QUICK REFERENCE HANDBOOK

AeroGal
AEROLINEAS GALAPAGOS S.A.

HC-CJV

A320-214
MSN 4547

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Issue date: 17 OCT 17

This is the QUICK REFERENCE HANDBOOK major event publication at issue date 17 OCT 17 for the A318/A319/A320/A321 and replacing last issue dated 05 SEP 17

QRH PAGE GEN.02A PROVIDES ADDITIONAL GUIDANCE TO MANAGE THE QRH UPDATES.

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FILING INSTRUCTIONS

Please incorporate this major event revision as follow:

Localization Subsection Title	Remove	Insert Rev. Date
PLP-LESS **LIST OF EFFECTIVE SECTIONS/SUBSECTIONS**	ALL	17 OCT 17
* PLP-LEDU **LIST OF EFFECTIVE DOCUMENTARY UNITS**	ALL	17 OCT 17
OEBPROC-PLP-LEOEB **LIST OF EFFECTIVE OPERATIONS ENGINEERING BULLETIN**	ALL	17 OCT 17
OEBPROC-50 **Modification of the AFTER START Normal Procedure**	ALL	

** Preliminary pages that may be removed from the QRH binder*

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PRELIMINARY PAGES
LIST OF EFFECTIVE SECTIONS/SUBSECTIONS

M(1)	Localization	Subsection Title	Rev. Date
R	PLP-LESS	**LIST OF EFFECTIVE SECTIONS/SUBSECTIONS**	17 OCT 17
	PLP-LETDU	**LIST OF EFFECTIVE TEMPORARY DOCUMENTARY UNITS**	12 APR 17
	GEN	**General**	05 SEP 17
	ABN-01	**[ADV] ECAM ADVISORY**	05 SEP 17
	ABN-02	**[RESET] SYSTEM RESET**	05 SEP 17
	ABN-10	**A-ICE**	12 APR 17
	ABN-11	**AIR**	12 APR 17
	ABN-12	**BRAKES**	12 APR 17
	ABN-13	**CAB PR**	12 APR 17
	ABN-15	**DOOR**	12 APR 17
	ABN-17	**EIS**	12 APR 17
	ABN-18	**ELEC**	12 APR 17
	ABN-19	**ENG**	12 APR 17
	ABN-20	**F/CTL**	12 APR 17
	ABN-21	**FUEL**	12 APR 17
	ABN-23	**HYD**	12 APR 17
	ABN-24	**L/G**	12 APR 17
	ABN-25	**MISC**	19 JUN 17
	ABN-26	**NAV**	12 APR 17
	ABN-27	**SMOKE**	12 APR 17
	ABN-28	**WHEEL**	12 APR 17
	NP	**Normal Procedures**	05 SEP 17
	PER-A	**Landing Performance Assessment**	12 APR 17
	PER-B	**Landing Distance without Failure**	12 APR 17
	PER-C	**Landing Distance with Anti Ice System Failure**	19 JUN 17
	PER-D	**Landing Distance with Bleed System Failure**	12 APR 17
	PER-E	**Landing Distance with Brake System Failure**	12 APR 17
	PER-F	**Landing Distance with Electrical System Failure**	19 JUN 17
	PER-G	**Landing Distance with Engine System Failure**	12 APR 17
	PER-H	**Landing Distance with Flight Controls System Failure**	12 APR 17
	PER-I	**Landing Distance with Hydraulic System Failure**	12 APR 17
	PER-J	**Landing Distance with Navigation System Failure**	12 APR 17
	PER-K	**Landing Distance with Slats Flaps System Failure**	12 APR 17
	PER-L	**One Engine Inoperative**	12 APR 17
	PER-M	**All Engines Operative**	12 APR 17
	PER-N	**Flight Without Cabin Pressurization**	12 APR 17
	PER-O	**Miscellaneous**	12 APR 17
	OPS	**Operational Data**	12 APR 17
R	OEBPROC-PLP-LEOEB	**LIST OF EFFECTIVE OPERATIONS ENGINEERING BULLETIN**	17 OCT 17
	NCL	**Normal Checklist**	12 APR 17

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

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M (1)	Localization	DU Title	DU identification	DU date
	ABN-02	**System Reset Table**	NG00824	
	ABN-02	**System Reset Table - AIR**	00021038.0001001	20 MAR 17
	Criteria: K10463, K6443, K9458 *Impacted DU: 00021025 System Reset Table - AIR*			
	Reason for issue: *This Temporary DU is issued for aircraft with the Air Conditioning System Controller 1803B0000-02, in order to provide Operators with the ACSC C/B reset procedure to apply in the case of a ˝PACK REGUL FAULT˝ triggered on ground.*			
	ABN-02	**System Reset Table - COM**	00021053.0028001	20 MAR 17
	Criteria: K12824, K12825, K3901, K8400, SA *Impacted DU: 00021045 System Reset Table - COM*			
	Reason for issue: *CIDS Director Hardware 333B and On Board Replacement Module (OBRM) 33A are sensitive to short power supply interruptions. These power supply interruptions occur when the aircraft is supplied by external power. As a consequence, ECAM caution "COM CIDS 1+2 FAULT" or CIDS Maintenance status 'CIDS 1' or 'CIDS 2' could be spuriously triggered. In such event, the flight crew should verify that the CIDS is functioning normally by checking the PA, Cabin Interphone and Cabin lighting function. If the ECAM caution is spurious, it can be removed by resetting the CIDS when the aircraft is powered by the APU.*			
	ABN-02	**System Reset Table- DOOR**	00013739.0001001	20 MAR 17
	Criteria: K11047 *Impacted DU: NONE*			
	Reason for issue: *This Temporary Documentary Unit (TDU) provides Operators with the CDSS reset procedure in case of flickering or total loss of the video camera on the ECAM System Display (SD), accompanied by the VIDEO NOT AVAIL message.*			
	ABN-02	**System Reset Table - WHEEL**	00021003.0001001	20 MAR 17
	Criteria: SA *Impacted DU: 00020997 System Reset Table - WHEEL*			
	Reason for issue: *The BSCU reset procedure for WHEEL N/W STRG FAULT is amended with a temporary procedure, in order to better address the spurious alerts that are currently encountered in-service.* - *Under the very specific conditions defined in the procedure, the flight crews can continue the flight without troubleshooting after a successful BSCU reset,* - *For aircraft with BSCU standard 10: The root cause of the spurious alerts that were triggered during taxiing with BSCU standard 10 has been cancelled. Therefore, the associated reset procedure has been removed.*			

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

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PRELIMINARY PAGES
AIRCRAFT ALLOCATION TABLE

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

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

M(1)	MSN	FSN	Registration Number	Model
	4547		HC-CJV	320-214

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

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PRELIMINARY PAGES
LIST OF MODIFICATIONS

M(1)	MODIFICATION	Linked SB	Incorp. Date	Title
	J0006		30 AUG 10	FUEL SYSTEM - ADDITIONAL TREATMENT OF CENTRE TANK STRUCTURE AND INSTALLATION OF CENTRE TANK SYSTEM
	J0071		30 AUG 10	WING STRUCTURE-INTRODUCTION OF A WING TIP INCORPORATING A TIP FENCE FOR 72T MTOW A/C
	J0513		30 MAY 12	WING-ANTI ICING SYSTEM-OPERATION IN ETOPS
	J1334		30 AUG 10	LANDING GEAR-MLG-LGCIU-INTRODUCTION OF A NEW STANDARD FOR IMPROVED PROXIMITY SENSOR FAULT MONITORING FUNCTION
	J1617		30 AUG 10	FLIGHT CONTROLS - GENERAL - DELETE LAF FEATURE FROM A320 DEFINITION (PRODUCTION SOLUTION)
	J2360		30 AUG 10	FUEL - QUANTITY INDICATION - INTRODUCE FUEL LEAK DETECTION ASSOCIATED WITH FQIC - 13 - 9
	J2361		30 AUG 10	FUEL - QUANTITY INDICATION - REMOVAL OF FUEL LEAK DETECTION FUNCTION ASSOCIATED WITH THE FQIC 13 - 9
	J2527		30 AUG 10	FUEL - QUANTITY INDICATING - INTRODUCE NEW STANDARD OF FUEL QTY INDICATING COMPUTER 13-10
	J2662		30 AUG 10	FUEL - QUANTITY INDICATING - INTRODUCE NEW STANDARD OF FQIC (P/N SIC5059 14-20)
	K0064		30 AUG 10	LIGHTS - INSTALLATION OF STROBE LIGHTS SYNCHRONISED MODE
	K0066		30 AUG 10	AIR CONDITIONING - VENTILATION SYSTEM FOR FWD CARGO COMPARTMENT
	K10009		30 AUG 10	EQUIPMENT/FURNISHINGS - CURTAINS AND PARTITIONS INTRODUCE IMPROVED STRIKES FOR COCKPIT DOOR
	K10463		11 SEP 13	AIR CONDITIONING PACK TEMPERATURE CONTROL INTRODUCE IMPROVED AIR CONDITIONING CONTROLLER P/N 1803B0000-02
	K10494		30 AUG 10	AIRBORNE AUXILIARY POWER - CHANGE STANDARD APU HONEYWELL GTCP36-300 TO APIC APS3200
	K11047		08 FEB 12	COMMUNICATION - ANTI HIJACK CAMERA MONITORING - INSTALL COCKPIT DOOR SURVEILLANCE SYSTEM DISPLAYEDON SD
	K11694		30 AUG 10	EQUIPMENT/FURNISHINGS-MISCELLANEOUS EMERGENCY EQUIPMENT-INSTALLATION OF ELT(406AFN) WITH RCP IN COCKPIT AND NAV PROVISIONS-HONEYWELL
	K12824		20 OCT 11	COMMUNICATIONS - CIDS - INSTALL CIDS AND SDF OBRM SOFTWARE P/N -33A AND CAM UPDATE
	K12825		20 OCT 11	COMMUNICATIONS - CIDS - INSTALL CIDS DIRECTOR P/N -333B
	K1806		30 AUG 10	AIR CONDITIONING SYSTEM POWER SUPPLY - MODIFY POWER TO FLOW CONTROL VALVE
	K2450		20 OCT 11	AUXILIARY POWER UNIT - INTRODUCTION OF APIC APS-3000
	K3901		30 AUG 10	COMMUNICATIONS - CIDS - MODIFICATION OF DIRECTOR POWER SUPPLY PRINCIPLE
	K5213		30 AUG 10	AIR CONDITIONING - PACK TEMPERATURE CONTROL - INTRODUCE IMPROVED PACK TEMPERATURE CONTROLLER
	K6156		30 AUG 10	AIR CONDITIONING-PACK TEMPERATURE CONTROL- INTRODUCE MODIFIED PACK TEMPERATURE CONTROLLER
	K6443		11 SEP 13	AIR CONDITIONING_AIR COOLING INSTALL A NEW ECS
	K7755		07 APR 11	EQUIPMENT/FURNISHINGS PAX COMPARTMENT INTRODUCE A MODIFIED INTRUSION AND PENETRATION RESISTANCE COCKPIT DOOR
	K7790		30 AUG 10	DOORS PASSENGER COMPARTMENT FIXED PARTITIONS INTERIOR DOOR-ELECTRICAL COCKPIT DOOR RELEASE SYSTEM
	K8400		30 AUG 10	COMMUNICATIONS CABIN INTERCOMMUNICATION MODIFY CABIN INTERCOMMUNICATION DATA SYSTEM ON A319
	K9458		11 SEP 13	AIR CONDITIONING - PACK TEMPERATURE CONTROL IMPROVED AIR CONDITIONING SYSTEM CONTROLLER P/N 1803B0000-01
	P10267		07 APR 11	NAVIGATION - RADIO MAGNETIC INFORMATION SWITCHING AND INDICATING : RE-INSTALL THALES DDRMI VOR/DME INDICATORS (ANTI-MOD 33503)

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M(1)	MODIFICATION	Linked SB	Incorp. Date	Title
	P10383	31-1334 04 31-1414 03	30 AUG 10	INDICATING/RECORDING SYSTEMS FLIGHT WARNING COMPUTER (FWC) INSTALL FWC STANDARD H2-F5
	P1044		30 MAY 12	MAP VALID FOR ALL A/C WITH AN EMBODIMENT STARTING AT A/C 13
	P10694	22-1296 06	09 SEP 15	AUTO-FLIGHT - FMGC ACTIVATE "MOD NAV IN GO AROUND" ON FMGC
	P10762	22-1269 05	07 APR 11	AUTO FLIGHT - FMGC INSTALL FMGC HWL H2C12 (RELEASE 1A) ON CFM A/C
	P11856	22-1315 05	09 SEP 15	AUTO - FLIGHT FMGC: ACTIVATE NO AP DISCONNECTION BELOW MDA/MDH UNTIL MISSED APPROACH POINT
	P1573		30 AUG 10	POWERPLANT-POWER SUPPLY FOR HP FUEL SOLENOID IN EMERGENCY SITUATION
	P1873		30 AUG 10	AIR CONDITIONING-ESSENTIAL DC SUPPLY FOR FORWARD CARGO COMPARTMENT SHUT-OFF VALVES
	P1970	23-1365 15	30 AUG 10	COMMUNICATIONS-INSTALL HF1 IN EMERGENCY CONFIG. (ETOPS)
	P2217		30 MAY 12	INDICATING - FWS DEFINE FWC C3 STANDARD
	P2590		30 AUG 10	NAVIGATION - INSTALL A TCAS II COLLISION AVOIDANCE SYSTEM
	P4089		30 AUG 10	AUTO-FLIGHT - FMGC - REDUCE VAPP FOR A320 CFM/IAE
	P4121		30 AUG 10	EXHAUST - THRUST REVERSER CONTROL AND INDICATING -ACTIVATE ADDITIONAL THRUST REVERSER LOCK CONTROL
	P4230		30 AUG 10	POWER PLANT-GENERAL INTRODUCTION OF CFM56-5B/P
	P4234		30 AUG 10	ICE AND RAIN PROTECTION-WINDSHIELD RAIN PROTECTION DESACTIVATION OF RAIN REPELLENT SYSTEM.
	P4319		30 AUG 10	AUTO FLIGHT/FCU DEFINE FD ENGAGEMENT IN CROSSED BARS AT GO AROUND
	P4395		30 AUG 10	INDICATING/RECORDING SYSTEMS.EIS.UNITS OF UNITS OF INDICATION "RUNWAY LENGHTS"IN FEET.
	P4502		30 AUG 10	INFORMATION SYSTEMS - ATIMS - INSTALL ATSU COMPUTER FOR PRE-FANS CONFIGURATION
	P4539		30 AUG 10	AUTO FLIGHT-GENERAL/FLIGHT CONTROL UNIT- DEFINE AND INSTALL SEXTANT MODULAR FCU
	P4576		30 AUG 10	LANDING GEAR-GENERAL WHEELS AND BRAKES EQUIPMENT COST REDUCTION ELECTRICAL ALTERNATE BRAKING
	P4647		30 AUG 10	NAVIGATION - WEATHER RADAR SYSTEM - COLLINS DUAL PWS ACTIVATOR
	P4801		30 AUG 10	ELECTRICAL POWER - GENERATION SYSTEM - DEFINE AND INSTALL ON A320 FAMILY NEW ELECTRICAL GENERATION CONCEPT (WIRING/EQUIPMENT)
	P4885		30 AUG 10	NAVIGATION - EGPWS - ACTIVATION OF ENHANCED FUNCTIONS OF THE EGPWS
	P4983		25 NOV 11	AUTO FLIGHT - FLIGHT AUGMENTATION - DEFINE FAC STANDARD B0513
	P5071		30 AUG 10	ICE AND RAIN PROTECTION-WINDSHIELD RAIN PROTECTIONREACTIVATE RAIN REPELLENT SYSTEM WITH FLUID COMPATIBLE WITH OZONE PROTECTION RULES
	P5168		30 AUG 10	NAVIGATION-MMR-INSTALLATION OF COLLINS MULTI-MODE RECEIVERS PROVIDING ILS (FM IMMUNE) AND GPS PRIMARY FUNCTION
	P5253		30 AUG 10	NAVIGATION ADIRS REMOVE ADIRS CDU
	P5451		30 AUG 10	ELECTRICAL POWER - GENERAL AC & DC MAIN DISTRIBUTION - INSTALL A/C AND DC SHEDDABLE BUSBARS
	P5638		30 AUG 10	NAVIGATION - STANDBY DATA : ALTITUDE AND HEADING -INSTALL ISIS (INTEGRATED STANDBY INSTRUMENT SYSTEM) - SERIAL SOLUTION -
	P5706	31-1257 01	30 AUG 10	INDICATING/RECORDING SYSTEMS- FLIGHT WARNING COMPUTER (FWC) INSTALL FWC STD H2/E3

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M(1)	MODIFICATION	Linked SB	Incorp. Date	Title
	P5768		30 AUG 10	ELECTRICAL POWER - AC EMERGENCY GENERATION - ACTIVATE ON A320 SAME ELECTRICAL EMERG. CONFIGURATION THAN A321
	P5895		30 AUG 10	NAVIGATION-GPWS-INSTALL EGPWS P/N-206-206 & INHIBIT AUTOMATIC DEACTIVATION OF ENHANCED FUNCTIONS.
	P6044		30 AUG 10	ICE AND RAIN PROTECTION - GENERAL - WINDSHIELD RAIN PROTECTION INSTALL IMPROVED GAGE ASSY P/N 4020W35-2
	P6251		30 AUG 10	ICE AND RAIN PROTECTION - GENERAL - WINDSHIELD RAIN PROTECTION - INSTALL NEW GAGE ASSYWITHOUT INPUT VALVE FUNCTION P/N 4020W35-3
	P6578		30 AUG 10	INDICATING/RECORDING SYSTEMS - ELECTRONIC INSTRUMENT SYSTEM INSTALL DMC, DU AND DISKETTES FOR EIS2
	P6703	22-1079 08 22-1102 02 22-1226 04	30 AUG 10	AUTO FLIGHT - FLIGHT AUGMENTATION COMPUTER INSTALL NEW FAC SOFTWARE STANDARD P/N B397BAM0515
	P6766		09 SEP 15	NAVIGATION - ILS (MMR) - INSTALL HONEYWELL MMR PROVIDING ILS (FM IMMUNE) AND GPS PRIMARY FUNCTIONS (HYBRID ARCHITECTURE)
	P6777		07 APR 11	INFORMATION SYSTEM - ATIMS UPGRADE ATSU HARDWARE FOR NEW ARINC 429 I/O BOARD
	P6954	22-1102 02 22-1226 04	25 NOV 11	AUTO FLIGHT - FLIGHT AUGMENTATION COMPUTER (FAC SYSTEM) - INTRODUCE FAC SOFTWARE "BAM0516" CAPABLE OF A318
	P7125	31-1257 01	30 AUG 10	INDICATING/RECORDING SYSTEMS - FWC - INSTALL FWC STANDARD H2 F1 ON A318 PW
	P7175		30 AUG 10	ELECTRICAL POWER - GENERAL - INSTALL A COMMERCIAL SHEDDING PUSH-BUTTON SWITCH IN COCKPIT
	P7218		09 SEP 15	AUTOFLIGHT - FLIGHT MANAGEMENT AND GUIDANCE COMPUTER (FMGC) DEVELOP FMS 2ND GENERATION HONEYWELL STEP1
	P7278		30 AUG 10	INDICATING RECORDING SYSTEM - EIS2 INSTALL EIS2 SOFTWARE CAPABLE OF A318 A/C
	P7455		30 AUG 10	ELECTRICAL POWER - GENERAL IN FLIGHT ENTERTAINMENT (IFE) POWER SUPPLY ON SHEDDABLE BUSBARS CONTROLED BY "GALY & CAB" SW
	P7519		30 AUG 10	AUTOFLIGHT - FMGC - INSTALL FMGC CFM C13042AA01 (EQUIPPED WITH FMS2 HONEYWELL)
	P8256	22-1102 02 22-1226 04	25 NOV 11	AUTO FLIGHT FLIGHT AUGMENTATION COMPUTER INSTALL FAC STANDARD BAM0617 FOR A318 EIS
	P8303		30 AUG 10	NAVIGATION DDRMI REMOVE DDRMI VOR/ADF/DME INDICATORS
	P8564		30 AUG 10	INDICATING/RECORDING SYSTEM EIS ACTIVATE ENGINE AVAIL DISPLAY
	P8710		07 APR 11	NAVIGATION - WEATHER RADAR SYSTEM - INSTALL COLLINS TRANSCEIVER FULLY COMPLIANT WITH MULTISCAN FUNCTION
	P8751		22 MAR 17	NAVIGATION - EGPWS - INSTALL AN EGPWC CAPABLE OF PEAKS/OBSTACLE FUNCTIONS WITH EIS1 & OF USING GPS LATERAL POSITION
	P8799		30 AUG 10	NAVIGATION - EGPWS - INSTALL AN EGPWC CAPABLE OF PEAKS/OBSTACLE FUNCTIONS WITH EIS1 & OF USING GPS LATERAL POSITION
	P9171		30 AUG 10	NAVIGATION - ADIRS INTRODUCE AIR DATA MONITORING FUNCTION
	P9508		30 AUG 10	INDICATING/RECORDING SYSTEMS - SDAC - ACQUISITION/INTERFACE CONFIGURATION CABIN FOR NO PED FLIGHTS
	P9522		30 AUG 10	AUTO FLIGHT - MCDU ACTIVATE BACK UP NAV FUNCTION
	P9824		07 APR 11	INDICATING / RECORDING SYSTEMS NSTALL DISPLAY MANAGEMENT COMPUTER SOFTWARE EIS2 S7 ELECTRONIC INSTRUMENT SYSTEM

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M(1)	MODIFICATION	Linked SB	Incorp. Date	Title
	P9873		30 AUG 10	POWER PLANT - GENERAL INTRODUCE CFM56-5BX/3 ENGINE (SAC) "TECH INSERTION PROGRAM"
	27-1234 01		19 JUN 17	FLIGHT CONTROL - ELEVATOR AILERON COMPUTER SYSTEM (ELAC)-INSTALL L97 STANDARD ON ELAC B WITH DATA LOADING CAPABILITY
	27-1243 01		22 MAR 16	FLIGHT CONTROLS - ELEVATOR AILERON COMPUTER SYSTEM (ELAC) - INSTALL ELAC B L97+ WITH DATA LOADING CAPABILITY
	31-1373 00		31 JUL 14	INDICATING/RECORDING SYSTEMS - FLIGHT WARNING COMPUTER (FWC) - INSTALL FWC STANDARD H2-F6
	31-1414 03		18 MAR 15	INDICATING RECORDING SYSTEMS - FWC - INTRODUCE FWC STANDARD H2-F7

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

Important.....GEN.01A
General Information.....GEN.02A

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IMPORTANT

SCOPE

The QRH contains some specific procedures which are not displayed on the ECAM.
As a general rule, the procedures displayed on the ECAM are not provided in the QRH (refer to FCOM PRO/ABN).

TASKSHARING FOR ABN /EMER PROC

For all abnormal/emergency procedures, the tasksharing is as follows :

- PF - Pilot flying - Responsible for the :
  - Thrust levers
  - Flight path and airspeed control
  - Aircraft configuration (request configuration change)
  - Navigation
  - Communications
- PM - Pilot Monitoring - Responsible for the :
  - Monitoring and reading aloud the ECAM and checklists
  - Performing required actions or actions requested by the PF, if applicable
  - Using engine master levers, cockpit C/B s, IR and guarded switches with PF's confirmation (except on ground).

ECAM CLEAR

DO NOT CLEAR ECAM WITHOUT CROSS-CONFIRMATION OF BOTH PILOTS.

ABN /EMER PROC INITIATION

Procedures are initiated on pilot flying command.

No action will be taken (apart from audio warning cancel through MASTER WARN light) until :

- The appropriate flight path is established, and
- The aircraft is at least 400 ft above the runway, if a failure occurs during takeoff, approach, or go-around. (In some emergency cases, provided the appropriate flight path is established, the pilot flying may initiate actions before this height).

The flight crew can stop the procedure if the conditions for the application of the QRH procedure disappear.

NORMAL CHECKLIST

Normal C/L are initiated by the PF and read by the PM.
The PF shall respond after having checked the existing configuration. When both pilots have to respond, "BOTH" is indicated.

DEFINITIONS OF WARNINGS, CAUTIONS AND NOTES

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

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

GENERAL INFORMATION

QRH REVISION DATE

The update of the FCOM does not necessarily result in the update of the QRH . Therefore, the revision dates of the QRH and of the FCOM may differ.

EFFECTIVITY

As QRH is published at aircraft level, each paper page has only one effectivity.

PAGE NUMBERING

The page numbering follows the following rules:

01A, 02A, 02B,.. : Numbering and Index (A, B, ...) for GEN, ABN, OPS, OEB PROC sections

Note: For these sections, the procedures start with the index A and for long procedures (more than one page), the index continues with B, C...

1/10, 3/5, ... : Numbering for NP, PER

C1, C2 : Back cover page interior

C3 : Back cover page exterior

"BLANK" : Index of an intentionally left blank paper page created to ensure the correct format of the next chapter (begins on recto page)

PRELIMINARY PAGES WITHIN THE QRH BINDER

It is essential for Airlines to correctly manage the updates of the QRH . For this purpose, Airbus publishes Preliminary Pages (PLP) with each QRH revision. These PLP are used as reference documents for Airlines to manage the QRH updates, e.g. easily insert the revisions, identify the modifications that impact the QRH , get a synthesis of changes introduced with each revision. However, when the QRH revisions have been incorporated in accordance with the information given in the PLP , these pages do not bring operational added value and therefore are no longer useful in the QRH binder for any operational purposes. Therefore, to minimize the size of the QRH binder on board the aircraft and to optimize the operational use of the QRH , Airbus has no objection that the Airlines remove the PLP from the QRH after the revisions have been incorporated in the QRH and all checks performed to confirm the revisions have been correctly incorporated. You will find below the list of PLP that may be removed from the QRH binder :

- The transmittal letter
- The List of Effective Preliminary Pages (LEPP)
- The Filing Instructions (FI)
- The List of Effective Documentary Units (the LESS is the reference)
- The List Of Modifications (LOM)
- The Summary Of Highlights (SOH)
- The front pages of all QRH sections
- The Table Of Contents (TOC) of the General section
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ECAM ADVISORY CONDITIONS

SYSTEM	CONDITIONS	RECOMMENDED ACTION
APU	EGT > EGT MAX -33 °C (inhibited during APU start)	
	OIL QTY (message LOW OIL LEVEL pulsing)	If there is no oil leak, then the remaining oil quantity allows normal APU operation for about 10 h.
CAB PR	CAB VERTICAL SPEED V/S > 1 800 ft/min	CPC changeover is recommended: MODE SEL : MAN Wait 10 s then: MODE SEL: AUTO
	CAB ALTITUDE altitude ≥ 8 800 ft	PACK FLOW: HI MODE SEL : MAN Manual pressure control If the cargo freight permits, set FWD ISOL VALVE: OFF to reduce the rate of cabin altitude increase.
	ΔP ≥ 1.5 PSI in phase 7	LDG ELEV : ADJUST If unsuccessful: MODE SEL : MAN Manual pressure control
ELEC	IDG OIL TEMP ≥ 147 °C	Reduce IDG load, if possible (GALLEY or GEN OFF). If required, restore when the temperature has dropped. Restrict generator use to a short time, if the temperature rises again excessively.
ENG	OIL PRESS P < 16 PSI	- If oil pressure is between 16 PSI and 13 PSI (advisory), continue normal operation. - If oil pressure is below 13 PSI (red indication), without the ENG OIL LO PR warning, continue normal engine operation (it can be assumed that the oil pressure transducer is faulty). In both cases, monitor other engine parameters, especially oil temperature and quantity.
	OIL PRESS P > 90 PSI	Closely monitor other engine parameters for symptoms of engine malfunction. If high oil pressure is not accompanied by other abnormal indications, operate the engine normally for the remainder of the flight. Record high oil pressure, and corresponding N2 readings, for maintenance action.
	OIL TEMP T > 140 °C	An oil temperature increase during normal steady-state operations indicates a system malfunction, and should be closely monitored for other symptoms of engine malfunction. *Note: If the OIL TEMP increase follows thrust reduction, increasing thrust may reduce oil temperature.* *In addition, an oil temperature increase could be related to the IDG oil cooling system. To reduce oil temperature increases before limits are reached, the following is recommended:* 1. *Low Speed - Increase engine speed to increase fuel flow, and thereby cool IDG oil.* 2. *High Speed - Reduce generator load, or turn off generator. If oil temperature continues to rise, mechanically disconnect IDG .*
	OIL QTY < 3 qt	If oil quantity is low at a high power setting, expect level increase after power reduction. Monitor affected engine oil parameters and crosscheck with other engine - If pressure and temperature remain normal, continue normal operation.
	NAC TEMP ≥ 240 °C	Monitor engine parameters and crosscheck with other engine.
	VIBRATION N1 ≥ 6 units N2 ≥ 4.3 units	Refer to HIGH ENGINE VIBRATION procedure (*Refer to ABN-19 HIGH ENGINE VIBRATION*).

Continued from the previous page

SYSTEM	CONDITIONS	RECOMMENDED ACTION
FUEL	Difference between wing fuel quantities greater than 1 500 kg (3 307 lb)	FUEL MANAGEMENT (CHECK) If a fuel leak is suspected, *Refer to ABN-21 Fuel Leak*
	Fuel temp greater than 45 °C in inner cell, or 55 °C in outer cell	GALLEY (OFF)
	Fuel temp lower than -40 °C in inner or outer cell	Consider descending to a lower altitude and/or increasing Mach to increase TAT.
OXY	CKPT OXY Pulsing green: When pressure is < 800 PSI. Amber: When pressure is < 400 PSI.	If mask is not being used, check if it is correctly stowed.

SYSTEM RESET - GENERAL

WARNING	Only perform one reset at a time, unless indicated differently.

Guidelines to reset a system:
- Set the related normal cockpit control to OFF, or pull the corresponding circuit breaker,
- Wait 3 s if a normal cockpit control is used, or 5 s if a circuit breaker is used (unless a different time is indicated),
- Set the related normal cockpit control to ON, or push the corresponding circuit breaker,
- Wait 3 s for the end of the reset.

■ **On ground:**
Reset ECU (CFM) or EEC (IAE) or EIU only when engine shut down.
Reset BSCU only when aircraft stopped.
Systems not listed in the System Reset Table can be reset following the guidelines described above.
Refer to System Reset Table

■ **In flight:**

WARNING	The flight crew can attempt a system reset only when: - An ECAM /OEB /FCOM /QRH procedure requests to reset the system, or - The System Reset Table permits.

CAUTION	Do not pull the following circuit breakers: - SFCC - ECU or EEC or EIU.

<u>Note:</u> *Before taking any action on the cockpit C/B s, both the PF and PM must crosscheck and ensure that the C/B label corresponds to the affected system.*

Refer to System Reset Table

SYSTEM RESET TABLE

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
AIR	AIR PACK 1(2) REGUL FAULT (ACSC)	**On ground only:** - Pull C/B s W21 and W22 on 122VU - Pull C/B s X21 and X22 on 122VU - Pull C/B s Y18, Y20 and Y21 on 122VU - Pull C/B D8 on 49VU - Wait 5 s before pushing all the C/Bs. Note: *During the reset, a small increase of the engine thrust may be observed (N1 or EPR, as applicable). If the parking brake is set, vibrations can occur.*
	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	Note: *Do not attempt more than one reset.* **On ground or in flight:** **If the PACK (non-affected side) is operative, and If the Wing Anti-Ice is OFF:** - Set ENG BLEED pb-sw (affected side) to OFF ■ **If ENG BLEED pb-sw FAULT light (affected side) is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If ENG BLEED pb-sw FAULT light (affected side) is off:** - Set X BLEED selector to AUTO - Set PACK pb-sw (affected side) to ON - Set ENG BLEED pb-sw (affected side) to ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If** AIR ENG (AFFECTED) BLEED FAULT **alert or** AIR ENG (AFFECTED) BLEED ABNORM PR **alert reoccur, or** **If Engine Bleed Valve (affected side) is not open on the** BLEED SD page**:** - Set ENG BLEED pb-sw(affected side) to OFF - Set X BLEED selector to OPEN. Note: *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	Note: *Do not attempt more than one reset.* **On ground only:** - Set ENG BLEED pb-sw (affected side) to OFF ■ **If ENG BLEED pb-sw FAULT light (affected side) is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If ENG BLEED pb-sw FAULT light (affected side) is off:** - Set ENG BLEED pb-sw (affected side) to ON. - Check that the affected Engine Bleed Valve is closed on the BLEED SD page. Note: *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

Continued from the previous page

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
AUTO FLT	AUTO FLT FCU 1(2) FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - If AUTO FLT FCU 1(2) FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1(2) FAULT remains, pull both C/B s B05 on 49VU and M21 on 121VU - Push them after 7 min, with a delay of less than 5 s between side 1 and 2 - Wait at least 30 s for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful).
	AUTO FLT FCU 1+2 FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, and then M21 on 121VU for FCU 2 - Push them after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, and then M21 on 121VU for FCU 2 - Push them after 5 s - If AUTO FLT FCU 1+2 FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1+2 FAULT remains, pull again both C/B s B05 on 49VU and M21 on 121VU - Push them after 7 min, with a delay of less than 5 s between side 1 and 2 - Wait for at least 30 s for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful). FCU targets are synchronized on current aircraft values, and displayed as selected targets. - Re-enter the barometer altimeter setting value, if necessary.
	AUTO FLT REAC W/S DET FAULT (FAC 1+2)	**On ground only:** The Flight Crew could cancel these alerts by resetting both FACs, one after the other - Pull the C/B s B03 and B04 on 49VU and push them after 5 s - Pull the C/B s M18 and M19 on 121VU and push them after 5 s.
	One MCDU locked, or blank (MCDU)	**On ground, or in fligth:** - Pull the C/B for the locked or blanck MCDU and push it back after 10 s. The circuit breakers for the MCDU's are: • AUTO FLT /MCDU 1 B1 ON 49VU (Overhead Panel) • AUTO FLT /MCDU 2 N20 ON 121VU (Right Rear Maintenance Panel) • AUTO FLT /MCDU 3 N21 ON 121VU (Right Rear Maintenance Panel) .
	Both MCDU locked, or blank, or FMGC malfunction (FMGC)	**On ground:** - Apply external power or APU generator power - Wait 2 min before resetting the FMGC circuit breakers - FD 1(2) OFF

Continued from the previous page

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Pull the C/B of the affected FMGC and reset it after 10 s. The circuit breakers for the FMGC's are: • AUTO FLT /FMGC 1 B2 ON 49VU (Overhead Panel) • AUTO FLT /FMGC 2 M17 ON 121VU (Right Rear Maintenance Panel). **CAUTION** Always wait 1 min after the "PLEASE WAIT" message disappears from the MCDU , before engaging or reengaging the FD s and the AP of the reset FMGC. Note: *Due to electrical transient, MANUAL FMGS RESET procedure may be unsuccessful. If so, the flight crew may attempt the same procedure with engines not running.* **In flight:** - FD 1(2) OFF - Pull the C/B of the affected FMGC and reset it after 10 s. The circuit breakers for the FMGC's are: • AUTO FLT /FMGC 1 B2 ON 49VU (Overhead Panel) • AUTO FLT /FMGC 2 M17 ON 121VU (Right Rear Maintenance Panel). **CAUTION** Always wait 1 min after the "PLEASE WAIT" message disappears from the MCDU , before engaging or reengaging the FD s and the AP of the reset FMGC.
BRAKES	BRAKES SYS 1(2) FAULT or BRAKES BSCU CH 1(2) FAULT (BSCU)	**On ground:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. • IF UNSUCCESSFUL: - Pull C/B s M33 and M34 on 121VU for BSCU channel 1 - Pull C/B s M36 and M35 on 121VU for BSCU channel 2 - Push C/Bs. After a successful reset, resume to normal operation. Note: *After any BSCU reset:* *1. Check brake efficiency* *2. Record BSCU reset in the logbook.* **In flight:** When landing gear is up only: - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON - If required, rearm the autobrake. When landing gear is down: reset not authorized. Note: *After any BSCU reset:* *- Record BSCU reset in the logbook.*

Continued from the previous page

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
COM	COM CIDS 1+2 FAULT and/or Loss of Passenger Address and/or Loss of Cabin Interphone (CIDS)	**Confirm if spurious:** - Check PA function - Check Cabin Interphone function - Check Cabin Lighting function. If spurious, reset the CIDS when aircraft is self powered (APU or engine). **On ground or in flight:** - Pull the C/Bs in the following order: P13 and P14 on 121VU G01 and G02 on 49VU M05 and, M06 on 121VU - Wait 10 s, then - Push the C/B in the following order: M05, M06, G01, G02, P13 , P14 - After CIDS reset, wait approximately 4 min before recovering normal operation.
	Uncommanded EVAC horn activation (CIDS)	**On ground, or in flight:** Press the EVAC HORN SHUT OFF pb. Set the EVAC CAPT & PURS CAPT sw to the CAPT only position. Wait for 3 s. • IF UNSUCCESSFUL: - Pull the C/B s for DIR 2 in the following order: G02 on 49VU , M06 on 121VU. • IF UNSUCCESSFUL: - Pull the C/B s for DIR 1 in the following order: G01 on 49VU , M05 on 121VU - Wait for 1 min, then - Push the C/B s for DIR 2 in the following order: M06, G02 - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Frozen RMP (RMP)	**On ground, or in flight:** The flight crew must reset all the RMP s one after the other via the RMP control panel: - Set RMP ON/OFF sw to OFF position - Wait 5 s - Set RMP ON/OFF sw to ON position.
	FAP freezing (FAP)	**On ground, or in flight:** - Pull the C/Bs in the following order: H01 on 49VU , Q14 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: Q14, H01.

Continued from the previous page

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
DATALINK	ATSU Malfunction (ATSU)	The ATSU reset should be attempted, only if: - Key selection has no effect on the DCDU or any of the MCDU ATSU DATALINK submenus - ADS-C or CPDLC are inoperative When the ATSU is reset, the following connections are no longer active: - CPDLC: • The flight crew should send a notification to the ATC center to re-establish the CPDLC connection - ADS-C: • As no ADS-C disconnect message is sent, the ATC center(s) assumes that the ADS-C connection is still alive • The flight crew must check that ADS-C is ARMED or ON. **On ground or in flight:** - Pull the C/B s in the following order: L16, L15 on 121VU - Wait 5 s, then - Push the C/Bs in the following order: L15, L16.
DOOR	Flickering or total loss of the video camera display (on the SD) accompanied by the ″VIDEO NOT AVAIL″ message. (CDSS)	**On ground, or in flight:** - Set the VIDEO rotary selector to OFF, on the center pedestal VIDEO panel - Set the COCKPIT DOOR VIDEO pb-sw to OFF, on the overhead panel - Wait 2 min, then - Set the COCKPIT DOOR VIDEO pb-sw back on, on the overhead panel - Wait 15 s, then - Set the VIDEO rotary selector to ″CKPT ENTRY″, on the center pedestal VIDEO panel.
ELEC	GPU cannot be connected to the aircraft (GAPCU)	**On ground only:** The GPU cannot be connected to the electrical network of the aircraft (AVAIL light is OFF): • If at least one power source (IDG 1 or 2, APU GEN or batteries) is connected to the electrical network of the aircraft: - Reset the EXT PWR pb on 35VU (Press and release). • If no power source is connected to the electrical network of the aircraft: - Set the BAT 1 pb-sw and BAT 2 pb-sw to AUTO.
ENG	ENG 1(2) FADEC A(B) FAULT (FADEC)	**On ground only:** If this alert triggers at engine start, apply the following procedure: - Set ENG MASTER (affected) pb-sw to OFF - Wait until N2 speed below 5 % - Pull C/B A04 or A05 on 49VU for ENG 1(2) FADEC channel A - Pull C/B R41 or Q40 on 121VU for ENG 1(2) FADEC channel B - Wait 5 s before pushing the C/Bs - After ECU power-up sequence, the Flight Crew can restart the engine.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
F/CTL	F/CTL ELAC 1(2) FAULT (one or both computer failed) (ELAC)	**On ground, or in flight** - Set ELAC 1(2) pb to OFF - Wait 3 s - Set ELAC 1(2) pb to ON. **WARNING** Do not reset more than one computer at a time. **Note:** - *When an ELAC reset is performed on ground, the flight crew must check the pitch trim position.* - *If a reset is performed on ground, the flight crew must then perform a flight controls check.*
	ELAC or SEC malfunction (ELAC or SEC)	ELAC or SEC may be reset. **WARNING** Do not reset more than one computer at a time. - It is possible to reset the flight control computers in flight, even if not requested by the ECAM, provided only one reset is performed at a time. **Note:** - *When an ELAC reset is performed on ground, the flight crew must check the pitch trim position.* - *If a reset is performed on ground, the flight crew must then perform a flight controls check.*
FUEL	Loss of fuel quantity indication or Simultaneous triggering of FUEL L OUTER XFR CLOSED and FUEL R OUTER XFR CLOSED although FUEL SD indicates no anomaly. (FQIC)	**On ground, or in flight:** - Pull the three C/Bs: • Channel 1 (A13 on 49VU) • Channel 2 (M27 on 121VU) • Channel 1 and 2 (L26 on 121VU). - Wait 5 s, before pushing the three C/Bs. *Note:* *The fuel quantity indication will be re-established within 1 min.*
FWS	FWS FWC 1(2) FAULT (FWC)	**On ground:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU). Wait 50 s after pushing the C/Bs. **In flight:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
L/G	L/G LGCIU 1(2) FAULT (LGCIU 1(2))	**On ground only:** The flight crew must depressurize the green hydraulic system before resetting the LGCIU: - ENG 1 PUMP OFF - PTU OFF. When there is no green hydraulic pressure: - To reset LGCIU 1: • Pull C/B Q34 on 121VU , then C09 on 49VU • Wait for 15 s, then push the C/Bs. - To reset LGCIU 2: • Pull C/B Q35 on 121VU • Wait for 15 s, then push the C/B. After the LGCIU reset, restore green hydraulic pressure (ENG 1 PUMP ON, PTU AUTO).
NAV	NAV GPWS FAULT and NAV GPWS TERR DET FAULT (EGPWS)	**On ground, or in flight:** Perform the following reset when both alerts are displayed at the same time: - Pull C/B P07 on 121VU - Set GPWS SYS pb and GPWS TERR pb to ON - Wait 5 s, then push the C/B.
	NAV TCAS FAULT (TCAS)	**On ground only:** - Pull C/B K10 on 121VU - Wait 5 s, then push the C/B.
	ISIS malfunction (ISIS)	**On ground only:** With aircraft not moving: - Pull C/B F12 on 49VU - Wait 5 s, then push the C/B - Normal operation is expected after approximately 2 min. *Note: In the case of small aircraft motion during the C/B reset (refueling, cargo loading conditions, etc.), the ATT red flag may appear on the ISIS. In this case, press the RST P/B for 2 s, and wait 2 min to recover normal operation.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
SMOKE	SMOKE DET FAULT (CIDS -SDF)	**On ground or in flight:** Apply the following actions in the presented order: - Pull the C/B s C05 and C06 on 49VU , T17 and T18 on 122VU - Wait 10 s, then - Push simultaneously the C/B s C05 and C06 on 49VU - Within 2 s push simultaneously the C/B s T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.
	SMOKE LAVATORY DET FAULT with all lavatories declared inoperative on the FAP (CIDS or CIDS -SDF)	**On ground or in flight:** Apply the following actions in the presented order: - Pull the C/B s P13 and P14 ⊲⊴ on 121VU , G01 and G02 on 49VU , M05 or M06 and M06 or M07 on 121VU - Wait 10 s, then - Push the C/B s in the following order: M05 or M06 and M06 or M07 on 121VU , G01 and G02 on 49VU , P13 and P14 ⊲⊴ on 121VU - After CIDS reset, wait approximately 4 min before recovering normal operation. **If unsuccessful, on ground only:** Apply the following actions in the presented order: - Pull the C/B s C06 and C05 on 49VU , T17 and T18 on 122VU - Wait 10 s, then - Push simultaneously the C/B s C05 and C06 on 49VU - Within 2 s push simultaneously the C/B s T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.
	SMOKE FWD (AFT) CARGO DET FAULT SMOKE FWD (AFT) CRG 1/2 BTL FAULT (CIDS -SDF)	**On ground:** Apply the following actions in the presented order: - Pull the C/B s C05 and C06 on 49VU , T17 and T18 on 122VU - Wait 10 s, then - Push simultaneously the C/B s C05 and C06 on 49VU - Within 2 s push simultaneously the C/B s T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.
VENT	VENT AVNCS SYS FAULT (AEVC)	**On ground only:** - Pull C/B Y17 on 122VU - Wait 5 s before pushing the C/B.
WINDSHEAR	WINDSHEAR DET FAULT ⊲⊴ (FAC 1+2)	**On ground only:** The Flight Crew could cancel these alerts by resetting both FACs, one after the other - Pull the C/B s B03 and B04 on 49VU and push them after 5 s - Pull the C/B s M18 and M19 on 121VU and push them after 5 s.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
WHEEL	WHEEL N.W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** **Case A** If the three conditions below are fulfilled: - the WHEEL N/W STRG FAULT alert was triggered just after engine start - the N/W STRG DISC memo was displayed before the start of the pushback (before the aircraft starts moving) - the N/W STRG DISC memo remained displayed even after the pushback is finished (nosewheel steering selector bypass pin is in the steering position). Apply the below reset procedure. If the ECAM alert disappears after the reset, the flight crew may continue the flight without troubleshooting. **Case B** In all other cases, including in case of doubt on the above conditions, troubleshooting must be performed before continuing the flight, even if the ECAM alert disappears after the reset. For a return to the gate : - Apply the below reset procedure - The taxi speed must not exceed 10 kt. **Reset Procedure:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Check absence of aircraft veering* *3. Record the BSCU reset in the logbook.*

DOUBLE AOA HEAT FAILURE

One of affected ADRs..... OFF

Keep preferably ADR 1 available as ADR1 is supplied in EMER ELEC config.

NAV ADR 1(2)(3) FAULT

Intentionally left blank

ENGINE 1+2 BLEED FAULT

- **At ANY TIME of the procedure, if** CAB PR EXCESS CAB ALT **alert triggers:**
  APPLY ECAM PROC

■ **If** AIR ENG 1 BLEED FAULT **alert or** AIR ENG 1 BLEED ABNORM PR **alert**
and
If AIR ENG 2 BLEED FAULT **alert or** AIR ENG 2 BLEED ABNORM PR **alert:**
X BLEED ..... SHUT
ENG 1 BLEED .....OFF THEN ON
ENG 2 BLEED .....OFF THEN ON

- **If reset unsuccessful (NO engine bleed recovered):**
  DESCENT TO FL 100 / MEA -MORA.....INITIATE
  ENG 1 BLEED ..... OFF
  ENG 2 BLEED ..... OFF
  APU BLEED..... OFF
  APU.....START
  WING A.ICE..... OFF
  AVOID ICING CONDITIONS

  ■ **If APU available:**

  - **When at or below FL 200:**
    KEEP WING A.ICE OFF
    APU BLEED.....ON

    ■ **If APU bleed available:**
    MAX FL: 200
    ENG 1 BLEED.....ON
    ENG 2 BLEED.....ON
    APU BLEED.....OFF

    - **If no engine bleed recovered:**
      APU BLEED..... ON
      ENG 1 BLEED.....OFF
      ENG 2 BLEED.....OFF
      WING A.ICE NOT AVAILABLE

      - **If PACK 1 inoperative:**
        X BLEED..... OPEN

    ■ **If APU bleed not available:**
    CONTINUE DESCENT TO FL 100 / MEA-MORA
    APU BLEED.....OFF

    - **When at or below FL 100 / MEA-MORA:**
      ENG 1 BLEED.....ON
      ENG 2 BLEED.....ON

      - **If no engine bleed recovered:**
        ENG 1 BLEED.....OFF
        ENG 2 BLEED.....OFF

ENGINE 1+2 BLEED FAULT (Cont'd)

WING A.ICE NOT AVAILABLE

- **When CAB PR ΔP < 1 psi:**
  RAM AIR..... ON
  MAX FL: 100 / MEA-MORA

■ **If APU not available:**
CONTINUE DESCENT TO FL 100 / MEA-MORA
APU BLEED..... OFF

- **When at or below FL 100 / MEA-MORA:**
  ENG 1 BLEED..... ON
  ENG 2 BLEED..... ON
  - **If no engine bleed recovered:**
    ENG 1 BLEED..... OFF
    ENG 2 BLEED..... OFF

    WING A.ICE NOT AVAILABLE
    - **When CAB PR ΔP < 1 psi:**
      RAM AIR..... ON
      MAX FL: 100 / MEA-MORA

■ **If at least one engine bleed failed due to bleed leak or engine fire or Start Air Valve failed open:**
DESCENT TO FL 100 / MEA -MORA..... INITIATE
X BLEED..... SHUT
ENG 1 BLEED..... OFF
ENG 2 BLEED..... OFF
APU BLEED..... OFF
APU..... START
WING A.ICE..... OFF
AVOID ICING CONDITIONS

■ **If** AIR ENG 2 BLEED FAULT **alert or** AIR ENG 2 BLEED ABNORM PR **alert:**

- **When at or below FL 100 / MEA-MORA:**
  ENG 2 BLEED..... ON
  - **If engine 2 bleed not recovered:**
    ENG 2 BLEED..... OFF

    WING A.ICE NOT AVAILABLE
    - **When CAB PR ΔP < 1 psi:**
      RAM AIR..... ON
      MAX FL: 100 / MEA-MORA

ENGINE 1+2 BLEED FAULT (Cont'd)

- **If AIR ENG 1 BLEED FAULT alert or AIR ENG 1 BLEED ABNORM PR alert:**
  - **If APU available:**
    - **When at or below FL 200:**
      KEEP WING A.ICE OFF
      APU BLEED.....ON
      - **If APU bleed available:**
        MAX FL: 200
        ENG 1 BLEED.....ON
        APU BLEED.....OFF
        - **If engine 1 bleed not recovered:**
          APU BLEED.....ON
          ENG 1 BLEED.....OFF
          WING A.ICE NOT AVAILABLE
      - **If APU bleed not available:**
        CONTINUE DESCENT TO FL 100 / MEA-MORA
        APU BLEED.....OFF
        - **When at or below FL 100 / MEA-MORA:**
          ENG 1 BLEED.....ON
          - **If engine 1 bleed not recovered:**
            ENG 1 BLEED.....OFF
            WING A.ICE NOT AVAILABLE
            - **When CAB PR ΔP < 1 psi:**
              RAM AIR.....ON
              MAX FL: 100 / MEA-MORA
  - **If APU not available:**
    CONTINUE DESCENT TO FL 100 / MEA-MORA
    APU BLEED.....OFF
    - **When at or below FL 100 / MEA-MORA:**
      ENG 1 BLEED.....ON
      - **If engine 1 bleed not recovered:**
        ENG 1 BLEED.....OFF
        WING A.ICE NOT AVAILABLE
        - **When CAB PR ΔP < 1 psi:**
          RAM AIR.....ON
          MAX FL: 100 / MEA-MORA
- **If neither AIR ENG 1(2) BLEED FAULT alert nor AIR ENG 1(2) BLEED ABNORM PR alert on any side:**
  NO ENGINE BLEED CAN BE RECOVERED
  WING A.ICE NOT AVAILABLE

ENGINE 1+2 BLEED FAULT (Cont'd)

- **When at or below FL 100 / MEA-MORA**
  and
  CAB PR ΔP < 1 psi:
  RAM AIR..... ON
  MAX FL: 100 / MEA-MORA

ASYMMETRIC BRAKING

Apply this procedure when all brakes of one gear are released.

AVOID XWIND > 10 KT FROM SIDE OF AVAILABLE BRAKE
APPLY BRAKE PROGRESSIVELY ON AVAILABLE SIDE
USE RUDDER TO COUNTER LATERAL DEVIATION

- **If reverser inoperative on same side as inoperative brakes:** DO NOT USE REVERSERS

LDG DIST PROC..... APPLY

RESIDUAL BRAKING

- **In flight:**
  BRAKE PEDALS..... PRESS SEVERAL TIMES
  - **If residual pressure remains:**
    A/SKID & N/W STRG sel.....KEEP ON
    - **For landing:**
      AUTO/BRK.....MED
      - **If autobrake not available:**
        APPLY BRAKING JUST AFTER TOUCHDOWN

  POSSIBLE BRAKING ASYMMETRY

Note: *If tire damage is suspected after landing, refer to FCOM-LIM-LG Landing Gear-Taxi with Deflated or damaged Tires.*

CABIN OVERPRESSURE

PACK 1 OR 2.....OFF
VENTILATION BLOWER.....OVRD
VENTILATION EXTRACT..... OVRD
ΔP..... FREQUENTLY MONITOR

- **If ΔP >9 PSI:**

  LAND ASAP

  PACK 1.....OFF
  PACK 2.....OFF

- **10 min before landing:**

  PACK 1.....OFF
  PACK 2.....OFF
  VENTILATION BLOWER.....AUTO
  VENTILATION EXTRACT.....AUTO

- **Before door opening:** CHECK ΔP ZERO

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COCKPIT DOOR FAULT

CKPT DOOR CONT [OVHD PANEL] ..... CHECK

- **If one or more STRIKE status lights on:**
  COCKPIT DOOR..... OPEN
  COCKPIT DOOR sw..... UNLOCK 10 s THEN NORM
  - **If two or more STRIKE status lights on:**
    COCKPIT DOOR NOT INTRUSION PROOF.
- **If two CHAN status lights on:**
  AUTOMATIC LATCH RELEASE NOT AVAILABLE AFTER COCKPIT DECOMPRESSION.
- **If no status light on:**
  TO UNLOCK THE DOOR: COCKPIT DOOR HANDLE AVAIL

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DISPLAY UNIT FAILURE

- **If DU flashes:**
  - **If captain PFD, ND, ECAM DUs or MCDU 1 affected:**
    GEN 1.....OFF
    - **If DUs flash continues:**
      GEN 1..... ON
    - **If DUs flash stops:**
      KEEP GEN 1 OFF
      RUD TRIM..... CHECK/RESET
      Use the slide slip indication to reset the rudder trim if necessary.
      APU START..... CONSIDER
  - **If first officer PFD, ND, lower ECAM or MCDU 2 affected:**
    GEN 2.....OFF
    - **If DUs flash continues:**
      GEN 2..... ON
    - **If DUs flash stops:**
      KEEP GEN 2 OFF
      RUD TRIM..... CHECK/RESET
      Use the slide slip indication to reset the rudder trim if necessary.
      APU START..... CONSIDER
- **If DU blank (with or without large amber "F"), or distorted:**
  DU brightness knob (affected DU).....AS RQRD
  CONSIDER ECAM/ND XFR
  CONSIDER PFD/ND XFR
- **If INVALID DISPLAY UNIT message displayed:**
  WAIT AT LEAST 40 s FOR AUTOMATIC DU RECOVERY
  - **If DU not recovered:**
    DU brightness knob (affected DU).....AS RQRD
- **If INVALID DATA message displayed (not on all DUs):**
  CONSIDER EIS DMC SWITCHING
  - **If unsuccessful:**
    DU brightness knob (affected DU).....OFF THEN ON

    Note: *Reduce ND range, or deselect WPT or CSTR , and the ND display may automatically recover, after about 30 s.*
- **If INVALID DATA message displayed on all DUs:**
  AP, A/THR AND MCDU NAVIGATION DATA AVAILABLE
  WAIT AT LEAST 40 s FOR AUTOMATIC DU RECOVERY
  - **If one or more DUs not recovered:**
    DUs brightness knob (all affected DUs).....OFF
    WAIT AT LEAST 40 s

DISPLAY UNIT FAILURE (Cont'd)

DUs brightness knob (one by one).....ON

- **If INVALID DATA message displayed on all DUs, when switching a given DU back ON:**
  FAULTY DU brightness knob.....OFF AND KEEP OFF
  REPEAT PROCEDURE
  Repeat the procedure starting at: If INVALID DATA message displayed on all DUs.

■ **If inversion of E/WD and SD:**
ECAM UPPER DISPLAY brightness knob.....OFF THEN ON

ELEC EMER CONFIG SUMMARY

CRUISE

MAX SPD : 320 kt
ALTN LAW: PROT LOST
ONLY CAPT PITOT AND AOA HEATED
FUEL: CTR TK UNUSABLE.
FUEL GRAVITY FEEDING
COM: VHF 1, HF1 ◁⊠ , ATC 1, RMP1, only
NAV: ILS 1, VOR 1, GPS 1 (if MMR is installed) only
For **Landing Performance** assessment, use the QRH/PER chapter or the performance application of FlySmart with Airbus.

APPROACH

CAT 2 INOP
MINIMUM RAT SPEED 140 KT
SLATS / FLAPS SLOW
FOR LANDING : USE FLAP 3

- **When L/G down:** USE MAN PITCH TRIM (DIRECT LAW)

LANDING

FLARE: Only 2 spoilers per wing. Direct law
SPOILERS: Only 2 per wing
NO REVERSER
BRAKING: ALTERNATE without antiskid
MAX BRK PR : 1 000 PSI
NO NOSEWHEEL STEERING

GO-AROUND

- **When L/G uplocked:**
  ALTN LAW: PROT LOST

ELEC EMER CONFIG SYS REMAINING

ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON THE GROUND
ICE - RAIN	WING A.ICE	Norm	Inop	Inop
	ENG A. ICE VALVE	Open	Open	Open
	CAPT PITOT	Norm	Norm	Norm (a)
	CAPT AOA	Norm	Inop	Inop
	RAIN REPELLENT (CAPT)	Norm	Norm	Norm
PNEU	ENG 1 BLEED	Norm	BMC 1 inop	BMC 1 inop
	ENG 2 BLEED	BMC 2 inop	BMC 2 inop	BMC 2 inop
	APU BLEED	Inop	Inop	Inop (b)
	X BLEED (MAN CTL)	Norm	Inop	Inop
APU	ECB - STARTER	Norm (c)	Norm (d)	Inop (b)
	FUEL LP VALVE	Norm	Norm	Norm
	FUEL PUMP	Norm	Norm	Norm
FMGS	FMGC (NAV FUNCTION)	N° 1 only	Inop	Inop
	MCDU	N° 1 only	Inop	Inop
	FAC	N° 1 only	Inop	Inop
	FCU	ch 1 only	ch 1 only	ch 1 only
AIR COND PRESS	PRESS AUTO SYS 1	Norm	Norm	Norm
	MAN PRESS CTL	Inop	Inop	Inop (b)
	RAM AIR	Norm	Norm	Norm
	PACK VALVE 1	Norm	Closure Inop	Closure Inop
	PACK VALVE 2	Closure Inop	Closure Inop	Closure Inop (b)
	AVIONIC VENT	Norm	Norm	Partial
	FWD CRG VENT VALVES	Norm	Inop	Inop
COM	VHF 1	Norm	Norm	Norm
	HF1	Norm	Inop	Inop
	RMP 1	Norm	Norm	Norm
	ACP (Capt, F/O)	Norm	Norm	Norm
	CIDS	Norm	Norm	Norm
	INTERPHONE	Norm	Norm	Norm
	CVR	Norm	Inop	Inop
	LOUDSPEAKER 1	Norm	Norm	Norm
EIS	PFD 1	Norm	Norm	Norm (a)
	ND 1	Norm	Inop	Inop
	ECAM upper disp.	Norm	Norm	Norm (a)
	DMC 1 or 3	Norm	Norm	Norm (a)
	SDAC 1, FWC 1	Norm	Norm	Norm (a)
	ECAM CONT. panel	Norm	Norm	Norm
FLT INS	CLOCKS	Norm	Norm	Norm

Continued from the previous page

ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON THE GROUND
EMER EQPT	CREW OXY	Norm	Norm *(e)*	Norm *(e)*
	PAX OXY mask release (auto + man)	Norm	Inop	Inop
	SLIDES ARM/WARN	Norm	Norm	Norm
PWR PLT	FADEC	A + B *(f)*	A + B *(f)*	A + B *(f)*
	IGNITION	A only	A only	A only
	HP FUEL VALVE closure	Norm	Norm	Norm
FLT CTL	ELAC	N° 1 only	N° 1+ N° 2	N°1+ N°2 *(g)*
	SEC	N° 1 only	N° 1	N° 1 *(g)*
	FCDC	N° 1 only	Inop	Inop
	SFCC	N° 1 only	N° 1 only	N° 1 only
	Flaps POS ind	Norm	Norm	Norm *(a)*
FIRE	ENG 1 LOOP	A only	A only	A only
	ENG 2 LOOP	B only	B only	B only
	APU LOOP	Inop	Inop	Inop *(b)*
	CARGO SMOKE DET	Channel 1	Inop	Inop
	ENG FIRE EXT.	Bottle 1 only	Bottle 1 only	Bottle 1 only
	APU FIRE EXT.	Squib A only	Squib A only	Squib A only
	CARGO FIRE EXT.	Inop	Inop	Inop *(b)*
	APU AUTO EXT.	Inop	Inop	Inop *(b)*
FUEL	LP VALVE	Norm	Norm	Norm
	FQI channel 1	Norm	Inop	Inop
	X FEED VALVE	Norm	Inop	Inop
	INTERTANK TRANSFER VALVE	Norm	Inop	Inop
HYD	FIRE VALVES	Norm	Norm	Norm
L/G	LGCIU SYS 1	Norm	Norm	Norm
	ABCU	Norm	Norm	Norm
	BRK PRESS IND	Norm	Norm	Norm
	PARK BRK	Norm	Norm	Norm
LIGHTS	EMER CKPT	Norm	Norm	Norm
	EMER CAB	Norm	Norm	Norm
MISC	MECH HORN	Norm	Norm	Norm

Continued from the previous page

ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON THE GROUND
NAV	IR	N° 1 only *(h)*	N° 1 only *(h)*	N° 1 only *(h)*
	ADR	N° 1 only	N° 1 only	N° 1 only
	ADF	N° 1 only	Inop	Inop
	VOR	N° 1 only	N° 1 only	N° 1 only *(a)*
	MMR	N° 1 only	N° 1 only	N° 1 only *(a)*
	DME	N° 1 only	Inop	Inop
	DDRMI	Norm	Norm	Norm *(a)*
	ATC	N° 1 only	Inop	Inop
	ISIS	Norm	Norm	Norm

(a) Lost, when speed is below 50 kt.

(b) Restored, when speed is below 100 kt.

(c) For APU start only.

(d) Not available for 45 s, after the loss of both engine generators.

(e) Crew oxygen valve inoperative.

(f) Channels A and B are self-powered above 12 % N2 . If N2 is below 12 % , only Channel A is powered.

(g) Lost 30 s after last engine shutdown.

(h) IR 2 and IR 3 are lost 5 min after failure of the main generators. But, if IR 3 replaces IR 1 (ATT -HDG selector at CAPT 3), IR3 remains supplied

C/B TRIPPED

- **On ground:**
  Do not reengage the circuit breaker (C/B) of the fuel pump(s) of any tank. For all other C/B , if the flight crew coordinates the action with maintenance, the flight crew may reengage a tripped C/B, provided that the cause is identified.
- **In flight:**
  Do not reengage a circuit breaker (C/B), unless the captain judges it necessary to do so for the safe continuation of the flight. Only one reengagement should be attempted.

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ENG DUAL FAILURE - FUEL REMAINING

LAND ASAP

EMER ELEC PWR MAN ON pb..... PRESS
THR LEVERS..... IDLE
FAC 1.....OFF THEN ON
ENG MODE sel..... IGN
OPTIMUM RELIGHT SPD.....300 KT

PITCH TARGET In case of speed indication failure:	
Gross Weight	***Pitch (°)***
At or below 50 000 kg/110 000 lb	*-4.5*
60 000 kg/132 000 lb	*-3.5*
70 000 kg/154 000 lb	*-2.5*

AVERAGE GLIDING DISTANCE: 2 NM / 1000 FT (300kt NO WIND)

DETERMINE LANDING STRATEGY
VHF1/HF1 ◁ /ATC1.....USE
ATC.....NOTIFY

- **If no relight after 30 s:**
  ENG MASTERS.....OFF 30 S / ON
  Unassisted start attempts can be repeated until successful, or until APU bleed is available.
- **If unsuccessful:**
  CREW OXY MASKS (above FL 100).....ON
  - **When below FL 250:**
    APU (IF AVAIL)..... START
  - **When below FL 200:**
    WING ANTI ICE.....OFF
    APU BLEED.....ON
    ENG MASTERS (one at a time).....OFF 30 S / ON
    Between each attempt to relight the same engine, wait at least 30 s with the associated ENG MASTER lever set to OFF.
- **When APU bleed is available or if engine restart is definitively considered impossible:**

GREEN DOT SPEED WITH ALL ENGINES INOPERATIVE (KNOTS)			
Gross Weight (1 000 kg)	**At or below FL 200**	**FL 300**	**FL 400**
78	241	251	261
76	237	247	257
72	229	239	249
68	221	231	241
64	213	223	233
60	205	215	225
56	197	207	217
52	189	199	209
48	181	191	201

ENG DUAL FAILURE - FUEL REMAINING (Cont'd)

GREEN DOT SPEED WITH ALL ENGINES INOPERATIVE (KNOTS)			
Gross Weight (1 000 kg)	At or below FL 200	FL 300	FL 400
44	173	183	193
40	165	175	185

AVERAGE GLIDING DISTANCE: 2.5NM / 1000 FT (NO WIND)
AVERAGE RATE OF DESCENT: 1600 FT/MIN

PREPARE CABIN AND COCKPIT
SIGNS.....ON
COMMERCIAL.....OFF

USE RUDDER WITH CARE

- **When below FL 150:**
  RAM AIR..... ON

BARO REF.....SET
CREW MASKS/OXY SUPPLY (below FL 100).....OFF
ELT ◁ (when conditions permit)..... ON

- **If forced landing anticipated:**

  AVERAGE GLIDING DISTANCE 1.2NM / 1000FT (CONF3, L/G DOWN, NO WIND)

  - **For approach:**

    FOR LANDING : USE FLAP 3

    SLATS AVAIL ONLY

    MIN APPR SPEED : 150 kt
    VAPP..... DETERMINE

Gross Weight (1 000 kg)	*40*	*44*	*48*	*52*	*56*	*60*	*64*	*68*	*72*	*76*	*78*
Vapp	*150*	*150*	*150*	*150*	*150*	*155*	*159*	*163*	*167*	*171*	*173*

  - **At a suitable altitude (not below 3 000 ft AGL):**
    - **When in CONF 3 and VAPP:**
      GRAVITY GEAR EXTN handcrank..... PULL AND TURN

      FLT CTL DIRECT LAW
      MAN PITCH TRIM NOT AVAILABLE

    - **When L/G downlocked**
      L/G lever..... DOWN
      APPROACH SPEED.....ADJUST

      ADJUST SPEED TO REACH LANDING FIELD

      MAX SPEED : 200 kt
      SPLRs.....ARM

      MAX BRK PR : 1 000 PSI

ENG DUAL FAILURE - FUEL REMAINING (Cont'd)

- **At 2 000 ft AGL:**
  CABIN CREW.....NOTIFY FOR LANDING
- **At 500 ft AGL:**
  BRACE FOR IMPACT.....ORDER
- **At touchdown:**
  ENG MASTERS.....OFF
  APU MASTER SW.....OFF
  BRAKES ON ACCU ONLY
- **When aircraft stopped:**
  PARKING BRK.....ON
  ATC.....NOTIFY
  FIRE pb (ENGs & APU).....PUSH
  AGENT (ENGs & APU).....DISCH
  - **If evacuation required:**
    EVACUATION.....INITIATE
    ELT ⊲ .....CHECK EMITTING
    If not, switch on the transmitter.
  - **If evacuation not required:**
    CABIN CREW and PASSENGERS (PA).....NOTIFY

- **If ditching anticipated:**
  - **For approach:**
    FOR LANDING : USE FLAP 3
    SLATS AVAIL ONLY
    MIN APPR SPEED : 150 kt
    VAPP..... DETERMINE

Gross Weight (1 000 kg)	*40*	*44*	*48*	*52*	*56*	*60*	*64*	*68*	*72*	*76*	*78*
Vapp	*150*	*150*	*150*	*150*	*150*	*155*	*159*	*163*	*167*	*171*	*173*

  - **At a suitable altitude (not below 3 000 ft AGL):**
    KEEP LANDING GEAR UP
    FOR FLARE: TARGET PITCH 11 ° & MIN V/S

    Note: *Prefer ditching parallel to the swell. If that causes a strong crosswind, ditch into the wind.*
  - **At 2 000 ft AGL:**
    CABIN CREW..... NOTIFY FOR DITCHING
    DITCHING pb.....ON
  - **At 500 ft AGL:**
    BRACE FOR IMPACT.....ORDER

ENG DUAL FAILURE - FUEL REMAINING (Cont'd)

- **At touchdown:**
  ENG MASTERS..... OFF
  APU MASTER SW..... OFF
- **After ditching:**
  ATC (VHF 1)..... NOTIFY
  FIRE pb (ENGs & APU)..... PUSH
  AGENT (ENGs & APU)..... DISCH
  EVACUATION..... INITIATE
  ELT ..... CHECK EMITTING
  If not, switch on the transmitter.

ENG DUAL FAILURE - NO FUEL REMAINING

EMER ELEC POWER MAN ON pb..... PRESS
THRUST LEVERS..... IDLE
FAC 1.....OFF THEN ON
OPTIMUM SPEED.....220 kt / GREEN DOT

Initially, fly 220 kt, because the PFD may not display the correct green dot speed. Then fly the green dot speed according to the following table:

GREEN DOT SPEED WITH ALL ENGINES INOPERATIVE (KNOTS)			
Gross Weight (1 000 kg)	**At or below FL 200**	**FL 300**	**FL 400**
68	221	231	241
64	213	223	233
60	205	215	225
56	197	207	217
52	189	199	209
48	181	191	201
44	173	183	193
40	165	175	185

AVERAGE GLIDING DISTANCE: 2.5 NM / 1000 FT (GREEN DOT NO WIND)
AVERAGE RATE OF DESCENT: 1600 FT/MIN

DETERMINE LANDING STRATEGY
VHF1/HF1 ◁ /ATC1.....USE
ATC.....NOTIFY
CREW OXY MASKS (above FL 100)..... ON
PREPARE CABIN AND COCKPIT
SIGNS.....ON
COMMERCIAL.....OFF
USE RUDDER WITH CARE

- **When below FL 150:**
  RAM AIR..... ON

BARO REF.....SET
CREW MASKS/OXY SUPPLY (below FL 100).....OFF
ELT ◁ (when conditions permit)..... ON

- **If forced landing anticipated:**

  AVERAGE GLIDING DISTANCE 1.2NM / 1000FT (CONF3, L/G DOWN, NO WIND)

  - **For approach:**
    FOR LANDING : USE FLAP 3
    SLATS AVAIL ONLY
    MIN APPR SPEED : 150 kt
    VAPP..... DETERMINE

Gross Weight (1 000 kg)	*40*	*44*	*48*	*52*	*56*	*60*	*64*	*68*	*72*	*76*	*78*
Vapp	*150*	*150*	*150*	*150*	*150*	*155*	*159*	*163*	*167*	*171*	*173*

ENG DUAL FAILURE - NO FUEL REMAINING (Cont'd)

- **At a suitable altitude (not below 3 000 ft AGL):**
  - **When in CONF 3 and VAPP**
    GRAVITY GEAR EXTN handcrank..... PULL AND TURN
    FLT CTL DIRECT LAW
    MAN PITCH TRIM NOT AVAILABLE
  - **When L/G downlocked**
    L/G lever..... DOWN
    APPROACH SPEED..... ADJUST
    ADJUST SPEED TO REACH LANDING FIELD
    MAX SPEED : 200 kt
    SPLRs.....ARM
    MAX BRK PR : 1 000 PSI
- **At 2 000 ft AGL:**
  CABIN CREW.....NOTIFY FOR LANDING
- **At 500 ft AGL:**
  BRACE FOR IMPACT.....ORDER
- **At touchdown:**
  ENG MASTERS..... OFF
  BRAKES ON ACCU ONLY
- **When aircraft stopped:**
  PARKING BRK.....ON
  ATC.....NOTIFY
  - **If evacuation required :**
    EVACUATION.....INITIATE
    ELT ..... CHECK EMITTING
    If not, switch on the transmitter
  - **If evacuation not required :**
    CABIN CREW and PASSENGERS (PA)..... NOTIFY

- **If ditching anticipated:**
  - **For approach:**
    FOR LANDING : USE FLAP 3
    SLATS AVAIL ONLY
    MIN APPR SPEED : 150 kt
    VAPP..... DETERMINE

Gross Weight (1 000 kg)	*40*	*44*	*48*	*52*	*56*	*60*	*64*	*68*	*72*	*76*	*78*
Vapp	*150*	*150*	*150*	*150*	*150*	*155*	*159*	*163*	*167*	*171*	*173*

ENG DUAL FAILURE - NO FUEL REMAINING (Cont'd)

- **At a suitable altitude (not below 3 000 ft AGL):**
  KEEP LANDING GEAR UP
  FOR FLARE: TARGET PITCH 11 ° & MIN V/S

  Note: *Prefer ditching parallel to the swell. If that causes a strong crosswind, ditch into the wind.*

- **At 2 000 ft AGL:**
  CABIN CREW..... NOTIFY FOR DITCHING
  DITCHING pb..... ON

- **At 500 ft AGL:**
  BRACE FOR IMPACT..... ORDER

- **At touchdown:**
  ENG MASTERS..... OFF

- **After ditching:**
  ATC (VHF 1)..... NOTIFY
  EVACUATION..... INITIATE
  ELT ..... CHECK EMITTING
  If not, switch on the transmitter

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ENG RELIGHT
IN FLIGHT

Engine Relight Envelope

1 STARTER ASSISTED RELIGHT
Above FL200 N2≤15% (Engine Bleed)
Below FL200 N2≤12% (APU or Engine Bleed)

2 WINDMILL QUICK RELIGHT if N2 > 12%

3 STABILIZED WINDMILL RELIGHT

ENG MASTER (affected engine).....OFF
THR LEVER (affected engine)..... IDLE
ENG MODE sel.....IGN
X BLEED ..... OPEN
WING ANTI-ICE (for starter assist).....OFF
ENG MASTER (affected engine)..... ON
ENG PARAMETERS (N2, EGT).....MONITOR

Engine light up should be achieved within 30 s after fuel flow increases.

AUTOMATIC START ABORT NOT AVAIL

- **When idle reached (ENG AVAIL) :**
  ENG MODE sel..... NORM
  TCAS MODE sel..... check TA/RA
  X BLEED.....AUTO
  Affected SYS..... RESTORE

- **If no relight :**
  ENG MASTER (affected engine)..... OFF

ENGINE STALL

- **If N2 between 50 % and IDLE:**
  THR LEVER (affected engine)..... IDLE
  ENG MASTER (affected engine)..... OFF

  ENG 1(2) SHUT DOWN

- **If N2 above IDLE and ENG 1(2) STALL alert not displayed on ECAM:**
  - **On ground :**
    THR LEVER (affected engine)..... IDLE
    ENG MASTER (affected engine)..... OFF
  - **In flight :**
    THR LEVER (affected engine)..... IDLE
    ENG PARAMETERS (affected engine)..... CHECK
    - **If abnormal ENG parameters:**
      ENG MASTER (affected engine)..... OFF

      ENG 1(2) SHUT DOWN
    - **If normal ENG parameters:**
      ENG ANTI-ICE (affected engine).....ON
      WING ANTI-ICE.....ON
      THR LEVER (affected engine)..... SLOWLY MOVE FORWARD
      - **If stall recurs :**
        THR LEVER (affected engine).....MOVE BACKWARD
        Reduce thrust and operate below the thrust threshold where stall recurs.
      - **If stall does not recur :**
        CONTINUE NORMAL ENGINE OPERATION

ENGINE TAILPIPE FIRE

CAUTION	External fire agents can cause severe corrosive damage. Consider the use of external fire agents only if the following procedure does not stop engine tailpipe fire.

ENG MASTER (affected engine).....OFF
ENG MAN START pb (affected engine)..... OFF
ESTABLISH AIR BLEED PRESS
BEACON.....ON
ENG MODE sel.....CRANK
ENG MAN START pb (affected engine)..... ON

- **When fire stopped :**
  ENG MAN START pb (affected engine)..... OFF
  ENG MODE sel..... NORM

HIGH ENGINE VIBRATION

ENG PARAMETERS.....CHECK

- **If icing suspected:**
  A/THR..... OFF
  THRUST (one engine at a time).....IDLE THEN INCREASE N1 > 80 %
  Reduce thrust to idle if flight conditions permit.
  *If ENG ANTI ICE is OFF, switch it ON **at idle fan speed,** one engine after the other with approximately 30 s interval.*
  To shed ice, it may be necessary to perform several thrust variations between idle and a thrust compatible with the flight phase.
- **If icing not suspected:**
  - **If above vibration advisory and flight conditions permit:**
    THRUST (affected engine)..... REDUCE BELOW ADVISORY THRESHOLD
- **After landing :** SHUT DOWN ENGINE WHEN POSSIBLE

ON GROUND - NON ENG SHUTDOWN AFTER ENG MASTER OFF

ECAM FUEL PAGE..... SELECT
LP FUEL VALVE POSITION (affected engine).....CHECK

- **If LP fuel valve closed (cross line amber):**
  NO CREW ACTION
- **If LP fuel valve open:**
  ENG FIRE pb-sw (affected engine).....PRESS

GROUND STAFF.....NOTIFY

IN BOTH CASES, ENGINE WILL SHUT DOWN AFTER A TIME DELAY UP TO 2 MIN 30 S

ONE ENGINE INOPERATIVE - CIRCLING APPROACH

MAXIMUM WEIGHT FOR CIRCLING IN CONF 3 WITH GEAR DOWN (1000 KG)								
OAT (°C)	AIRPORT ELEVATION (feet)							
	0	2 000	4 000	6 000	8 000	10 000	12 000	14 000
0	77.0	76.0	69.0	63.0	58.0	53.0	48.0	45.0
5	77.0	76.0	69.0	63.0	58.0	53.0	48.0	45.0
10	77.0	76.0	69.0	63.0	58.0	53.0	48.0	45.0
15	77.0	76.0	69.0	63.0	58.0	53.0	48.0	45.0
20	77.0	76.0	69.0	63.0	58.0	53.0	48.0	45.0
25	77.0	75.0	69.0	63.0	58.0	53.0	48.0	45.0
30	77.0	72.0	68.0	63.0	58.0	53.0	48.0	
35	74.0	70.0	66.0	63.0	56.0	51.0		
40	71.0	67.0	63.0	59.0				
45	69.0	65.0	61.0					
50	67.0	63.0						
55	64.0							

- **If aircraft weight above maximum weight for circling in CONF 3 with gear down:**

  DELAY GEAR EXTENSION TO MAINTAIN LEVEL FLIGHT

  FOR LANDING: USE FLAP 3

  GPWS LDG FLAP 3..... ON

Note: - *If circling below 750 ft RA, the "L/G GEAR NOT DOWN" alert will trigger. The pilot can cancel the aural warning by pressing the EMER CANC pb.*
- *If the landing gear is not downlocked at 500 ft RA , GPWS "TOO LOW GEAR" aural alert will trigger.*

ONE ENGINE INOPERATIVE - STRAIGHT-IN APPROACH

- **If NO level off expected during final approach:**
  DELAY CONF FULL UNTIL ESTABLISHED ON FINAL DESCENT
- **If level off expected during final approach:**
  FOR LANDING: USE CONF 3

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LANDING WITH SLATS OR FLAPS JAMMED

LDG DIST PROC..... APPLY

Determine flap lever position for landing.

- **Repeat the following until landing configuration is reached:**

  SPD SEL..... VFE NEXT - 5 kt

  AT VFE NEXT: SELECT FLAPS LEVER ONE STEP DOWN

  Note:
  - *OVERSPEED alert, and VLS displayed on the PFD, are computed according to the actual flaps/slats position*
  - *VFE and VFE NEXT are displayed on the PFD according to the FLAPS lever position. If not displayed, use the placard speeds*
  - *If VLS is greater than VFE NEXT (overweight landing case), the FLAPS lever can be set in the required next position, while the speed is reduced to follow VLS reduction as surfaces extend. The VFE warning threshold should not be triggered.*
    In this case, disconnect the A/THR . A/THR can be re-engaged when the landing configuration is established.

- **When in landing CONF and in final approach:**

  DECELERATE TO CALCULATED VAPP

  AP BELOW 500 ft AGL : DO NOT USE

- **For Go-around:**

<table>
<tr><th colspan="6">MAX SPEED</th></tr>
<tr><th>Flaps
Slats</th><th>F = 0</th><th>0 < F ≤ 1</th><th>1 < F ≤ 2</th><th>2 < F ≤ 3</th><th>F > 3</th></tr>
<tr><td>S = 0</td><td>NO LIMITATION</td><td rowspan="3">215 kt</td><td rowspan="3">200 kt</td><td rowspan="3">185 kt</td><td rowspan="2">177 kt
(Not allowed)</td></tr>
<tr><td>0 < S < 1</td><td rowspan="2">230 kt</td></tr>
<tr><td>S = 1</td><td rowspan="2">177 kt</td></tr>
<tr><td>1 < S ≤ 3</td><td colspan="2">200 kt</td><td>200 kt</td><td>185 kt</td></tr>
<tr><td>S > 3</td><td colspan="2">177 kt</td><td>177 kt</td><td>177 kt</td><td>177 kt</td></tr>
</table>

- **If SLATS FAULT:**
  - **For circuit:**

    MAINTAIN SLATS/FLAPS CONFIGURATION

    Recommended speed: MAX SPEED - 10 kt
  - **For diversion:**

    SELECT CLEAN CONFIGURATION

    Recommended speed for flaps retraction: between MAX SPEED - 10 kt and MAX SPEED

    Recommended speed for diversion: MAX SPEED - 10 kt.

    INCREASED FUEL CONSUMPTION
- **If FLAPS FAULT:**
  - **For circuit:**

    MAINTAIN SLATS/FLAPS CONFIGURATION

    Recommended speed: MAX SPEED - 10 kt

LANDING WITH SLATS OR FLAPS JAMMED (Cont'd)

- **For diversion:**
  - **If FLAPS jammed at 0:**
    SELECT CLEAN CONFIGURATION
    Recommended speed for slats retraction: between MAX SPEED - 10 kt and MAX SPEED
    USE NORMAL OPERATING SPEEDS
  - **If FLAPS jammed > 0:**
    MAINTAIN SLAT/FLAP CONFIGURATION
    Recommended speed for diversion: MAX SPEED - 10 kt
    INCREASED FUEL CONSUMPTION

CAUTION	For flight with SLATS or FLAPS extended, fuel consumption is increased. Refer to the fuel flow indication. As a guideline, determine the fuel consumption in clean configuration at the same altitude without airspeed limitation (e.g. From ALTERNATE FLIGHT PLANNING tables) and multiply this result by the applicable Fuel Penalty Factor provided in the QRH, to obtain the fuel penalty required to reach the destination in the current configuration. *Refer to OPS Fuel Penalty Factors/ECAM Alert Table*.

RUDDER JAM

- **For approach:**

  AVOID LANDING WITH CROSSWIND FROM THE SIDE WHERE THE RUDDER IS DEFLECTED

  MAX XWIND FOR LDG: 15 kt

  AUTO BRK..... DO NOT USE
  FOR LANDING.....USE NORMAL CONF
  SPEED AND TRAJECTORY..... STABILIZE ASAP
  LDG DIST PROC.....APPLY

- **For landing:**

  DIFFERENTIAL BRAKING.....USE ASAP

  REVERSER: SYMMETRIC USE ONLY

  Use nosewheel steering handle below 70 kt.

STABILIZER JAM

AP..... OFF
MAN PITCH TRIM.....CHECK

The pitch trim wheel may not be fully jammed, the force needed may be higher than usual.

- **If MAN PITCH TRIM available:**
  TRIM FOR NEUTRAL ELEV
- **If MAN PITCH TRIM not available:**
  FOR LANDING: USE FLAP 3
  GPWS LDG FLAP 3..... ON

CAT 1 ONLY

FUEL IMBALANCE

FOB..... CHECK

CAUTION	A fuel imbalance may indicate a fuel leak. Do not apply this procedure, if a fuel leak is suspected. *Refer to ABN-21 Fuel Leak*

FUEL X FEED..... ON

- **On lighter side and in center tank:**
  FUEL PUMPS.....OFF
- **When fuel balanced:**
  FUEL PUMPS..... ON
  FUEL X FEED..... OFF

FUEL LEAK

LAND ASAP

- **Leak from engine/pylon confirmed by excessive fuel flow or visual check:**
  THR LEVER (affected engine)..... IDLE
  ENG MASTER (affected engine)..... OFF
  FUEL X FEED.....AS RQRD
  DO NOT RESTART AFFECTED ENGINE
- **Leak from engine/pylon not confirmed or leak not located:**
  FUEL X FEED..... MAINTAIN CLOSED
  CTR TK PUMP 1.....OFF
  CTR TK PUMP 2.....OFF
  INNER TANK FUEL QUANTITIES..... MONITOR
  - **If one inner tank depletes faster than other by at least 300 kg (660 lb) in less than 30 min:**
    THR LEVER (engine on leaking side).....IDLE
    ENG MASTER (engine on leaking side).....OFF
    CTR TK PUMP 1..... ON
    CTR TK PUMP 2..... ON
    FUEL LEAK..... MONITOR
    - **If leak stops:**
      ENGINE LEAK CONFIRMED
      FUEL X FEED..... AS RQRD
      DO NOT RESTART AFFECTED ENGINE
    - **If leak continues (after engine shutdown):**
      WING LEAK SUSPECTED
      ENGINE RESTART..... CONSIDER

CAUTION	Do not apply the FUEL IMBALANCE procedure. Approach and landing can be done, even with one full wing/one empty wing.

  - **If both inner tanks deplete at a similar rate:**
    LEAK FROM CENTER TANK OR APU FEEDING LINE SUSPECTED
    - **If fuel smell in cabin:**
      APU..... OFF
    - **When fuel quantity in one inner tank less than 3 000 kg (6 600 lb):**
      CTR TK PUMP 1..... ON
      CTR TK PUMP 2..... ON
- **For landing:** DO NOT USE REVERSERS

GRAVITY FUEL FEEDING

ENG MODE SEL.....IGN
AVOID NEGATIVE G FACTOR
MAX FL: GRAVITY FEED CEILING

- *Current FL if flight time above FL 300 > 30 min.*
- *FL 300 if flight time above FL 300 < 30 min.*
- *Highest of FL 150 or 7 000 ft above takeoff airport if FL 300 never exceeded.*
- *FL 100 for JET B.*

- **When reaching gravity feed ceiling:**
  FUEL X FEED.....OFF
- **If no fuel leak and with one engine running (fed by gravity):**
  FUEL X FEED.....ON
  BANK ANGLE.....1 ° WING DOWN ON LIVE ENG SIDE
  RUDDER TRIM.....USE
  - **When fuel imbalance reaches 1 000 kg (2 200 lb):**
    BANK ANGLE.....2 °or 3 ° WING DOWN ON LIVE ENG SIDE

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HYD B + Y SYS LO PR SUMMARY

CRUISE

MAX SPD : 320/0.77
MANEUVER WITH CARE
FLIGHT CONTROLS REMAIN IN NORMAL LAW
FUEL: Increased fuel consumption (*Refer to OPS Use of Fuel Penalty Factor Tables*)
For **Landing Performance** assessment, use the QRH/PER chapter or the performance application of FlySmart with Airbus.

APPROACH

CAT 2 INOP
SLATS SLOW/FLAPS SLOW

- **L/G gravity extension:**
  GRVTY GEAR EXTN handcrank.....PULL AND TURN
  (Rotate the handle clockwise 3 turns until mechanical stop)
  L/G LEVER.....DOWN
  GEAR DOWN indications.....CHECK

LANDING

FLARE: Only one ELEV and two spoilers per wing
SPOILERS: Only 2 per wing
REVERSER: Only N°1
BRAKING: NORMAL
NO NOSEWHEEL STEERING

GO-AROUND

NO GEAR RETRACTION
FUEL: Increased fuel consumption (*Refer to OPS Use of Fuel Penalty Factor Tables*)

HYD G + B SYS LO PR SUMMARY

CRUISE

SPD BRK : DO NOT USE
MAX SPD : 320/0.77
MANEUVER WITH CARE
ALTN LAW: PROT LOST
FUEL: Increased fuel consumption (*Refer to OPS Use of Fuel Penalty Factor Tables*)
For **Landing Performance** assessment, use the QRH/PER chapter or the performance application of FlySmart with Airbus.

APPROACH

CAT 2 INOP
SLATS JAMMED/FLAPS SLOW
ATHR.....OFF
FOR LANDING : USE FLAP 3
GPWS LDG FLAP 3.....ON

- **For Flaps extension:**
  SPD SEL.....VFE NEXT - 5 kt
- **When SPD 200 kt:**
  - **L/G gravity extension:**
    GRVTY GEAR EXTN handcrank..... PULL AND TURN
    (Rotate the handle clockwise 3 turns until mechanical stop)
    L/G LEVER..... DOWN
    GEAR DOWN..... CHECK
- **When L/G down:** USE MAN PITCH TRIM
- **When in landing CONF and in final approach:** DECELERATE TO CALCULATED VAPP

LANDING

FLARE: Only one ELEV and two spoilers per wing. No ailerons.
A/C slightly sluggish – Direct law
SPOILERS: Only 2 per wing
REVERSER: Only N°2
BRAKING: ALTERNATE

GO-AROUND

NO GEAR RETRACTION
FUEL: Increased fuel consumption (*Refer to OPS Use of Fuel Penalty Factor Tables*)

- **For circuit:**
  MAINTAIN SLATS/FLAPS CONFIGURATION
  Recommended speed: MAX SPD - 10 kt
- **For diversion:**
  SELECT CLEAN CONFIGURATION
  - **If Slats jammed at zero:**
    Normal operating speeds (MAX SPEED = 250 kt)
  - **If Slats jammed above zero:**
    Recommended speed: MAX SPD - 10 kt

HYD G + Y SYS LO PR SUMMARY

CRUISE

MAX SPD : 320/0.77
MANEUVER WITH CARE
NO STABILIZER
ALTN LAW: PROT LOST
FUEL: Increased fuel consumption (*Refer to OPS Use of Fuel Penalty Factor Tables*)
For **Landing Performance** assessment, use the QRH/PER chapter or the performance application of FlySmart with Airbus.

APPROACH

CAT 2 INOP
SLATS SLOW / FLAPS JAMMED
FOR LANDING : USE FLAP 3
GPWS FLAP MODE..... OFF

- **For Flaps extension:**
  SPD SEL..... VFE NEXT - 5 kt
- **When in CONF 3:**
  DECELERATE TO CALCULATED VAPP
- **When in CONF 3 and VAPP:**
  Stabilize at VAPP before L/G down, to be trimmed for approach.
  - **L/G gravity extension:**
    GRVTY GEAR EXTN handcrank..... PULL AND TURN
    (Rotate the handle clockwise 3 turns until mechanical stop)
    L/G LEVER..... DOWN
    GEAR DOWN..... CHECK
    Disregard "USE MANUAL PITCH TRIM".
    MAN TRIM Unusable

LANDING

FLARE: PITCH AUTHORITY REDUCED (No stabilizer).
MAN TRIM Unusable
When Flaps jammed close to zero, consider tailstrike clearance.
Only 1 spoiler per wing – Direct law
SPOILERS: Only 1 per wing
NO REVERSER
BRAKING: BRK Y ACCU PR ONLY (7 applications)
MAX BRK PR : 1 000 PSI
NO NOSEWHEEL STEERING

GO-AROUND

NO GEAR RETRACTION
FUEL: Increased fuel consumption (*Refer to OPS Use of Fuel Penalty Factor Tables*)

- **For circuit:**
  MAINTAIN SLATS/FLAPS CONFIGURATION
  Maintain speed close to VAPP (due to pitch trim unusable)
- **For diversion:**
  - **If Flaps jammed at zero:**
    SELECT CLEAN CONFIGURATION
    Maintain at least the higher of VAPP or VLS (due to pitch trim unusable)

Continued from the previous page

GO-AROUND

- **If Flaps jammed above zero:**
  MAINTAIN SLATS/FLAPS CONFIGURATION
  Maintain speed close to VAPP (due to pitch trim unusable)

LANDING WITH ABNORMAL L/G

CAUTION	Do not apply this procedure if at least one green triangle is displayed on each landing gear on the WHEEL SD page. This is sufficient to confirm that the landing gear is downlocked. Disregard any possible GPWS "TOO LOW GEAR" aural alert.

CABIN CREW.....NOTIFY
ATC.....NOTIFY
GALY & CAB.....OFF

CONSIDER FUEL REDUCTION

- **If NOSE L/G abnormal:**
  SHIFT CG AFT IF POSSIBLE
  - *10 pax from front to rear moves the CG roughly 4 % aft.*
  - *10 pax from mid to rear moves the CG roughly 2.5 % aft.*
- **If one MAIN L/G abnormal:**
  FUEL DISTRIBUTION..... CONSIDER
  Open the fuel X-FEED valve and switch off the pumps on the side with landing gear normally extended.

OXYGEN CREW SUPPLY.....OFF
SIGNS.....ON
CABIN AND COCKPIT (LOOSE EQPT)..... SECURE

- **For approach:**
  GPWS SYS..... OFF
  L/G lever.....CHECK DOWN
  GRVTY GEAR EXTN handcrank..... TURN BACK TO NORMAL
  DO NOT ARM AUTOBRAKE
  EMER EXIT LT.....ON
  CABIN REPORT.....OBTAIN
  A/SKID & N/W STRG.....OFF
  MAX BRAKE PR : 1 000 PSI
  - **If one or both MAIN L/G abnormal:** DO NOT ARM GROUND SPOILERS

RAM AIR.....ON
DOME LT..... DIM

- **At 500 ft AGL:**
  BRACE FOR IMPACT.....ORDER
- **At flare, touchdown and rollout:**
  DO NOT USE REVERSE
  - **If NOSE L/G abnormal:**
    KEEP NOSE UP
    After touchdown, keep the nose off the runway by use of the elevator. Then, lower the nose on to the runway before elevator control is lost.
    BRAKES..... SMOOTHLY APPLY
    BEFORE NOSE IMPACT : ALL ENG MASTERS OFF

LANDING WITH ABNORMAL L/G (Cont'd)

- **If one MAIN L/G abnormal:**
  AT TOUCHDOWN : ALL ENG MASTERS OFF
  KEEP AFFECTED SIDE WING UP
- **If both MAIN L/G abnormal:**
  DURING FLARE : ALL ENG MASTERS OFF
  MIN PITCH ATT : 6 °

- **When aircraft stopped:**
  PARK BRK..... ON
  ALL FIRE pb (ENGs & APU)..... PUSH
  ALL AGENT (ENGs & APU)..... DISCH
  - **If evacuation required:**
    EVACUATION.....INITIATE
  - **If evacuation not required:**
    CABIN CREW and PASSENGERS (PA)..... NOTIFY
    Ensure that all the landing gears are secured before initiating the disembarkation (before switching OFF the seat belts signs).

L/G GRAVITY EXTENSION

CAUTION	Do not apply this procedure if at least one green triangle is displayed on each landing gear on the WHEEL SD page. This is sufficient to confirm that the landing gear is downlocked. Disregard any possible GPWS "TOO LOW GEAR" aural alert.

GRAVITY GEAR EXTN handcrank.....PULL AND TURN

Rotate the handle clockwise 3 turns until reaching the mechanical stop, even if resistance is felt.

L/G lever .....DOWN

GEAR DOWN indications (if available).....CHECK

The L/G LGCIU 2 FAULT or BRAKES SYS 1(2) FAULT alert may be spuriously triggered after a gravity extension.

- **If successful:**

  DO NOT RESET GRAVITY GEAR EXTN handcrank

- **If unsuccessful:**

  LDG WITH ABNORMAL L/G PROC.....APPLY

  Refer to ABN-24 Landing with Abnormal L/G.

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DITCHING

ATC.....NOTIFY
ATC XPDR 7700.....CONSIDER
PREPARE CABIN AND COCKPIT
- *Loose equipment secured,*
- *Survival equipment prepared,*
- *Belts and shoulder harness locked.*

GPWS SYS.....OFF
GPWS TERR.....OFF
SIGNS.....ON
EMER EXIT LT.....ON
COMMERCIAL.....OFF
LDG ELEV.....SELECT 00
BARO.....SET
ELT (when conditions permit).....ON

- **For approach and ditching:**

  KEEP LANDING GEAR UP
  SLATS / FLAPS.....MAX AVAIL
  FOR FLARE: TARGET PITCH 11 ° & MIN V/S

  Note: *Prefer ditching parallel to the swell. If that causes a strong crosswind, ditch into the wind.*

- **At 2 000 ft AGL:**

  CAB PRESS MODE SEL.....AUTO
  ALL BLEEDS (ENGs & APU).....OFF
  CABIN.....NOTIFY FOR DITCHING
  DITCHING pb.....ON

- **At 500 ft AGL:**

  BRACE FOR IMPACT.....ORDER

- **At touchdown:**

  ALL ENG MASTERS.....OFF
  APU MASTER SW.....OFF

- **After ditching:**

  ATC (VHF 1).....NOTIFY
  ALL FIRE pb (ENGs & APU).....PUSH
  ALL AGENTS (ENGs & APU).....DISCH
  EVACUATION.....INITIATE
  ELT.....CHECK EMITTING
  If not, switch on the transmitter.

EMER DESCENT

CREW OXY MASKS.....USE
SIGNS.....ON
EMER DESCENT.....INITIATE

- **If A/THR not active:**

  THR LEVERS.....IDLE

SPD BRK.....FULL

- **When descent established:**

  SPEED.....MAX/APPROPRIATE

  - **If structural damage suspected:** MANEUVER WITH CARE

  CONSIDER L/G EXTENSION
  ENG MODE SEL.....IGN
  ATC.....NOTIFY
  EMER DESCENT (PA).....ANNOUNCE
  ATC XPDR 7700.....CONSIDER
  CREW OXY MASKS DILUTION.....NORM
  MAX FL: 100 / MEA-MORA

  - **If CAB ALT above 14 000 ft:**

    OXYGEN PAX MASK MAN ON.....PRESS

FORCED LANDING

ATC.....NOTIFY
ATC XPDR 7700.....CONSIDER
PREPARE CABIN AND COCKPIT
- *Loose equipment secured*
- *Survival equipment prepared*
- *Belts and shoulder harness locked.*

GPWS SYS.....OFF
GPWS TERR.....OFF
SIGNS.....ON
EMER EXIT LT.....ON
COMMERCIAL.....OFF
LDG ELEV.....SET
BARO.....SET
DISREGARD NORM C/Ls
ELT (when conditions permit).....ON

- **For approach and landing:**
  RAM AIR.....ON
  L/G lever.....DOWN
  SLATS / FLAPS.....MAX AVAIL
  GND SPLR.....ARM

  MAX BRK PR: 1000 PSI

- **At 2 000 ft AGL:**
  CABIN CREW.....NOTIFY FOR LANDING

- **At 500 ft AGL:**
  BRACE FOR IMPACT.....ORDER

- **At touchdown:**
  ALL ENG MASTERS.....OFF
  APU MASTER SW.....OFF
  BRAKES ON ACCU ONLY

- **When aircraft stopped:**
  PARKING BRK.....ON
  ATC (VHF 1).....NOTIFY
  ALL FIRE pb (ENGs & APU).....PUSH
  ALL AGENTS (ENGs & APU).....DISCH

  ■ **If Evacuation required:**
  EVACUATION.....INITIATE
  ELT.....CHECK EMITTING
  If not, switch on the transmitter.

  ■ **If Evacuation not required:**
  CABIN CREW and PASSENGERS (PA).....NOTIFY

BOMB ON BOARD

CKPT / CAB COM..... ESTABLISH

- **If landing and evacuation possible within 30 min:**
  ATC / COMPANY..... NOTIFY
  EVAC..... PREPARE

- **If landing and evacuation NOT possible within 30 min:**
  AIRCRAFT (IF CLIMBING)..... LEVEL OFF
  CABIN PRESS MODE SEL..... MAN
  MAINTAIN CAB ALT
  ATC / COMPANY..... NOTIFY
  TRGT SPEED: PREFER LO IAS
  Low speed could reduce the consequences of possible structural damage, if the bomb explodes.
  DESCENT TO CAB ALT + 2 500 ft or MEA-MORA..... INITIATE
  AVOID SHARP MANEUVERS
  MAINTAIN CAB ALT
  - **When at CAB ALT + 2 500 ft:**
    MAINTAIN 1 PSI ΔP
    GALLEY..... OFF
    FUEL RESERVES..... DETERMINE
    When flying at cabin altitude + 2 500 ft , the fuel consumption in CONF 1, with landing gear down, will be about 2.1 times that consumed in clean configuration.
    - **When bomb secured at the LRBL or cannot be moved:**
      Least Risk Bomb Location (LRBL) is the center of the RH aft cabin door
      EMER EXIT LT..... ON
      COMMERCIAL..... OFF
    - **If fuel permits:**
      FLAPS..... AT LEAST CONF 1
      L/G lever (except for flight over water)..... DOWN
      USE NORMAL CONF FOR LANDING
  DURING FURTHER DESCENT: MAINTAIN MAX 1 PSI ΔP
  - **During approach:**
    CABIN PRESS MODE SEL..... AUTO

- **When aircraft on ground and stopped in a remote area (if possible) :**
  Refer to ABN-25 EMER EVAC

COCKPIT WINDSHIELD / WINDOW ARCING

Affected WINDOW/WINDSHIELD ANTI ICE C/B..... PULL

- *ANTI ICE L WSHLD C/B AF10 [123VU]*
- *ANTI ICE R WSHLD C/B AF03 [123VU]*
- *ANTI ICE/WINDOWS L C/B X14 [122VU]*
- *ANTI ICE/WINDOWS R C/B W14 [122VU]*

COCKPIT WINDSHIELD / WINDOW CRACKED

TOUCH THE CRACK WITH A PEN (OR CAREFULLY WITH FINGERNAIL)

- **If no crack on cockpit side:**
  NO LIMITATION
- **If cracks on cockpit side:**
  MAX FL: 230 / MEA-MORA
  CAB PRESS MODE SEL..... MAN
  DISREGARD THE CAB ALT TARGET TABLE DISPLAYED ON THE ECAM
  MAN V/S CTL..... AS RQRD
  SET THE CABIN ALTITUDE ACCORDING TO THE TABLE BELOW TO MAINTAIN ΔP 5 PSI

FL	*100*	*150*	*200*	*230*
CABIN ALTITUDE	*0*	*3 000*	*6 000*	*8 000*

  - **When starting the descent for approach:**
    CAB PRESS MODE SEL..... AUTO
- **If visibility not sufficient for approach due to damage:**
  CONSIDER AUTOLAND
  - **For approach, if AUTOLAND not available:**
    CAB PRESS MODE SEL..... MAN
    MAN V/S CTL..... FULL UP
    MAX SPEED: 200 kt
    PF SLIDING WINDOW..... OPEN

OVERWEIGHT LANDING

USE CONF FULL FOR LANDING UNLESS SPECIFIED BY ABN PROC OR LIMITED BY LANDING PERF

MAX WEIGHT (1 000 kg) FOR LANDING IN CONF FULL (GO AROUND IN CONF 3 CLIMB GRADIENT 2.1 %)								
OAT °C	AIRPORT ELEVATION (feet)							
	0	2 000	4 000	6 000	8 000	10 000	12 000	14 000
<10	85	83	84	81	77	71	66	61
15	85	83	83	81	77	70	64	57
20	85	83	83	81	75	67	61	55
25	85	83	83	79	72	64	58	
30	84	83	81	77	69			
35	84	83	79	73	66			
40	84	81	75	69				
45	82	76	70					
50	78	72						
55								

- **If aircraft weight above maximum weight for landing in conf FULL:** USE FLAP 3 FOR LANDING

LDG DIST.....CHECK

- **For approach:**
  PACK 1+2.....OFF OR SUPPLIED BY APU
- **If landing conf other than FULL:** USE CONF 1+F FOR GO AROUND

SPEED AT RUNWAY THRESHOLD: VLS
MINIMIZE V/S AT TOUCHDOWN

- **At main landing gear touchdown:** USE MAX REVERSER
- **After nosewheel touchdown:** APPLY BRAKES AS NECESSARY
- **When landing completed:**
  BRAKE FANS ⊲ ..... ON

SEVERE TURBULENCE

SEAT BELTS.....ON
SPEED AND THRUST..... ADJUST

FL	SPD or Mach	WEIGHT (1 000 kg)								
		44	48	52	56	60	64	68	72	76
		N1 (%)								
390	0.76	80.0	81.0	82.0	83.1	-	-	-	-	-
370	0.76	79.1	79.8	80.7	81.6	82.6	83.6	-	-	-
350	0.76	78.8	79.3	80.0	80.7	81.5	82.4	83.3	84.3	-
330	0.76	78.8	79.3	79.8	80.4	81.0	81.8	82.6	83.4	84.2
310	275	78.1	78.6	79.2	79.8	80.3	80.9	81.5	82.3	83.1
290	275	76.6	77.1	77.6	78.2	78.9	79.6	80.3	81.0	81.7
270	275	75.1	75.6	76.1	76.7	77.3	78.0	78.7	79.6	80.5
250	275	73.5	74.0	74.5	75.1	75.8	76.5	77.2	77.9	78.8
200	275	69.9	70.3	70.7	71.2	71.8	72.4	73.0	73.7	74.4
150	250	61.9	62.6	63.3	64.0	64.9	65.9	66.9	68.0	68.9
100	250	58.3	59.0	59.6	60.2	61.0	61.8	62.6	63.5	64.5
50	250	54.3	54.9	55.6	56.3	57.1	58.0	59.0	60.0	60.8

KEEP AUTO PILOT ON

- **If excessive thrust variations:** DISCONNECT A/THR

DESCENT TO OR BELOW OPT FL..... CONSIDER

Consider descending to or below OPT FL in order to increase the margin to buffet

- **For approach:**
  A/THR..... ON
  USE MANAGED SPEED

TAILSTRIKE

LAND ASAP

MAX FL: 100 / MEA-MORA
RAM AIR.....ON
PACK 1.....OFF
PACK 2.....OFF

VOLCANIC ASH ENCOUNTER

180 ° TURN.....INITIATE
ATC.....NOTIFY
A/THR..... OFF
THRUST (IF CONDS PERMIT).....REDUCE
CREW OXY MASKS.....USE / 100 % / EMER
CABIN CREW.....NOTIFY
OXYGEN PASSENGER MASK MAN ON.....AS RQRD
ENG ANTI ICE..... ON
WING ANTI ICE..... ON
PACK FLOW..... HI
CARGO ISOL VALVES ⊲⊳ .....OFF
ENGINE PARAMETERS.....MONITOR
AIRSPEED INDICATIONS.....MONITOR

- **If visibility not sufficient for approach due to windshield damage:**
  CONSIDER AUTOLAND
  - **For approach, if AUTOLAND not available:**
    CAB PRESS MODE SEL.....MAN
    MAN V/S CTL.....FULL UP
    MAX SPEED: 200 kt
    PF SLIDING WINDOW..... OPEN

ALL ADR OFF

SPEED.....FLY THE GREEN

Note: *If the BUSS does not react to longitudinal stick input when flying the green area of the speed scale, the flight crew must disregard the BUSS and use pitch/thrust tables.*

WHEN ALL ADR OFF BOTH FMS LOST

BACK UP NAV.....USE

USE RMP FOR NAVAID TUNING

PFD ALTITUDE: GPS

TCAS & ATC ALT RPTG INOP

CABIN PRESS MODE SEL.....MAN

MAN V/S CTL..... AS RQRD

Target CAB PRESS V/S:

- *Climb: 500 ft/min*
- *Descent: 300 ft/min*

AIRCRAFT CRZ FL	CAB ALT TARGET (ft)
410	8000
350	7000
300	5500
250	3000
<200	0

- **For approach:**

  SPEED.....FLY THE GREEN

  FOR LANDING: USE FLAP 3

  GPWS LDG FLAP 3..... ON

  LDG DIST PROC.....APPLY

  APPR SPEED: BUSS TARGET SPEED

  During approach, BUSS TARGET SPEED (green triangle) indicates VAPP.

  - **When flap 2:**

    LDG GEAR GRVTY EXTN handcrank..... PULL AND TURN

  - **When landing gear downlocked:**

    L/G lever.....DOWN

    GEAR DOWN indications..... CHECK

    L/G DOORS REMAIN OPEN

  - **During final approach:**

    MAN V/S CTL.....FULL UP

- **Before door opening:** CHECK ΔP ZERO

ADR CHECK PROC

Apply the UNRELIABLE SPEED INDICATION procedure.

UNRELIABLE SPEED INDICATION

- **If the safe conduct of the flight is impacted:**

AP.....OFF
A/THR.....OFF
FD.....OFF
PITCH/THRUST:
Below THRUST RED ALT.....15° / TOGA
Above THRUST RED ALT and Below FL 100..... 10° / CLB
Above THRUST RED ALT and Above FL 100.....5° / CLB
FLAPS (if CONF 0(1)(2)(3)).....MAINTAIN CURRENT CONF
FLAPS (if CONF FULL).....SELECT CONF 3 AND MAINTAIN
SPEEDBRAKES.....CHECK RETRACTED
L/G.....UP
When at, or above MSA or Circuit Altitude: Level off for troubleshooting.

- **To level off:**

AP.....OFF
A/THR.....OFF
FD.....OFF
SPEEDBRAKES.....CHECK RETRACTED
PITCH/THRUST TABLE.....APPLY

PITCH / THRUST FOR LEVEL OFF				
		70 t 155 000 lb	60 t 130 000 lb	50 t 110 000 lb
SLATS / FLAPS EXTENDED				
CONF	PITCH	THRUST % N1 (Resultant speed)		
3	7°	64% (155 kt)	60% (140 kt)	56% (130 kt)
2	5.5°	62% (170 kt)	58% (160 kt)	54% (145 kt)
1+F	5°	62% (190 kt)	58% (175 kt)	54% (160 kt)
1	6.5°	62% (205 kt)	58% (190 kt)	54% (170 kt)
CLEAN				
PITCH	FL	THRUST % N1 (Resultant speed)		
4° at or below FL250	100	62% (245 kt)	60% (225 kt)	54% (205 kt)
	200	70% (245 kt)	66% (225 kt)	62% (205 kt)
3° above FL250	300	80% (265 kt)	76% (245 kt)	72% (225 kt)
	350	84% (255 kt)	80% (240 kt)	76% (220 kt)
	400	/	86% (235 kt)	80% (220 kt)

FLYING TECHNIQUE TO STABILIZE SPEED

UNRELIABLE SPEED INDICATION (Cont'd)

Stabilize the altitude. When altitude is stabilized:
- If the pitch is above the target pitch, increase the thrust and maintain the altitude.
- If the pitch is below the target pitch, decrease the thrust and maintain the altitude.

When the pitch reaches the target pitch, adjust the thrust to keep this target pitch.

- **When flight path is stabilized:**
  AP..... OFF
  A/THR..... OFF
  FD..... OFF
  SPEEDBRAKES.....CHECK RETRACTED
  FLIGHT PATH..... KEEP STABILIZED

RESPECT STALL WARNING

AFFECTED ADR IDENTIFICATION

PROBE/WINDOW HEAT.....ON
ALL SPEED INDICATIONS.....CROSSCHECK
ADR 3 and STBY speeds use the data of the same probe.

- **If at least one ADR confirmed reliable:**
  RELIABLE AIR DATA..... USE
  UNRELIABLE ADR pb(s)..... OFF
- **If affected ADR(s) cannot be identified, or all ADRs affected:**
  - **When above FL 250:**
    KEEP ONE ADR ON
    TWO ADR pbs..... OFF
    - **For flight continuation:** USE PITCH/THRUST TABLES
  - **When below FL 250, if speed still unreliable:**
    ALL ADR pbs..... OFF
    SPEED.....FLY THE GREEN

    Note: *If the BUSS does not react to longitudinal stick input when flying the green area of the speed scale, the flight crew must disregard the BUSS and use pitch/thrust tables.*

    NAV ADR 1+2+3 FAULT Procedure..... APPLY

CLIMB

CLIMB IN CLEAN CONFIGURATION				
		70 t 155 000 lb	60 t 130 000 lb	50 t 110 000 lb
THRUST	FL	PITCH (Resultant speed)		
CLB	50	11° (235 kt)	13° (215 kt)	16° (195 kt)
	100	10° (235 kt)	12° (215 kt)	14° (195 kt)
	200	7° (235 kt)	8° (220 kt)	10° (195 kt)
	300	5° (235 kt)	6° (220 kt)	7° (200 kt)
	400	/	4° (215 kt)	5° (195 kt)

UNRELIABLE SPEED INDICATION (Cont'd)

CRUISE

FLYING TECHNIQUE TO STABILIZE SPEED

Stabilize the altitude. When altitude is stabilized:
- If the pitch is above the target pitch, increase the thrust and maintain the altitude.
- If the pitch is below the target pitch, decrease the thrust and maintain the altitude.

When the pitch reaches the target pitch, adjust the thrust to keep this target pitch.

LEVEL FLIGHT IN CLEAN CONFIGURATION				
		70 t 155 000 lb	60 t 130 000 lb	50 t 110 000 lb
PITCH	FL	THRUST % N1 (Resultant speed)		
4° at or below FL250	100	**62%** (245 kt)	**60%** (225 kt)	**54%** (205 kt)
	200	**70%** (245 kt)	**66%** (225 kt)	**62%** (205 kt)
3° above FL250	300	**80%** (265 kt)	**76%** (245 kt)	**72%** (225 kt)
	350	**84%** (255 kt)	**80%** (240 kt)	**76%** (220 kt)
	400	/	**86%** (235 kt)	**80%** (220 kt)

Note: *If the failure is due to radome destruction, the drag will increase and therefore N1 must be increased by 5 %. Fuel flow will increase by about 27 %.*

DESCENT

DESCENT IN CLEAN CONFIGURATION				
		70 t 155 000 lb	60 t 130 000 lb	50 t 110 000 lb
THRUST	PITCH	Resultant speed		
IDLE	1°	245 kt	230 kt	210 kt

INITIAL / INTERMEDIATE APPROACH

APPLY FLYING TECHNIQUE TO STABILIZE SPEED

LEVEL FLIGHT				
		70 t 155 000 lb	60 t 130 000 lb	50 t 110 000 lb
WITH LANDING GEAR UP				
CONF	PITCH	THRUST % N1 (Resultant speed)		
0	5.5°	**58%** (225 kt)	**54%** (205 kt)	**50%** (185 kt)
1	6.5°	**62%** (205 kt)	**58%** (190 kt)	**54%** (170 kt)
1+F	5°	**62%** (190 kt)	**58%** (175 kt)	**54%** (160 kt)
2	5.5°	**62%** (170 kt)	**58%** (160 kt)	**54%** (145 kt)
WITH LANDING GEAR DOWN				
3	7°	**70%** (155 kt)	**64%** (140 kt)	**60%** (130 kt)

UNRELIABLE SPEED INDICATION (Cont'd)

FINAL APPROACH AT -3° DESCENT FLIGHT PATH

APPROACH IN CONF 3 AND L/G EXTENDED				
		70 t 155 000 lb	60 t 130 000 lb	50 t 110 000 lb
CONF	PITCH	THRUST (% N1)		
3	4°	54%	50%	46%

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IR ALIGNMENT IN ATT MODE

IR MODE sel (affected IR).....ATT
KEEP SPEED, HEADING, AND FL CONSTANT FOR 30 s
FMS DATA page.....SELECT
IRS MONITOR key.....PRESS
[SET HDG key] A/C HDG.....ENTER
CROSSCHECK HEADING REGULARLY WITH STBY COMPASS AND UPDATE AS REQUIRED

NAV FM / GPS POS DISAGREE

A/C POS.....CHECK

- **During climb, cruise, or descent:**
  FMS PROG page..... SELECT
  - **If ESTIMATED ACCUR below REQUIRED ACCUR:**
    CONSIDER NAV MODE AND ND ARC/ROSE NAV
  - **If ESTIMATED ACCUR above REQUIRED ACCUR:**
    HDG/TRK MODE.....SELECT
    USE RAW DATA

  FMS POSITION MONITOR page.....SELECT
  - **If one FM position agrees with onside GPIRS position:**
    USE ASSOCIATED AP/FD
  - **If both FM positions DO NOT agree with onside GPIRS position:**
    GPS..... DESELECT
    USE RAW DATA
- **During ILS/LOC approach:**
  NAV MODE: DO NOT USE
  CONTINUE APPROACH
- **During RNAV GNSS, RNAV RNP, or GLS approach:**
  - **If visual references not sufficient:** GO AROUND
- **During VOR, VOR-DME, NDB, or NDB-DME approach:**
  HDG/TRK MODE.....SELECT
  USE RAW DATA

SMOKE / FUMES / AVNCS SMOKE

LAND ASAP

IF PERCEPTIBLE SMOKE APPLY IMMEDIATELY:
CREW OXY MASKS (if required)..... USE/100%/EMERG
VENTILATION BLOWER.....OVRD
VENTILATION EXTRACT..... OVRD
CAB FANS.....OFF
GALY & CAB..... OFF
SIGNS.....ON
CKPT / CAB COM.....ESTABLISH

- **If smoke source immediately obvious, accessible, and extinguishable:**
  FAULTY EQPT.....ISOLATE
- **If smoke source not immediately isolated:**
  DIVERSION..... INITIATE
  DESCENT TO FL 100 / MEA -MORA ..... INITIATE

- **At ANY TIME of the procedure, if SMOKE / FUMES becomes the GREATEST THREAT :**
  REMOVAL OF SMOKE / FUMES..... CONSIDER
  Refer to ABN-27 Removal of Smoke / Fumes
  ELEC EMER CONFIG.....CONSIDER
  Refer to the end of the procedure to set ELEC EMER CONFIG.

- **At ANY TIME of the procedure, if situation becomes UNMANAGEABLE :**
  IMMEDIATE LANDING.....CONSIDER

- **If Air COND smoke suspected:**
  APU BLEED.....OFF

SMOKE / FUMES / AVNCS SMOKE (Cont'd)

VENTILATION BLOWER..... AUTO
VENTILATION EXTRACT..... AUTO
CARGO FWD ISOL VALVE.....OFF
PACK 1..... OFF

- **If smoke continues:**
  PACK 1..... ON
  PACK 2..... OFF
  - **If smoke persists:**
    PACK 2..... ON
    VENTILATION BLOWER..... OVRD
    VENTILATION EXTRACT..... OVRD

REMOVAL OF SMOKE / FUMES..... CONSIDER
Refer to ABN-27 Removal of Smoke / Fumes

- **If CABIN EQPT smoke suspected:**
  - **If smoke continues:**
    EMER EXIT LIGHT.....ON
    COMMERCIAL..... OFF
    SMOKE DISSIPATION..... CHECK
    FAULTY EQPT.....SEARCH / ISOLATE
    - **If smoke persists or if faulty equipment confirmed isolated:**
      COMMERCIAL.....NORM

REMOVAL OF SMOKE / FUMES..... CONSIDER
Refer to ABN-27 Removal of Smoke / Fumes

SMOKE / FUMES / AVNCS SMOKE (Cont'd)

- **If smoke source cannot be determined and persists or AVNCS / ELECTRICAL smoke suspected:**
  ELEC EMER CONFIG.....CONSIDER
  Refer to the end of the procedure to set ELEC EMER CONFIG.
- **If smoke disappears within 5 minutes**
  NORMAL VENTILATION..... RESTORE

TO SET ELEC EMER CONFIG

EMER ELEC GEN 1 LINE.....OFF
EMER ELEC PWR..... MAN ON

- **When EMER GEN AVAIL:**
  APU GEN.....OFF
  GEN 2..... OFF
  APPLY ELEC EMER CONFIG PROCEDURE, BUT DO NOT RESET GEN, EVEN IF REQUESTED BY ECAM.
- **At 3 min or 2 000 ft AAL before landing:**
  GEN 2..... ON
  EMER ELEC GEN 1 LINE.....ON
- **When aircraft stopped:**
  ALL GENs..... OFF

REMOVAL OF SMOKE / FUMES

EMER EXIT LIGHT..... ON

■ **If fuel vapors:**

CAB FANS.....ON
PACK 1..... OFF
PACK 2..... OFF

■ **If no fuel vapors:**

CAB FANS.....OFF
PACK FLOW..... HI

LDG ELEV.....10 000 FT / MEA-MORA
DESCENT TO FL 100 / MEA-MORA.....INITIATE
ATC.....NOTIFY
SMOKE / FUMES / AVNCS SMOKE PROC.....
.....CONTINUE

Refer to ABN-27 Smoke / Fumes / AVNCS Smoke - General

● **At FL 100 or MEA-MORA:**

● **If in ELEC EMER CONFIG:**

APU MASTER sw .....ON

PACK 1..... OFF
PACK 2..... OFF
CABIN PRESS MODE SEL..... MAN
MAN V/S CTL..... FULL UP
RAM AIR.....ON
APU MASTER sw .....OFF

● **If smoke persists:**

MAX SPEED: 200 kt
COCKPIT DOOR.....OPEN
HEADSETS.....ON

REMOVAL OF SMOKE / FUMES (Cont'd)

PM SLIDING WINDOW.....OPEN

- **When window open:**

  NON-AFFECTED PACK(s)..... ON

  VISUAL WARNINGS (noisy CKPT).. MONITOR

  SMOKE / FUMES / AVNCS SMOKE PROC.....

  ..... CONTINUE

  Refer to ABN-27 Smoke / Fumes / AVNCS Smoke - General

SMOKE / FIRE FROM LITHIUM BATTERY

If necessary, transfer control to the flight crewmember seated on the opposite side of the fire.

CKPT / CAB COM.....ESTABLISH
STORAGE AFTER Li BAT FIRE cabin procedure.....
.....REQUEST INITIATION

- **If flames:**
  CREW OXY MASK (PF).....USE
  SMOKE HOOD (PM)..... USE
  HALON EXTINGUISHER.....USE
- **If no flames or when flames extinguished:**
  - **If not possible to remove device from cockpit:**
    WATER or NON-ALCOHOLIC LIQUID.....
    .....POUR ON DEVICE
    DEVICE..... MONITOR
  - **If possible to remove device from cockpit:**
    DEVICE.....TRANSFER TO CABIN

- **At ANY TIME of the procedure, if SMOKE becomes the GREATEST THREAT:**
  REMOVAL OF SMOKE / FUMES procedure.....
  .....CONSIDER
  Refer to ABN-27 Removal of Smoke / Fumes

- **At ANY TIME of the procedure, if situation becomes UNMANAGEABLE:**
  IMMEDIATE LANDING.....CONSIDER

WHEEL TIRE DAMAGE SUSPECTED

LDG DIST PROC..... APPLY

Performance impact of one burst tire is equivalent to one brake released.

TAXI WITH CARE

Refer to FCOM / LIM LG Landing Gear - Taxi with Deflated or Damaged Tires.

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Safety Exterior Inspection....1/14
Preliminary Cockpit Preparation....1/14
Cockpit Preparation....2/14
Before Pushback or Start....3/14
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SAFETY EXTERIOR INSPECTION

PF	PM
	* WHEEL CHOCKS.....CHECK
	* L/G DOORS.....CHECK POSITION
	* APU AREA.....CHECK

PRELIMINARY COCKPIT PREPARATION

PF	PM
	ENG MASTERS 1, 2.....OFF
	ENG MODE selector.....CHECK NORM
	* WEATHER RADAR.....OFF
	L/G lever.....DOWN
	Both WIPER selectors.....OFF
	BAT.....CHECK / AUTO
	EXT PWR pb-sw.....AS RQRD
	APU FIRE.....CHECK / TEST
	APU.....START
	When the APU is AVAIL:
	* EXT PWR pb-sw.....AS RQRD
	AIR COND panel.....SET
	* COCKPIT LIGHT.....AS RQRD
	* ECAM RCL pb.....PRESS
	* ECAM OXY PRESS / HYD QTY / ENG OIL QTY.....CHECK
* FMGS PRE-INITIALIZATION:	FLAPS.....CHECK POSITION
ENGINE & AIRCRAFT TYPE.....CHECK	* SPD BRK lever.....CHECK RET AND DISARMED
DATABASE VALID.....CHECK	* PARKING BRAKE handle.....ON
FLT NBR & FROM/TO.....INSERT	* ACCU/BRAKES PRESS.....CHECK
ACARS ◁ .....INTIALIZE	
ALL EFB/eQRH.....START	ALL EFB/eQRH.....START
EFB/eQRH Version.....CHECK	EFB/eQRH Version.....CHECK
* OEB in eQRH.....CHECK	
* EFB SYNCHRO AVIONICS ◁ .....CLICK	* EFB SYNCHRO AVIONICS ◁ .....CLICK
EFB RQRD APPLICATIONS.....START	EFB RQRD APPLICATIONS.....START

CM1	CM2
* ECAM RCL pb.....PRESS	
* LOGBOOK.....CHECK	* LOGBOOK.....CHECK
* EFB MEL /CDL.....CONSULT AND ACTIVATE INOP ITEMS	* EFB MEL /CDL.....CONSULT AND ACTIVATE INOP ITEMS
* AIRCRAFT ACCEPTANCE.....PERFORM	

PF	PM
* AIRFIELD DATA .....OBTAIN	* AIRFIELD DATA .....OBTAIN
•If the LOADSHEET application is used:	**•If the LOADSHEET application is used:**
* PRELIMINARY LOADING.....COMPUTE/CROSSCHECK	PRELIMINARY LOADING.....COMPUTE/CROSSCHECK
* MEL /CDL ITEMS.....CHECK ACTIVATED	MEL /CDL ITEMS.....CHECK ACTIVATED
* PRELIMINARY T.O. PERF.....COMPUTE/CROSSCHECK	PRELIMINARY T.O. PERF.....COMPUTE/CROSSCHECK

Continued from the previous page

PF	PM
	EMER EQPT.....CHECK
	RAIN REPELLENT..... CHECK
	C/B PANELS.....CHECK
	* GEAR PINS and COVERS.....CHECK ONBOARD / STOWED
	* EXTERIOR WALKAROUND.....PERFORM

COCKPIT PREPARATION

PF	PM
OVERHEAD PANEL:	
* ALL WHITE LIGHTS.....EXTINGUISH	
* RCDR GND CTL pb-sw..... ON	
CVR TEST pb..... PRESS	
CAPT & PURS / CAPT sw..... AS RQRD	
* ALL IR MODE selector..... NAV	
EXTERIOR LIGHTS..... SET	
* SIGNS..... SET	
PROB/WINDOW HEAT..... AUTO	
LDG ELEV ..... AUTO	
* PACK FLOW..... AS RQRD	
ELEC panel.....CHECK	
BAT .....CHECK	
ENG FIRE..... CHECK / TEST	
AUDIO SWITCH..... NORM	
VENT panel..... CHECK	
PA (3rd occupant).....RECEPT	
MAINT panel.....CHECK	
CTR INSTRUMENT PANEL:	
* ISIS.....CHECK	
* CLOCK..... CHECK / SET	
* A/SKID & N/W STRG sw..... ON	
PEDESTAL:	
ACP ..... CHECK	
COCKPIT DOOR..... CHECK	
SWITCHING PANEL..... NORM	
* THRUST LEVERS..... CHECK IDLE	
* ENG MASTERS.....CHECK OFF	
* ENG MODE selector.....CHECK NORM	
* PARK BRK..... AS RQRD	
GRAVITY GEAR EXTN ..... CHECK STOWED	
* ATC ..... STBY	
RMP ..... SET	
* AIRFIELD DATA.....OBTAIN	
* ACARS ..... INITIALIZE	
NAV CHARTS CLIPBOARD..... PREPARE	NAV CHARTS CLIPBOARD..... PREPARE
* FMS..... PREPARE	

Continued from the previous page

PF	PM
	* FMS PREPARATION.....CHECK
•When both flight crewmembers are seated:	
GLARESHIELD:	GLARESHIELD:
* BAROMETRIC REFERENCE.....SET	* BAROMETRIC REFERENCE.....SET
* FD .....CHECK ON	* FD .....CHECK ON
* LS .....AS RQRD	* LS .....AS RQRD
* ND mode and range.....SET	* ND mode and range.....SET
* VOR / ADF selector..... AS RQRD	* VOR / ADF selector..... AS RQRD
* FCU ..... SET	
LATERAL CONSOLE:	LATERAL CONSOLE:
OXY MASK..... TEST	OXY MASK..... TEST
INSTRUMENT PANEL:	INSTRUMENT PANEL:
PFD -ND brightness.....ADJUST	PFD -ND brightness.....ADJUST
LOUDSPEAKER knob.....SET	LOUDSPEAKER knob.....SET
* PFD -ND ..... CHECK	* PFD -ND ..... CHECK
* LDG ELEV (ECAM)..... CHECK AUTO	* IRS ALIGN..... CHECK
* ECAM STATUS.....CHECK	
* TAKEOFF BRIEFING..... PERFORM	

BEFORE PUSHBACK OR START

PF	PM
LOADSHEET..... CHECK	LOADSHEET..... CHECK
FOB.....CHECK	FOB.....CHECK
FMS TO DATA..... CHECK / REVISE AS RQRD	REVISED FMS TO DATA.....XCHECK
SEATING POSITION.....ADJUST	SEATING POSITION.....ADJUST
FMS PERF TO page..... SELECT	FMS F-PLN page ..... SELECT
	EXT PWR.....CHECK AVAIL
	EXT PWR DISCONNECTION ..... REQUEST
EFB TRANSMITTING MODE.....CONSIDER	EFB TRANSMITTING MODE.....CONSIDER
BEFORE START C/L down to the line.....COMPLETE	BEFORE START C/L down to the line.....COMPLETE
	PUSHBACK / START CLEARANCE..... OBTAIN
	ATC..... SET FOR OPERATION
WINDOWS / DOORS..... CHECK CLOSED	WINDOWS / DOORS..... CHECK CLOSED
SLIDES.....CHECK ARMED	SLIDES.....CHECK ARMED
EXTERIOR LIGHTS..... SET	
THRUST LEVERS.....IDLE	
ACCU PRESS..... CHECK	
NW STRG DISC..... CHECK AS RQRD	
PARK BRK.....AS RQRD	
BEFORE START C/L below the line..... COMPLETE	BEFORE START C/L below the line..... COMPLETE

ENGINE START

PF	PM
ENG MODE selector.....IGN/START	
ENG 2 START.....ANNOUNCE	
ENG MASTER 2.....ON	
ENG IDLE PARAMETERS.....CHECK	
ENG 1 START.....ANNOUNCE	
REPEAT THE START SEQUENCE	

AFTER START

PF	PM
ENG MODE selector.....NORM	
APU BLEED pb-sw.....OFF	GND SPOILERS.....ARM
ENG ANTI ICE pb-sw.....AS RQRD	RUD TRIM.....ZERO
WING ANTI ICE pb-sw.....AS RQRD	FLAPS.....SET
APU MASTER SW.....AS RQRD	PITCH TRIM.....SET
ECAM STATUS.....CHECK	ECAM STATUS.....CHECK
N/W STEER DISC MEMO.....CHECK NOT DISPLAYED	
CLEAR TO DISCONNECT.....ANNOUNCE	
AFTER START C/L.....COMPLETE	AFTER START C/L.....COMPLETE

TAXI

PF	PM
•Taxi clearance obtained:	
EXTERIOR LIGHTS.....SET	TAXI CLEARANCE.....OBTAIN
PARKING BRAKE handle.....OFF	BRAKES PRESSURE.....CHECK AT ZERO
THRUST LEVERS.....AS RQRD	
BRAKES.....CHECK	
TILLER or RUDDER PEDALS.....USE AS RQRD	
FLT CTL.....CHECK	FLT CTL.....CHECK
•ATC clearance obtained:	
	ATC CLEARANCE.....CONFIRM
	T.O DATA.....CHECK
	FMS F-PLAN / SPD.....CHECK
	FCU ALT /HDG.....SET
	BOTH FD.....CHECK ON
PFD /ND.....CHECK	PFD /ND.....CHECK
TAKEOFF BRIEFING.....CONFIRM	
	RADAR.....ON
	PREDICTIVE WINDSHEAR SYSTEM ◁ .....AUTO
	ATC CODE / MODE.....CONFIRM / SET FOR TAKEOFF
TERR ON ND ◁ .....AS RQRD	TERR ON ND ◁ .....AS RQRD
	AUTO BRK.....MAX
	T.O CONFIG pb.....TEST
	T.O MEMO.....CHECK NO BLUE

Continued from the previous page

PF	PM
CABIN REPORT.....RECEIVE	CABIN REPORT.....RECEIVE
BEFORE TAKEOFF C/L down to the line..... COMPLETE	BEFORE TAKEOFF C/L down to the line..... COMPLETE

BEFORE TAKEOFF

PF	PM
	BRAKE TEMP (if brake fan running)..... CHECK
	BRAKE FAN pb-sw (if brake fan running).....OFF
	TAKEOFF / LINE UP CLEARANCE..... OBTAIN
EXTERIOR LIGHTS..... SET	
	TCAS Mode selector ..... TA or TA /RA
APPROACH PATH..... CLEARED OF TRAFFIC	APPROACH PATH..... CLEARED OF TRAFFIC
	CABIN CREW..... ADVISE
	ENG MODE selector..... AS RQRD
SLIDING TABLE .....STOW	SLIDING TABLE .....STOW
EFB/eQRH TRANSMITTING MODE.....CONSIDER	EFB/eQRH TRANSMITTING MODE.....CONSIDER
EFB/eQRH (with no mounted equipment).....STOW	EFB/eQRH (with no mounted equipment).....STOW
THRUST BUMP .....AS RQRD	
TAKEOFF RUNWAY..... CONFIRM	TAKEOFF RUNWAY..... CONFIRM
	PACKS 1+2..... AS RQRD
BEFORE TAKEOFF C/L below the line..... COMPLETE	BEFORE TAKEOFF C/L below the line..... COMPLETE

TAKEOFF

PF	PM
TAKEOFF.....ANNOUNCE	
BRAKES.....RELEASE	
THRUST LEVERS..... FLX or TOGA	CHRONO..... START
The Captain places hand on thrust levers until V1	
DIRECTIONAL CONTROL.....USE RUDDER	
FMA.....ANNOUNCE	PFD /ND..... MONITOR
•BELOW 80 kt:	N1 (EPR)..... CHECK
	THRUST SET..... ANNOUNCE
	PFD and ENG indications..... MONITOR
•AT 100 kt:	ONE HUNDRED KNOTS.....ANNOUNCE
100 kt.....CHECK	
•AT V1:	V1.....ANNOUNCE
•AT VR:	ROTATION..... ORDER
ROTATION..... PERFORM	
•WHEN POSITIVE CLIMB:	POSITIVE CLIMB..... ANNOUNCE
L/G UP.....ORDER	L/G.....SELECT UP
AP..... AS RQRD	
•AT THR RED ALT:	
THRUST LEVERS..... CL	PACK 1+2 (if applicable)..... ON
•AT F SPEED:	
FLAPS 1.....ORDER	FLAPS 1.....SELECT

Continued from the previous page

PF	PM
•AT S SPEED:	
FLAPS 0.....ORDER	FLAPS 0.....SELECT
	GND SPLRS.....DISARM
	EXTERIOR LIGHTS.....SET

AFTER TAKEOFF

PF	PM
	APU BLEED pb-sw.....AS RQRD
	APU MASTER SW.....AS RQRD
	ENG MODE selector.....AS RQRD
	TCAS Mode selector ◁✻ .....TA /RA
	ANTI ICE pb-sw.....AS RQRD
AFTER TAKEOFF / CLIMB C/L down to the line.....COMPLETE	AFTER TAKEOFF / CLIMB C/L down to the line.....COMPLETE

CLIMB

PF	PM
MCDU.....PERF CLB	MCDU.....F-PLN
FCU / FMGS.....SET IF AP ON	FCU / FMGS.....SET IF AP OFF
•At transition altitude:	
BAROMETRIC REFERENCE.....SET STD / XCHECK	BAROMETRIC REFERENCE.....SET STD / XCHECK
AFTER TAKEOFF / CLIMB C/L below the line.....COMPLETE	AFTER TAKEOFF / CLIMB C/L below the line.....COMPLETE
RADAR.....ADJUST AS APPROPRIATE	ENG ANTI ICE.....AS RQRD
•At 10 000 ft:	
	LAND LIGHTS selector.....RETRACT
	SEAT BELTS sw.....AS RQRD
EFIS OPTION.....AS RQRD	EFIS OPTION.....AS RQRD
	ECAM MEMO.....REVIEW
	NAVAIDS.....CLEAR
	SEC F-PLN.....AS RQRD
	OPT / MAX ALT.....CHECK

CRUISE

PF	PM
ECAM MEMO / SD PAGES.....REVIEW	
FLIGHT PROGRESS.....CHECK	
FUEL.....MONITOR	
NAVIGATION ACCURACY.....MONITOR	
RADAR.....ADJUST AS APPROPRIATE	

DESCENT PREPARATION

PF	PM
	WEATHER AND LANDING INFORMATION..... OBTAIN
NAV CHARTS CLIPBOARD ..... PREPARE	NAV CHARTS CLIPBOARD ..... PREPARE
LDG PERFO .....CONFIRM	LDG PERFO .....CHECK
FMS..... PREPARE	FMS PREPARATION.....CHECK
	GPWS LDG FLAP 3..... AS RQRD
LDG ELEV..... CHECK	
AUTO BRK..... AS RQRD	
APPR BRIEFING.....PERFORM	
TERR ON ND ..... AS RQRD	TERR ON ND ..... AS RQRD
RADAR..... ADJUST AS APPROPRIATE	
	ENG ANTI ICE pb-sw..... AS RQRD
	WING ANTI ICE pb-sw..... AS RQRD
	DESCENT CLEARANCE..... OBTAIN
CLEARED ALTITUDE ON FCU..... SET	

DESCENT

PF	PM
DESCENT.....INITIATE	
MCDU.....PROG / PERF DESCENT	MCDU.....F-PLN
DESCENT..... MONITOR / ADJUST	
•When the aircraft approaches the transition level, and when cleared for an altitude:	
BAROMETRIC REFERENCE..... SET / XCHECK	BAROMETRIC REFERENCE..... SET / XCHECK
	ECAM STATUS..... CHECK
•At 10 000 ft:	
	LAND LIGHTS sw..... SET
	SEAT BELTS sw..... ON
EFIS option pb.....CSTR	EFIS option pb.....CSTR
LS pb ..... AS RQRD	LS pb..... AS RQRD
	RADIO NAV..... SELECT / IDENT
	ENG MODE selector..... AS RQRD
•If GPS PRIMARY not available:	
NAV ACCY..... CHECK	
APPROACH C/L.....COMPLETE	APPROACH C/L.....COMPLETE

AIRCRAFT CONFIGURATION FOR APPROACH

PF	PM
INITIAL APPROACH:	
F-PLN SEQUENCING.....ADJUST	
•Approx 15 NM from touchdown:	
APPR PHASE ..... ACTIVATE or set green dot (1)	
MANAGED SPEED..... CHECK	
FLIGHT PATH..... MONITOR	NAV ACCURACY..... MONITOR

Continued from the previous page

PF	PM
SPEED BRAKES lever.....AS RQRD	
RADAR..... ADJUST AS APPROPRIATE	
INTERMEDIATE / FINAL APPROACH:	
•At green dot:	
FLAPS 1.....ORDER	FLAPS 1..... SELECT
S SPEED..... CHECK OR SET *(1)*	
	TCAS ✠ .....TA or TA/RA
•At 2 000 ft AGL minimum:	
FLAPS 2.....ORDER	FLAPS 2..... SELECT
F SPEED..... CHECK OR SET *(1)*	
•When FLAPS 2:	
L/G DOWN.....ORDER	L/G..... SELECT DOWN
	AUTO BRAKE.....CONFIRM
	GRND SPLRS..... ARM
	EXTERIOR LIGHTS..... SET
•When L/G down:	
FLAPS 3.....ORDER	FLAPS 3..... SELECT
	ECAM WHEEL PAGE.....CHECK
•When FLAPS 3:	
FLAPS FULL.....ORDER	FLAPS FULL..... SELECT
SPEED TARGET..... CHECK OR SET *(1)*	
	A/THR.....CHECK SPD or OFF
	WING A. ICE (if not required).....OFF
SLIDING TABLE ✠ .....STOW	SLIDING TABLE ✠ .....STOW
EFB/eQRH (with no mounted equipment).....STOW	EFB/eQRH (with no mounted equipment).....STOW
	LDG MEMO.....CHECK NO BLUE
CABIN REPORT.....RECEIVE	CABIN REPORT.....RECEIVE
	CABIN CREW..... ADVISE
LDG C/L.....COMPLETE	LDG C/L.....COMPLETE
ANNOUNCE ANY FMA MODIFICATION	FLT PARAMETERS..... MONITOR
	Announce any deviation in excess of: • V/S: 1 000 ft/min • IAS: speed target + 10 kt; speed target - 5 kt • PITCH: 2.5 ° nose down; 10 ° nose up • BANK: 7 °

(1) PF if AP is ON, PM if AP is OFF. The PF may request that this action is performed by the PM depending on the situation.

APPROACH USING LOC G/S GUIDANCE

PF	PM
DESCENT PREPARATION:	
APPROACH MINIMUM.....DETERMINE	
APPROACH BRIEFING..... PERFORM	

Continued from the previous page

PF	PM
INITIAL / INTERMEDIATE APPROACH:	
APPR pb on FCU..... PRESS	
BOTH AP..... ENGAGE	
LOC..... CHECK ARMED	
G/S.....CHECK ARMED	
LOC CAPTURE.....MONITOR	
G/S CAPTURE..... MONITOR	
GO AROUND..... SET *(1)*	
FINAL APPROACH:	
	FLT PARAMETERS..... MONITOR
	Announce any deviation in excess of: • LOC: ½ dot • GLIDE: ½ dot
•At 350 ft :	
LAND mode..... CHECK ENGAGED / ANNOUNCE	
For CATI, CATII and CATIII with DH approach:	
•At minimum +100 ft:	
	ONE HUNDRED ABOVE..... MONITOR OR ANNOUNCE
•At minimum:	
CONTINUE OR GO-AROUND..... ANNOUNCE	MINIMUM..... MONITOR OR ANNOUNCE
For CATIII with no DH approach:	
•At 100 ft RA:	
If no failure detected	
CONTINUE..... ANNOUNCE	

(1) PF if AP is ON, PM if AP is OFF. The PF may request that this action is performed by the PM depending on the situation.

APPROACH USING FINAL APP GUIDANCE

PF	PM
DESCENT PREPARATION:	
	WEATHER AND LANDING INFO..... OBTAIN
F-PLN A Page.....CHECK	F-PLN A Page.....CHECK
PROG Page..... COMPLETE	PROG Page..... COMPLETE

Continued from the previous page

PF	PM
GO AROUND STRATEGY.....REVIEW	
DESCENT:	
•At 10 000 ft:	
NAV ACCURACY.....CHECK	
•For RNAV(GNSS):	
GPS PRIMARY..... CHECK	
BARO REF..... SET	
INITIAL / INTERMEDIATE / FINAL APPROACH:	
POSITION.....MONITOR	
APPR pb on FCU.....PRESS	
APP NAV.....CHECK ARMED or ENGAGED	
FINAL.....CHECK ARMED	
•At Final Descent Point:	
FINAL APP.....CHECK ENGAGED	
GO AROUND ALT..... SET *(1)*	
	FLT PARAMETERS.....MONITOR Announce any deviation in excess of: • XTK > 0.1 NM • V/DEV > ½ dot
•At minimum +100 ft:	ONE HUNDRED ABOVE.....MONITOR OR ANNOUNCE
•At minimum:	
CONTINUE OR GO-AROUND.....ANNOUNCE	MINIMUM.....MONITOR OR ANNOUNCE

(1) PF if AP is ON, PM if AP is OFF. The PF may request that this action is performed by the PM depending on the situation.

APPROACH USING FPA GUIDANCE

PF	PM
DESCENT PREPARATION:	
F-PLN A Page..... CHECK	F-PLN A Page..... CHECK
PROG Page.....COMPLETE	PROG Page.....COMPLETE

Continued from the previous page

PF	PM
GO AROUND STRATEGY.....REVIEW	
DESCENT:	
•At 10 000 ft:	
NAV ACCURACY..... CHECK	
•For RNAV(GNSS):	
GPS PRIMARY..... CHECK	
INITIAL / INTERMEDIATE / FINAL APPROACH:	
LATERAL GUIDANCE MODE.....SET FOR APPROACH	
•For LOC ONLY and ILS G/S OUT	
LOC pb-sw.....PRESS	
LOC.....CHECK ARMED	
•For back course localizer approaches:	
TRK FPA MODE..... USE FOR APPROACH	
LATERAL path..... INTERCEPT	
TRK FPA (Bird)..... SELECT	
FPA FOR FINAL APPROACH..... SET	
•At 0.3 NM from the Final Descent Point:	
FPA selector.....PULL	
FPA.....CHECK ENGAGED	
POSITION / FLT PATH.....MONITOR / ADJUST	
GO AROUND ALT.....SET *(1)*	
	FLT PARAMETERS..... MONITOR Announce any deviation in excess of: • Approach using NAV MODE : XTK > 0.1 NM • Approach using LOC MODE : LOC ½ dot • Approach using TRK MODE : ■ VOR: ½ dot or 2.5 ° ■ NDB: 5 °
•At minimum +100 ft:	ONE HUNDRED ABOVE..... MONITOR OR ANNOUNCE
•At minimum:	
CONTINUE OR GO-AROUND..... ANNOUNCE	MINIMUM..... MONITOR OR ANNOUNCE

(1) PF if AP is ON, PM if AP is OFF. The PF may request that this action is performed by the PM depending on the situation.

MANUAL LANDING

PF	PM
•In stabilized approach conditions, at approx. 30 ft:	
FLARE..... PERFORM	ATTITUDE..... MONITOR
THRUST LEVERS.....IDLE	
•At touchdown:	
DEROTATION..... INITIATE	
BOTH THRUST LEVERS.....REV MAX or REV IDLE	GRND SPLRS.....CHECK / ANNOUNCE
	REVERSERS..... CHECK / ANNOUNCE
DIRECTIONAL CONTROL.....ENSURE	DIRECTIONAL CONTROL.....MONITOR
BRAKES..... AS RQRD	DECELERATION..... CHECK / ANNOUNCE

Continued from the previous page

PF	PM
•At 70 kt:	
BOTH THRUST LEVERS.....REV IDLE	SEVENTY KNOTS.....ANNOUNCE
•At taxi speed:	
BOTH THRUST LEVERS..... FWD IDLE	
•Before 20 kt:	
AUTOBRK.....DISENGAGE	

AUTOLAND

PF	PM
•At 350 ft RA	
ILS /GLS ◁ /MLS ◁ COURSE ON PFD.....CHECK	
	Monitor auto callout
•At 40 ft RA	
	FLARE mode.....CHECK ENGAGED / ANNOUNCE
•At 30 ft RA	
	THRUST IDLE mode.....CHECK
•At 10 ft RA : autocallout "RETARD"	
BOTH THRUST LEVERS..... IDLE	
LATERAL GUIDANCE.....MONITOR	
•At TOUCH DOWN	
	ROLL OUT mode..... CHECK ENGAGED / ANNOUNCE
BOTH THRUST LEVERS..... REV MAX OR REV IDLE	
	GRND SPLRS.....CHECK / ANNOUNCE
	REVERSERS.....CHECK / ANNOUNCE
DIRECTIONAL CONTROL.....MONITOR / ENSURE	DIRECTIONAL CONTROL.....MONITOR
BRAKES..... AS RQRD	
	DECELERATION..... CHECK / ANNOUNCE
•At 70 kt :	
	SEVENTY KNOTS.....ANNOUNCE
BOTH THRUST LEVERS.....REV IDLE	
•Before 20 kt:	
AUTO BRK.....DISENGAGE	
•End of roll out	
BOTH THRUST LEVERS..... FWD IDLE	
AP.....OFF	

GO AROUND

PF	PM
THRUST LEVERS..... TOGA	
ROTATION..... PERFORM	
GO-AROUND.....ANNOUNCE	FLAPS lever..... SELECT AS RQRD
FMA.....ANNOUNCE	
	POSITIVE CLIMB..... ANNOUNCE
L/G UP.....ORDER	L/G.....SELECT UP

Continued from the previous page

PF	PM
AP ..... AS RQRD	
NAV or HDG mode ..... AS RQRD	
•AT GA THR RED ALT:	
THRUST LEVERS CL	
•AT GA ACCEL ALT:	
SPEED ..... MONITOR	
•AT F SPEED:	
FLAPS 1 ..... ORDER	FLAPS 1 ..... SELECT
•AT S SPEED:	
FLAPS 0 ..... ORDER	FLAPS 0 ..... SELECT
	GND SPLRS ..... DISARM
	EXTERIOR LIGHTS ..... SET
AFTER TAKEOFF C/L down to the line ..... COMPLETE	AFTER TAKEOFF C/L down to the line ..... COMPLETE

AFTER LANDING

PF	PM
GRND SPLRS ..... DISARM	
EXTERIOR LIGHTS ..... SET	
	RADAR ..... OFF
	PREDICTIVE WINDSHEAR ..... OFF
	ENG MODE selector ..... NORM
	FLAPS ..... RETRACT
	TCAS ..... STBY
	ATC ..... AS RQRD
	APU ..... START
	ANTI ICE ..... AS RQRD
	BRAKE TEMP ..... CHECK
AFTER LDG C/L ..... COMPLETE	AFTER LDG C/L ..... COMPLETE

PARKING

PF	PM
ACCU PRESS ..... CHECK	ANTI-ICE ..... OFF
PARKING BRAKE handle ..... ON	APU BLEED pb-sw ..... ON
ALL ENG MASTERS ..... OFF	
SLIDES ..... CHECK DISARMED	
SEAT BELTS sw ..... OFF	
	FUEL PUMPS ..... OFF
EXTERIOR LIGHTS ..... SET	ATC ..... STBY
GROUND CONTACT ..... ESTABLISH	IRS PERFORMANCE ..... CHECK
	FUEL QTY ..... CHECK
	STATUS ..... CHECK
PARKING BRK ..... AS RQRD	BRAKE FAN ..... OFF
DUs ..... DIM	DUs ..... DIM
EFB/eQRH TRANSMITTING MODE ..... CONSIDER	EFB/eQRH TRANSMITTING MODE ..... CONSIDER

Continued from the previous page

PF	PM
PARKING C/L.....COMPLETE	PARKING C/L.....COMPLETE
•If performing transit stop:	**•If performing transit stop:**
eQRH My Aircraft/ FLIGHT.....CLEAR	eQRH My Aircraft/ FLIGHT.....CLEAR

SECURING THE AIRCRAFT

PF	PM
PARKING BRK.....CHECK ON	
ALL IR MODE selectors.....OFF	OXY CREW SUPPLY pb.....OFF
	EXTERIOR LIGHTS.....OFF
	MAINT BUS SW.....AS RQRD
	APU BLEED pb-sw.....OFF
	APU MASTER SW.....OFF
	EMER EXIT LT sw.....OFF
	SIGNS sw.....OFF
	EXT PWR pb.....AS RQRD
	BAT 1+2.....OFF
SECURING THE A/C C/L.....COMPLETE	SECURING THE A/C C/L.....COMPLETE
eQRH application.....CLOSE	eQRH application.....CLOSE
EFB/eQRH LAPTOPS.....SWITCH OFF	EFB/eQRH LAPTOPS.....SWITCH OFF

Landing Performance Assessment PER-A
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METHOD TO DETERMINE AIRCRAFT PERFORMANCE AT LANDING WITHOUT OR WITH A SINGLE FAILURE

Use the following method to determine the runway landing performance level, the FLAPS lever position for landing, the VAPP, and the Factored Landing Distance (FLD):

RUNWAY LANDING PERFORMANCE LEVEL - CODE
Use the Runway Condition Assessment Matrix to determine the runway landing performance level and code.

FLAPS LEVER POSITION FOR LANDING
Select the FLAPS lever position requested by the ECAM*.

* If there are no ECAM instructions, the FLAPS lever position for landing is at the flight crew's discretion.

VAPP
Determine the VAPP.

FACTORED LANDING DISTANCE (FLD)

LANDING DISTANCE **(LD)**
Determine the Landing Distance **(LD)** using the appropriate Landing Distance table.

X

MEL LANDING PENALTY FACTOR
Multiply **LD** by the landing penalty factor specified in the MEL, if any.

X

SAFETY MARGIN
Add a margin, as per airline policy. Airbus recommends a 15% margin. Under exceptional circumstances, the flight crew may disregard this margin.

⇩

FACTORED LANDING DISTANCE **(FLD)**
FLD = LD x MEL LANDING PENALTY FACTOR x SAFETY MARGIN

METHOD TO DETERMINE AIRCRAFT PERFORMANCE AT LANDING WITH SEVERAL FAILURES

Use the following method to determine the runway landing performance level, the FLAPS lever position for landing, the VAPP, and the Factored Landing Distance (FLD):

RUNWAY LANDING PERFORMANCE LEVEL - CODE

Use the Runway Condition Assessment Matrix to determine the runway landing performance level and code.

FLAPS LEVER POSITION FOR LANDING

Select the FLAPS lever position requested by the ECAM*.

* If there are no ECAM instructions, the FLAPS lever position for landing is at the flight crew's discretion.

VAPP

Determine the VAPP using the highest ΔVREF.

FACTORED LANDING DISTANCE (FLD)

DETERMINE THE LANDING DISTANCE (LDG DIST) OF THE FAILURE THAT HAS THE MOST EFFECT

1 - Identify the failure with the longest REF DIST
2 - Calculate the landing distance **(LDG DIST)** for this failure taking into account all corrections.

+

DETERMINE THE EFFECT OF THE OTHER FAILURE (ΔLD)

1 - Identify the [REF DIST with failure] of the other failure (no correction)**
2 - Calculate **ΔLD** = [REF DIST with failure] - [REF DIST without failure].

** Use the FLAPS lever position selected for landing. If not available, use FLAPS 3.

⇩

DETERMINE THE LANDING DISTANCE WITH SEVERAL FAILURES (LD)

LD = LDG DIST + ΔLD

X

MEL LANDING PENALTY FACTOR

Multiply **LD** by the landing penalty factor specified in the MEL, if any.

X

SAFETY MARGIN

Add a margin, as per airline policy.
Airbus recommends a 15% margin. Under exceptional circumstances, the flight crew may disregard this margin.

⇩

FACTORED LANDING DISTANCE (FLD)

FLD = LD x MEL LANDING PENALTY FACTOR x SAFETY MARGIN

RUNWAY CONDITION ASSESSMENT MATRIX FOR LANDING

Runway Surface Conditions		Observations on Deceleration and Directional Control	Related Landing Performance		Maximum Crosswind for Landing (Gust included)
Runway State or / and Runway Contaminant	ESF(1) or PIREP(2)		Code	Level	
Dry	**-**	-	**6**	**DRY**	38 kt
Damp **Wet** Up to 3 mm (1/8") of water **Slush** Up to 3 mm (1/8") **Dry snow** Up to 3 mm (1/8") **Wet snow** Up to 3 mm (1/8") **Frost**	**Good**	Braking deceleration is normal for the wheel braking effort applied. Directional control is normal.	**5**	**GOOD**	38 kt
Compacted snow OAT at or below -15 °C	**Good to Medium**	Braking deceleration and controllability is between Good and Medium.	**4**	**GOOD TO MEDIUM**	29 kt
Dry snow More than 3 mm (1/8"), up to 100 mm (4") **Wet snow** More than 3 mm (1/8"), up to 30 mm (6/5") **Compacted snow** OAT above -15 °C **Dry snow over compacted snow** **Wet snow over compacted snow** **Slippery when wet**	**Medium**	Braking deceleration is noticeably reduced for the wheel braking effort applied. Directional control may be reduced.	**3**	**MEDIUM**	25 kt
Water More than 3 mm (1/8"), up to 12.7 mm (1/2") **Slush** More than 3 mm (1/8"), up to 12.7 mm (1/2")	**Medium to Poor**	Braking deceleration and controllability is between Medium and Poor. Potential for hydroplaning exists.	**2**	**MEDIUM TO POOR**	20 kt
Ice (cold & dry)	**Poor**	Braking deceleration is significantly reduced for the wheel braking effort applied. Directional control may be significantly reduced.	**1**	**POOR**	15 kt
Wet ice **Water on top of Compacted Snow** **Dry Snow or Wet Snow over ice**	**Nil**	Braking deceleration is minimal to non-existant for the wheel braking effort applied. Directional control may be uncertain.	**-**	**-**	-

(1) ESF: Estimated Surface Friction

(2) PIREP: Pilot Report of Braking Action

Note: Refer for FCOM LIM-AFS chapter for Automatic Approach, Landing and Rollout limitations.

VAPP DETERMINATION WITHOUT FAILURE

The FMGS performs the following VAPP computation for landing in normal configuration (CONF 3 or CONF FULL).

VAPP = VLS + APPR COR

VLS												
Weight (T)		40	42	46	50	54	58	62	66	70	74	78
VLS CONF FULL (kt) (=VREF)	CG < 25%	108	111	116	121	125	130	134	138	142	146	150
	CG ≥ 25%	106	109	114	119	123	128	132	136	140	144	148
VLS CONF 3 (kt)	CG < 25%	112	115	119	125	129	135	139	143	147	151	155
	CG ≥ 25%	110	113	117	123	127	133	137	141	145	149	153

+

APPRoach **COR**rection

APPR COR = Highest of
- 5kt in case of A/THR ON
- 5kt in case of Ice Accretion in CONF FULL
  10kt in case of Ice Accretion in CONF 3
- 1/3 Headwind component
  (excluding gust - maximum 15 kt)

⇩

VAPP

VAPP = VLS + APPR COR

⇩

LANDING DISTANCE CORRECTION (**SPD** column in Landing Distance table)

- If APPR COR is equal to 1/3 Headwind component: **No SPD**
- If APPR COR is greater than 1/3 Headwind component: **SPD = APPR COR**

CAUTION	Any extra pilot approach speed increment must be added to VAPP, and must be taken into account in SPD column for Landing Distance computation.

Note: In case of strong or gusty crosswind greater than 20kt, VAPP should be at least VLS + 5 kt. The 5kt increment above VLS may be increased up to 15kt at the flight crew's discretion.

VAPP DETERMINATION WITH FAILURE

VAPP = VREF + ΔVREF + APPR COR

VREF												
Weight (T)		40	42	46	50	54	58	62	66	70	74	78
VREF = VLS CONF FULL (kt)	CG < 25%	108	111	116	121	125	130	134	138	142	146	150
	CG ≥ 25%	106	109	114	119	123	128	132	136	140	144	148

+

ΔVREF
Refer to the applicable Landing Distance table

+

APPRoach CORrection	
ΔVREF ⩽ 10 kt	APPR COR= Highest of • 5kt in case of A/THR ON • 5kt in case of Ice Accretion in CONF FULL 10kt in case of Ice Accretion in CONF 3 • 1/3 Headwind component (excluding gust - maximum 15 kt) *APPR COR + ΔVREF must be limited to 20kt*
10 kt < ΔVREF < 20 kt	APPR COR = 1/3 Headwind component (excluding gust - maximum 10 kt) *APPR COR + ΔVREF must be limited to 20kt*
ΔVREF ⩾ 20 kt	APPR COR = 0kt *N/A displayed in the SPD column of the Landing Distance table*

⇩

VAPP
VAPP = VREF + ΔVREF + APPR COR

⇩

LANDING DISTANCE CORRECTION (**SPD** column in Landing Distance table)
• If APPR COR is equal to 1/3 Headwind component: **No SPD**
• If APPR COR is greater than 1/3 Headwind component: **SPD = APPR COR**

CAUTION	Any extra pilot approach speed increment must be added to VAPP, and must be taken into account in SPD column for Landing Distance computation. If N/A is displayed in the SPD column of the Landing Distance table, do not add any extra pilot approach speed increment.

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LANDING DISTANCE WITHOUT FAILURE

The Reference Distance (REF DIST) considers : Sea Level (SL), ISA, no wind, no slope, no engine reverse thrust, manual landing (1) , VAPP=VLS without APPR COR.

6 - DRY										
Corrections on Landing Distance (ft)			WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
Braking Mode	LDG CONF	REF DIST (ft) for 66T	Per 1T above 66T	Per 5kt	Per 1000ft above SL	Per 5kt TW	Per 10°C above ISA	Per 1% Down Slope	Per Thrust Reverser Operative	If OVW PROC applied
Maximum MANUAL	FULL	**3 570**	+ 140	+ 230	+ 130	+ 390	+ 110	+ 60	- 50	+ 2 540
	3	**3 830**	+ 150	+ 250	+ 140	+ 390	+ 130	+ 70	- 50	+ 3 080
AUTOBRAKE MED	FULL	**4 490**	+ 100	+ 300	+ 150	+ 420	+ 140	+ 30	0	+ 750
	3	**4 760**	+ 110	+ 310	+ 160	+ 440	+ 150	+ 30	0	+ 800
AUTOBRAKE LOW	FULL	**6 400**	+ 140	+ 450	+ 230	+ 660	+ 220	+ 80	- 30	+ 850
	3	**6 840**	+ 150	+ 470	+ 250	+ 680	+ 230	+ 80	- 30	+ 930

(1) Automatic Landing correction: if CONF FULL, add 920ft. If CONF 3, add 970ft.
(2) Weight correction: if CONF FULL, subtract 30ft per 1T below 66T. If CONF 3, subtract 40ft per 1T below 66T.

5 - GOOD										
Corrections on Landing Distance (ft)			WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
Braking Mode	LDG CONF	REF DIST (ft) for 66T	Per 1T above 66T	Per 5kt	Per 1000ft above SL	Per 5kt TW	Per 10°C above ISA	Per 1% Down Slope	Per Thrust Reverser Operative	If OVW PROC applied
Maximum MANUAL	FULL	**4 620**	+ 140	+ 350	+ 220	+ 670	+ 200	+ 150	- 120	+ 2 030
	3	**5 080**	+ 170	+ 390	+ 250	+ 730	+ 230	+ 190	- 150	+ 2 440
AUTOBRAKE MED	FULL	**4 790**	+ 140	+ 360	+ 230	+ 680	+ 200	+ 150	- 50	+ 730
	3	**5 270**	+ 160	+ 410	+ 260	+ 740	+ 230	+ 190	- 110	+ 780
AUTOBRAKE LOW	FULL	**6 400**	+ 140	+ 450	+ 230	+ 660	+ 220	+ 80	- 30	+ 850
	3	**6 840**	+ 150	+ 470	+ 250	+ 680	+ 230	+ 80	- 30	+ 910

(1) Automatic Landing correction: if CONF FULL, add 1 020ft. If CONF 3, add 1 060ft.
(2) Weight correction: if CONF FULL, subtract 60ft per 1T below 66T. If CONF 3, subtract 70ft per 1T below 66T.

4 - GOOD TO MEDIUM										
Corrections on Landing Distance (ft)			WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
Braking Mode	LDG CONF	REF DIST (ft) for 66T	Per 1T above 66T	Per 5kt	Per 1000ft above SL	Per 5kt TW	Per 10°C above ISA	Per 1% Down Slope	Per Thrust Reverser Operative	If OVW PROC applied
Maximum MANUAL	FULL	**5 440**	+ 120	+ 300	+ 190	+ 610	+ 190	+ 230	- 220	+ 2 260
	3	**5 910**	+ 130	+ 330	+ 210	+ 630	+ 210	+ 270	- 270	+ 2 740
AUTOBRAKE MED	FULL	**5 620**	+ 110	+ 300	+ 200	+ 620	+ 190	+ 240	- 300	+ 670
	3	**6 140**	+ 120	+ 320	+ 220	+ 650	+ 200	+ 280	- 370	+ 690
AUTOBRAKE LOW	FULL	**6 420**	+ 140	+ 450	+ 230	+ 670	+ 220	+ 160	- 70	+ 850
	3	**6 880**	+ 140	+ 460	+ 250	+ 700	+ 230	+ 190	- 100	+ 930

(1) Automatic Landing correction: if CONF FULL, add 1 010ft. If CONF 3, add 1 050ft.
(2) Weight correction: subtract 60ft per 1T below 66T.

3 - MEDIUM										
Corrections on Landing Distance (ft)			WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
Braking Mode	LDG CONF	REF DIST (ft) for 66T	Per 1T above 66T	Per 5kt	Per 1000ft above SL	Per 5kt TW	Per 10°C above ISA	Per 1% Down Slope	Per Thrust Reverser Operative	If OVW PROC applied
Maximum MANUAL	FULL	**6 090**	+ 130	+ 330	+ 220	+ 710	+ 210	+ 340	- 300	+ 2 150
	3	**6 670**	+ 140	+ 360	+ 240	+ 750	+ 240	+ 390	- 360	+ 2 610
AUTOBRAKE MED	FULL	**6 280**	+ 120	+ 320	+ 230	+ 730	+ 210	+ 340	- 400	+ 680
	3	**6 890**	+ 130	+ 360	+ 250	+ 760	+ 240	+ 410	- 500	+ 710
AUTOBRAKE LOW	FULL	**6 740**	+ 140	+ 420	+ 240	+ 760	+ 230	+ 290	- 200	+ 810
	3	**7 270**	+ 150	+ 450	+ 260	+ 790	+ 260	+ 350	- 260	+ 880

(1) Automatic Landing correction: if CONF FULL, add 1 040ft. If CONF 3, add 1 070ft.
(2) Weight correction: subtract 70ft per 1T below 66T.

2 - MEDIUM TO POOR										
Corrections on Landing Distance (ft)			WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
Braking Mode	LDG CONF	REF DIST (ft) for 66T	Per 1T above 66T	Per 5kt	Per 1000ft above SL	Per 5kt TW	Per 10°C above ISA	Per 1% Down Slope	Per Thrust Reverser Operative	If OVW PROC applied
Maximum MANUAL	FULL	**6 820**	+ 220	+ 510	+ 370	+ 1 170	+ 350	+ 500	- 340	+ 1 560
	3	**7 790**	+ 260	+ 600	+ 440	+ 1 340	+ 420	+ 660	- 430	+ 1 860
AUTOBRAKE MED	FULL	**6 910**	+ 220	+ 520	+ 370	+ 1 190	+ 350	+ 510	- 440	+ 780
	3	**7 840**	+ 260	+ 630	+ 450	+ 1 370	+ 410	+ 680	- 570	+ 920
AUTOBRAKE LOW	FULL	**7 000**	+ 220	+ 530	+ 370	+ 1 200	+ 340	+ 520	- 220	+ 800
	3	**7 930**	+ 260	+ 630	+ 450	+ 1 370	+ 410	+ 690	- 420	+ 950

(1) Automatic Landing correction: if CONF FULL, add 1 130ft. If CONF 3, add 1 210ft.
(2) Weight correction: if CONF FULL, subtract 90ft per 1T below 66T. If CONF 3, subtract 110ft per 1T below 66T.

1 - POOR										
Corrections on Landing Distance (ft)			WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
Braking Mode	LDG CONF	REF DIST (ft) for 66T	Per 1T above 66T	Per 5kt	Per 1000ft above SL	Per 5kt TW	Per 10°C above ISA	Per 1% Down Slope	Per Thrust Reverser Operative	If OVW PROC applied
Maximum MANUAL	FULL	**11 320**	+ 220	+ 480	+ 430	+ 1 830	+ 520	+ 3 000	- 1 050	+ 1 560
	3	**13 000**	+ 250	+ 550	+ 500	+ 1 960	+ 610	+ 3 720	- 1 410	+ 1 860
AUTOBRAKE MED	FULL	**11 510**	+ 220	+ 460	+ 430	+ 1 860	+ 510	+ 3 020	- 1 260	+ 790
	3	**13 180**	+ 250	+ 550	+ 500	+ 1 980	+ 590	+ 3 760	- 1 690	+ 920
AUTOBRAKE LOW	FULL	**11 590**	+ 220	+ 460	+ 440	+ 1 860	+ 510	+ 3 030	- 1 270	+ 800
	3	**13 260**	+ 250	+ 550	+ 500	+ 1 990	+ 590	+ 3 770	- 1 700	+ 950

(1) Automatic Landing correction: if CONF FULL, add 1 150ft. If CONF 3, add 1 180ft.
(2) Weight correction: if CONF FULL, subtract 110ft per 1T below 66T. If CONF 3, subtract 130ft per 1T below 66T.

LANDING DISTANCE WITH FAILURE

ANTI ICE SYSTEM

The Reference Distance (REF DIST) considers : Sea Level (SL), ISA, no wind, no slope, no engine reverse thrust, manual landing[1], maximum manual braking, VAPP = VREF+ΔVREF without APPR COR.

6 - DRY

Corrections on Landing Distance (ft)				WGT [2]	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (ft) for 66T	Per 1T above 66T	Per 5kt	Per 1000ft above SL	Per 5kt TW	Per 10°C above ISA	Per 1% Down Slope	Per Thrust Reverser Operative	If OVW PROC applied
WING ANTI ICE SYS FAULT with Ice Accretion	FULL	10	**4 110**	+ 130	+ 250	+ 140	+ 390	+ 140	+ 70	- 60	+ 1 970
	3	16	**4 480**	+ 140	+ 250	+ 150	+ 390	+ 150	+ 80	- 70	+ 2 520

(1) Automatic Landing correction: add 430ft - (2) Weight correction: subtract 40ft per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 3 570ft

5 - GOOD

Corrections on Landing Distance (ft)				WGT [2]	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (ft) for 66T	Per 1T above 66T	Per 5kt	Per 1000ft above SL	Per 5kt TW	Per 10°C above ISA	Per 1% Down Slope	Per Thrust Reverser Operative	If OVW PROC applied
WING ANTI ICE SYS FAULT with Ice Accretion	FULL	10	**5 370**	+ 150	+ 360	+ 260	+ 710	+ 230	+ 180	- 150	+ 1 480
	3	16	**5 960**	+ 170	+ 400	+ 300	+ 760	+ 270	+ 220	- 200	+ 1 860

(1) Automatic Landing correction: add 450ft - (2) Weight correction: subtract 70ft per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 4 620ft

4 - GOOD TO MEDIUM

Corrections on Landing Distance (ft)				WGT [2]	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (ft) for 66T	Per 1T above 66T	Per 5kt	Per 1000ft above SL	Per 5kt TW	Per 10°C above ISA	Per 1% Down Slope	Per Thrust Reverser Operative	If OVW PROC applied
WING ANTI ICE SYS FAULT with Ice Accretion	FULL	10	**6 120**	+ 110	+ 300	+ 220	+ 630	+ 210	+ 250	- 270	+ 1 720
	3	16	**6 700**	+ 120	+ 320	+ 240	+ 650	+ 230	+ 290	- 320	+ 2 190

(1) Automatic Landing correction: add 450ft - (2) Weight correction: subtract 60ft per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 5 440ft

Continued from the previous page

ANTI ICE SYSTEM

The Reference Distance (REF DIST) considers : Sea Level (SL), ISA, no wind, no slope, no engine reverse thrust, manual landing[1], maximum manual braking, VAPP = VREF+ΔVREF without APPR COR.

3 - MEDIUM

Corrections on Landing Distance (ft)				WGT [2]	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	**FLAPS LEVER for LDG**	**ΔVREF**	**REF DIST (ft) for 66T**	**Per 1T above 66T**	**Per 5kt**	**Per 1000ft above SL**	**Per 5kt TW**	**Per 10°C above ISA**	**Per 1% Down Slope**	**Per Thrust Reverser Operative**	**If OVW PROC applied**
WING ANTI ICE SYS FAULT with Ice Accretion	FULL	10	**6 830**	+ 130	+ 330	+ 250	+ 740	+ 240	+ 360	- 360	+ 1 620
	3	16	**7 530**	+ 130	+ 360	+ 280	+ 760	+ 270	+ 410	- 440	+ 2 070

(1) Automatic Landing correction: add 450ft - (2) Weight correction: subtract 70ft per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 6 090ft

2 - MEDIUM TO POOR

Corrections on Landing Distance (ft)				WGT [2]	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	**FLAPS LEVER for LDG**	**ΔVREF**	**REF DIST (ft) for 66T**	**Per 1T above 66T**	**Per 5kt**	**Per 1000ft above SL**	**Per 5kt TW**	**Per 10°C above ISA**	**Per 1% Down Slope**	**Per Thrust Reverser Operative**	**If OVW PROC applied**
WING ANTI ICE SYS FAULT with Ice Accretion	FULL	10	**7 890**	+ 230	+ 490	+ 410	+ 1 200	+ 400	+ 560	- 430	+ 1 170
	3	16	**9 130**	+ 260	+ 550	+ 490	+ 1 360	+ 470	+ 740	- 570	+ 1 420

(1) Automatic Landing correction: add 500ft - (2) Weight correction: subtract 110ft per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 6 820ft

1 - POOR

Corrections on Landing Distance (ft)				WGT [2]	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	**FLAPS LEVER for LDG**	**ΔVREF**	**REF DIST (ft) for 66T**	**Per 1T above 66T**	**Per 5kt**	**Per 1000ft above SL**	**Per 5kt TW**	**Per 10°C above ISA**	**Per 1% Down Slope**	**Per Thrust Reverser Operative**	**If OVW PROC applied**
WING ANTI ICE SYS FAULT with Ice Accretion	FULL	10	**12 360**	+ 230	+ 460	+ 470	+ 1 870	+ 570	+ 3 040	- 1 500	+ 1 170
	3	16	**14 300**	+ 250	+ 520	+ 550	+ 1 990	+ 650	+ 3 750	- 1 900	+ 1 420

(1) Automatic Landing correction: add 490ft - (2) Weight correction: subtract 120ft per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 11 320ft

BLEED SYSTEM

The Reference Distance (REF DIST) considers : Sea Level (SL), ISA, no wind, no slope, no engine reverse thrust, manual landing[1], maximum manual braking, VAPP = VREF+ΔVREF without APPR COR.

6 - DRY

Corrections on Landing Distance (ft)				WGT [2]	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	**FLAPS LEVER for LDG**	**ΔVREF**	**REF DIST (ft) for 66T**	**Per 1T above 66T**	**Per 5kt**	**Per 1000ft above SL**	**Per 5kt TW**	**Per 10°C above ISA**	**Per 1% Down Slope**	**Per Thrust Reverser Operative**	**If OVW PROC applied**
The following ECAM alerts with Ice Accretion: -DUAL BLEED FAULT -WING or ENG BLEED LEAK -X BLEED FAULT -ENG BLEED LO TEMP	FULL	10	**4 110**	+ 130	+ 250	+ 140	+ 390	+ 140	+ 70	- 60	+ 1 970
	3	16	**4 480**	+ 140	+ 250	+ 150	+ 390	+ 150	+ 80	- 70	+ 2 520

(1) Automatic Landing correction: add 430ft - (2) Weight correction: subtract 40ft per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 3 570ft

5 - GOOD

Corrections on Landing Distance (ft)				WGT [2]	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	**FLAPS LEVER for LDG**	**ΔVREF**	**REF DIST (ft) for 66T**	**Per 1T above 66T**	**Per 5kt**	**Per 1000ft above SL**	**Per 5kt TW**	**Per 10°C above ISA**	**Per 1% Down Slope**	**Per Thrust Reverser Operative**	**If OVW PROC applied**
The following ECAM alerts with Ice Accretion: -DUAL BLEED FAULT -WING or ENG BLEED LEAK -X BLEED FAULT -ENG BLEED LO TEMP	FULL	10	**5 370**	+ 150	+ 360	+ 260	+ 710	+ 230	+ 180	- 150	+ 1 480
	3	16	**5 960**	+ 170	+ 400	+ 300	+ 760	+ 270	+ 220	- 200	+ 1 860

(1) Automatic Landing correction: add 450ft - (2) Weight correction: subtract 70ft per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 4 620ft

4 - GOOD TO MEDIUM

Corrections on Landing Distance (ft)				WGT [2]	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	**FLAPS LEVER for LDG**	**ΔVREF**	**REF DIST (ft) for 66T**	**Per 1T above 66T**	**Per 5kt**	**Per 1000ft above SL**	**Per 5kt TW**	**Per 10°C above ISA**	**Per 1% Down Slope**	**Per Thrust Reverser Operative**	**If OVW PROC applied**
The following ECAM alerts with Ice Accretion: -DUAL BLEED FAULT -WING or ENG BLEED LEAK -X BLEED FAULT -ENG BLEED LO TEMP	FULL	10	**6 120**	+ 110	+ 300	+ 220	+ 630	+ 210	+ 250	- 270	+ 1 720
	3	16	**6 700**	+ 120	+ 320	+ 240	+ 650	+ 230	+ 290	- 320	+ 2 190

(1) Automatic Landing correction: add 450ft - (2) Weight correction: subtract 60ft per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 5 440ft

Continued from the previous page

BLEED SYSTEM

The Reference Distance (REF DIST) considers : Sea Level (SL), ISA, no wind, no slope, no engine reverse thrust, manual landing[1], maximum manual braking, VAPP = VREF+ΔVREF without APPR COR.

3 - MEDIUM

Corrections on Landing Distance (ft)				WGT [2]	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	**FLAPS LEVER for LDG**	**ΔVREF**	**REF DIST (ft) for 66T**	**Per 1T above 66T**	**Per 5kt**	**Per 1000ft above SL**	**Per 5kt TW**	**Per 10°C above ISA**	**Per 1% Down Slope**	**Per Thrust Reverser Operative**	**If OVW PROC applied**
The following ECAM alerts with Ice Accretion: -DUAL BLEED FAULT -WING or ENG BLEED LEAK -X BLEED FAULT -ENG BLEED LO TEMP	FULL	10	**6 830**	+ 130	+ 330	+ 250	+ 740	+ 240	+ 360	- 360	+ 1 620
	3	16	**7 530**	+ 130	+ 360	+ 280	+ 760	+ 270	+ 410	- 440	+ 2 070

(1) Automatic Landing correction: add 450ft - (2) Weight correction: subtract 70ft per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 6 090ft

2 - MEDIUM TO POOR

Corrections on Landing Distance (ft)				WGT [2]	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	**FLAPS LEVER for LDG**	**ΔVREF**	**REF DIST (ft) for 66T**	**Per 1T above 66T**	**Per 5kt**	**Per 1000ft above SL**	**Per 5kt TW**	**Per 10°C above ISA**	**Per 1% Down Slope**	**Per Thrust Reverser Operative**	**If OVW PROC applied**
The following ECAM alerts with Ice Accretion: -DUAL BLEED FAULT -WING or ENG BLEED LEAK -X BLEED FAULT -ENG BLEED LO TEMP	FULL	10	**7 890**	+ 230	+ 490	+ 410	+ 1 200	+ 400	+ 560	- 430	+ 1 170
	3	16	**9 130**	+ 260	+ 550	+ 490	+ 1 360	+ 470	+ 740	- 570	+ 1 420

(1) Automatic Landing correction: add 500ft - (2) Weight correction: subtract 110ft per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 6 820ft

1 - POOR

Corrections on Landing Distance (ft)				WGT [2]	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	**FLAPS LEVER for LDG**	**ΔVREF**	**REF DIST (ft) for 66T**	**Per 1T above 66T**	**Per 5kt**	**Per 1000ft above SL**	**Per 5kt TW**	**Per 10°C above ISA**	**Per 1% Down Slope**	**Per Thrust Reverser Operative**	**If OVW PROC applied**
The following ECAM alerts with Ice Accretion: -DUAL BLEED FAULT -WING or ENG BLEED LEAK -X BLEED FAULT -ENG BLEED LO TEMP	FULL	10	**12 360**	+ 230	+ 460	+ 470	+ 1 870	+ 570	+ 3 040	- 1 500	+ 1 170
	3	16	**14 300**	+ 250	+ 520	+ 550	+ 1 990	+ 650	+ 3 750	- 1 900	+ 1 420

(1) Automatic Landing correction: add 490ft - (2) Weight correction: subtract 120ft per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 11 320ft

BRAKE SYSTEM

The Reference Distance (REF DIST) considers : Sea Level (SL), ISA, no wind, no slope, no engine reverse thrust, manual landing[1], maximum manual braking, VAPP = VREF+ΔVREF without APPR COR.

6 - DRY											
Corrections on Landing Distance (ft)				WGT [2]	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (ft) for 66T	Per 1T above 66T	Per 5kt	Per 1000ft above SL	Per 5kt TW	Per 10°C above ISA	Per 1% Down Slope	Per Thrust Reverser Operative	If OVW PROC applied
ANTISKID FAULT	FULL	0	**6 140**	+ 210	+ 310	+ 210	+ 630	+ 200	+ 260	- 220	+ 2 150
	3	6	**6 770**	+ 230	+ 350	+ 230	+ 660	+ 230	+ 300	- 260	+ 2 580
ONE BRK RELEASED	FULL	0	**4 240**	+ 150	+ 290	+ 160	+ 460	+ 160	+ 110	- 80	+ 2 350
	3	6	**4 670**	+ 170	+ 300	+ 170	+ 480	+ 160	+ 120	- 100	+ 2 860
TWO BRK RELEASED	FULL	0	**5 270**	+ 200	+ 330	+ 200	+ 610	+ 200	+ 220	- 160	+ 2 180
	3	6	**5 860**	+ 220	+ 350	+ 220	+ 630	+ 210	+ 260	- 190	+ 2 640
ALTN L(R) RELEASED (if NORM BRK FAULT)	FULL	0	**5 280**	+ 200	+ 320	+ 200	+ 610	+ 190	+ 220	- 200	+ 2 180
	3	6	**5 870**	+ 220	+ 350	+ 220	+ 630	+ 210	+ 260	- 240	+ 2 640
ALTN L(R) RELEASED (if G SYS LO PR)	FULL	0	**5 710**	+ 190	+ 360	+ 210	+ 620	+ 200	+ 260	- 260	+ 2 260
	3	6	**6 180**	+ 220	+ 380	+ 230	+ 640	+ 220	+ 300	- 300	+ 2 740
NORM BRK FAULT	FULL	0	**3 860**	+ 130	+ 220	+ 120	+ 370	+ 120	+ 70	- 60	+ 2 530
	3	6	**4 140**	+ 140	+ 230	+ 140	+ 400	+ 120	+ 70	- 80	+ 3 000
NORM + ALTN FAULT	FULL	0	**6 140**	+ 210	+ 310	+ 210	+ 630	+ 200	+ 260	- 220	+ 2 150
	3	6	**6 770**	+ 230	+ 350	+ 230	+ 660	+ 230	+ 300	- 260	+ 2 580

(1) Automatic Landing correction: add 570ft - (2) Weight correction: subtract 40ft per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 3 570ft

Continued from the previous page

BRAKE SYSTEM

The Reference Distance (REF DIST) considers : Sea Level (SL), ISA, no wind, no slope, no engine reverse thrust, manual landing[1], maximum manual braking, VAPP = VREF+ΔVREF without APPR COR.

5 - GOOD											
Corrections on Landing Distance (ft)				WGT [2]	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (ft) for 66T	Per 1T above 66T	Per 5kt	Per 1000ft above SL	Per 5kt TW	Per 10°C above ISA	Per 1% Down Slope	Per Thrust Reverser Operative	If OVW PROC applied
ANTISKID FAULT	FULL	0	**6 140**	+ 200	+ 340	+ 230	+ 710	+ 220	+ 280	- 220	+ 1 950
	3	6	**6 780**	+ 220	+ 380	+ 270	+ 770	+ 250	+ 330	- 270	+ 2 320
ONE BRK RELEASED	FULL	0	**5 440**	+ 170	+ 400	+ 270	+ 810	+ 240	+ 240	- 190	+ 1 720
	3	6	**6 100**	+ 190	+ 450	+ 310	+ 900	+ 290	+ 300	- 250	+ 2 040
TWO BRK RELEASED	FULL	0	**6 520**	+ 200	+ 450	+ 330	+ 1 010	+ 300	+ 410	- 330	+ 1 520
	3	6	**7 410**	+ 230	+ 520	+ 380	+ 1 130	+ 370	+ 530	- 420	+ 1 780
ALTN L(R) RELEASED (if NORM BRK FAULT)	FULL	0	**6 920**	+ 210	+ 460	+ 350	+ 1 100	+ 330	+ 480	- 380	+ 1 450
	3	6	**7 900**	+ 240	+ 540	+ 410	+ 1 230	+ 390	+ 630	- 500	+ 1 690
ALTN L(R) RELEASED (if G SYS LO PR)	FULL	0	**7 760**	+ 240	+ 570	+ 400	+ 1 230	+ 390	+ 680	- 530	+ 1 430
	3	6	**8 810**	+ 270	+ 660	+ 480	+ 1 380	+ 460	+ 870	- 690	+ 1 690
NORM BRK FAULT	FULL	0	**5 100**	+ 150	+ 380	+ 250	+ 730	+ 230	+ 200	- 160	+ 1 810
	3	6	**5 700**	+ 170	+ 430	+ 290	+ 820	+ 260	+ 240	- 200	+ 2 140
NORM + ALTN FAULT	FULL	0	**6 140**	+ 200	+ 340	+ 230	+ 710	+ 220	+ 280	- 220	+ 1 950
	3	6	**6 780**	+ 220	+ 380	+ 270	+ 770	+ 250	+ 330	- 270	+ 2 320

(1) Automatic Landing correction: add 630ft - (2) Weight correction: subtract 70ft per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 4 620ft

Continued from the previous page

BRAKE SYSTEM

The Reference Distance (REF DIST) considers : Sea Level (SL), ISA, no wind, no slope, no engine reverse thrust, manual landing[1], maximum manual braking, VAPP = VREF+ΔVREF without APPR COR.

4 - GOOD TO MEDIUM											
Corrections on Landing Distance (ft)				WGT [2]	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (ft) for 66T	Per 1T above 66T	Per 5kt	Per 1000ft above SL	Per 5kt TW	Per 10°C above ISA	Per 1% Down Slope	Per Thrust Reverser Operative	If OVW PROC applied
ANTISKID FAULT	FULL	0	**6 200**	+ 190	+ 310	+ 210	+ 640	+ 210	+ 270	- 290	+ 2 150
	3	6	**6 830**	+ 220	+ 340	+ 230	+ 680	+ 220	+ 310	- 350	+ 2 580
ONE BRK RELEASED	FULL	0	**6 450**	+ 130	+ 340	+ 240	+ 750	+ 230	+ 370	- 360	+ 2 000
	3	6	**7 140**	+ 130	+ 370	+ 260	+ 790	+ 260	+ 440	- 430	+ 2 410
TWO BRK RELEASED	FULL	0	**7 890**	+ 160	+ 390	+ 300	+ 1 010	+ 300	+ 720	- 590	+ 1 780
	3	6	**8 850**	+ 170	+ 440	+ 340	+ 1 070	+ 350	+ 860	- 730	+ 2 140
ALTN L(R) RELEASED (if NORM BRK FAULT)	FULL	0	**7 890**	+ 160	+ 390	+ 300	+ 1 010	+ 300	+ 720	- 590	+ 1 780
	3	6	**8 850**	+ 170	+ 440	+ 340	+ 1 070	+ 350	+ 860	- 730	+ 2 140
ALTN L(R) RELEASED (if G SYS LO PR)	FULL	0	**8 800**	+ 170	+ 480	+ 340	+ 1 090	+ 360	+ 940	- 680	+ 1 760
	3	6	**9 800**	+ 190	+ 530	+ 380	+ 1 150	+ 400	+ 1 100	- 850	+ 2 140
NORM BRK FAULT	FULL	0	**5 610**	+ 110	+ 300	+ 200	+ 620	+ 190	+ 240	- 240	+ 2 160
	3	6	**6 150**	+ 110	+ 330	+ 220	+ 640	+ 210	+ 280	- 290	+ 2 600
NORM + ALTN FAULT	FULL	0	**6 200**	+ 190	+ 310	+ 210	+ 640	+ 210	+ 270	- 290	+ 2 150
	3	6	**6 830**	+ 220	+ 340	+ 230	+ 680	+ 220	+ 310	- 350	+ 2 580

(1) Automatic Landing correction: add 620ft - (2) Weight correction: subtract 60ft per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 5 440ft

Continued from the previous page

BRAKE SYSTEM

The Reference Distance (REF DIST) considers : Sea Level (SL), ISA, no wind, no slope, no engine reverse thrust, manual landing[1], maximum manual braking, VAPP = VREF+ΔVREF without APPR COR.

3 - MEDIUM											
Corrections on Landing Distance (ft)				WGT [2]	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (ft) for 66T	Per 1T above 66T	Per 5kt	Per 1000ft above SL	Per 5kt TW	Per 10°C above ISA	Per 1% Down Slope	Per Thrust Reverser Operative	If OVW PROC applied
ANTISKID FAULT	FULL	0	**6 780**	+ 130	+ 330	+ 240	+ 740	+ 230	+ 370	- 370	+ 2 040
	3	6	**7 500**	+ 140	+ 370	+ 260	+ 780	+ 260	+ 430	- 450	+ 2 460
ONE BRK RELEASED	FULL	0	**7 230**	+ 140	+ 370	+ 270	+ 880	+ 270	+ 540	- 480	+ 1 870
	3	6	**8 060**	+ 150	+ 410	+ 300	+ 930	+ 310	+ 640	- 590	+ 2 250
TWO BRK RELEASED	FULL	0	**8 840**	+ 170	+ 420	+ 340	+ 1 190	+ 360	+ 1 050	- 780	+ 1 650
	3	6	**10 000**	+ 190	+ 480	+ 390	+ 1 270	+ 420	+ 1 270	- 960	+ 1 980
ALTN L(R) RELEASED (if NORM BRK FAULT)	FULL	0	**8 840**	+ 170	+ 420	+ 340	+ 1 190	+ 360	+ 1 050	- 780	+ 1 650
	3	6	**10 000**	+ 190	+ 480	+ 390	+ 1 270	+ 420	+ 1 270	- 960	+ 1 980
ALTN L(R) RELEASED (if G SYS LO PR)	FULL	0	**9 910**	+ 190	+ 510	+ 390	+ 1 290	+ 410	+ 1 370	- 860	+ 1 630
	3	6	**11 130**	+ 210	+ 580	+ 430	+ 1 370	+ 480	+ 1 630	- 1 090	+ 1 990
NORM BRK FAULT	FULL	0	**6 270**	+ 120	+ 330	+ 230	+ 720	+ 230	+ 340	- 330	+ 2 030
	3	6	**6 930**	+ 130	+ 360	+ 250	+ 760	+ 250	+ 400	- 400	+ 2 450
NORM + ALTN FAULT	FULL	0	**6 780**	+ 130	+ 330	+ 240	+ 740	+ 230	+ 370	- 370	+ 2 040
	3	6	**7 500**	+ 140	+ 370	+ 260	+ 780	+ 260	+ 430	- 450	+ 2 460

(1) Automatic Landing correction: add 620ft - (2) Weight correction: subtract 70ft per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 6 090ft

Continued from the previous page

BRAKE SYSTEM

The Reference Distance (REF DIST) considers : Sea Level (SL), ISA, no wind, no slope, no engine reverse thrust, manual landing[1], maximum manual braking, VAPP = VREF+ΔVREF without APPR COR.

2 - MEDIUM TO POOR											
Corrections on Landing Distance (ft)				WGT [2]	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (ft) for 66T	Per 1T above 66T	Per 5kt	Per 1000ft above SL	Per 5kt TW	Per 10°C above ISA	Per 1% Down Slope	Per Thrust Reverser Operative	If OVW PROC applied
ANTISKID FAULT	FULL	0	**7 300**	+ 220	+ 510	+ 380	+ 1 190	+ 370	+ 540	- 410	+ 1 400
	3	6	**8 440**	+ 260	+ 600	+ 460	+ 1 350	+ 450	+ 720	- 520	+ 1 660
ONE BRK RELEASED	FULL	0	**8 050**	+ 250	+ 540	+ 420	+ 1 360	+ 410	+ 750	- 530	+ 1 260
	3	6	**9 360**	+ 290	+ 640	+ 510	+ 1 570	+ 510	+ 1 010	- 680	+ 1 460
TWO BRK RELEASED	FULL	0	**9 600**	+ 280	+ 560	+ 490	+ 1 680	+ 490	+ 1 310	- 830	+ 1 130
	3	6	**11 230**	+ 340	+ 680	+ 600	+ 1 940	+ 620	+ 1 740	- 1 070	+ 1 280
ALTN L(R) RELEASED (if NORM BRK FAULT)	FULL	0	**9 600**	+ 280	+ 560	+ 490	+ 1 680	+ 490	+ 1 310	- 830	+ 1 130
	3	6	**11 230**	+ 340	+ 680	+ 600	+ 1 940	+ 620	+ 1 740	- 1 070	+ 1 280
ALTN L(R) RELEASED (if G SYS LO PR)	FULL	0	**10 830**	+ 330	+ 700	+ 570	+ 1 900	+ 600	+ 1 790	- 960	+ 1 130
	3	6	**12 670**	+ 390	+ 820	+ 700	+ 2 230	+ 740	+ 2 390	- 1 270	+ 1 300
NORM BRK FAULT	FULL	0	**7 110**	+ 220	+ 510	+ 380	+ 1 180	+ 360	+ 520	- 380	+ 1 370
	3	6	**8 210**	+ 250	+ 600	+ 450	+ 1 350	+ 450	+ 700	- 480	+ 1 620
NORM + ALTN FAULT	FULL	0	**7 300**	+ 220	+ 510	+ 380	+ 1 190	+ 370	+ 540	- 410	+ 1 400
	3	6	**8 440**	+ 260	+ 600	+ 460	+ 1 350	+ 450	+ 720	- 520	+ 1 660

(1) Automatic Landing correction: add 670ft - (2) Weight correction: subtract 90ft per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 6 820ft

Continued from the previous page

BRAKE SYSTEM

The Reference Distance (REF DIST) considers : Sea Level (SL), ISA, no wind, no slope, no engine reverse thrust, manual landing[1], maximum manual braking, VAPP = VREF+ΔVREF without APPR COR.

1 - POOR											
Corrections on Landing Distance (ft)				WGT [2]	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (ft) for 66T	Per 1T above 66T	Per 5kt	Per 1000ft above SL	Per 5kt TW	Per 10°C above ISA	Per 1% Down Slope	Per Thrust Reverser Operative	If OVW PROC applied
ANTISKID FAULT	FULL	0	**11 790**	+ 220	+ 470	+ 450	+ 1 860	+ 530	+ 3 040	- 1 460	+ 1 410
	3	6	**13 630**	+ 240	+ 550	+ 520	+ 1 990	+ 630	+ 3 770	- 1 850	+ 1 660
ONE BRK RELEASED	FULL	0	Landing Distance greater than 18 000 ft for all conditions								
	3	6	Landing Distance greater than 18 000 ft for all conditions								
TWO BRK RELEASED	FULL	0	Landing Distance greater than 18 000 ft for all conditions								
	3	6	Landing Distance greater than 18 000 ft for all conditions								
ALTN L(R) RELEASED (if NORM BRK FAULT)	FULL	0	Landing Distance greater than 18 000 ft for all conditions								
	3	6	Landing Distance greater than 18 000 ft for all conditions								
ALTN L(R) RELEASED (if G SYS LO PR)	FULL	0	Landing Distance greater than 18 000 ft for all conditions								
	3	6	Landing Distance greater than 18 000 ft for all conditions								
NORM BRK FAULT	FULL	0	**11 600**	+ 220	+ 480	+ 440	+ 1 850	+ 530	+ 3 020	- 1 440	+ 1 370
	3	6	**13 410**	+ 240	+ 550	+ 520	+ 1 980	+ 620	+ 3 750	- 1 820	+ 1 620
NORM + ALTN FAULT	FULL	0	**11 790**	+ 220	+ 470	+ 450	+ 1 860	+ 530	+ 3 040	- 1 460	+ 1 410
	3	6	**13 630**	+ 240	+ 550	+ 520	+ 1 990	+ 630	+ 3 770	- 1 850	+ 1 660

(1) Automatic Landing correction: add 660ft - (2) Weight correction: subtract 120ft per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 11 320ft

ELECTRICAL SYSTEM

The Reference Distance (REF DIST) considers : Sea Level (SL), ISA, no wind, no slope, no engine reverse thrust, manual landing[1], maximum manual braking, VAPP = VREF+ΔVREF without APPR COR.

6 - DRY											
Corrections on Landing Distance (ft)				WGT [2]	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (ft) for 66T	Per 1T above 66T	Per 5kt	Per 1000ft above SL	Per 5kt TW	Per 10°C above ISA	Per 1% Down Slope	Per Thrust Reverser Operative	If OVW PROC applied
AC BUS 1 FAULT	FULL	0	**3 730**	+ 130	+ 230	+ 140	+ 400	+ 110	+ 60	- 50	+ 2 540
	3	6	**4 040**	+ 140	+ 260	+ 140	+ 400	+ 140	+ 70	- 70	+ 3 030
DC BUS 2 FAULT	FULL	0	**4 090**	+ 120	+ 290	+ 140	+ 380	+ 130	+ 90	- 90	+ 2 670
	3	6	**4 310**	+ 130	+ 280	+ 150	+ 400	+ 140	+ 90	- 100	+ 3 180
DC BUS 1+2 FAULT	FULL	0	**6 690**	+ 240	+ 370	+ 230	+ 690	+ 220	+ 340	INOP	+ 2 410
	3	6	**7 340**	+ 270	+ 410	+ 250	+ 720	+ 240	+ 390	INOP	+ 2 880
DC ESS BUS FAULT with no Ice Accretion	FULL	0	**3 730**	+ 130	+ 240	+ 130	+ 400	+ 120	+ 70	- 60	+ 2 540
	3	6	**4 040**	+ 140	+ 260	+ 150	+ 400	+ 140	+ 80	- 70	+ 3 030
DC ESS BUS FAULT with Ice Accretion	FULL	10	**4 140**	+ 140	+ 250	+ 150	+ 390	+ 140	+ 80	- 70	+ 2 000
	3	16	**4 510**	+ 150	+ 260	+ 160	+ 400	+ 150	+ 90	- 80	+ 2 560
DC ESS SHED BUS with Ice Accretion	FULL	10	**4 110**	+ 130	+ 250	+ 140	+ 390	+ 140	+ 70	- 60	+ 1 970
	3	16	**4 480**	+ 140	+ 250	+ 150	+ 390	+ 150	+ 80	- 70	+ 2 520
DC EMER CONFIG (Calculated with 140kt min)	FULL	0 / 140kt	**6 970**	+ 200	+ 360	+ 240	+ 700	+ 220	+ 350	INOP	+ 2 180
	3	6 / 140kt	**7 370**	+ 270	+ 400	+ 250	+ 730	+ 240	+ 390	INOP	+ 2 870
ELEC EMER CONFIG (Calculated with 140kt min)	3	10 / 140kt	**7 470**	+ 260	+ 390	+ 250	+ 700	+ 250	+ 360	INOP	+ 2 680

(1) Automatic Landing correction: add 590ft - (2) Weight correction: subtract 10ft per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 3 570ft

Continued from the previous page

ELECTRICAL SYSTEM

The Reference Distance (REF DIST) considers : Sea Level (SL), ISA, no wind, no slope, no engine reverse thrust, manual landing[1], maximum manual braking, VAPP = VREF+ΔVREF without APPR COR.

5 - GOOD											
Corrections on Landing Distance (ft)				WGT [2]	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (ft) for 66T	Per 1T above 66T	Per 5kt	Per 1000ft above SL	Per 5kt TW	Per 10°C above ISA	Per 1% Down Slope	Per Thrust Reverser Operative	If OVW PROC applied
AC BUS 1 FAULT	FULL	0	**4 940**	+ 150	+ 390	+ 240	+ 710	+ 220	+ 180	- 150	+ 1 900
	3	6	**5 490**	+ 170	+ 440	+ 280	+ 780	+ 260	+ 220	- 190	+ 2 250
DC BUS 2 FAULT	FULL	0	**5 720**	+ 180	+ 550	+ 300	+ 860	+ 280	+ 310	- 260	+ 1 900
	3	6	**6 280**	+ 200	+ 600	+ 350	+ 940	+ 320	+ 370	- 320	+ 2 280
DC BUS 1+2 FAULT	FULL	0	**6 960**	+ 240	+ 520	+ 320	+ 930	+ 290	+ 470	INOP	+ 1 940
	3	6	**7 660**	+ 260	+ 580	+ 360	+ 1 010	+ 330	+ 540	INOP	+ 2 340
DC ESS BUS FAULT with no Ice Accretion	FULL	0	**4 960**	+ 150	+ 400	+ 250	+ 730	+ 230	+ 190	- 160	+ 1 870
	3	6	**5 530**	+ 170	+ 450	+ 290	+ 810	+ 260	+ 230	- 210	+ 2 220
DC ESS BUS FAULT with Ice Accretion	FULL	10	**5 580**	+ 160	+ 400	+ 280	+ 770	+ 250	+ 210	- 200	+ 1 460
	3	16	**6 210**	+ 180	+ 440	+ 330	+ 820	+ 290	+ 260	- 260	+ 1 830
DC ESS SHED BUS with Ice Accretion	FULL	10	**5 370**	+ 150	+ 360	+ 260	+ 710	+ 230	+ 180	- 150	+ 1 480
	3	16	**5 960**	+ 170	+ 400	+ 300	+ 760	+ 270	+ 220	- 200	+ 1 860
DC EMER CONFIG (Calculated with 140kt min)	FULL	0 / 140kt	**7 310**	+ 180	+ 520	+ 340	+ 960	+ 300	+ 490	INOP	+ 1 730
	3	6 / 140kt	**7 690**	+ 260	+ 580	+ 360	+ 1 010	+ 330	+ 540	INOP	+ 2 330
ELEC EMER CONFIG (Calculated with 140kt min)	3	10 / 140kt	**7 840**	+ 250	+ 560	+ 360	+ 970	+ 350	+ 510	INOP	+ 2 180

(1) Automatic Landing correction: add 620ft - (2) Weight correction: subtract 10ft per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 4 620ft

Continued from the previous page

ELECTRICAL SYSTEM

The Reference Distance (REF DIST) considers : Sea Level (SL), ISA, no wind, no slope, no engine reverse thrust, manual landing[1], maximum manual braking, VAPP = VREF+ΔVREF without APPR COR.

4 - GOOD TO MEDIUM											
Corrections on Landing Distance (ft)				WGT [2]	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (ft) for 66T	Per 1T above 66T	Per 5kt	Per 1000ft above SL	Per 5kt TW	Per 10°C above ISA	Per 1% Down Slope	Per Thrust Reverser Operative	If OVW PROC applied
AC BUS 1 FAULT	FULL	0	**5 770**	+ 110	+ 320	+ 210	+ 630	+ 200	+ 260	- 250	+ 2 170
	3	6	**6 320**	+ 120	+ 350	+ 230	+ 660	+ 220	+ 300	- 310	+ 2 610
DC BUS 2 FAULT	FULL	0	**6 700**	+ 130	+ 450	+ 250	+ 720	+ 240	+ 420	- 470	+ 2 200
	3	6	**7 230**	+ 130	+ 470	+ 270	+ 750	+ 260	+ 460	- 540	+ 2 670
DC BUS 1+2 FAULT	FULL	0	**7 350**	+ 160	+ 460	+ 260	+ 760	+ 250	+ 490	INOP	+ 2 200
	3	6	**7 980**	+ 180	+ 490	+ 290	+ 790	+ 270	+ 540	INOP	+ 2 690
DC ESS BUS FAULT with no Ice Accretion	FULL	0	**5 880**	+ 110	+ 330	+ 210	+ 660	+ 200	+ 290	- 370	+ 2 160
	3	6	**6 450**	+ 110	+ 360	+ 240	+ 690	+ 220	+ 330	- 440	+ 2 600
DC ESS BUS FAULT with Ice Accretion	FULL	10	**6 440**	+ 110	+ 340	+ 230	+ 680	+ 220	+ 310	- 420	+ 1 710
	3	16	**7 060**	+ 120	+ 350	+ 260	+ 700	+ 230	+ 350	- 500	+ 2 190
DC ESS SHED BUS with Ice Accretion	FULL	10	**6 120**	+ 110	+ 300	+ 220	+ 630	+ 210	+ 250	- 270	+ 1 720
	3	16	**6 700**	+ 120	+ 320	+ 240	+ 650	+ 230	+ 290	- 320	+ 2 190
DC EMER CONFIG (Calculated with 140kt min)	FULL	0 / 140kt	**7 690**	+ 120	+ 450	+ 280	+ 780	+ 260	+ 500	INOP	+ 1 990
	3	6 / 140kt	**8 010**	+ 180	+ 490	+ 290	+ 800	+ 270	+ 530	INOP	+ 2 690
ELEC EMER CONFIG (Calculated with 140kt min)	3	10 / 140kt	**8 100**	+ 180	+ 460	+ 290	+ 770	+ 280	+ 490	INOP	+ 2 500

(1) Automatic Landing correction: add 610ft - (2) Weight correction: subtract 10ft per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 5 440ft

Continued from the previous page

ELECTRICAL SYSTEM

The Reference Distance (REF DIST) considers : Sea Level (SL), ISA, no wind, no slope, no engine reverse thrust, manual landing(1), maximum manual braking, VAPP = VREF+ΔVREF without APPR COR.

3 - MEDIUM											
Corrections on Landing Distance (ft)				WGT (2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (ft) for 66T	Per 1T above 66T	Per 5kt	Per 1000ft above SL	Per 5kt TW	Per 10°C above ISA	Per 1% Down Slope	Per Thrust Reverser Operative	If OVW PROC applied
AC BUS 1 FAULT	FULL	0	**6 460**	+ 130	+ 360	+ 240	+ 730	+ 240	+ 370	- 340	+ 2 040
	3	6	**7 140**	+ 130	+ 380	+ 260	+ 780	+ 260	+ 440	- 410	+ 2 460
DC BUS 2 FAULT	FULL	0	**7 620**	+ 140	+ 500	+ 290	+ 860	+ 280	+ 610	- 670	+ 2 060
	3	6	**8 290**	+ 150	+ 530	+ 320	+ 890	+ 310	+ 680	- 780	+ 2 510
DC BUS 1+2 FAULT	FULL	0	**8 270**	+ 140	+ 500	+ 310	+ 910	+ 280	+ 710	INOP	+ 2 070
	3	6	**9 040**	+ 150	+ 540	+ 330	+ 950	+ 310	+ 790	INOP	+ 2 540
DC ESS BUS FAULT with no Ice Accretion	FULL	0	**6 660**	+ 120	+ 370	+ 250	+ 790	+ 230	+ 430	- 550	+ 2 020
	3	6	**7 370**	+ 130	+ 400	+ 280	+ 830	+ 250	+ 500	- 670	+ 2 440
DC ESS BUS FAULT with Ice Accretion	FULL	10	**7 280**	+ 130	+ 360	+ 270	+ 810	+ 250	+ 450	- 610	+ 1 610
	3	16	**8 040**	+ 140	+ 390	+ 300	+ 830	+ 280	+ 520	- 740	+ 2 050
DC ESS SHED BUS with Ice Accretion	FULL	10	**6 830**	+ 130	+ 330	+ 250	+ 740	+ 240	+ 360	- 360	+ 1 620
	3	16	**7 530**	+ 130	+ 360	+ 280	+ 760	+ 270	+ 410	- 440	+ 2 070
DC EMER CONFIG (Calculated with 140kt min)	FULL	0 / 140kt	**8 630**	+ 90	+ 500	+ 320	+ 920	+ 300	+ 730	INOP	+ 1 870
	3	6 / 140kt	**9 060**	+ 150	+ 550	+ 330	+ 950	+ 320	+ 780	INOP	+ 2 530
ELEC EMER CONFIG (Calculated with 140kt min)	3	10 / 140kt	**9 040**	+ 160	+ 520	+ 330	+ 900	+ 330	+ 690	INOP	+ 2 370

(1) Automatic Landing correction: add 630ft - (2) Weight correction: subtract 10ft per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 6 090ft

Continued from the previous page

ELECTRICAL SYSTEM

The Reference Distance (REF DIST) considers : Sea Level (SL), ISA, no wind, no slope, no engine reverse thrust, manual landing[1], maximum manual braking, VAPP = VREF+ΔVREF without APPR COR.

2 - MEDIUM TO POOR											
Corrections on Landing Distance (ft)				WGT [2]	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (ft) for 66T	Per 1T above 66T	Per 5kt	Per 1000ft above SL	Per 5kt TW	Per 10°C above ISA	Per 1% Down Slope	Per Thrust Reverser Operative	If OVW PROC applied
AC BUS 1 FAULT	FULL	0	**7 370**	+ 230	+ 550	+ 400	+ 1 240	+ 380	+ 580	- 390	+ 1 380
	3	6	**8 530**	+ 270	+ 640	+ 480	+ 1 410	+ 470	+ 780	- 510	+ 1 630
DC BUS 2 FAULT	FULL	0	**8 960**	+ 290	+ 800	+ 540	+ 1 620	+ 510	+ 1 080	- 800	+ 1 350
	3	6	**10 330**	+ 330	+ 920	+ 650	+ 1 870	+ 620	+ 1 440	- 990	+ 1 600
DC BUS 1+2 FAULT	FULL	0	**9 380**	+ 290	+ 830	+ 590	+ 1 750	+ 520	+ 1 230	INOP	+ 1 320
	3	6	**10 870**	+ 330	+ 970	+ 710	+ 2 040	+ 640	+ 1 660	INOP	+ 1 570
DC ESS BUS FAULT with no Ice Accretion	FULL	0	**7 620**	+ 240	+ 590	+ 440	+ 1 360	+ 390	+ 680	- 630	+ 1 290
	3	6	**8 860**	+ 270	+ 700	+ 540	+ 1 590	+ 490	+ 920	- 800	+ 1 500
DC ESS BUS FAULT with Ice Accretion	FULL	10	**8 510**	+ 240	+ 550	+ 470	+ 1 390	+ 420	+ 730	- 730	+ 1 100
	3	16	**9 900**	+ 280	+ 650	+ 580	+ 1 610	+ 520	+ 990	- 980	+ 1 330
DC ESS SHED BUS with Ice Accretion	FULL	10	**7 890**	+ 230	+ 490	+ 410	+ 1 200	+ 400	+ 560	- 430	+ 1 170
	3	16	**9 130**	+ 260	+ 550	+ 490	+ 1 360	+ 470	+ 740	- 570	+ 1 420
DC EMER CONFIG (Calculated with 140kt min)	FULL	0 / 140kt	**9 910**	+ 220	+ 800	+ 600	+ 1 770	+ 550	+ 1 280	INOP	+ 1 220
	3	6 / 140kt	**10 900**	+ 330	+ 970	+ 710	+ 2 040	+ 640	+ 1 660	INOP	+ 1 570
ELEC EMER CONFIG (Calculated with 140kt min)	3	10 / 140kt	**10 830**	+ 330	+ 840	+ 630	+ 1 760	+ 630	+ 1 380	INOP	+ 1 620

(1) Automatic Landing correction: add 710ft - (2) Weight correction: subtract 20ft per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 6 820ft

Continued from the previous page

ELECTRICAL SYSTEM

The Reference Distance (REF DIST) considers : Sea Level (SL), ISA, no wind, no slope, no engine reverse thrust, manual landing[1], maximum manual braking, VAPP = VREF+ΔVREF without APPR COR.

1 - POOR											
Corrections on Landing Distance (ft)				WGT [2]	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (ft) for 66T	Per 1T above 66T	Per 5kt	Per 1000ft above SL	Per 5kt TW	Per 10°C above ISA	Per 1% Down Slope	Per Thrust Reverser Operative	If OVW PROC applied
AC BUS 1 FAULT	FULL	0	**12 080**	+ 230	+ 510	+ 460	+ 1 890	+ 560	+ 3 280	- 1 190	+ 1 390
	3	6	**13 960**	+ 250	+ 590	+ 540	+ 2 020	+ 660	+ 4 070	- 1 600	+ 1 630
DC BUS 2 FAULT	FULL	0	Landing Distance greater than 18 000 ft for all conditions								
	3	6	Landing Distance greater than 18 000 ft for all conditions								
DC BUS 1+2 FAULT	FULL	0	Landing Distance greater than 18 000 ft for all conditions								
	3	6	Landing Distance greater than 18 000 ft for all conditions								
DC ESS BUS FAULT with no Ice Accretion	FULL	0	Landing Distance greater than 18 000 ft for all conditions								
	3	6	Landing Distance greater than 18 000 ft for all conditions								
DC ESS BUS FAULT with Ice Accretion	FULL	10	Landing Distance greater than 18 000 ft for all conditions								
	3	16	Landing Distance greater than 18 000 ft for all conditions								
DC ESS SHED BUS with Ice Accretion	FULL	10	**12 360**	+ 230	+ 460	+ 470	+ 1 870	+ 570	+ 3 040	- 1 500	+ 1 170
	3	16	**14 300**	+ 250	+ 520	+ 550	+ 1 990	+ 650	+ 3 750	- 1 900	+ 1 420
DC EMER CONFIG (Calculated with 140kt min)	FULL	0 / 140kt	Landing Distance greater than 18 000 ft for all conditions								
	3	6 / 140kt	Landing Distance greater than 18 000 ft for all conditions								
ELEC EMER CONFIG (Calculated with 140kt min)	3	10 / 140kt	Landing Distance greater than 18 000 ft for all conditions								

(1) Automatic Landing correction: add 700ft - (2) Weight correction: subtract 10ft per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 11 320ft

ENGINE SYSTEM

The Reference Distance (REF DIST) considers : Sea Level (SL), ISA, no wind, no slope, no engine reverse thrust, manual landing[1], maximum manual braking, VAPP = VREF+ΔVREF without APPR COR.

6 - DRY

Corrections on Landing Distance (ft)				WGT [2]	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (ft) for 66T	Per 1T above 66T	Per 5kt	Per 1000ft above SL	Per 5kt TW	Per 10°C above ISA	Per 1% Down Slope	Per Thrust Reverser Operative	If OVW PROC applied
REV UNLOCK with buffet	3	10	**4 120**	+ 140	+ 260	+ 140	+ 390	+ 150	+ 80	- 60	+ 2 750
	1	40	**5 590**	+ 160	N/A	+ 180	+ 400	+ 170	+ 90	- 80	+ 2 590
SHUTDOWN with ENG FIRE pushbutton pushed and Ice Accretion	FULL	10	**4 040**	+ 130	+ 240	+ 140	+ 380	+ 140	+ 70	- 60	+ 1 950
	3	16	**4 400**	+ 140	+ 250	+ 150	+ 390	+ 150	+ 80	- 60	+ 2 480

(1) Automatic Landing correction: add 450ft - (2) Weight correction: subtract 40ft per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 3 570ft

5 - GOOD

Corrections on Landing Distance (ft)				WGT [2]	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (ft) for 66T	Per 1T above 66T	Per 5kt	Per 1000ft above SL	Per 5kt TW	Per 10°C above ISA	Per 1% Down Slope	Per Thrust Reverser Operative	If OVW PROC applied
REV UNLOCK with buffet	3	10	**5 430**	+ 160	+ 400	+ 270	+ 740	+ 250	+ 190	- 170	+ 2 010
	1	40	**7 410**	+ 200	N/A	+ 370	+ 820	+ 330	+ 250	- 290	+ 1 880
SHUTDOWN with ENG FIRE pushbutton pushed and Ice Accretion	FULL	10	**5 230**	+ 150	+ 360	+ 250	+ 690	+ 230	+ 170	- 150	+ 1 450
	3	16	**5 800**	+ 170	+ 390	+ 290	+ 740	+ 260	+ 200	- 190	+ 1 800

(1) Automatic Landing correction: add 460ft - (2) Weight correction: subtract 70ft per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 4 620ft

4 - GOOD TO MEDIUM

Corrections on Landing Distance (ft)				WGT [2]	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (ft) for 66T	Per 1T above 66T	Per 5kt	Per 1000ft above SL	Per 5kt TW	Per 10°C above ISA	Per 1% Down Slope	Per Thrust Reverser Operative	If OVW PROC applied
REV UNLOCK with buffet	3	10	**6 170**	+ 120	+ 320	+ 220	+ 630	+ 210	+ 260	- 300	+ 2 370
	1	40	**7 870**	+ 130	N/A	+ 280	+ 660	+ 260	+ 290	- 390	+ 2 280
SHUTDOWN with ENG FIRE pushbutton pushed and Ice Accretion	FULL	10	**5 940**	+ 110	+ 300	+ 210	+ 610	+ 200	+ 240	- 260	+ 1 680
	3	16	**6 500**	+ 120	+ 320	+ 240	+ 630	+ 220	+ 270	- 320	+ 2 140

(1) Automatic Landing correction: add 460ft - (2) Weight correction: subtract 60ft per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 5 440ft

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ENGINE SYSTEM

The Reference Distance (REF DIST) considers : Sea Level (SL), ISA, no wind, no slope, no engine reverse thrust, manual landing[1], maximum manual braking, VAPP = VREF+ΔVREF without APPR COR.

3 - MEDIUM

Corrections on Landing Distance (ft)				WGT [2]	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	**FLAPS LEVER for LDG**	**ΔVREF**	**REF DIST (ft) for 66T**	**Per 1T above 66T**	**Per 5kt**	**Per 1000ft above SL**	**Per 5kt TW**	**Per 10°C above ISA**	**Per 1% Down Slope**	**Per Thrust Reverser Operative**	**If OVW PROC applied**
REV UNLOCK with buffet	3	10	**6 900**	+ 130	+ 360	+ 260	+ 730	+ 250	+ 380	- 410	+ 2 220
	1	40	**8 810**	+ 150	N/A	+ 320	+ 770	+ 300	+ 420	- 540	+ 2 160
SHUTDOWN with ENG FIRE pushbutton pushed and Ice Accretion	FULL	10	**6 590**	+ 130	+ 330	+ 240	+ 710	+ 230	+ 330	- 360	+ 1 590
	3	16	**7 260**	+ 140	+ 350	+ 270	+ 730	+ 260	+ 380	- 440	+ 2 010

(1) Automatic Landing correction: add 460ft - (2) Weight correction: subtract 70ft per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 6 090ft

2 - MEDIUM TO POOR

Corrections on Landing Distance (ft)				WGT [2]	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	**FLAPS LEVER for LDG**	**ΔVREF**	**REF DIST (ft) for 66T**	**Per 1T above 66T**	**Per 5kt**	**Per 1000ft above SL**	**Per 5kt TW**	**Per 10°C above ISA**	**Per 1% Down Slope**	**Per Thrust Reverser Operative**	**If OVW PROC applied**
REV UNLOCK with buffet	3	10	**8 160**	+ 260	+ 570	+ 450	+ 1 270	+ 420	+ 640	- 510	+ 1 440
	1	40	**11 170**	+ 300	N/A	+ 580	+ 1 400	+ 540	+ 840	- 860	+ 1 500
SHUTDOWN with ENG FIRE pushbutton pushed and Ice Accretion	FULL	10	**7 560**	+ 230	+ 470	+ 390	+ 1 140	+ 360	+ 510	- 430	+ 1 120
	3	16	**8 690**	+ 260	+ 550	+ 470	+ 1 270	+ 440	+ 670	- 570	+ 1 340

(1) Automatic Landing correction: add 490ft - (2) Weight correction: subtract 110ft per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 6 820ft

1 - POOR

Corrections on Landing Distance (ft)				WGT [2]	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	**FLAPS LEVER for LDG**	**ΔVREF**	**REF DIST (ft) for 66T**	**Per 1T above 66T**	**Per 5kt**	**Per 1000ft above SL**	**Per 5kt TW**	**Per 10°C above ISA**	**Per 1% Down Slope**	**Per Thrust Reverser Operative**	**If OVW PROC applied**
REV UNLOCK with buffet	3	10	**12 570**	+ 270	+ 540	+ 510	+ 1 770	+ 530	+ 2 720	- 1 770	+ 1 440
	1	40	**15 900**	+ 320	N/A	+ 630	+ 1 880	+ 650	+ 3 070	- 2 240	+ 1 500
SHUTDOWN with ENG FIRE pushbutton pushed and Ice Accretion	FULL	10	**11 380**	+ 250	+ 460	+ 450	+ 1 670	+ 470	+ 2 210	- 1 420	+ 1 120
	3	16	**13 090**	+ 280	+ 520	+ 530	+ 1 770	+ 550	+ 2 710	- 1 830	+ 1 340

(1) Automatic Landing correction: add 490ft - (2) Weight correction: subtract 130ft per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 11 320ft

FLIGHT CONTROLS SYSTEM

The Reference Distance (REF DIST) considers : Sea Level (SL), ISA, no wind, no slope, no engine reverse thrust, manual landing[1], maximum manual braking, VAPP = VREF+ΔVREF without APPR COR.

6 - DRY											
Corrections on Landing Distance (ft)				WGT [2]	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (ft) for 66T	Per 1T above 66T	Per 5kt	Per 1000ft above SL	Per 5kt TW	Per 10°C above ISA	Per 1% Down Slope	Per Thrust Reverser Operative	If OVW PROC applied
ONE SPLR FAULT with no SPOILER runaway suspected	FULL	0	**3 830**	+ 130	+ 240	+ 130	+ 380	+ 110	+ 70	- 60	+ 2 560
	3	6	**4 070**	+ 140	+ 250	+ 150	+ 400	+ 130	+ 70	- 70	+ 3 060
ONE SPLR FAULT with SPOILER runaway suspected	3	10	**4 240**	+ 140	+ 260	+ 150	+ 400	+ 150	+ 80	- 70	+ 2 860
TWO SPLR FAULT/ GND SPLR 1+2(3+4) FAULT	FULL	0	**3 970**	+ 130	+ 270	+ 130	+ 380	+ 130	+ 80	- 70	+ 2 680
	3	6	**4 200**	+ 140	+ 260	+ 150	+ 410	+ 130	+ 80	- 80	+ 3 190
THREE SPLR FAULT	FULL	0	**4 130**	+ 120	+ 290	+ 140	+ 380	+ 130	+ 90	- 90	+ 2 700
	3	6	**4 360**	+ 130	+ 290	+ 150	+ 410	+ 140	+ 90	- 90	+ 3 210
ALL SPLR FAULT	FULL	0	**4 530**	+ 120	+ 390	+ 160	+ 420	+ 150	+ 130	- 130	+ 2 850
	3	6	**4 730**	+ 120	+ 370	+ 160	+ 430	+ 160	+ 130	- 130	+ 3 360
GND SPLR FAULT	FULL	0	**4 530**	+ 120	+ 390	+ 160	+ 420	+ 150	+ 130	- 130	+ 2 850
	3	6	**4 730**	+ 120	+ 370	+ 160	+ 430	+ 160	+ 130	- 130	+ 3 360
SEC 1 or SEC 3 FAULT	FULL	0	**3 840**	+ 130	+ 240	+ 130	+ 390	+ 110	+ 70	- 60	+ 2 620
	3	6	**4 100**	+ 140	+ 260	+ 150	+ 400	+ 130	+ 80	- 70	+ 3 110
SEC 2 FAULT	FULL	0	**3 730**	+ 130	+ 230	+ 140	+ 400	+ 110	+ 60	- 50	+ 2 540
	3	6	**4 040**	+ 140	+ 260	+ 140	+ 400	+ 140	+ 70	- 60	+ 3 030
SEC 2+3 FAULT	FULL	0	**4 090**	+ 120	+ 290	+ 130	+ 380	+ 130	+ 90	- 80	+ 2 670
	3	6	**4 310**	+ 130	+ 280	+ 150	+ 400	+ 140	+ 90	- 90	+ 3 180
SEC 1+3 FAULT	FULL	0	**4 300**	+ 120	+ 330	+ 140	+ 400	+ 140	+ 110	- 110	+ 2 720
	3	6	**4 520**	+ 120	+ 320	+ 150	+ 410	+ 150	+ 110	- 120	+ 3 240
SEC 1+2 FAULT	FULL	0	**3 930**	+ 130	+ 260	+ 130	+ 380	+ 120	+ 80	- 70	+ 2 680
	3	6	**4 190**	+ 140	+ 260	+ 150	+ 410	+ 130	+ 80	- 80	+ 3 180
RUDDER JAM	FULL	0	**4 170**	+ 170	+ 330	+ 190	+ 470	+ 160	+ 110	- 60	+ 2 180
	3	6	**4 660**	+ 190	+ 360	+ 220	+ 500	+ 180	+ 130	- 80	+ 2 640
SEC 1+2+3 FAULT	3	10	**4 960**	+ 120	+ 390	+ 170	+ 440	+ 170	+ 140	INOP	+ 3 150
ALTN LAW/ DIRECT LAW/ ELAC 1+2 FAULT/ L+R ELEV FAULT/ L(R) ELEV FAULT/ STAB JAM	3	10	**4 200**	+ 140	+ 260	+ 150	+ 400	+ 140	+ 80	- 60	+ 2 790

(1) Automatic Landing correction: add 590ft - (2) Weight correction: subtract 40ft per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 3 570ft

Continued from the previous page

FLIGHT CONTROLS SYSTEM

The Reference Distance (REF DIST) considers : Sea Level (SL), ISA, no wind, no slope, no engine reverse thrust, manual landing[1], maximum manual braking, VAPP = VREF+ΔVREF without APPR COR.

5 - GOOD											
Corrections on Landing Distance (ft)				WGT [2]	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (ft) for 66T	Per 1T above 66T	Per 5kt	Per 1000ft above SL	Per 5kt TW	Per 10°C above ISA	Per 1% Down Slope	Per Thrust Reverser Operative	If OVW PROC applied
ONE SPLR FAULT with no SPOILER runaway suspected	FULL	0	**5 120**	+ 160	+ 420	+ 250	+ 730	+ 230	+ 200	- 160	+ 1 860
	3	6	**5 650**	+ 170	+ 460	+ 290	+ 800	+ 270	+ 240	- 200	+ 2 230
ONE SPLR FAULT with SPOILER runaway suspected	3	10	**5 930**	+ 180	+ 460	+ 310	+ 820	+ 280	+ 260	- 210	+ 2 070
TWO SPLR FAULT/ GND SPLR 1+2(3+4) FAULT	FULL	0	**5 480**	+ 170	+ 500	+ 280	+ 810	+ 260	+ 260	- 200	+ 1 960
	3	6	**6 020**	+ 190	+ 540	+ 320	+ 880	+ 300	+ 310	- 240	+ 2 350
THREE SPLR FAULT	FULL	0	**5 810**	+ 180	+ 560	+ 310	+ 870	+ 280	+ 320	- 240	+ 1 950
	3	6	**6 370**	+ 200	+ 610	+ 350	+ 940	+ 330	+ 380	- 290	+ 2 340
ALL SPLR FAULT	FULL	0	**6 780**	+ 220	+ 840	+ 390	+ 1 070	+ 370	+ 580	- 390	+ 2 120
	3	6	**7 350**	+ 240	+ 880	+ 430	+ 1 140	+ 420	+ 640	- 450	+ 2 530
GND SPLR FAULT	FULL	0	**6 780**	+ 220	+ 840	+ 390	+ 1 070	+ 370	+ 580	- 390	+ 2 120
	3	6	**7 350**	+ 240	+ 880	+ 430	+ 1 140	+ 420	+ 640	- 450	+ 2 530
SEC 1 or SEC 3 FAULT	FULL	0	**5 180**	+ 160	+ 430	+ 260	+ 750	+ 240	+ 210	- 160	+ 1 930
	3	6	**5 760**	+ 180	+ 480	+ 300	+ 830	+ 280	+ 260	- 210	+ 2 290
SEC 2 FAULT	FULL	0	**4 940**	+ 150	+ 390	+ 240	+ 710	+ 220	+ 180	- 140	+ 1 900
	3	6	**5 490**	+ 170	+ 440	+ 280	+ 780	+ 260	+ 220	- 180	+ 2 250
SEC 2+3 FAULT	FULL	0	**5 700**	+ 180	+ 530	+ 300	+ 840	+ 270	+ 300	- 230	+ 1 920
	3	6	**6 250**	+ 190	+ 580	+ 340	+ 920	+ 310	+ 350	- 270	+ 2 300
SEC 1+3 FAULT	FULL	0	**6 170**	+ 200	+ 650	+ 340	+ 930	+ 320	+ 400	- 320	+ 1 960
	3	6	**6 760**	+ 210	+ 700	+ 380	+ 1 010	+ 360	+ 470	- 390	+ 2 360
SEC 1+2 FAULT	FULL	0	**5 400**	+ 170	+ 480	+ 280	+ 790	+ 260	+ 250	- 210	+ 1 970
	3	6	**6 000**	+ 190	+ 530	+ 320	+ 870	+ 300	+ 310	- 260	+ 2 340
RUDDER JAM	FULL	0	**5 490**	+ 190	+ 460	+ 320	+ 860	+ 270	+ 270	- 190	+ 1 520
	3	6	**6 290**	+ 210	+ 530	+ 380	+ 970	+ 330	+ 360	- 270	+ 1 780
SEC 1+2+3 FAULT	3	10	**7 850**	+ 240	+ 910	+ 470	+ 1 180	+ 440	+ 710	INOP	+ 2 330
ALTN LAW/ DIRECT LAW/ ELAC 1+2 FAULT/ L+R ELEV FAULT/ L(R) ELEV FAULT/ STAB JAM	3	10	**5 590**	+ 160	+ 410	+ 280	+ 770	+ 250	+ 210	- 170	+ 2 080

(1) Automatic Landing correction: add 710ft - (2) Weight correction: subtract 60ft per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 4 620ft

Continued from the previous page

FLIGHT CONTROLS SYSTEM

The Reference Distance (REF DIST) considers : Sea Level (SL), ISA, no wind, no slope, no engine reverse thrust, manual landing[1], maximum manual braking, VAPP = VREF+ΔVREF without APPR COR.

4 - GOOD TO MEDIUM											
Corrections on Landing Distance (ft)				WGT [2]	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (ft) for 66T	Per 1T above 66T	Per 5kt	Per 1000ft above SL	Per 5kt TW	Per 10°C above ISA	Per 1% Down Slope	Per Thrust Reverser Operative	If OVW PROC applied
ONE SPLR FAULT with no SPOILER runaway suspected	FULL	0	**5 970**	+ 110	+ 350	+ 210	+ 650	+ 210	+ 290	- 290	+ 2 140
	3	6	**6 490**	+ 120	+ 370	+ 240	+ 670	+ 230	+ 320	- 340	+ 2 600
ONE SPLR FAULT with SPOILER runaway suspected	3	10	**6 730**	+ 120	+ 370	+ 250	+ 680	+ 240	+ 330	- 360	+ 2 430
TWO SPLR FAULT/ GND SPLR 1+2(3+4) FAULT	FULL	0	**6 380**	+ 120	+ 410	+ 230	+ 680	+ 230	+ 350	- 350	+ 2 240
	3	6	**6 890**	+ 130	+ 430	+ 250	+ 710	+ 250	+ 390	- 400	+ 2 710
THREE SPLR FAULT	FULL	0	**6 740**	+ 130	+ 470	+ 250	+ 720	+ 250	+ 420	- 410	+ 2 240
	3	6	**7 270**	+ 130	+ 480	+ 270	+ 740	+ 270	+ 460	- 470	+ 2 710
ALL SPLR FAULT	FULL	0	**7 800**	+ 150	+ 680	+ 300	+ 810	+ 310	+ 670	- 620	+ 2 410
	3	6	**8 290**	+ 150	+ 670	+ 320	+ 830	+ 320	+ 690	- 680	+ 2 890
GND SPLR FAULT	FULL	0	**7 800**	+ 150	+ 680	+ 300	+ 810	+ 310	+ 670	- 620	+ 2 410
	3	6	**8 290**	+ 150	+ 670	+ 320	+ 830	+ 320	+ 690	- 680	+ 2 890
SEC 1 or SEC 3 FAULT	FULL	0	**6 040**	+ 120	+ 360	+ 220	+ 650	+ 210	+ 300	- 300	+ 2 210
	3	6	**6 610**	+ 120	+ 390	+ 240	+ 680	+ 240	+ 340	- 360	+ 2 660
SEC 2 FAULT	FULL	0	**5 770**	+ 110	+ 320	+ 210	+ 630	+ 200	+ 260	- 260	+ 2 170
	3	6	**6 320**	+ 120	+ 350	+ 230	+ 660	+ 220	+ 300	- 320	+ 2 610
SEC 2+3 FAULT	FULL	0	**6 620**	+ 130	+ 440	+ 240	+ 710	+ 240	+ 390	- 390	+ 2 200
	3	6	**7 140**	+ 130	+ 460	+ 260	+ 730	+ 260	+ 430	- 450	+ 2 670
SEC 1+3 FAULT	FULL	0	**7 140**	+ 140	+ 540	+ 270	+ 750	+ 270	+ 500	- 490	+ 2 250
	3	6	**7 680**	+ 140	+ 550	+ 290	+ 770	+ 290	+ 540	- 560	+ 2 730
SEC 1+2 FAULT	FULL	0	**6 290**	+ 120	+ 400	+ 230	+ 670	+ 230	+ 340	- 330	+ 2 250
	3	6	**6 870**	+ 130	+ 430	+ 250	+ 700	+ 250	+ 380	- 400	+ 2 700
RUDDER JAM	FULL	0	**6 340**	+ 150	+ 400	+ 290	+ 780	+ 250	+ 350	- 330	+ 1 780
	3	6	**7 150**	+ 160	+ 450	+ 330	+ 840	+ 290	+ 440	- 420	+ 2 140
SEC 1+2+3 FAULT	3	10	**8 720**	+ 150	+ 690	+ 330	+ 840	+ 340	+ 730	INOP	+ 2 690
ALTN LAW/ DIRECT LAW/ ELAC 1+2 FAULT/ L+R ELEV FAULT/ L(R) ELEV FAULT/ STAB JAM	3	10	**6 370**	+ 110	+ 330	+ 230	+ 650	+ 220	+ 280	- 300	+ 2 430

(1) Automatic Landing correction: add 700ft - (2) Weight correction: subtract 60ft per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 5 440ft

Continued from the previous page

FLIGHT CONTROLS SYSTEM

The Reference Distance (REF DIST) considers : Sea Level (SL), ISA, no wind, no slope, no engine reverse thrust, manual landing[1], maximum manual braking, VAPP = VREF+ΔVREF without APPR COR.

3 - MEDIUM											
Corrections on Landing Distance (ft)				WGT [2]	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (ft) for 66T	Per 1T above 66T	Per 5kt	Per 1000ft above SL	Per 5kt TW	Per 10°C above ISA	Per 1% Down Slope	Per Thrust Reverser Operative	If OVW PROC applied
ONE SPLR FAULT with no SPOILER runaway suspected	FULL	0	**6 690**	+ 130	+ 380	+ 250	+ 750	+ 250	+ 410	- 400	+ 2 010
	3	6	**7 330**	+ 140	+ 410	+ 270	+ 790	+ 270	+ 470	- 470	+ 2 450
ONE SPLR FAULT with SPOILER runaway suspected	3	10	**7 610**	+ 140	+ 410	+ 280	+ 800	+ 280	+ 480	- 490	+ 2 280
TWO SPLR FAULT/ GND SPLR 1+2(3+4) FAULT	FULL	0	**7 210**	+ 140	+ 450	+ 270	+ 800	+ 270	+ 510	- 480	+ 2 110
	3	6	**7 840**	+ 150	+ 480	+ 290	+ 830	+ 300	+ 570	- 560	+ 2 570
THREE SPLR FAULT	FULL	0	**7 640**	+ 150	+ 510	+ 290	+ 840	+ 290	+ 600	- 560	+ 2 110
	3	6	**8 300**	+ 150	+ 540	+ 310	+ 880	+ 320	+ 670	- 650	+ 2 560
ALL SPLR FAULT	FULL	0	**8 950**	+ 170	+ 750	+ 350	+ 960	+ 370	+ 970	- 850	+ 2 280
	3	6	**9 570**	+ 170	+ 760	+ 370	+ 980	+ 390	+ 1 020	- 940	+ 2 750
GND SPLR FAULT	FULL	0	**8 950**	+ 170	+ 750	+ 350	+ 960	+ 370	+ 970	- 850	+ 2 280
	3	6	**9 570**	+ 170	+ 760	+ 370	+ 980	+ 390	+ 1 020	- 940	+ 2 750
SEC 1 or SEC 3 FAULT	FULL	0	**6 800**	+ 130	+ 400	+ 250	+ 770	+ 250	+ 430	- 410	+ 2 090
	3	6	**7 500**	+ 140	+ 430	+ 280	+ 810	+ 270	+ 500	- 500	+ 2 510
SEC 2 FAULT	FULL	0	**6 460**	+ 130	+ 360	+ 240	+ 730	+ 240	+ 370	- 360	+ 2 040
	3	6	**7 140**	+ 130	+ 380	+ 260	+ 780	+ 260	+ 440	- 440	+ 2 460
SEC 2+3 FAULT	FULL	0	**7 480**	+ 150	+ 490	+ 280	+ 830	+ 290	+ 570	- 530	+ 2 070
	3	6	**8 130**	+ 150	+ 510	+ 310	+ 860	+ 310	+ 630	- 620	+ 2 520
SEC 1+3 FAULT	FULL	0	**8 120**	+ 160	+ 590	+ 310	+ 890	+ 320	+ 720	- 650	+ 2 120
	3	6	**8 800**	+ 160	+ 620	+ 340	+ 920	+ 350	+ 790	- 760	+ 2 580
SEC 1+2 FAULT	FULL	0	**7 110**	+ 140	+ 430	+ 270	+ 800	+ 260	+ 490	- 440	+ 2 130
	3	6	**7 820**	+ 150	+ 470	+ 290	+ 830	+ 300	+ 560	- 540	+ 2 550
RUDDER JAM	FULL	0	**7 070**	+ 170	+ 430	+ 330	+ 900	+ 290	+ 480	- 430	+ 1 650
	3	6	**8 030**	+ 190	+ 490	+ 380	+ 980	+ 340	+ 620	- 570	+ 1 980
SEC 1+2+3 FAULT	3	10	**10 060**	+ 170	+ 780	+ 390	+ 1 000	+ 410	+ 1 070	INOP	+ 2 550
ALTN LAW/ DIRECT LAW/ ELAC 1+2 FAULT/ L+R ELEV FAULT/ L(R) ELEV FAULT/ STAB JAM	3	10	**7 170**	+ 130	+ 360	+ 260	+ 770	+ 260	+ 410	- 420	+ 2 290

(1) Automatic Landing correction: add 730ft - (2) Weight correction: subtract 70ft per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 6 090ft

Continued from the previous page

FLIGHT CONTROLS SYSTEM

The Reference Distance (REF DIST) considers : Sea Level (SL), ISA, no wind, no slope, no engine reverse thrust, manual landing[1], maximum manual braking, VAPP = VREF+ΔVREF without APPR COR.

2 - MEDIUM TO POOR											
Corrections on Landing Distance (ft)				WGT [2]	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (ft) for 66T	Per 1T above 66T	Per 5kt	Per 1000ft above SL	Per 5kt TW	Per 10°C above ISA	Per 1% Down Slope	Per Thrust Reverser Operative	If OVW PROC applied
ONE SPLR FAULT with no SPOILER runaway suspected	FULL	0	**7 640**	+ 240	+ 580	+ 420	+ 1 280	+ 400	+ 640	- 450	+ 1 360
	3	6	**8 800**	+ 280	+ 680	+ 500	+ 1 460	+ 490	+ 860	- 570	+ 1 620
ONE SPLR FAULT with SPOILER runaway suspected	3	10	**9 220**	+ 280	+ 650	+ 520	+ 1 480	+ 500	+ 890	- 620	+ 1 530
TWO SPLR FAULT/ GND SPLR 1+2(3+4) FAULT	FULL	0	**8 440**	+ 280	+ 720	+ 490	+ 1 470	+ 480	+ 880	- 570	+ 1 450
	3	6	**9 700**	+ 310	+ 820	+ 580	+ 1 660	+ 580	+ 1 160	- 700	+ 1 720
THREE SPLR FAULT	FULL	0	**9 020**	+ 300	+ 810	+ 530	+ 1 580	+ 530	+ 1 080	- 670	+ 1 450
	3	6	**10 380**	+ 330	+ 910	+ 640	+ 1 800	+ 630	+ 1 420	- 820	+ 1 720
ALL SPLR FAULT	FULL	0	**11 100**	+ 370	+ 1 220	+ 720	+ 2 090	+ 740	+ 2 140	- 1 050	+ 1 620
	3	6	**12 680**	+ 400	+ 1 360	+ 840	+ 2 320	+ 880	+ 2 790	- 1 250	+ 1 910
GND SPLR FAULT	FULL	0	**11 100**	+ 370	+ 1 220	+ 720	+ 2 090	+ 740	+ 2 140	- 1 050	+ 1 620
	3	6	**12 680**	+ 400	+ 1 360	+ 840	+ 2 320	+ 880	+ 2 790	- 1 250	+ 1 910
SEC 1 or SEC 3 FAULT	FULL	0	**7 850**	+ 250	+ 630	+ 440	+ 1 340	+ 430	+ 700	- 480	+ 1 420
	3	6	**9 110**	+ 290	+ 720	+ 530	+ 1 530	+ 520	+ 950	- 610	+ 1 670
SEC 2 FAULT	FULL	0	**7 370**	+ 230	+ 550	+ 400	+ 1 240	+ 380	+ 580	- 410	+ 1 380
	3	6	**8 530**	+ 270	+ 640	+ 480	+ 1 410	+ 470	+ 780	- 520	+ 1 630
SEC 2+3 FAULT	FULL	0	**8 760**	+ 290	+ 760	+ 510	+ 1 520	+ 500	+ 980	- 630	+ 1 420
	3	6	**10 070**	+ 320	+ 860	+ 610	+ 1 730	+ 610	+ 1 290	- 770	+ 1 680
SEC 1+3 FAULT	FULL	0	**9 690**	+ 320	+ 920	+ 590	+ 1 720	+ 590	+ 1 350	- 810	+ 1 460
	3	6	**11 170**	+ 360	+ 1 050	+ 700	+ 1 970	+ 710	+ 1 810	- 1 020	+ 1 740
SEC 1+2 FAULT	FULL	0	**8 310**	+ 270	+ 700	+ 480	+ 1 440	+ 470	+ 840	- 530	+ 1 460
	3	6	**9 650**	+ 310	+ 810	+ 570	+ 1 650	+ 570	+ 1 140	- 700	+ 1 710
RUDDER JAM	FULL	0	**7 850**	+ 270	+ 570	+ 470	+ 1 360	+ 420	+ 710	- 490	+ 1 130
	3	6	**9 280**	+ 330	+ 690	+ 590	+ 1 620	+ 540	+ 1 030	- 680	+ 1 280
SEC 1+2+3 FAULT	3	10	**13 470**	+ 410	+ 1 330	+ 870	+ 2 340	+ 920	+ 2 970	INOP	+ 1 790
ALTN LAW/ DIRECT LAW/ ELAC 1+2 FAULT/ L+R ELEV FAULT/ L(R) ELEV FAULT/ STAB JAM	3	10	**8 590**	+ 260	+ 580	+ 470	+ 1 360	+ 450	+ 720	- 520	+ 1 530

(1) Automatic Landing correction: add 880ft - (2) Weight correction: subtract 100ft per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 6 820ft

Continued from the previous page

FLIGHT CONTROLS SYSTEM

The Reference Distance (REF DIST) considers : Sea Level (SL), ISA, no wind, no slope, no engine reverse thrust, manual landing[1], maximum manual braking, VAPP = VREF+ΔVREF without APPR COR.

1 - POOR											
Corrections on Landing Distance (ft)				WGT [2]	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (ft) for 66T	Per 1T above 66T	Per 5kt	Per 1000ft above SL	Per 5kt TW	Per 10°C above ISA	Per 1% Down Slope	Per Thrust Reverser Operative	If OVW PROC applied
ONE SPLR FAULT with no SPOILER runaway suspected	FULL	0	**12 510**	+ 230	+ 530	+ 480	+ 1 930	+ 580	+ 3 520	- 1 670	+ 1 360
	3	6	**14 410**	+ 260	+ 610	+ 550	+ 2 060	+ 680	+ 4 340	- 2 100	+ 1 620
ONE SPLR FAULT with SPOILER runaway suspected	3	10	**14 810**	+ 260	+ 610	+ 570	+ 2 070	+ 700	+ 4 360	- 2 140	+ 1 530
TWO SPLR FAULT/ GND SPLR 1+2(3+4) FAULT	FULL	0	**14 080**	+ 250	+ 650	+ 540	+ 2 060	+ 670	+ 4 500	- 2 100	+ 1 450
	3	6	**16 080**	+ 280	+ 730	+ 610	+ 2 190	+ 770	+ 5 450	- 2 590	+ 1 720
THREE SPLR FAULT	FULL	0	**15 080**	+ 270	+ 720	+ 580	+ 2 140	+ 730	+ 5 200	- 2 400	+ 1 450
	3	6	**17 200**	+ 290	+ 810	+ 650	+ 2 270	+ 840	+ 6 290	- 2 940	+ 1 720
ALL SPLR FAULT	FULL	0	Landing Distance greater than 18 000 ft for all conditions								
	3	6	Landing Distance greater than 18 000 ft for all conditions								
GND SPLR FAULT	FULL	0	Landing Distance greater than 18 000 ft for all conditions								
	3	6	Landing Distance greater than 18 000 ft for all conditions								
SEC 1 or SEC 3 FAULT	FULL	0	**13 010**	+ 240	+ 570	+ 500	+ 1 970	+ 610	+ 3 810	- 1 800	+ 1 420
	3	6	**15 010**	+ 260	+ 650	+ 580	+ 2 110	+ 710	+ 4 730	- 2 270	+ 1 670
SEC 2 FAULT	FULL	0	**12 080**	+ 230	+ 510	+ 460	+ 1 890	+ 560	+ 3 280	- 1 560	+ 1 390
	3	6	**13 960**	+ 250	+ 590	+ 540	+ 2 020	+ 660	+ 4 070	- 1 970	+ 1 630
SEC 2+3 FAULT	FULL	0	**14 570**	+ 260	+ 680	+ 560	+ 2 100	+ 700	+ 4 830	- 2 240	+ 1 420
	3	6	**16 640**	+ 280	+ 770	+ 640	+ 2 230	+ 810	+ 5 850	- 2 770	+ 1 690
SEC 1+3 FAULT	FULL	0	Landing Distance greater than 18 000 ft for all conditions								
	3	6	Landing Distance greater than 18 000 ft for all conditions								
SEC 1+2 FAULT	FULL	0	**13 880**	+ 250	+ 630	+ 530	+ 2 050	+ 660	+ 4 370	- 1 670	+ 1 460
	3	6	Landing Distance greater than 18 000 ft for all conditions								
RUDDER JAM	FULL	0	**12 330**	+ 280	+ 540	+ 560	+ 2 080	+ 610	+ 3 360	- 1 570	+ 1 130
	3	6	**14 540**	+ 330	+ 640	+ 680	+ 2 310	+ 750	+ 4 380	- 2 050	+ 1 280
SEC 1+2+3 FAULT	3	10	Landing Distance greater than 18 000 ft for all conditions								
ALTN LAW/ DIRECT LAW/ ELAC 1+2 FAULT/ L+R ELEV FAULT/ L(R) ELEV FAULT/ STAB JAM	3	10	**13 770**	+ 250	+ 540	+ 530	+ 1 990	+ 640	+ 3 770	- 1 860	+ 1 530

(1) Automatic Landing correction: add 830ft - (2) Weight correction: subtract 120ft per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 11 320ft

HYDRAULIC SYSTEM

The Reference Distance (REF DIST) considers : Sea Level (SL), ISA, no wind, no slope, no engine reverse thrust, manual landing[1], maximum manual braking, VAPP = VREF+ΔVREF without APPR COR.

6 - DRY											
Corrections on Landing Distance (ft)				WGT [2]	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (ft) for 66T	Per 1T above 66T	Per 5kt	Per 1000ft above SL	Per 5kt TW	Per 10°C above ISA	Per 1% Down Slope	Per Thrust Reverser Operative	If OVW PROC applied
G SYS LO PR	FULL	0	**4 140**	+ 110	+ 260	+ 130	+ 380	+ 130	+ 90	- 90	+ 2 600
	3	6	**4 400**	+ 120	+ 260	+ 140	+ 390	+ 130	+ 90	- 100	+ 3 110
B SYS LO PR	FULL	0	**3 730**	+ 130	+ 230	+ 140	+ 400	+ 110	+ 60	- 50	+ 2 540
	3	6	**4 040**	+ 140	+ 260	+ 140	+ 400	+ 140	+ 70	- 60	+ 3 030
Y SYS LO PR	FULL	0	**3 860**	+ 130	+ 240	+ 130	+ 390	+ 120	+ 70	- 60	+ 2 630
	3	6	**4 120**	+ 140	+ 260	+ 150	+ 400	+ 130	+ 80	- 70	+ 3 130
G SYS LO PR with B SYS supplied by the RAT (Calculated with 140kt min)	FULL	0 / 140kt	**4 490**	+ 80	+ 290	+ 140	+ 400	+ 140	+ 110	- 110	+ 2 380
	3	6 / 140kt	**4 550**	+ 120	+ 280	+ 150	+ 400	+ 140	+ 100	- 150	+ 3 130
Y SYS LO PR with B SYS supplied by the RAT (Calculated with 140kt min)	FULL	0 / 140kt	**4 210**	+ 100	+ 280	+ 140	+ 390	+ 140	+ 90	- 80	+ 2 440
	3	6 / 140kt	**4 300**	+ 140	+ 280	+ 150	+ 400	+ 140	+ 90	- 130	+ 3 190
G + B	3	25	**5 460**	+ 120	N/A	+ 180	+ 410	+ 160	+ 120	- 150	+ 2 220
G + Y	3	25	**8 630**	+ 250	N/A	+ 300	+ 680	+ 290	+ 430	INOP	+ 1 930
B + Y	FULL	0	**4 010**	+ 130	+ 270	+ 130	+ 380	+ 130	+ 80	- 70	+ 2 700
	3	6	**4 280**	+ 140	+ 270	+ 150	+ 410	+ 130	+ 80	- 90	+ 3 200

(1) Automatic Landing correction: add 540ft - (2) Weight correction: subtract 10ft per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 3 570ft

Continued from the previous page

HYDRAULIC SYSTEM

The Reference Distance (REF DIST) considers : Sea Level (SL), ISA, no wind, no slope, no engine reverse thrust, manual landing[1], maximum manual braking, VAPP = VREF+ΔVREF without APPR COR.

5 - GOOD											
Corrections on Landing Distance (ft)				WGT [2]	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (ft) for 66T	Per 1T above 66T	Per 5kt	Per 1000ft above SL	Per 5kt TW	Per 10°C above ISA	Per 1% Down Slope	Per Thrust Reverser Operative	If OVW PROC applied
G SYS LO PR	FULL	0	**5 650**	+ 170	+ 480	+ 290	+ 830	+ 270	+ 280	- 240	+ 1 780
	3	6	**6 260**	+ 190	+ 530	+ 330	+ 910	+ 310	+ 340	- 290	+ 2 140
B SYS LO PR	FULL	0	**4 940**	+ 150	+ 390	+ 240	+ 710	+ 220	+ 180	- 140	+ 1 900
	3	6	**5 490**	+ 170	+ 440	+ 280	+ 780	+ 260	+ 220	- 180	+ 2 250
Y SYS LO PR	FULL	0	**5 230**	+ 160	+ 440	+ 270	+ 760	+ 240	+ 220	- 180	+ 1 940
	3	6	**5 820**	+ 180	+ 500	+ 310	+ 840	+ 280	+ 270	- 230	+ 2 300
G SYS LO PR with B SYS supplied by the RAT (Calculated with 140kt min)	FULL	0 / 140kt	**6 290**	+ 130	+ 520	+ 330	+ 900	+ 300	+ 350	- 450	+ 1 630
	3	6 / 140kt	**6 580**	+ 200	+ 590	+ 360	+ 970	+ 330	+ 400	- 500	+ 2 170
Y SYS LO PR with B SYS supplied by the RAT (Calculated with 140kt min)	FULL	0 / 140kt	**5 900**	+ 120	+ 510	+ 310	+ 840	+ 290	+ 300	- 390	+ 1 780
	3	6 / 140kt	**6 210**	+ 190	+ 580	+ 330	+ 910	+ 320	+ 340	- 450	+ 2 340
G + B	3	25	**8 260**	+ 220	N/A	+ 430	+ 1 010	+ 400	+ 490	- 490	+ 1 520
G + Y	3	25	**9 420**	+ 280	N/A	+ 440	+ 1 030	+ 410	+ 630	INOP	+ 1 580
B + Y	FULL	0	**5 560**	+ 180	+ 520	+ 290	+ 820	+ 270	+ 280	- 220	+ 1 980
	3	6	**6 190**	+ 190	+ 570	+ 340	+ 910	+ 310	+ 340	- 280	+ 2 340

(1) Automatic Landing correction: add 600ft - (2) Weight correction: subtract 10ft per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 4 620ft

Continued from the previous page

HYDRAULIC SYSTEM

The Reference Distance (REF DIST) considers : Sea Level (SL), ISA, no wind, no slope, no engine reverse thrust, manual landing[1], maximum manual braking, VAPP = VREF+ΔVREF without APPR COR.

4 - GOOD TO MEDIUM											
Corrections on Landing Distance (ft)				WGT [2]	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (ft) for 66T	Per 1T above 66T	Per 5kt	Per 1000ft above SL	Per 5kt TW	Per 10°C above ISA	Per 1% Down Slope	Per Thrust Reverser Operative	If OVW PROC applied
G SYS LO PR	FULL	0	**6 170**	+ 120	+ 380	+ 220	+ 660	+ 220	+ 320	- 310	+ 2 150
	3	6	**6 700**	+ 120	+ 400	+ 240	+ 690	+ 240	+ 360	- 370	+ 2 610
B SYS LO PR	FULL	0	**5 770**	+ 110	+ 320	+ 210	+ 630	+ 200	+ 260	- 260	+ 2 170
	3	6	**6 320**	+ 120	+ 350	+ 230	+ 660	+ 220	+ 300	- 320	+ 2 610
Y SYS LO PR	FULL	0	**6 100**	+ 120	+ 370	+ 220	+ 660	+ 210	+ 310	- 260	+ 2 220
	3	6	**6 680**	+ 120	+ 390	+ 240	+ 690	+ 240	+ 350	- 320	+ 2 670
G SYS LO PR with B SYS supplied by the RAT (Calculated with 140kt min)	FULL	0 / 140kt	**6 770**	+ 80	+ 420	+ 250	+ 710	+ 240	+ 380	- 450	+ 1 980
	3	6 / 140kt	**7 010**	+ 130	+ 440	+ 260	+ 720	+ 250	+ 400	- 490	+ 2 640
Y SYS LO PR with B SYS supplied by the RAT (Calculated with 140kt min)	FULL	0 / 140kt	**6 780**	+ 80	+ 420	+ 250	+ 700	+ 250	+ 380	- 450	+ 2 050
	3	6 / 140kt	**7 100**	+ 130	+ 450	+ 260	+ 720	+ 260	+ 420	- 510	+ 2 700
G + B	3	25	**8 390**	+ 140	N/A	+ 300	+ 730	+ 300	+ 450	- 480	+ 1 870
G + Y	3	25	**9 570**	+ 180	N/A	+ 340	+ 790	+ 330	+ 590	INOP	+ 1 840
B + Y	FULL	0	**6 470**	+ 120	+ 430	+ 240	+ 690	+ 240	+ 370	- 320	+ 2 260
	3	6	**7 070**	+ 130	+ 450	+ 260	+ 720	+ 260	+ 420	- 390	+ 2 710

(1) Automatic Landing correction: add 600ft - (2) Weight correction: subtract 10ft per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 5 440ft

Continued from the previous page

HYDRAULIC SYSTEM

The Reference Distance (REF DIST) considers : Sea Level (SL), ISA, no wind, no slope, no engine reverse thrust, manual landing[1], maximum manual braking, VAPP = VREF+ΔVREF without APPR COR.

3 - MEDIUM											
Corrections on Landing Distance (ft)				WGT [2]	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (ft) for 66T	Per 1T above 66T	Per 5kt	Per 1000ft above SL	Per 5kt TW	Per 10°C above ISA	Per 1% Down Slope	Per Thrust Reverser Operative	If OVW PROC applied
G SYS LO PR	FULL	0	**6 940**	+ 130	+ 410	+ 260	+ 780	+ 260	+ 460	- 410	+ 2 020
	3	6	**7 590**	+ 140	+ 440	+ 280	+ 810	+ 290	+ 520	- 490	+ 2 460
B SYS LO PR	FULL	0	**6 460**	+ 130	+ 360	+ 240	+ 730	+ 240	+ 370	- 360	+ 2 040
	3	6	**7 140**	+ 130	+ 380	+ 260	+ 780	+ 260	+ 440	- 440	+ 2 460
Y SYS LO PR	FULL	0	**6 870**	+ 130	+ 400	+ 260	+ 770	+ 250	+ 440	- 340	+ 2 100
	3	6	**7 580**	+ 140	+ 440	+ 280	+ 810	+ 280	+ 510	- 420	+ 2 520
G SYS LO PR with B SYS supplied by the RAT (Calculated with 140kt min)	FULL	0 / 140kt	**7 620**	+ 100	+ 460	+ 280	+ 820	+ 290	+ 540	- 560	+ 1 860
	3	6 / 140kt	**7 970**	+ 150	+ 490	+ 300	+ 850	+ 300	+ 590	- 630	+ 2 490
Y SYS LO PR with B SYS supplied by the RAT (Calculated with 140kt min)	FULL	0 / 140kt	**7 670**	+ 100	+ 460	+ 290	+ 830	+ 290	+ 550	- 570	+ 1 930
	3	6 / 140kt	**8 090**	+ 150	+ 510	+ 300	+ 860	+ 310	+ 610	- 670	+ 2 560
G + B	3	25	**9 490**	+ 160	N/A	+ 350	+ 860	+ 350	+ 640	- 620	+ 1 770
G + Y	3	25	**10 680**	+ 170	N/A	+ 390	+ 920	+ 390	+ 810	INOP	+ 1 750
B + Y	FULL	0	**7 330**	+ 140	+ 470	+ 280	+ 820	+ 270	+ 530	- 420	+ 2 140
	3	6	**8 060**	+ 150	+ 510	+ 300	+ 850	+ 310	+ 610	- 520	+ 2 560

(1) Automatic Landing correction: add 610ft - (2) Weight correction: subtract 10ft per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 6 090ft

Continued from the previous page

HYDRAULIC SYSTEM

The Reference Distance (REF DIST) considers : Sea Level (SL), ISA, no wind, no slope, no engine reverse thrust, manual landing[1], maximum manual braking, VAPP = VREF+ΔVREF without APPR COR.

2 - MEDIUM TO POOR											
Corrections on Landing Distance (ft)				WGT [2]	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (ft) for 66T	Per 1T above 66T	Per 5kt	Per 1000ft above SL	Per 5kt TW	Per 10°C above ISA	Per 1% Down Slope	Per Thrust Reverser Operative	If OVW PROC applied
G SYS LO PR	FULL	0	**7 970**	+ 250	+ 630	+ 440	+ 1 340	+ 430	+ 730	- 490	+ 1 370
	3	6	**9 190**	+ 290	+ 730	+ 530	+ 1 540	+ 530	+ 980	- 620	+ 1 630
B SYS LO PR	FULL	0	**7 370**	+ 230	+ 550	+ 400	+ 1 240	+ 380	+ 580	- 410	+ 1 380
	3	6	**8 530**	+ 270	+ 640	+ 480	+ 1 410	+ 470	+ 780	- 520	+ 1 630
Y SYS LO PR	FULL	0	**7 960**	+ 260	+ 640	+ 450	+ 1 370	+ 430	+ 730	- 410	+ 1 430
	3	6	**9 240**	+ 290	+ 740	+ 540	+ 1 560	+ 530	+ 1 000	- 560	+ 1 680
G SYS LO PR with B SYS supplied by the RAT (Calculated with 140kt min)	FULL	0 / 140kt	**8 940**	+ 210	+ 690	+ 500	+ 1 470	+ 500	+ 930	- 810	+ 1 300
	3	6 / 140kt	**9 780**	+ 310	+ 810	+ 580	+ 1 660	+ 570	+ 1 170	- 1 040	+ 1 660
Y SYS LO PR with B SYS supplied by the RAT (Calculated with 140kt min)	FULL	0 / 140kt	**9 110**	+ 220	+ 720	+ 520	+ 1 520	+ 520	+ 990	- 870	+ 1 360
	3	6 / 140kt	**10 050**	+ 320	+ 860	+ 610	+ 1 730	+ 600	+ 1 280	- 1 140	+ 1 720
G + B	3	25	**12 000**	+ 330	N/A	+ 660	+ 1 690	+ 660	+ 1 350	- 1 010	+ 1 280
G + Y	3	25	**13 130**	+ 360	N/A	+ 720	+ 1 830	+ 740	+ 1 700	INOP	+ 1 290
B + Y	FULL	0	**8 620**	+ 280	+ 750	+ 500	+ 1 510	+ 500	+ 940	- 520	+ 1 470
	3	6	**10 020**	+ 320	+ 870	+ 600	+ 1 730	+ 610	+ 1 280	- 700	+ 1 720

(1) Automatic Landing correction: add 700ft - (2) Weight correction: subtract 30ft per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 6 820ft

Continued from the previous page

HYDRAULIC SYSTEM

The Reference Distance (REF DIST) considers : Sea Level (SL), ISA, no wind, no slope, no engine reverse thrust, manual landing[1], maximum manual braking, VAPP = VREF+ΔVREF without APPR COR.

1 - POOR											
Corrections on Landing Distance (ft)				WGT [2]	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (ft) for 66T	Per 1T above 66T	Per 5kt	Per 1000ft above SL	Per 5kt TW	Per 10°C above ISA	Per 1% Down Slope	Per Thrust Reverser Operative	If OVW PROC applied
G SYS LO PR	FULL	0	**13 110**	+ 240	+ 580	+ 500	+ 1 980	+ 620	+ 3 870	- 1 450	+ 1 370
	3	6	**15 090**	+ 270	+ 660	+ 580	+ 2 110	+ 720	+ 4 770	- 1 930	+ 1 630
B SYS LO PR	FULL	0	**12 080**	+ 230	+ 510	+ 460	+ 1 890	+ 560	+ 3 280	- 1 560	+ 1 390
	3	6	**13 960**	+ 250	+ 590	+ 540	+ 2 020	+ 660	+ 4 070	- 1 970	+ 1 630
Y SYS LO PR	FULL	0	**13 210**	+ 240	+ 580	+ 510	+ 1 990	+ 620	+ 3 940	0	+ 1 430
	3	6	Landing Distance greater than 18 000 ft for all conditions								
G SYS LO PR with B SYS supplied by the RAT (Calculated with 140kt min)	FULL	0 / 140kt	Landing Distance greater than 18 000 ft for all conditions								
	3	6 / 140kt	Landing Distance greater than 18 000 ft for all conditions								
Y SYS LO PR with B SYS supplied by the RAT (Calculated with 140kt min)	FULL	0 / 140kt	Landing Distance greater than 18 000 ft for all conditions								
	3	6 / 140kt	Landing Distance greater than 18 000 ft for all conditions								
G + B	3	25	Landing Distance greater than 18 000 ft for all conditions								
G + Y	3	25	Landing Distance greater than 18 000 ft for all conditions								
B + Y	FULL	0	Landing Distance greater than 18 000 ft for all conditions								
	3	6	Landing Distance greater than 18 000 ft for all conditions								

(1) Automatic Landing correction: add 680ft - (2) Weight correction: subtract 40ft per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 11 320ft

NAVIGATION SYSTEM

The Reference Distance (REF DIST) considers : Sea Level (SL), ISA, no wind, no slope, no engine reverse thrust, manual landing[1], maximum manual braking, VAPP = VREF+ΔVREF without APPR COR.

6 - DRY

Corrections on Landing Distance (ft)				WGT [2]	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (ft) for 66T	Per 1T above 66T	Per 5kt	Per 1000ft above SL	Per 5kt TW	Per 10°C above ISA	Per 1% Down Slope	Per Thrust Reverser Operative	If OVW PROC applied
IR 1+2+3 FAULT	3	10	**7 290**	+ 140	+ 520	+ 270	+ 690	+ 260	+ 40	- 10	+ 1 930
DUAL IR FAULT/ DUAL ADR FAULT	3	10	**4 200**	+ 140	+ 260	+ 150	+ 400	+ 140	+ 80	- 60	+ 2 790
ALL ADR OFF	3	N/A	**4 200**	+ 140	+ 260	+ 150	+ 400	+ 140	+ 80	- 60	+ 2 790

(1) Automatic Landing correction: add 480ft - (2) Weight correction: subtract 40ft per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 3 570ft

5 - GOOD

Corrections on Landing Distance (ft)				WGT [2]	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (ft) for 66T	Per 1T above 66T	Per 5kt	Per 1000ft above SL	Per 5kt TW	Per 10°C above ISA	Per 1% Down Slope	Per Thrust Reverser Operative	If OVW PROC applied
IR 1+2+3 FAULT	3	10	**7 300**	+ 150	+ 510	+ 270	+ 700	+ 260	+ 40	- 10	+ 1 890
DUAL IR FAULT/ DUAL ADR FAULT	3	10	**5 590**	+ 160	+ 410	+ 280	+ 770	+ 250	+ 210	- 170	+ 2 080
ALL ADR OFF	3	N/A	**5 590**	+ 160	+ 410	+ 280	+ 770	+ 250	+ 210	- 170	+ 2 080

(1) Automatic Landing correction: add 480ft - (2) Weight correction: subtract 70ft per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 4 620ft

4 - GOOD TO MEDIUM

Corrections on Landing Distance (ft)				WGT [2]	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (ft) for 66T	Per 1T above 66T	Per 5kt	Per 1000ft above SL	Per 5kt TW	Per 10°C above ISA	Per 1% Down Slope	Per Thrust Reverser Operative	If OVW PROC applied
IR 1+2+3 FAULT	3	10	**7 330**	+ 140	+ 520	+ 270	+ 720	+ 260	+ 120	- 10	+ 1 930
DUAL IR FAULT/ DUAL ADR FAULT	3	10	**6 370**	+ 110	+ 330	+ 230	+ 650	+ 220	+ 280	- 300	+ 2 430
ALL ADR OFF	3	N/A	**6 370**	+ 110	+ 330	+ 230	+ 650	+ 220	+ 280	- 300	+ 2 430

(1) Automatic Landing correction: add 480ft - (2) Weight correction: subtract 70ft per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 5 440ft

Continued from the previous page

NAVIGATION SYSTEM

The Reference Distance (REF DIST) considers : Sea Level (SL), ISA, no wind, no slope, no engine reverse thrust, manual landing(1), maximum manual braking, VAPP = VREF+ΔVREF without APPR COR.

3 - MEDIUM

Corrections on Landing Distance (ft)				WGT (2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (ft) for 66T	Per 1T above 66T	Per 5kt	Per 1000ft above SL	Per 5kt TW	Per 10°C above ISA	Per 1% Down Slope	Per Thrust Reverser Operative	If OVW PROC applied
IR 1+2+3 FAULT	3	10	**7 630**	+ 150	+ 520	+ 290	+ 790	+ 290	+ 300	- 130	+ 1 920
DUAL IR FAULT/ DUAL ADR FAULT	3	10	**7 170**	+ 130	+ 360	+ 260	+ 770	+ 260	+ 410	- 420	+ 2 290
ALL ADR OFF	3	N/A	**7 170**	+ 130	+ 360	+ 260	+ 770	+ 260	+ 410	- 420	+ 2 290

(1) Automatic Landing correction: add 470ft - (2) Weight correction: subtract 80ft per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 6 090ft

2 - MEDIUM TO POOR

Corrections on Landing Distance (ft)				WGT (2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (ft) for 66T	Per 1T above 66T	Per 5kt	Per 1000ft above SL	Per 5kt TW	Per 10°C above ISA	Per 1% Down Slope	Per Thrust Reverser Operative	If OVW PROC applied
IR 1+2+3 FAULT	3	10	**8 590**	+ 260	+ 580	+ 470	+ 1 360	+ 450	+ 720	- 210	+ 1 530
DUAL IR FAULT/ DUAL ADR FAULT	3	10	**8 590**	+ 260	+ 580	+ 470	+ 1 360	+ 450	+ 720	- 520	+ 1 530
ALL ADR OFF	3	N/A	**8 590**	+ 260	+ 580	+ 470	+ 1 360	+ 450	+ 720	- 520	+ 1 530

(1) Automatic Landing correction: add 480ft - (2) Weight correction: subtract 120ft per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 6 820ft

1 - POOR

Corrections on Landing Distance (ft)				WGT (2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (ft) for 66T	Per 1T above 66T	Per 5kt	Per 1000ft above SL	Per 5kt TW	Per 10°C above ISA	Per 1% Down Slope	Per Thrust Reverser Operative	If OVW PROC applied
IR 1+2+3 FAULT	3	10	**13 770**	+ 250	+ 540	+ 530	+ 1 990	+ 640	+ 3 770	- 1 830	+ 1 530
DUAL IR FAULT/ DUAL ADR FAULT	3	10	**13 770**	+ 250	+ 540	+ 530	+ 1 990	+ 640	+ 3 770	- 1 860	+ 1 530
ALL ADR OFF	3	N/A	**13 770**	+ 250	+ 540	+ 530	+ 1 990	+ 640	+ 3 770	- 1 860	+ 1 530

(1) Automatic Landing correction: add 480ft - (2) Weight correction: subtract 140ft per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 11 320ft

SLATS AND FLAPS SYSTEM

The Reference Distance (REF DIST) considers : Sea Level (SL), ISA, no wind, no slope, no engine reverse thrust, manual landing[1], maximum manual braking, VAPP = VREF+ΔVREF without APPR COR.

6 - DRY												
Corrections on Landing Distance (ft)					WGT [2]	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE		FLAPS LEVER for LDG	ΔVREF	REF DIST (ft) for 66T	Per 1T above 66T	Per 5kt	Per 1000ft above SL	Per 5kt TW	Per 10°C above ISA	Per 1% Down Slope	Per Thrust Reverser Operative	If OVW PROC applied
FLAPS FAULT	FLAPS<1	3	25	**5 130**	+ 160	N/A	+ 170	+ 410	+ 160	+ 100	- 70	+ 4 420
	1≤FLAPS<2	3	15	**4 540**	+ 150	+ 260	+ 160	+ 410	+ 150	+ 90	- 60	+ 3 530
	2≤FLAPS<3	3	10	**4 260**	+ 140	+ 270	+ 150	+ 400	+ 150	+ 80	- 60	+ 3 270
	FLAPS=3	3	10	**4 200**	+ 140	+ 270	+ 150	+ 400	+ 150	+ 80	- 60	+ 2 790
	FLAPS>3	FULL	5	**3 900**	+ 130	+ 250	+ 140	+ 390	+ 130	+ 70	- 50	+ 2 220
SLATS FAULT	SLATS<1	3	25	**4 920**	+ 150	N/A	+ 160	+ 400	+ 150	+ 90	- 70	+ 2 140
	1≤SLATS≤3	3	10	**4 200**	+ 140	+ 260	+ 150	+ 400	+ 140	+ 80	- 60	+ 2 790
	SLATS>3	3	5	**3 990**	+ 140	+ 260	+ 140	+ 400	+ 140	+ 70	- 60	+ 3 040
FLAPS AND SLATS AT 0		1	50	**6 380**	+ 190	N/A	+ 200	+ 430	+ 190	+ 120	- 100	+ 3 340
FLAPS<1	SLATS<1	3	45	**6 130**	+ 180	N/A	+ 200	+ 420	+ 190	+ 120	- 90	+ 3 520
	SLATS≥1	3	25	**5 130**	+ 160	N/A	+ 170	+ 410	+ 160	+ 100	- 70	+ 4 420
1≤FLAPS<2	SLATS<1	3	30	**5 240**	+ 160	N/A	+ 170	+ 410	+ 160	+ 100	- 80	+ 2 960
	SLATS≥1	3	15	**4 540**	+ 150	+ 260	+ 160	+ 410	+ 150	+ 90	- 60	+ 3 530
2≤FLAPS<3	SLATS<1	3	25	**4 970**	+ 150	N/A	+ 170	+ 400	+ 150	+ 90	- 70	+ 2 680
	SLATS≥1	3	10	**4 260**	+ 140	+ 270	+ 150	+ 400	+ 150	+ 80	- 60	+ 3 270
FLAPS=3	SLATS<1	3	25	**4 930**	+ 150	N/A	+ 160	+ 400	+ 150	+ 90	- 80	+ 2 140
	1≤SLATS≤3	3	10	**4 230**	+ 140	+ 270	+ 150	+ 400	+ 150	+ 80	- 60	+ 2 780
	SLATS>3	3	5	**3 970**	+ 140	+ 260	+ 140	+ 400	+ 140	+ 70	- 60	+ 3 040
FLAPS>3	1≤SLATS≤3	FULL	10	**4 140**	+ 140	+ 250	+ 150	+ 390	+ 140	+ 80	- 60	+ 1 960
	SLATS>3	FULL	5	**3 900**	+ 130	+ 250	+ 140	+ 390	+ 130	+ 70	- 50	+ 2 220

(1) Automatic Landing correction: add 500ft - (2) Weight correction: subtract 40ft per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 3 570ft

Continued from the previous page

SLATS AND FLAPS SYSTEM

The Reference Distance (REF DIST) considers : Sea Level (SL), ISA, no wind, no slope, no engine reverse thrust, manual landing[1], maximum manual braking, VAPP = VREF+ΔVREF without APPR COR.

5 - GOOD												
Corrections on Landing Distance (ft)					WGT [2]	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE		FLAPS LEVER for LDG	ΔVREF	REF DIST (ft) for 66T	Per 1T above 66T	Per 5kt	Per 1000ft above SL	Per 5kt TW	Per 10°C above ISA	Per 1% Down Slope	Per Thrust Reverser Operative	If OVW PROC applied
FLAPS FAULT	FLAPS<1	3	25	**6 800**	+ 200	N/A	+ 360	+ 870	+ 310	+ 270	- 260	+ 3 390
	1≤FLAPS<2	3	15	**6 000**	+ 180	+ 420	+ 320	+ 810	+ 280	+ 230	- 200	+ 2 660
	2≤FLAPS<3	3	10	**5 630**	+ 170	+ 420	+ 290	+ 800	+ 260	+ 210	- 180	+ 2 460
	FLAPS=3	3	10	**5 620**	+ 170	+ 420	+ 290	+ 790	+ 260	+ 220	- 180	+ 2 050
	FLAPS>3	FULL	5	**5 110**	+ 150	+ 370	+ 250	+ 720	+ 230	+ 180	- 140	+ 1 650
SLATS FAULT	SLATS<1	3	25	**6 570**	+ 180	N/A	+ 320	+ 780	+ 290	+ 230	- 230	+ 1 580
	1≤SLATS≤3	3	10	**5 590**	+ 160	+ 410	+ 280	+ 770	+ 250	+ 210	- 170	+ 2 080
	SLATS>3	3	5	**5 300**	+ 160	+ 410	+ 270	+ 750	+ 240	+ 200	- 160	+ 2 280
FLAPS AND SLATS AT 0		1	50	**8 790**	+ 230	N/A	+ 470	+ 990	+ 410	+ 370	- 400	+ 2 460
FLAPS<1	SLATS<1	3	45	**8 410**	+ 220	N/A	+ 450	+ 970	+ 390	+ 350	- 380	+ 2 610
	SLATS≥1	3	25	**6 800**	+ 200	N/A	+ 360	+ 870	+ 310	+ 270	- 260	+ 3 390
1≤FLAPS<2	SLATS<1	3	30	**7 000**	+ 190	N/A	+ 360	+ 850	+ 320	+ 270	- 270	+ 2 160
	SLATS≥1	3	15	**6 000**	+ 180	+ 420	+ 320	+ 810	+ 280	+ 230	- 200	+ 2 660
2≤FLAPS<3	SLATS<1	3	25	**6 600**	+ 180	N/A	+ 330	+ 810	+ 300	+ 250	- 240	+ 1 950
	SLATS≥1	3	10	**5 630**	+ 170	+ 420	+ 290	+ 800	+ 260	+ 210	- 180	+ 2 460
FLAPS=3	SLATS<1	3	25	**6 630**	+ 180	N/A	+ 330	+ 810	+ 290	+ 250	- 250	+ 1 550
	1≤SLATS≤3	3	10	**5 650**	+ 170	+ 420	+ 290	+ 800	+ 260	+ 220	- 180	+ 2 040
	SLATS>3	3	5	**5 300**	+ 160	+ 420	+ 270	+ 770	+ 250	+ 210	- 160	+ 2 260
FLAPS>3	1≤SLATS≤3	FULL	10	**5 420**	+ 150	+ 380	+ 270	+ 730	+ 240	+ 190	- 160	+ 1 460
	SLATS>3	FULL	5	**5 110**	+ 150	+ 370	+ 250	+ 720	+ 230	+ 180	- 140	+ 1 650

(1) Automatic Landing correction: add 510ft - (2) Weight correction: subtract 60ft per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 4 620ft

Continued from the previous page

SLATS AND FLAPS SYSTEM

The Reference Distance (REF DIST) considers : Sea Level (SL), ISA, no wind, no slope, no engine reverse thrust, manual landing[1], maximum manual braking, VAPP = VREF+ΔVREF without APPR COR.

4 - GOOD TO MEDIUM												
Corrections on Landing Distance (ft)					WGT [2]	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE		FLAPS LEVER for LDG	ΔVREF	REF DIST (ft) for 66T	Per 1T above 66T	Per 5kt	Per 1000ft above SL	Per 5kt TW	Per 10°C above ISA	Per 1% Down Slope	Per Thrust Reverser Operative	If OVW PROC applied
FLAPS FAULT	FLAPS<1	3	25	**7 520**	+ 120	N/A	+ 270	+ 690	+ 250	+ 340	- 450	+ 4 020
	1≤FLAPS<2	3	15	**6 840**	+ 110	+ 330	+ 250	+ 680	+ 220	+ 320	- 390	+ 3 150
	2≤FLAPS<3	3	10	**6 500**	+ 110	+ 340	+ 240	+ 680	+ 220	+ 310	- 370	+ 2 890
	FLAPS=3	3	10	**6 500**	+ 110	+ 340	+ 240	+ 680	+ 220	+ 310	- 370	+ 2 420
	FLAPS>3	FULL	5	**5 970**	+ 110	+ 320	+ 210	+ 650	+ 210	+ 270	- 310	+ 1 920
SLATS FAULT	SLATS<1	3	25	**7 230**	+ 120	N/A	+ 250	+ 650	+ 240	+ 290	- 350	+ 1 860
	1≤SLATS≤3	3	10	**6 370**	+ 110	+ 330	+ 230	+ 650	+ 220	+ 280	- 300	+ 2 430
	SLATS>3	3	5	**6 120**	+ 110	+ 330	+ 220	+ 640	+ 210	+ 270	- 290	+ 2 640
FLAPS AND SLATS AT 0		1	50	**9 130**	+ 130	N/A	+ 330	+ 750	+ 300	+ 390	- 570	+ 3 040
FLAPS<1	SLATS<1	3	45	**8 830**	+ 130	N/A	+ 320	+ 740	+ 290	+ 390	- 550	+ 3 200
	SLATS≥1	3	25	**7 520**	+ 120	N/A	+ 270	+ 690	+ 250	+ 340	- 450	+ 4 020
1≤FLAPS<2	SLATS<1	3	30	**7 700**	+ 120	N/A	+ 280	+ 690	+ 250	+ 330	- 450	+ 2 620
	SLATS≥1	3	15	**6 840**	+ 110	+ 330	+ 250	+ 680	+ 220	+ 320	- 390	+ 3 150
2≤FLAPS<3	SLATS<1	3	25	**7 350**	+ 120	N/A	+ 260	+ 680	+ 240	+ 320	- 420	+ 2 350
	SLATS≥1	3	10	**6 500**	+ 110	+ 340	+ 240	+ 680	+ 220	+ 310	- 370	+ 2 890
FLAPS=3	SLATS<1	3	25	**7 380**	+ 120	N/A	+ 260	+ 680	+ 240	+ 330	- 430	+ 1 860
	1≤SLATS≤3	3	10	**6 520**	+ 110	+ 340	+ 240	+ 680	+ 220	+ 310	- 370	+ 2 410
	SLATS>3	3	5	**6 210**	+ 110	+ 340	+ 230	+ 670	+ 210	+ 300	- 350	+ 2 630
FLAPS>3	1≤SLATS≤3	FULL	10	**6 270**	+ 110	+ 310	+ 230	+ 660	+ 210	+ 280	- 330	+ 1 700
	SLATS>3	FULL	5	**5 970**	+ 110	+ 320	+ 210	+ 650	+ 210	+ 270	- 310	+ 1 920

(1) Automatic Landing correction: add 510ft - (2) Weight correction: subtract 60ft per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 5 440ft

Continued from the previous page

SLATS AND FLAPS SYSTEM

The Reference Distance (REF DIST) considers : Sea Level (SL), ISA, no wind, no slope, no engine reverse thrust, manual landing[1], maximum manual braking, VAPP = VREF+ΔVREF without APPR COR.

3 - MEDIUM												
Corrections on Landing Distance (ft)					WGT [2]	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE		FLAPS LEVER for LDG	ΔVREF	REF DIST (ft) for 66T	Per 1T above 66T	Per 5kt	Per 1000ft above SL	Per 5kt TW	Per 10°C above ISA	Per 1% Down Slope	Per Thrust Reverser Operative	If OVW PROC applied
FLAPS FAULT	FLAPS<1	3	25	**8 650**	+ 140	N/A	+ 310	+ 840	+ 300	+ 530	- 670	+ 3 810
	1≤FLAPS<2	3	15	**7 810**	+ 130	+ 380	+ 290	+ 820	+ 270	+ 480	- 580	+ 2 970
	2≤FLAPS<3	3	10	**7 410**	+ 130	+ 380	+ 280	+ 810	+ 260	+ 470	- 540	+ 2 720
	FLAPS=3	3	10	**7 390**	+ 130	+ 380	+ 280	+ 810	+ 260	+ 470	- 540	+ 2 270
	FLAPS>3	FULL	5	**6 740**	+ 120	+ 350	+ 250	+ 770	+ 230	+ 410	- 450	+ 1 800
SLATS FAULT	SLATS<1	3	25	**8 110**	+ 140	N/A	+ 290	+ 770	+ 280	+ 420	- 470	+ 1 760
	1≤SLATS≤3	3	10	**7 170**	+ 130	+ 360	+ 260	+ 770	+ 260	+ 410	- 420	+ 2 290
	SLATS>3	3	5	**6 890**	+ 130	+ 370	+ 250	+ 760	+ 250	+ 400	- 400	+ 2 480
FLAPS AND SLATS AT 0		1	50	**10 480**	+ 150	N/A	+ 390	+ 900	+ 350	+ 600	- 830	+ 2 880
FLAPS<1	SLATS<1	3	45	**10 150**	+ 150	N/A	+ 370	+ 900	+ 340	+ 590	- 810	+ 3 030
	SLATS≥1	3	25	**8 650**	+ 140	N/A	+ 310	+ 840	+ 300	+ 530	- 670	+ 3 810
1≤FLAPS<2	SLATS<1	3	30	**8 770**	+ 140	N/A	+ 320	+ 840	+ 290	+ 510	- 660	+ 2 470
	SLATS≥1	3	15	**7 810**	+ 130	+ 380	+ 290	+ 820	+ 270	+ 480	- 580	+ 2 970
2≤FLAPS<3	SLATS<1	3	25	**8 350**	+ 140	N/A	+ 310	+ 820	+ 280	+ 480	- 610	+ 2 210
	SLATS≥1	3	10	**7 410**	+ 130	+ 380	+ 280	+ 810	+ 260	+ 470	- 540	+ 2 720
FLAPS=3	SLATS<1	3	25	**8 370**	+ 140	N/A	+ 310	+ 820	+ 280	+ 490	- 620	+ 1 750
	1≤SLATS≤3	3	10	**7 420**	+ 130	+ 380	+ 280	+ 820	+ 260	+ 470	- 540	+ 2 260
	SLATS>3	3	5	**7 070**	+ 130	+ 380	+ 260	+ 800	+ 250	+ 460	- 510	+ 2 470
FLAPS>3	1≤SLATS≤3	FULL	10	**7 060**	+ 120	+ 340	+ 260	+ 790	+ 240	+ 410	- 480	+ 1 600
	SLATS>3	FULL	5	**6 740**	+ 120	+ 350	+ 250	+ 770	+ 230	+ 410	- 450	+ 1 800

(1) Automatic Landing correction: add 520ft - (2) Weight correction: subtract 70ft per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 6 090ft

Continued from the previous page

SLATS AND FLAPS SYSTEM

The Reference Distance (REF DIST) considers : Sea Level (SL), ISA, no wind, no slope, no engine reverse thrust, manual landing[1], maximum manual braking, VAPP = VREF+ΔVREF without APPR COR.

2 - MEDIUM TO POOR												
Corrections on Landing Distance (ft)					WGT [2]	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE		FLAPS LEVER for LDG	ΔVREF	REF DIST (ft) for 66T	Per 1T above 66T	Per 5kt	Per 1000ft above SL	Per 5kt TW	Per 10°C above ISA	Per 1% Down Slope	Per Thrust Reverser Operative	If OVW PROC applied
FLAPS FAULT	FLAPS<1	3	25	**11 740**	+ 330	N/A	+ 700	+ 1 880	+ 640	+ 1 320	- 1 070	+ 2 400
	1≤FLAPS<2	3	15	**9 810**	+ 290	+ 650	+ 590	+ 1 640	+ 520	+ 970	- 770	+ 1 860
	2≤FLAPS<3	3	10	**9 050**	+ 270	+ 650	+ 540	+ 1 570	+ 480	+ 870	- 670	+ 1 700
	FLAPS=3	3	10	**8 910**	+ 260	+ 630	+ 520	+ 1 520	+ 470	+ 840	- 660	+ 1 430
	FLAPS>3	FULL	5	**7 760**	+ 230	+ 530	+ 430	+ 1 310	+ 380	+ 630	- 520	+ 1 190
SLATS FAULT	SLATS<1	3	25	**9 930**	+ 270	N/A	+ 510	+ 1 370	+ 500	+ 780	- 650	+ 1 270
	1≤SLATS≤3	3	10	**8 590**	+ 260	+ 580	+ 470	+ 1 360	+ 450	+ 720	- 520	+ 1 530
	SLATS>3	3	5	**8 140**	+ 250	+ 610	+ 450	+ 1 340	+ 440	+ 690	- 470	+ 1 630
FLAPS AND SLATS AT 0		1	50	**14 870**	+ 370	N/A	+ 850	+ 2 030	+ 760	+ 1 640	- 1 540	+ 1 890
FLAPS<1	SLATS<1	3	45	**14 330**	+ 360	N/A	+ 820	+ 2 010	+ 750	+ 1 610	- 1 460	+ 1 970
	SLATS≥1	3	25	**11 740**	+ 330	N/A	+ 700	+ 1 880	+ 640	+ 1 320	- 1 070	+ 2 400
1≤FLAPS<2	SLATS<1	3	30	**11 290**	+ 300	N/A	+ 630	+ 1 670	+ 570	+ 1 070	- 970	+ 1 610
	SLATS≥1	3	15	**9 810**	+ 290	+ 650	+ 590	+ 1 640	+ 520	+ 970	- 770	+ 1 860
2≤FLAPS<3	SLATS<1	3	25	**10 490**	+ 280	N/A	+ 580	+ 1 580	+ 530	+ 950	- 860	+ 1 460
	SLATS≥1	3	10	**9 050**	+ 270	+ 650	+ 540	+ 1 570	+ 480	+ 870	- 670	+ 1 700
FLAPS=3	SLATS<1	3	25	**10 350**	+ 280	N/A	+ 560	+ 1 550	+ 510	+ 920	- 840	+ 1 200
	1≤SLATS≤3	3	10	**8 940**	+ 260	+ 630	+ 520	+ 1 530	+ 470	+ 840	- 660	+ 1 420
	SLATS>3	3	5	**8 420**	+ 260	+ 640	+ 500	+ 1 510	+ 450	+ 810	- 600	+ 1 520
FLAPS>3	1≤SLATS≤3	FULL	10	**8 190**	+ 230	+ 520	+ 440	+ 1 320	+ 400	+ 650	- 560	+ 1 100
	SLATS>3	FULL	5	**7 760**	+ 230	+ 530	+ 430	+ 1 310	+ 380	+ 630	- 520	+ 1 190

(1) Automatic Landing correction: add 570ft - (2) Weight correction: subtract 110ft per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 6 820ft

Continued from the previous page

SLATS AND FLAPS SYSTEM

The Reference Distance (REF DIST) considers : Sea Level (SL), ISA, no wind, no slope, no engine reverse thrust, manual landing[1], maximum manual braking, VAPP = VREF+ΔVREF without APPR COR.

1 - POOR												
Corrections on Landing Distance (ft)					WGT [2]	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE		FLAPS LEVER for LDG	ΔVREF	REF DIST (ft) for 66T	Per 1T above 66T	Per 5kt	Per 1000ft above SL	Per 5kt TW	Per 10°C above ISA	Per 1% Down Slope	Per Thrust Reverser Operative	If OVW PROC applied
FLAPS FAULT	FLAPS<1	3	25	Landing Distance greater than 18 000 ft for all conditions								
	1≤FLAPS<2	3	15	Landing Distance greater than 18 000 ft for all conditions								
	2≤FLAPS<3	3	10	Landing Distance greater than 18 000 ft for all conditions								
	FLAPS=3	3	10	Landing Distance greater than 18 000 ft for all conditions								
	FLAPS>3	FULL	5	Landing Distance greater than 18 000 ft for all conditions								
SLATS FAULT	SLATS<1	3	25	**15 100**	+ 260	N/A	+ 570	+ 2 000	+ 680	+ 3 760	- 1 970	+ 1 270
	1≤SLATS≤3	3	10	**13 770**	+ 250	+ 540	+ 530	+ 1 990	+ 640	+ 3 770	- 1 860	+ 1 530
	SLATS>3	3	5	**13 340**	+ 240	+ 560	+ 510	+ 1 980	+ 620	+ 3 740	- 1 810	+ 1 640
FLAPS AND SLATS AT 0		1	50	Landing Distance greater than 18 000 ft for all conditions								
FLAPS<1	SLATS<1	3	45	Landing Distance greater than 18 000 ft for all conditions								
	SLATS≥1	3	25	Landing Distance greater than 18 000 ft for all conditions								
1≤FLAPS<2	SLATS<1	3	30	Landing Distance greater than 18 000 ft for all conditions								
	SLATS≥1	3	15	Landing Distance greater than 18 000 ft for all conditions								
2≤FLAPS<3	SLATS<1	3	25	Landing Distance greater than 18 000 ft for all conditions								
	SLATS≥1	3	10	Landing Distance greater than 18 000 ft for all conditions								
FLAPS=3	SLATS<1	3	25	Landing Distance greater than 18 000 ft for all conditions								
	1≤SLATS≤3	3	10	Landing Distance greater than 18 000 ft for all conditions								
	SLATS>3	3	5	Landing Distance greater than 18 000 ft for all conditions								
FLAPS>3	1≤SLATS≤3	FULL	10	Landing Distance greater than 18 000 ft for all conditions								
	SLATS>3	FULL	5	Landing Distance greater than 18 000 ft for all conditions								

(1) Automatic Landing correction: add 510ft - (2) Weight correction: subtract 10ft per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 11 320ft

CEILINGS

ONE ENGINE OUT

GROSS CEILING at LONG RANGE and GREEN DOT SPEEDS Pack Flow Hi - Anti ice OFF

CORRECTIONS		ISA	ISA + 10	ISA + 15	ISA + 20
LONG RANGE	ENGINE ANTI ICE ON	-200 ft	-1 200 ft	-1 800 ft	-7 800 ft
	TOTAL ANTI ICE ON	-900 ft	-3 900 ft	-9 600 ft	-11 700 ft
GREEN DOT	ENGINE ANTI ICE ON	-200 ft	-1 200 ft	-1 200 ft	-2 000 ft
	TOTAL ANTI ICE ON	-1 200 ft	-3 400 ft	-4 200 ft	-4 900 ft

GROSS FLIGHT PATH DESCENT AT GREEN DOT SPEED

ONE ENGINE OUT

GROSS FLIGHT PATH DESCENT AT GREEN DOT SPEED - 1 ENGINE OUT

MAX. CONTINUOUS THRUST
PACK FLOW HI
ANTI-ICING OFF

ISA
CG=33.0%

DISTANCE (NM) TIME (MIN)
INITIAL SPEED (KT) FUEL (1000KG)
LEVEL OFF (FT)

INIT.GW (1000KG)	INITIAL FLIGHT LEVEL 250	290	310	330	350	370	390
50			83 16 196 .4 30700	205 38 196 1.0 31000	253 47 200 1.2 31200	284 52 202 1.3 31200	308 56 204 1.4 31300
52			170 32 200 .9 29900	237 44 202 1.2 30000	273 51 204 1.3 30100	301 55 206 1.5 30200	322 58 208 1.5 30200
54		102 20 202 .6 28700	207 39 204 1.1 29000	255 48 206 1.3 29100	287 53 208 1.5 29200	311 57 210 1.5 29200	331 60 212 1.6 29200
56		174 33 206 1.0 27800	238 45 208 1.3 28000	276 51 210 1.5 28100	304 56 212 1.6 28200	324 59 214 1.6 28200	345 62 216 1.7 28200
58		215 41 210 1.2 26900	262 49 212 1.5 27000	294 55 214 1.6 27100	320 59 216 1.7 27200	339 62 218 1.8 27200	358 65 220 1.8 27200
60		244 46 214 1.4 26000	283 53 216 1.6 26100	311 58 218 1.7 26100	334 61 220 1.8 26200	353 64 222 1.9 26200	369 67 224 1.9 26300
62		176 33 218 1.0 25400	220 41 220 1.2 25400	240 44 222 1.3 25400	267 48 224 1.4 25400	302 54 226 1.6 25400	321 57 228 1.7 25400
64		117 21 222 .7 25200	149 27 224 .8 25200	175 31 226 .9 25300	197 35 228 1.0 25300	216 37 230 1.1 25300	233 40 232 1.2 25300
66		98 18 226 .6 25100	126 22 228 .7 25100	149 26 230. .8 25100	169 29 232 .9 25100	187 32 234 .9 25100	203 34 236 1.0 25100
68	26 5 226 .2 24900	94 17 230 .5 25000	120 21 232 .7 25000	141 24 234 .8 25000	153 26 236 .8 25000	170 28 238 .8 25000	185 30 240 .9 25000
70	119 21 230 .8 24500	182 32 234 1.2 24600	205 36 236 1.3 24600	222 39 238 1.3 24700	238 41 240 1.4 24700	253 43 242 1.4 24700	
72	153 27 234 1.1 23900	214 38 238 1.4 24000	234 41 240 1.5 24100	252 44 242 1.6 24100	268 46 244 1.6 24100	284 48 246 1.7 24100	
74	178 32 238 1.3 23400	232 41 242 1.6 23500	253 44 244 1.7 23500	270 47 246 1.7 23500	286 49 248 1.8 23500	300 51 250 1.8 23500	
76	196 35 242 1.4 22800	246 43 246 1.7 22900	264 46 248 1.8 22900	280 48 250 1.8 22900	295 50 252 1.9 23000	311 52 254 1.9 23000	
78	209 37 246 1.6 22300	256 44 250 1.8 22300	274 47 252 1.9 22300	291 50 254 1.9 22400	306 52 256 2.0 22400		

CORRECTIONS	DISTANCE	TIME	FUEL	LEVEL OFF
ENGINE ANTI ICE ON	+ 3 %	+ 3 %	+ 7 %	- 100 FT
TOTAL ANTI ICE ON	+ 8 %	+ 8 %	+ 10 %	- 700 FT

CRUISE AT LONG RANGE CRUISE SPEED

ONE ENGINE OUT

LONG RANGE CRUISE - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS
PACK FLOW HI
ANTI-ICING OFF

ISA
CG=33.0%

N1 (%) MACH
FUEL FLOW (KG/H) IAS (KT)

WEIGHT (1000KG)	FL100	FL150	FL190	FL210	FL230	FL250
50	75.5 .453 1891 251	79.5 .492 1848 248	82.2 .520 1802 242	83.3 .533 1778 238	84.7 .549 1771 236	85.8 .560 1750 231
52	76.7 .463 1967 256	80.5 .500 1915 252	82.9 .524 1856 244	84.3 .541 1851 242	85.5 .554 1833 238	86.7 .567 1825 234
54	77.8 .471 2041 261	81.4 .507 1983 255	83.8 .532 1925 248	85.2 .548 1920 246	86.2 .558 1896 240	87.4 .568 1880 235
56	78.9 .479 2112 265	82.4 .514 2049 259	84.6 .539 1996 251	85.9 .553 1983 248	87.0 .565 1969 243	88.4 .577 1975 238
58	79.7 .485 2175 268	83.1 .519 2107 261	85.5 .546 2068 255	86.5 .557 2045 250	87.7 .569 2035 245	89.5 .586 2075 242
60	80.4 .490 2233 271	83.7 .522 2160 263	86.2 .551 2132 257	87.2 .562 2112 252	88.4 .571 2100 246	90.6 .595 2178 246
62	81.1 .495 2292 274	84.3 .527 2219 266	86.8 .555 2194 259	88.0 .569 2190 255	89.6 .583 2211 251	92.1 .610 2302 253
64	82.0 .502 2363 278	85.0 .533 2289 269	87.4 .559 2258 261	88.6 .570 2247 256	90.5 .590 2306 254	92.4 .601 2323 249
66	82.8 .508 2431 281	85.8 .539 2361 272	88.1 .564 2330 264	89.4 .575 2327 258	91.5 .599 2413 258	92.6 .582 2315 241
68	83.6 .514 2499 284	86.5 .545 2434 275	88.8 .570 2406 266	90.3 .584 2434 263	92.7 .609 2523 263	
70	84.3 .519 2563 287	87.2 .550 2503 278	89.3 .571 2463 267	91.2 .591 2529 266	93.1 .601 2547 260	
72	84.8 .522 2619 289	87.7 .554 2566 280	90.0 .576 2546 269	92.2 .599 2638 269	93.3 .585 2543 252	
74	85.3 .524 2672 291	88.2 .557 2628 281	91.0 .585 2657 274	93.3 .609 2752 274	93.5 .554 2524 238	
76	85.8 .528 2731 293	88.8 .561 2695 283	91.8 .591 2754 277	93.6 .603 2778 271		
78	86.4 .533 2802 295	89.3 .565 2766 286	92.6 .598 2861 280	93.9 .591 2784 265		

ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
△FUEL = + 3.5 %	△FUEL = + 7 %

IN CRUISE QUICK CHECK LONG RANGE

ONE ENGINE OUT

IN CRUISE QUICK CHECK FROM ANY MOMENT IN CRUISE TO LANDING - 1 ENGINE OUT
CRUISE : LONG RANGE - DESCENT : M.78/300KT/250KT - IMC PROCEDURE : 120 KG (6 MIN)

REF. INITIAL WEIGHT = 55000 KG PACK FLOW HI ANTI-ICING OFF	ISA CG = 33.0 %	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL 100	150	200	220	240	250	CORRECTION ON FUEL CONSUMPTION (KG/1000KG) FL100 FL150	FL200 FL220	FL240 FL250
200	1379 0.46	1188 0.44	1061 0.42	1017 0.42	978 0.41	961 0.41	9	7	8
300	2055 1.06	1811 1.03	1641 1.01	1583 1.00	1533 0.59	1511 0.59	15	14	17
400	2727 1.26	2430 1.22	2217 1.19	2146 1.18	2085 1.17	2058 1.17	21	21	24
500	3394 1.46	3046 1.41	2790 1.37	2705 1.35	2632 1.34	2601 1.34	27	27	32
600	4058 2.06	3658 2.00	3359 1.55	3260 1.53	3175 1.52	3140 1.52	32	34	40
700	4718 2.27	4266 2.20	3924 2.14	3812 2.11	3713 2.10	3676 2.09	38	40	47
800	5373 2.48	4870 2.39	4485 2.32	4360 2.29	4248 2.28	4207 2.27	44	46	54
900	6024 3.09	5471 2.59	5042 2.51	4904 2.47	4780 2.46	4734 2.45	50	53	60
1000	6672 3.29	6067 3.18	5596 3.10	5445 3.06	5307 3.04	5257 3.02	56	59	67
1100	7315 3.51	6661 3.38	6146 3.28	5982 3.24	5831 3.22	5777 3.20	62	65	74
1200	7955 4.12	7251 3.58	6693 3.47	6516 3.42	6352 3.40	6293 3.38	68	71	80
1300	8590 4.33	7837 4.17	7237 4.06	7047 4.00	6869 3.58	6806 3.55	73	77	86
1400	9222 4.55	8421 4.37	7777 4.25	7574 4.19	7382 4.16	7315 4.13	79	83	93

ENGINE ANTI ICE ON △FUEL = + 2.5 %	**TOTAL ANTI ICE ON** △FUEL = + 5 %

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OPTIMUM & MAXIMUM ALTITUDES

ALL ENGINES

CORRECTIONS	ENGINE ANTI ICE	TOTAL ANTI ICE
ISA	Max ALT : -200 ft. Opt ALT : -200 ft	Max ALT : -500 ft Opt ALT : -300 ft
ISA +10	Max ALT : -1 500 ft Opt ALT : -400 ft	Max ALT : -4 200 ft Opt ALT : -3 100 ft
ISA +15	Max ALT : -3 500 ft Opt ALT :-3 500 ft	Max ALT : -4 800 ft Opt ALT : -4 300 ft
ISA +20	Max ALT : -5 300 ft Opt ALT : -3 800 ft	Max ALT : -6 500 ft Opt ALT : -6 200 ft

IN CRUISE QUICK CHECK AT A GIVEN MACH NUMBER

IN CRUISE QUICK CHECK FROM ANY MOMENT IN CRUISE TO LANDING - ALL ENGINES
CRUISE : M.78 - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6 MIN)

REF. INITIAL WEIGHT = 60000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL 290	310	330	350	370	390	CORRECTION ON FUEL CONSUMPTION (KG/1000KG) FL290 FL310	FL330 FL350	FL370 FL390
200	974 0.35	915 0.35	863 0.36	818 0.36	782 0.36	758 0.36	0	1	4
400	2147 1.01	2023 1.02	1913 1.02	1822 1.03	1756 1.03	1727 1.03	5	9	16
600	3315 1.27	3124 1.28	2957 1.28	2818 1.29	2720 1.29	2682 1.29	10	16	33
800	4477 1.53	4218 1.54	3993 1.55	3806 1.56	3674 1.56	3622 1.56	15	23	45
1000	5634 2.19	5306 2.20	5023 2.21	4787 2.22	4617 2.23	4549 2.23	20	30	56
1200	6786 2.45	6387 2.46	6045 2.48	5759 2.49	5551 2.50	5463 2.50	24	37	67
1400	7933 3.11	7464 3.13	7062 3.14	6724 3.16	6475 3.17	6365 3.17	29	43	77
1600	9076 3.37	8537 3.39	8075 3.41	7683 3.42	7392 3.43	7256 3.43	33	49	86
1800	10214 4.03	9604 4.05	9081 4.07	8636 4.09	8302 4.10	8135 4.10	34	54	95
2000	11347 4.29	10665 4.31	10083 4.33	9582 4.36	9203 4.37	9004 4.37	41	60	103
2200	12475 4.55	11721 4.57	11078 5.00	10521 5.02	10098 5.04	9863 5.04	45	65	111
2400	13599 5.21	12775 5.23	12068 5.26	11454 5.29	10984 5.31	10711 5.31	49	70	118
2600	14718 5.47	13824 5.50	13052 5.53	12382 5.56	11863 5.57	11550 5.57	52	74	125
2800	15833 6.13	14869 6.16	14030 6.19	13305 6.22	12739 6.24	12382 6.24	55	79	131
3000	16944	15909	15002	14222	13608	13211	58	83	137

CORRECTIONS	LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	- 0.5 %	+ 3 %	+ 6 %

Continued from the previous page

IN CRUISE QUICK CHECK FROM ANY MOMENT IN CRUISE TO LANDING - ALL ENGINES
CRUISE : M.78 - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6 MIN)

REF. INITIAL WEIGHT = 60000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	290	**310**	**330**	**350**	**370**	**390**	**FL290 FL310**	**FL330 FL350**	**FL370 FL390**
	6.39	6.42	6.45	6.49	6.51	6.51			

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.5 %	+ 3 %	+ 6 %

IN CRUISE QUICK CHECK FROM ANY MOMENT IN CRUISE TO LANDING - ALL ENGINES

COST INDEX FOR LONG RANGE CRUISE SPEED

ALL ENGINES

For a quick determination of the CI_{LRC}, use:

- CI_{LRC} = 25 kg/min in the FMGC, for aircraft in metric units.
  or
- CI_{LRC} = 35 (100 lb/h) in the FMGC, for aircraft in US units.

STANDARD DESCENT

ALL ENGINES

DESCENT - M.78/300KT/250KT									
IDLE THRUST NORMAL AIR CONDITIONING ANTI-ICING OFF			ISA CG=33.0%		MAXIMUM CABIN RATE OF DESCENT 350FT/MIN				
WEIGHT (1000KG)	45				65				
FL	TIME (MIN)	FUEL (KG)	DIST. (NM)	N1	TIME (MIN)	FUEL (KG)	DIST. (NM)	N1	IAS (KT)
390	16.1	204	101	68.8	17.4	165	106	IDLE	241
370	14.6	174	89	69.9	16.7	160	100	IDLE	252
350	12.9	134	77	72.1	16.0	156	95	IDLE	264
330	12.0	119	70	IDLE	15.4	153	91	IDLE	277
310	11.6	117	67	IDLE	14.8	149	86	IDLE	289
290	11.1	114	64	IDLE	14.2	145	82	IDLE	300
270	10.6	110	59	IDLE	13.4	141	76	IDLE	300
250	10.0	107	55	IDLE	12.7	136	71	IDLE	300
240	9.7	105	53	IDLE	12.3	133	68	IDLE	300
220	9.1	100	49	IDLE	11.5	127	62	IDLE	300
200	8.5	94	45	IDLE	10.6	119	56	IDLE	300
180	7.8	86	40	IDLE	9.8	109	51	IDLE	300
160	7.1	78	36	IDLE	8.8	97	45	IDLE	300
140	6.3	67	31	IDLE	7.9	83	39	IDLE	300
120	5.6	57	27	IDLE	6.9	70	33	IDLE	300
100	4.9	48	23	IDLE	6.0	58	28	IDLE	300
50	1.7	15	7	IDLE	2.1	18	9	IDLE	250
15	.0	0	0	IDLE	.0	0	0	IDLE	250

CORRECTIONS	LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON	PER 1° ABOVE ISA
TIME	–	+ 6 %	+ 6 %	–
FUEL	– 2 %	+ 28 %	+ 44 %	+ 0.2 %
DISTANCE	–	+ 3 %	+ 4 %	+ 0.3 %

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QUICK DETERMINATION TABLE OF ALTERNATE FLIGHT PLANNING

ALL ENGINES

ALTERNATE PLANNING FROM DESTINATION TO ALTERNATE AIRPORT
GO-AROUND : 100 KG - CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE
DESCENT : M.78/300KT/250KT - VMC PROCEDURE : 80 KG (4MIN)

REF. LDG WT AT DEST. = 55000 KG
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA
CG = 33.0 %

FUEL CONSUMED (KG)
TIME (H.MIN)

AIR DIST. (NM)	FLIGHT LEVEL 100	150	200	250	290	330	CORRECTION ON FUEL CONSUMPTION (KG/1000KG) FL100 FL150	FL200 FL250	FL290 FL330
40	522 0.12						2		
60	677 0.16	663 0.16					3		
80	831 0.19	801 0.19					5		
100	986 0.23	940 0.23	937 0.22				6	6	
120	1141 0.27	1078 0.26	1061 0.26	1073 0.25			7	7	
140	1296 0.31	1217 0.30	1186 0.29	1187 0.28			8	8	
160	1451 0.35	1356 0.33	1310 0.33	1301 0.31	1312 0.30		9	9	10
180	1607 0.38	1495 0.37	1435 0.36	1415 0.34	1417 0.33	1429 0.33	10	10	11
200	1762 0.42	1634 0.40	1559 0.40	1529 0.38	1523 0.36	1528 0.36	11	11	13
220	1918 0.46	1774 0.44	1684 0.43	1644 0.41	1629 0.39	1628 0.38	12	12	14
240	2074 0.50	1913 0.47	1809 0.47	1758 0.44	1735 0.42	1727 0.41	13	13	15
260	2231 0.53	2053 0.51	1934 0.50	1872 0.47	1841 0.45	1827 0.44	14	14	16
280	2387 0.57	2193 0.54	2060 0.53	1987 0.50	1948 0.48	1927 0.47	15	15	17
300	2544 1.01	2332 0.58	2185 0.57	2102 0.53	2054 0.51	2027 0.50	16	16	18
320	2700 1.04	2473 1.01	2310 1.00	2217 0.57	2161 0.54	2127 0.53	17	17	19
340	2857 1.08	2613 1.05	2436 1.04	2332 1.00	2267 0.57	2227 0.56	18	18	20
360	3014 1.12	2753 1.08	2562 1.07	2447 1.03	2374 1.00	2327 0.58	19	20	21
380	3170 1.16	2893 1.12	2688 1.11	2562 1.06	2481 1.03	2427 1.01	20	21	22
400	3328 1.19	3033 1.15	2814 1.14	2678 1.09	2587 1.06	2528 1.04	21	22	23
420	3485 1.23	3174 1.19	2940 1.18	2793 1.12	2694 1.09	2628 1.07	22	23	24
440	3642 1.27	3314 1.22	3066 1.21	2909 1.15	2802 1.12	2729 1.10	23	24	25
460	3800 1.30	3455 1.26	3192 1.24	3024 1.19	2909 1.15	2830 1.13	24	25	26
480	3957 1.34	3595 1.29	3319 1.28	3140 1.22	3016 1.18	2930 1.16	25	26	27
500	4115 1.38	3736 1.33	3446 1.31	3256 1.25	3123 1.21	3031 1.18	26	27	28

LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
△FUEL = - 1 %	△FUEL = + 5 %	△FUEL = + 7 %

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IN CRUISE QUICK CHECK FL 100 LONG RANGE

FLIGHT WITHOUT CAB PRESS

IN CRUISE QUICK CHECK FROM ANY MOMENT IN CRUISE TO LANDING
CRUISE : LONG RANGE - DESCENT : 250KT
IMC PROCEDURE : 120 KG (6MIN)

FL100

NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA
CG = 25.0%

FUEL CONSUMED (KG)
TIME (H.MIN)

AIR DIST. (NM)	INITIAL WEIGHT (1000KG) 50	55	60	65	70	75	80
40	312 0.15	310 0.15	309 0.15	310 0.15	311 0.15	314 0.15	318 0.15
60	458 0.19	463 0.19	467 0.18	472 0.18	478 0.18	485 0.18	493 0.18
80	604 0.23	616 0.22	625 0.22	634 0.22	644 0.22	655 0.21	667 0.21
100	750 0.28	768 0.26	783 0.26	797 0.25	811 0.25	825 0.25	841 0.25
120	896 0.32	921 0.30	940 0.29	959 0.29	977 0.28	995 0.28	1015 0.28
140	1041 0.36	1073 0.34	1098 0.33	1121 0.32	1143 0.32	1165 0.32	1189 0.32
160	1186 0.41	1225 0.38	1255 0.37	1283 0.36	1309 0.35	1335 0.35	1363 0.35
180	1331 0.45	1377 0.42	1413 0.40	1444 0.39	1475 0.39	1504 0.38	1537 0.38
200	1476 0.50	1529 0.46	1570 0.44	1606 0.43	1640 0.42	1674 0.42	1710 0.42
220	1621 0.54	1680 0.50	1727 0.48	1767 0.46	1806 0.46	1843 0.45	1883 0.45
240	1765 0.58	1831 0.54	1884 0.51	1928 0.50	1971 0.49	2012 0.49	2056 0.48
260	1910 1.03	1982 0.58	2040 0.55	2090 0.54	2136 0.52	2181 0.52	2229 0.52
280	2054 1.07	2133 1.02	2197 0.59	2251 0.57	2302 0.56	2350 0.55	2402 0.55
300	2198 1.11	2284 1.06	2353 1.03	2411 1.01	2467 0.59	2519 0.59	2575 0.59
320	2341 1.16	2434 1.10	2510 1.06	2572 1.04	2632 1.03	2687 1.02	2748 1.02
340	2485 1.20	2585 1.14	2666 1.10	2733 1.08	2796 1.06	2856 1.06	2920 1.05
360	2628 1.25	2735 1.19	2822 1.14	2893 1.11	2961 1.10	3024 1.09	3093 1.09
380	2771 1.29	2885 1.23	2978 1.17	3053 1.15	3125 1.13	3193 1.12	3265 1.12
400	2914 1.33	3034 1.27	3133 1.21	3213 1.18	3290 1.17	3361 1.16	3437 1.15
420	3057 1.38	3184 1.31	3289 1.25	3373 1.22	3454 1.20	3529 1.19	3609 1.19
440	3199 1.42	3333 1.35	3444 1.29	3533 1.26	3618 1.23	3697 1.22	3780 1.22
460	3342 1.47	3482 1.40	3600 1.32	3693 1.29	3782 1.27	3865 1.26	3952 1.26
480	3484 1.51	3631 1.44	3755 1.36	3852 1.33	3946 1.30	4033 1.29	4124 1.29
500	3626 1.56	3780 1.48	3910 1.40	4012 1.36	4110 1.34	4200 1.33	4295 1.32
520	3768 2.00	3928 1.52	4065 1.44	4171 1.40	4273 1.37	4368 1.36	4466 1.36
540	3909 2.05	4077 1.57	4219 1.47	4330 1.44	4437 1.41	4535 1.39	4637 1.39

AIR CONDITIONING OFF	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
△FUEL = – 2.5 %	△FUEL = + 5 %	△FUEL = + 9 %

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GROUND DISTANCE / AIR DISTANCE CONVERSION

IAS / MACH CONVERSION

ISA TEMPERATURE AND PRESSURE ALTITUDE CORRECTION

ISA Temperature

Airport Elevation (ft)	ISA Temp. (°C)
15 000	−14.7
14 000	−12.7
13 000	−10.8
12 000	−8.8
11 000	−6.8
10 000	−4.8
9 000	−2.8
8 000	−0.8
7 000	+1.1
6 000	+3.1
5 000	+5.1
4 000	+7.1
3 000	+9.1
2 000	+11.0
1 000	+13.0
0	+15.0
−1 000	+17.0
−2 000	+19.0

Example:

Airport Elevation = 1000 ft
OAT = 23°C

– With the table above, determine the ISA Temperature corresponding to the **Airport Elevation:**
→ **ISA Temp = +13°C**

– To obtain the Delta ISA Temperature, subtract the **ISA Temp** above from the **Outside Air Temperature (OAT)**
→ **Delta ISA Temp = +10°C**

Pressure Altitude Correction

QNH (hPa)	CORRECTION (ft)	QNH (in Hg)
949 – 951	+1 900	28.01 – 28.10
952 – 955	+1 800	28.11 – 28.20
956 – 958	+1 700	28.21 – 28.30
959 – 961	+1 600	28.31 – 28.40
962 – 964	+1 500	28.41 – 28.45
965 – 968	+1 400	28.46 – 28.56
969 – 971	+1 300	28.57 – 28.67
972 – 974	+1 200	28.68 – 28.77
975 – 978	+1 100	28.78 – 28.86
979 – 981	+1 000	28.87 – 28.95
982 – 984	+900	28.96 – 29.05
985 – 988	+800	29.06 – 29.15
989 – 991	+700	29.16 – 29.25
992 – 994	+600	29.26 – 29.35
995 – 997	+500	29.36 – 29.45
998 – 1 001	+400	29.46 – 29.54
1 002 – 1 004	+300	29.55 – 29.64
1 005 – 1 007	+200	29.65 – 29.74
1 008 – 1 011	+100	29.75 – 29.84
1 012 – 1 014	0	29.85 – 29.94
1 015 – 1 018	−100	29.95 – 30.04
1 019 – 1 021	−200	30.05 – 30.14
1 022 – 1 025	−300	30.15 – 30.24
1 026 – 1 028	−400	30.25 – 30.34
1 029 – 1 031	−500	30.35 – 30.44
1 032 – 1 035	−600	30.45 – 30.54
1 036 – 1 038	−700	30.55 – 30.65
1 039 – 1 042	−800	30.66 – 30.75
1 043 – 1 045	−900	30.76 – 30.85
1 046 – 1 050	−1 000	30.86 – 30.95

Example:

Airport Elevation = 1000 ft
QNH = 996 hPa (29.41 in Hg)

– With the table above, determine the Pressure Altitude Correction for the current **QNH:**
→ **Pressure Altitude Correction = +500 ft**

– To obtain the Airport Pressure Altitude, add the **Pressure Altitude Correction** above to the **Airport Elevation:**
→ **Airport Pressure Altitude = 1500 ft**

WIND COMPONENT

Aircraft Configuration Summary..... OPS.01A
Operating Speeds.....OPS.02A
Use of Fuel Penalty Factor Tables.....OPS.03A
Fuel Penalty Factors/ECAM Alert Table.....OPS.04A
Fuel Penalty Factors/Inop Sys Table..... OPS.05A
Hydraulic Architecture.....OPS.06A
Flight Controls Architecture..... OPS.07A
Required Equipment for CAT2 and CAT3.....OPS.08A

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AIRCRAFT CONFIGURATION SUMMARY

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

Item	System	Installed
ADS-B OUT	SURV	No
AP Automatic Disconnection at Minima	AUTO FLT	No
AP /FD TCAS	AUTO FLT	No
Automatic FD Bar Engagement at Go-Around	**AUTO FLT**	**Yes**
Backup Navigation Function of the MCDU	**AUTO FLT**	**Yes**
BUSS	**NAV**	**Yes**
CPDLC	DATALINK	No
Derated Takeoff	ENG	No
Descent Profile Optimization (DPO)	AUTO FLT	No
FLS Function in the FMS	AUTO FLT	No
FMS 2 Release 1A	**AUTO FLT**	**Yes**
GLS	AUTO FLT	No
GPS	**NAV**	**Yes**
GPS PRIMARY Function	**NAV**	**Yes**
Metric Altitude Indications on the PFD	EIS	No
MLS	AUTO FLT	No
NAV Mode Automatically Engaged (Armed) at Go-Around	**AUTO FLT**	**Yes**
PWS	**SURV**	**Yes**
QFE BARO Setting	NAV	No
RAAS	SURV	No
RNP AR	AUTO FLT	No
ROW / ROPS	SURV	No
Soft Go-Around Function	ENG	No

OPERATING SPEEDS

OPERATING SPEEDS (KT) CG ≥ 25 %					
Weight (1000 KG)	F	S	Green dot FL < 200 (1)	VLS CONF 3	VREF
40	117	152	165	110	106
44	122	159	173	115	111
48	128	166	181	120	116
52	133	173	189	125	121
56	138	179	197	130	125
60	143	185	205	135	130
64	148	192	213	139	134
68	152	197	221	143	138
72	157	203	229	147	142
76	161	209	237	151	146
78	163	211	241	153	148

(1) Above FL 200 add 1 kt per additional 1 000 ft.

For CG < 25 % add 2 kt to VLS and VREF

USE OF FUEL PENALTY FACTOR TABLES

USE OF THE FUEL PENALTY FACTORS

The Fuel Penalty Factors provided in the following tables are conservative values, given as a guideline in order to increase the crew awareness and to help the decision making.

Note: *In case of failure impacting the fuel consumption, the fuel predictions provided by the FMS are no longer reliable (except in One Engine Inoperative OEI condition). The flight crew must still compute and monitor the actual fuel consumption.*

Refer to the following tables in order to assess the impact of the failure on the fuel consumption after any ECAM alert that:

- Displays the line INCREASED FUEL CONSUMP or FUEL CONSUMPT INCRSD in the STATUS SD page, or
- Displays Flight Control Surfaces in the INOP SYS, or
- Impacts the Landing Gears or Landing Gear Doors retraction (when extended).

The Fuel Penalty Factors given in these tables have been calculated taking into account:

- The FUEL CRITICAL INOP SYS, and
- The aircraft configuration, speed or altitude described in the CONDITIONS column.

Ensure that all these conditions are well met before applying the corresponding Fuel Penalty Factor.

METHODOLOGY

The methodology is the following:

- Check the **ECAM ALERT table** to determine if a Fuel Penalty Factor is applicable depending on the CONDITIONS column, then

- Check the **INOP SYS table** in order to determine if, according to the actual aircraft status, there is a Fuel Penalty Factor applicable depending on the CONDITIONS column

- If only one Fuel Penalty Factor (FPF) is applicable:
  TRIP FUEL PENALTY = (FOB - EFOB at DEST) x FPF
  The FMS fuel predictions must be recomputed to take into account this trip fuel penalty.

- If two or more Fuel Penalty Factors (FPF) are applicable:
  TRIP FUEL PENALTY = (FOB - EFOB at DEST) x (FPF1 + FPF2 +...)
  The FMS fuel predictions must be recomputed to take into account this trip fuel penalty.

Note: *Due to previous failures in flight or dispatch under MEL, some failures could have an impact on the fuel consumption:*
- *Without being mentioned in the ECAM ALERT table (only through INOP SYS table), or*
- *If mentioned in the ECAM ALERT table, with additional INOP SYS (other than the one(s) described in the FUEL CRITICAL INOP SYS column for this specific ECAM alert) impacting also the fuel consumption.*

Example:

- Dispatch with the ELAC 1 inoperative under MEL
- HYD G SYS LO PR ECAM caution in flight
- These two failures lead to the loss of the left aileron
- INOP SYS will displayed "L AIL"

If the Fuel Penalty Factor of the HYD G SYS LO PR ECAM alert is applicable (spoiler extended), sum the corresponding factor with the Fuel Penalty Factor related to the INOP SYS "L(R) AIL" partially extended.
FPF (HYD G SYS LO PR) = 10 %
FPF (INOP SYS: L AIL) = 8 %
Therefore, TRIP FUEL PENALTY = (FOB - EFOB at DEST) x (10 % + 8 %)

If the Fuel Penalty Factor of the HYD G SYS LO PR ECAM alert is not applicable (spoiler remains retracted), apply the Fuel Penalty Factor related to the INOP SYS "L(R) AIL" partially extended.
Therefore, TRIP FUEL PENALTY = (FOB - EFOB at DEST) x 8 %

FUEL PENALTY FACTORS/ECAM ALERT TABLE

FUEL PENALTY FACTORS/ECAM ALERT TABLE				
SYS	**ECAM ALERT**	**FUEL CRITICAL INOP SYS**	**CONDITIONS**	**FUEL PENALTY FACTOR**
ELEC	AC BUS 1 FAULT (equivalent to B SYS LO PR)	SPLR 3	If L(R) spoiler 3 is indicated extended (at the time of the failure)	10 %
	DC ESS BUS FAULT (equivalent to B SYS LO PR)	SPLR 3	If L(R) spoiler 3 is indicated extended (at the time of the failure)	10 %
F/CTL	L(R) AIL FAULT	L(R) AIL	If one aileron is indicated fully extended (upwards or downwards)	27 %
		L(R) AIL or L+R AIL	If one or both aileron(s) is/are indicated partially extended	8 %
	SPLR FAULT	SPLR (affected)	If one spoiler is suspected fully extended *(2)* **Cruise Conditions:** **OPT SPEED..... GDOT +10KT** Whenever possible, target green dot speed +10 kt to minimize fuel consumption. However, if buffet is encountered at GDOT speed +10 kt increase speed to fly out of buffet condition. **CRUISE ALT.....AS REQUIRED** Current Flight Level (FL) may not be maintained due to increased drag. Maintain a cruise FL as high as possible.	55 %
			If one spoiler or one pair of spoilers is partially extended (zero hinge moment)	10 %
		SPLR 3 with BLUE HYD	If spoiler 3 is partially extended after the loss of the B hydraulic system *(1)*	Up to 4 %
		SPLR 1 or 5 with GREEN HYD	If spoiler 1 or 5 is partially extended after the loss of the G hydraulic system *(1)*	Up to 9 % *(3)*
		SPLR 2 or 4 with YELLOW HYD	If spoiler 2 or 4 is partially extended after the loss of the Y hydraulic system *(1)*	Up to 9 % *(3)*
	FLAPS FAULT/LOCKED	FLAPS	If Flaps are extended	80 %
	SLATS FAULT/LOCKED	SLATS	If Slats are extended	60 %
	SLATS + FLAPS FAULT/LOCKED	SLATS+FLAPS	If Slats and Flaps are extended	100 %
HYD	B SYS LO PR	SPLR 3	If L(R) spoiler 3 is indicated extended (at the time of the failure)	10 %
	G SYS LO PR	SPLR 1+5	If L(R) spoiler 5 is indicated extended (at the time of the failure)	10 %
	Y SYS LO PR	SPLR 2+4	If L(R) spoilers 2 and 4 are indicated extended (at the time of the failure)	20 %
	G+B SYS LO PR	L+R AIL SPLR 1+3+5 L ELEV	Both ailerons are failed Spoilers 1, 3 and 5 *(1)* Left elevator is failed RAT is extended	10 % to 15 % *(4)*
	G+Y SYS LO PR	SPLR 1+2+4+5 STABILIZER	Stabilizer is jammed Spoilers 1, 2, 4 and 5 *(1)*	0 % to 10 % *(4)*
	B+Y SYS LO PR	SPLR 2+3+4 R ELEV	Spoilers 2, 3 and 4 *(1)* Right elevator is failed RAT extended	3 % to 10 %

Continued from the previous page

FUEL PENALTY FACTORS/ECAM ALERT TABLE				
SYS	**ECAM ALERT**	**FUEL CRITICAL INOP SYS**	**CONDITIONS**	**FUEL PENALTY FACTOR**
				(4)
L/G	SHOCK ABSORBER FAULT	L/G RETRACT	All landing gears are extended (Also refer to PRO-SPO-25-10)	180 %
	GEAR NOT UPLOCKED			
	BOGIE ALIGN FAULT (option)			
	GEAR UPLOCK FAULT			
	DOORS NOT CLOSED	L/G DOOR	All landing gears doors are extended	15 %

(1) During the flight, the spoiler(s) may gradually extend and increase(s) the fuel consumption.

(2) A spoiler can be suspected fully extended (runaway) if high roll rate has been experienced immediately after the failure, associated with a possible AP disconnection. A visual inspection, if time permits, can also confirm the full extension of the spoiler.

(3) The maximum value of the Fuel Penalty Factor provided in the table considers that the two pairs of corresponding spoilers gradually extend during the flight.

(4) The minimum value of the Fuel Penalty Factor provided in the table considers that all spoilers remain retracted. The maximum value has been calculated considering that all impacted spoilers gradually extend during the flight.

FUEL PENALTY FACTORS/INOP SYS TABLE

FUEL PENALTY FACTORS/INOP SYS TABLE			
SYS	**INOP SYS**	**CONDITIONS**	**FUEL PENALTY FACTOR**
F/CTL	L(R) AIL or L+R AIL	If one or both aileron(s) is/are indicated partially extended	8 %
	FLAPS	If Flaps are extended	80 %
	SLATS	If Slats are extended	60 %
	SLATS+FLAPS	If Slats and Flaps are extended	100 %
L/G	L/G DOOR	All landing gears doors are extended	15 %

HYDRAULIC ARCHITECTURE

FLIGHT CONTROLS ARCHITECTURE

→ Arrows indicate the control reconfiguration priorities

G B Y indicates the hydraulic power source for each servo control

REQUIRED EQUIPMENT FOR CAT2 AND CAT3

	FMA CAPABILITY → / EQUIPMENT ↓	CAT 2	CAT 3 SINGLE	CAT 3 DUAL
FMGS MONITORED FOR FMA LDG CAPABILITY	AP	1 AP ENGAGED	1 AP ENGAGED	2 AP ENGAGED
	AUTOTHRUST	0	1	1
	FMA	1	2	2
	A/THR CAUTION	0	1	1
	ELECTRICAL SUPPLY SPLIT	0	0	1
	FAC	1	1	2
	ELAC	1	1	2
	YAW DAMPER/RUDDER TRIM	1/1	1/1	2/2
	HYDRAULIC CIRCUIT	2	2	3
	PFD	2	2	2
	FLIGHT WARNING COMPUTER	1	1	2
	BSCU CHANNEL	1 *(1)*	1 *(1)*	1
	ANTISKID	1 *(1)*	1 *(1)*	1
	NOSEWHEEL STEERING	1 *(1)*	1 *(1)*	1
	RADIO ALTIMETER	1 (displayed on both sides)	2	2
	ILS RECEIVER	2	2	2
	BEAM EXCESSIVE DEVIATION WARNING	1 for PM	2	2
	ATTITUDE INDICATION ON PFD	2	2	2
	ADR/IR	2/2	2/2	3/3
NOT FMGS MONITORED FOR FMA LDG CAPABILITY	AP DISCONNECT PB	2	2	2
	"AP OFF" ECAM WARNING	1	1	2
	"AUTOLAND" LIGHT	1	1	1
	RUDDER TRAVEL LIMIT SYSTEM	1 required for autoland with crosswind higher than 12 kt		
	WINDSHIELD HEAT (L or R windshield)	1 for PF		
	WINDSHIELD WIPERS OR RAIN REPELLENT (if activated)	1 for PF		
	ND	1	2	2
	AUTO CALLOUT FUNCTION	one is required for autoland	1	1
	ATTITUDE INDICATION (STBY)	1	1	1
	DH INDICATION	1 for PM		

(1) For automatic rollout, one is required. For autoland without automatic rollout, none is required.

Note:
- *Flight crews are not expected to check the equipment list before approach. When an ECAM or local caution occurs, the crew should use the list to confirm the landing capability.*
- *On ground, the equipment list determines which approach category the aircraft will be able to perform at the next landing.*
- *Electrical power supply split : This ensures that each FMGC is powered by an independent electrical source (AC and DC).*
- *Failure of antiskid and/or nosewheel steering mechanical parts are not monitored for landing capability.*
- *The DH will be displayed on the FMA , and the ˝Hundred Above˝ and ˝Minimum˝ auto callouts will be announced, provided that the DH value has been entered on the MCDU.*

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Identification	Title
OEB41 Issue 1	Erroneous Alternate Fuel Predictions Upon Modification of a Company Route in the Alternate Flight Plan ECAM Entry None
OEB46 Issue 1	No Engagement of Guidance Mode ECAM Entry None

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ERRONEOUS ALTERNATE FUEL PREDICTIONS UPON MODIFICATION OF A COMPANY ROUTE IN THE ALTERNATE FLIGHT PLAN

ECAM ENTRY

None

PROCEDURE

This OEB PROC N°41 is issued to provide flight crews with the following recommendations:
This procedure only applies when a CO RTE is used for ALTN F-PLN . In the case of ALTN fuel predictions erroneously set to zero further to a modification of this ALTN F-PLN:

ENTER manually a waypoint in the en-route F-PLN (neither in the departure, nor in the arrival), to start a new computation of ALTN fuel predictions
Maintain or delete the entered waypoint at convenience
Check the ALTN fuel predictions are correct

END OF OEB41

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NO ENGAGEMENT OF GUIDANCE MODE

ECAM ENTRY

None

PROCEDURE

This bulletin is issued to remind operators of the possible consequences of an erroneous Radio Altimeter (RA) height indication. As listed in the OEB 46, if a RA transmits an erroneous height indication, this may have effects on the auto flight system depending on the flight phase.
This OEB PROC is issued to provide flight crews with the following recommendations:

- **During go-around**
  - **If SRS and GA TRK modes remain engaged and other guidance modes cannot be selected or engaged as expected:**

    Note: - *At the thrust reduction altitude, LVR CLB will not be displayed on the FMA,*
    - *ALT* and ALT will not engage at the FCU altitude.*

    Disconnect APs.
    Set both FD s to OFF then ON. FDs revert to basic modes (HDG - V/S).
    Re-engage guidance modes as appropriate.

- **For the approach that follows the go-around:** Do not arm the G/S mode.

Flight crews must report, in the technical logbook, any of the consequences of an erroneous RA height listed in the OEB N°46.

END OF OEB46

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GENERAL DESCRIPTION

OEB IN THE QRH

Each FCOM OEB has an associated "OEB PROC " in the OEB section of the QRH, that includes:
- The title of the OEB PROC,
- The "ECAM ENTRY" field:
  This section identifies whether or not one of the possible conditions for applying the OEB PROC is an ECAM warning/caution.
  The flight crew must disregard the ECAM procedure and/or STATUS of the ECAM alerts listed in the "ECAM ENTRY" field and must apply the QRH 's OEB procedure instead.
- The OEB operational procedure(s) that the flight crew must apply.

QRH LIST OF EFFECTIVE OEB

The List of Effective Operations Engineering Bulletins (LEOEB) enables to review all the Operations Engineering Bulletins (OEB s) that are applicable to the fleet. Each time an OEB is issued or revised, the LEOEB is updated.

Identification	Title
OEB26 Issue 1	**Erroneous Radio Altimeter (RA) Height Indication** ECAM Entry None
OEB33 Issue 1	Pack Flow Monitoring ECAM Entry None
OEB34 Issue 1	NAV ADR 1+2+3 FAULT ECAM Warning Undue Activation ECAM Entry NAV ADR 1+2+3 FAULT
OEB35 Issue 2	**Loss of AP and A/THR Associated with Alternate Law Reversion** ECAM Entry None

The QRH LEOEB provides:
The "Identification" field which identifies the OEB with its identification and issue number.

Note: *The FCOM OEB and associated QRH OEB PROC have the same OEB number in order to be consistent. However, the issue number of the QRH OEB PROC and the FCOM OEB may be different, because a revision of an FCOM OEB does not necessarily result in a revision of the corresponding QRH OEB PROC, that only provides the procedure part.*

Red OEB identification number and title are in bold font. White OEB identification number and title are in regular font. This enables the flight crew to easily review the OEBs before flight.

Note: *OEBs are listed in numerical order regardless of the type of OEB (red or white).*

The "Title" field provides the OEB title and the "ECAM Entry " part of the OEB PROC. This enable the flight crew to easily review the OEB s before flight particularly for Operators that use the OEB REMINDER function.

CAUTION	When Airbus provides the Operator with the LEOEB , the information "ECAM Entry " does not necessarily mean that (for Operators using the OEB REMINDER function) the Operator's maintenance personnel has activated the OEB REMINDER codes for this OEB onboard the aircraft. It is the Operator's responsibility to define a suitable process to provide the flight crew with confirmation that the OEB REMINDER codes are activated for the ECAM alerts affected by OEBs.

A vertical bar in the margin of the QRH LEOEB identifies that the OEB is either new, revised or has an aircraft validity change.

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EMER LANDING
ALL ENG FAILURE

Apply the following if not able to maintain altitude after the loss of thrust near the ground.

DITCHING	FORCED LANDING
APU.....START	APU.....START
LANDING GEAR.....UP	
FLAPS LEVER.....2	FLAPS LEVER.....2
VAPP..... DETERMINE	VAPP..... DETERMINE

GW	40 t	50 t	60 t	70 t	80 t	90 t	95 t
VAPP	150 kt	150 kt	163 kt	173 kt	183 kt	193 kt	198 kt

DITCHING pb..... ON	SPLRS..... ARM
	At 1 000 ft AGL at the latest: LANDING GEAR..... DOWN by GRVTY
At 500 ft AGL or below: BRACE FOR IMPACT..... ORDER **For flare:** TOUCH DOWN AT MIN V/S TARGET PITCH ATT 11 °	**At 500 ft AGL or below:** BRACE FOR IMPACT..... ORDER **For flare:** TOUCH DOWN AT MIN V/S
At touchdown: ALL ENG MASTERS.....OFF APU MASTER SW..... OFF EMER EVAC PROC.....APPLY	**At touchdown:** ALL ENG MASTERS.....OFF APU MASTER SW..... OFF EMER EVAC PROC.....APPLY

EMER EVAC

AIRCRAFT / PARKING BRK..... STOP / ON
ATC (VHF 1).....NOTIFY
CABIN CREW (PA).....ALERT
ΔP (only if MAN CAB PR has been used).....CHECK ZERO

- **If ΔP not at zero:**
  CAB PR MODE SEL..... MAN
  V/S CTL.....FULL UP

ALL ENG MASTERS.....OFF
ALL FIRE pb (ENGs & APU).....PUSH
ALL AGENTS (ENGs & APU).....AS RQRD

- **If evacuation required:**
  EVACUATION.....INITIATE

- **If evacuation not required:**
  CABIN CREW AND PASSENGERS (PA).....NOTIFY

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NORMAL CHECKLIST

BEFORE START

COCKPIT PREP..... COMPLETED (BOTH)
GEAR PINS and COVERS.....REMOVED
SIGNS.....ON/AUTO
ADIRS.....NAV
FUEL QUANTITY..... _____KG .LB
TO DATA..... SET
BARO REF..... _____SET (BOTH)

WINDOWS/DOORS.....CLOSED (BOTH)
BEACON.....ON
THR LEVERS..... IDLE
PARKING BRAKE.....AS RQRD

AFTER START

ANTI ICE.....AS RQRD
ECAM STATUS.....CHECKED
PITCH TRIM..... _____% SET
RUDDER TRIM.....ZERO

BEFORE TAKEOFF

FLIGHT CONTROLS..... CHECKED (BOTH)
FLT INST..... CHECKED (BOTH)
BRIEFING..... CONFIRMED
FLAP SETTING.....CONF_____(BOTH)
V1 . VR . V2 /FLX TEMP.....(BOTH)
ATC.....SET
ECAM MEMO..... TO NO BLUE
- *AUTO BRK MAX*
- *SIGNS ON*
- *CABIN READY (◁)*
- *SPLRS ARM*
- *FLAPS TO*
- *TO CONFIG NORM*

TAKEOFF RWY..... _____CONFIRMED (BOTH)
CABIN CREW..... ADVISED
TCAS..... TA OR TA /RA
ENG MODE SEL.....AS RQRD
PACKS..... AS RQRD

AFTER TAKEOFF / CLIMB

LDG GEAR..... UP
FLAPS.....RETRACTED
PACKS.....ON

BARO REF..... _____SET (BOTH)

APPROACH

BRIEFING..... CONFIRMED
ECAM STATUS.....CHECKED
SEAT BELTS.....ON
BARO REF..... _____SET (BOTH)
MINIMUM..... _____SET (BOTH)
ENG MODE SEL.....AS RQRD

LANDING

CABIN CREW..... ADVISED
A/THR.....SPEED/OFF
AUTOBRAKE..... AS RQRD
ECAM MEMO.....LDG NO BLUE
- *LDG GEAR DN*
- *SIGNS ON*
- *CABIN READY (◁)*
- *SPLRS ARM*
- *FLAPS SET*

AFTER LANDING

FLAPS.....RETRACTED
SPOILERS..... DISARMED
APU.....START
RADAR..... OFF
PREDICTIVE WINDSHEAR SYSTEM..... OFF

PARKING

APU BLEED..... ON
ENGINES.....OFF
SEAT BELTS.....OFF
EXT LT.....AS RQRD
FUEL PUMPS.....OFF
PARK BRK and CHOCKS.....AS RQRD
Consider HEAVY RAIN

SECURING THE AIRCRAFT

ADIRS.....OFF
OXYGEN.....OFF
APU BLEED.....OFF
EMER EXIT LT.....OFF
NO PORTABLE/ELEC DEVICE..... OFF
APU AND BAT..... OFF
Consider COLD WEATHER

TAKEOFF CG/TRIM POS

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