FENIX

Airbus A320

IAE

QUICK REFERENCE HANDBOOK

05-Dec-23

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/Bs, IR and guarded switches with PF's confirmation (except on ground).

ECAM CLEAR

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

ABN-27 SMOKE

ABN-28 WHEEL

ECAM ADVISORY CONDITIONS

SYSTEM	CONDITIONS	RECOMMENDED ACTION
APU	FLAP OPEN Flap not fully closed when APU master switch is off.	
	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 - MODE SEL: AUTO • If unsuccessful: – MODE SEL: MAN – Manual pressure control
	CAB ALTITUDE V/S ≥ 8 800 ft/min	PACK FLOW: HI CPC changeover is recommended: - MODE SEL: MAN - Wait 10 s - MODE SEL: AUTO • If unsuccessful: – MODE SEL: MAN – Manual pressure control
	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.

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ECAM ADVISORY CONDITIONS (CONT'D)

SYSTEM	CONDITIONS	RECOMMENDED ACTION
ENG	OIL PRESS P < 80 PSI	- If oil pressure is between 80 PSI and 60 PSI continue normal operation. - If oil pressure is below 60 PSI (red indication), without the ENG 1(2) OIL LO PR alert, 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 > 390 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 > 155°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 continue to increase, mechanically disconnect IDG.

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ECAM ADVISORY CONDITIONS (CONT'D)

SYSTEM	CONDITIONS	RECOMMENDED ACTION
ENG	OIL QTY < 5 qt	The oil quantity in the tank can decrease at high thrust setting due to the effect of oil gulping. In that case, the indicated oil quantity will increase after thrust reduction. Monitor the affected engine oil parameters and crosscheck with the other engine - As long as the oil temperature and the oil pressure of the affected engine remain within limits, normal engine operation is not affected. If the oil quantity continues to decrease, both of the following ECAM alerts can be triggered: - ENG 1(2) OIL LO PR caution - ENG 1(2) OIL LO PR warning.
	NAC TEMP ≥ 320°C	Monitor engine parameters and crosscheck with other engine.
	VIBRATION N1 ≥ 5 units N2 ≥ 5 units	Refer to HIGH ENGINE VIBRATION procedure *(Refer to ABN-19 HIGH ENGINE VIBRATION).*
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	OXY 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.
Reset ELAC or SEC only when listed in the System Reset Table.
Other 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.

Note: *Before taking any action on the cockpit C/Bs, 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
A-ICE	ANTI ICE L(R) WINDSHIELD (WINDOW) (WHC)	On ground: If the air conditioning packs are OFF with the OAT above 40 °C, and/or the windshield is under direct sunlight, a spurious ANTI ICE L(R) WINDSHIELD (WINDOW) may trigger. In this case, apply the following reset procedure: - Set both PACKS to ON - Wait 5 min - Pull the C/B X13 on 122VU (WHC1), or W13 on 122 VU (WHC2) - Push it after 5 s.

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SYSTEM RESET TABLE (CONT'D)

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
AIR	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. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* On ground of 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 of unsuccessful).*

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SYSTEM RESET TABLE (CONT'D)

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
AIR	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 of unsuccessful).*
AUTO FLT	AUTO FLT A/THR OFF	On ground, before taxi only: • If no engine running: - Press FCU A/THR pb in order to re-engage the A/THR (this will cancel the ECAM alert) - Press A/THR instinctive disconnect pb to disconnect A/THR. • If at least one engine is running: - Apply external power or APU generator power - ENG MASTER (running engine(s)) ..... OFF - Press FCU A/THR pb in order to re-engage the A/THR (this will cancel the ECAM alert) - Press A/THR instinctive disconnect pb to disconnect A/THR.

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SYSTEM RESET TABLE (CONT'D)

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
AUTO FLT	AUTO FLT FCU 1(2) FAULT (FCU)	<u>In flight:</u> - Pull the C/B B05 on 49VU for FCU1, 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. <u>On ground:</u> - Pull the C/B B05 on 49VU for FCU1, 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 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).

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SYSTEM RESET TABLE (CONT'D)

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
AUTO FLT	AUTO FLT FCU 1+2 FAULT (FCU)	<u>In flight:</u> - Pull the C/B B05 on 49VU for FCU1, 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. <u>On ground:</u> - Pull the C/B B05 on 49VU for FCU1, and then M21 on 121VU for FCU 2 - Push the C/Bs 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 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 seconds 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 YAW DAMPER 1(2) (FAC 1(2))	<u>In flight:</u> If AP is inoperative: - Set FAC 1(2) pb to OFF - Wait 3 s - Set FAC 1(2) pb to ON.

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SYSTEM RESET TABLE (CONT'D)

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
AUTO FLT	CAT 3 DUAL displayed in INOP SYS without any other ECAM Alert (FAC)	<u>On ground, or in flight:</u> <u>Note:</u> *If the CAT 3 DUAL INOP SYS is associated to another ECAM message (in particular ADR FAULT or IR FAULT...), it means that the root cause is not an ADR or IR rejection by FAC or FMGC. Consequently, change of AP or FAC reset will not clear the CAT 3 DUAL inop.* If CAT 3 DUAL is displayed in INOP SYS without any other failure being detected: - Change the AP in command. If unsuccessful: - Set FAC 1 pb to OFF - Wait 3 s - Set FAC 1 pb to ON. Wait for <u>AUTO FLT FAC 1 FAULT</u> to disappear, and: - Set FAC 2 pb to OFF - Wait 3 s - Set FAC 2 pb to ON.
	One MCDU locked or blank (MCDU)	<u>On ground, or in flight:</u> - Pull the C/B for the locked or blank MCDU and push it back after 10 s. The circuit breakers for the MCDUs are: • AUTO FLT/MCDU 1 B1 ON 49 VU (Overhead Panel) • AUTO FLT/MCDU 2 N20 ON 121 VU (Right Rear Maintenance Panel) • AUTO FLT/MCDU 3 N21 ON 121 VU (Right Rear Maintenance Panel)

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SYSTEM RESET TABLE (CONT'D)

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
AUTO FLT	Both MCDU locked or blank or FMGC malfunction (FMGC)	The circuit breakers for the FMGCs are: • AUTO FLT/FMGC 1 B2 ON 49 VU (Overhead Panel) • AUTO FLT/FMGC 2 M17 ON 121 VU (Right Rear Maintenance Panel) <u>Short FMGC Reset:</u> <u>On ground:</u> • If no engine running: - Apply external power or APU generator power. - Wait 2 min before resetting the FMGC circuit breakers. - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. CAUTION: Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC. • If engines running: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. CAUTION: Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC. • If FMGC reset is unsuccessful: - Consider FMGC reset with engines not running.

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SYSTEM RESET TABLE (CONT'D)

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *The FMGC reset is more effective with engines not running.* In flight: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. CAUTION: Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC. **Long FMGC Reset:** On ground: • If no engine running: - Apply external power or APU generator power. - Wait 2 min before resetting the FMGC circuit breakers. - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 15 min. - Push the C/B of the affected FMGC. CAUTION: Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC. • If engines running: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 15 min. - Push the C/B of the affected FMGC. CAUTION: Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

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SYSTEM RESET TABLE (CONT'D)

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		• If FMGC reset is unsuccessful: - Consider FMGC reset with engines not running. Note: *The FMGC reset is more effective with engines not running.* In flight: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 15 min. - Push the C/B of the affected FMGC. CAUTION: Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC. Note: *Consider a long FMGC reset only if a short FMGC reset has no effect.*

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SYSTEM RESET TABLE (CONT'D)

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
BRAKES	BRAKES SYS 1(2) FAULT or BRAKES BSCU CH 1(2) FAULT (BSCU)	<u>On ground:</u> - 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/Bs M33 and M34 on 121VU for BSCU channel 1 - Pull C/Bs M36 and M35 on 121VU for BSCU channel 2 - Push C/Bs. After a successful reset, resume to normal operation. <u>Note:</u> *After any BSCU reset:* *1. Check brake efficiency* *2. Record BSCU reset in the logbook.* <u>In flight:</u> 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. <u>Note:</u> *After any BSCU reset:* - *Record BSCU reset in the logbook.*

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SYSTEM RESET TABLE (CONT'D)

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
COM	COM CIDS 1+2 FAULT (CIDS)	<u>On ground:</u> - Pull C/Bs in the following order: G02 on 49VU, M05 and N11 ✻ on 121VU - Wait 10 s - Push C/B G02 - Wait 5 min - Push C/B M05 - After CIDS reset, wait approximately 4 min before recovering normal operation. <u>In flight:</u> - Pull C/Bs in the following order: G02 on 49VU, M05 and N11 ✻ on 121VU - Wait 10 s - Push C/B G02 - Wait 10 s - Push C/Bs in the following order: N11 ✻, M05 - After CIDS reset, wait approximately 4 min before recovering normal operation.
	Uncommanded EVAC horn activation ✻ (CIDS)	<u>On ground:</u> - Press EVAC HORN SHUT OFF pb - Set EVAC CAPT & PURS/CAPT sw to CAPT position only - Wait 3 s. • IF UNSUCCESSFUL: - Pull C/Bs in the following order: G02 on 49VU, M05 and N11 ✻ on 121VU - Wait for 1 min - Push C/Bs in the following order: N11 ✻, M05, G02 - After CIDS reset, wait approximately 4 min before recovering normal operation.

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SYSTEM RESET TABLE (CONT'D)

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
COM	Frozen RMP (RMP)	<u>On ground, or in flight:</u> Flight crew must reset all RMPs one after the other via 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 or Tape reproducer/PRAM)	<u>On ground, or in flight:</u> - Pull FAP C/B M14 (or Q14 ❄) in 121VU - Wait 10 s - Push C/B M14 (or Q14 ❄). • IF UNSUCCESSFUL: - Pull tape reproducer/PRAM C/B D01 or E01 or F07 on 2000VU (cabin) - Wait for 10 s - Push C/B D01 or E01 or F07.
	Failure messages on CIDS FAP in the cabin (VSC)	<u>On ground, or in flight:</u> - Pull C/B A06 or B06 on 2001VU (aft cabin) - Wait 30 s - Push C/B A06 or B06.
	SATCOM ❄ malfunction (SATCOM ❄)	<u>On ground, or in flight:</u> - Pull SATCOM C/B K01 on 121VU - Wait 5 s - Push SATCOM C/B K01on 121VU. <u>Note:</u> - *SDU should reset in less than 2 min* - *The flight crew cannot perform software reset for SATCOM via MCDU.*

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SYSTEM RESET TABLE (CONT'D)

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
DATALINK	ATSU ❄	The ATSU reset should be attempted, only if: - INVALID DATA is displayed on the DCDU, or - Key selection has no effect on the DCDU or any of the MCDU ATSU DATALINK submenus, or - ADS-C, CPDLC or AOC are inoperative. **On ground, or in flight:** - Pull the C/Bs in the following order: L16, L15 on 121VU - Wait 5 s, then - Push the C/Bs in the following order: L15, L16. 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: • The flight crew must check the ADS-C is ARMED or ON. • The flight crew should contact the ATC center by voice to re-establish the ADS-C connection. *Note:* *As no ADS-C disconnect message is sent, the ATC center(s) consider that the ADS-C connection is still alive.*
	CINS ❄	If there is a malfunction of the CINS and if the reset by the cabin crew is unsuccessful, the flight crew can attempt to reset the system using the CINS RESET pb on the panel 45VU on the overhead panel. *Note:* *The CINS reset may take up to 10 min.*

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SYSTEM RESET TABLE (CONT'D)

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
DATALINK	DATALINK ATC FAULT or DATALINK COMPANY FAULT or DATALINK VHF 3 DATA FAULT (VHF3 ❄)	<u>On ground, or in flight:</u> - Pull the COM / VHF3 C/B L05 on 121VU - Wait 5 s - Push the COM / VHF3 C/B L05 on 121VU.
ELEC	GPU cannot be connected to the aircraft (GAPCU)	<u>On ground, or in flight:</u> 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.

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SYSTEM RESET TABLE (CONT'D)

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
F/CTL	F/CTL ELAC 1 PITCH FAULT (ELAC)	<u>In flight:</u> - Not authorized. <u>On ground:</u> CAUTION: - Do not reset ELAC in case of dispatch with MMEL item SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 2 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 1 pb-sw to OFF - Wait 3 s - Set ELAC 1 pb-sw to ON - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 2 pb-sw to ON - Set pitch trim to takeoff CG <u>Note:</u> *Record the ELAC 1 reset in the logbook (successful or unsuccessful).*

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SYSTEM RESET TABLE (CONT'D)

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
F/CTL	F/CTL ELAC 2 PITCH FAULT (ELAC)	In flight: - Not authorized. On ground: CAUTION: - Do not reset ELAC in case of dispatch with MMEL item SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to ON - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 1 pb-sw to ON - Set pitch trim to takeoff CG *Note:* *Record the ELAC 1 reset in the logbook (successful or unsuccessful).*

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SYSTEM RESET TABLE (CONT'D)

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
F/CTL	F/CTL AIL SERVO FAULT (ELAC)	In flight: - Not authorized. On ground: CAUTION - Do not reset ELAC if more than one aileron actuator indication box is displayed in amber on the F/CTL SD page. - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to ON - Perform a flight control check - Set ELAC 2 pb-sw to OFF - Set ELAC 1 pb-sw to ON - Perform a flight control check - Set ELAC 2 pb-sw to ON - Set pitch trim to takeoff CG *Note:* *Record the ELAC 1 and ELAC 2 resets in the logbook (successful or unsuccessful).*

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SYSTEM RESET TABLE (CONT'D)

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
F/CTL	F/CTL SPLR FAULT (ELAC)	<u>In flight:</u> - Not authorized. <u>On ground:</u> CAUTION: - Do not reset SEC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set SEC 1 pb-sw to OFF - Wait 3 s - Set SEC 1 pb-sw to ON - Set SEC 2 pb-sw to OFF - Wait 3 s - Set SEC 2 pb-sw to ON - Set SEC 3 pb-sw to OFF - Wait 3 s - Set SEC 3 pb-sw to ON - Perform a flight control check <u>Note:</u> *Record the SEC 1, SEC 2 and SEC 3 resets in the logbook (successful or unsuccessful).*

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SYSTEM RESET TABLE (CONT'D)

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
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)	<u>On ground, or in flight:</u> - Pull the three C/Bs: • Channel 1 (A13 on 49VU) • Channel 2 (M27 on 121 VU) • Channel 1 and 2 (L26 on 121VU). - Wait 5 s, before pushing the three C/Bs. *<u>Note:</u> The fuel quantity indication will be re-established within 1 min.*
FWS	FWS FWC 1(2) FAULT (FWC)	<u>On ground:</u> 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. <u>In flight:</u> Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU).

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SYSTEM RESET TABLE (CONT'D)

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
L/G	L/G LGCIU 1(2) FAULT (LGCIU 1(2))	<u>On ground only:</u> 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, then R32 on 121VU. • Wait 15 s, then push the C/Bs. - To reset LGCIU 2: • Pull C/B Q35 on 121VU, then R33 on 121VU. • Wait 15 s, then push the C/Bs. 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)	<u>On ground, or in flight:</u> 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)	<u>On ground only:</u> - Pull C/B K10 on 121VU - Wait 5 s, then push the C/B.

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SYSTEM RESET TABLE (CONT'D)

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
SMOKE	SMOKE DET FAULT (CIDS-SDF)	<u>On ground or in flight:</u> Apply the following actions in the presented order: - Pull the C/Bs C05 and C06 on 49VU, T17 and T18 on 122VU - Wait 10 s, then - Push simultaneously the C/Bs C05 and C06 on 49VU - Within 2 s push simultaneously the C/Bs 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)	<u>On ground or in flight:</u> Apply the following actions in the presented order: - Pull the C/Bs 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/Bs 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. <u>If unsuccessful, on ground only:</u> Apply the following actions in the presented order: - Pull the C/Bs C06 and C05 on 49VU, T17 and T18 on 122VU - Wait 10 s, then - Push simultaneously the C/Bs C05 and C06 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.

Continued on the next page

SYSTEM RESET TABLE (CONT'D)

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
SMOKE	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/Bs C05 and C06 on 49VU, T17 and T18 on 122VU - Wait 10 s, then - Push simultaneously the C/Bs C05 and C06 on 49VU - Within 2 s push simultaneously the C/Bs 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.

Continued on the next page

SYSTEM RESET TABLE (CONT'D)

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
WHEEL	WHEEL N.W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	<u>On ground only:</u> <u>Case A</u> 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 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. <u>Case B</u> 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. <u>Reset Procedure</u> - 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. <u>*Note:*</u> *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 ADR1 available as ADR1 is supplied in EMER ELEC config.

NAV ADR 1(2)(3) FAULT

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 FL200:
    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

Continued on the next page

ENGINE 1+2 BLEED FAULT (CONT'D)

- 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

    WING A.ICE NOT AVAILABLE

    - When CAB PR ΔP < 1 psi:

      RAM AIR .....ON
      MAX FL: 100 / MEA-MORA

Continued on the next page

ENGINE 1+2 BLEED FAULT (CONT'D)

- 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

      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

Continued on the next page

ENGINE 1+2 BLEED FAULT (CONT'D)

- 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

Continued on the next page

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

Continued on the next page

ENGINE 1+2 BLEED FAULT (CONT'D)

- 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

- 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

TOO HOT COCKPIT AND CABIN TEMPERATURE IN FLIGHT

PACKS OUTLET TEMP [BLEED SD PAGE] ..... CHECK

- If difference between both packs at or above 10 °C:
  PACK WITH THE HIGHEST OUTLET TEMP .....OFF

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 sideslip 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 sideslip 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

Continued on the next page

DISPLAY UNIT FAILURE (CONT'D)

- 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
  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: VHF1, HF1 ✻, ATC1, RMP1, only
NAV: ILS1, MLS1, VOR1, GPS1 (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

Continued on the next page

ELEC EMER CONFIG SUMMARY (CONT'D)

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 GROUND
ICE - RAIN	WING A.ICE	Norm	Inop	Inop
	ENG A.ICE VALVE	Open	Open	Open
	CAPT PITOT	Norm	Norm	Norm(1)
	CAPT AOA	Norm	Inop	Inop
	RAIN REPELLENT (CAPT)	Norm	Norm	Norm

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

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(1)
	X BLEED (MAN CTL)	Norm	Inop	Inop

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

Continued on the next page

ELEC EMER CONFIG SYS REMAINING (CONT'D)

ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON GROUND
APU	ECB – STARTER	Norm(1)	Norm(2)	Inop(3)
	FUEL LP VALVE	Norm	Norm	Norm
	FUEL PUMP	Norm	Norm	Norm

(1) For APU start only.
(2) Not available for 45 s, after the loss of both engine generators.
(3) Restored, when speed is below 100 kt.

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(1)
	RAM AIR	Norm	Norm	Norm
	PACK VALVE 1	Norm	Closure Inop	Closure Inop
	PACK VALVE 2	Closure Inop	Closure Inop	Closure Inop(1)
	AVIONIC VENT	Norm	Norm	Partial

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

COM	VHF 1	Norm	Norm	Norm
	HF 1	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

Continued on the next page

ELEC EMER CONFIG SYS REMAINING (CONT'D)

ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON GROUND
EIS	PFD 1	Norm	Norm	Norm(1)
	ND 1	Norm	Inop	Inop
	ECAM upper disp.	Norm	Norm	Norm(1)
	DMC 1 or 3	Norm	Norm	Norm(1)
	SDAC 1, FWC 1	Norm	Norm	Norm(1)
	ECAM CONT. panel	Norm	Norm	Norm
FLT INS	CLOCKS	Norm	Norm	Norm

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

EMER EQPT	CREW OXY	Norm	Norm(1)	Norm(1)
	PAX OXY mark release (auto + man)	Norm	Inop	Inop
	SLIDES ARM/WARN	Norm	Norm	Norm

(1) Crew oxygen valve inoperative.

PWR PLT	FADEC	A + B(1)	A + B(1)	A + B(1)
	IGNITION	A only	A only	A only
	HP FUEL VALVE closure	Norm	Norm	Norm

(1) Channels A and B are self-powered above 10 % N2. If N2 is below 10 % , only Channel A is powered.

FLT CTL	ELAC	N° 1 only	N° 1 + N° 2	N° 1 + N° 2(2)
	SEC	N° 1 only	N° 1	N° 1(2)
	FCDC	N° 1 only	Inop	Inop
	SFCC	N° 1 only	N° 1 only	N° 1 only
	Flaps POS ind	Norm	Norm	Norm(1)

(1) Lost, when speed is below 50 kt.
(2) Lost 30 s after last engine shutdown.

Continued on the next page

ELEC EMER CONFIG SYS REMAINING (CONT'D)

ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON GROUND
FIRE	ENG 1 LOOP	A only	A only	A only
	ENG 2 LOOP	B only	B only	B only
	APU LOOP	Inop	Inop	Inop(1)
	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(1)
	APU AUTO EXT.	Inop	Inop	Inop(1)

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

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
	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 on the next page

ELEC EMER CONFIG SYS REMAINING (CONT'D)

ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON GROUND
NAV	IR	N° 1 only(2)	N° 1 only(2)	N° 1 only(2)
	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(1)
	MMR	N° 1 only	N° 1 only	N° 1 only(1)
	DME	N° 1 only	Inop	Inop
	DDRMI	Norm	Norm	Norm(1)
	ATC	N° 1 only	Inop	Inop
	STBY HORIZON	Norm	Norm	Norm
	STBY COMP (LT)	Norm	Norm	Norm
	STBY ALTI (VIB)	Norm	Inop	Inop
	ISIS	Norm	Norm	Norm

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

(2) IR2 and IR3 are lost 5 min after failure of the main generators. But, if IR3 replaces IR1 (ATT-HDG selector at CAPT3), IR3 remains supplied.

CB 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.

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 ..... 280 KT

Note: In the case of an "ENG DUAL FAILURE" during high power operations (i.e. climb, cruise), it is mandatory to fly at or above the optimum relight speed in order to prevent engine core lock.

PITCH TARGET In case of speed Indication failure:	
Gross Weight	Pitch (°)
At or below 50 000 kg/110 000 lb	-2.5
60 000 kg/132 000 lb	-1.5
70 000 kg/154 000 lb	-0.5

AVERAGE GLIDING DISTANCE: 2.2 NM / 1000 FT (280kt 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

Continued on the next page

ENG DUAL FAILURE – FUEL REMAINING (CONT'D)

- 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 THEN 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	FL400
78	*236*	*246*	*256*
76	*232*	*242*	*252*
72	*224*	*234*	*244*
68	*216*	*226*	*236*
64	*208*	*218*	*228*
60	*200*	*210*	*220*
56	*192*	*202*	*212*
52	*184*	*194*	*204*
48	*176*	*186*	*196*
44	*168*	*178*	*188*
40	*160*	*170*	*180*

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

Continued on the next page

ENG DUAL FAILURE – FUEL REMAINING (CONT'D)

PREPARE CABIN AND COCKPIT
SIGNS .....ON
COMMERCIAL .....OFF
USE RUDDER WITH CARE

- When below FL 150:

  RAM AIR .....ON
  BARO REF (if avail) ..... 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 RAT 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*	*154*	*159*	*163*	*167*	*171*	*172*

Continued on the next page

ENG DUAL FAILURE – 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
    Flight controls revert to direct law at landing gear extension.

    FLT CTL DIRECT LAW
    MAN PITCH TRIM NOT AVAILABLE

    Disregard the "USE MAN PITCH TRIM" message on the PFD.
  - 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
  APU MASTER SW ..... OFF

  BRAKES ON ACCU ONLY

Continued on the next page

ENG DUAL FAILURE – FUEL REMAINING (CONT'D)

- When aircraft stopped:
  PARKING BRK ..... ON
  ATC ..... NOTIFY
  ALL FIRE pb (ENGs & APU) ..... PUSH
  ALL 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*	*154*	*159*	*163*	*167*	*171*	*172*

Continued on the next page

ENG DUAL FAILURE – 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
  APU MASTER SW ..... OFF

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

ENG DUAL FAILURE – NO FUEL REMAINING

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	FL400
68	*216*	*226*	*236*
64	*208*	*218*	*228*
60	*200*	*210*	*220*
56	*192*	*202*	*212*
52	*184*	*194*	*204*
48	*176*	*186*	*196*
44	*168*	*178*	*188*
40	*160*	*170*	*180*

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

DETERMINE LANDING STRATEGY
EMER ELEC POWER MAN ON pb ..... PRESS
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

Continued on the next page

ENG DUAL FAILURE – NO FUEL REMAINING (CONT'D)

- When below FL 150:

  RAM AIR ..... ON
  BARO REF (if avail) ..... SET
  CREW MASKS/OXY SUPPLY ..... 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 (kt)	*150*	*150*	*150*	*150*	*150*	*154*	*159*	*163*	*167*	*171*	*172*

  - At a suitable altitude (not below 3 000 ft AGL):

    - When in CONF 3 and VAPP:

      GRAVITY GEAR EXTN handcrank ..... PULL AND TURN
      Flight controls revert to direct law at landing gear extension.

      FLT CTL DIRECT LAW
      MAN PITCH TRIM NOT AVAILABLE

      Disregard the "USE MAN PITCH TRIM" message on the PFD.

Continued on the next page

ENG DUAL FAILURE – NO FUEL REMAINING (CONT'D)

- 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:

  ALL 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

Continued on the next page

ENG DUAL FAILURE – NO FUEL REMAINING (CONT'D)

- 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*	*154*	*159*	*163*	*167*	*171*	*172*

    - 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

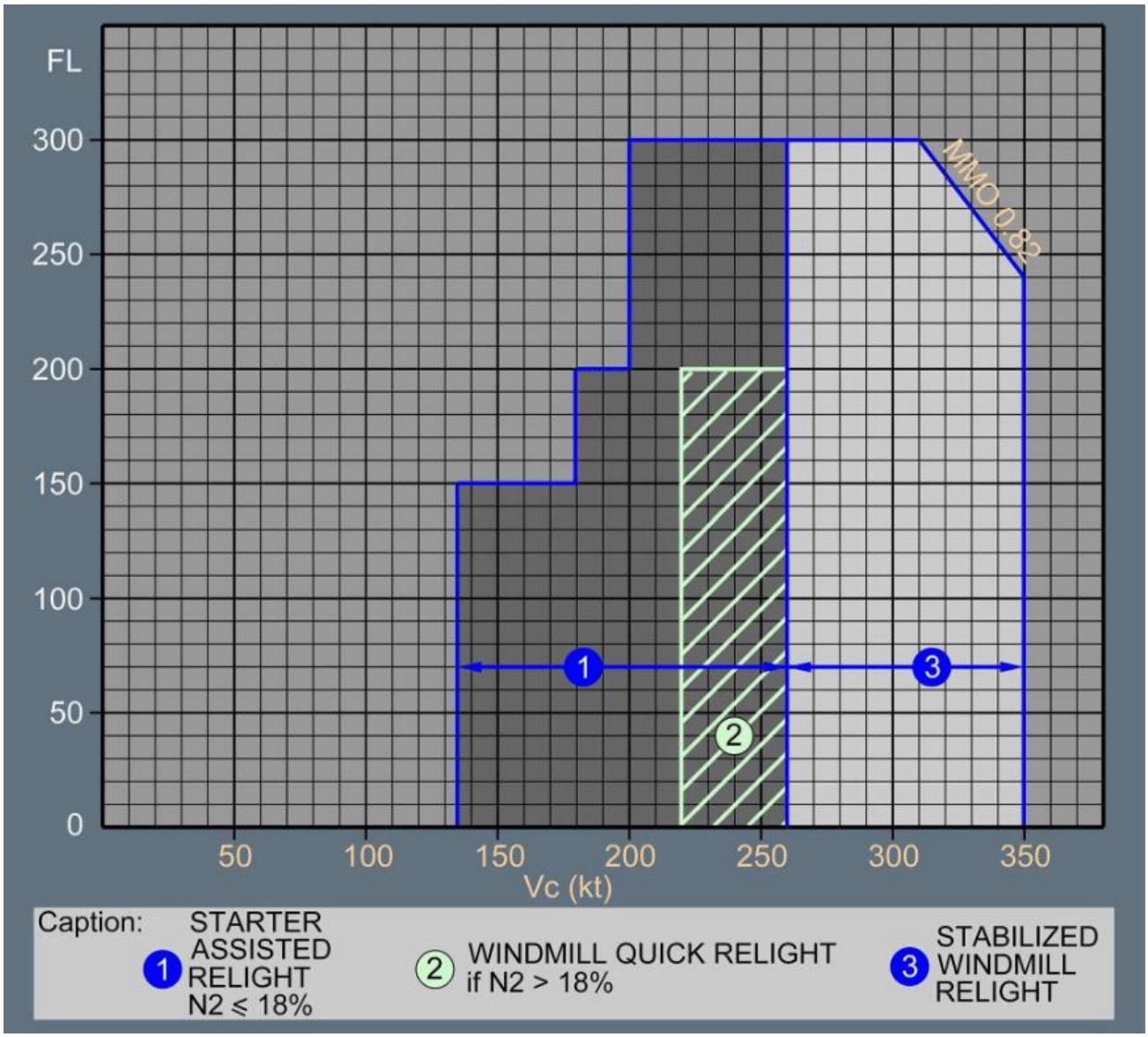
  - After ditching:

    ATC (VHF 1) ..... NOTIFY
    EVACUATION ..... INITIATE
    ELT ..... CHECK EMITTING

    If not, switch on the transmitter.

ENG RELIGHT
IN FLIGHT

Engine Relight Envelope



ENG MASTER (affected engine) ..... OFF
THR LEVER (affected engine) ..... IDLE
ENG MODE sel ..... IGN
X BLEED ..... OPEN

Continued on the next page

ENG RELIGHT (CONT'D)

IN FLIGHT

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 MODE sel ..... NORM
  TCAS MODE sel ..... TA/RA
  X BLEED ..... AUTO
  Affected SYS ..... RESTORE

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

ENG 1(2) STALL

- 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
    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

- On ground, during ENG start if N2 vibrations > 6.5:
  ENG MASTER (affected engine) ..... OFF

  A maximum of three new start attempts can be performed. Each start attempt must be initiated after the engine has completely spooled down.

  - If still N2 vibrations after third new start attempt:
    REQUEST MAINTENANCE ACTION

- In all other cases of high N1 or N2 vibrations:
  ENG PARAMETERS ..... CHECK

  - If icing suspected:
    A/THR ..... OFF
    THRUST (one engine at a time) ..... IDLE THEN INCREASE N1 > 90 %
    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:
    THRUST (affected engine) ..... REDUCE

    - After landing, if vibrations continue:
      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 CREW ..... 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	2000	4000	6000	8000	10 000	12 000	14 000
0	70.0	69.0	68.0	67.0	65.0	64.0	62.0	57.0
5	70.0	69.0	68.0	67.0	65.0	64.0	60.0	55.0
10	70.0	69.0	68.0	67.0	65.0	61.0	57.0	52.0
15	70.0	69.0	68.0	66.0	63.0	59.0	54.0	50.0
20	70.0	69.0	66.0	64.0	61.0	56.0	52.0	48.0
25	70.0	67.0	64.0	62.0	58.0	54.0	50.0	46.0
30	67.0	65.0	63.0	60.0	56.0	51.0	47.0	
35	65.0	62.0	60.0	57.0	53.0	49.0		
40	62.0	60.0	58.0	54.0				
45	59.0	57.0	55.0					
50	56.0	54.0						
55	53.0							

- 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

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*
  - *In some cases, the recommended speed for go around requested by the procedure might be slightly above the VFE displayed on PFD as the VFE is linked to the S/F lever position. The Overspeed Warning will not be triggered as it is taking into account the actual slat/flap position.*
  - *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><td colspan="6">MAX SPEED</td></tr>
<tr><td>Flaps
Slats</td><td>F = 0</td><td>0 < F ≤ 1</td><td>1 < F ≤ 2</td><td>2 < F ≤ 3</td><td>F > 3</td></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>

Continued on the next page

LANDING WITH SLATS OR FLAPS JAMMED (CONT'D)

- 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
    - If HYD G+Y SYS LO PR:
      Maintain speed close to VAPP
  - 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 HYD G+Y SYS LO PR:
        Maintain at least the higher of VAPP or VLS

Continued on the next page

LANDING WITH SLATS OR FLAPS JAMMED (CONT'D)

- If FLAPS jammed > 0:
  MAINTAIN SLAT/FLAP CONFIGURATION
  Recommended speed for diversion: MAX SPEED – 10 kt

  - If HYD G+Y SYS LO PR:
    Maintain speed close to VAPP

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

LDG DIST PROC ..... APPLY

- For approach:
  AVOID LANDING WITH CROSSWIND FROM THE SIDE WHERE THE RUDDER IS DEFLECTED
  MAX WIND FOR LDG: 15 kt
  AUTO BRK ..... DO NOT USE
  FOR LANDING ..... USE NORMAL CONF
  SPEED AND TRAJECTORY ..... STABILIZE ASAP

- For landing:
  DIFFERENTIAL BRAKING ..... USE ASAP
  REVERSER: SYMMETRIC USE ONLY
  Use nosewheel steering handle below 70kt.

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
CTR TK PUMP 1 ..... OFF
CTR TK PUMP 2 ..... OFF

- On lighter side:
  FUEL PUMPS: ..... OFF

- When fuel balanced:
  ALL FUEL PUMPS ..... ON
  FUEL X FEED ..... OFF

FUEL LEAK

LAND ASAP

- Leak from engine/pylon confirmed by excessive fuel flow, low N1, 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

Continued on the next page

FUEL LEAK (CONT'D)

- 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

FUEL OVERREAD

FOB / F. USED ..... CHECK

- If discrepancy confirmed:
  FUEL QTY UNRELIABLE
  DISREGARD FMS FUEL PREDICTIONS
  COMPUTE FOB FROM INITIAL FOB – F. USED

FUEL LO LVL ALERTS REMAIN RELIABLE

Maintenance action is due before next flight

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-OPS Use of Fuel Penalty Factor Tables*)
For Landing Performance assessment, use the QRH/PER chapter or use the performance application of the EFB.

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

Continued on the next page

HYD B + Y SYS LO PR SUMMARY (CONT'D)

GO-AROUND

MAX PITCH 15 DEG
THR LVR : TOGA THEN MCT
NO GEAR RETRACTION
FUEL: Increased fuel consumption (*Refer to OPS-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-OPS Use of Fuel Penalty Factor Tables*)
For Landing Performance assessment, use the QRH/PER chapter or use the performance application of the EFB.

APPROACH

CAT 2 INOP
SLATS JAMMED / FLAPS SLOW
A/THR .....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 indications .....CHECK
- When L/G down: USE MAN PITCH TRIM
- When in landing CONF and in final approach: DECELERATE TO CALCULATED VAPP

Continued on the next page

HYD G + B SYS LO PR SUMMARY (CONT'D)

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 Nº 2
BRAKING: ALTERNATE

GO-AROUND

MAX PITCH 15 DEG
THR LVR : TOGA THEN MCT
NO GEAR RETRACTION
FUEL: Increased fuel consumption (*Refer to OPS-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-OPS Use of Fuel Penalty Factor Tables*)
For Landing Performance assessment, use the QRH/PER chapter or use the performance application of the EFB.

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 indications .....CHECK
    Disregard “USE MANUAL PITCH TRIM”.
    MAN TRIM Unusable

Continued on the next page

HYD G + Y SYS LO PR SUMMARY (CONT'D)

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

MAX PITCH 15 DEG
THR LVR : TOGA THEN MCT
NO GEAR RETRACTION
FUEL: Increased fuel consumption (*Refer to OPS-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)
  - 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

Continued on the next page

LANDING WITH ABNORMAL L/G (CONT'D)

- 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

  - 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 ^{0}

- When aircraft stopped:
  PARK BRK ..... ON
  ALL FIRE pb (ENGs & APU) ..... PUSH
  ALL AGENT (ENGs & APU) ..... DISCH

Continued on the next page

LANDING WITH ABNORMAL L/G (CONT'D)

- 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.

- If L/G GEAR NOT DOWNLOCKED alert was displayed and IF TIME PERMITS:

  L/G lever ..... UP
  WAIT L/G UPLOCKED
  L/G lever ..... DOWN
  WAIT AT LEAST 60 s

  - If unsuccessful:

    REPEAT UP TO THREE TIMES

    - If unsuccessful after 4 attempts:

      WAIT AT LEAST 120 s
      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.

      N/W STEERING NOT AVAILABLE

      - 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.

Continued on the next page

L/G GRAVITY EXTENSION (CONT'D)

- In all other cases:

  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

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
DISREGARD NORM C/Ls
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 ..... CHECK AUTO
  ALL BLEEDS (ENGs & APU) ..... OFF
  CABIN CREW ..... NOTIFY FOR DITCHING
  DITCHING pb ..... ON

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

Continued on the next page

DITCHING (CONT'D)

- 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

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
  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
GALLEY ..... 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

Continued on the next page

FORCED LANDING (CONT'D)

- 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

  - If evacuation not required:

    CABIN CREW and PASSENGERS (PA) ..... NOTIFY

COCKPIT WINDSHIELD / WINDOW ARCING

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

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

COCKPIT WINDSHIELD / WINDOW CRACKED

SHOULDER HARNESS ..... FASTEN
TOUCH THE CRACK WITH A PEN (OR CAREFULLY WITH FINGERNAIL)

- If no crack on cockpit side:
  NO LIMITATION
- If cracks on cockpit side:
  CREW OXY MASKS ..... USE
  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 ΔP is 5 PSI:
    CREW OXY MASKS ..... REMOVE
  - Below FL 100:
    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
LDG DIST PROC ..... APPLY

- For approach:
  PACK 1 .....OFF OR SUPPLIED BY APU
  PACK 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

- For landing:
  INCREASE FLARE HEIGHT
  USE MAX REVERSE ASAP

  - 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	75.7	76.6	77.7	79.0	-	-	-	-	-
370	0.76	74.7	75.5	76.3	77.2	78.4	79.7	-	-	-
350	0.76	74.3	74.8	75.6	76.3	77.1	78.1	79.3	80.5	-
330	0.76	74.5	74.8	75.3	76.0	76.6	77.4	78.2	79.2	80.2
310	275	74.1	74.3	74.7	75.2	75.8	76.4	77.1	77.9	78.8
290	275	72.9	73.2	73.5	73.9	74.5	75.1	75.8	76.5	77.3
270	275	71.7	71.9	72.3	72.7	73.3	73.9	74.5	75.2	76.0
250	275	70.4	70.7	71.0	71.4	71.9	72.6	73.2	73.9	74.7
200	275	66.8	67.1	67.4	67.9	68.4	69.0	69.8	70.4	71.1
150	250	59.9	60.4	61.0	61.7	62.5	63.5	64.5	65.5	66.5
100	250	56.3	56.7	57.2	57.8	58.5	59.3	60.3	61.4	62.5
50	250	52.7	53.4	53.8	54.4	54.9	55.7	56.5	57.4	58.4

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.*

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*

LDG DIST PROC ..... APPLY

- For approach:

  SPEED ..... FLY THE GREEN

  FOR LANDING: USE FLAP 3

  GPWS LDG FLAP 3 ..... ON

  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

Continued on the next page

ALL ADR OFF (CONT'D)

- 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

Continued on the next page

UNRELIABLE SPEED INDICATION (CONT'D)

PITCH / THRUST FOR LEVEL OFF					
		80 t 175 000 lb	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°	66% (165 kt)	62% (155 kt)	58% (140 kt)	54% (130 kt)
2	5.5°	66% (185 kt)	62% (175 kt)	58% (160 kt)	54% (145 kt)
1+F	5°	64% (200 kt)	62% (190 kt)	58% (175 kt)	54% (160 kt)
1	6.5°	64% (220 kt)	60% (205 kt)	56% (190 kt)	52% (175 kt)
CLEAN					
PITCH	FL	THRUST % N1 (Resultant speed)			
4° at or below FL250	100	64% (265 kt)	60% (245 kt)	56% (225 kt)	52% (205 kt)
	200	72% (260 kt)	68% (245 kt)	66% (225 kt)	60% (205 kt)
3° above FL250	300	78% (280 kt)	76% (265 kt)	74% (245 kt)	70% (225 kt)
	350	/	80% (255 kt)	76% (240 kt)	74% (225 kt)
	400	/	/	82% (235 kt)	78% (220 kt)

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.

- When flight path is stabilized:

AP ..... OFF
A/THR ..... OFF
FD ..... OFF
SPEEDBRAKES ..... CHECK RETRACTED
FLIGHT PATH .....KEEP STABILIZED

RESPECT STALL WARNING

Continued on the next page

UNRELIABLE SPEED INDICATION (CONT'D)

AFFECTED ADR IDENTIFICATION

PROBE/WINDOW HEAT ..... ON
ALL SPEED INDICATIONS .....CROSSCHECK
ADR3 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 ECAM PROCEDURE .....APPLY

Continued on the next page

UNRELIABLE SPEED INDICATION (CONT'D)

CLIMB

CLIMB IN CLEAN CONFIGURATION					
		80 t 175 000 lb	70 t 155 000 lb	60 t 130 000 lb	50 t 110 000 lb
THRUST	FL	PITCH (Resultant speed)			
CLB	50	10° (255 kt)	11° (245 kt)	13° (220 kt)	15° (205 kt)
	100	9° (250 kt)	10° (240 kt)	12° (215 kt)	14° (200 kt)
	200	6° (265 kt)	7° (245 kt)	8° (230 kt)	10° (210 kt)
	300	5° (250 kt)	5° (250 kt)	6° (225 kt)	7° (205 kt)
	400	/	/	4° (225 kt)	5° (200 kt)

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					
		80 t 175 000 lb	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	64% (265 kt)	60% (245 kt)	56% (225 kt)	52% (205 kt)
	200	72% (260 kt)	68% (245 kt)	66% (225 kt)	60% (205 kt)
3° above FL250	300	78% (280 kt)	76% (265 kt)	74% (245 kt)	70% (225 kt)
	350	/	80% (255 kt)	76% (240 kt)	74% (225 kt)
	400	/	/	82% (235 kt)	78% (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 %.*

Continued on the next page

UNRELIABLE SPEED INDICATION (CONT'D)

DESCENT

DESCENT IN CLEAN CONFIGURATION					
		80 t 175 000 lb	70 t 155 000 lb	60 t 130 000 lb	50 t 110 000 lb
THRUST	PITCH	Resultant speed			
IDLE	1°	270 kt	255 kt	235 kt	215 kt

INITIAL / INTERMEDIATE APPROACH

APPLY FLYING TECHNIQUE TO STABILIZE SPEED

LEVEL FLIGHT					
		80 t 175 000 lb	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°	60% (240 kt)	56% (220 kt)	52% (200 kt)	50% (180 kt)
1	6.5°	64% (220 kt)	60% (205 kt)	56% (190 kt)	52% (175 kt)
1+F	5°	64% (200 kt)	62% (190 kt)	58% (175 kt)	54% (160 kt)
2	5.5°	66% (185 kt)	62% (175 kt)	58% (160 kt)	54% (145 kt)
WITH LANDING GEAR DOWN					
3	7°	70% (165 kt)	68% (155 kt)	62% (145 kt)	58% (130 kt)

FINAL APPROACH AT -3° DESCENT FLIGHT PATH

APPROACH IN CONF 3 AND L/G EXTENDED					
		80 t 175 000 lb	70 t 155 000 lb	60 t 130 000 lb	50 t 110 000 lb
WITH LANDING GEAR UP					
CONF	PITCH	THRUST % N1			
3	4°	54%	52%	48%	44%

IR ALIGNMENT IN ATT MODE

IR (affected) MODE SEL ..... ATT
KEEP SPEED, HEADING, AND FL CONSTANT FOR 30 s

- For alignment through MCDU:
  FMS DATA page ..... SELECT
  IRS MONITOR key ..... PRESS
  [SET HDG key] A/C HDG ..... ENTER

- For alignment through ADIRS panel:
  DISPLAY SYS sel ..... SELECT AFFECTED SYS
  DISPLAY DATA sel ..... HDG

  - If “H” written on the “5” key of ADIRS panel:
    H key ..... PRESS
    Degree marker, zero decimal point, ENT, and CLR lights come on.

  A/C HEADING ..... INSERT
  ENT key ..... PRESS

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
    CONSIDER SWITCHING OFF GPWS TERRAIN FUNCTIONS

  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/GLS approach:
  NAV MODE: DO NOT USE
  CONTINUE APPROACH
- During RNAV GNSS, or RNAV RNP approach:
  - If visual references not sufficient:
    GO AROUND ..... ANNOUNCE
- 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

Continued on the next page

SMOKE / FUMES / AVNCS SMOKE (CONT'D)

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

  - If smoke continues:
    PACK 1 ..... ON
    PACK 2 ..... OFF

Continued on the next page

SMOKE / FUMES / AVNCS SMOKE (CONT'D)

- 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

Continued on the next page

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

Continued on the next page

REMOVAL OF SMOKE / FUMES (CONT'D)

- 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
    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

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
  FIRE 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

Continued on the next page

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
  FIRE 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

Continued on the next page

SMOKE / FIRE FROM LITHIUM BATTERY (CONT'D)

- 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.

NP-NP Normal Procedures

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 ..... 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 LIGHTS ..... AS RQRD	* COCKPIT LIGHTS ..... AS RQRD
EFB / ACARS INITIALIZATION:	
ALL EFB ..... START	ALL EFB ..... START
EFB / eQRH Version ..... CHECK	EFB / eQRH Version ..... CHECK
* ACARS ..... INITIALIZE	
• If EFB SYNCHRO AVNCS or ACARS is used:	
FMGS PRE-INITIALIZATION:	
* ENGINE & AIRCRAFT TYPE ..... CHECK	
* DATABASE VALID ..... CHECK	
* FLT NBR & FROM/TO ..... INSERT / CHECK	
* EFB SYNCHRO AVIONICS ..... CLICK	* EFB SYNCHRO AVIONICS ..... CLICK
* EFB STATUS page ..... INSERT / CHECK	* EFB STATUS page ..... INSERT / CHECK

Continued on the next page

CM1	CM2
ECAM/LOGBOOK CHECK:	
* RCL pb ..... PRESS 3 s	
* LOGBOOK ..... CHECK	* LOGBOOK ..... CHECK
* MEL/CDL ..... CHECK DISPATCH CONDITIONS	* MEL/CDL ..... CHECK DISPATCH CONDITIONS
* AIRCRAFT ACCEPTANCE ..... PERFORM	

PF	PM
PRELIMINARY PERFORMANCE DETERMINATION:	
* AIRFIELD DATA ..... OBTAIN	* AIRFIELD DATA ..... OBTAIN
• If the LOADSHEET application is used:	
* PRELIM LOADING ..... COMPUTE/X-CHECK	* PRELIM LOADING ..... COMPUTE/X-CHECK
* MEL/CDL ITEMS ..... CHECK ACTIVATED	* MEL/CDL ITEMS ..... CHECK ACTIVATED
* PRELIM T.O PERF DATA ..... COMPUTE	* PRELIM T.O PERF DATA ..... COMPUTE
* PRELIM T.O PERF DATA ..... CROSSCHECK	* PRELIM T.O PERF DATA ..... CROSSCHECK
* OEB ..... CHECK	
BEFORE WALKAROUND:	
	* ECAM OXY PRESS / HYD QTY / ENG OIL QTY..... CHECK
	FLAPS ..... CHECK POSITION
	* SPD BRK lever ..... CHECK RET AND DISARMED
	* PARKING BRAKE handle ..... ON
	* ACCU/BRAKES PRESS ..... CHECK
	EMER EQPT ..... CHECK
	RAIN REPELLENT ..... CHECK
	SECURITY CHECK ..... PERFORM
	C/B PANELS ..... CHECK
	* GEAR PINS and COVERS ..... CHECK ONBOARD / STOWED
	* EXTERIOR WALKAROUND ..... PERFORM

COCKPIT PREPARATION

PF	PM
OVERHEAD PANEL:	COCKPIT DOOR CHECK ..... PERFORM
* 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	
PROBE/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	
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	

Continued on the next page

PF	PM
RMP ..... SET	
* MSG RECORD (MCDU) ..... ERASE	
* NAV CHARTS CLIPBOARD ..... PREPARE	* NAV CHARTS CLIPBOARD ..... PREPARE
* FMS ..... PREPARE	
	* FMS PREPARATION ..... CHECK
• When both flight crewmembers are seated:	
GLARESHIELD:	GLARESHIELD:
* BAROMETRIC REFERENCE ..... SET	* BAROMETRIC REFERENCE ..... SET
* FD ..... CHECK ON	* FD ..... CHECK ON
* LS/ILS ..... AS RQRD	* LS/ILS ..... AS RQRD
* ND mode and range ..... AS RQRD	* ND mode and range ..... AS RQRD
* 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 ..... AS RQRD	PFD-ND brightness ..... AS RQRD
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
FINAL LOADSHEET ..... CHECK	FINAL LOADSHEET ..... CHECK
FOB ..... CHECK	FOB ..... CHECK
	ACARS FUEL REPORT ..... PREPARE
• If takeoff conditions changed:	
FINAL T.O PERF DATA ..... RECOMPUTE	FINAL T.O PERF DATA ..... RECOMPUTE
FMS T.O DATA ..... REVISE	
	FMS FINAL T.O PERF DATA ..... CROSSCHECK
	EFB/MCDU GREEN DOT ..... COMPARE
SEATING POSITION .....ADJUST	SEATING POSITION .....ADJUST
FMS PERF TO page ..... SELECT	FMS F-PLN page .....SELECT
	EXT PWR .....CHECK AVAIL
	EXT PWR DISCONNECTION ..... REQUEST
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 .....AS RQRD	
PARK BRK ..... AS RQRD	
BEFORE START C/L below to the line ..... COMPLETE	BEFORE START C/L below to 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
• If takeoff conditions changed:	
FINAL T.O PERF DATA ..... RECOMPUTE	FINAL T.O PERF DATA ..... RECOMPUTE
	FMS T.O DATA ..... REVISE
FMS REVISED T.O PERF DATA ..... CROSSCHECK	
EFB/MCDU GREEN DOT ..... COMPARE	
	FLAPS lever ..... AS APPROPRIATE
	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 ..... 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
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
	LINE-UP CLEARANCE ..... OBTAIN
	BRAKES PRESSURE ..... CHECK AT ZERO
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
ALL EFB TRANSMITTING MODE .....AS RQRD	ALL EFB TRANSMITTING MODE .....AS RQRD
ALL EFB (with no mounted equipment) .....STOW	ALL EFB (with no mounted equipment) .....STOW
THRUST BUMP ❄ .....AS RQRD	
TAKEOFF RUNWAY .....AS RQRD	TAKEOFF RUNWAY .....AS RQRD
	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 CLEARANCE .....OBTAIN
EXTERIOR LIGHTS ..... SET	
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 ..... CHECK
	THRUST SET ..... ANNOUNCE
	PFD and ENG indications ..... MONITOR

Continued on the next page

PF	PM
• 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
A/P ..... AS RQRD	
• AT THR RED ALT:	
THRUST LEVERS CL	PACK 1+2 (if applicable) CL
• 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

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	AFTER TAKEOFF / CLIMB C/L down to the line .....
..... COMPLETE	..... 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
	STANDBY ALTIMETER ..... SET STD / XCHECK
AFTER TAKEOFF / CLIMB C/L below the line	AFTER TAKEOFF / CLIMB C/L below the line .....
..... COMPLETE	..... 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 ..... AS RQRD
	NAVAIDS ..... AS RQRD
	SEC F-PLN ..... AS RQRD
	OPT / MAX ALT ..... AS RQRD

CRUISE

PF	PM
ECAM MEMO / SD PAGES ..... REVIEW	ECAM MEMO / SD PAGES ..... REVIEW
FLIGHT PROGRESS ..... CHECK	FLIGHT PROGRESS ..... CHECK
FUEL ..... MONITOR	FUEL ..... MONITOR
NAVIGATION ACCURACY ..... 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
LANDING CONDITIONS .....CONFIRM	LANDING CONDITIONS .....CONFIRM
• If landing conditions change:	
LANDING PERF DATA .....COMPUTE	LANDING PERF DATA .....COMPUTE
LANDING PERF DATA .....CROSSCHECK	LANDING PERF DATA .....CROSSCHECK
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	

AIRCRAFT CONFIGURATION FOR APPROACH

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

Continued on the next page

PF	PM
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
ALL EFB (with no mounted equipment) ..... STOW	ALL EFB (with no mounted equipment) ..... STOW
	LDG MEMO ..... CHECK NO BLUE
CABIN REPORT ..... RECEIVE	CABIN REPORT ..... RECEIVE
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	
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 ALT ..... SET (1)	
INITIAL / INTERMEDIATE 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 F-LOC F-G/S 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
GO AROUND STRATEGY .....REVIEW	
DESCENT:	
GPS PRIMARY ON BOTH FMS ..... CHECK	
GPS 1+2 ..... CHECK BOTH IN NAV	
TERR on ND .....AS RQRD	
INITIAL / INTERMEDIATE / FINAL APPROACH:	
BARO REF / ALTIMETER ..... CHECK	
FD or AP/FD ..... USE FOR APPROACH	
L/DEV ..... CHECK DISPLAYED	
APPR pb on FCU ..... PRESS	
APP NAV .....CHECK ARMED or ENGAGED	
FINAL ..... CHECK ARMED	
• At the Final Descent Point:	
FINAL APP .....CHECK ENGAGED	
GO AROUND ALT ..... SET [1]	
	FLT PARAMETERS ..... MONITOR Announce any deviation in excess of: • L/DEV: ½ dot • 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 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
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 the 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
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)	

Continued on the next page

PF	PM
	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
• At 70 kt:	
BOTH THRUST LEVERS .....REV IDLE	
• At taxi speed:	
REVERSERS ..... STOW	
• Before 20 kt:	
AUTO BRK ..... 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	
REVERSERS ..... STOW	
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
A/P ..... 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 LANDING

PF	PM
	• When vacating runway:
	LAND LIGHTS ..... RETRACT
	STROBE LIGHTS ..... AUTO
	OTHER EXT LIGHTS ..... AS RQRD
• When taxi clearance issued:	
GRND SPLRS ..... DISARM	
	RADAR ..... OFF
	PREDICTIVE WINDSHEAR ..... OFF
	ENG MODE selector ..... NORM
	FLAPS ..... RETRACT
	TCAS ..... SET on standby
	ATC ..... AS RQRD
	APU ..... START
	ANTI ICE ..... AS RQRD
	BRAKE TEMP ..... CHECK
	BRAKE FANS ..... AS RQRD
AFTER LDG C/L ..... COMPLETE	AFTER LDG C/L ..... COMPLETE
	• If ONE ENGINE TAXI ARRIVAL:
	ENG 2 ..... SHUT DOWN
	Y ELEC PUMP ..... ON

PARKING

PF	PM
	• Approaching gate/stand:
	SLIDES DISARM ..... ORDER
• Stopped in final parking position:	
ACCU PRESS ..... CHECK	ANTI ICE ..... OFF
PARKING BRK ..... ON	Y ELEC PUMP ..... OFF
ALL ENGINE MASTERS ..... OFF	
SLIDES ..... CHECK DISARMED	
• Engines spool < 10 % N1 and slides disarmed:	
BEACON LT ..... OFF	FUEL PUMPS ..... OFF
OTHER EXTERIOR LIGHTS ..... AS RQRD	ATC ..... STBY
SEAT BELTS ..... OFF	IRS PERFORMANCE ..... CHECK
	FUEL QTY ..... CHECK
	STATUS ..... CHECK
	BRAKE FAN ..... OFF
DUs ..... DIM	DUs ..... DIM
ALL EFB TRANSMITTING MODE ..... AS RQRD	ALL EFB TRANSMITTING MODE ..... AS RQRD
PARKING C/L ..... COMPLETE	PARKING C/L ..... COMPLETE

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
EFB applications ..... CLOSE	EFB applications ..... CLOSE
ALL EFB .....SWITCH OFF	ALL EFB .....SWITCH OFF
SECURING THE A/C C/L ..... COMPLETE	SECURING THE A/C C/L ..... COMPLETE

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.

Continued on the next page

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	AIREP (1)		RWYCC (2)	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 wet	Medium	Braking deceleration is noticeably reduced for the wheel braking effort applied. Directional control may be reduced.	3	MEDIUM	25 kt
Standing Water More than 3 mm (1/8"), up to 13 mm (1/2") Slush More than 3 mm (1/8"), up to 13 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	Less than Poor	Braking deceleration is minimal to non-existent for the wheel braking effort applied. Directional control may be uncertain.	-	-	-

(1) AIREP: Special Air Report of Braking Action

(2) RWYCC: Runway Condition Code

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

VAPP DETERMINATION WITHOUT FAILURE

Flight crew (and FMGS) computation of VAPP in normal configuration (CONF 3 or CONF FULL) follows the subsequent determination:

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	129	134	138	142	146	149
	CG ≥ 25%	106	109	114	119	123	127	132	136	140	144	147
VLS CONF 3 (kt)	CG < 25%	111	114	119	124	128	133	137	142	146	150	154
	CG ≥ 25%	109	112	117	122	126	131	135	140	144	148	152

+

APPR oach COR rection

APPR COR = Highest of

- 5 kt 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	149
	CG ≥ 25%	106	109	114	119	123	128	132	136	140	144	147

+

ΔVREF
Refer to the applicable Landing Distance table

+

APPR oach COR rection	
ΔVREF ≤ 10 kt	APPR COR = Highest of • 5 kt 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 (excl. 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.

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 (m)			WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
Braking Mode	LDG CONF	REF DIST (m) 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	1 080	+ 40	+ 60	+ 40	+ 130	+ 30	+ 20	- 10	+ 760
	3	1 130	+ 50	+ 80	+ 50	+ 120	+ 40	+ 20	- 20	+ 990
AUTOBRAKE MED	FULL	1 360	+ 30	+ 90	+ 50	+ 130	+ 40	+ 10	0	+ 230
	3	1 420	+ 40	+ 100	+ 50	+ 140	+ 50	+ 10	0	+ 250
AUTOBRAKE LOW	FULL	1 930	+ 50	+ 130	+ 80	+ 200	+ 60	+ 20	0	+ 260
	3	2 030	+ 50	+ 150	+ 80	+ 210	+ 70	+ 30	0	+ 290

(1) Automatic Landing correction: if CONF FULL, add 190m. If CONF 3, add 260m.
(2) Weight correction: subtract 10m per 1T below 66T.

5 - GOOD										
Corrections on Landing Distance (m)			WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
Braking Mode	LDG CONF	REF DIST (m) 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	1 370	+ 50	+ 100	+ 70	+ 200	+ 60	+ 40	- 40	+ 600
	3	1 480	+ 50	+ 120	+ 80	+ 220	+ 70	+ 60	- 50	+ 790
AUTOBRAKE MED	FULL	1 420	+ 50	+ 110	+ 70	+ 200	+ 60	+ 40	0	+ 220
	3	1 540	+ 50	+ 120	+ 80	+ 220	+ 70	+ 60	- 20	+ 240
AUTOBRAKE LOW	FULL	1 930	+ 50	+ 130	+ 80	+ 200	+ 60	+ 20	0	+ 260
	3	2 030	+ 50	+ 150	+ 80	+ 210	+ 70	+ 30	0	+ 270

(1) Automatic Landing correction: if CONF FULL, add 230m. If CONF 3, add 310m.
(2) Weight correction: subtract 10m per 1T below 66T. If CONF 3, subtract 20m per 1T below 66T.

4 – GOOD TO MEDIUM										
Corrections on Landing Distance (m)			WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
Braking Mode	LDG CONF	REF DIST (m) 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	1 600	+ 40	+ 80	+ 70	+ 180	+ 50	+ 60	- 80	+ 670
	3	1 720	+ 40	+ 100	+ 70	+ 190	+ 60	+ 70	- 90	+ 880
AUTOBRAKE MED	FULL	1 650	+ 40	+ 90	+ 60	+ 190	+ 60	+ 70	- 100	+ 200
	3	1 790	+ 40	+ 100	+ 70	+ 200	+ 60	+ 80	- 130	+ 210
AUTOBRAKE LOW	FULL	1 930	+ 50	+ 130	+ 80	+ 210	+ 60	+ 40	0	+ 260
	3	2 030	+ 50	+ 150	+ 80	+ 210	+ 70	+ 50	- 10	+ 280

(1) Automatic Landing correction: if CONF FULL, add 230m. If CONF 3, add 310m.
(2) Weight correction: subtract 10m per 1T below 66T. If CONF 3, subtract 20m per 1T below 66T.

Continued on the next page

LANDING DISTANCE WITHOUT FAILURE (CONT'D)

3 – MEDIUM										
Corrections on Landing Distance (m)			WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
Braking Mode	LDG CONF	REF DIST (m) 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	1 770	+ 40	+ 90	+ 80	+ 210	+ 60	+ 90	- 100	+ 640
	3	1 920	+ 50	+ 110	+ 80	+ 220	+ 60	+ 110	- 120	+ 840
AUTOBRAKE MED	FULL	1 820	+ 40	+ 100	+ 80	+ 210	+ 70	+ 90	- 130	+ 210
	3	1 990	+ 50	+ 110	+ 80	+ 230	+ 70	+ 110	- 170	+ 220
AUTOBRAKE LOW	FULL	1 990	+ 50	+ 130	+ 80	+ 230	+ 70	+ 70	- 30	+ 240
	3	2 120	+ 50	+ 140	+ 90	+ 240	+ 70	+ 90	- 60	+ 270

(1) Automatic Landing correction: if CONF FULL, add 240m. If CONF 3, add 320m.
(2) Weight correction: subtract 20m per 1T below 66T.

2 – MEDIUM TO POOR										
Corrections on Landing Distance (m)			WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
Braking Mode	LDG CONF	REF DIST (m) 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	1 950	+ 70	+ 140	+ 120	+ 330	+ 90	+ 130	- 110	+ 460
	3	2 200	+ 80	+ 180	+ 150	+ 380	+ 110	+ 170	- 140	+ 600
AUTOBRAKE MED	FULL	1 980	+ 70	+ 150	+ 120	+ 330	+ 100	+ 130	- 140	+ 230
	3	2 230	+ 80	+ 180	+ 150	+ 390	+ 110	+ 180	- 190	+ 280
AUTOBRAKE LOW	FULL	2 020	+ 70	+ 150	+ 120	+ 340	+ 90	+ 130	- 30	+ 230
	3	2 250	+ 80	+ 180	+ 150	+ 390	+ 110	+ 180	- 70	+ 280

(1) Automatic Landing correction: if CONF FULL, add 280m. If CONF 3, add 390m.
(2) Weight correction: if CONF FULL, subtract 20m per 1T below 66T. If CONF 3, subtract 30m per 1T below 66T.

1 – POOR										
Corrections on Landing Distance (m)			WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
Braking Mode	LDG CONF	REF DIST (m) 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	2 950	+ 70	+ 140	+ 190	+ 490	+ 120	+ 530	- 200	+ 470
	3	3 380	+ 80	+ 170	+ 220	+ 530	+ 140	+ 690	- 300	+ 600
AUTOBRAKE MED	FULL	3 020	+ 70	+ 130	+ 190	+ 490	+ 120	+ 540	- 270	+ 230
	3	3 450	+ 80	+ 170	+ 220	+ 530	+ 140	+ 690	- 400	+ 280
AUTOBRAKE LOW	FULL	3 040	+ 70	+ 130	+ 190	+ 490	+ 120	+ 540	- 270	+ 230
	3	3 480	+ 80	+ 170	+ 220	+ 540	+ 140	+ 700	- 410	+ 280

(1) Automatic Landing correction: if CONF FULL, add 280m. If CONF 3, add 380m.
(2) Weight correction: if CONF FULL, subtract 30m per 1T below 66T. If CONF 3, subtract 40m 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 (m)				WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (m) 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	1 230	+ 40	+ 70	+ 50	+ 120	+ 40	+ 20	- 20	+ 580
	3	16	1 350	+ 50	+ 80	+ 50	+ 130	+ 40	+ 20	- 30	+ 790
(1) Automatic Landing correction: add 90m - (2) Weight correction: subtract 10m per 1T below 66T											
REF DIST without failure (valid for all FLAPS LEVER positions) = 1 080m											

5 - GOOD											
Corrections on Landing Distance (m)				WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (m) 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	1 580	+ 50	+ 110	+ 80	+ 210	+ 70	+ 50	- 60	+ 430
	3	16	1 760	+ 60	+ 120	+ 100	+ 230	+ 80	+ 70	- 80	+ 580
(1) Automatic Landing correction: add 130m - (2) Weight correction: subtract 20m per 1T below 66T											
REF DIST without failure (valid for all FLAPS LEVER positions) = 1 370m											

4 – GOOD TO MEDIUM											
Corrections on Landing Distance (m)				WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (m) 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	1 790	+ 40	+ 90	+ 70	+ 190	+ 60	+ 70	- 100	+ 500
	3	16	1 970	+ 40	+ 100	+ 80	+ 190	+ 60	+ 80	- 120	+ 690
(1) Automatic Landing correction: add 120m - (2) Weight correction: subtract 20m per 1T below 66T											
REF DIST without failure (valid for all FLAPS LEVER positions) = 1 600m											

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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 (m)				WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (m) 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	1 980	+ 40	+ 90	+ 80	+ 220	+ 70	+ 100	- 130	+ 480
	3	16	2 190	+ 50	+ 110	+ 100	+ 220	+ 80	+ 110	- 150	+ 650
(1) Automatic Landing correction: add 130m - (2) Weight correction: subtract 20m per 1T below 66T											
REF DIST without failure (valid for all FLAPS LEVER positions) = 1 770m											

2 – MEDIUM TO POOR											
Corrections on Landing Distance (m)				WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (m) 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	2 240	+ 70	+ 140	+ 130	+ 340	+ 110	+ 140	- 150	+ 350
	3	16	2 610	+ 90	+ 170	+ 170	+ 390	+ 130	+ 200	- 200	+ 450
(1) Automatic Landing correction: add 170m - (2) Weight correction: subtract 30m per 1T below 66T											
REF DIST without failure (valid for all FLAPS LEVER positions) = 1 950m											

1 – POOR											
Corrections on Landing Distance (m)				WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (m) 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	3 230	+ 80	+ 140	+ 200	+ 500	+ 130	+ 540	- 340	+ 350
	3	16	3 780	+ 90	+ 160	+ 240	+ 530	+ 150	+ 700	- 450	+ 450
(1) Automatic Landing correction: add 160m - (2) Weight correction: subtract 40m per 1T below 66T											
REF DIST without failure (valid for all FLAPS LEVER positions) = 2 950m											

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 (m)				WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (m) 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	1 230	+ 40	+ 70	+ 50	+ 120	+ 40	+ 20	- 20	+ 580
	3	16	1 350	+ 50	+ 80	+ 50	+ 130	+ 40	+ 20	- 30	+ 790
(1) Automatic Landing correction: add 90m - (2) Weight correction: subtract 10m per 1T below 66T											
REF DIST without failure (valid for all FLAPS LEVER positions) = 1 080m											

5 - GOOD											
Corrections on Landing Distance (m)				WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (m) 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	1 580	+ 50	+ 110	+ 80	+ 210	+ 70	+ 50	- 60	+ 430
	3	16	1 760	+ 60	+ 120	+ 100	+ 230	+ 80	+ 70	- 80	+ 580
(1) Automatic Landing correction: add 130m - (2) Weight correction: subtract 20m per 1T below 66T											
REF DIST without failure (valid for all FLAPS LEVER positions) = 1 370m											

Continued on the next 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.

4 – GOOD TO MEDIUM											
Corrections on Landing Distance (m)				WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (m) 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	1 790	+ 40	+ 90	+ 70	+ 190	+ 60	+ 70	- 100	+ 500
	3	16	1 970	+ 40	+ 100	+ 80	+ 190	+ 60	+ 80	- 120	+ 690
(1) Automatic Landing correction: add 120m - (2) Weight correction: subtract 20m per 1T below 66T											
REF DIST without failure (valid for all FLAPS LEVER positions) = 1 600m											

3 – MEDIUM											
Corrections on Landing Distance (m)				WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (m) 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	1 980	+ 40	+ 90	+ 80	+ 220	+ 70	+ 100	- 130	+ 480
	3	16	2 190	+ 50	+ 110	+ 100	+ 220	+ 80	+ 110	- 150	+ 650
(1) Automatic Landing correction: add 130m - (2) Weight correction: subtract 20m per 1T below 66T											
REF DIST without failure (valid for all FLAPS LEVER positions) = 1 770m											

Continued on the next 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.

2 – MEDIUM TO POOR											
Corrections on Landing Distance (m)				WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (m) 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	2 240	+ 70	+ 140	+ 130	+ 340	+ 110	+ 140	- 150	+ 350
	3	16	2 610	+ 90	+ 170	+ 170	+ 390	+ 130	+ 200	- 200	+ 450
(1) Automatic Landing correction: add 170m - (2) Weight correction: subtract 30m per 1T below 66T											
REF DIST without failure (valid for all FLAPS LEVER positions) = 1 950m											

1 – POOR											
Corrections on Landing Distance (m)				WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (m) 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	3 230	+ 80	+ 140	+ 200	+ 500	+ 130	+ 540	- 340	+ 350
	3	16	3 780	+ 90	+ 160	+ 240	+ 530	+ 150	+ 700	- 450	+ 450
(1) Automatic Landing correction: add 160m - (2) Weight correction: subtract 40m per 1T below 66T											
REF DIST without failure (valid for all FLAPS LEVER positions) = 2 950m											

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 (m)				WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (m) 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	1 790	+ 70	+ 90	+ 70	+ 190	+ 60	+ 70	- 90	+ 640
	3	6	1 990	+ 70	+ 110	+ 80	+ 200	+ 70	+ 90	- 100	+ 810
ONE BRK RELEASED	FULL	0	1 260	+ 50	+ 90	+ 50	+ 140	+ 50	+ 30	- 30	+ 700
	3	6	1 400	+ 50	+ 90	+ 60	+ 150	+ 40	+ 40	- 40	+ 900
TWO BRK RELEASED	FULL	0	1 540	+ 60	+ 100	+ 70	+ 180	+ 60	+ 60	- 60	+ 650
	3	6	1 730	+ 70	+ 100	+ 80	+ 190	+ 60	+ 70	- 70	+ 830
ALTN L(R) RELEASED (if NORM BRK FAULT)	FULL	0	1 550	+ 60	+ 90	+ 70	+ 190	+ 50	+ 60	- 70	+ 650
	3	6	1 730	+ 70	+ 100	+ 80	+ 190	+ 60	+ 70	- 90	+ 830
ALTN L(R) RELEASED (if G SYS LO PR)	FULL	0	1 670	+ 60	+ 100	+ 70	+ 190	+ 60	+ 70	- 90	+ 670
	3	6	1 810	+ 70	+ 110	+ 80	+ 190	+ 70	+ 80	- 110	+ 860
NORM BRK FAULT	FULL	0	1 160	+ 40	+ 70	+ 40	+ 110	+ 30	+ 20	- 20	+ 750
	3	6	1 240	+ 50	+ 70	+ 50	+ 120	+ 40	+ 20	- 30	+ 940
NORM + ALTN FAULT	FULL	0	1 790	+ 70	+ 90	+ 70	+ 190	+ 60	+ 70	- 90	+ 640
	3	6	1 990	+ 70	+ 110	+ 80	+ 200	+ 70	+ 90	- 100	+ 810

(1) Automatic Landing correction: add 135m - (2) Weight correction: subtract 10m per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 1 080m

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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 (m)				WGT[2]	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (m) 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	1 790	+ 60	+ 100	+ 80	+ 210	+ 60	+ 80	- 90	+ 580
	3	6	1 990	+ 70	+ 120	+ 90	+ 230	+ 80	+ 100	- 100	+ 730
ONE BRK RELEASED	FULL	0	1 590	+ 50	+ 120	+ 90	+ 230	+ 70	+ 70	- 70	+ 510
	3	6	1 790	+ 60	+ 140	+ 100	+ 260	+ 90	+ 90	- 90	+ 640
TWO BRK RELEASED	FULL	0	1 880	+ 70	+ 130	+ 110	+ 290	+ 80	+ 110	- 120	+ 450
	3	6	2 150	+ 80	+ 150	+ 130	+ 330	+ 100	+ 140	- 150	+ 560
ALTN L(R) RELEASED (if NORM BRK FAULT)	FULL	0	1 980	+ 70	+ 130	+ 110	+ 310	+ 90	+ 130	- 130	+ 430
	3	6	2 280	+ 80	+ 160	+ 140	+ 360	+ 110	+ 170	- 180	+ 540
ALTN L(R) RELEASED (if G SYS LO PR)	FULL	0	2 190	+ 80	+ 160	+ 140	+ 340	+ 100	+ 170	- 170	+ 430
	3	6	2 510	+ 90	+ 190	+ 170	+ 390	+ 120	+ 230	- 240	+ 540
NORM BRK FAULT	FULL	0	1 500	+ 50	+ 110	+ 80	+ 220	+ 70	+ 60	- 60	+ 540
	3	6	1 680	+ 60	+ 130	+ 100	+ 240	+ 80	+ 70	- 80	+ 680
NORM + ALTN FAULT	FULL	0	1 790	+ 60	+ 100	+ 80	+ 210	+ 60	+ 80	- 90	+ 580
	3	6	1 990	+ 70	+ 120	+ 90	+ 230	+ 80	+ 100	- 100	+ 730

(1) Automatic Landing correction: add 190m - (2) Weight correction: subtract 20m per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 1 370m

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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 (m)				WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (m) 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	1 810	+ 60	+ 90	+ 70	+ 190	+ 60	+ 70	- 110	+ 640
	3	6	2 010	+ 70	+ 100	+ 80	+ 210	+ 60	+ 90	- 130	+ 810
ONE BRK RELEASED	FULL	0	1 860	+ 40	+ 100	+ 80	+ 220	+ 70	+ 100	- 120	+ 600
	3	6	2 070	+ 50	+ 110	+ 90	+ 230	+ 80	+ 120	- 150	+ 760
TWO BRK RELEASED	FULL	0	2 220	+ 50	+ 110	+ 110	+ 290	+ 80	+ 180	- 180	+ 530
	3	6	2 510	+ 60	+ 130	+ 120	+ 310	+ 90	+ 220	- 230	+ 670
ALTN L(R) RELEASED (if NORM BRK FAULT)	FULL	0	2 220	+ 50	+ 110	+ 110	+ 290	+ 80	+ 180	- 180	+ 530
	3	6	2 510	+ 60	+ 130	+ 120	+ 310	+ 90	+ 220	- 230	+ 670
ALTN L(R) RELEASED (if G SYS LO PR)	FULL	0	2 440	+ 60	+ 140	+ 120	+ 310	+ 90	+ 230	- 200	+ 520
	3	6	2 750	+ 60	+ 160	+ 140	+ 330	+ 100	+ 280	- 260	+ 680
NORM BRK FAULT	FULL	0	1 640	+ 40	+ 90	+ 70	+ 180	+ 60	+ 70	- 90	+ 640
	3	6	1 810	+ 40	+ 100	+ 80	+ 190	+ 60	+ 80	- 110	+ 820
NORM + ALTN FAULT	FULL	0	1 810	+ 60	+ 90	+ 70	+ 190	+ 60	+ 70	- 110	+ 640
	3	6	2 010	+ 70	+ 100	+ 80	+ 210	+ 60	+ 90	- 130	+ 810

(1) Automatic Landing correction: add 180m - (2) Weight correction: subtract 20m per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 1 600m

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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 (m)				WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (m) 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	1 960	+ 40	+ 100	+ 80	+ 220	+ 60	+ 100	- 130	+ 610
	3	6	2 180	+ 50	+ 110	+ 90	+ 230	+ 80	+ 120	- 160	+ 780
ONE BRK RELEASED	FULL	0	2 060	+ 50	+ 110	+ 90	+ 260	+ 70	+ 140	- 150	+ 560
	3	6	2 310	+ 50	+ 120	+ 110	+ 270	+ 90	+ 170	- 190	+ 710
TWO BRK RELEASED	FULL	0	2 440	+ 60	+ 120	+ 130	+ 330	+ 90	+ 240	- 220	+ 490
	3	6	2 790	+ 60	+ 140	+ 150	+ 360	+ 100	+ 300	- 280	+ 630
ALTN L(R) RELEASED (if NORM BRK FAULT)	FULL	0	2 440	+ 60	+ 120	+ 130	+ 330	+ 90	+ 240	- 220	+ 490
	3	6	2 790	+ 60	+ 140	+ 150	+ 360	+ 100	+ 300	- 280	+ 630
ALTN L(R) RELEASED (if G SYS LO PR)	FULL	0	2 690	+ 60	+ 150	+ 140	+ 360	+ 110	+ 310	- 230	+ 480
	3	6	3 070	+ 70	+ 170	+ 170	+ 390	+ 120	+ 390	- 310	+ 630
NORM BRK FAULT	FULL	0	1 820	+ 40	+ 100	+ 80	+ 210	+ 60	+ 90	- 110	+ 600
	3	6	2 020	+ 40	+ 110	+ 90	+ 230	+ 70	+ 110	- 140	+ 770
NORM + ALTN FAULT	FULL	0	1 960	+ 40	+ 100	+ 80	+ 220	+ 60	+ 100	- 130	+ 610
	3	6	2 180	+ 50	+ 110	+ 90	+ 230	+ 80	+ 120	- 160	+ 780
(1) Automatic Landing correction: add 190m - (2) Weight correction: subtract 20m per 1T below 66T											
REF DIST without failure (valid for all FLAPS LEVER positions) = 1 770m											

Continued on the next 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 (m)				WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (m) 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	2 080	+ 70	+ 140	+ 130	+ 340	+ 100	+ 140	- 140	+ 420
	3	6	2 420	+ 80	+ 170	+ 160	+ 390	+ 120	+ 190	- 180	+ 530
ONE BRK RELEASED	FULL	0	2 260	+ 80	+ 150	+ 140	+ 380	+ 110	+ 190	- 170	+ 380
	3	6	2 650	+ 90	+ 180	+ 180	+ 450	+ 130	+ 260	- 220	+ 470
TWO BRK RELEASED	FULL	0	2 620	+ 90	+ 160	+ 170	+ 450	+ 120	+ 300	- 230	+ 340
	3	6	3 100	+ 110	+ 200	+ 220	+ 530	+ 150	+ 410	- 310	+ 410
ALTN L(R) RELEASED (if NORM BRK FAULT)	FULL	0	2 620	+ 90	+ 160	+ 170	+ 450	+ 120	+ 300	- 230	+ 340
	3	6	3 100	+ 110	+ 200	+ 220	+ 530	+ 150	+ 410	- 310	+ 410
ALTN L(R) RELEASED (if G SYS LO PR)	FULL	0	2 900	+ 100	+ 190	+ 200	+ 500	+ 140	+ 390	- 250	+ 340
	3	6	3 440	+ 130	+ 230	+ 270	+ 600	+ 180	+ 550	- 360	+ 420
NORM BRK FAULT	FULL	0	2 030	+ 70	+ 140	+ 130	+ 340	+ 90	+ 130	- 130	+ 410
	3	6	2 360	+ 80	+ 170	+ 160	+ 390	+ 120	+ 180	- 160	+ 510
NORM + ALTN FAULT	FULL	0	2 080	+ 70	+ 140	+ 130	+ 340	+ 100	+ 140	- 140	+ 420
	3	6	2 420	+ 80	+ 170	+ 160	+ 390	+ 120	+ 190	- 180	+ 530

(1) Automatic Landing correction: add 230m - (2) Weight correction: subtract 20m per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 1 950m

Continued on the next 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 (m)				WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (m) 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	3 070	+ 70	+ 140	+ 190	+ 490	+ 130	+ 540	- 330	+ 420
	3	6	3 590	+ 80	+ 170	+ 230	+ 530	+ 150	+ 700	- 430	+ 530
ONE BRK RELEASED	FULL	0	3 330	+ 80	+ 150	+ 240	+ 600	+ 140	+ 830	- 380	+ 380
	3	6	Landing Distance greater than 6 000 m for all conditions								
TWO BRK RELEASED	FULL	0	Landing Distance greater than 6 000 m for all conditions								
	3	6	Landing Distance greater than 6 000 m for all conditions								
ALTN L(R) RELEASED (if NORM BRK FAULT)	FULL	0	Landing Distance greater than 6 000 m for all conditions								
	3	6	Landing Distance greater than 6 000 m for all conditions								
ALTN L(R) RELEASED (if G SYS LO PR)	FULL	0	Landing Distance greater than 6 000 m for all conditions								
	3	6	Landing Distance greater than 6 000 m for all conditions								
NORM BRK FAULT	FULL	0	3 020	+ 70	+ 140	+ 190	+ 490	+ 130	+ 540	- 320	+ 410
	3	6	3 530	+ 80	+ 170	+ 230	+ 530	+ 150	+ 700	- 420	+ 520
NORM + ALTN FAULT	FULL	0	3 070	+ 70	+ 140	+ 190	+ 490	+ 130	+ 540	- 330	+ 420
	3	6	3 590	+ 80	+ 170	+ 230	+ 530	+ 150	+ 700	- 430	+ 530

(1) Automatic Landing correction: add 220m - (2) Weight correction: subtract 30m per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 2 950m

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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 (m)				WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (m) 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	1 120	+ 40	+ 70	+ 40	+ 120	+ 40	+ 20	- 20	+ 760
	3	6	1 210	+ 50	+ 80	+ 50	+ 120	+ 40	+ 20	- 20	+ 950
DC BUS 2 FAULT	FULL	0	1 220	+ 40	+ 90	+ 40	+ 120	+ 40	+ 30	- 30	+ 790
	3	6	1 290	+ 50	+ 90	+ 50	+ 130	+ 40	+ 30	- 30	+ 1 000
DC BUS 1+2 FAULT	FULL	0	1 940	+ 80	+ 110	+ 80	+ 210	+ 60	+ 90	INOP	+ 710
	3	6	2 150	+ 90	+ 120	+ 90	+ 220	+ 70	+ 110	INOP	+ 900
DC ESS BUS FAULT with no Ice Accretion	FULL	0	1 120	+ 40	+ 70	+ 40	+ 120	+ 40	+ 20	- 20	+ 750
	3	6	1 210	+ 50	+ 80	+ 50	+ 120	+ 50	+ 30	- 20	+ 950
DC ESS BUS FAULT with Ice Accretion	FULL	10	1 240	+ 50	+ 70	+ 50	+ 130	+ 40	+ 20	- 20	+ 590
	3	16	1 350	+ 50	+ 80	+ 50	+ 120	+ 50	+ 30	- 30	+ 800
DC ESS SHED BUS with Ice Accretion	FULL	10	1 230	+ 40	+ 70	+ 50	+ 120	+ 40	+ 20	- 20	+ 580
	3	16	1 350	+ 50	+ 80	+ 50	+ 130	+ 40	+ 20	- 30	+ 790
DC EMER CONFIG (Calculated with 140kt min)	FULL	0 / 140kt	2 020	+ 60	+ 100	+ 80	+ 210	+ 70	+ 100	INOP	+ 640
	3	6 / 140kt	2 160	+ 90	+ 120	+ 90	+ 220	+ 70	+ 110	INOP	+ 900
ELEC EMER CONFIG (Calculated with 140kt min)	3	10 / 140kt	2 190	+ 80	+ 120	+ 90	+ 210	+ 70	+ 100	INOP	+ 840

(1) Automatic Landing correction: add 160m - (2) Weight correction: subtract 10m per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 1 080m

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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 (m)				WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (m) 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	1 460	+ 50	+ 110	+ 80	+ 210	+ 60	+ 50	- 50	+ 560
	3	6	1 630	+ 60	+ 120	+ 90	+ 240	+ 70	+ 60	- 70	+ 710
DC BUS 2 FAULT	FULL	0	1 660	+ 60	+ 150	+ 100	+ 250	+ 80	+ 80	- 80	+ 560
	3	6	1 840	+ 70	+ 170	+ 120	+ 280	+ 90	+ 100	- 110	+ 720
DC BUS 1+2 FAULT	FULL	0	2 000	+ 70	+ 150	+ 100	+ 270	+ 80	+ 130	INOP	+ 570
	3	6	2 230	+ 80	+ 170	+ 120	+ 300	+ 90	+ 150	INOP	+ 740
DC ESS BUS FAULT with no Ice Accretion	FULL	0	1 460	+ 50	+ 120	+ 80	+ 210	+ 70	+ 60	- 50	+ 560
	3	6	1 630	+ 60	+ 140	+ 90	+ 240	+ 80	+ 70	- 70	+ 700
DC ESS BUS FAULT with Ice Accretion	FULL	10	1 640	+ 50	+ 110	+ 90	+ 230	+ 70	+ 60	- 70	+ 430
	3	16	1 830	+ 60	+ 130	+ 110	+ 250	+ 80	+ 70	- 90	+ 580
DC ESS SHED BUS with Ice Accretion	FULL	10	1 580	+ 50	+ 110	+ 80	+ 210	+ 70	+ 50	- 60	+ 430
	3	16	1 760	+ 60	+ 120	+ 100	+ 230	+ 80	+ 70	- 80	+ 580
DC EMER CONFIG (Calculated with 140kt min)	FULL	0 / 140kt	2 100	+ 60	+ 140	+ 110	+ 280	+ 90	+ 130	INOP	+ 500
	3	6 / 140kt	2 230	+ 80	+ 170	+ 120	+ 300	+ 100	+ 150	INOP	+ 740
ELEC EMER CONFIG (Calculated with 140kt min)	3	10 / 140kt	2 280	+ 80	+ 160	+ 120	+ 290	+ 90	+ 140	INOP	+ 690

(1) Automatic Landing correction: add 180m - (2) Weight correction: subtract 10m per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 1 370m

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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 (m)				WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (m) 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	1 690	+ 40	+ 90	+ 70	+ 190	+ 50	+ 70	- 90	+ 650
	3	6	1 860	+ 40	+ 100	+ 80	+ 200	+ 60	+ 80	- 110	+ 820
DC BUS 2 FAULT	FULL	0	1 930	+ 40	+ 130	+ 80	+ 220	+ 70	+ 110	- 150	+ 650
	3	6	2 100	+ 40	+ 140	+ 90	+ 220	+ 70	+ 130	- 180	+ 840
DC BUS 1+2 FAULT	FULL	0	2 110	+ 50	+ 130	+ 90	+ 230	+ 70	+ 130	INOP	+ 650
	3	6	2 310	+ 60	+ 150	+ 100	+ 240	+ 80	+ 150	INOP	+ 850
DC ESS BUS FAULT with no Ice Accretion	FULL	0	1 720	+ 40	+ 100	+ 70	+ 200	+ 60	+ 80	- 110	+ 640
	3	6	1 890	+ 40	+ 110	+ 80	+ 210	+ 70	+ 100	- 140	+ 820
DC ESS BUS FAULT with Ice Accretion	FULL	10	1 880	+ 40	+ 100	+ 80	+ 200	+ 60	+ 90	- 130	+ 500
	3	16	2 070	+ 40	+ 110	+ 90	+ 210	+ 70	+ 100	- 170	+ 690
DC ESS SHED BUS with Ice Accretion	FULL	10	1 790	+ 40	+ 90	+ 70	+ 190	+ 60	+ 70	- 100	+ 500
	3	16	1 970	+ 40	+ 100	+ 80	+ 190	+ 60	+ 80	- 120	+ 690
DC EMER CONFIG (Calculated with 140kt min)	FULL	0 / 140kt	2 210	+ 40	+ 120	+ 90	+ 230	+ 80	+ 140	INOP	+ 580
	3	6 / 140kt	2 320	+ 60	+ 150	+ 100	+ 240	+ 80	+ 150	INOP	+ 850
ELEC EMER CONFIG (Calculated with 140kt min)	3	10 / 140kt	2 350	+ 60	+ 140	+ 100	+ 230	+ 80	+ 130	INOP	+ 790

(1) Automatic Landing correction: add 180m - (2) Weight correction: subtract 10m per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 1 600m

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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 (m)				WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (m) 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	1 870	+ 40	+ 100	+ 80	+ 220	+ 60	+ 100	- 110	+ 610
	3	6	2 070	+ 50	+ 120	+ 90	+ 230	+ 80	+ 120	- 140	+ 770
DC BUS 2 FAULT	FULL	0	2 160	+ 50	+ 140	+ 100	+ 250	+ 80	+ 160	- 200	+ 610
	3	6	2 380	+ 50	+ 150	+ 110	+ 270	+ 90	+ 180	- 250	+ 790
DC BUS 1+2 FAULT	FULL	0	2 340	+ 50	+ 140	+ 100	+ 270	+ 80	+ 180	INOP	+ 610
	3	6	2 590	+ 50	+ 160	+ 120	+ 280	+ 90	+ 210	INOP	+ 800
DC ESS BUS FAULT with no Ice Accretion	FULL	0	1 920	+ 40	+ 110	+ 80	+ 230	+ 70	+ 120	- 160	+ 600
	3	6	2 140	+ 40	+ 120	+ 90	+ 250	+ 80	+ 140	- 210	+ 770
DC ESS BUS FAULT with Ice Accretion	FULL	10	2 100	+ 40	+ 110	+ 90	+ 240	+ 70	+ 120	- 180	+ 470
	3	16	2 330	+ 50	+ 120	+ 100	+ 250	+ 90	+ 140	- 240	+ 650
DC ESS SHED BUS with Ice Accretion	FULL	10	1 980	+ 40	+ 90	+ 80	+ 220	+ 70	+ 100	- 130	+ 480
	3	16	2 190	+ 50	+ 110	+ 100	+ 220	+ 80	+ 110	- 150	+ 650
DC EMER CONFIG (Calculated with 140kt min)	FULL	0 / 140kt	2 450	+ 30	+ 130	+ 110	+ 280	+ 90	+ 190	INOP	+ 540
	3	6 / 140kt	2 600	+ 50	+ 160	+ 120	+ 280	+ 90	+ 210	INOP	+ 800
ELEC EMER CONFIG (Calculated with 140kt min)	3	10 / 140kt	2 590	+ 50	+ 150	+ 120	+ 260	+ 90	+ 180	INOP	+ 750

(1) Automatic Landing correction: add 190m - (2) Weight correction: subtract 10m per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 1 770m

Continued on the next 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 (m)				WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (m) 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	2 090	+ 70	+ 150	+ 130	+ 350	+ 100	+ 150	- 130	+ 420
	3	6	2 440	+ 90	+ 180	+ 170	+ 410	+ 120	+ 200	- 170	+ 520
DC BUS 2 FAULT	FULL	0	2 470	+ 90	+ 220	+ 180	+ 440	+ 140	+ 260	- 230	+ 400
	3	6	2 890	+ 110	+ 260	+ 230	+ 520	+ 170	+ 360	- 310	+ 520
DC BUS 1+2 FAULT	FULL	0	2 580	+ 90	+ 230	+ 190	+ 480	+ 140	+ 300	INOP	+ 390
	3	6	3 030	+ 110	+ 280	+ 250	+ 580	+ 190	+ 420	INOP	+ 510
DC ESS BUS FAULT with no Ice Accretion	FULL	0	2 160	+ 80	+ 170	+ 140	+ 390	+ 110	+ 180	- 180	+ 380
	3	6	2 530	+ 90	+ 210	+ 180	+ 460	+ 140	+ 250	- 250	+ 480
DC ESS BUS FAULT with Ice Accretion	FULL	10	2 400	+ 80	+ 160	+ 150	+ 390	+ 120	+ 190	- 220	+ 330
	3	16	2 820	+ 90	+ 190	+ 190	+ 470	+ 150	+ 270	- 310	+ 420
DC ESS SHED BUS with Ice Accretion	FULL	10	2 240	+ 70	+ 140	+ 130	+ 340	+ 110	+ 140	- 150	+ 350
	3	16	2 610	+ 90	+ 170	+ 170	+ 390	+ 130	+ 200	- 200	+ 450
DC EMER CONFIG (Calculated with 140kt min)	FULL	0 / 140kt	2 730	+ 70	+ 200	+ 190	+ 490	+ 150	+ 310	INOP	+ 360
	3	6 / 140kt	3 040	+ 110	+ 280	+ 250	+ 580	+ 180	+ 420	INOP	+ 500
ELEC EMER CONFIG (Calculated with 140kt min)	3	10 / 140kt	3 030	+ 110	+ 230	+ 230	+ 490	+ 160	+ 350	INOP	+ 520

(1) Automatic Landing correction: add 260m - (2) Weight correction: subtract 10m per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 1 950m

Continued on the next 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 (m)				WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (m) 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	3 130	+ 80	+ 150	+ 200	+ 500	+ 130	+ 580	- 230	+ 420
	3	6	3 650	+ 90	+ 190	+ 240	+ 540	+ 160	+ 750	- 350	+ 520
DC BUS 2 FAULT	FULL	0	3 960	+ 70	+ 210	+ 270	+ 650	+ 170	+ 1 210	- 710	+ 400
	3	6	Landing Distance greater than 6 000 m for all conditions								
DC BUS 1+2 FAULT	FULL	0	Landing Distance greater than 6 000 m for all conditions								
	3	6	Landing Distance greater than 6 000 m for all conditions								
DC ESS BUS FAULT with no Ice Accretion	FULL	0	Landing Distance greater than 6 000 m for all conditions								
	3	6	Landing Distance greater than 6 000 m for all conditions								
DC ESS BUS FAULT with Ice Accretion	FULL	10	Landing Distance greater than 6 000 m for all conditions								
	3	16	Landing Distance greater than 6 000 m for all conditions								
DC ESS SHED BUS with Ice Accretion	FULL	10	3 230	+ 80	+ 140	+ 200	+ 500	+ 130	+ 540	- 340	+ 350
	3	16	3 780	+ 90	+ 160	+ 240	+ 530	+ 150	+ 700	- 450	+ 450
DC EMER CONFIG (Calculated with 140kt min)	FULL	0 / 140kt	Landing Distance greater than 6 000 m for all conditions								
	3	6 / 140kt	Landing Distance greater than 6 000 m for all conditions								
ELEC EMER CONFIG (Calculated with 140kt min)	3	10 / 140kt	4 440	+ 100	+ 240	+ 310	+ 610	+ 190	+ 1 070	INOP	+ 520

(1) Automatic Landing correction: add 260m - (2) Weight correction: subtract 10m per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 2 950m

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 (m)				WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (m) 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
REVERSE UNLOCKED with buffet	3	10	1 250	+ 50	+ 80	+ 50	+ 120	+ 40	+ 20	- 20	+ 860
	1	40	1 700	+ 50	N/A	+ 60	+ 130	+ 50	+ 30	- 40	+ 790
SHUT DOWN with ENG FIRE P/B pushed and Ice Accretion	FULL	10	1 220	+ 40	+ 70	+ 50	+ 120	+ 40	+ 20	- 20	+ 570
	3	22	1 330	+ 50	N/A	+ 50	+ 120	+ 50	+ 30	- 30	+ 780
The following ECAM alert with Ice Accretion: - START VALVE FAULT	FULL	10	1 230	+ 40	+ 70	+ 50	+ 120	+ 40	+ 20	- 20	+ 580
	3	22	1 350	+ 50	N/A	+ 50	+ 120	+ 40	+ 20	- 30	+ 790

(1) Automatic Landing correction: add 100m - (2) Weight correction: subtract 10m per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 1 080m

5 - GOOD											
Corrections on Landing Distance (m)				WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (m) 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
REVERSE UNLOCKED with buffet	3	10	1 630	+ 50	+ 120	+ 90	+ 220	+ 70	+ 60	- 70	+ 630
	1	40	2 250	+ 70	N/A	+ 120	+ 250	+ 100	+ 80	- 130	+ 570
SHUT DOWN with ENG FIRE P/B pushed and Ice Accretion	FULL	10	1 560	+ 50	+ 110	+ 80	+ 210	+ 70	+ 50	- 60	+ 420
	3	22	1 740	+ 60	N/A	+ 90	+ 220	+ 70	+ 60	- 80	+ 570
The following ECAM alert with Ice Accretion: - START VALVE FAULT	FULL	10	1 580	+ 50	+ 110	+ 80	+ 210	+ 70	+ 50	- 60	+ 430
	3	22	1 760	+ 60	N/A	+ 100	+ 220	+ 80	+ 60	- 80	+ 580

(1) Automatic Landing correction: add 130m - (2) Weight correction: subtract 20m per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 1 370m

Continued on the next page

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.

4 – GOOD TO MEDIUM											
Corrections on Landing Distance (m)				WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (m) 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
REVERSE UNLOCKED with buffet	3	10	1 840	+ 40	+ 100	+ 70	+ 190	+ 70	+ 80	- 120	+ 740
	1	40	2 380	+ 50	N/A	+ 90	+ 200	+ 80	+ 90	- 170	+ 700
SHUT DOWN with ENG FIRE P/B pushed and Ice Accretion	FULL	10	1 770	+ 40	+ 90	+ 70	+ 190	+ 60	+ 70	- 110	+ 490
	3	22	1 940	+ 40	N/A	+ 70	+ 190	+ 70	+ 80	- 130	+ 670
The following ECAM alert with Ice Accretion: - START VALVE FAULT	FULL	10	1 790	+ 40	+ 90	+ 70	+ 190	+ 60	+ 70	- 100	+ 500
	3	22	1 970	+ 40	N/A	+ 80	+ 190	+ 60	+ 80	- 120	+ 690

(1) Automatic Landing correction: add 130m - (2) Weight correction: subtract 20m per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 1 600m

3 - MEDIUM											
Corrections on Landing Distance (m)				WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (m) 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
REVERSE UNLOCKED with buffet	3	10	2 050	+ 50	+ 110	+ 80	+ 220	+ 80	+ 110	- 170	+ 700
	1	40	2 650	+ 50	N/A	+ 110	+ 230	+ 90	+ 130	- 230	+ 660
SHUT DOWN with ENG FIRE P/B pushed and Ice Accretion	FULL	10	1 950	+ 40	+ 100	+ 80	+ 220	+ 70	+ 90	- 140	+ 460
	3	22	2 160	+ 50	N/A	+ 90	+ 220	+ 70	+ 110	- 180	+ 630
The following ECAM alert with Ice Accretion: - START VALVE FAULT	FULL	10	1 980	+ 40	+ 90	+ 80	+ 220	+ 70	+ 100	- 130	+ 480
	3	22	2 190	+ 50	N/A	+ 90	+ 220	+ 80	+ 110	- 150	+ 650

(1) Automatic Landing correction: add 140m - (2) Weight correction: subtract 20m per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 1 770m

Continued on the next page

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.

2 – MEDIUM TO POOR											
Corrections on Landing Distance (m)				WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (m) 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
REVERSE UNLOCKED with buffet	3	10	2 410	+ 80	+ 170	+ 150	+ 380	+ 120	+ 180	- 200	+ 450
	1	40	3 350	+ 100	N/A	+ 190	+ 420	+ 160	+ 250	- 360	+ 450
SHUT DOWN with ENG FIRE P/B pushed and Ice Accretion	FULL	10	2 200	+ 70	+ 140	+ 120	+ 330	+ 110	+ 140	- 160	+ 330
	3	22	2 560	+ 90	N/A	+ 150	+ 370	+ 130	+ 190	- 230	+ 420
The following ECAM alert with Ice Accretion: - START VALVE FAULT	FULL	10	2 240	+ 70	+ 140	+ 130	+ 340	+ 110	+ 140	- 150	+ 350
	3	22	2 610	+ 90	N/A	+ 170	+ 380	+ 130	+ 200	- 200	+ 450
(1) Automatic Landing correction: add 170m - (2) Weight correction: subtract 30m per 1T below 66T											
REF DIST without failure (valid for all FLAPS LEVER positions) = 1 950m											

1 - POOR											
Corrections on Landing Distance (m)				WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (m) 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
REVERSE UNLOCKED with buffet	3	10	3 060	+ 70	+ 150	+ 150	+ 400	+ 120	+ 390	- 400	+ 520
	1	40	3 960	+ 90	N/A	+ 190	+ 430	+ 150	+ 450	- 540	+ 510
SHUT DOWN with ENG FIRE P/B pushed and Ice Accretion	FULL	10	2 780	+ 70	+ 120	+ 130	+ 370	+ 110	+ 310	- 310	+ 360
	3	22	3 200	+ 80	N/A	+ 150	+ 390	+ 120	+ 380	- 420	+ 480
The following ECAM alert with Ice Accretion: - START VALVE FAULT	FULL	10	2 820	+ 70	+ 130	+ 150	+ 380	+ 110	+ 320	- 270	+ 380
	3	22	3 250	+s 70	N/A	+ 180	+ 410	+ 130	+ 400	- 350	+ 500
(1) Automatic Landing correction: add 160m - (2) Weight correction: subtract 30m per 1T below 66T											
REF DIST without failure (valid for all FLAPS LEVER positions) = 2 560m											

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 (m)				WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (m) 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	1 150	+ 40	+ 70	+ 40	+ 120	+ 30	+ 20	- 20	+ 760
	3	6	1 220	+ 50	+ 80	+ 50	+ 130	+ 40	+ 20	- 30	+ 960
ONE SPLR FAULT with SPOILER runaway suspected	3	10	1 270	+ 50	+ 80	+ 50	+ 120	+ 50	+ 30	- 30	+ 900
TWO SPLR FAULT/ GND SPLR 1+2(3+4) FAULT	FULL	0	1 190	+ 40	+ 80	+ 40	+ 120	+ 40	+ 20	- 30	+ 800
	3	6	1 260	+ 50	+ 80	+ 50	+ 130	+ 40	+ 20	- 30	+ 1 000
THREE SPLR FAULT	FULL	0	1 230	+ 40	+ 90	+ 50	+ 120	+ 40	+ 30	- 30	+ 800
	3	6	1 300	+ 40	+ 90	+ 50	+ 120	+ 40	+ 30	- 40	+ 1 010
ALL SPLR FAULT	FULL	0	1 340	+ 40	+ 120	+ 50	+ 130	+ 50	+ 40	- 50	+ 840
	3	6	1 410	+ 40	+ 110	+ 60	+ 130	+ 40	+ 40	- 50	+ 1 050
GND SPLR FAULT	FULL	0	1 340	+ 40	+ 120	+ 50	+ 130	+ 50	+ 40	- 50	+ 840
	3	6	1 410	+ 40	+ 110	+ 60	+ 130	+ 40	+ 40	- 50	+ 1 050
SEC 1 or SEC 3 FAULT	FULL	0	1 150	+ 40	+ 80	+ 40	+ 120	+ 40	+ 20	- 20	+ 780
	3	6	1 230	+ 50	+ 80	+ 50	+ 130	+ 40	+ 20	- 30	+ 970
SEC 2 FAULT	FULL	0	1 120	+ 40	+ 70	+ 40	+ 120	+ 40	+ 20	- 20	+ 760
	3	6	1 210	+ 50	+ 80	+ 50	+ 120	+ 40	+ 20	- 20	+ 950
SEC 2+3 FAULT	FULL	0	1 220	+ 40	+ 90	+ 40	+ 120	+ 40	+ 30	- 30	+ 790
	3	6	1 290	+ 40	+ 90	+ 50	+ 120	+ 40	+ 30	- 30	+ 1 000
SEC 1+3 FAULT	FULL	0	1 280	+ 40	+ 100	+ 50	+ 120	+ 40	+ 30	- 30	+ 800
	3	6	1 350	+ 40	+ 100	+ 50	+ 130	+ 40	+ 30	- 40	+ 1 020
SEC 1+2 FAULT	FULL	0	1 180	+ 40	+ 80	+ 40	+ 120	+ 40	+ 20	- 20	+ 790
	3	6	1 260	+ 50	+ 80	+ 50	+ 130	+ 40	+ 20	- 30	+ 1 000
RUDDER JAM	FULL	0	1 240	+ 60	+ 100	+ 60	+ 140	+ 50	+ 30	- 20	+ 650
	3	6	1 390	+ 60	+ 110	+ 70	+ 150	+ 50	+ 40	- 30	+ 830
SEC 1+2+3 FAULT	3	10	1 470	+ 40	+ 110	+ 60	+ 130	+ 50	+ 40	INOP	+ 990
ALTN LAW/ DIRECT LAW/ ELAC 1+2 FAULT/ L+R ELEV FAULT/ L(R) ELEV FAULT/ STAB JAM	3	10	1 260	+ 50	+ 80	+ 50	+ 120	+ 50	+ 30	- 20	+ 880

(1) Automatic Landing correction: add 160m - (2) Weight correction: subtract 10m per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 1 080m

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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 (m)				WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (m) 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	1 510	+ 50	+ 120	+ 80	+ 220	+ 60	+ 60	- 60	+ 550
	3	6	1 670	+ 60	+ 130	+ 100	+ 240	+ 80	+ 70	- 80	+ 700
ONE SPLR FAULT with SPOILER runaway suspected	3	10	1 750	+ 60	+ 130	+ 100	+ 250	+ 80	+ 70	- 80	+ 650
TWO SPLR FAULT/ GND SPLR 1+2(3+4) FAULT	FULL	0	1 600	+ 60	+ 140	+ 90	+ 230	+ 80	+ 70	- 70	+ 580
	3	6	1 770	+ 60	+ 150	+ 110	+ 260	+ 80	+ 90	- 90	+ 740
THREE SPLR FAULT	FULL	0	1 680	+ 60	+ 160	+ 100	+ 250	+ 80	+ 90	- 90	+ 570
	3	6	1 860	+ 70	+ 180	+ 120	+ 280	+ 90	+ 110	- 110	+ 740
ALL SPLR FAULT	FULL	0	1 920	+ 70	+ 220	+ 130	+ 300	+ 100	+ 140	- 130	+ 610
	3	6	2 110	+ 80	+ 250	+ 150	+ 330	+ 120	+ 170	- 160	+ 800
GND SPLR FAULT	FULL	0	1 920	+ 70	+ 220	+ 130	+ 300	+ 100	+ 140	- 130	+ 610
	3	6	2 110	+ 80	+ 250	+ 150	+ 330	+ 120	+ 170	- 160	+ 800
SEC 1 or SEC 3 FAULT	FULL	0	1 520	+ 50	+ 120	+ 80	+ 220	+ 70	+ 60	- 60	+ 570
	3	6	1 700	+ 60	+ 140	+ 100	+ 250	+ 80	+ 70	- 80	+ 730
SEC 2 FAULT	FULL	0	1 460	+ 50	+ 110	+ 80	+ 210	+ 60	+ 50	- 50	+ 560
	3	6	1 630	+ 60	+ 120	+ 90	+ 240	+ 70	+ 60	- 70	+ 710
SEC 2+3 FAULT	FULL	0	1 660	+ 60	+ 150	+ 100	+ 250	+ 70	+ 80	- 80	+ 560
	3	6	1 830	+ 60	+ 170	+ 110	+ 270	+ 90	+ 100	- 100	+ 730
SEC 1+3 FAULT	FULL	0	1 780	+ 60	+ 180	+ 110	+ 270	+ 80	+ 100	- 100	+ 570
	3	6	1 960	+ 70	+ 200	+ 130	+ 290	+ 100	+ 130	- 130	+ 750
SEC 1+2 FAULT	FULL	0	1 580	+ 60	+ 130	+ 90	+ 230	+ 70	+ 70	- 70	+ 580
	3	6	1 760	+ 60	+ 160	+ 110	+ 260	+ 90	+ 90	- 90	+ 740
RUDDER JAM	FULL	0	1 600	+ 60	+ 130	+ 100	+ 250	+ 70	+ 70	- 70	+ 450
	3	6	1 840	+ 70	+ 160	+ 130	+ 290	+ 90	+ 100	- 100	+ 560
SEC 1+2+3 FAULT	3	10	2 250	+ 80	+ 250	+ 160	+ 340	+ 120	+ 180	INOP	+ 740
ALTN LAW/ DIRECT LAW/ ELAC 1+2 FAULT/ L+R ELEV FAULT/ L(R) ELEV FAULT/ STAB JAM	3	10	1 660	+ 50	+ 120	+ 90	+ 230	+ 70	+ 60	- 70	+ 660

(1) Automatic Landing correction: add 240m - (2) Weight correction: subtract 20m per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 1 370m

Continued on the next 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 (m)				WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (m) 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	1 740	+ 40	+ 100	+ 70	+ 190	+ 60	+ 80	- 100	+ 630
	3	6	1 900	+ 40	+ 110	+ 80	+ 200	+ 70	+ 90	- 120	+ 820
ONE SPLR FAULT with SPOILER runaway suspected	3	10	1 970	+ 40	+ 110	+ 80	+ 200	+ 70	+ 90	- 130	+ 760
TWO SPLR FAULT/ GND SPLR 1+2(3+4) FAULT	FULL	0	1 850	+ 40	+ 110	+ 80	+ 210	+ 60	+ 90	- 120	+ 660
	3	6	2 010	+ 40	+ 120	+ 90	+ 210	+ 70	+ 110	- 140	+ 850
THREE SPLR FAULT	FULL	0	1 940	+ 40	+ 130	+ 90	+ 210	+ 70	+ 110	- 140	+ 660
	3	6	2 110	+ 50	+ 140	+ 100	+ 220	+ 70	+ 120	- 160	+ 850
ALL SPLR FAULT	FULL	0	2 200	+ 50	+ 180	+ 100	+ 240	+ 80	+ 170	- 200	+ 700
	3	6	2 370	+ 50	+ 190	+ 110	+ 250	+ 90	+ 180	- 220	+ 910
GND SPLR FAULT	FULL	0	2 200	+ 50	+ 180	+ 100	+ 240	+ 80	+ 170	- 200	+ 700
	3	6	2 370	+ 50	+ 190	+ 110	+ 250	+ 90	+ 180	- 220	+ 910
SEC 1 or SEC 3 FAULT	FULL	0	1 760	+ 40	+ 100	+ 70	+ 200	+ 60	+ 80	- 110	+ 650
	3	6	1 930	+ 40	+ 120	+ 80	+ 200	+ 70	+ 100	- 130	+ 840
SEC 2 FAULT	FULL	0	1 690	+ 40	+ 90	+ 70	+ 190	+ 50	+ 70	- 90	+ 650
	3	6	1 860	+ 40	+ 100	+ 80	+ 200	+ 60	+ 80	- 120	+ 820
SEC 2+3 FAULT	FULL	0	1 910	+ 40	+ 120	+ 90	+ 210	+ 60	+ 110	- 130	+ 650
	3	6	2 070	+ 40	+ 140	+ 90	+ 220	+ 80	+ 120	- 160	+ 840
SEC 1+3 FAULT	FULL	0	2 040	+ 50	+ 150	+ 90	+ 220	+ 70	+ 130	- 160	+ 660
	3	6	2 210	+ 50	+ 160	+ 100	+ 230	+ 80	+ 150	- 190	+ 860
SEC 1+2 FAULT	FULL	0	1 820	+ 40	+ 120	+ 80	+ 200	+ 70	+ 90	- 110	+ 670
	3	6	2 000	+ 40	+ 130	+ 90	+ 210	+ 70	+ 110	- 140	+ 850
RUDDER JAM	FULL	0	1 830	+ 50	+ 120	+ 100	+ 230	+ 70	+ 90	- 110	+ 530
	3	6	2 080	+ 50	+ 130	+ 110	+ 250	+ 80	+ 120	- 150	+ 670
SEC 1+2+3 FAULT	3	10	2 490	+ 50	+ 190	+ 120	+ 250	+ 90	+ 190	INOP	+ 850
ALTN LAW/ DIRECT LAW/ ELAC 1+2 FAULT/ L+R ELEV FAULT/ L(R) ELEV FAULT/ STAB JAM	3	10	1 870	+ 40	+ 100	+ 80	+ 190	+ 70	+ 80	- 110	+ 760

(1) Automatic Landing correction: add 220m - (2) Weight correction: subtract 20m per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 1 600m

Continued on the next 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 (m)				WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (m) 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	1 930	+ 40	+ 110	+ 90	+ 220	+ 60	+ 110	- 130	+ 600
	3	6	2 130	+ 50	+ 120	+ 100	+ 240	+ 70	+ 130	- 160	+ 770
ONE SPLR FAULT with SPOILER runaway suspected	3	10	2 200	+ 50	+ 120	+ 100	+ 240	+ 80	+ 130	- 170	+ 720
TWO SPLR FAULT/ GND SPLR 1+2(3+4) FAULT	FULL	0	2 060	+ 50	+ 130	+ 90	+ 240	+ 70	+ 130	- 160	+ 620
	3	6	2 260	+ 50	+ 140	+ 100	+ 250	+ 80	+ 150	- 190	+ 810
THREE SPLR FAULT	FULL	0	2 160	+ 50	+ 150	+ 100	+ 240	+ 80	+ 150	- 180	+ 620
	3	6	2 380	+ 50	+ 150	+ 110	+ 260	+ 80	+ 180	- 220	+ 810
ALL SPLR FAULT	FULL	0	2 470	+ 60	+ 200	+ 120	+ 280	+ 100	+ 230	- 250	+ 660
	3	6	2 690	+ 60	+ 220	+ 130	+ 290	+ 110	+ 260	- 290	+ 870
GND SPLR FAULT	FULL	0	2 470	+ 60	+ 200	+ 120	+ 280	+ 100	+ 230	- 250	+ 660
	3	6	2 690	+ 60	+ 220	+ 130	+ 290	+ 110	+ 260	- 290	+ 870
SEC 1 or SEC 3 FAULT	FULL	0	1 950	+ 40	+ 120	+ 90	+ 220	+ 70	+ 110	- 140	+ 620
	3	6	2 170	+ 50	+ 130	+ 100	+ 240	+ 80	+ 140	- 170	+ 790
SEC 2 FAULT	FULL	0	1 870	+ 40	+ 100	+ 80	+ 220	+ 60	+ 100	- 120	+ 610
	3	6	2 070	+ 50	+ 120	+ 90	+ 230	+ 80	+ 120	- 150	+ 770
SEC 2+3 FAULT	FULL	0	2 120	+ 50	+ 140	+ 100	+ 240	+ 80	+ 150	- 170	+ 610
	3	6	2 330	+ 50	+ 150	+ 110	+ 250	+ 90	+ 170	- 210	+ 800
SEC 1+3 FAULT	FULL	0	2 280	+ 50	+ 160	+ 110	+ 260	+ 80	+ 180	- 200	+ 620
	3	6	2 500	+ 50	+ 180	+ 120	+ 270	+ 100	+ 210	- 250	+ 820
SEC 1+2 FAULT	FULL	0	2 030	+ 50	+ 130	+ 90	+ 230	+ 70	+ 130	- 140	+ 630
	3	6	2 250	+ 50	+ 140	+ 100	+ 240	+ 90	+ 150	- 180	+ 810
RUDDER JAM	FULL	0	2 020	+ 60	+ 120	+ 110	+ 260	+ 80	+ 130	- 140	+ 490
	3	6	2 310	+ 60	+ 140	+ 130	+ 290	+ 100	+ 170	- 190	+ 630
SEC 1+2+3 FAULT	3	10	2 830	+ 60	+ 210	+ 140	+ 300	+ 110	+ 270	INOP	+ 800
ALTN LAW/ DIRECT LAW/ ELAC 1+2 FAULT/ L+R ELEV FAULT/ L(R) ELEV FAULT/ STAB JAM	3	10	2 090	+ 40	+ 110	+ 90	+ 230	+ 70	+ 110	- 150	+ 720

(1) Automatic Landing correction: add 240m - (2) Weight correction: subtract 20m per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 1 770m

Continued on the next 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 (m)				WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (m) 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	2 160	+ 80	+ 160	+ 140	+ 360	+ 100	+ 160	- 150	+ 410
	3	6	2 500	+ 90	+ 200	+ 170	+ 410	+ 140	+ 220	- 190	+ 520
ONE SPLR FAULT with SPOILER runaway suspected	3	10	2 620	+ 90	+ 190	+ 180	+ 420	+ 140	+ 230	- 210	+ 490
TWO SPLR FAULT/ GND SPLR 1+2(3+4) FAULT	FULL	0	2 350	+ 90	+ 190	+ 160	+ 400	+ 120	+ 210	- 180	+ 430
	3	6	2 730	+ 100	+ 230	+ 210	+ 470	+ 150	+ 290	- 230	+ 550
THREE SPLR FAULT	FULL	0	2 480	+ 90	+ 210	+ 180	+ 430	+ 130	+ 250	- 210	+ 430
	3	6	2 890	+ 110	+ 260	+ 230	+ 500	+ 170	+ 350	- 260	+ 550
ALL SPLR FAULT	FULL	0	2 920	+ 120	+ 300	+ 250	+ 530	+ 170	+ 430	- 300	+ 470
	3	6	3 420	+ 130	+ 360	+ 320	+ 620	+ 210	+ 620	- 370	+ 620
GND SPLR FAULT	FULL	0	2 920	+ 120	+ 300	+ 250	+ 530	+ 170	+ 430	- 300	+ 470
	3	6	3 420	+ 130	+ 360	+ 320	+ 620	+ 210	+ 620	- 370	+ 620
SEC 1 or SEC 3 FAULT	FULL	0	2 210	+ 80	+ 170	+ 150	+ 370	+ 110	+ 170	- 160	+ 420
	3	6	2 580	+ 90	+ 210	+ 180	+ 430	+ 140	+ 250	- 200	+ 530
SEC 2 FAULT	FULL	0	2 090	+ 70	+ 150	+ 130	+ 350	+ 100	+ 150	- 140	+ 420
	3	6	2 440	+ 90	+ 180	+ 170	+ 410	+ 120	+ 200	- 180	+ 520
SEC 2+3 FAULT	FULL	0	2 420	+ 90	+ 200	+ 170	+ 410	+ 130	+ 230	- 200	+ 420
	3	6	2 820	+ 110	+ 240	+ 220	+ 480	+ 160	+ 320	- 250	+ 540
SEC 1+3 FAULT	FULL	0	2 630	+ 100	+ 240	+ 200	+ 460	+ 140	+ 300	- 240	+ 430
	3	6	3 080	+ 120	+ 290	+ 260	+ 540	+ 180	+ 430	- 320	+ 560
SEC 1+2 FAULT	FULL	0	2 320	+ 90	+ 190	+ 160	+ 400	+ 120	+ 200	- 170	+ 430
	3	6	2 720	+ 100	+ 230	+ 200	+ 460	+ 150	+ 290	- 230	+ 550
RUDDER JAM	FULL	0	2 210	+ 90	+ 160	+ 160	+ 370	+ 110	+ 170	- 160	+ 340
	3	6	2 630	+ 110	+ 200	+ 210	+ 450	+ 140	+ 260	- 220	+ 410
SEC 1+2+3 FAULT	3	10	3 610	+ 130	+ 370	+ 330	+ 630	+ 220	+ 660	INOP	+ 570
ALTN LAW/ DIRECT LAW/ ELAC 1+2 FAULT/ L+R ELEV FAULT/ L(R) ELEV FAULT/ STAB JAM	3	10	2 460	+ 80	+ 170	+ 160	+ 390	+ 120	+ 190	- 180	+ 490

(1) Automatic Landing correction: add 340m - (2) Weight correction: subtract 30m per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 1 950m

Continued on the next 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 (m)				WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (m) 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	3 220	+ 80	+ 160	+ 210	+ 510	+ 130	+ 620	- 360	+ 410
	3	6	3 760	+ 90	+ 190	+ 250	+ 560	+ 150	+ 800	- 480	+ 520
ONE SPLR FAULT with SPOILER runaway suspected	3	10	3 870	+ 90	+ 180	+ 260	+ 560	+ 160	+ 810	- 490	+ 490
TWO SPLR FAULT/ GND SPLR 1+2(3+4) FAULT	FULL	0	3 540	+ 90	+ 190	+ 240	+ 540	+ 150	+ 770	- 440	+ 430
	3	6	4 120	+ 100	+ 220	+ 290	+ 590	+ 180	+ 990	- 580	+ 550
THREE SPLR FAULT	FULL	0	3 740	+ 90	+ 210	+ 260	+ 560	+ 160	+ 870	- 490	+ 430
	3	6	4 360	+ 100	+ 250	+ 320	+ 620	+ 190	+ 1 130	- 640	+ 550
ALL SPLR FAULT	FULL	0	4 440	+ 110	+ 280	+ 340	+ 640	+ 190	+ 1 320	- 690	+ 470
	3	6	Landing Distance greater than 6 000 m for all conditions								
GND SPLR FAULT	FULL	0	4 440	+ 110	+ 280	+ 340	+ 640	+ 190	+ 1 320	- 690	+ 470
	3	6	Landing Distance greater than 6 000 m for all conditions								
SEC 1 or SEC 3 FAULT	FULL	0	3 320	+ 80	+ 170	+ 220	+ 520	+ 140	+ 660	- 390	+ 420
	3	6	3 890	+ 90	+ 200	+ 270	+ 570	+ 160	+ 870	- 510	+ 530
SEC 2 FAULT	FULL	0	3 130	+ 80	+ 150	+ 200	+ 500	+ 130	+ 580	- 340	+ 420
	3	6	3 650	+ 90	+ 190	+ 240	+ 540	+ 160	+ 750	- 460	+ 520
SEC 2+3 FAULT	FULL	0	3 640	+ 90	+ 200	+ 250	+ 550	+ 160	+ 820	- 470	+ 420
	3	6	4 240	+ 100	+ 240	+ 300	+ 600	+ 190	+ 1 060	- 610	+ 540
SEC 1+3 FAULT	FULL	0	3 960	+ 100	+ 230	+ 280	+ 590	+ 180	+ 1 000	- 460	+ 430
	3	6	4 640	+ 110	+ 270	+ 350	+ 650	+ 200	+ 1 320	- 670	+ 560
SEC 1+2 FAULT	FULL	0	3 500	+ 90	+ 190	+ 230	+ 540	+ 150	+ 750	- 320	+ 430
	3	6	4 100	+ 100	+ 220	+ 290	+ 590	+ 170	+ 980	- 480	+ 550
RUDDER JAM	FULL	0	3 190	+ 90	+ 150	+ 230	+ 540	+ 140	+ 600	- 350	+ 340
	3	6	3 800	+ 110	+ 200	+ 290	+ 610	+ 170	+ 820	- 480	+ 410
SEC 1+2+3 FAULT	3	10	Landing Distance greater than 6 000 m for all conditions								
ALTN LAW/ DIRECT LAW/ ELAC 1+2 FAULT/ L+R ELEV FAULT/ L(R) ELEV FAULT/ STAB JAM	3	10	3 630	+ 80	+ 170	+ 230	+ 540	+ 150	+ 700	- 440	+ 490

(1) Automatic Landing correction: add 310m - (2) Weight correction: subtract 40m per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 2 950m

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 (m)				WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (m) 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	1 240	+ 40	+ 80	+ 40	+ 120	+ 40	+ 30	- 30	+ 770
	3	6	1 320	+ 40	+ 80	+ 50	+ 120	+ 40	+ 30	- 40	+ 970
B SYS LO PR	FULL	0	1 120	+ 40	+ 70	+ 40	+ 120	+ 40	+ 20	- 20	+ 760
	3	6	1 210	+ 50	+ 80	+ 50	+ 120	+ 40	+ 20	- 20	+ 950
Y SYS LO PR	FULL	0	1 160	+ 40	+ 70	+ 40	+ 120	+ 30	+ 20	- 20	+ 780
	3	6	1 240	+ 50	+ 80	+ 50	+ 130	+ 40	+ 20	- 20	+ 980
G SYS LO PR with B SYS supplied by the RAT (Calculated with 140kt min)	FULL	0 / 140kt	1 340	+ 30	+ 80	+ 50	+ 120	+ 50	+ 30	- 40	+ 700
	3	6 / 140kt	1 360	+ 40	+ 80	+ 50	+ 120	+ 40	+ 30	- 60	+ 980
Y SYS LO PR with B SYS supplied by the RAT (Calculated with 140kt min)	FULL	0 / 140kt	1 270	+ 30	+ 80	+ 50	+ 120	+ 40	+ 30	- 40	+ 710
	3	6 / 140kt	1 290	+ 50	+ 80	+ 50	+ 130	+ 40	+ 30	- 50	+ 1 000
G + B	3	25	1 630	+ 40	N/A	+ 60	+ 130	+ 50	+ 40	- 50	+ 700
G + Y	3	25	2 510	+ 80	N/A	+ 100	+ 200	+ 80	+ 120	INOP	+ 610
B + Y	FULL	0	1 200	+ 40	+ 80	+ 40	+ 120	+ 40	+ 30	- 20	+ 800
	3	6	1 280	+ 50	+ 80	+ 50	+ 130	+ 40	+ 30	- 30	+ 1 000

(1) Automatic Landing correction: add 130m - (2) Weight correction: subtract 10m per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 1 080m

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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 (m)				WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (m) 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	1 650	+ 60	+ 130	+ 90	+ 240	+ 70	+ 80	- 80	+ 530
	3	6	1 840	+ 60	+ 150	+ 110	+ 270	+ 80	+ 90	- 100	+ 680
B SYS LO PR	FULL	0	1 460	+ 50	+ 110	+ 80	+ 210	+ 60	+ 50	- 50	+ 560
	3	6	1 630	+ 60	+ 120	+ 90	+ 240	+ 70	+ 60	- 70	+ 710
Y SYS LO PR	FULL	0	1 530	+ 50	+ 130	+ 90	+ 220	+ 70	+ 60	- 60	+ 570
	3	6	1 710	+ 60	+ 150	+ 100	+ 250	+ 90	+ 80	- 80	+ 730
G SYS LO PR with B SYS supplied by the RAT (Calculated with 140kt min)	FULL	0 / 140kt	1 830	+ 40	+ 130	+ 110	+ 260	+ 80	+ 90	- 160	+ 480
	3	6 / 140kt	1 920	+ 70	+ 170	+ 120	+ 290	+ 100	+ 110	- 180	+ 690
Y SYS LO PR with B SYS supplied by the RAT (Calculated with 140kt min)	FULL	0 / 140kt	1 720	+ 40	+ 140	+ 100	+ 240	+ 80	+ 80	- 130	+ 510
	3	6 / 140kt	1 820	+ 60	+ 170	+ 110	+ 270	+ 90	+ 100	- 160	+ 740
G + B	3	25	2 400	+ 70	N/A	+ 140	+ 300	+ 110	+ 130	- 180	+ 480
G + Y	3	25	2 710	+ 90	N/A	+ 150	+ 300	+ 110	+ 170	INOP	+ 500
B + Y	FULL	0	1 620	+ 60	+ 150	+ 90	+ 240	+ 80	+ 80	- 70	+ 580
	3	6	1 810	+ 60	+ 170	+ 110	+ 270	+ 90	+ 90	- 100	+ 740

(1) Automatic Landing correction: add 180m - (2) Weight correction: subtract 10m per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 1 370m

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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 (m)				WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (m) 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	1 790	+ 40	+ 110	+ 80	+ 200	+ 60	+ 90	- 100	+ 640
	3	6	1 960	+ 40	+ 120	+ 80	+ 210	+ 70	+ 100	- 130	+ 820
B SYS LO PR	FULL	0	1 690	+ 40	+ 90	+ 70	+ 190	+ 50	+ 70	- 90	+ 650
	3	6	1 860	+ 40	+ 100	+ 80	+ 200	+ 60	+ 80	- 120	+ 820
Y SYS LO PR	FULL	0	1 770	+ 40	+ 110	+ 80	+ 190	+ 60	+ 80	- 90	+ 660
	3	6	1 950	+ 40	+ 120	+ 80	+ 210	+ 70	+ 100	- 120	+ 840
G SYS LO PR with B SYS supplied by the RAT (Calculated with 140kt min)	FULL	0 / 140kt	1 960	+ 30	+ 110	+ 80	+ 210	+ 70	+ 100	- 160	+ 580
	3	6 / 140kt	2 040	+ 40	+ 130	+ 90	+ 210	+ 70	+ 110	- 180	+ 830
Y SYS LO PR with B SYS supplied by the RAT (Calculated with 140kt min)	FULL	0 / 140kt	1 960	+ 30	+ 120	+ 80	+ 210	+ 70	+ 100	- 160	+ 600
	3	6 / 140kt	2 060	+ 40	+ 140	+ 90	+ 210	+ 80	+ 120	- 190	+ 850
G + B	3	25	2 430	+ 50	N/A	+ 100	+ 220	+ 90	+ 120	- 180	+ 590
G + Y	3	25	2 750	+ 60	N/A	+ 120	+ 230	+ 100	+ 160	INOP	+ 580
B + Y	FULL	0	1 870	+ 40	+ 120	+ 80	+ 210	+ 70	+ 100	- 110	+ 670
	3	6	2 060	+ 40	+ 130	+ 90	+ 220	+ 70	+ 110	- 140	+ 850

(1) Automatic Landing correction: add 170m - (2) Weight correction: subtract 10m per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 1 600m

Continued on the next 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 (m)				WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (m) 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	1 990	+ 50	+ 120	+ 90	+ 230	+ 70	+ 120	- 130	+ 600
	3	6	2 190	+ 50	+ 130	+ 100	+ 240	+ 80	+ 140	- 170	+ 780
B SYS LO PR	FULL	0	1 870	+ 40	+ 100	+ 80	+ 220	+ 60	+ 100	- 120	+ 610
	3	6	2 070	+ 50	+ 120	+ 90	+ 230	+ 80	+ 120	- 150	+ 770
Y SYS LO PR	FULL	0	1 970	+ 50	+ 120	+ 90	+ 230	+ 70	+ 120	- 120	+ 620
	3	6	2 190	+ 50	+ 130	+ 100	+ 240	+ 80	+ 140	- 150	+ 790
G SYS LO PR with B SYS supplied by the RAT (Calculated with 140kt min)	FULL	0 / 140kt	2 180	+ 30	+ 120	+ 100	+ 240	+ 70	+ 140	- 190	+ 540
	3	6 / 140kt	2 290	+ 50	+ 140	+ 110	+ 250	+ 80	+ 160	- 230	+ 790
Y SYS LO PR with B SYS supplied by the RAT (Calculated with 140kt min)	FULL	0 / 140kt	2 190	+ 30	+ 120	+ 100	+ 250	+ 80	+ 140	- 200	+ 560
	3	6 / 140kt	2 320	+ 50	+ 150	+ 110	+ 250	+ 90	+ 160	- 240	+ 810
G + B	3	25	2 720	+ 50	N/A	+ 120	+ 250	+ 100	+ 170	- 230	+ 560
G + Y	3	25	3 040	+ 60	N/A	+ 140	+ 270	+ 100	+ 210	INOP	+ 550
B + Y	FULL	0	2 090	+ 50	+ 130	+ 100	+ 240	+ 70	+ 140	- 140	+ 630
	3	6	2 320	+ 50	+ 140	+ 110	+ 260	+ 80	+ 160	- 180	+ 810

(1) Automatic Landing correction: add 180m - (2) Weight correction: subtract 10m per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 1 770m

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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 (m)				WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (m) 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	2 240	+ 80	+ 170	+ 150	+ 370	+ 110	+ 180	- 150	+ 410
	3	6	2 600	+ 90	+ 210	+ 190	+ 430	+ 140	+ 250	- 210	+ 520
B SYS LO PR	FULL	0	2 090	+ 70	+ 150	+ 130	+ 350	+ 100	+ 150	- 140	+ 420
	3	6	2 440	+ 90	+ 180	+ 170	+ 410	+ 120	+ 200	- 180	+ 520
Y SYS LO PR	FULL	0	2 230	+ 80	+ 180	+ 150	+ 380	+ 120	+ 180	- 140	+ 430
	3	6	2 610	+ 100	+ 220	+ 190	+ 440	+ 150	+ 260	- 190	+ 540
G SYS LO PR with B SYS supplied by the RAT (Calculated with 140kt min)	FULL	0 / 140kt	2 490	+ 70	+ 170	+ 170	+ 400	+ 120	+ 220	- 260	+ 380
	3	6 / 140kt	2 750	+ 100	+ 230	+ 210	+ 470	+ 150	+ 300	- 350	+ 530
Y SYS LO PR with B SYS supplied by the RAT (Calculated with 140kt min)	FULL	0 / 140kt	2 520	+ 70	+ 190	+ 170	+ 410	+ 140	+ 240	- 280	+ 400
	3	6 / 140kt	2 810	+ 110	+ 250	+ 220	+ 480	+ 160	+ 320	- 380	+ 550
G + B	3	25	3 360	+ 110	N/A	+ 230	+ 470	+ 170	+ 340	- 340	+ 400
G + Y	3	25	3 640	+ 120	N/A	+ 260	+ 500	+ 190	+ 420	INOP	+ 400
B + Y	FULL	0	2 390	+ 90	+ 200	+ 170	+ 410	+ 120	+ 220	- 170	+ 430
	3	6	2 810	+ 110	+ 240	+ 220	+ 480	+ 150	+ 320	- 240	+ 550

(1) Automatic Landing correction: add 240m - (2) Weight correction: subtract 10m per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 1 950m

Continued on the next 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 (m)				WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (m) 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	3 340	+ 80	+ 170	+ 220	+ 520	+ 150	+ 670	- 280	+ 410
	3	6	3 910	+ 90	+ 200	+ 270	+ 570	+ 160	+ 880	- 430	+ 520
B SYS LO PR	FULL	0	3 130	+ 80	+ 150	+ 200	+ 500	+ 130	+ 580	- 340	+ 420
	3	6	3 650	+ 90	+ 190	+ 240	+ 540	+ 160	+ 750	- 460	+ 520
Y SYS LO PR	FULL	0	3 360	+ 80	+ 180	+ 220	+ 520	+ 150	+ 680	- 110	+ 430
	3	6	3 940	+ 90	+ 210	+ 270	+ 570	+ 170	+ 890	- 250	+ 540
G SYS LO PR with B SYS supplied by the RAT (Calculated with 140kt min)	FULL	0 / 140kt	3 660	+ 70	+ 170	+ 240	+ 550	+ 160	+ 770	- 230	+ 380
	3	6 / 140kt	4 130	+ 100	+ 220	+ 290	+ 590	+ 180	+ 990	- 400	+ 530
Y SYS LO PR with B SYS supplied by the RAT (Calculated with 140kt min)	FULL	0 / 140kt	3 750	+ 70	+ 170	+ 250	+ 560	+ 160	+ 820	- 260	+ 400
	3	6 / 140kt	4 240	+ 100	+ 240	+ 300	+ 600	+ 190	+ 1 050	- 450	+ 550
G + B	3	25	4 730	+ 100	N/A	+ 320	+ 600	+ 200	+ 1 010	- 390	+ 400
G + Y	3	25	Landing Distance greater than 6 000 m for all conditions								
B + Y	FULL	0	3 610	+ 90	+ 200	+ 250	+ 550	+ 160	+ 800	- 170	+ 440
	3	6	4 240	+ 100	+ 230	+ 300	+ 610	+ 180	+ 1 060	- 330	+ 550

(1) Automatic Landing correction: add 230m - (2) Weight correction: subtract 20m per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 2 950m

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 (m)				WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (m) 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	2 210	+ 50	+ 160	+ 90	+ 210	+ 80	+ 10	- 10	+ 610
DUAL IR FAULT/ DUAL ADR FAULT/ DUAL RA FAULT	3	10	1 260	+ 50	+ 80	+ 50	+ 120	+ 50	+ 30	- 20	+ 880
ALL ADR OFF	3	N/A	1 260	+ 50	+ 80	+ 50	+ 120	+ 50	+ 30	- 20	+ 880
(1) Automatic Landing correction: add 180m - (2) Weight correction: subtract 10m per 1T below 66T											
REF DIST without failure (valid for all FLAPS LEVER positions) = 1 080m											

5 – GOOD											
Corrections on Landing Distance (m)				WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (m) 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	2 210	+ 50	+ 160	+ 90	+ 210	+ 80	+ 20	- 10	+ 600
DUAL IR FAULT/ DUAL ADR FAULT/ DUAL RA FAULT	3	10	1 660	+ 50	+ 120	+ 90	+ 230	+ 70	+ 60	- 70	+ 660
ALL ADR OFF	3	N/A	1 660	+ 50	+ 120	+ 90	+ 230	+ 70	+ 60	- 70	+ 660
(1) Automatic Landing correction: add 180m - (2) Weight correction: subtract 20m per 1T below 66T											
REF DIST without failure (valid for all FLAPS LEVER positions) = 1 370m											

4 – GOOD TO MEDIUM											
Corrections on Landing Distance (m)				WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (m) 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	2 210	+ 50	+ 160	+ 90	+ 220	+ 80	+ 20	- 10	+ 610
DUAL IR FAULT/ DUAL ADR FAULT/ DUAL RA FAULT	3	10	1 870	+ 40	+ 100	+ 80	+ 190	+ 70	+ 80	- 110	+ 760
ALL ADR OFF	3	N/A	1 870	+ 40	+ 100	+ 80	+ 190	+ 70	+ 80	- 110	+ 760
(1) Automatic Landing correction: add 180m - (2) Weight correction: subtract 20m per 1T below 66T											
REF DIST without failure (valid for all FLAPS LEVER positions) = 1 600m											

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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 (m)				WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (m) 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	2 270	+ 50	+ 160	+ 100	+ 240	+ 80	+ 70	- 30	+ 610
DUAL IR FAULT/ DUAL ADR FAULT/ DUAL RA FAULT	3	10	2 090	+ 40	+ 110	+ 90	+ 230	+ 70	+ 110	- 150	+ 720
ALL ADR OFF	3	N/A	2 090	+ 40	+ 110	+ 90	+ 230	+ 70	+ 110	- 150	+ 720
(1) Automatic Landing correction: add 180m - (2) Weight correction: subtract 20m per 1T below 66T											
REF DIST without failure (valid for all FLAPS LEVER positions) = 1 770m											

2 – MEDIUM TO POOR											
Corrections on Landing Distance (m)				WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (m) 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	2 460	+ 80	+ 170	+ 160	+ 390	+ 120	+ 190	- 40	+ 490
DUAL IR FAULT/ DUAL ADR FAULT/ DUAL RA FAULT	3	10	2 460	+ 80	+ 170	+ 160	+ 390	+ 120	+ 190	- 180	+ 490
ALL ADR OFF	3	N/A	2 460	+ 80	+ 170	+ 160	+ 390	+ 120	+ 190	- 180	+ 490
(1) Automatic Landing correction: add 170m - (2) Weight correction: subtract 30m per 1T below 66T											
REF DIST without failure (valid for all FLAPS LEVER positions) = 1 950m											

1 – POOR											
Corrections on Landing Distance (m)				WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE	FLAPS LEVER for LDG	ΔVREF	REF DIST (m) 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	3 630	+ 80	+ 170	+ 230	+ 540	+ 150	+ 700	- 380	+ 490
DUAL IR FAULT/ DUAL ADR FAULT/ DUAL RA FAULT	3	10	3 630	+ 80	+ 170	+ 230	+ 540	+ 150	+ 700	- 440	+ 490
ALL ADR OFF	3	N/A	3 630	+ 80	+ 170	+ 230	+ 540	+ 150	+ 700	- 440	+ 490
(1) Automatic Landing correction: add 170m - (2) Weight correction: subtract 40m per 1T below 66T											
REF DIST without failure (valid for all FLAPS LEVER positions) = 2 950m											

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 (m)					WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE		FLAPS LEVER for LDG	ΔVREF	REF DIST (m) 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	1 540	+ 50	N/A	+ 60	+ 130	+ 50	+ 30	- 30	+ 1 390
	1≤FLAPS<2	3	15	1 370	+ 50	+ 80	+ 50	+ 130	+ 40	+ 30	- 30	+ 1 090
	2≤FLAPS<3	3	10	1 280	+ 50	+ 80	+ 50	+ 130	+ 50	+ 30	- 20	+ 1 030
	FLAPS=3	3	10	1 260	+ 50	+ 80	+ 50	+ 120	+ 50	+ 30	- 20	+ 880
	FLAPS>3	FULL	5	1 170	+ 40	+ 70	+ 50	+ 130	+ 40	+ 20	- 20	+ 660
SLATS FAULT	SLATS<1	3	25	1 480	+ 50	N/A	+ 50	+ 120	+ 40	+ 30	- 30	+ 680
	1≤SLATS≤3	3	10	1 260	+ 50	+ 80	+ 50	+ 120	+ 50	+ 30	- 20	+ 880
	SLATS>3	3	5	1 200	+ 50	+ 80	+ 50	+ 120	+ 40	+ 20	- 20	+ 950
FLAPS AND SLATS AT 0		1	50	1 920	+ 60	N/A	+ 70	+ 130	+ 50	+ 40	- 40	+ 1 050
FLAPS<1	SLATS<1	3	45	1 840	+ 60	N/A	+ 60	+ 130	+ 60	+ 40	- 40	+ 1 110
	SLATS≥1	3	25	1 540	+ 50	N/A	+ 60	+ 130	+ 50	+ 30	- 30	+ 1 390
1≤FLAPS<2	SLATS<1	3	30	1 580	+ 50	N/A	+ 60	+ 130	+ 50	+ 30	- 30	+ 910
	SLATS≥1	3	15	1 370	+ 50	+ 80	+ 50	+ 130	+ 40	+ 30	- 30	+ 1 090
2≤FLAPS<3	SLATS<1	3	25	1 490	+ 50	N/A	+ 50	+ 120	+ 50	+ 30	- 30	+ 830
	SLATS≥1	3	10	1 280	+ 50	+ 80	+ 50	+ 130	+ 50	+ 30	- 20	+ 1 030
FLAPS=3	SLATS<1	3	25	1 480	+ 50	N/A	+ 50	+ 120	+ 50	+ 30	- 30	+ 680
	1≤SLATS≤3	3	10	1 270	+ 50	+ 80	+ 50	+ 130	+ 40	+ 30	- 20	+ 870
	SLATS>3	3	10	1 260	+ 50	+ 80	+ 50	+ 120	+ 50	+ 30	- 20	+ 880
FLAPS>3	1≤SLATS≤3	FULL	10	1 240	+ 50	+ 70	+ 50	+ 120	+ 40	+ 20	- 20	+ 580
	SLATS>3	FULL	5	1 170	+ 40	+ 70	+ 50	+ 130	+ 40	+ 20	- 20	+ 660

(1) Automatic Landing correction: add 110m - (2) Weight correction: subtract 10m per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 1 080m

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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 (m)					WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE		FLAPS LEVER for LDG	ΔVREF	REF DIST (m) 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	2 020	+ 70	N/A	+ 120	+ 260	+ 90	+ 80	- 100	+ 1 070
	1≤FLAPS<2	3	15	1 790	+ 60	+ 130	+ 100	+ 250	+ 90	+ 70	- 80	+ 820
	2≤FLAPS<3	3	10	1 680	+ 60	+ 130	+ 100	+ 240	+ 80	+ 60	- 70	+ 770
	FLAPS=3	3	10	1 660	+ 60	+ 130	+ 90	+ 240	+ 80	+ 70	- 70	+ 650
	FLAPS>3	FULL	5	1 510	+ 50	+ 110	+ 80	+ 220	+ 60	+ 50	- 50	+ 490
SLATS FAULT	SLATS<1	3	25	1 940	+ 60	N/A	+ 110	+ 230	+ 80	+ 70	- 90	+ 500
	1≤SLATS≤3	3	10	1 660	+ 50	+ 120	+ 90	+ 230	+ 70	+ 60	- 70	+ 660
	SLATS>3	3	5	1 570	+ 50	+ 120	+ 90	+ 220	+ 70	+ 60	- 60	+ 720
FLAPS AND SLATS AT 0		1	50	2 610	+ 80	N/A	+ 160	+ 300	+ 120	+ 110	- 150	+ 770
FLAPS<1	SLATS<1	3	45	2 500	+ 80	N/A	+ 150	+ 290	+ 110	+ 100	- 140	+ 820
	SLATS≥1	3	25	2 020	+ 70	N/A	+ 120	+ 260	+ 90	+ 80	- 100	+ 1 070
1≤FLAPS<2	SLATS<1	3	30	2 090	+ 60	N/A	+ 120	+ 260	+ 100	+ 80	- 110	+ 660
	SLATS≥1	3	15	1 790	+ 60	+ 130	+ 100	+ 250	+ 90	+ 70	- 80	+ 820
2≤FLAPS<3	SLATS<1	3	25	1 970	+ 60	N/A	+ 110	+ 250	+ 90	+ 70	- 90	+ 600
	SLATS≥1	3	10	1 680	+ 60	+ 130	+ 100	+ 240	+ 80	+ 60	- 70	+ 770
FLAPS=3	SLATS<1	3	25	1 950	+ 60	N/A	+ 110	+ 240	+ 90	+ 70	- 90	+ 490
	1≤SLATS≤3	3	10	1 670	+ 60	+ 130	+ 90	+ 240	+ 80	+ 60	- 70	+ 640
	SLATS>3	3	10	1 660	+ 60	+ 130	+ 90	+ 240	+ 80	+ 70	- 70	+ 650
FLAPS>3	1≤SLATS≤3	FULL	10	1 600	+ 50	+ 110	+ 90	+ 220	+ 70	+ 50	- 60	+ 430
	SLATS>3	FULL	5	1 510	+ 50	+ 110	+ 80	+ 220	+ 60	+ 50	- 50	+ 490

(1) Automatic Landing correction: add 140m - (2) Weight correction: subtract 20m per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 1 370m

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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 (m)					WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE		FLAPS LEVER for LDG	ΔVREF	REF DIST (m) 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	2 220	+ 40	N/A	+ 90	+ 210	+ 70	+ 100	- 160	+ 1 260
	1≤FLAPS<2	3	15	2 030	+ 40	+ 100	+ 80	+ 210	+ 70	+ 90	- 140	+ 970
	2≤FLAPS<3	3	10	1 930	+ 40	+ 100	+ 80	+ 210	+ 60	+ 90	- 130	+ 900
	FLAPS=3	3	10	1 910	+ 40	+ 100	+ 80	+ 210	+ 70	+ 90	- 130	+ 760
	FLAPS>3	FULL	5	1 750	+ 40	+ 90	+ 70	+ 200	+ 60	+ 80	- 110	+ 570
SLATS FAULT	SLATS<1	3	25	2 120	+ 40	N/A	+ 90	+ 190	+ 70	+ 80	- 130	+ 590
	1≤SLATS≤3	3	10	1 870	+ 40	+ 100	+ 80	+ 190	+ 70	+ 80	- 110	+ 760
	SLATS>3	3	5	1 800	+ 40	+ 100	+ 70	+ 190	+ 60	+ 80	- 110	+ 830
FLAPS AND SLATS AT 0		1	50	2 710	+ 50	N/A	+ 110	+ 230	+ 90	+ 110	- 210	+ 960
FLAPS<1	SLATS<1	3	45	2 620	+ 50	N/A	+ 110	+ 220	+ 90	+ 110	- 200	+ 1 010
	SLATS≥1	3	25	2 220	+ 40	N/A	+ 90	+ 210	+ 70	+ 100	- 160	+ 1 260
1≤FLAPS<2	SLATS<1	3	30	2 290	+ 40	N/A	+ 90	+ 210	+ 70	+ 100	- 160	+ 800
	SLATS≥1	3	15	2 030	+ 40	+ 100	+ 80	+ 210	+ 70	+ 90	- 140	+ 970
2≤FLAPS<3	SLATS<1	3	25	2 180	+ 40	N/A	+ 90	+ 210	+ 70	+ 90	- 150	+ 730
	SLATS≥1	3	10	1 930	+ 40	+ 100	+ 80	+ 210	+ 60	+ 90	- 130	+ 900
FLAPS=3	SLATS<1	3	25	2 170	+ 40	N/A	+ 90	+ 210	+ 70	+ 90	- 150	+ 590
	1≤SLATS≤3	3	10	1 920	+ 40	+ 100	+ 80	+ 210	+ 60	+ 90	- 130	+ 760
	SLATS>3	3	10	1 910	+ 40	+ 100	+ 80	+ 210	+ 70	+ 90	- 130	+ 760
FLAPS>3	1≤SLATS≤3	FULL	10	1 830	+ 40	+ 100	+ 70	+ 200	+ 60	+ 80	- 110	+ 500
	SLATS>3	FULL	5	1 750	+ 40	+ 90	+ 70	+ 200	+ 60	+ 80	- 110	+ 570

(1) Automatic Landing correction: add 140m - (2) Weight correction: subtract 20m per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 1 600m

Continued on the next 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 (m)					WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE		FLAPS LEVER for LDG	ΔVREF	REF DIST (m) 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	2 530	+ 50	N/A	+ 110	+ 250	+ 90	+ 150	- 230	+ 1 200
	1≤FLAPS<2	3	15	2 300	+ 50	+ 120	+ 100	+ 250	+ 80	+ 140	- 200	+ 920
	2≤FLAPS<3	3	10	2 180	+ 40	+ 110	+ 100	+ 250	+ 70	+ 130	- 180	+ 850
	FLAPS=3	3	10	2 150	+ 40	+ 120	+ 90	+ 240	+ 80	+ 130	- 180	+ 710
	FLAPS>3	FULL	5	1 950	+ 40	+ 100	+ 80	+ 230	+ 70	+ 110	- 150	+ 530
SLATS FAULT	SLATS<1	3	25	2 360	+ 50	N/A	+ 100	+ 230	+ 80	+ 120	- 170	+ 560
	1≤SLATS≤3	3	10	2 090	+ 40	+ 110	+ 90	+ 230	+ 70	+ 110	- 150	+ 720
	SLATS>3	3	5	2 010	+ 40	+ 110	+ 90	+ 230	+ 70	+ 110	- 140	+ 780
FLAPS AND SLATS AT 0		1	50	3 080	+ 50	N/A	+ 130	+ 270	+ 110	+ 170	- 290	+ 910
FLAPS<1	SLATS<1	3	45	2 980	+ 50	N/A	+ 130	+ 270	+ 100	+ 170	- 280	+ 960
	SLATS≥1	3	25	2 530	+ 50	N/A	+ 110	+ 250	+ 90	+ 150	- 230	+ 1 200
1≤FLAPS<2	SLATS<1	3	30	2 590	+ 50	N/A	+ 110	+ 250	+ 90	+ 150	- 230	+ 760
	SLATS≥1	3	15	2 300	+ 50	+ 120	+ 100	+ 250	+ 80	+ 140	- 200	+ 920
2≤FLAPS<3	SLATS<1	3	25	2 460	+ 50	N/A	+ 100	+ 250	+ 80	+ 140	- 210	+ 680
	SLATS≥1	3	10	2 180	+ 40	+ 110	+ 100	+ 250	+ 70	+ 130	- 180	+ 850
FLAPS=3	SLATS<1	3	25	2 440	+ 50	N/A	+ 100	+ 250	+ 80	+ 130	- 210	+ 550
	1≤SLATS≤3	3	10	2 160	+ 40	+ 110	+ 90	+ 250	+ 80	+ 130	- 180	+ 710
	SLATS>3	3	10	2 150	+ 40	+ 120	+ 90	+ 240	+ 80	+ 130	- 180	+ 710
FLAPS>3	1≤SLATS≤3	FULL	10	2 040	+ 40	+ 100	+ 90	+ 230	+ 70	+ 110	- 150	+ 470
	SLATS>3	FULL	5	1 950	+ 40	+ 100	+ 80	+ 230	+ 70	+ 110	- 150	+ 530

(1) Automatic Landing correction: add 140m - (2) Weight correction: subtract 20m per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 1 770m

Continued on the next 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 (m)					WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE		FLAPS LEVER for LDG	ΔVREF	REF DIST (m) 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	3 340	+ 110	N/A	+ 240	+ 540	+ 190	+ 360	- 350	+ 760
	1≤FLAPS<2	3	15	2 850	+ 100	+ 200	+ 210	+ 490	+ 150	+ 280	- 260	+ 570
	2≤FLAPS<3	3	10	2 620	+ 90	+ 190	+ 180	+ 470	+ 140	+ 240	- 220	+ 530
	FLAPS=3	3	10	2 550	+ 90	+ 190	+ 170	+ 440	+ 140	+ 230	- 220	+ 450
	FLAPS>3	FULL	5	2 210	+ 70	+ 150	+ 140	+ 380	+ 100	+ 160	- 160	+ 350
SLATS FAULT	SLATS<1	3	25	2 840	+ 90	N/A	+ 180	+ 390	+ 140	+ 210	- 220	+ 400
	1≤SLATS≤3	3	10	2 460	+ 80	+ 170	+ 160	+ 390	+ 120	+ 190	- 180	+ 490
	SLATS>3	3	5	2 340	+ 80	+ 170	+ 160	+ 390	+ 120	+ 180	- 160	+ 520
FLAPS AND SLATS AT 0		1	50	4 260	+ 120	N/A	+ 290	+ 590	+ 230	+ 450	- 500	+ 590
FLAPS<1	SLATS<1	3	45	4 100	+ 120	N/A	+ 290	+ 580	+ 220	+ 440	- 480	+ 620
	SLATS≥1	3	25	3 340	+ 110	N/A	+ 240	+ 540	+ 190	+ 360	- 350	+ 760
1≤FLAPS<2	SLATS<1	3	30	3 280	+ 100	N/A	+ 220	+ 500	+ 180	+ 310	- 330	+ 490
	SLATS≥1	3	15	2 850	+ 100	+ 200	+ 210	+ 490	+ 150	+ 280	- 260	+ 570
2≤FLAPS<3	SLATS<1	3	25	3 030	+ 90	N/A	+ 200	+ 460	+ 160	+ 270	- 290	+ 440
	SLATS≥1	3	10	2 620	+ 90	+ 190	+ 180	+ 470	+ 140	+ 240	- 220	+ 530
FLAPS=3	SLATS<1	3	25	2 960	+ 90	N/A	+ 190	+ 450	+ 150	+ 250	- 270	+ 380
	1≤SLATS≤3	3	10	2 560	+ 90	+ 190	+ 170	+ 440	+ 140	+ 230	- 220	+ 450
	SLATS>3	3	10	2 550	+ 90	+ 190	+ 170	+ 440	+ 140	+ 230	- 220	+ 450
FLAPS>3	1≤SLATS≤3	FULL	10	2 330	+ 70	+ 140	+ 140	+ 380	+ 110	+ 170	- 180	+ 320
	SLATS>3	FULL	5	2 210	+ 70	+ 150	+ 140	+ 380	+ 100	+ 160	- 160	+ 350

(1) Automatic Landing correction: add 190m - (2) Weight correction: subtract 30m per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 1 950m

Continued on the next 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 (m)					WGT(2)	SPD	ALT	WIND	TEMP	SLOPE	REV	OVW
FAILURE		FLAPS LEVER for LDG	ΔVREF	REF DIST (m) 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	4 340	+ 70	N/A	+ 240	+ 560	+ 160	+ 850	- 750	+ 900
	1≤FLAPS<2	3	15	3 830	+ 60	+ 170	+ 210	+ 540	+ 150	+ 750	- 630	+ 670
	2≤FLAPS<3	3	10	3 570	+ 60	+ 170	+ 190	+ 530	+ 150	+ 700	- 570	+ 620
	FLAPS=3	3	10	3 490	+ 60	+ 160	+ 190	+ 520	+ 130	+ 670	- 550	+ 530
	FLAPS>3	FULL	5	3 030	+ 60	+ 130	+ 160	+ 490	+ 110	+ 540	- 430	+ 400
SLATS FAULT	SLATS<1	3	25	3 460	+ 80	N/A	+ 190	+ 410	+ 140	+ 410	- 370	+ 440
	1≤SLATS≤3	3	10	3 120	+ 70	+ 150	+ 170	+ 410	+ 120	+ 400	- 330	+ 550
	SLATS>3	3	5	3 010	+ 70	+ 150	+ 170	+ 410	+ 120	+ 400	- 320	+ 590
FLAPS AND SLATS AT 0		1	50	5 180	+ 80	N/A	+ 280	+ 600	+ 200	+ 940	- 890	+ 690
FLAPS<1	SLATS<1	3	45	5 040	+ 80	N/A	+ 270	+ 590	+ 190	+ 940	- 870	+ 720
	SLATS≥1	3	25	4 340	+ 70	N/A	+ 240	+ 560	+ 160	+ 850	- 750	+ 900
1≤FLAPS<2	SLATS<1	3	30	4 220	+ 70	N/A	+ 220	+ 550	+ 170	+ 760	- 690	+ 560
	SLATS≥1	3	15	3 830	+ 60	+ 170	+ 210	+ 540	+ 150	+ 750	- 630	+ 670
2≤FLAPS<3	SLATS<1	3	25	3 950	+ 70	N/A	+ 210	+ 530	+ 160	+ 700	- 630	+ 510
	SLATS≥1	3	10	3 570	+ 60	+ 170	+ 190	+ 530	+ 150	+ 700	- 570	+ 620
FLAPS=3	SLATS<1	3	25	3 860	+ 60	N/A	+ 200	+ 520	+ 150	+ 670	- 600	+ 420
	1≤SLATS≤3	3	10	3 490	+ 60	+ 170	+ 190	+ 520	+ 140	+ 670	- 550	+ 530
	SLATS>3	3	10	3 490	+ 60	+ 160	+ 190	+ 520	+ 130	+ 670	- 550	+ 530
FLAPS>3	1≤SLATS≤3	FULL	10	3 140	+ 60	+ 130	+ 160	+ 490	+ 120	+ 540	- 440	+ 360
	SLATS>3	FULL	5	3 030	+ 60	+ 130	+ 160	+ 490	+ 110	+ 540	- 430	+ 400

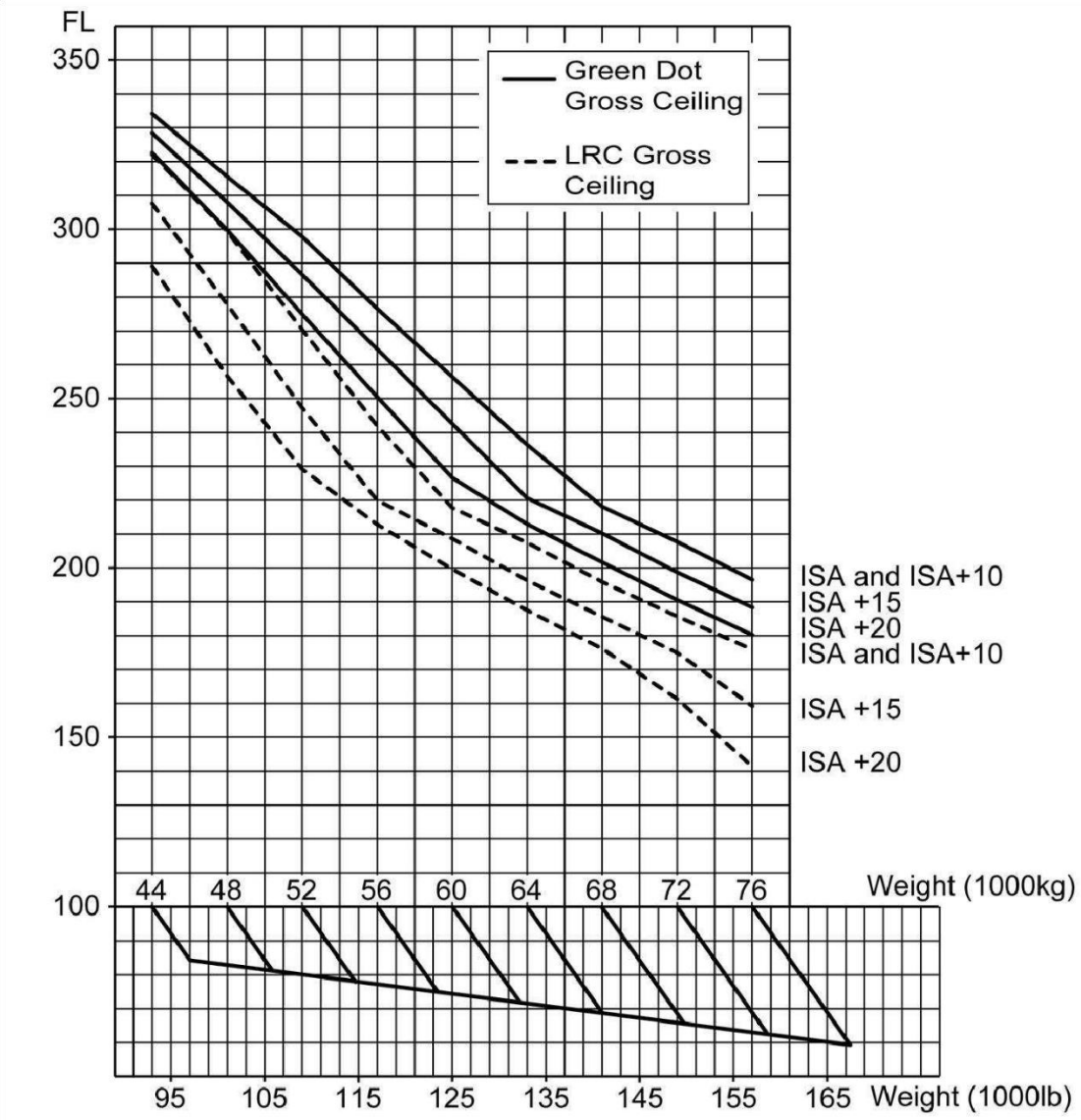
(1) Automatic Landing correction: add 170m - (2) Weight correction: subtract 30m per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 2 560m

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	-1 300 ft	-1 300 ft	-1 200 ft	-1 200 ft
	TOTAL ANTI ICE ON	-2 900 ft	-2 800 ft	-2 700 ft	-4 300 ft
GREEN DOT	ENGINE ANTI ICE ON	-800 ft	-800 ft	-900 ft	-900 ft
	TOTAL ANTI ICE ON	-1 900 ft	-1 900 ft	-2 200 ft	-2 400 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 LIMITS
HIGH AIR CONDITIONING
ANTI ICE 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			154 30 191 0.8 30000	215 42 193 1.0 30100	251 48 195 1.2 30100	278 53 197 1.3 30200	300 57 199 1.3 30200
52		97 19 193 0.5 28700	208 41 195 1.1 29000	252 49 197 1.2 29100	282 54 199 1.4 29200	305 58 201 1.4 29200	325 61 203 1.5 29300
54		172 34 197 0.9 27900	238 47 199 1.2 28000	274 53 201 1.4 28100	301 58 203 1.5 28200	321 61 205 1.6 28200	341 64 207 1.6 28200
56		203 40 201 1.1 26900	258 51 203 1.4 27000	289 56 205 1.5 27100	315 60 207 1.6 27200	336 64 209 1.7 27200	352 66 211 1.7 27200
58		171 33 205 1.0 26500	214 41 207 1.2 26500	244 47 209 1.3 26500	268 51 211 1.4 26500	287 54 213 1.4 26600	306 57 215 1.5 26600
60		166 32 209 0.9 26000	201 38 211 1.1 26100	227 43 213 1.2 26100	249 47 215 1.3 26100	268 50 217 1.4 26100	284 52 219 1.4 26100
62		165 31 213 1.0 25700	195 37 215 1.1 25700	218 41 217 1.2 25700	239 44 219 1.3 25700	256 47 221 1.3 25700	272 49 223 1.4 25800
64		165 31 217 1.0 25300	192 36 219 1.1 25400	214 39 221 1.2 25400	232 42 223 1.3 25400	249 45 225 1.3 25400	264 47 227 1.4 25400
66	51 10 217 0.3 24900	165 31 221 1.0 25000	188 35 223 1.1 25000	210 38 225 1.2 25000	226 41 227 1.2 25100	242 43 229 1.3 25100	257 45 231 1.3 25100
68	129 24 221 0.9 24400	207 38 225 1.3 24500	228 42 227 1.4 24600	246 45 229 1.5 24600	261 47 231 1.5 24600	277 49 233 1.5 24600	290 51 235 1.6 24600
70	162 30 225 1.1 23800	230 42 229 1.5 23900	250 46 231 1.6 24000	268 48 233 1.6 24000	282 50 235 1.7 24000	298 53 237 1.7 24000	
72	185 34 229 1.3 23200	245 45 233 1.6 23300	265 48 235 1.7 23400	282 51 237 1.7 23400	296 53 239 1.8 23400	310 55 241 1.8 23400	
74	205 38 233 1.4 22700	257 47 237 1.7 22700	275 49 239 1.8 22800	293 52 241 1.9 22800	307 54 243 1.9 22800	321 56 245 1.9 22800	
76	220 40 237 1.6 22100	268 48 241 1.8 22200	286 51 243 1.9 22200	300 53 245 1.9 22200	316 56 247 2.0 22200	331 58 249 2.0 22200	
78	252 46 241 1.8 21400	295 53 245 2.0 21500	312 55 247 2.1 21500	326 58 249 2.2 21600	339 59 251 2.2 21600		

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	+ 14 %	+ 28 %
TIME	+ 13 %	+ 26 %
DISTANCE	+ 12 %	+ 23 %
LEVEL OFF	- 700 ft	- 1800 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%

EPR
FUEL FLOW (KG/H)
MACH
IAS (KT)

WEIGHT (1000KG)	FL100	FL150	FL190	FL210	FL230	FL250
50	1.151 .430 1811 237	1.236 .511 1968 258	1.267 .515 1792 240	1.316 .550 1841 247	1.344 .556 1777 239	1.393 .584 1801 241
52	1.158 .435 1879 240	1.240 .511 1987 257	1.292 .535 1907 250	1.327 .553 1881 248	1.363 .567 1855 244	1.412 .594 1874 246
54	1.170 .447 1983 247	1.245 .510 2011 257	1.312 .550 1999 256	1.338 .555 1925 249	1.385 .581 1947 251	1.431 .602 1942 249
56	1.183 .461 2098 255	1.250 .510 2040 257	1.323 .553 2044 258	1.355 .565 2001 253	1.404 .592 2024 255	1.440 .600 1963 248
58	1.226 .510 2373 283	1.260 .514 2095 259	1.333 .555 2086 259	1.374 .576 2086 259	1.417 .595 2071 257	1.444 .585 1952 242
60	1.233 .514 2415 285	1.270 .519 2156 261	1.346 .561 2145 262	1.394 .588 2174 264	1.420 .585 2065 252	1.452 .562 1935 232
62	1.236 .514 2434 285	1.294 .540 2287 272	1.362 .570 2225 266	1.410 .596 2248 268	1.426 .570 2055 246	
64	1.239 .513 2454 284	1.311 .552 2382 279	1.381 .582 2317 272	1.418 .595 2272 267	1.435 .544 2037 234	
66	1.243 .513 2476 284	1.322 .556 2432 281	1.397 .591 2399 277	1.421 .585 2264 263		
68	1.247 .512 2499 283	1.330 .558 2472 282	1.412 .599 2473 280	1.426 .570 2253 256		
70	1.254 .514 2550 285	1.338 .560 2516 283	1.426 .604 2537 283	1.436 .543 2232 243		
72	1.262 .517 2604 287	1.351 .567 2592 286	1.428 .598 2533 280			
74	1.270 .521 2666 289	1.365 .575 2673 290	1.432 .587 2523 274			
76	1.290 .539 2805 299	1.381 .585 2767 296	1.438 .571 2509 267			
78	1.308 .554 2927 307	1.395 .593 2850 300	1.450 .537 2478 250			

ENGINE ANTI ICE ON
△FUEL = + 2.5 %

TOTAL ANTI ICE ON
△FUEL = + 6 %

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)

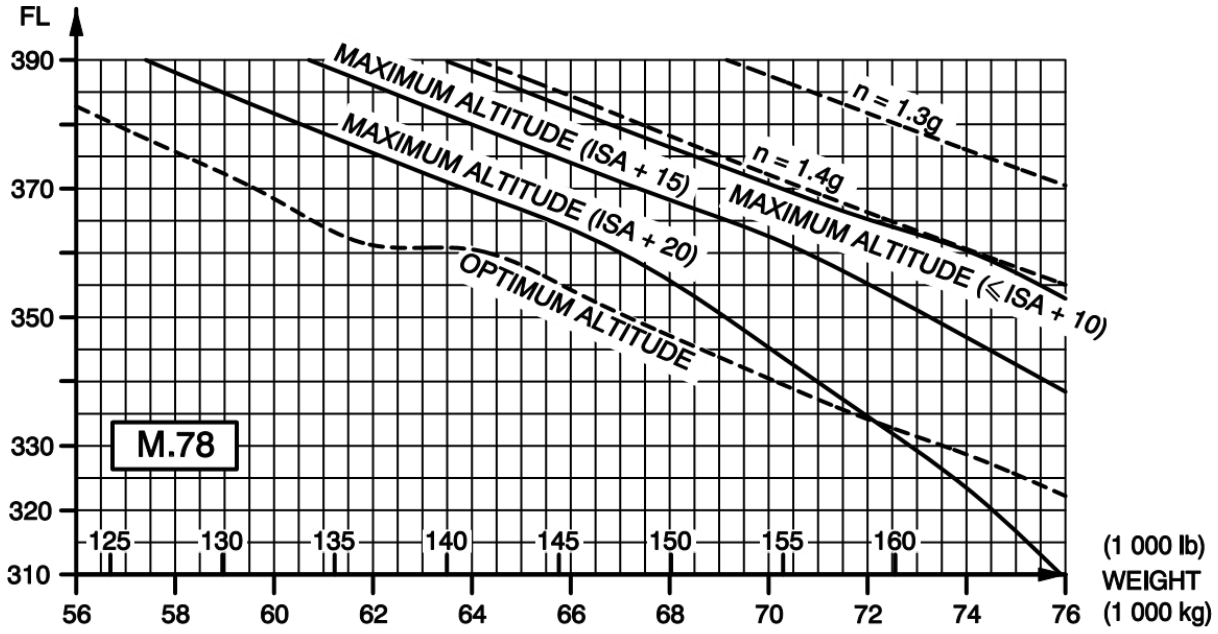
AIR DIST. (NM)	FLIGHT LEVEL 100	150	200	220	240	250	CORRECTION ON FUEL CONSUMPTION (KG/1000KG) FL100 FL150	FL200 FL220	FL240 FL250
200	1410 0.47	1187 0.44	1049 0.42	999 0.41	954 0.40	931 0.40	9	5	4
300	2101 1.09	1816 1.03	1627 1.00	1559 0.59	1499 0.57	1469 0.57	15	11	10
400	2785 1.30	2442 1.22	2203 1.17	2116 1.16	2042 1.14	2004 1.13	20	16	15
500	3463 1.52	3066 1.40	2776 1.35	2669 1.34	2581 1.31	2535 1.30	26	22	20
600	4136 2.14	3688 1.59	3346 1.53	3219 1.52	3118 1.48	3063 1.47	31	28	26
700	4801 2.36	4307 2.18	3913 2.11	3766 2.09	3652 2.05	3588 2.04	37	33	31
800	5460 2.58	4924 2.37	4477 2.28	4309 2.27	4183 2.22	4110 2.20	42	39	37
900	6114 3.20	5540 2.55	5040 2.46	4849 2.45	4710 2.39	4629 2.37	47	44	43
1000	6761 3.43	6153 3.14	5600 3.04	5386 3.03	5233 2.56	5146 2.54	51	49	48
1100	7403 4.05	6764 3.33	6157 3.22	5920 3.21	5753 3.14	5660 3.11	56	55	54
1200	8046 4.28	7373 3.52	6712 3.40	6451 3.39	6269 3.31	6173 3.28	61	60	60
1300	8686 4.49	7980 4.10	7265 3.58	6979 3.57	6783 3.49	6682 3.45	65	65	66
1400	9323 5.11	8586 4.29	7812 4.17	7504 4.15	7293 4.07	7189 4.02	70	70	72

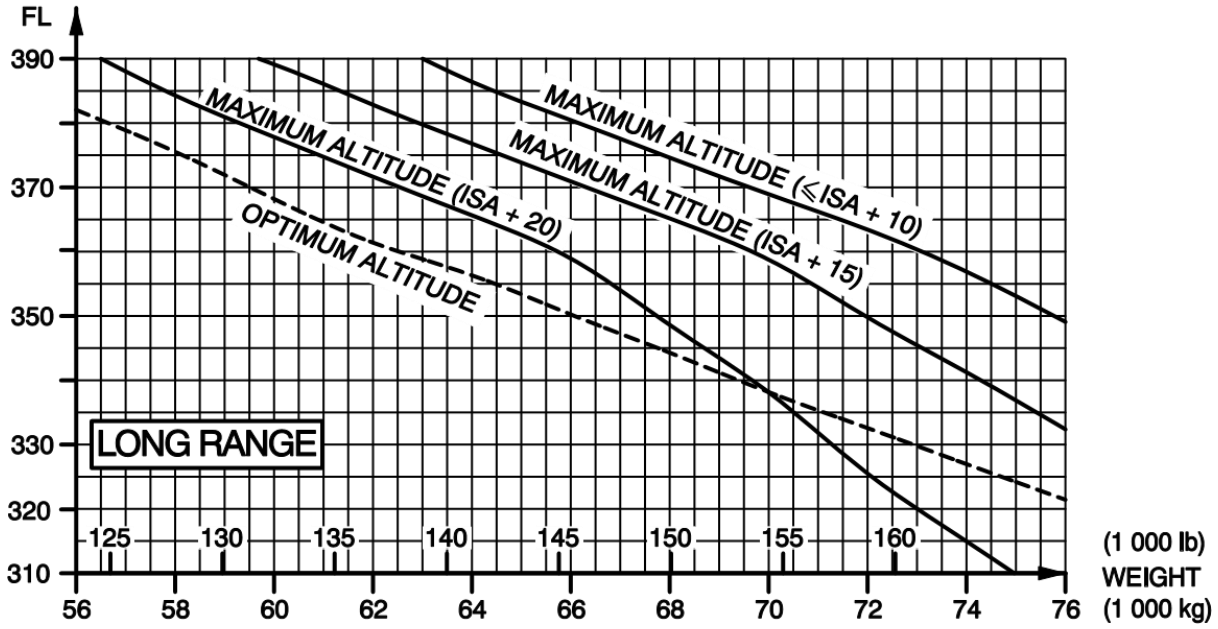
ENGINE ANTI ICE ON
△FUEL = + 3 %

TOTAL ANTI ICE ON
△FUEL = + 6 %

OPTIMUM & MAXIMUM ALTITUDES

ALL ENGINES





CORRECTIONS	ENGINE ANTI ICE	TOTAL ANTI ICE
≤ISA +10	Max ALT : -900 ft Opt ALT : No corr.	Max ALT : -1 700 ft Opt ALT : No corr.
ISA +15	Max ALT : -1 400 ft Opt ALT : No corr.	Max ALT : -2 800 ft Opt ALT : -1 400 ft
ISA +20	Max ALT : -1 700 ft Opt ALT : -1 500 ft	Max ALT : -2 800 ft Opt ALT : -2 000 ft

IN CRUISE QUICK CHECK AT A GIVEN MACH NUMBER

ALL ENGINES

IN CRUISE QUICK CHECK FROM ANY MOMENT IN CRUISE TO LANDING

CRUISE : M.78 - DESCENT : M.78/300KT/250KT - IMC PROCEDURE : 120 KG (6MIN)

REF. INITIAL WEIGHT = 60000 KG
NORMAL AIR CONDITIONING
ANTI-ICING 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	933 0.36	879 0.36	834 0.36	792 0.36	757 0.36	739 0.36	0	1	3
400	2069 1.02	1951 1.02	1858 1.03	1774 1.03	1704 1.03	1692 1.03	5	9	20
600	3202 1.28	3016 1.28	2873 1.29	2748 1.30	2642 1.30	2628 1.30	9	17	33
800	4331 1.54	4074 1.55	3881 1.55	3714 1.56	3572 1.57	3550 1.57	13	24	45
1000	5456 2.20	5124 2.21	4881 2.22	4673 2.23	4492 2.23	4458 2.23	17	32	57
1200	6579 2.46	6168 2.47	5874 2.48	5624 2.50	5403 2.50	5352 2.50	20	39	67
1400	7699 3.12	7206 3.13	6859 3.15	6569 3.16	6306 3.17	6232 3.17	23	46	77
1600	8817 3.37	8245 3.39	7838 3.41	7505 3.43	7202 3.44	7101 3.44	26	53	87
1800	9932 4.03	9279 4.05	8812 4.07	8432 4.09	8093 4.11	7957 4.11	28	59	95
2000	11044 4.29	10308 4.32	9778 4.34	9353 4.36	8978 4.37	8803 4.37	30	65	103
2200	12154 4.55	11332 4.58	10738 5.00	10266 5.03	9855 5.04	9637 5.04	31	71	110
2400	13262 5.21	12355 5.24	11692 5.27	11173 5.29	10726 5.31	10460 5.31	33	77	117
2600	14367 5.47	13380 5.50	12640 5.53	12072 5.56	11590 5.58	11274 5.58	34	83	123
2800	15469 6.13	14403 6.16	13582 6.19	12966 6.23	12448 6.25	12078 6.25	35	87	130
3000	16570 6.39	15422 6.42	14519 6.46	13853 6.49	13300 6.51	12888 6.51	36	92	136

LOW AIR CONDITIONING △FUEL = – 0.4 %

ENGINE ANTI ICE ON △FUEL = + 3 %

TOTAL ANTI ICE ON △FUEL = + 5.5 %

COST INDEX FOR LONG RANGE CRUISE SPEED

ALL ENGINES

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

- CI_{LRC} = 40 kg/min in the FMGC, for aircraft in metric units.
  or
- CI_{LRC} = 55 (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)	EPR	TIME (MIN)	FUEL (KG)	DIST. (NM)	EPR	IAS (KT)
390	16.1	188	98	1.047	19.0	192	114	IDLE	241
370	14.6	158	87	1.066	18.2	185	108	IDLE	252
350	13.5	139	78	IDLE	17.5	178	102	IDLE	264
330	12.9	134	74	IDLE	16.8	171	97	IDLE	277
310	12.4	129	71	IDLE	16.1	166	93	IDLE	289
290	12.0	125	67	IDLE	15.5	160	88	IDLE	300
270	11.4	120	63	IDLE	14.7	153	82	IDLE	300
250	10.8	115	58	IDLE	13.9	146	76	IDLE	300
240	10.5	112	56	IDLE	13.5	143	73	IDLE	300
220	9.9	107	52	IDLE	12.7	136	67	IDLE	300
200	9.3	102	48	IDLE	11.8	129	62	IDLE	300
180	8.7	97	44	IDLE	11.0	122	56	IDLE	300
160	8.0	91	40	IDLE	10.1	114	50	IDLE	300
140	7.4	85	36	IDLE	9.2	106	45	IDLE	300
120	6.7	79	32	IDLE	8.3	97	39	IDLE	300
100	6.0	72	28	IDLE	7.4	88	34	IDLE	300
50	2.2	28	10	IDLE	2.7	34	12	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	-	+ 4 %	+ 18 %	+ 0.3 %
FUEL	- 1 %	+ 17 %	+ 85 %	+ 0.4 %
DISTANCE	-	+ 4 %	+ 18 %	+ 0.4 %

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 ALTN. = 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	529 0.12						2		
60	681 0.16						4		
80	832 0.20	803 0.20					5		
100	984 0.24	943 0.24	939 0.22				6	5	
120	1136 0.28	1084 0.27	1066 0.26	1072 0.25			7	6	
140	1289 0.32	1224 0.31	1192 0.29	1182 0.28			9	7	
160	1441 0.37	1365 0.35	1319 0.32	1291 0.32	1307 0.31		10	7	9
180	1594 0.41	1506 0.39	1446 0.35	1401 0.35	1409 0.34	1422 0.33	11	8	11
200	1747 0.45	1647 0.42	1573 0.38	1511 0.38	1511 0.37	1518 0.36	13	9	12
220	1900 0.49	1788 0.46	1700 0.42	1621 0.41	1613 0.40	1613 0.39	14	9	13
240	2054 0.53	1930 0.50	1828 0.45	1731 0.45	1715 0.43	1709 0.42	15	10	14
260	2207 0.57	2072 0.54	1955 0.48	1841 0.48	1817 0.46	1805 0.45	17	11	15
280	2361 1.01	2213 0.57	2082 0.51	1951 0.51	1920 0.49	1901 0.48	18	11	16
300	2515 1.05	2356 1.01	2210 0.54	2061 0.54	2022 0.52	1997 0.51	19	12	17
320	2669 1.09	2498 1.05	2337 0.58	2172 0.57	2125 0.56	2094 0.53	21	13	18
340	2823 1.13	2640 1.09	2465 1.01	2282 1.01	2228 0.59	2190 0.56	22	13	19
360	2978 1.17	2783 1.12	2592 1.04	2393 1.04	2330 1.02	2286 0.59	23	14	20
380	3133 1.21	2926 1.16	2720 1.07	2503 1.07	2433 1.05	2383 1.02	25	15	21
400	3288 1.25	3069 1.20	2848 1.10	2614 1.10	2537 1.08	2480 1.05	26	16	22
420	3443 1.29	3212 1.23	2975 1.14	2725 1.14	2640 1.11	2576 1.08	27	16	23
440	3598 1.33	3356 1.27	3103 1.17	2835 1.17	2743 1.14	2673 1.11	29	17	25
460	3754 1.37	3499 1.30	3231 1.20	2946 1.20	2846 1.17	2770 1.13	30	18	26
480	3909 1.41	3643 1.34	3359 1.23	3057 1.23	2950 1.20	2868 1.16	31	18	27
500	4065 1.45	3787 1.38	3487 1.26	3169 1.27	3054 1.23	2965 1.19	33	19	28

LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
△FUEL = - 1 %	△FUEL = + 3 %	△FUEL = + 7 %

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

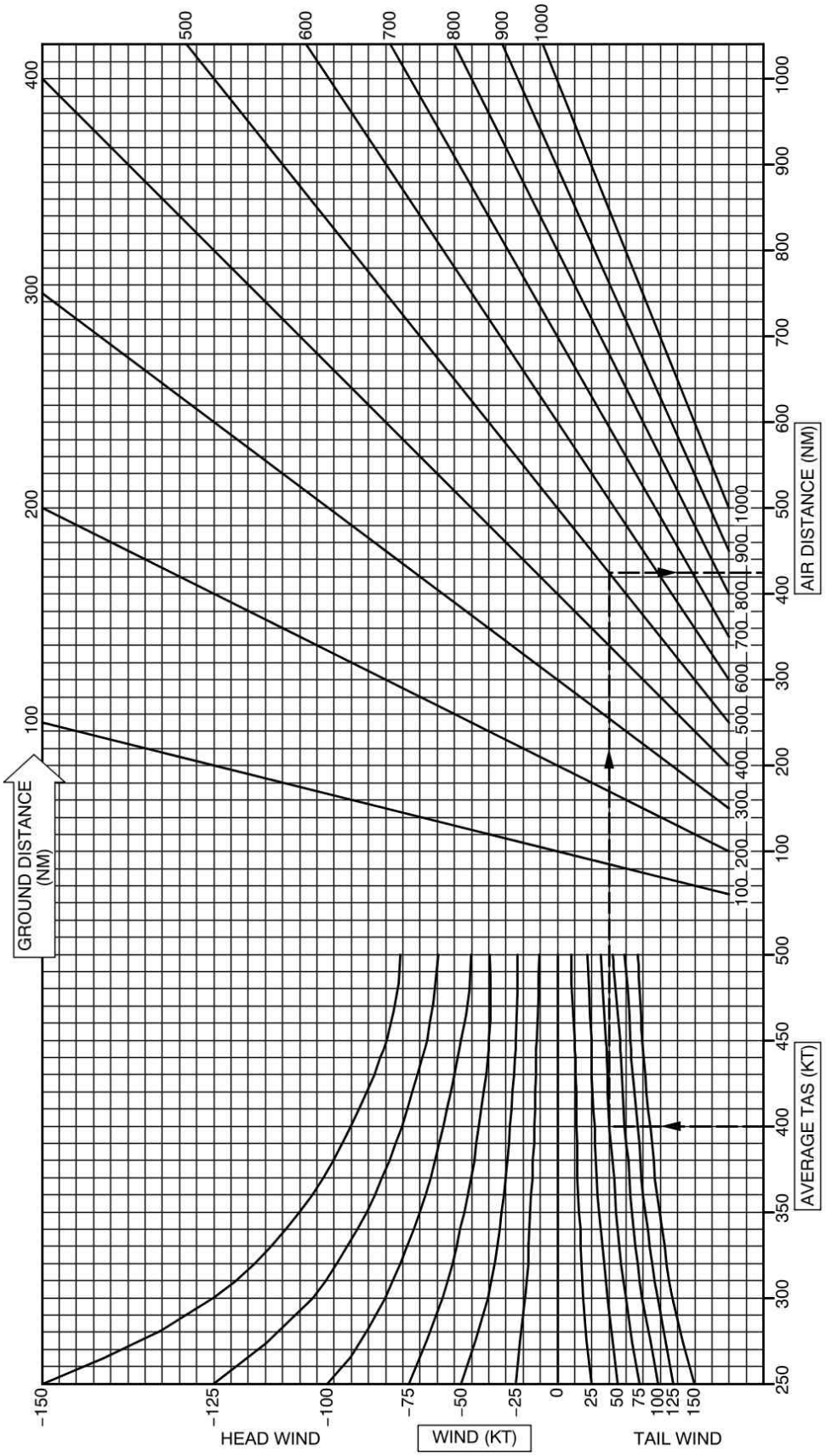
ISA
CG = 25.0%

FUEL CONSUMED (KG)
TIME (H.MIN)

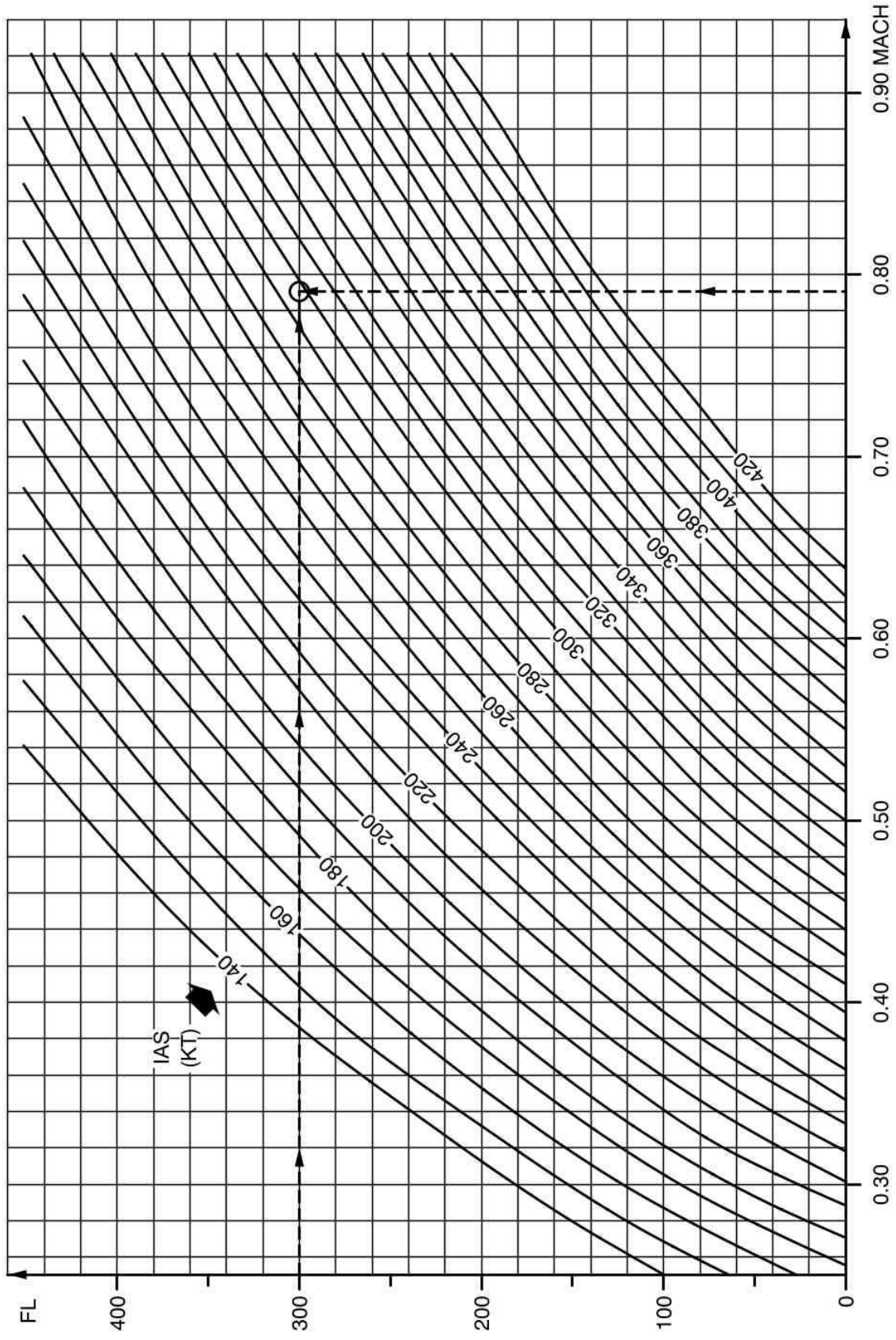
AIR DIST. (NM)	INITIAL WEIGHT (1000KG)						
	50	55	60	65	70	75	80
40	301 0.15	296 0.15	293 0.15	293 0.15	294 0.15	296 0.15	300 0.15
60	445 0.19	446 0.19	450 0.19	456 0.19	463 0.18	472 0.18	480 0.18
80	588 0.23	596 0.23	606 0.23	619 0.22	633 0.22	648 0.21	661 0.21
100	731 0.28	746 0.27	762 0.27	781 0.26	802 0.25	824 0.25	841 0.24
120	874 0.32	895 0.31	918 0.31	944 0.30	971 0.29	999 0.28	1021 0.27
140	1017 0.36	1045 0.35	1074 0.35	1106 0.34	1140 0.33	1174 0.31	1201 0.30
160	1160 0.41	1194 0.40	1229 0.39	1268 0.38	1309 0.36	1349 0.35	1381 0.34
180	1302 0.45	1343 0.44	1385 0.43	1430 0.42	1477 0.40	1524 0.38	1560 0.37
200	1444 0.50	1491 0.48	1540 0.47	1591 0.45	1645 0.44	1699 0.41	1740 0.40
220	1587 0.54	1640 0.52	1695 0.51	1752 0.49	1813 0.47	1873 0.45	1919 0.43
240	1728 0.58	1788 0.56	1849 0.55	1914 0.53	1981 0.51	2048 0.48	2098 0.46
260	1870 1.03	1936 1.00	2004 0.59	2074 0.57	2148 0.55	2222 0.52	2277 0.50
280	2012 1.07	2084 1.05	2158 1.03	2235 1.01	2316 0.58	2396 0.55	2456 0.53
300	2153 1.11	2232 1.09	2312 1.07	2396 1.05	2483 1.02	2570 0.58	2634 0.56
320	2294 1.16	2380 1.13	2466 1.11	2556 1.09	2650 1.06	2743 1.02	2813 0.59
340	2435 1.20	2527 1.17	2620 1.15	2716 1.12	2816 1.10	2917 1.05	2991 1.02
360	2576 1.25	2674 1.21	2773 1.19	2876 1.16	2983 1.13	3090 1.09	3169 1.06
380	2716 1.29	2821 1.26	2927 1.23	3035 1.20	3149 1.17	3263 1.12	3347 1.09
400	2856 1.33	2968 1.30	3080 1.27	3195 1.24	3315 1.21	3436 1.16	3525 1.12
420	2997 1.38	3114 1.34	3233 1.31	3354 1.28	3480 1.25	3609 1.19	3702 1.15
440	3137 1.42	3261 1.38	3385 1.35	3513 1.32	3646 1.28	3781 1.22	3880 1.19
460	3276 1.47	3407 1.43	3538 1.39	3672 1.36	3811 1.32	3954 1.26	4057 1.22
480	3416 1.51	3553 1.47	3690 1.43	3830 1.40	3977 1.36	4126 1.29	4235 1.25
500	3555 1.56	3699 1.51	3842 1.47	3989 1.44	4142 1.40	4298 1.33	4412 1.29
520	3695 2.00	3844 1.55	3994 1.51	4147 1.48	4306 1.43	4470 1.36	4588 1.32
540	3834 2.05	3990 2.00	4146 1.55	4305 1.51	4471 1.47	4642 1.40	4765 1.35

AIR CONDITIONING OFF	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
△FUEL = – 1.5 %	△FUEL = + 3 %	△FUEL = + 6 %

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

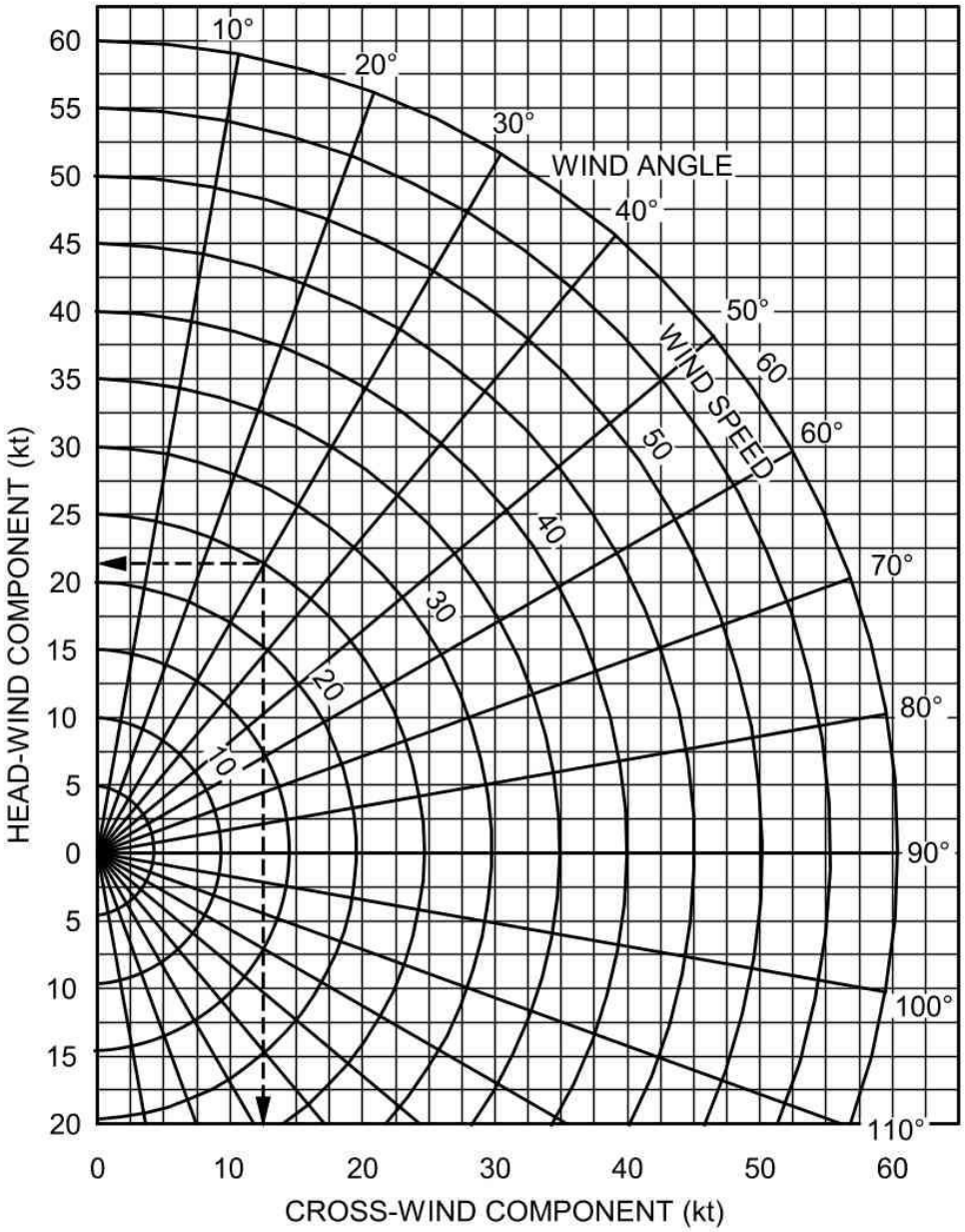
QNH (hPa)	CORRECTION (ft)	QNH (in Hg)
949 – 951	+ 1 900	28.01 – 28.10
952 – 955	+ 1 800	28.11 – 28.20
956 – 958	+ 1 700	28.21 – 28.30
959 – 961	+ 1 600	28.31 – 28.40
962 – 964	+ 1 500	28.41 – 28.45
965 – 968	+ 1 400	28.46 – 28.56
969 – 971	+ 1 300	28.57 – 28.67
972 – 974	+ 1 200	28.68 – 28.77
975 – 978	+ 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



OPS-OPS-Operational Data

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	Yes
AP Automatic Disconnection at Minima	AUTO FLT	Yes
AP/FD TCAS	AUTO FLT	Yes
Automatic FD Bar Engagement at Go-Around	AUTO FLT	Yes
Backup Navigation Function of the MCDU	AUTO FLT	Yes
BUSS	NAV	Yes
CPDLC	DATALINK	Yes
Derated Takeoff	ENG	No
Descent Profile Optimization (DPO)	AUTO FLT	No
FANS A+	DATALINK	Yes
FANS B+	DATALINK	Yes
FLS Function in the FMS	AUTO FLT	Yes
FMS2 Release 1A (including RF leg capability)	AUTO FLT	Yes
GLS	AUTO FLT	No
GPS	NAV	Yes
GPS PRIMARY Function	NAV	Yes
HPFD Harmonized Primary Flight Display	EIS	No
Metric Altitude Indications on the PFD	EIS	Yes
MLS	AUTO FLT	No
NAV Mode Automatically Engaged (Armed) at Go-Around	AUTO FLT	Yes
PED compatible Operation Manual and Checklist Stowage Aluminium Box	EQPT	No
PWS	SURV	No
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	160	109	106
44	122	159	168	114	111
48	128	166	176	119	116
52	133	173	184	124	121
56	138	179	192	128	125
60	143	185	200	133	129
64	148	192	208	137	134
68	152	197	216	142	138
72	157	203	224	146	142
76	161	209	232	150	146
78	163	211	236	152	147

(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.*

Continued on the next page

USE OF FUEL PENALTY FACTOR TABLES (CONT'D)

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 display "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	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 %

Continued on the next page

FUEL PENALTY FACTORS/ECAM ALERT TABLE (CONT'D)

FUEL PENALTY FACTORS/ECAM ALERT TABLE				
SYS	ECAM ALERT	FUEL CRITICAL INOP SYS	CONDITIONS	FUEL PENALTY FACTOR
HYD	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 % *(4)*
L/G	SHOCK ABSORBER FAULT	L/G RETRACT	All landing gears are extended	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.

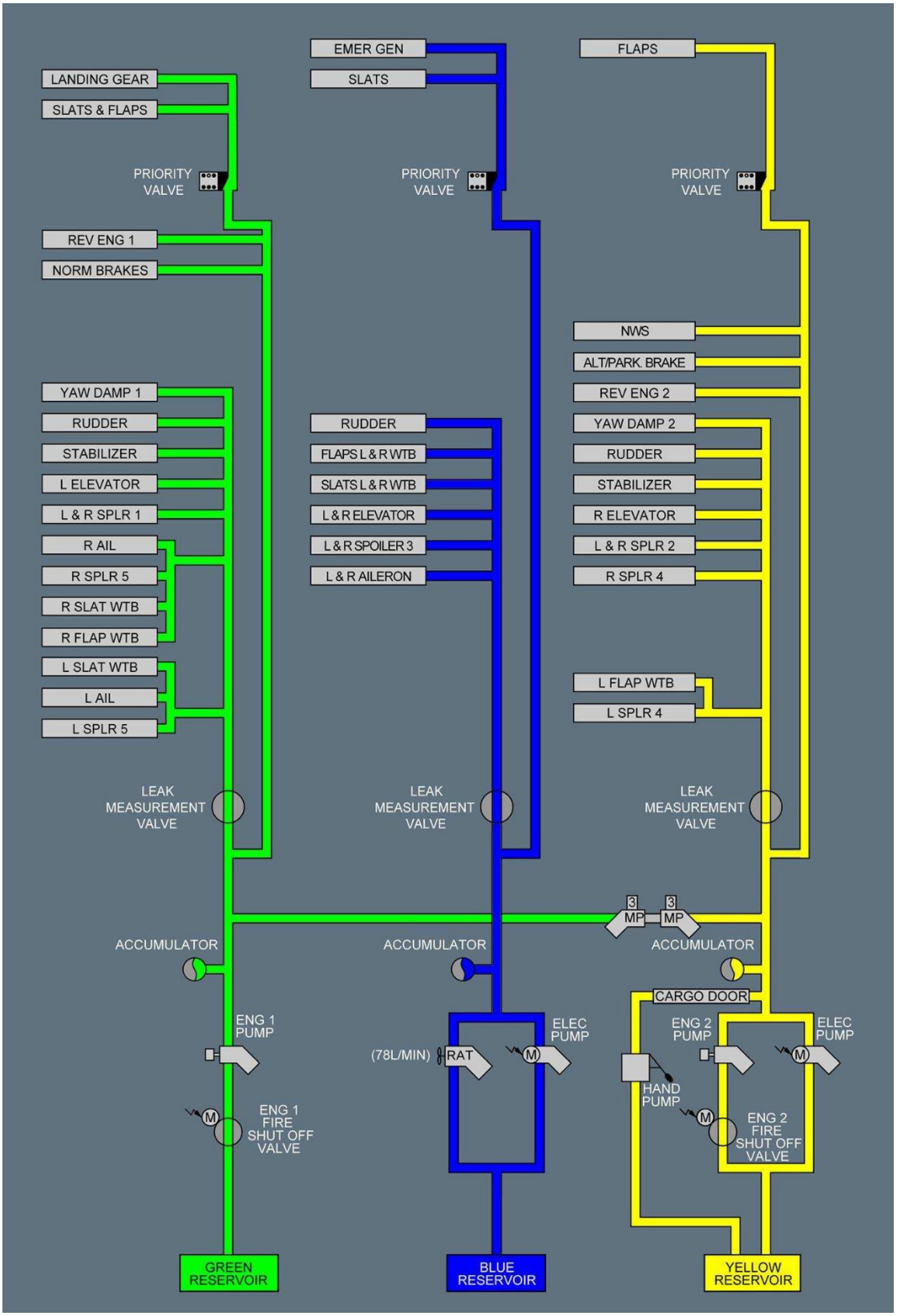
(3) The maximum value of the Fuel Penalty Factor provided in the table considers that the two pairs of corresponding spoilers gradually extend during the flight.

(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.

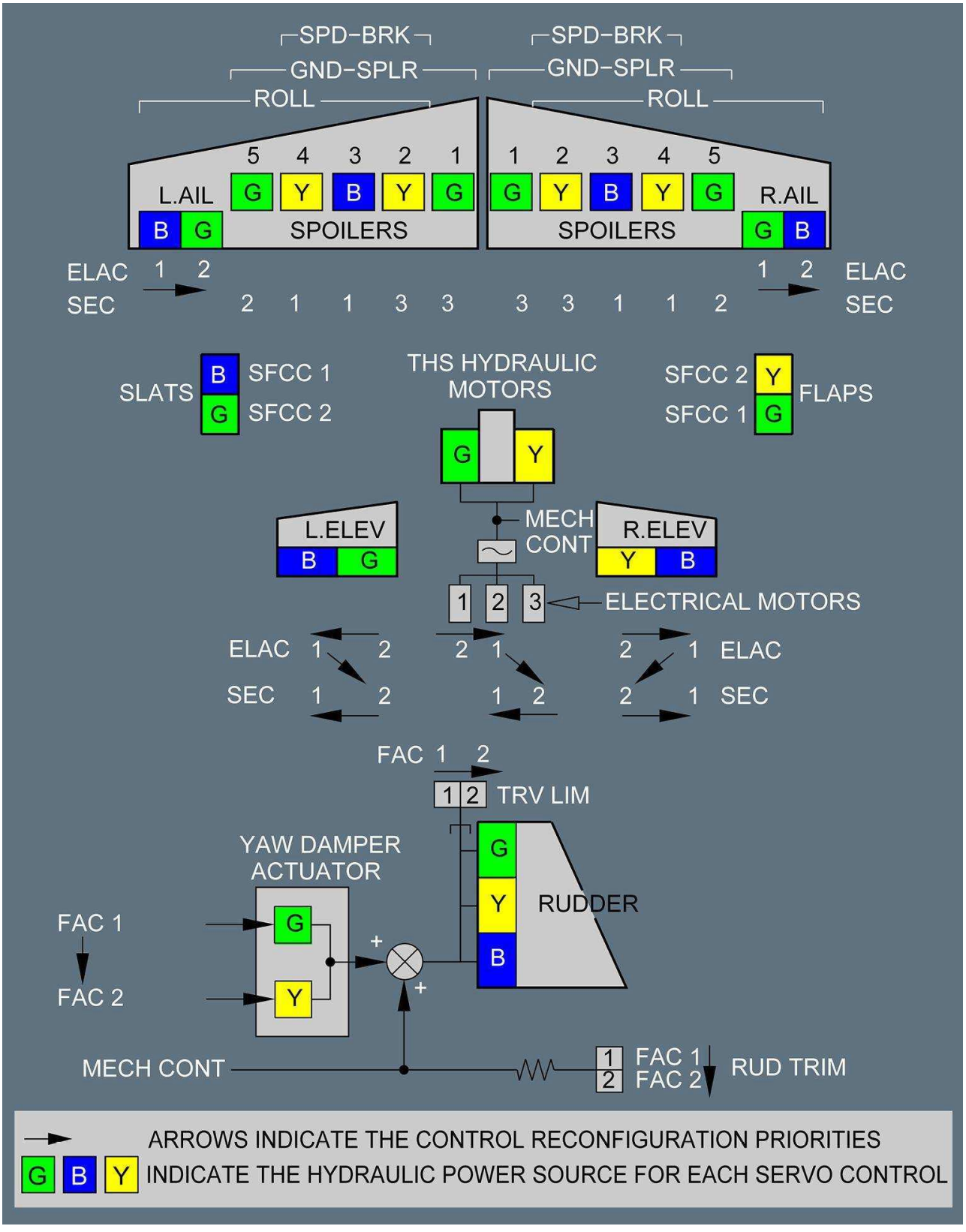
FUEL PENALTY FACTORS/INOP SYS TABLE

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



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	1 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.

Continued on the next page

REQUIRED EQUIPMENT FOR CAT2 AND CAT3 (CONT'D)

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.*

SUP-Supplementary Procedures

ONE ENGINE TAXI DEPARTURE

GENERAL

One Engine Taxi Departure is prohibited in the following circumstances:

- Low visibility procedures in force
- Steep uphill slopes
- Freezing precipitation (FZRA, FZFG etc.)
- Slippery taxiways or contaminated (braking action less than GOOD) or covered with dust/sand
- ENG2 is accidentally started instead of ENG1
- GEN1, IDG1, APU, APU BLEED or APU GEN inoperative
- Y-ELEC Pump inoperative
- Any fault or defect requiring a manual or X-Bleed engine start

BEFORE START

BRAKE ACCU PRESS ..... CHECK

ENGINE START

ENGINE 1 ..... START

AFTER START

Apply the normal "AFTER START" procedures, but:

APU ..... KEEP ON

APU BLEED ..... OFF

Y ELEC PUMP ..... ON

X BLEED ..... AS RQRD

TAXI

Apply the normal "TAXI" procedures, but:

- Delay the flight control check until all engines are started.
- Arm the autobrake after the flight controls check.

Continued on the next page

ONE ENGINE TAXI DEPARTURE (CONT'D)

- BEFORE TAKEOFF

  ENGINE WARM-UP TIME ..... CONSIDER

Engines require 5 minutes warm up if not operated within the last 2 hours, otherwise they require 3 minutes.

ENG 2 START PROCEDURE	
YELLOW ELEC PUMP	OFF
APU BLEED	ON
THR LEVER 2	IDLE
ENG MODE SEL	IGN/START
--- PRESSURE AT START VALVE ---	
ENG MASTER SWITCH 2	CONFIRM “ENG 2” / ON

ENG 2 AFTER START PROCEDURE	
ENG MODE SEL	NORM
APU BLEED	OFF
X-BLEED	OFF
ENG ANTI-ICE	AS REQ’D
APU MASTER Switch	AS REQ’D
ECAM STATUS	CHECK & ANNOUNCE

GROUND OPERATIONS IN HEAVY RAIN

On ground (Aircraft taxiing or parked) in case of heavy rain, water may enter the avionics ventilation system via the skin air inlet valve.

- When on ground:

  EXTRACT ..... OVRD

This closes the skin air inlets, preventing rainwater from entering the avionics bay.

PACK 1 ON ..... CHECK
PACK 2 ON ..... CHECK

Air conditioning compensates the avionics cooling reduction when the skin air inlet is closed.

- If air conditioning not available:

When the aircraft avionics are powered, closing the skin air inlet valve reduces avionics cooling capability. With air conditioning not available, the reduced cooling is efficient for a limited period of time, depending on the outside temperature.

Aircraft should not remain powered more than:

- OAT ≤ 39°C (102°F): no limit
- 39°C (102°F) < OAT ≤ 45°C (113°F): 3 h
- 45°C (113°F) < OAT: 30 min

- After takeoff:

  EXTRACT ..... AUTO

AIRFRAME DEICING/ANTI-ICING PROCEDURE ON GROUND

BEFORE FLUID SPRAYING

It is always the captain's responsibility to decide if de-icing/anti-icing is required.

CAUTION	- Make sure that low or high-pressure ground connectors do not supply any external air to the aircraft.

COMMUNICATION WITH GROUND CREW ..... ESTABLISH
DEICING/ANTI-ICING FLUIDS TYPE ..... CHECK APPROPRIATE

DO NOT START THE ENGINES DURING FLUID SPRAYING

CAUTION	- Do not move any of the flight control surfaces if they are not free of ice. - Always ensure that both sides of the aircraft receive the same complete and symmetrical deicing/anti-icing treatment.

CAB PRESS MODE SEL ..... CHECK AUTO
ENG 1 BLEED ..... OFF
ENG 2 BLEED ..... OFF
APU BLEED ..... OFF
DITCHING pb ..... ON

Note: *To ensure passenger comfort, it is not recommended to operate on ground with both PACKS set to OFF for more than 20 min.*

Continued on the next page

AIRFRAME DEICING/ANTI-ICING PROCEDURE ON GROUND (CONT'D)

THRUST LEVERS ..... CHECK IDLE

"AIRCRAFT READY FOR SPRAYING" ..... INFORM GROUND CREW

UPON COMPLETION OF THE SPRAYING OPERATION

PITOTS and STATICS (ground crew) ..... CHECK

CAUTION	When the OAT is below -5 °C during snow/freezing rain precipitations, melted snow or raindrops may drip from the cockpit windshields and freeze on the fuselage below. This could create ice build-up on the forward fuselage that could possibly disturb the airflow around the static/pitot/angle-of-attack probes, and result in unreliable air data measurements during takeoff. The area around static/pitot/angle-of-attack probes must be free of ice/snow before starting takeoff.

GROUND EQUIPMENT ..... REMOVE

DEICING/ANTI-ICING REPORT ..... RECEIVED

The ground crew should inform you of the following:

- *Type of fluid used*
- *Ratio of fluid to water (e.g. 75/25)*
- *Time the holdover period begins*
- *Result of the post application inspection.*

DITCHING pb ..... OFF

OUTFLOW VALVE ..... CHECK OPEN

On the ECAM PRESS page, confirm that the outflow valve indication reaches the open green position to avoid any unexpected aircraft pressurization.

Continued on the next page

AIRFRAME DEICING/ANTI-ICING PROCEDURE ON GROUND (CONT'D)

- At least 1 min after completion of spraying operations:

  ENG BLEED 1 ..... ON

  ENG BLEED 2 ..... ON

- At least 5 min after completion of spraying operation:

  APU BLEED ..... ON

  Note: *There is a risk of de-icing fluid ingestion by the APU air intake, resulting in specific odors, or smoke warnings. Therefore:*

  - *Keep the APU running with the APU BLEED OFF for 5 min after spraying operation before setting the APU BLEED to ON (if required),*
  - *Consider APU BLEED OFF for takeoff (if APU is required for takeoff)*

NORMAL PROCEDURES ..... RESUME

Apply appropriate normal procedures. In freezing precipitation, perform the appropriate checks to evaluate aircraft icing. Decide on whether to takeoff, or to re-treat the aircraft, based on the amount of ice that has built up on the main flight control surfaces (wings, flaps, vertical stab etc.) since the last deicing/anti-icing, via an internal and external inspection. Ensure the inspection is carried out before takeoff and before the holdover time expires.

DE-ICING WITH ENGINES RUNNING

Refer to the *AIRFRAME DEICING/ANTI-ICING PROCEDURE ON GROUND* QRH procedure and then in addition:

AFTER START

FLAPS ..... ZERO

Keep the flaps retracted until the aircraft reaches the holding point of the departure runway – this is to prevent contamination of the slats/flaps mechanism.

REMOTE HOLD / REMOTE DE-ICING WITH ENGINES SHUTDOWN

AFTER START

APU ..... KEEP RUNNING

APU BLEED ..... OFF

- IF TAXYING for 'DE-ICING WITH ENGINES SHUTDOWN':

  FLAPS ..... ZERO

  Keep the flaps retracted until the aircraft reaches the holding point of the departure runway – this is to prevent contamination of the slats/flaps mechanism.

  If remote hold is no longer required during taxi, select takeoff flaps and complete the normal 'TAXI' procedures.

Continued on the next page

REMOTE HOLD / REMOTE DE-ICING WITH ENGINES SHUTDOWN (CONT'D)

AT REMOTE HOLD

PARK BRAKE ..... ON
ENG ANTI-ICE ..... OFF
Y ELEC PUMP (if ONE ENGINE TAXI) ..... OFF
ENG MASTERS ..... OFF
BEACON ..... ON
FMGC INIT B ..... RE-ENTER

Note: *To ensure passenger comfort, it is not recommended to operate on ground with both PACKS set to OFF for more than 20 min.*

- IF REMOTE DE-ICING WITH ENGINES SHUTDOWN:
  'AIRFRAME DEICING/ANTI-ICING PROCEDURE ON GROUND' .....
  ..... APPLY

ENGINE START APPROVED:

NORMAL PROCEDURES ..... RESUME

Apply appropriate normal procedures. In freezing precipitation, perform the appropriate checks to evaluate aircraft icing. Decide on whether to takeoff, or to re-treat the aircraft, based on the amount of ice that has built up on the main flight control surfaces (wings, flaps, vertical stab etc.) since the last deicing/anti-icing, via an internal and external inspection. Ensure the inspection is carried out before takeoff and before the holdover time expires.

MANUAL ENGINE START PROCEDURE

MANUAL ENGINE START PROCEDURE

Note: *During a manual engine start, if you suspect an engine start malfunction, or if an engine-related ECAM alert is triggered, abort the start sequence as follows:*
- Before PM sets ENG MASTER to ON, set ENG MAN START pb-sw to OFF
- After PM sets ENG MASTER to ON, set ENG MASTER to OFF, and then the ENG MAN START pb-sw to OFF.
In this case, you should consider a dry crank cycle of the affected engine before performing another start attempt.

THR LEVERS ..... IDLE

CAUTION	The engines start regardless of thrust lever position. If the thrust levers are not set to IDLE, the thrust rapidly increases to the corresponding thrust lever position, causing a hazardous situation.

ENG MODE SEL ..... NORM THEN IGN/START

Note: *If both engines are started manually, the following procedure applies one engine at a time.*

- When all engine parameters (except N1 and N2) are available on the upper ECAM display (no amber crosses displayed):

  ENG MAN START pb-sw ..... ON

  START VALVE ..... CHECK IN-LINE

  OIL PRESS INCREASE ..... CHECK

  N2 INCREASE ..... CHECK

Continued on the next page

MANUAL ENGINE START PROCEDURE (CONT'D)

- If the N2 does not reach 16%:

  PACK VALVES ..... CHECK CLOSED

  - If APU bleed is used for engine start and pack valves are closed, shed APU electrical loads:

    GALY & CAB ..... OFF

    - If needed, shed also:

      BLUE ELEC PUMP (on ground only) ..... OFF
      FUEL X FEED ..... ON
      FUEL PUMPS (except R TK PUMP 2) ..... OFF
      BLOWER ..... OVRD
      CAB FANS ..... OFF

      - If additional shedding is required:

        HYD ENG PUMP ..... OFF
        Return the hydraulic engine pump to ON for second engine start, to permit PTU auto test.

Continued on the next page

MANUAL ENGINE START PROCEDURE (CONT'D)

- When N2 reaches maximum motoring speed (16% minimum) and 30 secs after selection of ENG MAN START pb-sw:

  Note: *Maximum motoring speed is reached when a significant decrease in N2 acceleration is observed.*
  Do not attempt to start unless N2 is at least 16%.

  In hot weather (OAT 40° C / 104° F or above):
  - If residual EGT is above 100° C, perform a 2 min dry crank in order to reduce the residual EGT to minimum achievable. *Refer to SUP Engine Ventilation (Dry Cranking).* Following the dry crank if residual EGT is below 250° C, the manual start can be attempted after a 15 second wait time for starter lubrication.
  - Starting with a residual EGT above 250° C is not recommended.

  ENG MASTER ..... ON
  CHRONO ..... START
  IGNITERS A AND B ..... CHECK ON
  FUEL FLOW INCREASE ..... CHECK

- 20 secs maximum after fuel flow increase:

  EGT INCREASE ..... CHECK
  N1 INCREASE (before 34% N2) ..... CHECK
  If electrical power supply is interrupted during the start sequence (loss of ECAM displays), abort start by setting affected ENG MASTER to OFF. Then perform a 30 sec dry crank.
  Refer to SUP Engine Ventilation (Dry Cranking).

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MANUAL ENGINE START PROCEDURE (CONT'D)

- When N2 reaches 43%:

  IGNITERS A AND B (at 43% N2) ..... CHECK OFF
  START VALVE (slightly above 43% N2) ..... CHECK CROSS LINE
  MAIN ENG PARAMETERS ..... CHECK NORMAL
  SECONDARY ENG PARAMETERS ..... CHECK NORMAL
  ENG MAN START pb-sw ..... OFF
  ENG MODE sel ..... NORM

  - When no other engine requires to be started manually:

    SHEDDED SYSTEMS ..... RESTORE
    SOP – ENGINE START ..... RESUME

ENGINE START WITH AIR START UNIT

- Before connecting the air start unit:

PACK 1 ..... OFF
PACK 2 ..... OFF
APU BLEED ..... OFF
ENG 1 BLEED ..... OFF
ENG 2 BLEED ..... OFF
X BLEED ..... OPEN
AIR START UNIT CONNECTION ..... REQUEST

- When cleared to start:

ENG 2 ..... START

Note: *For any operational reason, engine 1 can be started first.*
In this case, check the brake ACCU pressure prior to engine start.

The minimum recommended starter air supply pressure is 30 PSI when the start valve is open.

- After Engine 2 is started:

WARNING	Request disconnection of external power only with EXT PWR pb-sw set to AVAIL to avoid causing injury to ground personnel.

EXT PWR ..... CHECK AVAIL
EXT PWR DISCONNECTION ..... REQUEST

Note: *The external electrical power can be removed after the second engine start.*

Continued on the next page

ENGINE START WITH AIR START UNIT (CONT'D)

■ If the air start unit is used to start engine 1:

ENG 1 ..... START

● When engine 1 is started:

AIR START UNIT DISCONNECTION ..... REQUEST
X BLEED ..... AUTO
ENG 1 BLEED ..... ON
ENG 2 BLEED ..... ON
PACK 1 ..... ON
PACK 2 ..... ON

■ If crossbleed engine start procedure is used to start engine 1:

AIR START UNIT DISCONNECTION ..... REQUEST
PACK 1 ..... ON
PACK 2 ..... ON
ENG 2 BLEED ..... ON
CROSSBLEED ENGINE START PROC ..... APPLY

Refer to SUP Crossbleed Engine Start

SOP – AFTER START ..... RESUME

CROSSBLEED ENGINE START

CAUTION	It is not recommended to commence this procedure during pushback. Simultaneous use of engine bleed supply and external pneumatic power supply is prohibited.

One engine must be running in order to supply air to start the other engine.

- Before second engine start:

  APU BLEED ..... OFF
  ENG BLEED (supplying engine) ..... ON
  ENG BLEED (receiving engine) ..... OFF
  X BLEED ..... OPEN

- When cleared to start:

  AREA CLEAR OF OBSTACLES ..... CONFIRM
  THR LEVER (supplying engine) ..... ADJUST FOR BLEED PRESSURE

  Adjust thrust of supplying engine to obtain engine bleed pressure of 30 PSI before initiating start and maintain at least 25 PSI during start sequence.
  If thrust required to obtain appropriate engine bleed pressure exceeds 40% N1, be aware of the surrounding areas.

  RECEIVING ENGINE ..... START

  Apply normal engine start procedure.

Continued on the next page

CROSSBLEED ENGINE START (CONT'D)

- After start:

  THR LEVER (supplying engine) ..... IDLE
  X BLEED ..... AUTO
  ENG BLEED (receiving engine) ..... ON
  PACK 1 ..... ON
  PACK 2 ..... ON

ENGINE START VALVE MANUAL OPERATION

BEFORE ENGINE START

Advise ground crew to prepare for manual engine start valve operation.

WARNING	To ensure safety of ground crew when starting an engine with manual operation of the start valve, flight crew should start the affected engine first. In the case that both engines need to be started manually and for safety reasons, engine 1 should be started first, followed by engine 2. The access to the start valve is located on the right side of the engine.

ENGINE START

AUDIO CONTROL PANEL ..... CAB
GROUND CREW CLEARANCE ..... OBTAIN

- When the ground crew is ready:
  "ENGINE 1 (2) START" ..... ANNOUNCE
  ENG MODE sel ..... IGN/START
  ENG MASTER ..... ON
  "OPEN START VALVE AND KEEP OPEN" ..... ORDER
  If not maintained in the OPEN position by the ground crew, the start valve closes.

- When N2 at 43%:
  "CLOSE START VALVE" ..... ORDER
  SOP – ENGINE START ..... RESUME

ENGINE VENTILATION (DRY CRANKING)

This procedure can be used on the ground after:

- An unsuccessful manual engine start, or
- An unsuccessful automatic start not followed by an automatic dry crank

Flight crew can perform a dry crank cycle on the affected engine to remove the fuel vapours.

- Before dry crank:

  ENG MASTER (affected engine) ..... CHECK OFF
  ENG MODE sel ..... CHECK NORM
  ENG MAN START pb-sw (affected engine) ..... CHECK OFF

- Dry crank:

  ENG MODE SEL ..... CRANK
  ENG MAN START pb-sw (affected engine) ..... ON

  Note: *To clear fuel vapours, a 30 second dry crank cycle is the minimum required.*

  Note: *A manual start sequence can be initiated following a dry crank cycle (Refer to SUP-ENG Manual Engine Start Procedure). Flight crew should consider the starter limitations (Refer to LIM-ENG Starter).*

- When the dry crank is completed:

  ENG MAN START pb-sw (affected engine) ..... OFF
  ENG MODE sel ..... NORM

NORMAL CHECKLIST

BEFORE START
COCKPIT PREP_____ COMPLETED
BARO REF_____(___) SET
ACARS_____ INITIALISED
PARK BRAKE_____SET
FUEL ON BOARD_____ (_____) KG
INIT B_____LOADED
FLEX TEMP_____ (___)
TAKEOFF SPEEDS_____ (___)
----------START CLEARANCE----------
PAX SIGNS_____ ON & AUTO
BEACON_____ ON
TRANSPONDER_____ AUTO / XPNDR
ALL DOORS_____ CLOSED

AFTER START
GROUND EQUIPMENT_____ REMOVED
ANTI ICE_____(_____)
FLAPS_____ CONF (_____)
APU_____ (___)
YELLOW ELEC PUMP_____(___)
TRIMS_____(___) % & ZERO
CABIN DOORS_____ARMED
ECAM STATUS_____CHECKED

BEFORE TAKEOFF
FLIGHT CONTROLS_____ CHECKED
TCAS_____ TA/RA
DEPARTURE BRIEF_____ CONFIRMED
TAKE OFF DATA & FMA_____ (_____)
FLAPS_____ CONF (___)
ECAM MEMO_____T.O NO BLUE
----------ENTERING RUNWAY----------
TAKEOFF RWY_____(___)
STROBES_____ON
PACKS_____(___)

AFTER TAKEOFF / CLIMB
LANDING GEAR_____UP
ECAM_____ CHECKED
----------CLEARED TO FLIGHT LEVEL----------
BARO REF_____STD

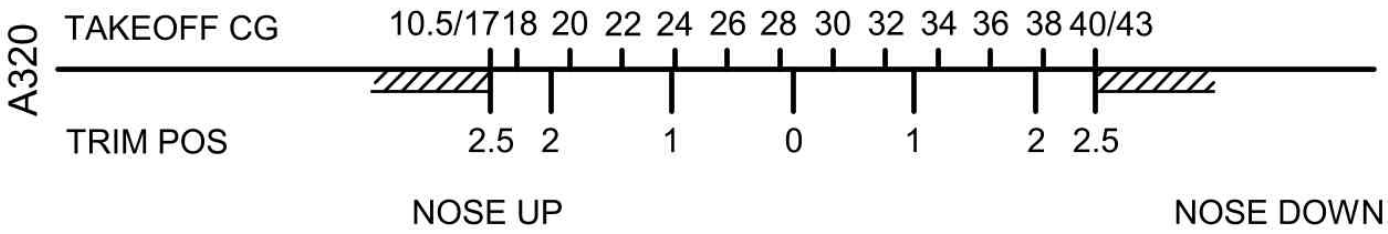
APPROACH
ECAM STATUS_____ CHECKED
APPROACH TYPE & RWY_____ (_____)
MINIMA_____ (_____)
APPROACH PHASE_____ ACTIVE
----------CLEARED TO AN ALTITUDE----------
BARO REF_____ (_____)

LANDING
AUTOBRAKE_____(_____)
GO AROUND ALT_____(_____) SET
ECAM MEMO_____ LDG NO BLUE

AFTER LANDING
EXTERIOR LIGHTS_____SET
FLAPS_____ ZERO
GROUND SPOLERS_____DISARMED
APU_____ START/OFF
WEATHER RADAR_____OFF
TCAS_____ STANDBY
----------IF ENG 2 SHUTDOWN----------
YELLOW ELEC PUMP_____ ON

PARKING
YELLOW ELEC PUMP_____ OFF
ENGINES_____ OFF
CABIN DOORS_____ DISARMED
BEACON_____ OFF
SEAT BELTS_____ OFF
TRANSPONDER_____ 1200 / 2000 & STBY

TAKEOFF CG/TRIM POS



EMER EVAC

AIRCRAFT / PARKING BRK ..... STOP / ON
ATC (VHF 1) ..... NOTIFY
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

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:	**At 500 ft AGL or below:**
BRACE FOR IMPACT ..... ORDER	BRACE FOR IMPACT ..... ORDER
For flare:	**For flare:**
TOUCH DOWN AT MIN V/S	TOUCH DOWN AT MIN V/S
TARGET PITCH ATT 11°	
At touchdown:	**At touchdown:**
ALL ENG MASTERS ..... OFF	ALL ENG MASTERS ..... OFF
APU MASTER SW ..... OFF	APU MASTER SW ..... OFF
EMER EVAC PROC ..... APPLY	EMER EVAC PROC ..... APPLY