FENIX

Airbus A320
CFM
QUICK REFERENCE HANDBOOK

27-Apr-22

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.

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.

Continued on the next page

ECAM ADVISORY CONDITIONS (CONT'D)

SYSTEM	CONDITIONS	RECOMMENDED ACTION
ENG	OIL PRESS P < 16 PSI	- If oil pressure is between 16 PSI and 13 PSI (advisory), continue normal operation. - If oil pressure is below 13 PSI (red indication), without the ENG 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 > 90 PSI	Closely monitor other engine parameters for symptoms of engine malfunction. If high oil pressure is not accompanied by other abnormal indications, operate the engine normally for the remainder of the flight. Record high oil pressure, and corresponding N2 readings, for maintenance action.
	OIL TEMP T > 140°C	An oil temperature increase during normal steady-state operations indicates a system malfunction, and should be closely monitored for other symptoms of engine malfunction. *Note:* *If the OIL TEMP increase follows thrust reduction, increasing thrust may reduce oil temperature.* In addition, an oil temperature increase could be related to the IDG oil cooling system. To reduce oil temperature increases before limits are reached, the following is recommended: 1. Low Speed – Increase engine speed to increase fuel flow, and thereby cool IDG oil. 2. High Speed – Reduce generator load, or turn off generator. If oil temperature continue to increase, mechanically disconnect IDG.

Continued on the next page

ECAM ADVISORY CONDITIONS (CONT'D)

SYSTEM	CONDITIONS	RECOMMENDED ACTION
ENG	OIL QTY <3 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, the ECAM alert ENG 1(2) OIL LO PR can be triggered.
	NAC TEMP ≥ 240°C	Monitor engine parameters and crosscheck with other engine.
	VIBRATION N1 ≥ 6 units N2 ≥ 4.3 units	Refer to HIGH ENGINE VIBRATION procedure *(Refer to ABN-19 HIGH ENGINE VIBRATION)*.
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 that case, select both air conditioning packs to ON and wait at least 5 minutes for the cockpit temperature to decrease. After, pull, then push the C/B of the affected WHC: - X13 on 122VU (WHC1) - W13 on 122VU (WHC2).

Continued on the next page

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).*

Continued on the next page

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.

Continued on the next page

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)	**In flight:** - 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. **On ground:** - 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).

Continued on the next page

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)	**In flight:** - 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. **On ground:** - 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))	**In flight:** If AP is inoperative: - Set FAC 1(2) pb to OFF - Wait 3 s - Set FAC 1(2) pb to ON.

Continued on the next page

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)	**On ground, or in flight:** *Note:* *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 AUTO FLT FAC 1 FAULT to disappear, and: - Set FAC 2 pb to OFF - Wait 3 s - Set FAC 2 pb to ON.
	One MCDU locked or blank (MCDU)	**On ground, or in flight:** - 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)

Continued on the next page

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) **Short 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 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.

Continued on the next page

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.

Continued on the next page

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.*

Continued on the next page

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)	**On ground:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. • IF UNSUCCESSFUL: - Pull C/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. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Record BSCU reset in the logbook.* **In flight:** When landing gear is up only: - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON - If required, rearm the autobrake. When landing gear is down: reset not authorized. *Note:* *After any BSCU reset:* - *Record BSCU reset in the logbook.*

Continued on the next page

SYSTEM RESET TABLE (CONT'D)

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
COM	COM CIDS 1+2 FAULT (CIDS)	**On ground:** - 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. **In flight:** - 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)	**On ground:** - 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.

Continued on the next page

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.*

Continued on the next page

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.*

Continued on the next page

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 ◁)	**On ground, or in flight:** - 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)	**On ground, or in flight:** 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.

Continued on the next page

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)	**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 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 *Note:* *Record the ELAC 1 reset in the logbook (successful or unsuccessful).*

Continued on the next page

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).*

Continued on the next page

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).*

Continued on the next page

SYSTEM RESET TABLE (CONT'D)

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
F/CTL	F/CTL SPLR FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** **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 *Note:* *Record the SEC 1, SEC 2 and SEC 3 resets in the logbook (successful or unsuccessful).*

Continued on the next page

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)	**On ground, or in flight:** - 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. *Note:* *The fuel quantity indication will be re-established within 1 min.*
FWS	FWS FWC 1(2) FAULT (FWC)	**On ground:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU). Wait 50 s after pushing the C/Bs. **In flight:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU).

Continued on the next page

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))	**On ground only:** The flight crew must depressurize the green hydraulic system before resetting the LGCIU: - ENG 1 PUMP OFF - PTU OFF. When there is no green hydraulic pressure: - To reset LGCIU 1: • Pull C/B Q34 on 121VU, then C09 on 49VU, 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)	**On ground, or in flight:** Perform the following reset when both alerts are displayed at the same time: - Pull C/B P07 on 121VU - Set GPWS SYS pb and GPWS TERR pb to ON - Wait 5 s, then push the C/B.
	NAV TCAS FAULT (TCAS)	**On ground only:** - Pull C/B K10 on 121VU - Wait 5 s, then push the C/B.

Continued on the next page

SYSTEM RESET TABLE (CONT'D)

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

DOUBLE AOA HEAT FAILURE

One of affected ADRs ..... OFF

Keep preferably 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

    - **If PACK 1 inoperative:**

      X BLEED ..... OPEN

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 / M 0.77

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 (^{0})**
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 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	241	251	261
76	237	247	257
72	229	239	249
68	221	231	241
64	213	223	233
60	205	215	225
56	197	207	217
52	189	199	209
48	181	191	201
44	173	183	193
40	165	175	185

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 10 000 ft AGL:**

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:**

DESCENT SLOPE (CONF2, L/G DOWN) : 1.6 NM / 1000 FT (600 FT / NM)
MIN RAT SPEED : 140 KT
GPWS SYS ..... OFF
GPWS TERR ..... OFF

- **For approach:**

FOR LANDING : USE FLAP 2
Only slats extend, and slowly.

VAPP ..... DETERMINE

Gross Weight (1 000 kg)	40	50	60	70	80	90	95
Vapp (kt)	150	150	163	173	183	193	198

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 2 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
    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:**

MIN RAT SPEED : 140 kt
GPWS SYS ..... OFF
GPWS TERR ..... OFF

- **For approach:**

FOR LANDING : USE FLAP 2
Only slats extend, and slowly.

VAPP ..... DETERMINE

Gross Weight (1 000 kg)	40	50	60	70	80	90	95
Vapp	150	150	163	173	183	193	198

- **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.*

Continued on the next page

ENG DUAL FAILURE – FUEL REMAINING (CONT'D)

- **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**
78	241	251	261
76	237	247	257
72	229	239	249
68	221	231	241
64	213	223	233
60	205	215	225
56	197	207	217
52	189	199	209
48	181	191	201
44	173	183	193
40	165	175	185

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 10 000 ft AGL:**

RAM AIR ..... ON
BARO REF (if avail) ..... SET
CREW MASKS/OXY SUPPLY ..... OFF
ELT (when conditions permit) ..... ON

- **If forced landing anticipated:**

DESCENT SLOPE (CONF2, L/G DOWN) : 1.6 NM / 1000 FT (600 FT / NM)
MIN RAT SPEED : 140 KT
GPWS SYS ..... OFF
GPWS TERR ..... OFF

- **For approach:**

FOR LANDING : USE FLAP 2
Only slats extend, and slowly.

VAPP ..... DETERMINE

Gross Weight (1 000 kg)	40	50	60	70	80	90	95
Vapp (kt)	150	150	163	173	183	193	198

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

- **When in CONF 2 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
  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:**

MIN RAT SPEED : 140 kt
GPWS SYS ..... OFF
GPWS TERR ..... OFF

- **For approach:**

FOR LANDING : USE FLAP 2
Only slats extend, and slowly.

VAPP ..... DETERMINE

Gross Weight (1 000 kg)	40	50	60	70	80	90	95
Vapp	150	150	163	173	183	193	198

- **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:**

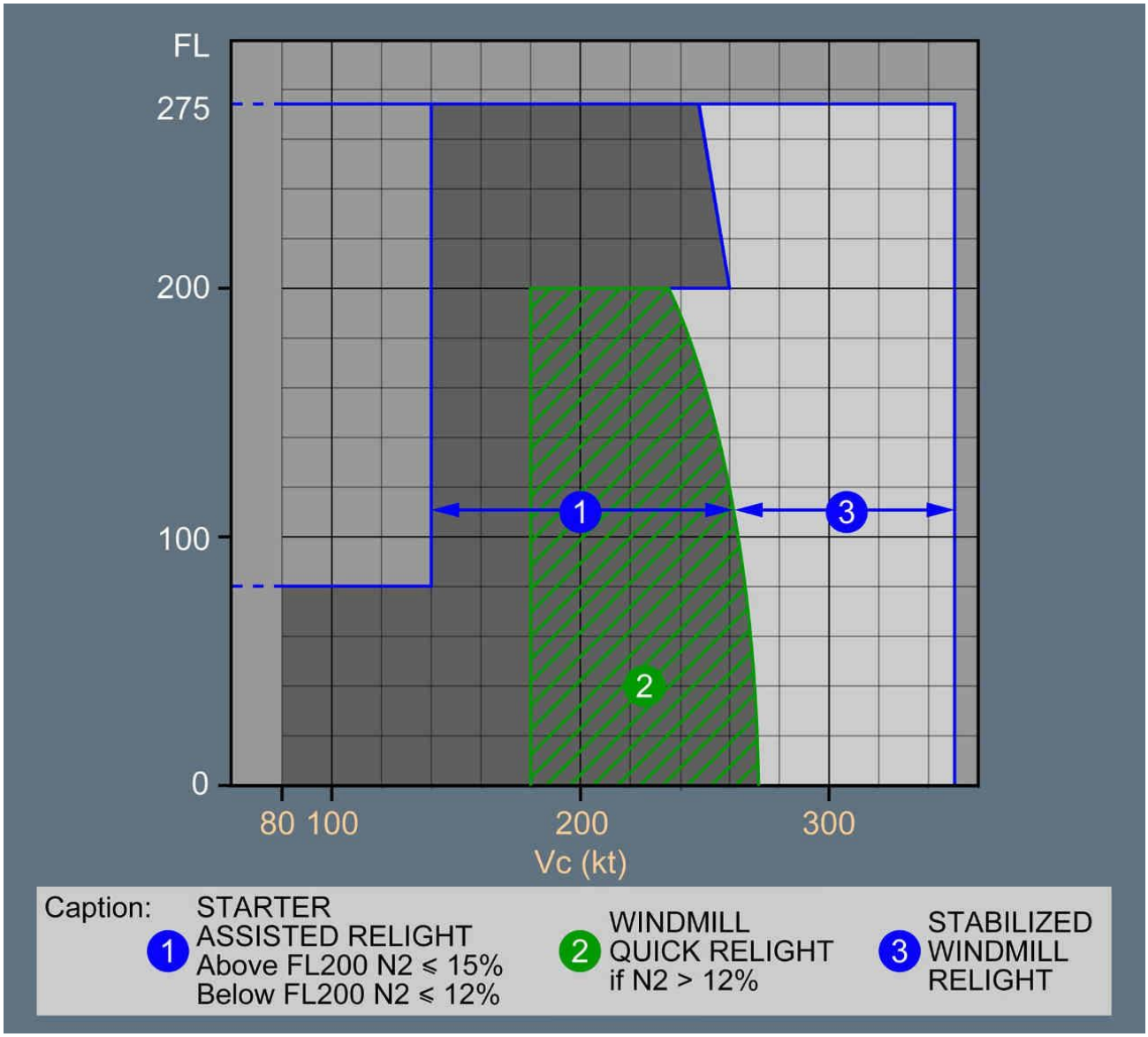
ENG MASTERS ..... OFF

- **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

ENG PARAMETERS ..... CHECK

■ **If icing suspected:**

A/THR ..... OFF

THRUST (one engine at a time) ..... IDLE THEN INCREASE N1 > 80 %

Reduce thrust to idle if flight conditions permit.

*If ENG ANTI ICE is OFF, switch it ON **at idle fan speed**, one engine after the other with approximately 30 s interval.*

To shed ice, it may be necessary to perform several thrust variations between idle and a thrust compatible with the flight phase.

■ **If icing not suspected:**

● **If above vibration advisory and flight conditions permit:**

THRUST (affected engine) ..... REDUCE BELOW ADVISORY THRESHOLD

● **After landing, 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 (^{0}C)	AIRPORT ELEVATION (feet)							
	0	2000	4000	6000	8000	10 000	12 000	14 000
0	77.0	76.0	69.0	63.0	58.0	53.0	48.0	45.0
5	77.0	76.0	69.0	63.0	58.0	53.0	48.0	45.0
10	77.0	76.0	69.0	63.0	58.0	53.0	48.0	45.0
15	77.0	76.0	69.0	63.0	58.0	53.0	48.0	45.0
20	77.0	76.0	69.0	63.0	58.0	53.0	48.0	45.0
25	77.0	74.0	68.0	63.0	58.0	53.0	48.0	45.0
30	76.0	71.0	66.0	61.0	56.0	52.0	48.0	
35	74.0	68.0	63.0	58.0	54.0	50.0		
40	70.0	65.0	61.0	56.0				
45	67.0	63.0	58.0					
50	64.0	60.0						
55	61.0							

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

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 the performance application of FlySmart with Airbus.

APPROACH

CAT 2 INOP
SLATS SLOW / FLAPS SLOW

- **L/G gravity extension:**

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

LANDING

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

Continued on the next page

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

GO-AROUND

MAX PITCH 15 DEG
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 the performance application of FlySmart with Airbus.

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
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 the performance application of FlySmart with Airbus.

APPROACH

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

- **For Flaps extension:**
  SPD SEL ..... VFE NEXT – 5 kt

- **When in CONF 3:**
  DECELERATE TO CALCULATED VAPP

- **When in CONF 3 and VAPP:**
  Stabilize at VAPP before L/G down, to be trimmed for approach.

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

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.

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

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

MAX WEIGHT (1 000 kg) FOR LANDING IN CONF FULL (GO AROUND IN CONF 3 CLIMB GRADIENT 2.1 %)								
OAT (°C)	AIRPORT ELEVATION (feet)							
	0	2000	4 000	6 000	8 000	10 000	12 000	14 000
≤10	85	83	84	81	77	71	66	61
15	85	83	83	81	77	70	64	57
20	85	83	83	81	75	67	61	55
25	85	83	83	79	72	64	58	
30	84	83	81	77	69			
35	84	83	79	73	66			
40	84	81	75	69				
45	82	76	70					
50	78	72						
55								

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

LDG DIST ..... CHECK

- **For approach:**
  PACK 1+2 ..... OFF OR SUPPLIED BY APU

- **If landing conf other than FULL:**
  USE CONF 1+F FOR GO AROUND

Continued on the next page

OVERWEIGHT LANDING (CONT'D)

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

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

SEVERE TURBULENCE

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

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

KEEP AUTO PILOT ON

- **If excessive thrust variations:**

  DISCONNECT A/THR
  DESCENT TO OR BELOW OPT FL ..... CONSIDER
  Consider descending to or below OPT FL in order to increase the margin to buffet

- **For approach:**

  A/THR ..... ON
  USE MANAGED SPEED

TAILSTRIKE

LAND ASAP

MAX FL: 100 / MEA-MORA

RAM AIR ..... ON

PACK 1 ..... OFF

PACK 2 ..... OFF

VOLCANIC ASH ENCOUNTER

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

- **If visibility not sufficient for approach due to windshield damage:**
  CONSIDER AUTOLAND

  - **For approach, if AUTOLAND not available:**
    CAB PRESS MODE SEL ..... MAN
    MAN V/S CTL ..... FULL UP
    MAX SPEED: 200 kt
    PF SLIDING WINDOW ..... OPEN

ALL ADR OFF

SPEED ..... FLY THE GREEN

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

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°**	**68%** (165 kt)	**64%** (155 kt)	**60%** (140 kt)	**56%** (130 kt)
2	**5.5°**	**66%** (185 kt)	**62%** (170 kt)	**58%** (160 kt)	**54%** (145 kt)
1+F	**5°**	**66%** (200 kt)	**62%** (190 kt)	**58%** (175 kt)	**54%** (160 kt)
1	**6.5°**	**66%** (220 kt)	**62%** (205 kt)	**58%** (190 kt)	**54%** (170 kt)
CLEAN					
PITCH	**FL**	**THRUST % N1** (Resultant speed)			
4° **at or below FL250**	100	**66%** (265 kt)	**62%** (245 kt)	**60%** (225 kt)	**54%** (205 kt)
	200	**74%** (260 kt)	**70%** (245 kt)	**66%** (225 kt)	**62%** (205 kt)
3° **above** **FL250**	300	**82%** (280 kt)	**80%** (265 kt)	**76%** (245 kt)	**72%** (225 kt)
	350	**88%** (270 kt)	**84%** (255 kt)	**80%** (240 kt)	**76%** (220 kt)
	400	/	/	**86%** (235 kt)	**80%** (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°** (235 kt)	**13°** (215 kt)	**16°** (195 kt)
	100	**9°** (255 kt)	**10°** (235 kt)	**12°** (215 kt)	**14°** (195 kt)
	200	**6°** (255 kt)	**7°** (235 kt)	**8°** (220 kt)	**10°** (195 kt)
	300	**5°** (250 kt)	**5°** (235 kt)	**6°** (220 kt)	**7°** (200 kt)
	400	/	/	**4°** (215 kt)	**5°** (195 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**	**66%** (265 kt)	**62%** (245 kt)	**60%** (225 kt)	**54%** (205 kt)
	200	**74%** (260 kt)	**70%** (245 kt)	**66%** (225 kt)	**62%** (205 kt)
3° above FL250	**300**	**82%** (280 kt)	**80%** (265 kt)	**76%** (245 kt)	**72%** (225 kt)
	350	**88%** (270 kt)	**84%** (255 kt)	**80%** (240 kt)	**76%** (220 kt)
	400	/	/	**86%** (235 kt)	**80%** (220 kt)

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

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°**	265 kt	245 kt	225 kt	200 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°**	**62%** (245 kt)	**58%** (225 kt)	**54%** (205 kt)	**50%** (185 kt)
1	**6.5°**	**66%** (220 kt)	**62%** (205 kt)	**58%** (190 kt)	**54%** (170 kt)
1+F	**5°**	**64%** (200 kt)	**62%** (190 kt)	**58%** (175 kt)	**54%** (160 kt)
2	**5.5°**	**66%** (185 kt)	**62%** (170 kt)	**58%** (160 kt)	**54%** (145 kt)
WITH LANDING GEAR DOWN					
3	**7°**	**72%** (165 kt)	**70%** (155 kt)	**64%** (140 kt)	**60%** (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°**	**58%**	**54%**	**50%**	**46%**

IR ALIGNMENT IN ATT MODE

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

NAV FM / GPS POS DISAGREE

A/C POS ..... CHECK

■ **During climb, cruise, or descent:**

FMS PROG page ..... SELECT

■ **If ESTIMATED ACCUR below REQUIRED ACCUR:**

CONSIDER NAV MODE AND ND ARC/ROSE NAV

■ **If ESTIMATED ACCUR above REQUIRED ACCUR:**

HDG/TRK MODE ..... SELECT

USE RAW DATA

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 (CONT'D)

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	56	62	66	70	74	78
VLS CONF FULL (kt) (=VREF)	CG < 25%	108	111	116	121	125	130	134	138	142	146	150
	CG ≥ 25%	106	109	114	119	123	128	132	136	140	144	148
VLS CONF 3 (kt)	CG < 25%	112	115	119	125	129	135	139	143	147	151	155
	CG ≥ 25%	110	113	117	123	127	133	137	141	145	149	153

+

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	150
	CG ≥ 25%	106	109	114	119	123	128	132	136	140	144	148

+

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	**1 090**	+ 40	+ 70	+ 40	+ 120	+ 40	+ 20	- 10	+ 420
	3	**1 170**	+ 50	+ 80	+ 40	+ 130	+ 40	+ 20	- 10	+ 350
AUTOBRAKE MED	FULL	**1 380**	+ 30	+ 90	+ 50	+ 140	+ 40	+ 10	0	+ 420
	3	**1 460**	+ 40	+ 100	+ 50	+ 140	+ 50	+ 10	0	+ 350
AUTOBRAKE LOW	FULL	**1 960**	+ 50	+ 140	+ 70	+ 200	+ 70	+ 30	- 10	+ 420
	3	**2 100**	+ 50	+ 150	+ 80	+ 210	+ 70	+ 30	- 10	+ 350

(1) Automatic Landing correction: if CONF FULL, add 280m. If CONF 3, add 300m.
(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	**1 410**	+ 50	+ 110	+ 70	+ 210	+ 60	+ 50	- 30	+ 370
	3	**1 550**	+ 50	+ 120	+ 80	+ 230	+ 70	+ 60	- 40	+ 430
AUTOBRAKE MED	FULL	**1 460**	+ 50	+ 110	+ 70	+ 210	+ 60	+ 50	- 20	+ 370
	3	**1 600**	+ 50	+ 120	+ 80	+ 230	+ 70	+ 60	- 40	+ 430
AUTOBRAKE LOW	FULL	**1 960**	+ 50	+ 140	+ 70	+ 210	+ 70	+ 30	- 10	+ 370
	3	**2 100**	+ 50	+ 150	+ 80	+ 210	+ 70	+ 30	- 10	+ 430

(1) Automatic Landing correction: if CONF FULL, add 310m. If CONF 3, add 330m.
(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	**1 660**	+ 40	+ 90	+ 60	+ 190	+ 60	+ 70	- 70	+ 390
	3	**1 810**	+ 40	+ 100	+ 70	+ 200	+ 60	+ 80	- 80	+ 460
AUTOBRAKE MED	FULL	**1 700**	+ 40	+ 90	+ 60	+ 190	+ 60	+ 70	- 70	+ 390
	3	**1 850**	+ 40	+ 100	+ 70	+ 200	+ 60	+ 90	- 90	+ 460
AUTOBRAKE LOW	FULL	**1 970**	+ 50	+ 140	+ 70	+ 210	+ 70	+ 50	- 10	+ 390
	3	**2 110**	+ 50	+ 150	+ 80	+ 220	+ 80	+ 50	- 10	+ 460

(1) Automatic Landing correction: if CONF FULL, add 310m. If CONF 3, add 320m.
(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	**1 860**	+ 40	+ 100	+ 70	+ 220	+ 60	+ 110	- 90	+ 380
	3	**2 030**	+ 50	+ 110	+ 80	+ 230	+ 80	+ 120	- 110	+ 440
AUTOBRAKE MED	FULL	**1 890**	+ 40	+ 100	+ 70	+ 220	+ 70	+ 110	- 100	+ 380
	3	**2 070**	+ 40	+ 110	+ 80	+ 230	+ 80	+ 120	- 120	+ 440
AUTOBRAKE LOW	FULL	**2 050**	+ 50	+ 130	+ 80	+ 230	+ 70	+ 90	- 40	+ 380
	3	**2 210**	+ 50	+ 140	+ 80	+ 240	+ 80	+ 110	- 60	+ 440

(1) Automatic Landing correction: if CONF FULL, add 320m. If CONF 3, add 330m.
(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	**2 080**	+ 70	+ 160	+ 110	+ 360	+ 110	+ 160	- 100	+ 320
	3	**2 380**	+ 80	+ 180	+ 140	+ 410	+ 130	+ 200	- 130	+ 380
AUTOBRAKE MED	FULL	**2 100**	+ 70	+ 150	+ 120	+ 370	+ 100	+ 160	- 110	+ 320
	3	**2 390**	+ 80	+ 190	+ 140	+ 410	+ 130	+ 210	- 140	+ 380
AUTOBRAKE LOW	FULL	**2 130**	+ 70	+ 160	+ 110	+ 370	+ 110	+ 160	- 50	+ 320
	3	**2 420**	+ 80	+ 190	+ 140	+ 410	+ 130	+ 210	- 100	+ 380

(1) Automatic Landing correction: if CONF FULL, add 350m. If CONF 3, add 370m.
(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	**3 450**	+ 70	+ 150	+ 130	+ 560	+ 160	+ 920	- 320	+ 330
	3	**3 970**	+ 80	+ 160	+ 150	+ 610	+ 180	+ 1150	- 430	+ 380
AUTOBRAKE MED	FULL	**3 480**	+ 70	+ 140	+ 130	+ 570	+ 160	+ 930	- 340	+ 330
	3	**3 990**	+ 80	+ 160	+ 150	+ 610	+ 180	+ 1150	- 450	+ 380
AUTOBRAKE LOW	FULL	**3 510**	+ 70	+ 140	+ 130	+ 570	+ 160	+ 930	- 340	+ 330
	3	**4 020**	+ 80	+ 170	+ 150	+ 610	+ 180	+ 1150	- 450	+ 380

(1) Automatic Landing correction: if CONF FULL, add 350m. If CONF 3, add 360m.
(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	**1 260**	+ 40	+ 70	+ 50	+ 130	+ 40	+ 20	- 10	+ 580
	3	16	**1 370**	+ 50	+ 80	+ 50	+ 120	+ 40	+ 30	- 20	+ 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 090m											

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	**1 640**	+ 50	+ 110	+ 80	+ 220	+ 70	+ 60	- 40	+ 430
	3	16	**1 820**	+ 60	+ 120	+ 90	+ 240	+ 80	+ 70	- 60	+ 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 410m											

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	**1 870**	+ 40	+ 90	+ 70	+ 200	+ 60	+ 80	- 80	+ 500
	3	16	**2 050**	+ 40	+ 90	+ 80	+ 200	+ 70	+ 90	- 90	+ 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 660m											

Continued on the next page

ANTI ICE SYSTEM

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

3 – MEDIUM											
Corrections on Landing Distance (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	**2 080**	+ 40	+ 100	+ 80	+ 230	+ 80	+ 110	- 110	+ 480
	3	16	**2 300**	+ 40	+ 110	+ 90	+ 240	+ 80	+ 130	- 130	+ 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 860m											

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	**2 410**	+ 70	+ 150	+ 130	+ 370	+ 120	+ 170	- 130	+ 350
	3	16	**2 780**	+ 80	+ 170	+ 150	+ 420	+ 150	+ 230	- 170	+ 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) = 2 080m											

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	**3 770**	+ 70	+ 140	+ 150	+ 570	+ 170	+ 930	- 450	+ 350
	3	16	**4 360**	+ 80	+ 160	+ 170	+ 610	+ 200	+ 1150	- 580	+ 450
(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) = 3 450m											

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	**1 260**	+ 40	+ 70	+ 50	+ 130	+ 40	+ 20	- 10	+ 580
	3	16	**1 370**	+ 50	+ 80	+ 50	+ 120	+ 40	+ 30	- 20	+ 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 090m											

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	**1 640**	+ 50	+ 110	+ 80	+ 220	+ 70	+ 60	- 40	+ 430
	3	16	**1 820**	+ 60	+ 120	+ 90	+ 240	+ 80	+ 70	- 60	+ 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 410m											

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	**1 870**	+ 40	+ 90	+ 70	+ 200	+ 60	+ 80	- 80	+ 500
	3	16	**2 050**	+ 40	+ 90	+ 80	+ 200	+ 70	+ 90	- 90	+ 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 660m											

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	**2 080**	+ 40	+ 100	+ 80	+ 230	+ 80	+ 110	- 110	+ 480
	3	16	**2 300**	+ 40	+ 110	+ 90	+ 240	+ 80	+ 130	- 130	+ 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 860m											

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	**2 410**	+ 70	+ 150	+ 130	+ 370	+ 120	+ 170	- 130	+ 350
	3	16	**2 780**	+ 80	+ 170	+ 150	+ 420	+ 150	+ 230	- 170	+ 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) = 2 080m											

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	**3 770**	+ 70	+ 140	+ 150	+ 570	+ 170	+ 930	- 450	+ 350
	3	16	**4 360**	+ 80	+ 160	+ 170	+ 610	+ 200	+ 1150	- 580	+ 450
(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) = 3 450m											

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	**1 670**	+ 70	+ 90	+ 60	+ 190	+ 60	+ 70	- 50	+ 640
	3	6	**1 840**	+ 70	+ 100	+ 70	+ 200	+ 60	+ 80	- 60	+ 810
ONE BRK RELEASED	FULL	0	**1 300**	+ 50	+ 90	+ 50	+ 150	+ 40	+ 30	- 20	+ 720
	3	6	**1 430**	+ 50	+ 90	+ 50	+ 150	+ 50	+ 40	- 30	+ 870
TWO BRK RELEASED	FULL	0	**1 610**	+ 60	+ 100	+ 60	+ 190	+ 60	+ 70	- 50	+ 670
	3	6	**1 790**	+ 70	+ 110	+ 70	+ 200	+ 70	+ 80	- 60	+ 810
ALTN L(R) RELEASED (if NORM BRK FAULT)	FULL	0	**1 610**	+ 60	+ 100	+ 60	+ 190	+ 60	+ 70	- 60	+ 670
	3	6	**1 790**	+ 70	+ 110	+ 70	+ 200	+ 70	+ 80	- 70	+ 810
ALTN L(R) RELEASED (if G SYS LO PR)	FULL	0	**1 740**	+ 60	+ 110	+ 70	+ 190	+ 60	+ 80	- 80	+ 690
	3	6	**1 890**	+ 70	+ 110	+ 70	+ 200	+ 70	+ 90	- 90	+ 840
NORM BRK FAULT	FULL	0	**1 180**	+ 40	+ 70	+ 40	+ 120	+ 30	+ 20	- 20	+ 770
	3	6	**1 260**	+ 40	+ 70	+ 40	+ 120	+ 40	+ 30	- 20	+ 920
NORM + ALTN FAULT	FULL	0	**1 870**	+ 70	+ 100	+ 60	+ 190	+ 70	+ 80	- 60	+ 660
	3	6	**2 070**	+ 70	+ 100	+ 70	+ 210	+ 70	+ 90	- 80	+ 790

(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 090m

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.

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	**1 700**	+ 60	+ 100	+ 70	+ 220	+ 60	+ 80	- 50	+ 580
	3	6	**1 880**	+ 70	+ 120	+ 90	+ 240	+ 70	+ 90	- 60	+ 730
ONE BRK RELEASED	FULL	0	**1 660**	+ 50	+ 120	+ 90	+ 250	+ 70	+ 70	- 60	+ 530
	3	6	**1 860**	+ 60	+ 140	+ 100	+ 280	+ 90	+ 90	- 70	+ 620
TWO BRK RELEASED	FULL	0	**1 990**	+ 70	+ 140	+ 100	+ 310	+ 90	+ 130	- 100	+ 470
	3	6	**2 260**	+ 70	+ 160	+ 120	+ 350	+ 110	+ 160	- 130	+ 550
ALTN L(R) RELEASED (if NORM BRK FAULT)	FULL	0	**2 110**	+ 70	+ 140	+ 110	+ 340	+ 100	+ 150	- 110	+ 440
	3	6	**2 410**	+ 80	+ 160	+ 130	+ 380	+ 120	+ 190	- 150	+ 520
ALTN L(R) RELEASED (if G SYS LO PR)	FULL	0	**2 370**	+ 80	+ 170	+ 120	+ 380	+ 120	+ 210	- 160	+ 440
	3	6	**2 690**	+ 90	+ 200	+ 150	+ 430	+ 140	+ 270	- 210	+ 520
NORM BRK FAULT	FULL	0	**1 560**	+ 50	+ 120	+ 80	+ 230	+ 70	+ 60	- 40	+ 550
	3	6	**1 740**	+ 50	+ 130	+ 90	+ 250	+ 80	+ 80	- 60	+ 660
NORM + ALTN FAULT	FULL	0	**1 870**	+ 60	+ 110	+ 70	+ 220	+ 70	+ 90	- 70	+ 600
	3	6	**2 070**	+ 70	+ 120	+ 80	+ 240	+ 80	+ 100	- 80	+ 710

(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 410m

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.

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	**1 710**	+ 60	+ 90	+ 60	+ 190	+ 60	+ 70	- 70	+ 640
	3	6	**1 880**	+ 70	+ 100	+ 70	+ 200	+ 70	+ 90	- 90	+ 810
ONE BRK RELEASED	FULL	0	**1 970**	+ 40	+ 100	+ 70	+ 230	+ 70	+ 120	- 110	+ 610
	3	6	**2 180**	+ 40	+ 110	+ 80	+ 250	+ 80	+ 140	- 130	+ 740
TWO BRK RELEASED	FULL	0	**2 410**	+ 50	+ 120	+ 90	+ 310	+ 90	+ 220	- 180	+ 550
	3	6	**2 700**	+ 50	+ 130	+ 100	+ 330	+ 110	+ 260	- 220	+ 650
ALTN L(R) RELEASED (if NORM BRK FAULT)	FULL	0	**2 410**	+ 50	+ 120	+ 90	+ 310	+ 90	+ 220	- 180	+ 550
	3	6	**2 700**	+ 50	+ 130	+ 100	+ 330	+ 110	+ 260	- 220	+ 650
ALTN L(R) RELEASED (if G SYS LO PR)	FULL	0	**2 690**	+ 60	+ 140	+ 110	+ 340	+ 100	+ 290	- 210	+ 540
	3	6	**2 990**	+ 60	+ 160	+ 120	+ 360	+ 120	+ 340	- 260	+ 660
NORM BRK FAULT	FULL	0	**1 710**	+ 40	+ 100	+ 60	+ 190	+ 60	+ 80	- 70	+ 660
	3	6	**1 880**	+ 40	+ 100	+ 70	+ 200	+ 60	+ 90	- 90	+ 800
NORM + ALTN FAULT	FULL	0	**1 890**	+ 60	+ 100	+ 60	+ 200	+ 70	+ 80	- 90	+ 660
	3	6	**2 080**	+ 70	+ 110	+ 70	+ 210	+ 70	+ 100	- 100	+ 790

(1) Automatic Landing correction: add 160m - (2) Weight correction: subtract 20m per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 1 660m

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.

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	**1 910**	+ 40	+ 100	+ 70	+ 230	+ 70	+ 100	- 100	+ 610
	3	6	**2 110**	+ 40	+ 110	+ 80	+ 240	+ 70	+ 120	- 120	+ 780
ONE BRK RELEASED	FULL	0	**2 210**	+ 50	+ 110	+ 80	+ 280	+ 80	+ 170	- 140	+ 570
	3	6	**2 460**	+ 50	+ 130	+ 100	+ 290	+ 90	+ 200	- 180	+ 690
TWO BRK RELEASED	FULL	0	**2 700**	+ 60	+ 130	+ 110	+ 370	+ 110	+ 320	- 230	+ 510
	3	6	**3 050**	+ 60	+ 150	+ 120	+ 390	+ 130	+ 390	- 290	+ 610
ALTN L(R) RELEASED (if NORM BRK FAULT)	FULL	0	**2 700**	+ 60	+ 130	+ 110	+ 370	+ 110	+ 320	- 230	+ 510
	3	6	**3 050**	+ 60	+ 150	+ 120	+ 390	+ 130	+ 390	- 290	+ 610
ALTN L(R) RELEASED (if G SYS LO PR)	FULL	0	**3 020**	+ 60	+ 160	+ 120	+ 400	+ 130	+ 420	- 260	+ 500
	3	6	**3 400**	+ 70	+ 170	+ 140	+ 430	+ 140	+ 500	- 330	+ 610
NORM BRK FAULT	FULL	0	**1 910**	+ 40	+ 110	+ 70	+ 220	+ 70	+ 110	- 100	+ 620
	3	6	**2 110**	+ 40	+ 120	+ 80	+ 230	+ 80	+ 130	- 120	+ 750
NORM + ALTN FAULT	FULL	0	**2 070**	+ 40	+ 100	+ 70	+ 230	+ 70	+ 120	- 110	+ 620
	3	6	**2 290**	+ 40	+ 110	+ 80	+ 240	+ 80	+ 140	- 140	+ 750

(1) Automatic Landing correction: add 170m - (2) Weight correction: subtract 20m per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 1 860m

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	**2 170**	+ 70	+ 150	+ 120	+ 370	+ 110	+ 160	- 110	+ 420
	3	6	**2 500**	+ 80	+ 190	+ 140	+ 410	+ 140	+ 220	- 140	+ 530
ONE BRK RELEASED	FULL	0	**2 460**	+ 80	+ 160	+ 130	+ 420	+ 120	+ 230	- 160	+ 390
	3	6	**2 850**	+ 90	+ 200	+ 160	+ 480	+ 160	+ 310	- 200	+ 450
TWO BRK RELEASED	FULL	0	**2 930**	+ 90	+ 170	+ 150	+ 520	+ 150	+ 400	- 250	+ 350
	3	6	**3 430**	+ 110	+ 200	+ 180	+ 600	+ 190	+ 540	- 320	+ 390
ALTN L(R) RELEASED (if NORM BRK FAULT)	FULL	0	**2 930**	+ 90	+ 170	+ 150	+ 520	+ 150	+ 400	- 250	+ 350
	3	6	**3 430**	+ 110	+ 200	+ 180	+ 600	+ 190	+ 540	- 320	+ 390
ALTN L(R) RELEASED (if G SYS LO PR)	FULL	0	**3 310**	+ 100	+ 210	+ 170	+ 590	+ 180	+ 550	- 290	+ 350
	3	6	**3 860**	+ 120	+ 260	+ 220	+ 680	+ 230	+ 730	- 380	+ 400
NORM BRK FAULT	FULL	0	**2 170**	+ 70	+ 160	+ 120	+ 370	+ 110	+ 160	- 110	+ 420
	3	6	**2 510**	+ 80	+ 180	+ 140	+ 420	+ 130	+ 220	- 140	+ 500
NORM + ALTN FAULT	FULL	0	**2 230**	+ 70	+ 150	+ 120	+ 370	+ 110	+ 170	- 120	+ 430
	3	6	**2 580**	+ 80	+ 180	+ 140	+ 420	+ 130	+ 220	- 160	+ 510

(1) Automatic Landing correction: add 200m - (2) Weight correction: subtract 30m per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 2 080m

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	**3 540**	+ 70	+ 140	+ 140	+ 570	+ 160	+ 930	- 440	+ 470
	3	6	**4 090**	+ 80	+ 170	+ 160	+ 610	+ 190	+ 1 150	- 550	+ 600
ONE 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								
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	**3 540**	+ 70	+ 140	+ 140	+ 570	+ 160	+ 930	- 440	+ 420
	3	6	**4 090**	+ 80	+ 170	+ 160	+ 610	+ 190	+ 1 150	- 550	+ 500
NORM + ALTN FAULT	FULL	0	**3 600**	+ 70	+ 140	+ 140	+ 570	+ 160	+ 940	- 440	+ 430
	3	6	**4 160**	+ 80	+ 170	+ 160	+ 610	+ 190	+ 1 160	- 560	+ 510

(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) = 3 450m

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.

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	**1 140**	+ 40	+ 70	+ 40	+ 130	+ 40	+ 20	- 10	+ 760
	3	6	**1 230**	+ 50	+ 80	+ 40	+ 120	+ 50	+ 30	- 20	+ 950
DC BUS 2 FAULT	FULL	0	**1 250**	+ 40	+ 90	+ 40	+ 120	+ 40	+ 30	- 20	+ 790
	3	6	**1 320**	+ 40	+ 90	+ 50	+ 130	+ 40	+ 30	- 30	+ 1 000
DC BUS 1+2 FAULT	FULL	0	**1 810**	+ 70	+ 120	+ 70	+ 200	+ 60	+ 90	INOP	+ 710
	3	6	**1 970**	+ 90	+ 120	+ 80	+ 210	+ 70	+ 110	INOP	+ 900
DC ESS BUS FAULT with no Ice Accretion	FULL	0	**1 140**	+ 40	+ 70	+ 40	+ 130	+ 40	+ 20	- 10	+ 750
	3	6	**1 230**	+ 50	+ 80	+ 50	+ 120	+ 50	+ 30	- 20	+ 950
DC ESS BUS FAULT with Ice Accretion	FULL	10	**1 270**	+ 50	+ 80	+ 50	+ 130	+ 40	+ 20	- 20	+ 590
	3	16	**1 380**	+ 50	+ 80	+ 50	+ 130	+ 40	+ 30	- 20	+ 800
DC ESS SHED BUS with Ice Accretion	FULL	10	**1 260**	+ 40	+ 70	+ 50	+ 130	+ 40	+ 20	- 10	+ 580
	3	16	**1 370**	+ 50	+ 80	+ 50	+ 120	+ 40	+ 30	- 20	+ 790
DC EMER CONFIG (Calculated with 140kt min)	FULL	0 / 140kt	**1 900**	+ 70	+ 130	+ 70	+ 200	+ 70	+ 90	INOP	+ 640
	3	6 / 140kt	**1 980**	+ 90	+ 120	+ 80	+ 210	+ 70	+ 110	INOP	+ 900
ELEC EMER CONFIG (Calculated with 140kt min)	3	10 / 140kt	**2 020**	+ 80	+ 110	+ 80	+ 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 090m

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.

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	**1 510**	+ 50	+ 120	+ 70	+ 220	+ 70	+ 60	- 40	+ 560
	3	6	**1 680**	+ 60	+ 130	+ 90	+ 240	+ 80	+ 70	- 60	+ 710
DC BUS 2 FAULT	FULL	0	**1 750**	+ 60	+ 170	+ 100	+ 270	+ 80	+ 100	- 80	+ 560
	3	6	**1 920**	+ 60	+ 180	+ 110	+ 290	+ 90	+ 110	- 90	+ 720
DC BUS 1+2 FAULT	FULL	0	**1 950**	+ 80	+ 170	+ 100	+ 290	+ 90	+ 130	INOP	+ 570
	3	6	**2 150**	+ 80	+ 180	+ 110	+ 310	+ 100	+ 150	INOP	+ 740
DC ESS BUS FAULT with no Ice Accretion	FULL	0	**1 520**	+ 50	+ 120	+ 80	+ 230	+ 60	+ 60	- 50	+ 560
	3	6	**1 690**	+ 60	+ 130	+ 90	+ 250	+ 80	+ 70	- 60	+ 700
DC ESS BUS FAULT with Ice Accretion	FULL	10	**1 700**	+ 50	+ 120	+ 90	+ 240	+ 80	+ 70	- 60	+ 430
	3	16	**1 900**	+ 60	+ 130	+ 100	+ 260	+ 80	+ 80	- 80	+ 580
DC ESS SHED BUS with Ice Accretion	FULL	10	**1 640**	+ 50	+ 110	+ 80	+ 220	+ 70	+ 60	- 40	+ 430
	3	16	**1 820**	+ 60	+ 120	+ 90	+ 240	+ 80	+ 70	- 60	+ 580
DC EMER CONFIG (Calculated with 140kt min)	FULL	0 / 140kt	**2 060**	+ 80	+ 170	+ 100	+ 290	+ 100	+ 130	INOP	+ 500
	3	6 / 140kt	**2 160**	+ 80	+ 180	+ 110	+ 310	+ 100	+ 150	INOP	+ 740
ELEC EMER CONFIG (Calculated with 140kt min)	3	10 / 140kt	**2 210**	+ 80	+ 180	+ 110	+ 300	+ 110	+ 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 410m

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.

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	**1 760**	+ 40	+ 100	+ 70	+ 200	+ 60	+ 80	- 70	+ 650
	3	6	**1 930**	+ 40	+ 110	+ 70	+ 210	+ 70	+ 90	- 90	+ 820
DC BUS 2 FAULT	FULL	0	**2 040**	+ 40	+ 140	+ 80	+ 220	+ 80	+ 130	- 140	+ 650
	3	6	**2 210**	+ 40	+ 140	+ 80	+ 230	+ 80	+ 140	- 160	+ 840
DC BUS 1+2 FAULT	FULL	0	**2 060**	+ 50	+ 140	+ 80	+ 230	+ 70	+ 130	INOP	+ 650
	3	6	**2 230**	+ 60	+ 150	+ 90	+ 240	+ 80	+ 150	INOP	+ 850
DC ESS BUS FAULT with no Ice Accretion	FULL	0	**1 790**	+ 40	+ 110	+ 70	+ 200	+ 60	+ 90	- 50	+ 640
	3	6	**1 970**	+ 40	+ 110	+ 70	+ 220	+ 70	+ 100	- 60	+ 820
DC ESS BUS FAULT with Ice Accretion	FULL	10	**1 970**	+ 40	+ 100	+ 70	+ 210	+ 60	+ 100	- 60	+ 500
	3	16	**2 150**	+ 40	+ 110	+ 80	+ 210	+ 80	+ 110	- 80	+ 690
DC ESS SHED BUS with Ice Accretion	FULL	10	**1 870**	+ 40	+ 90	+ 70	+ 200	+ 60	+ 80	- 40	+ 500
	3	16	**2 050**	+ 40	+ 90	+ 80	+ 200	+ 70	+ 90	- 60	+ 690
DC EMER CONFIG (Calculated with 140kt min)	FULL	0 / 140kt	**2 160**	+ 50	+ 140	+ 80	+ 230	+ 80	+ 140	INOP	+ 580
	3	6 / 140kt	**2 230**	+ 60	+ 150	+ 90	+ 230	+ 80	+ 150	INOP	+ 850
ELEC EMER CONFIG (Calculated with 140kt min)	3	10 / 140kt	**2 270**	+ 60	+ 140	+ 90	+ 230	+ 80	+ 140	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 660m

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.

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	**1 970**	+ 40	+ 110	+ 70	+ 230	+ 70	+ 120	- 100	+ 610
	3	6	**2 180**	+ 40	+ 120	+ 80	+ 240	+ 80	+ 140	- 120	+ 770
DC BUS 2 FAULT	FULL	0	**2 330**	+ 50	+ 150	+ 90	+ 270	+ 80	+ 190	- 200	+ 610
	3	6	**2 530**	+ 50	+ 160	+ 100	+ 280	+ 90	+ 210	- 230	+ 790
DC BUS 1+2 FAULT	FULL	0	**2 360**	+ 50	+ 160	+ 90	+ 270	+ 90	+ 200	INOP	+ 610
	3	6	**2 570**	+ 40	+ 170	+ 100	+ 280	+ 100	+ 230	INOP	+ 800
DC ESS BUS FAULT with no Ice Accretion	FULL	0	**2 030**	+ 40	+ 120	+ 80	+ 240	+ 70	+ 130	- 170	+ 600
	3	6	**2 250**	+ 40	+ 120	+ 90	+ 260	+ 80	+ 160	- 200	+ 770
DC ESS BUS FAULT with Ice Accretion	FULL	10	**2 220**	+ 50	+ 110	+ 80	+ 250	+ 80	+ 140	- 180	+ 470
	3	16	**2 450**	+ 40	+ 120	+ 90	+ 260	+ 90	+ 160	- 220	+ 650
DC ESS SHED BUS with Ice Accretion	FULL	10	**2 080**	+ 40	+ 100	+ 80	+ 230	+ 80	+ 110	- 110	+ 480
	3	16	**2 300**	+ 50	+ 110	+ 90	+ 240	+ 80	+ 130	- 130	+ 650
DC EMER CONFIG (Calculated with 140kt min)	FULL	0 / 140kt	**2 480**	+ 50	+ 150	+ 100	+ 280	+ 90	+ 210	INOP	+ 540
	3	6 / 140kt	**2 580**	+ 50	+ 170	+ 100	+ 280	+ 100	+ 220	INOP	+ 800
ELEC EMER CONFIG (Calculated with 140kt min)	3	10 / 140kt	**2 580**	+ 70	+ 160	+ 100	+ 270	+ 100	+ 200	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 860m

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	**2 250**	+ 90	+ 170	+ 130	+ 380	+ 110	+ 180	- 120	+ 420
	3	6	**2 600**	+ 90	+ 200	+ 150	+ 430	+ 150	+ 240	- 150	+ 520
DC BUS 2 FAULT	FULL	0	**2 730**	+ 100	+ 250	+ 170	+ 500	+ 160	+ 330	- 240	+ 400
	3	6	**3 150**	+ 90	+ 280	+ 200	+ 570	+ 190	+ 440	- 300	+ 520
DC BUS 1+2 FAULT	FULL	0	**2 800**	+ 110	+ 260	+ 180	+ 540	+ 150	+ 370	INOP	+ 390
	3	6	**3 240**	+ 80	+ 300	+ 220	+ 630	+ 190	+ 500	INOP	+ 510
DC ESS BUS FAULT with no Ice Accretion	FULL	0	**2 330**	+ 90	+ 180	+ 140	+ 420	+ 120	+ 210	- 190	+ 380
	3	6	**2 710**	+ 80	+ 210	+ 170	+ 490	+ 140	+ 280	- 240	+ 480
DC ESS BUS FAULT with Ice Accretion	FULL	10	**2 590**	+ 90	+ 170	+ 150	+ 430	+ 130	+ 230	- 220	+ 330
	3	16	**3 020**	+ 70	+ 200	+ 180	+ 500	+ 160	+ 310	- 300	+ 420
DC ESS SHED BUS with Ice Accretion	FULL	10	**2 410**	+ 80	+ 150	+ 130	+ 370	+ 120	+ 170	- 130	+ 350
	3	16	**2 780**	+ 90	+ 170	+ 150	+ 420	+ 150	+ 230	- 170	+ 450
DC EMER CONFIG (Calculated with 140kt min)	FULL	0 / 140kt	**2 960**	+ 110	+ 250	+ 190	+ 540	+ 170	+ 380	INOP	+ 360
	3	6 / 140kt	**3 240**	+ 100	+ 300	+ 220	+ 620	+ 200	+ 490	INOP	+ 500
ELEC EMER CONFIG (Calculated with 140kt min)	3	10 / 140kt	**3 230**	+ 70	+ 260	+ 190	+ 540	+ 200	+ 420	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 080m

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	**3 690**	+ 80	+ 150	+ 140	+ 580	+ 170	+ 1 010	- 360	+ 420
	3	6	**4 260**	+ 80	+ 180	+ 170	+ 620	+ 200	+ 1 250	- 480	+ 520
DC BUS 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 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	**3 770**	+ 70	+ 140	+ 150	+ 570	+ 170	+ 930	- 450	+ 350
	3	16	**4 360**	+ 80	+ 160	+ 170	+ 610	+ 200	+ 1 150	- 580	+ 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	Landing Distance greater than 6 000 m for all conditions								

(1) Automatic Landing correction: add 260m - (2) Weight correction: subtract 30m per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 3 450m

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	**1 260**	+ 50	+ 80	+ 50	+ 120	+ 40	+ 30	- 20	+ 790
	1	40	**1 710**	+ 50	N/A	+ 60	+ 130	+ 50	+ 30	- 20	+ 860
SHUT DOWN with ENG FIRE P/B pushed and Ice Accretion	FULL	10	**1 240**	+ 40	+ 70	+ 50	+ 120	+ 40	+ 20	- 10	+ 570
	3	16	**1 340**	+ 50	N/A	+ 50	+ 120	+ 50	+ 30	- 20	+ 780
The following ECAM alert with Ice Accretion: - START VALVE FAULT	FULL	10	**1 260**	+ 40	+ 70	+ 50	+ 130	+ 40	+ 20	- 10	+ 600
	3	16	**1 370**	+ 50	N/A	+ 50	+ 120	+ 40	+ 30	- 20	+ 770

(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 090m

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	**1 660**	+ 50	+ 120	+ 90	+ 230	+ 70	+ 60	- 50	+ 570
	1	40	**2 260**	+ 60	N/A	+ 110	+ 250	+ 100	+ 80	- 80	+ 630
SHUT DOWN with ENG FIRE P/B pushed and Ice Accretion	FULL	10	**1 600**	+ 50	+ 110	+ 80	+ 220	+ 70	+ 50	- 40	+ 420
	3	16	**1 770**	+ 60	N/A	+ 90	+ 230	+ 80	+ 60	- 60	+ 570
The following ECAM alert with Ice Accretion: - START VALVE FAULT	FULL	10	**1 640**	+ 50	+ 110	+ 80	+ 220	+ 70	+ 60	- 40	+ 450
	3	16	**1 820**	+ 50	N/A	+ 90	+ 230	+ 80	+ 70	- 60	+ 570

(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 410m

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	**1 880**	+ 40	+ 100	+ 70	+ 200	+ 70	+ 80	- 90	+ 700
	1	40	**2 400**	+ 40	N/A	+ 90	+ 200	+ 80	+ 90	- 120	+ 740
SHUT DOWN with ENG FIRE P/B pushed and Ice Accretion	FULL	10	**1 810**	+ 40	+ 100	+ 70	+ 190	+ 70	+ 70	- 80	+ 490
	3	16	**1 980**	+ 40	N/A	+ 70	+ 190	+ 70	+ 80	- 90	+ 670
The following ECAM alert with Ice Accretion: - START VALVE FAULT	FULL	10	**1 870**	+ 40	+ 90	+ 70	+ 200	+ 60	+ 80	- 80	+ 530
	3	16	**2 050**	+ 40	N/A	+ 80	+ 200	+ 60	+ 90	- 90	+ 670

(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 660m

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	**2 110**	+ 40	+ 110	+ 80	+ 230	+ 70	+ 120	- 120	+ 660
	1	40	**2 690**	+ 50	N/A	+ 100	+ 240	+ 90	+ 130	- 160	+ 700
SHUT DOWN with ENG FIRE P/B pushed and Ice Accretion	FULL	10	**2 010**	+ 40	+ 100	+ 80	+ 220	+ 70	+ 100	- 110	+ 460
	3	16	**2 220**	+ 50	N/A	+ 90	+ 230	+ 70	+ 120	- 130	+ 630
The following ECAM alert with Ice Accretion: - START VALVE FAULT	FULL	10	**2 080**	+ 40	+ 100	+ 80	+ 230	+ 80	+ 110	- 110	+ 500
	3	16	**2 300**	+ 40	N/A	+ 80	+ 230	+ 80	+ 130	- 130	+ 630

(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 860m

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	**2 490**	+ 80	+ 180	+ 140	+ 390	+ 130	+ 200	- 150	+ 450
	1	40	**3 410**	+ 100	N/A	+ 180	+ 430	+ 160	+ 260	- 260	+ 450
SHUT DOWN with ENG FIRE P/B pushed and Ice Accretion	FULL	10	**2 310**	+ 70	+ 140	+ 120	+ 350	+ 110	+ 160	- 130	+ 330
	3	16	**2 650**	+ 80	N/A	+ 140	+ 390	+ 140	+ 210	- 170	+ 420
The following ECAM alert with Ice Accretion: - START VALVE FAULT	FULL	10	**2 410**	+ 70	+ 150	+ 130	+ 370	+ 120	+ 170	- 130	+ 360
	3	16	**2 790**	+ 80	N/A	+ 150	+ 420	+ 140	+ 230	- 170	+ 440

(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 080m

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	**3 830**	+ 90	+ 170	+ 150	+ 540	+ 170	+ 830	- 540	+ 510
	1	40	**4 850**	+ 100	N/A	+ 190	+ 580	+ 200	+ 940	- 680	+ 520
SHUT DOWN with ENG FIRE P/B pushed and Ice Accretion	FULL	10	**3 470**	+ 80	+ 140	+ 140	+ 510	+ 150	+ 680	- 430	+ 360
	3	16	**3 990**	+ 90	N/A	+ 160	+ 540	+ 170	+ 830	- 550	+ 480
The following ECAM alert with Ice Accretion: - START VALVE FAULT	FULL	10	**3 170**	+ 60	+ 130	+ 130	+ 430	+ 130	+ 450	- 300	+ 400
	3	16	**3 610**	+ 70	N/A	+ 140	+ 450	+ 150	+ 540	- 380	+ 490

(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 880m

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	**1 170**	+ 40	+ 70	+ 40	+ 120	+ 40	+ 20	- 20	+ 760
	3	6	**1 240**	+ 50	+ 80	+ 50	+ 130	+ 40	+ 30	- 20	+ 960
ONE SPLR FAULT with SPOILER runaway suspected	3	10	**1 300**	+ 50	+ 80	+ 50	+ 130	+ 40	+ 20	- 20	+ 900
TWO SPLR FAULT/ GND SPLR 1+2(3+4) FAULT	FULL	0	**1 210**	+ 40	+ 90	+ 40	+ 120	+ 40	+ 30	- 20	+ 800
	3	6	**1 280**	+ 50	+ 80	+ 50	+ 130	+ 40	+ 30	- 20	+ 1 000
THREE SPLR FAULT	FULL	0	**1 260**	+ 40	+ 90	+ 40	+ 120	+ 40	+ 30	- 20	+ 800
	3	6	**1 330**	+ 40	+ 90	+ 50	+ 130	+ 40	+ 30	- 30	+ 1 010
ALL SPLR FAULT	FULL	0	**1 380**	+ 40	+ 120	+ 50	+ 130	+ 50	+ 40	- 40	+ 840
	3	6	**1 440**	+ 40	+ 110	+ 50	+ 130	+ 50	+ 40	- 40	+ 1 050
GND SPLR FAULT	FULL	0	**1 380**	+ 40	+ 120	+ 50	+ 130	+ 50	+ 40	- 40	+ 840
	3	6	**1 440**	+ 40	+ 110	+ 50	+ 130	+ 50	+ 40	- 40	+ 1 050
SEC 1 or SEC 3 FAULT	FULL	0	**1 170**	+ 40	+ 80	+ 40	+ 120	+ 40	+ 20	- 20	+ 780
	3	6	**1 250**	+ 50	+ 80	+ 50	+ 130	+ 40	+ 30	- 20	+ 970
SEC 2 FAULT	FULL	0	**1 140**	+ 40	+ 70	+ 40	+ 130	+ 40	+ 20	- 10	+ 760
	3	6	**1 230**	+ 50	+ 80	+ 40	+ 120	+ 50	+ 30	- 20	+ 950
SEC 2+3 FAULT	FULL	0	**1 250**	+ 40	+ 90	+ 40	+ 120	+ 40	+ 30	- 20	+ 790
	3	6	**1 320**	+ 40	+ 80	+ 50	+ 130	+ 40	+ 30	- 20	+ 1 000
SEC 1+3 FAULT	FULL	0	**1 310**	+ 40	+ 100	+ 50	+ 120	+ 50	+ 40	- 30	+ 800
	3	6	**1 380**	+ 40	+ 100	+ 50	+ 130	+ 50	+ 40	- 30	+ 1 020
SEC 1+2 FAULT	FULL	0	**1 200**	+ 40	+ 80	+ 40	+ 120	+ 40	+ 30	- 20	+ 790
	3	6	**1 280**	+ 50	+ 80	+ 50	+ 130	+ 40	+ 30	- 20	+ 1 000
RUDDER JAM	FULL	0	**1 270**	+ 60	+ 110	+ 60	+ 150	+ 50	+ 40	- 20	+ 650
	3	6	**1 420**	+ 60	+ 110	+ 70	+ 160	+ 60	+ 40	- 20	+ 830
SEC 1+2+3 FAULT	3	10	**1 510**	+ 40	+ 120	+ 60	+ 140	+ 50	+ 40	INOP	+ 990
ALTN LAW/ DIRECT LAW/ ELAC 1+2 FAULT/ L+R ELEV FAULT/ L(R) ELEV FAULT/ STAB JAM	3	10	**1 280**	+ 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 090m

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.

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	**1 560**	+ 50	+ 130	+ 80	+ 230	+ 70	+ 60	- 50	+ 550
	3	6	**1 720**	+ 60	+ 140	+ 90	+ 250	+ 90	+ 80	- 60	+ 700
ONE SPLR FAULT with SPOILER runaway suspected	3	10	**1 810**	+ 60	+ 140	+ 100	+ 260	+ 80	+ 80	- 60	+ 650
TWO SPLR FAULT/ GND SPLR 1+2(3+4) FAULT	FULL	0	**1 670**	+ 60	+ 150	+ 90	+ 250	+ 80	+ 80	- 60	+ 580
	3	6	**1 840**	+ 60	+ 160	+ 100	+ 280	+ 90	+ 100	- 70	+ 740
THREE SPLR FAULT	FULL	0	**1 770**	+ 60	+ 170	+ 100	+ 270	+ 90	+ 100	- 70	+ 570
	3	6	**1 940**	+ 70	+ 190	+ 110	+ 290	+ 100	+ 120	- 90	+ 740
ALL SPLR FAULT	FULL	0	**2 070**	+ 70	+ 260	+ 120	+ 330	+ 110	+ 180	- 120	+ 610
	3	6	**2 240**	+ 80	+ 270	+ 130	+ 350	+ 130	+ 200	- 130	+ 800
GND SPLR FAULT	FULL	0	**2 070**	+ 70	+ 260	+ 120	+ 330	+ 110	+ 180	- 120	+ 610
	3	6	**2 240**	+ 80	+ 270	+ 130	+ 350	+ 130	+ 200	- 130	+ 800
SEC 1 or SEC 3 FAULT	FULL	0	**1 580**	+ 50	+ 130	+ 80	+ 230	+ 70	+ 70	- 50	+ 570
	3	6	**1 760**	+ 60	+ 150	+ 100	+ 260	+ 80	+ 80	- 60	+ 730
SEC 2 FAULT	FULL	0	**1 510**	+ 50	+ 120	+ 70	+ 220	+ 70	+ 60	- 40	+ 560
	3	6	**1 680**	+ 60	+ 130	+ 90	+ 240	+ 80	+ 70	- 50	+ 710
SEC 2+3 FAULT	FULL	0	**1 740**	+ 60	+ 160	+ 90	+ 260	+ 80	+ 90	- 70	+ 560
	3	6	**1 910**	+ 60	+ 180	+ 110	+ 290	+ 90	+ 110	- 80	+ 730
SEC 1+3 FAULT	FULL	0	**1 880**	+ 70	+ 200	+ 100	+ 290	+ 100	+ 130	- 100	+ 570
	3	6	**2 060**	+ 70	+ 220	+ 120	+ 310	+ 110	+ 150	- 120	+ 750
SEC 1+2 FAULT	FULL	0	**1 650**	+ 60	+ 150	+ 90	+ 250	+ 80	+ 80	- 60	+ 580
	3	6	**1 830**	+ 60	+ 160	+ 100	+ 270	+ 90	+ 100	- 80	+ 740
RUDDER JAM	FULL	0	**1 680**	+ 60	+ 140	+ 100	+ 270	+ 80	+ 80	- 50	+ 450
	3	6	**1 920**	+ 70	+ 160	+ 120	+ 300	+ 100	+ 110	- 80	+ 560
SEC 1+2+3 FAULT	3	10	**2 390**	+ 80	+ 280	+ 140	+ 360	+ 140	+ 220	INOP	+ 740
ALTN LAW/ DIRECT LAW/ ELAC 1+2 FAULT/ L+R ELEV FAULT/ L(R) ELEV FAULT/ STAB JAM	3	10	**1 710**	+ 50	+ 120	+ 90	+ 240	+ 70	+ 60	- 50	+ 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 410m

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	**1 820**	+ 40	+ 110	+ 70	+ 200	+ 70	+ 90	- 90	+ 630
	3	6	**1 980**	+ 40	+ 110	+ 70	+ 210	+ 70	+ 100	- 100	+ 820
ONE SPLR FAULT with SPOILER runaway suspected	3	10	**2 060**	+ 40	+ 110	+ 80	+ 210	+ 70	+ 100	- 110	+ 760
TWO SPLR FAULT/ GND SPLR 1+2(3+4) FAULT	FULL	0	**1 950**	+ 40	+ 120	+ 70	+ 220	+ 70	+ 110	- 100	+ 660
	3	6	**2 100**	+ 40	+ 130	+ 80	+ 220	+ 80	+ 120	- 120	+ 850
THREE SPLR FAULT	FULL	0	**2 060**	+ 40	+ 140	+ 80	+ 220	+ 70	+ 130	- 120	+ 660
	3	6	**2 220**	+ 40	+ 150	+ 80	+ 230	+ 80	+ 140	- 140	+ 850
ALL SPLR FAULT	FULL	0	**2 380**	+ 50	+ 210	+ 90	+ 250	+ 90	+ 210	- 190	+ 700
	3	6	**2 530**	+ 50	+ 210	+ 100	+ 260	+ 100	+ 210	- 200	+ 910
GND SPLR FAULT	FULL	0	**2 380**	+ 50	+ 210	+ 90	+ 250	+ 90	+ 210	- 190	+ 700
	3	6	**2 530**	+ 50	+ 210	+ 100	+ 260	+ 100	+ 210	- 200	+ 910
SEC 1 or SEC 3 FAULT	FULL	0	**1 840**	+ 40	+ 110	+ 70	+ 200	+ 70	+ 90	- 90	+ 650
	3	6	**2 020**	+ 40	+ 120	+ 80	+ 210	+ 70	+ 110	- 110	+ 840
SEC 2 FAULT	FULL	0	**1 760**	+ 40	+ 100	+ 70	+ 200	+ 60	+ 80	- 80	+ 650
	3	6	**1 930**	+ 40	+ 110	+ 70	+ 210	+ 70	+ 90	- 90	+ 820
SEC 2+3 FAULT	FULL	0	**2 020**	+ 40	+ 140	+ 80	+ 220	+ 70	+ 120	- 120	+ 650
	3	6	**2 180**	+ 40	+ 140	+ 80	+ 230	+ 80	+ 130	- 130	+ 840
SEC 1+3 FAULT	FULL	0	**2 180**	+ 50	+ 160	+ 80	+ 240	+ 80	+ 160	- 150	+ 660
	3	6	**2 340**	+ 50	+ 170	+ 90	+ 240	+ 90	+ 170	- 170	+ 860
SEC 1+2 FAULT	FULL	0	**1 920**	+ 40	+ 120	+ 70	+ 210	+ 70	+ 110	- 100	+ 670
	3	6	**2 100**	+ 40	+ 130	+ 80	+ 220	+ 70	+ 120	- 120	+ 850
RUDDER JAM	FULL	0	**1 940**	+ 50	+ 120	+ 90	+ 240	+ 70	+ 110	- 100	+ 530
	3	6	**2 180**	+ 50	+ 140	+ 100	+ 260	+ 90	+ 140	- 130	+ 670
SEC 1+2+3 FAULT	3	10	**2 660**	+ 50	+ 210	+ 100	+ 260	+ 110	+ 230	INOP	+ 850
ALTN LAW/ DIRECT LAW/ ELAC 1+2 FAULT/ L+R ELEV FAULT/ L(R) ELEV FAULT/ STAB JAM	3	10	**1 940**	+ 40	+ 100	+ 70	+ 200	+ 70	+ 90	- 90	+ 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 660m

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	**2 040**	+ 40	+ 120	+ 80	+ 230	+ 80	+ 130	- 120	+ 600
	3	6	**2 240**	+ 50	+ 130	+ 80	+ 250	+ 80	+ 150	- 140	+ 770
ONE SPLR FAULT with SPOILER runaway suspected	3	10	**2 320**	+ 50	+ 130	+ 90	+ 250	+ 90	+ 150	- 150	+ 720
TWO SPLR FAULT/ GND SPLR 1+2(3+4) FAULT	FULL	0	**2 200**	+ 50	+ 140	+ 80	+ 250	+ 80	+ 160	- 140	+ 620
	3	6	**2 390**	+ 50	+ 150	+ 90	+ 260	+ 90	+ 180	- 170	+ 810
THREE SPLR FAULT	FULL	0	**2 330**	+ 50	+ 160	+ 90	+ 260	+ 90	+ 190	- 170	+ 620
	3	6	**2 530**	+ 50	+ 170	+ 100	+ 270	+ 100	+ 210	- 190	+ 810
ALL SPLR FAULT	FULL	0	**2 730**	+ 60	+ 230	+ 110	+ 300	+ 110	+ 300	- 260	+ 660
	3	6	**2 920**	+ 60	+ 230	+ 120	+ 300	+ 120	+ 310	- 280	+ 870
GND SPLR FAULT	FULL	0	**2 730**	+ 60	+ 230	+ 110	+ 300	+ 110	+ 300	- 260	+ 660
	3	6	**2 920**	+ 60	+ 230	+ 120	+ 300	+ 120	+ 310	- 280	+ 870
SEC 1 or SEC 3 FAULT	FULL	0	**2 080**	+ 40	+ 120	+ 80	+ 240	+ 70	+ 130	- 120	+ 620
	3	6	**2 290**	+ 50	+ 130	+ 90	+ 250	+ 80	+ 160	- 150	+ 790
SEC 2 FAULT	FULL	0	**1 970**	+ 40	+ 110	+ 70	+ 230	+ 70	+ 120	- 110	+ 610
	3	6	**2 180**	+ 40	+ 120	+ 80	+ 240	+ 80	+ 140	- 130	+ 770
SEC 2+3 FAULT	FULL	0	**2 280**	+ 50	+ 150	+ 90	+ 260	+ 90	+ 180	- 160	+ 610
	3	6	**2 480**	+ 50	+ 160	+ 90	+ 270	+ 100	+ 190	- 180	+ 800
SEC 1+3 FAULT	FULL	0	**2 480**	+ 50	+ 180	+ 100	+ 280	+ 100	+ 220	- 200	+ 620
	3	6	**2 680**	+ 50	+ 190	+ 100	+ 280	+ 110	+ 240	- 230	+ 820
SEC 1+2 FAULT	FULL	0	**2 170**	+ 50	+ 130	+ 80	+ 250	+ 80	+ 150	- 130	+ 630
	3	6	**2 390**	+ 50	+ 140	+ 90	+ 260	+ 90	+ 180	- 160	+ 810
RUDDER JAM	FULL	0	**2 160**	+ 60	+ 130	+ 100	+ 280	+ 90	+ 150	- 130	+ 490
	3	6	**2 450**	+ 60	+ 150	+ 120	+ 300	+ 100	+ 190	- 170	+ 630
SEC 1+2+3 FAULT	3	10	**3 070**	+ 60	+ 240	+ 120	+ 310	+ 130	+ 330	INOP	+ 800
ALTN LAW/ DIRECT LAW/ ELAC 1+2 FAULT/ L+R ELEV FAULT/ L(R) ELEV FAULT/ STAB JAM	3	10	**2 190**	+ 40	+ 110	+ 80	+ 240	+ 80	+ 130	- 120	+ 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 860m

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	**2 330**	+ 80	+ 180	+ 130	+ 400	+ 120	+ 200	- 140	+ 410
	3	6	**2 680**	+ 90	+ 210	+ 150	+ 450	+ 160	+ 260	- 170	+ 520
ONE SPLR FAULT with SPOILER runaway suspected	3	10	**2 810**	+ 90	+ 200	+ 160	+ 450	+ 150	+ 270	- 180	+ 490
TWO SPLR FAULT/ GND SPLR 1+2(3+4) FAULT	FULL	0	**2 570**	+ 90	+ 220	+ 150	+ 450	+ 150	+ 270	- 170	+ 430
	3	6	**2 960**	+ 100	+ 250	+ 180	+ 510	+ 170	+ 360	- 210	+ 550
THREE SPLR FAULT	FULL	0	**2 750**	+ 100	+ 250	+ 170	+ 480	+ 160	+ 330	- 200	+ 430
	3	6	**3 170**	+ 110	+ 280	+ 200	+ 560	+ 190	+ 440	- 250	+ 550
ALL SPLR FAULT	FULL	0	**3 390**	+ 120	+ 370	+ 220	+ 640	+ 220	+ 660	- 320	+ 470
	3	6	**3 870**	+ 130	+ 410	+ 260	+ 710	+ 270	+ 860	- 380	+ 620
GND SPLR FAULT	FULL	0	**3 390**	+ 120	+ 370	+ 220	+ 640	+ 220	+ 660	- 320	+ 470
	3	6	**3 870**	+ 130	+ 410	+ 260	+ 710	+ 270	+ 860	- 380	+ 620
SEC 1 or SEC 3 FAULT	FULL	0	**2 400**	+ 80	+ 190	+ 140	+ 420	+ 130	+ 220	- 140	+ 420
	3	6	**2 780**	+ 90	+ 220	+ 160	+ 470	+ 160	+ 290	- 180	+ 530
SEC 2 FAULT	FULL	0	**2 250**	+ 70	+ 170	+ 130	+ 380	+ 110	+ 180	- 120	+ 420
	3	6	**2 600**	+ 90	+ 200	+ 150	+ 430	+ 150	+ 240	- 160	+ 520
SEC 2+3 FAULT	FULL	0	**2 670**	+ 90	+ 240	+ 160	+ 470	+ 150	+ 300	- 190	+ 420
	3	6	**3 070**	+ 100	+ 270	+ 190	+ 530	+ 190	+ 400	- 230	+ 540
SEC 1+3 FAULT	FULL	0	**2 960**	+ 100	+ 280	+ 180	+ 530	+ 180	+ 420	- 240	+ 430
	3	6	**3 410**	+ 110	+ 320	+ 220	+ 610	+ 210	+ 560	- 310	+ 560
SEC 1+2 FAULT	FULL	0	**2 530**	+ 90	+ 220	+ 150	+ 440	+ 150	+ 260	- 160	+ 430
	3	6	**2 940**	+ 100	+ 250	+ 180	+ 510	+ 180	+ 350	- 210	+ 550
RUDDER JAM	FULL	0	**2 400**	+ 90	+ 170	+ 150	+ 430	+ 120	+ 220	- 150	+ 340
	3	6	**2 830**	+ 110	+ 210	+ 180	+ 500	+ 170	+ 320	- 200	+ 410
SEC 1+2+3 FAULT	3	10	**4 110**	+ 130	+ 400	+ 270	+ 720	+ 280	+ 910	INOP	+ 570
ALTN LAW/ DIRECT LAW/ ELAC 1+2 FAULT/ L+R ELEV FAULT/ L(R) ELEV FAULT/ STAB JAM	3	10	**2 620**	+ 80	+ 180	+ 150	+ 420	+ 140	+ 220	- 150	+ 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) = 2 080m

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	**3 820**	+ 80	+ 160	+ 150	+ 600	+ 170	+ 1 090	- 510	+ 410
	3	6	**4 400**	+ 80	+ 180	+ 170	+ 640	+ 200	+ 1 340	- 640	+ 520
ONE SPLR FAULT with SPOILER runaway suspected	3	10	**4 520**	+ 80	+ 180	+ 180	+ 640	+ 210	+ 1 340	- 650	+ 490
TWO SPLR FAULT/ GND SPLR 1+2(3+4) FAULT	FULL	0	**4 300**	+ 80	+ 190	+ 170	+ 640	+ 200	+ 1 390	- 640	+ 430
	3	6	**4 900**	+ 90	+ 220	+ 190	+ 670	+ 240	+ 1 660	- 790	+ 550
THREE SPLR FAULT	FULL	0	**4 600**	+ 90	+ 220	+ 180	+ 660	+ 220	+ 1 590	- 730	+ 430
	3	6	**5 250**	+ 90	+ 240	+ 200	+ 700	+ 250	+ 1 930	- 890	+ 550
ALL SPLR 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								
GND SPLR 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								
SEC 1 or SEC 3 FAULT	FULL	0	**3 970**	+ 80	+ 170	+ 150	+ 610	+ 190	+ 1 170	- 550	+ 420
	3	6	**4 580**	+ 90	+ 200	+ 180	+ 650	+ 220	+ 1 450	- 690	+ 530
SEC 2 FAULT	FULL	0	**3 690**	+ 70	+ 150	+ 140	+ 580	+ 170	+ 1 010	- 470	+ 420
	3	6	**4 260**	+ 80	+ 180	+ 170	+ 620	+ 200	+ 1 250	- 600	+ 520
SEC 2+3 FAULT	FULL	0	**4 450**	+ 80	+ 200	+ 170	+ 650	+ 210	+ 1 490	- 680	+ 420
	3	6	**5 080**	+ 90	+ 230	+ 200	+ 690	+ 240	+ 1 800	- 840	+ 540
SEC 1+3 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								
SEC 1+2 FAULT	FULL	0	**4 230**	+ 80	+ 190	+ 170	+ 630	+ 200	+ 1 330	- 510	+ 430
	3	6	**4 870**	+ 90	+ 220	+ 190	+ 670	+ 240	+ 1 640	- 670	+ 550
RUDDER JAM	FULL	0	**3 760**	+ 90	+ 170	+ 170	+ 640	+ 190	+ 1 030	- 480	+ 340
	3	6	**4 430**	+ 110	+ 200	+ 210	+ 710	+ 230	+ 1 340	- 620	+ 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	**4 200**	+ 80	+ 160	+ 160	+ 610	+ 200	+ 1 150	- 560	+ 490

(1) Automatic Landing correction: add 310m - (2) Weight correction: subtract 30m per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 3 450m

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	**1 260**	+ 40	+ 80	+ 40	+ 120	+ 40	+ 30	- 30	+ 770
	3	6	**1 340**	+ 40	+ 80	+ 50	+ 120	+ 40	+ 30	- 30	+ 970
B SYS LO PR	FULL	0	**1 140**	+ 40	+ 70	+ 40	+ 130	+ 40	+ 20	- 10	+ 760
	3	6	**1 230**	+ 50	+ 80	+ 40	+ 120	+ 50	+ 30	- 20	+ 950
Y SYS LO PR	FULL	0	**1 180**	+ 40	+ 80	+ 40	+ 120	+ 40	+ 20	- 20	+ 780
	3	6	**1 260**	+ 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 / 140 kt	**1 370**	+ 30	+ 90	+ 50	+ 130	+ 40	+ 40	- 30	+ 730
	3	6 / 140 kt	**1 390**	+ 40	+ 90	+ 50	+ 130	+ 40	+ 30	- 40	+ 960
Y SYS LO PR with B SYS supplied by the RAT (Calculated with 140kt min)	FULL	0 / 140 kt	**1 290**	+ 30	+ 90	+ 40	+ 130	+ 40	+ 30	- 30	+ 750
	3	6 / 140 kt	**1 310**	+ 40	+ 90	+ 50	+ 130	+ 50	+ 30	- 30	+ 980
G + B	3	25	**1 670**	+ 40	N/A	+ 60	+ 130	+ 50	+ 40	- 40	+ 980
G + Y	3	25	**2 420**	+ 70	N/A	+ 90	+ 200	+ 80	+ 120	INOP	+ 610
B + Y	FULL	0	**1 290**	+ 40	+ 90	+ 40	+ 130	+ 40	+ 30	- 30	+ 1 000
	3	6	**1 310**	+ 40	+ 90	+ 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 090m

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.

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	**1 730**	+ 60	+ 140	+ 90	+ 260	+ 80	+ 90	- 70	+ 530
	3	6	**1 910**	+ 60	+ 160	+ 100	+ 280	+ 100	+ 110	- 90	+ 680
B SYS LO PR	FULL	0	**1 510**	+ 50	+ 120	+ 70	+ 220	+ 70	+ 60	- 40	+ 560
	3	6	**1 680**	+ 60	+ 130	+ 90	+ 240	+ 80	+ 70	- 50	+ 710
Y SYS LO PR	FULL	0	**1 600**	+ 50	+ 130	+ 80	+ 240	+ 70	+ 70	- 50	+ 570
	3	6	**1 780**	+ 60	+ 150	+ 100	+ 260	+ 80	+ 80	- 70	+ 730
G SYS LO PR with B SYS supplied by the RAT (Calculated with 140kt min)	FULL	0 / 140 kt	**1 920**	+ 40	+ 160	+ 100	+ 280	+ 90	+ 110	- 140	+ 500
	3	6 / 140 kt	**2 010**	+ 60	+ 180	+ 110	+ 300	+ 100	+ 120	- 150	+ 670
Y SYS LO PR with B SYS supplied by the RAT (Calculated with 140kt min)	FULL	0 / 140 kt	**1 800**	+ 40	+ 160	+ 100	+ 260	+ 90	+ 90	- 120	+ 550
	3	6 / 140 kt	**1 900**	+ 60	+ 170	+ 110	+ 280	+ 90	+ 110	- 130	+ 720
G + B	3	25	**2 530**	+ 70	N/A	+ 130	+ 310	+ 120	+ 150	- 150	+ 690
G + Y	3	25	**2 730**	+ 90	N/A	+ 140	+ 320	+ 120	+ 180	INOP	+ 500
B + Y	FULL	0	**1 800**	+ 60	+ 160	+ 100	+ 260	+ 90	+ 90	- 120	+ 510
	3	6	**1 900**	+ 60	+ 170	+ 110	+ 290	+ 90	+ 110	- 130	+ 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 410m

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.

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	**1 880**	+ 40	+ 120	+ 70	+ 200	+ 70	+ 100	- 90	+ 640
	3	6	**2 050**	+ 40	+ 120	+ 80	+ 220	+ 70	+ 110	- 110	+ 820
B SYS LO PR	FULL	0	**1 760**	+ 40	+ 100	+ 70	+ 200	+ 60	+ 80	- 80	+ 650
	3	6	**1 930**	+ 40	+ 110	+ 70	+ 210	+ 70	+ 90	- 90	+ 820
Y SYS LO PR	FULL	0	**1 860**	+ 40	+ 110	+ 70	+ 210	+ 70	+ 100	- 80	+ 660
	3	6	**2 040**	+ 40	+ 120	+ 80	+ 220	+ 70	+ 110	- 100	+ 840
G SYS LO PR with B SYS supplied by the RAT (Calculated with 140kt min)	FULL	0 / 140 kt	**2 070**	+ 30	+ 120	+ 80	+ 220	+ 70	+ 120	- 130	+ 610
	3	6 / 140 kt	**2 140**	+ 40	+ 140	+ 80	+ 220	+ 80	+ 130	- 140	+ 810
Y SYS LO PR with B SYS supplied by the RAT (Calculated with 140kt min)	FULL	0 / 140 kt	**2 070**	+ 30	+ 130	+ 80	+ 220	+ 80	+ 120	- 140	+ 630
	3	6 / 140 kt	**2 170**	+ 40	+ 140	+ 80	+ 230	+ 80	+ 130	- 150	+ 830
G + B	3	25	**2 570**	+ 50	N/A	+ 100	+ 230	+ 90	+ 140	- 150	+ 830
G + Y	3	25	**2 740**	+ 60	N/A	+ 100	+ 240	+ 100	+ 170	INOP	+ 580
B + Y	FULL	0	**2 070**	+ 40	+ 130	+ 80	+ 220	+ 80	+ 120	- 140	+ 600
	3	6	**2 170**	+ 40	+ 140	+ 80	+ 230	+ 80	+ 130	- 150	+ 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 660m

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	**2 120**	+ 50	+ 130	+ 80	+ 240	+ 80	+ 140	- 120	+ 600
	3	6	**2 320**	+ 50	+ 130	+ 90	+ 250	+ 80	+ 160	- 150	+ 780
B SYS LO PR	FULL	0	**1 970**	+ 40	+ 110	+ 70	+ 230	+ 70	+ 120	- 110	+ 610
	3	6	**2 180**	+ 40	+ 120	+ 80	+ 240	+ 80	+ 140	- 130	+ 770
Y SYS LO PR	FULL	0	**2 100**	+ 40	+ 120	+ 80	+ 240	+ 80	+ 140	- 100	+ 620
	3	6	**2 310**	+ 50	+ 140	+ 90	+ 250	+ 90	+ 160	- 130	+ 790
G SYS LO PR with B SYS supplied by the RAT (Calculated with 140kt min)	FULL	0 / 140 kt	**2 330**	+ 30	+ 140	+ 90	+ 260	+ 80	+ 170	- 170	+ 570
	3	6 / 140 kt	**2 430**	+ 50	+ 150	+ 90	+ 260	+ 90	+ 180	- 190	+ 760
Y SYS LO PR with B SYS supplied by the RAT (Calculated with 140kt min)	FULL	0 / 140 kt	**2 340**	+ 30	+ 140	+ 90	+ 260	+ 90	+ 170	- 170	+ 590
	3	6 / 140 kt	**2 470**	+ 50	+ 150	+ 100	+ 270	+ 90	+ 190	- 200	+ 780
G + B	3	25	**2 900**	+ 50	N/A	+ 110	+ 270	+ 110	+ 200	- 190	+ 790
G + Y	3	25	**3 100**	+ 50	N/A	+ 120	+ 280	+ 120	+ 240	INOP	+ 550
B + Y	FULL	0	**2 340**	+ 50	+ 140	+ 90	+ 260	+ 90	+ 170	- 170	+ 560
	3	6	**2 470**	+ 50	+ 150	+ 100	+ 270	+ 90	+ 190	- 200	+ 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 860m

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.

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	**2 430**	+ 80	+ 200	+ 140	+ 410	+ 130	+ 230	- 150	+ 410
	3	6	**2 810**	+ 90	+ 220	+ 160	+ 480	+ 160	+ 300	- 190	+ 520
B SYS LO PR	FULL	0	**2 250**	+ 70	+ 170	+ 130	+ 380	+ 110	+ 180	- 120	+ 420
	3	6	**2 600**	+ 90	+ 200	+ 150	+ 430	+ 150	+ 240	- 160	+ 520
Y SYS LO PR	FULL	0	**2 430**	+ 80	+ 190	+ 140	+ 420	+ 130	+ 230	- 120	+ 430
	3	6	**2 820**	+ 90	+ 230	+ 170	+ 480	+ 160	+ 310	- 170	+ 540
G SYS LO PR with B SYS supplied by the RAT (Calculated with 140kt min)	FULL	0 / 140 kt	**2 730**	+ 70	+ 210	+ 160	+ 450	+ 150	+ 290	- 250	+ 400
	3	6 / 140 kt	**2 980**	+ 100	+ 250	+ 180	+ 510	+ 180	+ 360	- 310	+ 510
Y SYS LO PR with B SYS supplied by the RAT (Calculated with 140kt min)	FULL	0 / 140 kt	**2 780**	+ 70	+ 220	+ 160	+ 470	+ 160	+ 300	- 260	+ 420
	3	6 / 140 kt	**3 070**	+ 100	+ 260	+ 190	+ 540	+ 180	+ 390	- 340	+ 530
G + B	3	25	**3 670**	+ 100	N/A	+ 200	+ 520	+ 200	+ 410	- 310	+ 530
G + Y	3	25	**3 950**	+ 110	N/A	+ 220	+ 560	+ 220	+ 520	INOP	+ 400
B + Y	FULL	0	**2 780**	+ 90	+ 220	+ 160	+ 470	+ 160	+ 300	- 260	+ 400
	3	6	**3 070**	+ 100	+ 260	+ 190	+ 540	+ 180	+ 390	- 340	+ 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) = 2 080m

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	**4 000**	+ 80	+ 180	+ 150	+ 610	+ 190	+ 1 190	- 440	+ 410
	3	6	**4 600**	+ 90	+ 210	+ 180	+ 650	+ 220	+ 1 460	- 590	+ 520
B SYS LO PR	FULL	0	**3 690**	+ 70	+ 150	+ 140	+ 580	+ 170	+ 1 010	- 470	+ 420
	3	6	**4 260**	+ 80	+ 180	+ 170	+ 620	+ 200	+ 1 250	- 600	+ 520
Y SYS LO PR	FULL	0	**4 030**	+ 80	+ 180	+ 160	+ 610	+ 190	+ 1 210	0	+ 430
	3	6	**4 650**	+ 90	+ 200	+ 180	+ 650	+ 220	+ 1 500	- 40	+ 540
G SYS LO PR with B SYS supplied by the RAT (Calculated with 140kt min)	FULL	0 / 140 kt	**4 420**	+ 60	+ 190	+ 170	+ 640	+ 210	+ 1 380	- 50	+ 400
	3	6 / 140 kt	Landing Distance greater than 6 000 m for all conditions								
Y SYS LO PR with B SYS supplied by the RAT (Calculated with 140kt min)	FULL	0 / 140 kt	**4 550**	+ 60	+ 200	+ 180	+ 650	+ 220	+ 1 460	- 80	+ 420
	3	6 / 140 kt	Landing Distance greater than 6 000 m for all conditions								
G + B	3	25	Landing Distance greater than 6 000 m for all conditions								
G + Y	3	25	Landing Distance greater than 6 000 m for all conditions								
B + Y	FULL	0	**4 550**	+ 80	+ 190	+ 180	+ 650	+ 220	+ 1 460	- 80	+ 400
	3	6	**5 070**	+ 90	+ 240	+ 200	+ 680	+ 250	+ 1 780	- 250	+ 550

(1) Automatic Landing correction: add 230m - (2) Weight correction: subtract 10m per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 3 450m

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	**2 230**	+ 50	+ 160	+ 80	+ 220	+ 80	+ 10	- 10	+ 610
DUAL IR FAULT/ DUAL ADR FAULT/ DUAL RA FAULT	3	10	**1 280**	+ 50	+ 80	+ 50	+ 120	+ 50	+ 30	- 20	+ 880
ALL ADR OFF	3	N/A	**1 280**	+ 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 090m											

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	**2 230**	+ 50	+ 160	+ 90	+ 220	+ 80	+ 10	- 10	+ 600
DUAL IR FAULT/ DUAL ADR FAULT/ DUAL RA FAULT	3	10	**1 710**	+ 50	+ 120	+ 90	+ 240	+ 70	+ 60	- 50	+ 660
ALL ADR OFF	3	N/A	**1 710**	+ 50	+ 120	+ 90	+ 240	+ 70	+ 60	- 50	+ 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 410m											

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	**2 240**	+ 50	+ 160	+ 80	+ 230	+ 80	+ 40	- 10	+ 610
DUAL IR FAULT/ DUAL ADR FAULT/ DUAL RA FAULT	3	10	**1 940**	+ 40	+ 100	+ 70	+ 200	+ 70	+ 90	- 90	+ 760
ALL ADR OFF	3	N/A	**1 940**	+ 40	+ 100	+ 70	+ 200	+ 70	+ 90	- 90	+ 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 660m											

Continued on the next page

NAVIGATION SYSTEM

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

3 – MEDIUM											
Corrections on Landing Distance (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	**2 330**	+ 50	+ 160	+ 90	+ 250	+ 90	+ 90	- 40	+ 610
DUAL IR FAULT/ DUAL ADR FAULT/ DUAL RA FAULT	3	10	**2 190**	+ 40	+ 110	+ 80	+ 240	+ 80	+ 130	- 120	+ 720
ALL ADR OFF	3	N/A	**2 190**	+ 40	+ 110	+ 80	+ 240	+ 80	+ 130	- 120	+ 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 860m

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	**2 620**	+ 80	+ 180	+ 150	+ 420	+ 140	+ 220	- 60	+ 490
DUAL IR FAULT/ DUAL ADR FAULT/ DUAL RA FAULT	3	10	**2 620**	+ 80	+ 180	+ 150	+ 420	+ 140	+ 220	- 150	+ 490
ALL ADR OFF	3	N/A	**2 620**	+ 80	+ 180	+ 150	+ 420	+ 140	+ 220	- 150	+ 490

(1) Automatic Landing correction: add 180m - (2) Weight correction: subtract 30m per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 2 080m

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	**4 200**	+ 80	+ 160	+ 160	+ 610	+ 200	+ 1 150	- 550	+ 490
DUAL IR FAULT/ DUAL ADR FAULT/ DUAL RA FAULT	3	10	**4 200**	+ 80	+ 160	+ 160	+ 610	+ 200	+ 1 150	- 560	+ 490
ALL ADR OFF	3	N/A	**4 200**	+ 80	+ 160	+ 160	+ 610	+ 200	+ 1 150	- 560	+ 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) = 3 450m

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	**1 570**	+ 50	N/A	+ 50	+ 130	+ 50	+ 30	- 20	+ 1 390
	1≤FLAPS<2	3	15	**1 390**	+ 50	+ 80	+ 50	+ 130	+ 40	+ 30	- 20	+ 1 090
	2≤FLAPS<3	3	10	**1 300**	+ 50	+ 80	+ 50	+ 130	+ 50	+ 30	- 20	+ 1 030
	FLAPS=3	3	10	**1 280**	+ 50	+ 80	+ 50	+ 120	+ 50	+ 30	- 20	+ 880
	FLAPS>3	FULL	5	**1 190**	+ 40	+ 80	+ 50	+ 120	+ 40	+ 20	- 10	+ 660
SLATS FAULT	SLATS<1	3	25	**1 500**	+ 50	N/A	+ 50	+ 130	+ 50	+ 30	- 20	+ 680
	1≤SLATS≤3	3	10	**1 280**	+ 50	+ 80	+ 50	+ 120	+ 50	+ 30	- 20	+ 880
	SLATS>3	3	5	**1 220**	+ 50	+ 80	+ 50	+ 130	+ 40	+ 20	- 10	+ 950
FLAPS AND SLATS AT 0		1	50	**1 950**	+ 60	N/A	+ 60	+ 140	+ 60	+ 40	- 30	+ 1 050
FLAPS<1	SLATS<1	3	45	**1 870**	+ 60	N/A	+ 60	+ 130	+ 60	+ 40	- 30	+ 1 110
	SLATS≥1	3	25	**1 570**	+ 50	N/A	+ 50	+ 130	+ 50	+ 30	- 20	+ 1 390
1≤FLAPS<2	SLATS<1	3	30	**1 600**	+ 50	N/A	+ 50	+ 130	+ 50	+ 30	- 20	+ 910
	SLATS≥1	3	15	**1 390**	+ 50	+ 80	+ 50	+ 130	+ 40	+ 30	- 20	+ 1 090
2≤FLAPS<3	SLATS<1	3	25	**1 520**	+ 50	N/A	+ 50	+ 130	+ 50	+ 30	- 20	+ 830
	SLATS≥1	3	10	**1 300**	+ 50	+ 80	+ 50	+ 130	+ 50	+ 30	- 20	+ 1 030
FLAPS=3	SLATS<1	3	25	**1 500**	+ 50	N/A	+ 50	+ 120	+ 50	+ 30	- 20	+ 680
	1≤SLATS≤3	3	10	**1 290**	+ 50	+ 80	+ 50	+ 130	+ 50	+ 30	- 20	+ 870
	SLATS>3	3	5	**1 210**	+ 50	+ 80	+ 50	+ 130	+ 40	+ 30	- 10	+ 880
FLAPS>3	1≤SLATS≤3	FULL	10	**1 270**	+ 50	+ 70	+ 50	+ 130	+ 40	+ 20	- 10	+ 580
	SLATS>3	FULL	5	**1 190**	+ 40	+ 80	+ 50	+ 120	+ 40	+ 20	- 10	+ 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 090m

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.

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	**2 070**	+ 60	N/A	+ 110	+ 270	+ 100	+ 90	- 80	+ 1 070
	1≤FLAPS<2	3	15	**1 830**	+ 60	+ 130	+ 100	+ 250	+ 90	+ 70	- 60	+ 820
	2≤FLAPS<3	3	10	**1 720**	+ 60	+ 130	+ 90	+ 250	+ 80	+ 70	- 50	+ 770
	FLAPS=3	3	10	**1 720**	+ 60	+ 130	+ 90	+ 250	+ 70	+ 70	- 50	+ 650
	FLAPS>3	FULL	5	**1 560**	+ 50	+ 110	+ 80	+ 220	+ 70	+ 60	- 40	+ 490
SLATS FAULT	SLATS<1	3	25	**2 000**	+ 60	N/A	+ 100	+ 240	+ 90	+ 80	- 70	+ 500
	1≤SLATS≤3	3	10	**1 710**	+ 50	+ 120	+ 90	+ 240	+ 70	+ 60	- 50	+ 660
	SLATS>3	3	5	**1 620**	+ 50	+ 120	+ 80	+ 230	+ 70	+ 60	- 40	+ 720
FLAPS AND SLATS AT 0		1	50	**2 680**	+ 70	N/A	+ 140	+ 310	+ 130	+ 110	- 120	+ 770
FLAPS<1	SLATS<1	3	45	**2 560**	+ 70	N/A	+ 140	+ 300	+ 130	+ 110	- 110	+ 820
	SLATS≥1	3	25	**2 070**	+ 60	N/A	+ 110	+ 270	+ 100	+ 90	- 80	+ 1 070
1≤FLAPS<2	SLATS<1	3	30	**2 140**	+ 60	N/A	+ 110	+ 260	+ 90	+ 80	- 80	+ 660
	SLATS≥1	3	15	**1 830**	+ 60	+ 130	+ 100	+ 250	+ 90	+ 70	- 60	+ 820
2≤FLAPS<3	SLATS<1	3	25	**2 010**	+ 60	N/A	+ 100	+ 250	+ 90	+ 80	- 70	+ 600
	SLATS≥1	3	10	**1 720**	+ 60	+ 130	+ 90	+ 250	+ 80	+ 70	- 50	+ 770
FLAPS=3	SLATS<1	3	25	**2 020**	+ 60	N/A	+ 100	+ 250	+ 90	+ 80	- 70	+ 490
	1≤SLATS≤3	3	10	**1 720**	+ 60	+ 130	+ 90	+ 240	+ 80	+ 70	- 50	+ 640
	SLATS>3	3	5	**1 620**	+ 50	+ 130	+ 90	+ 240	+ 70	+ 70	- 50	+ 650
FLAPS>3	1≤SLATS≤3	FULL	10	**1 660**	+ 50	+ 110	+ 80	+ 230	+ 70	+ 60	- 50	+ 430
	SLATS>3	FULL	5	**1 560**	+ 50	+ 110	+ 80	+ 220	+ 70	+ 60	- 40	+ 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 410m

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.

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	**2 290**	+ 40	N/A	+ 80	+ 210	+ 80	+ 110	- 130	+ 1 260
	1≤FLAPS<2	3	15	**2 090**	+ 40	+ 100	+ 80	+ 210	+ 70	+ 100	- 120	+ 970
	2≤FLAPS<3	3	10	**1 980**	+ 40	+ 110	+ 70	+ 210	+ 70	+ 100	- 110	+ 900
	FLAPS=3	3	10	**1 980**	+ 40	+ 110	+ 70	+ 210	+ 70	+ 100	- 110	+ 760
	FLAPS>3	FULL	5	**1 820**	+ 40	+ 100	+ 70	+ 200	+ 70	+ 90	- 90	+ 570
SLATS FAULT	SLATS<1	3	25	**2 210**	+ 40	N/A	+ 80	+ 200	+ 70	+ 90	- 100	+ 590
	1≤SLATS≤3	3	10	**1 940**	+ 40	+ 100	+ 70	+ 200	+ 70	+ 90	- 90	+ 760
	SLATS>3	3	5	**1 870**	+ 40	+ 100	+ 70	+ 200	+ 60	+ 90	- 90	+ 830
FLAPS AND SLATS AT 0		1	50	**2 790**	+ 40	N/A	+ 100	+ 230	+ 90	+ 120	- 170	+ 960
FLAPS<1	SLATS<1	3	45	**2 690**	+ 40	N/A	+ 100	+ 230	+ 90	+ 120	- 160	+ 1 010
	SLATS≥1	3	25	**2 290**	+ 40	N/A	+ 80	+ 210	+ 80	+ 110	- 130	+ 1 260
1≤FLAPS<2	SLATS<1	3	30	**2 350**	+ 40	N/A	+ 90	+ 220	+ 80	+ 100	- 140	+ 800
	SLATS≥1	3	15	**2 090**	+ 40	+ 100	+ 80	+ 210	+ 70	+ 100	- 120	+ 970
2≤FLAPS<3	SLATS<1	3	25	**2 240**	+ 40	N/A	+ 80	+ 210	+ 80	+ 100	- 130	+ 730
	SLATS≥1	3	10	**1 980**	+ 40	+ 110	+ 70	+ 210	+ 70	+ 100	- 110	+ 900
FLAPS=3	SLATS<1	3	25	**2 250**	+ 40	N/A	+ 80	+ 210	+ 80	+ 100	- 130	+ 590
	1≤SLATS≤3	3	10	**1 990**	+ 40	+ 110	+ 70	+ 210	+ 70	+ 100	- 110	+ 760
	SLATS>3	3	5	**1 900**	+ 40	+ 100	+ 70	+ 210	+ 60	+ 90	- 100	+ 760
FLAPS>3	1≤SLATS≤3	FULL	10	**1 910**	+ 40	+ 100	+ 70	+ 210	+ 70	+ 90	- 100	+ 500
	SLATS>3	FULL	5	**1 820**	+ 40	+ 100	+ 70	+ 200	+ 70	+ 90	- 90	+ 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 660m

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	**2 640**	+ 50	N/A	+ 100	+ 260	+ 90	+ 160	- 200	+ 1 200
	1≤FLAPS<2	3	15	**2 380**	+ 40	+ 120	+ 90	+ 250	+ 90	+ 150	- 170	+ 920
	2≤FLAPS<3	3	10	**2 260**	+ 40	+ 120	+ 90	+ 250	+ 80	+ 150	- 160	+ 850
	FLAPS=3	3	10	**2 260**	+ 40	+ 110	+ 90	+ 260	+ 80	+ 150	- 160	+ 710
	FLAPS>3	FULL	5	**2 060**	+ 40	+ 100	+ 80	+ 240	+ 70	+ 130	- 140	+ 530
SLATS FAULT	SLATS<1	3	25	**2 470**	+ 50	N/A	+ 90	+ 240	+ 90	+ 130	- 140	+ 560
	1≤SLATS≤3	3	10	**2 190**	+ 40	+ 110	+ 80	+ 240	+ 80	+ 130	- 120	+ 720
	SLATS>3	3	5	**2 100**	+ 40	+ 110	+ 80	+ 230	+ 80	+ 120	- 120	+ 780
FLAPS AND SLATS AT 0		1	50	**3 200**	+ 50	N/A	+ 120	+ 280	+ 110	+ 190	- 250	+ 910
FLAPS<1	SLATS<1	3	45	**3 100**	+ 50	N/A	+ 120	+ 280	+ 100	+ 180	- 240	+ 960
	SLATS≥1	3	25	**2 640**	+ 50	N/A	+ 100	+ 260	+ 90	+ 160	- 200	+ 1 200
1≤FLAPS<2	SLATS<1	3	30	**2 670**	+ 50	N/A	+ 100	+ 260	+ 90	+ 160	- 200	+ 760
	SLATS≥1	3	15	**2 380**	+ 40	+ 120	+ 90	+ 250	+ 90	+ 150	- 170	+ 920
2≤FLAPS<3	SLATS<1	3	25	**2 550**	+ 40	N/A	+ 100	+ 250	+ 80	+ 150	- 180	+ 680
	SLATS≥1	3	10	**2 260**	+ 40	+ 120	+ 90	+ 250	+ 80	+ 150	- 160	+ 850
FLAPS=3	SLATS<1	3	25	**2 550**	+ 40	N/A	+ 100	+ 250	+ 90	+ 150	- 190	+ 550
	1≤SLATS≤3	3	10	**2 260**	+ 40	+ 120	+ 90	+ 250	+ 80	+ 150	- 160	+ 710
	SLATS>3	3	5	**2 160**	+ 40	+ 120	+ 80	+ 250	+ 80	+ 140	- 150	+ 710
FLAPS>3	1≤SLATS≤3	FULL	10	**2 150**	+ 40	+ 110	+ 80	+ 240	+ 80	+ 130	- 140	+ 470
	SLATS>3	FULL	5	**2 060**	+ 40	+ 100	+ 80	+ 240	+ 70	+ 130	- 140	+ 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 860m

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	**3 580**	+ 100	N/A	+ 220	+ 580	+ 200	+ 410	- 320	+ 760
	1≤FLAPS<2	3	15	**2 990**	+ 90	+ 200	+ 180	+ 500	+ 160	+ 300	- 230	+ 570
	2≤FLAPS<3	3	10	**2 760**	+ 90	+ 200	+ 170	+ 480	+ 150	+ 270	- 200	+ 530
	FLAPS=3	3	10	**2 720**	+ 90	+ 190	+ 160	+ 470	+ 140	+ 260	- 200	+ 450
	FLAPS>3	FULL	5	**2 370**	+ 70	+ 160	+ 130	+ 410	+ 120	+ 200	- 150	+ 350
SLATS FAULT	SLATS<1	3	25	**3 030**	+ 90	N/A	+ 160	+ 420	+ 150	+ 240	- 200	+ 400
	1≤SLATS≤3	3	10	**2 620**	+ 80	+ 180	+ 150	+ 420	+ 140	+ 220	- 150	+ 490
	SLATS>3	3	5	**2 490**	+ 80	+ 180	+ 140	+ 420	+ 130	+ 210	- 140	+ 520
FLAPS AND SLATS AT 0		1	50	**4 540**	+ 110	N/A	+ 260	+ 620	+ 230	+ 500	- 470	+ 590
FLAPS<1	SLATS<1	3	45	**4 370**	+ 110	N/A	+ 250	+ 620	+ 230	+ 490	- 440	+ 620
	SLATS≥1	3	25	**3 580**	+ 100	N/A	+ 220	+ 580	+ 200	+ 410	- 320	+ 760
1≤FLAPS<2	SLATS<1	3	30	**3 440**	+ 90	N/A	+ 190	+ 510	+ 180	+ 330	- 290	+ 490
	SLATS≥1	3	15	**2 990**	+ 90	+ 200	+ 180	+ 500	+ 160	+ 300	- 230	+ 570
2≤FLAPS<3	SLATS<1	3	25	**3 200**	+ 90	N/A	+ 180	+ 490	+ 160	+ 300	- 260	+ 440
	SLATS≥1	3	10	**2 760**	+ 90	+ 200	+ 170	+ 480	+ 150	+ 270	- 200	+ 530
FLAPS=3	SLATS<1	3	25	**3 150**	+ 90	N/A	+ 170	+ 470	+ 160	+ 280	- 250	+ 380
	1≤SLATS≤3	3	10	**2 720**	+ 90	+ 200	+ 160	+ 470	+ 150	+ 260	- 200	+ 450
	SLATS>3	3	5	**2 570**	+ 80	+ 190	+ 150	+ 470	+ 140	+ 250	- 180	+ 450
FLAPS>3	1≤SLATS≤3	FULL	10	**2 500**	+ 80	+ 160	+ 140	+ 410	+ 120	+ 200	- 170	+ 320
	SLATS>3	FULL	5	**2 370**	+ 70	+ 160	+ 130	+ 410	+ 120	+ 200	- 150	+ 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) = 2 080m

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	Landing Distance greater than 6 000 m for all conditions								
	1≤FLAPS<2	3	15	Landing Distance greater than 6 000 m for all conditions								
	2≤FLAPS<3	3	10	Landing Distance greater than 6 000 m for all conditions								
	FLAPS=3	3	10	Landing Distance greater than 6 000 m for all conditions								
	FLAPS>3	FULL	5	Landing Distance greater than 6 000 m for all conditions								
SLATS FAULT	SLATS<1	3	25	**4 600**	+ 80	N/A	+ 180	+ 610	+ 210	+ 1 150	- 600	+ 440
	1≤SLATS≤3	3	10	**4 200**	+ 80	+ 160	+ 160	+ 610	+ 200	+ 1 150	- 560	+ 550
	SLATS>3	3	5	**4 070**	+ 80	+ 170	+ 160	+ 610	+ 190	+ 1 150	- 550	+ 590
FLAPS AND SLATS AT 0		1	50	Landing Distance greater than 6 000 m for all conditions								
FLAPS<1	SLATS<1	3	45	Landing Distance greater than 6 000 m for all conditions								
	SLATS≥1	3	25	Landing Distance greater than 6 000 m for all conditions								
1≤FLAPS<2	SLATS<1	3	30	Landing Distance greater than 6 000 m for all conditions								
	SLATS≥1	3	15	Landing Distance greater than 6 000 m for all conditions								
2≤FLAPS<3	SLATS<1	3	25	Landing Distance greater than 6 000 m for all conditions								
	SLATS≥1	3	10	Landing Distance greater than 6 000 m for all conditions								
FLAPS=3	SLATS<1	3	25	Landing Distance greater than 6 000 m for all conditions								
	1≤SLATS≤3	3	10	Landing Distance greater than 6 000 m for all conditions								
	SLATS>3	3	5	Landing Distance greater than 6 000 m for all conditions								
FLAPS>3	1≤SLATS≤3	FULL	10	Landing Distance greater than 6 000 m for all conditions								
	SLATS>3	FULL	5	Landing Distance greater than 6 000 m for all conditions								

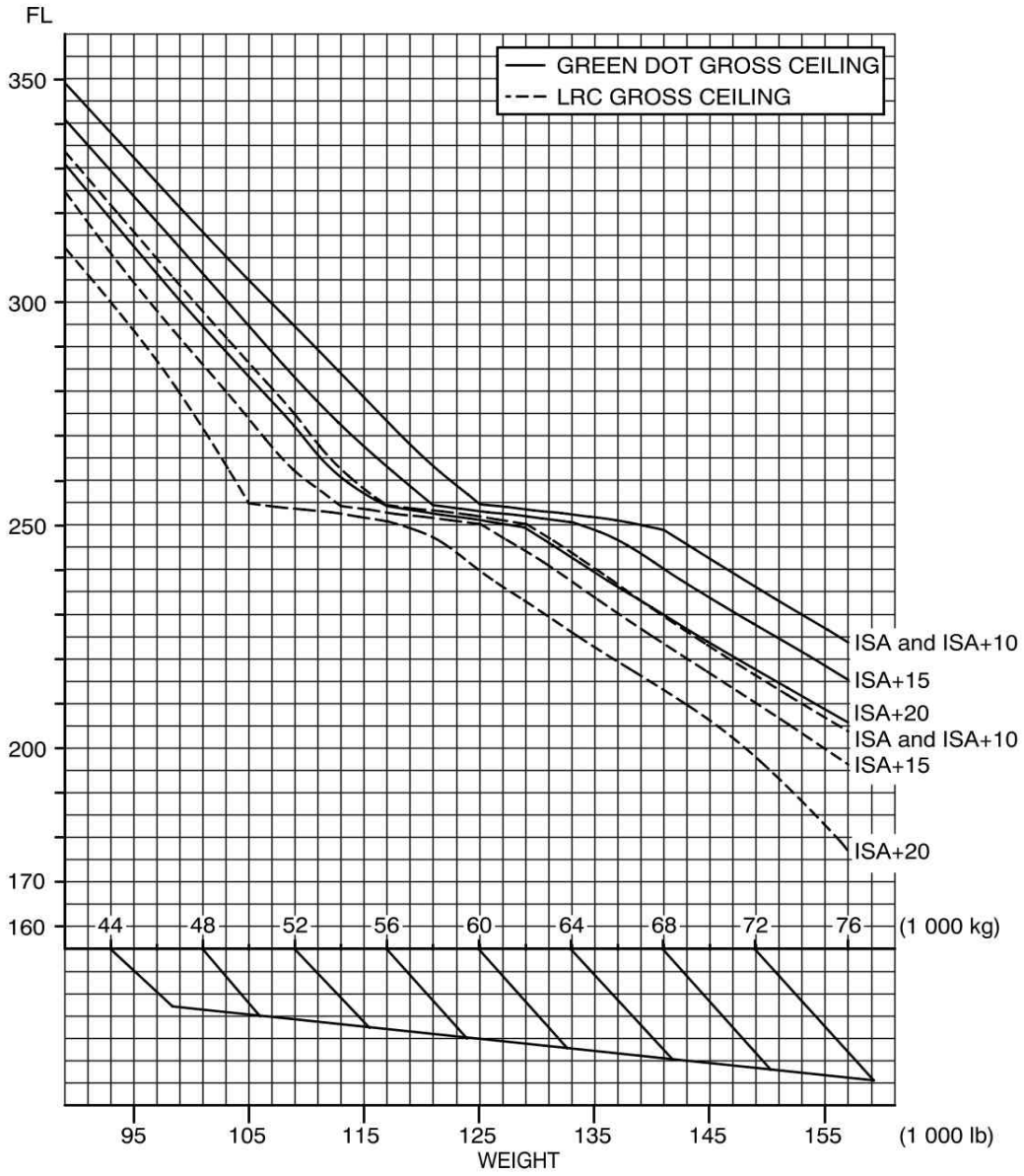
(1) Automatic Landing correction: add 170m - (2) Weight correction: subtract 40m per 1T below 66T

REF DIST without failure (valid for all FLAPS LEVER positions) = 2 880m

CEILINGS

ONE ENGINE OUT

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



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

GROSS FLIGHT PATH DESCENT AT GREEN DOT SPEED

ONE ENGINE OUT

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

MAX. CONTINUOUS THRUST
PACK FLOW HI
ANTI-ICING OFF

ISA
CG = 33.0%

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

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

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

CRUISE AT LONG RANGE CRUISE SPEED

ONE ENGINE OUT

LONG RANGE CRUISE – 1 ENGINE OUT												
MAX. CONTINUOUS THRUST LIMITS PACK FLOW HI ANTI-ICING OFF					ISA CG = 33.0%		**N1 (%)** **FUEL FLOW (KG/H)**					**MACH** **IAS (KT)**
WEIGHT (1000 KG)	**FL100**		**FL150**		**FL190**		**FL210**		**FL230**		**FL250**	
50	75.5 1891	.453 251	79.5 1848	.492 248	82.2 1802	.520 242	83.3 1778	.533 238	84.7 1771	.549 236	85.8 1750	.560 231
52	76.7 1967	.463 256	80.5 1915	.500 252	82.9 1856	.524 244	84.3 1851	.541 242	85.5 1833	.554 238	86.7 1825	.567 234
54	77.8 2041	.471 261	81.4 1983	.507 255	83.8 1925	.532 248	85.2 1920	.548 246	86.2 1896	.558 240	87.4 1880	.568 235
56	78.9 2112	.479 265	82.4 2049	.514 259	84.6 1996	.539 251	85.9 1983	.553 248	87.0 1969	.565 243	88.4 1975	.577 238
58	79.7 2175	.485 268	83.1 2107	.519 261	85.5 2068	.546 255	86.5 2045	.557 250	87.7 2035	.569 245	89.5 2075	.586 242
60	80.4 2233	.490 271	83.7 2160	.522 263	86.2 2132	.551 257	87.2 2112	.562 252	88.4 2100	.571 246	90.6 2178	.595 246
62	81.1 2292	.495 274	84.3 2219	.527 266	86.8 2194	.555 259	88.0 2190	.569 255	89.6 2211	.583 251	92.1 2302	.610 253
64	82.0 2363	.502 278	85.0 2289	.533 269	87.4 2258	.559 261	88.6 2247	.570 256	90.5 2306	.590 254	92.4 2323	.601 249
66	82.8 2431	.508 281	85.8 2361	.539 272	88.1 2330	.564 264	89.4 2327	.575 258	91.5 2413	.599 258	92.6 2315	.582 241
68	83.6 2499	.514 284	86.5 2434	.545 275	88.8 2406	.570 266	90.3 2434	.584 263	92.7 2523	.609 263		
70	84.3 2563	.519 287	87.2 2503	.550 278	89.3 2463	.571 267	91.2 2529	.591 266	93.1 2547	.601 260		
72	84.8 2619	.522 289	87.7 2566	.554 280	90.0 2546	.576 269	92.2 2638	.599 269	93.3 2543	.585 252		
74	85.3 2672	.524 291	88.2 2628	.557 281	91.0 2657	.585 274	93.3 2752	.609 274	93.5 2524	.554 238		
76	85.8 2731	.528 293	88.8 2695	.561 283	91.8 2754	.591 277	93.6 2778	.603 271				
78	86.4 2802	.533 295	89.3 2766	.565 286	92.6 2861	.598 280	93.9 2784	.591 265				
ENGINE ANTI ICE ON ΔFUEL = + 3.5 %							**TOTAL ANTI ICE ON** ΔFUEL = + 7 %					

IN CRUISE QUICK CHECK LONG RANGE

ONE ENGINE OUT

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

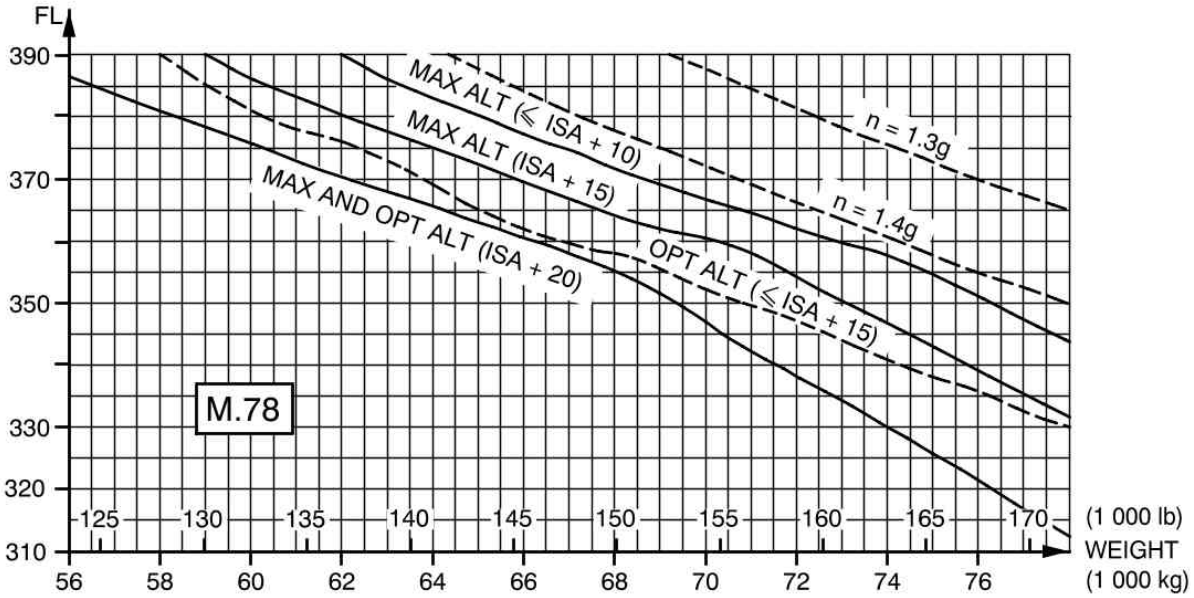
REF. INITIAL WEIGHT = 55000 KG PACK FLOW HI ANTI-ICING OFF	ISA CG = 33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

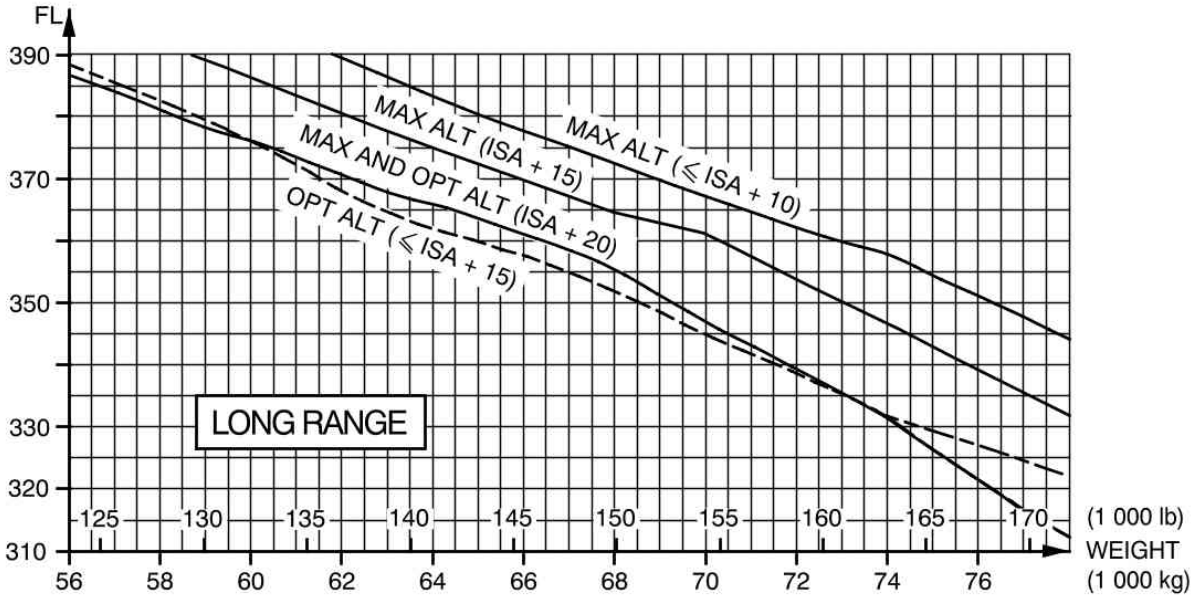
AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000 KG)		
	100	**150**	**200**	**220**	**240**	**250**	**FL100 FL150**	**FL200 FL220**	**FL240 FL250**
200	1379 0.46	1188 0.44	1061 0.42	1017 0.42	978 0.41	961 0.41	9	7	8
300	2055 1.06	1811 1.03	1641 1.01	1583 1.00	1533 0.59	1511 0.59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

ENGINE ANTI ICE ON	**TOTAL ANTI ICE ON**
ΔFUEL = + 2.5 %	ΔFUEL = + 5 %

OPTIMUM & MAXIMUM ALTITUDES

ALL ENGINES





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

IN CRUISE QUICK CHECK AT A GIVEN MACH NUMBER

ALL ENGINES

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

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

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000 KG)		
	290	**310**	**330**	**350**	**370**	**390**	**FL290 FL310**	**FL330 FL350**	**FL370 FL390**
200	974 0.35	915 0.35	863 0.36	818 0.36	782 0.36	758 0.36	0	1	4
400	2147 1.01	2023 1.02	1913 1.02	1822 1.03	1756 1.03	1727 1.03	5	9	16
600	3315 1.27	3124 1.28	2957 1.28	2818 1.29	2720 1.29	2682 1.29	10	16	33
800	4477 1.53	4218 1.54	3993 1.55	3806 1.56	3674 1.56	3622 1.56	15	23	45
1000	5634 2.19	5306 2.20	5023 2.21	4787 2.22	4617 2.23	4549 2.23	20	30	56
1200	6786 2.45	6387 2.46	6045 2.48	5759 2.49	5551 2.50	5463 2.50	24	37	67
1400	7933 3.11	7464 3.13	7062 3.14	6724 3.16	6475 3.17	6365 3.17	29	43	77
1600	9076 3.37	8537 3.39	8075 3.41	7683 3.42	7395 3.43	7256 3.43	33	49	86
1800	10214 4.03	9604 4.05	9081 4.07	8636 4.09	8302 4.10	8135 4.10	34	54	95
2000	11347 4.29	10665 4.31	10083 4.33	9582 4.36	9203 4.37	9004 4.37	41	60	103
2200	12475 4.55	11721 4.57	11078 5.00	10521 5.02	10098 5.04	9863 5.04	45	65	111
2400	13599 5.21	12775 5.23	12068 5.26	11454 5.29	10984 5.31	10711 5.31	49	70	118
2600	14718 5.47	13824 5.50	13052 5.53	12382 5.56	11863 5.57	11550 5.57	52	74	125
2800	15833 6.13	14869 6.16	14030 6.19	13305 6.22	12739 6.24	12382 6.24	55	79	131
3000	16944 6.39	15909 6.42	15002 6.45	14222 6.49	13608 6.51	13211 6.51	58	83	137

LOW AIR CONDITIONING	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
ΔFUEL = - 0.5 %	ΔFUEL = + 3 %	ΔFUEL = + 6 %

COST INDEX FOR LONG RANGE CRUISE SPEED

ALL ENGINES

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

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

STANDARD DESCENT

ALL ENGINES

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

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

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 (4 MIN)

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						CORRECTION ON FUEL CONSUMPTION (KG/1000 KG)		
	100	**150**	**200**	**250**	**290**	**330**	**FL100 FL150**	**FL200 FL250**	**FL290 FL330**
40	522 0.12						2		
60	677 0.16	663 0.16					3		
80	831 0.19	801 0.16					5		
100	986 0.23	940 0.23	937 0.22				6	6	
120	1141 0.27	1078 0.26	1061 0.26	1073 0.25			7	7	
140	1296 0.31	1217 0.30	1186 0.29	1187 0.28			8	8	
160	1451 0.35	1356 0.33	1310 0.33	1301 0.31	1312 0.30		9	9	10
180	1607 0.38	1495 0.37	1435 0.36	1415 0.34	1417 0.33	1429 0.33	10	10	11
200	1762 0.42	1634 0.40	1559 0.40	1529 0.38	1523 0.36	1528 0.36	11	11	13
220	1918 0.46	1774 0.44	1684 0.43	1644 0.41	1629 0.39	1628 0.38	12	12	14
240	2074 0.50	1913 0.47	1809 0.47	1758 0.44	1735 0.42	1727 0.41	13	13	15
260	2231 0.53	2053 0.51	1934 0.50	1872 0.47	1841 0.45	1827 0.44	14	14	16
280	2387 0.57	2193 0.54	2060 0.53	1987 0.50	1948 0.48	1927 0.47	15	15	17
300	2544 1.01	2332 0.58	2185 0.57	2102 0.53	2054 0.51	2027 0.50	16	16	18
320	2700 1.04	2473 1.01	2310 1.00	2217 0.57	2161 0.54	2127 0.53	17	17	19

LOW AIR CONDITIONING	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
ΔFUEL = - 1 %	ΔFUEL = + 5 %	ΔFUEL = + 7 %

Continued on the next page

QUICK DETERMINATION TABLE
OF ALTERNATE FLIGHT PLANNING (CONT'D)

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 (4 MIN)

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						CORRECTION ON FUEL CONSUMPTION (KG/1000 KG)		
	100	**150**	**200**	**250**	**290**	**330**	**FL100 FL150**	**FL200 FL250**	**FL290 FL330**
340	2857 1.08	2613 1.05	2436 1.04	2332 1.00	2267 0.57	2227 0.56	18	18	20
360	3014 1.12	2753 1.08	2562 1.07	2447 1.03	2374 1.00	2327 0.58	19	20	21
380	3170 1.16	2893 1.12	2688 1.11	2562 1.06	2481 1.03	2427 1.01	20	21	22
400	3328 1.19	3033 1.15	2814 1.14	2678 1.09	2587 1.06	2528 1.04	21	22	23
420	3485 1.23	3174 1.19	2940 1.18	2793 1.12	2694 1.09	2628 1.07	22	23	24
440	3642 1.27	3314 1.22	3066 1.21	2909 1.15	2802 1.12	2729 1.10	23	24	25
460	3800 1.30	3455 1.26	3192 1.24	3024 1.19	2909 1.15	2830 1.13	24	25	26
480	3957 1.34	3595 1.29	3319 1.28	3140 1.22	3016 1.18	2930 1.16	25	26	27
500	4115 1.38	3736 1.33	3446 1.31	3256 1.25	3123 1.21	3031 1.18	26	27	28

LOW AIR CONDITIONING	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
ΔFUEL = - 1 %	ΔFUEL = + 5 %	ΔFUEL = + 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 (6 MIN)

FL100

NORMAL AIR CONDITIONING ANTI-ICING OFF	ISA CG = 25.0%	FUEL CONSUMED (KG) TIME (H.MIN)

AIR DIST. (NM)	INITIAL WEIGHT (1000 KG)						
	50	**55**	**60**	**65**	**70**	**75**	**80**
40	312 0.15	310 0.15	309 0.15	310 0.15	311 0.15	314 0.15	318 0.15
60	458 0.19	463 0.19	467 0.18	472 0.18	478 0.18	485 0.18	493 0.18
80	604 0.23	616 0.22	625 0.22	634 0.22	644 0.22	655 0.21	667 0.21
100	750 0.28	768 0.26	783 0.26	797 0.25	811 0.25	825 0.25	841 0.25
120	896 0.32	921 0.30	940 0.29	959 0.29	977 0.28	995 0.28	1015 0.28
140	1041 0.36	1073 0.34	1098 0.33	1121 0.32	1143 0.32	1165 0.32	1189 0.32
160	1186 0.41	1225 0.38	1255 0.37	1283 0.36	1309 0.35	1335 0.35	1363 0.35
180	1331 0.45	1377 0.42	1413 0.40	1444 0.39	1475 0.39	1504 0.38	1537 0.38
200	1476 0.50	1529 0.46	1570 0.44	1606 0.43	1640 0.42	1674 0.42	1710 0.42
220	1621 0.54	1680 0.50	1727 0.48	1767 0.46	1806 0.46	1843 0.45	1883 0.45
240	1765 0.58	1831 0.54	1884 0.51	1928 0.50	1971 0.49	2012 0.49	2056 0.48
260	1910 1.03	1982 0.58	2040 0.55	2090 0.54	2136 0.52	2181 0.52	2229 0.52
280	2054 1.07	2133 1.02	2197 0.59	2251 0.57	2302 0.56	2350 0.55	2402 0.55
300	2198 1.11	2284 1.06	2353 1.03	2411 1.01	2467 0.59	2519 0.59	2575 0.59
320	2341 1.16	2434 1.10	2510 1.06	2572 1.04	2632 1.03	2687 1.02	2748 1.02

AIR CONDITIONING OFF	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
ΔFUEL = - 2.5 %	ΔFUEL = + 5 %	ΔFUEL = + 9 %

Continued on the next page

IN CRUISE QUICK CHECK FL 100 LONG RANGE (CONT'D)

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

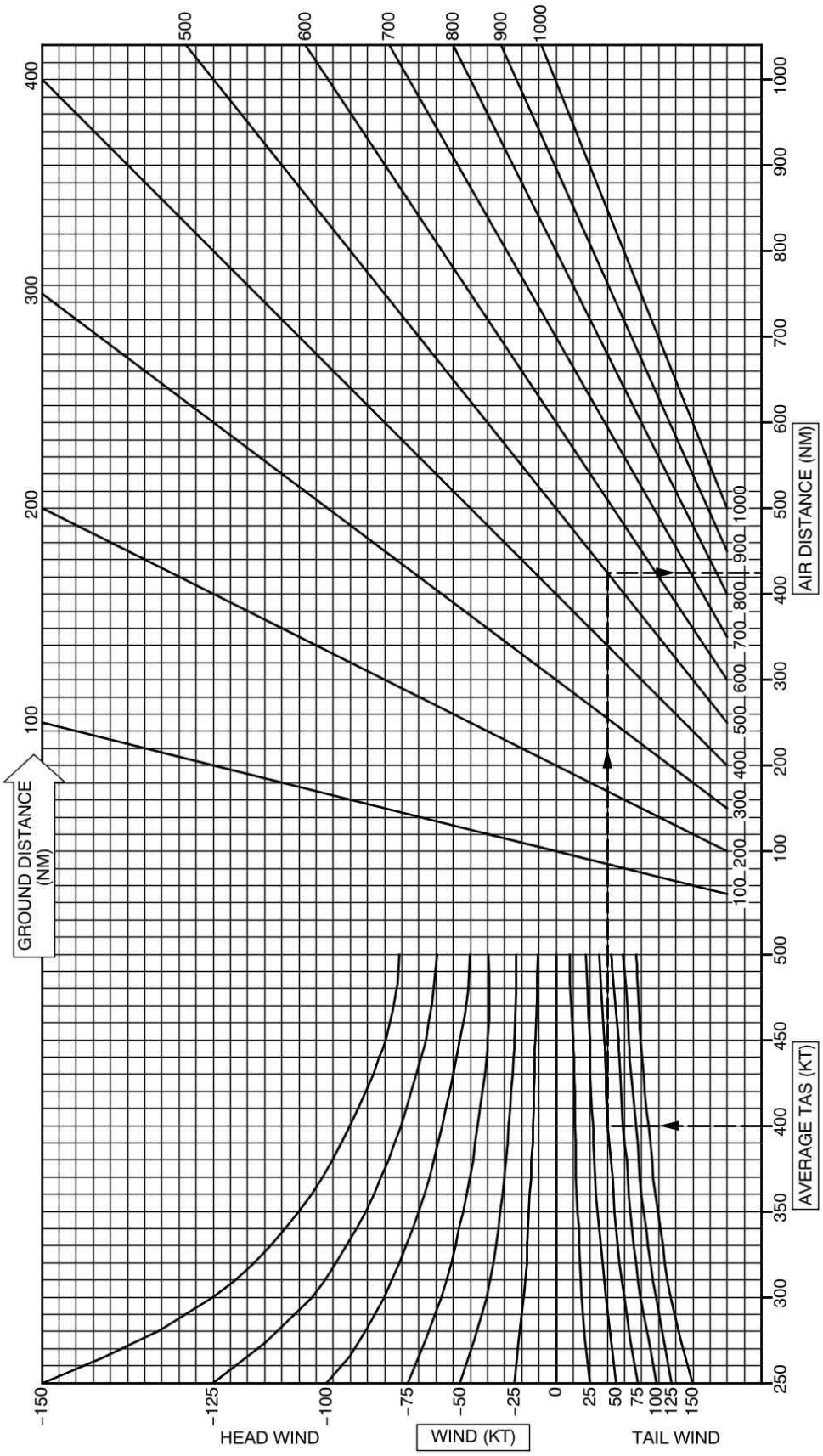
FL100

NORMAL AIR CONDITIONING ANTI-ICING OFF	ISA CG = 25.0%	FUEL CONSUMED (KG) TIME (H.MIN)

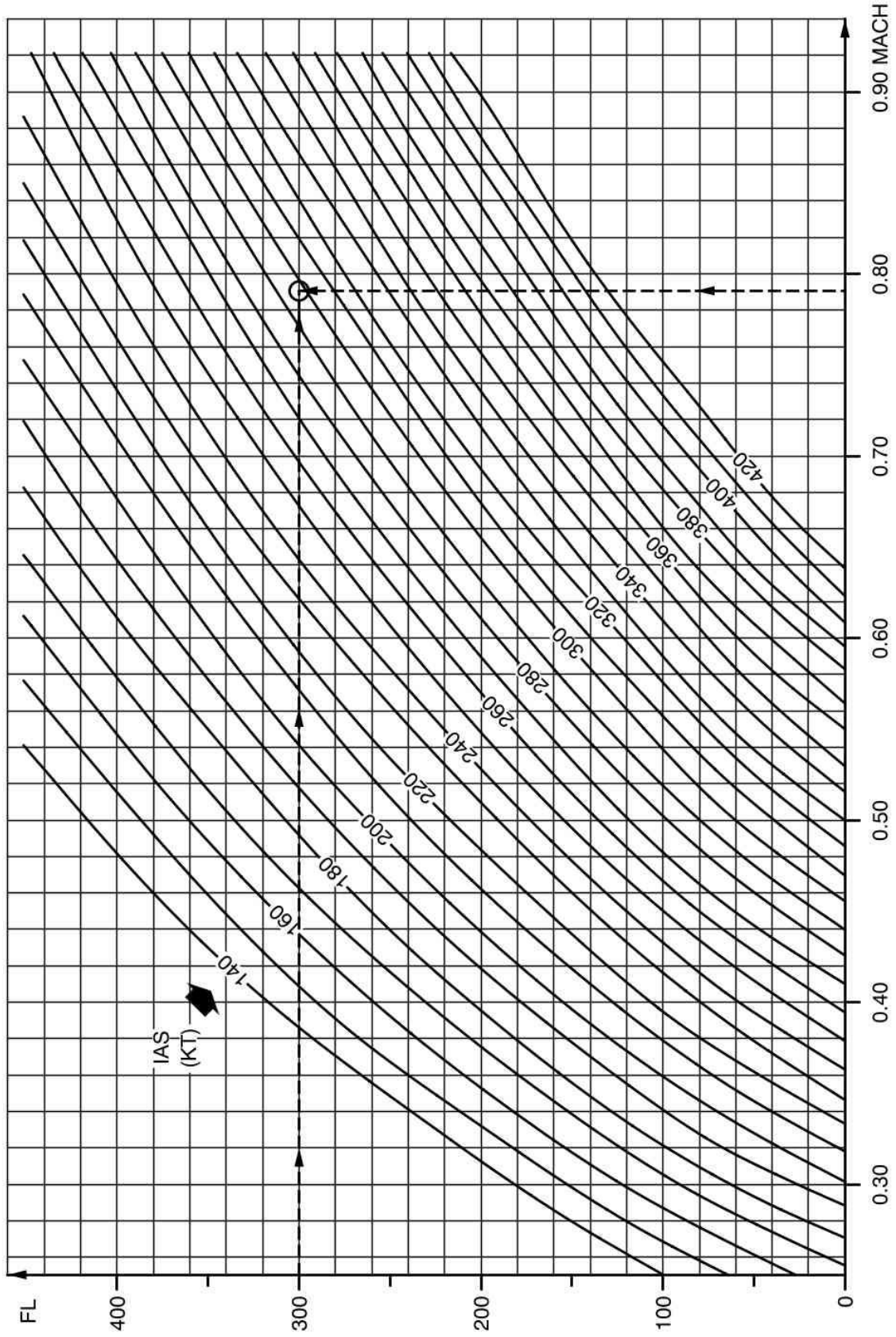
AIR DIST. (NM)	INITIAL WEIGHT (1000 KG)						
	50	**55**	**60**	**65**	**70**	**75**	**80**
340	2485 1.20	2585 1.14	2666 1.10	2733 1.08	2796 1.06	2856 1.06	2920 1.05
360	2628 1.25	2735 1.19	2822 1.14	2893 1.11	2961 1.10	3024 1.09	3093 1.09
380	2771 1.29	2885 1.23	2978 1.17	3053 1.15	3125 1.13	3193 1.12	3265 1.12
400	2914 1.33	3034 1.27	3133 1.21	3213 1.18	3290 1.17	3361 1.16	3437 1.15
420	3057 1.38	3184 1.31	3289 1.25	3373 1.22	3454 1.20	3529 1.19	3609 1.19
440	3199 1.42	3333 1.35	3444 1.29	3533 1.26	3618 1.23	3697 1.22	3780 1.22
460	3342 1.47	3482 1.40	3600 1.32	3693 1.29	3782 1.27	3865 1.26	3952 1.26
480	3484 1.51	3631 1.44	3755 1.36	3852 1.33	3946 1.30	4033 1.29	4124 1.29
500	3626 1.56	3780 1.48	3910 1.40	4012 1.36	4110 1.34	4200 1.33	4295 1.32
520	3768 2.00	3928 1.52	4065 1.44	4171 1.40	4273 1.37	4368 1.36	4466 1.36
540	3909 2.05	4077 1.57	4219 1.47	4330 1.44	4437 1.41	4535 1.39	4637 1.39

AIR CONDITIONING OFF	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
ΔFUEL = - 2.5 %	ΔFUEL = + 5 %	ΔFUEL = + 9 %

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

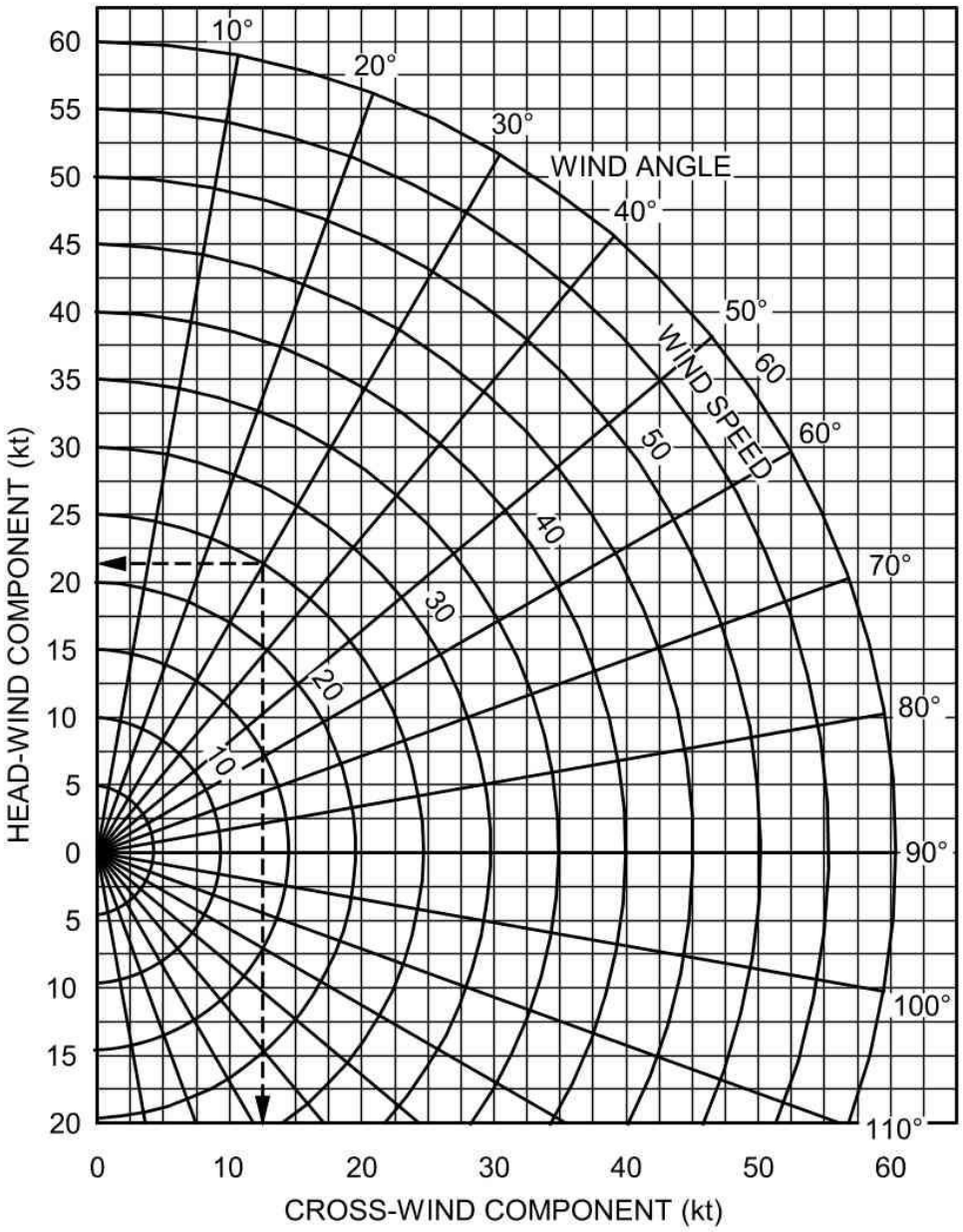
QNH (hPa)	CORRECTION (ft)	QNH (in Hg)
949 – 951	+ 1 900	28.01 – 28.10
952 – 955	+ 1 800	28.11 – 28.20
956 – 958	+ 1 700	28.21 – 28.30
959 – 961	+ 1 600	28.31 – 28.40
962 – 964	+ 1 500	28.41 – 28.45
965 – 968	+ 1 400	28.46 – 28.56
969 – 971	+ 1 300	28.57 – 28.67
972 – 974	+ 1 200	28.68 – 28.77
975 – 978	+ 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	165	110	106
44	122	159	173	115	111
48	128	166	181	120	116
52	133	173	189	125	121
56	138	179	197	130	125
60	143	185	205	135	130
64	148	192	213	139	134
68	152	197	221	143	138
72	157	203	229	147	142
76	161	209	237	151	146
78	163	211	241	153	148

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

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

USE OF FUEL PENALTY FACTOR TABLES

USE OF THE FUEL PENALTY FACTORS

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

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

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

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

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

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

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

METHODOLOGY

The methodology is the following:

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

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

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

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

Note: *Due to previous failures in flight or dispatch under MEL, some failures could have an impact on the fuel consumption:*

- *Without being mentioned in the ECAM ALERT table (only through INOP SYS table), or*
- *If mentioned in the ECAM ALERT table, with additional INOP SYS (other than the one(s) described in the FUEL CRITICAL INOP SYS column for this specific ECAM alert) impacting also the fuel consumption.*

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.	8 %
			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.

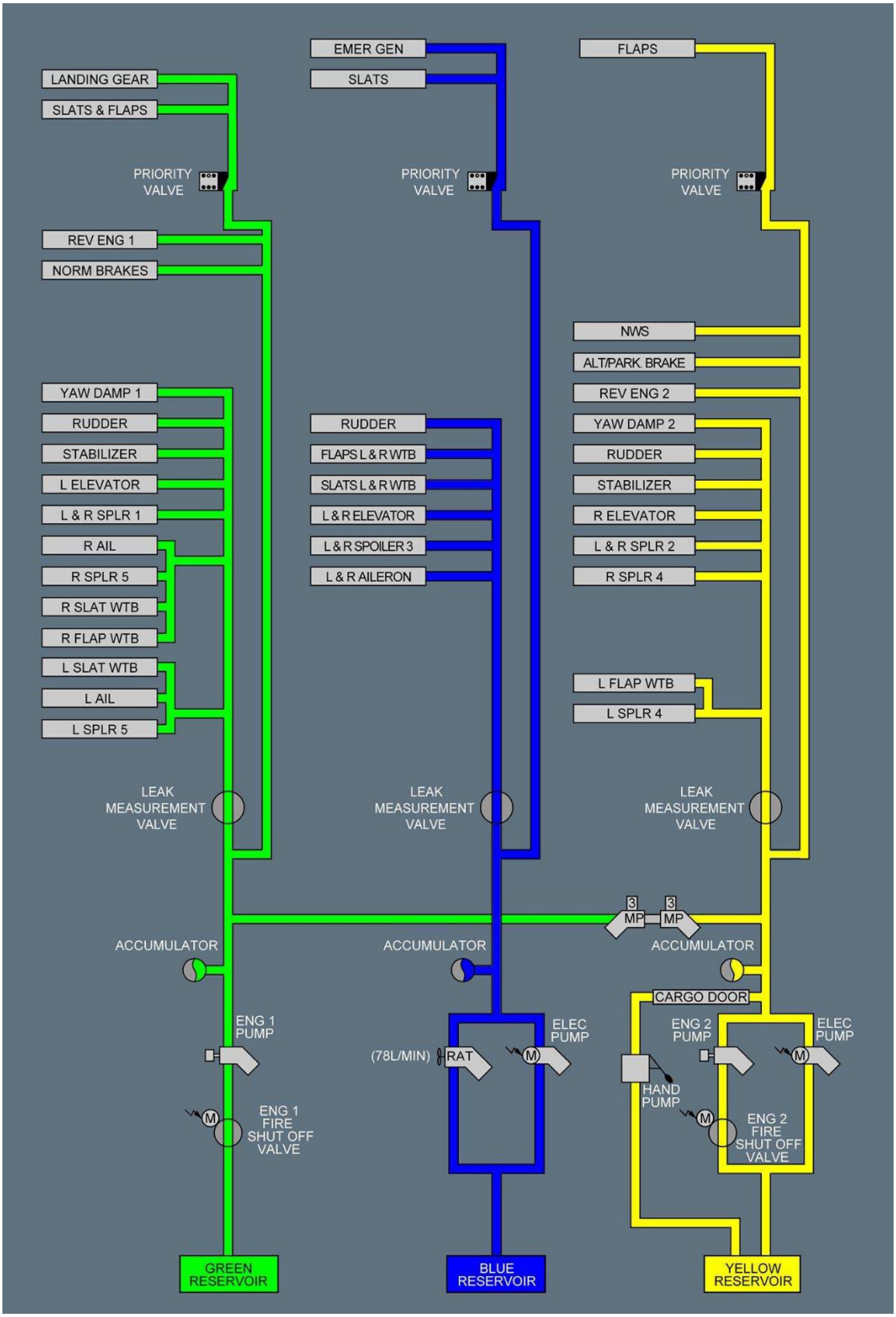
(3) The maximum value of the Fuel Penalty Factor provided in the table considers that the two pairs of corresponding spoilers gradually extend during the flight.

(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.

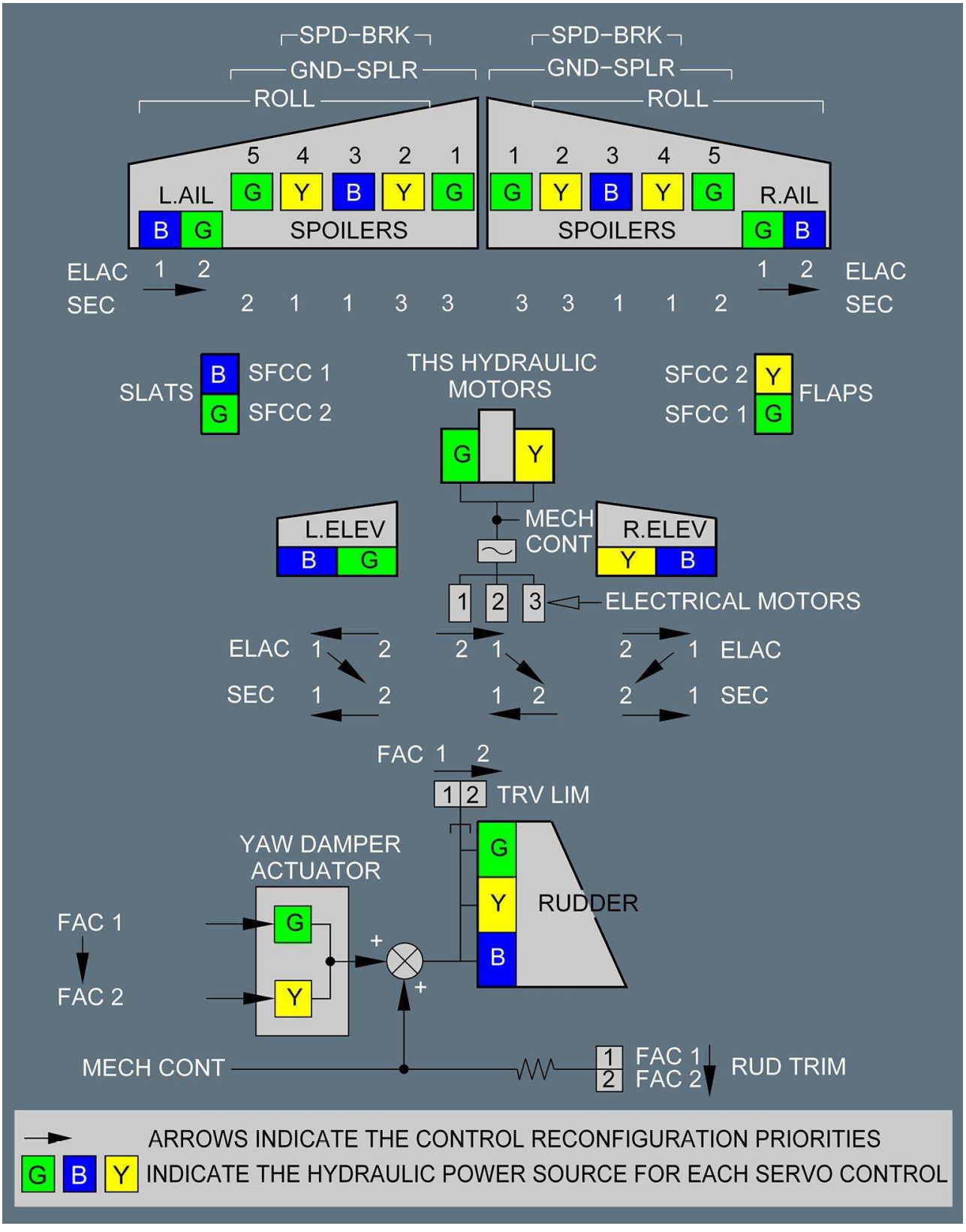
FUEL PENALTY FACTORS/INOP SYS TABLE

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

IAE engines require **5** minutes warm up if not operated within the last **2** hours, otherwise they require **3** minutes.
CFM engines require **3** minutes warm up in all cases.

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)*.

Continued on the next page

MANUAL ENGINE START PROCEDURE (CONT'D)

- **When N2 reaches 50%:**

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

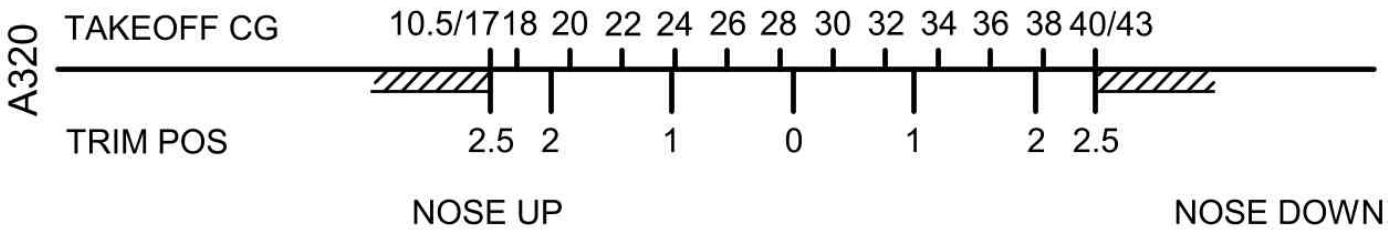
AFTER LANDING

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

APU ..... START
LANDING GEAR ..... UP
FLAPS LEVER 2
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

At 500 ft AGL or below:

BRACE FOR IMPACT ..... ORDER

For flare:

TOUCH DOWN AT MIN V/S
TARGET PITCH ATT 11°

At touchdown:

ALL ENG MASTERS ..... OFF
APU MASTER SW ..... OFF
EMER EVAC PROC ..... APPLY

FORCED LANDING

APU ..... START

FLAPS LEVER 2
VAPP ..... DETERMINE

SPLRS ..... ARM

At 1 000 ft AGL at the latest:

LANDING GEAR .....
..... DOWN by GRVTY

At 500 ft AGL or below:

BRACE FOR IMPACT ..... ORDER

For flare:

TOUCH DOWN AT MIN V/S

At touchdown:

ALL ENG MASTERS ..... OFF
APU MASTER SW ..... OFF
EMER EVAC PROC ..... APPLY