flybywire

A32NX

Flight Crew Operating Manual

For Simulation Purposes

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Effective Revisions

Version	Date	Note
1.0.0	13/04/2022	Initial Publication

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Abbreviations

FCOM

1.0.0

APRIL 13th, 2022

For Flight Simulation Use Only

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Abbreviations

A	
A.ICE	Anti-Ice, Anti-Icing
A/BRK	Autobrake Aircraft
A/THR	Autothrottle
ABV	Above
ACARS	Aircraft Communication Addressing and Reporting System
ACAS	Airborne Collision Avoidance System
ACCEL	Acceleration/Accelerate
ACCU	Accumulator
ACFT	Aircraft
ACK	Acknowledge
ACP	Audio Control Panel
ACQ	Acquire
ACT	Active
ADD	Addition, Additional
ADF	Automatic Direction Finder
ADIRS	Air Data/Inertial Reference System
ADIRU	Air Data/Inertial Reference Unit
ADR	Air Data Reference
ADS	Air Data System
AESS	Aircraft Environment Surveillance System
AESU	Aircraft Environment Surveillance Unit
AFFIRM	Affirmative
AFIS	Airline in Flight Information System
AFM	Aircraft Flight Manual
AFS	Automatic Flight System
AFTR	After
AGL	Above Ground Level
AGS	Air Generation System
AGU	Air Generation Unit
AGW	Actual Gross Weight
AI	Anti-Icing
AIDS	Aircraft Integrated Data System
AIL	Aileron
AIRCOND	Air Conditioning
AIS	Audio Integrated System
AIS	Aeronautical Information Service
ALIGN	Alignment
ALLWD	Allowed
ALPHA	Angle-of-Attack
ALS	Approach Light System
ALT	Altitude
ALT ACQ	Altitude Acquire
ALT TO	Alternate to
ALTM	Altimeter
ALTN	Alternate, Alternative
AMB	Ambient

A	
AMP	Ampere
ANN	Annunciator
ANN LT	Annunciator Light
AOA	Angle of Attack
AOC	Airline Operational Control
AOG	Aircraft On Ground
AP	Autopilot
AP/FD	Autopilot/Flight Director
APPR	Approach
APPROX	Approximately
APU	Auxiliary Power Unit
APU AFE	APU Automatic Fire Extinguishing Control Unit
ARMD	Armed
ARMG	Arming
ARND	Around
ARPT	Airport
ARR	Arrival, Arriving
AS	Airspeed
ASD	Accelerate Stop Distance
ASI	Airspeed Indicator
ASP	Audio Selector Panel
ASSY	Assembly
ASYM	Asymmetrical
AT	Autothrottle/Autothrust
ATA	Actual Time of Arrival
ATC	Air Traffic Control
ATIS	Automatic Terminal Information Service
ATS	Autothrottle/Autothrust System
ATSU	Air Traffic Service Unit
ATT	Attitude
AVAIL	Available, Availability
AVG	Average
AVNCS	Avionics
AWY	Airway

B	
B	Blue
B/C	Business Class
BARO	Barometric
BAT	Batteru
BCF	Brake Cooling Fan
BCN	Beacon
BCS	Brake Control System
BCU	Brake Control Unit
BETW	Between
BEW	Basic Empty Weight
BKUP	Backup

B	
BL	Bleed
BLK	Black, Block
BLW	Below
BM	Beam
BRDG	Bridge
BRK	Brake
BRKR	Breaker
BRKS	Brakes
BRKT	Bracket
BRT	Bright, Brightness
BT	Bus Tie
BTL	Bottle
BTN	Button
BU	Battery Unit
BUS	Busbar
BYP	Bypass
C	
C	Celsius, Centigrade
C/B	Circuit Breaker
C/L	Checklist
C/M	Crew Member
CAB	Cabin
CAPT	Captain
CAS	Collision Avoidance System
CAT	Category
CAUT	Caution
CAUT LT	Caution light
CFDS	Centralized Fault Display Unit
CHAS	Chassis
CHG	Change
CHK	Check
CHM	Chime
CIDS	Cabin Intercommunication Data System
CK	Check
CKD	Checked
CKPT	Cockpit
CL	Climb
CLB	Climb
CLG	Ceiling
CLK	Clock
CLR	Clear
CLR ALT	Clearance Altitude
CLRD	Cleared
CLRNC	Clearance
CLSD	Closed
CLSD	Closed
CLSG	Closing
CM	Crew Member, Centimeters
CMD	Command
CNCT	Connect
CNCTD	Connected
CNTOR	Contactor
CNTR	Counter

C	
COM	Communication
COMP	Compass
COND	Condition
CONT	Continue, Continuous
COOL	Cooling
CORR	Correct
COUNT	Counter
CPT	Capture
CRG	Cargo
CRK	Crank
CRZ	Cruise
CSL	Console
CSTR	Constraint
CTK	Center Tank
CTL	Control
CTL	Central
CTLR	Controller
CU	Control Unit
CUR	Current
CW	Clockwise
CY	Cycle
D	
DAC	Digital to Analog Converter
DADC	Digital Air Data Computer
DADS	Digital Air Data System
DAMP	Damp
DAU	Data Acquisition Unit
DB	Database, Decibel
Db	Decibel
DC	Direct Current
DCDU	Datalink Control and Display Unit
DCP	Display Control Panel
DECEL	Decelerate
DEG	Degree
DEGRADD	Degraded
DEL	Delete
DES	Descent
DEST	Destination
DET	Detection, Detector
DEV	Deviation
DFDAMU	Digital Flight Data Acquisition and Management Unit
DET	Detection, Detector
DFDAU	Digital Flight Data Acquisition Unit
DFDR	Digital Flight Data Recorder
DFDRS	Digital Flight Data Recorder System
DFDAU	Digital Flight Data Acquisition Unit
DH	Decision Height
DI	Deicing
DIR	Direct, Direction, Director
DIR TO	Direct To
DISC	Disconnect, Disconnected
DISCH	Discharge, Discharged

D	
DISCNTY	Discontinuity
DISRMD	Disarmed
DIST	Distance
DISTR	Distribute, Distribution, Distributor
DITCH	Ditching
DLK	Data Link
DLY	Delay
DMD	Demand
DME	Distance Measuring Equipment
DN	Down
DOW	Dry Operating Weight
DPI	Differential Pressure Indicator
DR	Door
DSPL	Display
E	
E	East
EC	Engine Control
ECAM	Electronic Centralized Aircraft Monitoring
ECM	Engine Condition Monitoring
ECS	Environmental Control System
ECU	Electronic Control Unit
EE	Electrical and Electronic
EEC	Electronic Engine Control
EFCC	Electronic Flight Control Computer
EFCS	Electrical Flight Control System
EFCU	Electrical Flight Control Unit
EFIS	Electronic Flight Information System
ELAC	Elevator Aileron Computer
ELAPS	Elapsed Time
ELEV	Elevator
ELS	Emergency Lighting System
ELT	Emergency Locator Transmitter
ELV	Elevation
EMER	Emergency
EMLS	Emergency Lighting System
ENG	Engine
ENG OUT	Engine Out
ENT	Entry
ENV	Envelope
EO	Engine Out
EPU	Emergency Power Unit
ERR	Error
ERS	Erase
ESC	Escape
ESD	Electronic System Display
EST	Estimated
ET	Estimated Time
ETA	Estimated Time of Arrival
ETD	Estimated Time of Departure
ET	Estimated Time
ETE	Estimated Time En Route
ETO	Estimated Time Over

E	
ETT	Estimated Time for Takeoff
EVAC	Evacuation
EWD	Engine/Warning Display
EWS	Electronic Warning System
EXT	Extend, Extension, Exterior
F	
F	Fuel, Fahrenheit, Minimum Flap Retract Speed
F/CTL	Flight Control
F/O	First Officer
F/S	Fast/Slow
FAA	Federal Aviation Administration
FAC	Flight Augmentation Computer
FACS	Flight Augmentation Computer System
FADEC	Full Authority Digital Engine Control
FAF	Final Approach Fix
FAIL	Failed, Failure
FAWP	Final Approach Waypoint
FBW	Fly-by-wire
FCC	Flight Control Computer
FCCS	Flight Control Computer System
FCCU	Flight Control Computer Unit
FCGU	Flight Control and Guidance Unit
FCMC	Fuel Control and Monitoring System
FCMS	Fuel Control Monitoring System
FCOM	Flight Crew Operating Manual
FCPC	Flight Control Primary Computer
FCPI	Flight Control Position Indicator
FCST	Forecast
FCTN	Function
FCU	Flight Control Unit
FD	Flight Director
FDR	Flight Data Recorder
FDU	Fire Detection Unit
FE	Flight Envelope
FEC	Flight Envelope Computer
FES	Fire Extinguishing System
FF	Fuel Flow
FG	Flight Guidance
FGES	Flight Guidance and Envelope System
FGS	Flight Guidance System
FL	Flight Level
FLDK	Flight Deck
FLEX	Flexible
FLP	Flap
FLT	Flight
FLT CTL	Flight Control
FM	Flight Management
FMA	Flight Mode Annunciator
FMC	Flight Management Computer

F	
FMCS	Flight Management Computer System
FMCU	Flight Management Computer Unit
FMGC	Flight Management and Guidance Computer
FMGEC	Flight Management Guidance and Envelope Computer
FMGES	Flight Management Guidance and Envelope System
FMGS	Flight Management and Guidance System
FMS	Flight Management System
FNA	Final Approach
FNCP	Flight Navigation Control Panel
FNSG	Flight Navigation Symbol Generator
FOB	Fuel On Board
FPA	Flight Path Angle
FPL	Flight Plan
F-PLN	Flight Plan
FPM	Feet per minute
FREQ	Frequency
Ft	Feet/foot
Ft/mn	Feet per Minute
FTK	Fuel Tank
FU	Fuel Used
FUSLG	Fuselage
FWC	Flight Warning Computer
FWD	Forward
FWS	Flight Warning System
FWSD	Flight Warning and System Display
G	
G	Green, gram
G/S	Glideslope
GA	Go-Around
GDNC	Guidance
GEN	Generator
GLS	GNSS Landing System
GMT	Greenwhich Mean Time
GND	Ground
GNSS	Global Navigation Satellite System
GP	Glide Path
GPCU	Ground Power Control Unit
GPS	Global Positioning System
GPU	Ground Power Unit
GPWC	Ground Proximity Warning Computer
GPWS	Ground Proximity Warning System
GR	Gear
GS	Ground Speed
GW	Gross Weight
GYRO	Gyroscope
H	
H	Hot
H NAV	Horizontal Navigation
HCU	Hydraulic Control Unit
HDG	Heading

H	
HDG/S	Heading Selected
HI	High
HLD	Hold
HOLD	Holding
HP	High Pressure
Hpa	Hectopascal
HPA	High Power Amplifier
HR	Hour
HRS	Hours
HSI	Horizontal Situation Indicator
HUD	Head Up Display
HYD	Hydraulic
HZ	Hertz
I	
I/P	Intercept Point
IAF	Initial Approach Fix
IAS	Indicated Airspeed
ICAO	International Civil Aviation Organization
IDENT	Identification, Indentifier, Identify
IFR	Instrument Flight Rules
IGN	Ignition
ILS	Instrument Landing System
IM	Inner Marker
IMU	Inertial Measurement Unit
IN	Inch
IN HG	Inches of Mercury
INB	Inbound
INBD	Inboard
INCR	Increase, Increment
IND	Indicator
INFO	Information
INHI	Inhibit
INHIB	Inhibit, Inhibited, Inhibition
INIT	Initialization
INOP	Inoperative
INS	Inertial Navigation System
INST	Instrument
INTCP	Intercept
INTERCOM	Intercommunication
INV	Inverter
IPDU	Ice Protection Data Unit
IRS	Inertial Reference System
IRU	Inertial Reference Unit
ISA	Inertial Sensor Assembly
JEP	Jeppesen
K	
Kg	Kilogram
JEP	Jeppesen
K	
Kg	Kilogram
KIAS	Knots Indicated Airspeed
kPa	Kilopascal
KT	Knot(s)

K	
KV	Kilovolt
KVA	Kilovolt Ampere
kW	KiloWatt
L	
L	Length, Liter, Left
L/D	Lift/Drag
L/G	Landing Gear
LAND	Landing
LAT	Lateral, Latitude
LAV	Lavatory
Lb	Pound
LCD	Liquid Crystal Display
LCH	Latch
LD	Load
LDG	Landing
LDG GR	Landing Gear
LED	Light Emitting Diode
LGERS	Landing Gear Extension and Retraction System
LGMS	Landing Gear Management System
LH	Left Hand
LIM	Limit, limitations, Limiting, Limiter
LKD	Locked
LO	Low
LO PR	Low Pressure
LOC	Localizer
LP	Low Pressure
LP VALVE	Low Pressure Valve
LS	Landing System
LT	Light
LTD	Limited
LTG	Lighting
LTS	Lights
LVL	Level
LVL/CH	Level Change
LVR	Lever
LW	Landing Weight
LWR	Lower
M	
M	Maneuvring Speed, Magenta, Meter
M	Mode, Mach
MA	Milli-Ampere
MAG	Magnetic
MAINT	Maintenance
MAN	Manual
MAX	Maximum
MAX CLB	Maximum Climb
MAX DES	Maximum Descent
MB	Millibars
mbar	Millibar
MCDU	Multipurpose Control & Display Unit
MCT	Maximum Continuous Thrust
MCU	Master Control Unit
MDA	Minimum Decision Altitude

M	
MDH	Minimum Decision Height
MEA	Minimum En Route IFR Altitude
MED	Medium
MEM	Memory
MFD	Multifunction Display
MGT	Management
MIN	Minimum, minutes
MIN FUEL	Minimum Fuel
MIN TIME	Minimum Time
MISC	Miscellaneous
ml	Milliliter
MLG	Main Landing Gear
MM	Middle Marker
mm	Millimeter
M_{MO}	Mach Max Operating Speed
M_{MO}	Maximum Operating Mach
Mn	Mach Number
MON	Monitor, Monitoring, Monitored
MRW	Maximum Ramp Weight
MSG	Message
MSTR	Master
MTO	Maximum Takeoff
MTOW	Maximum Takeoff Weight
MTR	Meter
MWARN	Master Warning
MWC	Master Warning Computer
MWP	Master Warning Panel
MWS	Master Warning System
MZFCG	Maximum Zero Fuel Center of Gravity
MZFW	Maximum Zero Fuel Weight
N	
N	Load Factor, Newton, Normal, North
N/A	Not Applicable
N/P	Next Page
N/W	Nose Wheel
N/WS	Nose Wheel Steering
N1	Low Pressure Rotor Speed
N1	Engine Fan Speed
N2	High Pressure Rotor Speed
NAV	Navigation
NAVAID	Navigation Aid
ND	Navigation Display
NDB	Navigation Database
NDB	Non-Directional Radio Beacon
NDB	Non-Directional Beacon
NEG	Negative
NLG	Nose Landing Gear
NM	Nautical Mile
NO	Normal Operation
NORM	Normal
NOTAM	Notice to Airmen
NW	Nose Wheel

O	
O	Open
O2	Oxygen
OAT	Outside Air Temperature
OEW	Operational Empty Weight
OFFR	Off/Reset
OFST	Offset
OK	Correct
OLW	Operational Landing Weight
OM	Outer Marker
OMS	Onboard Maintenance System
OMT	Onboard Maintenance Terminal
OP	Operational
OPP	Opposite
OPS	Operations
OPT	Optional, Optimum
OPTL	Optional
OPU	Overspeed Protection Unit
OTOW	Operational Takeoff Weight
OUT	Outlet, Output
OUTR	Outer
OVFL	Overflow
OVHD	Overhead
OVHT	Overheat
OVLD	Overload
OVPRESS	Overpressure
OVRD	Override
OVSP	Overspeed
OVSTEER	Oversteer
OVV	Overvoltage
OWE	Operating Weight Empty
OXY	Oxygen
OZ	Ounce
P	
P	Pressure
P/B	Pushbutton
P/BSW	Pushbutton Switch
P/L	Payload
Pa	Pascal
PARK	Parking
PAS	Pitch Attitude Sensor
PAX	Passenger
Pb	Pressure Ambient
PCT	Percent
PCU	Power Control Unit
PED	Pedestal
PERF	Performance
PF	Pilot Flying
PFD	Primary Flight Display
PG	Page
phi	Bank Angle
PHR	Pounds Per Hour
PLT	Pilot
PMP	Pump
PMU	Power Management Unit
P	
PNEU	Pneumatic
PNL	Panel
POS	Position
PPM	Parts per Million
PR	Pressure
PRB	Probe
PREV	Previous
PRGM	Program
PRI	Priority
PROC	Procedure
PROG	Progress
PSU	Power Supply Unit
PTR	Push to Reset
PTT	Push to Test, Push to Talk
PTU	Power Transfer Unit
PW	Pratt & Whitney
PWR	Power
Q	
QFE	Baro Pressure Setting for Airfield Altitude
QNE	Sea Level Standard Atmosphere Temperature
QNH	Baro Pressure Setting for En Route Altitude
QNH	Sea Level Pressure
R	
R	Road, Radius, Release, Reset, Right
R/C	Rate of Climb
R/D	Rate of Descent
R/H	Radar Height
R/L	Reading Light
R/MIN	Revolutions per Minute
R/T	Receiver Transmitter Unit
R/T	Radio Transmit
RA	Resolution Advisory
RA	Radio Altimeter, Radio Altitude
RAD	Radio
RAT	Ram Air Turbine
RCDR	Recorder
RCLM	Runway Center Line Marking
RCLS	Runway Center Line Light System
RCVR	Receiver
RCVY	Recovery
RDY	Ready
RECOG	Recognition
REFLNG	Refueling
REFUEL	Refueling
RET	Retract, Return
RETR	Retract
REV	Reverse, Revise, Revision
RF	Radio Frequency
RMP	Radio Management Panel
RMU	Radio Management Unit

R	
RNAV	Area Navigation
RNG	Range
RNI	Radio Navigation Indicator
RPLNT	Repellent
RPTG	Reporting
RQRD	Required
RR	Rolls Royce
RST	Reset
RSV	Reserve
RSVR	Reservoir
RTE	Route
RTG	Rating
RTN	Return
RTO	Rejected Takeoff
RTOLW	Runway Takeoff and Landing Weight
RTOW	Runway Takeoff Weight
RTR	Router
RTRSW	Rotary Switch
RTU	Radar Transceiver Unit
RUD	Rudder
RVR	Runway Visual Range
RVS	Reverse
RVSN	Reversion
RWY	Runway
S	
S	South, Second
S/C	Step Climb
S/D	Step Descent
SAT	Static Air Temperature
SATCOM	Satellite Communication
SBL	Symbol
SC	Single Chime
SD	System Display
SEAL	Sealing
SEC	Spoiler Elevator Computer
SEC	Secondary, Secondary Computer
SEL	Select, Selected, Selector, Selection
SEG	Segment
SELCAL	Selective Calling System
SEQ	Sequence, Sequential
SER	Serial Number
SGU	Symbol Generator Unit
SHT	Short
SI	Slip Indicator
SID	Standard Instrument Departure
SIG	Signal
SIM	Simulation
SL	Sea Level
SLT	Slat
SMK	Smoke
SNSR	Sensor
SPAD	Scratchpad
SPD	Speed
SPD/M	Speed-Mach
SPEC	Specification

S	
SPLR	Spoiler
SPLY	Supply
SRS	Speed Reference System
STAB	Stabilizer
STAR	Standard Terminal Arrival Route
STARTG	Starting
STAT	Statinc
STBY	Standby
STDY	Steady
STRG	Steering
STRUCT	Structure
STS	Status
SURF	Surface
SVCE	Service
SW	Switch
SYS	System
T	
T	True, Turn, Trim, Time, Tonne
T/C	Top of Climb
T/D	Top of Descent
T/R	Thrust Reverser
TA	Traffic Advisory
TACH	Tachometer
TAS	True Airspeed
TAT	Total Air Temperature
TBC	To Be Confirmed
TBD	To Be Determined
TBU	Time Base Unit
TBV	Transient Bleed Valve
TC	Takeoff Chart
TCAS	Traffic Alert and Collision Avoidance System
TEMP	Temperature
TGT	Target
THR	Thrust
THROT	Throttle
THS	Trimmable Horizontal Stabilizer
TK	Tank
TKE	Track Angle Error
TLK	Throttle Lever Angle
TMA	Terminal Control Area
TMR	Timer
TO	Takeoff
TO/APPR	Takeoff/Approach
TOD	Top Of Descent
TOD	Takeoff Distance
TOGA	Takeoff/Go-Around
TOGW	Takeoff Gross Weight
TOR	Takeoff Run
TOT	Total
TOW	Takeoff Weight
TR	Thrust Reverser
TRANS	Transition
TRANSF	Transfer
TRGT	Target

T	
TRIG	Trigger
TRK	Track
TROPO	Tropopause
TRT	Turn Around Time
TRU	True
TST	Test
TT	Total Time
TURB	Turbine
TWR	Tower
TWY	Taxiway
TX	Transmission
TYP	Typical
U	
UHF	Ultra High Frequency
V	
V	Volt, Voltage, Valve
V/L	VOR/LOC
V/L	VOR/Localizer
V/S	Vertical Speed
V2min	Critical Engine Failure Speed Decision Speed
VACU	Vacuum
VCTREND	Airspeed Tendency
VDF	Very High Frequency Direction Finding Station
VDR	VHF Data Radio
VEL	Velocity
VERT	Vertical
VFR	Visual Flight Rule
VHF	Very High Frequency
VHV	Very High Voltage
VIB	Vibration
VLF	Very Low Frequency
VOL	Volume
VOR	VHF Omnirange Station
VOR.D	VOR-DME
VORTAC	Visual Omni-Range Tactical Air Navigation
VSI	Vertical Speed Indicator
W	
W	Weight, Watt, West
W/V	Wind Direction and Speed
WAI	Wing Anti Ice
WARN	Warning
WB	Wide Body
WD	Warning Display
WDO	Window
WG	Wing
WHL	Wheel
WR	Weather Radar
WS	Windshear
WT	Weight
WX	Weather Mode
WXR	Weather Radar

X	
X	Cross, Crossbleed
X BLEED	Crossbleed
X FEED	Crossfeed
X Line	Crossline
X Valve	Cross Valve
XFR	Transfer
XING	Crossing
XPDR	Transponder
XPNDR	Transponder
X-TALK	Crosstalk
XWIND	Crosswind
Y	
Y	Yellow
Y/C	Economy Class
YCR	Economy Class-Rear
YE	Year
Z	
Z	Greenwhich Mean Time
ZC	Zone controller
ZFCG	Zero Fuel Center Of Gravity
ZFW	Zero Fuel Weight
Zp	Pressure Altitude
Zpi	Indicated Pressure Altitude

Performance

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International Standard Atmosphere (ISA)

Altitude (Feet)	Temp (°C)	Pressure			Pressure Ratio	Density	Speed of Sound (kt)	Altitude (Meters)
		hPa	P.S.I	inHg				
40 000	-56.5	188	2.72	5.54	0.1851	0.2462	573	12 192
39 000	-56.5	197	2.85	5.81	0.1942	0.2583	573	11 887
38 000	-56.5	206	2.99	6.10	0.2038	0.2710	573	11 582
37 000	-56.5	217	3.14	6.40	0.2138	0.2844	573	11 278
36 000	-56.3	227	3.30	6.71	0.2243	0.2981	573	10 973
35 000	-54.3	238	3.46	7.04	0.2353	0.3099	576	10 668
34 000	-52.4	250	3.63	7.38	0.2467	0.3220	579	10 364
33 000	-50.4	262	3.80	7.74	0.2586	0.3345	581	10 058
32 000	-48.4	274	3.98	8.11	0.2798	0.3473	584	9 754
31 000	-46.4	287	4.17	8.49	0.2837	0.3605	586	9 449
30 000	-44.4	301	4.36	8.89	0.2970	0.3741	589	9 144
29 000	-42.5	315	4.57	9.30	0.3107	0.3881	591	8 839
28 000	-40.5	329	4.78	9.73	0.3250	0.4025	594	8 534
27 000	-38.5	344	4.99	10.17	0.3398	0.4173	597	8 230
26 000	-36.5	360	5.22	10.63	0.3552	0.4325	599	7 925
25 000	-34.5	376	5.45	11.10	0.3711	0.4481	602	7 620
24 000	-32.5	393	5.70	11.60	0.3876	0.4642	604	7 315
23 000	-30.6	410	5.95	12.11	0.4046	0.4806	607	7 010
22 000	-28.6	428	6.21	12.64	0.4223	0.4976	609	6 706
21 000	-26.6	446	6.47	13.18	0.4406	0.5150	611	6 401
20 000	-24.6	466	6.75	13.75	0.4595	0.5328	614	6 096
19 000	-22.6	485	7.04	14.34	0.4781	0.5511	616	5 791
18 000	-20.7	506	7.34	14.94	0.4994	0.5690	619	5 406
17 000	-18.7	527	7.65	15.57	0.5203	0.5892	621	5 182
16 000	-16.7	549	7.97	16.22	0.5420	0.6090	624	4 877
15 000	-14.7	572	8.29	16.89	0.5643	0.6292	626	4 572
14 000	-12.7	595	8.63	17.58	0.5875	0.6500	628	4 267
13 000	-10.8	619	8.99	18.29	0.6113	0.6713	631	3 962
12 000	-8.8	644	9.35	19.03	0.6360	0.6932	633	3 658
11 000	-6.8	670	9.72	19.79	0.6614	0.7156	636	3 353
10 000	-4.8	697	10.10	20.58	0.6877	0.7385	638	3 048
9 000	-2.8	724	10.51	21.39	0.7148	0.7620	640	2 743
8 000	-0.8	753	10.92	22.22	0.7428	0.7860	643	2 438
7 000	+1.1	782	11.34	23.09	0.7716	0.8106	645	2 134
6 000	+3.1	812	11.78	23.98	0.8014	0.8358	647	1 829
5 000	+5.1	843	12.23	24.90	0.8320	0.8617	650	1 524
4 000	+7.1	875	12.69	25.84	0.8637	0.8881	652	1 219
3 000	+9.1	908	13.17	26.82	0.8962	0.9151	654	914
2 000	+11.0	942	13.67	27.82	0.9298	0.9428	656	610
1 000	+13.0	977	14.17	28.86	0.9644	0.9711	659	305
0	+15.0	1013	14.70	29.92	1.0000	1.000	661	0
-1 000	+17.0	1050	15.23	31.02	1.0366	1.0295	664	- 305

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Conversion – QFE – hPA – InHg – Pressure Altitude

QFE hPa	In.Hg	Press Alt ft	QFE hPa	In.Hg	Press Alt ft	QFW hPa	In.Hg	Press Alt ft
1050	31.01	-989	960	28.35	1 486	870	25.69	4 157
1048	30.95	-936	958	28.29	1 543	868	25.63	4 219
1046	30.89	-883	956	28.23	1 601	866	25.57	4 281
1044	30.83	-830	954	28.17	1 658	864	25.51	4 343
1042	30.77	-776	952	28.11	1 715	862	25.45	4 405
1040	30.71	-723	950	28.05	1 773	860	25.40	4 468
1038	30.65	-669	948	27.99	1 831	858	25.34	4 531
1036	30.59	-615	946	27.94	1 889	856	25.28	4 593
1034	30.53	-562	944	27.88	1 947	854	25.22	4 656
1032	30.47	-508	942	27.82	2 005	852	25.16	4 718
1030	30.42	-454	940	27.76	2 062	850	25.10	4 781
1028	30.36	-400	938	27.70	2 120	848	25.04	4 844
1026	30.30	-346	936	27.64	2 178	846	24.98	4 907
1024	30.24	-292	934	27.58	2 236	844	24.92	4 970
1022	30.18	-238	932	27.52	2 294	842	24.86	5 033
1020	30.12	-184	930	27.46	2 353	840	24.81	5 097
1018	30.06	-129	928	27.40	2 412	838	24.75	5 161
1016	30.00	-74	926	27.34	2 471	836	24.69	5 225
1014	29.94	-20	924	27.29	2 530	834	24.63	5 289
1012	29.88	34	922	27.23	2 589	832	24.57	5 353
1010	29.83	89	920	27.17	2 647	830	24.51	5 417
1008	29.77	144	918	27.11	2 707	828	24.45	5 481
1006	29.71	199	916	27.05	2 767	826	24.39	5 545
1004	29.65	254	914	26.99	2 826	824	24.33	5 610
1002	29.59	309	912	26.93	2 885	822	24.27	5 675
1000	29.53	364	910	26.87	2 944	820	24.21	5 740
998	29.47	419	908	26.81	3 004	818	24.16	5 805
996	29.41	475	906	26.75	3 064	816	24.10	5 870
994	29.35	530	904	26.70	3 124	814	24.04	5 935
992	29.29	586	902	26.64	3 183	812	23.98	6 000
990	29.23	641	900	26.58	3 243	810	23.92	6 065
988	29.18	697	898	26.52	3 303	808	23.86	6 131
986	28.12	753	896	26.46	3 363	806	23.80	6 197
984	29.06	809	894	26.40	3 424	804	23.74	6 263
982	29.00	865	892	26.34	3 484	802	23.68	6 329
980	28.94	921	890	26.28	3 545	800	23.62	6 394
978	28.88	977	888	26.22	3 606	798	23.56	6 461
976	28.82	1 033	886	26.16	3 667	796	23.51	6 528
974	28.76	1 089	884	26.10	3 728	794	23.45	6 595
972	28.70	1 145	882	26.05	3 789	792	23.39	6 661
970	28.64	1 202	880	25.99	3 850	790	23.33	6 727
968	28.59	1 259	878	25.93	3 911	788	23.27	6 794
966	28.53	1 316	876	25.87	3 973	786	23.21	6 861
964	28.47	1 373	874	25.81	4 034	784	23.15	6 928
962	28.41	1 430	872	27.75	4 096	782	23.09	6 995

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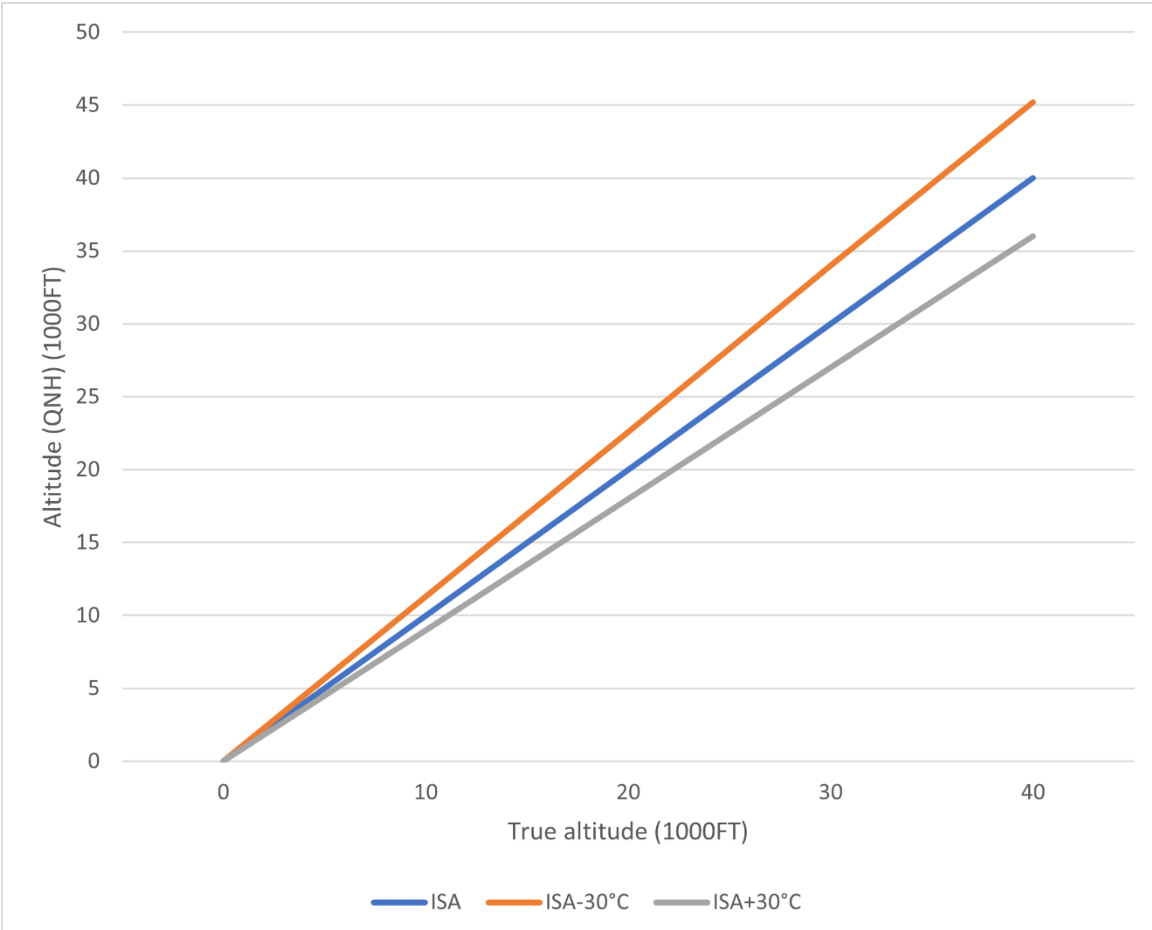
Altitude Temperature Correction

For High Altitude Use



For Low Altitude Use

Airport Temperature	Heigh above elevation of the altimeter setting source (feet)								
	200	**300**	**400**	**500**	**1 000**	**2 000**	**3 000**	**4 000**	**5 000**
0	20	20	30	30	60	120	170	230	280
-10	20	30	40	50	100	200	290	390	490
-20	30	50	60	70	140	280	420	570	710
-30	40	60	80	100	190	380	570	760	950
-40	50	80	100	120	240	480	720	970	1 210
-50	60	90	120	150	300	590	890	1 190	1 500

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Ground Distance/Air Distance Conversion – All engine operative

M.78

Ground Dist (NM)	Air Distance (NM)						
	Tail Wind		Wind Components (Kt)				Head Wind
	+150	+100	+50	0	-50	-100	-150
10	7	8	9	**10**	11	13	15
20	15	16	18	**20**	23	26	30
30	22	25	27	**30**	34	39	45
40	30	33	36	**40**	45	51	60
50	37	41	45	**50**	56	64	75
100	75	82	90	**100**	113	129	150
200	150	164	180	**200**	225	257	300
300	225	245	270	**300**	338	386	450
400	300	327	360	**400**	450	514	600
500	375	409	450	**500**	563	643	750
1 000	750	818	900	**1 000**	1 125	1 286	1 501
1 500	1 125	1 227	1 350	**1 500**	1 688	1 929	2 251
2 000	1 500	1 636	1 800	**2 000**	2 248	2 572	3 001
2 500	1 875	2 045	2 250	**2 500**	2 813	3 215	3 752
3 000	2 250	2 454	2 700	**3 000**	3 375	3 858	4 502
3 500	2 624	2 863	3 150	**3 500**	3 938	4 501	5 252
4 000	2 999	3 272	3 600	**4 000**	4 500	5 144	6 003
4 500	3 374	3 681	4 050	**4 500**	5 063	5 787	6 753
5 000	3 749	4 090	4 500	**5 000**	5 626	6 430	7 503

Long Range Speed Up to FL270

Ground Dist (NM)	Air Distance (NM)						
	Tail Wind		Wind Components (Kt)				Head Wind
	+150	+100	+50	0	-50	-100	-150
10	7	8	9	**10**	12	14	17
20	14	16	18	**20**	23	27	33
30	21	24	26	**30**	35	41	50
40	29	32	35	**40**	46	55	67
50	36	39	44	**50**	58	68	83
100	71	79	88	**100**	115	136	167
200	143	158	176	**200**	231	273	334
300	214	237	265	**300**	346	409	501
400	286	316	353	**400**	462	546	668
500	357	395	441	**500**	577	682	835
1 000	714	789	882	**1 000**	1 154	1 365	1 669
1 500	1 071	1 184	1 323	**1 500**	1 731	2 047	2 504
2 000	1 428	1 578	1 764	**2 000**	2 309	2 730	3 339
2 500	1 784	1 973	2 205	**2 500**	2 886	3 412	4 174
3 000	2 141	2 367	2 646	**3 000**	3 463	4 095	5 008
3 500	2 498	2 762	3 087	**3 500**	4 040	4 777	5 843
4 000	2 855	3 156	3 528	**4 000**	4 617	5 459	6 678
4 500	3 212	3 551	3 969	**4 500**	5 194	6 142	7 512
5 000	3 569	3 945	4 410	**5 000**	5 771	6 824	8 347

Long Range Speed Above FL 270

Ground Dist (NM)	Air Distance (NM)						
	Tail Wind		Wind Components (Kt)				Head Wind
	+150	+100	+50	0	-50	-100	-150
10	7	8	9	**10**	11	13	15
20	15	16	18	**20**	23	26	30
30	22	25	27	**30**	34	39	45
40	30	33	36	**40**	45	52	60
50	37	41	45	**50**	56	64	75
100	75	82	90	**100**	113	129	150
200	150	164	180	**200**	225	257	300
300	225	245	270	**300**	338	386	450
400	300	327	360	**400**	450	514	600
500	375	409	450	**500**	563	643	750
1 000	750	818	900	**1 000**	1 125	1 286	1 501
1 500	1 125	1 227	1 350	**1 500**	1 688	1 929	2 251
2 000	1 500	1 636	1 800	**2 000**	2 250	2 572	3 001
2 500	1 875	2 045	2 250	**2 500**	2 813	3 215	3 751
3 000	2 250	2 454	2 700	**3 000**	3 375	3 858	4 502
3 500	2 625	2 863	3 150	**3 500**	3 938	4 501	5 252
4 000	2 999	3 272	3 600	**4 000**	4 500	5 144	6 002
4 500	3 374	3 681	4 050	**4 500**	5 063	5 787	6 752
5 000	3 749	4 090	4 500	**5 000**	5 625	6 430	7 503

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Ground Distance/Air Distance Conversion – One engine inoperative

Long Range Speed

Ground Dist (NM)	Air Distance (NM)						
	Tail Wind		Wind Components (Kt)				Head Wind
	+150	+100	+50	0	-50	-100	-150
10	7	8	9	**10**	11	13	16
20	15	16	18	**20**	23	26	31
30	22	24	27	**30**	34	39	47
40	30	32	36	**40**	45	52	62
50	37	40	45	**50**	57	66	78
60	44	49	54	**60**	68	79	93
70	52	57	63	**70**	79	92	109
80	59	65	72	**80**	91	105	124
90	66	73	80	**90**	102	118	140
100	74	81	89	**100**	113	131	155
200	148	162	179	**200**	227	262	310
300	221	243	268	**300**	340	393	465
400	295	323	358	**400**	454	524	621
500	369	404	447	**500**	567	655	776
600	443	485	536	**600**	681	786	931
700	516	566	626	**700**	794	917	1 086
800	590	647	715	**800**	908	1 048	1 241
900	664	728	805	**900**	1 021	1 179	1 396
1 000	738	808	894	**1 000**	1 134	1 310	1 551
1 100	812	889	983	**1 100**	1 248	1 442	1 706
1 200	885	970	1 073	**1 200**	1 361	1 573	1 862
1 300	959	1 051	1 162	**1 300**	1 475	1 704	2 017
1 400	1 033	1 132	1 252	**1 400**	1 588	1 835	2 172
1 500	1 107	1 213	1 341	**1 500**	1 702	1 966	2 327
1 600	1 180	1 294	1 431	**1 600**	1 815	2 097	2 482
1 700	1 254	1 374	1 520	**1 700**	1 928	2 228	2 637
1 800	1 328	1 455	1 609	**1 800**	2 042	2 359	2 702
1 900	1 402	1 536	1 699	**1 900**	2 155	2 490	2 948
2 000	1 476	1 617	1 788	**2 000**	2 269	2 621	3 103

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Maximum Takeoff

LEAP-1A26 – TAKEOFF N1 (%)												
NO AIR BLEED								MACH=0.000				
TAT (°C)	PRESSURE ALTITUDE (FT)											
	-2000	-1000	0	500	1000	2000	3000	4000	5000	6000	7000	8000
-55	70.8	71.9	72.9	73.3	73.6	74.5	75.4	76.1	77.3	78.5	79.8	81.1
-50	71.6	72.7	73.8	74.1	74.4	75.3	76.3	77.0	78.2	79.4	80.7	82.1
-40	73.2	74.3	75.4	75.7	76.1	77.0	77.9	78.7	79.9	81.2	82.5	83.9
-30	74.7	75.9	77.0	77.4	77.7	78.6	79.6	80.3	81.6	82.9	84.2	85.7
-25	75.5	76.7	77.8	78.1	78.5	79.4	80.4	81.1	82.4	83.7	85.1	86.5
-20	76.3	77.4	78.6	78.9	79.3	80.2	81.2	82.0	83.3	84.6	86.0	87.4
-15	77.0	78.2	79.3	79.7	80.1	81.0	82.0	82.8	84.1	85.4	86.8	88.3
-10	77.7	78.9	80.1	80.5	80.8	81.8	82.8	83.6	84.9	86.2	87.6	89.1
-5	78.5	79.7	80.9	81.2	81.6	82.6	83.6	84.4	85.7	87.0	88.5	89.9
0	79.2	80.4	81.6	82	82.3	83.3	84.4	85.1	86.5	87.9	89.3	90.8
2	79.5	80.7	81.9	82.3	82.7	83.6	84.7	85.4	86.8	88.2	89.6	91.1
5	79.9	81.2	82.4	82.7	83.1	84.1	85. 1	85.9	87.3	88.7	90. 1	91.6
8	80.4	81.6	82.8	83.2	83.5	84.6	85.6	86.4	87.7	89.1	90.6	92.1
10	80.6	81.9	83.1	83.5	83.8	84.9	85.9	86.7	88.0	89.4	90.9	92.4
12	80.9	82.2	83.4	83.8	84.1	85.2	86.2	87.0	88.4	89.8	91.2	92.8
14	81.2	82.5	83.7	84.1	84.4	85.5	86.5	87.3	88.7	90. 1	91.6	93.1
16	81.5	82.7	84.0	84.4	84.7	85.7	86.8	87.6	89.0	90.4	91.9	93.4
18	81.8	83.0	84.3	84.6	85.0	86.0	87.1	87.9	89.3	90.7	92.2	93.4
20	82. 1	83.3	84.6	84.9	85.3	86.3	87.4	88.2	89.6	91.0	92.5	92.9
22	82.3	83.6	84.8	85.2	85.6	86.6	87.7	88.5	89.9	91.3	92.5	92.5
24	82.6	83.9	85.1	85.5	85.9	86.9	88.0	88.8	90.2	91.6	92.1	92.1
26	82.9	84.2	85.4	85.8	86.2	87.2	88.3	89.1	90.5	91.6	91.7	91.7
28	83.2	84.4	85.7	86.1	86.5	87.5	88.6	89.4	90.8	91.3	91.3	91.4
30	83.4	84.7	86.0	86.4	86.8	87.8	88.9	89.7	90.8	90.9	91.0	91.0
32	83.7	85.0	86.3	86.7	87.0	88.1	89.2	90.0	90.4	90.5	90.6	90.7
34	84.0	85.3	86.6	86.9	87.3	88.4	89.5	89.8	90.0	90.2	90.3	90.3
36	84.3	85.6	86.8	87.2	87.6	88.7	89.8	89.5	89.6	89.8	89.9	89.9
38	84.5	85.8	87.1	87.5	87.9	89.0	89.5	89.7	89.3	89.4	89.5	89.6
40	84.8	86.1	87.4	87.8	88.2	89.2	89.2	88.7	88.9	89.7	89.2	
42	85.1	86.4	87.7	88.1	88.5	88.9	88.8	88.4	88.6	88.7		
44	85.3	86.7	87.9	88.0	88.7	88.6	88.5	88.7	88.3			
46	85.6	86.9	87.6	87.7	87.8	88.2	88.7	87.7				
48	85.9	86.6	87.3	87.4	87.5	87.9	87.8					
50	85.5	86.2	87.0	87.1	87.1	87.6						
52	85.2	85.9	86.7	86.7	86.8							
55	84.7	85.5	86.2									
OAT < CORNER POINT							OAT >= CORNER POINT					

N1 CORRECTIONS FOR AIR BLEED (%)	OAT < CORNER POINT	OAT >= CORNER POINT
AIR CONDITIONING ON	-0.6	-0.7
NACELLE ANTI-ICE ON	0.0	-0.8
NACELLE AND WING ANTI ICE ON	0.0	-1.6

LEAP-1A26 – TAKEOFF N1 (%)										
NO AIR BLEED						MACH=0.000				
TAT (°C)	PRESSURE ALTITUDE (FT)									
	8000	9000	10000	11000	12000	13000	14000	15000	16000	16600
-55	81.1	81.8	82.7	83.0	83.2	83.0	83.1	83.3	83.8	84.1
-50	82.1	82.8	83.6	83.9	84.1	83.9	84	84.3	84.7	85.1
-40	83.9	84.6	85.4	85.7	86.0	85.8	85.8	86.1	86.5	86.9
-30	85.7	86.4	87.2	87.5	87.8	87.6	87.6	87.9	88.4	88.7
-25	86.5	87.3	88.1	88.4	88.7	88.5	88.5	88.8	89.2	89.6
-20	87.4	88.1	89.0	89.3	89.6	89.4	89.4	89.7	90.1	90.5
-15	88.3	89.0	89.9	90.2	90.4	90.2	90.3	90.5	91.0	91.4
-10	89.1	89.8	90.7	91.1	91.3	91.1	91.1	91.4	91.9	92.2
-5	89.9	90.7	91.6	91.9	92.2	92.0	92.0	92.3	92.7	93.1
0	90.8	91.5	92.4	92.8	93.0	92.8	92.9	93.1	93.6	94.0
2	91.1	91.9	92.8	93.1	93.4	93.2	93.2	93.5	93.9	94.3
5	91.6	92.4	93.3	93.6	93.9	93.7	93.7	94.0	94.4	94.8
8	92.1	92.9	93.8	94.1	94.4	94.2	94.2	94.5	94.3	94.2
10	92.4	93.2	94.1	94.5	94.7	94.5	94.3	94.2	93.8	93.7
12	92.8	93.5	94.5	94.8	94.7	94.1	93.9	93.9	93.2	93.1
14	93.1	93.9	94.5	94.6	94.3	93.7	93.5	93.4	92.7	92.6
16	93.4	93.9	94.2	94.2	93.9	93.2	93.0	93.0	92.2	92.1
18	93.4	93.4	93.8	93.7	93.4	92.7	92.6	92.5	91.7	91.7
20	92.9	93.0	93.5	93.3	92.9	92.3	92.2	92.1	91.3	97.3
22	92.5	92.5	93.7	92.9	92.6	91.9	91.3	91.7	90.9	90.9
24	92.1	92.1	92.7	92.5	92.2	91.5	91.4	91.3		
26	91.7	91.3	92.3	92.1	91.3	91.2	91.0			
28	91.4	91.4	91.9	91.7	91.5	90.8				
30	91.0	91.1	91.6	91.4	91.1					
32	90.7	90.7	91.2	97.1						
34	90.3	90.4	90.9							
36	89.9	90.0								
38	89.6									
40										
OAT < CORNER POINT							OAT >= CORNER POINT			

N1 CORRECTIONS FOR AIR BLEED (%)	OAT < CORNER POINT	OAT >= CORNER POINT
AIR CONDITIONING ON	-0.6	-0.7
NACELLE ANTI-ICE ON	0.0	-0.8
NACELLE AND WING ANTI ICE ON	0.0	-1.6

Maximum Go Around

LEAP-1A26 – GO-AROUND N1 (%)												
NO AIR BLEED									MACH=0.225			
TAT (°C)	**PRESSURE ALTITUDE (FT)**											
	-2000	**-1000**	**0**	**500**	**1000**	**2000**	**3000**	**4000**	**5000**	**6000**	**7000**	**8000**
-55	72.8	73.8	74.8	75.3	75.8	76.9	77.9	78.8	79.9	80.8	81.7	82.1
-50	73.7	74.7	75.7	76.2	76.7	77.8	78.8	79.7	80.8	81.7	82.6	83.0
-40	75.3	76.3	77.4	77.9	78.4	79.5	80.5	81.5	82.6	83.5	84.4	84.8
-30	76.9	77.9	79.0	79.5	80.1	81.2	82.3	83.2	84.3	85.3	86.2	86.6
-20	78.5	79.5	80.6	81.2	81.7	82.8	83.9	84.9	86.0	87.0	88.0	88.4
-10	80.0	81.1	82.2	82.7	83.3	84.4	85.6	86.6	87.7	88.7	89.7	90.1
-5	80.8	81.9	83.0	83.5	84.1	85.2	86.4	87.4	88.5	89.6	90.5	91.0
0	81.5	82.6	83.7	84.3	84.9	86.0	87.2	88.2	89.4	90.4	91.4	91.8
2	81.8	82.9	84.0	84.6	85.2	86.3	87.5	88.5	89.7	90.7	91.7	92.1
5	82.2	83.4	84.5	85.1	85.6	86.8	88.0	89.0	90.2	91.2	92.2	92.6
8	82.7	83.8	85.0	85.5	86.1	87.3	88.4	89.5	90.7	91.7	92.7	93.1
10	83.0	84.1	85.3	85.8	86.4	87.6	88.8	89.8	91.0	92.0	93.0	93.5
12	83.3	84.4	85.6	86.1	86.7	87.9	89.1	90.1	91.3	92.4	93.4	93.8
14	83.6	84.7	85.9	86.4	87.0	88.2	89.4	90.5	91.6	92.7	93.7	94.1
16	83.9	85.0	86.2	86.7	87.3	88.5	89.7	90.8	91.9	93.0	94.0	94.5
18	84.1	85.3	86.5	87.0	87.6	88.8	90.0	91.1	92.3	93.3	94.4	94.8
20	84.4	85.6	86.7	87.3	87.9	89.1	90.3	91.4	92.6	93.6	94.7	95.7
22	84.7	85.9	87.0	87.6	88.2	89.4	90.6	91.7	92.9	94.0	95.0	947
24	85.0	86.2	87.3	87.9	88.5	89.7	90.9	92.0	93.2	94.3	95.3	942
26	85.3	86.5	87.6	88.2	88.8	90.0	91.2	92.3	93.5	94.6	94.7	93.8
28	85.6	86.7	87.9	88.5	89.1	90.3	91.5	92.6	93.8	94.9	93.9	93.3
30	85.9	87.0	88.2	88.8	89.4	90.6	91.8	92.9	94.1	94.2	93.2	92.9
32	86.1	87.3	88.5	89.1	89.7	90.9	92.1	93.2	94.5	93.5	92.8	92.5
34	86.4	87.6	88.8	89.4	90.0	91.2	92.4	93.6	93.9	92.8	92.5	92.2
36	86.7	87.9	89.1	89.7	90.3	91.5	92.7	93.8	93.2	92.4	92.1	97.8
38	87.0	88.2	89.4	90.0	90.6	91.8	93.0	93.0	92.6	92.1	91.3	91.5
40	87.3	88.5	89.7	90.3	90.9	92.1	93.7	922	92.2	91.7	91.4	91.7
42	87.5	88.7	89.9	90.6	91.2	92.4	92.6	91.8	91.3	91.4	91.7	90.7
44	87.8	89.0	90.2	90.8	91.4	92.3	92.0	92.5	92.4	91.0	90.7	
46	88.1	89.3	90.5	91.7	91.4	91.8	91.4	91.1	91.1	90.7		
48	88.4	89.6	90.5	90.7	90.9	91.2	90.9	90.8	90.7			
50	88.7	89.6	90.7	90.2	90.3	90.7	90.6	90.5				
52	88.7	89.7	89.6	89.7	89.8	90.4	90.2					
54	88.2	88.7	89.2	89.4	89.6	90.1						
56	87.8	88.3	88.9	89.7	89.3							
58	87.4	88.0	88.6									
OAT < CORNER POINT							**OAT >= CORNER POINT**					

N1 CORRECTIONS FOR AIR BLEED (%)	OAT < CORNER POINT	OAT >= CORNER POINT
AIR CONDITIONING ON	0.4	0.4
NACELLE ANTI-ICE ON	0.0	-0.6
NACELLE AND WING ANTI ICE ON	0.0	-1.2

LEAP-1A26 – GO AROUND N1 (%)										
NO AIR BLEED							MACH=0.225			
TAT (°C)	PRESSURE ALTITUDE (FT)									
	8000	9000	10000	11000	12000	13000	14000	15000	16000	16600
-55	82.1	82.5	83.0	83.4	83.6	83.5	83.5	83.6	83.8	84.2
-50	83.0	83.4	83.9	84.3	84.5	84.4	84.4	84.6	84.8	85.2
-40	84.8	85.2	85.7	86.1	86.4	86.3	86.3	86.4	86.6	87.1
-30	86.6	87.0	87.5	88.0	88.2	88.1	88.1	88.2	88.4	88.9
-20	88.4	88.8	89.3	89.7	90.0	89.8	89.8	90.0	90.2	90.6
-10	90.1	90.5	91.1	91.5	91.7	91.6	91.6	91.7	91.9	92.4
-5	91.0	91.4	91.9	92.4	92.6	92.5	92.5	92.6	92.8	93.3
0	91.8	92.2	92.8	93.2	93.5	93.3	93.3	93.5	93.7	94.1
2	92.1	92.6	93.1	93.6	93.8	93.7	93.7	93.8	94.0	94.5
5	92.6	93.1	93.6	94.1	94.3	94.2	94.2	94.3	94.5	95.0
8	93.1	93.6	94.1	94.6	94.8	94.7	94.7	94.8	95.0	95.5
10	93.5	93.9	94.4	94.9	95.2	95.0	95.0	95.1	95.1	95.7
12	93.8	94.2	94.8	95.2	95.5	95.4	95.4	95.2	94.7	94.7
14	94.1	94.6	95.1	95.6	95.8	95.4	95.1	94.8	94.3	94.3
16	94.5	94.9	95.4	95.6	95.4	95.0	94.8	94.5	94.0	93.9
18	94.8	95.2	95.7	95.7	95.0	94.6	94.5	94.7	93.5	93.5
20	95.7	94.8	94.7	94.7	94.5	94.2	94.2	93.7	93.7	93.0
22	94.7	94.4	94.3	94.2	94.0	93.8	93.8	93.2	92.6	92.6
24	94.2	93.9	93.9	93.8	93.5	93.4	93.4	92.8	92.3	92.2
26	93.8	93.5	93.4	93.3	93.1	93.0	93.0	92.4	97.9	
28	93.3	93.0	93.0	92.9	92.7	92.6	92.6	92.7		
30	92.9	92.6	92.6	92.4	92.3	92.2	92.2			
32	92.5	92.3	92.2	92.0	91.9	91.8				
34	92.2	91.9	91.8	91.6	91.5					
36	91.8	91.6	91.4	91.2						
38	91.5	91.2	91.0							
40	91.1	90.8								
42	90.7									
44										
OAT < CORNER POINT							OAT >= CORNER POINT			

N1 CORRECTIONS FOR AIR BLEED (%)	OAT < CORNER POINT	OAT >= CORNER POINT
AIR CONDITIONING ON	-0.6	-0.7
NACELLE ANTI-ICE ON	0.0	-0.8
NACELLE AND WING ANTI ICE ON	0.0	-1.6

Maximum Continuous

LEAP-1A26 – MAXIMUM CONTINUOUS N1 (%)												
NO AIR BLEED								VC=230 KT				
TAT (°C)	PRESSURE ALTITUDE (FT)											
	-2000	3000	7000	11000	15000	17000	20000	22000	25000	27000	35000	39000
-54	71.4	74.7	77.2	79.9	83.1	84.5	86.0	85.7	85.3	84.3	85.5	85.3
-50	72.0	75.4	77.9	80.6	83.9	85.2	86.8	86.5	86.1	85.0	86.3	86.0
-46	72.7	76.0	78.6	81.3	84.6	86.0	87.6	87.3	86.8	85.8	87.0	86.8
-42	73.3	76.7	79.3	82.0	85.4	86.8	88.3	88.1	87.6	86.5	87.8	87.6
-38	73.9	77.4	79.9	82.7	86.1	87.5	89.1	88.8	88.3	87.3	88.5	88.3
-34	74.5	78	80.6	83.4	86.8	88.2	89.8	89.6	89.1	88	89.3	89.1
-30	75.2	78.7	81.3	84.1	87.5	89	90.6	90.3	89.8	88.8	90	89.8
-26	75.8	79.3	81.9	84.8	88.3	89.7	91.3	91.1	90.6	89.5	90.8	90.5
-22	76.4	79.9	82.6	85.5	89	90.4	92.1	91.8	91.3	90.2	91.5	90.9
-18	77.0	80.6	83.3	86.2	89.7	91.1	92.8	92.5	92	90.9	92.2	90.0
-14	77.6	81.2	83.9	86.8	90.4	91.9	93.5	93.2	92.7	91.6	97.5	89.1
-10	78.2	81.8	84.6	87.5	91.1	92.6	94.2	94.0	93.4	91.3	90.7	88.3
-6	78.8	82.4	85.2	88.2	91.8	93.3	94.9	94.7	92.8	90.6	89.8	87.5
-2	79.4	83.1	85.8	88.8	92.4	94.0	95.7	94.3	97.3	89.7	88.9	86.7
2	80.0	83.7	86.5	89.5	93.1	94.7	948	93.3	90.9	88.8	88.1	86.0
6	80.5	84.3	87.1	90.1	93.8	94.2	93.8	92.2	89.9	87.9	87.4	85.2
10	81.1	84.9	87.7	90.8	93.0	93.1	92.8	91.2	88.9	87.7	86.6	84.4
14	81.7	85.5	88.3	91.1	92.0	92.1	97.8	90.3	88.0	86.2	85.9	
18	82.3	86.1	88.9	90.1	97.0	91.1	90.8	89.3	87.0	85.4		
22	82.8	86.7	88.8	89.3	90.2	90.3	90.0	88.5	86.2			
26	83.4	87.2	88.0	88.5	89.4	89.5	89.2	87.7				
30	83.9	86.8	87.2	87.7	88.6	88.7	88.4					
34	84.5	86.0	86.4	86.9	87.8	88.0						
38	83.7	85.2	85.7	86.3								
42	82.9	84.5	85.0	85.9								
46	82.2	83.7	84.3									
50	81.4	83	83.7									
54	80.6	82.3										
58	79.9											
62	79.3											
OAT < CORNER POINT							OAT >= CORNER POINT					

N1 CORRECTIONS FOR AIR BLEED (%)	OAT < CORNER POINT	OAT >= CORNER POINT
AIR CONDITIONING ON	0.6	0.6
NACELLE ANTI-ICE ON	0.0	-0.9
NACELLE AND WING ANTI ICE ON	0.0	-2.1

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Maximum Climb

LEAP-1A26 – MAXIMUM CLIMB N1 (%)												
Air Conditioning ON							250/300/0.78					
TAT (°C)	PRESSURE ALTITUDE (FT)											
	2000	5000	8000	12000	15000	17000	20000	24000	27000	31000	39000	41500
-54	71.8	73.6	75.5	76.8	78.1	78.9	80.1	81.5	81.6	83.0	83.6	83.7
-50	72.5	74.3	76.2	77.5	78.8	79.6	80.9	82.2	82.4	83.8	84.4	84.5
-46	73.1	75.0	76.9	78.2	79.5	80.3	81.6	83.0	83.1	84.5	85.1	85.3
-42	73.8	75.6	77.6	78.9	80.2	81.0	82.3	83.7	83.8	85.3	85.9	86.0
-38	74.4	76.3	78.2	79.6	80.9	81.7	83.0	84.4	84.6	86.0	86.6	86.7
-34	75.0	76.9	78.9	80.3	81.6	82.4	83.7	85.1	85.3	86.7	87.3	87.5
-30	75.7	77.6	79.6	80.9	82.2	83.1	84.4	85.8	86.0	87.5	88.1	88.2
-26	76.3	78.2	80.2	81.6	82.9	83.8	85.1	86.5	86.7	88.2	88.8	88.9
-22	76.9	78.8	80.9	82.2	83.6	84.4	85.8	87.2	87.4	88.9	89.5	89.6
-18	77.5	79.5	81.5	82.9	84.2	85.1	86.5	87.9	88.1	89.6	90.2	90.0
-14	78.1	80.1	82.1	83.5	84.9	85.8	87.1	88.6	88.8	90.3	90.0	89.2
-10	78.7	80.7	82.8	84.2	85.6	86.4	87.8	89.3	89.5	91.0	89.2	88.4
-6	79.3	81.3	83.4	84.8	86.2	87.1	88.5	90.0	90.1	91.1	88.5	87.7
-2	79.9	81.9	84.0	85.5	86.8	87.7	89.1	90.6	90.8	90.2	87.7	86.9
2	80.5	82.5	84.6	86.1	87.5	88.4	89.8	91.3	90.3	89.5	87.0	86.2
6	81.1	83.1	85.3	86.7	88.1	89	90.4	90.5	89.5	88.8	86.3	85.5
10	81.6	83.7	85.9	87.3	88.7	89.7	90.0	89.6	88.7	88.1	85.6	84.8
14	82.2	84.3	86.5	87.9	89.4	89.3	89.1	88.7	87.9	87.5	84.8	83.9
18	82.8	84.9	87.1	88.5	88.6	88.4	88.3	87.9	87.2	86.8		
22	83.4	85.5	86.9	88.0	87.8	87.7	87.5	87.2	86.5	86.1		
26	83.9	85.7	86.2	87.2	87.1	87.0	86.8	86.5	85.8	85.4		
30	84.5	84.9	85,4	86.5	86.4	86,3	86.1	85.8	85.1			
34	83.8	84.2	84.7	85.8	85.7	85.6	85.5	85.1				
38	83.0	83.4	83.9	85.1	85.0	84.9	84.8					
42	82.2	82.6	83.1	84.4	84.4	84.3						
46	81.4	81.8	82.4	83.7	83.7							
50	80.6	81.1	81.6	83.0								
54	79.9	80.4										
58	79.2											
OAT < CORNER POINT							**OAT >= CORNER POINT**					

N1 CORRECTIONS FOR AIR BLEED (%)	OAT < CORNER POINT	OAT >= CORNER POINT
AIR CONDITIONING ON	0.2	0.3
NACELLE ANTI-ICE ON	0.0	-0.8
NACELLE AND WING ANTI ICE ON	0.0	-1.2

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Maximum Cruise

LEAP-1A26 – MAXIMUM CRUISE N1 (%)												
Air Conditioning ON							250/300/0.78					
TAT (°C)	PRESSURE ALTITUDE (FT)											
	2000	**5000**	**8000**	**12000**	**15000**	**17000**	**20000**	**24000**	**27000**	**31000**	**39000**	**41500**
-54	70.0	71.9	73.8	75.1	76.4	77.2	78.4	79.7	79.9	81.2	81.6	81.8
-50	70.7	72.5	74.4	75.8	77.1	77.9	79.1	80.5	80.6	81.9	82.4	82.5
-46	71.3	73.2	75.1	76.5	77.8	78.6	79.8	81.2	81.4	82.6	83.1	83.2
-42	71.9	73.8	75.7	77.2	78.5	79.3	80.5	81.9	82.1	83.4	83.8	84.0
-38	72.5	74.4	76.4	77.8	79.1	80.0	81.2	82.6	82.8	84.1	84.6	84.7
-34	73.2	75.1	77.0	78.5	79.8	80.6	81.9	83.3	83.5	84.8	85.3	85.4
-30	73.8	75.7	77.7	79.2	80.5	81.3	82.6	84.0	84.2	85.5	86.0	86.1
-26	74.4	76.3	78.3	79.8	81.1	82.0	83.3	84.7	84.9	86.2	86.7	86.8
-22	75.0	76.9	79.0	80.4	81.8	82.6	83.9	85.4	85.6	86.9	87.4	87.5
-18	75.6	77.5	79.6	81.1	82.4	83.3	84.6	86.0	86.2	87.6	88.1	87.9
-14	76.2	78.2	80.2	81.7	83.1	83.9	85.3	86.7	86.9	88.3	88.0	87.3
-10	76.7	78.8	80.8	82.3	83.7	84.6	85.9	87.4	87.6	88.9	87.4	86.7
-6	77.3	79.4	81.4	83.0	84.4	85.2	86.6	88.0	88.2	89.1	86.7	86.0
-2	77.9	79.9	82.0	83.6	85.0	85.9	87.2	88.7	88.9	88.4	86.0	85.2
2	78.5	80.5	82.6	84.2	85.6	86.5	87.9	89.3	88.4	87.8	85.3	84.5
6	79.0	81.1	83.2	84.8	86.2	87.1	88.5	88.6	87.7	87.1	84.6	83.9
10	79.6	81.7	83.8	85.4	86.8	87.7	88.2	87.8	86.9	86.4	83.9	83.1
14	80.2	82.3	84.4	86.0	87.5	87.4	87.3	86.9	86.2	85.8	83.2	82.3
18	80.7	82.8	85.0	86.6	86.7	86.6	86.5	86.2	85.5	85.2		
22	81.3	83.4	84.9	86.1	86.0	85.8	85.8	85.5	84.8	84.4		
26	81.8	83.6	84.1	85.3	85.2	85.1	85.1	84.8	84.1	83.7		
30	82.4	82.9	83.4	84.6	84.5	84.5	84.4	84.0	83.4			
34	81.7	82.1	82.6	83.9	83.9	83.8	83.7	83.4				
38	80.9	81.4	81.8	83.2	83.2	83.1	83.0					
42	80.1	80.6	81.1	82.5	82.5	82.5						
46	79.3	79.8	80.4	81.9	81.9							
OAT < CORNER POINT							**OAT >= CORNER POINT**					

N1 CORRECTIONS FOR AIR BLEED (%)	OAT < CORNER POINT	OAT >= CORNER POINT
AIR CONDITIONING ON	0.2	0.3
NACELLE ANTI-ICE ON	0.0	-0.8
NACELLE AND WING ANTI ICE ON	0.0	-1.2

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Standard Operating Procedures

A32NX

1.0.0

APRIL 13th, 2022

For Flight Simulation Use Only

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Table of Contents

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Preliminary Cockpit Preparation

Engines

PM | ENGINE MASTER 1,2 switch . . . . **OFF**

PM | ENGINE MODE selector . . . . **NORM**

Weather Radar

PM | RADAR switch . . . . **OFF**

PM | WINDSHEAR / PWS switch . . . . **OFF**

PM | GAIN knob . . . . **AUTO/CAL**

PM | MODE selector . . . . **AS REQUIRED**

Landing Gear

PM | LANDING GEAR lever . . . . **VERIFY DOWN POSITION**

Wipers

PM | WIPERS selector . . . . **OFF**

- **If the aircraft hasn't been electrically supplied for 6 hours or more**

PM | BATTERY 1 AND 2 pushbuttons . . . . **VERIFY OFF**

PM | BATTERY 1 AND 2 voltages . . . .**VERIFY ABOVE 25.5 V**
The battery voltage should be above 25.5 volts.

  - **If battery voltage is below 25.5 Volt :**

  PM | BATTERY 1 AND 2 pushbuttons . . . . **AUTO**

  PM | EXTERNAL POWER pushbutton . . . . **ON**
  Verify on the ECAM ELEC PAGE that the battery contactor is closed, and the battery is charging.

    - **After 20 minutes :**

    PM | BATTERY 1 AND 2 pushbuttons . . . . **OFF**

    PM | BATTERY 1 AND 2 voltages . . **VERIFY ABOVE 25.5 V**

PM | BATTERY 1 AND 2 pushbuttons . . . . **AUTO**

- **If battery voltage is above 25.5 Volt:**

  PM | BATTERY 1 AND 2 pushbuttons . . . . **AUTO**
  If the flight crew decides to start the APU using the batteries only, it is recommended to start the APU 30 minutes within the selection of the batteries to AUTO.

- **If the aircraft has been electrically supplied during the last 6 hours**

  PM | BATTERY 1 AND 2 pushbuttons . . . . **AUTO**

  PM | EXTERNAL POWER pushbuttons . . . . **ON**

APU Fire Test

PM | APU FIRE pushbutton . . . . **IN AND GUARDED**

PM | AGENT lights . . . . **VERIFY OFF**

PM | APU FIRE TEST Pushbutton . . . . **PRESS**
Verify that the APU Fire warning is displayed on the ECAM, the APU Fire pushbutton is illuminates in red, the SQUIB and DISCH lights are on, the master warning light is on, and there is an audible continuous repetitive chime.

APU Start

- **If external power AVAIL light is on:**

  PM | APU MASTER pushbutton . . . . **PRESS**

  PM | APU START pushbutton . . . . **ON**
  It is recommended to wait 3 seconds before pressing the APU START pushbutton.

  PM | EXTERNAL POWER pushbutton . . . . **AS REQUIRED**
  It is recommended to keep the external power ON to reduce the load on the APU.

- **If external power AVAIL light is out:**

  PM | APU MASTER pushbutton . . . . **ON**

  PM | APU START pushbutton . . . . **ON**
  It is recommended to wait 3 seconds before pressing the APU START pushbutton.

Air Conditioning

- **When the APU is available:**

PM | APU BLEED pushbutton. . . . . **ON**
The flight crew should ensure that there is no low-pressure or high-pressure ground air unit connected to the aircraft. In case of a connection to a lp or hp ground air unit, do not use the APU bleed.

Cargo Heat

PM | TEMPERATURE selector. . . . . **AS REQUIRED**

Cockpit Lights

PM | COCKPIT LIGHTS . . . . **AS REQUIRED**
Set the integral light, standby compass light, dome light, floodlight switches as required. It is recommended to set the dome light to ON, due to it being the only light source in the EMER ELEC configuration. It is also recommended to set the dome light to the OFF position for takeoff.

EFB Start

PM | EFB. . . . . **START**

ACARS Initialization

PF | ACARS. . . . . **INITIALIZE**

FMGS Pre-initialization

PF | ENGINE & AIRCRAFT TYPE. . . . . **VERIFY**

PF | FM DATABASE VALIDITY. . . . . **VERIFY**
Verify the database validity and stored waypoints, navaids, runway, and routes, if any.

PF | FLIGHT NUMBER. . . . . **INSERT / VERIFY**
It is recommended to not insert the flight number if the flight plan is received by ACARS.

PF | FROM/TO. . . . . **INSERT / VERIFY**
It is recommended to not insert the FROM/TO if the flight plan is received by ACARS.

CM1 | RCL pushbutton. . . . . **PRESS FOR 3 SECONDS**
This action will recall all the warnings that the flight crew cleared or cancelled during the last flight.

CM | LOGBOOK. . . . . **VERIFY**

CM | MEL/CDL ITEMS. . . . . **VERIFY DISPATCH CONDITION**

CM1 | AIRCRAFT ACCEPTANCE. . . . . **PERFORM**

Preliminary Performance Determination

CM | AIRFIELD DATA. . . . . **OBTAIN**
The airfield data should include the following information: the runway in use, the altimeter settings, and the weather data.

- **If the loadsheet application is used:**

CM | PRELIMINARY LOADING. . . . . **COMPUTE AND CROSSCHECK**

- **If dispatch under MEL and in accordance with the logbook:**

CM | MEL/CDL ITEMS. . . . . **VERIFY ACTIVATED**

CM | PRELIMINARY TAKEOFF DATA. . . . . **COMPUTE**

CM | PRELIMINARY TAKEOFF DATA. . . . . **CROSSCHECK**
The flight crew should compare both preliminary takeoff data results and ensure that the computations are the same.

Operation Engineering Bulletins

CM | OEB. . . . . **VERIFY**

ECAM pages

- **On the DOOR system display page:**

PM | OXYGEN . . . . **VERIFY PRESSURE**

  - **If the oxygen pressure is half boxed in amber:**

  PM | MIN FLT CREW OXY CHART. . . . . **VERIFY PRESSURE**

- **On the HYD system display page:**

PM | RESERVOIR FLUID LEVEL. . . . . **VERIFY WITHIN NORMAL RANGE**
The volume of the hydraulic fluid level in the reservoirs may be altered due to the outside air pressure. It is recommended to verify with the maintenance crew to validate the issue and resolve the situation.

- **On the ENG system display page:**

PM | ENGINE OIL QUANTITY. . . . . **VERIFY WITHIN NORMAL RANGE**
If there is no indication of the engine oil quantity on the engine system display page, push the ENG 1 and 2 FADEC GND PWR to the ON position. The indication will then appear. After verification, set the ENG 1 and 2 FADEC GND PWR to the OFF position. The oil quantity should indicate at or above 8.9 qt + estimated consumption and not below 10.6 qt. The estimated consumption is 0.45 qt/h.

Flight Controls

PM | FLAPS lever . . . . **VERIFY POSITION**
Ensure that the upper ECAM displays the same position as the flap lever position.

PM | SPEEDBRAKES lever. . . . . **VERIFY RETRACTED AND DISARMED**

Parking Brake

PM | ACCU PRESS indicator. . . . . **VERIFY**
The ACCU PRESS indicator should indicate within the green band. If it is not in the green band, the flight crew may turn the electric pump on the yellow hydraulic system to recharge the brake accumulator.

PM | PARKING BRAKE handle. . . . . **ON**
It is recommended to avoid applying the parking brake when one or multiple brake temperature is above 500°C.

PM | BRAKE PRESS indicator. . . . . **VERIFY**

Alternate Braking System

PM | Y ELECTRIC PUMP pushbutton . . . . **VERIFY OFF**

PM | CHOCKS . . . . **VERIFY IN PLACE**

PM | PARKING BRAKE handle . . . . **OFF**

PM | BRAKE Pedals . . . . **PRESS MAXIMUM PRESSURE**

PM | BRAKE PRESSURE. . . . . **VERIFY**
The flight crew should ensure that the pressure builds up symmetrically without delay. With full pedal deflection, the pressure must be within 2000 and 2700 psi.

PM | BRAKE Pedals . . . . **RELEASE**

PM | PARKING BRAKE handle . . . . **ON**
The parking brake must be set for the exterior inspection. This allows the flight crew to verify the brake wear indicators.

Emergency Equipment

PM | EMERGENCY EQUIPMENT. . . . . **VERIFY ONBOARD**
Ensure that the following emergency equipment is found onboard the aircraft: life jackets, axe, smoke hoods or portable oxygen equipment and full-face masks, portable fire extinguisher, smoke googles, oxygen masks, flashlights, and escape ropes.

Rain Repellent

PM **|** RAIN RPLNT indicators. . . . . **VERIFY PRESSURE AND QUANTITY**
It is not recommended to use rain repellent to wash the windshield. It is also not recommended to use it on a dry windshield.

Circuit Breakers Panels

PM **|** REAR AND OVERHEAD CIRCUIT BREAKER panels. . . . . **VERIFY**
Ensure that all the breakers are set. Flight crew may reset as necessary.

PM **|** GEAR PINS AND COVERS. . . . . **VERIFY ONBOARD AND STOWED**

Exterior Walkaround

Left Forward Fuselage

PM **|** AOA probes . . . . **VERIFY CONDITION**

PM **|** F/O AND CAPT static ports. . . . . **VERIFY CLEAR**

PM **|** AVIONICS EQUIPMENT VENT AIR INLET VALVE . . . **VERIFY CONDITION**

PM **|** OXYGEN BAY. . . . . **CLOSED**

PM **|** OXYGEN OVERBOARD DISCHARGE indicators . . . . **GREEN**

PM **|** TOILET SERVICING DOOR . . . . **CLOSED**

Nose section

PM **|** PITOT probes . . . . **VERIFY CONDITION**

PM **|** STANDBY static ports . . . . **CLEAR**

PM **|** TOTAL AIR TEMPERATURE probes . . . . **VERIFY CONDITION**

PM **|** RADOME AND LATCHES . . . . **VERIFY CONDITION /LATCHED**

PM **|** FORWARD AVIONICS COMPARTMENT door . . . . **CLOSED**

PM **|** GROUND ELECTRICAL POWER DOOR (If not required) . . . . **CLOSED**

Nose Landing Gear

PM **|** NOSE WHEEL CHOCKS . . . . **IN PLACE**

PM **|** WHEEL AND TIRES . . . . **VERIFY CONDITION**

PM **|** NOSE GEAR STRUCTURE . . . . **VERIFY CONDITION**

PM **|** TAXI, TO, TURN-OFF lights. . . . . **VERIFY CONDITION**

PM **|** HYDRAULIC LINES AND ELECTRICAL WIRES . . . . . **VERIFY CONDITION**

PM **|** WHEEL WELL . . . . **VERIFY**

PM **|** SAFETY PIN . . . . **REMOVE**

Right Forward Fuselage

PM **|** RH + AFT AVIONICS COMPARTMENT doors . . . . **CLOSED**

PM **|** AVIONICS EQUIPMENT VENT AIR OUTLET VALVE . **VERIFY CONDITION**

PM **|** F/O AND CAPT static ports . . . . **CLEAR**

PM **|** AOA probe . . . . **VERIFY CONDITION**

PM **|** FWD CARGO DOOR AND SELECTOR PANEL . . . . **VERIFY**

Lower Center Fuselage

PM **|** POTABLE WATER DRAIN panel . . . . **CLOSED**

PM **|** ANTENNAS . . . . **VERIFY CONDITION**

PM **|** DRAIN MAST . . . . **VERIFY CONDITION**

PM **|** EMERGENCY RAM AIR INLET FLAP . . . . **VERIFY CONDITION**

PM **|** LP AND HP GROUND CONNECTION doors . . . . **CLOSED**

PM **|** ANTICOLLISION light . . . . **VERIFY**

PM **|** CENTER TANK MAGNETIC fuel level . . . . **FLUSH**

PM **|** PACK AIR INTAKES AND OUTLETS . . . . **CLEAR**

Right Center Wing

PM **|** YELLOW HYDRAULIC BAY door . . . . **CLOSED**

PM **|** FUEL panel. . . . . **CLOSED**

PM **|** INNER TANK MAGNETIC FUEL LEVEL . . . . **FLUSH**

PM **|** FUEL WATER DRAIN VALVE INNER TANK . . . . **NO LEAK**

PM **|** LANDING lights . . . . **VERIFY CONDITION**

PM **|** SLAT 1 . . . . **VERIFY CONDITION**

Engine 2 Left Side

PM **|** OIL FILL ACCESS DOOR . . . . **CLOSED**

PM **|** FAN COWL doors . . . . **CLOSED/LATCHED**

PM | DRAIN MAST . . . . **VERIFY CONDITION/NO LEAK**

PM | ENGINE INLET AND FAN BLADES. . . . . **VERIFY**

Engine 2 Right Side

PM | PRESSURE RELIEF/START VALVE HANDLE ACCESS DOOR . . **CLOSED**

PM | PYLON ACCESS PANEL. . . . . **VERIFY CONDITION/CLOSED**

Right Wing Leading Edge

PM | SLAT 2, 3, 4. 5 . . . . **VERIFY CONDITION**

PM | INNER AND OUTER CELLS MAGNETIC FUEL LEVEL . . . . **FLUSH**

PM | FUEL WATER DRAIN VALVES (outer cell, surge tank) . . . . **NO LEAK**

PM | REFUEL COUPLING . . . . **CLOSED**

PM | SURGE TANK AIR INLET . . . . **CLEAR**

PM | FUEL VENTILATION OVERPRESSURE DISC . . . . **INTACT**

PM | NAVIGATION light . . . . **VERIFY CONDITION**

PM | WING TIP . . . . **VERIFY CONDITION**

Right Wing Trailing Edge

PM | STATIC DISCHARGERS . . . . **VERIFY**

PM | CONTROL SURFACES . . . . **VERIFY CONDITION**

PM | FLAPS AND FAIRING. . . . . **VERIFY CONDITION**

Right Landing Gear and Fuselage

PM | CHOCKS . . . . **REMOVED**

PM | WHEEL AND TIRES . . . . **VERIFY CONDITION**

PM | BRAKES AND WEAR INDICATION . . . . **VERIFY CONDITION**

PM | TORQUE LINK DAMPER . . . . **VERIFY CONDITION**

PM | HYDRAULIC lines . . . . **VERIFY**

PM | LANDING GEAR STRUCTURE . . . . **VERIFY**

PM | DOWNLOCK SPRINGS . . . . **VERIFY**

PM | SAFETY PIN . . . . **REMOVED**

PM | GROUND HYDRAULIC CONNECTION YELLOW. . . . . **CLOSED**

PM | WATER DRAIN MAST . . . . **VERIFY CONDITION**

PM | SHROUD FUEL DRAIN . . . . **VERIFY CONDITION**

Right Aft fuselage

PM | CARGO DOOR AND SELECTOR PANEL . . . . **VERIFY**

PM | BULK door . . . . **VERIFY**

PM | TOILET SERVICE ACCESS DOOR . . . . **CLOSED**

PM | OUTFLOW VALVE. . . . . **VERIFY CONDITION**

PM | DRAIN . . . . **VERIFY CONDITION**

PM | FLIGHT RECORDER ACCESS DOOR . . . . **CLOSED**

Tail

PM | STABILIZER, ELEVATORS, FIN AND . . . . **VERIFY CONDITION**

PM | STATIC DISCHARGERS. . . . . **VERIFY**

PM | LOWER FUSELAGE STRUCTURE. . . . . **VERIFY CONDITION**

APU

PM | APU ACCESS DOORS. . . . . **CLOSED**

PM | AIR INTAKE . . . . **VERIFY CONDITION**

PM | DRAIN. . . . . **VERIFY CONDITION /NO LEAK**

PM | OIL COOLER AIR OUTLET . . . . **CLEAR**

PM | EXHAUST . . . . **CLEAR**

PM | NAVIGATION light . . . . **VERIFY CONDITION**

PM | FIRE EXTINGUISHER OVERPRESSURE INDICATION. . . . . **IN PLACE**

Left Aft Fuselage

PM **|** STABILIZER, ELEVATOR, FIN, AND RUDDER . . . . . . **VERIFY CONDITION**

PM **|** POTABLE WATER SERVICE DOOR. . . . . **CLOSED**

PM **|** GROUND HYDRAULIC CONNECTION BLUE AND GREEN DOORS . . . . **CLOSED**

PM **|** HYDRAULIC RESERVOIR FILLING . . . . **CLOSED**

Left Landing Gear

PM **|** CHOCKS. . . . . **REMOVED**

PM **|** WHEEL AND TIRES . . . . **VERIFY CONDITION**

PM **|** BRAKES AND BRAKE WEAR indicator . . . . **VERIFY CONDITION**

PM **|** TORQUE LINK. . . . . **VERIFY CONDITION**

PM **|** HYDRAULIC lines . . . . **VERIFY**

PM **|** LANDING GEAR STRUCTURE . . . . **VERIFY**

PM **|** DOWNLOCK SPRINGS . . . . **VERIFY**

PM **|** SAFETY PIN . . . . **REMOVED**

Left Wing Trailing Edge

PM **|** FLAPS AND FAIRING. . . . . **VERIFY CONDITION**

PM **|** STATIC DISCHARGERS . . . . **VERIFY**

PM **|** CONTROL SURFACES . . . . **VERIFY CONDITION**

PM **|** STATIC DISCHARGERS . . . . **VERIFY**

Left Wing Leading Edge

PM **|** WING TIP . . . . **VERIFY CONDITION**

PM **|** NAVIGATION light . . . . **VERIFY CONDITION**

PM **|** SURGE TANK AIR INLET . . . . **CLEAR**

PM **|** FUEL VENTILATION OVERPRESSURE DISC . . . . **INTACT**

PM **|** FUEL WATER DRAIN VALVES (outer cell, surge tank) . . . . **NO LEAK**

PM **|** INNER AND OUTER CELLS MAGNETIC FUEL LEVEL . . . . **FLUSH**

PM **|** SLAT 2, 3, 4. 5 . . . . **VERIFY CONDITION**

Engine 1 Left Side

PM **|** OIL FILL ACCESS DOOR . . . . **CLOSED**

PM **|** FAN COWL doors . . . . **CLOSED/LATCHED**

PM **|** DRAIN MAST . . . . **VERIFY CONDITION/NO LEAK**

PM **|** ENGINE INLET AND FAN BLADES. . . . . **VERIFY**

Engine 1 Right Side

PM **|** PRESSURE RELIEF/START VALVE HANDLE ACCESS DOOR . . **CLOSED**

PM **|** PYLON ACCESS PANEL. . . . . **VERIFY CONDITION/CLOSED**

Left Center Wing

PM **|** SLAT 1 . . . . **VERIFY CONDITION**

PM **|** WING LEADING EDGE VENTILATION INTAKE . . . . **CLEAR**

PM **|** FUEL WATER DRAIN VALVES. . . . . **NO LEAK**

PM **|** INNER TANK MAGNETIC VALVES . . . . **FLUSH**

PM **|** LANDING lights . . . . **VERIFY CONDITION**

PM **|** HYDRAULIC RESERVOIR pressurization door . . . . **CLOSED**

PM **|** RAT doors. . . . . **CLOSED**

Cockpit Preparation

White lights on the overhead panel

- **In the passing flow the overhead panel:**

PF | ALL WHITE LIGHTS . . . . **OFF**

Recorder

PF | RCDR GND CTL pushbutton. . . . . **ON**

PF | LOUDSPEAKER VOLUME knob. . . . . **BOTH SIDES – OFF**

PF | ACP INT/RAD switch. . . . . **SET TO INT**

PF | INTERPHONE VOLUME RECEPTION KNOB. . . . . **RELEASE**

PF | CVR TEST pushbutton. . . . . **PRESS AND MAINTAIN**
To know the CVR result, the flight crew should hear an audio test signal through the loudspeakers. The audio test signal depends on the CVR model installed on the aircraft. A CVR 30 minutes will emit a continuous tone or a short tone, while the CVR 120 minutes will emit a short tone, or a short tone and a beep at every 4 seconds, or two short tones and a beep every 4 seconds.

EVAC

PF | CAPT & PURS/CAPT switch. . . . . **AS REQUIRED**
This depends on the company policy.

ADIRS

PF | All IR MODE selectors. . . . . **NAV**
It is recommended to align the inertial references as soon as possible. The initialization may take some time. It is also recommended to complete a full alignment if this is the first flight of the day, the flight crew has changed, the GPS is not available to all segments in the flight and the pilot expects long segments with low NAVAID coverage, or if the GPS is not available during a flight with an expected flight time that is over 3 hours. It is recommended to perform a fast alignment for all other flight conditions.

Exterior lights

PF | STROBE switch. . . . . **AUTO**

PF | BEACON switch. . . . . **OFF**

PF | NAV & LOGO switch. . . . . **AS REQUIRED**

PF | REMAINING EXTERIOR LIGHTS. . . . . **AS REQUIRED**

Signs

PF | SEAT BELTS sign . . . . **ON / AUTO**

PF | NO SMOKING sign. . . . . **AUTO**
Leaving the SEAT BELTS sign or NO SMOKING sign prevents the emergency batteries from charging.

PF | EMER EXIT LT selector . . . . **ARM**

Probe / Window Heat

PF | PROBE/WINDOW HEAT pushbuttons. **VERIFY AUTO**

Cabin Pressure

PF | LDG ELEV knob. . . . . **AUTO**

Air Conditioning

PF | PACK FLOW selector . . . . **AS REQUIRED**
It is recommended to set the PACK FLOW to NORM. The flight crew can select LO if the flight has less than 141 passengers. The flight crew can also select HI for abnormally hot and humid conditions.

Note	If the APU is supplying, the pack controllers will select HI flow automatically, no matter what the selector position is.

Electrical

PF | ECAM ELEC PAGE. . . . . **PRESS**

PF | BAT 1 & 2 pushbuttons. . . . . **OFF THEN ON**
After 10 seconds, the flight crew should ensure that the battery charge is below 60 A and is decreasing.

Fuel

- **If the fuel level in the center tank is less than 200 kg / 440 lbs. for the flight:**

PF | FUEL MODE SEL pushbutton. . . . . **MAN**

PF | CTR TK PUMP 1 & 2 pushbuttons. . . . . **OFF**

- **If the fuel level in the center tank is not less than 200 kg / 440 lbs. for the flight:**

PF | FUEL MODE SEL pushbutton. . . . . **VERIFY AUTO**

Engine Fire Tests

PF | ENG 1 FIRE & ENG 2 FIRE pushbuttons. . . . . . **VERIFY IN AND GUARDED**

PF | AGENT 1 & 2 lights. . . . . **VERIFY OFF**

PF | ENG 1 TEST & ENG 2 TEST. . . . . **PRESS AND MAINTAIN**
The pilots hold the TEST pushbutton pressed throughout the test. The test result should be the following items:

- a constant repetitive chime sound;
- the master warning light flashes on the glareshield;
- the ECAM displays the engine fire alert messages (ENG 1 FIRE, ENG 2 FIRE);
- All engine fire pushbutton, the squib light of the engine agent pushbuttons are illuminated;
- the disch light of the engine unit agent pushbuttom illuminates; and
- all fire lights on the engine master panel illuminates.

Audio Switching Panel

PF | AUDIO SWITCHING selector. . . . . **NORM**

Ventilation

PF | ALL LIGHTS. . . . . **VERIFY OFF**

ACT Control Panel

PF | ACT XFR rotary selector. . . . . **OFF**

Third Occupant Audio Control Panel

PF | PA knob. . . . . **RECEPT**
It is recommended to set the volume at or above medium range. This allows the cabin announcements to be recorded on the cockpit voice recorder.

Maintenance Panel

PF | ALL LIGHTS. . . . . **VERIFY OFF**

Center Instrument Panel – ISIS

PF | ISIS. . . . . **VERIFY**
The flight crew can adjust the brightness, the altimeter readings, and setting, and the attitude display. Ensure that no flags are shown. If necessary, reset the attitude.

Note	The use of the ISIS bugs functions is not recommended.

Clock

PF | CLOCK. . . . . **VERIFY / SET**
The flight crew must ensure that the date is correct. If it is not correct, the flight crew can set the date manually and keep the clock mode in the internal mode for the flight.

Nosewheel Steering

PF | A/SKID & N/W STRG switch. . . . . **ON**

ACP

PF | INT knob. . . . . **PRESS OUT / VERIFY VOLUME**

PF | VHF. . . . . **VERIFY**

PF | HF. . . . . **VERIFY**
Verify the transmission and the reception of the VHF and HF. It is prohibited to transmit on HF when the aircraft is refueling.

Cockpit door

PF | ANN LT selector. . . . . **TEST**
On the pedestal, ensure that the OPEN, FAULT, and the three LED lights on the overhead panel illuminate.

PF | ANN LT selector. . . . . **BRT**
Ensure that all lights go off.

PF | CKPT DOOR. . . . . **VERIFY CORRECT OPERATION**

PF | CKPT DOOR MECHANICAL OVERRIDE. . . . . **VERIFY**

Switching Panel

PF | ALL SELECTORS. . . . . **VERIFY NORM**

Engine

PF | THRUST lever. . . . . **IDLE**

PF | ENG MASTER switches. . . . . **OFF**

PF | ENG MODE selector. . . . . **NORM**

Parking Brake

PF | ACCU PRESS indicator. . . . . **VERIFY**
If the ACCU PRESS indicates outside of the green band, the flight crew may use the electric pump on the yellow hydraulic system to recharge the brake accumulator.

PF | PARK BRK handle. . . . . **VERIFY ON**
If the brakes are hot, and chocks are in place, the flight crew may leave the parking brakes off.

PF | BRAKES PRESS indicator. . . . . **VERIFY**

Gravity Gear Extension

PF | GRAVITY GEAR EXTN. . . . . **VERIFY STOWED**

Air Traffic Control

PF | ATC. . . . . **STBY**

PF | ALT RPTG. . . . . **ON**

PF | ATC SYS 1. . . . . **SELECT**
It is recommended to select SYS 1 if AP 1 is used, and SYS 2 if AP 2 is used in RVSM operations.

Radio Management Panel

PF | RMP . . . . **VERIFY ON**

PF | GREEN NAV light. . . . . **VERIFY OFF**

PF | SEL light. . . . . **VERIFY OFF**

PF | COM FREQUENCIES. . . . . **TUNE**
It is recommended to use the VHF in the following ways to ensure the optimal operation of the system:

- VHF selected for the active Air Traffic Control communications and emergency frequencies.
- VHF 2 for the Automatic Terminal Information Service (ATIS)
- VHF 3 for the ACARS

ATC Datalink Communications

PF | MSG RECORD. . . . . **ERASE**
To erase the message record, press the ATC COMM button on the MCDU and display the MSG RECORD page. Then, you can erase the MSG RECORD file.

FMGS Preparation

PF | ENGINE & AIRCRAFT TYPE. . . . . **VERIFY**
To display the status page, press the DATA key.

PF | FM database validity. . . . . **VERIFY**
Verify the database validity and the stored waypoints, navaids, runway, and routes.

On the Honeywell FMS, the AIRAC has one day in common to the previous AIRAC. It is then recommended on the first day of the AIRAC cycle to select the new AIRAC cycle on the first flight of the day.

PF | NAVAID DESELECTION. . . . . **AS REQUIRED**

PF | FLIGHT PLAN INITIALIZATION. . . . . **COMPLETE**
The flight crew should insert the company route or FROM/TO airport, verify ALTN/CO RTE, insert the flight number, enter the cost index, insert the estimated flight cruise level, verify the cruise flight level temperature, insert the expected ground temperature, and verify the alignment with the latitude and longitude.

PF | ADIRS POSITION INITIALIZATION. . . . . **AS APPROPRIATE**

PF | F-PLN A page. . . . . **COMPLETE AND VERIFIED**
First, perform a verification to the waypoints, routes, departure, arrival, and vertical climb speed limit or constraint. Then, modify the flight plan if appropriate. Verify the total distance calculated by the flight plan, and ensure that it is similar to the projected flight plan.

PF | WINDS. . . . . **AS APPROPRIATE**
The flight crew can choose between using the trip wind and the forecast wind for climb, cruise, and descent phase.

PF | F-PLN. . . . . **VERIFY**
Verify the total distance calculated by the flight plan using the DIST TO DEST function, and ensure that it is similar to the projected flight plan.

PF | SECONDARY FLIGHT PLAN. . . . . **AS APPROPRIATE**
It is recommended the use of secondary flight plans. Secondary flight plan should be used to anticipate a runway change, an immediate return, or an emergency landing to the nearest airport. However, the pilot must ensure that any past secondary flight plans are deleted.

PF | RADIO NAV. . . . . **VERIFY**
Verify the VOR, ILS/GLS, MLS, and ADF chosen by the FMGC. If they are erroneous, modify them, and ensure the correct identifier is displayed on the navigation display and primary flight display.

Gross Weight Insertion (INIT B page)

PF | ZFWCG/ZFW. . . . . **INSERT**

PF | BLOCK FUEL. . . . . **INSERT**
If the data is not available yet, the pilot can insert the expected values to enable performance predictions and the optimal fuel distribution.

Takeoff Data Insertion (PERF TAKEOFF page)

PF | T.O SHIFT. . . . . **INSERT AS REQUIRED**
It is recommended to insert a T.O Shift value if the flight crew plan to take off from an intersection.

PF | V1, VR, V2. . . . . **INSERT**

PF | FLX TO TEMP. . . . . **INSERT**

PF | THR RED/ACC altitude. . . . . **SET OR VERIFY**

PF | ENG OUT ACC altitude. . . . . **SET OR VERIFY**

PF | FLAPS/THS reminder. . . . . **INSERT**

Climb, Cruise, Descent, Speed Preselection

PF | PRESET SPEEDS. . . . . **AS REQUIRED**

FMGS Preparation Verification

PF | FMS PREPARATION. . . . . **VERIFY**
Verify all the data inserted in the FMS.

EFIS Control Panel

CM | BAROMETRIC REFERENCE. . . . . **SET**
Ensure to set the barometric on the EFIS control panel and on the standby altimeter. The flight crew must also verify that the difference in altitude of both PFDs are 20 feet, and the difference between a PFD and ISIS is no more than 100 feet.

CM | FD. . . . . **VERIFY ON**

CM | ILS/LS. . . . . **AS REQUIRED**

CM | ND MODE AND RANGE. . . . . **AS REQUIRED**

CM | ADF/VOR switch. . . . . **AS REQUIRED**

FCU

PF | SPD MACH window. . . . . **DASHED**

PF | HDG V/S – TRK FPA pushbutton. . . . . **HDG V/S**

PF | ALT window. . . . . , **SET INITIAL EXPECTED CLEARANCE ALTITUDE**

Oxygen Mask Test

CM | CREW SUPPLY pushbutton. . . . . **VERIFY ON**

CM | LOUDSPEAKERS. . . . . **ON**

CM | INT reception knob. . . . . **PRESS OUT-ADJUST**

CM | INT/RAD switch. . . . . **INT**

- **On the mask stowage box:**

  CM | RESET/TEST pushbutton. . **PRESS IN DIRECTION OF THE ARROW**
  Ensure that the blinker turn yellow, and after a short time goes black.

  CM | RESET/TEST pushbutton. . . . . **MAINTAIN**

  CM | EMERGENCY PRESSURE selector. . . . . **PRESS**
  Ensure that the blinker turn yellow and remain yellow. The flight crew must also notice an oxygen flow through the loudspeakers.

  CM | REGUL LO PR message. . . . . **VERIFY OFF**

Instrument Panel

CM | PFD and ND brightness knob. . . . . **AS REQUIRED**

CM | LOUDSPEAKER knob. . . . . **SET**
It is recommended to set the LOUDSPEAKER knob to the 1 o'clock position.

CM | PFD. . . . . **VERIFY**
Ensure that the PFD displays the ATT and HDG when available, and the IAS, FMA, initial targeted altitude, altimeter readings, vertical speed indicator, heading and attitude.

CM | ND. . . . . **VERIFY**
Ensure that the ND displays the heading, initial waypoint, and VOR ADF indications.

ECAM Control Panel

PF | PRESS pushbutton. . . . . **PRESS**
Ensure that the CAB PRESS page displays the LDG ELEV AUTO to verify the correct position of the LDG ELEV knob.

PF | STS pushbutton. . . . . **PRESS**
Ensure that the INOP SYS displayed are compatible with the MEL.

ADIRS

PM | IRS ALIGN. . . . . **VERIFY**
Ensure that the IRS are in the NAV mode, and that the aircraft position is consistent with the airport position.

CM | TAKEOFF BRIEFING. . . . . **PERFORM**
The takeoff briefing should contain information about any adverse weather, the runway condition, the crew coordination in case of a rejected takeoff, a discussion of any unusual conditions that can affect the safety of the flight, the SID if the aircraft has one engine out, and any other operational risk

Before Pushback or Start

Loadsheet

CM | FINAL LOADSHEET. . . . . **VERIFY**
Ensure that the loadsheet is accurate.

CM | ZFW/ZFWCG. . . . . **VERIFY/REVISE**
The flight crew compare the ZFW and ZFWCG data with the previously entered data. If different, the flight crew must reinsert the data.

CM | ZFW/ZFWCG. . . . . **CROSSCHECK**
The pilot verify on both flight management system the values of the ZGW/ZFWCG.

CM | FOB. . . . . **VERIFY**
Verify the fuel on board (FOB) on the system display. Ensure that it corresponds to the flight plan and to the loadsheet.

Takeoff Data

- **If takeoff conditions have changed:**

  PF | FINAL TAKEOFF PERF DATA. **RECOMPUTE**
  The flight crew members independently recompute the takeoff performance data.

  PF | FMS TAKEOFF DATA. . . . . **REVISE**
  Verify the takeoff speeds, flexible temperature, and takeoff configuration.

  PM | FMS REVISED TAKEOFF PERF DATA. . . . . **CROSSCHECK**
  The PF ensures the PNF got the same performance data on the T.O page.

Seating Position

CM | SEATING POSITION. . . . . **ADJUST**
The pilot eyes should be in line with the red and white balls.

MCDU

PF | FMS PERF TO page. . . . . **SELECT**
It is recommended to set the PERF TO page on the PF MCDU.

PM | FMS F-PLN page. . . . . **SELECT**
It is recommended to set the F-PLN page on the PM MCDU.

ELEC

PM | EXT PWR. . . . . **VERIFY AVAIL**

PM | EXT PWR DISCONNECTION. . . . . **REQUEST**

Before Start Checklist

CM | BEFORE START CHECKLIST down to the line. . . . . **PERFORM**

Pushback/Start Up Clearance

PM | PUSHBACK/START CLEARANCE. . . . . **OBTAIN**

PM | ATC. . . . . **SET FOR OPERATION**

Windows and Doors

CM | WINDOWS AND DOORS. . . . . **VERIFY CLOSED**
Verify on the ECAM DOOR page that the doors are closed.

CM | SLIDES. . . . . **VERIFY ARMED**
Verify on the ECAM DOOR page that the slides are armed.

Exterior Lights

PF | BEACON switch. . . . . **ON**

Thrust Levers

PF | THRUST LEVERS. . . . . **IDLE**
Ensure that the thrust levers are at the idle position. If the lever is beyond the idle detent, it can cause a hazardous situation at start-up.

ACCU Pressure

PF | ACCU PRESS indicator. . . . . **VERIFY**
The ACCU PRESS must indicates within the green band. If this is not the case, use the electric pump of the yellow hydraulic system.

Parking Brake and Nosewheel Steering

- **If pushback is not required:**

  PF | PARK BRK handle. . . . . **VERIFY ON**

  PF | BRAKES PRESS indicator. . . . . **VERIFY**

  CM | BEFORE START CHECKLIST below the line. . . . . **PERFORM**

- **If pushback is required:**

  PF | N/W STRG DISC MEMO. **VERIFY DISPLAYED**

CM **|** BEFORE START CHECKLIST below the line. . . . . **PERFORM**

PF **|** PARK BRK handle. . . . . **OFF**

- **When the pushback is completed:**

  PF **|** PARK BRK handle. . . . . **ON**

  PF **|** PARKING BRAKE indicator. . . . . **VERIFY**

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Engine Start

PF | ENG MODE selector. . . . . **IGN/START**
The flight crew should look at the engine warning display for the indication of “COOLING”.

PF | ENGINE 2 START. . . . . **ANNOUNCE**
The engine 2 is usually started first. This will add the ability to pressurize the yellow hydraulic system.

PF | ENG MASTER 2. . . . . **ON**
It is recommended to wait until all amber crosses and messages have disappeared from the upper ECAM display before setting the ENG MASTER 2 switch to ON.

- **When engine idle is reached (AVAIL indication is displayed)**

  PF | ENG IDLE PARAMETERS. . . . . **VERIFY**
  At ISA sea level, the engine parameters should indicate the following:

  - 19% N1
  - 68% N2
  - 520°C EGT
  - 290 kg/h FF

PF | ENGINE 1 START. . . . . **ANNOUNCE**

PF | ENG MASTER 1. . . . . **ON**

- **When engine idle is reached (AVAIL indication is displayed)**

  PF | ENG IDLE PARAMETERS. . . . . **VERIFY**
  At ISA sea level, the engine parameters should indicate the following:

  - 19% N1
  - 68% N2
  - 520°C EGT
  - 290 kg/h FF

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After Start

Engine Mode

PF | ENG MODE selector. . . . . **NORM**
It is recommended to wait 5 minutes before taking off to prevent a thermal shock. The taxi time can be included in the waiting period.

APU Bleed

PF | APU Bleed pushbutton. . . . . **OFF**
The auxiliary power unit bleed valves close. All engine bleed valves automatically open.

Anti-Ice

PF | ENG ANTI-ICE pushbutton. . . . . **AS REQUIRED**
The engine anti-ice must be set to on during all ground operations if there is an icing condition. If ground surface and the environment allow, the flight crew can proceed to an engine de-icing run-up.

To proceed to an engine de-icing runup, set the parking brakes to ON, then accelerate the engines N1 to a minimum of 50% for 5 seconds.

PF | WING ANTI-ICE pushbutton. . . . . **AS REQUIRED**
The flight crew should turn the wing anti-ice ON when icing conditions are encountered. After 30 seconds, the valve will close itself as a self-test is passed.

APU

- **If the APU is not required:**

PF | APU MASTER pushbutton. . . . . **OFF**

Ground Spoilers

PM | GROUND SPOILERS. . . . . **ARM**

Rudder Trim

PM | RUD TRIM position indication. . . . . **VERIFY ZERO**

- **If the RUD TRIM position indication does not indicates at zero:**

  RESET pushbutton. . . . . **PRESS**

Flaps

PM | FLAPS lever. . . . . **SET TAKEOFF POSITION**

PM | FLAPS. . . . . **VERIFY POSITION**
If taxiing in icing condition, delay the flaps extension until the runway holding point. This prevents contamination in the mechanism.

Pitch Trim

PM | PITCH TRIM handwheel. . . . . **SET**
Verify that the pitch trim is set to the takeoff trim position.

ECAM Status

PF | STATUS REMINDER. . . . . **VERIFY NOT DISPLAYED**

- **If STS reminder is displayed:**

  PF | STS pushbutton. . . . . **PRESS**

N/W STEER DISC Memo

PF | N/W STEER DISC MEMO. . . . . **VERIFY NOT DISPLAYED**

Ground Crew

PF | CLEAR TO DISCONNECT. . . . . **ANNOUNCE**
When the clearance to disconnect is given, the ground crew should remove the chocks, remove the tow pin, disconnect the interphone and make a hand signal on one side of the aircraft.

After Start Checklist

CM | AFTER START Checklist. . . . . **PERFORM**

Taxi

Taxi Clearance

PM | TAXI clearance. . . . . **OBTAIN**

Exterior Lights

PF | NOSE switch. . . . . **TAXI**

PF | RWY TURN OFF switch. . . . . **ON**

- **When crossing a runway:**
  PF | STROBE switch. . . . . **ON**

Parking Brakes

PF | PARK BRK handle. . . . . **OFF**

PM | BRAKES PRESSURE. . . . . **VERIFY AT ZERO**

Thrust Lever

PF | THRUST lever. . . . . **AS REQUIRED**

Brakes

PF | BRAKE PEDALS. . . . . **PRESS**

PF | BRAKES. . . . . **VERIFY**
The flight crew should monitor the WHEEL SD page on the ECAM display. If an arc is displayed above the brake temperature, it is recommended to set the brake fans to ON.

Nosewheel Steering

PF | TILLER or RUDDER PERDALS. . . . . **USE AS REQUIRED**

Flight Controls

CM | FLIGHT CONTROLS. . . . . **VERIFY**

ATC Clearance

PM | ATC Clearance. . . . . **CONFIRM**

Takeoff Data/Conditions

- **If takeoff conditions have changed:**

PM | FINAL TAKEOFF PERF DATA. **RECOMPUTE**
The flight crew should independently compute the takeoff performance data again.

PM | FMS TAKEOFF DATA. . . . . **REVISE**
The flight crew should revise the takeoff data in the FMS. It is recommended to pay attention to the changes at the slats/flaps configuration at takeoff.

CM | FMS REVISED TAKEOFF PERF DATA. . . . . **CROSSCHECK**

PM | FLAPS lever. . . . . **AS APPROPRIATE**

AFS/Flight instruments

PM | F-PLN (SID, TRANS) . . . . **REVISE or VERIFY**
Ensure that the ATC clearance is the same as with the inserted flight plan in the FMS.

PM | INITIAL CLIMB SPEED AND SPEED LIMIT. . . . . **MODIFY or VERIFY**
It is recommended to use VERT REV at departure, or at a CLB waypoint.

PM | CLEARED ALTITUDE ON FCU. . . . . **SET**

PM | HDG ON FCU. . . . . **PRESET**
Preset the heading if the air traffic control require a radar vector departure. However, please note that the RWY TRK mode maintains the aircraft on the runway heading until the heading mode engage.

PM | BOTH FD. . . . . **VERIFY ON**

CM | PFD/ND. . . . . **VERIFY**

CM | TAKEOFF BRIEFING. . . . . **CONFIRM**

PM | RADAR. . . . . **ON**
It is recommended to set the MULTISCAN switch to MAN. This allows the flight crew to verify the radar and the departure path. The flight crew can then set the radar to the AUTO position.

PM | PREDICTIVE WINDSHEAR SYSTEM. . . . . **AUTO**

ATC

PM | ATC code/mode. . . . . **CONFIRM & SET FOR TAKEOFF**

Terrain Radar

CM | TERR ON ND. . . . . **AS REQUIRED**
It is recommended to set the weather radar display on the PF side, and the terrain radar on the PM side.

Autobrakes

PM | AUTO BRK MAX pushbutton. . . . . **ON**

Final Verification

PM | T.O CONFIG pushbutton. . . . . **TEST**
Ensure that the upper ECAM display shows the message “T.O CONFIG NORMAL”.

PM | T.O MEMO. . . . . **VERIFY NO BLUE**

CM | CABIN REPORT. . . . . **RECEIVE**
Verify on the engine warning display the display of the message “CABIN READY” or obtain the report from the chief flight attendant “Cabin ready for takeoff”.

Before Takeoff Checklist

CM | BEFORE TAKEOFF CHECKLIST down to the line. . . . . **PERFOM**

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Before Takeoff

Brake Fans

- **If the brake fans are currently running:**

PM | BRAKE TEMPERATURE. . . . . **VERIFY**
If the brake temperature is below 150°C, the flight crew can select the brake fans OFF. If the brake temperature is above 150°C, it is recommended to delay the takeoff.

Line-Up Clearance

PM | LINE-UP CLEARANCE. . . . . **OBTAIN**

Exterior Lights

PF | STROBE switch. . . . . **ON**
The flight crew can turn off the strobe lights if it causes any visual trouble.

TCAS

PM | TCAS mode selector. . . . . **TA or TA/RA**
It is recommended the use of **TA/RA** for normal situations. If it is inappropriate, such as converging runways or parallel runways, the use of TA ONLY mode is recommended.

Approach Path

CM | APROACH PATH. . . . . **CLEARED OF TRAFFIC**
Ensure there is no traffic incoming, both from visual confirmation and using the TCAS display on the ND.

PM | Cabin Crew. . . . . **ADVISE**

Sliding Table/EFB

CM | SLIDING TABLE. . . . . **STOW**

CM | ALL EFB transmitting mode. . . . . **AS REQUIRED**

CM | TAKEOFF RUNWAY. . . . . **CONFIRM**

PM | PACK 1 and 2. . . . . **AS REQUIRED**
It is recommended to select the packs OFF or put the APU bleed ON. This should improve performance when using TOGA thrust. Furthermore, it can reduce maintenance cost due to the takeoff EGT reduction. However, if the wing anti-ice is used, it is not recommended to use the APU bleed.

CM | BEFORE TAKEOFF CHECKLIST below the line. **PERFORM**

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Takeoff

Takeoff Clearance

PM | TAKEOFF CLEARANCE. . . . . **OBTAINED**

Exterior Lights

PF | NOSE switch . . . . **T.O**

PF | RWY TURN OFF switch . . . . **ON**

PF | LAND LIGHTS switch . . . . **ON**

Thrust Setting

PF | TAKEOFF . . . . **ANNOUNCE**

PF | THRUST LEVERS **50% N1**

- **If the crosswind is at or below 20 knots and there is no tailwind:**
  It is recommended to apply half forward sidestick until the aircraft reach the airspeed of 80 knots to counter the nose-up effect. At 80 knots, release gradually the sidestick. The sidestick must be neutral at 100 knots.

  PF | BRAKES . . . . **RELEASE**

  PF | THRUST LEVERS. . . . . **FLX or TOGA**

- **If the crosswind is greater than 20 knots, or there is tailwind:**
  It is recommended to apply full forward sidestick until the aircraft reach the airspeed of 80 knots. At 80 knots, release gradually the sidestick. The sidestick must be neutral at 100 knots.

  PF | BRAKES. . . . . **RELEASE**

  PF | THRUST LEVERS. . . . . **FLX or TOGA**

Note	Expect the ENG SD page to replace the WHEEL SD page on the lower ECAM display.

PF | DIRECTIONAL CONTROL. . . . . **RUDDER**
Once the wheel reach 130 knots, there is an automatic disconnection between the nosewheel steering and the rudder pedals.

PM | CHRONO. . . . . **START**

CM | PFD/ND. . . . . **MONITOR**
Ensure that either of the following modes are displayed on the FMA: MAN TOGA (or MAN FLX xx) / SRS / RWY / A/THR / Blank. Also, verify the FMS position on the ND.

PF | FMA. . . . . **ANNOUNCE**

Below 80 knots

PM | TAKEOFF N1. . . . . **VERIFY**
Ensure that the actual N1 of each engine has reached the N1 rating limit before the aircraft reach the airspeed of 80 knots.

PM | THRUST SET. . . . . **ANNOUNCE**

PM | PFD/ENG indications. . . . . **MONITOR**

Reaching 100 knots

PM | ONE HUNDRED KNOTS. . . . . **ANNOUNCE**
It is recommended rejecting the takeoff under 100 knots. However, rejecting takeoff above 100 knots is a more serious case.

At V1

PM | V1. . . . . **ANNOUNCE**

At VR

PM | ROTATION. . . . . **ORDER**

PF | ROTATION. . . . . **PERFORM**
It is recommended to have a rotation speed of 3°/s until the aircraft is at a pitch attitude of 15°. It is recommended to minimize any lateral inputs as it can extend spoilers. After lift-off, it is recommended to follow the SRS pitch command bar.

Note	In case of an engine failure, the recommended pitch attitude is 12.5°.

When Positive Climb

PM | POSITIVE CLIMB. . . . . **ANNOUNCE**

PF | LANDING GEAR UP. . . . . **ORDER**

PM | LANDING GEAR. . . . . **SELECT UP**

PF | AUTOPILOT. . . . . **AS REQUIRED**
The autopilot can be engaged above 100 feet AGL.

At Thrust Reduction Altitude

PF | THRUST LEVERS. . . . . **CL**
On the FMA, when the message “LVR CLB” appear flashing, move the thrust levers to the CL detent. The autothrottle will activate.

PM | PACK 1 & 2 . . . . **ON**
It is recommended to select PACK 2 at least 10 seconds after PACK 1 has been selected. This is for passenger comfort.

At Acceleration Altitude

PM | TARGET SPEED. . . . . **MODIFIED**
Ensure that the speed target changes from V2 +10 to the first CLB speed.

Above Acceleration Altitude / Climb Phase

- **At F speed:**
  The F speed will only appear if the aircraft is in a higher configuration than 1+F.

  PF | FLAPS 1. . . . . **ORDER**

  PM | FLAPS 1. . . . . **SELECT**

- **At S speed:**

  PF | FLAPS 0. . . . . **ORDER**

  PM | FLAPS 0. . . . . **SELECT**

  PM | GND SPLRS. . . . . **DISARM**

  PM | NOSE switch. . . . . **OFF**

  PM | RWY TURN OFF switch. . . . . **OFF**

  PM | EXTERIOR LIGHTS. . . . . **AS REQUIRED**

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After Takeoff

PM **|** APU BLEED pushbutton. . . . . **AS REQUIRED**

PM **|** APU MASTER pushbutton. . . . . **AS REQUIRED**

PM **|** TCAS mode selector. . . . . **TA/RA**
If the takeoff was performed using TA only, select the TA/RA mode.

PM **|** ENG ANTI-ICE pushbutton. . . . . **AS REQUIRED**
It is recommended to set the engine anti-ice to ON when flying through icing condition, or anticipated icing condition, except when the SAT is below -40°C.

PM **|** WING ANTI-ICE pushbutton. . . . . **AS REQUIRED**
It is recommended to set the wing anti-ice to ON when flying through icing conditions. It prevents ice accretion on the wing leading edge.

CM **|** AFTER TAKEOFF/CLIMB CHECKLIST down to the line. . . . . **PERFORM**

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Climb

PF | MCDU. . . . . **PERF CLB**
It is recommended for the PF MCDU to display the PERF CLB page. This allows the PF to monitor the aircraft when it reaches the FCU selected altitude.

PM | MCDU. . . . . **F-PLN**
It is recommended for the PM MCDU to display the F-PLN page. This allows the PM to enter a long-term revision to the lateral or vertical flight plan.

Climb Speed Modifications

PF | FCU SPD. . . . . **SELECT AND PULL**
By pulling the FCU SPD knob, the speed target is in the selected mode. To return in managed speed mode, push the FCU SPD knob.

Expedite Climb

- **If the ATC requires a rapid climb through a particular level:**

  PF | EXP pushbutton. . . . . **PUSH**
  By pushing the EXP pushbutton, the aircraft enters the expedite climb mode. To return to the ECON CLB mode, push the ALT knob.

CM | BAROMETRIC REFERENCE. . . . . **SET STD/CROSSCHECK**
Once the aircraft reach the transition altitude, set STD on the EFIS control panel and on the ISIS.

PF | CRZ FL. . . . . **SET AS REQUIRED**

Checklist

CM | AFTER TAKEOFF/CLIMB CHECKLIST below the line. . . . . **COMPLETE**

PM | ENG ANTI-ICE pushbutton. . . . . **AS REQUIRED**
It is recommended to set the engine anti-ice to ON when icing conditions are present or are anticipated.

PF | RADAR. . . . . **AS APPROPRIATE**

At 10 000 Feet

PM | LAND LIGHTS selector. . . . . **RETRACT**

PM | SEAT BELTS switch. . . . . **AS REQUIRED**

CM | EFIS options. . . . . **AS REQUIRED**
It is recommended to select CSTR on one ND and ARPT on the other ND.

PM | ECAM MEMO. . . . . **REVIEW**

PM | NAVAIDS. . . . . **CLEAR**
It is recommended to clear the manually tuned VORs from the MCDU RAD NAV page.

PM | SEC F-PLN page. . . . . **AS REQUIRED**
It is recommended to recopy the active flight plan in the secondary flight plan.

PM | OPT/MAX ALT. . . . . **VERIFY**

Cruise

PF | ECAM MEMO. . . . . **REVIEW**

PF | ECAM SD PAGES. . . . . **REVIEW**
It is recommended to review regularly the following pages: ENG, BLEED, ELEC, HYD, FUEL, COND, FLT CTL, and DOOR.

PF | FLIGHT PROGRESS. . . . . **VERIFY**
It is recommended to monitor the flight progress. When overflying a waypoint, verify the track and distance to the next waypoint. Each 30 minutes, verify the fuel on board from the ECAM, the fuel prediction from the FMGC, and compare the data with the flight plan. Ensure that the fuel on board and fuel consumed is consistent with the fuel on board at departure.

PF | STEP FLIGHT LEVEL. . . . . **AS APPROPRIATE**

PF | RADAR. . . . . **AS APPROPRIATE**

- **If the oxygen mask has been used:**

  CM | OXYGEN MASK. . . . . **VERIFY**

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Descent Preparation

PM | WEATHER AND LANDING INFORMATION. . . . . **OBTAIN**
Verify the weather reports at the destination and the alternate airport. This should include the runway in use for the arrival.

CM | NAV CHARTS. . . . . **PREPARE**

PM | LDG PERFORMANCE. . . . . **COMPUTE**
It is recommended to perform an in-flight landing performance calculation in case the landing conditions has changed since departure. If the landing conditions are expected to change, it is recommended to compute with the worst possible runway conditions. Furthermore, the selection of REV MAX is the standard practice for landing.

CM | LDG PERFORMANCE. . . . . **VERIFY**

CM | ARRIVAL page. . . . . **COMPLETE/VERIFY**
If possible, insert the APPR, STAR, APPR VIA and TRANS.

CM | F-PLN A page. . . . . **VERIFY**
Ensure that the inserted flight plan agrees with the planned and missed approach. Ensure that they respect the restrictions from the charts. The flight crew may require adding a new speed or altitude constraint.

It is not recommended to modify the final approach fix (FAF to runway or MAP).

In case of a “TOO STEEP PATH” message appearing, do not use the FINAL APP guidance for approach.

CM | DES WIND page. . . . . **VERIFY**

CM | PERF CRUISE page. . . . . **VERIFY**

CM | PERF DES page. . . . . **VERIFY**
Before starting the descent, it is recommended to access the PERF DES page and verify the ECON MACH/SPD. If any other speed is required other than the ECON speed, insert that MACH or SPD into the ECON field. This allows the system to calculate the descent path and the top of descent.

Note	The default speed limit is 250 knots below 10 000 feet. The flight crew may modify on the VERT REV at the DEST page.

CM | PERF APPR page. . . . . **COMPLETE/VERIFY**
Insert the QNH, the temperature, the wind at destination and the minimum. It is not recommended to insert gust values.

Note	If there is a change of runway or a change in the approach type, it will automatically erase the inserted minimum.

CM | PERF GO-AROUND page. . . . . **VERIFY/MODIFY**
Verify the thrust reduction altitude and the acceleration altitude. The flight crew may modify if necessary.

CM | RAD NAV page. . . . .**VERIFY**
Set the navaids as required. Verify the idents on the navigation display and on the primary flight display. If a VOR/DME exists close to the airfield, it is recommended to select it and enter its ident in the BRG/DIST field of the PROG page. This allows the monitoring of NAV ACCY during descent.

CM |SEC F-PLN page. . . . . **AS REQUIRED**
It is recommended to set the secondary flight plan to the alternate runway for destination, or to the landing runway in case of a circling approach.

PM | GPWS LDG FLAP 3 pushbutton. . . . . **AS REQUIRED**
If the flight crew plans on landing with the FLAPS 3 configuration, the GPWS LDG FLAP 3 must be set to ON.

PF | LDG ELEV. . . . . **VERIFY**
Ensure that the LDG ELEV AUTO displays in green on the ECAM CRUISE page and verify the associated value.

PF | AUTO BRK. . . . . **AS REQUIRED**
It is recommended to use the autobrakes. For short or contaminated runways, the MED mode is recommended. For long runways, the LO mode is recommended. It is not recommended to use the MAX mode.

CM | APPROACH BRIEFING. . . . . **PERFORM**

CM | TERR ON ND. . . . . **AS REQUIRED**
It is recommended to set the weather radar to the PF side and the TERR ON ND on the PM side. It is not recommended to use the TERR ON ND if the nav accuracy is low.

PF | RADAR. . . . . **ADJUST AS APPROPRIATE**

PM | ENG ANTI-ICE pushbutton. . . . . **AS REQUIRED**
It is recommended to set the engine anti-ice to ON, even if the SAT is below -40°C. This ensures a better protection against flame-out.

PM | WING ANTI-ICE pushbutton. . . . . **AS REQUIRED**

Note	When turning the anti-ice on, it reduces the descent path angle. The pilot can therefore compensate by increasing the descent speed or by extending up to half speedbrakes.

PM | DESCENT CLEARANCE. . . . . **OBTAIN**

PF | CLEARED ALTITUDE ON FCU. . . . . **SET**
Ensure that the cleared altitude is lower than the ATC-cleared altitude.

Initial Descent

PF | DESCENT. . . . . **INITIATE**
It is recommended to select the DES mode at the top of descent.

Descent Monitoring

PF | MCDU. . . . . **PROG/PERF DES**
It is recommended for the PF to display the PROG page to get the VDEV or RQD DIST TO LAND/DIRECT DIST TO LAND information. The PF can also select the PERF DES page to get predictions to any inserted altitude in the DES/OP DES and EXP mode.

PM | MCDU. . . . . **F-PLN**

PF | DESCENT. . . . . **MONITOR/ADJUST**

It is recommended to use the DES mode when flying in the NAV mode. This allows the aircraft to descend along the descent flight path, considering all constraints.

Note	When the aircraft is flying in HDG or TRK mode, the DES mode is not available.

Descent Adjustments

To increase the rate of descent, it is recommended to increase the descent speed using selected speed. It allows better fuel economy than other techniques.

CM | BAROMETRIC REFERENCE. . . . . **SET**
Set the QNH on the EFIS control panel and on the ISIS at the transition altitude.

PM | ECAM STATUS. . . . . **VERIFY**
Ensure that there is no status reminder on the upper ECAM display. Note any degradation in landing capability or affecting approach and landing.

At 10 000 feet

PM | LAND lights. . . . . **SET**

PM | SEAT BELTS switch. . . . . **ON**

CM | EFIS options. . . . . **CSTR**
It is recommended to select CSTR on both sides.

CM | ILS/LS pushbutton. . . . . **AS REQUIRED**
It is recommended to turn on the ILS/LS if an ILS, GLS, MLS, ILS G/S out, LOC only, LOC/BC or FLS approaches. The flight crew must ensure that the deviation scales and IDENT are displayed on the PFD.

PM | RAD NAVAIDS. . . . . **SELECTED/IDENTIFIED**
The flight crew must ensure that the appropriate NAVAIDS are tuned and identified.

PF | NAV ACCURACY. . . . . **VERIFY**
If the GPS PRIMARY function is available, there is no accuracy check required.

CM | APPROACH CHECKLIST. . . . . **PERFORM**

Approach - General

	LOC G/S	FINAL APP	LOC FPA	NAV FPA	TRK FPA
ILS / MLS / GLS	Refer to APPR using LOC/GS	N/A	N/A	N/A	N/A
LOC ONLY **ILS G/S OUT**	N/A	N/A	Refer to APPR using FPA Guidance	N/A	N/A
LOC B/C	N/A	N/A	N/A	N/A	Refer to APPR using FPA Guidance
RNAV (GNSS) with LNAV/VNAV minima	N/A	Refer to APPR using FINAL APP	N/A	Not authorized	Not authorized
RNAV (GNSS) with LNAV minima	N/A	Refer to APPR using FINAL APP	N/A	N/A	Not authorized
RNAV (GNSS) with LPV minima	N/A	Not authorized	N/A	Not authorized	Not authorized
VOR **VOR-DME** **NDB** **NDB-DME**	N/A	Refer to APPR using FINAL APP	N/A	Refer to APP using FPA Guidance	Refer to APPR using FPA Guidance
RNAV (RNP)	N/A		N/A	Not Authorized	Not Authorized

Initial Approach

PF | F-PLN SEQUENCING. . . . . **ADJUST**
The NAV mode will be automatically available after go-around if the flight plan is properly sequenced. If flying in nav mode, the F-PLN will sequence automatically. In HDG/TRK mode, the F-PLN will only sequence automatically if flying close to the F-PLN route.

CM | APPROACH PHASE. . . . . **VERIFY/ACTIVATE**
If flying in NAV mode, the approach phase will automatically activate itself if the aircraft overlies the DECEL pseudo waypoint. If flying in HDG/TRK mode, it is recommended to activate the approach phase 15 NM from touchdown.

PF | MANAGED SPEED. . . . . **VERIFY**
It is recommended to remain in managed speed mode. If, for any reasons, the ATC requires a different speed, use the selected speed mode.

PF | FLIGHT PATH. . . . . **MONITOR**
If flying in NAV mode, it is recommended to use the VDEV information on the PFD and PROG MCDU page. If flying in HDG/TRK mode, it is recommended to use the energy circle on the ND.

PF | SPEED BRAKES lever. . . . . **AS REQUIRED**
It is recommended to avoid the use of the speed brakes. In the case of the use of the speedbrakes, the flight crew should ensure that there is an appropriate speed margin before the extension of the speed brakes. The flight crew should also ensure that there is an appropriate speed margin before the beginning of a turn. This is to ensure that the Alpha-Floor protection doesn't activate.

PF | RADAR. . . . . **ADJUST AS APPROPRIATE**

PM | NAV ACCURACY. . . . . **MONITOR**
If the GPS PRIMARY function is available, there is no accuracy check required.

At Green Dot Speed

PF | FLAPS 1. . . . . **ORDER**

PM | FLAPS 1. . . . . **SELECT**
It is recommended to select the FLAPS 1 3 NM before the final descent point. The aircraft should also decelerate. If the aircraft does not decelerate, the flight crew should consider the extension of the landing gear before the extension of speedbrakes. The extension of the speedbrakes at this point will cause an increase in VLS.

PM | TCAS MODE selector. . . . . **TA or TA/RA**
It is recommended the use of **TA/RA** for normal situations. If it is inappropriate, such as converging runways or parallel runways, the use of TA ONLY mode is recommended.

At 2 000 Feet AGL Minimum

PF | FLAPS 2. . . . . **ORDER**

PM | FLAPS 2. . . . . **SELECT**
The flight crew must notice a deceleration toward the F speed. The flight crew should consider extending the landing gear to reduce the airspeed. The use of speedbrakes is not recommended.

When Flaps Are At 2

PF | L/G DOWN. . . . . **ORDER**

PM | L/G lever. . . . . **SELECT DOWN**

PM | AUTO BRK. . . . . **CONFIRM**

PM | GROUND SPOILERS. . . . . **ARM**

Exterior Lights

PM | NOSE switch. . . . . **T.O**

PM | RWY TURN OFF switch. . . . . **ON**

When Landing Gear is Down

PF | FLAPS 3. . . . . **ORDER**

PM | FLAPS 3. . . . . **SELECT**

PM | ECAM WHEEL SD page. . . . . **CHECK**

PM | L/G lights. . . . . **CONFIRM THREE GREEN**

PF | FLAPS FULL. . . . . **ORDER**

PM | FLAPS FULL. . . . . **SELECT**
It is recommended to retract the speedbrakes before selecting the FLAPS full. This prevents the aircraft to pitch down when the speedbrakes retracts automatically.

PM | A/THR. . . . . **VERIFY IN SPEED MODE OR OFF**

PM | WING ANTI-ICE pushbutton. . . . . **OFF**
Only turn the wing anti-ice ON when there are severe icing conditions.

CM | SLIDING TABLE. . . . . **STOW**

CM | ALL EFB. . . . . **STOW**

PM | LDG MEMO. . . . . **VERIFY NO BLUE**

CM | CABIN REPORT. . . . . **RECEIVE**

PM | CABIN CREW. . . . . **ADVISE**

CM | LANDING CHECKLIST. . . . . **PERFORM**

PM | FLIGHT PARAMETERS. . . . . **MONITOR**
The PF should announce any FMA modification. The PM should call out in the following conditions:

- the speed goes lower than the speed target -5 kt, or greater than the speed target +10 kt;
- The pitch attitude is lower than -2.5° or greater than 7.5°;
- The bank angle is greater than 7°;
- The descent rate is greater than 1 000 ft/min.

Approach – LOC G/S Guidance

Descent Preparation

PF | APPROACH MINIMUM. . . . . **DETERMINE**
It is recommended to insert “NO” in the DH field of the MCDU to avoid any false auto callouts for a CATIII approach.

PF | APPROACH BRIEFING. . . . . **PERFORM**

Initial/Intermediate Approach

PF | APPR pushbutton. . . . . **PRESS**
The APPR should be activated when the aircraft is cleared for the approach, the aircraft is on the intercept trajectory for the final approach course and the LOC deviation is available.

PF | BOTH APs. . . . . **ENGAGE**
It is recommended to engage the AP1 and AP2 when the APPR mode is selected. The FMA will display CAT 1 above 5 000 feet AGL. Below 5 000 feet AGL, the FMA will display the intended approach.

PF | LOC. . . . . **VERIFY ARMED**

PF | G/S. . . . . **VERIFY ARMED**

PF | LOC CAPTURE. . . . . **MONITOR**

PF | G/S CAPTURE. . . . . **MONITOR**

GO-AROUND ALTITUDE. . . . . **SET**

Glide Interception from Above

PF | APPR mode. . . . . **ARM / VERIFY ARMED**

PF | FCU altitude. . . . . **SET ABOVE A/C ALTITUDE**

PF | V/S MODE. . . . . **SELECT**
It is recommended to select a V/S of 1 500 ft/min. If the V/S is above 2 000 ft/min, the airspeed will increase toward VFE.

Final Approach

PM | FLIGHT PARAMETERS. . . . . **MONITOR**
The PM should call out if ½ dot of LOC or GLIDE deviation.

At 350 ft RA

PF | LAND mode. . . . . **VERIFY ENGAGED/ANNOUNCE**
If there is no LAND mode, the Autoland function is not authorized.

For CAT I, CAT II, CAT III with DH Approach

At entered minimum + 100 ft

PM | ONE HUNDRED ABOVE. . . . . **MONITOR OR ANNOUNCE**

At entered minimum

PM | MINMUM. . . . . **MONITOR OR ANNOUNCE**

- **If visual references are sufficient:**

  PF | CONTINUE. . . . . **ANNOUNCE**

  PM | AP. . . . . **AS REQUIRED**

- **If visual references are not sufficient:**
  PF | GO AROUND. . . . . **ANNOUNCE**

For CAT III Without DH Approach

At 100 ft (Alert height) if no failure

PF | CONTINUE. . . . . **ANNOUNCE**

Degraded Guidance Procedures

For CAT II, CAT III Operations

- **In case of:**
  - Amber caution, or
  - Landing capability degradation.

Above 1 000 ft:

CM | ECAM / QRH PROCEDURE. . . . . **COMPLETE**

PM | REQUIRED EQUIPMENT. . . . . **VERIFY**

PM | APPROACH AND LANDING CAPABILITY. **VERIFY**

If required:

PM **|** RVR. . . . . **VERIFY**

PM **|** DH. . . . . **ADJUST**

CM **|** BRIEFING. . . . . **CONFIRM**

- **If the flight crew does not complete all the above actions above 1000 feet:**
  PF **|** GO AROUND. . . . . **PERFORM**

Below 1 000 ft:

- **If external visual is not sufficient:**
  PF **|** GO AROUND. . . . . **PERFORM**

Below 100 feet (Alert height) for CAT 3 DUAL:

- **In the case of Autoland warning light:**
  - **Visual references not sufficient:**

    PF **|** GO AROUND. . . . . **PERFORM**

  - **Visual references are sufficient:**

    PF **|** LANDING. . . . . **PERFORM**

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Approach Using Final APP Guidance

Descent Preparation

PM | WEATHER AND LANDING INFORMATION. **OBTAIN**
It is not recommended to use the vertical managed guidance if the OAT is below the minimum temperature indicated on the chart or when the temperature corrections are required.

PF | F-PLN A page. . . . . **VERIFY**
It is not recommended to use FINAL APP guidance if a TOO STEEP PATH is displayed after the Final Descent Point.

PF | PROG page. . . . . **COMPLETE**
Insert the reference runway threshold in the BRG/DIST field. This allows the monitoring of position during approach.

PF | GO-AROUND STRATEGY. . . . . **REVIEW**

Descent

At 10 000 feet:

PF | NAV ACCURACY. . . . . **VERIFY**
If the nav accuracy is low, it is recommended to use TRK FPA mode for approach.

- **For RNAV (GNSS) approach:**

  PF | GPS PRIMARY. . . . . **VERIFY**
  The GPS PRIMARY must be available on at least one FMS.

PF | BARO REF. . . . . **SET**

Initial/Intermediate/Final Approach

PF | POSITION. . . . . **MONITOR**

PF | APPR pushbutton. . . . . **PRESS**
Turn the on the APPR mode only when the aircraft is cleared for approach and the TO waypoint is the Final Descent Point.

PF | APP NAV. . . . . **VERIFY ARMED or ENGAGED**

PF | FINAL. . . . . **VERIFY ARMED**
Verify that the V/DDEV scale is displayed on the PFD. Ensure the display of a blue arrow on ND. This indicates that FINAL APP engagement conditions are fulfilled.

At the Final Descent Point

PF | FINAL APP. . . . . **VERIFY ENGAGED**

CM | GO AROUND ALTITUDE. . . . . **SET**

PM | FLIGHT PARAMETERS. . . . . **MONITOR**

At Entered Minimum +100 feet

PM | ONE HUNDRED ABOVE. . . . . **MONITOR OR ANNOUNCE**

At Entered Minimum

PM | MINIMUM. . . . . **MONITOR OR ANNOUNCE**

- **If visual references are sufficient:**

  PF | CONTINUE. . . . . **ANNOUNCE**

  - **At the latest at the MAP or Minimum Use Height of the AP (Whichever occurs first):**

    PF | AP. . . . . **OFF**

    PF | FD. . . . . **AS REQUIRED**

- **If visual references are not sufficient:**

  PF | GO AROUND. . . . . **ANNOUNCE**

Approach Using FPA Guidance

Descent Preparation

CM | F-PLN A page. . . . . **VERIFY**
It is recommended to disregard the V/DEV information on the PFD if the message TOO STEEP PATH is displayed after the Final Descent Point. For the approaches using the NAV FPA mode, 1 degree of difference between the MCDU and the charted final lateral track is acceptable. For conventional radio NAVAID approach, 3 degrees of difference between the MCDU and the charted final lateral track is acceptable. For all other cases, it is recommended to use TRK FPA mode.

CM | PROG page. . . . . **COMPLETE**
Insert the reference runway threshold in the BRG/DIST field. This allows the monitoring of position during approach.

PF | GO AROUND STRATEGY. . . . . **REVIEW**

Descent

At 10 000 feet :

PF | NAV ACCURACY. . . . . **VERIFY**
If the nav accuracy is low, it is recommended to use TRK FPA mode for approach.

- **For RNAV (GNSS) approach:**
  PF | GPS PRIMARY. . . . . **VERIFY**
  The GPS PRIMARY must be available on at least one FMS.

Initial/Intermediate/Final Approach

PF | LATERAL GUIDANCE MODE. . . . . **SET FOR APPROACH**
Arm the NAV or LOC mode as appropriate.

- **For LOC ONLY and ILS G/S OUT:**

  PF | LOC pushbutton. . . . . **PRESS**
  It is recommended to press the LOC pushbutton when cleared for approach and the aircraft is on the intercept trajectory for the final approach course.

  PF | LOC. . . . . **VERIFY ARMED**

- **For back course localizer approaches:**

  PF | TRK FPA MODE. . . . . **USE FOR APPROACH**

PF | LATERAL PATH. . . . . **INTERCEPT**
The flight crew should monitor the NAV or LOC engagement.

PF | TRK FPA pushbutton. . . . . **SELECT**

PF | FPA FOR FINAL APPROACH. . . . . **SET**

At 0.3 NM from the Final Descent Point

PF | FPA selector. . . . . **PULL**

PF | FPA MODE. . . . . **VERIFY ENGAGED**

PF | POSITION/FLIGHT PATH. . . . . **MONITOR/ADJUST**

CM | GO AROUND ALTITUDE. . . . . **SET**

PM | FLIGHT PARAMETERS. . . . . **MONITOR**

At Entered Minimum + 100 Feet

PM | ONE HUNDRED ABOVE. . . . . **MONITOR OR ANNOUNCE**

At Entered Minimum

PM | MINIMUM. . . . . **MONITOR OR ANNOUNCE**

- **If visual references are sufficient:**

  PF | CONTINUE. . . . . **ANNOUNCE**

  PF | AP. . . . . **OFF**
  If the autopilot is still engaged at minimum – 50 feet, the FMA will display the message DISCONNECT AP FOR LDG.

  PF | FD. . . . . **OFF**

  PF | RUNWAY TRACK. . . . . **VERIFY/SET**

- **If visual references are not sufficient:**

  PF | GO AROUND. . . . . **ANNOUNCE**

Manual Landing

Flare

In stabilized approach conditions, the flare height is approximately 30 feet:

PF | FLARE. . . . . **PERFORM**

PM | ATTITUDE. . . . . **MONITOR**

PF | THRUST levers. . . . . **IDLE**
The autopilot will automatically disengage when the thrust levers are set to IDLE.

At Touchdown

PF | DEROTATION. . . . . **INITIATE**

PF | ALL THRUST LEVERS. . . . . **REV MAX or REV IDLE**
The flight crew must select the reverse thrust immediately after the main landing gear touches the ground.

PM | GROUND SPOILERS. . . . . **VERIFY/ANNOUNCE**
Verify the ground spoilers on the WHEEL SD page.

PM | REVERSERS. . . . . **VERIFY/ANNOUNCE**
Ensure that the ECAM E/WD displays the reverse deployment (REV in green).

PF | DIRECTIONAL CONTROL. . . . . **MONITOR/ENSURE**
It is recommended to use the rudder until reaching taxi speed.

PF | BRAKES. . . . . **AS REQUIRED**
If there are no ground spoilers extended, the autobrakes are not activated. The use of manual braking is therefore recommended in this situation.

PM | DECELERATION. . . . . **VERIFY/ANNOUNCE**

At 70 knots

PM | SEVENTY KNOTS. . . . . **ANNOUNCE**

PF | BOTH THRUST LEVERS. . . . . **REV IDLE**
It is recommended to reduce thrust when passing 70 knots. Keeping a high level of reverse thrust may result in an engine stall due to excessive EGT.

At Taxi Speed

PF | REVERSERS. . . . . **STOW**
On snow-covered ground, it is recommended to stow the reversers when the aircraft reaches 25 knots. It is not recommended to use the reversers on taxiways. This may ingest fine sand, debris, or snow.

Before 20 Knots

PF | AUTO BRK. . . . . **DISENGAGE**

Autoland

At 350 feet RA

PF | ILS/GLS/MLS COURSE ON PFD. . . . . **VERIFY**

At 40 feet RA

PM | FLARE mode. . . . . **VERIFY ENGAGED/ANNOUNCE**

At 30 feet RA

PM | THRUST IDLE. . . . . **VERIFY**
The flight crew should notice a thrust reduction.

At 10 feet RA

PF | BOTH THRUST LEVERS. . . . . **IDLE**
Retard the thrust levers at the “RETARD” auto-callout.

PF | LATERAL GUIDANCE. . . . . **MONITOR**

At Touchdown

PM | ROLL OUT mode. **VERIFY ENGAGED/ANNOUNCE**

PF | BOTH THRUST LEVERS. . . . . **REV MAX or REV IDLE**

PM | GROUND SPOILERS. . . . . **VERIFY/ANNOUNCE**
Verify the ground spoilers on the WHEEL SD page.

PM | REVERSERS. . . . . **VERIFY/ANNOUNCE**
Ensure that the ECAM E/WD displays the reverse deployment (REV in green).

CM | DIRECTIONAL CONTROL. . . . . **MONITOR/ENSURE**
It is recommended to use the rudder until reaching taxi speed.

PF | BRAKES. . . . . **AS REQUIRED**
If there are no ground spoilers extended, the autobrakes are not activated. The use of manual braking is therefore recommended in this situation.

PM | DECELERATION. . . . . **VERIFY/ANNOUNCE**

At 70 knots

PM | SEVENTY KNOTS. . . . . **ANNOUNCE**

PF | BOTH THRUST LEVERS. . . . . **REV IDLE**
It is recommended to reduce thrust when passing 70 knots. Keeping a high level of reverse thrust may result in an engine stall due to excessive EGT.

Before 20 Knots

PF | AUTO BRK. . . . . **DISENGAGE**

End or Roll Out

PF | REVERSERS. . . . . **STOW**
On snow-covered ground, it is recommended to stow the reversers when the aircraft reaches 25 knots. It is not recommended to use the reversers on taxiways. This may ingest fine sand, debris, or snow.

PF | AP. . . . . **OFF**
It is recommended to disengage the AP at the end of the roll out, before leaving the runway.

Go Around

Apply the following three actions simultaneously:

PF | THRUST LEVERS. . . . . **TOGA**
The flight crew must set the thrust levers to the TOGA detent. This ensures the engagement of SRS GA mode. The flight crew can then set the thrust levers to FLX/MCT to engage the GA SOFT mode.

PF | ROTATION. . . . . **PERFORM**
It is recommended to have an initial rotation to 15°. When getting a positive rate of climb, follow the SRS Flight Director.

PF | GO AROUND. . . . . **ANNOUNCE**

PM | FLAPS lever. . . . . **SELECT AS REQUIRED**
It is recommended to retract one step of flaps.

PF | FMA. . . . . **VERIFY/ANNOUNCE**
In case the FMA does not display MAN GA SOFT or MAN TOGA, set the thrust levers to the TOGA detent.

PM | POSITIVE CLIMB. . . . . **ANNOUNCE**

PF | L/G UP. . . . . **ORDER**

PM | L/G. . . . . **SELECT UP**

PF | NAV or HDG mode. . . . . **AS REQUIRED**

PF | AP. . . . . **AS REQUIRED**

At Go Around Thrust Reduction Altitude

PF | THRUST levers. . . . . **CL**

At Go Around Acceleration Altitude

- **If the target speed does not increase to green dot:**

  PF | ALT knob. . . . . **VERIFY AND PULL**

- **At F speed:**

  PF | FLAPS 1. . . . . **ORDER**

  PM | FLAPS 1. . . . . **SELECT**

- **At S speed:**

  PF **|** FLAPS 0. . . . . **ORDER**

  PM **|** FLAPS 0. . . . . **SELECT**

PM **|** GND SPLRS. . . . . **DISARM**

PM **|** NOSE switch. . . . . **OFF**

PM **|** RWY TURN OFF switch. . . . . **OFF**

PM **|** OTHER EXTERIOR LIGHTS. . . . . **AS REQUIRED**

CM **|** AFTER TAKEOFF/CLIMB CHECKLIST down to the line. . . . . . . **COMPLETE**

After Landing

PF | GRND SPLRS. . . . . **DISARM**

Exterior lights

PF | LAND lights. . . . . **RETRACT**

- **When leaving the runway:**

  PF | STROBE switch. . . . . **AUTO**

  PF | NOSE switch. . . . . **TAXI**

- **When crossing a runway:**

  PF | STROBE switch. . . . . **ON**

PF | OTHER EXTERIOR LIGHTS. . . . . **AS REQUIRED**

PM | RADAR. . . . . **OFF**

PM | PREDICTIVE WINDSHEAR SYSTEM. . . . . **OFF**
It is highly recommended to turn the radar and predictive windshear system to off to avoid any risk of radiating the ground crew.

PM | ENG MODE selector. . . . . **NORM**

PM | FLAPS. . . . . **RETRACT**
If the approach was made in icing conditions, do not retract the flaps or slats until the ground crew confirms the flaps and slats are cleared of ice.

PM | TCAS. . . . . **STBY**

PM | ATC. . . . . **AS REQUIRED**

PM | APU. . . . . **START**

Note	The use of the APU for a prolonged time may cause a fuel imbalance.

PM | ANTI-ICE. . . . . **AS REQUIRED**
It is recommended to pay close attention when taxiing. The N1 ground idle is increased if the anti-ice is on.

PM **|** BRAKE TEMPERATURE. . . . . **VERIFY**

Verify the brake temperature on the WHEEL SD page. If temperature difference between two brakes of a gear is more than 150°C, and the temperature of one of these brakes is above or equal to 600°C, or the temperature difference between two brakes of a gear is more than 150°C, and the temperature of one of these brakes is equal to 60°C or the difference between the average temperature of the left gear brakes and the right brakes are above or equal to 200°C, or the temperature of one brake exceeds 800°C, maintenance is due.

PM **|** BRK FAN pushbutton. . . . . **AS REQUIRED**

It is recommended to delay the use of fan brakes to 5 minutes after landing.

CM **|** AFTER LANDING CHECKLIST. . . . . **PERFORM**

Parking

PF | ACCU PRESS indicator. . . . . **VERIFY**
Ensure that the ACCU PRESS indicates in the green band. If this isn't the case, chocks are required before engine 1 shutdown.

PF | PARKING BRAKE handle. . . . . **ON**
It is not recommended to set the parking brakes if one brake temperature is above 500°C or above 350°C if the brakes fan is on.

PF | BRAKE PRESS indicator. . . . . **VERIFY**
Ensure that the BRAKE PRESS indicates within normal range.

PM | ANTI-ICE. . . . . **OFF**

PM | APU BLEED pushbutton. . . . . **ON**
It is recommended to set the APU BLEED to ON before the engine shutdown. This minimizes the odors of engine exhaust fumes in the air conditioning.

- **If the APU is not available:**

  PM | EXT PWR pushbutton. . . . . **ON**

- **No less than 3 minutes after high thrust operations:**

  PF | ALL ENG MASTERS. . . . . **OFF**
  It is recommended to operate the engines at or near idle for 3 minutes before shutting down the engines. This stabilizes the engine thermal performance. The use of normal thrust for taxi or idle reverse thrust is not considered high thrust operations.

PF | SLIDES. . . . . **VERIFY DISARMED**
Ensure that the slides are disarmed by looking at the DOOR/OXY SD page. If any slide is not disarmed, warn the cabin crew.

PF | SEAT BELTS switch. . . . . **OFF**

PF | BEACON lights. . . . . **OFF**
When the engines are spooled down, turn off the beacon lights.

PF | OTHER EXTERIOR LIGHTS. . . . . **AS REQUIRED**

PF | GROUND CONTACT. . . . . **ESTABLISH**
Ensure that the chocks are in place.

PM | FUEL PUMPS/CTR XFR VALVES. . . . . **OFF**

PM | ATC. . . . . **STBY**

PM **|** IRS PERFORMANCE. . . . . **VERIFY**
Verify the NAV accuracy in the MCDU POSITION MONITOR page.

PM **|** FUEL QUANTITY. . . . . **VERIFY**
Ensure that the sum of fuel on board and the used fuel quantity is consistent with the fuel on board at departure.

PM **|** STS pushbutton. . . . . **PRESS**
Verify the STATUS page.

PM **|** BRAKE FAN. . . . . **OFF**

PF **|** PARKING BRAKE. . . . . **AS REQUIRED**
It is recommended to release the parking brakes when the chocks are in place.

CM **|** DISPLAY UNIT BRIGHNESS. . . . . **DIM**

CM **|** PARKING CHECKLIST. . . . . **PERFORM**

Securing the aircraft

Parking Brake

PF | PARKING BRAKE handle. . . . . **ON**
It is recommended to keep the parking brake to ON to reduce the hydraulic leak.

Oxygen Crew Supply

PM | OXYGEN CREW SUPPLY pushbutton. . . . . **OFF**

ADIRS

PF | ALL IR MODE selectors. . . . . **OFF**

Exterior Lights

PM | EXTERIOR LIGHTS. . . . . **OFF**

Maintenance Bus

PM | MAINT BUS switch. . . . . **AS REQUIRED**

APU

PM | APU BLEED pushbutton. . . . . **OFF**

PM | APU MASTER switch. . . . . **OFF**
Switch the APU to off only when all the passengers have disembarked.

PM | EMER EXIT LT switch. . . . . **OFF**

PM | SIGNS switch. . . . . **OFF**

External Power

PM | EXT PWR pushbutton. . . . . **AS REQUIRED**

Batteries

PM | BAT 1 & 2 pushbuttons. . . . . **OFF**

Securing the aircraft

CM | SECURING THE AIRCRAFT CHECKLIST. . . . . **PERFORM**

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Checklist

A32NX

1.0.0

APRIL 13th, 2022

For Flight Simulation Use Only

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BEFORE START

COCKPIT PREP	COMPLETED (BOTH)
GEAR PINS and COVERS	REMOVED
SIGNS	ON/AUTO
ADIRS	NAV
FUEL QUANTITY	____KG.LB
TO DATA	SET
BARO REF	____ SET (BOTH)
WINDOWS/DOORS	CLOSED (BOTH)
BEACON	ON
THR LEVERS	IDLE
PARKING BRAKE	AS RQRD

AFTER START

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

BEFORE TAKEOFF

FLIGHT CONTROLS	CHECKED (BOTH)
FLT INST	CHECKED (BOTH)
BRIEFING	CONFIRMED
FLAP SETTING	CONF ____ (BOTH)
V1, VR, V2/FLX TEMP	____ (BOTH)
ATC	SET
ECAM MEMO	TO NO BLUE

- *AUTO BRK MAX*
- *SIGNS ON*
- *CABIN READY*
- *SPLRS ARM*
- *FLAPS TO*
- *TO CONFIRM NORM*

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

AFTER TAKEOFF/CLIMB

LDG GEAR	UP
FLAPS	RETRACTED
PACKS	ON
BARO REF	____ SET (BOTH)

APPROACH

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

LANDING

CABIN CREW	ADVISED
A/THR	SPEED/OFF
AUTOBRAKE	AS RQRD
ECAM MEMO	LDG NO BLUE

- LDG GEAR DN
- SIGNS ON
- CABIN READY
- SPLRS ARM
- FLAPS SET

AFTER LANDING

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

PARKING

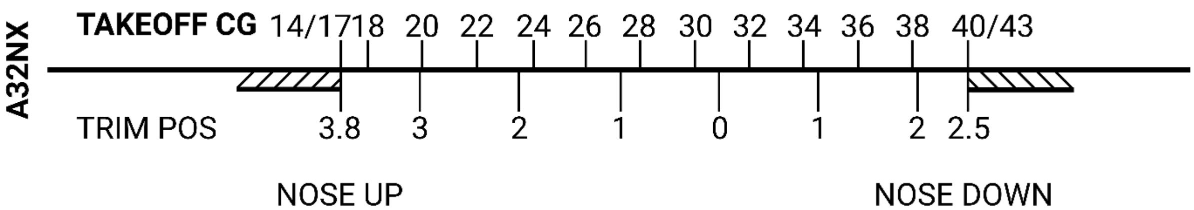
APU BLEED	ON
ENGINES	OFF
SEAT BELTS	OFF
EXT LT	AS RQRD
FUEL PUMPS	OFF
PARK BRK and CHOCKS	AS RQRD

Consider HEAVY RAIN

SECURING THE AIRCRAFT

ADIRS	OFF
OXYGEN	OFF
APU BLEED	OFF
EMER EXIT LT	OFF
SIGNS	OFF
APU AND BAT	OFF

Consider COLD WEATHER



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Supplementary Procedures

A32NX

1.0.0

APRIL 12th, 2022

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Table of Contents

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Airframe Deicing/Anti-icing Procedure On Ground

Before Fluid Spraying

CM | COMMUNICATION WITH GROUND CREW. . . . . **ESTABLISH**

CM | DEICING/ANTI-ICING FLUIDS TYPE. . . . . **VERIFY APPROPRIATE**

CM | CAB PRESS MODE SEL. . . . . **VERIFY AUTO**

CM | ENG 1 BLEED. . . . . **OFF**

CM | ENG 2 BLEED. . . . . **OFF**

CM | APU BLEED. . . . . **OFF**

CM | DITCHING. . . . . **ON**

CM | THRUST LEVERS. . . . . **VERIFY IDLE**

CM | "AIRCRAFT PREPARED FOR SPRAYING" . . . . **INFORM GROUND CREW**

Upon Completion of the Spraying Operation

CM | PITOTS AND STATICS (ground crew) . . . . **VERIFY**

CM | GROUND EQUIPMENT. . . . . **REMOVE**

CM | DEICING/ANTI-ICING REPORT. . . . . **RECEIVED**
Ensure the report contain the type of fluid used, the ratio of fluid to water, the time of the holdover beginning and the result of post application check.

CM | DITCHING. . . . . **OFF**

CM | OUTFLOW VALVE. . . . . **VERIFY OPEN**
Ensure the outflow valve indication is in the green position on the ECAM PRESS page.

- **At least 1 minute after completion of spraying operations:**

  CM | ENG BLEED 1. . . . . **ON**

  CM | ENG BLEED 2. . . . . **ON**

- **At least 5 minutes after completion of spraying operation:**

  CM | APU BLEED. . . . . **AS REQUIRED**

CM | NORMAL PROCEDURES. . . . . **RESUME**

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Ground Operations in Cold Weather Conditions

Safety Exterior Inspection

CM | PROTECTIVE COVERS. . . . . **REMOVED**

CM | APU INTAKE. . . . . **VERIFY FREE OF SNOW AND ICE**

CM | PACKS INLET/OUTLET DOORS. . . . . . **VERIFY FREE OF SNOW AND ICE**

CM | OUTFLOW VALVES. . . . . **VERIFY FREE OF SNOW AND ICE**

CM | ABOVE ITEMS. . . . . **DEICE IF NECESSARY**

Preliminary Cockpit Preparation

CM | SOP – PRELIMINARY COCKPIT PREPARATION. . . . . **COMPLETED**

- **If the avionics bay is cold soaked:**

  CM | IRS. . . . . **INITIATE ALIGNMENT**
  The IRS alignment requires 15 minutes if the temperature is below -15°C in the avionics bay.

CM | WINDSHIELD AND UPPER COCKPIT FUSELAGE. . **ICE/SNOW REMOVED**

CM | PROBES COVERS. . . . . **VERIFY REMOVED**

CM | PROBE/WINDOW HEAT. . . . . **ON**

Exterior Walkaround

CM | SURFACES. . . . . **VERIFY FREE OF FROST, ICE AND SNOW**

CM | LANDING GEAR. . . . . **VERIFY FREE OF FROST, ICE AND SNOW**

CM | ENGINES. . . . . **VERIFY FREE OF FROST, ICE AND SNOW**

CM | ENGINE FANS. . . . . **VERIFY FREE ROTATION**

CM | DRAINS, BLEEDS, PROBES. . **VERIFY FREE OF FROST, ICE AND SNOW**

CM | FUEL TANK VENTS. . . . . **VERIFY FREE OF FROST, ICE AND SNOW**

CM | RADOME. . . . . **VERIFY FREE OF FROST, ICE AND SNOW**

CM | NOSE FUSELAGE . . . . **VERIFY FREE OF FROST, ICE AND SNOW**

CM | WATER SUPPLIES. . . . . **VERIFY NOT FROZEN AND REFILLED**

After Start

- **After first engine start:**

CM | PROBE/WINDOW HEAT. . . . . **AUTO**

CM | NORMAL PROCEDURE. . . . . **RESUME**

Takeoff

- **If OAT below – 40°C, perform the following action before takeoff:**

CM | THRUST REVERSERS. . . . . **PERFORM 6 CYCLES**
To perform a cycle, set the thrust levers to REV IDLE, and maintain until the REV indication on the engine/warning display becomes green. Then, set the thrust levers back to IDLE and wait until the REV indication disappear before the next cycle.

Ground Operations in Heavy Rain

- **When on ground:**

CM | EXTRACT. . . . . **OVRD**

CM | PACK 1 ON. . . . . **VERIFY**

CM | PACK 2 ON. . . . . **VERIFY**

  - **If air conditioning not available:**

    The cooling of the avionics is reduced. The aircraft should not be powered more than the following requirements:

Time limit	
OAT ≤ 39°C	NO LIMIT
39°C < OAT ≤ 45°C	3 HOURS
45°C < OAT	30 MINUTES

- **After takeoff:**

CM | EXTRACT. . . . . **AUTO**

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Minimum Speed with Ice Accretion

It is recommended to avoid flying extended flight time with slats extended.

- **If wing anti ice is operative:**
  - **In CONF clean, 1, 2 or 3:**

    CM | MIN SPEED. . . . . **VLS + 10 KT**

  - **In CONF FULL:**

    CM | MIN SPEED. . . . . **VLS + 5 KT**

- **If wing anti ice is not operative:**

  CM | MIN SPEED. . . . . **VLS + 10 KT/GREEN DOT**

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Operations on Contaminated Airport

Parking

- **After engine shutdown and before shutting down electrical supply:**

  CM | FLAPS/SLATS. . . . . **CONFIRM FREE OF CONTAMINATION**

  CM | YELLOW ELEC PUMP. . . . . **ON**

  CM | BLUE ELEC PUMP. . . . . **AUTO**

  CM | BLUE PUMP OVRD. . . . . **ON**

  CM | SLATS/FLAPS. . . . . **RETRACT**

  - **When slats and flaps are retracted:**

    CM | YELLOW ELEC PUMP pushbutton. . . . . **OFF**

    CM | BLUE PUMP OVRD pushbutton. . . . . **OFF**

    CM | NORMAL PROCEDURE. . . . . **RESUME**

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Operations with Volcanic Ash, Sand or Dust

Preliminary Cockpit Preparation

CM | APU. . . . . **AVOID USE**

CM | WINDSHIELD WIPERS. . . . . **AVOID**

Exterior Walkaround

CM | SURFACES AND EQUIPMENT. . . . . **VERIFY FREE OF DEPOSITS**

CM | ENGINE/APU INLETS. . . . . **VERIFY FREE OF DEPOSITS**

Engine Start

CM | ENGINE. . . . . **CRANK**

After Start

CM | ENG ANTI-ICE. . . . . **ON FOR 10 S**

Taxi

CM | SINGLE ENGINE TAXI. . . . . **PROHIBITED**
It is recommended to minimize the engine thrust during taxi.

CM | ENG 1 BLEED. . . . . **OFF**

CM | ENG 2 BLEED. . . . . **OFF**

- **If 180° turn on runway:**

  CM | INITIATE TURN. . . . . **DOWNWIND**

Takeoff

CM | ASH, SAND OR DUST. . . . . **ALLOW TO SETTLE**

CM | PACK OFF TAKEOFF. . . . . **CONSIDER**
It is recommended to perform a pack off takeoff to prevent the air conditioning system from contamination.

CM | ROLLING TAKEOFF. . . . . **CONSIDER**

After Takeoff

CM | MINIMIZE TIME IN SAND OR DUST CLOUD. . . . . **AWARE**

CM | ENG 1 BLEED. . . . . **ON**

CM | ENG 2 BLEED. . . . . **ON**

In Flight

It is recommended to avoid ash, sand or dust cloud.

- **If sand or dust cloud encounter:**

  CM | MINIMIZE TIME IN SAND OR DUST CLOUD. . . . . **AWARE**

- **If ash cloud encounter:**

  CM | VOLCANIC ASH ENCOUNTER PROCEDURE. . . . . **APPLY**

Descent Preparation

CM | AUTOLAND RECOMMENDED. . . . . **AWARE**

- **For landing performance:**

  CM | IDLE REVERSE. . . . . **CONSIDER**

  CM | BRAKING PERFORMANCE MAY BE DEGRADED. . . . . **AWARE**

Descent

It is recommended to avoid level flight in ash, sand or dust cloud.

Landing

- **Before landing:**

  CM | ENG 1 BLEED. . . . . **OFF**

  CM | ENG 2 BLEED. . . . . **OFF**

  CM | PACK 1 and 2. . . . . **AS REQUIRED**
  It is recommended to set the packs to OFF to avoid air conditioning system contamination.

- **During landing:**

  CM | REVERSERS. . . . . **AS REQUIRED**
  It is recommended to limit the use of reverse thrust.

After Landing

CM | SINGLE ENGINE TAXI. . . . . **PROHIBITED**
It is recommended to minimize engine thrust during taxi.

CM | APU. . . . . **AVOID USE**

- **If 180° turn on runway:**

  CM | INITIATE TURN. . . . . **DOWNWIND**

Securing the aircraft

- **After switching off all bleeds and before switching off the electrical AC power:**

  CM | DITCHING pushbutton. . . . . **ON**

  By pressing the ditching pushbutton, it closes the outflow valve, pack valves and avionics ventilation inlet and extract valves.

- **After switching off the electrical AC power and the batteries:**

  CM | DITCHING pushbutton. . . . . **OFF**

  CM | PROTECTIVE COVERS. . . . . **INSTALL**

  CM | LOGBOOK. . . . . . . **REPORT ASH, SAND OR DUST CLOUD ENCOUNTER**

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Securing the Aircraft for Cold Soak

When securing the aircraft

- **After switching off all bleeds and before switching off the electrical AC power:**

  CM | DITCHING pushbutton. . . . . **ON**
  By pressing the ditching pushbutton, it closes the outflow valve, pack valves and avionics ventilation inlet and extract valves.

- **When the chocks are in place:**

  CM | PARKING BRAKE. . . . . **OFF**
  This prevents the brakes from freezing.

- **After switching off the electrical AC power and the batteries:**

  CM | DITCHING pushbutton. . . . . **OFF**

  CM | PROTECTIVE COVERS. . . . . **INSTALL**

  CM | WATER SYSTEM DRAINING. . . . . **REQUEST**

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Manual Engine Start

General

- The manual start is recommended after aborting a start because of an engine stall, or an engine EGT overlimit, or low start air pressure.
- The manual start is recommended if starting in hot conditions or at a high altitude airfield.

Procedure

CM | THR LEVERS. . . . . **IDLE**

CM | ENG MODE selector. . . . . **NORM THEN IGN/START**

- **When all engines parameters are available on the upper ECAM display (no amber crosses displayed):**

  CM | ENG MAN START. . . . . **ON**

  CM | START VALVE. . . . . **VERIFY IN-LINE**

  CM | N2 INCREASE. . . . . **VERIFY**

  CM | OIL PRESS INCREASE. . . . . **VERIFY**

  - **If the N2 does not reach 20%:**

    CM | PACK VALVES. . . . . **VERIFY CLOSED**

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

      CM | GALY & CAB. . . . . **OFF**

      - **If needed, shed also:**

        CM | BLUE ELEC PUMP (on ground only). . . . . . . **OFF**

        CM | FUEL X FEED. . . . . **ON**

        CM | FUEL PUMPS (except R TK PUMP 2). . . . . . **OFF**

        CM | BLOWER. . . . . **OVRD**

        CM | CAB FANS. . . . . **OFF**

- **When N2 reaches the maximum motoring speed (20 % minimum) and 60 seconds after selection of the ENG MAN START:**

  If the OAT is above 35°C, delay the motoring time from 60 seconds to 120 seconds after the selection of the ENG MAN START.

  CM **|** ENG MASTER. . . . . **ON**

  PM **|** CHRONO. . . . . **START**

  CM **|** IGNITERS A AND B. . . . . **VERIFY ON**

  CM **|** FUEL FLOW INCREASE. . . . . **VERIFY**

- **15 seconds maximum after fuel flow increase:**

  CM **|** EGT INCREASE. . . . . **VERIFY**

  CM **|** N1 INCREASE. . . . . **VERIFY**

- **When N2 reaches 63%:**

  CM **|** IGNITERS A AND B (at 55% N2) . . . . **VERIFY OFF**

  CM **|** START VALVE (slightly above 63% N2) . . . . . **VERIFY CROSS LINE**

  CM **|** MAIN ENG PARAMETERS. . . . . **VERIFY NORMAL**

  CM **|** ENG MAN START. . . . . **OFF**

  CM **|** ENG MODE selector. . . . . **NORM**

  - **When no other engine requires a manual start:**

    CM **|** SHEDDED SYSTEMS. . . . . **RESTORE**

    CM **|** SOP – ENGINE START. . . . . **RESUME**

Engine Start with External Pneumatic Power

- **Before connecting external pneumatic power:**

  CM | PACK 1. . . . . **OFF**

  CM | PACK 2. . . . . **OFF**

  CM | APU BLEED. . . . . **OFF**

  CM | ENG 1 BLEED. . . . . **OFF**

  CM | ENG 2 BLEED. . . . . **OFF**

  CM | X BLEED. . . . . **OPEN**

CM | EXTERNAL PNEUMATIC POWER CONNECTION. . . . . **REQUEST**

- **When cleared to start:**

  CM | ENG 2. . . . . **START**

- **After Engine 2 is started:**

  CM | EXT PWR. . . . . **VERIFY AVAIL**

  CM | EXT PWR DISCONNECTION. . . . . **REQUEST**

- **If external pneumatic power is used to start engine 1:**

  CM | ENG 1. . . . . **START**

  - **When engine 1 is started:**

    CM | EXTERNAL PNEUMATIC POWER REMOVAL. . . . . **REQUEST**

    CM | X BLEED. . . . . **AUTO**

    CM | ENG 1 BLEED. . . . . **ON**

    CM | ENG 2 BLEED. . . . . **ON**

    CM | PACK 1. . . . . **ON**

    CM | PACK 2. . . . . **ON**

- **If the crossbleed engine start procedure is used to start engine 1:**

  CM **|** EXTERNAL PNEUMATIC POWER REMOVAL. . . . . **REQUEST**

  CM **|** X BLEED. . . . . **AUTO**

  CM **|** PACK 1. . . . . **ON**

  CM **|** PACK 2. . . . . **ON**

  CM **|** ENG 2 BLEED. . . . . **ON**

  CM **|** CROSSBLEED ENGINE START PROC. . . . . **PERFORM**

Crossbleed Engine Start

General

- It is prohibited to perform the crossbleed engine start procedure during pushback.
- One engine must be running in order to supply air for the other engine start.

Procedure

- **Before second engine start:**

  CM | APU BLEED. . . . . **OFF**

  CM | SUPPLYING ENGINE ENG BLEED. . . . . **ON**

  CM | RECEIVING ENGINE ENG BLEED. . . . . **OFF**

  CM | X BLEED. . . . . **OPEN**

- **When cleared to start:**

  CM | AREA CLEAR OF OBSTACLES. . . . . **CONFIRM**

  CM | SUPPLYING ENGINE THR LEVER. . . . . . . **ADJUST FOR BLEED PRESSURE**
  It is recommended to obtain an engine bleed pressure of 30 PSI before the start sequence.

  CM | RECEIVING ENGINE. . . . . **START**
  It is recommended to apply the normal engine start procedure.

- **After Start:**

  CM | SUPPLYING ENGINE THR LEVER. . . . . **IDLE**

  CM | X BLEED. . . . . **AUTO**

  CM | RECEIVING ENGINE ENG BLEED. . . . . **ON**

  CM | PACK 1. . . . . **ON**

  CM | PACK 2. . . . . **ON**

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Air Conditioning during Automatic Engine Start

This procedure is in place to enhance passenger's comfort.

CM **|** ENG 2. . . . . **START**

- **When idle is reached (AVAIL indication displayed):**

  CM **|** X BLEED. . . . . **SHUT**

CM **|** ENG 1. . . . . **START**

- **When idle is reached (AVAIL indication displayed):**

  CM **|** X BLEED. . . . . **AUTO**

CM **|** NORMAL PROCEDURE. . . . . **RESUME**

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Engine Start Valve Manual Operation

Before Engine Start

CM | GROUND CREW. . . . . **ADVISE**

Engine Start

CM | AUDIO CONTROL PANEL. . . . . **CAB**

CM | GROUND CREW CLEARANCE. . . . . **OBTAIN**

- **When the ground crew is ready:**

  CM | "ENGINE 1(2) START" . . . . **ANNOUNCE**

  CM | ENG MODE selector. . . . . **IGN/START**

  CM | ENG MASTER. . . . . **ON**

  CM | "OPEN START VALVE AND KEEP OPEN" . . . . **ORDER**

- **When N2 at 50 %:**

  CM | "CLOSE START VALVE" . . . . **ORDER**

  CM | SOP – ENGINE START. . . . . **RESUME**

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Engine Ventilation (Dry Cranking)

General

- The procedure is applied after an unsuccessful manual engine start or after an unsuccessful automatic start not followed by an automatic dry crank.

Procedure

- **Before dry crank:**

  CM **|** AFFECTED ENG MASTER. . . . . **VERIFY OFF**

  CM **|** ENG MODE selector. . . . . **VERIFY NORM**

  CM **|** AFFECTED ENG MAN START. . . . . **VERIFY OFF**

- **Dry crank:**

  CM **|** ENG MODE selector. . . . . **CRANK**

  CM **|** ENG MAN START. . . . . **ON**
  It is recommended to dry crank for 30 seconds to clear fuel vapors.

- **When the dry crank is completed:**

  CM **|** ENG MAN START. . . . . **OFF**

  CM **|** ENG MODE selector. . . . . **NORM**

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Single Engine Taxi – At Departure

CM | BRAKE ACCU PRESS. . . . . **VERIFY**
The flight crew may use Y ELEC PUMP to pressurize the brake accumulator.

CM | ENG 1. . . . . **START**
It is recommended to start engine 1, as it pressurizes the green hydraulic system, which provide for normal braking.

CM | X BLEED. . . . . **OPEN**
This allows both packs to be used.

CM | SOP - AFTER START PROC. . . . . **PERFORM**
Apply the AFTER START normal procedure, however, keep the APU running and delay the ECAM status check and the wing anti-ice setting until all engines are started.

Before Releasing Parking Brake

CM | Y ELEC PUMP. . . . . **ON**

CM | SOP - TAXI PROC. . . . . **PERFORM**
Apply the TAXI normal procedure, however, delay the flight controls check and the autobrakes arm until all engines are started.

Before Takeoff

CM | ENGINE WARM-UP TIME BEFORE TAKEOFF. . . . . **CONSIDER**

- **For ENG 2 start, and when taxiing in a straight line:**

  CM | Y ELEC PUMP. . . . . **OFF**

  - **If the APU bleed is available:**

    CM | APU BLEED. . . . . **ON**

    CM | ENG 2. . . . . **START**

    CM | X BLEED. . . . . **AUTO**

  - **If the APU bleed in not available:**

    CM | CROSSBLEED ENGINE START. . . . . **PERFORM**

  CM | APU. . . . . **AS REQUIRED**

  CM | SOP - AFTER START. . . . . **COMPLETE**
  Perform the ECAM status check and the selection of anti-ice.

CM | AFTER START CHECKLIST. . . . .**PERFORM**

CM | FLIGHT CONTROLS. . . . . **VERIFY**

CM | AUTO BRK. . . . . **MAX**

Single Engine Taxi – At Arrival

CM | APU. . . . . **AS REQUIRED**

- **After high thrust operations:**

  CM | ENGINE MINIMUM COOLING TIME. . . . . **CONSIDER**

- **When taxiing in a straight line:**

  CM | ENG 2. . . . . **SHUT DOWN**

  CM | Y ELEC PUMP. . . . . **ON**
  It is recommended to avoid using the PTU.

- **At parking:**

  CM | Y ELEC PUMP. . . . . **OFF**

  CM | ENG 1. . . . . **SHUT DOWN**

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Refueling

Preparation

CM | SAFETY PRECAUTIONS. . . . . **APPLY**

CM | ACCESS PLATFORM. . . . . **IN POSITION**

CM | MAX REFUELING PRESSURE: 50 PSI (3.5 bar) . . . . **AWARE**

- **On refueling control panel:**

  CM | TEST switch. . . . . **LTS**
  The lights on the panel should come on.

  CM | TEST switch. . . . . **HI.LVL**

Automatic Refueling

CM | REFUEL VALVES selector. . . . . **VERIFY NORM AND GUARDED**

CM | REQUESTED BLOCK FUEL. . . . . **SET**

CM | MODE SELECT switch. . . . . **REFUEL**

CM | ACTUAL QUANTITY. . . . . **VERIFY**

CM | MODE SELECT switch. . . . . **OFF AND GUARDED**

Manual Refueling

CM | REFUEL VALVES selector. . . . . **SHUT**

CM | MODE SELECT switch. . . . . **REFUEL**

CM | REFUEL VALVES selectors of tanks to be filled. . . . . **OPEN**

CM | FUEL QTY . . . . **MONITOR**

- **When the contents of the tank reach the required level:**

  CM | CORRESPONDING REFUEL VALVES selector. . . . . **SHUT**

  CM | MODE SELECT switch. **OFF AND GUARDED**

  CM | REFUEL VALVES selector. . . . . **NORM AND GUARDED**

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Refueling with One Engine Running

General

- The refuel with one engine running is only allowed if there is no external ground pneumatic power and the APU is unserviceable.
- The passengers must be all disembarked, and the airport fire department should be on standby.
- The aircraft must be set into the wind, where the slope is negligable.
- It is prohibited to attempt an engine or apu start or shutdown during the refuel process.
- When monitoring the refueling, ensure it does not exceed the following fuel quantities:

Density (kg/l)	0.77	0.78	0.79	0.8	0.81	0.82	0.83
L(R) Wing (kg)	5 660	5 730	5 810	5 880	5 950	6 030	6 100
Center (kg)	5 990	6 070	6 150	6 220	6 300	6 380	6 460

After second engine start

- **Reset the 3DMCs in order to reinitialize the fuel used values:**

  CM | DMC 1 SPLY C/B (E11 on 49VU) . . . . **PULL**

  CM | DMC 2 SPLY C/B (Q8 on 121VU) . . . . **PULL**

  CM | DMC 3 SPLY C/B (Q9 on 121VU) . . . . **PULL**

  CM | DMC 3 SPLY STBY (E10 on 49VU) . . . . **PULL**

  - **After 5 seconds:**

    CM | ALL C/B. . . . . **PUSH**

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Ground Fuel Transfer

CM | SAFETY PRECAUTIONS. . . . . **APPLY**

CM | PARK BRK. . . . . **ON**

CM | ACCESS PLATFORM. . . . . **IN POSITION**

- **From one wing to the other wing or to the center tank:**
  - **On cockpit overhead FUEL panel:**

    CM | PUMPS of the tank not to be defueled. . . . . **OFF**

    CM | PUMPS of the tank to be defueled. . . . . **ON**

    CM | X FEED. . . . . **ON**

  - **On refueling control panel:**

    CM | REFUEL VALVES selectors of tanks not to be filled. . . . . **SHUT**

    CM | REFUEL VALVES selectors of tanks to be filled. . . . . **OPEN**

    CM | MODE SELECT switch. . . . . **DEFUEL/XFR**

    CM | FUEL QTY. . . . . **MONITOR**

    - **When the tank contents reach the required level:**

      CM | CORRESPONDING REFUEL VALVES selector. . . . . . . **SHUT**

      CM | MODE SELECT switch . . . . **OFF AND GUARDED**

      CM | REFUEL VALVE selector. . . . . **NORM AND GUARDED**

- **From center tank to the L (R) inner tank:**

CM | L(R) TK PUMPS. . . . . **ON**

CM | CTR TK L(R) XFR. . . . . **ON**

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Defueling

CM | SAFETY PRECAUTIONS. . . . . **APPLY**

CM | PARK BRK. . . . . **ON**

CM | ACCESS PLATFORM. . . . . **IN POSITION**

- **On cockpit overhead FUEL panel:**

  CM | PUMPS. . . . . **OFF**

- **On refueling control panel:**

  CM | REFUEL VALVES sel. . . . . **NORM**

  CM | MODE SEL switch. . . . . **DEFUEL/XFR**

- **On cockpit overhead FUEL panel:**

  CM | CORRESPONDING PUMPS. . . . . **ON**
  Turn on the pumps of the tanks to be defueled.

  CM | X FEED. . . . . **ON**

  CM | FUEL QUANTITY. . . . . **MONITOR**

  - **When tank contents reach required level:**

    CM | CORRESPONDING PUMPS. . . . . **OFF**

- **On refueling control panel:**

  CM | MODE SELECT switch. . . . . **OFF AND GUARDED**

  CM | REFUEL VALVES selector. . . . . **NORM AND GUARDED**

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Operations with Nosewheel Steering Offset

General

- The flight crew may notice a veering tendancy. This may be caused by the crosswind or slope, or to a nosewheel steering offset. The only way to know it's an nosewheel steering offset is if a veering tendancy has been reported previously by the previous flight crew.

NWS Offset Table

NWS Offest	Necessary Rudder Trim Input	Procedure
Offset ≤ 0.5°	Trim ≤ 3°	**Taxi** RUDDER TRIM. . . . . . **ADJUST** **Before Takeoff** RUDDER TRIM. . . . . . . **RESET**
0.5° < Offset ≤ 1.5°	3° < Trim ≤ 8.8°	**Taxi** RUDDER TRIM. . . . . . . **RESET** **Before Takeoff** RUDDER TRIM. . . . . . . **RESET** **Landing** The maximum crosswind allowed for an Autoland is 10 knots
Offset > 1.5 °	Trim > 8.8°	A maintenance action is required.

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Pushback with Power Push Unit

- **Before Start Clearance:**

  CM | SOP – BEFORE START CLEARANCE. . . . . **PERFORM**

  CM | BEFORE START CHECKLIST DOWN TO THE LINE. . . . . **COMPLETE**

  CM | NW STRG DISC MEMO. **VERIFY NOT DISPLAYED**

- **At Start Clearance:**

  PM | PUSHBACK/START CLEARANCE. . . . . **OBTAIN**

  CM | ATC. . . . . **SET FOR OPERATION**

  CM | WINDOWS AND DOORS. . . . . **VERIFY CLOSED**

  CM | SLIDES. . . . . **VERIFY ARMED**
  Ensure the slides are armed on the ECAM lower display.

  CM | BEACON. . . . . **ON**

  CM | THRUST LEVERS. . . . . **IDLE**

  CM | ACCU PRESS INDICATOR. . . . . **VERIFY**
  The indications must be in the green band.

  CM | PARK BRK. . . . . **VERIFY ON**

  CM | BRAKE PRESS INDICATOR. . . . . **VERIFY**

  CM | BEFORE START CHECKLIST BELOW THE LINE . . . . **PERFORM**

CM | ENG 2. . . . . **START**

Pushback

  CM | PARK BRK. . . . . **OFF**

  CM | BRAKE PRESS indicator. . . . . **VERIFY ZERO**

  CM | STEERING HANDWHEEL. . . . . **AS REQUIRED**
  With the guidance of the ground crew, steer the aircraft using the handwheel.

- **When pushback is completed:**

  CM | PARK BRK. . . . . **ON**

CM | BRAKE PRESS indicator. . . . . **VERIFY**

CM | GROUND CREW. . . . . **ADVISE TO REMOVE PPU**

- **When PPU is removed and ground crew clearance obtained:**

CM | ENG 1. . . . . **START**

CM | SOP – AFTER START. . . . . **RESUME**

High Altitude Airport Operations

- **Takeoff on airport with an elevation of 9 200 ft or above:**

Cockpit Preparation

CM | HIGH ALT LDG pushbutton (for all on ground operation) . . . . **ON**

Takeoff

For US flights, as long as the cabin altitude is above 12 000 ft in flight, one pilot must use the oxygen mask continuously.

CM | APU BLEED. . . . . **AS REQUIRED**
The packs may be supplied by the APU bleed up to 17 000 ft.

Cruise

CM | LDG ELEV AUTO. . . . . **VERIFY**

- **When cabin altitude below 12 000 ft and decreasing:**

  CM | HIGH ALT LDG. . . . . **OFF**
  This will allow the CAB PR EXCESS CAB ALT alert to trigger in case of excess cabin altitude.

  CM | CAB ALT DECREASING BELOW 9 550 FT. . . . . . . **MONITOR**

- **Landing on airports with an elevation of 9 200 ft or above:**

Cruise

- **If CAB ALT exceeds 8 000 ft:**

CM | LDG ELEV : 8 000 ft. . . . . **SET**

Descent Preparation

CM | HIGH ALT LDG. . . . . **ON**
If the HIGH ALT LDG pushbutton is switched to off, passenger oxygen masks would drop.

CM | LDG ELEV. . . . . **AUTO**
By setting the LDG ELEV to AUTO, the CPC will start controlling the pressure to the landing field elevation.

Descent

- **After descent initiation when cabin altitude as reached 8 500 ft:**

  CM | MODE SEL. . . . . **MAN**

  CM | MODE SEL. . . . . **AUTO**

After Landing

CM | HIGH ALT LDG (for all on ground operation) . . . . **ON**

Operations at QNH above 1 050 hPa

Limitations

- The FMS, FCU, ISIS, PFD and CPCS are capable of operating at QNH/QFE up to 1 100 hPa or 32,48 inHg.
- The TCAS may generate erroneous altitude information and create false TCAS alerts to other aircrafts if the aircraft flies below – 1000 ft standard pressure altitude.

Before Takeoff

CM | ALT RPTG. . . . . **OFF**

The ALT RPTG OFF and TCAS STBY memo appear on the warning display.

PM | ATC. . . . . **NOTIFY**
Notify the ATC that the altitude reporting is not available.

Takeoff

- **Above 1 000 ft, when time permits:**

CM | ALT RPTG. . . . . **ON**
The TCAS should automatically reverts to its previous setting.

CM | TCAS TA/RA. . . . . **VERIFY**

Approach

- **Before final approach:**

PM | ATC. . . . . **NOTIFY**
Notify the ATC that the altitude reporting will not be available.

CM | ALT RPTG. . . . . **OFF**

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Abnormal Procedures

A32NX

1.0.0

APRIL 12th, 2022

For Flight Simulation Use Only

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Anti-Ice

DOUBLE AOA HEAT FAILURE

CM | ONE OF THE AFFECTED ADR. . . . . **OFF**

It is recommended to keep ADR1, as it's the only one available in the EMER ELEC config.

ANTI ICE ALL PITOT

The heating system of the CAPT, F/O and STBY pitot probes are failed.

ECAM: INOP SYS – CAPT PITOT; F/O PITOT; STBY PITOT; CAPT PROBES; F/O PROBES; STBY PROBES

CM | ADR 1(2)(3) P/B. . . . . **OFF**

- **If icing expected:**

  CM | ADR 2(3) P/B. . . . . **OFF**

  CM | UNREL SPD PROC. . . . . **APPLY**

ANTI ICE CAPT(F/O) TAT

The heating system of the corresponding probe is failed.

ECAM: INOP SYS – CAPT(F/O) TAT

CM | ANTI ICE CAPT(F/O) TAT. . . . . **AWARE**

ANTI ICE CAPT + F/O PITOT

The heating systems of the CAPT and F/O pitot probes are failed

ECAM: INOP SYS – CAPT PITOT; F/O PITOT; CAPT PROBES; F/O PROBES

- **If ADR 3 operative and ON:**

  CM | ADR 1(2) P/B. . . . . **OFF**

- **If ADR 3 failed or OFF:**
  - **If icing expected:**

    CM | ADR 1(2) P/B. . . . . **OFF**

    CM | UNREL SPD PROC. . . . . **APPLY**

ANTI ICE CAPT + STBY PITOT

The heating system of the CAPT and STBY pitot probes are failed.

ECAM: INOP SYS – CAPT PITOT; STBY PITOT; CAPT PROBES; STBY PROVES

- **If ADR 2 operative and ON:**

  CM | ADR 1(3) . . . . **OFF**

- **If ADR 2 failed or OFF:**
  - **If icing expected:**

    CM | ADR 1(3) P/B. . . . . **OFF**

    CM | UNREL SPD PROC. . . . . **APPLY**

ANTI ICE CAPT PITOT OR L(R) STAT OR AOA

The heating system of the corresponding probe is failed.

ECAM: INOP SYS – CAPT PITOT; CAPT L(R) STAT; CAPT AOA

CM | AIR DATA SWTG. . . . . **CAPT 3**

ANTI ICE CAPT PROBES

The captain heat computer is failed.

ECAM: INOP SYS – CAPT PROBES

CM | AIR DATA SWTG. . . . . **CAPT 3**

ANTI ICE DETECT FAULT

Both ice detectors are failed.

ECAM: INOP SYS – ICE DETECT

CM | ANTI ICE. . . . . **AS REQUIRED**

ANTI ICE ENG 1(2) CTL FAULT (ENG 1(2) A.ICE VALVE OPEN)

The NAI control system is failed.

CM | ENG 1(2) ANTI ICE. . . . . **ON**

ANTI ICE ENG 1(2) CTL FAULT (ENG 1(2) A.ICE MON FAULT)

The NAI control system is failed.

ECAM: INOP SYS – APU

CM | ANTI ICE ENG 1(2) CTL FAULT. . . . . **AWARE**

CM | ICING CONDITIONS. . . . . **AVOID**

ANTI ICE ENG 1(2) OVER PRESS

The pressure regulation is lost on both NAI valves.

CM | ANTI ICE ENG 1(2) OVER PRESS. . . . . **AWARE**

ANTI ICE ENG 1(2) VALVE CLSD

The valve is abnormally closed.

ECAM: INOP SYS – ENG 1(2) A.ICE

CM | THRUST. . . . . **INCREASE**

- **If unsuccessful:**

  CM | ICING CONDITIONS. . . . . **AVOID**

ANTI ICE ENG 1(2) VALVE OPEN

The valve is abnormally open.

CM | ENG 1(2) ANTI ICE. . . . . **ON**

ANTI ICE F/O + STBY PITOT

The heating system of the F/O and STBY pitot probes are failed.

ECAM: INOP SYS – F/O PITOT; STBY PITOT; F/O PROBES; STBY PROBES

- **If ADR 1 operative and ON:**

  CM | ADR 2(3) P/B. . . . . **OFF**

- **If ADR 1 failed or OFF:**
  - **If icing expected:**

    CM | ADR 2(3) PB. . . . . **OFF**

    CM | UNREL SPD PROC. . . . . **APPLY**

ANTI ICE F/O PITOT OR L(R) STAT OR AOA

The heating system of the corresponding probe is failed.

ECAM: INOP SYS – F/O PITOT; F/O L(R) STAT; F/O AOA

CM | AIR DATA SWTG. . . . . **F/O 3**

ANTI ICE F/O PROBES

The F/O probe heat computer is failed.

ECAM: INOP SYS – F/O PROBES

CM | AIR DATA SWTG. . . . . **F/O 3**

ANTI ICE ICE DETECTED

The flight is above 1 500 ft, the TAT is below 10°C and the ENG ANTI ICE pushbutton is set to OFF.

CM | ENG 1 ANTI ICE. . . . . **ON**

CM | ENG 2 ANTI ICE. . . . . **ON**

ANTI ICE L+R WINDSHIELD

The heating system of both windshield is failed.

ECAM: INOP SYS – WSHLD HEAT

CM | ANTI ICE L+R WINDSHIELD. . . . . **AWARE**

ANTI ICE L(R) WINDOW

The corresponding window heating system is failed.

ECAM: INOP SYS – L(R) WNDW HEAT

CM | ANTI ICE L(R) WINDOW. . . . . **AWARE**

ANTI ICE L(R) WINDSHIELD

The corresponding windshield heating system is failed.

ECAM: INOP SYS – L(R) WSHLD HEAT

CM | ANTI ICE L(R) WINDSHIELD. . . . . **AWARE**

ANTI ICE STBY PITOT OR L(R) STAT OR AOA

The heating system of the corresponding probe is failed.

ECAM: INOP SYS – STBY PITOT; STBY L(R) STAT; STBY AOA

CM | ANTI ICE STBY PITOT OR L(R) STAT OR AOA. . . . . **AWARE**

ANTI ICE STBY PROBES

The standby probe heat computer is failed.

ECAM: INOP SYS – STBY PROBES

CM | ANTI ICE STBY PROBES. . . . . **AWARE**

Air

BLEED 1+2 FAULT

CM | DESCENT. . . . . **TO FL 100/MEA-MORA**

CM | ICING CONDITIONS. . . . . **AVOID**

CM | RCL pb. . . . . **PRESS**

- **If CAB PR EXCESS CAB ALT alert triggers, at any time:**

  CM | CAB PR EXCEES CAB ALT PROC. . . . . **APPLY**

- **If no subtitle with AIR ENG 1+2 BLEED FAULT alert and if both engine bleeds lost not due to engine fire nor start air valve failed open:**

  CM | APU. . . . . **START**

  - **If APU available:**
    - **When at or below FL 200:**

      CM | WING A.ICE. . . . . **OFF**

      CM | APU BLEED. . . . . **ON**

      - **If PACK 1 available:**

        CM | PACK 2. . . . . **OFF**

      - **If APU BLEED available:**

        CM | MAX FL 200. . . . . **AWARE**

        CM | PACK 1. . . . . **ON**

        CM | PACK 2. . . . . **ON**

        CM | ENG 1 BLEED. . . . . **ON**

        CM | ENG 2 BLEED. . . . . **ON**

        CM | APU BLEED. . . . . **OFF**

- **If no engine bleed recovered:**

  CM | APU BLEED. . . . . **ON**

  - **If PACK 1 available:**

    CM | PACK 2. . . . . **OFF**

  CM | ENG 1 BLEED. . . . . **OFF**

  CM | ENG 2 BLEED. . . . . **OFF**

  CM | WING A.ICE NOT AVAILABLE. . . . . **AWARE**

- **If APU bleed not available:**

  CM | APU BLEED. . . . . **OFF**

  - **When at or below FL 100/MEA-MORA:**

    CM | PACK 1. . . . . **ON**

    CM | PACK 2. . . . . **ON**

    CM | ENG 1 BLEED. . . . . **ON**

    CM | ENG 2 BLEED. . . . . **ON**

    - **If no engine bleed recovered:**

      CM | ENG 1 BLEED. . . . . **OFF**

      CM | ENG 2 BLEED. . . . . **OFF**

      CM | MAX FL 100/MEA-MORA. . . . . **AWARE**

      CM | WING A.ICE NOT AVAILABLE. . . . . **AWARE**

      - **When CAB PR ΔP< 1 psi:**

        CM | RAM AIR. . . . . **ON**

- **If APU not available:**

  CM | APU BLEED. . . . . **OFF**

  - **When at or below FL 100/MEA-MORA:**

    CM | PACK 1. . . . . **ON**

CM | PACK 2. . . . . **ON**

CM | ENG 1 BLEED. . . . . **ON**

CM | ENG 2 BLEED. . . . . **ON**

- **If no engine bleed recovered:**

  CM | ENG 1 BLEED. . . . . **OFF**

  CM | ENG 2 BLEED. . . . . **OFF**

  CM | MAX FL 100 / MEA-MORA. . . . . **AWARE**

  CM | WING A.ICE NOT AVAILABLE. . . . . **AWARE**

  - **When CAB PR ∆P < 1 psi:**

    CM | RAM AIR. . . . . **ON**

- **If LEFT LEAK subtitle with AIR ENG 1+2 BLEED FAULT alert or if engine 1 bleed lost due to engine 1 fire or Start Air Valve 1 failed open or APU leak fed by engine:**
  - **When at or below FL 100/MEA-MORA:**

    CM | PACK 2. . . . . **ON**

    CM | ENG 2 BLEED. . . . . **ON**

    - **If engine 2 bleed not recovered:**

      CM | ENG 2 BLEED. . . . . **OFF**

      CM | MAX FL 100/MEA-MORA. . . . . **AWARE**

      CM | WING A.ICE NOT AVAILABLE. . . . . **AWARE**

      - **When CAB PR ∆P < 1 psi :**

        CM | RAM AIR. . . . . **ON**

- **If RIGHT LEAK subtitle with AIR ENG 1+2 BLEED FAULT alert or if engine 2 bleed lost due to engine 2 fire or Start Air Valve 2 failed open:**

  CM | APU. . . . . **START**

- **If APU available:**
  - **When at or below FL 200:**

    CM | WING A.ICE. . . . . **OFF**

    CM | APU BLEED. . . . . **ON**

    - **If APU bleed available:**

      CM | MAX FL 200. . . . . **AWARE**

      CM | PACK 1. . . . . **ON**

      CM | ENG 1 BLEED. . . . . **ON**

      CM | APU BLEED. . . . . **OFF**

      - **If engine 1 bleed not recovered:**

        CM | APU BLEED. . . . . **ON**

        CM | ENG 1 BLEED. . . . . **OFF**

        CM | WING A.ICE NOT AVAILABLE. . . . . **AWARE**

    - **If APU bleed not available:**

      CM | APU BLEED. . . . . **OFF**

      - **When at or below FL 100/MEA-MORA:**

        CM | PACK 1. . . . . **ON**

        CM | ENG 1 BLEED. . . . . **ON**

        - **If engine 1 bleed not recovered:**

          CM | ENG 1 BLEED. . . . . **OFF**

          CM | MAX FL 100 / MEA-MORA. . . . . . **AWARE**

          CM | WING A.ICE NOT AVAILABLE. . . **AWARE**

          - **When CAB PR ∆P < 1 psi :**

            CM | RAM AIR. . . . . **ON**

- **If APU not available:**

  CM | APU BLEED. **OFF**

  - **When at or below FL 100/MEA-MORA:**

    CM | PACK 1. **ON**

    CM | ENG 1 BLEED. **ON**

    - **If engine 1 bleed not recovered:**

      CM | ENG 1 BLEED. **OFF**

      CM | MAX FL 100/MEA-MORA. **AWARE**

      CM | WING A.ICE NOT AVAILABLE. **AWARE**

      - **When CAB PR ∆O < 1 psi:**

        CM | RAM AIR. **ON**

- **If both LEFT LEAK and RIGHT LEAK subtitles with AIR ENG 1+2 BLEED FAULT alert or if both engines bleeds lost due to engine fire or Start Air Valve failed open or APU leak fed by engine:**

  CM | NO ENGINE BLEED CAN BE RECOVERED. **AWARE**

  CM | MAX FL 100/MEA-MORA. **AWARE**

  CM | WING A.ICE NOT AVAILABLE. **AWARE**

  - **When CAB PR ∆P < 1 psi:**

    CM | RAM AIR. **ON**

AIR APU BLEED FAULT

The APU is running and the position of the APU bleed valve disagrees with the selected position of the APU bleed pushbutton.

ECAM: INOP SYS – APU BLEED

CM | AIR APU BLEED FAULT. **AWARE**

AIR APU BLEED LEAK

The APU bleed leak detection loop has detected a temperature above 124°C.

ECAM: INOP SYS – APU BLEED

CM | APU BLEED (IF NOT CLOSED) . . . . **OFF**

AIR APU BLEED LEAK (APU LEAK FED BY ENG)

A bleed leak is detected in the APU bleed ducts and the APU is OFF.

ECAM: INOP SYS – WING A.ICE; ENG 1 BLEED; PACK 1; APU BLEED

CM | ENG 1 BLEED. . . . . **OFF**

CM | X BLEED. . . . . **SHUT**

CM | PACK 1. . . . . **OFF**

CM | WING ANTI ICE. . . . . **OFF**

CM | ICING CONDITIONS. . . . . **AVOID**

- **If severe ice accretion:**

  CM | MIN SPD. . . . . **VLS + 10 / G DOT**

  CM | LDG DIST PROC. . . . . **APPLY**

AIR APU LEAK DET FAULT

The APU bleed leak detection loop is inoperative.

ECAM: INOP SYS – APU LEAK DET

CM | AIR APU LEAK DET FAULT. . . . . **AWARE**

AIR BLEED 1(2) OFF

The engine bleed is abnormally set to OFF.

CM | AIR BLEED 1(2) OFF. . . . . **AWARE**

AIR BLEED LEAK

A leak is detected in a bleed duct and the X-BLEED selector is set to OPEN.

CM | X BLEED. . . . . **SHUT**

AIR COND CTL 1(2) – A(B) FAULT

The lane A or B of the ACSC 1 or 2 is failed.

ECAM: INOP SYS – COND CTL 1(2) – A(B)

CM | AIR COND CTL 1(2) – A(B) FAULT. . . . . **AWARE**

AIR ENG 1(2) BLEED ABNORM PR

The regulated pressure in the engine bleed duct is abnormal.

ECAM: INOP SYS – ENG 1(2) BLEED; PACK 1(2)

CM | AFT CRG HOT AIR. . . . . **OFF**

- **If both packs are on:**

  CM | AFFECTED PACK. . . . . **OFF**

CM | AFFECTED ENG BLEED. . . . . **OFF**

CM | X BLEED. . . . . **OPEN**

AIR ENG 1(2) BLEED FAULT
The engine 1(2) is running, and both bleed temperature sensors are lost, or the engine 1(2) bleed air pressure is above 57 PSI, or when the bleed air temperature is above 257°C for 55 seconds or 270°C for 15 seconds or 290°C for more than 5 seconds.
ECAM: INOP SYS – ENG 1(2) BLEED; PACK 1(2)

- **On ground, if only one bleed temperature sensor is lost:**

  CM | AIR ENG 1(2) BLEED FAULT. . . . . **AWARE**

CM | AFFECTED ENG BLEED (IF NOT AUTOMATICALLY CLOSED) . . . . **OFF**

CM | AFT CRG HOT AIR. . . . . **OFF**

CM | AFFECTED PACK. . . . . **OFF**

CM | X BLEED. . . . . **OPEN**

AIR ENG 1(2) BLEED FAULT (BLEED NOT CLOSED)
The engine 1(2) is running, and the engine 1(2) bleed valve fails to close when the engine 1(2) bleed air pressure is above 57 PSI or when the bleed air temperature is above 257°C for 55 seconds or 270°C for 15 seconds or 290°C for more than 5 seconds.
ECAM: INOP SYS – ENG 1(2) BLEED; PACK 1(2); WING A.ICE

CM | AFFECTED ENG BLEED. . . . . **OFF**

CM | AFT CRG HOT AIR. . . . . **OFF**

CM | AFFECTED PACK. . . . . **OFF**

CM | X BLEED. . . . . **SHUT**

CM | WING ANTI ICE. . . . . **OFF**

CM | ICING CONDITIONS. . . . . **AVOID**

- **If engine 1 bleed is affected:**

  CM | APU BLEED. . . . . **OFF**

- **If severe ice accretion:**

  CM | MIN SPD. . . . . **VLS + 10 / G DOT**

  CM | LDG DIST PROC. . . . . **APPLY**

AIR ENG 1+2 BLEED FAULT
Both engine bleed supply systems are lost without a wing leak or pylon leak.
ECAM: INOP SYS – WING A.ICE; ENG 1 BLEED; ENG 2 BLEED; APU BLEED; BMC 1+2; PACK 1+2

CM | X BLEED. . . . . **SHUT**

CM | WING ANTI ICE. . . . . **OFF**

CM | ICING CONDITION. . . . . **AVOID**

- **If APU bleed is on and fails:**

  CM | APU BLEED. . . . . **OFF**

CM | ENG 1 BLEED. . . . . **OFF THEN ON**

CM | ENG 2 BLEED. . . . . **OFF THEN ON**

- **If unsuccessful:**

  CM | ENG 1 BLEED. . . . . **OFF**

  CM | ENG 2 BLEED. . . . . **OFF**

  CM | DESCENT. . . . . **TO FL 100/MEA-MORA**

  CM | BLEED 1+2 PROC. . . . . **APPLY**

  - **If severe ice accretion:**

    CM | MIN SPD. . . . . **VLS + 10 / G DOT**

    CM | LDG DIST PROC. . . . . **APPLY**

AIR ENG 1+2 BLEED FAULT (LEFT LEAK)
Both engine bleed supply systems are lost with a left wing leak or a pylon leak on side 1.
ECAM: INOP SYS – WING A.ICE; ENG 1 BLEED; ENG 2 BLEED; APU BLEED; PACK 1+2

CM | X BLEED. . . . . **SHUT**

CM | WING ANTI ICE. . . . . **OFF**

CM | ICING CONDITION. . . . . **AVOID**

- **If APU bleed is on:**

  CM | APU BLEED. . . . . **OFF**

CM | ENG 2 BLEED. . . . . **OFF THEN ON**

- **If unsuccessful:**

  CM | ENG 1 BLEED. . . . . **OFF**

  CM | ENG 2 BLEED. . . . . **OFF**

  CM | DESCENT. . . . . **TO FL 100/MEA-MORA**

  CM | BLEED 1+2 PROC. . . . .**APPLY**

  - **If severe ice accretion:**

    CM | MIN SPD. . . . . **VLS + 10 / G DOT**

    CM | LDG DIST PROC. . . . . **APPLY**

AIR ENG 1+2 BLEED FAULT (RIGHT LEAK)
Both engine bleed supply systems are lost with a right wing leak or a pylon leak on side 2.
ECAM: INOP SYS – WING A.ICE; ENG 1 BLEED; ENG 2 BLEED; APU BLEED; PAC 1+2

CM | X BLEED. . . . . **SHUT**

CM | WING ANTI ICE. . . . . **OFF**

CM | ICING CONDITION. . . . . **AVOID**

- **If APU bleed is on:**

  CM | APU BLEED. . . . . **OFF**

- **If unsuccessful:**

  CM | ENG 1 BLEED. . . . . **OFF**

  CM | ENG 2 BLEED. . . . . **OFF**

  CM | DESCENT. . . . . **TO FL 100/MEA-MORA**

CM | BLEED 1+2 PROC. . . . .**APPLY**

- **If severe ice accretion:**

CM | MIN SPD. . . . . **VLS + 10 / G DOT**

CM | LDG DIST PROC. . . . . **APPLY**

AIR ENG 1+2 BLEED FAULT (LEFT AND RIGHT LEAK)
Both engine bleed supply systems are lost with a wing leak or a pylon leak on both sides.
ECAM: INOP SYS – WING A.ICE; ENG 1 BLEED; ENG 2 BLEED; APU BLEED; PACK 1+2

CM | X BLEED. . . . . **SHUT**

CM | WING ANTI ICE. . . . . **OFF**

CM | ICING CONDITION. . . . . **AVOID**

- **If APU bleed is on:**

CM | APU BLEED. . . . . **OFF**

CM | ENG 1 BLEED. . . . . **OFF**

CM | ENG 2 BLEED. . . . . **OFF**

CM | DESCENT. . . . . **TO FL 100/MEA-MORA**

CM | BLEED 1+2 PROC. . . . . **APPLY**

- **If severe ice accretion:**

CM | MIN SPD. . . . . **VLS + 10 / G DOT**

CM | LDG DIST PROC. . . . . **APPLY**

AIR ENG 1(2) BLEED LO TEMP (OPPOSITE BLEED AVAILABLE)
The associated engine bleed supplies bleed air at a temperature below 150°C in flight with the wing anti ice on.

CM | A/THR. . . . . **OFF**

CM | AFFECTED ENGINE THR LEVERS. . . . . **ADVANCE**

- **If unsuccessful:**

CM | X BLEED. . . . . **OPEN**

CM | AFFECTED ENG BLEED. . . . . **OFF**

CM | ASSOCIATED PACK (IF OPPOSITE PACK ON) . . . . **OFF**

AIR ENG 1(2) BLEED LO TEMP (OPPOSITE BLEED NOT AVAILABLE)

The associated engine bleed supplies bleed air at a temperature below 150°C in flight with the wing anti ice on.

ECAM: INOP SYS – WING A.ICE

CM | A/THR. . . . . **OFF**

CM | AFFECTED ENGINE THR LEVERS. . . . . **ADVANCE**

- **If unsuccessful:**

  CM | WING ANTI ICE. . . . . **OFF**

  CM | ICING CONDITIONS. . . . . **AVOID**

  - **If severe ice accretion:**

    CM | MIN SPD. . . . . **VLS + 10 / G DOT**

    CM | LDG DIST PROC. . . . . **APPLY**

AIR ENG 1+2 BLEED LO TEMP

Both engine bleeds supply bleed air at temperature below 150°C in flight with the wing anti ice on.

ECAM: INOP SYS – WING A.ICE

CM | A/THR. . . . . **OFF**

CM | THR LEVERS. . . . . **ADVANCE**

- **If unsuccessful:**

  CM | WING ANTI ICE. . . . . **OFF**

  CM | ICING CONDITIONS. . . . . **AVOID**

  - **If severe ice accretion:**

    CM | MIN SPD. . . . . **VLS + 10 / G DOT**

    CM | LDG DIST PROC. . . . . **APPLY**

AIR ENG 1(2) BLEED HI TEMP

The precooler outlet temperature is above 245°C.

ECAM: INOP SYS – WING A.ICE

CM | AFT CRG HOT AIR. . . . . **OFF**

- **If wing anti-ice off:**

  CM | PACK 2 (1) . . . . **OFF**

- **If wing anti-ice on and opposite pack off:**

  CM | PACK 1 (2) OR WAI. . . . . **OFF**

- **If wing anti-ice on and affected pack off:**

  CM | PACK 2 (1) OR WAI. . . . . **OFF**

- **If severe ice accretion:**

  CM | MIN SPD. . . . . **VLS + 10/G DOT**

  CM | LDG DIST PROC. . . . . **APPLY**

AIR ENG 1(2) BLEED NOT CLSD

The engine bleed valve fails to close when the APU bleed is set to ON, during engine start or shutdown, or when the APU bleed pushbutton is set to off with engine not running.

ECAM: INOP SYS – ENG 1(2) BLEED

CM | AFFECTED ENG BLEED. . . . . **OFF**

AIR ENG 1(2) HP VALVE FAULT

The HP valve is abnormally closed.

CM | AIR ENG 1(2) HP VALVE FAULT. . . . . **AWARE**

AIR ENG 1(2) LEAK DET FAULT

Both pylon bleed leak detection loops are inoperative.

ECAM: INOP SYS – ENG 1(2) LK DET

CM | AIR ENG 1(2) LEAK DET FAULT. . . . . **AWARE**

AIR FWD(AFT) CRG VENT FAULT

The forward (aft) cargo ventilation fan is failed.

ECAM: INOP SYS – FWD(AFT) CRG HEAT; FWD(AFT) CRG VENT

CM | AIR FWD(AFT) CRG VENT FAULT. . . . . **AWARE**

AIR L(R) WING OR ENG 1(2) BLEED LEAK

Both wing bleed leak detection loops detect a temperature above 124°C or the pylon bleed leak detection loop detects temperature above 204°C and engine 1(2) running.

ECAM: INOP SYS – WING A.ICE; ENG 1(2) BLEED; PACK 1(2)

CM | AFFECTED ENG BLEED. . . . . **OFF**

- **If AIR L WING LEAK or AIR ENG 1 BLEED LEAK:**

  CM | APU BLEED (IF NOT CLOSED) . . . . **OFF**

CM | X BLEED (IF NOT CLOSED) . . . . **SHUT**

CM | WING ANTI-ICE. . . . . **OFF**

CM | ICING CONDITION. . . . . **AVOID**

- **If severe ice accretion:**

  CM | MIN SPD. . . . . **VLS + 10 / G DOT**

  CM | LDG DIST PROC. . . . . **APPLY**

AIR L(R) WNG LEAK DET FAULT

Both wing bleed leak detection loops are inoperative in one wing.

ECAM: INOP SYS – L(R) WNG LK DET

CM | AIR L(R) WNG LEAK DET FAULT. . . . . **AWARE**

AIR PACK 1(2) FAULT

The position of the pack flow control disagrees with the commanded position or the pack valve is closed.

ECAM: INOP SYS – PACK 1(2); COND CTL 1(2); FWD CRG HEAT

CM | AFFECTED PACK. . . . . **OFF**

AIR PACK 1+2 FAULT

Both ACSC are failed.

ECAM: INOP SYS – PACK 1+2; COND CTL 1; COND CTL 2; FWD CRG HEAT

CM | PACK 1. . . . . **OFF**

CM | PACK 2. . . . . **OFF**

CM | DESCENT. . . . . **TO FL 100/MEA-MORA**

- **When DIFF PR < 1 PSI and below FL 100:**

  CM | RAM AIR. . . . . **ON**

  CM | MAX FL. **100/MEA-MORA**

- **If FAULT was due to an overheat:**

  CM | AIR PACK 1(2) OVHT PROC. . . . . **APPLY**

AIR PACK 1(2) OFF
The associated pack is set to OFF with no failure is detected.
ECAM: INOP SYS – PACL 1(2)

CM | AIR PACK 1(2) OFF. . . . . **AWARE**

AIR PACK 1(2) OVHT
The pack compressor outlet temperature is above 260°C.
ECAM: INOP SYS – PACK 1(2)

CM | AFFECTED PACK. . . . . **OFF**

- **When PACK OVHT out:**

  CM | AFFECTED PACK. . . . . **ON**

AIR PACK 1(2) REGUL FAULT
The temperature regulation performance is degraded.
ECAM: INOP SYS – PACK 1(2) REGUL; HOT AIR

CM | AIR PACK 1(2) REGUL FAULT. . . . . **AWARE**

AIR X BLEED FAULT
The crossbleed valve position disagrees with the X-BLEED selector position.
ECAM: INOP SYS – WING A.ICE; X BLEED

CM | X BLEED. . . . . **MAN CTL**

- **If manual opening inoperative, and only one bleed available:**

  CM | WING ANTI ICE. . . . . **OFF**

  CM | ICING CONDITION. . . . . **AVOID**

  - **If severe ice accretion:**

    CM | MIN SPD. . . . . **VLS + 10 / G DOT**

CM | LDG DIST PROC. . . . . **APPLY**

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APU

APU AUTO (EMER) SHUT DOWN

An automatic shutdown of the APU has occurred due to either the APU SHUT OFF sw on the External Power Panel is pushed, the APU FIRE pushbutton is pushed or an APU FIRE on ground is detected.

ECAM: INOP SYS – APU

CM **|** MASTER SW. . . . . **OFF**

APU FIRE DET FAULT

Both loops are inoperative of the fire detector unit is inoperative.

ECAM: INOP SYS – APU FIRE DET

CM **|** APU FIRE DET FAULT. . . . . **AWARE**

APU FIRE LOOP A(B) FAULT

ECAM: INOP SYS – APU LOOP A(B)

CM **|** APU FIRE LOOP A(B) FAULT. . . . . **AWARE**

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APU Fire

APU FIRE

A fire is detected by both loops, or a fire is detected by one loop when the other loop is faulty, or a rupture occurs in both loops within 5 seconds.

ECAM: INOP SYS – APU

Land ASAP

CM **|** APU FIRE pushbutton. . . . . **PUSH**

CM **|** AGENT AFTER 10 seconds. . . . . **DISCH**

The 10 seconds delay allows the airflow to decrease. This increase the effect of the agent.

CM **|** MASTER SW. . . . . **OFF**

It is prohibited to attempt to restart the APU.

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Auto Flight

AUTO FLT A/THR LIMITED

The autothrottle is active, but the thrust levers are set below CL detent or MCT detent.

CM | THR LEVERS. . . . . **MOVE TO CL/MCT**

AUTO FLT A/THR OFF

The autothrottle has been involuntary disconnected.

ECAM: INOP SYS – A/THR; CAT 3

CM | THR LEVERS. . . . . **MOVE**

The flight crew try to engage the other AP if this does not work.

AUTO FLT AP OFF

The autopilot has been involuntary disconnected.

ECAM: INOP SYS – Affected AP; CAT 2; GLS AUTOLAND

CM | AUTO FLT AP OFF. . . . . **AWARE**

AUTO FLT FAC 1(2) FAULT

A FAC computer has failed.

ECAM: INOP SYS – CAT 3 DUAL; FAC 1(2)

CM | AFFECTED FAC . . . . **OFF, THEN ON**

- **If unsuccessful:**

  CM | AFFECTED FAC. . . . . **OFF**

AUTO FLT FAC 1+2 FAULT

The two FAC computer are failed.

ECAM: INOP SYS – WINDSHEAR DET; REAC W/S DET; F/CTL PROT; FAC 1+2; AP 1+2; A/THR; CAT 2; GLS AUTOLAND; ROW/ROP

CM | FAC 1. . . . . **OFF THEN ON**

CM | FAC 2. . . . . **OFF THEN ON**

- **If unsuccessful:**

  CM | FAC 1+2. . . . . **OFF**

  The rudder travel limit system, rudder trim control, yaw damper and PFD characteristic speeds are lost.

Approach Procedure

CM | FLAP FOR LDG. **3**

CM | GPWS LDG FLAP 3. . . . . **ON**

CM | APPR SPD. . . . . **VREF + 15 KT**

CM | LDG DIST PROC. . . . . **APPLY**

AUTO FLT FCU 1(2) FAULT
Only one FCU channel is still operative.
ECAM: INOP SYS – FCU 1(2)

CM | BARO REF. . . . . **X CHECK**

AUTO FLT FCU 1+2 FAULT
The FCU is completely lost.
ECAM: INOP SYS – FCU 1(2); AP 1+2; A/THR; CAT 3; CAT 2; GPWS TERR

FCU channels are failed, so the barometer reference automatically set to 1 013 hPa. It is recommended to not set the MDA/MDH value in the MCDU.

AUTO FLT REAC W/S DET FAULT
The reactive windshear function is lost.
ECAM: INOP SYS – REAC W/S DET

CM | AUTO FLT REAC W/S DET FAULT. . . . . **AWARE**

AUTO FLT RUD TRIM 1(2) FAULT
A rudder trim actuator is failed.
ECAM: INOP SYS – CAT 3 DUAL; RUD TRIM 1(2)

CM | AUTO FLT RUD TRIM 1(2) FAULT. . . . . **AWARE**

AUTO FLT RUD TRIM SYS
The rudder trim system is failed.
ECAM: INOP SYS – RUD TRIM; AP 1+2; CAT 2; GLS AUTOLAND

CM | FAC 1. . . . . **OFF THEN ON**

CM | FAC 2. . . . . **OFF THEN ON**

AUTO FLT RUD TRV LIM 1(2)

One rudder travel limitation actuator is failed.

ECAM: INOP SYS – RUD TRV LIM 1(2)

CM | AUTO FLT RUD TRV LIM 1(2) . . . . **AWARE**

AUTO FLT RUD TRV LIM SYS

The rudder travel limitation system is failed.

ECAM: INOP SYS – RUD TRV LIM

CM | FAC 1. . . . . **OFF THEN ON**

CM | FAC 2. . . . . **OFF THEN ON**

- **If TLU (rudder or pedals) remains locked at high speed after slat extension:**

  CM | AUTO BRK. . . . . **AVOID**

- **At LDG Roll:**

  CM | DIFFERENTIAL BRAKING. . . . . **AS REQUIRED**

AUTO FLT TCAS MODE FAULT

The TCAS flight mode is inoperative.

ECAM: INOP SYS – AP/FD TCAS

- **For TCAS alert:**

  CM | AP+FD. . . . . **OFF**

  CM | TCAS ORDER. . . . . **FLY MANUALLY**

AUTO FLT YAW DAMPER 1(2)

One yaw damper actuator is failed.

ECAM: INOP SYS – CAT 3 DUAL; YAW DAMPER 1(2)

CM | AUTO FLT YAW DAMPER 1(2) . . . . **AWARE**

AUTO FLT YAW DAMPER SYS

The yaw damper system is failed.

ECAM: INOP SYS – F/CTL PROT; YAW DAMPER; AP 1+2; CAT 2; GLS AUTOLAND

CM | FAC 1. . . . . **OFF THEN ON**

CM | FAC 2. . . . . **OFF THEN ON**

- **If fault remains:**

  Refer to F/CTL ALTN LAW

Approach Procedure

CM **|** FLAP FOR LDG. **3**

CM **|** GPWS LDG FLAP 3. . . . . **ON**

CM **|** APPR SPD. . . . . **VREF + 10 KT**

CM **|** LDG DIST PROC. . . . . **APPLY**

Bleed

BLEED MONITORING FAULT
Both BMC are failed.
ECAM: INOP SYS – BMC 1+2

CM **|** BLEED MONITORING FAULT. . . . . **AWARE**

BLEED MONIT SYS 1(2) FAULT
The BMC 1 or 2 is failed.
ECAM: INOP SYS – BMC 1(2)

CM **|** BLEED MONIT SYS 1(2) FAULT. . . . . **AWARE**

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Brakes

LOSS OF BRAKING

- **If no braking:**

  CM | REV . . . . **MAX**
  The flight crew may keep reverse thrust until full aircraft thrust.

  CM | BRAKE PEDALS. . . . . **RELEASE**

  PF | A/SKID OFF. . . . . **ORDER**

  PM | A/SKID & N/W STRG. . . . . **OFF**

  PF | BRAKE PEDAL. . . . . **PRESS**

  CM | MAX BRK PR. . . . . **1000 PSI**

  - **If still no braking:**

    CM | PARK BRAKE. . . . . **USE**

ASYMMETRIC BRAKING

It is recommended to apply progressively the brake on available side.

If the thrust reverser is inoperative on the same side of the inoperative brakes, it is not recommended to use reversers.

RESIDUAL BRAKING

- **In Flight:**

  CM | BRAKE PEDALS. . . . . **PRESS SEVERAL TIME**

  - **If residual pressure remains:**

    CM | A/SKID & N/W STRG sel. . . . . **KEEP ON**

    - **For landing:**

      CM | AUTO/BRK. . . . . **MED**

      - **If autobrake not available:**

        Apply braking just after touchdown.

BRAKES A/SKID N/WS FAULT OR A/SKID N/WS OFF

There is a loss of normal brake system associated with Y HYD SYS LO PRESS, or both BSCU channels are failed, or the A/SKID & N/W STRG switch is set to OFF.

ECAM: INOP SYS – CAT 3 DUAL; ANTI SKID; N/W STRG; NORM BRK; AUTO BRK

CM | MAX BRK PR. . . . . **1000 PSI**

CM | LDG DIST PROC. . . . . **APPLY**

BRAKES ALTN BRK FAULT

The alternate braking system is lost.

ECAM: INOP SYS – ALTN BRK

CM | BRAKES ALTN BRK FAULT. . . . . **AWARE**

BRAKES ALTN L(R) RELEASED

The landing gear is downlocked, an engine is running, the alternate braking is active and the brakes of one gear is released.

ECAM: INOP SYS – ALTN L(R) BRK

- **If normal braking is lost:**

  CM | ASYM BRK PROC. . . . . **APPLY**

  CM | LDG DIST PROC. . . . . **APPLY**

BRAKES AUTO BRK FAULT

The autobrakes is failed, after being armed.

ECAM: INOP SYS – CAT 3 DUAL; AUTO BRK

CM | BRAKES AUTO BRK FAULT. . . . . **AWARE**

BRAKES BRK Y ACCU LO PR

The yellow accumulator pressure is low.

ECAM: INOP SYS – BRK Y ACCU

- **When on ground and before shutting down engines:**

  CM | CHOCKS. . . . . **CONSIDER**

- **If Y SYS LO PR :**

  CM | BRAKES. . . . . **NORM BRK ONLY**

BRAKES HOT

One brake temperature is above 300°C.

- **On ground:**

  CM | PARK BRK. . . . . **AVOID, USE CHOCKS**

  CM | BRK FAN. . . . . **ON**

Note	For the following takeoff, the brake temperature must be either below 300°C without brake fans, or below 150°C with the brake fans.

- **In Flight:**
  - **If performance permits:**

    CM | MAX SPEED. **250/.60**

    CM | L/G. . . . . **DOWN FOR COOL**

  - **For landing gear retraction:**

    CM | MAX SPEED. **220/.54**

BRAKES NORM + ALTN FAULT

The normal and alternate braking functions are lost.

ECAM: INOP SYS – CAT 3 DUAL; ANTI SKID; N/W STRG; NORM BRK; AUTO BRK; ALTN BRK

CM | BRAKING. . . . . **USE PARKING BRAKE**

CM | LDG DIST PROC. . . . . **APPLY**

BRAKES NORM BRK FAULT

The normal braking system is lost.

ECAM: INOP SYS – CAT 3 DUAL; NORM BRK; AUTO BRK

CM | BRAKES NORM BRK FAULT. . . . . **AWARE**

BRAKES PARK BRK FAULT

There is a discrepancy between the position of the parking brake handle and the applied parking brake pressure.

ECAM: INOP SYS – CAT 3 DUAL; NORM BRK; AUTO BRK

- **On ground:**
  - **If PARKING BRK handle is OFF and parking brake pressure is still applied:**

    Contact maintenance.

  - **If PARKING BRK handle is ON and no parking brake pressure is applied:**

    CM | PARK BRK. . . . . **OFF**

    - **Before engine shutdown:**

      CM | CHOCKS. . . . . **SET**

BRAKES PARK BRK LO PR

The normal braking system is lost.

ECAM: INOP SYS – CAT 3 DUAL; NORM BRK; AUTO BRK

Before engine 1 shut down, the aircraft must have chocks on.

BRAKES PARK BRK ON

The parking brake is on in flight.

CM | PARK BRK. . . . . **OFF**

BRAKES RELEASED

The normal braking is active, and the brake of one wheel is released.

ECAM: INOP SYS – CAT 3 DUAL; AUTO BRK

CM | BRAKES RELEASED. . . . . **AWARE**

BRAKES SYS 1(2) FAULT

A BSCU channel is failed

ECAM: INOP SYS – BRK SYS 1(2)

CM | BRAKES SYS 1(2) FAULT. . . . . **AWARE**

Brakes-N/WS

BRAKES-N/WS MINOR FAULT

A minor fault of the nose wheel steering system has been detected.

CM **|** BRAKES-N/WS MINOR FAULT. . . . . **AWARE**

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Cabin Pressure

CABIN OVERPRESSURE

CM | PACK 1 OR 2. . . . . **OFF**

CM | VENTILATION BLOWER. . . . . **OVRD**

CM | VENTILATION EXTRACT. . . . . **OVRD**
The cabin air is extracted overboard.

CM | ∆P. . . . . **MONITOR FREQUENTLY**

- **If ∆P > 9 PSI:**

  LAND ASAP

  CM | PACK 1. . . . . **OFF**

  CM | PACK 2. . . . . **OFF**

- **10 minutes before landing:**

  CM | PACK 1. . . . . **OFF**

  CM | PACK 2. . . . . **OFF**

  CM | VENTILATION BLOWER. . . . . **AUTO**

  CM | VENTILATION EXTRACT. . . . . **AUTO**

CAUTION	Ensure the ∆P is zero before opening the doors.

CAB PR EXCESS CAB ALT

- **If above FL 100:**

  CM | CREW OXY MASKS. . . . . **USE**

  - **If below FL 160:**

    CM | DESCENT. . . . . **INITIATE**

    CM | CABIN CREW. . . . . **ADVISE**

    CM | MAX FL. **100/MEA-MORA**

- **If above FL 160:**

  CM | SIGNS. . . . . **ON**

  CM | EMERGENCY DESCENT. . . . . **INITIATE**

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

    CM | THR LEVERS. . . . . **IDLE**

  CM | SPD BRK. . . . . **FULL**

  CM | SPD. . . . . **MAX/APPROPRIATE**

  CM | ENG MODE SEL. . . . . **IGN**

  CM | ATC. . . . . **NOTIFY**

  CM | EMER DESCENT (PA) . . . . **ANNOUNCE**

  CM | XPDR 7700. . . . . **CONSIDER**

  CM | MAX FL. **100/MEA-MORA**

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

  CM | PAX OXY MASKS. . . . . **MAN ON**

CAB PR EXCESS RESIDUAL PR

CM | PACK 1. . . . . **OFF**

CM | PACK 2. . . . . **OFF**

CM | CABIN CREW. . . . . **NOTIFY**

CAB PR LDG ELEV FAULT

The LDG ELEV selector is set to AUTO, and the landing field elevation of the FMGS is not available.

CM | LDG ELEV. . . . . **ADJUST**

If the landing is performed on QFE, it is recommended to set 0 ft on LDG ELEV selector.

CAB PR LO DIFF PR

The time to reach $\Delta P = 0$ is less than 1.5 minutes, and the time to reach $\Delta P = 0$ is less than the time for CAB ALT to reach landing field elevation + 30 s, and the aircraft is at least 3 000 ft above the landing field elevation.

CM | A/C V/S. . . . . **REDUCE**

CAB PR OFV NOT OPEN

The outflow valve is not fully open when on ground.

CM | MODE SEL. . . . . **MAN**

CM | MAN V/S CTL. . . . . **FULL UP**

It may take up to 10 seconds in manual mode before noticing any changes.

- **If unsuccessful:**

  CM | PACK 1. . . . . **OFF**

  CM | PACK 2. . . . . **OFF**

CAB PR SAFETY VALVE OPEN

The safety valve is not fully closed on ground, or the safety valve is not fully closed in flight for more than 1 minute.

- **If DIFF PR above 8 PSI:**

  CM | MODE SEL. . . . . **MAN**

  CM | MAN V/S CTL. . . . . **AS REQUIRED**

  It may take up to 10 seconds in manual mode before noticing any changes.

  - **If unsuccessful:**

    CM | AIRCRAFT FLIGHT LEVEL. . . . . **REDUCE**

- **If DIFF PR below 0 PSI:**

  CM | A/C V/S. . . . . **REDUCE**

- **During Final Approach:**

  CM | MAN V/S CTL. . . . . **FULL UP**

CAUTION	Ensure the ΔP is zero before opening the doors.

CAB PR SYS 1(2) FAULT

The cabin pressure controller is failed.

ECAM: INOP SYS – CAB PR 1(2)

CM | CAB PR SYS 1(2) FAULT. . . . . **AWARE**

CAB PR SYS 1 + 2 FAULT
Both cabin pressure controllers are failed.
ECAM: INOP SYS – CAB PR 1(2)

CM | MODE SEL. . . . . **MAN**

CM | MAN V/S CTL. . . . . **AS REQUIRED**
It may take up to 10 seconds in manual mode before noticing any changes.

- **During Final Approach:**

  CM | V/S CTL. . . . . **FULL UP**
  When on intermediate approach, set the ∆P at zero.

CAUTION	Ensure the ∆P is zero before opening the doors.

Circuit Breakers

C/B TRIPPED
A circuit breaker is tripped in the designated area.

CM **|** C/B TRIPPED. . . . . **AWARE**

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Communications

COM ACARS FAULT
ACARS is failed.
ECAM: INOP SYS – ACARS

CM | COM ACARS FAULT. . . . . **AWARE**

COM CIDS 1 + 2 FAULT
Both CIDS have failed.
ECAM: INOP SYS – CIDS

CM | COM CIDS 1 + 2 FAULT. . . . . **AWARE**

COM HF 1(2) DATA FAULT
The data communications via HF 1(2) are inoperative.
ECAM: INOP SYS – HF 1(2) DATA

CM | COM HF 1(2) DATA FAULT. . . . . **AWARE**

COM SATCOM DATA FAULT
The ACARS transmissions via SATCOM are lost.
ECAM: INOP SYS – SATCOM DATA

CM | COM SATCOM DATA FAULT. . . . . **AWARE**

COM SATCOM FAULT
The ACARS and telephone transmissions are lost.
ECAM: INOP SYS – SATCOM

CM | COM SATCOM FAULT. . . . . **AWARE**

COM SINGLE PTT STUCK
The PTT transmittion selector is jammed in the transmit position for more than 40 seconds (VHF) or for more than 180 seconds (HF).
ECAM: INOP SYS – SINGLE PTT

CM | ACP 1 VHF 1(2)(3) TX. . . . . **DESELECT**

CM | ACP 1 HF 1(2) TX. . . . . **DESELECT**

- **If unsuccessful:**

  CM | ACP 2 VHF 1(2)(3) TX. . . . . **DESELECT**

  CM | ACP 2 HF 1(2) TX. . . . . **DESELECT**

- **If unsuccessful:**

  CM | ACP 3 VHF 1(2)(3) TX. . . . . **DESELECT**

  CM | ACP 3 HF 1(2) TX. . . . . **DESELECT**

CM | AUDIO SWTG. . . . . **AVOID**

- **On affected ACP:**

  CM | ALL TX KEYS. . . . . **AVOID**

- **On all other ACP:**

  CM | VHF 1(2)(3) TX. . . . . **RESELECT**

  CM | HF 1(2) TX. . . . . **RESELECT**

COM VHF 1(2)(3)/HF 1(2) EMITTING
The VHF 1(2)(3) is emitting for more than 30 seconds or 60 seconds, or the HF 1(2) is emitting for more than 60 seconds.
ECAM: INOP SYS – SINGLE PTT

Try to remove the PPT Transmission selector. If unsuccessful, deselect the identified failed VHF/HF transmission keys of the associated ACP. If there is no transmission key on the ACP, pull the affected VHF/HF circuit breaker.

COM VHF 3 DATA FAULT
The communications via VHF 3 are inoperative.
ECAM: INOP SYS – VHF 3 DATA

CM | COM VHF 3 DATA FAULT. . . . . **AWARE**

Condition

COND FWD CAB/AFT CAB/CKPT DUCT OVHT

The associated duct temperature rises above 88°C, or the duct temperature has risen 4 times above 80°C.

ECAM: INOP SYS – HOT AIR; FWD CRG HEAT

- **When Duct Temp < 70°C:**

  CM | HOT AIR. . . . . **OFF THEN ON**

  The hot air pressure regulating valve reopens.

COND FWD(AFT) CARGO DUCT OVHT

The associated duct temperature rises above 88°C.

ECAM: INOP SYS – FWD(AFT) CRG HEAT

- **When Duct Temp < 70°C:**

  CM | HOT AIR. . . . . **OFF THEN ON**

  The hot air pressure regulating valve reopens.

COND FWD(AFT) CRG HEAT FAULT

The associated heat controller is failed.

ECAM: INOP SYS – FWD(AFT) CRG HEAT

CM | COND FWD(AFT) CRG HEAT FAULT. . . . . **AWARE**

COND FWD(AFT) CRG ISOL VALVE

The associated cargo isolation valve disagrees with the selected position.

ECAM: INOP SYS – FWD(AFT) CRG HEAT ; FWD(AFT) CRG VENT

CM | COND FWD(AFT) CRG ISOL VALVE. . . . . **AWARE**

COND HOT AIR FAULT

The associated cargo isolation valve disagrees with the selected position.

ECAM: INOP SYS – PAC 1+2; HOT AIR; FWD CRG HEAT

CM | HOT AIR (IF NOT CLOSED) . . . . **OFF**

- **If HOT AIR still open and DUCT OVHT persists:**

  CM | PACK 1. . . . . **OFF**

  CM | PACK 2. . . . . **OFF**

  CM | DESCEND TO FL 100/MEA-MORA

- **When DIFF PR < 1 PSI and below FL 100:**

  CM | RAM AIR. . . . . **ON**

  CM | MAX FL. **100/MEA-MORA**

COND L+R CAB FAN FAULT
Both recirculation fans are failed.
ECAM: INOP SYS – L+R CAB FAN

CM | PACK FLOW. . . . . **HI**

COND LAV + GALLEY FAULT
The extraction fan of the lavatory and galley is failed.
ECAM: INOP SYS – GALLEY FAN; PACK 2; COND CTL 2

CM | COND LAV + GALLEY FAULT. . . . . **AWARE**

COND TRIM AIR SYS FAULT
One trim air valve is failed, or there is an overpressure downstream of the hot air valve.
ECAM: INOP SYS – GALLEY FAN; PACK 2; COND CTL 2

CM | COND TRIM AIR SYS FAULT. . . . . **AWARE**

The following messages are displayed, depending on the situation:

- **One trim valve failed:**

  AFT CAB TRIM VALVE

  FWD CAB TRIM VALVE

  CKPT TRIM VALVE

- **High pressure detected downstream of the hot air pressure regulating valve:**

  TRIM AIR HI PR

Configuration

CONFIG L(R) SIDESTICK FAULT (BY TAKE OVER)

The associated sidestick is inoperative and the thrust levres are set at TO or FLEX TO, or when pressing T.O CONFIG pushbutton.

CM **|** L(R) TAKEOVER. . . . . **DEPRESS**

CONFIG PARK BRK ON

The parking brake is on when the thrust levers are set at TO' or FLEX TO.

CM **|** PARK BRK. . . . . **OFF**

If the warning stays on, verify the brake pressure indicator.

CONFIG PITCH TRIM NOT IN T.O RANGE

The pitch trim is not in takeoff configuration when the thrust levers are set at TO' or FLEX TO, or when pressing T.O CONFIG pushbutton.

CM **|** CONFIG PITCH TRIM NOT IN T.O RANGE. . . . . **AWARE**

CONF RUD TRIM NOT IN T.O RANGE

The rudder trim is not in takeoff configuration when the thrust levers are set at TO' or FLEX TO, or when pressing T.O CONFIG pushbutton.

CM **|** CONF RUD TRIM NOT IN T.O RANGE. . . . . **AWARE**

CONFIG SLATS(FLAPS) NOT IN T.O CONFIG

The slats or flaps are not in takeoff configuration when the thrust levers are set at TO' or FLEX TO, or when pressing T.O CONFIG pushbutton.

CM **|** CONFIG SLATS(FLAPS) NOT IN T.O CONFIG. . . . . **AWARE**

CONFIG SPD BRK NOT RETRACTED

The speed brakes are not retracted when the thrust levers are set to TO, FLEX TO, or when the T.O CONFIG pushbutton is pressed.

CM **|** CONFIG SPD BRK NOT RETRACTED. . . . . **AWARE**

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Datalink

DATALINK ATC FAULT
The ATC datalink communication is failed, or the ATC datalink application is lost.
ECAM: INOP SYS – DATA COMPANY

CM **|** DATALINK ATC FAULT. . . . . **AWARE**

DATALINK ATSU FAULT
The ATSU initialization is failed.
ECAM: INOP SYS – DATA COMPANY

CM **|** DATALINK ATSU FAULT. . . . . **AWARE**

DATALINK COMPANY FAULT
The AOC datalink communications is failed.
ECAM: INOP SYS – DATA COMPANY

CM **|** DATALINK COMPANY FAULT. . . . . **AWARE**

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Door

COCKPIT DOOR FAULT

CM | CKPT DOOR CONT (OVERHEAD PANEL) . . . . **VERIFY**

- **If one or more STRIKE status light on:**

  CM | COCKPIT DOOR. . . . . **OPEN**

  CM | COCKPIT DOOR switch. . . . . **UNLOCK 10 S THEN NORM**

  - **If two or more STRIKE status light on:**

    COCKPIT DOOR NOT INTRUSION PROOF.

- **If two CHAN status lights on:**

  Automatic latch release is not available in case of cockpit decompression.

- **If no status lights on:**

  The cockpit door handle is available.

DOOR L(R)(FWD)(AFT) AVIONICS (IN FLIGHT)

The associated avionics door is not detected closed.

If the cabin pressure is normal, no actions are required.

- **If abnormal cabin V/S:**

  CM | MAX FL. **100/MEA-MORA**

DOOR L(R)(FWD)(AFT) AVIONICS (ON GROUND)

The associated avionics door is not detected closed.

CM | DOOR L(R)(FWD)(AFT) AVIONICS. . . . . **AWARE**

DOOR L(R) FWD(AFT) CABIN (IN FLIGHT)

The associated cabin door is not detected closed.

If the cabin pressure is normal, no actions are required.

- **If abnormal cabin V/S:**

  CM | MAX FL. **100/MEA-MORA**

DOOR L(R) FWD(AFT) CABIN (ON GROUND)

The associated cabin door is not detected closed.

CM | DOOR L(R) FWD(AFT) CABIN. . . . . **AWARE**

DOOR L(R) FWD(AFT) EMER EXIT (IN FLIGHT)

The associated emergency exit door is not detected closed.

If the cabin pressure is normal, no actions are required.

- **If abnormal cabin V/S:**

  CM | MAX FL. **100/MEA-MORA**

DOOR L(R) FWD(AFT) EMER EXIT (ON GROUND)

The associated emergency exit door is not detected closed.

CM | DOOR L(R) FWD(AFT) EMER EXIT. . . . . **AWARE**

DOOR FWD(AFT)(BULK) CARGO (IN FLIGHT)

The associated cargo door is not detected closed.

If the cabin pressure is normal, no actions are required.

- **If abnormal cabin V/S:**

  CM | MAX FL. **100/MEA-MORA**

DOOR FWD(AFT)(BULK) CARGO (ON GROUND)

The associated cargo door is not detected closed.

CM | DOOR FWD(AFT)(BULK) CARGO. . . . . **AWARE**

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EIS

DISPLAY UNIT FAILURE

- **If DU flashes:**
  - **If captain PFD, ND, ECAM DUs or MCDU 1 affected:**

    CM | GEN 1. . . . . **OFF**

    - **If DUs flash continues:**

      CM | GEN 1. . . . . **ON**

    - **If DUs flash stops:**

      CM | GEN 1. . . . . **KEEP OFF**

      CM | RUD TRIM. . . . . **VERIFY/RESET**
      Intermittent electrical power supply interruptions may cause offset in the rudder trim.

      CM | APU START. . . . . **CONSIDER**

  - **If first officer PFD, ND, lower ECAM or MCDU 2 affected:**

    CM | GEN 2. . . . . **OFF**

    - **If DUs flash continues:**

      CM | GEN 2. . . . . **ON**

    - **If DUs flash stops:**

      CM | GEN 2. . . . . **KEEP OFF**
      It is recommended to keep the generator off for the remaining of the flight.

      CM | RUD TRIM. . . . . **VERIFY/RESET**
      Intermittent electrical power supply interruptions may cause offset in the rudder trim.

      CM | APU START. . . . . **CONSIDER**

- **If DU blank (with or without a large amber “F”), or distorted, or brightness reduced to minimum:**

  CM | AFFECTED DU BRIGHTNESS KNOB. . . . . **OFF THEN ON**
  The display will recover after about 10 seconds.

- **If unsuccessful:**

  CM | AFFECTED DU BRIGHTNESS KNOB. . . . . **AS REQUIRED**
  The DU can be switched off. It is recommended to consider ECAM/ND XFR and PFD/ND XFR.

- **If INVALID DISPLAY UNIT message displayed:**

  Wait at least 40 seconds for an automatic DU recovery. This may be caused by a DU failure.

  - **If DU not recovered:**

    CM | AFFECTED DU BRIGHTNESS KNOB. . . . . **AS REQUIRED**
    The DU can be switched off.

- **If INVALID DATA message displayed (not on all DUs):**

  Consider switching EIS DMC source.

  - **If unsuccessful:**

    CM | AFFECTED DU BRIGHTNESS KNOB. . . . . **OFF THEN ON**
    It is recommended to reduce ND range to reduce associated information to be displayed.

- **If INVALID DATA message displayed on all DUs:**

  The AP, A/THR, and MCDU navigation data is still available. Wait at least 40 seconds for automatic DU recovery.

  - **If one or more DUs not recovered:**

    CM | AFFECTED DUs BRIGHTNESS KNOB. . . . . **OFF**

    After 40 s:

    CM | AFFECTED DUs BRIGHTNESS KNOB. . . . . **ON**

    - **If INVALID DATA message displayed on all DUs, when switching a given DU back ON:**

      CM | FAULTY DU BRIGHTNESS KNOB. . . . . **OFF AND KEEP OFF**

      Repeat the procedure starting at: If INVALID DATA message displayed on all DUs.

- **If inversion of E/WD and SD:**

  CM | ECAM UPPER DISPLAY BRIGHTNESS KNOB. . . . . **OFF THEN ON**

EIS DMC 1(2)(3) FAULT

- **DMC 1**

  CM | EIS DMC SWITCH. . . . . **CAPT 3**

- **DMC 2**

  CM | EIS DMC SWITCH. . . . . **F/O 3**

- **DMC 3**

  CM | EIS DMC 3 FAULT. . . . . **AWARE**

EIS DMC/FWC COM FAULT

CM | EIS DMC/FWC COM FAULT. . . . . **AWARE**

Electric

C/B TRIPPED

- **On ground:**

  Contact maintenance for instructions.

- **In flight:**

  It is not recommended to reengage a circuit breaker, unless it is judged necessary. Only one reengagement attempt is allowed.

ELEC EMER CONFIG SYS REMAINING

ELEC EMER CONFIG SYS REMAINING					
ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON THE GROUND
AIR COND PRESS	PRESS AUTO SYS 1	NORM	NORM	NORM
	MAN PRESS CTL	INOP	INOP	INOP
	RAM AIR	NORM	NORM	NORM
	PACK VALVE 1	NORM	Closure INOP	Closure INOP
	PACK VALVE 2	Closure INOP	Closure INOP	Closure INOP
	AVIONIC VENT	NORM	NORM	PARTIAL
FMGS	FMGC (NAV FUNCT)	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
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
EMER EQPT	CREW OXY	NORM	NORM	NORM
	PAX OXY MASK REL	NORM	INOP	INOP
	SLIDES ARM/WARN	NORM	NORM	NORM
FIRE	ENG 1 LOOP	A ONLY	A ONLY	A ONLY
	ENG 2 LOOP	B ONLY	B ONLY	B ONLY
	APU LOOP	INOP	INOP	INOP
	CARGO SMOKE DET	CH 1 ONLY	INOP	INOP
	ENG FIRE EXT.	NORM	NORM	NORM
	APU FIRE EXT.	SQUIB A ONLY	SQUIB A ONLY	SQUIB A ONLY
	CARGO FIRE EXT.	INOP	INOP	INOP
	APU AUTO EXT.	INOP	INOP	INOP
F/CTL	ELAC	N°1 ONLY	N°1 + N°2	N°1 + N°2
	SEC	N°1 ONLY	N°1 ONLY	N°1 ONLY

	FCDC	N°1 ONLY	INOP	INOP
	SFCC	N°1 ONLY	N°1 ONLY	N°1 ONLY
	FLAPS POS IND	NORM	NORM	NORM
FUEL	LP VALVE	NORM	NORM	NORM
	FQI CHANNEL 1	NORM	INOP	INOP
	X FEED VALVES	NORM	INOP	INOP
HYD	FIRE VALVES	NORM	NORM	NORM
ICE-RAIN	WING A.ICE	NORM	INOP	INOP
	ENG A.ICE VALVE	OPEN	OPEN	OPEN
	CAPT PITOT	NORM	NORM	NORM
	CAPT AOA	NORM	INOP	INOP
	RAIN REPELLENT	NORM	NORM	NORM
EIS	PFD 1	NORM	NORM	NORM
	ND 1	NORM	INOP	INOP
	ECAM upper disp.	NORM	NORM	NORM
	DMC 1 OR 3	NORM	NORM	NORM
	SDAC 1, FWC 1	NORM	NORM	NORM
	ECAM CONT. PNL	NORM	NORM	NORM
FLT INS	CLOCKS	NORM	NORM	NORM
L/G	LGCIU SYS 1	NORM	NORM	NORM
	BRK PRESS IND	NORM	NORM	NORM
	PARK BRK	NORM	NORM	NORM
	ABCU	NORM	NORM	NORM
LIGHTS	EMER CKPT	NORM	NORM	NORM
	EMER CAB	NORM	NORM	NORM
NAV	IR	N°1 ONLY	N°1 ONLY	N°1 ONLY
	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
	MMR	N°1 ONLY	N°1 ONLY	N°1 ONLY
	DME	N°1 ONLY	N°1 ONLY	N°1 ONLY
	DDRMI	NORM	NORM	NORM
	ATC	N°1 ONLY	INOP	INOP
	ISIS	NORM	NORM	NORM
PNEU	ENG 1 BLEED	NORM	BMC 1 INOP	BMC 1 INOP
	ENG 2 BLEED	BMC 2 INOP	BMC 2 INOP	BMC 2 INOP
	APU BLEED	INOP	INOP	INOP
	X BLEED (MAN CTL)	NORM	INOP	INOP
APU	ECB-STARTER	NORM	NORM	INOP
	FUEL LP VALVE	NORM	NORM	NORM
	FUEL PUMP	NORM	NORM	NORM
PWR PLT	FADEC	A+B	A+B	A+B
	IGNITION	A ONLY	A ONLY	A ONLY
	HP FUEL VALVE	NORM	NORM	NORM
MISC	MECH HORN	NORM	NORM	NORM

ELEC AC BUS 1 FAULT
The AC 1 Busbar is not supplied
ECAM: INOP SYS – BLUE HYD; SPLR 3; ADR 3; RA 1; CAPT TAT; L WSHLD HEAT; L WNDW HEAT; CAT 3; L+R TK PUMP 1; CTR TK PUMP 1; VENT BLOWER; GALLEY FAN; CRG HEAT; CRG VENT; AFT CRG HEAT; FWD CRG HEAT; AFT CRG VENT; FWD CRG VENT; GND COOL; N/W STRG; MAIN GALLEY; B ELEC PUMP; BRK SYS 1/BSCU CH 1; DMC 3; GPWS; LAV DET; REVERSER 1; GPWS TERR; STEEP APPR;

CM | BLOWER. . . . . **OVRD**

CM | LDG DIST PROC. . . . . **APPLY**

Note	The fuel consumption will increase, and the FMS predictions are unreliable.
	Only CAT 2 is available.
	The slats might be slow.

ELEC AC BUS 2 FAULT
The AC 2 Busbar is not supplied
ECAM: INOP SYS – ADR 2; Y ELEC PUMP; SDAC 2; FWC 2; DMC 2; RECORDER SYS (OR FDIU); R WSHLD HEAT; LGCIU 2; RA 2; F/O PITOT; F/O AOA; F/O TAT; R WNDW HEAT; L+R TK PUMP 2; RUD TRV LIM 2; REVERSER 2; VENT EXTRACT; GND COOL; PACK 2 REGUL; MAIN GALLEY; YAW DAMPER 2; RUD TRIM 2; FAC 2; CAT 2; CTR TK PUMP 2; ACT PUMP; BRK SYS 2/BSCU CH 2; ILS 2; GPS 2; ATC 2 or ATC/XPDR 2; GLS AUTOLAND; ROW/ROP

CM | EXTRACT. . . . . **OVRD**

CM | ATC/XPDR. . . . . **SYS 1**

ELEC AC ESS BUS ALTN
The AC ESS busbar is supplied from the AC 2 busbar.

CM | ELEC AC ESS BUS ALTN. . . . . **AWARE**

ELEC AC ESS BUS FAULT
The AC ESS Busbar is not supplied
ECAM: INOP SYS – ADR 1; LS 1; GPS 1; CAPT PITOT; CAPT AOA; CAT 2; SDAC 1; FWC 1; DMC 1; GPWS; GPWS terr; YAW DAMPER 1; RUD TRIM 1; RUD TRV LIM 1; GLS AUTOLAND; ATC 1 or ATC/XPDR 1; ROW/ROP

CM | AC ESS FEED. . . . . **ALTN**
The AC BUS 2 will supply the AC ESS BUS.

CM | ATC/XPDR. . . . . **SYS 2**

ELEC AC ESS BUS SHED

The AC SHED ESS Busbar is not supplied

ECAM: INOP SYS – CAPT AOA; ATC 1 or ATC/XPDR 1;

CM | ATC/XPDR. . . . . **SYS 2**

ELEC APU GEN FAULT

The protection trip is initiated by the associated GCU or the line contactor is open with APU GEN set to ON.

ECAM: INOP SYS – MAIN GALLEY; APU GEN

CM | APU GEN. . . . . **OFF THEN ON**

- **If unsuccessful:**

  CM | APU GEN. . . . . **OFF**

ELEC BAT 1(2) FAULT

The charging current increases at an abnormal rate.

ECAM: INOP SYS – BAT 1(2)

CM | ELEC BAT 1(2) FAULT. . . . . **AWARE**

ELEC BAT 1(2) OFF

The associated battery is set to OFF, and no failure is detected.

CM | ELEC BAT 1(2) OFF. . . . . **AWARE**

ELEC BCL 1(2) FAULT

The battery charge limiter 1(2) is failed.

ECAM: INOP SYS – BCL 1(2)

CM | ELEC BCL 1(2) FAULT. . . . . **AWARE**

ELEC DC BAT BUS FAULT

The DC BAT busbar is not supplied.

ECAM: INOP SYS – APU FIRE DET

CM | ELEC DC BAT BUS FAULT. . . . . **AWARE**

ELEC DC BUS 1 FAULT

The DC 1 busbar is not supplied.

ECAM: INOP SYS – ACP 3; CAPT STAT heat; STBY STAT heat; L. WSHLD HEAT; L WNDW HEAT; CTR TK PUMP 1; AVNCS VENT; GALLEY FAN; GND COOL; REVERSER 1; BRAKES SYS 1; LAV DET; CAT 3 DUAL

CM | BLOWER. . . . . **OVRD**

CM | EXTRACT. . . . . **OVRD**
The air conditioning provides the ventilation to the avionics. This ventilation air is exhausted overboard.

ELEC DC 2 BUS FAULT
The DC 2 busbar is not supplied.
ECAM: INOP SYS – SPLR 1+2+5; ELAC 2; SEC 2+3; VHF 2; F/O STAT; R WSHLD HEAT; R WNDW HEAT; AP 2; FCU 2; CAT 3 DUAL; FAC 2; L TK PUMP 2; R TK PUMP 2; CTR TK PUMP 2; LGCIU 2; REVERSER 2; CAB PR 2; MAIN GALLEY; Y ELEC PUMP; BRK SYS 2; ENG 1 LOOP B; ENG 2 LOOP A; FCDC 2; LGCIU 1; ROW/ROP

CM | AIR DATA SWTG. . . . . **F/O 3**

CM | BARO REF. . . . . **VERIFY**

- **If DC ESS BUS is failed:**

  CM | L/G. . . . . **USE GRVTY EXTN**

- **If Abnormal Cabin V/S:**

  CM | MAX FL. **100/MEA**

CM | LDG DIST PROC. . . . . **APPLY**

Note	The fuel consumption will increase, and the FMS predictions are unreliable.
	Both PFD are on the same FAC.
	The slats and flaps might be slow.

ELEC DC 1+2 BUS FAULT
The DC 1 and 2 busbar are not supplied.
ECAM: INOP SYS – SPLR 1+2+5; ELAC 2; SEC 2+3; VHF 2; ACP 3; CAPT STAT heat; F/O STAT; STBY STAT heat; WSHLD HEAT; WNDW HEAT; AP 2; FCU 2; CAT 3 DUAL; FAC 2; SDCU; ANTI SKID; N/W STRG; LGCIU 2; REVERSER 1+2l CAB PRESS 2; AVNCS VENT; L+R CAB FAN; GALLEY FAN; CRG HEAT; GND COOL; MAIN GALLEY; Y ELEC PUMP; BRK SYS 1+2; APU FIRE DET; LAV DET; ENG 1 LOOP B; ENG 2 LOOP A; PACK 2; FCDC 2; L TK PUMP 2; R TK PUMP 2

CM | BLOWER. . . . . **OVRD**

CM | EXTRACT. . . . . **OVRD**

CM | BARO REF. . . . . **VERIFY**

Note	The fuel consumption will increase, and the FMS predictions are unreliable.

CM | MAX BRK PR. . . . . **1 000 PSI**
The antiskid is lost, so the pressure must be manually limited.

ELEC DC EMER CONFIG

The DC 1 and 2 and DC ESS busbar are not supplied.

Land ASAP

CM | EMER ELEC PWR. . . . . **MAN ON**

The emergency generator supplies DC ESS BUS.

Note	The fuel consumption will increase, and the FMS predictions are unreliable.

ELEC DC ESS BUS FAULT

The DC ESS busbar is not supplied.

ECAM: INOP SYS – B HYD; SPLR 3; VHF 1; ACP 1+2; WING A.ICE; AP 1; A/THR; FCU 1; FAC 1; L TK PUMP 1; R TK PUMP 1; REV 2; ENG 2 START; CAB PR 1; STEEP APPR; VENT EXTRACT; B ELEC PUMP; GPWS; ENG 1 LOOP A; ENG 2 LOOP B; FCDC 1; LGCIU 1; LGCIU 2; ALTN BRK; ROW/ROP

CM | VHF 2 OR 3. . . . . **USE**

CM | AUDIO SWTG. . . . . **SELECT CAPT 3 or F/O 3**

CM | BARO REF. . . . . **VERIFY**

CM | GPWS SYS. . . . . **OFF**

- **If DC BUS 2 is failed:**

  CM | L/G. . . . . **USE GRVTY EXTN**

CM | LDG DIST PROC. . . . . **APPLY**

Note	The fuel consumption will increase, and the FMS predictions are unreliable.
	It is recommended to avoid icing conditions.

ELEC DC ESS BUS SHED

The DC SHED ESS busbar is not supplied.

ECAM: INOP SYS – WING A.ICE; AP 1; CAT 3 DUAL; FAC 1; VENT EXTRACT; AFT CRG HEAT; FWD CRG HEAT; AFT CRG VENT; FWD CRG VENT; FCDC 1; ROW/ROP

CM | EXTRACT. . . . . **OVRD**

- **If severe ice accretion:**

  PF | MIN SPD. . . . . **VLS + 10/G DOT**

PF | LDG DIST PROC. . . . . **APPLY**

ELEC EMER CONFIG

The AC 1 and AC 2 busbars are not supplied.

ECAM: INOP SYS – F/CTL PROT; REVERSER 1+2; ADR 2+3; IR 2; RA 1+2; SPLR 1+2+5; ELAC 2; SEC 2+3; A/CALL OUT; AP 1+2; A/THR; FUEL PUMPS; ANTI SKID; N/W STRG; CAT 2;

Land ASAP

CM | MIN RAT SPEED. . . . . **140 KT**

CM | GEN 1+2. . . . . **OFF THEN ON**

- **If unsuccessful:**

  CM | BUS TIE. . . . . **OFF**

  CM | GEN 1+2. . . . . **OFF THEN ON**

  CM | EMER ELEC PWR (IF EMER GEN NOT IN LINE) . . . . **MAN ON**

  CM | ENG MODE SEL. . . . . **IGN**

CM | VHF1/HF//ATC1. . . . . **USE**

In the emergency configuration, only VHF 1, HF 1 and ATC 1 is supplied.

CM | GRAVITY FUEL. . . . . **USE**

CM | FAC 1. . . . . **OFF THEN ON**

There is no rudder trim indication, however the rudder trim is recovered.

CM | BUS TIE. . . . . **AUTO**

This allows the APU to take an available electrical channel.

CM | APU. . . . . **START**

There is a 45 seconds delay after the loss of both engine generators. This is done to prevent any interference with the emergency generator coupling.

CM | BLOWER + EXTRACT. . . . . **OVRD**

CM | MAX SPEED. . . . . **320 KT**

CM | MAX BRK PR. . . . . **1 000 PSI**

Approach Procedure

CM | FOR LDG. . . . . **USE FLAP 3**

CM | APPR SPD. . . . . **VREF +15/140 KT**

CM | LDG DIST PROC. . . . . **APPLY**

ELEC EMER GEN 1 LINE OFF

The GEN 1 LINE pushbutton is abnormally set to the OFF position.

CM | ELEC EMER GEN 1 LINE OFF. . . . . **AWARE**

CM | GEN 1 LINE. . . . . **ON**

ELEC ESS BUSES ON BAT

The DC ESS and AC ESS busbars are supplied by the batteries.

Land ASAP

CM | MIN RAT SPEED. . . . . **140 KT**

CM | EMER ELEC PWR. . . . . **MAN ON**

The ESS BUSES are supplied by the emergency generator.

ELEC GEN 1(2) OR APU GEN OVERLOAD

The load of a generator is above 100%.

ECAM: INOP SYS – GALY/CAB

CM | GALY/CAB. . . . . **OFF**

ELEC GEN 1(2) FAULT

The protection trip is initiated by the associated GCU, or the line contactor is open with the associated GEN pushbutton set to ON.

ECAM: INOP SYS – MAIN GALLEY; GEN 1(2); CAT 3 DUAL

CM | AFFECTED GEN. . . . . **OFF THEN ON**

- **If unsuccessful:**

  CM | AFFECTED GEN. . . . . **OFF**

Note	The APU may be started, so that the flight crew can use the APU Gen.

ELEC GEN 1(2) OFF

The associated GEN 1(2) pushbutton is set to OFF and there is no failure detected.

ECAM: INOP SYS – MAIN GALLEY; GEN 1(2); CAT 3 DUAL

CM | ELEC GEN 1(2) OFF. . . . . **OFF**

ELEC IDG 1(2) DISCONNECTED

The IDG 1(2) is disconnected

ECAM: INOP SYS – MAIN GALLEY; GEN 1(2); GEN 1(2); CAT 3 DUAL

CM | ELEC IDG 1(2) DISCONNECTED. . . . . **AWARE**

ELEC IDG 1(2) OIL LO PR/OVHT

The associated IDG oil pressure is low, or above 180°C.

ECAM: INOP SYS – MAIN GALLEY; GEN 1(2); GEN 1(2); CAT 3 DUAL

CM | ASSOCIATED IDG. . . . .**OFF**

It is recommended to not press for more than 3 seconds. This can damage to the solenoid.

ELEC STATIC INV FAULT

The static inverter is failed

CM | ELEC STATIC INV FAULT. . . . . **OFF**

ELEC TR 1(2) FAULT

The associated TR is failed.

ECAM: INOP SYS – TR 1(2); CAT 3 DUAL

CM | ELEC TR 1(2) FAULT. . . . . **OFF**

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Engines

ENG RELIGHT

If any indications of engine damage, it is prohibited to attempt an engine restart.

CM | AFFECTED ENG MASTER. . . . . **OFF**

CM | AFFECTED ENGINE THR LEVER. . . . . **IDLE**

CM | ENG MODE SEL. . . . . **IGN**

CM | X BLEED. . . . . **OPEN**
The FADEC will open the starter valve if the windmilling start.

CM | WING ANTI-ICE. . . . . **OFF**

CM | AFFECTED ENG MASTER. . . . . **ON**

CM | ENG PARAMETERS (N2, EGT) . . . . **MONITOR**
The engine light up should be achieved within 30 seconds of the fuel flow insertion. The engine might have abnormal EGT. Do not abort the engine relight unless EGT exceeds the red line indication.

- **When Idle Reached (ENG AVAIL)**

  CM | ENG MODE SEL. . . . . **NORM**

  CM | TCAS MODE SEL. . . . . **TA/RA**

  CM | X BLEED. . . . . **AUTO**

  CM | AFFECTED SYS. . . . . **RESTORE**

- **If No Relight:**

  CM | AFFECTED ENG MASTER. . . . . **OFF**

ALL ENG FAIL

Land ASAP

CM | EMER ELEC PWR MAN ON. . . . . **PRESS**
Setting the EMER ELEC PWR to MAN ON enables the extension of the RAT and the emergency generator connection.

CM | OPT RELIGHT SPD. **270/0.77**

Pitch Target In Case Of Speed Indication Failure	
Gross Weight	Pitch (°)
At or below 50 000 kg/ 110 000 lb	-2.5
60 000 kg / 132 000 lb	-1.5
70 000 kg / 154 000 lb	-0.5

CM | APU (below FL 250) . . . . **START**

CM | THR LEVERS. . . . . **IDLE**

GLIDING DISTANCE: 2 NM / 1000 FT

At 300 Kt: 2 NM / 1000 FT (500 ft/nm) No wind			
Flight Level	FL 200	FL 300	FL 400
Distance	40	60	80

CM | DIVERSION. . . . . **INITIATE**

CM | VHF 1/ HF 1/ATC 1. . . . . **USE**

CM | ATC. . . . . **NOTIFY**

CM | CABIN CREW. . . . . **NOTIFY**

CM | SIGNS. . . . . **ON**

CM | CREW OXY MASK (FL > 100) . . . . **USE**

CM | FUEL QUANTITY. . . . . **VERIFY**

- **If engine relight can be attempted:**

  CM | ENG MODE sel. . . . . **IGN**

  - **Approaching or below FL 270: Windmill Relight**

    CM | ALL ENG MASTERS. . . . . **OFF 30 S THEN ON**

    CM | ENGs RELIGHT. . . . . **TRY REGULARLY**
    The windmill relight can be repeated until successful.

    CM | APU (Below FL 250) . . . . **START**

    - **If APU available and windmill relight unsuccessful: Start Assisted Relight below FL 200:**

      CM | ALL ENG MASTERS. . . . . **OFF**

CM | SPEED. . . . . **FOLLOW GREEN DOT**

CM | WING ANTI-ICE. . . . . **OFF**

CM | APU BLEED. . . . . **ON**

CM | ENG MASTER (one at a time) . . . . **ON**
It is recommended to wait 30 secondes between the relight attempt of the same engine.

- **When below 10 000 ft AGL:**

CM | CABIN AND COCKPIT. . . . . **PREPARE**
Secure any loose equipment, prepare the survival equipment, and fasten belts and harnesses.

CM | RAM AIR. . . . . **ON**

CM | BARO REF (If available) . . . . **SET**

CM | COMMERCIAL. . . . . **OFF**

CM | GALLEY. . . . . **OFF**

CM | GALY & CAB. . . . . **OFF**

CM | ELT. . . . . **ON**

CM | ENGINE RELIGHTS. . . . . **TRY REGULARLY**

- **If engine relight cannot be attempted:**

In case of no fuel remaining, or engine damage.

CM | SPEED. . . . . **FOLLOW GREEN DOT**

GLIDING DISTANCE: 2.5 NM / 1000 FT

Gliding Distance at Green Dot : 2.5 NM / 1000 Ft (400 Ft/NM) NO WIND			
Flight level	FL 200	FL 300	FL 400
Distance (NM)	50	75	100

CM | APU (Below FL 250) . . . . **START**

CM | WING ANTI-ICE. . . . . **OFF**

CM | APU BLEED (Below FL 200) . . . . **ON**

- **When below 10 000 ft AGL:**

  CM | CABIN AND COCKPIT. . . . . **PREPARE**
  Secure any loose equipment, prepare the survival equipment and fasten belts and harnesses.

  CM | RAM AIR. . . . . **ON**

  CM | BARO REF (If available) . . . . **SET**

  CM | COMMERCIAL. . . . . **OFF**

  CM | GALLEY. . . . . **OFF**

  CM | GALY & CAB. . . . . **OFF**

  CM | ELT. . . . . **ON**

- **If ditching anticipated:**

CM | MINIMUM SPEED. . . . . **140 KT**

CM | GPWS SYS. . . . . **OFF**

CM | GPWS TERR. . . . . **OFF**

- **At appropriate altitude (above 3 000 ft AGL):**

  CM | FLAP FOR LDG. **2**

  CM | VAPP. . . . . **DETERMINE**

Gross Weight	**40 t / 90 klb**	**50 t / 100 klb**	**60 t / 130 klb**	**70 t / 155 klb**	**80 t / 175 klb**	**90 t / 200 klb**	**95 t / 210 klb**
VAPP (KT)	150	150	163	173	183	193	198

- **At 2 000 ft AGL:**

  CM | CABIN CREW. . . . . **NOTIFY**

  CM | DITCHING pushbutton. . . . . **ON**

- **At 500 ft AGL:**

  CM | BRACE FOR IMPACT. . . . . **ORDER**
  The target pitch attitude is 11°.

- **At touchdown:**

  CM | ALL ENG MASTERS. . . . . **OFF**

  CM | APU MASTER SW. . . . . **OFF**

- **After ditching:**

  CM | ATC (VHF 1) . . . . **NOTIFY**

  CM | ALL FIRE pushbutton (ENGs & APU) . . . . **PUSH**

  CM | ALL AGENT (ENGs & APU) . . . . **DISCH**

  CM | EVACUATION. . . . . **INITIATE**

- **If forced landing anticipated:**

The descent slope at CONF 2 and landing gear down is 1.6 NM / 1000 ft (600 Ft/Nm)

CM | MINIMUM RAT SPEED. . . . . **140 KT**

CM | GPWS SYS. . . . . **OFF**

CM | GPWS TERR. . . . . **OFF**

- **At appropriate altitude (above 3 000 ft AGL):**

  CM | FLAP FOR LDG. **2**

  CM | VAPP. . . . . **DETERMINE**

Gross Weight	**40 t / 90 klb**	**50 t / 100 klb**	**60 t / 130 klb**	**70 t / 155 klb**	**80 t / 175 klb**	**90 t / 200 klb**	**95 t / 210 klb**
VAPP (KT)	150	150	163	173	183	193	198

- **When in CONF 2 and VAPP:**

  CM | GRAVITY GEAR EXTN handcrank. . . . . **PULL AND TURN**

  - **When L/G is downlocked:**

    CM | L/G lever. . . . . **DOWN**

    CM | APPROACH SPEED. . . . . **ADJUST**

  CM | SPLRs. . . . . **ARM**

- **At 2 000 ft AGL:**

  CM | CABIN CREW. . . . . **NOTIFY**

- **At 500 ft AGL:**

  CM | BRACE FOR IMPACT. . . . . **ORDER**

- **At touchdown:**

  CM | ALL ENG MASTERS. . . . . **OFF**

  CM | APU MASTER SW. . . . . **OFF**

- **When the aircraft is stopped:**

  CM | PARKING BRK. . . . . **ON**

  CM | ATC (VHF 1) . . . . **NOTIFY**

  CM | ALL FIRE pushbutton (ENGs & APU) . . . . **PUSH**

  CM | ALL AGENT (ENGs & APU) . . . . **DISCH**

  - **If evacuation required:**

    CM | EVACUATION. . . . . **INITIATE**

  - **If evacuation is not required:**

    CM | CABIN CREW AND PASSENGERS. . . . . **NOTIFY**

ENG 1(2) STALL

- **On ground:**

  CM | AFFECTED ENGINE THR LEVER. . . . . **IDLE**

  CM | AFFECTED ENG MASTER. . . . . **OFF**

- **In flight:**

  CM | AFFECTED ENGINE THR LEVER. . . . . **IDLE**

  CM | AFFECTED ENG PARAMETERS. . . . . **VERIFY**

  - **If abnormal engine parameters:**

    CM | AFFECTED ENG MASTER. . . . . **OFF**

CM | ENG 1(2) SHUT DOWN PROC. . . . . **APPLY**

- **If normal engine parameters:**

  CM | WING ANTI ICE. . . . . **ON**

  - **If stall recurs:**

    CM | AFFECTED ENGINE THR LEVER. . . . . . **MOVE BACKWARD**

  - **If stall does not recur:**

    Continue normal engine operation.

ENGINE TAILPIPE FIRE

CM | AFFECTED ENG MASTER. . . . . **OFF**
It is recommended not pressing fire pushbutton. This would cut off the FADEC power supply and prevent any motoring sequence.

CM | AFFECTED ENG MAN START PB. . . . . **OFF**

CM | AIR BLEED PRESS. . . . . **ESTABLISH**
Select the APU, opposite bleed or an external pneumatic power.

CM | BEACON. . . . . **ON**

CM | ENG MODE SEL. . . . . **CRANK**

CM | AFFECTED ENG MAN START PB. . . . . **ON**
The start valves automatically reopens when the N2 is below 60%.

- **When fire stopped:**

  CM | AFFECTED ENG MAN START PB. . . . . **OFF**

  CM | ENG MODE SEL. . . . . **NORM**

HIGH ENGINE VIBRATION

CM | ENG PARAMETERS. . . . . **VERIFY**

- **If icing suspected:**

  CM | A/THR. . . . . **OFF**

  CM | THRUST (ONE ENGINE AT A TIME) . . . **IDLE THEN INCREASE N1 > 70%**

- **If icing not suspected:**
  - **If the VIB indication(s) are amber:**

    CM | AFFECTED ENGINE THRUST. . . . . **REDUCE**

- **After landing, if vibrations continue:**

  Shut down the engine when possible.

ON GROUND – NON ENG SHUTDOWN AFTER ENG MASTER OFF

CM | ECAM FUEL PAGE. . . . . **SELECT**

CM | LP FUEL VALVE POSITION. . . . . **VERIFY**

- **If LP fuel valve closed (cross line amber):**

  NO CREW ACTION

- **If LP fuel valve open:**

  CM | AFFECTED ENG FIRE PB. . . . . **PRESS**

CM | GROUND CREW. . . . . **NOTIFY**

Note	After a delay of 2 minutes and 30 seconds, the engine will shut down. The remaining fuel between the LP fuel valve and the nozzles will have burned.

ONE ENGINE INOPERATIVE – CIRCLING APPROACH

Maximum Weight For Circling in CONF 3 with Gear Down (1000 kg)								
OAT (°C)	Airport elevation (feet)							
	0	2 000	4 000	6 000	8 000	10 000	12 000	14 000
0	80	80	80	78	76	73	70	63
5	80	80	80	78	76	73	67	60
10	80	80	80	78	75	69	64	56
15	80	80	80	76	71	65	60	53
20	80	80	78	72	67	62	57	51
25	80	80	74	69	64	59	54	48
30	80	76	70	65	60	56	51	
35	77	72	67	62	58	53		
40	73	69	64	59				
45	69	65	61					
50	66	62						
55	63							

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

  CM | DELAY GEAR EXTENSION TO MAINTAIN LEVEL FLIGHT. . . . . . . **AWARE**

  CM | FLAP FOR LDG. **3**

  CM | GPWS LDG FLAP 3. . . . . **ON**

ONE ENGINE INOPERATIVE – STRAIGHT-IN APPROACH

- **If no level off expected during final approach:**

  CM | DELAY CONF FULL UNTIL ESTABLISHED ON FINAL DESCENT. . **AWARE**

- **If level off expected during final approach:**

  CM | FLAP FOR LANDING. **3**

ENG ALL ENGINES FAILURE

All engines are failed in flight.

ECAM: INOP SYS – G+Y HYD; F/CTL PROT; STABILIZER; R AIL; REVERSER 1+2; ADR 2+3; IR 2+3; RA 1+2; SPLR 1+2+4+5; ELAC 2; SEC 2+3; FLAPS; YAW DAMPER; A/CALL OUT; AP1+2; A/THR; FUEL PUMPS; ANTI SKID; N/W STEER; AUTO BRK; CAT 2; L/G RETRACT; CAB PR 1+2; PACK 1+2

Land ASAP

CM | EMER ELEC PWR MAN ON PB. . . . . **PRESS**
This enables the extension of the RAT and the connection of the emergency generator.

CM | OPT RELIGHT SPD. **270/0.77**

CM | APU (BELOW FL 250) . . . . **START**

CM | THR LEVERS. . . . . **IDLE**

CM | GLIDING DISTANCE. . . . . **2 NM/1000 FT**

CM | DIVERSION. . . . . **INITIATE**
Look for the most appropriate area for a forced landing or ditching.

CM | ALL ENG FAIL PROC. . . . . **APPLY**

CM | MIN RAT SPEED. . . . . **140 KT**

CM | MAX SPEED. **320/0.77**

CM | MAX BRP PR. . . . . **1 000 PSI**

Approach Procedure

CM | FLAP FOR LDG. **2**

- **When CONF 2 and VAPP :**

  CM | L/G GRVTY EXTN. . . . . **AS REQUIRED**

ENG 1(2) BLEED STATUS FAULT (IN FLIGHT)

The bleed valves, pack valves, wing and anti ice valves, or cross-bleed valve status is not received by the FADEC.

- **If the engine anti-ice is on:**

  CM | ENG MODE SEL. . . . . **IGN**

ENG 1(2) BLEED STATUS FAULT (ON GROUND)

The bleed valves, pack valves, wing and anti ice valves, or cross-bleed valve status is not received by the FADEC.

- **If engine anti-ice is on:**

  CM | ENG MODE SEL. . . . . **IGN**

- **Before takeoff:**

  CM | ASSOCIATED SIDE PACK. . . . . **OFF**

ENG 1+2 COMPRESSOR VANE

There is a loss of redundancy of the compressor vane control system on both engine.

ECAM: INOP SYS – BOOST A.ICE 1(2)

CM | ENG 1+2 COMPRESSOR VANE. . . . . **AWARE**

ENG 1(2) COMPRESSOR VANE

The Variable Bleed Valve or Variable Stator Vane is failed.

ECAM: INOP SYS – CORE ICE 1(2)

- **On ground:**

  CM | AFFECTED THR LEVERS. . . . . **IDLE**

  CM | AFFECTED ENG MASTER. . . . . **OFF**

ENG 1(2) CTL SYS FAULT

A failure is preventing the EEC from controlling the engine.

ECAM: INOP SYS – BOOST A.ICE 1(2)

CM | THR LEVER 1(2) . . . . **IDLE**

CM | ENG 1(2) MASTER. . . . . **OFF**

ENG 1(2) CTL VALVE FAULT

The Burner Staging Valve, HP Turbine Clearance system or the Rotor Active Clearance Control system is failed.

CM | MAX N2. . . . . **96 %**

ENG 1(2) CTL VALVE FAULT

The Start Bleed Valve, Booster Anti-Ice or the Transcient Bleed Valve is failed.

ECAM: INOP SYS – BOOST A.ICE 1(2)

- **On ground:**

  CM | THR LVR 1(2) NOT ABOVE IDLE. . . . . **AWARE**

- **In flight:**

  CM | THR LEVER 1(2) . . . . **IDLE**

  CM | A/THR . . . . **OFF**

  CM | AVOID RAPID THR CHANGES. . . . . **AWARE**

  CM | AVOID ICING CONDITIONS. . . . . **AWARE**

ENG 1(2) EIU FAULT

The data bus between the EIU and ECU is failed.

ECAM: INOP SYS – A/THR; CAT 3; REVERSER 1(2); ENG 1(2) START; GA SOFT

CM | ENG 1(2) EIU FAULT. . . . . **AWARE**

ENG 1(2) FADEC A(B) FAULT

The associated FADEC channel is lost.

CM | ENG 1(2) FADEC A(B) FAULT. . . . . **AWARE**

ENG 1(2) FADEC ALTERNATOR

The electrical auto supply for the FADEC system is lost.

CM | ENG 1(2) FADEC ALTERNATOR. . . . . **AWARE**

ENG 1(2) FADEC BLOWER FAULT

The FADEC blower is failed.

- **On ground:**

CM | THR LVR 1(2) NOT ABOVE IDLE. . . . . **AWARE**

ENG 1(2) FADEC FAULT

Both FADEC channels are lost.

- **On ground:**

CM | AFFECTED THR LVR NOT ABOVE IDLE. . . . . **AWARE**

CM | AFFECTED ENG PARAMETERS. . . . . **VERIFY**

  - **If abnormal engine operation:**

  CM | AFFECTED ENG MASTER. . . . . **OFF**

- **In flight:**

CM | AFFECTED THR LEVER. . . . . **IDLE**

CM | AFFECTED ENG PARAMETERS. . . . . **VERIFY**

  - **If abnormal engine operation:**

  CM | AFFECTED ENG MASTER. . . . . **OFF**

  CM | ENG 1(2) SHUT DOWN PROC. . . . . **APPLY**

ENG 1(2) FADEC HI TEMP

A high temperature is detected by one or both channels.

- **On the ground:**

CM | AFFECTED THR LEVER. . . . . **IDLE**

CM | ASSOCIATED ENG MASTER. . . . . **OFF**

CM | ENG MODE SEL. . . . . **NORM**

CM | FADEC GND PWR. . . . . **VERIFY OFF**

- **In flight:**

CM | AFFECTED ENG PARAMETERS. . . . . **VERIFY**

- **If abnormal engine operation:**

  CM | AFFECTED THR LEVER. . . . . **IDLE**

  CM | ASSOCIATED ENG MASTER. . . . . **OFF**

ENG 1(2) FADEC IDENT FAULT

The engine Data Storage Unit is failed.

CM | ENG 1(2) FADEC IDENT FAULT. . . . . **AWARE**

ENG 1(2) FADEC PLUG FAULT

The FADEC plug is failed.

CM | ENG 1(2) FADEC PLUG FAULT. . . . . **AWARE**

ENG 1(2) FADEC SYS FAULT

The FADEC system is failed.

- **On ground:**

  CM | THR LVR 1(2) NOT ABOVE IDLE. . . . . **AWARE**

ENG 1(2) FAN COWL NOT CLSD

The engine fan cowl is not closed.

CM | ENG 1(2) FAN COWL NOT CLSD. . . . . **AWARE**

ENG 1(2) FAIL

The engine core speed is below idle, and the engine masters are on and the ENG FIRE pb is not pushed.

Land ASAP

- **If shaft shear detected:**

  CM | SHAFT FAILURE. . . . . **AWARE**

- **In case of a thrust malfunction:**

  CM | THRUST MALFUNCTION. . . . . **AWARE**

  CM | AFFECTED ENG MASTER. . . . . **OFF**

- **Before takeoff or after landing:**

  CM | AFFECTED ENGINE THR LEVER. . . . . **IDLE**

CM | AFFECTED ENG MASTER. . . . . **OFF**

- **If damage:**

  CM | AFFECTED ENG FIRE P/B. . . . . **PUSH**

  CM | AGENT 1. . . . . **DISCH**

- **If no damage:**

  CM | AFFECTED ENG RELIGHT. . . . . **CONSIDER**

- **In Flight:**

  CM | ENG MODE SEL. . . . . **IGN**
  The selection of continuous ignition confirms the immediate relight attempt by the FADEC.

  CM | AFFECTED ENGINE THR LEVER. . . . . **IDLE**

  - **If no engine relight after 30 seconds:**

    CM | AFFECTED ENG MASTER. . . . . **OFF**

    - **If damage:**

      CM | AFFECTED ENG FIRE P/B. . . . . **PUSH**

      CM | AGENT 1 (AFTER 10 SECONDS IN FLIGHT) . . . . **DISCH**

ENG 1(2) FIRE (IN FLIGHT)

A fire is detected by both loops, or a fire is detected by a loop if the other loop is faulty, or a rupture occurs in both loops within 5 seconds.

Land ASAP

CM | AFFECTED THR LEVER. . . . . **IDLE**

CM | AFFECTED ENG MASTER. . . . . **OFF**

CM | AFFECTED ENG FIRE P/B. . . . . **PUSH**
The aural warning stops, but the light remain on until the fire is extinguished.

CM | AGENT 1 AFTER 10 SECONDS. . . . . **DISCH**
The 10 seconds delay is in place to allow the N1 to decrease.

CM | ATC. . . . . **NOTIFY**

- **If fire after 30 seconds:**

  CM | AGENT 2. . . . . **DISCH**

CM | ENG 1(2) SHUTDOWN PROC. . . . . **APPLY**

ENG 1(2) FIRE (ON GROUND)

A fire is detected by both loops, or a fire is detected by a loop if the other loop is faulty, or a rupture occurs in both loops within 5 seconds.

CM | THR LEVERS. . . . . **IDLE**

- **When the aircraft is stopped:**

  CM | PARKING BRK. . . . . **ON**

  CM | ATC (VHF 1) . . . . **NOTIFY**
  Only VHF 1 is available on batteries.

  CM | CABIN CREW (PA) . . . . **ALERT**

  CM | AFFECTED ENG MASTER. . . . . **OFF**

  CM | AFFECTED ENG FIRE P/B. . . . . **PUSH**
  The aural warning stops, but the light remains on until the fire is extinguished.

  CM | AGENT 1+2. . . . . **DISCH**

  CM | EMER EVAC PROC. . . . . **APPLY**

ENG 1(2) FIRE DET FAULT

Both loops are inoperative, or the fire detector unit is inoperative.

ECAM: INOP SYS – FIRE DET 1(2)

CM | ENG 1(2) FIRE DET FAULT. . . . . **AWARE**

ENG 1(2) FIRE LOOP A(B) FAULT

ECAM: INOP SYS – ENG 1(2) LOOP A(B)

CM | ENG 1(2) FIRE LOOP A(B) FAULT. . . . . **AWARE**

ENG 1(2) FUEL CTL FAULT

The Fuel Metering Valve position, command or position feedback is failed

ECAM: INOP SYS – WING A.ICE; ENG 1(2) A.ICE

- **On ground:**

  CM | AFFECTED ENGINE THR LEVER. . . . . **IDLE**

CM | AFFECTED ENG MASTER. . . . . **OFF**

CM | AVOID RAPID THR CHANGES. . . . . **AWARE**

ENG 1(2) FUEL FILTER CLOG

The affected fuel filter is clogged.

CM | ENG 1(2) FUEL FILTER CLOG. . . . . **AWARE**

ENG 1+2 FUEL FILTER CLOG

An actual bypass is detected on both fuel filters.

Land ASAP

- **On ground:**

  CM | THR LVR 1 NOT ABOVE IDLE. . . . . **AWARE**

  CM | THR LVR 2 NOT ABOVE IDLE. . . . . **AWARE**

ENG 1(2) FUEL FILTER DEGRAD

An impeding bypass is detected on the fuel filter.

CM | ENG 1(2) FUEL FILTER DEGRAD. . . . . **AWARE**

ENG 1(2) FUEL LEAK

A fuel flow or fuel used is abnormally different between both engine.

- **If leak confirmed:**

  CM | AFFECTED ENGINE THR LEVER. . . . . **IDLE**

  CM | AFFECTED ENG MASTER. . . . . **OFF**

ENG 1(2) FUEL RETURN VALVE

The fuel return valve, or the temperature sensor of the fuel return valve is failed.

CM | ENG 1(2) FUEL RETURN VALVE. . . . . **AWARE**

ENG 1(2) FUEL SENSOR FAULT

The fuel system monitoring and the fuel filter off IDG Fuel/Oil cooler sensing are failed.

CM | ENG 1(2) FUEL SENSOR FAULT. . . . . **AWARE**

ENG 1+2 FUEL STRAIN CLOG

Both fuel strainers are clogged.

- **On ground:**

  CM | THR LVR 1 NOT ABOVE IDLE. . . . . **AWARE**

  CM | THR LVR 2 NOT ABOVE IDLE. . . . . **AWARE**

- **In flight:**

  CM | A/THR. . . . . **OFF**

  CM | AVOID RAPID THR CHANGES. . . . . **AWARE**

ENG 1(2) FUEL STRAINER CLOG

The fuel strainer is clogged.

CM | ENG 1(2) FUEL STRAINER CLOG. . . . . **AWARE**

ENG GA SOFT FAULT - ANNUNCIATION

The soft go-around function is lost.

ECAM: INOP SYS – GA SOFT

CM | ENG GA SOFT FAULT - ANNUNCIATION. . . . . **AWARE**

ENG 1(2) HIGH VIBRATION

The N1 vibrations are above 6 units, or N2 vibrations are above 4.3 units.

CM | HI ENG VIB PROC. . . . . **APPLY**

ENG 1(2) HOT AIR DET FAULT

The hot air leak detection is failed.

- **On ground:**

  CM | THR LVR 1(2) NOT ABOVE IDLE. . . . . **AWARE**

ENG 1(2) HOT AIR LEAK

A hot air leak is detected in the engine compartment.

ECAM: INOP SYS – WING A.ICE; ENG 1(2) A.ICE

- **If the NAI valves are detected closed:**

  CM | ENG 1(2) ANTI ICE. . . . . **OFF**

  CM | ICING CONDITIONS. . . . . **AVOID**

CM | THR LVR 1(2) NOT ABOVE IDEL. . . . . **AWARE**

CM | ENG 1(2) BLEED. . . . . **OFF**

CM | APU BLEED. . . . . **OFF**

CM | X BLEED. . . . . **SHUT**

CM | WING ANTI ICE. . . . . **OFF**

- **If severe ice accretion:**

  CM | MIN SPD. . . . . **VLS + 10/G DOT**

ENG 1(2) HP FUEL VALVE

The HP fuel valve is failed in the closed position.

- **On the ground:**

  CM | MAN START. . . . . **OFF**

  CM | AFFECTED ENG MASTER. . . . . **OFF**

ENG 1(2) HP TIP CTL FAULT

The active clearance between HP turbine blades and HP turbine case is failed.

CM | ENG 1(2) HP TIP CTL FAULT. . . . . **AWARE**

ENG 1(2) IGN FAULT (IGN A OR B FAULT)

The associated ignition circuit is failed.
ECAM: INOP SYS – ENG 1(2) IGN A(B)

CM | NEW START IN PROGRESS. . . . . **AWARE**

ENG 1(2) IGN FAULT (IGN A+B FAULT)

Both ignition circuits are failed.
ECAM: INOP SYS – ENG 1(2) IGN

CM | AVOID ADVERSE CONDITION. . . . . **AWARE**

ENG 1(2) LOW START AIR PRESS

The engine start is failed due to low start air pressure in flight.

CM | BLEED AIR SUPPLY. . . . . **VERIFY**

- **If unsuccessful:**

  Only windmill starts are allowed.

ENG 1(2) LOW N1 (ON GROUND)

The N1 rotation is failed during start.

- **If confirmed:**

  CM | AFFECTED THR LEVER. . . . . **IDLE**

  CM | AFFECTED ENG MASTER. . . . . **OFF**

ENG 1(2) MINOR FAULT

A minor engine failure is detected.

CM | ENG 1(2) MINOR FAULT. . . . . **AWARE**

ENG 1(2) N1 OR N2 OR EGT OR FF DISCREPANCY

There is a discrepancy detected between the real and displayed values.

CM | ENG 1(2) N1 OR N2 OR EGT OR FF DISCREPANCY. . . . . **AWARE**

ENG 1(2) N1/N2/EGT OVER LIMIT

The N1 is above 101%, or N2 is above 116.5%, or EGT is above 750°C on ground or above 1060°C during takeoff or go around, or 1 025°C in all other cases.

CM | AFFECTED ENGINE THR LEVER. . . . . **BELOW LIMIT**

- **If unsuccessful:**

  CM | AFFECTED ENG MASTER. . . . . **OFF**

  CM | ENG 1(2) SHUT DOWN PROC. . . . . **APPLY**

ENG 1(2) NO LIGHT UP

The first attempt of an automatic engine start is failed.

CM | NEW START IN PROGRESS. . . . . **AWARE**

The FADEC will automatically start a new attempt.

ENG 1(2) OIL CHIP DETECTED

A chip is detected by the EEC in the engine oil system.

CM | ENG 1(2) OIL CHIP DETECTED. . . . . **AWARE**

ENG 1(2) OIL FILTER CLOG

The oil filter is clogged.

CM | ENG 1(2) OIL FILTER CLOG. . . . . **AWARE**

ENG 1(2) OIL FILTER DEGRAD

An impending bypass is detected on the oil filter.

CM **|** ENG 1(2) OIL FILTER DEGRAD. . . . . **AWARE**

ENG 1(2) OIL HI TEMP

The oil temperature is either between 140°C and 155°C for more than 15 minutes, or above 155°C.

CM **|** AFFECTED ENGINE THR LEVER. . . . . **BELOW LIMIT**

- **If unsuccessful:**

  CM **|** AFFECTED ENG MASTER. . . . . **OFF**

ENG 1(2) OIL LO PR

The oil pressure is below the alert threshold.

CM **|** AFFECTED ENGINE THR LEVER. . . . . **IDLE**

CM **|** AFFECTED ENG MASTER. . . . . **OFF**

ENG 1(2) OIL LO PR

The oil pressure is between 60 PSI and 80 PSI.

CM **|** ENG 1(2) OIL LO PR. . . . . **AWARE**

ENG 1(2) OIL LO TEMP

The oil temperature is low when pressing the T.O CONFIG pushbutton.

CM **|** TAKEOFF. . . . . **DELAY**

ENG 1(2) OIL SENSOR FAULT

The oil system monitoring is failed.

CM **|** ENG 1(2) OIL SENSOR FAULT. . . . . **AWARE**

ENG 1(2) ONE TLA FAULT

A TLA is failed.

CM **|** ENG 1(2) ONE TLA FAULT. . . . . **AWARE**

ENG 1(2) OVSPD PROT FAULT

The overspeed protection is lost.

CM **|** ENG 1(2) OVSPD PROT FAULT. . . . . **AWARE**

ENG 1(2) OVTHR PROT FAULT

The Thrust Control Malfunction is failed.

ECAM: INOP SYS – OVTHR PROT

CM | ENG 1(2) OVTHR PROT FAULT. . . . . **AWARE**

ENG 1(2) PROBES FAULT

The T12, P0 or PT 2 data are unavailable on both channels.

CM | ENG 1(2) PROBES FAULT. . . . . **AWARE**

ENG 1(2) REV INHIBITED

The thrust reverser system is inhibited by maintenance.

ECAM: INOP SYS – REVERSER 1(2)

CM | ENG 1(2) REV INHIBITED. . . . . **AWARE**

ENG 1(2) REV ISOL FAULT

The thrust reverser shut off valve is failed in open position.

CM | ENG 1(2) REV ISOL FAULT. . . . . **AWARE**

ENG 1(2) REVERSER LOCKED (ON GROUND)

The thrust reverser system is failed in the stowed position.

ECAM: INOP SYS – REVERSER 1(2)

CM | ENG 1(2) REVERSER LOCKED (ON GROUND) . . . . **AWARE**

ENG 1(2) REV MINOR FAULT

A failure is detected, and the reverser is not unlocked and not inhibited.

CM | ENG 1(2) REV MINOR FAULT. . . . . **AWARE**

ENG 1(2) REV PRESSURIZED

The EEC has detected a pressurized thrust reverser system when it should not.

- **In Flight:**

  CM | THR LEVER 1(2) . . . . **IDLE**

- **On ground:**

  CM | THR LVR 1(2) NOT ABOVE IDLE. . . . . **AWARE**

ENG REV SET

The reverse thrust is set in flight.

CM | AFFECTED ENGINE THR LEVER. . . . . **FWD THR**

ENG 1(2) REV SWITCH FAULT

The reverse permission switch has failed.

CM | ENG 1(2) REV SWITCH FAULT. . . . . **AWARE**

ENG 1(2) REVERSE UNLOCKED

One or more reverser doors are not locked in the stowed position in flight, or on ground without any deploy order.

- **On Ground:**

  CM | AFFECTED ENGINE THR LEVER. . . . . **IDLE**

  CM | AFFECTED ENG MASTER. . . . . **OFF**

- **In Flight:**

  Land ASAP

  CM | AFFECTED ENGINE THR LEVER. . . . . **IDLE**

  CM | MAX SPEED. **300/0.78**

  - **If buffet:**

    CM | MAX SPEED. . . . . **240 KT**

    CM | AFFECTED ENG MASTER. . . . . **OFF**

ENG 1(2) REVERSER CTL FAULT

The thrust reverser system is failed.

ECAM: INOP SYS – REVERSER 1(2)

CM | ENG 1(2) REVERSER CTL FAULT. . . . . **AWARE**

ENG 1(2) REVERSER FAULT

The reverse thrust on one engine is failed.

ECAM: INOP SYS – REVERSER 1(2); GA SOFT

- **If reverser position fault with reverser pressurized:**

  Land ASAP

  CM | THR LEVER 1(2) . . . . **IDLE**

ENG 1(2) SAT ABOVE FLEX TEMP

The SAT is above the FLEX TEMP.

CM | T.O DATA. . . . . **VERIFY**

ENG 1(2) SENSOR FAULT

The PS3, T25, T3, N1, N2, P3B or EGT Data are unavailable.

ECAM: INOP SYS – CORE ICE 1(2)

- **On ground:**

  CM | AFFECTED THR LEVER. . . . . **IDLE**

  CM | AFFECTED ENG MASTER. . . . . **OFF**

- **In flight:**

  CM | THR. . . . . **AVOID RAPID CHANGES**

ENG 1(2) SHUT DOWN

The engine master is off from takeoff to landing.

ECAM: INOP SYS – CAT 3 DUAL; ENG 1(2) BLEED; PACK 1(2); MAIN GALLEY; GEN 1(2); G ENG 1 PUMP OR Y ENG 2 PUMP; WING A.ICE; GA SOFT; AFT CRG HEAT

Land ASAP

- **If ELEC EMER Config:**

  CM | PACK 1. . . . . **OFF**

- **If not ELEC EMER Config:**

  CM | AFFECTED PACK. . . . . **OFF**

- **If wing anti-ice ON:**
  - **If ENG FIRE pushbutton not pushed:**

    CM | X BLEED. . . . . **OPEN**

CM | ENG MODE SEL. . . . . **IGN**
By selecting continuous ignition, it protects the remaining engine.

- **If no fuel leak:**

  CM | IMBALANCE. . . . . **MONITOR**

CM | TCAS MODE SEL. . . . . **TA**

- **If REV unlocked:**
  - **If Buffet:**

    CM | MAX SPEED. . . . . **240 KT**

- **If ENG FIRE pushbutton pushed:**

  CM | X BLEED. . . . . **SHUT**

  CM | WING ANTI ICE. . . . . **OFF**

  CM | ICING CONDITIONS. . . . . **AVOID**

  - **If severe ice accretion:**

    CM | MIN SPD. . . . . **VLS + 10/G DOT**

    CM | LDG DIST PROC. . . . . **APPLY**

- **If REV unlocked:**

  CM | MAX SPEED. **300/0.78**

Approach Procedure

- **If REV unlocked:**
  - **Reverser deployed:**
    - **If Buffet:**

      CM | FLAP FOR LANDING. **1**

      CM | APPR SPD. . . . . **VREF + 55 KT**

      CM | RUD TRIM. . . . . **5 DEG R(L)**

      CM | A/THR. . . . . **OFF**

      CM | GPWS FLAP MODE. . . . . **OFF**

    - **When landing assured:**

      CM | L/G. . . . . **DOWN**

    - **At 800 ft AGL:**

      CM | TARGET SPD. . . . . **VREF + 40 KT**

      CM | LDG DIST PROC. . . . . **APPLY**

- **Reverse detected unlocked:**
    - **If buffet:**

      CM | FLAP FOR LDG. **3**

      CM | GPWS LDG FLAP 3. . . . . **ON**

      CM | APPR SPD. . . . . **VREF + 15 KT**

      CM | LDG DIST PROC. . . . . **APPLY**

- **If WING A/ICE off and ENG 1(2) FIRE pushbutton not pressed:**
    - **If PERF permits:**

      CM | X BLEED. . . . . **OPEN**

      CM | AFT CRG HOT AIR. . . . . **OFF**

- **If no ENG 1(2) Damage:**

  CM | ENG 1(2) RELIGHT. . . . . **CONSIDER**

ENG 1(2) STALL

An engine stall is detected.

- **On Ground:**

  CM | AFFECTED ENGINE THR LEVER. . . . . **IDLE**

  CM | AFFECTED ENGIN ENG MASTER. . . . . **OFF**

- **In Flight:**

  CM | AFFECTED ENGINE THR LEVER. . . . . **IDLE**

  CM | AFFECTED ENG PARAMETERS. . . . . **VERIFY**

  CM | ENG 1(2) STALL PROC. . . . . **APPLY**

ENG 1(2) START FAULT

The engine start is failed.
ECAM: INOP SYS – ENG 1(2) IGN A (B)

- **AFFECTED ENG IGN A(B) FAULT:**
  - **On ground (auto start):**

    CM | NEW START IN PROGRESS. . . . . **AWARE**

  - **On ground (manual start):**

    CM | ENG 1(2) START FAULT. . . . . **AWARE**

- **AFFECTED ENG IGNITION FAULT:**
  - **In flight:**

    CM | AFFECTED ENG MASTER. . . . . **OFF**

  - **On ground (auto start):**

    CM | AFFECTED ENG MASTER. . . . . **OFF**

    CM | MODE SEL. . . . . **CRANK**

    CM | AFFECTED MAN START. . . . . **ON**

  - **On ground (manual start):**

    CM | AFFECTED ENG MASTER. . . . . **OFF**

    CM | AFFECTED MAN START. . . . . **OFF**

    CM | MODE SEL. . . . . **CRANK**

    CM | AFFECTED MAN START. . . . . **ON**

- **AFFECTED ENG EGT OVERLIMIT:**
  - **In flight:**

    CM | AFFECTED ENG MASTER. . . . . **OFF**

  - **On ground (auto start):**

    CM | AFFECTED ENG MASTER. . . . . **OFF**

    CM | MOD ESEL. . . . . **CRANK**

    CM | AFFECTED MAN START. . . . . **ON**

- **On ground (manual start):**

  CM | AFFECTED ENG MASTER. . . . . **OFF**

  CM | AFFECTED MAN START. . . . . **OFF**

  CM | MODE SEL. . . . . **CRANK**

  CM | AFFECTED MAN START. . . . . **ON**

- **AFFECTED ENG STALL OR HOT START:**
  - **In flight:**

    CM | AFFECTED ENG MASTER. . . . . **OFF**

  - **On ground (auto start):**

    CM | NEW START IN PROGRESS. . . . . **AWARE**

    - **If restart not possible:**

      CM | AFFECTED ENG MASTER. . . . . **OFF**

      CM | MODE SEL. . . . . **CRANK**

      CM | AFFECTED MAN START. . . . . **ON**

  - **On ground (manual start):**

    CM | NEW START IN PROGRESS. . . . . **AWARE**

    - **If restart not possible:**

      CM | AFFECTED ENG MASTER. . . . . **OFF**

      CM | AFFECTED MAN START. . . . . **OFF**

      CM | MODE SEL. . . . . **CRANK**

      CM | AFFECTED MAN START. . . . . **ON**

- **STARTER TIME EXCEEDED:**

  CM | AFFECTED ENG MASTER. . . . . **OFF**

  CM | AFFECTED MAN START. . . . . **OFF**

- **LO START AIR PRESS:**
  - **On ground (auto start):**

    CM | AFFECTED ENG MASTER. . . . . **OFF**

  - **On ground (manual start):**

    CM | BLEED AIR SUPPLY. . . . . **VERIFY**

    - **If unsuccessful:**

      CM | AFFECTED ENG MASTER. . . . . **OFF**

      CM | AFFECTED MAN START. . . . . **OFF**

- **BLOWED ROTOR PROTECTION:**

  CM | AFFECTED ENG MASTER. . . . . **OFF**

  CM | AFFECTED MAN START. . . . . **OFF**
  It is not recommended to attempt a new engine start. Contact maintenance.

- **THR LEVER NOT AT IDLE:**

  CM | THR LEVER. . . . . **IDLE**

- **STARTER SHAFT SHEAR:**
  - **On ground:**

    CM | AFFECTED ENG MASTER. . . . . **OFF**

    CM | AFFECTED MAN START. . . . . **OFF**
    It is not recommended to attempt a new engine start. Contact maintenance.

  - **In flight:**

    Only windmill starts are allowed.

ENG 1(2) START VALVE FAULT
The start valve is stuck in the closed or open position.
ECAM: INOP SYS – WING A.ICE

- **Start Valve Not Closed:**

  CM | APU BLEED (IF ENG 1 AFFECTED) . . . . **OFF**

  CM | X BLEED. . . . . **SHUT**

- **In Flight:**

  CM | AFFECTED ENG BLEED. . . . . **OFF**

  CM | MAN START (IF MAN START PERFORMED) . . . . **OFF**

  CM | WING ANTI-ICE. . . . . **OFF**

  CM | ICING CONDITION. . . . . **AVOID**

- **On Ground:**

  CM | MAN START (IF MAN START PERFORMED) . . . . **OFF**

  CM | AFFECTED ENG MASTER. . . . . **OFF**

- **Start Valve Not Open:**
  - **If opposite engine running:**

    CM | X BLEED. . . . . **OPEN**

  - **If APU AVAIL below FL 200:**

    CM | APU BLEED. . . . . **ON**

  - **If Unsuccessful:**
    - **On Ground:**

      CM | MAN START (IF MAN START PERFORMED) . . . . **OFF**

      CM | AFFECTED ENG MASTER (IF AUTO START PERFORMED). . . . . **OFF**

      The maximum allowed attempts at automatic starts is 4 attempts.

    - **In Flight:**

      Only windmill starts are allowed.

- **Pressure Sensor Fault:**

  CM | AFFECTED ENG MASTER. . . . . **OFF**

  CM | MAN START (IF MAN START PERFORMED) . . . . **OFF**

  MAN START are only allowed if auto start has been performed.

ENG 1(2) THR LEVER ABV IDLE

A thrust lever is above idle when the other thrust lever is in the reverse detent at landing, or a thrust lever is above idle when the other thrust lever is at idle at reverser deselection.

CM | AFFECTED ENGINE THR LEVER. . . . . **IDLE**

ENG 1(2) THR LEVER DISAGREE

There is a discrepancy between both resolvers of a thrust lever.

ECAM: INOP SYS – ENG 1(2) THR; GA SOFT

- **On ground (if TLA not at TOGA or FLX):**

  CM | AFFECTED ENG IDLE POWER ONLY. . . . . **AWARE**
  The FADEC will automatically set the engine thrust to idle.

- **In Flight:**

  CM | AVAIL MAX POWER: MCT. . . . . **AWARE**

  CM | A/THR. . . . . **ON**

ENG 1(2) THR LEVER FAULT

Both resolvers on one thrust lever are failed.

ECAM: INOP SYS – REVERSER 1(2); ENG 1(2) THR

- **On the ground:**

  CM | AFFECTED ENGINE IDLE ONLY. . . . . **AWARE**
  The FADEC will automatically set the engine thrust to idle.

- **In Flight:**

  The FADEC will automatically freeze engine power to TO or FLEX TO until slat retraction. When slats are selected, the FADEC will set the MCT thrust.

  - **If autothrottle engaged:**

    CM | A/THR. . . . . **KEEP ON**

  - **If autothrottle not engaged:**

    CM | AFFECTED ENGING HI PWR IN MAN THR. . . . . **AWARE**

    - **Before Slats In:**

      CM | A/THR. . . . . **ON**

ENG THR LEVERS NOT SET (ON GROUND)

The thrust levers position does not correspond to TO power mode.

- **If the flex mode is not armed, and the flight crew sets the thrust levers at or below the FLX/MCT position:**

  CM | THR LEVERS. . . . . **TOGA**

- **If the flex mode is armed, and the flight crew sets the thrust levers below the FLX/MCT position:**

  CM | THR LEVERS. . . . . **FLX/MCT**

- **If the derated is not armed, and the flight crew sets the thrust levers at or below the FLX/MCT position:**

  CM | THR LEVERS. . . . . **TOGA**

- **If the derated is armed, and the flight crew sets the thrust levers at any position except the FLX/MCT position:**

  CM | THR LEVERS. . . . . **FLX/MCT**

ENG THR LEVERS NOT SET (AT GO-AROUND)

The soft go-around function is not available.

CM | THR LEVERS. . . . . **TOGA**

ENG THRUST LOCKED

The thrust levers are not moved within 5 seconds of an involuntary disconnection of the A/THR.

CM | THR LEVERS. . . . . **MOVE**

ENG TYPE DISAGREE

There is a discrepancy between the two engines.

CM | ENG TYPE DISAGREE. . . . . **AWARE**

ENG VIB SYS FAULT

The vibration detection system is failed.

CM | ENG VIB SYS FAULT. . . . . **AWARE**

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LANDING WITH SLATS OR FLAPS JAMMED

CM | LDG DIST PROC. . . . . **APPLY**

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

  CM | SPD SEL. . . . . **VFE NEXT – 5 KT**

  - **At VFE NEXT:**

    CM | FLAPS. . . . . **SELECT FLAPS LEVER ONE STEP DOWN**

<table>
<tr><td rowspan="2">Note</td><td>The overspeed alert may be displayed. The VLS is displayed on the PFD.</td></tr>
<tr><td>The VFE and VFE NEXT are displayed on the PFD. If it is not displayed, it is recommended to use the placard speeds.</td></tr>
</table>

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

  The flight crew should decelerate to the calculated VAPP. The autopilot use is not recommended.

- **For Go-Around:**

<table>
<tr><th colspan="6">MAX Speed</th></tr>
<tr><td></td><td>F = 0</td><td>0 < F ≤ 1</td><td>1 < F ≤ 2</td><td>2 < F ≤ 3</td><td>F > 3</td></tr>
<tr><td>S = 0</td><td>NO LIMITATION</td><td colspan="2" rowspan="3">215 kt</td><td rowspan="4">296 kt</td><td rowspan="4">190</td></tr>
<tr><td>0 < S < 1</td><td rowspan="2">230 kt</td></tr>
<tr><td>S = 1</td></tr>
<tr><td>1 < S ≤ 3</td><td colspan="2">215 kt</td><td></td></tr>
<tr><td>S > 3</td><td colspan="5">190 kt</td></tr>
</table>

  - **If Slats fault:**
    - **For circuit:**

      CM | FLAP CONFIGURATION. . . . . **MAINTAIN**
      The recommended speed is MAX SPEED – 10 kt.

    - **For diversion:**

      CM | SLAT. . . . . **SELECT CLEAN CONF**
      The recommended speed for diversion is MAX SPEED – 10 kt.

- **If Flaps Fault:**
  - **For circuit:**

    CM | FLAP CONFIGURATION. . . . . **MAINTAIN**
    The recommended speed is MAX SPEED – 10 kt.

  - **For diversion:**
    - **If flaps jammed at 0:**

      CM | FLAP. . . . . **SELECT CLEAN CONF**

      CM | SPEED. . . . . **NORMAL OPERATING SPEEDS**

    - **If flaps jammed > 0:**

Note	In case of go-around in CONF FULL, the L/G NOT DOWN warning will be displayed at landing gear retraction.

CM | FLAP CONFIGURATION. . . . . **MAINTAIN**
The recommended speed for diversion is MAX SPEED – 10 kt.

RUDDER JAM

Note	The Rudder jamming may be falsely detected by an undue pedal movement during rolling maneuvers.

- **For Approach:**

CAUTION	The maximum crosswind landing is 15 knots.

CM | AUTOBRK. . . . . **AVOID**

CM | FLAP FOR LDG. . . . . **NORMAL CONF**

CM | SPEED AND TRAJECTORY. . . . . **STABILIZE ASAP**

CM | LDG DIST PROC. . . . . **APPLY**

- **For Landing:**

CM | BRAKING. . . . . **USE DIFFERENTIAL BRAKING**

STABILIZER JAM

Note	The ELACS may not detect a stabilizer jam if the pitch trim wheel is jammed.
	The flight control normal law remains active.

CM | AP. . . . . **OFF**

CM | MAN PITCH TRIM. . . . . **VERIFY**

- **If MAN PITCH TRIM available:**

  CM | TRIM. . . . . **NEUTRAL ELEV**

- **If MAN PITCH TRIM not available:**

  CM | FLAP FOR LDG. **3**

  CM | GPWS LDG FLAP 3. . . . . **ON**

ELEVATORS AND STABILIZER CONTROL AFTER FAILURE

	LEFT ELEVATOR		THS	RIGHT ELEVATOR	
	BLUE	**GREEN**	**GREEN AND YELLOW**	**YELLOW**	**BLUE**
NORM OPS		ELAC 2	ELAC 2	ELAC 2	
SINGLE FAILURE					
ELAC 2	ELAC 1		ELAC 1		ELAC 1
ELAC 1		ELAC 2	ELAC 2	ELAC 2	
SEC 2		ELAC 2	ELAC 2	ELAC 2	
SEC 1		ELAC 2	ELAC 2	ELAC 2	
G	ELAC 1		ELAC 1		ELAC 1
Y	ELAC 1		ELAC 1		ELAC 1
B		ELAC 2	ELAC 2	ELAC 2	
DOUBLE FAILURE					
ELAC 2 +					
+ ELAC 1		SEC 2	SEC 2	SEC 2	
+ SEC 2	ELAC 1		ELAC 1		ELAC 1
+ SEC 1	ELAC 1		ELAC 1		ELAC 1
+ G	ELAC 1		ELAC 1		ELAC 1
+ Y	ELAC 1		ELAC 1		ELAC 1
+ B		SEC 2	SEC 2	SEC 2	
ELAC 1 +					
+ SEC 2		ELAC 2	ELAC 2	ELAC 2	
+ SEC 1		ELAC 2	ELAC 2	ELAC 2	
+ G	SEC 1		SEC 2	SEC 2	
+ Y		SEC 2	SEC 2		SEC 1
+ B		ELAC 2	ELAC 2	ELAC 2	
SEC 2 +					
+ SEC 1		ELAC 2	ELAC 2	ELAC 2	
+ G	ELAC 1		ELAC 1	SEC 2	
+ Y	ELAC 1		ELAC 1		SEC 1
+ B		ELAC 2	ELAC 2	ELAC 2	
SEC 1 +					
+ G	ELAC 1		ELAC 1		ELAC 1
+ Y	ELAC 1		ELAC 1		ELAC 1
+ B		ELAC 2	ELAC 2	ELAC 2	
G + Y	ELAC 1		INOP		ELAC 1
B + G	Damped		ELAC 2	ELAC 2	
B + Y		ELAC 2	ELAC 2	Damped	

TRIPLE FAILURE					
ELAC 2 + ELAC 1 +					
+ SEC 2	SEC 1		SEC 1		SEC 1
+ SEC 1		SEC 2	SEC 2	SEC 2	
+ G	SEC 1		SEC 2	SEC 2	
+ Y		SEC 2	SEC 2		SEC 1
+ B		SEC 2	SEC 2	SEC 2	
ELAC 2 + SEC 2 +					
+ SEC 1	ELAC 1		ELAC 1		ELAC 1
+ G	ELAC 1		ELAC 1		ELAC 1
+ Y	ELAC 1		ELAC 1		ELAC 1
+ B	Centered		Mechanical	Centered	
ELAC 2 + SEC 1 +					
+ G	ELAC 1		ELAC 1		ELAC 1
+ Y	ELAC 1		ELAC 1		ELAC 1
+ B		SEC 2	SEC 2	SEC 2	
ELAC 2 + G + Y	ELAC 1		INOP		ELAC 1
ELAC 2 + B + G	Damped		SEC 2	SEC 2	
ELAC 2 + B + Y		SEC 2	SEC 2	Damped	
ELAC 1 + SEC 2 +					
+ SEC 1		ELAC 2	ELAC 2	ELAC 2	
+ G	SEC 1		SEC 1		SEC 1
+ Y	SEC 1		SEC 1		SEC 1
+ B		ELAC 2	ELAC 2	ELAC 2	
ELAC 1 + SEC 1 +					
+ G	Damped		SEC 2	SEC 2	
+ Y		SEC 2	SEC 2	Damped	
+ B		ELAC 2	ELAC 2	ELAC 2	
ELAC 1 + G + Y	SEC 1		INOP		SEC 1
ELAC 1 + B + G	Damped		ELAC 2	ELAC 2	
ELAC 1 + B + Y		ELAC 2	ELAC 2	Damped	
SEC 2 + SEC 1 +					
+ G	ELAC 1		ELAC 1		ELAC 1
+ Y	ELAC 1		ELAC 1		ELAC 1
+ B		ELAC 2	ELAC 2	ELAC 2	
SEC 2+ G + Y	ELAC 1		INOP		ELAC 1
SEC 2+ B + G	Damped		ELAC 2	ELAC 2	
SEC 2+ B + Y		ELAC 1	ELAC 2	Damped	
SEC 1 + G + Y	ELAC 1		INOP		ELAC 1
SEC 1 + B + G	Damped		ELAC 2	ELAC 2	
SEC 1 + B + Y		ELAC 2	ELAC 2	Damped	

F/CTL AIL SERVO FAIL

A servojack is lost on one aileron, or there is a lost of one or both ELAC 1 rudder pedal transducers.

CM | F/CTL AIL SERVO FAIL. . . . . **AWARE**

F/CTL ALTN LAW

The alternate law is active.
ECAM: INOP SYS – F/CTL PROT

CM | MAX SPEED. . . . . **320 KT**

Note	All flight protections are lost, except maneuver protections.

- **If L or R ELEVATOR FAULT:**

  CM | SPD BRAKE. . . . . **AVOID**

Approach Procedure

CM | FLAP FOR LDG. **3**

CM | GPWS LDG FLAP 3. . . . . **ON**

CM | APPR SPD. . . . . **VREF + 15 KT**

CM | LDG DIST PROC. . . . . **APPLY**

Note	When the landing gear is extended, the direct law engages.

F/CTL DIRECT LAW

The direct law is active.
ECAM: INOP SYS – F/CTL PROT

CM | MAX SPEED. . . . . **320 KT**

- **If HYD Y + G SYS LO PR is not displayed:**

  CM | MAN PITCH TRIM. . . . . **USE**

It is recommended to use small control inputs at high speed. At high speed, the direct law is very powerful. It is also recommended to avoid large thrust changes.

Approach Procedure

CM | FLAP FOR LDG. **3**

CM | GPWS LDG FLAP 3. . . . . **USE**

CM | APPR SPD. . . . . **VREF + 15**

CM | LDG DIST PROC. . . . . **APPLY**

F/CTL ELAC 1(2) FAULT (ONE COMPUTER FAILED)

An ELAC is failed, or a sidestick transducer is faulty.

ECAM: INOP SYS – ELAC 1(2); CAT 3 DUAL

CM | AFFECTED ELAC. . . . . **OFF THEN ON**

- **If unsuccessful:**

  CM | AFFECTED ELAC. . . . . **OFF**

Note	The fuel consumption has increased and the FMS predictions are unreliable.

F/CTL ELAC 1(2) FAULT (BOTH COMPUTERS FAILED)

An ELAC is failed, or a sidestick transducer is faulty.

ECAM: INOP SYS – F/CTL PROT; L+R AIL; ELAC 1+2; AP 1+2; CAT 2

CM | ELAC 1. . . . . **OFF THEN ON**

CM | ELAC 2. . . . . **OFF THEN ON**

- **If both ELAC FAULT remain:**

  CM | ELAC 1. . . . . **OFF**

  CM | ELAC 2. . . . . **OFF**

  CM | MAX SPEED. . . . . **320 KT**

Approach Procedure

CM | FLAP FOR LDG. **3**

CM | GPWS LDG FLAP 3. . . . . **ON**

CM | APPR SPD. . . . . **VREF +15 KT**

CM | LDG DIST PROC. . . . . **APPLY**

F/CTL ELAC 1(2) PITCH FAULT

A pitch channel in ELAC 1(2) is failed.

ECAM: INOP SYS – ELAC PITCH; CAT 3 DUAL

CM | F/CTL ELAC 1(2) PITCH FAULT. . . . . **AWARE**

F/CTL ELEV SERVO FAULT
A servojack of one elevator is lost.
ECAM: INOP SYS – CAT 3 DUAL

CM | F/CTL ELEV SERVO FAULT. . . . . **AWARE**

CAUTION	Do not use speedbrakes above 350 knots.

F/CTL FCDC 1(2) FAULT
A FCDC are failed.
ECAM: INOP SYS – FCDC 1(2)

CM | F/CTL FCDC 1(2) FAULT. . . . . **AWARE**

F/CTL FCDC 1+2 FAULT
Both FCDC are failed.
ECAM: INOP SYS – FCDC 1+2; STEEP APPR

CM | F/CTL OVHD PNL. . . . . **MONITOR**

Note	The Flight control data on ECAM is lost. The control laws remains normal.

F/CTL FLAP ATTACH SENSOR
A flap attachment's detection sensor is failed.

CM | FLAP ATTACH SENSOR. . . . . **AWARE**

F/CTL FLAPS FAULT/LOCKED
If both flaps channel fails, FLAPS FAULT appears. If flap wing tip brakes activate, FLAPS LOCKED appears.
ECAM: INOP SYS – FLAPS; AP 1+2; A/THR; CAT 2; GLS AUTOLAND; STEEP APPR

- **If flaps locked:**

  CM | MAX SPEED. . . . .**REFER TO FLAPS/SLATS FAULT/LOCKED**

- **If flaps not locked:**

  CM | FLAPS LEVER. . . . . **RECYCLE**

- **If flaps extended:**

  The fuel consumption has increased, and the FMS predictions are unreliable.

- **If unsuccessful:**

  Refer to Landing with Slats or Flaps Jammed.

Approach Procedure

- **If flaps are at or below than 3:**

  CM | FLAP FOR LDG. **3**

- **If flaps are greater than 3:**

  CM | FLAP FOR LDG. . . . . **KEEP CONF FULL**

- **If flaps are below than 3:**

  CM | GPWS FLAP MODE. . . . . **OFF**

- **If flaps are at or greater than 3:**

  CM | GPWS FLAP MODE. . . . . **ON**

  CM | APPR SPD. . . . . **REFER TO FLAPS/SLATS FAULT/LOCKED**

  CM | LDG DIST PROC. . . . . **APPLY**

F/CTL FLAP LVR NOT ZERO

The FLAP lever is not in the zero position, and the aircraft is above 22 000 ft.

CM | F/CTL FLAP LVR NOT ZERO. . . . . **AWARE**

F/CTL FLAP SYS 1(2) FAULT

There is a failure of a flap channel in one SFCC

CM | F/CTL FLAP SYS 1(2) FAULT. . . . . **AWARE**

- **If FLAP SYS 1 FAULT:**

  CM | GPWS FLAP MODE. . . . . **OFF**

F/CTL FLAPS/SLATS FAULT/LOCKED

CM | MAX SPEED. . . . . **REFER TO THE TABLE**

<table>
<tr><th colspan="6">Max Speed</th></tr>
<tr><td>Flaps</td><td rowspan="2">F = 0</td><td rowspan="2">0 < F ≤ 1</td><td rowspan="2">1 < F ≤ 2</td><td rowspan="2">2 < F ≤ 3</td><td rowspan="2">F > 3</td></tr>
<tr><td>Slats</td></tr>
<tr><td>S = 0</td><td>NO LIMITATION</td><td rowspan="3">215 kt</td><td rowspan="4">200 kt</td><td rowspan="4">185 Kt</td><td rowspan="2">Not allowed
(177 kt)</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></tr>
<tr><td>S > 3</td><td colspan="5">177 kt</td></tr>
</table>

<table>
<tr><th colspan="6">Max Speed</th></tr>
<tr><td>Flaps</td><td rowspan="2">F = 0</td><td rowspan="2">0 < F ≤ 1</td><td rowspan="2">1 < F ≤ 2</td><td rowspan="2">2 < F ≤ 3</td><td rowspan="2">F > 3</td></tr>
<tr><td>Slats</td></tr>
<tr><td>S = 0</td><td>VREF + 65 (APPR)
VREF + 55
(TOUCHDOWN)</td><td rowspan="2">VREF + 50</td><td rowspan="2">VREF + 30</td><td rowspan="2">VREF + 25</td><td rowspan="2">VREF + 25</td></tr>
<tr><td>0 < S < 1</td><td>VREF + 50</td></tr>
<tr><td>1 < S ≤ 3</td><td colspan="2" rowspan="2">VREF + 30</td><td rowspan="2">VREF + 15</td><td rowspan="2">VREF + 10</td><td>VREF + 10</td></tr>
<tr><td>S > 3</td><td>VREF + 5</td></tr>
</table>

Note	The fuel consumption has increased.

F/CTL GND SPLR 5 FAULT

There is a loss of ground spoiler function in SEC 2.

ECAM: INOP SYS – GND SPLR 5

CM | F/CTL GND SPLR 5 FAULT. . . . . **AWARE**

F/CTL GND SPLR / 1+2 / 3+4 / FAULT

There is a loss of ground spoiler function in SEC 1, or 3, or 1+3, or 1+2, or 2+3, or 1+2+3.

ECAM: INOP SYS – GND SPLR

Note	The autobrakes are inoperative.

CM | F/CTL GND SPLR / 1+2 / 3+4 / FAULT. . . . . **AWARE**

F/CTL GND SPLR NOT ARMED

The ground spoilers are not armed before landing.

CM | F/CTL GND SPLR NOT ARMED. . . . . **AWARE**

F/CTL L(R) AIL FAULT

Both servojacks are lost on an aileron.

ECAM: INOP SYS – L(R) AIL

CM | F/CTL L(R) AIL FAULT. . . . . **AWARE**

Note	The fuel consumption will increase, and FMS prediction are unreliable.

F/CTL L(R) ELEV FAULT

Both servojacks are lost on an elevator, or there is an activation of elevator flutter protection in ELAC.

ECAM: INOP SYS – F/CTL PROT; L(R) ELEV; ELAC PITCH; AP 1+2; CAT 2; GLS AUTOLAND; STEEP APPR

CM | MAX SPEED. . . . . **320 KT**

CM | SPD BRK. . . . . **AVOID**

Note	The high speed protections are lost.

CM | GO AROUND MAX PITCH 15°. . . . . **ACKNOWLEDGE**

Approach Procedure

CM | FLAP FOR LDG. **3**

CM | GPWS LDG FLAP 3. . . . . **ON**

CM | APPR SPD. . . . . **VREF + 25 KT**

CM | LDG DIST PROC. . . . . **APPLY**

F/CTL L+R ELEV FAULT

Both elevators are lost.

ECAM: INOP SYS – L+R ELEV; ELAC PITCH; AP 1+2; CAT 2; GLS AUTOLAND; STEEP APPR

CM | MAX SPEED. **320 KT/0.77**

Note	The high speed protections are lost.

CM | MAN PITCH TRIM. . . . . **USE**
The only pitch control available is the manual trim.

CM | SPD BRK. . . . . **AVOID**

Approach Procedures

CM | FLAP FOR LDG. **3**

CM | GPWS LDG FLAP 3. . . . . **ON**

CM | MAN PITCH TRIM. . . . . **USE**

CM | APPR SPD. . . . . **VREF + 15 KT**

CM | LDG DIST PROC. . . . . **APPLY**

F/CTL L(R) SIDESTICK FAULT

On one sidestick, the transducers of either pitch or roll axis are failed.

ECAM: INOP SYS – L(R) SIDESTICK

CM | F/CTL L(R) SIDESTICK FAULT. . . . . **AWARE**

F/CTL PITCH TRIM/MCDU/CG DISAGREE

When the TO CONFIG pb is pressed, or when the thrust levers are set to FLEX or TOGA, and there is a discrepancy between the actual pitch trim value from THSA, or the pitch trim value calculated by the FAC, based on the CG or the pitch trim value entered by crew in the MCDU.

CM | F/CTL PITCH TRIM/MCDU/CG DISAGREE. . . . . **AWARE**

It is recommended to verify the loadsheet data, the FMS entries and the trim settings.

F/CTL SEC 1(2)(3) FAULT

There is a failure of one SEC.

ECAM: INOP SYS – F/CTL PROT; associated SPLR; affected SEC; REVERSER; AUTO BRK

CM | AFFECTED SEC. . . . . **OFF, THEN ON**

- **If unsuccessful:**

  CM | AFFECTED SEC. . . . . **OFF**

  The associated spoilers are lost. If the SEC 1 or 2 fails, the LAF is degraded.

Note	If all spoilers are inoperatives, the roll direct law and pitch alternate law are active.

- **If SEC 1 affected:**

  CM | SPD BRK. . . . . **AVOID**

  If the speed brakes 2 is extended, the VLS will not be corrected.

- **If SEC 1 + 2 + 3 Fail**

  CM | FLAP FOR LDG. **3**

  CM | APPR SPD. . . . . **VREF + 15 KT**

Note	When the landing gear is extended, the aircraft will fly in direct law.

F/CTL SIDESTICK PRIORITY

A sidestick priority logic is failed.

Verify the integrity of flight control priority, as follows:

CM | ELAC 1. . . . . **OFF THEN ON**

Note	If the ELAC computer is reset on ground, it'll reset the pitch trim to the ground setting position of 0°.

CM | ELAC 2. . . . . **OFF THEN ON**

- **If the warning disappears:**

  CAPT | CAPT TAKE OVER . . . . **PRESS**
  Press for at least 3 seconds. Ensure the aural message "priority left" is heard, and the F/O red arrow light is on.

  CAPT | CAPT TAKE OVER. . . . . **RELEASE**

  FO | F/O TAKE OVER. . . . . **PRESS**
  Press for at least 3 seconds. Ensure the aural message "priority right" is heard, and the CAPT red arrow light is on.

  FO | F/O TAKE OVER. . . . . **RELEASE**
  Ensure that the warning does not reappear.

- **If the warning does not disappears, or if warning reappears:**

  The aircraft must be checked by the maintenance crew.

F/CTL SLATS(FLAP) TP BRK FAULT

One wing tip brake on slats or flaps is failed, or one of wing tip brake solenoid on slats or flaps is failed.

CM | F/CTL STLATS(FLAP) TP BRK FAULT. . . . . **AWARE**

F/CTL SLATS AND FLAPS FAULT IN CONF 0

The speed brakes 3+4 are not in the commanded position.

ECAM: INOP SYS – F/CTL PROT; FLAPS; SLATS; AP 1+2; A/THR; FD; CAT; STEEP APPR

PF | FLAPS LEVER. . . . . **RECYCLE**

- **If both slat channels fail:**

  CM | MAX SPEED. . . . . **320 KT**

Approach Procedure

CM | FOR LDG. . . . . **USE FLAP 1**

CM | GPWS FLAP MODE. . . . . **OFF**

CM | APPR SPD. . . . . **VREF + 60 KT**

- **If both slat channels fail:**

  When the landing gear will be extended, the aircraft will fly in direct law.

- **At 300 Ft AGL:**

  PF | TARGET SPD. . . . . **VREF + 55 KT**

  PF | LDG DIST PROC. . . . . **APPLY**

F/CTL SLATS FAULT/LOCKED

The speed brakes 3+4 are not in the commanded position.

ECAM: INOP SYS – F/CTL PROT; AP 1+2; A/THR; FDs; CAT 2; SLATS; GLS AUTOLAND; STEEP APPR

- **If slats locked:**

  CM | WING TIP BRK. . . . . **ON**

- **If slats not locked:**

  CM | FLAPS LEVER. . . . . **RECYCLE**

- **If slats extended:**

  The fuel consumption will increase, and the FMS predictions are unreliable

- **If unsuccessful:**

  CM | LANDING WITH SLATS OF FLAPS PROC. . . . . **APPLY**

Note	The fuel consumption will increase, and the FMS predictions are unreliable.

F/CTL SLATS SYS 1(2) FAULT

The speed brakes 3+4 are not in the commanded position.

CM | F/CTL SLAT SYS 1(2) FAULT. . . . . **AWARE**

Note	The slats retraction and extension might be slow.

F/CTL SPD BRK 2 (3+4) FAULT
The speed brakes 3+4 are not in the commanded position.
ECAM: INOP SYS – SPD BRK (affected); STEEP APPR

- **If SPD BRK 3+4 Affected:**

  CM | SPD BRK. . . . . **AVOID**

F/CTL SPD BRK DISAGREE
The speed brakes 3+4 are not in the commanded position.
ECAM: INOP SYS – SPD BRK 3+4; STEEP APPR

CM | SPEED BRAKES. . . . . **RETRACT**

CM | SPEED BRAKES. . . . . **AVOID**

F/CTL SPD BRK DISAGREE
The speed brakes 2+3+4 are not in the commanded position.
ECAM:

CM | SPEED BRAKES LEVERS. . . . . **RETRACT**

F/CTL SPD BRK FAULT
The speedbrake lever transducer to SEC 1 and 3 has failed.
ECAM: INOP SYS – STEEP APPR

CM | F/CTL SPD BRK FAULT. . . . . **AWARE**

CM | SPEED BRAKES. . . . . **AVOID**

F/CTL SPD BRK STILL OUT
The speed brakes are out during approach.
ECAM:

CM | F/CTL SPD BRK STILL OUT. . . . . **AWARE**

F/CTL SPLR FAULT
One of more spoilers are lost.
ECAM: INOP SYS – SPLR; SPD BRK; STEEP APPR

- **If one or multiple spoilers are fully extended in flight:**

  CM | OPTIMAL SPEED. . . . . **GREEN DOT + 10 KNOTS**

  CM | FLIGHT LEVEL. . . . . **AS HIGH AS POSSIBLE**

  CM | AUTOPILOT. . . . . **AVOID**

CM | SPOILERS. . . . . **AVOID**

- **Approach procedures**
  - **If one or multiple spoilers are fully extended:**

    CM | FLAPS. . . . . **FLAP 3**

    CM | GPWS LDG FLAP 3. . . . . **ON**

    CM | APPROACH SPEED. . . . . **VREF + 15 KNOTS**

  CM | LDG DIST PROC. . . . . **APPLY**

Note	The fuel consumption will increase, and the FMS prediction function might not be accurate.

F/CTL STABILIZER JAM

There is a loss detected in the electrical control of the stabilizer.

ECAM: INOP SYS – F/CTL; STABILIZER; ELAC PITCH; AP 1+2; CAT 2; GLS AUTOLAND; STEEP APPR

CM | MAN PITCH TRIM. . . . . **VERIFY**

- **If the manual pitch trim is available:**

  CM | TRIM. . . . . **TO ELEVATOR 0 POSITION**

- **Flying in the alternate flight law:**

  CM | MAX SPEED. . . . . **ACKNOWLEDGE 320 KNOTS**

- **Approach procedures:**

  CM | FLAPS. . . . . **FLAP 3**

  CM | GPWS LDG FLAP 3. . . . . **ON**

  - **If the manual trim is not available, and the aircraft is on config 3 and VAPP:**

    CM | LANDING GEAR. . . . . **DOWN**

  CM | APPROACH SPEED. . . . . **VREF + 15 KNOTS**

  CM | LDG DIST PROC. . . . . **APPLY**

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Fuel

FUEL IMBALANCE

CM | FOB. . . . . **VERIFY**
Compare the FOB and FU with the FOB at departure. If there is a significant difference, suspect a fuel leak.

CM | FUEL X FEED. . . . . **ON**

CM | CTR TK L XFR. . . . . **OFF**

CM | CTR TK R XFR. . . . . **OFF**

- **On lighter side:**

  CM | FUEL PUMPS. . . . . **OFF**

- **When fuel balanced:**

  CM | FUEL PUMPS. . . . . **ON**

  CM | CTR TK L XFR. . . . . **ON**

  CM | CTR TK R XFR. . . . . **ON**

  CM | FUEL X FEED. . . . . **OFF**

FUEL LEAK

When a leak is confirmed

LAND ASAP

- **Leak from engine/pylon confirmed by excessive fuel flow or visual check:**

  CM | THR LEVER (AFFECTED ENGINE) . . . . **IDLE**

  CM | ENG MASTER (AFFECTED ENGINE) . . . . **OFF**

  CM | FUEL X FEED. . . . . **AS REQUIRED**
  It is recommended to verify the leak. If the leak has stopped, the flight crew may open the crossfeed valve to rebalance the fuel quantity and to enable the use of fuel from both wings. Do not attempt to restart the affected engine.

- **Leak from engine/pylon not confirmed or leak not located:**

  CM | FUEL X FEED. . . . . **MAINTAIN CLOSED**
  This ensures the leak does not affect both sides.

CM | CTR TK L XFR. . . . . **OFF**

CM | CTR TK R XFR. . . . . **OFF**

CM | INNER TANK FUEL QUANTITIES. . . . . **MONITOR**

- **If one wing tank depletes faster than other by at least 300 kg (660 lb) in less than 30 min:**

  CM | THR LEVER (ENGINE ON LEAKING SIDE) . . . . **IDLE**

  CM | ENG MASTER (ENGINE ON LEAKING SIDE) . . . . **OFF**

  CM | FUEL LEAK. . . . . **MONITOR**

  - **If leak stops:**

    ENGINE LEAK CONFIRMED

    CM | CTR TK L XFR. . . . . **ON**

    CM | CTR TK R XFR. . . . . **ON**

    CM | FUEL X FEED. . . . . **AS REQUIRED**

    DO NOT RESTART AFFECTED ENGINE

  - **If leak continues (after engine shutdown):**

    WING LEAK SUSPECTED

    CM | ENGINE RESTART. . . . . **CONSIDER**

    CM | CTR TK XFR (NON-LEAKING SIDE) . . . . **ON**
    It is recommended to not apply the FUEL IMBALANCE procedure.

- **If both wing tanks deplete at a similar rate:**

  LEAK FROM CENTER TANK OF APU FEEDING LINE SUSPECTED

  - **If fuel smell in cabin:**

    CM | APU. . . . . **OFF**

  - **When fuel quantity in one wing tank less than 3 000 kg (6 600 lb):**

    CM | CTR TK L XFR. . . . . **ON**

CM | CTR TK R XFR. . . . . **ON**

- **For landing:**

  DO NOT USE REVERSERS

FWD ACT ISOLATED

It is not recommended to apply this procedure if the aircraft is in ELEC EMER config.

- **If no ENG 1(2) FAIL alert:**

  CM | FWD ACT. . . . . **OVRD**
  The FWD ACT was isolated due to spurious damage detection.

- **If ENG 1(2) FAIL alert and FWD ACT not empty:**

  CM | ACT XFR. . . . . **OFF**

  CM | ACT XFR MODE SEL. . . . . **MAN**

  CM | CTR TK L XFR. . . . . **OFF**

  CM | CTR TK R XFR. . . . . **OFF**
  Be aware that the use of wing tank fuel will modify the CG. Try to keep the CG within limits.

  CM | MAXIMUM FLIGHT TIME. . . . . **120 MINUTES**

- **If ENG 1(2) FAIL alert and FWD ACT empty or not installed:**

  CM | ACT TRANSFER. . . . . **CONTROL MANUALLY**

GRAVITY FUEL FEEDING

CM | ENG MODE SEL. . . . . **IGN**

CM | MAX FL. . . . . **DETERMINE**

- Current FL if flight time above FL300 > 30 min.
- FL 280 if flight time above FL300 <30 min.
- FL 150 is FL 300 never exceeded.

- **When reaching gravity feed ceiling:**

  CM | FUEL X FEED. . . . . **OFF**

- **If no fuel leak and with one engine running (fed by gravity):**

  CM | FUEL X FEED. . . . . **ON**

PF | BANK ANGLE. **1° WING DOWN ON LIVE ENG SIDE**

PF | RUDDER TRIM. . . . . **USE**
It is recommended to use the rudder trim to maintain a constant course and keep the sidestick neutral.

- **When fuel imbalance reaches 1 000 kg (2 200 lb):**

  PF | BANK ANGLE. . . . . . 2° OR 3° WING DOWN ON LIVE ENG SIDE
  This uses the fuel from the opposite wing tank. Keep the bank angle until the fuel imbalance is reduced to 0.

FUEL OVERREAD

CM | FUEL OVERREAD. . . . . **AWARE**
The fuel quantity is unreliable, however, the FUEL LO LVL alerts remain reliable.

FUEL ACT PUMP LO PR

The ACT pump pressure is low.
ECAM: INOP SYS – ACT PUMP

CM | ACT. . . . . **AUTO**

FUEL ACT SYSTEM FAULT

A ACT valve is in the wrong position.

CM | ACT SYSTEM FAULT. . . . . **APPLY**

FUEL ACT XFR FAULT

The ACT fuel quantity is over 250 kg, and the center tank fuel quantity is below 3 000 kg.
ECAM: INOP SYS – ACT XFR

CM | ACT. . . . . **FWD**

CM | FL270. . . . . **AS REQUIRED**

- **When the ACT is empty:**

  CM | ACT. . . . .**AUTO**
- **If the aircraft is equipped with 2 ACT**

  CM | ACT UNUSABLE PROC. . . . . **APPLY**

FUEL ACT PUMP LO PR

The additional center tank fuel pump is in low pressure.

CM | ACT. . . . .**OFF**

FUEL APU LP VALVE FAULT

The APU valve position is not the selected position.

CM | FUEL APU LP VALVE FAULT. . . . . **AWARE**

FUEL AUTO FEED FAULT

The center tank fuel quantity is greater than 250 kg and the left or right tank fuel quantity is lower than 5 000 kg, and the center tank pumps does not stop after the slats are extended, or the center tank fuel level is low.

CM | FUEL MODE SEL. . . . . **MAN**

- **There is fuel in one wing tank below 5 000 kg, and in the center tank is above 250 kg.**

  CM | CTR TK PUMP 1. . . . . **ON**

  CM | CTR TK PUMP 2. . . . . **ON**

- **The center tank pumps runs after the slats extension, or there is a low fuel level in center tank:**

  CM | CTR TK PUMP 1. . . . . **OFF**

  CM | CTR TK PUMP 2. . . . . **OFF**

FUEL AUTO TRANSFER FAULT

The center tank fuel quantity is above 250 kg, and the left or right wing tank fuel quantity is below 5 000 kg.

ECAM: INOP SYS - CTR TK L(R) XFR

CM | FUEL MODE SEL. . . . . **MAN**

CM | CTR TK L XFR. . . . . **ON**

CM | CTR TK R XFR. . . . .**ON**

FUEL CTR L(R) XFR FAULT

The center transfer valves are failed in the open position.

ECAM: INOP SYS - CTR TK L(R) XFR

CM | CTR TK L(R) XFR. . . . .**OFF**

- **If turning off the center tank transfer is unsuccessful, and the center tank is not empty:**

  CM | FUEL X FEED. . . . . **ON**

  CM | L(R) TK PUMP 1. . . . . **OFF**

  CM | L(R) TK PUMP 2. . . . . **OFF**

- **When the center tank is empty:**

  CM | L(R) TK PUMP 1. . . . . **ON**

  CM | L(R) TK PUMP 2. . . . . **ON**

  CM | FUEL X FEED. . . . . **OFF**

FUEL CTR L(R) XFR FAULT

The center transfer valves are failed in the closed position.

ECAM: INOP SYS - CTR TK L(R) XFR

CM | FUEL MODE SEL. . . . . **MAN**

- **If the fuel mode selection to manual is unsuccessful, and the center tank is not empty:**

  CM | FUEL X FEED. . . . . **ON**

  CM | L(R) TK PUMP 1. . . . . **OFF**

  CM | L(R) TK PUMP 2. . . . . **OFF**

- **When the center tank is empty:**

  CM | L(R) TK PUMP 1. . . . . **ON**

  CM | L(R) TK PUMP 2. . . . . **ON**

  CM | FUEL X FEED. . . . . **OFF**

FUEL CTR L + R XFR FAULT

The center transfer valves are failed in the open position.

ECAM: INOP SYS - CTR TK XFR

CM | CTR TK L XFR. . . . . **OFF**

CM | CTR TK R XFR. . . . .**OFF**

FUEL CTR L + R XFR FAULT

The center transfer valves are failed in the closed position.
ECAM: INOP SYS – CTR TK XFR

CM | FUEL MODE SEL. . . . . **MAN**

- **If the fuel mode selection to manual is unsuccessful:**

  CM | FUEL MODE SEL. . . . . **BY GRAVITY**

Note	Only 2 tons of fuel will be useable.

FUEL CTR TK PUMP 1(2) LO PR

The associated center tank fuel pump pressure is low.
ECAM: INOP SYS – CTR TK PUMP 1(2)

- **If there is no fuel leak:**

  CM | FUEL X FEED. . . . . **ON**

CM | AFFECTED CTRK TK PUMP. . . . .**OFF**

- **When the center tank is empty:**

  CM | FUEL X FEED. . . . . **OFF**

FUEL CTR TK PUMPS LO PR

The center tank pump pressure is low.
ECAM: INOP SYS – CTR TK PUMPS

CM | FUEL MODE SEL. . . . . **MAN**

CM | CTR TK PUMP 1. . . . .**OFF**

CM | CTR TK PUMP 2. . . . .**OFF**

CM | FUEL X FEED. . . . .**OFF**

FUEL CTR TK PUMPS OFF

The CTR TK PUMP 1 and CTR TK PUMP 2 are in the OFF position, with no failure.

CM | CTR TK PUMP 1. . . . .**ON**

CM | CTR TK PUMP 2. . . . .**ON**

FUEL CTR TK XFR OFF

The CTR TK L XFR and CTR TK R XFR are off, and the system is in automatic mode.

CM | CTR TK L XFR. . . . . **ON**

CM | CTR TK R XFR. . . . .**ON**

FUEL ENG 1(2) LP VALVE OPEN

The corresponding valve is in the open position.

CM | FUEL ENG 1(2) LP VALVE OPEN. . . . .**AWARE**

FUEL F. USED/FOB DISAGREE

A difference was detected in the initial FOB and the actual FOB, and the fuel used is significant.

- **If the current FOB and FUEL USED is more than the initial FOB:**

  CM | OVERREAD PROC. . . . .**APPLY**

- **If the current FOB and FUEL USED is less than initial FOB:**

  CM | FUEL LEAK PROC. . . . . **APPLY**

FUEL FQI CH 1(2) FAULT

A FQI channel has failed.

CM | FUEL FQI CH 1(2) FAULT. . . . . **AWARE**

FUEL FWD ACT ISOLATED

There is damage detected in the forward ACT transfer.

CM | FUEL FWD ACT ISOLATED. . . . . **AWARE**

CM | TO CONTINUE WHEN QRH ACCESSIBLE

FUEL FWD ACT LINE FAULT

The FWD ACT isolation valve as failed on ground, or the FWD ACT inlet valve has failed on ground.

CM | FUEL FWD ACT LINE FAULT. . . . . **AWARE**

FUEL IDG 1(2) COOL FAULT

The fuel recirculation command system has failed.

CM | FUEL IDG 1(2) COOL FAULT. . . . . **AWARE**

FUEL FUEL INERTING SYS FAULT

The fuel inerting system has failed.
ECAM: INOP SYS – FUEL INERT

CM | FUEL FUEL INERTING SYS FAULT. . . . . **AWARE**

FUEL L(R) OUTER (INNER) TK HI TEMP

The fuel temperature is above 60°C in the outer cell, or the fuel temperature is above 54°C in the inner cell.

CM | AFFECTED SIDE GEN. . . . . **OFF**

- **If the alert is on the ground:**

  CM | TAKEOFF. . . . . **DELAY**

  CM | AFFECTED SIDE ENGINE MASTER. . . . . **OFF**

- **If the alert is in the flight:**

  CM | AFFECTED SIDE ENGINE FUEL FLOW. . . . . **INCREASE**

  - **If the temperature is above 65 °C in the outer cell or above 57°C in the inner cell:**

    CM | APU. . . . . **AS REQUIRED**

    - **If the opposite GEN is available:**

      CM | AFFECTED SIDE IDG. . . . . **OFF**

FUEL L(R) OUTER (INNER) TK LO TEMP

The fuel temperature of the corresponding tank is below -43°C.

- **If the alert is on the ground:**

  CM | TAKEOFF. . . . . **DELAY**
  It is recommended to wait until the temperature is within the normal operating limits.

- **If the alert in in flight:**

  CM | FUEL L(R) OUTER (INNER) TK LO TEMP. **AWARE**

FUEL L(R) OUTER XFR CLOSED

The inner tank is at a low level, and both transfer valve are closed.

CM | FUEL L(R) OUTER XFR CLOSED. . . . . **AWARE**
The outer tank fuel will be unusable.

FUEL L(R) OUTER XFR OPEN

One inner tank is at a low level, and the transfer valve is open.

ECAM: INOP SYS – L(R) CELL VALVE

CM | FUEL L(R) OUTER XFR OPEN. . . . . **AWARE**

FUEL L(R) TK PUMP 1(2) LO PR

The pressure of one tank pump is low.

ECAM: INOP SYS – AFFECTED TK PUMPS

CM | TK PUMP (AFFECTED). . . . . **OFF**

FUEL L(R) TK PUMP 1 + 2 LO PR

The tank pump pressure is low, and the center tank is empty

ECAM: INOP SYS – AFFECTED TK PUMPS

- **If there is no fuel leak:**
  - **If above FL150:**

    CM | FUEL X FEED. . . . .**ON**

  CM | ENG MODE SEL. . . . .**IGN**

  CM | AFFECTED TK PUMP 1. . . . . **OFF**

  CM | AFFECTED TK PUMP 2. . . . . **OFF**

- **When the affected TK fuel required:**

  CM | AFFECTED TK FEED. . . . . **GRVTY ONLY**

- **If below FL150:**

  CM | FUEL X FEED. . . . . **OFF**

- **If the fuel X FEED is off:**

  CM | AFFECTED TK FEED. . . . . **GRVTY ONLY**

FUEL L(R) TK PUMP 1 + 2 LO PR

The tank pump pressure is low, and the center tank is not empty.

ECAM: INOP SYS – AFFECTED TK PUMPS

CM | FUEL MODE SEL. . . . . **MAN**

CM | AFFECTED TK PUMP 1. . . . .**OFF**

CM | AFFECTED TK PUMP 2. . . . .**OFF**

CM | AFFECTED TK FEED. . . . .**GRVTY ONLY**

It is recommended to follow the procedure associated with the gravity fuel feeding.

FUEL L(R) WING TK HI TEMP

The fuel temperature is below above 45° C on ground or 54°C in flight.

CM | AFFECTED SIDE GEN. . . . .**OFF**

- **If the alert is on the ground:**

  CM | TAKEOFF. . . . . **DELAY**

  CM | AFFECTED SIDE ENGINE MASTER. . . . . **OFF**

- **If the alert is in flight:**

  CM | AFFECTED SIDE ENGINE FUEL FLOW. . . . .**INCREASE**

  - **If the temperature is above 57°C:**

    CM | APU. . . . .**AS REQUIRED**

    - **If the opposite GEN is available:**

      CM | AFFECTED SIDE IDG. . . . . **OFF**

FUEL L(R) WING TK LO LEVEL

The left or right wing tank contains less than 750 kg of fuel.

ECAM: INOP SYS – TK PUMPS

- **If the center tank is not empty:**

  CM | FUEL MODE SEL. . . . . **MAN**

- **If there is no fuel leak:**

  CM | FUEL X FEED. . . . . **ON**

  CM | L(R) TK PUMP 1. . . . . **OFF**

  CM | L(R) TK PUMP 2. . . . . **OFF**

FUEL L+R WING TK LO LVL

The low-level sensor detected a low level of fuel in both wing tanks.

LAND ASAP

CM | FUEL MODE SEL. . . . . **MAN**

CM | ALL TK PUMP. . . . . **ON**

CM | CTR TK L+R XFR. . . . . **ON**

- **If there is no fuel leak:**

  CM | FUEL X FEED. . . . . **ON**

- **If there the fuel feed is via gravity:**

  CM | FUEL FEED. . . . . **OFF**

FUEL L(R) WING TK LO TEMP

The fuel temperature is below -44°C.

- **If the aircraft is still on the ground:**

  CM | TAKEOFF. . . . . **DELAY**

- **If the aircraft is in flight:**

  CM | FUEL L(R) WING TK LO TEMP. . . . . **AWARE**

FUEL L(R) WING TK OVERFLOW

An overflow of the corresponding tank is detected.
ECAM: INOP SYS – CTR TK L(R) XFR

CM | CTR TK L (R) XFR. . . . . **OFF**

CM | ALL ACT. . . . . **ISOL**

- **If the procedure has not succeeded, and the center tank is not empty:**

  CM | FUEL X FEED. . . . . **ON**

  CM | L (R) TK PUMP 1. . . . . **OFF**

  CM | L (R) TK PUMP 2. . . . . **OFF**

- **When the center tank is empty:**

  CM | L (R) TK PUMP 1. . . . . **ON**

  CM | L (R) TK PUMP 2. . . . . **ON**

  CM | FUEL X FEED. . . . .**OFF**

Note	It is expected to have a fuel imbalance.

FUEL LO LVL DET FAULT

The low level sensors has failed.

CM | FUEL LO LVL DET FAULT. . . . .**AWARE**

FUEL X FEED VALVE FAULT

The fuel X FEED valve position disagree with the selected position.

ECAM: INOP SYS – FUEL X-FEED

CM | FUEL X FEED VALVE FAULT. . . . . **AWARE**

It is recommended to land as soon as possible if the fuel balance is not acceptable.

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Flight Warning System

FWS FWC 1 + 2 FAULT

The FWC 1 and FWC 2 has failed, or the communication between the FWC and EIS has interrupted.

ECAM: INOP SYS – CAT2
NOT AVAIL – ECAM WARN; ALTI ALERT; STATUS; A/CALL OUT; MEMO

CM **|** SYSTEM. . . . . **MONITOR**

CM **|** OVERHEAD PANEL. . . . . **MONITOR**

FWS FWC 1(2) FAULT

The FWC 1 or FWC 2 has failed

ECAM: INOP SYS – CAT 3 DUAL; FWC 1(2)

CM **|** FWS FWC 1(2) FAULT. . . . . **AWARE**

FWS OEB/FWC DISCREPANCY

The FWC 1 and FWC 2 has different OEB in their database.

CM **|** OEB DATABASE. . . . . **CROSSCHECK**

FWS SDAC 1+2 FAULT

The SDAC 1 and 2 has failed.

ECAM: INOP SYS – SDAC 1+2

CM **|** OVERHEAD PANEL. . . . . **MONITOR**
Some amber cautions won't appear, the aircraft status page will not be accurate, and all red warnings, engine and fuel parameters, and slat/flaps position will be available on the upper ECAM display.

FWS SDAC 1(2) FAULT

The SDAC 1 or 2 has failed.

ECAM: INOP SYS – SDAC 1(2)

CM **|** FWS SDAC 1(2) FAULT. . . . . **AWARE**

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Hydraulics

HYD B ELEC PUMP LO PR OR OVHT
The blue pump outlet pressure is below 1 450 PSI, or the blue electric pump is overheating.
ECAM: INOP SYS – BLUE HYD; SPLR 3; CAT 3 DUAL; B ELEC PUMP; STEEP APPR; SECONDARY FAILURE – F/CTL

CM | BLUE ELEC PUMP. . . . .**OFF**

- **Approach procedures**
  - **If the blue electric pump has stopped overheating:**

    CM | BLUE ELEC PUMP. . . . . **AUTO**

  CM | LDG DIST PROC. . . . .**APPLY**

Note	The FMS prediction function might not be accurate
	The slats extension might be slower than usual.
	Only CAT 3 single will be available.

HYD B RSVR LO AIR PR
The blue hydraulic reservoir air pressure is less than 22 PSI.
ECAM: INOP SYS – BLUE HYD; SPLR 3; CAT 3 DUAL; B ELEC PUMP; STEEP APPR; SECONDARY FAILURE – F/CTL

- **If the pressure fluctuates:**

  CM | BLUE ELEC PUMP. . . . . **OFF**

- **Approach procedures:**

  CM | BLUE ELEC PUMP. . . . .**AUTO**

  - **If the pressure has not recovered:**

    CM | LDG DIST PROC. . . . . **APPLY**

Note	The FMS prediction function might not be accurate
	The slats extension might be slower than usual.
	Only CAT 3 single will be available.

HYD B RSVR LO LVL
The blue hydraulic system fluid quantity is less than 2.4 liters.
ECAM: INOP SYS – BLUE HYD; SPLR 3; CAT 3 DUAL; EMER GEN; B ELEC PUMP; STEEP APPR; SECONDARY FAILURE – F/CTL

CM | BLUE ELEC PUMP. . . . .**OFF**

CM | LDG DIST PROC. . . . . APPLY

Note	The FMS prediction function might not be accurate
	The slats extension might be slower than usual.
	Only CAT 3 single will be available.

HYD B RSVR OVHT
The temperature of the blue system fluid is at or above 93°C.
ECAM: INOP SYS – BLUE HYD; SPLR 3; CAT 3 DUAL; B ELEC PUMP; STEEP APPR SECONDARY FAILURE – F/CTL;

CM | BLUE ELEC PUMP. . . . .**OFF**

- **Approach procedures**
  - **If the blue overheat is out:**

    CM | BLUE ELEC PUMP. . . . . **AUTO**

  - **If the blue hydraulic reservoir is still overheating:**

    CM | LDG DIST PROC. . . . . **APPLY**

Note	The FMS prediction function might not be accurate
	The slats extension might be slower than usual.
	Only CAT 3 single will be available.

HYD G ENG 1 PUMP LO PR
The green pump outlet pressure is less than 1 750 PSI and the PTU is operative.
ECAM: INOP SYS – G ENG 1 PUMP

CM | GREEN ENG 1 PUMP. . . . . **OFF**

HYD G ENG 1 PUMP LO PR
The green pump outlet pressure is less than 1 750 PSI and the PTU is inoperative.
ECAM: INOP SYS - GREEN HYD; SPLR 1+5; CAT 3 DUAL; AUTO BRK; NORM BRK; L/G RETRACT; REVERSER 1; PTU; G ENG 1 PUMP; YAW DAMPER 1; SECONDARY FAILURE – F/CTL; WHEEL

CM | GREEN ENG 1 PUMP. . . . . **OFF**

CM | LANDING GEAR. . . . . **USE GRAVITY EXTENSION**

CM | LDG DIST PROC. . . . .**APPLY**

Note	The flaps extension might be slower than usual.
	Only CAT 3 SINGLE will be available.

HYD G RSVR LO AIR PR
The green hydraulic system air reservoir air pressure is at or less than 22 PSI.
ECAM: INOP SYS - GREEN HYD; SPLR 1+5; CAT 3 DUAL; AUTO BRK; NORM BRK; L/G RETRACT; REVERSER 1; YAW DAMPER 1; SECONDARY FAILURE – F/CTL; WHEEL

- **If the pressure fluctuates:**

  CM | PTU. . . . . **OFF**

  CM | GREEN ENG 1 PUMP. . . . .**OFF**

- **Approach procedures**

  CM | GREEN ENG 1 PUMP. . . . .**ON**

  - **If the pressure has not recovered:**

    CM | LANDING GEAR. . . . . **USE GRAVITY EXTENSION**

    CM | LDG DIST PROC. . . . . **APPLY**

Note	The FMS prediction function might not be accurate.
	The flaps extension might be slower than usual.
	Only CAT 3 SINGLE will be available.
	The alternate yellow braking system with anti skid will be in use.

HYD G RSVR LO LVL
The green hydraulic system fluid quantity is less than 3.5 liters.
ECAM: INOP SYS - GREEN HYD; SPLR 1+5; CAT 3 DUAL; AUTO BRK; NORM BRK; L/G RETRACT; REVERSER 1; YAW DAMPER 1; SECONDARY FAILURE – F/CTL; WHEEL

CM | PTU. . . . .**OFF**

CM | GREEN ENG 1 PUMP. . . . . **OFF**

CM | LANDING GEAR. . . . . **USE GRAVITY EXTENSION**

CM | LDG DIST PROC. . . . .**APPLY**

Note	The FMS prediction function might not be accurate.
	The flaps extension might be slower than usual.
	Only CAT 3 SINGLE will be available.
	The alternate yellow braking system with anti skid will be in use.

HYD G RSVR OVHT
The temperature of the green system fluid is at or above 98°C.
ECAM: INOP SYS – GREEN HYD; SPLR 1+5; CAT 3 DUAL; AUTO BRK; NORM BRK; L/G RETRACT; REVERSER 1; YAW DAMPER 1; SECONDARY FAILURE – F/CTL; WHEEL

CM | PTU. . . . .**OFF**

CM | GREEN ENG 1 PUMP. . . . . **OFF**

- **Approach procedures**
  - **If the green hydraulic reservoir has stop overheating:**

    CM | GREEN ENG 1 PUMP. . . . . **ON**

  - **If the green hydraulic is still overheating:**

    CM | LANDING GEAR. . . . . **USE GRAVITY EXTENSION**

    CM | LDG DIST PROC. . . . . **APPLY**

Note	The FMS prediction function might not be accurate.
	The flaps extension might be slower than usual.
	Only CAT 3 SINGLE will be available.
	The alternate yellow braking system with anti skid will be in use.

HYD Y ELEC PUMP LO PR OR OVHT

The yellow system pressure is less than 1 450 PSI and the Y ELEC PUMP pushbutton is set to ON, and the Y ENG PUMP and PTU is not available, or the yellow electric pump is overheating.

ECAM: INOP SYS – YELLOW HYD; SPLR 2+4; CAT 3 DUAL; N/W STRG; REVERSER 2; Y ELEC PUMP; YAW DAMPER 2; STEEP APPR;
SECONDARY FAILURES – F/CTL

CM | YELLOW ELEC PUMP. . . . .**OFF**

CM | BRK Y ACCU PR. . . . . **MONITOR**

- **Approach procedures**
  - **If the yellow electrical pump has stopped overheating:**

    CM | YELLOW ENG 2 PUMP. . . . . **ON**

    CM | PTU. . . . . **AUTO**

CM | LDG DIST PROC. . . . .**APPLY**

Note	
	The FMS prediction function might not be accurate.
	The flaps extension might be slower than usual.

HYD Y ENG 2 PUMP LO PR

The yellow pump outlet pressure is less than 1 750 PSI and the PTU is operative.

ECAM: INOP SYS – Y ENG 2 PUMP

CM | YELLOW ENG 2 PUMP. . . . . **OFF**

HYD Y ENG 2 PUMP LO PR

The yellow pump outlet pressure is less than 1 750 PSI and the PTU is inoperative.

ECAM: INOP SYS - YELLOW HYD; SPLR 2+4; CAT 3 DUAL; N/W STRG; REVERSER 2; PTU; Y ENG 2 PUMP; YAW DAMPER 2; STEEP APPR
SECONDARY FAILURE – F/CTL

CM | YELLOW ENG 2 PUMP. . . . . **OFF**

CM | LDG DIST PROC. . . . .**APPLY**

Note	The flaps extension might be slower than usual.

HYD Y RSVR LO AIR PR
The yellow hydraulic system air reservoir air pressure is at or less than 22 PSI.
ECAM: INOP SYS - YELLOW HYD; SPLR 2+4; CAT 3 DUAL; REVERSER 2; YAW DAMPER 2; SECONDARY FAILURE – F/CTL

- **If the pressure fluctuates:**

  CM | PTU. . . . . **OFF**

  CM | YELLOW ENG 2 PUMP. . . . . **OFF**

  CM | YELLOW ELEC PUMP. . . . . **OFF**

  CM | BRK Y ACCU PR. . . . . **MONITOR**

- **Approach procedures**

  CM | YELLOW ENG 2 PUMP. . . . . **ON**

  - **If the air pressure has not recovered:**

    CM | LDG DIST PROC. . . . . **APPLY**

Note	The FMS prediction function might not be accurate.
	The flaps extension might be slower than usual.

HYD Y RSVR LO LVL
The yellow hydraulic system fluid quantity is less than 3.5 liters.
ECAM: INOP SYS - YELLOW HYD; SPLR 2+4; CAT 3 DUAL; N/W STRG; REVERSER 2; CARGO DOOR; YAW DAMPER 2; STEEP APPR; SECONDARY FAILURE – F/CTL

CM | PTU. . . . . **OFF**

CM | YELLOW ENG 2 PUMP. . . . . **OFF**

CM | YELLOW ELEC PUMP. . . . . **OFF**

CM | BRK Y ACCU PR. . . . . **MONITOR**

CM | LDG DIST PROC. . . . . **APPLY**

HYD Y RSVR OVHT

The temperature of the yellow system fluid is at or above 98°C.

ECAM: INOP SYS – YELLOW HYD; SPLR 2+4; CAT 3 DUAL; N/W STRG; REVERSER 2; YAW DAMPER 2; STEEP APPR;
SECONDARY FAILURE – F/CTL

CM | PTU. . . . . **OFF**

CM | YELLOW ENG 2 PUMP. . . . . **OFF**

CM | YELLOW ELEC PUMP. . . . . **OFF**

CM | BRK Y ACCU PR. . . . . **MONITOR**

- **Approach procedures**
  - **If the yellow overheat warning is out:**

    CM | YELLOW ENG 2 PUMP. . . . . **ON**

  - **If the yellow system is still overheating:**

    CM | LDG DIST PROC. . . . . **APPLY**

HYD B+Y SYS LO PR

The blue and yellow system pressure is lower or equal to 1 450 PSI.

ECAM: INOP SYS – B+Y HYD; R ELEV; SPLR 2+3+4; SPD BRK; AP 1+2; N/W STRG; CARGO DOOR; REVERSER 2; B ELEC PUMP; EMER GEN; YAW DAMPER 2; CAT 2; GLS AUTOLAND

LAND ASAP

- **If yellow sys lost by ENG 2 PUMP LO PR:**

  CM | YELLOW ELEC PUMP. . . . . **ON**

- **If blue sys lost by ELEC PUMP LO PR:**

  CM | RAT. . . . . **MAN ON**

  CM | MIN RAT SPD. . . . . **140 KT**

CM | AFFECTED PUMPS. . . . . **OFF**

CM | MIN RAT SPD. . . . . **140 KT**

CM | MAX SPEED. **320/0.77**

CM | THR LVR. . . . . **TOGA THEN MCT**

Approach Procedure

- **If sys lost by RSVR LO AIR PR:**

  CM | RELATED PUMP. . . . . **ON**

- **If sys lost by RSVR OVHT:**
  - **If BLUE OVHT out:**

    CM | BLUE ELEC PUMP. . . . . **AUTO**

  - **If BLUE OVHT out:**

    CM | YELLOW ENG 2 PUMP. . . . . **ON**

- If HYD not recovered:

  CM | FOR LDG. . . . . **USE FLAP 3**

  CM | GPWS LDG FLAP 3. . . . . **ON**

  CM | L/G. . . . . **GRVTY EXTN**

  CM | APPR SPD. . . . . **VREF + 25 KT**

  CM | LDG DIST PROC. . . . . **APPLY**
  The fuel consumption will increase, the slats and flaps extension will be slow, and the FMS predictions are unreliable.

HYD G+B SYS LO PR
The green and blue system pressure is lower or equal to 1 450 PSI.
ECAM: INOP SYS – G+B HYD; F/CTL PROT; L ELEV; L+R AIL; SPLR 1+3+5; SLATS; AP 1+2; AUTO BRK; NORM BRK; L/G RETRACT; REVERSER 1; EMER GEN (IF B RSVR LO LVL); G ENG 1 PUMP; B ELEC PUMP; YAW DAMPER 1; CAT 2; GLS AUTOLAND

- **If blue sys lost by ELEC PUMP LO PR:**

  CM | RAT. . . . . **MAN ON**

  CM | MIN RAT SPD. . . . . **140 KT**

CM | AFFECTED PUMPS. . . . . **OFF**

CM | THR LVR. . . . . **TOGA THEN MCT**
The fuel consumption will increase, and the FMS prediction are unreliable.

Approach Procedure:

- **If sys lost by RSVR LO AIR PR:**

  CM | RELATED PUMPS. . . . . **ON**

- **If sys lost by RSVR OVHT:**
  - **If BLUE OVHT out:**

    CM | BLUE ELEC PUMP. . . . . **AUTO**

  - **If GREEN OVHT out:**

    CM | GREEN ENG 1 PUMP. . . . . **ON**

- **If HYD NOT RECOVERED:**

  CM | S/F JAMMED PROC. . . . . **APPLY**

  CM | A/THR. . . . . **OFF**

  CM | FOR LDG. . . . . **USE FLAP 3**

  CM | GPWS LDG FLAP 3. . . . . **ON**

  - **When SPD 200 KT**

    CM | L/G. . . . . **GRVTY EXTN**

  CM | APPR SPD. . . . . **VREF + 30 KT**

  CM | LDG DIST PROC. . . . . **APPLY**

HYD G+Y SYS LO PR
The green and yellow system pressure is lower or equal to 1 450 PSI.
ECAM: INOP SYS – G+Y HYD; F/CTL PROT; STABILIZER; REVERSER 1+2; SPLR 1+2+4+4; FLAPS; YAW DAMPER; AP 1+2; ANTI SKID; N/W STRG; NORM BRK; AUTO BRK; L/G RETRACT; CARGO DOOR; CAT 2; GLS AUTOLAND

LAND ASAP

CM | PTU. . . . . **OFF**

CM | AFFECTED PUMPS . . . . **OFF**

- **If yellow sys lost by ENG 2 PUMP LO PR:**

  CM | YELLOW ELEC PUMP. . . . . **ON**

PF | MANEUVER WITH CARE

PF | THR LVR. . . . . **TOGA THEN MCT**
The fuel consumption has increased, and the FMS prediction is unreliable.

Approach Procedure

- **If sys lost by RSVR LO AIR PR:**

  CM | RELATED PUMP. . . . . **ON**

- **If sys lost by RSVR OVHT:**
  - **If GREEN OVHT out:**

    CM | GREEN ENG 1 PUMP. . . . . **ON**

  - **If YELLOW OVHT out:**

    CM | YELLOW ENG 2 PUMP. . . . . **ON**

- **If HYD NOT RECOVERED**

  CM | S/F JAMMED PROC. . . . . **APPLY**

  CM | FOR LDG. . . . . **USE FLAP 3**

  CM | GPWS FLAP MODE. . . . . **OFF**

  - **When CONG 3 and VAPP:**

    CM | L/G. . . . . **GRVTY EXTN**

  CM | APPR SPD. . . . . **VREF +30 KT**

  CM | LDG DIST PROC. . . . . **APPLY**

HYD PTU FAULT
The differential pressure on ground is greater than 650 PSI between the system and the yellow or green system, or the PTU does not run in flight when the green or yellow reservoir is at a low level or their system pressures are low.
ECAM: INOP SYS – PTU

- **If the green or yellow reservoir is at a low level and the system is at a low pressure:**

  CM | PTU. . . . . **OFF**

HYD RAT FAULT
The Ram Air Turbine is not fully stowed, or the pressure is present in the RAT stowing actuator, or the RAT pump is unavailable.
ECAM:

CM **|** HYD RAT FAULT. . . . . **AWARE**

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Landing Gear

LANDING WITH ABNORMAL L/G

This procedure is used when the nose or main landing gear fails to extend and/or lock down following the application of the L/G GRAVITY EXTENSION procedure.

CM | CABIN CREW. . . . . **NOTIFY**

PM | ATC. . . . . **NOTIFY**

CM | GALY & CAB. . . . . **OFF**

- **If NOSE L/G abnormal:**

  SHIFT CG AFT IF POSSIBLE :

  - 10 pax from front to rear moves the CG by around 4% aft.
  - 10 pax from mid to rear moves the CG by around 2.5% aft.

- **If one MAIN L/G abnormal:**

  CM | FUEL DISTRIBUTION. . . . . **CONSIDER**

CM | OXYGEN CREW SUPPLY. . . . . **OFF**

CM | SIGNS. . . . . **ON**

CM | CABIN and COCKPIT (LOOSE EQPT) . . . . **SECURE**

- **For approach:**

  CM | GPWS SYS. . . . . **OFF**

  CM | L/G lever. . . . . **VERIFY DOWN**

  CM | GRVTY GEAR EXTN handcrank. . . . . **TURN BACK TO NORMAL**

  CM | AUTOBRAKE. . . . . **DO NOT ARM**

  CM | EMER EXIT LT. . . . . **ON**

  CM | CABIN REPORT. . . . . **OBTAIN**

  CM | A/SKID & N/W STRG. . . . . **OFF**

  CM | MAX BRAKE PR: 1 000 PSI

- **If one or both MAIN L/G abnormal:**

  CM | GND SPLR. . . . . **DO NOT ARM**

CM | RAM AIR. . . . . **ON**
This ensures the full depressurization of the aircraft before impact.

CM | DOME LT. . . . . **DIM**
It is recommended to set the dome light to DIM to ensure a light source after both engine are shut down.

- **At 500 feet AGL:**

CM | BRACE FOR IMPACT. . . . . **ORDER**

- **At flare: touchdown and rollout**

DO NOT USE REVERSE THRUST

- **If NOSE L/G abnormal:**

  KEEP NOSE UP, THEN SMOOTHLY LOWER THE NOSE

  CM | 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 AS MUCH AS POSSIBLE

- **If both MAIN L/G abnormal:**

  DURING FLARE: ALL ENG MASTERS OFF

  MIN PITCH ATT: 6°

- **When aircraft stopped:**

  CM | PARK BRK. . . . . **ON**

  CM | ALL FIRE pushbutton (ENGs & APU) . . . . **PUSH**

  CM | ALL AGENT (ENGs & APU) . . . . **DISCH**

- **If evacuation is required:**

  CM | EVACUATION. . . . . **EXECUTE**

- **If evacuation is not required:**

  CM | CABIN CREW AND PASSENGERS (PA) . . . . **NOTIFY**

L/G GRAVITY EXTENSION

CM | GRAVITY GEAR EXTN handcrank. . . . . **PULL AND TURN**

CM | L/G lever. . . . . **DOWN**
This action reduces the risk of landing gear retraction on ground.

CM | GEAR DOWN indications. . . . . **VERIFY**

- **If successful:**

  CM | DO NOT RESET LDG GEAR GRVTY EXTN

- **If unsuccessful:**

  CM | LDG WITH ABNORMAL L/G PROC. . . . . **APPLY**

L/G DOORS NOT CLOSED

One of the landing gear door is not locked in the up position.
ECAM: INOP SYS – L/G DOOR

- **If the landing gear lever is in the up position:**

  CM | LANDING GEAR LEVER. . . . .**RECYCLE**

Note	Move the landing gear lever to the down position, then ensure that the landing gear is down, and the door are closed. Then move the landing gear lever to the up position.

- **If the landing gear recycle is not successful**:

  CM | MAX SPEED. . . . . **ACKNOWLEDGE 250 KNOTS**

Note	The fuel consumption will increase, and the FMS prediction function might not be accurate.

L/G GEAR NOT DOWN
The landing gear is not downlocked and the radio height is lower than 750 ft, and both engines N1 are lower than 75%, or the landing gear is not downlocked and the radio height is lower than 750 ft and both engines are not at T.O power and flaps at 1,2,3 or FULL.

CM | L/G GEAR NOT DOWN. . . . . **AWARE**

L/G GEAR NOT DOWNLOCKED
One gear is not downlocked and the L/G is selected down.
ECAM: INOP SYS – CAT 3 DUAL

PM | L/G LEVER. . . . . **RECYCLE**

- **If unsuccessful after 120 seconds:**

  CM | L/G. . . . . **GRVTY EXTN**

L/G GEAR NOT UPLOCKED
One is gear is not uplocked and the landing gear is selected up.
ECAM: INOP SYS – L/G RETRACT

- **If the doors are closed:**

  CM | G FACTOR. . . . .**AVOID**

- **If the doors are not closed and there is a shock absorber fault:**

  CM | MAX SPEED. . . . . **ACKNOWLEDGE 220 KNOTS**

  CM | L/G LEVER. . . . .**DOWN**

  CM | MAX SPEED. . . . . **ACKNOWLEDGE 280 KNOTS**

- **If the doors are not closed and there is no shock absorber fault:**

  CM | MAX SPEED. . . . . **ACKNOWLEDGE 220 KNOTS**

  CM | L/G LEVER. . . . .**RECYCLE**

Note	Move the landing gear lever to the down position, then ensure that the landing gear is down, and the door are closed. Then move the landing gear lever to the up position.

- **If the previous procedure is not successful:**

  CM | LANDING GEAR. . . . .**DOWN**

CM | MAX SPEED. . . . .**ACKNOWLEDGE 280 KNOTS**

Note	The fuel consumption might increase, and the FMS prediction might not be accurate.

L/G GEAR UPLOCK FAULT

One gear is uplocked while the selected position is downlocked.

ECAM: INOP SYS – L/G RETRACT

CM | LANDING GEAR. . . . . .KEEP DOWN

CM | MAX SPEED. . . . . ACKNOWLEDGE 280 KNOTS

Note	The fuel consumption will increase, and the FMS prediction will be inaccurate.

L/G LGCIU 1(2) FAULT

The corresponding LGCIU has failed.

ECAM: INOP SYS – LGCIU 1(2); GPWS

- **If the fault is on LGCIU 1:**

  CM | GPWS SYS. . . . . **OFF**

- **If the fault is on LGCIU 2:**

  CM | L/G LGCIU 2 FAULT. . . . . **AWARE**

L/G LGCIU 1+2 FAULT

The LGCIU 1 and LGCIU 2 has failed.

ECAM: INOP SYS – REVERSER 1+2; AP 1+2; CAT 2; A/THR; GLS AUTOLAND; LGCIU 1; LGCIU 2; GPWS; ROW/ROP

CM | LANDING GEAR. . . . . **USE GRAVITY EXTENSION**

CM | GPWS SYS. . . . .**OFF**

- **Approach procedures :**

  CM | FLAPS. . . . .**FLAP 3**

Note	It is recommended to have the engines in the idle thrust.

L/G SHOCK ABSORBER FAULT

There is one shock absorber who has not compressed after landing.

CM | L/G SHOCK ABSORBER FAULT. . . . .**AWARE**

L/G SHOCK ABSORBER FAULT
There is one shock absorber who hasn't extended in flight.
ECAM: INOP SYS – L/G RETRACT

- **If the fault is detected after the landing gear is locked in the up position:**

  CM | L/G SHOCK ABSORBER FAULT. . . . . **AWARE**

- **If the fault is detected when the landing gear is not locked in the up position:**

  CM | MAX SPEED. . . . . **ACKNOWLEDGE 280 KNOTS**

  CM | L/G LEVER. . . . .**DOWN**

Note	The fuel consumption will increase, and the FMS prediction might not be accurate.

L/G SYS DISAGREE
The LGCIU 1 and LGCIU 2 has detected a fault between the landing gear positions.

CM | L/G SYS DISAGREE. . . . . **AWARE**

Miscellaneous

EMER DESCENT

CM | CREW OXY MASK. . . . . **USE**

PM | SIGNS. . . . . **ON**

PF | EMER DESCENT. . . . . **INITIATE**

- **If A/THR is not activated:**

  PF | THR LEVERS. . . . . **IDLE**

PF | SPD BRK. . . . . **FULL**

- **When descent established:**

  PF | SPEED. . . . . **MAX/APPROPRIATE**
  The flight crew may extend the landing gear if deemed necessary.

  - **If structural damage is suspected:**

    PF | MANEUVER WITH CARE

  PM | ENG MODE SEL. . . . . **IGN**

  PM | ATC. . . . . **NOTIFY**
  Notify the ATC with the nature of the emergency, and state intention. It is recommended to communicate the ATC using voice, however, if unavailable, the CPDLC can be used.

  PM | EMER DESCENT (PA) . . . . **ANNOUNCE**
  It is recommended to inform the passenger of the situation in a calm and optimistic way.

  PM | ATC XPDR 7700. . . . . **CONSIDER**
  It is recommended to squawk 7700 unless stated otherwise by the ATC.

  CM | CREW OXY MASK DILUTION. . . . . **NORM**
  It is recommended to set the oxygen diluter to the N position to save oxygen. It is also recommended to minimize the use of the interphone to minimize interference with breathing noise in the oxygen mask.

  CM | MAX FL. . . . . **FL100 / MEA-MORA**

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

    CM | OXYGEN PAX MASK MAN ON. . . . . **PRESS**

STALL RECOVERY

As soon as any stall indication is recognized, apply the following actions:

PF | NOSE DOWN PITCH CONTROL. . . . . **APPLY**
It might be necessary to reduce thrust if there is a lack of pitch down authority.

PF | BANK. . . . . **WING LEVEL**

- **When out of stall (no longer stall indications):**

  PF | THRUST. . . . . **INCREASE SMOOTHLY AS NEEDED**

  PF | SPEEDBRAKES. . . . . **VERIFY RETRACTED**

  PF | FLIGHT PATH. . . . . **RECOVER SMOOTHLY**

  - **If in clean configuration and below 20 000 ft:**

    PM | FLAP 1. . . . . **SELECT**

STALL WARNING AT LIFT-OFF

A spurious stall warning may sound and appear on the PFD in the normal law. This results from a damaged angle of attack probed. Apply the following actions:

PF | THRUST. . . . . **TOGA**

PF | PITCH ATTITUDE. . . . . **15°**

PF | BANK. . . . . **WINGS LEVEL**

Note	When a safe flight path and speed is maintain, and the stall warning continues, it should be considered as spurious.

BOMB ON BOARD

This presumes the bomb is an altitude-sensitive bomb. The goal is to not exceed the cabin altitude value of which the time bomb has been discovered. It is recommended to stay at a differential pressure of 1 PSI, which corresponds to 2 500 ft distance between the aircraft and the cabin altitude. Therefore, the use of manual pressure control is required.

- **If landing and evacuation is possible within 30 min:**

  PM | ATC/COMPANY. . . . . **NOTIFY**

  CM | EVAC. . . . . **PREPARE**

- **If landing and evacuation is not possible with 30 min:**

  PF | AIRCRAFT (IF CLIMBING) . . . . **LEVEL OFF**

  PM | CABIN PRESS MODE SEL. . . . . **MAN**

  CM | CAB ALT. . . . . **MAINTAIN**

  PM | ATC/COMPANY. . . . . **NOTIFY**

  PF | TARGET SPEED. . . . . **LO IAS**
  It is recommended to reduce the speed, as it reduces the consequences of structural damage in case the bomb explodes.

  PF | DESCENT TO CAB ALT + 2 500 FT OR MEA - MORA. . . . . **INITIATE**

  PF | AVOID SHARP MANEUVERS. . . . . **ACKNOWLEDGE**
  This prevents the bombs from moving.

  PM | CAB ALT. . . . . **MAINTAIN CAB ALT**
  Use the MAN V/S CTL selector to maintain the cabin altitude. DO NOT INCREASE the cabin altitude.

  - **When at CAB ALT + 2 500 ft:**

    CM | DIFFERENTIAL PRESSURE. . . . . **MAINTAIN 1 PSI ΔP**

    PM | GALLEY. . . . . **OFF**

    PM | FUEL RESERVES. . . . . .DETERMINE

    - **When bomb secured at the LRBL (Least Risk Bomb Location) or cannot be moved:**

      The Least Risk Bomb Location (LRBL) is the center of the RH aft cabin door.

      PM | EMER EXIT LT. . . . . **ON**

      PM | COMMERCIAL. . . . . **OFF**

    - **If fuel permits:**

      PM | FLAPS. . . . . **AT LEAST CONF 1**

      PM | L/G LEVER (EXCEPT FLIGHT OVER WATER) . . . . . . **DOWN**

    ALWAYS MAINTAIN 1 PSI ΔP during further descent.

- **During approach:**

  PM | CAB PRESS MODE SEL. . . . . **AUTO**
  The CPC will automatically set the cabin altitude to 0 during final approach.

- **When aircraft on ground and stopped in a remote area (if possible):**

  CM | EMER EVAC. . . . . **PERFORM**

Cabin Procedures

If a suspected device is found in the cabin:

WARNING	Never cut or disconnect wires or attempt to gain entry in the internal components of a closed or concealed suspect device. This may result in an explosion if a booby-trapped device is used.
	Do not move the location of the bomb without consulting an aviation explosive security specialist.

CAUTION	The least risk bomb location for the aircraft structure is the center of the RH aft cabin door.

EOD PERSONNEL ON BOARD. . . . . **VERIFY**
It is recommended to only use the initials, as only personal familiar with the term will be aware of the problem.

PASSENGERS. . . . . **LEAD AWAY FROM BOMB**
It is recommended to move all passengers at least 4 rows away from the bomb location.

PORTABLE ELECTRONIC DEVICES. . . . . **SWITCH OFF**

EMERGENCY EQUIPMENT. . . . . **REMOVE AND STOW**

GALLEY/IFE POWER. . . . . **OFF**

- **If the bomb can be moved:**

  RH AFT CABIN DOOR SLIDE. . . . . **DISARM**

  LEAST RISK BOMB LOCATION (LRBL) . . . . **PREPARE**

  BOMB INDICATION LINE. . . . . **POSITION**

  BOMB. . . . . **MOVE TO LRBL**

  LEAST RISK BOMB LOCATION (LRBL) . . . . **COMPLETE**
  It is recommended to set soft luggage, seat cushion around the bomb to reduce the blast impact in case of activation.

PASSENGER. . . . . **MOVE/ADVISE**

CABIN CREW. . . . . **NOTIFY COCKPIT CREW**

EVACUATION/DISEMBARKATION. . . . . **EXECUTE**

COCKPIT WINDSHIELD/WINDOW ARCING

CM | AFFECTED WINDOW/WINDSHIELD ANTI-ICE C/B. **PULL**
Pull the: ANTI-ICE L WSHLD AF10 C/B, ANTI-ICE WSHLD AF03 C/B, ANTI-ICE/WINDOWS L X14 C/B, ANTI-ICE/WINDOW R W14 C/B.

COCKPIT WINDSHIELD/WINDOW CRACKED

CM | SHOULDER HARNESS. . . . . **FASTEN**

CM | CRACK. . . . . **TOUCH WITH A PEN**

- **If no crack on cockpit side:**

  CM | LIMITATIONS. . . . . **NONE**

- **If cracks on cockpit side:**

  CM | CREW OXY MASKS. . . . . **USE**

  CM | MAX ALTITUDE. . . . . **FL 230 / MEA-MORA**

  CM | CAB PRESS MODE SEL. . . . . **MAN**
  It is recommended to disregard the CAB ALT target table on the ECAM.

  CM | MAN V/S CTL. . . . . **AS REQUIRED**
  It is recommended to set the cabin altitude to the table below.

FL	100	150	200	250
CABIN ALTITUDE	0	3 000	6 000	8 000

  - **When ΔP is 5 PSI:**

    CM | CREW OXY MASKS. . . . . **REMOVE**

  - **Below FL 100:**

    CM | CAB PRESS MODE SEL. . . . . **AUTO**

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

  CM | AUTOLAND. . . . .**CONSIDER**

- **For approach, if AUTOLAND not available:**

  CM | CAB PRESS MODE SEL. . . . . **MAN**

  CM | MAN V/S CTL. . . . . **FULL UP**

  PF | MAX SPEED. . . . . **ACKNOWLEDGE 200 KT**

  PF | SLIDING WINDOW. . . . . **OPEN**

DITCHING

This procedure applies when engines are running.

PM | ATC. . . . . **NOTIFY**

PM | ATC XPDR. . . . . **CONSIDER**

CM | CABIN CREW. . . . . **NOTIFY**

PM | GPWS SYS. . . . . **OFF**

PM | GPWS TERR. . . . . **OFF**
It is recommended to turn off in order to prevent nuisance warnings.

PM | SIGNS. . . . . **ON**

PM | EMER EXIT LT. . . . . **ON**

CM | COMMERCIAL. . . . . **OFF**

PM | LDG ELEV. . . . . **SELECT 00**

CM | BARO. . . . . **SET**

CM | ELT. . . . . **ON**

- **For approach and ditching:**

  PM | SLATS / FLAPS. . . . . **MAX AVAIL**
  It is recommended to target an 11° pitch up, and minimum vertical speed.

- **At 2000 feet AGL:**

  PM | CAB PRESS MODE SELL. . . . . **VERIFY AUTO**

  PM | ALL BLEEDS (ENGs & APU) . . . . **OFF**

  PM | CABIN CREW. . . . . **NOTIFY FOR DITCHING**

PM | DITCHING pushbutton. . . . . **ON**
This will automatically close the outflow valve, emergency ram air inlet, avionics ventilation inlet and extract valves, and pack flow control valves.

The ditching depends on the wind's direction. It is recommended to use the following guidelines to evaluate wind speed:

- A few white crests: 8-17 kt
- Many white crests: 17-26 kt
- Streaks of foam along water: 23-35 kt
- Spray from the waves: 35-43 kt.

- **At 500 feet AGL:**

CM | BRACE FOR IMPACT. . . . . **ORDER**

- **At touchdown:**

PF | ALL ENG MASTERS. . . . . **OFF**

PF | APU MASTER SWITCH. . . . . **OFF**

- **After ditching:**

PM | ATC (VHF 1) . . . . **NOTIFY**

PM | ALL FIRE pushbutton (ENGs & APU) . . . . **PUSH**

PM | ALL AGENTS (ENGs & APU) . . . . **DISCH**

PM | EVACUATION. . . . . **INITIATE**

EMER EVAC

CM | AIRCRAFT/PARKING BRK. . . . . **STOP/ON**

CM | ATC (VHF1) . . . . **NOTIFY**
Only VHF1 is available when the aircraft is on batteries.

CM | CABIN CREW (PA) . . . . **ALERT**

CM | ΔP (ONLY IF MAN CAB PR HAS BEEN USED) . . . . **VERIFY ZERO**

- **If ΔP not at zero:**

CM | CAB PR MODE SEL. . . . . **MAN**

CM | V/S CTL. . . . . **FULL UP**

CM | ALL ENG MASTERS. . . . . **OFF**

CM | ALL FIRE pushbutton (ENGs & APU) . . . . **PUSH**

CM | ALL AGENTS (ENGs & APU) . . . . **AS REQUIRED**

- **If evacuation required:**

  CM | EVACUATION. . . . . **INITIATE**

- **If evacuation not required:**

  CM | CABIN CREW AND PASSENGERS (PA) . . . . **NOTIFY**

EMER LANDING – ALL ENG FAILURE

- **If ditching anticipated:**

  CM | APU. . . . . **START**

  CM | L/G LEVER. . . . . **VERIFY UP**

  CM | FOR LANDING. . . . . **USE FLAP 2**

  CM | VAPP. . . . . **DETERMINE**

Weight	**40 t / 90 klb**	**50 t / 110 klb**	**60 t / 130 klb**	**70 t / 155 klb**	**80 t / 175 klb**	**90 t / 200 klb**	**95 t / 210 klb**
VAPP	150 kt	150 kt	163 kt	173 kt	183 kt	193 kt	198 kt

  CM | DITCHING pushbutton. . . . . **ON**

  - **At 500 feet AGL or below:**

    CM | BRACE FOR IMPACT. . . . . **ORDER**
    It is recommended to touch down at minimum vertical speed and target a pitch attitude of 11°.

  - **At touchdown:**

    CM | ALL ENG MASTERS. . . . . **OFF**

    CM | APU MASTER SWITCH. . . . . **OFF**

    CM | EMER EVAC PROC. . . . . **APPLY**

- **If forced landing anticipated:**

  CM | APU. . . . . **START**

CM | FOR LANDING. . . . . **USE FLAP 2**

CM | VAPP. . . . . **DETERMINE**

Weight	40 t / 90 klb	50 t / 110 klb	60 t / 130 klb	70 t / 155 klb	80 t / 175 klb	90 t / 200 klb	95 t / 210 klb
VAPP	150 kt	150 kt	163 kt	173 kt	183 kt	193 kt	198 kt

CM | GND SPLRs. . . . . **ARM**

- **At 1 000 feet AGL at the latest:**

  CM | GRAVITY GEAR EXTN handcrank. . . . . **PULL AND TURN**

  - **When L/G downlocked:**

    CM | L/G LEVER. . . . . **DOWN**

- **At 500 feet AGL or below:**

  CM | BRACE FOR IMPACT. . . . . **ORDER**

- **For flare:**

  PF | TOUCHDOWN. . . . . **MINIMUM V/S**

- **At touchdown:**

  CM | ALL ENG MASTERS. . . . . **OFF**

  CM | APU MASTER SWITCH. . . . . **OFF**

  CM | EMER EVAC PROC. . . . .**APPLY**

FORCED LANDING

This procedure applies when engines are running.

PM | ATC. . . . . **NOTIFY**

PM | ATC XPDR. . . . . **CONSIDER**

CM | CABIN CREW. . . . . **NOTIFY**

PM | GPWS SYS. . . . . **OFF**

PM | GPWS TERR. . . . . **OFF**
It is recommended to turn off in order to prevent nuisance warnings.

PM **|** SIGNS. . . . . **ON**

PM **|** EMER EXIT LT. . . . . **ON**

CM **|** COMMERCIAL. . . . . **OFF**

PM **|** LDG ELEV. . . . . **SELECT 00**

CM **|** BARO. . . . . **SET**

CM **|** ELT. . . . . **ON**

- **For approach and landing:**

  CM **|** RAM AIR. . . . . **ON**

  CM **|** L/G lever. . . . . **DOWN**

  CM **|** SLATS/FLAPS. . . . . **MAX AVAIL**

  CM **|** GND SPLR. . . . . **ARM**

  CM **|** MAX BRK PR. . . . . **1 000 PSI**

- **At 2 000 feet AGL:**

  CM **|** CABIN CREW. . . . . **NOTIFY FOR LANDING**

- **At 500 feet AGL:**

  CM **|** BRACE FOR IMPACT. . . . . **ORDER**

- **At touchdown:**

  CM **|** ALL ENG MASTERS. . . . . **OFF**

  CM **|** APU MASTER switch. . . . . **OFF**

- **When aircraft stopped:**

  CM **|** PARKING BRK. . . . . **ON**

  CM **|** ATC (VHF1) . . . . **NOTIFY**

  CM **|** ALL FIRE pushbutton (ENGs & APU) . . . . **PUSH**

  CM **|** ALL AGENTS (ENGs & APU) . . . . **DISCH**

- **If evacuation required:**

  CM | EVACUATION. . . . . **INITIATE**

- **If evacuation not required:**

  CM | CABIN CREW AND PASSENGERS (PA) . . . . **NOTIFY**

OVERWEIGHT LANDING

MAX WEIGHT (1 000 KG) FOR LANDING IN CONF FULL (GO AROUND IN CONF 3 CLIMB GRADIENT 2.1%)								
OAT (°C)	AIRPORT ELEVATION (feet)							
	0	**2 000**	**4 000**	**6 000**	**8 000**	**10 000**	**12 000**	**15 000**
<=10	87	85	84	83	80	75	70	62
15	87	85	84	83	80	74	69	61
20	87	85	84	83	79	73	68	59
25	87	85	84	83	77	72	66	57
30	87	85	84	80	75	70	63	
35	87	85	84	77	72			
40	87	85	80	74				
45	87	83	77					
50	84	78						
55								

- **If aircraft weight above maximum weight for landing in conf FULL:**

  USE FLAP 3 FOR LANDING

CM | LDG DIST. . . . . **VERIFY**

- **For approach:**

  CM | PACK 1. . . . . **OFF OR SUPPLIED BY APU**

  CM | PACK 2. . . . . **OFF OR SUPPLIED BY APU**

- **If landing CONG other than full:**

  USE CONF 1+F FOR GO AROUND

- **At main landing gear touchdown:**

  USE MAX REVERSER

- **After nosewheel touchdown:**

  APPLY BRAKES AS NECESSARY

- **When landing completed:**

  PM | BRAKE FANS. . . . . **ON**

TAILSTRIKE

LAND ASAP

CM | MAX FL. . . . . **FL 100/MEA-MORA**

CM | RAM AIR. . . . . **ON**

CM | PACK 1. . . . . **OFF**

CM | PACK 2. . . . . **OFF**

VOLCANIC ASH ENCOUNTER

PF | 180° TURN. . . . . **INITIATE**
Perform a 180° turn as soon as possible. The volcanic ash clouds can extend for hundreds of nautical miles.

PM | ATC. . . . . **NOTIFY**

PF | A/THR. . . . . **OFF**

PF | THRUST (IF CONDS PERMIT) . . . . **REDUCE**

CM | CREW OXY MASKS. . . . . **USE / 100% / EMER**

CM | CABIN CREW. . . . . **NOTIFY**

CM | OXYGEN PASSENGER MASK MAN ON. . . . . **AS REQUIRED**

CM | ENG ANTI-ICE. . . . . **ON**

CM | WING ANTI-ICE. . . . . **ON**

CM | PACK FLOW. . . . . **HI**
This ensures the engines has additional stall margin.

CM | CARGO ISOL VALVES. . . . . **OFF**
This prevents the cargo smoke detector to emit a warning.

CM | ENGINE PARAMETERS. . . . . **MONITOR**

In the event the EGT exceeds limits, it is recommended to proceed a precautionary engine shutdown in flight and restart when clear of the volcanic ash clouds. The engine may accelerate very slowly.

CM | AIRSPEED INDICATIONS. . . . . **MONITOR**

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

  CONSIDER AUTOLAND

  - **For approach, if AUTOLAND is not available:**

    CM | CAB PRESS MODE SEL. . . . . **MAN**

    CM | MAN V/S CTL. . . . . **FULL UP**

    CM | MAX SPEED. . . . . **200 KT**

    PF | SLIDING WINDOW. . . . . **OPEN**

Navigation

UNRELIABLE SPEED INDICATION

An unreliable speed is indicated.

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

  CM | AP. . . . . **OFF**

  CM | A/THR. . . . . **OFF**

  CM | FD. . . . . **OFF**

  PITCH/THRUST:

  PF | BELOW THRUST RED ALT. . . . . **15° / TOGA**

  PF | ABOVE THRUST RED ALT AND BELOW FL 100. . . . . **10° / CLB**

  PF | ABOVE THRUST RED ALT AND ABOVE FL 100. . . . . **5°/ CLB**

  PF | FLAPS (if CONF 0(1)(2)(3)) . . . . **MAINTAIN CURRENT CONF**

  PF | SPEEDBRAKES. . . . . **VERIFY RETRACTED**

  PF | LANDING GEAR. . . . . **UP**

  When at, or above MSA or Circuit Altitude: Level off for troubleshooting.

  - **To level off:**

    PF | AP. . . . . **OFF**

    PF | A/THR. . . . . **OFF**

    PF | FD. . . . . **OFF**

    PF | SPEEDBRAKES. . . . . **VERIFY RETRACTED**

    - **Below FL 250:**

      CM | BKUP SPD/ALT pb. . . . . **USE**

      CM | SPEED. . . . . **FLY THE GREEN**

    - **Above FL 250:**

      CM | PITCH/THRUST TABLE. . . . . **APPLY**

PITCH / THRUST FOR LEVEL OFF				
		70 t 155 000 lb	60 t 130 000 lb	50 t 110 000 lb
Pitch	FL	THRUST % N1 (Resultant speed)		
3° above FL 250	300	78% (260 kt)	74% (240 kt)	68% (220 kt)
	350	82% (250 kt)	78% (235 kt)	72% (215 kt)
	400	-	84% (230 kt)	78% (215 kt)

- **When flight path is stabilized:**

  PF | AP. . . . . **OFF**

  PF | A/THR. . . . . **OFF**

  PF | FD. . . . . **OFF**

  CM | SPEEDBRAKES. . . . . **VERIFY RETRACTED**

  - **Below FL 250:**

    CM | BKUP SPD/ALT pb. . . . . **USE**

    CM | SPEED. . . . . **FLY THE GREEN**

  - **Above FL 250:**

    PF | FLIGHT PATH. . . . .**KEEP STABILIZED**

Affected ADR Identification

CM | PROBE/WINDOW HEAT. . . . . **ON**

CM | ALL SPEED INDICATIONS. . . . . **CROSSCHECK**
The ADR 3 and STBY speeds use the data of the same probe.

- **If at least one ADR confirmed reliable:**

  CM | RELIABLE AIR DATA. . . . . **USE**

  CM | UNRELIABLE ADR pushbuttons. **OFF**

- **If affected ADR(s) cannot be identified, or all ADRs affected:**

  It is recommended to keep ONE ADR ON.

  CM | TWO ADR pushbuttons. . . . . **OFF**
  This avoids the flight control laws from using two coherent but unreliable ADR data.

- **When above FL 250 :**

  CM | PITCH/THRUST TABLES. **USE**

- **When below FL 250, if speed still unreliable:**

  CM | BKUP SPD/ALT pushbutton. . . . . **USE**

  PF | SPEED. . . . . **FLY THE GREEN**

Climb

Climb in clean configuration				
		70 t 155 000 lb	60 t 130 000 lb	50 t 110 000 lb
Thrust	FL	PITCH (Resultant speed)		
CLB	50	13° (225 kt)	15° (205 kt)	19° (185 kt)
	100	11° (225 kt)	14° (205 kt)	17° (185 kt)
	200	9° (230 kt)	10° (210 kt)	12° (190 kt)
	300	6° (230 kt)	7° (210 kt)	9° (190 kt)
	400	/	4° (210 kt)	5° (190 kt)

Cruise

Level flight in clean configuration				
		70 t 155 000 lb	60 t 130 000 lb	50 t 110 000 lb
Pitch	FL	THRUST % N1 (Resultant speed)		
4° at or below FL 250	100	58% (235 kt)	54% (220 kt)	50% (200 kt)
	200	66% (235 kt)	62% (220 kt)	58% (200 kt)
3° above FL 250	300	78% (260 kt)	74% (240 kt)	68% (220 kt)
	350	82% (250 kt)	78% (235 kt)	72% (215 kt)
	400	/	84% (230 kt)	78% (215 kt)

Descent

Level flight in clean configuration				
		70 t 155 000 lb	60 t 130 000 lb	50 t 110 000 lb
THRUST	PITCH	Resultant speed		
IDLE	1°	245 kt	225 kt	205 kt

Initial / Intermediate Approach

Level flight with landing gear up				
		70 t 155 000 lb	**60 t 130 000 lb**	**50 t 110 000 lb**
CONF	**PITCH**	**THRUST % N1 (Resultant speed)**		
0	**5°**	54% (225 kt)	50% (205 kt)	46% (185 kt)
1	**6.5°**	56% (200 kt)	52% (185 kt)	48% (170 kt)
1+F	**5°**	54% (180 kt)	50% (165 kt)	46% (150 kt)
2	**5.5°**	56% (165 kt)	52% (155 kt)	48% (140 kt)
Level flight with landing gear down				
3	**7°**	62% (150 kt)	56% (140 kt)	52% (125 kt)

Final Approach at -3° Descent Path

Approach in CONF 3 and Landing Gear Extended				
		70 t 155 000 lb	**60 t 130 000 lb**	**50 t 110 000 lb**
CONF	**PITCH**	**THRUST % N1**		
3	**4°**	46%	42%	38%

NAV ADR 1+2+3 FAULT

All ADR has failed.

ECAM: INOP SYS – F/CTL PROT; WINDSHEAR DET; GPWS; ADR 1+2+3; AP 1+2; A/THR; RUD TRV LIM 1+2; CAB PR 1+2; YAW DAMPER; ATC/XPDR 1; ATC/XPDR 2; STEEP APPR; ROW/ROP; ATC ALTI MODE; TCAS; L/G RETRACT; RAT AUTOMATIC EXTENSION; CAT 2

If the fault is simultaneous ADR and IR, the ADR procedure must be applied first.

Note	The TCAS and ATC ALT RPTG are inoperative.

CM | ALL ADR. . . . .**OFF**

CM | STBY INSTRUMENT. . . . . **USE**

CM | MAX SPEED. . . . .**ACKNOWLEDGE 320 KNOTS**

CM | CABIN PRESSURIZATION. . . . . **MANUAL**

CM | MODE SEL. . . . . **MAN**

CM | MAN V/S CTL. . . . .**AS REQUIRED**

- **Approach procedure**

CM | FLAPS. . . . .**FLAP 3**

CM | GPWS LDG FLAP 3. . . . .**ON**

CM | LDG DIST PROC. . . . .**APPLY**

  - **If using the gravity landing gear:**

  CM | LDG GEAR GRVTY EXTN. . . . . **PULL AND TURN**

  - **When the landing gear is down and locked:**

  CM | LANDING GEAR. . . . .**DOWN**

  - CM | GEAR DOWN. . . . . **VERIFY AND CONFIRM**

Note	The landing gear doors will remain open.

CM | APPR SPEED. . . . .**VREF +10 KT**

- **During final approach**

CM | MAN V/S CTL. . . . .**FULL UP**

ALL ADR OFF

The aircraft is in a stall.

PF | SPEED. . . . . **FLY THE GREEN**
It is recommended to fly within the green area of the speed scale to ensure a safe flight.

CM | BACK UP NAV. . . . . **USE**
It is recommended to use RMP for NAVAID tuning.

CM | CABIN PRESS MODE SEL. . . . . **MAN**

CM | MAN V/S CTL. . . . . **AS REQUIRED**

Target CAB PRESS V/S:

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

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

- **For approach:**

PF | SPEED. . . . . .FLY THE GREEN
To extend the slats or flaps, it is recommended to fly at the bottom of the speed scale green area, and to be in a straight flight.

CM | FLAP 3. . . . . **USE**

CM | GPWS LDG FLAP 3. . . . . **ON**

CM | LDG DIST PROC. . . . . **APPLY**

CM | APPR SPEED: BUSS TARGET SPEED. . . . . **AWARE**

IR ALIGNMENT IN ATT MODE

The IR Alignment are in ATT mode.

CM | IR MODE sel (affected IR) . . . . **ATT**
Keep the speed, heading, and altitude constant for 30 seconds.

CM | FMS DATA page. . . . . **SELECT**

CM | IRS MONITOR key. . . . . **PRESS**

CM | [SET HDG key] A/C HDG. . . . . **ENTER**
Verify on a regular basis the heading with the standby compass and update if necessary.

NAV ADR 1(2)(3) FAULT

The corresponding ADR has failed.
ECAM: INOP SYS – ADR 1(2)(3); CAT 3 DUAL; GPWS

- **If the ADR 1 is faulty:**

CM | AIR DATA SWTG. . . . .**CAPT 3**
It is recommended to select the ADR for the captain side.

CM | GPWS TERR. . . . . **OFF**

CM | ADR 1. . . . .**OFF**

- **If the ADR 2 is faulty:**

CM | AIR DATA SWTG. . . . . **F/O 3**

CM | ADR 2. . . . . **OFF**

CM | BARO REF. . . . . **VERIFY**

- **If the ADR 3 is faulty:**

CM | ADR 3. . . . . **OFF**

CM | AIR DATA SWTG. . . . . **NORM**

NAV ADR 1+2(1+3)(2+3) FAULT
There is two ADR systems that have failed.
ECAM: INOP SYS – F/CTL PROT; ADR 1+2(1+3)(2+3); STEEP APPR; RUD TRV LIM 1(2); AP 1+2; A/THR; CAT 2; GLS AUTOLAND; GA SOFT; ATC/XPDR 1; ATC/XPDR 2; GPWS; ROW/ROP

- **If the fault is on ADR 1 and 2:**

CM | AIR DATA SWTG. . . . . **CAPT 3**

CM | AFFECTED ADR. . . . . **OFF**

- **If the fault is on ADR 1 and 3, or 2 and 3:**

CM | AIR DATA SWTG. . . . . **NORM**

CM | ATC/XPDR (IF ADR 1 HAS FAILED). . . . . **SYS 2**

CM | ATC/XPDR (IF ADR 2 HAS FAILED). . . . . **SYS 1**

CM | AFFECT ADR. . . . . **OFF**

- **Flying in the alternate flight law:**

CM | MAX SPEED. . . . . **ACKNOWLEDGE 320 KNOTS**

CM | GO AROUND THRUST. . . . . **TOGA ONLY**

- **Approach procedures**

CM | FLAPS. . . . . **FLAP 3**

CM | GPWS LDG FLAP 3. . . . . **ON**

- **If the ADR 1 and 3, or 2 and 3 are faulty:**

  CM | LANDING GEAR. . . . . **GRVTY EXTN**

CM | APPROACH SPEED. . . . . **VREF +15**

CM | LDG DIST PROC. . . . .**APPLY**

NAV ADR 1+2+3 FAULT
All three ADRs are failed.
ECAM: INOP SYS – REAC W/S DET; PRED W/S DET; F/CTL PROT; ADR 1+2+3; STEEP APPR; RUD TRV LIM; YAW DAMPER; AP 1+2; A/THR; GA SOFT; CAB PR 1+2; ATC/XPDR 1; ATC/XPDR 2; GPWS; GPWS TERR; ROW/ROP

In the event of a simultaneous ADR and IR (same ADIRU) failure, apply the ADR FAULT procedure prior to the IR fault procedure.

CM | AP+FD. . . . . **OFF**

CM | A/THR. . . . . **OFF**

CM | PROBE/WINDOW HEAT. . . . . **ON**

CM | BKUP SPD/ALT PB. . . . . **USE**

CM | ADR 1+2+3 P/B. . . . . **OFF**

PF | SPD. . . . . **FLY THE GREEN**
It is recommended to fly within the green area of the speed scale to ensure a safe flight.

- **If AOA disagree:**

  CM | BKUP SPD/ALT. . . . . **DO NOT USE**

CM | STBY INST MAY BE UNRELIABLE. . . . . **AWARE**

CM | ALL ADR OFF PROCEDURE. . . . . **APPLY**

CM | SPD BRK. . . . . **DO NOT USE**

NAV ADR DISAGREE
The ELAC has rejected an ADR, or an ADR is faulty, or the AOA from the two other ADR are different.
ECAM: INOP SYS – FCTL PROT

CM | AIR SPEED. . . . .**CROSSCHECK**
It is recommended to verify the airspeed with the standby airspeed indicator.

- **If there is no airspeed disagreement:**

  CM | AOA DISCREPANCY. . . . . **DO NOT USE BKUP SPD/ALT**

- **If there is an airspeed disagreement:**

  CM | ADR VERIFICATION PROCEDURE. . . . .**APPLY**

- **Flying in the alternate flight law:**

  CM | MAX SPEED. . . . . **ACKNOWLEDGE 320 KNOTS**

- **Approach procedure:**

  CM | FLAPS. . . . .**FLAP 3**

  CM | GPWS LDG FLAP 3. . . . .**ON**

  CM | APPROACH SPEED. . . . .**VREF + 15**

  CM | LDG DIST PROC. . . . .**APPLY**

Note	If there is a disagreement in airspeed, there is a risk of stall.

NAV ADS-B RPTG 1(2) FAULT

The ADS-B has failed.

ECAM: INOP SYS – ADS-B RPTG 1(2)

CM | ATC/XPDR. . . . . **SYS 2 OR 1**

NAV ALTI DISCREPANCY

The altitude difference between the captain and first officer PFD is greater than 500 feet is the standard barometer reference is used, or greater than 250 feet if the QNH barometer reference is used.

CM | ALTITUDE. . . . . **CROSSCHECK**
It is recommended to use the standby altimeter to determine the faulty side.
CM | AIR DATA SWTG. . . . . **AS REQUIRED**
It is recommended to select ADR 3 to the faulty side.

NAV CAPT(F/O)(STBY) AOA FAULT

The corresponding AOA sensor has failed.

ECAM: INOP SYS – CAPT(F/O)(STBY) AOA

CM | CAPT(F/O)(STBY) AOA FAULT. . . . .**AWARE**

NAV ATC/XPDR 1(2) FAULT

The transponder 1 or 2 has failed.

ECAM: INOP SYS – ATC/XPDR 1(2); ADS-B RPTG 1(2)

CM | ATC/XPDR. . . . . **SYS 2 OR 1**

NAV ATC/XPDR 1+2 FAULT

All transponders have failed.

ECAM: INOP SYS – TCAS; ATC/XPDR 1; ATC/XPDR 2; ADS-B RPTG 1; ADS-B RPTG 2

CM | ATC/XPDR 1+2 FAULT. . . . . **AWARE**

NAV ATC/XPDR STBY

The transponder is set to standby in flight.

CM | ATC/XPDR STBY. . . . .**AWARE**

NAV ATT DISCREPANCY

The roll or pitch angle difference between the captain and first officer PFD is greater than 5°.

CM | ATT. . . . .**CROSSCHECK**

It is recommended to use the standby horizon as reference.

CM | ATT HDG SWTG. . . . .**AS REQUIRED**

It is recommended to switch to IR 3 to the faulty side.

NAV BARO REF DISCREPANCY

The barometer reference is different on the captain side and first officer side.

CM | BARO REF. . . . .**CROSSCHECK**

NAV BARO VALUE DISAGREE

The barometer value are different on the FCU control panels.

CM | BARO REF VALUE. . . . .**CROSSCHECK**

NAV BKUP SPD/ALT ON CAPT(F/O) PFD

The backup speed and altimeter is activated on the captain PFD or on the first officer PFD, and the autopilot and/or flight director is engaged.

CM | AP 1(2). . . . . **NOT RECOMMENDED**

CM | FD 1(2). . . . . **NOT RECOMMENDED**

NAV BKUP SPD/ALT ON CAPT+F/O PFD

The backup speed and altitude are activated on the captain and first officer PFD at the same time.

- **If all airspeeds are unreliable:**

  CM | ADR VERIFICATION PROCEDURE. . . . .**APPLY**

- **If at least one airspeed is reliable:**

  CM | RELIABLE AIRSPEED. . . . . **USE AS REFERENCE**

NAV FM/GPS POS DISAGREE

The FMS position and GPS position are different.

CM | A/C POS. . . . . **VERIFY**

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

  CM | ACCURACY. . . . . **VERIFIED**
  It is recommended to verify the accuracy in the PROG page of the MCDU.

  - **If the estimated accuracy is below the required accuracy:**

    CM | NAV MODE. . . . . **CONSIDER**

    CM | ND. . . . .**ARC/ROSE NAV**

  - **If the estimated accuracy is greater than the required accuracy:**

    CM | HDG/TRK MODE. . . . . **SELECT AND USE RAW DATA**

  - **If one FM position agree with the onside GPIRS position:**

    CM | AP and FD. . . . .**USE ASSOCIATED SIDE**

  - **If all FM position disagree with the onside GPIRS position:**

    CM | GPS. . . . .**DESELECT AND USE RAW DATA**

- **During ILS/MLS/LOC/GLS approach**

  CM | NAV MODE. . . . .**NOT USED**

- **During LOC only approach with the FLS function**

  CM | NAV MODE. . . . .**NOT USED**

  CM | F-G/S DEVIATION. . . . .**DISREGARD**

CM | VERTICAL SELECTED MODE. . . . . **IN FUNCTION**

- **During RNAV GNSS or RNAV RNP approach**

  CM | VISUAL REFERENCES. . . . .**GO AROUND IF NOT SUFFICIENT**

- **During VOR, VOR-DME, NDB, or NDB-DME approach**

  CM | HDG/TRK MODE. . . . .**SELECT AND USE RAW DATA**

  CM | LS. . . . .**PRESS IF FLS IS USE**

NAV GPS 1(2) FAULT
The GPS 1 or 2 has failed.
ECAM: GPS 1(2)

CM | GPS 1 or 2 FAULT. . . . . **AWARE**

NAV GPWS FAULT
The GPWS has failed.
ECAM: INOP SYS - GPWS

CM | GPWS. . . . .**OFF**

NAV GPWS TERR DET FAULT
The enhanced TCF and TAD, or the prediction function of the GPWS are failed.
ECAM: INOP SYS – GPWS TERR; ROW/ROP

CM | GPWS TERR. . . . . **OFF**

NAV HDG DISCREPANCY
The difference between the captain and first officer displays is greater than 5° within eachother.

CM | HEADING. . . . .**CROSSCHECK**
It is recommended to compare the heading with the standby compass to determine the faulty side.

CM | ATT HDG SWTG. . . . .**AS REQUIRED**
It is recommended to select IR 3 for the faulty side.

NAV IAS DISCREPANCY
The indicated airspeed of the captain and first officer PFD are different.
ECAM: INOP SYS – CAT 3 DUAL

CM | AIR SPEED. . . . .**CROSSCHECK**
It is recommended to compare the speed with the standby instrument to determine the faulty side.

CM | AIR DATA SWTG. . . . . **AS REQUIRED**

It is recommended to select the IR 3 for the faulty side.

NAV ILS 1(2)(1+2) FAULT

The ILS 1 or 2 or both has failed.

ECAM: INOP SYS – ILS 1(2)(1+2); CAT 2; GPWS

CM | NAV ILS 1(2)(1+3) FAULT. . . . . **AWARE**

NAV IR 1(2)(3) FAULT

The IR system has failed.

ECAM: INOP SYS – IR 1(2)(3); CAT 3 DUAL; GPWS TERR; ROW/ROP; TCAS; ATC/XPDR 1; ATC/XPDR2

- **If the failure is on IR 1**

  CM | ATT HDG SWTG. . . . . **CAPT 3**

  CM | ATC/XPDR. . . . . **SYS 2**

- **If the failure is on IR 2**

  CM | ATT HDG SWTG. . . . . **F/O 3**

  CM | ATC/XPDR. . . . . **SYS 1**

- **If the failure is on IR 3**

  CM | ATT HDG SWTG. . . . . **NORM**

NAV IR 1+2(1+3)(2+3) FAULT

The IR 1 and 2, or 1 and 3, or 2 and 3 are failed.

ECAM: INOP SYS – F/CTL PROT; IR 1 (2)(3) IR 1+2 (1+3)(2+3); AP 1+2; A/THR; YAW DAMPER 1; YAW DAMPER 2; GPWS TEER; TCAS; CAT 2; ATC/XPDR 1; ATC/XPDR 2; GLS AUTOLANT; ROW/ROP

- **If the fault is on IR 1 and 2**

  CM | ATT HDG SWTG. . . . . **CAPT 3**

- **If the fault is on IR 1 and 3, or 2 and 3**

  CM | ATT HDG SWTG. . . . . **NORM**

- **Flying with alternate flight law**

  CM | MAX SPEED. . . . . **ACKNOWLEDGE 320 KNOTS**

- **Approach procedure**

CM | FLAPS. . . . .**FLAP 3**

CM | GPWS LDG FLAP 3. . . . .**ON**

CM | APPROACH SPEED. . . . . **VREF + 10 KNOTS**

CM | LDG DIST PROC. . . . .**APPLY**

NAV IR DISAGREE

One IR system is failed, and the two remaining IR does not give similar informations.
ECAM: INOP SYS – F/CTL PROT

- **Determine the erroneous IR**

CM | ATT. . . . . **CROSSCHECK**
It is recommended to use the standby horizon to compare the attitude.

CM | FAULTY IR. . . . .**OFF**

CM | ELAC 2. . . . . **OFF THEN ON**

CM | ELAC 1. . . . . **OFF THEN ON**

Note	If ELAC 1 is reset on the ground, the pitch trim will reset automatically to the ground setting position of 0°.
	The pitch alternate law with reduced protection will be available if the faulty IR is set to off and the ELACs have reset.

- **Flying with alternate flight law.**

CM | MAX SPEED. . . . . **ACKNOWLEDGE 320 KNOTS**

- **Approach procedure**

CM | FLAPS. . . . .**FLAP 3**

CM | GPWS LDG FLAP 3. . . . .**ON**

CM | APPROACH SPEED. . . . .**VREF + 15**

CM | LDG DIST PROC. . . . .**APPLY**

NAV IR NOT ALIGNED
The IR has some trouble during the alignment.
ECAM: POSITION DISAGREE; POSITION MISSING; EXCESS MOTION; IR 1(2)(3)(1+2)(2+3)(1+2+3) IN ALIGN

CM | NAV IR NOT ALIGNED. . . . . **AWARE**

NAV LS TUNING DISAGREE
The tuning of the MMR 1 and MMR 2 are different.
ECAM: INOP SYS – CAT 2

CM | NAV LS TUNING DISAGREE. . . . .**AWARE**

Note	It will automatically disarm the APPR mode, and revert to the AP/FD mode.

NAV PRED W/S DET FAULT
The predictive windshear function has failed.
ECAM: INOP SYS – PRED W/S DET

CM | NAV PRED W/S DET FAULT. . . . .**AWARE**

NAV RA 1 AND RA 2 FAULT
Both radio altimeters are failed
ECAM: RA 1+2; A/CALL OUT; GPWS; CAT 2; GLS AUTOLAND; STEEP APPR; REAC W/S DET; TCAS; ROW/ROP

CM | NAV RA 1 AND RA 2 FAULT. . . . .**AWARE**

- **For approach**

  CM | FLAPS. . . . . **FLAPS 3**

  CM | GPWS LDG FLAP 3. . . . .**ON**

  CM | APPROACH SPEED. . . . .**VREF +15 KNOTS**

  CM | LDG DIST PROC. . . . .**APPLY**

Note	The ILS APPR mode cannot be engaged.

NAV RA 1(2) FAULT

The radio altimeter 1 or 2 is failed.

ECAM: INOP SYS – RA 1(2); CAT 3; GPWS (If RA 1 is failed); ROW/ROP

CM | NAV RA 1(2) FAULT. . . . .**AWARE**

Note	Only CAT 2 landings will be available.

NAV RA DEGRADED

The height difference between RA 1 and RA 2 are significant.

CM | NAV RA DEGRADATION. . . . .**AWARE**

NAV TCAS FAULT

The TCAS has a failure.

ECAM: INOP SYS - TCAS

CM | TCAS FAULT. . . . . **AWARE**

Note	The alert can trigger if the ADIRU are set to OFF.

NAV TCAS STBY

The TCAS is set on STBY when in flight.

CM | TCAS STBY. . . . . **AWARE**

NAV L(R) CAPT(F/O) STATIC FAULT

The left or right CAPT or FO static pressure probe is lost.

ECAM: INOP SYS – CAPT(F/O) (R)(L) STAT; CAPT PROBES; F/O PROBES

CM | IAS/ALTI MAY BE UNRELIABLE. . . . . **AWARE**

STALL WARNING

The aircraft is in a stall.

CM | PITCH. . . . . **ADJUST**

The aural and visual alert will stop when a correct angle-of-attack is recovered

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Overspeed

OVERSPEED

The aircraft is overspeeding.

CM | VMO/MMO. **350/.82**

It is 235/0.60 if the landing gear is extended.

CM | VLE. **280/.67**

CM | VFE. . . . . **SEE BELOW**

CONFIG	VFE
FULL	177
3	185
2	200
1+F	215
F	230

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Recorder

NAV L(R) CAPT (F/O) STATIC FAULT
The left or right captain or first officer static pressure probe has failed.
ECAM: INOP SYS – CAPT (F/O) (R)(L) STAT; CAPT PROBES; F/O PROBES

CM | NAV L(R) CAPT (F/O) STATIC FAULT. . . . . **AWARE**

Note	The indicated air speed and the altitude might be inaccurate.

RECORDER DFDR FAULT
The Flight Data Interface Unit is failed.
ECAM: INOP SYS – DFDR

CM | RECORDER DFDR FAULT. . . . . **AWARE**

RECORDER SYS FAULT
The Flight Data Interface Unit is failed.
ECAM: INOP SYS – RECORDER SYS

CM | RECORDER SYS FAULT. . . . .**AWARE**

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Severe Ice

SEVERE ICE DETECTED

Heavy ice is detected in flight above 1 500 feet, and the WING ANTI-ICE is on the OFF position.

CM **|** WING ANTI-ICE. . . . . **ON**

CM **|** ENG MODE SEL. . . . .**IGN**

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Smoking

SMOKE / FUMES / AVNCS SMOKE

There is either smoke coming from the avionics, air conditioning, cabin equipment, or a smell of smoke in the cockpit.

LAND ASAP

CM | OXY MASK / GOGGLE. **USE/100%/EMERG**
The flight crew should ensure that the crew communication is established.

CM | VENTILATION BLOWER. . . . . **OVRD**

CM | VENTILATION EXTRACT. . . . . **OVRD**
The avionics ventilation air is extracted overboard.

CM | CAB FANS. . . . . **OFF**
This action prevents smoke from entering the cockpit and cabin.

CM | GALY & CAB. . . . . **OFF**

CM | SIGNS. . . . . **ON**

CM | CKPT / CABIN COM. . . . . **ESTABLISH**

- **If smoke source immediately obvious, accessible, and extinguishable :**

  CM | FAULTY EQPT. . . . . **ISOLATE**

- **If smoke source not immediately isolated :**

  CM | DIVERSION. . . . . **INITIATE**

  CM | DESCENT TO FL 100 / MEA-MORA. . . . . **INITIATE**

- **At ANY TIME of the production, if SMOKE / FUMES becomes the GREATEST THREAT :**

  CM | REMOVAL OF SMOKE / FUMES PROCEDURE. . . . . **CONSIDER**

  CM | ELEC EMER CONFIG PROCEDURE. . . . . **CONSIDER**

- **At ANY TIME of the procedure, if situation becomes UNMANAGEABLE :**

  CM | IMMEDIATE LANDING. . . . . **CONSIDER**

- **If Air COND smoke is suspected :**

  CM | APU BLEED. . . . . **OFF**

  CM | VENTILATION BLOWER AND EXTRACT. . . . . **OFF**

  CM | PACK 1. . . . . **OFF**

  - **If smoke continues :**

    CM | PACK 1. . . . .**ON**

    CM | PACK 2. . . . . **OFF**

    - **If smoke persists :**

      CM | PACK 2. . . . . **ON**
      Restore to normal configuration only if PACK 2 is not suspected to cause smoke.

      CM | VENTILATION BLOWER. . . . . **OVRD**

      CM | VENTILATION EXTRACT. . . . . **OVRD**

  CM | REMOVAL OF SMOKE / FUMES. . . . . **CONSIDER**

- **If CABIN EQPT smoke suspected :**
  - **If smoke continues :**

    CM | EMER EXIT LIGHT. . . . . **ON**

    CM | COMMERCIAL. . . . . **OFF**

    CM | SMOKE DISSIPATION. . . . . **VERIFY**

    CM | FAULTY EQPT. . . . . **SEARCH / ISOLATE**

    - **If smoke persists or if faulty equipment confirmed isolated :**

      CM | COMMERCIAL. . . . . **NORM**

    CM | REMOVAL OF SMOKE/FUMES. . . . . **CONSIDER**

- **If smoke source cannot be determined and persists or AVNCS / ELECTRICAL smoke suspected :**

  ELEC EMER CONFIG. . . . . **CONSIDER**

- **If smoke disappears within 5 minutes :**

  CM | NORMAL VENTILATION. . . . . **RESTORE**

To Set ELEC EMER CONFIG

CM | EMER ELEC GEN 1 LINE. . . . . **OFF**
The GEN 1 LINE contactor will open. The GEN 1 remains running and supplies one fuel pump in each wing tank.

CM | EMER ELEC PWR. . . . . **MAN ON**
The RAT is extended, and the EMER GEN is connected to the aircraft network.

- **When EMER GEN AVAIL :**

  CM | APU GEN. . . . . **OFF**

  CM | GEN 2. . . . . .OFF

  ELEC EMER CONFIG

  The ECAM may display two different procedures.

  - **If AVIONICS SMOKE not triggered :**

    It is recommended to apply the ELEC EMER CONFIG procedure, however it is prohibited to reset the GEN, even if requested by ECAM.

    - **At 3 minutes or 2 000 feet AAL before landing :**

      CM | GEN 2. . . . . **ON**

      CM | EMER ELEC GEN 1 LINE. . . . . **ON**
      This ensures the recovery of normal braking, while reducing risk of reactivation of a smoke source.

    - **When aircraft is stopped :**

      CM | ALL GENs. . . . . **OFF**

  - **If AVIONICS SMOKE triggered :**

    Follow the ECAM procedure.

    CM | MIN RAT SPEED. . . . . **140 KT**

    CM | VHF 1 / HF 1 / ATC 1. . . . . **USE**
    In this aircraft configuration, only VHF 1 / HF 1 / ATC 1 is supplied.

CM | FAC 1. . . . . **OFF THEN ON**
There might not have no indication of rudder trim, however, the rudder trim is recovered.

- **At 3 minutes or 2 000 feet AAL before landing :**

  CM | GEN 2. . . . . **ON**

  CM | EMER ELEC GEN 1 LINE. . . . . **ON**

CM | F/CTL ALTN LAW. . . . . **AWARE**

CM | MAX SPEED. . . . . **320 KT**

REMOVAL OF SMOKE / FUMES

There is smoke in one of the lavatory detected.

Apply the REMOVAL OF SMOKES / FUMES procedure if the smoke or fumes become the greatest threat.

EMER EXIT LIGHT. . . . . **ON**

- **If fuel vapors :**

  CM | CAB FANS. . . . . **ON**
  This actions prevents the fuel vapors from accumulating and create a risk of explosion.

  CM | PACK 1. . . . . **OFF**

  CM | PACK 2. . . . . **OFF**

- **If no fuel vapors :**

  CM | CAB FANS. . . . . **OFF**
  This action prevents the smoke from entering the cockpit.

  CM | PACK FLOW. . . . . **HI**
  It is prohibited to deploy oxygen masks if the fire is suspected in the cabin.

PM | LDG ELEV. . . . . **10 000 FT/ MEA-MORA**

PF | DESCENT TO FL 100 / MEA-MORA. . . . . **INITIATE**
This technique make use of the ram air. This reduces the smoke concentration.

PM | ATC. . . . . **NOTIFY**

CM | SMOKES / FUMES / AVNCS SMOKE PROC. . . . . **CONTINUE**

- **At FL 100 or MEA-MORA :**
  - **If in ELEC EMER CONFIG :**

    CM | APU MASTER. . . . . **ON**

    CM | PACK 1. . . . . **OFF**

    CM | PACK 2. . . . . **OFF**

    CM | MODE SEL. . . . . **MAN**

    CM | MAN V/S CTL. . . . . **FULL UP**

    CM | RAM AIR. . . . . **ON**
    This action enable to fly without packs.

    CM | APU MASTER. . . . . **OFF**

    - **If smoke persists :**
      If presence of smoke in the cockpit, open the cockpit window to evacuate the smoke.

      MAX SPEED : 200 knots

      COCKPIT DOOR. . . . . **OPEN**

      HEADSETS. . . . . **ON**

      PM SLIDING WINDOW. . . . . **OPEN**

      - **When window open :**

        CM | NON-AFFECTED PACK. . . . . **ON**

        CM | VISUAL WARNINGS. **MONITOR**
        It is recommended to pay attention visually due to the increased noise level.

        CM | SMOKES / FUMES / AVNCS SMOKE PROC. . . . . **CONTINUE**

SMOKE/FIRE FROM LITHIUM BATTERY

There is smoke from the lithium batteries.

The flight crew may need to transfer control to the crew member seated on the opposite side of the fire.
CKPT/CAB COM. . . . . **ESTABLISH**

STORAGE AFTER LiBAT FIRE cabin procedure. . . . . **REQUEST INITIATION**

- **If flames :**

  PF | CREW OXY MASK. . . . . **USE**

  PM | SMOKE HOOD. . . . . **USE**

  CM | HALON EXTINGUISHER. . . . . **USE**

- **If no flames or when flames extinguished :**
  - **If not possible to remove device from the cockpit :**

    WATER or NON-ALCOHOLIC LIQUID. . . . . **POUR ON DEVICE**

    DEVICE. . . . . **MONITOR**

  - **If possible to remove device from the cockpit :**

    DEVICE. . . . . **TRANSFER TO CABIN**

- **At ANY time of the procedure, if SMOKES becomes the GREATEST THREAT :**

  CM | REMOVAL OF SMOKES/FUMES procedure. . . . . **CONSIDER**

- **At ANY time of the procedure, if situation becomes UNMANAGEABLE :**

  CM | IMMEDIATE LANDING. . . . . **CONSIDER**

SMOKE AFT CARGO SMOKE
There is smoke detected in the AFT Cargo compartment.
ECAM: INOP SYS – AFT CRG VENT; AFT CRG HEAT

LAND ASAP

CM | AFT ISOL VALVE. . . . . **OFF**

CM | CAB FANS. . . . . **OFF**

- **If AFT CRG CLOSED :**
  It is not recommended to open the door of the affected cargo compartment unless passengers have disembarked, and fire services are present. The AFT Cargo Door must be closed to discharge the extinguishing agent.

  CM | AGENT. . . . . **DISCH**

- **In flight :**
  - **When on ground before opening cargo doors :**

    PAX. . . . . **DISEMBARK**

- **On ground :**
  - **Before opening cargo doors :**

    PAX. . . . . **DISEMBARK**

SMOKE AFT CRG DET FAULT
The AFT smoke detection system is failed.
ECAM: INOP SYS – SMOKE DET

- **If there is no livestock:**

  CM | AFT ISOL VALVE. . . . .**OFF**

SMOKE FWD CARGO SMOKE
There is smoke detected in the FWD Cargo compartment.
ECAM: INOP SYS – FWD CRG VENT; FWD CRG HEAT

LAND ASAP

CM | FWD ISOL VALVE. . . . .**OFF**

CM | CAB FANS. . . . . .OFF

- **If FWD CARGO CLOSED**
  It is not recommended to open the door of the affected cargo compartment unless passengers have disembarked, and fire services are present. The FWD Cargo Door must be closed to discharge the extinguishing agent.

  CM | AGENT. . . . . **DISCH**

- **In Flight:**
  - **When on ground before opening cargo doors:**

    PAX. . . . . **DISEMBARK**

- **On ground:**
  - **Before opening cargo doors:**

    PAX. . . . . **DISEMBARK**

SMOKE FWD(AFT) CRG BTL 1(2) FAULT
The FWD or AFT bottle 1 or two squib is failed or is at low pressure.

CM | SMOKE FWD(AFT) CRG BTL 1(2) FAULT. . . . . **AWARE**

SMOKE FWD CRG DET FAULT

The forward smoke detection system is failed.

ECAM: INOP SYS – FWD CRG DET

- **If there is no livestock:**

  CM **|** FWD ISOL VALVE. . . . .**OFF**

SMOKE DET FAULT

The SDCU or the CIDS-SDF are failed

ECAM: INOP SYS – SMOKE DET

- **If there is no livestock:**

  CM **|** FWD ISOL VALVE. . . . .**OFF**

  CM **|** AFT ISOL VALVE. . . . .**OFF**

CM **|** PAX SYS. . . . .**OFF**

SMOKE LAVATORY DET FAULT

The lavatory smoke detection system is failed, or the lavatory and galley fan system are failed.

ECAM: INOP SYS – LAV DET

CM **|** SMOKE LAVATORY DET FAULT. . . . . **AWARE**

SMOKE LAVATORY SMOKE

There is smoke in one of the lavatory detected.

CKP/CAB COM. . . . . **ESTABLISH**

Surveillance

EGPWS CAUTIONS

An EGPWS caution is emitted.

- **“TERRAIN TERRAIN” – “TOO LOW TERRAIN” – “TERRAIN AHEAD” – “OBSTACLE AHEAD”**
  - **During night or IMC:**

    Simultaneously:

    PF | AP. . . . . **OFF**

    PF | PITCH. . . . . **PULL UP**
    Pull to full backstick deflection and hold that position.

    PF | THRUST LEVERS. . . . . **TOGA**

    PF | SPEED BRAKES lever. **VERIFY RETRACTED**

    PF | BANK. . . . . **WING LEVEL or ADJUST**
    It is prohibited to change the slats, flaps or gear configuration until clear of obstacle.

  - **During daylight and VMC, with terrain and obstacles clearly in sight:**

    PF | FLIGHT PATH. . . . . **ADJUST**
    Adjust the pitch and thrust to silence the alert.

- **“SINK RATE”**
  - **Above 1 000 feet AAL in IMC or above 500 feet AAL in VMC:**

    PF | FLIGHT PATH. . . . . **ADJUST**
    Adjust the pitch and thrust to silence the alert.

  - **Below 1 000 feet AAL in IMC or below 500 feet AAL in VMC**

    CM | GO-AROUND. . . . .**CONSIDER**

- **“DON’T SINK”**

  PF | FLIGHT PATH. . . . . **ADJUST**
  Adjust the pitch and thrust to silence the alert.

- **“TOO LOW GEAR” – “TOO LOW FLAPS”**

  CM | GO-AROUND. . . . . **PERFORM**

- **“GLIDESLOPE”**
  - **Above 1 000 feet AAL in IMC or above 500 feet AAL in VMC:**

    PF | FLIGHT PATH. . . . . **ADJUST**
    Adjust the pitch and thrust to reduce the vertical deviation from the glideslope.

    - **When conditions require a deliberate approach below glideslope:**

      CM | G/S MODE. . . . . **OFF**

  - **Below 1 000 feet AAL in IMC or below 500 feet AAL in VMC:**

    CM | GO-AROUND. . . . . **CONSIDER**

EGPWS WARNING

There is EGPWS warning

- **“PULL UP” – “TERRAIN AHEAD PULL UP” – “OBSTACLE AHEAD PULL UP”**

  Simultaneously:

  CM | AP. . . . . **OFF**

  PF | PITCH. . . . . **PULL UP**
  Pull to full backstick deflection and hold that position.

  PF | THRUST LEVERS. . . . . **TOGA**

  PM | SPEED BRAKES lever. . . . . **VERIFY RETRACTED**

  PF | BANK. . . . . **WINGS LEVEL or ADJUST**
  It is prohibited to change the slats, flaps or gear configuration until clear of obstacle.

TCAS WARNING

There is a TCAS warning

- **Traffic Advisory (TA) Alert:**

  CM | TCAS MODE. . . . . **VERIFY ARMED**
  The flight crew must ensure that the TCAS flight guidance is armed. If not, the flight crew must manually follow the Resolution Advisory orders.

  - **If the A/THR is off:**

    CM | A/THR. . . . . **ON**
    It is recommended to set the A/THR to ON. This avoid the triggering of the AUTO FLT A/THR LIMITED alert when activating the A/THR in the case of a RA.

- **Resolution Advisory (RA) Alert:**
  - **If TCAS flight guidance is available:**

    The TCAS mode automatically engages and follows the RA orders.

    - **If AP OFF:**

      PF | FD ORDERs. . . . . **FOLLOW**
      The autopilot can be engaged.

    PM | VERTICAL SPEED. . . . . **MONITOR**
    If it is a preventive RA that was triggered, ensure that the vertical speed remains out of the red area of the vertical speed scale. If it is a corrective RA that was triggered, ensure that the vertical speeds get out of the red area, and remains in the green area of the vertical speed scale.

CAUTION	The flight crew may disconnect the AP and override the FD orders if the aircraft does not reach the green area of the vertical speed scale.

    - **If any "CLIMB" aural alert sounds during the final approach:**

      CM | TCAS MODE ORDERs. . . . . **MONITOR/FOLLOW**

      CM | GO-AROUND. . . . . **CONSIDER**
      If the flight crew decides to perform a go-around, the TCAS mode will automatically disengages, and the SRS mode engages. At all times, the flight crew must ensure that the vertical speed gets out of the red area and remains in the green area of the vertical speed scale.

      CM | ATC. . . . . **NOTIFY**

    - **When "CLEAR OF CONFLICT" aural alert sounds:**

      The TCAS mode will automatically disengage.

      CM | AP/FD. . . . . **MONITOR/FOLLOW**

      CM | ATC. . . . . **NOTIFY**

      CM | LATERAL AND VERTICAL GUIDANCE. . . . . **ADJUST**

      CM | SPEED. . . . . **ADJUST**
      It is recommended to revert to the managed speed mode if appropriate.

  - **If TCAS flight guidance is not available:**
    The TCAS mode will not engage.

    CM | AP. . . . . **OFF**

    CM | BOTH FDs. . . . . **OFF**

CM | VERTICAL SPEED. . . . . **ADJUST or MAINTAIN**

Adjust the pitch as require to reach the green area and/or avoid the red area of the vertical speed scale.

It is recommended to avoid excessive maneuvers.

- **If any "CLIMB" aural alert sounds during the final approach:**

  CM | GO-AROUND. . . . . **PERFORM**

CM | ATC. . . . . **NOTIFY**

- **When "CLEAR OF CONFLICT" aural alert sounds:**

  CM | ATC. . . . . **NOTIFY**

  CM | LATERAL AND VERTICAL GUIDANCE. . . . . **ADJUST**

  CM | AP/FD. . . . . **AS REQUIRED**

  If necessary, the flight crew may reengage the AP/FD.

WINDSHEAR
There is windshear detected
PFD: WINDSHEAR

If the Windshear is detected at takeoff:

- **Before V1:**

  Reject the takeoff.

- **After V1:**

  CM | THRUST LEVERS. . . . . **TOGA**

  CM | VR. . . . . **ROTATE**

  CM | SRS ORDERS. . . . . **FOLLOW**

Note	It might be necessary to pull the sidestick fully back.
	If the flight director bars are not displayed, set the initial pitch attitude at 17.5°.

If the windshear is detected while airborne (cruise, climb, descent, or landing):

CM | THRUST LEVERS. . . . . **TOGA**

CM | AUTOPILOT. . . . . **ENGAGED**

CM | SRS ORDERS. . . . . **FOLLOW**

It is not recommended to change the slats, flaps, or gear configuration until the aircraft is out of windshear. It is recommended to monitor the flight path and speed. It is also recommended to have a smooth recovery to a normal climb when the aircraft is out of the windshear.

Note	It might be necessary to pull the sidestick fully back.
	If the flight director bars are not displayed, set the initial pitch attitude at 17.5°.

WINDSHEAR AHEAD

There is windshear predicted ahead of the aircraft.

PFD: W/S AHEAD

- **If the "W/S AHEAD" is in red color:**
  - **During Takeoff:**
    - **If the alarm is set before the takeoff:**

      It is recommended to delay the takeoff or select another runway.

    - **If the alarm is emitted during the takeoff run:**

      Reject the takeoff.

    - **If the alarm is emitted when airborne:**

      CM | THROTTLE LEVERS. . . . . **TOGA**

      CM | AUTOPILOT. . . . . **ON**

      CM | SRS ORDERS. . . . . **FOLLOW**

Note	It might be necessary to pull the sidestick fully back.
	If the flight director bars are not displayed, set the initial pitch attitude at 17.5°.

  - **During Landing:**

    CM | GO-AROUND. . . . . **PERFORM**

    CM | AUTOPILOT. . . . . **ENGAGED**

Note	It might be necessary to pull the sidestick fully back.
	If the flight director bars are not displayed, set the initial pitch attitude at 17.5°.

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Ventilation

VENT AVNCS SYS FAULT

The power up test has not passed, or the AEVC is not supplied, or the valve position is not coordinated with the commanded position.

ECAM: INOP SYS – AVNCS VENT; VENT BLOWER; VENT EXTRACT

CM | VENT AVNCS SYS FAULT. . . . . **AWARE**

VENT BLOWER FAULT

The blowing pressure is low, or the duct is overheating

ECAM: INOP SYS – VENT BLOWER

- **If there is no DC ESS BUS fault:**

  CM | BLOWER. . . . . **OFF**

  This action will automatically change the ventilation system to a closed circuit configuration. The air from the air conditioning is added in the ventilation air.

- **If there is a DC ESS BUS fault:**

  CM | LANDING. . . . .**AS SOON AS POSSIBLE**

VENT EXTRACT FAULT

The extract pressure is low.

ECAM: INOP SYS – VENT EXTRACT

CM | EXTRACT. . . . . **OVRD**

This action will automatically change the ventilation system to a closed circuit configuration. The air from the air conditioning is added in the ventilation air.

VENT SKIN VALVE FAULT

The extract valve is open in phase 3, in flight, or the inlet valve is not closed in flight.

ECAM: INOP SYS – AVNCS VALVE

- **If it's the inlet valve that is not fully closed in flight:**

  CM | INLET VALVE NOT FULLY CLOSED. . . . . **AWARE**

- **If it's the extract valve that is open in flight:**

  CM | BLOWER. . . . . **OVRD**

  CM | EXTRACT. . . . . **OVRD**

  The weather radar may be lost due to insufficient ventilation.

  - **If the situation does not resolve:**

    CM | MAX FLIGHT LEVEL. **100/MEA**

CM | CAB PR MODE SEL. . . . .**MAN**

CM | MAN V/S CTL. . . . . **FULL UP**
The aircraft is manually depressurized. The flight crew may need to wait 10 seconds before noticing any changes in the outflow valve position.

Wheel

WHEEL TIRE DAMAGE SUSPECTED

The brake normal selector is failed, or the NWS selector is in the OPEN position.

CM | LDG DIST PROC. . . . .**APPLY**

CM | TAXI. . . . . **CAREFULLY**

WHEEL HYD SEL FAULT

The brake normal selector is failed, or the NWS selector is in the OPEN position.

CM | A/SKID. . . . . **ON**

CM | N/W STRG. . . . . **ON**

Note	It is not recommended to tow the aircraft

WHEEL N/W STRG FAULT

The nose wheel steering system is failed.

ECAM: INOP SYS – CAT 3 DUAL; N/W STRG

CM | WHEEL N/W STRG FAULT. . . . . **AWARE**

Note	If the ECAM displays L/G SHOCK ABSORBER FAULT, the nose wheel might be at a deflection of 90° from the center. It is recommended to delay the nose wheel touchdown as much as possible.

WHEEL TYRE LO PR

One tire pressure is below 74% of the optimal pressure between liftoff and engines shutdown, or 89% of nominal pressure in all other cases. It also alerts if the difference of pressure within the same axle is above 21% of the nominal pressure between liftoff and engines shutdown, or 15% of the nominal pressure in all other cases.

CM | WHEEL TYE LO PR. . . . . **AWARE**

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Wing Anti-Ice

WING A.ICE L(R) HI PR

The WING ANTI-ICE pushbutton is in the ON position, and the pressure sensor detects a high pressure in the duct.

ECAM: INOP SYS – WAI REGUL

CM | THRUST LIM PENALTY. . . . .**AWARE**

WING A.ICE L(R) VALVE OPEN

The WING ANTI-ICE pushbutton is in the OFF position, and one wing anti-ice valve is open in flight.

ECAM: INOP SYS – ENG 1 (2) BLEED; PACK 1 (2)

CM | WING ANTI-ICE. . . . . **AS REQUIRED**

CM | THRUST LIM PENALTY. . . . .**AWARE**

- **After landing**

  CM | ENG BLEED ON AFFECTED SIDE. . . . .**OFF**

  CM | X BLEED. . . . . **SHUT**

  CM | APU BLEED. . . . .**OFF**

  CM | WING ANTI-ICE. . . . . **OFF**

WING A.ICE L (R) VALVE OPEN

The WING ANTI-ICE pushbutton is in the OFF position, and one wing anti-ice valve is open on the ground.

ECAM: INOP SYS – ENG 1 (2) BLEED; PACK 1 (2)

CM | WING ANTI-ICE. . . . . **OFF**

CM | ENG BLEED ON THE AFFECTED SIDE. . . . . **OFF**

CM | X BLEED. . . . . **SHUT**

- **If the left wing is affected, and the APU is running:**

  CM | APU BLEED. . . . .**OFF**

- **After taking off and above 1 500 feet.**

  CM | ENG BLEED ON THE AFFECTED SIDE. . . . .**ON**

CM | WING ANTI ICE. . . . . **AS REQUIRED**

CM | THRUST LIM PENALTY. . . . . **AWARE**

- **After landing**

CM | WING ANTI ICE. . . . .**OFF**

CM | ENG BLEED ON THE AFFECTED SIDE. . . . .**OFF**

CM | X BLEED. . . . . **SHUT**

CM | APU BLEED. . . . .**OFF**

WING A.ICE OPEN ON GND

The WING ANTI-ICE pushbutton is in the ON position, and one wing anti-ice valve is remains open for more than 35 seconds in the ground.

CM | WING ANTI-ICE. . . . . **OFF**

WING A.ICE SYS FAULT

The WING ANTI-ICE pushbutton is in the ON position, and one wing anti-ice valve is closed.

ECAM: INOP SYS – WING ANTI-ICE

CM | THRUST. . . . . **INCREASE**

CM | WING ANTI-ICE. . . . .**OFF, and AVOID ICING CONDITIONS**

- **If severe ice accretion:**

CM | MINIMUM SPEED. . . . . **VLS + 10/G DOT**

CM | LDG DIST PROC. . . . .**APPLY**

WING A.ICE SYS FAULT

The WING ANTI-ICE pushbutton is in the ON position, and one wing anti-ice valve is closed after an engine shutdown or after loss of one bleed

ECAM: INOP SYS – WING ANTI-ICE

CM | X BLEED. . . . . **OPEN**

CM | AFFECTED PACK. . . . . **OFF**

Windshear

WINDSHEAR DET FAULT
The reactive windshear function is faulty.
ECAM: INOP SYS – WINDSHEAR DET

CM | WINDSHEAR DET FAULT. . . . .**AWARE**

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