



QUICK REFERENCE HANDBOOK

ALX - Medium Jet

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Auto Flight	-----	(ATA 22)
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General

TASK SHARING FOR ABN/EMER PROCEDURES

For all abnormal and emergency procedures, task sharing is divided as follows:

- PF - Pilot Flying - Responsible for:
 - Thrust levers
 - Flight path and airspeed control
 - Aircraft configuration (requests configuration changes)
 - Navigation
 - Communications
- PM - Pilot Monitoring - Responsible for:
 - Monitoring and reading aloud the Warning and Advisory List (WAL) and checklists
 - Performing required actions or actions requested by the PF, if applicable
 - Using engine master switches, cockpit C/Bs and guarded switches with PF's confirmation.

QRH INITIATION

QRH procedures are initiated on command of the pilot flying.

No action is to be taken (except for cancelling audio warnings and MASTER WARN lights) until:

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

STRUCTURE - WEIGHT - BALANCE

Maximum Weight	Tons (metric)	Lbs
Taxiing	75.9	167,330
Take-off	75.5	166,449
Landing	61	134,482
Zero Fuel	57	125,663

Maximum weights at take-off and landing may be reduced due to the following performance consideration:

- Climb performance (first and second segment, final segment and climb in cruise configuration, approach and landing)
- Available runway length (take-off and landing)
- Maximum tyre speed
- Brake limitations
- Obstacle clearance (take-off and landing)
- Cruise and landing weight.

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NORMAL CHECKLIST

Normal C/L are initiated by the PF and read by the PM.

The PF shall respond after having checked the existing configuration. When both pilots have to respond, "BOTH" is indicated.

SPEEDS

VMO - maximum operating speed 350 kt / M0.82
 VA - design manoeuvring speed (max. mass) 280 kt / M0.78

VFE maximum flaps extended speeds:

Flaps 1 230 kt
 Flaps 1 + F 215 kt
 Flaps 2 200 kt
 Flaps 3 185 kt
 Flaps 4 177 kt

VLO (maximum landing gear operating speed) 220 kt
 VLE (maximum landing gear extended speed) 280 kt / M0.67
 VRA (rough air speed) 200 kt
 VWO (maximum speed windshield wiper use) 230 kt
 Maximum tyre speed 195 kt

FLIGHT ENVELOPE

Maximum operating altitude 39 100 ft

Manoeuvring Load factor limitations:

Flaps extended +0 to +2 G.
 Flaps retracted -1 to +2.5 G.

Bank angle when turning and pull-up are limited by acceleration forces in accordance with chart indications.

RUNWAY SLOPE LIMITATIONS

Maximum runway slope +/-2%

WIND LIMITATIONS (TAKE-OFF/LANDING)

	Dry Runway	Contaminated Runway
Head-wind	unlimited	unlimited
Tail-wind	10 kt	5 kt
Cross-wind (landing)	33 kt	15 kt
Cross-wind (take-off)	29 kt	15 kt

RUNWAY SURFACE CONDITIONS

Take-off with standing water on the runway (+ 13 mm) or on a contaminated runway (slush + 13 mm or black ice) is prohibited.

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LANDING GEAR

Do not make sharp turns using differential wheel braking except in case of an emergency.

AUTOPILOT/FLIGHT DIRECTOR

Autopilot/Flight Director

- Minimum height for autopilot engagement after take-off 100ft
- Minimum height to operate either autopilot or flight director:
- except during take-off and approach 500 ft
 - in VS or IAS modes during approach MDA
 - during a CAT I approach..... 160 ft
 - during a CAT II approach..... 50 ft

The VOR APP (AP + flight director) mode is authorised only if a DME is available.

PRESSURISATION

- Maximum differential pressure 8.6 PSI
- Maximum negative differential pressure -1 PSI
- RAM vent open..... only if ΔP \leq 1PSI
- Excessive Cabin Altitude >9550 +/-350

POWERPLANT

ENGINE

Type of engine: GENERIC TURBINE

Maximum thrust per engine: 23000 lbf

Number of engines: 2

STARTER LIMITATIONS

After 4 cycles, a minimum of 15 minutes must elapse before attempting a further start or dry motoring cycle.

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LUBRICATION SYSTEM

Maximum oil temperatures:

Transient (15 min) 155 °C
 Continuous 140 °C

Minimum oil temperature for start -40 °C

Minimum oil pressure on MFD (ENG) 13 PSI

Fuel	Freezing point	Maximum fuel temp -°C -starting	Maximum fuel temp -°C -in flight	Maximum fuel temperature
JET A	-40	-34	-38	57
JET A1	-50	-34	-48	57
JET B	-50	-34	-48	50
JET 4	-58	-54	-56	50
JET 5	-46	-26	-33	59

Fuelling: Maximum pressure 3.5 bars (50 PSI)

Usable Fuel: Total usable fuel quantity in each tank 9364 kg / 20640 lb

Fuel left in tanks when gauges indicate zero cannot be used in flight.

Maximum fuel asymmetry 1500 kg / 3300 lb.

Do not use cross-feed with JP 4 or JET B when fuel temperature is above 20 °C.

Each electrical pump can supply an engine in all flight phases. Each pump can supply two engines in all flight phases except during take-off.

APU

Maximum altitudes for APU start:

- on ground 9200 ft
- battery start 25000 ft
- electric bus start 39000 ft

Starter limitations:

Time between each cycle 1 minute.

Elapsed time after 3 consecutive attempts 60 minutes.

Maximum EGT:

- start-up FL<250 900 °C
- start-up FL≥250 982 °C
- continuous..... 742 °C

VARIOUS LIMITATIONS

REVERSE

Prohibited actions:

- the use of reverse is prohibited in flight or for pushback
- max reverse thrust below 70 kt (except in case of emergency)

QRH	PRESET VALUES FOR VARIOUS FLIGHT PHASES	Version 2.1.1
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Preset Values for Various Flight Phases

Preset values are valid for:

- Aircraft mass: 64 Metric Tons / 141,100 lbs
- Temperature: ISA
- Wind: none

Values vary for different masses and meteorological conditions.

TAKE-OFF

Pressure altitude: 300 ft

Vertical speed: 3900 ft/min

Landing Gear	Flaps	IAS (kt)	N1 (%)	Pitch (°)
Down	2	155	95.1	+16.6

CLIMB

Pressure altitude: XXX

Normal Climb: 7000 ft

Landing Gear	Flaps	IAS (kt)	N1 (%)	Vertical Speed (ft/min)	Pitch (°)
Up	0	250	88.4	3500	+10

CRUISE

Pressure altitude: 31000 ft

Landing Gear	Flaps	IAS (kt)	N1 (%)	Pitch (°)
Up	0	310	87.7	+1.5

DESCENT

Pressure altitude: 15000 ft

Vertical speed: -2000 ft/min

Landing Gear	Flaps	IAS (kt)	N1 (%)	Pitch (°)
Up	0	300	Idle	-2.1

HOLD

Pressure altitude: 6000 ft

Landing Gear	Flaps	IAS (kt)	N1 (%)	Pitch (°)
Up	0	220	45.0	+5.1

QRH	PRESET VALUES FOR VARIOUS FLIGHT PHASES	Version 2.1.1
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APPROACH

Pressure altitude: 4000 ft

Vertical speed: -750 ft/min

Landing Gear	Flaps	IAS (kt)	N1 (%)	Pitch (°)
Down	2	144	47.2	+1.5

LANDING

Pressure altitude: 2000 ft

Vertical speed: -700 ft/min

Landing Gear	Flaps	IAS (kt)	N1 (%)	Pitch (°)
Down	4	135	52	+2.5

CLIMB WITH ONE ENGINE INOPERATIVE

Pressure altitude: 7000 ft

Climb at Green Dot

Landing Gear	Flaps	IAS (kt)	N1 (%)	Vertical Speed (ft/min)	Pitch (°)
Up	0	213	90.7	700	+7.4

HOLD WITH ONE ENGINE INOPERATIVE

Pressure altitude: 6000 ft

Landing Gear	Flaps	IAS (kt)	N1 (%)	Pitch (°)
Up	0	205	68.0	+6.6

APPROACH WITH ONE ENGINE INOPERATIVE

Pressure altitude: 2000 ft

Vertical speed: -700 ft/min

Landing Gear	Flaps	IAS (kt)	N1 (%)	Pitch (°)
Down	3	135	74.9	+2.5

LANDING DISTANCES

Landing distances are only valid with these initial conditions:

- No significant wind
- Normal dry runway
- Sea level runway
- No runway gradient
- Anti-skid ON
- Ground spoilers armed
- Reverse not used during deceleration on ground
- Standard atmosphere

CONFIG 3			
Gross weight (kg)	Landing distance (ft)		
	Manual Braking	A/BRAKE NORM	A/BRAKE MAX
44,000	2,829	3,347	2,352
45,400	2,905	3,549	2,480
47,600	2,972	3,745	2,594
49,900	3,037	3,925	2,703
52,200	3,101	4,107	2,811
54,400	3,163	4,289	2,913
56,700	3,232	4,451	2,997
59,000	3,298	4,566	3,078
61,200	3,351	4,659	3,149
64,000	3,405	4,747	3,202

CONFIG FULL			
Gross weight (kg)	Landing distance (ft)		
	Manual Braking	A/BRAKE NORM	A/BRAKE MAX
44,000	2,075	3,384	2,348
45,400	2,124	3,414	2,375
47,600	2,171	3,462	2,423
49,900	2,218	3,535	2,465
52,200	2,261	3,636	2,503
54,400	2,327	3,761	2,561
56,700	2,423	3,891	2,622
59,000	2,538	4,019	2,702
61,200	2,675	4,150	2,796
64,000	2,851	4,299	2,891

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ABNORMAL AND EMERGENCY PROCEDURES

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Air Conditioning / Pressurization (ATA 21)

WARNING

DEPRESSURIZATION - P. 21
EXCESSIVE CABIN ALTITUDE - P. 22
HIGH DIFFERENTIAL PRESSURE - P. 22
LOW DIFFERENTIAL PRESSURE - P. 22
PACK 1(2) OVERHEAT - P. 23

CAUTION

COCKPIT / FORWARD / AFT DUCT OVERHEAT - P. 20
FAN FAULT - P. 22
HOT AIR FAULT - P. 20
PACK 1(2) FAULT - P. 23
ZONE REGULATION FAULT - P. 24

NON ANNUNCIATED

PRESSURE SYSTEM 1+2 FAULT - P. 20
MANUAL MODE FAULT - P. 23

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PRESSURE SYSTEM 1+2 FAULT

“PRESS SYS 1+2 FAULT”

CABIN PRESSURE MODE SELECTORMAN

MANUAL VALVE CLOSE TO STOP CABIN FROM CLIMBING

● **IF CABIN IS NOT DESCENDING**

DESCENT AS REQUIRED TO MAINTAIN CABIN ALTITUDE

MINIMUM SAFE ALTITUDE.....CONSIDERED

MANUAL VALVE.....OPEN PROGRESSIVELY DURING DESCENT UNTIL FULLY OPEN WHEN CABIN ALT = EXTERIOR ALT

ICING CONDITIONSAVOID

DITCHING MODE OFF/OUT PRIOR TO LANDING

● **IF REQUIRED**

OXYGEN MASKS MANUAL ON

PASSENGER OXYGEN..... ON

MINIMUM SAFE ALTITUDE.....CONSIDERED

EMERGENCY DESCENT INITIATE

LAND ASAP

COCKPIT / FORWARD / AFT DUCT OVERHEAT

“CKPT/FWD/AFT DUCT OVHT”

PACK FLOW SELECTOR LO

● **IF ZONE TEMPERATURE IS OVER 30 °C**

HOT AIR OFF

● **WHEN ZONE TEMPERATURE FALLS UNDER 30 °C**

HOT AIR ON

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DEPRESSURIZATION

“DEPRESS DETECTED”

CREW OXYGEN MASK (IF ABOVE FL100)ON

● **IF ABOVE FL 160**

CABIN SIGNS..... NO SMOKING/SEAT BELTS ON
 ATC..... CONFIRM DESCENT
 EMER DESCENT
 DESCENT..... INITIATE
 MINIMUM SAFE ALTITUDE..... CONSIDERED
 THRUST LEVERS..... IDLE
 SPEED BRAKE..... 100%
 SPEED..... MAX/APPROPRIATE
 ENGINE MODE SELECTOR..... IGN
 FL/ALT..... HIGHER OF FL100 OR MEA

● **ABOVE FL 100, AND BELOW FL 160**

DESCENT..... INITIATE
 MINIMUM SAFE ALTITUDE..... CONSIDERED
 FL/ALT..... HIGHER OF FL100 OR MEA

● **IF IN AUTOMATIC MODE**

PROCEED TO PRESSURE SYSTEM 1+2 FAULT PROCEDURE

● **IF MODE SELECTOR PB-SW IS PUSHED (MANUAL LIGHT ON)**

SELECT AUTOMATIC MODE

● **IF IN MANUAL MODE**

OR PROCEED WITH MANUAL MODE FAULT PROCEDURE

WING ANTI-ICE SWITCHOFF
 AIR CONDITIONING SYSTEM..... CHECK
 BLEED AIR SYSTEM..... CHECK

● **IF CAB ALT > 14 000 FT**

PAX OXYGEN MASKS.....MANUAL ON
 MAX FL..... 100/MEA

LAND ASAP

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EXCESSIVE CABIN ALTITUDE

“DEPRESS DETECTED”

REFER TO DEPRESSURIZATION - P.21

FAN FAULT

“L+R CAB FAN FAULT”

PACK FLOW SELECTOR HI

HIGH DIFFERENTIAL PRESSURE

“DEPRESS DETECTED”

REFER TO DEPRESSURIZATION - P.21

HOT AIR FAULT

“HOT AIR FAULT”

HOT AIR (IF NOT CLOSED) OFF

● **IF FAULT PERSISTS**

PACK FLOW SELECTOR LO

● **IF ZONE TEMPERATURE DECREASES UNDER 18 °C**

PACK (BOTH) OFF

LOW DIFFERENTIAL PRESSURE

“DEPRESS DETECTED & EXCESS CAB ALT”

EXPECT HIGH CABIN ALTITUDE

A/C V/SAS REQUIRED

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MANUAL MODE FAULT	
MINIMUM SAFE ALTITUDE.....	CONSIDERED
DESCENT	AS REQUIRED TO MAINTAIN CABIN ALTITUDE
ICING CONDITIONS	AVOID
DITCHING MODE	OFF/OUT PRIOR TO LANDING
● IF REQUIRED	
OXYGEN MASKS MANUAL	ON
PASSENGER OXYGEN	ON
MINIMUM SAFE ALTITUDE.....	CONSIDERED
EMERGENCY DESCENT	INITIATE
LAND ASAP	

PACK 1(2) FAULT	
"PACK 1/2 FAULT"	
● ONE PACK FAILED	
PACK (AFFECTED)	OFF
PACK FLOW SELECTOR	HI
● BOTH PACKS FAILED	
PACK (BOTH)	OFF
MAXIMUM FL	HIGHER of FL100 or MEA

PACK 1(2) OVERHEAT	
"PACK 1/2 OVHT"	
PACK (AFFECTED)	OFF
PACK FLOW SELECTOR	HI
● WHEN PACK OVERHEAT OUT:	
PACK (AFFECTED)	ON
PACK FLOW SELECTOR	NORM

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ZONE REGULATION FAULT

"ZONE REGUL FAULT"

● **FAULT IN ZONE PRIMARY CHANNEL**

PACK FLOW SELECTOR LO

EACH ZONE TEMPERATURE DEFAULT IS 24 °C

● **FAULT IN BOTH ZONE CHANNELS**

PACK FLOW SELECTOR LO

EACH PACK DELIVERS 15 °C

HOT AIR VALVE IS AUTOMATICALLY CLOSED

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APU (ATA 49)

NON ANNUNCIATED

APU BLEED LEAK FAULT - P. 26
APU OVERHEAT - P. 26

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APU BLEED LEAK FAULT	
"APU BLEED LEAK"	
APU BLEED	OFF
● IF FAULT LIGHT EXTINGUISHES	
APU BLEED	ON
● IF FAULT PERSISTS	
APU	SHUT-DOWN

APU OVERHEAT	
APU BLEED	OFF
APU GENERATOR	OFF
APU MASTER SWITCH	OFF
EGT	CHECK DECREASE

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Auto Flight (ATA 22)

WARNING

AUTOPILOT INOPERATIVE - P. 28

CAUTION

AUTO THRUST INOPERATIVE - P. 28

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AUTOPILOT INOPERATIVE

CREW AWARENESS

Hand Fly the Aircraft.
 Not compliant with RVSM operation.
 Aircraft may be required to leave RVSM airspace.

INOPERATIVE SYSTEM:
 AP (Affected)

AUTO THRUST INOPERATIVE

THRUST LEVERS OPERATE MANUALLY

INOPERATIVE SYSTEM:
 A/THR

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Doors (ATA 52)

CAUTION

CABIN/EMERGENCY EXIT/CARGO DOORS - P. 30
FORWARD/LEFT/RIGHT/AFT AVIONICS DOORS - P. 30

QRH	DOORS (ATA 52)	Version 2.1.1
Medium Jet		27/03/18

CABIN/EMERGENCY EXIT/CARGO DOORS

“AFT/FWD CABIN or AFT/FWD EMER EXIT or AFT/FWD CARGO”

- **On the ground:**
Crew awareness.
- **In flight:**
No crew action required as long as cabin pressure is normal.
- **IF ABN CAB V/S:**
HIGHER OF.....FL100 or MEA

FORWARD/LEFT/RIGHT/AFT AVIONICS DOORS

“FWD/AFT AVIONICS”

- **On the ground:**
Crew awareness.
- **In flight:**
No crew action required as long as cabin pressure is normal.
- **IF ABN CAB V/S:**
HIGHER OF.....FL100 or MEA

QRH	ELECTRICAL (ATA 24)	Version 2.1.1
Medium Jet		27/03/18

Electrical (ATA 24)

WARNING

DUAL GENERATOR FAILURE (EMERGENCY CONFIG) - P. 35
ESSENTIAL BUSES ON BATTERY - P. 35

CAUTION

AC BUS 1(2) FAULT - P. 32
AC ESSENTIAL BUS FAULT - P. 32
AC ESSENTIAL BUS SHED - P. 33
APU GENERATOR FAULT - P. 33
BATTERY 1(2) DC BATTERY CONNECTION - P. 34
BATTERY 1(2) FAULT - P. 34
DC ESSENTIAL BUS SHED - P. 34
GENERATOR 1(2) FAULT - P. 36
INTEGRATED DRIVE GENERATOR 1(2) OIL LOW PRESS - P. 36
INTEGRATED DRIVE GENERATOR 1(2) OIL OVERHEAT - P. 37
TRANSFORMER RECTIFIER 1(2) FAULT - P. 37

NON ANNUNCIATED

DC ESSENTIAL BUS FAULT - P. 34

QRH	ELECTRICAL (ATA 24)	Version 2.1.1
Medium Jet		27/03/18

AC BUS 1(2) FAULT

“AC BUS 1(2) FAULT”

BACKUP MODE (PFD REMAINING) FULL

ICING CONDITIONS AVOID

- **IF GENERATOR 1(2) FAULT**

REFER TO GENERATOR 1(2) FAULT - P.36

- **POSSIBLE BROKEN CONNECTION OR ELECTRICAL FIRE**

BUS TIE AUTO

- **IF AC ESSENTIAL BUS FAULT also displayed**

REFER TO AC ESSENTIAL BUS FAULT - P.32

LAND ASAP

SYSTEM INOPERATIVE

IF AC BUS 1 FAULT
AC BUS 1
AC ESSENTIAL BUS
PACK 1
L+R TK PUMP 1

IF AC BUS 2 FAULT
AC BUS 2
AC ESSENTIAL BUS
L+R TK PUMP 2
PACK 2

AC ESSENTIAL BUS FAULT

“AC ESS BUS FAULT”

AC ESSENTIAL FEED..... PUSH/RIGHT SIDE

BUS TIE AUTO

- **IF AC ESSENTIAL POWER IS NOT RESTORED**
(possible broken connection or electrical fire)

APU START

APU GENERATOR ON

GENERATOR 1 AND 2 OFF

LAND ASAP

AC ESSENTIAL BUS SHED
"AC ESS BUS SHED"
AVOID ICING CONDITIONS

APU GENERATOR FAULT
"APU GEN FAULT"
APU GENERATOR CYCLE OFF THEN ON
● IF UNSUCCESSFUL
APU GENERATOR OFF
SYSTEM INOPERATIVE
<i>IF GENERATOR 1+2 ARE OFFLINE</i>
PFD (BOTH)
ENGINE BLEED (BOTH)
TRIM AIR
CAB FAN (BOTH)
HOT AIR
PACK (BOTH)
PRESSURE (BOTH)
WEATHER RADAR
DC BUS (BOTH)
AC ESSENTIAL BUS
AC BUS (BOTH)
AHRS 1
ADC 1
L TK PUMP (BOTH)
R TK PUMP (BOTH)
TCAS

BATTERY 1(2) DC BATTERY CONNECTION

"BAT 1/2 DC BAT CNT FAULT"

DC BATTERY BUS CIRCUIT BREAKER CHECK/RESET

● **IF POWER IS NOT RESTORED**

BATTERY 1(2) ISOLATE IN TURN

● **IF POWER IS NOT RESTORED AFTER**

DC BATTERY BUS CIRCUIT BREAKER OFF

BATTERY 1+2 ON

APU START IS NOT AVAILABLE

BATTERY 1(2) FAULT

"BAT 1/2 FAULT"

GENERATOR 1(2) OUTPUT MONITOR FOR CORRECT OPERATION

PREPARE FOR DIVERSION IN CASE OF ANY GENERATOR FAILURE

DC ESSENTIAL BUS FAULT

● **IF POWER IS NOT RESTORED**

ICING CONDITIONS AVOID

PF TRANSFER TO LHS
 BACKUP MODE TO LEFT PFD

LAND ASAP

DC ESSENTIAL BUS SHED

"DC ESS BUS SHED"

ICING CONDITIONS AVOID

DUAL GENERATOR FAILURE (EMERGENCY CONFIG)

"GEN 1/2 FAULT"

MIN RAT SPEED..... 100 KIAS

GENERATOR 1 + 2.....CYCLE OFF AND RESET

CHECK RAT DEPLOYED (HYD PAGE SELECTED)

● **IF UNSUCCESSFUL:**

GENERATOR 1 + 2 OFF

BUS TIE OFF

ENGINE MODE SELECTOR IGN

AVOID ICING CONDITIONS

AVOID NEGATIVE G

APU (IF AVAIL)..... START

BUS TIE AUTO

APU GENERATOR ON

LAND ASAP

ESSENTIAL BUSES ON BATTERY

LAND ASAP

MIN RAT SPEED..... 100 KIAS

CHECK RAT DEPLOYED (HYD PAGE SELECTED)

GENERATOR 1(2) FAULT

"GEN 1/2 FAULT"

BUS TIE AUTO

GENERATOR 1(2) (affected side) OFF

CIRCUIT BREAKERS CONFIRM SET

GENERATOR 1(2) (affected side) ON

● **IF WARNING PERSISTS**

GENERATOR 1(2) (affected side) OFF

APU AS REQUIRED

INTEGRATED DRIVE GENERATOR 1(2) OIL LOW PRESS

"IDG 1/2 OIL LO PR"

BUS TIE AUTO

● **SINGLE IDG FAULT**

GENERATOR 1(2) OFF

IDG 1(2) OFF

● **DOUBLE IDG FAULT**

APU START

APU GENERATOR ON

GENERATOR 1+2 OFF

IDG 1+2 OFF

INTEGRATED DRIVE GENERATOR 1(2) OIL OVERHEAT

"IDG 1/2 OIL OVHT"

BUS TIE AUTO

● **SINGLE IDG FAULT**

GENERATOR 1(2) OFF

IDG 1(2) OFF

● **DOUBLE IDG FAULT**

APU START

APU GENERATOR ON

GENERATOR 1+2 OFF

IDG 1+2 OFF

TRANSFORMER RECTIFIER 1(2) FAULT

"TR 1/2 FAULT"

● **SINGLE TR FAULT**

CREW AWARENESS - NO ACTION REQUIRED

● **DOUBLE TR FAULT**

ICING CONDITIONS AVOID

LAND ASAP

SYSTEM INOPERATIVE

BOTH DC BUSES ARE NOT POWERED

WING ANTI ICE

L+R FUEL PUMPS 1

L+R FUEL PUMPS 2

L+R TRANSFER VALVES

X-FEED VALVE

QRH		Version 2.1.1
Medium Jet		27/03/18

Intentionally Blank

QRH	ENGINES (ATA 70)	Version 2.1.1
Medium Jet		27/03/18

Engines (ATA 70)

WARNING

DUAL ENGINE FAILURE – FUEL REMAINING - P. 40
ENGINE 1(2) OIL LOW PRESSURE - P. 45

CAUTION

ENGINE 1(2) FAILURE - P. 43
ENGINE 1(2) HIGH PRESSURE FUEL VALVE - P. 44
ENGINE 1(2) IGNITION FAULT - P. 44
ENGINE 1(2) N1/N2/EGT OVERLIMIT - P. 45
ENGINE 1(2) OIL HIGH TEMPERATURE - P. 45
ENGINE 1(2) START VALVE FAULT - P. 47

NON ANNUNCIATED

ENGINE 1(2) SHUT DOWN - P. 46
ENGINE RELIGHT (IN FLIGHT) - P. 48
ENGINE FAILURE AFTER V1- CONTINUED TAKEOFF - P. 49

DUAL ENGINE FAILURE – FUEL REMAINING

“ENG DUAL FAILURE”

THRUST LEVERS..... IDLE
 ENGINE MODE SELECTOR.....IGN
 OPTIMUM RELIGHT SPEED.....300 KT

WEIGHT	Pitch (°)
At or below 50,000 kg / 110,000 lb	-4.5
60,000 kg / 132,000 lb	-3.5
70,000 kg / 154,000 lb	-2.5

LANDING TECHNIQUE.....CONFIRM
 COM1.....USE
 ATC.....NOTIFY

● **IF NO RELIGHT AFTER 30 SEC:**

ENGINE MASTERS.....OFF 30 S/ON

● **IF UNSUCCESSFUL:**

CREW OXYGEN MASKS (Above FL 100).....ON

● **BELOW FL 250**

APU (IF AVAIL).....START

● **BELOW FL 200**

WING ANTI ICE.....OFF

APU BLEED.....ON

ENGINE MASTERS (one at a time).....OFF 30 S/ON

● **APU bleed available (Engines Inoperative):**

OPTIMUM SPEED.....REFER TO TABLE BELOW

GREEN DOT SPEED WITH ALL ENGINES INOPERATIVE (KNOTS)

Weight (1 000 kg)	At or below FL 200	FL 300	FL 400
78	241	251	261
76	237	247	257
72	229	239	249
68	221	231	241
64	213	223	233
60	205	215	225
56	197	207	217
52	189	199	209
48	181	191	201
44	173	183	193
40	165	175	185

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



Continued from previous page

APPROACH PREPARATION

QNH.....SET
 CREW MASKS/OXYGEN SUPPLY (below FL 100).....OFF

IF A FORCED LANDING IS ANTICIPATED

APPROACH

FOR LANDING.....USE FLAP 3
 MIN APPROACH SPEED.....150 KT
 VAPP.....DETERMINE

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

● **At a suitable altitude (not below 3 000 ft AGL), configure the aircraft for landing (CONF 3; LANDING GEAR DOWN):**

● **CONF 3 and VAPP CONFIRMED:**

EMERGENCY GEAR EXTEND

● **LANDING GEAR downlocked**

LANDING GEAR lever.....DOWN
 APPROACH SPEED.....ADJUST

SPEED BRAKE.....GND

AT 2 000 FT AGL

CABIN.....ADVISE LANDING

AT 500 FT AGL

BRACE FOR IMPACT.....ORDER

AT TOUCHDOWN

ENGINE MASTERS.....OFF
 APU MASTER SW.....OFF
 BRAKES ON ACCU ONLY

AFTER LANDING

● **Once the aircraft has stopped:**

PARKING BRAKE.....ON
 ATC.....NOTIFY
 FIRE pushbutton (ENGINE and APU).....PUSH
 AGENTS (ENGINE and APU).....SQUIB DISCH

● **If Evacuation is required:**

EVACUATION.....INITIATE

● **If Evacuation is not required:**

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



Continued from previous page

IF DITCHING IS ANTICIPATED

APPROACH

FOR LANDING.....USE FLAP 3
 MIN APPROACH SPEED..... 150 KT
 VAPP.....DETERMINE

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

● **At a suitable altitude (not below 3 000 ft AGL), configure the aircraft for ditching (CONF 3; LANDING GEAR UP)**
 LANDING GEAR lever.....CHECK UP

AT 2 000 FT AGL
 CABIN.....ADVISE DITCHING
 DITCHING pushbutton.....ON

AT 500 FT AGL
 BRACE FOR IMPACT.....ORDER

AT TOUCHDOWN
 ENGINE MASTERS.....OFF
 APU MASTER SW.....OFF

AFTER DITCHING
 ATC (VHF 1).....NOTIFY
 FIRE pushbutton (ENGINE and APU).....PUSH
 AGENT (ENGINE and APU).....SQUIB DISCH
Engine Agent 2 is not available.
 EVACUATION.....INITIATE

QRH	ENGINES (ATA 70)	Version 2.1.1
Medium Jet		27/03/18

ENGINE 1(2) EGT OVERHEAT

“ENG 1(2) EGT OVERHT”

THRUST (affected engine) RETARD UNTIL ITT DECREASE

- **IF WARNING PERSISTS**

REFER TO ENGINE 1(2) SHUT DOWN-P.46

ENGINE 1(2) FAILURE

“ENG 1/2 FAIL”

LAND ASAP

- **Before takeoff or after landing:**

THRUST LEVER (AFFECTED ENGINE).....IDLE
 AFFECTED ENGINE MASTER.....OFF

- **IF DAMAGE IS SUSPECTED:**

AFFECTED ENGINE FIRE P/B.....PUSH
 EXTINGUISHER AGENT.....SQUIB / DISCHARGE

- **IF NO DAMAGE:**

AFFECTED ENGINE RELIGHT.....CONSIDER

-----ASSOCIATED PROCEDURES-----

ENGINE 1(2) SHUT DOWN (Refer to ENGINE 1(2) SHUT DOWN - P.46).

- **In flight:**

ENGINE MODE SELECTOR.....IGN
 THRUST LEVER (AFFECTED ENGINE).....IDLE

- **IF NO ENGINE RELIGHT AFTER 30 S:**

ENGINE MASTER (AFFECTED ENGINE).....OFF

- **IF DAMAGE:**

AFFECTED ENGINE FIRE P/B.....PUSH
 EXTINGUISHER AGENT (AFTER 10 SECONDS IN FLIGHT)...SQUIB / DISCHARGE

-----ASSOCIATED PROCEDURES-----

ENGINE 1(2) SHUT DOWN (Refer to ENGINE 1(2) SHUT DOWN - P.46).

- **IF NO DAMAGE:**

AFFECTED ENGINE RELIGHT.....CONSIDER

QRH	ENGINES (ATA 70)	Version 2.1.1
Medium Jet		27/03/18

ENGINE 1(2) HIGH PRESSURE FUEL VALVE

"ENG 1/2 HP FUEL VALVE"

- **On the ground:**

MANUAL START (IF MANUAL START USED).....OFF

ENGINE MASTER.....OFF

REFER TO ENGINE 1(2) BLEED ABNORMAL PRESSURE - P.100

(THE HIGH PRESSURE FUEL VALVE CANNOT BE CONTROLLED)

ENGINE 1(2) IGNITION FAULT

"ENG 1/2 IGN FAULT"

AC ESSENTIAL BUS CHECK

ENGINE IGN CIRCUIT BREAKER CHECK/RESET ONCE

- **IF WARNING PERSISTS**

ENGINE IGN CIRCUIT BREAKER PULL

- **IF ON GROUND**

ADVISE MAINTENANCE (TECHNICAL LOG ACTION)

ENGINE 1(2) N1/N2/EGT OVERLIMIT

● **Max pointer indication:**

EGT between 915 °C and 950 °C (except during takeoff or reverse selected), or EGT between 950 °C and 990 °C, or
 N1 between 104.0 % and 105.8 % or
 N2 between 105.0 % and 105.8 %

THRUST LEVER (OF AFFECTED ENGINE).....REDUCE POWER TO BELOW EGT LIMIT
 IF INDICATIONS REMAIN ABOVE LIMITCONSIDER SHUT-DOWN

Normal operation may be resumed and maintained until next landing. Report in the maintenance log.

● **Max pointer indication:**

EGT above 990 °C or
 N1 above 105.8 % or
 N2 above 105.8 %

THRUST LEVER (AFFECTED ENGINE).....IDLE
 ENGINE MASTER (AFFECTED ENGINE).....OFF

If conditions do not permit engine shutdown land ASAP using the minimum thrust required to sustain safe flight.

-----ASSOCIATED PROCEDURES-----

ENGINE 1(2) SHUT DOWN (Refer to ENGINE 1(2) SHUT DOWN - P.46).

ENGINE 1(2) OIL HIGH TEMPERATURE

“ENG 1(2) OIL HI TEMP”

THRUST LEVER (AFFECTED ENGINE).....IDLE
 ENGINE MASTER (AFFECTED ENGINE).....OFF

-----ASSOCIATED PROCEDURES-----

ENGINE 1(2) SHUT DOWN (Refer to ENGINE 1(2) SHUT DOWN - P.46).

ENGINE 1(2) OIL LOW PRESSURE

“ENG 1(2) OIL LO PR”

● **IF OIL PRESSURE < 13 PSI:**

THRUST LEVER (OF AFFECTED ENGINE).....IDLE
 ENGINE MASTER (OF AFFECTED ENGINE).....OFF

-----ASSOCIATED PROCEDURES-----

ENGINE 1(2) SHUT DOWN (Refer to ENGINE 1(2) SHUT DOWN - P.46).

ENGINE 1(2) SHUT DOWN

THRUST LEVER (AFFECTED ENGINE).....IDLE
 AFFECTED ENGINE MASTER.....OFF
 IGNITION (AFFECTED ENGINE).....AS REQUIRED
 FUEL PUMPS (AFFECTED ENGINE).....OFF
 GENERATOR (AFFECTED ENGINE).....OFF
 ELECTRICAL LOAD.....REDUCE
 FUEL X FEED.....AS REQUIRED
 APU.....START
 APU GENERATOR.....ON
 APU BLEED.....AS REQUIRED

● **If wing Anti-ice ON:**

PACK (AFFECTED SIDE).....OFF
 X BLEED (IF ENGINE FIRE PB-SW NOT PUSHED).....OPEN
 ENGINE MODE SELECTOR.....IGN

● **IF NO FUEL LEAK:**

IMBALANCE.....MONITOR
 TCAS MODE SELECTORTA

● **IF ENGINE FIRE pb-sw pushed:**

X BLEED SHUT

● **IF ENGINE 1(2) FIRE pb-sw pushed:**

AVOID ICING CONDITIONS

● **IF SEVERE ICE ACCRETION:**

MIN SPEED.....VLS + 10/GREEN DOT
 MANOEUVRE WITH CARE

CHECK LANDING DISTANCE REQUIRED

● **If REV unlocked:**

MAX SPEED.....300/0.78

● **If WING A/ICE off and ENGINE 1(2) FIRE pb-sw not pressed:**

● **IF PERFORMANCE PERMITS:**

X BLEED.....OPEN

● **IF NO ENGINE 1(2) DAMAGE:**

ENGINE 1(2) RELIGHT.....CONSIDER

LAND ASAP

ENGINE 1(2) START VALVE FAULT

“ENG 1/2 START VALVE FAULT”

- **START VALVE NOT CLOSED**
 - APU BLEED (ENGINE 1 AFFECTED).....OFF
 - X BLEED.....SHUT

- **In flight:**
 - ENGINE BLEED (AFFECTED SYSTEM).....OFF

- **On the ground:**
 - MANUAL START (MANUAL START USED).....OFF
 - ENGINE MASTER (AFFECTED SYSTEM).....OFF

- **START VALVE NOT OPEN**
 - **If opposite engine running:**
 - X BLEED.....ON

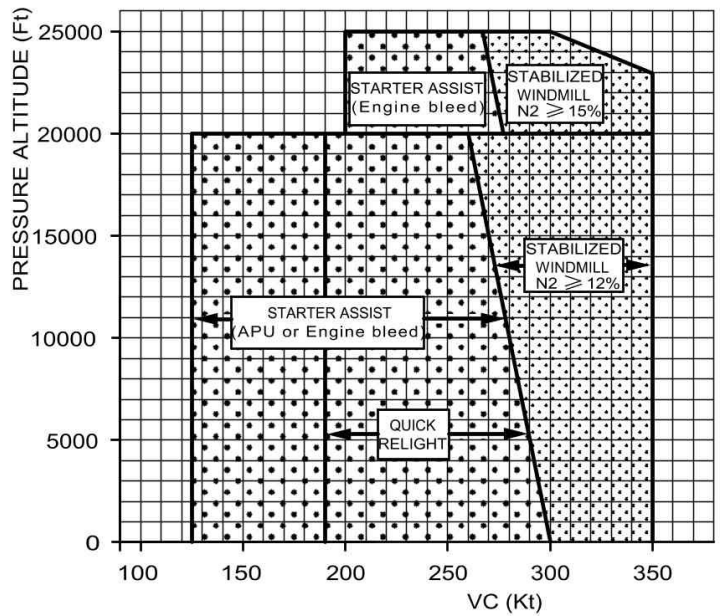
 - **If APU AVAIL below FL 200:**
 - APU BLEED.....ON

 - **IF UNSUCCESSFUL:**
 - MANUAL START (MANUAL START USED).....OFF
 - ENGINE MASTER (IF AUTO START USED).....OFF

ENGINE RELIGHT (IN FLIGHT)

- MAX ALTITUDE.....SEE FLIGHT ENVELOPE BELOW
- ENGINE MASTER (1/2).....OFF
- THRUST LEVER (1/2)..... IDLE
- ENGINE MODE SELECTOR.....IGN
- X BLEED OPEN
- WING A. ICE (for starter assist).....OFF
- ENGINE MASTER (1/2)..... ON
- ENGINE PARAMETERS (N2, EGT).....CHECK
- **When idle is reached:**
- ENGINE MODE SELECTOR..... NORM
- TCAS MODE SELECTOR.....check TA/RA
- Affected SYS.....RESTORE
- **If no relight:**
- ENGINE MASTER (affected).....OFF

IN FLIGHT ENGINE RELIGHT ENVELOPE*



*Not Simulated

QRH	ENGINES (ATA 70)	Version 2.1.1
Medium Jet		27/03/18

ENGINE FAILURE AFTER V1 - CONTINUED TAKEOFF	
THROTTLES	TOGA
LANDING GEAR	UP
CLIMB PROFILE	MAINTAIN V2 – (MAX V2+10 KIAS)
OPERATING ENGINE	MCT
ENGINE (affected engine)	SHUT-DOWN
NO CONFIGURATION CHANGE UNTIL ABOVE 1,000 FT AGL MINIMUM	

SINGLE ENGINE APPROACH CHECKLIST

SEATS AND SEAT BELTSSECURE

CABIN CREW.....ADVISE

SPEED/MINIMUMS/MISSED APPROACH.....SET /BRIEFED

PASSENGER LIGHTS.....FSB/NO SMOKING ON

FUEL CROSS FEED.....OFF

ENGINE SELECTOR.....IGN

SPEED BRAKE.....GND

LANDING GEAR.....DOWN & 3 GREENS

LANDING LIGHTS.....ON

AIRSPEEDVREF(CONFIG 3) + 10

A/PILOT & YAW DAMPER.....OFF

CONFIG 3

Gross weight (kg)	Landing distance (ft)			Speeds (KIAS)
	Manual Braking	A/BRAKE NORM	A/BRAKE MAX	
44,000	2,829	3,347	2,352	113
45,400	2,905	3,549	2,480	115
47,600	2,972	3,745	2,594	117
49,900	3,037	3,925	2,703	121
52,200	3,101	4,107	2,811	124
54,400	3,163	4,289	2,913	127
56,700	3,232	4,451	2,997	129
59,000	3,298	4,566	3,078	131
61,200	3,351	4,659	3,149	134
64,000	3,405	4,747	3,202	137

QRH	FIRE / SMOKE & FIRE PROTECTION (ATA 26)	Version 2.1.1
Medium Jet		27/03/18

Fire / Smoke & Fire Protection (ATA 26)

WARNING

APU FIRE - P. 52
ELECTRICAL FIRE OR SMOKE - P. 54
ENGINE 1(2) FIRE - P. 56
FORWARD(AFT) CARGO SMOKE - P. 57
LAVATORY SMOKE - P. 57

CAUTION

APU DETECTOR FAULT - P. 52
CARGO/LAVATORY DETECTOR FAULT - P. 53
ENGINE 1(2) FIRE DETECTOR FAULT - P. 55

APU DETECTOR FAULT

“APU FIRE DET FAULT”

APU FIRE DETECTION TEST TEST

APU SYSTEM PAGE.....MONITOR FOR ABNORMAL TEMP

APU FIRE

APU FIRE P/B.....PUSH

- **IF WARNING PERSISTS**

APU EXTINGUISHER AGENT BOTTLE SQUIB.....PUSH

APU BLEED.....OFF

APU GENERATOR.....OFF

APU MASTER SWITCH.....OFF

Do not attempt to restart the APU.

- **IF WARNING PERSISTS**

LAND ASAP

POSSIBLE UNCONTAINED FIRE IN TAIL

CONSIDER OPTION OF LANDING BELOW LIMITS

QRH	FIRE / SMOKE & FIRE PROTECTION (ATA 26)	Version 2.1.1
Medium Jet		27/03/18

CARGO/LAVATORY DETECTOR FAULT

“FWD/AFT CRG/LAVATORY DET FAULT”

FIRE DETECTION TEST..... TEST

- **IF TEST IS SATISFACTORY BUT WARNING PERSISTS**

SUSPECT FALSE WARNING

OTHERWISE LAND ASAP

ELECTRICAL FIRE OR SMOKE

LAND ASAP

- **IF SMOKE IS VISIBLE**

CREW OXYGEN MASKS ON
 SWIVEL VENT.....CLOSED
 SIGNS ON
 COCKPIT/CABIN COM ESTABLISH⁽¹⁾

- **IF SMOKE SOURCE IMMEDIATELY OBVIOUS, ACCESSIBLE, AND EXTINGUISHABLE:**

FAULTY EQUIPMENT ISOLATE

- **IF SMOKE SOURCE NOT IMMEDIATELY ISOLATED:**

DIVERSION INITIATE
 DESCENT INITIATE
 Descent to FL100, or MEA, or minimum obstacle clearance altitude

- **IF SMOKE OR FUMES PERSIST:**

PACK 1 ON
 REMOVAL OF SMOKE OR FUMES CONSIDER
 IMMEDIATE LANDING CONSIDER

AIR COND SMOKE/CAB EQUIPMENT SMOKE

- **IF AIR COND SMOKE SUSPECTED:**

APU BLEED OFF
 PACK 1 OFF

- **if smoke continues:**

PACK 1 OFF
 PACK 2 OFF

- **if smoke still continues:**

PACK 2 OFF
 REMOVAL OF SMOKE/FUMES CONSIDER

- **IF CAB EQUIPMENT SMOKE SUSPECTED:**

EMER EXIT LIGHT ON



QRH	FIRE / SMOKE & FIRE PROTECTION (ATA 26)	Version 2.1.1
Medium Jet		27/03/18

Continued from previous page

SMOKE DISSIPATION CHECKLIST
 FAULTY EQUIPMENT SEARCH/ISOLATE

● **if smoke still continues or if faulty equipment confirmed isolated:**

REMOVAL OF SMOKE/FUMES CONSIDER

UNDETERMINED/AVIONICS/ELECTRICAL SMOKE

● **IF SMOKE SOURCE CAN NOT BE DETERMINED AND STILL CONTINUES OR AVIONICS/ELECTRICAL SMOKE SUSPECTED:**

REMOVAL OF SMOKE/FUMES CONSIDER

● **IF SMOKE DISAPPEARS WITHIN 5 MINUTES:**

NORMAL VENTILATION RESTORE

ENGINE 1(2) FIRE DETECTOR FAULT

“ENG 1(2) FIRE DET FAULT”

ENGINE FIRE DETECTION TEST TEST ENGINE

INSTRUMENTS.....MONITOR FOR ABNORMAL TEMP

ENGINE 1(2) FIRE

“ENG 1/2 FIRE”

LAND ASAP

THRUST LEVER (AFFECTED ENGINE).....IDLE

FIRE PUSH (AFFECTED ENGINE).....IDLE

ENGINE MASTER (AFFECTED ENGINE).....OFF

ENGINE MODE (AFFECTED ENGINE).....IGNITION/START

FUEL PUMPS (AFFECTED ENGINE).....OFF

USE SINGLE ENGINE CHECKLIST

POSSIBLE UNCONTAINED FIRE – CHECK BY OBSERVATION

CONSIDER OPTION OF LANDING BELOW LIMITS IF FIRE PERSISTS

● **IF WARNING PERSISTS:**

EXTINGUISHER AGENT BOTTLE SQUIB 1.....PUSH

STOPWATCH.....START

ATC.....NOTIFY

● **IF WARNING PERSISTS AFTER 30 SECONDS:**

EXTINGUISHER AGENT BOTTLE SQUIB 2.....PUSH

REFER TO ENGINE 1(2) SHUT DOWN - P.46

QRH	FIRE / SMOKE & FIRE PROTECTION (ATA 26)	Version 2.1.1
Medium Jet		27/03/18

FORWARD(AFT) CARGO SMOKE

"FWD/AFT CARGO SMOKE"

FWD / AFT ISOLATE VALVE (affected compart).....OFF

EXTINGUISHER AGENT BOTTLE (affected compart).....PUSH

EMERGENCY DESCENT AS REQUIRED

LAND ASAP

LAVATORY SMOKE

CABIN CREW ORDER TO EXTINGUISH FIRE

IF SMOKE/FIRE PERSISTS

EMERGENCY DESCENT AS REQUIRED

LAND ASAP

QRH		Version 2.1.1
Medium Jet		27/03/18

Intentionally Blank

QRH	FLIGHT CONTROLS (ATA 27)	Version 2.1.1
Medium Jet		27/03/18

Flight Controls (ATA 27)

NON ANNUNCIATED

**LANDING WITH SLATS OR FLAPS JAMMED OR
INOPERATIVE - P. 60**

RUDDER JAMMED - P. 62

STABILIZER JAMMED - P. 62

LANDING WITH SLATS OR FLAPS JAMMED OR INOPERATIVE

LANDING CONFIGURATION..... DETERMINE

Repeat the following until landing configuration is reached:

SPEED SELECTOR..... BELOW MAXIMUM FOR REQUIRED CONFIGURATION

As speed reduces through MAXIMUM CONFIGURATION SPEED:

FLAPS LEVER..... SELECT CONFIGURATION

Repeat the above process until landing configuration is established.

When landing configuration is established:

DECELERATE TO CALCULATED APPROACH SPEED FOR FINAL APPROACH

● **FOR GO AROUND**

The table below provides the MAX SPEEDS for the abnormal configurations.

● **SLAT FAULT**

• **FOR CIRCUIT:**

MAINTAIN SLATS/FLAPS CONFIGURATION

Recommended speed: MAX SPEED - 10 kt

• **FOR DIVERSION**

SELECT CLEAN CONFIGURATION

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

Recommended diversion speed: MAX SPEED - 10 kt.

● **FLAP FAULT**

• **FOR CIRCUIT:**

MAINTAIN SLATS/FLAPS CONFIGURATION

Recommended speed: MAX SPEED - 10 kt

• **FOR DIVERSION**

○ **If FLAPS jammed at 0**

SELECT CLEAN CONFIGURATION

○ **If FLAPS jammed at > 0**

MAINTAIN SLAT/FLAP CONFIGURATION

Recommended speed for diversion: MAX SPEED - 10 kt

MAX SPEED

Slats	Flaps	F = 0	0 < F ≤ 1	1 < F ≤ 2	2 < F ≤ 3	F > 3
S = 0		NO LIMITATION	215 kt	200 kt	185 kt	177 kt (Not allowed)
0 < S < 1		230 kt				177 kt
S = 1			200 kt	200 kt	185 kt	
1 < S ≤ 3		177 kt	177 kt	177 kt	177 kt	



Continued from previous page.

APPROACH SPEED						
Slats Flaps	F = 0	0 < F < 1	1 ≤ F < 2	2 ≤ F < 3	F ≥ 3	
S = 0	VREF +60 (Appr) VREF +50 (Touch Down)	VREF +45	VREF +30	VREF +25	(FLAPS > 3 not allowed) VREF +25	
0 < S < 1						
1 ≤ S ≤ 3	VREF +25	VREF +15	VREF +10	VREF +10		
S > 3				VREF +5		

LANDING DISTANCES & SPEEDS CONFIG 3				
Gross weight (kg)	Landing distance (ft)			Speeds (KIAS)
	Manual Braking	A/BRAKE NORM	A/BRAKE MAX	
44,000	2,829	3,347	2,352	113
45,400	2,905	3,549	2,480	115
47,600	2,972	3,745	2,594	117
49,900	3,037	3,925	2,703	121
52,200	3,101	4,107	2,811	124
54,400	3,163	4,289	2,913	127
56,700	3,232	4,451	2,997	129
59,000	3,298	4,566	3,078	131
61,200	3,351	4,659	3,149	134
64,000	3,405	4,747	3,202	137

LANDING DISTANCES & SPEEDS CONFIG 4				
Gross weight (kg)	Landing distance (ft)			Speeds (KIAS)
	Manual Braking	A/BRAKE NORM	A/BRAKE MAX	
44,000	2,075	3,384	2,348	108
45,400	2,124	3,414	2,375	110
47,600	2,171	3,462	2,423	112
49,900	2,218	3,535	2,465	115
52,200	2,261	3,636	2,503	118
54,400	2,327	3,761	2,561	121
56,700	2,423	3,891	2,622	123
59,000	2,538	4,019	2,702	125
61,200	2,675	4,150	2,796	127
64,000	2,851	4,299	2,891	130

QRH	FLIGHT CONTROLS (ATA 27)	Version 2.1.1
Medium Jet		27/03/18

RUDDER JAMMED

FOR APPROACH

AUTO BRAKE..... DO NOT USE
 FOR LANDING..... USE NORMAL CONF
 SPEED AND TRAJECTORY..... STABILIZE ASAP
 CHECK LANDING DISTANCE REQUIRED

AVOID LANDING WITH CROSSWIND IF POSSIBLE

MAX CROSSWIND for LANDING 15 kt

ON GROUND

DIFFERENTIAL BRAKING..... USE AS REQUIRED

STABILIZER JAMMED

AP..... OFF
 MANUAL PITCH TRIM..... CHECK

- IF MANUAL TRIM AVAIL

TRIM FOR NEUTRAL ELEVATION

APPROACH PROCEDURE

- IF MANUAL TRIM AVAIL

USE FLAP 3 FOR LANDING

QRH	FUEL (ATA 28)	Version 2.1.1
Medium Jet		27/03/18

Fuel (ATA 28)

CAUTION

LEFT / RIGHT INNER/OUTER TANK HIGH TEMP - P. 65
LEFT / RIGHT INNER/OUTER TANK LOW TEMP - P. 65
LEFT / RIGHT TRANSFER VALVE FAULT - P. 66
LEFT / RIGHT WING TANK LOW LEVEL - P. 66
LEFT TANK PUMP 1(2) LOW PRESSURE - P. 66
LEFT TANK PUMP 1+2 LOW PRESSURE - P. 67
RIGHT TANK PUMP 1(2) LOW PRESSURE - P. 68
RIGHT TANK PUMP 1+2 LOW PRESSURE - P. 68
CROSSFEED VALVE FAULT - P. 64

NON ANNUNCIATED

GRAVITY FUEL FEED - P. 64
LEFT / RIGHT WING FUEL LEAK - P. 67

CROSSFEED VALVE FAULT

"XFEED VALVE FAULT"

● IF X FEED BREAKER IS PULLED PUSH

● IF FAULT IS NOT RECTIFIED

X FEED OFF

CHECK ENDURANCE

GRAVITY FUEL FEED

ENGINE MODE SELECTOR.....IGN

AVOID NEGATIVE G

● **DETERMINE GRAVITY FEED CEILING:**

Consult the following table to determine the flight altitude limitation.

<i>Flight conditions at time of gravity fuel feed</i>	<i>Gravity feed ceiling</i>
Flight time above FL 300 more than 30 min	Current FL ⁽¹⁾
Flight time above FL 300 less than 30 min	FL 300 ⁽¹⁾
Aircraft flight level must never exceeded FL 300	FL 150 ⁽¹⁾ , or 7 000 ft above takeoff airport, whichever is higher

⁽¹⁾ For JET B, gravity feed ceiling is FL 100 in all cases.

DESCEND TO GRAVITY FEED CEILING (if applicable).

● **WHEN REACHING GRAVITY FEED CEILING:**

FUEL X FEED.....OFF

● **IF NO FUEL LEAK AND FOR AIRCRAFT HANDLING:**

If no fuel leak, and for flight with only one engine running (this engine being fed by gravity), apply the following:

FUEL X FEED.....ON

BANK ANGLE.....1° WING DOWN ON LIVE ENGINE SIDE

RUDDER TRIM.....USE

WHEN FUEL IMBALANCE REACHES 1 000 kg (2 200 lb):

BANK ANGLE.....2° or 3° WING DOWN ON LIVE ENGINE SIDE

QRH	FUEL (ATA 28)	Version 2.1.1
Medium Jet		27/03/18

LEFT / RIGHT INNER/OUTER TANK HIGH TEMP

"L/R INNER/OUTER TK HI TEMP"

● **ON GROUND**

ENGINE (AFFECTED SIDE)..... SHUT OFF

PROCEED WITH MAINTENANCE CHECK

● **IN FLIGHT**

ENGINE FUEL FLOW (AFFECTED SIDE).....INCREASE

Disconnect auto-thrust. Adjust the thrust lever to increase fuel flow through the IDG oil heat exchanger and decrease the temperature of the fuel returning to the outer cell.

● **IF TEMPERATURE ABOVE 65° C IN OUTER CELL OR 57° C IN INNER CELL:**

APU AS REQUIRED

APU if available may be started and APU GENERATOR used to allow IDG disconnection.

● **IF OPPOSITE GENERATOR AVAILABLE:**

IDG (AFFECTED SIDE) OFF

LEFT / RIGHT INNER/OUTER TANK LOW TEMP

"L/R INNER/OUTER TK LO TEMP"

● **ON GROUND**

ENGINE SHUT OFF

PROCEED WITH MAINTENANCE CHECK

● **IN FLIGHT**

CREW AWARENESS

CONSIDER DESCENDING TO A LOWER ALTITUDE AND/OR INCREASING MACH TO INCREASE TAT

QRH	FUEL (ATA 28)	Version 2.1.1
Medium Jet		27/03/18

LEFT / RIGHT WING TANK LOW LEVEL

“LEFT/RIGHT WING TK LO LVL”

LEFT/RIGHT (AFFECTED TANK) FUEL PUMP ON

● **IF FUEL LEAK SUSPECTED**

REFER TO LEFT / RIGHT WING FUEL LEAK- P.67

● **OTHERWISE**

FUEL XFEED AS REQUIRED

LEFT / RIGHT TRANSFER VALVE FAULT

“LEFT/RIGHT XFR VALVE FAULT”

X FEED ON

FUEL OPPOSITE WING CHECK ENDURANCE

LEFT TANK PUMP 1(2) LOW PRESSURE

“L/R TK PUMP 1(2) LO PR”

● **IF LEFT PUMP 1(2) (NON AFFECTED PUMP) IS NOT SELECTED ON SELECT ON**

X FEED ON

LEFT TANK PUMP 1(2) (AFFECTED PUMP) OFF

● **IF LEFT PUMP 1(2) (AFFECTED PUMP) BREAKER IS PULLED PUSH**

LEFT TANK PUMP 1(2) (AFFECTED PUMP) ON

● **IF FAULT IS NOT RESUMED**

LEFT TANK PUMP 1(2) (AFFECTED PUMP) OFF

LEFT TANK PUMP 1+2 LOW PRESSURE

"L/R TK PUMP 1+2 LO PR"

- X FEED ON
- IF RIGHT PUMP 1 IS NOT SELECTED ON SELECT ON
 - IF RIGHT PUMP 2 IS NOT SELECTED ON SELECT ON
- LEFT TANK PUMP 1 OFF
- IF LEFT PUMP 1 BREAKER IS PULLED PUSH
- LEFT TANK PUMP 1 ON
- IF FAULT IS NOT RESUMED
- LEFT TANK PUMP 1 OFF
- LEFT TANK PUMP 2 OFF
- IF LEFT PUMP 2 BREAKER IS PULLED PUSH
- LEFT TANK PUMP 2 ON
- IF FAULT IS NOT RESUMED
- LEFT TANK PUMP 2 OFF

LEFT / RIGHT WING FUEL LEAK

- X FEED..... ON
- LEFT/RIGHT PUMP 1 OFF
- LEFT/RIGHT PUMP 2 OFF
- FUEL LEFT/RIGHT (NON AFFECTED) WING CHECK ENDURANCE

*Use as much fuel as possible from affected tank to supply both engines.
Once the affected tank is empty, consider if two engine operation is still possible using X-feed, otherwise revert to single engine operation.
Ensure that the fuel imbalance is within limits for landing.*

QRH	FUEL (ATA 28)	Version 2.1.1
Medium Jet		27/03/18

RIGHT TANK PUMP 1(2) LOW PRESSURE

"L/R TK PUMP 1(2) LO PR"

- IF RIGHT PUMP 1(2) (NON AFFECTED PUMP) IS NOT SELECTED ON SELECT ON
X FEED ON
RIGHT TANK PUMP 1(2) (AFFECTED PUMP) OFF
- IF RIGHT PUMP 1(2) (AFFECTED PUMP) BREAKER IS PULLED PUSH
RIGHT TANK PUMP 1(2) (AFFECTED PUMP) ON
- IF FAULT IS NOT RESUMED
RIGHT TANK PUMP 1(2) (AFFECTED PUMP) OFF

RIGHT TANK PUMP 1+2 LOW PRESSURE

"L/R TK PUMP 1+2 LO PR"

- X FEED ON
- IF LEFT PUMP 1 IS NOT SELECTED ON SELECT ON
 - IF LEFT PUMP 2 IS NOT SELECTED ON SELECT ON
 - RIGHT TANK PUMP 1 OFF
 - IF RIGHT PUMP 1 BREAKER IS PULLED PUSH
RIGHT TANK PUMP 1 ON
 - IF FAULT IS NOT RESUMED
RIGHT TANK PUMP 1 OFF
RIGHT TANK PUMP 2 OFF
 - IF RIGHT PUMP 2 BREAKER IS PULLED PUSH
RIGHT TANK PUMP 2 ON
 - IF FAULT IS NOT RESUMED
RIGHT TANK PUMP 2 OFF

QRH	HYDRAULIC (ATA 29)	Version 2.1.1
Medium Jet		27/03/18

Hydraulic (ATA 29)

WARNING

BLUE+YELLOW SYSTEM LOW PRESSURE - P. 71
GREEN+BLUE SYSTEM LOW PRESSURE - P. 72
GREEN+YELLOW SYSTEM LOW PRESSURE - P. 74

CAUTION

BLUE RESERVOIR LOW AIR PRESSURE - P. 70
BLUE ELECTRIC PUMP LOW PRESS OR OVERHEAT - P. 70
BLUE RESERVOIR OVERHEAT - P. 70
BLUE RESERVOIR LOW LEVEL - P. 70
GREEN RESERVOIR LOW AIR PRESSURE - P. 73
GREEN RESERVOIR OVERHEAT - P. 73
GREEN RESERVOIR LOW LEVEL - P. 73
YELLOW ELECTRIC PUMP LOW PRESS OR OVERHEAT - P. 74
YELLOW RESERVOIR LOW AIR PRESS - P. 75
YELLOW RESERVOIR LOW LEVEL - P. 75
YELLOW RESERVOIR OVERHEAT - P. 76

QRH	HYDRAULIC (ATA 29)	Version 2.1.1
Medium Jet		27/03/18

BLUE ELECTRIC PUMP LOW PRESS OR OVERHEAT

“B ELEC PUMP LO PR” or “B ELEC PUMP OVHT”

BLUE ELECTRIC PUMP.....OFF

-----ASSOCIATED PROCEDURES-----

BLUE SYSTEM LOW PRESSURE

APPROACH PROCEDURE

HYDRAULIC LOW PRESSURE

- **IF BLUE OVERHEAT OUT:**
BLUE ELECTRIC PUMP.....AUTO

BLUE RESERVOIR LOW AIR PRESSURE

“B RSVR LO AIR PR”

- **IF PRESSURE FLUCTUATES:**

BLUE ELECTRIC PUMP.....OFF

-----ASSOCIATED PROCEDURES-----

BLUE SYSTEM LOW PRESSURE

APPROACH PROCEDURE

HYDRAULIC LOW PRESSURE

BLUE ELECTRIC PUMP.....AUTO

BLUE RESERVOIR LOW LEVEL

“B RSVR LO LEVEL”

BLUE ELECTRIC PUMP.....OFF

BLUE RESERVOIR OVERHEAT

“B RSVR OVHT”

BLUE ELECTRIC PUMP.....OFF

-----ASSOCIATED PROCEDURES-----

BLUE SYSTEM LOW PRESSURE

APPROACH PROCEDURE

HYDRAULIC LOW PRESSURE

BLUE ELECTRIC PUMP.....AUTO

BLUE+YELLOW SYSTEM LOW PRESSURE

"B+Y SYS LO PR"

LAND ASAP

- **If yellow system lost by ENGINE 2 PUMP LOW PRESSURE:**
YELLOW ELECTRIC PUMP.....ON
- **If blue system lost by ELECTRIC PUMP LOW PRESSURE:**
RAT.....CHECK OUT
MIN RAT SPEED.....100 KT
AFFECTED PUMPS.....OFF

CHECK RAT DEPLOYED (HYD PAGE SELECTED)

MANOEUVER WITH CARE

If neither blue or yellow system recovered:

Refer to LANDING WITH SLATS OR FLAPS JAMMED OR INOPERATIVE - P.60

MIN RAT SPEED.....100 KT
(If BLUE PUMP LOW PRESSURE)

SPEED BRAKE.....DO NOT USE

CHECK RAT DEPLOYED (HYD PAGE SELECTED)

MANOEUVER WITH CARE

APPROACH PROCEDURE

DUAL HYDRAULIC LOW PRESSURE
(Line not displayed for dual LOW LVL)

- **If system lost by RESERVOIR LOW AIR PRESSURE:**
RELATED PUMP.....ON
- **If system lost by RESERVOIR OVERHEAT:**
 - **IF BLUE OVERHEAT OUT:**
BLUE ELECTRIC PUMP.....AUTO
 - **IF YELLOW OVERHEAT OUT:**
YELLOW ENGINE 2 PUMP.....ON

- **IF HYDRAULIC NOT RECOVERED**
LANDING GEAR..... GRAVITY EXTENSION
APPROACH SPEED..... VREF+55 KT

CHECK LANDING DISTANCES REQUIRED

SLATS/FLAPS INOPERATIVE - Refer to LANDING WITH SLATS OR FLAPS JAMMED OR INOPERATIVE - P.60

*AUTOBRAKES INOPERATIVE
SPEED BRAKE INOPERATIVE
LANDING GEAR INOPERATIVE*

QRH	HYDRAULIC (ATA 29)	Version 2.1.1
Medium Jet		27/03/18

GREEN+BLUE SYSTEM LOW PRESSURE

"G+B SYS LO PR"

LAND ASAP

- **If blue system lost by ELECTRIC PUMP LOW PRESSURE:**
RAT.....CHECK DEPLOYED
MIN RAT SPEED..... 100 KT
AFFECTED PUMPS.....OFF
MANOEUVRE WITH CARE

-----ASSOCIATED PROCEDURES-----

APPROACH PROCEDURE

DUAL HYDRAULIC LOW PRESSURE

- **If system lost by RESERVOIR LOW AIR PR:**
RELATED PUMPS.....ON
- **If system lost by RESERVOIR OVERHEAT:**
 - **IF BLUE OVERHEAT OUT:**
BLUE ELECTRIC PUMP.....AUTO
 - **IF GREEN OVERHEAT OUT:**
GREEN ENGINE 1 PUMP.....ON
- **IF HYDRAULIC PRESSURE NOT RESTORED (CHECK MFD HYD PAGE):**
 - **PRIOR TO APPROACH:**
LANDING GEAR.....GRAVITY EXTENSION

CHECK LANDING DISTANCES REQUIRED
STOP THE A/C USING REVERSE ONLY

*AUTOBRAKES INOPERATIVE
BRAKES INOPERATIVE
LANDING GEAR INOPERATIVE*

GREEN RESERVOIR LOW AIR PRESSURE
"G RSVR LO AIR PR"
<ul style="list-style-type: none"> ● IF PRESSURE FLUCTUATES: GREEN ENGINE 1 PUMP.....OFF GREEN ENGINE 1 PUMP LOW PRESSURE -----ASSOCIATED PROCEDURES----- GREEN SYSTEM LOW PRESSURE <u>APPROACH PROCEDURE</u> HYDRAULIC LOW PRESSURE GREEN ENGINE 1 PUMP.....ON

GREEN RESERVOIR LOW LEVEL
"G RSVR LO LEVEL"
GREEN ENGINE 1 PUMP.....OFF GREEN ENGINE 1 PUMP LOW PRESSURE

GREEN RESERVOIR OVERHEAT
"G RSVR OVHT"
GREEN ENGINE 1 PUMP.....OFF GREEN ENGINE 1 PUMP LOW PRESSURE -----ASSOCIATED PROCEDURES----- GREEN SYSTEM LOW PRESSURE <u>APPROACH PROCEDURE</u> HYDRAULIC LOW PRESSURE <ul style="list-style-type: none"> ● IF GREEN OVERHEAT OUT: GREEN ENGINE 1 PUMP.....ON

QRH	HYDRAULIC (ATA 29)	Version 2.1.1
Medium Jet		27/03/18

GREEN+YELLOW SYSTEM LOW PRESSURE

"G+Y SYS LO PR"

LAND ASAP

AFFECTED PUMPS.....OFF

- **If yellow system lost by ENGINE 2 PUMP LOW PRESSURE:**
 YELLOW ELECTRIC PUMP.....ON

MANOEUVER WITH CARE

-----ASSOCIATED PROCEDURES-----

APPROACH PROCEDURE

DUAL HYDRAULIC LOW PRESSURE

- **If system lost by RESERVOIR LOW AIR PRESSURE:**
 RELATED PUMP.....ON
- **If system lost by RESERVOIR OVERHEAT:**
 - **IF GREEN OVERHEAT OUT:**
 GREEN ENGINE 1 PUMP.....ON
 - **IF YELLOW OVERHEAT OUT:**
 YELLOW ENGINE 2 PUMP.....ON
- **IF HYDRAULIC NOT RECOVERED:**
 - **WHEN VAPP:**
 LANDING GEAR.....GRAVITY EXTENSION

CHECK LANDING DISTANCES REQUIRED

YELLOW ELECTRIC PUMP LOW PRESS OR OVERHEAT

"Y ELEC PUMP LO PR" or "Y ELEC PUMP OVHT"

- **IF PRESSURE FLUCTUATES:**

YELLOW ELECTRIC PUMP.....OFF

-----ASSOCIATED PROCEDURES-----

YELLOW SYSTEM LOW PRESSURE

APPROACH PROCEDURE

HYDRAULIC LOW PRESSURE

- **IF YELLOW OVERHEAT OUT:**
 YELLOW ENGINE 2 PUMP.....ON

YELLOW RESERVOIR LOW AIR PRESS

“Y RSVR LO AIR PR”

- **IF PRESSURE FLUCTUATES:**

YELLOW ELECTRIC PUMP.....OFF

-----ASSOCIATED PROCEDURES-----

YELLOW SYSTEM LOW PRESSURE

APPROACH PROCEDURE

HYDRAULIC LOW PRESSURE

YELLOW ENGINE 2 PUMP.....ON

YELLOW RESERVOIR LOW LEVEL

“Y RSVR LO LEVEL”

YELLOW ENGINE 2 PUMP.....OFF

YELLOW ELECTRIC PUMP..... OFF

YELLOW ENGINE 2 PUMP LOW PRESSURE

-----ASSOCIATED PROCEDURES-----

YELLOW SYSTEM LOW PRESSURE

APPROACH PROCEDURE

HYDRAULIC LOW PRESSURE

- **IF YELLOW OVERHEAT OUT:**

YELLOW ENGINE 2 PUMP.....ON

QRH	HYDRAULIC (ATA 29)	Version 2.1.1
Medium Jet		27/03/18

YELLOW RESERVOIR OVERHEAT

"Y RSVR OVHT"

YELLOW ENGINE 2 PUMPOFF
 YELLOW ELECTRIC PUMP OFF

YELLOW ENGINE 2 PUMP LOW PRESSURE
 -----ASSOCIATED PROCEDURES-----

YELLOW SYSTEM LOW PRESSURE

APPROACH PROCEDURE

HYDRAULIC LOW PRESSURE
 ● **IF YELLOW OVERHEAT OUT:**
 YELLOW ENGINE 2 PUMPON

QRH	ICE AND RAIN PROTECTION (ATA 30)	Version 2.1.1
Medium Jet		27/03/18

Ice and Rain Protection (ATA 30)

CAUTION

ANTI ICE ALL PITOT FAILURE - P. 78

ANTI ICE CAPTAIN / STANDBY PITOT - P. 78

QRH	ICE AND RAIN PROTECTION (ATA 30)	Version 2.1.1
Medium Jet		27/03/18

ANTI ICE ALL PITOT FAILURE

"CAPT + STBY PITOT"

UNRELIABLE SPEED PROCEDURES.....APPLY

ANTI ICE CAPTAIN / STANDBY PITOT

"CAPT/STBY PITOT"

AC BUSES.....CHECK
 PITOT ANTI ICE BREAKER.....CHECK, PUSH IF PULLED

QRH	INDICATING / RECORDING SYSTEMS (ATA 31)	Version 2.1.1
Medium Jet		27/03/18

Indicating / Recording Systems (ATA 31)

CAUTION

DISPLAY UNIT FAILURE - P. 80

DISPLAY UNIT FAILURE

- **AFFECTED DISPLAY UNIT FLASHES INTERMITTENTLY:**
 - **IF CAPTAIN'S SIDE IS AFFECTED:**
 - GENERATOR 1 OFF
 - **If Display Units do not stop flashing:**
 - GENERATOR 1 ON
 - **If Display Units stop flashing:**
 - GENERATOR 1 KEEP OFF
 - RUDDER TRIM CHECK/RESET
 - AP and/or A/THR AS REQUIRED
 - APU START CONSIDER
 - **IF FIRST OFFICER'S SIDE IS AFFECTED:**
 - GENERATOR 2 OFF
 - **If Display Units do not stop flashing:**
 - GENERATOR 2 ON
 - **If Display Units stop flashing:**
 - GENERATOR 2 KEEP OFF
 - RUDDER TRIM CHECK/RESET
 - AP and/or A/THR AS REQUIRED
 - APU START CONSIDER
 - **IF MFD IS AFFECTED:**
 - CAPT + F/O PFD SET BACKUP MODE FULL

QRH	LANDING GEAR & BRAKES (ATA 32)	Version 2.1.1
Medium Jet		27/03/18

Landing Gear & Brakes (ATA 32)

WARNING

GEAR NOT DOWNLOCKED - P. 82
LOSS OF BRAKING - P. 85

CAUTION

AUTOBRAKE FAULT - P. 82
ANTI-SKID FAULT - P. 82
LANDING GEAR DOORS NOT CLOSED - P. 83
GEAR UPLOCKS NOT ENGAGED - P. 83
LANDING GEAR CONTROL UNIT FAULT - P. 85

NON ANNUNCIATED

BRAKES ANTI-SKID FAULT OR ANTI-SKID OFF - P. 82
EXCESSIVE ASYMMETRY OR LOSS OF BRAKING - P. 82
GEAR UP OR DOWN INDICATIONS DISAGREE- P. 83
LANDING GEAR GRAVITY EXTENSION - P. 84
LANDING WITH ABNORMAL GEAR INDICATIONS - P. 84

QRH	LANDING GEAR & BRAKES (ATA 32)	Version 2.1.1
Medium Jet		27/03/18

ANTI-SKID FAULT

“ANTI SKID FAULT”

NORMAL AUTO BRAKESON

ANTI SKID BREAKER PUSH

IF ‘MANUAL’ BRAKING REQUIRED:

BRAKING PRESSURE MODERATED

AUTOBRAKE FAULT

“AUTO BRK FAULT”

A/SKID ON

AUTO BRAKES CIRCUIT BREAKER PUSH

IF ‘MANUAL’ BRAKING REQUIRED:

BRAKING PRESSURE MODERATED

BRAKES ANTI-SKID FAULT OR ANTI-SKID OFF

CHECK LANDING DISTANCE REQUIRED

EXCESSIVE ASYMMETRY OR LOSS OF BRAKING

BRAKES RELEASE

ANTISKID OFF

BRAKES USE MODERATE BRAKING WITH CAUTION

GEAR NOT DOWNLOCKED

LANDING GEAR LEVER RECYCLE

- **IF UNSUCCESSFUL:**
LANDING GEAR..... GRAVITY EXTENSION

GEAR UP OR DOWN INDICATIONS DISAGREE	
SPEED	220 KIAS MAXIMUM
HYDRAULIC GREEN	CYCLE OFF AND RESET
<ul style="list-style-type: none"> ● IF LANDING GEAR AGREES WITH GEAR HANDLE POSITION 	
<p>NO FURTHER ACTION REQUIRED. LAND AT THE NEAREST SUITABLE AIRPORT, AND MAINTAIN LESS THAN 176 KIAS</p>	
<ul style="list-style-type: none"> ● IF LANDING GEAR DISAGREES WITH GEAR HANDLE POSITION 	
LANDING GEAR CIRCUIT BREAKER	PULL
EMERGENCY GEAR	EXTEND
<ul style="list-style-type: none"> ● IF ANY LANDING LIGHT FAILS TO INDICATE GREEN SAFE LIGHT 	
<p>REFER TO UNSAFE LANDING PROCEDURE - P.90</p>	

GEAR UPLOCKS NOT ENGAGED	
<ul style="list-style-type: none"> ● LANDING GEAR doors not closed: 	
MAX SPEED.....	220/.54
LANDING GEAR.....	RECYCLE
<ul style="list-style-type: none"> ● IF UNSUCCESSFUL: 	
LANDING GEAR.....	DOWN
MAX SPEED.....	280/.67

LANDING GEAR DOORS NOT CLOSED	
<ul style="list-style-type: none"> ● If the LANDING GEAR lever is UP: 	
<ul style="list-style-type: none"> ● WHEN SPEED < 220/.54: 	
LANDING GEAR.....	RECYCLE
<ul style="list-style-type: none"> ● IF UNSUCCESSFUL: 	
MAX SPEED.....	250/.60

LANDING GEAR GRAVITY EXTENSION

LANDING GEAR lever.....	DOWN
LANDING GEAR CIRCUIT BREAKER	PULL
EMERGENCY GEAR switch cover.....	PULL UP
EMERGENCY GEAR switch.....	DOWN
GEAR DOWN indications (if available).....	CHECK
<ul style="list-style-type: none"> ● IF UNSUCCESSFUL: APPLY UNSAFE LANDING PROCEDURE - P.90 	

LANDING WITH ABNORMAL GEAR INDICATIONS

PREPARATION

CABIN CREW.....	NOTIFY
ATC.....	NOTIFY
<ul style="list-style-type: none"> ● If NOSE LANDING GEAR abnormal: CG location (if possible).....AFT ● If one MAIN LANDING GEAR abnormal: FUEL IMBALANCE.....CONSIDER 	

CONSIDER MOVING PASSENGERS AWAY FROM UNSAFE INDICATION SIDE

OXYGEN CREW SUPPLY	OFF
SIGNS	ON
CABIN and COCKPIT.....	PREPARE

APPROACH

GPWS SYS.....	OFF
LANDING GEAR lever.....	CHECK DOWN
EMERGENCY GEAR switch cover.....	PULL DOWN
AUTOBRAKE.....	DO NOT ARM
EMER EXIT LIGHT.....	ON
CABIN REPORT.....	OBTAIN
A/SKID.....	OFF
<ul style="list-style-type: none"> ● If one or both MAIN LANDING GEAR abnormal: GROUND SPOILERS.....DO NOT ARM (ZERO) 	

BEFORE LANDING

BRACE FOR IMPACT.....	ORDER
<ul style="list-style-type: none"> ● If the external light condition is poor during landing: DOME LIGHT.....LO 	



QRH	LANDING GEAR & BRAKES (ATA 32)	Version 2.1.1
Medium Jet		27/03/18

Continued from previous page.

FLARE, TOUCH DOWN AND ROLL OUT

REVERSE.....DO NOT USE

● **If NOSE LANDING GEAR abnormal:**

NOSE.....MAINTAIN BACK PRESSURE ON CONTROL COLUMN
BRAKES (compatible with elevator efficiency).....APPLY
ENGINE MASTERS.....OFF

● **If one MAIN LANDING GEAR abnormal:**

ENGINE MASTERS.....OFF
FAILED GEAR SIDE.....HOLD WING UP USING AILERON
DIRECTIONAL CONTROL.....MAINTAIN

● **If both MAIN LANDING GEAR abnormal:**

ENGINE MASTERS.....OFF
PITCH ATTITUDE (at touchdown).....NOT LESS THAN 6°

WHEN A/C STOPPED

ENGINE (all) and APU FIRE pushbutton.....PUSH
ENGINE (all) and APU AGENT.....SQUIB DISCH

● **If Evacuation required:**

EVACUATION.....INITIATE

● **If Evacuation not required:**

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

LANDING GEAR CONTROL UNIT FAULT

“LG CONTROL UNIT”

LANDING GEAR CIRCUIT BREAKERPULL

LANDING GEAR.....GRAVITY EXTENSION

REFER TO LANDING GEAR GRAVITY EXTENSION - P.84

GPWSOFF

LOSS OF BRAKING

● **IF BRAKING UNAVAILABLE:**

REV.....MAX
BRAKE PEDALS.....RELEASE

● **If STILL NO BRAKING:**

PARKING BRAKE.....SHORT AND SUCCESSIVE APPLICATIONS*

*Not simulated

QRH	LANDING GEAR & BRAKES (ATA 32)	Version 2.1.1
Medium Jet		27/03/18

Intentionally Blank

QRH	MISCELLANEOUS (ATA 90)	Version 2.1.1
Medium Jet		27/03/18

Miscellaneous (ATA 90)

NON ANNUNCIATED

CREW INCAPACITATION - P. 88

EMERGENCY DESCENT - P. 89

UNSAFE LANDING PROCEDURE - P. 90

WINDSHEAR - P. 91

QRH	MISCELLANEOUS (ATA 90)	Version 2.1.1
Medium Jet		27/03/18

CREW INCAPACITATION

NOT SIMULATED

If a cockpit crew member becomes incapacitated, the remaining crew member must call a cabin attendant as soon as practicable. The best way to request assistance from the cabin crew, is by means of the passenger address system:

"ATTENTION, PURSER TO COCKPIT PLEASE" the purser or any other cabin attendant must proceed to the cockpit immediately.
The cabin attendant must then:

Tighten and manually lock the shoulder harness of the incapacitated crew member;
Push the seat completely aft;
Recline the seat back.

It takes 2 people to remove the dead weight of an unconscious body from a seat without endangering any controls and switches.
If it is not possible to remove the body, one cabin attendant must remain in the cockpit to take care of and observe the incapacitated crew member.
In coordination with the purser:

Request assistance from any medically qualified passenger.
Check if a type qualified company pilot is on board to replace the incapacitated crew member. If not, cabin attendant must remain on flight deck to read checklists as requested by pilot flying.

QRH	MISCELLANEOUS (ATA 90)	Version 2.1.1
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EMERGENCY DESCENT

IMMEDIATE ACTION

CREW OXYGEN MASKS.....ON
 EMER DESCENT.....ANNOUNCE(PA)
 ATC.....REQUEST EMERGENCY DESCENT
 ATC XPDR 7700.....CONSIDER
 SIGNS.....ON
 THRUST LEVERS(if A/THR not engaged).....IDLE
 SPEED BRAKE.....FULL

WHEN DESCENT ESTABLISHED

SPEED.....MAX/APPROPRIATE

CAUTION	Descend at the maximum appropriate speed. If structural damage is suspected, use the flight controls with care and reduce speed as appropriate.
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ENGINE MODE SELECTOR.....IGN
 MAX FL.....100/MEA

- **IF CAB ALT > 14 000 ft:**
 PAX OXYGEN MASKS.....MANUAL ON

QRH	MISCELLANEOUS (ATA 90)	Version 2.1.1
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UNSAFE LANDING PROCEDURE

- **DESCENT AS REQUIRED**

DESCENT..... CAREFULLY PLAN A LOW PROFILE/STEADY POWERED APPROACH
 PASSENGER BRIEFING COMPLETED
 SEATBELT SHOULDER HARNESSSES SECURED/TIGHT

- **APPROACH**

EMERGENCY EGRESS REVIEW
 PRESSURE MODE SELECTOR..... MAN
 MANUAL VALVE OPEN 100%
 PACKS 1 AND 2 OFF
 APU SHUT-DOWN

- **TOUCHDOWN**

ENGINE MASTERS OFF
 ENGINE FIRE PUSH PUSH

- **IF ONE MAIN LANDING GEAR IS UP OR UNSAFE**

CONSIDER RELOCATING PASSENGERS AWAY FROM SUSPECT GEAR PRIOR TO COMMENCING APPROACH.
 HOLD THE APPLICABLE WING UP FOR AS LONG AS POSSIBLE. MAINTAIN DIRECTIONAL CONTROL WITH RUDDER.

- **IF NOSE LANDING GEAR IS UP OR UNSAFE**

RELOCATE PASSENGER TO OBTAIN AFT CG, IF RUNWAY IS LONG ENOUGH. GENTLY LOWER THE NOSE BEFORE ELEVATOR EFFECTIVENESS IS LOST

- **IF ALL WHEELS ARE UP OR UNSAFE PERFORM A NOSE HIGH ATTITUDE TOUCHDOWN**

EVACUATION SIGNAL..... PUSH
 EMERGENCY EGRESS INITIATE

WINDSHEAR

- **At takeoff**

- **If before V1**

The takeoff should be rejected only if significant airspeed variations occur below indicated V1 and the pilot decides that there is sufficient runway remaining to stop the aircraft.

- **If after V1**

THRUST LEVERS.....TOGA
 AT VR.....ROTATE
 TARGET PITCH.....15°

- **Airborne, initial climb or landing**

THRUST LEVERS AT TOGA.....SET OR CONFIRM
 AP.....DISENGAGE
 TARGET PITCH.....15°

DO NOT CHANGE CONFIGURATION (FLAPS, GEAR) UNTIL CLEAR OF WINDSHEAR.
 CLOSELY MONITOR FLIGHT PATH AND SPEED. RECOVER SMOOTHLY TO NORMAL CLIMB
 WHEN CLEAR OF WINDSHEAR.

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QRH	NAVIGATION (ATA 34)	Version 2.1.1
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Navigation (ATA 34)

WARNING

TOTAL ADC FAILURE - P. 96

CAUTION

NAVIGATION AIR DATA COMPUTER 1/2 FAILURE - P. 94
NAVIGATION AIR DATA COMPUTER 1(2) FAILURE - P. 94
NAVIGATION ATTITUDE AND HEADING REFERENCE SYSTEM
1(2) FAULT - P. 94
NAV HEADING/ATTITUDE/ALTITUDE DISCREPANCY - P. 95
NAVIGATION ILS 1(2) FAULT - P. 95
NAVIGATION ILS (1+2) FAULT - P. 95
OVERSPEED - P. 95

NAVIGATION AIR DATA COMPUTER 1/2 FAILURE

“ADC 1/2 FAIL”

- **IF CAPTAIN'S SIDE AFFECTED:**

ADC SOURCE.....SELECT ADC 2
(AIR DATA LINE SELECT KEY 1 RIGHT)

- **IF FIRST OFFICER'S SIDE AFFECTED:**

ADC SOURCE.....SELECT ADC 1
(AIR DATA LINE SELECT KEY 1 RIGHT)

NOTE: THE AIRCRAFT IS NO LONGER RVSM COMPLIANT. ATC MAY REQUIRE OPERATION OUTSIDE RVSM AIRSPACE.

NAVIGATION AIR DATA COMPUTER 1(2) FAILURE

“ADC 1(2) FAIL”

- **ADC 1 FAULT:**

CPT PFD AIR DATA SOURCE.....ADC 2
BARO REF.....CHECK

- **ADR 2 FAULT:**

F/O PFD AIR DATA SOURCE.....ADC 1
BARO REF.....CHECK

NAVIGATION ATTITUDE AND HEADING REFERENCE SYSTEM 1(2) FAULT

“AHRS 1/2 FAIL”

- **AHRS 1 FAULT:**

CPT PFD ATTITUDE/HEADING SOURCE.....AHRS 2

- **AHRS 2 FAULT:**

F/O PFD ATTITUDE/HEADING SOURCE.....AHRS 1

NAV HEADING/ATTITUDE/ALTITUDE DISCREPANCY

“ADC 1/2 FAIL”

- **IF HEADING DISCREPANCY:**
 HDG.....X CHECK
 PFD ATTITUDE/HEADING SOURCE.....AS REQUIRED

- **IF ATTITUDE DISCREPANCY:**
 ATT.....X CHECK
 PFD ATTITUDE/HEADING SOURCE.....AS REQUIRED

- **IF ALTI DISCREPANCY:**
 Crew awareness.

NAVIGATION ILS 1(2) FAULT

Crew awareness.

NAVIGATION ILS (1+2) FAULT

Crew awareness.

OVERSPEED

VMO/MMO.....350/.82

VLE.....280/.67

VFE.....SEE BELOW

CONF	VFE
FULL	177
3	185
2	200
1+F	215
1	230

TOTAL ADC FAILURE

SPEED.....USE EXTERNAL GPS DATA
 BACK UP NAV.....USE

MANUAL CABIN PRESSURE CONTROL

MODE SELECTOR.....MANUAL
 MANUAL VALVE CONTROL.....AS REQUIRED

TARGET V/S: CLIMB 500 ft/min
 DESC 300 ft/min

A/C GPS ALT	CAB ALT TGT
410	8000
350	7000
300	5500
250	3000
<200	0

FOR APPROACH

SPEED.....USE EXTERNAL GPS DATA
 FOR LANDING.....USE FLAP 3
 CHECK LANDING DISTANCE REQUIRED
 APPROACH SPEED.....USE EXTERNAL GPS DATA

- **WHEN FLAP 2**
 LANDING GEAR (GRAVITY EXTENSION).....DOWN
- **WHEN LANDING GEAR DOWNLOCKED:**
 LANDING GEAR lever.....DOWN
 GEAR DOWN indications.....CHECK
- **DURING FINAL APPROACH:**
 MANUAL VALVE CONTROL.....OPEN
Check that the cabin altitude is at airfield elevation before opening the doors.

QRH	PNEUMATICS (ATA 36)	Version 2.1.1
Medium Jet		27/03/18

Pneumatics (ATA 36)

CAUTION

APU BLEED LEAK - P. 98
BLEED 1(2) OFF - P. 98
CROSSBLEED FAULT - P. 98
ENGINE 1 + 2 BLEED FAULT - P. 99
ENGINE 1(2) BLEED ABNORMAL PRESSURE - P. 100
ENGINE 1(2) BLEED FAULT - P. 100
ENGINE 1(2) HIGH PRESSURE VALVE - P. 101
ENGINE 1(2) BLEED LOW TEMPERATURE (OPPOSITE BLEED AVAILABLE) - P. 100
ENGINE 1(2) BLEED LOW TEMPERATURE (OPPOSITE BLEED NOT AVAILABLE) - P. 101
ENGINE 1 + 2 BLEED LOW TEMPERATURE - P. 100
LEFT(RIGHT) WING LEAK - P. 101

APU BLEED LEAK

APU BLEED OFF

- **IF FAULT LIGHT EXTINGUISHES**

APU BLEED ON

- **IF FAULT PERSISTS**

APU SHUT-DOWN

BLEED 1(2) OFF

One engine bleed off with no fault indicated.

Crew awareness.

CROSSBLEED FAULT

"X BLEED FAULT"

- **IN FLIGHT AND ANTI ICE REQUIRED**

X-VALVE OPEN

- **ALL OTHER CONDITIONS**

X-VALVE SHUT

- **IF X-VALVE MANUAL MODE INOPERATIVE**

WING ANTI ICE OFF

ICING CONDITIONS..... LEAVE

ENGINE 1 + 2 BLEED FAULT

“ENG 1/2 BLEED FAULT”

- **If ENG1 BLEED FAULT due to:**

LEAK on side 1
ENGINE 1 FIRE
Start Air Valve 1 failed open.

DESCENT TO FL100/MEA.....INITIATE
AVOID ICING CONDITIONS

- **IF ICE ACCRETION:**

APPROACH SPEED.....VLS + 10 KT
CHECK LANDING DISTANCE REQUIRED

- **If ENGINE 2 BLEED FAULT due to:**

LEAK on side 2
ENGINE 2 FIRE
Start Air Valve 2 failed open.

X BLEED.....CHECK CLOSED
DESCENT.....INITIATE TO FL225/MEA
APU.....START

- **AT, OR BELOW, FL 225:**

WING ANTI ICE.....OFF
APU BLEED.....ON

- **IF ICE ACCRETION:**

APPROACH SPEED.....VLS + 10 KT
CHECK LANDING DISTANCE REQUIRED

- **In all other cases:**

DESCENT.....INITIATE

- **If both packs are available:**

- **If ENGINE 1 BLEED NOT AVAILABLE:**

PACK 1.....OFF
ENGINE 2 BLEED.....ON

- **If ENGINE 2 BLEED NOT AVAILABLE:**

PACK 2.....OFF
ENGINE 1 BLEED.....ON

- **If engine bleed recovery was unsuccessful, or if one pack is inoperative:**

X BLEED.....CHECK OPEN
DESCENT TO FL225/MEA.....CONTINUE
APU.....START

- **AT, OR BELOW, FL 225:**

WING A.ICE.....OFF
APU BLEED.....ON
AVOID ICING CONDITIONS

- **IF ICE ACCRETION:**

APPROACH SPEED.....VLS + 10 KT
CHECK LANDING DISTANCE REQUIRED

ENGINE 1 + 2 BLEED LOW TEMPERATURE

“ENG 1/2 BLEED LOW TEMP”

A/THR.....OFF

THRUST LEVERS.....ADVANCE

● **IF UNSUCCESSFUL:**

WING A. ICE.....OFF

AVOID ICING CONDITIONS

● **IF SEVERE ICE ACCRETION:**

MIN SPEED.....VLS +10 / G DOT

MANOEUVER WITH CARE

CHECK LANDING DISTANCE REQUIRED

ENGINE 1(2) BLEED ABNORMAL PRESSURE

“ENG 1/2 BLEED FAULT”

● **If wing anti-ice is on and both packs are on:**

PACK AFFECTED.....OFF

X BLEED.....OPEN

ENGINE 1(2) BLEED FAULT

“ENG 1/2 BLEED FAULT”

ENGINE BLEED AFFECTED SIDE (IF NOT AUTOMATICALLY CLOSED).....OFF

● **If wing anti-ice is on and both packs are on:**

PACK AFFECTED.....OFF

X BLEED.....OPEN

ENGINE 1(2) BLEED LOW TEMPERATURE (OPPOSITE BLEED AVAILABLE)

“ENG 1/2 BLEED LOW TEMP”

A/THR.....OFF

THRUST LEVER (AFFECTED ENGINE).....ADVANCE

● **IF UNSUCCESSFUL:**

X BLEED.....OPEN

ENGINE BLEED (AFFECTED SIDE).....OFF

ASSOCIATED PACK (IF OPPOSITE PACK ON).....OFF

ENGINE 1(2) BLEED LOW TEMPERATURE (OPPOSITE BLEED NOT AVAILABLE)

A/THR.....OFF
 THRUST LEVER (AFFECTED ENGINE).....ADVANCE

- **IF UNSUCCESSFUL:**

WING A. ICE.....OFF

AVOID ICING CONDITIONS

- **IF SEVERE ICE ACCRETION:**

MIN SPEED.....VLS +10 / G DOT

MANOEUVER WITH CARE

CHECK LANDING DISTANCE REQUIRED

ENGINE 1(2) HIGH PRESSURE VALVE

Crew awareness.

AIR PRESSURE LOW AT IDLE

LEFT(RIGHT) WING LEAK

“L/R WING LEAK”

- **IF BLEED ABNORM PRESSURE IS ALSO ILLUMINATED**

ICING CONDITIONS LEAVE

REFER TO ENGINE 1(2) BLEED ABNORMAL PRESSURE - P.100

- **IF BLEED ABNORM PRESSURE IS NOT ILLUMINATED**

WING ANTI ICE OFF

ICING CONDITIONS LEAVE

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NORMAL PROCEDURES

Procedures marked with asterisks () are the only items required during a transit stop.*

EXTERIOR SAFETY INSPECTION**

PF	PM
	* WHEEL CHOCKS.....CHECK IN PLACE * LANDING GEAR DOORS.....CHECK POS. * APU AREA.....CHECK

**NOT SIMULATED

COCKPIT SAFETY CHECK

PF	PM
SEAT BELTS.....ADJUST	SEAT BELTS.....ADJUST <u>PEDESTAL:</u> * PARKING BRAKE.....ON * SPEED BRAKE LEVER... CHECK 0 POSITION * THRUST LEVERS.....CHECK IDLE LANDING GEAR lever.....CHECK DOWN FLAPS..... CHECK 0 POSITION <u>OVERHEAD PANEL:</u> C/B PANELS..... CHECK/PUSHED IN

PRELIMINARY COCKPIT PREP

PF	PM
	<u>OVERHEAD PANEL:</u> WIPERS.....OFF BAT.....CHECK/ON APU FIRE.....CHECK/TEST APU MASTER SW.....ON APU.....START ENGINE MASTERS.....CHECK OFF ENGINE MODE SELECTOR.....CHECK NORM * EXT PWR.....AS REQUIRED BUS TIE.....CHECK AUTO * COCKPIT LIGHTS.....AS REQUIRED PROBES ANTI-ICE.....CHECK AUTO WINDOWS ANTI-ICE.....CHECK AUTO APU BLEED.....ON <u>MFD PANEL:</u> AIR CONDITIONING panel.....SET ELECTRICAL panel.....CHECK * MSD OXY PRESS/HYD QTY/ENGINE OIL QTY.....CHECK <u>OTHER:</u> EMER EQUIPMENT.....CHECK * EXT. WALKAROUND..... PERFORM

COCKPIT PREPARATION

PF	PM
<p>* GEAR PINS & COVERS.....CHECK</p> <p><u>OVERHEAD PANEL:</u></p> <p>* ALL WHITE LIGHTS.....EXTINGUISH</p> <p>PRESS. MODE SELECTOR..... AUTO</p> <p>NAV LIGHTS.....ON</p> <p>ANN TEST..... CHECK</p> <p>INT LIGHTS..... AS REQUIRED</p> <p>* SIGNS..... SET</p> <p>* PACK FLOW..... AS REQUIRED</p> <p>ENGINE FIRE.....CHECK/TEST</p> <p>* ENGINE MASTER..... CHECK OFF</p> <p>* ENGINE MODE SELECTOR....CHECK NORM</p> <p><u>PEDESTAL:</u></p> <p>GTN 1 AND 2.....ON</p> <p>ADF.....ON</p> <p>TRANSPONDER.....SBY</p> <p>GRAVITY GEAR EXTN.....CHECK STOWED</p> <p>FLOOD LIGHT.....AS REQUIRED</p> <p>INSTRUMENT LIGHT.....AS REQUIRED</p> <p>PARKING BRAKE knob..... CHECK</p> <p>* THRUST LEVERS.....CHECK IDLE</p> <p>* AIRFIELD DATA.....OBTAIN</p> <p>* ATC CLEARANCE.....OBTAIN</p> <p>* FMGS INITIALIZATION (INIT PAGE 1):</p> <p>ENGINE & AIRCRAFT TYPE.....CHECK</p> <p>DATABASE VALID.....CHECK</p> <p>FPL INITIALIZATION..... COMPLETE</p> <p>WINDS CLB/CRZ..... INSERT</p> <p>FPL.....CHECK</p> <p>* FMGS DATA INSERTION:</p> <p>BOW, FOB (INIT 3/3).....INSERT</p> <p>TAKEOFF DATA (PERF)..... INSERT</p> <p>* When both pilots are seated:</p> <p><u>MFD PANEL:</u></p> <p>TCAS.....TEST/STDBY</p> <p>WEATHER RADAR.....SET OFF/STDBY</p> <p>* STBY BARO.....QNH</p> <p>* ESI.....CHECK</p> <p><u>LATERAL CONSOLE:</u></p> <p>OXYGEN MASK.....TEST</p> <p><u>PF INSTRUMENT PANEL:</u></p> <p>* SPEED MODE.....KIAS</p> <p>* HSI MODE.....SET</p> <p>* BRG 1 AND 2.....SET</p> <p>* SOURCE.....CHECK AHRS1/ADC1</p> <p>* BARO.....QNH</p> <p>* HSI SCALE.....SET</p> <p>* CDI SOURCE.....FMS 1</p> <p>* DME SOURCE.....AS REQUIRED</p> <p><u>GLARESHIELD:</u></p> <p>TEST.....CHECK</p> <p>AUDIO PANEL.....SET</p> <p>* FD.....CHECK ON</p>	<p><u>LATERAL CONSOLE:</u></p> <p>OXYGEN MASK.....TEST</p> <p><u>PM INSTRUMENT PANEL:</u></p> <p>* SPEED MODE.....KIAS</p> <p>* HSI MODE.....SET</p> <p>* BRG 1 AND 2.....SET</p> <p>* SOURCE.....CHECK AHRS2/ADC2</p> <p>* BARO.....SET</p> <p>* HSI SCALE.....SET</p> <p>* CDI SOURCE.....FMS 2</p> <p>* DME SOURCE.....AS REQUIRED</p> <p><u>GLARESHIELD:</u></p> <p>TEST.....CHECK</p> <p>AUDIO PANEL.....SET</p>



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* FUEL QTY.....CHECK * TAKEOFF BRIEFING.....PERFORM	<i>Continued from previous page</i> FMGS DATA CONFIRMATION: AIRFIELD DATA.....CONFIRM ATC CLEARANCE.....OBTAIN TOW.....CHECK TO DATA (PERF).....CALCULATE/CHECK FPL.....CHECK * ATC CODE.....SET * FUEL QTY.....CHECK
--	--

BEFORE PUSHBACK OR START

PF	PM
LOADSHEET.....	CHECK (CM1)
TO DATA.....REVISE IF REQUIRED FMS (1 OR 2).....PERF TO	TO DATA.....CONFIRM FMS (1 OR 2).....FPL EXT PWR.....CHECK OFF
BEFORE START C/L DOWN TO THE LINE WINDOWS/DOORS.....CHECK PARKING BRAKE.....OFF	PUSHBACK/START CLEARANCE.....OBTAIN WINDOWS.....CHECK BEACON.....ON
BEFORE START C/L BELOW THE LINE	

ENGINE START

PF	PM
MSD PAGE.....ENG ENGINE MODE selector.....IGN/START ENGINE 2 START.....CONFIRM CLEAR ENGINE MASTER switch 2.....ON START VALVE N2 FUEL FLOW EGT N1 OIL PRESS START VALVE CLOSES AT OR ABOVE: AT 50 % N2 CFM ENGINE IDLE PARAMETERS.....CHECK ENGINE 1 START.....ANNOUNCE REPEAT THE START SEQUENCE	CHECK

AFTER START

PF	PM
ENGINE MODE selector.....NORM	SPEED BRAKE.....GND
APU MASTER sw.....AS REQUIRED	FLAPS.....SET
APU BLEED.....OFF	PITCH TRIM.....SET
WING ANTI ICE..... AS REQUIRED	RUDDER TRIM..... NEUTRAL
ENGINE ANTI ICE..... AS REQUIRED	DOOR MSD page.....CHECK
•If Warning and Advisory List (WAL) Item is displayed:	
WAL.....CHECK	
CLEAR TO DISCONNECT.....CONFIRM WITH GROUND CREW AND CONFIRM THAT NOSE PIN IS REMOVED AFTER START C/L COMPLETE	

TAXI

PF	PM
TAXI LIGHTS.....ON	TAXI CLEARANCE..... OBTAIN
•Taxi clearance obtained:	
PARKING BRAKE.....OFF	ELAPSED TIME.....AS REQUIRED
THRUST LEVERS.....AS REQUIRED	
BRAKES.....CHECK	
FLT CTLS.....CHECK	FLT CTLS.....CHECK
•ATC clearance:	
	ATC CLEARANCE.....CONFIRM
	TO DATA..... CHECK
	FMGS FPL/SPEED.....CHECK
	LNAV/VNAV.....SET
	FCU ALT/HDG..... SET
	FD.....CHECK ON
FLT INST & FMA.....CHECK	FLT INST & FMA.....CHECK
	WX RADAR.....AS REQUIRED
	ATC CODE.....CONFIRM/SET
	PRESSURE FLT ALT.....SET
	PRESSURE LANDING ALT.....SET
	ANTISKID.....ON
TO BRIEFING.....CONFIRM	
CABIN REPORT.....	RECEIVE (CM1)
BEFORE TO C/L DOWN TO THE LINE	

BEFORE TAKEOFF

PF	PM
	TAKEOFF/LINE UP CLEARANCE....OBTAINED LAND/STROBE LIGHTS.....ON LNAV/VNAV on FCU.....ON TCAS MODE.....TA or TA/RA PF MSD.....WX RADAR PM MSD.....NAV
APPROACH CLEAR OF TRAFFIC.....	CHECK
	EXT LIGHTS.....SET PACKS 1+2.....AS REQUIRED
TAKEOFF RUNWAY.....	CONFIRM
CABIN CREW.....ADVISE	ENGINE MODE selector.....AS REQUIRED
BEFORE TAKEOFF C/L BELOW THE LINE	

TAKEOFF

PF	PM
TAKEOFF.....CONFIRM BRAKES.....RELEASE THRUST LEVERS.....TOGA	
The Captain places hand on thrust levers until V1	
DIRECTION CONTROL.....RUDDER INITIALLY	
CHRONO.....START	CHRONO.....START
FMA.....ANNOUNCE	PFD/ND.....CHECK
•BELOW 80 kt:	N1 (EPR).....CHECK
	THRUST SET.....ANNOUNCE
	PFD/ENGINE PARAMETERS.....SCAN
	ONE HUNDRED KNOTS.....ANNOUNCE
•AT 100 kt:	
100 kt.....CHECK	
•AT V1.....CALL	V1.....CALL
•AT VR.....ROTATE	VR.....ORDER ROTATE
•WHEN V/S POSITIVE:	
LANDING GEAR UP.....ORDER	POSITIVE CLIMB.....CALL
AP.....AS REQUIRED	LANDING GEAR.....SELECT UP
FMA.....ANNOUNCE	
•AT THR RED ALT:	
THRUST LEVERS.....CL	
FMA.....ANNOUNCE	
•IN CLIMB PHASE	PACK 1 (if applicable).....ON
•AT FLAPS 1 SPEED:	
FLAPS 1.....ORDER	FLAPS 1.....SELECT
•AT FLAPS 0 SPEED:	
FLAPS 0.....ORDER	FLAPS 0.....SELECT
	GND SPOILERS.....0
	EXTERIOR LIGHTS.....SET
	PACK 2 (if applicable).....ON

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AFTER TAKEOFF

PF	PM
AFTER TO/CLIMB C/L DOWN TO THE LINE	APU BLEED/MASTER switch... AS REQUIRED ENGINE MODE selector..... AS REQUIRED ANTI ICE..... AS REQUIRED TCAS..... TA/RA

CLIMB

PF	PM
FMS.....CLIMB PERF FCU/FMGS.....SET IF AP ON •At transition altitude: ALTIMETER.....STANDARD AFTER TO/CLIMB C/L BELOW THE LINE RADAR..... AS REQUIRED •Above 10 000 ft:	FMS..... FPL FCU/FMGS.....SET IF AP OFF ALTIMETER.....STANDARD ENGINE ANTI ICE..... AS REQUIRED LAND LIGHTS.....OFF SEAT BELTS AS REQUIRED RADIO NAV..... CHECK Performed upon SEC FPL..... AS REQUIRED PF request or OPT/MAX ALT..... CHECK approval

CRUISE

PF	PM
MFD WAL/SYSTEM PAGES.....REVIEW FLIGHT PROGRESS.....CHECK FUEL.....MONITOR RADAR..... AS REQUIRED CABIN TEMP.....MONITOR	

DESCENT PREPARATION

PF	PM
LANDING ELEV.....CHECK FMGS.....PREPARE APPROACH BRIEFING.....PERFORM AUTO BRAKE..... AS REQUIRED	LANDING DATA.....PREPARE FMGS.....PREPARE DESCENT CLEARANCE.....OBTAIN ANTI ICE..... AS REQUIRED

DESCENT

PF	PM
DESCENT.....INITIATE	
FMA.....ANNOUNCE	FMA.....CHECK
MCDU.....PROG/PERF DESCENT	MCDU.....FPL
DESCENT.....MONITOR	
SPEEDBRAKES.....AS REQUIRED	
RADAR.....AS APPROPRIATE	
•When cleared to altitude:	
ALTIMETER.....QNH	ALTIMETER.....QNH
	WAL.....CHECK
•At 10 000 ft:	
	LAND LIGHTS.....ON
	SEAT BELTS.....AS REQUIRED
	RADIO NAV.....SELECT/IDENT

ILS APPROACH

PF	PM
<u>INITIAL APPROACH:</u>	
SEAT BELTS.....ON	ENGINE MODE selector.....AS REQUIRED
	NAV ACCURACY.....MONITOR
•Approx 15 nm from touchdown:	
GREEN DOT SPEED.....SET ⁽¹⁾	
POSITIONING.....MONITOR	
RADAR.....AS APPROPRIATE	
APPROACH C/L	
<u>INTERMEDIATE/FINAL APPROACH:</u>	
	CDI SRC.....GNS (PM SIDE)
	GS and LOC.....CONFIRMED
HEADING mode.....ON	
V/S mode.....ON	
<i>With AP on, PF makes FCU selections or may request that PM does. With AP off, all flight director selections are made by PM. Both pilots confirm all selections.</i>	
FMA.....ANNOUNCE	FMA.....CHECK
CDI SRC.....GNS (PF SIDE)	HDG.....MONITOR
	V/S.....MONITOR
•When cleared for ILS approach:	
APPROACH.....SELECT	
AP.....ENGAGE	
BELOW CONFIG 1 SPEED	
•Below VFE 1:	
CONFIG 1.....REQUEST	CONFIG 1.....SELECT
	TCAS.....TA or TA/RA
BELOW CONFIG 2 SPEED	
FMA.....ANNOUNCE	FMA.....CHECK
LOC CAPTURE.....MONITOR	
G/S CAPTURE.....MONITOR	



Continued from previous page

GO AROUND ALT ⁽¹⁾.....SET

With AP on, PF makes FCU selections or may request that PM does. With AP off, all flight director selections are made by PM. Both pilots confirm all selections.

•At 2 000 ft AGL, below VFE 2:

CONFIG 2.....REQUEST	CONFIG 2.....SELECT
HSI MODE/SCALE.....AS REQUIRED	HSI MODE/SCALE.....AS REQUIRED

BELOW CONFIG 3 SPEED

LANDING GEAR DOWN.....REQUEST	LANDING GEAR.....CONFIRM '3 GREENS'
	AUTO BRAKE.....CONFIRM
	SPEED BRAKE GND.....ARM
	EXT LIGHTS.....SET

•When LANDING GEAR down, below VFE 3:

CONFIG 3.....REQUEST	CONFIG 3.....SELECT
----------------------	---------------------

BELOW CONFIG 4

•When FLAPS 3, below VFE FULL:

CONFIG 4.....REQUEST	FLAPS FULL.....SELECT
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VAPP.....SET⁽¹⁾

A/THR.....CHECK SPEED or OFF	WING A. ICE (if not required).....OFF
------------------------------	---------------------------------------

CABIN REPORT.....OBTAIN (CM1)

CABIN CREW.....ADVISE

LANDING C/L
STATE ANY FMA MODIFICATION

FLT PARAMETERS.....CHECK
Announce any deviation in excess of:

V/S	: 1 000 ft/min
IAS	: speed target +10 kt; VAPP -5 kt
LOC	: 1/4 dot LOC
GLIDE	: 1 dot GS
PITCH	: 2.5 ° nose down; 10 ° nose up
BANK	: 7 °

•At minimum +100 ft:

ONE HUNDRED ABOVE...MONITOR OR STATE

•At minimum:

CONTINUE OR GO-AROUND.....CALL	MINIMUMS.....MONITOR AND CALL
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⁽¹⁾ *With AP on, PF makes FCU selections or may request that PM does. With AP off, all flight director selections are made by PM. Both pilots confirm all selections.*

NON PRECISION APPROACH (SELECTED GUIDANCE) NON ILS APPROACH

PF	PM
INITIAL APPROACH:	
SEAT BELTS.....ON	ENGINE MODE selector.....AS REQUIRED
•Approx 15 nm from touchdown:	
GREEN DOT SPEED.....	SET(1)
POSITIONING.....MONITOR	
RADAR.....AS APPROPRIATE	
APPROACH C/L	
FINAL APPROACH:	
	CDI SRC.....GNS (PM SIDE)
	GS and LOC.....CONFIRMED
HEADING mode.....ON	
V/S mode.....ON	
<i>With AP on, PF makes FCU selections or may request that PM does. With AP off, all flight director selections are made by PM. Both pilots confirm all selections.</i>	
FMA.....ANNOUNCE	FMA.....CHECK
CDI SRC.....GNS (PF SIDE)	HDG.....MONITOR
	V/S.....MONITOR
BELOW CONFIG 1 SPEED	
Below VFE 1:	
CONFIG 1.....REQUEST	CONFIG 1.....SELECT
BELOW CONFIG 2 SPEED	
HSI MODE/SCALE.....AS REQUIRED	HSI MODE/SCALE.....AS REQUIRED
Below VFE 2:	
CONFIG 2.....REQUEST	CONFIG 2.....SELECT
BELOW CONFIG 3 SPEED	
LANDING GEAR DOWN.....REQUEST	LANDING GEAR.....CONFIRM '3 GREENS'
	AUTOBRAKES.....CONFIRM
	SPEED BRAKE GND.....ARM
	EXTERIOR LIGHTS.....SET
•When LANDING GEAR down, below VFE 3:	
CONFIG 3.....REQUEST	CONFIG 3.....SELECT
BELOW CONFIG 4 SPEED	
•When CONFIG 3, below VFE FULL:	
CONFIG 4.....REQUEST	CONFIG 4.....SELECT
VAPP.....	SET ⁽¹⁾
•AT the FAF:	
FPA FOR FINAL APPROACH PATH.....	SET ⁽¹⁾
•After the FAF:	
GO AROUND ALTITUDE.....	SET ⁽¹⁾
POSITION/FLT PATH.....CHECK/ADJUST	
	A/THR.....CHECK SPEED or OFF
	WING A. ICE (if not required).....OFF
CABIN REPORT.....OBTAIN (CM1)	
CABIN CREW.....ADVISE	



<p>LANDING C/L ANNOUNCE ANY FMA MODIFICATION</p> <p>•At minimum + 100 ft: •At minimum: CONTINUE OR GO-AROUND.....ANNOUNCE AP (if applicable).....OFF</p>	<p style="text-align: right;"><i>Continued from previous page</i></p> <p>FLT PARAMETERS.....CHECK Announce any deviation in excess of: V/S : 1 000 ft/min IAS : speed target + 10 kt ; VAPP - 5 kt PITCH : 2.5 ° nose down; 10 ° nose up BANK : 7 ° COURSE : 1/2 dot or 2.5 ° (VOR); 5 ° (ADF) 100 ABOVE.....MONITOR OR ANNOUNCE MINIMUM.....MONITOR OR ANNOUNCE</p>
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⁽¹⁾ With AP on, PF makes FCU selections or may request that PM does. With AP off, all flight director selections are made by PM. Both pilots confirm all selections.

LANDING

PF	PM
<p>•In stabilized approach conditions, at approx. 30 ft: FLARE.....PERFORM THRUST LEVERS.....IDLE •At touchdown: NOSE.....LOWER BOTH THRUST LEVERS.....REV FULL</p> <p>DIRECTIONAL CONTROL.....ENSURE BRAKES.....AS REQUIRED •At 70 kt: BOTH THRUST LEVERS.....REV IDLE •At taxi speed: BOTH THRUST LEVERS.....FWD IDLE •Before 20 kt: AUTOBRAKE.....DISENGAGE</p>	<p>ATTITUDE.....MONITOR</p> <p>SPEED BRAKES.....CHECK/ANNOUNCE REVERSERS.....CHECK/ANNOUNCE</p> <p>DIRECTIONAL CONTROL.....MONITOR DECELERATION.....MONITOR 70 kt.....ANNOUNCE</p>

GO AROUND

PF	PM
THRUST LEVERS.....TOGA ATTITUDE.....12° NOSE UP GO-AROUND.....CALL FMA.....ANNOUNCE	FLAPS.....SELECT AS REQUIRED FMA.....CHECK POSITIVE CLIMB.....ANNOUNCE LANDING GEAR.....SELECT UP
LANDING GEAR UP.....ORDER AP.....AS REQUIRED LNAV, NAV or HEADING mode...AS REQUIRED •At Go-Around thrust reduction altitude: THRUST LEVERS.....CL •At Go-Around acceleration altitude: SPEED.....MONITOR •AT FLAPS 1 SPEED: FLAPS 1.....ORDER	FLAPS 1.....SELECT
•AT FLAPS 0 SPEED: FLAPS 0.....ORDER	FLAPS 0.....SELECT SPEED BRAKES.....DISARM EXTERIOR LIGHTS.....SET
AFTER TAKEOFF C/L DOWN TO THE LINE	

AFTER LANDING

PF	PM
SPEED BRAKE.....SET TO 0 <i>(signal for PM to commence after landing items)</i>	LAND LIGHTS.....OFF TAXI LIGHTS.....ON OTHER EXT LIGHTS.....AS REQUIRED
AFTER LANDING C/L	WX RADAR.....OFF/STBY TCAS.....SET on standby ATC.....AS REQUIRED FLAPS.....RETRACT ANTI ICE.....AS REQUIRED ENGINE MODE SELECTOR.....NORM APU MASTER sw.....ON APU.....START

PARKING

PF	PM
PARKING BRAKE.....ON ENGINE MASTER 1, 2.....OFF GROUND CONTACT.....ESTABLISH SEAT BELTS.....OFF BEACON LIGHT.....OFF OTHER EXTERIOR LIGHTS.....AS REQUIRED PARKING BRAKE.....AS REQUIRED INSTRUMENTS LIGHT.....DIM	ANTI-ICE.....OFF APU BLEED.....ON ELAPSED TIME.....STOP SLIDE DISARMED ⁽¹⁾CHECK FUEL PUMPS.....OFF ANTISKID.....OFF ATC.....SET on standby FUEL QTY.....CHECK
PARKING C/L	

⁽¹⁾Not simulated.

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SECURING THE AIRCRAFT

PF	PM
PARKING BRAKE.....CHECK ON	OXYGEN CREW SUPPLY.....OFF
	EXTERIOR LIGHTS.....OFF
	SIGNS.....OFF
	EMER EXIT LIGHT.....OFF
	APU BLEED.....OFF
	APU MASTER SW.....OFF
	EXT PWR.....AS REQUIRED
	BATTERY 1+2.....OFF
SECURING THE A/C C/L	

BEFORE START	
COCKPIT PREP.....	COMPLETED (BOTH)
GEAR PINS and COVERS.....	REMOVED
SIGNS.....	ON
FUEL QUANTITY.....	____ KG.LB
TO DATA.....	SET
BARO REF.....	____ SET (x3)
WINDOWS/DOORS.....	CLOSED (BOTH)
BEACON.....	ON
THR LEVERS.....	IDLE
PARKING BRAKE.....	AS REQUIRED

AFTER START	
ANTI ICE.....	AS REQUIRED
WAL.....	CHECKED
PITCH TRIM.....	ZERO
RUDDER TRIM.....	ZERO

BEFORE TAKEOFF	
FLIGHT CTRLS.....	CHECKED (BOTH)
FLT INST.....	CHECKED (BOTH)
BRIEFING.....	CONFIRMED
FLAP SETTING.....	CONF ____ (BOTH)
V1. VR. V2.....	____ (BOTH)
ATC.....	SET
AUTO BRAKE.....	MAX
SIGNS.....	ON
CABIN.....	READY
SPEED BRAKE.....	GND
LANDING LIGHTS.....	ON
TAKEOFF RWY.....	____ CONFIRM (BOTH)
CABIN CREW.....	ADVISED
TCAS.....	TA OR TA/RA
ANTISKID.....	ON
ENGINE MODE SELECTOR..	AS REQUIRED
PACKS.....	AS REQUIRED
PF MSD PAGE.....	ENG

AFTER TAKEOFF / CLIMB	
LANDING GEAR.....	UP
FLAPS.....	RETRACTED
PACKS.....	ON
BARO REF.....	____ SET (BOTH)

APPROACH	
BRIEFING.....	CONFIRMED
WAL STATUS.....	CHECKED
SEAT BELTS.....	ON
BARO REF.....	____ SET (BOTH)
MINIMUM.....	____ SET (BOTH)
ENGINE MODE SELECTOR..	AS REQUIRED

LANDING	
CABIN CREW.....	ADVISED
A/THR.....	SPEED/OFF
AUTOBRAKE.....	AS REQUIRED
LANDING GEAR.....	DN
SIGNS.....	ON
CABIN.....	READY
SPEED BRAKE.....	GND
FLAPS.....	SET

AFTER LANDING	
FLAPS.....	RETRACTED
SPEED BRAKE.....	SET TO 0
APU.....	START
RADAR.....	OFF/STBY

PARKING	
APU BLEED.....	ON
ENGINES.....	OFF
SEAT BELTS.....	OFF
EXT LIGHT.....	AS REQUIRED
FUEL PUMPS.....	OFF
PARK BRAKE and CHOCKS..	AS REQUIRED
Consider HEAVY RAIN	

SECURING THE AIRCRAFT	
OXYGEN.....	OFF
APU BLEED.....	OFF
EMER EXIT LIGHTS.....	OFF
SIGNS.....	OFF
APU AND BAT.....	OFF
Consider COLD WEATHER	

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64 t. ISA. WIND 0.	LDG GEAR	FLAPS	IAS (KT)	N1 (%)	PITCH (°)
TAKE OFF	DOWN	2	155	95.1	16.6
CLIMB	UP	0	250	88.4	10
CRUISE	UP	0	310	87.7	1.5
DESCENT	UP	0	300	IDLE	-2.1
HOLD	UP	0	220	45	5.1
APPROACH	DOWN	2	144	47.2	1.5
LANDING	DOWN	4	135	52	2.5
CLIMB N-1	UP	0	213	90.7	7.4
HOLD N-1	UP	0	205	68	6.6
APPROACH N-1	DOWN	4	135	74.9	2.5

WIND LIMITS (T/O LDG)	DRY	CONTAMINATED
HEADWIND	NO LIMIT	NO LIMIT
TAILWIND	10 kt	5 kt
CROSSWIND T/O	33 kt	15 kt
CROSSWIND LDG	29 kt	15 kt

FL Maximum	FL390
VLO	220 KIAS
VLE	280 KIAS
Vw	230 KIAS
Maximum Slope	-/+ 2 %

FLAPS 1	230 KIAS
FLAPS 1+F	215 KIAS
FLAPS 2	200 KIAS
FLAPS 3	185 KIAS
FLAPS FULL	177 KIAS

T/O CONFIGURATION 2						
GROSS WEIGHT (t)	V1	VR	V2	F	S	Green dot
75.3	149	151	154	161	211	231
72.6	147	149	151	158	206	225
68.0	142	144	146	153	200	216
65.3	139	141	143	150	196	211
63.5	137	139	141	148	194	207
59.0	131	133	136	143	187	198

LANDING WEIGHT (t)	CONFIG 3	CONFIG 4
64.0	137	130
61.2	134	127
59.0	131	125
56.7	129	123
54.4	127	121
52.2	124	118
49.9	121	115

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EMERGENCY EVACUATION

AIRCRAFT/PARKING BRK.....	STOP/ON
ATC (VHF 1).....	NOTIFY
CABIN CREW (PA).....	ALERT
ΔP (only if MAN CAB PR has been used).....	CHECK ZERO
<i>If not zero, MODE selector on MAN, then MAN VALVE OPEN.</i>	
ENG MASTERS (ALL).....	OFF
FIRE Pushbuttons (ALL: ENG and APU).....	PUSH
AGENTS (ENG and APU).....	AS REQUIRED
If evacuation required:	
EVACUATION.....	INITIATE
If evacuation not required:	
CABIN CREW and PASSENGERS (PA).....	NOTIFY