

777

Quick Reference Handbook

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Passenger signs	ON	C
Mode control panel	set	C
Windows	closed & locked	C&F
Oxygen mask	ckd	ALL
Altimeters	____, xckd	C&F
Flight & nav instruments.	ckd	C&F
EICAS	ckd	C
Parking brake	set	C
Fuel control switches	CUTOFF	C
Radios & transponder	set	C
Radar	off	C
Flight attendant briefing	complete	C
Departure briefing	complete	C
Logbook & QRHs	onboard	C
Fuel required	___ onboard ___	C&F

PUSHBACK

Doors	closed	F
Hydraulic panel	set	F
Fuel panel	set	F
Flight deck door	closed & locked	F
Transponder	XPNDR	F

AFTER START

Engine anti-ice	as reqd	C
Recall	ckd	F
Autobrakes	RTO	F

TAXI

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Thrust	____, ____	C&F
Flap data	____	C&F
Trim	____, 0, 0	C&F
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DEPARTURE RUNWAY CHANGE

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Takeoff speeds	____, ____, ____, set	C&F
Thrust	____, ____	C&F
Flap data	____	C&F
Trim	____, 0, 0	C&F
Radios & transponder	set	C
Runway position	____, ____	C&F
Takeoff briefing	complete	C

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BEFORE TAKEOFF

Runway position	____, ____	C&F	
Flaps	____, ____	C&F	
Takeoff briefing	complete	C	
Transponder	TA/RA	F	
Flight Attendants	notified & acknowledged	F	

AFTER TAKEOFF

Flaps	up
Landing gear	up
APU	off
Packs	AUTO
Anti-ice	AUTO

CLIMB

Altimeters	STD, xckd	C&F

DESCENT

Altimeters	____, xckd	C&F
Minimums	____, ____, xckd	C&F
Landing data	____, ____	C&F
Approach briefing	complete	PM
Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Recall	ckd	PM
Notes	ckd	PM

APPROACH

Flight & nav instruments	verified	C&F
Cabin notification	complete	C
Altimeters	__, xckd	C&F

APPROACH RUNWAY CHANGE

Flight & nav instruments	verified	C&F
Minimums	__, __, xckd	C&F
Landing data	__, __	C&F
Approach briefing	complete	PM
Autobrakes	as reqd	PM

LANDING

Landing gear	down	C&F
Flaps	__, __	C&F
Speedbrake	ARMED	PM

AFTER LANDING

Anti-ice	as reqd
Flaps	up
Speedbrake	DOWN
Radar	off

DELTA
777 Operations Manual

SHUTDOWN

Seat belt signs	OFF	C
Fuel control switches	CUTOFF	C
Hydraulic panel	set	C
Fuel pump switches	OFF	C
Engine anti-ice	AUTO	C
Transponder	STBY	C
Beacon	OFF	C
Parking brake	as reqd	C

AFTER SHUTDOWN REMINDERS

Enter appropriate ACARS information.

Check oxygen, engine oil, and hydraulic quantities.

Check status messages.

Check ADIRU drift error.

Make appropriate logbook entries.

Shutdown the APU, unless required for environmental reasons.

Pull red color-coded circuit breakers as required.

SECURE

ADIRU	OFF
Emergency lights	OFF
Packs	OFF
APU & external power	as reqd
Battery switch	OFF

Intentionally
Blank

Non-Normal Checklists

Chapter NNC

Miscellaneous

Section 0

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Intentionally
Blank

Ditching

Condition: Airplane ditching and evacuation are needed.

Additional considerations and preparations are listed in the Additional Information section.

- 1 Transmit a distress message by the appropriate means:
 - ATC
 - VHF (121.5)
 - HF
 - CPDLC
 - ADS
 - SATCOM
 - ACARSState the:
 - Nature of the emergency.
 - Aircraft's position.
 - Aircraft's course, speed, and altitude.
- 2 Transponder. 7700 (if required)
- 3 Brief the crew and passengers.
- 4 If possible, reduce fuel load before ditching.
- 5 Do **not** arm speedbrake lever.
- 6 Use flaps 30 and VREF 30 for landing.

▼ Continued on next page ▼

▼ Ditching continued ▼

7 Checklist Complete Except Deferred Items

Deferred Items

Below 5,000 feet

- GND PROX GEAR OVRD switch OVRD
- GND PROX TERR OVRD switch OVRD
- PACK switches (both) Off
- OUTFLOW VALVE switches (both) MAN
- OUTFLOW VALVE MANUAL
switches (both) Hold in CLOSE
until the outflow valve
indications show fully closed
- PASS SIGNS selector(s) ON

Do **not** accomplish the following checklists:

- PACK L
- PACK R
- CABIN ALTITUDE AUTO

▼ Continued on next page ▼

▼ Ditching continued ▼

Landing Checklist

Landing gear	UP	C&F
Flaps	30, 30	C&F
Speedbrake	DOWN	PM

At 1,000 feet

- Advise crew of imminent touchdown.
- Passenger cabin **Secure**

Just prior to ditching

Maintain airspeed at VREF 30 to touchdown. Flare the airplane to achieve the minimum rate of descent at touchdown.

After ditching

- Notify the flight attendants “EASY VICTOR” three times.
 - FUEL CONTROL switches (both) CUTOFF
 - Notify the flight attendants:
 - “THIS IS THE CAPTAIN EVACUATE, EVACUATE.”
 - APU fire switch Override and pull
- 

▼ Continued on next page ▼

▼ Ditching continued ▼**Additional Information**

- Don life vests.
- Stow loose articles.
- Open the flight deck door.
- Fasten seat belt and shoulder harness and lock.
- Take the ELT, if able.

Driftdown

Condition: Engine failure or shutdown during cruise.

1 FMS VNAV key.. Select
ECON CRZ page is displayed.

2 ENG OUT prompt Select

3 EXEC key. Select

The airplane will remain at the current altitude, the reference thrust limit becomes CON, and the autothrottle adjusts the thrust on the operative engine to maintain FMS commanded E/O speed.

4 MCP Altitude Selector. Set

Set altitude at or below the FMS displayed MAX altitude.

5 MCP Altitude Selector Push

The operative engine increases thrust to CON, the VNAV cruise altitude will change to the MCP altitude, and the airplane will begin a shallow descent at the E/O speed.

Selecting a higher airspeed will lower the E/O MAX altitude. If a higher airspeed is desired, a lower cruise altitude may need to be selected.



Additional Information

Once a higher airspeed and/or increased rate of descent is desired, select the CO SPD prompt. (This will increase airspeed to 300 KIAS.)

EFB Failure – All

Condition: One of the following occurs:

- All EFBs are inoperative or unavailable
- A required application has failed on all EFBs

1 Choose one:

◆ Failure occurs **on the ground**:

▶▶ **Go to step 2**

◆ Failure occurs **in flight**:

▶▶ **Go to step 6**

2 If not at gate, return to gate.

3 Attempt to obtain spare EFBs.

4 Choose one:

◆ **Two** EFBs available:

Proceed normally.



◆ Only **one** EFB available:

▶▶ **Go to the EFB Failure – Single
checklist on page 0.10**



◆ **No** spare EFBs available:

▶▶ **Go to step 5**

▼ Continued on next page ▼

▼ EFB Failure - All continued ▼

- 5 Contact Dispatch to obtain the following printed material:
- FOM, chapter 10, Emergency/Irregular Operations
 - FOM, chapter 4, section 4, Sensitive Security Information
 - All Bulletins
 - Vol. 1, Limitations
 - Vol. 1, NOI section
 - Vol. 1, SP material applicable to the flight, e.g., cold weather operations
 - Airway Manual Ops Specs material applicable to flight
 - Applicable Communications Failure pages from Jeppesen text pages, Emergency section
 - Applicable Jeppesen charts for departure, destination, and alternates
 - ODM, OPERATIONAL LANDING DISTANCES tables

Note: ODM tables are not required if ACARS Landing Performance Request (LPR) functionality operative.

Caution! No dangerous goods allowed.



▼ Continued on next page ▼

▼ EFB Failure - All continued ▼**6 Contact Dispatch.**

EFB may be obtained from a non-working crew member.

Consider weather, operating region, fuel reserves, and destination airport characteristics.

Note: A flight may continue to destination airport without Jeppesen terminal charts if the captain and dispatcher agree that such a continuation will not affect the safety of flight.

7 Consider using the FMS to decrease workload and obtain/verify relevant instrument procedure information.

Program the FMS for approach (if available).

Using the FMS, review the following approach information: runway length, frequency, identifier, and approach course.

From the LEGS page, review approach/missed approach segments and altitude restrictions.

From the MAP Mode display on the ND, review the general approach depiction to include the missed approach segment.

8 See Additional Information at end of this checklist and record arrival, approach, and landing data.**▼ Continued on next page ▼**

▼ EFB Failure - All continued ▼

Additional Information**Terminal chart unavailable:**

Before conducting an instrument approach without an approach chart, obtain the following information as appropriate from Dispatch or ATC.

Note: Use ATC only in time critical situations as a last option.

- NOTAMs
- Arrival (STAR) / fixes, airspeed, altitudes
- Arrival (STAR) waypoints
- ATIS frequency
- Approach / tower / ground frequency
- Wx required / minimums
- MSA
- Navaids
- Approach courses, altitude constraints, and airspeed constraints
- Airport elevation
- Initial approach altitude
- If a procedure turn is required:
 - the direction of the procedure turn from the outbound course
 - the distance from the initial approach fix within which the procedure turn must be completed
 - the procedure turn altitude
- Step-down altitude / distance
- Glideslope intercept altitude
- DA/DH or MDA
- Airport Elevation / TDZE
- Missed approach point (if applicable)
- Missed approach procedure
- Runway length, width, and lighting

EFB Failure – Single

Condition: One of the following occurs:

- An EFB is inoperative or unavailable
- A required application has failed

1 Choose one:

◆ Failure occurs **before** pushback:

Attempt to obtain spare EFB.

Utilize EFB loaner cart if station is equipped.

EFB may be obtained from a non-working crew member.

►► **Go to step 2**

◆ Failure occurs **after** pushback:

Attempt to obtain spare EFB.

EFB may be obtained from a non-working crew member.

►► **Go to step 2**

▼ Continued on next page ▼

▼ EFB Failure - Single continued ▼

2 Choose one:

◆ Spare EFB **available**:

Utilize spare EFB.

If the spare EFB is obtained from another crew member, obtain password.

Coordinate with Dispatch to determine future need of replacement EFB.



◆ Spare EFB **unavailable**:

►► **Go to step 3**

- 3 Contact Dispatch. Operation with only one operative EFB may be authorized. Additional printed materials may be required.
- 4 Conserve battery on remaining EFB.

Note: Use powered keyboard or approved charging device.

▼ Continued on next page ▼

▼ EFB Failure - Single continued ▼

5 Choose one:

- ◆ Battery power **is above and expected to remain** above 10%:

Continue operation with one operative EFB.



- ◆ Battery power **drops or is expected to drop** below 10%:

Use approved charging device, if available, to charge EFB to at least 10% prior to TOD.

If battery is below or is expected to be below 10% at TOD, record relevant arrival/approach information for all crew members.

►► **Go to the EFB Failure – All checklist on page 0.6**



EFB or Application Unresponsive

Condition: One of the following occurs:

- An EFB is unresponsive
- An application within the EFB is unresponsive

1 Choose one:

◆ **EFB** is unresponsive:

▶▶ **Go to step 3**

◆ **Application** within EFB is unresponsive:

Close and restart application.

▶▶ **Go to step 2**

2 Choose one:

◆ Application operates **normally**:

Continue normal operation.



◆ Application within EFB remains **unresponsive**:

▶▶ **Go to the EFB Failure – Single checklist on page 0.10**

3 Battery power Check

If able, verify EFB battery status indicator displays at least 10% battery power available.
Connect power source, if necessary.

▼ Continued on next page ▼

▼ EFB or Application Unresponsive continued ▼**4 When** sufficient battery power is available:

Power button Press and hold

Press and hold the power button for ten seconds, then release. This ensures the Surface® shuts down instead of entering sleep mode.

Power button Press and release

Press and release the power button;
SURFACE should appear on the screen.

5 Choose one:**◆ EFB normal operation is **restored**:**

Accomplish normal logon procedure.

**◆ EFB **fails** to restart:**

Press and hold the power button for forty-five seconds, then release. This forces the Surface® into a hard restart.

▶▶ Go to step 6

▼ Continued on next page ▼

▼ EFB or Application Unresponsive continued ▼

6 Choose one:

◆ EFB normal operation is **restored**:

Accomplish normal logon procedure.



◆ EFB **fails** to restart:

Refer to applicable EFB Non-Normal Checklist.



Emergency Landing Considerations

Condition: The captain has determined a red emergency exists.

Objective: To assist the crew in managing a red emergency.

- Declare an emergency
- Transponder - 7700 (if required)
- Brief the flight attendants and passengers
- Consider reducing fuel load
- SEAT BELTS and NO SMOKING signs - ON
- TERR OVRD - OVRD
- EMER LIGHTS - ON
- When below 10,000 feet:

OUTFLOW VALVE switches (both) MAN

OUTFLOW VALVE MANUAL

switches (both) Hold in OPEN until the
outflow valve indication
shows fully open (30 seconds)
to depressurize the airplane

▼ Continued on next page ▼

▼Emergency Landing Considerations continued▼

- When at 1,000 feet:

Announce "BRACE FOR LANDING" over the PA.

- After landing:

Evaluate the need for emergency evacuation.

If emergency evacuation is appropriate:

Perform the EVACUATION checklist (back cover).

If emergency evacuation is NOT appropriate:

Make the following PA, "THIS IS THE CAPTAIN, REMAIN SEATED WITH YOUR SEAT BELT FASTENED."



Overweight Landing

Condition: A landing at greater than maximum landing weight is needed.

- 1 Refer to the Overweight Landing Considerations, in this section, as time and conditions allow.
- 2 If both engines are running normally, refer to the Operational Data Manual (ODM), Approach/Landing section, Approach and Landing Climb Limit table.
- 3 Choose one:

◆ Landing gross weight is **greater** than the Landing Climb Limit Weight, **or one engine is inoperative**:

GND PROX FLAP OVRD switch OVRD

Note: Use flaps 20 and VREF 20 for landing and flaps 5 for go-around. This gives greater climb capability.

▶▶ **Go to step 8**

◆ Landing gross weight is **less than or equal to** the Landing Climb Limit Weight, **and both engines are running** normally:

7101 - 7110

▶▶ **Go to step 4**

7001 - 7008

▶▶ **Go to step 6**

▼ Continued on next page ▼

▼ Overweight Landing continued ▼

4 Enter the landing gross weight on the APPROACH REF page.

5 Choose one:

- ◆ VREF 30 + additives (wind and gusts, 5 knots minimum) is **at or below** 170 knots:

Note: Use flaps 30 and VREF 30 for landing and flaps 20 for go-around.



- ◆ VREF 30 + additives (wind and gusts, 5 knots minimum) is **above** 170 knots:

Note: Use flaps 25 and VREF 25 for landing and flaps 20 for go-around. This gives greater margin to the flap placard speed.

►► **Go to step 8**

▼ Continued on next page ▼

▼ Overweight Landing continued ▼

6 Enter the landing gross weight on the APPROACH REF page.

7 Choose one:

- ◆ VREF 30 + additives (wind and gusts, 5 knots minimum) is **at or below** 160 knots:

Note: Use flaps 30 and VREF 30 for landing and flaps 20 for go-around.



- ◆ VREF 30 + additives (wind and gusts, 5 knots minimum) is **above** 160 knots:

Note: Use flaps 25 and VREF 25 for landing and flaps 20 for go-around. This gives greater margin to the flap placard speed.

►► Go to step 8

8 Checklist Complete Except Deferred Items

▼ Continued on next page ▼

▼ Overweight Landing continued ▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
Minimums	____,____, xckd	C&F
Landing data	VREF 20 or VREF 25 ____	C&F
Approach briefing	complete	PM
Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Recall	ckd	PM
Notes	ckd	PM

Approach Checklist

Flight & nav instruments	verified	C&F
Cabin notification	complete	C
Altimeters	____, xckd	C&F

Landing Checklist

Landing gear	down	C&F
Flaps	____/____ 20 or 25	C&F
Speedbrake	ARMED	PM



Overweight Landing Considerations

Condition: A decision is being considered or has been made to land over the maximum landing weight limitation.

Note: Refer to the Overweight Landing checklist, in this section, for the procedure.

Note: Exercising captain's emergency authority does not require the declaration of an emergency with air traffic control. Refer to FOM, 10.2, Overweight Landings.

Note: When considering an immediate return to the takeoff runway, the landing distance is generally less than the takeoff distance at all gross weights when landing with flaps 25 or 30 and the runway is dry.

Approach:

- Consider landing on the longest available runway.
- Review landing distance required in the Approach/Landing or Abnormal section of the ODM (normal or reduced landing flap configuration).
- If landing distance is a concern, consider jettisoning fuel or holding to reduce weight.
- If landing distance is not an issue, jettisoning fuel or holding to reduce weight is not necessary.
- Use an autobrake setting commensurate with runway length and conditions. Refer to the Operational Landing Distances tables in the ODM.

▼ Continued on next page ▼

▼ Overweight Landing Considerations continued ▼

- If approach VREF (including additives) is within 10 KIAS of the flaps 30 placard speed, use flaps 25 and VREF 25 (plus additives) for landing.
- The aircraft is not certified to autoland at greater than maximum landing weight. If the captain determines that an autoland is the safest course of action, the approach, flare, and landing must be closely monitored at all times.
- The vertical speed required to maintain glidepath may be significantly higher than normal. The captain should brief contingencies if "SINK RATE" cautions are received on short final.

Landing:

- Do not hold the airplane off waiting for a smooth landing.
- Fly the airplane onto the runway at the normal touchdown point.
- Attempt to touch down at approximately 200 - 300 fpm. If able, note the vertical speed at touchdown.
- If a long landing is likely to occur, a go-around should be accomplished.
- Apply reverse thrust commensurate with runway length and conditions.

▼ Continued on next page ▼

▼ Overweight Landing Considerations continued ▼**After Landing:**

- Be alert for the possibility of tire, grease, or hydraulic fire and the possibility of wheel fuse plugs melting. Advise the ground crew of the hot brake hazard.
- Make a logbook entry including the phrase "overweight landing." Include actual landing weight, maximum landing weight, and vertical speed at touchdown, if known.



Rejected Takeoff - Post RTO Considerations

Condition: A takeoff has been discontinued after takeoff thrust is set and/or initiation of the takeoff roll has begun.

Following the RTO:

- Wind direction in case of fire. If able, park with fire on the downwind side of the aircraft.
- The possible need for emergency equipment.
- The possible need to evacuate the aircraft.
- Complete non-normal checklist (if appropriate) for the condition(s) causing the RTO.
- The need to clear the runway. Check entry/exit door status and ensure passengers are seated prior to taxi.
- Refer to FOM, chapter 3.4, Rejected Takeoff (RTO).

Prior to a subsequent takeoff:

- (7001 - 7008) Maintenance approval is required if thrust reversers were deployed.
- Contact Flight Control.
- Observe brake cooling schedule and precautions in the ODM.
- Accomplish any required MEL actions.
- Consider additional de-icing requirements.
- Consider additional fueling requirements.
- Verify FMS information.
- Accomplish the appropriate Normal checklists (e.g., After Landing checklist, Taxi checklist, Before Takeoff checklist).

▼ Continued on next page ▼

▼ Rejected Takeoff - Post RTO Considerations continued ▼**Return to the gate:**

- Accomplish the After Landing checklist.
- Coordinate with station.
- Consider the possibility of wheel fuse plugs melting and/or remote parking.
- Advise the ground crew of the hot brake hazard.



Volcanic Ash

7101 - 7110

Condition: Volcanic Ash is suspected when one or more of these occur:

- A static discharge around the windshield
- A bright glow in the engine inlets
- Smoke or dust on the flight deck
- An acrid odor.

Caution! Exit volcanic ash as quickly as possible. Consider a 180 degree turn. Attempting to climb above the volcanic cloud is not recommended.

- 1 Don the oxygen masks, as needed.
- 2 Establish crew communications, as needed.
- 3 Do not deploy passenger oxygen if cabin pressure is normal.
- 4 Autothrottle disconnect switch Push

If conditions allow, run the engines at idle.

- 5  Thrust levers (both). Idle

This step reduces possible engine damage or flameout, or both, by decreasing EGT.

- 6 ENGINE ANTI-ICE selectors (both) ON
- 7 WING ANTI-ICE selector ON
- 8 RECIRC FANS switches (both) Off
- 9 APU selector
(if APU available) START, then ON

▼ Continued on next page ▼

▼ Volcanic Ash continued ▼

Note: Volcanic ash can cause non-normal system reactions such as:

- Engine malfunctions, increasing EGT, engine stall or flameout
- Decrease or loss of airspeed displays
- EQUIP COOLING OVRD message
- FIRE CARGO FWD or AFT messages

10 Choose one:

◆ Engines are **flamed out** or **stalled**, or EGT is rapidly **approaching** or **exceeding** the **limit**:

▶▶ **Go to step 11**

◆ Engines run **normally**:

Plan to land at the nearest suitable airport



11 FUEL CONTROL switches

(both) CUTOFF, then RUN

12 RAM AIR TURBINE switch Push and hold for 1 second

13 For a dual engine in-flight start, do not manually abort the start if the EGT display turns red. Autostart allows EGT to exceed the in-flight start limit, however autostart aborts the start before EGT becomes too high for continued engine operation.

14 Set airspeed **above 270 knots**.

▼ Continued on next page ▼

▼ Volcanic Ash continued ▼

- 15 Engines can accelerate to idle very slowly, especially at high altitudes. The time from fuel control switch to RUN to stabilized idle can take up to two and a half minutes.
- 16 If N2 is steadily increasing and EGT stays within limits, do not interrupt the start.
- 17 **When** the HEAT PITOT L+C+R message blanks:

PRIMARY FLIGHT COMPUTERS
 disconnect switch DISC,

then AUTO

This step restores flight control normal mode.

Re-engage the autopilot as needed when the flight control normal mode is restored.
- 18 Plan to land at the nearest suitable airport.



Volcanic Ash

7001-7008

Condition: Volcanic Ash is suspected when one or more of these occur:

- A static discharge around the windshield
- A bright glow in the engine inlets
- Smoke or dust on the flight deck
- An acrid odor.

Caution! Exit volcanic ash as quickly as possible. Consider a 180 degree turn. Attempting to climb above the volcanic cloud is not recommended.

- 1 Don the oxygen masks, as needed.
- 2 Establish crew communications, as needed.
- 3 Do not deploy passenger oxygen if cabin pressure is normal.
- 4 Autothrottle disconnect switch Push
- 5  **If conditions allow, run the engines at idle.**
Thrust levers (both) Idle
- 6 ENGINE ANTI-ICE selectors (both) ON
- 7 WING ANTI-ICE selector ON
- 8 RECIRC FANS switches (both) Off
- 9 APU selector
(if APU available) START, then ON

▼ Continued on next page ▼

▼ Volcanic Ash continued ▼

Note: Volcanic ash can cause non-normal system reactions such as:

- Engine malfunctions, increasing EGT, engine stall or flameout
- Decrease or loss of airspeed displays
- EQUIP COOLING OVRD message
- FIRE CARGO FWD or AFT messages

10 Choose one:

◆ Engines are **flamed out** or **stalled**, or EGT is rapidly **approaching** or **exceeding** the **limit**:

▶▶ **Go to step 11**

◆ Engines run **normally**:

Plan to land at the nearest suitable airport



11 FUEL CONTROL switches

(both) CUTOFF, then RUN

12 RAM AIR TURBINE switch Push and
hold for 1 second

13 Set airspeed **above 250 knots**.

▼ Continued on next page ▼

▼ Volcanic Ash continued ▼

14 Engines can accelerate to idle very slowly, especially at high altitudes. If N3 is steadily increasing and EGT remains within limits, do not interrupt the start.

15 **When** the HEAT PITOT L+C+R message blanks:
PRIMARY FLIGHT COMPUTERS
disconnect switch DISC,
then AUTO

 This step restores flight control normal mode.

 Re-engage the autopilot as needed when the flight control normal mode is restored.

16 Plan to land at the nearest suitable airport.
 ■ ■ ■ ■

Non-Normal Checklists

Chapter NNC

Airplane Gen., Emer. Equip., Doors, Windows

Section 1

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Intentionally
Blank

Automatic Unlock

Condition: The correct emergency access code is entered.

- 1 FLT DECK DOOR lock selector Rotate to DENY and hold for 1 second



CREW OXYGEN LOW

Condition: Crew oxygen pressure is low.

Note: If oxygen supply is low or depleted:

►► **Go to the Oxygen Low Pressure - Crew checklist on page 1.11**



[] DOOR AFT CARGO

Condition: The aft lower cargo door is not closed and secure.

Objective: To reduce the cabin differential pressure to decrease the risk of door separation.

1 LDG ALT selector PULL ON, set 8000

2 Choose one:

◆ Airplane altitude is **at or below** 8,000 feet:

Level off at the lowest safe altitude.

▶▶ **Go to step 3**

◆ Airplane altitude is **above** 8,000 feet:

Descend to the lowest safe altitude or 8,000 feet, whichever is higher.

▶▶ **Go to step 3**

3 **After** level off, allow sufficient time for the cabin altitude to stabilize. This minimizes discomfort when the airplane is depressurized.

▼ Continued on next page ▼

▼ DOOR AFT CARGO continued ▼

4 Choose one:

◆ Airplane altitude is **at or below** 10,000 feet:

▶▶ **Go to step 5**

◆ Airplane altitude is **above** 10,000 feet:

Don the oxygen masks.

Establish crew communications.

▶▶ **Go to step 5**

5 OUTFLOW VALVE switches (both) MAN

6 OUTFLOW VALVE MANUAL

switches (both) Move to OPEN
until the outflow
valve indications show
fully open to depressurize the
airplane; use momentary actuation
of the outflow valve manual control

7 **After** the airplane is depressurized, the crew may change altitude as needed.

8 Do **not** accomplish the following checklists:

CABIN ALTITUDE AUTO

LANDING ALTITUDE



[] DOOR BULK CARGO

Condition: The bulk cargo door is not closed and secure.

Note: The bulk cargo door is in a safe configuration as long as cabin pressurization is normal.

- 1 Continue normal operation.

**[] DOOR E/E ACCESS**

Condition: The electrical and electronic access door is not closed and secure.

Note: The E/E access door is in a safe configuration as long as cabin pressurization is normal.

- 1 Continue normal operation.



[] DOOR ENTRY 1-4L, R

Condition: An entry door is not closed and secure.

Note: The entry door is in a safe configuration as long as cabin pressurization is normal.

- 1 Continue normal operation.

**[] DOOR FWD ACCESS**

Condition: The forward access door is not closed and secure.

Note: The forward access door is in a safe configuration as long as cabin pressurization is normal.

- 1 Continue normal operation.



[] DOOR FWD CARGO

Condition: The forward lower cargo door is not closed and secure.

Objective: To reduce the cabin differential pressure to decrease the risk of door separation.

1 LDG ALT selector PULL ON, set 8000

2 Choose one:

◆ Airplane altitude is **at or below** 8,000 feet:

Level off at the lowest safe altitude.

▶▶ **Go to step 3**

◆ Airplane altitude is **above** 8,000 feet:

Descend to the lowest safe altitude or 8,000 feet, whichever is higher.

▶▶ **Go to step 3**

3 **After** level off, allow sufficient time for the cabin altitude to stabilize. This minimizes discomfort when the airplane is depressurized.

▼ Continued on next page ▼

▼ DOOR FWD CARGO continued ▼

4 Choose one:

◆ Airplane altitude is **at or below** 10,000 feet:

▶▶ **Go to step 5**

◆ Airplane altitude is **above** 10,000 feet:

Don the oxygen masks.

Establish crew communications.

▶▶ **Go to step 5**

5 OUTFLOW VALVE switches (both) MAN

6 OUTFLOW VALVE MANUAL

switches (both) Move to OPEN
until the outflow
valve indications show
fully open to depressurize the
airplane; use momentary actuation
of the outflow valve manual control

7 **After** the airplane is depressurized, the crew may change altitude as needed.

8 Do **not** accomplish the following checklists:

CABIN ALTITUDE AUTO

LANDING ALTITUDE



DOORS

Condition: Two or more doors are not closed and secure.



ELT ON

7101 - 7110

Condition: The emergency locator transmitter is on.



EMER LIGHTS

Condition: One of these occurs:

- The emergency lights are on
- The emergency lights switch is not ARMED



Lock Fail

7101 - 7110

Condition: One or more of these occur:

- The FLIGHT DECK ACCESS SYSTEM switch is OFF
- The lock is failed

Objective: To remove electrical power from the lock to prevent possible overheat.

Do **if** conditions allow a crew member to leave the seat.

- 1  FLIGHT DECK ACCESS SYSTEM switch OFF
- 2 The door can be locked with the deadbolt.

Note: Refer to the FOM for flight deck entry/exit procedures.



Lock Fail**7001 - 7008**

Condition: The lock is failed.

- 1 The door can be locked by inserting the mechanical latch pin.

Note: Refer to the FOM for flight deck entry/exit procedures.



Oxygen Low Pressure - Crew

Condition: The flight crew oxygen supply is low or depleted during flight.

Warning! When the flight crew oxygen supply is depleted during flight, the flight crew is vulnerable to smoke, fumes, or a loss of cabin pressurization.

- 1 Initiate an immediate diversion to the nearest suitable airport.

Caution! If an emergency situation occurs resulting in use of the portable oxygen bottles/masks or PBEs, a lack of communication capability may cause flight crew and ATC coordination problems.

- 2 Position a cabin portable oxygen bottle/mask and a PBE near each pilot.
- 3 Consider a descent to 10,000 feet or MEA which ever is higher, if conditions permit.
- 4 Review rapid depressurization and smoke/fire/fumes procedures.



PASS OXYGEN ON

Condition: The passenger oxygen system is on.



Window Damage FWD L, R

Condition: A forward flight deck window has one or more of these:

- An electrical arc
- A crack
- Is shattered
- A delamination (separation of vinyl and glass layers)
- Is deformed (additional outward curvature or bowing of window)

Objective: To remove electrical power, if needed, to prevent arcing. To descend, if needed, to minimize forces on the window.

- 1 **If** the window is arcing, shattered, or cracked:
- FWD WINDOW HEAT switch
(affected side) Off
- Do **not** accomplish the following checklist:
- WINDOW HEAT FWD

- 2 **If** the window is deformed, or an air leak occurs:
- Plan to land at the nearest suitable airport.
- If** the airplane altitude is above 10,000 feet:
- Descend to the lowest safe altitude or 10,000 feet, whichever is higher.

Note: Sustained flight below 10,000 feet is not recommended due to greater risk of bird strike.



Window Damage Side L, R

Condition: The side flight deck window has one or more of these:

- An electrical arc
- A crack
- Is shattered
- A delamination (separation of vinyl and glass layers)
- Is deformed (additional outward curvature or bowing of window)

Objective: To remove electrical power, if needed, to prevent arcing. To descend, if needed, to minimize forces on the window.

- 1 **If** the window is arcing, shattered, or cracked:

SIDE WINDOW HEAT switch

(affected window) Off

Do **not** accomplish the following checklist:

WINDOW HEAT SIDE

- 2 **If** the window is deformed, or an air leak occurs:

Plan to land at the nearest suitable airport.

If the airplane altitude is above 10,000 feet:

Descend to the lowest safe altitude or 10,000 feet, whichever is higher.

Note: Sustained flight below 10,000 feet is not recommended due to greater risk of bird strike.



[] WINDOW FLT DECK L, R

Condition: The side window is not closed and secure.

- 1 Maintain the maneuvering speed for the existing flap setting until the window is closed.
- 2 The force needed to close the window increases with airspeed. It may not be possible to close the window at speeds above 250 knots.
- 3 Close and lock the window.
- 4 Choose one:

◆ Window **locks and** pressurization **is normal**:

Continue normal operation.



◆ Window does **not lock or** pressurization is **not normal**:

Level off at the lowest safe altitude.

The airplane can fly unpressurized and land safely with the window open.



[] WINDOWS

Condition: The left and right side windows are not closed and secure.

- 1 Maintain the maneuvering speed for the existing flap setting until the windows are closed.
- 2 The force needed to close the windows increases with airspeed. It may not be possible to close the windows at speeds above 250 knots.
- 3 Close and lock the windows.
- 4 Choose one:

◆ Both windows **lock and** pressurization **is normal**:

Continue normal operation.



◆ Any window does **not lock or** pressurization is **not normal**:

Level off at the lowest safe altitude.

The airplane can fly unpressurized and land safely with the windows open.



Intentionally
Blank

Non-Normal Checklists
Air Systems

Chapter NNC
Section 2

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[] CABIN ALTITUDE

Condition: Cabin altitude is excessive.

- 1 Don the oxygen masks.
- 2 Establish crew communications.

-
- 3 Check the cabin altitude and rate.

Without delay, descend to the lowest safe altitude or 10,000 feet, whichever is higher.

To descend:

Select lower altitude on MCP and select FL CH.

Move the thrust levers to idle.

Extend the speedbrakes.

If structural integrity is in doubt, limit airspeed and avoid high maneuvering loads.

Descend at VMO/MMO.

- 4 **If** the cabin altitude exceeds 14,000 feet:

PASS OXYGEN switch Push to ON and hold for 1 second

- 5 Advise the cabin by PA when the descent is complete and use of the oxygen system can be discontinued. Request passenger and cabin status.



BLEED ISLN CLOSED C, L, R

Condition: One of the following occurs:

- The isolation valve is failed closed
- The bleed isolation switch is off

**BLEED ISLN OPEN C, L, R**

Condition: The isolation valve is failed open.

**[] BLEED LEAK BODY**

Condition: A bleed air leak occurs in the body area.

- 1 The air supply controller automatically isolates the heat source within approximately 3 minutes by closing the bleed and isolation valves.
- 2 Pilot action will be needed when a BLEED LOSS message shows.
- 3 Do **not** accomplish the following checklists:
HYD PRESS DEM C1
HYD PRESS DEM C2



[] BLEED LEAK L, R

Condition: A bleed air leak occurs in the wing or pack bay area.

- 1 The air supply controller automatically isolates the heat source within approximately 5 minutes by closing the bleed and isolation valves.
- 2 Pilot action will be needed when a BLEED LOSS message shows.
- 3 Do **not** accomplish the following checklists:

PACK

HYD PRESS DEM



[] BLEED LEAK STRUT L, R

Condition: A bleed air leak occurs in the strut area.

- 1 The air supply controller automatically isolates the heat source by closing the bleed and isolation valves.
- 2 Do **not** accomplish the following checklist:
PACK
- 3 **Wait** 1 minute.
- 4 Choose one:
 - ◆ BLEED LEAK STRUT message **blanks**:
■ ■ ■ ■
 - ◆ BLEED LEAK STRUT message **stays shown**:
▶▶ **Go to step 5**
- 5 A/T ARM switch (affected side). OFF
- 6 Thrust lever (affected side) Retard slowly
until the BLEED LEAK
STRUT message blanks
or the thrust lever is at idle
- 7 Do **not** accomplish the following checklist:
AUTOTHROTTLE

▼ Continued on next page ▼

▼ BLEED LEAK STRUT L, R continued ▼

8 Choose one:

◆ BLEED LEAK STRUT message **blanks**:

Note: Run the engine at a thrust setting that keeps the BLEED LEAK STRUT message blank.



◆ BLEED LEAK STRUT message **stays shown**:

Transponder mode selector TA ONLY

Note: Run the engine at idle for the rest of the flight.

▶▶ **Go to step 9**

9 Choose one:

◆ Landing using flaps **20**:

GND PROX FLAP OVRD switch OVRD

Note: Use flaps 20 and VREF 20 for landing and flaps 5 for go-around.

▶▶ **Go to step 10**

◆ Landing using flaps **30 (if performance allows)**:

Note: Use flaps 30 and VREF 30 for landing and flaps 20 for go-around.



▼ Continued on next page ▼

▼ BLEED LEAK STRUT L, R continued ▼

10 Checklist Complete Except Deferred Items

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
Minimums	____,____, xckd	C&F
Landing data	____, VREF 20	C&F
Approach briefing	complete	PM
Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Recall	ckd	PM
Notes	ckd	PM

Approach Checklist

Flight & nav instruments	verified	C&F
Cabin notification	complete	C
Altimeters	____, xckd	C&F

Landing Checklist

Landing gear	down	C&F
Flaps	20, 20	C&F
Speedbrake	ARMED	PM



[] BLEED LOSS BODY

Condition: Bleed air from the left and right body ducts is not available.

- 1 C1 and C2 AIR DEMAND pump selectors OFF

Note: Gear retraction time increases to approximately 3 minutes due to reduced center hydraulic system capacity. HYD PRESS SYS C and GEAR DISAGREE messages show during retraction.

- 2 Do **not** accomplish the following checklists:

HYD PRESS DEM C1

HYD PRESS DEM C2



[] BLEED LOSS BODY L

Condition: Bleed air from the left body duct is not available.

- 1 C1 AIR DEMAND pump selector OFF

- 2 Do **not** accomplish the following checklist:

HYD PRESS DEM C1



[] BLEED LOSS BODY R

Condition: Bleed air from the right body duct is not available.

- 1 C2 AIR DEMAND pump selector OFF
- 2 Do **not** accomplish the following checklist:
HYD PRESS DEM C2



[] BLEED LOSS WING L, R

Condition: Bleed air from the wing duct is not available.

Objective: To prevent possible asymmetrical ice buildup on the wings.

- 1 WING ANTI-ICE selector OFF
- 2 Do **not** accomplish the following checklist:
PACK



BLEED OFF APU

Condition: One of the following occurs:

- The APU bleed valve is closed because of a system fault
- The APU bleed switch is off



BLEED OFF ENG L, R

Condition: One of the following occurs:

- The engine bleed valve is closed because of a system fault
- The engine bleed switch is off



[] CABIN ALTITUDE AUTO

Condition: One of these occurs:

- Automatic pressurization control is failed
- Both outflow valve switches are in manual

1 OUTFLOW VALVE switches (both) MAN

Valves may take up to 6 seconds
to begin moving.

2  OUTFLOW VALVE MANUAL
switches (both) Move to
OPEN or CLOSE
as needed to control
cabin rate and altitude

Note: The recommended cabin rate is
approximately 500 FPM for climbs and
descents.

Recommended cabin altitude in cruise is:

FLIGHT LEVEL	CABIN ALTITUDE
Up to 230	Landing Field Elevation
Up to 260	2000
Up to 300	4000
Up to 350	6000
Above 350	8000

3 **Checklist Complete Except Deferred Items**

▼ Continued on next page ▼

▼ CABIN ALTITUDE AUTO continued ▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
Minimums	____, ____ xckd	C&F
Landing data	____, ____	C&F
Approach briefing	complete	PM
Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Recall	ckd	PM
Notes	ckd	PM

Approach Checklist

Flight & nav instruments	verified	C&F
Cabin notification	complete	C
Altimeters	____, xckd	C&F

At pattern altitude

OUTFLOW VALVE MANUAL

switches (both) Hold in OPEN
until the outflow valve
indications show fully open
to depressurize the airplane

▼ Continued on next page ▼

▼ CABIN ALTITUDE AUTO continued ▼

Landing Checklist

- Landing gear down

C&F
- Flaps ____, __

C&F
- Speedbrake ARMED

PM



CARGO HEAT AFT

- Condition: One of these occurs:
- Aft lower cargo heat is inoperative

•The aft cargo temperature selector is OFF



CARGO HEAT BULK

Condition: One of these occurs:

- Bulk cargo heat is inoperative
- The bulk cargo temperature selector is OFF



EQUIP COOLING

Condition: The forward equipment cooling system is failed.



[] EQUIP COOLING OVRD

Condition: The equipment cooling system is in override mode.

- 1 **Wait** 2 minutes. This allows time for any smoke in the system to clear.
- 2 EQUIP COOLING switch Off, then AUTO
The EQUIP COOLING OVRD message blanks.
- 3 **Wait** 1 minute. This allows time for the system to reset.
- 4 Choose one:

◆ EQUIP COOLING OVRD message **stays blank**:



◆ EQUIP COOLING OVRD message **shows again**:

Note: After 30 minutes of operation at low altitude and low cabin differential pressure, electronic equipment and displays may fail.



[] LANDING ALTITUDE

Condition: One of these occurs:

- The FMC does not supply a landing altitude
- The landing altitude selector is pulled

- 1 LDG ALT selector PULL ON, set manually



[] OUTFLOW VALVE AFT, FWD

Condition: One of these occurs:

- Automatic control of the outflow valve is inoperative
- The outflow valve switch is in manual

Objective: To allow the operable outflow valve to take full control of cabin pressure.

- 1 OUTFLOW VALVE switch (affected side) MAN
- 2 OUTFLOW VALVE MANUAL
switch (affected side) Hold in
CLOSE until
the outflow valve
indication shows fully closed



[] PACK L

Condition: The left pack is inoperative.

- 1 **Wait** 2 minutes. This allows time for an overheat condition to cool.
- 2 AIR COND RESET switch Push and hold for 1 second
- 3 **Wait** 2 minutes.
- 4 Choose one:
 - ◆ PACK L message **stays blank**:

■ ■ ■ ■
 - ◆ PACK L message **shows again**:

L PACK switch Off

■ ■ ■ ■

[] PACK L+R

Condition: Both packs are inoperative.

Objective: To prevent excessive cabin altitude and temperature by descending and increasing ventilation.

- 1 **Wait** 2 minutes. This allows time for an overheat condition to cool.
- 2 AIR COND RESET switch Push and hold for 1 second
- 3 **Wait** 2 minutes unless the PACK L+R message shows again.
- 4 Choose one:
 - ◆ PACK L+R message **stays blank**:


 - ◆ PACK L+R message **shows again**:

►► Go to step 5
- 5 Descend to the lowest safe altitude or 10,000 feet, whichever is higher.

If needed to prevent excessive cabin altitude, descend with speedbrakes extended at Vmo/Mmo.

▼ Continued on next page ▼

▼ **PACK L+R continued** ▼

6 **When** at level off:

Choose one:

◆ Airplane altitude is **at or below** 10,000 feet:

▶▶ **Go to step 7**

◆ Airplane altitude is **above** 10,000 feet:

Don the oxygen masks.

Establish crew communications.

▶▶ **Go to step 7**

- 7 OUTFLOW VALVE switches (both) MAN
- 8 OUTFLOW VALVE MANUAL
switches (both) Hold in OPEN
for 30 seconds
- 9 IFE/PASS SEATS power switch OFF
- 10 CABIN/UTILITY power switch OFF
- 11 SHOULDER and FOOT HEATERS (all) OFF
- 12 Minimize the flight deck lighting intensity.

▼ **Continued on next page** ▼

▼PACK L+R continued▼

13 **During** daylight:

Install the flight deck sunvisors.

Advise the cabin to close the cabin window shades.

14 Plan to land at the nearest suitable airport.

15 Do **not** accomplish the following checklist:

CABIN ALTITUDE AUTO



[] PACK R

Condition: The right pack is inoperative.

- 1 **Wait** 2 minutes. This allows time for an overheat condition to cool.
- 2 AIR COND RESET switch Push and hold for 1 second
- 3 **Wait** 2 minutes.
- 4 Choose one:

◆ PACK R message **stays blank:**



◆ PACK R message **shows again:**

R PACK switch Off



[] PACK MODE L, R

Condition: The pack is in the standby mode.

Note: At lower altitudes or higher outside air temperatures, the pack may shut down.



[] TRIM AIR L, R

Condition: The trim air valve is closed.

- 1 **Wait** 2 minutes. This allows time for an overheat condition to cool.
- 2 AIR COND RESET switch Push and hold for 1 second
- 3 **Wait** 2 minutes.
- 4 Choose one:
 - ◆ TRIM AIR message **stays blank**:

■ ■ ■ ■
 - ◆ TRIM AIR message **shows again**:

TRIM AIR switch Off

■ ■ ■ ■

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Non-Normal Checklists

Chapter NNC

Anti-Ice, Rain

Section 3

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[] ANTI-ICE ENG L, R

Condition: An engine anti-ice valve is closed when commanded open.

1 Choose one:

◆ On the **ground**:

▶▶ **Go to step 2**

◆ In **flight**:

▶▶ **Go to step 6**

2 Thrust lever

(affected side) Advance until N1 is
approximately 3% above idle

3 Choose one:

◆ ANTI-ICE ENG message **blanks**:

■ ■ ■ ■

◆ ANTI-ICE ENG message **stays shown**:

ENGINE ANTI-ICE selector

(affected side). OFF, then ON

▶▶ **Go to step 4**

4 Choose one:

◆ ANTI-ICE ENG message **blanks**:

■ ■ ■ ■

◆ ANTI-ICE ENG message **stays shown**:

▶▶ **Go to step 5**

▼ Continued on next page ▼

▼ ANTI-ICE ENG L, R continued ▼

- 5 ENGINE ANTI-ICE selector
(affected side) OFF

Note: Avoid icing conditions.



- 6 ENGINE ANTI-ICE selector
(affected side) OFF, then ON

- 7 Choose one:

◆ ANTI-ICE ENG message **blanks**:

Note: Run the affected engine anti-ice system manually.



◆ ANTI-ICE ENG message **stays shown**:

►► **Go to step 8**

- 8 ENGINE ANTI-ICE selector
(affected side) OFF

Note: Avoid icing conditions.



[] ANTI-ICE LEAK ENG L, R

7101 - 7110

Condition: A bleed air leak occurs in the engine anti-ice or starter duct.

Objective: To reduce the flow of bleed air through the leak.

- 1 The engine anti-ice system automatically isolates the heat source within approximately 2 minutes by closing the engine anti-ice valve.

Note: Avoid icing conditions.

- 2 **Wait** 2 minutes.

- 3 Choose one:

◆ ANTI-ICE LEAK ENG message **blanks**:

■ ■ ■ ■

◆ ANTI-ICE LEAK ENG message **stays shown**:

▶▶ **Go to step 4**

- 4 A/T ARM switch (affected side). OFF
- 5 Thrust lever (affected side) Retard slowly
until the ANTI-ICE
LEAK ENG message blanks
or the thrust lever is at idle
- 6 Do **not** accomplish the following checklist:
AUTOTHROTTLE

▼ Continued on next page ▼

▼ ANTI-ICE LEAK ENG L, R continued ▼

7 Choose one:

◆ ANTI-ICE LEAK ENG message **blanks**:



◆ ANTI-ICE LEAK ENG message **stays shown**:

▶▶ **Go to step 8**

8 Transponder mode selector TA ONLY

Note: Run the engine at idle for the rest of the flight.

9 Choose one:

◆ Landing using flaps **20**:

GND PROX FLAP OVRD switch OVRD

Note: Use flaps 20 and VREF 20 for landing and flaps 5 for go-around.

▶▶ **Go to step 10**

◆ Landing using flaps **30 (if performance allows)**:

Note: Use flaps 30 and VREF 30 for landing and flaps 20 for go-around.



10 Checklist Complete Except Deferred Items

▼ Continued on next page ▼

▼ ANTI-ICE LEAK ENG L, R continued ▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
Minimums	____,____, xckd	C&F
Landing data	____, VREF 20	C&F
Approach briefing	complete	PM
Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Recall	ckd	PM
Notes	ckd	PM

Approach Checklist

Flight & nav instruments	verified	C&F
Cabin notification	complete	C
Altimeters	____, xckd	C&F

Landing Checklist

Landing gear	down	C&F
Flaps	20, 20	C&F
Speedbrake	ARMED	PM



[] ANTI-ICE LEAK ENG L, R

7001 - 7008

Condition: A bleed air leak occurs in the engine anti-ice or starter duct.

Objective: To isolate the heat source, or reduce the flow of bleed air through the leak.

- 1 The engine anti-ice system automatically isolates the heat source within approximately 1 minute if the leak is in the engine anti-ice duct by closing the engine anti-ice valve.

Note: Avoid icing conditions.

- 2 **Wait** 1 minute.

- 3 Choose one:

◆ ANTI-ICE LEAK ENG message **blanks**:



◆ ANTI-ICE LEAK ENG message **stays shown**:

▶▶▶ **Go to step 4**

- 4 BLEED AIR ISLN switch (affected side) Off
- 5 ENG BLEED AIR switch (affected side). Off
- 6 WING ANTI-ICE selector OFF

This prevents possible asymmetrical ice buildup on the wings.

▼ Continued on next page ▼

▼ ANTI-ICE LEAK ENG L, R continued ▼

7 Do **not** accomplish the following checklists:

BLEED LOSS WING

PACK

8 **Wait** 1 minute.

9 Choose one:

◆ ANTI-ICE LEAK ENG message **blanks**:

■ ■ ■ ■

◆ ANTI-ICE LEAK ENG message **stays shown**:

▶▶ **Go to step 10**

10 A/T ARM switch (affected side) OFF

11 Thrust lever (affected side) Idle

Note: Run the engine at idle for the rest of the flight.

12 Transponder mode selector TA ONLY

13 Do **not** accomplish the following checklist:

AUTOTHROTTLE

▼ Continued on next page ▼

▼ ANTI-ICE LEAK ENG L, R continued ▼

14 Choose one:

◆ Landing using flaps **20**:

GND PROX FLAP OVRD switch OVRD

Note: Use flaps 20 and VREF 20 for landing and flaps 5 for go-around.

►► **Go to step 15**

◆ Landing using flaps **30 (if performance allows)**:

Note: Use flaps 30 and VREF 30 for landing and flaps 20 for go-around.



15 Checklist Complete Except Deferred Items

▼ Continued on next page ▼

▼ ANTI-ICE LEAK ENG L, R continued ▼

Deferred Items

Descent Checklist

Altimeters.	____, xckd	C&F
Minimums.	____,____, xckd	C&F
Landing data	____, VREF 20	C&F
Approach briefing	complete	PM
Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Recall.	ckd	PM
Notes	ckd	PM

Approach Checklist

Flight & nav instruments.	verified	C&F
Cabin notification.	complete	C
Altimeters.	____, xckd	C&F

Landing Checklist

Landing gear.	down	C&F
Flaps	20 , 20	C&F
Speedbrake.	ARMED	PM



ANTI-ICE LOSS ENG L, R

Condition: Anti-ice bleed air for the engine is not available.



[] ANTI-ICE ON

Condition: All of these occur:

- An ANTI-ICE selector is ON
- TAT is more than 10 degrees C
- Ice is not detected

- 1 ENGINE ANTI-ICE
selectors (both) AUTO or OFF
- 2 WING ANTI-ICE selector AUTO or OFF



[] ANTI-ICE WING

Condition: One or both wing anti-ice valves are failed closed.

1 WING ANTI-ICE selector OFF, then ON

2 Choose one:

◆ ANTI-ICE WING message **blanks**:

Run wing anti-ice manually.



◆ ANTI-ICE WING message **stays shown**:

WING ANTI-ICE selector OFF



[] HEAT PITOT C

Condition: The center pitot probe heat is failed.

Note: The standby air data is unreliable in icing conditions.

**[] HEAT PITOT L**

Condition: The left pitot probe heat is failed.

Note: The PFD air data is not affected by a single pitot heat failure. Ensure that the right AIR DATA/ATT source switch stays off.

**[] HEAT PITOT L+C+R**

Condition: The left, center and right pitot probe heat are failed.

Note: The air data is unreliable in icing conditions.

**[] HEAT PITOT R**

Condition: The right pitot probe heat is failed.

Note: The PFD air data is not affected by a single pitot heat failure. Ensure that the left AIR DATA/ATT source switch remains off.



Ice Crystal Icing

7101 - 7110

Condition: Engine ice crystal icing or TAT probe icing is suspected. Ice crystal icing conditions exist when in visible moisture, and one or more of the following indications are present:

- Amber or red weather radar returns below the airplane
- Appearance of liquid water on the windshield at temperatures too cold for rain (the sound is different than rain)
- The autothrottle disconnects or is unable to maintain the selected airspeed
- TAT indication on EICAS stays near 0 degrees C
- Abnormal engine vibration indications

(Additional items that can indicate ice crystal icing are listed in the Additional Information section.)

Objective: To exit the ice crystal icing conditions and reduce the operational effects of the icing.

Note: TAT probe icing can cause one or more of the following abnormal engine indications:

- Reference/target N1 indications blank
- Reference/target N1 indications decrease while flying at a constant altitude and airspeed

▼ Continued on next page ▼

▼ Ice Crystal Icing continued ▼

- 1 Minimize time above amber and red weather radar returns. If conditions allow, exit the ice crystal icing conditions.
- 2 Choose one:
 - ◆ Autothrottle response **or** TAT indication is normal:
 - ▶▶ **Go to step 5**
 - ◆ Autothrottle is **unable** to maintain the selected airspeed **and** TAT indication stays near 0 degrees C:
 - ▶▶ **Go to step 3**
- 3 A/T ARM switches (both) OFF
- 4 Thrust levers (both) Set to maintain airspeed and airplane flight path
- 5 **When** in ice crystal icing conditions, the following can be unreliable:
 - Reference/target N1 indications and reference N1
 - TAS, TAT, SAT, ECON SPD, and LRC
- 6 **When** ice crystal icing conditions are no longer present:
 - The autothrottle can be activated, if needed.
 - ■ ■ ■

▼ Continued on next page ▼

▼ Ice Crystal Icing continued ▼**Additional Information**

One or more of the following can indicate ice crystal icing:

- Light to moderate turbulence
- Static discharge around the windshield (St. Elmo's fire)
- Smell of sulfur
- Smell of ozone
- Humidity increase

An erroneous TAT indication can occur as a result of ice crystals blocking the sensor. The erroneous indication can last from one minute to more than 20 minutes. TAT normally should increase approximately 2 degrees Celsius per 1,000 ft of descent.

Ice Crystal Icing

7001 - 7008

Condition: Engine ice crystal icing or TAT probe icing is suspected. Ice crystal icing conditions exist when in visible moisture, and one or more of the following indications are present:

- Amber or red weather radar returns below the airplane
- Appearance of liquid water on the windshield at temperatures too cold for rain (the sound is different than rain)
- The autothrottle disconnects or is unable to maintain the selected airspeed
- TAT indication on EICAS stays near 0 degrees C

(Additional items that can indicate ice crystal icing are listed in the Additional Information section.)

Objective: To exit the ice crystal icing conditions and reduce the operational effects of the icing.

▼ Continued on next page ▼

▼ Ice Crystal Icing continued ▼

Note: TAT probe icing can cause one or more of the following non-normal engine indications:

- Reference/target EPR indications or reference EPR blank
- Maximum EPR lines (amber) or reference/target EPR indications decrease while flying at a constant altitude and airspeed
- Thrust levers or actual EPR indications are not aligned
- Unable to achieve maximum continuous thrust or maximum climb thrust

1 Minimize time above amber and red weather radar returns. If conditions allow, exit the ice crystal icing conditions.

2 Choose one:

◆ TAT **or** engine indications are **normal**:

▶▶ **Go to step 13**

◆ TAT indication stays near 0 degrees C **and** engine indications are **not** normal:

▶▶ **Go to step 3**

3 A/T ARM switches (both) OFF

4 Thrust levers (both) Set to
maintain airspeed
and airplane flight path

▼ Continued on next page ▼

▼ Ice Crystal Icing continued ▼

5 Choose one:

◆ Airspeed and airplane flight path **can** be maintained with manual thrust:

▶▶ **Go to step 13**

◆ Airspeed and airplane flight path **cannot** be maintained with manual thrust:

▶▶ **Go to step 6**

6 Thrust levers (both) Retard
to mid position

This prevents exceeding thrust limits when switching to the alternate mode.

Push one switch at a time.

7  ENGINE EEC MODE switches (both) Off

8 Do **not** accomplish the following checklist:

ENG EEC MODE

9 Maximum thrust limiting is not available. N1 can be used to set thrust.

10 Do **not** activate the autothrottle.

11 The ENG LIMIT PROT messages may show due to incorrect maximum N1 lines. Set thrust to maintain the needed airspeed and airplane flight path. Maintain EGT below the amber band.

▼ Continued on next page ▼

▼ Ice Crystal Icing continued ▼

12 Do **not** accomplish the following checklist:

ENG LIMIT PROT

13 When in ice crystal icing conditions, the following can be unreliable:

In EEC normal mode:

Reference/target EPR indications and
reference EPR

Maximum EPR lines (amber)

TAS, TAT, SAT, ECON SPD, and LRC

In EEC alternate mode:

Reference/target N1 indications and
reference N1

Maximum N1 lines (amber)

TAS, TAT, SAT, ECON SPD, and LRC

14 **When** ice crystal icing conditions are no longer present:

ENGINE EEC MODE switches

(both). NORM

The autothrottle can be activated, if needed.



▼ Continued on next page ▼

▼ Ice Crystal Icing continued ▼**Additional Information**

One or more of the following can indicate ice crystal icing:

- Light to moderate turbulence
- Static discharge around the windshield (St. Elmo's fire)
- Smell of sulfur
- Smell of ozone
- Humidity increase

An erroneous TAT indication can occur as a result of ice crystals blocking the sensor. The erroneous indication can last from one minute to more than 20 minutes. TAT normally should increase approximately 2 degrees Celsius per 1,000 ft of descent.

[] ICE DETECTORS

Condition: The ice detectors are failed.

Note: Run the engine and wing anti-ice systems manually.



ICING ENG

Condition: Ice is detected and an engine anti-ice selector is OFF.



ICING WING

Condition: Ice is detected and one of these occurs:

- The wing anti-ice selector is OFF
- The wing anti-ice takeoff inhibit is active



WINDOW HEAT

Condition: Two or more window heats are off.



[] WINDOW HEAT L, R FWD

Condition: Primary window heat for the forward window is inoperative.

Objective: To attempt to reset the system or remove power to prevent arcing.

- 1 FWD WINDOW HEAT switch (affected side) Off
- 2 **Wait** 10 seconds.
- 3 FWD WINDOW HEAT switch (affected side) ON
- 4 Choose one:
 - ◆ WINDOW HEAT FWD message **blanks**:

 - ◆ WINDOW HEAT FWD message **stays shown**:
FWD WINDOW HEAT switch (affected side) Off
The window is defogged by the backup system.


[] WINDOW HEAT L, R SIDE

Condition: Window heat for the side window is inoperative.

Objective: To attempt to reset the system or remove power to prevent arcing.

- 1 SIDE WINDOW HEAT
switch (affected side) Off
- 2 **Wait** 10 seconds.
- 3 SIDE WINDOW HEAT
switch (affected side) ON
- 4 Choose one:
 - ◆ WINDOW HEAT SIDE message **blanks**:

■ ■ ■ ■
 - ◆ WINDOW HEAT SIDE message **stays shown**:

SIDE WINDOW HEAT
switch (affected side) Off

■ ■ ■ ■

Intentionally
Blank

Non-Normal Checklists
Automatic Flight

Chapter NNC
Section 4

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Intentionally
Blank

AUTOPILOT

Condition: One or more of these occur:

- The autopilot is in a degraded mode other than the selected mode
- The engaged roll mode is failed
- The engaged pitch mode is failed
- The autopilot is in flight envelope protection

Note: Flight may not be permitted in RVSM airspace. Contact ATC. Refer to the Airway Manual, SUP, 2 - Crew Duties, Navigation, for RVSM requirements.



AUTOPILOT DISC

Condition: All autopilots are disengaged.

Note: Flight may not be permitted in RVSM airspace. Contact ATC. Refer to the Airway Manual, SUP, 2 - Crew Duties, Navigation, for RVSM requirements.



AUTOTHROTTLE DISC

Condition: Both autothrottles are disconnected.



[] AUTOTHROTTLE L, R

Condition: One autothrottle is inoperative.

- 1 A/T ARM switch (affected side). OFF
- 2 The other autothrottle may be activated if needed.



NO AUTOLAND

Condition: The autoland system is not available.



NO LAND 3

Condition: The autoland system does not have redundancy for a triple channel autoland.



Non-Normal Checklists
Communications

Chapter NNC
Section 5

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Cabin Interphone System Inoperative

Condition: The cabin interphone system is inoperative.

- 1 Ensure all cabin handsets are properly reset and stowed.
- 2 Choose one:
 - ◆ Cabin interphone system is operative:
Continue normal operation.

■ ■ ■ ■
 - ◆ Cabin interphone system remains **inoperative**:
▶▶ Go to step 3
- 3 Avoid use of PA for direct messages to Flight Attendants except in an emergency.
- 4 Contact Purser/Flight Leader and establish plan for communications under normal conditions.
- 5 Brief the Purser/Flight Leader on the following alternate emergency procedure:

▼ Continued on next page ▼

▼ Cabin Interphone System Inoperative continued ▼

Cabin Interphone System Inoperative			
Source of Abnormal		Pilot Action	Briefing Items
Flight Deck	Cabin		
Smoke/Fire		Use PA.	PA is primary means to command an evacuation.
Emergency Landing			
Ditching			
Evacuation or Rejected Takeoff			
	Smoke/Fire	Continually monitor PA.	Flight attendant will use "Alert" function on handset (if operable) to notify pilots to monitor PA.
	Hijacking		Flight attendant will use "Alert" function on handset (if operable) to notify pilots to monitor PA.
	Passenger Problem (Medical/ Disturbance)		Flight attendant will use "Alert" function on handset (if operable) to notify pilots to monitor PA. If unable, Flight Attendant will use briefed entry method at Flight Deck door.



DATALINK LOST

Condition: The ACARS datalink is temporarily lost.



DATALINK SYS

Condition: The datalink system is failed.



PA System Inoperative

Condition: The Public Address (PA) system is inoperative.

- 1 Establish cabin communications.
 - 2 Contact Purser/Flight Leader and establish plan for communications under normal conditions, including:
 - Use of standard flight deck/cabin call signals.
 - Advising Purser/Flight Leader to review location and operation of portable megaphones with flight attendants.
 - 3 Advise Purser/Flight Leader 20 minutes (1 hour on transoceanic flights) and 5 minutes before landing.
- Note:** With the PA inoperative, the F/As must individually (few seats at a time) brief passengers before takeoff and landing. Coordinate as required to provide sufficient time to meet these requirements.
- 4 Brief the Purser/Flight Leader on the following alternate emergency procedures.

▼ Continued on next page ▼

▼ Public Address System Inoperative continued ▼

Public Address System Inoperative			
Source of Abnormal		Pilot Action	Briefing Items
Flight Deck	Cabin		
Smoke/Fire		Use cabin interphone.	Pilots and Flight Attendants will use the cabin interphone for communication. Public Announcements accomplished by Flight Attendants using megaphones.
Emergency Landing		Use "Alert" function on handset, then cabin interphone or face-to-face.	Pilots will use "Alert" function on handset to alert Flight Attendants of emergency situation. Subsequent communication via interphone or face-to-face, time permitting. Initiate evacuation using EVACUATION COMMAND switch.
Ditching			
Evacuation or Rejected Takeoff			
	Smoke/Fire	Use cabin interphone.	Pilots and Flight Attendants will use the cabin interphone for communication. Public Announcements accomplished by Flight Attendants using megaphones.
	Hijacking		
	Passenger Problem (Medical/ Disturbance)		



[] RADIO TRANSMIT

Condition: A microphone switch is on and causes a radio to transmit for 30 seconds or more.

Objective: To identify and isolate the stuck microphone switch.

- 1 Transmitter select switches
(all audio control panels) FLT interphone
- 2 The microphone with the stuck switch transmits on the flight interphone rather than over a radio.

Note: The affected audio control panel should stay on FLT interphone. All other audio panels may be used normally.



SATCOM

Condition: The SATCOM system is failed.



SATCOM DATALINK

Condition: The SATCOM datalink is failed.



SATCOM VOICE

Condition: SATCOM voice communication is failed.



SATVOICE LOST

Condition: SATCOM voice communication is temporarily lost.



VHF DATALINK

Condition: The VHF datalink is failed.



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Non-Normal Checklists
Electrical

Chapter NNC
Section 6

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Table of Contents

Intentionally
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[] ELEC AC BUS L, R

Condition: The AC bus is not energized.

Objective: To restore power or use the APU to supply another source of power.

Attempt only one reset per flight.

1  GEN CTRL switch
(affected side) Off, then ON

2 Choose one:

◆ ELEC AC BUS message **blanks**:



◆ ELEC AC BUS message **stays shown**:

APU selector
(if APU available) START, then ON

Do **not** accomplish the following checklist:

ELEC GEN OFF

When the APU is running:

▶▶ **Go to step 3**

3 Choose one:

◆ ELEC AC BUS message **blanks**:



◆ ELEC AC BUS message **stays shown**:

▶▶ **Go to step 4**

▼ Continued on next page ▼

▼ **ELEC AC BUS L, R continued** ▼

Attempt only one reset per flight.

- 4  **BUS TIE switch**
(affected side). Off, then AUTO

5 Choose one:

◆ **ELEC AC BUS message **blanks**:**



◆ **ELEC AC BUS message **stays shown**:**

Do **not** accomplish the following checklists:

WINDOW HEAT

HYD PRESS PRI



[] ELEC BACKUP GEN L, R

Condition: The backup generator is failed.

Attempt only one reset per flight.

- 1  **BACKUP GEN switch**
(affected side). Off, then ON



[] ELEC BACKUP SYS

Condition: The backup power system is failed.

- Attempt only one reset per flight.
- 1  L BACKUP GEN switch Off, then ON

Attempt only one reset per flight.

 - 2  R BACKUP GEN switch Off, then ON
- ■ ■ ■

ELEC BATTERY OFF

Condition: The battery switch is OFF.

■ ■ ■ ■

ELEC BUS ISLN L, R

Condition: The bus tie breaker is open.

■ ■ ■ ■

ELEC CABIN/UTIL OFF

Condition: The cabin/utility power switch is OFF.

■ ■ ■ ■

[] ELEC GEN DRIVE L, R

Condition: A generator drive fault occurs.

Action is irreversible.

- 1  DRIVE DISC
switch Confirm Push and
hold for 1 second
- 2 APU selector
(if APU available) START, then ON
- 3 Do **not** accomplish the following checklist:
ELEC GEN OFF



[] ELEC GEN OFF APU

Condition: The generator control breaker is open.

Attempt only one reset per flight.

- 1  APU GEN switch. Off, then ON



[] ELEC GEN OFF L, R

Condition: The generator control breaker is open.

Objective: To reset the generator or use the APU to supply another source of power.

Attempt only one reset per flight.

1  GEN CTRL switch
(affected side) Off, then ON

2 Choose one:

◆ ELEC GEN OFF message **blanks**:



◆ ELEC GEN OFF message **stays shown**:

APU selector
(if APU available) START, then ON



ELEC GND HDLG BUS

Condition: A fault occurs in the ground handling bus.



ELEC IFE/SEATS OFF

Condition: The IFE/passenger seats power switch is OFF.



ELEC STANDBY SYS

Condition: A standby power system failure occurs.



MAIN BATTERY DISCH

Condition: One of these occurs:

- The main battery is discharging
- The hot battery bus is not energized

Note: The main battery can power the standby system for a minimum of 10 minutes.



Non-Normal Checklists
Engines, APU

Chapter NNC
Section 7

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Eng Svr Damage/Sep L, R 7.12

Aborted Engine Start L, R

Condition: On the ground, an aborted engine start is needed.

- 1 FUEL CONTROL switch
(affected side) CUTOFF
-
- 2 START selector (affected side) START
- 3 Motor the engine for 30 seconds.
- 4 START selector (affected side) NORM



Dual Eng Fail/Stall

7101 - 7110

Condition: Engine speed for both engines is below idle.

- 1 FUEL CONTROL switches
(both) CUTOFF, then RUN
- 2 RAM AIR TURBINE switch Push and
hold for 1 second
-
- 3 Do not manually abort the start if EGT turns red.
EGT turns red when EGT exceeds the start limit line
(lower red line). Autostart discontinues the current
start attempt before EGT becomes too high for
continued engine operation.
- 4 Set airspeed **above 270 knots**.
- 5 APU selector
(if APU available) START, then ON
- 6 Engines can accelerate to idle very slowly,
especially at high altitudes. The time from fuel
control switch to RUN to stabilized idle can take up
to two and a half minutes.
- 7 Do not interrupt autostart. Move the fuel control
switch to CUTOFF only when no further start
attempts are needed.

▼ Continued on next page ▼

▼ Dual Eng Fail/Stall continued ▼

8 **When** the HEAT PITOT L+C+R message blanks:

PRIMARY FLIGHT COMPUTERS

disconnect switch DISC,
then AUTO

This step restores the flight control normal mode.

Re-engage the autopilot as needed when the flight control normal mode is restored.



7001 - 7008

- 1 FUEL CONTROL switches
(both) CUTOFF, then RUN
- 2 RAM AIR TURBINE switch Push and
hold for 1 second

- 3 Set airspeed **above 250 knots**.
- 4 APU SELECTOR
(if APU available) START, then ON
- 5 Engines can accelerate to idle very slowly,
especially at high altitudes.
- 6 Do not interrupt autostart. Move the fuel control
switch to CUTOFF only when no further start
attempts are needed.
- 7 **When** the HEAT PITOT L+C+R message blanks:
PRIMARY FLIGHT COMPUTERS
disconnect switch DISC,
then AUTO

This step restores the flight control normal mode.

Re-engage the autopilot as needed when the flight control normal mode is restored.



[] ENG AUTOSTART L, R

Condition: During a ground start, one of these occurs:

- Autostart did not start the engine
- Fuel control switch is in RUN at low engine RPM with the autostart switch OFF

- 1 FUEL CONTROL switch
(affected side) CUTOFF
- - - - -
- 2 START selector (affected side) START
- 3 Motor the engine for 30 seconds.
- 4 START selector (affected side) NORM
■ ■ ■ ■

Eng Lim/Surge/Stall L, R

Condition: One or more of these occur:

- Engine indications are abnormal
- Engine indications are quickly nearing or show an exceedance
- Abnormal engine noises are heard, possibly with airframe vibration
- There is no response to thrust lever movement or the response is abnormal
- Flames in the engine inlet or exhaust are reported

- 1 A/T ARM switch
(affected side) . . . Confirm OFF
- 2 Thrust lever
(affected side) . . . Confirm Retard until
engine indications
stay within limits or
the thrust lever is at idle



Note: If an engine compressor surge/stall occurs during ground operations, or takeoff is rejected due to an engine compressor surge/stall, a maintenance inspection is required prior to flight.

▼ Continued on next page ▼

▼ Eng Lim/Surge/Stall L, R continued ▼

3 Choose one:

◆ Engine indications are **stabilized and** EGT is **stabilized or decreasing**:

▶▶ **Go to step 4**

◆ Engine indications are **abnormal or** EGT continues to **increase**:

FUEL CONTROL switch
(affected side). Confirm. . CUTOFF
APU selector
(if APU available). START, then ON
Transponder mode selector TA ONLY
Plan to land at the nearest suitable airport.
Consider an evacuation.

▶▶ **Go to step 5**

Check that RPM and EGT follow thrust lever movement.

4  Thrust lever
(affected side) Advance slowly

Note: Run engine normally or at a reduced thrust setting that is surge and stall free.

5 Do **not** accomplish the following checklist:
AUTOTHROTTLE

▼ Continued on next page ▼

▼ Eng Lim/Surge/Stall L, R continued ▼

6 Choose one:

◆ Landing using flaps **20**:

GND PROX FLAP OVRD switch OVRD

Note: Use flaps 20 and VREF 20 for landing and flaps 5 for go-around.

▶▶ **Go to step 7**

◆ Landing using flaps **30 (if performance allows)**:

Note: Use flaps 30 and VREF 30 for landing and flaps 20 for go-around.



7 Checklist Complete Except Deferred Items

▼ Continued on next page ▼

▼ Eng Lim/Surge/Stall L, R continued ▼

Deferred Items

Descent Checklist

Altimeters.	____, xckd	C&F
Minimums.	____,____, xckd	C&F
Landing data	____, VREF 20	C&F
Approach briefing	complete	PM
Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Recall.	ckd	PM
Notes	ckd	PM

Approach Checklist

Flight & nav instruments.	verified	C&F
Cabin notification.	complete	C
Altimeters.	____, xckd	C&F

Landing Checklist

Landing gear.	down	C&F
Flaps	20, 20	C&F
Speedbrake.	ARMED	PM



Engine Response

7001 - 7008

Condition: One or both engines do not reach commanded thrust or roll back, and fuel system icing is suspected (indicated EPR is below commanded EPR and fuel temperature is below -10 degrees C).

Objective: To clear ice from the fuel system by reducing engine fuel flow while descending, then checking for proper engine response.

- 1 Select a lower altitude on the MCP.
- 2 FLCH switch Push
- 3 Thrust levers (both) Idle
- 4 WING ANTI-ICE selector OFF
- 5 ENGINE ANTI-ICE selectors (both) OFF
- 6 Maintain idle thrust for 30 seconds.
- 7 If thrust asymmetry compensation is inoperative, manual control inputs are required to compensate for asymmetric thrust conditions.
- 8 Left thrust lever Advance to maximum
- 9 Check for normal engine indications. Engine may accelerate very slowly especially at high altitudes. The time from idle to maximum thrust may be as long as 30 seconds.
- 10 Left thrust lever Retard to idle
- 11 Right thrust lever Advance to maximum

▼ Continued on next page ▼

▼ Engine Response continued ▼

- 12 Check for normal engine indications. Engine may accelerate very slowly especially at high altitudes. The time from idle to maximum thrust may be as long as 30 seconds.
- 13 Right thrust lever Retard to idle
- 14 WING ANTI-ICE selector AUTO
- 15 ENGINE ANTI-ICE
selectors (both) AUTO
- 16 Resume normal operation.



Eng Svr Damage/Sep L, R

Condition: One or more of these occur:

- Airframe vibration with abnormal engine indications
- Engine separation

- 1 A/T ARM switch
(affected side) Confirm OFF
- 2 Thrust lever
(affected side) Confirm Idle
-
- 3 FUEL CONTROL switch
(affected side) Confirm CUTOFF
- 4 Engine fire switch
(affected side) Confirm Pull
- 5 **If** high airframe vibration occurs and continues after engine shutdown:

Without delay, reduce airspeed and descend to a safe altitude which results in an acceptable vibration level.

If high vibration returns and further airspeed reduction and descent are not practical, increasing the airspeed may reduce the vibration.
- 6 APU selector
(if APU available) START, then ON
- 7 Transponder mode selector TA ONLY

▼ Continued on next page ▼

▼ Eng Svr Damage/Sep L, R continued ▼

8 Plan to land at the nearest suitable airport.

Consider an evacuation.

9 Do **not** accomplish the following checklists:

AUTOTHROTTLE

ENG FAIL

10 Choose one:

◆ Landing using flaps **20**:

GND PROX FLAP OVRD switch OVRD

Note: Use flaps 20 and VREF 20 for landing and flaps 5 for go-around.

▶▶ **Go to step 11**

◆ Landing using flaps **30 (if performance allows)**:

Note: Use flaps 30 and VREF 30 for landing and flaps 20 for go-around.



11 Checklist Complete Except Deferred Items

▼ Continued on next page ▼

▼ Eng Svr Damage/Sep L, R continued ▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
Minimums	____,____, xckd	C&F
Landing data	____, VREF 20	C&F
Approach briefing	complete	PM
Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Recall	ckd	PM
Notes	ckd	PM

Approach Checklist

Flight & nav instruments	verified	C&F
Cabin notification	complete	C
Altimeters	____, xckd	C&F

Landing Checklist

Landing gear	down	C&F
Flaps	20, 20	C&F
Speedbrake	ARMED	PM



[] APU LIMIT

Condition: An APU limit exceedance occurs.

1 APU selector OFF



[] APU SHUTDOWN

Condition: An APU automatic shutdown occurs.

Objective: To reset the APU controller.

1 APU selector OFF

2 APU selector START, then ON



ENG AUTOSTART OFF

Condition: The engine autostart switch is OFF.



ENG CONTROL L, R

Condition: An EEC system fault occurs.



[] ENG EEC MODE L, R

Condition: An EEC is in the alternate control mode.

Objective: To run both engines in the alternate mode.

- 1 Autothrottle disconnect switch Push
- 2 Thrust levers (both) Retard to mid position

This prevents exceeding the thrust limits when switching to the alternate mode.

Push one switch at a time.

- 3  ENGINE EEC MODE switches (both) Off
- 4 Activate the autothrottle.

Note: Maximum thrust limiting is not available with autothrottle disconnected. Alternate thrust setting information shows on the N1 indication.

- 5 Do **not** accomplish the following checklist:
 ENG EEC MODE (for other engine)



[] ENG FAIL L, R

7101 - 7110

Condition: Engine speed is below idle.

Objective: To restart the engine if needed, or configure for single engine operation.

1 **If** thrust is lost on **both** engines:

▶▶ **Go to the Dual Eng Fail/Stall checklist on page 7.2**



- 2 A/T ARM switch
(affected side) Confirm OFF
- 3 Thrust lever
(affected side) Confirm Idle
- 4 FUEL CONTROL switch
(affected side) Confirm CUTOFF
- 5 Do **not** accomplish the following checklist:
AUTOTHROTTLE
- 6 A restart can be attempted if there is N1 rotation and no abnormal airframe vibration.

Note: Do not attempt restart unless greater emergency exists.

▼ Continued on next page ▼

▼ ENG FAIL L, R continued ▼

7 Choose one:

◆ Restart **is** needed:

▶▶ **Go to step 8**

◆ Restart is **not** needed:

▶▶ **Go to step 20**

8 Engine can accelerate to idle very slowly, especially at high altitudes. The time from fuel control switch to RUN to stabilized idle can take as long as two and a half minutes.

9 If N2 is steadily increasing and EGT stays within limits, do not interrupt the start.

10 Choose one:

◆ Crossbleed indication (X-BLD or XB) **shows**:

START selector (affected side). . . . START

▶▶ **Go to step 11**

◆ Crossbleed indication (X-BLD or XB) is **blank**:

▶▶ **Go to step 11**

▼ Continued on next page ▼

▼ ENG FAIL L, R continued ▼

11 Choose one:

◆ Autostart is **on**:

▶▶ **Go to step 12**

◆ Autostart is **off**:

▶▶ **Go to step 15**

12 Monitor EGT during start to prevent an EGT exceedance. Autostart allows EGT to exceed the in-flight start time.

13 Do not interrupt autostart. Only abort the start if:

There is no oil pressure indication after the EGT increases.

EGT quickly nears or exceeds the start limit.

No further autostart attempts are needed.

14 FUEL CONTROL switch

(affected side) RUN

▶▶ **Go to step 17**

15 Abort the start if:

EGT does not rise within 30 seconds after selecting RUN.

N2 is not increasing.

EGT quickly nears or exceeds the start limit.

▼ Continued on next page ▼

▼ ENG FAIL L, R continued ▼

16 Choose one:

◆ Crossbleed indication (X-BLD or XB) **shows**:

When at maximum motoring:

FUEL CONTROL switch
(affected side) RUN

▶▶ **Go to step 17**

◆ Crossbleed indication (X-BLD or XB) is **blank**:

FUEL CONTROL switch
(affected side). RUN

▶▶ **Go to step 17**

17 Choose one:

◆ Engine **starts** and runs **normally**:



◆ Engine stays **failed**:

▶▶ **Go to step 18**

▼ Continued on next page ▼

▼ ENG FAIL L, R continued ▼

- 18 FUEL CONTROL switch
(affected side) Confirm CUTOFF
- 19 START selector (affected side) NORM
- 20 APU selector
(if APU available) START, then ON
- 21 Transponder mode selector TA ONLY
- 22 Plan to land at the nearest suitable airport.
- 23 Choose one:

◆ Landing using flaps **20**:

GND PROX FLAP OVRD switch OVRD

Note: Use flaps 20 and VREF 20 for
landing and flaps 5 for go-around.

▶▶ **Go to step 24**

◆ Landing using flaps **30 (if performance allows)**:

Note: Use flaps 30 and VREF 30 for
landing and flaps 20 for go-around.



24 Checklist Complete Except Deferred Items

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
Minimums	____,____, xckd	C&F
Landing data	____, VREF 20	C&F
Approach briefing	complete	PM
Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Recall	ckd	PM
Notes	ckd	PM

Approach Checklist

Flight & nav instruments	verified	C&F
Cabin notification	complete	C
Altimeters	____, xckd	C&F

Landing Checklist

Landing gear	down	C&F
Flaps	20, 20	C&F
Speedbrake	ARMED	PM



[] ENG FAIL L, R

7001 - 7008

Condition: Engine speed is below idle.

Objective: To restart the engine if needed, or configure for single engine operation.

1 **If** thrust is lost on **both** engines:

▶▶ **Go to the Dual Eng Fail/Stall checklist on page 7.4**



- 2 A/T ARM switch
(affected side) Confirm OFF
- 3 Thrust lever
(affected side) Confirm Idle
- 4 FUEL CONTROL switch
(affected side) Confirm CUTOFF
- 5 Do **not** accomplish the following checklist:
AUTOTHROTTLE
- 6 A restart can be attempted if there is N1 rotation and no abnormal airframe vibration.

Note: Do not attempt restart unless greater emergency exists.

▼ Continued on next page ▼

▼ ENG FAIL L, R continued ▼

7 Choose one:

◆ Restart **is** needed:

▶▶ **Go to step 8**

◆ Restart is **not** needed:

▶▶ **Go to step 18**

8 Engine can accelerate to idle very slowly, especially at high altitudes. If N3 is steadily increasing and EGT stays within limits, do not interrupt the start.

9 Choose one:

◆ Crossbleed indication (X-BLD or XB) **shows**:

START selector (affected side). . . . START

▶▶ **Go to step 10**

◆ Crossbleed indication (X-BLD or XB) is **blank**:

▶▶ **Go to step 10**

10 Choose one:

◆ Autostart is **on**:

▶▶ **Go to step 11**

◆ Autostart is **off**:

▶▶ **Go to step 13**

▼ Continued on next page ▼

▼ **ENG FAIL L, R continued** ▼

11 Do not interrupt autostart. Only abort the start if:

There is no oil pressure indication after the EGT increases.

EGT quickly nears or exceeds the start limit.

No further autostart attempts are needed.

12 FUEL CONTROL switch

(affected side) RUN

►► **Go to step 15**

13 Abort the start if:

EGT does not rise within 30 seconds after selecting RUN.

N3 is not increasing.

EGT quickly nears or exceeds the start limit.
Autostart allows EGT to exceed the in-flight start limit.

▼ **Continued on next page** ▼

▼ ENG FAIL L, R continued ▼

14 Choose one:

◆ Crossbleed indication (X-BLD or XB) **shows**:

When at maximum motoring:

FUEL CONTROL switch
(affected side) RUN

▶▶ **Go to step 15**

◆ Crossbleed indication (X-BLD or XB) is **blank**:

FUEL CONTROL switch
(affected side). RUN

▶▶ **Go to step 15**

15 Choose one:

◆ Engine **starts** and runs **normally**:



◆ Engine stays **failed**:

▶▶ **Go to step 16**

16 FUEL CONTROL switch
(affected side) Confirm. CUTOFF

17 START selector
(affected side) NORM

18 APU selector
(if APU available) START, then ON

19 Transponder mode selector TA ONLY

▼ Continued on next page ▼

▼ ENG FAIL L, R continued ▼

20 Plan to land at the nearest suitable airport.

21 Choose one:

◆ Landing using flaps **20**:

GND PROX FLAP OVRD switch OVRD

Note: Use flaps 20 and VREF 20 for landing and flaps 5 for go-around.

►► **Go to step 22**

◆ Landing using flaps **30 (if performance allows)**:

Note: Use flaps 30 and VREF 30 for landing and flaps 20 for go-around.



22 Checklist Complete Except Deferred Items

▼ Continued on next page ▼

▼ ENG FAIL L, R continued ▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
Minimums	____,____, xckd	C&F
Landing data	____, VREF 20	C&F
Approach briefing	complete	PM
Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Recall	ckd	PM
Notes	ckd	PM

Approach Checklist

Flight & nav instruments	verified	C&F
Cabin notification	complete	C
Altimeters	____, xckd	C&F

Landing Checklist

Landing gear	down	C&F
Flaps	20, 20	C&F
Speedbrake	ARMED	PM



[] ENG FUEL FILTER L, R

Condition: Fuel contamination can cause fuel to bypass the engine fuel filter.

1 Choose one:

- ◆ **Only one** ENG FUEL FILTER message, left or right, has shown during the flight:

Note: Erratic engine operation and flameout may occur on the affected engine due to fuel contamination.



- ◆ ENG FUEL FILTER messages for **both** engines show or have shown at any time during the flight (either separately or at the same time):

►► **Go to step 2**

2 Plan to land at the nearest suitable airport.

Note: Erratic engine operation and flameout may occur on either or both engines due to fuel contamination.



[] ENG FUEL VALVE L, R

Condition: One or more of these occur:

- The engine fuel valve is not in the commanded position
- The fuel spar valve is not in the commanded position

7101 - 7110

- 1 **If** the ENG FUEL VALVE message shows when the fuel control switch is moved to CUTOFF, the engine may continue to run for approximately 10 seconds.

7001 - 7008

- 2 **If** the ENG FUEL VALVE message shows when the fuel control switch is moved to CUTOFF, the engine may continue to run for approximately 1 minute.
- 3 **If** on the ground:

Do not attempt engine start.

**ENG IDLE DISAGREE**

Condition: One engine is at approach idle and the other engine is at minimum idle.



Eng In-Flight Start L, R

7101 - 7110

Condition: An engine start is needed and all of the following are true:

- There is N1 rotation
- There was **no** engine fire
- There is **no** abnormal airframe vibration

Note: Do not attempt restart unless greater emergency exists.

- 1 Engine can accelerate to idle very slowly, especially at high altitudes. The time from fuel control switch to RUN to stabilized idle can take up to two and a half minutes.
- 2 If N2 is steadily increasing and EGT stays within limits, do not interrupt the start.
- 3 Choose one:
 - ◆ Crossbleed indication (X-BLD or XB) **shows:**
START selector (affected side) START
▶▶ **Go to step 4**
 - ◆ Crossbleed indication (X-BLD or XB) is **blank:**
▶▶ **Go to step 4**

▼ Continued on next page ▼

▼ Eng In-Flight Start L, R continued ▼

4 Choose one:

◆ Autostart is **on**:

▶▶ **Go to step 5**

◆ Autostart is **off**:

▶▶ **Go to step 8**

5 Monitor EGT during start to prevent an EGT exceedance. Autostart allows EGT to exceed the in-flight start limit.

6 Do not interrupt autostart. Only abort the start if:

- There is no oil pressure indication after the EGT increases.
- EGT quickly nears or exceeds the start limit.
- No further autostart attempts are needed.

7 FUEL CONTROL switch
(affected side) RUN

▶▶ **Go to step 10**

8 Abort the start if:

EGT does not rise within 30 seconds after selecting RUN.

N2 is not increasing.

EGT quickly nears or exceeds the start limit.

▼ Continued on next page ▼

▼ Eng In-Flight Start L, R continued ▼

9 Choose one:

◆ Crossbleed indication (X-BLD or XB) **shows**:

When at maximum motoring:

FUEL CONTROL switch
(affected side) RUN

►► **Go to step 10**

◆ Crossbleed indication (X-BLD or XB) is **blank**:

FUEL CONTROL switch
(affected side) RUN

►► **Go to step 10**

10 Choose one:

◆ Engine **starts** and runs normally:

GND PROX FLAP OVRD switch Off

Transponder mode selector TA/RA



◆ Engine **fails** to start:

FUEL CONTROL switch
(affected side) Confirm . . . CUTOFF

START selector (affected side) NORM

Plan to land at the nearest suitable airport.



Eng In-Flight Start L, R

7001 - 7008

Condition: An engine start is needed and all of the following are true:

- There is N1 rotation
- There was **no** engine fire
- There is **no** abnormal airframe vibration

Note: Do not attempt restart unless greater emergency exists.

- 1 Engine can accelerate to idle very slowly, especially at high altitudes. If N3 is steadily increasing and EGT stays within limits, do not interrupt the start.
- 2 Choose one:
 - ◆ Crossbleed indication (X-BLD or XB) **shows**:
START selector (affected side). . . . START
▶▶ **Go to step 3**
 - ◆ Crossbleed indication (X-BLD or XB) is **blank**:
▶▶ **Go to step 3**
- 3 Choose one:
 - ◆ Autostart is **on**:
▶▶ **Go to step 4**
 - ◆ Autostart is **off**:
▶▶ **Go to step 6**

▼ Continued on next page ▼

▼ Eng In-Flight Start L, R continued ▼

- 4 Do not interrupt autostart. Only abort the start if:
- There is no oil pressure indication after the EGT increases.
 - EGT quickly nears or exceeds the start limit.
 - Autostart allows EGT to exceed the in-flight start limit.
 - No further autostart attempts are needed.

- 5 FUEL CONTROL switch
(affected side) RUN

▶▶ Go to step 8

- 6 Abort the start if:
- EGT does not rise within 30 seconds after selecting RUN.
 - N3 is not increasing.
 - EGT quickly nears or exceeds the start limit.
 - Autostart allows EGT to exceed the in-flight start limit.

▼ Continued on next page ▼

▼ Eng In-Flight Start L, R continued ▼

7 Choose one:

◆ Crossbleed indication (X-BLD or XB) **shows**:

When at maximum motoring:

FUEL CONTROL switch
(affected side) RUN

▶▶ **Go to step 8**

◆ Crossbleed indication (X-BLD or XB) is **blank**:

FUEL CONTROL switch
(affected side). RUN

▶▶ **Go to step 8**

8 Choose one:

◆ Engine **starts** and runs normally:

GND PROX FLAP OVRD switch Off

Transponder mode selector TA/RA



◆ Engine **fails** to start:

FUEL CONTROL switch
(affected side). Confirm. . . CUTOFF

START selector (affected side). NORM

Plan to land at the nearest suitable airport.



[] ENG LIMIT PROT L, R

Condition: The EEC is in the alternate mode and the commanded N1 exceeds the limit.

- 1 Thrust lever
(affected side) Retard until N1
stays below the amber line



[] ENG OIL FILTER L, R

7101 - 7110

Condition: The engine oil filter contamination has caused oil to bypass the oil filter.

Objective: To decrease oil pressure to stop filter bypass, or shut down the engine.

- 1 A/T ARM switch
(affected side) Confirm. OFF
- 2 Thrust lever
(affected side) Confirm. Retard
slowly until the
ENG OIL FILTER message
blanks or the thrust lever is at idle
- 3 Do **not** accomplish the following checklist:
AUTOTHROTTLE
- 4 Choose one:
 - ◆ ENG OIL FILTER message **blanks**:

Note: Run the affected engine at a thrust setting that keeps the ENG OIL FILTER message blank.

■ ■ ■ ■
 - ◆ ENG OIL FILTER message **stays shown**:

▶▶ **Go to step 5**
- 5 FUEL CONTROL switch
(affected side) Confirm. CUTOFF

▼ Continued on next page ▼

▼ ENG OIL FILTER L, R continued ▼

- 6 APU selector
(if APU available) START, then ON
- 7 Transponder mode selector TA ONLY
- 8 Plan to land at the nearest suitable airport.
- 9 Choose one:

◆ Landing using flaps **20**:

GND PROX FLAP OVRD switch OVRD

Note: Use flaps 20 and VREF 20 for landing and flaps 5 for go-around.

►► **Go to step 10**

◆ Landing using flaps **30 (if performance allows)**:

Note: Use flaps 30 and VREF 30 for landing and flaps 20 for go-around.



10 Checklist Complete Except Deferred Items

▼ Continued on next page ▼

▼ ENG OIL FILTER L, R continued ▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
Minimums	____,____, xckd	C&F
Landing data	____, VREF 20	C&F
Approach briefing	complete	PM
Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Recall	ckd	PM
Notes	ckd	PM

Approach Checklist

Flight & nav instruments	verified	C&F
Cabin notification	complete	C
Altimeters	____, xckd	C&F

Landing Checklist

Landing gear	down	C&F
Flaps	20, 20	C&F
Speedbrake	ARMED	PM



[] ENG OIL PRESS L, R

7101 - 7110

Condition: The engine oil pressure is low.

- 1 A/T ARM switch
(affected side) Confirm OFF
- 2 Thrust lever
(affected side) Confirm Idle
- 3 FUEL CONTROL switch
(affected side) Confirm CUTOFF
- 4 APU selector
(if APU available) START, then ON
- 5 Transponder mode selector TA ONLY
- 6 Plan to land at the nearest suitable airport.
- 7 Do **not** accomplish the following checklist:
AUTOTHROTTLE

▼ Continued on next page ▼

▼ ENG OIL PRESS L, R continued ▼

8 Choose one:

◆ Landing using flaps **20**:

GND PROX FLAP OVRD switch OVRD

Note: Use flaps 20 and VREF 20 for landing and flaps 5 for go-around.

►► **Go to step 9**

◆ Landing using flaps **30 (if performance allows)**:

Note: Use flaps 30 and VREF 30 for landing and flaps 20 for go-around.



9 **Checklist Complete Except Deferred Items**

▼ Continued on next page ▼

▼ ENG OIL PRESS L, R continued ▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
Minimums	____,____, xckd	C&F
Landing data	____, VREF 20	C&F
Approach briefing	complete	PM
Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Recall	ckd	PM
Notes	ckd	PM

Approach Checklist

Flight & nav instruments	verified	C&F
Cabin notification	complete	C
Altimeters	____, xckd	C&F

Landing Checklist

Landing gear	down	C&F
Flaps	20, 20	C&F
Speedbrake	ARMED	PM



[] ENG OIL PRESS L, R

7001 - 7008

Condition: The engine oil pressure is low.

- 1 A/T ARM switch
(affected side) Confirm. OFF
- 2 Thrust lever
(affected side) Confirm. Idle
- 3 Do **not** accomplish the following checklist:
AUTOTHROTTLE
- 4 Choose one:
 - ◆ ENG OIL PRESS message **blanks**:

■ ■ ■ ■
 - ◆ ENG OIL PRESS message **stays shown**:

▶▶ **Go to step 5**
- 5 FUEL CONTROL switch
(affected side) Confirm. CUTOFF
- 6 APU selector
(if APU available) START, then ON
- 7 Transponder mode selector TA ONLY
- 8 Plan to land at the nearest suitable airport.

▼ Continued on next page ▼

▼ ENG OIL PRESS L, R continued ▼

9 Choose one:

◆ Landing using flaps **20**:

GND PROX FLAP OVRD switch OVRD

Note: Use flaps 20 and VREF 20 for landing and flaps 5 for go-around.

▶▶ **Go to step 10**

◆ Landing using flaps **30 (if performance allows)**:

Note: Use flaps 30 and VREF 30 for landing and flaps 20 for go-around.



10 Checklist Complete Except Deferred Items

▼ Continued on next page ▼

▼ ENG OIL PRESS L, R continued ▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
Minimums	____,____, xckd	C&F
Landing data	____, VREF 20	C&F
Approach briefing	complete	PM
Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Recall	ckd	PM
Notes	ckd	PM

Approach Checklist

Flight & nav instruments	verified	C&F
Cabin notification	complete	C
Altimeters	____, xckd	C&F

Landing Checklist

Landing gear	down	C&F
Flaps	20, 20	C&F
Speedbrake	ARMED	PM



[] ENG OIL TEMP L, R

7101 - 7110
[AFM]

Condition: The engine oil temperature is high.

- 1 A/T ARM switch
(affected side) Confirm OFF
- 2 Thrust lever
(affected side) Confirm Move
to mid position

This allows the oil to cool.

- 3 Do **not** accomplish the following checklist:
AUTOTHROTTLE

- 4 Choose one:

◆ Oil temperature is **below** the **red** line limit, or is in the **amber** band for **less than 15 minutes**:

Note: Run the engine at a thrust setting that keeps the ENG OIL TEMP message blank.



◆ Oil temperature is **at or above** the **red** line limit, or is in the **amber** band for **15 minutes or more**:

▶▶ **Go to step 5**

- 5 Thrust lever
(affected side) Confirm Idle

▼ Continued on next page ▼

▼ ENG OIL TEMP L, R continued ▼

- 6 FUEL CONTROL switch
(affected side) Confirm. CUTOFF
- 7 APU selector
(if APU available) START, then ON
- 8 Transponder mode selector TA ONLY
- 9 Plan to land at the nearest suitable airport.
- 10 Choose one:

◆ Landing using flaps **20**:

GND PROX FLAP OVRD switch OVRD

Note: Use flaps 20 and VREF 20 for
landing and flaps 5 for go-around.

►► **Go to step 11**

◆ Landing using flaps **30 (if performance allows)**:

Note: Use flaps 30 and VREF 30 for
landing and flaps 20 for go-around.



11 Checklist Complete Except Deferred Items

▼ Continued on next page ▼

▼ ENG OIL TEMP L, R continued ▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
Minimums	____,____, xckd	C&F
Landing data	____, VREF 20	C&F
Approach briefing	complete	PM
Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Recall	ckd	PM
Notes	ckd	PM

Approach Checklist

Flight & nav instruments	verified	C&F
Cabin notification	complete	C
Altimeters	____, xckd	C&F

Landing Checklist

Landing gear	down	C&F
Flaps	20, 20	C&F
Speedbrake	ARMED	PM



[] ENG OIL TEMP L, R

7001 - 7008

Condition: The engine oil temperature is high.

- 1 A/T ARM switch
(affected side) Confirm. OFF
- 2 Thrust lever
(affected side) Confirm. Move
to mid position

This allows the oil to cool.

- 3 Do **not** accomplish the following checklist:
AUTOTHROTTLE

- 4 Choose one:

◆ Oil temperature is **below** the **red** line limit:

Note: Run the engine at a thrust setting that keeps the ENG OIL TEMP message blank.



◆ Oil temperature is **at or above** the **red** line limit:

▶▶ **Go to step 5**

- 5 Thrust lever
(affected side) Confirm. Idle
- 6 FUEL CONTROL switch
(affected side) Confirm. CUTOFF
- 7 APU selector
(if APU available) START, then ON

▼ Continued on next page ▼

▼ ENG OIL TEMP L, R continued ▼

8 Transponder mode selector TA ONLY

9 Plan to land at the nearest suitable airport.

10 Choose one:

◆ Landing using flaps **20**:

GND PROX FLAP OVRD switch OVRD

Note: Use flaps 20 and VREF 20 for
landing and flaps 5 for go-around.

►► **Go to step 11**

◆ Landing using flaps **30 (if performance allows)**:

Note: Use flaps 30 and VREF 30 for
landing and flaps 20 for go-around.



11 Checklist Complete Except Deferred Items

▼ Continued on next page ▼

▼ ENG OIL TEMP L, R continued ▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
Minimums	____,____, xckd	C&F
Landing data	____, VREF 20	C&F
Approach briefing	complete	PM
Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Recall	ckd	PM
Notes	ckd	PM

Approach Checklist

Flight & nav instruments	verified	C&F
Cabin notification	complete	C
Altimeters	____, xckd	C&F

Landing Checklist

Landing gear	down	C&F
Flaps	20, 20	C&F
Speedbrake	ARMED	PM



Engine Low Oil Quantity

Condition: One or more of these occurs:

- Low and/or decreasing oil quantity indications
- Oil quantity video is reversed and LO (white) is displayed

- 1 **If** oil pressure and oil temperature indications are **normal**:

Continue normal operations.

Monitor oil quantity, pressure, and temperature.



- 2 **If** ENG OIL PRESS EICAS message appears, do the ENG OIL PRESS checklist.



- 3 **If** ENG OIL TEMP EICAS message appears, do the ENG OIL TEMP checklist.



ENG REV LIMITED L, R

Condition: The engine reverser operation is limited.

Note: On landing, the affected thrust reverser will not deploy or affected reverse thrust will be limited to idle.



ENG REVERSER L, R

Condition: A fault occurs in the thrust reverser system.



ENG RPM LIMITED L, R

7101 - 7110

Condition: Engine thrust is at the N1 or N2 red line limit.



ENG RPM LIMITED L, R

7001 - 7008

Condition: Engine control is limiting affected engine thrust to prevent N1, N2, or N3 from exceeding the RPM operating limit.



ENG SHUTDOWN

Condition: Both engines were shut down by the fuel control switches or the engine fire switches.



ENG SHUTDOWN L, R

Condition: The engine was shut down by the fuel control switch or the engine fire switch.



[] ENG START VALVE L, R

Condition: The start valve is not in the commanded position.

- 1 Ground or in-flight start using a bleed air source may be unsuccessful.
- 2 Choose one:

◆ On the **ground**:

FUEL CONTROL switch
 (affected side) CUTOFF
 START selector (affected side) NORM



◆ In **flight**:

▶▶ **Go to step 3**

- 3 START selector (affected side) NORM
- 4 Increase airspeed until the crossbleed indication (X-BLD or XB) blanks.



[] ENG STARTER CUTOUT L, R

Condition: One of these occurs:

- The start valve fails to close
- The start selector stays in start

Objective: To ensure start selector is in normal or to remove bleed air source from the starter and prevent possible asymmetrical ice buildup on the wings.

1 START selector (affected side) NORM

2 Choose one:

◆ ENG STARTER CUTOUT message **blanks**:



◆ ENG STARTER CUTOUT message **stays shown**:

▶▶ **Go to step 3**

3 ENG BLEED AIR switch (affected side) Off

4 BLEED AIR ISLN switch (affected side) Off

5 **If** on the ground:

Disconnect the ground air source if it is in use.

6 WING ANTI-ICE selector OFF

7 Do **not** accomplish the following checklists:

BLEED LOSS WING

PACK



ENG THRUST L, R

Condition: The engine thrust is less than the commanded thrust.



Non-Normal Checklists

Chapter NNC

Fire Protection

Section 8

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Intentionally
Blank

[] FIRE APU

Condition: Fire is detected in the APU.

- 1 APU fire switch. Confirm Pull, rotate
to the stop and
hold for 1 second
- 2 Choose one:
 - ◆ FIRE APU message **stays shown**:

Plan to land at the nearest suitable airport.

▶▶ **Go to step 3**
 - ◆ FIRE APU message **blanks**:

▶▶ **Go to step 3**
- 3 Do **not** accomplish the following checklist:

APU SHUTDOWN

■ ■ ■ ■

[] FIRE ENG L, R

Condition: Fire is detected in the engine.

- 1 A/T ARM switch
(affected side) Confirm OFF
- 2 Thrust lever
(affected side) Confirm Idle
-
- 3 FUEL CONTROL switch
(affected side) Confirm CUTOFF
- 4 Engine fire switch
(affected side) Confirm Pull
- 5 **If** the FIRE ENG message stays shown:

Engine fire switch
(affected side) Rotate to the stop
and hold for 1 second

If after 30 seconds, the FIRE ENG message
stays shown:

Engine fire switch
(affected side) Rotate to the
other stop and
hold for 1 second
- 6 APU selector
(if APU available) START, then ON
- 7 Transponder mode selector TA ONLY
- 8 Plan to land at the nearest suitable airport.
Consider an evacuation.

▼ Continued on next page ▼

▼ FIRE ENG L, R continued ▼

9 Do **not** accomplish the following checklist:

AUTOTHROTTLE

10 Choose one:

◆ Landing using flaps **20**:

GND PROX FLAP OVRD switch OVRD

Note: Use flaps 20 and VREF 20 for landing and flaps 5 for go-around.

▶▶ **Go to step 11**

◆ Landing using flaps **30 (if performance allows)**:

Note: Use flaps 30 and VREF 30 for landing and flaps 20 for go-around.



11 Checklist Complete Except Deferred Items

▼ Continued on next page ▼

▼ FIRE ENG L, R continued ▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
Minimums	____,____, xckd	C&F
Landing data	____, VREF 20	C&F
Approach briefing	complete	PM
Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Recall	ckd	PM
Notes	ckd	PM

Approach Checklist

Flight & nav instruments	verified	C&F
Cabin notification	complete	C
Altimeters	____, xckd	C&F

Landing Checklist

Landing gear	down	C&F
Flaps	20 , 20	C&F
Speedbrake	ARMED	PM



Fire Eng Tailpipe L, R

Condition: An engine tailpipe fire occurs on the ground with no engine fire warning.

- 1 FUEL CONTROL switch
(affected side) CUTOFF
- 2 Advise the cabin.
- 3 Choose one:
 - ◆ Bleed air is **available**:
 - ▶▶ **Go to step 4**
 - ◆ Bleed air is **not** available:
 - Advise the tower.
 - ■ ■ ■
- 4 START selector
(affected side) START
- 5 Advise the tower.
- 6 **When** the tailpipe fire is extinguished:
 - START selector
(affected side) NORM
 - ■ ■ ■

Smoke, Fire or Fumes

Condition: Smoke, fire or fumes occurs.

Objective: To remove power from the ignition source.
To land the airplane as soon as possible, if needed.

- 1 Diversion may be needed.
- 2 Don oxygen masks, if needed.
- 3 Establish crew and cabin communications.
- 4 IFE/PASS SEATS switch OFF
- 5 RECIRC FANS switches (both) Off
- 6 GASPER switch Off
- 7 APU BLEED AIR switch Off
- 8 **Any time** the smoke or fumes becomes the greatest threat:

►► Go to the Smoke or Fumes Removal checklist on page 8.30

▼ Continued on next page ▼

▼ Smoke, Fire or Fumes continued ▼

9 Choose one:

- ◆ Source of the smoke, fire or fumes **is** obvious **and can** be extinguished quickly:

Isolate and extinguish the source of the smoke, fire or fumes.

If practical, remove power from the affected equipment by switch or circuit breaker in the flight deck or cabin.

▶▶ **Go to step 10**

- ◆ Source of the smoke, fire or fumes is **not** obvious **or cannot** be extinguished quickly:

▶▶ **Go to step 11**

▼ Continued on next page ▼

▼ Smoke, Fire or Fumes continued ▼

10 Choose one:

- ◆ Source **is** visually confirmed to be extinguished **and** smoke or fumes are **decreasing**:

Continue the flight at the captain's discretion.

Restore unpowered items at the captain's discretion.

- ▶▶ **Go to the Smoke or Fumes Removal checklist on page 8.30, if needed.**



- ◆ Source **is not** visually confirmed extinguished **or** smoke or fumes **continue**:

- ▶▶ **Go to step 11**

▼ Continued on next page ▼

▼ Smoke, Fire or Fumes continued ▼

- 11 Advise the cabin that the main cabin lighting will be turned off.
- 12 CABIN/UTILITY switch. OFF
- 13 Initiate a diversion to the nearest suitable airport while continuing the checklist.
- 14 Consider an immediate landing if the smoke, fire or fumes situation becomes uncontrollable.
- 15 Do not delay landing in an attempt to complete the following steps.
- 16 C BLEED AIR ISLN switch Off
- 17 L PACK switch Off
- 18 L TRIM AIR switch Off
- 19 Do **not** accomplish the following checklists:
 - PACK L
 - TRIM AIR L
- 20 **Wait** 2 minutes unless the smoke or fumes are increasing.

▼ Continued on next page ▼

▼ Smoke, Fire or Fumes continued ▼

21 Choose one:

- ◆ Smoke or fumes **continue or are increasing**:
 - L PACK switch AUTO
 - L TRIM AIR switch ON
 - R PACK switch Off
 - R TRIM AIR switch Off

▶▶ **Go to step 22**

- ◆ Smoke or fumes are **decreasing**:
 - ▶▶ **Go to the Smoke or Fumes Removal checklist on page 8.30, if needed.**

22 Do **not** accomplish the following checklists:

- PACK R
- TRIM AIR R

23 **Wait** 2 minutes unless the smoke or fumes are increasing.

▼ Continued on next page ▼

▼ Smoke, Fire or Fumes continued ▼

24 Choose one:

◆ Smoke or fumes **continue or are increasing**:

C BLEED AIR ISLN switch AUTO

R PACK switch AUTO

R TRIM AIR switch ON

Consider an immediate landing.

►► **Go to the Smoke or Fumes Removal checklist on page 8.30, if needed.**

◆ Smoke or fumes are **decreasing**:

►► **Go to the Smoke or Fumes Removal checklist on page 8.30, if needed.**



BOTTLE 1, 2 DISCH ENG

Condition: The engine fire extinguisher bottle pressure is low.



BOTTLE DISCH APU

Condition: The APU fire extinguisher bottle pressure is low.



BOTTLE DISCH CARGO

Condition: Both rapid discharge cargo fire extinguisher bottle pressures are low.

**[] DET FIRE APU**

Condition: APU fire detection is failed.

1 Choose one:

◆ APU **is** running:

Plan to shut down the APU as soon as practical.



◆ APU is **not** running:

Note: Do not start the APU unless use is needed.

**DET FIRE CARGO AFT, FWD**

Condition: Lower cargo compartment smoke detection is failed.

**DET FIRE ENG L, R**

Condition: Engine fire and overheat detection is failed.



EFB Battery Overheat or Fire

Condition: Battery for an EFB or PED has overheated or is on fire.

Warning! Use this procedure only when an electronic device battery overheats or fire is positively identified. If in doubt, Go to the Smoke, Fire or Fumes checklist on page 8.6.

- 1 External power source Unplug
Remove device from powered keyboard, battery, or external power.
- 2 Fire. Extinguish
Use a halon fire extinguisher, water fire extinguisher, or available liquid to extinguish fire.

Warning! Do not attempt to pick up or move a smoking or burning device. Do not move the device until certain the fire is extinguished and the device is cool.

Warning! Do not cover the device or use ice to cool the device. Ice or other materials insulate the device, increasing the likelihood that additional battery cells will reach thermal runaway.

▼ Continued on next page ▼

▼ EFB Battery Overheat or Fire continued ▼

- 3 **After** extinguishing the fire, immediately douse the device with water or other liquid to cool the device and prevent additional battery cells from reaching thermal runaway.



[] FIRE CARGO AFT

Condition: Smoke is detected in the aft lower cargo compartment.

- 1 AFT CARGO FIRE ARM switch Confirm. ARMED
- 2 CARGO FIRE DISCH switch Push and hold for 1 second

3 Choose one:

◆ On the **ground**:

**Warning! Inform ground personnel
NOT to open any cargo door
until all passengers and crew
have exited the airplane and
fire fighting equipment is
nearby.**



◆ In flight:

▶▶ **Go to step 4**

- 4 LDG ALT selector PULL ON, set 8000
This minimizes extinguisher agent leakage out of the compartment.

▼ Continued on next page ▼

▼ FIRE CARGO AFT continued ▼

- 5 Plan to land at the nearest suitable airport.
Consider an evacuation.
- 6 Do **not** accomplish the following checklist:
LANDING ALTITUDE
- 7 **When** leaving cruise altitude for landing:
LDG ALT selector Push off

8 Checklist Complete Except Deferred Items

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
Minimums	____,____, xckd	C&F
Landing data	____,____	C&F
Approach briefing.	complete	PM
Autobrakes	as reqd	PM
Seat belt signs.	ON	PM
Recall	ckd	PM
Notes	ckd	PM

▼ Continued on next page ▼

▼ FIRE CARGO AFT continued ▼

Approach Checklist

Flight & nav instruments.	verified	C&F
Cabin notification.	complete	C
Altimeters.	____, xckd	C&F

Warning! Inform ground personnel NOT to open any cargo door after landing until all passengers and crew have exited the airplane and fire fighting equipment is nearby.

Landing Checklist

Landing gear.	down	C&F
Flaps	____, ____	C&F
Speedbrake.	.ARMED	PM



[] FIRE CARGO FWD

Condition: Smoke is detected in the forward lower cargo compartment.

- 1 FWD CARGO FIRE ARM switch Confirm ARMED
- 2 CARGO FIRE DISCH switch Push and hold for 1 second

3 Choose one:

◆ On the **ground**:

**Warning! Inform ground personnel
 NOT to open any cargo door
 until all passengers and crew
 have exited the airplane and
 fire fighting equipment is
 nearby.**



◆ In flight:

▶▶ **Go to step 4**

- 4 LDG ALT selector PULL ON, set 8000
 This minimizes extinguisher agent leakage out of the compartment.

▼ Continued on next page ▼

▼ FIRE CARGO FWD continued ▼

- 5 Plan to land at the nearest suitable airport.

Consider an evacuation.

Note: Equipment cooling normal mode is inoperative. After 30 minutes of operation at low altitude and low cabin differential pressure, electronic equipment and displays may fail.

- 6 Do **not** accomplish the following checklists:

EQUIP COOLING OVRD

LANDING ALTITUDE

- 7 **When** leaving cruise altitude for landing:

LDG ALT selector Push off

- 8 **Checklist Complete Except Deferred Items**

▼ Continued on next page ▼

▼ FIRE CARGO FWD continued ▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
Minimums	____,____, xckd	C&F
Landing data	____,____	C&F
Approach briefing.	complete	PM
Autobrakes	as reqd	PM
Seat belt signs.	ON	PM
Recall	ckd	PM
Notes	ckd	PM

Approach Checklist

Flight & nav instruments.	verified	C&F
Cabin notification	complete	C
Altimeters	____, xckd	C&F

Warning! Inform ground personnel NOT to open any cargo door after landing until all passengers and crew have exited the airplane and fire fighting equipment is nearby.

▼ Continued on next page ▼

▼ FIRE CARGO FWD continued ▼

Landing Checklist

- Landing gear down C&F
- Flaps _____, _____ C&F
- Speedbrake ARMED PM



[] FIRE WHEEL WELL

Condition: Fire is detected in a main wheel well.

- 1 Do not exceed the gear EXTEND limit speed (270K/.82M).
- 2 Landing gear lever DN
 This attempts to remove and extinguish the fire source.
- 3 Plan to land at the nearest suitable airport.
 Consider an evacuation.
- 4 Flight with the gear down increases fuel consumption and decreases climb performance. Refer to the Operational Data Manual (ODM), Abnormal section, for flight planning.
- 5 Choose one:
 - ◆ Gear **must be retracted** for airplane performance:

▶▶ Go to step 6
 - ◆ Gear **can stay extended**:

■ ■ ■ ■
- 6 **When** the FIRE WHEEL WELL message blanks:
Wait 20 minutes. This ensures the fire is extinguished.
 Landing gear lever UP

■ ■ ■ ■

[] OVERHEAT ENG L, R

Condition: An overheat is detected in the engine.

- 1 ENG BLEED AIR switch
(affected side) Off
- 2 A/T ARM switch
(affected side) Confirm. OFF
- 3 Thrust lever
(affected side) Confirm. Retard
slowly until the
OVERHEAT ENG message
blanks or the thrust lever is at idle
- 4 Do **not** accomplish the following checklist:
AUTOTHROTTLE
- 5 Choose one:
 - ◆ OVERHEAT ENG message **blanks**:

Note: Run the engine at a thrust setting that keeps the OVERHEAT ENG message blank.

■ ■ ■ ■
 - ◆ OVERHEAT ENG message **stays shown**:
▶▶ **Go to step 6**
- 6 FUEL CONTROL switch
(affected side) Confirm. CUTOFF
- 7 APU selector
(if APU available) START, then ON
- 8 Transponder mode selector TA ONLY

▼ Continued on next page ▼

▼ OVERHEAT ENG L, R continued ▼

9 Plan to land at the nearest suitable airport.

10 Choose one:

◆ Landing using flaps **20**:

GND PROX FLAP OVRD switch OVRD

Note: Use flaps 20 and VREF 20 for landing and flaps 5 for go-around.

►► **Go to step 11**

◆ Landing using flaps **30 (if performance allows)**:

Note: Use flaps 30 and VREF 30 for landing and flaps 20 for go-around.



11 Checklist Complete Except Deferred Items

▼ Continued on next page ▼

▼ OVERHEAT ENG L, R continued ▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
Minimums	____,____, xckd	C&F
Landing data	____, VREF 20	C&F
Approach briefing	complete	PM
Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Recall	ckd	PM
Notes	ckd	PM

Approach Checklist

Flight & nav instruments	verified	C&F
Cabin notification	complete	C
Altimeters	____, xckd	C&F

Landing Checklist

Landing gear	down	C&F
Flaps	20 , 20	C&F
Speedbrake	ARMED	PM



[] SMOKE BBAND UPR DR 2

Condition: This is a nuisance message.

Note: No crew action is needed.



SMOKE LAVATORY

Condition: Smoke is detected in one or more lavatories.



[] SMOKE REST UPR DR 1

Condition: Smoke is detected in the crew rest area.

Objective: To coordinate with the cabin to locate and remove the source of the smoke.

1 Establish cabin communications.

2 Choose one:

◆ Smoke is **persistent**:

Plan to land at the nearest suitable airport.

Consider an evacuation.



◆ Smoke has **cleared**:



[] SMOKE REST UPR DR 3**7001 - 7008**

Condition: Smoke is detected in the crew rest area.

Objective: To coordinate with the cabin to locate and remove the source of the smoke.

- 1 Establish cabin communications.
- 2 Choose one:

◆ Smoke is **persistent**:

Plan to land at the nearest suitable airport.

Consider an evacuation.



◆ Smoke has **cleared**:



[] SMOKE REST UPR DR 4

7101 - 7110

Condition: Smoke is detected in the crew rest area.

Objective: To coordinate with the cabin to locate and remove the source of the smoke.

- 1 Establish cabin communications.
- 2 Choose one:

◆ Smoke is **persistent**:

Plan to land at the nearest suitable airport.

Consider an evacuation.



◆ Smoke has **cleared**:



Smoke or Fumes Removal

Condition: Smoke or fumes removal is needed.

- 1 Do this checklist **only** when directed by the Smoke, Fire or Fumes checklist.
- 2 Do not delay landing in an attempt to complete the following steps.
- 3 EQUIP COOLING switch Off

Note: After 30 minutes of operation at low altitude and low cabin differential pressure, electronic equipment and displays may fail.

- 4 Do **not** accomplish the following checklist:

EQUIP COOLING OVRD

- 5 Choose one:

◆ Most smoke or fumes are in the cabin **forward** of mid-wing:

▶▶ **Go to step 6**

◆ Most smoke or fumes are in the cabin **aft** of mid-wing:

▶▶ **Go to step 9**

- 6 AFT OUTFLOW VALVE switch MAN
- 7 AFT OUTFLOW VALVE
MANUAL switch Hold in CLOSE until
the AFT outflow valve
indication shows fully closed

▼ Continued on next page ▼

▼ Smoke or Fumes Removal continued ▼

8 Do **not** accomplish the following checklist:

OUTFLOW VALVE AFT

►► **Go to the Smoke, Fire or Fumes checklist on page 8.6 and do the remaining steps.**



9 FWD OUTFLOW VALVE switch. MAN

10 FWD OUTFLOW VALVE

MANUAL switch Hold in CLOSE until
the FWD outflow valve
indication shows fully closed

11 Do **not** accomplish the following checklist:

OUTFLOW VALVE FWD

►► **Go to the Smoke, Fire or Fumes checklist on page 8.6, if needed.**



Intentionally
Blank

Non-Normal Checklists
Flight Controls

Chapter NNC
Section 9

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Intentionally
Blank

[] **STABILIZER**

Condition: One of these occurs:

- Stabilizer movement without a signal to trim
- The stabilizer is failed

- 1 STAB cutout switches (both) CUTOUT
- 2 Do not exceed the current airspeed.
-
- 3 The stabilizer is inoperative. Pitch trim is available in the normal flight control mode.
- 4 GND PROX FLAP OVRD switch OVRD

Note: Use flaps 20 and VREF 30 + 20 for landing. This gives sufficient elevator authority for landing.

- 5 Do **not** accomplish the following checklist:
- FLIGHT CONTROLS

6 **Checklist Complete Except Deferred Items**

▼ Continued on next page ▼

▼STABILIZER continued▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
Minimums	____,____, xckd	C&F
Landing data	____, VREF 30 + 20	C&F
Approach briefing	complete	PM
Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Recall	ckd	PM
Notes	ckd	PM

Approach Checklist

Flight & nav instruments	verified	C&F
Cabin notification	complete	C
Altimeters	____, xckd	C&F

Landing Checklist

Landing gear	down	C&F
Flaps	20, 20	C&F
Speedbrake	ARMED	PM



[] AUTO SPEEDBRAKE

Condition: An automatic speedbrake fault occurs.

Note: Do not arm the speedbrake lever. This prevents inadvertent in-flight speedbrake extension.

Manually extend the speedbrakes after landing.

1 Checklist Complete Except Deferred Items

▼ Continued on next page ▼

▼ **AUTO SPEEDBRAKE continued** ▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
Minimums	____,____, xckd	C&F
Landing data	____,____	C&F
Approach briefing.	complete	PM
Autobrakes	as reqd	PM
Seat belt signs.	ON	PM
Recall	ckd	PM
Notes	ckd	PM

Approach Checklist

Flight & nav instruments.	verified	C&F
Cabin notification	complete	C
Altimeters	____, xckd	C&F

Landing Checklist

Landing gear	down	C&F
Flaps	____,____	C&F
Speedbrake	DOWN	PM



[] FLAPS DRIVE

Condition: The flap drive mechanism is failed.

- 1 Do not use alternate flaps. Asymmetry and uncommanded motion protection is not provided in the alternate mode.
- 2 GND PROX FLAP OVRD switch OVRD

Note: Do not use FMC fuel predictions with flaps extended.

- 3 Choose one:

◆ Flap position is **5 or less**:

Note: Move the FLAP lever to 1 and use VREF 30 + 40 for landing. This ensures the slats are extended.

▶▶ **Go to step 4**

◆ Flap position is **between 5 and 20**:

Note: Use current flaps and VREF 30 + 20 for landing.

▶▶ **Go to step 4**

◆ Flap position is **20 or greater**:

Note: Use current flaps and VREF 20 for landing.

▶▶ **Go to step 4**

- 4 Do **not** accomplish the following checklist:

FLAPS PRIMARY FAIL



[] FLAPS PRIMARY FAIL

Condition: The flaps primary mode is failed.

1 GND PROX FLAP OVRD switch OVRD

Note: Plan more time for slower flap operation.

Use flaps 20 and VREF 20 for landing. This gives improved go-around performance.

2 **Checklist Complete Except Deferred Items**

▼ Continued on next page ▼

▼ **FLAPS PRIMARY FAIL continued** ▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
Minimums	____,____, xckd	C&F
Landing data	____, VREF 20	C&F
Approach briefing	complete	PM
Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Recall	ckd	PM
Notes	ckd	PM

Approach Checklist

Flight & nav instruments	verified	C&F
Cabin notification	complete	C
Altimeters	____, xckd	C&F

Landing Checklist

Landing gear	down	C&F
Flaps	20, 20	C&F
Speedbrake	ARMED	PM



[] FLAP/SLAT CONTROL

Condition: The flap/slat electronics units are failed.

1 **If** flap retraction is needed:

FLAP lever UP

This allows the maximum speed indication on the PFD to increase to VMO/MMO after the flaps are fully retracted.

ALTN FLAPS ARM switch ALTN

Alternate flaps selector RET

Monitor airspeed during retraction.

2 GND PROX FLAP OVRD switch OVRD

Note: Use alternate slat and flap extension. Plan more time for alternate mode.

Use alternate flaps 20 and VREF 20 for landing. The alternate mode is limited to a maximum of flaps 20.

3 **Checklist Complete Except Deferred Items**

▼ Continued on next page ▼

▼ **FLAP/SLAT CONTROL continued** ▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
Minimums	____,____, xckd	C&F
Landing data	____, VREF 20	C&F
Approach briefing	complete	PM
Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Recall	ckd	PM
Notes	ckd	PM

Approach Checklist

Flight & nav instruments	verified	C&F
Cabin notification	complete	C
Altimeters	____, xckd	C&F

Alternate flaps extension

- ALTN FLAPS ARM switch ALTN
- ALTERNATE FLAPS selector EXT
- Monitor airspeed during extension.

▼ **Continued on next page** ▼

▼FLAP/SLAT CONTROL continued ▼

Landing Checklist

- Landing gear downC&F
- Flaps **20, 20**C&F
- Speedbrake ARMEDPM



[] FLIGHT CONTROL MODE

Condition: The flight control system is in the secondary mode.

- 1 PRIMARY FLIGHT COMPUTERS
disconnect switch DISC, then AUTO
- 2 Choose one:
 - ◆ FLIGHT CONTROL MODE message **blanks**:


 - ◆ FLIGHT CONTROL MODE message **stays shown**:

▶▶ Go to step 3
- 3 Avoid abrupt control inputs. The airplane response is changed by simplified elevator feel and rudder ratio systems.
- 4 GND PROX FLAP OVRD switch OVRD

Note: Inoperative Items

Autopilot inop

Envelope protection functions inop

▼ Continued on next page ▼

▼ FLIGHT CONTROL MODE continued ▼

Note: The yaw damper is degraded.

Manual control inputs are needed to compensate for asymmetrical thrust conditions.

Use flaps 20 and VREF 20 for landing. This ensures sufficient pitch trim capability for landing

Do not arm the speedbrake lever. This prevents inadvertent in-flight speedbrake extension.

Manually extend the speedbrakes after landing.

Flight may not be permitted in RVSM airspace. Contact ATC. Refer to the Airway Manual, SUP, 2 - Crew Duties, Navigation, for RVSM requirements.

5 Do **not** accomplish the following checklists:

AUTO SPEEDBRAKE

THRUST ASYM COMP

6 Checklist Complete Except Deferred Items

▼ Continued on next page ▼

▼ FLIGHT CONTROL MODE continued ▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
Minimums	____,____, xckd	C&F
Landing data	____, VREF 20	C&F
Approach briefing	complete	PM
Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Recall	ckd	PM
Notes	ckd	PM

Approach Checklist

Flight & nav instruments	verified	C&F
Cabin notification	complete	C
Altimeters	____, xckd	C&F

Landing Checklist

Landing gear	down	C&F
Flaps	20, 20	C&F
Speedbrake	DOWN	PM



[] FLIGHT CONTROLS

Condition: One or more of these occur:

- Two or more flight control surfaces are inoperative
- Other faults in the flight control system are detected

- 1 Handling qualities are degraded. Pitch and roll control capability is reduced with fewer operating control surfaces.
- 2 Plan to land at the nearest suitable airport.
- 3 GND PROX FLAP OVRD switch OVRD

Note: Use flaps 20 and VREF 30 + 20 for landing. Higher approach speeds improve airplane maneuvering characteristics.

Crosswind limit for landing is 20 knots.

Roll rate may be reduced in flight.
Speedbrake effectiveness may be reduced in flight and during landing.

- 4 Do **not** accomplish the following checklist:

SPOILERS

5 Checklist Complete Except Deferred Items

▼ Continued on next page ▼

▼ FLIGHT CONTROLS continued ▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
Minimums	____,____, xckd	C&F
Landing data	____, VREF 30 + 20	C&F
Approach briefing	complete	PM
Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Recall	ckd	PM
Notes	ckd	PM

Approach Checklist

Flight & nav instruments	verified	C&F
Cabin notification	complete	C
Altimeters	____, xckd	C&F

Landing Checklist

Landing gear	down	C&F
Flaps	20, 20	C&F
Speedbrake	ARMED	PM



FLT CONTROL VALVE

Condition: One or more of these occur:

- One or more flight control shutoff valves are failed closed
- One or more flight control shutoff switches are in shutoff



Jammed Flight Controls

Condition: Flight controls are jammed or restricted in roll, pitch, or yaw.

- 1 Autopilot disengage switch. Push
- 2 Autothrottle disconnect switch. Push
- 3 Overpower the jammed or restricted system.

Use maximum force, including a combined effort of both pilots, as needed. A maximum two-pilot effort on the controls will not damage the flight controls.

- 4 Choose one:

◆ Controls are **normal**:

▶▶ **Go to step 5**

◆ Controls stay **jammed or restricted**:

Note: Control may be limited to one pilot.

If the aileron controls are jammed, use the rudder and rudder trim to counter the effect of the jam.

▼ **Continued on next page** ▼

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▼ Jammed Flight Controls continued ▼

Note: If elevator controls are jammed, use pitch trim to counter the effect of the jam. If more pitch trim authority is needed, select DISC on the primary flight computers disconnect switch. This puts the flight control system in direct mode. In direct mode, pitch trim moves slower than in normal mode.

If the rudder controls are jammed, use aileron and aileron trim to counter the effect of the jam.

Do not make abrupt thrust changes.

Extend or retract speedbrake slowly and smoothly.

Limit bank angle to 15 degrees.

The autopilot and autothrottle may be available to control the airplane.

Do not use autoland.

If the rudder controls are jammed, differential braking may be required for landing.

►► Go to step 5

5 Plan to land at the nearest suitable airport.



[] PITCH DOWN AUTHORITY

Condition: Pitch down authority is restricted.

Note: Slower airspeeds assist nose down pitch control. The airplane is approaching its nose down pitch control limit.

Avoid speedbrake use and rapid thrust increases in flight. Only limited elevator authority is available to counter nose up pitch.

Do not arm the speedbrake lever.

Slowly extend the speedbrakes after landing.

1 Checklist Complete Except Deferred Items

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
Minimums	____,____, xckd	C&F
Landing data	____,____	C&F
Approach briefing.	complete	PM
Autobrakes	as reqd	PM
Seat belt signs.	ON	PM
Recall	ckd	PM
Notes	ckd	PM

▼ Continued on next page ▼

▼ **PITCH DOWN AUTHORITY continued** ▼

Approach Checklist

Flight & nav instruments.	verified	C&F
Cabin notification.	complete	C
Altimeters.	____, xckd	C&F

Landing Checklist

Landing gear.	down	C&F
Flaps	____, ____	C&F
Speedbrake	DOWN	PM



[] **PITCH UP AUTHORITY**

Condition: Pitch up and flare authority are restricted.

- 1 Do not extend the flaps any further until on approach. The airplane is approaching its nose up pitch control limit.
- 2 GND PROX FLAP OVRD switch OVRD

Note: Do not use autoland.

- 3 Choose one:

◆ Flap position is **15 or less**

Note: Use flaps 5 and VREF 30 + 40 for landing and flaps 5 for go-around. Higher approach speeds provide better pitch up control authority.

►► **Go to step 4**

◆ Flap position is **20 or greater**

Note: Use flaps 20 and VREF 30 + 20 for landing. Higher approach speeds give better pitch up control authority.

►► **Go to step 4**

- 4 **Checklist Complete Except Deferred Items**

▼ Continued on next page ▼

▼ PITCH UP AUTHORITY continued ▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
Minimums	____,____, xckd	C&F
Landing data	____, VREF 30 + 40 or VREF 30 + 20	C&F
Approach briefing	complete	PM
Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Recall	ckd	PM
Notes	ckd	PM

Approach Checklist

Flight & nav instruments	verified	C&F
Cabin notification	complete	C
Altimeters	____, xckd	C&F

Landing Checklist

Landing gear	down	C&F
Flaps	____,____ 5 or 20	C&F
Speedbrake	.ARMED	PM



[] PRI FLIGHT COMPUTERS

Condition: The flight control system is operating in the direct mode.

Do **not** accomplish this step if direct mode is desired.

- 1  PRIMARY FLIGHT COMPUTERS disconnect switch DISC, then AUTO
- 2 Choose one:
 - ◆PRI FLIGHT COMPUTERS message **blanks**:

■ ■ ■ ■
 - ◆PRI FLIGHT COMPUTERS message **stays shown**:

▶▶ **Go to step 3**
- 3 Avoid abrupt control inputs. The airplane response is changed by simplified elevator feel and rudder ratio systems.
- 4 GND PROX FLAP OVRD switch OVRD

Note: Inoperative Items
Autopilot inop
Envelope protection functions inop
Yaw damping inop
Rudder manual trim cancel switch inop
▼ Continued on next page ▼

▼ PRI FLIGHT COMPUTERS continued ▼

Note: Manual control inputs are needed to compensate for asymmetrical thrust conditions.

Pitch trim moves slower than in normal mode.

Use flaps 20 and VREF 20 for landing. This ensures sufficient pitch trim capability for landing.

Do not arm the speedbrake lever. This prevents inadvertent in-flight speedbrake extension.

Manually extend the speedbrakes after landing.

Flight may not be permitted in RVSM airspace. Contact ATC. Refer to the Airway Manual, SUP, 2 - Crew Duties, Navigation, for RVSM requirements.

5 Do **not** accomplish the following checklists:

AUTO SPEEDBRAKE

THRUST ASYM COMP

6 **Checklist Complete Except Deferred Items**

▼ Continued on next page ▼

▼ PRI FLIGHT COMPUTERS continued ▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
Minimums	____,____, xckd	C&F
Landing data	____, VREF 20	C&F
Approach briefing	complete	PM
Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Recall	ckd	PM
Notes	ckd	PM

Approach Checklist

Flight & nav instruments	verified	C&F
Cabin notification	complete	C
Altimeters	____, xckd	C&F

Landing Checklist

Landing gear	down	C&F
Speedbrake	DOWN	PM
Flaps	20, 20	C&F



[] SLATS DRIVE

Condition: The slat drive mechanism is failed.

- 1 Do not use alternate flaps. Asymmetry and uncommanded motion protection are not provided in alternate mode.
- 2 GND PROX FLAP OVRD switch OVRD

Note: Do not use FMC fuel predictions with slats extended.

Do not use autoland.

Use flaps 20 and VREF 30 + 30 for landing.
This gives better handling qualities when the slats are not fully extended.

- 3 Do **not** accomplish the following checklist:
SLATS PRIMARY FAIL

4 Checklist Complete Except Deferred Items

▼ Continued on next page ▼

▼ SLATS DRIVE continued ▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
Minimums	____,____, xckd	C&F
Landing data	____, VREF 30 + 30	C&F
Approach briefing	complete	PM
Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Recall	ckd	PM
Notes	ckd	PM

Approach Checklist

Flight & nav instruments	verified	C&F
Cabin notification	complete	C
Altimeters	____, xckd	C&F

Landing Checklist

Landing gear	down	C&F
Flaps	20, 20	C&F
Speedbrake	ARMED	PM



[] SLATS PRIMARY FAIL

Condition: The slats primary mode is failed.

Note: Plan more time for slower slat operation.

7001 - 7008

Note: The slats will extend beyond midrange when the airspeed is below 239 knots. For go-around, do not exceed 239 knots until the slats retract to midrange.



7101 - 7110

Note: The slats will extend beyond midrange when the airspeed is below 256 knots. For go-around, do not exceed 256 knots until the slats retract to midrange.

**SPEEDBRAKE EXTENDED**

Condition: The speedbrakes are extended and one or more of these occur:

- The radio altitude is between 15 and 800 feet
- The flap lever is in a landing setting
- A thrust lever is not at idle



[] SPOILERS

Condition: One or more spoiler pairs are failed.

Note: Roll rate may be reduced in flight.
Speedbrake effectiveness may be reduced in flight and during landing.



[] STAB GREENBAND

Condition: The nose gear pressure sensor disagrees with the computed stabilizer greenband.

Objective: To verify the stabilizer greenband and airplane loading are correct.

1 Verify that takeoff thrust, takeoff flaps, gross weight, and CG are entered correctly.

2 Reset stab trim, if needed.

3 Choose one:

◆ STAB GREENBAND message **blanks**:



◆ STAB GREENBAND message **stays shown**:

▶▶ **Go to step 4**

4 Verify airplane loading.



[] STABILIZER C

Condition: The center stabilizer control path is failed.

1 C STAB cutout switch CUTOUT

Note: The captain's control wheel pitch trim switches may be inoperative.



STABILIZER CUTOUT

Condition: Both stabilizer cutout switches are in CUTOUT.



[] STABILIZER R

Condition: The right stabilizer control path is failed.

1 R STAB cutout switch CUTOUT

Note: The first officer's control wheel pitch trim switches may be inoperative.



[] THRUST ASYM COMP

Condition: Thrust asymmetry compensation is failed or off.

1 THRUST ASYM COMP switch. . . . Off, then AUTO

2 Choose one:

◆ THRUST ASYM COMP message **blanks**:



◆ THRUST ASYM COMP message **stays shown**:

Note: Manual control inputs are needed to compensate for asymmetric thrust conditions.



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Airspeed Unreliable

Condition: Airspeed or Mach indications are suspected to be unreliable. (Items which may indicate unreliable airspeed are listed in Additional Information section.)

Objective: To identify a reliable airspeed indication, if possible, or to continue the flight using the Flight with Unreliable Airspeed table in the ODM.

- 1 Autopilot disengage switch Push
- 2 A/T ARM switches (both) OFF
- 3 F/D switches (both) OFF
- 4 If necessary to stabilize the aircraft, set the following gear up pitch attitude and thrust:
 - Flaps extended 10 degrees and 85% N1
 - Flaps up 4 degrees and 70% N1

Note: These pitch and power settings provide a simple reference setting for the crew to use for a short period of time while the initial steps of the checklist are accomplished. These settings do not ensure a level flight or constant airspeed at any particular altitude/airspeed/weight combination.



▼ Continued on next page ▼

▼ Airspeed Unreliable continued ▼

Note: Flight may not be permitted in RVSM airspace. Contact ATC. Refer to the Airway Manual, SUP, 2 - Crew Duties, Navigation, for RVSM requirements.

5 Choose one:

◆ Aircraft can be **trimmed** to desired pitch attitude:

▶▶ **Go to step 6**

◆ Aircraft **cannot** be trimmed to desired pitch attitude:

PRIMARY FLIGHT COMPUTERS
disconnect switch. DISC

▶▶ **Go to step 6**

6 The following are **reliable**:

Attitude

N1

Ground speed

Radio altitude

Digital AOA readout, analog needle, and
approach reference band

Note: Stick shaker, overspeed warning, and AIRSPEED LOW alerts may sound erroneously or simultaneously.

▼ Continued on next page ▼

▼ **Airspeed Unreliable continued** ▼

Note: The flight path vector, and pitch limit indicator are unreliable.

Note: The stick shaker indicator on the AOA indicator is unreliable.

7 Refer to the Operation with Unreliable Airspeed Indication table in the ODM and set the pitch attitude and thrust setting for the current airplane configuration and phase of flight.

8 **When** in trim and stabilized:

Cross check the captain, first officer, and standby airspeed indicators.

An airspeed indication that differs by more than 20 knots or .03 Mach from the airspeed shown in the table should be considered **unreliable**.

9 Choose one:

◆ Reliable airspeed indication **can** be determined:

Use the most reliable airspeed source for the rest of the flight.

▶▶ **Go to step 11**

◆ Reliable airspeed indication **cannot** be determined:

▶▶ **Go to step 10**

▼ **Continued on next page** ▼

▼ **Airspeed Unreliable continued** ▼

- 10 Set pitch attitude and thrust from the Operation with Unreliable Airspeed Indication table in the ODM for the airplane configuration and phase of flight, as needed.
- 11 GND PROX FLAP OVRD switch OVRD

Note: Maintain visual conditions if possible.

Use alternate slat and flap extension. Plan more time for alternate mode.

Use alternate flaps 20 and VREF 20 for landing. The alternate mode is limited to a maximum of flaps 20.

Establish landing configuration early.

Radio altitude reference is available below 2,500 feet AGL.

Use electronic and visual glideslope indicators, where available, for approach and landing.

12 Checklist Complete Except Deferred Items

▼ **Continued on next page** ▼

▼ **Airspeed Unreliable continued** ▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
Minimums	____,____, xckd	C&F
Landing data	____, VREF 20	C&F
Approach briefing	complete	PM
Autobrakes.	as reqd	PM
Seat belt signs	ON	PM
Recall	ckd	PM
Notes	ckd	PM

Approach Checklist

Flight & nav instruments	verified	C&F
Cabin notification	complete	C
Altimeters	____, xckd	C&F

Alternate flaps extension

ALTN FLAPS ARM switch.	ALTN
Alternate flaps selector	EXT

Do **not** accomplish the following checklist:

FLAP/SLAT CONTROL

▼ **Continued on next page** ▼

▼ Airspeed Unreliable continued ▼

Landing Checklist

Landing gear	down	C&F
Flaps	20, 20	C&F
Speedbrake	ARMED	PM

Additional Information

One or more of the following may be evidence of unreliable airspeed or Mach indications:

- Speed/altitude information not consistent with pitch attitude and thrust setting
- Airspeed or Mach failure flags
- PFD current airspeed box amber
- An amber line through one or more PFD flight mode annunciations
- Blank or fluctuating airspeed displays
- Variation between captain and first officer airspeed displays
- Radome damage or loss
- Overspeed warning
- Simultaneous overspeed and stall warnings

▼ Continued on next page ▼

▼ Airspeed Unreliable continued ▼

One or more of the following EICAS messages may show:

AIRSPEED LOW
GND PROX SYS
HEAT PITOT C
HEAT PITOT L
HEAT PITOT R
HEAT PITOT L+C+R
NAV AIR DATA SYS
OVERSPEED
SGL SOURCE AIR DATA
SGL SOURCE DISPLAYS
WINDSHEAR SYS

[] ALTN ATTITUDE

Condition: Both pilots' AIR DATA/ATT source switches are in ALTN.

Note: Both PFDs show the SAARU attitude information.



BARO SET DISAGREE

Condition: The captain's and first officer's barometric settings disagree.

Note: Flight may not be permitted in RVSM airspace. Contact ATC. Refer to the Airway Manual, SUP, 2 - Crew Duties, Navigation, for RVSM requirements.



DISPLAY SELECT PNL

Condition: Left, center, or right CDU control of the display select panel is used.



[] EFIS CONTROL PNL L, R

Condition: One of these occurs:

- The EFIS control panel is failed
- CDU control of the EFIS is used

Note: Backup control of the EFIS is accessed from the CDU menu page.

- 1 Displays can be controlled through the related CDU. CDU capability is available at all times, but inhibits inputs from the respective EFIS control panel.



SGL SOURCE AIR DATA

Condition: Both PFDs use the same air data source.

Note: Flight may not be permitted in RVSM airspace. Contact ATC. Refer to the Airway Manual, SUP, 2 - Crew Duties, Navigation, for RVSM requirements.



[] SGL SOURCE DISPLAYS

Condition: Some or all display units use a single source of display data.

Note: Both PFDs and NDs or just both NDs show information generated from a single source. The lower center display unit may be blank or may not be capable of showing all normal formats. The left EFIS control panel controls either the right PFD and ND or the right ND only.



[] SGL SOURCE RAD ALT

Condition: Both PFDs use the same radio altimeter source.

Note: Autothrottle retard during flare is inoperative.



SINGLE SOURCE F/D

Condition: Both PFDs use the same flight director source.



Suspected Electronic Interference

Condition: EFB or other PED is suspected of interfering with aircraft systems.

- 1 Airplane Mode (all EFBs) Verify/select ON
- 2 WiFi and Bluetooth® (all EFBs) . . . Verify/select Off
- 3 All PEDs (except EFBs) Off

Ensure all PEDs (except EFBs), including those being used in the cabin, are turned off.

4 Choose one:

◆ Interference does **not continue**:

Continue normal EFB operation.

Ensure all other PEDs remain off for the duration of the flight.



◆ Interference **continues**:

EFBs (all) Off

▶▶ **Go to step 5**

▼ Continued on next page ▼

▼ Suspected Electronic Interference continued ▼

5 Choose one:

◆ Interference does **not continue**:

If possible, determine which EFB is causing the interference by turning on one EFB at a time.

▶▶ **Go to step 6**

◆ Interference **continues**:

EFBs (all) On

Resume normal flight using EFBs.

Attempt to determine the source of the interference since unrelated to EFBs or PEDs.



6 Choose one:

◆ Interference does **not continue** with **specific** EFB:

Complete flight using unaffected EFB(s).
Ensure affected EFB remains off.



◆ Interference **resumes** with **all** EFBs selected on:

All EFBs Off

▶▶ **Go to the EFB Failure – All checklist on page 0.6**



Non-Normal Checklists
Flight Management, Navigation

Chapter NNC
Section 11

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ADS-B Out Failure

Condition: One or more of these occur:

- ATC reports ADS-B Out is lost or degraded
- On the CDU POS REF 3/3 page, the GPS L line is blank and the left transponder is selected
- On the CDU POS REF 3/3 page, the GPS R line is blank and the right transponder is selected

1 Transponder selector. Select opposite transponder



[] FMC

Condition: One of these occurs:

- The FMC selector is in L and the left FMC is failed
- The FMC selector is in R and the right FMC is failed
- Both FMCs are failed

- 1 LNAV and VNAV modes are inoperative. Select different autopilot roll and pitch modes.

Note: LNAV can be re-engaged. Plan to enter new waypoints by latitude and longitude into any CDU.

Manually tune navigation radios through the CDUs.

Refer to the Operational Data Manual (ODM), Pattern and Approach speeds table in the Approach/Landing section.

- 2 LDG ALT selector PULL ON, set manually
- 3 Do **not** accomplish the following checklist:

LANDING ALTITUDE



FMC L, R

Condition: An FMC is failed.



FMC MESSAGE

Condition: An alerting message is in the FMC scratchpad.



FMC RUNWAY DISAGREE

Condition: Airplane is not on the FMC origin runway when takeoff is attempted.



[] GPS

Condition: Both GPS receivers are failed.

Objective: Allow Radio Navigation updating during all phases of flight except if both GPS receivers fail during an RNAV (RNP) approach or missed approach.

- 1 Select the REF NAV DATA page.

Do not select OFF during an RNAV (RNP) approach or missed approach.

- 2  Select OFF for RAD NAV INHIBIT.



[] ILS ANTENNA

Condition: Two or more ILS receivers do not use the correct antenna.

Note: AFDS may have difficulty capturing or tracking localizer or glideslope. The airplane path may be lower than indicated by the glideslope pointer.



[] NAV ADIRU INERTIAL

Condition: The ADIRU cannot supply correct attitude, position, heading, track, and groundspeed data.

- 1 Heading information shows for 3 minutes after the NAV ADIRU INERTIAL message shows. If the airplane is in the polar region, heading information is removed immediately.
- 2 GPS continues to give position and track information.
- 3 Transponder ALT SOURCE selector ALTN

▼ Continued on next page ▼

▼ NAV ADIRU INERTIAL continued ▼**Note: Inoperative Items****FMC VNAV pages inop****FMC performance predictions inop****ND wind direction/speed and wind arrow inop****Autobrake inop****PFD flap maneuvering speeds inop**

Refer to the Operational Data Manual (ODM),
Pattern and Approach speeds table in the
Approach/Landing section.

Note: Inoperative AFDS Modes

- LNAV
- VNAV
- TO/GA
- LOC
- GS
- FPA
- TRK HOLD/SEL

- 4 **When** the heading blanks and the SET HDG line shows on POS INIT page 1:

Enter the heading.

Re-engage the autopilot.

▼ Continued on next page ▼

▼ NAV ADIRU INERTIAL continued ▼

Note: Crosscheck heading periodically for drift with the magnetic compass and update heading as necessary. If magnetic compass information is unreliable or unavailable, track information may be used.

VOR course deviation is available in the ND VOR mode. ILS localizer and glideslope deviation raw data is available on both the PFD and the ND.

Flight may not be permitted in RVSM airspace. Contact ATC. Refer to the Airway Manual, SUP - 2 Crew Duties, Navigation, for RVSM requirements.

Note: If GPS is not available, the following additional items are inoperative:

- ND map mode
- active leg course and distance
- direct to waypoint function
- alternate page DIVERT NOW function
- navigation radio autotuning



[] NAV AIR DATA SYS

Condition: The three air data sources disagree.

- 1 Avoid abrupt control inputs. Airplane response is changed by simplified elevator feel and rudder ratio systems.
- 2 Crosscheck airspeed and altitude on the PFDs and standby flight instruments for accuracy. Each display is receiving data from an independent source.

Note: Normal pitch attitude and thrust settings are available in the Flight With Unreliable Airspeed table in the Operational Data Manual (ODM), Abnormal section.

Select alternate air data/attitude source if airspeed or altitude on respective PFD is determined to be in error and airspeed or altitude on opposite side PFD is verified to be correct.

3 GND PROX FLAP OVRD switch OVRD

Note: Inoperative Items

Envelope protection functions inop

Autopilot inop

Flight directors inop

Autothrottles inop

PFD flap maneuvering speeds inop

Refer to the Operational Data Manual (ODM), Pattern and Approach speeds table in the Approach/Landing section.

▼ Continued on next page ▼

▼ NAV AIR DATA SYS continued ▼

Note: Yaw damper is degraded.

Manual control inputs are needed to compensate for asymmetric thrust conditions.

Do **not** use the flight path vector.

Use flaps 20 and VREF 20 for landing. This ensures sufficient pitch control for landing.

Do not arm speedbrake lever. This prevents inadvertent in-flight speedbrake extension.

Manually extend the speedbrakes after landing.

Flight may not be permitted in RVSM airspace. Contact ATC. Refer to the Airway Manual, SUP, 2 - Crew Duties, Navigation, for RVSM requirements.

4 Do **not** accomplish the following checklists:

AUTO SPEEDBRAKE

FLIGHT CONTROL MODE

THRUST ASYM COMP

5 **Checklist Complete Except Deferred Items**

▼ Continued on next page ▼

▼ NAV AIR DATA SYS continued ▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
Minimums	____,____, xckd	C&F
Landing data	____, VREF 20	C&F
Approach briefing	complete	PM
Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Recall	ckd	PM
Notes	ckd	PM

Approach Checklist

Flight & nav instruments	verified	C&F
Cabin notification	complete	C
Altimeters	____, xckd	C&F

Landing Checklist

Landing gear	down	C&F
Flaps	20, 20	C&F
Speedbrake	DOWN	PM



[] NAV UNABLE RNP

Condition: The actual navigational performance is not sufficient.

1 Choose one:

◆ On the **ground**:

Message may show with GPS disabled.

◆ In **flight**

►► **Go to step 2**

2 Choose one:

◆ On a procedure or an airway **with** an RNP alerting requirement:

Select alternate procedure or airway.
During an approach, start a go-around
unless suitable visual references can be
established and maintained.

◆ On a procedure or an airway **without** an RNP alerting requirement:

Verify position.



SINGLE SOURCE ILS

Condition: Both pilots' displays use the same ILS source.



TRANSPONDER L, R

Condition: A transponder fault occurs.

Note: Flight may not be permitted in RVSM airspace. Contact ATC. Refer to the Airway Manual, SUP, 2 - Crew Duties, Navigation, for RVSM requirements.



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Non-Normal Checklists

Chapter NNC

Fuel

Section 12

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[] FUEL AUTO JETTISON

Condition: One of these occurs:

- The total fuel quantity is less than or equal to the fuel to remain and a jettison nozzle valve is open
- The fuel jettison automatic shutoff is failed

Objective: To manually close the fuel jettison nozzle valves when fuel jettison is complete.

1 Choose one:

- ◆The total fuel quantity is **less than or equal to** the FUEL to REMAIN:

FUEL JETTISON NOZZLE
valve switches (both) Off
FUEL JETTISON ARM switch Off
■ ■ ■ ■

- ◆The total fuel quantity is **greater than** the FUEL to REMAIN:

►► **Go to step 2**

▼ Continued on next page ▼

▼ **FUEL AUTO JETTISON continued** ▼

2 Choose one:

- ◆ One or more tank quantity displays are **blank**:
Determine the approximate jettison time using the following rates:
Fuel in center tank: 5,400 lbs/minute
Center tank empty: 3,100 lbs/minute

▶▶ **Go to step 3**

- ◆ All tank quantity displays **stay shown**:
▶▶ **Go to step 3**

3 FUEL JETTISON NOZZLE
valve switches (both) ON

4 **When** fuel jettison is complete:
FUEL JETTISON NOZZLE
valve switches (both) Off
FUEL JETTISON ARM switch Off

▼ **Continued on next page** ▼

▼ FUEL AUTO JETTISON continued ▼

5 Choose one:

◆ FUEL line on PERF INIT page is **blank**:

Wait 5 minutes. Manual entry of fuel quantity is not possible until 5 minutes after jettison is complete.

Enter the current estimated total fuel in the FUEL line box prompts on the PERF INIT page. This gives gross weight data for FMC performance calculations and allows VNAV to be re-engaged.

▶▶ **Go to step 6**

◆ FUEL line on PERF INIT page **shows a fuel quantity**:

▶▶ **Go to step 6**

6 Do **not** accomplish the following checklist:

FUEL JETTISON



[] FUEL CROSSFEED AFT

Condition: The aft fuel crossfeed valve is not in the commanded position.

1 Choose one:

- ◆ AFT FUEL CROSSFEED switch is **on**:
FWD FUEL CROSSFEED switch On
■ ■ ■ ■
- ◆ AFT FUEL CROSSFEED switch is **off**:
■ ■ ■ ■

[] FUEL CROSSFEED FWD

Condition: The forward fuel crossfeed valve is not in the commanded position.

1 Choose one:

- ◆ FWD FUEL CROSSFEED switch is **on**:
AFT FUEL CROSSFEED switch On
■ ■ ■ ■
- ◆ FWD FUEL CROSSFEED switch is **off**:
■ ■ ■ ■

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[] FUEL DISAGREE

Condition: The totalizer fuel quantity and the FMC calculated fuel quantity disagree.

Objective: To decide if a fuel leak is suspected. To select the most accurate fuel value if a fuel leak is not suspected.

- 1 The FUEL DISAGREE message may be caused by a fuel leak.
- 2 A fuel leak should be suspected if one or more of the following are true:

The total fuel remaining on EICAS is less than the planned fuel remaining.

An engine has excessive fuel flow.

One main tank is abnormally low compared to the other main tank and to the expected fuel remaining in the tanks.

On PROGRESS page 2, the totalizer is less than the calculated fuel.

The TOTALIZER fuel is the sum of the individual tank quantities.

The CALCULATED fuel is the totalizer value at engine start minus fuel used.

Fuel used is calculated using the engine fuel flow sensors.

▼ Continued on next page ▼

▼ FUEL DISAGREE continued ▼

3 **If** a fuel leak is suspected:

▶▶ **Go to the Fuel Leak checklist on page 12.14**

4 Select PROGRESS page 2.

Select TOTALIZER unless it is inaccurate.

5  TOTALIZER or
CALCULATED Select the
most accurate value



[] FUEL IMBALANCE

Condition: There is a fuel imbalance between the main tanks.

Objective: To decide if a fuel leak is suspected. To balance fuel if a fuel leak is not suspected.

- 1 **If** an engine has low fuel flow and unusual engine indications, the FUEL IMBALANCE message may show due to an engine malfunction instead of a fuel leak.
- 2 The FUEL IMBALANCE message may be caused by a fuel leak or fuel imbalance.
- 3 A fuel leak should be suspected if one or more of the following are true:

The total fuel remaining on EICAS is less than the planned fuel remaining.

An engine has excessive fuel flow.

On PROGRESS page 2, the totalizer is less than the calculated fuel.

The TOTALIZER fuel is the sum of the individual tank quantities.

The CALCULATED fuel is the totalizer value at engine start minus fuel used.

Fuel used is calculated using the engine fuel flow sensors.

▼ Continued on next page ▼

▼ FUEL IMBALANCE continued ▼

4 **If** a fuel leak is suspected:

▶▶ **Go to the Fuel Leak checklist on page 12.14**

5 FUEL CROSSFEED switch (either) On

6 Choose one:

◆ **Left** main tank quantity is low:

L fuel PUMPS FWD and AFT
switches (both) Off

This allows fuel from the higher
quantity tank to feed both engines.

Do **not** accomplish the following checklists:

FUEL PUMP L AFT

FUEL PUMP L FWD

▶▶ **Go to step 9**

◆ **Right** main tank quantity is low:

▶▶ **Go to step 7**

7 R fuel PUMPS FWD and AFT
switches (both) Off

This allows fuel from the higher quantity tank to
feed both engines.

▼ Continued on next page ▼

▼ **FUEL IMBALANCE continued** ▼

- 8 Do **not** accomplish the following checklists:
- FUEL PUMP R AFT
 - FUEL PUMP R FWD
- 9 **When** fuel balancing is complete:
- Fuel PUMPS FWD and AFT switches (all) ON
 - FUEL CROSSFEED switches (both) Off
- ■ ■ ■

FUEL IN CENTER

Condition: The center tank fuel quantity is at the level where the pump switches must be ON.

■ ■ ■ ■

FUEL JETT NOZZLE L, R

Condition: A jettison nozzle valve is not in the commanded position.

■ ■ ■ ■

Fuel Jettison

Condition: Fuel jettison is needed.

- 1 FUEL JETTISON ARM switch ARMED
- 2 Choose one:
 - ◆ FUEL TO REMAIN is **acceptable**:
 - ▶▶ **Go to step 4**
 - ◆ FUEL TO REMAIN must be **changed**:
 - ▶▶ **Go to step 3**
- 3 FUEL TO REMAIN selector PULL ON, set manually
- 4 FUEL JETTISON NOZZLE valve switches (both) ON
- 5 Do **not** accomplish the following checklists:
 - FUEL PUMP CENTER L
 - FUEL PUMP CENTER R
 - FUEL SCAVENGE SYS
- 6 **When** fuel jettison is complete:
 - FUEL JETTISON NOZZLE valve switches (both) Off
 - FUEL JETTISON ARM switch Off
- 7 Verify VREF speed for new gross weight.



[] FUEL JETTISON MAIN

Condition: The main tank fuel jettison system is failed.

- 1

Fuel jettison can occur only from the center tank.
- 2

Do **not** accomplish the following checklist:
FUEL JETTISON
- 3

When the center fuel tank is empty or the FUEL TO REMAIN quantity is reached:
FUEL JETTISON NOZZLE
valve switches (both) Off
FUEL JETTISON ARM switch Off

■ ■ ■ ■

[] FUEL JETTISON SYS

Condition: The fuel jettison system is failed.

- 1

FUEL JETTISON NOZZLE
valve switches (both) Off
- 2

FUEL JETTISON ARM switch Off
- 3

Do **not** accomplish the following checklist:
FUEL JETTISON

■ ■ ■ ■

Intentionally
Blank

Fuel Leak

Condition: A fuel leak is suspected for the reasons listed in the Additional Information section of this checklist.

Objective: To confirm there is a fuel leak. If confirmed, to isolate the leak to one of the following:

- engine
- main tank
- center tank

- 1 A diversion may be needed.
 - 2 Fuel L PUMPS and R PUMPS switches (all) ON
 - 3 FUEL CROSSFEED switches (both) Off
 - 4 Fuel CENTER PUMPS switches (both). Off
- The FUEL IN CENTER message may show.

- 5 **The following steps check for an engine or main tank leak:**
- 6 Record the main tank fuel quantities and the current time.
- 7 An engine/main tank leak is confirmed if one or both of the following are true:
 - Fuel spray is observed from an engine, strut, or wing
 - A change in fuel imbalance of 1,000 lbs within 30 minutes or less

▼ Continued on next page ▼

▼ Fuel Leak continued ▼

8 Choose one:

◆ Engine/main tank leak is **confirmed**:

▶▶ **Go to step 19**

◆ Engine/main tank leak is **not** confirmed:

▶▶ **Go to step 9**

9 Choose one:

◆ FUEL IN CENTER message is **blank**:

Resume normal fuel management.



◆ FUEL IN CENTER message **shows**:

▶▶ **Go to step 10**

10 The following steps check for a center tank leak:

11 Fuel CENTER PUMPS

switches (both) ON

12 Select PROGRESS page 2.

13 Record the totalizer and calculated fuel quantities, and the current time.

14 A center tank leak is confirmed if the difference between calculated and totalizer increases by 1,000 lbs within 30 minutes or less.

▼ Continued on next page ▼

▼ Fuel Leak continued ▼

15 Choose one:

◆ Center tank leak is **confirmed**:

▶▶ **Go to step 16**

◆ Center tank leak is **not** confirmed:

Resume normal fuel management.



16 Continue to use all center tank fuel.

17 Verify that sufficient fuel is available in the left and right main tanks to complete the flight.

Note: If the FUEL DISAGREE message shows at any time, go to PROGRESS page 2 and select the TOTALIZER fuel quantity.

18 Do **not** accomplish the following checklist:

FUEL DISAGREE

**▼ Continued on next page ▼**

▼ Fuel Leak continued ▼

- 19 **An engine/main tank leak is confirmed. The following steps shut down the engine to stop an engine fuel leak:**
- 20 The affected engine is on the side where the fuel quantity decreased faster.
- 21 A/T ARM switch
(affected engine) Confirm OFF
- 22 Thrust lever
(affected engine) Confirm Idle
- 23 FUEL CONTROL switch
(affected engine) Confirm CUTOFF
This closes the spar valve and stops an engine fuel leak.
- 24 APU selector
(if APU available) START, then ON
- 25 Transponder mode selector TA ONLY
- 26 Do **not** accomplish the following checklists:
AUTOTHROTTLE
FUEL DISAGREE

27 Choose one:

- ◆ FUEL QTY LOW message **shows**:
FUEL CROSSFEED
switch (either) On
This ensures that all fuel is available
to the running engine.
▶▶ Go to step 28
- ◆ FUEL QTY LOW message **is blank**:
▶▶ Go to step 28

28 Choose one:

- ◆ FUEL IN CENTER message **shows**:
Fuel CENTER PUMP
switch (**on side with
running engine**) ON
▶▶ Go to step 29
- ◆ FUEL IN CENTER message **is blank**:
▶▶ Go to step 29

29 Plan to land at the nearest suitable airport.

▼ Continued on next page ▼

▼ Fuel Leak continued ▼

30 Choose one:

◆ Landing using flaps **20**:

GND PROX FLAP OVRD switch OVRD

Note: Use flaps 20 and VREF 20 for landing and flaps 5 for go-around.

►► **Go to step 31**

◆ Landing using flaps **30 (if performance allows)**:

Note: Use flaps 30 and VREF 30 for landing and flaps 20 for go-around.

►► **Go to step 31**

▼ Continued on next page ▼

▼ Fuel Leak continued ▼**31 The following steps check for a main tank leak:**

32 Select PROGRESS page 2.

33 Record the totalizer and calculated fuel quantities, and the current time.

34 A main tank leak is confirmed if the difference between calculated and totalizer increases by 1,000 lbs within 30 minutes or less.

35 Choose one:

◆ Main tank leak is **confirmed**:

►► **Go to step 36**

◆ Main tank leak is **not** confirmed:

►► **Go to step 39**

36 The leak is not an engine fuel leak. The engine may be re-started.

37 For a long diversion, range may be improved by re-starting the engine and climbing.

Note: Do **not** balance fuel.

If the FUEL QTY LOW message shows at any time, do the FUEL QTY LOW checklist.

38 Do **not** accomplish the following checklist:

FUEL IMBALANCE

▼ Continued on next page ▼

▼ Fuel Leak continued ▼

Note: If the FUEL DISAGREE message shows at any time, go to PROGRESS page 2 and select the TOTALIZER fuel quantity.

►► **Go to step 40**

39 The leak was an engine fuel leak.

Note: All remaining fuel can be used for the running engine. Use normal fuel management. When the FUEL IMBALANCE message shows, do the FUEL IMBALANCE checklist.

Note: If the FUEL DISAGREE message shows at any time, go to PROGRESS page 2 and select the TOTALIZER fuel quantity.

40 Checklist Complete Except Deferred Items

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
Minimums	____,____, xckd	C&F
Landing data	____, VREF 20 or VREF 30	C&F
Approach briefing	complete	PM
Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Recall	ckd	PM
Notes	ckd	PM

▼ Continued on next page ▼

▼ Fuel Leak continued ▼

Approach Checklist

Flight & nav instruments	verified	C&F
Cabin notification	complete	C
Altimeters	____, xckd	C&F

Landing Checklist

Landing gear	down	C&F
Flaps	____, ____ 20 or 30	C&F
Speedbrake	ARMED	PM



Additional Information

Reasons that a fuel leak should be suspected:

- A visual observation of fuel spray
- The total fuel quantity is decreasing at an abnormal rate
- An engine has excessive fuel flow
- The FUEL DISAGREE message shows on EICAS
- The FUEL IMBALANCE message shows on EICAS
- The FUEL QTY LOW message shows on EICAS
- The INSUFFICIENT FUEL message shows on a CDU scratchpad

FUEL LOW CENTER

Condition: The center tank fuel quantity is at the level where the pump switches must be off.



[] FUEL PRESS ENG L, R

Condition: The affected engine is on suction feed.

Objective: To fly at an altitude that ensures a sufficient supply of fuel to the engine.

1 Choose one:

◆ Airplane altitude is **at or below** 38,000 feet:

▶▶▶ **Go to step 6**

◆ Airplane altitude is **above** 38,000 feet:

▶▶▶ **Go to step 2**

2 FUEL CROSSFEED switch (either) On

This allows fuel from the operative pump side to feed both engines.

3 Descend to 38,000 feet or lower.

4 Do **not** accomplish the following checklists:

FUEL PUMP AFT

FUEL PUMP FWD

5 **When** airplane altitude is at or below 38,000 feet:

▶▶▶ **Go to step 6**

6 FUEL CROSSFEED switches (both) Off

This restores main tank-to-engine fuel feed. The FUEL PRESS ENG message may show again.

▼ **Continued on next page** ▼

▼FUEL PRESS ENG L, R continued▼

Note: Do not climb above 38,000 feet for the rest of the flight.

Continue suction feed. Do not open the crossfeed valves unless an engine restart is needed.

If engine flameout occurs at any time, immediately open a fuel crossfeed valve. Close the crossfeed valves when the engine is operating normally.

Do not balance fuel.

Note: 500 lbs of fuel in the affected main tank is unusable.

- 7 Select the PERF INIT page.
- 8 Add 500 lbs to the required RESERVES.
- 9 Do **not** accomplish the following checklist:

FUEL IMBALANCE



FUEL PRESS ENG L+R

Condition: Fuel pressure to both engines is low on the ground with the engines shut down.



[] FUEL PUMP CENTER L, R

Condition: The center fuel pump pressure is low.

- 1 FUEL CROSSFEED switch (either) On
- 2 Fuel CENTER PUMP switch (affected pump) . . . Off
- 3 Choose one:

◆ **At least one** center fuel pump output pressure is **normal**:



◆ **Both** center fuel pump output pressures are **low**:

▶▶ **Go to step 4**

- 4 FUEL CROSSFEED switches (both) Off
- 5 Check that available left and right main tank quantity is sufficient for the planned flight. The center tank fuel is not available.



[] FUEL PUMP L AFT, FWD

Condition: The left fuel pump pressure is low.

- 1 Fuel PUMP switch (affected pump) Off



[] FUEL PUMP R AFT, FWD

Condition: The right fuel pump pressure is low.

- 1 Fuel PUMP switch (affected pump) Off



[] FUEL QTY LOW

Condition: The fuel quantity is low in a main tank.

Objective: To decide if a fuel leak is suspected. To ensure that all fuel is available for use if a fuel leak is not suspected.

Note: Avoid high nose up attitude. Make thrust changes slowly and smoothly. This reduces the chance of uncovering fuel pumps.

- 1 The FUEL QTY LOW message may be caused by a fuel leak.
- 2 A fuel leak should be suspected if one or more of the following are true:

The total fuel remaining on EICAS is less than the planned fuel remaining.

An engine has excessive fuel flow.

One main tank is abnormally low compared to the other main tank and to the expected fuel remaining in the tanks.

On PROGRESS page 2, the totalizer is less than the calculated fuel.

The TOTALIZER fuel is the sum of the individual tank quantities.

The CALCULATED fuel is the totalizer value at engine start minus fuel used.

Fuel used is calculated using the engine fuel flow sensors.

▼ Continued on next page ▼

▼ **FUEL QTY LOW continued** ▼

- 3 **If** a fuel leak is suspected:
 - ▶▶ **Go to the Fuel Leak checklist on page 12.14, then finish this checklist.**

- 4 FUEL CROSSFEED switch (either) On
This ensures that fuel is available to both engines if the low tank empties.

- 5 Fuel PUMPS switches (all) ON
This ensures that all fuel is available for use.

- 6 Plan to land at the nearest suitable airport.

- 7 GND PROX FLAP OVRD switch OVRD

Note: Use flaps 20 and VREF 20 for landing.
Increased speed provides improved elevator control for landing flare in the event of a dual engine flameout.

8 **Checklist Complete Except Deferred Items**

▼ **Continued on next page** ▼

▼ FUEL QTY LOW continued ▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
Minimums	____,____, xckd	C&F
Landing data	____, VREF 20	C&F
Approach briefing	complete	PM
Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Recall	ckd	PM
Notes	ckd	PM

Approach Checklist

Flight & nav instruments	verified	C&F
Cabin notification	complete	C
Altimeters	____, xckd	C&F

Landing Checklist

Landing gear	down	C&F
Flaps	20, 20	C&F
Speedbrake	ARMED	PM



[] FUEL SCAVENGE SYS

Condition: The fuel scavenge system is failed.

1 Choose one:

◆ Center fuel tank quantity indication is **available**:

Select the PERF INIT page

Add center fuel tank quantity to the required RESERVES.

▶▶ **Go to step 4**

◆ Center fuel tank quantity indication is **unavailable**:

▶▶ **Go to step 2**

2 Select the PERF INIT page.

3 Add 2,700 lbs to the required RESERVES.

4 Select the PROGRESS page.

5 Check the DESTINATION FUEL ESTIMATE. Verify that adequate fuel is available in the left and right main tanks to complete the flight.

Note: Remaining center tank fuel is unusable.



[] FUEL TEMP LOW

Condition: Fuel temperature is near the minimum.

- 1 Increase airspeed, change altitude or deviate to a warmer air mass to achieve a TAT equal to or higher than the fuel temperature limit (3 degrees C above the fuel freeze point).
- 2 TAT increases approximately 0.5 to 0.7 degrees C for each .01 Mach increase in airspeed. In extreme conditions it may be necessary to descend as low as 25,000 feet.



[] FUEL VALVE APU

Condition: The APU fuel valve is not in the commanded position.

- 1 Do not start the APU.

This prevents a potential fire hazard.

Note: The APU is not available for the rest of the flight.

- 2 Do **not** accomplish the following checklist:

APU SHUTDOWN



Intentionally
Blank

Non-Normal Checklists
Hydraulics

Chapter NNC
Section 13

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Intentionally
Blank

[] HYD AUTO CONTROL C

Condition: Both of the following occur:

- Automatic control of both center demand pumps fails
- System indications fail

- 1 C1 AIR DEMAND pump selector ON
- ■ ■ ■

[] HYD AUTO CONTROL L, R

Condition: Both of the following occur:

- Automatic control of demand pump fails
- System indications fail

- 1 ELEC DEMAND pump selector
(affected system) ON
- ■ ■ ■

[] HYD OVERHEAT DEM C1, C2, L, R

Condition: The pump temperature is high.

- 1 DEMAND pump selector
(affected pump) OFF
- 2 Do **not** accomplish the following checklist:
- HYD PRESS DEM
- ■ ■ ■

[] HYD OVERHEAT PRI C1, C2

Condition: The pump temperature is high.

- 1 ELEC PRIMARY pump switch
(affected pump) Off
- 2 Do **not** accomplish the following checklist:
HYD PRESS PRI



[] HYD OVERHEAT PRI L, R

Condition: The pump temperature is high.

- 1 ENG PRIMARY pump switch
(affected side) Off
- Note:** Thrust reverser on the affected side may be inoperative.
- 2 Do **not** accomplish the following checklist:
HYD PRESS PRI



[] HYD PRESS DEM C1, C2, L, R

Condition: The demand pump output pressure is low when commanded on.

1 DEMAND pump selector
(affected pump) ON

2 Choose one:

◆ HYD PRESS DEM message **blanks**:



◆ HYD PRESS DEM message **stays shown**:

DEMAND pump selector
(affected pump) OFF



[] HYD PRESS PRI C1, C2

Condition: The pump pressure is low.

1 ELEC PRIMARY pump switch
(affected pump) Off



[] HYD PRESS PRI L, R

Condition: The pump pressure is low.

1 ENG PRIMARY pump switch
(affected side) Off

Note: Thrust reverser on the affected side may be inoperative.



[] HYD PRESS SYS C

Condition: The center hydraulic system pressure is low.

Objective: To restore system pressure and configure for landing using alternate systems, if needed.

- 1 C1 or C2 AIR DEMAND pump selector ON
- 2 Choose one:
 - ◆ HYD PRESS SYS C message **blanks**:

■ ■ ■ ■
 - ◆ HYD PRESS SYS C message **stays shown**:

▶ ▶ **Go to step 3**
- 3 C2 ELEC PRIMARY pump switch Off
- 4 C1 and C2 AIR DEMAND pump selectors OFF
- 5 GND PROX FLAP OVRD switch OVRD
- 6 Do **not** accomplish the following checklists:
 - AUTO SPEEDBRAKE
 - SPOILERS

Note: Inoperative Items

Primary flap and slat operation inop

Plan more time for slower flap and slat operation.

Main landing gear hydraulic operation inop

Alternate gear extension is needed.

Main gear steering inop

Tires may scrub during turns.

▼ Continued on next page ▼

▼ **HYD PRESS SYS C continued** ▼**7101 - 7110**

Note: The slats will extend beyond midrange when the airspeed is below 256 knots. For go-around, do not exceed 256 knots until the slats retract to midrange.

7001 - 7008

Note: The slats will extend beyond midrange when the airspeed is below 239 knots. For go-around, do not exceed 239 knots until the slats retract to midrange.

Note: Use flaps 20 and VREF 20 for landing. This ensures adequate go-around performance due to slower slat/flap operation in secondary mode.

The roll rate may be reduced in flight. Speedbrake effectiveness may be reduced in flight and during landing.

Do not arm the speedbrake lever. This prevents inadvertent in-flight speedbrake extension.

Manually extend the speedbrakes after landing.

For go-around, do not exceed the gear EXTEND limit speed (270K/.82M).

7 Checklist Complete Except Deferred Items▼ **Continued on next page** ▼

▼ **HYD PRESS SYS C continued** ▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
Minimums	____,____, xckd	C&F
Landing data	____, VREF 20	C&F
Approach briefing	complete	PM
Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Recall	ckd	PM
Notes	ckd	PM

Approach Checklist

Flight & nav instruments	verified	C&F
Cabin notification	complete	C
Altimeters	____, xckd	C&F

▼ **Continued on next page** ▼

▼ **HYD PRESS SYS C continued** ▼

Flap extension

Start flap extension as needed.

Do **not** accomplish the following checklists:

- FLAPS PRIMARY FAIL
- SLATS PRIMARY FAIL

Alternate gear extension

- Landing gear lever DN
- ALTN GEAR
extend switch Push to DOWN
and hold until all gear
show down or in transit

A reduction of airspeed to below 240 knots may be necessary for the landing gear to lock down.

Do **not** accomplish the following checklist:

- GEAR DOOR

Landing Checklist

- Landing gear down C&F
- Flaps **20, 20** C&F
- Speedbrake **DOWN** PM



[] HYD PRESS SYS L

Condition: The left hydraulic system pressure is low.

- 1 L ELEC DEMAND pump selector ON
- 2 Choose one:
 - ◆ HYD PRESS SYS L message **blanks**:

■ ■ ■ ■
 - ◆ HYD PRESS SYS L message **stays shown**:

▶▶ **Go to step 3**
- 3 L ENG PRIMARY pump switch Off
- 4 L ELEC DEMAND pump selector OFF

Note: The left thrust reverser is inoperative.
Roll rate may be reduced in flight.
Speedbrake effectiveness may be reduced in flight and during landing.

- 5 Do **not** accomplish the following checklist:
SPOILERS



[] HYD PRESS SYS L+C

Condition: The left and center hydraulic system pressures are low.

Objective: To restore system pressure and configure for landing using alternate systems, if needed.

- 1 L ELEC DEMAND pump selector ON
- 2 C1 or C2 AIR DEMAND pump selector ON
- 3 Choose one:

◆ HYD PRESS SYS L+C message **blanks**:



◆ HYD PRESS SYS L+C message **stays shown**:

▶▶ **Go to step 4**

- 4 L ENG PRIMARY pump switch Off
- 5 C2 ELEC PRIMARY pump switch Off
- 6 L ELEC DEMAND pump selector OFF
- 7 C1 and C2 AIR DEMAND pump selectors OFF
- 8 Handling qualities are degraded. Pitch and roll control capability is reduced with fewer operating control surfaces.
- 9 Plan to land at the nearest suitable airport.
- 10 GND PROX FLAP OVRD switch OVRD

▼ Continued on next page ▼

▼ HYD PRESS SYS L+C continued ▼

11 Do **not** accomplish the following checklists:

AUTO SPEEDBRAKE

FLIGHT CONTROLS

SPOILERS

Note: Inoperative Items**Multiple flight control surfaces inop**

Handling qualities are degraded.

Primary flap and slat operation inop

Plan more time for slower flap and slat operation.

Main landing gear hydraulic operation inop

Alternate gear extension is needed.

Left thrust reverser inop

Right thrust reverser is available.

Main gear steering inop

Tires may scrub during turns.

7101 - 7110

Note: The slats will extend beyond midrange when the airspeed is below 256 knots. For go-around, do not exceed 256 knots until slats retract to midrange.

7001 - 7008

Note: The slats will extend beyond midrange when the airspeed is below 239 knots. For go-around, do not exceed 239 knots until slats retract to midrange.

▼ Continued on next page ▼

▼ HYD PRESS SYS L+C continued ▼

Note: Use flaps 20 and VREF 30 + 20 for landing. Higher approach speeds improve airplane maneuvering characteristics.

Crosswind limit for landing is 20 knots.

Roll rate may be reduced in flight.

Speedbrake effectiveness may be reduced in flight and during landing.

Do not arm the speedbrake lever. This prevents inadvertent in-flight speedbrake extension.

Manually extend the speedbrakes after landing.

For go-around, do not exceed the gear EXTEND limit speed (270K/.82M).

12 Checklist Complete Except Deferred Items**▼ Continued on next page ▼**

▼ HYD PRESS SYS L+C continued ▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
Minimums	____,____, xckd	C&F
Landing data	____, VREF 30 + 20	C&F
Approach briefing	complete	PM
Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Recall	ckd	PM
Notes	ckd	PM

Approach Checklist

Flight & nav instruments	verified	C&F
Cabin notification	complete	C
Altimeters	____, xckd	C&F

Flap extension

- Start flap extension as needed.
- Do **not** accomplish the following checklists:
- FLAPS PRIMARY FAIL
 - SLATS PRIMARY FAIL

▼ Continued on next page ▼

▼ **HYD PRESS SYS L+C continued** ▼

Alternate gear extension

Landing gear lever DN

ALTN GEAR

extend switch Push to DOWN
and hold until all gear
show down or in transit

A reduction of airspeed to below 240 knots may be necessary for the landing gear to lock down.

Do **not** accomplish the following checklist:

GEAR DOOR

Landing Checklist

Landing gear down C&F

Flaps **20, 20** C&F

Speedbrake **DOWN** PM



HYD PRESS SYS L+C+R

Condition: All hydraulic system pressures are low.



[] HYD PRESS SYS L+R

Condition: The left and right hydraulic system pressures are low.

Objective: To restore system pressure and configure for landing using alternate systems, if needed.

7101 - 7110

- 1 Do not exceed .87 Mach. This ensures sufficient roll control.
- 2 L ELEC DEMAND pump selector ON
- 3 R ELEC DEMAND pump selector ON
- 4 Choose one:
 - ◆ HYD PRESS SYS L+R message **blanks**:

■ ■ ■ ■
 - ◆ HYD PRESS SYS L+R message **stays shown**:

▶▶ **Go to step 5**
- 5 L ENG PRIMARY pump switch Off
- 6 R ENG PRIMARY pump switch. Off
- 7 L ELEC DEMAND pump selector OFF
- 8 R ELEC DEMAND pump selector OFF
- 9 Handling qualities are degraded. Pitch and roll control capability is reduced with fewer operating control surfaces.
- 10 Plan to land at the nearest suitable airport.
- 11 GND PROX FLAP OVRD switch OVRD

▼ **Continued on next page** ▼

▼ **HYD PRESS SYS L+R continued** ▼**Note: Inoperative Items****Multiple flight control surfaces inop**

Handling qualities are degraded.

Left and right thrust reversers inop

Manual braking is available.

Autobrake inop

Manual braking is available.

Normal brakes inop

Alternate brakes are available.

Note: Use flaps 20 and VREF 30 + 20 for landing.
Higher approach speeds improve airplane
maneuvering characteristics.

Crosswind limit for landing is 20 knots.

Roll rate may be reduced in flight.

Speedbrake effectiveness may be reduced in
flight and during landing.

12 Do **not** accomplish the following checklists:

FLIGHT CONTROLS

SPOILERS

13 Checklist Complete Except Deferred Items

▼ Continued on next page ▼

▼ HYD PRESS SYS L+R continued ▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
Minimums	____,____, xckd	C&F
Landing data	____, VREF 30 + 20	C&F
Approach briefing	complete	PM
Autobrakes	OFF	PM
Seat belt signs	ON	PM
Recall	ckd	PM
Notes	ckd	PM

Approach Checklist

Flight & nav instruments	verified	C&F
Cabin notification	complete	C
Altimeters	____, xckd	C&F

Landing Checklist

Landing gear	down	C&F
Flaps	20, 20	C&F
Speedbrake	ARMED	PM



[] HYD PRESS SYS R

Condition: The right hydraulic system pressure is low.

1 R ELEC DEMAND pump selector ON

2 Choose one:

◆ HYD PRESS SYS R message **blanks**:



◆ HYD PRESS SYS R message **stays shown**:

▶▶ **Go to step 3**

3 R ENG PRIMARY pump switch Off

4 R ELEC DEMAND pump selector OFF

Note: Inoperative Items

Right thrust reverser inop

Left thrust reverser is available.

Autobrake inop

Manual braking is available.

Normal brakes inop

Alternate brakes is available.

Note: Roll rate may be reduced in flight.

Speedbrake effectiveness may be reduced in flight and during landing.

5 Do **not** accomplish the following checklist:

SPOILERS

6 **Checklist Complete Except Deferred Items**

▼ Continued on next page ▼

▼ **HYD PRESS SYS R continued** ▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
Minimums	____,____, xckd	C&F
Landing data	____,____	C&F
Approach briefing.	complete	PM
Autobrakes	OFF	PM
Seat belt signs.	ON	PM
Recall	ckd	PM
Notes	ckd	PM

Approach Checklist

Flight & nav instruments.	verified	C&F
Cabin notification	complete	C
Altimeters	____, xckd	C&F

Landing Checklist

Landing gear	down	C&F
Flaps	____,____	C&F
Speedbrake.	ARMED	PM



[] HYD PRESS SYS R+C

Condition: The right and center hydraulic system pressures are low.

Objective: To restore system pressure and configure for landing using alternate systems, if needed.

7101 - 7110

- 1 Do not exceed .87 Mach. This ensures sufficient roll control.
- 2 C1 or C2 AIR DEMAND pump selector ON
- 3 R ELEC DEMAND pump selector ON
- 4 Choose one:
 - ◆ HYD PRESS SYS R+C message **blanks**:

■ ■ ■ ■
 - ◆ HYD PRESS SYS R+C message **stays shown**:

▶▶ **Go to step 5**
- 5 STAB cutout switches (both) CUTOUT
 This keeps the STABILIZER message blank.
- 6 Do not exceed current airspeed. Nose down elevator authority is limited.
- 7 C2 ELEC PRIMARY pump switch Off
- 8 R ENG PRIMARY pump switch Off
- 9 C1 and C2 AIR DEMAND pump selectors OFF
- 10 R ELEC DEMAND pump selector OFF

▼ Continued on next page ▼

▼ **HYD PRESS SYS R+C continued** ▼

- 11 Handling qualities are degraded. Pitch and roll control capability is reduced with fewer operating control surfaces.
- 12 Plan to land at the nearest suitable airport.
- 13 GND PROX FLAP OVRD switch OVRD
- 14 Do **not** accomplish the following checklists:
 - AUTO SPEEDBRAKE
 - FLIGHT CONTROLS
 - SPOILERS
 - STABILIZER

Note: Inoperative Items
Multiple flight control surfaces inop Handling qualities are degraded.
Stabilizer inop Pitch trim is available in the normal flight control mode.
Primary flap and slat operation inop Plan more time for slower flap and slat operation.
Main landing gear hydraulic operation inop Alternate gear extension is needed.
Right thrust reverser inop Left thrust reverser is available.
Autobrake inop Manual braking is available.
Normal and alternate brakes inop Reserve brakes are available.
Main gear steering inop Tires may scrub during turns.

▼ HYD PRESS SYS R+C continued ▼**7101 - 7110**

Note: The slats will extend beyond midrange when airspeed is below 256 knots. For go-around, do not exceed 256 knots until the slats retract to midrange.

7001 - 7008

Note: The slats will extend beyond midrange when airspeed is below 239 knots. For go-around, do not exceed 239 knots until the slats retract to midrange.

Note: Use flaps 20 and VREF 30 + 20 for landing. Higher approach speeds to improve airplane maneuvering characteristics.

Crosswind limit for landing is 20 knots.

Roll rate may be reduced in flight.

Speedbrake effectiveness may be reduced in flight and during landing.

Do not arm the speedbrake lever. This prevents inadvertent in-flight speedbrake extension.

Manually extend the speedbrakes after landing.

For go-around, do not exceed the gear EXTEND limit speed (270K/.82M).

15 Checklist Complete Except Deferred Items**▼ Continued on next page ▼**

▼ HYD PRESS SYS R+C continued ▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
Minimums	____,____, xckd	C&F
Landing data	____, VREF 30 + 20	C&F
Approach briefing	complete	PM
Autobrakes	OFF	PM
Seat belt signs	ON	PM
Recall	ckd	PM
Notes	ckd	PM

Approach Checklist

Flight & nav instruments	verified	C&F
Cabin notification	complete	C
Altimeters	____, xckd	C&F

Flap extension

- Start flap extension as needed.
- Do **not** accomplish the following checklists:
 - FLAPS PRIMARY FAIL
 - SLATS PRIMARY FAIL

▼ Continued on next page ▼

▼ HYD PRESS SYS R+C continued ▼

Alternate gear extension

Landing gear lever DN

ALTN GEAR

extend switch Push to DOWN
and hold until all gear
show down or in transit

A reduction of airspeed to below 240 knots may be necessary for the landing gear to lock down.

Do **not** accomplish the following checklist:

GEAR DOOR

Landing Checklist

Landing gear down C&F

Flaps **20, 20** C&F

Speedbrake **DOWN** PM



[] HYD QTY LOW C

Condition: The center hydraulic quantity is low.

Note: Nose wheel steering may be slow to react. Excessive force on the nose wheel steering tiller may cause abrupt tiller movement in the opposite direction.



HYD QTY LOW L, R

Condition: The hydraulic quantity is low.



[] HYD QTY LOW L+C

Condition: The left and center hydraulic quantities are low.

- 1 Plan to land at the nearest suitable airport.

Note: Nose wheel steering may be slow to react. Excessive force on the nose wheel steering tiller may cause abrupt tiller movement in the opposite direction.



[] HYD QTY LOW L+C+R

Condition: All three hydraulic quantities are low.

- 1 Plan to land at the nearest suitable airport.

Note: Nose wheel steering may be slow to react. Excessive force on the nose wheel steering tiller may cause abrupt tiller movement in the opposite direction.



[] HYD QTY LOW L+R

Condition: The left and right hydraulic quantities are low.

- 1 Plan to land at the nearest suitable airport.



[] HYD QTY LOW R+C

Condition: The right and center hydraulic quantities are low.

Objective: To prevent fluid loss through the brake system.

- 1 C1 ELEC PRIMARY pump switch Off
- 2 Plan to land at the nearest suitable airport.

Note: Nose wheel steering may be slow to react. Excessive force on the nose wheel steering tiller may cause abrupt tiller movement in the opposite direction.

Do not taxi with loss of steering.

- 3 Do **not** accomplish the following checklists:

BRAKE SOURCE

RESERVE BRAKES/STRG

- 4 **Checklist Complete Except Deferred Items**

▼ Continued on next page ▼

▼HYD QTY LOW R+C continued ▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
Minimums	____,____, xckd	C&F
Landing data	____,____	C&F
Approach briefing.	complete	PM
Autobrakes	as reqd	PM
Seat belt signs.	ON	PM
Recall	ckd	PM
Notes	ckd	PM

Approach Checklist

Flight & nav instruments.	verified	C&F
Cabin notification	complete	C
Altimeters	____, xckd	C&F

Landing Checklist

Landing gear	down	C&F
Flaps	____,____	C&F
Speedbrake.	ARMED	PM

▼ Continued on next page ▼

▼HYD QTY LOW R+C continued ▼

Before landing

C1 ELEC PRIMARY pump switch ON

This restores alternate brakes from the reserve hydraulic source and may restore steering.



RAT UNLOCKED

Condition: The ram air turbine is not stowed and locked.



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Non-Normal Checklists
Landing Gear

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Section 14

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[] ANTISKID

Condition: An antiskid system fault occurs.

1 AUTOBRAKE selector. OFF

Note: The autobrake system is inoperative.

Use minimum braking consistent with runway length and conditions to reduce the possibility of tire blowout.

Do not apply the brakes until the nose wheel is on the ground and the speedbrakes have extended.

Brake initially using light steady pedal pressure. Increase pressure as ground speed decreases. Do not pump the brakes.

2 **Checklist Complete Except Deferred Items**

▼ Continued on next page ▼

▼ANTISKID continued▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
Minimums	____,____, xckd	C&F
Landing data	____,____	C&F
Approach briefing	complete	PM
Autobrakes	OFF	PM
Seat belt signs	ON	PM
Recall	ckd	PM
Notes.	ckd	PM

Approach Checklist

Flight & nav instruments	verified	C&F
Cabin notification	complete	C
Altimeters	____, xckd	C&F

Landing Checklist

Landing gear	down	C&F
Flaps	____,____	C&F
Speedbrake	ARMED	PM



AUTOBRAKE

Condition: One of these occurs:

- the autobrake system is disarmed
- the autobrake system is failed



[] BRAKE SOURCE

Condition: Normal and alternate brake system pressures are low, and reserve hydraulic source for alternate brake system is low.

Note: Only accumulator pressure is available for braking. During landing rollout, apply steady, increasing brake pressure and hold to a full stop. Do not taxi.



[] BRAKE TEMP

Condition: One or more brake temperatures are high.

1 Choose one:

◆ In **flight**:

Do not exceed the gear EXTEND limit speed (270K/.82M).

Landing gear lever DN

When the BRAKE TEMP message blanks:

Wait 8 minutes.

Landing gear lever UP



◆ On the **ground**:

Refer to Brake Cooling Schedule table in the Operational Data Manual (ODM), Abnormal section, for the needed cooling time.



[] GEAR DISAGREE

Condition: The gear position disagrees with the landing gear lever position.

Objective: To extend the gear using alternate gear extension, or land on the available gear.

Note: Do not exceed the gear EXTEND limit speed (270K/.82M).

1 Choose one:

◆ Landing gear lever **UP**:

Note: Flight with the gear down increases fuel consumption and decreases climb performance. Refer to the Gear Down performance tables in the Operational Data Manual (ODM), Abnormal section for flight planning.

Do **not** accomplish the following checklists:

AUTO SPEEDBRAKE

GEAR DOOR



Landing gear lever **DN**:

▶▶ **Go to step 2**

2 ALTN GEAR

extend switch Push to DOWN
and hold until all gear
show down or in transit

▼ Continued on next page ▼

▼ **GEAR DISAGREE** continued ▼

3 Reduction of airspeed to below 240 knots may be necessary for the gear to lock down.

4 Do **not** accomplish the following checklist:

GEAR DOOR

5 **Wait** 30 seconds.

6 Choose one:

◆ **All** gear indicate **DN**:



◆ **Any** gear indicate **UP or in transit**:

▶▶ **Go to step 7**

7 Plan to land on the available gear.

8 GND PROX GEAR OVRD switch OVRD

Note: Use flaps 30 for landing. This gives the slowest landing speed.

Do not arm the speedbrake lever.

When stopping distance is critical, extend the speedbrakes after all gear, or the nose, or the engine nacelle have contacted the runway.

Do not use the thrust reversers unless stopping distance is critical.

▼ **Continued on next page** ▼

▼ **GEAR DISAGREE continued** ▼

9 Checklist Complete Except Deferred Items

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
Minimums	____,____, xckd	C&F
Landing data	____,	C&F
	VREF 30	
Approach briefing	complete	PM
Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Recall	ckd	PM
Notes	ckd	PM

Approach Checklist

Flight & nav instruments	verified	C&F
Cabin notification	complete	C
Altimeters	____, xckd	C&F

▼ **Continued on next page** ▼

▼ GEAR DISAGREE continued ▼

At pattern altitude

- OUTFLOW VALVE switches (both) MAN
- OUTFLOW VALVE MANUAL
switches (both) Hold in OPEN
until the outflow
valve indications show fully
open to depressurize the airplane
- Fuel PUMPS switches (all) Off

Do **not** accomplish the following checklists:

- CABIN ALTITUDE AUTO
- FUEL PRESS ENG L
- FUEL PRESS ENG R

Landing Checklist

- Landing gear down C&F
- Flaps**30, 30** C&F
- Speedbrake**DOWN** PM



[] GEAR DOOR

Condition: One or more gear doors are not closed.

Note: Do not exceed the gear EXTEND limit speed (270K/.82M).



Gear Lever Locked Down

Condition: The landing gear lever cannot move to UP.

- 1 Landing gear lever
LOCK OVRD switch Push and hold
- 2 Landing gear lever UP



[] MAIN GEAR BRACE L, R

Condition: The main gear is down with one brace unlocked.

1 GND PROX GEAR OVRD switch OVRD

Note: Use flaps 30 for landing. This gives the slowest landing speed.
Do not arm the speedbrake lever.
Manually extend the speedbrakes after landing.

2 Checklist Complete Except Deferred Items

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
Minimums	____,____, xckd	C&F
Landing data	____,	C&F
	VREF 30	
Approach briefing	complete	PM
Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Recall	ckd	PM
Notes	ckd	PM

▼ Continued on next page ▼

▼ MAIN GEAR BRACE L, R continued ▼

Approach Checklist

Flight & nav instruments	verified	C&F
Cabin notification	complete	C
Altimeters	____, xckd	C&F

At pattern altitude

Fuel PUMPS switches (all) Off

Do **not** accomplish the following checklists:

FUEL PRESS ENG L

FUEL PRESS ENG R

Landing Checklist

Landing gear	down	C&F
Flaps	30, 30	C&F
Speedbrake	DOWN	PM



MAIN GEAR STEERING

Condition: Main gear steering does not lock.



[] RESERVE BRAKES/STRG

Condition: One or more of these are possibly not available:

- Alternate brakes from the reserve hydraulic source
- Normal nose gear extension
- Nose wheel steering

Note: Plan for possible alternate gear extension.
Do not taxi with loss of steering.



Tire Failure(s)

Condition: One or more tires have failed, or are suspected to have failed.

Note: Consider continuing to the destination unless there is evidence that other damage has occurred. (Abnormal engine indications or engine vibration, or loss of hydraulic pressure and/or quantity, for example.)

Continuing to the destination ensures a lighter landing weight and allows the crew time to plan and coordinate the arrival and landing when the workload is low.

- 1 Advise ATC of possible tire remnants on the runway.
- 2 Avoid landing overweight.
- 3 Use normal approach and landing techniques.
- 4 Use differential braking as needed to assist directional control.
- 5 Choose one:
 - ◆ Uncertain about whether a nose or main landing gear tire has failed:
▶▶ Go to step 6
 - ◆ Nose landing gear tire flat:
▶▶ Go to step 9
 - ◆ Main landing gear tire flat:
▶▶ Go to step 14

▼ Continued on next page ▼

▼ Tire Failure(s) continued ▼

- 6 Slowly and gently lower the nose to the runway.
- 7 Do not use autobrakes.
- 8 Use idle or higher reverse thrust as needed to stop the aircraft.



- 9 Slowly and gently lower the nose to the runway.
- 10 Runway length permitting, use idle reverse thrust.
- 11 Autobrakes may be used at lower settings.
- 12 After the nose landing gear is down, vibration levels may be affected by increasing or decreasing control column back pressure.
- 13 Maintain nose landing gear contact with the runway.



- 14 Braking effectiveness will be reduced.
- 15 Light braking will cause yawing towards the flat tire. Hard braking will cause yawing away from the flat tire.
- 16 Use of maximum reverse thrust is recommended.
- 17 Do not use autobrakes.



TIRE PRESS

7101 - 7110

Condition: One or more tire pressures are not normal.

►► **Go to the Tire Failure(s) checklist on page 14.13**



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Non-Normal Checklists
Warning Systems

Chapter NNC
Section 15

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AIRSPPEED LOW

Condition: Airspeed is less than minimum maneuvering speed.



ALTITUDE ALERT

Condition: A deviation from the MCP set altitude occurs.



ALTITUDE CALLOUTS

Condition: Altitude and minimums voice callouts during approach are not available.



CONFIG DOORS

Condition: An entry, forward cargo, or aft cargo door is not closed and latched and locked during takeoff.



CONFIG FLAPS

Condition: The flaps are not in a takeoff position during takeoff.



CONFIG GEAR

Condition: A landing gear is not down and locked and one of these occurs:

- Below 800 feet radio altitude and a thrust lever is at or near idle
- The flaps are in a landing position



CONFIG GEAR STEERING

Condition: Main gear steering is not locked during takeoff.



CONFIG PARKING BRAKE

Condition: The parking brake is set during takeoff.



CONFIG RUDDER

Condition: Rudder trim is not centered during takeoff.



CONFIG SPOILERS

Condition: One of these occurs:

- The speedbrake lever is not down during takeoff
- The speedbrake lever is extended beyond ARMED in flight with climb thrust or greater



CONFIG STABILIZER

Condition: The stabilizer is not in the greenband during takeoff.



[] CONFIG WARNING SYS

Condition: A configuration warning system fault occurs.

Note: Radio altitude voice callouts and other aural alerts may not be available.



[] GND PROX SYS

Condition: A ground proximity warning system fault occurs.

Note: Some or all ground proximity alerts are not available. Ground proximity alerts that occur are valid.



OVERSPEED

Condition: Airspeed is more than Vmo/Mmo.



PILOT RESPONSE

Condition: Pilot action is not detected during a specified time.



[] TAIL STRIKE

Condition: The tail hits the runway.

**Caution! Do not pressurize the airplane.
Pressurizing the airplane may cause
further structural damage.**

- 1 OUTFLOW VALVE switches (both) MAN
- 2 OUTFLOW VALVE MANUAL
switches (both) Hold in OPEN
until the outflow
valve indications show fully
open to depressurize the airplane
- 3 Plan to land at the nearest suitable airport.
- 4 Do **not** accomplish the following checklist:
CABIN ALTITUDE AUTO



TCAS

Condition: TCAS is failed.

**TCAS OFF**

Condition: TCAS modes TA or TA/RA are not selected.

**TCAS RA CAPTAIN, F/O**

Condition: TCAS cannot show RA guidance on the PFD.

**TERR OVRD**

Condition: The ground proximity terrain override switch is in OVRD.

**[] TERR POS**

Condition: Terrain position data is lost.

Note: Position data for the ND terrain map and look-ahead terrain alerts are lost. Ground proximity alerts that occur are valid.



[] WINDSHEAR SYS

Condition: A windshear system fault occurs.

Note: Some or all windshear alerts are not available. Windshear alerts that occur are valid.



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Non-Normal Operational InformationChapter NNOI
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ILS Approach Equipment Requirements (Not for Dispatch)	NNOI.1.1
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Non-Normal Operational Information	Chapter NNOI
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ILS Approach Equipment Requirements (Not for Dispatch)

If operable, both the autopilot and flight director will be utilized for all ILS approaches when the reported weather is below 4,000 RVR or 3/4 mile.

Equipment Required	CAT I	CAT II	CAT III
Anti-skid	0	0	Required
Autobrakes or Groundspeed Indication	0	0	Required
Autopilot	1 (A)	2	3
Flight Director	1 (A)	0	0
Autothrottles	0	Required	Required
NDs	0	2	2
Normal Flight Controls	0	Required	Required
Marker Beacon System	0	0 (B)	0
Windsheild Wipers (High)	0	2	2
Notes: (A): If operable, both autopilot and flight director will be utilized for all ILS approaches when the reported weather is below 4,000 RVR or 3/4 mile. (B): Inner Marker is required for CAT II RA NOT AUTH.			

RNAV Approach Equipment Requirements (Not for Dispatch)

Equipment Required	RNAV (GPS)	RNAV (RNP)
ADIRU	1	1
AFDS FMA	1	2
Global Positioning System (GPS)	1	2
Autopilot	1	2
Autothrottle	0	1
Control Display Unit	1	2
EGPWS	0	1
EGPWS (Terrain Display Function)	0	1
Flight Director	1	2
FMC with current navigation database	1	2
EICAS	1	1
ND	1	2
PFD	1	2
Radio Altimeter	1	2
TO/GA switches	0	1

Notes:

An RNAV (RNP) approach may not be conducted with any of the following Single Source EICAS messages displayed:

- SGL SOURCE AIR DATA
- SGL SOURCE DISPLAYS
- SGL SOURCE RAD ALT
- SGL SOURCE F/D

An RNAV approach may not be conducted with any of the following NAV EICAS messages displayed:

- NAV ADIRU INERTIAL
- NAV AIR DATA SYS
- NAV UNABLE RNP

RNAV Enroute Equipment Requirements (Not for Dispatch)

Equipment Required	RNP-4 Enroute	RNAV Enroute
ADIRU	1	1
AFDS FMA	1	0
Global Positioning System (GPS)	2	1
Autopilot	1	1
Autothrottle	0	0
Control Display Unit	2	2
EGPWS	0	0
EGPWS (Terrain Display Function)	0	0
Flight Director	1	1
FMC	2	1
EICAS	1	1
ND	1	1
PFD	1	1
Radio Altimeter	0	0
TO/GA switches	0	0
Automatic Dependent Surveillance	1	0
Flight Deck Communication System (Datalink) CPDLC	1	0
Satellite Communication Systems (SATCOM)	1	0

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Non-Normal Checklist Instructions	Chapter NNCI
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Introduction

The non-normal checklists chapter contains checklists used by the flight crew to manage non-normal situations. The checklists are grouped in sections which match the system description chapters in Volume 2.

Most checklists correspond to an EICAS alert message. The EICAS alert message indicates a non-normal condition and is the cue to select and do the associated checklist.

Checklists without an EICAS alert message are called unannunciated checklists. Most unannunciated checklists are in the associated system section. For example, Engine Fuel Leak is in section 12, Fuel. Unannunciated checklists with no associated system (such as Volcanic Ash) are in section 0, Miscellaneous. In addition, the Miscellaneous section contains checklists titled “Considerations.” These checklists are designed to assist crewmembers in the decision making process to accomplish a non-normal maneuver (such as a decision to perform an overweight landing), assist in the preparation and execution of a non-normal maneuver (such as preparation for a ditching), and/or provide considerations that should be taken into account after a non-normal maneuver has been executed (such as post RTO). These checklists should be referenced as time and conditions allow.

A rectangle icon [] precedes all EICAS alert messages that have procedural steps, notes, or other information of which the flight crew should be aware. The rectangle icon is removed from the EICAS message when the checklist has been completed. In the printed non-normal checklists, the titles also have the rectangle icon to agree with the EICAS alert message. EICAS alert messages without rectangle icons are informational, have no procedural steps or notes, or the action is obvious (such as OVERSPEED).

All checklists have condition statements. The condition statement briefly describes the situation that caused the EICAS alert message. Unannunciated checklists also have condition statements to help in understanding the reason for the checklist.

Some checklists have objective statements. The objective statement briefly describes the expected result of doing the checklist or briefly describes the reason for steps in the checklist.

Checklists can have both memory and reference items. Memory items are critical steps that must be done before reading the checklist. Condition, objective and precaution statements, and notes associated with memory items (i.e., above the dashed line) support action steps and are not considered memory items. In the printed non-normal checklists, the last memory item is followed by a dashed horizontal line. In the ECL, memory items are not identified. Reference items are actions to be done while reading the checklist.

Note: Crewmembers must maintain a sufficient knowledge of all designated memory items so that they can accomplish the critical steps in proper sequence without omission. Verbatim memorization of the steps is not required.

Some checklists have additional information at the end of the checklist. The additional information provides data the crew may wish to consider. The additional information does not need to be read.

Checklists that need a quick response are listed in the Quick Action Index. In each system section, Quick Action Index checklists are listed first, followed by checklists that are not in the Quick Action Index. The titles of Quick Action Index checklists are printed in **bold** type. Checklist titles in upper case (such as AUTOBRAKE) are annunciated by an EICAS alert message or other indication. Checklist titles in upper and lower case (such as Window Damage L, R) are not annunciated. Some checklist titles are shown in a larger font (such as Evacuation) to make them easier to read under conditions where crewmembers may be wearing an oxygen mask or under conditions of reduced visibility.

Electronic Checklist (ECL) Operation

A non-normal menu is given for the ECL. The menu is arranged in the same manner as the Non-Normal Checklists chapter.

The primary purpose of the non-normal menu is to access unannunciated checklists and condition statements for EICAS alert messages without icons.

The non-normal menu is also used to access checklists with icons to allow review of a specific checklist. Operation of the ECL is described in Chapter 10, Flight Instruments, Displays.

Non-Normal Checklist Operation

General

Non-normal checklists start with steps to correct the situation. If needed, information for planning the rest of the flight is included. In the printed non-normal checklists, when special items are needed to configure the airplane for landing, the items are included in the Deferred Items section of the checklist. In the ECL, deferred items are automatically added to the end of the applicable normal checklist. Flight patterns for some non-normal situations are located in the Flight Crew Training Manual (FCTM) and show the sequence of configuration changes.

If a checklist or a step in a checklist is not applicable to all airplanes, airplane effectivity information is included in the checklist. Airplane effectivity can be listed by ship number or airplane model. If a checklist is applicable to some but not all airplanes, airplane effectivity is centered below the checklist title. If a step in a checklist is applicable to some but not all airplanes, airplane effectivity is included above the step. If a checklist or a step in a checklist is applicable to all airplanes, airplane effectivity information is not included.

While every attempt is made to supply needed non-normal checklists, it is not possible to develop checklists for all conceivable situations. In some smoke, fire or fumes situations, the flight crew may need to move between the Smoke, Fire or Fumes checklist and the Smoke or Fumes Removal checklist. In some multiple failure situations, the flight crew may need to combine the elements of more than one checklist. In all situations, the captain must assess the situation and use good judgment to determine the safest course of action.

Landing at the Nearest Suitable Airport

There are some situations where the flight crew must land at the nearest suitable airport. These situations include, but are not limited to, conditions where:

- the non-normal checklist includes the words “Plan to land at the nearest suitable airport.”
- fire or smoke continues
- only one AC power source remains (engine or APU generator)
- only one hydraulic system remains
- any other situation determined by the flight crew to have a significant adverse effect on safety if the flight is continued.

Land Immediately

It must be stressed that for smoke that continues or a fire that cannot be positively confirmed to be completely extinguished, the earliest possible descent, landing, and evacuation must be done.

If a smoke, fire or fumes situation becomes uncontrollable, the flight crew should consider an immediate landing. Immediate landing implies immediate diversion to a runway. However, in a severe situation, the flight crew should consider an overweight landing, a tailwind landing, an off-airport landing, or a ditching.

Checklists Directing Engine Shutdown

Checklists directing an engine shutdown must be evaluated by the captain to determine whether an actual shutdown or operation at reduced thrust is the safest course of action. Consideration must be given to the probable effects of running the engine at reduced thrust.

There are no non-normal checklists for the loss of an engine indication or automatic display of the secondary engine indications. Continue normal engine operation unless an EICAS message shows or a limit is exceeded.

Non-Normal Checklist Assumptions

Non-normal checklists assume:

- During engine start and before takeoff, the associated non-normal checklist is done if a non-normal situation is identified. After completion of the checklist, the Maintenance Dispatch Manual (MDM) is consulted to determine if Minimum Equipment List (MEL) dispatch relief is available.
- System controls are in the normal configuration for the phase of flight before the start of the non-normal checklist.
- Aural alerts are silenced and the master caution system is reset by the flight crew as soon as the cause of the alert is recognized.
- The EMERGENCY position of the oxygen regulator is used when needed to supply positive pressure in the masks to remove contaminants. The 100% position of the oxygen regulator is used when positive pressure is not needed but contamination of the flight deck air exists. The Normal position of the oxygen regulator is used if prolonged use is needed and the situation allows. Normal boom microphone operation is restored when oxygen is no longer in use.
- Indicator lights are tested to verify suspected faults.

Circuit Breaker Reset

WARNING: Do not reset a tripped fuel boost pump circuit breaker.

Flight crew reset of a tripped circuit breaker is not recommended unless directed by a non-normal checklist.

However, a tripped circuit breaker may be reset once, after a short cooling period if, in the judgment of the captain, the situation resulting from the circuit breaker trip has a significant adverse effect on safety. A reset of a tripped circuit breaker should only be accomplished after maintenance and the flight crew have determined it is safe to reset the circuit breaker.

Flight crew may cycle (pull and reset) the circuit breaker(s) of a degraded or inoperative system (normally only one time per event) provided the Captain determines the affected system is desirable for the conduct of the flight and one of the following conditions exists:

- the circuit breaker had not previously tripped, and there is no specific non-normal procedure in the checklist prohibiting reset, or
- maintenance has determined cycling the circuit breaker is safe.

If a circuit breaker is cycled during flight, notify maintenance. A logbook entry shall be made to document the occurrence.

Non-Normal Checklist Use

General

Non-normal checklist use starts when the airplane flight path and configuration are correctly established. Only a few situations need an immediate response (such as CABIN ALTITUDE). Usually, time is available to assess the situation before corrective action is started. All actions must then be coordinated under the captain's supervision and done in a deliberate, systematic manner. Flight path control must never be compromised. As a general rule, use the following as guidelines:

- Fly the aircraft
- Cancel the warning
- Identify the emergency or non-normal
- Accomplish recall items from memory (if applicable)
- Read the checklist
- Do not hurry

Calling for the Checklist

When a non-normal situation occurs, at the direction of the Captain both crewmembers systematically and without delay accomplish all memory items in their areas of responsibility.

The Captain may also direct reference checklists to be done by memory if no hazard is created by such action, or if the situation does not allow reference to the checklist.

Call for the checklist when:

- the flight path is under control
- the airplane is not in a critical phase of flight (such as takeoff or landing)
- all memory items are complete.

Reading the Checklist

The PM reads aloud:

- the checklist title
- as much of the condition statement as needed to verify that the correct checklist has been selected
- as much of the objective statement (if applicable) as needed to understand the expected result of doing the checklist.

The PF does not need to repeat this information but must acknowledge that the information was heard and understood.

For checklists with memory items, the PM first verifies that each memory item has been done. The checklist is normally read aloud during this verification. The PF does not need to respond except for items that are not in agreement with the checklist. The item numbers do not need to be read. With the ECL, items that are complete (green) do not need to be read or verified.

Non-memory items are called reference items. The PM reads aloud the reference items, including:

- the precaution (if any)
- the response or action
- any amplifying information.

The PF does not need to repeat this information but must acknowledge that the information was heard and understood. The item numbers do not need to be read.

After moving any control, the crewmember taking the action also states the checklist response.

Checklists include an Inoperative Items table only when the condition of the items is needed for planning the rest of the flight and the condition is not shown on EICAS. The inoperative items, including the consequences (if any), are read aloud by the PM. The PF does not need to repeat this information but must acknowledge that the information was heard and understood.

Closed loop (sensed) checklist items change from white to green when the action is taken. The PM is responsible to “check off” any open loop (not sensed) item and to verify that all closed loop items are green.

Dual Verification of Critical Controls

The word “Confirm” is added to checklist items when both crewmembers must verbally agree before action is taken. During an inflight non-normal situation, verbal confirmation is required prior to the movement of the following critical controls:

- an engine thrust lever
- an engine fuel control switch
- an engine, APU or cargo fire switch
- a generator drive disconnect switch
- a flight control switch

After determination that a critical control must be actuated in flight, the following steps must be taken:

- Both pilots must verbally and visually identify the affected control.
- The pilot performing the action will place his hand on the affected control.

- The pilot monitoring the action will verbally and visually confirm the proper control has been selected.
- The pilot performing the action then actuates the affected control.

This does not apply to the Dual Eng Fail/Stall checklist.

Conditional Items

Conditional items are used at a decision point. Conditional items usually begin with “If.” When a conditional item is encountered in a procedure, apply the following logic:

- If the conditional item applies, accomplish the action step(s) immediately following it.
- If the conditional item does not apply, skip the associated action step(s) and proceed to the next procedural step.

Deferred Items

When there are deferred items, the non-normal checklist will include the item “**Checklist Complete Except Deferred Items.**” The PF is to be made aware when there are deferred items. In the printed non-normal checklists, these items are included in the Deferred Items section of the checklist and may be delayed until the usual point during descent, approach or landing. In the ECL, these items are automatically added to the end of the applicable normal checklist and may be delayed until the usual point during descent, approach, or landing.

The deferred items are read aloud by the PM. The crewmember taking the action states the response.

In the printed non-normal checklists, when there are deferred items, the Deferred Items section of the non-normal checklist will include the Descent, Approach and Landing normal checklists. These checklists should be used instead of the usual Descent, Approach, and Landing normal checklists. If a normal checklist item is changed as a result of the non-normal situation, the changed response is printed in **bold** type. In the ECL, when there are deferred items, the items are automatically added to the end of the usual Descent, Approach, or Landing normal checklist. The PF or the PM responds to the deferred normal checklist items based on each crewmember’s area of responsibility.

When there are no deferred items, the Descent, Approach, and Landing normal checklists are used to verify that the configuration is correct for each phase of flight.

Consequential EICAS Alert Messages

Consequential EICAS alert messages can show as the result of a primary failure condition (such as AUTO SPEEDBRAKE from HYD PRESS SYS C) or the result of a non-normal checklist crew action. Consequential messages are shown for crew awareness with icons automatically removed. The checklists for the consequential messages can have procedural steps, notes, or other information. The crew does not do these checklists. If consequential checklist steps, notes, and information are applicable to the primary failure condition, then these are included in the primary checklist. The statement “Do not accomplish the following checklists:” followed by a list of the checklists, shows in the printed primary checklist to inform the crew of consequential checklists. All consequential alert messages may not show while doing the primary checklist, depending on operational circumstances. The statement “Inhibited checklists:” followed by the list, shows in the ECL. The statement does not need to be read aloud when doing the ECL.

Checklist Completion

Each checklist has a checklist complete symbol at the end. The following symbol indicates that the checklist is complete:



The checklist complete symbol can also be in the body of the checklist. This only occurs when a checklist divides into two or more paths. Each path can have a checklist complete symbol at the end. The flight crew does not need to continue reading the checklist after the checklist complete symbol.

After completion of each non-normal checklist, the PM states “___ CHECKLIST COMPLETE.”

Additional information at the end of the checklist is not required to be read.

Checklist Limitations

The flight crew must be aware that checklists cannot be created for all conceivable situations and are not intended to replace good judgment. In some situations, at the captain’s discretion, deviation from a checklist may be needed.

Non-Normal Checklist Legend

Redirection Symbol



The redirection symbol is used in two ways:

- In the Table of Contents of a system section, to direct the flight crew to a different system section.
- In a non-normal checklist, with the word “Go to”, to direct the flight crew to a different checklist or to a different step in the current checklist.

Separator Symbol



The separator symbol is used in two ways:

- In certain system section tables of contents, to separate the titles of QAI checklists from non-QAI checklists.
- In a non-normal checklist, to separate the memory items from the reference items.

Task Divider Symbol



The task divider symbol is used to indicate the end of one task and the beginning of another task.

Decision Symbol

Choose one:



The decision symbol is used to identify possible choices.

Precaution Symbol



The precaution symbol is used to identify information the flight crew must consider before taking the action.

Emergency Evacuation Flow/Philosophy

Evacuation flow items listed below are not included within the Evacuation checklist. They are meant to refresh the logical pattern of procedures that must occur for a successful evacuation. In the unlikely event that the checklist cannot be read due to smoke/fire, darkness, injury or incapacitation, this simple flow or philosophy should lead the pilot to completion of all critical tasks contributing to the safest possible evacuation. The checklist follows the flow pattern of:

STOP
CONFIGURE
SHUTDOWN
EVACUATE

Intentionally
Blank

Revision Record
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Intentionally
Blank

Revision Record

Model Identification

Chapter RR

Section ModID

General

The airplanes listed in the table below are covered in this manual. The numbers are used to distinguish data peculiar to one or more, but not all of the airplanes. Where data applies to all airplanes listed, no reference is made to individual airplane numbers.

The table permits flight crew correlation of configuration differences by Registry Number in alpha/numeric order within an operator's fleet for airplanes covered in this manual. Configuration data reflects the airplane as delivered configuration and is updated for service bulletin incorporations in conformance with the policy stated in the introduction section of this chapter.

Airplane number is supplied by the operator. Registry number is supplied by the national regulatory agency. Serial and tabulation numbers are supplied by Boeing. The procedures and information contained in this manual also apply to aircraft acquired by Delta Air Lines subsequent to the current revision; however, this document may not address all pertinent information for these airplanes. In such instances, specific operating procedures and systems information can be found in appropriate Differences Chapter(s) and/or Fleet Bulletin(s) prior to their incorporation in the next scheduled revision.

Airplane Number	Registry Number	Serial Number	Tabulation Number
7001	N860DA	29951	WB446
7002	N861DA	29952	WB447
7003	N862DA	29734	WB448
7004	N863DA	29735	WB449
7005	N864DA	29736	WB450
7006	N865DA	29737	WB451
7007	N866DA	29738	WB452
7008	N867DA	29743	WB453
7101	N701DN	29740	WD066
7102	N702DN	29741	WD067
7103	N703DN	32222	WD068

Airplane Number	Registry Number	Serial Number	Tabulation Number
7104	N704DK	29739	WD069
7105	N705DN	29742	WD070
7106	N706DN	30440	WD071
7107	N707DN	39091	WD072
7108	N708DN	39254	WD073
7109	N709DN	40559	WD074
7110	N710DN	40560	WD075
And Subsequent			

Revision Record

Introduction

Chapter RR

Section Intro

General

The manufacturer has developed normal and non-normal procedures for the 777 aircraft. Delta Air Lines, Inc. has modified some of these procedures for simplification and standardization, when appropriate, with other aircraft operated by Delta Air Lines, Inc. Finally, the FAA has approved the procedures presented in this Operations Manual.

These procedures are intended to be followed during normal ground operations and in flight. Deviations from these procedures should be made only with good cause and based on the safest course of action. The captain's best judgment must be applied if an abnormality occurs that is not covered by these procedures.

Manual Rights

The 777 Operations Manual has been prepared for the exclusive use of Delta Air Lines, Inc., Flight Operations personnel under the direction and authority of Delta and shall, at all times, remain the property of Delta. The holder hereof acknowledges and agrees that this manual contains or may contain trade secrets, copyrighted material and commercial and proprietary information, privileged and confidential, to the interest of Delta, and the holder hereof further agrees that this manual may not be reproduced, distributed or copied, in whole or in part, without the express prior written consent of Delta.

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Corrections to the Manual

Log on to the Delta Flight Operations Portal, <http://dlnet.delta.com> and submit a Publications Change Request (PCR) to correct any errors or discrepancies discovered in this manual, or to submit a suggested change to any Aircraft Operating Manual, Volume 1, Volume 2, Quick Reference Handbook (QRH), Flight Crew Training Manual (FCTM), Normal Checklist, Airway Manual (AM), Flight Operations Manual (FOM), Operating Experience (OE/TOE) Guide, Fleet Bulletin (FB), or All Pilot Bulletin (APB).

There are links to the PCR form on each fleet page and also on the Flight Ops Manuals/Library Services page. Once submitted, the PCR is automatically routed to the applicable Fleet Technical Manager and Technical Writer for that manual.

Organization

The operations manual is organized in the following manner.

Volume 1

- Preface - Contains general information regarding the manual's purpose, structure, and content. It also contains lists of abbreviations, a record of revisions and a list of effective pages.
- Limitations - Covers operational limitations.
- Normal Procedures - Covers all amplified normal operating procedures and are based on a thorough analysis of crew activity required to operate the aircraft, and reflect the latest knowledge and experience available.
- Normal Operational Information - Contains reference material used to support normal procedures.
- Supplementary Procedures is organized by system and covers:
 - any procedure that is non-routine in nature,
 - any first-flight-of-the-day test or other systems test,
 - guidance on lengthy operating procedures, and
 - adverse weather procedures and guidance.
- Differences - Notes differences between aircraft models and variants.

Volume 2

- Preface - Contains general information regarding the manual's purpose, structure, and content. It also contains lists of abbreviations, a record of revisions and a list of effective pages.
- Contains general aircraft and systems information. These chapters are generally subdivided into sections covering controls and indicators and systems descriptions.

QRH

- Non-normal checklists - Contains checklists used to manage non-normal situations.
- Non-Normal Operational Information - Contains reference material used to support non-normal procedures.
- Non-Normal Checklist Instructions - Contains non-normal checklist instructions and evacuation flow/philosophy.
- Revision Record - Contains general information regarding the manual's purpose, structure, and content. It also contains lists of abbreviations, a record of revisions and a list of effective pages.

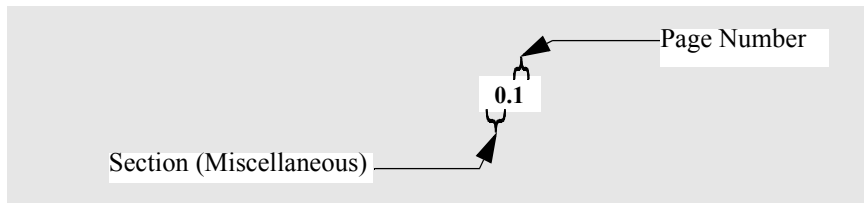
FCTM

- Preface - Contains general information regarding the manual's purpose, structure, and content. It also contains lists of abbreviations, a record of revisions and a list of effective pages.
- Provides information and recommendations on aircraft operations, maneuvers, and techniques.

Page Numbering

This manual uses a decimal page numbering system. The page number is divided into two fields; section and page. An example of a page number follows:

Example Page Number



Warnings, Cautions, and Notes

The following levels of written advisories are used throughout the manual and are not to be confused with EICAS messages, which are identified in separate text.

Warning - A warning is an instruction about a hazard that if ignored could result in injury, loss of aircraft control, or loss of life. A warning will appear prior to the applicable step or item.

Warning! Do not pressurize any hydraulic or pneumatic system until clearance is obtained from Maintenance.

Caution - A caution is an instruction concerning a hazard that if ignored could result in damage to equipment. A caution will appear prior to the applicable step or item.

Caution! Do not set takeoff thrust until oil temperature is above 50°C.

Note - A note provides amplified information, instruction, or emphasis. A note will appear after the applicable step or item.

Note: The checklist must not be modified in any way.

Aircraft Effectivities

Differences in aircraft configuration are shown by use of aircraft effectivities throughout Volumes 1 and 2, QRH, and the FCTM. The following rules are used to express aircraft effectivities:

- Aircraft effectivities are listed by model and/or ship number. A range of aircraft is defined by a dash, e.g. 9901 - 9910. A comma in the effectivity range indicates a break in the range, e.g. 9901 - 9910, 9912 - 9925; aircraft 9911 is excluded from the range. Aircraft introduced to the fleet following manual publication are effective as subsequent ships, e.g. 9901 & Subsequent.
- Aircraft effectivities are listed in bold text throughout the manual.
- Aircraft effectivities apply only to the paragraph, illustration, operational note, procedural step, etc. and to subordinate items (if any). Refer to the examples below.

Example (with subordinate items):

9951 – 9961	
CTR TK PUMP (affected).....	OFF
Do not open the WING X FEED valve.	
OUTR TK XFR.....	ON

In this example, the effectivity 9951 - 9961 applies to the first procedural step (CTR TK PUMP....) and the further indented/subordinate step (Do not...). The effectivity does not apply to the next equivalently indented step (OUTR TK XFR.....).

Example (without subordinate items):

Using ship number:

9951 – 9961	
CTR TK PUMP (affected).....	ON
OUTR TK XFR.....	OFF

In this example, the effectivity 9951 - 9961 applies to the first procedural step (CTR TK PUMP) only. The effectivity does not apply to the next procedural step (OUTR TK XFR).

When airplane effectivities are centered immediately below a checklist title, the entire checklist applies to the listed airplanes. In the following example, the FUEL L + R CTR PUMPS LO PR checklist is applicable to 9951-9961 only:

FUEL L + R CTR PUMPS LO PR
9951-9961

Revision Record

Abbreviations

Chapter RR

Section Abbrev

General

The following abbreviations may be found throughout the manual. Some abbreviations may also appear in lowercase letters. Abbreviations having very limited use are explained in the chapter where they are used. Since this list is compiled across several fleets, there may be some abbreviations that do not apply to this specific fleet.

A	
ABV	Above
AC	Alternating Current or Aircraft
ACARS	Aircraft Communications Addressing and Reporting System
ACE	Actuator Control Electronics
ACP	Audio Control Panel
ACT	Active
ADC	Air Data Computer
ADF	Automatic Direction Finder
ADI	Attitude Director Indicator
ADIRS	Air Data Inertial Reference System
ADIRU	Air Data Inertial Reference Unit
ADM	Air Data Module
AED	Automated External Defibrillator
AFB	Alternate Fuel Burn
AFDC	Autopilot Flight Director Computer

AFDS	Autopilot Flight Director System
AFE	Above Field Elevation
AFM	Airplane Flight Manual (FAA approved)
AFM - DPI	Airplane Flight Manual - Digital Performance Information
AFS	Automatic Flight System (Autopilot or Autothrottle)
A/G	Air/Ground
AGL	Above Ground Level
AH	Alert Height
AHRS	Attitude Heading Reference System
AI	Anti-Ice
AIL	Aileron
AIMS	Airplane Information Management System
ALFA	Safe Stall Margin Speed
ALT	Altitude
ALT ACQ	Altitude Acquire
ALT HOLD	Altitude Hold
ALTN	Alternate
AM	Amplitude Modulation

AMI	Airline Modifiable Information
AMM	Aircraft Maintenance Manual
ANP	Actual Navigational Performance
ANT	Antenna
ANU	Aircraft Nose Up
AOA	Angle of Attack
AOC	Airline Operational Communication Data Link
A/P	Autopilot
APL	Airplane
APP	Approach
APU	Auxiliary Power Unit
AR	Authorization Required
ARINC	Aeronautical Radio, Incorporated
ARPT	Airport
ARR	Arrival
ART	Automatic Reserve Thrust
ASA	Autoland Status Annunciator
ASI	Airspeed Indicator
ASR	Airport Surveillance Radar
ASYM	Asymmetry
A/T	Autothrottle
ATA	Actual Time of Arrival
ATC	Air Traffic Control
ATIS	Automated Terminal Information Service

ATM	Assumed Temperature Method
ATT	Attitude
AUTO	Automatic
AUTO-THROT	Autothrottle
AUX	Auxiliary
AVAIL	Available
AWABS	Automated Weight and Balance System
B	
BARO	Barometric
BAT	Battery
B/C or B/CRS or BAC or BCS	Back Course
BFO	Beat Frequency Oscillator
BITE	Built-In Test Equipment
BKR	Breaker
BLD	Bleed
BLW	Below
BRG	Bearing
BRT	Bright
BTL	Bottle
BTL DISCH	Bottle Discharge (fire extinguisher)
BTMS	Brake Temperature Monitoring System
C	

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C	Captain or Celsius or Center or Cool
CAA	Civil Aviation Authority
CADC	Central Air Data Computer
CALSEL	Call Select
CANC/RCL	Cancel/Recall
CANPA	Constant Angle Non-Precision Approach
CAP	Capture
CAPT	Captain
CAWS	Central Aural Warning System
CB	Circuit Breaker
CCD	Cursor Control Device
CDS	Common Display System
CDU	Control Display Unit
CFIT	Controlled Flight Into Terrain
CG	Center of Gravity
CHKL	Checklist
CHR	Chronograph
CKD	Checked
CKT	Circuit
CL	Close
CLB	Climb
CLMP	Computer Lockout Manual Power
CLR	Clear
CMD	Command
CO	Company

COMM	Communication
COMP	Comparator
COMPT	Compartment
CON	Continuous
CONFIG	Configuration
CONT	Control
COOL	Cooling
CRM	Crew Resource Management
CRS	Course
CRT	Cathode Ray Tube
CRZ	Cruise
CTL	Control
CTR	Center
CWS	Control Wheel Steering
D	
DA	Decision Altitude
DA(H)	Decision Altitude (Height)
DC	Direct Current
DCU	Display Concentrator Unit
D/D	Direct Descent
DDA	Derived Decision Altitude (MDA +50 feet)
DDG	Dispatch Deviations Guide
DEL	Delete
DEP	Departure
DEP ARR	Departure Arrival
DEPR	Depressurize
DES	Descent

DEU	Display Electronic Unit
DFCS	Digital Flight Control System
DFGC	Digital Flight Guidance Computer
DFGS	Digital Flight Guidance System
DH	Decision Height
DIFF	Differential
DIR	Direct
DISC	Disconnect
DISCH	Discharge
DK	Deck
DME	Distance Measuring Equipment
DN	Down
DPC	Display Processing Computer
DSP	Display Select Panel
DSPL	Display
DTG	Distance to Go
DTW	Distance to Waypoint
DU	Display Unit
E	
EADI	Electronic Attitude Director Indicator
ECON	Economy
E/D	End of Descent
E/E	Electrical/Electronic
EEC	Electronic Engine Control
EFB	Electronic Flight Bag

EFI	Electronic Flight Instruments
EFIS	Electronic Flight Instrument System
EGPWS	Enhanced Ground Proximity Warning System
EGT	Exhaust Gas Temperature
EHSI	Electronic Horizontal Situation Indicator
EICAS	Engine Indication and Crew Alerting System
EIS	Electronic Instrument System
ELEC	Electrical
ELEV	Elevator
EMER	Emergency
ENG	Engine
ENG OUT	Engine Out
ENT	Entry
EO or E/O	Engine Out
EOAP	Electronic Overhead Annunciation Panel
EPC	Electrical Power Center
EPR	Engine Pressure Ratio
EQPT or EQUIP	Equipment
ETOPS	Extended Range Operation with Twin Engine Airplanes
ETP	Equal Time Point
EVAC	Evacuation
EXEC	Execute

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EXT	Extend or External
F	
F	Fahrenheit
FAC	Final Approach Course
FAA	Federal Aviation Administration
FADEC	Full Authority Digital Engine Control
FAF	Final Approach Fix
FAR	Federal Aviation Regulation
FB	Fleet Bulletin
FCC	Flight Control Computer
FCTL	Flight Control
FCTM	Flight Crew Training Manual
FD, F/D or FLT DIR	Flight Director
FF	Fuel Flow
FFM	Force Fight Monitor
FGCP	Flight Guidance Control Panel
FGS	Flight Guidance System
FILT	Filter
FIR	Flight Information Region
FL CH or FLCH	Flight Level Change
FLT	Flight
FLT CTRL	Flight Control
FLPRN	Flaperon
FMA	Flight Mode Annunciator

FMC	Flight Management Computer
FMS	Flight Management System
F/O or F O	First Officer
FOM	Flight Operations Manual
FPA	Flight Path Angle
FPM	Feet Per Minute
FPV	Flight Path Vector
FREQ	Frequency
F/S	Fast/Slow
FT	Feet
FWD	Forward
FWSOV	Fire Wall Shut Off Valve
FX	Fix
G	
GA	Go-Around
GEN	Generator
GLS	GNSS Landing System
GMT	Greenwich Mean Time
GND	Ground
GNSS	Global Navigation Satellite System
GP or G/P	Glide Path
GPS	Global Positioning System
GPWS	Ground Proximity Warning System
GS	Ground Speed
G/S	Glide Slope
GW	Gross Weight

H	
HAA	Height Above Airport
HAT	Height Above Touchdown
HDG	Heading or Hydraulic Driven Generator
HDG REF	Heading Reference
HDG SEL	Heading Select
HF	High Frequency
HGS	Head-Up Guidance System (HGS® is a registered trademark of Flight Dynamics)
HI	High
HLD	Hold
HPA	Hectopascals
HPSOV	High Pressure Shut Off Valve
HSI	Horizontal Situation Indicator
HUD	Head-Up Display
HYD	Hydraulic
I	
IAF	Initial Approach Fix
IAN	Integrated Approach Navigation
IAS	Indicated Airspeed
ICAO	International Civil Aviation Organization
IDENT	Identification
IFE	In-Flight Entertainment System
IFR	Instrument Flight Rules

IGN	Ignition
IGS	Instrument Guidance System
ILS	Instrument Landing System
IM	Inner Marker
IMC	Instrument Meteorological Conditions
IN	Inches
INBD	Inboard
IND	Indicator
IND LTS	Indicator Lights
INOP	Inoperative
INIT	Initialization
INSTR	Instrument
INT or INTPH	Interphone
INTC	Intercept
INTC CRS	Intercept Course
IP	Instructor Pilot
IRS	Inertial Reference System
IRU	Inertial Reference Unit
ISA	International Standard Atmosphere
ISDU	Inertial System Display Unit
ISFD	Integrated Standby Flight Display
ISLN	Isolation
J	
JAA	Joint Aviation Authority

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K	
K or KTS	Knots
KCAS	Knots Calibrated Airspeed
KGS	Kilograms
KIAS	Knots Indicated Airspeed
L	
L	Left
LAT	Latitude
LBS	Pounds
LD	Load
LDA	Localizer-type Directional Aid
LDG	Landing
LDG ALT	Landing Altitude
LE	Leading Edge
LIM	Limit
LIM SPD	Limit Speed
LKD	Locked
L NAV or LNAV	Lateral Navigation
LOC	Localizer
LOC-BC	Localizer Back Course
LOM	Locator Outer Marker
LON	Longitude
LRC	Long Range Cruise
LRU	Line Replaceable Unit
LSK	Line Select Key
LT	Light
LWR CTR	Lower Center

LWR DSPLY or LWR DSPL	Lower Display
M	
M	Mach
MAG	Magnetic
MAHP	Missed Approach Holding Point
MAN	Manual
MAP	Missed Approach Point
MASI	Mach/Airspeed Indicator
MAX	Maximum
MCC	Maintenance Control Center
MCDU	Multi-function Control and Display Unit
MCO	Maintenance Carry Over
MCP	Mode Control Panel
MCT	Maximum Continuous Thrust
MDA	Minimum Descent Altitude
MDA(H)	Minimum Descent Altitude (Height)
MDM	Mechanical Dispatch Manual
MEA	Minimum Enroute Altitude
MEL	Minimum Equipment List
MFD	Multifunction Display
MHZ	Megahertz
MIC	Microphone
MIN	Minimum

MKR	Marker
MLS	Microwave Landing System
MM	Middle Marker
MMO	Maximum Mach Operating Speed
MNPS	Minimum Navigation Performance Specification
MOCA	Minimum Obstruction Clearance Altitude
MOD	Modify
MORA	Minimum Off Route Altitude
MSA	Minimum Safe Altitude
MSG	Message
MSGS RCVD	Messages Received
MSL	Mean Sea Level
MTRS	Meters
MUH	Minimum Use Height
N	
N	Normal
NADP	Noise Abatement Departure Procedures
NAR	North American Route
NAV	Navigation
NAV RAD	Navigation Radio
ND	Navigation Display
NGS	Nitrogen Generation System
NLT	No Later Than
NM	Nautical Mile(s)

NNC	Non-Normal Checklists
NNM	Non-Normal Maneuvers
NPS	Navigation Performance Scales
NORM	Normal
N1	Low Pressure Rotor Speed
N2	High Pressure Rotor Speed (Pratt & Whitney and GE engines) or Intermediate Pressure Rotor Speed (Rolls Royce Engines)
N3	High Pressure Rotor Speed (Rolls Royce Engines)
O	
OAP	Overhead Annunciator Panel (a.k.a. EOAP)
OAT	Outside Air Temperature
OCC	Operations Control Center
ODM	Operational Data Manual
OFST	Offset
OHU	Overhead Unit
OM	Outer Marker
OP	Open
OUTBD DSPL	Outboard Display
OVHD	Overhead
OVHT	Overheat
OVRD	Override
OVSPD	Overspeed
OXY or O2	Oxygen

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P	
PA	Passenger Address
PAPI	Precision Approach Path Indicator
PAR	Precision Approach Radar
PASS	Passenger
PBE	Protective Breathing Equipment
PCP	Pilot Call Panel
PDC	Pitch Data Computer or Performance Data Computer or Pre-Departure Clearance
PED	Personal Electronic Device
PERF	Performance
PERF INIT	Performance Initialization
PES	Pitch Enhancement System
PF	Pilot Flying
PFAF	Precision Final Approach Fix
PFC	Primary Flight Computer
PFD	Primary Flight Display
PI	Performance Inflight
PIP	Product Improvement Package
PLI	Pitch Limit Indicator
PM	Pilot Monitoring
PMC	Power Management Control

PNL	Panel
POS	Position
POS INIT	Position Initialization
POS REF	Position Reference
PPI	Planned Position Indicator
PPOS	Present Position
PRES or PRESS	Pressure
PREV	Previous
PRI	Primary
PRAIM	Predictive Receiver Autonomous Integrity Monitoring
PROG	Progress
PROX	Proximity
P/RST	Push To Reset
PRV	Pressure Regulating Valve
PSI	Pounds Per Square Inch
PTH	Path
PTT	Push To Talk
PTU	Power Transfer Unit
PWR	Power
PWS	Predictive Windshear System
Q	
Q	Quantity
QFE	Local Station Pressure
QNH	Altimeter Setting
QRH	Quick Reference Handbook
QTY	Quantity

R	
R	Right
RA	Radio Altitude or Resolution Advisory
RAD	Radio
RAT	Ram Air Temperature or Ram Air Turbine
RCL	Request for Clearance
RDMI	Radio Distance Magnetic Indicator
REC	Recorder
RECIR or RECIRC	Recirculation
REF	Reference
RET	Retract
REV	Reverse
RF	Radius-to-Fix (RF) Legs or Refill
RMI	Radio Magnetic Indicator
RON	Remain Overnight
RNAV or RNV	Area Navigation
RNP	Required Navigational Performance
RPL	Rudder Pressure Limiter
RPM	Revolutions Per Minute
RPR	Rudder Pressure Reducer
RSEP	Rudder System Enhancement Program
RST	Reset
RSVR	Reservoir
R/T	Radio Transmit

RTE	Route
RTO	Rejected Takeoff
RTP	Radio Tuning Panel
RUD	Rudder
RVR	Runway Visual Range
RVSM	Reduced Vertical Separation Minimum
S	
SAAAR	Special Aircraft and Aircrew Authorization Required
SAARU	Secondary Attitude Air Data Reference Unit
SAT	Static Air Temperature or Satellite
SB	Service Bulletin
S/B	Speedbrake
S/C	Step Climb
SDF	Simplified Directional Facility
SEI	Standby Engine Indicator
SEL	Select
SELCAL	Selective Calling
SENS	Sensitivity
SERV	Service
SG	Symbol Generator
SMGCS	Surface Movement and Guidance Control System
SPD	Speed
SPDBRK	Speedbrake
STA	Station
STAB	Stabilizer

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STAT	Status
STBY	Standby
STD	Standard
SYS	System
T	
T or TRU	True
T or TK or TRK	Track (to a Navaid)
TA	Traffic Advisory
TAA	Terminal Arrival Area
TACAN	Tactical Air Navigation
TAC	Thrust Asymmetry Compensation
TAI	Thermal Anti-Ice
TAS	True Airspeed
TAT	Total Air Temperature
T/C	Top of Climb
TCA	Terminal Control Area
TCAS	Traffic Alert and Collision Avoidance System
T/D	Top of Descent
TDZ	Touch Down Zone
TDZE	Touch Down Zone Elevation
TE	Trailing Edge
TEMP	Temperature
TERR	Terrain
TFC	Traffic
TFR	Transfer
THR	Throttle or Thrust

THR HOLD	Throttle Hold
TMC	Thrust Management Computer
TMI	Track Message Identifier
TMSP	Thrust Mode Select Panel
TO or T/O	Takeoff
TOC	Top of Climb
TOD	Top of Descent
TOPR	Takeoff Performance Request
TO/GA	Takeoff/Go-Around
TR	Traffic Resolution
TRK	Track
TRP	Thrust Rating Panel
TRU	Transformer Rectifier Unit
TURB	Turbine or Turbulence
U	
UNLKD	Unlocked
UNSCHD or UNSCHED	Unscheduled
UPR DSPL	Upper Display
U.S.	United States
USB	Upper Side Band
UTC	Universal Time Coordinated
UTIL	Utility
V	
VA	Design maneuvering speed
VAL	Valve

VANP	Vertical Actual Navigational Performance
VASI	Visual Approach Slope Indicator
VDP	Visual Descent Point
VEF	Speed at Engine Failure
VERT	Vertical
VFR	Visual Flight Rules
VG	Vertical Gyro
VHF	Very High Frequency
VIB	Vibration
VLV	Valve
VMC	Visual Meteorological Conditions
VMCA	Minimum Control Airspeed or Single Engine Minimum Control Airspeed
VMCG	Minimum Control Speed Ground
VMO	Maximum Operating Speed
V NAV or VNAV	Vertical Navigation
VOR	VHF Omnidirectional Range
VR	Rotation Speed
VREF	Reference Speed
VRNP	Vertical Required Navigation Performance
V/S	Vertical Speed
VSCF	Variable Speed Constant Frequency

VSD	Vertical Situation Display
VSI	Vertical Speed Indicator
VTK	Vertical Track
V1	Takeoff Decision Speed
V1 (MCG)	Minimum V1 for Control on the Ground
V2	Scheduled Takeoff Target Speed
W	
W	Warm
WATRS	Western Atlantic Route System
WDR	Weight Data Record
WGS-84	World Geodetic System of 1984
WHL	Wheel
WPT	Waypoint
WT	Weight
WXR	Weather Radar
X	
X-FEED	Crossfeed
XPDR or XPDR	Transponder
XTK	Cross Track

Revision Record

Revision Record

Chapter RR

Section RR

QRH Revision Transmittal Letter

To: All holders of Delta Air Lines, Inc. 777 Operations Manual, Quick Reference Handbook.

Subject: Operations Manual Revision.

This revision reflects the most current information available to Delta Air Lines, Inc. The following revision highlights explain changes in this revision. General information below explains the use of revision bars to identify new or revised information.

Revision Record

No.	Revision Date	Date Filed	No.	Revision Date	Date Filed
00	March 6, 2009		01	March 17, 2009	
02	June 1, 2009		03	August 1, 2009	
04	November 10, 2009		05	January 1, 2010	
06	February 8, 2010		07	October 10, 2010	
08	January 20, 2011		09	March 01, 2011	
10	July 2, 2012		11	November 7, 2012	
12	July 3, 2013		13	February 13, 2014	
14	September 25, 2014		15	July 30, 2015	
16	June 17, 2016				

General

Delta Air Lines, Inc. issues operations manual revisions to provide new or revised procedures and information. Formal revisions also incorporate appropriate information from previously issued flight crew operations manual bulletins.

The revision date is the approximate date the manual is distributed and considered current. The revision should be incorporated as soon as it is received, but may be incorporated as much as 21 days after the revision date.

Formal revisions include a Transmittal Letter, a new Revision Record, Revision Highlights, and a current List of Effective Pages. Use the information on the new Revision Record and List of Effective Pages to verify the operations manual content.

The record above should be completed by the person incorporating the revision into the manual.

Filing Instructions

Consult the QRH List of Effective Pages (RR.LEP). Pages identified with an asterisk (*) are either replacement pages or new (original) issue pages. Remove corresponding old pages and replace or add new pages. Remove pages that are marked DELETED; there are no replacement pages for deleted pages.

Revision Highlights

This section (RR.RR) replaces the existing section RR.RR in your manual.

Pages containing revised technical and non-technical revisions have revision bars associated with the changed text or illustration.

Repaginated material not containing technical revisions are identified only by a new page date.

Chapter NC - Normal Checklists

DEPARTURE RUNWAY CHANGE

NC.2 - Updated Flaps response to " ____, ____".

NC.2 - Updated Runway position step to "Runway position. . . ____, ____ C&F".

NC.2 - Changed Takeoff briefing step to captain's response.

BEFORE TAKEOFF

NC.3 - Updated Runway position step to "Runway position. . . ____, ____ C&F" and moved to first item in checklist.

NC.3 - Changed Takeoff briefing step to captain's response; no content change.

NC.3 - Moved Transponder step above Flight Attendants step.

SECURE

NC.5 - Moved Battery switch step to final item in checklist to match the Secure procedure and checklist in the Volume 1.

Revision Record

Chapter RR

QRH List of Effective Pages - FAA Approved

Section LEP

Page	Date
Quick Reference Handbook	
Quick Action Index	
* QA.Index.1-2	June 17, 2016
Annunciated Index (tab)	
* Annun.Index.1-10	June 17, 2016
Unannunciated Index (tab)	
* Unann.Index.1-2	June 17, 2016
Alphabetical Index (tab)	
* Alpha.Index.1-12	June 17, 2016
Normal Checklists (tab)	
* NC.1-6	June 17, 2016
0 Miscellaneous (tab)	
* 0.TOC.1-2	June 17, 2016
* 0.1-32	June 17, 2016
1 Airplane General, Emergency Equipment, Doors, Windows (tab)	
* 1.TOC.1-2	June 17, 2016
* 1.1-16	June 17, 2016
2 Air Systems (tab)	
* 2.TOC.1-2	June 17, 2016
* 2.1-22	June 17, 2016
3 Anti-Ice, Rain (tab)	
* 3.TOC.1-2	June 17, 2016
* 3.1-24	June 17, 2016
4 Automatic Flight (tab)	
* 4.TOC.1-2	June 17, 2016
* 4.1-2	June 17, 2016

Page	Date
5 Communications (tab)	
* 5.TOC.1-2	June 17, 2016
* 5.1-8	June 17, 2016
6 Electrical (tab)	
* 6.TOC.1-2	June 17, 2016
* 6.1-6	June 17, 2016
7 Engines, APU (tab)	
* 7.TOC.1-2	June 17, 2016
* 7.1-58	June 17, 2016
8 Fire Protection (tab)	
* 8.TOC.1-2	June 17, 2016
* 8.1-32	June 17, 2016
9 Flight Controls (tab)	
* 9.TOC.1-2	June 17, 2016
* 9.1-30	June 17, 2016
10 Flight Instruments, Displays (tab)	
* 10.TOC.1-2	June 17, 2016
* 10.1-12	June 17, 2016
11 Flight Management, Navigation (tab)	
* 11.TOC.1-2	June 17, 2016
* 11.1-12	June 17, 2016
12 Fuel (tab)	
* 12.TOC.1-2	June 17, 2016
* 12.1-32	June 17, 2016
13 Hydraulics (tab)	
* 13.TOC.1-2	June 17, 2016
* 13.1-28	June 17, 2016

* = Revised, Added, or Deleted

Page	Date
14 Landing Gear (tab)	
* 14.TOC.1-2	June 17, 2016
* 14.1-16	June 17, 2016
15 Warning Systems (tab)	
* 15.TOC.1-2	June 17, 2016
* 15.1-8	June 17, 2016
Non-Normal Operational Information (tab)	
* NNOI.0.1-2	June 17, 2016
* NNOI.1.1-4	June 17, 2016
Non-Normal Checklist Instructions (tab)	
* NNCI.TOC.0.1-2	June 17, 2016
* NNCI.1.1-12	June 17, 2016
Revision Record (tab)	
* RR.TOC.RR.1-2	June 17, 2016
* RR.ModID.1-2	June 17, 2016
* RR.Intro.1-6	June 17, 2016
* RR.Abbrev.1-12	June 17, 2016
* RR.RR.1-2	June 17, 2016
* RR.LEP.1-2	June 17, 2016
Evacuation	
* Back Cover.1-2	June 17, 2016

* = Revised, Added, or Deleted

**Evacuation Checklist is on the
reverse side of this page.**

Evacuation

Condition: An evacuation is needed.

- 1 Parking brake Set
- 2 Notify flight attendants "EASY VICTOR" three times.
- 3 OUTFLOW VALVE switches (both) MAN
- 4 OUTFLOW VALVE MANUAL switches (both) Hold in OPEN until the outflow valve indications show fully open to depressurize the airplane
- 5 FUEL CONTROL switches (both) CUTOFF
- 6 Notify flight attendants "THIS IS THE CAPTAIN. EVACUATE. EVACUATE."
- 7 Advise the tower.
- 8 Engine fire switches (both) Pull
- 9 APU fire switch Override and pull
- 10 **If** an engine or APU fire warning occurs:
 Related fire switch Rotate to the stop and hold for 1 second

