



767-300

Quick Reference Handbook

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Non-Normal Checklists

Chapter NNC

Miscellaneous

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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)

CPDLC

ADS

SATCOM

ACARS

USCG HF (4125kHz)

Navy HF (2182kHz)

State 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** use autobrakes.

▼ Continued on next page ▼

▼ Ditching continued ▼

- 6 Do **not** arm speedbrake lever.
- 7 Use flaps 30 and VREF 30 for landing.
- 8 **Checklist Complete Except Deferred Items**

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
Minimums	____, ____, xckd	C&F
Landing data . . .	flaps 30, Vref 30, xckd	C&F
Approach briefing	complete	PM
Autobrakes	OFF	PM
Seat belt signs	ON	PM
Fuel crossfeed (ETOPS)	cycled	PM
Pressurization panel	set	PM
Recall	ckd	PM

Approach Checklist

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

▼ Continued on next page ▼

▼ Ditching Preparation continued ▼

When below 5,000 feet

GND PROX/CONFIG GEAR OVRD
switch (as installed) OVRD

GND PROX GEAR OVRD
switch (as installed) OVRD

GND PROX TERR OVRD switch
(as installed) OVRD

PACK control selectors (both) OFF

Cabin altitude MODE SELECT MAN

CABIN ALTITUDE
MANUAL control Hold in DESCEND until
the outflow valve indication
shows fully closed

PASS SIGNS selectors ON

Do **not** accomplish the following checklists:

PACK OFF

CABIN AUTOMATIC INOPERATIVE

Landing Checklist

Landing gear **UP** C&F

Flaps **30, 30** C&F

Speedbrake **DOWN** PM

▼ Continued on next page ▼

▼ Ditching Preparation continued ▼

At 1,000 feet

Advise crew of imminent touchdown.

Passenger cabin **Secure**

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

Caution! If engines not operating, maintain a minimum of 130 KIAS for flight controls.

After ditching

Notify the flight attendants "EASY VICTOR" three times.

FUEL CONTROL switches (both) CUT OFF

Notify the flight attendants:

"THIS IS THE CAPTAIN EVACUATE, EVACUATE."

Engine and APU

fire switches (all) Override and pull



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 A/T ARM SWITCH. OFF
- 2 Continuous thrust. Set
- 3 RUDDER TRIM as required
Set in the direction of the operating engine
- 4 MCP ALTITUDE. Set
Set below EO CRZ ALT - Approx. FL200 may be used.
- 5 FMS CRZ page Select
- 6 ENG OUT prompt Select
- 7 EXEC key. Select
With VNAV engaged EO Drift Down will commence.



Additional Information

For oceanic driftdown, accomplish the OCEANIC DRIFTDOWN CHECKLIST on the Quick Reference Card in lieu of this checklist.

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 HSI, 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 (if landing off airport or at an airport not in the database)
- EMER LIGHTS - ON
- When below 10,000 feet:

Cabin altitude MODE SELECT MAN

Use momentary actuation of the cabin altitude manual control to avoid large and rapid pressurization changes.



CABIN ALTITUDE

MANUAL control. Move to CLIMB until
the outflow valve indication
shows fully open 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 required

Note: Refer to the Overweight Landing Considerations, in this section, as time and conditions allow.



Overweight Landing Considerations

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

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.

▼ Continued on next page ▼

▼ Overweight Landing Considerations continued ▼

- 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 table in the ODM.
- 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.

▼ Continued on next page ▼

▼ Overweight Landing Considerations continued ▼**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.

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:

- 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.



Tail Strike

Condition: A tail strike is suspected or confirmed.

Caution! Continued pressurization of the airplane can cause further structural damage.

1 Cabin altitude MODE SELECT MAN

Use momentary actuation of the cabin altitude manual control to avoid large and rapid pressurization changes.

2  CABIN ALTITUDE
MANUAL control. Move to CLIMB until
the outflow valve indication
shows fully open to
depressurize the airplane

3 Level off at the lowest safe altitude.

4 Plan to land at the nearest suitable airport.

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

CABIN AUTOMATIC INOPERATIVE



Volcanic Ash

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. Consider a descending turn.

- 1 Don oxygen masks, as needed.
- 2 Establish crew communications, as needed.
- 3 Do not deploy passenger oxygen if cabin pressure is normal.
- 4 A/T ARM switch OFF
- 5  **If conditions allow, run the engines at idle**
Thrust levers (both). Idle
This reduces possible engine damage or flameout, or both, by decreasing EGT.
- 6 ENG START selectors (both). FLT
- 7 RECIRC FAN switches (both) Off
- 8 ENG ANTI ICE selectors/switches (both) ON
- 9 WING ANTI ICE selector AUTO/ON

▼ Continued on next page ▼

▼ Volcanic Ash continued ▼

10 Choose one:

◆ APU is **not available**:

▶▶ **Go to step 12**

◆ APU is **available**:

▶▶ **Go to step 11**

11 APU selector START, then ON

12 Engines may accelerate to idle very slowly,
especially at high altitude.

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

- engine malfunctions, increasing EGT, engine stall or flameout
- decrease or loss of airspeed indications
- equipment overheat or smoke indications
- cargo fire indications

13 Engines can accelerate to idle very slowly, especially at high altitude. If N2 is steadily increasing, and EGT stays within limits, do not interrupt the start.

▼ Continued on next page ▼

▼ Volcanic Ash continued ▼

14 Choose one:

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

▶▶ **Go to the Dual Engine Failure checklist on page 7.2**



◆ Engines **not** flamed out or stalled **and** EGT **stabilized or decreasing:**

▶▶ **Go to step 15**

15 Plan to land at the nearest suitable airport.

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

RECIRCULATION FAN



Intentionally
Blank



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Intentionally
Blank

**ACCESS
DOORS**

ACCESS DOOR(S)

Messages: ACCESS DOORS
E/E ACCESS DOOR FWD ACCESS DOOR

Condition: One or more access doors are not closed and secure.

1 Choose one:

◆ Pressurization is **normal**:

The door is in a safe configuration.
Continue normal operation.



◆ Pressurization is **not** normal:

▶▶ **Go to step 2**

2 PASS SIGNS selectors. ON

3 LDG ALT selector Set 9,500 feet

4 Choose one:

◆ Occurrence is on **takeoff or initial climb**:

Do **not** exceed 10,000 feet.

▶▶ **Go to step 5**

◆ Occurrence is in **climb, cruise, or descent**:

Descend to lowest safe altitude or 14,000 feet, whichever is higher.

▶▶ **Go to step 5**

5 **Checklist Complete Except Deferred Items**

▼ Continued on next page ▼

▼ ACCESS DOOR(S) continued ▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
■ Minimums	____,____, xckd	C&F
■ Landing data	____,____, xckd	C&F
■ Approach briefing	complete	PM
■ Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Fuel crossfeed (ETOPS)	cycled	PM
Pressurization panel . . .	LDG ALT 9,500 ft	PM
Recall	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



**AUTO
UNLK**

AUTOMATIC UNLOCK

Condition: The flight deck door AUTO UNLK light illuminated indicates the correct emergency access code has been entered and the flight deck door is programmed to automatically unlock after a time delay.

- 1 FLIGHT DECK DOOR LOCK selector. DENY
rotate and hold
for 1 second



CARGO DOORS

**CARGO DOOR(S)
[767-300]**

121, 124-139, 1401-1404

Messages: CARGO DOORS BULK CARGO DOOR
 AFT CARGO DOOR FWD CARGO DOOR

Condition: One or more cargo doors are not closed and secure.

1 Choose one:

◆ Pressurization is **normal**:

The door is in a safe configuration.
Continue normal operation.



◆ Pressurization is **not** normal:

▶▶ **Go to step 2**

- 2 PASS SIGNS selectors ON
- 3 LDG ALT selector Set 9,500 feet

▼ Continued on next page ▼

▼ CARGO DOOR(S) continued ▼

4 Choose one:

◆ Occurrence is on **takeoff or initial climb**:

Do **not** exceed 10,000 feet.

▶▶ **Go to step 5**

◆ Occurrence is in **climb, cruise, or descent**:

Descend to lowest safe altitude **or** 14,000 feet, whichever is higher.

▶▶ **Go to step 5**

5 **Checklist Complete Except Deferred Items**

▼ Continued on next page ▼

▼ CARGO DOOR(S) continued ▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
■ Minimums	____,____, xckd	C&F
■ Landing data	____,____, xckd	C&F
■ Approach briefing	complete	PM
■ Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Fuel crossfeed (ETOPS)	cycled	PM
Pressurization panel . . .	LDG ALT 9,500 ft	PM
Recall	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



CARGO
DOORS

**CARGO DOOR(S)
[767-300ER]**

171-199, 1200-1201, 1501-1506, 1521, 1601-1708

Messages: CARGO DOORS BULK CARGO DOOR
AFT CARGO DOOR FWD CARGO DOOR

Condition: One or more cargo doors are not closed and secure.

1 Choose one:

◆ FWD CARGO DOOR message is **shown**:

▶▶ **Go to step 3**

◆ FWD CARGO DOOR message is **not** shown:

▶▶ **Go to step 2**

2 Choose one:

◆ Pressurization is **normal**:

The aft and bulk cargo doors are in a safe configuration. Continue normal operation.



◆ Pressurization is **not normal**:

▶▶ **Go to step 3**

3 PASS SIGNS selectors. ON

4 LDG ALT selector Set 9,500 feet

▼ Continued on next page ▼

▼ CARGO DOOR(S) continued ▼

5 Choose one:

◆ Occurrence is on **takeoff or initial climb**:

Do not exceed 10,000 feet.

▶▶ **Go to step 6**

◆ Occurrence is in **climb, cruise, or descent**:

Descend to lowest safe altitude or 14,000 feet, whichever is higher.

▶▶ **Go to step 6**

6 **Checklist Complete Except Deferred Items**

▼ Continued on next page ▼

▼ CARGO DOOR(S) continued ▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
■ Minimums	____,____, xckd	C&F
■ Landing data	____,____, xckd	C&F
■ Approach briefing	complete	PM
■ Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Fuel crossfeed (ETOPS)	cycled	PM
Pressurization panel . . .	LDG ALT 9,500 ft	PM
Recall	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



EMER
DOORS

EMERGENCY DOOR(S)

Messages: EMER DOORS
L EMER DOOR R EMER DOOR
L AFT EMER DOOR R AFT EMER DOOR
L FWD EMER DOOR R FWD EMER DOOR

Condition: One or more emergency doors are not closed and secure.

- 1 Choose one:
- ◆ Pressurization is **normal**:
The emergency door is in a safe configuration. Continue normal operation.
▶▶ **Go to step 2**
 - ◆ Pressurization is **not** normal:
▶▶ **Go to step 3**
- 2 Choose one:
- ◆ WING SLIDE deployment is **suspected**:
▶▶ **Go to the WING SLIDE checklist on page 1.22**

■ ■ ■ ■
 - ◆ WING SLIDE deployment is **not** suspected:

■ ■ ■ ■
- 3 PASS SIGNS selectors ON
- 4 LDG ALT selector Set 9,500 feet

▼ Continued on next page ▼

▼ EMERGENCY DOOR(S) continued ▼

5 Choose one:

◆ Occurrence is on **takeoff or initial climb**:

Do not exceed 10,000 feet.

▶▶ **Go to step 6**

◆ Occurrence is in **climb, cruise, or descent**:

Descend to lowest safe altitude or 14,000 feet, whichever is higher.

▶▶ **Go to step 6**

6 Choose one:

◆ WING SLIDE deployment is **suspected**:

▶▶ **Go to the WING SLIDE checklist on page 1.22**



◆ WING SLIDE deployment is **not** suspected

▶▶ **Go to step 7**

7 **Checklist Complete Except Deferred Items**

▼ Continued on next page ▼

▼ **EMERGENCY DOOR(S) continued** ▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
■ Minimums	____,____, xckd	C&F
■ Landing data	____,____, xckd	C&F
■ Approach briefing	complete	PM
■ Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Fuel crossfeed (ETOPS)	cycled	PM
Pressurization panel . . .	LDG ALT 9,500 ft	PM
Recall	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



UNARMED**EMERGENCY LIGHTS**

Messages: EMER LIGHTS

Condition: The emergency lights switch is not ARMED.



ENTRY DOORS

ENTRY DOOR(S)

Messages: L ENTRY DOORS R ENTRY DOORS
 L AFT ENT DOOR R AFT ENT DOOR
 L FWD ENT DOOR R FWD ENT DOOR

Condition: One or more entry doors are not closed and secure.

- 1 Choose one:
- ◆ Pressurization is **normal**:
- The door is in a safe configuration.
Continue normal operation.
- ■ ■ ■
- ◆ Pressurization is **not** normal:
- ▶▶ **Go to step 2**
- 2 PASS SIGNS selectors ON
- 3 LDG ALT selector Set 9,500 feet
- 4 Choose one:
- ◆ Occurrence is on **takeoff or initial climb**:
- Do not exceed 10,000 feet.
- ▶▶ **Go to step 5**
- ◆ Occurrence is in **climb, cruise, or descent**:
- Descend to lowest safe altitude or 14,000 feet, whichever is higher.
- ▶▶ **Go to step 5**

▼ ENTRY DOOR(S) continued ▼

5 Checklist Complete Except Deferred Items

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
■ Minimums	____,____, xckd	C&F
■ Landing data	____,____, xckd	C&F
■ Approach briefing	complete	PM
■ Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Fuel crossfeed (ETOPS)	cycled	PM
Pressurization panel . . .	LDG ALT 9,500 ft	PM
Recall	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



**LOCK
FAIL****LOCK FAIL****[AFM]**

Condition: The flight deck door LOCK FAIL light illuminated indicates the flight deck door lock has failed.

1 Insert mechanical latch pin.

Note: A second crewmember is required to secure the flight deck door when a crewmember leaves the flight deck. Reference the FOM for flight deck entry/exit procedures.



Oxygen Pressure Low - Crew

Condition: The flight crew oxygen is 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 or PBEs, a lack of communication capability may cause flight crew and ATC coordination problems.

- 2 Position a cabin portable oxygen bottle and a PBE near each pilot.
- 3 Consider a descent to 10,000 feet if conditions permit.
- 4 Review Rapid Depressurization procedures.

**ON**

PASSENGER OXYGEN ON

Messages: PASS OXYGEN ON

Condition: The passenger oxygen system is on.



Window Damage

Condition: A 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 curvatures or bowing of windows)

1 Choose one:

◆ Window is **arcing, shattered, or cracked**:

WINDOW HEAT switch
(affected window) Off

Do **not** accomplish the following checklist:
WINDOW (HEAT)

▶▶ **Go to step 2**

◆ Window is **not** arcing, shattered, or cracked:

▶▶▶ **Go to step 2**

▼ Continued on next page ▼

▼ Window Damage continued ▼

2 Choose one:

◆ Damaged window is **deformed** or an **air leak** is **observed**:

Deformed is defined as an additional outward curvature or bowing of window.

►► **Go to step 3**

◆ Damaged window is **not** deformed and an air leak is **not** observed:



3 Plan to land at the nearest suitable airport.

4 Choose one:

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

Descend to lowest safe altitude or 10,000 feet, whichever is higher. This minimizes forces on the window.

►► **Go to step 5**

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

►► **Go to step 5**

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



Window Open

Condition: A side window opens during takeoff or in flight.

- 1 Maintain the maneuvering speed for 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.

Note: It may be necessary to completely open the window prior to closing in order to reset the locking mechanism.

- 4 Window crank Rotate
Crank the window to the full closed position (the WINDOW NOT CLOSED placard is not visible and, the link arm assembly is approximately perpendicular to the lower track).
- 5 Window lock lever. Rotate
Rotate the window lock lever forward to the locked position.
Pull on lock lever without depressing release button to ensure lock lever is secure.
Ensure the indicator at the top of window reads CLOSED.

▼ Continued on next page ▼

▼ Window Open continued ▼

6 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.



**EMER
DOORS****WING SLIDE**

Messages: EMER DOORS

L WING SLIDE

R WING SLIDE

Condition: One or both wing slide doors are not closed and secure.

1 Choose one:

◆ Visual or aural observation does **not confirm** that the overwing ramp slide is deployed and is still attached to the airplane:



◆ Visual or aural observation **confirms** that the overwing ramp slide is deployed and is still attached to the airplane:

►► **Go to step 2**

- 2 Minor damage to the trailing edge flap, aft fuselage, and empennage may occur.
- 3 **If** needed to minimize slide oscillations and subsequent airplane damage:
Operate at a reduced airspeed.
- 4 If performance allows, use Flaps 20 and VREF 20 for landing.

▼ Continued on next page ▼

▼ WING SLIDE continued ▼

5 Choose one:

◆ Flaps 20 and VREF 20 **can** be used for landing:
GND PROX FLAP OVRD switch OVRD

▶▶ **Go to step 6**

◆ Flaps 20 and VREF 20 **cannot** be used for landing:

Use normal flaps and speeds for landing.



6 Checklist Complete Except Deferred Items

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
■ Minimums	____,____, xckd	C&F
■ Landing data . .	flaps 20, Vref 20, xckd	C&F
■ Approach briefing	complete	PM
■ Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Fuel crossfeed (ETOPS)	cycled	PM
Pressurization panel	.set	PM
Recall	ckd	PM

▼ Continued on next page ▼

▼WING SLIDE 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, 20	C&F
Speedbrake	ARMED	PM



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CABIN
ALT

**CABIN ALTITUDE
or
Rapid Depressurization**

CABIN
ALTITUDE

Messages: CABIN ALTITUDE

Condition: A cabin altitude exceedance occurs.

- 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 FLCH.

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 OXY switch Push and hold
for 1 second

▼ Continued on next page ▼

▼ CABIN ALTITUDE or Rapid Depressurization continued ▼

- 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.

172, 174, 179, 185-187, 191-192, 194, 1607-1613

Caution! Speedbrakes will autostow to the 50% flight detent if airspeed exceeds 320 knots. Do not override autostow function unless airspeed is less than 315 knots.



V
A
L
V
E

APU BLEED VALVE

Messages: APU BLEED VAL

Condition: The APU bleed valve is not in the commanded position.



DUCT
LEAK

BLEED DUCT LEAK [Non ETOPS]

121, 124-139

Messages: L BLD DUCT LEAK R BLD DUCT LEAK

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

- 1 ENG bleed air switch (affected side) Off
- 2 PACK control selector (affected side) Off
- 3 ISLN switch (affected side) Off
- 4 Choose one:
 - ◆ DUCT LEAK light is **illuminated**:
 - ▶▶ **Go to step 5**
 - ◆ DUCT LEAK light is **not illuminated**:
 - ▶▶ **Go to step 7**
- 5 A/T ARM switch OFF
- 6 Thrust lever (affected side) . . . Retard slowly until
DUCT LEAK light is no
longer illuminated or
thrust lever is closed

▼ Continued on next page ▼

▼ BLEED DUCT LEAK continued ▼

Thrust may be restored if light remains illuminated at idle.

- 7 WING ANTI-ICE switch Off

This prevents possible asymmetrical ice buildup on the wings.

- 8 Avoid icing conditions.

Caution! Flight beyond six hours with a DUCT LEAK light illuminated may result in structural damage.

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

ENGINE BLEED OFF

PACK OFF



DUCT
LEAK

BLEED DUCT LEAK [ETOPS]

171-199, 1200-1201, 1401-1404, 1501-1506, 1521, 1601-1708

Messages: L BLD DUCT LEAK R BLD DUCT LEAK

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

- 1 ENG bleed air switch (affected side) Off
- 2 PACK control selector (affected side) Off
- 3 ISLN switch (affected side) Off
- 4 WING ANTI-ICE selector / switch OFF / Off

This prevents possible asymmetrical ice buildup on the wings.

- 5 Avoid icing conditions.

Caution! Flight beyond six hours with a DUCT LEAK light illuminated may result in structural damage.

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

ENGINE BLEED OFF

PACK OFF



VALVE

BLEED ISOLATION VALVE

Messages: C BLD ISLN VAL L BLD ISLN VAL
 R BLD ISLN VAL

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



DL
UE
CA
TK

BODY DUCT LEAK

Messages: BODY DUCT LEAK

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

- 1 C ISLN switch. Off
- 2 APU bleed air switch Off

Note: ADP is inoperative.

Inoperative Items

- Aft cargo heat**
- Bulk cargo heat**
- Air-driven demand pump**
Additional time will be required for landing gear retraction and flap extension or retraction.

▼ Continued on next page ▼

▼ BODY DUCT LEAK continued ▼

3 Choose one:

◆ DUCT LEAK light **extinguishes**:

▶▶ **Go to step 4**

◆ DUCT LEAK light **stays illuminated**:

▶▶ **Go to step 5**

4 Choose one:

◆ L and R Duct PRESS are **at or above** 10 PSI:

■ ■ ■ ■

◆ L and R Duct pressure is **below** 10 PSI:

▶▶ **Go to step 5**

5 ENG bleed air switch (L or R) Off

This step decreases the amount of bleed air entering the body duct.

6 PACK control selector (affected side) Off

7 WING ANTI ICE selector / switch OFF / Off

This prevents possible asymmetrical ice buildup on the wings.

8 Avoid icing conditions.

Caution! Flight beyond six hours may result in structural damage.

▼ Continued on next page ▼

▼ BODY DUCT LEAK continued ▼

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

ENGINE BLEED OFF

PACK OFF



AUTO INOP

**CABIN AUTOMATIC
INOPERATIVE**

Messages: CABIN AUTO INOP

Condition: One of these occurs:

- The automatic pressurization control is failed
- The cabin altitude mode selector is in manual

1 CABIN ALTITUDE MODE SELECT MAN

Use momentary actuation of the cabin altitude manual control to avoid large and rapid pressurization changes.

2  CABIN ALTITUDE

MANUAL control Move to CLIMB
or DESCEND
as needed to control
cabin rate and altitude

Note: 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
260	2000
300	4000
350	6000
400 and above	8000

3 **Checklist Complete Except Deferred Items**

▼ Continued on next page ▼

▼ CABIN AUTOMATIC INOPERATIVE continued ▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
■ Minimums	____,____, xckd	C&F
■ Landing data	____, ____ , xckd	C&F
■ Approach briefing	complete	PM
■ Autobrake	as reqd	PM
Seat belt signs	ON	PM
Fuel crossfeed (ETOPS)	cycled	PM
Pressurization panel	set	PM
Recall	ckd	PM

Approach Checklist

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

▼ Continued on next page ▼

▼ CABIN AUTOMATIC INOPERATIVE continued ▼

When at pattern altitude

 Use momentary actuation of the cabin altitude manual control to avoid large and rapid pressurization changes.

CABIN ALTITUDE

MANUAL control Move to CLIMB until the outflow valve indication shows fully open to depressurize the airplane

Landing Checklist

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



INOP

CABIN TEMPERATURE

Messages: AFT CABIN TEMP FWD CABIN TEMP
 MID CABIN TEMP

Condition: One or more of these occur:

- A fault in the zone temperature controller
- The compartment temperature control is off
- The trim air switch is off

- 1 EICAS EVENT RCD switch Push
- 2 CAB COMPT TEMP control
(affected compartment) OFF
- 3 **If** affected compartment temperature continues to be too warm or too cold:

TRIM AIR switch Off

This schedules the operating pack(s) to a programmed temperature.

Do **not** accomplish the following checklist:

TRIM AIR

■ ■ ■ ■

OVHT

CARGO OVERHEAT

Messages: AFT CARGO OVHT BULK CARGO OVHT
FWD CARGO OVHT

Condition: A cargo compartment overheat occurs.

1 Choose one:

◆ Cargo heat is **needed**:

■ ■ ■ ■

◆ Cargo heat is **not needed**:

CARGO HEAT switch. Off

■ ■ ■ ■

OFF

ENGINE BLEED OFF

Messages: L ENG BLEED OFF R ENG BLEED OFF

Condition: The engine bleed valve closed because of a system fault.

- 1 EICAS EVENT RCD switch Push
- 2 Attempt to reset engine bleed.
 ENG bleed air switch
 (affected side) Off, then On
- 3 Choose one:
 - ◆ Engine bleed air OFF light **extinguishes:**
 ■ ■ ■ ■
 - ◆ Engine bleed air OFF light **stays illuminated or illuminates again:**
 ▶▶ **Go to step 4**
- 4 WING ANTI ICE selector / switch OFF/off

▼ Continued on next page ▼

▼ ENGINE BLEED OFF continued ▼

1501-1506, 1521, 1601-1613, 1701-1708

- 5 Thrust reverser on the affected side may be inoperative.
- 6 PACK control selector (affected side) OFF
- 7 **If** wing anti-ice is needed:
ISLN switch (affected side) On
WING ANTI-ICE selector/switch AUTO/ON
When wing anti-ice is no longer needed:
WING ANTI-ICE
selector/switch OFF/Off
L and R ISLN switches Off

- 8 Do **not** accomplish the following checklist:
PACK OFF



OVHT

ENGINE BLEED OVERHEAT

171-199, 1200-1201, 1401-1404, 1501-1506, 1521, 1601-1708

Messages: L ENG BLD OVHT R ENG BLD OVHT
Condition: An engine bleed air overheat occurs.

- 1 EICAS EVENT RCD switch Push
- 2 Attempt to reset engine bleed.
 ENG bleed air switch
 (affected side) Off, then On
- 3 **After** thrust is reduced for cruise:
 ENG bleed air switch (affected side) On
- 4 Choose one:
 - ◆OVHT light **extinguishes:**
 ■ ■ ■ ■
 - ◆OVHT light **stays illuminated or illuminates again:**
 ▶▶ **Go to step 5**
- 5 ENG bleed air switch (affected side) Off
- 6 WING ANTI ICE selector / switch OFF/Off

▼ Continued on next page ▼

▼ ENGINE BLEED OVERHEAT continued ▼

7 **If** wing anti-ice needed:

PACK control selector (affected side) OFF

ISLN switch (affected side) On

WING ANTI ICE selector / switch . . . AUTO/ON

When wing anti-ice no longer needed:

WING ANTI ICE

selector / switch OFF/Off

L and R ISLN switches Off

1501-1506, 1521, 1601-1708

8 Thrust reverser on the affected side is inoperative.

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

ENGINE BLEED OFF

PACK OFF



BLEED

ENGINE BLEED VALVE

121, 124-139

Messages: L ENG BLEED VAL R ENG BLEED VAL
Condition: The high pressure bleed valve failed to close.

- 1 EICAS EVENT RCD switch Push
- 2 Attempt to reset engine bleed.
 - ENG bleed air switch
(affected side) Off, then On
- 3 PACK control selector (affected side). Off
- 4 Choose one:
 - ◆ Engine BLEED light **extinguishes:**

■ ■ ■ ■
 - ◆ Engine BLEED light **stays illuminated or illuminates again:**
 - ▶▶ **Go to step 5**
- 5 ENG bleed air switch (affected side) Off
- 6 **If** wing anti-ice needed:
 - ISLN switch (affected side) On
 - When** wing anti-ice no longer needed:
 - L and R ISLN switches Off

▼ Continued on next page ▼

▼ ENGINE BLEED VALVE continued ▼

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

ENGINE BLEED OFF

PACK OFF



HI STAGE

ENGINE HIGH STAGE

121, 124-139

Messages: L ENG HI STAGE R ENG HI STAGE

Condition: An engine bleed air overheat occurs.

- 1 ENG bleed air switch (affected side) Off
- 2 PACK control selector (affected side). Off
- 3 **After** thrust is reduced for cruise:
 ENG bleed air switch (affected side) On
 PACK control selector (affected side) On
- 4 Choose one:
 ◆ HI STAGE light **extinguishes:**
 ■ ■ ■ ■
 ◆ HI STAGE light **stays illuminated or illuminates again:**
 ▶▶ **Go to step 5**
- 5 ENG bleed air switch (affected side) Off
- 6 PACK control selector (affected side). Off
- 7 **If** wing anti-ice needed:
 ISLN switch (affected side) On
 When wing anti-ice no longer needed:
 L and R ISLN switches Off

▼ Continued on next page ▼

▼ ENGINE HIGH STAGE continued ▼

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

ENGINE BLEED OFF

PACK OFF



BLEED

ENGINE HPSOV

171-199, 1200-1201, 1401-1404, 1501-1506, 1521, 1601-1708

Messages: L ENG HPSOV

R ENG HPSOV

Condition: The high pressure shutoff valve failed to close.

1 Attempt to reset engine bleed.

ENG bleed air switch

(affected side) Off, then On

2 PACK control selector (affected side) Off

3 Choose one:

◆ Engine BLEED light **extinguishes:**



◆ Engine BLEED light **stays illuminated or illuminates again:**

►► **Go to step 4**

4 ENG bleed air switch (affected side) Off

5 WING ANTI ICE selector / switch OFF/Off

▼ Continued on next page ▼

▼ **ENGINE HPSOV continued** ▼

- 6 **If** wing anti-ice needed:
- ISLN switch (affected side) On
- WING ANTI ICE selector / switch . . . AUTO/ON
- When** wing anti-ice no longer needed:
- WING ANTI ICE
selector / switch OFF/Off
- L and R ISLN switches Off
- 7 Do **not** accomplish the following checklists:
- ENGINE BLEED OFF
- PACK OFF



BLEED

ENGINE PRV

171-199, 1200-1201, 1401-1404, 1501-1506, 1521, 1601-1708

Messages: L ENG PRV

R ENG PRV

Condition: The pressure regulating valve failed to close.

1 Attempt to reset engine bleed.

ENG bleed air switch

(affected side) Off, then On

2 PACK control selector (affected side) Off

3 Choose one:

◆ Engine BLEED light **extinguishes:**



◆ Engine BLEED light **stays illuminated or illuminates again:**

►► **Go to step 4**

4 ENG bleed air switch (affected side) Off

5 WING ANTI ICE selector / switch OFF/Off

▼ Continued on next page ▼

▼ ENGINE PRV continued ▼

- 6 **If** wing anti-ice needed:
- ISLN switch (affected side) On
- WING ANTI ICE selector / switch . . . AUTO/ON
- When** wing anti-ice no longer needed:
- WING ANTI ICE
selector / switch OFF/Off
- L and R ISLN switches Off
- 7 Do **not** accomplish the following checklists:
- ENGINE BLEED OFF
- PACK OFF



**NO
COOLING****EQUIPMENT COOLING**

Messages: FWD EQPT COOLING

Condition: The differential pressure for reverse flow cooling is insufficient.

- 1 Avionics and electronic equipment and displays, not powered by standby buses, are subject to imminent failure.
- 2 Avionics and electrical equipment on standby buses are reliable for 90 minutes. Continued flight beyond 90 minutes can result in loss of essential avionics and electrical equipment.



OVHT

EQUIPMENT OVERHEAT

Messages: FWD EQPT OVHT

Condition: One or more of these occur:

- Airflow is insufficient
- An overheat is sensed

- 1 EQUIP COOLING selector STBY
- 2 **Wait** 5 minutes.

After STBY is selected, the OVHT light and FWD EQPT OVHT message are inhibited for 5 minutes.

- 3 Choose one:
- ◆OVHT light **stays extinguished:**
- ■ ■ ■

◆OVHT light **illuminates again:**

▶▶ **Go to step 4**

- 4 Choose one:
- ◆On the **ground:**
- Airflow is insufficient and may result in the loss of flight instruments.
- ■ ■ ■

◆In **flight:**

EQUIP COOLING selector OVRD

▶▶ **Go to step 5**

▼ Continued on next page ▼

▼ EQUIPMENT OVERHEAT continued ▼

5 **Wait** 30 minutes.

6 EQUIP COOLING selector. AUTO

7 Choose one:

◆ OVHT light is **extinguished**:



◆ OVHT light is **illuminated**:

EQUIP COOLING selector STBY

►► **Go to step 8**

8 **Wait** 5 minutes.

After STBY is selected, the OVHT light and FWD EQPT OVHT message are inhibited for 5 minutes.

9 Choose one:

◆ OVHT light **stays extinguished**:



◆ OVHT light is **illuminated**:

EQUIP COOLING selector OVRD



VALVE

EQUIPMENT VALVE

Messages: FWD EQPT VAL

Condition: An equipment cooling valve is not in the commanded position.

- 1 EQUIP COOLING selector. STBY
- 2 **Wait** 30 seconds.
- 3 Choose one:
 - ◆ VALVE light **extinguishes:**

■ ■ ■ ■
 - ◆ VALVE light **stays illuminated:**

Pressurization **cannot** be ensured.

■ ■ ■ ■

INOP

FLIGHT DECK TEMPERATURE

Messages: FLT DECK TEMP

Condition: One or more of these occur:

- A fault in the zone temperature controller
- The trim air switch is off

- 1 EICAS EVENT RCD switch Push
- 2 FLT DK COMPT TEMP control Use MAN to
position trim air
valve as needed
- 3 **If** affected compartment temperature continues to
be too warm or too cold:

TRIM AIR switch. Off

This schedules the operating pack(s) to a
programmed temperature.

Do **not** accomplish the following checklist:

TRIM AIR



**PACK
OFF**

PACK OFF

Messages: L PACK OFF

R PACK OFF

Condition: A pack shutdown occurs.

1 EICAS EVENT RCD switch Push

2 Choose one:

◆ **A single** PACK OFF light is **illuminated**:

Continue normal operation.



◆ **Both** PACK OFF lights are illuminated:

▶▶ **Go to step 3**

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

4 To descend:

Select lower altitude on MCP and select FLCH.

Move the thrust levers to idle.

Extend the speedbrakes.

Descend at VMO/MMO.

▼ Continued on next page ▼

▼ PACK OFF continued ▼

172, 174, 179, 185-187, 191-192, 194, 1607-1613

Caution! Speedbrakes will autostow to the 50% flight detent if airspeed exceeds 320 knots. Do not override autostow function unless airspeed is less than 315 knots.

5 Consider an alternate engine bleed air source, or if below 17,000 feet the APU bleed air source, if dual PACK OFF condition is a result of engine bleed air loss not caused by a duct leak or engine start valve failure.

6 **Wait** until level off.

7 Choose one:

◆ **Either or both** PACK OFF lights **extinguish:**



◆ **Both** PACK OFF lights **stay illuminated:**

►► **Go to step 8**

8 Maintain airspeed at or less than 290 knots.

▼ Continued on next page ▼

▼ PACK OFF continued ▼

- 9 Choose one:
- ◆ Airplane altitude is at or below 10,000 feet:
 - ▶▶ **Go to step 10**
 - ◆ Airplane altitude is above 10,000 feet:
 - Don the oxygen masks.
 - Establish crew communications.
 - ▶▶ **Go to step 10**
- 10 CABIN ALTITUDE MODE SELECT MAN
- Use momentary actuation of the cabin altitude manual control to avoid large and rapid pressurization changes.
- 11  CABIN ALTITUDE
MANUAL control. Move to CLIMB until the
outflow valve indication
shows fully open
- 12 SHOULDER HEATERS and
FOOT HEATERS switches (all) OFF
- 13 UTILITY BUS switches (Both) Off
- 14 Minimize flight deck lighting intensity.
- 15 Open the flight deck door, if necessary.
- 16 Install flight deck sunvisors during daylight
operations.

▼ Continued on next page ▼

▼ PACK OFF continued ▼

17 Instruct flight attendants to:

Select all galley equipment off.

Select in flight entertainment main power off.

Reduce cabin lighting to minimum needed.

Close cabin window shades during daylight operations.

Select main cabin door heaters off.

18 Plan to land at nearest suitable airport.**19 Do **not** accomplish the following checklist:**

CABIN AUTOMATIC INOPERATIVE

UTILITY BUS OFF



INOP

PACK TEMPERATURE

Messages: L PACK TEMP R PACK TEMP

Condition: One or more of these occur:

- A pack controller fault
- A pack overheat

- 1 EICAS EVENT RCD switch Push
- 2 PACK control selector (affected side). . . . STBY N
- 3 Choose one:
 - ◆ INOP light **extinguishes**:
 - ▶▶ **Go to step 4**
 - ◆ INOP light **stays illuminated**:
 - Wait** 5 minutes.
 - PACK RESET switch Push
 - ▶▶ **Go to step 4**
- 4 **If** the compartment temperature becomes unacceptably warm or cool with STBY N selected:
 - PACK control selector
 - (affected side) STBY C or STBY W as needed

▼ Continued on next page ▼

▼ PACK TEMPERATURE continued ▼

5 Choose one:

◆ INOP light **stays extinguished:**



◆ INOP light **stays illuminated or illuminates again:**

PACK control selector (affected side) . OFF

Do **not** accomplish the following checklist:

PACK OFF

If both packs remain inoperative:

►► **Go to the PACK OFF checklist on page 2.30**



INOP

RECIRCULATION FAN

Messages: L RECIR FAN

R RECIR FAN

Condition: The recirculation fan is inoperative.



DUCT
LEAK

STRUT DUCT LEAK

171-199, 1200-1201, 1401-1404, 1501-1506, 1521, 1601-1708

Messages: L STRUT DCT LEAK R STRUT DCT LEAK
Condition: A bleed air leak occurs in the strut area.

- 1 ENG bleed air switch (affected side) Off
- 2 PACK control selector (affected side). Off
- 3 WING ANTI-ICE selector / switch Off

 This prevents possible asymmetrical ice buildup on the wings.

- 4 Avoid icing conditions.

1501-1506, 1521, 1601-1708

- 5 Thrust reverser on the affected side is inoperative.
- 6 Do **not** accomplish the following checklist:

 ENGINE BLEED OFF
 PACK OFF



OFF

TRIM AIR

Messages: TRIM AIR
Condition: The trim air switch is OFF.



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AOA PROBE

L AOA

R AOA

Messages: L AOA PROBE

R AOA PROBE

Condition: The AOA probe heat is failed.

- 1 Flight in icing conditions may result in some erroneous flight instrument indications.

Note: Flight may not be permitted in RVSM airspace. Contact ATC. Refer to the Airway Manual, Airspace & Enroute Navigation, Navigation, for RVSM requirements.



AUXILIARY PITOT

L AUX
PITOT

R AUX
PITOT

Messages: L AUX PITOT

R AUX PITOT

Condition: The auxiliary pitot probe heat is failed.

- 1 Flight in icing conditions may result in some erroneous flight instrument indications.

Note: Flight may not be permitted in RVSM airspace. Contact ATC. Refer to the Airway Manual, Airspace & Enroute Navigation, Navigation, for RVSM requirements.



**CAPT
PITOT**

CAPTAIN PITOT

Messages: CAPT PITOT

Condition: The captain’s static pitot probe heat is failed.

- 1 Avoid icing conditions. Flight in icing conditions may result in erroneous flight instrument indications.
- 2 **If** icing conditions exist, icing conditions are anticipated, or the captain’s and first officer’s airspeed or Mach indications disagree:
 - Autopilot disengage switch Push
 - Left AIR DATA source select switch ALTN
 - R autopilot is available. L and C autopilots are unreliable.
 - Select transponder 2.

Note: Flight may not be permitted in RVSM airspace. Contact ATC. Refer to the Airway Manual, Airspace & Enroute Navigation, Navigation, for RVSM requirements.



VALVE

ENGINE ANTI-ICE
[121, 124-139, 1501-1506, 1521]

Messages: L ENG ANTI-ICE

R ENG ANTI-ICE

Condition: The engine anti-ice valve is not in the commanded position.

1 Choose one:

◆ Engine anti-ice switch is **ON**:

Avoid icing conditions.

Leave the Engine anti-ice switch ON.



◆ Engine anti-ice switch is **off**:

►► **Go to step 2**

2 ENG ANTI-ICE switch (affected engine) ON

3 **If** total air temperature (TAT) is above 10 degrees C:

Avoid high thrust settings.



VALVE

ENGINE ANTI-ICE [1401-1404]

Messages: L ENG ANTI-ICE

R ENG ANTI-ICE

Condition: The engine anti-ice valve is not in the commanded position.

1 Choose one:

◆ Engine anti-ice switch is **ON**:▶▶ **Go to step 2**◆ Engine anti-ice switch is **off**:▶▶ **Go to step 5**

2 ENG bleed air switch (affected side) Off

3 ENG ANTI-ICE switch
(affected side) Off, then ON

4 Choose one:

◆ VALVE light **extinguishes**:

ENG bleed air switch (affected side) . . . ON

◆ VALVE light **stays illuminated**:

Avoid icing conditions.

Leave the ENGINE ANTI-ICE switch ON.

ENG bleed air switch (affected side) . . . ON



▼ Continued on next page ▼

▼ENGINE ANTI-ICE continued▼

- 5 ENG ANTI-ICE switch (affected engine) ON
- 6 **If** total air temperature (TAT) is above 10 degrees C:

Avoid high thrust settings.



VALVE

ENGINE ANTI-ICE **[171-199, 1200-1201,** **1601-1708]**

Messages: L ENG ANTI-ICE

R ENG ANTI-ICE

Condition: The engine anti-ice valve is not in the commanded position.

1 Choose one:

◆ Engine anti ice selector is **ON**:▶▶ **Go to step 3**◆ Engine anti ice selector is **OFF**:ENGINE ANTI ICE selector
(affected side) ON▶▶ **Go to step 2**◆ Engine anti ice selector is **AUTO**:▶▶ **Go to step 6**

2 Choose one:

◆ Total air temperature (TAT) is **at or below** 10°C:

■ ■ ■ ■

◆ Total air temperature (TAT) is **above** 10°C:

Avoid high thrust settings.

■ ■ ■ ■

3 ENG bleed air switch (affected side) Off

▼ Continued on next page ▼

▼ ENGINE ANTI-ICE continued ▼

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

5 Choose one:

◆ VALVE light **extinguishes:**

ENGINE bleed air switch (affected side) ON



◆ VALVE light **stays illuminated:**

Avoid icing conditions.

Leave the ENGINE ANTI ICE selector ON.

ENGINE bleed air switch (affected side) ON



6 ENGINE ANTI ICE selector (affected side) ON

7 Choose one:

◆ VALVE light **extinguishes:**

▶▶ **Go to step 8**

◆ VALVE light **stays illuminated:**

▶▶ **Go to step 9**

▼ Continued on next page ▼

▼ **ENGINE ANTI-ICE continued** ▼

8 Choose one:

◆ Total air temperature (TAT) is **at or below** 10°C:

■ ■ ■ ■

◆ Total air temperature (TAT) is **above** 10°C:

Avoid high thrust settings.

■ ■ ■ ■

9 ENG bleed air switch (affected side) Off

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

11 Choose one:

◆ VALVE light **extinguishes**:

ENG bleed air switch (affected side) . . . ON

■ ■ ■ ■

◆ VALVE light **stays illuminated**:

Avoid icing conditions.

Leave the ENGINE ANTI ICE selector ON.

ENG bleed air switch (affected side) . . . ON

■ ■ ■ ■

F O
PITOT

FIRST/OFFICER PITOT

Messages: F/O PITOT

Condition: The first officer's static pitot probe heat is failed.

- 1 Avoid icing conditions. Flight in icing conditions may result in erroneous flight instrument indications.
- 2 **If** icing conditions exist, icing conditions are anticipated, or the captain's and first officer's airspeed or Mach indications disagree:

Autopilot disengage switch Push

Right AIR DATA source select switch ALTN

L and C autopilots are available. R autopilot is unreliable.

Select transponder 1.

Note: Flight may not be permitted in RVSM airspace. Contact ATC. Refer to the Airway Manual, Airspace & Enroute Navigation, Navigation, for RVSM requirements.



Ice Crystal Icing [GE Engines]

121-139, 1501-1506, 1521, 1601-1613, 1701-1708

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 is unable to maintain the selected airspeed
- TAT indication on EICAS stays near 0°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.

Note: TAT probe icing can cause the N1 bugs to decrease while flying at a constant altitude and airspeed.

Caution! Do not use engine or wing anti-ice when TAT is above 10°C.

1 ENGINE ANTI-ICE switches/selectors (both). . . ON

▼ Continued on next page ▼

▼ Ice Crystal Icing continued ▼

Note: At or below 22,000 feet, turn on wing anti-ice.

- 2 Minimize time above amber and red weather radar returns. If conditions allow, exit the ice crystal icing conditions.
- 3 Choose one:
 - ◆ Autothrottle response **or** TAT indication is normal:
 - ▶▶ **Go to step 6**
 - ◆ Autothrottle is **unable** to maintain the selected airspeed **and** TAT indication stays near 0°C:
 - ▶▶ **Go to step 4**
- 4 A/T ARM switch OFF
- 5 Thrust levers (both) Set to maintain airspeed and airplane flight path
- 6 When in ice crystal icing conditions, the following can be temporarily unreliable:
 - N1 bug and reference N1 display
 - TAS, TAT, SAT, ECON SPD, and LRC

▼ Continued on next page ▼

▼ Ice Crystal Icing continued ▼

- 7 **When** ice crystal icing conditions are no longer present:

Use engine and wing anti-ice normally.

The autothrottle can be re-engaged, if needed.



Additional Information

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

- Light to moderate turbulence
- Speckled green returns on the weather radar
- Appearance of rain on the windscreen
- Small collection of ice particles on the wiper post
- "Shhh" sound
- Humid flight deck
- Ozone smell
- St Elmo's Fire

An erroneous TAT indication can occur as a result of ice crystals blocking the sensors. The erroneous indication can last from one minute to more than 20 minutes. TAT normally should increase approximately 2 degrees Celsius per 1000 ft of descent.

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Ice Crystal Icing [P&W Engines]

171-199, 1200-1201, 1401-1404

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 is unable to maintain the selected airspeed
- TAT indication on EICAS stays near 0°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.

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

- Maximum EPR lines (amber) or EPR bugs decrease while flying at constant altitude and airspeed
- EPR indications are not aligned
- Unable to achieve maximum continuous thrust or maximum climb thrust

▼ 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:
 - ◆ TAT **or** engine indications are **normal**:
 - ▶▶ **Go to step 14**
 - ◆ TAT indication stays near 0°C **and** engine indications are **not** normal:
 - ▶▶ **Go to step 3**
- 3 A/T ARM switch OFF
- 4 Thrust levers (both) . . . Set to maintain airspeed and airplane flight path
- 5 Choose one:
 - ◆ Airspeed and airplane flight path **can** be maintained with manual thrust:
 - ▶▶ **Go to step 14**
 - ◆ 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.

▼ Continued on next page ▼

▼ Ice Crystal Icing continued ▼

- 7 L ELEC ENG CONT switch. ALTN
- 8 R ELEC ENG CONT switch ALTN
- 9 Do **not** accomplish the following checklist:
ENGINE EEC MODE
- 10 Maximum thrust limiting is not available. N1 can be used to set thrust.
- 11 The autothrottle is not available.
- 12 The ENG LIM PROT message can show due to incorrect maximum EPR line. Set thrust to maintain the needed airspeed and airplane flight path. Maintain EGT below the amber band.
- 13 Do **not** accomplish the following checklist:
ENGINE LIMIT PROTECTION
- 14 When in ice crystal icing conditions, the following can be temporarily unreliable:
- EPR bug and reference EPR
 - Maximum EPR line (amber)
 - TAS, TAT, SAT, ECON SPD, and LRC
- 15 **When** ice crystal icing conditions are no longer present:
ELEC ENG CONT switches (both) NORM
Autothrottle is available and can be re-engaged, if needed.

**▼ Continued on next page ▼**

▼ Ice Crystal Icing continued ▼

Additional Information

One or more of the following may 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 sensors. The erroneous indication can last from one minute to more than 20 minutes. TAT normally should increase approximately 2 degrees Celsius per 1000 ft of descent.

ICE DET

ICE DETECTOR

171-199, 1200-1201, 1601-1708

Messages: ICE DET

Condition: The ice detector is failed.

- 1 Operate the engine and wing anti-ice systems manually.



ICE DETECTOR OFF

121, 124-139, 1401-1404

Messages: ICE DET OFF

Condition: Ice is not detected.



ICING

ICE DETECTOR ON

121, 124-139, 1401-1404

Messages: ICE DET ON

Condition: Ice is detected.



ICING

ICING ENGINE

171-199, 1200-1201, 1601-1708

Messages: ICING ENGINE

Condition: Ice is detected and an engine anti-ice valve is closed.

- 1 ENGINE ANTI ICE selector ON
■ ■ ■ ■

ICING

ICING WING

171-199, 1200-1201, 1601-1708

Messages: ICING WING

Condition: Ice is detected and a wing anti-ice valve is closed.

- 1 WING ANTI ICE selector ON
■ ■ ■ ■

PROBE HEAT

Messages: PROBE HEAT

Condition: Two or more probe heats are failed.

- 1 Flight in icing conditions may result in some erroneous flight instrument indications.

Note: Flight may not be permitted in RVSM airspace. Contact ATC. Refer to the Airway Manual, Airspace & Enroute Navigation, Navigation, for RVSM requirements.

**TAT****TAT PROBE**

Messages: TAT PROBE

Condition: The TAT probe heat is failed.

- 1 Flight in icing conditions may result in some erroneous flight instrument indications.

Additional Information

If TAT probe heat fails inflight, the following systems may be inoperative:

Autothrottle

LNAV

VNAV

SAT indication

FMC Performance prediction



INOP

WINDOW (HEAT)

Messages: L FWD WINDOW R FWD WINDOW
L SIDE WINDOW R SIDE WINDOW
WINDOW HEAT

Condition: One or more window heats are off.

Objective: To attempt to reset the system.

1 WINDOW HEAT switch. Off 10 seconds,
then ON

2 Choose one:

◆ INOP light **extinguishes:**



◆ INOP light **stays illuminated:**

WINDOW HEAT switch Off



VALVE

WING ANTI-ICE

[WING ANTI-ICE switch]

121, 124-139, 1401-1404, 1501-1506, 1521

Messages: L WING ANTI-ICE R WING ANTI-ICE

Condition: The wing anti-ice valve is not in the commanded position.

- 1 Choose one:
- ◆Wing anti-ice switch is **ON**:

WING ANTI-ICE switch Off

Avoid icing conditions.

■ ■ ■ ■
- ◆Wing anti-ice switch is **OFF**:

▶▶ **Go to step 2**
- 2 WING ANTI-ICE switch ON
- 3 **Checklist Complete Except Deferred Items**

▼ Continued on next page ▼

▼ WING ANTI-ICE continued ▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
■ Minimums	____, ____, xckd	C&F
■ Landing data	____, ____, xckd	C&F
■ Approach briefing	complete	PM
■ Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Fuel crossfeed (ETOPS)	cycled	PM
Pressurization panel	.set	PM
Recall	ckd	PM

Approach Checklist

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

▼ Continued on next page ▼

▼ **WING ANTI-ICE continued** ▼

Landing Checklist

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

After landing

- ENG bleed air switch (affected side) Off
 - ISLN switch (affected side). Off
- This prevents possible structural damage due to
overheat.



VALVE

WING ANTI-ICE [WING ANTI ICE selector]

171-199, 1200-1201, 1601-1708

Messages: L WING ANTI-ICE R WING ANTI-ICE

Condition: The wing anti-ice valve is not in the commanded position.

1 WING ANTI ICE selector ON

2 Choose one:

◆ VALVE light **stays illuminated:**

WING ANTI ICE selector OFF

Avoid icing conditions.



◆ VALVE light **extinguishes:**

►► **Go to step 3**

3 **Checklist Complete Except Deferred Items**

▼ Continued on next page ▼

▼ WING ANTI-ICE continued ▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
■ Minimums	____, ____, xckd	C&F
■ Landing data	____, ____, xckd	C&F
■ Approach briefing	complete	PM
■ Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Fuel crossfeed (ETOPS)	cycled	PM
Pressurization panel	set	PM
Exterior lights	set	PM
Recall	ckd	PM

Approach Checklist

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

▼ Continued on next page ▼

▼ WING ANTI-ICE continued ▼

Landing Checklist

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

After landing

- ENG bleed air switch (affected side) Off
- ISLN switch (affected side) Off

This prevents possible structural damage due to
overheat.



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Non-Normal Checklists

Chapter NNC

Automatic Flight

Section 4

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**AUTO
PILOT**

AUTOPILOT

Message: AUTOPILOT

Condition: One or more of these occur:

- The autopilot operates in a degraded mode other than the selected mode
- The engaged roll mode fails
- The engaged pitch mode fails

1 Autopilot disengage switch Push

Note: Flight may not be permitted in RVSM airspace. Contact ATC. Refer to the Airway Manual, Airspace & Enroute Navigation, Navigation, for RVSM requirements.



**A/P
DISC**

AUTOPILOT DISCONNECT

Message: AUTOPILOT DISC

Condition: All autopilots are disconnected.

Note: Flight may not be permitted in RVSM airspace. Contact ATC. Refer to the Airway Manual, Airspace & Enroute Navigation, Navigation, for RVSM requirements, for RVSM requirements.



**A/T
DISC****AUTOTHROTTLE DISCONNECT**

Message: AUTOTHROT DISC

Condition: The autothrottle is disconnected.





**Non-Normal Checklists
Communications**

**Chapter NNC
Section 5**

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Intentionally
Blank

ACARS - No Comm (Touchscreen)

Condition: A NO COMM condition has occurred.

Frequency changes are automatically controlled by the ACARS unit as long as the aircraft is in range of a datalink ground station. However, within oceanic airspace or isolated areas out of VHF range, a NO COMM condition may occur. In NO COMM, all messages are stored in memory and will be downlinked when comm is automatically re-established at the next landfall.

1 Choose one:

◆ NO COMM message exists when **not in range of a ground station:**



◆ NO COMM message exists when **in range of a ground station:**

►► **Go to step 2**

- 2 INDEX Touch
- 3 MISC MENU Touch
- 4 LINK STATUS Touch
- 5 VHF LINK TEST Touch

This action should establish a good link if one is available. If successful, the VHF frequency of the ground station will appear below the VHF MODE/FREQ label

▼ Continued on next page ▼

▼ ACARS - NO COMM continued ▼

6 Choose one:

◆ NO COMM message no longer **displayed**.



◆ NO COMM message **remains displayed**:

▶▶ **Go to step 7**

7 INDEX Touch

8 MISC MENU Touch

9 LINK STATUS Touch

10 VHF CONTROL Touch

US/PACIFIC, EUR/ASIA, JAPAN

11 Choose one:

◆ NO COMM message no longer **displayed**.



◆ NO COMM message **remains displayed**:

▶▶ **Go to the ACARS System
Inoperative checklist on page 5.3**



ACARS System Inoperative

Condition: ACARS system is inoperative.

If ACARS is inoperative, refer to the Airway Manual, ATC & Flt Control Communication, Dispatch Communication, for guidance.

The following items must be completed manually:

- Report out/off/on/in times, refer to FOM, chapter 3, ACARS Inop Flight Time Reporting.
- Required Company Reporting Points.
- Oceanic clearances.
- Engine Condition Monitoring Report (ECM). Refer to Vol. 1, SP.7 for procedures.



Cabin Interphone System Inoperative

Condition: Cabin interphone system is inoperative.

- 1 Ensure all cabin handsets are properly stowed.

Improperly stowed handsets may be the cause of the malfunction.

- 2 Choose one:

◆ Cabin interphone system is **operative**:

Continue normal operation.



◆ Cabin interphone system remains **inoperative**:

▶▶ **Go to step 3**

▼ Continued on next page ▼

▼ Cabin Interphone System Inoperative continued ▼

3 Notify Flight Attendants.

Contact Flight Leader and establish plan for communications under normal conditions.

Avoid use of PA for direct messages to Flight Attendants except in an emergency.

Brief the Flight Attendants on the following alternate emergency procedures:

Cabin Interphone System Inoperative.			
Source of Non-normal.		Pilot action.	Briefing Items.
Flight Deck.	Cabin.		
Smoke/Fire.		Use PA.	The emergency signal from flight deck to cabin may be designated as the signal to evacuate, provided the Captain and Flight Leader agree to use this signal in advance.
Emergency Landing.			
Ditching.			
Evacuation or Rejected Takeoff.			
	Smoke/Fire.	Monitor PA.	Flight Attendant will use the emergency signal to notify pilots to monitor the PA.
	Hijacking.		Flight Attendant will use the emergency signal to notify pilots to monitor the PA.
	Passenger Problem (Medical/ Disturbance).		Flight Attendant will use the emergency signal to notify pilots to monitor the PA.



**COMM With Center VHF
(Touchscreen)**

Condition: Center VHF is required for voice communication.

- 1 INDX. Touch
- 2 MISC MENU Touch
- 3 LINK STATUS Touch
- 4 VHF CONTROL Touch
- 5 CHANGE MODE. Touch

Note that the MODE prompt at top of page changes from DATA to VOICE. Frequency tuning is then done manually on the other VHF center control panel.

Return to DATA by touching CHANGE MODE. The unit will automatically scan for an available frequency to establish link.

If a data message is attempted with the unit in the VOICE mode, a DATAMD advisory will appear. Touch the advisory message and the IDU will shift to the VHF CTRL page.

Return to DATA by touching CHANGE MODE.



DATALINK LOST

Message: DATALINK LOST

Condition: The datalink is temporarily lost.

Note: If out of VHF coverage, consider the following:

- SATCOM Malfunction
- SAT 1 and/or SAT 2 Not Available
- CPDLC / ADS-C may be inoperative
- ACARS may not function

Note: Notify ATC if SATCOM operation cannot be restored. A descent below FL350 may be required. HF voice reports may be required.



DATALINK SYSTEM

Message: DATALINK SYS

Condition: The datalink system is failed.



**IDU Touchscreen Datalink
Inoperative**

Condition: IDU or printer is inoperative.

- 1 **If** on the ground, recycle the following circuit breakers before calling Maintenance:

P11 G5 Flight Deck Printer

P11 G6 Mgmt Unit

P11 G7 Dsply Unit

P6 G5 Mgmt Unit

**Caution! Do not attempt to fix any inoperative function by accessing the MAINT MENU submenu on the MAIN MENU page.
This submenu requires special training and is to be used by Avionics Technicians only.**



PA System Inoperative

Condition: PA system is inoperative.

1 Notify Flight Attendants.

Contact Flight Leader and establish plan for communications under normal conditions, including:

Use of standard flight deck/cabin call signals.

Advising the Flight Leader to review location and operation of portable megaphones with Flight Attendants

2 Advise the Flight Leader 20 minutes (1 hour 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.

▼ Continued on next page ▼

▼PA System Inoperative continued▼

3 Brief the Flight Leader on the following alternate emergency procedures:

Public Address System Inoperative.			
Source of Non-normal.		Pilot action.	Briefing Items.
Flight Deck.	Cabin.		
Smoke/Fire.		Use cabin interphone.	No changes to current procedures. Pilots and Flight Attendants will use the cabin interphone for communication. Any public announcements will be made by the Flight Attendants using megaphones.
Emergency Landing.		Use emergency signal followed by. cabin interphone or face-to-face.	Pilots will use the emergency signal to alert the Flight Attendants to an emergency situation. Subsequent communication will then be via the interphone or face-to-face, time permitting. The interphone will be used to command an evacuation.
Ditching.			
Evacuation or Rejected Takeoff.			
	Smoke/Fire.	Use cabin interphone.	No changes to current procedures. Pilots and Flight Attendants will use the cabin interphone for communication. Any public announcements will be made by the Flight Attendants using megaphones.
	Hijacking.		
	Passenger Problem (Medical/ Disturbance).		



**Radio Transmit Continuous
(Stuck Microphone Switch)**

Condition: A radio transmits continuously without crew input.

Objective: To identify and isolate the stuck microphone.

- 1 INT microphone selector switches (all) On
This deselects radios and stops radio transmissions.
- 2 The microphone/interphone with the stuck switch continuously transmits on interphone.
- 3 The associated audio control panel should remain on interphone. All other audio control panels may be used normally.



SATVOICE LOST

Message: SATVOICE LOST

Condition: SATCOM voice capability is temporarily lost due to a reason other than SATCOM failure.



SAT 1 and/or SAT 2 Not Available

171-199, 1200-1201, 1501-1506, 1521, 1601-1613

Message: SATVOICE LOST

Condition: SATCOM system may not be logged on to a satellite or SATCOM channels may be failed.

Note: IRUs must be aligned before SATCOM will function.

- 1 Select MENU key on MCDU
- 2 Select SAT
SATCOM Main Menu should be displayed.
- 3 **If** SAT 1 and/or SAT 2 display **NOT** available:
<SUBMENU (at 6L) Select
SATCOM SUBMENU should be displayed.
- 4 Choose one:
 - ◆ <LOGGED ON AUTO is displayed at 1L:
▶▶ **Go to step 5**
 - ◆ <LOGGED OFF is displayed at 1L:
▶▶ **Go to step 12**

▼ Continued on next page ▼

✎ SAT 1 and/or SAT 2 Not Available continued ▼

- 5 SATCOM **is** logged on to a satellite.
- 6 LOG-ON (at 2L) Select
- 7 LOG-OFF* (at 2R) Select
- 8 Pull and reset the following CBs:
 H8 SATCOM
 H9 SATCOM HGA
- 9 *AUTO LOG-ON (at 2L) Select
 <LOGGED ON AUTO> should be displayed at 1L
- 10 RETURN> (at 6R) Select
 SATCOM MAIN MENU should be displayed
 SAT 1 AND/OR SAT 2 AVAILABLE should be displayed
- 11 Reattempt normal SATCOM operation.

Note: Refer to Volume 1, SP.5, SATCOM Operation, for procedure.



▼ Continued on next page ▼

 SAT 1 and/or SAT 2 Not Available continued ▼

- 12 SATCOM **is not** logged on to a satellite.
- 13 *AUTO LOG-ON (at 2L) Select
 <LOGGED ON AUTO> should be displayed at 1L
- 14 RETURN> (at 6R) Select
 SATCOM MAIN MENU should be displayed
 SAT 1 AND/OR SAT 2 AVAILABLE should be
 displayed
- 15 Reattempt normal SATCOM operation.

Note: Refer to Volume 1, SP.5, SATCOM Operation,
for procedure.



SATCOM Malfunction

1701-1708

Condition: SATCOM fails or interferes with required aircraft systems.

Objective: To restore normal SATCOM operation.

- 1 Contact Maintenance Control Center via Dispatch for guidance, if able.
- 2 Pull and reset the P11 H8 SATCOM circuit breaker.



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Non-Normal Checklists
Electrical

Chapter NNC
Section 6

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Intentionally
Blank

AC BUS OFF
[HDG not installed]

121, 124-139

BUS
OFF

BUS
OFF

Messages: L AC BUS OFF

R AC BUS OFF

Condition: The AC bus is not powered.

Objective: To attempt to restore electrical power.

Attempt only one reset per flight

- 1  GEN CONT switch
(affected side) Off, then ON
- 2 Choose one:
 - ◆ APU is **available**:
 - ▶▶ **Go to step 3**
 - ◆ APU is **not** available:
 - ▶▶ **Go to step 5**
- 3 APU selector START, then ON

▼ Continued on next page ▼

▼ AC BUS OFF continued ▼

4 **When** the APU is running:

 Attempt only one reset per flight
L BUS TIE switch Off, then AUTO

 Attempt only one reset per flight
R BUS TIE switch Off, then AUTO

5 **If** both AC BUS OFF lights were illuminated **and** AC power is restored:

Activate the FMC route, if needed.

Enter the FMC performance data, if needed.

If an IRS ALIGN light is illuminated:

 Action is **not** reversible. Do this step only for the affected IRS(s)
IRS MODE selector ATT
Maintain straight and level attitude for 30 seconds.

Enter heading on IRS control panel or POS INIT page of FMC.

IRS may require periodic updates.

▼ Continued on next page ▼

▼ AC BUS OFF continued ▼

6 Choose one:

◆ **Both** BUS OFF lights are **extinguished**:



◆ **Both** BUS OFF lights **stay illuminated**:

▶▶ **Go to step 17**

◆ **Right** BUS OFF light **stays illuminated**:

▶▶ **Go to step 12**

◆ **Left** BUS OFF light **stays illuminated**:

▶▶ **Go to step 7**

7 Plan to land at the nearest suitable airport.

8 FLT DIR source selector (Captain's) R

9 NAV source selector (Captain's) FMC-R

10 AIR DATA switch (Captain's) ALTN

11 Transponder selector. 2

▼ Continued on next page ▼

▼ AC BUS OFF continued ▼**Left AC Bus Off
Inoperative Items****Some pitot heat probes inop**

Flight in icing conditions may result in some erroneous flight instrument indications.

Left and Center flight directors inop**Flap indicator inop****All autopilots inop**

12 Plan to land at the nearest suitable airport.

▼ Continued on next page ▼

▼ AC BUS OFF continued ▼

13 FLT DIR source selector (First Officer's)	C
14 NAV source selector (First Officer's)	FMC-L
15 AIR DATA switch (First Officer's)	ALTN
16 Transponder selector.	1

**Right AC Bus Off
Inoperative Items**

Some pitot heat probes inop

Flight in icing conditions may result in some erroneous flight instrument indications.

Right flight director inop

Right autopilot inop

Use left or center autopilot.



17 Plan to land at the nearest suitable airport.

Caution! Flight beyond 30 minutes will result in complete loss of electrical power and the inability to extend gear and flaps.

▼ Continued on next page ▼

▼ AC BUS OFF continued ▼

18 Choose one:

◆ Electronic engine control INOP lights are **not** illuminated:

▶▶ **Go to step 19**

◆ Electronic engine control INOP lights are **illuminated**:

Thrust levers

(both) Retard to mid position

L ELEC ENG CONTROL switch Off

R ELEC ENG CONTROL switch Off

Do **not** accomplish the following checklist:

ENGINE EEC

▶▶ **Go to step 19**

▼ Continued on next page ▼

▼ AC BUS OFF continued ▼

19 Choose one:

◆ An engine is **inoperative**:

FUEL CROSSFEED valve switch On

►► **Go to step 20**

◆ **Both** engines are **running**:

►► **Go to step 20**

20 EQUIP COOLING selector OVRD

21 Avoid icing conditions.

22 CABIN ALTITUDE MODE SELECT MAN

Use momentary actuation of the cabin altitude manual control to avoid large and rapid pressurization changes.

23 ! CABIN ALTITUDE

MANUAL control Move to CLIMB or DESCEND as needed to control cabin rate and altitude

Note: 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
260	2000
300	4000
350	6000
400 and above	8000

▼ Continued on next page ▼

▼ AC BUS OFF continued ▼

**Both AC Buses Off
Inoperative Items****Some pitot heat probes inop**

Flight in icing conditions may result in some erroneous flight instrument indications.

All flight directors inop**All autopilots inop****Flap indicator inop****Automatic speedbrake system inop**

Manual speedbrake extension after landing is needed.

Caution! Do not deploy speedbrakes manually until the nosewheel is on the ground. Deploying speedbrakes manually before nosewheel touchdown may cause pronounced nose pitch up, increasing the likelihood of tail strike.

Anti-skid for outboard wheels inop**Master caution system inop****Wing and engine anti-ice inop****Left and right thrust reversers inop**

24 Do not use autobrakes.

25 Use standby attitude ILS guidance, if required.

26 Do not arm the speedbrake for landing.

27 Checklist Complete Except Deferred Items

▼ Continued on next page ▼

▼ AC BUS OFF continued ▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
■ Minimums	____, ____, xckd	C&F
■ Landing data	____, ____, xckd	C&F
■ Approach briefing	complete	PM
■ Autobrakes	OFF	PM
Seat belt signs	ON	PM
Fuel crossfeed (ETOPS)	cycled	PM
Pressurization panel	.set	PM
Recall	ckd	PM

Approach Checklist

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

▼ Continued on next page ▼

▼ AC BUS OFF continued ▼

When at pattern altitude

 Use momentary actuation of the cabin altitude manual control to avoid large and rapid pressurization changes.

CABIN ALTITUDE
MANUAL control. Move to CLIMB until
the outflow valve indication
shows fully open to
depressurize the airplane

Landing Checklist

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



AC BUS OFF
[HDG installed]

171-199, 1200-1201, 1401-1404, 1501-1506, 1521, 1601-1708

**BUS
OFF**

**BUS
OFF**

Messages: L AC BUS OFF

R AC BUS OFF

Condition: The AC bus is not powered.

Objective: To attempt to restore electrical power.

Attempt only one reset per flight

- 1  GEN CONT switch
(affected side) Off, then ON
- 2 Choose one:
 - ◆ APU is **available**:
 - ▶▶ **Go to step 3**
 - ◆ APU is **not** available:
 - ▶▶ **Go to step 5**
- 3 APU selector START, then ON

▼ Continued on next page ▼

▼ AC BUS OFF continued ▼

4 **When** the APU is running:

 Attempt only one reset per flight
L BUS TIE switch Off, then AUTO

 Attempt only one reset per flight
R BUS TIE switch Off, then AUTO

5 **If** both AC BUS OFF lights were illuminated **and** AC power is restored:

Activate the FMC route, if needed.

Enter the FMC performance data, if needed.

If an IRS ALIGN light is illuminated:

 Action is **not** reversible. Do this step only for the affected IRS(s)
IRS MODE selector ATT

Maintain straight and level attitude for 30 seconds.

Enter heading on IRS control panel or POS INIT page of FMC.

IRS may require periodic updates.

▼ Continued on next page ▼

▼ AC BUS OFF continued ▼

6 Choose one:

◆ **Both** BUS OFF lights are **extinguished**:



◆ **Both** BUS OFF lights **stay illuminated**:

▶▶ **Go to step 17**

◆ **Right** BUS OFF light **stays illuminated**:

▶▶ **Go to step 12**

◆ **Left** BUS OFF light **stays illuminated**:

▶▶ **Go to step 7**

▼ Continued on next page ▼

▼ AC BUS OFF continued ▼

- 7 Plan to land at the nearest suitable airport.
- 8 FLT DIR source selector (Captain's) R
- 9 NAV source selector (Captain's) FMC-R
- 10 AIR DATA source switch (Captain's) ALTN
- 11 Transponder selector. 2

Left AC Bus Off

Inoperative Items

- Some pitot heat probes inop**
Flight in icing conditions may result in some erroneous flight instrument indications.
- Left and Center flight directors inop**
- Flap indicator inop**
- All autopilots inop**



- 12 Plan to land at the nearest suitable airport.

▼ Continued on next page ▼

▼ AC BUS OFF continued ▼

13 FLT DIR source selector (First Officer's)	C
14 NAV source selector (First Officer's)	FMC-L
15 AIR DATA source switch (First Officer's) . . .	ALTN
16 Transponder selector.	1

**Right AC Bus Off
Inoperative Items**

Some pitot heat probes inop

Flight in icing conditions may result in some erroneous flight instrument indications.

Right flight director inop

Right autopilot inop

Use center or left autopilot.



17 Plan to land at the nearest suitable airport.

▼ Continued on next page ▼

▼ AC BUS OFF continued ▼

1501-1506

18 Choose one:

◆ Electronic engine control INOP lights are **not** illuminated:

►► **Go to step 20**

◆ Electronic engine control INOP lights are **illuminated**:

Thrust levers

(both) Retard to mid position

L ELEC ENG CONTROL switch Off

R ELEC ENG CONTROL switch Off

Do **not** accomplish the following checklist:

ENGINE EEC

►► **Go to step 20**

▼ Continued on next page ▼

▼ AC BUS OFF continued ▼

171-199, 1200-1201, 1401-1404, 1521, 1601-1708

19 Choose one:

◆ Electronic engine control ALTN lights are **not** illuminated:

►► **Go to step 20**

◆ Electronic engine control ALTN lights are **illuminated**:

Thrust levers

(both) Retard to mid position

L ELEC ENG CONT switch ALTN

R ELEC ENG CONT switch ALTN

Do **not** accomplish the following checklist:

ENGINE EEC MODE

►► **Go to step 20**

▼ Continued on next page ▼

▼ AC BUS OFF continued ▼

20 Choose one:

- ◆ An engine is **inoperative**:
 - 171-180, 1501-1506**
FUEL CROSSFEED valve switch On
 - 181-199, 1200-1201, 1401-1404, 1521, 1601-1708**
AFT and FWD FUEL XFEED switches . . . On
 - ▶▶ Go to step 21**
- ◆ **Both** engines are **running**:
 - ▶▶ Go to step 21**

21 EQUIP COOLING selector OVRD
22 FLT DK temperature control MAN

▼ Continued on next page ▼

▼ AC BUS OFF continued ▼

171-199, 1200-1201, 1601-1613, 1701-1708

23 **If** If Captain's EFIS is displayed and First Officer's EFIS is desired:

NAV source selector (First Officer's) FMC-L

AIR DATA source switch (First Officer's) . ALTN

IRS source switch (First Officer's). ALTN

FLT INSTR BUS PWR switch ALTN

Return to OFF when desired to re-power captain flight instruments.

Note: A 10- to 15-second loss of all electronic flight instruments will occur. Return to OFF when desired to repower Captain's flight instruments.

Note: Configuration warning may occur with either thrust lever at idle.

▼ Continued on next page ▼

▼ AC BUS OFF continued ▼

**Both AC Buses Off
Inoperative Items****Some pitot heat probes inop**

Flight in icing conditions may result in some erroneous flight instrument indications.

All flight directors inop**All autopilots inop****Automatic speedbrake system inop**

Manual speedbrake extension after landing is needed.

Caution! Do not deploy speedbrakes manually until the nosewheel is on the ground. Deploying speedbrakes manually before nosewheel touchdown may cause pronounced nose pitch up, increasing the likelihood of tail strike.

Anti-skid for outboard wheels inop**Master caution system inop****Left and right thrust reversers inop****Auto engine anti-ice inop**

171-199, 1200-1201, 1601-1613, 1701-1708

Auto wing anti-ice inop

24 Do not use autobrakes.

25 Do not arm the speedbrake for landing.

26 Use left VHF radio for communications.

▼ Continued on next page ▼

▼ AC BUS OFF continued ▼

27 Checklist Complete Except Deferred Items

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
■Minimums	____, ____, xckd	C&F
■Landing data	____, ____, xckd	C&F
■Approach briefing	complete	PM
■Autobrakes	OFF	PM
Seat belt signs	ON	PM
Fuel crossfeed (ETOPS)	cycled	PM
Pressurization panel	set	PM
Recall	ckd	PM

Approach Checklist

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

▼ Continued on next page ▼

▼ AC BUS OFF continued ▼

Landing Checklist

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



OFF

APU GENERATOR OFF

Messages: APU GEN OFF

Condition: The generator control breaker is open.

- Attempt only one reset per flight
- 1  APU GEN switch. Off, then ON
 - 2 **If** there is only one AC power source available:
Plan to land at the nearest suitable airport.



OFF

BATTERY OFF

Messages: BATTERY OFF

Condition: The battery switch is OFF.



ISLN**BUS ISOLATED**

Messages: L BUS ISOLATED R BUS ISOLATED

Condition: The bus tie breaker is open.



DRIVE**GENERATOR DRIVE**

Messages: L GEN DRIVE

R GEN DRIVE

Condition: A generator drive malfunction occurs.

Caution! The engine must be rotating when the GENERATOR DRIVE DISCONNECT switch is pushed.

Action is **not** reversible.

1  GEN DRIVE DISC switch
(affected side). Confirm Push

2 Choose one:

◆ APU is **available**:

APU selector START, then ON

▶▶ **Go to step 3**

◆ APU is **not available**:

Plan to land at the nearest suitable airport.

▶▶ **Go to step 3**

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

GENERATOR OFF



OFF

GENERATOR OFF

Messages: L GEN OFF

R GEN OFF

Condition: The generator control breaker is open.

Attempt only one reset per flight

1  GEN CONT switch (affected side). . Off, then ON

2 Choose one:

◆ GEN CONT OFF light **extinguishes:**

Continue normal operation.



◆ GEN CONT OFF light **stays illuminated:**

►► Go to step 3

3 Choose one:

◆ APU is **available:**

APU selector START, then ON



◆ APU is **not available:**

Plan to land at the nearest suitable airport.



DISCH

MAIN BATTERY DISCHARGE

Messages: MAIN BAT DISCH

Condition: A main battery discharge occurs.

Caution! Flight beyond 30 minutes may result in complete loss of electrical power.

- 1 Plan to land at the nearest suitable airport.



OFF

STANDBY BUS OFF
[Upgraded Standby Power System
not installed]

(Use this checklist for aircraft that **DO NOT** have an upgraded Standby Power System. Effective aircraft are identified by a placard in the logbook.)

Messages: STANDBY BUS OFF

Condition: One or more of these buses are not energized:

- AC standby bus
- DC standby bus
- Battery bus

1 STBY POWER selector BAT

2 Choose one:

◆ Standby power bus OFF light is **illuminated**:

STBY POWER selector. AUTO

▶▶ **Go to step 3**

◆ Standby power bus OFF light is **not illuminated**:

STBY POWER selector. AUTO

▶▶ **Go to step 12**

3 Alternate stabilizer trim may be inoperative.

4 Wing and engine anti-ice may be inoperative.

5 Passenger address, flight, and cabin interphone systems may be inoperative.

▼ **Continued on next page ▼**

▼ STANDBY BUS OFF continued ▼**121, 124-139, 171-180, 1501-1506**

- 6 Fuel crossfeed valve may be inoperative.

Engine thrust may need to be varied to maintain fuel balance.

181-199, 1200-1201, 1401-1404, 1521, 1601-1613, 1701-1708

- 7 Forward and aft fuel crossfeed valves may be inoperative.

Engine thrust may need to be varied to maintain fuel balance.

- 8 Cabin altitude and differential pressure indicators may be inoperative.

Cabin altitude control AUTO 1 or AUTO 2 mode operates normally.

- 9 Left thrust reverser may be inoperative.

- 10 Left VHF communication system may be inoperative.

- 11 Do the checklist for each consequential EICAS alert message as soon as practical.

**▼ Continued on next page ▼**

▼ **STANDBY BUS OFF** continued ▼

- 12 Plan to land with the standby buses powered normally.
- 13 Alternate stabilizer trim may be inoperative.
- 14 Passenger address, flight, and cabin interphone systems may be inoperative.
- 15 Wing and engine anti-ice may be inoperative.

121, 124-139, 171-180, 1501-1506

- 16 Fuel crossfeed valve may be inoperative.

Engine thrust may need to be varied to maintain fuel balance.

181-199, 1200-1201, 1401-1404, 1521, 1601-1613, 1701-1708

- 17 Forward and aft fuel crossfeed valves may be inoperative.

Engine thrust may need to be varied to maintain fuel balance.

- 18 Cabin altitude and differential pressure indicators may be inoperative.

Cabin altitude control AUTO 1 or AUTO 2 mode operates normally.

- 19 Left VHF communication system may be inoperative.

- 20 **When** within approximately 30 minutes of landing:
STBY POWER selector BAT

►► **Go to step 21**

▼ **Continued on next page** ▼

▼STANDBY BUS OFF continued▼

21 Choose one:

◆ Standby power bus OFF light is **illuminated**:

Left thrust reverser may be inoperative.

Do the checklist for each consequential
EICAS alert message prior to landing.



◆ Standby power bus OFF light is **not illuminated**:

Power to all equipment on the standby
buses is available.

Continue normal operation.



OFF

STANDBY BUS OFF [Upgraded Standby Power System installed]

(Use this checklist for aircraft that HAVE an upgraded Standby Power System. Effective aircraft are identified by a placard in the logbook.)

Message: STANDBY BUS OFF

Condition: One or more of these buses are unpowered:

- Standby AC bus
- Standby DC bus
- Battery bus

Objective: To identify the inoperative bus(es) and the associated inoperative items.

1 STBY POWER selector BAT

2 Choose one:

◆ Standby power bus OFF light **extinguishes:**

Continue normal operation.



◆ Standby power bus OFF light **stays illuminated:**

At least one bus is unpowered.

121-139, 171-180, 1501-1506

▶▶ **Go to step 3**

181-199, 1200-1201, 1401-1404, 1521, 1601-1613,
1701-1708

▶▶ **Go to step 4**

▼ Continued on next page ▼

▼ STANDBY BUS OFF continued ▼

3 Choose one:

◆ FUEL CROSSFEED message is **shown**:

The battery bus is unpowered. The standby AC bus and the standby DC bus are also unpowered.

►► **Go to step 5**

◆ FUEL CROSSFEED message is **not shown**:

The battery bus is powered.

►► **Go to step 14**

4 Choose one:

◆ AFT FUEL X-FEED and FWD FUEL X-FEED messages are **shown**:

The battery bus is unpowered. The standby AC bus and the standby DC bus are also unpowered.

►► **Go to step 5**

◆ AFT FUEL X-FEED and FWD FUEL X-FEED messages are **not shown**:

Battery bus is powered.

►► **Go to step 14**

5 Avoid icing conditions.

▼ Continued on next page ▼

▼ STANDBY BUS OFF continued ▼

- 6 Check that available left and right main tank quantity is sufficient for the planned flight. Center tank fuel is not available.
- 7 Do **not** use autobrakes.
- 8 Do **not** arm speedbrake lever.

Caution! Do not deploy speedbrakes manually until the nosewheel is on the ground. Deploying speedbrakes manually before nosewheel touchdown may cause pronounced nose pitch up, increasing the likelihood of tail strike.

- 9 Manually extend speedbrakes after landing.
- 10 Use flaps 20 and VREF 20 for landing.

The battery bus is unpowered. The standby AC bus and the standby DC bus are also unpowered.

Inoperative Items**Wing anti-ice inop**

Avoid icing conditions.

Left engine anti-ice inop

Avoid icing conditions.

▼ Continued on next page ▼

▼ **STANDBY BUS OFF** continued ▼

121-139, 1501-1506

EEC inop

Engines are controlled hydromechanically.

171-199, 1200-1201, 1401-1404, 1521, 1601-1613, 1701-1708

EEC normal mode inop

Engines operate in alternate control mode.

Aileron lockout inop**Rudder trim inop**131-139, 171-199, 1200-1201, 1401-1404, 1501-1506, 1521,
1601-1613, 1701-1708**Alternate stabilizer trim inop****Center fuel pumps inop**

Center tank fuel is unavailable.

121-139, 171-180, 1501-1506

Fuel crossfeed valve inop

Vary engine thrust as needed to maintain fuel balance as conditions allow.

181-199, 1200-1201, 1401-1404, 1521, 1601-1613, 1701-1708

Fuel crossfeed valves inop

Vary engine thrust as needed to maintain fuel balance as conditions allow.

Left VHF communication system inop**Left VOR inop**171-199, 1200-1201, 1401-1404, 1501-1506, 1521, 1601-1613,
1701-1708**Right ADF inop****Left RDMI inop****Standby ADI inop****PA, flight and cabin interphone systems inop**▼ **Continued on next page** ▼

▼ STANDBY BUS OFF continued ▼
Cabin altitude and differential pressure indicators inop

Cabin altitude control AUTO 1 or AUTO 2 mode operates normally.

Leading edge slats primary extension inop

Alternate leading edge slat extension is available. Flaps 1 is indicated regardless of actual slat position until trailing edge flap position is greater than 1. Trailing edge flap operation is normal.

Inboard wheel antiskid inop
Autobrakes inop

Manual braking is needed.

Automatic speedbrake inop

Manual speedbrake extension after landing is needed.

Left and right thrust reverser inop

11 Refer to the ODM, Abnormal section for applicable performance information.

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

LEADING EDGE SLAT DISAGREE

EQUIPMENT VALVE

REVERSER ISOLATION VALVE

13 Do the checklist for each consequential ECIAS alert message as soon as practicable.

►► **Go to step 20**

▼ Continued on next page ▼

▼ STANDBY BUS OFF continued ▼

14 Choose one:

◆ Rudder trim is **operative**:

Standby DC bus is powered. Standby AC bus is unpowered.

▶▶ **Go to step 15**

◆ Rudder trim **not operative**:

Standby DC bus is unpowered. Standby AC bus may be unpowered.

▶▶ **Go to step 16**

15 Do the checklist for each consequential EICAS alert message as soon as practicable.

The standby AC bus is unpowered.

Inoperative Items

Cabin altitude and differential pressure indicators inop

Cabin altitude control AUTO 1 or AUTO 2 mode operates normally.



16 Use flaps 20 and VREF 20 for landing.

▼ Continued on next page ▼

▼ STANDBY BUS OFF continued ▼

The standby DC bus is unpowered. The standby AC bus may also be unpowered.

Inoperative Items**Left engine anti-ice inop**

Avoid icing conditions.

121-139, 1501-1506

EEC inop

Engines are controlled hydromechanically.

171-199, 1200-1201, 1401-1404, 1521, 1601-1613, 1701-1708

EEC normal mode inop

Engines operate in alternate control mode.

Aileron lockout inop**Rudder trim inop****Left VHF communication system inop****Left VOR inop**

▼ Continued on next page ▼

▼ STANDBY BUS OFF continued ▼

171-199, 1200-1201, 1401-1404, 1501-1506, 1521, 1601-1613, 1701-1708

Right ADF inop

Left RDMI inop

Standby ADI inop

Cabin altitude and differential pressure indicators may be inop

Cabin altitude control AUTO 1 or AUTO 2 mode operates normally.

Leading edge slats primary extension inop

Alternate leading edge slat extension is available. Flaps 1 is indicated regardless of actual slat position until trailing edge flap position is greater than 1. Trailing edge flap operation is normal.

Left thrust reverser inop

17 Refer to the ODM, Abnormal section for applicable performance information.

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

LEADING EDGE SLAT DISAGREE

19 Do the checklist for each consequential ECIAS alert message as soon as practicable.

20 **Checklist Complete Except Deferred Items**

▼ Continued on next page ▼

▼ STANDBY BUS OFF continued ▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
■ Minimums	____, ____, xckd	C&F
■ Landing data	____, ____, xckd	C&F
■ Approach briefing	complete	PM
■ Autobrakes	as reqd or OFF if Battery Bus is unpowered	PM
Seat belt signs	ON	PM
Fuel crossfeed (ETOPS)	cycled	PM
Pressurization panel	set	PM
Recall	ckd	PM

Approach Checklist

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

▼ Continued on next page ▼

▼ STANDBY BUS OFF continued ▼

Alternate Leading Edge Slat Extension

- ALTN FLAPS selector Position to agree with FLAP selector
- LE ALTN FLAPS arm switch ALTN
- ALTN FLAPS selector Extend or retract leading edge slats as needed
- FLAP lever Extend or retract trailing edge flaps as needed

Landing Checklist

- Landing gear down C&F
- Flaps **20, 20** C&F
- Speedbrake **ARMED or DOWN if** PM
- Battery Bus is unpowered**



OFF

UTILITY BUS OFF

Messages: L UTIL BUS OFF R UTIL BUS OFF

Condition: The galley and utility buses are not energized.

1 Choose one:

◆ Two generator sources are **available**:

UTILITY BUS switch Off, then ON



◆ Two generator sources are **not available**:



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Blank

Non-Normal Checklists

Chapter NNC

Engines, APU

Section 7

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Aborted Engine Start

Condition: During a ground start, an abort start condition occurs.

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

2 Choose one:

◆ ENG START selector in **GND**:

Motor the engine for 30 seconds.

ENG START selector
(affected side) AUTO



◆ ENG START selector in **AUTO**:

▶▶ **Go to step 3**

3 **When** N2 decreases below 20%:

ENG START selector (affected side) GND

Motor the engine for 30 seconds.

ENG START selector (affected side) AUTO



Dual Engine Failure

Condition: One of these occurs on both engines:

- Engine flameout
- No response to thrust lever movement

- 1 ENG START selectors (both) FLT
- 2 Thrust levers (both) Idle
- 3 FUEL CONTROL
switches (both) CUTOFF, then RUN

-
- 4 **If** engine appears stalled **or** EGT approaches the
Standby Engine Indicator placard limit:
Repeat above step as needed.

Note: SEI maximum EGT limit is inflight start EGT limit.

- 5 RAM AIR TURB switch Push

Warning! If engines not operating, maintain a minimum of 130 KIAS for flight controls.

▼ Continued on next page ▼

▼ Dual Engine Failure continued ▼

6 Maintain airspeed as indicated below.

121, 124-139

Above 30,000 feet use 240 knots.

30,000 feet or below use 260 knots minimum.

1501-1506, 1521, 1601-1708

Above 30,000 feet use 240 knots.

30,000 feet or below use 220 knots minimum.

171-199, 1200-1201, 1401-1404

Above 35,000 feet use 240 knots.

Above 20,000 to 35,000 feet use 250 knots minimum.

20,000 feet and below use 200 knots minimum.

172, 174, 179, 185-187, 191-192, 194, 1607-1613

Caution! Speedbrakes autostow to the 50% flight detent if airspeed exceeds 320 knots. Do not override autostow function unless airspeed is less than 315 knots.

Note: OVSPD light and associated aural warning indicate Vmo/Mmo exceedances.

▼ Continued on next page ▼

▼ Dual Engine Failure continued ▼

Note: Cabin altitude warning can occur during descent.

7 Choose one:

◆ APU is **not** available:

▶▶ **Go to step 9**

◆ APU is **available**:

▶▶ **Go to step 8**

Do **not** wait for successful engine start(s) before to starting the APU

8  APU selector START, then ON

9 Choose one:

◆ **Either or both** engines **started**:

▶▶ **Go to step 13**

◆ **Both** engines remain **failed**:

▶▶ **Go to step 10**

10 Thrust levers (both) Idle

11 Engines can accelerate to idle very slowly, especially at high altitude. If N2 is steadily increasing, and EGT remains within limits, do not interrupt the start.

▼ Continued on next page ▼

▼ Dual Engine Failure continued ▼

The time from fuel control switch to RUN to EGT increase can be as long as two minutes.

- 12  FUEL CONTROL switches (both) . . . CUTOFF for approximately 30 seconds, then RUN for approximately 120 seconds. Repeat until engine start is achieved

13 Plan to land at the nearest suitable airport.

14 Activate the FMC route.

15 Enter the FMC performance data.

16 Choose one:

◆ **All** ALIGN lights are **not** illuminated:

▶▶ **Go to step 19**

◆ **Any** ALIGN light is **illuminated**:

▶▶ **Go to step 17**

Action is **not** reversible. Do this step only for the affected IRS(s)

- 17  IRS MODE selector (affected IRS) ATT

▼ Continued on next page ▼

▼ Dual Engine Failure continued ▼

18 Enter heading on IRS control panel or POS INIT page of FMC.

Note: Cabin altitude warning may occur during descent.

19 Choose one:

◆ **Both** engines are **started**:



◆ **An** engine **stays failed**:

►► **Go to the Engine Failure or Shutdown checklist on page 7.17**



Engine Limit or Surge or Stall

Condition: One or more of these occur:

- Engine indications are abnormal
- Engine indications are rapidly approaching or exceeding limits
- 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 OFF
- 2 Thrust lever
(affected side) . . Confirm Retard until
engine indications
stay within limits or
the thrust lever is at idle

- 3 ENG START selector (affected side) FLT

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.

Note: Do not initiate an over-water crossing when a surge or stall has occurred.

Note: EGT may take up to two minutes to recover to normal range.

▼ Continued on next page ▼

▼ Engine Limit or Surge or Stall continued ▼

4 Choose one:

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

▶▶ **Go to step 5**

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

▶▶ **Go to the Engine Failure or Shutdown checklist on page 7.17**



Check that RPM and EGT follow thrust lever movement.

5  Thrust levers (affected side) . . . Advance slowly

6 Choose one:

◆ Engine acceleration is **normal**:

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

▶▶ **Go to step 11**

◆ Engine acceleration is **not** normal:

▶▶ **Go to step 7**

▼ Continued on next page ▼

▼ Engine Limit or Surge or Stall continued ▼

7 Choose one:

◆ EGT is **normal**:

▶▶ **Go to step 8**

◆ EGT is **not** normal:

▶▶ **Go to the Engine Failure or Shutdown checklist on page 7.17**



8 ENG bleed air switch (affected side) Off

9 Choose one:

◆ Engine **responds**:

Operate engine normally or at a **reduced thrust level** which is surge and stall free.

▶▶ **Go to step 10**

◆ Engine does **not** respond:

Operate engine at idle.

▶▶ **Go to step 10**

10 ENG bleed air switch (affected side) On

▼ Continued on next page ▼

▼ Engine Limit or Surge or Stall continued ▼

11 Choose one:

◆ Engine operates **normally**:



◆ Engine operating **at idle** or at a **reduced thrust level** which is surge and stall free:

►► **Go to step 12**

12 GND PROX FLAP OVRD switch OVRD

Note: Monitor fuel balance.

13 Transponder mode selector TA / TA ONLY

14 Use flaps 20 and VREF 20 for landing.

15 Use flaps 5 for go-around.

16 Check the Abnormal Configuration, Actual Landing Distances and Approach Speeds tables in the ODM.

17 **Checklist Complete Except Deferred Items**

▼ Continued on next page ▼

▼ Engine Limit or Surge or Stall continued ▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
■ Minimums	____,____, xckd	C&F
■ Landing data . .	flaps 20, Vref 20, xckd	C&F
■ Approach briefing	complete	PM
■ Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Fuel crossfeed (ETOPS)	cycled	PM
Pressurization panel	.set	PM
Recall	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



FAULT**APU FAULT**

Messages: APU FAULT

Condition: An APU automatic shutdown occurs.

1 APU selector OFF, then ON

2 Choose one:

◆ FAULT light **stays illuminated:**◆ FAULT light **extinguishes:**▶▶ **Go to step 3**

3 APU selector START, then ON



FAULT

APU FUEL VALVE

Messages: APU FUEL VAL

Condition: The APU fuel valve is not in the commanded position.

- 1 APU selector OFF
- 2 Do **not** start the APU.



INOP

EEC OFF

121, 124-139, 1501-1506

Messages: L EEC OFF

R EEC OFF

Condition: The EEC switch is off.



ENGINE CONTROL(S)

1521, 1601-1613, 1701-1708

Messages: ENGINE CONTROLS

R ENG CONTROL

L ENG CONTROL

Condition: An EEC system fault occurs.



ENGINE CONTROL

171-199, 1200-1201, 1401-1404

Messages: L ENG CONTROL R ENG CONTROL

Condition: An EEC system fault occurs.



INOP

ENGINE EEC

121, 124-139, 1501-1506

Messages: L ENG EEC R ENG EEC

Condition: The EEC is inoperative.

Objective: To operate both engines in the same control mode.

- 1 A/T ARM switch OFF
- 2 Thrust levers (both) Retard to mid position

This prevents exceeding thrust limits.

- 3 L ELEC ENG CONTROL switch Off
- 4 R ELEC ENG CONTROL switch Off
- 5 A/T ARM switch (if needed) ARM

The autothrottle provides maximum thrust limiting.

- 6 Observe thrust limits.



ALTN

ENGINE EEC MODE [GE Engines]

1521, 1601-1613, 1701-1708

Messages: L ENG EEC MODE R ENG EEC MODE

Condition: An EEC operates in the alternate control mode.

Objective: To ensure both engines operate in the alternate mode.

- 1 A/T ARM switch OFF
- 2 Thrust levers (both) Retard to mid position

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

- 3 L ELEC ENG CONT switch ALTN
- 4 R ELEC ENG CONT switch ALTN
- 5 A/T ARM switch (if needed) ARM

The autothrottle provides maximum thrust limiting.

- 6 Resume normal thrust management. Observe thrust limits.



ALTN

ENGINE EEC MODE [P&W Engines]

171-199, 1200-1201, 1401-1404

Messages: L ENG EEC MODE R ENG EEC MODE

Condition: An EEC operates in the alternate control mode.

- 1 A/T ARM switch OFF
- 2 Thrust levers (both) Retard to mid position

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

- 3 ELEC ENG CONT switch (affected side) ALTN, then NORM

- 4 Choose one:

◆ EEC ALTN mode light is **extinguished**:

▶▶▶ **Go to step 5**

◆ EEC ALTN mode light **stays illuminated**:

▶▶▶ **Go to step 7**

- 5 A/T ARM switch ARM
- 6 Resume normal thrust management. Observe thrust limits.



- 7 ELEC ENG CONT switches (both) ALTN
- 8 Resume normal thrust management. Observe thrust limits



Engine Failure or Shutdown

Condition: One of these occurs:

- An engine failure
- An engine flameout
- Another checklist directs an engine shutdown

- 1 A/T ARM switch OFF
 - 2 Thrust lever (affected side) . Confirm Idle
 - 3 **If** engine conditions allow, operate at idle for two minutes to allow engine to cool and stabilize.
 - 4 FUEL CONTROL switch
(affected side) Confirm . . . CUTOFF
 - 5 Choose one:
 - ◆APU is **not available**:
 - ▶▶ **Go to step 7**
 - ◆APU is **available**:
 - ▶▶ **Go to step 6**
 - 6 APU selector START, then ON
- Note:** Monitor fuel balance
- 7 TRANSPONDER mode selector TA / TA ONLY
 - 8 WING ANTI ICE selector / switch OFF / Off
 - 9 Plan to land at the nearest suitable airport.

▼ Continued on next page ▼

▼ Engine Failure or Shutdown continued ▼

10 If wing anti-ice required:

PACK control selector (affected side) OFF

ISLN switch (affected side) On

WING ANTI ICE selector / switch . . AUTO / ON

When wing anti-ice no longer required:

WING ANTI ICE

selector / switch OFF / Off

L and R ISLN switches Off

11 GND PROX FLAP OVRD switch OVRD

12 Use flaps 20 and VREF 20 for landing.

13 Use flaps 5 for go-around.

14 Check the Abnormal Configuration, Actual Landing Distances and Approach Speeds tables in the ODM.

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

ENGINE SHUTDOWN

PACK OFF

16 Checklist Complete Except Deferred Items

▼ Continued on next page ▼

▼ Engine Failure or Shutdown continued ▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
■ Minimums	____,____, xckd	C&F
■ Landing data . .	flaps 20, Vref 20, xckd	C&F
■ Approach briefing	complete	PM
■ Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Fuel crossfeed (ETOPS)	cycled	PM
Pressurization panel	.set	PM
Recall	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 FUEL FILTER

[AFM]

Messages: L ENG FUEL FILT R ENG FUEL FILT

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

1 Choose one:

- ◆ Only **one** ENG FUEL FILT 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 FILT messages for **both** engines either 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
VALVE

ENGINE FUEL VALVE

Messages: L ENG FUEL VAL R ENG FUEL VAL

Condition: The engine fuel valve is not in the commanded position.

1 Choose one:

◆ FUEL CONTROL switch is **not** in CUTOFF:

◆ FUEL CONTROL switch is in **CUTOFF**:

The engine may continue to run for approximately 1 minute.

►► **Go to step 2**

2 Choose one:

◆ In **flight**:

◆ On the **ground**:

Do **not** attempt engine start.



Engine In-Flight Start

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

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

Note: Do not attempt restart unless greater emergency exists.

- 1 Check altitude and airspeed. Starts are not assured outside the EICAS envelope.
- 2 Engine can accelerate to idle very slowly, especially at high altitude. If N2 is steadily increasing, and EGT stays within limits, do not interrupt the start.
- 3 Choose one:
 - ◆ X-BLD is **shown**:
▶▶ **Go to step 7**
 - ◆ X-BLD is **not shown**:
▶▶ **Go to step 4**
- 4 ENG START selector (affected side). FLT

▼ Continued on next page ▼

▼ Engine In-flight Start continued ▼

- 5 121, 124-139, 1501-1506, 1521, 1601-1613, 1701-1708:

FUEL CONTROL switch (affected side). . . . RUN

Choose one:

- ◆ EGT does **not increase** in 45 seconds **or** another abort start condition as listed in normal procedures **occurs**:

▶▶ Go to step 19

- ◆ EGT **increases** in 45 seconds **and** another abort start condition as listed in normal procedures does **not occur**:

▶▶ Go to step 13

- 6 171-199, 1200-1201, 1401-1404:

FUEL CONTROL switch (affected side). . . . RUN

Choose one:

- ◆ EGT does **not increase** in 30 seconds **or** another abort start condition as listed in normal procedures **occurs**:

▶▶ Go to step 19

- ◆ EGT **increases** in 30 seconds **and** another abort start condition as listed in normal procedures does **not occur**:

▶▶ Go to step 13

▼ Continued on next page ▼

▼ Engine In-flight Start continued ▼

- 7 PACK control selector (affected side). OFF
- 8 ISLN switch (affected side) On
- 9 Ignition selector BOTH
- 10 ENG START selector (affected side). GND
- 11 121, 124-139, 1501-1506, 1521, 1601-1613,
1701-1708:

When N2 exceeds minimum fuel on command bug:

FUEL CONTROL
switch (affected side) Select RUN
when N2 exceeds
the minimum fuel
on command bug

Choose one:

◆ EGT does **not increase** in 45 seconds **or** another abort start condition as listed in normal procedures **occurs**:

▶▶ **Go to step 19**

◆ EGT **increases** in 45 seconds **and** another abort start condition as listed in normal procedures does **not occur**:

▶▶ **Go to step 13**

▼ Continued on next page ▼

▼ Engine In-flight Start continued ▼

12 171-199, 1200-1201, 1401-1404:

When N2 exceeds minimum fuel on command
bug:

FUEL CONTROL switch
(affected side) RUN

Choose one:

◆ EGT does **not increase** in 30 seconds **or** another
abort start condition as listed in normal
procedures **occurs**:

▶▶ **Go to step 19**

◆ EGT **increases** in 30 seconds **and** another abort
start condition as listed in normal procedures
does **not occur**:

▶▶ **Go to step 13**

▼ Continued on next page ▼

▼ Engine In-flight Start continued ▼

13 Choose one:

◆ Engine **starts** and runs normally:

▶▶ **Go to step 14**

◆ Engine **fails** to start:

▶▶ **Go to step 19**

14 ENG START selector (affected side). AUTO

15 PACK control selectors (both). AUTO

16 L and R ISLN switches. Off

171-199, 1200-1201, 1601-1613, 1701-1708

17 WING ANTI-ICE

selector/switch. AUTO/As needed

18 APU selector As needed



19 FUEL CONTROL switch

(affected side) Confirm CUTOFF

20 ENG START selector

(affected side) AUTO

21 L and R ISLN switches. Off

22 Plan to land at the nearest suitable airport.

▼ Continued on next page ▼

▼ Engine In-flight Start continued ▼

23 **If** wing anti-ice needed:

PACK control selector (affected side) OFF

ISLN switch (affected side) On

WING ANTI ICE selector / switch . . AUTO / ON

When wing anti-ice no longer needed:

WING ANTI ICE

selector / switch OFF / Off

L and R ISLN switches Off

24 GND PROX FLAP OVRD switch OVRD

25 Use flaps 20 and VREF 20 for landing.

26 Use flaps 5 for go-around.

27 Check the Abnormal Configuration, Actual Landing Distances and Approach Speeds tables in the ODM.

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

ENGINE SHUTDOWN

PACK OFF

29 **Checklist Complete Except Deferred Items**

▼ Continued on next page ▼

▼ Engine In-flight Start continued ▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
■ Minimums	____,____, xckd	C&F
■ Landing data . .	flaps 20, Vref 20, xckd	C&F
■ Approach briefing	complete	PM
■ Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Fuel crossfeed (ETOPS)	cycled	PM
Pressurization panel	set	PM
Recall	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



ALTN

ENGINE LIMIT PROTECTION

171-199, 1200-1201, 1401-1404, 1521, 1601-1613, 1701-1708

Messages: L ENG LIM PROT R ENG LIM PROT

Condition: The EEC operates in the alternate mode and command N1 is more than the limit.

- 1 Thrust lever (affected side) Retard until N1 remains within limits



ENGINE LOW IDLE

171-199, 1200-1201, 1401-1404, 1521, 1601-1613, 1701-1708

Messages: L ENG LOW IDLE R ENG LOW IDLE

Condition: The engine is below approach idle.

- 1 Thrust lever (affected side) Advance until the message blanks



ENGINE OIL PRESSURE**L ENG
OIL PRESS****R ENG
OIL PRESS**

Messages: L ENG OIL PRESS R ENG OIL PRESS

Condition: The oil pressure is low.

1 Choose one:

◆ Oil pressure indication **normal**:

Operate engine normally.

◆ Oil pressure indication **at or below red line limit**:▶▶ **Go to the Engine Failure or Shutdown checklist on page 7.17**

Intentionally
Blank

Engine Oil Temperature [GE engines]

121, 124-139, 1501-1506, 1521, 1601-1708

Condition: The oil temperature is high.

1 Choose one:

◆ Oil temperature is in the amber band:

A/T ARM switch OFF

Thrust lever
(affected side). Confirm . . . Retard slowly
until the temperature
decreases

►► **Go to step 2**

◆ Oil temperature is at red line limit:

►► **Go to the Engine Failure or
Shutdown checklist on page 7.17**



2 **If** the temperature remains in the amber band for 15 minutes **or** reaches the red line limit:

►► **Go to the Engine Failure or Shutdown
checklist on page 7.17**



Engine Oil Temperature [P&W engines]

171-199, 1200-1201, 1401-1404

Condition: The oil temperature is high.

1 Choose one:

◆ Oil temperature is in the amber band:

A/T ARM switch OFF

Thrust lever
(affected side). Confirm. . . Retard slowly
until the temperature
decreases

▶▶ **Go to step 2**

◆ Oil temperature is at red line limit:

▶▶ **Go to the Engine Failure or
Shutdown checklist on page 7.17**



2 **If** the temperature remains in the amber band for 20 minutes **or** reaches the red line limit:

▶▶ **Go to the Engine Failure or Shutdown
checklist on page 7.17**



ENGINE RPM LIMIT

171-199, 1200-1201, 1401-1404, 1521, 1601-1708

Messages: L ENG RPM LIM R ENG RPM LIM

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



ENGINE SHUTDOWN

Messages: L ENG SHUTDOWN R ENG SHUTDOWN

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



VALVE

ENGINE STARTER

Messages: L ENG STARTER

R ENG STARTER

Condition: The start valve is not open.

- 1 ENG START selector (affected side) AUTO

This prevents bleed air from entering starter if valve subsequently opens.

- 2 Choose one:

◆ On the **ground**:



◆ In **flight**:

Increase airspeed until X-BLD no longer displayed.



SPAR
VALVE**FUEL SPAR VALVE**

Messages: L FUEL SPAR VAL R FUEL SPAR VAL

Condition: The spar fuel valve is not in the commanded position.

1 Choose one:

◆ In **flight**:◆ On the **ground**:Do **not** attempt engine start.

IDLE DISAGREE

171-199, 1200-1201, 1401-1404, 1501-1506, 1521, 1601-1613,
1701-1708

Messages: IDLE DISAGREE

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

1 Choose one:

◆ On the **ground**:

Crew awareness.



◆ In **flight**:

Thrust lever
(lower thrust side) Advance until
message disappears



OIL FILTER [GE engines]

121, 124-139, 1501-1506, 1521, 1601-1708

Messages: L OIL FILTER

R OIL FILTER

Condition: Oil filter contamination can cause oil to bypass the oil filter.

- 1 A/T ARM switch OFF
- 2 Thrust lever
(affected side) Confirm . Retard slowly until
message disappears
or thrust lever is idle

3 Choose one:

◆ OIL FILTER message **not displayed**:

Continue operating at reduced thrust.



◆ OIL FILTER message **remains displayed**:

▶▶ **Go to the Engine Failure or
Shutdown checklist on page 7.17**



OIL FILTER
[P&W engines]

171-199, 1200-1201, 1401-1404

Messages: L OIL FILTER

R OIL FILTER

Condition: Oil filter contamination can cause oil to bypass the oil filter.

- 1 Closely monitor all other engine parameters.



**REV
ISLN**

REVERSER ISOLATION VALVE

Messages: REV ISLN VAL

R REV ISLN VAL

L REV ISLN VAL

Condition: A fault occurs in the thrust reverser system.

- 1 Additional system failures may cause inflight deployment.
- 2 Expect normal reverser operation after landing.



REVERSER UNLOCKED

Condition: The REV indication shows with reverse thrust not intentionally commanded.

- 1 Reverse thrust lever
(affected side) Verify in the
full down position

- 2 Choose one:
 - ◆ With **no yaw, loss of airspeed, or buffet:**
Operate engine normally.

■ ■ ■ ■

 - ◆ With **yaw, loss of airspeed, or buffet:**
▶▶ **Go to step 3**

- 3 Flaps. Retract
- 4 A/T ARM switch OFF
- 5 Thrust lever
(affected side) Confirm Idle
- 6 FUEL CONTROL switch
(affected side) Confirm . . . CUTOFF
- 7 Choose one:
 - ◆ APU is **not available:**
▶▶ **Go to step 9**

 - ◆ APU is **available:**
▶▶ **Go to step 8**

- 8 APU selector START, then ON

▼ Continued on next page ▼

▼ REVERSER UNLOCKED continued ▼

9 GND PROX FLAP OVRD switch OVRD

Note: Monitor fuel balance.

10 TRANSPONDER mode selector TA

11 WING ANTI ICE selector / switch OFF / Off

12 Plan to land at the nearest suitable airport.

13 **If** wing anti-ice needed:

PACK control selector (affected side) OFF

ISLN switch (affected side) On

WING ANTI ICE selector / switch . . AUTO / ON

When wing anti-ice no longer needed:

WING ANTI ICE

selector / switch OFF / Off

L and R ISLN switches Off

14 Use trailing edge flaps 20 and VREF 30 + 30 for landing.

15 Check the Abnormal Configuration, Actual Landing Distances and Approach Speeds tables in the ODM.

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

ENGINE SHUTDOWN

PACK OFF

17 **Checklist Complete Except Deferred Items**

▼ Continued on next page ▼

▼ REVERSER UNLOCKED continued ▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
■ Minimums	____,____, xckd	C&F
■ Landing data	flaps 20, Vref 30+30, xckd	C&F
■ Approach briefing	complete	PM
■ Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Fuel crossfeed (ETOPS)	cycled	PM
Pressurization panel	set	PM
Recall	ckd	PM

Approach Checklist

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

▼ Continued on next page ▼

▼ REVERSER UNLOCKED continued ▼

Alternate Flap Extension

L and R ENG START selectors CONT
 ALTN FLAPS selector Set to agree
 with flap lever

 **Do not** extend leading edge slats
 TE ALTN FLAPS arm switch ALTN

ALTN FLAPS selector Set to extend or retract
 trailing edge flaps as needed

Note: Flap indicator may not move until flaps 5 or greater is selected.

Landing Checklist

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



VALVE**STARTER CUTOUT**

Messages: L STARTER CUTOUT R STARTER CUTOUT

Condition: The start valve is not closed.

1 ENG START selector (affected side). AUTO

2 Choose one:

◆ VALVE light **extinguishes**:



◆ VALVE light **stays illuminated**:

▶▶ **Go to step 3**

3 ENG bleed air switch (affected side) Off

4 ISLN switch (affected side) Off

5 Choose one:

◆ Ground air source **not** in use:

▶▶ **Go to step 7**

◆ Ground air source **in use**:

▶▶ **Go to step 6**

6 Disconnect the ground air source.

7 WING ANTI-ICE selector / switch OFF / Off

This prevents possible asymmetrical ice buildup on the wings.

▼ Continued on next page ▼

▼ STARTER CUTOUT continued ▼

- 8 Avoid icing conditions.
- 9 Do **not** accomplish the following checklists:

ENGINE BLEED OFF

PACK OFF



Intentionally
Blank



Non-Normal Checklists

Chapter NNC

Fire Protection

Section 8

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Intentionally
Blank

APU FIRE

Messages: APU FIRE

Condition: Fire is detected in the APU.

- 1 APU fire switch Confirm Pull, rotate to the stop, and hold for 1 second

121, 124-139, 171-199, 1200-1201, 1401-1404, 1501-1506,
1601-1708

- 2 Choose one:

◆ **After** 30 seconds, APU fire warning light **stays illuminated**:

APU fire switch Rotate to the other stop and hold for 1 second

▶▶ **Go to step 3**

◆ **After** 30 seconds, APU fire warning light **extinguishes**:

▶▶ **Go to step 4**

- 3 Choose one:

◆ APU fire warning light **stays illuminated**:

Plan to land at the nearest suitable airport.

▶▶ **Go to step 4**

◆ APU fire warning light **extinguishes**:

▶▶ **Go to step 4**

▼ Continued on next page ▼

▼ APU FIRE continued ▼

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

APU BOTTLE

APU FAULT



Crew Rest Smoke

171-199, 1200-1201, 1501-1506, 1521, 1601-1613, 1701-1708

FWD CR
SMK DET

AFT CR
SMK DET

Condition: Smoke is detected in a crew rest area.

Warning! Notify pilots/flight attendants to evacuate the crew rest facilities and close the main hatch and vestibule door.

Note: The pilot/flight attendant crew rest smoke alarm may be silenced at the associated CREW REST SMOKE DETECTION panel.

►► **Go to the Smoke, Fire or Fumes checklist on page 8.10**



ENGINE FIRE or Engine Severe Damage or Separation

Messages: L ENGINE FIRE

R ENGINE FIRE

Condition: One or more of these occur:

- Engine fire warning
- Airframe vibrations with abnormal engine indications
- Engine separation

1 A/T ARM switch OFF

2 Thrust lever (affected side) . Confirm Idle

3 FUEL CONTROL switch
(affected side) Confirm . . . CUTOFF4 Engine fire switch
(affected side) Confirm Pull5 **If** the engine fire warning light is illuminated:

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

If after 30 seconds the engine fire warning light
stays illuminated:

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

▼ Continued on next page ▼

▼ ENGINE FIRE or Severe Damage or Separation continued ▼

- 6 **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 airframe vibration returns and further airspeed reduction and descent are not practical, increasing the airspeed may reduce the vibration.

- 7 Choose one:

◆ APU is **available**:

▶▶ **Go to step 8**

◆ APU is **not available**:

▶▶ **Go to step 9**

- 8 APU selector START, then ON

Note: Monitor fuel balance.

- 9 WING ANTI ICE selector / switch OFF / Off

- 10 Plan to land at the nearest suitable airport.

▼ Continued on next page ▼

▼ ENGINE FIRE or Severe Damage or Separation continued ▼

11 **If** wing anti-ice required:

PACK control selector (affected side) OFF

ISLN switch (affected side) On

WING ANTI ICE selector / switch . . AUTO / ON

When wing anti-ice no longer required:

WING ANTI ICE

selector / switch OFF / Off

L and R ISLN switches Off

12 GND PROX FLAP OVRD switch OVRD

13 Use flaps 20 and VREF 20 for landing.

14 Use flaps 5 for go-around.

15 Check the Abnormal Configuration, Actual Landing Distances and Approach Speeds tables in the ODM.

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

ENGINE BOTTLE

ENGINE SHUTDOWN

PACK OFF

17 **Checklist Complete Except Deferred Items**

▼ Continued on next page ▼

▼ ENGINE FIRE or Severe Damage or Separation continued ▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
■ Minimums	____,____, xckd	C&F
■ Landing data . .	flaps 20, Vref 20, xckd	C&F
■ Approach briefing	complete	PM
■ Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Fuel crossfeed (ETOPS)	cycled	PM
Pressurization panel	.set	PM
Recall	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 Tailpipe Fire

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.

Caution! Notify maintenance prior to a subsequent takeoff.



4 PACK control selectors (both). OFF

5 L and R ISLN switches. On

6 Choose one:

◆ Affected ENG START selector is in **GND**:

▶▶ **Go to step 9**

◆ Affected ENG START selector is **not** in GND:

▶▶ **Go to step 7**

▼ Continued on next page ▼

▼ Engine Tailpipe Fire continued ▼

- 7 **Wait** for N2 to decrease to 30%.
- 8 ENG START selector (affected side) GND
- 9 Advise the tower.
- 10 **When** the tailpipe fire is extinguished:
ENG START selector
(affected engine) AUTO

Caution! Notify maintenance prior to a subsequent takeoff.



Smoke, Fire or Fumes

Condition: Smoke, fire or fumes occur.

- 1 Diversion may be needed.
- 2 Don oxygen masks (if needed).
- 3 Establish crew and cabin communications.
- 4 Advise the cabin crew to turn off main IFE power switch.
- 5 Advise cabin crew that main cabin lighting will be turned off.
- 6 UTILITY BUS switches (both) Off
- 7 APU bleed air switch Off
- 8 **Anytime** the smoke or fumes become the greatest threat:

▶▶ Go to the Smoke or Fumes Removal checklist on page 8.26

▼ Continued on next page ▼

▼ Smoke, Fire or Fumes continued ▼

9 Choose one:

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

Isolate and extinguish the source.

If possible 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**

10 Choose one:

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

Continue flight at the Captain's discretion.

Restore unpowered items at the Captain's discretion.

▶▶ **Go to the Smoke or Fumes Removal checklist on page 8.26, if needed**



- ◆ Source is visually **not confirmed** to be extinguished **or** smoke or fumes are **not decreasing**:

▶▶ **Go to step 11**

11 EQUIP COOLING selector. STBY

▼ Continued on next page ▼

▼ Smoke, Fire or Fumes continued ▼

- 12 Initiate a diversion to the nearest suitable airport while continuing the checklist.
- 13 Consider an immediate landing if the smoke, fire or fumes situation becomes uncontrollable.
- 14 Do **not** delay landing in an attempt to complete all of the following steps.
- 15 L and R ISLN switches. Off
- 16 R PACK control selector. OFF
- 17 **Wait** 2 minutes unless the smoke or fumes are increasing. This allows time for the smoke or fumes to clear.
- 18 Choose one:
 - ◆ Smoke or fumes do **not continue** or are **not increasing**:
 - ▶▶ **Go to step 25**
 - ◆ Smoke or fumes **continue** or are **increasing**:
 - ▶▶▶ **Go to step 19**
- 19 R PACK control selector. AUTO
- 20 L PACK control selector. OFF
- 21 **Wait** 2 minutes unless the smoke or fumes are increasing. This allows time for the smoke or fumes to clear.

▼ Continued on next page ▼

▼ Smoke, Fire or Fumes continued ▼

22 Choose one:

◆ Smoke or fumes do **not continue** or are **not increasing**:

▶▶ **Go to step 25**

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

▶▶ **Go to step 23**

23 L PACK control selector AUTO

24 Consider an immediate landing.

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

UTILITY BUS OFF

PACK OFF

RECIRCULATION FAN

▶▶ **Go to the Smoke or Fumes Removal checklist on page 8.26, if needed.**



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 8.10.

- 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.



APU BTL
DISCH

APU BOTTLE
[One APU fire bottle installed]

1521

Message: APU BTL

Condition: The fire bottle pressure is low.



APU BOTTLE
[Two APU fire bottles installed]

121, 124-139, 171-199, 1200-1201, 1401-1404, 1501-1506,
1601-1708

APU BTL
1 DISCH

APU BTL
2 DISCH

Messages: APU BTL 1 APU BTL 2

Condition: The fire bottle pressure is low.



DISCH

CARGO BOTTLE

Messages: CARGO BTL 1 CARGO BTL 2

Condition: A fire bottle pressure is low.



CARGO FIRE

FWD

AFT

Messages: FWD CARGO FIRE AFT CARGO FIRE

Condition: Smoke is detected in the cargo compartment.

171-199, 1200-1201, 1501-1506, 1521, 1601-1613, 1701-1708

Warning! Notify pilots/flight attendants to evacuate the crew rest facilities and close the main hatch and vestibule door.

- 1 CARGO FIRE ARM switch
(FWD or AFT). Confirm Push
Confirm ARMED light is illuminated.
- 2 CARGO FIRE BTL DISCH switch . . . Push and hold
for 1 second

Note: DISCH light may require approximately 30 seconds to illuminate.

▼ Continued on next page ▼

▼ CARGO FIRE continued ▼

3 Choose one:

◆ On the **ground**:

**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.**



◆ In flight:

▶▶ **Go to step 4**

4 EQUIP COOLING selector OVRD

5 Choose one:

◆ **Forward** cargo fire:

FWD CARGO HEAT switch Off

▶▶ **Go to step 6**

◆ **Aft** cargo fire:

AFT and BULK
CARGO HEAT switches Off

▶▶ **Go to step 6**

6 FLT DK COMPT TEMP control Full cool

▼ Continued on next page ▼

▼ CARGO FIRE continued ▼

7 Choose one:

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

LDG ALT selector Set 7,500 feet

CABIN ALTITUDE

AUTO RATE control MAX

▶▶ **Go to step 8**

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

▶▶ **Go to step 8**

8 PACK control selector (either) OFF

9 Choose one:

◆ Airplane altitude **above** 35,000 feet:

Descend to 35,000 feet or below.

▶▶ **Go to step 10**

◆ Airplane altitude **at or below** 35,000 feet:

▶▶ **Go to step 10**

10 Plan to land at the nearest suitable airport.

Consider an evacuation.

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

CARGO BOTTLE

PACK OFF

RECIRCULATION FAN

▼ Continued on next page ▼

▼ CARGO FIRE continued ▼

12 Checklist Complete Except Deferred Items

Deferred Items

When leaving cruise altitude for landing

LDG ALT selector. Set landing
field elevation

Descent Checklist

Altimeters	____, xckd	C&F
■ Minimums	____,____, xckd	C&F
■ Landing data	____, ____ , xckd	C&F
■ Approach briefing	complete	PM
■ Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Fuel crossfeed (ETOPS)	cycled	PM
Pressurization panel	set	PM
Recall	ckd	PM

▼ Continued on next page ▼

▼ CARGO FIRE 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



ENGINE BOTTLE

ENG BTL 1 DISCH ENG BTL 2 DISCH

Messages: ENG BTL 1 ENG BTL 2

Condition: The fire bottle pressure is low.



ENGINE OVERHEAT

L ENG
OVHT

R ENG
OVHT

Messages: L ENG OVHT R ENG OVHT

Condition: An engine overheat is detected.

- 1 ENG bleed air switch (affected side) Off
- 2 PACK control selector (affected side). Off
- 3 A/T ARM switch OFF
- 4 Thrust lever
(affected side) . . . Confirm . . . Retard slowly until
ENG OVHT light extinguishes
or thrust lever is at idle

5 Choose one:

◆ ENG OVHT light is **not illuminated**:

▶▶ **Go to step 6**

◆ ENG OVHT light is **illuminated**:

▶▶ **Go to the Engine Failure or
Shutdown checklist on page 7.17**



- 6 Run the engine at a thrust setting that keeps the
ENG OVHT light extinguished.

Note: Monitor fuel balance.

- 7 GND PROX FLAP OVRD switch OVRD

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

▼ Continued on next page ▼

▼ **ENGINE OVERHEAT continued** ▼

8 WING ANTI ICE selector / switch OFF / Off

9 **If** wing anti-ice needed:

ISLN switch (affected side) On

WING ANTI ICE

selector /switch AUTO / ON

When wing anti-ice no longer needed:

WING ANTI ICE

selector / switch OFF / Off

L and R ISLN switches Off

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

ENGINE BLEED OFF

PACK OFF

11 **Checklist Complete Except Deferred Items**

▼ Continued on next page ▼

▼ **ENGINE OVERHEAT continued** ▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
■ Minimums	____, ____, xckd	C&F
■ Landing data . .	flaps 20, Vref 20, xckd	C&F
■ Approach briefing	complete	PM
■ Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Fuel crossfeed (ETOPS)	cycled	PM
Pressurization panel	set	PM
Recall	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

EQUIPMENT SMOKE

Messages: FWD EQPT SMOKE

Condition: Smoke is sensed in the forward equipment cooling ducts.

- 1 EQUIP COOLING selector. OVRD
- 2 The SMOKE light will extinguish when smoke clears.
- 3 **Wait** 1 minute.
- 4 Choose one:

◆ NO COOLING light is **not** illuminated:



◆ NO COOLING light is **illuminated**:

EQUIP COOLING selector STBY



FAIL
P-RESET

FIRE/OVERHEAT SYSTEM

Messages: FIRE/OVHT SYS

Condition: One or more of these occur:

- Engine fire and overheat detection is inoperative
- APU fire detection is inoperative
- Cargo fire detection is inoperative

- 1 FIRE/OVHT TEST SYS FAIL switch. Push



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.

**Warning! Do not turn an operating pack OFF.
Selecting packs OFF will result in
increased smoke concentrations.**

- 3 Close the flight deck door.
- 4 EQUIP COOLING selector OVRD
- 5 LDG ALT selector Set 9,500 feet
- 6 CABIN ALTITUDE AUTO RATE control. MAX
- 7 Choose one:

◆ Smoke or fumes is **not persistent**:

▶▶ **Go to the Smoke, Fire or Fumes
checklist on page 8.10 and do the
remaining steps.**

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

▶▶ **Go to step 8**

- 8 Descend to 9,500 feet or below as soon as conditions permit.

▼ Continued on next page ▼

▼ Smoke or Fumes Removal continued ▼**9 When at 9,500 feet:**

Cabin altitude MODE SELECT MAN

CABIN ALTITUDE

MANUAL control Hold in CLIMB until
the outflow valve indication
shows fully open

Do not accomplish the following checklist:

CABIN AUTOMATIC INOPERATIVE

10 When smoke has dissipated:

EQUIP COOLING selector STBY

**►► Go to the Smoke, Fire or Fumes checklist on
page 8.10 and do the remaining steps.**



**WHL WELL
FIRE**
WHEEL WELL FIRE

Messages: WHEEL WELL FIRE

Condition: Fire is detected in a main wheel well.

Maximum 270K/.82M

- 1  Landing gear lever DN

This attempts to extinguish the fire.

- 2 Plan to land at the nearest suitable airport.

Consider an evacuation.

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

- 3 Flight with gear down increases fuel consumption and decreases climb performance. Refer to Landing gear extended in the ODM ferry section for flight planning.

- 4 Choose one:

◆ Landing gear retraction is **not needed** for airplane performance:



◆ Landing gear retraction is **needed** for airplane performance:

►► **Go to step 5**

▼ Continued on next page ▼

▼ WHEEL WELL FIRE continued ▼

5 **When** WHL WELL FIRE light extinguishes:

Wait 20 minutes. This attempts to ensure the fire remains extinguished.

Landing gear lever UP, then OFF



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Non-Normal Checklists**Chapter NNC****Flight Controls****Section 9****Table of Contents**

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**AIL
LOCK**

AILERON LOCKOUT

Messages: AILERON LOCKOUT

Condition: An aileron lockout actuator is not in the commanded position.

1 Choose one:

◆ At **high** airspeed:

Avoid large or abrupt control wheel inputs.



◆ At **low** airspeed:

Roll rates may be reduced.



All Flaps and Slats Up Landing

Condition: The leading edge slats and trailing edge flaps fail to extend.

- 1 Accomplish this checklist **only** when directed by the LEADING EDGE SLAT ASYMMETRY checklist.
- 2 Do **not** slow below VREF 30 + 80 until established on final approach.
- 3 Limit bank angle to 15 degrees below VREF 30 + 80.

Note: Tail clearance is reduced on landing.

- 4 GND PROX FLAP OVRD switch OVRD
- 5 ENG START selectors (both) CONT
- 6 Use VREF 30 + 50 for landing.
- 7 Check the Abnormal Configuration, Actual Landing Distances and Approach Speeds tables in the ODM.
- 8 **Checklist Complete Except Deferred Items**

▼ Continued on next page ▼

▼ All Flaps and Slats Up Landing continued ▼**Additional Information**

Use longest available runway.

Reduce airplane gross weight (time and conditions permitting, burn off fuel) to reduce final approach speed.

Use of the autopilot during approach phase is acceptable. Do not autoland.

The G/A mode of the F/D and the autopilot will not be armed, unless an ILS approach is executed. Glide slope capture is required to arm the G/A mode if the flaps are not out of the up position.

See ODM Abnormal Section for abnormal flap/slat landing distances for runway shorter than 8,000 feet.

Use auto brakes consistent with runway length, consider MAX AUTO.

▼ Continued on next page ▼

▼ All Flaps and Slats Up Landing continued ▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
■ Minimums	____,____, xckd	C&F
■ Landing data	flaps as indicated, Vref 30+50, xckd	C&F
■ Approach briefing	complete	PM
■ Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Fuel crossfeed (ETOPS)	cycled	PM
Pressurization panel	set	PM
Recall	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	As indicated	C&F
Speedbrake	ARMED	PM



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Blank

AUTO
SPDBRK**AUTO SPEEDBRAKE**
[Aircraft without Speedbrake Load
Alleviation system]

121, 124-139, 171, 175-178, 180-184, 188-190, 193, 195-199,
1200-1201, 1401-1404, 1501-1506, 1521, 1601-1606, 1701-1708

Messages: AUTO SPEEDBRAKE

Condition: An automatic speedbrake fault occurs.

- 1 Do **not** arm the speedbrake lever.

Caution! Do not deploy speedbrakes manually until the nosewheel is on the ground. Deploying speedbrakes manually before nosewheel touchdown may cause pronounced nose pitch up, increasing the likelihood of tail strike.

- 2 Manually extend speedbrakes after landing.

Note: Refer to ODM, Approach/Landing section, Dry Landing Field Length, for landing distance.

- 3 **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	____, ____, xckd	C&F
■ Approach briefing	complete	PM
■ Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Fuel crossfeed (ETOPS)	cycled	PM
Pressurization panel	.set	PM
Recall	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



AUTO
SPDBRK**AUTO SPEEDBRAKE**
[Aircraft with Speedbrake Load
Alleviation system]

172, 174, 179, 185-187, 191-192, 194, 1607-1613

Messages: AUTO SPEEDBRAKE

Condition: An automatic speedbrake or load alleviation system fault occurs.

Note: Limit airspeed to 320 KIAS. Speedbrakes may be used in flight.

- 1 Do **not** arm the speedbrake lever.

Caution! Do not deploy speedbrakes manually until the nosewheel is on the ground. Deploying speedbrakes manually before nosewheel touchdown may cause pronounced nose pitch up, increasing the likelihood of tail strike.

- 2 Manually extend speedbrakes after landing. Increased force may be required to deploy speedbrakes to full UP.

Note: Refer to ODM, Approach/Landing section, Dry Landing Field Length, for landing distance.**3 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	____, ____, xckd	C&F
■ Approach briefing	complete	PM
■ Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Fuel crossfeed (ETOPS)	cycled	PM
Pressurization panel	.set	PM
Recall	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



Flap Indication Disagree

Condition: The flap position indication does not reach the selected setting. The LEADING EDGE and TRAILING EDGE lights are **not** illuminated and **none** of these messages are shown:

- LE SLAT ASYM
- LE SLAT DISAGREE
- TE FLAP ASYM
- TE FLAP DISAGREE

Objective: To move the flaps normally.

- 1 Flaps are operating normally.

Only the flap position indicating system is failed.

- 2 Use the speeds for the selected flap setting.



TRAILING
EDGE

FLAP LOAD RELIEF

Messages: FLAP LD RELIEF

Condition: The flap load relief system is failed.

- 1 Check flap position and maintain the appropriate speed.



OFF**FLIGHT CONTROL VALVES****OFF**

Messages: FLT CONT VALS

Condition: Two or more flight control shutoff valves are closed.

- 1 L, C, and R TAIL and WING FLT CONTROL SHUTOFF switches must be ON for flight.



Jammed or Restricted Flight Controls

Condition: A flight control is jammed or restricted in roll, pitch, or yaw.

- 1 Overpower the jammed or restricted system. Use maximum force, including a combined effort of both pilots, if needed.
- 2 Do not turn off any flight control hydraulic power switch.
- 3 **If** the failure could be due to freezing water and conditions allow, consider descent to a warmer temperature and attempt to overpower the jammed or restricted system again.
- 4 Choose one:

◆ Faulty system can be **overpowered**:

Continue to overpower the jammed or restricted system as needed.



◆ Faulty system **cannot** be overpowered:

Use operative flight controls, trim, and thrust as needed for airplane control.

Plan to land at the nearest suitable airport.



LEADING
EDGE

LEADING EDGE SLAT ASYMMETRY

Messages: LE SLAT ASYM

Condition: The leading edge slats are not symmetrically extended.

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

- 1 GND PROX FLAP OVRD switch OVRD
- 2 Choose one:
 - ◆ Indicated flap position is **greater than 20**:
Use current flaps and VREF 30 + 20 for landing.
▶▶ Go to step 14
 - ◆ Indicated flap position is **20 or less**:
▶▶ Go to step 3
- 3 Use trailing edge flaps 20 and VREF 30 + 30 for landing.
- 4 ENG START selectors (both). CONT
- 5 FLAP lever Extend or retract trailing edge flaps as needed
- 6 **Wait** 30 seconds.

▼ Continued on next page ▼

▼ **LEADING EDGE SLAT ASYMMETRY** continued ▼

7 Choose one:

◆ TE FLAP DISAGREE message is **not shown**:

▶▶ **Go to step 8**

◆ TE FLAP DISAGREE message **is shown**:

Do **not** accomplish the following checklist:

TRAILING EDGE FLAP DISAGREE

▶▶ **Go to step 9**

8 Choose one:

◆ Trailing edge flap movement **is indicated**:

▶▶ **Go to step 14**

◆ Trailing edge flap movement **is not indicated**:

▶▶ **Go to step 9**

9 ALTN FLAPS selector Position to agree
with FLAP lever

Do **not** arm the **LE** ALTN FLAPS arm switch

10  TE ALTN FLAPS arm switch ALTN

11 ALTN FLAPS selector Extend or retract trailing
edge flaps as needed

Note: Flap position indicator may not move until
flaps 5 or greater is selected.

Note: Autothrottle may disconnect during alternate
flap extension.

▼ **Continued on next page** ▼

▼ LEADING EDGE SLAT ASYMMETRY continued ▼

12 Choose one:

◆ TE FLAP DISAGREE message is **not** shown:

▶▶ **Go to step 14**

◆ TE FLAP DISAGREE message is **shown**:

Do **not** accomplish the following checklist:

TRAILING EDGE FLAP DISAGREE

▶▶ **Go to step 13**

13 Choose one:

◆ Indicated flap position is **less than 5**:

▶▶ **Go to the All Flaps and Slats Up
Landing checklist on page 9.2**



◆ Indicated flap position is **at or greater than 5
and less than 20**:

Use current flaps and VREF 30 + 40 for
landing.

▶▶ **Go to step 14**

◆ Indicated flap position is **20**:

Use current flaps and VREF 30 + 30 for
landing.

▶▶ **Go to step 14**

▼ Continued on next page ▼

▼ LEADING EDGE SLAT ASYMMETRY continued ▼

14 Check the Abnormal Configuration, Actual Landing Distances and Approach Speeds tables in the ODM.

15 Checklist Complete Except Deferred Items

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
■ Minimums	____,____, xckd	C&F
■ Landing data	as directed, xckd	C&F
■ Approach briefing	complete	PM
■ Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Fuel crossfeed (ETOPS)	cycled	PM
Pressurization panel	set	PM
Recall	ckd	PM

Approach Checklist

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

▼ Continued on next page ▼

▼ LEADING EDGE SLAT ASYMMETRY continued ▼

Landing Checklist

Landing gear	down	C&F
Flaps.	As directed	C&F
Speedbrake	.ARMED	PM



**LEADING
EDGE**
LEADING EDGE SLAT DISAGREE

Messages: LE SLAT DISAGREE

Condition: The leading edge slats are not in the commanded position.

1 GND PROX FLAP OVRD switch OVRD

2 Choose one:

◆ Indicated flap position **greater than 20:**

Use current flaps and VREF 20 for landing.

▶▶ **Go to step 16**

◆ Indicated flap position **20 or less:**

▶▶ **Go to step 3**

3 Use flaps 20 and VREF 20 for landing.

4 Choose one:

◆ FLAP lever position **greater than 20:**

ALTN FLAPS selector. 20

▶▶ **Go to step 5**

◆ FLAP lever position **20 or less:**

▶▶ **Go to step 5**

▼ Continued on next page ▼

▼ LEADING EDGE SLAT DISAGREE continued ▼

- 5 ALTN FLAPS selector Position to agree
with FLAP lever
- 6 LE ALTN FLAPS arm switch ALTN
- 7 **After** selecting ALTN:
▶▶ Go to step 8

▼ Continued on next page ▼

▼ LEADING EDGE SLAT DISAGREE continued ▼

8 Choose one:

◆ LEADING EDGE light is **illuminated**:

LE ALTN FLAPS arm switch Off

▶▶ **Go to the LEADING EDGE SLAT
ASYMMETRY checklist on page 9.13**



◆ LEADING EDGE light is **not illuminated**:

▶▶ **Go to step 9**

9 ALTN FLAPS selector . . . Extend or retract leading
edge slats as needed

Use flaps 20 and VREF 20 for landing.

10 FLAP lever Extend or retract trailing
edge flaps as needed

11 Choose one:

◆ TE FLAP DISAGREE message is **not shown**:

▶▶ **Go to step 16**

◆ TE FLAP DISAGREE message is **shown**:

▶▶ **Go to step 12**

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

TRAILING EDGE FLAP DISAGREE

13 ALTN FLAPS selector Position to agree
with FLAP lever

▼ Continued on next page ▼

▼ LEADING EDGE SLAT DISAGREE continued ▼

- 14 TE ALTN FLAPS arm switch ALTN
- 15 ALTN FLAPS selector Extend or retract trailing
edge flaps as needed
- 16 Check the Abnormal Configuration, Actual Landing
Distances and Approach Speeds tables in the ODM.
- 17 **Checklist Complete Except Deferred Items**

Deferred Items

Descent Checklist

- Altimeters ____, xckd C&F
- Minimums ____,____, xckd C&F
- Landing data . . **flaps 20, Vref 20, xckd** C&F
- Approach briefing complete PM
- Autobrakes as reqd PM
- Seat belt signs ON PM
- Fuel crossfeed (ETOPS) cycled PM
- Pressurization panel set PM
- Recall ckd PM

▼ Continued on next page ▼

▼ LEADING EDGE SLAT DISAGREE continued ▼

Approach Checklist

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

Landing Checklist

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



RUDDER
RATIO

RUDDER RATIO

Messages: RUDDER RATIO

Condition: The rudder ratio system is failed.

1 Above 160 knots, avoid large or abrupt rudder inputs.

2 Choose one:

◆ Left hydraulic system pressure is **not normal**:



◆ Left hydraulic system pressure is **normal**:

▶▶ **Go to step 3**

3 Crosswind limit is 15 knots.

4 Do **not** autoland.



SPEED
BRAKES

SPEEDBRAKES EXTENDED

Messages: SPEEDBRAKES EXT

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



SPOILERS

SPOILERS
[Advisory]

Messages: SPOILERS

Condition: One or more spoiler pairs are failed.

- 1 Roll rate may be reduced inflight.
- 2 Speedbrake effectiveness may be reduced in flight and during landing.

Note: Roll tendencies, way tendencies, or airframe buffet can indicate a spoiler failed in the extended position. Do not use FMC fuel predictions with a spoiler panel extended.



STAB TRIM

STABILIZER TRIM

Messages: STAB TRIM

Condition: The stabilizer trim operates at a decreased rate.

- 1 **If** a normal stabilizer trim rate is desired:

121-130

STAB TRIM levers (both) Push and hold
when trim is desired

**131-199, 1200-1201, 1401-1404, 1501-1506, 1521,
1601-1708**

ALTN STAB TRIM

switches (both) Push and hold
when trim is desired



OFF**TAIL HYDRAULIC VALVE**

Messages: C TAIL HYD VAL R TAIL HYD VAL
 L TAIL HYD VAL

Condition: A flight control shutoff valve is closed.

- 1 L, C, and R TAIL FLT CONTROL SHUTOFF switches must be ON for flight.



**TRAILING
EDGE****TRAILING EDGE FLAP ASYMMETRY**

Messages: TE FLAP ASYM

Condition: The trailing edge flaps are not symmetrically extended.

Caution! Do not arm the TRAILING EDGE (TE) ALTERNATE FLAPS arm switch.

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

1 GND PROX FLAP OVRD switch OVRD

2 Choose one:

◆ Indicated flap position **at or greater than 20:**

Use VREF 20 for landing.

▶▶ **Go to step 4**

◆ Indicated flap position **greater than 5 and less than 20:**

Use VREF 30 + 20 for landing.

▶▶ **Go to step 4**

◆ Indicated flap position **5 or less:**

▶▶ **Go to step 3**

▼ Continued on next page ▼

▼ TRAILING EDGE FLAP ASYMMETRY continued ▼

3 Use VREF 30 + 30 for landing.

Note: Tail clearance is reduced on landing.

4 Check the Abnormal Configuration, Actual Landing Distances and Approach Speeds tables in the ODM.

5 **Checklist Complete Except Deferred Items**

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
■ Minimums	____,____, xckd	C&F
■ Landing data	as directed, xckd	C&F
■ Approach briefing	complete	PM
■ Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Fuel crossfeed (ETOPS)	cycled	PM
Pressurization panel	.set	PM
Recall	ckd	PM

▼ Continued on next page ▼

▼ TRAILING EDGE FLAP ASYMMETRY 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	As directed	C&F
Speedbrake	ARMED	PM



TRAILING
EDGE

TRAILING EDGE FLAP DISAGREE

Messages: TE FLAP DISAGREE

Condition: The trailing edge flaps are not in the commanded position.

Note: Check that the FLAP lever is secure in the desired detent.

1 GND PROX FLAP OVRD switch OVRD

2 Choose one:

◆ Indicated flap position **greater than 20:**

Use current flaps and VREF 20 for landing.

▶▶ **Go to step 9**

◆ Indicated flap position **20 or less:**

Use flaps 20 and VREF 20 for landing.

▶▶ **Go to step 3**

3 Choose one:

◆ FLAP lever position **greater than 20:**

ALTN FLAPS selector 20

▶▶ **Go to step 4**

◆ FLAP lever position **20 or less:**

ALTN FLAPS selector . . . Position to agree
with FLAP lever

▶▶ **Go to step 4**

4 TE ALTN FLAPS arm switch ALTN

▼ Continued on next page ▼

▼ TRAILING EDGE FLAP DISAGREE continued ▼

5 Choose one:

◆ TRAILING EDGE light **stays illuminated**:

TE ALTN FLAPS arm switch Off

▶▶ **Go to the TRAILING EDGE FLAP
ASYMMETRY checklist on page 9.26**



◆ TRAILING EDGE light **extinguishes**:

▶▶ **Go to step 6**

6 ALTN FLAPS selector Extend or retract trailing
edge flaps as needed

Use flaps 20 and VREF 20 for landing.

7 FLAP lever Position to agree with
ALTN FLAPS selector

8 Choose one:

◆ LE SLAT DISAGREE message is **not** shown:

▶▶ **Go to step 9**

◆ LE SLAT DISAGREE message is **shown**:

LE ALTN FLAPS arm switch ALTN

▶▶ **Go to step 9**

9 Check the Abnormal Configuration, Actual Landing
Distances and Approach Speeds tables in the ODM.

10 Checklist Complete Except Deferred Items

▼ Continued on next page ▼

▼ TRAILING EDGE FLAP DISAGREE continued ▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
■ Minimums	____,____, xckd	C&F
■ Landing data . .	flaps 20, Vref 20, xckd	C&F
■ Approach briefing	complete	PM
■ Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Fuel crossfeed (ETOPS)	cycled	PM
Pressurization panel	.set	PM
Recall	ckd	PM

Approach Checklist

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

▼ Continued on next page ▼

▼ TRAILING EDGE FLAP DISAGREE continued ▼

Landing Checklist

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



UNSCHE
STAB TRIM

UNSCHEDULED STABILIZER TRIM

Messages: UNSCHD STAB TRIM

Condition: One of the following occurs:

- Stabilizer movement occurs without a signal to trim
- The alternate stabilizer trim switches are used with an autopilot engaged

- 1 STAB TRIM CUT OUT switches
(both) CUT OUT
- 2 Higher than normal control column force may be needed to prevent unwanted pitch change.
- 3 Autopilot disengage switch Push

Immediately move the switch back to CUTOUT if unscheduled movement occurs

- 4  C STAB TRIM CUT OUT switch NORM
- 5 Choose one:

◆ Stabilizer movement is **normal**:

Continue normal operation.

Stabilizer trim moves at half rate.

Center and right autopilots are available.

▶▶ **Go to step 8**

◆ **Unscheduled stabilizer** movement occurs:

C STAB TRIM CUT OUT switch . . . CUT OUT

▶▶ **Go to step 6**

▼ Continued on next page ▼

▼ **UNSCHEDULED STABILIZER TRIM** continued ▼

Immediately move the switch back to CUTOUT if unscheduled movement occurs

6  L STAB TRIM CUT OUT switch NORM

7 Choose one:

◆ Stabilizer movement is **normal**:

Continue normal operation.

Stabilizer trim moves at half rate.

Center and left autopilots are available.

►► **Go to step 8**

◆ **Unscheduled stabilizer** movement occurs:

L STAB TRIM CUT OUT switch . . CUT OUT

►► **Go to step 8**

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

STABILIZER TRIM



OFF

WING HYDRAULIC VALVE

Messages: C WING HYD VAL R WING HYD VAL
 L WING HYD VAL

Condition: A wing flight control shutoff valve is closed.

1 L, C, and R WING FLT CONTROL SHUTOFF switches must be ON for flight.



INOP

YAW DAMPER

Messages: L YAW DAMPER R YAW DAMPER

Condition: A yaw damper is inoperative because one of these occurs:

- A yaw damper system is failed
- None of the IRS are aligned

1 YAW DAMPER switch Off



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Airspeed Unreliable

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

Objective: To identify a reliable airspeed indication, if possible, or to continue the flight using the ODM, Abnormal section, Operation Without Airspeed Indication tables.

- 1 Autopilot disengage switch Push
- 2 A/T ARM switch 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° and 80% N1
 - Flaps up 4° and 75% 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, Airspace & Enroute Navigation, Navigation, for RVSM requirements.

5 The following are **reliable**:

Attitude

N1

Ground speed

Radio altitude

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

Note: The Pitch Limit Indicator, and Angle of Attack Indicator (as installed) are unreliable.

6 Refer to the ODM, Abnormal section, Operation Without Airspeed Indication tables, and set the pitch attitude and thrust setting for the current aircraft configuration and phase of flight.

7 When in trim and stabilized, cross check the captain, first officer, and standby airspeed indicators. An airspeed indication that differs by more than 30 knots or .03 Mach from the airspeed shown in the table should be considered **unreliable**.

▼ **Continued on next page** ▼

▼ **Airspeed Unreliable continued** ▼

8 Choose one:

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

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

AIR DATA switch
(unreliable side) ALTN

Invalid overspeed warning and invalid input to AFDS and autothrottle may occur or continue.

▶▶ **Go to step 9**

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

▶▶ **Go to step 11**

9 Flight director switch (reliable side) ON

10 Autopilot (reliable side) Engage

Note: Do not re-engage the autothrottle.

▶▶ **Go to step 12**

▼ **Continued on next page** ▼

▼ **Airspeed Unreliable continued** ▼

- 11 Set pitch attitude and thrust from the ODM, Abnormal section, Operation Without Airspeed Indication tables for the aircraft configuration and phase of flight, as needed.

Note: Maintain visual conditions if possible.
Establish landing configuration early.
Radio altitude reference is available below 2,500 feet.
Use electronic and visual glideslope indicators, where available, for approach and landing.

- 12 Use flaps 20 and VREF 20 for landing.
- 13 GND FLAP OVRD switch OVRD
- 14 Refer to the ODM, Abnormal Section, Actual Landing Distances and Approach Speeds, for Airspeed Unreliable.

15 **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 . .	flaps 20, Vref 20, xckd	C&F
■ Approach briefing	complete	PM
■ Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Fuel crossfeed (ETOPS)	cycled	PM
Pressurization panel	.set	PM
Recall	ckd	PM

Approach Checklist

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

▼ 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.
- Speed/airspeed/Mach failure flags.
- Blank or fluctuating airspeed display.
- Variation between captain and first officer airspeed displays.
- Amber line through one or more ADI flight mode annunciations.
- Overspeed warning.
- Radome damage or loss.
- Simultaneous overspeed and stall warnings.

▼ **Continued on next page** ▼

▼ **Airspeed Unreliable continued** ▼

Display of one or more of the following EICAS messages may be evidence of unreliable airspeed/Mach indication:

AILERON LOCKOUT
 ALT DISAGREE
 CAPT PITOT
 F/O PITOT
 IAS DISAGREE
 L AUX PITOT
 OVERSPEED
 PROBE HEAT
 R AUX PITOT
 RUDDER RATIO

ADI or HSI Blank or Abnormal

Condition: ADI or HSI is blank or displaying abnormal data.

- 1 EFIS SOURCE SELECT
 switch (affected side). ALTN

■ ■ ■ ■

Airspeed or Altimeter Fail

Condition: Airspeed or altimeter indicator(s) have failed or displaying abnormal data.

- 1 AIR DATA SOURCE
switch (affected side). ALTN

Note: TAS/SAT indicator is supplied data from right ADC only. It does not switch to opposite ADC when ALTN is pushed.

Note: MNPS Airspace In-flight contingencies found on applicable charts.

Note: Flight may not be permitted in RVSM airspace. Contact ATC. Refer to the Airway Manual, Airspace & Enroute Navigation, Navigation, for RVSM requirements.



ALTITUDE DISAGREE

Message: ALT DISAGREE

Condition: The captain's and the first officer's altitude indications disagree by more than 200 feet.

- 1 Airplane does not meet RVSM airspace requirements. Contact ATC. Refer to the Airway Manual, Airspace & Enroute Navigation, Navigation, for RVSM requirements.
- 2 Transponder altitude received by ATC may be unreliable.

Additional Information

Review before descent:

Maintain visual conditions if possible.

Establish landing configuration early.

Radio altitude reference available below 2,500 feet.

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



ATTITUDE DISAGREE

Message: ATT DISAGREE

Condition: The captain's and the first officer's attitude indications disagree.

**IAS DISAGREE**

Message: IAS DISAGREE

Condition: The captain's and the first officer's airspeed indications disagree.

►► **Go to the Airspeed Unreliable checklist on page 10.1**

**INSTRUMENT SWITCH**

Message: INSTR SWITCH

Condition: Both pilots' ADI and HSI use the same symbol generator source.

- 1 Both ADIs and HSIs are displaying information from the center symbol generator.



Radio Altimeter

Condition: RA flag is displayed on ADI.

- 1 EFIS SOURCE SELECT
switch (affected side). ALTN


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**



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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
- The ATC FAIL light on the transponder control panel is illuminated and TCAS is operating normally.
- GPS-L or GPS-R EICAS message is displayed and the transponder is selected to the related side.

Note: Refer to the Airway Manual, ATC & Flt Control Communication, ATC Communication for additional information.

- 1 Transponder selector. Select opposite transponder

Note: If the ATC FAIL light extinguishes, the ADS-B Out function has been restored.



ATC FAULT

Messages: ATC FAULT

Condition: A transponder fault occurs.

Note: Flight may not be permitted in RVSM airspace. Contact ATC. Refer to the Airway Manual, Airspace & Enroute Navigation, Navigation, for RVSM requirements.

- 1 Transponder selector. Select opposite transponder



FMC FAIL

Messages: L FMC FAIL

R FMC FAIL

Condition: An FMC is failed.

1 Choose one:

◆ **A single** FMC is failed:▶▶ **Go to step 2**◆ **Both** FMCs are failed:▶▶ **Go to step 7**

2 NAV SOURCE selector FMC-L or FMC-R

Select the operative FMC

3 Both HSI range selectors Set to the
same position

4 Choose one:

◆ **Left** FMC is failed:

Use right autopilot.

▶▶ **Go to step 5**◆ **Right** FMC is failed:

Use left or center autopilot.

▶▶ **Go to step 5**

▼ Continued on next page ▼

▼ FMC FAIL continued ▼

- 5 If necessary, re-engage autothrottles.
- 6 During VOR approaches, one pilot must have raw data from the VOR associated with the approach displayed on the RDMI (RMI) or HSI in a VOR mode, no later than the final approach fix.

Note: Flight into MNPS airspace is authorized with one FMS and one alternate navigation system operable.



- 7 Select autopilot roll and pitch modes appropriate for the desired flight path. LNAV and VNAV are not available.
- 8 Do not initiate flight into MNPS airspace if in radio navigation range.
- 9 Captain's NAV SOURCE selector CDU-L
- 10 First Officer's NAV SOURCE selector CDU-R
- 11 Route modifications must be entered into both CDUs. Enter any new waypoints by latitude and longitude.
- 12 Manually tune navigation radios.
- 13 Refer to ODM for VREF speed and other applicable performance information.



FMC

FMC MESSAGE

Messages: FMC MESSAGE

Condition: An alert message is in the CDU scratchpad.

1 Choose one:

◆ CDU message **is** FUEL DISAGREE-PROG 2, or
INSUFFICIENT FUEL

►► **Go to the Fuel Leak Engine
checklist on page 12.10**



◆ CDU message is **not** FUEL DISAGREE-PROG 2, or
INSUFFICIENT FUEL:

Take action as needed per the message.



GPS

Messages: L GPS
GPS

R GPS

Condition: One or both GPS receivers are failed.

1 Choose one:

◆ **L GPS or R GPS** message is shown:

The indicated GPS has failed.



◆ **GPS** message is shown:

Both GPSs have failed.



ILS Fail

Condition: LOC or G/S failure flags are displayed on ADI.

1 EFI SOURCE SELECT switch (Affected side) ALTN



DC FAIL

IRS DC FAIL

Messages: L IRS DC FAIL
C IRS DC FAIL

R IRS DC FAIL

Condition: IRS backup DC power is failed.



FAULT

IRS FAULT

Messages: L IRS FAULT R IRS FAULT
 C IRS FAULT

Condition: An IRS fault occurs.

1 Choose one:

- ◆ **Left** IRS FAULT light is **illuminated**:
 Captain’s IRS switch. ALTN
 ■ ■ ■ ■
- ◆ **Right** IRS FAULT light is **illuminated**:
 First Officer’s IRS switch ALTN
 ■ ■ ■ ■
- ◆ **Center** IRS FAULT light is **illuminated**:
 ■ ■ ■ ■

ON DC

IRS ON DC

Messages: L IRS ON DC R IRS ON DC
 C IRS ON DC

Condition: IRS AC power is failed.



Radar Malfunctions

Condition: Major faults.

- If** one or more of the following codes appear on the radar indicator:

R/T FAULT	IND FAULT
ANT FAULT	ATT FAULT
CON FAULT	COOL FAULT

MODE selector OFF

- When** the system is in WX or MAP mode, partial failures will appear as yellow caution annunciations in the corner of the display unit. Radar data will still be displayed but the flight crew should be aware that the display may not be accurate.

ANNUNCIATION EFFECT/CREW ACTION

CAL	Weak targets, use caution
STAB	System stabilized with respect to aircraft, no pitch or roll stabilization
COOL	System may fail if operation is continued. Use only long enough to analyze weather, then turn off to allow cooling of the transceiver



UNABLE RNP

Messages: UNABLE RNP

Condition: The actual navigation performance is not sufficient.

1 Choose one:

◆ On a procedure or airway **with RNP alerting requirement:**

Obtain clearance for an alternate procedure or airway. During an approach, initiate a go-around.



◆ In oceanic airspace:

RNP-4 routing not authorized. Notify ATC immediately. ATC may authorize continuation on current route.

Verify position.

Go to POS REF page 2

Confirm FMC updating source

Compare FMC, IRS, GPS, RADIO (if available) positions

Plot positions as required



Non-Normal Checklists**Chapter NNC****Fuel****Section 12****Table of Contents**

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**FUEL
CONFIG****FUEL CONFIGURATION**

Messages: FUEL CONFIG

Condition: One or more of these occur:

- Both center pump switches are off with fuel in the center tank
- A fuel imbalance between main tanks
- The fuel quantity is low in a main tank

- 1 If an engine has low fuel flow and unusual engine indications, a fuel imbalance may show due to engine damage instead of a fuel leak.
- 2 The FUEL CONFIG message may be caused by an engine fuel leak, center pump switches off incorrectly, an imbalance, or low fuel.

▼ Continued on next page ▼

▼ FUEL CONFIGURATION continued ▼

- 3 A fuel leak should be suspected if one or more of the following are true:

The total fuel quantity remaining is less than 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 value 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 CONFIGURATION continued ▼

4 Choose one:

◆ Engine fuel leak **indicated**:

▶▶ **Go to the Fuel Leak Engine checklist on page 12.10**



◆ Engine fuel leak **not indicated**:

121-180, 1501-1506

FUEL CROSSFEED switch On

▶▶ **Go to step 5**

181-199, 1200-1201, 1401-1404, 1521, 1601-1708

FWD and AFT FUEL XFEED switches . . . On

▶▶ **Go to step 5**

5 FWD and AFT PUMP switches (low tank) Off

This ensures fuel from the high tank feeds both engines.

6 **When** fuel balancing complete:

All FWD and AFT PUMP switches. ON

121-180, 1501-1506

FUEL CROSSFEED switch. Off

181-199, 1200-1201, 1401-1404, 1521, 1601-1708

FWD and AFT FUEL XFEED switches Off

▼ Continued on next page ▼

▼ FUEL CONFIGURATION continued ▼

7 Choose one:

◆ Fuel quantity is **low** in either main tank:

►► **Go to the LOW FUEL checklist on page 12.26**



◆ Fuel quantity is **not low** in either main tank:



VALVE

FUEL CROSSFEED
[Single FUEL CROSSFEED valve]

121-180, 1501-1506

Messages: FUEL CROSSFEED

Condition: The fuel crossfeed valve is not in the commanded position.

1 Choose one:

◆ FUEL CROSSFEED switch is **on**:

Crossfeed valve is failed closed.

Vary engine thrust as needed to maintain fuel balance as conditions allow.



◆ FUEL CROSSFEED switch is **off**:

Crossfeed valve is failed open.



VALVE

FUEL CROSSFEED

[Two FUEL CROSSFEED valves]

181-199, 1200-1201, 1401-1404, 1521, 1601-1708

Messages: AFT FUEL X-FEED FWD FUEL X-FEED

Condition: The fuel crossfeed valve is not in the commanded position.

- 1 **If** both crossfeed switches ON and one valve is open, fuel will crossfeed.



Fuel Jettison

171-199, 1200-1201, 1501-1506, 1521, 1601-1613, 1701-1708

Condition: Fuel jettison is needed.

- 1 C PUMP switch(es) ON
Verify center tank fuel pump switches are selected ON for fuel jettison operation.
- 2 FUEL JETTISON selector ON
- 3 FUEL JETTISON NOZZLE switches (both) ON
- 4 Fuel jettison is from center tank only.
- 5 Time needed to empty full center tank is approximately 60 minutes.

Note: Activation of the FUEL JETTISON selector automatically selects equipment cooling override mode regardless of the EQUIPMENT COOLING selector position. A FWD EQPT COOLING EICAS message may appear. Once the FUEL JETTISON selector is OFF, the equipment cooling system reverts to the selected mode.

- 6 Do **not** accomplish the following checklist:
WINDOW HEAT

▼ Continued on next page ▼

▼ Fuel Jettison continued ▼**7 When** jettison is complete:

FUEL JETTISON NOZZLE switches (both) . . . Off

FUEL JETTISON selector OFF

Verify VREF speed for new gross weight.

C PUMPS switch(es) As required



VALVE

FUEL JETTISON NOZZLE

171-199, 1200-1201, 1501-1506, 1521, 1601-1708

Messages: FUEL JET NOZ

Condition: The fuel nozzle valve is not in the commanded position.

- 1 Choose one:
- ◆ On the **ground**:

FUEL JETTISON NOZZLE
switches (both) OFF

■ ■ ■ ■
- ◆ In **flight**:

▶▶ **Go to step 2**
- 2 Choose one:
- ◆ FUEL JETTISON NOZZLE switch **ON**:

Fuel jettison time will be extended.

■ ■ ■ ■
- ◆ FUEL JETTISON NOZZLE switch **OFF**:

Fuel Jettison Nozzle valve failed open.

■ ■ ■ ■

FAULT

FUEL JETTISON PUMP

171-199, 1200-1201, 1501-1506, 1521, 1601-1708

Messages: L FUEL JET PUMP

R FUEL JET PUMP

Condition: The pump pressure is low because of a fault.

- 1 Fuel jettison time will be extended.



FAULT

FUEL JETTISON TRANSFER VALVE

171-199, 1200-1201, 1501-1506, 1521, 1601-1708

Messages: L JET XFER VALVE

R JET XFER VALVE

Condition: The jettison transfer valve is not in the commanded position.

- 1 Choose one:

◆ FUEL JETTISON selector is **ON**:

Fuel jettison time will be extended.



◆ FUEL JETTISON selector is **OFF**:

Fuel jettison valve has failed open.



Fuel Leak Engine

Condition: An in flight engine fuel leak is suspected or confirmed. (Items which can indicate an engine fuel leak are listed in the Additional Information section.)

121-180, 1501-1506

- 1 C LEFT and C RIGHT PUMP switches Off

181-199, 1200-1201, 1401-1404, 1521, 1601-1708

- 2 C L and C R PUMP switches Off
- 3 Do **not** accomplish the following checklist:

FUEL CONFIGURATION

121-180, 1501-1506

- 4 FUEL CROSSFEED switch Off

181-199, 1200-1201, 1401-1404, 1521, 1601-1708

- 5 FWD and AFT FUEL XFEED switches Off
- 6 Identify an engine fuel leak by observing a left or right main tank fuel quantity decreasing faster than the other.
- 7 An increase in fuel imbalance of approximately 1000 pounds or more in 30 minutes should be considered an engine fuel leak.
- 8 **If** conditions allow:

Visually check for engine fuel leak.

▼ Continued on next page ▼

▼ Fuel Leak Engine continued ▼

9 Choose one:

◆ Engine fuel leak **confirmed**:

▶▶ **Go to step 19**

◆ Engine fuel leak **not confirmed**:

▶▶ **Go to step 10**

10 Resume normal fuel management procedures.

11 Choose one:

◆ FUEL DISAGREE-PROG 2 **and** FUEL QTY
ERROR-PROG 2 messages are **not** shown on the
CDU scratchpad:

▶▶ **Go to step 14**

◆ FUEL DISAGREE-PROG 2 **or** FUEL QTY
ERROR-PROG 2 message is **shown** on the CDU
scratchpad:

▶▶ **Go to step 12**

12 Select PROGRESS PAGE 2.

▼ Continued on next page ▼

▼ **Fuel Leak Engine continued** ▼

13 TOTALIZER or

CALCULATED Select USE for the
most accurate indication

Compare TOTALIZER and CALCULATED fuel values with flight plan for indication of fuel leak. If CALCULATED fuel remaining is greater than TOTALIZER fuel, a fuel leak upstream of the fuel flow transmitter may exist. TOTALIZER should be used to determine fuel remaining.

A 3,000 pound difference between TOTALIZER and CALCULATED fuel causes the USE prompts to appear.

14 Choose one:

◆ LOW FUEL message **not** shown:



◆ LOW FUEL message is **shown**:

121-180, 1501-1506

FUEL CROSSFEED switch On

This ensures fuel is available to both engines if the low tank empties.

►► **Go to step 15**

181-199, 1200-1201, 1401-1404, 1521, 1601-1708

FWD and AFT FUEL XFEED switches . . . On

This ensures fuel is available to both engines if the low tank empties.

►► **Go to step 15**

▼ **Continued on next page** ▼

▼ Fuel Leak Engine continued ▼

15 Fuel PUMP switches (all) ON

This ensures all fuel is available.

16 Plan to land at nearest suitable airport.

17 Avoid high nose up attitude and excessive acceleration and deceleration.

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

LOW FUEL



19 A/T ARM switch OFF

20 Thrust lever

(affected engine) Confirm Idle

21 FUEL CONTROL switch

(affected engine) Confirm . . . CUTOFF

▼ Continued on next page ▼

▼ **Fuel Leak Engine continued** ▼

22 Choose one:

- ◆ APU is **available**:
▶▶ **Go to step 23**
- ◆ APU is **not available**:
▶▶ **Go to step 24**

- 23 APU selector START, then ON
- 24 Transponder mode selector TA
- 25 WING ANTI ICE selector / switch OFF / Off
- 26 Plan to land at the nearest suitable airport.
- 27 **If** wing anti-ice needed:

- PACK control selector (affected side) OFF
- ISLN switch (affected side) On
- WING ANTI ICE selector / switch AUTO / ON

When wing anti-ice no longer needed:

- WING ANTI ICE
selector / switch OFF / Off
- L and R ISLN switches Off

▼ **Continued on next page** ▼

▼ Fuel Leak Engine continued ▼

28 Choose one:

◆ FUEL DISAGREE-PROG 2 **and** FUEL QTY ERROR-PROG 2 messages are **not** shown on the CDU scratchpad:

▶▶ **Go to step 31**

◆ FUEL DISAGREE-PROG 2 **or** FUEL QTY ERROR-PROG 2 message is **shown** on the CDU scratchpad:

▶▶ **Go to step 29**

29 PROGRESS PAGE 2 SELECT

30 TOTALIZER Select USE for TOTALIZER to determine fuel remaining

31 **After** engine shutdown, all remaining fuel can be used for the operating engine. Resume normal fuel management procedures.

32 GND PROX FLAP OVRD switch OVRD

33 Use flaps 20 and VREF 20 for landing.

34 Use flaps 5 for go-around.

35 Check the Abnormal Configuration, Actual Landing Distances and Approach Speeds tables in the ODM.

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

ENGINE SHUTDOWN

PACK OFF

▼ Continued on next page ▼

▼ Fuel Leak Engine continued ▼

37 Choose one:

◆ LOW FUEL message **not** shown:
▶▶ **Go to step 42**

◆ LOW FUEL message is **shown**:
121-180, 1501-1506
FUEL CROSSFEED switch On
This ensures fuel is available to the operating engine if the low tank empties.
▶▶ **Go to step 38**

181-199, 1200-1201, 1401-1404, 1521, 1601-1708
FWD and AFT FUEL XFEED switches . . . On
This ensures fuel is available to the operating engine if the low tank empties.
▶▶ **Go to step 38**

38 Fuel PUMP switches (all) ON
This ensures all fuel is available.

39 Plan to land at nearest suitable airport.

40 Avoid high nose up attitude and excessive acceleration and deceleration.

41 Do **not** accomplish the following checklist:
LOW FUEL

▼ Continued on next page ▼

▼ Fuel Leak Engine continued ▼

42 Checklist Complete Except Deferred Items

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
■ Minimums	____,____, xckd	C&F
■ Landing data . .	flaps 20, Vref 20, xckd	C&F
■ Approach briefing	complete	PM
■ Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Fuel crossfeed (ETOPS)	cycled	PM
Pressurization panel	set	PM
Recall	ckd	PM

Approach Checklist

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

▼ Continued on next page ▼

▼ Fuel Leak Engine continued ▼

Landing Checklist

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



Additional Information

- | One or more of the following can be evidence of an engine fuel leak:
- Visual observation of fuel spray from strut or engine
 - Excessive engine fuel flow
 - Total fuel quantity decreasing at an abnormal rate
 - FUEL CONFIG message on EICAS.
 - LOW FUEL message on EICAS
 - FUEL DISAGREE–PROG 2 or FUEL QTY ERROR–PROG 2 message on the CDU scratchpad
 - INSUFFICIENT FUEL message on the CDU scratchpad

PRESS

FUEL PUMP

Messages: CTR L FUEL PUMP CTR R FUEL PUMP
 L AFT FUEL PUMP R AFT FUEL PUMP
 L FWD FUEL PUMP R FWD FUEL PUMP

Condition: The pump pressure is low.

- 1 Verify fuel quantity in each tank.
Low fuel pump pressure may be an indication of low fuel quantity.
- 2 Verify fuel pumps are on for any tank that has usable fuel.
- 3 Do not reset any tripped fuel pump circuit breaker or fuel pump control circuit breaker.

▼ Continued on next page ▼

▼ FUEL PUMP continued ▼

- 4 Choose one:
- ◆ **Left or right** pump PRESS light is illuminated:
PUMP switch (affected pump) Off

■ ■ ■ ■
 - ◆ Center left **or** center right pump PRESS light is illuminated:

▶▶ **Go to step 5**
 - ◆ Center left **and** center right pump PRESS lights are illuminated:

121-180, 1501-1506
C LEFT and C RIGHT PUMP switches . . Off
FUEL CROSSFEED switch Off

▶▶ **Go to step 9**

181-199, 1200-1201, 1401-1404, 1521, 1601-1708
C L and C R PUMP switches. Off
FWD and AFT
FUEL XFEED switches. Off

▶▶ **Go to step 9**
- 5 PUMP switch (affected pump). Off
121-180, 1501-1506
- 6 FUEL CROSSFEED switch On
181-199, 1200-1201, 1401-1404, 1521, 1601-1708
- 7 FUEL XFEED switches (both) On

▼ Continued on next page ▼

▼ FUEL PUMP continued ▼**8 When center tank fuel depleted:**

Remaining C PUMP switch Off

121-180, 1501-1506

FUEL CROSSFEED switch. Off

181-199, 1200-1201, 1401-1404, 1521, 1601-1708

FWD and AFT FUEL XFEED switches Off



9 Check available left and right main tank quantity is sufficient for the planned flight. Center tank fuel is not available.



PRESS

FUEL SYSTEM PRESSURE

121-180, 1501-1506

Messages: L FUEL SYS PRESS R FUEL SYS PRESS

Condition: The engine is on suction feed.

Note: At high altitude, thrust deterioration or engine flameout may occur.

- 1 Choose one:

◆ **Able** to maintain needed thrust on affected engine:

■ ■ ■ ■

◆ **Unable** to maintain needed thrust on affected engine:

▶▶ **Go to step 2**
- 2 FUEL CROSSFEED switch On
- Note:** Continued operation with the crossfeed valve open will result in a progressive fuel imbalance when both engines are feeding from the same main tank.
- 3 Do **not** balance fuel.
- 4 Do **not** accomplish the following checklist:

FUEL CONFIGURATION
- 5 **When** the FUEL CONFIG light illuminates due to main tank imbalance:

FUEL CROSSFEED switch Off

▼ Continued on next page ▼

▼ FUEL SYSTEM PRESSURE continued ▼

Continue suction feed operation. Sufficient roll control is available to compensate for any main tank fuel imbalance.

If unable to maintain needed thrust on affected engine:

Operate at a lower altitude.



PRESS

FUEL SYSTEM PRESSURE

181-199, 1200-1201, 1521, 1601-1708

Messages: L FUEL SYS PRESS R FUEL SYS PRESS

Condition: The engine is on suction feed.

Note: At high altitude, thrust deterioration or engine flameout may occur.

1 Choose one:

◆ **Able** to maintain needed thrust on affected engine:



◆ **Unable** to maintain needed thrust on affected engine:

►► **Go to step 2**

2 FWD and AFT FUEL XFEED switches On

Note: Continued operation with the crossfeed valves open will result in a progressive fuel imbalance when both engines are feeding from the same main tank.

3 Do **not** balance fuel.4 Do **not** accomplish the following checklist:

FUEL CONFIGURATION

5 **When** FUEL CONFIG light illuminates due to main tank imbalance:

FWD and AFT FUEL XFEED switches Off

▼ Continued on next page ▼

▼ FUEL SYSTEM PRESSURE continued ▼

Continue suction feed operation. Sufficient roll control is available to compensate for any main tank fuel imbalance.

If unable to maintain needed thrust on affected engine:

Operate at lower altitude.



**FUEL
CONFIG****LOW FUEL**

Messages: LOW FUEL

Condition: The fuel quantity is low in a main tank.

- 1 Avoid high nose up attitude. Make thrust changes slowly and smoothly. This reduces the possibility of uncovering fuel pumps.
- 2 The LOW FUEL message may be caused by an engine fuel leak or low fuel.
- 3 A fuel leak should be suspected if one or more of the following are true:

The total fuel quantity remaining is less than 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 value is the totalizer value at engine start minus fuel used.

Fuel used is calculated using the engine fuel flow sensors.

▼ Continued on next page ▼

▼ LOW FUEL continued ▼

4 Choose one:

◆ **Indication** of engine fuel leak:

▶▶ **Go to the Fuel Leak Engine checklist on page 12.10**



◆ **No indication** of engine fuel leak:

121-180, 1501-1506

FUEL CROSSFEED switch On

This ensures fuel is available to both engines if the low tank empties.

▶▶ **Go to step 5**

181-199, 1200-1201, 1401-1404, 1521, 1601-1708

FWD and AFT FUEL XFEED switches . . . On

This ensures fuel is available to both engines if the low tank empties.

▶▶ **Go to step 5**

5 Fuel PUMP switches (all) ON

This ensures all fuel is available.

6 Plan to land at nearest suitable airport.

7 Avoid high nose up attitude and excessive acceleration and deceleration.



Fuel Temperature Low

Condition: Fuel temperature is near the minimum.

- 1 **When** fuel temperature is approaching minimum inflight fuel tank temperature limit (3 °C above the fuel freeze point. Refer to Vol. 1. Limitation section, Fuel, for fuel type):

Increase speed, change altitude, and or deviate to a warmer air mass to achieve a TAT equal to or higher than the fuel temperature limit.

TAT will increase approximately 0.5 to 0.7 °C for each .01 Mach increase in speed.

In extreme conditions it may be necessary to descend as low as FL250.



Non-Normal Checklists
Hydraulics**Chapter NNC**
Section 13**Table of Contents**

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OVHT

DEMAND HYDRAULIC OVERHEAT

Messages: C DEM HYD OVHT R DEM HYD OVHT
L DEM HYD OVHT

Condition: The pump temperature is high.

- 1 HYD DEMAND PUMP selector OFF
- 2 Do **not** accomplish the following checklist:
HYDRAULIC DEMAND PUMP



PRESS

HYDRAULIC DEMAND PUMP

Messages: C HYD DEM PUMP R HYD DEM PUMP
L HYD DEM PUMP

Condition: The pump pressure is low.

Objective: To restore system pressure if the AUTO demand function failed to operate.

- 1 HYD DEMAND PUMP selector ON
- 2 Choose one:

◆PRESS light **stays illuminated:**

HYD DEMAND PUMP selector OFF



◆PRESS light **extinguishes:**

Continue normal operation.



OVHT

HYDRAULIC (1 or 2) OVERHEAT

Messages: C HYD 1 OVHT C HYD 2 OVHT

Condition: The pump temperature is high.

- 1 ELEC HYD PRIMARY PUMP switch Off
- 2 Do **not** accomplish the following checklist:
HYDRAULIC PRIMARY (1 or 2)
■ ■ ■ ■

PRESS

HYDRAULIC PRIMARY (1 or 2)

Messages: C HYD PRIM 1 C HYD PRIM 2

Condition: The pump pressure is low.

- 1 ELEC HYD PRIMARY PUMP switch Off
■ ■ ■ ■

PRESS

HYDRAULIC PRIMARY PUMP

Messages: L HYD PRIM PUMP R HYD PRIM PUMP

Condition: The pump pressure is low.

- 1 ENG HYD PRIMARY PUMP switch Off
■ ■ ■ ■

RSVR

HYDRAULIC QUANTITY

Messages: C HYD QTY
 L HYD QTY

R HYD QTY

Condition: The hydraulic quantity is low.

Objective: Time permitting, isolate the leak and preserve hydraulic fluid for landing.

- 1 Select an autopilot not on affected system.
- 2 Select STATUS page.

Check hydraulic quantity and verify fluid loss.

If all hydraulic quantity is lost, be prepared to accomplish the HYD SYS PRESS procedure.

- 3 Choose one:

◆ **Only one** RSVR light is illuminated:

▶▶ **Go to step 4**

◆ **More than one** RSVR light is illuminated:

▶▶ **Go to step 8**

▼ Continued on next page ▼

▼ **HYDRAULIC QUANTITY continued** ▼

4 Choose one:

◆ Quantity continues to **decrease**:

PRIMARY PUMP switch(es)
(affected system) OFF

DEMAND PUMP selector
(affected system) OFF

Affected HYD SYS PRESS EICAS message
will appear.

▶▶ **Go to step 5**

◆ Quantity **does not** continue to decrease:

Leave pumps ON and monitor quantity.



5 Monitor hydraulic quantity on STATUS page.

If all hydraulic quantity is lost, accomplish the
HYD SYS PRESS procedure. Time permitting,
review the inoperative items in the affected HYD
SYS PRESS checklist.

6 Do **not** complete the following steps until ready for
approach.

▼ **Continued on next page** ▼

▼ **HYDRAULIC QUANTITY continued** ▼

7 Choose one:

◆ **C HYD QTY** message is displayed:

Establish landing configuration early.

Just prior to extending flaps and gear:

PRIMARY PUMP switches ON

AIR DEMAND PUMP selector . . AUTO

Extend flaps and gear normally.

▶▶ **Go to step 8**

◆ **L or R HYD QTY** message is displayed:

PRIMARY PUMP switch
(affected side). ON

DEMAND PUMP selector
(affected side). AUTO

▶▶ **Go to step 8**

8 Monitor hydraulic quantity on STATUS page.

If all hydraulic quantity is lost, accomplish the
HYD SYS PRESS procedure.



**SYS
PRESS**

**HYDRAULIC SYSTEM PRESSURE
(C only)**

Messages: C HYD SYS PRESS

Condition: The hydraulic system pressure is low.

Objective: To avoid further damage and configure for landing using alternate systems.

1 C AIR HYD DEMAND PUMP selector ON

2 Choose one:

◆ SYS PRESS light **extinguishes**:

Continue normal operation.



◆ SYS PRESS light **stays illuminated**:

►► **Go to step 3**

3 C AIR HYD DEMAND PUMP selector OFF

4 C1 and C2 ELEC HYD PRIMARY
PUMP switches Off

5 Speedbrake lever DOWN

Do **not** arm speedbrake lever.

▼ Continued on next page ▼

▼ HYDRAULIC SYSTEM PRESSURE (C only) continued ▼

Caution! Do not deploy speedbrakes manually until the nosewheel is on the ground. Deploying speedbrakes manually before nosewheel touchdown may cause pronounced nose pitch up, increasing the likelihood of tail strike.

- 6 Manually extend speedbrakes after landing.
- 7 Use flaps 20 and VREF 20 for landing.
- 8 Do **not** autoland.

Inoperative Items

Center autopilot inop

Right autopilot stabilizer trim inop

Left Autopilot is available.

Some spoiler panels on each wing inop

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

Center system hydraulic power to stabilizer trim inop

Left system powers the trim at half rate.

Normal flap operation inop

Alternate flap operation is needed. Allow 3 minutes for flap extension during approach.

Normal landing gear extension and retraction inop

Alternate gear extension is needed.

Automatic speedbrake system inop

Manual deployment is needed.

▼ Continued on next page ▼

▼ **HYDRAULIC SYSTEM PRESSURE (C only) continued** ▼

- 9 Check the Abnormal Configuration, Actual Landing Distances and Approach Speeds tables in the ODM.
- 10 Do **not** accomplish the following checklists:
- HYDRAULIC DEMAND PUMP
 - HYDRAULIC PRIMARY (1 or 2)
 - SPOILERS
 - STABILIZER TRIM
 - YAW DAMPER

11 Checklist Complete Except Deferred Items

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
■ Minimums	____, ____, xckd	C&F
■ Landing data . .	flaps 20, Vref 20, xckd	C&F
■ Approach briefing	complete	PM
■ Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Fuel crossfeed (ETOPS)	cycled	PM
Pressurization panel	set	PM
Recall	ckd	PM

▼ **Continued on next page** ▼

▼ HYDRAULIC SYSTEM PRESSURE (C only) continued ▼

Approach Checklist

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

Alternate Flap Extension

GND PROX FLAP OVRD switch	OVRD
ALTN FLAPS selector	Set to agree with flap lever
LE ALTN FLAPS arm switch	ALTN
TE ALTN FLAPS arm switch	ALTN

If flap lever is UP:

Flap lever	1

This prevents uncommanded autothrottle
disengagement.

ALTN FLAPS selector Set to extend or
retract flaps as needed

Use Flaps 20 and VREF 20 for landing.

▼ Continued on next page ▼

▼ HYDRAULIC SYSTEM PRESSURE (C only) continued ▼

Alternate Gear Extension

Landing gear lever OFF

Action is **not** reversible
Maximum 250K/.75M

 **ALTN GEAR EXTEND** switch DN

After gear down lights illuminate:

Landing gear lever DN

RESERVE BKS & STRG switch ON

If C1 ELEC HYD PRIMARY PUMP PRESS light is illuminated:

Nose wheel steering is inoperative.

Do **not** accomplish the following checklists:

- GEAR DOORS
- RESERVE BRAKE VALVE
- TAILSKID

Landing Checklist

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



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**SYS
PRESS****HYDRAULIC SYSTEM PRESSURE
(L only)**

Messages: L HYD SYS PRESS

Condition: The hydraulic system pressure is low.

Objective: To avoid further system damage.

1 L ELEC HYD DEMAND PUMP selector ON

2 Choose one:

◆ SYS PRESS light **extinguishes**:

Continue normal operation.



◆ SYS PRESS light **stays illuminated**:

►► **Go to step 3**

3 L ELEC HYD DEMAND PUMP selector OFF

4 L ENG HYD PRIMARY PUMP switch Off

5 Avoid large or abrupt rudder inputs above 160 knots.

6 Do **not** autoland.

▼ Continued on next page ▼

▼ HYDRAULIC SYSTEM PRESSURE (L only) continued ▼

Inoperative Items

Left autopilot inop

Some spoiler panels on each wing inop

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

Left system hydraulic power to stabilizer trim inop

Center system powers the trim at half rate.

Rudder ratio system inop

121-199, 1200-1201, 1401-1404

Left thrust reverser inop

- 7 Check the Abnormal Configuration, Actual Landing Distances and Approach Speeds tables in the ODM.
- 8 Do **not** accomplish the following checklists:
 - HYDRAULIC DEMAND PUMP
 - HYDRAULIC PRIMARY PUMP
 - RUDDER RATIO
 - SPOILERS
 - STABILIZER TRIM
 - YAW DAMPER



SYS
PRESS

HYDRAULIC SYSTEM PRESSURE (R only)

Messages: R HYD SYS PRESS

Condition: The hydraulic system pressure is low.

Objective: To avoid further system damage.

1 R ELEC HYD DEMAND PUMP selector ON

2 Choose one:

◆ SYS PRESS light **extinguishes:**

Continue normal operation.



◆ SYS PRESS light **stays illuminated:**

►► **Go to step 3**

3 R ELEC HYD DEMAND PUMP selector OFF

4 R ENG HYD PRIMARY PUMP switch Off

5 Do **not** autoland.

▼ Continued on next page ▼

▼ **HYDRAULIC SYSTEM PRESSURE (R only) continued** ▼

Inoperative Items
Right autopilot inop
Autobrakes inop
Some spoiler panels on each wing inop

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

121-199, 1200-1201, 1401-1404
Right thrust reverser inop

- 6 Check the Abnormal Configuration, Actual Landing Distances and Approach Speeds tables in the ODM.
- 7 Do **not** accomplish the following checklists:
 - HYDRAULIC DEMAND PUMP
 - HYDRAULIC PRIMARY PUMP
 - SPOILERS

8 Checklist Complete Except Deferred Items

▼ Continued on next page ▼

▼ **HYDRAULIC SYSTEM PRESSURE (R only) continued** ▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
■ Minimums	____, ____, xckd	C&F
■ Landing data	____, ____, xckd	C&F
■ Approach briefing	complete	PM
■ Autobrakes	OFF	PM
Seat belt signs	ON	PM
Fuel crossfeed (ETOPS)	cycled	PM
Pressurization panel	set	PM
Recall	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



HYDRAULIC SYSTEM PRESSURE (L and C)

**SYS
PRESS**

**SYS
PRESS**

Messages: L HYD SYS PRESS C HYD SYS PRESS

Condition: Two hydraulic system pressures are low.

Objective: To avoid further system damage and
configure for landing using alternate
systems.

- 1 L ELEC HYD DEMAND PUMP selector ON
- 2 C AIR HYD DEMAND PUMP selector ON

▼ Continued on next page ▼

▼ HYDRAULIC SYSTEM PRESSURE (L and C) continued ▼

3 Choose one:

◆ **Left and center SYS PRESS lights extinguish:**

Continue normal operation.



◆ **Only left SYS PRESS light stays illuminated:**

▶▶ **Go to the HYDRAULIC SYSTEM PRESSURE (L only) checklist on page 13.12**

◆ **Only center SYS PRESS light stays illuminated:**

▶▶ **Go to the HYDRAULIC SYSTEM PRESSURE (C only) checklist on page 13.6**

◆ **Left and center SYS PRESS lights stay illuminated:**

▶▶ **Go to step 4**

- 4 L ELEC HYD DEMAND PUMP selector OFF
- 5 C AIR HYD DEMAND PUMP selector OFF
- 6 C1 and C2 ELEC HYD PRIMARY
PUMP switches Off
- 7 L ENG HYD PRIMARY PUMP switch Off
- 8 Plan to land at the nearest suitable airport.
- 9 Crosswind limit is 20 knots.

▼ Continued on next page ▼

▼ HYDRAULIC SYSTEM PRESSURE (L and C) continued ▼

10 Speedbrake lever DOWN

Do **not** arm speedbrake lever.

Caution! Do not deploy speedbrakes manually until the nosewheel is on the ground. Deploying speedbrakes manually before nosewheel touchdown may cause pronounced nose pitch up, increasing the likelihood of tail strike.

11 Manually extend speedbrakes after landing.

12 Use flaps 20 and VREF 30 + 20 for landing.

13 Avoid large or abrupt rudder inputs above 160 knots.

14 Do **not** autoland.

Inoperative Items

All autopilots inop

Some spoiler panels on each wing inop

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

Elevator feel inop

Column forces may be significantly higher than normal, particularly during landing flare.

Rudder ratio system inop

Normal flap operation inop

Alternate flap operation is needed. Allow 3 minutes for flap extension during approach.

▼ Continued on next page ▼

▼ HYDRAULIC SYSTEM PRESSURE (L and C) continued ▼

Normal landing gear extension and retraction inop

Alternate gear extension is needed.

Automatic speedbrake system inop

Manual deployment is needed.

Left and Center system hydraulic power to stabilizer trim inop

Right system powers the trim at one quarter rate.

Alternate trim switches and automatic stabilizer trim inop

The control wheel stabilizer trim switches are available.

121-199, 1200-1201, 1401-1404

Left thrust reverser inop

15 Check the Abnormal Configuration, Actual Landing Distances and Approach Speeds tables in the ODM.

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

HYDRAULIC DEMAND PUMP

HYDRAULIC PRIMARY (1 or 2)

HYDRAULIC PRIMARY PUMP

RUDDER RATIO

SPOILERS

STABILIZER TRIM

YAW DAMPER

17 **Checklist Complete Except Deferred Items**

▼ Continued on next page ▼

▼ HYDRAULIC SYSTEM PRESSURE (L and C) continued ▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
■ Minimums	____, ____, xckd	C&F
■ Landing data	flaps 20, Vref 30+20, xckd	C&F
■ Approach briefing	complete	PM
■ Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Fuel crossfeed (ETOPS)	cycled	PM
Pressurization panel	set	PM
Recall	ckd	PM

Approach Checklist

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

▼ Continued on next page ▼

▼ **HYDRAULIC SYSTEM PRESSURE (L and C) continued** ▼

Alternate Flap Extension

- GND PROX FLAP OVRD switch. OVRD
- ALTN FLAPS selector Set to agree
with flap lever
- LE ALTN FLAPS arm switch ALTN
- TE ALTN FLAPS arm switch ALTN

If flap lever is UP:

- Flap lever 1
- This prevents uncommanded autothrottle
disengagement.

- ALTN FLAPS selector Set to extend or
retract flaps as needed
- Use flaps 20 and VREF 30 + 20 for landing.

▼ **Continued on next page** ▼

▼ HYDRAULIC SYSTEM PRESSURE (L and C) continued ▼

Alternate Gear Extension

Landing gear lever OFF

Action is **not** reversible
Maximum 250K/.75M



ALTN GEAR EXTEND switch DN

After gear down lights illuminate:

Landing gear lever DN

RESERVE BKS & STRG switch ON

If C1 ELEC HYD PRIMARY PUMP PRESS light is illuminated:

Nose wheel steering is inoperative.

Do **not** accomplish the following checklists:

GEAR DOORS

RESERVE BRAKE VALVE

TAILSKID

Landing Checklist

Landing gear down C&F

Flaps **20, 20** C&F

Speedbrake **DOWN** PM



HYDRAULIC SYSTEM PRESSURE (L and R)

**SYS
PRESS****SYS
PRESS**

Messages: L HYD SYS PRESS R HYD SYS PRESS

Condition: Two hydraulic system pressures are low.

Objective: To avoid further system damage.

1 L and R ELEC HYD DEMAND PUMP selectors. . . ON

2 Choose one:

◆ **Left and right** SYS PRESS lights are **not illuminated**:

Continue normal operation.



◆ **Only left** SYS PRESS light is **illuminated**:

▶▶ **Go to the HYDRAULIC SYSTEM PRESSURE (L only) checklist on page 13.12**

◆ **Only right** SYS PRESS light is **illuminated**:

▶▶ **Go to the HYDRAULIC SYSTEM PRESSURE (R only) checklist on page 13.14**

◆ **Left and right** SYS PRESS lights are **illuminated**:

▶▶ **Go to step 3**

▼ Continued on next page ▼

▼ **HYDRAULIC SYSTEM PRESSURE (L and R) continued** ▼

- 3 L and R ELEC HYD DEMAND PUMP selectors. . OFF
- 4 L and R ENG HYD PRIMARY PUMP switches . . . Off
- 5 Plan to land at the nearest suitable airport.
- 6 Crosswind limit is 20 knots.
- 7 Use flaps 20 and VREF 30 + 20 for landing.
- 8 Avoid large or abrupt rudder inputs above 160 knots.
- 9 GND PROX FLAP OVRD switch OVRD
- 10 Do **not** autoland.

Inoperative Items
Left and Right autopilots inop

Center autopilot is available.

Autobrakes inop

Manual braking is needed.

Some spoiler panels on each wing inop

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

Left system hydraulic power to stabilizer trim inop

Center system powers the trim at half rate.

Rudder ratio system inop

121-199, 1200-1201, 1401-1404

Left and Right thrust reversers inop

- 11 Check the Abnormal Configuration, Actual Landing Distances and Approach Speeds tables in the ODM.

▼ Continued on next page ▼

▼ HYDRAULIC SYSTEM PRESSURE (L and R) continued ▼

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

- HYDRAULIC DEMAND PUMP
- HYDRAULIC PRIMARY PUMP
- RUDDER RATIO
- SPOILERS
- STABILIZER TRIM
- YAW DAMPER

13 Checklist Complete Except Deferred Items

Deferred Items		
Descent Checklist		
Altimeters	____, xckd	C&F
■ Minimums	____, ____, xckd	C&F
■ Landing data	flaps 20, Vref 30+20, xckd	C&F
■ Approach briefing	complete	PM
■ Autobrakes	OFF	PM
Seat belt signs	ON	PM
Fuel crossfeed (ETOPS)	cycled	PM
Pressurization panel	set	PM
Recall	ckd	PM
▼ Continued on next page ▼		

▼ HYDRAULIC SYSTEM PRESSURE (L and R) 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, 20	C&F
Speedbrake	.ARMED	PM



HYDRAULIC SYSTEM PRESSURE
(R and C)

SYS
PRESS

SYS
PRESS

Messages: R HYD SYS PRESS C HYD SYS PRESS

Condition: Two hydraulic system pressures are low.

Objective: To avoid further system damage and
 configure for landing using alternate
 systems.

- 1 R ELEC HYD DEMAND PUMP selectors ON
- 2 C AIR HYD DEMAND PUMP selectors ON

▼ Continued on next page ▼

▼ **HYDRAULIC SYSTEM PRESSURE (R and C) continued** ▼

3 Choose one:

◆ **Right and center** SYS PRESS lights **extinguish**:

Continue normal operation.



◆ **Only right** SYS PRESS light **stays illuminated**:

▶▶ **Go to the HYDRAULIC SYSTEM PRESSURE (R only) checklist on page 13.14**

◆ **Only center** SYS PRESS light **stays illuminated**:

▶▶ **Go to the HYDRAULIC SYSTEM PRESSURE (C only) checklist on page 13.6**

◆ **Right and center** SYS PRESS lights **stay illuminated**:

▶▶ **Go to step 4**

4 R ELEC HYD DEMAND PUMP selectors OFF

5 C AIR HYD DEMAND PUMP selectors OFF

6 C1 and C2 ELEC HYD PRIMARY PUMP switches Off

7 R ENG HYD PRIMARY PUMP switch Off

8 Plan to land at the nearest suitable airport.

9 Crosswind limit is 20 knots.

▼ **Continued on next page** ▼

▼ HYDRAULIC SYSTEM PRESSURE (R and C) continued ▼

10 Do **not** autoland.

Caution! Do not deploy speedbrakes manually until the nosewheel is on the ground. Deploying speedbrakes manually before nosewheel touchdown may cause pronounced nose pitch up, increasing the likelihood of tail strike.

11 Manually extend speedbrakes after landing.

12 Use flaps 20 and VREF 30 + 20 for landing.

▼ Continued on next page ▼

▼ HYDRAULIC SYSTEM PRESSURE (R and C) continued ▼
Inoperative Items
Right and Center autopilots inop
Some spoiler panels on each wing inop

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

Center system hydraulic power to stabilizer trim inop

Left system powers the trim at half rate.

Normal flap operation inop

Alternate flap operation is needed. Allow 3 minutes for flap extension during approach.

Normal landing gear extension and retraction inop

Alternate gear extension is needed.

Autobrakes inop

Manual braking is needed.

Normal and alternate brakes inop

Reserve brakes source to alternate brakes is available.

Automatic speedbrake system inop

121-199, 1200-1201, 1401-1404

Right thrust reverser inop

- 13 Check the Abnormal Configuration, Actual Landing Distances and Approach Speeds tables in the ODM.

▼ Continued on next page ▼

▼ **HYDRAULIC SYSTEM PRESSURE (R and C) continued ▼**

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

- HYDRAULIC DEMAND PUMP
- HYDRAULIC PRIMARY (1 or 2)
- HYDRAULIC PRIMARY PUMP
- SPOILERS
- STABILIZER TRIM
- YAW DAMPER

15 **Checklist Complete Except Deferred Items**

Deferred Items		
Descent Checklist		
Altimeters	____, xckd	C&F
■ Minimums	____, ____, xckd	C&F
■ Landing data	flaps 20, Vref 30+20, xckd	C&F
■ Approach briefing	complete	PM
■ Autobrakes	OFF	PM
Seat belt signs	ON	PM
Fuel crossfeed (ETOPS)	cycled	PM
Pressurization panel	set	PM
Recall	ckd	PM
▼ Continued on next page ▼		

▼ **HYDRAULIC SYSTEM PRESSURE (R and C) continued** ▼

Approach Checklist

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

Alternate Flap Extension

GND PROX FLAP OVRD switch	OVRD
ALTN FLAPS selector	Set to agree with flap lever
LE ALTN FLAPS arm switch	ALTN
TE ALTN FLAPS arm switch	ALTN

If flap lever is UP:

Flap lever	1

This prevents uncommanded autothrottle
disengagement.

ALTN FLAPS selector	Set to extend or retract flaps as needed

Use flaps 20 and VREF 30 + 20 for landing.

▼ **Continued on next page** ▼

▼ HYDRAULIC SYSTEM PRESSURE (R and C) continued ▼

Alternate Gear Extension

Landing gear lever OFF

Action is **not** reversible
Maximum 250K/.75M

 **ALTN GEAR EXTEND** switch DN

After gear down lights illuminate:

Landing gear lever DN

RESERVE BKS & STRG switch ON

If C1 ELEC HYD PRIMARY PUMP PRESS light is illuminated:

- Nose wheel steering is inoperative.
- Only accumulator pressure is available for brakes.
- Apply steady, increasing brake pressure and hold to a full stop. Do not taxi.

Do **not** accomplish the following checklists:

- GEAR DOORS
- RESERVE BRAKE VALVE
- TAILSKID

▼ Continued on next page ▼

▼ HYDRAULIC SYSTEM PRESSURE (R and C) continued ▼

Landing Checklist

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



OVHT

PRIMARY HYDRAULIC OVERHEAT

Messages: L PRIM HYD OVHT R PRIM HYD OVHT

Condition: The pump temperature is high.

- 1 ENG HYD PRIMARY PUMP switch. Off
- 2 Do **not** accomplish the following checklist:

HYDRAULIC PRIMARY PUMP



UNLKD

RAT UNLOCKED

Messages: RAT UNLOCKED

Condition: The ram air turbine is not stowed and locked.



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Non-Normal Checklists**Chapter NNC****Landing Gear****Section 14****Table of Contents**

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AIR/GROUND SYSTEM

Messages: AIR/GND SYS

Condition: The air/ground system is failed in the air mode.

Inoperative Items

One or both thrust reversers inop

Automatic speedbrake inop

Manual speedbrake extension after landing is needed.

Caution! Do not deploy speedbrakes manually until the nosewheel is on the ground. Deploying speedbrakes manually before nosewheel touchdown may cause pronounced nose pitch up, increasing the likelihood of tail strike.

Autobrakes inop

Manual braking is needed.

- 1 When deployed manually, spoiler capability is reduced.
- 2 Check the Abnormal Configuration, Actual Landing Distances and Approach Speeds tables in the ODM.
- 3 **Checklist Complete Except Deferred Items**

▼ Continued on next page ▼

▼ **AIR/GROUND SYSTEM continued** ▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
■ Minimums	____, ____, xckd	C&F
■ Landing data	____, ____, xckd	C&F
■ Approach briefing	complete	PM
■ Autobrakes	OFF	PM
Seat belt signs	ON	PM
Fuel crossfeed (ETOPS)	cycled	PM
Pressurization panel	set	PM
Recall	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



ANTISKID

ANTISKID

Messages: ANTISKID

Condition: An antiskid system fault occurs.

- 1 ANTISKID switch (as installed). ON
- 2 Braking effectiveness may be reduced.
- 3 Use minimum braking consistent with runway conditions to reduce possibility of tire blowout.
- 4 AUTO BRAKES selector OFF
Autobrake system is inoperative.
- 5 Check the Abnormal Configuration, Actual Landing Distances and Approach Speeds tables in the ODM.
- 6 **Checklist Complete Except Deferred Items**

▼ Continued on next page ▼

▼ **ANTISKID continued** ▼

Deferred Items

Landing Procedure Review

Use minimum braking consistent with runway length and conditions to reduce the possibility of a tire blowout.

Do **not** apply the brakes until the nose wheel is on the ground and speedbrakes have extended.

Brake initially using light steady pedal pressure. Increase pressure as ground speed decreases. Do **not** pump the brakes.

Descent Checklist

Altimeters	____, xckd	C&F
■ Minimums	____, ____, xckd	C&F
■ Landing data	____, ____, xckd	C&F
■ Approach briefing	complete	PM
■ Autobrakes	OFF	PM
Seat belt signs	ON	PM
Fuel crossfeed (ETOPS)	cycled	PM
Pressurization panel	set	PM
Recall	ckd	PM

▼ **Continued on next page** ▼

▼ ANTISKID 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	.ARMED	PM



ANTISKID

ANTISKID OFF

Messages: ANTISKID OFF

Condition: The antiskid system power is off.

- 1 Braking effectiveness may be reduced.
- 2 Use minimum braking consistent with runway conditions to reduce possibility of tire blowout.
- 3 AUTO BRAKES selector OFF
Autobrake system is inoperative.
- 4 Check the Abnormal Configuration, Actual Landing Distances and Approach Speeds tables in the ODM.
- 5 **Checklist Complete Except Deferred Items**

▼ Continued on next page ▼

▼ ANTISKID OFF continued ▼

Deferred Items

Landing Procedure Review

Use minimum braking consistent with runway length and conditions to reduce the possibility of a tire blowout.

Do **not** apply the brakes until the nose wheel is on the ground and speedbrakes have extended.

Brake initially using light steady pedal pressure. Increase pressure as ground speed decreases. Do **not** pump the brakes.

Descent Checklist

Altimeters	____, xckd	C&F
■ Minimums	____, ____, xckd	C&F
■ Landing data	____, ____, xckd	C&F
■ Approach briefing	complete	PM
■ Autobrakes	OFF	PM
Seat belt signs	ON	PM
Fuel crossfeed (ETOPS)	cycled	PM
Pressurization panel	.set	PM
Recall	ckd	PM

▼ Continued on next page ▼

▼ ANTISKID OFF 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	ARMED	PM



**AUTO
BRAKES**

AUTOBRAKES

Messages: AUTOBRAKES

Condition: One of these occurs:

- The autobrake system is disarmed
- The autobrake system is failed

1 AUTO BRAKES selector Reselect

2 Choose one:

◆AUTO BRAKES light **extinguishes:**



◆AUTO BRAKES light **stays illuminated:**

AUTO BRAKES selector OFF

►► **Go to step 3**

3 **Checklist Complete Except Deferred Items**

▼ Continued on next page ▼

▼ AUTOBRAKES continued ▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
■ Minimums	____, ____, xckd	C&F
■ Landing data	____, ____, xckd	C&F
■ Approach briefing	complete	PM
■ Autobrakes	OFF	PM
Seat belt signs	ON	PM
Fuel crossfeed (ETOPS)	cycled	PM
Pressurization panel	set	PM
Recall	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



**BRAKE
SOURCE**

BRAKE SOURCE

Messages: BRAKE SOURCE

Condition: Normal and alternate brake system pressures are low.

- 1 RESERVE BKS & STRG switch. ON
- 2 Choose one:
 - ◆ BRAKE SOURCE light **extinguishes:**

■ ■ ■ ■
 - ◆ BRAKE SOURCE light **stays illuminated:**

▶ ▶ **Go to step 3**
- 3 AUTOBRAKE selector. OFF
- 4 Only accumulator pressure is available for braking. During landing rollout, apply steady, increasing brake pressure and hold to a full stop.
- 5 **Checklist Complete Except Deferred Items**

▼ Continued on next page ▼

▼ **BRAKE SOURCE continued** ▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
■ Minimums	____, ____, xckd	C&F
■ Landing data	____, ____, xckd	C&F
■ Approach briefing	complete	PM
■ Autobrakes	OFF	PM
Seat belt signs	ON	PM
Fuel crossfeed (ETOPS)	cycled	PM
Pressurization panel	set	PM
Recall	ckd	PM

Approach Checklist

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

▼ **Continued on next page** ▼

▼ BRAKE SOURCE continued ▼

Landing Checklist

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

After Landing

Do **not** taxi.



DRAG BRACE

Messages: L DRAG BRACE R DRAG BRACE

Condition: The main landing gear is down with the drag brace unlocked.

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

Observe the gear EXTEND OR EXTENDED limit speed of 270K/.82M

1  Increase airspeed until GEAR light extinguishes.

2 Choose one:

◆ GEAR light is **extinguished**:◆ GEAR light stays **illuminated**:**►► Go to step 3**

3 Use flaps 30 for landing. This ensures slowest landing speed.

4 Do **not** arm speedbrake lever.**▼ Continued on next page ▼**

▼ DRAG BRACE continued ▼

Caution! Do not deploy speedbrakes manually until the nosewheel is on the ground. Deploying speedbrakes manually before nosewheel touchdown may cause pronounced nose pitch up, increasing the likelihood of tail strike.

- 5 Manually extend speedbrakes after landing for gradual speedbrake extension.
121-199, 1200-1201, 1401-1403, 1601-1602, 1701-1704
- 6 GND PROX/CONFIG GEAR OVRD switch . . . OVRD
1404, 1501-1506, 1521, 1603-1613, 1705-1708
- 7 GND PROX GEAR OVRD switch OVRD
- 8 **Checklist Complete Except Deferred Items**

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
■ Minimums	____, ____ , xckd	C&F
■ Landing data . .	flaps 30, Vref 30, xckd	C&F
■ Approach briefing	complete	PM
■ Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Fuel crossfeed (ETOPS)	cycled	PM

▼ Continued on next page ▼

▼ **DRAG BRACE continued** ▼

Pressurization panel	set	PM
Recall	ckd	PM

Approach Checklist

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

When at pattern altitude

- PACK control selectors (both) OFF
- Fuel PUMP switches (all) Off
- Do **not** accomplish the following checklists:
 - FUEL SYSTEM PRESSURE
 - PACK OFF

Landing Checklist

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



GEAR

GEAR DISAGREE

Messages: GEAR DISAGREE

Condition: The landing gear position disagrees with the landing gear lever position.

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

▼ Continued on next page ▼

▼ **GEAR DISAGREE** continued ▼

1 Choose one:

◆ Landing gear lever **UP**:

Observe the gear extend or extended limit speed of 270 knots and .82 Mach.

Flight with gear down increases fuel consumption and decreases climb performance. Refer to Landing Gear Extended in the ODM, Ferry section, for flight planning.

◆ Landing gear lever is **OFF**:

▶▶ **Go to step 2**

◆ Landing gear lever **DN and any** gear down (green) lights **not** illuminated:

▶▶ **Go to step 5**

◆ Landing gear lever **DN and all** gear down (green) lights **illuminated**:

121-199, 1200-1201, 1401-1403, 1601-1602,
1701-1704

GND PROX/CONFIG

GEAR OVRD switch OVRD

1404, 1501-1506, 1521, 1603-1613, 1705-1708

GND PROX GEAR OVRD switch OVRD

Accomplish normal landing.



▼ Continued on next page ▼

▼ GEAR DISAGREE continued ▼

2 Choose one:

◆ Landing gear lever **moved** to the UP position after takeoff:

▶▶ **Go to step 3**

◆ Landing gear lever did **not** move to the UP position after takeoff:

▶▶ **Go to the Gear Lever Will Not Move Up checklist on page 14.24**

3 Landing gear lever UP

4 Choose one:

◆ GEAR DISAGREE message **blanks**:

The landing gear lever should be kept in the UP position to keep the landing gear retracted.



◆ GEAR DISAGREE message **stays shown**:

Observe the gear extend or extended limit speed of 270 knots and .82 Mach.

Flight with gear down increases fuel consumption and decreases climb performance. Refer to Landing Gear Extended in the ODM, Ferry section, for flight planning.



▼ Continued on next page ▼

▼ GEAR DISAGREE continued ▼

5 Landing gear lever OFF

Observe the gear **EXTEND OR EXTENDED**
limit speed of 250K/.75M

6  **ALTN GEAR EXTEND** switch DN

7 Choose one:

◆ **All** gear down (green) lights **illuminated**:
Landing gear lever DN
■ ■ ■ ■

◆ **Any** gear down (green) light **not** illuminated:
▶▶ **Go to step 8**

8 Plan to land on available gear.

9 Consider an evacuation.

10 Landing gear lever DN

121-199, 1200-1201, 1401-1403, 1601-1602, 1701-1704

11 GND PROX/CONFIG GEAR OVRD switch. . . . OVRD

1404, 1501-1506, 1521, 1603-1613, 1705-1708

12 GND PROX GEAR OVRD switch OVRD

13 Use flaps 30 for landing.

This ensures slowest landing speed.

14 Do **not** arm speedbrake lever.

▼ Continued on next page ▼

▼ GEAR DISAGREE continued ▼

15 Choose one:

- ◆ Stopping distance is **not critical**:
 Do **not** use thrust reversers.
 ►► **Go to step 18**
- ◆ Stopping distance is **critical**:
 ►► **Go to step 16**

16 Extend the speedbrakes after all gear, or the nose or engine nacelle have contacted the runway.

17 Do **not** use the thrust reversers unless stopping distance is critical.

18 **Checklist Complete Except Deferred Items**

▼ Continued on next page ▼

▼ GEAR DISAGREE continued ▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
■ Minimums	____, ____, xckd	C&F
■ Landing data . .	flaps 30, Vref 30, xckd	C&F
■ Approach briefing	complete	PM
■ Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Fuel crossfeed (ETOPS)	cycled	PM
Pressurization panel	set	PM
Recall	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 ▼

When at pattern altitude

PACK control selectors (both) OFF

Fuel PUMP switches (all) Off

Do **not** accomplish the following checklists:

FUEL SYSTEM PRESSURE

PACK OFF

Landing Checklist

Landing gear down C&F

Flaps **30, 30** C&FSpeedbrake **DOWN** PM

After LandingDo **not** extend speedbrakes unless stopping distance is critical.Do **not** use the thrust reversers unless stopping distance is critical.

**D
O
O
R
S**

GEAR DOORS

Messages: GEAR DOORS

Condition: One or more landing gear doors are not closed.

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

1 Choose one:

- ◆ Landing gear lever **UP or DN**:
Observe the gear EXTEND OR EXTENDED limit speed of 270 K/.82 M.
The gear doors may close when airspeed is reduced to normal flap extension speed.



- ◆ Landing gear lever **OFF**:
Landing gear lever UP



Gear Lever Will Not Move Up

Condition: The landing gear lever cannot move to UP.

- 1 Landing gear lever
LOCK OVRD switch Push and hold
- 2 Landing gear lever UP, then OFF



NOSE AIR/GROUND SYSTEM

Messages: NOSE A/G SYS

Condition: The nose air/ground system is failed in the air mode.

- 1 Takeoff configuration warning system inoperative.



**PARK
BRAKE**

PARKING BRAKE [ADVISORY]

Messages: PARKING BRAKE

Condition: The parking brake is set.

- 1 Antiskid is inoperative.



VALVE**RESERVE BRAKE VALVE**

Messages: RSV BRAKE VAL

Condition: A reserve brakes and steering valve is not in the commanded position.

1 Choose one:

◆ Center hydraulic system is **operative**:◆ Center hydraulic system is **inoperative**:▶▶ **Go to step 2**

2 Nose wheel steering is inoperative.

3 Choose one:

◆ Right hydraulic system is **operative**:◆ Right hydraulic system is **inoperative**:▶▶ **Go to step 4**

4 Only accumulator pressure is available for brakes.

5 Apply steady, increasing brake pressure and hold to a full stop.

6 Do **not** taxi.

GEAR

SIDE BRACE

Messages: L SIDE BRACE

R SIDE BRACE

Condition: The main landing gear is down with the side brace unlocked.

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

- 1 Observe the gear EXTEND OR EXTENDED limit speed of 270K/.82M
- 2 Decrease airspeed until GEAR light extinguishes. Decrease to VREF 30 and flaps 30, if needed.
- 3 Choose one:
 - ◆ GEAR light is **extinguished**:

■ ■ ■ ■
 - ◆ GEAR light stays **illuminated**:

▶▶ **Go to step 4**
- 4 Use flaps 30 for landing. This ensures slowest landing speed.
- 5 Do **not** arm speedbrake lever.

▼ Continued on next page ▼

▼ **SIDE BRACE** continued ▼

Caution! Do not deploy speedbrakes manually until the nosewheel is on the ground. Deploying speedbrakes manually before nosewheel touchdown may cause pronounced nose pitch up, increasing the likelihood of tail strike.

- 6 Manually extend speedbrakes after landing for gradual speedbrake extension.
121-199, 1200-1201, 1401-1403, 1601-1602, 1701-1704
- 7 GND PROX/CONFIG GEAR OVRD switch. . . . OVRD
1404, 1501-1506, 1521, 1603-1613, 1705-1708
- 8 GND PROX GEAR OVRD switch OVRD
- 9 **Checklist Complete Except Deferred Items**

▼ Continued on next page ▼

▼ SIDE BRACE continued ▼

Deferred Items

Descent Checklist

Altimeters	____, xckd	C&F
■ Minimums	____, ____, xckd	C&F
■ Landing data . .	flaps 30, Vref 30, xckd	C&F
■ Approach briefing	complete	PM
■ Autobrakes	as reqd	PM
Seat belt signs	ON	PM
Fuel crossfeed (ETOPS)	cycled	PM
Pressurization panel	.set	PM
Recall	ckd	PM

Approach Checklist

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

▼ Continued on next page ▼

▼ **SIDE BRACE continued** ▼

When at pattern altitude

- PACK control selectors (both) OFF
- Fuel PUMP switches (all) Off

Do **not** accomplish the following checklists:

- FUEL SYSTEM PRESSURE
- PACK OFF

Landing Checklist

- Landing gear down C&F
- Flaps **30, 30** C&F
- Speedbrake **DOWN** PM



TAILSKID

TAILSKID

Messages: TAILSKID

Condition: The tailskid is not in the commanded position.

- 121-199, 1200-1201, 1401-1403, 1601-1602, 1701-1704**
1 GND PROX/CONFIG GEAR OVRD switch . . . OVRD
1404, 1501-1506, 1521, 1603-1613, 1705-1708
2 GND PROX GEAR OVRD switch OVRD

Caution! If tailstrike is suspected, Go to the Tail Strike checklist on page 0.24



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.





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Non-Normal Checklists

Chapter NNC

Warning Systems

Section 15

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**ALT
ALERT**

ALTITUDE ALERT

Message: ALTITUDE ALERT

Condition: A deviation from the MCP set altitude occurs.

Note: Flight may not be permitted in RVSM airspace. Contact ATC. Refer to the Airway Manual, Airspace & Enroute Navigation, Navigation, for RVSM requirements.



ALTITUDE CALLOUTS

Message: ALT CALLOUTS

Condition: Altitude voice annunciations during approach are not supplied.


CONFIG

CONFIG FLAPS

Message: FLAPS

Condition: The flaps are not in a takeoff position during takeoff.



CONFIG**CONFIG GEAR NOT DOWN**

Message: GEAR NOT DOWN

Condition: A landing gear is not down and locked and one of these occurs:

- Below 800 feet radio altitude and a thrust lever is near idle
- The flaps are in a landing position

**CONFIG****CONFIG PARKING BRAKE**

Message: PARKING BRAKE

Condition: The parking brake is set during takeoff.

**CONFIG****CONFIG SPOILERS**

Message: SPOILERS

Condition: The speedbrake lever is not DOWN during takeoff.

**CONFIG****CONFIG STABILIZER**

Message: STABILIZER

Condition: The stabilizer is not in the green band during takeoff.



EICAS CONTROL PANEL

Message: EICAS CONT PNL

Condition: The EICAS control panel is failed.



EICAS DISPLAY

Message: EICAS DISPLAY

Condition: One EICAS display is failed.



GROUND PROXIMITY SYSTEM

Message: GND PROX SYS

Condition: A ground proximity warning system fault occurs.

- 1 Some or all ground proximity alerts are not available.
- 2 Ground proximity alerts that occur are valid.



OVSPD

OVERSPEED

Message: OVERSPEED

Condition: Airspeed is more than Vmo/Mmo.



TCAS FAIL

Message: TCAS FAIL

Condition: The TCAS system has failed or is inoperative.

**TCAS OFF**

Message: TCAS OFF

Condition: The TCAS system is off.

**TERRAIN OVERRIDE**

Message: TERR OVRD

Condition: The ground proximity terrain override switch is in override.

- 1 Look-ahead terrain alerts and the terrain display are not provided.

**TERRAIN POSITION**

Message: TERR POS

Condition: Terrain position data is lost.

- 1 Position data for the terrain map and look-ahead terrain alerts are lost. Ground proximity alerts that occur are valid.



WINDSHEAR SYSTEM

Message: WINDSHEAR SYS

Condition: A windshear system fault occurs.

- 1 Some or all windshear alerts are not available.
- 2 Windshear alerts that occur are still valid.



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Non-Normal Operational InformationChapter NNOI
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Non-Normal Operational Information Chapter NNOI

Non-Normal Ops Info Section 1

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
IRS(s)	1(B) or ATT	2 in NAV	3 in NAV
AFDS FMA(s)	0	2	2
Autopilot(s)/FD(s)	1(C) or 1	2 and 0	3 and 0
Autothrottle System and Disconnect Warn	0 (H)	1	1
ASA(s)	0	1(F)	2
Engine(s) Operating	1	2	2
DH Annunciator(s)	0	2	2
ILS System(s) (LOC & G/S)	1	2	3
ADI(s) (D)(E)	1	2	2
Radio Altimeter(s)	0	2	3
Autobrakes	0	0	1(A)
Windshield Wipers	0	2	2
Marker beacon system	0	0(G)	0

- (A) Autobrakes or Ground Speed indication required.
 (B) With single IRS, only Flight Director information is available.
 (C) If operable, both the Autopilot and Flight Director will be utilized for all ILS approaches when the reported weather is below 4,000 feet RVR or 3/4 mile.
 (D) For CAT II and CAT III approaches, ADI indications must be from separate symbol generators.
 (E) The ADI must be capable of displaying the following: attitude, radio altitude, ILS deviation, DA(H) or AH indication, AFDS status, and ground speed.
 (F) For CAT II Autoland approach the Captain's ASA must be operative.
 (G) Inner Marker is required for CAT II RA/NA.
 (H) If conducting an autoland, autothrottles are required.

RNAV Approach Equipment Requirements (Not for Dispatch)

757/767-300 with Pegasus FMS

Equipment Required	RNAV (GPS)	RNAV (RNP)
IRS(s)	2	2
AFDS FMA(s)	1	2
Global Positioning System(s)	1	2
Autopilot(s) and/or Flight Director(s)	1 and 0	2 and 2
MCDU(s)	1	2
ADC(s) (Pitot and Static)	2	2
GPWS	0	1
Electrical Power Source(s) (A)	1	2
FMC(s) (B)	1	2
EICAS	1	2
HSI(s)	1	2
ADI(s)	1	2(C)
Radio Altimeter(s)	1	2
GA Switch(es)	0	1
(A) The APU generator may be used. (B) With current navigation database (C) Indications must be from separate sources.		

RNAV Enroute Equipment Requirements (Not for Dispatch)

Equipment Required	RNP-4 Enroute	RNAV Enroute
	Number Required	
IRS(s)	1	1
Global Positioning System (GPS)	2	1
Autopilot	1	1
MCDU	2	1
Flight Director	1	1
FMC	2	1
EICAS	1	1
ADI	1	1
HSI	1	1
Automatic Dependent Surveillance	1	0
Flight Deck Communication System (Datalink) CPDLC	1	0
Satellite Communication Systems (SATCOM)	1	0
Used for enroute equipment failure only. Refer to the RNAV Minimum Requirements for Dispatch Requirements. If one or more required components fail while in oceanic airspace or prior to oceanic entry, notify ATC and Dispatcher.		

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Non-Normal Checklist Instructions	Chapter NNCI
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Non-Normal Checklist Instructions	Chapter NNCI
Non-Normal Checklists	Section 1

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, Fuel Leak Engine 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.

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. 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.

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. 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, consult the Minimum Equipment List (MEL) to determine if 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. [AFM]

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.

Airplane effectivity is shown above a line item when:

- the procedures in a non-normal checklist are different because of an airplane configuration difference
- that difference applies to only a single line item

For example:

601-682
FUEL CROSSFEED switch OFF
683-6717
FUEL CROSSFEED switches (Both). OFF

This example shows that 601 through 682 have a single fuel crossfeed switch. 683 through 6717 have dual fuel crossfeed switches.

If the effectivity applies to all the procedure, the effectivity is shown centered below the title.

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.

The PF calls 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.

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.

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.

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. 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.

A ■ indicates items that should be considered for re-accomplishment in the event of an approach change or go-around.

Consequential EICAS Alert Messages

Consequential EICAS alert messages can show as a result of a primary failure condition (such as RUDDER RATIO as a result of HYDRAULIC SYSTEM PRESSURE (L Only)) or as a result of doing a non-normal checklist (such as L PACK OFF or R PACK OFF as a result of doing the Smoke, Fire or Fumes checklist). The flight crew should do the checklists for consequential EICAS alert messages, unless the statement "Do not accomplish the following checklists:" is included. All consequential EICAS alert messages may not show while doing the primary checklist, depending on operational circumstances.

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 pilot monitoring 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.

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, the 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**

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Revision Record

Chapter RR

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Revision Record

Model Identification

Chapter RR

Section ModID

General

The airplanes listed in the table below are covered in the Quick Reference Handbook. 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.

Registry number is supplied by the national regulatory agency. Serial and tabulation numbers are supplied by Boeing.

Custom number is supplied by the operator.

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 their incorporation in the next scheduled revision.

Ship Number	Registry Number	Serial Number	Tabulation Number
0121	N121DE	23435	VK036
0122	N122DL	23436	VK037
0123	N123DN	23437	VK038
0124	N124DE	23438	VK039
0125	N125DL	24075	VK040
0126	N126DL	24076	VK041
0127	N127DL	24077	VK042
0128	N128DL	24078	VK043
0129	N129DL	24079	VK044
0130	N130DL	24080	VK045

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Ship Number	Registry Number	Serial Number	Tabulation Number
0131	N131DN	24852	VK046
0132	N132DN	24981	VK047
0133	N133DN	24982	VK048
0134	N134DL	25123	VK049
0135	N135DL	25145	VK050
0136	N136DL	25146	VK051
0137	N137DL	25306	VK052
0138	N138DL	25409	VK053
0139	N139DL	25984	VK054
0171	N171DN	24759	VN251
0172	N172DN	24775	VN252
0173	N173DN	24800	VN253
0174	N174DN	24802	VN254
0175	N175DN	24803	VN255
0176	N176DN	25061	VN256
0177	N177DN	25122	VN257
0178	N178DN	25143	VN258
0179	N179DN	25144	VN259
0180	N180DN	25985	VN260
0181	N181DN	25986	VN261
0182	N182DN	25987	VN262
0183	N183DN	27110	VN263
0184	N184DN	27111	VN264
0185	N185DN	27961	VN265
0186	N186DN	27962	VN266
0187	N187DN	27582	VN267
0188	N188DN	27583	VN268

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**Revision Record -
Model Identification**

Ship Number	Registry Number	Serial Number	Tabulation Number
0189	N189DN	25990	VN269
0190	N190DN	28447	VN270
0191	N191DN	28448	VN271
0192	N192DN	28449	VN272
0193	N193DN	28450	VN273
0194	N194DN	28451	VN274
0195	N195DN	28452	VN275
0196	N196DN	28453	VN276
0197	N197DN	28454	VS066
0198	N198DN	28455	VS067
0199	N199DN	28456	VS068
1200	N1200K	28457	VS069
1201	N1201P	28458	VS070
1401	N140LL	25988	VK055
1402	N1402A	25989	VK056
1403	N143DA	25991	VR471
1404	N144DA	27584	VR472
1501	N1501P	24983	VN301
1502	N152DL	24984	VN302
1503	N153DL	24985	VN303
1504	N154DL	25241	VN304
1505	N155DL	25269	VN305
1506	N156DL	25354	VN306
1521	N394DL	27394	VL753
1601	N169DZ	29689	VS073
1602	N1602	29694	VS074
1603	N1603	29695	VS075

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Ship Number	Registry Number	Serial Number	Tabulation Number
1604	N1604R	30180	VS076
1605	N1605	30198	VS077
1606	N16065	30199	VS078
1607	N1607B	30388	VS466
1608	N1608	30573	VS467
1609	N1609	30574	VS468
1610	N1610D	30594	VS469
1611	N1611B	30595	VS470
1612	N1612T	30575	VS471
1613	N1613B	32776	VS472
1701	N171DZ	29690	VS266
1702	N172DZ	29691	VS267
1703	N173DZ	29692	VS268
1704	N174DZ	29693	VS269
1705	N175DZ	29696	VS270
1706	N176DZ	29697	VS271
1707	N177DZ	29698	VS272
1708	N178DZ	30596	VS273
And subsequent			

Revision Record

Introduction

Chapter RR

Section Intro

General

The manufacturer has developed normal and non-normal procedures for the 767-300 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 767-300 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.

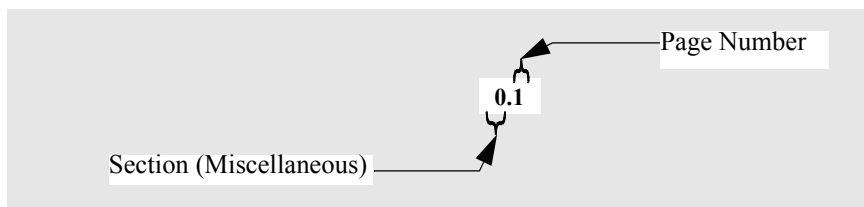
FCTM

- 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, techniques, and human factors.

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
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
ALFA	Safe Stall Margin Speed
ALT	Altitude
ALT ACQ	Altitude Acquire
ALT HOLD	Altitude Hold
ALTN	Alternate
AM	Amplitude Modulation
AIMS	Airplane Information Management System

AMI	Airline Modifiable Information
ANP	Actual Navigational Performance
ANT	Antenna
ANU	Aircraft Nose Up
AOA	Angle of Attack
AOC	Airline Operational Communication Data Link
A/P	Autopilot
APB	All Pilots Bulletin
APL	Airplane
APP	Approach
APU	Auxiliary Power Unit
AR	Authorization Required
ARINC	Aeronautical Radio, Incorporated
ARM	Aircraft Restrictions Manual
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

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C	
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	Multifunction Control Display Unit
MCO	Maintenance Carry Over
MCP	Mode Control Panel
MCT	Maximum Continuous Thrust
MDA	Minimum Descent Altitude
MDA(H)	Minimum Descent Altitude (Height)
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 Generating 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
TDU	Takeoff Data Uplink
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
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 XPNDR	Transponder
XTK	Cross Track

**Revision Record****Revision Record****Chapter RR****Section RR****Revision Transmittal Letter**

To: All holders of Delta Air Lines, Inc., 767-300 Operations Manual, QRH.

Subject: Operations Manual Revision.

This revision reflects the most current information available through the subject revision date. 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
0	April 27, 2009		1	June 1, 2009	
2	June 2, 2009		3	August 1, 2009	
4	October 1, 2009		5	January 1, 2010	
6	April 11, 2010		7	July 19, 2010	
8	November 8, 2010		9	June 23, 2011	
10	February 2, 2012		11	May 24, 2012	
12	November 7, 2012		13	February 28, 2013	
14	August 13, 2013		15	December 3, 2013	
16	March 25, 2014		17	September 9, 2014	
18	December 30, 2014		19	April 21, 2015	
20	August 11, 2015		21	October 6, 2015	
22	May 6, 2016				

General

Delta Air Lines issues operations manual revisions to provide new or revised procedures and information. Formal revisions also incorporate appropriate information from previously issued Fleet Bulletins.

The revision date is the approximate date the revision material is distributed and considered current. The revision should be incorporated on the revision date, but may be incorporated as much as 21 days after the revision date.

Formal revisions include a new Revision Record (including 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 Revision Record should be completed by the person incorporating the revision into the manual.

Filing Instructions

Consult the 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.

Be careful when inserting changes not to throw away pages from the manual that are not replaced. The List of Effective Pages determines the correct content of the manual.

Revision Highlights

This section (RR.RR) replaces the existing section RR.RR in your manual.

Pages containing revised technical and non-technical material 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 NNC - Non-Normal Checklists

Section 0 - Miscellaneous

Ditching

0.1 - Added, "USCG HF (4125kHz)" and "Navy HF (2182kHz)".

Emergency Landing Considerations

0.16 - Added precaution and revised response to step, to standardize with Boeing.

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Tail Strike

0.24 - Revised Tail Strike to standardize with Boeing.

Section 2 - Air Systems**CABIN AUTOMATIC INOPERATIVE**

2.9 - Revised step 2 to standardize with Boeing.

2.11 - Added precaution and revised step to standardize with Boeing.

PACK OFF

2.32 - Revised step 11 to standardize with Boeing.

Section 3 - Anti-Ice, Rain**AOA PROBE**

3.1 - Updated Airway Manual reference.

AUXILIARY PITOT

3.1 - Updated Airway Manual reference.

CAPTAIN PITOT

3.2 - Updated Airway Manual reference.

FIRST/OFFICER PITOT

3.9 - Updated Airway Manual reference.

PROBE HEAT

3.20 - Updated Airway Manual reference.

Section 4 - Automatic Flight**AUTOPILOT**

4.1 - Updated Airway Manual reference.

AUTOPILOT DISCONNECT

4.1 - Updated Airway Manual reference.

Section 5 - Communications**ACARS System Inoperative**

5.3 - Updated Airway Manual reference.

5.3 - Added, “refer to FOM, chapter 3, ACARS Inop Flight Time Reporting.”

DATALINK LOST

5.7 - Added Notes to Datalink Lost for considerations when out of VHF coverage.

Section 6 - Electrical

AC BUS OFF [HDG not installed]

6.3 - Revised step 9 from, “FMC source switch (Captain’s)...ALTN” to “NAV source selector (Captain’s)...FMC-R”.

6.3 - Removed, "source" from step 10.

6.5 - Revised step 14 from, “FMC source switch (First Officer’s)...ALTN” to “NAV source selector (First Officer’s)...FMC-R”.

6.5 - Removed, “source” from step 15.

6.7 - Revised step 23 to standardize with Boeing.

6.10 - Revised step to standardize with Boeing.

AC BUS OFF [HDG installed]

6.14 - Deleted step, “FMC source switch (as installed) (Captain’s)...ALTN”, due to modification of Pegasus being complete.

6.14-15,19 - Removed, “(as installed)” from step.

6.15 - Deleted step, “FMC source switch (as installed) (First Officer’s)...ALTN”.

6.19 - Added effectivities to step 23.

6.19 - Removed step, “FMC source switch (as installed) (First Officer’s)...ALTN”.

Section 7 - Engines, APU

Dual Engine Failure

7.5 - Added Precaution to step 12 to standardize with Boeing.

ENGINE CONTROL(S)

7.13 - Updated effectivities.

ENGINE CONTROL

7.14 - Updated effectivities.

ENGINE EEC MODE [GE Engines]

7.15 - Added, “[GE Engines]” to title.

7.15 - Revised, “This prevents exceeding thrust limits.” to “This step prevents exceeding thrust limits when switching to the EEC alternate mode.” to standardize with Boeing.

7.15 - Removed effectivities to standardize with Boeing.

7.15 - Revised step 6 from, “Observe thrust limits.” to “Resume normal thrust management. Observe thrust limits.” to standardize with Boeing.

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ENGINE EEC MODE [P&W Engines]

7.16 - Added ENGINE EEC MODE checklist for P&W engines.

Engine Failure or Shutdown

7.17 - Updated response in step 7 from “TA” to “TA / TA ONLY”.

ENGINE FUEL FILTER

7.20 - Removed end symbol from after Go To step 2 and placed after Note.

Engine In-Flight Start

7.22 - Changed, “may” to “can” and “remains” to “stays” in step 2, to standardize with Boeing.

7.23 - Revised effectivities in step 5.

7.23 - Removed, “FUEL CONTROL switch (affected side)...CUTOFF” from step 5 to standardize with Boeing.

7.23 - Removed, “FUEL CONTROL switch (affected side)...CUTOFF” from step 6 to standardize with Boeing.

7.24 - Revised effectivities in step 11.

7.24 - Removed, “FUEL CONTROL switch (affected side)...CUTOFF” and “ENGINE START selector...AUTO” from step 11 to standardize with Boeing.

7.25 - Removed, “FUEL CONTROL switch (affected side)...CUTOFF” and “ENGINE START selector...AUTO” from step 12 to standardize with Boeing.

7.26 - Revised step 17 to, “WING ANTI-ICE selector/switch...AUTO/As needed”.

7.26 - Revised step 18 from, “GND PROX FLAP OVRD switch...Off” to “APU selector...As needed” to standardize with Boeing.

7.26 - Added step 21, “L and R ISLN switches...Off” to standardize with Boeing.

7.26 - Removed step, “WING ANTI ICE selector/swtich...OFF/off” to standardize with Boeing.

ENGINE LIMIT PROTECTION

7.29 - Updated effectivities.

ENGINE LOW IDLE

7.29 - Updated effectivities.

Section 8 - Fire Protection

Crew Rest Smoke

8.3 - Added effectivities.

CARGO FIRE

8.17 - Removed, “Aircraft with Lower Lobe Crew Rest” and replaced with effectivities.

Section 9 - Flight Controls

Flap Indication Disagree

9.10 - Added Flap Indication Disagree checklist to standardize with Boeing.

SPOILERS [Advisory]

9.24 - Added Note, “Roll tendencies, yaw tendencies, or airframe buffet can indicate a spoiler failed in the extended position. Do not use FMC fuel predictions with a spoiler panel extended.” to standardize with Boeing.

Section 10 - Flight Instruments, Displays

Airspeed Unreliable

10.2 - Updated Airway Manual reference.

Airspeed or Altimeter Fail

10.8 - Updated Airway Manual reference.

ALTITUDE DISAGREE

10.9 - Updated Airway Manual reference.

Section 11 - Flight Management, Navigation

ADS-B Out Failure

11.1 - Added ADS-B Out Failure checklist to standardize with Boeing.

ATC FAULT

11.1 - Updated Airway Manual reference.

FMC MESSAGE

11.4 - Revised condition from “FMC” to “CDU” to standardize with Boeing.

11.4 - Removed, “FUEL QTY ERROR-PROG 2” from step 1 to standardize with Boeing.

Section 12 - Fuel

Fuel Leak Engine

12.10,18 - Changed, “may” to “can” to standardize with Boeing.

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Section 15 - Warning Systems**ALTITUDE ALERT**

15.1 - Updated Airway Manual reference.

Chapter NNCI - Non-Normal Checklist Instructions**Section 1 - Non-Normal Checklists****Non-Normal Checklist Assumptions**

NNCI.1.4 - Removed, “Maintenance Dispatch Manual (MDM)”.

Chapter RR - Revision Record**Section Intro - Introduction****Organization**

RR.Intro.3 - Updated bullet regarding content within the FCTM.

Section Abbrev - Abbreviations

RR.Abbrev.7 - Removed “MDM” from abbreviation table.

Intentionally
Blank



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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	May 6, 2016
EICAS Messages (tab)	
* Annun.Index.1-12	May 6, 2016
Unannunciated (tab)	
* Unann.Index.1-2	May 6, 2016
Alphabetical (tab)	
* Alpha.Index.1-20	May 6, 2016
0 Miscellaneous (tab)	
* 0.TOC.1-2	May 6, 2016
* 0.1-28	May 6, 2016
1 Airplane General, Emergency Equipment, Doors, Windows (tab)	
* 1.TOC.1-2	May 6, 2016
* 1.1-24	May 6, 2016
2 Air Systems (tab)	
* 2.TOC.1-2	May 6, 2016
* 2.1-36	May 6, 2016
3 Anti-Ice, Rain (tab)	
* 3.TOC.1-2	May 6, 2016
* 3.1-28	May 6, 2016
4 Automatic Flight (tab)	
* 4.TOC.1-2	May 6, 2016
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**Evacuation Checklist is on the
reverse side of this page.**

Evacuation

Condition: Evacuation is needed.

- 1

Parking brake.

Set
- 2

Notify the flight attendants "EASY VICTOR" three times.
- 3

Cabin altitude MODE SELECT

MAN
- 4

CABIN ALTITUDE
MANUAL control

Hold in CLIMB until the
outflow valve is fully open
- 5

FUEL CONTROL switches (both)

CUT OFF
- 6

Notify flight attendants
"THIS IS THE CAPTAIN. EVACUATE, EVACUATE."
- 7

Advise the tower.
- 8

Engine and APU
fire switches (all)

Override and pull
- 9

If an engine or APU fire warning occurs:
Related fire switch

Rotate to the stop and
hold for 1 second

