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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)

HF

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 Plan to touch down on the windward side and parallel to waves and swells.

▼ **Continued on next page** ▼

▼ Ditching continued ▼

- 6 Plan a flaps 40 landing unless another configuration is needed.
- 7 Set VREF 40.
- 8 Do **not** arm the autobrake.
- 9 Do **not** accomplish the normal landing checklist.
- 10 **Checklist Complete Except Deferred Items**

Deferred Items

Descent Checklist

|                                |                   |     |
|--------------------------------|-------------------|-----|
| Altimeters . . . . .           | ____, xckd        | C&F |
| Minimums . . . . .             | ____, ____, xckd  | C&F |
| Landing data . . . . .         | ____, ____        | C&F |
| VREF 40                        |                   |     |
| Approach briefing . . . . .    | complete          | PM  |
| Autobrakes . . . . .           | <b>OFF</b>        | PM  |
| Seat belt signs . . . . .      | ON                | PM  |
| Pressurization panel . . . . . | <b>LAND ALT 0</b> | 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 continued ▼

**Below 5,000 feet**

LANDING GEAR AURAL WARN  
circuit breaker (P6-3:D18) . . . . . Pull

This prevents the warning horn with gear  
retracted and landing flaps selected.

The flight deck chime for an incoming call from  
the cabin crew is unavailable.

Engine BLEED air switches (both) . . . . . OFF

This allows the airplane to be depressurized with  
the outflow valve closed.

Pressurization mode selector . . . . . MAN

Outflow VALVE switch . . . . . Hold in CLOSE  
until the outflow valve  
indication shows fully closed

This prevents water from entering the airplane.

**Note:** The outflow valve takes up to 20 seconds to  
close.

APU switch . . . . . OFF

GROUND PROXIMITY GEAR  
INHIBIT switch . . . . . GEAR INHIBIT

GROUND PROXIMITY TERR  
INHIBIT switch . . . . . TERR INHIBIT

Life vests, shoulder harnesses and  
seat belts. . . . . On

▼ Continued on next page ▼

**▼ Ditching continued ▼**

Confirm that passenger cabin preparations are complete.

**Caution! Do not open aft entry or service doors as they may be partially submerged.**

Transmit all pertinent information regarding final ditching position.

**Landing Checklist**

|                               |                     |     |
|-------------------------------|---------------------|-----|
| Landing gear . . . . .        | <b>UP &amp; OFF</b> | C&F |
| Flaps . . . . .               | ____, ____, green   | C&F |
| Speedbrake . . . . .          | <b>DOWN detent</b>  | PM  |
| ENGINE START switch . . . . . | CONT                | PM  |

**At 1,000 feet**

Advise the cabin of imminent touchdown.

**Just prior to ditching**

Maintain airspeed at VREF. Flare the airplane to achieve the minimum rate of descent at touchdown. Maintain 200-300 fpm rate of descent until the start of the flare. At flare, rotate smoothly to a touchdown attitude of 10-12 degrees. Maintain airspeed and rate of descent with thrust.

At touchdown, reduce thrust to idle.

**▼ Continued on next page ▼**



**▼ Ditching continued ▼**

**After ditching**

Notify the flight attendants “EASY VICTOR” three times.

Notify the flight attendants:

“THIS IS THE CAPTAIN EVACUATE, EVACUATE.”

Set both engine start levers to CUTOFF. This closes fuel shutoff valves to prevent discharge of fuel from ruptured fuel lines.

Open flight deck windows. This ensures no cabin differential pressure prevents the opening of the doors or emergency exits.

**3601-3610, 3772-3773, 3801-3900**

ELT switch . . . . . ON

**3701-3771**

Portable ELT . . . . . Retrieve  
Place switch in the ON position

Start the evacuation.

Proceed to assigned ditching stations, launch rafts and evacuate the airplane as soon as practicable.

The airplane may stay afloat indefinitely if fuel load is minimal and no serious damage was sustained during landing.



**▼ Continued on next page ▼**

**▼ Ditching continued ▼****Additional Information**

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

**Driftdown**

Condition: Engine failure or shutdown during cruise.

- 1 FMS CRZ PAGE . . . . .Select
- 2 ENG OUT . . . . .Select
- 3 LT or RT ENG OUT (as appropriate). . . . .Select
- 4 RUDDER TRIM . . . . .As required
- 5 AUTOTHROTTLE (if engaged) . . . . . DISENGAGE
- 6 Max continuous thrust (MCT) . . . . .Select  
    Use value shown on the N1 line.
- 7 MCP Speed . . . . .Set  
    Set the TGT SPD.

**Note:** Engine out airspeed (E/O SPD) is available on the FMS cruise page, ENG OUT prompt.

- 8 MCP Altitude . . . . .Set  
    Set the MAX ALT or lower altitude.

- 9 LVL CHG . . . . .Select

**Note:** The airplane will descend at CON thrust and driftdown airspeed to the MAX ALT. As the driftdown proceeds and the airplane gross weight decreases, the maximum altitude may increase.

**Note:** The ENG OUT CRZ page provides advisory performance data for operating with one engine.

▼ Continued on next page ▼

▼ **Driftdown continued** ▼

**Note:** Performance information for driftdown is also located in ODM, Abnormal section.

- 10 At desired cruise altitude . . . . . Level off
  - 11 Airspeed . . . . . As required
- Maintain engine-out cruise speed at level-off altitude.



**Additional Information**

- One or more of the following checklists may need to be accomplished:
- Engine Failure or Shutdown
  - Engine Limit or Surge or Stall
  - ENGINE FIRE or Engine Severe Damage or Separation
  - One Engine Inoperative Landing
  - Ditching

**Emergency Descent**

Condition: One or more of these occur:

- Cabin altitude cannot be controlled
- A rapid descent is needed.

- 1 Announce the emergency descent. The captain will advise the cabin crew, on the PA system, of impending rapid descent. The first officer will advise ATC and obtain the area altimeter setting.
- 2 Seat belt signs . . . . . ON
- 3 **Without delay**, descend to the lowest safe altitude or 10,000 feet, whichever is higher.
- 4 ENGINE START switches (both) . . . . . CONT
- 5 Thrust levers (both) . . . . . Reduce thrust to minimum or as needed for anti-ice
- 6 Speedbrake . . . . . FLIGHT DETENT

If structural integrity is in doubt, limit speed as much as possible and avoid high maneuvering loads.

- 7  Set target speed to Mmo/Vmo.

▼ Continued on next page ▼

**▼ Emergency Descent continued ▼**

3601 - 3610

---

**Caution!** When gross weight is greater than 143,000 lbs, speed brake will autostow to the 50% flight detent if airspeed exceeds 320 knots. Do not override autostow function unless airspeed is less than 320 knots.

---

3701 - 3743

---

**Caution!** When gross weight is greater than 155,000 lbs, speed brake will autostow to the 50% flight detent if airspeed exceeds 320 knots. Do not override autostow function unless airspeed is less than 320 knots.

---

3801 - 3900

---

**Caution!** When gross weight is greater than 170,000 lbs, speed brake will autostow to the 50% flight detent if airspeed exceeds 320 knots. Do not override autostow function unless airspeed is less than 320 knots.

---

8 **When** approaching the level off altitude:

Smoothly lower the SPEED BRAKE lever to the DOWN detent and level off. Add thrust and stabilize on altitude and airspeed.

**▼ Continued on next page ▼**

**▼Emergency Descent continued▼****9 Crew oxygen regulators . . . . . Normal**

Flight crew must use oxygen when cabin altitude is above 10,000 feet. To conserve oxygen, move the regulator to Normal.

**10 Advise the cabin by PA when the descent is complete and use of the oxygen system can be discontinued. Request passenger and cabin status.****11 ENGINE START switches (both) . . . . .As needed****12 The new course of action is based on weather, oxygen, fuel remaining and available airports. Use of long range cruise may be needed.**

## 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 0.16**



◆ **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.**

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**▼ Continued on next page ▼**

## ▼ EFB Failure - All continued ▼

## 6 Contact Dispatch.

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

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

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

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

Program the FMS for approach (if available).

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

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

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

## 8 See Additional Information at end of this checklist and record arrival, approach, and landing data.



▼ Continued on next page ▼

## ▼ EFB Failure - All continued ▼

**Additional Information****Terminal chart unavailable:**

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

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

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

**EFB Failure – Single**

Condition: One of the following occurs:

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

1 Choose one:

◆ Failure occurs **before** pushback:

Attempt to obtain spare EFB.

Utilize EFB loaner cart if station is equipped.

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

►► **Go to step 2**

◆ Failure occurs **after** pushback:

Attempt to obtain spare EFB.

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

►► **Go to step 2**

▼ Continued on next page ▼

▼ EFB Failure - Single continued ▼

2 Choose one:

◆ Spare EFB **available**:

Utilize spare EFB.

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

Coordinate with Dispatch to determine future need of replacement EFB.



◆ Spare EFB **unavailable**:

►► **Go to step 3**

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

**Note:** Use powered keyboard or approved charging device.

▼ Continued on next page ▼

**▼ EFB Failure - Single continued ▼**

5 Choose one:

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

Continue operation with one operative EFB.



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

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

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

►► **Go to the EFB Failure – All checklist on page 0.12**



## 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 0.16**

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.



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.
- Passenger signs - ON
- When below 10,000 feet:

Pressurization mode selector . . . . .MAN

Outflow VALVE switch . . . . . Hold in OPEN  
until the outflow VALVE  
indication shows fully open

- When at 1,000 feet:

Announce "BRACE FOR LANDING" over the PA.

▼ Continued on next page ▼

▼ Emergency Landing Considerations continued ▼

• 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 30 or 40 and the runway is dry.

### Approach:

- Consider landing on the longest available runway.
- Review landing distance required in the Landing or Abnormal section of the ODM (normal or reduced landing flap configuration).
- If landing distance is a concern, consider holding to reduce weight.
- If landing distance is not an issue, holding to reduce weight is not necessary.
- Flaps 30 is recommended for landing to provide increased margin to flap placard speed.
- 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.

▼ Continued on next page ▼

**▼ Overweight Landing Considerations continued ▼**

- The vertical speed required to maintain glidepath may be significantly higher than normal. The captain should brief contingencies if "SINK RATE" cautions are received on short final.

**Landing:**

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

**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 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! Further pressurization of the airplane can cause further structural damage.**

1 Pressurization mode selector . . . . .MAN

Use momentary actuation of the outflow valve switch to avoid large and rapid pressurization changes.

2  Outflow VALVE switch . . . . .Move to OPEN until the outflow VALVE indication shows fully open to depressurize the airplane

3 Plan to land at the nearest suitable airport.





## 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. Attempting to climb above the volcanic cloud is not recommended.**

- 1 Don oxygen masks, as needed.
- 2 Establish crew communications, as needed.
- 3 Do not deploy passenger oxygen if cabin pressure is normal.
- 4 Autothrottle (if engaged) . . . . . Disengage

- 5  **If conditions allow, run the engines at idle thrust**  
Thrust levers (both) . . . . . Close

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

- 6 ENGINE START switches (both) . . . . . FLT
- 7 PACK switches . . . . . HIGH
- 8 ENG ANTI-ICE switches (both) . . . . . ON

▼ Continued on next page ▼

▼ Volcanic Ash continued ▼

**Caution! Use of wing anti-ice above approximately FL350 may cause bleed trip off and possible loss of cabin pressure.**

- 9 WING ANTI-ICE switch . . . . . ON
- 10 APU switch  
(if APU available) . . . . . START
- This supplies backup electrical and pneumatic sources, if needed.

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

- Engine malfunctions, increasing EGT, engine stall or flameout.
- Decrease or loss of airspeed indications.
- Equipment cooling OFF light.

- 11 If failed, engines can accelerate to idle very slowly, especially at high altitudes. If N2 is steadily increasing and EGT stays within limits, the start is progressing normally.
- 12 Plan to land at the nearest suitable airport.

▼ Continued on next page ▼

▼ Volcanic Ash continued ▼

13 Choose one:

◆ Engines run **normally**:



◆ Engines do **not** run normally:

▶▶ **Go to the Loss Of Thrust On Both  
Engines checklist on page 7.6**



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**Non-Normal Checklists**

**Chapter NNC**

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

**Section 1**

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**AUTO  
UNLK****AUTOMATIC UNLOCK**

Condition: The correct emergency access code is entered.

Objective: To deny unauthorized access to the flight deck before the door automatically unlocks.

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



**CARGO DOOR**

- FWD  
CARGO
- AFT  
CARGO

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

- 1 Choose one:

◆ Pressurization is **normal**:

The door is in a safe configuration as long as cabin pressurization is normal. Continue normal operation.

■ ■ ■ ■

◆ Pressurization is **not** normal:

▶▶ **Go to step 2**
- 2 Don oxygen masks.
- 3 Establish crew communications.
- 4 Passenger signs . . . . .ON

▼ Continued on next page ▼



▼ CARGO DOOR continued ▼

5 Choose one:

◆ Airplane **has** reached the planned cruise altitude:

▶▶ **Go to step 6**

◆ Airplane has **not** reached the planned cruise altitude:

Do **not** continue the climb.

Reset the FLT ALT indicator to the actual airplane altitude.

▶▶ **Go to step 6**

6 LAND ALT . . . . .9,000 feet

7 Choose one:

◆ Minimum safe altitude is **at or below 9000 feet:**

▶▶ **Go to step 8**

◆ Minimum safe altitude is **between 9000 feet and 13,000 feet:**

▶▶ **Go to step 10**

◆ Minimum safe altitude is **at or above 13,000 feet:**

▶▶ **Go to step 12**

8 Descend to 9000 feet.

9 Maintain a cabin differential pressure of 0 psi by limiting flight altitude to 9000 feet.

▶▶ **Go to step 15**

▼ Continued on next page ▼

▼ **CARGO DOOR** continued ▼

- 10 Descend to the minimum safe altitude.
- 11 LAND ALT indicator . . . . . Select a higher altitude (maximum 13,000 feet) to maintain a cabin differential pressure of 0 psi

**Note:** The intermittent cabin altitude/configuration warning horn will sound and the CABIN ALTITUDE lights (if installed and operative) will illuminate at a cabin altitude of approximately 10,000 feet.

►► **Go to step 15**

- 12 Descend to the minimum safe altitude.
- 13 Pressurization mode selector . . . . . MAN

Use momentary actuation of the outflow valve switch to avoid large and rapid pressurization changes.

- 14  Outflow VALVE switch. . . . . Move to OPEN until the outflow VALVE indication shows fully open to depressurize the airplane

**Note:** The intermittent cabin altitude/configuration warning horn will sound and the CABIN ALTITUDE lights (if installed and operative) will illuminate at a cabin altitude of approximately 10,000 feet.

- 15 Plan to land at the nearest suitable airport.
- 16 **When** the cabin altitude is at or below 10,000 feet:  
Oxygen masks may be removed.





Condition: The emergency locator transmitter is on.



Condition: The emergency exit lights switch is not ARMED.

# 1 Choose one:

- ◆ EMER EXIT LIGHTS switch is **ON**:

Individual emergency exit light batteries supply a minimum of 10 minutes of lighting.



- ◆ EMER EXIT LIGHTS switch is **OFF**:

Emergency lighting is not available.



**ENTRY DOOR****FWD  
ENTRY****AFT  
ENTRY**

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

- 1 Instruct the cabin crew to verify that the door handle is in the closed position or to move the handle to the closed position if possible.
- 2 Choose one:
  - ◆ Handle is in the **closed** position:  

▶▶ **Go to step 3**
  - ◆ Handle is **not** in the closed position:  

Plan to land at the nearest suitable airport.

■ ■ ■ ■
- 3 Choose one:
  - ◆ Pressurization is **normal**:  

The door is in a safe configuration as long as cabin pressurization is normal. Continue normal operation.

■ ■ ■ ■
  - ◆ Pressurization is **not** normal:  

Plan to land at the nearest suitable airport.

■ ■ ■ ■

## EQUIP

## EQUIPMENT DOOR

Condition: The equipment door is not closed and secure.

## 1 Choose one:

◆ Pressurization is **normal**:

The door is in a safe configuration as long as cabin pressurization is normal. Continue normal operation.



Pressurization is **not** normal:

▶▶ **Go to step 2**

## 2 Don oxygen masks.

## 3 Establish crew communications.

## 4 Seat belt signs . . . . . ON

## 5 Choose one:

◆ Airplane **has** reached the planned cruise altitude:

▶▶ **Go to step 6**

◆ Airplane has **not** reached the planned cruise altitude:

Do **not** continue the climb.

Reset the FLT ALT indicator to the actual airplane altitude.

▶▶ **Go to step 6**

## 6 LAND ALT indicator . . . . . 9,000 feet

▼ Continued on next page ▼

**▼ EQUIPMENT DOOR continued ▼**

7 Choose one:

◆ Minimum safe altitude is **at or below 9000 feet:**

▶▶ **Go to step 8**

◆ Minimum safe altitude is **between 9000 feet and 13,000 feet:**

▶▶ **Go to step 10**

◆ Minimum safe altitude is **at or above 13,000 feet:**

▶▶ **Go to step 12**

8 Descend to 9000 feet.

9 Maintain a cabin differential pressure of 0 psi by limiting flight altitude to 9000 feet.

▶▶ **Go to step 15**

10 Descend to the minimum safe altitude.

11 LAND ALT indicator . . . . Select a higher altitude (maximum 13,000 feet) to maintain a cabin differential pressure of 0 psi

**Note:** The intermittent cabin altitude/configuration warning horn will sound and the CABIN ALTITUDE lights (if installed and operative) will illuminate at a cabin altitude of approximately 10,000 feet.

▶▶ **Go to step 15**

12 Descend to the minimum safe altitude.

**▼ Continued on next page ▼**

▼ EQUIPMENT DOOR continued ▼

13 Pressurization mode selector . . . . . MAN

Use momentary actuation of the outflow valve switch to avoid large and rapid pressurization changes.

14  Outflow VALVE switch . . . . Move to OPEN until the outflow VALVE indication shows fully open to depressurize the airplane

**Note:** The intermittent cabin altitude/configuration warning horn will sound and the CABIN ALTITUDE lights (if installed and operative) will illuminate at a cabin altitude of approximately 10,000 feet.

15 Plan to land at the nearest suitable airport.

16 **When** the cabin altitude is at or below 10,000 feet:  
Oxygen masks may be removed.



**LOCK  
FAIL**

**LOCK FAIL**

Condition: One or more of these occur:

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

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

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

1  FLIGHT DECK ACCESS SYSTEM switch . . . . OFF

**Note:** The door can be locked with the dead bolt.



**OVERWING DOOR**

3601 - 3610

**LEFT  
OVERWING**

**RIGHT  
OVERWING**

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



## 1 Choose one:

◆ Pressurization is **normal**:

The door is in a safe configuration as long as cabin pressurization is normal. Continue normal operation.

◆ Pressurization is **not** normal:

Plan to land at the nearest suitable airport.



## OVERWING DOOR

3701 - 3773, 3801 - 3900

LEFT FWD  
OVERWING

LEFT AFT  
OVERWING

RIGHT FWD  
OVERWING

RIGHT AFT  
OVERWING

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

### 1 Choose one:

◆ Pressurization is **normal**:

The door is in a safe configuration as long as cabin pressurization is normal. Continue normal operation.



◆ Pressurization is **not** normal:

Plan to land at the nearest suitable airport.



---

**Oxygen Low Pressure - Crew**

---

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

---

---

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

---

---

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

---

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

---

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



**PASS OXY  
ON**

---

**PASSENGER OXYGEN ON**

---

Condition: The passenger oxygen system is on.



**SERVICE DOOR****FWD  
SERVICE****AFT  
SERVICE**

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

- 1 Instruct the cabin crew to verify that the door handle is in the closed position or to move the handle to the closed position if possible.
- 2 Choose one:
  - ◆ Handle is in the **closed** position:  

▶▶ **Go to step 3**
  - ◆ Handle is **not** in the closed position:  

Plan to land at the nearest suitable airport.

■ ■ ■ ■
- 3 Choose one:
  - ◆ Pressurization is **normal**:  

The door is in a safe configuration as long as cabin pressurization is normal. Continue normal operation.

■ ■ ■ ■
  - ◆ Pressurization is **not** normal:  

Plan to land at the nearest suitable airport.

■ ■ ■ ■

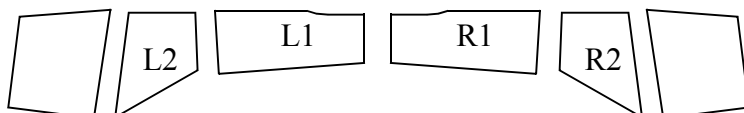
## Window Damage - Forward (L1, L2, R1, R2)

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

- An electrical arc
- A delamination
- A crack
- Is shattered.

Objective:

- To determine if damage is to an inner pane, an outer pane, or both.
- To reduce differential pressure and descend if an inner (structural) pane is shattered or cracked.
- To remove electrical power to prevent arcing.



**Note:** Damage to the outer pane does **not** affect the structural integrity of the window.

▼ Continued on next page ▼

▼ **Window Damage - Forward (L1, L2, R1, R2) continued** ▼

- 1

Choose one:

◆ Window is **delaminated** only:

Continue normal operation.

■ ■ ■ ■

◆ Window is **arcing**:

▶▶ **Go to step 2**

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

▶▶ **Go to step 5**
- 2

WINDOW HEAT switch  
(affected window) . . . . . OFF

Limit airspeed to 250 knots maximum below  
10,000 feet.
- 3

Pull both WINDSHIELD AIR controls. This vents  
conditioned air to the inside of the windshield for  
defogging.
- 4

Continue normal operation.

■ ■ ■ ■
- 5

Don seat belts and shoulder harnesses.
- 6

WINDOW HEAT switch  
(affected window) . . . . . OFF

Limit airspeed to 250 knots maximum below  
10,000 feet.

▼ **Continued on next page** ▼

▼ Window Damage - Forward (L1, L2, R1, R2) continued ▼

- 7 Pull both WINDSHIELD AIR controls. This vents conditioned air to the inside of the windshield for defogging.

**Note:** To determine if the outer or inner pane of the affected window is damaged:

- Place the tip of a pen on the crack, and move your head. If the crack appears to move, it is in the outer pane. If the crack does **not** appear to move, it is in the inner pane.
- A crack in the inner pane may also be detected by running a fingernail or the tip of a pen across the window surface.

- 8 Choose one:

◆ Damage is on the **outer** pane:

▶▶ **Go to step 9**

◆ Damage is on the **inner** pane:

▶▶ **Go to step 11**

- 9 Continue normal operation.

- 10 Shoulder harnesses may be removed.



- 11 Don oxygen masks.

- 12 Establish crew communications.

- 13 Seat belt signs . . . . . ON

▼ Continued on next page ▼

**▼ Window Damage - Forward (L1, L2, R1, R2) continued ▼**

14 Choose one:

◆ Airplane **has** reached the planned cruise altitude:

▶▶ **Go to step 15**

◆ Airplane has **not** reached the planned cruise altitude:

Do **not** continue the climb.

Reset the FLT ALT indicator to the actual airplane altitude.

▶▶ **Go to step 15**

15 LAND ALT indicator . . . . . 9,000 feet

16 Start a normal descent to below 14,000 feet or to the minimum safe altitude, whichever is higher.

17 Plan to land at the nearest suitable airport.

18 **When** cabin differential pressure is 2 psi or less:

Oxygen masks and shoulder harnesses may be removed.

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



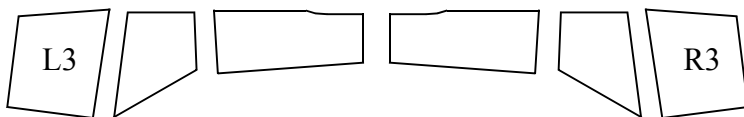


## Window Damage - Unheated Side (L3, R3)

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

- A crack
- Is shattered.

Objective: To reduce differential pressure to 0 psi if both panes are shattered or cracked.



1 Don seat belts and shoulder harnesses.

**Note:** To determine if the outer or inner pane of the affected window is damaged:

- Place the tip of a pen on the crack, and move your head. If the crack appears to move, it is in the outer pane. If the crack does **not** appear to move, it is in the inner pane.
- A crack in the inner pane may also be detected by running a fingernail or the tip of a pen across the window surface.

▼ Continued on next page ▼

▼ Window Damage - Unheated Side (L3, R3) continued ▼

- 2 Choose one:

◆ Damage is **only** on the inner **or** outer pane:

▶▶▶ **Go to step 3**

◆ Damage is on **both** the inner **and** outer panes:

▶▶▶ **Go to step 5**
- 3 Continue normal operation.
- 4 Shoulder harnesses may be removed.

■ ■ ■ ■
- 5 Don oxygen masks.
- 6 Establish crew communications.
- 7 Passenger signs . . . . .ON
- 8 Choose one:

◆ Airplane **has** reached the planned cruise altitude:

▶▶▶ **Go to step 9**

◆ Airplane has **not** reached the planned cruise altitude:

Do **not** continue the climb.

Reset the FLT ALT indicator to the actual airplane altitude.

▶▶▶ **Go to step 9**
- 9 LAND ALT indicator . . . . .9,000 feet

▼ Continued on next page ▼

## ▼ Window Damage - Unheated Side (L3, R3) continued ▼

10 Choose one:

◆ Minimum safe altitude is **at or below 9,000 feet:**

▶▶ **Go to step 11**

◆ Minimum safe altitude is **between 9,000 feet and 13,000 feet:**

▶▶ **Go to step 13**

◆ Minimum safe altitude is **at or above 13,000 feet:**

▶▶ **Go to step 15**

11 Descend to 9000 feet.

12 Maintain a cabin differential pressure of 0 psi by limiting flight altitude to 9000 feet.

▶▶ **Go to step 18**

13 Descend to the minimum safe altitude.

14 LAND ALT indicator . . . . .Select a higher altitude (maximum 13,000 feet) to maintain a cabin differential pressure of 0 psi

**Note:** The intermittent cabin altitude/configuration warning horn will sound and the CABIN ALTITUDE lights (if installed and operative) will illuminate at a cabin altitude of approximately 10,000 feet.

▶▶ **Go to step 18**

▼ Continued on next page ▼

▼ **Window Damage - Unheated Side (L3, R3) continued** ▼

15 Descend to the minimum safe altitude.

16 Pressurization mode selector . . . . .MAN

Use momentary actuation of the outflow valve switch to avoid large and rapid pressurization changes.

17  Outflow VALVE switch. . . . Move to OPEN until the outflow VALVE indication shows fully open to depressurize the airplane

**Note:** The intermittent cabin altitude/configuration warning horn will sound and the CABIN ALTITUDE lights (if installed and operative) will illuminate at a cabin altitude of approximately 10,000 feet.

18 **When** the cabin altitude is at or below 10,000 feet:  
Oxygen masks may be removed.

19 Shoulder harnesses may be removed.



## Window Open

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

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

Continue normal operation.

■ ■ ■ ■
  - ◆ Window does **not** lock **or** the pressurization is **not** normal:

Level off at the lowest safe altitude.

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

■ ■ ■ ■

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**CABIN ALTITUDE WARNING**  
**or**  
**Rapid Depressurization**

**CABIN  
ALTITUDE**

Condition: The Cabin Altitude warning light illuminates or the intermittent warning horn sounds in flight above 10,000 ft MSL.

- 1 Don oxygen masks and set regulators to 100%.
- 2 Establish crew communications.
- 
- 3 Pressurization mode selector . . . . . MAN
- 4 Outflow VALVE switch . . . . . Hold in CLOSE  
until the outflow VALVE  
indication shows fully closed

▼ Continued on next page ▼

5 Check the cabin altitude and rate.

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.

6 **If** the cabin altitude exceeds 14,000 feet:

PASS OXY switch . . . . . Push and hold  
for 1 second

**►► Go to the Emergency Descent checklist on page 0.9**



## AUTO FAIL or Unscheduled Pressurization Change

AUTO  
FAIL

**May or may not be illuminated**

Condition: One or more of these occur:

- Automatic pressurization mode has failed
- The cabin altitude is uncontrollable.

Objective: To maintain control of cabin altitude.

- 1 Increasing thrust may ensure sufficient air supply to control cabin altitude.

One at a time.

- 2  Engine BLEED air switches (both) . . . Verify ON

One at a time. Allow cabin rate to stabilize before placing second switch to AUTO.

- 3  PACK switches (both) . . . . . Verify AUTO

- 4 **If** a DISPLAYS CONTROL PANEL annunciation is displayed on the captain's altimeter:

**Note:** The captain's altimeter also displays an ALT flag indicating a failure on the captain's EFIS control panel. All barometric corrections to the AUTO and ALTN pressurization controllers are lost.

CONTROL PANEL

select switch . . . . . BOTH ON 2

Verify DISPLAYS CONTROL PANEL  
annunciation and ALT flag extinguish.

▼ Continued on next page ▼

▼ **AUTO FAIL or Unscheduled Pressurization Change continued** ▼

5 Choose one:

◆ AUTO FAIL light is **extinguished and** cabin altitude is **controllable**:

Continue normal operation.



◆ AUTO FAIL light is **illuminated or** cabin altitude is **uncontrollable**:

Pressurization mode selector . . . . . ALTN

▶▶ **Go to step 6**

6 Choose one:

◆ AUTO FAIL light is **extinguished and** cabin altitude is **controllable**:

Continue normal operation.



◆ AUTO FAIL light is **illuminated or** cabin altitude is **uncontrollable**:

▶▶ **Go to step 7**

7 Pressurization mode selector . . . . . MAN

Use momentary actuation of the outflow valve switch to avoid large and rapid pressurization changes.

8  Outflow VALVE switch. . . . . Move to OPEN or CLOSE as needed to control cabin altitude and rate

▼ **Continued on next page** ▼

▼ **AUTO FAIL or Unscheduled Pressurization Change continued** ▼

9 Choose one:

◆ Cabin altitude is **controllable**:

▶▶ **Go to step 14**

◆ Cabin altitude is **uncontrollable**:

▶▶ **Go to step 10**

10 Don oxygen masks and set regulators to 100%.

11 Establish crew communications.

12 Seat belt signs . . . . . ON

13 PASS OXYGEN switch . . . . . ON

▶▶ **Go to the Emergency Descent checklist  
on page 0.9**



**14 Checklist Complete Except Deferred Items**

▼ **Continued on next page** ▼

▼ AUTO FAIL or Unscheduled Pressurization Change continued ▼

Deferred Items

**Note:** Use momentary actuation of the outflow valve switch to avoid large and rapid pressurization changes.

Descent Checklist

- Altimeters . . . . .\_\_\_\_, xckd C&F
- Minimums . . . . . \_\_\_\_, \_\_\_\_, xckd C&F
- Landing data . . . . .\_\_\_\_,\_\_\_\_ C&F
- Approach briefing . . . . . complete PM
- Autobrakes . . . . . as reqd PM
- Seat belt signs . . . . . ON PM
- Pressurization . . . . . **Move outflow VALVE switch to OPEN or CLOSE as needed to control cabin altitude and rate** PM
- Recall . . . . . ckd PM

Approach Checklist

- Flight & nav instruments . . . . . verified C&F
- Cabin notification . . . . . complete C
- Altimeters . . . . .\_\_\_\_, xckd C&F

▼ Continued on next page ▼

▼ **AUTO FAIL or Unscheduled Pressurization Change continued** ▼

**At Pattern Altitude**

Outflow VALVE switch . . . . . Move to OPEN until the  
outflow VALVE indication shows  
fully open to depressurize the airplane

**Landing Checklist**

- |                                      |     |
|--------------------------------------|-----|
| Landing gear . . . . . down          | C&F |
| Flap. . . . . ____, ____, green      | C&F |
| Speedbrake . . . . . ARMED           | PM  |
| ENGINE START switches . . . . . CONT | PM  |



**BLEED  
TRIP OFF**

**BLEED TRIP OFF**

Condition: One or more of these occur:

- An engine bleed air overheat
- An engine bleed air overpressure.

1 WING ANTI-ICE switch . . . . . OFF

2 TRIP RESET switch . . . . . Push

The BLEED TRIP OFF light extinguishes if the bleed air temperature has cooled below limits.

3 Choose one:

◆ BLEED TRIP OFF light **stays illuminated**:

PACK switch (affected side). . . . . OFF

This causes the operating pack to regulate to high flow in flight with flaps up.

Avoid icing conditions.



◆ BLEED TRIP OFF light **extinguishes**:

►► **Go to step 4**

4 WING ANTI-ICE switch . . . . .As needed

---

**Caution! Use of wing anti-ice above approximately FL350 may cause bleed trip off and possible loss of cabin pressure.**

---





## Cabin Temperature Hot

**Condition:** Flight deck or passenger cabin temperature is excessively hot. The temperature can cause incapacitation.

**Objective:** To regain temperature control. If unable to regain control, to descend and configure to provide alternate ventilation.

**3601 - 3610**

1 Choose one:

◆ **Flight deck** temperature is too high:

▶▶ **Go to step 3**

◆ **Passenger cabin** temperature is too high:

▶▶ **Go to step 11**

**3701 - 3773, 3801 - 3900**

2 Choose one:

◆ **Flight deck** temperature is too high:

▶▶ **Go to step 5**

◆ **Passenger cabin** temperature is too high:

▶▶ **Go to step 13**

**3601 - 3610**

3 CONT CABIN temperature selector . . . . . **MANUAL**

▼ Continued on next page ▼

**▼ Cabin Temperature Hot continued ▼**

**3601 - 3610**

- 4 CONT CABIN temperature selector . . . . . Hold in COOL until the AIR MIX VALVE indication shows full COLD

**3701 - 3773, 3801 - 3900**

- 5 TRIM AIR switch . . . . . OFF
- 6 **Wait** 1 minute.
- 7 Choose one:

- ◆ Air from the flight deck outlets is still too **warm**:  

**▶▶ Go to step 8**
- ◆ Air from the flight deck outlets is **cool**:  

The flight deck temperature gradually cools.



- 8 L PACK switch . . . . . OFF
- 9 **Wait** 1 minute.
- 10 Choose one:

- ◆ Air from the flight deck outlets is still too **warm**:  

**▶▶ Go to step 19**
- ◆ Air from the flight deck outlets is **cool**:  

The flight deck temperature gradually cools.



**▼ Continued on next page ▼**

▼ Cabin Temperature Hot continued ▼

**3601 - 3610**

- 11 PASS CABIN temperature  
selector . . . . . MANUAL

**3601 - 3610**

- 12 PASS CABIN temperature  
selector . . . . . Hold in COOL until the  
AIR MIX VALVE indication  
shows full COLD

**3701 - 3773, 3801 - 3900**

- 13 TRIM AIR switch . . . . . OFF

- 14 **Wait** 1 minute.

- 15 Choose one:

◆ Air from the passenger cabin outlets is still too  
**warm:**

▶▶ **Go to step 16**

◆ Air from the passenger cabin outlets is **cool:**

The passenger cabin temperature gradually  
cools.



- 16 R PACK switch . . . . . OFF

- 17 **Wait** 1 minute.

▼ Continued on next page ▼

**▼ Cabin Temperature Hot continued ▼**

18 Choose one:

◆ Air from the passenger cabin outlets is still too **warm**:

▶▶ **Go to step 19**

◆ Air from the passenger cabin outlets is **cool**:

The passenger cabin temperature gradually cools.



19 Start a descent to the lowest safe altitude, or 10,000 feet, whichever is higher. Use the speedbrakes to increase the rate of descent, if needed. Monitor cabin altitude and rate.

**3701 - 3773, 3801 - 3900**

20 R RECIRC FAN switch . . . . . **AUTO**

**3701 - 3773, 3801 - 3900**

21 L RECIRC FAN switch . . . . . **OFF**

22 Minimize the flight deck lighting intensity.

23 Open the flight deck door.

24 **During** daylight:

Use flight deck window shades, as needed.

Instruct the cabin crew to close cabin window shades.

**3601 - 3610, 3701 - 3773**

25 Instruct the cabin crew to dim cabin lighting.

**▼ Continued on next page ▼**

▼ Cabin Temperature Hot continued ▼

**3801 - 3900**

26 Advise the cabin crew that the cabin lighting will be extinguished, but passenger reading lights will continue to work.

27 CAB/UTIL switch . . . . . OFF

28 IFE/PASS SEAT switch. . . . . OFF

29 **When** at level off:

Maintain 290 knots minimum. Flight deck and passenger cabin temperatures can increase rapidly at speeds below 290 knots.

30 Choose one:

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

▶▶ **Go to step 31**

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

Don oxygen masks.

Establish crew communications.

▶▶ **Go to step 31**

31 PACK switch (operating pack) . . . . . OFF

32 Pressurization mode selector . . . . . MAN

▼ Continued on next page ▼

▼ Cabin Temperature Hot continued ▼

33 Outflow VALVE switch . . . . .Hold in OPEN  
until the outflow VALVE  
indication shows fully open

This increases airplane ventilation.

34 Plan to land at the nearest suitable airport.



**DUAL BLEED**

**DUAL BLEED**

Condition: The APU bleed valve is open and one of these occurs:

- BLEED 1 air switch is on
- BLEED 2 air switch is on and the ISOLATION VALVE is open.

Objective: To prevent possible back pressure of the APU.

1 Limit engine thrust to idle while the light is illuminated.

2 **After** engine start:

APU BLEED air switch . . . . . OFF



**DUCT  
OVERHEAT**

## DUCT OVERHEAT

**3601-3610**

Condition: A duct overheat occurs.

- 1 Temperature selector  
(affected side) . . . . . Select cooler  
temperature

This prevents the air mix valves from returning  
to an overheat condition.

- 2 TRIP RESET switch . . . . . Push

The DUCT OVERHEAT light extinguishes if the  
duct temperature has cooled below limits.

- 3 Monitor duct temperature.

If the duct temperature increases rapidly or the  
air mix valve indicator moves toward full hot, set  
the temperature selector to MANUAL. Adjust the  
air mix valve position as needed.



**OFF**

**EQUIPMENT COOLING OFF**

Condition: The equipment cooling supply or exhaust fan is failed.

- 1 EQUIP COOLING SUPPLY or EXHAUST switch (affected side) . . . . . ALTN

**Note:** Illumination of the EQUIP COOLING SUPPLY or EXHAUST OFF light may be an indication of a pressurization problem. Ensure the pressurization system is operating normally.

- 2 No further action is necessary in flight if the equipment cooling OFF light does not extinguish.
- ■ ■ ■

**INOP**

**HIGH ALTITUDE LANDING  
INOPERATIVE**

3601-3610

Condition: The high altitude landing system is inoperative.

**Note:** The intermittent cabin altitude/configuration warning horn will sound and the CABIN ALTITUDE lights (if installed and operative) will illuminate at a cabin altitude of approximately 10,000 feet.





**OFF SCHED  
DESCENT**
**OFF SCHEDULE DESCENT**

Condition: A descent is started before reaching the planned cruise altitude set in the FLT ALT indicator.

1 Choose one:

◆ **Landing** at airport of departure:

Continue normal operation.



◆ **Not** landing at airport of departure:

FLT ALT indicator . . . . . Reset to actual  
airplane altitude



PACK

PACK

3701 - 3773, 3801 - 3900

Condition: One or more of these occur:

- The primary and standby pack controls are failed
- A pack overheat.

**Note:** If a PACK light illuminates only during Master Caution RECALL and extinguishes when the Master Caution light is depressed, the primary **or** back-up controller has failed. The QRH procedure does not apply. Refer to MEL 21-00-32.

- 1 Temperature selectors (all). . . . . Select warmer temperature
- This reduces the workload on the affected air conditioning pack.
- 2 TRIP RESET switch . . . . . Push
- If the PACK light illuminated as a result of the pack temperature exceeding limits, the light extinguishes if the pack temperature has cooled below limits.

▼ Continued on next page ▼

▼ PACK continued ▼

3 Choose one:

◆ **Both** PACK lights are **extinguished**:

Continue normal operation.



◆ **A single** PACK light **stays illuminated**:

ISOLATION VALVE switch . . . . . CLOSE

PACK switch (affected side) . . . . . OFF



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

**Note:** Both pack valves may have closed resulting in a gradual loss of cabin pressure and an eventual CABIN ALTITUDE warning.

▶▶ **Go to step 4**

4 Descend to the lowest safe altitude, or 10,000 feet, whichever is higher. Monitor cabin altitude and rate.

5 **When** at level off:

Maintain 290 knots minimum. Flight deck and cabin temperatures may increase rapidly at speeds below 290 knots.

▼ Continued on next page ▼

▼ PACK continued ▼

6 Choose one:

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

▶▶ **Go to step 7**

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

Don oxygen masks.

Establish crew communications.

**If airplane altitude is above 14,000 feet:**

PASS OXYGEN switch . . . . . ON

▶▶ **Go to step 7**

7 Pressurization mode selector . . . . . MAN

8 Outflow VALVE switch . . . . . Hold in OPEN until  
outflow VALVE position  
indicates fully open

This increases airplane ventilation.

9 R RECIRC FAN switch . . . . . AUTO

10 L RECIRC FAN switch . . . . . OFF

11 Minimize the flight deck lighting intensity.

▼ Continued on next page ▼

▼ PACK continued ▼

Exercise appropriate security precautions.

12  Open the flight deck door.

13 **During** daylight:

Use flight deck window shades, as needed.

Instruct the cabin crew to close cabin window shades.

**3701 - 3773**

14 Instruct the cabin crew to dim cabin lighting.

**3801 - 3900**

15 Advise the cabin crew that the cabin lighting will be extinguished, but passenger reading lights will continue to work.

16 CAB/UTIL switch . . . . . OFF

17 IFE/PASS SEAT switch. . . . . OFF

18 Plan to land at the nearest suitable airport.



PACK  
TRIP OFF

**PACK TRIP OFF**

3601 - 3610

Condition: A pack overheat occurs.

- 1 Temperature  
selectors (all) . . . . . Select warmer  
temperature  
  
This reduces the workload on the affected air  
conditioning pack.
- 2 TRIP RESET switch . . . . . Push  
  
The PACK TRIP OFF light extinguishes if the pack  
temperature has cooled below limits.

▼ Continued on next page ▼

## ▼ PACK TRIP OFF continued ▼

3 Choose one:

◆ **Both** PACK TRIP OFF lights are **extinguished**:

Continue normal operation.



◆ **A single** PACK TRIP OFF light **stays illuminated**:

Continue normal operation.



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

**Note:** Both pack valves may have closed resulting in a gradual loss of cabin pressure and an eventual CABIN ALTITUDE warning.

►► **Go to step 4**

4 Descend to the lowest safe altitude, or 10,000 feet, whichever is higher. Monitor cabin altitude and rate.

5 **When** at level off:

Maintain 290 knots minimum. Flight deck and cabin temperatures may increase rapidly at speeds below 290 knots.

▼ Continued on next page ▼

▼ PACK TRIP OFF continued ▼

6 Choose one:

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

▶▶ **Go to step 7**

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

Don oxygen masks.

Establish crew communications.

**If airplane altitude is above 14,000 feet:**

PASS OXYGEN switch . . . . . ON

▶▶ **Go to step 7**

7 Pressurization mode selector . . . . . MAN

Use momentary actuation of the outflow valve switch to avoid large and rapid pressurization changes.

8  Outflow VALVE switch. . . . Move to OPEN until the outflow VALVE indication shows fully open

9 This increases airplane ventilation.

10 Minimize the flight deck lighting intensity.

Exercise appropriate security precautions.

11  Open the flight deck door.

▼ Continued on next page ▼



▼ **PACK TRIP OFF continued** ▼

**12 During** daylight:

Use flight deck window shades, as needed.

Instruct the cabin crew to close cabin window shades.

13 Instruct the cabin crew to dim cabin lighting.

14 CAB/UTIL switch . . . . . OFF

15 IFE/PASS SEAT switch. . . . . OFF

16 Plan to land at the nearest suitable airport.



**WING-BODY  
OVERHEAT**

**WING-BODY OVERHEAT**

**3601 - 3610**

Condition: An overheat from a bleed duct leak occurs.

Objective: To isolate the bleed duct leak.

1 ISOLATION VALVE switch. . . . . CLOSE

2 Choose one:

◆ **Right** WING-BODY OVERHEAT light illuminated:

▶▶ **Go to step 3**

◆ **Left** WING-BODY OVERHEAT light illuminated:

▶▶ **Go to step 7**

3 R PACK switch . . . . . OFF

This causes the operating pack to regulate to high flow in flight with the flaps up.

4 BLEED 2 air switch . . . . . OFF

5 WING ANTI-ICE switch . . . . . OFF

This prevents possible asymmetrical ice buildup on the wings.

6 Avoid icing conditions where wing anti-ice is needed.



▼ **Continued on next page** ▼

▼ WING-BODY OVERHEAT continued ▼

7 L PACK switch . . . . . OFF

This causes the operating pack to regulate to high flow in flight with the flaps up.

8 BLEED 1 air switch . . . . . OFF

9 WING ANTI-ICE switch . . . . . OFF

This prevents possible asymmetrical ice buildup on the wings.

10 Avoid icing conditions where wing anti-ice is needed.

11 Choose one:

◆ WING-BODY OVERHEAT light **extinguishes:**



◆ WING-BODY OVERHEAT light **stays illuminated:**

▶▶ **Go to step 12**

12 Choose one:

◆ APU is **running:**

▶▶ **Go to step 13**

◆ APU is **not** running:



▼ Continued on next page ▼

▼ **WING-BODY OVERHEAT** continued ▼

13 Choose one:

- ◆ **APU BLEED** air switch is **ON**:  
APU BLEED air switch . . . . . OFF  
This stops the flow of bleed air from the APU to the left side of the pneumatic ducting.  
  
▶▶ **Go to step 14**

- ◆ **APU BLEED** air switch is **OFF**:  
APU switch . . . . . OFF  
  
▶▶ **Go to step 15**

14 Choose one:

- ◆ **WING-BODY OVERHEAT** light **extinguishes**:  
▶▶ **Go to step 16**
- ◆ **WING-BODY OVERHEAT** light **stays illuminated**:  
APU switch . . . . . OFF  
  
▶▶ **Go to step 15**

▼ **Continued on next page** ▼

▼ WING-BODY OVERHEAT continued ▼

15 Choose one:

◆ WING-BODY OVERHEAT light **extinguishes:**

▶▶ **Go to step 16**

◆ WING-BODY OVERHEAT light **stays illuminated:**



16 ISOLATION VALVE switch . . . . . AUTO

17 BLEED 1 air switch . . . . . ON

18 L PACK switch . . . . . AUTO

19 WING ANTI-ICE switch . . . . . As needed

20 Choose one:

◆ WING-BODY OVERHEAT light **stays extinguished:**

▶▶ **Go to step 21**

◆ WING-BODY OVERHEAT light **illuminates again:**

▶▶ **Go to step 22**

▼ Continued on next page ▼

▼ WING-BODY OVERHEAT continued ▼

21 Choose one:

◆ APU switch is **ON**:

The APU can be used during the rest of the flight, as an electrical source only, if needed.



◆ APU switch is **OFF**:

Do **not** start the APU for the rest of the flight.



22 ISOLATION VALVE switch. . . . . CLOSE

23 L PACK switch . . . . . OFF

24 BLEED 1 air switch . . . . . OFF

25 WING ANTI-ICE switch . . . . . OFF

26 Avoid icing conditions where wing anti-ice is needed.

27 The APU can be used during the rest of the flight, as an electrical source only, if needed.



**WING-BODY  
OVERHEAT**

**WING-BODY OVERHEAT**

3701 - 3773, 3801 - 3900

Condition: An overheat from a bleed duct leak occurs.

Objective: To isolate the bleed duct leak.

1 ISOLATION VALVE switch . . . . . CLOSE

2 Choose one:

◆ **Both** WING-BODY OVERHEAT lights illuminated:

TRIM AIR switch . . . . . OFF

**Note:** Passenger cabin temperature  
control may be less accurate.



◆ **Only right** WING-BODY OVERHEAT light  
illuminated:

▶▶ **Go to step 3**

◆ **Only left** WING-BODY OVERHEAT light  
illuminated:

▶▶ **Go to step 8**

3 R PACK switch . . . . . OFF

This causes the operating pack to regulate to  
high flow in flight with the flaps up.

4 BLEED 2 air switch . . . . . OFF

▼ Continued on next page ▼

▼ **WING-BODY OVERHEAT continued** ▼

5 WING ANTI-ICE switch . . . . . OFF

This prevents possible asymmetrical ice buildup on the wings.

6 Avoid icing conditions where wing anti-ice is needed.

7 Choose one:

◆ WING-BODY OVERHEAT light **extinguishes**:



◆ WING-BODY OVERHEAT light **stays illuminated**:

TRIM AIR switch . . . . . OFF

**Note:** Passenger cabin temperature control may be less accurate.



8 L PACK switch . . . . . OFF

This causes the operating pack to regulate to high flow in flight with the flaps up.

9 BLEED 1 air switch . . . . . OFF

10 WING ANTI-ICE switch . . . . . OFF

This prevents possible asymmetrical ice buildup on the wings.

11 Avoid icing conditions where wing anti-ice is needed.

▼ **Continued on next page** ▼



▼ WING-BODY OVERHEAT continued ▼

12 Choose one:

◆ WING-BODY OVERHEAT light **extinguishes:**



◆ WING-BODY OVERHEAT light **stays illuminated:**

▶▶ **Go to step 13**

13 Choose one:

◆ APU is **running:**

▶▶ **Go to step 14**

◆ APU is **not** running:

TRIM AIR switch . . . . . OFF

**Note:** Passenger cabin temperature control may be less accurate.



▼ Continued on next page ▼

▼ **WING-BODY OVERHEAT continued** ▼

14 Choose one:

◆ **APU BLEED** air switch is **ON**:

APU BLEED air switch . . . . . OFF

This stops the flow of bleed air from  
the APU to the left side of the  
pneumatic ducting.

▶▶ **Go to step 15**

◆ **APU BLEED** air switch is **OFF**:

APU switch . . . . . OFF

▶▶ **Go to step 16**

15 Choose one:

◆ **WING-BODY OVERHEAT** light **extinguishes**:

▶▶ **Go to step 17**

◆ **WING-BODY OVERHEAT** light **stays  
illuminated**:

APU switch . . . . . OFF

▶▶ **Go to step 16**

▼ **Continued on next page** ▼

▼ WING-BODY OVERHEAT continued ▼

16 Choose one:

◆ WING-BODY OVERHEAT light **extinguishes**:

▶▶ **Go to step 17**

◆ WING-BODY OVERHEAT light **stays illuminated**:

TRIM AIR switch . . . . . OFF

**Note:** Passenger cabin temperature control may be less accurate.



17 ISOLATION VALVE switch . . . . . AUTO

18 BLEED 1 air switch . . . . . ON

19 L PACK switch . . . . . AUTO

20 WING ANTI-ICE switch . . . . . As needed

21 Choose one:

◆ WING-BODY OVERHEAT light **stays extinguished**:

▶▶ **Go to step 22**

◆ WING-BODY OVERHEAT light **illuminates again**:

▶▶ **Go to step 23**

▼ Continued on next page ▼

▼WING-BODY OVERHEAT continued▼

22 Choose one:

◆APU switch is **ON**:

The APU can be used during the rest of the flight, as an electrical source only, if needed.



◆APU switch is **OFF**:

Do **not** start the APU for the rest of the flight.



23 ISOLATION VALVE switch. . . . . CLOSE

24 L PACK switch . . . . . OFF

25 BLEED 1 air switch . . . . . OFF

26 WING ANTI-ICE switch . . . . . OFF

27 Avoid icing conditions where wing anti-ice is needed.

28 The APU can be used during the rest of the flight, as an electrical source only, if needed.



ZONE  
TEMP

## ZONE TEMP

**3701 - 3773, 3801 - 3900**

Condition: One or more of these occur:

- A zone duct overheat
- Flight deck temperature control is failed.

**Note:** If a ZONE TEMP light illuminates only during Master Caution RECALL and extinguishes when the Master Caution light is depressed, the primary **or** back-up temperature controller has failed. The QRH procedure does not apply. For CONT CAB ZONE TEMP refer to MEL 21-00-21C. For FWD CAB or AFT CAB ZONE TEMP refer to MEL 21-00-19C.

- 1 Temperature selector  
(affected cabin) . . . . .Select a cooler temperature

This prevents the trim air modulating valve from returning to an overheat condition.

- 2 TRIP RESET switch . . . . .Push  
The ZONE TEMP light extinguishes if the duct temperature has cooled below limits.

- 3 Monitor duct temperature.

If the duct temperature increases rapidly, set the TRIM AIR switch to OFF.

▼ Continued on next page ▼

**▼ZONE TEMP continued▼**

4 Choose one:

◆ Affected cabin temperature is excessively high:

►► **Go to the Cabin Temperature Hot  
checklist on page 2.9**

◆ Affected cabin temperature is normal:



**Non-Normal Checklists**

**Chapter NNC**

**Anti-Ice, Rain**

**Section 3**

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**COWL  
ANTI-ICE**

**ENGINE COWL ANTI-ICE**

Condition: An engine cowl anti-ice duct overpressure occurs.

Objective: To reduce cowl duct pressure by reducing thrust.

- 1 Reduce thrust only when flight conditions allow.  
Autothrottle (if engaged). . . . . Disengage  
Thrust lever (affected engine) . . . Retard until  
the COWL ANTI-ICE  
light extinguishes



**COWL VALVE  
OPEN****ENGINE COWL VALVE OPEN  
OR TAI INDICATION**

Condition: One or both of the following occurs:

- An engine COWL VALVE OPEN light stays illuminated bright blue
- An amber TAI indication is shown.

1 Choose one:

◆ ENG ANTI-ICE switch is **ON**:

The cowl anti-ice valve is failed closed.

Avoid icing conditions.



◆ ENG ANTI-ICE switch is **OFF**:

The cowl anti-ice valve is failed open.

If TAT is **above 10°C**, limit thrust on the affected engine to 80% N1 if possible.



# Ice Crystal Icing

Condition: Engine ice crystal 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 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 reference N1 indicators to increase or decrease while flying at a constant altitude and airspeed.

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

- 1 ENGINE START switches . . . . . CONT
- 2 ENG ANTI-ICE switches (both) . . . . . ON
- 3 Minimize time above amber and red weather radar returns. If conditions allow, exit the ice crystal icing conditions.

▼ Continued on next page ▼

▼ Ice Crystal Icing continued ▼

4 Choose one:

◆ Autothrottle response **or** TAT indication is normal:

▶▶▶ **Go to step 7**

◆ Autothrottle is **unable** to maintain the selected airspeed and TAT indication stays near 0°C:

▶▶▶ **Go to step 5**

5 Autothrottle (if engaged) . . . . . Disengage

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

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

Reference N1 indicators and reference N1  
TAS, TAT, SAT, ECON SPD, and LRC

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

Use engine anti-ice normally.

The autothrottle can be re-engaged, if needed.



▼ Continued on next page ▼

▼ Ice Crystal Icing continued ▼

### Additional Information

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

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

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

### PROBE HEAT

CAPT  
PITOT

L ELEV  
PITOT

L ALPHA  
VANE

TEMP  
PROBE

F/O  
PITOT

R ELEV  
PITOT

R ALPHA  
VANE

AUX  
PITOT

Condition: One or more probe heats are failed.

1 Avoid icing conditions.

**Note:** Flight in icing conditions may result in erroneous flight instrument indications.



**OVERHEAT****WINDOW OVERHEAT**

Condition: A window overheat occurs.

- 1 WINDOW HEAT switch (affected window) . . . OFF
- 2 **Wait** 2 - 5 minutes.
- 3 WINDOW HEAT switch (affected window) . . . ON

**3856-3920**

- 4 **Wait** 5 seconds.

**Note:** The master caution and ANTI-ICE system annunciator lights will illuminate then extinguish within 5 seconds.

- 5 Choose one:

◆ Window OVERHEAT light **stays extinguished:**

Continue normal operation.



◆ Window OVERHEAT light **illuminates again:**

►► **Go to step 6**

- 6 WINDOW HEAT switch (affected window) . . . OFF

Limit airspeed to 250 knots maximum below 10,000 feet.

- 7 Pull both WINDSHIELD AIR controls. This vents conditioned air to the inside of the windshield for defogging.



## WING ANTI-ICE VALVE OPEN

L VALVE  
OPEN

R VALVE  
OPEN

Condition: A wing anti-ice L VALVE OPEN or R VALVE OPEN light stays illuminated bright blue if the wing anti-ice valve is not in the commanded position.

### 1 Choose one:

◆ WING ANTI-ICE switch is **ON**:

The wing anti-ice valve is failed closed.

WING ANTI-ICE switch . . . . . OFF

Avoid icing conditions where wing anti-ice is needed.



◆ WING ANTI-ICE switch is **OFF**:

The wing anti-ice valve is failed open.

►► **Go to step 2**

### 2 **When** icing conditions no longer exist:

ISOLATION VALVE switch . . . . . CLOSE

PACK switch (affected side) . . . . . OFF

This causes the operating pack to regulate to high flow in flight with the flaps up.

Engine BLEED air switch (affected side) . . OFF

Wing anti-ice is not available on the affected side with the ISOLATION VALVE switch closed.



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**Non-Normal Checklists**  
**Automatic Flight**

**Chapter NNC**  
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## AUTOPILOT DISENGAGE

A/P  
P/RST

Condition: All autopilots are disengaged. The red light flashes and the aural tone sounds.

- 1 Fly the airplane manually or re-engage an autopilot.

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



## AUTOTHROTTLE DISENGAGE

A/T  
P/RST

Condition: The autothrottle is disengaged. The red light flashes.

- 1 Control thrust manually or re-engage the autothrottle.



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**Non-Normal Checklists**  
**Communications**

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## **ACARS Electrical Power Loss**

Condition: ACARS AC power is lost.

**Note:** The ACARS automatically reverts to VOX MODE. The DATA MODE is inoperative.

- 1 Refer to the Airway Manual, ATC & Flt Control Communication, Dispatch Communication, for guidance.
- 2 The following reports must be manually completed:  
Stations time slip.  
Required company radio reports.  
Engine performance reports.



## **ACARS MU Fail or DU Fail**

Condition: The ACARS system is failed.

- 1 Use normal voice procedures for reporting.
- 2 Refer to the Airway Manual, ATC & Flt Control Communication, Dispatch Communication, for guidance.
- 3 The following reports must be manually completed:  
Stations time slip.  
Required company radio reports.  
Engine performance reports.



## Audio Control Panel - Degraded

**Condition:** The Audio Control Panel (ACP) normal mode or Remote Electronic Unit (REU) has malfunctioned.

**Objective:** Restore audio system operation in degraded mode.

- 1 On the failed ACP, select ALT-NORM switch to ALT. The transmitter selector for the usable radio illuminates.

**Note:** In ALT mode, the ACP transmitter selectors are not functional. Any transmission from that station must be from a radio mentioned below.

| CREW STATION AUDIO SYSTEM IN DEGRADED MODE | RADIO AVAILABLE FOR TRANSMISSION AND RECEPTION AT DEGRADED STATION |
|--------------------------------------------|--------------------------------------------------------------------|
| CAPTAIN                                    | VHF-1                                                              |
| FIRST OFFICER                              | VHF-2                                                              |
| OBSERVER                                   | VHF-1                                                              |

**Note:** The usable radio is heard at a preset volume, through the headset. The speaker and speaker switch are not functional at that station. The hand microphone is not usable in the degraded mode of operation.

**Note:** Audio warnings for altitude alert, GPWS, and windshear are not heard on an audio system operating in the degraded mode.

▼ Continued on next page ▼



▼ Audio Control Panel - Degraded continued ▼

**Note:** An audio system operating in the degraded mode cannot access the passenger address system through the audio control panel. The crewmember can still use the service interphone handset.



**Cabin Interphone System  
Inoperative**

Condition: The cabin interphone system is inoperative.

- 1 Ensure SERVICE INTERPHONE switch (aft overhead panel) is in the OFF position.

The OFF position deactivates external jacks that could interfere with normal operation.

- 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 procedure:

| Cabin Interphone System Inoperative |                                          |              |                                                                                                                                                                                          |
|-------------------------------------|------------------------------------------|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Source of Abnormal                  |                                          | Pilot Action | Briefing Items                                                                                                                                                                           |
| Flight Deck                         | Cabin                                    |              |                                                                                                                                                                                          |
| Smoke/Fire                          |                                          | Use PA.      | Use the following procedure if an evacuation is required: Pilots will use the PA to contact the flight attendants. Subsequent communication will be face-to-face, time permitting.       |
| 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. If not possible, flight attendant will come to the flight deck door and use the briefed entry method. |



**PA System Inoperative**

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

1 Flight Attendants . . . . . Notify

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

Use of standard flight deck/cabin call signals.

Advising Flight Leader to review location and operation of portable megaphones with flight attendants.

Use of evacuation signal.

Advise Flight Leader 20 minutes 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.

Brief the Flight Attendants on the following alternate emergency procedures.

▼ Continued on next page ▼

▼ PA System Inoperative continued ▼

| Public Address System Inoperative |                                          |                                                                    |                                                                                                                                                                                                                                                                                                                                  |
|-----------------------------------|------------------------------------------|--------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Source of Abnormal                |                                          | 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. Any public announcements will be made by the flight attendants using megaphones. |
| 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.

- 1 MIC SELECTOR switches  
(all audio selector panels) . . . . .FLT INT

This deselects radios and stops radio transmissions.

**Note:** The microphone/interphone with the stuck switch continuously transmits on flight interphone.

- 2 The associated audio selector panel should stay on flight interphone. All other audio selector panels may be used normally.



## SATCOM UNAVAILABLE

3601-3603

Condition: The MCDU channel status field shows UNAVAILABLE.

**Note:** The SAT channel is not available; insufficient signal level.



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-----

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**BAT  
DISCHARGE****BATTERY DISCHARGE**

Condition: A battery discharge exceedance occurs.

**3601 - 3610, 3772 - 3773, 3801 - 3900**

**Note:** A fully charged battery supplies a minimum of 30 minutes of standby power.

**3701 - 3771**

**Note:** Fully charged batteries supply a minimum of 60 minutes of standby power.



**DRIVE****DRIVE**

Condition: A generator drive malfunction occurs.

Action is irreversible.

- 1  Generator drive  
 DISCONNECT switch  
 (affected side) . . . . . Confirm . . . . Hold in the  
 DISCONNECT  
 position momentarily

This prevents generator drive damage.

- 2 Choose one:

◆ APU is **available** for start:

APU . . . . . START

**When** APU is running:

APU GEN switch  
 (affected side) . . . . . ON



◆ APU is **not** available:

Plan to land at the nearest suitable airport.  
 Only one main AC power source remains.



**ELEC****ELEC**

Condition: A standby power or DC system fault occurs.

**Note:** The ELEC light illuminates on the ground only.

- 1 Do **not** takeoff.



## LOSS OF BOTH ENGINE DRIVEN GENERATORS

**GEN 1 & 2      GEN 1 & 2      GEN 1 & 2**

**TRANSFER  
BUS OFF**

**SOURCE  
OFF**

**GEN OFF  
BUS**

Condition: Both engine driven generators are off.

**Note:** At high altitude, thrust deterioration or engine flameout can occur.

1 Engine GEN switches (both) . . . ON, one at a time

2 Choose one:

◆ **A single SOURCE OFF light stays illuminated:**

▶▶ **Go to step 3**

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

▶▶ **Go to step 5**

◆ **Both SOURCE OFF lights extinguish:**

YAW DAMPER switch . . . . . ON

▶▶ **Go to step 17**

---

**A single SOURCE OFF light stays illuminated**

3 YAW DAMPER switch . . . . . ON

▼ Continued on next page ▼

▼ **LOSS OF BOTH ENGINE DRIVEN GENERATORS** continued ▼

4 Choose one:

◆ APU is **available** for start:

**Note:** APU start attempts are not recommended above 25,000 feet.

APU . . . . . START

**When** APU is running:

APU GEN switch  
(affected side) . . . . . ON

▶▶ **Go to step 17**

◆ APU is **not** available:

Plan to land at the nearest suitable airport.  
Only one main AC power source remains.

▶▶ **Go to step 17**

▼ **Continued on next page** ▼

▼ **LOSS OF BOTH ENGINE DRIVEN GENERATORS** continued ▼

## Both **SOURCE OFF** lights stay illuminated

5 Choose one:

◆ APU is **available** for start:

BUS TRANSFER switch . . . . . OFF

ELEC HYD PUMP switches (both) . . . . OFF

**Note:** APU start attempts are not recommended above 25,000 feet. With both buses off, only one start attempt is recommended. Multiple start attempts reduce standby power capacity.

APU . . . . . START

▶▶ **Go to step 6**

◆ APU is **not** available:

▶▶ **Go to step 14**

6 **When** APU is running:

APU GEN  
switches (both) . . . . . ON,  
one at a time

**3701-3771**

7 Check the REMOTE CONTROL circuit breaker (RCCB REMOTE) (STANDBY POWER CONTROL UNIT, P6:A4).

▼ **Continued on next page** ▼

▼ LOSS OF BOTH ENGINE DRIVEN GENERATORS continued ▼

3701-3771

8 Choose one:

◆ RCCB REMOTE circuit breaker **is** tripped:

Reset circuit breaker. Only one reset is allowed.

▶▶ **Go to step 9**

◆ RCCB REMOTE circuit breaker is **not** tripped:

▶▶ **Go to step 9**

9 Choose one:

◆ **A single or both** SOURCE OFF lights **extinguish**:

▶▶ **Go to step 10**

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

▶▶ **Go to step 14**

10 BUS TRANSFER switch . . . . . AUTO

This restores power to the remaining transfer bus if one BUS OFF light stays illuminated.

11 ELEC HYD PUMP

switches (both) . . . . . ON, one at a time

12 YAW DAMPER switch . . . . . ON

13 Plan to land at the nearest suitable airport. Only one main AC power source remains.

▶▶ **Go to step 17**

▼ Continued on next page ▼

**▼ LOSS OF BOTH ENGINE DRIVEN GENERATORS continued ▼****Both SOURCE OFF lights stay illuminated**

14 Avoid icing conditions.

**Note:** Flight in icing conditions may result in erroneous flight instrument indications.

15 Plan to land at the nearest suitable airport.

**3601 - 3610, 3772 - 3773, 3801 - 3900**

**Note:** A fully charged battery supplies a minimum of 30 minutes of standby power.

**3701 - 3771**

**Note:** Fully charged batteries supply a minimum of 60 minutes of standby power.

16 The right IRS will operate on DC power for 5 minutes.

**▼ Continued on next page ▼**



▼ LOSS OF BOTH ENGINE DRIVEN GENERATORS continued ▼

17 Choose one:

- ◆ **Both** the captain's and first officer's primary attitude displays are **operative and** ATT flags are **not** shown:



- ◆ **Both** the captain's and first officer's primary attitude displays are **failed**:

▶▶ **Go to step 19**

- ◆ **Only** the **first officer's** primary attitude display is **failed**:

IRS TRANSFER switch . . . . . BOTH ON L

Do **not** engage either autopilot.

18 Choose one:

- ◆ **A single** SOURCE OFF light is **illuminated**:



- ◆ **Both** SOURCE OFF lights are **extinguished**:



- ◆ **Both** SOURCE OFF lights are **illuminated**:

The left IRS will operate as long as battery power remains.

Plan to land at the nearest suitable airport.



▼ Continued on next page ▼

▼ **LOSS OF BOTH ENGINE DRIVEN GENERATORS** continued ▼

Action is irreversible. Do this step only if **both** the captain's and first officer's primary attitude displays are **failed**.

- 19  IRS MODE selectors (both). . . . . ATT

Maintain straight and level, constant airspeed flight until attitude displays recover (approximately 30 seconds).

The primary attitude displays stay failed and the SET IRS HDG prompt on the POS INIT page is blank until the attitude mode alignment is complete.

- 20 Enter magnetic heading on the POS INIT page or on the overhead IRS display unit by selecting HDG/STS.

- 21 The MAP display is not available.

**Note:** Periodically enter updated heading on the POS INIT page or on the overhead IRS display unit by selecting HDG/STS.

- 22 Do **not** engage either autopilot.



**SOURCE  
OFF**

**SOURCE OFF**

Condition: The transfer bus is not powered by the last selected source.

1 Choose one:

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

▶▶ **Go to the LOSS OF BOTH ENGINE  
DRIVEN GENERATORS checklist on  
page 6.4**



◆ **Only one** SOURCE OFF light is illuminated:

▶▶ **Go to step 2**

2 Engine GEN switch (affected side) . . . . . ON

3 Choose one:

◆ SOURCE OFF light **extinguishes**:



◆ SOURCE OFF light **stays illuminated**:

▶▶ **Go to step 4**

▼ Continued on next page ▼

▼ **SOURCE OFF continued** ▼

4 Choose one:

◆ APU is **available** for start:

APU . . . . . START

**When** APU is running:

APU GEN switch  
(affected side) . . . . . ON

►► **Go to step 5**

◆ APU is **not** available:

Plan to land at the nearest suitable airport.  
Only one main AC power source remains.



5 Choose one:

◆ SOURCE OFF light **extinguishes**:



◆ SOURCE OFF light **stays illuminated**:

Plan to land at the nearest suitable airport.  
Only one main AC power source remains.



**STANDBY  
PWR OFF**
**STANDBY POWER OFF**

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

- AC standby bus
- DC standby bus
- Battery bus.

1 STANDBY POWER switch . . . . . BAT

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


**TR UNIT**
**TR UNIT**

Condition: One or more transformer rectifiers are failed.

1 Do not use the AFDS approach mode during an ILS approach.

**Note:** Autoland is not available.

**Note:** The AFDS approach mode can be used during an IAN approach.



TRANSFER  
BUS OFF

TRANSFER BUS OFF

Condition: The transfer bus is not energized.

1 Engine GEN switch (affected side) . . . . .ON

2 Choose one:

◆TRANSFER BUS OFF light **extinguishes**:



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

▶▶Go to step 3

3 Choose one:

◆APU is **available** for start:

APU . . . . . START

**When** APU is running:

APU GEN switch  
(affected side) . . . . .ON



◆APU is **not** available:

Plan to land at the nearest suitable airport.  
Only one main AC power source remains.



**Non-Normal Checklists**  
**Engines, APU**

**Chapter NNC**  
**Section 7**

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**Aborted Engine Start**

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

Objective: To shut down the engine and motor it.

1 Engine start lever (affected engine) . . . . CUTOFF



2 Choose one:

◆ENGINE START switch is in **GRD**:

Motor the engine for 60 seconds.

ENGINE START switch  
(affected engine) . . . . . OFF



◆ENGINE START switch is in **OFF**:

▶▶Go to step 3

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

ENGINE START switch  
(affected engine) . . . . . GRD

Motor the engine for 60 seconds.

ENGINE START switch  
(affected engine) . . . . . OFF



## 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.

Objective: To attempt to recover normal engine operation or shut down the engine if recovery is not possible.

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

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

- 1 Autothrottle (if engaged) . . . . . Disengage
- 2 Thrust lever  
(affected engine) . . . . Confirm . . . . Retard until  
indications stay  
within limits or  
the thrust lever is closed

-----

▼ Continued on next page ▼

▼ Engine Limit or Surge or Stall continued ▼

3 Choose one:

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

▶▶ **Go to step 6**

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

▶▶ **Go to step 4**

Check that RPM and EGT follow thrust lever movement.

4  Thrust lever  
(affected side) . . . . . Advance slowly

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



6 Engine start lever  
(affected engine) . . . . . Confirm . . . . . CUTOFF

7 PACK switch (affected side) . . . . . OFF

This causes the operating pack to regulate to high flow in flight with flaps up.

▼ Continued on next page ▼

▼ Engine Limit or Surge or Stall continued ▼

8 Choose one:

◆ APU is **available** for start:

APU . . . . . START

**When** APU is running:

APU GEN switch  
(affected side) . . . . . ON

►► **Go to step 9**

◆ APU is **not** available:

►► **Go to step 9**

9 Balance fuel as needed.

10 Transponder mode selector . . . . . TA ONLY

This prevents climb commands which can exceed single engine performance capability.

11 ISOLATION VALVE switch. . . . . Verify AUTO

This will ensure bleed air is available to both wings if wing anti-ice is needed.

12 A restart may be attempted if there is N1 rotation and no abnormal airframe vibration.

▼ Continued on next page ▼

▼ Engine Limit or Surge or Stall continued ▼

13 Choose one:

◆ A restart will be **attempted**:

▶▶ **Go to the Engine In-Flight Start  
checklist on page 7.22**



◆ A restart will **not** be attempted:

▶▶ **Go to step 14**

14 Plan to land at the nearest suitable airport.

▶▶ **Go to the One Engine Inoperative Landing  
checklist on page 7.34**



## Loss Of Thrust On Both Engines

Condition: Both of these occur:

- Both engines have a loss of thrust
- Both ENG FAIL alerts show.

Objective: To restart at least one engine.

- 1 ENGINE START switches (both) . . . . . FLT
- 2 Engine start levers (both) . . . . . CUTOFF
- 3 **When** EGT decreases:

Engine start levers (both) . . . . . IDLE detent

- 
- 4 **If** EGT reaches 950°C or there is no increase in EGT within 30 seconds:

Engine start lever  
(affected engine) . . Confirm. . . . . CUTOFF,  
then IDLE detent

**If** EGT again reaches 950°C or there is no increase in EGT within 30 seconds, repeat as needed.

- 5 At or above FL270, set airspeed to 275 knots.  
Below FL270, set airspeed to 300 knots.
- 6 Engines can accelerate to idle very slowly, especially at high altitudes or in heavy precipitation. If N2 is steadily increasing and EGT stays within limits, do not interrupt the start.
- 7 Do **not** wait for a successful engine start before starting the APU.

▼ Continued on next page ▼

▼ Loss Of Thrust On Both Engines continued ▼

8 Choose one:

◆ APU is **available** for start:

APU . . . . . START

▶▶ **Go to step 9**

◆ APU is **not** available:

▶▶ **Go to step 10**

9 **When** APU is running:

APU GEN switches  
(both). . . . . ON, one at a time

10 Choose one:

◆ **One or both** engines **start**:

▶▶ **Go to step 15**

◆ **Neither** engine starts:

▶▶ **Go to step 11**

11 Choose one:

◆ **N2** is **above 11%**:

Attempt a windmill start.

▶▶ **Go to step 13**

◆ **N2** is **at or below 11%**:

Attempt a starter assisted start.

▶▶ **Go to step 12**

▼ Continued on next page ▼

▼ Loss Of Thrust On Both Engines continued ▼

12 Choose one:

◆ APU bleed air is **available**:

Attempt a starter assist start.

▶▶ **Go to step 16**

◆ APU bleed air is **not** available:

Attempt a windmill start.

▶▶ **Go to step 13**

13 Thrust levers (both) . . . . . Close

14 Engine start  
lever (**either**) . . . . . Confirm . . . . . CUTOFF,  
then IDLE detent

The engine may accelerate to idle very slowly especially at high altitudes or in heavy precipitation. If N2 is steadily increasing and EGT stays within limits, do not interrupt the start.

15 **When** engine parameters have stabilized:

ENGINE START switch  
(operating engine) . . . . . As needed

Thrust lever  
(operating engine) . . . . . Advance slowly

Engine GEN switch  
(operating engine side) . . . . . ON

▶▶ **Go to step 25**

▼ Continued on next page ▼



▼ **Loss Of Thrust On Both Engines continued** ▼

- 16 Thrust levers (both) . . . . . Close
- 17 WING ANTI-ICE switch . . . . . OFF
- 18 PACK switches (both) . . . . . OFF
- 19 APU BLEED air switch . . . . . ON
- 20 Ignition select switch . . . . . BOTH
- 21 Engine start  
    lever (**either**) . . . . . Confirm . . . . . CUTOFF
- 22 ENGINE START switch . . . . . GRD
- 23 **When** N2 is at or above 11%:  
    Engine start lever. . . . . IDLE detent

The engine may accelerate to idle very slowly especially at high altitudes or in heavy precipitation. If N2 is steadily increasing and EGT stays within limits, do not interrupt the start.

▼ **Continued on next page** ▼

▼ Loss Of Thrust On Both Engines continued ▼

24 **When** engine parameters have stabilized:

APU BLEED air switch . . . . . OFF

ENGINE START switch  
(operating engine) . . . . . As needed

Thrust lever  
(operating engine) . . . . . Advance slowly

Engine GEN switch  
(operating engine side) . . . . . ON

PACK switch  
(operating engine side) . . . . . AUTO

25 Choose one:

◆ **Both** the captain's and first officer's primary attitude displays are **operative** and ATT flags are **not** shown:

▶▶ **Go to step 30**

◆ **Both** the captain's and first officer's primary attitude displays are **failed**:

▶▶ **Go to step 26**

◆ **Only** the **first officer's** primary attitude display is **failed**:

IRS TRANSFER switch. . . . . BOTH ON L

Do **not** engage either autopilot.

▶▶ **Go to step 30**

▼ Continued on next page ▼

▼ Loss Of Thrust On Both Engines continued ▼

Action is irreversible. Do this step only if **both** the captain's and first officer's primary attitude displays are **failed**.

- 26  IRS MODE selectors (both) . . . . . ATT

Maintain straight and level, constant airspeed flight until attitude displays recover (approximately 30 seconds).

The primary attitude displays stay failed and the SET IRS HDG prompt on the POS INIT page is blank until the attitude mode alignment is complete.

- 27 Enter magnetic heading on the POS INIT page or on the overhead IRS display unit by selecting HDG/STS.
- 28 The MAP display is not available.

**Note:** Periodically enter updated heading on the POS INIT page or on the overhead IRS display unit by selecting HDG/STS.

- 29 Do **not** engage either autopilot.

▼ Continued on next page ▼

**▼ Loss Of Thrust On Both Engines continued ▼**

30 Choose one:

◆ **Both** engines are **running**:

Run the APU as needed.



◆ **One** engine stays **failed**:

►► **Go to the Engine In-Flight Start  
checklist on page 7.22**



**FAULT****APU FAULT**

Condition: An APU malfunction occurs.

**Note:** The APU shuts down automatically.

- 1 APU switch . . . . . OFF

If the APU FAULT light extinguishes after 5 minutes, restarts may be attempted.

**LOW OIL PRESSURE****APU LOW OIL PRESSURE**

Condition: The APU oil pressure is low.

**Note:** The APU shuts down automatically.

- 1 APU switch . . . . . OFF

The LOW OIL PRESSURE light extinguishes in 5 minutes.

**OVER SPEED****APU OVERSPEED**

Condition: One of these occurs:

- An APU RPM limit exceedance causes automatic shutdown
- During a normal APU shutdown the overspeed shutdown protection logic fails a self-test.

- 1 APU switch . . . . . OFF

The APU OVERSPEED light extinguishes in 5 minutes.



**ALTN**

## EEC ALTERNATE MODE

Condition: An EEC operates in the alternate control mode.

- 1 Autothrottle (if engaged) . . . . . Disengage
- 2 Thrust levers (both) . . . . . Retard to mid position

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

- 3 EEC mode switches (one at a time) . . . . . ALTN

This ensures both engines operate in alternate mode.

- 4 Autothrottle (if needed) . . . . . Engage

**Note:** Maximum thrust limiting is available with autothrottle engaged.

- 5 Do not exceed engine limits. Engine limit protection in alternate mode is not the same as in normal mode.

- 6 Choose one:

◆ **DSPLY SOURCE** annunciation is **shown**:

▶▶ **Go to step 7**

◆ **DSPLY SOURCE** annunciation is **not** shown:



▼ Continued on next page ▼

▼ EEC ALTERNATE MODE continued ▼

7 Choose one:

◆ **DISPLAY SOURCE** checklist **has** been completed:



◆ **DISPLAY SOURCE** checklist has **not** been completed:

▶▶ **Go to the DISPLAY SOURCE  
checklist on page 10.10**



**ENGINE  
CONTROL****ENGINE CONTROL**

Condition: An engine control system fault occurs.

**Note:** An ENGINE CONTROL light illuminates on the ground only. If the light illuminates after landing, notify maintenance.

- 1 Do **not** takeoff.





## Engine Failure or Shutdown

Condition: One of these occurs:

- An engine failure
- An ENG FAIL alert shows
- An engine flameout
- Another checklist directs an engine shutdown.

- 1 Do an engine shutdown only when flight conditions allow.
- 2 Autothrottle (if engaged) . . . . . Disengage
- 3 Thrust lever  
(affected engine) . . . . . Confirm . . . . . Close
- 4 **When** the affected engine is at idle thrust:
  - Engine start lever  
(affected engine) . . . . Confirm . . . . CUTOFF
- 5 PACK switch (affected side) . . . . . OFF
 

This causes the operating pack to regulate to high flow in flight with flaps up.

▼ Continued on next page ▼

▼ Engine Failure or Shutdown continued ▼

6 Choose one:

◆ APU is **available** for start:

APU . . . . . START

**When** APU is running:

APU GEN switch  
(affected side) . . . . . ON

▶▶ **Go to step 7**

◆ APU is **not** available:

▶▶ **Go to step 7**

7 Balance fuel as needed.

8 Transponder mode selector . . . . . TA ONLY

This prevents climb commands which can exceed single engine performance capability.

9 ISOLATION VALVE switch. . . . . Verify AUTO

This ensures bleed air is available to both wings if wing anti-ice is needed.

10 A restart may be attempted if there is N1 rotation and no abnormal airframe vibration.

▼ Continued on next page ▼

**▼ Engine Failure or Shutdown continued ▼**

11 Choose one:

◆ A restart will be **attempted**:

▶▶ **Go to the Engine In-Flight Start  
checklist on page 7.22**



◆ A restart will **not** be attempted:

▶▶ **Go to step 12**

12 Plan to land at the nearest suitable airport.

▶▶ **Go to the One Engine Inoperative Landing  
checklist on page 7.34**



## Engine High Oil Temperature

Condition: The engine oil temperature is high.

1 Choose one:

◆ Oil pressure **at or below** 14 PSI, **OR**,  
temperature is **at or above** the **redline**:

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



Temperature is in the **amber band**:

▶▶ **Go to step 2**

2 Autothrottle (if engaged) . . . . . Disengage

3 Thrust lever  
(affected engine) . . . Confirm . . . . . Retard  
slowly until the  
engine oil temperature  
is within the normal operating range  
or the thrust lever is closed

▼ Continued on next page ▼

▼ Engine High Oil Temperature continued ▼

4 Choose one:

◆ Oil temperature is in the **amber** band for **45 minutes or less**:

**Note:** Run the affected engine at a thrust setting that keeps the engine oil temperature within the normal operating range.



◆ Oil temperature is in the **amber** band for **more than 45 minutes**:

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



## 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:** Oil quantity indication as low as zero is normal if windmilling N2 RPM is below approximately 8%.

- 1 Do this checklist **only** after completion of the Engine Failure or Shutdown checklist or as directed by the Engine Limit or Surge or Stall checklist or by the Loss of Thrust on Both Engines checklist.
- 2 Check the In-Flight Start Envelope. X-BLD or XB indication may not match the envelope. Starts are not assured outside of the In-flight Start Envelope.

**Note:** For engines shut down one hour or more, or if EGT is less than 30°C, attempt a restart:

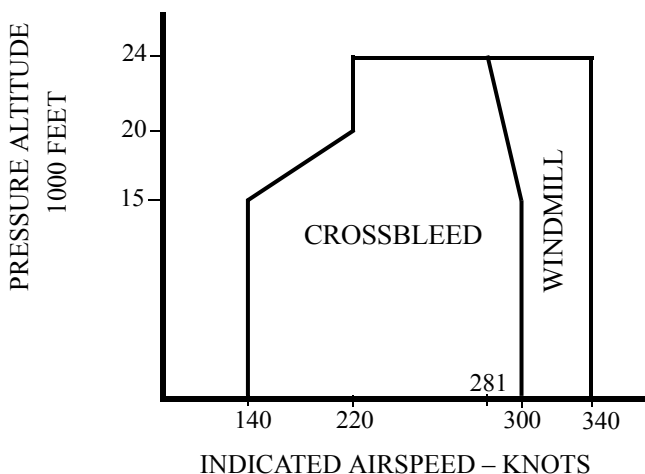
- At an altitude at or below 20,000 feet
- With airspeed at or above 220 knots
- Using a crossbleed start.

If the N2 is less than 8%, ENGINE START switch must be in CONT to display the EGT.

▼ Continued on next page ▼

**▼ Engine In-Flight Start continued ▼**

**IN-FLIGHT START ENVELOPE**



- 3 Thrust lever  
(affected engine) . . . Confirm . . . . . Close
- 4 Engine start lever  
(affected engine) . . . Confirm . . . . . CUTOFF
- 5 Engines can accelerate to idle very slowly,  
especially at high altitudes or in heavy  
precipitation. If N2 is steadily increasing and EGT  
stays within limits, do not interrupt the start.

**▼ Continued on next page ▼**

▼ Engine In-Flight Start continued ▼

6 Choose one:

◆ **Windmill** start:

ENGINE START switch  
(affected engine) . . . . . FLT

►► **Go to step 7**

◆ **Crossbleed** start:

PACK switch (affected side) . . . . . OFF

DUCT PRESSURE . . . . . Minimum 30 PSI

Advance the thrust lever to increase  
duct pressure if needed.

ENGINE START switch  
(affected engine) . . . . . GRD

►► **Go to step 7**

7 **When** N2 is at or above 11%:

Engine start lever  
(affected engine) . . . . . IDLE detent

Monitor EGT to ensure it does not rise rapidly or  
exceed the start limit of 725° C during the start  
attempt.

▼ Continued on next page ▼



▼ Engine In-Flight Start continued ▼

8 Choose one:

- ◆ EGT **increases** within 30 seconds **and** a normal start occurs:

▶▶ **Go to step 10**

- ◆ EGT does **not** increase within 30 seconds **or** another abort start condition as listed in the Normal Procedures occurs:

Engine start lever  
(affected engine) . . . Confirm . . . CUTOFF

ENGINE START switch  
(affected engine) . . . . . OFF

**Note:** If the engine has been shutdown for more than 1 hour, multiple start attempts can be needed.

▶▶ **Go to step 9**

9 Choose one:

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

▶▶ **Go to step 10**

- ◆ Engine **fails** to start:

▶▶ **Go to the One Engine Inoperative  
Landing checklist on page 7.34**



▼ Continued on next page ▼

**▼ Engine In-Flight Start continued ▼**

- 10 Engine GEN switch (affected side) . . . . .ON
  - 11 PACK switch (affected side) . . . . . AUTO
  - 12 ENGINE START switch . . . . .As needed
  - 13 APU . . . . .As needed
  - 14 Transponder mode selector . . . . .TA/RA
- 

## ENGINE LOW OIL PRESSURE

Condition: The engine oil pressure is low. The LOW OIL PRESSURE alert may or may not be illuminated.

1 Choose one:

- ◆ Engine oil pressure is in the **amber band** with **takeoff thrust** set:

Do **not** takeoff.



- ◆ Engine oil quantity low or temperature high, **OR**, engine oil pressure is **at or below** the **redline**:

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



## Engine Low Oil Quantity

Condition: One or more of these occur:

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

**Note:** Indicated oil quantity may decrease significantly during engine start, takeoff, and climb out. If this occurs, engine operation is not impacted and the correct oil quantity should be indicated during level flight.

**Note:** An oil quantity indication as low as zero is normal if windmilling N2 RPM is below approximately 8%.

**Note:** Low and/or decreasing oil quantity indications in level flight may be the result of indicator fault, oil leak, excessive oil consumption or inadequate servicing.

▼ Continued on next page ▼

▼ Engine Low Oil Quantity continued ▼

1 Choose one:

- ◆ Oil pressure and oil temperature indications are normal:

Continue normal operations.

Monitor oil quantity, pressure, and temperature.



- ◆ Oil pressure is decreasing or oil temperature is high:

Autothrottle (if engaged) . . . . Disengage

Thrust Lever

(affected engine)... . Confirm. . . Retard  
slowly until engine oil temp  
and pressure are within  
normal operating range or  
thrust lever is closed

**►► Go to step 2**

2 Choose one:

- ◆ Oil temperature or pressure is outside the normal range:

**►► Go to step 3**

- ◆ Oil temperature and pressure indications are normal:



▼ Continued on next page ▼

**▼ Engine Low Oil Quantity continued ▼**

3 Choose one:

◆ Oil pressure is in the amber band:

Continue normal operations.

Monitor oil pressure.



◆ Oil pressure is at or below 14 psi (just above red line):

**Note:** The LOW OIL PRESSURE alert may or may not be illuminated.**▶▶ Go to the Engine Failure or Shutdown checklist on page 7.17**

◆ Oil temperature is high:

**▶▶ Go to step 4**

4 Choose one:

◆ Temperature is at or above the redline:

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

◆ Temperature is in the amber band for more than 45 minutes:

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

## ENGINE OIL FILTER BYPASS

Condition: The OIL FILTER BYPASS alert indicates oil filter contamination can cause oil to bypass the oil filter.

- 1 Autothrottle (if engaged) . . . . . Disengage
- 2 Thrust lever  
(affected engine) . . . . . Confirm . . . . . Retard  
slowly until the  
OIL FILTER BYPASS  
alert extinguishes or  
the thrust lever is closed

3 Choose one:

◆ OIL FILTER BYPASS alert **extinguishes**:

Run the engine at reduced thrust to keep  
the alert extinguished.



◆ OIL FILTER BYPASS alert **stays illuminated**:

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



## Engine High Vibration

Condition: The vibration level is more than 4.0 units.  
Airframe vibration may or may not be felt.

1 Choose one:

◆ In **icing** conditions:

▶▶ **Go to step 2**

◆ **Not** in icing conditions:

▶▶ **Go to step 6**

2 ENGINE START switch  
(affected engine) . . . . . FLT

3 Autothrottle (if engaged) . . . . . Disengage

Do the following on one engine at a time.

4  Thrust lever  
(affected engine) . . . . . Retard to 45% N1  
for five seconds,  
then slowly advance  
to a minimum of 80% N1  
while monitoring engine vibration

5 Choose one:

◆ Vibration **decreases**:

Continue normal operation.



◆ Vibration does **not** decrease:

▶▶ **Go to step 6**

▼ Continued on next page ▼



**▼ High Engine Vibration continued ▼**

- 6 Autothrottle (if engaged) . . . . . Disengage
- 7 Thrust lever  
(affected engine) . . . . Confirm. . . . . Retard to  
maintain vibration  
levels below 4 units or  
until the thrust lever is closed

**Note:** If the VIB indication does not decrease when the thrust lever is retarded, check other engine indications on the affected engine. If other engine indications are normal, run the engine at reduced thrust.



## One Engine Inoperative Landing

Condition: Landing must be made with one engine inoperative.

- 1 Plan a flaps 15 landing.
- 2 Set VREF 15 or VREF ICE.

**Note:** If any of the following conditions apply, set VREF ICE = VREF 15 + 10 knots:

- Engine anti-ice will be used during landing
- Wing anti-ice has been used any time during the flight
- Icing conditions were encountered during the flight and the landing temperature is below 10° C.

**Note:** When VREF ICE is needed, the wind additive should not exceed 10 knots.

- 3 Check the Abnormal Configuration Landing Distance table in the ODM.
- 4 Maintain VREF 15 + wind additive or VREF ICE + wind additive on final approach to assure sufficient maneuver margin and speed for go-around. The minimum wind additive is 5 knots.
- 5 When engine anti-ice is needed, use on the operating engine only.
- 6 **Checklist Complete Except Deferred Items**

▼ Continued on next page ▼

▼ One Engine Inoperative Landing continued ▼

## Deferred Items

### Descent Checklist

|                                |                  |     |
|--------------------------------|------------------|-----|
| Altimeters . . . . .           | ____, xckd       | C&F |
| ■ Minimums . . . . .           | ____, ____, xckd | C&F |
| ■ Landing data . . . . .       | ____/____        | C&F |
| <b>VREF 15 or VREF ICE</b>     |                  |     |
| ■ Approach briefing . . . . .  | complete         | PM  |
| ■ Autobrakes . . . . .         | as reqd          | PM  |
| Seat belt signs . . . . .      | ON               | PM  |
| Pressurization panel . . . . . | set              | PM  |
| Recall . . . . .               | ckd              | PM  |

### Additional Go-Around Thrust

Choose one:

- ◆ Additional go-around thrust is **needed**:
  - ▶▶ **Go to No Engine Bleed Landing below**
- ◆ Additional go-around thrust is **not** needed:
  - ▶▶ **Go to Go-Around Procedure Review below**

▼ Continued on next page ▼

▼ One Engine Inoperative Landing continued ▼

**No Engine Bleed Landing**

**When** below 10,000 feet:

- WING ANTI-ICE switch . . . . . OFF
- ISOLATION VALVE switch . . . . . CLOSE
- BLEED 1 air switch . . . . . OFF



Do not open the APU bleed air valve if the engine fire switch is illuminated.

- APU BLEED air switch . . . . . ON
- Left PACK switch . . . . . AUTO
- BLEED 2 air switch . . . . . OFF

**Go-Around Procedure Review**

Do the normal go-around procedure except:

- Use flaps 1.
- Maintain VREF 15 + 5 knots or VREF ICE + 5 knots until reaching flap retraction altitude.
- Limit bank angle to 15° when airspeed is less than VREF 15 + 15 knots or VREF ICE + 5 knots or the minimum maneuver speed, whichever is lower.
- Accelerate to flaps 1 maneuvering speed before flap retraction.

▼ Continued on next page ▼

▼ One Engine Inoperative Landing continued ▼

Approach Checklist

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

Additional Deferred Items

|                          |              |
|--------------------------|--------------|
| GROUND PROXIMITY FLAP    |              |
| INHIBIT switch . . . . . | FLAP INHIBIT |
| Fuel Imbalance . . . . . | monitored    |

Landing Checklist

|                        |                     |     |
|------------------------|---------------------|-----|
| Landing gear . . . . . | down                | C&F |
| Flaps . . . . .        | <b>15, 15 green</b> | C&F |
| Speedbrake . . . . .   | ARMED               | PM  |

ENGINE START

|                                     |      |    |
|-------------------------------------|------|----|
| switch (operating engine) . . . . . | CONT | PM |
| ■ ■ ■ ■                             |      |    |

**REVERSER****REVERSER**

Condition: A fault occurs in the thrust reverser system.

**Note:** Additional system failures may cause in-flight deployment.

- 1 Expect normal reverser operation after landing.



## REVERSER UNLOCKED (IN FLIGHT)

Condition: The amber REV indication shows with uncommanded reverse thrust.

**Note:** Only multiple failures could allow the engine to go into reverse thrust.

Unstowed reverser sleeves produce buffet, yaw, roll and increased airplane drag.

- 1 Check movement of the forward thrust lever on the affected engine.

The EECs prevent power above idle if the related thrust reverser has moved from the stowed position.

---

### Warning! Do not actuate the reverse thrust lever.

---

- 2 Choose one:

◆ Engine **responds** to forward thrust lever movement **and no** buffet or yaw exists:

Continue normal operation.



◆ Engine does **not** respond to forward thrust lever movement **or** buffet or yaw **exists**:

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



## START VALVE OPEN

Condition: The START VALVE OPEN alert indicates the start valve fails to close.

1 ENGINE START switch . . . . . OFF

2 Choose one:

◆ START VALVE OPEN alert **extinguishes:**



◆ START VALVE OPEN alert **stays illuminated:**

▶▶ **Go to step 3**

3 ISOLATION VALVE switch. . . . . CLOSE

4 PACK switch (affected side) . . . . . OFF

This causes the operating pack to regulate to high flow in flight with flaps up.

5 Engine BLEED air switch  
(affected side) . . . . . OFF

6 Choose one:

◆ START VALVE OPEN alert stays illuminated for **engine 1:**

APU BLEED air switch . . . . . OFF

▶▶ **Go to step 7**

◆ START VALVE OPEN alert stays illuminated for **engine 2:**

▶▶ **Go to step 7**

▼ Continued on next page ▼



▼ START VALVE OPEN continued ▼

7 Choose one:

◆ **In flight:**

WING ANTI-ICE switch . . . . . OFF

This prevents possible asymmetrical  
ice buildup on the wings.

Avoid icing conditions where anti-icing is  
needed.



◆ **On the ground:**

Ground air source  
(if in use) . . . . . Disconnect

Engine start lever  
(affected engine) . . . . . CUTOFF



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**Non-Normal Checklists**

**Chapter NNC**

**Fire Protection**

**Section 8**

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Intentionally  
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## APU FIRE

Condition: Fire is detected in the APU.

- 1 APU fire switch . . . Confirm . . . .Pull, rotate to the stop, and hold for 1 second
- 2 APU switch . . . . . OFF  
 - - - - -
- 3 Choose one:
  - ◆APU fire switch **extinguishes:**  
                                     ■ ■ ■ ■
  - ◆APU fire switch **stays illuminated:**  
                             ▶▶ **Go to step 4**
- 4 Plan to land at the nearest suitable airport.  
                                     ■ ■ ■ ■

## ENGINE FIRE

or

## Engine Severe Damage or Separation

Condition: One or more of these occur:

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

1 Autothrottle (if engaged) . . . . . Disengage

2 Thrust lever  
(affected engine) . . . Confirm . . . . . Close

3 Engine start lever  
(affected engine) . . . Confirm . . . . . CUTOFF

4 Engine fire switch  
(affected engine) . . . Confirm . . . . . Pull

To manually unlock the engine fire switch, press the override and pull.

5 **If** the engine fire switch or ENG OVERHEAT light is illuminated:

Engine fire switch . . . . . Rotate to the stop and hold for 1 second

**If** after 30 seconds the engine fire switch or ENG OVERHEAT light stays illuminated:

Engine fire switch. . . . . Rotate to the opposite stop and hold for 1 second

▼ Continued on next page ▼

▼ ENGINE FIRE or Engine Severe Damage or Separation continued ▼

6 Choose one:

- ◆ High airframe vibration **occurs** and **continues** after the engine is shut down:

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

**Note:** If high vibration returns and further airspeed reduction and descent are not practical, increasing airspeed may reduce the vibration.

►► **Go to step 7**

- ◆ High airframe vibration does **not** occur or does **not** continue after the engine is shut down:

►► **Go to step 7**

7 ISOLATION VALVE switch . . . . . CLOSE

8 PACK switch (affected side) . . . . . OFF

This causes the operating pack to regulate to high flow in flight with the flaps up.

9 APU BLEED air switch . . . . . OFF

▼ Continued on next page ▼

▼ **ENGINE FIRE or Engine Severe Damage or Separation continued** ▼

10 Choose one:

◆ APU is **available** for start:

APU . . . . . START

**When** APU is running:

APU GEN switch  
(affected side) . . . . . ON

▶▶ **Go to step 11**

◆ APU is **not** available:

▶▶ **Go to step 11**

11 Balance fuel as needed.

12 Transponder mode selector . . . . . TA ONLY

This prevents climb commands which can exceed single engine performance capability.

13 ISOLATION VALVE switch  
(after the fire has been extinguished) . . . . . AUTO

This ensures bleed air is available to both wings if wing anti-ice is needed.

14 Plan to land at the nearest suitable airport.

▶▶ **Go to the One Engine Inoperative Landing checklist on page 7.34**





## ENGINE OVERHEAT

**ENG 1  
OVERHEAT**

**ENG 2  
OVERHEAT**

Condition: An overheat is detected in the engine.

- 1 Autothrottle (if engaged) . . . . . Disengage
- 2 Thrust lever  
(affected engine) . . . Confirm . . . . . Close
- 3 **If the ENG OVERHEAT light *stays illuminated*:**

**▶▶ Go to the ENGINE FIRE or Engine  
Severe Damage or Separation checklist  
on page 8.2**



- 4 **If the ENG OVERHEAT light *extinguishes*:**

Run the engine at reduced thrust to keep the light extinguished.



**Engine Tailpipe Fire**

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

- 1 Engine start lever  
(affected engine) . . . . . CUTOFF
- 2 Advise the cabin.
- 3 Choose one:
  - ◆ Bleed air is **available**:
    - ▶▶ **Go to step 4**
  - ◆ Bleed air is **not** available:
    - Advise the tower.
    - ■ ■ ■
- 4 PACK switches (both) . . . . . OFF
- 5 ISOLATION VALVE switch. . . . . AUTO
- 6 Engine BLEED air switches (both) . . . . . ON
- 7 Choose one:
  - ◆ APU is **running**:
    - APU BLEED air switch . . . . . ON
    - ▶▶ **Go to step 8**
  - ◆ APU is **not** running:
    - ▶▶ **Go to step 8**

▼ Continued on next page ▼

**▼ Engine Tailpipe Fire continued ▼**

8 Choose one:

◆ Affected ENGINE START switch is in **GRD**:



**▶▶ Go to step 9**

◆ Affected ENGINE START switch is **not** in GRD:

Allow the affected N2 to decrease below 20%.

ENGINE START switch  
(affected engine) . . . . . GRD

**▶▶ Go to step 9**

9 Advise the tower.

10 **When** the tailpipe fire is extinguished:

ENGINE START switch  
(affected engine) . . . . . OFF



**Smoke, Fire or Fumes**

Condition: Smoke, fire or fumes occur.

- 1 Diversion may be needed.
- 2 Don oxygen masks and set regulators to 100%, as needed.
- 3 Establish crew and cabin communications.
- 4 BUS TRANSFER switch . . . . . OFF  
**3801 - 3900**
- 5 Advise the cabin crew that the cabin lighting will be extinguished, but passenger reading lights will continue to work.
- 6 CAB/UTIL switch. . . . . OFF
- 7 IFE/PASS SEAT switch . . . . . OFF  
**3601 - 3610**
- 8 RECIRC FAN switch . . . . . OFF  
**3701 - 3773, 3801 - 3900**
- 9 RECIRC FAN switches (both) . . . . . OFF  
**3601 - 3610, 3701 - 3773**
- 10 Instruct the cabin crew to turn off the INTERNET master switch, FC PC POWER, and IFE switches.

**Note:** The FC PC POWER and the IFE switches are located on the Forward Attendant Panel. The INTERNET switch (black guarded) is located to the left of this panel.

▼ Continued on next page ▼

▼ Smoke, Fire or Fumes continued ▼

**3801 - 3900**

- 11 Instruct the cabin crew to turn off the INTERNET master switch, IFE/PC POWER, and PC OUTLETS switches.

**Note:** The IFE/PC POWER and PC OUTLETS switches are located on the Passenger Services display of the Forward Attendant Panel. The INTERNET switch (black guarded) is located to the left of this panel.

- 12 APU BLEED air switch . . . . . OFF

- 13 **Anytime** the smoke or fumes becomes the greatest threat:

▶▶ **Go to the Smoke or Fumes Removal checklist on page 8.22**

- 14 Choose one:

◆ Source of the smoke, fire or fumes is **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 15**

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

▶▶ **Go to step 16**

▼ Continued on next page ▼

▼ Smoke, Fire or Fumes continued ▼

15 Choose one:

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

Continue the flight at the captain's discretion.

Restore unpowered items at the captain's discretion.

▶▶ **Go to the Smoke or Fumes Removal checklist on page 8.22, if needed.**



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

▶▶ **Go to step 16**

16 EQUIP COOLING SUPPLY

and EXHAUST switches (both) . . . . . ALTN

17 Instruct the cabin crew to:

Turn on cabin reading lights.

Turn on galley attendants work lights.

Turn off cabin fluorescent light switches.

18 Divert to the nearest suitable airport while continuing the checklist.

19 Consider an immediate landing if the smoke, fire or fumes situation becomes uncontrollable.

▼ Continued on next page ▼

▼ Smoke, Fire or Fumes continued ▼

- 20 Do **not** delay landing in an attempt to complete all of the following steps.
- 21 ISOLATION VALVE switch . . . . . CLOSE
- 22 R PACK switch . . . . . OFF
- 23 **Wait** 2 minutes unless the smoke or fumes are increasing. This allows time for the smoke or fumes to clear.
- 24 Choose one:
- ◆ Smoke or fumes are **decreasing**:
    - ▶▶ **Go to the Smoke or Fumes Removal checklist on page 8.22, if needed.**
    - ■ ■ ■
  - ◆ Smoke or fumes **continue or are increasing**:
    - R PACK switch . . . . . AUTO
    - L PACK switch . . . . . OFF
    - ▶▶ **Go to step 25**
- 25 **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 ▼**

26 Choose one:

◆ Smoke or fumes are **decreasing**:**▶▶ Go to the Smoke or Fumes Removal checklist on page 8.22, if needed.**◆ Smoke or fumes **continue or are increasing**:

L PACK switch . . . . . AUTO

Consider an immediate landing.

**▶▶ Go to the Smoke or Fumes Removal checklist on page 8.22, if needed.**



**APU DET  
INOP**

**APU DETECTION  
INOPERATIVE**

Condition: APU fire detection is inoperative.

1 APU switch . . . . . OFF

**Caution! Do not run the APU. An APU fire would not be detected and the APU would continue to run.**



## CARGO FIRE

FWD

AFT

Condition: Fire is detected in the related cargo compartment.

- 1 CARGO FIRE ARM switch  
(affected compartment) . . . Confirm . . . . . Push,  
Verify ARMED
- 2 CARGO FIRE DISCH switch . . . . . Push and hold  
for 1 second

**Note:** DISCH light may need up to 30 seconds to illuminate.

3601 - 3610

- 3 Choose one:

◆ On the **ground**:

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



◆ In flight:

▶▶ Go to step 5

▼ Continued on next page ▼

▼ CARGO FIRE continued ▼

3701 - 3773, 3801 - 3900

4 Choose one:

◆ On the **ground**:

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



◆ In flight:

▶▶ Go to step 6

3601 - 3610

5 RECIRC FAN switch . . . . . OFF

3701 - 3773, 3801 - 3900

6 RECIRC FAN switches (both) . . . . . OFF

7 PACK switches (both) . . . . . HIGH

8 Plan to land at the nearest suitable airport.

9 **Checklist Complete Except Deferred Items**

▼ Continued on next page ▼

▼ **CARGO FIRE continued** ▼

**Deferred Items**

**Descent Checklist**

|                                |                  |     |
|--------------------------------|------------------|-----|
| Altimeters . . . . .           | ____, xckd       | C&F |
| ■ Minimums . . . . .           | ____, ____, xckd | C&F |
| ■ Landing data . . . . .       | ____, ____       | C&F |
| ■ Approach briefing . . . . .  | complete         | PM  |
| ■ Autobrakes . . . . .         | as reqd          | PM  |
| Seat belt signs . . . . .      | ON               | PM  |
| Pressurization panel . . . . . | set              | PM  |
| Recall . . . . .               | ckd              | PM  |

**Approach Checklist**

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

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

▼ **Continued on next page** ▼

**▼ CARGO FIRE continued ▼**

**Landing Checklist**

|                                 |                  |     |
|---------------------------------|------------------|-----|
| Landing gear . . . . .          | down             | C&F |
| Flaps . . . . .                 | ____, ____ green | C&F |
| Speedbrake . . . . .            | .ARMED           | PM  |
| ENGINE START switches . . . . . | .CONT            | PM  |



**DETECTOR  
FAULT****CARGO FIRE DETECTOR FAULT**

Condition: Fire detection is inoperative in one or both cargo compartments.

- 1 The fire detection system in one or both cargo compartments is inoperative.



## 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 8.8.**

- 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.





**FAULT****ENGINE FIRE/OVERHEAT  
DETECTOR FAULT**

Condition: Engine fire and overheat detection is inoperative.

- 1 The fire detection system in one or both engines is inoperative.

**Smoke Light on  
Flight Attendant Panel**

3601 - 3610, 3772 - 3773

Condition: SMOKE light on the forward flight attendant control panel is illuminated.

- 1 Verify that the lavatory fire is contained.



## Smoke or Fumes Removal

Condition: Smoke or fumes removal is needed.

- 1 Do this checklist **only** when directed by the Smoke, Fire or Fumes checklist.
- 2 Do **not** delay landing in an attempt to complete the following steps.
- 3 Close the flight deck door.
- 4 Choose one:
  - ◆ **Both** PACK switches are **OFF**:
    - ▶▶ **Go to step 5**
  - ◆ **A single or both** PACK switch(es) are in **AUTO**:
    - ▶▶ **Go to step 6**

▼ Continued on next page ▼

▼ Smoke or Fumes Removal continued ▼

5 Choose one:

◆ Smoke or fumes source is confirmed to be **outside** the flight deck:



◆ Smoke or fumes source is confirmed to be **on** the flight deck:

---

**Caution! Window should not be opened unless the source is confirmed to be on the flight deck.**

---

Establish normal holding speed. High airspeed may prevent opening the window.

Open the first officer's sliding window.

►► **Go to the Smoke, Fire or Fumes checklist on page 8.8 and do the remaining steps**



Do **not** turn on any PACK switch that was turned off by the Smoke, Fire or Fumes checklist.

- 6  Operating PACK switch(es) . . . . . HIGH
- 7 LAND ALT indicator . . . . . 10,000 feet

**Note:** The intermittent cabin altitude/configuration warning horn will sound and the CABIN ALTITUDE lights (if installed and operative) will illuminate at a cabin altitude of approximately 10,000 feet.

▼ Continued on next page ▼

**▼ Smoke or Fumes Removal continued ▼**

- 8 Engine BLEED air switches (both) . . . . Verify ON
- 9 Set thrust to maximum practical N1 (minimum 45%).
- 10 Open flight deck air conditioning and gasper outlets.

---

**Caution! Do not open any flight deck window.  
Keep the flight deck door closed.**

---

11 Choose one:

◆ Smoke or fumes are **controllable**:

▶▶ **Go to the Smoke, Fire or Fumes  
checklist on page 8.8 and do the  
remaining steps**



◆ Smoke or fumes are **uncontrollable**:

▶▶ **Go to step 12**

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

---

**▼ Continued on next page ▼**

---

**▼ Smoke or Fumes Removal continued ▼**

13 **When** at 14,000 feet or below:

Pressurization mode selector . . . . . MAN

Outflow VALVE switch . . . . . Hold in OPEN until  
the outflow VALVE position  
indicates fully OPEN

This causes the cabin airflow to carry  
smoke or fumes aft.

**Note:** The outflow valve can take up to 20  
seconds to open.

►► **Go to the Smoke, Fire or Fumes checklist on  
page 8.8 and do the remaining steps**



WHEEL  
WELL

## WHEEL WELL FIRE

Condition: Fire is detected in the main wheel well.

270K/.82M maximum.

- 1  LANDING GEAR lever . . . . . DN

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

- 2 Plan to land at the nearest suitable airport.

- 3 Choose one:

◆ Gear **must be retracted** for airplane performance:

▶▶ **Go to step 4**

◆ Gear **does not** need to be retracted for airplane performance:



- 4 **When** the WHEEL WELL light extinguishes:

**Wait** 20 minutes.

235K maximum

- 5  LANDING GEAR lever . . . . . UP

- 6 **When** the landing gear indicator lights extinguish:

LANDING GEAR lever . . . . . OFF

- 7 Plan to land at the nearest suitable airport.



**Non-Normal Checklists**

**Chapter NNC**

**Flight Controls**

**Section 9**

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Intentionally  
Blank



**Runaway Stabilizer**

Condition: Uncommanded stabilizer trim movement occurs continuously.

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

- 1 Control column. . . . . Hold firmly
- 2 Autopilot (if engaged) . . . . . Disengage

Do **not** re-engage the autopilot.

Control airplane pitch attitude manually with control column and main electric trim as needed.

- 3 **If the runaway stops:**



- 4 **If the runaway continues:**

STAB TRIM CUTOUT  
switches (both) . . . . . CUTOUT

**If the runaway continues:**

Stabilizer  
trim wheel . . . . . Grasp and hold

- 
- 5 Stabilizer. . . . . Trim manually
  - 6 Anticipate trim requirements.
  - 7 **Checklist Complete Except Deferred Items**

▼ Continued on next page ▼

▼ Runaway Stabilizer continued ▼

**Deferred Items**

**Descent Checklist**

|                                |                  |     |
|--------------------------------|------------------|-----|
| Altimeters . . . . .           | ____, xckd       | C&F |
| ■ Minimums . . . . .           | ____, ____, xckd | C&F |
| ■ Landing data . . . . .       | ____, ____       | C&F |
| ■ Approach briefing . . . . .  | complete         | PM  |
| ■ Autobrakes . . . . .         | as reqd          | PM  |
| Seat belt signs . . . . .      | ON               | PM  |
| Pressurization panel . . . . . | set              | PM  |
| Recall . . . . .               | ckd              | PM  |

**Approach Checklist**

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

**Airspeed and Trim**

Establish correct airspeed and in-trim condition early on final approach.

▼ Continued on next page ▼

**▼ Runaway Stabilizer continued ▼**

**Landing Checklist**

|                                 |                   |     |
|---------------------------------|-------------------|-----|
| Landing gear . . . . .          | down              | C&F |
| Flaps . . . . .                 | ____, ____, green | C&F |
| Speedbrake . . . . .            | .ARMED            | PM  |
| ENGINE START switches . . . . . | .CONT             | PM  |



## All Flaps Up Landing

Condition: The leading edge devices fail to extend and trailing edge flaps are less than 1.

Objective: To configure for a landing with leading edge devices retracted and trailing edge flaps less than 1.

- 1 Do this checklist **only** when directed by the Trailing Edge Flaps Up Landing checklist.
- 2 Burn off fuel to reduce touchdown speed.
- 3 Set VREF 40 + 55 knots.
- 4 Check the Non-Normal Configuration Landing Distance table in the ODM.
- 5 Maintain flaps up maneuvering speed until established on final approach.
- 6 Limit bank angle to 15° when airspeed is less than the flaps up maneuvering speed.

### 7 Checklist Complete Except Deferred Items

▼ Continued on next page ▼

▼ All Flaps Up Landing continued ▼

**Deferred Items**

**Descent Checklist**

|                                |                  |     |
|--------------------------------|------------------|-----|
| Altimeters . . . . .           | ____, xckd       | C&F |
| ■ Minimums . . . . .           | ____, ____, xckd | C&F |
| ■ Landing data . . . . .       | ____, ____       | C&F |
| <b>VREF 40 + 55 knots</b>      |                  |     |
| ■ Approach briefing . . . . .  | complete         | PM  |
| ■ Autobrakes . . . . .         | as reqd          | PM  |
| Seat belt signs . . . . .      | ON               | PM  |
| Pressurization panel . . . . . | set              | PM  |
| Recall . . . . .               | ckd              | PM  |

**Go-Around Procedure Review**

- Do the normal go-around procedure except:
- Limit bank angle to 15° when the airspeed is less than the flaps up maneuvering speed.
  - Accelerate to flaps up maneuvering speed.

**Approach Checklist**

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

▼ Continued on next page ▼

▼ All Flaps Up Landing continued ▼

Additional Deferred Items

GROUND PROXIMITY FLAP  
INHIBIT switch . . . . . FLAP INHIBIT

Landing Checklist

Landing gear . . . . .down C&F  
Flaps . . . . . **up, up, no lights** C&F  
Speedbrake . . . . . ARMED PM

3801 - 3900

**Note:** The SPEED BRAKE lever will not move beyond the FLIGHT DETENT on landing and the spoilers will not fully deploy.

ENGINE START switches. . . . .CONT PM  
■ ■ ■ ■

AUTO SLAT  
FAIL

AUTO SLAT FAIL

Condition: The auto slat system is failed.

- 1 Continue normal operation.  
■ ■ ■ ■

## Elevator Tab Vibration

Condition: An elevator tab vibration occurs in flight. One or more of the following may be an indication of an elevator tab vibration:

- Vibration that originates, and is strongest, in the aft part of the airplane but can be felt throughout the airplane.
- Vibration that is felt in the control wheel and rudder pedals.
- Vibration that causes items attached to the airplane, such as sun visors, to move.

1 Passenger signs . . . . . ON

Do **not** use speedbrakes or change aircraft configuration to reduce airspeed. Do **not** reduce airspeed below the minimum speed for the existing flap setting and gross weight.

- 2  Smoothly reduce airspeed until the vibration stops.
- 3 Consider landing at the nearest suitable airport.
- 4 Stay at or below the reduced airspeed at which the vibration stopped for the rest of the flight. Limit bank angle to 15° until below 20,000 feet.
- 5 Do **not** deploy speedbrakes in flight.

**Note:** Flaps and landing gear can be extended normally for the approach.

The speedbrakes can be armed for landing.



**FEEL  
DIFF PRESS**

**FEEL DIFFERENTIAL  
PRESSURE**

Condition: High differential pressure is measured by the elevator feel computer.

- 1 Continue normal operation.



**LOW  
PRESSURE**

**FLIGHT CONTROL LOW  
PRESSURE**

Condition: Hydraulic system pressure to the ailerons, elevators and rudder is low.

Objective: To activate the standby hydraulic system and standby rudder PCU.

- 1 FLT CONTROL switch  
(affected side) . . . . .Confirm . . . . .STBY RUD





## Jammed or Restricted Flight Controls

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

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

- 1 Autopilot (if engaged) . . . . . Disengage
- 2 Autothrottle (if engaged) . . . . . Disengage
- 3 Verify that the thrust is symmetrical.
- 4 Overpower the jammed or restricted system. Use maximum force, including a combined effort of both pilots, if needed. A maximum two-pilot effort on the controls will not cause a cable or system failure.
- 5 Do **not** turn off any flight control switches.
- 6 Choose one:

◆ The failure could be **due** to freezing **and** conditions **allow**:

Consider a descent to a warmer temperature and attempt to overpower the jammed or restricted system again.

▶▶ **Go to step 7**

◆ The failure could **not** be due to freezing water **or** conditions do **not** allow:

▶▶ **Go to step 7**

▼ Continued on next page ▼

**▼ Jammed or Restricted Flight Controls continued ▼**

7 Choose one:

◆ Controls are **normal**:



◆ Controls are **not** normal:

►► **Go to step 8**

8 Use stabilizer or rudder trim to offload control forces.

9 Choose one:

◆ Electric stabilizer trim is **needed**:

Move the Stabilizer Trim Override switch to  
OVERRIDE.

►► **Go to step 10**

◆ Electric stabilizer trim is **not** needed:

►► **Go to step 10**

10 Do not make abrupt thrust changes. Extend or retract speedbrake slowly and smoothly.

11 Limit bank angle to 15°.

12 Plan to land at the nearest suitable airport.

13 Plan a flaps 15 landing.

**▼ Continued on next page ▼**

▼ **Jammed or Restricted Flight Controls continued** ▼

14 Set VREF 15 or VREF ICE.

**Note:** If any of the following conditions apply, set VREF ICE = VREF 15 + 10 knots:

- Engine anti-ice will be used during landing
- Wing anti-ice has been used any time during the flight
- Icing conditions were encountered during the flight and the landing temperature is below 10° C.

**Note:** When VREF ICE is needed, the wind additive should not exceed 10 knots.

15 Check the Non-Normal Configuration Landing Distance table in the ODM.

16 **Checklist Complete Except Deferred Items**

**Deferred Items**

**Descent Checklist**

|                               |                  |     |
|-------------------------------|------------------|-----|
| Altimeters . . . . .          | ____, xckd       | C&F |
| ■ Minimums . . . . .          | ____, ____, xckd | C&F |
| ■ Landing data . . . . .      | ____, ____       | C&F |
| <b>VREF 15 or VREF ICE</b>    |                  |     |
| ■ Approach briefing . . . . . | complete         | PM  |
| ■ Autobrakes . . . . .        | as reqd          | PM  |
| Seat belt signs . . . . .     | ON               | PM  |

▼ **Continued on next page** ▼

**▼ Jammed or Restricted Flight Controls continued ▼**

|                                |     |    |
|--------------------------------|-----|----|
| Pressurization panel . . . . . | set | PM |
| Recall . . . . .               | ckd | PM |

**Go-Around Procedure Review**

Do the normal go-around procedure.

Advance thrust to go-around smoothly and slowly to avoid excessive pitch-up.

**Approach Checklist**

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

**Additional Deferred Item**

GROUND PROXIMITY FLAP  
INHIBIT switch . . . . . FLAP INHIBIT

**Landing Checklist**

|                                 |                     |     |
|---------------------------------|---------------------|-----|
| Landing gear . . . . .          | down                | C&F |
| Flaps . . . . .                 | <b>15, 15 green</b> | C&F |
| Speedbrake . . . . .            | ARMED               | PM  |
| ENGINE START switches . . . . . | CONT                | PM  |



LE FLAPS  
TRANSIT

**LEADING EDGE FLAPS  
TRANSIT**

Condition: One or more of these occur:

- The leading edge devices are not in the commanded position
- A leading edge device asymmetry is detected
- A leading edge device skew is detected.

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

1 Choose one:

◆ **Trailing** edge flaps are **extended** and the trailing edge flap position indication **disagrees** with the flap handle position:

▶▶ **Go to the Trailing Edge Flap Disagree checklist on page 9.37**



◆ **Trailing** edge flaps are **extended** and the trailing edge flap position indication **agrees** with the flap handle position:

▶▶ **Go to step 7**

◆ **Trailing** edge flaps are **up**:

Limit airspeed to 230 knots maximum.

▶▶ **Go to step 2**

▼ Continued on next page ▼

▼ LEADING EDGE FLAPS TRANSIT continued ▼

2 Choose one:

◆ Roll is **encountered**:

▶▶ **Go to step 7**

◆ Roll is **not** encountered:

**Note:** Roll may be difficult to identify with the autopilot engaged.

▶▶ **Go to step 3**

3  Maximum flap extension altitude 20,000 feet.  
Flaps . . . . . Extend to flaps 1,  
then retract to flaps up

4 Choose one:

◆ LE FLAPS TRANSIT light **extinguishes** after the flaps are up:

Continue normal operation.



◆ LE FLAPS TRANSIT light **stays illuminated** after the flaps are up:

▶▶ **Go to step 5**

5 Check LE DEVICES annunciator panel.

▼ Continued on next page ▼

▼ LEADING EDGE FLAPS TRANSIT continued ▼

6 Choose one:

◆ Light(s) for **only one** leading edge device is illuminated:

Limit airspeed to 300 knots (280 knots for turbulent air penetration) or .65 Mach, whichever is lower.

▶▶ **Go to step 7**

◆ Light(s) for **more than one** leading edge device is illuminated:

Limit airspeed to 230 knots maximum.

▶▶ **Go to step 7**

7 Plan a flaps 15 landing.

8 Set VREF 15 + 15 knots.

9 Limit bank angle to 15° when airspeed is less than the flaps up maneuvering speed.

10 Check the Non-Normal Configuration Landing Distance table in the ODM.

**11 Checklist Complete Except Deferred Items**

**Deferred Items**

**Descent Checklist**

|                          |                   |     |
|--------------------------|-------------------|-----|
| Altimeters . . . . .     | ____, xckd        | C&F |
| ■ Minimums . . . . .     | ____, ____ , xckd | C&F |
| ■ Landing data . . . . . | ____, ____        | C&F |
| <b>VREF 15 + 15</b>      |                   |     |

▼ Continued on next page ▼

**▼ LEADING EDGE FLAPS TRANSIT continued ▼**

|                                |          |    |
|--------------------------------|----------|----|
| ■ Approach briefing . . . . .  | complete | PM |
| ■ Autobrakes . . . . .         | as reqd  | PM |
| Seat belt signs . . . . .      | ON       | PM |
| Pressurization panel . . . . . | set      | PM |
| Recall . . . . .               | ckd      | PM |

**Approach Checklist**

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

**Additional Deferred Item**

GROUND PROXIMITY FLAP  
INHIBIT switch . . . . . FLAP INHIBIT

**Note:** The amber LE FLAPS TRANSIT light may be illuminated. Operation within the lower amber airspeed band for landing is normal for this condition.

**Landing Checklist**

|                        |                              |     |
|------------------------|------------------------------|-----|
| Landing gear . . . . . | down                         | C&F |
| Flaps . . . . .        | <b>15, 15 green or amber</b> | C&F |

**Note:** The light may be green or amber depending on the cause of the failure.

|                                 |       |    |
|---------------------------------|-------|----|
| Speedbrake . . . . .            | ARMED | PM |
| ENGINE START switches . . . . . | CONT  | PM |





**MACH TRIM  
FAIL**

## **MACH TRIM FAIL**

Condition: The mach trim system is failed.

- 1 Limit airspeed to 280 knots/.82 Mach.



**SPEED BRAKE  
DO NOT ARM****SPEED BRAKE DO NOT ARM**

3601 - 3610, 3701 - 3743, 3801 - 3900

Condition: An automatic speedbrake fault occurs.

**Note:** Speedbrakes may be used in flight.

1 Choose one:

◆ **SPEED BRAKE DO NOT ARM** light illuminates  
**before** the flaps are retracted:

Retract the flaps on schedule.

▶▶ **Go to step 2**◆ **SPEED BRAKE DO NOT ARM** light illuminates with  
the flaps **up**:

Limit airspeed to 320 knots maximum.

▶▶ **Go to step 3**◆ **SPEED BRAKE DO NOT ARM** light is illuminated  
**after** flap extension for landing:▶▶ **Go to step 3**

▼ Continued on next page ▼

▼ Speed Brake Do Not Arm continued ▼

2 Choose one:

◆ SPEED BRAKE DO NOT ARM light **stays illuminated** after the flaps are retracted:

Limit airspeed to 320 knots maximum.

▶▶ **Go to step 3**

◆ SPEED BRAKE DO NOT ARM light **extinguishes** after the flaps are retracted:

▶▶ **Go to step 3**

### 3 Checklist Complete Except Deferred Items

#### Deferred Items

#### Descent Checklist

|                                |                  |     |
|--------------------------------|------------------|-----|
| Altimeters . . . . .           | ____, xckd       | C&F |
| ■ Minimums . . . . .           | ____, ____, xckd | C&F |
| ■ Landing data . . . . .       | ____, ____       | C&F |
| ■ Approach briefing . . . . .  | complete         | PM  |
| ■ Autobrakes . . . . .         | as reqd          | PM  |
| Seat belt signs . . . . .      | ON               | PM  |
| Pressurization panel . . . . . | .set             | PM  |
| Recall . . . . .               | ckd              | PM  |

▼ Continued on next page ▼

## Approach Checklist

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

### Additional Deferred Item

◆ SPEED BRAKE DO NOT ARM light **is extinguished** after flap extension for landing:



◆ SPEED BRAKE DO NOT ARM light **is illuminated** after flap extension for landing:

Do **not** arm the speedbrakes for landing. Manually deploy the speedbrakes immediately upon landing. Increased force may be needed to move the SPEED BRAKE lever to the UP position.

**►► Go to Landing Checklist below**

## Landing Checklist

|                                 |                    |     |
|---------------------------------|--------------------|-----|
| Landing gear . . . . .          | down               | C&F |
| Flaps . . . . .                 | ____, ____ green   | C&F |
| Speedbrake . . . . .            | <b>DOWN detent</b> | PM  |
| ENGINE START switches . . . . . | CONT               | PM  |



**SPEED BRAKE  
DO NOT ARM**

## SPEED BRAKE DO NOT ARM

3744-3773

Condition: An automatic speedbrake fault occurs.

**Note:** Speedbrakes may be used in flight.

- 1 Do **not** arm the speedbrake for landing. Manually deploy the speedbrakes immediately upon landing.
- 2 **Checklist Complete Except Deferred Items**

### Deferred Items

#### Descent Checklist

|                                |                  |     |
|--------------------------------|------------------|-----|
| Altimeters . . . . .           | ____, xckd       | C&F |
| ■ Minimums . . . . .           | ____, ____, xckd | C&F |
| ■ Landing data . . . . .       | ____, ____       | C&F |
| ■ Approach briefing . . . . .  | complete         | PM  |
| ■ Autobrakes . . . . .         | as reqd          | PM  |
| Seat belt signs . . . . .      | ON               | PM  |
| 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 ▼

▼Speed Brake Do Not Arm continued▼

**Landing Checklist**

|                                |                    |     |
|--------------------------------|--------------------|-----|
| Landing gear . . . . .         | down               | C&F |
| Flaps . . . . .                | ____, ____ green   | C&F |
| Speedbrake . . . . .           | <b>DOWN detent</b> | PM  |
| ENGINE START switches. . . . . | .CONT              | PM  |



**SPEED TRIM  
FAIL**

**SPEED TRIM FAIL**

Condition: The speed trim system is failed.

- 1 Continue normal operation.



## SPEEDBRAKES EXTENDED

## SPEEDBRAKES EXTENDED

Condition: In flight, the speedbrakes are extended beyond the ARMED position and one or more of these occur:

- The radio altitude is below 800 feet
- The flap lever setting is more than flaps 10.

On the ground, the SPEED BRAKE lever is down and the speedbrakes are extended.

### 1 Choose one:

#### ◆ In flight:

SPEED BRAKE lever . . . . . ARMED



#### ◆ On the **ground**:

SPEED BRAKE lever . . . . . DOWN detent

**Note:** If the light stays illuminated, do **not** takeoff.



**STABILIZER OUT OF TRIM**

**STAB OUT OF TRIM** Condition: The autopilot does not set the stabilizer trim correctly.

**Note:** Momentary illumination of the STAB OUT OF TRIM light during large changes in trim requirements is normal.

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

- 1 Choose one:
  - ◆ Stabilizer is **trimming**:

Continue normal operation.

■ ■ ■ ■
  - ◆ Stabilizer is **not** trimming:

▶▶ **Go to step 2**
- 2 Control column. . . . . Hold firmly
- 3 Autopilot . . . . .Disengage
- 4 Stabilizer trim . . . . .As needed

▼ Continued on next page ▼



▼ STABILIZER OUT OF TRIM continued ▼

5 Choose one:

◆ Stabilizer **responds** to electric trim inputs:

Do **not** re-engage the autopilot or autothrottle.



◆ Stabilizer does **not** respond to electric trim inputs:

▶▶ **Go to the Stabilizer Trim  
Inoperative checklist on page 9.26**



## Stabilizer Trim Inoperative

Condition: Both of these occur:

- Loss of electric trim through the autopilot
- Loss of electric trim through the control wheel switches.

Objective: To land the airplane using manual trim or, if manual trim is not available, to land the airplane using elevator control only.

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

1 STAB TRIM CUTOUT switches (both) . . . CUTOUT

The autopilot is not available.

▼ Continued on next page ▼

▼ Stabilizer Trim Inoperative continued ▼

- 2 Apply steady pressure on the manual trim handles until the needed trim is attained.

Use sufficient force to disengage the disconnect clutch. Approximately 1/2 turn of the stabilizer trim wheel may be needed.

**Note:** A maximum two-pilot effort on the trim wheels will not cause a cable or system failure.

The handle(s) should be folded inside the stabilizer trim wheel when manual trim is no longer needed.

If the failure could be due to ice accumulation, descend to a warmer temperature and attempt again.

- 3 Choose one:

◆ Stabilizer **can** be trimmed manually:

▶▶ **Go to step 4**

◆ Stabilizer can **not** be trimmed manually:

▶▶ **Go to step 8**

- 4 Maintain in-trim airspeed until the start of the approach.
- 5 Use an airspeed which results in an in-trim condition. This will reduce the force that is needed to move the stabilizer.
- 6 Continue to trim manually for the rest of the flight.

▼ Continued on next page ▼

**▼ Stabilizer Trim Inoperative continued ▼**

7 Establish the landing configuration early.

**►► Go to step 10**

8 Anticipate higher than normal elevator forces during approach and landing.

9 The thrust reduction at flare will cause a nose down pitch.

**Note:** Elevator control is sufficient to safely land the airplane regardless of stabilizer position.

10 Plan a flaps 15 landing.

11 Set VREF 15 or VREF ICE.

**Note:** If any of the following conditions apply, set  $VREF\ ICE = VREF\ 15 + 10\ knots$ :

- Engine anti-ice will be used during landing
- Wing anti-ice has been used any time during the flight
- Icing conditions were encountered during the flight and the landing temperature is below 10° C.

**Note:** When VREF ICE is needed, the wind additive should not exceed 10 knots.

12 Check the Non-Normal Configuration Landing Distance table in the ODM.

**13 Checklist Complete Except Deferred Items****▼ Continued on next page ▼**

▼ Stabilizer Trim Inoperative continued ▼

## Deferred Items

### Descent Checklist

|                                |                  |     |
|--------------------------------|------------------|-----|
| Altimeters . . . . .           | ____, xckd       | C&F |
| ■ Minimums . . . . .           | ____, ____, xckd | C&F |
| ■ Landing data . . . . .       | ____/____        | C&F |
| <b>VREF 15 or VREF ICE</b>     |                  |     |
| ■ Approach briefing . . . . .  | complete         | PM  |
| ■ Autobrakes . . . . .         | as reqd          | PM  |
| Seat belt signs . . . . .      | ON               | PM  |
| Pressurization panel . . . . . | set              | PM  |
| Recall . . . . .               | ckd              | PM  |

### Go-Around Procedure Review

Do the normal go-around procedure.

Advance thrust to go-around smoothly and slowly to avoid excessive pitch-up.

### Approach Checklist

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

▼ Continued on next page ▼

▼ Stabilizer Trim Inoperative continued ▼

Additional Deferred Item

GROUND PROXIMITY FLAP  
INHIBIT switch . . . . . FLAP INHIBIT

Landing Checklist

|                                     |     |
|-------------------------------------|-----|
| Landing gear . . . . . down         | C&F |
| Flaps . . . . . <b>15, 15 green</b> | C&F |
| Speedbrake . . . . . ARMED          | PM  |
| ENGINE START switches. . . . .CONT  | PM  |



STBY  
RUD ON

## STANDBY RUDDER ON

Condition: The standby rudder hydraulic system is commanded on.

## 1 Choose one:

- ◆ STBY RUD ON light is illuminated with **no other flight deck indications:**

Avoid large or abrupt rudder pedal inputs.



- ◆ STBY RUD ON light is illuminated due to the **pilot moving** the FLT CONTROL A or B switch to STBY RUD:



- ◆ STBY RUD ON light is illuminated in response to a hydraulic system **non-normal** situation:



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## Trailing Edge Flap Asymmetry

---

Condition: One or more of these occur:

- An uncommanded roll occurs when the flaps change position
- The left and right flap indications disagree.

Objective: To configure the airplane for landing.

- 1 Set the flap lever to the nearest detent that is equal to or less than the smallest indicated flap position.

---

**Caution! Do not attempt to move the trailing edge flaps with the ALTERNATE FLAPS switch because there is no asymmetry protection.**

---

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

▼ Continued on next page ▼



**▼ Trailing Edge Flap Asymmetry continued ▼**

2 Choose one:

◆ Flap **lever** is set to **30**:

Set VREF 30.

**Note:** VREF + wind additive must not exceed the flap placard speed for the next larger flap setting.

▶▶ **Go to step 4**

◆ Flap **lever** is set to **15 or 25**:

▶▶ **Go to step 3**

◆ Flap **lever** is set to **1 or greater and less than 15**:

Set VREF 40 + 30 knots.

▶▶ **Go to step 4**

◆ Flap **lever** is set to **UP**:

▶▶ **Go to the Trailing Edge Flaps Up Landing checklist on page 9.46**



**▼ Continued on next page ▼**

**▼ Trailing Edge Flap Asymmetry continued ▼****3 Set VREF 15 or VREF ICE.**

**Note:** If any of the following conditions apply, set VREF ICE = VREF 15 + 10 knots:

- Engine anti-ice will be used during landing
- Wing anti-ice has been used any time during the flight
- Icing conditions were encountered during the flight and the landing temperature is below 10° C.

**Note:** When VREF ICE is needed, the wind additive should not exceed 10 knots.

VREF + wind additive, or VREF ICE + wind additive if needed, must not exceed the flap placard speed for the next larger flap setting.

**4 Check the Non-Normal Configuration Landing Distance table in the ODM.****5 Checklist Complete Except Deferred Items****▼ Continued on next page ▼**

▼ Trailing Edge Flap Asymmetry continued ▼

## Deferred Items

### Descent Checklist

|                                |                                                             |     |
|--------------------------------|-------------------------------------------------------------|-----|
| Altimeters . . . . .           | ____, xckd                                                  | C&F |
| ■ Minimums . . . . .           | ____, ____, xckd                                            | C&F |
| ■ Landing data . . . . .       | ____, ____<br><b>VREF____, as directed<br/>by checklist</b> | C&F |
| ■ Approach briefing . . . . .  | complete                                                    | PM  |
| ■ Autobrakes . . . . .         | as reqd                                                     | PM  |
| Seat belt signs . . . . .      | ON                                                          | PM  |
| Pressurization panel . . . . . | set                                                         | PM  |
| Recall . . . . .               | ckd                                                         | PM  |

### Approach Checklist

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

### Additional Deferred Item

GROUND PROXIMITY FLAP  
INHIBIT switch . . . . . FLAP INHIBIT

▼ Continued on next page ▼

▼Trailing Edge Flap Asymmetry continued▼

Landing Checklist

Landing gear . . . . . down C&F

Flaps . . . . . \_\_\_\_/\_\_\_\_  
**green or amber** C&F

**Note:** The light may be green or amber depending on the cause of the failure.

Speedbrake . . . . . ARMED PM

ENGINE START switches . . . . .CONT PM



## Trailing Edge Flap Disagree

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

Objective: To configure the airplane for landing.

### 1 Choose one:

◆ Trailing edge flap asymmetry **exists**:

An uncommanded roll occurs and/or a difference between the left and right flap indicator needle tips of one needle width or more is observed.

▶▶ **Go to the Trailing Edge Flap Asymmetry checklist on page 9.32**



◆ Trailing edge flap asymmetry does **not** exist:

▶▶ **Go to step 2**

### 2 Flap lever . . . . . Set to less than indicated position

Place the flap lever to one detent less than current indicated flap position.

Example: If flap needles stopped at 17 and flap lever is at 30, return the flap lever to the flap 15 detent.

**Note:** If flaps indicate UP, move lever back to UP, wait five seconds, then reselect flaps 1.

▼ Continued on next page ▼

**▼Trailing Edge Flap Disagree continued ▼**

3 Choose one:

◆ Flaps **move** as commanded:

Proceed normally.



◆ Flaps do **not** move as commanded:

►► **Go to step 4**

4 Choose one:

◆ Indicated flap position is **30 or greater and less than 40**:

Land using existing flaps.

►► **Go to step 5**

◆ Indicated flap position is **15 or greater and less than 30**:

Land using existing flaps.

►► **Go to step 7**

◆ Indicated flap position is **less than 15**:

►► **Go to step 6**

5 Set VREF 30.

**Note:** VREF 30 + wind additive must not exceed the flap placard speed for flaps 40.

►► **Go to step 8**

6 Plan to extend flaps to 15 using alternate flap extension.

**Note:** Alternate flap extension time to flaps 15 is approximately 2 minutes.

The drag penalty with the leading edge devices extended may make it impossible to reach an alternate field.

7 Set VREF 15 or VREF ICE.

**Note:** If any of the following conditions apply, set VREF ICE = VREF 15 + 10 knots:

- Engine anti-ice will be used during landing
- Wing anti-ice has been used any time during the flight
- Icing conditions were encountered during the flight and the landing temperature is below 10° C.

**Note:** When VREF ICE is needed, the wind additive should not exceed 10 knots.

VREF 15 + wind additive, or VREF ICE + wind additive if needed, must not exceed the flap placard speed for the next larger flap setting.

8 Check the Non-Normal Configuration Landing Distance table in the ODM.

9 **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 . . . . .        | ____, ____                                    | C&F |
|                                | <b>VREF____, as directed<br/>by checklist</b> |     |
| ■Approach briefing . . . . .   | complete                                      | PM  |
| ■Autobrakes . . . . .          | as reqd                                       | PM  |
| Seat belt signs . . . . .      | ON                                            | 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 ▼

## Additional Deferred Item

Choose one:

- ◆ Indicated flap position is **30 or greater**:
  - ▶▶ **Go to Landing Checklist below**
- ◆ Indicated flap position is **15 or greater and less than 30**:
  - GROUND PROXIMITY FLAP  
INHIBIT switch . . . . . FLAP INHIBIT
  - ▶▶ **Go to Landing Checklist below**
- ◆ Indicated flap position is **less than 15**:
  - GROUND PROXIMITY FLAP  
INHIBIT switch . . . . . FLAP INHIBIT
  - ▶▶ **Go to Alternate Flap Extension below**

▼ Continued on next page ▼

**▼ Trailing Edge Flap Disagree continued ▼****Alternate Flap Extension**

During flap extension, set the flap lever to the desired flap position.

230 knots maximum during alternate flap extension.



ALTERNATE FLAPS master switch . . . . . ARM

**Note:** The landing gear configuration warning may sound if the flaps are between 10 and 15 and the landing gear are retracted.

**3601 - 3610, 3701 - 3773**

**Note:** The amber LE FLAPS TRANSIT light will stay illuminated until the flaps approach the flaps 10 position.

**3801 - 3900**

**Note:** The amber LE FLAPS TRANSIT light will stay illuminated until the flaps approach the flaps 15 position.

**Note:** Operation within the lower amber band may be needed until the LE FLAPS TRANSIT light extinguishes.

**▼ Continued on next page ▼**

**▼ Trailing Edge Flap Disagree continued ▼**



 If flap asymmetry occurs, release the switch immediately. There is no asymmetry protection.

**ALTERNATE FLAPS**

position switch . . . . . Hold DOWN to extend flaps to 15 on schedule

As flaps are extending, slow to respective maneuvering speed.

**▼ Continued on next page ▼**

**▼ Trailing Edge Flap Disagree continued ▼**

Choose one:

- ◆ Trailing edge flaps asymmetry occurs:
  - ▶▶ **Go to the Trailing Edge Flap Asymmetry checklist on page 9.32**
  - ■ ■ ■
- ◆ Trailing edge flaps extend to **15**:
  - ▶▶ **Go to Landing Checklist below**
- ◆ Indicated flap position is **less than 1** after attempting alternate flap extension:
  - ▶▶ **Go to the Trailing Edge Flaps Up Landing checklist on page 9.46**
  - ■ ■ ■
- ◆ Indicated flap position is **1 or greater and less than 15** after attempting alternate flap extension:

Land using existing flaps.

Set VREF 40 + 30 knots for landing.

Check the Non-Normal Configuration Landing Distance table in the ODM.

▶▶ **Go to Landing Checklist below**

**▼ Continued on next page ▼**

▼Trailing Edge Flap Disagree continued▼

Landing Checklist

Landing gear . . . . . down C&F

Flaps. . . . . \_\_\_\_/\_\_\_\_  
**green or amber** C&F

**Note:** The light may be green or amber depending on the failure.

Speedbrake . . . . .ARMED PM

ENGINE START switches . . . . .CONT PM



## Trailing Edge Flaps Up Landing

Condition: The trailing edge flaps are less than 1.

Objective: To configure for a landing with trailing edge flaps less than 1.

### 1 Choose one:

◆ Trailing edge flap asymmetry **exists**:

▶▶ **Go to step 2**

◆ Trailing edge flap asymmetry does **not** exist:

Do this checklist **only** when directed by the Trailing Edge Flap Disagree checklist.

▶▶ **Go to step 4**

230 knots maximum.

### 2 ALTERNATE FLAPS master switch . . . . . ARM

**Note:** This procedure extends the leading edge devices only.

### 3 ALTERNATE FLAPS position switch . . . . . Momentary DOWN

Verify that the LE DEVICES annunciator indicates FULL EXT for all leading edge slats and flaps.

**Note:** The LE FLAPS TRANSIT light may stay illuminated after the LE devices are fully extended.

▼ Continued on next page ▼

▼ Trailing Edge Flaps Up Landing continued ▼

4 Choose one:

◆ LE DEVICES annunciator **shows** FULL EXT:

▶▶ **Go to step 5**

◆ LE DEVICES annunciator does **not** show FULL EXT:

▶▶ **Go to the All Flaps Up Landing checklist on page 9.4**



- 5 Burn off fuel to reduce touchdown speed.
- 6 Set VREF 40 + 40 knots.
- 7 Check the Non-Normal Configuration Landing Distance table in the ODM.
- 8 Maintain flaps up maneuvering speed until on final.
- 9 Limit bank angle to 15° when airspeed is less than the flaps up maneuvering speed.
- 10 **Checklist Complete Except Deferred Items**

**Deferred Items**

**Descent Checklist**

|                          |                  |     |
|--------------------------|------------------|-----|
| Altimeters . . . . .     | ____, xckd       | C&F |
| ■ Minimums . . . . .     | ____, ____, xckd | C&F |
| ■ Landing data . . . . . | ____, ____       | C&F |
| <b>VREF 40 + 40</b>      |                  |     |

▼ Continued on next page ▼

▼ **Trailing Edge Flaps Up Landing continued** ▼

|                                |          |    |
|--------------------------------|----------|----|
| ■ Approach briefing . . . . .  | complete | PM |
| ■ Autobrakes . . . . .         | as reqd  | PM |
| Seat belt signs . . . . .      | ON       | PM |
| Pressurization panel . . . . . | set      | PM |
| Recall . . . . .               | ckd      | PM |

**Go-Around Procedure Review**

- Do the normal go-around procedure except:
  - Limit bank angle to 15° when the airspeed is less than the flaps up maneuvering speed.
  - Accelerate to flaps up maneuvering speed.
  - Do not exceed 230 knots with leading edge devices extended.

**Approach Checklist**

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

▼ **Continued on next page** ▼



▼ Trailing Edge Flaps Up Landing continued ▼

## Additional Deferred Item

GROUND PROXIMITY FLAP

INHIBIT switch . . . . . FLAP INHIBIT

**Note:** A nuisance stick shaker may occur when slowing to VREF 40 + 40 knots at high gross weights and/or bank angles greater than 15°.

Operation within the lower amber airspeed band for landing is normal for this condition.

## Landing Checklist

Landing gear . . . . . down C&F

Flaps . . . . .     /      
**green or amber** C&F

Speedbrake . . . . . ARMED PM

**3801 - 3900**

**Note:** The SPEED BRAKE lever will not move beyond the FLIGHT DETENT on landing and the spoilers will not fully deploy.

ENGINE START switches . . . . . CONT PM



**YAW  
DAMPER**

**YAW DAMPER**

Condition: The yaw damper is disengaged.

1 YAW DAMPER switch . . . . . OFF then ON

2 Choose one:

◆ YAW DAMPER light **extinguishes:**



◆ YAW DAMPER light **stays illuminated:**

YAW DAMPER switch . . . . . OFF

**►► Go to step 3**

3 Avoid areas of predicted moderate or severe turbulence. If turbulence is encountered and passenger comfort becomes affected, reduce airspeed and/or descend to a lower altitude.

4 Do not exceed flaps 30 if the crosswind exceeds 30 knots.



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**Airspeed Unreliable**

**Condition:** Airspeed or Mach indications are suspected to be unreliable. (Items which might 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 (if engaged) . . . . . Disengage
- 2 Autothrottle (if engaged) . . . . . Disengage
- 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.

- 
- 5 PROBE HEAT switches . . . . . Check ON

**▼ Continued on next page ▼**

**▼ Airspeed Unreliable continued ▼****6 The following are **reliable**:**

Attitude

N1

Ground speed

Radio altitude

Digital AOA readout, analog needle, and approach reference band

**Note:** Stick shaker, overspeed warning and AIRSPEED LOW (as installed) alerts may sound erroneously or simultaneously.

**Note:** The Flight Path Vector and Pitch Limit Indicator may be unreliable on the PFD and HUD.

**Note:** The Stick Shaker Indicator on the Angle of Attack indicator is unreliable

- 7** Refer to the ODM, Abnormal section, Operation Without Airspeed Indication tables and set the pitch attitude and thrust setting for the current airplane configuration and phase of flight.
- 8** When in trim and stabilized, cross check the captain, first officer and standby airspeed indicators. An airspeed indication that differs by more than 20 knots or 0.03 Mach from the airspeed shown in the table should be considered **unreliable**.

**▼ Continued on next page ▼**

▼ **Airspeed Unreliable continued** ▼

9 Choose one:

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

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

▶▶ **Go to step 10**

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

▶▶ **Go to step 12**

10 Flight director switch (reliable side) . . . . . ON

11 Autopilot (reliable side) . . . . . Engage

**Note:** Do not re-engage the autothrottle.



12 Set pitch attitude and thrust from the ODM, Abnormal section, Operation Without Airspeed Indication tables for the airplane 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 glidescope indicators, where available, for approach and landing.

**13 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 . . . . .\_\_\_\_/\_\_\_\_ C&F

**VREF 15 or VREF ICE**

- Approach briefing . . . . . complete PM
- Autobrakes . . . . . as reqd PM
- Seat belt signs . . . . . ON PM
- Pressurization panel . . . . . set PM
- Recall . . . . . ckd PM

**Go-Around Procedure Review**

Do the normal go-around procedure.

Advance thrust to go-around smoothly and slowly to avoid excessive pitch-up.

**Approach Checklist**

- Flight & nav instruments . . . . . verified C&F
- Cabin notification . . . . . complete C
- Altimeters . . . . .\_\_\_\_, xckd C&F

▼ **Continued on next page** ▼



▼ **Airspeed Unreliable continued** ▼

**Additional Deferred Item**

GROUND PROXIMITY FLAP  
INHIBIT switch . . . . . FLAP INHIBIT

**Landing Checklist**

|                                      |     |
|--------------------------------------|-----|
| Landing gear . . . . . down          | C&F |
| Flaps. . . . . <b>15, 15 green</b>   | C&F |
| Speedbrake . . . . . ARMED           | PM  |
| ENGINE START switches . . . . . CONT | 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
  - SPD failure flag
  - SPD LIM failure flag
  - IAS DISAGREE alert
  - AOA DISAGREE alert
  - Blank or fluctuating airspeed display
  - Variation between captain and first officer airspeed displays
  - Radome damage or loss
  - Overspeed warning
  - Simultaneous overspeed and stall warnings

**ALT DISAGREE**

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

1 Check all altimeters are set to correct barometric setting for phase of flight.

2 Choose one:

◆ ALT DISAGREE alert **extinguishes**:

Continue normal operation.



◆ ALT DISAGREE alert **stays illuminated**:

►► **Go to step 3**

3 Airplane does not meet RVSM airspace requirements.

4 Standby altimeter is available.

5 Transponder altitude received by ATC may be unreliable.

6 Do **not** use the flight path vector.

7 Maintain visual conditions if possible.

8 **Checklist Complete Except Deferred Items**

▼ Continued on next page ▼

**▼ ALT DISAGREE continued ▼****Deferred Items****Review before descent:**

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.



---

**AOA DISAGREE**

---

Condition: The AOA DISAGREE alert indicates the left and right angle of attack vanes disagree.

- 1 Airspeed errors and the IAS DISAGREE alert may occur.
- 2 Altimeter errors and the ALT DISAGREE alert may occur.



---

**CDS FAULT**

---

Condition: The CDS FAULT annunciation indicates a CDS fault occurs.

**Note:** CDS FAULT annunciates on the ground only, before the second engine start.

- 1 Do **not** takeoff.



**Display Failure**

Condition: A display in the common display system is failed.

1 Choose one:

◆ A single display is not usable and automatic switching **has** occurred:

Continue normal operation.



◆ A single display is not usable and automatic switching has **not** occurred:

▶▶ **Go to step 2**

2 MAIN PANEL DUs selector . . . . .As needed

3 LOWER DU selector . . . . .As needed



**DISPLAY SOURCE**

Condition: The DSPLY SOURCE annunciation indicates only one DEU is supplying display information. Indications may include:

- No hydraulic pressure indication on the failed side
- Speed limit flag shown on the failed side
- Minimum maneuver speed and stick shaker band removed on the failed side
- Both EEC ALTN lights illuminated.

**Note:** Flight director indications may be removed and autoflight mode reversions may occur.

Dual autopilot approach is not available.

1 Choose one:

- ◆ DEU fails on the **same** side as the engaged autopilot:

Select the opposite autopilot.

Verify that the correct flight director indications and flight mode annunciations are shown on the same side as the operating autopilot.

►► **Go to step 2**

- ◆ DEU fails on the **opposite** side as the engaged autopilot:

►► **Go to step 2**

▼ Continued on next page ▼

▼ DISPLAY SOURCE continued ▼

2 Choose one:

◆ **EEC ALTN** lights are **illuminated**:

▶▶ **Go to step 3**

◆ **EEC ALTN** lights are **not** illuminated:



3 Choose one:

◆ **EEC ALTERNATE MODE** checklist has been **completed**:



◆ **EEC ALTERNATE MODE** checklist has **not** been completed:

▶▶ **Go to the EEC ALTERNATE MODE  
checklist on page 7.14**



**DISPLAYS CONTROL PANEL**

Condition: The DISPLAYS CONTROL PANEL annunciation indicates the EFIS control panel is failed.

**Note:** The altimeter blanks and an ALT flag illuminates on the side corresponding to the failed control panel.

- 1 CONTROL PANEL select switch . . . . . BOTH ON 1 or BOTH ON 2  
Select the operating control panel.
- 2 Verify that the DISPLAYS CONTROL PANEL annunciation and ALT flag extinguish.



**OFF**

**FLIGHT RECORDER OFF**

Condition: The flight recorder is off.

- 1 Continue normal operation.



**IAS DISAGREE**

Condition: The IAS DISAGREE alert indicates the captain's and first officer's airspeed indications disagree.

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





## 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 0.12**



**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
- GPS-L or GPS-R INVALID message is in the FMC scratchpad and the transponder is selected to the related side.

- 1 Transponder selector. . . . . Select opposite transponder



MSG

## FMC DISAGREE

FMC  
P/RST

Condition: Data needed for dual FMC operation disagree.

- 1 Choose one:

- ◆ Flying an approach with an **RNP alerting requirement**:

Go-around unless suitable visual references can be established and maintained.



- ◆ Flying an approach **without** an RNP alerting requirement

Verify position.



**M  
S  
G****FMC DISAGREE - VERTICAL****FMC**  
P/RST

Condition: One of the following occur:

- Left FMC and right FMC target airspeeds disagree during descent
- Left FMC and right FMC vertical paths disagree during descent.

- 1 Do **not** move the FMC source select switch.

The FMC will attempt to correct the difference without crew action.

- 2 Monitor crossing altitudes to ensure compliance.

**Additional Information**

The disagreement will most likely be corrected when crossing a waypoint with an altitude constraint.

If the disagreement remains when entering the approach phase, the FMC DISAGREE - VERTICAL message will be replaced with the FMC DISAGREE message. An approach with an RNP alerting requirement is not authorized when the FMC DISAGREE message is shown.

**FMC**  
P/RST

## FMC FAIL

**Condition:** Display of VTK followed by MAP failure flags on one or both navigation displays.

**Objective:** To restore dual FMC operation, configure for single FMC operation or resume conventional navigation.

**Note:** LNAV/VNAV may disengage.

- 1 Check both navigation display MAP modes and FMC CDUs.
- 2 Choose one:
  - ◆ No FMC data on the captain's and first officer's navigation display MAP modes **and** no FMC data on both CDUs:

Both FMCs are failed.

**▶▶ Go to step 7**
  - ◆ No FMC data on the captain's navigation display MAP mode **and** no FMC data on both CDUs:

Left FMC is failed.

**▶▶ Go to step 3**
  - ◆ No FMC data on the first officer's navigation display MAP mode, MSG light is illuminated **and** SINGLE FMC OPERATION scratchpad message is shown:

Right FMC is failed.

**▶▶ Go to step 3**

▼ Continued on next page ▼

▼ **FMC FAIL continued** ▼

- 3 FMC source  
select switch . . . . . BOTH ON L or BOTH ON R  
Select the operating FMC.
- 4 **Wait** 1 minute.
- 5 Check for FMC-L and FMC-R bearing/distance information on POS SHIFT page 3/3.
- 6 Choose one:
  - ◆ Bearing/distance information for **both** FMCs are displayed:  
FMC source select switch . . . . . NORMAL  
■ ■ ■ ■
  - ◆ Bearing/distance information for only a **single** FMC is displayed:  
Continue with single FMC operation.  
■ ■ ■ ■
- 7 Resume conventional navigation. Without an operating FMC, LNAV and VNAV are not available.
- 8 Verify position relative to terrain using conventional navigation.

**Note:** EGPWS may use inaccurate GPS position data or an inappropriate value of RNP. This could result in a VSD terrain display that is incorrectly positioned relative to the airplane track.

▼ **Continued on next page** ▼



▼ FMC FAIL continued ▼

9 **When** preparing for the approach:

Use the SPD REF selector to set the current gross weight.

Use the SPD REF selector to set the reference airspeed bugs.

Use the N1 SET selector to set the N1 bugs.



MSG

**FMC/CDU ALERTING MESSAGE**

FMC  
P/RST

Condition: An alert message is in the FMC scratchpad.

Objective: Take action as needed by the message.

**Note:** These messages relate to operationally significant conditions which affect FMC operation.

**Note:** FMC alerting messages:

- are shown in the CDU scratchpad
- cause the amber FMC alert light on each pilot's instrument panel to illuminate
- illuminate message lights (MSG) on both CDUs.

**Note:** FMC entry error messages:

- are shown in the CDU scratchpad
- illuminate the message light (MSG) of the CDU where the entry error was made
- temporarily overwrite data in the scratchpad.

**Note:** FMC advisory messages:

- are shown in the CDU scratchpad
- illuminate message lights (MSG) on both CDUs.

**Note:** FMC Data Link messages:  
These messages relate to FMC data link message status. FMC data link alerting and advisory messages function the same as the alerting and advisory messages described above:

**Note:** Correct the condition responsible for the message to remove the message. The message is temporarily removed from the scratchpad when manually entering data. The message returns when the data is removed from the scratchpad.

## FMC Alerting Messages

| MESSAGE                                       | CAUSE                                                                                                                                                                | CORRECTIVE ACTION                                                       |
|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| ABOVE MAX CERT ALT                            | The airplane is above its maximum certified altitude.                                                                                                                | Descend to an altitude below the maximum certified altitude.            |
| ALT CONSTRAINT<br>XXXXX (waypoint identifier) | A flight plan modification has caused an altitude conflict with a waypoint that has an altitude constraint.                                                          | Clear the message and revise the entry.                                 |
| ALTN DEST UPLINK                              | An FMC alternate destinations uplink message has been loaded on the ALTERNATE DESTS page, and is ready for flight crew review. (Alternate destinations as installed) | Review the alternate destinations uplink.                               |
| APPRCH VREF NOT<br>SELECTED                   | Airplane has transitioned into approach environment and Vref has not been selected on APPROACH REF page.                                                             | Select Vref on APPROACH REF page.                                       |
| ARR N/A FOR RUNWAY                            | Runway or approach does not match the selected arrival procedure.                                                                                                    | Go to the ARRIVALS page and modify selection.                           |
| ATC COMM<br>ESTABLISHED                       | Active ATC connection established.                                                                                                                                   | Clear message.                                                          |
| ATC COMM TERMINATED                           | ATC connection terminated without transfer to another service station.                                                                                               | Clear message.                                                          |
| ATC MESSAGE                                   | Receipt of valid ATC datalink message.                                                                                                                               | Clear message and display the received ATC uplink.                      |
| ATC REPORT LIST FULL                          | ATC REPORT buffer is full.                                                                                                                                           | Clear message and send or delete reports listed on the ATC REPORT page. |

| <b>MESSAGE</b>             | <b>CAUSE</b>                                                                                                                                                                    | <b>CORRECTIVE ACTION</b>                                                                                          |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| ATC ROUTE DATA UPLINK      | Receipt of am ATC ACARS uplink message containing route data. The route data has been loaded into the flight plan buffer.                                                       | Review the route uplink, and execute or ERASE.                                                                    |
| ATC ROUTE X DATA UPLINK    | Receipt of am ATC ACARS uplink message containing route data. The route data has been loaded into the active RTE 1 or 2 flight plan buffer.                                     | Review the route uplink, and execute or ERASE.                                                                    |
| ATC ROUTE UPLINK LOADING   | ATC uplink route loading into flight plan buffer.                                                                                                                               | Clear message.                                                                                                    |
| ATC ROUTE X UPLINK LOADING | Receipt of an ATC ACARS uplink message containing route data. The route data is currently being loaded into the active RTE 1 or 2 FMC flight plan buffer.                       | Clear message.                                                                                                    |
| ATC ROUTE UPLINK READY     | An ATC ACARS route uplink message has been received and is available for loading on the RTE page.                                                                               | Select RTE page, LOAD route, and execute or ERASE.                                                                |
| ATC ROUTE X UPLINK READY   | Receipt of an ATC ACARS uplink that contains route data, and the route data LOAD prompts are displayed on the active/inactive RTE 1 or 2 and active/inactive LEGS 1 or 2 pages. | Select the active/inactive RTE 1 or 2 page or active/inactive LEGS 1 or 2 page, LOAD route, and execute or ERASE. |
| ATC RTA DATA UPLINK        | An ATC ACARS uplink message has been loaded on the RTA PROGRESS page, and is ready for flight crew review.                                                                      | Review the RTA uplink, and execute or ERASE.                                                                      |

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**737 Operations Manual**

| <b>MESSAGE</b>                          | <b>CAUSE</b>                                                                                                                                                                                                                                                                                                           | <b>CORRECTIVE ACTION</b>                                      |
|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|
| ATC RTA DATA UPLINK                     | Receipt of an ATC ACARS uplink message containing RTA data. The RTA data is currently being loaded into the active RTE 1 or 2 flight plan.                                                                                                                                                                             | Review the RTA uplink, and execute or ERASE.                  |
| BUFFET ALERT                            | Current conditions result in a maneuver margin less than specified.                                                                                                                                                                                                                                                    | Bring the airplane back within the operating envelope.        |
| CRZ ALT CHANGED TO XXXXX                | An altitude constraint added due to entering a new company route, a new destination airport, or selection of a new procedure conflicts with the cruise altitude, resulting in automatically raising the cruise altitude to match the highest waypoint altitude constraint in the mod plan, when not in active descent. | Clear the message. Verify MCP cruise altitude.                |
| CRZ WIND UPLINK LOADING                 | An FMC cruise wind uplink message is loading (after LOAD selected on the RTE DATA page).                                                                                                                                                                                                                               | Wait for load to complete.                                    |
| CRZ WIND UPLINK READY                   | An FMC cruise wind uplink message has been received and is available for loading on the RTE DATA page.                                                                                                                                                                                                                 | Select RTE DATA page, LOAD cruise wind, and execute or ERASE. |
| CRZ WIND XXXXX (cruise altitude) UPLINK | An FMC cruise wind uplink message has been loaded on the RTE DATA page, and is ready for flight crew review.                                                                                                                                                                                                           | Review the cruise wind uplink, and execute or ERASE.          |
| CRZ WIND XXXXX (cruise altitude) UPLINK | An FMC cruise wind uplink message has been loaded on the RTE DATA page, and is ready for flight crew review.                                                                                                                                                                                                           | Review the cruise wind uplink, and execute or ERASE.          |

| MESSAGE                 | CAUSE                                                                                                                                   | CORRECTIVE ACTION                                                                                                                               |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| CHECK ALT TGT           | VNAV disengages while airplane is between MCP and FMC altitudes or VNAV button pressed while airplane is between MCP and FMC altitudes. | Clear the message.                                                                                                                              |
| CHECK FMC FUEL QUANTITY | The FMC has detected an unexpected drop in the fuel quantity.                                                                           | Check the fuel quantity indications for correctness.                                                                                            |
| CUTBACK DISARMED        | Cutback turned off as a result of changing or deleting the flight plan runway while on the ground.                                      | Clear the message.<br>Re-arm as required.                                                                                                       |
| CUTBACK UNAVAILABLE     | The FMC is unable to compute a Cutback N1 value.                                                                                        | Clear the message.                                                                                                                              |
| CYCLE IRS OFF-NAV       | IRS is unable to complete alignment under current conditions.                                                                           | Cycle IRS mode selector to "OFF" and back to "NAV."                                                                                             |
| DATA BASE FULL          | Entry attempted into a supplemental or temporary navigation database category which is full.                                            | Go to the NAV DATA pages and delete unneeded waypoints, navaids, or airports from the appropriate database and re-attempt entry.                |
| DATA BASE INVALID       | The automatic validity test of the permanent navigation database has failed.                                                            | Advise maintenance personnel to check the FMC and reload the database, as required. If desired, consider the use of the temporary nav database. |
| DATALINK CONFIG INVALID | Validity check of the FMC datalink configuration file has failed.                                                                       | Contact maintenance personnel.                                                                                                                  |
| DATALINK LOST           | Datalink connectivity has been lost                                                                                                     | Notify ATC of the loss of FANS datalink connectivity.                                                                                           |

| <b>MESSAGE</b>                                | <b>CAUSE</b>                                                                                                                                               | <b>CORRECTIVE ACTION</b>                                                                                                                      |
|-----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| DESCENT FORECASTS UPLINK                      | An FMC descent forecasts uplink message has been loaded on the DESCENT FORECASTS page, and is ready for flight crew review.                                | Review the descent forecasts uplink, and execute or ERASE.                                                                                    |
| DES PATH UNACHIEVABLE                         | When in path descent and above the path, the FMC predictions show the profile restrictions at the next waypoint cannot be achieved (LNAV remains engaged). | Modify the restrictions.                                                                                                                      |
| DISCO INSRTD AFTR XXXXX (waypoint identifier) | A ROUTE DISCONTINUITY has been inserted into the flight plan due to undefined termination of a downpath leg or a triple waypoint BYPASS.                   | Select the RTE or RTE LEGS pages and modify the waypoints for a continuous route.                                                             |
| DISCONTINUITY                                 | Passing the last waypoint in the route prior to a ROUTE DISCONTINUITY (LNAV disengages) or pressing LNAV while in a discontinuity.                         | Select the RTE LEGS page. Enter the desired active waypoint into the box prompts. Correct any ROUTE DISCONTINUITY and EXECute. Reengage LNAV. |
| DRAG REQ AFTER XXXXX                          | A waypoint speed constraint greater than 10 knots above the predicted speed exists at waypoint XXXXX.                                                      | Modify flight plan as required.<br>Clear the message.                                                                                         |
| DRAG REQUIRED                                 | Airspeed is 10 kts or more above FMC target speed or within 5 kts of Vmo/Vmmo.                                                                             | Use speedbrakes, trim or reduced thrust, as required, to bring the airplane within 5 kts of FMC target speed.                                 |
| DUAL FMC OP RESTORED                          | Dual FMC operation has been successfully restored. (Dual FMC as installed)                                                                                 | Clear message and set FMC source select switch to NORMAL.                                                                                     |

| MESSAGE                  | CAUSE                                                                                                                                       | CORRECTIVE ACTION                                                                                                                                                                                                                                              |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DUPLICATE FLIGHT PLAN ID | The entry attempted is a duplicate of an existing supplemental flight plan name.                                                            | Clear the message and select a unique flight plan name.                                                                                                                                                                                                        |
| END OF OFFSET            | Two minutes prior to passing offset leg termination.                                                                                        | Confirm clearance.                                                                                                                                                                                                                                             |
| END OF ROUTE             | LNAV engaged and passing the last waypoint in the route (LNAV disengages).                                                                  | Select the RTE LEGS page. Enter the desired active waypoint into the dash prompts and EXECute. Reengage LNAV.                                                                                                                                                  |
| ENG OUT SID MOD          | An engine-out SID has been automatically inserted into the flight plan as a modification.                                                   | Clear the message.                                                                                                                                                                                                                                             |
| ENTER EO CRZ SPD AND ALT | Engine-out operation has been terminated and no cruise speed or altitude has been entered.                                                  | Enter cruise speed and altitude on the cruise page.                                                                                                                                                                                                            |
| ENTER IRS POSITION       | IRS in the alignment mode needs present position to complete alignment. Previous present position entry was not received back from the IRS. | Enter IRS present position into the scratchpad pad and line select 4R on the POS INIT page of the CDU. If present position was previously entered, overwrite displayed data. If necessary, enter present position directly into the IRS control /display unit. |
| FMC APP/TUNE DISAGREE    | An approach that utilizes FMC generated glidepath is in the active flight plan but an approach navaid (ILS/GLS) has been tuned with G/S ON. | Confirm the tuned frequency and approach selected in the FMC are both consistent with the actual approach intended to be flown. Resolve tuning or approach selection inconsistency. Clear the message.                                                         |



| <b>MESSAGE</b>              | <b>CAUSE</b>                                                                                                                                                                                                                                                                                                                                                                                 | <b>CORRECTIVE ACTION</b>                                                                                                                                       |
|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| FMC APP MODE<br>UNAVAIL-GP  | The approach selected in the FMC does not have a specified glidepath angle for final approach. The FMC approach mode cannot be used for this approach.                                                                                                                                                                                                                                       | Select an alternate approach. Clear the message.                                                                                                               |
| FMC APP MODE<br>UNAVAIL-QFE | An approach that utilizes FMC generated glide path is in the flight plan (active or inactive) but QFE is selected on the FMC.                                                                                                                                                                                                                                                                | Select QNH as the landing altimeter reference on the APPROACH REF page. Clear the message.                                                                     |
| FMC DISAGREE                | During approach or on the ground, monitored parameters required for dual FMC operation are in disagreement. (Dual FMC as installed.)<br>Message will remain displayed until the condition has been resolved. The FMC does not check for mach and indicated airspeed disagreements on the ground. Message display is inhibited when in the Approach Nav environment. (Dual FMC as installed.) | Monitor FMCs closely. Both FMCs remain online. Limit approaches to single FMC only. If desired, revert to SINGLE FMC OPERATION in this section.                |
| FMC DISAGREE -<br>VERTICAL  | A vertical deviation, FMC Airspeed, or FMC Mach value disagreement between the FMCs by more than the allowed tolerance occurs and long enough that all attempts to resynchronize failed while the aircraft in a path descent. (Dual FMC as installed.)                                                                                                                                       | Do not move the FMC source select switch. The FMC will attempt to correct the difference without crew action. Monitor crossing altitudes to ensure compliance. |
| FMC POS/RW DISAGREE         | Position information is contradictory.                                                                                                                                                                                                                                                                                                                                                       | Refer to FMC Navigation Check Supplementary Procedure.                                                                                                         |

| MESSAGE                               | CAUSE                                                                                                                              | CORRECTIVE ACTION                                                                                                                |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| FORECASTS UPLINK READY                | An FMC descent forecasts uplink message has been received and is available for loading on the DESCENT FORECASTS page.              | Select DESCENT FORECASTS page, LOAD descent forecasts winds, and execute or ERASE.                                               |
| GPS-L INVALID<br>GPS-R INVALID        | FMC is no longer receiving valid information from the displayed GPS system.                                                        | Clear the message. If both GPS-L INVALID and GPS-R INVALID messages show, refer to FMC Navigation Check supplementary procedure. |
| INSUFFICIENT FUEL                     | A change in conditions or flight plan route causes predicted fuel at destination to be 900 kilograms/2000 lbs or less.             | Modify the route plan or cruising altitude, or divert for additional fuel.                                                       |
| INVALID ALTN DEST UPLINK              | An FMC alternate destinations uplink message was received, but was rejected due to errors.                                         | Clear the message.                                                                                                               |
| INVALID ATC (ROUTE or ROUTE X) UPLINK | ATC uplink received by FMC contains errors.                                                                                        | Clear message.                                                                                                                   |
| INVALID ATC UPLINK                    | ATC uplink received by FMC contains errors.                                                                                        | Clear message.                                                                                                                   |
| INVALID CRZ WIND UPLINK               | An FMC cruise wind uplink message was received, but was rejected due to errors.                                                    | Clear the message.                                                                                                               |
| INVALID DELETE                        | DEL key operation was attempted for a data line to which it was not applicable.                                                    | Clear the message and select the proper line after the DEL key is pressed.                                                       |
| INVALID ENTRY                         | Attempted data entry has incorrect format, range, etc. for the selected data line. Entered RTA waypoint is not in the flight plan. | Clear the message and scratchpad entry, and repeat the entry with the correct data.                                              |

| <b>MESSAGE</b>           | <b>CAUSE</b>                                                                                           | <b>CORRECTIVE ACTION</b>                     |
|--------------------------|--------------------------------------------------------------------------------------------------------|----------------------------------------------|
| INVALID FORECASTS UPLINK | An FMC descent forecasts uplink message was received, but was rejected due to errors.                  | Clear the message.                           |
| INVALID INACTIVE PLAN    | An exception has occurred in the INACTIVE plan prior to execution and it has been deleted as a result. | Re-enter the data.                           |
| INVALID LIMITS UPLINK    | An FMC performance limits uplink message was received, but was rejected due to errors.                 | Clear the message.                           |
| INVALID MOD PLAN         | An exception has occurred in the MOD plan and it has been deleted as a result.                         | Re-enter the data.                           |
| INVALID NAV DATA UPLINK  | An FMC supplemental navigation data uplink message was received, but was rejected due to errors.       | Clear the message.                           |
| INVALID OFFSET           | Desired offset does not meet FMC offset criteria.                                                      | Clear the message and amend the entry.       |
| INVALID PERF INIT UPLINK | An FMC performance initialization uplink message was received, but was rejected due to errors.         | Clear the message.                           |
| INVALID QUAD             | Attempted HOLD page QUAD entry has incorrect format or range.                                          | Clear the message and revise the QUAD entry. |
| INVALID ROUTE UPLINK     | An FMC route uplink message was received, but was rejected due to errors.                              | Clear the message.                           |
| INVALID RTA UPLINK       | An FMC RTA uplink message was received, but was rejected due to errors.                                | Clear the message.                           |

| <b>MESSAGE</b>                                                     | <b>CAUSE</b>                                                                                                                                                                                                                                                                                                                                                                     | <b>CORRECTIVE ACTION</b>                                                                                                               |
|--------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| INVALID TAKEOFF UPLINK                                             | An FMC takeoff data uplink message was received, but was rejected due to errors.                                                                                                                                                                                                                                                                                                 | Clear the message.                                                                                                                     |
| INVALID TAKEOFF XXX/YYY (runway or runway/intersection identifier) | Runway (RTE page) or runway/intersection (TAKEOFF REF page) has been entered that matches runway takeoff data in FMC memory. However, the airplane is performance limited for the selected runway.                                                                                                                                                                               | Clear the message. Enter correct takeoff data, request new takeoff data uplink, or enter new runway or runway/intersection identifier. |
| IRS MOTION                                                         | IRS has automatically restarted the alignment due to detection of excessive motion.                                                                                                                                                                                                                                                                                              | Clear message and attempt to reduce airplane movement, if practicable.                                                                 |
| IRS POS/ORIGIN DISAGREE                                            | Position information is contradictory.                                                                                                                                                                                                                                                                                                                                           | Refer to FMC Navigation Check Supplementary Procedure.                                                                                 |
| KEY/FUNCTION INOP                                                  | A mode key is pressed for which an FMC function has not been implemented or has not been enabled. (FANS MCDU only)                                                                                                                                                                                                                                                               | Clear the message or select another CDU page for display.                                                                              |
| LNAV BANK ANGLE LIMITED                                            | LNAV is engaged and the airplane is not on a lateral offset and is not near or in an orbit or hold and the airplane is within 5 minutes or less from an LNAV guided course change, and will exceed the airway/route boundaries for non-flyover turns less than or equal to 135 degrees due to performance limited bank angle. This message does not apply to fixed radius turns. | Review the LNAV course change. If course change exceeds airway/route boundary, consider flight plan change.                            |

| <b>MESSAGE</b>                                                       | <b>CAUSE</b>                                                                                                                      | <b>CORRECTIVE ACTION</b>                                                            |
|----------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| LOC CAP ACTIVE                                                       | The airplane is approaching its turn onto the localizer or GLS course and will maintain an intercept heading.                     | Clear the message manually, or wait for the AFDS to signal reset status to the FMC. |
| LOC CAP CANCELLED                                                    | Flight plan modifications or the airplane condition did not facilitate localizer capture.                                         | Clear the message manually, or wait for the AFDS to reset to LOC CAP ACTIVE.        |
| MAX ALT FLXXX<br>(flight level value)                                | Altitude intervention (as installed) attempt to raise cruise altitude when MCP altitude is above maximum altitude.                | Clear the message.                                                                  |
| MAX ALT FLXXX<br>(flight level value)                                | Altitude entry on any page is above the maximum altitude for current selected performance margins.                                | Clear the message or amend the data entry.                                          |
| MAX MACH .XXX/MIN<br>MACH .XXX<br>OR<br>MAX CAS .XXX/MIN CAS<br>.XXX | FMC target speed is greater than the maximum or less than the minimum buffet speed for the entered cruise or step climb altitude. | Change the target speed to within the message limits or enter a lower altitude.     |
| MESSAGE LIMIT<br>EXCEEDED                                            | Crew attempts to select more than five message elements for inclusion in downlink message.                                        | Clear message.                                                                      |
| MISSED CAPTURE                                                       | Proper localizer capture maneuver was performed, but the AFDS did not capture.                                                    | Clear the message.                                                                  |
| MODEL/ENG DATA<br>INVALID                                            | A valid performance database is not available.                                                                                    | Contact maintenance personnel.                                                      |
| NAV DATA LOADING                                                     | An FMC supplemental navigation data uplink message has been received and is loading.                                              | Wait for load to complete.                                                          |

| <b>MESSAGE</b>                                | <b>CAUSE</b>                                                                                                                       | <b>CORRECTIVE ACTION</b>                                                                                                                                 |
|-----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| NAV DATA OUT OF DATE                          | Effectivity dates of nav database do not agree with date input from clock.                                                         | Check the IDENT page and reverse the dates for ACTIVE NAV DATA if required.                                                                              |
| NAV DATA UPLINK                               | An FMC supplemental navigation data uplink message has been loaded on the SUPP NAV DATA page, and is ready for flight crew review. | Review the supplemental navigation data uplink, and execute or ERASE.                                                                                    |
| NAV INVALID-TUNE<br>XXXXX (navaid identifier) | FMC is unable to auto-tune or receive the navaid for a RNAV or VOR approach procedure.                                             | Cross-check radios and manually tune the desired navaid.                                                                                                 |
| NO DES PATH AFTER<br>XXXXX (waypoint)         | FMC is unable to construct a PATH DES that satisfies all altitude restrictions after XXXXX.                                        | Modify speed or altitude restrictions on the RTE LEGS pages.                                                                                             |
| NO OFFSET AT LEG<br>XXXXX (waypoint)          | Attempted entry of a lateral offset start or end waypoint XXXXXX that is not offsetable (lateral offset as installed).             | Clear the message and amend the route.                                                                                                                   |
| NOT IN DATA BASE                              | FMC does not contain the required data for the entered identifier.                                                                 | Clear the message and check data entry, or enter the required information into the supplemental or temporary navigation database via the NAV DATA pages. |
| NOT IN FLIGHT PLAN                            | RTA waypoint or lateral offset (as installed) start/end waypoint entry is not in active flight plan.                               | Clear the message and amend the entry.                                                                                                                   |
| NOT ON INTERCEPT<br>HEADING                   | Airplane is not within the LNAV capture criteria for the active leg (LNAV disengages).                                             | Manually place the airplane on an intercept heading and reengage LNAV.                                                                                   |

**▲ DELTA**  
**737 Operations Manual**

| <b>MESSAGE</b>         | <b>CAUSE</b>                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>CORRECTIVE ACTION</b>                                                                                                                                                                                             |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| NO VNAV AFTER XXXXX,   | <p>The descent path is monitored independent of path construction for the following scenarios:</p> <p>A) - an "at", "at or above", "at or below" or "window" constraint is violated</p> <p>B) - a navigation data base gradient (vertical angle) is violated</p> <p>If a violation is detected and not resolved, VNAV will disconnect after the point of the violation. The alerting message is displayed one minute prior to the violation.</p> | <p>After sequencing waypoint XXXXX, VNAV INVALID - PERF logic applies:</p> <p>Pilot should reenter the CI using either the previous CI displayed or enter a new CI. Reengage VNAV when change has been EXECuted.</p> |
| OAT DISAGREE - DELETED | <p>A check of entered OAT versus sensed OAT occurs after first engine start. A difference of +/- 6 degrees Celsius between the OAT value on the N1 LIMIT / TAKEOFF REF page and the engine temperature sensors.</p>                                                                                                                                                                                                                              | <p>Enter updated/corrected OAT on the N1 LIMITS page.</p>                                                                                                                                                            |
| OVERSPEED DISCONNECT   | <p>During path descent and above or below the speed restriction altitude, VNAV disengages when airspeed exceeds FMC speed restriction by more than 15 knots.</p>                                                                                                                                                                                                                                                                                 | <p>Manually reduce speed and reengage VNAV.</p>                                                                                                                                                                      |
| OFFSET DELETED         | <p>The entered start waypoint has been deleted from the flight plan. (lateral offset as installed)</p>                                                                                                                                                                                                                                                                                                                                           | <p>Clear the message and amend the route.</p>                                                                                                                                                                        |
| OFST ENDS ABEAM XXXXXX | <p>An invalid offset leg exists between the end waypoint (XXXXXX) and the start of offset or no end waypoint exists.</p>                                                                                                                                                                                                                                                                                                                         | <p>Clear the message and amend the route.</p>                                                                                                                                                                        |

| <b>MESSAGE</b>             | <b>CAUSE</b>                                                                                                                                                                                         | <b>CORRECTIVE ACTION</b>                                        |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|
| PARTIAL ALTN DEST UPLINK   | An FMC alternate destinations uplink message has been loaded on the ALTERNATE DESTS page, but errors were encountered during the loading process. (Alternate destinations as installed)              | Review the alternate destinations uplink, and execute or ERASE. |
| PARTIAL ATC ROUTE UPLINK   | An ATC ACARS route uplink message has been loaded on the RTE page, but errors were encountered during the loading process.                                                                           | Review the route uplink, and execute or ERASE.                  |
| PARTIAL ATC ROUTE X UPLINK | Receipt of an ATC ACARS uplink message containing route data which passed syntax error checks, but contained errors in the data, and part of the active RTE 1 or 2 flight plan data has been loaded. | Review the route uplink, and execute or ERASE.                  |
| PARTIAL CLEARANCE LOADED   | FMC able to load only a portion of data.                                                                                                                                                             | Clear message and reject uplinked clearance.                    |
| PARTIAL FORECASTS UPLINK   | An FMC descent forecasts uplink message has been loaded on the DESCENT FORECASTS page, but errors were encountered during the loading process.                                                       | Review the descent forecasts uplink, and execute or ERASE.      |
| PARTIAL LIMITS UPLINK      | An FMC performance limits uplink message has been loaded on the PERF LIMITS page, but errors were encountered during the loading process.                                                            | Review the performance limits uplink, and execute or ERASE.     |



| <b>MESSAGE</b>           | <b>CAUSE</b>                                                                                                                                          | <b>CORRECTIVE ACTION</b>                                              |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| PARTIAL NAV DATA UPLINK  | An FMC supplemental navigation data uplink message has been loaded on the SUPP NAV DATA page, but errors were encountered during the loading process. | Review the supplemental navigation data uplink, and execute or ERASE. |
| PARTIAL PERF INIT UPLINK | An FMC performance initialization uplink message has been loaded on the PERF INIT page, but errors were encountered during the loading process.       | Review the performance initialization uplink, and execute or ERASE.   |
| PARTIAL ROUTE LOADED     | A route is loaded which references data not contained in the database.                                                                                | Clear the message.                                                    |
| PARTIAL ROUTE UPLINK     | An FMC route uplink message has been loaded on the RTE page, but errors were encountered during the loading process.                                  | Review the route uplink, and execute or ERASE.                        |
| PARTIAL ROUTE X LOADED   | A route is loaded into the active/inactive RTE 1 or 2 flight plan buffer which references data not contained in any of the databases.                 | Clear the message.                                                    |
| PERF DEFAULTS DELETED    | Performance database has been automatically deleted due to conflict with performance database limits.                                                 | Contact maintenance personnel.                                        |
| PERF DEFAULTS INVALID    | Validity check of performance defaults database has failed.                                                                                           | Contact maintenance personnel.                                        |
| PERF INIT UPLINK         | An FMC performance initialization uplink message has been loaded on the PERF INIT page, and is ready for flight crew review.                          | Review the performance initialization uplink, and execute or ERASE.   |

| <b>MESSAGE</b>           | <b>CAUSE</b>                                                                                                             | <b>CORRECTIVE ACTION</b>                                                               |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| PERF INIT UPLINK READY   | An FMC performance initialization uplink message has been received and is available for loading on the PERF INIT page.   | Select PERF INIT page, LOAD performance initialization data, and execute or ERASE.     |
| PERF LIMITS UPLINK       | An FMC performance limits uplink message has been loaded on the PERF LIMITS page, and is ready for flight crew review.   | Review the performance limits uplink, and execute or ERASE.                            |
| PERF LIMITS UPLINK READY | An FMC performance limits uplink message has been received and is available for loading on the PERF LIMITS page.         | Select PERF LIMITS page, LOAD performance limits, and execute or ERASE.                |
| POS SHIFT OVER 50NM      | A viable position shift is currently selected that will result in an FMC position shift in excess of 50nm when executed. | Clear the message.                                                                     |
| PROGRAM PIN ERROR        | FMC connector wiring is incorrect.                                                                                       | System unusable; advise maintenance personnel. The CLR key will not clear the message. |
| PROGRAM PIN NOT IN DB    | FMC connector wiring or performance database is incorrect.                                                               |                                                                                        |
| RE-LOGON TO ATC COMM     | No response to logon message after 10 minutes.                                                                           | Clear message and re-send logon message.                                               |
| RESEND MESSAGE           | An FMC downlink message was attempted, but the FMC was unable to deliver the message to the ACARS MU.                    | Re-send the downlink message.                                                          |

| <b>MESSAGE</b>         | <b>CAUSE</b>                                                                                                                                    | <b>CORRECTIVE ACTION</b>                                                                                |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| RESET MCP ALT          | During the FMC cruise phase with VNAV engaged, when within 5 NM of the top-of-descent point without selecting a lower altitude on the AFDS MCP. | Select lower MCP altitude values as clearances permit.                                                  |
| RESET MCP ALT          | Normal FMC operation would require flying away from MCP altitude.                                                                               | Select a MCP altitude value in the proper direction (higher for climb, lower for descent).              |
| RESET MCP APP MODE     | A change in the expected approach is made with an FCC approach mode armed or engaged.                                                           | Clear and rearm FCC approach mode. Clear the message.                                                   |
| RESPOND TO ATC UPLINKS | ATC uplink pending storage full.                                                                                                                | Clear message and respond to open uplinks.                                                              |
| ROUTE DATA UPLINK      | An FMC route uplink message has been loaded on the RTE page, and is ready for flight crew review.                                               | Review the route uplink, and execute or ERASE.                                                          |
| ROUTE FULL             | Entry of more than maximum allowed number of waypoints or holding patterns attempted.                                                           | Clear the message and review existing and desired waypoints and holding patterns for possible deletion. |
| ROUTE UPLINK LOADING   | An FMC route uplink message is loading (after LOAD selected on the RTE page).                                                                   | Wait for load to complete.                                                                              |
| ROUTE UPLINK READY     | An FMC route uplink message has been received and is available for loading on the RTE page.                                                     | Select RTE page, LOAD route, and execute or ERASE.                                                      |
| RTA DATA UPLINK        | An FMC RTA uplink message has been loaded on the RTA PROGRESS page, and is ready for flight crew review.                                        | Review the RTA uplink, and execute or ERASE.                                                            |

| <b>MESSAGE</b>        | <b>CAUSE</b>                                                                                                            | <b>CORRECTIVE ACTION</b>                                                                              |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| RTA UNACHIEVABLE      | The RTA is not in the computed RTA window under current parameters.                                                     | Enter an achievable RTA or discontinue the RTA mode of navigation. Adjust parameters to meet the RTA. |
| RTA UPLINK READY      | An FMC RTA uplink message is has been received and is available for loading on the RTA PROGRESS page.                   | Select RTA PROGRESS page, LOAD RTA data, and execute or ERASE.                                        |
| RUNWAY N/A FOR SID    | The selected runway is not applicable to the selected departure procedure.                                              | Clear the message and check selections on the DEPARTURES page. Modify as required.                    |
| RW/APP TUNE DISAGREE  | During approach, manual tuned approach frequency or channel does not match active flight plan.                          | Clear the message and select correct approach frequency.                                              |
| RW/APP CRS ERROR      | During approach, MCP selected course does not match front course for the approach in the active flight plan.            | Clear the message and select correct MCP course.                                                      |
| SCANNING DME FAIL     | Inputs from both frequency scanning DME radios have failed.                                                             | Clear the message and check position. Radio updating of FMC position is not available.                |
| SELECT ACTIVE WPT/LEG | Power-up restart or insertion of a different flight plan while airborne.                                                | EXECute a direct-to or leg intercept to tell the FMC which leg of the route is active.                |
| SELECT MODE AFTER RTA | RTA mode has been discontinued due to sequencing of RTA waypoint or RTA waypoint has been removed from the flight plan. | Select alternate performance mode. (ECON, manual speed, etc.)                                         |

| MESSAGE                    | CAUSE                                                                                                                                                                                                                                                                                                 | CORRECTIVE ACTION                                                                                                                                                                                |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SINGLE FMC OPERATION       | The primary FMC has determined that the secondary FMC is not available. (Dual FMC as installed)                                                                                                                                                                                                       | If the FMC source selector switch is in the "Normal" position, move to "BOTH ON L". No action is required if the FMC source selector switch is already positioned to "BOTH ON L" or "BOTH ON R". |
| STEEP DESCENT AFTER XXXXXX | An excessive vertical discontinuity exists after point XXXXXX.                                                                                                                                                                                                                                        | Check routing.                                                                                                                                                                                   |
| SW OPTIONS INVALID         | The CRC performed during power up BIT on the current software options data base has failed, or the CRC of the software options database that has been loaded via the data loader has failed.                                                                                                          | Reload the FMC OPS software by maintenance.                                                                                                                                                      |
| TAKEOFF SPEEDS DELETED     | A change to runway, runway data, takeoff thrust selection or performance data is made after the V speeds have been selected, or entered V speeds fail to meet relative value check.                                                                                                                   | Reselect new V speeds and clear message.                                                                                                                                                         |
| TAKEOFF SPEEDS DELETED     | A change to runway, runway data, takeoff thrust selection or performance data is made after the V speeds have been selected, or entered V speeds fail to meet relative value check.<br>A check, after first engine start, of entered OAT versus sensed OAT has a difference of +/- 6 degrees Celsius. | Reselect new V speeds and clear message.<br>Enter updated/corrected OAT on the N1 LIMITS page, then reselect new V speeds and clear message.                                                     |

| <b>MESSAGE</b>          | <b>CAUSE</b>                                                                                                                                                           | <b>CORRECTIVE ACTION</b>                                                                                        |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| SUPP RTE DATA BASE FULL | Attempted save of the 11th supplemental flight plan.                                                                                                                   | Clear the message, delete unneeded supplemental flight plans and re-attempt entry.                              |
| TAI ON ABOVE 10°C       | Airplane is operating with anti-icing with TAT above +10°C.                                                                                                            | Clear the message and check the use of anti-icing for engines and/or wings.                                     |
| TAKEOFF DATA LOADED     | Uplink takeoff data matching Runway (RTE page) or runway/intersection (TAKEOFF REF page) has been loaded on the TAKEOFF REF page, and is ready for flight crew review. | Select TAKEOFF REF page, accept or reject takeoff data.                                                         |
| TAKEOFF DATA UPLINK     | An FMC takeoff data uplink message containing one or more sets of runway takeoff data has been received and loaded in FMC memory.                                      | Enter appropriate runway (RTE page) or runway/intersection (TAKEOFF REF page) to access runway takeoff data.    |
| THRUST REQUIRED         | Airplane is in an underspeed condition.                                                                                                                                | Clear the message. Increase airspeed to within 15 knots of speed target.                                        |
| UNABLE HOLD AIRSPACE    | LNAV guided holding pattern may exceed allowable hold airspace due to LNAV performance limited bank angle.                                                             | Review the holding pattern. If holding pattern exceeds allowable holding airspace, consider flight plan change. |
| UNABLE CRZ ALT          | FMC predicts that no cruise time is possible at the entered CRZ ALT.                                                                                                   | Clear the message and review the CRZ ALT selection.                                                             |
| UNABLE MACH .XXX        | The entered cruise Mach is unattainable based on present gross weight.                                                                                                 | Select a smaller Mach number or wait until gross weight is reduced sufficiently.                                |

| <b>MESSAGE</b>           | <b>CAUSE</b>                                                                                                                    | <b>CORRECTIVE ACTION</b>                                                                                                                                                                 |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UNABLE NEXT ALTITUDE     | Unable to meet the next flight plan altitude constraint in a VNAV climb or descent. The message appears only with VNAV engaged. | Clear the message and review the prediction. For undershoot condition during climb, consider selection of MAX RATE CLB or MAX ANGLE CLB, or a different N1 limit as appropriate.         |
| UNABLE PROC AIRSPACE     | Minimum procedure turn built by guidance exceeds the allowable excursion distance.                                              | Modify flight plan as required. Clear the message.                                                                                                                                       |
| UNABLE TO LOAD CLEARANCE | FMC unable to load any data from uplink.                                                                                        | Clear message and reject uplinked clearance.                                                                                                                                             |
| UNABLE TO OFFSET         | A valid offset cannot be constructed due to geometric limitations.                                                              | Clear the message and amend the route.                                                                                                                                                   |
| UNABLE TO SEND MSG       | Manual initiation of downlink failed.                                                                                           | Clear message.                                                                                                                                                                           |
| UNABLE YYY KTS AT XXXXX  | Next waypoint speed restriction (speed YYY, at waypoint XXXXX) cannot be met.                                                   | Modify flight plan as required. Clear the message.                                                                                                                                       |
| UNABLE REQD NAV PERF-RNP | FMC actual navigation performance is not sufficient for the displayed RNP.                                                      | During approach: Refer to UNABLE REQD NAV PERF - RNP non-normal checklist in the QRH. During other phases of flight: Refer to the FMC Navigation Check supplementary procedure in SP.11. |
| USING RSV FUEL           | Predicted fuel remaining at DEST is less than the RESERVES entry on the PERF INIT page.                                         | Clear the message and change routing if required.                                                                                                                                        |
| V SPEEDS UNAVAILABLE     | FMC cannot compute V speeds (as installed) due to unreasonable inputs on the RTE, PERF INIT, or TAKEOFF REF pages.              | Correct inputs that affect V speed computation.                                                                                                                                          |

| MESSAGE               | CAUSE                                                                                                                                                                                                                                                                           | CORRECTIVE ACTION                                                                                                       |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| VERIFY GW AND FUEL    | Fuel data becomes invalid, PERF INIT fuel value is replaced with dashes. FMC uses last valid fuel quantity for performance predictions until manual entry is made.<br>Shows if 30 minutes have elapsed since last manual entry.<br>Does not show in descent with Vref selected. | Enter fuel weight on PERF INIT page 1/2. Periodic update of fuel weight is required to keep gross weight value current. |
| VERIFY POS: FMC-FMC   | Position information is contradictory.                                                                                                                                                                                                                                          | Refer to FMC Nav Accuracy Check Supplementary Procedure.                                                                |
| VERIFY POS: FMC-GPS   | Position information is contradictory.                                                                                                                                                                                                                                          | Refer to FMC Nav Accuracy Check Supplementary Procedure.                                                                |
| VERIFY POS: FMC-RADIO | Position information is contradictory.                                                                                                                                                                                                                                          | Refer to FMC Nav Accuracy Check Supplementary Procedure.                                                                |
| VERIFY POS: IRS-FMC   | Position information is contradictory.                                                                                                                                                                                                                                          | Refer to FMC Nav Accuracy Check Supplementary Procedure.                                                                |
| VERIFY POS: IRS-IRS   | Position information is contradictory.                                                                                                                                                                                                                                          | Refer to FMC Nav Accuracy Check Supplementary Procedure.                                                                |
| VERIFY POS: IRS-RADIO | Position information is contradictory.                                                                                                                                                                                                                                          | Refer to FMC Nav Accuracy Check Supplementary Procedure.                                                                |
| VERIFY POSITION       | Position information is contradictory.                                                                                                                                                                                                                                          | Refer to FMC Nav Accuracy Check Supplementary Procedure.                                                                |



| MESSAGE               | CAUSE                                                                                                                                                                                | CORRECTIVE ACTION                                                                                        |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| VERIFY RNP            | Underlying RNP value is less than manually entered value.                                                                                                                            | Enter appropriate RNP.                                                                                   |
| VERIFY RNP VALUE      | When entering an RNP the underlying RNP value is smaller than the manually entered value or the ANP is greater than the manually entered RNP.                                        | Change or delete the manually entered RNP.                                                               |
| VERIFY TAKEOFF SPEEDS | A PERF INIT change has been made after takeoff speeds were specified.                                                                                                                | On TAKEOFF REF page 1, accept previous V speeds, or reject previous V speeds and enter new V speeds.     |
| VERIFY TAKEOFF THRUST | With the Takeoff Thrust Auto Selection option enabled, the system determines that the selected takeoff thrust setting is not compatible with the engine thrust rating configuration. | Clear the message. Manually change takeoff thrust setting, or accept uplink of different thrust setting. |
| VERIFY VERT RNP       | During an active descent with CDS navigation performance scales enabled, a manually entered vertical RNP is greater than the default vertical RNP.                                   | Clear CDU message. Enter appropriate vertical RNP.                                                       |
| VERIFY VERT RNP VALUE | With CDS navigation performance scales enabled, a manually entered vertical RNP is greater than the default vertical RNP or manually entered vertical RNP is less than vertical ANP. | Clear the message. Change or delete the manually entered RNP.                                            |
| VNAV DISCONNECT       | The criteria for VNAV engagement is not satisfied (VNAV disengages).<br>On approach, with VNAV engaged, the FCC has switched to LVL CHG.                                             | Manually control the vertical path.                                                                      |

| <b>MESSAGE</b>             | <b>CAUSE</b>                                                                                                                                                                                                                                             | <b>CORRECTIVE ACTION</b>                                                                                             |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| VNAV INVALID-PERF          | If the exception effects both the MOD and the ACT flight plan, the COST INDEX will be replaced with box prompts on the PERF INIT page and the message will result. LNAV is still valid and can navigate the airplane laterally but VNAV will disconnect. | Re-enter the COST INDEX on the PERF INIT page or complete PERF INIT.<br>Reengage VNAV when change has been executed. |
| XXXX (airport identifier)  | A REF AIRPORT is entered on the POS INIT page and no entry of ORIGIN yet appears on RTE page 1.                                                                                                                                                          | Enter the airport identifier on the ORIGIN data line.                                                                |
| XXXXX (MCP altitude value) | With the CRZ page displayed, resetting the AFDS MCP altitude to a value different from the CRZ ALT causes the value to appear in the scratchpad.                                                                                                         | Enter the MCP altitude value on the appropriate target altitude data line.                                           |

**GLS****GLS****3601 - 3610, 3772 - 3773, 3801 - 3900**

Condition: A GLS failure occurs.

**Note:** If a GLS light illuminates only during Master Caution RECALL and extinguishes when the Master Caution light is depressed, the left or right GLS System (G/S and LOC) has failed. The QRH procedure does not apply.

For CAT I (HUD used) approaches, the VHF NAV Transfer switch may be used to display GLS information on both PFDs.

- 1 Do not fly a GLS approach.
- 2 ILS and non-ILS approaches may be flown.

**GPS****GPS**

Condition: One or both GPS receivers are failed.

**Note:** The FMC uses only IRS or radio inputs.

Look-ahead terrain alerting and display are unavailable due to position uncertainty.

- 1 Select/verify the DME UPDATE ON mode (3L) on the FMC NAV OPTIONS page 2.
- 2 Continue normal operation if ANP meets the requirements for the phase of flight.



ILS

ILS

3601 - 3610, 3772 - 3773, 3801 - 3900

Condition: An ILS failure occurs.

**Note:** If an ILS light illuminates only during Master Caution RECALL and extinguishes when the Master Caution light is depressed, the left or right ILS System (G/S and LOC) has failed. The QRH procedure does not apply.

For CAT I (HUD used) approaches, the VHF NAV Transfer switch may be used to display ILS information on both PFDs. If autopilot use is required, use CMD A with VHF NAV 1 or CMD B with VHF NAV 2 for control.

- 1 Do not fly an ILS approach.
- 2 Non-ILS approaches may be flown.



**DC FAIL****IRS DC FAIL**

Condition: IRS backup DC power is failed.

1 Choose one:

- ◆ **One** IRS DC FAIL light is illuminated **and** all other IRS lights are **extinguished**:

Continue normal operation. The IRS is operating normally on AC power.



- ◆ **Both** IRS DC FAIL lights are illuminated:

The IRS is operating normally on AC power.

The battery is nearly discharged or the switched hot battery bus is not powered.  
The following systems may be inoperative:

Engine and APU fire extinguishing  
APU start.



**FAULT**

**IRS FAULT**

Condition: One or more of these occur:

- An IRS fault occurs
- On the ground, if the ALIGN light is also illuminated, the present position entry is possibly incorrect.

- 1 Choose one:
- ◆On the **ground**:
    - ▶▶ **Go to step 2**
  - ◆**In flight**:
    - ▶▶ **Go to step 6**

**On the ground**

- 2 Choose one:
- ◆ALIGN light is **extinguished**:

Do not takeoff.

■ ■ ■ ■
  - ◆ALIGN light is also **illuminated**:

IRS mode selector . . . . . OFF

The FAULT light extinguishes immediately and the ALIGN light extinguishes after approximately 30 seconds.

▶▶▶ **Go to step 3**

▼ **Continued on next page** ▼

▼ IRS FAULT continued ▼

- 3 **After** the ALIGN light extinguishes:  
     IRS mode selector . . . . . NAV  
     Enter present position.
  
- 4 Choose one:
  - ◆ ALIGN light **is** flashing:  
     Re-enter present position.  
     ▶▶ **Go to step 5**
  
  - ◆ ALIGN light is **not** flashing:  
     ▶▶ **Go to step 5**
  
- 5 Choose one:
  - ◆ **FAULT** light **illuminates** again:  
     Do not takeoff.  
     ■ ■ ■ ■
  
  - ◆ **FAULT** light does **not** illuminate again:  
     ■ ■ ■ ■

▼ Continued on next page ▼

▼ IRS FAULT continued ▼

## In flight

- 6 The IRS ATT and/or NAV mode(s) can be inoperative.
- 7 Partial capability can be restored by selecting attitude mode on the failed IRS. Straight and level, constant airspeed flight must be maintained for at least 30 seconds.
- 8 Choose one:
  - ◆ Selecting attitude mode on the failed IRS **is** desired:  

▶▶ **Go to step 9**
  - ◆ Selecting attitude mode on the failed IRS is **not** desired:  

▶▶▶ **Go to step 12**
- 9 Do the next step **only** if the captain's **or** first officer's primary attitude display is failed.

- 10 

Action is irreversible.

  
 IRS mode selector (**failed side**) . Confirm. . . . . ATT  
 Maintain straight and level, constant airspeed flight until the attitude display recovers (approximately 30 seconds).

**Note:** The primary attitude display stays failed and the SET IRS HDG prompt on the POS INIT page is blank until the attitude mode alignment is complete.

▼ Continued on next page ▼



▼ IRS FAULT continued ▼

11 Choose one:

◆ FAULT light **extinguishes:**

Enter magnetic heading on the POS INIT page or on the overhead IRS display unit by selecting HDG/STS.

Enter updated heading periodically on the POS INIT page or on the overhead IRS display unit by selecting HDG/STS.

Do **not** engage either autopilot.



◆ FAULT light **stays illuminated:**

►► **Go to step 12**

12 IRS transfer switch . . . BOTH ON L or BOTH ON R

**Note:** Autopilot(s) cannot be engaged.

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



ON DC

IRS ON DC

Condition: IRS AC power is failed.

1 Choose one:

◆ **Left** IRS ON DC light is illuminated:

The left IRS continues to operate as long as DC power is available.



◆ **Right** IRS ON DC light is illuminated:

Power to the right IRS is removed after 5 minutes.



**UNABLE REQD NAV PERF - RNP**

Condition: UNABLE REQD NAV PERF-RNP is shown. The actual navigation performance is not sufficient.

1 Choose one:

- ◆ On a procedure or airway with an **RNP alerting requirement**:

Select an alternate procedure or airway.  
During an approach, go-around unless  
suitable visual references can be  
established and maintained.



- ◆ On a procedure or airway **without** an RNP alerting requirement:

Verify position.



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## CONFIG

**3601 - 3610, 3772 - 3773, 3801 - 3900**

Condition: All of these occur:

- Both center tank fuel pump switches are off
- There is more than 1600 lbs of fuel in the center tank
- An engine is running.

- 1 Do not accomplish this procedure until established in a level flight attitude.
- 2 CTR FUEL PUMP switches (both). . . . . ON  
 Verify that the LOW PRESSURE lights extinguish.
- 3 **When** both LOW PRESSURE lights illuminate:  
 CTR FUEL PUMP switches (both). . . . . OFF



CONFIG

3701 - 3771

Condition: All of these occur:

- Both center tank fuel pump pressures are low
- There is more than 1600 lbs of fuel in the center tank
- An engine is running.

**Caution! Do not accomplish this procedure prior to or during takeoff with less than 5,000 pounds in the center tank, or during descent and landing with less than 3,000 pounds in the center tank. [AD 2002-19-52]**

- 1

Do not accomplish this procedure until established in a level flight attitude.
- 2

CTR FUEL PUMP switches (both) . . . . . ON

Verify that the LOW PRESSURE lights extinguish.
- 3

**When** both LOW PRESSURE lights illuminate:

CTR FUEL PUMP switches (both) . . . . . OFF





## CROSSFEED SELECTOR INOPERATIVE

VALVE  
OPEN

**May or may not be illuminated**

Condition: One of the following occurs:

- The crossfeed VALVE OPEN light stays illuminated bright blue
- The CROSSFEED selector is in the open position and the crossfeed VALVE OPEN light is extinguished
- When the CROSSFEED selector is rotated to a new position, the crossfeed VALVE OPEN light does not illuminate bright blue.

- 1 Check the FUEL CROSSFEED VALVE circuit breaker (P6-3:B7).

▼ Continued on next page ▼

**▼ CROSSFEED SELECTOR INOPERATIVE continued ▼**

2 Choose one:

- ◆ **FUEL CROSSFEED VALVE** circuit breaker is **tripped**:

It is not possible to determine the position of the fuel crossfeed valve.

**Note:** Verify that sufficient fuel is available to both engines to complete the flight.

Do **not** accomplish the following checklist:

IMBAL



- ◆ **FUEL CROSSFEED VALVE** circuit breaker is **not** tripped:

►► **Go to step 3**

**▼ Continued on next page ▼**

**▼ CROSSFEED SELECTOR INOPERATIVE continued ▼**

3 Choose one:

◆ CROSSFEED selector is **closed**:

Crossfeed **valve** is failed open.

**Note:** Maintain fuel balance with selective use of fuel pumps.



◆ CROSSFEED selector is **open**:

Crossfeed **valve** is failed closed.

**Note:** As conditions allow, vary engine thrust as needed to maintain fuel balance.

Verify that sufficient fuel is available to both engines to complete the flight.



**FILTER  
BYPASS****FUEL FILTER BYPASS**

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

1 Choose one:

- ◆ Only **one** FILTER BYPASS light, ENG 1 or ENG 2, has illuminated during the flight:

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



- ◆ FILTER BYPASS lights for **both** engines illuminate or have illuminated 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.



## Fuel Leak Engine

**Condition:** An engine fuel leak is suspected for the reasons listed in the Additional Information section of this checklist.

**Objective:** To confirm there is an engine fuel leak and shut down the affected engine if needed. This checklist does not address the unlikely possibility of a tank leak.

- 1 A diversion may be needed.
- 2 Main tank FUEL PUMPS switches (all) . . . . . ON
- 3 CROSSFEED selector. . . . . Close
- 4 CTR FUEL PUMPS switches (both). . . . . OFF

The fuel CONFIG alert may show with fuel in the center tank.

### **The following steps check for an engine fuel leak**

- 5 Record the main tank fuel quantities and the current time.
- 6 An engine fuel leak is confirmed if one or both of the following are true:
  - Fuel spray is observed from an engine or strut
  - A change in fuel imbalance of 500 lbs within 30 minutes or less

▼ Continued on next page ▼

▼ **Fuel Leak Engine continued** ▼

- 7 Choose one:
- ◆ Engine fuel leak is **confirmed**:  
▶▶ **Go to step 11**
  - ◆ Engine fuel leak is **not** confirmed:  
▶▶ **Go to step 8**
- 8 Choose one:
- ◆ The center tank **contains** usable fuel:  
▶▶ **Go to step 9**
  - ◆ The center tank does **not** contain usable fuel:  
▶▶ **Go to step 10**
- 9 CTR FUEL PUMPS switches (both) . . . . . ON
- 10 Resume normal fuel management.
- ■ ■ ■



**An engine fuel leak is confirmed**

- 11 The following steps shut down the engine to stop an engine fuel leak.
- 12 The engine to be shut down is the engine on the side where the fuel quantity decreased faster.
- 13 Autothrottle . . . . . Disengage
- 14 Thrust lever  
(affected engine) . . . . . Confirm . . . . . Close

▼ **Continued on next page** ▼

▼ Fuel Leak Engine continued ▼

15 **When** the affected engine is at idle thrust:

Engine start lever  
(affected engine) . . . . Confirm . . . . CUTOFF

This closes the spar valve and stops an engine fuel leak.

16 PACK switch (affected side) . . . . . OFF

This causes the operating pack to regulate to high flow in flight with the flaps up.

17 Choose one:

◆ APU is **available** for start:

APU . . . . . START

**When** APU is running:

APU GEN switch  
(affected side) . . . . . ON

▶▶ **Go to step 18**

◆ APU is **not** available:

▶▶ **Go to step 18**

18 Transponder mode selector . . . . . TA ONLY

This prevents climb commands which can exceed single engine performance capability.

▼ Continued on next page ▼

▼ **Fuel Leak Engine continued** ▼

19 ISOLATION VALVE switch. . . . . Verify AUTO

This ensures bleed air is available to both wings if wing anti-ice is needed.

20 Choose one:

◆ Fuel LOW alert is **shown**:

▶▶ **Go to step 21**

◆ Fuel LOW alert is **not** shown:

▶▶ **Go to step 23**

21 CROSSFEED selector. . . . . Open

This ensures that all fuel is available to the running engine.

22 FUEL PUMPS switches (all). . . . . ON

This ensures that all fuel is available for use.

23 Plan to land at the nearest suitable airport.

**Note:** Balance fuel as needed. All remaining fuel can be used for the running engine.

▶▶ **Go to the One Engine Inoperative Landing checklist on page 7.34**



▼ **Continued on next page** ▼



▼ Fuel Leak Engine continued ▼

## Additional Information

Reasons that an engine fuel leak should be suspected:

- A visual observation of fuel spray

- The total fuel quantity is decreasing at an abnormal rate

- An engine has excessive fuel flow

- The fuel IMBAL alert shows

- The fuel LOW alert shows

- The USING RSV FUEL message shows on the FMC CDU

- The INSUFFICIENT FUEL message shows on the FMC CDU

- The CHECK FMC FUEL QUANTITY message shows on the FMC CDU.

**LOW  
PRESSURE**

**FUEL PUMP LOW PRESSURE**

Condition: The fuel pump pressure is low.

**Note:** Fuel pump LOW PRESSURE lights may flicker when tank quantity is low and the airplane is in turbulent air or during climb or descent.

1 Choose one:

◆ **One main** tank fuel pump LOW PRESSURE light is illuminated:

Main tank FUEL PUMP switch  
(affected pump). . . . . OFF

Sufficient fuel pressure is available  
for normal operation.



◆ **Both main** tank fuel pump LOW PRESSURE lights are illuminated:

**Note:** At high altitude, thrust deterioration or engine flameout may occur.



◆ **One CTR** tank fuel pump LOW PRESSURE light is illuminated:

►► **Go to step 2**

◆ **Both CTR** tank fuel pump LOW PRESSURE lights are illuminated:

►► **Go to step 5**

▼ Continued on next page ▼

▼ **FUEL PUMP LOW PRESSURE** continued ▼

- 2 CROSSFEED selector. . . . . Open  
This prevents fuel imbalance.
- 3 CTR FUEL PUMP switch (affected side) . . . . . OFF
- 4 **When** the other CTR tank fuel pump LOW  
PRESSURE light illuminates:  
CROSSFEED selector . . . . . Close  
Remaining CTR FUEL PUMP switch . . . . . OFF




---

**Both CTR tank fuel pump LOW PRESSURE lights are illuminated**

- 5 CTR FUEL PUMP switches (both). . . . . OFF
- 6 Fuel CONFIG alert may show with fuel in the center tank.
- 7 Center tank fuel is unusable. Main tank fuel may not be sufficient for the planned flight.



## **Fuel Quantity Indication Inoperative**

Condition: The fuel quantity indication is blank.

- 1 Enter and periodically update the manually calculated FUEL weight on the FMC PERF INIT page.



## **Fuel Temperature Low**

Condition: Fuel temperature is near the minimum.

- 1 **When** fuel temperature is approaching the fuel temperature limit (3 degrees C /5 degrees F above the fuel freeze point or - 43 degrees C /- 45 degrees F whichever is higher):

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 degrees C for each .01 Mach increase in speed. In extreme conditions, it may be necessary to descend as low as FL250.



**IMBAL**

Condition: There is a fuel imbalance between the main tanks.

Objective: To decide if a fuel leak is suspected. To balance fuel if a fuel leak is not suspected.

- 1 If an engine has low fuel flow and unusual engine indications, the IMBAL alert may show due to an engine malfunction instead of a fuel leak.
- 2 The IMBAL alert may be caused by a fuel leak, an inoperative crossfeed valve or a fuel imbalance.
- 3 A fuel leak should be suspected if one or more of the following are true:

The total fuel remaining is less than the planned fuel remaining

An engine has excessive fuel flow.

- 4 Choose one:

◆ A fuel leak is **suspected**:

▶▶ **Go to the Fuel Leak Engine checklist on page 12.7**



◆ A fuel leak is **not** suspected:

▶▶ **Go to step 5**

▼ Continued on next page ▼

▼ **IMBAL continued** ▼

5 CROSSFEED selector . . . . . Open

Verify that the VALVE OPEN light illuminates bright, then dim. This indicates that the crossfeed valve is operating correctly.

6 Choose one:

◆ Crossfeed valve is operating **correctly**:

▶▶ **Go to step 7**

◆ Crossfeed valve is **not** operating correctly:

▶▶ **Go to the CROSSFEED SELECTOR  
INOPERATIVE checklist on page  
12.3**



▼ **Continued on next page** ▼

▼ **IMBAL continued** ▼

7 Choose one:

◆ **Main tank 1** quantity is low:

Main tank 1 FUEL PUMPS  
switches (both) . . . . . OFF

This allows fuel from the higher  
quantity tank to feed both engines.

▶▶ **Go to step 8**

◆ **Main tank 2** quantity is low:

Main tank 2 FUEL PUMPS  
switches (both) . . . . . OFF

This allows fuel from the higher  
quantity tank to feed both engines.

▶▶ **Go to step 8**

8 **When** fuel balancing is complete:

Main tank FUEL PUMPS switches (all) . . . . . ON  
CROSSFEED selector . . . . . Close



**LOW**

Condition: The fuel quantity in a main tank is less than 2000 lbs. [AFM]

Objective: To decide if a fuel leak is suspected. To ensure that all fuel is available for use.

**Note:** Avoid high nose up attitude. Make thrust changes slowly and smoothly. This reduces the possibility of uncovering fuel pumps.

- 1 The fuel LOW alert may be caused by a fuel leak or low fuel.
- 2 A fuel leak should be suspected if one or more of the following are true:

The total fuel remaining is less than the planned fuel remaining

An engine has excessive fuel flow.

One main tank is abnormally low compared to the other main tank and to the expected fuel remaining in the tanks.

- 3 Choose one:

◆ A fuel leak is **suspected**:

▶▶ **Go to the Fuel Leak Engine checklist on page 12.7**



◆ A fuel leak is **not** suspected:

▶▶ **Go to step 4**

▼ Continued on next page ▼



**▼LOW continued▼**

- 4 CROSSFEED selector. . . . . Open

This ensures that fuel is available to both engines if the low tank empties.

- 5 FUEL PUMPS switches (all). . . . . ON

This ensures that all fuel is available for use.

- 6 Plan to land at the nearest suitable airport.



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**Non-Normal Checklists**  
**Hydraulics**

**Chapter NNC**  
**Section 13**

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**LOW  
PRESSURE**

**HYDRAULIC PUMP LOW  
PRESSURE**

Condition: The hydraulic pump pressure is low.

1 HYD PUMP switch (affected side) . . . . . OFF

**Note:** Loss of an engine-driven hydraulic pump and a high demand on the system may result in an intermittent illumination of the LOW PRESSURE light for the remaining electric motor-driven hydraulic pump.



**OVERHEAT**

**HYDRAULIC PUMP OVERHEAT**

Condition: The hydraulic pump temperature is high.

1 ELEC HYD PUMP switch (affected side) . . . . . OFF

**Note:** One pump supplies sufficient pressure for normal system operation.



LOSS OF SYSTEM A

FLT CONTROL

A HYD PUMPS

A

ENG 1

ELEC 2

LOW  
PRESSURE

LOW  
PRESSURE

LOW  
PRESSURE

Condition: Hydraulic system A pressure is low.

- 1 System A  
FLT CONTROL switch . . . . Confirm . . . .STBY RUD
- 2 System A  
HYD PUMP switches (both). . . . . OFF
- 3 Check the Non-Normal Configuration Landing  
Distance table in the ODM.
- 4 NOSE WHEEL STEERING switch . . . . . ALT
- 5 Plan for manual gear extension.

**Note:** When the gear has been lowered manually, it cannot be retracted. The drag penalty with gear extended may make it impossible to reach an alternate field.

▼ Continued on next page ▼

**▼ LOSS OF SYSTEM A continued ▼**

**Note: Inoperative Items**

**Autopilot A inop**

Autopilot B is available.

**Flight spoilers (two on each wing) inop**

Roll rate and speedbrake effectiveness may be reduced in flight.

**Normal landing gear extension and retraction inop**

Manual gear extension is needed.

**Ground spoilers inop**

Landing distance will be increased.

**Alternate brakes inop**

Normal brakes are available.

**Engine No. 1 thrust reverser normal hydraulic pressure inop**

Thrust reverser will deploy and retract at a slower rate and some thrust asymmetry can be anticipated during thrust reverser deployment.

**Normal nose wheel steering inop**

Alternate nose wheel steering is available.

**6 Checklist Complete Except Deferred Items**

**Deferred Items**

**Descent Checklist**

|                               |                  |     |
|-------------------------------|------------------|-----|
| Altimeters . . . . .          | ____, xckd       | C&F |
| ■ Minimums . . . . .          | ____, ____, xckd | C&F |
| ■ Landing data . . . . .      | ____, ____       | C&F |
| ■ Approach briefing . . . . . | complete         | PM  |
| ■ Autobrakes . . . . .        | as reqd          | PM  |

**▼ Continued on next page ▼**

▼ LOSS OF SYSTEM A continued ▼

|                                |     |    |
|--------------------------------|-----|----|
| Seat belt signs . . . . .      | ON  | PM |
| Pressurization panel . . . . . | set | PM |
| Recall . . . . .               | ckd | PM |

Approach Checklist

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

Manual Gear Extension

- LANDING GEAR lever. . . . . OFF
- Manual gear extension handles. . . . . Pull
- The uplock is released when the handle is pulled to its limit.

The related red landing gear indicator light illuminates, indicating uplock release.
- Wait 15 seconds after the last manual gear extension handle is pulled:
- LANDING GEAR lever . . . . . DN

▼ Continued on next page ▼



**▼ LOSS OF SYSTEM A continued ▼**

**Landing Checklist**

- Landing gear . . . . . down C&F
- Flaps . . . . . \_\_\_\_, \_\_\_\_ green C&F
- Speedbrake . . . . . ARMED PM
- ENGINE START switches . . . . . CONT PM



## LOSS OF SYSTEM B

### FLT CONTROL

#### B

**LOW  
PRESSURE**

### B HYD PUMPS

#### ELEC 1

**LOW  
PRESSURE**

#### ENG 2

**LOW  
PRESSURE**

Condition: Hydraulic system B pressure is low.

- 1 System B  
FLT CONTROL switch . . . . Confirm . . . . STBY RUD
- 2 System B  
HYD PUMP switches (both). . . . . OFF
- 3 Plan a flaps 15 landing.
- 4 Set VREF 15 or VREF ICE.

**Note:** If any of the following conditions apply, set VREF ICE = VREF 15 + 10 knots:

- Engine anti-ice will be used during landing
- Wing anti-ice has been used any time during the flight
- Icing conditions were encountered during the flight and the landing temperature is below 10° C.

**Note:** When VREF ICE is needed, the wind additive should not exceed 10 knots.

- 5 Plan to extend flaps to 15 using alternate flap extension.

**Note:** The drag penalty with the leading edge devices extended may make it impossible to reach an alternate field.

▼ Continued on next page ▼

▼ **LOSS OF SYSTEM B continued** ▼

- 6 Check the Non-Normal Configuration Landing Distance table in the ODM.
- 7 Do **not** arm the autobrake for landing. Use manual braking.

▼ **Continued on next page** ▼

**▼ LOSS OF SYSTEM B continued ▼****Note: Inoperative Items****Autopilot B inop**

Autopilot A is available.

**Flight spoilers (two on each wing) inop**

Roll rate and speedbrake effectiveness may be reduced in flight.

**Yaw damper inop****Trailing edge flaps normal hydraulic system inop**

The trailing edge flaps can be operated with the alternate electrical system. Alternate flap extension time to flaps 15 is approximately 2 minutes.

**Leading edge flaps and slats normal hydraulic system inop**

The leading edge flaps and slats can be extended with standby pressure. Once extended, they can not be retracted.

**Autobrake inop**

Use manual braking.

**Normal brakes inop**

Alternate brakes are available.

**Engine 2 thrust reverser normal hydraulic pressure inop**

Thrust reverser will deploy and retract at a slower rate and some thrust asymmetry can be anticipated during thrust reverser deployment.

**Alternate nose wheel steering inop**

Normal nose wheel steering is available.

**▼ Continued on next page ▼**

▼ **LOSS OF SYSTEM B continued** ▼

**8 Checklist Complete Except Deferred Items**

**Deferred Items**

**Descent Checklist**

|                                |                  |     |
|--------------------------------|------------------|-----|
| Altimeters . . . . .           | ____, xckd       | C&F |
| ■Minimums . . . . .            | ____, ____, xckd | C&F |
| ■Landing data . . . . .        | ____, ____       | C&F |
| <b>VREF 15 or VREF ICE</b>     |                  |     |
| ■Approach briefing . . . . .   | complete         | PM  |
| ■Autobrakes . . . . .          | <b>OFF</b>       | PM  |
| Seat belt signs . . . . .      | ON               | 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** ▼

**▼ LOSS OF SYSTEM B continued ▼****Alternate Flap Extension**

During flap extension, set the flap lever to the desired flap position.

230 knots maximum during alternate flap extension.



ALTERNATE FLAPS master switch . . . . . ARM

**Note:** The landing gear configuration warning may sound if the flaps are between 10 and 15 and the landing gear are retracted.

**3601 - 3610, 3701 - 3773**

**Note:** The amber LE FLAPS TRANSIT light will stay illuminated until the flaps approach the flaps 10 position.

**3801 - 3900**

**Note:** The amber LE FLAPS TRANSIT light will stay illuminated until the flaps approach the flaps 15 position.

**Note:** Operation within the lower amber band may be needed until the LE FLAPS TRANSIT light extinguishes.

**▼ Continued on next page ▼**

▼ LOSS OF SYSTEM B continued ▼

 If flap asymmetry occurs, release the switch immediately. There is no asymmetry protection.

**ALTERNATE FLAPS**  
position switch . . . . . Hold DOWN  
to extend flaps  
to 15 on schedule

**Note:** After actuating the ALTERNATE FLAPS position switch, allow 15 seconds after release before moving the switch again to avoid damage to the motor clutch.

As flaps are extending, slow to respective maneuvering speed.

### Additional Deferred Item

GROUND PROXIMITY FLAP  
INHIBIT switch . . . . . FLAP INHIBIT

### Landing Checklist

|                                      |     |
|--------------------------------------|-----|
| Landing gear . . . . . down          | C&F |
| Flaps. . . . . <b>15, 15 green</b>   | C&F |
| Speedbrake . . . . . ARMED           | PM  |
| ENGINE START switches . . . . . CONT | PM  |



**MANUAL REVERSION**  
**or**  
**LOSS OF SYSTEM A AND SYSTEM B**

**FLT CONTROL**

**HYD PUMPS**

**A**

**B**

**ENG 1 ELEC 2**

**ELEC 1 ENG 2**

**LOW  
PRESSURE**

**LOW  
PRESSURE**

**LOW  
PRESSURE**

**LOW  
PRESSURE**

Condition: Hydraulic system A and B pressures are low.

- 1 System A and B FLT CONTROL switches (both) . . . . Confirm . . . . .STBY RUD
- 2 YAW DAMPER switch . . . . .ON
- 3 System A and B HYD PUMPS switches (all) . . . . . OFF
- 4 Plan to land at the nearest suitable airport.
- 5 Plan a flaps 15 landing.
- 6 Set VREF 15 or VREF ICE.

**Note:** If any of the following conditions apply, set VREF ICE = VREF 15 + 10 knots:

- Engine anti-ice will be used during landing
- Wing anti-ice has been used any time during the flight
- Icing conditions were encountered during the flight and the landing temperature is below 10° C.

**Note:** When VREF ICE is needed, the wind additive should not exceed 10 knots.

▼ Continued on next page ▼



▼ **MANUAL REVERSION or**  
**LOSS OF SYSTEM A AND SYSTEM B continued ▼**

- 7 Plan to extend flaps to 15 using alternate flap extension.

**Note:** The drag penalty with the leading edge devices extended may make it impossible to reach an alternate field.

- 8 Plan for manual gear extension.

**Note:** When the gear has been lowered manually, it cannot be retracted. The drag penalty with gear extended may make it impossible to reach an alternate field.

- 9 Check the Non-Normal Configuration Landing Distance table in the ODM.

**Note:** The crosswind capability of the airplane is greatly reduced.

- 10 Do **not** arm the autobrake for landing.
- 11 Do **not** arm the speedbrakes for landing.
- 12 On touchdown, apply steady brake pressure without modulating the brakes.
- 13 Do not attempt to taxi the airplane after stopping.

▼ **Continued on next page ▼**

**▼ MANUAL REVERSION or  
 LOSS OF SYSTEM A AND SYSTEM B continued ▼**

**Note: Inoperative Items**

**Autopilots A and B inop**

**All flight spoilers inop**

Roll rate will be reduced and speedbrakes will not be available in flight.

**Trailing edge flaps normal hydraulic system inop**

The trailing edge flaps can be operated with the alternate electrical system. Alternate flap extension time to flaps 15 is approximately 2 minutes.

**Leading edge flaps and slats normal hydraulic system inop**

The leading edge flaps and slats can be extended with standby hydraulic pressure. Once extended, they can not be retracted.

**Normal landing gear extension and retraction inop**

Manual gear extension is needed.

**Autobrake inop**

**Ground spoilers inop**

Landing distance will be increased.

**Normal and alternate brakes inop**

Inboard and outboard brakes have accumulator pressure only. On landing, apply steady brake pressure without modulating the brakes.

**Both thrust reversers normal pressure inop**

Thrust reversers will deploy and retract at a slower rate.

**Nose wheel steering inop**

Do not attempt to taxi the airplane after stopping.

**▼ Continued on next page ▼**

▼ **MANUAL REVERSION or**  
**LOSS OF SYSTEM A AND SYSTEM B continued ▼**

## 14 Checklist Complete Except Deferred Items

### Deferred Items

#### Descent Checklist

|                                |                  |     |
|--------------------------------|------------------|-----|
| Altimeters . . . . .           | ____, xckd       | C&F |
| ■ Minimums . . . . .           | ____, ____, xckd | C&F |
| ■ Landing data . . . . .       | ____, ____       | C&F |
| <b>VREF 15 or VREF ICE</b>     |                  |     |
| ■ Approach briefing . . . . .  | complete         | PM  |
| ■ Autobrakes . . . . .         | <b>OFF</b>       | PM  |
| Seat belt signs . . . . .      | ON               | PM  |
| Pressurization panel . . . . . | .set             | PM  |
| Recall . . . . .               | ckd              | PM  |

#### Go-Around Procedure Review

Do the normal go-around procedure except:

Advance thrust to go-around smoothly and slowly to avoid excessive pitch-up.

Be prepared to trim.

Limit bank angle to 15° when airspeed is less than the minimum maneuver speed.

▼ **Continued on next page ▼**

▼ **MANUAL REVERSION or  
LOSS OF SYSTEM A AND SYSTEM B continued** ▼

**Approach Checklist**

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

**Alternate Flap Extension**

During flap extension, set the flap lever to the desired flap position.



230 knots maximum during alternate flap extension.

ALTERNATE FLAPS master switch . . . . . ARM

**Note:** The landing gear configuration warning may sound if the flaps are between 10 and 15 and the landing gear are retracted.

**3601 - 3610, 3701 - 3773**

**Note:** The amber LE FLAPS TRANSIT light will stay illuminated until the flaps approach the flaps 10 position.

**3801 - 3900**

**Note:** The amber LE FLAPS TRANSIT light will stay illuminated until the flaps approach the flaps 15 position.

**Note:** Operation within the lower amber band may be needed until the LE FLAPS TRANSIT light extinguishes.

▼ **MANUAL REVERSION or  
LOSS OF SYSTEM A AND SYSTEM B** continued ▼

 If flap asymmetry occurs, release the switch immediately. There is no asymmetry protection.

**ALTERNATE FLAPS**  
position switch . . . . . Hold DOWN  
to extend flaps  
to 15 on schedule

**Note:** After actuating the ALTERNATE FLAPS position switch, allow 15 seconds after release before moving the switch again to avoid damage to the motor clutch.

As flaps are extending, slow to respective maneuvering speed.

## Manual Gear Extension

LANDING GEAR lever. . . . . OFF

Manual gear extension handles. . . . . Pull

The uplock is released when the handle is pulled to its limit.

The related red landing gear indicator light illuminates, indicating uplock release.

**Wait** 15 seconds after the last manual gear extension handle is pulled:

LANDING GEAR lever . . . . . DN

▼ Continued on next page ▼

**▼ MANUAL REVERSION or  
LOSS OF SYSTEM A AND SYSTEM B continued ▼**

**Additional Deferred Item**

GROUND PROXIMITY FLAP  
INHIBIT switch . . . . . FLAP INHIBIT

**Landing Checklist**

Landing gear . . . . . down C&F  
Flaps . . . . . **15, 15 green** C&F  
Speedbrake . . . . . **DOWN detent** PM  
ENGINE START switches. . . . . CONT PM



**LOW  
PRESSURE****STANDBY HYDRAULIC LOW  
PRESSURE**

Condition: The standby hydraulic pump pressure is low.

**Note:** With a loss of hydraulic system A and B, the rudder is inoperative.

**LOW  
QUANTITY****STANDBY HYDRAULIC LOW  
QUANTITY**

Condition: The standby hydraulic quantity is low.

- 1 Continue normal operation.



Intentionally  
Blank



**Non-Normal Checklists**  
**Landing Gear**

**Chapter NNC**  
**Section 14**

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Blank

**ANTISKID  
INOP****ANTISKID INOPERATIVE**

Condition: An antiskid system fault occurs.

---

**Caution! Locked wheel protection is not available.**

---

- 1 AUTO BRAKE select switch. . . . . OFF

The autobrake system is inoperative.

- 2 Do **not** arm the speedbrakes for landing. Manually deploy the speedbrakes immediately upon landing.

Automatic speedbrake extension may be inoperative.

- 3 Refer to the ODM, Abnormal Section, MEL Support, FAR Landing Distances (Factored) tables.

Use this chart if dispatched with antiskid inoperative.

- 4 Also refer to the ODM, Abnormal Section, Abnormal Configuration Actual Landing Distances and Approach Speeds tables.

Tire damage or blowouts can occur if moderate to heavy braking is used.



Use this chart to determine actual stopping distance for in-flight system failures.

Chart is based on maximum manual braking.

▼ Continued on next page ▼

**▼ ANTISKID INOPERATIVE continued ▼**

- 5 Plan for a Flaps 40 landing.
- 6 Consider using max reverse thrust.
- 7 Use longest available runway.
- 8 **Checklist Complete Except Deferred Items**

---

**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 the speedbrakes have been manually deployed.

Brake initially using light steady pedal pressure. Increase pressure as ground speed decreases. Do **not** pump the brakes.

---

**▼ Continued on next page ▼**

---

▼ **ANTISKID INOPERATIVE continued** ▼

**Descent Checklist**

|                                |                  |     |
|--------------------------------|------------------|-----|
| Altimeters . . . . .           | ____, xckd       | C&F |
| ■ Minimums . . . . .           | ____, ____, xckd | C&F |
| ■ Landing data . . . . .       | ____, ____       | C&F |
| ■ Approach briefing . . . . .  | complete         | PM  |
| ■ Autobrakes . . . . .         | <b>OFF</b>       | PM  |
| Seat belt signs . . . . .      | ON               | 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 . . . . .                 | ____, ____ green   | C&F |
| Speedbrake . . . . .            | <b>DOWN detent</b> | PM  |
| ENGINE START switches . . . . . | .CONT              | PM  |



**AUTO BRAKE  
DISARM**

**AUTO BRAKE DISARM**

Condition: The autobrake system disarms after being set.

1 Choose one:

◆ On the **ground**:

AUTO BRAKE select switch . . . . . OFF

▶▶ **Go to step 2**

◆ **In flight**:

▶▶ **Go to step 3**

2 Choose one:

◆ AUTO BRAKE DISARM light **extinguishes**:



◆ AUTO BRAKE DISARM light **stays illuminated**:

Do not takeoff.



3 AUTO BRAKE select switch . . . OFF, then reselect

▼ **Continued on next page** ▼

4 Choose one:

- □ □ □

- AUTO BRAKE select switch . . . . . OFF

Use manual brakes for landing.

**▶▶ Go to step 5**

## 5 Checklist Complete Except Deferred Items

## Deferred Items

## Descent Checklist

|                                |                  |     |
|--------------------------------|------------------|-----|
| Altimeters . . . . .           | ____, xckd       | C&F |
| ■ Minimums . . . . .           | ____, ____, xckd | C&F |
| ■ Landing data . . . . .       | ____, ____       | C&F |
| ■ Approach briefing . . . . .  | complete         | PM  |
| ■ Autobrakes . . . . .         | <b>OFF</b>       | PM  |
| Seat belt signs . . . . .      | ON               | PM  |
| Pressurization panel . . . . . | .set             | PM  |
| Recall . . . . .               | ckd              | PM  |

**▼ Continued on next page ▼**

▼ **AUTO BRAKE DISARM 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 . . . . .                | ____, ____ green | C&F |
| Speedbrake . . . . .           | ARMED            | PM  |
| ENGINE START switches. . . . . | .CONT            | PM  |



**Brake Pressure Indicator Zero PSI**

Condition: The brake accumulator has no nitrogen precharge.

1 Accumulator braking is not available.

**Note:** If hydraulic systems indications are normal, brake operation is unaffected.





## Gear Disagree

LEFT  
GEAR

NOSE  
GEAR

RIGHT  
GEAR

Condition: The landing gear position disagrees with the LANDING GEAR lever position.

**Note:** Do not exceed the gear EXTEND limit speed (270K/.82M).

Do not use FMC fuel predictions with gear extended.

1 Choose one:

◆ LANDING GEAR lever is **UP**:

▶▶ **Go to step 5**

◆ LANDING GEAR lever is **OFF**:

▶▶ **Go to step 2**

◆ LANDING GEAR lever is **DN**:

▶▶ **Go to step 9**

▼ 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 Landing Gear Lever Will Not Move Up After Takeoff checklist on page 14.16**





235K maximum

 LANDING GEAR lever . . . . . UP

4 Choose one:

◆ **All red and green landing gear indicator lights are **extinguished**:**

The landing gear lever should be kept in the UP position to keep the landing gear retracted.



◆ **Any red landing gear indicator light is **illuminated**:**

▶▶ **Go to step 8**

▼ Continued on next page ▼

▼ Gear Disagree continued ▼

5 Choose one:

◆ **All red and green** landing gear indicator lights are **illuminated**:

Open and close the manual gear extension access door. Verify the door is fully closed.

▶▶ **Go to step 6**

◆ **Any other combination** of landing gear indicator lights is **illuminated**:

▶▶ **Go to step 8**

235K maximum

6  LANDING GEAR lever. . . . . DN, then UP

7 Choose one:

◆ **All** landing gear indicator lights **extinguish**:

LANDING GEAR lever . . . . . OFF



◆ **Any red** landing gear indicator light is **illuminated**:

▶▶ **Go to step 8**

8 Flight with gear down increases fuel consumption and decreases climb performance. Refer to the ODM.



▼ Continued on next page ▼

▼ Gear Disagree continued ▼

9 Check landing gear indicator lights.

**Note:** If a green landing gear indicator light is illuminated on either the center main panel or the overhead panel, the related landing gear is down and locked.

10 Choose one:

◆ **All** landing gear indicate **down and locked** and one or more **red** landing gear indicator lights are also **illuminated**:

▶▶ **Go to step 11**

◆ **Any** landing gear is **not** down and locked:

▶▶ **Go to the Manual Gear Extension checklist on page 14.21**



11 Verify landing gear lever is pushed in and fully in the DN detent.

12 Choose one:

◆ **All red** landing gear indicator lights **extinguish**:



◆ **One or more red** landing gear indicator lights stay **illuminated**:

GROUND PROXIMITY GEAR  
INHIBIT switch . . . . . GEAR INHIBIT  
Land normally.



## Landing Gear Lever Jammed in the Up Position

Condition: The LANDING GEAR lever will not move from the UP position.

**Note:** Start this checklist **only** when ready to extend the gear for landing.

Once the gear is extended, do **not** retract.

270K/.82M maximum.

- 1  LANDING GEAR override trigger . . . . . Pull
- 2 LANDING GEAR lever . . . . . DN
- 3 Choose one:
  - ◆ LANDING GEAR **lever** moves to the **DN** position:
 

▶▶ **Go to step 4**
  - ◆ LANDING GEAR **lever** does **not** move to the DN position:
 

▶▶ **Go to step 6**
- 4 Check landing gear indicator lights.

**Note:** If a green landing gear indicator light is illuminated on either the center main panel or the overhead panel, the related landing gear is down and locked.

▼ Continued on next page ▼

▼ **Landing Gear Lever Jammed in the Up Position continued** ▼

5 Choose one:

◆ **All** landing gear **indicate** down and locked:  
Plan to land at the nearest suitable airport.  
■ ■ ■ ■

◆ **One or more** landing gear do **not** indicate down and locked:  
▶▶ **Go to the Manual Gear Extension checklist on page 14.21**  
■ ■ ■ ■

6 NOSE WHEEL  
STEERING switch . . . . . Verify NORM  
Nose wheel steering is not available.

---

---

**Warning! Do not use alternate nose wheel steering because the landing gear may retract on the ground.**

---

---

▼ Continued on next page ▼

▼ Landing Gear Lever Jammed in the Up Position continued ▼

- 7  270K/.82M maximum.  
Manual gear extension handles (all) . . . . . Pull  
The uplock is released when the handle is pulled to its limit. The related red landing gear indicator light illuminates, indicating uplock released.

**Note:** With the LANDING GEAR lever in the UP or OFF position, the red landing gear indicator lights will stay illuminated.

- 8 Check landing gear indicator lights.

**Note:** If a green landing gear indicator light is illuminated on either the center main panel or the overhead panel, the related landing gear is down and locked.

- 9 Choose one:

◆ **All** landing gear **indicate** down and locked:

▶▶ **Go to step 10**

◆ **One or more** landing gear do **not** indicate down and locked:

▶▶ **Go to the Partial or All Gear Up Landing checklist on page 14.23**



- 10 **Checklist Complete Except Deferred Items**

▼ Continued on next page ▼

▼ Landing Gear Lever Jammed in the Up Position continued ▼

**Deferred Items**

**Descent Checklist**

|                                |                  |     |
|--------------------------------|------------------|-----|
| Altimeters . . . . .           | ____, xckd       | C&F |
| ■ Minimums . . . . .           | ____, ____, xckd | C&F |
| ■ Landing data . . . . .       | ____, ____       | C&F |
| ■ Approach briefing . . . . .  | complete         | PM  |
| ■ Autobrakes . . . . .         | as reqd          | PM  |
| Seat belt signs . . . . .      | ON               | PM  |
| Pressurization panel . . . . . | set              | PM  |
| Recall . . . . .               | ckd              | PM  |

**Approach Checklist**

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

**Additional Deferred Item**

GROUND PROXIMITY GEAR  
INHIBIT switch . . . . . GEAR INHIBIT

▼ Continued on next page ▼



▼ Landing Gear Lever Jammed in the Up Position continued ▼

---

## Landing Checklist

|                                 |                  |     |
|---------------------------------|------------------|-----|
| Landing gear . . . . .          | down             | C&F |
| Flaps . . . . .                 | ____, ____ green | C&F |
| Speedbrake . . . . .            | ARMED            | PM  |
| ENGINE START switches . . . . . | CONT             | PM  |

**Note:** Nose wheel steering is not available.

---

---

**Warning! Do not use alternate nose wheel steering because the landing gear may retract on the ground.**

---

---



**Landing Gear Lever Will Not Move  
Up After Takeoff**

Condition: The LANDING GEAR lever cannot be moved to the UP position due to one or more of the following:

- Failure of the landing gear lever lock solenoid
- Failure of the air/ground system
- Failure of the ground spoiler bypass valve to close.

**Note:** Do not use FMC fuel predictions.

- 1 LANDING GEAR lever . . . . . DN
- 2 Retract the flaps on schedule.

▼ Continued on next page ▼

▼ Landing Gear Lever Will Not Move Up After Takeoff continued ▼

3 Choose one:

- ◆ Intermittent cabin altitude/configuration warning horn **stays silent** and the TAKEOFF CONFIG lights (if installed and operative) do **not illuminate** after the flaps are fully retracted and the thrust levers are beyond the vertical position:

**Note:** This indicates a failure of the landing gear lever lock solenoid.

▶▶ **Go to step 4**

- ◆ Intermittent cabin altitude/configuration warning horn **sounds** and the TAKEOFF CONFIG lights (if installed and operative) **illuminate** when the flaps are fully retracted:

**Note:** This indicates either a failure of the air/ground system or a failure of the ground spoiler bypass to close.

Do **not** retract the gear.

▶▶ **Go to step 8**

235K maximum.

- 4  LANDING GEAR override trigger . . . . . Pull
- 5 LANDING GEAR lever . . . . . UP
- 6 **When** the landing gear indicator lights extinguish:  
LANDING GEAR lever . . . . . OFF

▼ Continued on next page ▼

▼ **Landing Gear Lever Will Not Move Up After Takeoff continued** ▼

7 Continue normal operation.



8 **LANDING GEAR**  
**TAKEOFF WARNING CUTOFF**  
circuit breaker (P6-3:C18) . . . . . Pull

**Note:** The intermittent cabin altitude/configuration warning horn may still sound and the TAKEOFF CONFIG lights (if installed and operative) may still illuminate depending on thrust lever and flap position.

---

**Caution! Do not use the speedbrakes in flight.**

---

- 9 Plan to land at the nearest suitable airport.
- 10 Do **not** arm the autobrake for landing. Use manual braking.
- 11 Do **not** arm the speedbrakes for landing. Manually deploy the speedbrakes immediately upon landing.
- 12 **Checklist Complete Except Deferred Items**

▼ **Continued on next page** ▼

▼ Landing Gear Lever Will Not Move Up After Takeoff continued ▼

## Deferred Items

### Descent Checklist

|                                |                  |     |
|--------------------------------|------------------|-----|
| Altimeters . . . . .           | ____, xckd       | C&F |
| ■ Minimums . . . . .           | ____, ____, xckd | C&F |
| ■ Landing data . . . . .       | ____, ____       | C&F |
| ■ Approach briefing . . . . .  | complete         | PM  |
| ■ Autobrakes . . . . .         | <b>OFF</b>       | PM  |
| Seat belt signs . . . . .      | ON               | PM  |
| Pressurization panel . . . . . | set              | PM  |
| Recall . . . . .               | ckd              | PM  |

### Approach Checklist

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

### Gear Down Verification

LANDING GEAR lever. . . . . Verify DN

▼ Continued on next page ▼

▼Landing Gear Lever Will Not Move Up After Takeoff continued ▼

Landing Checklist

|                                |                    |     |
|--------------------------------|--------------------|-----|
| Landing gear . . . . .         | down               | C&F |
| Flaps . . . . .                | ____, ____ green   | C&F |
| Speedbrake . . . . .           | <b>DOWN detent</b> | PM  |
| ENGINE START switches. . . . . | CONT               | PM  |

**Note:** Manually deploy the speedbrakes immediately upon touchdown. Use manual braking.



## Manual Gear Extension

Condition: One of these occurs:

- Any landing gear is not down and locked when the LANDING GEAR lever is down
- The LANDING GEAR lever is jammed in the OFF position.

**Note:** If a green landing gear indicator light is illuminated on either the center main panel or the overhead panel, the related landing gear is down and locked.

1 LANDING GEAR lever . . . . . OFF (if possible)

2  270K/.82M maximum. Manual gear extension handles (affected gear) . . . . . Pull  
The uplock is released when the handle is pulled to its limit. The related red landing gear indicator light illuminates, indicating uplock released.

3 **Wait** 15 seconds after the last manual gear extension handle is pulled:

LANDING GEAR lever . . . . . DN (if possible)

4 Check landing gear indicator lights.

▼ Continued on next page ▼

▼ **Manual Gear Extension continued** ▼

**Note:** If the LANDING GEAR lever is in the OFF position, the red landing gear indicator lights will also be illuminated.

5 Choose one:

◆ **All** landing gear **indicate** down and locked:

▶▶ **Go to step 6**

◆ **One or more** landing gear do **not** indicate down and locked:

▶▶ **Go to the Partial or All Gear Up Landing checklist on page 14.23**



6 Choose one:

◆ LANDING GEAR **lever** is in the **DN** position:

Land normally.



◆ LANDING GEAR **lever** is in the **OFF** position:

GROUND PROXIMITY GEAR  
INHIBIT switch . . . . . GEAR INHIBIT  
Land normally.

**Note:** Nose wheel steering is not available.





## Partial or All Gear Up Landing

Condition: All landing gear are not down and locked after attempting manual gear extension.

1 Choose one:

◆ Manual gear extension **has** been attempted:

▶▶ **Go to step 2**

◆ Manual gear extension has **not** been attempted:

▶▶ **Go to the Manual Gear Extension checklist on page 14.21**



2 Brief the crew and passengers on emergency landing and evacuation procedures.

3 Burn off fuel to reduce touchdown speed.

4 Plan a flaps 40 landing.

5 Set VREF 40.

6 LANDING GEAR

AURAL WARN circuit breaker (P6-3:D18). . . . Pull

This prevents the warning horn with gear retracted and landing flaps selected.

The flight deck chime for an incoming call from the cabin crew is unavailable.

▼ Continued on next page ▼

▼ **Partial or All Gear Up Landing continued** ▼

- 7 FLIGHT CONTROL  
AUTO SPEED BRAKE  
circuit breaker (P6-2:B9). . . . . Pull  
  
This prevent inadvertent deployment of ground  
spoilers after landing.
- 8 Do **not** arm the autobrake for landing. Use manual  
braking.
- 9 Do **not** arm the speedbrakes for landing.
- 10 **Checklist Complete Except Deferred Items**

**Deferred Items**

**Descent Checklist**

- Altimeters . . . . ., xckd C&F
- Minimums . . . . ., \_\_\_\_, \_\_\_\_, xckd C&F
- Landing data . . . . ., \_\_\_\_, \_\_\_\_, **VREF 40** C&F
- Approach briefing . . . . . complete PM
- Autobrakes . . . . . **OFF** PM
- Seat belt signs . . . . . ON PM
- Pressurization panel . . . . . set PM
- Recall . . . . . ckd PM

**Approach Checklist**

- Flight & nav instruments . . . . . verified C&F

▼ **Continued on next page** ▼

▼ Partial or All Gear Up Landing continued ▼

|                              |            |     |
|------------------------------|------------|-----|
| Cabin notification . . . . . | complete   | C   |
| Altimeters . . . . .         | ____, xckd | C&F |

## Landing Procedure Review

Do not extend the speedbrakes unless stopping distance is critical. When stopping distance is critical, extend the speedbrakes after all landing gear, the nose or the engine nacelle have contacted the runway.

Do not use the thrust reversers unless stopping distance is critical.

Turn all fuel pump switches OFF just before the flare.

After stopping, do the Evacuation checklist, if needed.

## Additional Deferred Items

APU switch . . . . . OFF

GROUND PROXIMITY GEAR

INHIBIT switch . . . . . GEAR INHIBIT

**When** on approach:

Engine BLEED air switches . . . . . OFF

This ensures the airplane is depressurized at touchdown.

▼ Continued on next page ▼

▼Partial or All Gear Up Landing continued▼

Landing Checklist

|                                |                              |     |
|--------------------------------|------------------------------|-----|
| Landing gear . . . . .         | <b>Down &amp; ____ green</b> | C&F |
| Flaps . . . . .                | <b>40, 40 green</b>          | C&F |
| Speedbrake . . . . .           | <b>DOWN detent</b>           | PM  |
| ENGINE START switches. . . . . | <b>CONT</b>                  | PM  |
| <div>■ ■ ■ ■</div>             |                              |     |

## 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 Use idle or higher reverse thrust as needed to stop the aircraft.
- 8 Do **not** use autobrakes.



- 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. Harder braking will cause yawing away from the flat tire.
- 16 Use of maximum reverse thrust is recommended.
- 17 Do **not** use autobrakes.



**Non-Normal Checklists**  
**Warning Systems**

**Chapter NNC**  
**Section 15**

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## LANDING CONFIGURATION

Condition: In flight, the steady warning horn sounds.

- 1 Assure correct airplane landing configuration.



## TAKEOFF CONFIGURATION

TAKEOFF  
CONFIG

Condition: On the ground, the intermittent cabin altitude/configuration warning horn sounds and the TAKEOFF CONFIG lights illuminate when advancing the thrust levers to takeoff thrust.

- 1 Assure correct airplane takeoff configuration.



INOP

## GROUND PROXIMITY INOPERATIVE

Condition: A ground proximity warning system fault occurs.

**Note:** Some or all GPWS alerts are not available. GPWS alerts which occur are valid.



## **Overspeed**

Condition: Airspeed is more than Vmo/Mmo.

- 1 Reduce thrust and, if needed, adjust attitude to reduce airspeed to less than Vmo/Mmo.



PSEU

PSEU

Condition: A proximity switch electronics unit fault occurs.

**Note:** The PSEU light illuminates on the ground only.

3601 - 3610, 3701 - 3773

1 Choose one:

◆ PSEU light **stays illuminated** when the Master Caution system is reset:

▶▶ **Go to step 2**

◆ PSEU light **extinguishes** when the Master Caution system is reset:



3601 - 3610, 3701 - 3773

2 Choose one:

◆ PSEU light **stays illuminated** when the parking brake is set or when both engines are shut down:

Do **not** takeoff.



◆ PSEU light **extinguishes** when the parking brake is set or when both engines are shut down:



▼ Continued on next page ▼

▼ **PSEU continued** ▼

**3801 - 3900**

3 Choose one:

◆ PSEU light **stays illuminated** when the parking brake is set or when both engines are shut down:

Do **not** takeoff.



◆ PSEU light **extinguishes** when the parking brake is set or when both engines are shut down:



I

# **Non-Normal Operational InformationChapter NNOI**

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## **HUD Takeoff Equipment Requirements**

| Equipment Required                    | Touchdown RVR 300 (75m) |
|---------------------------------------|-------------------------|
| Localizer Receivers                   | 2                       |
| First Officer's HUD Annunciator Panel | 1                       |
| Windshield Wipers                     | 2                       |
| Electrical Power Source(s)            | 2                       |
| Anti-Skid System                      | 1                       |

## ILS Approach Equipment Requirements (HUD used) (Not for Dispatch)

If operable, the HUD or 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              | SA CAT I<br>ILS    | SA CAT II ILS /<br>CAT II | CAT III        |
|-----------------------------------------------|--------------------|--------------------|---------------------------|----------------|
| ADIRU IRS(s)                                  | 2 in NAV           | 2 in NAV           | 2 in NAV                  | 2 in NAV       |
| AFDS FMA(s)                                   | 1 (A)              | 2 (A)              | 2 (A)                     | 2 (A)          |
| Autopilot(s) and/or Flight Directors          | 0 and 1<br>(B) (I) | 0 and 1<br>(B) (C) | 0 and 1<br>(B)            | 0 and 1<br>(B) |
| Autothrottle System and<br>Disconnect Warning | 0                  | 0 (D)              | 0                         | 0              |
| DADC(s) (Pitot and Static)                    | 2                  | 2                  | 2                         | 2              |
| DFCS(s) (FCC and MCP)                         | 1                  | 1                  | 1                         | 1              |
| DH Indicators                                 | 1                  | 2                  | 2                         | 2              |
| Display Electronic Unit(s)                    | 1                  | 2                  | 2                         | 2              |
| Electrical Power Source(s)                    | 1 (F)              | 2 (F)              | 2 (F)                     | 2 (F)          |
| Engine(s) Operating                           | 1                  | 1                  | 1                         | 1              |
| Hydraulic System(s)                           | A or B             | A and B            | A and B                   | A and B        |
| ILS Systems (LOC & G/S)                       | 1 (E)              | 2 (E)              | 2 (E)                     | 2 (E)          |
| Marker Beacon System                          | 0                  | 0                  | 0 (H)                     | 0              |
| ND(s)                                         | 0                  | 2                  | 2                         | 2              |
| PFD(s)                                        | 1                  | 1 (B)              | 1 (B)                     | 1 (B)          |
| Radio Altimeter(s)                            | 1 (G)              | 2                  | 2                         | 2              |
| Windshield Wipers                             | 0                  | 2                  | 2                         | 2              |

See next page for notes (A) through (H).

(A) G/S, LOC, FLARE, TO/GA, and GA mode annunciations required.

(B) F/O's flight director and PFD required for crosscheck.

(C) For autoland approach, two autopilots and one flight director required.

(D) For autoland approach, the autothrottle system and its disconnect warning system are required.

(E) Raw data (i.e. localizer/glideslope) must be displayed on captain's HUD combiner and F/O's PFD.

(F) The APU can be a substitute power source for the left or right electrical system when two are required.

(G) If radio altimeter is inoperative, do not use associated autopilot or autothrottle for approach and landing. In addition, the respective FD steering command will be lost at G/S and LOC capture.

(H) For CAT II RA/NA approaches, Inner Marker is required.

(I) For approaches with "autopilot coupled approaches not authorized" restrictions, hand-flown CAT I are authorized to applicable minimums with an operable flight director.



## ILS Approach Equipment Requirements (HUD not used) (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  |
|--------------------------------------------|------------|----------|----------|
| ADIRU IRS(s)                               | 1 in NAV   | 2 in NAV | 2 in NAV |
| AFDS FMA(s)                                | 1 (A)      | 2 (A)    | 2 (A)    |
| Autopilot(s) and/or Flight Directors       | 1 or 1 (E) | 2 and 2  | 2 and 2  |
| Autothrottle System and Disconnect Warning | 0          | 1        | 1        |
| DADC(s) (Pitot and Static)                 | 2          | 2        | 2        |
| DFCS(s) (FCC and MCP)                      | 1          | 2        | 2        |
| DH Indicators                              | 0          | 2        | 2        |
| Display Electronic Unit(s)                 | 1          | 2        | 2        |
| Electrical Power Source(s)                 | 1 (B)      | 2 (B)    | 2 (B)    |
| Engine(s) Operating                        | 1          | 2        | 2        |
| Hydraulic System(s)                        | A or B     | A and B  | A and B  |
| ILS Systems (LOC & G/S)                    | 1          | 2        | 2        |
| Marker Beacon System                       | 0          | 0 (D)    | 0        |
| ND(s)                                      | 0          | 2        | 2        |
| PFD(s)                                     | 1          | 2        | 2        |
| Radio Altimeter(s)                         | 1 (C)      | 2        | 2        |
| Windshield Wipers                          | 0          | 2        | 2        |

(A) G/S, LOC, FLARE, TO/GA, and GA mode annunciations required.

(B) The APU can be a substitute power source for the left or right electrical system when two are required.

(C) If Radio Altimeter is inoperative, do not use associated autopilot or autothrottle for approach and landing. In addition, the respective FD Steering Command will be lost at G/S and LOC capture.

(D) For CAT II RA/NA approaches, Inner Marker is required.

(E) For approaches with “autopilot coupled approaches not authorized” restrictions, hand-flown CAT I are authorized to applicable minimums with an operable flight director..

## RNAV Approach Equipment Requirements (Not for Dispatch)

| Equipment Required                                                | RNAV (GPS) | RNAV (RNP) |
|-------------------------------------------------------------------|------------|------------|
| ADIRU IRS(s)                                                      | 1          | 2          |
| AFDS FMA's                                                        | 1          | 2          |
| Global Positioning System (GPS)                                   | 1          | 2          |
| Autopilot                                                         | 1          | 2          |
| Autothrottle System and Disconnect Warning                        | 0          | 0          |
| CDU                                                               | 1          | 2          |
| Current Navigation Database                                       | 1          | 1          |
| DADC(s) (Pitot and Static)                                        | 2          | 2          |
| DA Indicators                                                     | 1          | 1          |
| GPWS or EGPWS Terrain Mode                                        | 0          | 1          |
| Electrical power source (AC)<br>(APU may be used)                 | 1          | 2          |
| Flight Director                                                   | 1          | 2          |
| FMC                                                               | 1          | 2          |
| FMC Alert Lights                                                  | 1          | 1          |
| Nav Display                                                       | 1          | 2          |
| Primary Flight Display (PFD)<br>"DISPLAYS SOURCE" not annunciated | 1          | 2 (A)      |
| Radio Altimeter                                                   | 0          | 2          |
| TO/GA Switches                                                    | 0          | 1          |
| (A) HUD combiner may be substituted for Captain's PFD.            |            |            |

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## **RNAV Enroute Equipment Requirements (Not for Dispatch)**

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## Non-Normal Checklist Instructions

### Non-Normal Checklists

## Chapter NNCI

### 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 a light, alert or other indication. In most cases, the MASTER CAUTION and system annunciator lights also illuminate to indicate the non-normal condition. These lights, alerts and other indications are the cues to select and do the associated checklist.

Checklists without a light, alert or other indication are called unannunciated checklists. Most unannunciated checklists are in the associated system section. For example, Engine Fuel Leak is in section 12, Fuel. Unannunciated checklists with no associated system (such as Volcanic Ash) are in section 0, Miscellaneous. In addition, the Miscellaneous section contains checklists titled “Considerations.” These checklists are designed to assist crewmembers in the decision making process to accomplish a non-normal maneuver (such as a decision to perform an overweight landing), assist in the preparation and execution of a non-normal maneuver (such as preparation for a ditching), and/or provide considerations that should be taken into account after a non-normal maneuver has been executed (such as post RTO). These checklists should be referenced as time and conditions allow.

All checklists have condition statements. The condition statement briefly describes the situation that caused the light, alert or other indication. 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. 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 AUTO BRAKE DISARM) are annunciated by a light, alert, or other indication. Checklist titles in upper and lower case (such as Window Damage) 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. 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.

After engine start and before takeoff, illumination of a red warning light, an amber caution light, an alert or other indication requires completion of the associated checklist. In certain cases, amber system monitor lights illuminate during MASTER CAUTION recall to inform the flight crew of the failure of one element in a system with redundant elements. If system operation is maintained by a second element, the amber system monitor light will extinguish when MASTER CAUTION is reset. In these situations, the amber light alerts the flight crew that normal system operation will be affected if another element fails. If an amber light illuminates during MASTER CAUTION recall, but extinguishes after MASTER CAUTION reset, completion of the associated checklist is not required.



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 item “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 (the standby system is considered a hydraulic system)
- 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 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.
- If the MASTER CAUTION and system annunciator lights illuminate, all related amber lights are reviewed to assist in recognizing the cause(s) of the alert.
- Aural alerts are silenced and the master caution system is reset by the flight crew as soon as the cause of the alert is recognized.
- The EMERGENCY position of the oxygen regulator is used when needed to supply positive pressure in the masks to remove contaminants. The 100% position of the oxygen regulator is used when positive pressure is not needed but contamination of the flight deck air exists. The Normal position of the oxygen regulator is used if prolonged use is needed and the situation allows. Normal boom microphone operation is restored when oxygen is no longer in use.
- Indicator lights are tested to verify suspected faults.

## Circuit Breaker Reset

**WARNING: Do not reset a tripped fuel boost pump circuit breaker.**

Flight crew reset of a tripped circuit breaker is not recommended unless directed by a non-normal checklist.

However, a tripped circuit breaker may be reset once, after a short cooling period if, in the judgment of the captain, the situation resulting from the circuit breaker trip has a significant adverse effect on safety. A reset of a tripped circuit breaker should only be accomplished after maintenance and the flight crew have determined it is safe to reset the circuit breaker.

Flight crew may cycle (pull and reset) the circuit breaker(s) of a degraded or inoperative system (normally only one time per event) provided the Captain determines the affected system is desirable for the conduct of the flight and one of the following conditions exists:

- the circuit breaker had not previously tripped, and there is no specific non-normal procedure in the checklist prohibiting reset, or
- maintenance has determined cycling the circuit breaker is safe.

If a circuit breaker is cycled during flight, notify maintenance. A logbook entry shall be made to document the occurrence.

---

## **Non-Normal Checklist Use**

### **General**

Non-normal checklist use starts when the airplane flight path and configuration are correctly established. Usually, time is available to assess the situation before corrective action is started. All actions must then be coordinated under the captain's supervision and done in a deliberate, systematic manner. Flight path control must never be compromised. As a general rule, use the following as guidelines:

- Fly the aircraft
- Cancel the warning
- Identify the emergency or non-normal
- Accomplish recall items from memory (if applicable)
- Read the checklist
- Do not hurry

### **Calling for the Checklist**

When a non-normal situation occurs, at the direction of the Captain both crewmembers systematically and without delay accomplish all memory items in their areas of responsibility.

The Captain may also direct reference checklists to be done by memory if no hazard is created by such action, or if the situation does not allow reference to the checklist.

The pilot flying 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 pilot monitoring 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 pilot flying does not need to repeat this information but must acknowledge that the information was heard and understood.

For checklists with memory items, the pilot monitoring first verifies that each memory item has been done. The checklist is normally read aloud during this verification. The pilot flying 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 pilot monitoring reads aloud the reference items, including:

- the precaution (if any)
- the response or action
- any amplifying information.

The pilot flying 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. The inoperative items, including the consequences (if any), are read aloud by the pilot monitoring. The pilot flying 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 start lever/fuel control switch
- an engine, APU or cargo fire switch
- a generator drive disconnect switch
- an IRS mode selector, when only one IRS is failed.
- 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 Loss of Thrust on Both Engines checklist.

---

## Deferred Items

When there are deferred items, the non-normal checklist will include the item “**Checklist Complete Except Deferred Items.**” The pilot flying is to be made aware when there are deferred items. 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 pilot monitoring. The crewmember taking the action states the response.

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.

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.

## 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.

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## Non-Normal Checklist Legend

### Redirection Symbol



The redirection symbol is used in two ways:

- In the Table of Contents of a system section, to direct the flight crew to a different system section.
- In a non-normal checklist, with the word “Go to,” to direct the flight crew to a different checklist or to a different step in the current checklist.

### Separator Symbol



The separator symbol is used in two ways:

- In certain system section tables of contents, to separate the titles of QAI checklists from non-QAI checklists.
- In a non-normal checklist, to separate the memory items from the reference items.

### Task Divider Symbol



The task divider symbol is used to indicate the end of one task and the beginning of another task.

### Decision Symbol

Choose one:



The decision symbol is used to identify possible choices.

### Precaution Symbol



The precaution symbol is used to identify information the flight crew must consider before taking the action.

---

## **Emergency Evacuation Flow/Philosophy**

Evacuation flow items listed below are not included within the Passenger Evacuation checklist. They are meant to refresh the logical pattern of procedures that must occur for a successful evacuation. In the unlikely event that the checklist cannot be read due to smoke/fire, darkness, injury or incapacitation, this simple flow or philosophy should lead the pilot to completion of all critical tasks contributing to the safest possible evacuation. The checklist follows the flow pattern of:

STOP  
CONFIGURE  
SHUTDOWN  
EVACUATE

Intentionally  
Blank



**Revision Record**  
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Intentionally  
Blank

## **Revision Record**

### **Model Identification**

## **Chapter RR**

### **Section ModID**

### **General**

The aircraft listed in the table below are covered in the operations manual. The table information is used to distinguish data peculiar to one or more, but not all of the aircraft. Where data applies to all aircraft listed, no reference is made to individual aircraft.

**Note:** The procedures and information contained in this manual also apply to aircraft acquired by Delta Air Lines, Inc. subsequent to the current revision; however, this document may not address all pertinent information for these airplanes. In such instances, specific operating procedures and systems information can be found in appropriate Differences Chapter(s) and/or Fleet Bulletin(s) prior to their incorporation in the next scheduled revision.

Ship number is supplied by Delta Air Lines, Inc. Registry number is supplied by the national regulatory agency. Serial number and tabulation number are supplied by Boeing.

#### **737-700**

| <b>Ship Number</b>    | <b>Registry Number</b> | <b>Serial Number</b> | <b>Tabulation Number</b> |
|-----------------------|------------------------|----------------------|--------------------------|
| 3601                  | N301DQ                 | 29687                | YM701                    |
| 3602                  | N302DQ                 | 29648                | YM702                    |
| 3603                  | N303DQ                 | 29688                | YM703                    |
| 3604                  | N304DQ                 | 29683                | YM704                    |
| 3605                  | N305DQ                 | 29645                | YM705                    |
| 3606                  | N306DQ                 | 29633                | YM706                    |
| 3607                  | N307DQ                 | 29679                | YM707                    |
| 3608                  | N308DE                 | 29656                | YM708                    |
| 3609                  | N309DE                 | 29634                | YM709                    |
| 3610                  | N310DE                 | 29665                | YM710                    |
| <b>And Subsequent</b> |                        |                      |                          |

---

**737-800**

| <b>Airplane Number</b> | <b>Registry Number</b> | <b>Serial Number</b> | <b>Tabulation Number</b> |
|------------------------|------------------------|----------------------|--------------------------|
| 3701                   | N371DA                 | 29619                | YC601                    |
| 3702                   | N372DA                 | 29620                | YC602                    |
| 3703                   | N373DA                 | 29621                | YC603                    |
| 3704                   | N374DA                 | 29622                | YC604                    |
| 3705                   | N375DA                 | 29623                | YC605                    |
| 3706                   | N376DA                 | 29624                | YC606                    |
| 3707                   | N377DA                 | 29625                | YC607                    |
| 3708                   | N378DA                 | 30265                | YC608                    |
| 3709                   | N379DA                 | 30349                | YC609                    |
| 3710                   | N380DA                 | 30266                | YC610                    |
| 3711                   | N381DN                 | 30350                | YC611                    |
| 3712                   | N382DA                 | 30345                | YC612                    |
| 3713                   | N383DN                 | 30346                | YC613                    |
| 3714                   | N384DA                 | 30347                | YC614                    |
| 3715                   | N385DN                 | 30348                | YC615                    |
| 3716                   | N386DA                 | 30373                | YC616                    |
| 3717                   | N387DA                 | 30374                | YC617                    |
| 3718                   | N388DA                 | 30375                | YC618                    |
| 3719                   | N389DA                 | 30376                | YC619                    |
| 3720                   | N390DA                 | 30536                | YC620                    |
| 3721                   | N391DA                 | 30560                | YC621                    |
| 3722                   | N392DA                 | 30561                | YC622                    |
| 3723                   | N393DA                 | 30377                | YC623                    |
| 3724                   | N394DA                 | 30562                | YC624                    |
| 3725                   | N395DN                 | 30773                | YC681                    |
| 3726                   | N396DA                 | 30378                | YC682                    |
| 3727                   | N397DA                 | 30537                | YC683                    |

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**Revision Record -  
Model Identification**

| <b>Airplane Number</b> | <b>Registry Number</b> | <b>Serial Number</b> | <b>Tabulation Number</b> |
|------------------------|------------------------|----------------------|--------------------------|
| 3728                   | N398DA                 | 30774                | YC684                    |
| 3729                   | N399DA                 | 30379                | YC685                    |
| 3730                   | N3730B                 | 30538                | YC686                    |
| 3731                   | N3731T                 | 30775                | YC687                    |
| 3732                   | N3732J                 | 30380                | YC688                    |
| 3733                   | N3733Z                 | 30539                | YC689                    |
| 3734                   | N3734B                 | 30776                | YC690                    |
| 3735                   | N3735D                 | 30381                | YC691                    |
| 3736                   | N3736C                 | 30540                | YC692                    |
| 3737                   | N3737C                 | 30799                | YC693                    |
| 3738                   | N3738B                 | 30382                | YC694                    |
| 3739                   | N3739P                 | 30541                | YC695                    |
| 3740                   | N3740C                 | 30800                | YC696                    |
| 3741                   | N3741S                 | 30487                | YC625                    |
| 3742                   | N3742C                 | 30835                | YC626                    |
| 3743                   | N3743H                 | 30836                | YC627                    |
| 3744                   | N3744F                 | 30837                | YC628                    |
| 3745                   | N3745B                 | 32373                | YC629                    |
| 3746                   | N3746H                 | 30488                | YC630                    |
| 3747                   | N3747D                 | 32374                | YC631                    |
| 3748                   | N3748Y                 | 30489                | YC632                    |
| 3749                   | N3749D                 | 30490                | YC633                    |
| 3750                   | N3750D                 | 32375                | YC634                    |
| 3751                   | N3751B                 | 30491                | YC635                    |
| 3752                   | N3752                  | 30492                | YC636                    |
| 3753                   | N3753                  | 32626                | YC637                    |
| 3754                   | N3754A                 | 29626                | YC638                    |
| 3755                   | N3755D                 | 29627                | YC639                    |

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**July 15, 2016**

**RR.ModID.3**

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| Airplane Number | Registry Number | Serial Number | Tabulation Number |
|-----------------|-----------------|---------------|-------------------|
| 3756            | N3756           | 30493         | YC640             |
| 3757            | N3757D          | 30813         | YC641             |
| 3758            | N3758Y          | 30814         | YC642             |
| 3759            | N3759           | 30815         | YC643             |
| 3760            | N3760C          | 30816         | YC644             |
| 3761            | N3761R          | 29628         | YC645             |
| 3762            | N3762Y          | 30817         | YC646             |
| 3763            | N3763D          | 29629         | YC647             |
| 3764            | N3764D          | 30818         | YC648             |
| 3765            | N3765           | 30819         | YC649             |
| 3766            | N3766           | 30820         | YC650             |
| 3767            | N3767           | 30821         | YC651             |
| 3768            | N3768           | 29630         | YC652             |
| 3769            | N3769L          | 30822         | YC653             |
| 3770            | N37700          | 29631         | YC654             |
| 3771            | N3771K          | 29632         | YC655             |
| 3772            | N3772H          | 30823         | YF441             |
| 3773            | N3773D          | 30825         | YF442             |
| And Subsequent  |                 |               |                   |

**737-900**

| Ship Number    | Registry Number | Serial Number | Tabulation Number |
|----------------|-----------------|---------------|-------------------|
| 3801           | N801DZ          | 31912         | YH801             |
| 3802           | N802DN          | 31917         | YH802             |
| 3803           | N803DN          | 31919         | YH803             |
| 3804           | N804DN          | 31918         | YH804             |
| 3805           | N805DN          | 31913         | YH805             |
| And Subsequent |                 |               |                   |

## **Revision Record**

### **Introduction**

## **Chapter RR**

### **Section Intro**

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### **General**

The manufacturer has developed normal and non-normal procedures for the 737 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.

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### **Manual Rights**

The 737 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

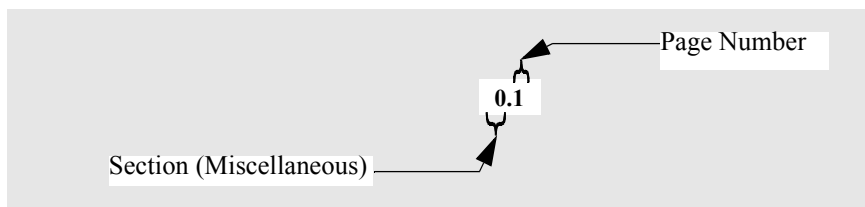
- Preface - Contains general information regarding the manual's purpose, structure, and content. It also contains lists of abbreviations, a record of revisions and a list of effective pages.
- Provides information and recommendations on aircraft operations, maneuvers, techniques, and human factors.

---

## 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.

**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      |                                                         |
|--------|---------------------------------------------------------|
| ABNORM | Abnormal                                                |
| ABS    | Absolute                                                |
| ABV    | Above                                                   |
| A/C    | Aircraft                                                |
| AC     | Alternating Current or Aircraft                         |
| ACARS  | Aircraft Communications Addressing and Reporting System |
| ACCEL  | Accelerate(d)<br>Acceleration                           |
| ACE    | Actuator Control Electronics                            |
| ACM    | Air Cycle Machine                                       |
| ACMP   | Alternating Current Motor Pump/Electric Hydraulic Pump  |
| ACMS   | Aircraft Condition Monitoring System                    |
| 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                                          |
| ADP       | Air Driven Pump<br>Air Driven Demand Hydraulic Pump      |
| AED       | Automatic 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                                      |
| AIDS     | Aircraft Integrated Data System               |
| AIL      | Aileron                                       |
| AIMS     | Airplane Information Management System        |
| ALFA     | Safe Stall Margin Speed                       |
| ALT      | Altitude                                      |
| ALT ACQ  | Altitude Acquire                              |
| ALT HOLD | Altitude Hold                                 |
| ALTM     | Altimeter                                     |
| ALTN     | Alternate                                     |
| AM       | Amplitude Modulation                          |
| AMB      | Ambient                                       |
| AMI      | Airline Modifiable Information                |
| AMP      | Amperes                                       |
| ANNUNC   | Annunciator                                   |
| ANP      | Actual Navigational Performance               |
| ANT      | Antenna                                       |
| ANU      | Aircraft Nose Up                              |
| AOA      | Angle of Attack                               |
| AOC      | Airline Operational Communication Data Link   |
| A/P      | Autopilot                                     |
| APB      | Auxiliary Power Breaker or All Pilot Bulletin |
| APD      | Approach Progress Display                     |

|             |                                        |
|-------------|----------------------------------------|
| APL         | Airplane                               |
| APP or APPR | Approach                               |
| APU         | Auxiliary Power Unit                   |
| AR          | Authorization Required                 |
| ARINC       | Aeronautical Radio, Incorporated       |
| ARPT        | Airport                                |
| ARR         | Arrival                                |
| ART         | Automatic Reserve Thrust               |
| A/S         | Airspeed                               |
| ASA         | Autoland Status Annunciator            |
| ASAP        | As Soon As Possible                    |
| ASI         | Airspeed Indicator                     |
| A/SKID      | Anti-Skid                              |
| ASP         | Audio Selector Panel                   |
| ASR         | Airport Surveillance Radar             |
| ASSY        | Assembly                               |
| ASYM        | Asymmetry                              |
| A/T         | Autothrottle                           |
| ATA         | Actual Time of Arrival                 |
| ATC         | Air Traffic Control                    |
| A/THR       | Auto Thrust Function                   |
| ATIS        | Automated Terminal Information Service |
| ATM         | Assumed Temperature Method             |
| ATT         | Attitude                               |
| ATTND       | Attendant                              |
| AUG         | Augmentation                           |

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|                                     |                                        |
|-------------------------------------|----------------------------------------|
| AUTO                                | Automatic                              |
| AUTO-<br>THROT                      | Autothrottle                           |
| AUX                                 | Auxiliary                              |
| AVAIL                               | Available                              |
| AVM                                 | Airborne Vibration<br>Monitor          |
| AVS                                 | Audio Visual System                    |
| AWABS                               | Automated Weight and<br>Balance System |
| AWI                                 | Altitude Warning<br>Indicator          |
| AWY                                 | Airway                                 |
| <b>B</b>                            |                                        |
| BAL                                 | Balance                                |
| BARO                                | Barometric                             |
| BAT                                 | Battery                                |
| B/C or<br>B/CRS or<br>BAC or<br>BCS | Back Course                            |
| BCL                                 | Battery Charge Limiter                 |
| BFE                                 | Buyer Furnished<br>Equipment           |
| BFO                                 | Beat Frequency<br>Oscillator           |
| BIT                                 | Built-In Test                          |
| BITE                                | Built-In Test Equipment                |
| BK                                  | Brake                                  |
| BKGRD                               | Background                             |
| BKR                                 | Breaker                                |
| BLD                                 | Bleed                                  |
| BLW                                 | Below                                  |

|           |                                               |
|-----------|-----------------------------------------------|
| BMC       | Bleed Air Monitoring<br>Computer              |
| BMV       | Brake Metering Valve                          |
| BRG       | Bearing                                       |
| BRT       | Bright                                        |
| BSCU      | Braking Steering Control<br>Unit              |
| BTB(S)    | Bus Tie Breaker(s)                            |
| BTC       | Bus Tie Contactor                             |
| BTL       | Bottle                                        |
| BTL DISCH | Bottle Discharge (fire<br>extinguisher)       |
| BTMS      | Brake Temperature<br>Monitoring System        |
| <b>C</b>  |                                               |
| C         | Captain or<br>Celsius or<br>Center or<br>Cool |
| CAA       | Civil Aviation Authority                      |
| CADC      | Central Air Data<br>Computer                  |
| CALSEL    | Call Select                                   |
| CANC/RCL  | Cancel/Recall                                 |
| CANPA     | Constant Angle<br>Non-Precision Approach      |
| CAP       | Capture                                       |
| CAPT      | Captain                                       |
| CAS       | Calibrated Airspeed                           |
| CAWS      | Central Aural Warning<br>System               |
| CB or C/B | Circuit Breaker                               |
| CCA       | Central Control Accuator                      |
| CCD       | Cursor Control Device                         |

|       |                                      |
|-------|--------------------------------------|
| CCW   | Counterclockwise                     |
| CDI   | Course Deviation Indicator           |
| CDL   | Configuration Deviation List         |
| CDS   | Common Display System                |
| CDU   | Control Display Unit                 |
| CFDS  | Centralized Fault Display System     |
| CFIT  | Controlled Flight Into Terrain       |
| CFM   | Cubic Feet per Minute                |
| CG    | Center of Gravity                    |
| CHAN  | Channel                              |
| CHG   | Change                               |
| CHKL  | Checklist                            |
| CHR   | Chronograph                          |
| CHRGR | Charger                              |
| CIDS  | Cabin Intercommunication Data System |
| CIS   | Cabin Interphone System              |
| CKD   | Checked                              |
| CKT   | Circuit                              |
| CL    | Close                                |
| CLB   | Climb                                |
| CLMP  | Computer Lockout Manual Power        |
| CLR   | Clear                                |
| CLSD  | Closed                               |
| CMD   | Command                              |
| CMPTR | Computer                             |
| CNX   | Cancelled                            |

|        |                                |
|--------|--------------------------------|
| CO     | Company                        |
| COMM   | Communication                  |
| COMP   | Comparator                     |
| COMPT  | Compartment                    |
| CON    | Continuous                     |
| COND   | Condition                      |
| CONFIG | Configuration                  |
| CONN   | Connection                     |
| CONT   | Control                        |
| COOL   | Cooling                        |
| CORR   | Correction                     |
| CO RTE | Company Route                  |
| CP     | Control Panel                  |
| CPCS   | Cabin Pressure Control System  |
| CRC    | Continuous Repetitive Chime    |
| CRM    | Crew Resource Management       |
| CRS    | Course                         |
| CRT    | Cathode Ray Tube               |
| CRZ    | Cruise                         |
| CSEU   | Control System Electronic Unit |
| CSM/G  | Constant Speed Motor/Generator |
| CSTR   | Constraint                     |
| CTL    | Control                        |
| CTR    | Center                         |
| CU     | Control Unit                   |
| CVR    | Cockpit Voice Recorder         |
| CW     | Clockwise                      |



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|         |                                             |
|---------|---------------------------------------------|
| CWS     | Control Wheel Steering                      |
| D       |                                             |
| DA      | Decision Altitude                           |
| DA(H)   | Decision Altitude (Height)                  |
| DC      | Direct Current                              |
| DCU     | Display Concentrator Unit                   |
| DCV     | Directional Control Valve                   |
| D/D     | Direct Descent                              |
| DDA     | Derived Decision Altitude (MDA +50 feet)    |
| DDG     | Dispatch Deviations Guide                   |
| DDRMI   | Digital Distance & Radio Magnetic Indicator |
| DECEL   | Decelerate(d)                               |
| DECR    | Decrease                                    |
| DED     | Dedicated                                   |
| DEG     | Degree                                      |
| DEL     | Delete                                      |
| DEM     | Demand                                      |
| DEP     | Departure                                   |
| DEP ARR | Departure Arrival                           |
| DEPR    | Depressurize                                |
| DES     | Descent                                     |
| DEST    | Destination                                 |
| DET     | Detector                                    |
| DEU     | Display Electronic Unit                     |
| DEV     | Deviation                                   |
| DFCS    | Digital Flight Control System               |

|         |                                      |
|---------|--------------------------------------|
| DFDAU   | Digital Flight Data Acquisition Unit |
| DFDR    | Digital Flight Data Recorder         |
| DFGC    | Digital Flight Guidance Computer     |
| DFGS    | Digital Flight Guidance System       |
| DH      | Decision Height                      |
| DIFF    | Differential                         |
| DIR     | Direct                               |
| DIR TO  | Direct To                            |
| DISC    | Disconnect                           |
| DISCH   | Discharge                            |
| DISCONT | Discontinued                         |
| DISP    | Dispatch                             |
| DIST    | Distance                             |
| DK      | Deck                                 |
| DMC     | Display Management Computer          |
| DME     | Distance Measuring Equipment         |
| DN      | Down                                 |
| DNTKFX  | Down Track Fix                       |
| DPC     | Display Processing Computer          |
| DR      | Door                                 |
| DSP     | Display Select Panel                 |
| DSPL    | Display                              |
| DTG     | Distance to Go                       |
| DTW     | Distance to Waypoint                 |
| DU      | Display Unit                         |

| E          |                                                               |
|------------|---------------------------------------------------------------|
| EADI       | Electronic Attitude Director Indicator                        |
| EBU        | Engine Build-Up                                               |
| ECAM       | Electronic Centralized Aircraft Monitor                       |
| ECB        | Electronic Control Box (APU)                                  |
| ECON       | Economy                                                       |
| ECS        | Environmental Control System                                  |
| ECU        | Electronic Control Unit                                       |
| E/D        | End of Descent                                                |
| EDP        | Engine Driven Pump                                            |
| E/E or E&E | Electrical/Electronic or Electrical & Electronic              |
| EEC        | Electronic Engine Control                                     |
| EFB        | Electronic Flight Bag                                         |
| EFI        | Electronic Flight Instruments                                 |
| EFIS       | Electronic Flight Instrument System                           |
| EFOB       | Estimated Fuel On Board Electronic Flight Operations Bulletin |
| 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                          |
| EIU           | Engine Interface Unit                                 |
| ELAC          | Elevator Aileron Computer                             |
| ELEC          | Electrical                                            |
| ELEV          | Elevator                                              |
| EMER          | Emergency                                             |
| EMER GEN      | Emergency Generator                                   |
| ENG           | Engine                                                |
| ENG OUT       | Engine Out                                            |
| ENT           | Entry                                                 |
| ENTMT         | Entertainment                                         |
| EO or E/O     | Engine Out                                            |
| EOAP          | Electronic Overhead Annunciation Panel                |
| EPC           | Electrical Power Center or Electrical Power Contactor |
| EPR           | Engine Pressure Ratio                                 |
| EPRL          | Engine Pressure Ratio Limit                           |
| EQPT or EQUIP | Equipment                                             |
| ER            | Extended Range                                        |
| ERP           | Eye Reference Point                                   |
| ET            | Elapsed Time                                          |
| ETOPS         | Extended Range Operation with Twin Engine Airplanes   |
| ETP           | Equal Time Point                                      |
| EVAC          | Evacuation                                            |
| EVBC          | Engine Vane and Bleed Control                         |

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|                    |                                       |
|--------------------|---------------------------------------|
| EVMU               | Engine Vibration Monitoring Unit      |
| E/WD               | Engine/Warning Display                |
| EXEC               | Execute                               |
| EXH                | Exhaust                               |
| EXT                | Extend or External                    |
| EXTIN              | Extinguish(ed)                        |
| 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               |
| FCEU               | Flight Control Electronics Unit       |
| FCTL or F/CTL      | Flight Control                        |
| FCTM               | Flight Crew Training Manual           |
| FCU                | Flight Control Unit                   |
| FD, F/D or FLT DIR | Flight Director                       |
| FDAU               | Flight Data Acquisition Unit          |
| FDEP               | Flight Data Entry Panel               |
| FDR                | Flight Data Recorder                  |
| FDS                | Flight Director System                |

|               |                                              |
|---------------|----------------------------------------------|
| FEXT          | Fire Extinguisher                            |
| FF            | Fuel Flow                                    |
| FFM           | Force Fight Monitor                          |
| FGCP          | Flight Guidance Control Panel                |
| FGS           | Flight Guidance System                       |
| FILT          | Filter                                       |
| FIM           | Fault Isolation Manual                       |
| FIR           | Flight Information Region                    |
| FL            | Flight Level                                 |
| FL CH or FLCH | Flight Level Change                          |
| FLD           | Field                                        |
| FLT           | Flight                                       |
| FLT CTRL      | Flight Control                               |
| FLPRN         | Flaperon                                     |
| FLUOR         | Fluorescent                                  |
| FMA           | Flight Mode Annunciator                      |
| FMC           | Flight Management Computer                   |
| FMCS          | Flight Management Computer System            |
| FMGC          | Flight Management Guidance Envelope Computer |
| FMGS          | Flight Management Guidance Envelope System   |
| FMS           | Flight Management System                     |
| F/O or F O    | First Officer                                |
| FOM           | Flight Operations Manual                     |
| FPA           | Flight Path Angle                            |

|            |                                    |
|------------|------------------------------------|
| F-PLN      | Flight Plan                        |
| FPM        | Feet Per Minute                    |
| FPV        | Flight Path Vector                 |
| FREQ       | Frequency                          |
| FRM        | Fault Reporting Manual             |
| F/S        | Fast/Slow                          |
| FSEU       | Flaps/Slats Electronic Unit        |
| FT         | Feet                               |
| FWD        | Forward                            |
| FWC        | Flight Warning Computer            |
| FWSOV      | Fire Wall Shut Off Valve           |
| FX         | Fix                                |
| <b>G</b>   |                                    |
| GA         | Go-Around                          |
| GAL        | Gallon                             |
| GB(S)      | Generator Breakers                 |
| GCU        | Generator Control Unit             |
| GE         | General Electric                   |
| GEN        | Generator                          |
| GLC        | Generator Line Contactor           |
| GLS        | GNSS Landing System                |
| GMT        | Greenwich Mean Time                |
| GND or GRD | Ground                             |
| GNSS       | Global Navigation Satellite System |
| GOMEX      | Gulf of Mexico                     |
| GP or G/P  | Glide Path                         |
| GPM        | Gallons Per Minute                 |

|              |                                                                             |
|--------------|-----------------------------------------------------------------------------|
| GPS          | Global Positioning System                                                   |
| GPWS         | Ground Proximity Warning System                                             |
| GR           | Gear                                                                        |
| GS           | Ground Speed                                                                |
| G/S          | Glide Slope                                                                 |
| GW           | Gross Weight                                                                |
| <b>H</b>     |                                                                             |
| 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                                                                        |
| HMU          | Hydrau-Mechanical Unit                                                      |
| HOR or HORIZ | Horizontal                                                                  |
| HORZ         | Horizon                                                                     |
| HP           | High Pressure                                                               |
| HPA          | Hectopascals                                                                |
| HPSOV        | High Pressure Shut Off Valve                                                |
| HPV          | High Pressure Valve                                                         |

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|       |                                           |
|-------|-------------------------------------------|
| HSI   | Horizontal Situation Indicator            |
| HTR   | Heater                                    |
| HUD   | Head-Up Display                           |
| HYD   | Hydraulic                                 |
| HZ    | Hertz                                     |
| I     |                                           |
| IAF   | Initial Approach Fix                      |
| IAN   | Integrated Approach Navigation            |
| IAS   | Indicated Airspeed                        |
| I/C   | Inspection/Check or Intercom              |
| ICAO  | International Civil Aviation Organization |
| ICU   | Instrument Comparator Unit                |
| IDENT | Identification                            |
| IDG   | Integrated Drive Generator                |
| IDU   | Interactive Display Unit                  |
| IFE   | In-Flight Entertainment System            |
| IFR   | Instrument Flight Rules                   |
| IGN   | Ignition                                  |
| IGS   | Instrument Guidance System                |
| ILLUM | Illuminate, Illuminated                   |
| ILS   | Instrument Landing System                 |
| IM    | Inner Marker                              |
| IMC   | Instrument Meteorological Conditions      |

|              |                                        |
|--------------|----------------------------------------|
| IMP          | Imperial                               |
| IN           | Inches                                 |
| INC          | Incorporated                           |
| INCR         | Increase                               |
| INBD         | Inboard                                |
| IND          | Indicator                              |
| IND LTS      | Indicator Lights                       |
| INFLT        | In flight or in-flight                 |
| INHB         | Inhibit                                |
| INIT         | Initialization                         |
| INOP         | Inoperative                            |
| 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                              |
| IVSI         | Instantaneous Vertical Speed Indicator |
| J            |                                        |
| JAA          | Joint Aviation Authority               |

| K        |                                   |
|----------|-----------------------------------|
| K or KTS | Knots                             |
| KCAS     | Knots Calibrated<br>Airspeed      |
| KEAS     | Knots, Equivalent<br>Airspeed     |
| KGS      | Kilograms                         |
| KHZ      | Kilohertz (Kilocycles)            |
| KIAS     | Knots Indicated Airspeed          |
| KW(S)    | Kilowatt(s)                       |
| L        |                                   |
| L        | Left                              |
| LAF      | Load Alleviation<br>Function      |
| LAT      | Latitude                          |
| LAT REV  | Lateral Revision                  |
| LAV      | Lavatory                          |
| LBS      | Pounds                            |
| LCD      | Liquid Crystal Display            |
| LCN      | Load Classification<br>Number     |
| LD       | Load                              |
| LDA      | Localizer-type<br>Directional Aid |
| LDG      | Landing                           |
| LDG ALT  | Landing Altitude                  |
| LE       | Leading Edge                      |
| L/G      | Landing Gear                      |
| LGW      | Landing Gross Weight              |
| LH       | Left Hand                         |
| LIM      | Limit                             |
| LIM SPD  | Limit Speed                       |

|                          |                                                 |
|--------------------------|-------------------------------------------------|
| LKD                      | Locked                                          |
| LMM or<br>MM             | Localizer Middle Marker                         |
| LN                       | Left Nose                                       |
| L NAV or<br>LNAV         | Lateral Navigation                              |
| LO                       | Low                                             |
| LOC                      | Localizer                                       |
| LOC-BC                   | Localizer Back Course                           |
| LOGO                     | Logographic                                     |
| LOM                      | Locator Outer Marker                            |
| LON or<br>LONG           | Longitude                                       |
| LP                       | Low Pressure                                    |
| LPV                      | Localizer Performance<br>with Vertical Guidance |
| LR                       | Long Range or<br>Left Rear                      |
| LRC                      | Long Range Cruise                               |
| LRRA                     | Low Range Radio<br>Altimeter                    |
| LRU                      | Line Replaceable Unit                           |
| LSB                      | Lower Side Band                                 |
| LSU                      | Lavatory Service Unit                           |
| LSK                      | Line Select Key                                 |
| LT                       | Light                                           |
| LVL                      | Level                                           |
| LVL CHG<br>or<br>LVL/CHG | Level Change                                    |
| LW                       | Left Wing                                       |
| LWR                      | Lower                                           |
| LWR CTR                  | Lower Center                                    |


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|                             |                                           |
|-----------------------------|-------------------------------------------|
| LWR<br>DSPLY or<br>LWR DSPL | Lower Display                             |
| M                           |                                           |
| M                           | Mach                                      |
| MAC                         | Mean Aerodynamic<br>Chord                 |
| MAG                         | Magnetic                                  |
| MAHP                        | Missed Approach<br>Holding Point          |
| MAINT                       | Maintenance                               |
| MALF                        | Malfunction                               |
| MAN                         | Manual                                    |
| MAP                         | Missed Approach Point                     |
| MASI                        | Mach/Airspeed Indicator                   |
| MAX                         | Maximum                                   |
| MB                          | Millibar                                  |
| MCC                         | Maintenance Control<br>Center             |
| MCDP                        | Maintenance Control and<br>Display Panel  |
| MCDU                        | Multi-purpose Control<br>and Display Unit |
| MCO                         | Maintenance Carry Over                    |
| MCP                         | Mode Control Panel                        |
| MCT                         | Maximum Continuous<br>Thrust              |
| MCU                         | Modular Concept Unit                      |
| MDA                         | Minimum Descent<br>Altitude               |
| MDA(H)                      | Minimum Descent<br>Altitude (Height)      |
| MDM                         | Mechanical Dispatch<br>Manual             |

|      |                                                    |
|------|----------------------------------------------------|
| MEA  | Minimum Enroute<br>Altitude                        |
| MED  | Medium                                             |
| MEL  | Minimum Equipment<br>List                          |
| MEW  | Manufacturer's Empty<br>Weight                     |
| MFD  | Multifunction Display                              |
| MHZ  | Megahertz                                          |
| MI   | Miles                                              |
| MIC  | Microphone                                         |
| MIN  | Minimum                                            |
| MKR  | Marker                                             |
| MLS  | Microwave Landing<br>System                        |
| MLW  | Maximum Landing<br>Weight                          |
| MM   | Middle Marker                                      |
| MMO  | Maximum Mach<br>Operating Speed                    |
| MNPS | Minimum Navigation<br>Performance<br>Specification |
| MOCA | Minimum Obstruction<br>Clearance Altitude          |
| MOD  | Modify or<br>Module                                |
| MON  | Monitor                                            |
| MORA | Minimum Off Route<br>Altitude                      |
| MPH  | Miles Per Hour                                     |
| MSA  | Minimum Safe Altitude                              |
| MSG  | Message                                            |

|           |                                      |
|-----------|--------------------------------------|
| MSGS RCVD | Messages Received                    |
| MSL       | Mean Sea Level                       |
| M-SPD     | Manual Speed                         |
| MSU       | Mode Selector Unit                   |
| MTG       | Miles To Go                          |
| MTOW      | Maximum Take-Off Weight              |
| MTRS      | Meters                               |
| MTW       | Maximum Taxi Weight                  |
| MU        | Management Unit                      |
| MUH       | Minimum Use Height                   |
| MUX       | Multiplexer                          |
| MZFW      | Maximum Zero Fuel Weight             |
| <b>N</b>  |                                      |
| N         | Normal                               |
| NAC       | Nacelle                              |
| NADP      | Noise Abatement Departure Procedures |
| NAR       | North American Route                 |
| NAV       | Navigation                           |
| NAV RAD   | Navigation Radio                     |
| ND        | Navigation Display                   |
| NEUT      | Neutral                              |
| Negative  | NEG                                  |
| NGS       | Nitrogen Generating System           |
| NLG       | Nose Landing Gear                    |
| NLT       | No Later Than                        |
| NM        | Nautical Mile(s)                     |
| NNC       | Non-Normal Checklists                |

|            |                                                                                                                       |
|------------|-----------------------------------------------------------------------------------------------------------------------|
| NNM        | Non-Normal Maneuvers                                                                                                  |
| NPS        | Navigation Performance Scales                                                                                         |
| NORM       | Normal                                                                                                                |
| NW         | Nose Wheel                                                                                                            |
| NWS        | Nose Wheel Steering                                                                                                   |
| 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)                                                                       |
| <b>O</b>   |                                                                                                                       |
| OAP        | Overhead Annunciator Panel (a.k.a. EOAP)                                                                              |
| OAT        | Outside Air Temperature                                                                                               |
| OBS        | Observer                                                                                                              |
| OCC        | Operations Control Center                                                                                             |
| ODM        | Operational Data Manual                                                                                               |
| OEW        | Operating Empty Weight                                                                                                |
| OFST       | Offset                                                                                                                |
| OHU        | Overhead Unit                                                                                                         |
| OM         | Outer Marker                                                                                                          |
| OP         | Open                                                                                                                  |
| OPR        | Operate                                                                                                               |
| OPRN       | Operation                                                                                                             |
| OUTBD DSPL | Outboard Display                                                                                                      |



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|           |                                                                                      |
|-----------|--------------------------------------------------------------------------------------|
| OVHD      | Overhead                                                                             |
| OVHT      | Overheat                                                                             |
| OVRD      | Override                                                                             |
| OVSPD     | Overspeed                                                                            |
| OXY or O2 | Oxygen                                                                               |
| <b>P</b>  |                                                                                      |
| PA        | Passenger Address                                                                    |
| PAPI      | Precision Approach Path Indicator                                                    |
| PAR       | Precision Approach Radar                                                             |
| PASS      | Passenger                                                                            |
| PB        | Push Button                                                                          |
| PBE       | Protective Breathing Equipment                                                       |
| PCA       | Power Control Actuation                                                              |
| PCP       | Pilot Call Panel                                                                     |
| PCU       | Power Control Unit                                                                   |
| PDC       | Pitch Data Computer or<br>Performance Data Computer<br>or<br>Pre-Departure Clearance |
| PDI       | Pictorial Deviation Indication                                                       |
| PED       | Personal Electronic Device                                                           |
| PERF      | Performance                                                                          |
| PERF INIT | Performance Initialization                                                           |

|               |                                                                  |
|---------------|------------------------------------------------------------------|
| PES           | Pitch Enhancement System<br>or<br>Passenger Entertainment 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                                            |
| PLT(S)        | Pilot(s)                                                         |
| PM            | Pilot Monitoring                                                 |
| PMA           | Permanent Magnet Alternator                                      |
| PMC           | Power Management Control                                         |
| PNL           | Panel                                                            |
| PO            | Outside Air Pressure                                             |
| POS           | Position                                                         |
| POS INIT      | Position Initialization                                          |
| POS REF       | Position Reference                                               |
| PPH           | Pounds Per Hour                                                  |
| PPI           | Planned Position Indicator                                       |
| PPOS          | Present Position                                                 |
| PRES or PRESS | Pressure                                                         |
| PREV          | Previous                                                         |
| PRI           | Primary                                                          |

|          |                                                     |
|----------|-----------------------------------------------------|
| PRAIM    | Predictive Receiver Autonomous Integrity Monitoring |
| PRED     | Prediction                                          |
| PROC     | Procedure                                           |
| PROC T   | Procedure Turn                                      |
| PROG     | Progress                                            |
| PROT     | Protection                                          |
| PROX     | Proximity                                           |
| P/RST    | Push To Reset                                       |
| PRV      | Pressure Regulating Valve                           |
| P/S      | Pitot/Static                                        |
| PSI      | Pounds Per Square Inch                              |
| PSIG     | Pounds per Square Inch Gage                         |
| PSS      | Passenger Service System                            |
| PSU      | Passenger Service Unit                              |
| PTH      | Path                                                |
| PTT      | Push To Talk                                        |
| PTU      | Power Transfer Unit                                 |
| PWR      | Power                                               |
| PWS      | Predictive Windshear System                         |
| <b>Q</b> |                                                     |
| Q        | Quantity                                            |
| QFE      | Local Station Pressure                              |
| QNH      | Altimeter Setting                                   |
| QRH      | Quick Reference Handbook                            |
| QT       | Quart                                               |
| QTY      | Quantity                                            |

|                 |                                          |
|-----------------|------------------------------------------|
| <b>R</b>        |                                          |
| R               | Right                                    |
| RA              | Radio Altitude or Resolution Advisory    |
| RAAC            | Rotor Active Clearance Control           |
| RAD             | Radio                                    |
| RAIM            | Receiver Autonomous Integrity Monitoring |
| RAT             | Ram Air Temperature or Ram Air Turbine   |
| RCL             | Request for Clearance                    |
| RDMI            | Radio Distance Magnetic Indicator        |
| REC or RCDR     | Recorder                                 |
| RECIR or RECIRC | Recirculation                            |
| REF             | Reference                                |
| RET             | Retract                                  |
| REV             | Reverse                                  |
| RF              | Radius-to-Fix (RF) Legs or Refill        |
| RMI             | Radio Magnetic Indicator                 |
| RMP             | Radio Management Panel                   |
| RON             | Remain Overnight                         |
| RNAV or RNV     | Area Navigation                          |
| RNP             | Required Navigational Performance        |
| RPL             | Rudder Pressure Limiter                  |
| RPM             | Revolutions Per Minute                   |
| RPR             | Rudder Pressure Reducer                  |

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|       |                                                     |
|-------|-----------------------------------------------------|
| RR    | Rolls Royce                                         |
| RSEP  | Rudder System Enhancement Program                   |
| RST   | Reset                                               |
| RSV   | Reserves                                            |
| 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                 |
| RWY   | Runway                                              |
| S     |                                                     |
| SA    | Special Authorization                               |
| 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                                          |
| SC    | Single Chime                                        |
| S/C   | Step Climb                                          |
| SD    | System Display                                      |
| S/D   | Step Descent                                        |
| SDAC  | System Data Acquisition Concentrator                |

|             |                                              |
|-------------|----------------------------------------------|
| SDCU        | Smoke Detection Control Unit                 |
| SDF         | Simplified Directional Facility              |
| SEC         | Spoiler Elevator Computer                    |
| SEI         | Standby Engine Indicator                     |
| SEL         | Select                                       |
| SELCAL      | Selective Calling                            |
| SENS        | Sensitivity                                  |
| SERV        | Service                                      |
| SFCC        | Slat/Flap Control Computer                   |
| SG          | Symbol Generator                             |
| SID         | Standard Instrument Departure                |
| SMGCS       | Surface Movement and Guidance Control System |
| SPD         | Speed                                        |
| SPDBRK      | Speedbrake                                   |
| SPD LIM     | Speed Limit                                  |
| SPLR        | Spoiler                                      |
| SRS         | Speed Reference System                       |
| STA         | Station                                      |
| STAB        | Stabilizer                                   |
| STAR        | Standard Terminal Arrival Route              |
| STAT or STS | Status                                       |
| STAT INV    | Static Inverter                              |
| STBY        | Standby                                      |
| STD         | Standard                                     |
| STRG        | Steering                                     |

|                |                                              |
|----------------|----------------------------------------------|
| SW             | Switch                                       |
| SWTG           | Switching                                    |
| 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 |
| TCI            | Thrust Computer Indicator                    |
| T/D            | Top of Descent                               |
| TDZ            | Touch Down Zone                              |
| TDZE           | Touch Down Zone Elevation                    |
| TE             | Trailing Edge                                |
| TEMP           | Temperature                                  |
| TERR           | Terrain                                      |
| TFC            | Traffic                                      |
| TFR            | Transfer                                     |
| THR            | Throttle or Thrust                           |

|                   |                                 |
|-------------------|---------------------------------|
| THR HOLD          | Throttle Hold                   |
| THS               | Trimmable Horizontal Stabilizer |
| TK                | Tank                            |
| TLA               | Throttle Lever Angle            |
| 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 or TOGA     | Takeoff/Go-Around               |
| TOGW              | Takeoff Gross Weight            |
| T-P               | Turn Point                      |
| TPR               | Turbine Pressure Ratio          |
| TR                | Traffic Resolution              |
| TRK               | Track                           |
| TRP               | Thrust Rating Panel             |
| TRU               | Transformer Rectifier Unit      |
| TURB              | Turbine or Turbulence           |
| U                 |                                 |
| UNLK              | Unlock                          |
| UNLKD             | Unlocked                        |
| UNSCHD or UNSCHED | Unscheduled                     |
| UPR DSPL          | Upper Display                   |
| U.S.              | United States                   |
| USB               | Upper Side Band                 |

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|               |                                                                     |
|---------------|---------------------------------------------------------------------|
| UTC           | Universal Time Coordinated                                          |
| UTIL          | Utility                                                             |
| V             |                                                                     |
| V             | Volt                                                                |
| 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                                                            |
| VFE           | Maximum Velocity Flaps Extended                                     |
| VFR           | Visual Flight Rules                                                 |
| VG            | Vertical Gyro                                                       |
| VHF           | Very High Frequency                                                 |
| VIB           | Vibration                                                           |
| VLV           | Valve                                                               |
| VMC           | Visual Meteorological Conditions                                    |
| VMCA          | Minimum Control Speed Air 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                 |
| VSID     | Vertical Speed Indicator Display         |
| 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            |
| WHC      | Window Heat Computer                     |
| WHL      | Wheel                                    |
| WPT      | Waypoint                                 |
| WT       | Weight                                   |
| WTB      | Wing Tip Brake                           |
| WXR      | Weather Radar                            |

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| X                |                                |
|------------------|--------------------------------|
| X-FEED           | Crossfeed                      |
| XFR              | Transfer                       |
| XMTR             | Transmitter                    |
| XPDR or<br>XPNDR | Transponder                    |
| XTK              | Cross Track                    |
| Z                |                                |
| ZFCG             | Zero Fuel Center of<br>Gravity |
| ZFW              | Zero Fuel Weight               |

## Revision Record

### Revision Record

## Chapter RR

### Section RR

### Revision Transmittal Letter

To: All holders of Delta Air Lines, Inc. Operations Manuals.

Subject: Operations Manual Revision.

This revision reflects the most current information available to Delta Air Lines, Inc. 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 |
|-----|--------------------|------------|
| 0   | January 26, 2009   |            |
| 2   | August 1, 2009     |            |
| 4   | January 1, 2010    |            |
| 6   | June 14, 2010      |            |
| 8   | March 31, 2011     |            |
| 10  | July 21, 2011      |            |
| 12  | November 7, 2012   |            |
| 14  | September 10, 2013 |            |
| 16  | December 2, 2014   |            |
| 18  | July 2, 2015       |            |
| 20  | December 17, 2015  |            |
| 22  | July 15, 2016      |            |

| No. | Revision Date    | Date Filed |
|-----|------------------|------------|
| 1   | June 1, 2009     |            |
| 3   | October 1, 2009  |            |
| 5   | April 19, 2010   |            |
| 7   | February 3, 2011 |            |
| 9   | April 21, 2011   |            |
| 11  | April 26, 2012   |            |
| 13  | March 26, 2013   |            |
| 15  | June 17, 2014    |            |
| 17  | March 12, 2015   |            |
| 19  | August 27, 2015  |            |
| 21  | May 20, 2016     |            |
|     |                  |            |

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## General

Delta Air Lines, Inc. issues operations manual revisions to provide new or revised procedures and information. Formal revisions also incorporate appropriate information from previously issued 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 Transmittal Letter, a new Revision Record, Revision Highlights, and a current List of Effective Pages. Use the information on the new Revision Record and List of Effective Pages to verify the operations manual content.

The 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).

0.2 - Removed Fuel Crossfeed (ETOPS)...Cycled...PM.

#### Tail Strike

0.28 - Updated procedure for cross-fleet standardization.



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## **Section 2 - Air Systems**

### **CABIN ALTITUDE WARNING or Rapid Depressurization**

2.1 - Removed "(If installed and operative)".

2.1 - Updated Condition to "The Cabin Altitude warning light illuminates or the intermittent warning horn sounds in flight above 10,000 ft MSL."

### **AUTO FAIL or Unscheduled Pressurization Change**

2.6 - Removed Fuel Crossfeed (ETOPS)...Cycled...PM.

## **Section 3 - Anti-Ice, Rain**

### **WINDOW OVERHEAT**

3.6 - Added step 4 for aircraft 3856-3920 to wait 5 seconds after turning the WINDOW HEAT switch ON, noting that the master caution and ANTI-ICE system annunciator lights will illuminate then extinguish within 5 seconds.

## **Section 4 - Automatic Flight**

### **AUTOPILOT DISENGAGE**

4.1 - Updated Airway Manual reference.

## **Section 5 - Communications**

### **ACARS Electrical Power Loss**

5.1 - Updated Airway Manual reference.

### **ACARS MU Fail or DU Fail**

5.1 - Updated Airway Manual reference.

### **Audio Control Panel - Degraded**

5.3 - Removed "and PA microphone if they are installed on the control stand."

## **Section 6 - Electrical**

### **STANDBY POWER OFF**

6.13 - Updated Airway Manual reference.

## **Section 7 - Engines, APU**

### **Engine Low Oil Quantity**

7.29 - Combined steps 1 and 2 into a Choose one.

### **One Engine Inoperative Landing**

7.35 - Removed Fuel Crossfeed (ETOPS)...Cycled...PM.

## **Section 8 - Fire Protection**

### **CARGO FIRE**

8.16 - Removed Fuel Crossfeed (ETOPS)...Cycled...PM.

---

## **Section 9 - Flight Controls**

### **Runaway Stabilizer**

- 9.1 - Updated Airway Manual reference.
- 9.2 - Removed Fuel Crossfeed (ETOPS)...Cycled...PM.

### **All Flaps Up Landing**

- 9.5 - Removed Fuel Crossfeed (ETOPS)...Cycled...PM.

### **Jammed or Restricted Flight Controls**

- 9.9 - Updated Airway Manual reference.
- 9.12 - Removed Fuel Crossfeed (ETOPS)...Cycled...PM.

### **LEADING EDGE FLAPS TRANSIT**

- 9.16 - Removed Fuel Crossfeed (ETOPS)...Cycled...PM.

### **SPEED BRAKE DO NOT ARM**

- 9.19 - Removed Fuel Crossfeed (ETOPS)...Cycled...PM.

### **STABILIZER OUT OF TRIM**

- 9.24 - Updated Airway Manual reference.

### **Stabilizer Trim Inoperative**

- 9.26 - Updated Airway Manual reference.
- 9.29 - Removed Fuel Crossfeed (ETOPS)...Cycled...PM.

### **Trailing Edge Flap Asymmetry**

- 9.35 - Removed Fuel Crossfeed (ETOPS)...Cycled...PM.

### **Trailing Edge Flap Disagree**

- 9.40 - Removed Fuel Crossfeed (ETOPS)...Cycled...PM.

### **Trailing Edge Flaps Up Landing**

- 9.48 - Removed Fuel Crossfeed (ETOPS)...Cycled...PM.

## **Section 10 - Flight Instruments, Displays**

### **Airspeed Unreliable**

- 10.4 - Removed Fuel Crossfeed (ETOPS)...Cycled...PM.

## **Section 11 - Flight Management, Navigation**

### **IRS FAULT**

- 11.37 - Updated Airway Manual reference.

---

## **Section 13 - Hydraulics**

### **LOSS OF SYSTEM A**

13.4 - Removed Fuel Crossfeed (ETOPS)...Cycled...PM.

### **MANUAL REVERSION or LOSS OF SYSTEM A AND SYSTEM B**

13.15 - Removed Fuel Crossfeed (ETOPS)...Cycled...PM.

## **Section 14 - Landing Gear**

### **AUTO BRAKE DISARM**

14.5 - Removed Fuel Crossfeed (ETOPS)...Cycled...PM.

### **Landing Gear Lever Jammed in the Up Position**

14.14 - Removed Fuel Crossfeed (ETOPS)...Cycled...PM.

### **Landing Gear Lever Will Not Move Up After Takeoff**

14.19 - Removed Fuel Crossfeed (ETOPS)...Cycled...PM.

### **Partial or All Gear Up Landing**

14.24 - Removed Fuel Crossfeed (ETOPS)...Cycled...PM.

## **Section 15 - Warning Systems**

### **TAKEOFF CONFIGURATION**

15.1 - Removed "(If installed and operative)".

15.1 - Removed WARNING HORN (INTERMITTENT) or WARNING LIGHT - CABIN ALTITUDE OR TAKEOFF CONFIGURATION NNC.

### **PSEU**

15.4 - Removed duplicate Tail Strike NNC; chapter 0 contains the remaining Tail Strike NNC.

---

## **Chapter NNOI - Non-Normal Operational Information**

### **Section 1 - Non-Normal Ops Info**

#### **ILS Approach Equipment Requirements (HUD used) (Not for Dispatch)**

NNOI.1.2 - Added "(I)" to CAT I for Autopilot(s) and/or Flight Directors.

NNOI.1.2 - Added "(I)" For approaches with "autopilot coupled approaches not authorized" restrictions, hand-flown CAT I are authorized to applicable minimums with an operable flight director."

#### **ILS Approach Equipment Requirements (HUD not used) (Not For Dispatch)**

NNOI.1.3 - Added "(E)" to CAT I for Autopilot(s) and/or Flight Directors.

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NNOL.1.3 - Added "(E) For approaches with “autopilot coupled approaches not authorized” restrictions, hand-flown CAT I are authorized to applicable minimums with an operable flight director."

#### RNAV Approach Equipment Requirements (Not for Dispatch)

NNOL.1.4 - Updated Radio Altimeter for RNAV (GPS) from 1 to 0.

---

## Chapter NNCI - Non-Normal Checklist Instructions

### Section 1 - Non-Normal Checklists

#### Non-Normal Checklist Assumptions

NNCI.1.4 - Updated language in first bullet to read "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."

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## Chapter RR - Revision Record

### Section Intro - Introduction

#### Organization

RR.Intro.3 - Added human factors due to addition of new chapters to the FCTM.

### Section Abbrev - Abbreviations

RR.Abbrev.10 - Changed LVL CH or LVL/CH to LVL CHG or LVL/CHG.

## Revision Record

## Chapter RR

### QRH List of Effective Pages - FAA Approved

### Section LEP

| Page                                                          | Date          |
|---------------------------------------------------------------|---------------|
| <b>Quick Reference Handbook</b>                               |               |
| Quick Action Index                                            |               |
| * QA.Index.1-2                                                | July 15, 2016 |
| Annunciated (tab)                                             |               |
| * Annun.Index.1-8                                             | July 15, 2016 |
| Unannunciated (tab)                                           |               |
| * Unann.Index.1-4                                             | July 15, 2016 |
| Alphabetical (tab)                                            |               |
| * Alpha.Index.1-12                                            | July 15, 2016 |
| 0 Miscellaneous (tab)                                         |               |
| * 0.TOC.1-2                                                   | July 15, 2016 |
| * 0.1-32                                                      | July 15, 2016 |
| 1 Airplane General, Emergency Equipment, Doors, Windows (tab) |               |
| * 1.TOC.1-2                                                   | July 15, 2016 |
| * 1.1-24                                                      | July 15, 2016 |
| 2 Air Systems (tab)                                           |               |
| * 2.TOC.1-2                                                   | July 15, 2016 |
| * 2.1-38                                                      | July 15, 2016 |
| 3 Anti-Ice, Rain (tab)                                        |               |
| * 3.TOC.1-2                                                   | July 15, 2016 |
| * 3.1-8                                                       | July 15, 2016 |
| 4 Automatic Flight (tab)                                      |               |
| * 4.TOC.1-2                                                   | July 15, 2016 |
| * 4.1-2                                                       | July 15, 2016 |
| 5 Communications (tab)                                        |               |
| * 5.TOC.1-2                                                   | July 15, 2016 |
| * 5.1-8                                                       | July 15, 2016 |

| Page                                   | Date          |
|----------------------------------------|---------------|
| 6 Electrical (tab)                     |               |
| * 6.TOC.1-2                            | July 15, 2016 |
| * 6.1-14                               | July 15, 2016 |
| 7 Engines, APU (tab)                   |               |
| * 7.TOC.1-2                            | July 15, 2016 |
| * 7.1-42                               | July 15, 2016 |
| 8 Fire Protection (tab)                |               |
| * 8.TOC.1-2                            | July 15, 2016 |
| * 8.1-26                               | July 15, 2016 |
| 9 Flight Controls (tab)                |               |
| * 9.TOC.1-2                            | July 15, 2016 |
| * 9.1-50                               | July 15, 2016 |
| 10 Flight Instruments, Displays (tab)  |               |
| * 10.TOC.1-2                           | July 15, 2016 |
| * 10.1-14                              | July 15, 2016 |
| 11 Flight Management, Navigation (tab) |               |
| * 11.TOC.1-2                           | July 15, 2016 |
| * 11.1-40                              | July 15, 2016 |
| 12 Fuel (tab)                          |               |
| * 12.TOC.1-2                           | July 15, 2016 |
| * 12.1-20                              | July 15, 2016 |
| 13 Hydraulics (tab)                    |               |
| * 13.TOC.1-2                           | July 15, 2016 |
| * 13.1-20                              | July 15, 2016 |
| 14 Landing Gear (tab)                  |               |
| * 14.TOC.1-2                           | July 15, 2016 |
| * 14.1-28                              | July 15, 2016 |

\* = Revised, Added, or Deleted

| Page                                     | Date          |
|------------------------------------------|---------------|
| 15 Warning Systems (tab)                 |               |
| * 15.TOC.1-2                             | July 15, 2016 |
| * 15.1-4                                 | July 15, 2016 |
| Non-Normal Operational Information (tab) |               |
| * NNOI.TOC.0.1-2                         | July 15, 2016 |
| * NNOI.1.1-6                             | July 15, 2016 |
| Non-Normal Checklist Instructions (tab)  |               |
| * NNCI.TOC.0.1-2                         | July 15, 2016 |
| * NNCI.1.1-10                            | July 15, 2016 |
| Revision Record (tab)                    |               |
| * RR.TOC.RR.1-2                          | July 15, 2016 |
| * RR.ModID.1-4                           | July 15, 2016 |
| * RR.Intro.1-6                           | July 15, 2016 |
| * RR.Abbrev.1-18                         | July 15, 2016 |
| * RR.RR.1-6                              | July 15, 2016 |
| * RR.LEP.1-2                             | July 15, 2016 |
| Evacuation                               |               |
| * Back Cover.1-2                         | July 15, 2016 |

\* = Revised, Added, or Deleted

**Evacuation Checklist is on the  
reverse side of this page.**

Evacuation

Condition: Evacuation is needed.

- 1

PARKING BRAKE. . . . .

Set
- 2

Speedbrake lever . . . . .

DOWN
- 3

FLAP lever . . . . .

40
- 4

Pressurization mode selector . . . . .

MAN
- 5

Outflow VALVE switch . . . . .

Hold in OPEN  
until the outflow VALVE  
indication shows fully open  
to depressurize the airplane
- 6

Notify flight attendants "EASY VICTOR" three  
times.
- 7

If time allows, verify that the flaps are 40 before  
the engine start levers are moved to CUTOFF.
- 8

Engine start levers (both) . . . . .

CUTOFF
- 9

Notify flight attendants:  
"THIS IS THE CAPTAIN. EVACUATE, EVACUATE."
- 10

Advise the tower.
- 11

Engine and APU  
fire switches (all) . . . . .

Override and pull
- 12

If an engine or APU fire warning occurs:
- Illuminated fire switch. . . . .

Rotate to the stop  
    and hold for 1 second

