



MJC-8 Q400  
PRO/TRAINING EDITION  
Version 1.0

# Abnormal and Emergency Procedures Manual

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## Chapter1: Checklist Instructions

The checklists are organized into chapters alphabetically by aircraft system or by type of Abnormal or Emergency Procedure. Each procedure is listed in the Table of contents at the beginning of the corresponding chapter.

The procedures presented in this manual are based on the best information available. Pilots should follow these procedures as long as they apply to the situation. If at any time the established procedures prove to be inadequate or no longer apply, the Crew's best judgment shall prevail.

Throughout this document, the boxes (shown below) indicate either Emergency Procedures (Black Box), or Non-Normal Procedures (Grey Box).

### EMERGENCY PROCEDURES

### NON-NORMAL PROCEDURE

Memory items (if applicable to the procedure) are contained in a single box and presented in the order of accomplishment.

When the PM is utilizing a procedure, it is recommended the PF utilize the highest level of automation available at that time and handle ATC communication duties until the procedure has been completed by the PM. This is on a workload permitting basis only.

## Duplicate Items

Checklist items that have duplicate (e.g., #1/#2 or Left/Right) systems, switches, levers, etc., will be preceded by a blank underlined space. In such a case, the Pilot referring to the item or reading the checklist shall substitute the number of the affected system, switch, lever, etc.

Example: The associated Aux Pump must be turned off when securing the left engine. Checklist reads:

     **AUX PUMP**..... **OFF**

Pilot reading checklist states: “**Number one aux pump, off.**”

## Confirmation and Command Items

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Whenever an applicable procedural item is a Power Lever, Condition Lever, or PULL/FUEL HYD OFF handle, the PM shall confirm the correct lever/handle with the PF prior to initiating the procedural item.

*Example:*

Prior to shutting down the #1 engine, the PM shall touch the correct lever/handle, state the correct handle/lever, (ex. #1 “Power Lever”), at which point the PF will confirm lever/handle and state, “Confirmed”. Once the proper lever/handle has been confirmed by the PF, the PM shall state and complete the procedural item.

### **WARNING**

*The PF must visually confirm the affected engine or system following the initial malfunction callout. Failure to do so may result in the inadvertent shutdown of the operating engine or system.*

The accomplishment of certain checklist items may require the transfer of control of the aircraft to the other Pilot until the particular item can be accomplished.

## Warnings, Cautions, and Notes

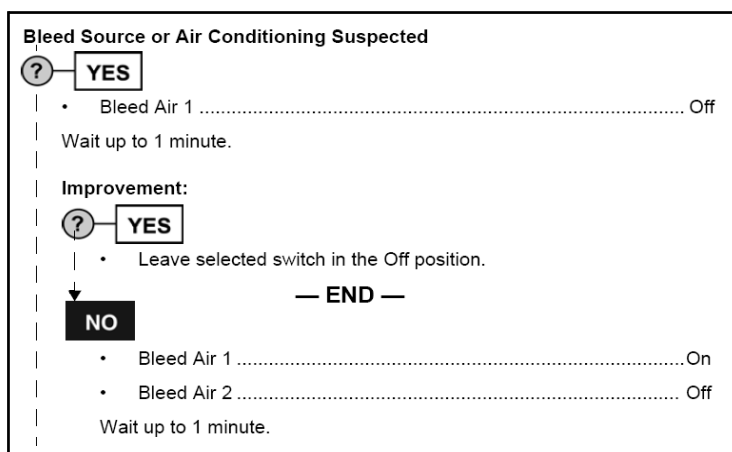
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All advisory items will be read aloud. Exception: when reading a procedure, if an advisory item does not apply to the existing condition, it need not be read aloud. Simply state “Not applicable”, and continue to the next applicable checklist item.

## Condition Statement

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Some checklist procedures will present the Pilot with alternatives for completing the checklist. This situation occurs when the outcome of a checklist item is not predictable (e.g., “Did the smoke stop after turning off the Bleed switch?”). The Pilot conducting the checklist must decide which of the checklist choices to complete, or if the items are applicable, based upon the outcome of previous steps. If possible, the decision is based on a “YES”/“NO” answer. These “Condition Statements” are identified with arrow lines that take the checklist reader to one action, or another. An example of this is shown below:



As is shown above, the Crewmember performing the checklist will follow the arrow to the alternative action appropriate to the condition. Alternative items are performed, when required, by reference to the checklist. Dashed arrows indicate a secondary conditional decision to be made.

## End Statements

An ----END---- statement within a checklist indicates all actions appropriate to the existing condition have been accomplished by reaching this point in the checklist. This is a stopping point for this checklist, where no further action is required and no further checklist items are to be read. See the example above.

## Land Immediately at Nearest Suitable Airport

Procedures pertaining to engine failures, fumes/smoke/fire, known aircraft damage, controllability issues, life-threatening passenger or Crewmember illness, and failures or malfunctions of systems or components critical for the safety of flight shall use the term “land immediately at nearest suitable airport”. These circumstances require landing at the nearest suitable airport in point of time. When landing “immediately at nearest suitable airport”, consideration shall NOT be given to passenger handling or convenience, or to the availability of maintenance or ground handling unless the two airports are equidistant in time from the aircraft's current location. The only considerations when selecting an airport are weather, runway availability, and ARFF equipment available at the airport of intended landing.

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## Chapter 2: Air Conditioning, Pressurization, and Pneumatics

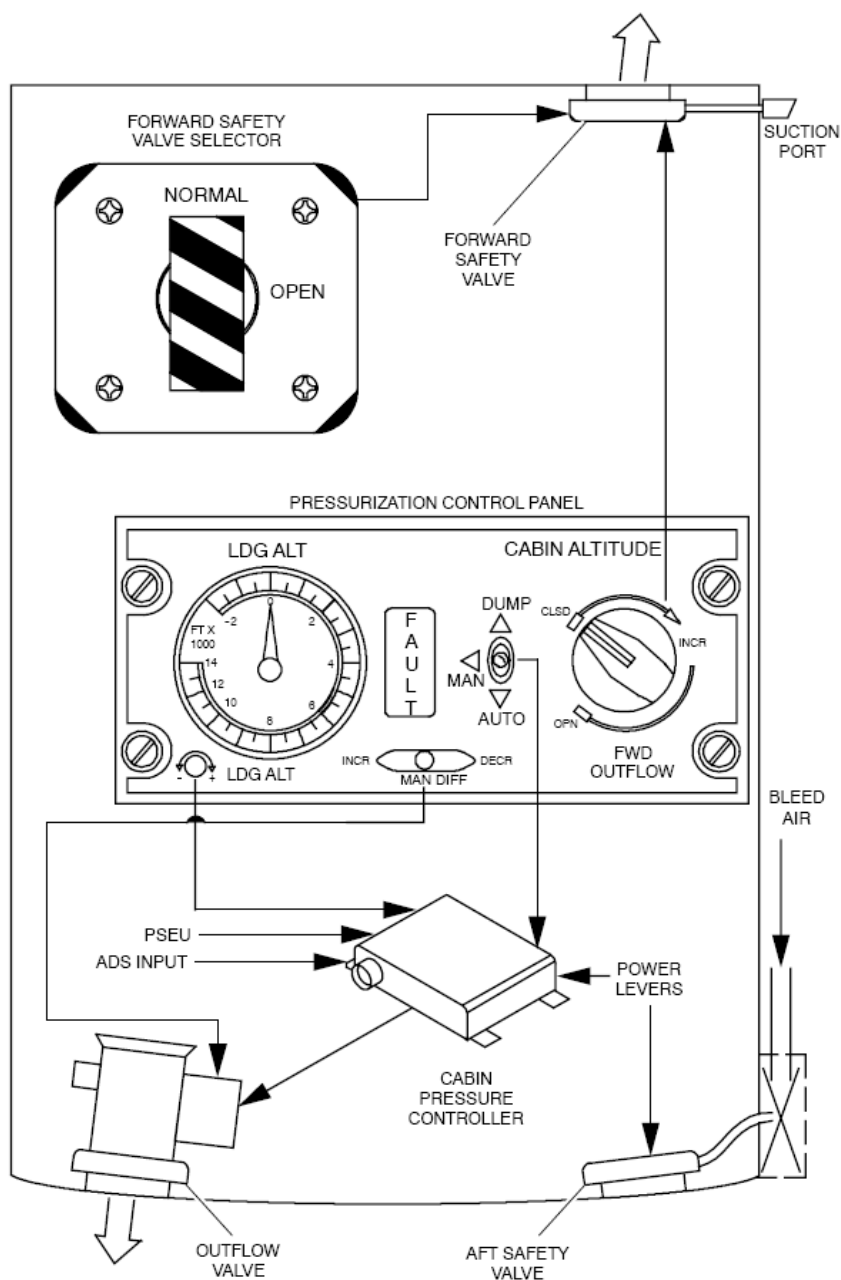
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# Chapter 2: Air Conditioning, Pressurization, and Pneumatics

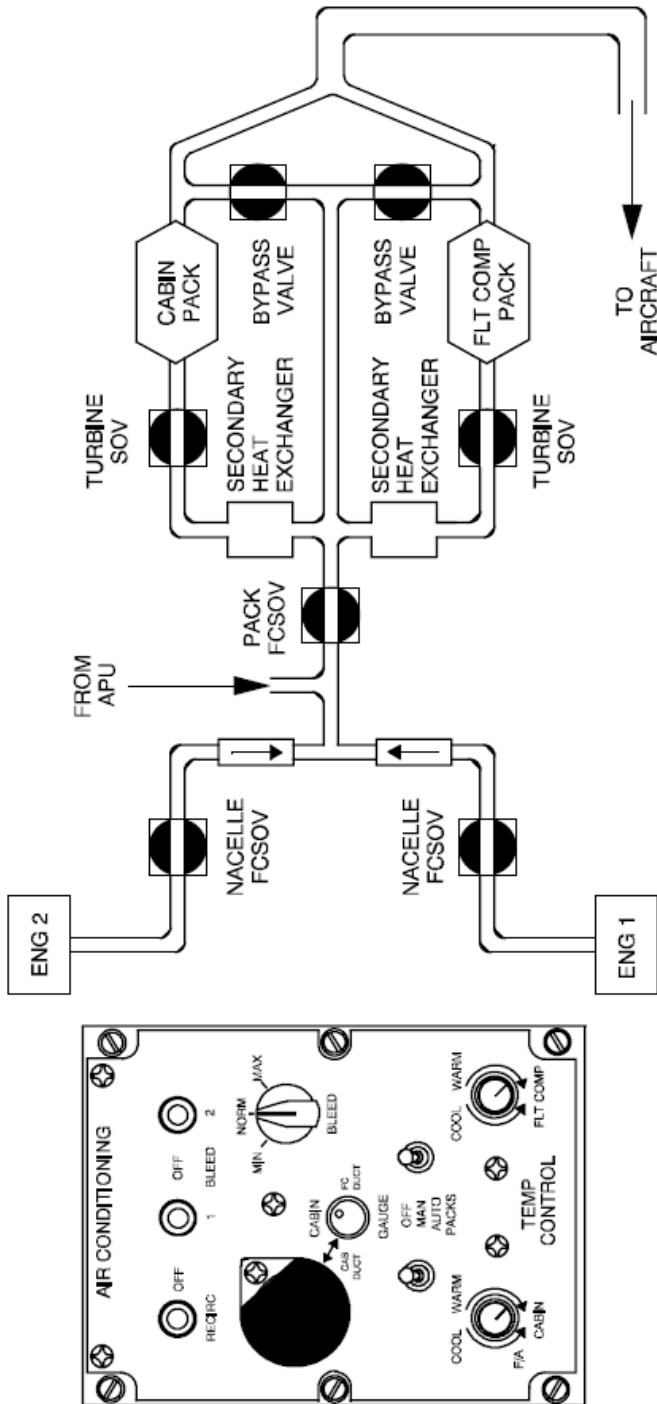
## Pressurization System



PSM 1-84-1B (Oct 31, 2010)

Figure 2-1: Pressurization System

# Air Conditioning System



PSM 1-84-1B (Oct 31, 2010)

Figure 2-2: Air Conditioning System

## RAPID DEPRESSURIZATION / EMERGENCY DESCENT

- Oxygen Masks.....ON/100%
- BOOM/MASK switch.....MASK
- FASTEN BELTS switch.....ON

### EMERGENCY DESCENT, accomplish as required:

**NOTE:**

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

- POWER levers..... FLIGHT IDLE
- Condition Levers..... MAX
- Airspeed .....  $V_{MO}$
- ATC ..... Notify

— END —

## CABIN PRESSURIZATION FAILURE

**OR**

### “CABIN PRESS” (Warning Light)

- CABIN ALT Indicator.....Check CABIN ALT

#### Is **FAULT** light illuminated on the Cabin Pressure Controller?

DH8-400-SL-21-014 APR 22/08

**?** — **YES**

- AUTO/MAN/DUMP switch ..... Select MAN for 2  
..... seconds then AUTO

#### Is control of pressurization regained?

**?** — **YES**

- No further action required.

— END —

**NO**

#### AIR CONDITIONING Control Panel:

- CABIN pack and FLT COMP pack switches.....AUTO
- BLEED switches 1 and 2.....BLEED
- BLEED selector.....MAX

#### Pressurization Control Panel:

- AUTO/MAN/DUMP switch.....AUTO
- CABIN ALTITUDE FWD OUTFLOW ..... CLSD

#### First Officer Side Panel—Safety Guard:

- FWD OUTFLOW VALVE ..... NORM (Closed)

— CONTINUED —

### Is control of pressurization regained:

**?** **YES**

- No further action required.

— END —

**NO**

- AUTO/MAN/DUMP switch .....MAN
- MAN DIFF switch.....Select INCR for 2 seconds

**NOTE:**

INCR--increases CABIN DIFF and decreases CABIN ALT

### Is CABIN DIFF increasing and CABIN ALT decreasing:

**?** **YES**

- Control of pressurization is regained.
- MANUAL MODE OPERATION ([Page 2-6](#)) .....Accomplish

— END —

**NO**

- Descend to below 14,000 ft as soon as possible.
- UNPRESSURIZED FLIGHT ([Page 2-5](#)) ..... Accomplish

— END —

## UNPRESSURIZED FLIGHT

- AUTO/MAN/DUMP switch.....DUMP
- BLEED switches 1 and 2 ..... BLEED
- BLEED selector .....NORM or MAX
- Oxygen Masks ..... As Req'd

### For flight with BLEED switches OFF:

- RAM VENTILATION ([Page 2-6](#)) ..... Accomplish

— END —

## RAM VENTILATION

- BLEED switches 1 and 2 ..... OFF
- BLEED selector ..... MIN
- AUTO/MAN/DUMP switch ..... MAN
- MAN DIFF switch ..... INCR (hold 50 seconds)
- CABIN ALTITUDE FWD OUTFLOW ..... OPN (Full Clockwise)
- FWD OUTFLOW VALVE ..... OPEN

**NOTE:**

Ram Ventilation is most effective above 150 KIAS.

— END —

## PRESSURIZATION — MANUAL MODE OPERATION

**CAUTION:**

*Any emergency encountered while operating with MAN MODE takes priority. Do not be distracted by management of this system. Both Safety Valves will prevent overpressurization.*

**NOTE:**

If using MAN Mode in accordance with an MEL 21-30-5: Before departure with power supplied to the aircraft, select AUTO/MAN/DUMP switch to MAN and hold MANDIFF switch to INCR for 15 seconds. This will provide pre-pressurization during takeoff.

- AUTO/MAN/DUMP switch ..... MAN
- MAN DIFF switch ..... Select INCR/DECR

INCR:	Increases CABIN DIFF and decreases CABIN ALT
DECR:	Decreases CABIN DIFF and increases CABIN ALT

**NOTE:**

1. Max Altitude in MAN MODE is 25,000 ft.
  2. Hold the MAN DIFF switch to INCR or DECR as applicable for 1 to 2 second increments max.
  3. CABIN RATE will lag behind MAN DIFF switch inputs by 2 to 3 seconds.
- CABIN RATE..... +/- 500-1000 FPM
  - CABIN ALT schedule placard..... Follow
  - When desired CABIN DIFF and ALT are achieved, adjust MAN DIFF switch to maintain zero CABIN RATE

**Prior to Starting Approach:**

**NOTE:**

1. The intent of depressurizing prior to starting the approach is to decrease pilot workload and distractions during a critical phase of flight.
  2. Starting this procedure no higher than 2500ft AFE is best but does not prevent depressurizing earlier at PIC discretion.
  3. Especially for mountain operations, if CABIN ALT reaches 9800ft while executing the checklist items below, the CABIN PRESS Warning Light will illuminate.
- MAN DIFF switch.....DECR (500-1000 FPM to depressurize)
  - CABIN DIFF.....Check (0.5 psi or less)
  - AUTO/MAN/DUMP switch.....DUMP
  - BLEED switches 1 and 2.....OFF

— END —

## LOSS OF CABIN ALTITUDE, CABIN RATE and CABIN DIFF INDICATORS

(All Indicators at Zero)

- Descend to below 14,000 ft. as soon as possible.
- AUTO/MAN/DUMP switch.....MAN
- MAN DIFF switch.....DECR (during descent)
- UNPRESSURIZED FLIGHT ([Page 2-5](#)) ..... Accomplish

— END —

## CABIN DIFF GREATER THAN 1.0 PSI ON APPROACH

- CABIN ALTITUDE FWD OUTFLOW..... OPN (Fully Clockwise)

**NOTE:**

If CABIN DIFF does not decrease, assume indication failure.

**Prior to Landing:**

- RAM VENTILATION ([Page 2-6](#))..... Accomplish

— END —

## “CABIN PACK HOT” or “FLT COMPT PACK HOT” (Caution Light)

- CABIN pack or FLT COMP pack switch..... OFF
- BLEED selector.....MAX

— END —



**"CABIN PACK HOT" *and*  
"FLT COMPT PACK HOT"  
(Caution Lights)**

- CABIN pack and FLT COMP pack switches ..... OFF
- FASTEN BELTS switch.....ON
  - Descend to below 14,000 ft. as soon as possible.

**NOTE:**

ECS pack airflow is lost and cabin will depressurize.

When CABIN DIFF pressure has decreased to 0.5 psi or less:

- RAM VENTILATION ([Page 2-6](#))..... Accomplish

— END —

**"CABIN DUCT HOT" *or*  
"FLT COMPT DUCT HOT"  
(Caution Light)**

- CAB DUCT/CABIN/FC DUCT GAUGE..... Confirm Abnormal Temp
- CABIN pack or FLT COMP pack switch..... OFF
- BLEED selector.....MAX

— END —

**"#1 BLEED HOT" *or*  
"#2 BLEED HOT"  
(Caution Light)**

- \_\_\_BLEED switch (affected side) ..... OFF

— END —

## “#1 BLEED HOT” and “#2 BLEED HOT” (Caution Lights)

**Caution lights illuminated during takeoff with BLEED 1 and BLEED 2 switches OFF?**

**?** **YES**

**NOTE:**

Conduct the following procedure during the takeoff climb.

- BLEED switches 1 and 2.....BLEED

**After 10 seconds:**

BLEED switches 1 and 2..... OFF

**Are #1 and #2 BLEED HOT caution lights out?**

**?** **YES**

- BLEED switches 1 and 2.....BLEED
- BLEED selector.....As Req'd

**NO**

— END —

- BLEED switches 1 and 2.....OFF
  - BLEED selector.....MIN
  - FASTEN BELTS switch ..... ON
- Descend to below 14,000 ft as soon as possible.

**NOTE:**

ECS pack airflow is lost and cabin will depressurize.

**When CABIN DIFF pressure has decreased to 0.5 psi or less:**

- RAM VENTILATION ([Page 2-6](#)) .....Accomplish

— END —

## CRACKED WINDSHIELD

- Max Airspeed .....210 KIAS
  - AUTO/MAN/DUMP switch.....MAN
  - MAN DIFF switch ..... DECR (hold 2 seconds max)
  - Max CABIN DIFF .....DECR to maintain < 3.0 psi
  - FASTEN BELTS switch.....ON
- Descend to below 14,000 ft. if practical.
  - Use MAN DIFF switch to maintain < 3.0 psi diff, or less, in descent.
  - Refer to MANUAL MODE OPERATION for more detailed operation of MAN MODE.

### Prior to Starting Approach:

**NOTE:**

1. The intent of depressurizing prior to starting the approach is to decrease pilot workload and distractions during a critical phase of flight.
  2. Starting this procedure no higher than 2500ft AFE is best but does not prevent depressurizing earlier at PIC discretion.
  3. Especially for mountain operation, if CABIN ALT reaches 9800ft while executing the checklist items below. the CABIN PRESS Warning Light will illuminate.
- MAN DIFF switch .....DECR (500-1000 FPM to depressurize)
  - CABIN DIFF ..... Check (0.5 psi or less)
  - AUTO/MAN/DUMP switch.....DUMP
  - BLEED selector .....MIN
  - BLEED switches 1 and 2 ..... OFF

— END —

## “FUSELAGE DOORS” (Warning Light)

Is the airplane on the ground?

? YES

- Confirm affected door on MFD ‘DOORS’ page.
- Inspect and secure affected door.

— END —

NO

- FASTEN BELTS switch.....ON
- Confirm affected door on MFD ‘DOORS’ page.
- If operating the aircraft pressurized, confirm normal CABIN DIFF, CABIN ALT, and RATE.

**NOTE:**

If MEL 21-30-5 is being used for both AUTO and MAN mode of pressurization. Pressurization is NOT considered normal.

— CONTINUED —

## Is pressurization normal?

**?** **YES**

- FASTEN BELTSwitch.....ON
  - The flight may continue to the destination, return to point of departure, or continue to nearest airport where maintenance services are available.
  - Coordinate with Dispatch.
- Pressurization.....Continue to monitor
  - If pressurization is subsequently lost, CABIN PRESSURIZATION FAILURE ([Page 2-4](#)) accomplish.

— END —

**NO**

## Security of affected door is confirmed visually?

### NOTE:

If affected door is the AFT or FWD Baggage door, continue to “Security of the affected door cannot be confirmed visually”.

### **WARNING**

*Do not attempt to secure affected door.*

**?** **YES**

- FASTEN BELTSwitch.....ON
  - The flight may continue to the destination, return to point of departure, or continue to nearest airport where maintenance services are available.
  - Coordinate with Dispatch.
- Pressurization.....Continue to monitor
  - If pressurization is subsequently lost, CABIN PRESSURIZATION FAILURE ([Page 2-4](#)) accomplish.

— END —

**NO**

## Security of affected door cannot be confirmed visually or Operating handle of affected door is not in the closed position:

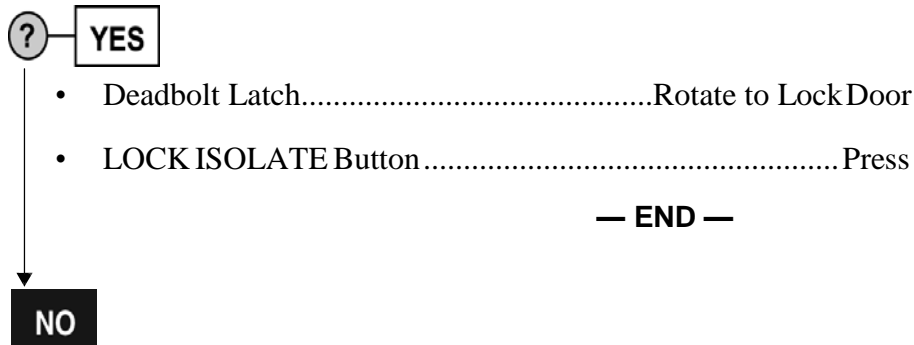
- FASTEN BELTSwitch.....ON
  - Land immediately at nearest suitable airport.

— END —

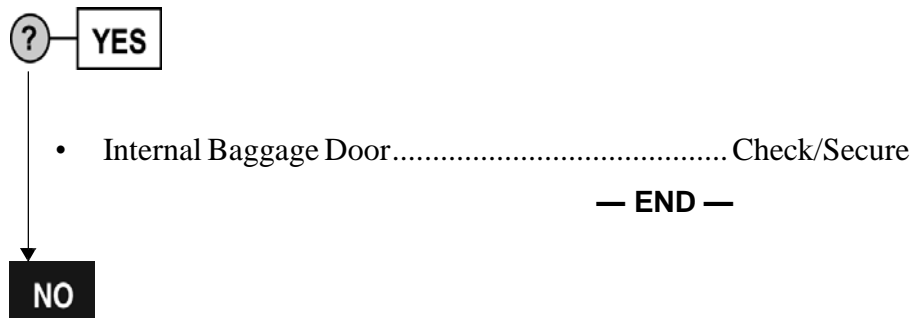
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## INTERNAL DOORS (Caution Light)

**“Internal Doors Fail” Advisory Light On (Overhead Pilot Control Switch Panel)?**



**“BAGG DOOR” Advisory Light On (Overhead Pilot Control Switch Panel)?**



**“CKPT DOOR” Advisory Light On (Overhead Pilot Control Switch Panel):**

- Flight Compartment Door..... Check/Secure
- END —

## EMERGENCY OPENING OF FLIGHT COMPARTMENT DOOR (Door Jammed)

- Unlock and step down on bottom hinge pin.
- Unlock and pull down upper hinge pin.
- Unlock and lift middle hinge pin.
- Push flight compartment door at hinge side.

**NOTE:**

It may require a large force to open the flight compartment door.

- Rotate the flight compartment door counter-clockwise and stow against the lavatory.

**NOTE:**

Upon forcing the flight compartment door open, it may fall straight aft and lay flat on the cabin floor.

— END —

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## AIRSTAIR DOOR, FAILURE TO OPEN

Is electrical power on?

? YES

- Airstair Door SOV Circuit Breaker (E1 L MAIN).....Pull

**NOTE:**

The Airstair Door failure to open may be associated with a failure of IOM 1 or IOM 2.

- Airstair Door.....Open
- **If Airstair door remains inoperative:**
- BATTERY MASTER switch.....OFF
- Airstair Door.....Open
- **If Airstair door remains inoperative:**
- Exit via the Aft Passenger Access door.

— END —

NO

- Exit via the After Passenger Access door.

— END —

## Chapter 3: APU, Engines, and Propellers

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## Chapter 3: APU, Engines, and Propellers

### ENGINE FAILURE/FIRE/SHUTDOWN (In Flight)

Affected Engine:

- \_\_\_POWER Lever ..... FLIGHT IDLE
- \_\_\_Condition Lever ..... FUEL OFF
- \_\_\_Alternate Feather (If required) ..... FTHR
- \_\_\_PULL FUEL/HYD OFF handle..... Pull
- \_\_\_TANK AUX PUMP ..... OFF

**If Fire:**

- EXTG switch (Affected engine) ..... FWD BTL

**If Fire Persists, Wait Up To 30 Seconds:**

- EXTG switch (Affected engine) ..... AFT BTL

- Landing Gear ..... UP
  - Flaps ..... 0
- Condition Lever (Operating engine)..... MAX
- Ice Protection ..... As Req'd

#### **CAUTION:**

*Propeller may unfeather if Autofeather is selected off before condition lever is selected to FUEL OFF.*

- AUTOFEATHER ..... OFF
- POWER levers ..... Operate together
- \_\_\_Ignition (Affected Engine)..... OFF
- BLEED switch (Affected engine)..... OFF
- BLEED switch (Operating engine)..... BLEED
- BLEED selector (Operating engine)..... NORM or MAX
  - Max Continuous power should be displayed on the ED.
- STBY HYD Press ..... ON
- \_\_\_TANK AUX PUMP (Operating engine)..... ON
  - Transfer fuel as required to maintain fuel balance.

— CONTINUED —

# Is Driftdown required?

**?** **YES**

SINGLE ENGINE SERVICE CEILING/ DRIFTDOWN SPEEDS								
Note: Icing Conditions with the Ice Protection Systems "On": Subtract 4,800 ft from single-engine service ceiling								
Cruising WT	KIAS		ISA -20	ISA -10	ISA	ISA +10	ISA +20	ISA +30
	Level 1	Level 2						
64500	158	178	19700	18000	16100	14200	12100	8900
64000	157	177	20000	18200	16300	14400	12300	9300
62000	154	174	20900	19100	17300	15400	13300	10400
60000	152	172	21800	20100	18300	16400	14400	11500
58000	149	169	22700	21000	19300	17500	15400	12600
56000	147	167	23700	22000	20300	18500	16500	13800
54000	144	164	24700	23000	21300	19600	17600	15000
52000	142	162	25000	24100	22400	20600	18700	16300
50000	139	159	25000	25000	23500	21700	19800	17600
48000	136	156	25000	25000	24600	22700	20900	18900
46000	134	154	25000	25000	25000	24000	22100	20000
44000	131	151	25000	25000	25000	25000	23300	21200
42000	130	150	25000	25000	25000	25000	24600	22500

Figure 3-1: Driftdown Speeds

- If unable to maintain airspeed at cruise altitude after engine failure/fire/shutdown, descend at driftdown speed.

**NO**

— CONTINUED —

**If #1 engine inoperative:**

- PTU CNTRL..... NORM (Off)
- DO NOT select PTU CNTRL to ON for landing.

**If #2 engine inoperative:**

- PTU CNTRL..... ON

**Landing Considerations:**

Abnormal Landing Distance Factors		
Flap	Ice Protection	
	Level 1	Level 2/3
10	1.4	1.4
15	1.4	1.4
35	1.5	1.5

Conditional Landing Distance Statement	
Level 1 Ice Protection	Landing Distance = 5100 ft
Wt. less than 64,500 lbs.	
Flap greater than or equal to 10°	
Dry Runway	
Airport Elevation less than 2000 ft	
Tailwind less than or equal to 10 kts.	

**After Landing:**

- If possible, clear the runway.

**Descent Checklist—One Engine Inoperative:**

- Altimeters..... SET / Crosscheck
- Fuel balance.....Check
- Pressurization.....Set
- FASTENBELTS switch.....ON
- Approach & Landing Brief.....Complete
- GPWS LANDING FLAP.....Selected °

----- LINE -----

— CONTINUED —

Fuel Transfer.....OFF  
 Hyd Press/Qty.....Check  
 Caution/Warning Lights.....Check  
 APPROACH/FLARE Lights.....ON  
 REF SPEEDS switch/bugs.....As Req'd/Set  
 F/A Notification.....Complete

### Before Landing Checklist --One Engine Inoperative:

- Autopilot..... Disengage (At or above 1000 ft AGL)

#### **If #1 engine inoperative:**

- PTU ..... OFF
- STBY HYDPRESS.....ON
- LANDING GEAR ..... Down / 3 Green
- \_\_\_\_AUX PUMP (Operating engine).....ON
- Condition Lever (Operating engine)..... MAX
- BLEED selector.....MIN
- Flaps..... Indicating \_\_\_\_ / Planned \_\_\_\_

— END —

OR

#### **If #2 engine inoperative:**

- PTU .....ON
- STBY HYDPRESS.....ON
- LANDING GEAR ..... Down / 3 Green
- \_\_\_\_AUX PUMP (Operating engine).....ON
- Condition Lever (Operating engine)..... MAX
- BLEED selector.....MIN
- Flaps..... Indicating \_\_\_\_ / Planned \_\_\_\_

— END —

### Go-Around / Missed Approach--One Engine Inoperative:

- LANDING GEAR.....UP
- Flaps.....0°
- BLEED selector.....NORM or MAX
- FUEL TRANSFER.....As Req'd
- One Engine Inoperative .....Descent / Approach / Before Landing  
.....Checklists Accomplish

— END —

## ON GROUND EMERGENCIES

- EMERG BRAKE.....PARK
- POWER Levers.....DISC
- CONDITION Levers ..... FUEL OFF
- PULL FUEL/HYD OFF Handle (Affected engine)..... Pull
- TANK AUX PUMPS..... OFF

### If Engine Fire:

- EXTG Switch.....FWD BTL
- EXTG Switch..... AFT BTL

### If Baggage Compartment Fire:

- Illuminated SMOKE/EXTG Switch ..... Press

### If Evacuation:

- EMERG LIGHTS switch.....ON
- FASTEN BELTS switch..... OFF
- Evacuate..... Command
- AC/DC EXT PWR and APU ..... OFF
- BATTERY MASTER..... OFF

— END —

## UNSCHEDULED PROPELLER FEATHERING

(May be indicated by high torque and/or low Prop RPM)

Above 400 ft AGL:

### Affected Engine:

- ENGINE FAILURE/FIRE/SHUTDOWN (In Flight) ([Page 3-1](#))....  
.....Accomplish

— END —



## Autofeather Fails to ARM during Takeoff (No Annunciation of A/F Arm)

DH8-400-SL-61-011 19MAY11

### Aborted Takeoff Considerations:

- Takeoff abort speed.....NOTE
- Inform Dispatch of abort.

**NOTE:**

Dispatch will calculate brake cooling.

### Autofeather Re-Test:

- EMERG Brake .....PARK
- POWER Levers..... DISC
- STBY/PTU Pumps.....Norm(Off)
- AUTOFEATHER ..... OFF
- Condition Levers.....START/FEATHER
- AUTOFEATHER .....Re-Test

**NOTE:**

BOTH Power Levers must be in DISC detent. If POWER Levers are not seated properly, Autofeather Test will ABORT. If A/F TEST ABORT is displayed, re-test using steps above.

### A/F TEST PASS appears on ED:

**?** **YES**

- AUTOFEATHER ..... OFF
- Condition Levers.....MAX
- AUTOFEATHER .....ON
- After Start Checklist ..... Accomplish

— END —

**NO**

- Maintenance action required prior to flight.

— END —

## ABORTED ENGINE START

- \_\_\_Condition Lever .....FUEL OFF
- START SELECT switch..... OFF

**Was engine lightoff observed (ITT rise)?**

**?** **YES**

- Engine Starter cranking limits.....Observe

Start	MAX Time	Followed by
1	70 sec.	2 min. off
2	70 sec.	2 min. off
3	70 sec.	30 min. off

- Engine Start.....As Req'd

**NO**

### Clearing Internally Trapped Fuel:

- Engine Starter cranking limits above..... Observe
- \_\_\_Condition Lever .....FUEL OFF
- \_\_\_POWER Lever .....DISC
- \_\_\_Ignition Control switch ..... OFF
- START SELECT switch..... 1 or 2
- START SELECT switchlight .....Press
- Starter..... Motor 30 seconds
- START SELECT switch.....Center

**If a subsequent engine start is to be attempted:**

- \_\_\_Ignition Control switch ..... NORM

— END —

## START Light Remains On After Engine Start Sequence (No STARTER Cut Out)

(START Light remains illuminated after engine start sequence)

- START SELECT switch.....Center

**NOTE:**

Engine START and SELECT lights will take approximately 15 seconds to go out.

**NOTE:**

If DC EXT PWR is used for start, wait for START and SELECT lights to extinguish prior to moving EXT PWR switch to OFF.

- DC EXT PWR switch..... OFF

**Affected DC GEN caution light is illuminated?**

**?** **YES**

- \_\_\_DC GEN switch..... OFF then ON

**Affected DC GEN caution remains illuminated?**

**?** **YES**

- \_\_\_DC GEN switch..... OFF

**If in flight:**

- No further action required.

**If on the ground:**

- Accomplish normal After Landing and Parking Checklists.
- Maintenance action required prior to flight.

— END —

**NO**

- Check affected DC Gen load for normal indications.

**NOTE:**

The flight may depart but maintenance action or Flight Crew Deferral required after landing. Refer to MEL 24-30-2 for more information.

— END —

## SELECT Light Remains On After Engine Start (Possible ENGINE STARTER Failure on the Ground)

### NOTE:

Consider returning to the gate prior continuing this checklist.

- EMER LIGHTS switch..... As Req'd
- MAIN, AUX, and STBY BATT switches ..... OFF
- DC EXT PWR ..... OFF
- AC EXT PWR ..... OFF
- Condition Levers..... OFF
- APU Power ..... OFF
- EXTERIOR LIGHTS ..... As Req'd

— END —

## APU FIRE

(Illumination of Check Fire Detect Warning, APU Caution, and APU Fire Advisory Lights)

### Confirm APU Automatic Shutdown:

#### On APU CONTROL Panel

- PWR—RUN light..... Dark
- PWR—FAIL light..... FAIL Illuminated

#### On APU Fire Protection Panel

- BTL LOW light ..... BTL LOW Illuminated
- VALVE CLOSED light..... Illuminated

### BTL ARM or FIRE Lights remain illuminated after 7 seconds:

- EXTG switch light..... Press

— CONTINUED —

## Passengers:

- EMER LIGHTS switch.....ON
- FASTEN BELTS switch..... OFF
- Deplane/ Evacuate ..... As Req'd
- POST APU AUTOMATIC SHUTDOWN ([Page 3-10](#)) Accomplish

— END —

## POST APU AUTOMATIC SHUTDOWN

### On APU CONTROL Panel:

- BLAIR.....OFF
- GEN ..... OFF
- PWR..... OFF

### Is the FIRE Light illuminated on the APU Fire Protection?

☐ YES

- DO NOT attempt a restart if the FIRE Light is illuminated on the APU Fire Protection Panel.

— END —

☐ NO

- APU Starter Limitation..... Observe
- Restart..... As Applicable

— END —

## APU START FAILURE (APU FAIL Advisory Light Illuminates during Start)

**STARTER Light On APU CONTROL Panel is Dark?**

**?** **YES**

- PWR ..... OFF then ON

**NOTE:**

After an APU start attempt, APU start will remain disabled for approximately 7 seconds.

- APU Starter Limitation.....Observe
- Restart..... As Applicable

— END —

**NO**

- APU STARTER FAILURE ([Page 3-11](#)).....Accomplish

— END —

## APU STARTER FAILURE (START Light Remains Illuminated on APU Control Panel)

**NOTE:**

Consider returning to the gate and deplaning passengers prior to continuing this checklist.

- EMER LIGHTS switch..... OFF
- MAIN, AUX, and STBY BATT switches ..... OFF
- DC EXT PWR ..... OFF
- AC EXT PWR ..... OFF
- Condition Levers..... OFF
- APU CONTROL—PWR..... OFF
- EXTERIOR LIGHTS ..... As Req'd

## "APU" (CAUTION LIGHT)

**Is the FAIL Light illuminated on the APU CONTROL Panel?**

**? YES**

**APU Failure:**

- APU automatic shutdown..... Confirm
- POST APU AUTOMATIC SHUTDOWN ([Page 3-10](#)).....  
.....Accomplish

— END —

**NO**

**Is the WARN Light illuminated on the APU CONTROL Panel?**

**? YES**

**APU GEN Failure:**

- GEN.....OFF then ON

**WARN Light remains illuminated?**

**? YES**

- GEN ..... OFF

— END —

**NO**

- No further action required.

— END —

**NO**

**Is the GEN OHT Light illuminated on the APU CONTROL Panel**

**? YES**

**APU GEN Overheat?**

- APU automatic shutdown.....Confirm
- POST APU AUTOMATIC SHUTDOWN ([Page 3-10](#)) .....  
.....Accomplish

— END —

**NO**

- No further action required.

— END —

## APU BLEED AIR OVERHEAT

(FLT COMPT DUCT HOT or CABIN DUCT HOT or CABIN PACK HOT or FLT COMPT PACK HOT Caution Light):

**NOTE:**

On the AIR CONDITIONING Panel, ensure  
PACKS switches are in AUTO.

- APU-BL AIR ..... OFF

— END —



## ENGINE AIRSTART

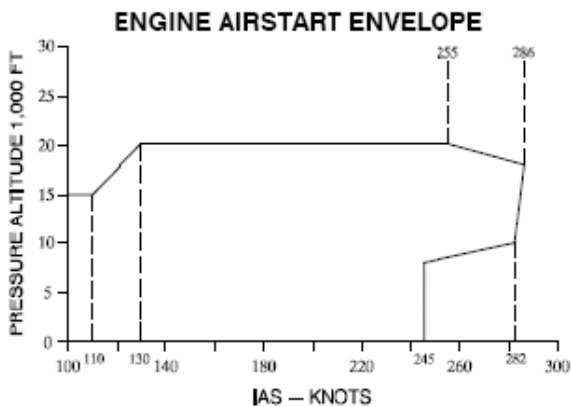


Figure 3-2: Engine Airstart Envelope

**NOTE:**

Minimum SAT for engine relight is  $-40^{\circ}\text{C}$ .

**Affected Engine:**

- ☐ POWER Lever ..... FLIGHT IDLE
- ☐ Condition Lever ..... FUEL OFF
- ☐ PULL FUEL/HYD OFF handle ..... Push In
- ☐ Ignition Control switch ..... NORM
- ☐ BLEED switch ..... OFF
- ☐ TANK AUX PUMP ..... ON
- AUTOFEATHER ..... OFF
- ☐ ALTFTHR ..... OFF
- MAIN BUS TIE ..... TIE
- Autopilot ..... Disengage
- Conduct normal start procedure and adhere to normal start limitations.

**When Engine Stabilizes:**

- ☐ Condition Lever ..... MIN

**When Propeller  $N_P$  Stabilizes:**

- ☐ Condition Lever ..... As Req'd
- ☐ POWER Lever ..... As Req'd

— CONTINUED —

- BLEED switch.....As Req'd
- MAIN BUS TIE.....OFF
- \_\_\_TANK AUX PUMP.....OFF
- STBY HYD PRESS and PTU CNTRL .....As Req'd

**If airstart of Number 1 Engine:**

- PTU CNTRL.....ON then NORM (OFF)

— END —

### STARTER FAILURE IN FLIGHT

(SELECT Light remains illuminated after engine start in flight)

- MAIN, AUX, and STBY BATT switches.....OFF
- DC Bus Tie Cont CB (G8 – R ESS Bus).....Pull
  - Land immediately at nearest suitable airport.

***CAUTION:***

*Do not connect External Power or select APU generator on shutdown.*

— END —

## Low Oil Pressure or “#1 ENG OIL PRESS” or “#2 ENG OIL PRESS” (Warning Light)

Is indicated oil pressure below 44 psi (gauge is red) or continuous illumination of the #1 ENG OIL PRESS or #2 ENG OIL PRESS warning light?

**?** **YES**

**Affected Engine:**

- ENGINE FAILURE/FIRE/SHUTDOWN ([Page 3-1](#)) ..Accomplish

**NOTE:**

An OIL PRESS Warning light must be responded to regardless of oil pressure gauge indication.

— END —

**NO**

**Oil pressure is between 44 and 60 psi (gauge is yellow):**

- \_\_\_\_POWER Lever (Affected engine) .....FLIGHT IDLE

**To reduce in-flight drag:**

- \_\_\_\_Conditional Lever..... START & FEATHER
- \_\_\_\_POWER Lever (Affected engine) .....FTHR

**NOTE:**

Monitor oil pressure closely.

**If oil pressure decreases to 44 psi or less:**

**Affected Engine:**

- ENGINE FAILURE/FIRE/SHUTDOWN ([Page 3-1](#)) .....Accomplish

— END —

## HIGH OIL PRESSURE (72 psi or above)

PSM 1-84-1B MAY 31/11

### Affected Engine(s):

- Power.....Reduce

---

#### **CAUTION:**

*Maximum power reduction must not exceed 20% of previously set torque.*

---

#### **NOTE:**

Power reduction will be dependant on performance, including icing, and airspeed requirements. Minimum airspeed will be appropriate to flap configuration and flight conditions.

### Monitor oil pressure for 2 minutes:

#### Does oil pressure decrease to 72 psid or less?

?

**YES**

- Maintain power at or below the adjusted torque setting for the remainder of the flight.
- Maintenance action required prior to flight.

— END —

**NO**

### Affected engine:

- ENGINE FAILURE/FIRE/SHUTDOWN ([Page 3-1](#)) .....Accomplish

— END —

## HIGH OIL TEMPERATURE IN FLIGHT (107°C or above)

### Affected engine(s):

- Power.....Reduce

#### **CAUTION:**

*Maximum power reduction must not exceed 20% of previously set torque.*

#### **NOTE:**

Power reduction will be dependant on performance, including icing, and airspeed requirements. Minimum airspeed will be appropriate to flap configuration and flight conditions.

- Monitor oil temperature

### After 10 minutes:

### Has the oil temperature decreased below 107°C?

**?** **YES**

- Maintain power at or below the adjusted torque setting for the remainder of the flight.
- Maintenance action required prior to next flight.

— END —

**NO**

### Oil temperature does NOT decrease OR increases above 125 C:

### Affected engine:

- ENGINE FAILURE/FIRE/SHUTDOWN ([Page 3-1](#)) .....Accomplish

— END —

## LOW OIL TEMPERATURE (0° – 65° C)

(Prop Deice On In Flight)

**NOTE:**

To maintain the minimum engine oil temperature of 65° C in icing conditions, it may be necessary to increase engine power. The increase in engine power may be limited by airspeed limitations and operational requirements.

- Monitor engine performance.
- Exit icing conditions as soon as possible.

— END —

**"#1 ENG FADEC FAIL" or  
"#2 ENG FADEC FAIL"  
(Warning Light)**

### Affected Engine:

- ENGINE FAILURE/FIRE/SHUTDOWN ([Page 3-1](#)).....Accomplish

**NOTE:**

FADEC Failure may cause the affected engine to shut down automatically.

— END —

**"#1 ENG FADEC" (Caution Light) or  
"#2 ENG FADEC" (Caution Light)**

**Affected Engine:**

- \_\_\_\_POWER Lever ..... Adjust slowly and smoothly

**NOTE:**

Symmetric torque may require asymmetric Power Lever positions.

**Landing Considerations:**

DO NOT retard affected POWER Lever below DISC on landing.

— END —

**"POWERPLANT"  
(ED Advisory)**

- Monitor engine performance

**NOTE:**

Maintenance action required prior to next flight.

— END —

## DUAL PROPELLER OVERSPEED

(Both propellers increase above 1020 RPM and “#1 PEC” and “#2 PEC” Caution Lights illuminate.)

- The flight may continue to the destination, return to point of departure or the nearest airport where maintenance services are available, as appropriate. (Coordinate with Dispatch/SOC.)

**NOTE:**

1. During overspeed governor control, an increase in power or turbulence encounter may cause the propeller speed to temporarily exceed 1080 rpm.
2. With Power Levers in the RATING DETENT, the TRQ indication will be less than the displayed torque rating.

### Landing Considerations:

- DO NOT retard POWER Levers below FLT IDLE on landing and during taxi, as propellers will feather.
- Anticipate greater than normal braking requirements due to increased propeller thrust at FLT IDLE setting.

**NOTE:**

During the landing roll, propellers will decrease to approximately 500 – 550 RPM and may cause the AC generators to drop off-line.

Abnormal Landing Distance Factors		
Flap	Ice Protection	
	Level 1	Level 2/3
10	1.35	1.35
15	1.35	1.35
35	1.35	1.35

Conditional Landing Distance Statement	
Level 1 Ice Protection	Landing Distance = 5100 ft
Wt. less than 64,500 lbs.	
Flap greater than or equal to 10°	
Dry Runway	
Airport Elevation less than 2000 ft	
Tailwind less than or equal to 10 kts.	

— END —



## PROPELLER OVERSPEED

(Propeller increases above 1020 RPM and “#1 PEC” or “#2 PEC” Caution Light illuminates.)

Above 400 ft AGL:

- Airspeed..... Reduce toward minimum speed appropriate to flap configuration and flight conditions.

### Affected Engine:

- \_\_\_ POWER Lever..... FLIGHT IDLE
- \_\_\_ Condition Lever..... START/FEATHER
- \_\_\_ ALT FTHR (If required)..... FTHR

### IF propeller feathers:

- ENGINE FAILURE/FIRE/SHUTDOWN (In Flight)  
(Page 3-1)..... Accomplish Immediately

#### NOTE:

If the engine is not shutdown immediately after feathering the propeller with the Alternate Feather system, the propeller may unfeather. Reselect the ALT FTHR switch to feather the propeller.

### IF propeller does not feather:

- DO NOT SHUT DOWN ENGINE.
- Condition Levers..... MAX
- POWER Levers..... Operate together
  - Land immediately at the nearest suitable airport.

#### NOTE:

1. Symmetric Power levers will give approximately symmetric power.
2. During overspeed governor control, an increase in power or turbulence encounter may cause the propeller speed to temporarily exceed 1080 rpm.

## Landing Considerations if propeller does not feather:

- DO NOT retard affected POWER Lever below FLIGHT IDLE on landing.
- Anticipate greater than normal braking requirements due to increased propeller thrust at FLT IDLE setting.

Abnormal Landing Distance Factors		
Flap	Ice Protection	
	Level 1	Level 2/3
10	1.35	1.35
15	1.35	1.35
35	1.35	1.35

Conditional Landing Distance Statement	
Level 1 Ice Protection	Landing Distance = 5100 ft
Wt. less than 64,500 lbs.	
Flap greater than or equal to 10°	
Dry Runway	
Airport Elevation less than 2000 ft	
Tailwind less than or equal to 10 kts.	

— END —

## Power Lever Overtravel Reset

*DH8-400-SL-71-011*

**(Necessary or Inadvertent Power Lever movement past Rating detent causing propeller RPM to increase to 1020 even with Condition Lever in 850 or 900 detent)**

**NOTE:**

Propeller RPM may exceed 1020 upon initial Power Lever movement past the rating detent. Do not mis interpret as an overspeed condition.

- POWER Lever (affected)..... Rating Detent (or below)
- Condition Lever (affected).....MAX
- Condition Lever (affected)..... As Req'd (900/850)
- Engine Event Marker.....PRESS

### **IF Engine Limitation exceeded:**

- Exeedences.....NOTE
- Maintenance action required prior to next flight.
- Following the flight, an Informational write-up should be made noting a successful reset and use of the Event Marker.

**— END —**

**“#1 PEC” or  
“#2 PEC”  
(Caution Light)**

### **Landing Considerations:**

- DO NOT retard affected POWER Lever below FLIGHT IDLE on landing.
- Anticipate greater than normal braking requirements due to increased propeller thrust at FLT IDLE setting.

<b>Abnormal Landing Distance Factors</b>		
<b>Flap</b>	<b>Ice Protection</b>	
	<b>Level 1</b>	<b>Level 2/3</b>
10	1.35	1.35
15	1.35	1.35
35	1.35	1.35

<b>Conditional Landing Distance Statement</b>	
Level 1 Ice Protection	Landing Distance = 5100 ft
Wt. less than 64,500 lbs.	
Flap greater than or equal to 10°	
Dry Runway	
Airport Elevation less than 2000 ft	
Tailwind less than or equal to 10 kts.	

**— END —**

## PROPELLER GROUND RANGE ADVISORY LIGHT CYCLING

- POWER Levers .....Advance above Flight Idle

### **CAUTION:**

*Avoid Power Lever positions that cause the Ground Range lights to illuminate.*

### **Landing Considerations:**

- DO NOT select affected Power lever below FLIGHT IDLE on landing.
- Anticipate greater than normal braking requirements due to increased propeller thrust at FLT IDLE setting.

Abnormal Landing Distance Factors		
Flap	Ice Protection	
	Level 1	Level 2/3
10	1.35	1.35
15	1.35	1.35
35	1.35	1.35

Conditional Landing Distance Statement	
Level 1 Ice Protection	Landing Distance = 5100 ft
Wt. less than 64,500 lbs.	
Flap greater than or equal to 10°	
Dry Runway	
Airport Elevation less than 2000 ft	
Tailwind less than or equal to 10 kts.	

— END —

**"CHECK FIRE DET" Warning Light and  
"FAULT A" or "FAULT B" Advisory Light**

(Fire Detector Loop Failure)

- No Crew action required.

**NOTE:**

Maintenance action required prior to next flight.

— END —

---

**"CHECK FIRE DET" Warning Light and  
"BTL LOW" Advisory Light**

(Fire Bottle Pressure Low)

- No Crew action required.

**NOTE:**

Maintenance action required prior to next flight.

— END —

---

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## Chapter 4: Autoflight, Flight Instruments, and Navigation

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## Chapter 4: Autoflight, Flight Instruments, and Navigation

### "AP DISENGAGED" or "AP/YD DISENGAGED" (Flashing PFD Message and Red "AP DISENG" Light)

(Autopilot has automatically disengaged)

- A/P DIS..... Press to Cancel Alerts
- Pitch, Roll, and Rudder Trim..... Adjust (As Necessary)
- Autopilot..... Engage (If Req'd)

— END —

### "YD DISENGAGED" (Flashing PFD Message)

(Yaw Damper has automatically disengaged)

- A/P DIS..... Press to Cancel Alerts
- Rudder Trim..... Adjust (As Necessary)
- Yaw Damper ..... Engage (If Req'd)

— END —

**"AP FAIL"**  
**(Message on PFD)**

(Autopilot system is inoperative)

- Autopilot..... Do not Engage

**IF message goes out:**

- Autopilot..... Engage (As Req'd)

**— END —**

---

**"AP/YD FAIL"**  
**(Message on PFD)**

(Autopilot and Yaw Damper systems are inoperative)

- Autopilot or Yaw Damper ..... Do not Engage

**IF message disappears:**

- Autopilot or Yaw Damper ..... Engage (As Req'd)

**— END —**

---

**"MISTRIM [TRIM L WING DN]" or  
"MISTRIM [TRIM R WING DN]"  
(Message on PFD)**

(Autopilot is holding a roll force)

**CAUTION:**

*Prior to disengaging the autopilot, firmly hold the control wheel and be prepared for a control force in roll.*

- Autopilot ..... Disengage
- Aileron and Rudder Trim.....As Req'd

**NOTE:**

Observe the slip/skid indication on the PFD. If required, adjust the rudder trim to center the slip/skid indication prior to applying aileron trim.

- Autopilot..... Engage (As Req'd)

— END —

**"MISTRIM [TRIM NOSE DOWN]" or  
"MISTRIM [TRIM NOSE UP]"  
(Message on PFD)**

(Autopilot is holding a pitch force)

**CAUTION:**

*Prior to disengaging the autopilot, firmly hold the control wheel and be prepared for a control force in roll.*

- Autopilot ..... Disengage
- Pitch Trim .....As Req'd
- Autopilot..... Engage (As Req'd)

— END —



## **"AFCS CONTROLLER INOP" (Message on PFD)**

(A failed FGCP or stuck button has been detected)

**NOTE:**

It may not be possible to disengage the Autopilot or Yaw Damper using the FGCP AP or YD buttons.

- Use the control wheel AP DIS button or GA button to disengage the autopilot when required.

### **IF Flight Director modes remain active:**

**NOTE:**

It may not be possible to select or deselect certain Flight Director modes. The Pitch Wheel may be inoperative.

- Use alternate Flight Director modes or fly aircraft by reference to raw data to accomplish remainder of flight.

### **IF NAV Source, Course, or HDG knob is inoperative:**

- HSI SEL .....Unaffected Side L or R (As Req'd)
- Use PFD source data from the selected side to accomplish the remainder of the flight.

**— END —**

---

**"AFCS FAIL"**  
**(Message on PFD)**

(Both Flight Guidance Modules have failed)

**Lost Services:**

- Autopilot
- Flight Director
- Auto Trim
- Autopilot or Yaw Damper ..... Do not Engage
  - Fly aircraft manually by reference to raw data to accomplish remainder of flight.

**NOTE:**

When selecting Flap 15 to Flap 35 or Flap 35 to Flap 15, there will be an increase in the Pitch Trim requirement.

**IF message disappears:**

- Autopilot or Yaw Damper ..... Do not Engage

— END —

**"AP PITCH TRIM FAIL"**  
**(Message on PFD)**

(Autopilot control of Pitch Trim is inoperative)

**CAUTION:**

*Prior to disengaging the autopilot, firmly hold the control wheel and be prepared for a control force in pitch.*

- Autopilot ..... Disengage
- Pitch Trim ..... As Req'd
- Autopilot ..... Engage (As Req'd)

**NOTE:**

The Auto Trim function will also be inoperative.

— END —

**"AUTO TRIM FAIL"  
(Message on PFD)**

(Flap Automatic Pitch Trim is inoperative)

**NOTE:**

When selecting Flap 15 to Flap 35 or Flap 35 to Flap 15, there will be an increase in the Pitch Trim adjustment.

**— END —**

---

**"L FD FAIL" or "R FD FAIL"  
(Message on PFD)**

(Left or Right Flight Guidance Module has failed)

**Lost Services:**

- Autopilot and Yaw Damper
- Auto Trim
- Dual FD Approach Mode
- Autopilot or Yaw Damper ..... Do not Engage
- Fly aircraft manually by reference to the Flight Director or raw data.

**NOTE:**

When selecting Flap 15 to Flap 35 or Flap 35 to Flap 15, there will be an increase in the Pitch Trim requirement.

**IF message disappears:**

- Autopilot or Yaw Damper ..... Engage (As Req'd)

**— END —**

---

**"YD NOT CENTERED"  
(Message on PFD)**

(Yaw Damper has disengaged in a noncentered position)

**Is the AP/YD message also displayed?**

**?** **YES**

- Autopilot or Yaw Damper ..... Do not Engage

**NO**

**— END —**

**Wait 15 seconds:**

- Yaw Damper..... Engage

**IF message remains displayed:**

- Autopilot or Yaw Damper ..... Do not Engage

**— END —**

**"ALT OFF"  
(Message on PFD)**

(Pitch Thumbwheel motion has cancelled ALT\* or ALT Mode)

- Confirm PRESELECT Altitude is set to an appropriate value.
- ALT SEL.....Push
- FD Vertical Mode ..... Select (As Req'd)

**— END —**

**"CHECK NAV SOURCE"  
(Message on PFD)**

(NAV source or frequency change has cancelled NAV mode)

- Confirm appropriate navigation data source is selected.
- FD Lateral Mode..... Select (As Req'd)

**— END —**

---

**"FD ADC DATA INVLD"  
(Message on PFD)**

(Selected air data on FD is invalid or mismatched)

- Determine valid air data source by comparing IAS and altitude displayed on PFD 1 and 2 against the standby instrument.
- EFIS ADC Source..... Select 1 or 2 (As Req'd)
- FD Modes ..... Select (As Req'd)

**NOTE:**

Autopilot and Yaw Damper are inoperative. “ELEVATOR FEEL”, “PITCH TRIM”, “SPLR OUTBD”, and “RUD CTRL” Caution lights will be illuminated. Elevator forces, roll rate, and rudder sensitivity may be higher or lower than normal.

**— END —**

---

**"FD ATT DATA INVLD"  
(Message on PFD)**

(Selected attitude data input to FD is invalid or mismatched)

- Determine valid attitude source by comparing pitch and roll displayed on PFD 1 and 2 against the standby instrument.
- EFIS ATT/HDG Source.....Select 1 or 2 (As Appropriate)
- FD Modes ..... Select (As Req'd)

**NOTE:**

Autopilot and Yaw Damper are inoperative. “ELEVATOR FEEL” Caution light will be illuminated. Elevator forces may be higher or lower than normal.

— END —

---

**"FD HDG DATA INVLD"  
(Message on PFD)**

(Selected heading data input to FD is invalid or mismatched)

- Determine valid heading source by comparing heading displayed on PFD 1 and 2 against the standby compass.
- EFIS ATT/HDG Source.....Select 1 or 2 (As Appropriate)
- FD Lateral Mode..... Select (As Req'd)

— END —

---

**"FD NAV DATA INVLD"  
(Message on PFD)**

(Selected navigation data input to FD is invalid or mismatched)

- Determine valid navigation source by confirming valid ground station selection or comparing bearing and deviation data displayed on PFD 1 and 2 against other available navigation information.
- NAV Source.....Select 1 or 2 (As Appropriate)
- FD Lateral Mode..... Select (As Req'd)

**— END —**

---

**"CAT II FAIL"  
(Message on PFD)**

(Required input for CAT II ILS approach is invalid or mismatched)

- Determine valid HSI source.
- HSI SEL.....Select 1 or 2 (As Appropriate)

**NOTE:**

If a mismatch appears between the two HSI sources in DUAL APPR mode, the Flight Director will automatically switch back to the HSI (which may not be valid) that was in use at the commencement of the approach.

**— END —**

---

**"DUAL OFF"**  
**(Message on PFD)**

(Required input for a Dual Mode ILS approach is invalid or mismatched)

- Determine valid HSI source.
- HSI SEL.....Select 1 or 2 (As Appropriate)

**NOTE:**

If a mismatch appears between the two HSI sources in DUAL APPR mode, the Flight Director will automatically switch back to the HSI (which may not be valid) that was in use at the commencement of the approach.

**— END —**

**"AP INHIBIT"**  
**(Message on PFD)**

(AFCS external failure or condition inhibits AP engagement)

- A/P DIS.....Press to Cancel Alerts

**Wait 15 seconds:**

- If AP INHIBIT is still displayed, Autopilot is inoperative.

**— END —**

**"YD INHIBIT"**  
**(Message on PFD)**

(Autopilot and Yaw Damper are inoperative)

- A/P DIS.....Press to Cancel Alerts

**Wait 15 seconds:**

- If YD INHIBIT is still displayed, Autopilot and Yaw Damper are inoperative.

**— END —**



## PRIMARY FLIGHT DISPLAY FAILURE

(No data displayed on PFD screen)

- Fly the aircraft by reference to the operative PFD.

### Affected Side:

- MFD..... PFD
- PFD Brightness ..... OFF

— END —

---

## "CHECK PFD 1" or "CHECK PFD 2" (Message on PFD)

(Critical data on the indicated PFD may be displayed incorrectly)

- Fly the aircraft by reference to the operative PFD.

### Affected Side:

- MFD..... PFD
  - Monitor MFD display data for incorrectly displayed flight information.

— END —

---

### **"ATT FAIL" (Message on PFD)**

(Source of pitch and roll data to PFD has failed)

- EFIS ATT/HDG Source.....Select 1 or 2 (As Appropriate)
  - Fly the airplane by reference to the remaining source of attitude data.
- | • Max Airspeed.....200 KIAS

**NOTE:**

Autopilot and Yaw Damper are inoperative. Flight Director is available. "ELEVATOR FEEL" Caution light will illuminate. Elevator forces may be higher or lower than usual.

— END —

---

### **"HDG FAIL" (Message on PFD)**

(Source of heading data to PFD has failed)

- EFIS ATT/HDG Source.....Select 1 or 2 (As Appropriate)
  - Fly the airplane by reference to the remaining source of heading data.

**NOTE:**

Autopilot and Yaw Damper are inoperative. Flight Director is available. If a malfunction of the flux valve is the cause of the heading failure, the SLAVE advisory light, on the AHRS controller, will also illuminate.

— END —

---

## "TVSI FAIL" (Message on PFD)

(Source of inertial vertical speed data to PFD has failed)

- EFIS ATT/HDG Source.....Select 1 or 2 (As Appropriate)
  - Fly the airplane by reference to the remaining source of attitude data.
- Max Airspeed.....200 KIAS

**NOTE:**

Autopilot and Yaw Damper are inoperative. Flight Director is available. "ELEVATOR FEEL" Caution light will illuminate. Elevator forces may be higher or lower than usual.

— END —

## "PITCH MISMATCH" or "ROLL MISMATCH" (Message on PFD)

(AHRS 1 and 2 attitudes do not match)

- Determine valid attitude source by comparing pitch and roll displayed on PFD 1 and 2 against the standby instrument.
- EFIS ATT/HDG Source.....Select 1 or 2 (As Appropriate)
  - Fly aircraft by reference to the selected attitude source.
- Max Airspeed.....200 KIAS

**NOTE:**

Autopilot and Yaw Damper are inoperative. Flight Director is available. "ELEVATOR FEEL" Caution light will illuminate. Elevator forces may be higher or lower than usual.

— END —

**"HDG MISMATCH"  
(Message on PFD)**

(AHRS 1 and 2 headings do not match)

- Determine valid heading source by comparing headings displayed on PFD 1 and 2 against the standby compass.
- EFIS ATT/HDG Source.....Select 1 or 2 (As Appropriate)
  - Fly aircraft by reference to the selected heading source.

**— END —**

---

## LOSS OF CAPTAIN, FIRST OFFICER and INTEGRATED STANDBY INSTRUMENT AIRSPEED and ALTITUDE FUNCTIONS

(Loss of both pitot-static probes on the right side of the aircraft due to a bird strike)

- Pitot Static Isolation Valve .....Press
  - Fly the aircraft by reference to the airspeed and altitude indications on PFD 1.
- Max Airspeed.....200KIAS
  - Land immediately at the nearest suitable airport.

**NOTE:**

Autopilot and Yaw Damper are inoperative. Flight Director is available. “ELEVATOR FEEL”, “PITCH TRIM”, “SPLR OUTBD” and “RUD CTRL” Caution lights will illuminate. Elevator forces, roll rate, and rudder sensitivity may be higher or lower than usual.

### Landing Considerations:

- Land at an airport with minimum crosswind and turbulence using Flaps 15.

Weight (lbs)	Derived V <sub>REF</sub>	
	Flap 15	
	Level 1	Level 2
64,000	134	154
62,000	131	151
60,000	129	149
58,000	127	147
56,000	125	145
54,000	123	143
52,000	121	141
50,000	118	138
48,000	116	136
46,000	114	134
44,000	111	131
42,000	109	129
40,000	106	126

— CONTINUED —

### Abnormal Landing Distance Factors

Flap	Ice Protection	
	Level 1	Level 2/3
15	1.45	1.45

### Conditional Landing Distance Statement

Level 1 Ice Protection	Landing Distance = 5100 ft
Wt. less than 64,500 lbs.	
Dry Runway	
Airport Elevation less than 2000 ft	
Tailwind 10 kts.	

— END —

**LOSS OF BOTH AIRSPEED and BOTH  
ALTITUDE INDICATIONS ON PILOT's and  
FIRST OFFICER's PFDs**

(Air Data 1 and 2 sources have failed)

- Fly the aircraft by reference to the Integrated Standby Instrument.
- Max Airspeed..... As shown in Derived Maximum Airspeed Table below

Derived Max Airspeed				
Weight (lbs)	Flap 0	Flap 5	Flap 10	Flap 15
	Level 1/2/3	Level 1/2/3	Level 1/2/3	Level 1/2/3
64,000	232	190	178	170
62,000	227	186	174	165
60,000	223	184	171	163
58,000	220	181	168	160
56,000	216	178	165	157
54,000	212	174	162	155
52,000	209	171	160	152
50,000	203	168	157	149
48,000	200	165	154	146
46,000	196	160	149	142
44,000	191	157	147	139
42,000	187	154	144	136
40,000	182	149	139	133

**NOTE:**

Autopilot and Yaw Damper are inoperative. Flight Director is available. “ELEVATOR FEEL”, “PITCH TRIM”, “SPLR OUTBD” and “RUD CTRL” Caution lights will illuminate. Elevator forces, roll rate, and rudder sensitivity may be higher or lower than usual.

**Landing Considerations:**

- Land at an airport with minimum crosswind and turbulence using Flaps 15.
- Approach Speed.....Derived  $V_{REF}$

— CONTINUED —

Derived $V_{REF}$		
Weight (lbs)	Flap 15	
	Level 1	Level 2
64,000	134	154
62,000	131	151
60,000	129	149
58,000	127	147
56,000	125	145
54,000	123	143
52,000	121	141
50,000	118	138
48,000	116	136
46,000	114	134
44,000	111	131
42,000	109	129
40,000	106	126

Abnormal Landing Distance Factors		
Flap	Ice Protection	
	Level 1	Level 2/3
15	1.45	1.45

Conditional Landing Distance Statement	
Level 1 Ice Protection	Landing Distance = 5100 ft
Wt. less than 64,500 lbs.	
Dry Runway	
Airport Elevation less than 2000 ft	
Tailwind 10 kts.	

— END —



**"IAS FAIL" or "ALT FAIL"  
(Message on PFD)**

(Selected air data source has failed)

- EFIS ADC Source.....Select 1 or 2 (As Appropriate)
  - Fly aircraft by reference to the selected air data source.
- Max Airspeed.....200 KIAS

**NOTE:**

Autopilot and Yaw Damper are inoperative. Flight Director is available. “ELEVATOR FEEL”, “PITCH TRIM”, “SPLR OUTBD” and “RUD CTRL” Caution lights will illuminate. Elevator forces, roll rate, and rudder sensitivity may be higher or lower than usual.

**— END —**

---

**"CUE" (Message on PFD)**

(Low speed cue is invalid)

- Fly the aircraft by reference to the Standby Airspeed Indicator and Altimeter.

**— END —**

---

**"IAS MISMATCH"  
(Message on PFD)**

(Air Data 1 or 2 airspeed indications do not match)

- Determine valid air data source by comparing airspeed displayed on PFD 1 and 2 against the standby instrument.
- EFIS ADC Source.....Select 1 or 2 (As Appropriate)
  - Fly the aircraft by reference to the selected air data source.

**NOTE:**

Autopilot and Yaw Damper are inoperative. Flight Director is available. “ELEVATOR FEEL”, “PITCH TRIM”, “SPLR OUTBD” and “RUD CTRL” Caution lights will illuminate. Elevator forces, roll rate, and rudder sensitivity may be higher or lower than usual.

**— END —**

---

**"ALT MISMATCH"  
(Message on PFD)**

(Air data 1 or 2 altitude indications do not match)

- Determine valid air data source by comparing airspeed displayed on PFD 1 and 2 against the standby instrument.
- EFIS ADC Source..... Select 1 or 2 (As Req'd)
  - Fly the aircraft by reference to the selected air data source.
- Max Airspeed.....200 KIAS

**NOTE:**

Autopilot and Yaw Damper are inoperative. Flight Director is available. "ELEVATOR FEEL", "PITCH TRIM", "SPLR OUTBD" and "RUD CTRL" Caution lights will illuminate. Elevator forces, roll rate, and rudder sensitivity may be higher or lower than usual.

**— END —**

## **"LOC MISMATCH" or "GS MISMATCH" (Message on PFD)**

(ILS 1 and 2 deviation indications do not match)

- Determine valid localizer or glideslope source.
- HSI SEL.....Select 1 or 2 (As Appropriate)

### **NOTE:**

If a Mismatch appears between the two ILS sources in DUAL APPR mode, the Flight Director will automatically switch back to the HSI (which may not be valid) that was in use at the commencement of the approach.

**— END —**

---

## **"RA" (Message on PFD)**

(Both Radar Altimeters have failed)

### **Lost Services:**

- Stick Pusher
- EGPWS
- TCAS
  - Ensure required clearance from terrain, obstructions and other aircraft is maintained using alternate sources of available information.

### **Landing Considerations:**

- Select approach where minimums and operating procedures are not dependant upon radar altitude.
- Land with Condition Levers MAX/1020 only.
- Flap 35 Landing Distance on a contaminated runway is increased by 400 ft.

**— END —**

---

**"RAD ALT MISMATCH"**  
**(Message on PFD)**

(Radar Altimeter 1 and 2 indications do not match)

**Landing Considerations:**

- Select approach where minimums and operating procedures are not dependant upon radar altitude.

**NOTE:**

EGPWS Minimums callouts will be based on Rad Alt 1 altitudes.

**— END —**

---

**"GPS INTEG"**  
**(Message on PFD)**

(The integrity of the GPS position cannot be assured to meet minimum requirements for the particular phase of flight)

- Monitor FMS position by cross-reference to other navigation sensors.

**NOTE:**

“GPS INTEG” message can appear on the ground, due to local obstructions to satellite reception.

**Landing Considerations:**

- GPS-based approaches are not available.

**— END —**

---

**"NAV INTEG"  
(Message on PFD)**

(The integrity of the FMS position cannot be assured to meet minimum requirements for the particular phase of flight)

- Revert to an alternate means of navigation using other available navigation sensors.

**NOTE:**

“NAV INTEG” message can appear on the ground, due to local signal reception characteristics.

**— END —**

---

**"NAV DR"  
(Message on PFD)**

(The FMS is navigating by dead reckoning on the last known track, groundspeed, heading and TAS)

- Revert to an alternate means of navigation using other available navigation sensors.

**— END —**

---

**"ALIGNING"  
(Message on PFD)**

(AHRS is in the alignment mode)

- No Crew action required.

**— END —**

---

## MULTIFUNCTION DISPLAY FAILURE

(No data displayed on MFD screen)

- MFD (Affected) ..... OFF
  - Use operating MFD to display systems or navigation data as required.

— END —

---

## "TCAS FAIL" (Message on PFD and MFD)

(No TCAS TA or RA advisories or traffic display)

**NOTE:**

An amber "FAIL" annunciation is also displayed in the TCAS display area on the TCAS/ATC page.

- Ensure adequate separation is maintained from other aircraft using alternate sources of available information.

— END —

---

## "WX FAIL" (Message on MFD)

(No weather radar display)

### On Ground Only:

Refer to [Chapter 14: Supplemental Resets](#) for reset procedure.

### In Air:

- WX Radar ..... OFF then ON

### IF message persists:

- Ensure required clearance from areas of convective weather is maintained using alternate sources of available information.

— END —

---

## ENGINE DISPLAY FAILURE

(No data displayed on ED screen)

### **NOTE:**

ED display will automatically transfer to MFD 1 in flight.

- MFD (Select 1 or 2 as appropriate).....ENG
- ED Brightness ..... OFF

— END —

---



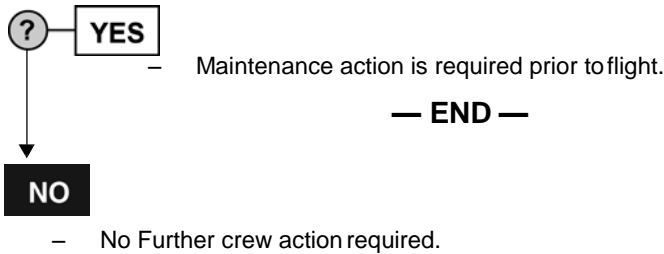
## Ghost Or Mirror Images On Integrated Standby Instrument (ISI)

*AOM 3.4-6 MAY 31/11*

(On initial application of power after the aircraft has been cold-soaked, the ISI displays ghost or mirror images)

- Wait a minimum of five (5) minutes for the ISI to warm up.
- ISI Circuit Breaker (H1 - Left Essential)..... RESET
- Wait until ISI alignment sequence is complete.

### Ghost or mirror images remain on the ISI?



## "CHECK ED" (Message on ED)

(Critical data on the ED may be displayed incorrectly)

- MFD 1..... ENG

**Does the CHECK ED Advisory remain displayed?**

**?** **YES**

- MFD 1 ..... NAV or SYS (As Req'd)
  - Monitor engine display data for incorrect information.

— END —

**NO**

- Continue using MFD 1 as primary engine display.

— END —

## DU BAD CONFIG (ED)

(Configuration of an EIS Display Unit is incorrect on aircraft power-up)

### **Ground only:**

- Display Units (All).....OFF
- Display Units .....ON Individually

#### **NOTE:**

Wait 30 seconds for self-test to complete on each individual display before selecting the next display ON.

### **IF message remains on:**

- Maintenance action required prior to flight.

— END —

---

## ED MON FAIL (ED)

(The EIS is no longer able to monitor information displayed on the ED for errors)

- Maintenance action required prior to next flight.

#### **NOTE:**

Avionics Caution light will illuminate after landing.

— END —

---

## FADEC1/DU or FADEC2/DU or FADECS/DU (ED)

(EIS is no longer receiving information from  
one or more engine FADECs)

- Operate Power Levers and Conditions Levers together.
- Maintenance action required prior to next flight.

— END —

## FANS FAIL (ED)

(Two or more EIS display cooling fans have failed)

**Is the airplane in the air?**



**YES**

- The flight may continue to the destination, return to point of departure or the nearest airport where maintenance are available, as appropriate. (Coordinate with Dispatch/SOC.)

**NOTE:**

Avionics Caution light will illuminate after landing.

— END —

**NO**

Aircraft is on the ground only:

**NOTE:**

1. AVIONICS caution light will illuminate indicating an avionics no dispatch condition has been sensed.
2. FANS FAIL message will clear when flight deck temperature sensors warm above 5° C.
3. Refer to [Chapter 14: Supplemental Resets](#).

**IF message remains on after Flight Deck temperature rises above 5° C:**

- Maintenance action required prior to flight.

— END —

**"GPWS I/F FAIL"  
(Message on ED)**

(The EIS is no longer receiving information for the EGPWS)

- Ensure required clearance from terrain and obstructions is maintained using alternate sources of available information.
- Maintenance action required prior to next flight.

**— END —**

**HOT DISPLAYS  
(Message on ED)**

(Two or more EIS display units are overheating)

- The flight may continue to the destination, return to point of departure or the nearest airport where maintenance are available, as appropriate. (Coordinate with Dispatch/SOC.)

**IF a PFD or ED should subsequently fail:**

- MFD (Select 1 or 2 as appropriate)..... PFD or ENG

**NOTE:**

Avionics Caution light will illuminate after landing.

**— END —**

**HOT ED  
(Message on ED)**

(The ED display is overheating)

- Maintenance action required prior to next flight.

**IF the ED should subsequently fail:**

- MFD (Select 1 or 2 as appropriate).....ENG

**NOTE:**

Avionics Caution light will illuminate after landing.

— END —

**HOT MFD1 or HOT MFD2  
(Message on ED)**

(The indicated MFD display is overheating)

- Maintenance action required prior to next flight.

**IF the MFD should subsequently fail:**

- | • Opposite MFD (1 or 2 as appropriate)..... PFD

**NOTE:**

Avionics Caution light will illuminate after landing.

— END —

---

## **IOMS FAIL (Message on ED)**

(Both avionics data Input/Output Modules have failed)

### **Lost Services:**

- Stall Warning and Stick Pusher
- Warning Tones and Audible Alerts
- VHF Nav 1 and 2 Course Deviation and Bearing Pointers
- DME 1 and 2 Distance
- ADF 1 and 2 Bearing Pointers
- Marker Beacon Indications
- FMS 1 and 2 Course Deviation, Distance, Track, and Bearing Pointers
- Radar Altitude Indication
- Weather Radar Display
- EGPWS Terrain Display and Audible Warnings
- TCAS Traffic Display, TA/RA Advisories, and Audible Advisories
- ATC Mode S
  
- Establish and use alternate means to determine aircraft position in order to navigate and to ensure required clearance from terrain, obstructions, convective weather, and other aircraft is maintained.

### **NOTE:**

Avionics Caution light will illuminate after landing.

**— END —**

---

## **IOM1 FAIL or IOM2 FAIL (Message on ED)**

(One avionics data Input/Output Module has failed)

- Maintenance action required prior to next flight.

### **NOTE:**

Avionics Caution light will illuminate after landing.

**— END —**

---

### **IOP BAD CONF (Message on ED)**

(Configuration of an avionics Input/Output Processor is incorrect on aircraft power-up)

- Maintenance action required prior to flight.

**— END —**

---

### **IOPS FAIL (Message on ED)**

(Both avionics data Input/Output Processors have failed)

#### **Lost Services:**

- Stall Warning and Stick Pusher
- Warning Tones and Audible Alerts
- VHF Nav 1 and 2 Course Deviation and Bearing Pointers
- DME 1 and 2 Distance
- ADF 1 and 2 Bearing Pointers
- FMS 1 and 2 Course Deviation, Distance, Track, and Bearing Pointers
- Radar Altitude Indication
- Weather Radar Display
- EGPWS Terrain Display and Audible Warnings
- TCAS Traffic Display, TA/RA Advisories, and Audible Advisories
- ATC Mode S
  - Establish and use alternate means to determine aircraft position in order to navigate and to ensure required clearance from terrain, obstructions, convective weather, and other aircraft is maintained.

#### **NOTE:**

Avionics Caution light will illuminate after landing.

**— END —**

---



**IOP1 FAIL or IOP2 FAIL  
(Message on ED)**

(One avionics data Input/Output Processor has failed)

- Maintenance action required prior to next flight.

**NOTE:**

Avionics Caution light will illuminate after landing.

**— END —**

---

**MFD LINK FAIL or MFD2 LINK FAIL  
(Message on ED)**

(The EIS is no longer able to monitor information displayed on the indication MFD for errors)

- Maintenance action required prior to next flight.

**— END —**

---

**PFD LINK FAIL or PFD2 LINK FAIL  
(Message on ED)**

(The EIS is no longer able to monitor information displayed on the indication PFD for errors)

- Maintenance action required prior to next flight.

**— END —**

---

**PFD1 MON FAIL or PFD2 MON FAIL or  
PFDS MON FAIL  
(Message on ED)**

(The EIS is no longer able to monitor information displayed on the indication PFD for errors)

- Maintenance action required prior to next flight.

**NOTE:**

Avionics Caution light will illuminate after landing.

**— END —**

---

**"RAS FAIL"  
(Message on ED)**

(Both Radar Altimeters have failed)

**Lost Services:**

- Stick Pusher
- EGPWS
- TCAS
  - Ensure required clearance from terrain, obstructions and other aircraft is maintained using alternate sources of available information.

**Landing Considerations:**

- Select approach where minimums and operating procedures are not dependant upon radar altitude.
- Land with Condition Levers MAX/1020 only.
- Flap 35 Landing Distance on a contaminated runway is increased by 400 ft.

**— END —**

---

**RA1 FAIL or RA2 FAIL  
(Message on ED)**

(The indicated Radar Altimeter has failed)

- Maintenance action required prior to next flight.

**NOTE:**

Radar altitude will continue to be displayed on PFD 1 and 2 from the remaining operative radar altimeter.

— END —

---

**WOW/IOPS FAIL  
(Message on ED)**

(Neither Input/Output Processor is receiving Weight On Wheels information)

**Landing Considerations:**

- Airspeed indications will go invalid on both PFDs below 80 knots.
- Stick Shaker may activate during landing rollout and taxi.

**NOTE:**

Radar altitude will continue to be displayed on PFD 1 and 2 from the remaining operative radar altimeter.

— END —

---

**WOW/IOP1 FAIL or  
WOW/IOP2 FAIL  
(Message on ED)**

(The indicated Input/Output Processor is not receiving Weight On Wheels information)

- Maintenance action required prior to next flight.

**NOTE:**

Avionics Caution light will illuminate after landing.

**— END —**

---

**WTGS FAIL  
(Message on ED)**

(Both Warning Tone Generators have failed)

**Lost Warning Tones and Aural Alerts:**

- EGPWS Audible Warnings
- TCAS TA/RA Advisories
- Overspeed Warning
- Beta Lockout
- Caution/Warning Alert
- Altitude Alert
- Unilink Alerts
  - Establish and use alternate means to monitor aircraft airspeed, altitude, position and operating condition.

**NOTE:**

Avionics Caution light will illuminate after landing.

**— END —**

---

**WTG1 FAIL or  
WTG2 FAIL  
(Message on ED)**

(The indicated Warning Tone Generator has failed)

- Maintenance action required prior to next flight.

**NOTE:**

Warning tones and audible alerting will continue to be provided by the operative Warning Tone Generator. Avionics Caution light will illuminate after landing.

**— END —**

---

**PA CHIME INOPERATIVE**

*AOM 3.4-8 NOV 21/11*

**NOTE:**

If on the ground, refer to [Chapter 14: Supplemental Resets](#) for reset procedure.

- No crew action required in flight.

**— END —**

---

## ARCDU Transmission Errors

DH8-400-SL-23-010 MAY 3/11

### **(Microphone/Interphone Rotary Selector (MIRS) Intermittent)**

- Spurious interruptions of transmission, intermittent display of selected transmission on ARCDU display, intermittent audio return when pushing the PTT.

#### **Inflight or on Ground:**

- Confirm transmission source in INT box on ARCDU matches the MIRS position by observing TX appears in the INT box when the PTT switch is selected.

#### **IF ARCDU and MIRS position disagree or TX does not appear in lower left corner of ARCDU display when PTT switch is selected:**

- Momentarily select alternate source with the MIRS.

**— END —**

#### **IF problem persists:**

- Pilot on side with working MIRS will make a radio transmissions.

**— END —**

## DUAL ARCDU FAILURE

(Loss of both ARCDU displays and control of radio functions)

- ARCDU 1 and 2.....OFF

**Wait 5 seconds:**

- ARCDU 1 and 2.....ON

**IF ARCDUs are still inoperative:**

- STBY VHF CONTROL.....ON
- NORM/EMER.....EMER
  - Establish alternate means to communicate between Cockpit Crewmembers as Hot MIC and INT transmit functions are not available.
  - Establish air to ground communications on VHF 1 with the left seat Pilot using the standby VHF controller.
  - Establish alternate means to communicate with Cabin Crew as PACIS transmit function is not available.

**NOTE:**

In EMERGENCY mode, ARCDU selections revert to default settings as follows:

Left ARCDU --- VHF 1 and interphone audio are connected to the left seat Pilot's headset at a fixed volume. Pilot's handset, boom, and mask microphones are selected to transmit on VHF 1 only.

Right ARCDU --- VHF 2 and interphone audio are connected to the right seat Pilot's headset at a fixed volume. Right seat Pilot's handset, boom, and mask microphones are selected to transmit on VHF 2 only.

— END —

**"ARCDU FAILED"**  
(Message on ARCDU display)

(No display or control of radio functions)

- \_\_\_\_ARCDU(Affected).....OFF

**Wait 5 seconds:**

- \_\_\_\_ARCDU (Affected).....ON

**IF ARCDUs are still inoperative:**

- NORM/EMER .....EMER
  - Establish alternate means to communicate between Cockpit Crewmembers as Hot MIC and INT transmit functions are not available.
  - Assign communication duties with ATC and Cabin Crew to Pilot with functional ARCDU.

**NOTE:**

In EMERGENCY mode, ARCDU selections revert to default settings as follows:

Left ARCDU --- VHF 1 and interphone audio are connected to the left seat Pilot's headset at a fixed volume. Pilot's handset, boom, and mask microphones are selected to transmit on VHF 1 only.

Right ARCDU --- VHF 2 and interphone audio are connected to the right seat Pilot's headset at a fixed volume. Right seat Pilot's handset, boom, and mask microphones are selected to transmit on VHF 2 only.

**— END —**



**"FAIL"**  
**(Message on ARCDU INT display area)**

(No control of audio level or transmit source selections)

- Maintenance action required prior to next flight.

**NOTE:**

RCAU has automatically reconfigured to select VHF1, VHF 2, and interphone audio to the affected Pilot's headset at a fixed volume. Affected Pilot handset, boom, and mask microphones are selected to transmit on INT---only. VHF 1, VHF 2, and PACIS transmit functions are not available.

Assign communication duties with ATC and Cabin Crew to Pilot with functional ARCDU.

— END —

---

**LOSS OF PILOT or  
FIRST OFFICER HEADSET AUDIO**

(One headset is no longer receiving audio signals)

- Connect affected headset to the AUX output on the Audio Jack Panel.

**NOTE:**

The AUX output is configured to receive the same audio sources selected by the opposite Pilot. Own side VHF 1, VHF 2, INT, and PACIS transmit functions continue to operate normally.

— END —

---

**"ALT"**  
**(Message on ARCDU ATC display area)**

(Message appears during climb or descent)

**NOTE:**

A red "FAIL" message is also displayed in the ALT and TCAS display areas of the TCAS/ATC page.

**IF annunciation remains on after aircraft is in level flight:**

- Maintenance action requires prior to next flight.

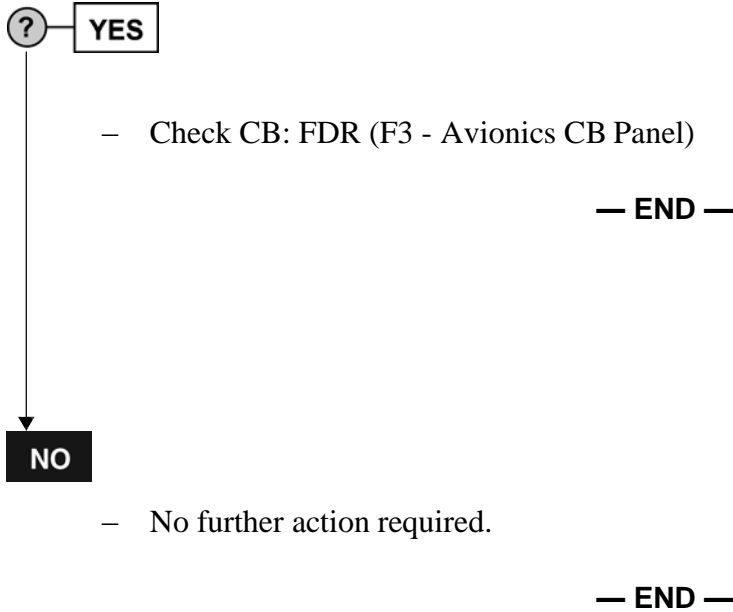
**— END —**

---

## "FLT DATA RECORDER" (Caution Light)

- Anti-Collision Light.....Red or White

**Does the Caution Light remain illuminated?**



## "GPWS" (Caution Light)

- Check CB: (E) GPWS (A1 - Avionics CB Panel).

**— END —**

## **Chapter 5: Fuselage Fire or Smoke**

"SMOKE" (Warning Light)	5-1
FUSELAGE FIRE or SMOKE	5-1

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## Chapter 5: Fuselage Fire or Smoke

### "SMOKE" (Warning Light)

(SMOKE Warning Light and BAGGAGE FWD or  
AFT SMOKE and EXTG Advisory Lights)

- Oxygen Masks ..... On/100%
- Smoke Goggles (If applicable) ..... On
- BOOM/MASK switch ..... MASK
- RECIRC switch..... OFF
- Illuminated SMOKE/EXTG switchlight ..... Press

**NOTE:**

The second Baggage compartment FIRE BTL LOW Advisory Light may illuminate after the first bottle has been discharged.

- Land immediately at the nearest suitable airport.

### FUSELAGE FIRE or SMOKE

- Oxygen Masks ..... On/100%
- Smoke Goggles (If applicable) ..... On
- BOOM/MASK switch ..... MASK
- RECIRC switch..... OFF
- EMER LIGHTS switch..... ON

- Land immediately at nearest suitable airport if it cannot be visibly verified that the fire has been extinguished following fire suppression.

**NOTE:**

To prepare for and manage an immediate landing, the procedures given in the Unknown Source of Fire or Smoke section may be terminated prior to completion.

— CONTINUED —

## Known Source of Fire or Smoke:

☐ ?
 ☒ YES

### Flight Compartment Fire or Smoke?

- Extinguish fire with halon fire extinguishers.
- CABIN ALT FWD OUTFLOW ..... Fully Clockwise (OPN)

IF necessary to assist in removal of smoke:

- FWD OUTFLOW VALVE selector ..... OPEN
- Descend to below 14,000 ft. as soon as possible.

— END —

### Cabin Fire or Smoke:

- EMER LIGHTS switch ..... ON
- Evacuate passengers from affected area.
- Extinguish fire with halon fire extinguishers.

#### **NOTE:**

If a Pilot is required to fight the fire, protective breathing equipment must be donned prior to exiting the flight compartment.

IF necessary to assist in removal of smoke:

- AUTO/MAN/DUMP switch ..... DUMP
- Descend to below 14,000 ft. as soon as possible.

— END —

### Baggage Compartment Fire or Smoke

- “SMOKE” (Warning Light) ([Page 5-1](#)) ..... Accomplish

— END —

☒ NO

### Unknown Source of Fire or Smoke:

— CONTINUED —

**NO**

## Unknown Source of Fire or Smoke:

### Bleed Source or Air Conditioning Suspected?

**?** **YES**

- BLEED switch 1 ..... OFF

Wait up to 1 minute.

#### Improvement?

**?** **YES**

- Leave selected switch in the OFF position.

— END —

**NO**

- BLEED switch 1 ..... BLEED

- BLEED switch 2 ..... OFF

Wait up to 1 minute.

#### Improvement?

**?** **YES**

- Leave selected switch in the OFF position.

— END —

**NO**

- BLEED switch 2 ..... BLEED

- FLT COMP pack switch ..... OFF

Wait up to 1 minute.

**NO**

— CONTINUED —



↓  
**NO** **Improvement?**

⊙ **YES**

- Leave selected switch in the OFF position.

— END —

**NO**

- FLT COMP pack switch.....AUTO or MAN
- CABIN pack switch.....OFF

Wait up to 1 minute.

**Improvement?**

⊙ **YES**

- Leave selected switch in the OFF position.

— END —

**NO**

- CABIN pack switch.....AUTO or MAN

### **Source of Fire or Smoke cannot be Identified:**

- DC GEN switches..... OFF
- AC GEN switches..... OFF
- STORM/DOME Light switch.....STORM (If Req'd)
- MAIN, AUX, and STBY BATT switches..... OFF
- EMER LIGHTS switch.....OFF (Until Req'd)

– Land immediately at the nearest suitable airport.

---

#### **CAUTION:**

*Battery duration for operation of essential services is 60 minutes.*

---

— CONTINUED —

The following services will be available with their associated caution/warnings and advisory lights:

ADC 1	CB Panel Lights
Standby Pitot Heat	Emergency Lights
Engine Fire Detection and Extinguishing	Passenger Signs
Smoke Detectors	Position Lights
Aileron Trim Actuation and Indication	Baggage Lights
Rudder Trim Actuation and Indication	Strobe Lights
Elevator Trim Actuation and Indication	Flight Compartment Dome Lights
Flap Control and Indication	Landing Gear Control and Indication
PFCS Indication	Engine Ignition and Start
AHRS 1 and 2	#1 and #2 Engine Oil Pressure
VHF COMM 1	#1 Engine Fuel Temperature
VHF NAV 1	#1 and #2 FADECS
Captain and First Officer Audio	#1 and #2 PECS
PA and Cabin Interphone Audio	Fuel and Hydraulic Shut Off Valves
Clock 1	#1 and #3 Hydraulic Quantity Indications
Integrated Standby Instrument (ISI)	#1, #2, and #3 Hydraulic Pressure Indications
No. 3 Hydraulic System	

**NOTE:**

Engine bleed air flow to ECS packs lost. Cabin will depressurize.

- Ventilate aircraft, when below 14,000 ft:
- AUTO/MAN/DUMP switch..... MAN
- MAN DIFF switch..... INCR(50 sec)
- CABIN ALT FWD OUTFLOW..... Fully clockwise (OPN)
- FWD OUTFLOW VALVE selector ..... OPEN

**NOTE:**

Ram ventilation is most effective above 150 KIAS.

— END —

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## **Chapter 6: Emergency Landing and Forced Landing**

EMERGENCY LANDING (Both Engines Operating)	6-1
FORCED LANDING (Both Engines Inoperative)	6-6

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## Chapter 6: Emergency Landing and Forced Landing

### EMERGENCY LANDING (Both Engines Operating)

- Flight Compartment and Cabin..... Secure
- If possible ensure no passengers are seated in the plane of the propellers.

#### **NOTE:**

Configuring the forward right hand emergency exit for ditching may required the aircraft to be depressurized to reduce the force on the lower exit door handle.

- GPWS CB (A1 - Avionics CB Panel) .....Pull
- EMER LIGHTS switch.....ON
- AUTO/MAN/DUMPswitch.....DUMP
- ELT switch.....ON
- Shoulder Harness ..... Lock

#### **Review appropriate Landing Considerations:**

- Landing Gear Extended ..... [Page 6-7](#)
- Landing Gear Retracted..... [Page 6-3](#)
- Ditching ..... [Page 6-4](#)

## **| Landing Gear Extended--Landing Considerations:**

When airplane comes to a stop:

- EMERG BRAKE .....PARK
- Condition Levers.....FUEL OFF
- PULL FUEL/HYD OFF handles ..... Pull
- BATTERY MASTER switch .....OFF
- Evacuation .....Command

## Landing Gear Retracted--Landing Considerations:

- Flaps 35

### NOTE:

Gear Warning Horn can be muted by Pressing HORN MUTE on Landing Gear Selector when PLA < RATING detent, KIAS < 156, Radio Altitude < 1053 ft.

- Maintain  $V_{REF}$  until immediately prior to flare.

Weight (lbs)	$V_{REF}$	
	Flap 35	
	Level 1	Level 2/3
64,000	122	137
62,000	120	135
60,000	118	133
58,000	116	131
56,000	115	130
54,000	112	127
52,000	110	125
50,000	108	123
48,000	106	121
46,000	104	119
44,000	102	117

- DO NOT exceed 6° nose up during flare.
- Touch down with minimum speed and minimum rate of descent without stalling.

After ground contact:

- Condition Levers.....FUEL OFF
- PULL FUEL/HYD OFF handles .....Pull
- BATTERY MASTER switch .....OFF

When airplane comes to a stop:

- Evacuation .....Command



## **Ditching:**

### **NOTE:**

Configuring the forward right hand emergency exit for ditching may require the aircraft to be depressurized to reduce force on the lower exit and handle.

- Condition Levers..... MAX
- BLEED switches 1 and 2 ..... OFF
- Flaps 35

### **NOTE:**

Gear Warning Horn can be muted by Pressing HORN MUTE on Landing Gear Selector when PLA < RATING detent, KIAS < 156, Radio Altitude < 1053 ft.

<b>V<sub>REF</sub></b>		
<b>Weight (lbs)</b>	<b>Flap 35</b>	
	<b>Level 1</b>	<b>Level 2/3</b>
64,000	122	137
62,000	120	135
60,000	118	133
58,000	116	131
56,000	115	130
54,000	112	127
52,000	110	125
50,000	108	123
48,000	106	121
46,000	104	119
44,000	102	117

## **Landing Considerations:**

- DO NOT select Landing Gear Down.
- In rolling swell surface conditions attempt to ditch along and parallel to the crests as much into wind as swell line permits. In other water surface conditions land into wind.
- Maintain V<sub>REF</sub> until immediately prior to flare.
- Commence flare to achieve zero vertical velocity immediately prior to water contact.

- Maintain pitch attitude of 10° nose up.
- Touch down with minimum speed and minimum rate of descent without stalling.
- A transient nose-up pitching motion may result following touchdown. Overcorrection of this tendency could result in porpoising or nosing in.

After water contact:

- Condition Levers.....FUEL OFF
- PULL FUEL/HYD OFF handles .....Pull
- BATTERY MASTER switch .....OFF

When airplane comes to a stop:

**WARNING**

***DO NOT open the Aft Doors or the lower portion of the right forward Emergency Exit.***

- Evacuation .....Command

**NOTE:**

After completion of the ditching run, the airplane will float with one wing in the water. The upper portion of the right forward emergency exit and the airstair door should be used for evacuation. The airstair door ditching dam must be in place prior to opening the door.

**— END —**

## FORCED LANDING (Both Engines Inoperative)

- HYD #3 ISOL VLV.....Open
- Airspeed .....V<sub>REF</sub>

Weight (lbs)	V <sub>REF</sub>	
	Flap 0	
	Level 1	Level 2/3
64,000	158	183
62,000	155	180
60,000	153	178
58,000	150	175
56,000	147	172
54,000	145	170
52,000	142	167
50,000	139	164
48,000	137	162
46,000	134	159
44,000	131	156
42,000	128	153
40,000	125	150

**NOTE:**

With Flap 0°, landing gear retracted, propellers feathered and zero wind, 2.5 nautical miles can be travelled for every 1,000 feet of altitude loss. All Hydraulic (except for elevator control), pneumatic, and non-essential electrical services will be inoperative.

- Attempt engine airstart.
- ENGINE AIRSTART ([Page 3-14](#)) ..... Accomplish

— CONTINUED —

## When all attempts to achieve a successful airstart have failed:

- MAIN, AUX, and STBY BATT switches ..... OFF
- FASTEN BELTS switch.....ON
- EMER LIGHTS switch.....ON
- ELT switch.....ON
- Shoulder Harness ..... Lock
- Make the approach and landing into wind.
- Extending landing gear will steepen glide angle and decrease glide distance.

## Review Appropriate Landing Considerations:

- Landing Gear Extended ..... [Page 6-7](#)
- Landing Gear Retracted..... [Page 6-8](#)
- Ditching ..... [Page 6-10](#)

## Landing Gear Extended--Landing Considerations:

IF the available surface is appropriate, extend landing gear allowing sufficient time for alternate gear extension.

- Maintain  $V_{REF}$  minimum until immediately prior to flare.

$V_{REF}$		
Weight (lbs)	Flap 0	
	Level 1	Level 2/3
64,000	158	183
62,000	155	180
60,000	153	178
58,000	150	175
56,000	147	172
54,000	145	170
52,000	142	167
50,000	139	164
48,000	137	162
46,000	134	159
44,000	131	156
42,000	128	153
40,000	125	150

— CONTINUED —

**NOTE:**

Gear Warning Horn can be muted by Pressing HORN MUTE on Landing Gear Selector when PLA < RATING detent, KIAS < 156, Radio Altitude < 1053 ft.

- Commence flare to achieve zero vertical velocity immediately prior to ground contact.
- DO NOT exceed 6° nose up during flare.
- Touch down with minimum speed and minimum rate of descent without stalling.
- ALTERNATE LANDING GEAR EXTENSION

(Page 12-1)..... Accomplish

After touchdown:

- BATTERY MASTER switch .....OFF
- EMERG BRAKE ..... Apply Intermittently

When airplane comes to a stop:

- Evacuation .....Command

**Landing Gear Retracted--Landing Considerations:**

- Maintain  $V_{REF}$  minimum until immediately prior to flare.

$V_{REF}$		
Weight (lbs)	Flap 0	
	Level 1	Level 2/3
64,000	158	183
62,000	155	180
60,000	153	178
58,000	150	175
56,000	147	172
54,000	145	170
52,000	142	167
50,000	139	164
48,000	137	162
46,000	134	159
44,000	131	156
42,000	128	153
40,000	125	150

— CONTINUED —

**NOTE:**

Gear Warning Horn can be muted by Pressing HORN MUTE on Landing Gear Selector when PLA <RATING detent, KIAS < 156, Radio Altitude < 1053 ft.

- Commence flare to achieve zero vertical velocity immediately prior to ground contact.
- DO NOT exceed 5° nose up during flare.
- Touch down with minimum speed and minimum rate of descent without stalling.

When airplane comes to a stop:

- BATTERY MASTER switch .....OFF
- Evacuation .....Command

## Ditching--Landing Considerations:

- DO NOT select Landing Gear Down.
- In rolling swell surface conditions attempt to ditch along and parallel to the crests as much into wind as swell line permits. In other water surface conditions land into wind.
- Maintain  $V_{REF}$  minimum until immediately prior to flare.

Weight (lbs)	$V_{REF}$	
	Flap 0	
	Level 1	Level 2/3
64,000	158	183
62,000	155	180
60,000	153	178
58,000	150	175
56,000	147	172
54,000	145	170
52,000	142	167
50,000	139	164
48,000	137	162
46,000	134	159
44,000	131	156
42,000	128	153
40,000	125	150

### NOTE:

Gear Warning Horn can be muted by Pressing HORN MUTE on Landing Gear Selector when PLA < RATING detent, KIAS < 156, Radio Altitude < 1053 ft.

- Commence flare to achieve zero vertical velocity immediately prior to water contact.
- Maintain pitch attitude of 10° nose up.
- Touch down with minimum speed and minimum rate of descent without stalling.
- A transient nose-up pitching motion may result following touchdown. Overcorrection of this tendency could result in porpoising or nosing in.

— CONTINUED —

**NOTE:**

Configuring the forward right hand emergency exit for ditching may require the aircraft to be depressurized to reduce force on the lower exit and handle.

After water contact:

- | • BATTERY MASTER switch ..... OFF

When airplane comes to a stop:

**WARNING**

***DO NOT open the Aft Doors or the lower portion of the right forward emergency exit.***

- | • Evacuation ..... Command

**NOTE:**

After completion of the ditching run, the airplane will float with one wing in the water. The upper portion of the right forward emergency exit and the airstair door should be used for evacuation. The airstair door ditching dam must be in place prior to opening the door.

— END —

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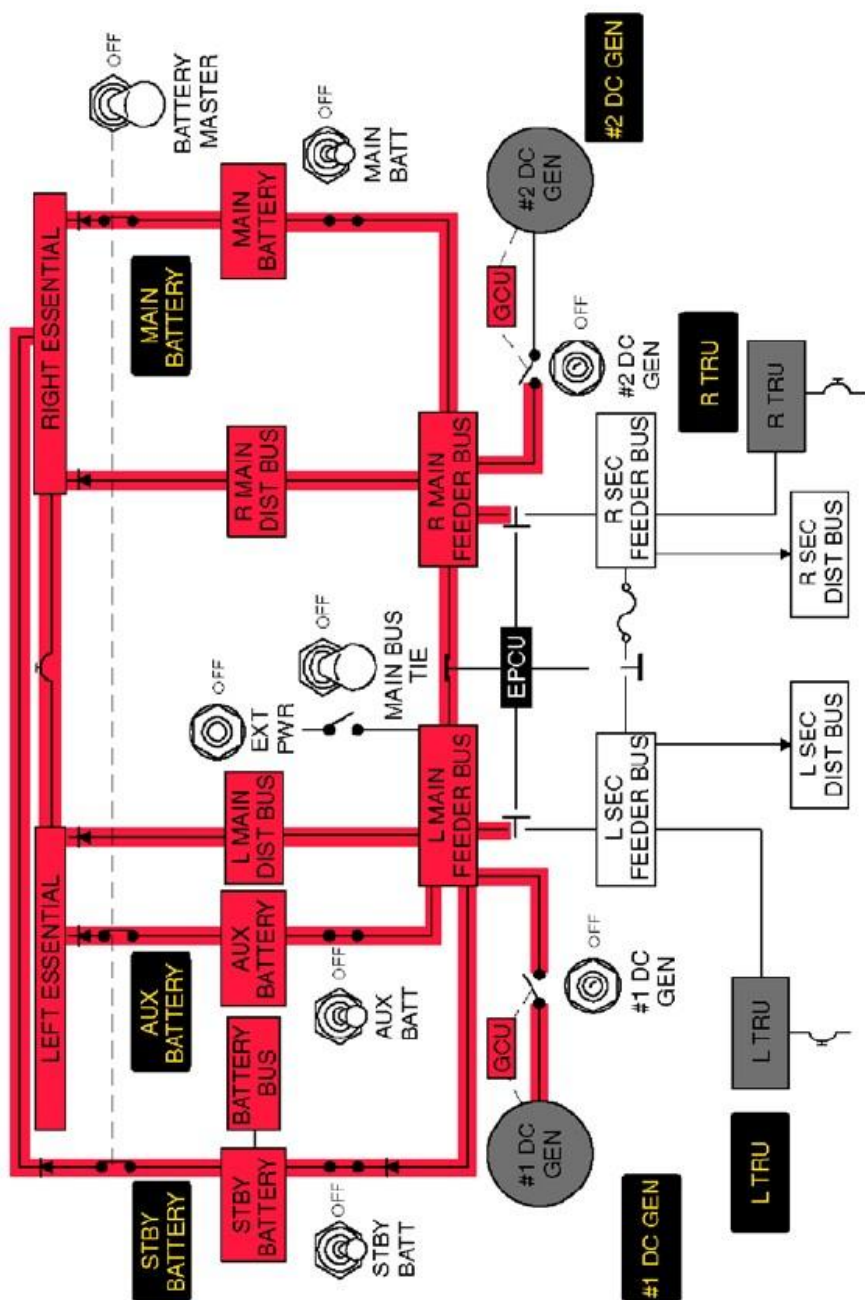
## Chapter 7: Electrical

"MAIN BATTERY" or "AUX BATTERY" or "STBY BATTERY" (Caution Light)	7-3
"MAIN BAT HOT" or "AUX BAT HOT" or "STBY BAT HOT" (Warning Light)	7-3
"EMER LTS DISARMED" (Caution Light)	7-4
"DC BUS" (Caution Light)	7-4
MAIN DC BUS FAULT	7-4
"L AC BUS" or "R AC BUS" (Caution Light)	7-7
LOSS OF GENERATED POWER	7-7
"#1 DC GEN" and "#2 DC GEN" and either "#1 AC GEN" and "#2 AC GEN" or "L TRU" and/or "R TRU" (Caution Lights)	7-7
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"#1 AC GEN" or "#2 AC GEN" (Caution Light)	7-12
"#1 AC GEN HOT" or "#2 AC GEN HOT" (Caution Light)	7-12
"L TRU" or "R TRU" or "L TRU HOT" or "R TRU HOT" (Caution Light)	7-13

## Chapter 7: Electrical

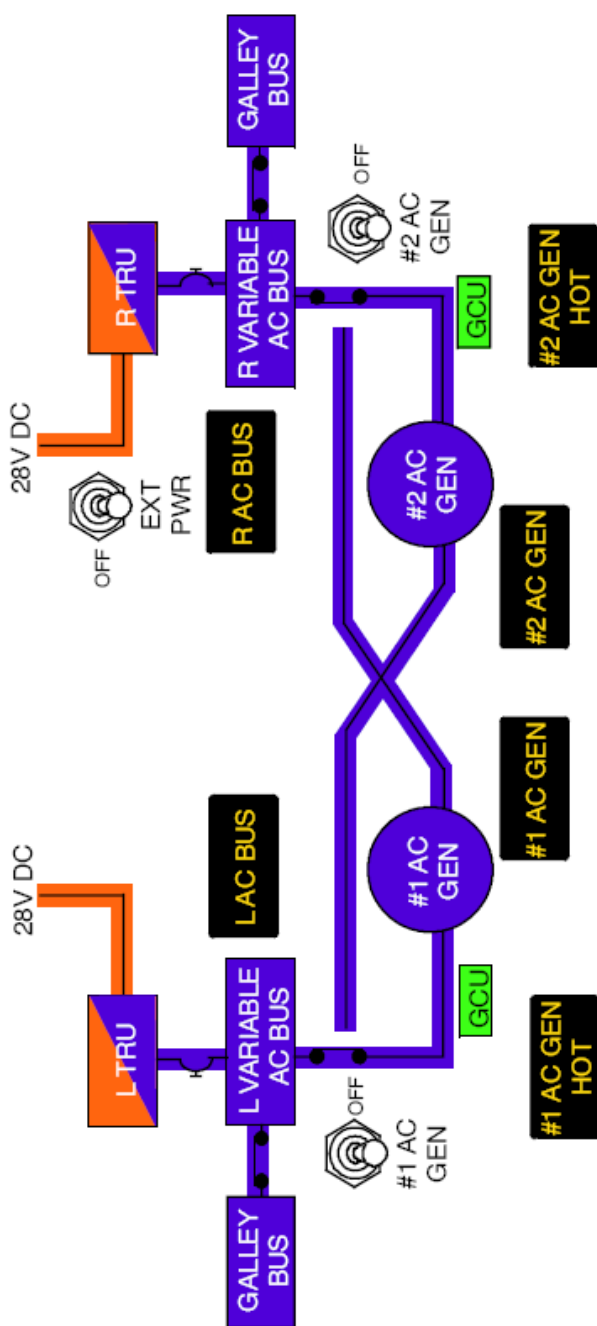
### DC Power Schematic



PSM 1-84-1B (Oct 31, 2010)

Figure 7-1: DC Power Schematic

# AC Power Schematic



PSM 1-84-1B (Oct 31, 2010)

Figure 7-2: AC Power Schematic

**"MAIN BATTERY" or  
"AUX BATTERY" or  
"STBY BATTERY"  
(Caution Light)**

- Battery (Affected)..... OFF then ON

**| Caution Light remains on?**

**?** **YES**

- Battery (Affected).....OFF

**— END —**

**NO**

- No further action required.

**— END —**

**"MAIN BAT HOT" or  
"AUX BAT HOT" or  
"STBY BAT HOT"  
(Warning Light)**

- Electrical Page ..... Confirm Overheat
- Battery (Affected)..... OFF

**| Battery temperature continues to rise?**

**?** **YES**

- Land immediately at the nearest suitable airport.

**— END —**

**NO**

- Continue to monitor affected battery temperature

**— END —**

## "EMER LTS DISARMED" (Caution Light)

- EMER LIGHTS switch..... ARM

— END —

## "DC BUS" (Caution Light)

### NOTE:

If aircraft is on ground and APU start was completed using ship's batteries prior to "DC BUS" Caution Light, refer to [Chapter 14: Supplemental Resets](#) for reset procedure.

### Other associated caution lights are illuminated?

(#1 DC GEN, STBY BATTERY and AUX BATTERY CAUTION LIGHTS or #2 DC GEN AND MAIN BATTERY CAUTION LIGHTS)

☐ ?    ☐ YES

- MAIN DC BUS FAULT (Next Checklist).....Accomplish

— END —

NO

- BUS FAULT RESET .....Reset

— END —

## MAIN DC BUS FAULT

### Left Main DC Bus Fault:

**("DC BUS", "#1 DC GEN", "STBY BATTERY" and "AUX BATTERY" Caution Lights)?**

- AUX and STBY BATT switches..... OFF
- DC GEN 1 switch ..... OFF
- BUS FAULT RESET switch .....Reset
  - Leave selected switches in the OFF position.

— CONTINUED —

## DC BUS Caution Light remains illuminated?

**?** **YES**

- Descend to below 14,000 ft. as soon as possible.
- AUTO/MAN/DUMP switch.....MAN
- MAN DIFF switch..... INCR (50 sec)
- The flight may continue to the destination, return to point of departure, or the nearest airport where maintenance services are available, as appropriate. (Coordinate with Dispatch/SOC.)

**NOTE:**

ECS pack airflow is lost and cabin will depressurize.

When below 14,000 ft., ventilate cabin:

- RECIRC switch..... OFF
- BLEED selector.....MIN
- BLEED switches 1 and 2 ..... OFF
- CABIN ALT FWD OUTFLOW..... Fully Clockwise (OPN)
- FWD OUTFLOW VALVE selector ..... OPEN

**NOTE:**

Ram ventilation is most effective above 150 KIAS.

**NO**

**— END —**

- No further action required.

**— CONTINUED —**



## Right Main DC Bus Fault:

### (“DC BUS”, “#2 DC GEN”, and “MAIN BATTERY” Caution Lights)

- MAIN BATT switch..... OFF
- DC GEN 2 switch ..... OFF
- BUS FAULT RESET switch ..... Reset
  - Leave selected switches in the OFF position.

## DC BUS Caution light remains illuminated?

**?** **YES**

- Descend to below 14,000 ft. as soon as possible.
- The flight may continue to the destination, return to point of departure or the nearest airport where maintenance services are available, as appropriate. (Coordinate with Dispatch/SOC.)

### **NOTE:**

ECS pack airflow is lost and cabin will depressurize.

When below 14,000 ft., ventilate cabin:

- RECIRC switch..... OFF
- BLEED selector..... MIN
- BLEED switch 1 and 2 ..... OFF
- AUTO/MAN/DUMP switch..... MAN
- MAN DIFF switch..... INCR(50 sec)
- CABIN ALT FWD OUTFLOW..... Fully Clockwise (Opn)
- FWD OUTFLOW VALVE selector ..... OPEN

### **NOTE:**

Ram ventilation is most effective above 150 KIAS.

- INBD ANTI-SKID and/or OUTBD ANTI-SKID  
([Page 12-11](#))..... Accomplish

— END —

**NO**

- No further action required.

— END —

## "L AC BUS" or "R AC BUS" (Caution Light)

**NOTE:**

Affected variable AC BUS is depowered with loss of associated services.

**Lost Services:**

<u>L AC BUS</u>	<u>R AC BUS</u>
L Aux Fuel Pump	R Aux Fuel Pump
L Prop Deicing	R Prop Deicing
L Alpha Vane Heater	R Alpha Vane Heater
L TRU	R TRU
L Ice Detection Sensor	R Ice Detection Sensor
Pilot Windshield Heat (NORM & WARM UP)	Standby Hydraulic Pump
L Engine Intake Heater	Co-pilot Windshield Heat (NORM)
L Pitot Static Heater	Pilot Side Window Heat
Stick Pusher System	R Engine Intake Heater
	R Pitot Static Heater
	Stick Pusher System

— END —

## LOSS OF GENERATED POWER

**"#1 DC GEN" and "#2 DC GEN"  
and either  
"#1 AC GEN" and "#2 AC GEN" or  
"L TRU" and/or "R TRU"  
(Caution Lights)**

(Loss of BOTH DC Generators and BOTH AC Generators or loss of  
BOTH DC Generators and ONE or BOTH TRUs)

- STORM/DOME LIGHT switch ..... STORM (If Req'd)
- MAIN, AUX, and STBY BATT switches ..... OFF
- EMER LIGHTS switch..... As Req'd

— Land immediately at nearest suitable airport.

— CONTINUED —

The following services WILL BE available along with their associated caution/warnings and advisory lights:

ADC 1	CB Panel Lights
Standby Pitot Heat	Emergency Lights
Engine Fire Detection and Extinguishing	Passenger Signs
Smoke Detectors	Position Lights
Aileron Trim Actuation and Indication	Baggage Lights
Rudder Trim Actuation and Indication	Strobe Lights
Elevator Trim Actuation and Indication	Flight Compartment Dome Lights
Flap Control and Indication	Landing Gear Control and Indication
PFCS Indication	Engine Ignition and Start
AHRS 1 and 2	#1 and #2 Engine Oil Pressure
VHF COMM 1	#1 Engine Fuel Temperature
VHF NAV 1	#1 and #2 FADECS
Captain and First Officer Audio	#1 and #2 PECS
PA and Cabin Interphone Audio	Fuel and Hydraulic Shut Off Valves
Clock 1	#1 and #3 Hydraulic Quantity Indications
Integrated Standby Instrument (ISI)	#1, #2, and #3 Hydraulic Pressure Indications
No. 3 Hydraulic System	

---

**CAUTION:**

*Battery duration for operation of essential services is 60 minutes.*

---

**NOTE:**

ECS pack air flow is lost and cabin will depressurize.

— CONTINUED —

When below 14,000 ft., ventilate cabin:

- AUTO/MAN/DUMP switch.....MAN
- MAN DIFF switch..... INCR (50 secs)
- CABIN ALT FWD OUTFLOW..... Fully Clockwise (OPN)
- FWD OUTFLOW VALVE selector .....OPEN

**NOTE:**

Ram ventilation is most effective above 150 KIAS.

— END —

**"#1 DC GEN" and "#2 DC GEN"  
and  
"#1 AC GEN" or "#2 AC GEN"  
(Caution Lights)**

(Loss of BOTH DC Generators and ONE AC Generator)

- AC GEN (Operative) ..... Monitor Load
- Land immediately at nearest suitable airport.

— END —

**"#1 DC GEN" and "#2 DC GEN"  
(Caution Lights)**

(Loss of BOTH DC Generators)

- DC GEN switches 1 and 2 .....Individually OFF then ON

**IF caution lights persist:**

- L TRU and R TRU..... Monitor load

— END —

**"#1 DC GEN" or "#2 DC GEN"  
and  
"L TRU" and "R TRU"  
(Caution Lights)**

(Loss of ONE DC Generator and BOTH TRUs)

**NOTE:**

All secondary bus services are inoperative.

- The flight may continue to the destination, return to point of departure, or the nearest airport where maintenance services are available, as appropriate. (Coordinate with Dispatch/SOC.)

**— END —**

**"#1 DC GEN" or "#2 DC GEN"  
(Caution Light)**

(Loss of ONE DC Generator)

- \_\_\_ GEN switch (Affected) ..... OFF then ON

**Caution Light remains on?**

**?** **YES**

- \_\_\_ GEN switch (Affected) ..... OFF

**NOTE:**

If on the ground, consult Dispatch and Maintenance.  
Consider MEL 24-30-6. Flight Crew placarding permitted.

**NO**

**— END —**

- No further action required.

**— END —**

**"#1 DC GEN HOT" or  
"#2 DC GEN HOT"  
(Caution Light)**

(Overheat of ONE DC Generator)

- | • \_\_\_\_GEN switch (Affected).....OFF

**NOTE:**

Continued operation of the associated engine is permissible for the remainder of the flight. The affected GEN HOT light may remain illuminated for the remainder of the flight.

— END —

**"#1 AC GEN" and "#2 AC GEN"  
(Caution Light)**

(Loss of both AC Generators with Propeller Deice selected ON)

**NOTE:**

The PROP DEICE caution light may also be illuminated.

- | • PROP selector ..... OFF
- Condition Levers..... MAX
- | • AC GEN 1 and AC GEN 2 switches .....OFF then ON Individually
  - Check #1 and #2 AC GEN caution light out and affected AC generator VOLTS and LOAD on ELECTRICAL page of MFD.

IF Caution Light remains on:

- | • \_\_\_\_AC GEN switch (Affected).....OFF
  - Exit icing conditions as soon as possible.

— END —

**"#1 AC GEN" or "#2 AC GEN"  
(Caution Light)**

(Loss of ONE AC Generator)

- \_\_\_ GEN switch (Affected) ..... OFF then ON

**Caution Light remains on?**

**?** **YES**

- \_\_\_ GEN switch(Affected).....OFF

**— END —**

**NO**

- No further action required.

**— END —**

**"#1 AC GEN HOT" or  
"#2 AC GEN HOT"  
(Caution Light)**

(Overheat of ONE AC Generator)

- \_\_\_ GEN switch (Affected) ..... OFF

**NOTE:**

Continued operation of the associated engine is permissible for the remainder of the flight. The affected GEN HOT light may remain illuminated for the remainder of the flight.

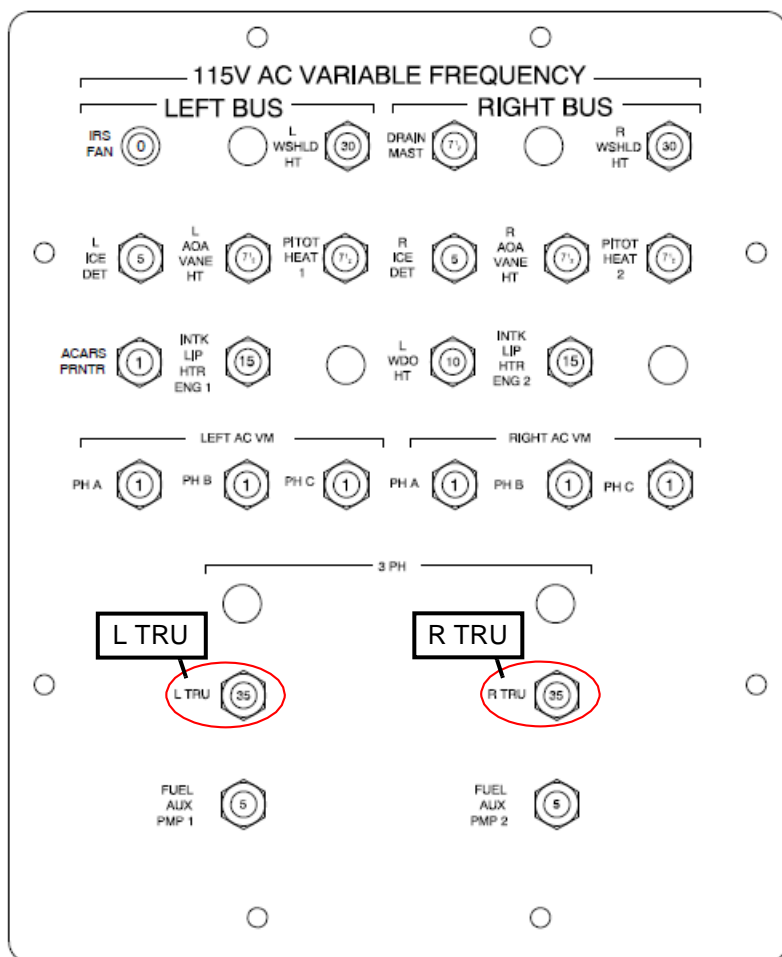
**— END —**

**"L TRU" or  
"R TRU" or  
"L TRU HOT" or  
"R TRU HOT"  
(Caution Light)**

(Loss or overheat of ONE TRU)

- \_\_\_TRU CB (AC CB panel behind F/O)(Affected) .....Pull

AC CB Panel



— END —



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## Chapter 8: Flight Controls

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## Chapter 8: Flight Controls

### ROLL CONTROL JAM

- Autopilot .....Disengage
- ROLL DISC handle .....Pull and Turn 90°

#### **CAUTION:**

*With the ROLL DISC handle pulled, the autopilot must not be engaged.*

- Pilot with unjammed Control Wheel will have roll control and should take the following action:

#### **Is the right Control Wheel Free?**



**YES**

#### **NOTE:**

Roll control will be degraded and forces will be normal.

#### **IF continuous illumination of SPLR 1 and SPLR 2 PUSH OFF switchlights:**

- SPLR 1 PUSH OFF switchlight..... PUSH OFF
- SPLR 2 PUSH OFF switchlight..... PUSH OFF

#### **Landing Considerations:**

- Land at an airport with minimum crosswind and turbulence using Flaps 10 or 15.
- Approach Speed..... Derived  $V_{REF}$

**— CONTINUED —**

YES

Derived $V_{REF}$				
Weight (lbs)	Flap 10		Flap 15	
	Level 1	Level 2/3	Level 1	Level 2/3
64,000	136	15	129	149
62,000	13	153	126	146
60,000	130	150	124	144
58,000	128	148	122	142
56,000	126	146	120	140
54,000	124	144	118	138
52,000	121	141	116	136
50,000	119	139	113	133
48,000	116	136	111	131
46,000	114	134	109	129
44,000	112	132	106	126
42,000	109	129	104	124
40,000	108	128	101	121

Abnormal Landing Distance Factors		
Flap	Ice Protection	
	Level 1	Level 2/3
10	1.4	1.4
15	1.4	1.4

Conditional Landing Distance Statement	
Level 1 Ice Protection	Landing Distance = 5200 ft
Wt. less than 64,500 lbs.	
Flap 10° or 15°	
Dry Runway	
Airport Elevation less than 2000 ft	
Tailwind less than or equal to 10 kts.	

— END —

NO

— CONTINUED —

## Left Control Wheel free?

↓  
**NO**

### **NOTE:**

Roll control forces will be low and tendency to over control is likely and should be avoided.

IF roll control is inadequate with Flaps 5, 10, or 15 selected:

- Max airspeed..... 165 KIAS

### **Landing Considerations:**

- Land at an airport with minimum crosswind and turbulence using Flaps 15 or 35

— END —

## **AILERON TRIM RUNAWAY**

- Airspeed ..... Reduce
- Aileron Trim ..... Opposite to Runaway

WHEN trim is at neutral position or if trim actuator cannot be reversed:

- Ail Trim Act CB (G8 – Left Essential)..... Pull

— END —

## **ROLL CONTROL MALFUNCTION**

(Airplane rolls with no control wheel input)

- Roll Control ..... Apply to hold wings level

**IF continuous illumination of SPLR 1 or SPLR 2 PUSH OFF switchlights:**

- Illuminated switchlight ..... PUSH OFF

— CONTINUED —

## Landing Considerations:

- Approach Speed ..... $V_{REF}$
- Land at an airport with minimum crosswind and turbulence using Flaps 10, 15, and 35.

$V_{REF}$						
Weight (lbs)	Flap 10		Flap 15		Flap 35	
	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3
64,000	136	156	129	149	123	138
62,000	133	153	126	146	121	136
60,000	130	150	124	144	119	134
58,000	128	148	122	142	117	132
56,000	126	146	120	140	115	130
54,000	124	144	118	138	113	128
52,000	121	141	116	136	110	125
50,000	119	139	113	133	108	123
48,000	116	136	111	131	106	121
46,000	114	134	109	129	104	119
44,000	112	132	106	126	102	117
42,000	109	129	104	124	100	115
40,000	108	128	101	121	97	112

Abnormal Landing Distance Factors		
Flap	Ice Protection	
	Level 1	Level 2/3
10	1.35	1.35
15	1.35	1.35
35	1.35	1.35

Conditional Landing Distance Statement	
Level 1 Ice Protection	Landing Distance = 5100 ft
Wt. less than 64,500 lbs.	
Flap greater than or equal to 10°	
Dry Runway	
Airport Elevation less than 2000 ft	
Tailwind less than or equal to 10 kts.	

— CONTINUED —

**| If SPLR 1 or SPLR 2 PUSH OFF switchlights do not illuminate:**

- Power .....Apply
- Airspeed ..... Increase as Req'd

**Landing Considerations:**

- | – Approach Speed.....Derived  $V_{REF}$
- Land at an airport with minimum crosswind and turbulence using Flap 10, 15, and 35.

Derived $V_{REF}$						
Weight (lbs)	Flap 10		Flap 15		Flap 35	
	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3
64,000	144	156	138	149	130	138
62,000	142	153	134	146	127	136
60,000	139	150	133	144	126	134
58,000	137	148	130	142	124	132
56,000	134	146	127	140	121	130
54,000	131	144	126	138	120	128
52,000	130	141	124	136	117	125
50,000	127	139	121	133	114	123
48,000	125	136	118	131	112	121
46,000	121	134	116	129	111	119
44,000	120	132	113	126	108	117
42,000	117	129	111	124	105	115
40,000	113	128	108	121	103	112

Abnormal Landing Distance Factors		
Flap	Ice Protection	
	Level 1	Level 2/3
10	1.50	1.52
15	1.50	1.52
35	1.50	1.50

Conditional Landing Distance Statement	
Level 1 Ice Protection	Landing Distance = 5600 ft
Wt. less than 64,500 lbs.	
Flap greater than or equal to 10°	
Dry Runway	
Airport Elevation less than 2000 ft	
Tailwind less than or equal to 10 kts.	

— END —



**"ROLL SPLR INBD HYD" or  
"ROLL SPLR OUTBD HYD"  
(Caution Light)**

**NOTE:**

If aircraft is on ground, refer to [Chapter 14: Supplemental Resets](#) for reset procedure.

**Landing Considerations:**

— Approach Speed.....Derived  $V_{REF}$

Derived $V_{REF}$						
Weight (lbs)	Flap 10		Flap 15		Flap 35	
	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3
64,000	146	156	139	149	133	148
62,000	143	153	136	146	131	146
60,000	140	150	134	144	129	144
58,000	138	148	132	142	127	142
56,000	136	146	130	140	125	140
54,000	134	144	128	138	123	138
52,000	131	141	126	136	120	135
50,000	129	139	123	133	118	133
48,000	126	136	121	131	116	131
46,000	124	134	119	129	114	129
44,000	122	132	116	126	112	127
42,000	119	129	114	124	110	125
40,000	118	128	111	121	107	122

Abnormal Landing Distance Factors		
Flap	Ice Protection	
	Level 1	Level 2/3
10	1.50	1.35
15	1.50	1.35
35	1.50	1.50

— CONTINUED —

Conditional Landing Distance Statement	
Level 1 Ice Protection	Landing Distance = 5600 ft
Wt. less than 64,500 lbs.	
Flap greater than or equal to 10°	
Dry Runway	
Airport Elevation less than 2000 ft	
Tailwind less than or equal to 10 kts.	

— END —

**"ROLL SPLR INBD HYD" and  
"ROLL SPLR OUTBD HYD"  
(Caution Lights)**

(Spoiler Cable Failure)

- SPLR 1 and 2 PUSH Off switchlights .....PUSH OFF

**Landing Considerations:**

- Approach Speed.....Derived  $V_{REF}$
- Land at an airport with minimum crosswind and turbulence using Flap 10 or 15.

$V_{REF}$				
Weight (lbs)	Flap 10		Flap 15	
	Level 1	Level 2/3	Level 1	Level 2/3
64,000	136	156	129	149
62,000	133	153	126	146
60,000	130	150	124	144
58,000	128	148	122	142
56,000	126	146	120	140
54,000	124	144	118	138
52,000	121	141	116	136
50,000	119	139	113	133
48,000	116	136	111	131
46,000	114	134	109	129
44,000	112	132	106	126
42,000	109	129	104	124
40,000	108	128	101	121

— CONTINUED —

Abnormal Landing Distance Factors		
Flap	Ice Protection	
	Level 1	Level 2/3
10	1.40	1.40
15	1.40	1.40

Conditional Landing Distance Statement	
Level 1 Ice Protection	Landing Distance = 5200 ft
Wt. less than 64,500 lbs.	
Flap greater than or equal to 10°	
Dry Runway	
Airport Elevation less than 2000 ft	
Tailwind less than or equal to 10 kts.	

— END —

**"ROLL SPLR INBD GND" or  
"ROLL SPLR OUTBD GND"  
(Caution Light)**

**Landing Considerations:**

- Approach Speed .....  $V_{REF}$
- Affected Inboard or Outboard roll spoilers may not extend at touchdown.

$V_{REF}$						
Weight (lbs)	Flap 10		Flap 15		Flap 35	
	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3
64,000	136	156	129	149	123	138
62,000	133	153	126	146	121	136
60,000	130	150	124	144	119	134
58,000	128	148	122	142	117	132
56,000	126	146	120	140	115	130
54,000	124	144	118	138	113	128
52,000	121	141	116	136	110	125
50,000	119	139	113	133	108	123
48,000	116	136	111	131	106	121
46,000	114	134	109	129	104	119
44,000	112	132	106	126	102	117
42,000	109	129	104	124	100	115
40,000	108	128	101	121	97	112

Abnormal Landing Distance Factors		
Flap	Ice Protection	
	Level 1	Level 2/3
10	1.35	1.35
15	1.35	1.35
35	1.35	1.35

Conditional Landing Distance Statement	
Level 1 Ice Protection	Landing Distance = 5100 ft
Wt. less than 64,500 lbs.	
Flap greater than or equal to 10°	
Dry Runway	
Airport Elevation less than 2000 ft	
Tailwind less than or equal to 10 kts.	

**— END —**

## "SPLR OUTBD" (Caution Light)

- Max Airspeed.....200KIAS

— END —

## PITCH CONTROL JAM

- Autopilot .....Disengage
- Flap and Airspeed .....Maintain at time of jam
- Pitch Control .....Attempt to overcome jam

### IF unable to overcome jam:

- Relax control column force.
- Pitch Disc handle .....Pull and Turn 90°

- Max Airspeed..... 170 KIAS or  
speed at which jam occurred, whichever is higher.

### **CAUTION:**

*With the PITCH disconnect handle pulled, the autopilot must not be engaged.*

### **NOTE:**

Elevator forces will be lighter than normal and pitch control degraded.

— CONTINUED —

## Landing Considerations:

- Approach Speed .....  $V_{REF}$
- Land using Flap 10 or 15 at an airport with minimum crosswind and turbulence..

$V_{REF}$				
Weight (lbs)	Flap 10		Flap 15	
	Level 1	Level 2/3	Level 1	Level 2/3
64,000	136	156	129	149
62,000	133	153	126	146
60,000	130	150	124	144
58,000	128	148	122	142
56,000	126	146	120	140
54,000	124	144	118	138
52,000	121	141	116	136
50,000	119	139	113	133
48,000	116	136	111	131
46,000	114	134	109	129
44,000	112	132	106	126
42,000	109	129	104	124
40,000	108	128	101	121

Abnormal Landing Distance Factors		
Flap	Ice Protection	
	Level 1	Level 2/3
10	1.35	1.35
15	1.35	1.35

Conditional Landing Distance Statement	
Level 1 Ice Protection	Landing Distance = 5100 ft
Wt. less than 64,500 lbs.	
Flap greater than or equal to 10°	
Dry Runway	
Airport Elevation less than 2000 ft	
Tailwind less than or equal to 10 kts.	

— END —

**"ELEVATOR FEEL" and  
"PITCH TRIM" and  
"SPLR OUTBD" and  
"RUD CTRL"  
(Caution Lights)**

- Autopilot ..... Disengage
- Max Airspeed.....200 KIAS

— END —

**"ELEVATOR ASYMMETRY"  
(Caution Light)**

- Autopilot ..... Disengage
- Max Airspeed.....200 KIAS

— END —

## "ELEVATOR PRESS" (Caution Light)

- Hyd Press #3 ..... Check

**Pressure is indicated?**

**?** — **YES**

- HYD #3 ISOL VLV ..... Norm (Closed)

**Caution Light remains illuminated?**

**?** — **YES**

- Maintenance action required prior to next flight.

— END —

**NO**

- No further action required.

— END —

**NO**

- No further action required.

- Maintenance action required prior to next flight.

— END —

## "ELEVATOR FEEL" (Caution Light)

- Autopilot ..... Disengage

- Max Airspeed ..... 200 KIAS

— END —

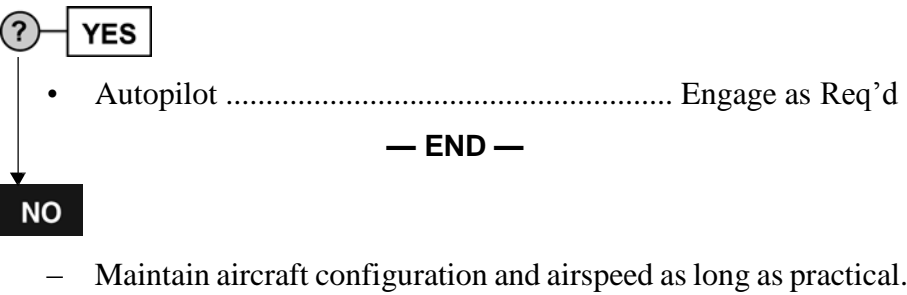


## "PITCH TRIM" (Continuous illumination of Caution Light)

- Autopilot.....Disengage
- Elevator Trim..... Activate

**NOTE:**  
Elevator Trim pointer may indicate full NU trim position with PITCH TRIM caution light illuminated.

### Elevator Trim is operative?



**NOTE:**  
If the PITCH TRIM fails on takeoff with flap 10° or flap 15°, it is recommended that the landing be conducted with the takeoff flap setting.

### Landing Considerations:

- Land at an airport with minimum crosswind and turbulence.

**NOTE:**  
During the airspeed deceleration to  $V_{FE}$ , the elevator force will increase. When decelerating from  $V_{MO}$  with Flap 0, the elevator force may be as high as 40 lb until flap is extended.

— END —

## ELEVATOR TRIM SWITCH FAILURE

(Illumination of Elevator Trim Shutoff switchlight and  
Audio Tone for elevator trim in motion)

- ELEVATOR TRIM SHUT OFF.....PUSH OFF

**NOTE:**

Elevator Trim pointer will indicate full NU trim position.

- Autopilot..... Do Not Engage
  - Maintain aircraft configuration and airspeed as long as practicable.

**NOTE:**

If the pitch trim fails on takeoff with Flap 10 or Flap 15, it is recommended that the landing be conducted with the takeoff flap setting.

### Landing Considerations:

- Land at an airport with minimum crosswind and turbulence.

**NOTE:**

During the airspeed deceleration to  $V_{FE}$ , the elevator force will increase. When decelerating from  $V_{MO}$  with Flap 0, the elevator force may be as high as 40 lb until flap is extended.

— END —

## ELEVATOR TRIM INDICATOR FAILURE

(Elevator Trim Pointer indicates offscale ND)

- Elevator Trim..... Use as Req'd

**NOTE:**

Maintenance action required prior to next flight.

— END —

## ABNORMAL FLAP LANDING

- GPWS FLAP OVERRIDE switchlight.....Press

Before 1,000 ft. AGL:

- Autopilot ..... Disengage

**Flap failed between 0 and 10?**

**?** **YES**

### Landing Considerations

#### **CAUTION:**

- Pitch attitudes greater than 6° in the landing flare may cause the fuselage to contact the runway.*
- Do not select POWER levers below FLIGHT IDLE until indicated airspeed is below 150 KIAS.*

- Nosewheel should be promptly brought into contact with the ground following main wheel contact.
- High landing speeds may result in Brake Kinetic Energy limits being exceeded.
- If flap failed between gated positions, the smaller flap angle must be used when calculating the landing performance that follows.
- Approach Speed.....Derived  $V_{REF}$

Derived $V_{REF}$				
Weight (lbs)	Flap 0		Flap 5	
	Level 1	Level 2/3	Level 1	Level 2/3
64,000	158	183	145	165
62,000	155	180	143	163
60,000	153	178	140	160
58,000	150	175	137	157
56,000	147	172	135	155
54,000	145	170	133	153
52,000	142	167	130	150
50,000	139	164	128	148
48,000	137	162	125	145
46,000	134	159	122	142
44,000	131	156	120	140
42,000	128	153	117	137
40,000	125	150	114	134

— CONTINUED —

**YES**

**Abnormal Landing Distance Factor:**

- Use “Actual Landing Distance Flap 0, Flap 5” table in [Chapter 1: Performance](#) to calculate landing distance if Conditional Landing Distance Statement does not apply.
- Enter the table using pressure altitude of field, ice protection level, and predicted gross weight of the aircraft at the time of landing.
- Distance shown includes the abnormal landing distance factor for aircraft weight and pressure altitude.
- Add additional factor for headwind, tailwind and/or wet runway below table.

**CAUTION:**

*Avoid pitch attitudes in excess of 6° at touchdown. DO NOT select POWER to FLIGHT IDLE above 150 knots.*

Conditional Landing Distance Statement	
Level 1 Ice Protection	Landing Distance = 6500 ft
Wt. less than 64,500 lbs.	
Flap 0°-5°	
Dry Runway	
Airport Elevation less than 2000 ft	
Tailwind less than or equal to 10 kts.	

**After Landing:**

- GPWS FLAP OVERRIDE switchlight.....Press (Off)

— END —

**NO**

**Flap failed between 10, 15 or 35:**

**Landing Considerations:**

- The smaller flap angle must be used when calculating landing performance.
- GPWS FLAP OVERRIDE switchlight.....Press (off)

— END —

## "FLAP DRIVE" (Caution Light)

**Flap movement stops?**

**?** **YES**

- Further operation of flaps is NOT available and flaps will remain in the failed position.
- ABNORMAL FLAP LANDING  
(Page 8-16).....Accomplish

**NO**

— END —

- Flaps.....As Req'd
- Flaps may be operated normally to complete the flight

— END —

## "FLAP POWER" (Caution Light)

(Flap System Failure)

**Is aircraft on the ground?**

**?** **YES**

- Refer to [Chapter 14: Supplemental Resets](#) for reset procedure.

**NO**

- FLAPS lever .....Select flap gate appropriate to the FLAP indication on #2 MFD

**NOTE:**

1. Ensure the FLAPS lever release trigger is fully engaged in the appropriate flap gate.
  2. If FLAPS CONT CB (L7 - Left Essential) is already tripped, DO NOT reset.
  3. FLAPS CONT CB (L7) is limited to one reset.
- FLAPS CONT CB (L7 – Left Essential) .....Pull out / wait 2 seconds / Push in

— CONTINUED —

## | Caution Light remains on?



**YES**

- Operation of flaps is NOT available and flaps will remain in the last selected position.
- ABNORMAL FLAP LANDING  
(Page 8-16) ..... Accomplish

— END —

**NO**

### **NOTE:**

Delay the selection of the FLAPS lever for a minimum of 20 seconds following reset of the FLAPS CONT CB.

- FLAPS lever ..... Select as req'd

— END —

## RUDDER JAM

(Restricted Rudder Pedal Movement)

- Affected Rudder Pedal ..... Apply a normal push force

**Rudder pedal moves as required?**

**?** **YES**

- Affected Rudder Pedal ..... Reduce push force and allow  
..... rudder pedal to center

### **WARNING**

*Should the rudder pedal (rudder jam) suddenly break free, DO NOT apply rudder pedal input in the opposite direction.*

- .Rudder Pedals..... Use as Req'd

— END —

**NO**

**Rudder pedal does not respond to normal push force (rudder remains jammed or rudder jam re-occurs):**

- Use roll control required for directional control.

IF rudder jam occurs on take-off and conditions permit, return for landing on the take-off runway.

**Landing Considerations:**

- STEERING switch..... OFF
- Land at an airport with no known or forecast icing conditions and with minimum crosswind and turbulence, using Flaps 10, 15, or 35.
- Small amounts of asymmetric power may be used to maintain directional control on approach.
- After touchdown, use asymmetric braking and power, as required, to maintain directional control.

— CONTINUED —

– Approach Speed.....V<sub>REF</sub>

### Conditional Landing Distance Statement

V <sub>REF</sub>						
Weight (lbs)	Flap 10		Flap 15		Flap 35	
	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3
64,000	136	156	129	149	123	138
62,000	133	153	126	146	121	136
60,000	130	150	124	144	119	134
58,000	128	148	122	142	117	132
56,000	126	146	120	140	115	130
54,000	124	144	118	138	113	128
52,000	121	141	116	136	110	125
50,000	119	139	113	133	108	123
48,000	116	136	111	131	106	121
46,000	114	134	109	129	104	119
44,000	112	132	106	126	102	117
42,000	109	129	104	124	100	115
40,000	108	128	101	121	97	112

Abnormal Landing Distance Factors		
Flap	Ice Protection	
	Level 1	Level 2/3
10	1.40	N/A
15	1.40	N/A
35	1.50	N/A

Conditional Landing Distance Statement	
Level 1 Ice Protection	Landing Distance = 5200 ft
Wt. less than 64,500 lbs.	
Flap greater than or equal to 10°	
Dry Runway	
Airport Elevation less than 2000 ft	
Tailwind less than or equal to 10 kts.	

After the aircraft has come to a stop:

- STEERING switch.....ON

— END —



**"RUD 1 PUSH OFF" or "RUD 2 PUSH OFF"**  
(Switchlight On)

- Illuminated switchlight .....PUSH OFF

— END —

**"#1 RUD HYD" or "#2 RUD HYD"**  
(Caution Light)

**NOTE:**

If aircraft is on ground, refer to [Chapter 14: Supplemental Resets](#) for reset procedure.

- No Crew action required.

**NOTE:**

Maintenance action required prior to next flight.

— END —

**"RUD CTRL"**  
(Caution Light)

- Max Airspeed.....200 KIAS

**Landing Considerations:**

- Maximum crosswind for landing is 20 kts.

— END —

**RUDDER TRIM ACTUATOR RUNAWAY**

- Rudder Trim.....Opposite to Runaway

WHEN trim is at the neutral position or if the trim actuator cannot be reversed:

- Rud Trim Act CB (F7 – Left Essential).....Pull

— END —

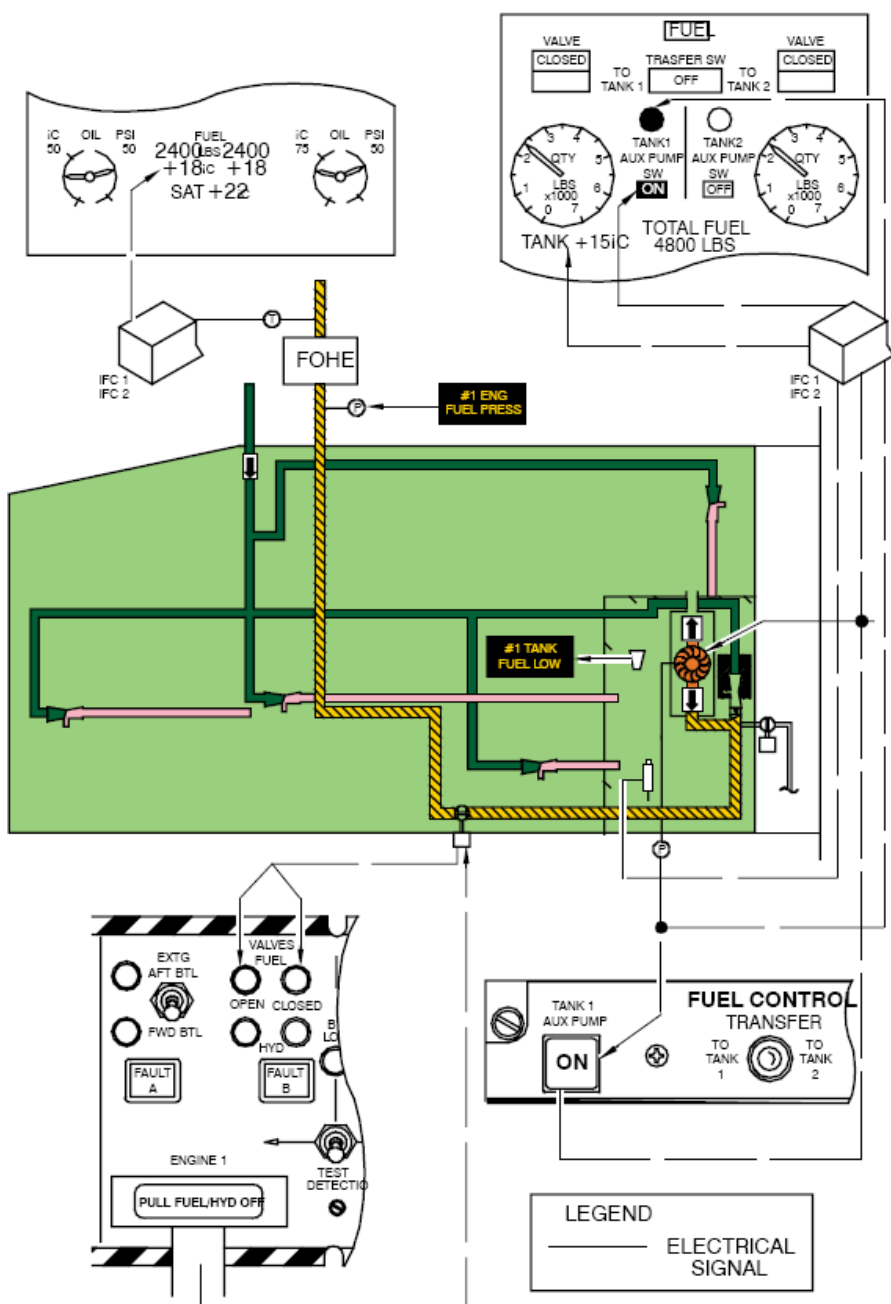
## Chapter 9: Fuel

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## Chapter 9: Fuel

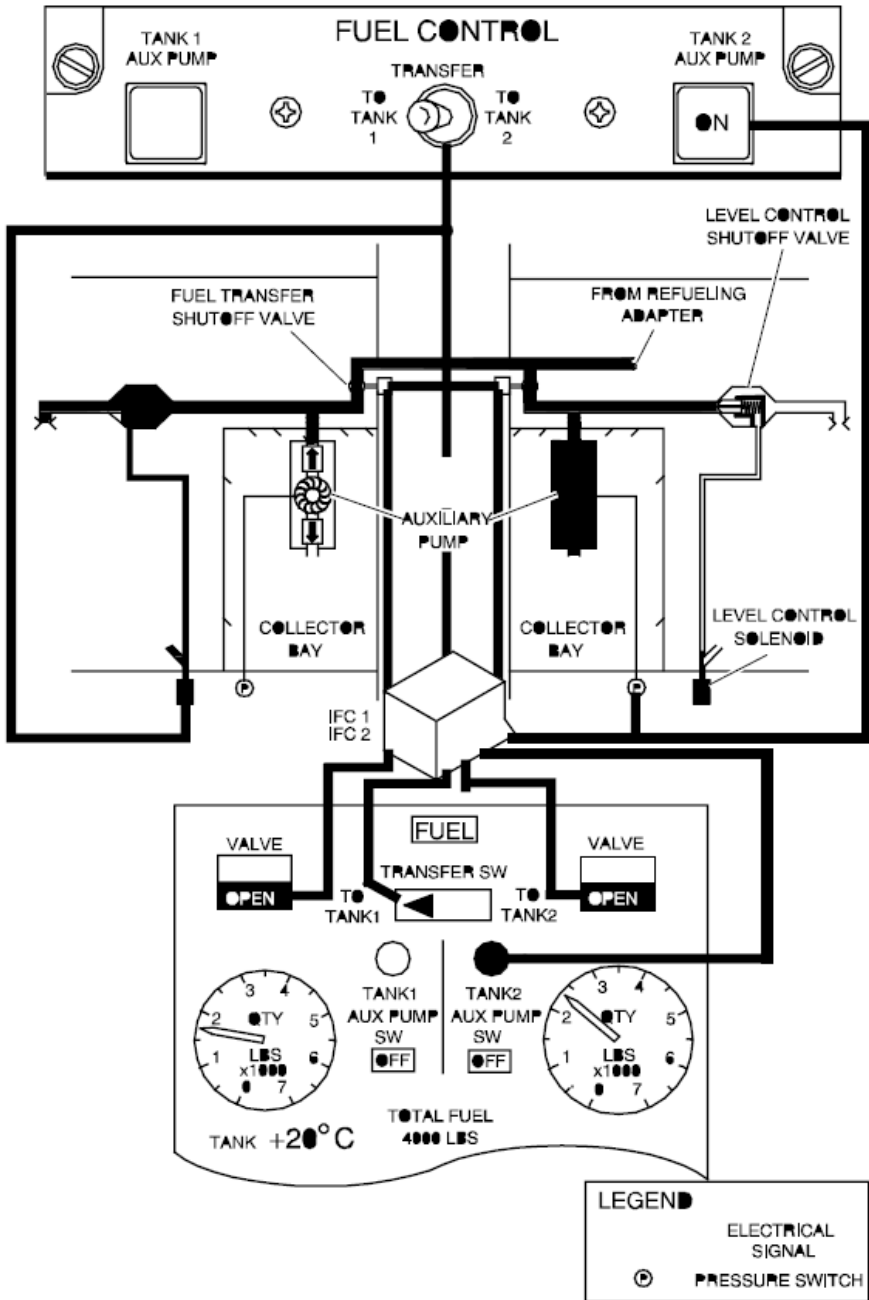
### Fuel Feed



PSM 1-84-1B (Oct 31, 2010)

Figure 9-1: Fuel Feed

## Fuel Transfer



PSM 1-84-1B (Oct 31,2010)

Figure 9-2: Fuel Transfer

**"#1 TANK FUEL LOW" or  
"#2 TANK FUEL LOW"  
(Caution Light)**

- Fuel Quantity .....Check

**| Is the Fuel Quantity low?**

**?** **YES**

- Check for external and internal fuel leaks.

**NOTE:**

A check of the cabin will be necessary to identify a possible internal fuel leak.

**| Fuel leak confirmed?**

**?** **YES**

- ENGINE FAILURE/FIRE/SHUTDOWN  
(Page 3-1)..... Accomplish

— END —

**NO**

- Transfer fuel from unaffected tank.
- Monitor fuel quantity.

— END —

**NO**

- Maintain level attitude as much as possible.
- \_\_\_ Tank Aux Pump (Affected side) .....ON
- Monitor fuel quantity.

IF “ENG FUEL PRESS” Caution Light illuminates:

- ENGINE FAILURE/FIRE/SHUTDOWN  
(Page 3-1)..... Accomplish

— END —

**"#1 ENG FUEL PRESS" or  
"#2 ENG FUEL PRESS"  
(Caution Light)**

- \_\_\_\_ Tank Aux Pump (Affected side).....ON

**Caution Light remains on?**

**?** **YES**

- \_\_\_\_ Tank Aux Pump (Affected side).....OFF
  - Check for external leaks and for fuel odor within the airplane.

**IF either is confirmed:**

- ENGINE FAILURE/FIRE/SHUTDOWN  
(Page 3-1).....Accomplish

— END —

**NO**

- Maintenance required prior to flight.

— END —

**ABNORMAL FUEL TEMPERATURE**

*\*S.I.L. NO.PW150-034 AUG 24/09*

- \_\_\_\_ TANK AUX PUMP (Affected side).....ON
- Continue flight.
  - Monitor fuel temperature and fuel pressure.

**IF fuel temperature returns to normal:**

- \_\_\_\_ TANK AUX PUMP (Affected side).....OFF

**NOTE:**

1. If fuel temperature indication is above 71° C (gauge is red), AUX PUMP may be left on to combat high temperature.
2. If high fuel temperature is successfully returned within limits by use of the above procedure and the temperature did not exceed 85° C, no further immediate maintenance is required. A mechanical discrepancy will be logged to alert maintenance prior to next flight.

— CONTINUED —

3. Flights may continue with the use of the applicable AUX PUMP -- ON until repairs can be scheduled.
4. Fuel Temperature limitation applies to a running engine ONLY. With a life limited thermal element, it is not uncommon to see the fuel temperature in the red until the engine is started and fuel is circulating.

— END —

## FUEL TRANSFER FAILURE

### **Tank Aux Pump Fails to Automatically Activate:**

#### **Tank Aux Pump Advisory Light Fails to illuminate:**

- \_\_\_ TANK AUX PUMP (Appropriate side) ..... ON

When transfer is complete:

- \_\_\_ TANK AUX PUMP (Appropriate side) ..... OFF
- Fuel Transfer..... OFF

— END —

#### **One or Both Fuel Transfer Valves Fail(s) to Open:**

- TRANSFER switch..... OFF
- Consider the effects of maximum lateral fuel asymmetry or fuel low level.

— END —



**"#1 FUEL FLTR BYPASS" or  
"#2 FUEL FLTR BYPASS"  
(Caution Light)**

- No Crew action required.

**NOTE:**

Monitor fuel flow, ITT, and  $N_H$ . If erratic, may indicate contamination has passed filter.

**— END —**

---

**"FUELING ON"  
(Caution Light)**

- No Crew action required.

**— END —**

---

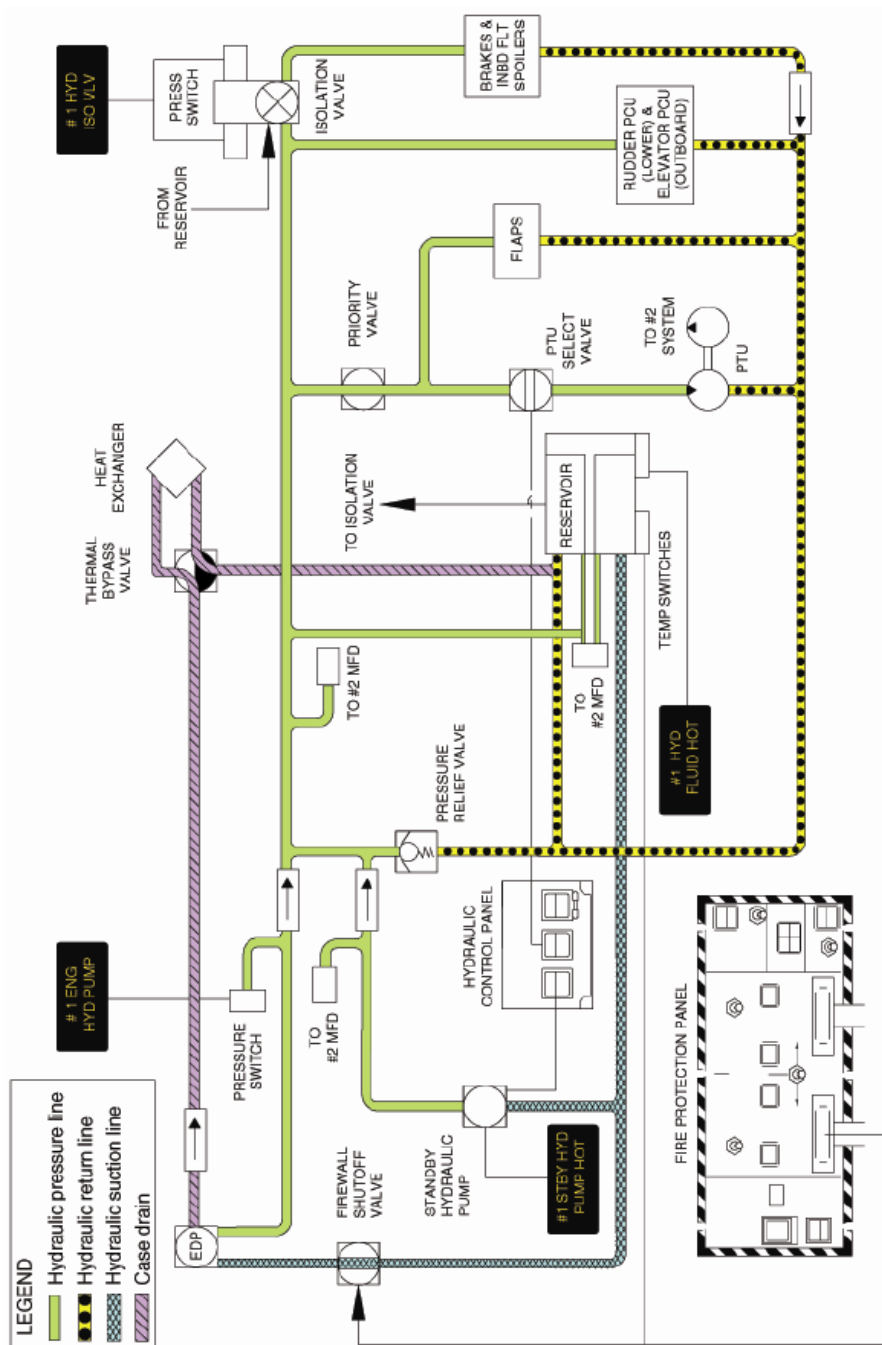
## Chapter 10: Hydraulic Power

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## Chapter 10: Hydraulic Power

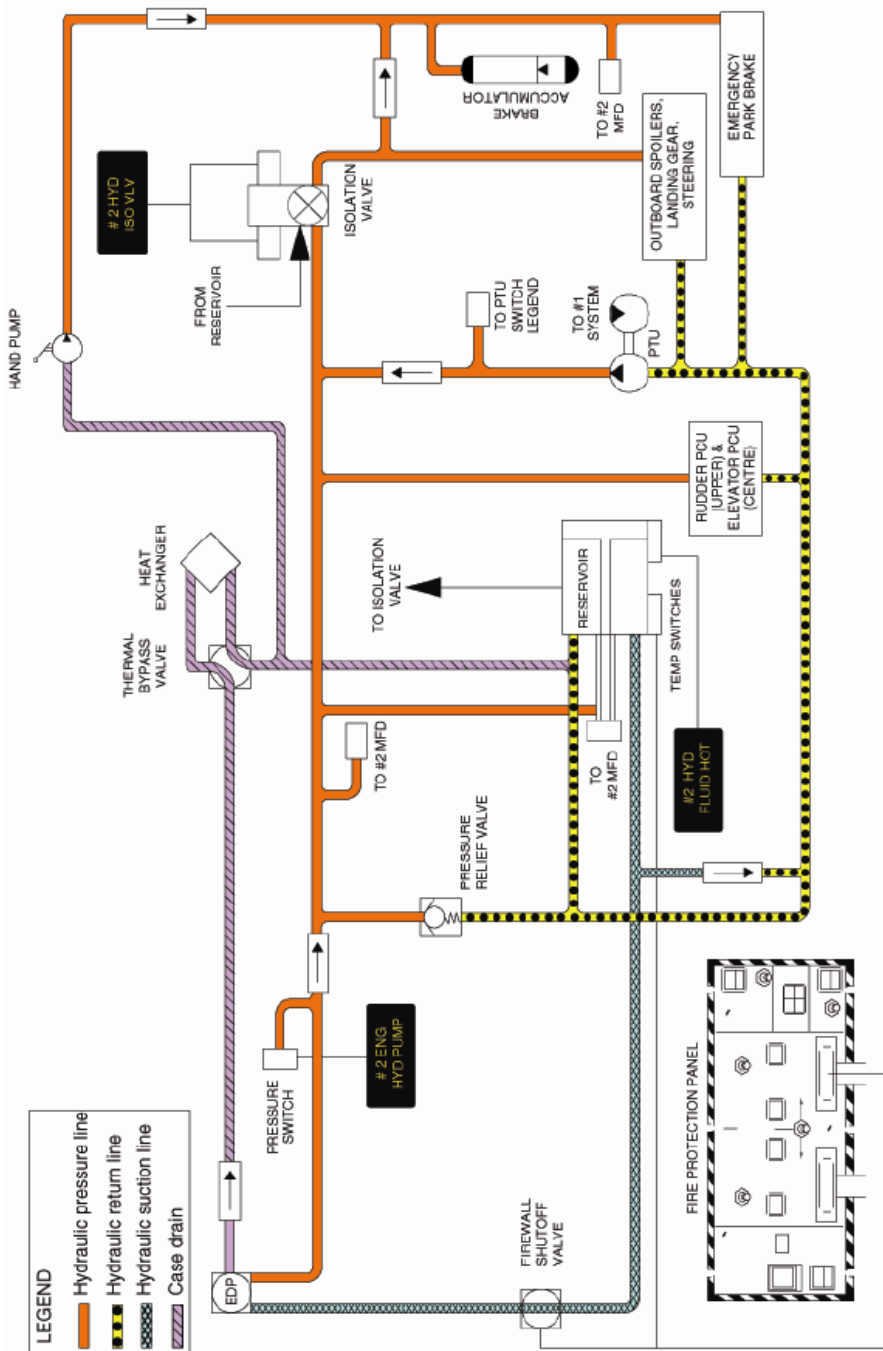
### No. 1 Hydraulic System



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Figure 10-1: No. 1 Hydraulic System (Page 1 of 3)

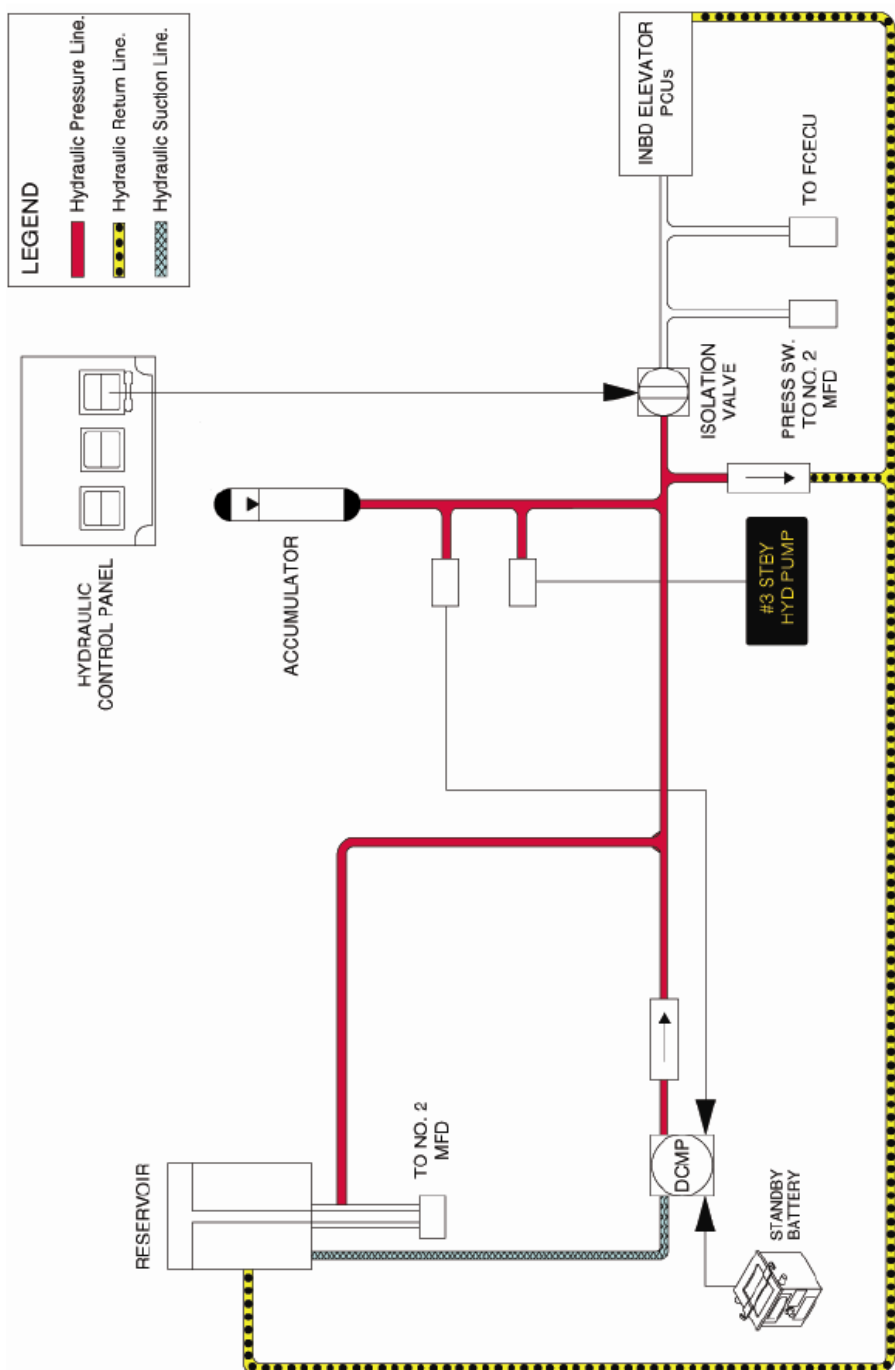
## No. 2 Hydraulic System



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Figure 10-2: No. 2 Hydraulic System (Page 2 of 3)

## No. 3 Hydraulic System



PSM 1-84-1B (Oct 31, 2010)

Figure 10-3: No. 3 Hydraulic System (Page 3 of 3)

## No. 1 and No. 2 HYDRAULIC SYSTEMS FAILURE

(No. 1 HYD PRESS and No. 2 HYD PRESS indicating no pressure)

- Autopilot ..... Disengage
- Yaw Damper ..... Disengage
- Max Airspeed ..... 200 KIAS
- Use aileron, elevator and, if required for directional control, small inputs of asymmetric power, to control the aircraft.

IF Flap at 0 or 5:

- GPWS FLAP OVERRIDE switchlight ..... Press

### Lost Services:

- All hydraulically-powered services except elevator.

### Landing Considerations:

- Land at an airport with minimum crosswind and turbulence.
- Align aircraft with runway using asymmetric power prior to lowering the nosewheel to the runway.
- Nose steering will be inoperative. To maintain directional control, significant asymmetric power will be required.
- ALTERNATE LANDING GEAR EXTENSION  
(Page 12-1) ..... Accomplish when Req'd
- Emergency braking will only produce about 6 brake applications. Use of maximum reverse power for stopping may cause directional deviation.

#### NOTE:

Emergency brake application is proportional to lever travel with no differential braking and no anti-skid control. Excessive application of emergency braking can result in skidding and tire failure.

— CONTINUED —

– Approach Speed.....Derived  $V_{REF}$

Weight (lbs)	Derived $V_{REF}$									
	Flap 0		Flap 5		Flap 10		Flap 15		Flap 35	
	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3
64,000	168	183	155	165	146	156	139	149	133	148
62,000	165	180	153	163	143	153	136	146	131	146
60,000	163	178	150	160	140	150	134	144	129	144
58,000	160	175	147	157	138	148	132	142	127	142
56,000	157	172	145	155	136	146	130	140	125	140
54,000	155	170	143	153	134	144	128	138	123	138
52,000	152	167	140	150	131	141	126	136	120	135
50,000	149	164	138	148	129	139	123	133	118	133
48,000	147	162	135	145	126	136	121	131	116	131
46,000	144	159	144	154	124	134	119	129	114	129
44,000	141	156	130	140	122	132	116	126	112	127
42,000	138	153	127	137	119	129	114	124	110	125
40,000	135	150	124	134	118	128	111	121	107	122

Abnormal Landing Distance Factors		
Flap	Ice Protection	
	Level 1	Level 2/3
0	1.33	1.16
5	1.33	1.16
10	1.85	1.68
15	1.85	1.68
35	1.85	1.84

Conditional Landing Distance Statement	
Level 1 Ice Protection	Landing Distance = 7300 ft
Wt. less than 64,500 lbs.	
Flap greater than or equal to 0°	
Dry Runway	
Airport Elevation less than 2000 ft	
Tailwind 0 kts.	

#### **CAUTION:**

*Avoid pitch attitudes in excess of 6° at touchdown. Unless required for immediate directional control, DO NOT select power levers below flight idle until indicated airspeed is below 150 kts. Excessive application of emergency braking can result in skidding and tire failure.*

— END —



## No. 1 HYDRAULIC SYSTEM FAILURE

### LOSS of ALL FLUID from No. 1 HYDRAULIC SYSTEM

(“#1ENG HYD PUMP” and “#1HYD ISO VLV” Caution Lights, and ENGINE 1 HYD valve CLOSED Advisory Light and no Quantity indicated on No. 1 HYD QTY)

- HYD #3 ISOL VLV ..... OPEN
- STBY HYD PRESS ..... Norm (Off)

IF Flap at 0 or 5:

- GPWS FLAP OVERRIDE switchlight ..... Press

Before 1000 ft. AGL:

- Autopilot ..... Disengage

#### Lost Services:

- Flap
- Normal/Anti-Skid Brakes
- Inbd Roll Spoiler / Elevator No. 1 / Rudder No. 1 System
- PTU

#### Landing Considerations:

- Emergency braking only.
- Excessive application of emergency braking can result in skidding and tire failure.
- Do not select STBY HYD PRESS or PTU CNTRL switches ON before landing.

— CONTINUED —

– Approach Speed.....Derived V<sub>REF</sub>

Weight (lbs)	Derived V <sub>REF</sub>									
	Flap 0		Flap 5		Flap 10		Flap 15		Flap 35	
	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3
64,000	168	183	155	165	146	156	139	149	133	148
62,000	165	180	153	163	143	153	136	146	131	146
60,000	163	178	150	160	140	150	134	144	129	144
58,000	160	175	147	157	138	148	132	142	127	142
56,000	157	172	145	155	136	146	130	140	125	140
54,000	155	170	143	153	134	144	128	138	123	138
52,000	152	167	140	150	131	141	126	136	120	135
50,000	149	164	138	148	129	139	123	133	118	133
48,000	147	162	135	145	126	136	121	131	116	131
46,000	144	159	144	154	124	134	119	129	114	129
44,000	141	156	130	140	122	132	116	126	112	127
42,000	138	153	127	137	119	129	114	124	110	125
40,000	135	150	124	134	118	128	111	121	107	122

Abnormal Landing Distance Factors		
Flap	Ice Protection	
	Level 1	Level 2/3
0	1.33	1.16
5	1.33	1.16
10	1.85	1.68
15	1.85	1.68
35	1.85	1.84

Conditional Landing Distance Statement	
Level 1 Ice Protection	Landing Distance = 7300 ft
Wt. less than 64,500 lbs.	
Flap greater than or equal to 0°	
Dry Runway	
Airport Elevation less than 2000 ft	
Tailwind 0 kts.	

### **CAUTION:**

*Avoid pitch attitudes in excess of 6 degrees at touchdown.*

*DO NOT select Power Levers below Flight Idle until indicated airspeed is below 150 kts.*

*Excessive application of emergency braking can result in skidding and tire failure.*

— END —

## “#1 HYD ISO VLV” (Caution Light)

(Partial Loss of Fluid from the No. 1 Hydraulic System)

- Monitor quantity in No. 1 Hydraulic system for further loss of fluid. .

### Lost Services:

- Normal/Anti-Skid Brakes
- Inboard Roll Spoilers

### Landing Considerations:

- Emergency braking only.
- Approach Speed.....Derived  $V_{REF}$

Derived $V_{REF}$						
Weight (lbs)	Flap 10		Flap 15		Flap 35	
	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3
64,000	136	156	129	149	123	148
62,000	133	153	126	146	121	146
60,000	130	150	124	144	119	144
58,000	128	148	122	142	117	142
56,000	126	146	120	140	115	140
54,000	124	144	118	138	113	138
52,000	121	141	116	136	110	135
50,000	119	139	113	133	108	133
48,000	116	136	111	131	106	131
46,000	114	134	109	129	104	129
44,000	112	132	106	126	102	127
42,000	109	129	104	124	100	125
40,000	108	128	101	121	97	122

Abnormal Landing Distance Factors		
Flap	Ice Protection	
	Level 1	Level 2/3
10	1.85	1.85
15	1.85	1.85
35	1.85	1.85

— CONTINUED —

Conditional Landing Distance Statement	
Level 1 Ice Protection	Landing Distance = 5900 ft
Wt. less than 64,500 lbs.	
Flap greater than or equal to 10°	
Dry Runway	
Airport Elevation less than 2000 ft	
Tailwind 0 kts.	

---

**CAUTION:**

*Excessive application of emergency braking can result in skidding and tire failure.*

---

— END —

---

**"#1 ENG HYD PUMP"  
(Caution Light)**

(No Pressure Indicated in the No. 1 Hydraulic System)

- STBY HYD PRESS..... ON
  - Monitor quantity in No. 1 Hydraulic system for further loss of fluid. If quantity is lost and/or the “#1 HYD ISO VLV” also illuminates, accomplish No. 1 HYDRAULIC SYSTEM FAILURE checklist Page 10-6.

**NOTE:**

1. Hydraulic pressure in the No.3 system is indicated until normal pressure is restored in the No. 1 Hydraulic system.
2. When an ENG HYD PUMP failure occurs, the ELEVATOR PRESS caution light may illuminate momentarily.

**Landing Considerations:**

- Flap extension and retraction is slower than normal.

---

**CAUTION:**

*With #1 ENG HYD PUMP caution light illuminated, DO NOT select PTU CNTRL switch.*

---

— END —

---

## No. 2 HYDRAULIC SYSTEM FAILURE

### LOSS of ALL FLUID from No. 2 HYDRAULIC SYSTEM

(“#2 ENG HYD PUMP” and “#2 HYD ISO VLV” Caution Lights, and ENGINE 2 HYD valve CLOSED Advisory Light and no Quantity indicated on No. 2 HYD QTY))

- HYD #3 ISOL VLV.....OPEN
- PTU CNTRL.....Norm(Off)
- HYD PWR XFER C/B (L8 - R Ess).....Pull
- STBY HYD PRESS.....ON

#### Lost Services:

- Normal Gear Extension Retraction
- Nose Steering
- EMERG Brakes
- Outbd Roll Spoiler / Elevator No. 2 / Rudder No. 2 System

#### Landing Considerations:

- Normal / Anti-skid brakes are operational.
- ALTERNATE LANDING GEAR EXTENSION (Page 12-1).....Accomplish when Req’d
- Do NOT select PTU CNTRL to ON before landing.

— CONTINUED —

– Approach Speed.....Derived  $V_{REF}$

Derived $V_{REF}$						
Weight (lbs)	Flap 10		Flap 15		Flap 35	
	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3
64,000	136	156	129	149	123	148
62,000	133	153	126	146	121	146
60,000	130	150	124	144	119	144
58,000	128	148	122	142	117	142
56,000	126	146	120	140	115	140
54,000	124	144	118	138	113	138
52,000	121	141	116	136	110	135
50,000	119	139	113	133	108	133
48,000	116	136	111	131	106	131
46,000	114	134	109	129	104	129
44,000	112	132	106	126	102	127
42,000	109	129	104	124	100	125
40,000	108	128	101	121	97	122

Abnormal Landing Distance Factors		
Flap	Ice Protection	
	Level 1	Level 2/3
10	1.85	1.85
15	1.85	1.85
35	1.85	1.85

Conditional Landing Distance Statement	
Level 1 Ice Protection	Landing Distance = 5900 ft
Wt. less than 64,500 lbs.	
Flap greater than or equal to 10°	
Dry Runway	
Airport Elevation less than 2000 ft	
Tailwind 0 kts.	

— END —

## "#2 HYD ISO VLV" (Caution Light)

(Partial Loss of Fluid from the No. 2 Hydraulic System)

- PTU CNTRL.....Norm (Off)
- HYD PWR XFER C/B (L8 - R ESS) .....Pull
- Monitor quantity in No. 2 Hydraulic system for further loss of fluid.

### Lost Services:

- Normal Gear Extention
- Nose Steering
- EMERG Brakes
- Outboard Roll Spoilers

### Landing Considerations:

- Alternate Landing Gear Extension  
(Page 12-1).....Accomplish when Req'd
- Approach Speed.....Derived  $V_{REF}$

Derived $V_{REF}$						
Weight (lbs)	Flap 10		Flap 15		Flap 35	
	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3
64,000	136	156	129	149	123	148
62,000	133	153	126	146	121	146
60,000	130	150	124	144	119	144
58,000	128	148	122	142	117	142
56,000	126	146	120	140	115	140
54,000	124	144	118	138	113	138
52,000	121	141	116	136	110	135
50,000	119	139	113	133	108	133
48,000	116	136	111	131	106	131
46,000	114	134	109	129	104	129
44,000	112	132	106	126	102	127
42,000	109	129	104	124	100	125
40,000	108	128	101	121	97	122

— CONTINUED —

Abnormal Landing Distance Factors		
Flap	Ice Protection	
	Level 1	Level 2/3
10	1.85	1.85
15	1.85	1.85
35	1.85	1.85

Conditional Landing Distance Statement	
Level 1 Ice Protection	Landing Distance = 5900 ft
Wt. less than 64,500 lbs.	
Flap greater than or equal to 10°	
Dry Runway	
Airport Elevation less than 2000 ft	
Tailwind 0 kts.	

---

**CAUTION:**

*Excessive application of emergency braking can result in skidding and tire failure.*

---

— END —

---

**"#2 ENG HYD PUMP"  
(Caution Light)**

(No Pressure Indicated in the No. 2 Hydraulic System)

- PTUCNTRL.....On
  - Monitor pressure and quantity in No. 2 Hydraulic system for normal indications.

**NOTE:**

1. Hydraulic pressure in the No. 3 system is indicated until normal pressure is restored in the No. 1 Hydraulic system.
2. When an ENG HYD PUMP failure occurs, the ELEVATOR PRESS caution light may illuminate momentarily.

— END —

---



## PTU FAILURE

(Amber PTU CNTRL “FAIL” Advisory Light is illuminated)

- PTU CNTRL.....Norm(Off)

### **CAUTION:**

*PTU CNTRL must not be selected ON following illumination of PTU CNTRL Fail advisory light.*

— END —

## “#1 HYD FLUID HOT” or “#2 HYD FLUID HOT” (Caution Light)

- Pressure and Quantity .....Monitor

— END —

## “#1 STBY HYD PUMP HOT” (Caution Light)

Flap selector Lever set at 0:

**?** **YES**

- STBY HYD PRESS ..... Norm(Off)

— END —

**NO**

No Crew action required.

— END —

**"#3 HYD PUMP"  
(Caution Light)**

- No Crew action required.

***NOTE:***

| Maintenance action required prior to next flight.

— END —

---

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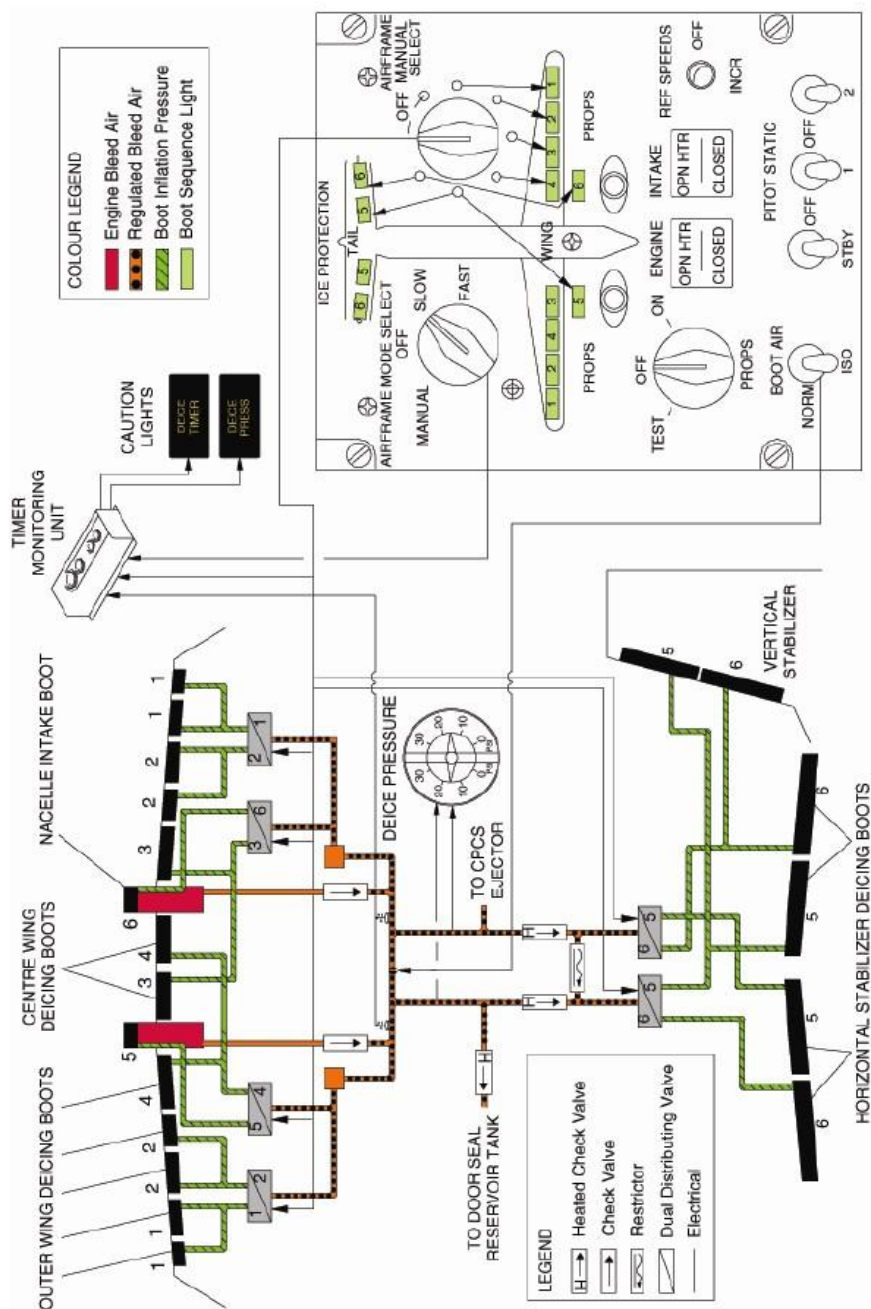
## Chapter 11: Ice and Rain Protection, Stall Protection

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"PUSHER SYST FAIL" (Caution Light)	11-9

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## Chapter 11: Ice and Rain Protection, Stall Protection

### Airframe De-Icing System



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Figure 11-1: Airframe Deicing System

## "DEICE PRESS" (Caution Light)

- AIRFRAME MODE SELECT selector .....MANUAL

After 10 seconds:

- AIRFRAME MANUAL SELECT selector .....SLOW or FAST

**NOTE:**

Adjust power to maintain above 80% NL. It is not unusual to experience intermittent DEICE PRESS caution light with low power setting.

### DEICE PRESS Caution Light persists?

**?** **NO**

No further action required.

— END —

**YES**

- BOOT AIR..... ISO
- DEICE PRESS indicator..... Check for pressure in No. 1 or No. 2 system
- ICE PROTECTION panel ..... Check deice boot advisory lights

### ONLY 1 Deice Boot Advisory Light fails to illuminate?

**?** **YES**

- Exit icing conditions as soon as possible.
  - If the failed deice boot is associated with an engine intake boot:
    - ENGINE INTAKE BOOT FAILURE  
(Page 11-4).....Accomplish

— END —

**NO**

— CONTINUED —

↓  
**NO**

**Deice Pressure Indication is abnormal (less than  $18 \pm 3$  psi) on the No. 1 and No. 2 DEICE PRESS gauges OR 2 or more wing deice boot lights on the same side fail to illuminate:**

- Exit icing conditions as soon as possible.
- ENGINE INTAKE switchlights ..... OPN

**CAUTION:**

*Do not select the WING positions during manual deicing of the tail and engine intake.*

**NOTE:**

1. The engine intake boot on the side with normal pressure can be deiced. For the failed side, refer to ENGINE INTAKE BOOT FAILURE (Page 11-4).
  2. Dwell period at each tail and engine intake position should be approximately 6 seconds.
- AIRFRAME MODE SELECT selector .....MANUAL
  - AIRFRAME MANUAL SELECT selector .....Tail & Engines

**Landing Considerations:**

- Minimum Holding Speed.....190 kts
- For landing use flaps 10 or 15 only.
- Approach Speed.....Derived  $V_{REF}$

Derived $V_{REF}$		
Weight (lbs)	Flap 10	Flap 15
	Level 2/3	
64,000	165	153
62,000	163	151
60,000	160	149
58,000	158	148
56,000	156	145
54,000	154	143
52,000	151	141
50,000	149	138
48,000	146	136
46,000	144	133
44,000	141	131
42,000	139	130
40,000	138	130

— CONTINUED —



Abnormal Landing Distance Factors		
Flap	Ice Protection	
	Level 1	Level 2/3
10	N/A	1.44
15	N/A	1.44

Conditional Landing Distance Statement	
Level 2/3 Ice Protection	Landing Distance = 5800 ft
Wt. less than 64,500 lbs.	
Flap 10° or 15°	
Dry Runway	
Airport Elevation less than 2000 ft	
Tailwind 0 kts.	

— END —

## ENGINE INTAKE BOOT FAILURE

FOR remainder of flight (Affected engine):

- ENGINE INTAKE switchlight..... OPN
- Exit icing conditions as soon as possible.

— END —

**"DEICE TIMER"  
(Caution Light)**

- Deice Boots Advisory Lights..... Monitor

If Deice Boot inflation sequencing is incorrect:

- AIRFRAME MODE SELECT selector ..... MANUAL
- AIRFRAME MANUAL SELECT selector .... Cycle (As Req'd)
- Exit icing conditions as soon as possible.

**NOTE:**

Dwell period at each position should be approximately 6 seconds.

Allow for a dwell period of not less than 24 seconds before commencing subsequent inflation of boots.

**— END —**

## “PROP DEICE” (Caution Light)

**NOTE:**

If aircraft is on the ground, refer to [Chapter 14: Supplemental Resets](#) for reset procedure.

- PROP selector ..... OFF then ON

### PROP DEICE Caution Light persists and aircraft in icing conditions?

**?** **YES**

- Condition Levers .....MAX
- Exit icing conditions as soon as possible.
  - Confirm operation of the propeller deice system of the operating engine by observing PROPS advisory light (operating engine) illuminates and goes out repeatedly.

**NOTE:**

1. Only one reset of the PROP selector is allowed.
2. PROP selector must remain ON until clear of icing conditions.
3. With an engine shutdown and PROP selector ON, the PROP DEICE Caution Light will illuminate.

— END —

**NO**

- Monitor PROPS Advisory lights for normal operation.

— END —

**"WSHLD HOT"  
(Caution Light)**

- WINDSHIELD--HEAT selector..... WARM UP
- Exit icing conditions as soon as possible.

— END —

**"SIDE WDO HOT"  
(Caution Light)**

- PLT SIDE WDO/HT ..... OFF

— END —

**"WSHLD CTRL"  
(Caution Light)**

- Exit icing conditions as soon as possible.

— END —

**WINDSHIELD WIPER SWITCH FAILURE**

- ALTERNATE PILOT WIPER switch (below GPWS FLAP OVERRIDE switchlight) ..... ON

— END —

**"ICE DETECT FAIL"  
(Caution Light)**

- Monitor ice detection spigots on windshield wipers and wing leading edges to determine icing conditions.

— END —

## ENGINE OIL TEMP BELOW 65°C

(Prop Deice On In Flight)

**NOTE:**

To maintain the minimum engine oil temperature of 65°C in icing conditions, it may be necessary to increase engine power. The increase in engine power may be limited by airspeed limitations and operational requirements.

- Monitor affected engine performance.
- Exit icing conditions as soon as possible.

— END —

## "ENG ADPT HEAT 1" or "ENG ADPT HEAT 2" (Caution Light)

- Monitor affected engine performance.
- Exit icing conditions as soon as possible.

— END —

## "PITOT HEAT 1" or "PITOT HEAT 2" or "PITOT HEAT STBY" (Caution Light)

- PITOT STATIC switch (Affected) ..... On

— CONTINUED —

**Affected switch is on or there are abnormal indications of airspeed or altitude on the Pilot's or Co-pilot's PFD?**

**?** **YES**

- EFIS ADC Source .....1 or 2 (As Req'd)

— END —

**NO**

- No further action required.

— END —

**"#1 STALL SYST FAIL" or  
"2 STALL SYST FAIL"  
and  
"PUSHER SYST FAIL"  
(Caution Lights)**

- Autopilot ..... Disengage
- Minimum Airspeed .....  $V_{REF}$ 
  - Maintain airspeed appropriate for icing conditions and other failures if applicable.

— END —

**"PUSHER SYST FAIL"  
(Caution Light)**

**NOTE:**

If aircraft is on the ground, refer to [Chapter 14: Supplemental Resets](#) for reset procedure.

- Autopilot ..... Disengage
- STICK PUSHER SHUT OFF (on glareshield).....PUSH OFF
- Minimum Airspeed .....  $V_{REF}$ 
  - Maintain airspeed appropriate for icing conditions and other failures if applicable.

— END —

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## Chapter 12: Landing Gear

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## Chapter 12: Landing Gear

### ALTERNATE LANDING GEAR EXTENSION or ONE OR MORE LANDING GEAR FAIL TO EXTEND or "LDG GEAR INOP" (Caution Light)

**NOTE:**

All of the following need to be considered prior to ALTERNATE LANDING GEAR EXTENSION.

#### Landing Considerations:

- Manual gear extension should not be conducted above 15,000 ft.
- Landing gear cannot be retracted after ALTERNATE LANDING GEAR EXTENSION procedure.
  - Exit icing conditions.
  - Contact Dispatch to ensure adequate fuel for planned diversion/destination and to ensure go-around performance. (If unable to contact Dispatch refer to Performance Manual - Page 1-28 "LANDING GEAR DOWN" charts).
- 

**WARNING**

Continuing flight into mountainous terrain must be avoided.

- Nose Steering will be inoperative:
  - Avoid landing on contaminated runways when practical.
  - Avoid landing on a runway where crosswind exceeds 25 knots.

#### Alternate Landing Gear Extension Procedure:

- Max Airspeed..... 185 KIAS

**NOTE:**

If LDG GEAR INOP caution light was out, it will illuminate when the Landing Gear INHIBIT switch is selected to INHIBIT.

- Landing Gear INHIBIT switch .....INHIBIT / Leave at INHIBIT
- LANDING GEAR selector lever .....DN

— CONTINUED —

**NOTE:**

LANDING GEAR selector lever light will be amber (indicating position disagreement), and any gear that is not already down/locked/green will have its associated red gear-unsafe advisory light illuminated .

- LANDING GEAR ALTERNATE RELEASE Door ..... Fully Open/  
..... Leave Open
- Main Gear Release handle ..... Pull Fully Down

**NOTE:**

1. The main gear release handle pull force will be significantly higher than experienced during alternate landing gear extensions in the simulator.
2. The required pull force, to release the main gear uplocks, will be as high as 90 pounds.
3. If main landing gear down-and-locked indication is not achieved, PM should assume whatever position necessary; and repeat pull action with whatever force necessary to achieve a down-and-locked indication.

- LANDING GEAR ALTERNATE EXTENSION door . Fully Open/  
..... Leave Open

**NOTE:**

IF LEFT and/or RIGHT green gear locked down Advisory Lights do not illuminate, insert Hydraulic Pump handle in socket and operate until LEFT and RIGHT green gear locked down Advisory Lights illuminate.

- NOSE L/G RELEASE ..... Pull Fully up

**NOTE:**

1. The nose gear release handle pull force will be significantly higher than experienced during alternate landing gear extensions in the simulator.
2. The required pull force, to release the nose gear uplock, will be as high as 90 pounds.
3. If nose landing gear down-and-locked indication is not achieved, PM should assume whatever position necessary; and repeat pull action with whatever force necessary to achieve a down-and-locked indication.

- Landing Gear Downlock Verification switch (in floor).....ON/  
.....check 3 green/OFF

— CONTINUED —

## Is Landing Gear Downlock Verification and/or Landing Gear Control Panel indicating 3 green?

?

**YES**

- Anti-Skid.....Test

### After Landing:

- If possible, clear the runway but do not attempt to taxi to the gate.

As soon as possible after engine shutdown and prior to tow:

- Ground Locks .....Install

— END —

**NO**

## Nose Landing Gear unsafe, Main Landing Gear Down and Locked?

?

**YES**

- Via ACARS, ARINC, Operations Frequency, or ATC, communicate failure of procedure to Dispatcher and Fleet Manager (or Duty Officer).
- Unless deemed necessary by the Pilot-in-Command due to low fuel or other aircraft system malfunctions, do not land until all available resources have been used.

### Landing Considerations:

- Reduce landing weight through fuel burn.
- Attempt to achieve an aft C.G. by re-seating passengers.
- Select a runway with minimal crosswind.
- Land with flap 35°.

— CONTINUED —

**YES**

- Fly the appropriate VREF for the landing weight.
- Touchdown offset from the runway centerline if the runway is equipped with centerline lighting system.
- On touchdown, hold the nose up off the runway as long as possible. Prior to losing elevator effectivity, gently lower the nose onto the runway.
- If the nose landing gear is not extended or it collapses, maintain directional control with rudder until it is no longer effective, at which point asymmetric braking may be used as required.
- If the nose wheel is on the ground and the nose landing gear appears to be locked, apply brakes and/or reverse thrust. If the nose landing gear is not extended or it collapses, apply brakes only.

**— END —**

**NO**

**One Main Landing Gear unsafe, Nose Landing Gear and opposite Main Landing Gear down and locked?**

**?**

**YES**

- Via ACARS, ARINC, Operations Frequency, or ATC, communicate failure of procedure to Dispatcher and Fleet Manager (or Duty Officer).
- Unless deemed necessary by the Pilot-in-Command due to low fuel or other aircraft system malfunctions, do not land until all available resources have been used.

**Landing Considerations:**

- In this situation, re-setting the INHIBIT switch, alternate extension and release doors, and attempting to cycle the gear should be considered since this is the least desirable landing gear condition.

**— CONTINUED —**

**YES**

- The flight crew must make a decision to perform a landing with main landing gear unsafe or an all landing gear up landing to the All Landing Gear Up Landing procedure on the page follows).
- Reduce landing weight through fuel burn.
- Passengers must be moved from the seats in the plane of the main landing gear and re-seated elsewhere in the cabin. Priority is to be given to the passengers seated on the side with the indicated main landing gear.
- Crosswind (if any) would be advantageous from the side with the un-affected main landing gear.
- Land with flap 35°.
- Fly the appropriate  $V_{REF}$  for landing weight.
- Giving due regard to the specific approach to be flown, flight path and possible missed approach; prior to commencing final approach, feather and secure the engine on the side with the affected main landing gear.
- If the unsafe main landing gear collapses, in an effort to reduce airplane turning moment in the direction of the failed main landing gear, apply maximum braking and reverse thrust on the side with the un-affected main landing gear.
- After landing, feather and secure the operative engine and be prepared for the ON GROUND EMERGENCIES checklist.

**— END —**

**NO**

### **All Landing Gear Up Landing**

- Via ACARS, ARINC, Operations Frequency, or ATC, communicate failure of procedure to Dispatcher and Fleet Manager (or Duty Officer).
- Unless deemed necessary by the Pilot-in-Command due to low fuel or other aircraft system malfunctions, do not land until all available resources have been used.

### **Landing Considerations:**

- In this situation, re-setting the INHIBIT switch, and alternate extension and release doors, and attempting to cycle the gear should be considered since this is one of the least desirable landing gear condition.

**— CONTINUED —**

- It is possible to safely land the Dash 8 Q400 airplane with all landing gear retracted. The geometry of the Q400 airplane is such that the propellers should not come in contact with the ground with all landing gear retracted, if it is possible to maintain the wings level throughout the landing.
- Reduce landing weight through fuel burn.
- Passengers must be moved from the seats in the plane of the propellers and re-seated elsewhere in the cabin.
- Select a runway with minimal crosswind.
- Land with flap 35°.
- Fly the appropriate VREF for the landing weight.
- Touchdown offset from the runway centerline if the runway is equipped with a centerline lighting system.
- Maintain a nose-up pitch attitude not exceeding 5° prior to runway contact.
- On touchdown, maintain wings level using lateral control and directional control with rudder.
- Feather and secure engines.

— END —

### **LANDING GEAR MALFUNCTIONS (Other Landing Gear or Gear Door Malfunctions)**

**NOTE:**

Following any landing gear extension or retraction malfunction not covered by a specific procedure in this chapter, the landing gear must be extended using the ALTERNATE LANDING GEAR EXTENSION.

**WARNING**

***DO NOT ATTEMPT TO EXTEND or RETRACT the landing gear normally.***

- ALTERNATE LANDING GEAR EXTENSION ([Page 12-1](#))..... Accomplish

— END —

## MAIN LANDING GEAR DOOR MALFUNCTIONS

(Amber Main Gear Door Open Advisory Light remains illuminated after Landing Gear selection)

### Landing Gear Up selected?

**?** **YES**

- Max Airspeed..... 185 KIAS
- Flap ..... 0°

**NO**

### Landing Gear Down selected:

- Max Airspeed..... 185 KIAS
- Complete flight with landing gear down.

### Amber Main Gear Door Open Advisory Light remains illuminated?

**?** **YES**

- Max Airspeed ..... 185 KIAS
- DO NOT extend landing gear via normal selection.

### Landing Considerations:

- Extend landing gear via ALTERNATE LANDING GEAR EXTENSION ([Page 12-1](#)).

**NOTE:**

Intermittent illumination of amber main gear door open advisory light must be reported to maintenance.

— END —

**NO**

- Continue flight at normal airspeed.

— END —



## NOSE LANDING GEAR DOOR MALFUNCTIONS

(Amber Nose Gear Door Open Advisory Light remains illuminated after Landing Gear selection)

### Landing Gear Up selected?

?

YES

- Max Airspeed..... 185 KIAS
  - DO NOT extend landing gear via normal selection.

#### Landing Considerations:

- Extend landing gear via ALTERNATE LANDING GEAR EXTENSION ([Page 12-1](#)).

#### NOTE:

Intermittent illumination of amber nose gear door open advisory light must be reported to maintenance.

— END —

NO

### Landing Gear Down selected:

- Max Airspeed..... 185 KIAS
  - Complete flight with landing gear down.

— END —

## LANDING GEAR FAIL TO RETRACT

### **CAUTION:**

*If any Red Gear Unsafe Advisory Lights are illuminated with Landing Gear Lever selected up, check landing gear alternate release and extension door(s) CLOSED. If door(s) OPEN, Landing gear will not retract when Landing Gear Selector Lever selected to the UP position after liftoff.*

**Are 3 Green Gear Locked Down Advisory Lights Illuminated with Landing Gear Lever selected UP?**



**YES**

### **NOTE:**

Landing Gear Doors may be open or closed.

**IF Landing Gear Doors Open (Amber Doors Open Advisory Lights illuminated):**

- Max Airspeed ..... 185 KIAS

**IF Landing Gear Doors Closed (Amber Doors Open Advisory Lights are out):**

- Max Airspeed ..... 215 KIAS
- Landing Gear selector..... DN
- Confirm 3 Green Gear Locked Down Advisory Lights remain illuminated.
- DO NOT select landing gear up.

### **Continuation Considerations:**

- If conditions allow, consider return to departure airport.
- Do not operate above 15,000 ft with Landing Gear extended.
- Exit icing conditions.
- Continuing flight into mountainous terrain must be avoided.

**— CONTINUED —**

- Contact Dispatch to coordinate fuel burn and go-around at planned diversion/destination. (If unable to contact Dispatch refer to Performance Manual - Page 1-28 "LANDING GEAR DOWN" charts).

**NOTE:**

The flight may continue to the destination, return to point of departure, or the nearest airport where adequate services are available based on the above considerations.

**NO**

**— END —**

- DO NOT select landing gear handle down.
- ALTERNATE LANDING GEAR EXTENSION ([Page 12-1](#))....  
Accomplish

**— END —**

---

**"INBD ANTI-SKID" and/or "OUTBD ANTI-SKID"  
(Caution Lights)**

- Anti-Skid.....ON

**Caution Light remains on?**

**?** **YES**

**Landing Considerations:**

- Use Manual Technique for braking.

**CAUTION:**

*Excessive brake application can result in skidding and tire failure.*

**NOTE:**

**Manual Technique** – For maximum deceleration, brakes should be applied intermittently with momentary release at 1 second intervals.

Abnormal Landing Distance Factors		
Flap	Ice Protection	
	Level 1	Level 2/3
10	1.70	1.68
15	1.70	1.68
35	1.70	1.71

Conditional Landing Distance Statement	
Level 1 Ice Protection	Landing Distance = 5400 ft
Wt. less than 64,500 lbs.	
Flap greater than or equal to 10°	
Dry Runway	
Airport Elevation less than 2000 ft	
Tailwind 0 kts.	

— END —

**NO**

- No further action required.

— END —

## "WT ON WHEELS" (Caution Light)

Aircraft is on the ground at the gate?

**?** **YES**

**NOTE:**

WT ON WHEELS caution light and other related caution lights may be present if cargo is added to the AFT Baggage Compartment prior to passenger boarding.

- Caution light will extinguish after nosewheel WOW sensor closes.
- Aircraft power down may be required to clear caution.

— END —

**NO**

- IF on the ground taxiing, maintenance action required prior to flight.
- IF in flight, no Crew action required.

---

**CAUTION:**

*Landing Gear may not retract.*

---

**NOTE:**

Caution Light may extinguish after landing; however, maintenance action will be required prior to next flight.

— END —

---

## LANDING GEAR INDICATOR MALFUNCTION

**IF any of the Green Gear–Locked–Down Advisory Lights fail to illuminate:**

- LANDING GEAR ALTERNATE EXTENSION Door .....Open
- Landing Gear Downlock Verification switch (in floor).....ON/  
.....check 3 green/OFF
- LANDING GEAR ALTERNATE EXTENSION Door ..... Close

— END —

---

## "NOSE STEERING" (Caution Light)

- Nose Steering handle .....Center

### Caution Light remains illuminated?



**YES**

- Steering switch .....OFF

Note:

4. Taxi using differential braking and power.
5. Maneuver at a reduced taxi speed.

---

***CAUTION:***

***Avoid tight turns. Tight turns may cause nosewheel to caster to a greater than desired steering angle, making it difficult to return to the center position.***

---

- Maintenance action is required prior to flight.

— END —

**NO**

- No further action required.

— END —

## "TOUCHED RUNWAY" (Warning Light)

### Due to the possibility of runway debris:

- Advise ATC and airport operation of fuselage/runway contact.
- Aircraft must not be flown prior to inspection and maintenance approval.

— END —

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## **Chapter 13: Winter Operations (OPS)**

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## Chapter 13: Winter Operations (OPS)

### Takeoff

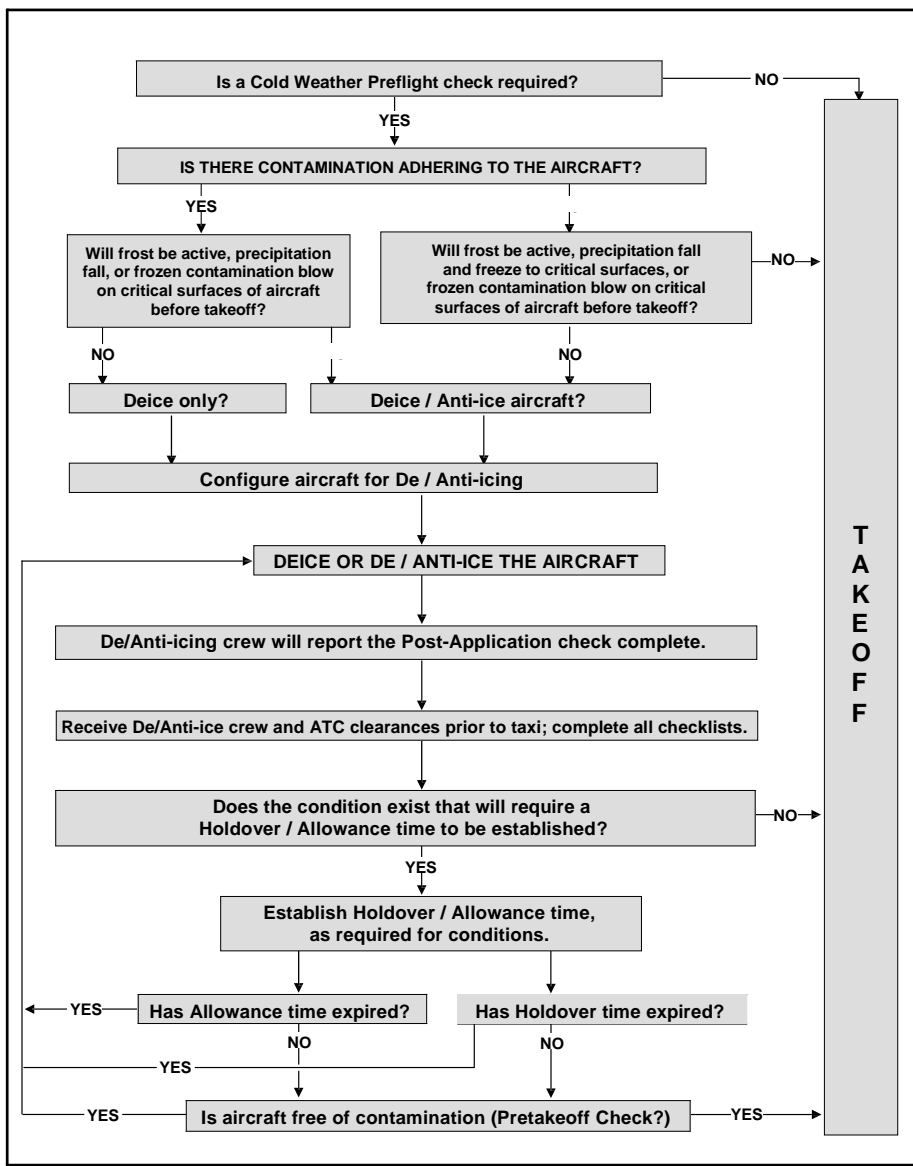


Figure 13-1: Takeoff

## Engines Running Deice Checklist

### **CAUTION:**

*All deicing will be accomplished with flaps 0.  
At NO TIME will an aircraft be deiced with the APU running.  
At NO TIME will an aircraft be deiced with any bleed air on.*

### **NOTE:**

Accomplish Reposition Checklist in lieu of After Start Checklist if deicing cannot be accomplished at the gate. All Deice/Anti-Ice operations must be conducted with flaps 0.

### **When ready for deice/anti-ice:**

- EMERG BRAKE .....PARK
- Nose Steering ..... OFF
- Cabin Announcement .....Complete
- AUTOFEATHER ..... OFF
- AUX/STBY/PTU Pumps ..... OFF
- POWER Levers..... DISC
- Condition Levers.....START & FEATHER
- BLEED selector .....MIN
- BLEED switches 1 and 2 ..... OFF
- APU ..... OFF
- Deicing..... Accomplish
- Start time of final application .....Note

### **NOTE:**

If Type I and IV fluid are applied on one side of the aircraft, then the other, start-time of Type IV application on first side is beginning of HOT.

### **When application is complete:**

- Flight Controls ..... Check for freedom of movement
- After Start Checklist ..... Accomplish

— END —

## Alternating Engines Deice Checklist

### **CAUTION:**

*All deicing will be accomplished with flaps 0.*

*At NO TIME will an aircraft be deiced with the APU running.*

*At NO TIME will an aircraft be deiced with any bleed air on.*

### **NOTE:**

Accomplish Reposition Checklist in lieu of After Start Checklist if deicing cannot be accomplished at the gate. All Deice/Anti-Ice operations must be conducted with flaps 0.

### **When ready for deice/anti-ice:**

- EMERG BRAKE .....PARK
- Nose Steering ..... OFF
- Cabin Announcement .....Complete
- AUTOFEATHER ..... OFF
- AUX/STBY/PTU Pumps ..... OFF
- POWER Levers..... DISC
- Condition Levers.....START &FEATHER
- Transponder .....STBY
- BLEED selector .....MIN
- BLEED switches 1 and 2 ..... OFF
- MAIN BUS TIE..... TIE
- APU ..... OFF
- Start time of final application .....Note

### **NOTE:**

If Type I and IV fluid are applied on one side of the aircraft, then the other, start-time of Type IV application on first side is beginning of HOT.

### **Side to be deiced/anti-iced first (min. 30 seconds):**

- Condition Levers.....FUEL OFF
- Deicing..... Accomplish

— CONTINUED —

**When application on side with engine shutdown is complete:**

**NOTE:**

Observe all engine start limitations.

- Engine .....CLEAR
- Engine Start Procedure .....Accomplish

**Side to be deiced/anti-iced second:**

- Condition Levers..... FUEL OFF
- Deice .....Accomplish

**When application is complete:**

**NOTE:**

Observe all engine start limitations.

- Engine .....CLEAR
- Engine Start Procedure .....Accomplish

**NOTE:**

Observe all engine start limitations.

- Flight Controls .....Check for freedom of movement
- After Start Checklist .....Accomplish

**— END —**

---

## Engines Shutdown Deice Checklist

CEME: M8

### **CAUTION:**

*All deicing will be accomplished with flaps 0.*

*At NO TIME will an aircraft be deiced with the APU running.*

*At NO TIME will an aircraft be deiced with any bleed air on.*

### **NOTE:**

Accomplish Reposition Checklist in lieu of After Start Checklist if deicing cannot be accomplished at the gate. All Deice/Anti-Ice operations must be conducted with flaps 0.

### **When ready for deice/anti-ice:**

- EMERG BRAKE .....PARK
- Nose Steering .....OFF
- Cabin Announcement .....Complete
- AUTOFEATHER .....OFF
- AUX/STBY/PTU Pumps .....OFF
- POWER Levers..... DISC
- Condition Levers .....START/FEATHER
- Transponder .....STBY
- BLEED selector .....MIN
- BLEED switches 1 and 2 .....OFF
- EXTPWR .....ON
- MAIN BUS TIE..... TIE
- Condition Levers.....FUEL OFF
- APU .....OFF
- Deicing..... Accomplish
- Start time of final application .....Note

### **NOTE:**

If Type I and IV fluid are applied on one side of the aircraft, then the other, start-time of Type IV application on first side is beginning of HOT

— CONTINUED —



**When application is complete:**

**NOTE:**

Observe all engine start limitations.

- Engine .....CLEAR
- Engine Start Procedure .....Accomplish
- Flight Controls .....Check for freedom of movement
- After Start Checklist .....Accomplish

**— END —**

---

## Holdover Tables

CEME: J4H

TYPE I Fluid Holdover Table

Ambient Temp. (C°)	Weather Conditions (See notes 1 & 2)	TYPE I Holdover Times Fluid (Mixture 50/50) Moderate - Light
-3°C and above	Active Frost	0:45
	Freezing Fog - Ice Fog	0:11 - 0:17
	Very Light - Snow /Snow Grains/Snow Pellets (2)	0:18 - 0:22
	Light - Snow /Snow Grains/Snow Pellets (2)	0:11 - 0:18
	Moderate - Snow /Snow Grains/Snow Pellets (2)	0:06 - 0:11
	Freezing Drizzle (1)	0:09 - 0:13
	Light Freezing Rain	0:02 - 0:05
	Rain on Cold Soaked Wing (above 0°C only)	0:02 - 0:05
-4°C to -6°C	Active Frost	0:45
	Freezing Fog - Ice Fog	0:08 - 0:13
	Very Light - Snow /Snow Grains/Snow Pellets (2)	0:14 - 0:17
	Light - Snow /Snow Grains/Snow Pellets (2)	0:08 - 0:14
	Moderate - Snow /Snow Grains/Snow Pellets (2)	0:05 - 0:08
	Freezing Drizzle (1)	0:05 - 0:09
	Light Freezing Rain	0:02 - 0:05
-7°C to -10°C	Active Frost	0:45
	Freezing Fog - Ice Fog	0:06 - 0:10
	Very Light - Snow /Snow Grains/Snow Pellets (2)	0:11 - 0:13
	Light - Snow /Snow Grains/Snow Pellets (2)	0:06 - 0:11
	Moderate - Snow /Snow Grains/Snow Pellets (2)	0:04 - 0:06
	Freezing Drizzle (1)	0:04 - 0:07
below -10°C	Light Freezing Rain	0:02 - 0:05
	Active Frost	0:45
	Freezing Fog - Ice Fog	0:05 - 0:09
	Very Light - Snow /Snow Grains/Snow Pellets (2)	0:07 - 0:08
	Light - Snow /Snow Grains/Snow Pellets (2)	0:04 - 0:07
	Moderate - Snow /Snow Grains/Snow Pellets (2)	0:02 - 0:04

- (1) Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.  
A pre-takeoff check is required before departure. **No takeoff after expiration of holdover time is permitted.**
- (2) To use these times, the fluid must be heated to a minimum temperature of 60°C at the nozzle and at least 1 liter/m<sup>2</sup> (2 gals/100 ft<sup>2</sup>) must be applied to deiced surfaces.

Note: Type I fluid/water mixture is selected so that the FP of the mixture is at least 10 °C below OAT.

**CAUTIONS:** 1. THE TIME OF PROTECTION WILL BE SHORTENED IN HEAVY WEATHER CONDITIONS. HEAVY PRECIPITATION RATES OR HIGH MOISTURE CONTENT, HIGH WIND VELOCITY OR JET BLAST MAY REDUCE HOLDOVER TIME BELOW THE LOWEST TIME STATED IN THE RANGE. HOLDOVER TIME MAY BE REDUCED WHEN AIRCRAFT SKIN TEMPERATURE IS LOWER THAN OAT.

2. SAE TYPE I FLUID USED DURING GROUND DEICING/ANTI-ICING IS NOT INTENDED FOR AND DOES NOT PROVIDE PROTECTION DURING FLIGHT.

**WARNING:** TAKEOFF IN CONDITIONS OF HEAVY SNOW, MODERATE OR HEAVY FREEZING RAIN, HEAVY ICE PELLETS, HAIL(GR) IS PROHIBITED. FOR TAKEOFF IN ICE PELLETS, TYPE IV FLUID

MUST BE APPLIED. SEE TYPE IV HOLDOVERTABLE.

---

**TYPE III Fluid Holdover Table**

Ambient Temp. (C°)	Weather Conditions (See notes 1 & 2)	TYPE III Holdover Times Fluid (Mixture 100%)
		Moderate - Light
-3°C and above	Active Frost	2:00
	Freezing Fog - Ice Fog	0:20 - 0:40
	Very Light - Snow /Snow Grains/Snow Pellets (2)	0:35 - 0:40
	Light - Snow /Snow Grains/Snow Pellets (2)	0:20 - 0:35
	Moderate - Snow /Snow Grains/Snow Pellets (2)	0:10 - 0:20
	Freezing Drizzle (1)	0:10 - 0:20
	Light Freezing Rain	0:08 - 0:10
	Rain on Cold Soaked Wing (above 0°C only)	0:06 - 0:20
-4°C to -10°C	Active Frost	2:00
	Freezing Fog - Ice Fog	0:20 - 0:40
	Very Light - Snow /Snow Grains/Snow Pellets (2)	0:30 - 0:35
	Light - Snow /Snow Grains/Snow Pellets (2)	0:15 - 0:30
	Moderate - Snow /Snow Grains/Snow Pellets (2)	0:09 - 0:15
	Freezing Drizzle (1)	0:10 - 0:20
	Light Freezing Rain	0:08 - 0:10
below -10°C to -29°C	Active Frost	2:00
	Freezing Fog - Ice Fog	0:20 - 0:40
	Very Light - Snow /Snow Grains/Snow Pellets (2)	0:30 - 0:35
	Light - Snow /Snow Grains/Snow Pellets (2)	0:15 - 0:30
	Moderate - Snow /Snow Grains/Snow Pellets (2)	0:08 - 0:15

- (1) Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.  
A pre-takeoff check is required before departure. **No takeoff after expiration of holdover time is permitted.**
- (2) A/C rotation speed (VR) must be 100 kts or greater. If any form of allowable mixed precipitation exceeds the listed intensity, operations are **N/A**. If mixed with -R, operations are **N/A** below 0°C.

Note: Type III fluid may be used below -10°C provided the freezing point of the fluid is at least 7°C below OAT.

- CAUTIONS:** 1. THE TIME OF PROTECTION WILL BE SHORTENED IN HEAVY WEATHER CONDITIONS. HEAVY PRECIPITATION RATES OR HIGH MOISTURE CONTENT, HIGH WIND VELOCITY OR JET BLAST MAY REDUCE HOLDOVER TIME BELOW THE LOWEST TIME STATED IN THE RANGE. HOLDOVER TIME MAY BE REDUCED WHEN AIRCRAFT SKIN TEMPERATURE IS LOWER THAN OAT.
2. SAE TYPE III FLUID USED DURING GROUND DEICING/ANTI-ICING IS NOT INTENDED FOR AND DOES NOT PROVIDE PROTECTION DURING FLIGHT.

**WARNING:** TAKEOFF IN CONDITIONS OF HEAVY SNOW, MODERATE OR HEAVY FREEZING RAIN, HEAVY ICE PELLETS, HAIL (GR) IS PROHIBITED. FOR TAKEOFF IN ICE PELLETS, TYPE IV FLUID MUST BE APPLIED. SEE TYPE IV HOLDOVER TABLE.

**TYPE IV Fluid Holdover Table**

Ambient Temp. (C°)	Weather Conditions	TYPE IV Holdover Times Fluid (Mixture 100/0)		
		Octagon MAX-Flight 04	Clariant Safewing MP IV 2001	Killfrost ABC-S PLUS
-3°C and above	Light Ice Pellets	0:50 / 0:25 if mixed with SN / ZD / -ZR / -R (1)(2)		
	Moderate Ice Pellets	0:25 (1)(2)		
	Active Frost	12:00	12:00	12:00
	Freezing Fog - Ice Fog	2:40 - 4:00	1:20 - 3:20	2:10 - 4:00
	Snow(SN)-SG-GS(pellets)	1:25 - 2:00	1:00 - 1:55	1:15 - 2:00
	Heavy Snow	Not applicable.		
	Freezing Drizzle (1)	2:00 - 2:00	0:55 - 1:55	1:50 - 2:00
	Light Freezing Rain	1:10 - 1:30	0:40 - 1:00	1:05 - 2:00
	Rain on Cold Soaked Wing (above 0°C only)	0:20 - 2:00	0:15 - 2:00	0:25 - 2:00
-4°C to -14°C	Light Ice Pellets	0:30 / <b>N/A</b> if mixed with SN / ZD / -ZR / -R (1)(2)		
	Moderate Ice Pellets	0:10 (1)(2)		
	Active Frost	6:00 (3)	6:00 (3)	6:00 (3)
	Freezing Fog - Ice Fog	0:50 - 2:30	0:45 - 1:35	0:55 - 3:30
	Snow(SN)-SG-GS(pellets)	0:35 - 1:10	0:30 - 0:50	1:00 - 1:45
	Heavy Snow	Not applicable.		
-4°C to -10°C	Freezing Drizzle (1)	0:25 - 1:30	0:55 - 1:35	0:25 - 1:35
	Light Freezing Rain	0:20 - 0:40	0:30 - 0:45	0:20 - 0:30
-15°C to -26°C	Active Frost	4:00 (2) (3)	4:00 (2) (3)	4:00 (2) (3)
	Freezing Fog - Ice Fog	0:20 - 0:45 (2)	0:20 - 0:45 (2)	0:40 - 1:00 (2)
	Snow(SN)-SG-GS(pellets)	0:15 - 0:30 (2)	0:15 - 0:30 (2)	0:15 - 0:30 (2)
	Heavy Snow	Not applicable.		
Below -26°C	No holdover times for <b>Type IV</b> exist. Consider use of <b>Type I</b> .			

- (1) Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.  
A pre-takeoff check is required before departure. **No takeoff after expiration of holdover time is permitted. The aircraft must return for a new application of fluids.**
- (2) A/C rotation speed (VR) must be 100 kts or greater. If any form of allowable mixed precipitation exceeds the listed intensity, operations are **N/A**. If mixed with -R, operations are **N/A** below 0°C.
- (3) Radiational cooling during active frost conditions may reduce holdover times when operating close to the lower end of the outside air temperature range.

**CAUTIONS:** 1. THE TIME OF PROTECTION WILL BE SHORTENED IN HEAVY WEATHER CONDITIONS. HEAVY PRECIPITATION RATES OR HIGH MOISTURE CONTENT, HIGH WIND VELOCITY OR JET BLAST MAY REDUCE HOLDOVER TIME BELOW THE LOWEST TIME STATED IN THE RANGE. HOLDOVER TIME MAY BE REDUCED WHEN AIRCRAFT SKIN TEMPERATURE IS LOWER THAN OAT.

2. SAE TYPE IV FLUID USED DURING GROUND DEICING/ANTI-ICING IS NOT INTENDED FOR AND DOES NOT PROVIDE PROTECTION DURING FLIGHT.

**WARNING:** TAKEOFF IN CONDITIONS OF HEAVY SNOW, MODERATE OR HEAVY FREEZING RAIN, HEAVY ICE PELLETS OR HAIL(GR) IS PROHIBITED.

**Type IV Fluid Holdover Table**

Ambient Temp. (C°)	Weather Conditions	TYPE IV Holdover Times Fluid (Mixture 100/0)		
		All Other Brands		
-3°C and above	Light Ice Pellets	0:50 / 0:25 if mixed with SN / ZD / -ZR / -R (1)(2)		
	Moderate Ice Pellets	0:25 (1)(2)		
	Active Frost	12:00		
	Freezing Fog - Ice Fog	1:20 - 3:10		
	Snow(SN)-SG-GS(pel-lets)	0:35 - 1:15		
	Heavy Snow	Not applicable.		
	Freezing Drizzle (1)	0:45 - 1:30		
	Light Freezing Rain	0:25 - 0:40		
	Rain on Cold Soaked Wing (above 0°C only)	0:10 - 1:15		
-4°C to -14°C	Light Ice Pellets	0:30 / <b>N/A</b> if mixed with SN / ZD / -ZR / -R (1)(2)		
	Moderate Ice Pellets	0:10 (1)(2)		
	Active Frost	6:00 (3)		
	Freezing Fog - Ice Fog	0:20 - 1:20		
	Snow(SN)-SG-GS(pel-lets)	0:25 - 0:50		
	Heavy Snow	Not applicable.		
-4°C to -10°C	Freezing Drizzle (1)	0:20 - 1:00		
	Light Freezing Rain	0:10 - 0:25		
-15°C to -26°C	Active Frost	4:00 (3)		
	Freezing Fog - Ice Fog	0:15 - 0:40		
	Snow(SN)-SG-GS(pel-lets)	0:15 - 0:30		
	Heavy Snow	Not applicable.		
Below -26°C	No holdover times for <b>Type IV</b> exist. Consider use of <b>Type I</b> .			

- (1) Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.  
A pre-takeoff check is required before departure. **No takeoff after expiration of holdover time is permitted. The aircraft must return for a new application of fluids.**
- (2) A/C rotation speed (VR) must be 100 kts or greater. If any form of allowable mixed precipitation exceeds the listed intensity, operations are **N/A**. If mixed with -R, operations are **N/A** below 0°C.
- (3) Radiational cooling during active frost conditions may reduce holdover times when operating close to the lower end of the outside air temperature range.

**CAUTIONS:**

1. THE TIME OF PROTECTION WILL BE SHORTENED IN HEAVY WEATHER CONDITIONS. HEAVY PRECIPITATION RATES OR HIGH MOISTURE CONTENT, HIGH WIND VELOCITY OR JET BLAST MAY REDUCE HOLDOVER TIME BELOW THE LOWEST TIME STATED IN THE RANGE. HOLDOVER TIME MAY BE REDUCED WHEN AIRCRAFT SKIN TEMPERATURE IS LOWER THAN OAT.
2. SAE TYPE IV FLUID USED DURING GROUND DEICING/ANTI-ICING IS NOT INTENDED FOR AND DOES NOT PROVIDE PROTECTION DURING FLIGHT.

**WARNING:** TAKEOFF IN CONDITIONS OF HEAVY SNOW, MODERATE OR HEAVY FREEZING RAIN, HEAVY ICE PELLETS OR HAIL(GR) IS PROHIBITED.

8/29/11

N 8900.167

**Table 1C. Snowfall Intensities as a Function of Prevailing Visibility**

Time of Day	Temp.		Visibility (Statute Mile)								
	Degrees Celsius	Degrees Fahrenheit	:2 21/2	2	1 1/2	1	3/4	1/2	:σ 1/4		
Day	colder/equal -1	colder/equal 30	Very Light	Very Light	Light	Light	Moderate	Moderate	Heavy	Snowfall Intensity	
	warmer than -1	warmer than 30	Very Light	Light	Light	Moderate	Moderate	Heavy	Heavy		
Night	colder/equal -1	colder/equal 30	Very Light	Light	Moderate	Moderate	Heavy	Heavy	Heavy		
	warmer than -1	warmer than 30	Very Light	Light	Moderate	Heavy	Heavy	Heavy	Heavy		
NOTE 1: This table is for estimating snowfall intensity. It is based upon the technical report, “The Estimation of Snowfall Rate Using Visibility,” Rasmussen, et al., Journal of Applied Meteorology, October 1999 and additional in situ data.											
NOTE 2: This table is to be used with Type I, II, III, and IV fluid guidelines.											
HEAVY = Caution—No Holdover Time Guidelines Exist											

Figure 13-2: Snowfall Intensities

## Braking Action and Estimated Correlations

Braking Action		Estimated Correlations		
Term	Definition	Runway Surface Condition	ICAO	
			Code	Mu
<b>Good</b>	Braking deceleration is normal for the wheel braking effort applied. Directional control is normal	Water depth of 1/8" or less Dry snow less than 3/4" in depth Compacted snow with OAT at or below 15°C	5	40 & Above
<b>Good to Medium</b>			4	39-36
<b>Medium (Fair)</b>	Braking deceleration is noticeably reduced for the wheel braking effort applied. Directional control may be slightly reduced	Dry snow 3/4" or greater in depth Sanded Snow Sanded Ice Compacted snow with OAT Above 15°C	3	35-30
<b>Medium to Poor</b>			2	29-26
<b>Poor</b>	Braking deceleration is significantly reduced for the wheel braking effort applied. Potential hydroplaning exists. Directional control may be significantly reduced.	Wet snow Slush Water depth more than 1/8" Ice (not melting)	1	25-21
<b>Nil</b>	Braking deceleration is minimal to nonexistent for the wheel braking effort applied. Directional control may be uncertain.  <b>NOTE: Taxi, takeoff and landing operations in Nil conditions are prohibited.</b>	Ice (melting) Wet Ice	9	20 & below

**NOTE: Conditions specified as "Nil" braking action are not considered safe. Do not operate on surfaces reported as Nil. Further, the ICAO term "Unreliable" approximates Nil.**

**Try to obtain runway assessments as close to the arrival time as possible**

This is extracted from AC 91-79

Braking Action and Estimated Correlations Rev. 1 (18 Feb 11)

Figure 13-3: Braking Action and Estimated Correlations



## Wind Components

WIND COMPONENT TABLE																								
WIND SPEED KNOTS										ANGLE BETWEEN WIND DIRECTION AND HEADING (LEFT OR RIGHT)										TAIL WIND COMPONENT				

Friction Coefficient vs. Max Crosswind Component			
Friction Coefficient in MU/ ICAO surface condition code		Max Crosswind Component	Braking Action
40 or above	5	32 KTS	GOOD
39 – 36	4	25 KTS	MEDIUM TO GOOD
35 – 30	3	20 KTS	MEDIUM
29 – 26	2	15 KTS	MEDIUM TO POOR
25 – 21	1	5 KTS	POOR
20 or below	9	Not Applicable	NIL
Warning: Taxi, Takeoff and Landing operations in Nil Conditions are Prohibited.			

Figure 13-5: Friction Coefficient vs. Max Crosswind Component

## Chapter 14: Supplemental Resets

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## Chapter 14: Supplemental Resets

### Supplemental System Resets

A successful or unsuccessful reset must be entered in the aircraft Flight Log.

After a successful or unsuccessful reset, the Pilot In Command will enter the discrepancy under the Flight Log's "Mechanical Discrepancy" column. *Example:*

Flap Power caution light illuminated. Signed by PIC (Name and Employee number)

After a successful reset, the PIC will enter the corrective action under the corrective action column. *Example:*

"Identified as a Nuisance Advisory Message per Chapter 14 "Supplemental System Resets". Clearing action accomplished, no further discrepancy noted. Signed by Pilot In Command (Name and Employee number).

After an unsuccessful reset, the PIC will contact SOC for further assistance. If the discrepancy can not be deferred (MEL), the aircraft will be returned to the gate for maintenance action.

### General

Where corrective action to the affected system, has not been implemented through a modification and/or Service Bulletin, the following procedures provide the means to reset specific nuisance caution lights, advisory messages or system faults. The following general procedures **MUST** be adhered to in order to ensure the continued safe operation of the aircraft:

- These procedures may only be used during ground operations unless there is a note that specifically states that the procedure may be performed in flight;
- Any procedure detailing the reset (pull out and push in) of circuit breakers may only be used one time for each nuisance indication; and
- If these procedures are not sufficient to clear the nuisance indication, then the MEL must be used if applicable, or the problem must be rectified prior to aircraft dispatch.

## Air Conditioning, Pressurization, and Pneumatics

CEME:

N5

N24

### **FAULT Light (Illuminated on Pressurization Panel)**

- May be performed in flight.

Cabin Pressure Controller:

AUTO/MAN/DUMP switch..... Select MAN for 2 sec, then AUTO

### **IF annunciation remains:**

- Cabin Pressurization must be managed in MANUAL MODE OPERATION.
- Maintenance is required before the next flight.

**— END —**

---

### **Erroneous CABIN Temperature Indication**

*AOM 3.4-2 REV.X MAY 31/11*

(Flight Deck indication of cabin temperature reads up to 9°C higher than Flight Attendant's panel reading)

- No maintenance action required. Operation of the ECS system is unaffected.

**— END —**

---

## Poor ECS Temperature Control

*AOM 3.4-3 REV.X MAY 31/11*

(Recommended procedure to improve temperature control throughout the aircraft)

RECIRC switch.....ON

CABIN and FLT COMP pack switches ..... AUTO

CABIN and FLT COMP Temperature selectors ..... 12 o'clock

BLEED selector ..... NORM or MAX

Flight Deck Gasper Vents (4 places) ..... Fully Open

Flight Deck/Side Window Demist Flow Control Levers ... Fully Open

– Wait at least 5 minutes for compartment temperatures to stabilize.

**IF a temperature adjustment is required:**

Temp Control ..... Adjust by a small increment

– Wait at least 5 minutes for compartment temperatures to restabilize before making a further adjustment.

**— END —**

## Hot Cabin During Boarding

*AOM 3.4-3 REV.X MAY 31/11*

CEME: N4B N5

(Recommended procedure to minimize overheating the cabin during boarding in cold weather)

RECIRC switch.....ON

CABIN and FLT COMP pack switches..... AUTO

CABIN AND FLT COMP temperature selectors ..... 12 o'clock

BLEED selector .....NORM or MAX

Flight Deck Gasper Vents (4) ..... Fully Open

Flight Deck/Side Window Demist Flow Control Levers ... Fully Open

Flight Deck Door ..... Closed

- To avoid overheating the cabin, maintain temperature controls at 12 o'clock. Compartment temperatures will stabilize after passenger doors are closed.

**— END —**

## Cold Soaked Aircraft

*AOM 3.4-3 REV.X MAY 31/11*

CEME: N4A N5

(Recommended procedure to heat aircraft cabin after the aircraft has been cold-soaked overnight)

RECIRC switch.....ON

. CABIN and FLT COMP pack switches..... AUTO

. CABIN and FLT COMP temperature selectors.....12 o'clock

**— CONTINUED —**



APU Bleed..... ON

Flight Deck Gasper Vents (4 places)..... Fully Open

Flight Deck/Side Window Demist Flow Control Levers .... Fully Open

| Flight Deck Door ..... Closed

- Maintain temperature control at 12 o'clock until compartment temperatures have stabilized.
- To avoid duct temperature overshoots and triggering a DUCT HOT caution light, do not select packs to MAN.

| — END —

---

## Auto, Flight Instruments, and Navigation

CEME:

N32

N34

### PA CHIME INOPERATIVE

*AOM 3.4-8 REV. 1 NOV 21/11*

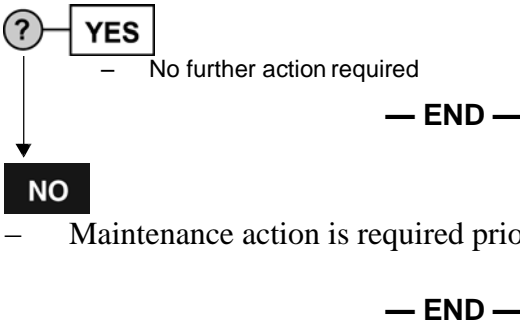
(Passenger Address Amplifier Chime is inoperative)

**NOTE:**

Related to possible low essential buss voltage during initial power up.

- PA AMP CB (8B-Left Essential Avionics)Reset

**PA Chime restored:**



### "DU BAD CONFIG" (Message on ED)

*AOM 3.4-5 REV.1 NOV 21/11*

(Message appears after power-up of displays.)

PFD 1 and 2, MFD 1 and 2 and ED ..... OFF then ON one at a time

**NOTE:**

Wait 30 seconds for self-test to complete on each individual display before selecting the next display On.

**IF message remains on:**

- Maintenance action is required prior to flight.

— END —

### **Erroneous SAT Indications**

*AOM 3.4-5 REV.1 NOV 21/11*

(SAT differs from reported OAT by more than +/- 2°C)

- Monitor SAT indication during taxi with #1 engine operating and propeller selected out of feather.

#### **IF erroneous indications remain:**

- Maintenance action is required prior to flight.

**— END —**

---

### **"ALT" (Red Annunciation on ARCDU ATC Display Area)**

*AOM 3.4-5 REV.1 NOV 21/11*

(Annunciation appeared on ARCDU main page ATC area during climb or descent.)

#### **NOTE:**

A red "FAIL" annunciation is also displayed in the ALT and TCAS display areas on the TCAS/ATC expanded page.

#### **IF annunciation remained on after aircraft levelled off:**

- Maintenance action is required prior to flight.

**— END —**

---

**"FANS FAIL" (Message on ED)****AOM 3.4-5 REV.1 NOV 21/11**

(Message appears after starting an engine in an aircraft with a cold flight deck)

- Monitor message as flight deck warms.

**IF message remains on after flight deck temperature rises:**

- Maintenance action is required prior to flight.

**NOTE:**

FANS FAIL message will clear when flight deck temperature sensors warm above 5°C.

**— END —**

---

## Weather Radar Display Frozen

AOM 3.4-6 REV.1 NOV 21/11

(Weather radar data on MFD did not appear to update or respond to control panel inputs.)

- Position aircraft so as to ensure that no ground personnel, equipment, aircraft, vehicles or buildings are in the radar scan area within 300 feet (100 meters).

### **WARNING**

*Exposure to microwave radiation may cause serious bodily injury to personnel or ignite combustible materials.*

WX Radar ..... OFF

Wait 10 sec then WX Radar..... STBY

WX Radar ..... TST

- Confirm yellow WX TEST and STAB OFF mode messages are annunciated and weather radar test pattern is displayed on the MFD.

WX Radar ..... ON

- Confirm WX ON mode is annunciated.

#### **NOTE:**

A blue pattern may be displayed on the MFD if the required 60 second warm up period has not elapsed before the system will transmit.

Tilt ..... Adjust

- Adjust tilt to obtain targets (weather or ground) for display on the MFD. Confirm tilt angle display changes in response to inputs.

WX Radar ..... STBY

### **IF display data did not update or respond:**

- Maintenance action is required prior to flight.

**— END —**

## "WX FAIL" (Message on MFD)

AOM 3.4-7 REV.1 NOV 21/11

(Message appeared during operation of WX radar)

- Position aircraft so as to ensure that no ground personnel, equipment, aircraft, vehicles or buildings are in the radar scan area within 300 feet (100 meters).

### **WARNING**

*Exposure to microwave radiation may cause serious bodily injury to personnel or ignite combustible materials.*

WX Radar ..... OFF

Wait 10 sec then WX Radar..... STBY

WX Radar..... TST

- Confirm yellow WX TEST and STAB OFF mode messages are annunciated and weather radar test pattern is displayed on the MFD.

WX Radar .....ON

- Confirm WX ON mode is annunciated.

#### **NOTE:**

A blue pattern may be displayed on the MFD if the required 60 second warm up period has not elapsed before the system will transmit.

Tilt ..... Adjust

- Adjust tilt to obtain targets (weather or ground) for display on the MFD. Confirm tilt angle display changes in response to inputs.

WX Radar.....STBY

#### **IF display data did not update or respond:**

- Maintenance action is required prior to flight.

— END —

## Electrical

CEME: N10 N8

### **Tripped Circuit Breaker**

*AOM 3.4-8 REV.1 NOV 21/11*

(Circuit breaker(s) tripped after initial power-up of aircraft on ground)

#### **NOTE:**

This procedure **MUST** not be used if there is a recent history (24 hours) of reported defects with the system or related systems that are associated with the tripped circuit breaker(s) or if there is other evidence of anomalies with these systems.

- Pull out tripped circuit breaker to ensure it is fully disengaged.
- Push in circuit breaker until it reengages.

#### **IF the circuit breaker trips again:**

- Do not attempt any further resets.
  - Maintenance action is required prior to flight.

**— END —**

### **"DC BUS" (Caution Light)**

*AOM 3.4-8 REV.1 NOV 21/11*

(Associated with attempted APU start from batteries)

APU--PWR switchlight ..... OFF

BUS FAULT RESET switch ..... RESET

#### **IF DC Bus Caution Light goes out:**

- Further APU start attempts may only be performed using an external DC power source.

**— END —**

## Flight Controls

CEME:

N35

### **"ROLL SPLR INBD GND" and ROLL SPLR OUTBD GND" (Caution Lights)**

*AOM 3.4-9 REV.1 NOV 21/11*

(Associated with reversal of the FLIGHT/TAXI switch from  
FLIGHT to TAXI back to FLIGHT)

- Clear active runway and park aircraft.

FLIGHT/TAXI switch.....TAXI

FCS ECU 1 and 2 CBs (M3-Left Essential and L6-Right Essential)....  
reset simultaneously

#### **NOTE:**

Wait 90 seconds until self-test sequence is complete before  
moving flight controls.

Flight Controls.....Check/full travel

#### **IF Caution Lights remain on:**

- Maintenance action is required prior to flight.

**— END —**



## Erroneous Takeoff Warning Horn

**AOM 3.4-9 REV.1 NOV 21/11**

(Associated with elevator trim indication near the extreme ends of the takeoff range)

Elevator Trim ..... Reset to ensure indication is fully within TO range.

Flap .....5, 10, or 15 set/ind

Condition Levers ..... MAX

FLIGHT/TAXI switch..... TAXI

– Confirm all spoilers fully retracted.

EMERGBRAKE..... OFF

T/O WARN TEST ..... TEST

### IF Takeoff Warning Horn sounds:

– Maintenance action is required prior to flight.

EMERG BRAKE ..... PARK

— END —

## "FLAP POWER" (Caution Light)

**AOM 3.4-9 REV.1 NOV 21/11**

(Associated with movement of Flap Lever without #1 hydraulic system pressure)

Flap Lever ..... Select to match flap indication

Flaps Cont CB (L7 – Left Essential) ..... Reset

### NOTE:

Wait 10 seconds for self-test to complete.

### IF Caution Light remains on:

– Maintenance action is required prior to flight.

— END —

**"#1 RUD HYD" or "#2 RUD HYD" (Caution Lights)**  
*AOM 3.4-10 REV.1 NOV 21/11*

(Caution light remains illuminated after completion of engine start)

FCS ECU 1 and 2 CBs (M3- Left Essential and L6- Right Essential)..  
reset simultaneously

**NOTE:**  
Wait 90 seconds until self-test sequence is complete before  
moving flight controls.

Flight Controls.....Check/full travel

**IF Caution Light remains on:**

- Maintenance action is required prior to flight.

— END —

**Ice and Rain Protection / Stall Protection**

CEME:                    N6

**"PROP DEICE" (Caution Light)**  
*AOM 3.4-12 REV.1 NOV 21/11*

(Associated with selection of Prop Deice after unfeathering propellers)

PROP selector.....OFF then ON

**IF Caution Light remains on:**

PROP DEICE CONT CBs (L6- Left Essential and E5- Right Essential)  
reset simultaneously

**IF Caution Light remains on:**

- Maintenance action is required prior to flight.

— END —

**"PUSHER SYST FAIL" (Caution Lights)**  
**AOM 3.4-5 REV.1 NOV 21/11**

(Associated with an incomplete stall test OR Caution light illuminates  
 30 seconds after landing)

**PUSHER SYST FAIL caution light illuminates before takeoff?**

**?** **YES**

- Repeat stall test to achieve pass.
- IF caution light remains illuminates maintenance action required prior to flight.

— END —

**NO**

**PUSHER SYST FAIL caution light illuminates after landing:**

- Locate SPM1 and SPM2 circuit breakers on Captain's Upper Circuit Breaker Panel (Avionics--F2 & F5)
- SPM1 and SPM2 CB's .....RESET SIMULTANEOUSLY

**?** **YES**

**Caution Light remains illuminated:**

- Maintenance action is required prior to flight.

— END —

**NO**

- No further action required.

— END —

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