



CL-350

Bombardier
CHALLENGER 350

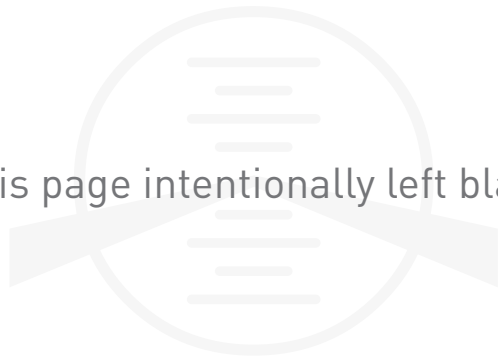


CL-350 SUPPLEMENTAL MANUAL

NON-NORMAL
PROCEDURES

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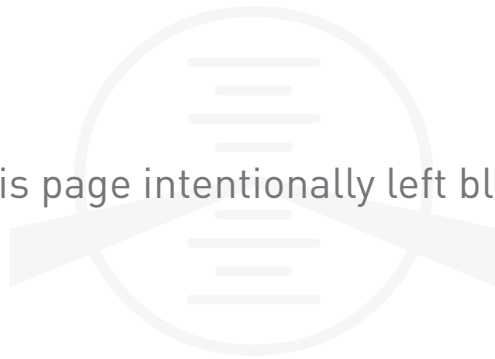
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GENERAL

The Advisory part of this section addresses minor failure conditions or loss of redundancy with an associated crew action. A listing of all Advisory messages is included in FCOM vol 1 and QRH vol 2.

AIR CONDITIONING & PRESSURIZATION

L (R) PYLON LOOP FAIL (A)

1. Do not takeoff.

————— END —————

Effectivity:

The following BLEED LOOP FAULT (A) procedure applies to aircraft 20501 thru 20906 not incorporating Service Bulletin SB350-36-003:

BLEED LOOP FAULT (A)

If message posted on ground only, after AIR SOURCE switch selected to NORM and AIR COND/BLEED from any source (external, APU, engine bleed) or engine running.

1. Do not takeoff.

————— END —————

**AUTO FLIGHT****FD 1 FAIL (A)****FD 2 FAIL (A)**

1. Autopilot Disconnect
2. Autothrottle (if installed) Disengage
3. Flight Guidance Panel XFR button Select operative FD
4. Autopilot As desired

————— **END** —————

AUXILIARY POWER UNIT**APU FAULT (A)**

1. XBLEED switch Closed
2. L BLEED switch ON
3. APU BLEED switch Off
4. R BLEED switch ON
5. APU switch OFF

————— **END** —————

APU SHUTDOWN (A)

1. XBLEED switch Closed
2. L BLEED switch ON
3. APU BLEED switch Off
4. R BLEED switch ON
5. APU switch OFF

————— **END** —————



AVIONICS

FDR FAULT (A)

1. With the PARK/EMER BRAKE set, push ENGINE EVENT button for two seconds.

————— **END** —————

MFD X-TALK FAIL (A)

If cross-side tuning is desired:

1. TUNE REVERSION switch CDU ONLY

————— **END** —————

Effectivity:

For aircraft 20595–22999 and aircraft incorporating SB 350–34–011.

XPDR 1 (2) FAIL (A)

The not-selected transponder has failed.

————— **END** —————

XPDR 1 (2) FAIL (A)

1. Select cross-side transponder.

————— **END** —————

Effectivity:

For aircraft 20595–22999 and aircraft incorporating SB 350–34–011.

TSS FAN FAIL (A)

1. No crew action required.

————— **END** —————

Effectivity:

For aircraft 20595–22999 and aircraft incorporating SB 350–34–011.

XPDR IN STBY (S)

The selected transponder is in STBY and operational.

————— **END** —————

SVS RWY INOP on PFD

(This advisory is white in color)

1. SVS Select OFF prior to passing the FAF

————— **END** —————

AVIONICS**SVS INOP on PFD**

(This advisory is white in color)

1. SVS Select OFF

————— **END** —————

CHART FAULT on MFD

If left (right) MFD shows CHART FAULT message on CHART MAIN INDEX after a chart has been selected and the MFD becomes inoperative (locked up):

1. Affected LEFT (RIGHT) DISPLAYS
REVERSION switch Select from NORM to PFD
REV and back to NORM

————— **END** —————



FIRE PROTECTION

FIREX BTL 2 LOW (A)

APU Shutdown:

1. XBLEED switch Closed
2. L BLEED switch ON
3. APU BLEED switch Off
4. R BLEED switch ON
5. APU switch OFF

————— **END** —————

FLIGHT CONTROLS**STAB TRIM FAULT (A)**

A minor failure has occurred causing a loss of redundancy in the horizontal stabilizer trim system. The stabilizer trim will continue to function in most cases.

NOTE: If STAB TRIM FAULT (A) posts and autopilot is engaged, consider leaving engaged as long as practical.

Prior to disengaging the autopilot and operating in manual flight, refer to Chapter 5, CAUTIONS PROCEDURES, FLIGHT CONTROLS, Stabilizer Trim Malfunction.

———— **END** ————

**FUEL****FUEL GRAV XFLOW FAIL (A)**

1. Fuel Quantities Check
2. GRAVITY XFLOW switch Cycle

GRAVITY XFLOW valve fails to open:**Yes****If fuel is not balanced:**

3. FUEL XFER switch Open
4. L or R FUEL PUMP switch (heavy wing) ON
5. Wing fuel quantity Monitor

When fuel is balanced:

6. L or R FUEL PUMP switch OFF
7. FUEL XFER switch Close

– END –**No****GRAVITY XFLOW valve fails to close:**

3. Sideslip Minimize
4. Wing fuel quantity Monitor

END

FUEL

FUEL XFER FAIL (A)

1. Fuel quantities Check
2. FUEL XFER switch Cycle

FUEL XFER valve fails to open:



Yes

If fuel is not balanced:

3. GRAVITY XFLOW switch OPEN

NOTE: It may be necessary to use a sideslip to transfer fuel.

- END -

No

FUEL XFER valve fails to close:

3. L and R FUEL PUMPS **Both** OFF or **Both** ON
as required

————— **END** —————



HYDRAULICS

AUX HYD PUMP FAIL ON (A)

1. AUX HYDRAULIC PUMP switch OFF

Before landing

2. AUX HYDRAULIC PUMP switch AUTO

— END —

AUX HYD SYS FAIL (A)

Fluid quantity digits are green:



1. AUX HYDRAULIC PUMP switch AUTO

Message goes out:



— END —

No

1. AUX HYDRAULIC PUMP switch OFF

— END —

L (R) HYD DC PUMP FAIL (A)

1. Affected HYDRAULIC PUMP switch ON

If L (R) HYD DC PUMP FAIL persists:

2. Affected HYDRAULIC PUMP switch OFF

The engine driven pump will provide sufficient pressure.

— END —

ICE & RAIN PROTECTION**ICE DETECTOR FAULT (A)**

If in visible moisture or at night and TAT is 10 °C or below except when SAT is -40 °C or below:

1. WING ANTI-ICE switch ON
2. L and R ENG ANTI-ICE switches ON

————— **END** —————

L (R) ENG A/ICE FAIL ON (A)

1. Anti-Ice synoptic Check

An amber T₂ is displayed:



2. No action required.

— **END** —

No

2. Use Engine Anti-Ice On performance data in the PERFORMANCE DATA Chapter.

————— **END** —————

WING A/ICE LOOP FAIL (A)

1. Do not takeoff.

————— **END** —————



LANDING GEAR, WHEEL AND BRAKE SYSTEM

NWS FAULT (A)

1. NWS switch **Do Not** turn OFF

———— **END** ————

PROX SYS FAULT (A)

1. LANDING GEAR switch Ensure firmly in “DN” or “UP” position.

If all landing gear indications display “DN”, “UP” or “in transit” and no further crew action is required.

If landing gear indication displays “--” (magenta) :

2. GEAR SYS FAIL procedure in the
NON-NORMAL Procedures Chapter Perform
Refer to GEAR SYS FAIL procedure.
3. WOW FAIL procedure in the NON-NORMAL
Procedures Chapter Perform
Refer to WOW FAIL procedure.

———— **END** ————

POWERPLANT**Effectivity:***If Autothrottle installed:***AT FAIL (A)**

1. Autothrottle Disengage
2. Thrust levers Position manually

————— **END** —————

ENGINE SYNC FAIL (A)

1. SYNC switch OFF

————— **END** —————

Effectivity:*Applicable to aircraft without Autothrottle.***ENGINE MACH-HOLD FAIL (A)**

1. MACH HOLD switch Off

————— **END** —————

L (R) ENG FUEL TEMP LOW (A)

1. Descend to a warmer altitude.
2. Monitor the affected engine(s).

————— **END** —————

L (R) ENGINE FUEL BYPASS (A)

1. Affected FUEL PUMP switch ON
2. Engine and fuel synoptic pages Monitor

————— **END** —————

L (R) ENGINE OIL BYPASS (A)

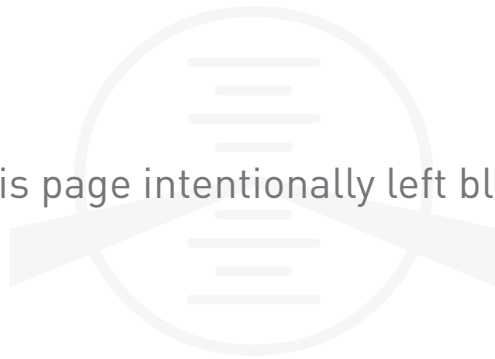
1. Affected engine indications Monitor

————— **END** —————



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GENERAL

The CAUTION part of this section addresses foreseeable but abnormal situations, usually involving a failure condition. While not requiring immediate action, Caution messages must still be actioned expeditiously to maintain safe operation.

AIR CONDITIONING & PRESSURIZATION**AIR COND TEMP FAIL (C)**

1. MAN TEMP switch ON
2. COCKPIT and CABIN COLD-HOT knobs As desired

END**AIR COND TEMP HIGH (C)**

1. AIR SOURCE switch PACK ONLY

Airflow into Cockpit/Cabin stops:**Yes**

2. AIR SOURCE switch TRIM AIR ONLY
3. Altitude 35,000 ft maximum
4. COCKPIT COLD-HOT knob (for cockpit & cabin) As desired

On approach below 9000 ft but not below minimum safe altitude:

5. AIR SOURCE switch OFF
6. EMER DEPRESS switch ON
7. RAM AIR switch ON

- END -**No****AIR COND TEMP HIGH CAS remains displayed:****Yes**

2. Descend to an altitude that will safely allow unpressurized flight.
3. AIR SOURCE switch OFF
4. EMER DEPRESS switch ON
5. RAM AIR switch ON

- END -**No****On approach below 9000 ft but not below minimum safe altitude:**

2. AIR SOURCE switch OFF
3. EMER DEPRESS switch ON
4. RAM AIR switch ON

END

**AUTO PRESS FAIL (C)**

1. MANUAL PRESSURIZATION switch ON
2. MAN RATE control As required
Refer to the applicable Pressurization schedule in this section:
 - For aircraft 20501 to 20886
 - For aircraft 20887 to 22999

————— **END** —————

Unpressurized Flight

1. Airplane altitude 9000 ft maximum
2. AIR SOURCE switch OFF
3. RAM AIR switch ON
Check RAM AIR ON (S) message is displayed.
4. EMER DEPRESS switch ON
Check EMER DEPRESS ON (S) message is displayed.

————— **END** —————

Manual Cabin Pressurization Control

1. MAN RATE control Set to mid position/center
2. MANUAL PRESSURIZATION switch ON
Adjust cabin altitude and cabin differential pressure as required. The Pressurization Schedule presents the normal values during operation in AUTO mode.

Effectivity:

For aircraft 20501 to 20886:

CAUTION: Do not exceed the maximum normal cabin differential pressure of 8.8 PSID.

Effectivity:

For aircraft 20887 to 22999:

CAUTION: Do not exceed the maximum normal cabin differential pressure of 9.7 PSID.

To increase cabin altitude:

3. MAN RATE control UP

To decrease cabin altitude:

4. MAN RATE control DN

To maintain cabin altitude:

5. MAN RATE control Mid position/center

AIR CONDITIONING & PRESSURIZATION**Manual Cabin Pressurization Control (Cont)****Before landing:**

6. Cabin altitude Adjust
to the landing field elevation

After Landing:

7. MAN RATE control UP
until field elevation is attained

————— **END** —————

L (R) BLEED FAIL (C)

1. Autothrottle (if installed) Disengage
2. Affected thrust lever Increase

CAUTION: If conditions persists, do not engage Autothrottle.

BLEED FAIL (C) remains displayed:

-  **Yes**
3. Affected BLEED switch OFF
4. XBLEED switch CLOSED
If R BLEED FAIL is displayed:
5. APU BLEED switch OFF

— **END** —

No

————— **END** —————

L (R) BLEED LOOP FAIL (C)

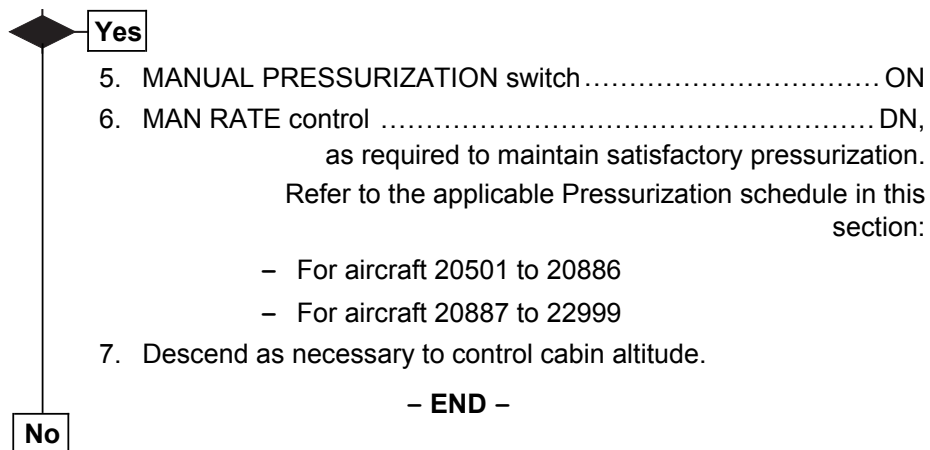
1. Affected BLEED switch OFF

————— **END** —————

**CABIN ALTITUDE (C)**

1. Crew oxygen masks Don
2. AIR SOURCE switch Check NORM
3. L and R BLEED switches Check On
4. CAB ALT Check

Cabin altitude continues to climb:



Cabin altitude stabilizes at a safe altitude:

5. Continue flight.

END

AIR CONDITIONING & PRESSURIZATION

Effectivity:

For aircraft 20501 to 20886:

PRESSURIZATION SCHEDULE — CLIMB AND CRUISE

Aircraft Altitude (ft)	Cabin Altitude (ft)	Cabin Delta P (PSID)	Aircraft Altitude (ft)	Cabin Altitude (ft)	Cabin Delta P (PSID)	Aircraft Altitude (ft)	Cabin Altitude (ft)	Cabin Delta P (PSID)
-1500	-1786	0.2	15 000	1379	5.7	33 000	4955	8.5
-1000	-1273	0.2	16 000	1504	6.0	34 000	5272	8.5
0	-245	0.1	17 000	1637	6.2	35 000	5612	8.5
1000	-135	0.6	18 000	1778	6.4	36 000	5877	8.5
1500	-81	0.8	19 000	1926	6.7	37 000	6076	8.6
2000	-26	1.0	20 000	2091	6.9	38 000	6331	8.6
3000	81	1.5	21 000	2258	7.1	39 000	6586	8.7
4000	187	1.9	22 000	2429	7.2	40 000	6827	8.7
5000	294	2.3	23 000	2608	7.4	41 000	7056	8.7
6000	399	2.7	24 000	2795	7.6	42 000	7272	8.8
7000	504	3.1	25 000	2984	7.7	43 000	7476	8.8
8000	610	3.5	26 000	3189	7.9	44 000	7669	8.8
9000	716	3.8	27 000	3404	8.0	45 000	7850	8.8
10 000	816	4.2	28 000	3628	8.1	-	-	-
11 000	925	4.5	29 000	3864	8.2	-	-	-
12 000	1036	4.8	30 000	4111	8.3	-	-	-
13 000	1150	5.1	31 000	4375	8.4	-	-	-
14 000	1268	5.4	32 000	4653	8.4	-	-	-

PRESSURIZATION SCHEDULE — DESCENT AND HOLD (<25 000 FT)

Aircraft Altitude (ft)	Cabin Altitude (ft)	Cabin Delta P (PSID)	Aircraft Altitude (ft)	Cabin Altitude (ft)	Cabin Delta P (PSID)	Aircraft Altitude (ft)	Cabin Altitude (ft)	Cabin Delta P (PSID)
-1500	-1786	0.2	15 000	1118	5.8	33 000	4699	8.6
-1000	-1291	0.2	16 000	1229	6.1	34 000	5098	8.6
0	-299	0.2	17 000	1347	6.3	35 000	5487	8.6
1000	-202	0.6	18 000	1473	6.6	36 000	5782	8.6
1500	-155	0.9	19 000	1606	6.8	37 000	6064	8.6
2000	-107	1.1	20 000	1756	7.0	38 000	6332	8.6
3000	-13	1.5	21 000	1907	7.2	39 000	6587	8.7
4000	80	2.0	22 000	2063	7.4	40 000	6828	8.7
5000	173	2.4	23 000	2226	7.6	41 000	7057	8.7
6000	264	2.8	24 000	2396	7.8	42 000	7273	8.8
7000	356	3.2	25 000	2569	7.9	43 000	7477	8.8
8000	448	3.5	26 000	2754	8.1	44 000	7670	8.8
9000	540	3.9	27 000	2948	8.2	45 000	7850	8.8
10 000	626	4.3	28 000	3151	8.3	-	-	-
11 000	721	4.6	29 000	3366	8.4	-	-	-
12 000	818	4.9	30 000	3591	8.5	-	-	-
13 000	918	5.2	31 000	3873	8.6	-	-	-
14 000	1022	5.5	32 000	4291	8.6	-	-	-

**AIR CONDITIONING & PRESSURIZATION****Effectivity:***For aircraft 20887 to 22999:***PRESSURIZATION SCHEDULE – CLIMB AND CRUISE**

Aircraft Altitude (ft)	Cabin Altitude (ft)	Cabin Delta P (PSID)	Aircraft Altitude (ft)	Cabin Altitude (ft)	Cabin Delta P (PSID)	Aircraft Altitude (ft)	Cabin Altitude (ft)	Cabin Delta P (PSID)
-1,500	-1,786	0.2	15,000	756	6.0	33,000	3,300	9.2
-1,000	-1,273	0.1	16,000	845	6.3	34,000	3,525	9.3
0	-245	0.1	17,000	933	6.6	35,000	3,742	9.3
1,000	-180	0.6	18,000	1,022	6.8	36,000	3,926	9.4
1,500	-148	0.9	19,000	1,111	7.1	37,000	4,111	9.5
2,000	-116	1.1	20,000	1,201	7.3	38,000	4,295	9.5
3,000	-53	1.6	21,000	1,311	7.5	39,000	4,479	9.6
4,000	11	2.0	22,000	1,422	7.7	40,000	4,650	9.7
5,000	75	2.4	23,000	1,534	7.9	41,000	4,848	9.7
6,000	139	2.8	24,000	1,646	8.1	42,000	5,114	9.7
7,000	203	3.2	25,000	1,775	8.3	43,000	5,369	9.7
8,000	268	3.6	26,000	1,920	8.5	44,000	5,614	9.7
9,000	333	4.0	27,000	2,099	8.6	45,000	5,850	9.7
10,000	397	4.4	28,000	2,271	8.7	–	–	–
11,000	469	4.7	29,000	2,443	8.9	–	–	–
12,000	540	5.1	30,000	2,625	9.0	–	–	–
13,000	612	5.4	31,000	2,830	9.1	–	–	–
14,000	684	5.7	32,000	3,050	9.2	–	–	–

PRESSURIZATION SCHEDULE – DESCENT AND HOLD

Aircraft Altitude (ft)	Cabin Altitude (ft)	Cabin Delta P (PSID)	Aircraft Altitude (ft)	Cabin Altitude (ft)	Cabin Delta P (PSID)	Aircraft Altitude (ft)	Cabin Altitude (ft)	Cabin Delta P (PSID)
-1,500	-1,786	0.2	15,000	712	6.0	33,000	2,989	9.4
-1,000	-1,290	0.2	16,000	801	6.3	34,000	3,206	9.4
0	-299	0.2	17,000	891	6.6	35,000	3,423	9.5
1,000	-235	0.6	18,000	980	6.8	36,000	3,629	9.6
1,500	-202	0.9	19,000	1,070	7.1	37,000	3,837	9.6
2,000	-170	1.1	20,000	1,161	7.3	38,000	4,064	9.7
3,000	-106	1.6	21,000	1,273	7.6	39,000	4,294	9.7
4,000	-42	2.0	22,000	1,385	7.8	40,000	4,572	9.7
5,000	23	2.5	23,000	1,498	8.0	41,000	4,848	9.7
6,000	88	2.9	24,000	1,611	8.2	42,000	5,114	9.7
7,000	153	3.3	25,000	1,726	8.3	43,000	5,369	9.7
8,000	218	3.7	26,000	1,867	8.5	44,000	5,614	9.7
9,000	283	4.0	27,000	2,011	8.7	45,000	5,850	9.7
10,000	349	4.4	28,000	2,155	8.8	–	–	–
11,000	421	4.8	29,000	2,299	8.9	–	–	–
12,000	494	5.1	30,000	2,445	9.1	–	–	–
13,000	566	5.4	31,000	2,625	9.2	–	–	–
14,000	639	5.7	32,000	2,807	9.3	–	–	–

AIR CONDITIONING & PRESSURIZATION**CABIN PRESS FAULT (C)**

- Altitude 31,000 ft maximum

————— **END** —————

DITCHING NOT AVAIL (C)

- DITCHING switch Off

MANUAL DITCHING (Aircraft below 15,000 ft and time permitting):

- AIR SOURCE switch OFF
- MANUAL PRESSURIZATION switch Check ON
- EMER DEPRESS switch ON

When CABIN DELTA P is indicated less than 0.15 psid:

- EMER DEPRESS switch OFF
- MAN RATE control Full down

————— **END** —————

EQPT RACK TEMP HIGH (C)

- AIR SOURCE switch NORM
- COCKPIT COLD/HOT control Full COLD
- Land as soon as practical.

————— **END** —————

OXYGEN QUANTITY LOW (C)

- Altitude 25,000 ft maximum

————— **END** —————

OXYGEN VALVE CLOSED (C)**On the ground:**

- Oxygen bottle valve Open

In flight:

- Altitude 25,000 ft maximum

NOTE: This CAS will occur in flight with the OXYGEN QUANTITY LOW (C), when the bottle(s) are depleted.

————— **END** —————

**AIR CONDITIONING & PRESSURIZATION****PACK FAIL (C)****On the ground:**

1. AIR SOURCE switch OFF

In flight:

1. AIR SOURCE switch TRIM AIR ONLY
2. Altitude 35,000 ft maximum
3. COCKPIT COLD-HOT knob (for cockpit & cabin) As desired

On approach below 9000 ft but not below minimum safe altitude:

4. AIR SOURCE switch OFF
5. EMER DEPRESS switch ON
6. RAM AIR switch ON

————— **END** —————

PACK LOOP FAIL (C)

1. AIR SOURCE switch TRIM AIR ONLY
2. Altitude 35,000 ft maximum
3. COCKPIT COLD-HOT knob (for cockpit & cabin) As desired

On approach below 9000 ft but not below minimum safe altitude:

4. AIR SOURCE switch OFF
5. EMER DEPRESS switch ON
6. RAM AIR switch ON

————— **END** —————

PACK TEMP HIGH (C)**On the ground:**

1. AIR SOURCE switch OFF

In flight:

1. AIR SOURCE switch TRIM AIR ONLY
2. Altitude 35,000 ft maximum
3. COCKPIT COLD-HOT knob (for cockpit & cabin) As desired

AIR CONDITIONING & PRESSURIZATION**PACK TEMP HIGH (C) (Cont)****PACK TEMP HIGH remains on:****Yes**

4. Descend to an altitude that will safely allow unpressurized flight.
5. AIR SOURCE switch OFF
6. EMER DEPRESS switch ON
7. RAM AIR switch ON

- END -**No****On approach below 9000 ft but not below minimum safe altitude:**

4. AIR SOURCE switch OFF
5. EMER DEPRESS switch ON
6. RAM AIR switch ON

END**PAX OXYGEN AUTO FAIL (C)**

1. PAX OXYGEN switch DEPLOY

END**TRIM AIR FAIL (C)**

1. AIR SOURCE switch PACK ONLY
2. COCKPIT COLD-HOT knob (for cockpit & cabin) As desired

END**TRIM AIR LOOP FAIL (C)**

1. AIR SOURCE switch PACK ONLY
2. COCKPIT COLD-HOT knob (for cockpit & cabin) As desired

END

**AIR CONDITIONING & PRESSURIZATION****XBLEED FAIL (C)**

1. XBLEED switch CYCLE

XBLEED valve is failed closed:**Yes**

2. Crossbleed engine starts will not be possible. If necessary, conduct a windmilling start on the left engine, and a windmilling or APU assisted start on the right engine.

- END -**No****XBLEED valve is failed open:**

2. L or R BLEED switch OFF

END

AUTO FLIGHT**AFCS MESSAGES FAIL (C)**

1. Autopilot Disconnect and do not re-engage

————— **END** —————

AP HOLDING LWD (C)**AP HOLDING RWD (C)****AP HOLDING NOSE DOWN (C)****AP HOLDING NOSE UP (C)**

WARNING: An abrupt change in control force, or an out of trim situation may be experienced when disconnecting the autopilot.

SMKG/BELTS should be selected on.

CAUTION: Minimize changes to airspeed and configuration to minimize control forces and out of trim situation.

1. Flight controls Hold firmly
2. Autopilot Use control wheel MSW switch to disconnect
3. Retrim aircraft if necessary.
4. Autopilot As desired

————— **END** —————

AP STAB TRIM FAIL (C)

1. AP STAB TRIM FAIL PROCEDURE Accomplish
Refer to Chapter 3, EMERGENCY PROCEDURES, Auto Flight, AP STAB TRIM FAIL

————— **END** —————

FD MODE CHANGE (C)

1. Autothrottle (if installed) Disengage
2. Flight director Select the desired mode

————— **END** —————



AUTO FLIGHT

FD Failure

1. Flight Guidance Panel XFR switch Select operative side

NOTE: Autothrottle (if installed) will disengage if coupled to the failed Flight Director. It can be re-engaged after XFR to the operative side.

2. If failure occurred on approach, select TO/GA and Go-Around if required.
3. Verify flight director modes are appropriate on XFR side.

NOTE: If a subsequent approach is an ILS, the failed side will not perform a NAV to NAV transfer. It is necessary to manually select the LOC as NAV source.

————— **END** —————

YAW DAMPER FAIL (C)

1. YD Re-engage

If YAW DAMPER FAIL remains on:

2. Autopilot Disconnect
3. **Do not** re-engage yaw damper.
4. Altitude 31,000 ft maximum

NOTE: Landing on a wide runway of sufficient length with minimum turbulence and crosswind is recommended.

————— **END** —————

AUTOPILOT DISCONNECT



Cavalry Charge

1. Control wheel MSW switch Press to silence tone
2. Autopilot Re-engage

If condition recurs:

3. Control wheel MSW switch Press to silence tone
4. **Do not** re-engage autopilot.

————— **END** —————

AUXILIARY POWER UNIT**APU BLEED ALT LIMIT (C)**

1. XBLEED switch Closed
2. L BLEED switch ON
3. APU BLEED switch Off
4. R BLEED switch ON

————— **END** —————

APU FUEL SOV FAIL (C)

If APU fuel SOV has failed to close when commanded closed:

APU is supplying bleed air for air conditioning



— **END** —

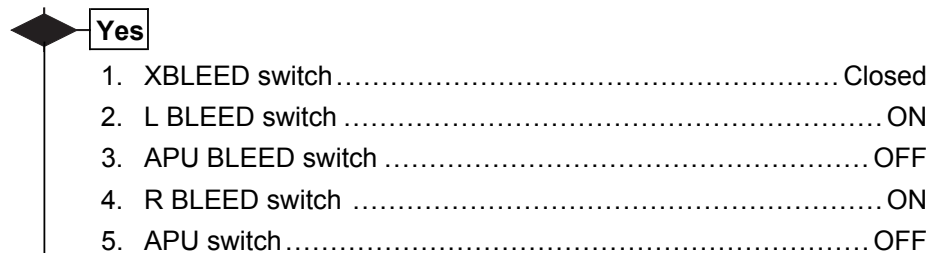
No

1. APU switch OFF

————— **END** —————

APU OIL PRESS LOW (C)

APU is supplying bleed air for air conditioning



— **END** —

No

1. APU switch OFF

————— **END** —————

**AUXILIARY POWER UNIT****APU OIL TEMP HIGH (C)****APU is supplying bleed air for air conditioning****Yes**

1. XBLEED switch Closed
2. L BLEED switch ON
3. APU BLEED switch OFF
4. R BLEED switch ON
5. APU switch OFF

- END -**No**

1. APU switch OFF

END**APU OVERSPEED (C)****APU is supplying bleed air for air conditioning****Yes**

1. XBLEED switch Closed
2. L BLEED switch ON
3. APU BLEED switch OFF
4. R BLEED switch ON
5. APU switch OFF

- END -**No**

1. APU switch OFF

END**APU STARTER FAIL ON (C)**

1. APU Leave operating
until after landing SHUTDOWN checks in the NORMAL
PROCEDURES Chapter are performed.

END

AVIONICS

AIR DATA 1 (2) FAULT (C)

The airplane is above 29,000 ft.



Yes

1. AIR DATA REVERSION switch Select operative side

NOTE: FLAPS FAULT (A), STAB TRIM FAULT (A), and L (R) ENG THRUST FAULT (A) CAS messages will be displayed due to loss of one ADC input.

2. Flight Guidance Panel XFR switch Select same side as air data reversion

– END –

No

1. AIR DATA REVERSION switch NORM

— END —

EFIS COMPARATOR INOP (C)

1. Affected flight instruments Monitor
2. Integrated Standby Instrument Use to cross-check

NOTE: If any of the following occurs, refer to Chapter 3, EMERGENCY PROCEDURES, AVIONICS, Unreliable Airspeed:

- Pitch attitude, thrust setting or external noise not consistent with indicated airspeed,
- Large airspeed differences between PFDs and/or ISI,
- Loss of multiple airspeed indications.

NOTE: If message is displayed during an LPV approach with indications of an air data or attitude/heading failure, refer to EMERGENCY PROCEDURES for IAS or ATT/HDG failure.

— END —



AVIONICS

EFIS MISCOMPARE (C)

If accompanied by ALT or IAS:

1. Altitude and airspeed Cross check
2. AIR DATA REVERSION switch Select operative side
3. Flight Guidance Panel XFR switch Select same side as air data reversion

NOTE: If any of the following occurs, refer to Chapter 3, EMERGENCY PROCEDURES, AVIONICS, Unreliable Airspeed:

- Pitch attitude, thrust setting or external noise not consistent with indicated airspeed,
- Large airspeed differences between PFDs and/or ISI,
- Loss of multiple airspeed indications.

If accompanied by HDG, ROL or PIT, or ATT:

1. Autopilot Disconnect

Accompanied by ROL or PIT, or ATT



Yes

2. Flight instruments and Integrated Standby Instrument Cross check
3. Reversionary panel, ATT/HDG switch Select to reliable alternate source

- END -

No

Accompanied by HDG

IRS 1(2) IN ATT status message displayed



Yes

2. FMS Enter present airplane heading on the IRS CDU Control page

- END -

No

2. Flight instruments and Integrated Standby Instrument Cross check
3. Reversionary panel, ATT/HDG switch Select to reliable alternate source

- END -

If accompanied by LOC or GS:

1. Autopilot Disconnect

AVIONICS**EFIS MISCOMPARE (C) (Cont)**

2. Localizer and glideslope Cross check
3. NAV SRC button Select operative side

If accompanied by RA:

1. Autopilot Disconnect

Effectivity:*If Autothrottle installed:*

CAUTION: For an intermittent or undetected radio altimeter error or if the unreliable side is selected, arming of RETARD mode and retarding of thrust levers may occur early, late or not occur.

2. Autothrottle (if installed) Disengage
prior to 200 feet AGL
3. ROAAS (if installed) OFF
4. Radio altitude Cross check with barometric
altimeter
5. Radio altimeter Use reliable side

If accompanied by FD:

1. Autopilot Disconnect
2. Autothrottle (if installed) Disengage
3. Flight directors Cross check
4. Flight Guidance Panel XFR switch Select operative side

————— **END** —————

Inertial Reference System (IRS) Failure

NOTE: 1. If an IRS is in attitude mode, a heading drift rate of up to 15 deg/hr can occur. The FMS heading on the IRS CONTROL page should be updated periodically from the best available alternate navigation source.

2. Autothrottle (if installed) will disengage if coupled to the failed IRS. It can be re-engaged after XFR to the operative side.

1. ATT/HDG Reversion switch Select operative side
2. Flight Guidance Panel XFR switch Select same side as
ATT/HDG reversion

CAUTION: PFD Flight Director Modes may not remain synchronized on some approaches.

3. If failure occurred on approach, select TO/GA and Go-Around if required.
4. Verify flight director modes are appropriate on XFR side.
5. Failed side FD Off



AVIONICS

Inertial Reference System (IRS) Failure (Cont)

- NOTE:**
1. If a subsequent approach is an ILS, the failed side will not perform a NAV to NAV transfer. It is necessary to manually select the LOC as NAV source.
 2. Selecting TO/GA will re-engage the flight director on both sides. If this occurs, it will be necessary to select the failed side FD off again.

————— **END** —————

Effectivity:

For airplanes 20595–22999 and airplanes incorporating SB 350–34–011.

XPDR 1 & 2 FAIL (C)

1. Contact ATC on radio.

————— **END** —————

Effectivity:

For airplanes 20501–20594 not incorporating SB 350–34–011.

**XPDR 1 FAIL (C) and
XPDR 2 FAIL (C)**

1. Contact ATC on radio.

————— **END** —————

Effectivity:

For airplanes 20595–22999 and airplanes incorporating SB 350–34–011.

XPDR 1(2) FAIL (C)

1. Select the alternate transponder.

NOTE: TCAS and ADS-B OUT will stop functioning until the alternate transponder is activated.

————— **END** —————

Effectivity:

For airplanes 20595–22999 and airplanes incorporating SB 350–34–011.

ADS-B OUT FAIL (C)

1. Contact ATC on radio.

————— **END** —————

AVIONICS**Effectivity:**

For airplanes 20595–22999 and airplanes incorporating SB 350–34–011.

ADS–B OUT FAULT (C)

1. Select the alternate transponder.

———— **END** ————

L IAPS FAIL (C)

1. Autopilot Check disconnected
2. Flight Guidance Panel XFR switch Select FD2
3. TUNE REVERSION switch CDU ONLY
4. LNDG ALT SOURCE SELECT FMS2

———— **END** ————

R IAPS FAIL (C)

1. Autopilot Check disconnected
2. Flight Guidance Panel XFR switch Select FD1
3. TUNE REVERSION switch CDU ONLY
4. LNDG ALT SOURCE SELECT FMS1

———— **END** ————

PFD X–TALK FAIL (C)

1. Instruments Cross check
2. Verify that the information is set (entered) on both display control panels.

———— **END** ————



AVIONICS

Air Data Computer (ADC) Failure – Single

1. AIR DATA Reversion switch Select operative side
2. Flight Guidance Panel XFR switch Select same side as air data reversion

CAUTION: PFD Flight Director Modes may not remain synchronized on some approaches.

NOTE: Autothrottle (if installed) will disengage if coupled to the failed ADC. It can be re-engaged after XFR to the operative side.

3. If failure occurred on approach, select TO/GA and Go-Around if required.
4. Verify flight director modes are appropriate on XFR side.
5. Failed side FD Off

NOTE: 1. If a subsequent approach is an ILS, the failed side will not perform a NAV to NAV transfer. It is necessary to manually select the LOC as NAV source.

2. Selecting TO/GA will re-engage the flight director on both sides. If this occurs, it will be necessary to select the failed side FD off again.

NOTE: If any of the following occurs, refer to Chapter 3, EMERGENCY PROCEDURES, AVIONICS, Unreliable Airspeed:

- Pitch attitude, thrust setting or external noise not consistent with indicated airspeed,
- Large airspeed differences between PFDs and/or ISI,
- Loss of multiple airspeed indications.

————— **END** —————

Air Data Computer (ADC) Failure – Dual

1. Autothrottle (if installed) Disengage
2. Maintain airplane control by reference to the standby airspeed/Mach and altitude.
3. Operative flight director modes will be PIT and ROL only.

NOTE: If any of the following occurs, refer to Chapter 3, EMERGENCY PROCEDURES, AVIONICS, Unreliable Airspeed:

- Pitch attitude, thrust setting or external noise not consistent with indicated airspeed,
- Large airspeed differences between PFDs and/or ISI,
- Loss of multiple airspeed indications.

————— **END** —————

AVIONICS**Audio System Failure**

1. Affected audio NORM/EMER switch EMER
2. Affected crew member Use headset

————— **END** —————

CDU Failure

1. TUNE REVERSION switch MFD ONLY

————— **END** —————

Cursor Control Panel Failure

Is EICAS displayed on failed CCP side?



————— **END** —————

No

1. EICAS REVERSION switch BOTH PFDs

————— **END** —————

DCU A and DCU B Failure

1. Autopilot Disconnect
2. L and R HYDRAULIC PUMP switches ON
3. Land as soon as practical.

————— **END** —————

Loss of EICAS

1. EICAS REVERSION switch BOTH PFDs

————— **END** —————

MFD Failure

If a MFD fails (blank display, erratic display, or display of stale information), any information entered on the opposite MFD could be lost if the failed MFD comes back up.

1. Affected DISPLAYS REVERSION switch PFD REV

or

1. TUNE REVERSION switch CDU ONLY

NOTE: If more than one display has failed, it will be necessary to select TUNE REVERSION switch to CDU ONLY to regain tuning capability through the CDUs.

2. EICAS REVERSION switch BOTH PFDs

————— **END** —————

AVIONICS

PFD Failure

1. Affected DISPLAYS REVERSION switch MFD REV

NOTE: 1. If more than one display has failed, it will be necessary to select TUNE REVERSION switch to CDU ONLY to regain tuning capability through the CDUs.

2. Autothrottle (if installed) will disengage if coupled to the failed PFD. It can be re-engaged after MFD REV selected.

2. EICAS REVERSION switch BOTH PFDs

— END —

Radio Tuning Failure

NOTE: 1. Note all frequencies being used prior to starting procedure.

2. During all steps of procedure, continue tuning and attempting communication even if the frequency is displayed in amber.

1. TUNE REVERSION switch CDU ONLY

2. Use CDUs to retune radios as needed.

Radio tuning is restored:



— END —

No

3. TUNE REVERSION switch MFD ONLY

4. Use DCP 1 and/or DCP 2 to retune radios as needed.

Radio tuning is restored:



— END —

No

5. LEFT DISPLAYS REVERSION switch PFD REV

6. Use DCP 2 to retune radios as needed.

Radio tuning is restored:



— END —

No

7. TUNE REVERSION switch CDU ONLY

8. EICAS REVERSION switch BOTH PFDs

9. RIGHT DISPLAYS REVERSION switch PFD REV

10. Use CDUs to retune radios as needed.

AVIONICS

Radio Tuning Failure (Cont)

Radio tuning is restored:



No

- END -

11. TUNE REVERSION switch MFD ONLY

NOTE: Autothrottle (if installed) will disengage when DISPLAY REVERSION switch is selected back to NORM, but can be re-engaged after display is repowered.

12. LEFT DISPLAYS REVERSION switch NORM

13. Use DCP 1 to retune radios as needed.

Radio tuning is restored:



No

- END -

14. LEFT DISPLAYS REVERSION switch PFD REV

15. TUNE REVERSION switch CDU ONLY

16. CB2-A4 (CDU 2) Pull

17. Use CDU 1 to retune left hand radios as needed.

Radio tuning is restored:



No

- END -

18. CB2-A4 (CDU 2) Reset

19. CB1-A4 (CDU 1) Pull

20. Use CDU 2 to retune right hand radios as needed.

Radio tuning is restored:



No

- END -

21. CB1-A4 (CDU 1) Reset

NOTE: Autothrottle (if installed) will disengage when DISPLAY REVERSION switch is selected back to NORM, but can be re-engaged after display is repowered.

22. LEFT DISPLAYS REVERSION switch NORM

23. RIGHT DISPLAYS REVERSION switch NORM



AVIONICS

Radio Tuning Failure (Cont)

24. EICAS REVERSION switch LEFT MFD

25. TUNE REVERSION switch 121.50

NOTE: If 8.33 KHz channel spacing was previously tuned on VHF1, the emergency frequency (121.50) may be displayed in amber. The amber display does not prevent VHF from operating normally on this frequency.

— END —

FSU INOP on MFD

Airplanes equipped with Dual IFIS:

Is EICAS displayed on failed FSU side?



— END —

No

1. EICAS REVERSION switch BOTH PFDs

— END —

TAWS Aural



TAWS Aural

"SINK RATE, SINK RATE"

1. Descent rate Reduce

— END —

"TERRAIN, TERRAIN" or

"DON'T SINK, DON'T SINK" or

"TOO LOW, TERRAIN" or

"CAUTION TERRAIN, CAUTION TERRAIN" or

"CAUTION OBSTACLE, CAUTION OBSTACLE"

1. Establish a positive rate of climb.

— END —

"TOO LOW GEAR"

There is adequate time to extend gear:



1. GEAR switch DN

— END —

No

AVIONICS**TAWS Aural (Cont)**

1. Execute a go-around.

– END –

"TOO LOW FLAPS"

1. FLAPS lever 30

– END –

"GLIDESLOPE"

1. Fly airplane up to glideslope.

– END –

"CAUTION WINDSHEAR"**During final approach:**

1. Add wind and gust allowances to the approach speed. Increase thrust as necessary.
2. Avoid getting low on the approach glidepath or letting the thrust levers remain at idle for extended periods of time.

– END –

During takeoff:

1. Thrust levers TO
2. Airspeed $V_2 + 10$, until safe climbout is assured.

————— **END** —————

ROAAS (If Installed)**RWY LENGTH (Amber annunciation on PFD)****"RUNWAY LENGTH"**

Can occur during final approach between 450 and 200 feet above runway elevation:

1. Current predicted landing distance exceeds runway length available.
2. Consider a go-around.
3. If condition persists at 200 feet above runway elevation, a ROAAS warning will be issued

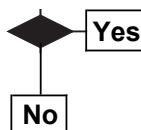
– END –

**AVIONICS****RWY LENGTH (Amber annunciation on PFD) (Cont)****DECELERATE (Amber annunciation on PFD)****“DECELERATE”****Can occur during landing rollout:**

1. Current predicted stopping point is approaching the end of the runway.
2. Increase deceleration to avoid a ROAAS Warning.

— END —**Loss of Navigation Mode – Remote / Oceanic Airspace****If GNSS is used as sole means of navigation****and****following messages are shown on the PFD:****FMS DR****or****DR EXCEEDS 5 MIN**

1. Pull and reset GPS circuit breakers (CB1–A3 & CB2–A3).

Within approximately 60 seconds, following messages are not shown on the PFD: FMS DR and DR EXCEEDS 5 MIN**– END –****After approximately 60 seconds, following messages remain shown on the PFD: FMS DR or DR EXCEEDS 5 MIN**

2. Notify the controlling agency.

— END —

DOORS**AFT EQPT BAY DOOR (C)**

1. Avoid slips or skids that could open the door.

————— **END** —————

BATTERY BAY DOOR (C)

1. Avoid slips or skids that could open the door.

————— **END** —————

CARGO DOOR (C)

1. SMKG/BELTS switch BELTS
2. Cabin Altitude Monitor

WARNING: Do not approach door. Door failure may be indicated by a loud noise, pressurization leak, or rumble emanating from the hatch area.

————— **END** —————

EMERGENCY EXIT (C)

1. SMKG/BELTS switch BELTS
2. Cabin Altitude Monitor

WARNING: Do not approach exit. Exit failure may be indicated by a loud noise, pressurization leak, or rumble emanating from the hatch area.

————— **END** —————

PASSENGER DOOR (C)

WARNING: Do not approach door. Door failure may be indicated by a loud noise, pressurization leak, or rumble emanating from the door area.

1. SMKG/BELTS switch SMKG/BELTS
2. EMER DEPRESS switch ON
The cabin altitude will climb to approximately 15,000 feet and stabilize.
3. Airspeed 250 KIAS maximum
4. Establish descent to reduce cabin delta pressure, but not lower than the minimum safe altitude.
5. Land as soon as possible.

————— **END** —————



ELECTRICAL

APU GEN FAIL (C)

NOTE: Should electrical system indication be flickering, cycling intermittently or behaving unexpectedly, accomplish the "Unexpected electrical indications" procedure at page 05-19-6.

1. APU GEN switch ON

If APU GEN FAIL CAS remains on:

2. Do not attempt a second reset of the APU GEN switch.

— END —

APU GEN OVERLOAD (C)

1. Electrical load Reduce

— END —

L (R) BATT FAIL (C)

NOTE: Should electrical system indication be flickering, cycling intermittently or behaving unexpectedly, accomplish the "Unexpected electrical indications" procedure at page 05-19-6.

If L (R) ESS BUS FAIL (C) is also displayed:



Yes

1. Affected BATT switch OFF

— END —

No

1. Affected BATT switch Verify OFF
2. Affected BATT temperature Monitor

If BATT TEMP decreases below 60 °C:

3. Applicable BATT switch On

— END —

ELEC HYD GEN FAIL (C)

The hydraulic generator has failed to come on-line:

1. HYD GEN OFF

— END —

ELECTRICAL FAULT (C)

NOTE: Should electrical system indication be flickering, cycling intermittently or behaving unexpectedly, accomplish the "Unexpected electrical indications" procedure at page 05-19-6.

1. Land as soon as practical.

— END —

ELECTRICAL**L (R) ESS BUS FAIL (C)**

1. Land as soon as practical.

If L ESS BUS FAIL CAS is displayed:



Yes

2. LEFT DISPLAYS REVERSION switch PFD REV
3. ATT/HDG REVERSION switch 2
4. AIR DATA REVERSION switch 2
5. Autopilot Disconnect
6. Flight Guidance Panel XFR switch Select FD2
7. AIR SOURCE switch TRIM AIR ONLY
8. L BLEED switch OFF
9. XBLEED switch Closed
10. WING SOURCE switch FROM R
11. Leave icing conditions as soon as possible.
12. Altitude 31,000 ft maximum
13. If less than 60 minutes has elapsed from
takeoff Operate with landing
gear extended for 15
minutes prior to landing
(to ensure cool brakes).
14. Final Approach Speed $V_{REF} + 10$
15. Normal actual landing distance Multiply by 1.75

NOTE: – The STBY probe will not be anti-iced.
– The applicable procedures for the following CAS messages are consolidated within this procedure and do not need to be conducted separately:
L WING ANTI-ICE FAIL (C), STALL PROTECT FAIL (C), INBD BRAKES FAIL (C)

WARNING: Maximum brake energy may be exceeded for a landing weight above MLW or when landing at an airport pressure altitude of 4000 ft and above. In this situation, consider reducing weight or land at an alternate airport.

CAUTION: Reducing weight below MLW or landing at an alternate airport shall only be attempted at pilot discretion and only if this can be achieved in a safe manner and within a reasonable time period.

16. ROAAS (if installed) As required

**ELECTRICAL****L (R) ESS BUS FAIL (C) (Cont)**

NOTE: ROAAS should be selected OFF when landing on a runway with RCC less than 6.

– END –

No

If R ESS BUS FAIL CAS is displayed:

2. WING SOURCE switch FROM L
3. Flight Guidance Panel XFR switch Select FD1
4. Autopilot Disconnect
5. Altitude 31,000 ft maximum
6. If less than 60 minutes has elapsed from
takeoff Operate with landing gear
extended for 15 minutes prior
to landing (to ensure cool
brakes).
7. Final Approach Speed $V_{REF} + 10$
8. Normal actual landing distance Multiply by 1.75

NOTE: The applicable procedures for the following CAS messages are consolidated within this procedure and do not need to be conducted separately:

OUTBD BRAKES FAIL (C), STBY PITOT HEAT FAIL (C), *STALL
PUSHER OFF (C) – *Not applicable to EASA registered aircraft.

WARNING: Maximum brake energy may be exceeded for a landing weight above MLW or when landing at an airport pressure altitude of 4000 ft and above. In this situation, consider reducing weight or land at an alternate airport.

CAUTION: Reducing weight below MLW or landing at an alternate airport shall only be attempted at pilot discretion and only if this can be achieved in a safe manner and within a reasonable time period.

9. ROAAS (if installed) As required

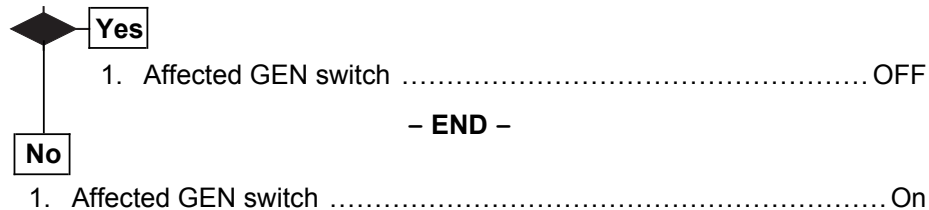
NOTE: ROAAS should be selected OFF when landing on a runway with RCC less than 6.

— END —

ELECTRICAL**L (R) GEN FAIL (C)**

NOTE: Should electrical system indication be flickering, cycling intermittently or behaving unexpectedly, accomplish the "Unexpected electrical indications" procedure at page 05-19-6.

If L (R) MAIN BUS FAIL (C) is also displayed:



If GEN FAIL CAS remains on:

2. Do not attempt a second reset of the GEN switch.

— END —

L (R) GEN OVERLOAD (C)

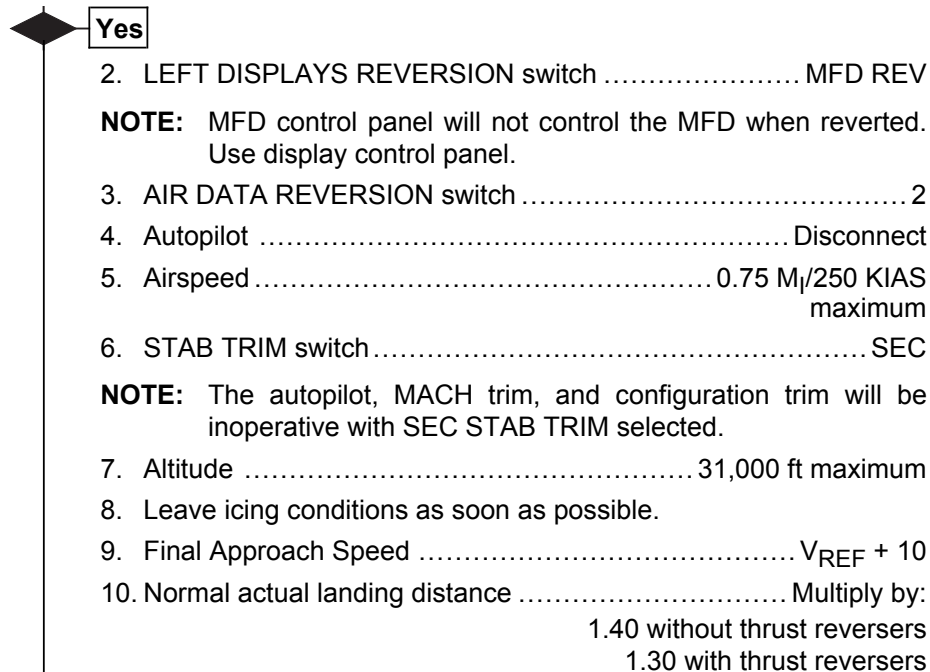
1. Affected electrical load Reduce

— END —

L (R) MAIN BUS FAIL (C)

1. Land as soon as practical.

If L MAIN BUS FAIL CAS is displayed:





ELECTRICAL

L (R) MAIN BUS FAIL (C) (Cont)

NOTE: The applicable procedures for the following CAS messages are consolidated within this procedure and do not need to be conducted separately:

STALL PROTECT FAIL (C), L PITOT HEAT FAIL (C), L (R) AUX BUS OFF (A).

11. ROAAS (if installed) As required

NOTE: – For aircraft with ROAAS installed, ROAAS should be selected OFF when landing on an RCC 6 runway with a length shorter than the increased actual landing distance plus 2,000 ft (600 m).
– ROAAS should be selected OFF when landing on a runway with RCC less than 6.

– END –

No

If R MAIN BUS FAIL CAS is displayed:

2. Autopilot Disconnect
3. Autothrottle (if installed) Disengage
4. AIR SOURCE switch PACK ONLY
5. R BLEED switch OFF
6. XBLEED switch Closed
7. WING SOURCE switch FROM L
8. EMER LTS switch OFF
9. Altitude 31,000 ft maximum
10. Leave icing conditions as soon as possible.
11. Final Approach Speed $V_{REF} + 10$
12. Normal actual landing distance Multiply by:
1.40 without thrust reversers
1.30 with thrust reversers
13. EMER LTS switch ON, when on final approach

NOTE: The applicable procedures for the following CAS messages are consolidated within this procedure and do not need to be conducted separately:

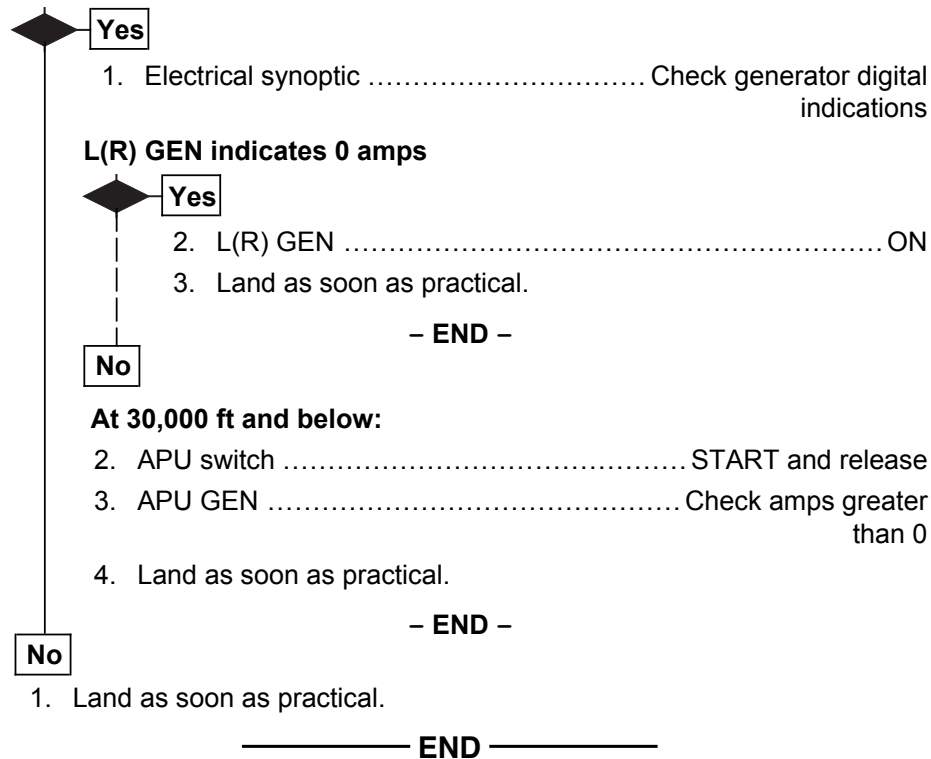
R WING ANTI-ICE FAIL (C), STALL PROTECT FAIL (C), R PITOT HEAT FAIL (C), L (R) AUX BUS OFF (A).

— END —

ELECTRICAL**Unexpected Electrical Indications**

CAUTION: Any reset action may turn the affected source off-line, possibly worsening the situation.

NOTE: Indications may include flickering or incorrect switch annunciations, unexpected or multiple electrical system CAS messages (GEN FAIL, BATT FAIL, ELECTRICAL FAULT, GEN OFF, BATT OFF), partial loss of displays.

Apparent loss of electrical power



FIRE PROTECTION

APU FIRE DET FAIL (C)

APU Shutdown:

1. XBLEED switch Closed
2. L BLEED switch ON
3. APU BLEED switch Off
4. R BLEED switch ON
5. APU switch OFF

— END —

CARGO SMOKE DET FAIL (C)

1. Doors between the cabin and the baggage compartment Open

— END —

L (R) FIRE DET FAIL (C)

1. Associated engine indications Monitor

— END —

FIRE SYS FAULT (C)

1. FIRE DET TEST

NOTE: Release the FIRE DET press-to-test after 3 seconds maximum or when the FIRE SYS IN TEST (S) message illuminates.

All of the following CAS messages come on:

L (R) ENG FIRE, APU FIRE, GEAR BAY OVHT, CARGO SMOKE



2. Continue flight.

— END —

One of the following CAS messages comes on:

APU FIRE DET FAIL (C), CARGO SMOKE DET FAIL (C), L (R) FIRE DET FAIL (C), FIREX APU SQUIB FAIL (C), GEAR BAY DET FAIL (C), FIREX BTL 1 (2) FAULT (A).

2. Refer to the appropriate displayed CAS message.

— END —

FIRE PROTECTION**FIREX APU SQUIB FAIL (C)**

APU Shutdown:

1. XBLEED switch Closed
2. L BLEED switch ON
3. APU BLEED switch Off
4. R BLEED switch ON
5. APU switch OFF

————— **END** —————

GEAR BAY DET FAIL (C)

The CAS displays within 5 minutes of takeoff:

**Yes**

1. Airspeed 250 KIAS maximum
2. LANDING GEAR switch DN

After 5 minutes:

3. LANDING GEAR switch UP

— **END** —

No

1. Continue flight.

————— **END** —————



FLIGHT CONTROLS

ELEVATOR SPLIT (C)

1. Airspeed Reduce to speed at which message clears, or 200 kts maximum, whichever is greater.

- NOTE:**
- Avoid excessive elevator input.
 - Use pitch trim as necessary to minimize elevator deflection.
 - Use aileron control as necessary to stabilize the aircraft.

————— **END** —————

FLAPS FAIL (C)

CAUTION: If a STALL PROTECT FAULT (A) message is displayed in conjunction with a FLAPS FAIL (C), and flaps are not at 30, the Low Speed Awareness Cue will indicate too high. This is an indication error only. Using the final approach speed per step 10 of this procedure will provide adequate stall warning margin.

If flaps fail at any angle other than 30, divert to a suitable landing field with a glidepath angle of 3.5 degrees or less.

Descent checks:

1. Pressurization LNDG ALT set
2. WING ANTI-ICE switch As required
3. L and R ENG ANTI-ICE switches As required

Transition Level (or FL 180) checks:

4. Altimeters Set
5. L and R LANDING light switches On
6. Passenger Brief/Cabin Check Complete
7. SMKG/BELTS switch SMKG/BELTS
8. Fuel quantities and balance Check

Approach checks:

9. APU and Bleeds Set
10. Final approach speed As listed for flaps attained:
 - Flaps 0 $V_{REF} + 20$
 - Flaps 10 $V_{REF} + 15$
 - Flaps 20 $V_{REF} + 5$
 - Flaps 30 V_{REF}

FLIGHT CONTROLS

FLAPS FAIL (C) (Cont)

When combined with SPOILERS FAIL (C):

Flaps 0	$V_{REF} + 25$
Flaps 10	$V_{REF} + 20$
Flaps 20	$V_{REF} + 10$
Flaps 30	$V_{REF} + 5$

NOTE: Use the lesser flap deflection V_{REF} speed increment and distance factor for flap settings between the detent values.

11. Normal actual landing distance Multiply by:

FLAPS	WITH TR	WITHOUT TR
0	1.40	1.45
10	1.30	1.35
20	1.20	1.25

When combined with SPOILERS FAIL (C):

FLAPS	WITH TR	WITHOUT TR
0	1.65	1.85
10	1.60	1.85
20	1.50	1.75
30	1.45	1.65

12. ROAAS (if installed) As required

- NOTE:**
- For aircraft with ROAAS installed, ROAAS should be selected OFF when landing on an RCC 6 runway with a length shorter than the increased actual landing distance plus 2,000 ft (600 m).
 - ROAAS should be selected OFF when landing on a runway with RCC less than 6.

Effectivity:*If Autothrottle installed:*

CAUTION: Autothrottle will not arm RETARD mode at 200 feet AGL if FLAPS are not at 30 degrees. AT RETARD INHIBIT (C) will post, and Autothrottle will not retard thrust levers at 50 feet AGL.



FLIGHT CONTROLS

FLAPS FAIL (C) (Cont)

- 13. FLAPS TAWS WARN OFF
- 14. Approach setup and crew briefing Complete
- 15. RA MIN or BARO MIN Set
- 16. MIN ALERT Set
- 17. L and R HYDRAULIC PUMP switches ON

Before Landing checks:

- 18. LANDING GEAR switch DN
- 19. L LANDING, N LDG/TAXI, and R LANDING
light switches On
- 20. Autothrottle (if installed) Disengage
prior to 200 feet AGL

— END —

FLAPS FAULT (C)

- 1. Airspeed Decrease
- 2. FLAPS Select the previous detent,
then select a detent to agree with the closest flap position.

NOTE: Trying to reset the flaps with the flap handle three times will result in a FLAPS FAIL (C) if the condition has not cleared. Ensure that all hydraulics are operating prior to resetting the flaps the third time.

FLAPS FAULT (C) message clears:



— END —

No

- 3. ALTN FLAPS switch ON
- 4. FLAPS selector Select the previous detent,
then select a detent to agree with the closest flap position.

FLAPS FAULT (C) message clears:



— END —

No

- 5. Refer to Flaps Fail procedure, this section.

— END —

END



FLIGHT CONTROLS

GND SPLRS NOT ARMED (C)

1. GROUND SPOILERS switch MANUAL ARM

If GND SPLRS NOT ARMED (C) remains on:

2. Normal actual landing distance Multiply by:
1.60 without thrust reversers
1.50 with thrust reversers
3. ROAAS (if installed) As required

NOTE: ROAAS should be selected OFF when landing on a runway with RCC less than 6.

After touchdown:

4. FLIGHT SPOILERS lever EMER

————— **END** —————

GND SPOILERS FAIL (C)

1. GROUND SPOILERS switch OFF
2. Normal actual landing distance Multiply by:
1.60 without thrust reversers
1.50 with thrust reversers
3. ROAAS (if installed) As required

NOTE: ROAAS should be selected OFF when landing on a runway with RCC less than 6.

After touchdown:

4. FLIGHT SPOILERS lever EMER

————— **END** —————

MACH TRIM FAIL (C)

1. Airspeed:
with AP engaged M_{MO}/V_{MO} maximum
with AP disengaged 0.75 $M_I/250$ KIAS
maximum

————— **END** —————

FLIGHT CONTROLS

PRI STAB TRIM FAIL (C)

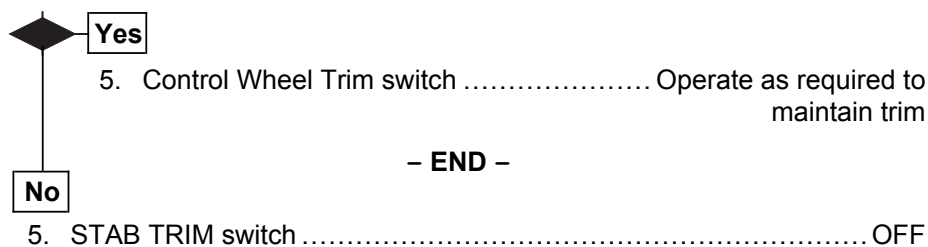
- WARNING:**
- If autopilot is engaged, an abrupt change in control force up to approximately 50 lbs, or an out of trim situation may be experienced when disconnecting the autopilot, or when selecting STAB TRIM switch to SEC.
 - SMKG/BELTS should be selected on.
 - Minimize changes to airspeed and configuration to minimize control forces and out of trim situation.

1. Flight Controls Hold firmly
2. STAB TRIM switch SEC

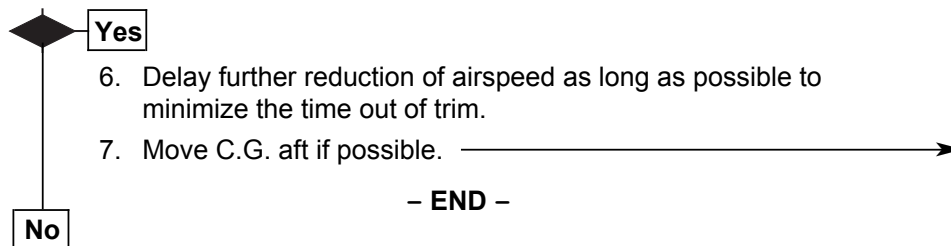
NOTE: The autopilot, MACH trim, and configuration trim will be inoperative with SEC STAB TRIM selected.

3. Control Wheel Trim switch Operate as required to maintain trim
4. Airspeed 0.75 M_I/250 KIAS maximum

Stab trim is operative in both directions:



If elevator PULL force is encountered and / or stabilizer jams during a high speed condition:



If Elevator PUSH force is encountered and / or stabilizer jams during a low speed condition:

6. Do not increase airspeed to minimize the out of trim conditions.
7. Move C.G. forward if possible.
8. Land as soon as possible to minimize aft C.G. movement.

Descent checks:

9. Pressurization LNDG ALT set
10. WING ANTI-ICE switch As required



FLIGHT CONTROLS

PRI STAB TRIM FAIL (C) (Cont)

11. L and R ENG ANTI-ICE switches As required

Transition Level (or FL 180) Checks:

12. Altimeters Set

13. L and R LANDING light switches On

14. Passenger brief/cabin check Complete

15. SMKG/BELTS switch SMKG/BELTS

16. Fuel quantities and balance Check

Approach checks:

17. APU and BLEEDS Set

18. Final approach speed V_{REF}

19. Normal actual landing distance Multiply by:

1.15 without thrust reversers

1.10 with thrust reversers

20. ROAAS (if installed) As required

NOTE: – For aircraft with ROAAS installed, ROAAS should be selected OFF when landing on an RCC 6 runway with a length shorter than the increased actual landing distance plus 2,000 ft (600 m).

– ROAAS should be selected OFF when landing on a runway with RCC less than 6.

21. Approach setup and crew briefing Complete

22. RA MIN or BARO MIN Set

23. MIN ALERT Set

24. L and R HYDRAULIC PUMP switches AUTO

Before Landing Checks:

25. LANDING GEAR switch DN

26. L LANDING, N LDG/TAXI, and R LANDING light switches On

27. FLAPS 30

— END —

FLIGHT CONTROLS

ROLL SPOILERS FAIL (C)

NOTE: The presence of SPOILERS FAULT (C) in addition to ROLL SPOILERS FAIL (C) may indicate a jammed spoiler surface. Disregard the SPOILERS FAULT (C) message.

Is any spoiler panel jammed in an extended position?



Yes

1. Autopilot Disconnect
2. Aileron Trim As required to minimize roll force
3. Altitude 41,000 ft maximum
4. Land as soon as possible.
5. FLAPS 20
6. Final approach speed $V_{REF} + 18$
7. Normal actual landing distance Multiply by:
1.65 without thrust reversers
1.50 with thrust reversers

NOTE: Landing on a wide runway of sufficient length with minimum turbulence and crosswind is recommended.

Effectivity:

If Autothrottle installed:

CAUTION: Autothrottle will not arm RETARD mode at 200 feet AGL if FLAPS are not at 30 degrees, AT RETARD INHIBIT (C) will post, and Autothrottle will not retard thrust levers at 50 feet AGL.

8. ROAAS (if installed) As required

NOTE: – For aircraft with ROAAS installed, ROAAS should be selected OFF when landing on an RCC 6 runway with a length shorter than the increased actual landing distance plus 2,000 ft (600 m).
– ROAAS should be selected OFF when landing on a runway with RCC less than 6.

9. Autothrottle (if installed) Disengage
Prior to 200 feet AGL
10. FLAPS TAWS WARN OFF

– END –

No

1. FLAPS 30
2. Final approach speed $V_{REF} + 5$



FLIGHT CONTROLS

ROLL SPOILERS FAIL (C) (Cont)

3. Normal actual landing distance Multiply by:
1.20 without thrust reversers
1.15 with thrust reversers

NOTE: Landing on a wide runway of sufficient length with minimum turbulence and crosswind is recommended.

4. ROAAS (if installed) As required

- NOTE:**
- For aircraft with ROAAS installed, ROAAS should be selected OFF when landing on an RCC 6 runway with a length shorter than the increased actual landing distance plus 2,000 ft (600 m).
 - ROAAS should be selected OFF when landing on a runway with RCC less than 6.

————— **END** —————

ROLL SPOILERS FAULT (C)

1. Normal actual landing distance Multiply by:
1.15 without thrust reversers
1.10 with thrust reversers

NOTE: Landing on a wide runway of sufficient length with minimum turbulence and crosswind is recommended.

2. ROAAS (if installed) As required

- NOTE:**
- For aircraft with ROAAS installed, ROAAS should be selected OFF when landing on an RCC 6 runway with a length shorter than the increased actual landing distance plus 2,000 ft (600 m).
 - ROAAS should be selected OFF when landing on a runway with RCC less than 6.

————— **END** —————

ROLL SPOILERS OFF (C)

1. ROLL SPOILERS switch On

————— **END** —————

RUDDER LIMITER FAIL (C)

1. Avoid excessive rudder inputs.
2. Airspeed 185 KIAS maximum

NOTE: Landing on a wide runway of sufficient length with minimum turbulence and crosswind is recommended.

————— **END** —————

FLIGHT CONTROLS

SEC STAB TRIM FAIL (C)

PRI STAB TRIM FAIL is displayed:

Yes

1. Refer to Pri Stab Trim Fail procedure, this section.

– END –

No

1. STAB TRIM switch PRI

— END —

SPOILERS FAIL (C)

1. FLIGHT SPOILERS lever RET
2. Altitude 41,000 ft maximum

Is any spoiler panel jammed in an extended position?

Yes

3. Autopilot Disconnect
4. Aileron Trim As required to minimize roll force
5. Land as soon as possible.
6. FLAPS 20
7. Final approach speed $V_{REF} + 18$
8. Normal actual landing distance Multiply by:
2.0 without thrust reversers
1.65 with thrust reversers

NOTE: Landing on a wide runway of sufficient length with minimum turbulence and crosswind is recommended.

Effectivity:

If Autothrottle installed:

CAUTION: Autothrottle will not arm RETARD mode at 200 feet AGL if FLAPS are not at 30 degrees, AT RETARD INHIBIT (C) will post, and Autothrottle will not retard thrust levers at 50 feet AGL.

9. ROAAS (if installed) As required

NOTE: – For aircraft with ROAAS installed, ROAAS should be selected OFF when landing on an RCC 6 runway with a length shorter than the increased actual landing distance plus 2,000 ft (600 m).
– ROAAS should be selected OFF when landing on a runway with RCC less than 6.

**FLIGHT CONTROLS****SPOILERS FAIL (C) (Cont)**

10. Autothrottle (if installed) Disengage
Prior to 200 feet AGL
11. FLAPS TAWS WARN OFF

– END –**No**

3. FLAPS 30
4. Final approach speed $V_{REF} + 5$
5. Normal actual landing distance Multiply by:
1.65 without thrust reversers
1.45 with thrust reversers

NOTE: Landing on a wide runway of sufficient length with minimum turbulence and crosswind is recommended.

6. ROAAS (if installed) As required

NOTE: – For aircraft with ROAAS installed, ROAAS should be selected OFF when landing on an RCC 6 runway with a length shorter than the increased actual landing distance plus 2,000 ft (600 m).
– ROAAS should be selected OFF when landing on a runway with RCC less than 6.

END**SPOILERS FAULT (C)**

CAUTION: If SPOILERS FAULT (C) is displayed intermittently, conduct the procedure in its entirety. The SPOILERS FAULT (C) may be displayed in conjunction with SPOILERS FAULT (A) and STAB TRIM FAULT (A).

NOTE: Monitor CAS messages for any potential new CAUTION/ADVISORY messages.

1. Altitude 41,000 ft maximum

Is any spoiler panel jammed in an extended position?

Yes

2. Autopilot Disconnect
3. Aileron Trim As required to minimize roll force
4. Land as soon as possible.
5. FLAPS 20
6. Final approach speed $V_{REF} + 13$

SPOILERS FAULT (C) (Cont)

- END –

END



FLIGHT CONTROLS

STALL PROTECT FAIL (C)

1. STALL PUSHER switch OFF
2. Final approach speed $V_{REF} + 10$
3. Normal actual landing distance Multiply by:
1.25 without thrust reversers
1.20 with thrust reversers
4. ROAAS (if installed) As required

NOTE: – For aircraft with ROAAS installed, ROAAS should be selected OFF when landing on an RCC 6 runway with a length shorter than the increased actual landing distance plus 2,000 ft (600 m).
– ROAAS should be selected OFF when landing on a runway with RCC less than 6.

— END —

* STALL PUSHER OFF (C)

* (Not applicable to EASA registered aircraft)

1. MSW disconnect button Release

STALL PUSHER OFF remains on:



Yes

2. Final approach speed $V_{REF} + 10$
3. Normal actual landing distance Multiply by:
1.25 without thrust reversers
1.20 with thrust reversers
4. ROAAS (if installed) As required

NOTE: – For aircraft with ROAAS installed, ROAAS should be selected OFF when landing on an RCC 6 runway with a length shorter than the increased actual landing distance plus 2,000 ft (600 m).
– ROAAS should be selected OFF when landing on a runway with RCC less than 6.

– END –

No

— END —

FLIGHT CONTROLS

Flight Spoiler Lever Jam

- Altitude 41,000 ft maximum

If the spoiler lever is jammed in an extended position:

- Final approach speed $V_{REF} + 8$
- Normal actual landing distance Multiply by:
 - 1.25 without thrust reversers
 - 1.20 with thrust reversers
- ROAAS (if installed) As required

NOTE: – For aircraft with ROAAS installed, ROAAS should be selected OFF when landing on an RCC 6 runway with a length shorter than the increased actual landing distance plus 2,000 ft (600 m).

– ROAAS should be selected OFF when landing on a runway with RCC less than 6.

————— **END** —————

Roll Trim Malfunction

Roll trim unresponsive in one or both directions, trim moving slower than normal or inconsistently, trim moving opposite to command.

- CAUTION:**
- Use caution in trimming and be aware that with a failed pilot trim switch, copilot trim inputs regardless of direction may cause the trim to move opposite to the desired direction, worsening the situation.
 - If uncommanded trim motion occurs with no trim switch operation, refer immediately to Chapter 3, EMERGENCY PROCEDURES, FLIGHT CONTROLS, Roll and Yaw Axis Uncommanded Motion.
- Retrim airplane Monitor closely the direction of trim movement

If movement is not in the desired direction:

Problem identified when using pilot trim switch



Yes

- Pilot's master disconnect switch Depress
- Master disconnect switch and Pilot's trim switch Release
- Do not** use pilot trim switch in either pitch or roll.
- Use copilot's trim switch to trim the aircraft.





FLIGHT CONTROLS

Roll Trim Malfunction (Cont)

6. If roll trim operation is or becomes unsatisfactory, discontinue trimming, and pull AIL TRIM CB2 B15; hold out of trim forces and land as soon as practical.

– END –

No

(Copilot's trim switch malfunction)

2. Copilot's master disconnect switch Depress
3. Master disconnect switch and Copilot's trim switch Release
4. **Do not** use copilot trim switch in either pitch or roll.
5. Use pilot's trim switch to trim the aircraft.
6. If roll trim operation is or becomes unsatisfactory, discontinue trimming, and pull AIL TRIM CB2 B15; hold out of trim forces and land as soon as practical.

— END —

Stabilizer Trim Malfunction

Stabilizer trim unresponsive to pilot or copilot trim commands in one or both directions, trim moving slower than normal or inconsistently, trim moving opposite to command.

May be accompanied by STAB TRIM FAULT (A)

- WARNING:**
1. Use caution in trimming and be aware that with a failed pilot trim switch, copilot trim inputs regardless of direction may cause the trim to move opposite to the desired direction, worsening the situation.
 2. If uncommanded trim motion occurs with no trim switch operation, refer immediately to Chapter 3, EMERGENCY PROCEDURES, FLIGHT CONTROLS, Pitch Axis Uncommanded Motion.
1. Retrim airplane Monitor closely the direction of trim movement

If movement is not in the desired direction:

Problem identified when using pilot trim switch

Yes

2. Pilot's master disconnect switch Depress
3. Master disconnect switch and Pilot's trim switch Release
4. **Do not** use pilot trim switch in either pitch or roll.

FLIGHT CONTROLS

Stabilizer Trim Malfunction (Cont)

5. Avoid changing aircraft flap configuration or significantly changing speed.
6. Wait 3 minutes without trimming.

NOTE: 1. Waiting 3 minutes with no trim inputs by either pilot may allow the system to identify a faulty trim switch and disregard inputs from that switch, allowing control to be regained through the operative side.

2. If the failure is intermittent, the malfunction may reoccur.

7. Use copilot trim switch to trim the aircraft.

NOTE: Once aircraft is in-trim, engaging the autopilot will relieve the need for further trim switch operations and reduce the likelihood of unexpected trim responses.

8. If manual trim operation is or becomes unsatisfactory, discontinue trimming, set STAB TRIM switch to OFF, hold out of trim forces and land as soon as practical.

— END —

No

(Copilot's trim switch malfunction)

2. Copilot's master disconnect switch Depress
3. Master disconnect switch and Copilot's trim switch Release
4. **Do not** use copilot trim switch in either pitch or roll.
5. Use pilot's trim switch to trim the aircraft.
6. If trim operation is or becomes unsatisfactory, discontinue trimming, set STAB TRIM switch to OFF, hold out of trim forces and land as soon as practical.

— END —

**FUEL****L (R) FUEL COLLECTOR LOW (C)**

1. Affected FUEL PUMP switch ON
2. Sideslip Minimize
3. Land as soon as possible.

————— **END** —————

L (R) FUEL EJECTOR FAIL (C)

Is fuel leak evident? (fuel imbalance developing, or abnormally fast fuel depletion from one side):



Yes

1. Affected engine Shutdown,
refer to Engine Shutdown In Flight procedure in the
NON-NORMAL PROCEDURES chapter.

— **END** —

No

————— **END** —————

FUEL IMBALANCE (C)

1. Fuel quantities Check

CAUTION:

- Do not taxi until imbalance is rectified.
- Do not land until imbalance is rectified, unless a greater emergency exists.

Correct fuel distribution, if required:

2. FUEL XFER switch Open
3. L or R FUEL PUMP switch (heavy wing) ON
4. Monitor wing fuel quantity.

When fuel balance is achieved:

5. L or R FUEL PUMP switch AUTO
6. FUEL XFER switch Close

————— **END** —————

FUEL**L (R) FUEL PRESSURE LOW (C)**

1. Affected FUEL PUMP switch ON

FUEL PRESS LOW CAS remains on:

2. Affected thrust lever Reduce to minimum practical setting
3. Maintain 18,500 ft or below to enable suction feed.

————— **END** —————

L (R) FUEL PUMP FAIL (C)**To balance fuel (if required) :**

1. GRAVITY XFLOW switch Open

NOTE: It may be necessary to use a sideslip to transfer fuel.

————— **END** —————

FUEL QUANTITY FAIL (C)

1. Monitor fuel quantity on the FMS.

————— **END** —————

FUEL QUANTITY LOW (C)

1. Fuel quantities Check
2. L and R FUEL PUMP switches ON
3. Land as soon as possible. A go-around is not recommended.

————— **END** —————

WING FUEL TEMP LOW (C)

1. Descend to a warmer ambient temperature.

————— **END** —————



HYDRAULICS

AUX HYD TEMP HIGH (C)

1. AUX HYDRAULIC PUMP switch OFF

If temperature continues to rise:

2. AUX DC PUMP circuit breaker (CB1 D10) Pull
3. Land as soon as practical.

————— **END** —————

L (R) HYD PRESS LOW (C)

1. Autopilot Disconnect
2. Affected hydraulic pump switch OFF
3. Affected HYDRAULIC SOV switch CLOSED
4. Altitude 41,000 ft maximum
5. Land as soon as practical.

Descent checks:

1. Pressurization LNDG ALT set
2. WING ANTI-ICE switch As required
3. L and R ENG ANTI-ICE switches As required

Transition level (or FL 180) checks:

4. Altimeters Set
5. L and R LANDING light switches On
6. Passenger brief/cabin check Complete
7. SMKG/BELTS switch SMKG/BELTS
8. Fuel quantities and balance Check

Approach checks:

9. APU and bleeds Set

L HYD PRESS LOW is displayed:



Yes

10. Final approach speed V_{REF}
11. Normal actual landing distance Multiply by:
1.40 without thrust reversers
1.35 with thrust reversers

WARNING: Maximum brake energy may be exceeded for a landing weight above MLW and when landing at an airport pressure altitude of 4000 ft and above. In this situation, consider reducing weight or land at an alternate airport.

CAUTION: Reducing weight below MLW or landing at an alternate airport shall only be attempted at pilot discretion and only if this can be achieved in a safe manner and within a reasonable time period.

HYDRAULICS

L (R) HYD PRESS LOW (C) (Cont)

12. ROAAS (if installed) As required

NOTE: – For aircraft with ROAAS installed, ROAAS should be selected OFF when landing on an RCC 6 runway with a length shorter than the increased actual landing distance plus 2,000 ft (600 m).

– ROAAS should be selected OFF when landing on a runway with RCC less than 6.

13. Approach setup and crew briefing Complete

14. RA MIN or BARO MIN Set

15. MIN ALERT Set

16. R HYDRAULIC PUMP switch AUTO

Before landing checks:

17. LANDING GEAR switch DN

CAUTION: Do not push PUSH TO STOW button while pulling handle.

18. LG PULL handle PULL

NOTE: Performing a sideslip to each side may help achieve MLG downlock. Increased airspeed may be required to ensure downlock during sideslip.

19. GEAR Indication Check
for three green DN indications.

CAUTION: Do not stow the handle until the gear pins are installed.

20. L LANDING, N LDG/TAXI, and R
LANDING light switches On

21. FLAPS 30

22. NWS switch OFF
Maintain directional control using differential braking.

After touchdown:

23. Limit reverse thrust on the right side as required to maintain directional control.

NOTE: Do not deploy the left thrust reverser.

– END –

No

R HYD PRESS LOW is displayed:

10. Final approach speed V_{REF}

11. Normal actual landing distance Multiply by:
1.40 without thrust reversers
1.35 with thrust reversers



HYDRAULICS

L (R) HYD PRESS LOW (C) (Cont)

WARNING: Maximum brake energy may be exceeded for a landing weight above MLW and when landing at an airport pressure altitude of 4000 ft and above. In this situation, consider reducing weight or land at an alternate airport.

CAUTION: Reducing weight below MLW or landing at an alternate airport shall only be attempted at pilot discretion and only if this can be achieved in a safe manner and within a reasonable time period.

12. ROAAS (if installed) As required

NOTE: – For aircraft with ROAAS installed, ROAAS should be selected OFF when landing on an RCC 6 runway with a length shorter than the increased actual landing distance plus 2,000 ft (600 m).

– ROAAS should be selected OFF when landing on a runway with RCC less than 6.

13. ALTN FLAPS ON

14. Approach setup and crew briefing Complete

15. RA MIN or BARO MIN Set

16. MIN ALERT Set

17. L HYDRAULIC PUMP switch AUTO

Before landing checks:

18. LANDING GEAR switch DN

19. L LANDING, N LDG/TAXI, and R LANDING
light switches On

20. FLAPS selector 30

After touchdown:

21. Limit reverse thrust on left side as required to maintain directional control.

NOTE: Do not deploy the right thrust reverser.

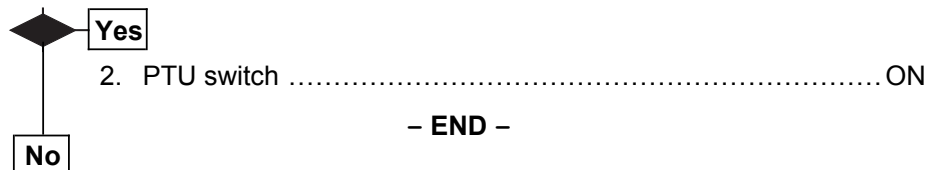
————— **END** —————

HYDRAULICS

HYD PTU FAIL (C)

1. HYDRAULIC quantity for both systems Check

Quantities are normal:



Either quantity goes low or the message persists:

2. PTU switch OFF

— END —

L (R) HYD SOV FAIL (C)

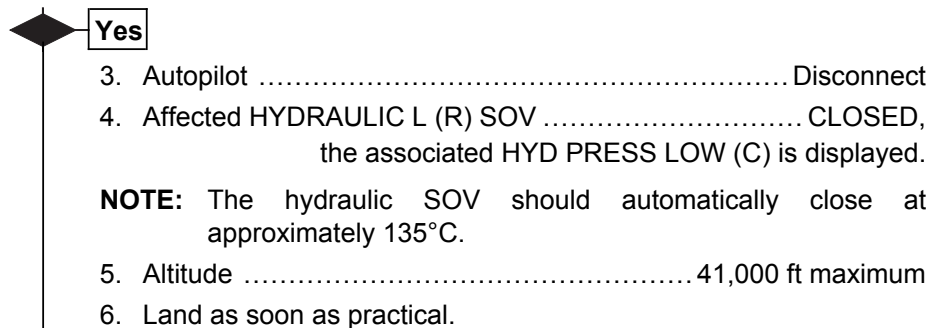
1. Affected SOV switch Check proper position

— END —

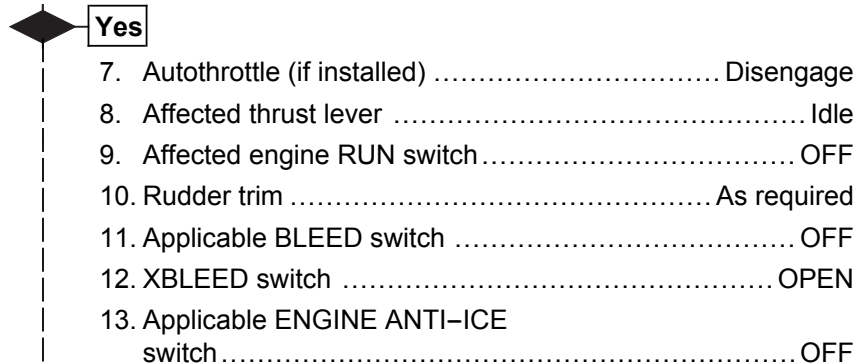
L (R) HYD TEMP HIGH (C)

1. Affected HYDRAULIC PUMP switch OFF
2. Affected HYDRAULIC temperature Monitor

Hydraulic temperature reaches 135 °C:



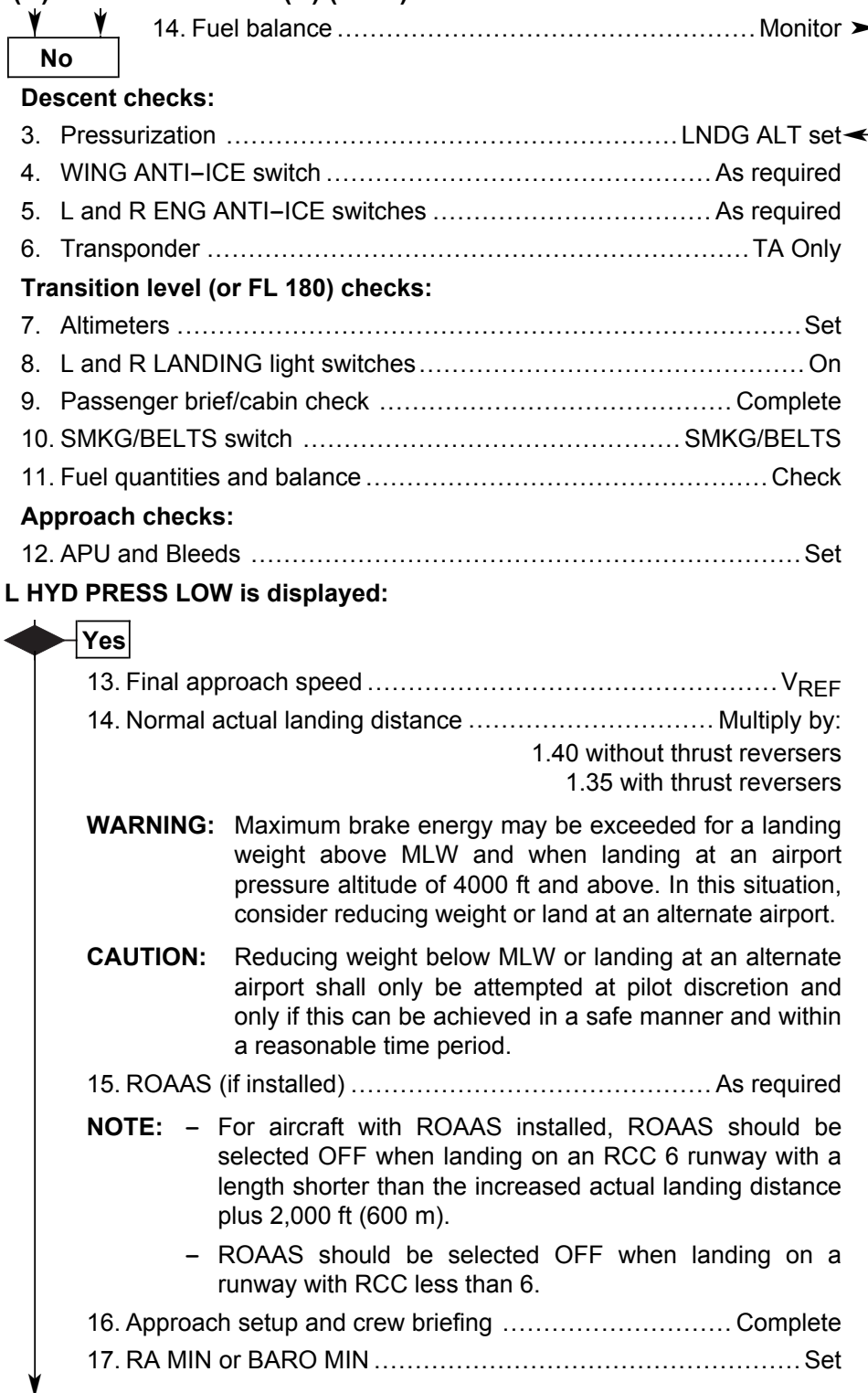
Hydraulic temperature reaches 155 °C:





HYDRAULICS

L (R) HYD TEMP HIGH (C) (Cont)



HYDRAULICS

L (R) HYD TEMP HIGH (C) (Cont)

18. MIN ALERT Set

19. R HYDRAULIC PUMP switch AUTO

Before landing checks:

20. LANDING GEAR switch DN

CAUTION: Do not push PUSH TO STOW button while pulling handle.

21. LG PULL handle PULL

NOTE: Performing a sideslip to each side may help achieve MLG downlock. Increased airspeed may be required to ensure downlock during sideslip.22. GEAR Indication Check
for three green DN indications.**CAUTION:** Do not stow the handle until the gear pins are installed.23. L LANDING, N LDG/TAXI, and R
LANDING light switches On

24. FLAPS 30

25. NWS switch OFF

Maintain directional control using differential braking.

After touchdown:26. Limit reverse thrust on the right side as required to maintain
directional control.**NOTE:** Do not deploy the left thrust reverser.

– END –

No

R HYD PRESS LOW is displayed:

Yes

13. Final approach speed V_{REF} 14. Normal actual landing distance Multiply by:
1.40 without thrust reversers
1.35 with thrust reversers**WARNING:** Maximum brake energy may be exceeded for a landing weight above MLW and when landing at an airport pressure altitude of 4000 ft and above. In this situation, consider reducing weight or land at an alternate airport.**CAUTION:** Reducing weight below MLW or landing at an alternate airport shall only be attempted at pilot discretion and only if this can be achieved in a safe manner and within a reasonable time period.



HYDRAULICS

L (R) HYD TEMP HIGH (C) (Cont)

15. ROAAS (if installed) As required

NOTE: – For aircraft with ROAAS installed, ROAAS should be selected OFF when landing on an RCC 6 runway with a length shorter than the increased actual landing distance plus 2,000 ft (600 m).

– ROAAS should be selected OFF when landing on a runway with RCC less than 6.

16. ALTN FLAPS ON

17. Approach setup and crew briefing Complete

18. RA MIN or BARO MIN Set

19. MIN ALERT Set

20. L HYDRAULIC PUMP switch AUTO

Before landing checks:

21. LANDING GEAR switch DN

22. L LANDING, N LDG/TAXI, and R
LANDING light switches On

23. FLAPS 30

After touchdown:

24. Limit reverse thrust on left side as required to maintain directional control.

NOTE: Do not deploy the right thrust reverser.

– END –

No

13. Approach set up and crew briefing Complete

14. RA MIN or BARO MIN Set

15. MIN ALERT Set

Before landing checks:

16. LANDING GEAR DN

17. L LANDING, N LDG/TAXI, and R LANDING light
switches On

18. L and R HYDRAULIC PUMP switches Auto

19. FLAPS 30

— END —

ICE & RAIN PROTECTION**L (R) AOA VANE HEAT FAIL (C)**

NOTE: – If L AOA VANE HEAT FAIL (C) posts simultaneously with L PITOT HEAT FAIL (C) and STBY PITOT HEAT FAIL (C) refer to LEFT AIR DATA HEAT FAIL procedure, this section. No further crew action is required for L AOA VANE HEAT FAIL (C).

- If R AOA VANE HEAT FAIL (C) posts simultaneously with R PITOT HEAT FAIL (C) and R STBY STAT HT FAIL (C) refer to RIGHT AIR DATA HEAT FAIL procedure, this section. No further crew action is required for R AOA VANE HEAT FAIL (C).

1. Affected PROBES switch OFF, then On

AOA VANE HEAT FAIL remains displayed:

2. Leave icing conditions as soon as possible.

If icing is encountered:

3. STALL PUSHER switch OFF

4. Final approach speed $V_{REF} + 10$

5. Normal actual landing distance Multiply by:
1.25 without thrust reversers
1.20 with thrust reversers

6. ROAAS (if installed) As required

NOTE: – For aircraft with ROAAS installed, ROAAS should be selected OFF when landing on an RCC 6 runway with a length shorter than the increased actual landing distance plus 2,000 ft (600 m).

- ROAAS should be selected OFF when landing on a runway with RCC less than 6.

————— **END** —————

ICE DETECTED (C)

1. WING ANTI-ICE switch ON

2. L and R ENG ANTI-ICE switches ON

————— **END** —————



ICE & RAIN PROTECTION

ICE DETECTOR FAIL (C)

If in visible moisture or at night and TAT is 10 °C or below except when SAT is -40 °C or below:

1. WING ANTI-ICE switch ON
2. L and R ENG ANTI-ICE switches ON

————— **END** —————

L (R) ENG ANTI-ICE FAIL (C)

1. ANTI-ICE synoptic Check

Affected engine anti-ice flow line is amber:



Yes

2. Autothrottle (if installed) Disengage
3. IGNITION switch ON
4. Engine N₁ Increase to improve airflow

If ENG ANTI-ICE FAIL remains on:

5. Leave icing conditions as soon as possible.

————— **END** —————

No

An amber T₂ is displayed next to the engine graphic:

2. Leave icing conditions as soon as possible.

————— **END** —————

L (R) PITOT HEAT FAIL (C)

- NOTE:**
- If L PITOT HEAT FAIL (C) posts simultaneously with L AOA VANE HEAT FAIL (C) and STBY PITOT HEAT FAIL (C) refer to LEFT AIR DATA HEAT FAIL procedure, this section. No further crew action is required for L PITOT HEAT FAIL (C).
 - If R PITOT HEAT FAIL (C) posts simultaneously with R AOA VANE HEAT FAIL (C) and R STBY STAT HT FAIL (C) refer to RIGHT AIR DATA HEAT FAIL procedure, this section. No further crew action is required for R PITOT HEAT FAIL (C).
1. Affected PROBES switch OFF, then On

ICE & RAIN PROTECTION

L (R) PITOT HEAT FAIL (C) (Cont)

PITOT HEAT FAIL remains displayed:

Yes

2. Cross-check the three pitot-static systems.

PITOT HEAT FAIL is accompanied by erroneous pitot-static indications:

Yes

If L PITOT HEAT FAIL:

3. AIR DATA reversion switch Select 2

If R PITOT HEAT FAIL:

3. AIR DATA reversion switch Select 1

— END —

No

— END —

L (R) PROBE HEAT OFF (C)

In flight:

1. Affected PROBES switch On

— END —



ICE & RAIN PROTECTION

STBY PITOT HEAT FAIL (C)

NOTE: If STBY PITOT HEAT FAIL (C) posts simultaneously with L AOA VANE HEAT FAIL (C) and L PITOT HEAT FAIL (C) refer to LEFT AIR DATA HEAT FAIL procedure, this section. No further crew action is required for STBY PITOT HEAT FAIL (C).

1. L PROBES switch OFF, then On

STBY PITOT HEAT FAIL remains on:



2. Use the pilot's and copilot's airspeed/Mach indicators.
Do not use the standby instrument.

– END –



————— END —————

L (R) STBY STAT HT FAIL (C)

NOTE: – If L STBY STAT HT FAIL (C) posts simultaneously with L AOA VANE HEAT FAIL (C), L PITOT HEAT FAIL (C) and STBY PITOT HEAT FAIL (C) refer to LEFT AIR DATA HEAT FAIL procedure, this section. No further crew action is required for L STBY STAT HT FAIL (C).

- If R STBY STAT HT FAIL (C) posts simultaneously with R AOA VANE HEAT FAIL (C) and R PITOT HEAT FAIL (C) refer to RIGHT AIR DATA HEAT FAIL procedure, this section. No further crew action is required for R STBY STAT HT FAIL (C).

1. Affected PROBES switch OFF, then On

If STBY STAT HT FAIL remains on:



2. Use the pilot's and copilot's airspeed/Mach indicators.
Do not use the standby instrument.

– END –



————— END —————

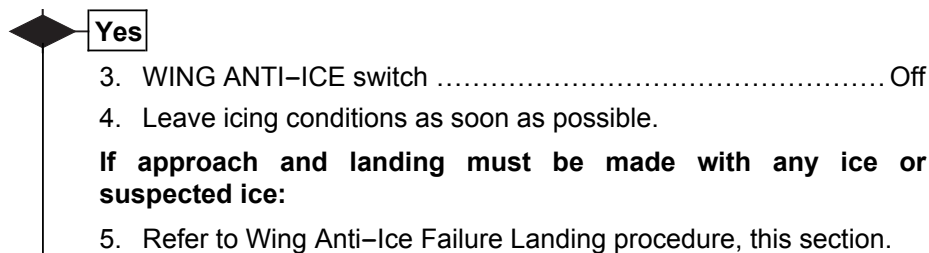
ICE & RAIN PROTECTION**L (R) WINDOW HEAT FAIL (C)**

1. Affected WSHLD/WINDOW switch OFF, then On
2. Moving the COCKPIT and CABIN COLD–HOT knobs to HOT may help reduce fogging.

————— **END** —————

L (R) WING A/I PRESS HI (C)

1. WING SOURCE switch Select FROM L or FROM R
as required
2. AUTO SYNC switch OFF

WING A/I PRESS HI remains displayed:

– END –

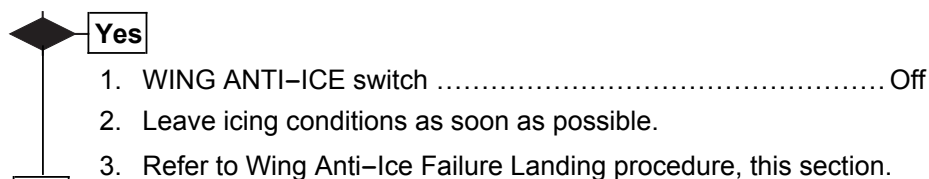
No

————— **END** —————

L (R) WING ANTI–ICE FAIL (C)

NOTE: If a L (R) WING A/I LOW TEMP (C) and a L (R) WING ANTI–ICE FAIL (C) are displayed at the same time, perform the procedure for L (R) WING A/I LOW TEMP (C) in this chapter.

Both the L WING ANTI–ICE FAIL (C) and the R WING ANTI–ICE FAIL (C) are on:



No

1. WING SOURCE switch Select FROM L or FROM R
as required
2. AUTO SYNC switch OFF
3. Autothrottle (if installed) Disengage
4. Affected thrust lever Increase to 74% N₂ minimum

**ICE & RAIN PROTECTION****L (R) WING ANTI-ICE FAIL (C) (Cont)****WING ANTI-ICE FAIL (C) remains displayed:**

- Yes**
5. WING ANTI-ICE switch Off
 6. Leave icing conditions as soon as possible.
 7. Refer to Wing Anti-Ice Failure Landing procedure, this section.

CAUTION: If conditions persists, do not engage Autothrottle.

No

————— **END** —————

L (R) WING A/I LOW TEMP (C)

NOTE: If a L (R) WING A/I LOW TEMP (C) and a L (R) WING ANTI-ICE FAIL (C) are displayed at the same time, perform the procedure for L (R) WING A/I LOW TEMP (C).

1. Autothrottle (if installed) Disengage
2. Affected thrust lever Increase to 74% N₂ minimum

WING A/I LOW TEMP (C) extinguishes:

Yes

— **END** —

No

3. WING SOURCE switch Select FROM L or FROM R
as required
4. AUTO SYNC switch OFF
5. Affected thrust lever Increase to 74% N₂ minimum

CAUTION: If conditions persists, do not engage Autothrottle.

WING A/I LOW TEMP (C) remains displayed:

Yes

6. WING ANTI-ICE switch Off
7. Leave icing conditions as soon as possible.
8. Refer to Wing Anti-Ice Failure Landing procedure, this section.

No

————— **END** —————

ICE & RAIN PROTECTION**WING ANTI-ICE FAULT (C)**

1. Leave icing conditions as soon as possible.

When out of icing:

2. WING ANTI-ICE switch Off

————— **END** —————

L (R) WSHLD HEAT FAIL (C)

1. Affected WSHLD/WINDOW switch OFF, then On

If WSHLD HEAT FAIL (C) remains on:

2. Leave icing conditions as soon as possible.
3. Moving the COCKPIT and CABIN COLD-HOT knobs to HOT may help reduce fogging.

————— **END** —————

LEFT AIR DATA HEAT FAIL

Indication: Simultaneous posting of L PITOT HEAT FAIL (C), STBY PITOT HEAT FAIL (C) and L AOA VANE HEAT FAIL (C).

NOTE: No crew action is required for the following procedures:

- Caution messages: L PITOT HEAT FAIL (C), STBY PITOT HEAT FAIL (C), L AOA VANE HEAT FAIL (C).

If L STBY STAT HT FAIL (C) posts no crew action is required.

1. L Probes switch OFF, then On.

L PITOT HEAT FAIL (C), STBY PITOT HEAT FAIL (C) and L AOA VANE HEAT FAIL (C) remain displayed:

Yes

2. Leave icing conditions as soon as possible.

NOTE: If the Pitch attitude, thrust setting or external noise are not consistent with copilot's indicated airspeed, refer to Chapter 3, EMERGENCY PROCEDURES, AVIONICS, Unreliable Airspeed.

3. AIR DATA reversion switch Select 2
Do not use the standby instruments.

If icing is encountered:

4. STALL pusher switch OFF
5. Final approach speed VREF +10
6. Normal actual landing distance Multiply by:
1.25 without thrust reversers
1.20 with thrust reversers
7. ROAAS (if installed) As required



**ICE & RAIN PROTECTION****LEFT AIR DATA HEAT FAIL (Cont)**

- NOTE:**
- For aircraft with ROAAS installed, ROAAS should be selected OFF when landing on an RCC 6 runway with a length shorter than the increased actual landing distance plus 2,000 ft (600 m).
 - ROAAS should be selected OFF when landing on a runway with RCC less than 6.

– END –

No

— END —

RIGHT AIR DATA HEAT FAIL

Indication: Simultaneous posting of R PITOT HEAT FAIL (C), R STBY STAT HT FAIL (C) and R AOA VANE HEAT FAIL (C).

NOTE: No crew action is required for the following procedures:

- Caution messages: R PITOT HEAT FAIL (C), R STBY STAT HT FAIL (C), R AOA VANE HEAT FAIL (C).

1. R Probes switch OFF, then On.

R PITOT HEAT FAIL (C), R STBY STAT HT FAIL (C) and R AOA VANE HEAT FAIL (C) remain displayed:

Yes

NOTE: TAT probe heater has also failed.

2. Leave icing conditions as soon as possible.

NOTE: If the Pitch attitude, thrust setting or external noise are not consistent with pilot's indicated airspeed, refer to Chapter 3, EMERGENCY PROCEDURES, AVIONICS, Unreliable Airspeed.

3. AIR DATA reversion switch Select 1
Note: Do not use the standby instruments.

If icing is encountered:

4. STALL pusher switch OFF
5. Final approach speed VREF +10
6. Normal actual landing distance Multiply by:
1.25 without thrust reversers
1.20 with thrust reversers
7. ROAAS (if installed) As required

ICE & RAIN PROTECTION**RIGHT AIR DATA HEAT FAIL (Cont)**

- NOTE:**
- For aircraft with ROAAS installed, ROAAS should be selected OFF when landing on an RCC 6 runway with a length shorter than the increased actual landing distance plus 2,000 ft (600 m).
 - ROAAS should be selected OFF when landing on a runway with RCC less than 6.

– END –

No

— END —

Cracked, Shattered, Delaminated, or Arcing Windshield or Window

1. Affected WSHLD/WINDOW switch OFF
2. Cabin differential pressure Reduce to 5.8 maximum
3. Altitude 15,000 ft maximum
4. Leave icing conditions as soon as possible.
5. Moving the COCKPIT and CABIN COLD–HOT knobs to HOT may help reduce fogging.

If core or inside plies are shattered:

6. Airspeed 205 KIAS maximum below 8,000 ft

— END —

Wing Anti-Ice Failure Landing

- WARNING:**
- Approach low speed flight with care so that detection of abnormal flying qualities can be obtained. Increased buffet may indicate ice formation on the wing leading edge.
 - Even **small** accumulations of ice on the wing leading edge can cause an increase in stall speed, and possibly a degradation in stall characteristics.
 - Visually inspect wing for ice accumulation if possible. Use WING INSP light at night

NOTE: Select a suitable landing field with a glidepath angle of 3.5 degrees or less.

Descent Checks:

1. Pressurization LNDG ALT set
2. L and R ENG ANTI-ICE switches As required

Transition Level (or FL 180) Checks:

3. Altimeters Set



ICE & RAIN PROTECTION

Wing Anti-Ice Failure Landing (Cont)

4. L and R LANDING light switches On
5. Passenger brief/cabin Check Complete
6. SMKG/BELTS switch SMKG/BELTS
7. Fuel quantities and balance Check
8. Airspeed Increase to V_{MO}/M_{MO} if possible to disperse ice

Approach Checks:

9. APU and Bleeds Set
10. Final approach speed $V_{REF} + 25$
11. Normal actual landing distance Multiply by:
1.55 without thrust reversers
1.45 with thrust reversers

Effectivity:

If Autothrottle installed:

CAUTION: Autothrottle will not arm RETARD mode at 200 feet AGL if FLAPS are not at 30 degrees, AT RETARD INHIBIT (C) will post, and Autothrottle will not retard thrust levers at 50 feet AGL.

12. ROAAS (if installed) As required

NOTE: – For aircraft with ROAAS installed, ROAAS should be selected OFF when landing on an RCC 6 runway with a length shorter than the increased actual landing distance plus 2,000 ft (600 m).
– ROAAS should be selected OFF when landing on a runway with RCC less than 6.

13. FLAPS TAWS WARN OFF
14. Approach setup and crew briefing Complete
15. L and R HYDRAULIC PUMP switches AUTO

Before Landing Checks:

16. LANDING GEAR switch DN
17. N LDG/TAXI light switch On
18. FLAPS 20
19. Autothrottle (if installed) Disengage
prior to 200 feet AGL

— END —

LANDING GEAR, WHEEL & BRAKE SYSTEM**CPLT BRAKE FAULT (C)**

1. Use the pilot's brakes.

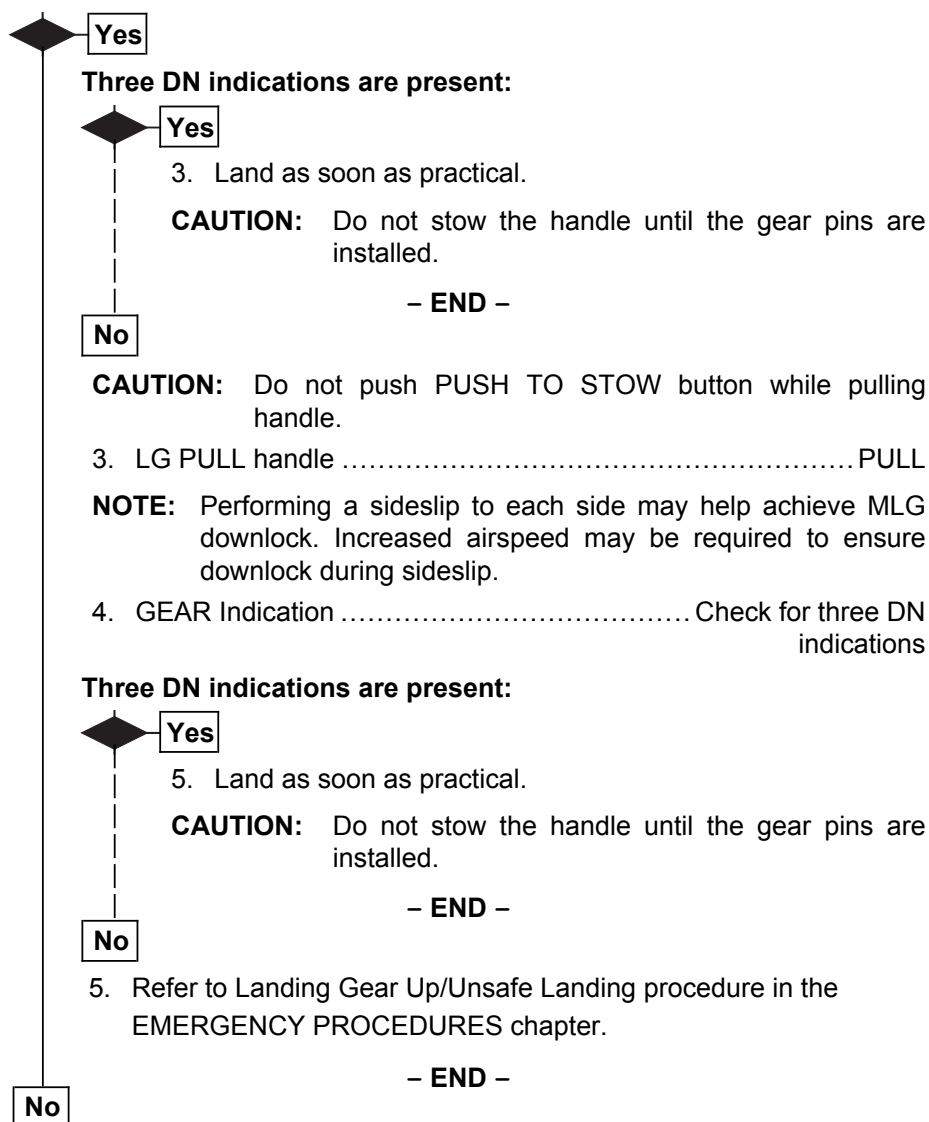
————— **END** —————

GEAR DISAGREE (C)

1. Airspeed 250 KIAS maximum
2. LANDING GEAR switch DN

NOTE: Ensure landing gear switch is firmly in the "DN" position.

If CAS remains with the landing gear selected down:





LANDING GEAR, WHEEL & BRAKE SYSTEM

GEAR DISAGREE (C) (Cont)

All landing gear are down (three DN indications) :



Yes

3. Land as soon as practical.

CAUTION: Do not stow the handle until the gear pins are installed.

– END –

No

Combined with WOW FAIL (C)



Yes

All landing gear are down as confirmed by control tower:



Yes

3. Land as soon as practical.

CAUTION: Do not stow the handle until the gear pins are installed.

– END –

No

3. Refer to Landing Gear Up/Unsafe Landing procedure in the EMERGENCY PROCEDURES chapter.

— END —

GEAR SYS FAIL (C)

1. Airspeed 250 KIAS maximum
2. LANDING GEAR switch DN
3. GEAR indication Check for three DN indications

All landing gear are down (three DN indications):



Yes

4. Land as soon as practical.

– END –

No

GEAR SYS FAIL (C) (Cont)

4. LG PULL handle PULL

5. GEAR indication Check for three DN indications

CAUTION: Do not stow the handle until the gear pins are installed.

No

END

END



LANDING GEAR, WHEEL & BRAKE SYSTEM

INBD BRAKE PRESS LO (C)

1. If less than 60 minutes has elapsed from takeoff, operate with landing gear extended for 15 minutes prior to landing (to ensure cool brakes).
2. Normal actual landing distance Multiply by:
1.60 without thrust reversers
1.45 with thrust reversers

WARNING: Maximum brake energy may be exceeded for a landing weight above MLW or when landing at an airport pressure altitude of 6000 ft and above. In this situation, consider reducing weight or land at an alternate airport.

3. ROAAS (if installed) As required

NOTE: ROAAS should be selected OFF when landing on a runway with RCC less than 6.

————— **END** —————

INBD BRAKES FAIL (C)

1. If less than 60 minutes has elapsed from takeoff, operate with landing gear extended for 15 minutes prior to landing (to ensure cool brakes).
2. Normal actual landing distance Multiply by:
1.60 without thrust reversers
1.45 with thrust reversers

WARNING: Maximum brake energy may be exceeded for a landing weight above MLW or when landing at an airport pressure altitude of 6000 ft and above. In this situation, consider reducing weight or land at an alternate airport.

3. ROAAS (if installed) As required

NOTE: ROAAS should be selected OFF when landing on a runway with RCC less than 6.

————— **END** —————

NOSE GEAR DOOR (C)

1. Airspeed 250 KIAS maximum
2. Land as soon as practical.

————— **END** —————

END



LANDING GEAR, WHEEL & BRAKE SYSTEM

OUTBD BRAKE PRESS LO (C)

1. If less than 60 minutes has elapsed from takeoff, operate with landing gear extended for 15 minutes prior to landing (to ensure cool brakes).
2. Normal actual landing distance Multiply by:
1.60 without thrust reversers
1.45 with thrust reversers

WARNING: Maximum brake energy may be exceeded for a landing weight above MLW or when landing at an airport pressure altitude of 6000 ft and above. In this situation, consider reducing weight or land at an alternate airport.

3. ROAAS (if installed) As required

NOTE: ROAAS should be selected OFF when landing on a runway with RCC less than 6.

————— **END** —————

OUTBD BRAKES FAIL (C)

1. If less than 60 minutes has elapsed from takeoff, operate with landing gear extended for 15 minutes prior to landing (to ensure cool brakes).
2. Normal actual landing distance Multiply by:
1.60 without thrust reversers
1.45 with thrust reversers

WARNING: Maximum brake energy may be exceeded for a landing weight above MLW or when landing at an airport pressure altitude of 6000 ft and above. In this situation, consider reducing weight or land at an alternate airport.

3. ROAAS (if installed) As required

NOTE: ROAAS should be selected OFF when landing on a runway with RCC less than 6.

————— **END** —————

LANDING GEAR, WHEEL & BRAKE SYSTEM**PARK/EMER BRAKE ON (C)**

1. PARK/EMER BRAKE handle Stow

If message remains:

2. Normal actual landing distance Multiply by:
2.40 without thrust reversers
1.90 with thrust reversers
3. ROAAS (if installed) As required

NOTE: ROAAS should be selected OFF when landing on a runway with RCC less than 6.

4. Use normal brakes.

CAUTION: All four brakes may be locked and landing control will be affected.

————— **END** —————

PK/EMER BRK PRESS LO (C)

1. Normal brakes Apply until chocks are in

————— **END** —————

PLT BRAKE FAULT (C)

1. Use the copilot's brakes.

————— **END** —————

WOW FAIL (C)

1. ROAAS (if installed) OFF
2. Normal actual landing distance Multiply by 1.30

NOTE: Select the longest runway available with minimum turbulence and crosswind.

3. Autothrottle (if installed) Disengage

After touchdown:

4. FLIGHT SPOILERS EMER
5. Directional control Maintain with differential braking

CAUTION: Normal brakes may be inoperative below 10 knots.

6. PARK/EMER BRAKE handle Apply below 10 knots

————— **END** —————



LANDING PROCEDURES

Single Engine Landing

Descent Checks:

1. Pressurization LNDG ALT set
2. WING ANTI-ICE switch As required
3. L or R ENG ANTI-ICE switches As required

Transition Level (or FL 180) Checks:

4. Altimeters Set
5. L and R LANDING light switches On
6. Passenger Brief/Cabin Check Complete
7. SMKG/BELTS switch SMKG/BELTS
8. Fuel quantities and balance Check

Approach Checks:

9. APU and Bleeds Set
10. Final approach speed V_{REF}
11. Normal actual landing distance Multiply by:
1.15 without thrust reversers
1.10 with thrust reversers
12. ROAAS (if installed) As required

NOTE: – For aircraft with ROAAS installed, ROAAS should be selected OFF when landing on an RCC 6 runway with a length shorter than the increased actual landing distance plus 2,000 ft (600 m).
– ROAAS should be selected OFF when landing on a runway with RCC less than 6.

13. Approach setup and crew briefing Complete
14. RA MIN or BARO MIN Set
15. MIN ALERT Set
16. L and R HYDRAULIC PUMP switches AUTO

Before Landing Checks:

17. LANDING GEAR switch DN
18. FLAPS 30
19. GEAR indication Check
20. L LANDING, N LDG/TAXI, and R LANDING
light switches On

LANDING PROCEDURES**Single Engine Landing (Cont)****After landing:**

21. Applicable thrust reverser As required, limit to maintain directional control

NOTE: Do not deploy the thrust reverser on the inoperative engine.

———— **END** ————

Wing Anti-Ice Failure Landing

- WARNING:**
- Approach low speed flight with care so that detection of abnormal flying qualities can be obtained. Increased buffet may indicate ice formation on the wing leading edge.
 - Even **small** accumulations of ice on the wing leading edge can cause an increase in stall speed, and possibly a degradation in stall characteristics.
 - Visually inspect wing for ice accumulation if possible. Use WING INSP light at night

NOTE: Select a suitable landing field with a glidepath angle of 3.5 degrees or less.

Descent Checks:

1. Pressurization LNDG ALT set
2. L and R ENG ANTI-ICE switches As required

Transition Level (or FL 180) Checks:

3. Altimeters Set
4. L and R LANDING light switches On
5. Passenger brief/cabin Check Complete
6. SMKG/BELTS switch SMKG/BELTS
7. Fuel quantities and balance Check
8. Airspeed Increase to V_{MO}/M_{MO} if possible to disperse ice

Approach Checks:

9. APU and Bleeds Set
10. Final approach speed $V_{REF} + 25$
11. Normal actual landing distance Multiply by:
- 1.55 without thrust reversers
- 1.45 with thrust reversers



LANDING PROCEDURES

Wing Anti-Ice Failure Landing (Cont)

12. ROAAS (if installed) As required

- NOTE:**
- For aircraft with ROAAS installed, ROAAS should be selected OFF when landing on an RCC 6 runway with a length shorter than the increased actual landing distance plus 2,000 ft (600 m).
 - ROAAS should be selected OFF when landing on a runway with RCC less than 6.

13. FLAPS TAWS WARN OFF

14. Approach setup and crew briefing Complete

15. RA MIN or BARO MIN Set

16. MIN ALERT Set

17. L and R HYDRAULIC PUMP switches AUTO

Before Landing Checks:

18. LANDING GEAR switch DN

19. L LANDING, N LDG/TAXI, and R LANDING
light switches On

20. FLAPS 20

————— **END** —————

MISCELLANEOUS SYSTEMS

EMER LIGHTS OFF (C)

1. EMER LTS switchARM

————— **END** —————

EMER LIGHTS ON (C)

The cabin emergency lights are on.

————— **END** —————

**POWERPLANT****L (R) ENG DSPL MISCOMP (C)**

1. L DISPLAYS switch PFD REV

L (R) ENG DSPL MISCOMP (C) extinguishes:**Yes**

2. L DISPLAYS switch Leave in PFD REV

- END -**No**

2. L DISPLAYS switch NORM
The left MFD is not corrupting the engine data. One of the other displays is.

END**L (R) ENGINE FLAMEOUT (C)**

1. Autothrottle (if installed) Disengage
2. Affected engine thrust lever IDLE

If engine does not auto restart:

3. Refer to Engine Shutdown In Flight procedure, this section.

END**ENGINES FUEL BYPASS (C)**

1. L and R FUEL PUMP switches ON
2. Land as soon as possible.

END**L (R) ENGINE VIBRATION (C)****VIB (EI icon)****During icing conditions:**

1. Autothrottle (if installed) Disengage
2. Affected thrust lever Increase above 70% N_1 , then as desired

CAUTION: If condition persists, do not engage Autothrottle.

3. If ENGINE VIBRATION (C) persists, go to During Non-Icing Conditions procedure below.

- END -

POWERPLANT**L (R) ENGINE VIBRATION (C)****VIB (EI icon) (Cont)****During non-icing conditions:**

1. Engine instruments Monitor for abnormal indications (oil temperature/pressure, N_1 , ITT and N_2) or unusual sounds or vibrations.

If ENGINE VIBRATION CAS remains on for more than 30 seconds and if conditions permit:

2. Autothrottle (if installed) Disengage
3. Respective Thrust lever Adjust

CAUTION: If condition persists, do not engage Autothrottle.

NOTE: Engine shutdown is not recommended unless there are other indications of severe engine abnormalities.

————— **END** —————

L (R) ENG FUEL SOV FAIL (C)**If affected engine fuel SOV has failed to close when commanded closed:**

1. Affected ENGINE RUN switch OFF
2. Refer to Engine Shutdown In Flight procedure, this section.

————— **END** —————

L (R) ENG OIL PRESS HIGH (C)

1. Autothrottle (if installed) Disengage
2. Affected thrust lever Reduce

CAUTION: If condition persists, do not engage Autothrottle.

————— **END** —————

L (R) ENG OIL TEMP HIGH (C)

1. Autothrottle (if installed) Disengage
2. Affected thrust lever Reduce

CAUTION: If condition persists, do not engage Autothrottle.

NOTE: Upon reduction of engine power, the oil temperature may rise initially due to a reduction in fuel flow through the Fuel Heater Oil Cooler.

3. OIL TEMP Monitor

**POWERPLANT****L (R) ENG OIL TEMP HIGH (C) (Cont)****OIL TEMP remains high:**

4. Affected engine thrust lever IDLE
5. Land as soon as practical.

– END –**No**

4. Continue flight.

END**L (R) FADEC FAIL (C)****If engine shutdown:**

1. Refer to Engine Shutdown In Flight procedure, this section.

If engine decelerates to idle:

1. Autothrottle (if installed) Disengage
2. Affected engine thrust lever IDLE

CAUTION: If condition persists, do not engage Autothrottle.

3. Land as soon as practical. Refer to Single–Engine Landing procedure, this section.

If engine continues to operate:

1. Avoid rapid thrust lever movements. Expect deteriorated engine response.
2. Engine instruments Monitor

CAUTION: If condition persists, do not engage Autothrottle.**END****IGN (EI icon) (C)**

One or both ignitor channels have failed.

1. Engine starts will not be possible if both channels have failed.

END

POWERPLANT**Effectivity:***If Autothrottle installed:***AT RETARD INHIBIT (C)**

NOTE: Below 200 feet AGL, AT RETARD INHIBIT (C) may post if autothrottle engaged and aircraft not in landing configuration. Disengaging the autothrottle will clear the message. The autothrottle can be re-engaged once the aircraft is above 200 feet AGL.

CAUTION: Autothrottle will not arm RETARD and will not reduce the thrust levers to idle at 50 feet AGL.

1. Autothrottle Disengage
2. Thrust levers Position manually

————— **END** —————

L (R) REVERSER FAIL (C)

1. Affected thrust reverser Do not use

————— **END** —————

L (R) START ABORTED (C)

1. Affected engine RUN switch OFF
2. Affected STARTER switch CRANK, hold for 30 seconds

If conditions warrant, another start may be initiated:

3. Affected engine RUN switch RUN
4. Affected STARTER switch START and release

————— **END** —————

L (R) STARTER FAIL (C)**GROUND:**

If the message comes on during start:

1. Affected engine RUN switch OFF

If the message comes on any other time:

1. Continue.

IN FLIGHT:

If attempting an airstart:

1. Refer to Engine Airstart – Windmill Airstart, this section.

If the message comes on any other time:

1. Continue.

————— **END** —————

**POWERPLANT****L (R) STARTER FAIL ON (C)****GROUND:**

1. Affected engine RUN switch OFF
2. L, R, and APU BLEED switches OFF

IN FLIGHT:**L STARTER FAIL ON (C) is displayed.****Yes**

1. XBLEED switch Close
2. L BLEED switch OFF

- END -**No****R STARTER FAIL ON (C) is displayed.**

1. XBLEED switch Close
2. APU BLEED switch OFF
3. R BLEED switch OFF

END**Effectivity:***If Autothrottle installed:***AT (Amber FMA annunciation flashing on PFD)****“AUTOTHROTTLE”**

1. Autothrottle Disengage
2. Thrust levers Position Manually

END**Effectivity:***If Autothrottle installed:***OSPD (Amber FMA annunciation flashing on PFD)**

1. Airspeed Monitor

END**Effectivity:***If Autothrottle installed:***LIM (Amber FMA annunciation flashing on PFD)**

1. Reference speed/Vertical speed Adjust

END

POWERPLANT**Engine Shutdown In Flight**

1. Autothrottle (if installed) Disengage

Affected engine:

2. Thrust lever IDLE
3. Engine RUN switch OFF

- NOTE:**
1. The ENG FIRE switch should not be pushed unless a fuel or hydraulic leak is suspected.
 2. Autothrottle (if installed) may be re-engaged for the operative engine once the engine run switch for the affected engine is selected OFF.
4. Rudder trim As required
 5. Electrical load Reduce, within generator limits
 6. Applicable BLEED switch OFF
 7. XBLEED switch Open
 8. Applicable ENG ANTI-ICE switch Off
 9. Monitor fuel balance. Transfer as required.
 10. Transponder TA Only
 11. Land as soon as practical.
 12. Refer to Engine Airstart, this section, if applicable. Refer to Single-Engine Landing procedure, this section or Thrust Reverser Deployed Landing procedure, EMERGENCY PROCEDURES chapter, as appropriate.

————— **END** —————

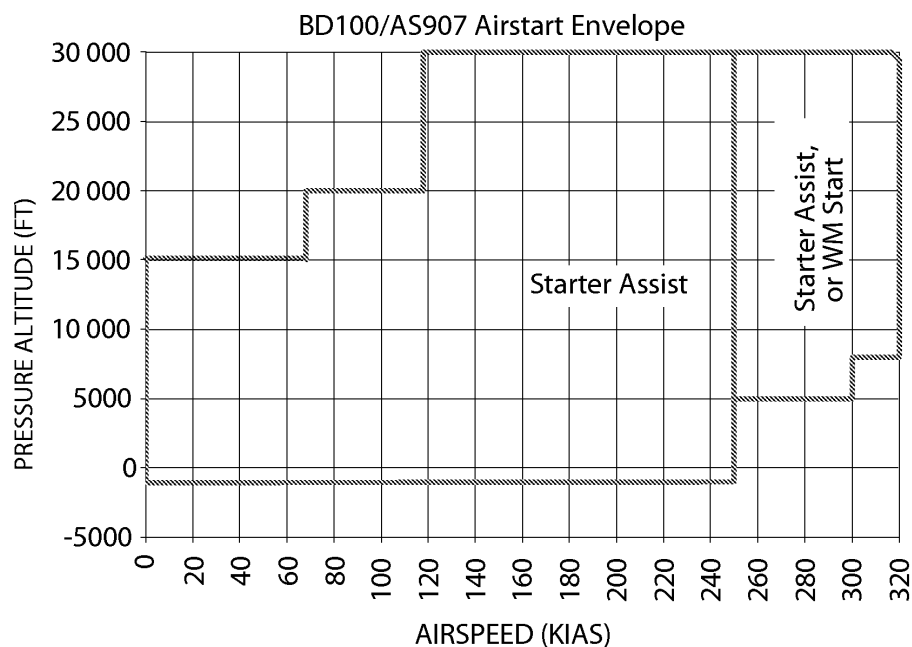


POWERPLANT

Engine Airstart

WARNING: Do not attempt an airstart following an engine failure which was accompanied by indications of internal engine damage or fire.

CAUTION: Do not attempt an airstart without an indication of N_1 rotation.



BEFORE START

Affected engine:

1. Make sure that the aircraft is within the appropriate Airstart Envelope as shown in figure above.
2. Fuel panel XFER switch Closed
3. Fuel panel PUMP switch Auto
4. ENG ANTI-ICE switch Off
5. BLEED switch OFF
6. Autothrottle (if installed) Disengage
7. Thrust lever IDLE
8. Conduct the following crossbleed, APU, or windmill assisted airstart.
9. If IGNITION switch is ON:
Affected RUN switch OFF for 3 seconds minimum.

POWERPLANT

Engine Airstart (Cont)

CROSSBLEED STARTER ASSISTED AIRSTART

1. BLEED pressure 32 minimum
2. Autothrottle (if installed) Disengage

Affected engine:

3. ENGINE RUN switch RUN
4. STARTER switch START and release
5. IGN and FUEL FLOW Check
6. ITT Check rise

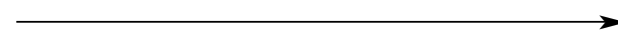
If no indication of light-off is obtained within:

**20 seconds (if engine has been windmilling for 2 minutes or less)
after STARTER switch-START, or**

**45 seconds (if engine has been windmilling for more than 2 minutes)
after STARTER switch-START:**

7. Affected ENGINE RUN switch OFF
8. Repeat a starter assisted airstart or refer to Engine Shutdown In Flight procedure, this chapter.

If engine started:

9. Go to AFTER START. 

APU BLEED STARTER ASSISTED AIRSTART (BELOW 20,000 FT)

1. L and R BLEED switches OFF
2. APU BLEED switch On
3. Autothrottle (if installed) Disengage

Affected engine:

4. ENGINE RUN switch RUN
5. STARTER switch START
6. IGN and FUEL FLOW Check
7. ITT Check rise

If no indication of light-off is obtained within:

**20 seconds (if engine has been windmilling for 2 minutes or less)
after STARTER switch-START, or**

**45 seconds (if engine has been windmilling for more than 2 minutes)
after STARTER switch-START:**

8. Affected ENGINE RUN switch OFF
 9. Repeat a starter assisted airstart or refer to Engine Shutdown In Flight procedure, this chapter.
- 

**POWERPLANT****Engine Airstart (Cont)**

If engine started:

10. Go to AFTER START. →

WINDMILL AIRSTART

ALTITUDE	MINIMUM N ₂
≤ 10,000 ft	6.0%
20,000 ft	7.1%
30,000 ft	8.2%

Affected engine:

1. ENGINE RUN switch RUN
2. IGN and FUEL FLOW Check
3. ITT Check rise

NOTE: Start may be as long as 3 minutes to idle.

If no indication of light-off is obtained within:

**20 seconds (if engine has been windmilling for 2 minutes or less)
after ENGINE RUN switch–RUN, or**

**45 seconds (if engine has been windmilling for more than 2 minutes)
after ENGINE RUN switch–RUN:**

4. Affected ENGINE RUN switch OFF
5. Repeat an airstart or refer to Engine Shutdown In Flight procedure, this chapter.

AFTER START ←

Affected Engine:

1. Engine instruments Check
2. GEN switch Check on
3. ENG ANTI-ICE switch As required
4. L and R, and APU BLEED switch(es) As required
5. Transponder TA/ RA

———— **END** ————



POWERPLANT

Single Engine Go-Around

1. Autopilot Disconnect with TO/GA button
2. Autothrottle (if installed) Disengage
3. Thrust lever TO
4. FLIGHT SPOILERS RETRACT
5. Pitch attitude Adjust as required to achieve V_{GA}

NOTE: Initially rotate toward flight director pitch guidance command, adjust pitch as required to maintain V_{GA} .

6. FLAPS selector 10
7. LANDING GEAR switch UP, after positive rate of climb is established
8. Climb at V_{GA} .

WARNING: It is prohibited to have the Autothrottle engaged during a single engine go-around until flaps are retracted and the aircraft has accelerated to en route climb speed.

9. When clear of obstacles, accelerate to $V_{GA} + 15$ and retract flaps.
10. Climb At en route climb speed
11. N LDG/TAXI light switch OFF
12. Applicable ENG ANTI-ICE OFF

————— **END** —————

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