



AIRPLANE FLIGHT MANUAL

SECTION III EMERGENCY AND ABNORMAL PROCEDURES

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CTA APPROVED

NOVEMBER 16, 1987

REV. 79 – FEBRUARY 20, 2003

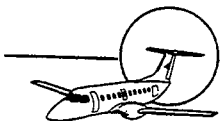


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ABNORMAL PROCEDURES (Continued)

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EMERGENCY PROCEDURES

INTRODUCTION

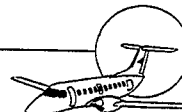
The following procedures have been established and are recommended by the airplane manufacturer for application in the event of an emergency condition.

The recommended procedures are presented as follows:

- a. The actions contained in a box are vital actions. They should be performed expeditiously and from memory to minimize hazards.
- b. The numbered actions should be performed in the order given.
- c. The other actions should be performed as soon as the conditions permit.

Crew members should silence any aural warning as soon as the cause of the warning is recognized. The three basic rules stated below apply to the majority of the emergencies and should be kept in mind by the crew:

1. Maintain airplane control.
2. Analyze the situation and take proper action.
3. Land as soon as practical or possible.



ENGINE FIRE

ENGINE FIRE IN FLIGHT

- FIRE ENG/WW or FIRE PIPE ZONE lights illuminated on the fire control panel.
- WARNING light flashing.

Identify the affected engine and proceed:

- | | |
|--------------------------|---------------------|
| 1. Power Lever | FLT IDLE |
| 2. Condition Lever | FEATHER, THEN CHECK |

In case no feathering is observed:

- | | |
|------------------------------|--|
| 3. ELEC FEATHER Switch | ON, THEN CHECK
PROPELLER FEATHERING |
|------------------------------|--|

After propeller feathering, if fire is confirmed or warning remains:

- | | |
|--------------------------|-------------------------------------|
| 4. Condition Lever | FUEL CUT OFF |
| 5. Fire Handle | SQUEEZE AND PULL
(DO NOT ROTATE) |

- CAUTION:**
- DO NOT DISCHARGE THE EXTINGUISHER AGENTS IF FIRE/OVERHEAT HAS OCCURRED IN TAIL PIPE ZONE.
 - IF DET INOP ENG/WW OR DET INOP PIPE ZONE LIGHT ILLUMINATES SIMULTANEOUSLY WITH ENGINE FAILURE, APPLY ENGINE FIRE PROCEDURE.

Fuel Shutoff Valve (affected engine)	CHECK CLOSED INDICATION
--	----------------------------

If fuel shutoff valve is not confirmed closed:

Crossfeed	CLOSE
Fuel Pumps (affected engine)	OFF

In case fire/overheat has occurred in engine or wheelwell and warning remains:

Agent A (affected engine)	DISCHARGE
---------------------------------	-----------

Wait 30 seconds.

If warning still remains:

Agent B (affected engine)	DISCHARGE
---------------------------------	-----------

Main and Auxiliary Generators (affected engine)	OFF
---	-----

AUTO FEATHER Switch	OFF
---------------------------	-----

Synchrophasing	OFF
----------------------	-----

Fuel Pumps (affected engine)	AS REQUIRED
------------------------------------	-------------

Electric Hydraulic Pump (affected engine)	AS REQUIRED
---	-------------

The electric hydraulic pump should be turned on or off as required for operation of each related system.

In case of right engine shutdown, do not keep the electric hydraulic pump in AUTO position, in order to avoid rudder pedal bumps above 120 KIAS.



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ENGINE FIRE (Continued)

Engine Bleed (affected engine)	CLOSE
Electrical Load (if APU generator is not operating)	MONITOR
APU (if available)	START
APU starting is not possible if the right engine is not operating and crossfeed is closed.	
APU Generator	ON
APU Bleed	AS REQUIRED
Bleed and Pack (operative engine)	AS REQUIRED
This action should be done in order to obtain more efficiency in the operative engine.	

- CAUTION:** • ABOVE 12000 FT, RAPID MOVEMENT OF THE CONDITION LEVER OF THE OPERATIVE ENGINE TOWARD MAX RPM MAY LEAD TO A COMPRESSOR STALL, IF THE RESPECTIVE POWER LEVER IS NOT AT FLT IDLE.
- DO NOT ATTEMPT TO RESTART THE ENGINE.
 - DO NOT SET POWER LEVER BELOW FLT IDLE IN FLIGHT.

- NOTE:** • Monitor fuel imbalance and use crossfeed operation, if necessary.
- For further pump operation, it is necessary to turn the electrical feathering switch OFF, then ON.
- The pump may be operated for no more than six consecutive operations.

Land at the nearest suitable airport.

ENGINE FIRE ON GROUND

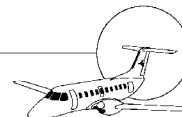
Identify the affected engine and proceed:

1. Condition Lever	FUEL CUT OFF
2. Fire Handle	SQUEEZE AND PULL
3. Extinguisher Agents	USE AS REQUIRED
4. ATC	NOTIFY

Avoid stopping the airplane with the engine on fire upwind; otherwise, the fire may penetrate the cabin when the emergency doors are opened for emergency evacuation.

If the fire is detected during engine starting:

START Switch	ABORT
IGNITION Switch	OFF
Fuel Pumps (affected engine)	OFF

**PROPELLER OVERSPEED****CAUTION:** DO NOT SET POWER LEVER BELOW FLT IDLE IN FLIGHT.

- | | |
|--|------------------|
| 1. Power Lever (affected engine) | FLT IDLE |
| 2. Condition Lever (affected engine) | FEATHER |
| 3. Flaps | 15° |
| 4. Airspeed | 125 KIAS MINIMUM |

NOTE: The power lever may be reduced to avoid airplane adverse controllability condition.

Propeller CHECK FEATHERING

If the propeller does not feather:

With N_p at or below 120%:

ELEC FEATHER Switch ON

With N_p above 120%:**NOTE:** With N_p above 120%, both mechanical and electrical feathering systems may not have sufficient authority to feather the propeller.Therefore, it is necessary to reduce N_p to or below 120% in order to obtain satisfactory feathering action. N_p reduction will be achieved by reducing the airspeed.

Airspeed	REDUCE
Flaps	AS REQUIRED (OBSERVE TABLE BELOW)

FLAPS	MINIMUM AIRSPEED
15°	125 KIAS
25°	115 KIAS
45°	110 KIAS

NOTE: With the flaps extended beyond 15° and landing gear up, the aural and visual landing gear warnings will be activated and cannot be cancelled.

Power Lever (operative engine)	AS REQUIRED
N_p	CHECK BELOW 120%
ELEC FEATHER Switch	ON



AIRPLANE FLIGHT MANUAL

PROPELLER OVERSPEED (Continued)

NOTE: The electrical auxiliary feathering pump will be automatically turned off 20 seconds after the electrical feathering switch is set to ON. Therefore, for further pump operation, it is necessary to turn the electrical feathering switch to OFF, then ON. If the affected engine is not running, it is necessary to carry out an engine dry motoring to replenish the auxiliary electrical pump oil tank. The pump may be operated for no more than six consecutive operations.

If even so the propeller still does not feather, proceed:

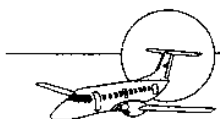
Airspeed 125 TO 130 KIAS
Flaps 15°

CAUTION: DO NOT SHUT THE AFFECTED ENGINE DOWN UNLESS ADDITIONAL FAILURES WARRANT SHUTDOWN.

Land at the nearest suitable airport as using ONE ENGINE INOPERATIVE APPROACH AND LANDING procedure and maintain V_{REF} 25 until landing is assured.

When the propeller feathers:

Condition Lever FUEL CUT OFF
Complete PRECAUTIONARY ENGINE SHUTDOWN procedure prior to landing.



AIRPLANE FLIGHT MANUAL

CABIN FIRE OR SMOKE

- | | |
|--|------------------|
| 1. Crew Oxygen Masks | DON, SELECT 100% |
| 2. Recirculation and Gasper Fans | OFF |
| 3. Smoke Goggles | DON |
| Select EMERG as required to clear the mask and smoke goggles or wear the full face mask. | |
| 4. Crew Communication | ESTABLISH |

Use portable fire extinguisher, as necessary.

NOTE: Crew member should use the crew portable oxygen cylinder and don the oxygen mask and smoke goggles or full face mask while extinguishing fire.

To clear the cockpit and cabin refer to SMOKE EVACUATION procedure.
Whether or not smoke has dissipated, if it cannot be visibly verified that the fire has been extinguished following fire suppression and/or smoke evacuation procedures, land as soon as possible.

SMOKE EVACUATION

AIRPLANE PRESSURIZED

Manual Controller Selector 1 O'CLOCK

Wait 15 seconds to allow electropneumatic outflow to reach its neutral position, thus avoiding a sudden differential pressure increase.

Mode Selector Switch MAN

Manual Controller Selector AS REQUIRED

Between 1 o'clock and UP position, cabin depressurization rate varies from 0 to 2500 ft/min.

Select in this range a position which will allow proper smoke evacuation.

NOTE: In manual control mode the 13000 ± 1500 ft maximum cabin altitude protection is by-passed and may be exceeded. However, in DUMP mode this limit is still effective.

To evacuate the smoke faster:

Mode Selector Switch DUMP

NOTE: • PAX OXYGEN switch must be set to MAN position if cabin altitude exceeds 14000 ft and PAX OXYGEN ON light is not illuminated.

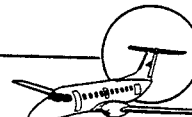
• In the event of loss of the DC bus 2, the DUMP mode will be inoperative.

Emergency Descent PERFORM

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NOVEMBER 16, 1987

REV. 69 – JULY 26, 2001

AIRPLANE FLIGHT MANUAL**CABIN FIRE OR SMOKE (Continued)****AIRPLANE UNPRESSURIZED**

Ram Air Inlet Switch OPEN

NOTE: In the event of loss of the emergency DC BUS 2, ram air inlet will be inoperative.

Packs OFF

Cockpit Windows (Recommended below 140 KIAS) OPEN

NOTE: If not previously performed, set the Mode Selector Switch to DUMP position and the Manual Controller Selector to UP position.

WHEN SMOKE OR FIRE IS SUSPECTED TO COME FROM THE AIR CONDITIONING SYSTEM

CAUTION: SMOKE IN THE PASSENGER CABIN AND/OR COCKPIT COMING FROM THE AIR CONDITIONING SYSTEM MAY BE AN INDICATION OF AN ENGINE INTERNAL FIRE.

NOTE: Engine internal fire will also be characterized by abnormal engine indications like these: a) T_6 increase; b) N_H fluctuation then decrease and; c) N_L decrease until complete loss of indication. These parameters shall be considered as a reference only, since other symptoms could be observed.

Closely monitor the T_6 , N_H and N_L indications of both engines.

If abnormal engine indications are observed:

Suspect Engine SHUT DOWN

Perform the PRECAUTIONARY ENGINE SHUTDOWN procedure.

Land as soon as possible.

If no abnormal engine indications are observed:

Suspect Bleed CLOSE

If smoke stops or decreases:

Crossbleed OPEN

Altitude AT OR BELOW MAX
OPERATING ALTITUDE

If smoke does not decrease:

Crossbleed CLOSE

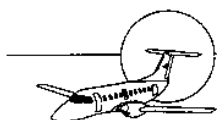
Affected Pack OFF

If this procedure does not eliminate smoke, reverse bleeds.

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NOVEMBER 16, 1987

REV. 22 - DECEMBER 02, 1991



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CABIN FIRE OR SMOKE (Continued)

WHEN SMOKE OR FIRE IS SUSPECTED TO COME FROM THE ELECTRICAL SYSTEM

APU Generator (if available)	OFF
Auxiliary Generators 1 and 2	OFF
Electrical Emergency Switch	EMERG
Main Generators 1 and 2	OFF

These procedures are intended to leave only the AC and DC emergency buses energized, supplied by the battery. All the other buses are deenergized to allow the fire source isolation.

Wait at least 1 minute to determine whether to follow steps A or B below:

A. Smoke stops or decreases:

Auxiliary Generator 1	ON
-----------------------------	----

If smoke recurs:

Auxiliary Generator 1	OFF
RADIO MASTER NORMAL Switch	OFF

These procedures are intended to isolate the smoke source in the Auxiliary DC bus, Radio Master DC buses or 115 or 26 V AC essential buses.

Main Generators 1 and 2	ON
Electrical Emergency Switch	NORMAL

NOTE: Only the standby horizon, magnetic compass, RMIs and ADF are available for attitude and navigation references.

Land as soon as possible.

If smoke does not reappear:

Auxiliary Generator 2	ON
-----------------------------	----

In this condition, the battery will be continuously charged.

Altitude	MOCA, MEA OR 10000 FT, WHICHEVER IS HIGHER
----------------	---

The engine bleed and air conditioning packs shutoff valves will close due to loss of electrical power.

The cabin will slowly depressurize through leakage.

Land as soon as possible.

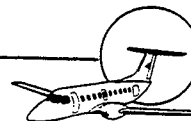
NOTE: For airplanes Post-Mod. SB 120-33-0033 or S/N 120.273 and on:

- The emergency lights will be automatically turned on when the electrical system is in emergency operating mode.
- The emergency lights must be turned off, in order to save the emergency lights batteries.
- The emergency lights must be turned on during approach or when necessary.

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CABIN FIRE OR SMOKE (Continued)

B. Smoke continues:

Probably the source of smoke or fire is located in the AC or DC emergency buses.

Prepare for the loss of emergency DC buses.

Bus Tie 1 Switch OFF

Main Generator 2 ON

Central bus, DC bus 2, DC bus 3 and Radio Master DC buses 2A, 2B and 2C will be energized.

Electrical Emergency Switch NORMAL

Emergency DC buses will be deenergized.

If smoke disappears:

Auxiliary Generators 1 and 2 ON

Altitude AT OR BELOW 25000 FT

The left engine bleed and left air conditioning pack shutoff valves will close due to loss of electrical power. As a consequence, the airplane altitude is limited to 25000 ft.

Land as soon as possible, observing the following procedures:

Anti-Skid Switches OFF

The anti-skid system must be turned off in order to have the normal brake system available.

Brake with care since the tires may be blown out.

Landing Gear EXTEND BY FREEFALL

No landing gear downlock indication will be available.

After landing:

Airplane Directional Control USE DIFFERENTIAL
BRAKING TECHNIQUE

The steering control will be lost.

If smoke persists:

Prepare for the loss of all AC buses.

Inverters 2 and 1 OFF

The AC system will be deenergized.



AIRPLANE FLIGHT MANUAL

CABIN FIRE OR SMOKE (Continued)

NOTE: • Turn off inverter 2 prior to inverter 1.

- For airplanes equipped with Collins EFIS equipment, all attitude and navigation instruments are available, except for the compass card and the VOR information on the RMIs.
- For airplanes equipped with Bendix EFIS equipment, only standby horizon and magnetic compass are available for attitude and navigation references. On the EHSI, the compass card and the To/From indicator stop in the last presented position. Only the VOR deviation information, presented by the course deviation bar, is reliable on the EHSI.

Main Generator 1 ON

Bus Tie 1 Switch ON

Auxiliary Generators 1 and 2 ON

All DC systems are energized.

APU (if available) AS REQUIRED

Land as soon as possible.

TOILET FIRE OR SMOKE

- Alarm light illuminated on the toilet smoke detector panel (if installed).
- SMOKE light illuminated on the multiple alarm panel.
- WARNING light flashing.

Recirculation and Gasper Fans OFF

Flight Attendant Communication ESTABLISH

Communicate the flight attendant to inspect the toilet and to extinguish the fire if necessary.

Portable Fire Extinguisher USE IF REQUIRED

SMOKE EVACUATION Procedure AS REQUIRED

If required to clear the cabin and cockpit, perform the SMOKE EVACUATION procedure.

No Smoking and Fasten Belts AS REQUIRED

AIRPLANE FLIGHT MANUAL**CLASS-C BAGGAGE COMPARTMENT FIRE OR SMOKE**

- WARN light illuminated on the baggage smoke/fire extinguishing panel.
- SMOKE light illuminated on the multiple alarm panel.
- WARNING light flashing.

1. Baggage Fire Extinguishing Button (if installed) PRESS

Recirculation and Gasper Fans OFF

Altitude MAINTAIN

Maintain the current altitude as long as possible so that fire extinguishing agent concentration will not decrease due to venting as airplane descends.

Land as soon as possible.

- NOTE:**
- The extinguishing agent duration is approximately 60 minutes.
 - Advise ground crew of possible presence of Halon vapors and smoke trapped in the compartment.



AIRPLANE FLIGHT MANUAL

AUXILIARY POWER UNIT FIRE (IF INSTALLED)

- FIRE light illuminated on the APU fire control panel.
- FIRE APU light illuminated on the multiple alarm panel.
- WARNING light flashing.
- Fire Bell.

1. APU SHUTOFF/EXTG Switch	CLOSE
----------------------------------	-------

APU Bleed	CLOSE
Air Conditioning	SET
APU Fuel Shutoff Valve	CHECK CLOSED INDICATION

Check if APU shutoff valve is confirmed close or not to determine whether to follow steps A or B below:

A. APU fuel shutoff valve is confirmed closed:

If FIRE APU warning remains illuminated:

APU SHUTOFF/EXTG Switch	EXTG
-------------------------------	------

Agent discharge (empty bottle) is indicated by the APU bottle INOP light on.

END

B. APU fuel shutoff valve is not confirmed closed:

APU Master Switch	OFF
APU Fuel Shutoff Valve	CHECK CLOSED INDICATION

The APU fuel shutoff valve CLOSED light will be illuminated for 10 seconds only.

If APU fuel shutoff valve is confirmed closed and FIRE APU warning remains illuminated:

APU SHUTOFF/EXTG Switch	EXTG
-------------------------------	------

If APU fuel shutoff valve is not confirmed closed:

Crossfeed	CLOSE
Right Fuel Pumps	OFF
Power Lever Right Engine	FLT IDLE
Condition Lever Right Engine	FEATHER, THEN CHECK

In case no feathering is observed:

ELEC FEATHER Switch	ON, THEN CHECK PROPELLER FEATHERING
Condition Lever Right Engine	FUEL CUT OFF
APU Generator	OFF

**AUXILIARY POWER UNIT FIRE (IF INSTALLED) (Continued)**

Remaining Generators Load MONITOR

The electrical load must be reduced to limit.

If fire remains illuminated:

APU SHUTOFF/EXTG Switch EXTG

CAUTION: DO NOT ATTEMPT TO RESTART THE APU.

After the APU fire is extinguished:

Precautionary Engine Shutdown COMPLETE

Land at the nearest suitable airport.

END



AIRPLANE FLIGHT MANUAL

LOSS OF ALL ENGINE GENERATORS

- All electrical panel alarm lights illuminated, except: EMERG BUS OFF, Emergency 115 V AC BUS OFF, 26 V AC BUS OFF and Inverter 2 INOP lights.
- ELEC light illuminated on the multiple alarm panel.
- CAUTION light flashing.

If APU is available:

Electrical Load REDUCE

The electrical load must be reduced by switching off the electric hydraulic pumps, electrical anti-ice system, exterior/interior lights, normal radio master and any unnecessary electrical equipment.

Main Generators Switches OFF

Electrical Emergency Switch NORMAL

CAUTION: THE SWITCHES OF THE INOPERATIVE MAIN GENERATORS MUST BE SET TO OFF AND THE ELECTRICAL EMERGENCY SWITCH MUST BE SET TO NORMAL TO PERMIT APU AIRSTART.

APU START

APU Generator ON

Electrical Load RESTORE TO LIMIT

If APU is not available:

Electrical Emergency Switch EMERG

Electrical Load REDUCE

Altitude MOCA, MEA OR 10000 FT,
WHICHEVER IS HIGHER

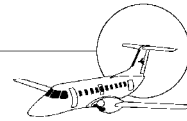
The engine bleed shutoff valves will close due to loss of electrical power. Consequently, the air conditioning packs become inoperative.

The cabin will slowly depressurize through leakage.

CAUTION: THE ANTI-SKID SYSTEM WILL BE INOPERATIVE. REFER TO SUPPLEMENT 8 FOR LANDING PROCEDURE.

NOTE: • If generators cannot be reset, power will be supplied by battery for approximately 30 minutes.

- Refer to magnetic compass calibration card for electrical emergency.
- The flaps may be operated by the override switches. However, this is not recommended because the flaps asymmetry protection and all flaps position indications are lost. In case the decision of using the override switches is taken, the flaps should only be set to fully down position by holding each of the override switches at a time pressed for at least 15 seconds. After the flaps are set to fully down position, set the flap selector lever to 45°.

**LOSS OF ALL ENGINE GENERATORS (Continued)**

- For airplanes Post-Mod. SB 120-33-0033 or S/N 120.273 and on:
 - The emergency lights will be automatically turned on when the electrical system is in emergency operating mode.
 - The emergency lights must be turned off, in order to save the emergency lights batteries.
 - The emergency lights must be turned on during approach or when necessary.

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NOVEMBER 16, 1987

REV. 79 – FEBRUARY 20, 2003



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LOSS OF ALL ENGINE GENERATORS (Continued)

AVAILABLE INSTRUMENTS, CONTROLS AND EQUIPMENT WHEN BATTERY IS THE ONLY SOURCE OF ELECTRICAL POWER

EMERG DC BUS 1	EMERG DC BUS 2	HOT BATTERY BUS	115 V AC EMERG BUS	RELAY BOX EMERG DC BUS 2
<ul style="list-style-type: none"> – STICK PUSHER COMPUTER 1 – VOICE RECORDER (IF INSTALLED) – INVERTER 2 – BATT TEMP MONITOR – RADIO MASTER EMERG – EMERG DC BUS 1 OFF RELAY – LEFT FIRE DETECTION – LEFT FIRE DET. INOP. IND. – EXTG. BOTTLE A INOP. IND. – FLAP EMERG CONTROL – LEFT FRONT FUEL BOOSTER PUMP CONTROL – LEFT FRONT FUEL BOOSTER PUMP – FUEL CROSSFEED IND. – FUEL CROSSFEED VALVE – PANEL ALARM LIGHTS 1 – ALARM LIGHTS CONTROL 1 – STEERING – AIR/GND POSITION LEFT – EMERGENCY LIGHTS – ALTIMETER 1 – STBY HORIZON – RMI 1 – OXYGEN SYSTEM – BETA 1 – LEFT IGNITION – EEC 1 – EEC 1 IND. – SCU 1 – TORQUE INDICATOR 1 – T₆ INDICATOR ENG 1 – FEATHER SOLENOID 1 – LANDING GEAR IND. B – L.G. DOWN CONTROL OVERRIDE – LEADING EDGES TIMER 1 – LEFT ENG. AIR INLET DEICING – SHAKER 1 – RUDDER GREEN SYSTEM CONTROL – RUDDER GREEN SYST. IND. – AIRSPEED INDICATOR 1 – INTERPHONE 1 – AC BUS TRANSF. IND. – AC BUS TRANSF. 2 – PRESSURIZATION ALARM – VHF 1 (COLLINS CONFIGURATION) – ATTENDANT HANDSET/OBSERVER INTERPHONE (*) – PUBLIC ADDRESS (*) 	<ul style="list-style-type: none"> – AIR COND. VENT VALVE – EMERG DC BUS 2 OFF RELAY – EXTG. BOTTLE B INOP. IND. – APU FIRE DETECTION – APU FIRE EXTINGUISHING – RIGHT FRONT FUEL BOOSTER PUMP CONTROL – RIGHT FRONT FUEL BOOSTER PUMP – PANEL ALARM LIGHTS 2 – ALARM LIGHTS CONTROL 2 – LANDING GEAR CONTROL – LANDING GEAR IND. A – AIR/GND POSITION NOSE – AIR/GND POSITION RIGHT – LANDING GEAR ALARM – BETA 2 – FEATHER SOLENOID 2 – RIGHT IGNITION – SCU 2 – EEC 2 – EEC IND. 2 – TORQUE INDICATOR 2 – T₆ INDICATOR ENG. 2 – BACK-UP POWER SUPPLY – APU FUEL SHUTOFF VALVE – APU FUEL SHUTOFF IND. – LEADING EDGES TIMER 2 – RIGHT ENG. AIR INLET DEICING – RIGHT FIRE DETECTION – INTERPHONE 2 – AIRSPEED INDICATOR 2 – RIGHT FIRE DET. INOP. IND. – RUDDER BLUE SYSTEM CONTROL – RUDDER BLUE SYST. IND. – BRAKE LIGHTS – PITOT/STATIC HEATER 1 – PITOT/STATIC HEATER 1 IND. – PAX SIGNS – ADS 3 – FLIGHT DATA RECORDER (FDAU/FDEP) 	<ul style="list-style-type: none"> – LEFT FUEL SHUTOFF VALVE – RIGHT FUEL SHUTOFF VALVE – LEFT FIRE EXTG. – RIGHT FIRE EXTG. – DC INDICATION 1 – DC INDICATION 2 – COURTESY LIGHT – AUTOTRANSFER – FORWARD ENTRY DOOR – GREEN HYDRAULIC SHUTOFF VALVE – BLUE HYDRAULIC SHUTOFF VALVE 	<ul style="list-style-type: none"> – FLIGHT DATA RECORDER (DFDR) – TAS – RAD ALT. 1 (BENDIX CONFIGURATION) <div>RELAY BOX EMERG DC BUS 1</div> <ul style="list-style-type: none"> – LEFT AUXILIARY FEATHER PUMP <div>RADIO MASTER EMERG DC BUS 1</div> <ul style="list-style-type: none"> – TRANSPONDER 1 – ADF 1 – VHF 1 (BENDIX CONFIGURATION) 	<ul style="list-style-type: none"> – RIGHT AUXILIARY FEATHER PUMP – LEFT LANDING LIGHT – FLOOD LIGHT

(*) APPLICABLE ONLY FOR AIRPLANES POST-MOD. SB 120-23-0038 OR S/N 120.216 AND ON.

**BATTERY OVERHEAT**

- BATT OVERHEAT light illuminated on the multiple alarm panel.
- WARNING light flashing.

1. PWR SELECT Switch OFF

Monitor system and land as soon as possible if battery temperature remains high.



AIRPLANE FLIGHT MANUAL

WINDSHIELD OVERHEAT

- LW/S or RW/S OVERHEAT lights illuminated on the multiple alarm panel.
- WARNING light flashing.

1. Respective Windshield Switch	OFF
---------------------------------------	-----

Remain clear of icing conditions.

If the light remains illuminated, continue normal flight, and after landing proceed:

Bus Tie 2 Switch	OFF
Main Generator 2 Switch	OFF
Auxiliary Generators 1 and 2 Switches	OFF

AIRPLANE FLIGHT MANUAL**FLIGHT WITH ALL ENGINES INOPERATIVE**

1. Airspeed	V_{FS} (OBSERVE TABLE BELOW)
-------------------	-----------------------------------

WEIGHT (KG)	AIRSPEED (KIAS)
8000	126
9000	132
10000	138
11000	144
12000	150

■ Electrical Emergency Transfer Switch	EMERGENCY
Electrical Load	REDUCE
Electric Hydraulic Pumps	OFF
Exterior/Interior Lights	AS REQUIRED
■ Ice Protection System	AS REQUIRED

With all engines inoperative, the flight characteristics of the airplane are not severely handicapped. The rudder control will be limited due to aerodynamics forces; however, small corrections can be made at low speeds and landing can be performed.

Under manual reversion mode, rudder system behaves like a fully mechanical system and no trimming devices will be available.

With all generators inoperative, the electrical system automatically reverts to the emergency condition if at least one main generator switch is set to ON.

As soon as possible electrical load must be reduced so as to save battery power. The Pitot Static 1 system is available and should be turned on if necessary.

If APU is available, it must be started and APU generator turned on.



AIRPLANE FLIGHT MANUAL

FLIGHT WITH ALL ENGINES INOPERATIVE (Continued)

If APU is available:

Main Generators	OFF
Electrical Emergency Switch	NORMAL
PWR SELECT Switch	BATT
Electrical Load	MINIMUM OF 22 VOLTS
Electrical Fuel Pump	AS REQUIRED
APU	START
APU Generator	ON

If situation permits, apply ENGINE AIRSTART procedure.

If engine cannot be restarted, apply the FORCED LANDING or DITCHING procedure to land with all engines inoperative.

NOTE: • For airplanes Post-Mod. SB 120-33-0033 or S/N 120.273 and on:

- The emergency lights will be automatically turned on when the electrical system is in emergency operating mode.
- The emergency lights must be turned off, in order to save the emergency lights batteries.
- The emergency lights must be turned on during approach or when necessary.
- In the event of an engine failure in icing conditions, maintain the engine failure airspeeds shown in Section V, Performance. The icing condition low speed alarm may activate as airspeed decreases below 160 KIAS.



AIRPLANE FLIGHT MANUAL

RAPID DEPRESSURIZATION

- | | |
|-----------------------------|-----------|
| 1. Oxygen Masks | DON |
| 2. Crew Communication | ESTABLISH |

Passenger Oxygen AS REQUIRED
PAX OXYGEN switch must be set to MAN position if cabin altitude exceeds 14000 ft and
PAX OXYGEN ON light is not illuminated.

Emergency Descent PERFORM, IF REQUIRED
NO SMOKING Switch ON

**EMERGENCY DESCENT**

- | | |
|---------------------------|--|
| 1. Power Levers | FLT IDLE |
| 2. Airspeed | THE LOWEST OF
V _{MO} OR 200 KIAS |
| 3. Landing Gear | DOWN |
| 4. Condition Levers | MAX RPM |

Advance the condition levers steady and continuously.

- | | |
|---------------------------|--------|
| Minimum Altitude | CHECK |
| ATC | NOTIFY |
| FASTEN BELTS Switch | ON |
| Cabin Crew | NOTIFY |

- NOTE:** • It is recommended that descent be initiated by a turn.
- Descend to 10000 ft or minimum altitude for terrain clearance, whichever is higher.

- CAUTION:** • THIS PROCEDURE ASSUMES THAT THE INTEGRITY OF THE STRUCTURE IS NOT AFFECTED. IF STRUCTURAL DAMAGE IS SUSPECTED, USE THE FLIGHT CONTROLS WITH CAUTION, AVOIDING HIGH MANEUVERING LOADS AND REDUCING AIRSPEED AS APPROPRIATE.
- DO NOT SET POWER LEVER BELOW FLT IDLE IN FLIGHT.



AIRPLANE FLIGHT MANUAL

FORCED LANDING

This procedure is recommended for landings, with engines operative or not, including places other than a runway.

Landing on unprepared surfaces is not recommended; however, if specific circumstances render such landing inevitable, accomplish the following procedures:

Airspeed	1.3 V _S (MINIMUM)
Pitot Static 1 (if necessary)	ON
ATC/Cabin Crew	NOTIFY
Transponder	7700
ELT Remote Switch	ON
Emergency Lights	ON
Passenger	PREPARE FOR FORCED LANDING
Airplane (below 10000 ft)	DEPRESSURIZE

With engines operative, accomplish the procedures below and carry out a normal approach.

Landing Gear	AS REQUIRED
DOWN or UP according to the landing surface characteristics.	
Flaps	45°
Airspeed	V _{REF} 45

NOTE: In the event of an engine failure in icing conditions, maintain the engine failure airspeeds shown in Section V, Performance. The icing condition low speed alarm may activate as airspeed decreases below 160 KIAS.

With engines inoperative, accomplish the procedures below only when landing is assured.

Landing Gear	AS REQUIRED
DOWN or UP according to the landing surface characteristics. With all engines inoperative and APU not available, the landing gear must be extended according to GEAR EXTENSION BY FREE FALL procedure, if required.	

CAUTION: DO NOT MOVE THE LANDING GEAR LEVER DOWN NOR OPERATE THE GEAR ELECTRICAL OVERRIDE SWITCH WHEN EXTENDING THE LANDING GEAR BY FREE FALL.

Airspeed	1.3 V _S
----------------	--------------------

NOTE: If APU generator is available and functioning:

- Flaps may be extended by setting the Electrical Emergency Switch to NORMAL and turning on the electric hydraulic pumps.
- With electric hydraulic pumps turned on, the rudder control, steering, normal brake system and normal landing gear system will be available.

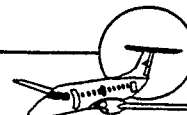
If a crash is unavoidable, just before touchdown:

Fire Handles	SQUEEZE AND PULL
--------------------	------------------

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NOVEMBER 23, 1988

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FORCED LANDING (Continued)

APU SHUTOFF/EXTG Switch (if installed) CLOSED
PWR SELECT Switch OFF

When the airplane comes to a complete stop, immediately accomplish the EMERGENCY EVACUATION procedure.



AIRPLANE FLIGHT MANUAL

DITCHING

This procedure results from tests carried out on a 1:9 scale model of the EMB-120 BRASILIA airplane in order to assess its probable ditching characteristics.

ATC/Cabin Crew	NOTIFY
Transponder	7700
Pitot Static 1 (if necessary)	ON
ELT Remote Switch	ON RESET
Emergency Lights	ON
Passengers	PREPARE FOR DITCHING

Passengers must be seated with life vests donned (if provided) and seat belts fastened.

Airplane (below 10000 ft)	DEPRESSURIZE
Landing Gear Aural Warning Circuit Breaker (H8)	PULL
GPWS 1 Aural Warning Circuit Breaker	PULL

If not in electrical emergency condition:

Backup Battery	OFF
----------------------	-----

When reaching 1000 ft height:

Air Conditioning	OFF
Engine Bleeds	CLOSE

Approach configuration:

Landing Gear	UP
Flaps	45°
Airspeed	VREF 45

NOTE: In the event of an engine failure in icing conditions, maintain the engine failure airspeeds shown in Section V, Performance. The icing condition low speed alarm may activate as airspeed decreases below 160 KIAS.

The final path should be made with airplane straight and level. Roll and yaw angles should not exceed 10 degrees. If possible, ditching should be made parallel to the line of the wave crests.

Before touchdown:

Rate of Descent	LESS THAN 180 FT/MIN
Attitude	ROTATE TO 4° NOSE UP

NOTE: Do not stall the airplane.

Upon water contact:

Condition Levers	FUEL CUT OFF
Fire Handles	SQUEEZE AND PULL
Emergency Evacuation	ACCOMPLISH

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REV. 73 – JUNE 25, 2002



DITCHING (Continued)

CAUTION: AIRPLANE EVACUATION MUST BE DONE THROUGH THE OVERWING EMERGENCY EXITS, USING THE HAND-HOLD ROPES.

Before leaving the airplane:

PWR SELECT Switch OFF



AIRPLANE FLIGHT MANUAL

PASSENGER EVACUATION

1. Parking Brake	APPLY
2. ATC	NOTIFY
3. Engines and APU	SHUTDOWN
4. Fire Handles	PULL
5. Extinguishers Agents (if necessary)	DISCHARGE
6. Emergency Lights	ON
7. Evacuation (proper side)	INITIATE
8. Back UP Battery/PWR SELECT Switch	OFF

**ELECTRIC TRIM RUNAWAY**

- | | |
|-------------------------------------|----------------|
| 1. Elevator Trim Wheel | HOLD |
| 2. AP/TRIM/PUSHER DISC Switch | PRESS AND HOLD |
| 3. Autopilot Transfer Switch | PRESS |

- | | |
|----------------------------------|-------------|
| AP/TRIM/PUSHER DISC Switch | RELEASE |
| Elevator Trim Wheel | AS REQUIRED |

NOTE: The affected autopilot may be deactivated by pulling the three relevant circuit breakers: CAPT (D19-D20-D21) or F/O (D22-D23-D24).

JAMMED AILERON

- | | |
|-----------------------------|------------------|
| 1. Autopilot | DISENGAGE |
| 2. Aileron Disconnect | SQUEEZE AND PULL |

NOTE: Avoid skidding the airplane.

If copilot's aileron control is jammed, no trim is available. In this case, expect greater aileron control forces. Aileron trim is available if pilot's aileron control is jammed.

- Jammed Aileron Landing: Approach and Landing Configuration – Gear down, flaps 25°
Airspeed – $V_{REF} 25 + 5$ KIAS

NOTE: Avoid landings at airports where crosswind or turbulence is anticipated. If necessary, land at another airport.

JAMMED ELEVATOR

- | | |
|------------------------------|------------------|
| 1. Autopilot | DISENGAGE |
| 2. Elevator Disconnect | SQUEEZE AND PULL |

- Jammed Elevator Landing: Approach and Landing Configuration – Gear down, flaps 25°
Airspeed – $V_{REF} 25 + 15$ KIAS

CAUTION: THE UNFACTORED LANDING DISTANCE (FLAPS 25°) WILL BE INCREASED BY 20%.



AIRPLANE FLIGHT MANUAL

ABNORMAL PROCEDURES

INTRODUCTION

The following procedures have been established and are recommended by the airplane manufacturer for application in the event of an abnormal condition.

The information is related to system and operational requirements and covers the actions to be followed in case of failure which are not considered as emergency cases.

Those procedures which are considered to be basic airmanship are not covered.

**ENGINE FAILURE**

CAUTION: IF DET INOP ENG/WW OR DET INOP PIPE ZONE LIGHT ILLUMINATES SIMULTANEOUSLY WITH ENGINE FAILURE, APPLY ENGINE FIRE PROCEDURE.

Precautionary Engine Shutdown **PERFORM**

REJECTED TAKEOFF (BELOW V_1)

Immediately and simultaneously proceed:

Power Levers **REVERSE**

Brake **APPLY MAXIMUM**

Maintain the directional control with the rudder pedals and the nosewheel steering, as necessary.

Immediately after stopping, perform the PRECAUTIONARY ENGINE SHUTDOWN or ENGINE FIRE procedure, as applicable.

CAUTION: AVOID MAX REVERSE IN AREAS OF STANDING WATER.

TAKEOFF WITH ENGINE FAILURE (ABOVE V_1)

At V_R rotate to the takeoff attitude (7°).

At 35 ft height and positive rate of climb:

Landing Gear **UP**

Airspeed **V_2**

Retract flaps at $V_2 + 20$ KIAS at the level off height and accelerate to final segment speed or, if a close-in turn is performed, maintain the takeoff flaps and the airspeed at V_2 with a maximum bank of 15° .

Complete PRECAUTIONARY ENGINE SHUTDOWN or ENGINE FIRE procedure, as applicable.

NOTE: In the event of an engine failure in icing conditions, maintain the engine failure airspeeds shown in Section V, Performance. The icing condition low speed alarm may activate as airspeed decreases below 160 KIAS.

ONE ENGINE INOPERATIVE APPROACH AND LANDING

AUTO FEATHER Switch **OFF**

Landing Gear **DOWN**

When landing is assured:

Flaps **25°**

Airspeed **$V_{REF} 25$**

NOTE: • Operative engine air bleed should be closed during final approach, to provide an increase on the approach climb gradient.



AIRPLANE FLIGHT MANUAL

ENGINE FAILURE (Continued)

- In the event of an engine failure in icing conditions, maintain the engine failure airspeeds shown in Section V, Performance. The icing condition low speed alarm may activate as airspeed decreases below 160 KIAS.

ONE ENGINE INOPERATIVE GO-AROUND

Simultaneously rotate to go-around attitude (7°) and apply takeoff power (inflight setting).

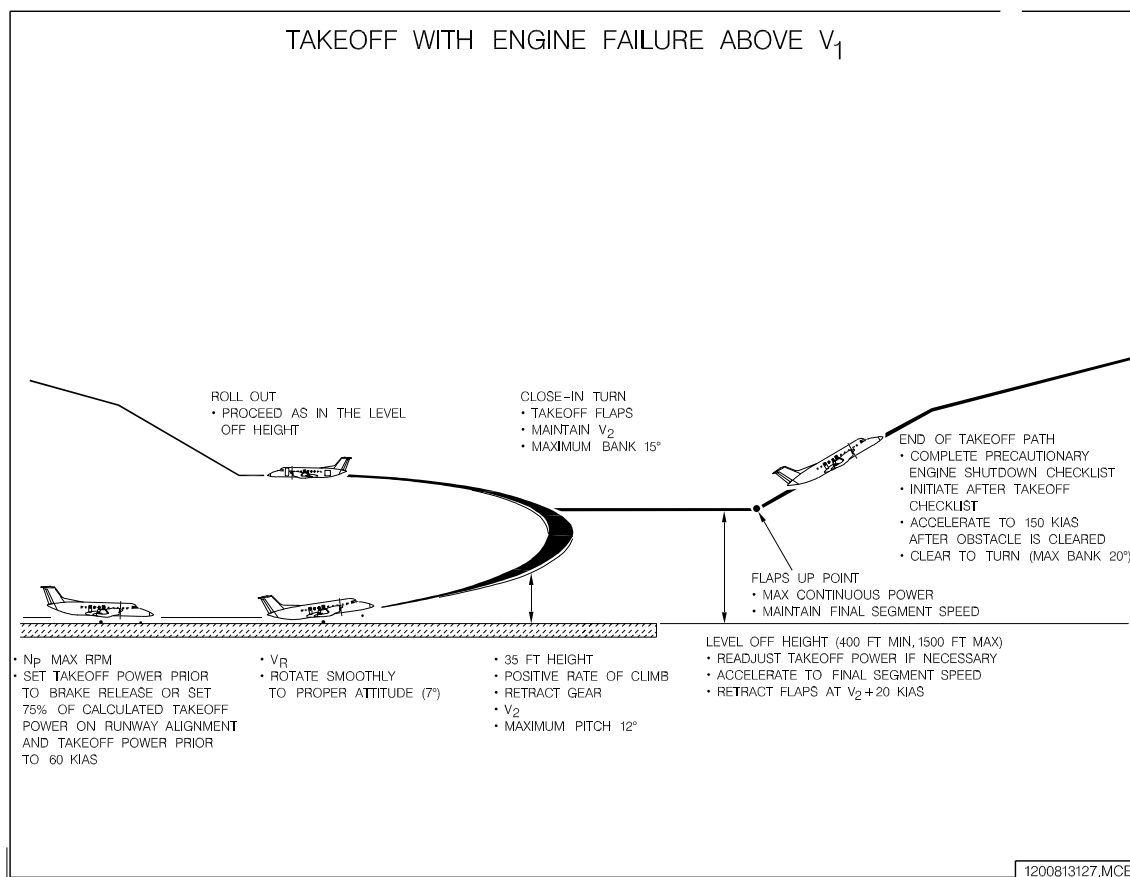
Airspeed V_2
Flaps 15°

With positive rate of climb:

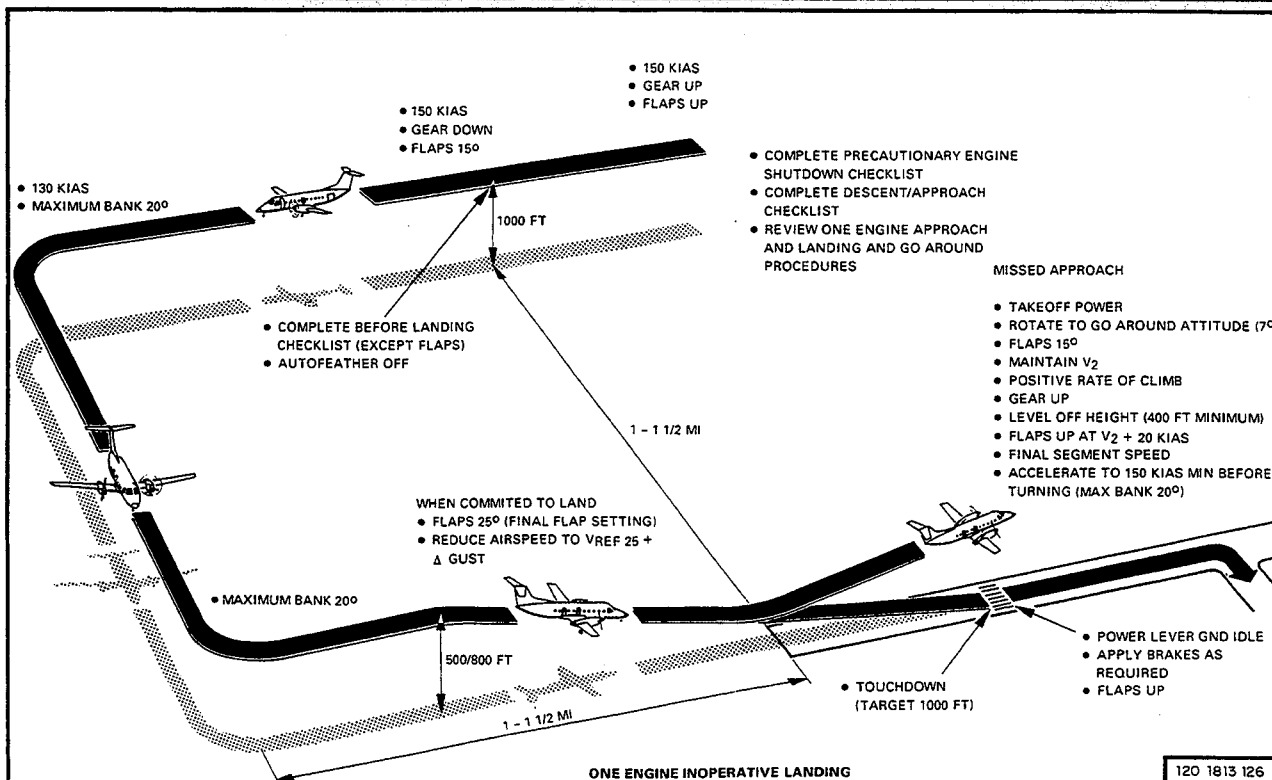
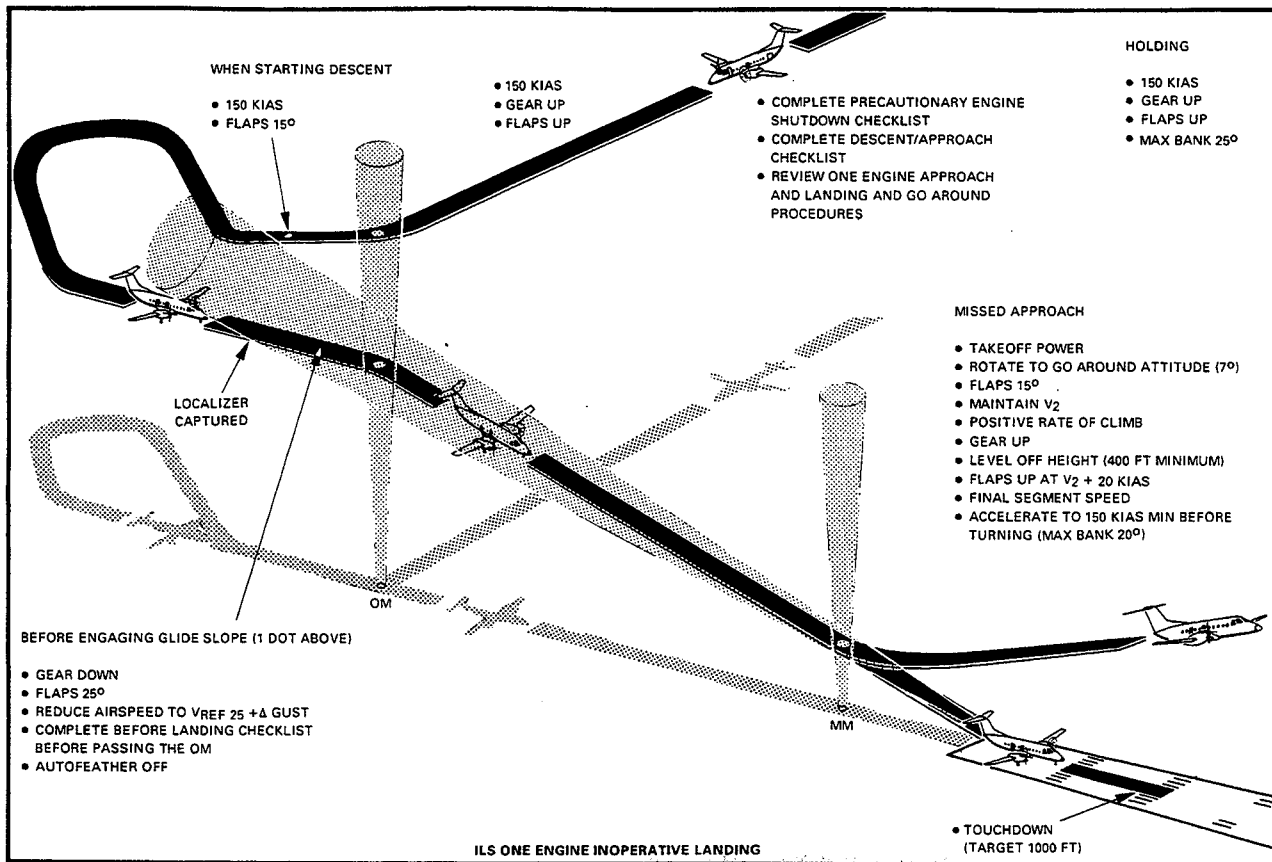
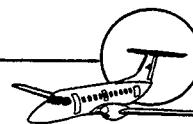
Landing Gear UP

At level off height, proceed as for takeoff with engine failure.

NOTE: In the event of an engine failure in icing conditions, maintain the engine failure airspeeds shown in Section V, Performance. The icing condition low speed alarm may activate as airspeed decreases below 160 KIAS.



EMBRAER **EMB120 Brasília** **AIRPLANE FLIGHT MANUAL**



120 1813 126

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AIRPLANE FLIGHT MANUAL

ENGINE FAILURE (Continued)

LOW OIL PRESSURE

- OIL PRESS light illuminated on the multiple alarm panel.
- WARNING light flashing.

Engine oil pressure between 40 and 55 psi should be tolerated only for completion of flight, at reduced power setting (FLT IDLE setting).

With oil pressure below 40 psi, perform the following procedure in the affected engine:

Power Lever	FLT IDLE
Condition Lever	FEATHER, THEN CHECK

In case no feathering is observed:

ELEC FEATHER Switch	ON
---------------------------	----

Propeller feathering is confirmed when Np indication drops to approximately 20%.

NOTE: The electrical auxiliary feathering pump will be automatically turned off 20 seconds after the ELEC FEATHER switch is set to ON. Therefore, for further pump operation, it is necessary to turn the ELEC FEATHER switch OFF, then ON.

The pump may be operated for no more than six consecutive operations.

Check propeller feathering to determine whether to follow steps A or B below:

A. If propeller is confirmed feathered:

Proceed as follows with the affected engine:

Condition Lever	FUEL CUT OFF
Main and Auxiliary Generators (affected engine)	OFF
AUTO FEATHER Switch	OFF
Synchrophasing	OFF
Fuel Pumps (affected engine)	OFF
Electric Hydraulic Pump	AS REQUIRED

The electric hydraulic pump should be turned on or off according to the necessity of operation of each related system.

In case of right engine shutdown, do not keep the electric hydraulic pump in AUTO position, in order to avoid the rudder pedals bumps above 120 KIAS.

Engine Bleed (affected engine)	CLOSE
Electric Load	REDUCE TO LIMIT
APU (if available)	START

APU starting is not possible if the right engine is not operating and crossfeed is closed.

Bleed and Pack (not affected engine)	LOW
--	-----

CAUTION: ABOVE 12000 FT, RAPID MOVEMENT OF THE CONDITION LEVER OF THE NOT AFFECTED ENGINE TOWARD MAX RPM MAY LEAD TO COMPRESSOR STALL, IF THE RESPECTIVE POWER LEVER IS NOT AT FLT IDLE.

NOTE: Monitor fuel imbalance and use crossfeed operation, if necessary.

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MAY 12, 1998

REV. 82 – MAY 11, 2004

**ENGINE FAILURE (Continued)****B. In case no feathering is observed:**

Affected Engine DO NOT SHUTDOWN
 Power Lever FLT IDLE

NOTE: Use power in the affected engine only if required.

N_p Indication MONITOR. KEEP IT
 UNDER LIMITS

NOTE: N_p can be reduced by reducing airspeed or power.

Airspeed 110 KIAS MINIMUM

Proceed as follows with the affected engine:

Main and Auxiliary Generators OFF
 Engine Bleed CLOSE
 Electrical Load REDUCE TO LIMIT
 APU (if available) START

APU starting is not possible if the right engine is inoperative and crossfeed is closed.

Bleed and Pack (not affected engine) LOW

Land as soon as possible.

Landing procedure:

Flap Selector Lever CHECK 15°
 Airspeed V_{REF} 45 + 15 KIAS

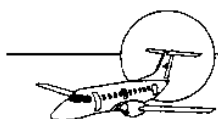
CAUTION: • DO NOT ATTEMPT TO GO-AROUND.
 • DO NOT REDUCE AIRSPEED BELOW 110 KIAS.

In case of engine seize:

Condition Lever FUEL CUT OFF
 Fuel Pumps OFF

In case of engine fire:

Engine Fire Procedure APPLY



AIRPLANE FLIGHT MANUAL

ENGINE FAILURE (Continued)

CHIP DETECTOR FAILURE

- CHIP DETR light illuminated on the multiple alarm panel.
- CAUTION light flashing.

Continue flight monitoring engine instruments.

EEC FAILURE

- EEC light illuminated on the glareshield panel.
- MANUAL light illuminated on the EEC panel.

Power Lever	FLT IDLE
EEC Switch	SELECT MAN THEN RESET AS REQUIRED

If EEC light does not extinguish:

EEC Switch	MAN
Altitude	AT OR BELOW MAX OPERATING ALTITUDE
Power Lever	AS REQUIRED

EEC in manual control will result in a limited power reduction. Restore power by advancing the power lever.

It is recommended that the torque of the engine with EEC failed be maintained above 20%. If necessary, select MAN position in the other EEC switch in order to avoid power levers misalignment.

NOTE: With EEC in manual mode, there will be little reverse power available.

IGNITION LIGHT ON AFTER 50% N_H

1. Condition Lever (on ground)	FUEL CUT OFF
2. START Switch	ABORT
If IGNITION light remains:	
3. Electrical Emergency Switch	EMERG
4. BUS TIE 1 and 2 Switches	OFF
5. APU Generator	OFF

If airplane is in flight:

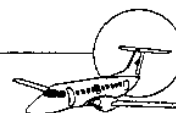
Affected Generator	ON
Voltage and Amperage	CHECK

NOTE: Failure to observe the procedure above may cause generator fire above 30 seconds. If the values are found to be correct, the generator may be used normally. Otherwise, turn the generator off. In this case, the other engine cannot be started due to electrical emergency condition (central bus isolated).

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NOVEMBER 16, 1987

REV. 69 – JULY 26, 2001

**ENGINE FAILURE (Continued)**

If airplane is on the ground:

Main and Auxiliary Generators Switch OFF

PWR SELECT Switch OFF

Report to the maintenance personnel.

ELECTRONIC FUEL CONTROL FAILURE

If engine parameters become erratic (abrupt loss, increase or excessive fluctuations) proceed:

Power Lever FLT IDLE

EEC Switch MAN

Altitude AT OR BELOW MAX
OPERATING ALTITUDE

Verify engine control by using the power lever.

If the control is regained:

Continue flight with EEC in manual mode.

Power Lever AS REQUIRED

EEC in manual control will result in a limited power reduction. Restore power by advancing the power lever.

It is recommended that the torque of the affected engine be maintained above 20%. If necessary, select MAN position in the other EEC switch in order to avoid power levers misalignment.

If the control is not regained or the engine parameters are still out of limits.

Affected Engine SHUT DOWN

Land as soon as possible.

NOTE: With EEC in manual mode, there will be little reverse power available.

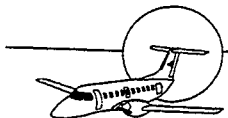
IDLE UNLK LIGHT ILLUMINATED (IF INSTALLED)

— IDLE 1 (2) UNLK light illuminated on the glareshield panel.

CAUTION: DO NOT SET POWER LEVER BELOW FLT IDLE IN FLIGHT.

Continue normal flight and report to the maintenance personnel after landing.

In case the light illuminates on the ground, do not takeoff and report to the maintenance personnel.



AIRPLANE FLIGHT MANUAL

PRECAUTIONARY ENGINE SHUTDOWN

Power Lever FLT IDLE
Condition Lever FEATHER, THEN CHECK

In case no feathering is observed:

ELEC FEATHER Switch ON

Propeller feathering is confirmed when Np indication drops to approximately 20%.

NOTE: The electrical auxiliary feathering pump will be automatically turned off 20 seconds after the electrical feathering switch is set to ON. Therefore, for further pump operation, it is necessary to turn the electrical feathering switch to OFF, then ON. The pump may be operated for no more than six consecutive operations.

After propeller feathering:

Condition Lever FUEL CUT OFF
Main and Auxiliary Generators (affected engine) OFF
AUTO FEATHER Switch OFF
Synchrophasing OFF
Fuel Pumps (affected engine) AS REQUIRED
Electric Hydraulic Pump (affected engine) AS REQUIRED

The electric hydraulic pump should be turned on or off as required for operation of each related system.

In case of right engine shutdown, do not keep the electric hydraulic pump in AUTO position, in order to avoid rudder pedal bumps above 120 KIAS.

Engine Bleed (affected engine) CLOSE
Electrical Load (if APU generator is not operating) MONITOR
APU (if available) START

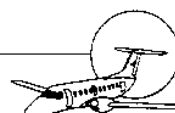
APU starting is not possible if the right engine is not operating and crossfeed is closed.

Bleed and Pack (operative engine) AS REQUIRED

This action should be done in order to obtain more efficiency in the operative engine.

CAUTION: ABOVE 12000 FT, FAST MOVEMENT OF THE CONDITION LEVER OF THE OPERATIVE ENGINE TOWARD MAX RPM MAY LEAD TO A COMPRESSOR STALL, IF THE RESPECTIVE POWER LEVER IS NOT AT FLT IDLE.

NOTE: Monitor fuel imbalance and use crossfeed operation, if necessary.



ENGINE AIRSTART

RELIGHT PROCEDURE

This procedure is intended to be used in case one or both engines are inoperative.

Electrical Load REDUCE TO BELOW 150 A

The electrical load must be reduced by switching off the electric hydraulic pumps, electrical anti-ice system, exterior/interior lights, normal radio master, and any unnecessary electrical equipment.

Engine Bleed (affected engine)	CLOSE
Air Conditioning	AS REQUIRED
EEC	AS REQUIRED
Power Lever (affected engine)	FLT IDLE
Condition Lever (affected engine)	FUEL CUT OFF
PWR SELECT Switch	BATT
Main and Auxiliary Generators Switches (affected engine)	OFF
Electrical Emergency Switch	NORMAL

CAUTION: THE SWITCHES OF THE INOPERATIVE MAIN GENERATORS MUST BE SET TO OFF AND THE ELECTRICAL EMERGENCY SWITCH MUST BE SET TO NORMAL TO PERMIT ENGINE AIRSTART.

IGNITION Switch	AUTO
Fuel Pumps	ONE/ENG ON
START Switch	ON
IGNITION Light	CHECK ON

At 10% N_H:

Condition Lever	FEATHER
Engine Instruments	MONITOR
IGNITION Light	CHECK OFF AT 50% N _H

After 60% N_H:

Condition Lever	MIN RPM, THEN SET
Power Lever	SET
Engine Instruments	CHECKED
Main and Auxiliary Generators	ON
Fuel Pump	AUTO
Electric Hydraulic Pump	AUTO
Engine Bleed	AS REQUIRED
Electrical Load	RESTORE
Synchrophasing	ON

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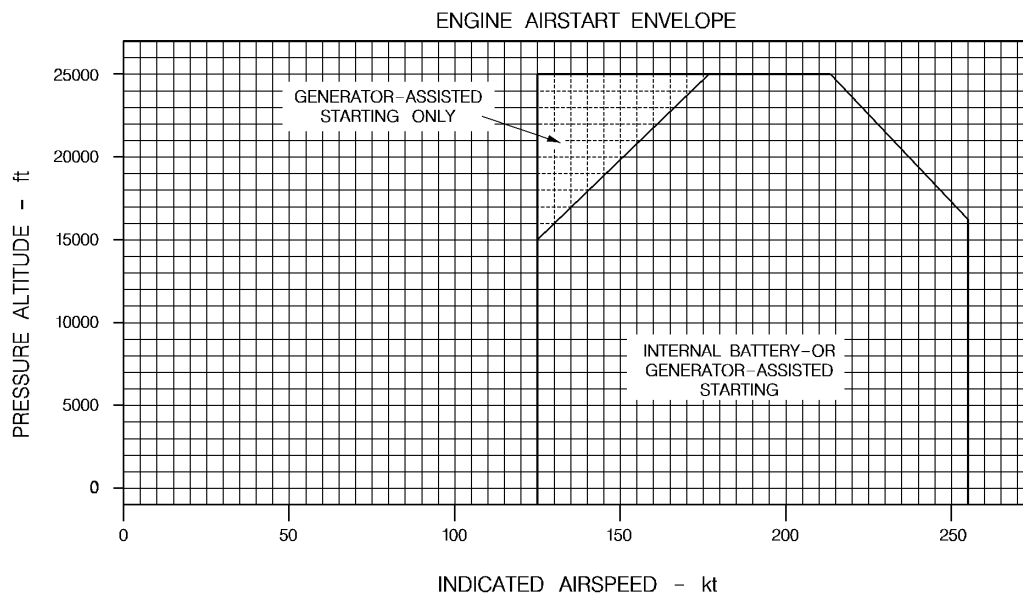
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AIRPLANE FLIGHT MANUAL

ENGINE AIRSTART (Continued)



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AIRPLANE FLIGHT MANUAL

ENGINE AIRSTART (Continued)

DRIFTDOWN

If the engine airstart is not successful, proceed as follows:

Power Lever (operative engine) ADVANCE

Advance the power lever until the maximum continuous power (inflight setting) is attained.

Airspeed AS REQUIRED
(OBSERVE TABLE BELOW)

Refer to the Enroute Climb Speed Chart, Section 5.

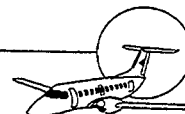
This is the speed at which the airplane will descend until it stabilizes at level flight.

WEIGHT (KG)	AIRSPEED (KIAS)
8000	126
9000	132
10000	138
11000	144
12000	150

Altitude AT OR BELOW MAX
OPERATING ALTITUDE

Refer to the Enroute Climb Weights for Positive Net Gradient Chart, Section 5, to read the pressure altitude at which the airplane will be flown as a function of the airplane weight and temperature.

NOTE: In the event of an engine failure in icing conditions, maintain the engine failure airspeeds shown in Section V, Performance. The icing condition low speed alarm may activate as airspeed decreases below 160 KIAS.

**PROPELLER FAILURE****BETA LIGHT**

— BETA light illuminated on glareshield panel.

Np Indication CHECK

Torque Indication CHECK

If there is an Np increase associated with a torque decrease, proceed:

Power Lever FLT IDLE

Condition Lever FEATHER

In case no feathering is observed:

ELEC FEATHER Switch ON, THEN CHECK

NOTE: The electrical auxiliary feathering pump will be automatically turned off 20 seconds after the electrical feathering switch is set to ON. Therefore, for further pump operation, it is necessary to turn the electrical feathering switch to OFF, then ON. The pump may be operated for no more than six consecutive operations.

If there is an Np decrease associated with a torque increase, proceed:

Power Lever FLT IDLE

Affected Engine BETA Circuit Breaker (C2 or C3) PULL

If propeller unfeathering is observed:

Power Lever SET MIN REQUIRED

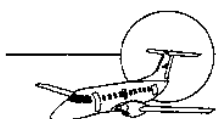
If propeller does not unfeather:

Condition Lever FEATHER

Shut the affected engine down if neither generator nor bleed is required.

If no changes in Np or torque are verified, monitor the conditions for the remainder of the flight.

Land as soon as practical.



AIRPLANE FLIGHT MANUAL

PROPELLER FAILURE (Continued)

INADVERTENT PROPELLER FEATHERING

DURING TAKEOFF

1. Takeoff with Engine Failure (above V_1)	PROCEDURE APPLY
At a safe height, identify the engine and proceed:	
2. Power Lever	FLT IDLE
3. Condition Lever	FEATHER
4. AUTO FEATHER Switch	OFF
5. Engine Parameters	CHECK

If all engine parameters are normal:

Condition Lever AS REQUIRED
Power Lever AS REQUIRED

Power should be set as required, observing the affected engine limits.

If the engine is showing abnormal parameters:

Do not reapply power to the affected engine and land as soon as possible.
In both cases, report this event to the maintenance personnel after landing.

DURING CLIMB, APPROACH OR GO-AROUND

Identify the engine and proceed:	
1. Power Lever	FLT IDLE
2. Condition Lever	FEATHER
3. AUTO FEATHER Switch	OFF
4. Engine Parameters	CHECK

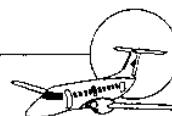
If all engine parameters are normal:

Condition Lever AS REQUIRED
Power Lever AS REQUIRED

Power should be set as required, observing the affected engine limits.

If the engine is showing abnormal parameters:

Do not reapply power to the affected engine and land as soon as possible.
In both cases, report this event to the maintenance personnel after landing.

**HIGH OIL TEMPERATURE**

Power Lever (affected engine) FLT IDLE
Condition Lever (affected engine) MINIMUM
Oil Temperature CHECK

If oil temperature return to normal:

Condition Lever AS REQUIRED
Power Levers AS REQUIRED

If oil temperature remains high:

Precautionary Engine Shutdown PERFORM



AIRPLANE FLIGHT MANUAL

AIR CONDITIONING AND PRESSURIZATION FAILURE

DUCT LEAK LIGHT ILLUMINATED (AIRPLANES PRE-MOD. SB 120-36-0013)

- DUCT LEAK lights illuminated on the air conditioning and multiple alarm panels.
- WARNING light flashing.

Crossbleed	CHECK CLOSED
Respective Bleed	CLOSE
Altitude	AT OR BELOW MAX OPERATING ALTITUDE
Pressurization	MONITOR

Wait 3 minutes to determine whether to follow steps A or B below:

A. If the light extinguishes:

Continue the normal flight and report to maintenance personnel after landing.

B. If the light remains illuminated:

Affected Engine SHUT DOWN

Wait 3 additional minutes to determine whether to follow steps C or D below:

C. If the light still remains illuminated:

Affected Engine RESTART

In this case, the warning may be either a misindication or a leakage on the pneumatic manifold and no corrective action need to be taken by the crew.

Continue the normal flight and report to maintenance personnel after landing.

D. If the light extinguishes:

Affected Engine RESTART

If the light remains extinguished:

Continue the normal flight and report to maintenance personnel after landing.

In case the light illuminates again:

Affected Engine SHUT DOWN

The leakage is isolated in the pneumatic deice bleed line between the engine P₃ port and the manifold.

Land as soon as possible.

CAUTION: IF THE SITUATION REQUIRES, IN CASE OF OPPOSITE ENGINE FAILURE OR TO ASSURE A SAFE LANDING, THE AFFECTED ENGINE MAY BE RESTARTED.

**AIR CONDITIONING AND PRESSURIZATION FAILURE (Continued)****DUCT LEAK LIGHT ILLUMINATED (AIRPLANES POST-MOD. SB 120-36-0013 OR WHICH HAVE AN EQUIVALENT MODIFICATION FACTORY INCORPORATED)**

- DUCT LEAK lights illuminated on the air conditioning and multiple alarm panels.
- WARNING light flashing.

Crossbleed	CHECK CLOSED
Respective Bleed	CLOSE AND CHECK
Altitude	AT OR BELOW MAX
	OPERATING ALTITUDE
Pressurization	MONITOR

Wait 3 minutes to determine whether to follow steps A or B below:

A. If the light extinguishes:

Continue the normal flight and report to maintenance personnel after landing.
 The respective pneumatic deicing supply line will be closed.

B. If the light remains illuminated:

Wait 3 additional minutes to determine whether to follow steps C or D below:

C. If the light still remains illuminated:

Respective Bleed AUTO

In this case, the warning may be either a misindication or a leakage on the pneumatic manifold and no corrective action need to be taken by the crew.

Continue the normal flight and report to maintenance personnel after landing.

D. If the light extinguishes:

Respective Bleed AUTO

If the light remains extinguished:

Continue the normal flight and report to maintenance personnel after landing.

In case the light illuminates again:

Respective Bleed CLOSE

Continue the normal flight and report to maintenance personnel after landing.

The respective pneumatic deicing supply line will be closed.



AIRPLANE FLIGHT MANUAL

AIR CONDITIONING AND PRESSURIZATION FAILURE (Continued)

BLEED OVERHEAT LIGHT ILLUMINATED

- BLEED OVERHEAT and CLOSED lights illuminated on the air conditioning panel.
- AIR COND light illuminated on the multiple alarm panel.
- CAUTION light flashing.

Respective Pack LOW OR NORM

Select the next lower position on the pack switch. The HI position (bleed air from the P₃ port) must not be used.

Respective Bleed CLOSE

The light will extinguish.

Wait about 1 minute.

Respective Bleed AUTO

If the light illuminates again:

Respective Bleed CLOSE

The light will extinguish.

Wait about 1 minute.

Respective Bleed LOW

Selects the bleed air from the P_{2.5} port only.

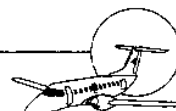
If the light illuminates again, bleed air cannot be used safely. Then, proceed:

Respective Bleed CLOSE

Crossbleed OPEN

Altitude AT OR BELOW MAX
OPERATING ALTITUDE

Pressurization MONITOR

**AIR CONDITIONING AND PRESSURIZATION FAILURE (Continued)****PACK FAIL LIGHT ILLUMINATED**

- PACK FAIL light illuminated on the air conditioning panel.
- AIR COND light illuminated on the multiple alarm panel.
- CAUTION light flashing.

A. Aircraft in flight:

Respective Pack	OFF
Crossbleed	OPEN
Altitude	AT OR BELOW 25000 FT
Pressurization	MONITOR

B. Aircraft on ground:

Respective Pack	OFF
-----------------------	-----

The light will extinguish.

Respective Bleed	LOW
------------------------	-----

Select the bleed air from the P2.5 port only.

Wait about 1 minute.

Respective Pack	LOW
-----------------------	-----

If the light remains extinguished:

Respective Bleed	AUTO AND CHECK
------------------------	----------------

Respective Pack	NORM AND CHECK
-----------------------	----------------

If the light illuminates again:

Respective Pack	OFF
-----------------------	-----

Respective Bleed	LOW
------------------------	-----

Wait about 1 minute.

Respective Pack	LOW
-----------------------	-----

If the light remains illuminated with the bleed switch in LOW:

Respective Pack	OFF
-----------------------	-----

Respective Bleed	AUTO
------------------------	------

Crossbleed	OPEN
------------------	------

NOTE: If the light illuminates on the ground, inflight pack operation can be attempted.



AIRPLANE FLIGHT MANUAL

AIR CONDITIONING AND PRESSURIZATION FAILURE (Continued)

DUCT OVERHEAT LIGHT ILLUMINATED

- DUCT OVERHEAT light illuminated on the air conditioning panel.
- AIR COND light illuminated on the multiple alarm panel.
- CAUTION light flashing.

Respective Temperature Control FULL COLD

If DUCT OVERHEAT light extinguishes:

Respective Temperature Control AS REQUIRED

If DUCT OVERHEAT light remains illuminated or illuminates again:

Respective Temperature Mode Selector MAN

Respective Temperature Control FULL COLD

DUCT OVERHEAT Light CHECK OFF

Cabin Temperature MONITOR

Use the temperature control as required to select the desired cabin temperature. Full cold selection may be used to maintain the light extinguished; otherwise, avoid selecting the full cold or full hot positions.

If the manual control is lost, proceed:

Respective Pack OFF

Crossbleed OPEN

Altitude AT OR BELOW 25000 FT

Pressurization MONITOR

APU DUCT LEAK LIGHT ILLUMINATED (IF INSTALLED)

- DUCT LEAK light illuminated on the APU and multiple alarm panels.
- WARNING light flashing.

APU Bleed CLOSE

Air Conditioning and Pressurization CHECK

Adjust and monitor these systems for the condition that the APU bleed air is no longer used.

AUTOMATIC PRESSURIZATION INOPERATIVE

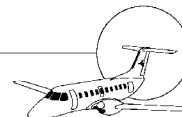
Automatic pressurization inoperative is indicated by abnormal cabin altitude indications.

Manual Controller Selector SET 1 O'CLOCK POSITION

Wait 15 seconds to allow pneumatic outflow valve to reach its neutral position, thus avoiding a sudden differential pressure increase.

Mode Selector MAN

Manual Controller Selector OPERATE AS REQUIRED

**AIR CONDITIONING AND PRESSURIZATION FAILURE (Continued)****ENGINE BLEED FAILURE**

- Engine bleed failure is indicated by a power asymmetry or an inconsistency between the bleed switch and the respective bleed CLOSED light.

Engine handling must be made with care. Maintain airplane at or below Maximum Operating Altitude.

CABIN ALT LIGHT ILLUMINATED

- CABIN ALT light illuminated on the multiple alarm panel.
- WARNING light flashing.

Oxygen Masks	DON
Crew Communication	ESTABLISH
Cabin Altitude	CHECK

If cabin altitude is above 10000 ft, proceed:

Manual Controller Selector SET 1 O'CLOCK POSITION

Wait 15 seconds to allow pneumatic outflow valve to reach its neutral position, thus avoiding a sudden differential pressure increase.

Mode Selector Switch MAN

Manual Controller Selector OPERATE AS REQUIRED

Operate the manual controller in order to maintain the cabin altitude below 8000 ft. If necessary, descend to lower altitudes.

If cabin altitude is below 10000 ft, continue the flight monitoring the instruments and report to the maintenance personnel.



AIRPLANE FLIGHT MANUAL

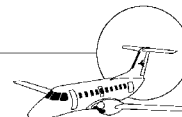
AIR CONDITIONING AND PRESSURIZATION FAILURE (Continued)

ELECTRONIC BAY OVERTEMPERATURE

- ELEC BAY OVERTEMP light illuminated on the multiple alarm panel.
- CAUTION light flashing.

Turn off the redundant systems and equipment non-essential for the present flight phase.
The items of equipment installed on the electronic bay are:

- 2 AHRS Computers
- 2 DPU or SG Computers
- 1 MPU Computer (if installed)
- SELCAL Decoder (if installed)
- Passenger Address System Unit
- Audio System
- Radar Transceiver (if installed)
- 2 Auto Pilot Computers
- 2 VOR Receivers
- 2 Transponder Transceivers
- 2 or 3 VHF Receivers (as applicable)
- 1 or 2 ADF Receivers (as applicable)
- OMEGA Receiver (if installed)
- 2 DME Transceivers

**ELECTRICAL FAILURE****MAIN GENERATOR FAILURE**

- GEN OFF BUS light illuminated on the electrical panel.
- ELEC light illuminated on the multiple alarm panel.
- CAUTION light flashing.

Affected Main Generator RESET

If not successful, turn off the affected main generator.

Right Windshield Heating OFF

Remaining Main Generator Load MONITOR

Electric load should be reduced to limit.

If APU is available:

APU START

APU Generator ON

In case the second main generator fails and does not reset:

If APU is available:

Second Main Generator Switch OFF

APU Generator Load MONITOR

Electric load should be reduced to limit.

If APU is not available:

Electrical Emergency Switch EMERG

Second Main Generator Switch OFF

EMERG BUS OFF Light CHECK OFF

TRANSFER FAIL Light CHECK OFF

AUX GEN OFF BUS Lights CHECK OFF

Auxiliary Generators Load CHECK

Electric load should be reduced to limit.

Altitude MOCA, MEA OR 10000 FT,
WHICHEVER IS HIGHER

The engine bleed shutoff valves will close due to loss of electrical power. Consequently, the air conditioning packs will become inoperative.

The cabin will slowly depressurize through leakage.

- NOTE:**
- EMERG BUS OFF and TRANSFER FAIL lights extinguished assure that the electrical system is in the emergency operating mode.
 - If TRANSFER FAIL light is illuminated, proceed as per LOSS OF ALL ENGINE GENERATORS.



ELECTRICAL FAILURE (Continued)

- For airplanes Post-Mod. S.B. 120-33-0033 or S/N 120.273 and on:
 - The emergency lights will be automatically turned on when the electrical system is in emergency operating mode.
 - The emergency lights must be turned off, in order to save the emergency lights batteries.
 - The emergency lights must be turned on during approach or when necessary.

INVERTER FAILURE

- Inverter INOP light illuminated on the electrical panel.
- ELEC light illuminated on the multiple alarm panel.
- CAUTION light flashing.

Affected Inverter RESET

Turn inverter off and on again and check the respective INOP light. If inverter does not reset, turn off the affected inverter.

Remaining inverter will assume the AC loads.

In case the second inverter fails and does not reset, the following equipment will be lost: Autopilot, Flight Director, Omega (if installed), Voice Recorder (if connected to the AC buses), Entertainment System (if installed), Flight Data Recorder (if installed), GPWS (if installed) and Radar antenna stabilization.

In addition:

- a. The airplanes equipped with Collins EFIS equipment will lose the compass card and VOR information on the RMIs; and
- b. The airplanes equipped with Bendix EFIS equipment will lose all the attitude and navigation equipment, except for the standby horizon and magnetic compass. On the EHSI, the compass card and the To/From indicator will stop in the last presented position. Only the VOR deviation information, presented by the course deviation bar, will be reliable on the EHSI.

**ELECTRICAL FAILURE (Continued)****AUXILIARY GENERATOR FAILURE**

- AUX GEN OFF BUS light illuminated on the electric panel.
- ELEC light illuminated on the multiple alarm panel.
- CAUTION light flashing.

Affected Auxiliary Generator **RESET**

Momentarily select the affected auxiliary generator to RESET and check the respective light. If the auxiliary generator does not reset, turn it off. Observe the load on the remaining auxiliary generator.

EMERG BUS OFF LIGHT ILLUMINATED

- EMERG BUS OFF light illuminated on the overhead panel.
- ELEC light illuminated on the multiple alarm panel.
(not available in case both emergency DC buses have been deenergized).
- CAUTION light flashing.
(not available in case both emergency DC buses have been deenergized).

Prepare to identify one of the following situations:

A. Emergency Bus Off Light is Illuminated and the Multiple Alarm Panel is Functioning:

It means that either emergency DC bus 1 or emergency DC bus 2 is not being supplied. In order to identify which emergency bus is lost, refer to LOSS OF ALL ENGINE GENERATORS procedure that presents the loads supplied by each emergency DC bus.

Land as soon as practical.

The steering will not be available if the emergency DC bus 1 is the lost bus. In this case, after landing:

Airplane Directional Control **USE DIFFERENTIAL
BRAKING TECHNIQUE**

B. Emergency Bus Off Light is Illuminated and the Multiple Alarm Panel is Not Functioning:

Electrical Emergency Switch **EMERG**

If Emergency Bus Off Light Extinguishes:

It means that both emergency buses are now being supplied by the auxiliary generators or battery.

Continue the flight and report to maintenance personnel after landing.

If Emergency Bus Off Light Remains Illuminated and the Multiple Alarm Panel is Not Functioning:

It means that both emergency DC buses are lost. In order to identify which systems are lost, refer to LOSS OF ALL ENGINE GENERATORS procedure that presents the loads supplied by each emergency bus.



AIRPLANE FLIGHT MANUAL

ELECTRICAL FAILURE (Continued)

Land as soon as practical, observing the following procedures:

Anti-Skid Switches OFF

The anti-skid system must be turned off in order to have the normal brake system available.

Brake with care since the tires may be blown out.

Landing Gear EXTEND BY FREEFALL

No landing gear downlock indication will be available.

After landing:

Airplane Directional Control USE DIFFERENTIAL
BRAKING TECHNIQUE

NOTE: For airplanes Post-Mod. S.B. 120-33-0033 or S/N 120.273 and on:

- The emergency lights will be automatically turned on when the electrical system is in emergency operating mode.
- The emergency lights must be turned off, in order to save the emergency lights batteries.
- The emergency lights must be turned on during approach or when necessary.



AIRPLANE FLIGHT MANUAL

ELECTRICAL FAILURE (Continued)

SHORT CIRCUIT IN THE RELAY BOX DC BUS 1 (AIRPLANES POST-MOD. SB 120-24-0051 OR S/N 120292 AND ON)

- GEN 1 OFF BUS, BUS 1 OFF, CENTRAL BUS OFF and BATT OFF BUS lights illuminated on the electrical panel.

NOTE: In some cases, the CENTRAL BUS OFF light may not illuminate.

- ELEC light illuminated on the multiple alarm panel.
- CAUTION light flashing.

CAUTION: DO NOT TRY TO RESET THE ELECTRICAL SYSTEM.

Altitude AT OR BELOW 25000 FT

Airplane is limited to 25000 ft since the left engine bleed is closed due to loss of the electrical power. The engines or APU airstart and electrical crossfeed are not possible.

The battery is isolated from the electrical network, supplying the Hot Battery bus only.

The equipment connected to the Relay Box DC bus 1, DC bus 1, Radio Master DC buses 1B and 1C are out.

Land as soon as practical.

NOTE: For airplanes Pre-Mod. SB 120-24-0008, the AHRS 1 and the equipment connected to the Radio Master DC bus 1A are out too.



ELECTRICAL FAILURE (Continued)

SHORT CIRCUIT IN THE RELAY BOX DC BUS 2

- GEN 2 OFF BUS, BUS 2 OFF, CENTRAL BUS OFF, BATT OFF BUS and Inverter 1 INOP lights illuminated on the electrical panel.

NOTE: • For airplanes Pre-Mod. SB 120-24-0008, the 115 and 26 VAC ESSENTIAL BUS OFF lights will also illuminate.

- In some cases, the CENTRAL BUS OFF light may not illuminate.

- ELEC light illuminated on the multiple alarm panel.
- CAUTION light flashing.

CAUTION: DO NOT TRY TO RESET THE ELECTRICAL SYSTEM.

Altitude AT OR BELOW 25000 FT

Airplane is limited to 25000 ft since the right engine bleed is closed due to loss of the electrical power. The engines or APU airstart and electrical crossfeed are not possible.

The battery is isolated from the electrical network, supplying the Hot Battery bus only.

The equipment connected to the Relay Box DC bus 2, DC bus 2, Radio Master DC buses 2A and 2B are out.

Land as soon as practical.

NOTE: For airplanes Pre-Mod. SB 120-24-0008, the AHRS 2 and the equipment connected to the Radio Master DC bus 2C and the 115 and 26 VAC essential buses are out too.



AIRPLANE FLIGHT MANUAL

ELECTRICAL FAILURE (Continued)

SHORT CIRCUIT IN THE CENTRAL DC BUS

- CENTRAL BUS OFF and BATT OFF BUS lights illuminated on the electrical panel.
- ELEC light illuminated on the multiple alarm panel.
- GEN OFF BUS and APU lights illuminated on the APU control panel and multiple alarm panel, respectively, if APU generator is connected to the Central DC bus at the time the short circuit occurs.
- CAUTION light flashing.

CAUTION: DO NOT TRY TO RESET THE ELECTRICAL SYSTEM.

The engines or APU airstart and electrical crossfeed are not possible.

The battery is isolated from the electrical network, supplying the Hot Battery bus only.
Land as soon as practical.

CIRCUIT BREAKER TRIPPED

If the lost system is necessary to the continuation of the flight, proceed:

Affected Circuit Breaker REARM

A second resetting of the same circuit breaker must not be done. In this case, the flight may be continued, depending upon the crew evaluation as regards the airplane conditions.

If the lost system does not affect the continuation of the flight, do not reset the circuit breaker.
In both cases, report to the maintenance personnel.



FLIGHT CONTROLS FAILURE

ELEVATOR TRIM JAMMING

Control Wheel	HOLD FIRMLY
Autopilot	DISENGAGE
Airspeed	REDUCE

NOTE: Minimum airspeed with flaps 0° – 160 KIAS.

Pitch Trim Command	CHECK ALL SWITCHES AND ELEVATOR TRIM WHEEL
--------------------------	--

If pitch trim is recovered:

Re-trim the airplane and continue the flight with the autopilot disengaged. Do not exceed the airspeed at which trim control was recovered.

If pitch trim is not recovered:

Land at the nearest suitable airport.

Approach and landing configuration:

Landing Gear	DOWN
Flaps	25°
Airspeed	VREF 25

CAUTION: DO NOT TRY TO REENGAGE THE AUTOPILOT.

Report to the maintenance personnel.

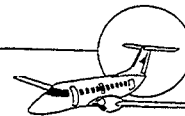
RUDDER SPEED SW LIGHT ILLUMINATED

- RUDDER SPEED SW light illuminated on the multiple alarm panel.
- CAUTION light flashing.

Green System Switch	OFF
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NOTE: The light may remain illuminated.

Turn on green system switch again when airspeed is below 120 kt.

**FLIGHT CONTROLS FAILURE (Continued)****UNWANTED YAW OR LOSS OF RUDDER LOAD FEEL**

- Loss of rudder load feel is indicated by unstable rudder operation and no centering forces on the pedal.

Turn both rudder switches off. Airplane directional control is reduced and, above 120 KIAS, greater efforts by the pilots will be necessary.

NOTE: When the rudder is in manual reversion mode, disengage the autopilot and yaw damper. Avoid landings at airports where crosswind or turbulence is anticipated. If necessary, land at another airport.

RUDDER PEDALS JAMMED OR LOST

Control the airplane by the use of asymmetric engine power, ailerons, and rudder trim.

In case the rudder pedal requires excessive command force above 120 kts:

Blue System Isolation Switch OFF

If the problem persists:

Both Isolation Switches OFF

NOTE: When the rudder pedals are jammed, nose wheel pedal steering is inoperative.

When the rudder is in manual reversion mode, disengage the autopilot and yaw damper. Avoid landings at airports where crosswind or turbulence is anticipated. If necessary, land at another airport.

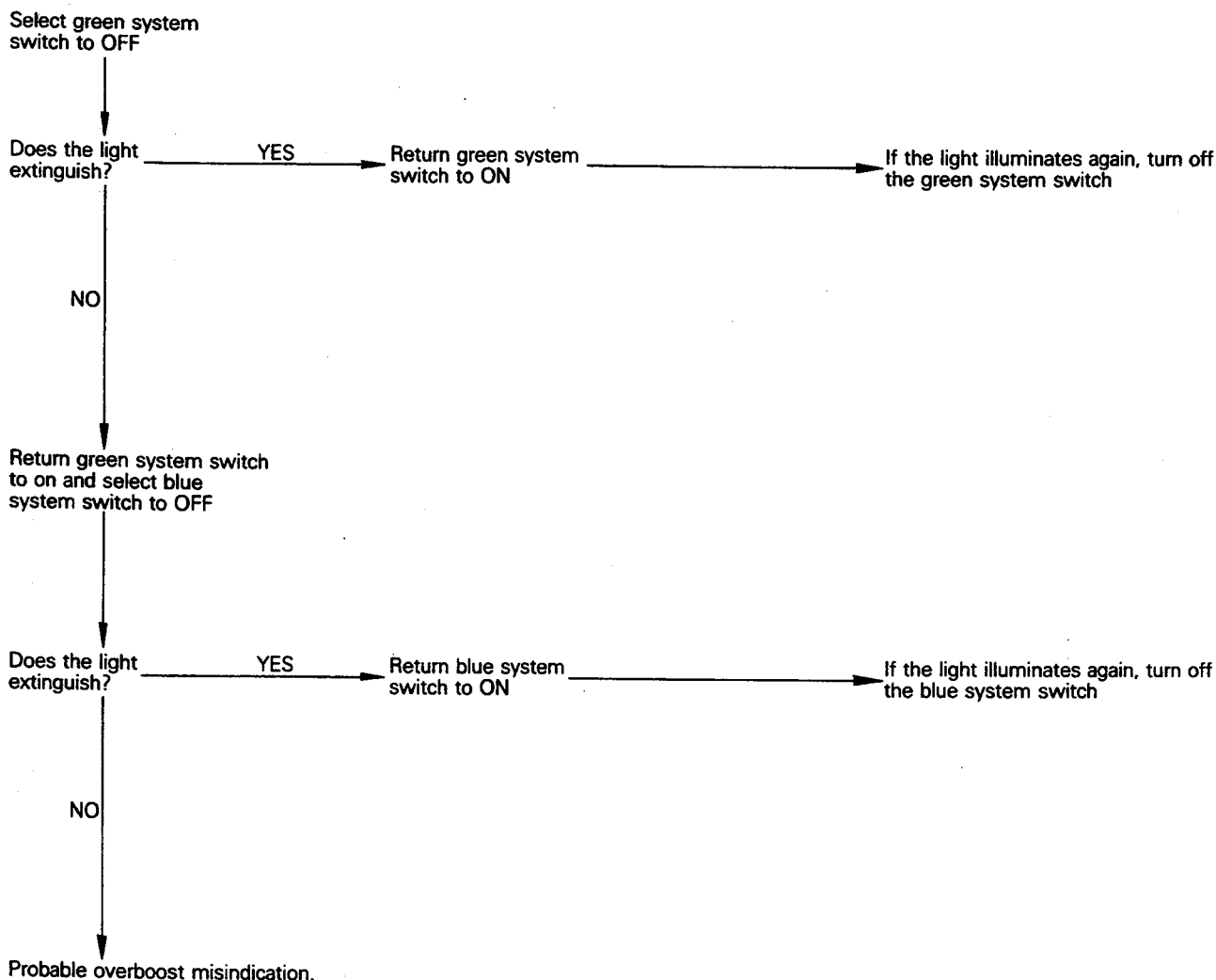


AIRPLANE FLIGHT MANUAL

FLIGHT CONTROLS FAILURE (Continued)

RUDDER OVERBOOST LIGHT ILLUMINATED

- RUDDER OVERBOOST light illuminated on the rudder panel.
- RUDDER light illuminated on the multiple alarm panel.
- CAUTION light flashing.



NOTE: Below 120 kt, assure both switches are turned on prior to landing.

RUDDER INOP LIGHT ILLUMINATED

- INOP light illuminated on the rudder panel.
 - RUDDER light illuminated on the multiple alarm panel.
- Turn off respective rudder system isolation switch.

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AIRPLANE FLIGHT MANUAL

FLIGHT CONTROLS FAILURE (Continued)

FLAP CONTROL FAULT

(Electronic fault in the control channel(s) not involving disagreement or asymmetry).

- INDICATION:**
- FLAP & ADVANCED SWS lights on multiple alarm panel.
 - CONTROL FAULT light on Flap Warning Indication panel.
 - CONTROL FAULT indication on annunciator panel alphanumeric display (if applicable).
 - Affected flap pair(s) light bars flashing on flap annunciator panel.

- Verify Normal Radio Master Switch ON.
- Verify flap position on flap position indicator.

NOTE: Flap position indication may not be valid after the RST button is pressed.

- Press RESET (RST) button momentarily.
- If successful (CONTROL FAULT light extinguish), flap selector lever may be used as required.
- If unsuccessful, flap selector lever may be used as required to command remaining flaps pairs. Land as soon as practical.

NOTE: • Do not exceed the V_{FE} of the most extended pair of flaps. V_{FE} for intermediate positions is the next higher flaps setting limit.

- Landing Reference Speed correction values:

Flaps position indicator	Correction
0° to 14°	$V_{REF} 45 + 35 \text{ KIAS}$
15° to 44°	$V_{REF} 45 + 15 \text{ KIAS}$
45°	$V_{REF} 45 + 5 \text{ KIAS}$

Correction values given above have been increased by 5 kt for flaps position greater than 14°, to prevent stall warning system actuation.

- In the event of a 0° flaps landing in icing conditions, maintain 160 KIAS until landing is assured. Reduce airspeed to cross runway threshold (50 ft) at $V_{REF} 45 + 35 \text{ KIAS}$. The icing condition low speed alarm may activate as airspeed decreases below 160 KIAS.
- The GPWS aural warning may be deactivated by pulling the GPWS 1 circuit breaker.

CAUTION: THE UNFACTORED LANDING DISTANCE WILL BE INCREASED BY 73% (FLAPS 0° TO 14°), 30% (FLAPS 15° TO 44°) AND 5% (FLAPS 45°). THESE INCREMENTS SHOULD BE APPLIED TO THE LANDING DISTANCE FOR FLAPS 45°.

**FLIGHT CONTROLS FAILURE (Continued)****FLAP DISAGREEMENT**

(Pair in disagreement with other pairs).

- INDICATION:**
- FLAP light on multiple alarm panel.
 - DISAGREEMENT light on Flap Warning Indication panel.
 - DISAGREEMENT indication on annunciator panel alphanumeric display (if applicable).
 - DON'T OVRD message, associated with a flap pair in disagreement, on annunciator panel alphanumeric display (if applicable).
 - All flap pairs light bars flashing on flap annunciator panel.
 - Slight roll tendency.

CAUTION: DO NOT PRESS RESET (RST) BUTTON NOR ACTIVATE OVERRIDE SWITCH.

- If flight conditions permit, use flap selector lever to command flaps back to previous position and try select again the flaps to the desired position.
- If unsuccessful, flap selector lever may be used as required to command remaining flaps pairs. Land as soon as practical.

NOTE:

- Do not exceed the V_{FE} of the most extended pair of flaps. V_{FE} for intermediate positions is the next higher flaps setting limit.

- Landing Reference Speed correction values:

Flaps position indicator	Correction
0° to 14°	$V_{REF} 45 + 35 \text{ KIAS}$
15° to 44°	$V_{REF} 45 + 10 \text{ KIAS}$

- In the event of a 0° flaps landing in icing conditions, maintain 160 KIAS until landing is assured. Reduce airspeed to cross runway threshold (50 ft) at $V_{REF} 45 + 35 \text{ KIAS}$. The icing condition low speed alarm may activate as airspeed decreases below 160 KIAS.
- The GPWS aural warning may be deactivated by pulling the GPWS 1 circuit breaker.

CAUTION: THE UNFACTORED LANDING DISTANCE WILL BE INCREASED BY 73% (FLAPS 0° TO 14°) AND 29% (FLAPS 15° TO 44°). THESE INCREMENTS SHOULD BE APPLIED TO THE LANDING DISTANCE FOR FLAPS 45°.



AIRPLANE FLIGHT MANUAL

FLIGHT CONTROLS FAILURE (Continued)

FLAP ASYMMETRY

(Disagreement within the same pair).

INDICATION: – FLAP light on multiple alarm panel.

– ASYMMETRY light on Flap Warning Indication panel.

– ASYMMETRY indication on annunciator panel alphanumeric display (only for airplanes Post-Mod. SB 120-27-0067 or S/N 120.206, 120.209 thru 120.212, 120.214, 120.216 thru 120.220, 120.222 thru 120.231, 120.233, 120.234, 120.236 and on).

– Affected flap pair light bars flashing on flap annunciator panel.

– Positive roll tendency.

Maintain airplane control using aileron, rudder and asymmetrical engine power, as required. With the airplane controlled and a safe altitude established, proceed as follows:

CAUTION: • DO NOT PRESS RESET (RST) FOR THE REST OF THE FLIGHT.

• DO NOT MOVE THE FLAP SELECTOR LEVER BEFORE OBSERVING THE FOLLOWING PROCEDURE.

If flap asymmetry is more than 2 segments of light bars and the control forces are excessive or airplane is marginally controllable, proceed as follows:

- Press the override switch of the affected pair to drive the good flap panel toward the malfunctioning flap panel. Correct direction for flap movement is toward the panel that did not respond correctly to the last command.
- Keep the override switch pressed until the asymmetry is completely eliminated.
- After asymmetry elimination, use flap selector lever as required to command remaining operational flap pairs.
- Land as soon as possible.

If flap asymmetry is equal to or less than 2 segments of light bars and the airplane is controllable, proceed as follows:

- Do not press the override switch.
- Leave the flap selector lever in the last selected position.
- Land as soon as possible.

**FLIGHT CONTROLS FAILURE (Continued)**

NOTE: • In any case, do not exceed the V_{FE} of the most extended pair of flaps. V_{FE} for intermediate positions is the next higher flaps setting limit.

- Landing Reference Speed correction values:

Flaps position indicator	Correction
0° to 14°	$V_{REF} 45 + 35 \text{ KIAS}$
15° to 44°	$V_{REF} 45 + 10 \text{ KIAS}$

- In the event of a 0° flaps landing in icing conditions, maintain 160 KIAS until landing is assured. Reduce airspeed to cross runway threshold (50 ft) at $V_{REF} 45 + 35 \text{ KIAS}$. The icing condition low speed alarm may activate as airspeed decreases below 160 KIAS.
- The GPWS aural warning may be deactivated by pulling the GPWS 1 circuit breaker.

CAUTION: THE UNFACTORED LANDING DISTANCE WILL BE INCREASED BY 73% (FLAPS 0° TO 14°) AND 16% (FLAPS 15° TO 44°). THESE INCREMENTS SHOULD BE APPLIED TO THE LANDING DISTANCE FOR FLAPS 45°.



AIRPLANE FLIGHT MANUAL

FUEL SYSTEM FAILURE

LOW PRESS LIGHT FLASHING

- LOW PRESS and Fuel Pump ON lights flashing on the fuel panel.
- FUEL light illuminated on the multiple alarm panel.
- CAUTION light flashing.

One Fuel Pump..... ON
Turning one fuel pump on will prevent the fuel pump from cycling.
The other fuel pump should be set to AUT.

FUEL SUPPLY WITHOUT TANK PUMPS

If jet pump and electric fuel booster pump (one or two, as applicable) from the same wing tank are inoperative, maintain 15000 ft or lower altitudes. If it is not possible to descend, turn on fuel pump from opposite wing tank and open crossfeed valve. Monitor fuel quantity imbalance. When crossfeed operation has been completed, close crossfeed valve and select the respective fuel pump to AUT.

LOW TEMP LIGHT ILLUMINATED

- LOW TEMP light illuminated on the fuel panel.
- FUEL light illuminated on the multiple alarm panel.
- CAUTION light flashing.

Descend to lower altitudes.

FILTER LIGHT ILLUMINATED

- FILTER light illuminated on the fuel panel.
- FUEL light illuminated on the multiple alarm panel.
- CAUTION light flashing.

Continue flight, monitoring engine parameters.

If the second FILTER light also illuminates:

Land as soon as practical.

**HYDRAULIC FAILURE****LOSS OF THE GREEN SYSTEM**

The loss of the hydraulic systems caused by the loss of mechanical and electric hydraulic pumps or by the hydraulic fluid leakage is indicated by:

- MAIN PUMP LOW PRESS and ELEC PUMP lights or LOW LEVEL light illuminated on the hydraulic panel.
- INOP light illuminated, below 120 KIAS, on the rudder panel.
- HYD and RUDDER (below 120 KIAS) lights illuminated on the multiple alarm panel.
- CAUTION light flashing.

Green System Electric Hydraulic Pump OFF

In case of total loss of the green system, extend the landing gear using the GEAR EXTENSION BY FREE FALL procedure.

CAUTION: DO NOT MOVE THE LANDING GEAR LEVER DOWN NOR OPERATE THE GEAR ELECTRICAL OVERRIDE SWITCH.

The total loss of the green system means the loss of the landing gear retraction and normal extension, the nose wheel steering, the outboard pair of normal brakes, the outboard pair of flaps, and rudder green system. Emergency brake will remain available; furthermore, the landing gear doors will open due to the lack of locking hydraulic pressure resulting in airspeed performance penalties.

If flight conditions permit, flap selector lever may be used as required to command flaps. Outboard flap pair will not respond to command, causing a flap disagreement.

CAUTION: DO NOT PRESS RESET (RST) BUTTON NOR ACTIVATE OVERRIDE SWITCH.

NOTE: • Do not exceed the V_{FE} of the most extended pair of flaps. V_{FE} for intermediate positions is the next higher flaps setting limit.

- Landing Reference Speed correction values:

Flaps position indicator	Correction
0° to 14°	$V_{REF} 45 + 35 \text{ KIAS}$
15° to 44°	$V_{REF} 45 + 10 \text{ KIAS}$

- In the event of a 0° flaps landing in icing conditions, maintain 160 KIAS until landing is assured. Reduce airspeed to cross runway threshold (50 ft) at $V_{REF} 45 + 35 \text{ KIAS}$. The icing condition low speed alarm may activate as airspeed decreases below 160 KIAS.
- The GPWS aural warning may be deactivated by pulling the GPWS 1 circuit breaker.

CAUTION: USE RUDDER AND BRAKES FOR GROUND DIRECTIONAL CONTROL. THE UNFACTORED LANDING DISTANCE WILL BE INCREASED BY 88%. THIS INCREMENT SHOULD BE APPLIED ON THE LANDING DISTANCE FOR FLAPS 45°.



AIRPLANE FLIGHT MANUAL

HYDRAULIC FAILURE (Continued)

LOSS OF THE BLUE SYSTEM

The loss of the hydraulic systems caused by the loss of mechanical and electric hydraulic pumps or by the hydraulic fluid leakage is indicated by:

- MAIN PUMP LOW PRESS and ELEC PUMP lights or LOW LEVEL light illuminated on the hydraulic panel.
- INOP light illuminated, below 120 KIAS, on the rudder panel.
- HYD and RUDDER (below 120 KIAS) lights illuminated on the multiple alarm panel.
- CAUTION light flashing.

Blue System Electric Hydraulic Pump OFF

The total loss of the blue system means the loss of the inboard pair of normal brake system, the inboard and nacelle pair of flaps, and the rudder blue system. Emergency brake has accumulator pressure only.

If flight conditions permit, flap selector lever may be used as required to command flaps.

Inboard and nacelle flaps pairs will not respond to command, causing a flap disagreement.

CAUTION: DO NOT PRESS RESET (RST) BUTTON NOR ACTIVATE OVERRIDE SWITCH.

NOTE: • Do not exceed the V_{FE} of the most extended pair of flaps. V_{FE} for intermediate positions is the next higher flaps setting limit.

- Landing Reference Speed correction values:

Flaps position indicator	Correction
0° to 14°	$V_{REF} 45 + 35 \text{ KIAS}$
15° to 44°	$V_{REF} 45 + 10 \text{ KIAS}$

- In the event of a 0° flaps landing in icing conditions, maintain 160 KIAS until landing is assured. Reduce airspeed to cross runway threshold (50 ft) at $V_{REF} 45 + 35 \text{ KIAS}$. The icing condition low speed alarm may activate as airspeed decreases below 160 KIAS.
- The GPWS aural warning may be deactivated by pulling the GPWS 1 circuit breaker.

CAUTION: THE UNFACTORED LANDING DISTANCE WILL BE INCREASED BY 88%. THIS INCREMENT SHOULD BE APPLIED ON THE LANDING DISTANCE FOR FLAPS 45°.

**HYDRAULIC FAILURE (Continued)****LOSS OF BOTH HYDRAULIC SYSTEMS**

The loss of both hydraulic systems caused by the loss of mechanical and electric hydraulic pumps or by the hydraulic fluid leakage is indicated by:

- All MAIN PUMP LOW PRESS and ELEC PUMP lights or both LOW LEVEL lights illuminated on the hydraulic panel.
- Both INOP lights illuminated on the rudder panel.
- HYD and RUDDER lights illuminated on the multiple alarm panel.
- CAUTION light flashing.

The total loss of hydraulic systems means the loss of the landing gear retraction and normal extension, rudder hydraulic system, normal brakes, anti-skid system, flap actuating system and nosewheel steering. Emergency brake has accumulator pressure only. Furthermore, the landing gear doors will open due to the lack of locking hydraulic pressure resulting in airspeed performance penalties.

Airspeed	BELOW 200 KIAS
Green and Blue Systems Electric Hydraulic Pumps	OFF
Landing Gear	DOWN, USING THE FREE FALL

CAUTION: DO NOT MOVE THE LANDING GEAR LEVER DOWN NOR OPERATE THE GEAR ELECTRICAL OVERRIDE SWITCH.

Airplane directional control will be reduced and, above 120 KIAS, greater efforts by the pilots will be necessary.

Approach and landing should be performed with the airspeed concerning the flap position at the moment of failure.

Landing Reference Speed correction values:

Flaps position indicator	Correction
0° to 14°	$V_{REF} 45 + 35 \text{ KIAS}$
15° to 44°	$V_{REF} 45 + 10 \text{ KIAS}$
45°	$V_{REF} 45$

NOTE: In the event of a 0° flaps landing in icing conditions, maintain 160 KIAS until landing is assured. Reduce airspeed to cross runway threshold (50 ft) at $V_{REF} 45 + 35 \text{ KIAS}$. The icing condition low speed alarm may activate as airspeed decreases below 160 KIAS.

Avoid landing at airports in which crosswind or turbulence is anticipated. If necessary, land at another airport.

The GPWS aural warning may be deactivated by pulling the GPWS 1 circuit breaker.



AIRPLANE FLIGHT MANUAL

HYDRAULIC FAILURE (Continued)

After touchdown:

Power Levers REVERSE

Emergency Brake ACTUATE

Apply reverse thrust to reduce airspeed to a minimum, before initiating brake application.

The emergency brake has a capacity of 8 to 10 complete actuations.

Use rudder for directional control on the ground.

Do not attempt to taxi, since the normal brake and the nosewheel steering system are lost.

CAUTION: • THE UNFACTORED LANDING DISTANCE WILL BE INCREASED BY 265% (FLAPS 0° TO 14°), 147% (FLAPS 15° TO 44°), AND 107% (FLAPS 45°). THESE INCREMENTS SHOULD BE APPLIED TO THE LANDING DISTANCE FOR FLAPS 45°.

• AVOID MAX REVERSE IN AREAS OF STANDING WATER. BRAKE WITH CARE. THE TIRES MAY BE BLOWN OUT.

LOSS OF HYDRAULIC MAIN PUMP

- MAIN PUMP LOW PRESS and ELEC PUMP lights illuminated on the hydraulic panel.
- HYD light illuminated on the multiple alarm panel.
- CAUTION light flashing.

Respective Electric Hydraulic Pump ON

RESERVOIR LOW LEVEL

- LOW LEVEL light illuminated on the hydraulic panel.
- HYD light illuminated on the multiple alarm panel.
- CAUTION light flashing.

Hydraulic Fluid Quantity Indicator MONITOR

If reservoir is totally empty:

Respective Electric Hydraulic Pump OFF

NOTE: Hydraulic main pump may run dry and engine shutdown is not required. However, if pump runs dry, report to the maintenance personnel after landing.

FLUID OVERHEAT LIGHT ILLUMINATED

- FLUID OVERHEAT light illuminated on the hydraulic panel.
- HYD light illuminated on the multiple alarm panel.
- CAUTION light flashing.

Land as soon as practical to prevent damage to the system.

CTA APPROVED

JANUARY 24, 1990

REV. 73 – JUNE 25, 2002

**HYDRAULIC FAILURE (Continued)****FILTER LIGHT ILLUMINATED**

- FILTER light illuminated on the hydraulic panel.
- HYD light illuminated on the multiple alarm panel.
- CAUTION light flashing.

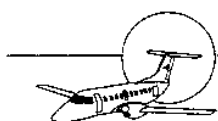
Continue flight and report to the maintenance personnel after landing.

RESERVOIR LOW PRESS LIGHT ILLUMINATED

- Reservoir LOW PRESS light illuminated on the hydraulic panel.
- HYD light illuminated on the multiple alarm panel.
- CAUTION light flashing.

Continue normal flight, monitoring the hydraulic pressure indicator. After landing, report to the maintenance personnel.

In case the reservoir LOW PRESS light illuminates on ground, after engine start or after APU start with APU bleed shutoff valve open, the airplane is not cleared for takeoff.



AIRPLANE FLIGHT MANUAL

OXYGEN SYSTEM FAILURE

CREW OXY LIGHT ILLUMINATED

- CREW OXY light illuminated on the multiple alarm panel.
- CAUTION light flashing.

Oxygen Pressure CHECK

If a CREW OXY light indication failure is detected by checking the oxygen pressure indicator, proceed the flight normally monitoring the oxygen pressure. If not, proceed:

Altitude MOCA, MEA OR 10000 FT,
WHICHEVER IS HIGHER

OXYGEN LEAKAGE

On evidence of any oxygen leakage through the crew mask, mask hose, or flow indicator (blinker), proceed:

NO SMOKING ON
Stowage Box Doors CLOSE
Test and Shutoff Sliding Control ACTUATE
Oxygen Pressure CHECK

If oxygen pressure is below minimum oxygen pressure for dispatch, descend to or below 10000 ft.

Altitude AS REQUIRED

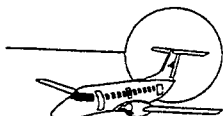
The pilot of the affected side should use the crew portable oxygen cylinder, if necessary.

If oxygen leakage is verified in the oxygen line, close the oxygen cylinder shutoff valve.

Altitude MOCA, MEA OR 10000 FT,
WHICHEVER IS HIGHER

NOTE: Minimum oxygen pressure for dispatch:

- Flight crew - pilot and copilot: 1270 psi.
- Flight crew - pilot, copilot and observer: 1780 psi.



AIRPLANE FLIGHT MANUAL

ICE AND RAIN PROTECTION FAILURE

LEADING EDGE DEICERS FAILURE

- Associated leading edge deicer light illuminated on the ice/rain protection panel.
- DEICE light illuminated on the multiple alarm panel.
- CAUTION light flashing.

Engine Bleed CHECK LOW OR AUTO
For airplanes Post-Mod. SB 120-36-0013 or which have an equivalent modification factory incorporated, at least one engine bleed switch must be positioned to LOW or AUTO to allow pneumatic deicing system operation.

Leading Edge Deicers Switch OFF

Wait 5 seconds and turn on the system by selecting the other Timer.

If the affected light does not extinguish, verify whether to follow steps A or B below:

A. Failure in one of the wing, stabilizer or vertical fin deicers:

Add 15 kt to the speeds to be used in approach and go-around procedures.

Landing:

Flaps 25°
Airspeed $V_{REF} 25 + 5 \text{ KIAS}$

B. Failure in two or more deicers:

Avoid or exit from icing conditions.

WINDSHIELD HEATER FAILURE

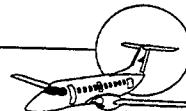
- Respective INOP light illuminated on the ice/rain protection panel.
- DEICE light illuminated on the multiple alarm panel.
- CAUTION light flashing.

Affected Windshield Heater OFF

If ice accumulates avoid operating the windshield wiper on that side.

If both windshield heaters fail, impairing the visibility through windshield, the direct vision window may be removed for approach and landing. In this case proceed:

- Close the cockpit door and check no loose papers and objects in the cockpit.
- Depressurize the airplane.
- Remove the direct vision window when the airspeed is below 140 KIAS.

**AIRPLANE FLIGHT MANUAL****ICE AND RAIN PROTECTION FAILURE (Continued)****PITOT STATIC HEATER FAILURE**

- Respective INOP light illuminated on the ice/rain protection panel.
- DEICE light illuminated on the multiple alarm panel.
- CAUTION light flashing.

Information on the instruments supplied by the affected system may be unreliable. Proceed to a cross-check, and do not use the affected system, if a disagreement is found.

MONITOR SYSTEM FAILURE

- Respective INOP light illuminated on the ice/rain protection panel.
- DEICE light illuminated on the multiple alarm panel.
- CAUTION light flashing.

MONITOR Switch..... TEST

If the INOP light remains illuminated, remain clear of icing conditions.

PROPELLER HEATER FAILURE

- LEFT or RIGHT INOP light illuminated on the ice/rain protection panel.
- DEICE light illuminated on the multiple alarm panel.
- CAUTION light flashing.

Select the other timer on the propeller deicer panel. If the INOP light remains illuminated, remain clear of icing conditions.

AOA SENSOR HEATER FAILURE

- Respective INOP light illuminated on the ice/rain protection panel.
- DEICE light illuminated on the multiple alarm panel.
- CAUTION light flashing.

Add 5 kt to the speeds to be used in approach, landing and go-around procedures, should a failure occur in both angle of attack sensor heaters.

CAUTION: FOR LANDING WITH FLAPS 45°, THE UNFACTORED LANDING DISTANCE WILL BE INCREASED BY 5%.



AIRPLANE FLIGHT MANUAL

ICE AND RAIN PROTECTION FAILURE (Continued)

TAT SENSOR HEATER FAILURE (IF INSTALLED)

- Respective INOP light illuminated on the ice/rain protection panel.
- DEICE light illuminated on the multiple alarm panel.
- CAUTION light flashing.

Report to the maintenance personnel.

NOTE: The OMEGA (if installed) airspeed information may not be valid.

SLIP SENSOR HEATER FAILURE

- Respective INOP light illuminated on the ice/rain protection panel.
- DEICE light illuminated alarm panel.
- CAUTION light flashing.

Add 5 kt to the speeds to be used in approach, landing and go-around procedures and avoid to skid the airplane.

CAUTION: FOR LANDING WITH FLAPS 45°, THE UNFACTORED LANDING DISTANCE WILL BE INCREASED BY 5%.

ENGINE AIR INLET DEICER FAILURE

- Respective INOP light illuminated on the ice/rain protection panel.
- DEICE light illuminated on the multiple alarm panel.
- CAUTION light flashing.

Engine Bleed CHECK LOW OR AUTO
For airplanes Post-Mod. SB 120-36-0013 or which have an equivalent modification factory incorporated, at least one engine bleed switch must be positioned to LOW or AUTO to allow pneumatic deicing system operation.

Remain clear of icing conditions, should a failure occur in any engine air inlet deicer.

**LANDING GEAR FAILURE****INDICATION SYSTEMS (A and B) DISAGREE**

Test indicating lights before initiating the procedure below.

Landing Gear Lever	CYCLE
Landing Gear Indications	WATCH FOR CORRECT SEQUENCE

NOTE: Correct information will be given by the system which displays the correct light sequence.

The system displaying disagreement should be ignored.

GEAR EXTENSION BY ELECTRICAL OVERRIDE

This procedure must be followed in case of normal landing gear extension failure with the green hydraulic system available and Emergency DC bus 1 energized.

CAUTION: DO NOT USE THE ELECTRICAL OVERRIDE EXTENSION PROCEDURE IN CASE OF LOSS OF GREEN HYDRAULIC SYSTEM. REFER TO FREE FALL PROCEDURE.

Landing Gear Lever	DOWN
Gear Electrical Override Switch	DOORS
Wait 3 seconds.	
Gear Electrical Override Switch	GEAR/DOORS
Landing Gear Indication	CHECK
If landing gear extends:	
Gear Electrical Override Switch	NORMAL

If landing gear does not extend, perform GEAR EXTENSION BY FREE FALL procedure.



AIRPLANE FLIGHT MANUAL

LANDING GEAR FAILURE (Continued)

GEAR EXTENSION BY FREE FALL

CAUTION: IN CASE OF LOSS OF GREEN HYDRAULIC SYSTEM DO NOT MOVE THE LANDING GEAR LEVER DOWN NOR OPERATE THE GEAR ELECTRICAL OVERRIDE SWITCH.

Landing Gear Lever	CHECK IN UP POSITION
Free Fall Lever	INSERT AT THE EMERGENCY SELECTOR SOCKET AND ACTUATE TO THE EMERGENCY POSITION
Free Fall Lever	INSERT AT THE NOSE GEAR SOCKET AND ACTUATE TO ITS STOP. WAIT UNTIL THE RESPECTIVE RED LIGHT ILLUMINATED, THEN MOVE IT BACK TO ITS ORIGINAL POSITION. WAIT FOR DOWNLOCK INDICATION
Free Fall Lever	INSERT AT THE LEFT MAIN GEAR SOCKET AND REPEAT THE SAME PROCEDURE AS USED TO LOWER THE NOSE GEAR
Free Fall Lever	INSERT AT THE RIGHT MAIN GEAR SOCKET AND REPEAT THE SAME PROCEDURE AS USED TO LOWER THE NOSE GEAR

- NOTE:**
- Respective red lights will illuminate when each uplock is released.
 - Respective green lights will illuminate when each gear leg is downlocked.
 - No landing gear indication will be available when both emergency DC buses are lost.
 - Time to extend and downlock each landing gear leg is approximately 15 seconds.

After the three landing gears are confirmed downlocked:

Landing Gear Lever DOWN
Red lights will extinguish.

If the "Landing Gear" aural warning persists even after ALARM CANCEL button is pressed:

Landing Gear Indicator A or B Circuit Breaker
(B23 or B24) CYCLE (PULL OUT/
PUSH IN)

**LANDING GEAR FAILURE (Continued)****LANDING GEAR LEVER CANNOT BE MOVED UP AFTER TAKEOFF**

- | | |
|----------------------------------|-------|
| 1. Downlock Release Button | PRESS |
| 2. Landing Gear Lever | UP |

ANTI-SKID FAILURE

- INOP light illuminated on the anti-skid panel.
- BRAKES light illuminated on the multiple alarm panel.
- CAUTION light flashing.

Affected Anti-Skid Switch OFF

Maintain the airplane rolling straight by using the rudder pedal steering.

Apply reverse thrust to reduce airspeed to a minimum, before initiating brake application.

The brake application must be moderate and intermittent. Continuous brake application may be used below 40 KIAS.

CAUTION: AVOID MAX REVERSE IN AREAS OF STANDING WATER.

BRAKE WITH CARE. THE TIRES MAY BE BLOWN OUT.

THE LANDING DISTANCE WILL BE INCREASED. SEE SUPPLEMENT 8.

NOSE WHEEL STEERING FAILURE

- STEER INOP light illuminated on the multiple alarm panel.
(PEDAL STEER INOP light may also illuminate).
- CAUTION light flashing.

In order to perform the steering failure operation, the anti-skid system must be operative.

Taxi, takeoff, and landing must be performed using differential braking.

Use asymmetric power, between GND IDLE and FLT IDLE, for better airplane control during turns.

For turns above 90°, an anticipated use of brakes and power is required to avoid the alignment point surpassing or sudden braking or stopping.

The use of rolling takeoff technique is recommended to avoid sudden braking or large deviations from runway center line.

In case of only steering pedal failure (PEDAL STEER INOP light illuminated on the glareshield panel), the use of the steering handle must be avoided above 60 KIAS.



AIRPLANE FLIGHT MANUAL

STALL WARNING SYSTEM FAILURE

STALL WARNING LIGHT ILLUMINATED

- Associated STALL WARNING light illuminated on the stall warning panel.
- STALL WARN light illuminated on the multiple alarm panel.
- WARNING light flashing.

Associated Stall Warning System Switch OFF

This action deactivates the affected shaker and pusher system. The other system will remain activated.

Add 5 kt to the speeds to be used in approach, landing and go-around procedures should a failure occur in both Stall Warning System.

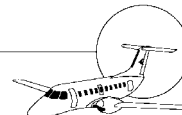
CAUTION: FOR LANDING WITH FLAPS 45°, THE UNFACTORED LANDING DISTANCE WILL BE INCREASED BY 5%.

ADVANCED SWS LIGHT ILLUMINATED

- ADVANCED SWS light illuminated on the multiple alarm panel.
- CAUTION light flashing.

Add 5 kt to the speeds to be used in approach, landing and go-around procedures to prevent stall warning system from being actuated.

CAUTION: FOR LANDING WITH FLAPS 45°, THE UNFACTORED LANDING DISTANCE WILL BE INCREASED BY 5%.

**STALL WARNING SYSTEM FAILURE (Continued)****STALL WARNING ACTIVATION IN ICING CONDITIONS**

- STALL WARN light on the multiple alarm panel.
- WARNING light flashing.

1. Flight Controls	CONTROL COLUMN FWD AND WINGS LEVEL
2. Power Levers	AS REQUIRED
3. Airspeed	ABOVE 165 KIAS
4. Bank Indication	CENTERED

NOTE: • Loss of altitude may occur during speed recovery.

- During the recovery, nose down trim should be applied to reduce the required column force. This pilot technique is useful since the airplane normally will be at a nose up trim setting due to low speed prior to shaker activation. If a large power setting increase becomes necessary to recover speed, the power lever should be moved forward continuously (approximately 3 seconds from IDLE to MAX) to prevent undesirable increases in pitch and roll at speeds close to shaker activation and high angles of attack.



AIRPLANE FLIGHT MANUAL

NAV/FLIGHT INSTRUMENTS FAILURE

COLLINS EFIS CONFIGURATION

LOCATION	FLAG/ ANNUNCIATOR	REASON	ACTION
EHSI	HDG (red)	Compass system failure	Use cross-side heading, selecting XFR position on AHRS HDG transfer switch (EFIS control panel)
	Distance, GS, TTG (red)	DME failure	Select another source of VOR/ILS on DCP
	Bearing VOR, ADF, VLF, LRN (red)	Bearing source failure	Select another source on DCP. Use RMI if necessary
	Nav LOC, VOR, VLF, LRN (red)	Navigation source failure	Select another source on DCP
EADI	ATT (red)	Attitude source failure	Use cross-side attitude, selecting XFR position on AHRS ATT transfer switch (EFIS control panel)
	FD (red)	Flight director system failure	—
	RA (red)	Radio altimeter system failure	—
	SPD (red)	Stall warning system failure	—
	LOC, VOR, VLF, LRN (red)	NAV source failure	Select another source
	PIT or ROL (yellow)	Pitch or Roll comparator error	Reset through ATT/HDG MONITOR switch

AIRPLANE FLIGHT MANUAL



NAV/FLIGHT INSTRUMENTS FAILURE

COLLINS EFIS CONFIGURATION (Continued)

LOCATION	FLAG/ ANNUNCIATOR	REASON	ACTION
EHSI/EADI	GS (red)	Glide slope source failure	Select another source
	XDTA (red)	Cross-side data bus failure	Select XFR position on display source switch (EFIS control panel)
	DPU FAIL (red)	DPU failure	Select XFR position on display source switch (EFIS control panel)
	Blanked Display	Display failure	Select composite format (EFIS control panel)
	DCP (red)	DCP failure	—
	HDG (yellow)	Heading comparator error	Reset through ATT/HDG MONITOR Switch. if unsuccessful, use standby compass
Multiple Alarm Panel	Attitude Display (Yellow)	Discrepancy between pilot and copilot attitude indicators	Reset through the ATT/HDG MONITOR switch. If unsuccessful, use standby horizon
	EFIS OVERHEAT (Yellow)	Any EFIS component in an overheat condition	No immediate action required. Report to maintenance personnel
	AHRS 1 TEST, AHRS 2 TEST (Yellow)	AHRS in test mode	Report to maintenance personnel for corrective action
RMI	Heading Flag	RMI fails to synchronize with the compass, or unreliable information	Use EHSI and standby compass
Altimeter	Failure Warning	Loss of power to vibrator or loss of altimeter information	
Altitude Alerter Panel	OFF	Loss of power or unreliable altitude information indication	—

CTA APPROVED

NOVEMBER 16, 1987



AIRPLANE FLIGHT MANUAL

NAV/FLIGHT INSTRUMENTS FAILURE

COLLINS FIS CONFIGURATION

LOCATION	FLAG/ ANNUNCIATOR	REASON	ACTION
EHSI	Distance Warning (green)	Invalid distance data	—
	GLS (red)	Glide slope source failure or unreliable signal	Check if glide slope indication in ADI is available
	Bearing pointer flashes red and white	Bearing source	Use another source
	Ground-speed Time-to-go (green)	Invalid data	—
	FAIL (yellow)	HPU failure	—
	NAV (red)	Navigation data source failure	—
	HDG (red)	Compass system failures	Check if the RMI can be used
	HCP (yellow)	HCP failures	—
ADI	GS (red)	Glide slope source failure or unreliable signal	Check if glide slope indication in EHSI is available
	Gyro (red)	Roll or pitch failure	Use standby horizon
	Computer (red)	Sterring command signal failure	—
	Localizer Shutter	Localizer signal unreliable	Check if localizer indication in EHSI can be used



NAV/FLIGHT INSTRUMENTS FAILURE

COLLINS FIS CONFIGURATION (Continued)

LOCATION	FLAG/ ANNUNCIATOR	REASON	ACTION
Multiple Alarm Panel	Attitude Display (yellow)	Discrepancy between pilot and copilot attitude indicators	Reset through the ATT MON switch. If unsuccessful, use standby horizon.
	AHRS 1 TEST, AHRS 2 TEST (yellow)	AHRS in test mode	Report to maintenance personnel for corrective action
RMI	Heading Flag	RMI fails to synchronize with the compass, or unreliable information	Use EHSI and standby compass.
Altimeter	Failure Warning	Loss of power to vibrator or loss of altimeter information	—
Altitude Alert Panel	OFF	Loss of power or unreliable altitude information	—



AIRPLANE FLIGHT MANUAL

NAV/FLIGHT INSTRUMENTS FAILURE

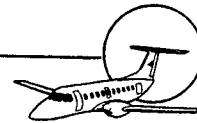
BENDIX EFIS CONFIGURATION

LOCATION	FLAG/ANNUNCIATOR	REASON	REQUIRED ACTION
EHSI	Double red line drawn through the affected pointer, deviation scale, or alphanumeric readout.	Failures on the affected pointer, scale, or alphanumeric readout.	For failures affecting L/R deviation, glide slope, NAV source and course: select another source. Failure affecting DME: select XFER on the DME switch (EFIS switching panel), and turn off DME audio on audio control panel.
	Red "X" drawn through the affected pointer.	Failure of the affected pointer.	Select another source.
EADI	Double red line drawn through the affected pointer or deviation scale.	Failure of the affected pointer or scale.	Failures affecting glide slope or rising runway indication: select another source.
	FD (Red)	Flight Director System Failure.	—
EHSI/EADI	ATTITUDE FAIL (Red)	Attitude system failure.	Use cross-side attitude source, selecting XFER on the AHRS ATT switch (EFIS switching panel).
	HDG (Red)	Heading system failure.	Use cross-side heading source, selecting XFER on the AHRS HDG switch (EFIS switching panel).
	DU 1 (yellow)	EADI fan failure or power supply failure.	Select DISPLAY DOWN on EFIS switching panel.
	DU 2 (yellow)	EHSI fan or power supply failure.	Report to maintenance personnel for corrective action.
	SG (Red)	Symbol generator failure.	Select COPY & AP/FD DIS on EFIS switching panel. CAUTION: THE ON-SIDE AP/FD, IF ON, WILL DISENGAGE.
	CP (Red)	Control panel failure.	Turn OFF the respective control panel, and use cross-side control panel.
	Double ended yellow arrow over affected system indication	Discrepancy between pilot's and copilot's affected system.	—

CTA APPROVED

NOVEMBER 16, 1987

REV. 19 — JANUARY 18, 1991

**NAV/FLIGHT INSTRUMENTS FAILURE****BENDIX EFIS CONFIGURATION (Continued)**

LOCATION	FLAG/ANNUNCIATOR	REASON	REQUIRED ACTION
Multiple Alarm Panel	AHRS 1 TEST, AHRS 2 TEST (yellow)	AHRS in test Mode.	Report to Maintenance personnel for corrective action.
	ELEC BAY OVERTEMP (yellow)	Overtemperature in the electronic compartment.	Turn off redundant instruments, and instruments unnecessary for the present phase of flight.
	ATTITUDE DISPLAY	Discrepancy between pilot's and copilot's attitude indicators.	Use standby horizon as a reference to perform a cross-check between both attitude indicators. Do not use the discrepant attitude indicator.
RMI	Heading Flag	RMI fails to synchronize with compass, or unreliable information.	Use EHSI and standby compass.

CTA APPROVED

NOVEMBER 16, 1987

REV. 14 – JANUARY 24, 1990



AIRPLANE FLIGHT MANUAL

GROUND PROXIMITY WARNING SYSTEM FAILURE (IF INSTALLED)

GPWS INOP LIGHT ILLUMINATED (IF INSTALLED)

- GPWS INOP light illuminated on the multiple alarm panel.
- CAUTION light flashing.

It indicates that the GPWS is inoperative. All informations are unreliable. In this case, continue the flight and report to the maintenance personnel after landing.

NOTE: The GPWS may be deactivated in the event of a system failure generating a false alert, or when an emergency or abnormal procedure specifies landing with gear up or with a flap setting less than those approved for normal operation. In this case, the respective GPWS circuit breaker must be pulled out (J25 for airplanes equipped with Collins avionic version, or F27 for airplanes equipped with Bendix avionic version).

ENHANCED GROUND PROXIMITY WARNING SYSTEM FAILURE (IF INSTALLED)

GPWS FAIL LIGHT ILLUMINATED

- GPWS FAIL light illuminated on the copilot's panel.
- GPWS INOP light illuminated on the multiple alarm panel.
- CAUTION light flashing.

It indicates that the GPWS is inoperative. All informations are unreliable. In this case, continue the flight and report to the maintenance personnel after landing.

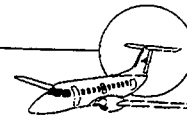
NOTE: The GPWS may be deactivated in the event of a system failure generating a false alert, or when an emergency or abnormal procedure specifies landing with gear up or with a flap setting less than those approved for normal operation. In this case, the respective GPWS circuit breaker must be pulled out (J18 for airplanes equipped with Collins avionic version).

TERR FAIL LIGHT ILLUMINATED

- TERR FAIL light illuminated on the copilot's panel.
- FAIL displayed on the dedicated terrain display (if installed).

It indicates that no valid terrain information is displayed on the MFD (Multiple Function Display) or on the Dedicated Terrain Display (if installed).

The GPWS mode is operating properly. Continue the flight and report to the maintenance personnel after landing.



AHRS FAILURE

The procedures below should be used:

- If, after normal initialization procedure, the EFIS continues displaying ATT and HDG red flags.
- If the EADI and EHSI do not show flags, but present incoherent information due to improper initialization (aircraft movement, proximity to metallic structures, electrical transients or hang-up conditions during initialization).

Respective AHRS Circuit Breakers (G18 and G19

or G20 and G21) PULL

BACK UP BATT Switch OFF

Wait 10 seconds.

BACK UP BATT Switch ARM

Respective AHRS Circuit Breakers (G18 and G19

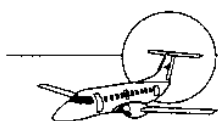
or G20 and G21) RESET

Valid information should be available in approximately 70 seconds.

NOTE: Check the DG MODE pushbutton in off position.

If the yellow HDG flag is displayed but the EADI and EHSI show valid information, the HDG flag should disappear by pressing the ATT/HDG MONITOR switch (if installed) or moving the aircraft away from any building or metallic structure.

NOTE: If required, AHRS airborne initialization can be performed maintaining the airplane in leveled attitude, completely stabilized and without any acceleration. The valid information will be available in approximately 18 seconds.



AIRPLANE FLIGHT MANUAL

AUXILIARY POWER UNIT FAILURE

OIL LOW PRESSURE OR FUEL LOW PRESSURE FAILURE

- OIL LOW PRESS or FUEL LOW PRESS light illuminated on the APU control panel.
- In case of oil low pressure failure, the APU light will illuminate on the multiple alarm panel, and the CAUTION light will flash.

APU Parameters MONITOR

If APU is required for the remainder of the flight, monitor APU EGT and RPM. In case abnormal values occur shut the APU down.

Shut the APU down if not essential for the flight.

GEN OFF BUS LIGHT ILLUMINATED

- GEN OFF BUS light illuminated on the APU control panel.
- APU light illuminated on the multiple alarm panel.
- CAUTION light flashing.

Indicates that the APU generator is not supplying the central bus bar.

APU GEN Switch RESET

GEN OFF BUS Light CHECK OFF

If the light remains illuminated:

APU GEN Switch OFF

If air is not bleeding from APU, shut it down.

APU OIL HIGH TEMP LIGHT ILLUMINATED

- HIGH TEMP light, illuminated on the APU control panel.

Shut the APU down.

APU START CONTACTOR LIGHT ILLUMINATED ABOVE 50% RPM (APU GARRETT) OR 70% RPM (APU SUNDSTRAND)

- START CONTACTOR light illuminated on the APU control panel.

1. APU STOP Button	PRESS
If the light remains illuminated:	
2. APU Master Switch	OFF

If the light is still illuminated:

- On ground:

PWR SELECT Switch OFF

BUS TIE 1 and 2 Switches OFF

Deenergizes the APU starter-generator.

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JANUARY 24, 1990

REV. 69 – JULY 26, 2001



AUXILIARY POWER UNIT FAILURE (Continued)

– In flight:

APU GCU Circuit Breaker (C15) PULL

Deenergizes the APU generator control unit.

In any case, report to the maintenance personnel.

EGT ABOVE 732°C

Shut the APU down.

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AIRPLANE FLIGHT MANUAL

DOORS FAILURE

FORWARD ACTUATOR LIGHT ILLUMINATED

- FORWARD ACTUATOR light illuminated on the doors panel.
- DOORS light illuminated in the multiple alarm panel.
- WARNING light flashing.

To open the door, actuate the forward door emergency valve located in the cockpit step.

FORWARD LIGHT ILLUMINATED

- FORWARD light illuminated on the doors panel.
- DOORS light illuminated in the multiple alarm panel.
- WARNING light flashing.

FASTEN BELTS ON
Door Internal Lock Indicator CHECK

If the red marks in the upper track and cam are aligned:

FASTEN BELTS OFF

Report to the maintenance personnel.

If the red marks are disaligned, descend below 10000 ft and depressurize the airplane.

Door Handle PUSH

If red marks remain disaligned, land as soon as possible and avoid skidding the airplane.

CARGO LIGHT ILLUMINATED

- CARGO light illuminated on the doors panel.
- DOORS light illuminated in the multiple alarm panel.
- WARNING light flashing.

In-flight:

- Avoid rapid maneuvers.
- Report to the maintenance personnel.

On ground:

- Visually check the door for positive locking before takeoff.

SERVICE LIGHT ILLUMINATED

- SERVICE light illuminated on the doors panel.
- DOORS light illuminated in the multiple alarm panel.
- WARNING light flashing.

If associated with ice or rain condition, reduce the flying time with the landing gear down to avoid possible water penetration into the electronic compartment.

High airspeed should be avoided.

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STRUCTURAL DAMAGE

The airplane structure may be affected in the following cases:

- Bird impact
- Propeller blade failure
- Engine rotor burst
- Hail impacts
- Engine fire

On evidence of any structural damage:

Airspeed Under Turbulence BELOW 170 KIAS

Load Factor BELOW 1.7

Refer to Buffet Onset Envelope to obtain altitude and speed required for the desired load factor.

Aileron and Rudder Deflection BELOW 30%

Avoid excessive deflection of rudder and aileron after stabilization.

If fuselage is damaged with the cabin pressurized:

Manual Controller Selector 1 O'CLOCK POSITION

Wait 15 seconds to allow electropneumatic outflow valve to reach its neutral position, thus avoiding a sudden cabin differential pressure increase.

Mode Selector Switch MAN

Manual Controller Selector UP

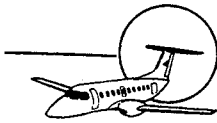
Altitude MOCA, MEA OR 10000 FT,
WHICHEVER IS HIGHER

When cabin ΔP needle reaches zero:

Mode Selector Switch DUMP

When landing:

Rate of Descent LESS THAN 300 FT/MIN



BIRD IMPACT

Against cockpit:

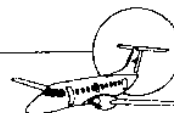
- See the CRACKED WINDSHIELD procedure.

Against the leading edge (wing or tail):

- It may result in possible reduction in maneuverability and damage to the leading edge deicer. Refer to LEADING EDGE DEICERS FAILURE procedures and, if necessary, re-trim the airplane.
- At a safety altitude perform a controllability check with the airplane in landing configuration. Define a safe Landing Reference Speed for approach and landing.
- The use of a Landing Reference Speed greater than the one specified will imply in a unknown increase in the landing distance.
Land at suitable airport.

Against propeller:

- Verify passenger windows for damage. Monitor pressurization parameters.
- Decrease propeller RPM, if necessary. If propeller unbalance is found to be excessive, shut the engine down.



CRACKED WINDSHIELD

— Windshield cracking is visually identified.

Respective Windshield Heater OFF
 Pressurization CHECK

Verify the pressurization parameters within required values and reduce the ΔP as much as possible.

If windshield is impaired, reduce the airplane airspeed and use the full-face mask to prevent injury to the eyes.

In the event a shattered windshield:

Airplane DEPRESSURIZE
 Cockpit Door CLOSE

Check no loose papers in the cockpit.

Altitude MOCA, MEA OR 10000 FT,
 WHICHEVER IS HIGHER

In case of both windshield impairment, remove the direct vision window when the airspeed is below 140 KIAS to make the final approach by looking through it.



AIRPLANE FLIGHT MANUAL

CROSSFEED OPERATION

It is recommended that crossfeed be used in the following conditions:

- Fuel imbalance due to: Flight with one engine inoperative, different consumption rate between engines, incorrect refueling or continuous APU operation.
- APU operation with fuel supply from the left tank.

NOTE: • The crossfeed operation is not recommended during takeoff and landing.
• Monitor the maximum fuel imbalance limit between tanks (272 kg – 346 liters).

Perform the crossfeed operation as follows:

One Fuel Pump in Each Tank ON

Switch ON one fuel pump in each tank, maintaining the other fuel pumps set to AUT.

Crossfeed Valve OPEN

Check the crossfeed OPEN light illuminated.

Both Fuel Pumps on the Side With Less Fuel AUT

Switch to AUT the fuel pump which was set to ON position on the side with less fuel.

During crossfeed operation, verify both LOW PRESS lights extinguished and monitor fuel quantity imbalance.

When crossfeed operation has been accomplished:

One Fuel Pump in Each Tank ON

Switch ON one fuel pump in each tank.

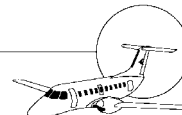
Crossfeed Valve CLOSE

Check the crossfeed OPEN light extinguished.

Fuel Pumps on Both Sides AUT

Switch to AUT all fuel pumps of both sides.

The crossfeed operation is also recommended in case of flights above 15000 ft with loss of all fuel pumps of one tank. In this case, refer to the procedure FUEL SUPPLY WITHOUT TANK PUMPS in the Emergency/Abnormal Procedures section.

**HIGH SPEED**

- HIGH SPEED voice message (non-cancellable) on the aural warning system.

Airspeed REDUCE TO
BELOW V_{MO}/M_{MO}

NOTE: At airspeeds above V_{MO}/M_{MO} the stick forces to recover from a dive are reduced, specially when the C.G. is at the aft limit. The pilot should be aware of this condition to avoid overstressing the airplane.

LANDING BELOW – 40°C

Before touchdown:

Rate of Descent LESS THAN 300 FT/MIN

After landing:

Maintenance Personnel REPORT

ICING CONDITION LOW SPEED ALARM

- LOW SPEED amber light illuminated on the ice cond low speed alarm panel.
- Buzzer sound.

1. Airspeed.....	ABOVE 165 KIAS
2. Leading Edge Deicers Switch.....	CHECK TIMER 1 OR TIMER 2

NOTE: Icing condition LOW SPEED alarm may not be cancelable by the flightcrew, and may not extinguish until 170 KIAS. Applying power should promptly recover speed. If necessary, disengage the autopilot, push over to regain airspeed, and notify ATC of altitude deviation.

When icing condition LOW SPEED alarm turns off:

Autopilot AS REQUIRED

NOTE: Monitor the ice accretion, and the airspeed.

Severe Icing Conditions CHECK



AIRPLANE FLIGHT MANUAL

ICING CONDITION LOW SPEED ALARM (IF INSTALLED) (Continued)

SEVERE ICING CONDITIONS

- WARNING:**
- SEVERE ICING MAY RESULT FROM ENVIRONMENTAL CONDITIONS OUTSIDE OF THOSE FOR WHICH THE AIRPLANE IS CERTIFICATED. FLIGHT IN FREEZING RAIN, FREEZING DRIZZLE, OR MIXED ICING CONDITIONS (SUPERCOOLED LIQUID WATER AND ICE CRYSTALS) MAY RESULT IN ICE BUILD-UP ON PROTECTED SURFACES EXCEEDING THE CAPABILITY OF THE ICE PROTECTION SYSTEM, OR MAY RESULT IN ICE FORMING AFT OF THE PROTECTED SURFACES. THIS ICE MAY NOT BE SHED USING THE ICE PROTECTION SYSTEMS, AND MAY SERIOUSLY DEGRADE THE PERFORMANCE AND CONTROLLABILITY OF THE AIRPLANE.
 - DURING FLIGHT, SEVERE ICING CONDITIONS THAT EXCEED THOSE FOR WHICH THE AIRPLANE IS CERTIFICATED SHALL BE DETERMINED BY THE FOLLOWING VISUAL CUES:
 - UNUSUALLY EXTENSIVE ICE ACCRETED ON THE AIRFRAME IN AREAS NOT NORMALLY OBSERVED TO COLLECT ICE.
 - ACCUMULATION OF ICE ON THE UPPER SURFACE OF THE WING AFT OF THE PROTECTED AREA.
 - ACCUMULATION OF ICE ON THE PROPELLER SPINNER FARTHER AFT THAN NORMALLY OBSERVED.
 - IF ONE OR MORE OF THESE VISUAL CUES EXISTS, IMMEDIATELY REQUEST PRIORITY HANDLING FROM AIR TRAFFIC CONTROL TO FACILITATE A ROUTE OR AN ALTITUDE CHANGE TO EXIT THE ICING CONDITIONS.
 - SINCE THE AUTOPILOT MAY MASK TACTILE CUES THAT INDICATE ADVERSE CHANGES IN HANDLING CHARACTERISTICS, USE OF THE AUTOPILOT IS PROHIBITED WHEN ANY OF THE VISUAL CUES SPECIFIED ABOVE EXIST, OR WHEN UNUSUAL LATERAL TRIM REQUIREMENTS OR AUTOPILOT TRIM WARNINGS ARE ENCOUNTERED WHILE THE AIRPLANE IS IN ICING CONDITIONS.

If severe icing conditions are confirmed:

FLYING IN SEVERE ICING CONDITIONS Procedure APPLY

FLYING IN SEVERE ICING CONDITIONS

Severe ice conditions should be determined by the visual cues specified in the Limitations Section of this manual.

The following weather conditions may be conducive to severe icing in flight:

- Visible rain at temperatures below 0°C (32°F) ambient air temperature.

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**ICING CONDITION LOW SPEED ALARM (IF INSTALLED) (Continued)**

- Droplets that splash or splatter on impact at temperatures below 0°C (32°F) ambient air temperature.

When flying in severe ice conditions, proceed as follows. These procedures are applicable to all flight phases from takeoff to landing.

1. Immediately turn all ice protection systems on. Select leading edge deicers inflation cycle switch to HEAVY for airplanes Pre-Mod. SB 120-30-0032 and propeller deicing switch to COLD or NORM, as required.
2. Immediately request priority handling from Air Traffic Control to facilitate a route or an altitude change to exit the severe icing conditions in order to avoid extended exposure to flight conditions more severe than those for which the airplane has been certificated.
3. Avoid abrupt and excessive maneuvering that may exacerbate control difficulties.
4. Do not engage the autopilot.
5. If the autopilot is engaged, hold the control wheel firmly and disengage the autopilot.
6. If an unusual roll response or uncommanded roll control movement is observed, reduce the angle-of-attack.
7. Do not extend flaps during extended operation in icing conditions. Operation with flaps extended can result in a reduced wing angle-of-attack, with the possibility of ice accretion on the upper surface further aft on the wing than normal, possibly aft of the protected area.
8. If the flaps are extended, do not retract them until the airframe is clear of ice or unless flap retraction is essential for go-around.
9. Report these weather conditions to Air Traffic Control.