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**Agencia Federal de Aviación Civil**

Dirección Ejecutiva de Aviación  
Dirección de Aviación

4.1.4. OPS.-4948/ 2022.

Ciudad de México, a 10 de octubre de 2022  
Asunto: Aut. Manual QRH EMB -145

**Link Conexión Aérea, S.A. de C.V.**  
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Representante Legal

En atención a su escrito con referencia TAR-089/22 de fecha 26 de julio del año en curso, y de acuerdo a lo establecido en el Reglamento de la Ley de Aviación Civil y las Normas Oficiales Mexicanas en vigor, así como en lo establecido en los transitorios Cuarto y Quinto del Decreto por el que se crea el órgano administrativo desconcentrado de la Secretaría de Infraestructura, Comunicaciones y Transportes, denominado Agencia Federal de Aviación Civil se devuelven debidamente aprobadas las siguientes enmiendas aplicables a las aeronaves Embraer, modelo EMB-145, no teniendo inconveniente en su uso operacional:

Manual / Número de Parte	Revisión	Fecha	Aplica para las series
Quick Reference Handbook (QRH/1115/04) (Motores AE3007A1)	19	20-julio-2022	145481
Quick Reference Handbook (QRH/1115/06) (Motores AE3007A1P)	19	20-julio-2022	145063, 145067, 145080, 145078, 145071, 145138 y 145241

**Nota:** La presente autorización de la revisión anterior, queda supeditada a los comentarios realizados por la Dirección de Control una vez que esta información haya sido analizada por el personal de operaciones vuelo.

Dichas enmiendas deberán ser insertadas en el manual de vuelo con número de autorización **AUT. VLO.: 219/2013, de fecha 21 de octubre de 2013.**

Una copia en electrónico (CD) del manual queda en poder del archivo de esta Dirección, debiendo entregar la copia anexa al presente a la Comandancia de su base de operaciones, para mantener actualizado el Manual correspondiente en poder de dicha Comandancia de Aeropuerto.

Atentamente.

  
**Ing. Pablo Carranza Plata**  
Director Ejecutivo de Aviación



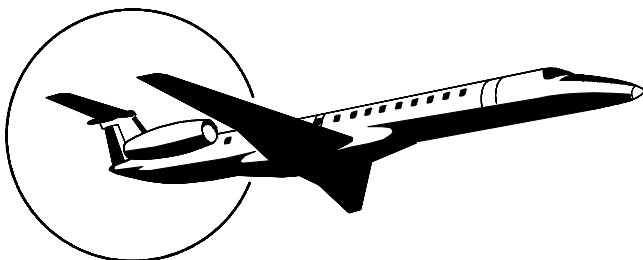
C.c. Director General de la Agencia Federal de Aviación Civil.- Pte.  
Director Ejecutivo de Seguridad Aérea.- Pte.  
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# EMB145



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## UNITED STATES QUICK REFERENCE HANDBOOK

THIS PUBLICATION CANCELS AND SUPERSEDES THE  
QRH-145/1115 DATED APRIL 16, 2001; REVISION 8  
DATED APRIL 04, 2005.

**QRH-145/1115-04**  
**SEPTEMBER 29, 2006**  
**REVISION 19 – JULY 20, 2022**

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## **APPLICABILITY**

**This handbook is applicable to the EMB-135, ERJ-140 and the EMB-145 models.**

**The procedures contained in this handbook have been developed by the manufacturer for use during the operation of the EMB-135, ERJ-140 and EMB-145 models. These procedures are provided as guidance and should not be construed as prohibiting the development of equivalent procedures.**

**The use of the on board checklist is based on the assumption that both pilots have been properly trained on the type of airplane and, therefore, have a thorough knowledge of the airplane's systems and procedures.**

**It further assumes that they know the consequences of not performing the right actions at the right time.**

**In case of conflicting information between this handbook and the AFM-145/1153 or AFM-140/1330, the AFM must prevail.**



# NORMAL PROCEDURES

## INTRODUCTION

The normal checklist is just a memory aid to assist the pilots so they do not forget actions which, if not carried out, can result in some type of risk to the airplane, to the operational environment, to any of its systems, to its occupants or to the passengers comfort. Specific regulations also ask for items to be included in the checklist.

The normal checklist assumes that the pilots previously accomplished all normal procedures.

The normal checklist is named and divided according to each specific phase of flight.

When a disagreement between the response and the checklist answer is found, the checklist should be interrupted until the item is resolved.

Upon completion of the checklist the pilot reading it should state: “\_\_\_\_\_ Checklist Complete”.

- \* Items marked with an asterisk are to be performed at least once a day, by flight crew or maintenance personnel, at operator’s discretion.
- ◆ Items marked with a diamond are to be on through flights.

# ***NORMAL PROCEDURES***

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# NORMAL PROCEDURES

## INTERNAL SAFETY INSPECTION

CHALLENGE	ACTION
Maintenance Status .....	CKD
Cockpit Emergency Equip.....	CKD
Reinforced Cockpit Door	
Vent Louver (if applicable).....	OPN
Circuit Breakers .....	CKD
ELECTRIC Panel.....	SET
Emergency Lights .....	OFF
Fire Extinguishing Handle 1 .....	PUSHED IN
FUEL Panel .....	SET
APU .....	SET
Ignitions.....	AUTO
START/STOP Selectors.....	STOP
Fire Extinguishing Handle 2 .....	PUSHED IN
Ailerons & Rudders Shutoff .....	PUSHED IN
HYDRAULIC Panel.....	SET
Windshield Heating.....	PUSHED OUT
Sensors.....	PUSHED IN
Ice Detection Override .....	AUTO
AIR COND/PNEUM Panel .....	SET
Windshield Wipers (if installed).....	OFF
Lights .....	OFF
ELT .....	ARMED
Weather Radar.....	OFF
Landing Gear Lever .....	DOWN
Crew Oxygen .....	ON
PASSENGER OXYGEN Panel .....	SET
Gust Lock .....	LOCKED
Speed Brake .....	CLSD
Emergency/Parking Brake.....	AS RQRD
FLAPS Selector Lever .....	VERIFY POS
Alternate Gear Extension	
Compartment .....	CKD

# NORMAL PROCEDURES

## POWER UP

CHALLENGE	ACTION/RESPONSE
Batteries 1 & 2.....	AUTO
Avionics Master 1 or 2.....	PUSHED IN
* Batteries Voltage.....	CKD
* Backup Battery (EMB XR only) .....	CKD
GPU Voltage (if available).....	CKD
Avionics Master 1 & 2.....	PUSHED OUT
GPU (if available) .....	PUSHED IN
Fuel Pump Power Tank 2.....	AS RQRD
Navigation Light.....	ON
* FIRE EXTINGUISHER Panel.....	CKD
APU .....	AS RQRD
Avionics Master 1 & 2.....	PUSHED IN
.....With APU Power.....	
GPU (if available) .....	PUSHED OUT
.....3 minutes After APU Start.....	
APU Bleed.....	PUSHED IN
Air Conditioning.....	AS RQRD

## BEFORE START

CHALLENGE	RESPONSE
Manuals & Documents.....	ON BOARD
CVR .....	CKD
ELECTRICAL Panel.....	SET
Emergency Lights.....	ARM
Push Button Lights	
Test (if installed).....	CKD
◆ FUEL Panel.....	SET
* Fire Detection.....	CKD
FIRE EXTINGUISHER Panel.....	CKD
POWERPLANT Panel .....	SET
* Elec Pump Sys 1 & 2.....	CKD
Elec Pump Sys 1 & 2.....	OFF
◆ PAX SIGNS Panel.....	SET
ICE PROTECTION Panel .....	SET
AIR COND/PNEUM Panel.....	SET
Oxy Masks & Regulators .....	CKD
Weather Radar .....	TST/STBY
Pitch Trim Cutout Buttons .....	CKD
DISPLAY CONTROL Panel .....	SET
◆ Flight Number & Clocks .....	SET

**CONTINUES ON NEXT PAGE**

# NORMAL PROCEDURES

## CONTINUED FROM PREVIOUS PAGE

CHALLENGE	RESPONSE
AHRS (if applicable).....	SET
IRS (if applicable).....	NAV
Autopilot .....	CKD
Gust Lock .....	LOCKED
REVERSIONARY Panel .....	SET
◆ Flight Instruments.....	SET/X-CKD
◆ RMU.....	SET
Thrust Levers .....	IDLE
◆ Stall Protection System .....	CKD
TRIM Panel.....	CKD
◆ PRESSURIZATION Panel .....	SET
◆ FMS .....	SET
-----	
◆ Fuel QTY .....	CKD
◆ FMS .....	SET
◆ Speed Bugs .....	SET
◆ TRIM Panel.....	__SET/ZERO/ZERO
◆ Doors & Windows .....	CLSD
◆ Takeoff Briefing.....	COMPLETED
◆ Fuel Pump Power .....	ON
◆ Red Beacon .....	ON
◆ Emergency/Parking Brake.....	AS RQRD
◆ Steering .....	AS RQRD
Safety Pins.....	ON BOARD

## AFTER START

CHALLENGE	RESPONSE
Ground Equipment.....	REMOVED
ELECTRICAL Panel .....	SET
APU .....	AS RQRD
FADEC.....	RST/ALTN
Elec Hyd Pumps .....	AUTO
Windshield Heating.....	AS RQRD
AIR COND/PNEUM Panel .....	SET
FLAPS .....	__SET
Flight Controls .....	CKD
Taxi Lights .....	ON

# NORMAL PROCEDURES

## BEFORE TAKEOFF

CHALLENGE	ACTION/RESPONSE
Takeoff Briefing.....	PERFORM
Ice Protection Test.....	AS RQRD
Brakes Temperature .....	CKD
EICAS.....	CKD
Transponder .....	TA/RA
Takeoff Configuration.....	CKD
Gust Lock.....	UNLOCKED
Elevator.....	CKD

## AFTER TAKEOFF

CHALLENGE	ACTION/RESPONSE
Landing Gear.....	UP
FLAPS.....	0
Thrust Rating .....	CLB
Windshield Heating.....	AS RQRD
AIR COND/PNEUM Panel.....	SET
Altimeters .....	SET/X-CKD
Pressurization .....	CKD
APU .....	AS RQRD

## DESCENT

CHALLENGE	ACTION
Windshield Heating.....	PUSHED IN
Approach Briefing.....	COMPLETED
Speed Bugs .....	SET
PRESSURIZATION Panel.....	SET
-----	-----
External Lights.....	ON
Pax Signs.....	SET

## APPROACH

CHALLENGE	ACTION/RESPONSE
PASS SIGNS Panel.....	SET
Altimeters .....	SET/X-CKD
Approach Aids.....	SET/X-CKD

## BEFORE LANDING

CHALLENGE	ACTION
Landing Gear.....	DOWN
FLAPS.....	___ SET
Lights.....	AS RQRD
AP/YD.....	OFF

# NORMAL PROCEDURES

## SHUTDOWN

CHALLENGE	ACTION/RESPONSE
Thrust Levers .....	IDLE
Emergency/Parking Brake .....	SET
GPU/APU Generators .....	PUSHED IN
Shed Buses .....	AS RQRD
START/STOP Selectors.....	STOP
Red Beacon .....	OFF
FSTN BELTS .....	OFF
Fuel Pump Pwr .....	AS RQRD
Elec Hyd Pumps .....	OFF
Ice Protection Sys .....	OFF
AIR COND/PNEUM Panel .....	SET

## LEAVING THE AIRPLANE

CHALLENGE	ACTION/RESPONSE
IRS (if applicable).....	OFF
Avionics Master 1 & 2 .....	PUSHED OUT
Emergency Lights .....	OFF
External & Internal Lights.....	OFF
PAX SIGNS Panel .....	OFF
Weather Radar.....	OFF
Standby Attitude (if applicable).....	CAGED
GPU/APU.....	OFF
AIR COND/PNEUM Panel .....	SET
Fuel Pumps.....	OFF
Batteries .....	OFF

# ***NORMAL PROCEDURES***

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# **EMERGENCY/ABNORMAL PROCEDURES**

## **INTRODUCTION**

The Emergency/Abnormal Procedures published in the Quick Reference Handbook (QRH) are provided to pilots as quick guide to minimize the consequences of emergency and abnormal situations that might occur during airplane operation.

In case a discrepancy is found between the QRH and the approved Airplane Flight Manual (AFM), the AFM shall prevail.

Use the QRH requires proper training on the execution of all operational, emergency and abnormal procedures set forth in the AFM and a thorough knowledge of airplane systems.

The procedures set forth herein also require situational awareness for identification of an emergency or abnormal situations and pilot skills to guarantee safety. The Emergency Evacuation procedure accomplishment may be necessary in many situations and its need is at pilot's discretion.

It is EMBRAER recommendation that any unusual situation encountered should be reported as quickly as possible to Flight Operations and Maintenance Personnel.

Three blocks of procedures are contained in this manual:

- **Smoke Procedures:** address all annunciated and non annunciated smoke related procedures.
- **Non Annunciated Procedures:** procedures that are not related to an EICAS message but rather to a condition present in the airplane. The Checklists are arranged in alphabetical order with Emergency Checklists first, followed by Abnormal Checklists.
- **Annunciated Procedures:** procedures related to EICAS message. These procedures are grouped by system and the system tabs are in alphabetical order. Each title procedure is followed by the corresponding EICAS message identification. The Checklists for each System Tab are arranged in alphabetical order with the Emergency Checklists first followed by the Abnormal Checklists. The message provided for each procedure represents the root cause of the failure.

The emergency evacuation procedure is repeated in the last page of QRH, after Performance Data to make it easier to find.

# EMERGENCY/ABNORMAL PROCEDURES

Some procedures can either be annunciated or non annunciated. In this case, the procedures are presented in the Annunciated block but are referenced in the Non Annunciated index.

In each Annunciated System Tab Index, the related non annunciated procedures are presented with a cross-reference to the Non Annunciated Tab page. The procedures index is classified into Emergency and Abnormal procedures, while EICAS Messages List is classified into Warning, Caution and Advisory messages.

Some EICAS messages do not have an associated QRH procedure. In those cases, "Crew Awareness" identifies the EICAS message as noted in the Index Table. If a Crew Awareness message is displayed on the EICAS, takeoff is prohibited, unless at least one of the following conditions is met:

- The message is an expected result of an intentional operation;
- Flight crew action is taken to clear the message;
- Maintenance personnel take action to clear the message;
- The airplane is dispatched in accordance with all approved company MEL provisions.

If one of the following Crew Awareness messages is presented after gate departure, the flight may continue only to the intended destination without further action:

- AHRs BASIC MODE,
- DU 1 (2, 3, 4, 5) FAN FAIL,
- E1 (2) OIL IMP BYP,
- ENG A/ICEOVERPRES,
- IC 1 (2) FAN FAIL or
- GEN 1 (2, 3, 4) BRG FAIL.

Some procedures include a characterization below the title if a relevant emergency/abnormal condition is present, such as aural warnings, lights, EICAS indications, flight instrument flags and the airplane condition itself.

The actions contained in the bold square boxes are recall items. They must be performed expeditiously, by memory.

Flying the airplane is always the priority in any emergency/abnormal situation. Checklists should be called after the flight path is under control, critical phases of flight (such as takeoff and landing) have ended and all recall items have been accomplished.

# EMERGENCY/ABNORMAL PROCEDURES

Some emergency and abnormal situations require landing at the nearest suitable airport. This statement will be listed at the beginning of a task checklist to give the crew proper time to plan the landing. Also, as an aid for planning the diversion airport, the landing distance correction factor will be presented together with the “Land at nearest suitable airport” statement.

Throughout this manual, a text followed by () means that either condition applies. A text followed by “..” means that both conditions apply simultaneously.

Some procedures require depressurizing the cabin. This will require either dumping the cabin air or the use of manual control to accomplish this task. In this situation, manual control depressurization is the recommended method to be used for passenger comfort and should be made by setting the pressurization mode selector to MAN and smoothly setting the controller to FULL UP. When there is a need to depressurize by a specific method, it will be clearly stated in the procedure.

The procedures contained herein assume that:

- Airplane systems were operating normally prior to the failure.
- All emergency/abnormal actions are performed in the order they are listed in the procedure.
- Normal procedures have been properly performed.
- Aural warnings are silenced as necessary. Master Warning/ Caution lights are reset as soon as the failure is recognized.
- All procedures are self-contained. All other messages that may be generated by a single failure do not require that procedures associated to those messages be accomplished in addition to the procedure addressing the root cause.
- Circuit breakers must not be pushed in if they pop up.

All assigned tasks in the procedures have the indication END at the completion of each assigned task. No task is over until **END** has been reached.

Upon completion of the checklist the pilot reading it should state: “(Procedure Title) Checklist Complete”.

In the event of multiple failures (excluding cascade failures) with different landing configuration and/or landing distance correction factors, the crew should use good judgment to determine the safest action.

# **EMERGENCY/ABNORMAL PROCEDURES**

According to the QRH philosophy, Rejected Takeoff (at or below  $V_1$ ) procedure is not considered in this manual. Indeed, should the flight crew decide to reject the takeoff; they will do it by memory, not by referring to the QRH. Consequently, Rejected Takeoff (at or below  $V_1$ ) procedure is a matter of flight crew training and is considered within the Standard Operating Procedures Manual, which contains the complete guidance to accomplish it.

Indentation exists when the information is displaced to the right relative to the paragraph that immediately precedes it. The indentation is used to establish a relationship between the indented and the preceding information. An indented information is normally preceded by a condition (e.g. “during landing”, “if something is true”, “when something happens”). When this is the case, observe the indented information when the preceding condition is satisfied.

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# EMERGENCY/ABNORMAL PROCEDURES

## Smoke

### LIST OF EICAS MESSAGES

**BAGG SMOKE ..... S-3**

**LAV SMOKE ..... S-3**

**BAGGAGE SMOKE**

**EICAS Warning: BAGG SMOKE**

**Fire Extg Bagg  
Button (if installed)..... PUSH IN**

**LAND AT THE NEAREST SUITABLE AIRPORT.**

**Shed Buses ..... OFF**

**Altitude ..... MAINTAIN**

Delay the descent as long as possible.

**NOTE:** Advise Ground Crew of possible Halon vapors approximately 50 minutes after discharging fire extinguishing bottle.

**END**

**LAVATORY SMOKE**

**EICAS Warning: LAV SMOKE (may be presented)**

**Lavatory Flush and Lavatory Light CB's (Located in Line E) ..... PULL**

**Establish contact with the cabin crew.**

**If necessary:**

**Diversion ..... CONSIDER**

**SMOKE EVACUATION**

**Procedure (S-4) ..... ACCOMPLISH**

**END**

**Smoke**

**SMOKE EVACUATION**

**Condition:** Smoke or odor inside the cabin and/or cockpit requiring smoke removal.

**Crew Oxygen Masks.....DON, 100%**  
**Smoke Goggles.....DON**  
**Crew Communication....ESTABLISH**

**LAND AT THE NEAREST SUITABLE AIRPORT.**

**Cockpit Door ..... CLOSE**

**Reinforced Cockpit Door Louver Vent (if applicable) ..... CLOSE**

**Recirculation Fan..... PUSH OUT**

**Gasper Fan ..... PUSH OUT**

**Pressurization Manual Controller ..... 1 O'CLOCK POSITION**

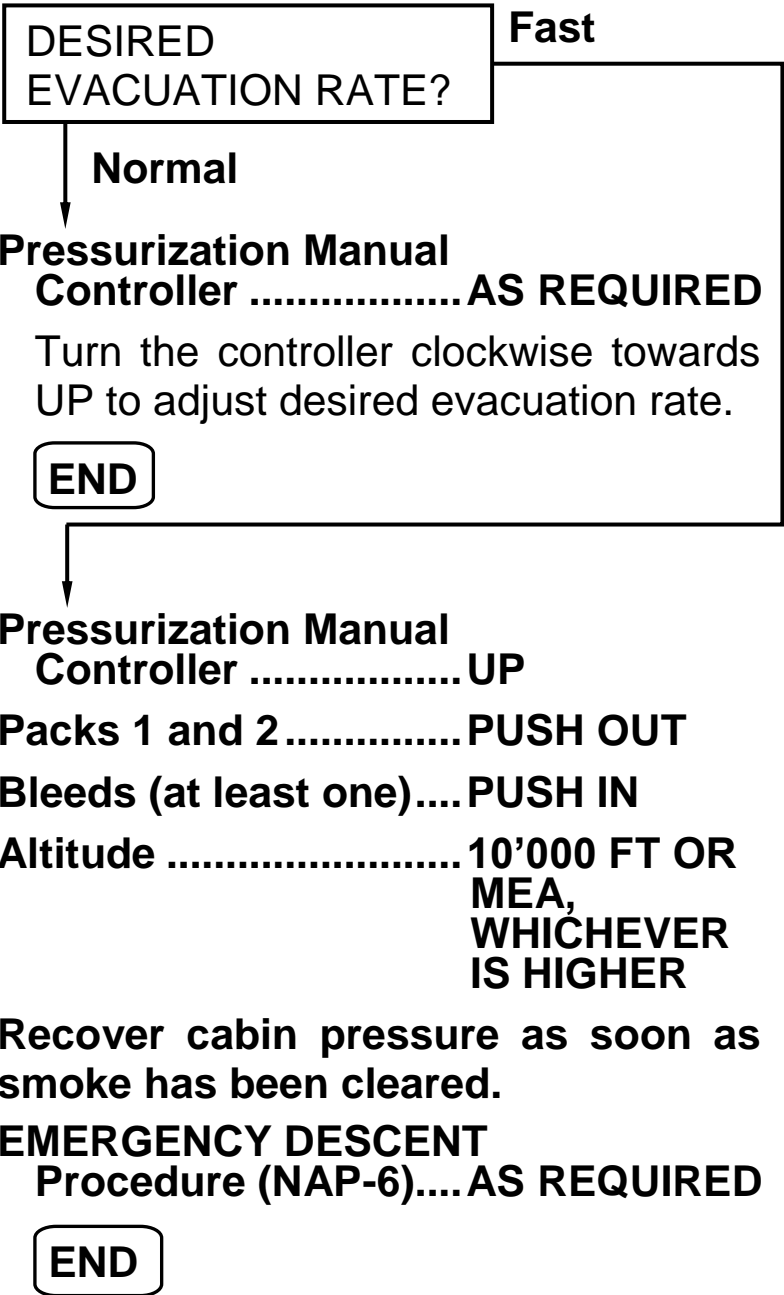
 ..... **WAIT 15 SECONDS**

**Pressurization Mode Selector ..... PUSH IN (MAN)**

**Passenger Oxygen ..... AS REQUIRED**

**CONTINUES ON NEXT PAGE**

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# EMERGENCY/ABNORMAL PROCEDURES

Smoke

## SMOKE / FIRE / FUMES

**Condition:** Smoke fire or fumes visually confirmed or identified by odor without an EICAS warning.

**Crew Oxygen Masks.....DON, 100%**

**Smoke Goggles.....DON**

**Crew Communication....ESTABLISH**

**LAND AT THE NEAREST SUITABLE AIRPORT.**

**Recirculation Fan.....PUSH OUT**

**Gasper Fan .....PUSH OUT**

**NOTE:** Any time smoke becomes dense, perform **SMOKE EVACUATION Procedure(S-4).**

SMOKE ORIGIN IS OBVIOUS AND CAN BE REMOVED?

No

Yes

**Affected Source .....REMOVE**

SMOKE STOPS OR DECREASES?

No

Yes

**SMOKE EVACUATION Procedure (S-4).....AS REQUIRED**

**END**

**Cabin Crew .....NOTIFY  
FSTN Belts..... ON**

**CONTINUES ON NEXT PAGE**

**Smoke**

**CONTINUED FROM PREVIOUS PAGE**

- Thrust Levers ..... IDLE**
- Speed Brakes ..... OPEN**
- Airspeed ..... MAX 250 KIAS**
- Landing Gear ..... DOWN**
- Altitude ..... 10'000 FT OR  
MEA,  
WHICHEVER  
IS HIGHER**
- Transponder ..... 7700**
- ATC ..... NOTIFY**
- Cockpit Door ..... CLOSE**
- Reinforced Cockpit Door  
Louver Vent  
(if applicable) ..... CLOSE**
- Pressurization  
Manual Controller ..... 1 O'CLOCK  
POSITION**



..... **WAIT 15  
SECONDS**

- Pressurization Mode  
Selector ..... PUSH IN (MAN)**
- Passenger Oxygen ..... AS REQUIRED**
- Pressurization Manual  
Controller ..... FULL UP**
- Packs 1 and 2 ..... PUSH OUT**
- Shed Buses ..... OFF**
- Bus Ties ..... OFF**
- VTRL PUMP SEL  
(if applicable) ..... SET TO A**

**CONTINUES ON NEXT PAGE**

**EMERGENCY/ABNORMAL PROCEDURES**

**Smoke**

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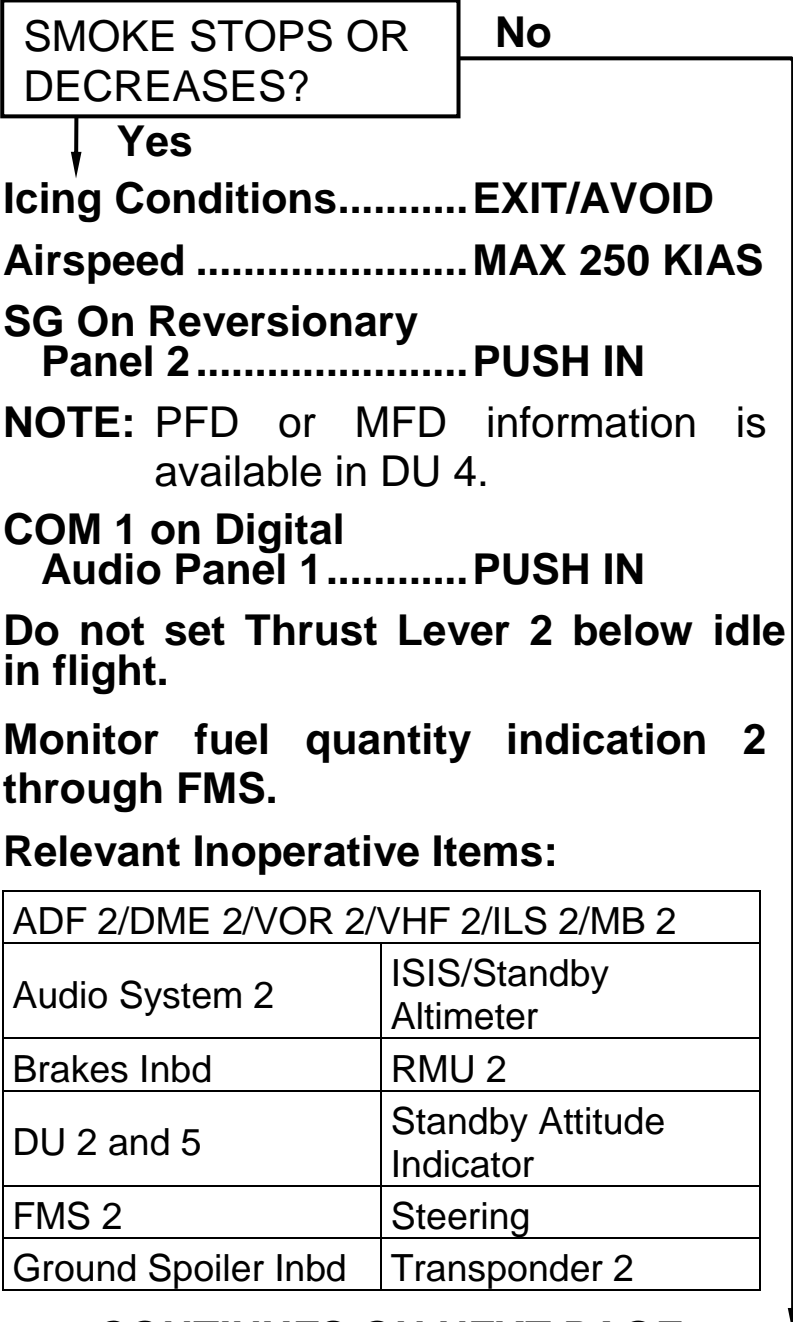
**Fuel Pump 1 ..... 1A OR 1C**

**Fuel Pump 2 ..... 2B**

**Battery 2 ..... OFF**

**Generators 2 and 4 ..... PUSH OUT**

Shed Buses, Central DC Bus, DC Bus 2 and Essential Bus 2 deenergized.



**CONTINUES ON NEXT PAGE**

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**NOTE:** Landing gear lever can not be moved up.

**Landing configuration:**

**Anticipate flap slower actuation.**

**If landing gear has not been selected down:**

**Gear Electrical  
Override .....DOORS**

 .....**WAIT 3  
SECONDS**

**Gear Electrical  
Override .....GEAR/DOORS**

**Flaps .....45°**

**V<sub>REF</sub> .....V<sub>REF</sub> 45° +  
5 KIAS**

**CAUTION:MULTIPLY THE FLAPS  
45° UNFACTORED  
LANDING DISTANCE BY  
1.95.**

**Do not actuate Thrust Reverser 2.**

**Brake effectiveness will be reduced.**

**END**

**IS SUITABLE  
AIRPORT DISTANT?**

**No**

**Yes**

**Generators 2 and 4 .....PUSH IN**

**Battery 2 .....AUTO**

**CONTINUES ON NEXT PAGE**

**EMERGENCY/ABNORMAL PROCEDURES**

**Smoke**

**CONTINUED FROM PREVIOUS PAGE**

**Fuel Pump 1 .....1B**

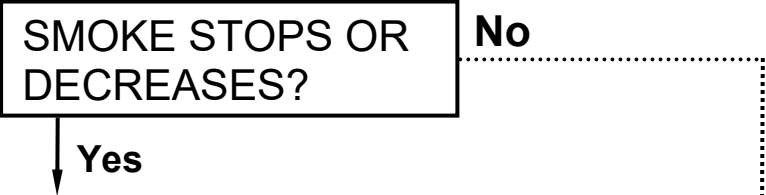
**Fuel Pump 2 .....2A OR 2C**

**VTRL PUMP SEL  
(if applicable) .....SET TO B**

**Battery 1 .....OFF**

**Generators 1 and 3 .....PUSH OUT**  
Shed Buses, Central DC Bus, DC Bus 1 and  
Essential Bus 1 deenergized.

**Emergency lights .....OFF**



**Icing Conditions.....EXIT/AVOID**

**SG On Reversionary  
Panel 1 .....PUSH IN**

**NOTE:** PFD or MFD information is available in DU 2.

**COM 2 on Digital  
Audio Panel 2.....PUSH IN**

**Do not set Thrust Lever 1 below idle in flight.**

**Monitor fuel quantity indication 1 through FMS.**

**CONTINUES ON NEXT PAGE**

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**CONTINUED FROM PREVIOUS PAGE**

**Relevant Inoperative Items:**

ADF 1/DME 1/VOR 1/VHF 1/ILS 1/MB 1	
Audio System 1	Ground Spoiler Outbd
Autopilot	Main Pitch Trim
Brakes Outbd	RMU 1
DU 1 and 4	Speed Brake
FMS 1	Transponder 1

**NOTE:** Landing gear lever can only be moved up using downlock release button (DN Lock Rel).

**Landing configuration:**

**Anticipate flap slower actuation.**

**Emergency lights ....ON**

**Flaps .....45°**

**V<sub>REF</sub> .....V<sub>REF</sub> 45° + 5 KIAS**

**CAUTION: MULTIPLY THE FLAPS 45° UNFACTORED LANDING DISTANCE BY 1.95.**

**Do not actuate Thrust Reverser 1.**

**Brake effectiveness will be reduced.**

**END**

**Generators 1 and 3 .....PUSH IN**

**Battery 1 .....AUTO**

**Backup Battery .....PUSH OUT**

**WARNING: CONSIDER AN IMMEDIATE LANDING.**

**CONTINUES ON NEXT PAGE**

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# EMERGENCY/ABNORMAL PROCEDURES

Smoke

**CONTINUED FROM PREVIOUS PAGE**

**Landing configuration:**

**Emergency lights.....ON**

**Flaps .....45°**

**V<sub>REF</sub> .....V<sub>REF</sub> 45°**

**END**

**Icing Conditions.....EXIT/AVOID**

**Airspeed .....MAX 250 KIAS**

**SG On Reversionary**

**Panel 2.....PUSH IN**

**NOTE:** PFD or MFD information is available in DU 4.

**COM 1 on Digital**

**Audio Panel 1.....PUSH IN**

**Do not set Thrust Lever 2 below idle in flight.**

**Monitor fuel quantity indication 2 through FMS.**

**Relevant Inoperative Items:**

ADF 2/DME 2/VOR 2/VHF 2/ILS 2/MB 2	
Audio System 2	ISIS/Standby Altimeter
Brakes Inbd	RMU 2
DU 2 and 5	Standby Attitude Indicator
FMS 2	Steering
Ground Spoiler Inbd	Transponder 2

**NOTE:** Landing gear lever can not be moved up.

**CONTINUES ON NEXT PAGE**

Smoke

**CONTINUED FROM PREVIOUS PAGE**

**Landing configuration:**

**Anticipate flap slower actuation.**

**If landing gear has not been selected down:**

**Gear Electrical  
Override .....DOORS**



..... **Wait 3**

**SECONDS**

**Gear Electrical  
Override .....GEAR/DOORS**

**Flaps .....45°**

**V<sub>REF</sub> .....V<sub>REF45°</sub> +  
5 KIAS**

**CAUTION:MULTIPLY THE FLAPS  
45° UNFACTORED  
LANDING DISTANCE  
BY 1.95.**

**Do not actuate Thrust Reverser 2.**

**Brake effectiveness will be reduced.**

**END**

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# **EMERGENCY/ABNORMAL PROCEDURES**

**Smoke**

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# EMERGENCY/ABNORMAL PROCEDURES

Non Annunciated

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Non Annunciated

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# **EMERGENCY/ABNORMAL PROCEDURES**

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## AILERON RUNAWAY/ ROLL TRIM RUNAWAY

**Condition:** Sudden roll.

**Quick Disconnect Button.....PRESS AND HOLD**  
**Aileron Shutoff 1 and 2 .....PUSH OUT**

**Roll Trim CB (F23) .....PULL**  
**Quick Disconnect Button.....RELEASE**  
**Airspeed .....MAX 250 KIAS**  
**Roll Trim Position.....CHECK**

ROLL TRIM IN NEUTRAL POSITION?

Yes

**Roll Trim CB (F23) .....PUSH**  
**Prepare to overcome uncommanded roll.**  
**Aileron Shutoff 1.....PUSH IN**

RUNAWAY PERSISTS?

No

Yes

**Aileron Shutoff 1.....PUSH OUT**  
**Prepare to overcome uncommanded roll.**  
**Aileron Shutoff 2.....PUSH IN**

RUNAWAY STILL PERSISTS?

No

Yes

**Aileron Shutoff 2.....PUSH OUT**  
 Expect greater aileron control force. If required, both pilots should act together to control airplane.  
**Avoid airports with anticipated turbulence or crosswind.**  
**Perform a long final approach.**  
**Landing configuration:**

**Landing Gear .....DOWN**  
**Flaps .....22°**  
**V<sub>REF</sub>.....V<sub>REF45</sub> + 30 KIAS**

**CAUTION:** MULTIPLY THE FLAPS 45° UNFACTORED LANDING DISTANCE BY 1.85.

END

**Aileron Shutoff 1 and 2 .....PUSH IN**  
**Roll trim is inoperative. Use aileron and rudder to control the airplane.**

END

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# EMERGENCY/ABNORMAL PROCEDURES

Non Annunciated

## AIRPLANE OVERSPEED

Aural Warning: Voice Message HIGHSPEED

INDICATION: Airspeed and Mach indications in red range.

Airspeed.....MAX  $V_{MO}/M_{MO}$

END

## APU OVERTEMPERATURE

**EICAS Indication:** EGT enter amber or red range.

**EICAS Caution:** APU FAIL may be presented.

APU Bleed .....PUSH OUT



.....WAIT 10 SECONDS

EGT REMAINS HIGH?

No

Yes

APU Fuel Shutoff Button.....PUSH IN

APU Master Knob.....OFF

**CAUTION:** DO NOT ATTEMPT TO RESTART APU.

END

Consider the APU shutdown if it is not necessary.

END

## DITCHING

ATC ..... NOTIFY  
 Transponder ..... 7700  
 FSTN Belts ..... ON  
 Cabin Crew ..... NOTIFY  
 Passengers (and Crew) ..... PREPARE FOR  
 DITCHING

Below 10'000 ft:

Pressurization Dump Button ..... PUSH IN (ON)  
 GPWS CB (J7 or J8) ..... PULL  
 Aural Warn CBs (B4 and E30) ..... PULL  
 Emerg Lts ..... ON  
 ELT ..... ON

At 1'000 ft:

VTRL TK XFER (if applicable) ..... OFF  
 Packs 1 and 2 ..... PUSH OUT  
 Engine Bleeds 1 and 2 ..... PUSH OUT

Plan ditching parallel to the line of the wave crests. On final, level the wings and avoid skidding. Touchdown with 4° nose up attitude, and rate of descent less than 180 ft/min.

Ditching configuration:

Landing Gear ..... UP  
 Flaps ..... 45°

If it is not possible to achieve the selected flap position, maintain airspeed according to the following:

FLAPS POSITION	MIN AIRSPEED
0 to 8°	V <sub>REF45</sub> + 30 KIAS
9° to 21°	V <sub>REF45</sub> + 10 KIAS
22° to 44°	V <sub>REF45</sub> + 5 KIAS
45°	V <sub>REF45</sub>

Just before touchdown:

Cabin ..... ANNOUNCE IMPACT

**WARNING: USE ONLY OVERWING EMERGENCY EXITS FOR PASSENGER EVACUATION. DO NOT OPEN REMAINING DOORS.**

Upon water contact:

Thrust Levers 1 and 2 ..... IDLE  
 Start/Stop Selectors 1 and 2 ..... STOP  
 APU ..... SHUTDOWN  
 Fire Extinguishing Handles ..... PULL  
 APU Fuel Shutoff Button ..... PUSH IN  
 Engine and APU Fire Extinguishing  
 Bottles (if necessary) ..... DISCHARGE  
 Fuel Pumps Pwr ..... OFF  
 Hydraulic Elec Pumps ..... OFF  
**EMERGENCY EVACUATION**  
 Procedure ..... ACCOMPLISH

Before leaving the airplane:

Batteries 1 and 2 ..... OFF

**END**

# EMERGENCY/ABNORMAL PROCEDURES

Non Annunciated

## EMERGENCY DESCENT

Cabin Crew .....	NOTIFY
FSTN Belts.....	ON
Thrust Levers .....	IDLE
Speed Brakes .....	OPEN
Airspeed .....	MAX 250 KIAS
Landing Gear.....	DOWN
Descent.....	INITIATE
Altitude .....	MEA OR 10'000 FT, WHICHEVER IS HIGHER

Transponder .....

7700

ATC.....NOTIFY

**CAUTION:** IF STRUCTURAL DAMAGE IS SUSPECTED,  
USE THE FLIGHT CONTROLS WITH CAUTION  
AVOIDING HIGH MANEUVERING LOADS AND  
REDUCING AIRSPEED AS APPROPRIATE.

END

## EMERGENCY EVACUATION

Parking Brake .....

APPLY

Cabin.....

DEPRESSURIZE

Fire Extinguishing Handles .....

PULL

APU Fuel Shutoff Button .....

PUSH IN

Engines and APU Fire Extinguishing  
Bottles (if necessary).....

DISCHARGE

VTRL TK XFER (if applicable) .....

OFF

Fuel Pumps Pwr 1 and 2.....

OFF

Hydraulic Elec Pumps 1 and 2 .....

OFF

Cabin Crew.....

NOTIFY

Emerg Lts.....

ON

**EMERGENCY EVACUATION**  
Procedure.....

ACCOMPLISH

ATC.....

NOTIFY

Before leaving the airplane:  
Batteries 1 and 2.....

OFF

END

## FORCED LANDING

- ATC ..... NOTIFY
- Transponder..... 7700
- FSTN Belts..... ON
- Cabin Crew ..... NOTIFY
- Passengers (and Crew)..... **PREPARE FOR FORCED LANDING**

**Below 10'000 ft:**

- Pressurization Dump Button..... **PUSH IN (ON)**
- GPWS CB (J7 or J8) ..... **PULL**
- Aural Warn CBs (B4 and E30) ..... **PULL**
- Emerg Lts ..... **ON**
- ELT ..... **ON**

**When committed to land:**

**Landing Gear ..... AS REQUIRED**

The decision to land with all gear up or with any gear extended is left to pilots. The choice of configuration is based on the number of gear available, airplane load distribution, controllability and conditions of the landing field. Ground spoilers and thrust reversers will not operate if any main gear is up.

**Flaps ..... 45°**

If it is not possible to achieve the selected flap position, maintain airspeed according to the following:

FLAPS POSITION	MIN AIRSPEED
0 to 8°	$V_{REF45} + 30$ KIAS
9° to 21°	$V_{REF45} + 10$ KIAS
22° to 44°	$V_{REF45} + 5$ KIAS
45°	$V_{REF45}$

**Just before touchdown:**

- Cabin..... **ANNOUNCE IMPACT**
- Fire Extinguishing Handles ..... **PULL**
- APU Fuel Shutoff Button ..... **PUSH IN**
- VTRL TK XFER (if applicable) ..... **OFF**

**When the airplane stops:**

- Engines and APU Fire Extinguishing Bottles (if necessary)..... **DISCHARGE**
- Fuel Pumps Pwr 1 and 2 ..... **OFF**
- Hydraulic Elec Pumps 1 and 2 ..... **OFF**

**EMERGENCY EVACUATION**

Procedure..... **ACCOMPLISH**

**Before leaving the airplane:**

- Batteries 1 and 2..... **OFF**

**END**

# EMERGENCY/ABNORMAL PROCEDURES

Non Annunciated

## FUEL LEAK

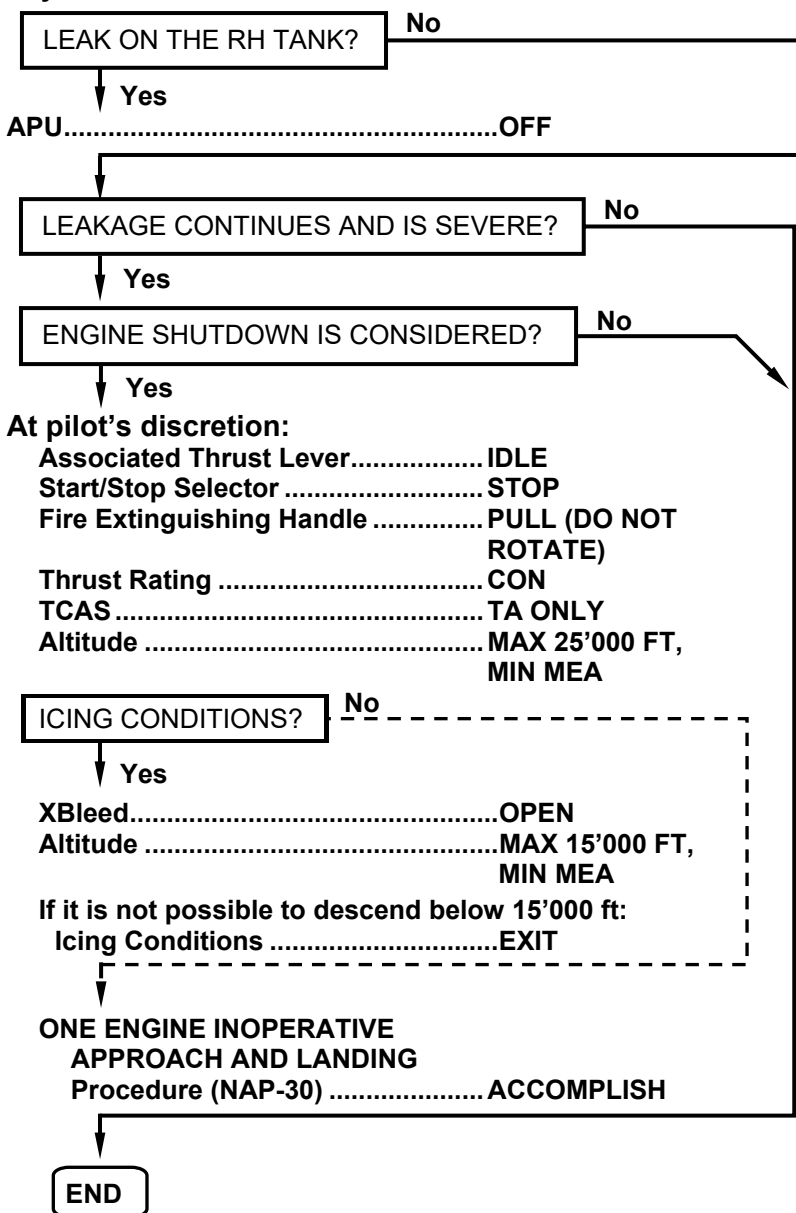
- Condition:**
- FMS Fuel Remaining quantity is above the MFD or EICAS total fuel indication.
  - Excessive Fuel flow from one of the engines.
  - Fuel imbalance develops.
  - Fuel quantity of a tank decreases at an abnormal rate.

**LAND AT THE NEAREST SUITABLE AIRPORT.**

XFEED .....OFF

Affected Fuel Tank .....IDENTIFY

Asymmetric Thrust .....AS REQUIRED



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**JAMMED AILERON**

**Condition:** Both control wheels can not be moved to either side.

**Aileron Disconnection Handle..... PRESS AND PULL**

Autopilot ..... **DISENGAGE**

Airspeed ..... **MAX 200 KIAS**

If the right control wheel is jammed, roll trim and artificial feel are not available.

Maintain bank angle below 20°.

If both ailerons are jammed, use rudder to control the airplane.

Avoid abrupt and large aileron inputs.

Avoid airports with anticipated turbulence or crosswind.

**Landing configuration:**

Flaps ..... **45°**

V<sub>REF</sub>..... **V<sub>REF45</sub> + 5 KIAS**

**CAUTION:** MULTIPLY THE FLAPS 45° UNFACTORED LANDING DISTANCE BY 1.10.

**END**

**JAMMED ELEVATOR**

**Condition:** Both control columns can not be moved either forward or backward.

**EICAS Warning:** SPS 1-2 INOP may be presented.

**EICAS Caution:** STICK PUSHER FAIL may be presented.

**Elevator Disconnection Handle..... PRESS AND PULL**

Autopilot ..... **DISENGAGE**

Airspeed ..... **MAX 200 KIAS**

Pitch Trim ..... **AS REQUIRED**

Avoid airports with anticipated turbulence or crosswind.

**Landing configuration:**

Flaps ..... **22°**

V<sub>REF</sub>..... **V<sub>REF45</sub> + 10 KIAS**

If both elevators are jammed, pitch trim may be used to land the airplane.

If left elevator is jammed, Stick Pusher will not be available.

Elevator authority to flare during landing may be reduced.

Do not reengage autopilot.

**CAUTION:** MULTIPLY THE FLAPS 45° UNFACTORED LANDING DISTANCE BY 1.45.

**END**

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# **EMERGENCY/ABNORMAL PROCEDURES**

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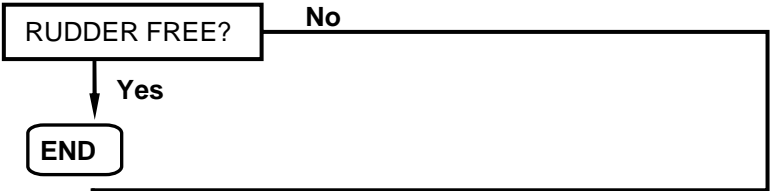
**JAMMED RUDDER**

**Condition:** Pedals can not be moved.

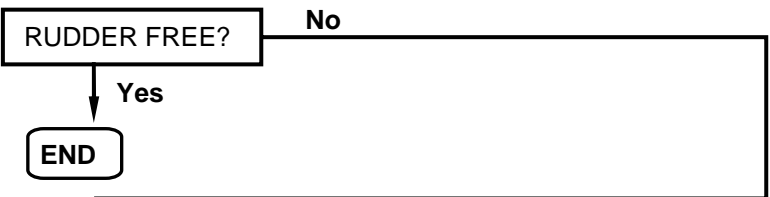
**Command** rudder through yaw trim.

If required, use asymmetric thrust to control the airplane. Maintain engine asymmetric thrust until nose gear contact in order to avoid lateral and directional miscontrol.

**Rudder Shutoff Sys 2 PUSH OUT**



**Rudder Shutoff Sys 2 ..... PUSH IN**  
**Rudder Shutoff Sys 1 ..... PUSH OUT**



**Airspeed ..... MAX 200 KIAS**  
**Avoid airports with anticipated turbulence or crosswind.**  
**During final approach and landing run:**

**Pilot not flying:**

**Steering Disengage Button ..... PRESS AND HOLD**

**Steering Handle ..... AS REQUIRED**

Use Steering Handle still keeping the Steering Disengage Button pressed.

**CAUTION:** DO NOT RELEASE THE NOSEWHEEL STEERING HANDLE UNTIL THE AIRPLANE IS COMPLETELY STOPPED.

**Thrust Levers ..... IDLE**

If necessary, use differential braking to steer the airplane.

**Landing configuration:**

**Flaps ..... 22°**

**V<sub>REF</sub> ..... V<sub>REF45</sub> + 5 KIAS**

**CAUTION:** MULTIPLY THE FLAPS 45° UNFACTORED LANDING DISTANCE BY 1.62.

**END**

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# EMERGENCY/ABNORMAL PROCEDURES

Non Annunciated

## PITCH TRIM RUNAWAY

**Condition:** Uncommanded pitch and trim indication changes.

**EICAS Warning:** AUTOPILOT FAIL may be presented.

**EICAS Caution:** AUTO TRIM FAIL may be presented.

**Quick Disconnect Button .....PRESS AND HOLD**

**NOTE:** Do not change flap setting.

**At safe altitude:**

Pitch Trim Main Sys Cutout .....**PUSH OUT**

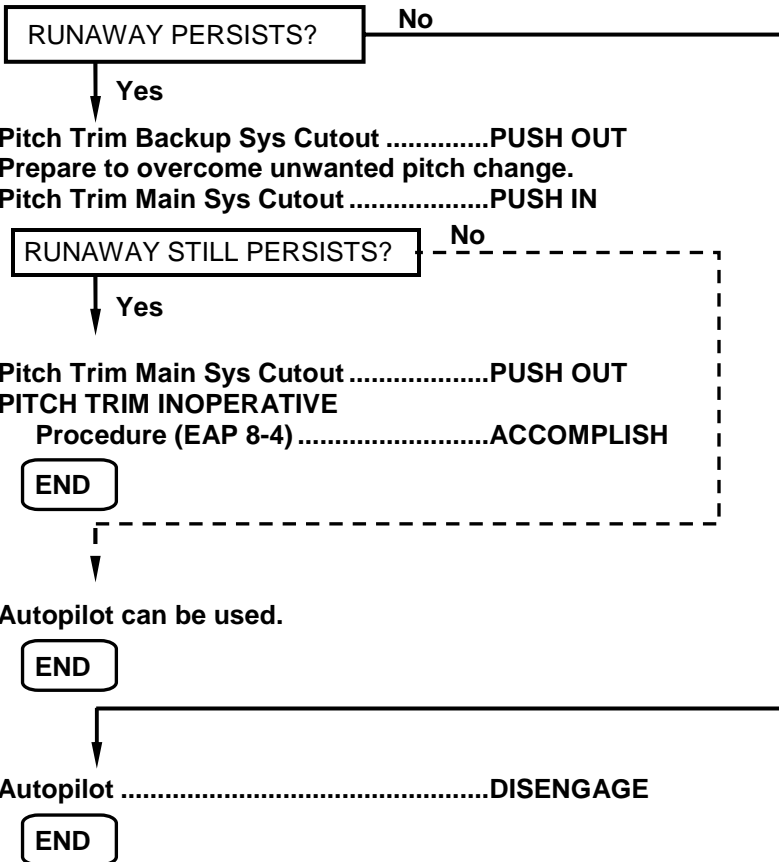
Pitch Trim Backup Sys Cutout .....**PUSH OUT**

Quick Disconnect Button .....**RELEASE**

**WARNING: DO NOT OPEN SPEED BRAKE.**

Prepare to overcome unwanted pitch change.

Pitch Trim Backup Sys Cutout .....**PUSH IN**



Non Annunciated

**RAPID CABIN DEPRESSURIZATION**

**Aural Warning:** Voice Message **CABIN**  
**EICAS Indication:** CAB ALT Value in red  
**Condition:** Cabin altitude has exceeded 10'000 ft.

- Crew Oxygen Masks..... DON**
- Crew Communication..... ESTABLISH**
- If Emergency Descent is necessary:**
  - Cabin Crew ..... NOTIFY**
  - FSTN Belts ..... ON**
  - Thrust Levers..... IDLE**
  - Speed Brakes..... OPEN**
  - Airspeed ..... MAX 250 KIAS**
  - Landing Gear ..... DOWN**
  - Descent..... INITIATE**
  - Altitude ..... MEA OR 10'000 FT,  
WHICHEVER IS  
HIGHER**

**CAUTION:** IF STRUCTURAL DAMAGE IS SUSPECTED, USE THE FLIGHT CONTROLS WITH CAUTION AVOIDING HIGH MANEUVERING LOADS AND REDUCING AIRSPEED AS APPROPRIATE.

**Passenger Oxygen ..... AS REQUIRED**  
**Altitude ..... MEA OR 10'000 FT,  
WHICHEVER IS  
HIGHER**

**END**

# EMERGENCY/ABNORMAL PROCEDURES

Non Annunciated

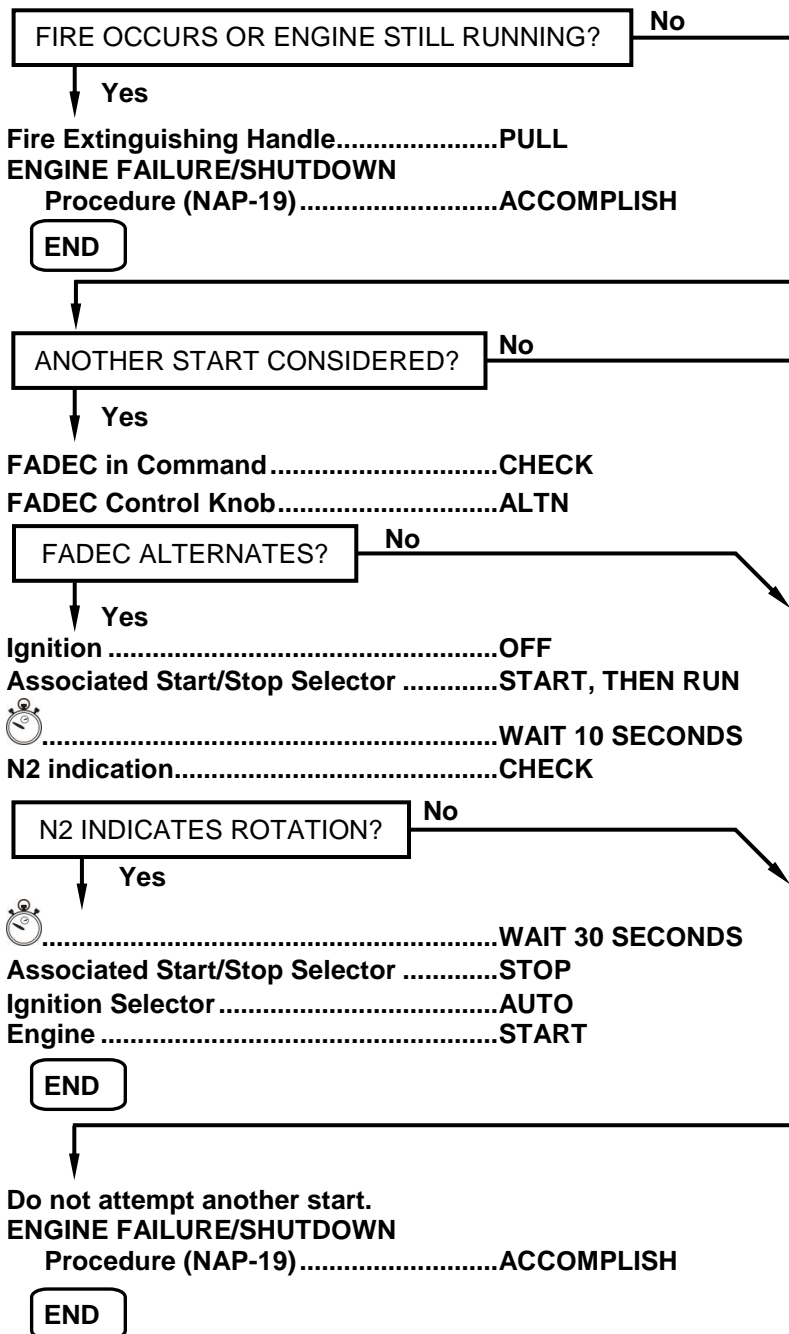
## ABNORMAL ENGINE START

**Condition:** Any abnormal engine indication during engine start.

To abort start:

Associated Thrust Lever .....IDLE

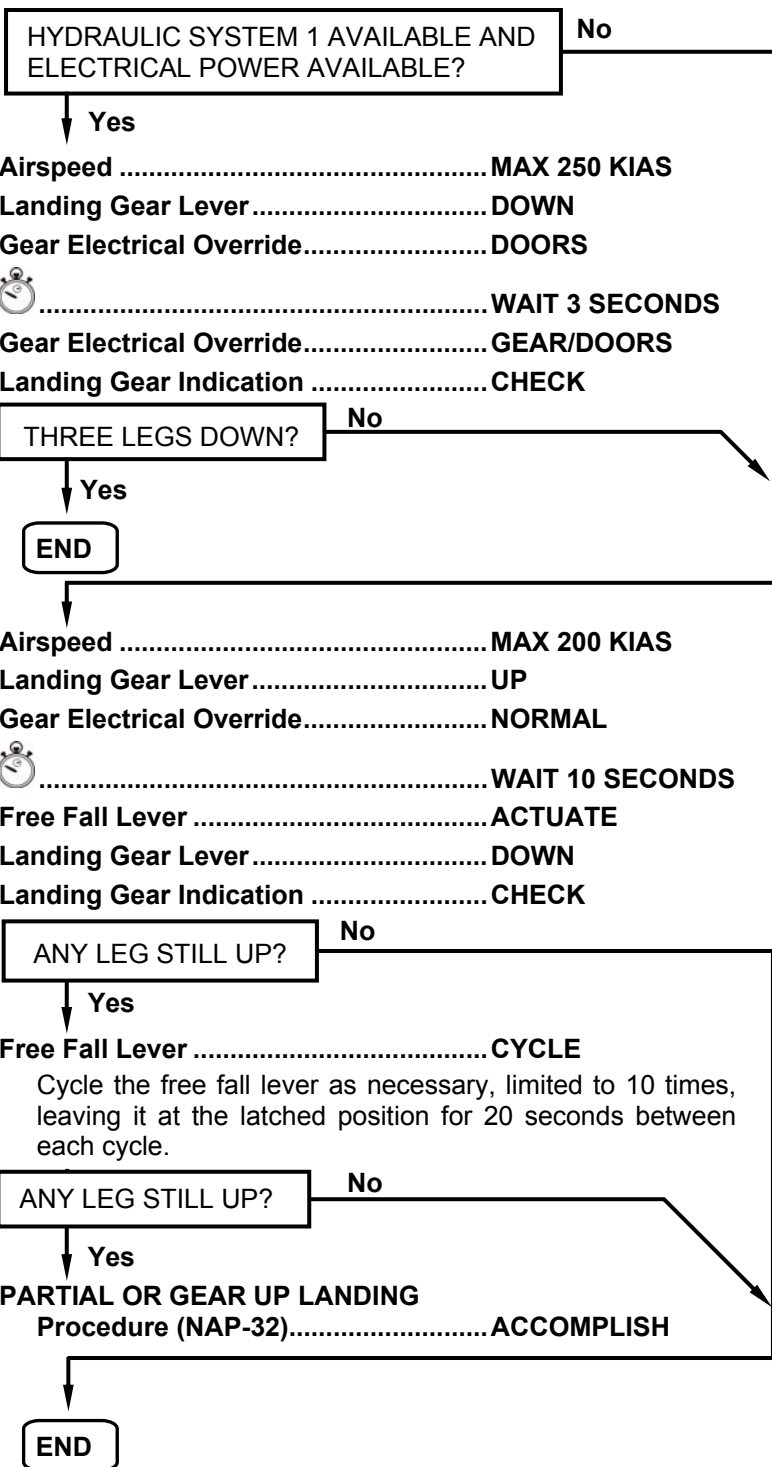
Associated Start/Stop Selector .....STOP



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## ABNORMAL LANDING GEAR EXTENSION

**Condition:** Landing gear has not extended by normal means.



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# EMERGENCY/ABNORMAL PROCEDURES

Non Annunciated

## ADS-B OUT FAIL OR DEGRADED

**Condition:** ADS-B FAIL or ADS-B DGR annunciation displayed on the RMU Radio page or by ATC notification.

**Transponder** .....**SELECT ANOTHER**

**END**

## AILERON ARTIFICIAL FEEL INOPERATIVE

**Condition:** Control Wheel excessively light and oversensitive.

**Airspeed**.....**MAX 200 KIAS**

**Do not make abrupt and large aileron inputs.**

**END**

## APPROACH WARNING

**Combiner Message:** APCH WARN

**MISSED APPROACH Procedure**.....**PERFORM**

A Missed Approach Procedure must be performed, unless the approach is continued under visual conditions and the airplane position and attitude assure a safe landing.

In this case, the All guidance must not be followed.

**END**

## ASYMMETRIC RUDDER OPERATION

**Condition:** Rudder pedals heavier to be moved to one side than the other.

**Rudder Shutoff Sys 2** .....**PUSH OUT**

**If the failure persists:**

**Rudder Shutoff Sys 2** .....**PUSH IN**

**END**

## CAS MESSAGE MISCOMPARISON

**PFD Indication:** CAS MSG in amber.

**MFD Knob on Reversionary Panel 1** .....**EICAS**

**MFD Knob on Reversionary Panel 2** .....**EICAS**

**Pilot's/Copilot's EICAS Messages** .....**COMPARE**

**Discrepant Message** .....**CHECK**

**Analyze the situation to check whether the discrepant message is spurious or not, and take the appropriate corrective action.**

**END**

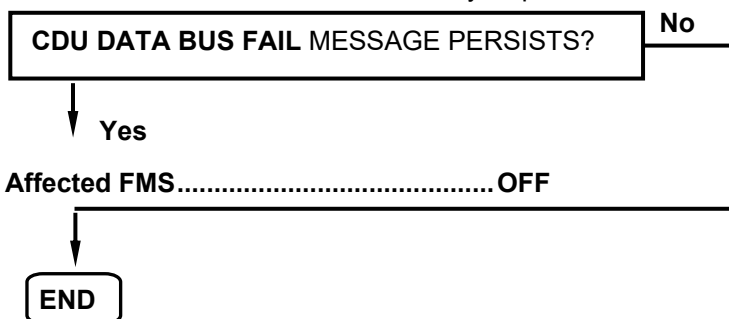
# EMERGENCY/ABNORMAL PROCEDURES

Non Annunciated

## CDU DATA BUS FAIL FMS ANNUNCIATION

**Condition:** Affected FMS is not updating CDU.  
CDU DATA BUS FAIL message presented on FMS (UNS-1K).

**Affected FMS**..... **OFF, then ON**  
Power down the FMS using the ON-OFF DIM key.  
DO NOT use the circuit breaker to cycle power to the FMS.



## EMERGENCY/PARKING BRAKE HANDLE DISAGREE

**Light:** BRAKE ON with Emergency/ Parking Brake Handle not actuated.

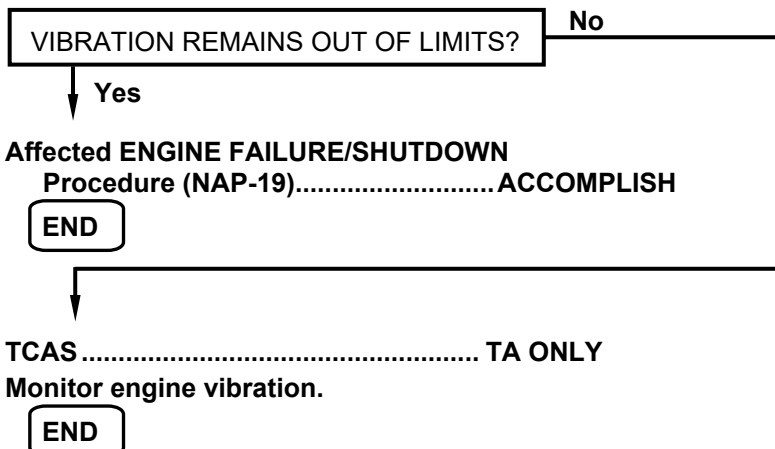
Do not take off.

END

## ENGINE ABNORMAL VIBRATION

**EICAS Indication:** Engine vibration enters amber range.

**Associated Thrust Lever**..... **REDUCE TO KEEP VIBRATION WITHIN LIMITS**



# EMERGENCY/ABNORMAL PROCEDURES

Non Annunciated

## ENGINE AIRSTART

Inoperative engine:

Fuel Pump Selector .....A or B

Fuel Pump Pwr .....ON

Ignition .....AUTO

Start/Stop Selector .....STOP

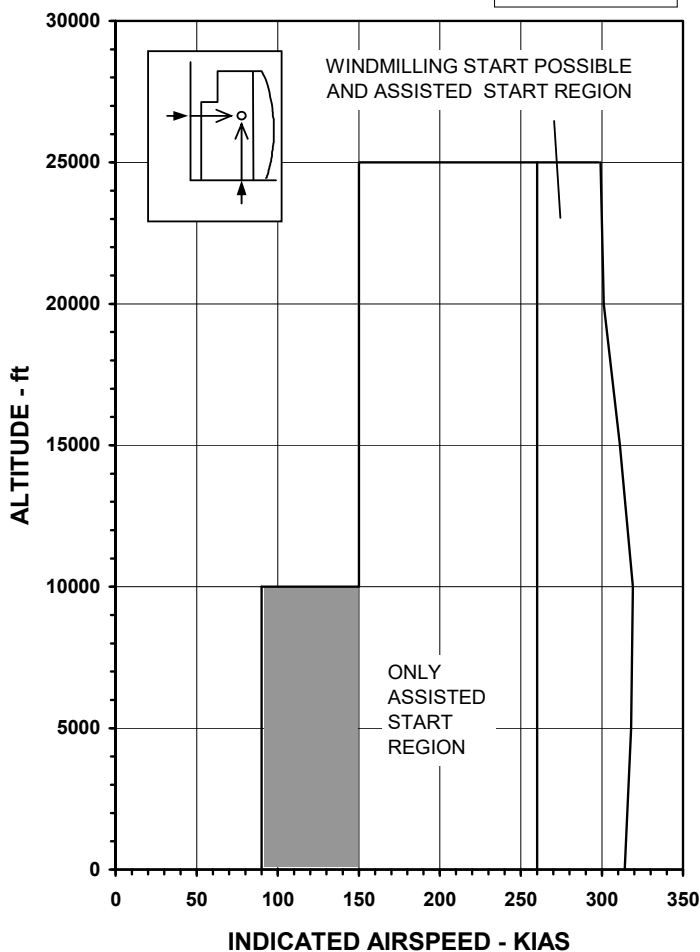
Engine Bleed .....PUSH OUT

Thrust Lever .....IDLE

Engine Airstart Envelope .....CHECK

### ENGINE AIRSTART ENVELOPE

AE3007 ENGINES



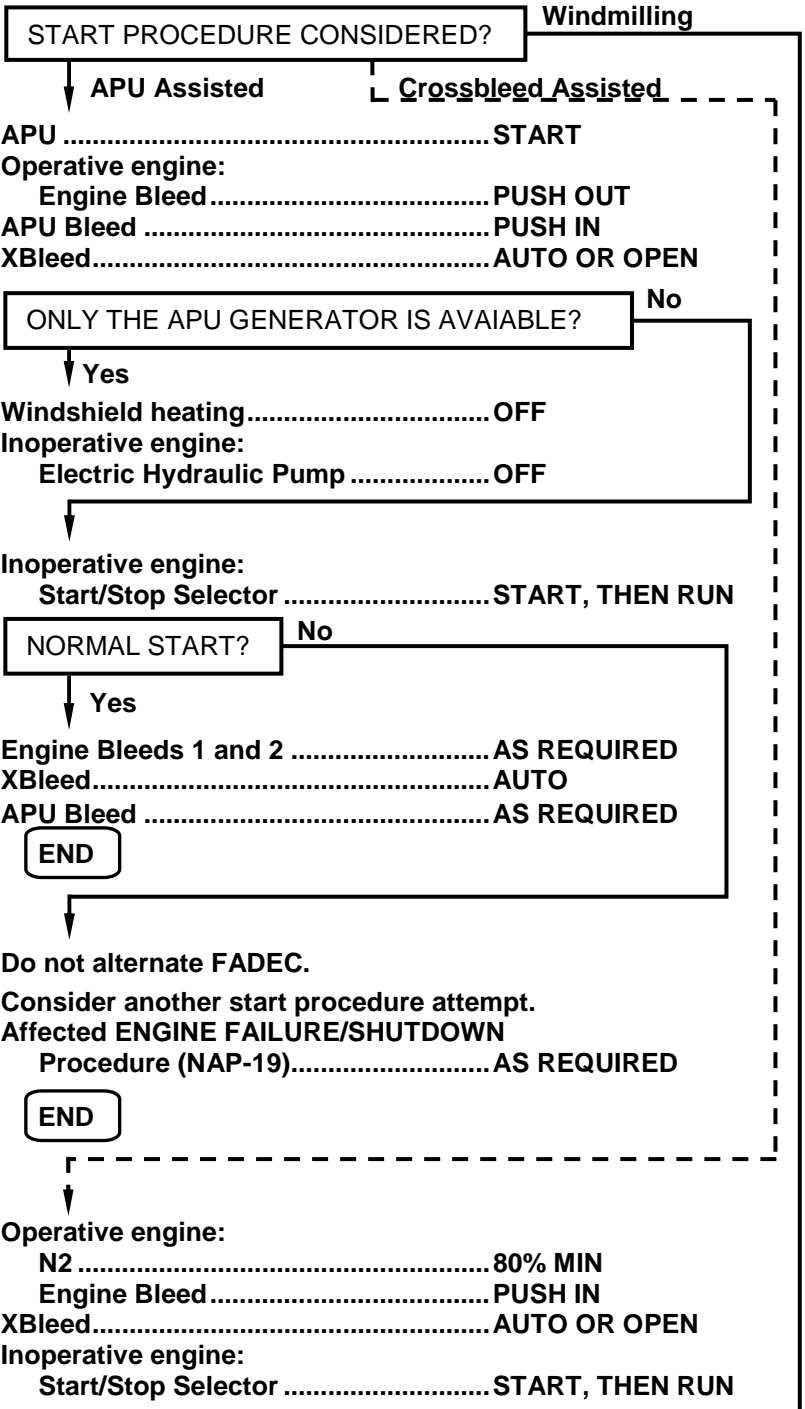
NOTE: Shaded area may be below 1.23 V<sub>SR</sub>.

CONTINUES ON NEXT PAGE

# EMERGENCY/ABNORMAL PROCEDURES

Non Annunciated

## CONTINUED FROM PREVIOUS PAGE

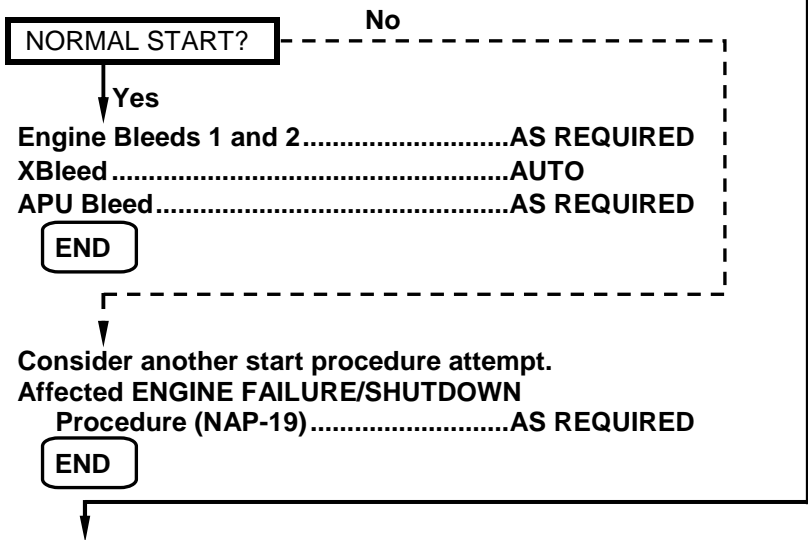


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# EMERGENCY/ABNORMAL PROCEDURES

Non Annunciated

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**NOTE:** Windmilling starts can be attempted in both engines simultaneously.

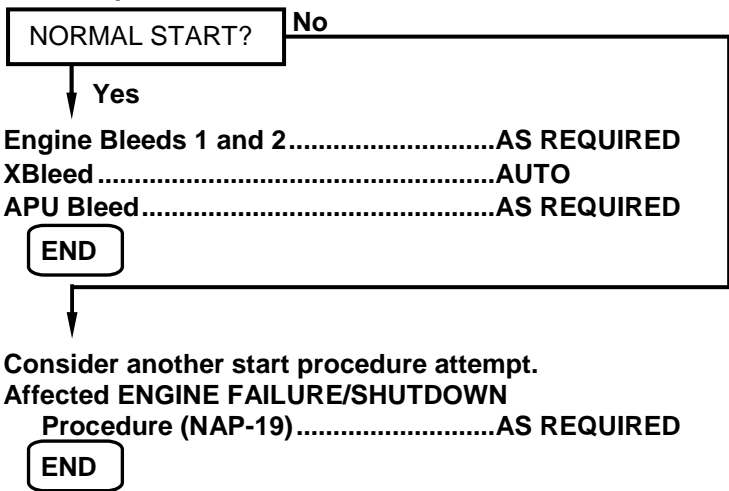
**Airspeed.....MIN 260 KIAS**

**Inoperative engine:**

**N2 .....MIN 10%**

Initiate windmilling start with N2 as high as possible.  
Once N2 is below 10%, it may not be recovered.

**Start/Stop Selector.....START, THEN RUN**



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# EMERGENCY/ABNORMAL PROCEDURES

Non Annunciated

## ENGINE FAILURE/SHUTDOWN

**Condition:** Loss of thrust on an engine or abnormal engine indication or precautionary shutdown.

**Associated Thrust Lever**..... IDLE

**Associated Start/Stop Selector** ..... STOP

**NOTE:** If engine shutdown does not occur, pull the associated fire extinguishing handle.

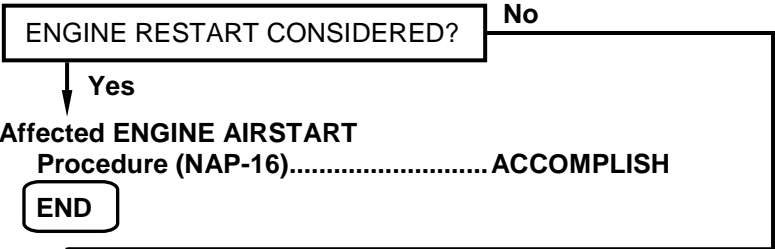
**Engine Thrust Rating** ..... CON

**APU (if available)** ..... START

**APU Bleed** ..... AS REQUIRED

**XBleed**..... AS REQUIRED

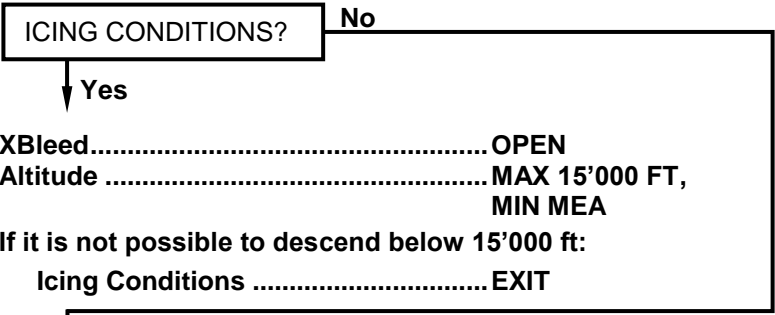
**Fuel** ..... BALANCE



**LAND AT THE NEAREST SUITABLE AIRPORT.**

**TCAS** ..... TA ONLY

**Altitude** ..... MAX 25'000 FT,  
MIN MEA



**ONE ENGINE INOPERATIVE APPROACH AND LANDING Procedure (NAP-30)..... AS REQUIRED**

END

# EMERGENCY/ABNORMAL PROCEDURES

Non Annunciated

## ENGINE HIGH OIL PRESSURE

**EICAS Indication:** Oil pressure pointer in amber range.

OIL TEMPERATURE, OIL LEVEL OR  
ENGINE VIBRATION OUT OF LIMITS?

No

Yes

Associated Procedure .....ACCOMPLISH

END

## ENGINE HIGH OIL TEMPERATURE

**EICAS Indication:** Oil temperature pointer and digits  
become red.

Associated Thrust Lever .....REDUCE

FAILURE PERSISTS?

No

Yes

ABOVE 25'000 FT?

No

Yes

Altitude.....MAX 25'000 FT  
MINIMUM MEA

FAILURE PERSISTS?

No

Yes

Affected ENGINE FAILURE/SHUTDOWN  
Procedure (NAP-19).....ACCOMPLISH

END

## ENGINE LOW OIL LEVEL

**MFD Indication:** Oil quantity enters amber range.

**Affected ENGINE FAILURE/SHUTDOWN**

Procedure (NAP-19).....AS REQUIRED

Consider shutting the engine down to preserve oil quantity,  
and if required restart it prior to landing.

**NOTE:** The indication of oil-level is accurate above 3 quarts.

END

## ENGINE OIL LOW PRESSURE

**EICAS Indication:** Oil pressure in amber range.

Associated Thrust Lever .....REDUCE

Reduce N2 below 88%.

END

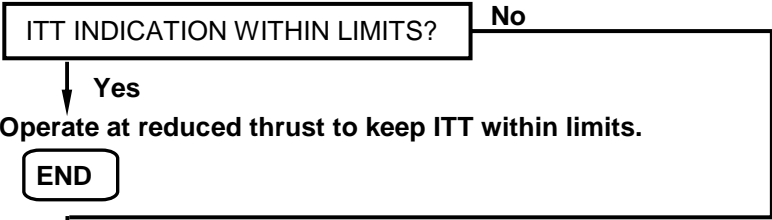
# EMERGENCY/ABNORMAL PROCEDURES

Non Annunciated

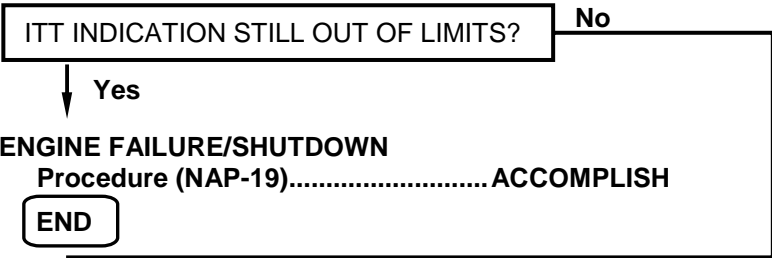
## ENGINE OVERTEMPERATURE

**Condition:** ITT pointer and digits flashing amber or red.

**Associated Thrust Lever**..... **REDUCE**



**Associated Bleed**..... **PUSH OUT**  
**Altitude** ..... **MAX 25'000 FT, MIN MEA**



Operate at reduced thrust to keep ITT within limits.  
**TCAS** ..... **TA ONLY**

**END**

## ENGINE TAILPIPE FIRE

**Condition:** Tailpipe fire was detected visually by crew or ground personnel. No EICAS message displayed.

**Affected engine:**

- Thrust Lever..... **IDLE**
- Start/Stop Selector ..... **STOP**
- Ignition..... **OFF**
- Fuel Pump ..... **OFF**
- XFeed Selector Knob ..... **OFF**
- Start/Stop Selector ..... **START, THEN RUN**
- ITT ..... **MONITOR**

**ATC** ..... **NOTIFY**

 ..... **WAIT 90 SECONDS**

**Associated Start/Stop Selector** ..... **STOP**

**Associated**

**Fire Extinguishing Handle** ..... **PULL (DO NOT ROTATE)**

**NOTE:** If fire is not extinguished while the engine is motored, ground personnel support must be requested.

**END**

**REVISION 14**

**NAP-21**

# EMERGENCY/ABNORMAL PROCEDURES

Non Annunciated

## ERRONEOUS STALL PROTECTION ACTUATION

**Condition:** Inadvertent shaker and/or pusher actuation.

Immediately and simultaneously:

- Quick Disconnect Button .....PRESS
- Stall Protection Cutout 1 and 2 .....PUSH OUT
- Minimum Airspeed .....FLAP  
MANEUVERING  
SPEED (PD-2)

Avoid skidding the airplane.

To approach and go-around speeds, add 5 KIAS to  $V_{REF}$ .

Landing configuration:

- Landing Gear ..... DOWN
- Flaps ..... 45°
- Airspeed .....  $V_{REF 45} + 5$  KIAS

**CAUTION:** MULTIPLY THE FLAPS 45° UNFACTORED LANDING DISTANCE BY 1.10.

END

## GEAR LEVER CANNOT MOVE UP AFTER TAKEOFF

**Condition:** Landing gear cannot be moved to up position after takeoff in the normal manner.



.....WAIT 10 SECONDS

LG AIR/GND FAIL MESSAGE DISPLAYED?

No

Yes

Landing Gear Lever .....DO NOT MOVE  
LANDING GEAR AIR/GROUND SYSTEM  
FAILURE Procedure (EAP 12-6) .....ACCOMPLISH

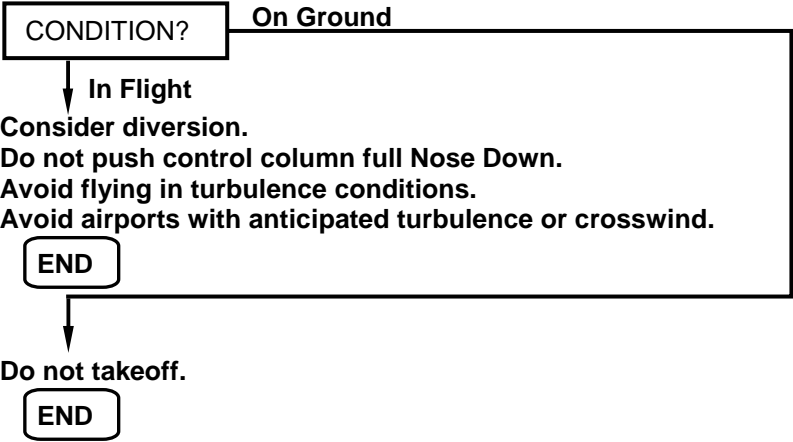
END

Downlock Release  
Button (DN LOCK REL) .....PRESS  
Landing Gear Lever .....UP

END

**GUST LOCK FAILURE**

**Light:** GUST LOCK (amber).



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# EMERGENCY/ABNORMAL PROCEDURES

Non Annunciated

## IMPAIRED OR CRACKED WINDSHIELD

### Associated Ice Protection

Windshield.....PUSH OUT

Cockpit Door.....CLOSE

ONLY OUTER LAYER CRACKED?

No

Yes

END

Oxygen Masks.....AS REQUIRED

Smoke Goggle.....DON

Airspeed.....MAX 250 KIAS

Altitude.....MEA OR 10'000 FT,  
WHICHEVER IS  
HIGHER

Pressurization Manual Controller .....1 O'CLOCK  
POSITION



WAIT 15 SECONDS

Pressurization Mode Selector.....PUSH IN (MAN)

Pressurization Manual Controller .....CAB MAX  $\Delta P = 1$  PSI

FORWARD VISIBILITY GOOD IN ONE SIDE?

No

Yes

Pilot flying must be on non impaired side.

END

When reaching 10'000 ft:

Pressurization Mode Selector .....PUSH OUT

Pressurization Dump Button .....PUSH IN

During approach and landing, when visibility is required:

Airspeed.....MAX 140 KIAS,  
MIN  $V_{REF45}$

Check no loose objects in the cockpit.

Direct Vision Window .....REMOVE

Landing must be made by looking through Direct Vision Window. Intercommunication will be impossible with window removed.

END

# EMERGENCY/ABNORMAL PROCEDURES

Non Annunciated

## IRS/MSU FAILURE ANNUNCIATION

LIGHT	OPERATION PHASE		
	POWER ON	ALIGNMENT	IN FLIGHT
<b>ALIGN</b>	<ul style="list-style-type: none"> <li>-No light:</li> <li>-Check IRS CBs.</li> <li>-Set mode select switch to ALIGN or NAV.</li> <li>-Press MSU Test switch. Annunciator bulb must be replaced if the other MSU annunciators do light.</li> </ul>	Accomplish associated <b>IRS ALIGNMENT FAULT</b> Procedure (EAP 2-13)	<ul style="list-style-type: none"> <li>-Flashes:</li> <li>-IRS data is not normal.</li> <li>-Accomplish associated <b>IRS OVERHEAT</b> Procedure (EAP 2-15)</li> </ul>
<b>FAULT</b>	<ul style="list-style-type: none"> <li>-Set mode select switch to OFF for at least 3 sec. Then set mode select switch back to ALIGN or NAV.</li> <li>-If the annunciator remains lighted, do not takeoff.</li> </ul>	<ul style="list-style-type: none"> <li>-Associated with ALIGN annunciation:</li> <li>-Check and reenter latitude.</li> <li>-Allow additional time for alignment.</li> <li>-Try new alignment. Set mode select switch to OFF for at least 3 sec, then to ALIGN, and enter present position.</li> <li>-If on ground, do not takeoff.</li> </ul>	<ul style="list-style-type: none"> <li>-Select the remaining IRU by pressing the IRS Button on the associated reversionary panel.</li> <li>-If necessary set mode select switch to ATT.</li> </ul>
<b>NO AIR</b>	<ul style="list-style-type: none"> <li>-Do not takeoff.</li> </ul>	*****	<ul style="list-style-type: none"> <li>-Operate IRU until flight completion.</li> <li>-If fault annunciator is ON or inertial data ceases to be transmitted by IRU, accomplish associated <b>IRS OVERHEAT</b> Procedure (EAP 2-15). IRS data is not normal.</li> </ul>
<b>BATT FAIL</b>	<ul style="list-style-type: none"> <li>-Do not takeoff.</li> </ul>	*****	*****
<b>ON BATT</b>	<ul style="list-style-type: none"> <li>-Check IRS CBs.</li> <li>-If the annunciator remains lighted, do not takeoff.</li> </ul>	*****	Accomplish associated <b>IRS ON BATTERY</b> Procedure (EAP 2-14).

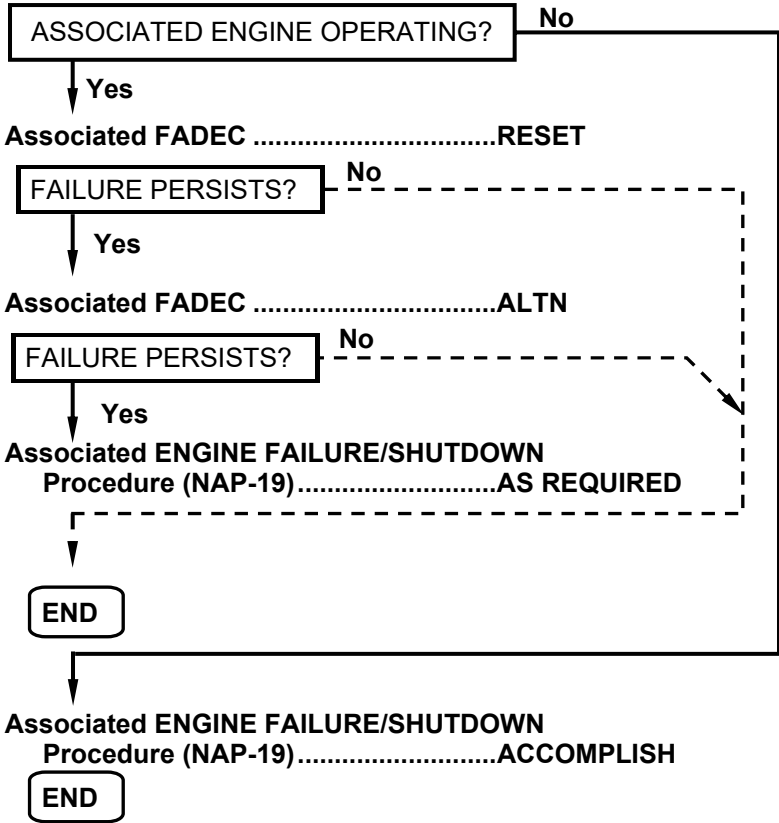
END

# EMERGENCY/ABNORMAL PROCEDURES

Non Annunciated

## LOSS OF ENGINE INDICATIONS

**Condition:** Loss of Thrust Mode, ITT, N1 and N2 indications.



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## LOSS OF PRESSURIZATION INDICATION

**Condition:** Cabin altitude or cabin  $\Delta P$  is not being presented or during use of the pressurization manual control.

Use the remaining indications to maintain cabin altitude below 10'000 ft, according to the table below:

**AIRPLANE/CABIN ALTITUDE CONVERSION TABLE**

AIRPLANE ALTITUDE (ft)	CABIN ALTITUDE (ft)	DIFFERENTIAL PRESSURE (psi)
10000	300	4.4
11000	500	4.7
12000	700	5.0
13000	900	5.2
14000	1100	5.5
15000	1300	5.7
16000	1500	5.9
17000	1700	6.1
18000	1900	6.3
19000	2200	6.5
20000	2400	6.7
21000	2700	6.8
22000	2900	7.0
23000	3200	7.1
24000	3400	7.2
25000	3800	7.3
26000	4100	7.4
27000	4400	7.5
28000	4700	7.6
29000	5000	7.6
30000	5400	7.7
31000	5700	7.7
32000	6100	7.7
33000	6500	7.7
34000	6800	7.8
35000	7200	7.8
36000	7600	7.8
37000	8000	7.8

If pressurization can not be maintained, refer to PRESSURIZATION AUTOMATIC SYSTEM FAILURE/CABIN DEPRESSURIZATION Procedure (EAP 1-13).

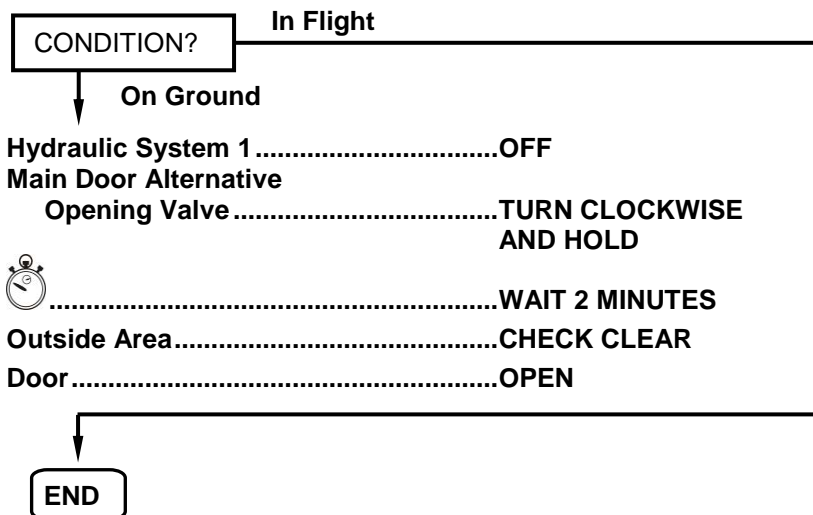
END

# EMERGENCY/ABNORMAL PROCEDURES

Non Annunciated

## MAIN DOOR BLOCKED

**Light:** DOOR BLOCKED (Attendant's Panel).



## NAV/FLIGHT INSTRUMENTS FAILURE

ANNUNCIATOR/ FAILURE	LOCATION	ACTION
ATT: CAGE (amber)	ISIS	Press the CAGE push button in order to recover attitude indication. Caging the ISIS in flight will result in loss of attitude indication for up to 10 seconds and the amber message ATT 10s will be presented during this time. Use the primary indication source until attitude indication is available.
ATT, ALT, SPD, M, HDG (red)		Use the primary indication source. If on ground, do not takeoff.
MENU INOP (amber)	MFD	Do not takeoff.
HDG FAIL (red)	PFD MFD	Use cross-side heading by pressing the AHRS (IRS) button on associated reversionary panel or use RMU or standby attitude indicator.

**CONTINUES ON NEXT PAGE**

# EMERGENCY/ABNORMAL PROCEDURES

Non Annunciated

## CONTINUED FROM PREVIOUS PAGE

ANNUNCIATOR/ FAILURE	LOCATION	ACTION
HDG (amber)	PFD MFD	Identify the failed side by comparing data with the Magnetic Compass and use cross-side data by pressing the AHRS (IRS) on associated reversionary panel.
ALT, ATT, IAS, PIT or ROL (amber)		Compare data with Standby Indicator. For altitude, compare the PFD altimeters setting also. If required, use cross-side data by pressing the appropriate button on associated reversionary panel.
ATT FAIL (red)		Push in the AHRS (IRS) button on associated reversionary panel or use standby attitude indicator.
RA (amber)	PFD	Compare both radio altimeter indications. If required, consider only the lower indication. Otherwise, disregard Radio Altitude. If RA is displayed in the center, the RA is failed.
RA1 (2) (amber)		Radio altimeter automatic reversion has occurred. No action is required.
VS (red)		Push in the ADC button on associated reversionary panel.
"X" (red) over IAS tape and/or altitude tape		Push in the ADC button on associated reversionary panel or use standby indications.
"X" (red) over course scale		Select another sensor.
Blank or "X" (red) on PFD or EICAS		Use the MFD Knob to present the required information on MFD.
Errors in attitude indication	Standby Attitude Instrument	Maintain a straight and leveled flight using the primary indication source. Wait 3 minutes. If error persists, cage the instrument and wait 5 min.

END

# EMERGENCY/ABNORMAL PROCEDURES

Non Annunciated

## NOSE LANDING GEAR UP DOOR OPEN

**Condition:** Noise increase due to nose landing gear doors open.

**Airspeed**.....MAX 250 KIAS

**Icing Conditions**.....AVOID/EXIT

**Fuel Consumption** .....MONITOR

### ABNORMAL LANDING GEAR EXTENSION

**Procedure (NAP-13)**.....AS REQUIRED

END

## ONE ENGINE INOPERATIVE APPROACH AND LANDING

For CAT III mode or CAT II approaches using HGS, the normal CAT III approach procedure must be used.

### Approach:

**Altimeters** .....SET AND CROSS CHECKED

**Approach Aids** .....SET AND CROSS CHECKED

**Speed Bugs** .....SET

**Pressurization** .....CHECK

**Go-Around Procedure** .....REVIEW

- Disengage Autopilot.
- Press Go-Around Button.
- Advance Operative Engine Thrust Lever to MAX.
- Rotate airplane to 10° nose up.
- Set flaps to 9°.

With positive rate of climb:

- Landing gear up.
- Maintain Approach Climb Speed until reaching acceleration altitude (level off).

### Before Landing:

#### Inoperative Engine

**Thrust Lever** .....IDLE

**Landing Gear** .....DOWN

**Thrust Rating** .....TAKEOFF MODE

**Fuel XFeed** .....OFF

**Autopilot/Yaw Damper** .....DISENGAGE

### Landing configuration:

**Flaps**.....22°

**V<sub>REF</sub>** .....V<sub>REF45</sub> + 10 KIAS

**CAUTION:** MULTIPLY THE FLAPS 45° UNFACTORED LANDING DISTANCE BY 1.48.

END

## OVERWEIGHT LANDING

Before touchdown:

- Emerg Lts ..... AS REQUIRED
- APU Fuel Shutoff Button ..... PUSH IN
- Rate of Descent ..... MAX 300 FT/MIN

Touch smoothly the runway surface.

Reduce the engine thrust only after the touchdown.

Landing configuration:

- Flaps ..... 45°
- V<sub>REF</sub> ..... V<sub>REF45</sub>

**CAUTION:** MULTIPLY THE FLAPS 45° UNFACTORED LANDING DISTANCE BY AT LEAST 1.10.

**END**

## OXYGEN LEAKAGE

**Condition:** Evidence of oxygen leakage through the crew mask, mask hose, flow indicator (blinker), or oxygen line.

No Smoking ..... ON

IS THE LEAKAGE IN THE CREW MASK, MASK HOSE, OR FLOW INDICATOR?

No

Yes

- Affected Mask ..... REMOVE FROM STORAGE BOX
- Stowage Box Doors ..... CLOSE
- Shutoff Sliding Control ..... ACTUATE
- Oxygen Pressure ..... CHECK

OXYGEN PRESSURE BELOW MINIMUM REQUIRED FOR DISPATCH?

No

Yes

- Altitude ..... MEA OR 10'000 FT, WHICHEVER IS HIGHER

**END**

Keep one Portable Oxygen Cylinder available for the pilot of the affected side. The oxygen supply by the Portable Oxygen Cylinder will last at least 30 minutes.

**END**

- Oxygen Cylinder Shutoff Valve ..... OFF
- Altitude ..... MEA OR 10'000 FT, WHICHEVER IS HIGHER

**END**

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# EMERGENCY/ABNORMAL PROCEDURES

Non Annunciated

## PARTIAL OR GEAR UP LANDING

**Condition:** Airplane committed to land with gear up or in transit.

**EICAS Indication:** Abnormal landing gear position.

**EICAS Warning:** LG/LEVER DISAGREE may be presented.

**ATC**.....**NOTIFY**

**Burn fuel to reduce touchdown speed.**

**Transponder** .....**7700**

**FSTN Belts** .....**ON**

**Cabin Crew** .....**NOTIFY**

**Passengers (and Crew)** .....**PREPARE FOR  
EMERGENCY LANDING  
AND EVACUATION**

**Below 10'000 ft:**

**GPWS CB (J7 or J8)**.....**PULL**

**Aural Warn CBs (B4 and E30)**.....**PULL**

**Emerg Lts** .....**ON**

**ELT** .....**ON**

**Prior to approach:**

**Hydraulic Elec Pumps 1 and 2** .....**OFF**

**Cabin** .....**DEPRESSURIZE**

**Engine Bleeds 1 and 2**.....**PUSH OUT**

**When committed to land:**

**Landing Gear**.....**AS REQUIRED**

The decision to land with all gear up or with any gear extended is left to pilots. Ground spoilers and thrust reversers will not operate if any main gear is up.

**Flaps**.....**45°**

If it is not possible to achieve the selected flap position, maintain airspeed according to the following:

FLAPS POSITION	MIN AIRSPEED
0 to 8°	$V_{REF45} + 30$ KIAS
9° to 21°	$V_{REF45} + 10$ KIAS
22° to 44°	$V_{REF45} + 5$ KIAS
45°	$V_{REF45}$

**Just before touchdown:**

**Cabin** ..... **ANNOUNCE IMPACT**

**Apply thrust reverser (if available) after touchdown.**

**When the airplane stops:**

**Fire Extinguishing Handles** .....**PULL**

**APU Fuel Shutoff Button**.....**PUSH IN**

**Engines and APU Fire Extinguishing**

**Bottles (if necessary)** .....**DISCHARGE**

**Fuel Pumps Pwr 1 and 2** .....**OFF**

**EMERGENCY EVACUATION**

**Procedure** .....**ACCOMPLISH**

**Before leaving the airplane:**

**Batteries 1 and 2** .....**OFF**

**END**

**NAP-32**

**REVISION 17**

**RUDDER ARTIFICIAL FEEL INOPERATIVE**

**Condition:** Rudder pedals become light and do not center by themselves. Yaw trim does not operate properly.

**Rudder Shutoff Sys 2 ..... PUSH OUT**

**FAILURE PERSISTS?** No

Yes

**Rudder Shutoff Sys 1 ..... PUSH OUT**

Expect greater rudder pedal force. If required, both pilots should act together to control the airplane.

Consider the use of aileron to help in yaw control, and asymmetric thrust to trim the airplane.

**Avoid airports with anticipated turbulence or crosswind.**

**END**

**RUDDER/YAW TRIM RUNAWAY**

**Condition:** Sudden uncommanded yaw.

**EICAS Indication:** Associated yaw trim indication changes.

**Quick Disconnect Button ..... PRESS AND HOLD**  
**Rudder Shutoff Sys 1 and 2 ..... PUSH OUT**

**Airspeed ..... MAX 250 KIAS**

**Yaw Trim Position ..... CHECK**

**YAW TRIM DISPLACED FROM NEUTRAL?** No

Yes

**Yaw Trim CB (F12) ..... PULL**

**Quick Disconnect Button ..... RELEASE**

**Rudder Shutoff Sys 1 and 2 ..... PUSH IN**

**END**

**Quick Disconnect Button ..... RELEASE**

**Prepare to overcome uncommanded yaw.**

**Rudder Shutoff Sys 1 ..... PUSH IN**

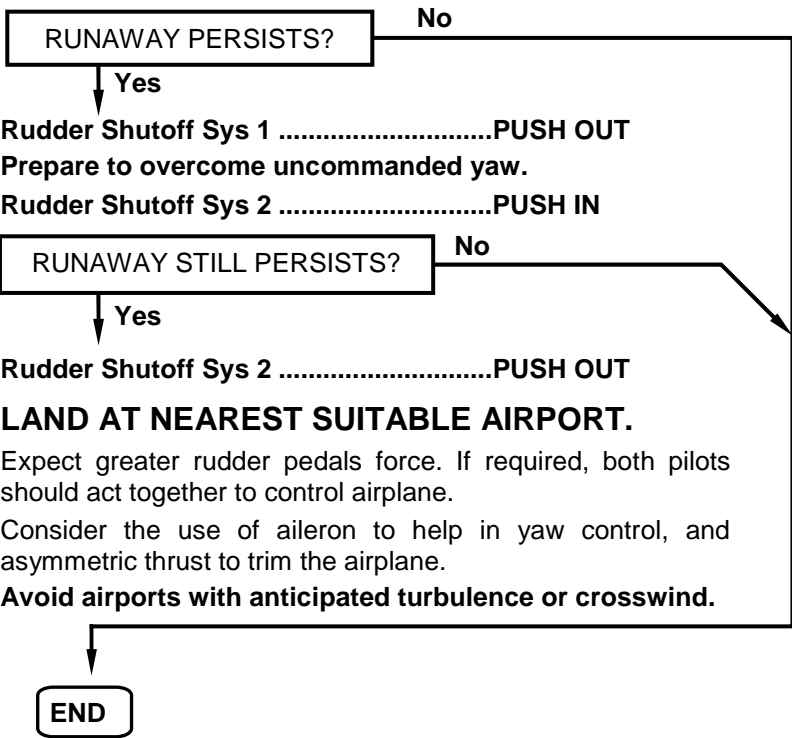
**CONTINUES ON NEXT PAGE**

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# EMERGENCY/ABNORMAL PROCEDURES

Non Annunciated

## CONTINUED FROM PREVIOUS PAGE



### SINGLE ENGINE BLEED OPERATION IN ICING CONDITIONS

- XBleed ..... OPEN
- Altitude ..... MAX 15'000 FT,  
MIN MEA
- If it is not possible to descend below 15'000 ft:  
Icing Conditions ..... EXIT

END

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# EMERGENCY/ABNORMAL PROCEDURES

Non Annunciated

## STIFFENED ELEVATOR

**Condition:** Elevator control columns movement is stiffened.

**EICAS Warning:** AUTOPILOT FAIL (may be presented),  
SPS 1-2 INOP (may be presented)

**EICAS Caution:** STICK PUSHER FAIL (may be presented)

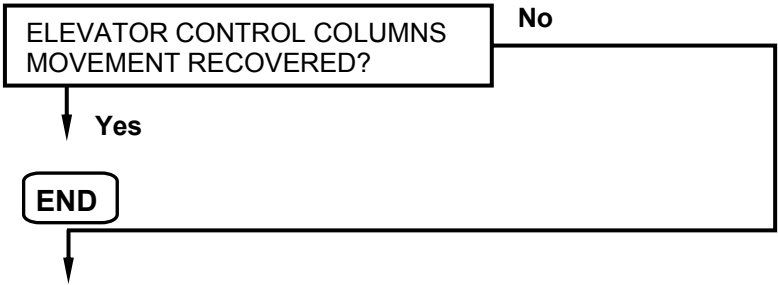
**Autopilot** ..... **DISENGAGE**

**Pitch Trim** ..... **AS REQUIRED**

**Avoid abrupt and large elevator inputs.**

**Consider descent to a warmer altitude.**

Freezing conditions may lead to de/anti-icing fluids residues to stiffen the elevator.



### JAMMED ELEVATOR

Procedure (NAP-8)..... **ACCOMPLISH**

**END**

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# EMERGENCY/ABNORMAL PROCEDURES

Non Annunciated

## STRUCTURAL DAMAGE

Land at the nearest suitable airport.

At safe altitude, evaluate airplane aero dynamical behavior and take extra caution varying airspeed and attitude.

Use the flight controls with caution avoiding high maneuvering loads.

FUSELAGE DAMAGED OR SUSPECTED DAMAGED?

No

Yes

Oxygen Masks ..... AS REQUIRED  
Altitude ..... MEA OR 10'000 FT,  
WHICHEVER IS HIGHER

When reaching 10'000 ft:

Pressurization Dump Button ..... PUSH IN

Land as smooth as possible.

END

## TRANSPONDER FAIL

**Condition:** The transponder mode annunciation is replaced with dashes on the RMU Radio page or by ATC notification.

TRANSPONDER ..... SELECT ANOTHER

END

## UNCOMMANDED ELEVATOR OR AILERON DISCONNECTION

**Light:** Amber ELEV DISC or AIL DISC on Pedestal.

**Condition:** One control column or control wheel moves independently of the other.

**Affected Surface Disconnection**

Handle ..... PULL

If aileron is affected, aileron artificial feel not available on left side.

Avoid airports with anticipated turbulence or crosswind.

END

**UNRELIABLE AIRSPEED**

**Autopilot/Yaw Damper ..... DISENGAGE**

**Both Flight Directors ..... OFF**

**SPEED INDICATION ON BOTH  
PFD BELOW 135 KIAS?**

**No**

**Yes**

**Rudder Shutoff Sys 1 ..... PUSH OUT**

**CAUTION:** AVOID USING THE SPEEDBRAKE.

**Attitude/Thrust ..... ADJUST**

Maintain airplane control. Refer to Unreliable Airspeed tables in the Performance Data section. Altitude and/or Vertical Speed indications may also be unreliable.

**Ground speed indication is available in the FMS for reference.**

**END**

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# EMERGENCY/ABNORMAL PROCEDURES

Non Annunciated

## VOLCANIC ASH

### LAND AT THE NEAREST SUITABLE AIRPORT.

Volcanic Ash Area..... EXIT/AVOID

Consider performing a 180° turn.

Oxygen Masks (if necessary)..... DON, 100%

If a significant amount of volcanic ash fills the cockpit or if there is a strong smell of sulphur, don an oxygen mask and select 100%.

APU..... START

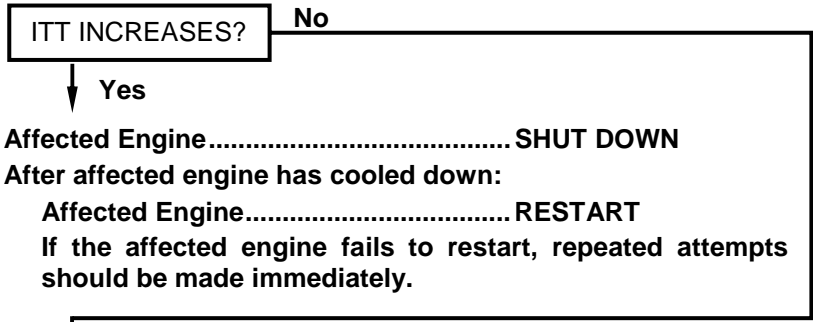
Ignitions ..... ON

Thrust Levers (if altitude permits)..... IDLE

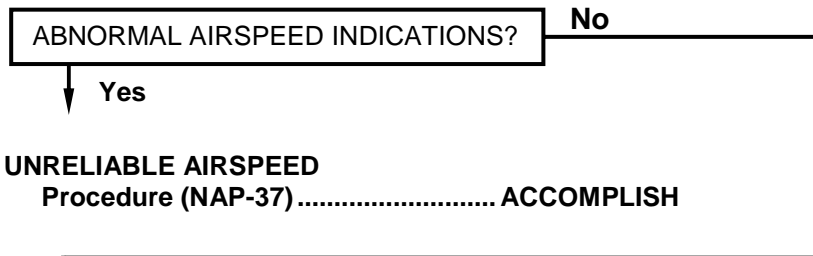
Anti-Icing Buttons (Engine, Wing and Stabilizer) ..... CHECK PUSHED IN

Ice Detection Override Knob..... ALL

ITT ..... MONITOR



Airspeed..... MONITOR



Restore systems to normal operation.

ATC..... NOTIFY

END

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EAP 0-2

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CAUTION

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# EMERGENCY/ABNORMAL PROCEDURES

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# EMERGENCY/ABNORMAL PROCEDURES

## Air Conditioning, Pneumatics & Pressurization

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PRESN AUTO FAIL .....	EAP 1-13
RAM AIR VLV FAIL.....	EAP 1-14

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# EMERGENCY/ABNORMAL PROCEDURES

## Air Conditioning, Pneumatics & Pressurization

### BLEED APU LEAK

EICAS Warning: BLD APU LEAK

APU Bleed ..... PUSH OUT  
Bleed 1 and 2 ..... AS REQUIRED



..... WAIT 3 MINUTES

MESSAGE PERSISTS?

No

Yes

APU ..... SHUTDOWN

MESSAGE STILL PERSISTS?

No

Yes

BLEED ENGINE LEAK

Procedure (EAP 1-4) ..... ACCOMPLISH  
Start the procedure considering BLD 1 LEAK.

END

END

# EMERGENCY/ABNORMAL PROCEDURES

## Air Conditioning, Pneumatics & Pressurization

### BLEED ENGINE LEAK

**EICAS Warning:** BLD 1 (2) LEAK  
**Light:** Red LEAK inscription in affected push button.

**XBleed** ..... **CLOSED**  
**Affected Bleed** ..... **PUSH OUT**  
**APU Bleed** ..... **PUSH OUT**  
**Altitude** ..... **MAX 25'000 FT,**  
**MIN MEA**  
**Icing Conditions** ..... **EXIT/AVOID**

 ..... **WAIT 3 MINUTES**

**BLD 1 (2 OR APU) LEAK MESSAGE EXTINGUISHES?**

No

Yes

**END**

**ASSOCIATED MESSAGE?**

**BLD 1 (2) VLV FAIL**

**BLD 1 (2) VLV CLSD**

**Opposite Bleed** ..... **PUSH OUT**  
**Associated Bleed** ..... **PUSH IN**

 ..... **WAIT 3 MINUTES**

**BLD 1 (2 OR APU) LEAK MESSAGE PERSISTS?**

No

Yes

**Associated Bleed** ..... **PUSH OUT**  
**Oxygen Masks** ..... **AS REQUIRED**  
**Altitude** ..... **MEA OR**  
**10'000 FT,**  
**WHICHEVER**  
**IS HIGHER**

**END**

**Associated Thrust Lever** ..... **IDLE**

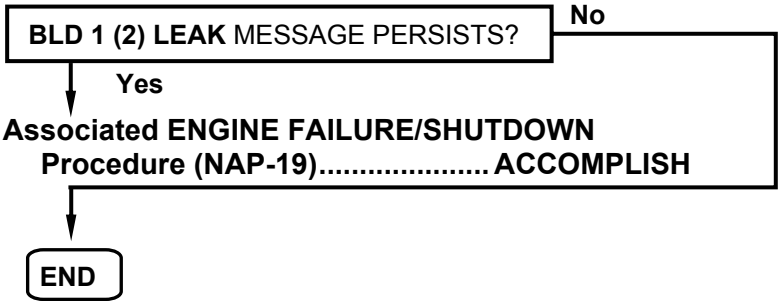
 ..... **WAIT 3 MINUTES**

**CONTINUES ON NEXT PAGE**

# EMERGENCY/ABNORMAL PROCEDURES

## Air Conditioning, Pneumatics & Pressurization

### CONTINUED FROM PREVIOUS PAGE

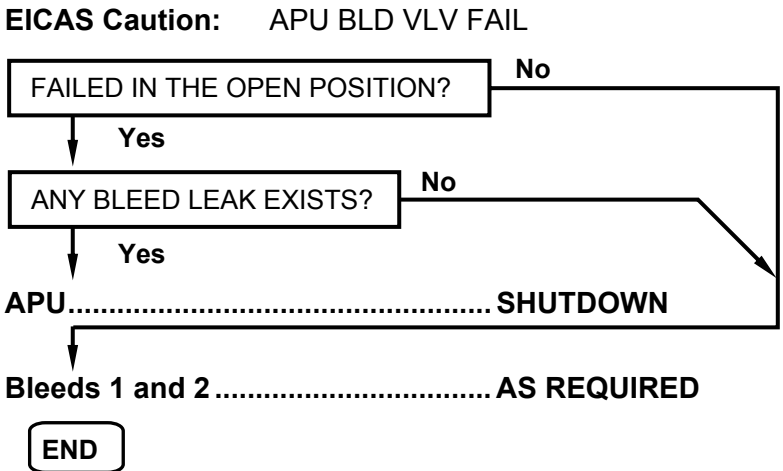


## BLEED OVERTEMPERATURE

- EICAS Warning:** BLD 1 (2) OVTEMP  
**MFD Indication:** Bleed Temp pointer may be in red range or out of view.
- XBleed** ..... **OPEN**  
**Affected Bleed** ..... **PUSH OUT**  
**Altitude** ..... **MAX 25'000 FT,**  
**MIN MEA**

- SINGLE ENGINE BLEED OPERATION**  
**IN ICING CONDITIONS**  
Procedure (NAP-34)..... **AS REQUIRED**
- END**

## APU BLEED VALVE FAILURE



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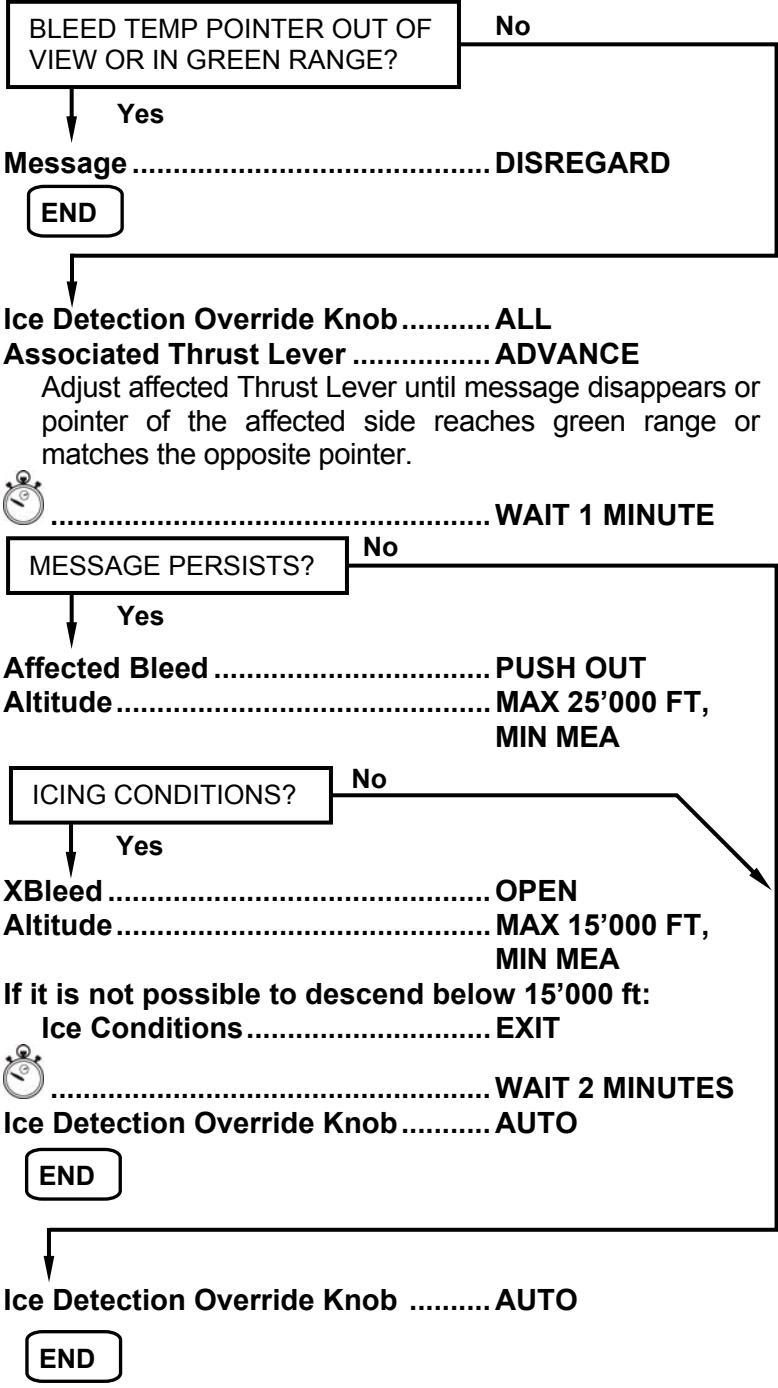
# EMERGENCY/ABNORMAL PROCEDURES

## Air Conditioning, Pneumatics & Pressurization

### BLEED LOW TEMPERATURE

**EICAS Caution:** BLD 1 (2) LOW TEMP

**MFD Indication:** Pointer may be amber or may be out of view.



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# EMERGENCY/ABNORMAL PROCEDURES

## Air Conditioning, Pneumatics & Pressurization

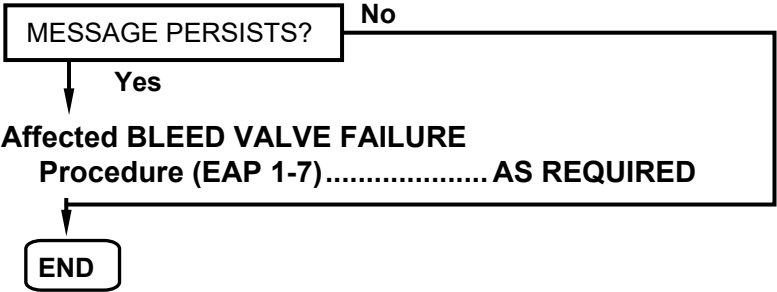
### BLEED VALVE CLOSED

**EICAS Advisory:** BLD 1 (2) VLV CLSD

Confirm the closed side and, if required and situation permits:

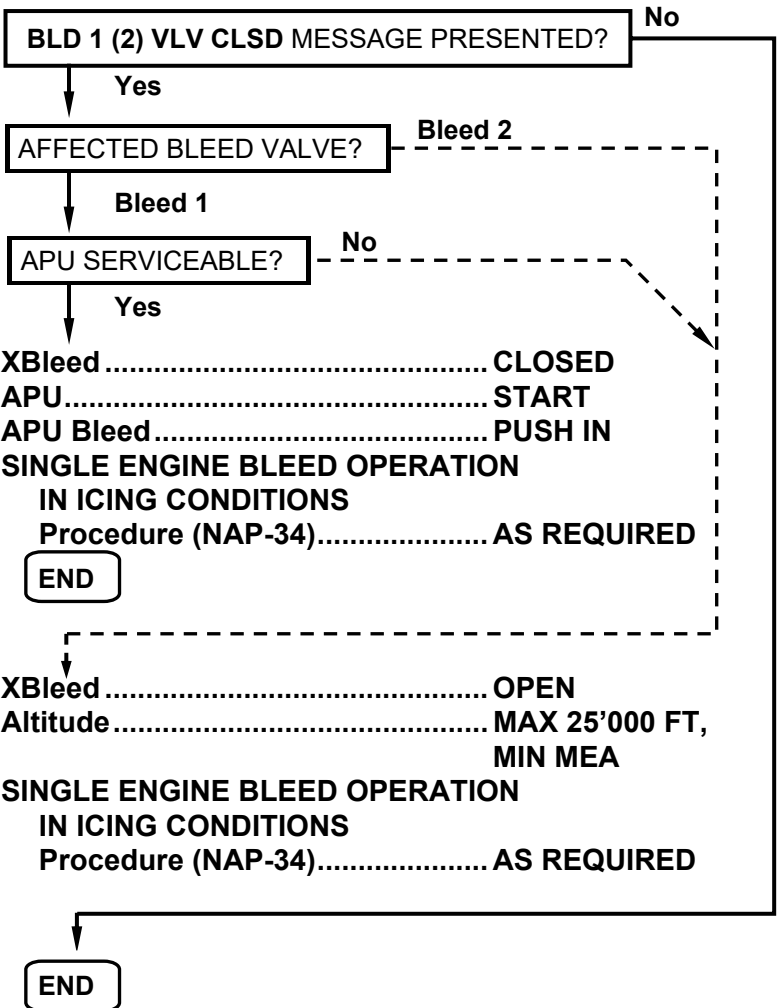
Associated Pack..... PUSH OUT, THEN  
PUSH IN

Associated Bleed ..... PUSH IN



### BLEED VALVE FAILURE

**EICAS Caution:** BLD 1 (2) VLV FAIL

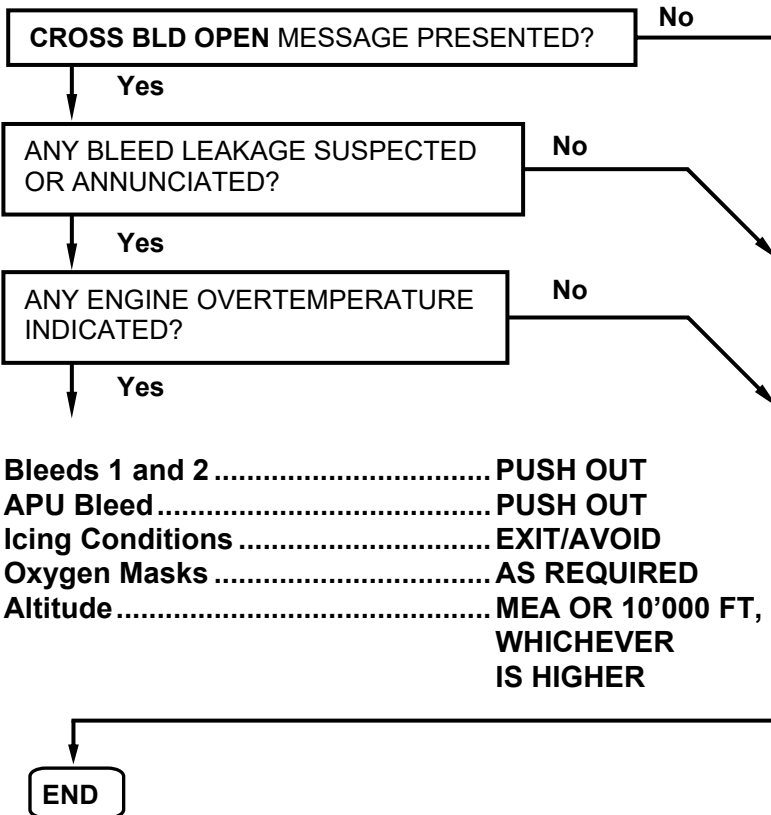


# EMERGENCY/ABNORMAL PROCEDURES

## Air Conditioning, Pneumatics & Pressurization

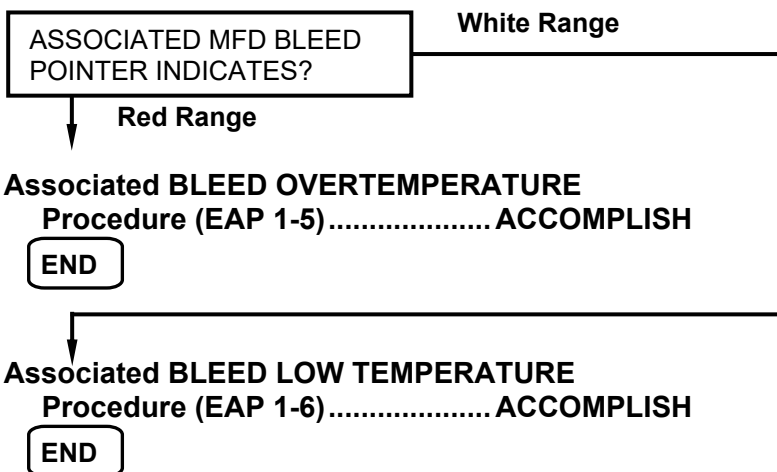
### CROSSBLEED FAILURE

EICAS Caution: CROSS BLD FAIL



### HIGH STAGE VALVE FAILURE

EICAS Caution: HS VLV 1 (2) FAIL



# EMERGENCY/ABNORMAL PROCEDURES

## Air Conditioning, Pneumatics & Pressurization

### PACK OVERHEAT

**EICAS Caution:** PACK 1 (2) OVHT

**Associated Temperature &**

**Mode Selector** .....AUTO/FULL COLD

**Affected Pack** .....PUSH OUT



.....WAIT 3 MINUTES

**Affected Pack** .....PUSH IN

MESSAGE PERSISTS?

No

Yes

**Associated Temperature &**

**Mode Selector** .....MANUAL/FULL COLD

**Affected Pack** .....PUSH OUT



.....WAIT 3 MINUTES

**Affected Pack** .....PUSH IN

MESSAGE PERSISTS?

No

Yes

**Affected Pack** .....PUSH OUT

BOTH PACKS AFFECTED?

No

Yes

**Oxygen Masks** .....AS REQUIRED

**Altitude** .....MEA OR 10'000 FT,  
WHICHEVER IS HIGHER

At least one bleed source must be kept open.

When reaching 10'000 ft:

**Cabin** .....DEPRESSURIZE

END

**Altitude** .....MAX 25'000 FT,  
MIN MEA

END

END

# EMERGENCY/ABNORMAL PROCEDURES

## Air Conditioning, Pneumatics & Pressurization

### PACK OVERLOAD

EICAS Caution: PACK 1 (2) OVLD

Recirculation Fan ..... PUSH IN

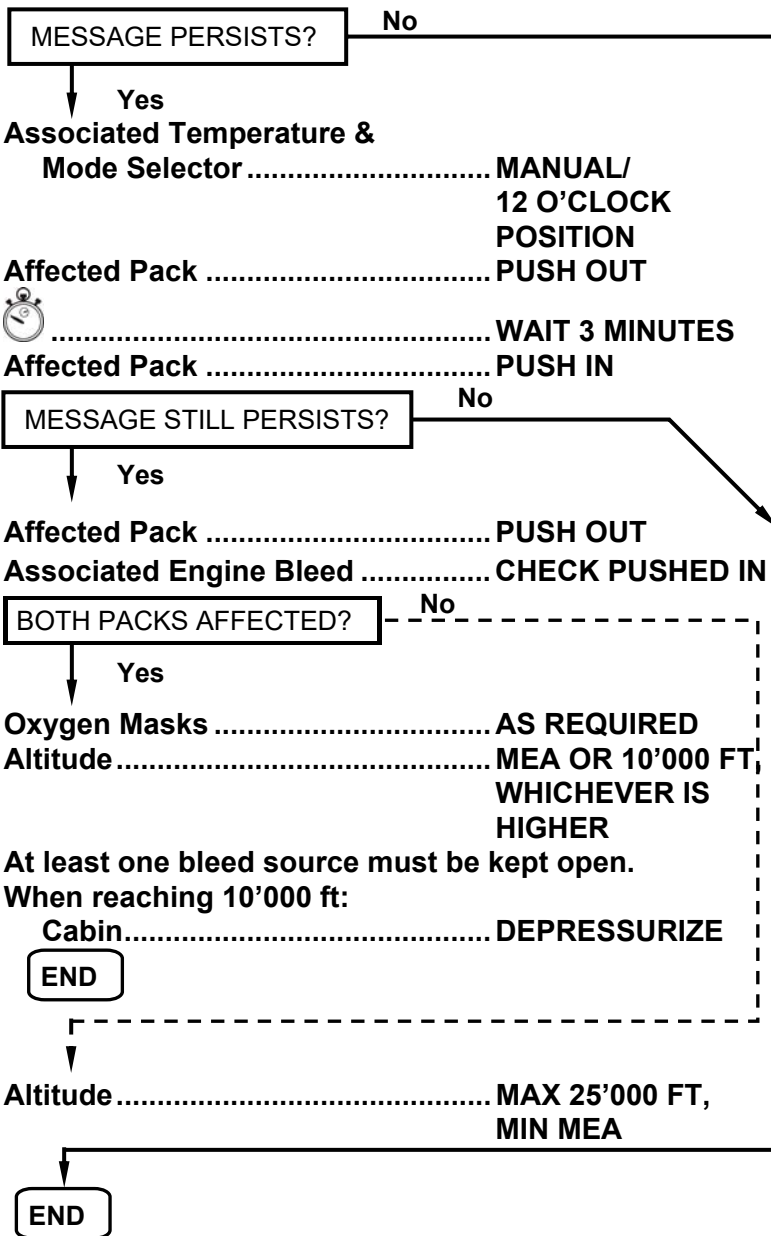
Associated Temperature &  
Mode Selector ..... AUTO / 12 O'CLOCK  
POSITION

Associated Pack ..... PUSH OUT

 ..... WAIT 3 MINUTES

Associated Pack ..... PUSH IN

**NOTE:** In case the message remains displayed after reset,  
report to the maintenance personnel.



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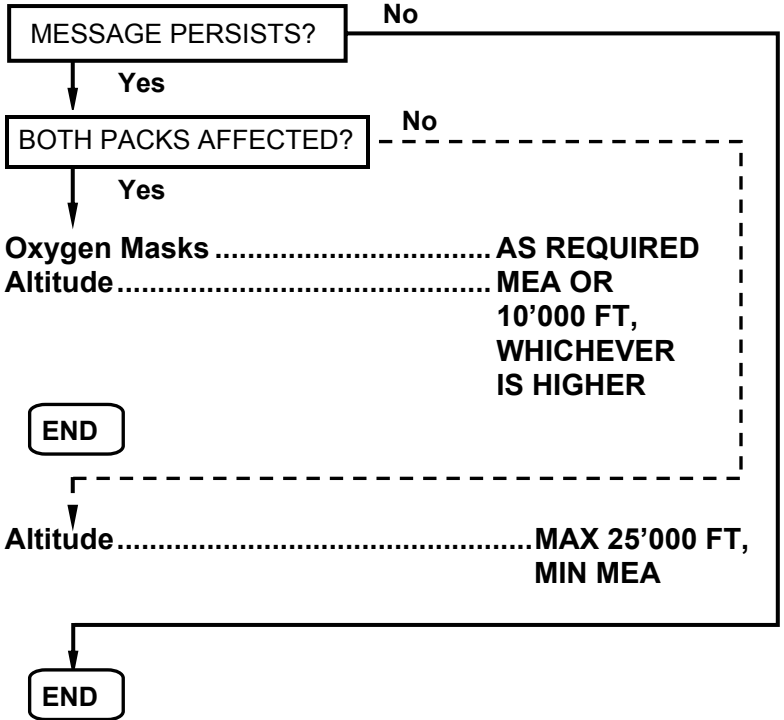
# EMERGENCY/ABNORMAL PROCEDURES

## Air Conditioning, Pneumatics & Pressurization

### PACK VALVE CLOSED

EICAS Advisory: PACK 1 (2) VLV CLSD

Associated Pack..... **PUSH OUT, THEN  
PUSH IN**



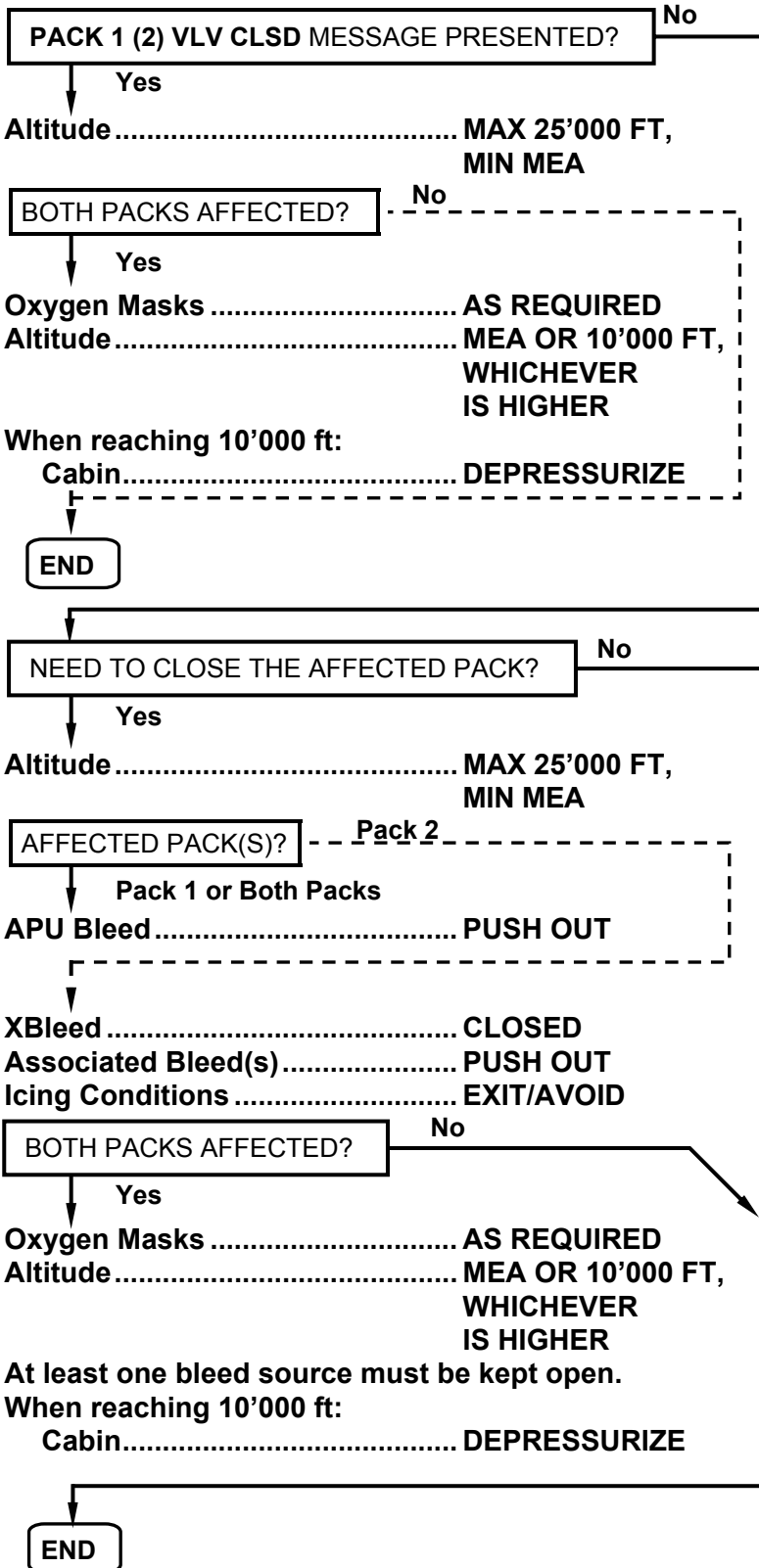
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# EMERGENCY/ABNORMAL PROCEDURES

## Air Conditioning, Pneumatics & Pressurization

### PACK VALVE FAILURE

EICAS Caution: PACK 1 (2) VLV FAIL



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QRH-145/1115

# EMERGENCY/ABNORMAL PROCEDURES

## Air Conditioning, Pneumatics & Pressurization

### PRESSURIZATION AUTOMATIC SYSTEM FAILURE/CABIN DEPRESSURIZATION/CABIN RATE ABNORMAL FLUCTUATIONS

**EICAS Caution:** PRESN AUTO FAIL may be presented.

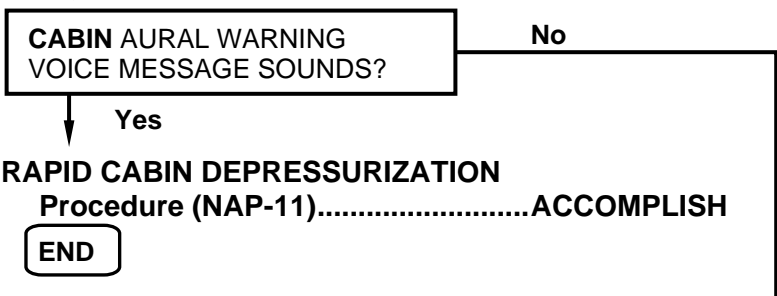
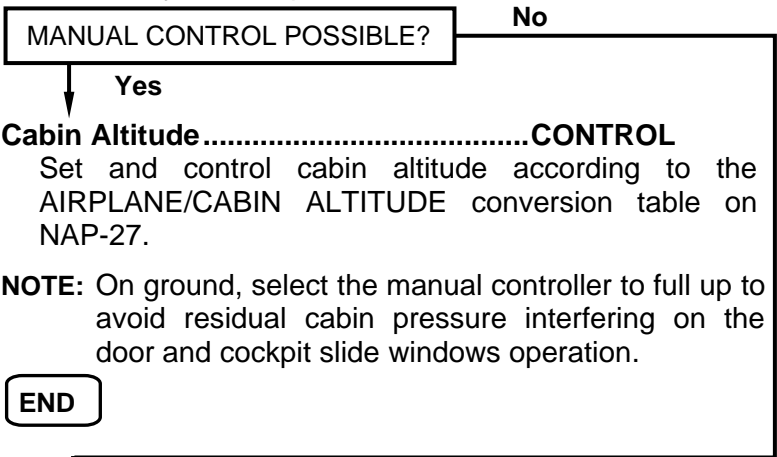
**EICAS Indication:** Abnormal cabin altitude (amber or red) may be presented.  
Erratic cabin rate fluctuations may be presented.

**Pressurization Manual Controller** ..... 11 O'CLOCK POSITION

**Pressurization Mode Selector** ..... PUSH IN (MAN)

**Pressurization Manual Controller** ..... AS REQUIRED

Wait for system response and stabilization.



**Oxygen Masks** ..... AS REQUIRED  
**Altitude** ..... MEA OR 10'000 FT, WHICHEVER IS HIGHER

**CONTINUES ON NEXT PAGE**

# EMERGENCY/ABNORMAL PROCEDURES

## Air Conditioning, Pneumatics & Pressurization

### CONTINUED FROM PREVIOUS PAGE

At least one bleed source must be kept open.

When reaching 10'000 ft:

Pressurization Manual Controller ...DOWN

Pressurization Mode Selector .....PUSH OUT

Pressurization Dump Button .....PUSH IN (ON)

END

## RAM AIR VALVE FAILURE

EICAS Caution: RAM AIR VLV FAIL

Air Conditioning System .....MONITOR

ANY PACK 1 (2) OVLD OR PACK 1 (2) OVHT  
MESSAGE PRESENTED?

No

Yes

Associated Pack.....PUSH OUT  
Altitude.....MAX 25'000 FT,  
MIN MEA

BOTH PACKS AFFECTED?

No

Yes

Oxygen Masks ..... AS REQUIRED  
Altitude..... MEA OR 10'000 FT,  
WHICHEVER  
IS HIGHER

At least one bleed source must be kept open.

When reaching 10'000 ft:

Cabin.....DEPRESSURIZE

END

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# EMERGENCY/ABNORMAL PROCEDURES

## Autopilot, Flight Instruments & Navigation

### LIST OF EICAS MESSAGES

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RAD ALT FAIL .....	EAP 2-16

# EMERGENCY/ABNORMAL PROCEDURES

## Autopilot, Flight Instruments & Navigation

### AUTOPILOT FAILURE

**EICAS Warning:** AUTOPILOT FAIL

**Aural Warning:** AUTOPILOT Voice message

**Autopilot .....DISENGAGE**

Trim the airplane as required.

**NOTE:** If associated with autopilot hardover a sudden deviation from the expected flight path may occur.

END

### AHRS ALIGNMENT FAULT

**EICAS Caution:** AHRS 1 (2) ALN FAULT

**Check and reenter present position. If necessary, reenter present position once again.**

END

### AHRS ATTITUDE MODE

**EICAS Advisory:** AHRS 1 (2) ATT MODE

CROSS-SIDE AHRS AVAILABLE?

No

Yes

**AHRS Button on Associated Reversionary Panel .....PUSH IN**

END

**Maintain wings level and constant airspeed until AHRS 1 (2) ALN message is no longer displayed and attitude is recovered (approximately 20 seconds).**

**CAUTION:** • ATTITUDE OUTPUTS ARE NOT AS ACCURATE AS IN THE NORMAL OPERATIONAL MODE.

- AHRS MAGNETIC HEADING IS NOT AVAILABLE.

**NOTE:** The Autopilot is not available while AHRS 1 (2) ALN message is being displayed.

END

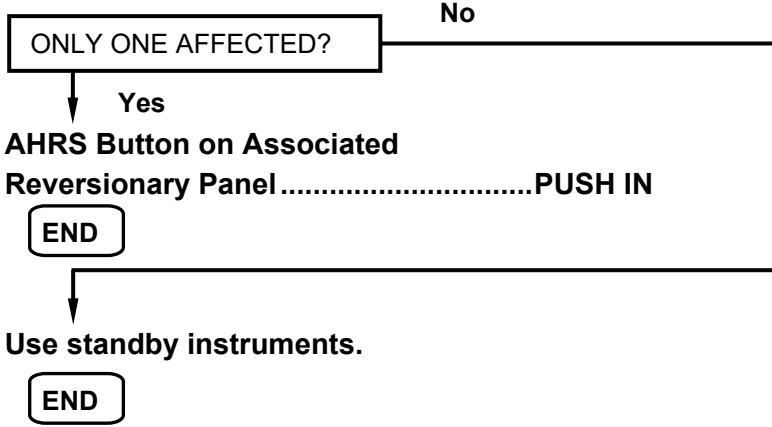
# EMERGENCY/ABNORMAL PROCEDURES

## Autopilot, Flight Instruments & Navigation

### AHRS FAIL

EICAS Caution: AHRS 1 (2) FAIL

Relevant Inoperative Item: **Autopilot**



### AHRS ON BATTERY

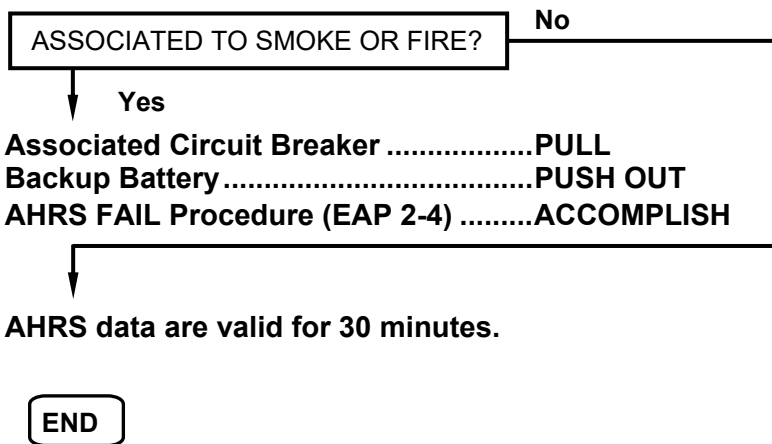
EICAS Advisory: AHRS 1 (2) ON BATT

Affected AHRS will operate for 40 minutes.

END

### AHRS OVERHEAT

EICAS Caution: AHRS 1 (2) OVERHEAT



# EMERGENCY/ABNORMAL PROCEDURES

## Autopilot, Flight Instruments & Navigation

### AUTOPILOT AILERON MISTRIM

**EICAS Caution:** AP AIL MISTRIM for more than 10 s.

**Condition:** Autopilot is engaged with aileron out of trim.

**Control Wheel.....HOLD FIRMLY**  
**Quick Disconnect Button .....PRESS**  
**Roll Trim.....AS REQUIRED**  
**Yaw Trim .....AS REQUIRED**  
**Autopilot .....AS REQUIRED**

END

### AUTOPILOT ELEVATOR MISTRIM

**EICAS Caution:** AP ELEV MISTRIM

**Condition:** Autopilot is engaged with pitch out of trim.

**Control Column.....HOLD FIRMLY**  
**Quick Disconnect Button .....PRESS**  
**Pitch Trim.....AS REQUIRED**  
**Autopilot .....AS REQUIRED**

END

# EMERGENCY/ABNORMAL PROCEDURES

## Autopilot, Flight Instruments & Navigation

### AUTOPILOT TRIM FAILED

**EICAS Caution:** AUTO TRIM FAIL

**Control Column** .....**HOLD FIRMLY**

**Quick Disconnect Button** .....**PRESS**

**Pitch Trim**.....**AS REQUIRED**

**Autopilot** .....**AS REQUIRED**

**END**

### DAU FAILURE

**EICAS Caution:** DAU1 (2) A FAIL

**EICAS Advisory:** DAU1 (2) B FAIL

ONLY CHANNEL B AFFECTED?

No

Yes

**END**

ONLY CHANNEL A AFFECTED?

No

Yes

**Associated DAU on EICAS Rev (Pedestal Panel) .....PUSH IN**

WHICH DAU IS AFFECTED?

DAU 2

DAU 1

- **Lost Indications:** engine 1 oil (temperature and pressure), battery 1 and 2 temperature, fuel tank temperature, roll trim position, cockpit temperature and bleed 1 temperature.

- **Lost Messages:** FUEL TANK LO TEMP, E1 FUEL LO TEMP, BLEED 1 OVTEMP.

- BLD 1 LOW TEMP message will appear.

**END**

- **Lost Indications:** engine 2 oil (temperature and pressure), hydraulic quantity 1 and 2, yaw trim position, cabin temperature and bleed 2 temperature.

- **Lost Messages:** BLEED 2 OVTEMP, E2 FUEL LO TEMP, HYD 1 LO QTY, HYD 2 LO QTY.

- BLD 2 LOW TEMP message will appear.

- APU OIL HI TEMP message will appear in case APU is OFF.

**END**

**CONTINUES ON NEXT PAGE**

# EMERGENCY/ABNORMAL PROCEDURES

## Autopilot, Flight Instruments & Navigation

↓ **CONTINUED FROM PREVIOUS PAGE**

**LAND AT THE NEAREST SUITABLE AIRPORT.**

WHICH DAU IS AFFECTED?

DAU 2

↓  
DAU 1

- **All messages and indications of the following systems are lost:** Oxygen, Steering, Landing Gear, Roll Trim, and the message EMERG LIGHT NOT ARMED.
- **Some messages and indications of the following system are lost:** Doors, Stall Protection, Electrical, Fire Protection, Fuel, APU, Power Plant, Thrust Reverser, Spoiler, Brakes, Air Conditioning, Ice and Rain Protection.

END

- **All messages and indications of the following systems are lost:** Smoke, Hydraulic, Rudder and Yaw Trim.
- **Some messages and indications of the following systems are lost:** Doors, Stall Protection, Electrical, Fire Protection, Fuel, APU, Power Plant, Thrust Reverser, Flap, Brakes, Air Conditioning, Ice and Rain Protection.

END

### DAU MISCOMPARE

**EICAS Caution:**    DAU1 (2) ENG MISCOMP or  
                             DAU1 (2) SYS MISCOMP or  
                             DAU1 (2) WRN MISCOMP

**Associated DAU on  
EICAS Rev (Pedestal Panel) .....PUSH IN**

Analyze the situation before and after the reversion, and take the appropriate corrective action.

- NOTE:** For each miscompare message and each side, check the following parameters before and after the reversion:
- Engine: N1, N2, ITT.
  - System: Battery voltage and temperature, Takeoff temperature, Hydraulic pressure, Oxygen pressure.
  - Warning: all warning messages, if any.

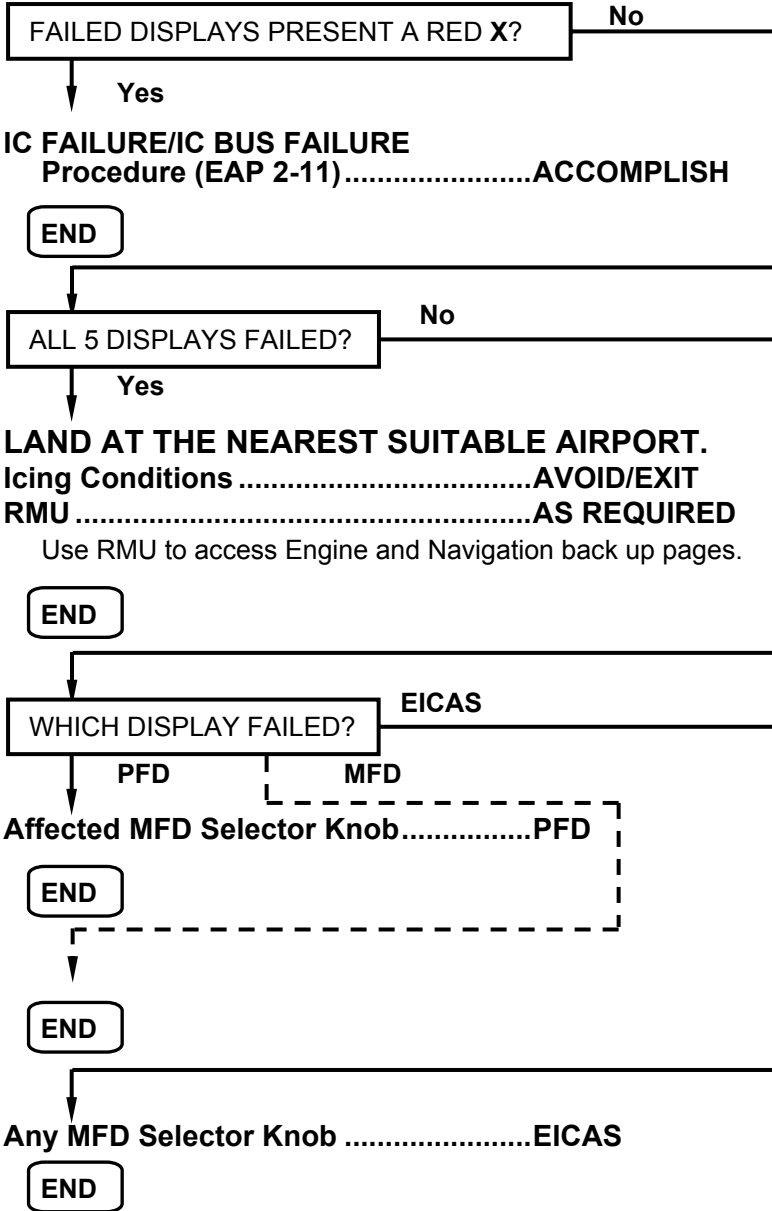
END

# EMERGENCY/ABNORMAL PROCEDURES

## Autopilot, Flight Instruments & Navigation

### DISPLAY FAILURE

**EICAS Caution:** CHECK PFD 1 (2) message is presented if PFD is the failed display.



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# EMERGENCY/ABNORMAL PROCEDURES

## Autopilot, Flight Instruments & Navigation

### ELECTRONIC BAY OVERTEMPERATURE

**EICAS Caution:** ELEKBAY OVTEMP

The following equipment is installed in the forward electronic compartment:

- Air Data Computer (ADC);
- Transponder Mode S;
- Integrated Communication Unit (ICU);
- Aural Warning Computer (AWC);
- Flight Management System (FMS);
- Attitude and Heading Reference System (AHRS);
- Passenger Address;
- Integrated Navigation Unit (INU);
- Inverters;
- Dimmers;
- Backup Battery.

It is recommended to turn off the systems that are unessential, using the table below to assess which system could be turned off. Turn off only systems that are unessential to the present phase of flight.

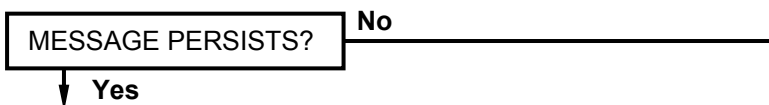
SYSTEM	POWER OFF CONTROL
Passenger Address	PA <b>CB</b> ..... PULL
Dimmers	Panel lights knob (pilot, pedestal and copilot) at left and right side of the glareshield panel ..... OFF OR PUSH BUTTONS <b>CB</b> ..... PULL
Integrated Navigation Unit	For INU 1: ADF 1 <b>CB</b> , DME 1 <b>CB</b> and VOR/ILS 1 <b>CB</b> ..... PULL OR For INU 2: ADF 2 <b>CB</b> , DME 2 <b>CB</b> and VOR/ILS 2 <b>CB</b> ..... PULL
Inverters	Push out AC PWR Push Button on overhead Electrical System panel. <b>NOTE:</b> TCAS and GPWS/Windshear may use 115V AC.

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# EMERGENCY/ABNORMAL PROCEDURES

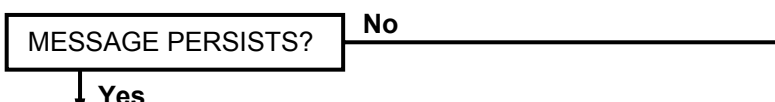
## Autopilot, Flight Instruments & Navigation

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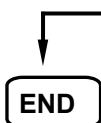


It is recommended to turn off the redundant system and unessential equipment, using the table below to assess which system or equipment could be turned off. Turn off only systems and equipment that are unessential to the present phase of flight.

SYSTEM	POWER OFF CONTROL
FMS	<ul style="list-style-type: none"> <li>- For Honeywell FMS:</li> <li>- For FMS 1: CMPTR 1 CB.</li> <li>- For FMS 2: CMPTR 2 CB.</li> <li>- For Universal FMS:</li> <li>- FMS 1 CB.</li> <li>- FMS 2 CB.</li> </ul> <p><b>NOTE:</b> Some airplanes may not be equipped with dual FMS.</p>
Aural Warning Computer	AWS CB.
Transponder Mode S	<ul style="list-style-type: none"> <li>- For Transponder 1: XPDR 1 CB.</li> <li>- For Transponder 2: XPDR 2 CB.</li> </ul>
Integrated Communication Unit	<ul style="list-style-type: none"> <li>- For ICU 1: XPDR 1 CB and VHF 1 CB.</li> <li>- For ICU 2: XPDR 2 CB and VHF 2 CB.</li> </ul>
Attitude and Reference System	<ul style="list-style-type: none"> <li>- AHRS 1 CB.</li> <li>- AHRS 2 CB.</li> </ul>
Air Data Computer	<ul style="list-style-type: none"> <li>- ADC 1 CB.</li> <li>- ADC 2 CB.</li> </ul>
Backup Battery	Backup Power Push Button on overhead Electrical System panel.



**LAND AT THE NEAREST SUITABLE AIRPORT.**  
 Maintain a cross-check between main and standby instruments. In case of disagreement, follow the standby instruments indication.



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# EMERGENCY/ABNORMAL PROCEDURES

## Autopilot, Flight Instruments & Navigation

### FD LATERAL MODE OFF/ FD VERTICAL MODE OFF

**EICAS Caution:** LATERAL MODE OFF or  
VERTICAL MODE OFF

**At crew discretion, re-select the affected Flight Director or select the other.**

**NOTE:** For some EICAS versions this message will be presented if the crew turns the Flight Director off. In this case, the message must be disregarded.

END

### IC FAILURE/IC BUS FAILURE

**EICAS Caution:** IC BUS FAIL may be presented.

**Condition:** Associated Display Units present a red X.

**The following features will be inoperative:**

- EICAS messages miscompare monitoring.
- Takeoff speeds synchronization.
- Flight Director mode synchronization.

FAILED DISPLAYS?

**PFD 2 and MFD 2 (IC 2 Failed)**

**PFD 1, MFD 1 and EICAS (IC 1 Failed)**

**SG on Reversionary Panel 1 .....PUSH IN**

**NOTE:** - The PIT TRIM 1 (2) INOP or PTRIM MAIN INOP and PTRIM BACKUP INOP messages may not be available, and  
- The autopilot is not available.

END

**SG on Reversionary Panel 2 .....PUSH IN**

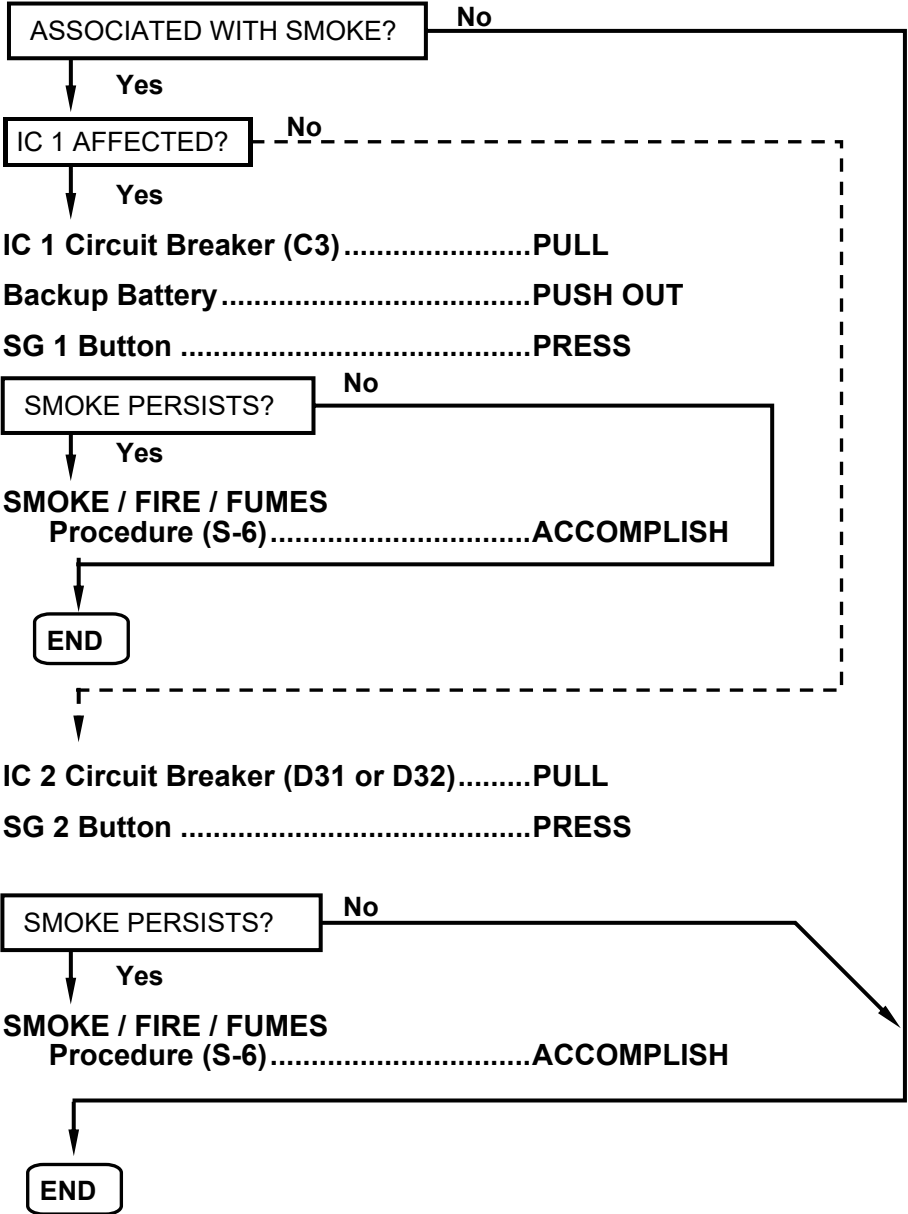
END

# EMERGENCY/ABNORMAL PROCEDURES

## Autopilot, Flight Instruments & Navigation

### IC OVERHEAT

EICAS Caution: IC 1 (2) OVERHEAT



### IRS ALIGNMENT

EICAS Advisory: IRS 1 (2) ALN

IRU mode select switch .....CHECK NAV

This message is only presented during alignment phase or while the IRU mode select switch is set at ALIGN position.

END

# EMERGENCY/ABNORMAL PROCEDURES

## Autopilot, Flight Instruments & Navigation

### IRS ALIGNMENT FAULT

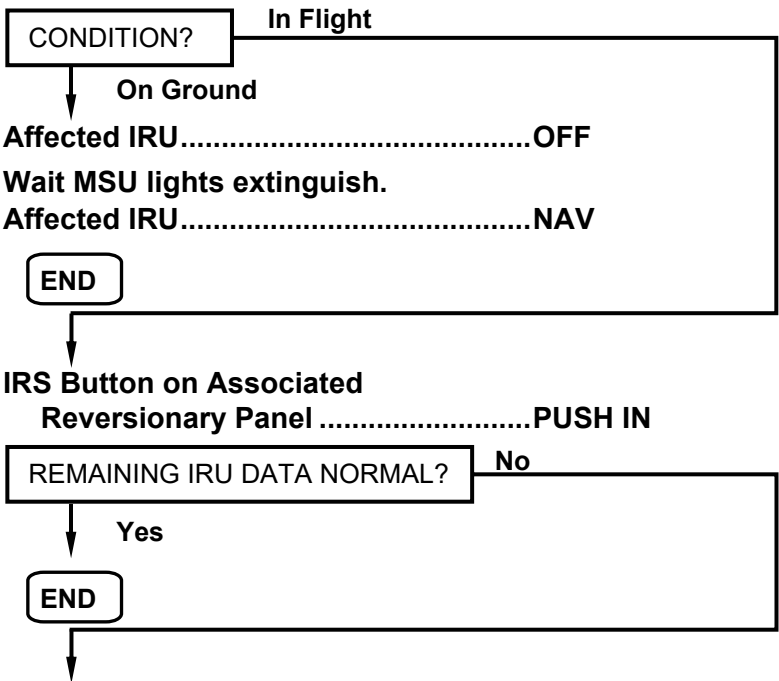
**EICAS Caution:** IRS 1 (2) ALN FAULT

Check and reenter present position. If necessary, reenter present position once again.

END

### IRS ATTITUDE MODE

**EICAS Advisory:** IRS 1 (2) ATT MODE



Maintain wings level and constant airspeed for approximately 20 seconds until IRS 1 (2) ALN message is no longer displayed and attitude is recovered.

Magnetic Heading .....ENTER

**CAUTION:** FOR IRS IN ATTITUDE MODE, NAVIGATION AND ATTITUDE OUTPUTS ARE NOT AS ACCURATE AS IN THE NAV MODE. MAGNETIC HEADING MUST BE ENTERED AND UPDATED PERIODICALLY FROM THE BEST AVAILABLE ALTERNATIVE SOURCE, THROUGH THE FMS CDU.

**Relevant Inoperative Item:** Autopilot

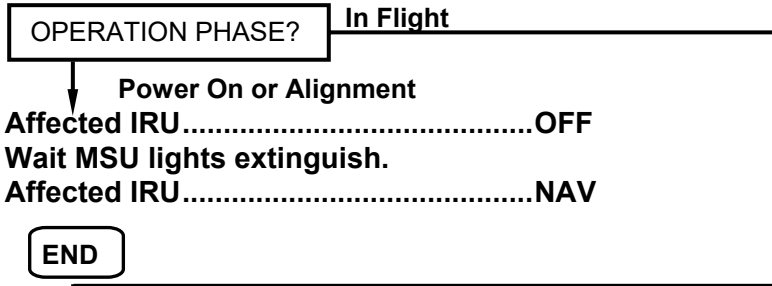
END

# EMERGENCY/ABNORMAL PROCEDURES

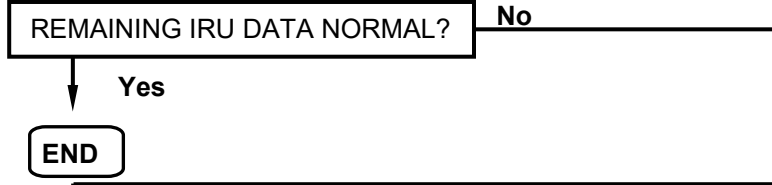
## Autopilot, Flight Instruments & Navigation

### IRS FAIL

EICAS Caution: IRS 1 (2) FAIL



IRS Button on Associated Reversionary Panel .....PUSH IN



Affected IRU.....ATT

Maintain wings level and constant airspeed for approximately 20 seconds until IRS 1 (2) ALN message is no longer displayed and attitude is recovered.

Magnetic Heading .....ENTER

**CAUTION:** FOR IRS IN ATTITUDE MODE, NAVIGATION AND ATTITUDE OUTPUTS ARE NOT AS ACCURATE AS IN THE NAV MODE. MAGNETIC HEADING MUST BE ENTERED AND UPDATED PERIODICALLY FROM THE BEST AVAILABLE ALTERNATIVE SOURCE, THROUGH THE FMS CDU.

Relevant Inoperative Item: Autopilot

END

### IRS ON BATTERY

EICAS Advisory: IRS 1 (2) ON BATT

Associated IRU will operate for 40 minutes.

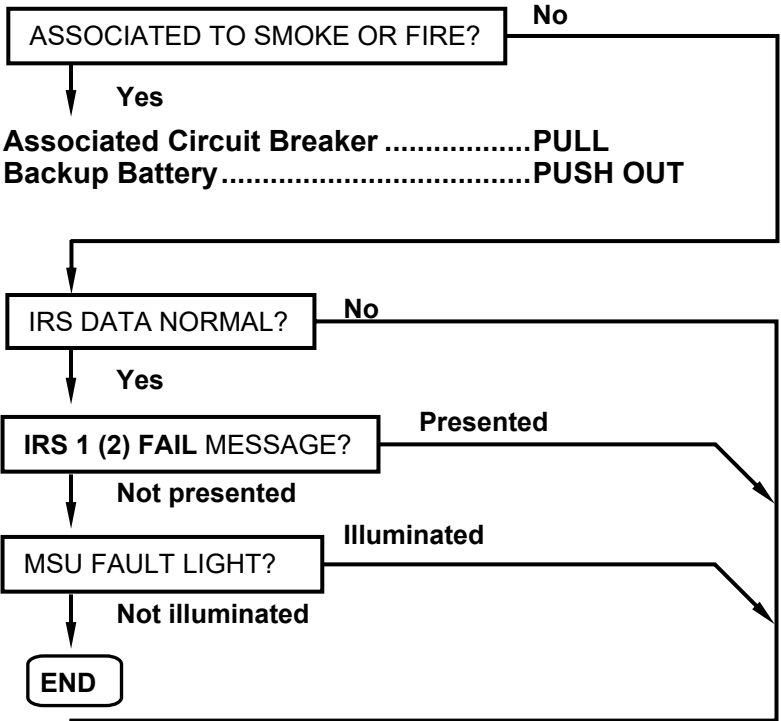
END

# EMERGENCY/ABNORMAL PROCEDURES

## Autopilot, Flight Instruments & Navigation

### IRS OVERHEAT

**EICAS Caution:** IRS 1 (2) OVERHEAT



**IRS Button on Associated**

**Reversionary Panel .....PUSH IN**

**Affected IRU .....OFF**

**Autopilot .....DISENGAGE**

**During final approach, if additional attitude reference is necessary:**

**Affected IRU .....ATT**

For IRS in ATT mode, navigation and attitude outputs are not as accurate as in the NAV mode. Magnetic heading must be entered and updated periodically from the best available alternative source, through the FMS CDU.

**Relevant Inoperative Item:** Autopilot

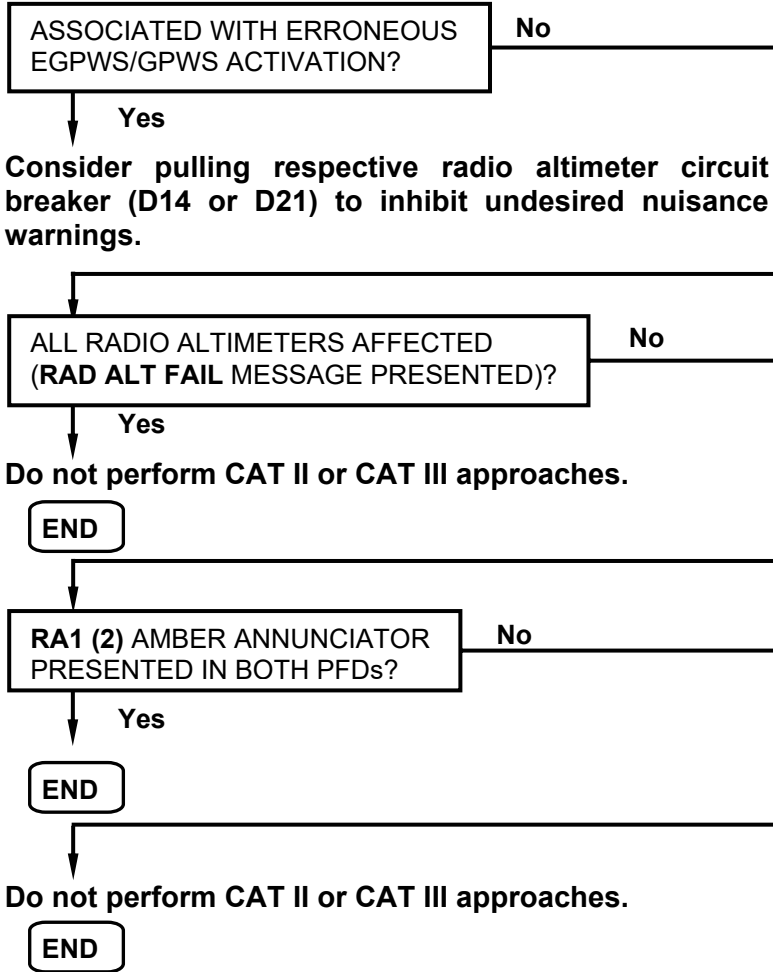
END

# EMERGENCY/ABNORMAL PROCEDURES

## Autopilot, Flight Instruments & Navigation

### RADIO ALTIMETER FAIL

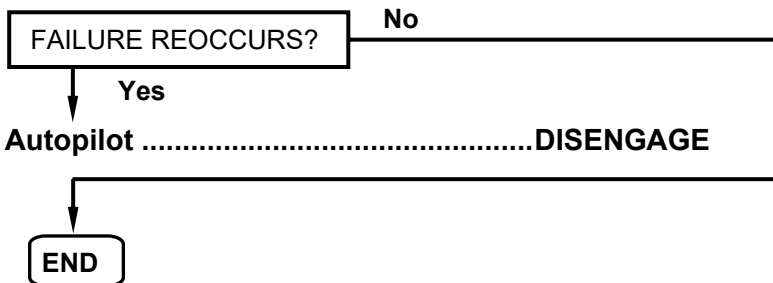
**EICAS Advisory:** RAD ALT 1 (2) FAIL or  
RAD ALT FAIL may be presented.



### YAW DAMPER FAILURE

**EICAS Caution:** YAW DAMPER FAIL

Yaw Damper.....**DISENGAGE**  
Autopilot .....**AS REQUIRED**



**TABLE OF CONTENTS**

**ANNUNCIATED PROCEDURES**

**APU FIRE ..... EAP 3-3**  
**BLEED APU LEAK.....refer to EAP 1-3**  
APU BLEED VALVE FAILURE.....refer to EAP 1-5  
APU CONTACTOR CLOSED ..... EAP 3-4  
APU FAIL..... EAP 3-4  
APU FUEL LOW PRESSURE ..... EAP 3-4  
APU FUEL SHUTOFF VALVE  
INOPERATIVE .....refer to EAP 9-4  
APU OIL LOW PRESSURE ..... EAP 3-5  
APU OIL HIGH TEMPERATURE ..... EAP 3-5

**NON ANNUNCIATED PROCEDURES**

**APU OVERTEMPERATURE .....refer to NAP-4**

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# **EMERGENCY/ABNORMAL PROCEDURES**

## **Auxiliary Power Unit**

### **LIST OF EICAS MESSAGES**

<b>APU FIRE .....</b>	<b>EAP 3-3</b>
<b>BLD APU LEAK .....</b>	<b>refer to EAP 1-3</b>
<b>APU BLD VLV FAIL .....</b>	<b>refer to EAP 1-5</b>
<b>APU CNTOR CLSD .....</b>	<b>EAP 3-4</b>
<b>APU FAIL.....</b>	<b>EAP 3-4</b>
<b>APU FUEL LO PRESS.....</b>	<b>EAP 3-4</b>
<b>APU FUEL SOV INOP .....</b>	<b>refer to EAP 9-4</b>
<b>APU OIL LO PRESS.....</b>	<b>EAP 3-5</b>
<b>APU OIL HI TEMP .....</b>	<b>EAP 3-5</b>

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# EMERGENCY/ABNORMAL PROCEDURES

Auxiliary Power Unit

## APU FIRE

EICAS Warning: APU FIRE  
Aural Warning: BELL

**APU Fuel Shutoff Button ..... PUSH IN**

**LAND AT THE NEAREST SUITABLE AIRPORT.**

APU Master Knob ..... OFF

APU FUEL SOV CLSD MESSAGE?

Presented

Not Presented

XFeed ..... OFF

Fuel Pump Pwr 2 ..... OFF

Initiate the descent to MEA or 25'000 ft, whichever is higher.



..... WAIT 30 SECONDS

APU FIRE MESSAGE PERSISTS OR  
APU FIREDET FAIL IS DISPLAYED?

No

Yes

APU Fire Extinguishing Button..... PRESS

**WARNING: DO NOT ATTEMPT TO RESTART APU.**

END

# EMERGENCY/ABNORMAL PROCEDURES

## Auxiliary Power Unit

### APU CONTACTOR CLOSED

**EICAS Caution:** APU CNTOR CLSD

**Bus Ties** ..... **OFF**

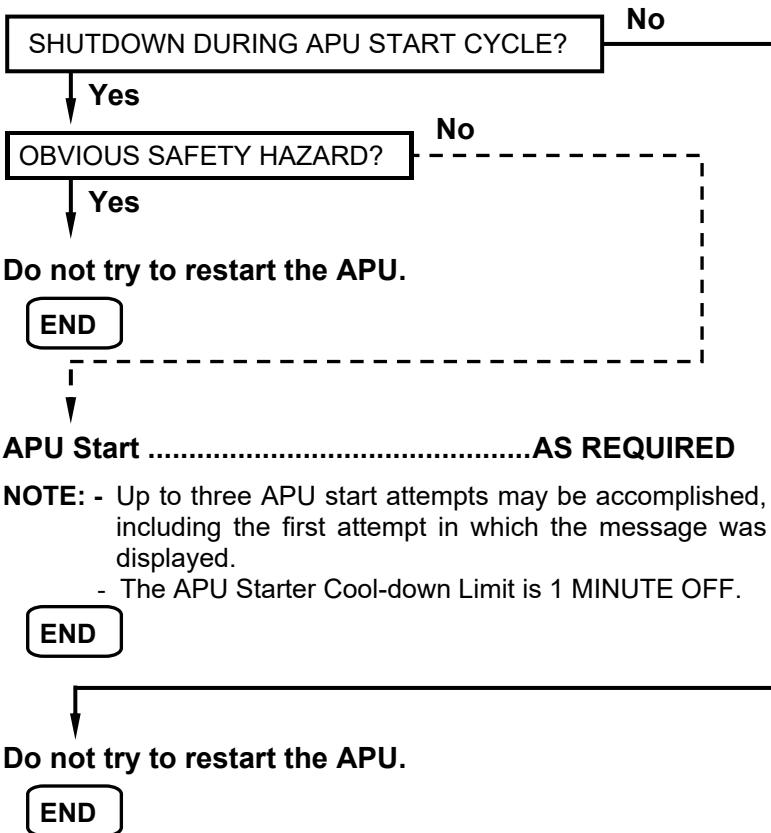
**Battery 2** ..... **OFF**

**END**

### APU FAIL

**EICAS Caution:** APU FAIL

**Condition:** APU automatically shuts down.



### APU FUEL LOW PRESSURE

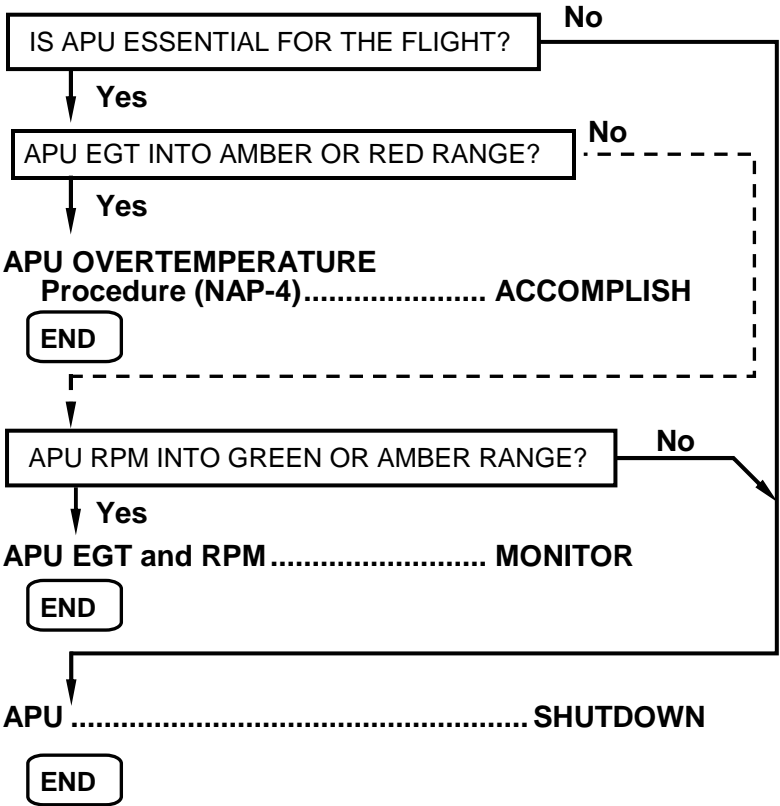
**EICAS Caution:** APU FUEL LO PRESS

**Fuel Pump Sel 2** ..... **SELECT ANOTHER**  
If the message persists, repeat the procedure.

**END**

**APU OIL LOW PRESSURE/  
APU OIL HIGH TEMPERATURE**

**EICAS Caution:** APU OIL LO PRESS and/or  
APU OIL HI TEMP



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# **EMERGENCY/ABNORMAL PROCEDURES**

## **Auxiliary Power Unit**

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**ANNUNCIATED PROCEDURES**

<b>MAIN DOOR OPEN .....</b>	<b>EAP 4-3</b>
<b>SERVICE DOOR OPEN.....</b>	<b>EAP 4-3</b>
<b>ACCESS DOORS OPEN .....</b>	<b>EAP 4-4</b>
<b>BAGGAGE DOOR OPEN .....</b>	<b>EAP 4-4</b>
<b>EMERGENCY EXIT OPEN .....</b>	<b>EAP 4-5</b>

**NON ANNUNCIATED PROCEDURES**

<b>MAIN DOOR BLOCKED .....</b>	<b>refer to NAP-28</b>
--------------------------------	------------------------

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# EMERGENCY/ABNORMAL PROCEDURES

## Doors

### LIST OF EICAS MESSAGES

MAIN DOOR OPN .....	EAP 4-3
SERVICE DOOR OPN.....	EAP 4-3
ACCESS DOORS OPN .....	EAP 4-4
BAGGAGE DOOR OPN .....	EAP 4-4
EMERG EXIT OPN .....	EAP 4-5

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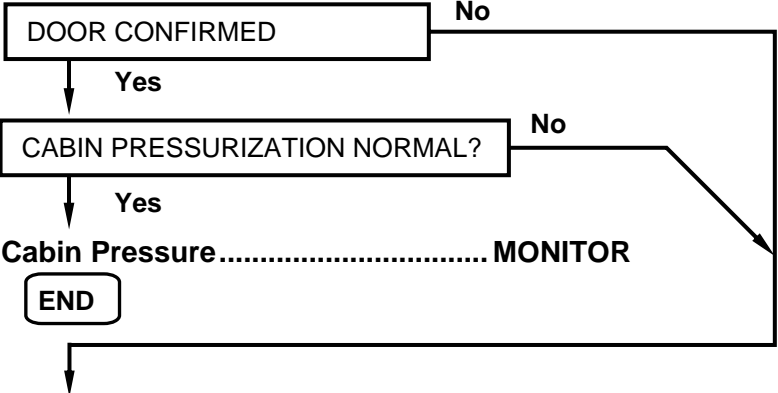
**MAIN OR SERVICE DOOR OPEN**

**EICAS Warning:** MAIN DOOR OPN or SERVICE DOOR OPN

**MFD Indication:** Red DOOR OPEN

**FSTN Belts ..... ON**

**Door Alignment Red Marks ..... CHECK**



**LAND AT THE NEAREST SUITABLE AIRPORT.**

**Oxygen Masks ..... AS REQUIRED**

**Altitude ..... MEA OR 10'000 FT,  
WHICHEVER IS HIGHER**

**When reaching 10'000 ft:**

**Cabin ..... DEPRESSURIZE**

**END**

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# EMERGENCY/ABNORMAL PROCEDURES

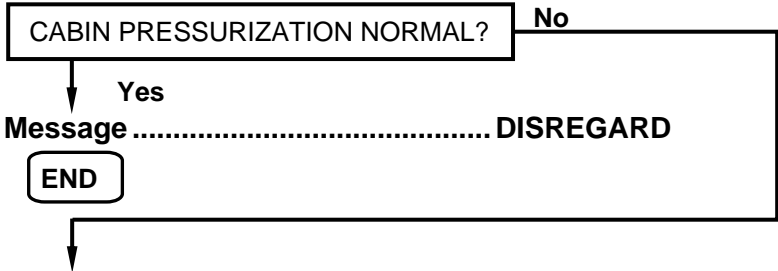
## Doors

### ACCESS/BAGGAGE DOORS OPEN

**EICAS Caution:** ACCESS DOORS OPN or  
BAGGAGE DOOR OPN

**MFD Indication:** Red DOOR OPEN

**Abrupt Maneuvers..... AVOID**



**LAND AT THE NEAREST SUITABLE AIRPORT.**

**Oxygen Masks ..... AS REQUIRED**

**Altitude ..... MEA OR 10'000 FT,  
WHICHEVER  
IS HIGHER**

**When reaching 10'000 ft:**

**Cabin..... DEPRESSURIZE**

**END**

**EMERGENCY EXIT OPEN**

**EICAS Caution:** EMERG EXIT OPN

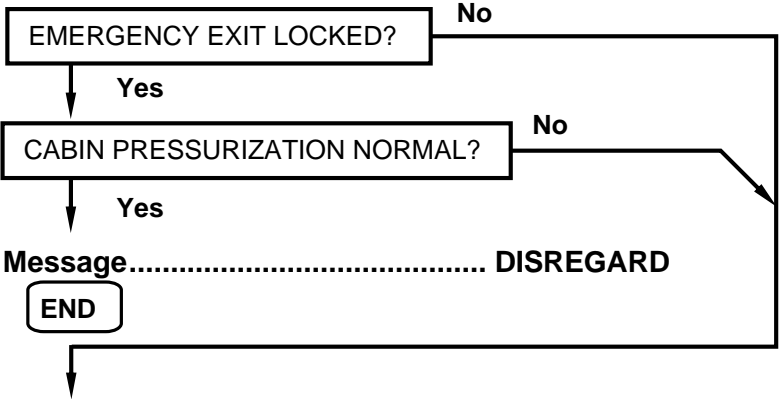
**MFD Indication:** Red DOOR OPEN

**FSTN Belts** ..... ON

**Affected Exit** ..... CHECK

**Remove passenger(s) from exit vicinity.**

**Emergency exit handle** ..... CHECK PUSHED IN



**LAND AT THE NEAREST SUITABLE AIRPORT.**

**Oxygen Masks** ..... AS REQUIRED

**Altitude** ..... MEA OR 10'000 FT,  
WHICHEVER IS HIGHER

**When reaching 10'000 ft:**

**Cabin** ..... DEPRESSURIZE

**END**

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# **EMERGENCY/ABNORMAL PROCEDURES**

**Doors**

INTENTIONALLY BLANK

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BATTERY OVERTEMPERATURE .....	EAP 5-3
ELECTRIC ESSENTIAL TRANSFER FAILURE ..	EAP 5-3
LOSS OF ALL GENERATORS .....	EAP 5-4
SMOKE / FIRE / FUMES.....	refer to S-6
115 V AC BUS OFF .....	EAP 5-5
APU CONTACTOR CLOSED .....	refer to EAP 3-4
BACK-UP BATTERY OFF BUS .....	EAP 5-5
BATTERY OFF BUS .....	EAP 5-5
DC BUS 1 OFF .....	EAP 5-6
DC BUS 2 OFF .....	EAP 5-7
ELECTRICAL EMERGENCY ABNORMAL TRANSFER .....	EAP 5-8
EMERGENCY LIGHTS NOT ARMED .....	EAP 5-8
ESSENTIAL BUS 1 OFF .....	EAP 5-9
ESSENTIAL BUS 2 OFF .....	EAP 5-10
ESSENTIAL BUS 1-2 OFF .....	EAP 5-11
GENERATOR OFF BUS .....	EAP 5-12
GENERATOR OVERLOAD.....	EAP 5-12

#### ANNEX 01 - AFFECTED EQUIPMENT

DC BUS FAILURE .....	EAP 5-13
ESS BUS FAILURE .....	EAP 5-14

# EMERGENCY/ABNORMAL PROCEDURES

## Electrical & Lighting

### LIST OF EICAS MESSAGES

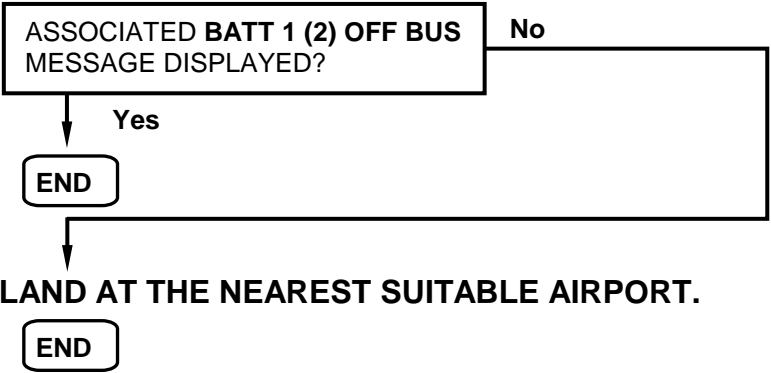
<b>BATT 1 (2) OVTEMP .....</b>	<b>EAP 5-3</b>
<b>ELEC ESS XFR FAIL.....</b>	<b>EAP 5-3</b>
115 VAC BUS OFF .....	EAP 5-5
APU CNTOR CLSD .....	refer to EAP 3-4
APU GEN OFF BUS .....	EAP 5-12
APU GEN OVLD .....	EAP 5-12
BKUP BATT OFF BUS .....	EAP 5-5
BATT1 (2) OFF BUS.....	EAP 5-5
DC BUS 1 OFF .....	EAP 5-6
DC BUS 2 OFF .....	EAP 5-7
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EMERG LT NOT ARMD.....	EAP 5-8
ESS BUS 1 OFF .....	EAP 5-9
ESS BUS 2 OFF .....	EAP 5-10
ESS BUS 1-2 OFF .....	EAP 5-11
GEN 1-2-3-4 OFF BUS .....	EAP 5-4
GEN 1 (2, 3, 4) OFF BUS .....	EAP 5-12
GEN 1 (2, 3, 4) OVLD .....	EAP 5-12

**BATTERY OVERTEMPERATURE**

**EICAS Warning:** BATT 1 (2) OVTEMP

**MFD Indication:** Battery temperature in red.

**Affected Battery ..... OFF**

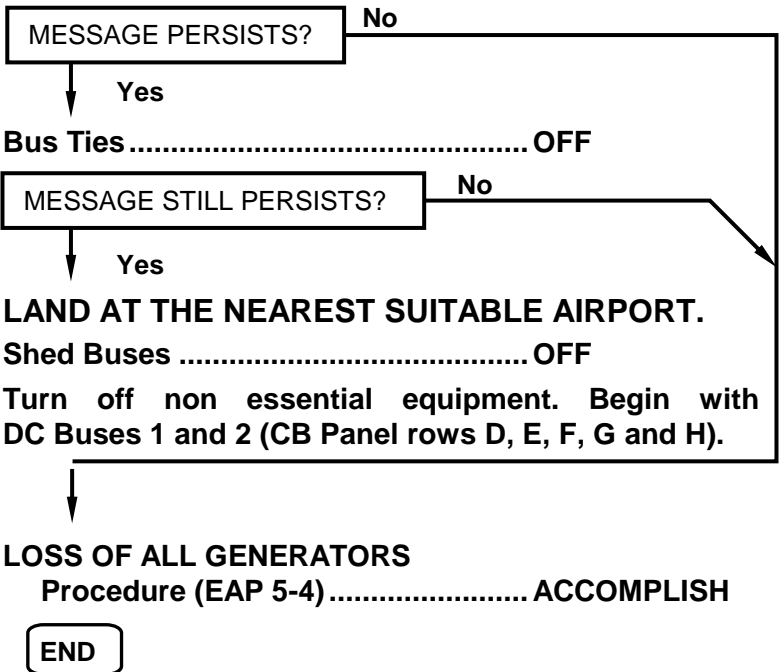


**ELECTRIC ESSENTIAL TRANSFER FAILURE**

**EICAS Warning:** ELEC ESS XFR FAIL

If no generator is available:

**Essential Power ..... PUSH IN**



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# EMERGENCY/ABNORMAL PROCEDURES

## Electrical & Lighting

### LOSS OF ALL GENERATORS

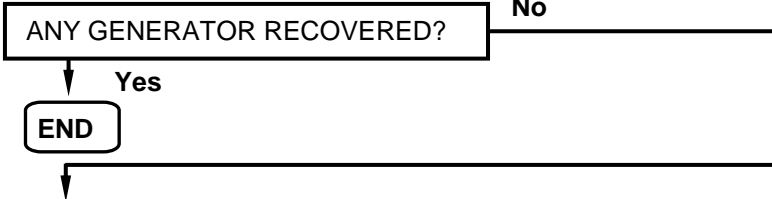
**EICAS Caution:** GEN 1-2-3-4 OFF BUS,  
APU GEN OFF BUS may be presented.

**Condition:** Noise increase due to nose landing gear doors open.

**Generators**..... **PUSH OUT, THEN PUSH IN**

**APU** ..... **AS REQUIRED**

Remember APU Maximum Start Altitude limitation.



**LAND AT THE NEAREST SUITABLE AIRPORT.**

**CAUTION:** MULTIPLY THE FLAPS 45° UNFACTORED LANDING DISTANCE BY 1.95.

**Airspeed** ..... **MAX 250 KIAS**

**Altitude** ..... **MEA OR 10'000 FT, WHICHEVER IS HIGHER**

**Essential Power** ..... **PUSH IN**

**Crew Oxygen**..... **AS REQUIRED**

**Passenger Oxygen**..... **AS REQUIRED**

**Emerg Lts** ..... **OFF**

If required, turn on Emergency Lights before landing.

**Icing Conditions**..... **EXIT/AVOID**

**Use standby instruments and RMU Navigation Backup Page.**

**CAUTION:** BATTERY DURATION IS 40 MINUTES.

**Do not set Thrust Levers below idle in flight.**

**Relevant Inoperative Items:**

Autopilot	W/S 1 and 2 Heating and Wiper	GPWS
FMS 1 and 2	Transponder 1 and 2	RA 1
Speed Brake	Main Pitch Trim	TCAS
Pack 1 and 2	Stick Pusher	Steering
Spoilers	ADF/DME/VHF/VOR/ILS/MB 2 and DME 1	Flaps
Ventral Fuel Transfer Pump A and B (EMB-145XR only)		

**Affected Equipment (EAP 5-13 and 5-14)**..... **CHECK**

**CONTINUES ON NEXT PAGE**

**CONTINUED FROM PREVIOUS PAGE**

Landing configuration:

Landing Gear .....DOWN

If necessary:

LG WRN Cutout .....PRESS

FLAPS POSITION	MINIMUM AIRSPEED
0 to 8°	V <sub>REF 45</sub> + 30 KIAS
9° to 21°	V <sub>REF 45</sub> + 10 KIAS
22° to 44°	V <sub>REF 45</sub> + 5 KIAS
45°	V <sub>REF 45</sub>

**CAUTION:** MULTIPLY THE FLAPS 45° UNFACTORED LANDING DISTANCE BY 1.95.

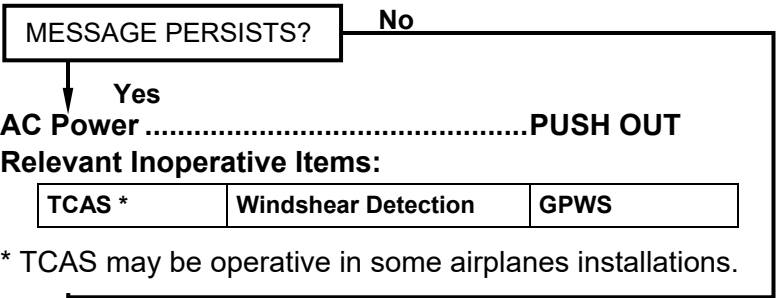
**Do not actuate Thrust Reversers.**

**END**

**115 V AC BUS OFF**

**EICAS Caution:** 115 VAC BUS OFF

AC Power .....**PUSH OUT, THEN PUSH IN**



\* TCAS may be operative in some airplanes installations.

**END**

**BACK-UP BATTERY OFF BUS**

**EICAS Caution:** BKUP BATT OFF BUS

Backup Battery .....**CHECK PUSHED IN**

**END**

**BATTERY OFF BUS**

**EICAS Caution:** BATT1 (2) OFF BUS

**MFD Indication:** Battery may be amber.

Affected Battery .....**AUTO**

**END**

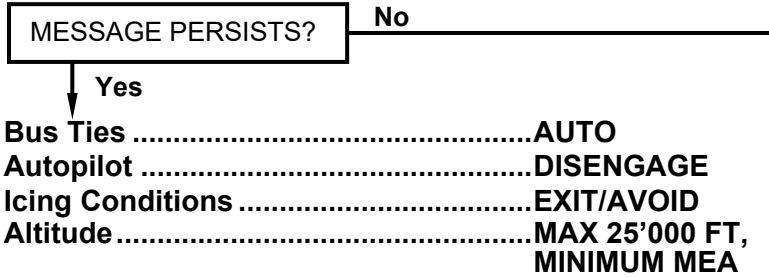
# EMERGENCY/ABNORMAL PROCEDURES

## Electrical & Lighting

### DC BUS 1 OFF

**EICAS Caution:** DC BUS 1 OFF  
**MFD Indication:** DC BUS may be amber.

**Bus Ties** .....OVRD



**At pilot's discretion:**

**MFD Knob on**  
**Reversionary Panel 1**.....PFD

**Relevant Inoperative Items:**

Ventral Fuel Transfer Pump A (EMB-145XR only)		
Autopilot	W/S 1 Heating and Wiper	GPWS
FMS 1	Transponder 1	RA 1
Speed Brake	Main Pitch Trim	TCAS *
Automatic Pressurization Control		DME 1
Thrust Reverser 1		Pack 1

\* TCAS may be operative in some airplanes installations.

**Do not set Thrust Lever 1 below idle in flight.**

**Affected Equipment (EAP 5-13) .....CHECK**

**Landing configuration:**

**Anticipate flap slower actuation.**

**Flaps**.....22°

**V<sub>REF</sub>**.....V<sub>REF</sub> 45° + 10 KIAS

**CAUTION:** MULTIPLY THE FLAPS 45° UNFACTORED LANDING DISTANCE BY 1.50.

**Do not actuate Thrust Reverser 1.**

END

# EMERGENCY/ABNORMAL PROCEDURES

## Electrical & Lighting

### DC BUS 2 OFF

- EICAS Caution:** DC BUS 2 OFF
- MFD Indication:** DC BUS may be amber.
- MFD Indication:** Noise increase due to nose landing gear doors open.

**Bus Ties .....OVRD**

**MESSAGE PERSISTS?** **No**

**Yes**

- Bus Ties .....AUTO**
- Icing Conditions .....EXIT/AVOID**
- Airspeed .....MAX 250 KIAS**
- Altitude .....MAX 25'000 FT,  
MINIMUM MEA**

The overhead panel lighting is inoperative, therefore, all striped bars will not illuminate.

**SG on Reversionary Panel 2 .....PUSH IN**

**At pilot's discretion:**

**MFD Knob on  
Reversionary Panel 2.....PFD**

MFD Control is possible through MFD 1 Bezel.

**Relevant Inoperative Items:**

Stick Pusher	W/S 2 Heating and Wiper	Steering
FMS 2	Transponder 2	Pack 2
ADF/DME/VHF/VOR/ILS/MB 2		
Thrust Reverser 2		

**Do not set Thrust Lever 2 below idle in flight.**

**Affected Equipment (EAP 5-13) .....CHECK**

**Landing configuration:**

**Anticipate flap slower actuation.**

**Flaps ..... 22°**

**V<sub>REF</sub> ..... V<sub>REF</sub> 45° + 10 KIAS**

**CAUTION:** MULTIPLY THE FLAPS 45° UNFACTORED LANDING DISTANCE BY 1.50.

**Do not actuate Thrust Reverser 2.**

**END**

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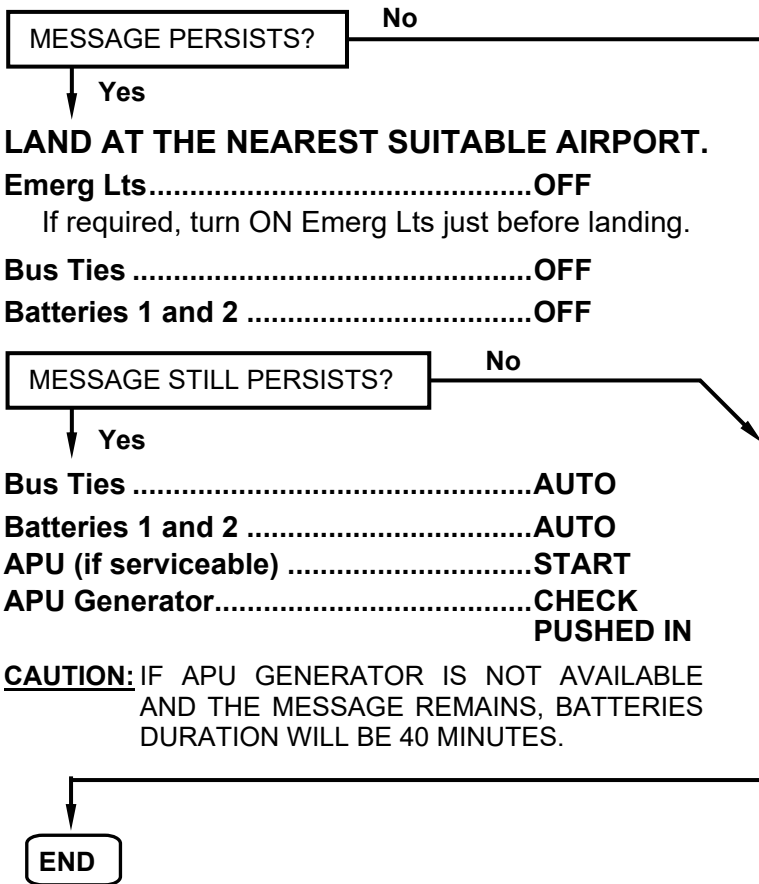
# EMERGENCY/ABNORMAL PROCEDURES

## Electrical & Lighting

### ELECTRICAL EMERGENCY ABNORMAL TRANSFER

**EICAS Caution:** ELEC EMERG ABNORM

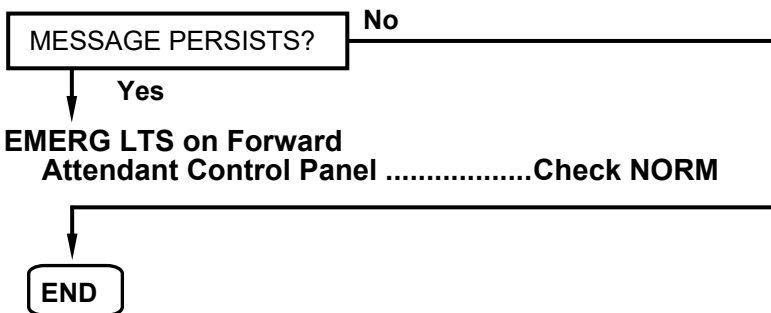
**Essential Power**.....**CHECK PUSHED OUT**



### EMERGENCY LIGHTS NOT ARMED

**EICAS Caution:** EMERG LT NOT ARMD

**EMERG LT Switch**.....**ARM**



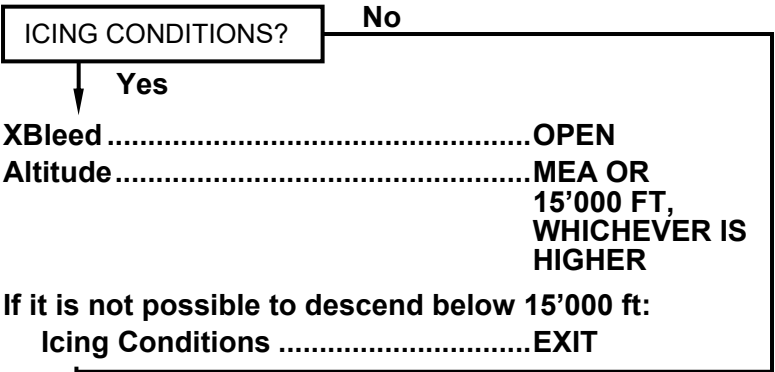
# EMERGENCY/ABNORMAL PROCEDURES

## Electrical & Lighting

### ESSENTIAL BUS 1 OFF

**EICAS Caution:** ESS BUS 1 OFF

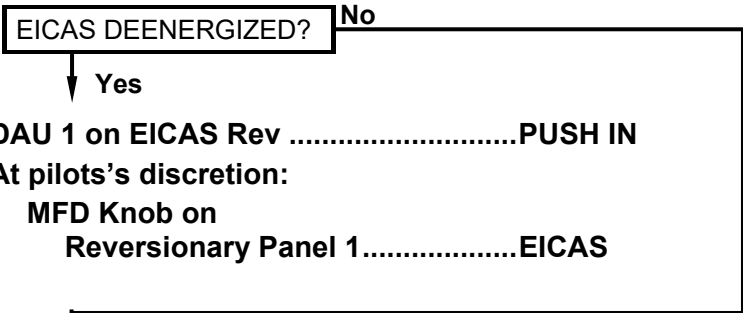
- SG On Reversionary Panel 1.....PUSH IN
- Fuel Pump 1.....1B OR 1C
- Fuel Pump 2.....2A OR 2C
- Altitude.....MAX 25'000 FT,  
MIN MEA



Monitor fuel quantity indication 1 through FMS.  
COM 2 on Digital Audio Panel 2.....PUSH IN  
Relevant Inoperative Items:

ADF 1/VHF 1/VOR 1/ILS 1/MB 1	Audio System 1
ENG 1 Fire Detection System	RMU 1
Landing Gear Control (Down Override)	

Affected Equipment (EAP 5-14) .....CHECK



Landing configuration:

- Landing Gear .....DOWN
- Flaps .....45°
- Airspeed .....V<sub>REF 45°</sub>

**CAUTION:** MULTIPLY THE FLAPS 45° UNFACTORED LANDING DISTANCE BY 1.45.  
Brake effectiveness will be reduced.

**END**

# EMERGENCY/ABNORMAL PROCEDURES

## Electrical & Lighting

### ESSENTIAL BUS 2 OFF

**EICAS Caution:** ESS BUS 2 OFF  
**MFD Indication:** ESS BUS may be amber.

Fuel Pump 1 ..... 1A OR 1C  
Fuel Pump 2 ..... 2B OR 2C  
Icing Conditions ..... EXIT/AVOID  
Altitude ..... MAX 25'000 FT,  
MIN MEA

Monitor fuel quantity indication 2 through FMS.

**CAUTION:** DO NOT USE CROSSFEED.

**Relevant Inoperative Items:**

ISIS/Standby Altimeter (except for EMB-145XR Model)	
APU Fire Detection System	Pitot Heating 3
ENG 2 Fire Detection System	Standby Attitude Indicator
APU Control	RMU 2
Audio System 2	

**Affected Equipment (EAP 5-14) ..... CHECK**

**When necessary to extend landing gear:**

Landing Gear Lever ..... DOWN  
Gear Electrical Override ..... DOORS

 ..... WAIT 3 SECONDS  
Gear Electrical Override ..... GEAR/DOORS

**Landing configuration:**

Landing Gear ..... DOWN  
Flaps ..... 45°  
Airspeed ..... V<sub>REF</sub> 45°

**CAUTION:** MULTIPLY THE FLAPS 45° UNFACTORED LANDING DISTANCE BY 1.45.

**Brake effectiveness will be reduced.**

**END**

# EMERGENCY/ABNORMAL PROCEDURES

## Electrical & Lighting

### ESSENTIAL BUS 1-2 OFF

EICAS Caution: ESS BUS 1-2 OFF

Bus Ties ..... OFF

MFD Electrical Page ..... CHECK

**BOTH DC BUSES ENERGIZED?** No

Yes

**Battery 1 and 2 ..... OFF**

**MESSAGE ESS BUS 1 OFF PERSISTS?** No

Yes

**ESSENTIAL BUS 1 OFF**  
Procedure (EAP 5-9) ..... ACCOMPLISH

END

**MESSAGE ESS BUS 2 OFF PERSISTS?** No

Yes

**ESSENTIAL BUS 2 OFF**  
Procedure (EAP 5-10) ..... ACCOMPLISH

END

END

**WHICH DC BUS IS ENERGIZED?** DC BUS 2

DC BUS 1

**Battery 1 ..... OFF**  
Check which Essential Bus is off.  
**Associated ESSENTIAL BUS OFF**  
Procedure (EAP 5-9 or EAP 5-10) ... ACCOMPLISH

END

**Battery 2 ..... OFF**  
Check which Essential Bus is off.  
**Associated ESSENTIAL BUS OFF**  
Procedure (EAP 5-9 or EAP 5-10) ... ACCOMPLISH

END

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# EMERGENCY/ABNORMAL PROCEDURES

## Electrical & Lighting

### GENERATOR OFF BUS

**EICAS Caution:** GEN 1 (2, 3, 4) OFF BUS or  
APU GEN OFF BUS

**MFD Indication:** Generator voltage may be amber.

ALL GENERATORS OFF BUS?

No

Yes

**LOSS OF ALL GENERATORS**

Procedure (EAP 5-4)..... ACCOMPLISH

END

Affected Generator ..... **PUSH OUT,  
THEN PUSH IN**

APU (if serviceable) ..... **AS REQUIRED**

END

### GENERATOR OVERLOAD

**EICAS Caution:** GEN 1 (2, 3, 4) OVLD or  
APU GEN OVLD

**MFD Indication:** Generator may be amber.

**Shed Buses** ..... **OFF**

MESSAGE PERSISTS?

No

Yes

**Electrical Load (affected generator).... REDUCE**

The equipments that require more electrical load and may be turned OFF, at pilot's discretion, are: lights, hydraulic electric pump, ice protection and air conditioning related systems. Non-required equipment may also be turned OFF.

GEN 1 (2, 3, 4) OVLD EICAS  
MESSAGE DISPLAYED?

No

Yes

APU ON?

No

Yes

APU GEN ..... **PUSH IN**

END

APU ..... **START**

APU GEN ..... **PUSH IN**

END

EAP 5-12

REVISION 16

# EMERGENCY/ABNORMAL PROCEDURES

## Electrical & Lighting

### ANNEX 01

In case of electrical bus failure, refer to the following table to verify the affected equipment.

#### DC BUS 1

AILERON CONTROL SYSTEM 1  
AIR/GND POSITION SYSTEM A  
AOA 1 SENSOR HEATING  
AUTOMATIC PRESSURIZATION CONTROL  
AUTOPILOT 1  
BRAKES TEMP INDICATION OUTBD  
CLEAR ICE DET - CHANNEL 1  
CMC  
CREW PEDAL ADJUSTMENT  
CREW SEAT ADJUSTMENT 1  
DME 1  
EICAS POWER (DAU 1B)  
ELECTRICAL FLIGHT IDLE STOP 1  
ELECTRONIC BAY COOLING (EXHAUST 1 AND RECIRC 2)  
EMER/PARKING BRAKE  
ENG 1 FUEL PUMPS 1C  
ENGINE 1 ANTI-ICE  
FLAP CHANNEL 1  
FMS SYSTEM 1 \*  
FUEL PRESSURE REFUELING 1/2  
GROUND SPOILER OUTBD  
HEAD-UP GUIDANCE SYSTEM  
HYDR ELECTRIC PUMP 2  
HYDR GEN SYS 2 INDICATION  
ICE DETECTOR 1  
INVERTER  
LAVATORY FLUSH  
LAVATORY SMOKE DETECTOR  
LAVATORY WATER DRAIN HEATER  
LIGHTING: CABIN 1, OVERHEAD PANEL, COCKPIT READING, COURTESY/STAIR 2, FLOOD/STORM, LAVATORY, LOGOTYPE  
LIGHTS: LANDING 1 & NAVIGATION  
MAIN DOOR CONTROL 1  
MFD 2 POWER  
PACK VALVE 1  
PASSENGER SIGNS  
PFD 1 POWER  
PITCH TRIM MAIN  
PITOT 1 HEATING  
PNEUMATIC HSV 1  
PUMP A (EMB-145XR)  
RADAR SYSTEM  
RADIO ALTIMETER 1  
SPEED BRAKE  
STATIC PORT HEATING 1  
STROBE LIGHTS  
TAT 1 SENSOR HEATING  
TCAS 2000  
TRANSPONDER 1  
VHF SYSTEM 3 \*  
WINDSHIELD HEATING 1  
WINDSHIELD WIPER 1  
WING ANTI-ICE  
YAW TRIM

#### DC BUS 2

ADC 2  
ADF 2 \*  
AHRS 2 or IRS 2  
AILERON CONTROL SYSTEM 2  
AIR/GND POSITION SYSTEM C  
AOA 2 SENSOR HEATING  
AURAL WARNING SYSTEM 2  
BAGGAGE SMOKE DETECTOR  
BRAKES TEMP INDICATION INBD  
CABIN RECIRCULATION  
CLEAR ICE DET - CHANNEL 2  
CLOCK COPILOT'S  
CREW SEAT ADJUSTMENT 2  
DEFUELING  
DISPLAY PRCS/CTRL PWR 2 (IC 2)  
DME 2  
EICAS POWER (DAU 2B)  
ELECTRICAL FLIGHT IDLE STOP 2  
ELECTRONIC BAY COOLING (EXHAUST 2 AND RECIRC 1)  
ENG 2 FUEL PUMPS 2C  
ENGINE VIBRATION SENSORS  
ENGINE 2 ANTI-ICE  
FLAP CHANNEL 2  
FMS SYSTEM 2 \*  
GASPER FAN  
GPS \*  
GROUND SPOILER INBD  
GUST LOCK (ELECTROMECHANICAL)  
HF POWER/CONTROL \*  
HYDR ELECTRIC PUMP 1  
HYDR GEN SYS 1 INDICATION  
ICE DETECTOR 2  
IRS 2  
LANDING GEAR DOOR COMMAND  
LIGHTING: OVERHEAD PANEL, COMPARTMENT, INSPECTION & PASSENGER CABIN 1/2/3  
LIGHTS: RED BEACON & LANDING  
MFD 1 POWER  
OBSERVER'S DAP (INTPH 3)  
PACK VALVE 2  
PFD 2 POWER  
PITOT 2 HEATING  
PNEUMATIC HSV 2  
PUMP B (EMB-145XR)  
RADIO ALTIMETER 2 \*  
ROLL TRIM SYSTEM  
SENSORS HEATING CONTROL  
SPOILER INDICATION  
SPS (SHAKER 2/CHANNEL 2)  
SPS PUSHER  
STABILIZER ANTI-ICE  
STATIC PORT HEATING 2  
STEERING  
TAT 2 SENSOR HEATING  
TRANSPONDER 2  
TUNING BACKUP CONTROL HEAD  
VHF SYSTEM 2  
VOR 2/ILS 2/MB 2  
WINDSHIELD WIPER 2

Optional equipments are marked with an asterisk (\*)

REVISION 17

EAP 5-13

# EMERGENCY/ABNORMAL PROCEDURES

## Electrical & Lighting

### ANNEX 01

In case of electrical bus failure, refer to the following table to verify the affected equipment.

#### ESSENTIAL BUS 1

ADC 1  
ADF 1  
AHRS 1  
AIR/GND POSITION SYSTEM B  
APU BLEED  
AURAL WARNING SYSTEM 1  
BRAKES OUTBOARD  
CLOCK PILOT'S  
DISPLAY PRCS/CTRL PWR 1 (IC 1)  
EICAS (DAU 1A)  
EICAS DISPLAY  
ENG 1 FIRE DETECTION  
ENG 1 FUEL PUMPS 1A  
ENG 2 FUEL PUMPS 2B  
ENGINE 1 STARTING  
ENGINES N2 SIGNALS 1A AND 2A  
ENGINES 1 AND 2 FADEC A  
FDR MANAGEMENT  
FUEL QUANTITY INDICATION 1  
IRS 1  
LDG CONTROL (DOWN OVRD)  
LDG NOSE INDICATION 1  
LIGHTS COCKPIT DOME  
PANEL LIGHTING PILOT'S  
PASSENGER OXYGEN SYSTEM 1  
PILOT/COPILOT'S DAP (INTPH 1)  
PNEUMATIC 1 (EBV 1)  
RAM AIR DISTRIBUTION  
RMU 1  
RUDDER CONTROL SYSTEM 2  
SPS (SHAKER 1/CHANNEL 1)  
VHF SYSTEM 1  
VOR/ILS/MB 1

#### ESSENTIAL BUS 2

AIR/GND POSITION SYSTEM D  
APU CONTROL  
APU FIRE DETECTION  
APU FIRE EXTINGUISHING  
APU FUEL FEED  
BRAKES INBOARD  
CROSSBLEED  
EICAS (DAU 2A)  
ENG 1 FUEL PUMPS 1B  
ENG 2 FIRE DETECTION  
ENG 2 FUEL PUMPS 2A  
ENGINE 2 STARTING  
ENGINES N2 SIGNALS 1B AND 2B  
ENGINES 1 AND 2 FADEC B  
FUEL CROSS FEED  
FUEL QUANTITY INDICATION 2  
ISIS (all models except for  
EMB-145XR)  
LDG CONTROL  
LDG NOSE INDICATION 2  
LIGHTING EMERGENCY CTRL  
LIGHTING PANEL COPILOT'S AND  
PEDESTAL  
PASSENGER OXYGEN SYSTEM 2  
PILOT/COPILOT'S DAP (INTPH 2)  
PITCH TRIM BACKUP  
PITOT HEATING 3  
PNEUMATIC 2 (EBV 2)  
PUBLIC ADDRESS  
RMU 2  
RUDDER CONTROL SYSTEM 1  
STANDBY ALTIMETER  
STANDBY ATTITUDE INDICATOR  
VOICE RECORDER

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**ATTCS FAILURE ..... EAP 6-3**

**BLEED ENGINE LEAK..... refer to EAP 1-4**

**DUAL ENGINE FAILURE..... EAP 6-3**

**ENGINE ATTCS NO MARGIN ..... EAP 6-5**

**ENGINE FIRE, SEVERE DAMAGE OR SEPARATION ..... EAP 6-6**

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**ENGINE FUEL FILTER IMPENDING BYPASS... EAP 6-9**

**ENGINE FUEL LOW PRESSURE..... refer to EAP 9-5**

**ENGINE FUEL LOW TEMPERATURE .. refer to EAP 9-5**

**ENGINE FUEL SHUTOFF VALVE INOPERATIVE ..... refer to EAP 9-6**

**ENGINE IDLE STOP FAILURE..... EAP 6-9**

**ENGINE OUT..... EAP 6-10**

**ENGINE THRUST LEVER FAILURE ..... EAP 6-11**

**ENGINE THRUST REVERSER FAILURE/DISAGREE ..... EAP 6-12**

**NON ANNUNCIATED PROCEDURES**

**ABNORMAL ENGINE START ..... refer to NAP-12**

**ENGINE ABNORMAL VIBRATION ..... refer to NAP-15**

**ENGINE AIRSTART..... refer to NAP-16**

**ENGINE FAILURE/SHUTDOWN ..... refer to NAP-19**

**ENGINE HIGH OIL PRESSURE ..... refer to NAP-20**

**ENGINE HIGH OIL TEMPERATURE..... refer to NAP-20**

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**ENGINE OVERTEMPERATURE ..... refer to NAP-21**

**LOSS OF ENGINE INDICATIONS..... refer to NAP-26**

**ONE ENGINE INOPERATIVE APPROACH AND LANDING ..... refer to NAP-30**

**SINGLE ENGINE BLEED OPERATION IN ICING CONDITIONS ..... refer to NAP-34**

# EMERGENCY/ABNORMAL PROCEDURES

## Engine

### LIST OF EICAS MESSAGES

ATTCS FAIL .....	EAP 6-3
BLD 1 (2) LEAK .....	refer to EAP 1-4
E1 (2) ATTCS NO MRGN .....	EAP 6-5
E1 (2) OIL LOW PRESS .....	EAP 6-7
ENG 1 (2) FIRE .....	EAP 6-6
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E1 (2) ATS SOV OPN .....	EAP 6-8
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ENG1 (2) REV FAIL .....	EAP 6-12
ENG1 (2) TLA FAIL .....	EAP 6-11
E1 (2) FUEL IMP BYP .....	EAP 6-9
E1 (2) IDL STP FAIL .....	EAP 6-9

**ATTCS FAILURE**

EICAS Warning: ATTCS FAIL

**Thrust Levers ..... MAX**

Another takeoff is not permitted.

**END**

**DUAL ENGINE FAILURE**

EICAS Warning: ENG 1-2 OUT may be presented.

**Airspeed ..... MIN 260 KIAS**  
**Oxygen Mask ..... AS REQUIRED**

Altitude ..... MAX 25'000 FT  
Fuel Pumps Selectors 1 and 2 ..... CHECK A or B  
Fuel Pumps Pwr 1 and 2 ..... CHECK ON

**APU SERVICEABLE?**

No

Yes

Thrust Levers ..... IDLE  
Engine 1 and 2 Start/Stop Selectors... STOP  
APU Bleed ..... PUSH IN  
Engine Bleeds 1 and 2 ..... PUSH OUT  
Below 25'000 ft:  
Engine 1 Start/Stop Selector ..... START, THEN RUN

**ENGINE 1 STARTS?**

No

Yes

Do not alternate FADEC 1.  
**ENGINE 2 AIRSTART**  
Procedure (NAP-16) ..... ACCOMPLISH

**END**

Engine 1 Start/Stop Selector ..... STOP  
Engine 2 Start/Stop Selector ..... START, THEN RUN

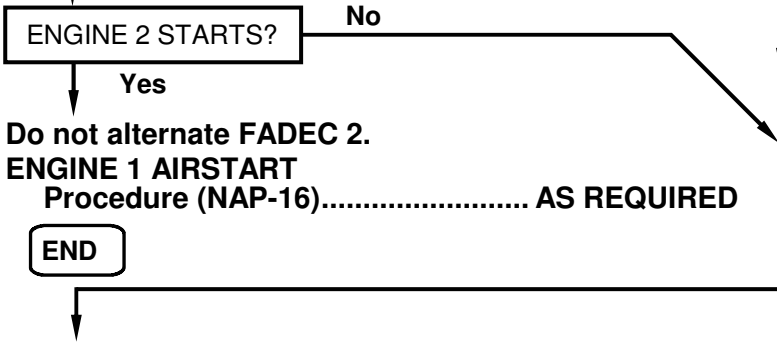
**CONTINUES ON NEXT PAGE**

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# EMERGENCY/ABNORMAL PROCEDURES

## Engine

**CONTINUED FROM PREVIOUS PAGE**



**NOTE:** Windmilling starts can be attempted in both engines simultaneously.

**Airspeed** ..... **MIN 260 KIAS**

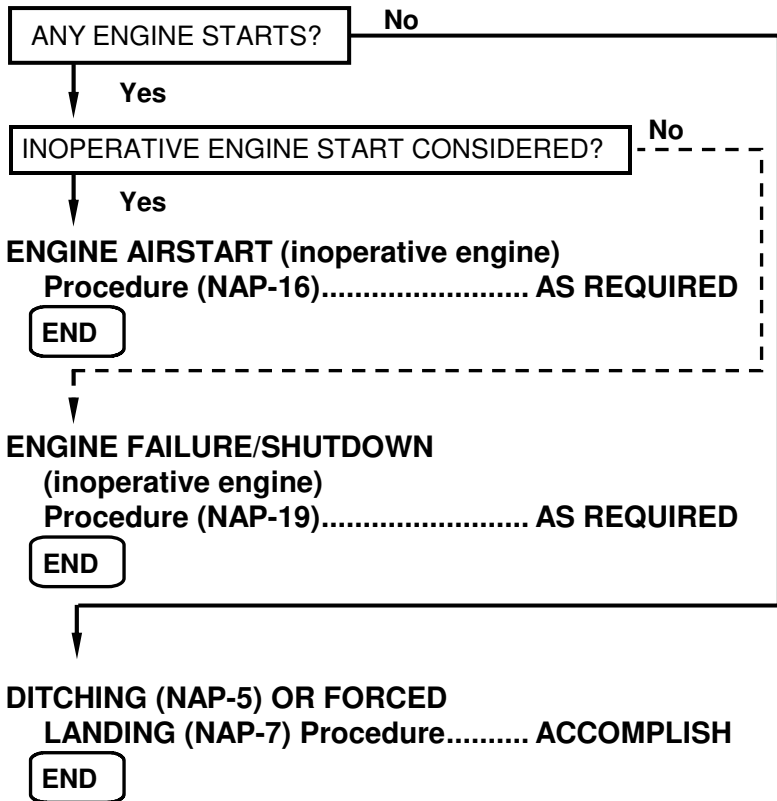
**Minimum N2** ..... **10%**

Initiate windmilling start with N2 as high as possible.  
Once N2 is below 10%, it may not be recovered.

**Thrust Levers** ..... **IDLE**

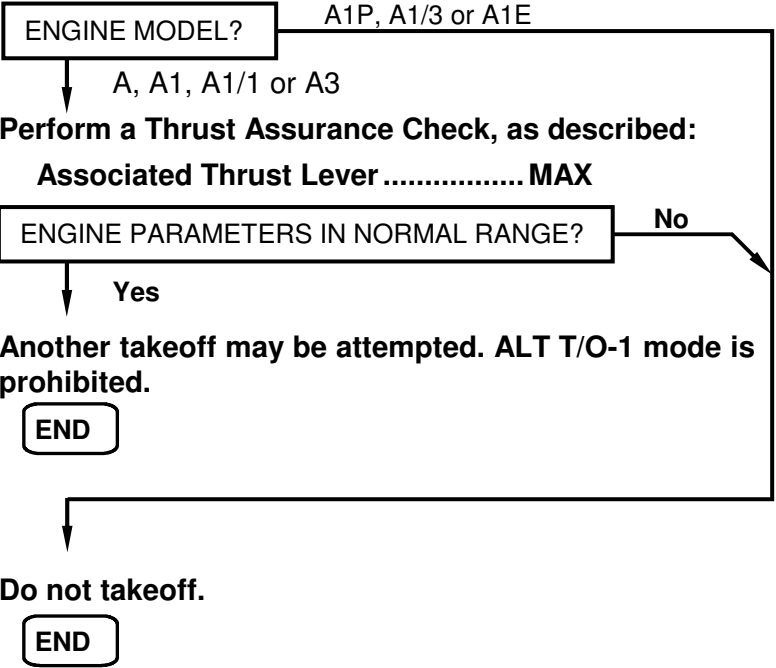
**Engine 1 and 2 Start/Stop Selectors...** **STOP**

**Engine 1 and 2 Start/Stop Selectors...** **START, THEN RUN**



**ENGINE ATTCS NO MARGIN**

**EICAS Warning:** E1 (2) ATTCS NO MRGN



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# EMERGENCY/ABNORMAL PROCEDURES

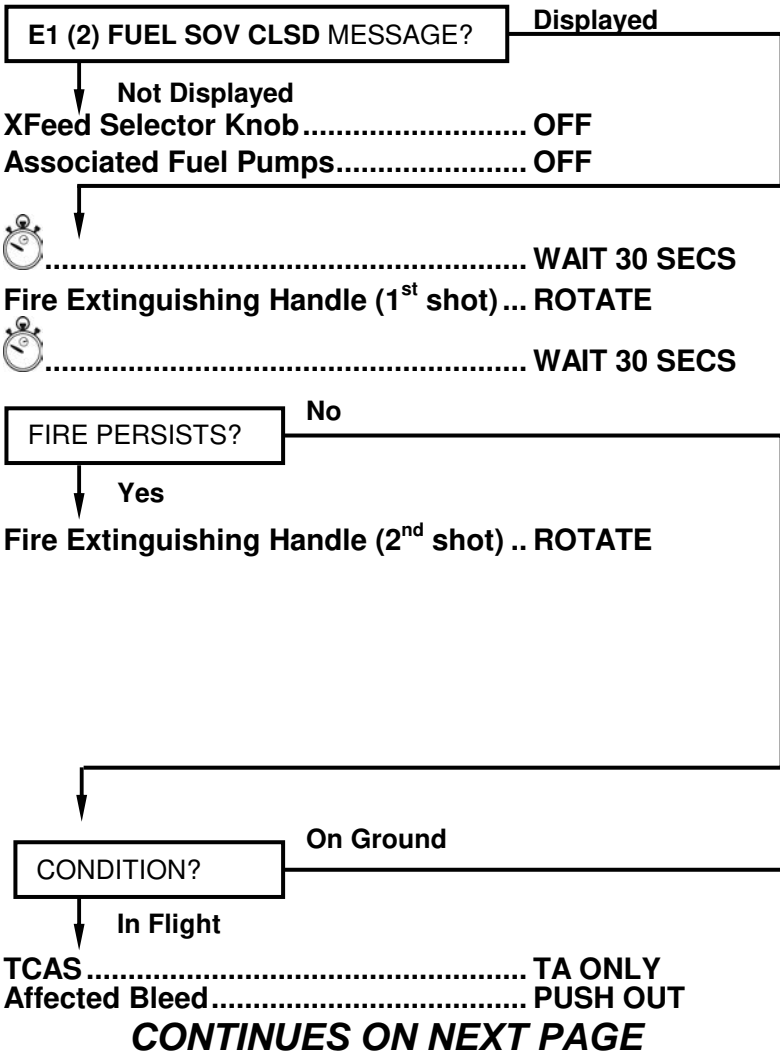
## Engine

### ENGINE FIRE, SEVERE DAMAGE OR SEPARATION

- EICAS Warning:** ENG 1 (2) FIRE (in case of fire) (may be presented)
- Light:** Engine Fire Handle (may be illuminated)
- Aural Warning:** BELL (in case of fire) (may sound)

**Associated Thrust Lever ..... IDLE**  
**Associated Start/Stop Selector ..... STOP**  
**Associated Fire Extinguishing Handle ..... PULL (DO NOT ROTATE)**

**LAND AT THE NEAREST SUITABLE AIRPORT.**



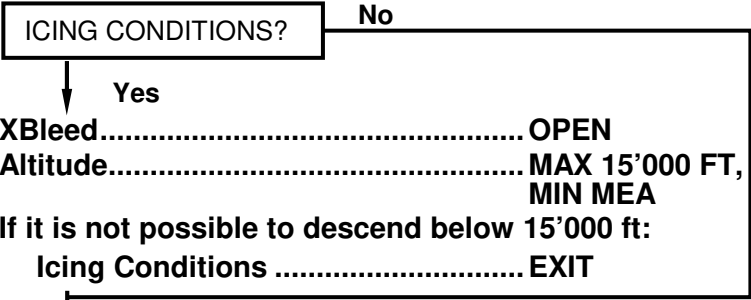
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# EMERGENCY/ABNORMAL PROCEDURES

Engine

## CONTINUED FROM PREVIOUS PAGE

Remaining Engine Thrust Rating ..... CON  
 APU ..... START  
 APU Bleed ..... AS REQUIRED  
 XBleed ..... AS REQUIRED



For CAT III or CAT II approaches using HGS, the normal CAT III approach procedure must be used.

### Approach:

Altimeters ..... SET AND  
 CROSS  
 CHECKED

Approach Aids ..... SET AND  
 CROSS  
 CHECKED

Speed Bugs ..... SET

Pressurization ..... CHECK

Go-Around Procedure ..... REVIEW

- Disengage Autopilot.
- Press Go-Around Button.
- Advance Operative Engine Thrust Lever to MAX.
- Rotate airplane to 10° nose up.
- Set flaps to 9°.

With positive rate of climb:

- Landing gear up.
- Maintain Approach Climb Speed until reaching acceleration altitude (level off).

### Before Landing:

Inoperative Engine Thrust Lever .... IDLE

Landing Gear ..... DOWN

Thrust Rating ..... TAKEOFF MODE

Fuel XFeed ..... OFF

Autopilot/Yaw Damper ..... DISENGAGE

### Landing configuration:

Flaps ..... 22°

V<sub>REF</sub> ..... V<sub>REF45</sub> + 10 KIAS

**CAUTION:** MULTIPLY THE FLAPS 45° UNFACTORED LANDING DISTANCE BY 1.48.

### EMERGENCY EVACUATION

Procedure (NAP-6) ..... AS REQUIRED

END

REVISION 14

EAP 6-6A

# **EMERGENCY/ABNORMAL PROCEDURES**

**Engine**

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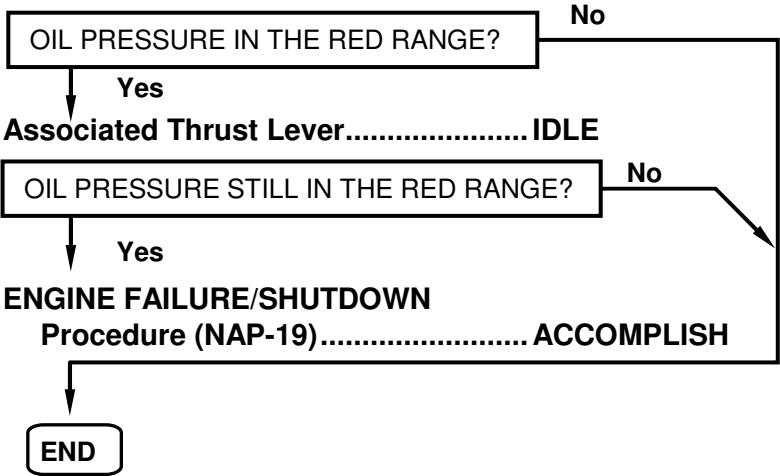
**ENGINE OIL LOW PRESSURE**

**EICAS Warning:** E1 (2) OIL LOW PRESS may be presented.

**EICAS Indication:** Oil pressure may be red.

**Associated Thrust Lever..... REDUCE**

Reduce Thrust Lever to at least N2 below 88%, until pressure is within limits.



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# EMERGENCY/ABNORMAL PROCEDURES

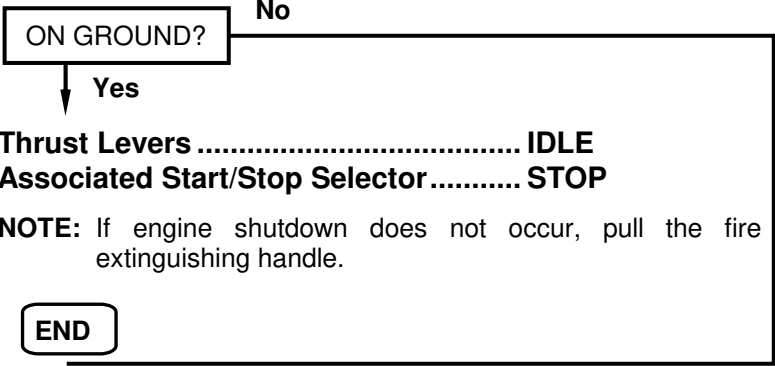
Engine

## ENGINE ATS SHUTOFF VALVE OPEN

EICAS Caution: E1 (2) ATS SOV OPN

### Associated Bleeds

(including APU bleed) ..... PUSH OUT  
XBleed ..... CLOSE



Altitude ..... MAX 25'000 FT,  
MIN MEA

Icing Conditions ..... EXIT/AVOID

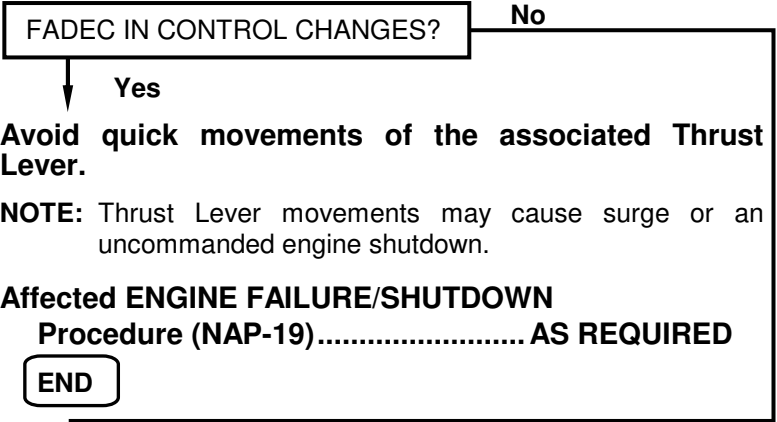
END

**ENGINE CONTROL FAILURE**

**EICAS Caution:** E1 (2) CTL FAIL may be presented.

**CAUTION:** DO NOT MANUALLY ALTERNATE ASSOCIATED FADECS.

**FADEC In Control..... CHECK**  
**Associated FADEC..... RESET**

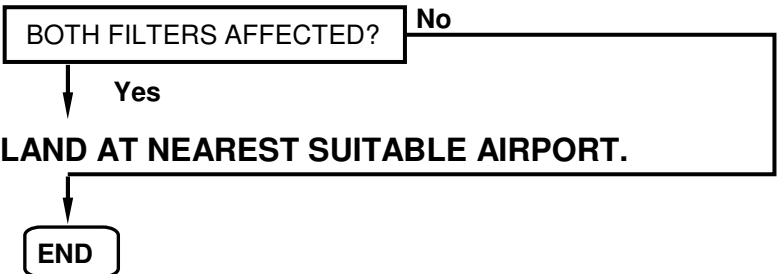


**Engine control recovered.**

**END**

**ENGINE FUEL FILTER IMPENDING BYPASS**

**EICAS Advisory:** E1 (2) FUEL IMP BYP



**ENGINE IDLE STOP FAILURE**

**EICAS Advisory:** E1 (2) IDL STP FAIL

**Protection against thrust lever movement below flight idle is not available.**

**CAUTION:** NEVER SET THRUST LEVER BELOW IDLE INFLIGHT.

**END**

# EMERGENCY/ABNORMAL PROCEDURES

## Engine

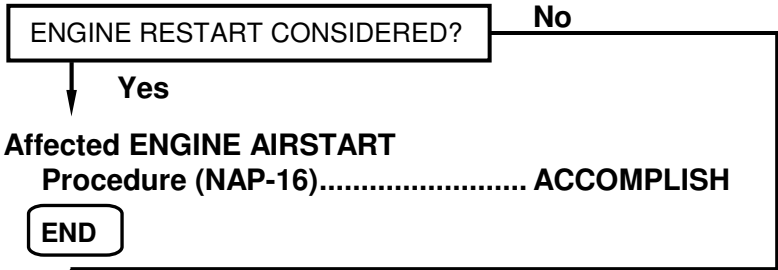
### ENGINE OUT

EICAS Caution:      ENG1 (2) OUT

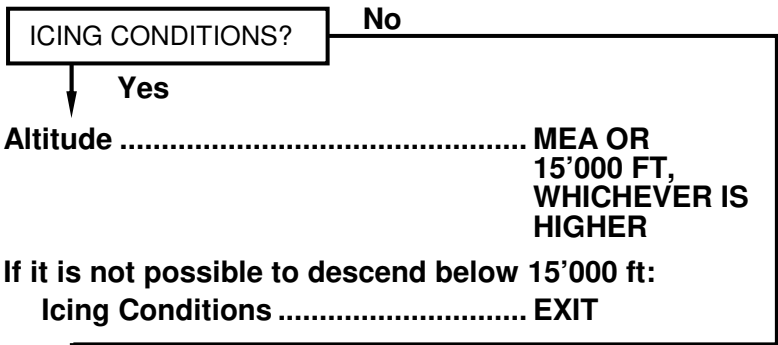
Associated Thrust Lever ..... IDLE  
Associated Start/Stop Selector ..... STOP

**NOTE:** If engine shutdown does not occur, pull the associated fire extinguishing handle.

Engine Thrust Rating ..... CON  
APU (if available) ..... START  
APU Bleed ..... AS REQUIRED  
XBleed ..... AS REQUIRED  
Fuel ..... BALANCE



**LAND AT THE NEAREST SUITABLE AIRPORT.**  
TCAS ..... TA ONLY  
XBleed ..... OPEN  
Altitude ..... MAX 25'000 FT,  
MIN MEA



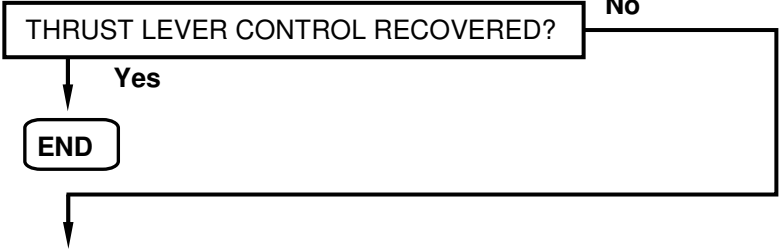
**ONE ENGINE INOPERATIVE APPROACH AND LANDING**  
Procedure (NAP-30) ..... AS REQUIRED

END

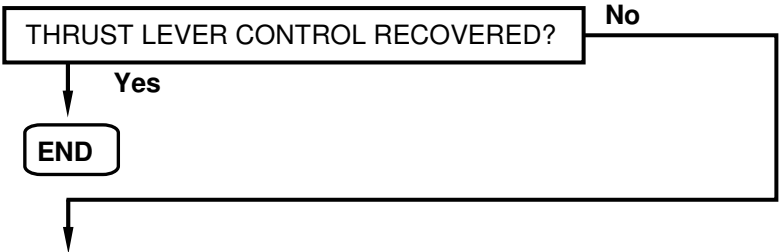
**ENGINE THRUST LEVER FAILURE**

**EICAS Caution:**      ENG1 (2) TLA FAIL

**Associated FADEC ..... RESET**



**Associated FADEC ..... ALTN**



**Thrust can be partially controlled through the Thrust Rating Buttons.**

**Affected ENGINE FAILURE/SHUTDOWN**

**Procedure (NAP-19) ..... AS REQUIRED**



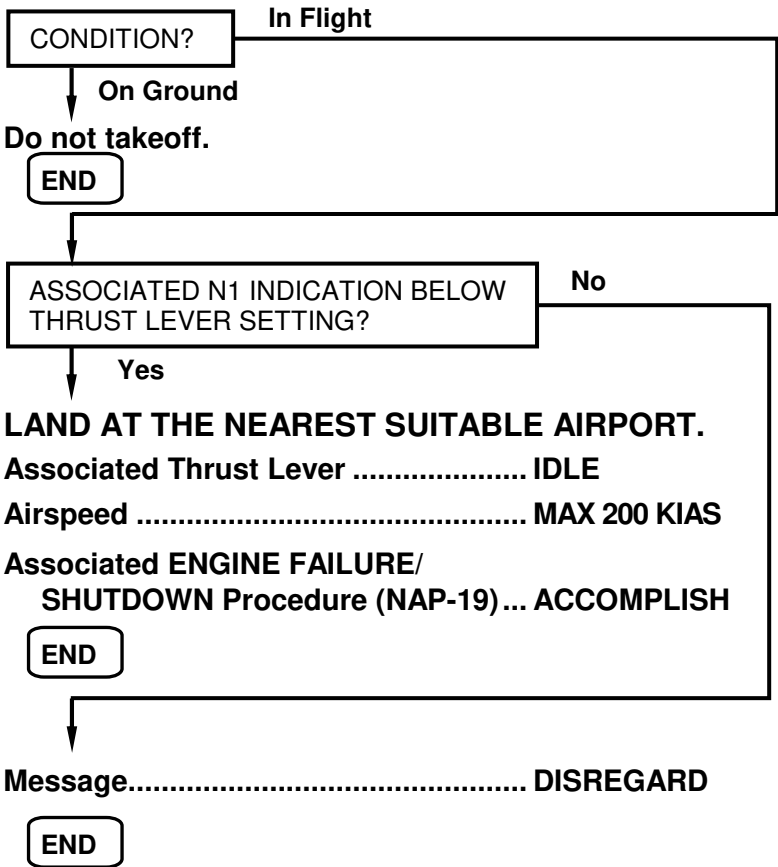
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# EMERGENCY/ABNORMAL PROCEDURES

## Engine

### ENGINE THRUST REVERSER FAILURE/DISAGREE

**EICAS Caution:**      ENG1 (2) REV DISAGREE or  
                                  ENG1 (2) REV FAIL



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<b>SMOKE / FIRE / FUMES.....</b>	<b>refer to S-6</b>
<b>APU FIRE DETECTION FAILURE .....</b>	<b>EAP 7-3</b>
<b>APU FIRE EXTINGUISHING INOPERATIVE.....</b>	<b>EAP 7-3</b>
<b>BAGGAGE COMPARTMENT FIRE EXTINGUISHING INOPERATIVE .....</b>	<b>EAP 7-4</b>
<b>ENGINE FIRE DETECTION FAILURE.....</b>	<b>EAP 7-4</b>
<b>ENGINE FIRE EXTINGUISHING INOPERATIVE .....</b>	<b>EAP 7-5</b>

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# EMERGENCY/ABNORMAL PROCEDURES

## Fire Protection

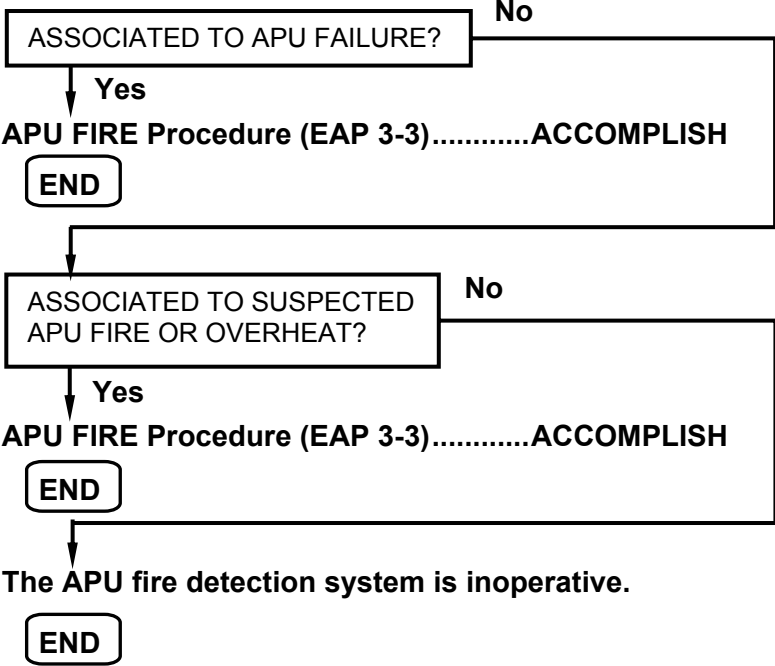
### LIST OF EICAS MESSAGES

BAGG SMOKE .....	refer to S-3
ENG 1 (2) FIRE .....	refer to EAP 6-6
APU FIREDET FAIL.....	EAP 7-3
APU EXTBTL INOP .....	EAP 7-3
BAGG EXTBTL INOP .....	EAP 7-4
E1 (2) FIREDET FAIL .....	EAP 7-4
E1 (2) EXTBTLA INOP .....	EAP 7-5
E1 (2) EXTBTLB INOP .....	EAP 7-5

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**APU FIRE DETECTION FAILURE**

**EICAS Caution:** APU FIREDET FAIL



**APU FIRE EXTINGUISHING INOPERATIVE**

**EICAS Caution:** APU EXTBTL INOP

**Condition:** Affected bottle has not been discharged intentionally.

**APU fire protection is not available.  
Consider shutting the APU down.**

**END**

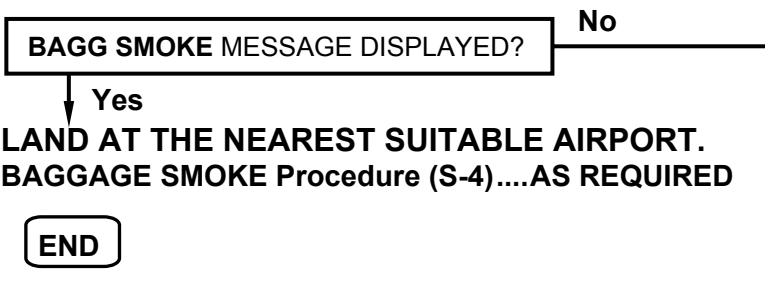
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# EMERGENCY/ABNORMAL PROCEDURES

## Fire Protection

### BAGGAGE COMPARTMENT FIRE EXTINGUISHING INOPERATIVE

**EICAS Caution:** BAGG EXTBTL INOP (if installed).  
**Condition:** Affected bottle has not been discharged intentionally.

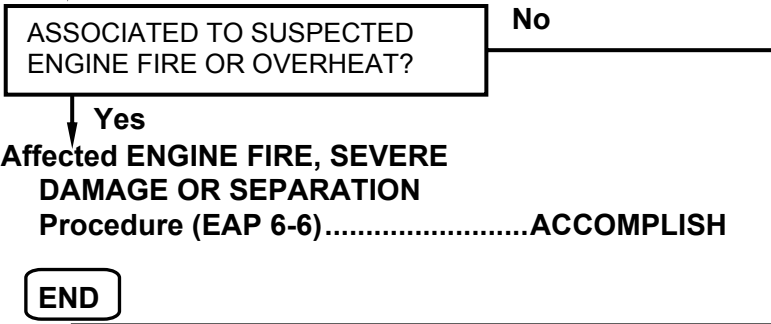
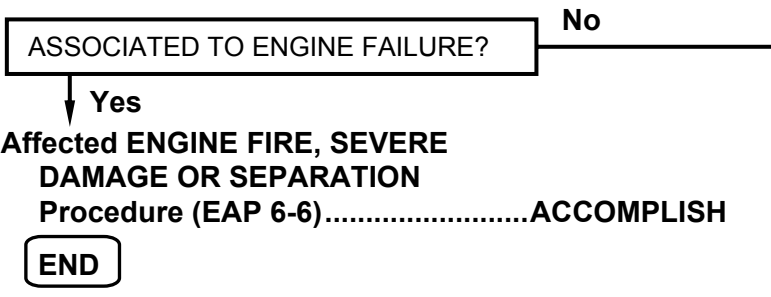


**Baggage fire protection is not available.**

**END**

### ENGINE FIRE DETECTION FAILURE

**EICAS Caution:** E1 (2) FIREDET FAIL



**The associated engine fire detection system is inoperative.**

**END**

### ENGINE FIRE EXTINGUISHING INOPERATIVE

**EICAS Caution:** E1 (2) EXBTBLA INOP or  
E1 (2) EXBTBLB INOP

**Condition:** Affected bottle has not been  
discharged intentionally.

**Only one bottle is available to protect both engines  
against fire.**

**END**

# **EMERGENCY/ABNORMAL PROCEDURES**

## **Fire Protection**

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**TABLE OF CONTENTS**  
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<b>INADVERTENT SPOILER OPEN .....</b>	<b>EAP 8-3</b>
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<b>AILERON SYSTEM INOPERATIVE .....</b>	<b>EAP 8-6</b>
<b>FLAP FAILURE .....</b>	<b>EAP 8-7</b>
<b>FLAP LOW ACTUATION SPEED .....</b>	<b>EAP 8-8</b>
<b>PITCH TRIM SWITCH INOPERATIVE.....</b>	<b>EAP 8-8</b>
<b>RUDDER HARDOVER PROTECTION FAILURE .....</b>	<b>EAP 8-8</b>
<b>RUDDER OVERBOOST .....</b>	<b>EAP 8-9</b>
<b>RUDDER SYSTEM INOPERATIVE .....</b>	<b>EAP 8-10</b>
<b>SPEED BRAKE LEVER DISAGREE .....</b>	<b>EAP 8-11</b>

**NON ANNUNCIATED PROCEDURES**

<b>AILERON RUNAWAY .....</b>	<b>refer to NAP-3</b>
<b>JAMMED AILERON .....</b>	<b>refer to NAP-8A</b>
<b>JAMMED ELEVATOR .....</b>	<b>refer to NAP-8A</b>
<b>JAMMED RUDDER.....</b>	<b>refer to NAP-9</b>
<b>PITCH TRIM RUNAWAY .....</b>	<b>refer to NAP-10</b>
<b>ROLL TRIM RUNAWAY.....</b>	<b>refer to NAP-3</b>
<b>AILERON ARTIFICIAL FEEL INOPERATIVE .....</b>	<b>refer to NAP-14</b>
<b>ASYMMETRIC RUDDER OPERATION .</b>	<b>refer to NAP-14</b>
<b>RUDDER ARTIFICIAL FEEL INOPERATIVE .....</b>	<b>refer to NAP-33</b>
<b>RUDDER RUNAWAY .....</b>	<b>refer to NAP-33</b>
<b>STIFFENED ELEVATOR .....</b>	<b>refer to NAP-35</b>
<b>UNCOMMANDED AILERON DISCONNECTION .....</b>	<b>refer to NAP-36</b>
<b>UNCOMMANDED ELEVATOR DISCONNECTION .....</b>	<b>refer to NAP-36</b>
<b>YAW TRIM RUNAWAY.....</b>	<b>refer to NAP-33</b>

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# EMERGENCY/ABNORMAL PROCEDURES

## Flight Controls

### LIST OF EICAS MESSAGES

SPOILER FAIL.....	EAP 8-3
PIT TRIM 1 (2) INOP .....	EAP 8-4
PTRIM MAIN INOP .....	EAP 8-4
PTRIM BACKUP INOP .....	EAP 8-4
AIL SYS 1 (2) INOP .....	EAP 8-6
FLAP FAIL .....	EAP 8-7
PTRIM CPT SW FAIL .....	EAP 8-8
PTRIM F/O SW FAIL .....	EAP 8-8
PTRIM BKP SW FAIL .....	EAP 8-8
RUD HDOV PROTFAIL .....	EAP 8-8
RUDDER OVERBOOST .....	EAP 8-9
RUDDER SYS 1 (2) INOP .....	EAP 8-10
SPBK LVR DISAGREE .....	EAP 8-11
FLAP LOW SPEED .....	EAP 8-8

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**INADVERTENT SPOILER OPEN**

**EICAS Caution:** SPOILER FAIL (may be presented)  
**Condition:** Sudden airspeed or altitude loss, buffeting or roll tendency.

**EICAS Indication:** SPLRS OPN

**Speed Brake ..... CLOSE**

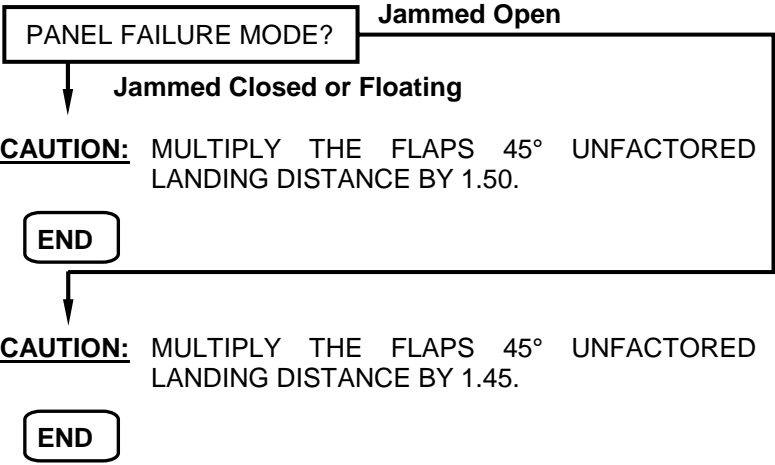
**Spoilers CB's F13, F14 and F21 ..... PULL**

**Do not reduce Thrust during flare.**

**Landing Configuration:**

**Flaps ..... 22°**

**V<sub>REF45</sub> ..... V<sub>REF45</sub> + 10 KIAS**



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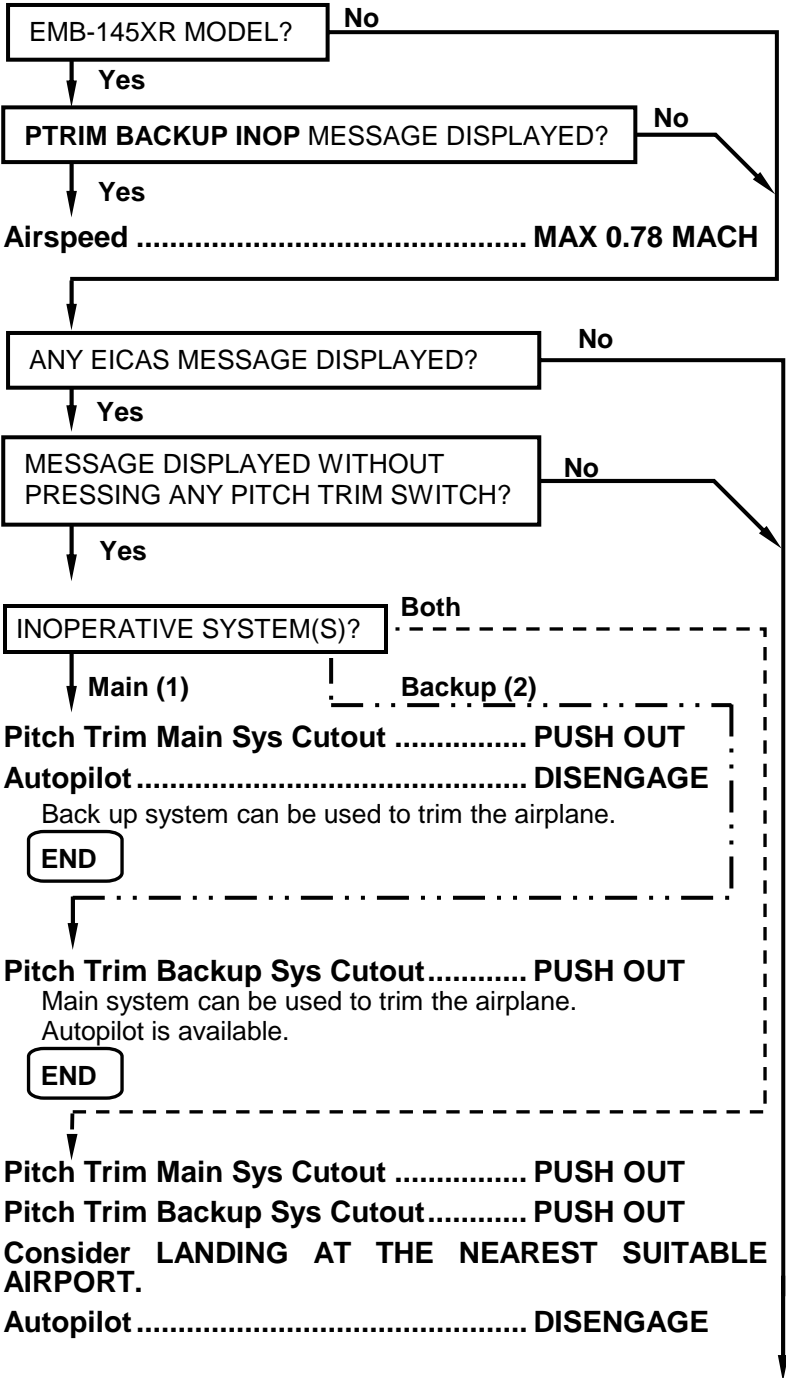
# EMERGENCY/ABNORMAL PROCEDURES

## Flight Controls

### PITCH TRIM INOPERATIVE

**EICAS Warning:** PTRIM MAIN INOP (may be presented) and/or PTRIM BACKUP INOP (may be presented) or PIT TRIM 1 (2) INOP (may be presented).

**EICAS Caution:** AUTO TRIM FAIL (may be presented).

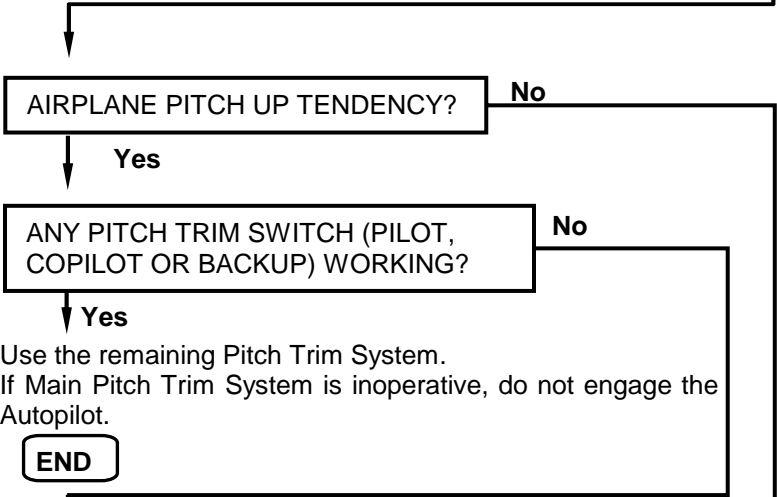


**CONTINUES ON NEXT PAGE**

# EMERGENCY/ABNORMAL PROCEDURES

Flight Controls

CONTINUED FROM PREVIOUS PAGE



**WARNING: DO NOT OPEN SPEEDBRAKE.**

**Airspeed..... REDUCE**

Reduce airspeed to alleviate forward control column forces, observing Flap Maneuvering Speed (PD-2). Continuous turns also helps to alleviate forward control column forces. Extending flaps and landing gear helps to recover trimmed condition.

**Landing Configuration:**

**Landing Gear ..... DOWN**

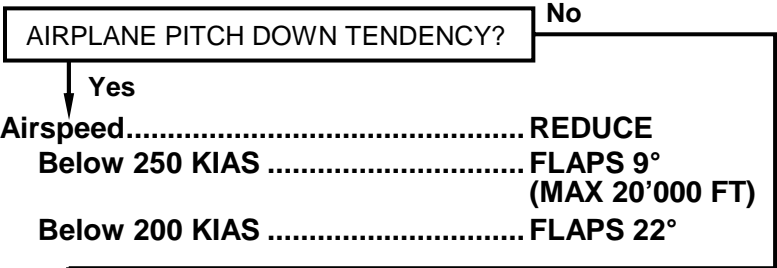
**Flaps ..... 22°**

**V<sub>REF</sub> ..... V<sub>REF45</sub> + 10 KIAS**

**CAUTION: MULTIPLY THE FLAPS 45° UNFACTORED LANDING DISTANCE BY 1.45.**

**END**

**WARNING: DO NOT OPEN SPEEDBRAKE.**



**Landing Configuration:**

**Landing Gear ..... DOWN**

**Delay gear extension as long as possible.**

**Flaps ..... 22°**

**V<sub>REF</sub> ..... V<sub>REF45</sub> + 25 KIAS**

**CAUTION: MULTIPLY THE FLAPS 45° UNFACTORED LANDING DISTANCE BY 1.75.**

**END**

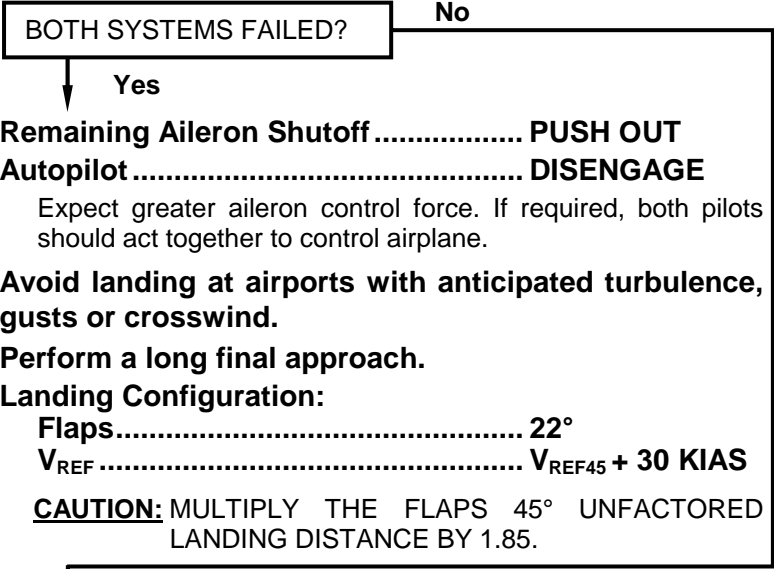
# EMERGENCY/ABNORMAL PROCEDURES

## Flight Controls

### AILERON SYSTEM INOPERATIVE

EICAS Caution: AIL SYS 1 (2) INOP

Affected Aileron Shutoff ..... PUSH OUT  
Airspeed ..... MAX 250 KIAS



END

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### FLAP FAILURE

- EICAS Caution:** FLAP FAIL
- Condition:** Flap operation is not possible.
- EICAS Indication:** Flap position may become amber.

If flap indication on EICAS is not available, use the RMU Engine Backup Page 2 or flap position marks on the wing.

**With flaps at intermediate positions, limit airspeed according to the following:**

#### ALL MODELS EXCEPT EMB-145XR

FLAPS POSITION	MAX AIRSPEED
1° to 9°	250 KIAS
10° to 22°	200 KIAS
23° to 45°	145 KIAS

#### EMB-145XR MODEL

FLAPS POSITION	MAXIMUM AIRSPEED	ABOVE 10'000 ft AND Y/D DISENGAGED
1° to 9°	250 KIAS	250 KIAS
10° to 22°	180 KIAS	180 KIAS
23° to 45°	160 KIAS	145 KIAS

**V<sub>REF</sub>:**

FLAPS POSITION	V <sub>REF</sub>
0 to 8°	V <sub>REF45</sub> + 30 KIAS
9° to 21°	V <sub>REF45</sub> + 10 KIAS
22° to 44°	V <sub>REF45</sub> + 5 KIAS
45°	V <sub>REF45</sub>

**At crew discretion:**

**EGPWS/GPWS CB's (J7 or J8) .....PULL**

**CAUTION:** MULTIPLY THE FLAPS 45° UNFACTORED LANDING DISTANCE BY:

FLAPS POSITION	FACTOR
0 to 8°	1.65
9° to 21°	1.40
22° to 44°	1.40

**END**

# EMERGENCY/ABNORMAL PROCEDURES

## Flight Controls

### FLAP LOW ACTUATION SPEED

**EICAS Advisory:** FLAP LOW SPEED

Anticipate flap slower actuation.

END

### PITCH TRIM SWITCH INOPERATIVE

**EICAS Caution:** PTRIM CPT SW FAIL,  
PTRIM F/O SW FAIL or  
PTRIM BKP SW FAIL

CONDITION?

On Ground

In Flight

Use another serviceable switch.

END

Deenergize the airplane and energize it again.

END

### RUDDER HARDOVER PROTECTION FAILURE

**EICAS Caution:** RUD HDOV PROTFAIL

Rudder hardover protection is not available.

END

**RUDDER OVERBOOST**

EICAS Caution: RUDDER OVERBOOST

Rudder Shutoff 2 .....PUSH OUT

**RUDDER OVERBOOST MESSAGE PERSISTS?**

No

Yes

Rudder Shutoff 2 .....PUSH IN

Rudder Shutoff 1 .....PUSH OUT

Below 135 KIAS:

Rudder Shutoff 1 .....PUSH IN

END

Below 135 KIAS:

Rudder Shutoff 2 .....PUSH IN

END

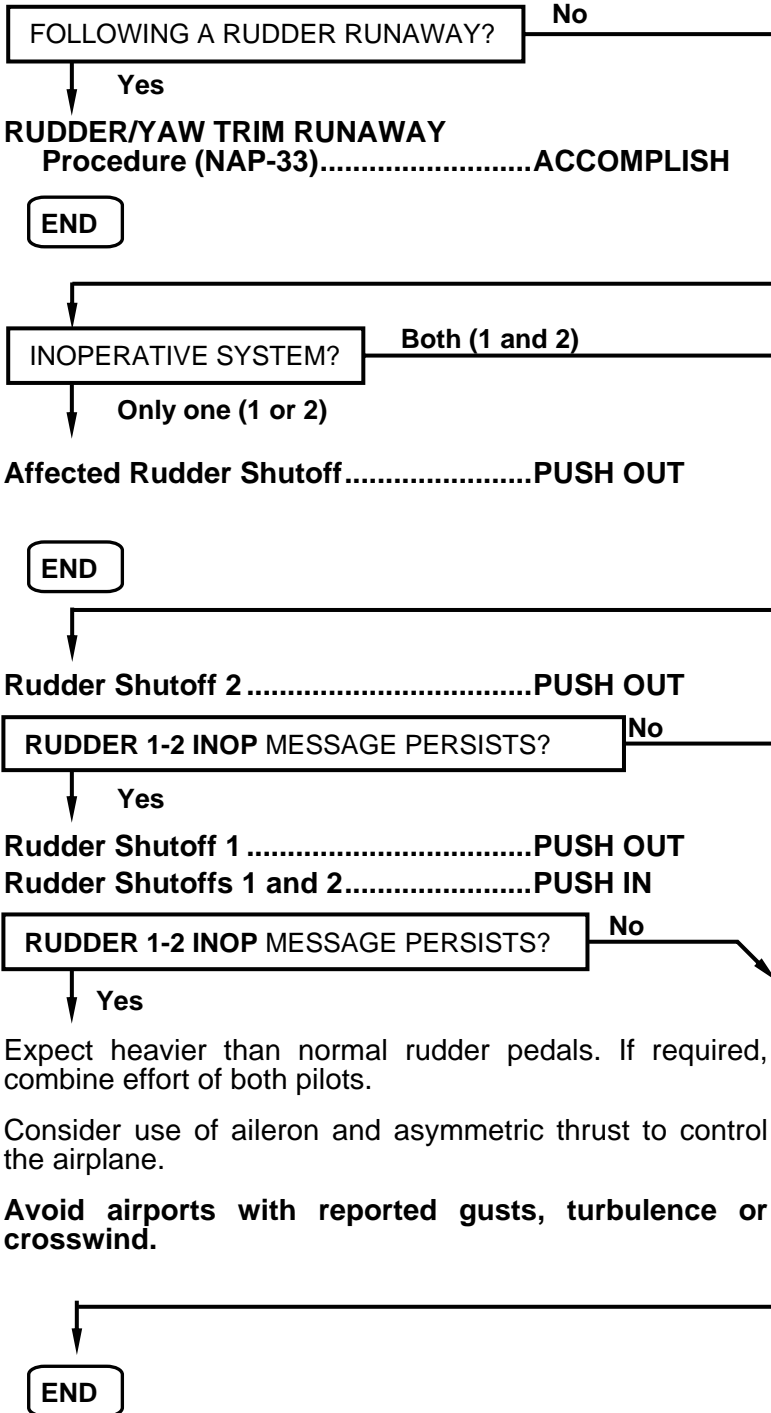
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# EMERGENCY/ABNORMAL PROCEDURES

## Flight Controls

### RUDDER SYSTEM INOPERATIVE

**EICAS Caution:** RUDDER SYS 1 (2) INOP or  
RUDDER SYS 1-2 INOP



**SPEED BRAKE LEVER DISAGREE**

EICAS Caution:      SPBK LVR DISAGREE

Speed Brake Lever .....CLOSE

**END**

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# **EMERGENCY/ABNORMAL PROCEDURES**

## **Flight Controls**

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APU FUEL SHUTOFF VALVE INOPERATIVE .....	EAP 9-4
DEFUEL VALVE NOT CLOSED .....	EAP 9-4
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VENTRAL TANK VENTILATION OPEN .....	EAP-9-10
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# EMERGENCY/ABNORMAL PROCEDURES

## Fuel

### LIST OF EICAS MESSAGES

<b>FUEL 1 (2) LO LEVEL</b> .....	<b>EAP 9-3</b>
<b>FUEL XFER CRITICAL</b> .....	<b>EAP 9-3</b>
APU FUEL LO PRESS .....	refer to EAP 3-4
APU FUEL SOV INOP .....	EAP 9-4
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E1 (2) FUEL LO TEMP.....	EAP 9-5
E1 (2) FUEL SOV INOP .....	EAP 9-6
FUEL EQ XFEED OPN .....	EAP 9-6
FUEL IMBALANCE .....	EAP 9-7
FUEL TANK LO TEMP.....	EAP 9-7
FUEL VENT OPEN .....	EAP 9-10
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XFER ISOL FAIL.....	EAP 9-8

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**FUEL LOW LEVEL**

**EICAS Warning:** FUEL 1 (2) LO LEVEL  
**MFD Indication:** Fuel quantity in red range.

**LAND AT THE NEAREST SUITABLE AIRPORT.**

**Thrust Levers ..... LONG RANGE  
CRUISE**

**Avoid attitudes in excess of 10° nose down or 12° nose up attitude, uncoordinated maneuvers and negative g's.**

**Xfeed Operation ..... AS REQUIRED**

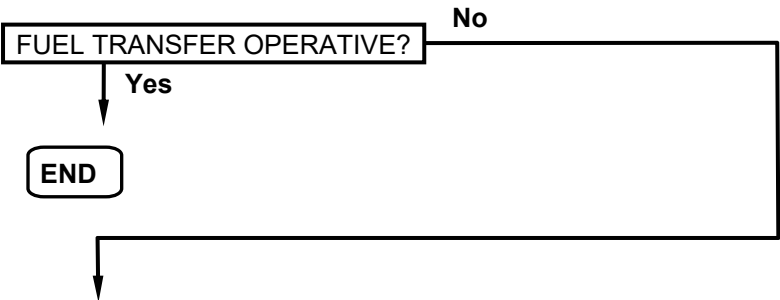
END

**FUEL TRANSFER CRITICAL**

**EICAS Warning:** FUEL XFER CRITICAL

**Thrust Levers ..... LONG RANGE  
CRUISE**

**Fuel Transfer System..... CHECK STATUS**



**Consider diversion.**

**Remaining Fuel ..... CHECK**

**Avoid rapid maneuvers and flying in severe turbulence conditions.**

**Before touchdown:**

**Rate of Descent ..... MAX 450 FT/MIN**

**Touch smoothly the runway surface.**

**Reduce engine thrust only after touchdown.**

END

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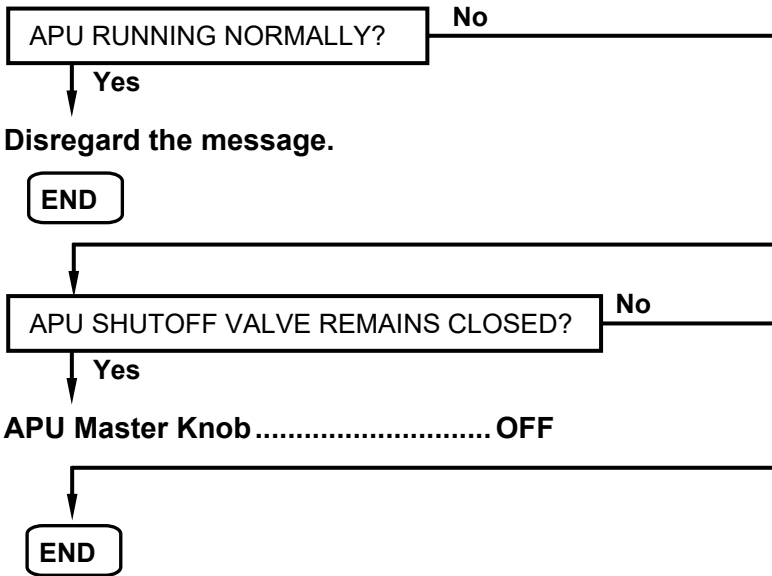
# EMERGENCY/ABNORMAL PROCEDURES

## Fuel

### APU FUEL SHUTOFF VALVE INOPERATIVE

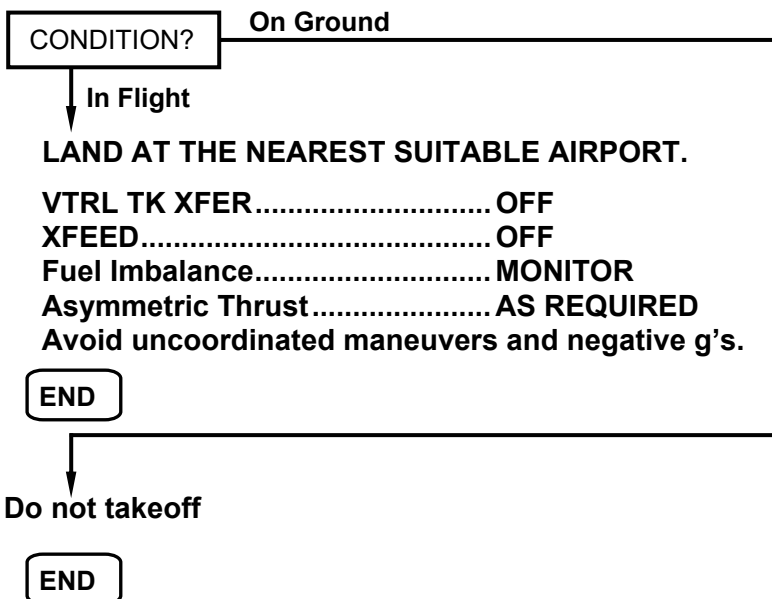
**EICAS Caution:** APU FUEL SOV INOP

**APU Fuel Shutoff Button ..... CHECK NOT PUSHED IN**



### DEFUEL VALVE NOT CLOSED

**EICAS Caution:** DEFUEL NOT CLOSED



# EMERGENCY/ABNORMAL PROCEDURES

Fuel

## ENGINE FUEL LOW PRESSURE

**EICAS Caution:** E1 (2) FUEL LO PRESS

**Condition:** One or more affected tank electric fuel pump may be inoperative.

**Associated Fuel Pump Sel** ..... **SELECT ANOTHER**

ALL PUMPS INOPERATIVE  
IN THE AFFECTED TANK?

No

Yes

**Altitude** ..... **MAX 25'000 FT,  
MIN MEA**

**NOTE:** If required, the flight may proceed above 25'000 ft using XFEED.

**Avoid rapid thrust lever movements and set minimum required thrust.**

END

END

## ENGINE FUEL LOW TEMPERATURE

**EICAS Caution:** E1 (2) FUEL LO TEMP

**WARNING:** IF NO ICING INHIBITOR WAS ADDED,  
ENGINE FLAMEOUT MAY OCCUR.

ON GROUND?

No

Yes

**Do not take off.**

END

**Descend to lower altitude and monitor engine indications as long as the message remains.**

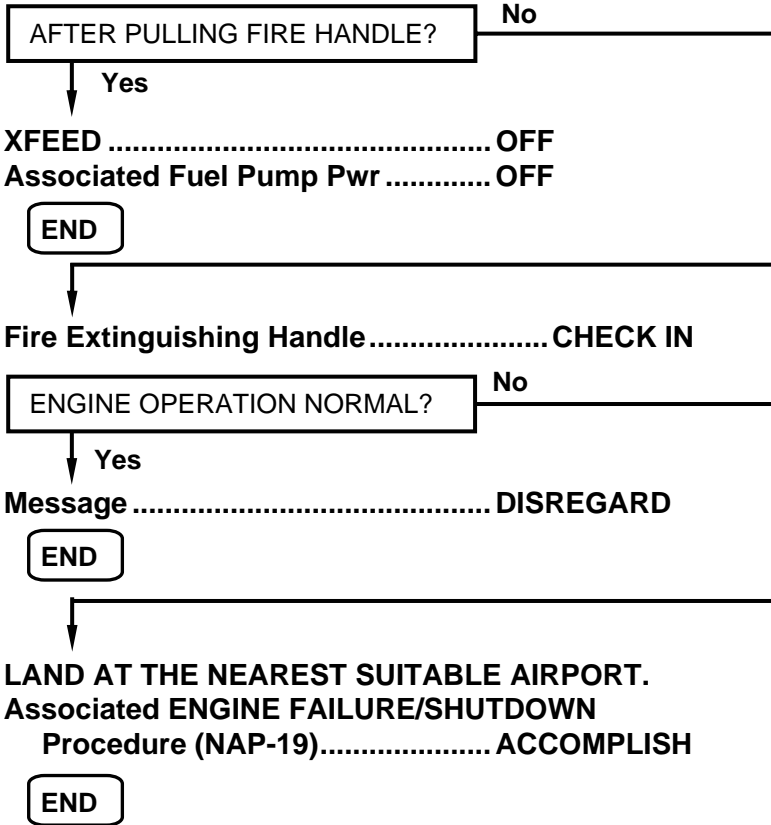
END

# EMERGENCY/ABNORMAL PROCEDURES

## Fuel

### ENGINE FUEL SHUTOFF VALVE INOPERATIVE

EICAS Caution: E1 (2) FUEL SOV INOP



### FUEL CROSSFEED FAILURE

EICAS Caution: FUEL XFEED FAIL

Fuel Imbalance ..... MONITOR  
Asymmetric Thrust..... AS REQUIRED

END

### FUEL CROSSFEED MISCOMMAND

EICAS Caution: FUEL EQ XFEED OPN

XFEED ..... OFF  
Fuel Imbalance ..... CHECK  
XFEED ..... AS REQUIRED  
Check XFEED selector knob properly positioned to  
correct wing fuel imbalance.

END

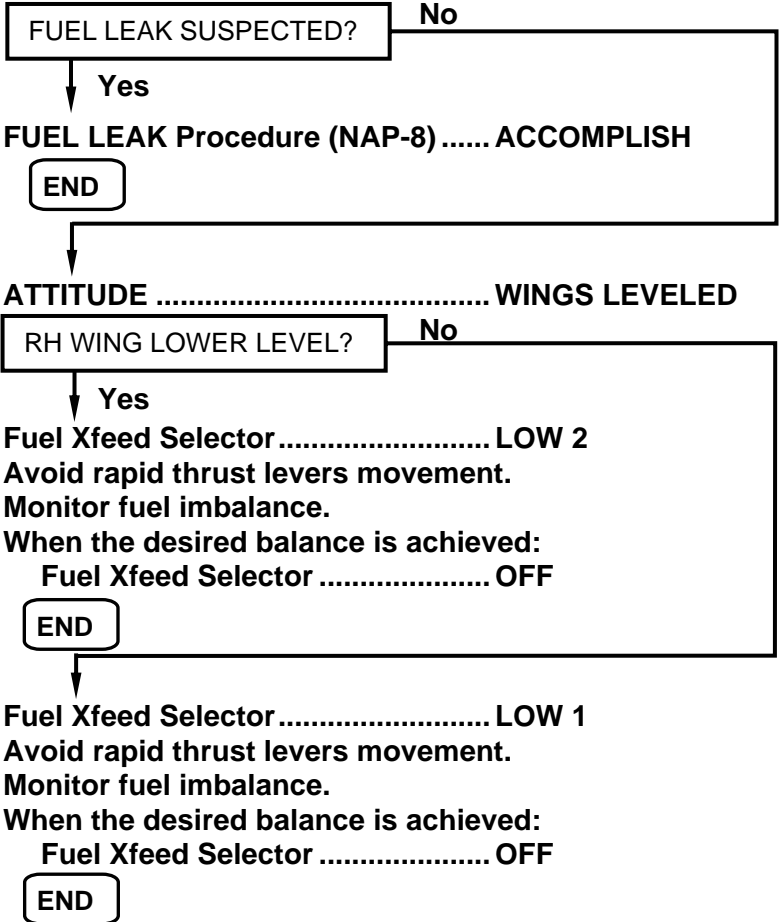
# EMERGENCY/ABNORMAL PROCEDURES

Fuel

## FUEL IMBALANCE

**EICAS Caution:** FUEL IMBALANCE

**NOTE:** Crossfeed must be off during takeoff and landing.

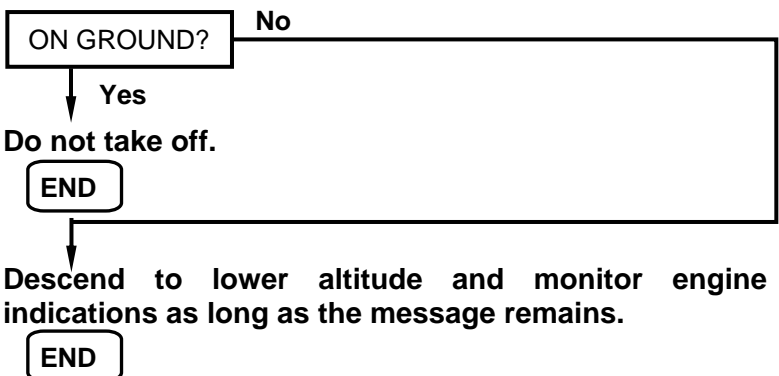


## FUEL TANK LOW TEMPERATURE

**EICAS Caution:** FUEL TANK LO TEMP

**MFD Indication:** Fuel temperature in amber range.

**WARNING: ENGINE FLAMEOUT MAY OCCUR.**

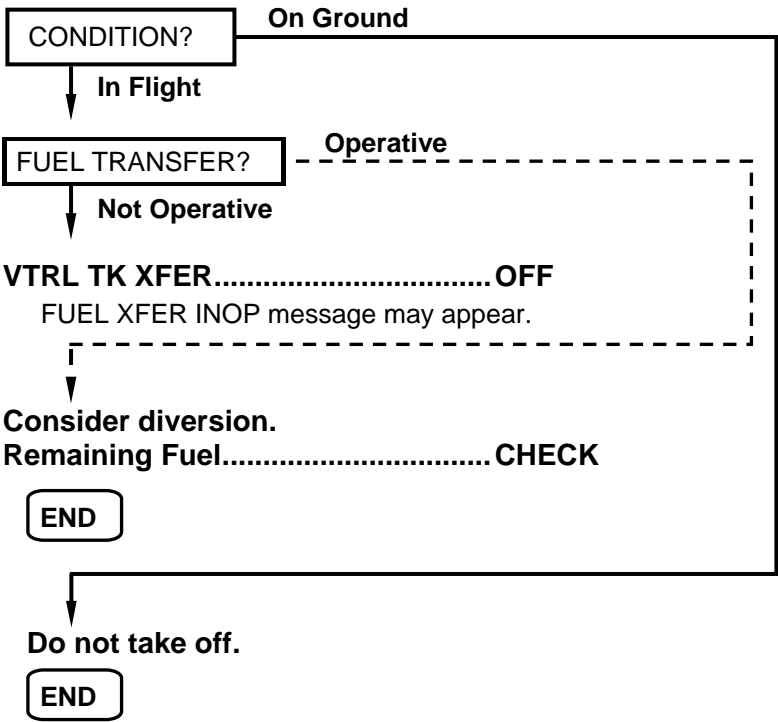


# EMERGENCY/ABNORMAL PROCEDURES

## Fuel

### FUEL TRANSFER ISOLATION FAILURE

EICAS Caution: XFER ISOL FAIL



### FUEL TRANSFER OVERRIDE

EICAS Advisory: FUEL XFER OVRD

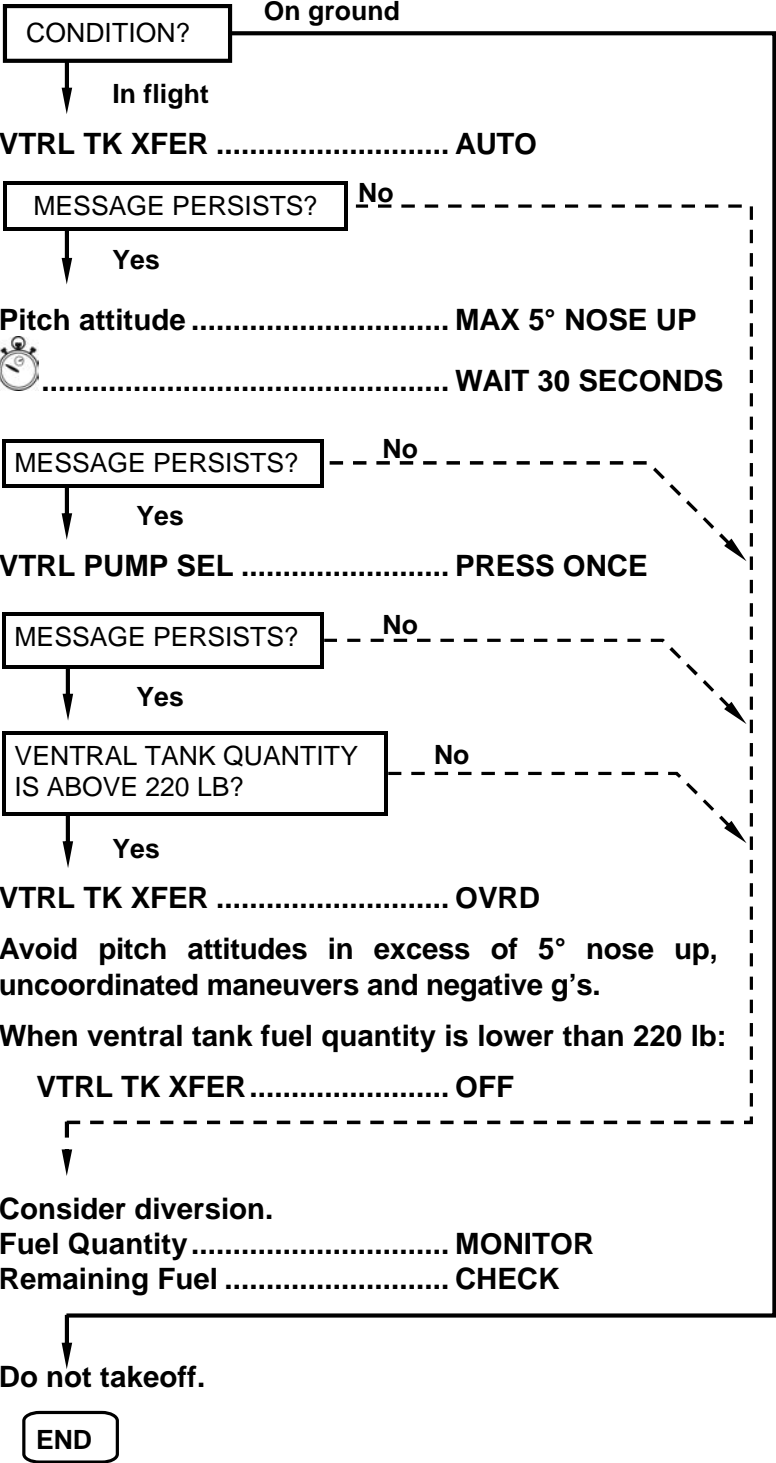
When Ventral Tank Fuel Quantity is lower than 220 lb:

VTRL TK XFER..... OFF

END

**FUEL TRANSFER SYSTEM INOPERATIVE**

**EICAS Caution:** FUEL XFER INOP



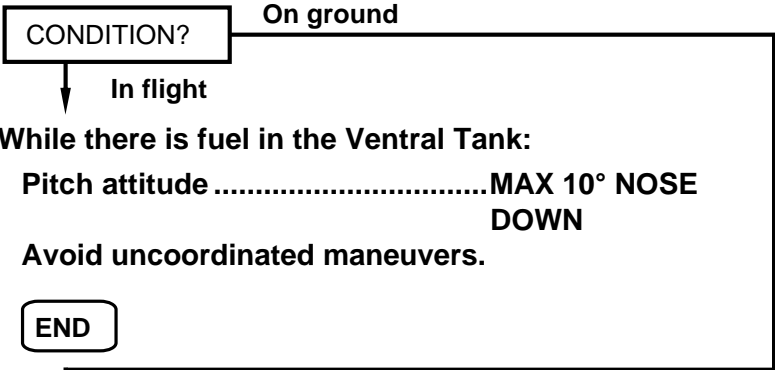
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# EMERGENCY/ABNORMAL PROCEDURES

## Fuel

### VENTRAL TANK VENTILATION OPEN

EICAS Caution: FUEL VENT OPEN



While there is fuel in the Ventral Tank:

Pitch attitude .....MAX 10° NOSE DOWN

Avoid uncoordinated maneuvers.

END

Do not takeoff.

END

### WING TANKS OVERFLOW

EICAS Caution: FUEL XFER OVERFLOW

VTRL TK XFER .....OFF

Wing Fuel Tank Quantity .....MONITOR

XFEED.....AS REQUIRED

When Wing Fuel Tanks quantity is at 4630 lb or below:

VTRL TK XFER .....AUTO

Fuel Imbalance .....MONITOR

XFEED.....AS REQUIRED

END

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**HYDRAULIC SYSTEM 1 FAILURE ..... EAP 10-5**

**HYDRAULIC SYSTEM 2 FAILURE ..... EAP 10-6**

**HYDRAULIC SYSTEM LOW QUANTITY ..... EAP 10-7**

**HYDRAULIC SYSTEM OVERHEAT ..... EAP 10-7**

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# EMERGENCY/ABNORMAL PROCEDURES

## Hydraulics

### LIST OF EICAS MESSAGES

HYD SYS 1-2 FAIL .....	EAP 10-3
HYD SYS 1 FAIL.....	EAP 10-5
HYD SYS 2 FAIL.....	EAP 10-6
HYD SYS 1 (2) OVHT .....	EAP 10-7
HYD1 (2) LO QTY.....	EAP 10-7

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**BOTH HYDRAULIC SYSTEMS FAILURE**

**EICAS Caution:** HYD SYS 1-2 FAIL  
**MFD Indication:** Hydraulic pressure may be amber.  
**Condition:** Noise increase due to nose landing gear doors open.

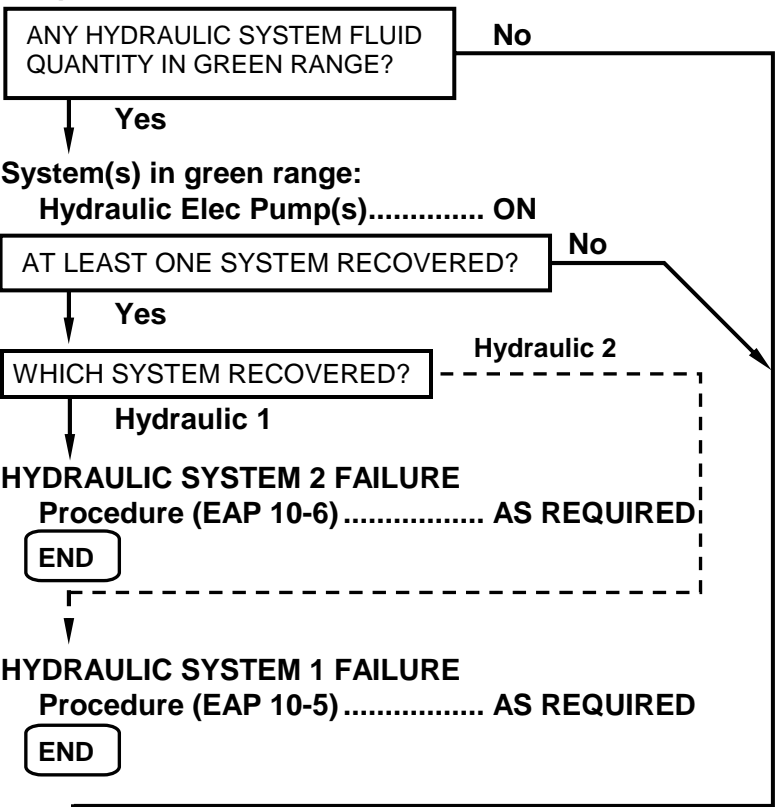
The following messages will be displayed:

EICAS Caution: AIL SYS 1-2 INOP,  
RUDDER SYS 1-2 INOP

EICAS Advisory: E1-2 HYD PUMP FAIL

**CAUTION:** DO NOT OPEN THE SPEED BRAKES.

**Airspeed..... MAX 250 KIAS**



**LAND AT THE NEAREST SUITABLE AIRPORT.**

**CAUTION:** MULTIPLY THE FLAPS 45° UNFACTORED LANDING DISTANCE BY 3.45.

**Autopilot/Yaw Damper ..... DISENGAGE**

**Both Hydraulic Elec Pumps..... OFF**

Expect greater aileron and rudder control force. If required, both pilots should act together to control airplane. Consider using aileron and asymmetric thrust to help yaw control.

**CONTINUES ON NEXT PAGE**

# EMERGENCY/ABNORMAL PROCEDURES

## Hydraulics

### CONTINUED FROM PREVIOUS PAGE

Relevant Inoperative Items:

Normal gear extension	Thrust reversers	Anti-skid
Normal brakes	Spoilers	Steering
Main door retraction		

Approach:

- APU..... AS REQUIRED
- Altimeters..... SET AND CROSS CHECKED
- Approach Aids ..... SET AND CROSS CHECKED
- Speed Bugs..... SET
- Pressurization..... CHECK
- Go-Around Procedure ..... REVIEW

If necessary, accomplish a normal go-around procedure except that landing gear cannot be retracted.

Before Landing:

- Free Fall Lever ..... ACTUATE
- Landing Gear Lever..... DOWN

Perform a long final approach.

Avoid landings at airports with anticipated crosswind or turbulence.

Excessive flare may require a bigger landing distance.

Use rudder for directional control on ground.

During landing run, pull Emergency Brake Handle carefully.

Landing Configuration:

- Landing Gear ..... DOWN
- Flaps..... 22°
- V<sub>REF</sub> ..... V<sub>REF45</sub> + 30 KIAS

**CAUTION:** MULTIPLY THE FLAPS 45° UNFACTORED LANDING DISTANCE BY 3.45.

END

**HYDRAULIC SYSTEM 1 FAILURE**

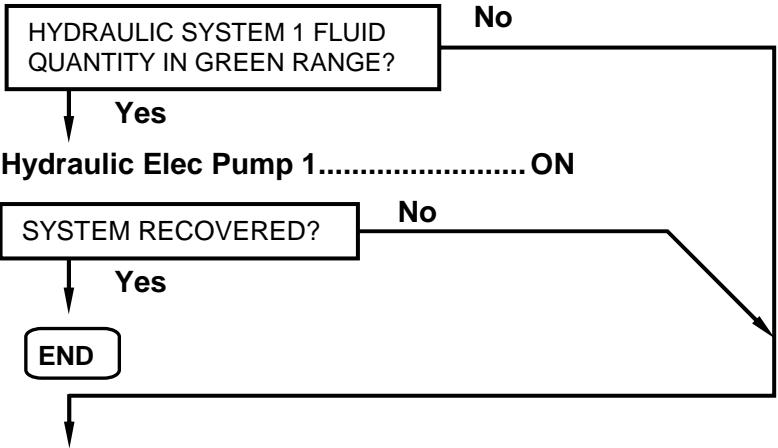
**EICAS Caution:** HYD SYS 1 FAIL

**MFD Indication:** Hydraulic pressure may be amber.  
**Condition:** Noise increase due to nose landing gear doors open.

The following messages will be displayed:

EICAS Caution: AIL SYS 1 INOP,  
 RUDDER SYS 1 INOP

EICAS Advisory: E1 HYD PUMP FAIL



**Hydraulic Elec Pump 1..... OFF**  
**Airspeed..... MAX 250 KIAS**

**Relevant Inoperative Items:**

Inboard Spoiler	Normal gear extension	Thrust reverser 1
Steering	Main door retraction	Outboard brakes

**Before Landing:**

**Free Fall Lever ..... ACTUATE**

**Landing Gear Lever ..... DOWN**

**Brake effectiveness will be reduced.**

**Do not actuate engine 1 Thrust Reverser.**

**Landing Configuration:**

**Landing Gear ..... DOWN**

**Flaps ..... 45°**

**V<sub>REF</sub> ..... V<sub>REF45</sub>**

**CAUTION:** MULTIPLY THE FLAPS 45° UNFACTORED LANDING DISTANCE BY 1.60.

**END**

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# EMERGENCY/ABNORMAL PROCEDURES

## Hydraulics

### HYDRAULIC SYSTEM 2 FAILURE

**EICAS Caution:** HYD SYS 2 FAIL

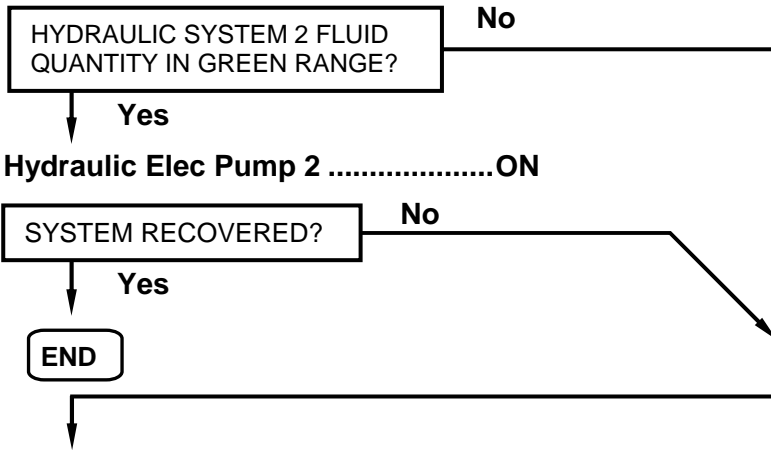
**MFD Indication:** Hydraulic pressure may be amber.

The following messages will be displayed:

EICAS Caution: AIL SYS 2 INOP,  
RUDDER SYS 2 INOP

EICAS Advisory: E2 HYD PUMP FAIL

**CAUTION:** DO NOT OPEN THE SPEED BRAKES.



Hydraulic Elec Pump 2 .....OFF

Airspeed .....MAX 250 KIAS

**Relevant Inoperative Items:**

Outboard Spoiler	Thrust reverser 2	Inboard brakes
------------------	-------------------	----------------

The Emergency/Parking Brake has accumulator pressure only.

**Brake effectiveness will be reduced.**

**Do not actuate engine 2 Thrust Reverser.**

**Landing Configuration:**

Landing Gear .....DOWN

Flaps.....45°

V<sub>REF</sub>.....V<sub>REF45</sub>

**CAUTION:** MULTIPLY THE FLAPS 45° UNFACTORED LANDING DISTANCE BY 1.53.

END

**HYDRAULIC SYSTEM LOW QUANTITY**

**EICAS Advisory:** HYD1 (2) LO QTY

**MFD Indication:** Hydraulic fluid quantity may be amber.

**Affected Hydraulic System ..... MONITOR**

**NOTE:** If Hydraulic System 2 is affected, do not open the Speed Brakes.

**END**

**HYDRAULIC SYSTEM OVERHEAT**

**EICAS Caution:** HYD SYS 1 (2) OVHT

**Turn the affected system OFF:**

**Associated Hydraulic**

**Eng Pump Shutoff..... PUSH IN**

**Associated Hydraulic**

**Elec Pump ..... OFF**

EICAS Messages related to associated hydraulic system will be displayed while system is set to OFF.

**Airspeed..... MAX 250 KIAS**

**For remainder of flight, if required:**

**Affected Hydraulic System..... 15 MINUTES OFF,  
1 MINUTE ON**

**NOTE:** To turn the hydraulic system ON, first turn the Hydraulic Elec Pump to AUTO. As soon as the system pressure is recovered, push out the Hydraulic Eng Pump Shutoff button.

**During Approach and Landing or when required:**

**Affected Hydraulic System..... ON**

**After reaching taxi speed or when the system is no longer required:**

**Affected Hydraulic System..... OFF**

**END**

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# **EMERGENCY/ABNORMAL PROCEDURES**

## **Hydraulics**

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**TABLE OF CONTENTS**  
**ANNUNCIATED PROCEDURES**

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ANTI-ICING LOW CAPACITY .....	EAP 11-4
ANTI-ICING SWITCH OFF .....	EAP 11-4
AOA HEATING INOPERATIVE .....	EAP 11-4
ENGINE ANTI-ICING FAILURE .....	EAP 11-5
ICE DETECTOR FAIL.....	EAP 11-5
NO ICE - ANTI-ICE ON.....	EAP 11-6
PITOT HEATING INOPERATIVE.....	EAP 11-6
STABILIZER ANTI-ICING FAILURE .....	EAP 11-8
TAT HEATING INOPERATIVE .....	EAP 11-7
WINDSHIELD HEATING FAILURE.....	EAP 11-7
WING ANTI-ICING FAILURE .....	EAP 11-8

**NON ANNUNCIATED PROCEDURES**

<b>SINGLE ENGINE BLEED OPERATION IN ICING CONDITIONS .....</b>	<b>refer to NAP-34</b>
--	------------------------

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# EMERGENCY/ABNORMAL PROCEDURES

## Ice & Rain Protection

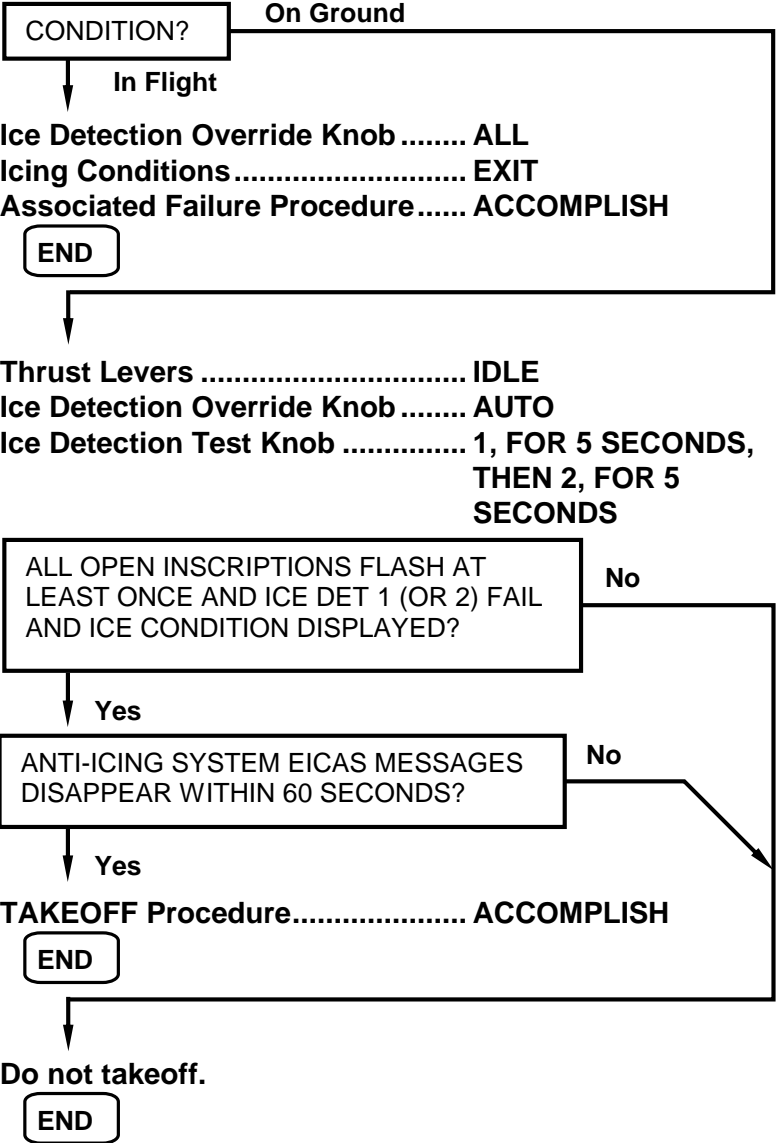
### LIST OF EICAS MESSAGES

<b>ICE COND-A/I INOP .....</b>	<b>EAP 11-3</b>
A/ICE LOW CAPACIT .....	EAP 11-4
A/ICE SWITCH OFF .....	EAP 11-4
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E1 (2) A/ICE FAIL .....	EAP 11-5
ICE DET1 (2) FAIL .....	EAP 11-5
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PITOT 1 (2, 3) INOP .....	EAP 11-6
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TAT 1 (2) HEAT INOP .....	EAP 11-7
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WG A/ICE FAIL .....	EAP 11-8

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**ICING CONDITIONS WITH ANTI-ICING INOPERATIVE**

**EICAS Warning:** ICE COND-A/I INOP



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# EMERGENCY/ABNORMAL PROCEDURES

## Ice & Rain Protection

### ANTI-ICING LOW CAPACITY

**EICAS Caution:** A/ICE LOW CAPACIT

**Thrust Levers .....ADVANCE**

Advance Thrust Levers to at least 55% N1.



.....**WAIT 5 SECONDS**

**MESSAGE PERSISTS?**

**No**

**Yes**

**WING ANTI-ICING FAILURE OR  
STABILIZER ANTI-ICING FAILURE  
Procedure (EAP 11-8).....AS REQUIRED**

**END**

### ANTI-ICING SWITCH OFF

**EICAS Caution:** A/ICE SWITCH OFF

**All Ice Protection Buttons .....PUSH IN**

**END**

### AOA HEATING INOPERATIVE

**EICAS Caution:** AOA 1 (2) HEAT INOP

**Minimum Airspeed .....FLAP  
MANEUVERING  
SPEED (PD-2)**

**END**

**ENGINE ANTI-ICING FAILURE**

**EICAS Caution:** E1 (2) A/ICE FAIL

**Thrust Levers ..... ADVANCE**

MESSAGE PERSISTS?

No

Yes

**Ice Detection Override Knob ..... ALL**

MESSAGE STILL PERSISTS?

No

Yes

**Ice Protection Engine Air Inlet ..... PUSH OUT, THEN PUSH IN**

MESSAGE STILL PERSISTS?

No

Yes

**Icing Conditions ..... AVOID/EXIT**

**Two minutes after exiting icing conditions:**

**Ice Detection Override Knob ..... AUTO**

**Engine Vibration ..... MONITOR**

If vibration increases, advance thrust levers one at a time, to 60% N1 minimum for 5 seconds.

If vibration increases to unacceptable values or engine parameters indicate abnormal values, exit icing conditions.

**END**

**ICE DETECTOR FAIL**

**EICAS Caution:** ICE DET1 (2) FAIL or  
ICE DETECTORS FAIL

**When flying in icing conditions:**

**Ice Detection Override Knob ..... ALL**

**Two minutes after exiting icing conditions:**

**Ice Detection Override Knob ..... AUTO**

**END**

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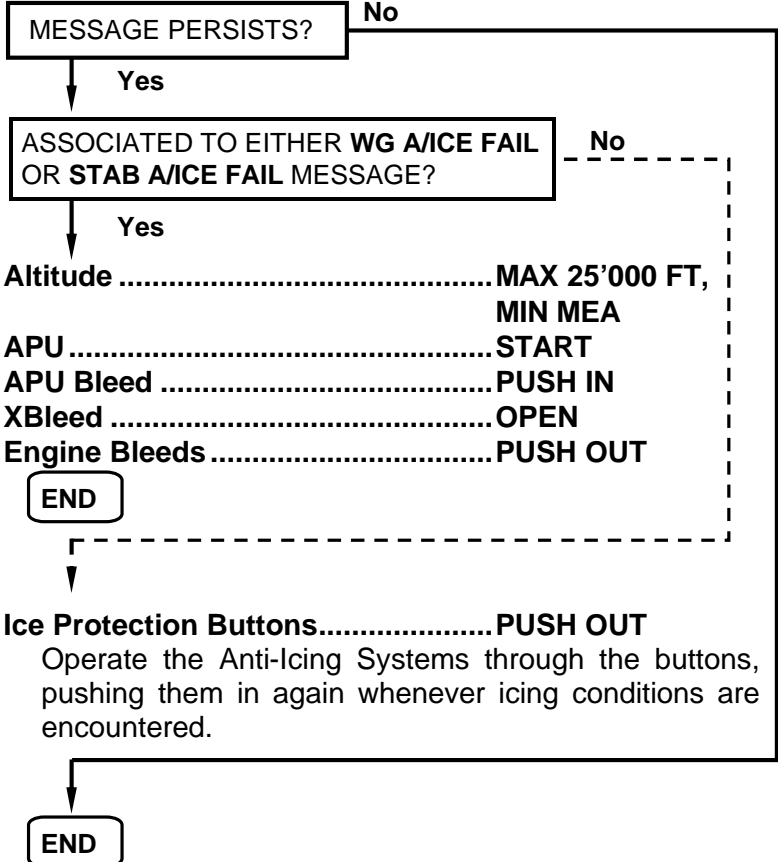
# EMERGENCY/ABNORMAL PROCEDURES

## Ice & Rain Protection

### NO ICE - ANTI-ICE ON

EICAS Caution: NO ICE-A/ICE ON

Ice Detection Override Knob.....AUTO



### PITOT HEATING INOPERATIVE

EICAS Caution: PITOT 1 (2, 3) INOP

Instruments' information supplied by the affected system may be unreliable. Cross-check and do not use the affected system if a disagreement is found. If the Pitot 3 heating is inoperative, standby instruments and pressurization system may be affected.

If necessary:

- ADC on Associated Reversionary Panel.....PUSH IN

**END**

# EMERGENCY/ABNORMAL PROCEDURES

Ice & Rain Protection

## TAT HEATING INOPERATIVE

EICAS Caution: TAT 1 (2) HEAT INOP

TAT, TAS and SAT indication may be unreliable.

END

## WINDSHIELD HEATING FAILURE

EICAS Caution: W/S 1 (2) HEAT FAIL

Associated Ice Protection

Windshield ..... PUSH OUT

END

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# EMERGENCY/ABNORMAL PROCEDURES

## Ice & Rain Protection

### WING ANTI-ICING FAILURE OR STABILIZER ANTI-ICING FAILURE

**EICAS Caution:** STAB A/ICE FAIL or WG A/ICE FAIL

**Ice Detector Override Knob**..... ALL

**Thrust Levers** ..... ADVANCE

**MESSAGE PERSISTS?** No  
↓ Yes

**Affected Ice Protection Button**..... **PUSH OUT, THEN PUSH IN**

**MESSAGE STILL PERSISTS?** No  
↓ Yes

**Associated Ice Protection Button**..... **PUSH OUT**  
**Icing Conditions**..... **AVOID/EXIT**

**Two minutes after exiting icing conditions:**  
**Ice Detector Override Knob** ..... **AUTO**  
**Maximum Bank Angle**..... **30°**  
**Minimum Airspeed (Flaps 0° or 9°)**..... **190 KIAS**

**LANDING IN ICING CONDITIONS OR WITH ICE ACCRETION?** No  
↓ Yes

**AFFECTED SYSTEM(S)?** Stab  
↓ **Wing or Wing+Stab**

**Landing configuration:**  
**Flaps**..... **22°**  
**V<sub>REF</sub>**..... **V<sub>REF45</sub> + 30 KIAS**  
**CAUTION:** MULTIPLY THE FLAPS 45° UNFACTORED LANDING DISTANCE BY 1.85.

**END**

**Landing configuration:**  
**Flaps**..... **22°**  
**V<sub>REF</sub>**..... **V<sub>REF45</sub> + 15 KIAS**  
**CAUTION:** MULTIPLY THE FLAPS 45° UNFACTORED LANDING DISTANCE BY 1.55.

**END**

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**ANNUNCIATED PROCEDURES**

<b>LANDING GEAR/LEVER DISAGREE .....</b>	<b>EAP 12-3</b>
<b>BRAKE OVERHEAT .....</b>	<b>EAP 12-4</b>
<b>BRAKES DEGRADED .....</b>	<b>EAP 12-5</b>
<b>BRAKES INOPERATIVE.....</b>	<b>EAP 12-5</b>
<b>EMERGENCY/PARKING BRAKE LOW PRESSURE.....</b>	<b>EAP 12-5</b>
<b>LANDING GEAR AIR/GROUND SYSTEM FAILURE.....</b>	<b>EAP 12-6</b>
<b>STEERING SYSTEM INOPERATIVE .....</b>	<b>EAP 12-7</b>
<b>UNCOMMANDED SWERVING ON GROUND.....</b>	<b>EAP 12-7</b>

**NON ANNUNCIATED PROCEDURES**

<b>ABNORMAL LANDING GEAR EXTENSION.....</b>	<b>refer to NAP-13</b>
<b>EMERGENCY/PARKING BRAKE HANDLE DISAGREE.....</b>	<b>refer to NAP-15</b>
<b>GEAR LEVER CANNOT MOVE UP AFTER TAKEOFF .....</b>	<b>refer to NAP-22</b>
<b>NOSE LANDING GEAR UP DOOR OPEN .....</b>	<b>refer to NAP-30</b>
<b>PARTIAL OR GEAR UP LANDING .....</b>	<b>refer to NAP-32</b>

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# EMERGENCY/ABNORMAL PROCEDURES

## Landing Gear & Brakes

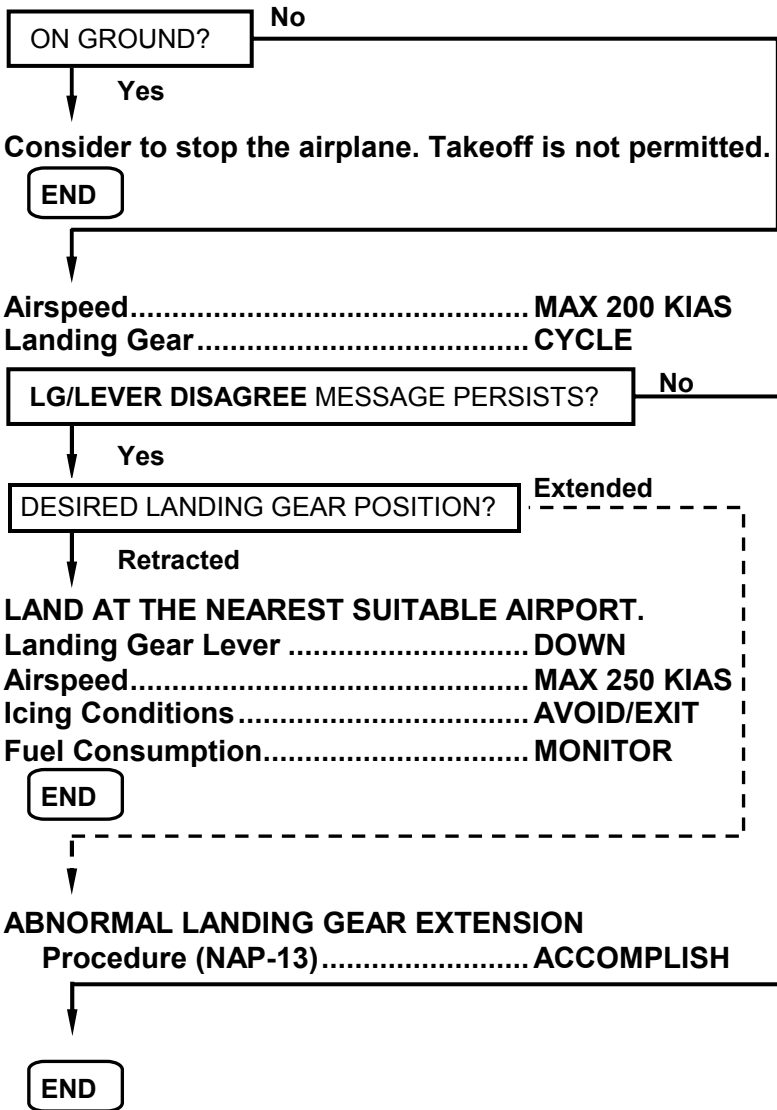
### LIST OF EICAS MESSAGES

<b>LG/LEVER DISAGREE .....</b>	<b>EAP 12-3</b>
BRAKE OVERHEAT .....	EAP 12-4
BRAKE DEGRADED.....	EAP 12-5
BRK INBD INOP .....	EAP 12-5
BRK OUTBD INOP .....	EAP 12-5
EMRG BRK LO PRES .....	EAP 12-5
LG AIR/GND FAIL.....	EAP 12-6
STEER INOP .....	EAP 12-7

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**LANDING GEAR/LEVER DISAGREE**

**EICAS Warning:** LG/LEVER DISAGREE  
**EICAS Caution:** NLG UP/DOOR OPN may be displayed.  
**EICAS Indication:** Landing gear abnormal indication.  
**Condition:** Landing gear cannot move to desired position.



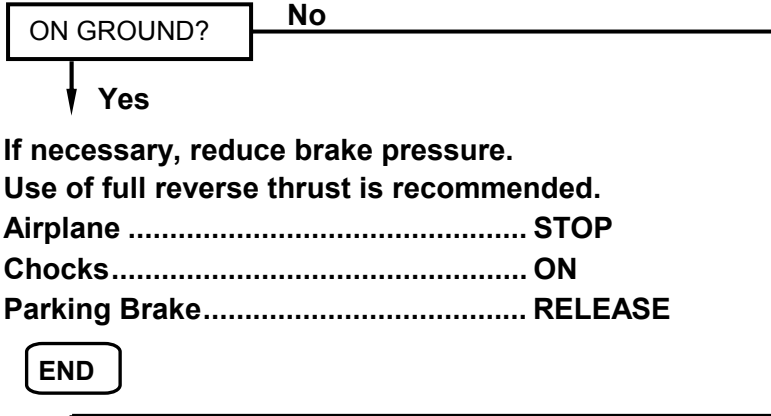
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# EMERGENCY/ABNORMAL PROCEDURES

## Landing Gear & Brakes

### BRAKE OVERHEAT

EICAS Caution: BRAKE OVERHEAT



Airspeed ..... MAX 250 KIAS  
Landing Gear Lever ..... DOWN  
Brakes Temperature ..... CHECK IN THE GREEN RANGE

If MFD is not available, retract gear after message is removed.

Airspeed ..... MAX 200 KIAS  
Landing Gear Lever ..... UP  
Thrust Rating ..... AS REQUIRED

END

# EMERGENCY/ABNORMAL PROCEDURES

## Landing Gear & Brakes

### BRAKES DEGRADED

**EICAS Caution:** BRAKE DEGRADED

Brake effectiveness and symmetry may be affected.

**CAUTION:** MULTIPLY THE FLAPS 45° UNFACTORED LANDING DISTANCE BY 1.24.

**During landing run:**

**Brakes** ..... **APPLY NORMALLY**  
Use thrust reverser if available.

END

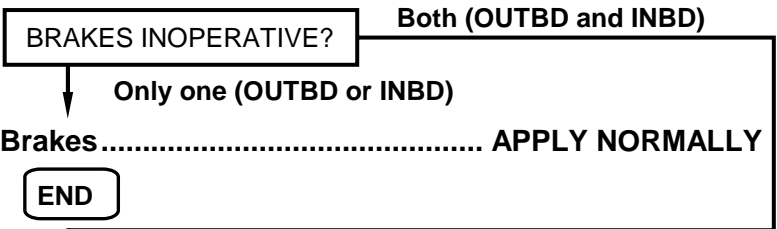
### BRAKES INOPERATIVE

**EICAS Caution:** BRK OUTBD (INBD) INOP

**CAUTION:** MULTIPLY THE FLAPS 45° UNFACTORED LANDING DISTANCE BY 1.45.

**During landing run:**

If available, use thrust reverser.



**Emergency Brake Handle** ..... **PULL CAREFULLY**  
**Relevant Inoperative Item:** Anti-skid

END

### EMERGENCY/PARKING BRAKE LOW PRESSURE

**EICAS Caution:** EMRG BRK LO PRES

**Emergency/Parking Brake performance may be degraded.**

**When parking the airplane, use wheel chocks.**

END

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QRH-145/1115

# EMERGENCY/ABNORMAL PROCEDURES

## Landing Gear & Brakes

### LANDING GEAR AIR/GROUND SYSTEM FAILURE

**EICAS Caution:** LG AIR/GND FAIL

- NOTE:** - Thrust Reversers, Steering and Ground Spoiler may not be available.
- Depending on the failed condition, Ground Idle may not be selectable.
  - If the message is presented on ground, a loss of the main brake capacity may occur (below 10 kt ground speed) and steering may not be available.
  - Refer to the associated procedures for each case.

ICING CONDITIONS?

No

Yes

**Anti-Icing System..... MONITOR**

If any anti-ice valve does not open or anti-ice failure messages appear, exit and avoid icing conditions.

**After exiting icing conditions, proceed as follows:**

**Maximum Bank Angle..... 30°**

**Minimum Airspeed for  
Flaps up or 9° ..... 190 KIAS**

**Landing Configuration:**

**Flaps ..... 22°**

**Airspeed.....  $V_{REF 45} + 30$  KIAS**

**CAUTION:** MULTIPLY THE FLAPS 45° UNFACTORED LANDING DISTANCE BY 2.40.

END

**Icing Conditions..... EXIT/AVOID**

**Landing Configuration:**

**Flaps ..... 45°**

**Airspeed.....  $V_{REF 45}$**

**CAUTION:** MULTIPLY THE FLAPS 45° UNFACTORED LANDING DISTANCE BY 1.70.

END

# EMERGENCY/ABNORMAL PROCEDURES

Landing Gear & Brakes

## STEERING SYSTEM INOPERATIVE OR UNCOMMANDED SWERVING ON GROUND

**EICAS Caution:** STEER INOP may be displayed.

**Steering Handwheel..... DO NOT USE**  
**Steering Disengagement Button..... PRESS**

Control the airplane using differential brakes and rudder.

Consider the use of differential thrust if serviceable.

END

# **EMERGENCY/ABNORMAL PROCEDURES**

## **Landing Gear & Brakes**

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# EMERGENCY/ABNORMAL PROCEDURES

Oxygen

## TABLE OF CONTENTS

### ANNUNCIATED PROCEDURES

CREW OXYGEN LOW PRESSURE ..... EAP 13-3

OXYGEN LOW PRESSURE ..... EAP 13-3

PASSENGER OXYGEN LOW PRESSURE ..... EAP 13-3

### NON ANNUNCIATED PROCEDURES

OXYGEN LEAKAGE ..... refer to NAP-31

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# **EMERGENCY/ABNORMAL PROCEDURES**

Oxygen

## **LIST OF EICAS MESSAGES**

CREW OXYGEN LO PRESS.....	EAP 13-3
OXYGEN LO PRESS.....	EAP 13-3
PAX OXYGEN LO PRESS .....	EAP 13-3

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# EMERGENCY/ABNORMAL PROCEDURES

Oxygen

## (CREW/PASSENGER) OXYGEN LOW PRESSURE

**EICAS Caution:** OXYGEN LO PRESS  
CREW (PAX) OXYGEN LO PRESS

**MFD Indication:** Oxygen pressure red or amber.

**Altitude** ..... **MEA OR 10'000 FT,  
WHICHEVER IS  
HIGHER**

**END**

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# **EMERGENCY/ABNORMAL PROCEDURES**

Oxygen

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**ANNUNCIATED PROCEDURES**

<b>STALL PROTECTION INOPERATIVE .....</b>	<b>EAP 14-3</b>
<b>STICK PUSHER FAILURE .....</b>	<b>EAP 14-4</b>
<b>TAKEOFF CONFIGURATION WARNING .....</b>	<b>EAP 14-4</b>
<b>ADVANCED STALL PROTECTION .....</b>	<b>EAP 14-5</b>
<b>AURAL WARNING FAIL .....</b>	<b>EAP 14-6</b>
<b>GPWS INOPERATIVE .....</b>	<b>EAP 14-6</b>
<b>WINDSHEAR DETECTION INOPERATIVE .....</b>	<b>EAP 14-6</b>

**NON ANNUNCIATED PROCEDURES**

<b>AIRPLANE OVERSPEED</b>	<b>refer to NAP-4</b>
<b>ERRONEOUS STALL PROTECTION ACTUATION</b>	<b>refer to NAP-22</b>

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# **EMERGENCY/ABNORMAL PROCEDURES**

## **Warning System**

### **LIST OF EICAS MESSAGES**

<b>SPS 1 (2) INOP .....</b>	<b>EAP 14-3</b>
<b>SPS 1-2 INOP .....</b>	<b>EAP 14-4</b>
<b>NO TAKEOFF CONFIG .....</b>	<b>EAP 14-4</b>
<b>AURAL WARN FAIL .....</b>	<b>EAP 14-6</b>
<b>GPWS INOP .....</b>	<b>EAP 14-6</b>
<b>SPS ADVANCED .....</b>	<b>EAP 14-5</b>
<b>STICK PUSHER FAIL .....</b>	<b>EAP 14-4</b>
<b>TERR INOP .....</b>	<b>EAP 14-6</b>
<b>WINDSHEAR INOP .....</b>	<b>EAP 14-6</b>

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**STALL PROTECTION INOPERATIVE**

**EICAS Warning:** SPS 1 (2) INOP  
**EICAS Caution:** SPS ADVANCED

**Affected Stall Protection**

**Cutout Button ..... PUSH OUT**

The following messages will be displayed:

EICAS Warning: SPS 1 (2) INOP  
EICAS Caution: STICK PUSHER FAIL

**Minimum Airspeed ..... FLAP  
MANEUVERING  
SPEED (PD-2)**

**Avoid skidding the airplane.**

**Add 5 KIAS to approach and go-around speeds.**

**Landing configuration:**

**Landing Gear ..... DOWN  
Flaps ..... 45°  
Airspeed ..... V<sub>REF 45</sub> + 5 KIAS**

**NOTE:** - The remaining stick shaker is available.  
- Stick pusher is not available.

**CAUTION:** MULTIPLY THE FLAPS 45° UNFACTORED LANDING DISTANCE BY 1.10.

**END**

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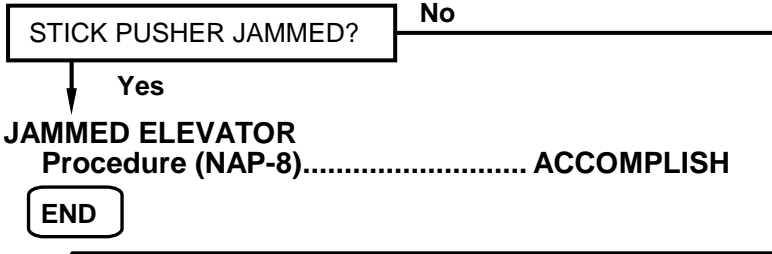
# EMERGENCY/ABNORMAL PROCEDURES

## Warning System

### STICK PUSHER FAILURE

EICAS Warning: SPS 1-2 INOP  
EICAS Caution: STICK PUSHER FAIL

Stall ..... RECOVER  
Minimum Airspeed ..... FLAP  
MANEUVERING  
SPEED (PD-2)



Both stick shaker 1 and 2 are still available.  
Add 5 KIAS to  $V_{REF}$ , approach and approach-climb speeds.

**CAUTION:** MULTIPLY THE FLAPS 45° UNFACTORED LANDING DISTANCE BY 1.15.

END

### TAKEOFF CONFIGURATION WARNING

EICAS Warning: NO TAKEOFF CONFIG  
Aural Warning: Voice Messages TAKEOFF-BRAKES, TAKEOFF-FLAPS, TAKEOFF-TRIM, TAKEOFF-SPOILERS  
EICAS Indication: Spoiler and pitch trim may be red.

Do not take off.  
Airplane Configuration ..... CORRECT  
TO Config Button ..... PRESS

END

# EMERGENCY/ABNORMAL PROCEDURES

Warning System

## ADVANCED STALL PROTECTION

EICAS Caution: SPS ADVANCED

Above 25'000 ft:

Minimum Airspeed..... 150 KIAS

Below 25'000 ft:

Minimum Airspeed..... FLAP  
MANEUVERING  
SPEED (PD-2)

Add 5 KIAS to approach and go-around speeds.

Landing configuration:

Landing Gear ..... DOWN

Flaps..... 45°

Airspeed.....  $V_{REF45} + 5$  KIAS

**CAUTION:** MULTIPLY THE FLAPS 45° UNFACTORED  
LANDING DISTANCE BY 1.10.

END

# EMERGENCY/ABNORMAL PROCEDURES

## Warning System

### AURAL WARNING FAIL

**EICAS Caution:** AURAL WARN FAIL

Visually monitor every EICAS, MFD and PFD indication specially related to TCAS, Windshear Detection, GPWS, IC-600, Fire Detection, Stall Protection, Trims, Flaps, Brakes, Spoilers, Radio Altimeter, Autopilot, Landing gear, ADC, Pressurization, SELCAL. No aural warning will be available.

Do not perform CAT II or CAT III approaches.

END

### GPWS INOPERATIVE

**EICAS Caution:** GPWS INOP or  
GPWS INOP and TERR INOP (for  
EGPWS)

Monitor visually any trend toward terrain contact, excessive sink rate, marginal flight path and airplane configuration. No aural warning related to the system will be available.

END

### WINDSHEAR DETECTION INOPERATIVE

**EICAS Caution:** WINDSHEAR INOP

Windshear detection is not available.

END

# PERFORMANCE DATA

ALL ENGINES

WIND COMPONENT TABLE																							
ANGLE BETWEEN WIND DIRECTION AND HEADING (LEFT OR RIGHT)																							
HEADWIND COMPONENT (kt)										TAILWIND COMPONENT (kt)													
10	20	30	40	50	60	70	80	100	110	120	130	140	150	160	170	10	20	30	40	50	60	70	80
5	5	4	4	3	3	2	1	-1	-2	-3	-3	-4	-4	-5	-5	1	2	3	3	4	4	5	5
10	10	9	8	6	5	3	2	-2	-3	-5	-6	-8	-9	-9	-10	2	3	5	6	8	9	9	10
15	15	14	13	11	10	8	5	-3	-5	-8	-10	-11	-13	-14	-15	3	5	8	10	11	13	14	15
20	20	19	17	15	13	10	7	-3	-7	-10	-13	-15	-17	-19	-20	3	7	10	13	15	17	19	20
25	25	23	22	19	16	13	9	-4	-9	-13	-16	-19	-22	-23	-25	4	9	13	16	19	22	23	25
30	30	28	26	23	19	15	10	-5	-10	-15	-19	-23	-26	-28	-30	5	10	15	19	23	26	28	30
35	34	33	30	27	22	18	12	-6	-12	-18	-22	-27	-30	-33	-34	6	12	18	22	27	30	33	34
40	39	38	35	31	26	20	14	-7	-14	-20	-26	-31	-35	-38	-39	7	14	20	26	31	35	38	39
45	44	42	39	34	29	23	15	-8	-15	-23	-29	-34	-39	-42	-44	8	15	23	29	34	39	42	44
50	49	47	43	38	32	25	17	-9	-17	-25	-32	-38	-43	-47	-49	9	17	25	32	38	43	47	49

Example: Given Wind Speed=20 kt and Angle (between wind and nose)= 30°, the Headwind Component is 17 kt and the Crosswind component is 10 kt. Shaded areas are not allowed for CAT II operations.

REFERENCE CROSSWIND VALUES					
Ice	-	Standing Water/ Slush/ Dry Snow	Compacted Snow	Dry/ Wet	Surface Condition
Poor	Medium	-	Good	-	Brake Action
<0.20	0.30	-	0.40	-	Friction Coefficient
10 kt	17 kt	20 kt	25 kt	30 kt	Reference Crosswind

# PERFORMANCE DATA

ALL ENGINES

PITCH TRIM UNITS						
EMB-145	CG POSITION (%)	LESS THAN OR EQUAL TO 27.5	27.6 UP TO 32.5	32.6 UP TO 36.5	36.6 UP TO 41.5	ABOVE OR EQUAL TO 41.6
		PITCH TRIM UNITS	8	7	6	5

FLAP RETRACTION SCHEDULE		
ALL ENGINES	<i>For a flaps 9° takeoff:</i> Flaps 9° to UP	V <sub>2</sub> + 15 KIAS
A1P and A1/3 ENGINES	<i>For a flaps 18° takeoff:</i> Flaps 18° to 9° Flaps 9° to UP	V <sub>2</sub> + 10 KIAS V <sub>2</sub> + 30 KIAS
A, A1, A1/1 ENGINES	<i>For a flaps 22° takeoff:</i> Flaps 22° to 9° Flaps 9° to UP	V <sub>2</sub> + 5 KIAS V <sub>2</sub> + 25 KIAS
A1P ENGINES	<i>For a flaps 22° takeoff:</i> Flaps 22° to 9° Flaps 9° to UP	V <sub>2</sub> + 10 KIAS V <sub>2</sub> + 30 KIAS
FLAP MANEUVERING SPEED		
GEAR-FLAP	No Icing Conditions	Icing Conditions
UP-0°	180 KIAS	200 KIAS
UP/DN-9°	160 KIAS	160 KIAS
UP/DN-18°/22°	140 KIAS	150 KIAS
DN-45°	140 KIAS	140 KIAS

# PERFORMANCE DATA

## AE3007A1 ENGINES

<b>UNRELIABLE AIRSPEED TABLES (CLB Thrust Mode)</b>							
<b>Airplane: EMB-145 – Engine: AE3007A1 &amp; A1P – Anti-Ice: OFF</b>							
PRESSURE ALTITUDE (ft)		WEIGHT (lb)					
		30000	35000	40000	45000	50000	55000
0 (240 KIAS)	Pitch (deg) V/S (ft/min)	13 4800	12 4000	11 3400	10 2900	10 2500	9 2200
10000 (240 KIAS)	Pitch (deg) V/S (ft/min)	10 3800	9 3100	8 2700	8 2200	8 1900	7 1600
20000 (0.56 M)	Pitch (deg) V/S (ft/min)	7 3500	6 2800	6 2300	5 1800	5 1500	5 1200
30000 (0.56 M)	Pitch (deg) V/S (ft/min)	7 2700	7 2000	7 1600	8 1200	7 900	7 600
37000 (0.56 M)	Pitch (deg) V/S (ft/min)	7 1800	7 1300	8 900	8 400	8 100	-

<b>UNRELIABLE AIRSPEED TABLES (Cruise)</b>							
<b>Airplane: EMB-145 – Engine: AE3007A1 &amp; A1P – Anti-Ice: OFF</b>							
PRESSURE ALTITUDE (ft)		WEIGHT (lb)					
		30000	35000	40000	45000	50000	55000
15000 (250 KIAS)	Pitch (deg) N1 (%)	1 68.7	1 69.9	2 71.1	2 72.4	2 73.8	3 75.3
20000 (250 KIAS)	Pitch (deg) N1 (%)	1 72.0	1 73.3	2 74.8	2 76.4	2 78.0	3 79.6
25000 (250 KIAS)	Pitch (deg) N1 (%)	1 76.1	1 77.6	2 79.3	2 80.7	2 81.9	3 83.1
30000 (0.63 M)	Pitch (deg) N1 (%)	1 78.5	1 80.0	2 81.2	2 82.5	2 84.0	3 85.5
37000 (0.63 M)	Pitch (deg) N1 (%)	2 79.8	2 81.7	2 83.8	3 86.4	3 89.8	4 92.8

<b>UNRELIABLE AIRSPEED TABLES (Flight Idle Descent)</b>							
<b>Airplane: EMB-145 – Engine: AE3007A1 &amp; A1P – Anti-Ice: OFF</b>							
PRESSURE ALTITUDE (ft)		WEIGHT (lb)					
		30000	35000	40000	45000	50000	55000
0 (240 KIAS)	Pitch (deg) V/S (ft/min)	-3 -1800	-2 -1700	-2 -1600	-1 -1500	-1 -1500	0 -1500
10000 (240 KIAS)	Pitch (deg) V/S (ft/min)	-3 -2000	-2 -1900	-2 -1800	-1 -1800	0 -1700	0 -1700
20000 (240 KIAS)	Pitch (deg) V/S (ft/min)	-2 -2200	-2 -2100	-1 -2000	-1 -1900	0 -1900	0 -1900
30000 (240 KIAS)	Pitch (deg) V/S (ft/min)	-2 -2500	-2 -2400	-1 -2200	0 -2100	0 -2100	1 -2000
37000 (240 KIAS)	Pitch (deg) V/S (ft/min)	-1 -2400	-1 -2200	0 -2100	0 -2100	1 -2000	1 -2000

<b>UNRELIABLE AIRSPEED TABLES (Holding)</b>							
<b>Airplane: EMB-145 – Engine: AE3007A1 &amp; A1P – Anti-Ice: OFF</b>							
PRESSURE ALTITUDE (ft)		WEIGHT (lb)					
		30000	35000	40000	45000	50000	55000
5000 (200 KIAS)	Pitch (deg) N1 (%)	3 54.0	3 55.9	4 57.8	5 59.9	5 62.2	6 64.4
10000 (200 KIAS)	Pitch (deg) N1 (%)	3 57.5	3 59.5	4 61.8	5 63.9	5 66.2	6 68.4

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# PERFORMANCE DATA

AE3007A1 ENGINES

## UNRELIABLE AIRSPEED TABLES (Terminal Area)

Terminal Area (5000 ft) - %N1 for Level Flight

Airplane: EMB-145 – Engine: AE3007A1 & A1P – Anti-Ice: OFF

FLAP POSITION (V <sub>REF</sub> + INCREMENT)		WEIGHT (lb)			
		30000	35000	40000	45000
0 (V <sub>REF45</sub> + 30)	Pitch (deg)	7	7	7	8
	N1 (%)	48.9	52.5	55.7	58.8
9 (V <sub>REF45</sub> + 15)	Pitch (deg)	7	7	7	8
	N1 (%)	51.6	55.3	58.6	61.7

## UNRELIABLE AIRSPEED TABLES (Final Approach)

Final Approach (1500 ft) - %N1 for 3° Glideslope

Airplane: EMB-145 – Engine: AE3007A1 & A1P – Anti-Ice: OFF

FLAP POSITION (V <sub>REF</sub> + INCREMENT)		WEIGHT (lb)			
		30000	35000	40000	45000
22 (V <sub>REF22</sub> + 10)	Pitch (deg)	3	3	3	3
	N1 (%)	47.7	51.1	53.9	56.6
45 (V <sub>REF45</sub> + 10)	Pitch (deg)	-1	0	0	0
	N1 (%)	58.6	62.4	65.7	68.6

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# PERFORMANCE DATA

## AE3007A1 ENGINES

<b>UNRELIABLE AIRSPEED TABLES (CLB Thrust Mode)</b>							
<b>Airplane: EMB-145 – Engine: AE3007A1 &amp; A1P – Anti-Ice: ON</b>							
PRESSURE ALTITUDE (ft)		WEIGHT (lb)					
		30000	35000	40000	45000	50000	55000
0 (240 KIAS)	Pitch (deg)	13	11	10	10	9	9
	V/S (ft/min)	4700	3900	3400	2900	2500	2200
10000 (240 KIAS)	Pitch (deg)	8	8	7	7	7	6
	V/S (ft/min)	3500	2800	2400	1900	1600	1400
20000 (0.56 M)	Pitch (deg)	6	5	5	5	5	5
	V/S (ft/min)	3000	2300	1900	1500	1200	900
30000 (0.56 M)	Pitch (deg)	6	6	6	6	6	6
	V/S (ft/min)	2000	1400	1100	700	400	200
37000 (0.56 M)	Pitch (deg)	6	6	7	7	-	-
	V/S (ft/min)	1200	700	400	0		

<b>UNRELIABLE AIRSPEED TABLES (Cruise)</b>							
<b>Airplane: EMB-145 – Engine: AE3007A1 &amp; A1P – Anti-Ice: ON</b>							
PRESSURE ALTITUDE (ft)		WEIGHT (lb)					
		30000	35000	40000	45000	50000	55000
15000 (250 KIAS)	Pitch (deg)	1	1	2	2	2	3
	N1 (%)	68.7	69.9	71.1	72.4	73.8	75.3
20000 (250 KIAS)	Pitch (deg)	1	1	2	2	2	3
	N1 (%)	72.0	73.4	74.8	76.4	78.0	79.6
25000 (250 KIAS)	Pitch (deg)	1	1	2	2	2	3
	N1 (%)	76.1	77.6	79.3	80.7	81.9	83.1
30000 (0.63 M)	Pitch (deg)	1	1	2	2	2	3
	N1 (%)	78.5	79.9	81.2	82.5	84.0	85.5
37000 (0.63 M)	Pitch (deg)	2	2	2	3	3	4
	N1 (%)	79.8	81.7	83.8	86.4	89.8	92.8

<b>UNRELIABLE AIRSPEED TABLES (Flight Idle Descent)</b>							
<b>Airplane: EMB-145 – Engine: AE3007A1 &amp; A1P – Anti-Ice: ON</b>							
PRESSURE ALTITUDE (ft)		WEIGHT (lb)					
		30000	35000	40000	45000	50000	55000
0 (240 KIAS)	Pitch (deg)	-1	0	0	0	1	1
	V/S (ft/min)	-900	-900	-900	-900	-900	-1000
10000 (240 KIAS)	Pitch (deg)	-1	0	0	0	1	1
	V/S (ft/min)	-1200	-1200	-1200	-1200	-1200	-1200
20000 (240 KIAS)	Pitch (deg)	-1	0	0	0	1	1
	V/S (ft/min)	-1300	-1300	-1300	-1300	-1300	-1400
30000 (240 KIAS)	Pitch (deg)	0	0	0	1	1	2
	V/S (ft/min)	-1400	-1400	-1400	-1400	-1400	-1400
37000 (240 KIAS)	Pitch (deg)	0	0	0	1	1	2
	V/S (ft/min)	-1700	-1600	-1600	-1500	-1500	-1500

<b>UNRELIABLE AIRSPEED TABLES (Holding)</b>							
<b>Airplane: EMB-145 – Engine: AE3007A1 &amp; A1P – Anti-Ice: ON</b>							
PRESSURE ALTITUDE (ft)		WEIGHT (lb)					
		30000	35000	40000	45000	50000	55000
5000 (200 KIAS)	Pitch (deg)	3	3	4	5	5	6
	N1 (%)	54.0	55.9	57.8	59.9	62.2	65.7
10000 (200 KIAS)	Pitch (deg)	3	3	4	5	5	6
	N1 (%)	57.5	59.5	61.8	65.7	66.2	69.7

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# PERFORMANCE DATA

AE3007A1 ENGINES

## UNRELIABLE AIRSPEED TABLES (Terminal Area)

Terminal Area (5000 ft) - %N1 for Level Flight

Airplane: EMB-145 – Engine: AE3007A1 & A1P – Anti-Ice: ON

FLAP POSITION ( $V_{REF} + INCREMENT$ )		WEIGHT (lb)			
		30000	35000	40000	45000
0 ( $V_{REF45} + 30$ )	Pitch (deg)	7	7	7	8
	N1 (%)	48.9	52.5	55.7	61.3
9 ( $V_{REF45} + 15$ )	Pitch (deg)	7	7	7	8
	N1 (%)	52.3	55.3	58.6	64.3

## UNRELIABLE AIRSPEED TABLES (Final Approach)

Final Approach (1500 ft) - %N1 for 3° Glideslope

Airplane: EMB-145 – Engine: AE3007A1 & A1P – Anti-Ice: ON

FLAP POSITION ( $V_{REF} + INCREMENT$ )		WEIGHT (lb)			
		30000	35000	40000	45000
22 ( $V_{REF22} + 10$ )	Pitch (deg)	3	3	3	3
	N1 (%)	48.9	52.5	55.7	61.3
45 ( $V_{REF45} + 10$ )	Pitch (deg)	-1	0	0	0
	N1 (%)	58.6	62.4	65.7	70.9

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# PERFORMANCE DATA

AE3007A1 ENGINES

TAKEOFF SPEEDS (Balanced Field Length)				
V1/VR/V2 SPEEDS T/O-1 MODE - NORMAL V <sub>2</sub> - FLAPS 9°				
PRESSURE ALTITUDE (ft)	STATIC AIR TEMPERATURE (°C)			
SL →	-40 to 44	45 to 49	50 to 50	-
1000 →	-40 to 41	42 to 47	48 to 48	-
2000 →	-40 to 37	38 to 43	44 to 46	-
3000 →	-40 to 33	34 to 40	41 to 44	-
4000 →	-40 to 29	30 to 36	37 to 41	42 to 42
5000 →	-40 to 24	25 to 31	32 to 37	38 to 40
6000 →	-40 to 15	16 to 26	27 to 33	34 to 38
7000 →	-	-40 to 22	23 to 28	29 to 36
8000 →	-	-40 to 18	19 to 23	24 to 34
8500 →	-	-	-40 to 20	21 to 33
	↓	↓	↓	↓
WEIGHT (lb)	V1	VR	V2	V1 VR V2
28000	102	106	122	98 101 117
29000	102	105	122	97 100 114
30000	102	105	121	98 102 116
31000	101	105	121	99 102 117
32000	101	105	120	101 103 117
33000	103	106	121	102 104 117
34000	105	107	122	104 106 119
35000	107	109	123	107 108 121
36000	109	111	124	109 110 122
37000	111	113	126	112 113 124
38000	114	115	128	114 115 126
39000	116	117	129	116 117 128
40000	118	119	131	118 119 129
41000	121	121	132	120 120 131
42000	123	123	134	122 122 132
43000	125	125	135	122 123 132
44000	127	127	137	122 123 132
45000	128	128	138	124 124 134
46000	130	130	140	124 124 134
47000	132	132	141	126 126 136
48000	134	134	143	126 126 136
49000	135	135	144	127 127 136
50000	137	137	146	128 128 137
				128 128 137
				129 129 137
				129 129 137
				130 130 139
				131 131 139
				132 132 140
				133 133 140
				133 133 141
				134 134 142
				135 135 143
				135 135 143
				136 136 143
				137 137 144
				138 138 144
				139 139 146

FINAL SEGMENT SPEED (V <sub>FS</sub> )			
WEIGHT (lb)	V <sub>FS</sub> (KIAS)	WEIGHT (lb)	V <sub>FS</sub> (KIAS)
26000	132	39000	160
27000	134	40000	162
28000	136	41000	164
29000	139	42000	165
30000	141	43000	167
31000	142	44000	169
32000	145	45000	171
33000	147	46000	172
34000	150	47000	173
35000	152	48000	175
36000	154	49000	177
37000	156	50000	179
38000	158		

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# PERFORMANCE DATA

AE3007A1 ENGINES

<b>TAKEOFF SPEEDS (Balanced Field Length)</b>				
<b>V1/VR/V2 SPEEDS</b>				
<b>T/O-1 MODE - NORMAL V<sub>2</sub> - FLAPS 22°</b>				
<b>PRESSURE ALTITUDE (ft)</b>	<b>STATIC AIR TEMPERATURE (°C)</b>			
SL →	-40 to 42	43 to 47	48 to 50	-
1000 →	-40 to 42	43 to 45	46 to 48	-
2000 →	-40 to 38	39 to 42	43 to 46	-
3000 →	-40 to 34	35 to 38	39 to 44	-
4000 →	-	-40 to 34	35 to 41	42 to 42
5000 →	-	-40 to 29	30 to 37	38 to 40
6000 →	-	-40 to 24	25 to 32	33 to 38
7000 →	-	-40 to 20	21 to 27	28 to 36
8000 →	-	-	-40 to 23	24 to 34
8500 →	-	-	-40 to 20	21 to 33
	↓	↓	↓	↓
<b>WEIGHT (lb)</b>	<b>V1 VR V2</b>	<b>V1 VR V2</b>	<b>V1 VR V2</b>	<b>V1 VR V2</b>
28000	95 109 119	93 106 115	91 102 111	89 98 106
29000	95 108 118	93 106 115	91 102 111	90 99 107
30000	95 108 117	94 105 115	92 102 110	90 99 107
31000	96 108 117	94 105 114	93 102 110	92 100 107
32000	96 108 116	95 105 114	93 102 110	94 100 108
33000	97 107 116	96 105 113	95 103 110	96 102 109
34000	98 107 116	97 105 113	97 104 111	99 103 110
35000	99 107 116	98 105 114	98 105 112	102 105 111
36000	100 107 116	100 106 114	100 106 113	104 106 113
37000	101 108 116	101 107 115	103 107 114	107 108 114
38000	102 109 117	103 108 116	106 108 116	109 109 116
39000	104 110 118	105 110 117	108 110 117	111 111 117
40000	106 111 118	108 111 118	110 112 118	112 112 118
41000	108 112 120	110 113 120	112 113 120	114 114 120
42000	111 114 121	113 114 121	114 115 121	115 115 121
43000	114 115 122	115 115 122	116 116 122	117 117 122
44000	116 116 123	117 117 123	117 117 123	118 118 123
45000	117 118 124	118 118 124	119 119 124	119 119 124
46000	119 119 125	119 119 125	120 120 125	121 121 125
47000	120 120 126	121 121 126	121 121 126	122 122 126
48000	122 122 127	122 122 127	123 123 127	123 123 127
49000	123 123 128	123 123 128	124 124 128	124 124 128
50000	124 124 130	125 125 130	125 125 130	126 126 130

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# PERFORMANCE DATA

AE3007A1 ENGINES

<b>TAKEOFF SPEEDS (Balanced Field Length)</b>				
<b>V1/VR/V2 SPEEDS</b>				
<b>ALT T/O-1 MODE - NORMAL V<sub>2</sub> - FLAPS 9°</b>				
<b>PRESSURE ALTITUDE (ft)</b>	<b>STATIC AIR TEMPERATURE (°C)</b>			
SL →	-40 to 43	44 to 48	49 to 50	-
1000 →	-40 to 43	44 to 45	46 to 48	-
2000 →	-40 to 40	41 to 42	43 to 46	-
3000 →	-40 to 36	37 to 38	39 to 44	-
4000 →	-40 to 31	32 to 33	34 to 40	41 to 42
5000 →	-40 to 27	28 to 29	30 to 36	37 to 40
6000 →	-	-40 to 25	26 to 31	32 to 38
7000 →	-	-	-40 to 27	28 to 36
8000 →	-	-	-40 to 23	24 to 34
8500 →	-	-	-40 to 19	20 to 33
	↓	↓	↓	↓
<b>WEIGHT (lb)</b>	<b>V1 VR V2</b>	<b>V1 VR V2</b>	<b>V1 VR V2</b>	<b>V1 VR V2</b>
28000	101 105 122	100 103 120	97 100 116	94 97 111
29000	101 105 121	100 103 119	97 100 116	96 98 112
30000	101 104 120	100 103 119	97 101 115	98 100 113
31000	101 104 120	100 103 118	99 102 116	100 102 115
32000	101 104 119	100 103 118	101 103 117	103 104 117
33000	103 106 121	103 105 119	104 105 119	105 107 119
34000	105 107 122	105 107 121	106 108 121	108 109 121
35000	107 109 123	108 109 123	109 110 122	110 111 122
36000	109 111 124	110 111 124	111 112 124	112 113 124
37000	112 113 126	112 113 126	113 114 126	115 115 126
38000	114 115 127	115 115 128	116 116 128	117 117 128
39000	116 117 129	117 117 129	118 118 129	119 119 129
40000	118 119 131	119 119 131	120 120 131	121 121 131
41000	121 121 132	121 121 132	122 122 132	123 123 132
42000	123 123 134	123 123 134	124 124 134	125 125 134
43000	124 125 135	125 125 135	126 126 136	127 127 136
44000	126 126 137	127 127 137	128 128 137	129 129 137
45000	128 128 138	129 129 139	129 129 139	130 130 139
46000	130 130 140	130 130 140	131 131 140	132 132 140
47000	132 132 141	132 132 141	133 133 141	134 134 142
48000	133 133 143	134 134 143	135 135 143	135 135 143
49000	135 135 144	135 135 144	136 136 144	137 137 144
50000	137 137 146	138 138 146	138 138 146	139 139 146

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# PERFORMANCE DATA

AE3007A1 ENGINES

**APPROACH CLIMB SPEED ( $V_{APPCLB}$ ),  
LANDING CLIMB &  
REFERENCE SPEEDS ( $V_{REF}$ ) and  
FINAL SEGMENT SPEED ( $V_{FS}$ )**

WEIGHT (lb)	Approach Climb Speed (KIAS)	Landing Climb & Reference Speeds (KIAS)		$V_{FS}$ (KIAS)
	Flaps 9°	Flaps 45°	Flaps 22°	
27000	125	104	109	134
28000	128	106	111	136
29000	130	108	113	139
30000	132	109	114	141
31000	134	111	116	142
32000	136	113	118	145
33000	138	115	120	147
34000	140	117	121	150
35000	142	118	123	152
36000	144	120	125	154
37000	146	121	127	156
38000	148	123	128	158
39000	150	124	130	160
40000	152	126	131	162
41000	154	127	133	164
42000	156	128	134	165
43000	157	130	136	167
44000	159	131	137	169
45000	161	132	139	171
46000	163	134	140	172
47000	164	135	142	173
48000	166	136	143	175
49000	167	137	144	177
50000	167	137	144	179

**APPROACH SPEED ( $V_{APP}$ )**

$$V_{APP} = V_{REF} + \frac{1}{2} \text{ headwind} + \text{full gust}$$

# PERFORMANCE DATA

AE3007A1 ENGINES

## HOLDING - (All Engines)

CRUISE CONFIGURATION, BLEED OPEN

ANTI-ICE: OFF

MINIMUM FUEL CONSUMPTION SPEED, STANDARD ATMOSPHERE

WEIGHT (lb)			ALTITUDE (ft)								
			0	1500	5000	10000	15000	20000	25000	30000	37000
50000	IAS	kt	180	179	176	173	171	171	174	179	184
	N1	%	57.7	58.8	61.6	65.8	69.7	73.9	78.2	82.4	90.3
	FF	lb/h/En	1104	1090	1061	1032	1016	1013	1014	1027	1078
48000	IAS	kt	178	176	173	170	168	168	170	174	184
	N1	%	56.7	57.8	60.5	64.7	68.7	72.7	77.2	81.3	88.9
	FF	lb/h/En	1067	1052	1023	992	974	968	969	979	1024
46000	IAS	kt	175	174	170	167	165	164	166	170	180
	N1	%	55.6	56.7	59.3	63.6	67.6	71.5	76.2	80.2	87.3
	FF	lb/h/En	1031	1015	985	952	932	924	925	932	971
44000	IAS	kt	173	171	168	164	161	161	162	165	175
	N1	%	54.6	55.6	58.1	62.4	66.4	70.4	74.9	79.0	85.7
	FF	lb/h/En	995	979	947	913	892	881	881	886	919
42000	IAS	kt	170	169	165	161	158	157	158	161	169
	N1	%	53.5	54.5	56.9	61.0	65.2	69.2	73.6	77.9	84.4
	FF	lb/h/En	959	943	910	875	851	839	838	840	867
40000	IAS	kt	168	166	162	158	155	153	154	156	164
	N1	%	52.3	53.3	55.7	59.6	63.9	68.0	72.1	76.6	83.1
	FF	lb/h/En	924	907	874	836	811	797	794	795	817
38000	IAS	kt	166	164	160	155	152	150	150	151	158
	N1	%	51.1	52.1	54.5	58.2	62.6	66.6	70.7	75.4	81.9
	FF	lb/h/En	890	873	838	799	772	756	750	751	768
36000	IAS	kt	163	161	157	152	148	146	145	147	152
	N1	%	49.8	50.8	53.2	56.8	61.2	65.3	69.3	74.0	80.6
	FF	lb/h/En	856	838	802	762	734	716	708	708	720
34000	IAS	kt	161	159	154	149	145	142	141	142	147
	N1	%	48.6	49.5	51.9	55.4	59.5	63.8	67.9	72.4	79.1
	FF	lb/h/En	823	805	767	726	696	676	666	666	674
32000	IAS	kt	158	156	152	146	142	139	137	138	141
	N1	%	47.3	48.2	50.5	53.9	57.8	62.2	66.4	70.6	77.6
	FF	lb/h/En	790	772	733	690	658	637	625	622	628
30000	IAS	kt	156	154	149	143	139	135	133	133	136
	N1	%	46.0	46.8	49.0	52.4	56.2	60.6	64.7	68.9	76.0
	FF	lb/h/En	759	740	700	655	622	599	585	580	584
28000	IAS	kt	154	151	146	140	135	132	129	128	130
	N1	%	44.6	45.4	47.5	50.9	54.5	58.7	63.1	67.2	74.3
	FF	lb/h/En	728	708	668	621	586	561	546	538	540

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# PERFORMANCE DATA

AE3007A1 ENGINES

## HOLDING - (All Engines)

CRUISE CONFIGURATION, BLEED OPEN  
 AIRSPEED: 1.3 V<sub>s</sub> OR 200 KIAS WHICHEVER IS HIGHER  
 ANTI-ICE: ON (NO ICE ACCRETION)  
 STANDARD ATMOSPHERE

WEIGHT (lb)			ALTITUDE (ft)									
			0	1500	5000	10000	15000	20000	25000	30000	37000	
50000	IAS	kt	200	200	200	200	200	200	200	200	200	-
	N1	%	58.3	59.4	62.2	66.2	70.1	73.9	78.2	82.3	-	-
	FF	lb/h/En	1256	1238	1201	1160	1133	1123	1120	1133	-	-
48000	IAS	kt	200	200	200	200	200	200	200	200	200	-
	N1	%	57.5	58.6	61.3	65.3	69.2	73.0	77.3	81.3	-	-
	FF	lb/h/En	1225	1207	1169	1127	1098	1085	1082	1091	-	-
46000	IAS	kt	200	200	200	200	200	200	200	200	200	200
	N1	%	56.7	57.8	60.4	64.4	68.3	72.0	76.4	80.4	87.1	-
	FF	lb/h/En	1196	1177	1139	1095	1064	1049	1046	1051	1093	-
44000	IAS	kt	200	200	200	200	200	200	200	200	200	200
	N1	%	56.0	57.0	59.5	63.5	67.5	71.1	75.5	79.5	85.7	-
	FF	lb/h/En	1167	1148	1109	1064	1032	1014	1011	1013	1049	-
42000	IAS	kt	200	200	200	200	200	200	200	200	200	200
	N1	%	55.3	56.2	58.6	62.6	66.7	70.3	74.5	78.7	84.7	-
	FF	lb/h/En	1140	1121	1081	1035	1001	981	978	978	1007	-
40000	IAS	kt	200	200	200	200	200	200	200	200	200	200
	N1	%	54.4	55.5	57.8	61.7	65.8	69.4	73.5	77.8	83.7	-
	FF	lb/h/En	1114	1094	1054	1007	972	950	944	944	968	-
38000	IAS	kt	200	200	200	200	200	200	200	200	200	200
	N1	%	53.6	54.7	57.0	60.8	64.9	68.6	72.6	76.9	82.9	-
	FF	lb/h/En	1089	1069	1029	980	944	920	911	913	931	-
36000	IAS	kt	200	200	200	200	200	200	200	200	200	200
	N1	%	52.8	53.8	56.2	60.0	64.0	67.8	71.6	76.0	82.0	-
	FF	lb/h/En	1065	1045	1004	955	917	892	881	883	897	-
34000	IAS	kt	200	200	200	200	200	200	200	200	200	200
	N1	%	52.0	53.0	55.5	59.1	63.2	67.0	70.7	75.2	81.2	-
	FF	lb/h/En	1042	1023	981	931	892	865	852	855	865	-
32000	IAS	kt	200	200	200	200	200	200	200	200	200	200
	N1	%	51.3	52.3	54.8	58.3	62.3	66.2	69.9	74.2	80.4	-
	FF	lb/h/En	1021	1001	959	908	869	840	824	824	836	-
30000	IAS	kt	200	200	200	200	200	200	200	200	200	200
	N1	%	50.6	51.5	54.0	57.5	61.6	65.5	69.0	73.2	79.6	-
	FF	lb/h/En	1001	981	938	887	846	816	799	796	808	-
28000	IAS	kt	200	200	200	200	200	200	200	200	200	200
	N1	%	49.9	50.8	53.2	56.8	60.7	64.7	68.2	72.2	78.9	-
	FF	lb/h/En	981	961	919	867	825	794	774	769	783	-

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QRH-145/1115  
CODE 04

# PERFORMANCE DATA

AE3007A1 ENGINES

<b>DRIFTDOWN TABLE</b>							
<b>ANTI-ICE OFF</b>							
WEIGHT (lb)		INITIAL DRIFTDOWN SPEED (KIAS)	GROSS LEVEL OFF ALTITUDE - FT (NET LEVEL OFF ALTITUDE - FT)				
START DRIFTDOWN	LEVEL OFF		ISA + 10 & BELOW	ISA + 15	ISA + 20		
46000	44200	172	20770 (16010)	20640 (15930)	20220 (15690)		
44000	42300	169	22030 (17490)	21880 (17390)	21470 (17180)		
42000	40500	165	23430 (19400)	23050 (19250)	22710 (18760)		
40000	38700	161	24860 (21055)	24520 (20910)	23950 (20410)		
38000	36900	157	26440 (22460)	26170 (22260)	25470 (21950)		
36000	34900	154	28150 (24110)	27520 (23730)	26920 (23250)		
34000	33000	149	29820 (25850)	29220 (25560)	28260 (24890)		
32000	31100	145	31870 (27550)	30784 (27000)	29680 (26410)		
<b>ANTI-ICE ON</b>							
WEIGHT (lb)		INITIAL SPEED (KIAS)	GROSS AND (NET) LEVEL OFF ALTITUDE - FT				
START DRIFTDOWN	LEVEL OFF		ISA - 10 & BELOW	ISA - 5	ISA	ISA + 5	ISA + 10
46000	43600	173	17190 (13220)	17090 (13030)	15980 (12280)	14260 (10670)	12630 (8550)
44000	42000	169	18730 (14620)	18540 (14410)	17480 (13460)	15620 (11890)	13850 (10330)
42000	40100	165	20390 (16150)	20200 (15940)	19200 (14940)	17370 (13260)	15350 (11750)
40000	38200	161	21790 (17840)	21450 (17780)	20600 (16620)	18920 (14830)	16960 (13220)
38000	36300	158	23180 (19780)	22730 (19570)	21840 (18350)	20540 (16590)	18450 (14670)
36000	34400	154	24590 (21390)	24300 (21050)	23150 (20270)	21850 (18450)	20010 (16400)
34000	32600	149	26080 (22990)	25340 (22580)	24420 (21670)	23190 (20370)	21410 (18250)
32000	30700	145	27370 (24460)	26550 (23900)	25660 (23020)	24390 (21700)	22690 (19810)

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CODE 04

# PERFORMANCE DATA

AE3007A1 ENGINES

## UNFACTORED LANDING DISTANCE

UNFACTORED LANDING DISTANCE (FT) – DRY RUNWAY

EMB-145 - FLAPS 45°

ISA CONDITIONS - SLOPE 0%

WEIGHT (lb)	ALTITUDE							
	0 ft				1000 ft			
	WIND				WIND			
	-10 kt	0 kt	10 kt	20 kt	-10 kt	0 kt	10 kt	20 kt
48000	3507	3025	2873	2726	3587	3098	2943	2794
46000	3399	2927	2778	2634	3476	2996	2845	2699
44000	3291	2829	2684	2543	3364	2895	2748	2605
42000	3184	2732	2589	2451	3253	2795	2650	2511
40000	3078	2636	2497	2362	3143	2695	2553	2417
38000	2978	2546	2409	2277	3039	2601	2463	2329
36000	2878	2454	2321	2191	2936	2507	2372	2241
34000	2773	2359	2229	2102	2829	2410	2278	2150
32000	2663	2260	2133	2009	2716	2308	2179	2054
30000	2551	2158	2034	1914	2601	2204	2078	1956
28000	2437	2055	1934	1817	2484	2098	1976	1857

WEIGHT (lb)	ALTITUDE							
	2000 ft				3000 ft			
	WIND				WIND			
	-10 kt	0 kt	10 kt	20 kt	-10 kt	0 kt	10 kt	20 kt
48000	3670	3173	3016	2865	3757	3252	3093	2939
46000	3555	3068	2915	2767	3638	3144	2988	2837
44000	3440	2964	2814	2669	3520	3036	2884	2737
42000	3326	2860	2714	2572	3401	2929	2780	2636
40000	3211	2757	2614	2475	3284	2822	2677	2536
38000	3103	2659	2518	2383	3170	2719	2577	2439
36000	2996	2562	2425	2292	3059	2619	2480	2346
34000	2886	2462	2328	2199	2946	2517	2381	2250
32000	2771	2358	2227	2101	2828	2409	2277	2149
30000	2653	2250	2123	2000	2707	2299	2171	2046
28000	2533	2142	2018	1899	2584	2188	2063	1942

WEIGHT (lb)	ALTITUDE							
	4000 ft				5000 ft			
	WIND				WIND			
	-10 kt	0 kt	10 kt	20 kt	-10 kt	0 kt	10 kt	20 kt
48000	3848	3334	3172	3015	3942	3420	3255	3096
46000	3725	3222	3064	2911	3815	3304	3143	2988
44000	3602	3111	2956	2807	3688	3189	3032	2880
42000	3480	3000	2849	2703	3562	3075	2921	2773
40000	3358	2890	2743	2600	3437	2961	2811	2666
38000	3238	2781	2637	2498	3311	2847	2701	2560
36000	3124	2678	2537	2401	3193	2740	2597	2459
34000	3008	2573	2435	2303	3073	2632	2493	2358
32000	2887	2463	2329	2200	2949	2519	2383	2252
30000	2763	2350	2220	2094	2821	2403	2271	2143
28000	2637	2236	2110	1987	2692	2286	2158	2034

**NOTE:** Landing distance in feet.

# PERFORMANCE DATA

AE3007A1 ENGINES

## UNFACTORED LANDING DISTANCE

UNFACTORED LANDING DISTANCE (FT) – DRY RUNWAY  
 EMB-145 - FLAPS 45°  
 ISA CONDITIONS - SLOPE 0%

WEIGHT (lb)	ALTITUDE							
	6000 ft				7000 ft			
	WIND				WIND			
	-10 kt	0 kt	10 kt	20 kt	-10 kt	0 kt	10 kt	20 kt
48000	4041	3509	3342	3180	4143	3601	3431	3266
46000	3909	3389	3226	3067	4006	3477	3311	3150
44000	3778	3270	3110	2956	3871	3354	3192	3035
42000	3648	3152	2996	2845	3736	3233	3074	2921
40000	3518	3035	2882	2735	3602	3111	2956	2807
38000	3388	2917	2769	2625	3468	2990	2839	2693
36000	3264	2805	2660	2520	3338	2872	2725	2583
34000	3141	2693	2551	2415	3210	2756	2612	2474
32000	3013	2577	2439	2306	3079	2637	2497	2362
30000	2882	2458	2324	2195	2944	2515	2379	2248
28000	2750	2338	2208	2083	2809	2392	2260	2133

WEIGHT (lb)	ALTITUDE							
	8000 ft				8500 ft			
	WIND				WIND			
	-10 kt	0 kt	10 kt	20 kt	-10 kt	0 kt	10 kt	20 kt
46000	4108	3569	3400	3236	4161	3617	3447	3281
44000	3967	3442	3277	3117	4018	3488	3321	3160
42000	3828	3316	3155	2999	3876	3359	3197	3039
40000	3689	3190	3033	2881	3735	3231	3073	2920
38000	3551	3065	2912	2764	3595	3104	2950	2800
36000	3415	2941	2792	2648	3455	2978	2827	2682
34000	3282	2821	2675	2535	3319	2855	2708	2567
32000	3147	2698	2557	2420	3182	2730	2588	2450
30000	3009	2573	2436	2303	3042	2604	2465	2331
28000	2869	2447	2313	2184	2901	2475	2341	2211

**NOTE:** Landing distance in feet.

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# PERFORMANCE DATA

AE3007A1 ENGINES

## UNFACTORED LANDING DISTANCE

UNFACTORED LANDING DISTANCE (FT) – DRY RUNWAY  
 EMB-145 - FLAPS 22°  
 ISA CONDITIONS - SLOPE 0%

WEIGHT (lb)	ALTITUDE							
	0 ft				1000 ft			
	WIND				WIND			
	-10 kt	0 kt	10 kt	20 kt	-10 kt	0 kt	10 kt	20 kt
48000	4613	4011	3821	3636	4724	4112	3919	3731
46000	4445	3858	3673	3493	4551	3955	3766	3583
44000	4281	3709	3529	3353	4381	3800	3617	3438
42000	4123	3566	3390	3218	4218	3652	3473	3298
40000	3964	3421	3249	3081	4053	3502	3327	3158
38000	3810	3281	3114	2951	3895	3358	3188	3022
36000	3660	3145	2982	2823	3740	3217	3052	2890
34000	3507	3005	2846	2692	3581	3073	2912	2755
32000	3356	2869	2714	2563	3427	2932	2776	2623
30000	3212	2737	2587	2440	3278	2798	2645	2497
28000	3067	2606	2459	2317	3129	2662	2514	2369

WEIGHT (lb)	ALTITUDE							
	2000 ft				3000 ft			
	WIND				WIND			
	-10 kt	0 kt	10 kt	20 kt	-10 kt	0 kt	10 kt	20 kt
48000	4841	4218	4022	3830	4963	4329	4129	3934
46000	4661	4055	3863	3677	4776	4159	3965	3775
44000	4485	3895	3708	3527	4594	3994	3804	3620
42000	4316	3741	3559	3382	4419	3835	3650	3470
40000	4145	3586	3409	3236	4242	3674	3494	3319
38000	3982	3437	3265	3097	4073	3520	3346	3175
36000	3822	3292	3124	2961	3908	3370	3200	3034
34000	3659	3143	2980	2821	3740	3217	3052	2891
32000	3499	2998	2840	2685	3576	3068	2907	2750
30000	3346	2859	2705	2555	3418	2925	2768	2616
28000	3193	2720	2570	2424	3260	2781	2629	2481

WEIGHT (lb)	ALTITUDE							
	4000 ft				5000 ft			
	WIND				WIND			
	-10 kt	0 kt	10 kt	20 kt	-10 kt	0 kt	10 kt	20 kt
48000	*****	4445	4241	4043	*****	4567	4359	4158
46000	4897	4269	4071	3878	*****	4384	4182	3986
44000	4707	4097	3904	3716	4827	4205	4009	3818
42000	4526	3932	3744	3562	4639	4034	3844	3658
40000	4343	3766	3583	3406	4450	3863	3677	3496
38000	4169	3607	3429	3256	4269	3698	3518	3342
36000	3998	3452	3279	3111	4092	3538	3362	3191
34000	3824	3294	3126	2962	3913	3374	3204	3038
32000	3655	3140	2976	2818	3738	3215	3050	2889
30000	3492	2992	2834	2679	3570	3063	2902	2746
28000	3330	2844	2690	2540	3402	2910	2754	2602

NOTE: Landing distance in feet.

# PERFORMANCE DATA

AE3007A1 ENGINES

## UNFACTORED LANDING DISTANCE

UNFACTORED LANDING DISTANCE (FT) – DRY RUNWAY  
 EMB-145 - FLAPS 22°  
 ISA CONDITIONS - SLOPE 0%

WEIGHT (lb)	ALTITUDE							
	6000 ft				7000 ft			
	WIND				WIND			
	-10 kt	0 kt	10 kt	20 kt	-10 kt	0 kt	10 kt	20 kt
48000	*****	4694	4483	4277	*****	4827	4611	4402
46000	*****	4504	4298	4099	*****	4629	4419	4216
44000	4951	4319	4119	3925	*****	4436	4233	4035
42000	4756	4141	3947	3758	4878	4252	4054	3862
40000	4560	3963	3774	3590	4675	4067	3875	3689
38000	4373	3793	3609	3431	4480	3891	3704	3523
36000	4190	3627	3449	3275	4292	3719	3538	3362
34000	4005	3458	3285	3117	4100	3545	3369	3198
32000	3824	3294	3126	2962	3913	3375	3204	3038
30000	3651	3136	2973	2815	3735	3213	3047	2886
28000	3478	2979	2821	2667	3557	3051	2890	2734

WEIGHT (lb)	ALTITUDE							
	8000 ft				8500 ft			
	WIND				WIND			
	-10 kt	0 kt	10 kt	20 kt	-10 kt	0 kt	10 kt	20 kt
46000	*****	4759	4546	4338	*****	4827	4612	4402
44000	*****	4559	4352	4150	*****	4623	4414	4211
42000	*****	4367	4166	3971	*****	4428	4225	4027
40000	4794	4176	3981	3790	4856	4232	4035	3844
38000	4593	3993	3803	3619	4651	4046	3855	3669
36000	4397	3815	3631	3452	4452	3865	3679	3499
34000	4199	3635	3456	3282	4251	3682	3502	3326
32000	4006	3459	3286	3118	4054	3503	3329	3159
30000	3822	3292	3124	2960	3867	3333	3164	2999
28000	3638	3124	2962	2803	3680	3163	2999	2839

**NOTE:** Landing distance in feet.

# PERFORMANCE DATA

AE3007A1 ENGINES

## ADVISORY INFORMATION

EMB-145 UNFACTORED LANDING DISTANCES -  
CONTAMINATED RUNWAYS (ft)

ALL ENGINES TYPES – FAA CERTIFICATION

STANDING WATER 0.125 in/SLUSH 0.15 in

WET SNOW 0.25 in/DRY SNOW 0.625 in

WEIGHT (lb)	FLAP 22°	FLAP 45°
29000	6033	4822
30000	6194	4946
31000	6357	5071
32000	6532	5201
33000	6707	5330
34000	6883	5459
35000	7058	5589
36000	7245	5721
37000	7436	5852
38000	7627	5983
39000	7819	6114
40000	8010	6246
41000	8197	6377
42000	8383	6508
43000	8570	6639
44000	8757	6768
45000	8971	6914
46000	9188	7062
47000	9404	7210
48000	9621	7357

## CORRECTIONS

ALTITUDE: LANDING DISTANCE + 3% per 1000 ft  
above sea level.

WIND: LANDING DISTANCE + 11% per 5 kt  
tailwind.

OVERSPEED: LANDING DISTANCE + 9% per 5 kt above  
 $V_{REF}$ .

# PERFORMANCE DATA

AE3007A1 ENGINES

<b>ADVISORY INFORMATION</b>
<b>EMB-145 UNFACTORED LANDING DISTANCES - CONTAMINATED RUNWAYS (ft)</b>
<b>ALL ENGINES TYPES – FAA CERTIFICATION</b>
<b>STANDING WATER 0.25 in/SLUSH 0.29 in</b>
<b>WET SNOW 0.50 in/DRY SNOW 1.25 in</b>

WEIGHT (lb)	FLAP 22°	FLAP 45°
29000	5276	4357
30000	5411	4464
31000	5546	4571
32000	5693	4683
33000	5839	4794
34000	5986	4905
35000	6132	5016
36000	6289	5129
37000	6448	5243
38000	6608	5356
39000	6768	5470
40000	6928	5583
41000	7086	5697
42000	7243	5810
43000	7401	5923
44000	7559	6036
45000	7739	6163
46000	7922	6292
47000	8105	6421
48000	8288	6549

CORRECTIONS	
ALTITUDE:	LANDING DISTANCE + 3% per 1000 ft above sea level.
WIND:	LANDING DISTANCE + 11% per 5 kt tailwind.
OVERSPEED:	LANDING DISTANCE + 8% per 5 kt above $V_{REF}$ .

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# PERFORMANCE DATA

AE3007A1 ENGINES

## ADVISORY INFORMATION

EMB-145 UNFACTORED LANDING DISTANCES -  
CONTAMINATED RUNWAYS (ft)

ALL ENGINES TYPES – FAA CERTIFICATION

STANDING WATER 0.50 in/SLUSH 0.59 in

WET SNOW 1.00 in/DRY SNOW 2.50 in

WEIGHT (lb)	FLAP 22°	FLAP 45°
29000	4411	3856
30000	4515	3943
31000	4619	4031
32000	4732	4122
33000	4845	4213
34000	4957	4304
35000	5070	4395
36000	5190	4488
37000	5313	4581
38000	5436	4674
39000	5559	4766
40000	5682	4859
41000	5804	4952
42000	5926	5044
43000	6048	5137
44000	6170	5229
45000	6310	5332
46000	6451	5437
47000	6593	5542
48000	6734	5647

## CORRECTIONS

ALTITUDE: LANDING DISTANCE + 3% per 1000 ft  
above sea level.

WIND: LANDING DISTANCE + 10% per 5 kt  
tailwind.

OVERSPEED: LANDING DISTANCE + 8% per 5 kt above  
 $V_{REF}$ .

# PERFORMANCE DATA

AE3007A1 ENGINES

**ADVISORY INFORMATION**  
**EMB-145 UNFACTORED LANDING DISTANCES -**  
**CONTAMINATED RUNWAYS (ft)**  
**ALL ENGINES TYPES – FAA CERTIFICATION**  
**COMPACTED SNOW**

WEIGHT (lb)	FLAP 22°	FLAP 45°
29000	3944	3645
30000	4036	3734
31000	4129	3823
32000	4222	3909
33000	4315	3996
34000	4408	4082
35000	4501	4169
36000	4593	4250
37000	4685	4329
38000	4777	4409
39000	4868	4488
40000	4960	4567
41000	5052	4646
42000	5143	4726
43000	5235	4805
44000	5327	4884
45000	5417	4960
46000	5507	5035
47000	5597	5111
48000	5688	5186

<b>CORRECTIONS</b>	
ALTITUDE:	LANDING DISTANCE + 3% per 1000 ft above sea level.
WIND:	LANDING DISTANCE + 11% per 5 kt tailwind.
OVERSPEED:	LANDING DISTANCE + 7% per 5 kt above $V_{REF}$ .

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# PERFORMANCE DATA

AE3007A1 ENGINES

**ADVISORY INFORMATION**  
**EMB-145 UNFACTORED LANDING DISTANCES -**  
**CONTAMINATED RUNWAYS (ft)**  
**ALL ENGINES TYPES – FAA CERTIFICATION**  
**ICE**

WEIGHT (lb)	FLAP 22°	FLAP 45°
29000	11551	9411
30000	11556	9406
31000	11572	9412
32000	11656	9487
33000	11740	9561
34000	11824	9635
35000	11909	9709
36000	12032	9810
37000	12170	9921
38000	12308	10032
39000	12446	10143
40000	12584	10254
41000	12721	10365
42000	12859	10476
43000	12997	10587
44000	13135	10698
45000	13303	10826
46000	13473	10955
47000	13644	11084
48000	13814	11213

## CORRECTIONS

ALTITUDE: LANDING DISTANCE + 3% per 1000 ft above sea level.

WIND: LANDING DISTANCE + 24% per 5 kt tailwind.

OVERSPEED: LANDING DISTANCE + 5% per 5 kt above  $V_{REF}$ .

INTENTIONALLY BLANK

User: aherrera - Printed By myTechCare - Jul 25/22 - 16:13:55

QRH-145/1115

# EMERGENCY/ABNORMAL PROCEDURES

## Appendix

### EMERGENCY EVACUATION

- Parking Brake ..... APPLY
- Cabin ..... DEPRESSURIZE
- Fire Extinguishing Handles ..... PULL
- APU Fuel Shutoff Button ..... PUSH IN
- Engines and APU Fire Extinguishing  
Bottles (if necessary) ..... DISCHARGE
- Ventral Tank Transfer Knob  
(if applicable) ..... OFF
- Fuel Pumps Pwr 1 and 2 ..... OFF
- Hydraulic Elec Pumps 1 and 2 ..... OFF
- Cabin Crew ..... NOTIFY
- Emerg Lts ..... ON
- EMERGENCY EVACUATION**  
Procedure ..... ACCOMPLISH
- ATC ..... NOTIFY
- Before leaving the airplane:  
Batteries 1 and 2 ..... OFF

END