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Quick Reference Handbook


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General

The airplanes listed in the table below are covered in this manual. The numbers are used to distinguish data peculiar to one or more, but not all of the airplanes. Where data applies to all airplanes listed, no reference is made to individual airplane numbers.

The table permits flight crew correlation of configuration differences by Registry Number in alpha/numeric order within an operator's fleet for airplanes covered in this manual. Configuration data reflects the airplane as delivered configuration and is updated for service bulletin incorporations in conformance with the policy stated in the introduction section of this chapter.

Airplane number is supplied by the operator. Registry number is supplied by the national regulatory agency. Serial and tabulation numbers are supplied by Boeing.

Airplane Number	Registry Number	Serial Number	Tabulation Number
7001	N860DA	29951	WB446
7002	N861DA	29952	WB447
7003	N862DA	29734	WB448
7004	N863DA	29735	WB449
7005	N864DA	29736	WB450
7006	N865DA	29737	WB451
7007	N866DA	29738	WB452
7008	N867DA	29743	WB453
7101	N701DN	29740	WD066
7102	N702DN	29741	WD067
And Subsequent			

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General

Purpose

The Boeing Company developed normal and non-normal procedures for the 777 aircraft. Delta Air Lines, Inc. has modified some of the procedures for simplification and standardization, when appropriate, with other Delta Air Lines, Inc. aircraft. Finally, the FAA has approved the procedures presented in the Operations Manual, with the exception of flight crew bulletins.

These procedures are company policy for pilots to follow during ground operations and in flight. Deviations from these policies and procedures should be made only with good cause and based on the safest course of action. The Captain's best judgement must be applied if an abnormality occurs that is not covered by these procedures.

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Corrections to the Manual

To correct any errors or discrepancies discovered in this manual, or to submit a suggested change to any Aircraft Operating Manual (Volume 1, Volume 2, Quick Reference Handbook, Flight Crew Training Manual), Normal Checklist, Airway Manual, Flight Operations Manual (FOM), OE/TOE Guide, Flight Crew Bulletin (FCB), or Flight Operations Bulletin (FOB):

Log on to the Flight Operations Portal (<http://dalweb.delta.com/portal>) to submit a Publications Change Request (PCR).

There are links to the PCR form on each fleet page and also on the Flight Ops Manual/Library Services page.

Once submitted, the PCR is automatically routed to the applicable Fleet Technical Manager, Technical Writer, and Specialist for that manual.

Organization

The FCOM is organized in the following manner.

Volume 1 –

- Preface chapter contains general information regarding the manual's purpose, structure, and content. It also contains lists of abbreviations, a record of revisions, a list of effective pages, and bulletins.
- Limitations and Normal Procedures chapters cover operational limitations and normal procedures. All operating procedures are based on a thorough analysis of crew activity required to operate the airplane, and reflect the latest knowledge and experience available.
- Supplementary Procedures chapter covers those procedures accomplished as required rather than routinely on each flight.
- Differences chapter notes differences between aircraft types.

Volume 2 – Chapters 1 through 15 contain general airplane and systems information. These chapters are generally subdivided into sections covering controls and indicators and systems descriptions.

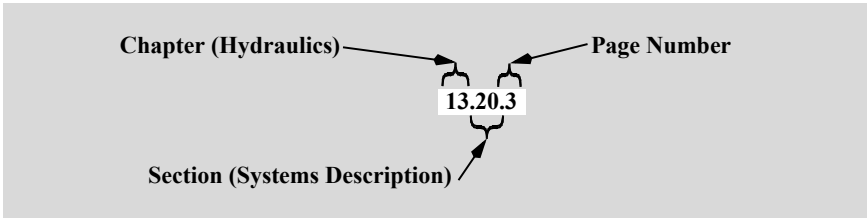
Quick Reference Handbook (QRH) – The QRH covers normal checklists, non-normal checklists, and maneuvers.

Flight Crew Training Manual (FCTM) - The Flight Crew Training Manual provides information and recommendations on maneuvers and techniques.

Page Numbering

The Operations Manual uses a decimal page numbering system. The page number is divided into three fields; chapter, section, and page (except for the Flight Crew Training Manual which uses a two field numbering system). An example of a page number for the hydraulics chapter follows: chapter 13, section 20, page 3.

Example Page Number



Warnings, Cautions, and Notes

The following levels of written advisories are used throughout the FCOM and are not to be confused with EICAS messages, which are separately identified in the text.

WARNING: An operating procedure, technique, etc., that may result in personal injury or loss of life if not carefully followed.

CAUTION: An operating procedure, technique, etc., that may result in damage to equipment if not carefully followed.

Note: An operating procedure, technique, etc., considered essential to emphasize. Information contained in notes may also be safety related.

Airplane Effectivities

Differences in airplane configuration are shown by use of airplane effectivities throughout Volumes 1 and 2, Quick Reference Handbook, and the Flight Crew Training Manual. The following rules are used to express airplane effectivities:

- Airplane effectivities are listed by ship number. A range of airplanes is defined by a dash, e.g. Ships 7001 – 7008. A comma in the effectivity range indicates a break in the range, e.g. Ships 7001 – 7005, 7007 – 7008; airplane 7006 is excluded from the range. Airplanes introduced to fleet following manual publication are effective as subsequent ships, e.g. Ships 7101 & Subsequent.
- Airplane effectivities apply only to the paragraph, illustration, operational note, procedural step, etc. and to subordinate items (if any).

Continued on next page

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Example (with subordinate items):

Ships 7001 – 7008

**CABIN CREW COMMUNICATIONS.....ESTABLISH
Evacuate lower crew rest compartment and close hatches.**

Plan to land at the nearest suitable airport

In this example, the effectivity 7001 – 7008 applies to the first procedural step (CABIN CREW.....) and further indented/subordinate step (Evacuate....). The effectivity does not apply to the next equivalently indented step (Plan to land.....).

Example (without subordinate items):

Ships 7101 & Subsequent

NOTE: Slats will extend beyond midrange when airspeed is below 246 knots. For go-around, do not exceed 246 knots until slats retract to midrange.

NOTE: Use flaps 20 and VREF20 for landing.

In this example, the effectivity Ships 7101 & Subsequent applies to the first operational note only. The effectivity does not apply to the next equivalently indented note.

For clarity, an "All" effectivity may be applied to differentiate common steps from those effected by specific ship numbers.

When airplane effectivities are centered immediately below a checklist title, the entire checklist applies to the listed airplanes. In the following example, the PACK L, R checklist is applicable to Ships 7001 – 7008 only:

□ **PACK L, R**
Ships 7001 – 7008

General

The following abbreviations may be found throughout the manual. Some abbreviations may also appear in lowercase letters. Abbreviations having very limited use are explained in the chapter where they are used. Since this list is compiled across several fleets, there may be some abbreviations that do not apply to this specific fleet.

A	
ABV	Above
AC	Alternating Current or Aircraft
ACARS	Aircraft Communications Addressing and Reporting System
ACE	Actuator Control Electronics
ACP	Audio Control Panel
ACT	Active
ADC	Air Data Computer
ADF	Automatic Direction Finder
ADI	Attitude Director Indicator
ADIRS	Air Data Inertial Reference System
ADIRU	Air Data Inertial Reference Unit
ADM	Air Data Module
AED	Automatic External Defibrillator
AFDC	Autopilot Flight Director Computer

AFDS	Autopilot Flight Director System
AFE	Above Field Elevation
AFM	Airplane Flight Manual (FAA approved)
AFM - DPI	Airplane Flight Manual - Digital Performance Information
AFS	Automatic Flight System (Autopilot or Autothrottle)
A/G	Air/Ground
AGL	Above Ground Level
AH	Alert Height
AHRS	Attitude Heading Reference System
AI	Anti-Ice
AIL	Aileron
ALFA	Safe Stall Margin Speed
ALT	Altitude
ALT ACQ	Altitude Acquire
ALT HOLD	Altitude Hold
ALTN	Alternate
AM	Amplitude Modulation

AIMS	Airplane Information Management System
AMI	Airline Modifiable Information
ANP	Actual Navigational Performance
ANT	Antenna
ANU	Aircraft Nose Up
AOA	Angle of Attack
AOC	Airline Operational Communication Data Link
A/P	Autopilot
APL	Airplane
APP	Approach
APU	Auxiliary Power Unit
ARINC	Aeronautical Radio, Incorporated
ARM	Aircraft Restrictions Manual
ARPT	Airport
ARR	Arrival
ART	Automatic Reserve Thrust
ASA	Autoland Status Annunciator
ASI	Airspeed Indicator
ASR	Airport Surveillance Radar
ASYM	Asymmetry
A/T	Autothrottle
ATA	Actual Time of Arrival
ATC	Air Traffic Control

ATIS	Automated Terminal Information Service
ATM	Assumed Temperature Method
ATT	Attitude
AUTO	Automatic
AUTO-THROT	Autothrottle
AUX	Auxiliary
AVAIL	Available
AWABS	Automated Weight and Balance System

B	
BARO	Barometric
BAT	Battery
B/C or B/CRS or BAC or BCS	Back Course
BFO	Beat Frequency Oscillator
BITE	Built-In Test Equipment
BKR	Breaker
BLD	Bleed
BLW	Below
BRG	Bearing
BRT	Bright
BTL	Bottle
BTL DISCH	Bottle Discharge (fire extinguisher)
BTMS	Brake Temperature Monitoring System

C	
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C	Captain or Celsius or Center or Cool
CAA	Civil Aviation Authority
CADC	Central Air Data Computer
CALSEL	Call Select
CANC/RCL	Cancel/Recall
CANPA	Constant Angle Non-Precision Approach
CAP	Capture
CAPT	Captain
CAWS	Central Aural Warning System
CB	Circuit Breaker
CCD	Cursor Control Device
CDS	Common Display System
CDU	Control Display Unit
CFIT	Controlled Flight Into Terrain
CG	Center of Gravity
CHKL	Checklist
CHR	Chronograph
CKD	Checked
CKT	Circuit
CL	Close
CLB	Climb
CLMP	Computer Lockout Manual Power
CLR	Clear
CMD	Command

CO	Company
COMM	Communication
COMP	Comparator
COMPT	Compartment
CON	Continuous
CONFIG	Configuration
CONT	Control
COOL	Cooling
CRS	Course
CRT	Cathode Ray Tube
CRZ	Cruise
CTL	Control
CTR	Center
CWS	Control Wheel Steering

D	
DA	Decision Altitude
DA(H)	Decision Altitude (Height)
DC	Direct Current
DCU	Display Concentrator Unit
D/D	Direct Descent
DDA	Derived Decision Altitude (MDA +50 feet)
DDG	Dispatch Deviations Guide
DEL	Delete
DEP	Departure
DEP ARR	Departure Arrival
DEPR	Depressurize
DES	Descent

DEU	Display Electronic Unit
DFCS	Digital Flight Control System
DFGC	Digital Flight Guidance Computer
DFGS	Digital Flight Guidance System
DH	Decision Height
DIFF	Differential
DIR	Direct
DISC	Disconnect
DISCH	Discharge
DK	Deck
DME	Distance Measuring Equipment
DN	Down
DPC	Display Processing Computer
DSP	Display Select Panel
DSPL	Display
DTG	Distance to Go
DTW	Distance to Waypoint
DU	Display Unit

E	
EADI	Electronic Attitude Director Indicator
ECON	Economy
E/D	End of Descent
E/E	Electrical/Electronic
EEC	Electronic Engine Control

EFI	Electronic Flight Instruments
EFIS	Electronic Flight Instrument System
EGPWS	Enhanced Ground Proximity Warning System
EGT	Exhaust Gas Temperature
EHSI	Electronic Horizontal Situation Indicator
EICAS	Engine Indication and Crew Alerting System
EIS	Electronic Instrument System
ELEC	Electrical
ELEV	Elevator
EMER	Emergency
ENG	Engine
ENG OUT	Engine Out
ENT	Entry
EO or E/O	Engine Out
EOAP	Electronic Overhead Annunciation Panel
EPR	Engine Pressure Ratio
EQPT or EQUIP	Equipment
ER	Extended Range
ETOPS	Extended Range Operation with Twin Engine Airplanes
EVAC	Evacuation
EXEC	Execute
EXT	Extend or External

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F	
F	Fahrenheit
FAC	Final Approach Course
FAA	Federal Aviation Administration
FADEC	Full Authority Digital Engine Control
FAF	Final Approach Fix
FAR	Federal Aviation Regulation
FCB	Flight Crew Bulletin
FCC	Flight Control Computer
FCTL	Flight Control
FCTM	Flight Crew Training Manual
FD, F/D or FLT DIR	Flight Director
FF	Fuel Flow
FFM	Force Fight Monitor
FGCP	Flight Guidance Control Panel
FGS	Flight Guidance System
FILT	Filter
FIR	Flight Information Region
FL CH or FLCH	Flight Level Change
FLT	Flight
FLT CTRL	Flight Control
FLPRN	Flaperon
FMA	Flight Mode Annunciator
FMC	Flight Management Computer

FMS	Flight Management System
F/O or F O	First Officer
FOM	Flight Operations Manual
FPA	Flight Path Angle
FPM	Feet Per Minute
FPV	Flight Path Vector
FREQ	Frequency
F/S	Fast/Slow
FT	Feet
FWD	Forward
FWSOV	Fire Wall Shut Off Valve
FX	Fix

G	
GA	Go-Around
GE	General Electric
GEN	Generator
GLS	GPS Landing System
GMT	Greenwich Mean Time
GND	Ground
GP or G/P	Glide Path
GPS	Global Positioning System
GPWS	Ground Proximity Warning System
GS	Ground Speed
G/S	Glide Slope
GW	Gross Weight

H	
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HAA	Height Above Airport
HAT	Height Above Touchdown
HDG	Heading or Hydraulic Driven Generator
HDG REF	Heading Reference
HDG SEL	Heading Select
HF	High Frequency
HGS	Head-Up Guidance System (HGS® is a registered trademark of Flight Dynamics)
HI	High
HLD	Hold
HPA	Hectopascals
HPSOV	High Pressure Shut Off Valve
HSI	Horizontal Situation Indicator
HUD	Head-Up Display
HYD	Hydraulic

I

IAF	Initial Approach Fix
IAN	Instrument Approach Navigation
IAS	Indicated Airspeed
IDENT	Identification
IFE	In-Flight Entertainment System
IFR	Instrument Flight Rules
IGN	Ignition

IGS	Instrument Guidance System
ILS	Instrument Landing System
IM	Inner Marker
IMC	Instrument Meteorological Conditions
IN	Inches
INBD	Inboard
IND	Indicator
IND LTS	Indicator Lights
INOP	Inoperative
INIT	Initialization
INSTR	Instrument
INT or INTPH	Interphone
INTC	Intercept
INTC CRS	Intercept Course
IP	Instructor Pilot
IRS	Inertial Reference System
IRU	Inertial Reference Unit
ISA	International Standard Atmosphere
ISDU	Inertial System Display Unit
ISFD	Integrated Standby Flight Display
ISLN	Isolation

J

JAA	Joint Aviation Authority
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K	
K or KTS	Knots
KCAS	Knots Calibrated Airspeed
KGS	Kilograms
KIAS	Knots Indicated Airspeed

L	
L	Left
LAT	Latitude
LBS	Pounds
LD	Load
LDA	Localizer-type Directional Aid
LDG	Landing
LDG ALT	Landing Altitude
LE	Leading Edge
LIM	Limit
LIM SPD	Limit Speed
LKD	Locked
L NAV or LNAV	Lateral Navigation
LOC	Localizer
LOC-BC	Localizer Back Course
LOM	Locator Outer Marker
LON	Longitude
LR	Long Range
LRC	Long Range Cruise
LRU	Line Replaceable Unit
LSK	Line Select Key
LT	Light

LWR CTR	Lower Center
LWR DSPLY or LWR DSPL	Lower Display

M	
M	Mach
MAG	Magnetic
MAHP	Missed Approach Holding Point
MAN	Manual
MAP	Missed Approach Point
MASI	Mach/Airspeed Indicator
MAX	Maximum
MCC	Maintenance Control Center
MCDU	Multi-purpose Control and Display Unit
MCO	Maintenance Carry Over
MCP	Mode Control Panel
MCT	Maximum Continuous Thrust
MDA	Minimum Descent Altitude
MDA(H)	Minimum Descent Altitude (Height)
MDM	Mechanical Dispatch Manual
MEA	Minimum Enroute Altitude
MEL	Minimum Equipment List
MFD	Multifunction Display
MHZ	Megahertz

MIC	Microphone
MIN	Minimum
MKR	Marker
MLS	Microwave Landing System
MM	Middle Marker
MMO	Maximum Mach Operating Speed
MNPS	Minimum Navigation Performance Specification
MOCA	Minimum Obstruction Clearance Altitude
MOD	Modify
MORA	Minimum Off Route Altitude
MSA	Minimum Safe Altitude
MSG	Message
MSGS RCVD	Messages Received
MSL	Mean Sea Level
MTRS	Meters
MUH	Minimum Use Height

N	
N	Normal
NADP	Noise Abatement Departure Procedures
NAR	North American Route
NAV	Navigation
NAV RAD	Navigation Radio
ND	Navigation Display
NLT	No Later Than

NM	Nautical Mile(s)
NNC	Non-Normal Checklists
NNM	Non-Normal Maneuvers
NPS	Navigation Performance Scales
NORM	Normal
N1	Low Pressure Rotor Speed
N2	High Pressure Rotor Speed (Pratt & Whitney and GE engines) or Intermediate Pressure Rotor Speed (Rolls Royce Engines)
N3	High Pressure Rotor Speed (Rolls Royce Engines)

O	
OAP	Overhead Annunciator Panel (a.k.a. EOAP)
OAT	Outside Air Temperature
OCC	Operations Control Center
ODM	Operational Data Manual
OFST	Offset
OHU	Overhead Unit
OM	Outer Marker
OP	Open
OUTBD DSPL	Outboard Display
OVHD	Overhead
OVHT	Overheat
OVRD	Override
OVSPD	Overspeed

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OXY or O2	Oxygen
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P	
PA	Passenger Address
PAPI	Precision Approach Path Indicator
PAR	Precision Approach Radar
PASS	Passenger
PBE	Protective Breathing Equipment
PCP	Pilot Call Panel
PDC	Pitch Data Computer or Performance Data Computer or Pre-Departure Clearance
PERF	Performance
PERF INIT	Performance Initialization
PES	Pitch Enhancement System
PF	Pilot Flying
PFC	Primary Flight Computer
PFD	Primary Flight Display
PI	Performance Inflight
PIP	Product Improvement Package
PM	Pilot Monitoring
PMC	Power Management Control
PNL	Panel
POS	Position

POS INIT	Position Initialization
POS REF	Position Reference
PPI	Planned Position Indicator
PPOS	Present Position
PRES or PRESS	Pressure
PREV	Previous
PRI	Primary
PROG	Progress
PROX	Proximity
P/RST	Push To Reset
PRV	Pressure Regulating Valve
PSI	Pounds Per Square Inch
PTH	Path
PTT	Push To Talk
PTU	Power Transfer Unit
PWR	Power
PWS	Predictive Windshear System

Q	
Q	Quantity
QFE	Local Station Pressure
QNH	Altimeter Setting
QRH	Quick Reference Handbook
QTY	Quantity

R	
R	Right

RA	Radio Altitude or Resolution Advisory
RAD	Radio
RAT	Ram Air Temperature or Ram Air Turbine
RCL	Request for Clearance
RDMI	Radio Distance Magnetic Indicator
REC	Recorder
RECIR or RECIRC	Recirculation
REF	Reference
RET	Retract
REV	Reverse
RF	Radius-to-Fix (RF) Legs or Refill
RMI	Radio Magnetic Indicator
RNAV or RNV	Area Navigation
RNP	Required Navigational Performance
RPL	Rudder Pressure Limiter
RPM	Revolutions Per Minute
RPR	Rudder Pressure Reducer
RR	Rolls Royce
RSEP	Rudder System Enhancement Program
RST	Reset
RSVR	Reservoir
R/T	Radio Transmit
RTE	Route
RTO	Rejected Takeoff

RTP	Radio Tuning Panel
RUD	Rudder
RVR	Runway Visual Range
RVSM	Reduced Vertical Separation Minimum

S	
SAARU	Secondary Attitude Air Data Reference Unit
SAT	Static Air Temperature or Satellite
SB	Service Bulletin
S/B	Speedbrake
S/C	Step Climb
SDF	Simplified Directional Facility
SEI	Standby Engine Indicator
SEL	Select
SELCAL	Selective Calling
SENS	Sensitivity
SERV	Service
SG	Symbol Generator
SPD	Speed
SPDBRK	Speedbrake
STA	Station
STAB	Stabilizer
STAT	Status
STBY	Standby
STD	Standard
SYS	System

T	
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T or TRU	True
T or TK or TRK	Track (to a Navaid)
TA	Traffic Advisory
TAA	Terminal Arrival Area
TACAN	Tactical Air Navigation
TAC	Thrust Asymmetry Compensation
TAI	Thermal Anti-Ice
TAS	True Airspeed
TAT	Total Air Temperature
T/C	Top of Climb
TCA	Terminal Control Area
TCAS	Traffic Alert and Collision Avoidance System
T/D	Top of Descent
TDZ	Touch Down Zone
TDZE	Touch Down Zone Elevation
TE	Trailing Edge
TEMP	Temperature
TERR	Terrain
TFC	Traffic
TFR	Transfer
THR	Throttle or Thrust
THR HOLD	Throttle Hold
TMC	Thrust Management Computer
TMI	Track Message Identifier
TMSP	Thrust Mode Select Panel

TO or T/O	Takeoff
TOC	Top of Climb
TOD	Top of Descent
TO/GA	Takeoff/Go-Around
TR	Traffic Resolution
TRP	Thrust Rating Panel
TRU	Transformer Rectifier Unit
TURB	Turbine or Turbulence

U	
UNLKD	Unlocked
UNSCHD or UNSCHED	Unscheduled
UPR DSPL	Upper Display
U.S.	United States
USB	Upper Side Band
UTC	Universal Time Coordinated
UTIL	Utility

V	
VA	Design maneuvering speed
VAL	Valve
VANP	Vertical Actual Navigational Performance
VASI	Visual Approach Slope Indicator
VDP	Visual Descent Point
VEF	Speed at Engine Failure

VERT	Vertical
VFR	Visual Flight Rules
VG	Vertical Gyro
VHF	Very High Frequency
VIB	Vibration
VLV	Valve
VMC	Visual Meteorological Conditions
VMCA	Minimum Control Speed Air or Single Engine Minimum Control Airspeed
VMCG	Minimum Control Speed Ground
VMO	Maximum Operating Speed
V NAV or VNAV	Vertical Navigation
VOR	VHF Omnidirectional Range
VR	Rotation Speed
VREF	Reference Speed
VRNP	Vertical Required Navigation Performance
V/S	Vertical Speed
VSCF	Variable Speed Constant Frequency
VSD	Vertical Situation Display
VSI	Vertical Speed Indicator
VTK	Vertical Track
V1	Takeoff Decision Speed
V1 (MCG)	Minimum V1 for Control on the Ground

V2	Scheduled Takeoff Target Speed
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W	
W	Warm
WATRS	Western Atlantic Route System
WDR	Weight Data Record
WGS-84	World Geodetic System of 1984
WHL	Wheel
WPT	Waypoint
WT	Weight
WXR	Weather Radar

X	
X-FEED	Crossfeed
XPDR or XPDR	Transponder
XTK	Cross Track

Revision Transmittal Letter

To: All holders of Delta Air Lines, Inc. 777 Aircraft Operations Manuals.

Subject: Flight Crew Operations Manual Revision.

This revision reflects the most current information available through the subject revision date. The following revision highlights explain changes in this revision. General information below explains the use of revision bars to identify new or revised information.

Revision Record

No.	Revision Date	Date Filed
00	October 14, 1998	
02	May 31, 1999	
04	August 15, 2000	
06	January 25, 2002	
08	April 29, 2002	
10	December 15, 2003	
12	March 28, 2005	
14	December 18, 2006	

No.	Revision Date	Date Filed
01	March 30, 1999	
03	December 15, 1999	
05	September 15, 2000	
07	February 25, 2002	
09	September 8, 2003	
11	March 29, 2004	
13	July 31, 2006	
15	February 15, 2008	

Complete Manual Reprint

This revision is a complete reprint. Please remove and replace all pages in this manual.

DO NOT DISCARD THE COVERS AND TABS FOR THIS MANUAL.

Due to a change in the company trademark, all pages in this revision have a new revision date applied, however, not all pages contain revised content. Please refer to the List of Effective Pages (PQ.5) for the specific location of revised content identified by a revision bar.

General

Delta Air Lines, Inc. issues operations manual revisions to provide new or revised procedures and information. Revisions also incorporate appropriate information from previously issued Flight Crew Bulletins.

The revision date is the approximate date the manual is distributed. The revision should be incorporated on the revision date, but may be incorporated as much as 21 days after the revision date.

Formal revisions include a Revision Notification Transmittal Letter, a new Revision Record, Revision Highlights, and a current List of Effective Pages. Use the information on the new Revision Record and List of Effective Pages to verify the manual content.

The record above should be completed by the person incorporating the revision into the manual.

Filing Instructions

Consult the List of Effective Pages (P1.5). Pages identified with an asterisk (*) are either replacement pages, new (original) issue pages, or deleted pages. Remove pages marked DELETED; there are no replacement pages for deleted pages.

Be careful when insrtng changes not to throw away pages from the manual that are not replaced. The List of Effective Pages determines the correct content of the manual.

Revision Highlights

This section (P1.4) replaces the existing section P1.4 in your manual.

Pages containing revised technical and non-technical revisions have revision bars associated with the changed text or illustration.

Repaginated material not containing technical revisions is identified only by a new page date.

Quick Action Index

QA.Index.1 - Added "Airspeed Unreliable" and "Stabilizer" non-normal checklist listings.

QA.Index.1 - Applied "Recall Item" formatting similar to that applied to the Table of Contents for each non-normal checklist section.

QA.Index.1 - Added ENG AUTOSTART L, R reference.

QA.Index.1 - Replaced all SMOKE/FUMES listings with new SMOKE, FIRE OR FUMES checklist reference.

QA.Index.1 - Added STABILIZER reference.

QA.Index.2 - Updated the Review and Approval signatories to reflect current assignment of Fleet Captain Jon Swift and the addition of Chief Line Check Pilot Warren Abrams.

Annunciated Index

ANN.Index.1-8 - Updated index for current revision.

Chapter P1 - Preface

Section 0 - Table of Contents

PQ.0.1 - Added Preface section listings for consistency with other manuals.

Section 1 - Model Identification

PQ.1.1 - Revised airplane numbers to reflect actual company identification.

PQ.1.1 - Added airplanes to model identification table to reflect operations with 777-232LR aircraft.

Section 2 - Introduction

PQ.2.1 - Revised Captain's judgement sentence for clarity.

PQ.2.2 - Updated instructions for submitting changes to the manual.

PQ.2.2 - Reformatted Volume 1 organization information and added Preface chapter information for consistency with other Delta aircraft operations manuals.

PQ.2.2 - Added differences chapter information due to operations with 777-232LR aircraft.

PQ.2.3-4 - Added airplane effectivities identificaton information for operations with 777-232LR aircraft.

Section 3 - Abbreviations

PQ.3-12 - Updated abbreviations table for consistency with other Delta aircraft operations manuals.

Section 4 - Revision Record

PQ.4.1-16 - Revision record and highlights for current revision.

Section 5 - List of Effective Pages

PQ.5.1-4 - Effective page information updated to reflect current revision.

Chapter CI - Checklist Introduction

Section 0 - Table of Contents

CI.TOC.0.1-2 - Updated to reflect changes in this chapter.

Section 1 - Normal Checklists

Reading the Checklists

CI.1.1 - Revised paragraph to state that the Captain normally responds to checklists on the ground.

CI.1.1 - Added instructions for dual response items.

Runway Change Checklist

CI.1.2 - Added runway change checklist instructions.

Electronic Checklist Operation

CI.1.3 - Provided additional closed loop item instructions.

CI.1.3 - Revised reference to Volume 2 for clarity.

Checklist Construction

CI.1.4 - Deleted "Other Conventions" title.

QRH Normal Checklists Response Designators

CI.1.4 - Added QRH normal checklist response designator information.

CI.1.4 - Deleted checklist symbology information.

Section 2 - Non-Normal Checklists

Introduction

CI.2.1 - Deleted existing information only sentence.

CI.2.1 - Revised the recall/reference item concept and identification paragraph for consistency with airplane manufacturer's information.

CI.2.1 - Revised and relocated crew requirements for recall items for clarity.

CI.2.2 - Added table of contents and index formatting information for identifying checklists containing recall items.

Non-Normal Checklist Operation

CI.2.2 - Revised first paragraph in non-normal checklists operation for consistency with airplane manufacturer's information.

Land Immediately

CI.2.3 - Added guidance for when to land the airplane immediately.

Notes and Information

CI.2.7 - Revised inoperative equipment guidance to clarify that equipment is listed only when required for planning the rest of the flight and is not shown on EICAS.

Flight Crew Summary for Emergency Landing/Ditching Evacuation

CI.2.9 - Added instructions for notifying ATC about souls remaining in crew rest facilities for ships 7101 and subsequent airplanes.

CI.2.11 - Added information for evacuation command on 777LR aircraft.

CI.2.11 - Added effectivity to evacuation command switch for 777ER aircraft.

CI.2.11 - Added ELT instructions for ships 7101 and subsequent airplanes.

CI.2.11 - Added effectivity information for existing 777-232ER portable ELT.

Smoke/Fumes Principles

CI.2.12 - Completely revised principles due to change in related checklists.

Smoke/Fumes Priorities

CI.2.13 - Completely revised priorities due to change in related checklists.

Normal Checklists

Before Start Checklist

NC.1 - Added designators to checklist items to indicate which crewmember(s) normally respond to a verbalized checklist item.

NC.1 - Added dollar signs (\$) to oxygen masks, altimeters, and flight and nav instruments items.

NC.1 - Deleted "set &" from altimeters item response.

NC.1 - Removed indent from items accomplished when paperwork is received.

Pushback/Start Checklist

NC.2 - Added designators to checklist items to indicate which crewmember(s) respond to a verbalized checklist item.

NC.2 - Relocated beacon item to bottom of checklist.

After Start Checklist

NC.2 - Added designators to checklist items to indicate which crewmember(s) respond to a verbalized checklist item.

Taxi Checklist

NC.2 - Added designators to checklist items to indicate which crewmember(s) respond to a verbalized checklist item.

NC.2 - Added dollar sign (\$) to flight controls item.

Runway Change Checklist

NC.2 - Added designators to checklist items to indicate which crewmember(s) respond to a verbalized checklist item.

NC.2 - Changed route discontinuity instruction to a note.

Before Takeoff Checklist

NC.3 - Added designators to checklist items to indicate which crewmember(s) respond to a verbalized checklist item.

NC.3 - Added dollar sign (\$) to altimeters item.

NC.3 - Removed indent from final items list.

Climb Checklist

NC.3 - Added designators to checklist item to indicate which crewmember(s) respond to a verbalized checklist item.

NC.3 - Deleted "set &" from altimeters item response.

Descent Checklist

NC.4 - Added designators to checklist items to indicate which crewmember(s) respond to a verbalized checklist item.

Approach Checklist

NC.4 - Added designators to checklist items to indicate which crewmember(s) respond to a verbalized checklist item.

NC.4 - Added dollar sign (\$) to PFD/ND item.

Landing Checklist

NC.4 - Added designators to checklist items to indicate which crewmember(s) respond to a verbalized checklist item.

NC.4 - Added dollar sign (\$) to landing gear item.

NC.4 - Deleted duplicate after takeoff checklist.

Secure Checklist

NC.6 - Removed indent from before leaving aircraft items.

Chapter NNC - Non-Normal Checklists

Section 0 - Unannounced Checklists

Table of Contents

NNC.TOC.0.1-2 - Updated to reflect changes in this section.

AIRSPEED UNRELIABLE

0.2 - Added checklist to reflect addition by Boeing.

AUTOMATIC UNLOCK

0.4 - Added AUTOMATIC UNLOCK checklist for flight deck security door installation.

CABIN INTERPHONE INOPERATIVE

0.5 - Added non-normal procedure previously located in Volume 1, Supplementary Procedures chapter to match other fleets.

DUAL ENG FAIL/STALL

0.8-9 - Added new information and airplane effectivities for 777-232LR operations.

ENG IN-FLIGHT START L, R (7101 & Subsequent)

0.10 - Added new checklist to reflect new engine installation in fleet.

ENG IN-FLIGHT START L, R (Ships 7001 - 7008)

0.12 - Updated checklist to make consistent with new 777LR format.

FUEL LEAK

0.19 - Added steps to reflect new FUEL DISAGREE message included in AIMS Blockpoint 2005 software update.

0.19 - Deleted FUEL DISAGREE -PROG 2/3 reference.

0.19-20 - Revised steps for FUEL DISAGREE message.

LOCK FAIL

0.22 - Added airplane effectivities and 777-232LR information to checklist.

OVERWEIGHT LANDING

0.23 - Added engine inoperative information.

0.23-24 - Added airplane effectivities and 777-232LR information to checklist.

PUBLIC ADDRESS SYSTEM INOPERATIVE

0.24 - Added non-normal procedure previously located in Volume 1, Supplementary Procedures chapter to match other fleets.

0.25 - Added effectivity information to evacuation command switch.

SMOKE, FIRE OR FUMES

0.26-28 - Revised entire procedure to reflect changes to Boeing's information.

SMOKE OR FUMES REMOVAL

0.29-30 - Revised entire procedure to reflect changes to Boeing's information.

TAT PROBE ICING

0.31 - Added information to reflect addition of engine type to fleet.

VOLCANIC ASH

0.34-35 - Added airplane effectivities and 777-232LR information to checklist.

Section 1 - Airplane General, Emer. Equip., Doors, Windows

Table of Contents

NNC.TOC.1.1-2 - Updated to reflect changes in this section.

AUTOMATIC UNLOCK

1.1 - Added AUTOMATIC UNLOCK checklist to reflect flight deck security door installation.

ELT ON

1.5 - Added ELT ON checklist for 777-232LR operations.

LOCK FAIL

1.5 - Revised LOCK FAIL checklist to reflect addition of airplane model to fleet.

WINDOW FLT DECK L, R

1.7 - Added Boeing procedure steps for closing a window that has opened during flight.

WINDOWS

1.8 - Added new Boeing procedure for closing flight deck windows when both have opened during flight.

Section 2 - Air Systems

Table of Contents

NNC.TOC.2.1-2 - Updated to reflect changes in this section.

CABIN ALTITUDE

2.6-7 - Added Boeing information to reflect AIMS Blockpoint 2006 update.

PACK L, R

2.10 - Added PACK L, R checklist to reflect AIMS 2006 software update. This checklist plus PACK L+R are used in place of the PACK L, R checklist used in previous AIMS updates.

PACK L+R

2.11-12 - Added PACK L+ R checklist to reflect AIMS 2006 software update. This checklist plus PACK L, R are used in place of the PACK L, R checklist used in previous AIMS updates. Added effectivity information to reflect 777-232LR operations.

Section 3 - Anti-Ice, Rain

Table of Contents

NNC.TOC.3.1-2 - Updated to reflect changes in this section.

ANTI-ICE LEAK ENG L, R (Ships 7101 & Subsequent)

3.4-5 - Added ANTI-ICE LEAK ENG L, R checklist to reflect addition of airplane model to fleet

ANTI-ICE LEAK ENG L, R (Ships 7001 - 7008)

3.6 - Added 777-232ER effectivity information to checklist.

TAT PROBE ICING

3.10 - Added information to reflect addition of new engine model to fleet.

Section 4 - Automatic Flight

Table of Contents

NNC.TOC.5.1-2 - Updated to reflect changes in this section.

Section 5 - Communications

Table of Contents

NNC.TOC.4.1-2 - Updated to reflect changes in this section.

CABIN INTERPHONE SYSTEM INOPERATIVE

5.2 - Added non-normal procedure previously located in Volume 1.

PUBLIC ADDRESS SYSTEM INOPERATIVE

5.4 - Added non-normal procedure previously located in Volume 1.

Section 6 - Electrical

Table of Contents

NNC.TOC.6.1-2 - Updated to reflect changes in this section.

ELEC CABIN/UTIL OFF (Ship 7008, 7101 & Subsequent)

6.2 - Revised effectivity for ELEC CABIN/UTIL OFF checklist to reflect 777-232LR airplane operations.

ELEC IFE/SEATS OFF (Ship 7008, 7101 & Subsequent)

6.4 - Revised effectivity for ELEC IFE/SEATS OFF checklist to reflect 777-232LR airplane operations.

Section 7 - Engines, APU

Table of Contents

NNC.TOC.7.1-2 - Updated to reflect changes in this section.

DUAL ENG FAIL/STALL (Ships 7101 & Subsequent)

7.2 - Revised checklist to reflect new engine installation into fleet.

ENG FAIL L, R (Ships 7101 & Subsequent)

7.6-8 - Added checklist to reflect new engine installation into fleet.

ENG FAIL L, R (Ships 7001 - 7008)

7.10 - Updated checklist to make consistent with new 777LR format.

ENG FUEL VALVE L, R

7.13 - Added step to reflect new engine installation into fleet.

7.13 - Added effectivity information to reflect addition of airplane model to fleet.

ENG IN-FLIGHT START L, R (7101 & Subsequent)

7.14 - Added new checklist to reflect new engine type.

ENG IN-FLIGHT START L, R (7001 - 7008)

7.16 - Updated checklist to make consistent with new 777LR format.

ENG OIL FILTER L, R (Ships 7101 & Subsequent)

7.20 - Added checklist to reflect new engine installation into fleet.

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ENG OIL PRESS L, R (Ships 7101 & Subsequent)

7.21 - Added checklist to reflect new engine installation into fleet.

ENG OIL PRESS L, R (Ships 7001 - 7008)

7.22 - Added 777-232ER effectivity information to checklist.

ENG OIL TEMP L, R (Ships 7101 & Subsequent)

7.23 - Added checklist to reflect new engine installation into fleet.

ENG OIL TEMP L, R (Ships 7001 - 7008)

7.24 - Added 777-232ER effectivity information to checklist.

ENG RPM LIMITED L, R (Ships 7101 & Subsequent)

7.25 - Added checklist to reflect new engine installation into fleet.

ENG RPM LIMITED L, R (Ships 7001 - 7008)

7.25 - Added 777-232ER effectivity information to checklist.

VOLCANIC ASH

7.31-32 - Added information to checklist to reflect new engine installation in fleet.

Section 8 - Fire Protection

Table of Contents

NNC.TOC.8.1-2 - Updated to reflect changes in this section.

SMOKE, FIRE OR FUMES

8.12-14 - Revised entire procedure to reflect changes to Boeing's information.

SMOKE OR FUMES REMOVAL

8.15-16 - Revised entire procedure to reflect changes to Boeing's information.

SMOKE REST UPR DR 3 (Ships 7001 - 7008)

8.17 - Added 777-232ER effectivity information to checklist.

SMOKE REST UPR DR 4 (Ships 7101 & Subsequent)

8.17 - Added SMOKE REST UPR DR 4 checklist to reflect addition of airplane model to fleet.

Section 9 - Flight Controls

Table of Contents

NNC.TOC.9.1-2 - Updated to reflect changes in this section.

SLATS PRIMARY FAIL

9.8 - Added information to reflect addition of airplane model to fleet.

Section 10 - Flight Instruments, Displays

Table of Contents

NNC.TOC.10.1-2 - Updated to reflect changes in this section.

AIRSPPEED UNRELIABLE

10.1-3 - Added checklist to reflect addition by Boeing.

ALTN ATTITUDE

10.4 - Added information to reflect installation of integrated standby flight display in 777-232LR airplanes.

Section 11 - Flight Management, Navigation

Table of Contents

NNC.TOC.11.1-2 - Updated to reflect changes in this section.

FMC RUNWAY DISAGREE

11.1 - Added checklist to reflect installation of new system capability.

NAV UNABLE RNP

11.5 - Revised instruction when EICAS message is displayed and on airway that has an RNP alerting requirement.

Section 12 - Fuel

Table of Contents

NNC.TOC.12.1-2 - Updated to reflect changes in this section.

FUEL DISAGREE

12.3 - Added checklist to reflect new message included in AIMS Blockpoint 2006 software update.

FUEL LEAK

12.8 - Added steps to reflect new FUEL DISAGREE message included in AIMS Blockpoint 2006 software update.

12.8 - Deleted FUEL DISAGREE -PROG 2/3 reference.

12.8-9 - Revised steps for FUEL DISAGREE message.

FUEL LOW CENTER

12.10 - Revised condition.

Section 13 - Hydraulics

Table of Contents

NNC.TOC.13.1-2 - Updated to reflect changes in this section.

HYD PRESS SYS C

13.4 - Added information to reflect addition of airplane model to fleet.

HYD PRESS SYS L+C

13.9 - Added information to reflect addition of airplane model to fleet.

HYD PRESS SYS R+C

13.15 - Added information to reflect addition of airplane model to fleet.

HYD QTY LOW L+C

13.17 - Added information for AIMS Blockpoint 2006 update.

HYD QTY LOW L+C+R

13.17 - Added information for AIMS Blockpoint 2006 update.

HYD QTY LOW L+R

13.17 - Added information for AIMS Blockpoint 2006 update.

HYD QTY LOW R+C

13.18 - Added information for AIMS Blockpoint 2006 update.

Section 14 - Landing Gear

Table of Contents

NNC.TOC.14.1-2 - Updated to reflect changes in this section.

TIRE PRESS

14.6 - Added checklist to reflect installation of new capability in 777-232LR airplanes.

Section 15 - Warning Systems

Table of Contents

NNC.TOC.15.1-2 - Updated to reflect changes in this section.

CONFIG SPOILERS

15.2 - Added information to reflect addition of airplane model to fleet.

Chapter MAN - Maneuvers

Section 0 - Table of Contents

MAN.TOC.0.1-2 - Updated to reflect changes in this chapter.

Section 1 - Non-Normal Maneuvers

Approach to Stall Recovery

MAN.1.1 - Added Pilot Monitoring instruction to verify all required actions have been completed and call out omissions.

Terrain Avoidance, Ground Proximity Caution

MAN.1.5 - Added CAUTION OBSTACLE aural alert to reflect installation of optional message.

Terrain Avoidance, Ground Proximity Warning

MAN.1.6 - Added CAUTION OBSTACLE PULL UP warning to reflect installation of optional message.

Traffic Avoidance, For RA, except climb in landing configuration

MAN.1.8 - Added warning regarding DESCEND RAs below 1,000 feet to reflect addition by Boeing.

MAN.1.9 - Revised Pilot Monitoring instructions to reflect Boeing information.

Section 2 - Flight Patterns

Takeoff - Engine Failure

MAN.2.1 - Revised title to reflect Boeing's information.

ILS Approach - One Engine Inoperative

MAN.2.2 - Revised title to reflect Boeing's information.

Instrument Approach Using VNAV - One Engine Inoperative

MAN.2.3 - Revised title to reflect Boeing's information.

Instrument Approach Using V/S or FPA - One Engine Inoperative

MAN.2.4 - Revised title to reflect Boeing's information.

Circling Approach - One Engine Inoperative

MAN.2.5 - Revised title to reflect Boeing's information.

Visual Traffic Pattern - One Engine Inoperative

MAN.2.6 - Revised title to reflect Boeing's information.

Go-Around and Missed Approach - One Engine Inoperative

MAN.2.7 - Revised title to reflect Boeing's information.

NNC Index

Index

NNC.Index.1-8 - Updated to reflect changes in this chapter.

Preface

Chapter PQ

List of Effective Pages - FAA Approved

Section 5

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* PQ.0.1-2	February 15, 2008
* PQ.1.1-2	February 15, 2008
* PQ.2.1-4	February 15, 2008
* PQ.3.1-12	February 15, 2008
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* PQ.5.1-4	February 15, 2008
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* CI.TOC.0.1-2	February 15, 2008
* CI.1.1-4	February 15, 2008
* CI.2.1-3	February 15, 2008
CI.2.4-6	February 15, 2008
* CI.2.7-8	February 15, 2008
* CI.2.9	February 15, 2008
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Normal Checklists	
* NC.1-6	February 15, 2008

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1 Airplane General, Emergency Equipment, Doors, Windows (tab)	
* TOC.1.1-2	February 15, 2008
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* TOC.2.1-2	February 15, 2008
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* 2.6-7	February 15, 2008
* 2.10-12	February 15, 2008
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Introduction

Normal Checklists contain, in abbreviated form, information required by the trained flight crew to operate the airplane in normal situations.

This introduction gives guidelines for use of the printed version of the Normal Checklist (NC) as well as the Electronic Checklist (ECL).

The NC is organized by phase of flight.

The NC is used to verify that critical items have been done.

Normal Checklist Operation

General

Normal checklists are used by the flight crew after accomplishing all applicable procedural items found in the Amplified Procedures section of Volume 1.

Note: Normal checklists will be used as verification lists, not as do lists.

Reading the Checklists

On the ground, the Captain calls for the checklists and the First Officer reads the checklists after the procedures are accomplished. Normally the Captain responds, however, the Captain may elect to read the Before Start checklist, in which case, the First Officer will respond.

In flight, the Pilot Flying (PF) calls for the checklists and the Pilot Monitoring (PM) reads the checklists after the procedures are accomplished

If the airplane configuration does not agree with the needed configuration:

- stop the checklist
- complete the respective procedure steps
- continue the checklist

If it becomes apparent that an entire procedure was not done:

- stop the checklist
- complete the entire procedure
- do the checklist from the start

If a checklist item is identified with a dollar sign (\$), a dual response is required:

- The first response will be made by the pilot being challenged.
- The challenger will then confirm with an echo response.

Try to do checklists before or after high work load times. The crew may need to stop a checklist for a short time to do other tasks. If the interruption is short, continue the checklist with the next step. If a pilot is not sure where the checklist was stopped, do the checklist from the start. If the checklist is stopped for a long time, also do the checklist from the start.

On the ground, if any checklist item has not been completed when challenged, or a disagreement between the response and checklist answer occurs, it is mandatory that the checklist be discontinued until the item is accomplished or resolved. However, the PUSHBACK/START checklist may be started while awaiting the “CABIN IS READY FOR PUSHBACK” report from the Flight Leader. The first flight of the day items are only required to be accomplished on the first flight after midnight local time.

If the flight deck is vacated by all pilots during or after accomplishing the BEFORE START checklist, the checklist must be re-accomplished.

The AFTER LANDING checklist will be accomplished only after the aircraft has cleared the active runway, unless a back-taxi is required. In this case, perform the checklist after the 180° turn and at normal taxi speed.

In flight, if any item has not been accomplished, continue with the remaining items. In this case, the pilot reading the checklist will state, “(THOSE ITEMS) TO GO.” When the missing items are accomplished, the checklist may be called complete.

Following the completion of each normal checklist, including those accomplished silently, the crewmember reading the checklist states, " _____ CHECKLIST COMPLETE."

Runway Change Checklist

The Runway Change checklist includes items that should be considered for re-accomplishment in the event of a runway/intersection change. The Captain should call for “Runway Change Items” if not previously briefed.

The First Officer will then verbalize each runway change item by stating the challenge to the item and then the designated crewmember(s) will respond with either.

- "No Change" for an item, or
- The appropriate checklist response for the item being changed.

Electronic Checklist Operation

Operation with the electronic normal checklist is the same as the printed normal checklist except that, there is no need to read aloud or visually confirm items that are complete (green). For the BEFORE TAKEOFF and LANDING checklists, the PM announces “___ CHECKLIST COMPLETE,” the PF visually confirms that the CHECKLIST COMPLETE indication is shown, and announces “CHECKLIST COMPLETE.”

Closed loop (sensed) checklist items change from white to green when the action is taken. The PM is responsible to check off any open loop (not sensed) item and to verify that all closed loop items are green.

If a complete indicator does not appear for an ECL closed loop line item, verify the associated control is positioned correctly. If the related system is functioning normally, or is other wise operating as expected, override the line item and continue with the checklist. A failure of a line item to automatically complete is not indicative of an ECL fault, therefore, the ECL should continue to be used for all checklists. A logbook entry is required for any faulty switch.

See Volume 2, chapter 10, Flight Instruments, Displays, for a complete description of the electronic checklist system.

Checklist Content

The checklist has the minimum items needed to operate the airplane safely.

Normal checklists have items that meet any of the following criteria:

- items essential to safety of flight that are not monitored by an alerting system, or
- items essential to safety of flight that are monitored by an alerting system but if not done, would likely result in a catastrophic event if the alerting system fails, or
- needed to meet regulatory requirements, or
- items needed to maintain fleet commonality between the MD-88/90, 737, 757, 767, and 777, or
- items that enhance safety of flight and are not monitored by an alerting system (for example autobrakes), or
- during shutdown and secure, items that could result in injury to personnel or damage to equipment if not done

Checklist Construction

When a checklist challenge does not end with “switch or lever” then the challenge refers to system status. For example, “Landing gear...DOWN”, refers to the status of the landing gear, not just the position of the lever.

When a checklist challenge ends with “switch or lever”, then the challenge refers to the position of the switch or lever. For example, “FUEL CONTROL switches...CUTOFF” refers to the position of the switches.

- When alternatives are available in a checklist item, a forward slash “/” will be used (e.g., APU/ external power).

When the printed response to any checklist item is “as reqd”, the proper verbal response is the actual position of that switch or system.

A blank line “____” requires a numerical response and is used when the response is a variable value, such as altimeters, bugs, flaps, slats, or stabilizer trim settings.

When the challenge requires verification of proper system operation, “ckd” is used as the response.

QRH Normal Checklists Response Designators

Located on the right side of certain QRH Normal Checklists challenge-response items are designators which indicate that verbalization is required. The pilot(s) designated will visually verify switch position or status and then make the response to the pilot challenging.

Items that do not have designators are to be accomplished silently.

Note: Items that are critical to flight safety are indicated by the designators “C&F” or “All”, and a “\$” and require a response from both crewmembers or all flight deck occupants.

The following designators are used:

- C - Captain
- F - First Officer
- All - All flight deck positions, including jump seat(s)
- PM - Pilot Monitoring
- C&F - Captain and First Officer

Introduction

The Non-Normal Checklists chapter contains checklists used by the flight crew to cope with non-normal situations. The checklists are grouped in logical sections which match the system description chapters in Volume 2. The checklists are in alphabetical order in each section.

Most checklists correspond to an EICAS alert message. An EICAS alert message announces a failure condition and is the cue to select and do the checklist.

Checklists without an EICAS alert message (such as DITCHING) are called unannunciated checklists. The title of an unannunciated checklist on the printed checklist is preceded by an italic u character. All unannunciated checklists are found in the first section of the printed Non-Normal Checklists chapter. Some unannunciated checklists also appear in the respective systems section (such as FUEL JETTISON in the Fuel section).

A square bracket icon [] precedes all EICAS messages that have procedural steps, notes, or other information of which the crew must be made aware. The icon is removed from the EICAS message when the checklist has been completed. The title of the printed non-normal checklists also has the [] icon to agree with the EICAS message symbology. EICAS messages without icons have obvious checklists (such as OVERSPEED).

A condition statement is given for all alert messages. The condition statement briefly describes the condition which caused the message to show. Unannunciated checklists also have condition statements to help in understanding the reason for the checklist.

Non-Normal Checklists can have both recall and reference items. Recall items are critical steps that must be done from memory, prior to reading the checklist. Recall items are preceded by a pound symbol (#). Reference items are actions to be done while reading the checklist.

Each crewmember is required to know all recall items. However, bullets, notes, and bracketed items within the recall box support action steps and are not considered recall items.

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In the Table of Contents for each non-normal checklist section, and all indexes (including the Quick Action Index on the front cover), the titles of checklists containing recall items are printed in bold type.

Some amplified information is included in brackets [] in the printed non-normal checklist when the reason for an item is not obvious. Information in brackets is also used to identify the checklist from which an item originated.

Electronic Checklist Operation

A non-normal menu is given for the electronic checklist. The menu is arranged in the same manner as the Non-Normal Checklists chapter.

The primary purpose of the non-normal menu is to access unannounced checklists and condition statements for EICAS alert messages without icons.

The non-normal menu is also used to access checklists with icons to allow review of a specific checklist. Operation of the electronic checklist is described in Chapter 10, Flight Instruments, Displays.

Non-Normal Checklist Operation

Non-normal checklists start with steps to correct the situation or condition. Information for planning the rest of the flight is included. When special items are needed to configure the airplane for landing, the items are deferred to the Approach or Landing checklist. The electronic checklist automatically transfers deferred items to the Approach or Landing checklist. Flight patterns for some non-normal situations are located in the Maneuvers chapter, and in the Flight Crew Training Manual (FCTM), showing the sequence of configuration changes.

While every attempt is made to provide needed non-normal checklists, it is not possible to develop checklists for all conceivable situations, especially those involving multiple failures. In some unrelated multiple failure situations, the flight crew may combine elements of more than one checklist or exercise judgment to determine the safest course of action. The Captain must assess the situation and use good judgment to determine the safest course of action.

Landing at the Nearest Suitable Airport

There are some situations where the crew must always land at the nearest suitable airport. These situations include, but are not limited to, conditions where:

- the non-normal checklist has the words “Plan to land at the nearest suitable airport”
- cabin smoke or fire persists
- normal aircraft pitch, roll, or yaw cannot be maintained using aircraft trim systems
- there is only one AC power source (such as engine or APU generator)
- one hydraulic system remains, or
- any other situation determined by the crew to have a significant adverse effect on safety if the flight is continued

It must be stressed that for persistent smoke or a fire that cannot be positively confirmed to be completely extinguished, the earliest possible descent, landing, and evacuation should be done.

Land Immediately

A Smoke, Fire, or Fumes situation may become unmanageable, requiring an immediate landing. If conditions have deteriorated to where the risks associated with the approach, landing or post-landing are exceeded by the risk of the on-board situation, crews should strongly consider landing immediately. The situation may be severe enough that the Captain should consider an off-airport landing, or ditching.

Checklists Prescribing Engine Shutdown

Checklists prescribing an engine shutdown must be evaluated by the captain to determine whether an actual shutdown, or operation at reduced thrust, is the safest course of action. Consideration must be given to probable effects if the engine is operated at the minimum needed thrust.

There are no non-normal checklists associated with the loss of an engine indication, or with an automatic display of the secondary engine indications. Operate the engine normally unless an EICAS message shows or a limit is exceeded.

Non-Normal Checklist Assumptions

Non-normal checklists assume:

- Continuing to fly the airplane is the single most important consideration in every situation.
- Hurried action may be inappropriate and could result in a more serious situation.

Non-normal checklists also assume:

- During engine start and before takeoff, the respective non-normal checklist is done if an EICAS alert message is shown. Upon completion of the checklist, the Dispatch Deviations Guide or operator equivalent is consulted to determine if Minimum Equipment List relief is available
- System controls are in the normal configuration for the phase of flight before the start of the non-normal checklists
- Aural alerts are silenced and the system reset by the flight crew as soon as the cause of the alert is recognized
- The EMERGENCY position of the oxygen regulator is used when needed to supply positive pressure in the masks and goggles to evacuate contaminants. The 100% position of the oxygen regulator is used when positive pressure is not needed, but contamination of flight deck air exists. The NORMAL position of the oxygen regulator is used if prolonged use is needed and the situation allows. Normal boom mic operation is restored when oxygen use is no longer needed
- Indicator lights are tested to verify suspected faults

CAUTION: Flight crew reset of a tripped circuit breaker in flight is not recommended unless directed to do so in a non-normal checklist. However, a tripped circuit breaker may be reset once, after a short cooling period (approximately 2 minutes), if in the judgment of the Captain, the situation resulting from the circuit breaker trip has a significant adverse effect on safety. A ground reset of a tripped circuit breaker by the flight crew should only be done after maintenance has determined that it is safe to reset the circuit breaker.

Flight crew cycling (pulling and resetting) of circuit breakers to clear non-normal conditions is not recommended unless directed by a non-normal checklist.

If it is determined that the circuit breaker must be reset, turn off the affected component (if possible), and wait 3 minutes to let the circuit breaker cool properly prior to reset. Attempt only one reset

WARNING: Do not reset a tripped fuel boost pump CB.

Non-Normal Checklist Use

General

Non-normal checklist use starts when the airplane flight path and configuration are correctly established. Only a few situations need an immediate response (such as a stall warning, ground proximity PULL UP and WINDSHEAR warnings, or a rejected takeoff). Usually, time is available to assess the situation before corrective action is started. All actions must then be coordinated under the captain's supervision and done in a deliberate, systematic manner. Flight path control must never be compromised.

Calling for the Checklist

When a non-normal situation occurs, at the direction of the pilot flying, both crewmembers systematically and without delay do all recall items in their areas of responsibility.

The pilot flying may also direct reference procedures to be done by recall if no hazard is created by such action, or if the situation does not allow reference to a checklist.

Call for the checklist when:

- the flight path is in control
- the airplane is not in a critical phase of flight (such as takeoff or landing)
- all recall items are complete.

Reading the Checklist

For those checklists with only recall items or a combination of recall and reference items, the pilot monitoring first verifies each recall item has been done. The checklist is normally read aloud during this verification. The pilot flying does not need to respond except for items not in agreement with the checklist. With the electronic checklist, there is no need to read aloud or verify items that are complete (green).

Checklist title and reference items, including the response or action, and any amplifying information, are read aloud by the pilot monitoring. Read aloud as much of the condition statement as needed to verify the selection of the correct checklist. Information appearing in brackets does not need to be read aloud. The pilot flying need not repeat these items, but must acknowledge that the items were heard and understood. After moving the control the crewmember taking the action also states the checklist response.

Closed loop (sensed) checklist items change from white to green when the action is taken. The pilot monitoring is responsible to “check off” any open loop (not sensed) item and to verify that all closed loop items are green.

Dual Verification of Critical Controls

Prior to actuation of any critical controls when accomplishing a non-normal checklist in flight, a verbal dual response is required. The following are considered critical controls:

- thrust lever reduction of a failed engine
- fuel control switches/engine start levers
- any fire switch
- any IDG/CSD disconnect switch.

After determination that a critical control must be actuated in flight, the following steps must be taken:

- Both pilots must verbally and visually identify the affected control.
- The pilot performing the action will place his hand on the affected control
- The pilot monitoring the action will verbally and visually confirm the proper control has been selected.
- The pilot performing the action then actuates the affected control.

Conditional Items

Conditional items are used at a decision point. Conditional items usually begin with “If.” When a conditional item is encountered in a procedure, apply the following logic:

- If the conditional item applies, accomplish the action step(s) immediately following it.
- If the conditional item does not apply, skip the associated action step(s) and proceed to the next procedural step.

Deferred Items

The pilot flying is to be made aware when there are deferred items. These items may be delayed until the usual point during approach or landing.

Following completion of the applicable non-normal checklist items, normal checklists are used to verify that the configuration is correct for each phase of flight.

Consequential EICAS Alert Messages

Consequential EICAS alert messages can show as the result of a primary failure condition (such as AUTO SPEEDBRAKE from HYD PRESS SYS C) or the result of a non-normal checklist crew action (such as PACK L from SMOKE AIR CONDITIONING). Consequential messages are shown for crew awareness with icons automatically removed. The checklists for the consequential messages can have procedural steps, notes, or other information. The crew does not do these checklists. If consequential checklist steps, notes, and information are applicable to the primary failure condition, then these are included in the primary checklist. The statement “Do not accomplish the following checklists:” followed by a list of the checklists, shows in the printed primary checklist to inform the crew of consequential checklists. All consequential alert messages may not show while doing the primary checklist, depending on operational circumstances. The statement “Inhibited checklists:” followed by the list, shows in the electronic checklist. The statement need not be read aloud when doing the electronic checklist.

Notes and Information

Notes and information items, except for condition statements, are read aloud. The pilot flying need not repeat these items, but should acknowledge that the items were heard and understood.

Checklists show lists of inoperative equipment only when knowledge of the condition of such equipment is needed for planning the rest of the flight and the condition is not shown on EICAS.

Checklist Limitations

Pilots must be aware that checklists cannot be made for all conceivable situations and are not intended to replace good judgment. In some conditions, deviation from checklists may, at the Captain’s discretion, be needed.

Checklist Completion

The following symbol shows that the checklist is complete.



Each checklist has a checklist complete symbol at the end.

The checklist complete symbol can also be in the body of the checklist. This occurs only when a checklist divides into two or more paths. Each path can have a checklist complete symbol. The checklist complete symbol shows the end of the applicable path. The crew need not continue the checklist after that point.

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Following completion of each non-normal checklist, the pilot monitoring states: “_____ CHECKLIST COMPLETE.” When a non-normal checklist is complete except for the deferred items, and the normal checklist to which the items have been deferred has not yet been done, the pilot monitoring states: “_____ CHECKLIST COMPLETE EXCEPT FOR DEFERRED ITEMS.”

Ditching & Evacuation

Coast Guard Ditching Recommendations

In a ditching situation, the Captain should consider requesting a US Coast Guard Search and Rescue (SAR) aircraft to launch for intercept. Initial contact with SAR may be made on primary HF frequency or 121.5 mhz. To assist SAR aircraft, squawk 7700 unless assigned another code.

The SAR aircraft may intercept 1000 feet below your aircraft in VFR or 1000 feet above in IFR. Therefore, the altimeters of each aircraft must be compared prior to intercept to ensure safe vertical separation.

If ditching is unavoidable, the Coast Guard may be able to recommend a ditching heading either through the SAR aircraft or from a surface ship. If possible, ditch in the lee of an island, in a lagoon, or near a ship.

On primary HF, try to obtain information on ship location through USCG, Navy, AMVER, or RCC. If a merchant ship is nearby, attempt to communicate on 4125 or 2182 kHz. USCG and Navy vessels may be able to communicate on 121.5.

Coast Guard, Navy, and some merchant ships may have the capability of supplying homing signals, radar for intercept, flares for night ditching, and other aids. Standard low frequency homing signal is 410 hz, giving the call sign, followed by 2 (two) 10 (ten) second dashes.

Flight Crew Duties Summary for Emergency Landing/Ditching Evacuation

The following flight crew duties summary is designed to assist the crew members in preparing the aircraft’s occupants for emergency landing and evacuation. Time is essential in preparing passengers for the evacuation (especially non-ambulatory). Flight attendants should be advised of the problem(s) as soon as flight safety is in doubt. Specific flight attendant duties are outlined in the In-Flight Service On-Board Manual. Additionally, the flight attendants should be informed of any conditions such as high winds, irregular ground condition, sea state, structural damage and/or fire that affect or alter status of the escape slides/raft deployment.

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Pre-Landing / Ditching	
Captain	First Officer
<ul style="list-style-type: none"> • Advise crew to prepare for emergency landing (or ditching) and order distress message sent. • Set course for most logical point of landing under existing circumstances. • Order flight deck emergency preparation as conditions dictate. • Fasten seat belt and shoulder harness and lock. • Signal cabin crew/passengers when touchdown is imminent, using PA system if operative. • If ditching: don life vest. 	<ul style="list-style-type: none"> • Send distress message (MAY DAY), giving aircraft identification, type, position, heading, airspeed, altitude, fuel remaining in hours and minutes, nature of distress, intentions, and assistance desired. <p style="margin-left: 20px;">Ships 7101 & Subsequent</p> <p style="margin-left: 20px;">Note: Advise ATC number of souls remaining in overhead crew rest facility when communicating passenger numbers.</p> <p style="margin-left: 20px;">Note: Order cabin crew to relocate any crewmembers occupying the overhead crew rest facilities to the main cabin.</p> <ul style="list-style-type: none"> • Assist in flight deck emergency preparations as directed by the Captain and as conditions dictate. • Fasten seat belt and shoulder harness and lock. • If ditching: don life vest.
Relief Pilot (when aboard)	
<ul style="list-style-type: none"> • Assist in flight deck emergency preparations as directed by the Captain and as conditions dictate. • Open flight deck door. Stow loose articles. • Fasten seat belt and shoulder harness and lock. • If ditching: don life vest. 	

Post-Landing	
Captain	First Officer
<p>Ships 7101 & Subsequent</p> <ul style="list-style-type: none"> • Order evacuation. <p>Ships 7001 – 7008</p> <ul style="list-style-type: none"> • Activate evacuation signal with command switch on EVAC panel. <p>All</p> <ul style="list-style-type: none"> • Proceed to forward cabin area. • Assist in evacuating passengers as conditions dictate. • After ensuring that all passengers are off the aircraft or all possible assistance has been given, exit from the rear of the aircraft if able. • Assume command outside the aircraft. 	<ul style="list-style-type: none"> • Proceed to forward entry/exit door area. • Ensure forward exits are open. • Exit aircraft from forward exit and assist in the evacuation from outside the aircraft.
Relief Pilot (when aboard)	
<ul style="list-style-type: none"> • Proceed to forward entry/exit door area. • Ensure forward exits are open. • Exit aircraft from forward exit and assist in the evacuation from outside the aircraft. 	

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Ditching	
Captain	First Officer
<p>Ships 7101 & Subsequent</p> <ul style="list-style-type: none"> • Order evacuation. <p>Ships 7001 – 7008</p> <ul style="list-style-type: none"> • Activate evacuation signal with command switch on EVAC panel. <p>All</p> <ul style="list-style-type: none"> • Proceed to forward cabin area. • Assist in evacuating passengers as conditions dictate. • After ensuring that all passengers are off the aircraft or all possible assistance has been given, exit from the rear of the aircraft if able. Board raft. • After exiting, assemble passengers/rafts away from the aircraft. 	<p>7101 & Subsequent</p> <ul style="list-style-type: none"> • Select ELT switch to ON. <p>7001 – 7008</p> <ul style="list-style-type: none"> • Take portable ELT. <p>All</p> <ul style="list-style-type: none"> • Ensure forward exits are open. • Exit aircraft from forward exit and board raft. • Assist in assembling passengers/rafts away from the aircraft.
Relief Pilot (when aboard)	
<ul style="list-style-type: none"> • Direct passengers, and exit aircraft, through 2R door; board side raft. • Assist in assembling passengers/rafts away from aircraft. 	

Evacuation Flow/Philosophy

Evacuation flow items listed below are not included within the EVACUATION checklist. They are meant to refresh the logical pattern of procedures that must occur for a successful evacuation. In the unlikely event that the checklist cannot be read due to smoke/fire, darkness, injury or incapacitation, the simple flow or philosophy should lead the pilot to completion of all critical tasks contributing to the safest possible evacuation. The checklist follows the flow pattern of:

STOP

CONFIGURE

SHUT DOWN

EVACUATE

Smoke/Fumes Principles

All smoke/fire/fumes events are different, and every contingency cannot be addressed in a single checklist. At the beginning of any smoke/fire/fumes event, crews should always consider the following:

- Protecting themselves (e.g., oxygen masks)
- Communicating (Crew and ATC)
- Diverting
- Assessing the smoke/fire/fumes situation and available resources.

If smoke/fire/fumes are associated with an annunciated checklist (e.g., cargo fire), accomplish that checklist prior to the "SMOKE, FIRE OR FUMES" or "SMOKE OR FUMES REMOVAL" checklists.

Known Source

Many smoke/fire/fumes events involve aircraft equipment or materials readily accessible. Rapid, positive extinguishing of the source is the key to preventing escalation of the event. Confirmation that the situation has been resolved is critical. Do not consider flight continuation unless the source is positively identified, confirmed to be extinguished and smoke/fumes are decreasing.

Unknown Source

It may not always be possible to accurately identify the smoke/fire/fumes source due to ambiguous cues, such as multiple sources. It may not be possible to determine the difference between electrical smoke/fumes and air conditioning smoke/fumes by sense of smell. The source identification/elimination steps in the "SMOKE, FIRE OR FUMES" Checklist will systematically remove the most probable smoke/fire/fumes sources.

Inordinate depowering of airplane systems is not likely to benefit an unknown smoke/fire/fumes situation. Such action significantly reduces airplane capabilities without commensurate likelihood of depowering the unknown smoke/fire/fumes source.

Smoke/Fumes Priorities

General

The following information is critical to survival in a smoke/fumes situation. Though all applicable non-normal checklists can be found in other sections of this manual, Section 8 (Fire Protection) contains all of these checklists.

Note: Pilots should remain at their stations to fly the aircraft, coordinate with ATC and accomplish the checklists. The incapacitation of a pilot fighting a fire would seriously complicate the situation.

Priorities

Diversion

After making a preliminary assessment of the smoke/fire/fumes source, the flight crew is reminded a diversion may be necessary.

Oxygen Masks (if required)

The flight crew should don the oxygen mask anytime smoke/fire/fumes are detected on the flight deck. If smoke/fire/fumes are detected in another part of the aircraft, flight crew judgment will determine if/when the Oxygen Masks are donned.

Crew and Cabin Communications

For a cabin smoke/fire/fumes situation, continuous communications between the flight crew and a designated flight attendant is essential. Flight attendants should be directed to inspect the entire cabin in an attempt to locate the smoke/fire/fumes source. Passengers should be moved away from the source.

Identification/Elimination

The flight crew should, without delay or analysis, perform the initial "SMOKE, FIRE OR FUMES" checklist steps that remove the most probable smoke/fire/fumes sources. The flight crew should attempt to identify and eliminate the source, and visually confirm it is extinguished and the smoke/fumes are decreasing.

Continued on next page

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Assessment

Once a fire or concentration of smoke/fumes is detected, continuing the flight to the planned destination is not recommended unless the source of the smoke/fire/fumes is positively identified and visually confirmed to be extinguished and the smoke/fumes are decreasing. If initial identification / elimination steps do not positively identify and remove the smoke/fire/fumes, a diversion will be necessary.

"Visually confirmed to be extinguished" means that a crew member can physically see the source of smoke and that it has been extinguished. An example would be if a cabin crewmember visually identified smoke coming from an oven, and after power was removed from the oven, visually can see that the smoke has stopped. On the other hand, if the smoke stops after depowering a particular system (e.g., Recirculation Fan), the smoke/fire is not "positively identified and visually confirmed to be extinguished", therefore a diversion will be necessary.

The flight crew must continually evaluate the situation to determine if further actions (e.g. oxygen mask, diversion, immediate landing, immediate smoke removal) are necessary.

Removal

The "SMOKE OR FUMES REMOVAL" checklist should be accomplished only when the smoke/fumes are the greatest threat, or when the source is confirmed to be extinguished. Smoke/fumes removal may change the airflow and make the situation worse by fanning or masking the ignition source

WARNING: Do not activate the emergency passenger oxygen system. It provides no smoke protection for passengers as it mixes oxygen with cabin air. It is also an extreme fire hazard.

BEFORE START

Exterior & interior preflight	Complete	C
Passenger signs	ON	C
\$ Oxygen masks, regulator, interphone	Checked	All
\$ Altimeters	___, xckd	C&F
\$ Flight & nav instruments	Checked	C&F
Autobrake selector	RTO	C
EICAS	Checked	C
Flaps	UP	C
Parking brake	Set	C
Fuel control switches	CUTOFF	C
Radios, transponder, radar	Checked & set	C
Flight Attendant briefing	Complete	C
Departure briefing	Complete	C
Log book	Checked	C
\$ Fuel required	___ onboard ___	C&F
When paperwork received:		
CDU	Set	C
Mode Control Panel	Set	C



PUSHBACK/START

Doors	Closed	F
Hydraulic panel	Set	F
Fuel panel	Set	F
Flight deck door	Closed & locked	F
\$ Trim	___ Units, zero, zero	C&F
Transponder	As reqd	F
Beacon light switch	ON	F

AFTER START

APU	OFF	F
\$ Engine anti-ice	As reqd	C&F
Recall	Checked	F

TAXI

\$ Flaps	___, ___	C&F
\$ Flight controls	Checked	C&F

RUNWAY CHANGE

\$ Runway, departure, first fix	___, ___, ___	C&F
Note: Check for route discontinuity.		
\$ Flaps	___, ___	C&F
\$ Trim	___ Units, zero, zero	C&F
Mode Control Panel	Set	F
Departure briefing	Complete	F

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777 Operations Manual

BEFORE TAKEOFF

\$ Flaps	___, ___	C&F
\$ Windows	Closed & locked	C&F
\$ Altimeters	___, xckd	C&F
Takeoff briefing	Complete	F
\$ Runway, departure, first fix	___, ___, ___	C&F
Flight Attendants	Notified & acknowledged	F
Final items:		
Transponder/TCAS	TA/RA	F
Exterior lights	Set	F

AFTER TAKEOFF

Landing gear	UP
Flaps	UP
Anti-ice selectors	AUTO

CLIMB

\$ Altimeters (transition altitude)	STD, xckd	C&F
---	-----------	-----

▲ DELTA
777 Operations Manual

DESCENT

\$	Altimeters	___, xckd	C&F
\$	Radio/baro minimums	___, xckd	C&F
	Seat belts sign selector	ON	PM
	Approach briefing	Complete	PM
	EICAS & notes	Recall & checked	PM
	Landing data	Set	PM
	Autobrakes	As reqd	PM

APPROACH

\$	PFD/ND	Checked	C&F
	(777LR) Cabin chime switch	Cycled	PM
	(777ER) No smoking sign selector	Cycled & ON	PM
\$	Altimeters (transition level)	___, xckd	C&F

LANDING

\$	Landing gear	DOWN	C&F
	Speedbrake lever	Armed	PM
\$	Flaps	___, ___	C&F



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AFTER LANDING

Speedbrake lever **DOWN**
 Exterior lights **Set**
 Radar **OFF**
 Flight director switches **OFF**
 Autobrake selector **OFF**
 Flaps **UP**
 Transponder/TCAS **As reqd**
 Engine anti-ice selectors **As reqd**
 Fuel control switches **As reqd**
 APU **As reqd**

SHUTDOWN

Seat belts sign selector **OFF**
 APU/external power **As reqd**
 Fuel control switches **CUTOFF**
 Hydraulic panel **Set**
 Fuel pump switches **OFF**
 Anti-ice selectors **AUTO**
 Transponder **STBY**
 Beacon light switch **OFF**
 Parking brake **As reqd**

SECURE

ADIRU switch OFF

Emergency lights switch OFF

Pack switches OFF

Battery switch As reqd

Before leaving aircraft:

Configure APU and external power as required.

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Intentionally
Blank

***U* ABORTED ENGINE START L, R**

Condition: **During a ground start, an aborted engine start condition occurs.**

FUEL CONTROL switch CUTOFF

START selector START

Motor the engine for 30 seconds.

START selector NORM



U AIRSPEED UNRELIABLE

Condition: **Airspeed or Mach indication suspected to be unreliable.**

One or more of the following may be evidence of unreliable airspeed/Mach indication:

- speed/altitude information not consistent with pitch attitude and thrust setting
- airspeed failure flags
- PFD current airspeed box amber
- blank or fluctuating airspeed displays
- amber line through one or more PFD flight mode annunciations
- overspeed indications
- radome damage or loss
- simultaneous overspeed and stall warnings.

One or more of the following EICAS messages may be displayed:

**AIRSPEED LOW
GND PROX SYS
HEAT PITOT C
HEAT PITOT L
HEAT PITOT R
HEAT PITOT L+C+R
NAV AIR DATA SYS
OVERSPEED
SGL SOURCE AIR DATA
SGL SOURCE DISPLAYS
WINDSHEAR SYS**

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

Pitch attitude and thrust Check

Continued on next page

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If pitch attitude or thrust are NOT normal for phase of flight:

AUTOPILOT Disengage

AUTOTHROTTLE Disconnect

FLIGHT DIRECTORS OFF

Pitch attitude and thrust Adjust

Establish normal pitch attitude and thrust setting for phase of flight.

Note: Normal pitch attitude and thrust settings are available in the Operational Data Manual, Abnormal section.

Ships 7101 & Subsequent

Note: Altitude, Vertical Speed, Reference N1, and Maximum N1 may be unreliable.

Ships 7001 – 7008

Note: Altitude, Vertical Speed, Reference EPR, and Maximum EPR may be unreliable.

Compare pitch attitude, thrust setting, and airspeed with ground speed and the Operational Data Manual, Abnormal section.

If reliable airspeed data source can be determined:

Use reliable airspeed indication.



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If reliable airspeed data source can NOT be determined:

Pitch attitude and thrust Adjust
Maintain normal pitch attitude and thrust setting for phase of flight. Refer to the Operational Data Manual, Abnormal section.

-----DEFERRED ITEMS-----

==> APPROACH CHECKLIST

Plan to do the following:

- maintain visual conditions if possible
- establish landing configuration early
- use electronic and visual glide slope indicators, where available, for approach and landing
- refer to ground speed on ND and reported wind for approach.



U AUTOMATIC UNLOCK

Condition: **Flight deck door AUTO UNLOCK light illuminated indicates correct emergency access code has been entered and flight deck door is programmed to automatically unlock after a time delay.**

FLIGHT DECK DOOR LOCK selector DENY
Rotate and hold for 1 second.

[Prohibits unauthorized access to flight deck.]



**U CABIN INTERPHONE SYSTEM
INOPERATIVE**

Condition: **Cabin interphone system is inoperative.**

Cabin handsets Reset
Ensure all cabin handsets are properly reset and stowed.
 [Improperly stowed handsets may be cause of malfunction.]



If interphone system remains inoperative:

Cabin crew communications Establish
Contact Flight Leader and establish plan for
communications under normal conditions.

Note: Avoid use of PA for direct messages to Flight
Attendants, except, in an emergency.

Brief the Flight Leader on the following alternate
emergency procedures:

Cabin Interphone System Inoperative			
Source of Abnormal		Pilot Action	Briefing Items
Flight Deck	Cabin		
Smoke/Fire		Use PA	PA is primary means to command an evacuation. The Flight Deck Evacuation Command switch will be secondary.
Emergency Landing			
Ditching			
Evacuation or Rejected Takeoff			
	Smoke/Fire	Continually monitor PA	Flight Attendant will use "Alert" function on handset (if operable) to notify pilots to monitor PA.
	Hijacking		
	Passenger Problem (Medical/ Disturbance)		Flight Attendant will use "Alert" function on handset (if operable) to notify pilots to monitor PA. If unable, Flight Attendant will use briefed entry method at flight deck door.



U DITCHING

Condition: **Airplane ditching and evacuation are required.**

Note: Refer to Checklist Introduction for the Flight Crew Duties Summary for Emergency Landing/Ditching Evacuation.

Plan to jettison fuel as required.

[Reduces VREF speeds.]

-----DEFERRED ITEMS-----

==> APPROACH CHECKLIST

When below 5,000 feet:

GROUND PROXIMITY GEAR OVERRIDE
switch **OVRD**

GROUND PROXIMITY TERRAIN OVERRIDE
switch **OVRD**

PACK switches (Both) **Off**
[Ensures airplane is depressurized for opening passenger entry doors.]

OUTFLOW VALVE switches (Both) **MAN**

OUTFLOW VALVE MANUAL switches
(Both) **CLOSE**

Position outflow valves fully closed.

[Prevents water from entering airplane through the valves.]

PASSENGER SIGNS selectors **ON**

Do not accomplish the following checklists:

PACK L

PACK R

CABIN ALTITUDE AUTO

Continued on next page

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When on final approach (omit Landing checklist):

Landing gear lever **UP**
FLAPS **30**

[Allows lowest VREF speed for approach.]

Advise cabin crew of imminent touchdown.

Maintain airspeed at VREF30 to touchdown. Flare airplane to achieve minimum rate of descent at touchdown.

After impact, position fuel control switches to CUTOFF, override and pull APU fire switch.

[Removes electrical power which ensures passenger entry door flight locks are unlocked.]



U DUAL ENG FAIL/STALL

Condition: **Engine speed for both engines is below idle.**

FUEL CONTROL switches

(Both) CUTOFF, then RUN

[Attempts to clear stall condition and allows engines to be put into start mode.]

RAM AIR TURBINE switch Push

Push and hold for 1 second.

[Backs up automatic deployment of the RAT.]

Ships 7101 & Subsequent

For a dual engine in-flight start, do not manually abort the start if the EGT indication turns red. AUTOSTART allows EGT to exceed the in-flight start limit, however AUTOSTART aborts the start before EGT becomes too high for continued engine operation.

Ships 7101 & Subsequent

Airspeed Above 270 KTS

[Ensures best windmill start capability.]

Ships 7001 – 7008

Airspeed Above 250 KTS

[Ensures best windmill start capability.]

APU selector

(If APU available) START, then ON

[Backs up automatic APU start.]

Ships 7101 & Subsequent

Engines may accelerate to idle very slowly, especially at high altitudes. The time from fuel control switch to RUN to stabilized idle may be as long as two and a half minutes. Slow acceleration may be incorrectly interpreted as a hung start or engine malfunction. If N2 is steadily increasing and EGT remains within limits, the start is progressing normally.

Continued on next page

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Ships 7001 – 7008

Engines may accelerate to idle very slowly, especially at high altitudes. Slow acceleration may be incorrectly interpreted as a hung start or engine malfunction. If N3 is steadily increasing and EGT remains within limits, the start is progressing normally. Any further cycling of the fuel control switches will result in longer start times.

When HEAT PITOT L+C+R message no longer displayed:

PRIMARY FLIGHT COMPUTERS

DISCONNECT switch DISC, then AUTO

[Restores flight control normal mode following reversion to secondary mode caused by loss of pitot heat.]

Autopilot can be re-engaged when flight control normal mode is restored.



U ENG IN-FLIGHT START L, R

Ships 7101 & Subsequent

Condition: Engine start is needed after a shutdown with no fire or apparent damage.

Monitor EGT during start.

[Prevents EGT exceedance because AUTOSTART allows EGT to exceed the in-flight start limit.]

Engine may accelerate to idle very slowly, especially at high altitudes. The time from fuel control switch to RUN to stabilized idle may be as long as two and a half minutes. Slow acceleration may be incorrectly interpreted as a hung start or engine malfunction. If N2 is steadily increasing and EGT remains within limits, the start is progressing normally.

If X-BLD is displayed:

START selectorSTART

[Allows air to starter for a crossbleed start.]

FUEL CONTROL switchRUN

For AUTOSTART OFF, move to RUN at maximum motoring.

If an abort start condition as listed in normal procedures occurs:

FUEL CONTROL switch CUTOFF

START selector NORM

If X-BLD is not displayed:

FUEL CONTROL switchRUN

If an abort start condition as listed in normal procedures occurs:

FUEL CONTROL switch CUTOFF

Continued on next page

Continued from previous page

If engine starts and runs normally:

GROUND PROXIMITY FLAP OVERRIDE switch Off

Transponder mode selector TA/RA



U ENG IN-FLIGHT START L, R

Ships 7001 – 7008

Condition: Engine start is needed after a shutdown with no fire or apparent damage.

Monitor EGT during start.

[Prevents EGT exceedance because AUTOSTART allows EGT to exceed the in-flight start limit.]

Engine may accelerate to idle very slowly, especially at high altitudes. Slow acceleration may be incorrectly interpreted as a hung start or engine malfunction. If N3 is steadily increasing and EGT remains within limits, the start is progressing normally. Any further cycling of the fuel control switches will result in longer start times.

If X-BLD is displayed:

START selectorSTART

[Allows air to starter for a crossbleed start.]

FUEL CONTROL switchRUN

For AUTOSTART OFF, move to RUN at maximum motoring.

If an abort start condition as listed in normal procedures occurs:

FUEL CONTROL switch CUTOFF

START selector NORM

If X-BLD is not displayed:

FUEL CONTROL switchRUN

If an abort start condition as listed in normal procedures occurs:

FUEL CONTROL switch CUTOFF

Continued on next page

Continued from previous page

If engine starts and runs normally:

GROUND PROXIMITY FLAP OVERRIDE switch Off

Transponder mode selector TA/RA



U ENG LIM/SURGE/STALL L, R

Condition: **Engine indications are abnormal or are approaching or exceeding limits, abnormal engine noises are heard, or there is no response to thrust lever movement.**

AUTOTHROTTLE ARM switch OFF

[Allows thrust lever to remain where manually positioned.]

Thrust lever Retard

Retard until indications remain within appropriate limits or the thrust lever is closed.

[Stabilizes air flow through engine.]

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

If indications abnormal or EGT continues to increase:

FUEL CONTROL switch CUTOFF

APU selector

(If APU available) START, then ON

[Provides an additional source of electrical power.]

Transponder mode selector TA ONLY

[Prevents climb commands which can exceed single engine performance capability.]

Plan to land at the nearest suitable airport.

Consider an evacuation.

Continued on next page

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If indications stabilized/EGT decreasing:

Thrust lever Advance
Advance slowly. Check that RPM and EGT follow
thrust lever movement.

[Attempts to restore normal control of engine operation.]

Operate engine normally or at a reduced thrust level
which is surge and stall free.

If landing using flaps 20:

GROUND PROXIMITY FLAP OVERRIDE
switch OVRD

Note: Use flaps 20 and VREF20 for landing and flaps 5 for
go-around.

If landing using flaps 30 (performance permitting):

Note: Use flaps 30 and VREF30 for landing and flaps 20
for go-around.

Do not accomplish the following checklist:

AUTOTHROTTLE



U ENG SVR DAMAGE/SEP L, R

Condition: **Engine has severe damage, vibration, or has separated.**

AUTOTHROTTLE ARM switch OFF

[Allows thrust lever to remain where manually positioned.]

Thrust lever Close

[Assists in recognition of affected engine.]

FUEL CONTROL switch CUTOFF

ENGINE FIRE switch Pull

[Shuts off fuel and hydraulic fluid.]

If high airframe vibration occurs and continues after engine shutdown:

Without delay, reduce airspeed and descend to a safe altitude which results in an acceptable vibration level. If high vibration returns and further airspeed reduction and descent is not practical, increasing the airspeed may reduce the vibration.

APU selector (If APU available) START, then ON

[Provides an additional source of electrical power.]

Transponder mode selector TA ONLY

[Prevents climb commands which can exceed single engine performance capability.]

**Plan to land at the nearest suitable airport.
Consider an evacuation.**

If landing using flaps 20:

GROUND PROXIMITY FLAP OVERRIDE switch OVRD

Note: Use flaps 20 and VREF20 for landing and flaps 5 for go-around.

Continued on next page

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If landing using flaps 30 (performance permitting):

Note: Use flaps 30 and VREF30 for landing and flaps 20 for go-around.

Do not accomplish the following checklist:

AUTOTHROTTLE



***U* FIRE ENG TAILPIPE L, R**

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

FUEL CONTROL switch (Affected engine) CUTOFF

Advise the cabin.

If bleed air is available:

START selector (Affected engine) START

Advise the tower.

If the engine is being motored:

Continue to motor until the tailpipe fire is extinguished.

START selector (Affected engine) NORM



U FUEL JETTISON

Condition: **Fuel jettison is required.**

FUEL JETTISON ARM switch ARMED

If desired FUEL TO REMAIN different than displayed FUEL TO REMAIN:

FUEL TO REMAIN selector Pull, set manually

FUEL JETTISON NOZZLE switches (Both) ON

Do not accomplish the following checklists:

FUEL PUMP CENTER L

FUEL PUMP CENTER R

When fuel jettison complete:

FUEL JETTISON NOZZLE switches (Both) Off

FUEL JETTISON ARM switch Off



U FUEL LEAK

Condition: **An in-flight fuel leak is suspected or confirmed.**

One or more of the following may be evidence of a fuel leak:

- **visual observation of fuel spray from strut/engine**
- **excessive engine fuel flow**
- **total fuel quantity decreasing at an abnormal rate**
- **FUEL DISAGREE message on EICAS**
- **FUEL IMBALANCE message on EICAS**
- **FUEL QTY LOW message on EICAS**
- **INSUFFICIENT FUEL message on CDU scratchpad.**

CENTER FUEL PUMP switches (Both) Off

CROSSFEED switches (Both) Off

Identify an engine fuel leak by observing a left or right main fuel tank quantity decreasing faster than the other.

An increase in fuel imbalance of approximately 1,000 lbs or more in 30 minutes should be considered a fuel leak.

Conditions permitting, visually check for engine fuel leak.

If left and right main tank quantities decrease at same rate:

Resume normal fuel management procedures.

If FUEL DISAGREE message displayed:

PROGRESS PAGE 2 Select

TOTALIZER OR CALCULATED Select USE

Select most accurate value.

Continued on next page

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If engine fuel leak confirmed:

AUTOTHROTTLE ARM switch
(Affected engine) **OFF**

[Allows thrust lever to remain where manually positioned.]

Thrust lever (Affected engine) **Close**

[Assists in recognition of affected engine.]

FUEL CONTROL switch
(Affected engine) **CUTOFF**

APU selector
(If APU available) **START, then ON**

[Provides an additional source of electrical power.]

Transponder mode selector **TA ONLY**

[Prevents climb commands which can exceed single engine performance capability.]

If FUEL DISAGREE message displayed:

PROGRESS PAGE 2 **Select**

TOTALIZER **Select USE**

Use TOTALIZER to determine fuel remaining.

Note: After engine shutdown, all remaining fuel can be used for the operating engine. Resume normal fuel management procedures. Plan to balance fuel when the FUEL IMBALANCE message is displayed.

Plan to land at the nearest suitable airport.

If landing using flaps 20:

GROUND PROXIMITY FLAP
OVERRIDE switch **OVRD**

Note: Use flaps 20 and VREF20 for landing and flaps 5 for go-around.

Continued on next page

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If engine fuel leak confirmed: (continued)

If landing using flaps 30 (performance permitting):

Note: Use flaps 30 and VREF30 for landing and flaps 20 for go-around.

If FUEL QTY LOW message displayed:

CROSSFEED switch (Either) ON

[From FUEL QTY LOW checklist. Ensures fuel is available to both engines if the low tank empties.]

FUEL PUMP switches (All) ON

[From FUEL QTY LOW checklist. Ensures all fuel is available for use.]

Plan to land at the nearest suitable airport.

[From FUEL QTY LOW checklist.]

GROUND PROXIMITY FLAP

OVERRIDE switch OVRD

Note: Use flaps 20 and VREF20 for landing.

[From FUEL QTY LOW checklist. Provides improved elevator authority in event of dual engine flameout.]

Note: Avoid high nose up attitude and excessive acceleration or deceleration.

[From FUEL QTY LOW checklist. Prevents forward pumps from uncovering.]

Do not complete the following checklist:

FUEL QTY LOW



U GEAR LEVER LOCKED DN

Condition: Landing gear lever cannot be positioned to UP.

Landing gear lever LOCK

OVERVERRIDE switch Push and hold

Landing gear lever UP



U LOCK FAIL

Condition: **Flight deck door LOCK FAIL** light illuminated indicates flight deck door lock has failed, or flight deck access system switch is OFF.

FLIGHT DECK ACCESS SYSTEM switch
(Conditions permitting) OFF

[Removes electrical power to prevent possible lock overheat.]

Ships 7101 & Subsequent
Door can be locked with deadbolt.

Ships 7001 – 7008
Door can be locked by inserting mechanical latch pin.

Note: A second crewmember is required to secure the flight deck door when a crewmember leaves the flight deck. Reference the FOM for flight deck entry/exit procedures.



U OVERWEIGHT LANDING

Condition: **A landing at greater than maximum landing weight is required.**

Refer to Operational Data Manual (ODM), Approach/Landing section.

If landing gross weight greater than LANDING CLIMB LIMIT WEIGHT, or an engine is inoperative:

**GROUND PROXIMITY FLAP
OVERRIDE switch OVRD**

Note: Use flaps 20 and VREF20 for landing and flaps 5 for go-around.



Ships 7101 & Subsequent

If landing gross weight less than LANDING CLIMB LIMIT WEIGHT:

Enter landing gross weight on the APPROACH REF page.

If VREF30 at or below 170 knots:

Note: Use flaps 30 and VREF30 for landing and flaps 20 for go-around.



If VREF30 above 170 knots:

Note: Use flaps 25 and VREF25 for landing and flaps 20 for go-around.



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Ships 7001 – 7008

If landing gross weight less than LANDING CLIMB LIMIT WEIGHT:

Enter landing gross weight on the APPROACH REF page.

If VREF30 at or below 160 knots:

Note: Use flaps 30 and VREF30 for landing and flaps 20 for go-around.



If VREF30 above 160 knots:

Note: Use flaps 25 and VREF25 for landing and flaps 20 for go-around.



***U* PUBLIC ADDRESS SYSTEM
INOPERATIVE**

Condition: Public address system is inoperative.

Cabin crew communications Establish

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

- **Use of standard flight deck/cabin call signals.**
- **Advising Flight Leader to review location and operation of portable megaphones with Flight Attendants.**

20 minutes (1 hour on transoceanic flights) and 5 minutes before landing:

Flight Leader Advise

Coordinate as required to provide sufficient time to meet passenger briefing requirements.

[With PA inoperative, Flight Attendants must individually (a few seats at a time) brief passengers before takeoff and landing.]

Brief the Flight Leader on the following alternate emergency procedures:

Continued on next page

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Public Address System Inoperative			
Source of Abnormal		Pilot Action	Briefing Items
Flight Deck	Cabin		
Smoke/Fire		Use Cabin Interphone	Pilots and Flight Attendants will use the cabin interphone for communication. Public Announcements accomplished by Flight Attendants using megaphones.
Emergency Landing		Use "Alert" function on handset, then cabin interphone or face-to-face.	Pilots will use "Alert" function on handset to alert Flight Attendants to emergency situation. Subsequent communication via interphone or face-to-face, time permitting. Ships 7001 – 7008 Initiate evacuation using EVACUATION COMMAND switch.
Ditching			
Evacuation or Rejected Takeoff			
	Smoke/Fire	Use Cabin Interphone	Pilots and Flight Attendants will use the cabin interphone for communication. Public Announcements accomplished by Flight Attendants using megaphones.
	Hijacking		
	Passenger Problem (Medical/ Disturbance)		



U SMOKE, FIRE OR FUMES

Condition: **Smoke, fire or fumes is identified.**

Diversion may be needed.

Oxygen masks (as required) On, 100%

Crew and cabin communications Establish

Ships 7008, 7101 & Subsequent

IFE/PASS SEATS switch Off

Ships 7001 – 7007

Advise the cabin crew to turn off main IFE and PC power switches (as installed).

RECIRCULATION FANS switches (Both) Off

GASPER switch Off

APU BLEED AIR switch Off

Any time the smoke or fumes becomes the greatest threat, do the SMOKE OR FUMES REMOVAL checklist.

If the source of the smoke, fire or fumes is both obvious and can be extinguished quickly:

Source Isolate and extinguish

If possible, remove power from the affected equipment by switch or circuit breaker in the flight deck or cabin.

If both of the following are true:

- **The source is visually confirmed to be extinguished, and**
- **The smoke or fumes are decreasing**

Continue the flight at the Captain's discretion.

Restore unpowered items at the Captain's discretion.

Do the SMOKE OR FUMES REMOVAL checklist if needed.



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Ships 7001 – 7007

Advise the cabin crew to:

- **turn on cabin reading lights switches**
- **turn on galley attendant work lights switches**
- **turn off galley power switches**
- **turn off cabin fluorescent light switches**

Ships 7008, 7101 & Subsequent

Advise the cabin crew that main cabin lighting will be turned off.

Ships 7008, 7101 & Subsequent

CABIN/UTILITY power switch Off

Initiate a diversion to the nearest suitable airport while continuing the checklist.

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

Do not delay landing in an attempt to complete the following steps:

CENTER BLEED ISOLATION switch Off

[Isolates left and right sides of the bleed air system.]

LEFT PACK switch Off

[Removes left side of the air conditioning system as a possible source of smoke/fumes.]

LEFT TRIM AIR switch Off

[Removes left side of the trim air system as a possible source of smoke/fumes.]

Do not accomplish the following checklists:

PACK L

TRIM AIR L

Wait 2 minutes unless the smoke or fumes are increasing.

[Allows time for the smoke or fumes to clear.]

Continued on next page

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If the smoke or fumes continue or are increasing:

LEFT PACK switch **AUTO**

[Restores left side of the air conditioning system.]

LEFT TRIM AIR switch **ON**

[Restores left side of the trim air system.]

RIGHT PACK switch **Off**

[Removes right side of the air conditioning system as a possible source of smoke/fumes.]

RIGHT TRIM AIR switch **Off**

[Removes right side of the trim air system as a possible source of smoke/fumes.]

Do not accomplish the following checklists:

PACK R

TRIM AIR R

Wait 2 minutes unless the smoke or fumes are increasing.

[Allows time for the smoke or fumes to clear.]

If smoke or fumes continue or are increasing:

CENTER BLEED ISOLATION switch **AUTO**

[Isolates left and right sides of the bleed air system.]

RIGHT PACK switch **AUTO**

[Restores the right side of the air conditioning system.]

RIGHT TRIM AIR switch **ON**

[Restores the right side of the trim air system.]

Consider an immediate landing.

Do the SMOKE OR FUMES REMOVAL checklist if needed.



U SMOKE OR FUMES REMOVAL

Condition: **Smoke/fumes removal is needed.**

Do this checklist only when directed by the SMOKE, FIRE OR FUMES checklist.

Do not delay landing in an attempt to complete the following steps:

EQUIPMENT COOLING switch Off

Note: After 30 minutes of operation at low altitude and low cabin differential pressure, electronic equipment and displays may fail.

Do not accomplish the following checklist:

EQUIP COOLING OVRD

If most smoke/fumes are in cabin forward of mid-wing and outflow valve manual control available:

AFT OUTFLOW VALVE switch MAN

AFT OUTFLOW VALVE MANUAL switch Close

Position outflow valve fully closed.

Do not accomplish the following checklist:

OUTFLOW VALVE AFT

Return to the SMOKE, FIRE OR FUMES checklist and complete the remaining steps.



Continued on next page

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If most smoke/fumes are in cabin aft of mid-wing and outflow valve manual control available:

FORWARD OUTFLOW VALVE switch MAN

FORWARD OUTFLOW VALVE MANUAL switchClose

Position outflow valve fully closed.

Do not accomplish the following checklist:

OUTFLOW VALVE FWD

Return to the SMOKE, FIRE OR FUMES checklist and complete the remaining steps.



U TAT PROBE ICING

Condition: **Airplane TAT probe or engine TAT probe icing is suspected.**

One or more of the following may be evidence of TAT probe icing:

- **autothrottle disconnects and Reference/Target EPR/N1 and Reference EPR/N1 are blanked**
- **thrust lever stagger with EPR/N1 aligned**
- **EPR/N1 stagger with thrust levers aligned**
- **decrease or increase in Reference/Target EPR/N1 at constant altitude and speed**
- **unable to achieve maximum continuous or maximum climb rating with thrust levers fully advanced**
- **TAT remains constant and near 0 degrees C during climb, cruise, or descent.**

AUTOTHROTTLE DISCONNECT switch Push
[Allows thrust levers to remain where manually positioned.]

Thrust levers (Both) Retard to mid position
[Prevents exceeding thrust limits when switching to alternate mode.]

EEC MODE switches (Both) Off
Push one switch at a time.
[Ensures both engines operate in alternate mode.]

Thrust levers (Both) Set
[Maintains desired airspeed and rate of climb or descent.]

Note: Maximum thrust limiting is not available in alternate mode. Alternate thrust setting information is displayed on the N1 indications.

Continued on next page

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If TAT remains constant and near 0 degrees C:

Airplane TAT probe icing is suspected:

- Reference/Target N1/EPR and Reference N1/EPR may be temporarily unreliable
- Observe EGT caution limits
- Maximum N1 display may be temporarily unreliable.

Do not accomplish the following checklists:

ENG LIMIT PROT L

ENG LIMIT PROT R

If TAT is not near 0 degrees C:

Engine TAT probe icing is suspected:

- Airplane TAT is reliable
- Reference/Target N1 and Reference N1 are reliable if displayed
- Maximum N1 is reliable if displayed.

Autothrottle may be re-engaged when:

- Reference/Target N1 and Reference N1 are displayed
- TAT is not near 0 degrees C.

Do not accomplish the following checklists:

ENG EEC MODE L

ENG EEC MODE R



U VOLCANIC ASH

Condition: **Static discharge around the windshield, bright glow in the engine inlets, smoke or dust on the flight deck, or acrid odor indicates the airplane is in volcanic ash.**

Exit volcanic ash as quickly as possible. Consider a 180 degree turn.

Oxygen masks On, 100%

Crew communications Establish

AUTOTHROTTLE DISCONNECT switch Push

[Allows thrust levers to remain where manually positioned.]

Thrust levers Close

Conditions permitting, operate engines at idle.

[Reduces possible engine damage and/or flameout by decreasing EGT.]

ENGINE ANTI-ICE selectors (Both) ON

[Increases bleed air extraction to improve engine stall margin.]

WING ANTI-ICE selector ON

[Increases bleed air extraction to improve engine stall margin.]

RECIRCULATION FANS switches (Both) Off

[Increases bleed air extraction to improve engine stall margin by putting packs into high flow.]

APU selector

(If APU available) START, then ON

[Provides an electrical power source in the event one or both engines flame out.]

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

- **engine malfunctions, increasing EGT, engine stall or flameout**
- **decrease or loss of airspeed indications**
- **EQUIP COOLING OVRD indications**
- **FIRE CARGO FWD or AFT indications.**

Continued on next page

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If engines flamed out or stalled, or EGT rapidly approaching or exceeding limit:

FUEL CONTROL switches

(Both) CUTOFF, then RUN

[Attempts to clear stall condition and allows engines to be put into start mode.]

RAM AIR TURBINE switch Push

Push and hold for 1 second.

[Backs up automatic deployment of the RAT.]

Ships 7101 & Subsequent

For a dual engine in-flight start, do not manually abort the start if the EGT indication turns red. AUTOSTART allows EGT to exceed the in-flight start limit, however AUTOSTART aborts the start before EGT becomes too high for continued engine operation.

Ships 7101 & Subsequent

Airspeed Above 270 KTS

[Ensures best windmill start capability.]

Ships 7101 & Subsequent

Engines may accelerate to idle very slowly, especially at high altitudes. The time from fuel control switch to RUN to stabilized idle may be as long as two and a half minutes. Slow acceleration may be incorrectly interpreted as a hung start or engine malfunction. If N2 is steadily increasing and EGT remains within limits, the start is progressing normally.

Continued on next page

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Ships 7001 – 7008

Airspeed Above 250 KTS

[Ensures best windmill start capability.]

Ships 7001 – 7008

Engines may accelerate to idle very slowly, especially at high altitudes. Slow acceleration may be incorrectly interpreted as a hung start or engine malfunction. If N3 is steadily increasing and EGT remains within limits, the start is progressing normally. Any further cycling of the fuel control switches will result in longer start times.

When HEAT PITOT L+C+R message no longer displayed:

PRIMARY FLIGHT COMPUTERS

DISCONNECT switch DISC, then AUTO

[Restores flight control normal mode following reversion to secondary mode caused by loss of pitot heat.]

Autopilot can be re-engaged when flight control normal mode is restored.

Plan to land at the nearest suitable airport.



U WINDOW DAMAGE L, R

Condition: **Arcing, delamination, shattered, or cracked condition of any flight deck window is observed.**

If forward window arcing, shattered, or cracked:

FORWARD WINDOW HEAT

switch (Affected window) Off

[Removes electrical power to prevent arcing.]

Do not accomplish the following checklist:

WINDOW HEAT FWD

If damaged window deforms, or air leak is observed:

Plan to land at the nearest suitable airport.

If airplane altitude above 10,000 feet:

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

[Minimizes forces on the window. Outward cabin pressure differential counters inward dynamic air load on the window.]

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



Non-Normal Checklists

Chapter NNC

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

Section 1

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U AUTOMATIC UNLOCK

Condition: **Flight deck door AUTO UNLK light illuminated indicates correct emergency access code has been entered and flight deck door is programmed to automatically unlock after a time delay.**

**FLIGHT DECK DOOR LOCK selector DENY
Rotate and hold for 1 second.**

[Prohibits unauthorized access to flight deck.]



CREW OXYGEN LOW

Condition: **Crew oxygen pressure is low.**



DOOR AFT CARGO

Condition: **Aft cargo door is not closed and latched and locked.**

LANDING ALTITUDE selector Pull, set 8,000

[Reduces cabin differential pressure to decrease risk of door separation.]

If airplane altitude at or below 8,000 feet:

Level off Initiate

Level off at lowest safe altitude.

If airplane altitude above 8,000 feet:

Descent Initiate

**Descend to lowest safe altitude or 8,000 feet,
whichever is higher.**

[Reduces cabin differential pressure.]

After level off, allow sufficient time for cabin altitude to stabilize.

[Minimizes passenger discomfort from effects of cabin depressurization.]

OUTFLOW VALVE switches (Both) MAN

OUTFLOW VALVE MANUAL switches (Both) OPEN

Position outflow valves fully open to depressurize airplane.

Once depressurized, the crew may change altitude as necessary.

Do not accomplish the following checklists:

CABIN ALTITUDE AUTO

LANDING ALTITUDE



□ DOOR BULK CARGO

Condition: **Bulk cargo door is not closed and latched and locked.**

Note: The door is in a safe configuration as long as cabin pressurization is normal.

[Positive cabin differential pressure ensures door remains in place.]



□ DOOR E/E ACCESS

Condition: **Electrical and electronic access door is not closed and latched and locked.**

Note: The door is in a safe configuration as long as cabin pressurization is normal.

[Positive cabin differential pressure ensures door remains in place.]



□ DOOR ENTRY 1-4L, R

Condition: **Entry door is not closed and latched and locked.**

Note: The door is in a safe configuration as long as cabin pressurization is normal.

[Positive cabin differential pressure ensures door remains in place.]



□ DOOR FWD ACCESS

Condition: **Forward access door is not closed and latched and locked.**

Note: The door is in a safe configuration as long as cabin pressurization is normal.

[Positive cabin differential pressure ensures door remains in place.]



□ DOOR FWD CARGO

Condition: **Forward cargo door is not closed and latched and locked.**

LANDING ALTITUDE selector Pull, set 8,000

[Reduces cabin differential pressure to decrease risk of door separation.]

If airplane altitude at or below 8,000 feet:

Level off Initiate

Level off at lowest safe altitude.

If airplane altitude above 8,000 feet:

Descent Initiate

**Descend to lowest safe altitude or 8,000 feet,
whichever is higher.**

[Reduces cabin differential pressure.]

After level off, allow sufficient time for cabin altitude to stabilize.

[Minimizes passenger discomfort from effects of cabin depressurization.]

OUTFLOW VALVE switches (Both) MAN

OUTFLOW VALVE MANUAL switches (Both) OPEN

Position outflow valves fully open to depressurize airplane.

Once depressurized, the crew may change altitude as necessary.

Do not accomplish the following checklists:

CABIN ALTITUDE AUTO

LANDING ALTITUDE



DOORS

Condition: **Two or more doors are not closed and latched and locked.**



ELT ON

Ships 7101 & Subsequent

Condition: **Emergency locator transmitter is on.**



EMER LIGHTS

Condition: **Emergency lighting system has been manually activated or emergency lights switch is OFF.**



U LOCK FAIL

Condition: **Flight deck door LOCK FAIL light illuminated indicates flight deck door lock has failed, or flight deck access system switch is OFF.**

Ships 7101 & Subsequent

FLIGHT DECK ACCESS SYSTEM switch

(Conditions permitting) OFF

[Removes electrical power to prevent possible lock overheat.]

Ships 7101 & Subsequent

Door can be locked with deadbolt.

Ships 7001 – 7008

Door can be locked by inserting mechanical latch pin.

Note: A second crewmember is required to secure the flight deck door when a crewmember leaves the flight deck. Reference the FOM for flight deck entry/exit procedures.



PASS OXYGEN ON

Condition: **Passenger oxygen system is activated.**



U WINDOW DAMAGE L, R

Condition: **Arcing, delamination, shattered, or cracked condition of any flight deck window is observed.**

If forward window arcing, shattered, or cracked:

**FORWARD WINDOW HEAT
switch (Affected window) Off**

[Removes electrical power to prevent arcing.]

**Do not accomplish the following checklist:
WINDOW HEAT FWD**

If damaged window deforms, or air leak is observed:

Plan to land at the nearest suitable airport.

If airplane altitude above 10,000 feet:

**Descend to lowest safe altitude or 10,000 feet,
whichever is higher.**

[Minimizes forces on the window. Outward cabin pressure differential counters inward dynamic air load on the window.]

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



WINDOW FLT DECK L, R

Condition: **Side window is not closed and latched.**

Maintain the maneuvering speed for the existing flap setting until the window is closed.

[Minimizes noise.]

The force required to close the window increases with airspeed. It may not be possible to close the window at speeds above 250 knots.

Close and lock the window.

If the window does not lock or pressurization is not normal:

Level off at the lowest safe altitude.

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



If the window locks and pressurization is normal:

Continue normal operation.



WINDOWS

Condition: Left and right side windows are not closed and latched.

Maintain the maneuvering speed for the existing flap setting until the windows are closed.

[Minimizes noise.]

The force required to close the window increases with airspeed. It may not be possible to close the window at speeds above 250 knots.

Close and lock the window.

If either window does not lock or pressurization is not normal:

Level off at the lowest safe altitude.

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



If windows lock and pressurization is normal:

Continue normal operation



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BLEED ISLN CLOSED C, L, R

Condition: **Isolation valve remains closed when commanded open or bleed isolation switch is Off.**



BLEED ISLN OPEN C, L, R

Condition: **Isolation valve remains open when commanded closed.**



□ BLEED LEAK BODY

Condition: **High temperature bleed air leak is detected in the body area.**

The air supply controller automatically isolates heat source within approximately 3 minutes by closing bleed and isolation valves.

Pilot action will be required when a BLEED LOSS message is displayed.

Do not accomplish the following checklists:

HYD PRESS DEM C1

HYD PRESS DEM C2



□ BLEED LEAK L, R

Condition: **High temperature bleed air leak is detected in the wing or pack bay area.**

The air supply controller automatically isolates heat source within approximately 5 minutes by closing bleed and isolation valves.

Pilot action will be required when a BLEED LOSS message is displayed.

Do not accomplish the following checklists:

PACK

HYD PRESS DEM

**□ BLEED LEAK STRUT L, R**

Condition: **High temperature bleed air leak is detected in the strut area.**

The air supply controller automatically isolates heat source by closing bleed and isolation valves.

Do not accomplish the following checklist:

PACK

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If, after 1 minute, **BLEED LEAK STRUT** message remains displayed:

AUTOTHROTTLE ARM switch OFF

[Allows thrust lever to remain where manually positioned.]

Thrust lever Retard

Retard slowly until the BLEED LEAK STRUT message is no longer displayed or the thrust lever is closed.

[Reduces flow of bleed air through the leak.]

Do not accomplish the following checklist:

AUTOTHROTTLE

If BLEED LEAK STRUT message remains displayed:

Transponder mode selector. TA ONLY

[Prevents climb commands which can exceed single engine performance capability.]

Note: Operate engine at idle for remainder of flight.

If landing using flaps 20:

**GROUND PROXIMITY FLAP OVERRIDE
switch OVRD**

Note: Use flaps 20 and VREF 20 for landing and flaps 5 for go-around.



If landing using flaps 30 (performance permitting):

Note: Use flaps 30 and VREF30 for landing and flaps 20 for go-around.



BLEED LOSS BODY

Condition: **Bleed air from the left and right body ducts is no longer available.**

C1 and C2 DEMAND PUMP selectors OFF

[Prevents display of HYD PRESS DEM C1 and HYD PRESS DEM C2 messages while configuring flaps during approach.]

Note: Gear retraction time increases to approximately 3 minutes due to reduced center hydraulic system capacity. HYD PRESS SYS C and GEAR DISAGREE messages will be displayed during retraction.

Do not accomplish the following checklists:

- HYD PRESS DEM C1**
- HYD PRESS DEM C2**



BLEED LOSS BODY L

Condition: **Bleed air from the left body duct is no longer available.**

C1 DEMAND PUMP selector OFF

[Prevents display of HYD PRESS DEM C1 message while configuring flaps during approach.]

Do not accomplish the following checklist:

- HYD PRESS DEM C1**



BLEED LOSS BODY R

Condition: **Bleed air from the right body duct is no longer available.**

C2 DEMAND PUMP selector OFF

[Prevents display of HYD PRESS DEM C2 message while configuring flaps during approach.]

Do not accomplish the following checklist:

HYD PRESS DEM C2



BLEED LOSS WING L, R

Condition: **Bleed air from the wing duct is no longer available.**

WING ANTI-ICE selector OFF

[Prevents possible asymmetrical ice buildup on the wings.]

Do not accomplish the following checklist:

PACK



BLEED OFF APU

Condition: **APU bleed valve is closed for a system fault or APU bleed switch is Off.**



BLEED OFF ENG L, R

Condition: **Engine bleed valve is closed for a system fault or engine bleed switch is Off.**



□ CABIN ALTITUDE

Condition: **Cabin altitude is excessive.**

Oxygen masks **On, 100%**

Crew communications **Establish**

Cabin altitude and rate **Check**
[Confirms pressurization problem.]

If cabin altitude uncontrollable:

PASSENGER OXYGEN switch **Push**
Push and hold for 1 second.

[Backs up automatic activation of the passenger oxygen system.]

Descent **Accomplish**
Without delay, close thrust levers, extend speedbrakes, and descend at VMO/MMO. Level off at lowest safe altitude or 10,000 feet, whichever is higher. If structural integrity is in doubt, limit airspeed and avoid high maneuvering loads.

When at level off:

If both pack OFF lights are illuminated and the PACK L+R message is NOT displayed:

OUTFLOW VALVE switches (Both) **MAN**

OUTFLOW VALVE MANUAL switches (Both) **OPEN**

Hold both switches to OPEN position for 30 seconds.

[Provides air ventilation to cabin. Timing is used because outflow valve indications may be inaccurate.]

Ships 7008, 7101 & Subsequent IN-FLIGHT ENTERTAINMENT SYSTEM/PASSENGER SEATS POWER switch **Off**

[Removes electrical power to minimize cabin heating.]

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Ships 7008, 7101 & Subsequent
CABIN/UTILITY POWER switch Off

[Removes electrical power to minimize cabin heating.]

SHOULDER and FOOT HEATERS (All) OFF

Flight deck lighting Set

Minimize flight deck lighting intensity to reduce heat.

Flight deck sunvisors Install

[Reduces flight deck heating during daylight operations.]

Ships 7008, 7101 & Subsequent
Instruct Flight Attendants to close cabin window shades during daylight operations.

Ships 7001 – 7007
Cabin equipment Off

Instruct Flight Attendants to:

- turn off galley power switches
- turn off main IFE and PC power switches (as installed)
- reduce cabin lighting to minimum required
- close cabin window shades during daylight operations.

[Removes electrical power to minimize cabin heating.]

Plan to land at the nearest suitable airport.

Do not accomplish the following checklist:

CABIN ALTITUDE AUTO



□ CABIN ALTITUDE AUTO

Condition: **Automatic pressurization control has failed or both outflow valve switches are in manual.**

OUTFLOW VALVE switches (Both) MAN

**OUTFLOW VALVE MANUAL switches
(Both) OPEN/CLOSE**

Position as required to control desired cabin rate and altitude. Valves may take up to 6 seconds to begin moving.

Note: Recommended cabin rate is approximately 500 FPM for climbs and descents.

Note: Recommended cabin altitude in cruise is:

FLIGHT LEVEL	CABIN ALTITUDE
Up to 230	Landing Field Elevation
260	2,000
300	4,000
350	6,000
400 and above	8,000

-----DEFERRED ITEMS-----

==> APPROACH CHECKLIST

When at pattern altitude:

**OUTFLOW VALVE MANUAL switches
(Both) OPEN**

Push and hold for 30 seconds or until outflow valve positions indicate fully open.



CARGO HEAT AFT, BULK

Condition: **Cargo heat is inoperative or cargo temperature selector is OFF.**



EQUIP COOLING

Condition: **Forward equipment cooling system is inoperative.**



□ EQUIP COOLING OVRD

Condition: **Equipment cooling system is in override mode.**

Wait 2 minutes.

[Allows time for any smoke in the system to clear.]

EQUIPMENT COOLING switch Off, then AUTO

[Attempts reset of the equipment cooling system.]

If EQUIP COOLING OVRD message remains displayed:

Note: After 30 minutes of operation at low altitude and low cabin differential pressure, electronic equipment and displays may fail.



□ LANDING ALTITUDE

Condition: **FMC has failed to provide a landing altitude or landing altitude selector is pulled.**

LANDING ALTITUDE selector Pull, set manually



□ OUTFLOW VALVE AFT, FWD

Condition: **Automatic control has failed or outflow valve switch is in MAN.**

OUTFLOW VALVE switch MAN

OUTFLOW VALVE MANUAL switch CLOSE

Push and hold for 30 seconds or until outflow valve position indicates fully closed. Valve may take up to 6 seconds to begin moving.

[Allows the other outflow valve to take full control of cabin pressure.]



PACK L, R

Condition: **Pack is shut down.**

Wait 2 minutes.

[Allows time for any overheat condition to cool.]

AIR CONDITIONING RESET switch Push

Push and hold for 1 second.

Wait 2 minutes.

If PACK message displayed again:

PACK switch Off



PACK L+R

Condition: **Both packs are shut down.**

Wait 2 minutes.

[Allows time for any overheat condition to cool.]

AIR CONDITIONING RESET switch Push
Push and hold for 1 second.

Wait 2 minutes.

If PACK L+R message displayed again:

Descent Accomplish
Level off at lowest safe altitude or 10,000 feet,
whichever is higher. If flight conditions require,
accomplish descent with speedbrakes extended at
VMO/MMO to prevent excessive cabin altitude.

When at level off:

OUTFLOW VALVE switches (Both) MAN

OUTFLOW VALVE MANUAL switches
(Both) OPEN

Hold both switches to OPEN position for
30 seconds.

[Provides air ventilation to cabin. Timing is used because outflow
valve indications may be inaccurate.]

Ships 7008, 7101 & Subsequent
IN-FLIGHT ENTERTAINMENT SYSTEM/PASSENGER
SEATS POWER switch Off

[Removes electrical power to minimize cabin heating.]

Ships 7008, 7101 & Subsequent
CABIN/UTILITY POWER switch Off

[Removes electrical power to minimize cabin heating.]

SHOULDER and FOOT HEATERS (All) OFF

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Flight deck lighting **Set**
Minimize flight deck lighting intensity to reduce heat.

Flight deck sunvisors **Install**
[Reduces flight deck heating during daylight operations.]

Ships 7008, 7101 & Subsequent
Instruct Flight Attendants to close cabin window shades during daylight operations.

Ships 7001 – 7007
Cabin equipment **Off**
Instruct Flight Attendants to:
• **turn off galley power switches**
• **turn off main IFE and PC power switches (as installed)**
• **reduce cabin lighting to minimum required**
• **close cabin window shades during daylight operations.**

[Removes electrical power to minimize cabin heating.]

Plan to land at the nearest suitable airport.

Do not accomplish the following checklist:

CABIN ALTITUDE AUTO



PACK MODE L, R

Condition: **Pack is operating in standby mode.**

Note: At lower altitudes and/or higher outside air temperatures, the pack may shut down.

[Standby mode is not capable of providing cool conditioned air during low altitude, high outside air temperature conditions.]



TRIM AIR L, R

Condition: **Trim air is shut off.**

Wait 2 minutes.

[Allows time for any overheat condition to cool.]

AIR CONDITIONING RESET switch Push
Push and hold for 1 second.

Wait 2 minutes.

If TRIM AIR message displayed again:

TRIM AIR switch Off



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ANTI-ICE ENG L, R

Condition: **Engine anti-ice valve remains closed when commanded open.**

If on the ground:

Thrust lever Advance
Advance until N1 is approximately 3% above idle.
[Increases bleed air pressure to provide more power to open valve]

If ANTI-ICE ENG message remains displayed:

ENGINE ANTI-ICE selector. OFF, then ON
[Attempts to manually reset controller and open the valve.]

If ANTI-ICE ENG message remains displayed:

ENGINE ANTI-ICE selector OFF
[Enables display of ICING ENG message if encountering icing conditions]

Note: Avoid icing conditions

[Anti-ice is not available to affected engine because the engine anti-ice system has failed]



If in flight:

ENGINE ANTI-ICE selector OFF, then ON
[Attempts to manually reset controller and open the valve.]

If ANTI-ICE ENG message no longer displayed:

Operate affected engine anti-ice system manually.
[Automatic anti-ice is not available for affected engine.]



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If ANTI-ICE ENG message remains displayed:

ENGINE ANTI-ICE selector OFF

[Enables display of ICING ENG message if encountering icing conditions]

Note: Avoid icing conditions

[Anti-ice is not available to affected engine because the engine anti-ice system has failed]



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ANTI-ICE LEAK ENG L, R

Ships 7101 & Subsequent

Condition: High temperature anti-ice bleed air leak is detected in the affected engine.

The engine anti-ice system automatically isolates heat source within approximately 2 minutes by closing the engine anti-ice valve.

Note: Avoid icing conditions.

[Anti-ice is not available to affected engine.]

If, after 2 minutes, ANTI-ICE LEAK ENG message remains displayed:

AUTOTHROTTLE ARM switch OFF

[Allows thrust lever to remain where manually positioned.]

Thrust lever Retard

Retard slowly until the ANTI-ICE LEAK ENG message is no longer displayed or the thrust lever is closed.

[Reduces flow of bleed air through the leak.]

Do not accomplish the following checklist:

AUTOTHROTTLE

If ANTI-ICE LEAK ENG message remains displayed:

Transponder mode selector TA ONLY

[Prevents climb commands which can exceed single engine performance capability.]

Note: Operate engine at idle for remainder of flight.

If landing using flaps 20:

**GROUND PROXIMITY FLAP OVERRIDE
switch OVRD**

Note: Use flaps 20 and VREF 20 for landing and flaps 5 for go-around.



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If landing using flaps 30 (performance permitting):

**Note: Use flaps 30 and VREF30 for landing and
flaps 20 for go-around.**



ANTI-ICE LEAK ENG L, R

Ships 7001 – 7008

Condition: High temperature anti-ice or starter duct bleed air leak is detected in the affected engine.

The engine anti-ice system automatically isolates heat source within approximately 1 minute if leak is in the engine anti-ice duct by closing the engine anti-ice valve.

Note: Avoid icing conditions.

[Anti-ice is not available to affected engine.]

If, after 1 minute, ANTI-ICE LEAK ENG message remains displayed:

BLEED ISOLATION switch (Affected side) Off

ENGINE BLEED switch (Affected side) Off

[Isolates heat source if bleed air leak in starter duct.]

WING ANTI-ICE selector OFF

[From BLEED LOSS WING checklist. Prevents possible asymmetrical ice buildup on the wings.]

Do not accomplish the following checklists:

**BLEED LOSS WING
PACK**

If, after 1 minute, ANTI-ICE LEAK ENG message remains displayed:

AUTOTHROTTLE ARM switch OFF

[Allows thrust lever to remain where manually positioned.]

Thrust lever Close

[Reduces flow of bleed air through the leak.]

Note: Operate engine at idle for remainder of flight.

Transponder mode selector TA ONLY

[Prevents climb commands which can exceed single engine performance capability.]

Continued on next page

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If, after 1 minute, ANTI-ICE LEAK ENG message remains displayed: (continued)

If landing using flaps 20:

GROUND PROXIMITY FLAP OVERRIDE
switch OVRD

Note: Use flaps 20 and VREF20 for landing and flaps 5 for go-around.

If landing using flaps 30 (performance permitting):

Note: Use flaps 30 and VREF30 for landing and flaps 20 for go-around.

Do not accomplish the following checklist:

AUTOTHROTTLE



ANTI-ICE LOSS ENG L, R

Condition: **Anti-ice bleed air for the affected engine is no longer available.**



ANTI-ICE ON

Condition: **Any anti-ice selector is ON, air temperature is above 10 degrees C, and ice is not detected.**

ENGINE ANTI-ICE selectors (Both) AUTO or OFF

WING ANTI-ICE selector AUTO or OFF



ANTI-ICE WING

Condition: **One or both wing anti-ice valves remain closed when commanded open.**

WING ANTI-ICE selector OFF, then ON

[Attempts to manually reset controller and open the valve.]

If ANTI-ICE WING message no longer displayed:

Operate wing anti-ice manually.

[Automatic anti-ice is not available.]



If ANTI-ICE WING message remains displayed:

WING ANTI-ICE selector OFF

[Enables ICING WING message to be displayed if icing conditions are encountered.]



HEAT PITOT C

Condition: **Center pitot probe heat is inoperative.**

Note: Standby air data is unreliable in icing conditions.



□ HEAT PITOT L

Condition: **Left pitot probe heat is inoperative.**

Note: ADIRU and SAARU air data is not affected for a single pitot heat failure. Ensure that right AIR DATA/ATT switch remains Off.



□ HEAT PITOT L+C+R

Condition: **All pitot probe heats are inoperative.**

Note: Air data is unreliable in icing conditions.



□ HEAT PITOT R

Condition: **Right pitot probe heat is inoperative.**

Note: ADIRU and SAARU air data is not affected for a single pitot heat failure. Ensure that left air AIR DATA/ATT switch remains Off.



□ ICE DETECTORS

Condition: **Ice detection has failed.**

Note: Operate engine and wing anti-ice systems manually.



ICING ENG

Condition: **Ice is detected and one or both engine anti-ice selectors are OFF.**



ICING WING

Condition: **Ice is detected and wing anti-ice selector is OFF, or ice is detected and wing anti-ice takeoff inhibit is active.**



U TAT PROBE ICING

Condition: **Airplane TAT probe or engine TAT probe icing is suspected.**

One or more of the following may be evidence of TAT probe icing:

- **autothrottle disconnects and Reference/Target EPR/N1 and Reference EPR/N1 are blanked**
- **thrust lever stagger with EPR/N1 aligned**
- **EPR/N1 stagger with thrust levers aligned**
- **decrease or increase in Reference/Target EPR/N1 at constant altitude and speed**
- **unable to achieve maximum continuous or maximum climb rating with thrust levers fully advanced**
- **TAT remains constant and near 0 degrees C during climb, cruise, or descent.**

AUTOTHROTTLE DISCONNECT switch Push
[Allows thrust levers to remain where manually positioned.]

Thrust levers (Both) Retard to mid position
[Prevents exceeding thrust limits when switching to alternate mode.]

EEC MODE switches (Both) Off
Push one switch at a time.
[Ensures both engines operate in alternate mode.]

Thrust levers (Both) Set
[Maintains desired airspeed and rate of climb or descent.]

Note: Maximum thrust limiting is not available in alternate mode. Alternate thrust setting information is displayed on the N1 indications.

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If TAT remains constant and near 0 degrees C:

Airplane TAT probe icing is suspected:

- Reference/Target N1/EPR and Reference N1/EPR may be temporarily unreliable
- Observe EGT caution limits
- Maximum N1 display may be temporarily unreliable.

Do not accomplish the following checklists:

ENG LIMIT PROT L

ENG LIMIT PROT R

If TAT is not near 0 degrees C:

Engine TAT probe icing is suspected:

- Airplane TAT is reliable
- Reference/Target N1 and Reference N1 are reliable if displayed
- Maximum N1 is reliable if displayed.

Autothrottle may be re-engaged when:

- Reference/Target N1 and Reference N1 are displayed
- TAT is not near 0 degrees C.

Do not accomplish the following checklists:

ENG EEC MODE L

ENG EEC MODE R



WINDOW HEAT

Condition: **Two or more window heats are off.**



□ WINDOW HEAT L, R FWD

Condition: **Primary window heat for the affected forward window is off.**

FORWARD WINDOW HEAT

switchOff 10 seconds, then ON

[Attempts to reset system.]

If WINDOW HEAT FWD message remains displayed:

FORWARD WINDOW HEAT switchOff

[Removes power to prevent arcing. Window is defogged by the backup system.]



□ WINDOW HEAT L, R SIDE

Condition: **Window heat for the affected side window is off.**

SIDE WINDOW HEAT

switchOff 10 seconds, then ON

[Attempts to reset system.]

If WINDOW HEAT SIDE message remains displayed:

SIDE WINDOW HEAT switchOff

[Removes power to prevent arcing.]



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Intentionally
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AUTOPILOT

Condition: **Autopilot is operating in a degraded mode. Engaged roll and/or pitch mode may have failed, or the autopilot has entered envelope protection.**

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



AUTOPILOT DISC

Condition: **Autopilot has disconnected.**

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



AUTOTHROTTLE DISC

Condition: **Both autothrottles have disconnected.**



□ AUTOTHROTTLE L, R

Condition: **Affected autothrottle has failed or is OFF.**

AUTOTHROTTLE ARM switch (Affected side) OFF

Other autothrottle may be re-engaged if desired.



NO AUTOLAND

Condition: **Autoland is not available.**



NO LAND 3

Condition: **Autoland system does not have redundancy for triple channel autoland.**



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Intentionally
Blank

ATC DATALINK LOST

Condition: **An established ATC datalink has been lost.**



**U CABIN INTERPHONE SYSTEM
INOPERATIVE**

Condition: **Cabin interphone system is inoperative.**

Cabin handsetsReset

Ensure all cabin handsets are properly reset and stowed.

[Improperly stowed handsets may be cause of malfunction.]



If interphone system remains inoperative:

Cabin crew communications Establish

Contact Flight Leader and establish plan for communications under normal conditions.

Note: Avoid use of PA for direct messages to Flight Attendants, except, in an emergency.

Brief the Flight Leader on the following alternate emergency procedures:

Cabin Interphone System Inoperative			
Source of Abnormal		Pilot Action	Briefing Items
Flight Deck	Cabin		
Smoke/Fire		Use PA	PA is primary means to command an evacuation. The Flight Deck Evacuation Command switch will be secondary.
Emergency Landing			
Ditching			
Evacuation or Rejected Takeoff			
	Smoke/Fire	Continually monitor PA	Flight Attendant will use "Alert" function on handset (if operable) to notify pilots to monitor PA.
	Hijacking		
	Passenger Problem (Medical/ Disturbance)		Flight Attendant will use "Alert" function on handset (if operable) to notify pilots to monitor PA. If unable, Flight Attendant will use briefed entry method at flight deck door .



DATALINK LOST

Condition: **Datalink is temporarily lost.**



DATALINK SYS

Condition: **Datalink system has failed.**



**U PUBLIC ADDRESS SYSTEM
INOPERATIVE**

Condition: **Public address system is inoperative.**

Cabin crew communications Establish

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

- **Use of standard flight deck/cabin call signals.**
- **Advising Flight Leader to review location and operation of portable megaphones with Flight Attendants.**

20 minutes (1 hour on transoceanic flights) and 5 minutes before landing:

Flight Leader Advise

Coordinate as required to provide sufficient time to meet passenger briefing requirements.

[With PA inoperative, Flight Attendants must individually (a few seats at a time) brief passengers before takeoff and landing.]

Brief the Flight Leader on the following alternate emergency procedures:

Continued on next page

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Public Address System Inoperative			
Source of Abnormal		Pilot Action	Briefing Items
Flight Deck	Cabin		
Smoke/Fire		Use Cabin Interphone	Pilots and Flight Attendants will use the cabin interphone for communication. Public Announcements accomplished by Flight Attendants using megaphones.
Emergency Landing		Use "Alert" function on handset, then cabin interphone or face-to-face.	Pilots will use "Alert" function on handset to alert Flight Attendants to emergency situation. Subsequent communication via interphone or face-to-face, time permitting. Initiate evacuation using EVACUATION COMMAND switch.
Ditching			
Evacuation or Rejected Takeoff			
	Smoke/Fire	Use Cabin Interphone	Pilots and Flight Attendants will use the cabin interphone for communication. Public Announcements accomplished by Flight Attendants using megaphones.
	Hijacking		
	Passenger Problem (Medical/ Disturbance)		



□ RADIO TRANSMIT

Condition: **A radio is transmitting for 30 seconds or more.**

Transmitter select switches (All audio control panels) FLIGHT interphone

[Deselects radios and stops radio transmissions.]

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

The associated audio select panel should remain on flight interphone. All other audio panels may be used normally.



SATCOM

Condition: **SATCOM system has failed.**



SATCOM DATALINK

Condition: **SATCOM datalink has failed.**



SATCOM VOICE

Condition: **SATCOM voice communication has failed.**



SATVOICE LOST

Condition: **SATCOM voice communication is temporarily lost.**



VHF DATALINK

Condition: **VHF datalink has failed.**



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Intentionally
Blank

□ ELEC AC BUS L, R

Condition: **AC bus is unpowered.**

GENERATOR CONTROL switch Off, then ON
Attempt only one reset.

If ELEC AC BUS message remains displayed:

APU selector
(If APU available) **START**, then ON
[Provides an additional source of electrical power.]

Do not accomplish the following checklist:
ELEC GEN OFF

If ELEC AC BUS message remains displayed after APU running:

BUS TIE switch
(Affected side) Off, then **AUTO**
Attempt only one reset.

If ELEC AC BUS message remains displayed:

Do not accomplish the following checklists:
WINDOW HEAT
HYD PRESS PRI



□ ELEC BACKUP GEN L, R

Condition: **Backup generator has failed.**

BACKUP GENERATOR switch Off, then ON
Attempt only one reset.



ELEC BACKUP SYS

Condition: **Backup power system has failed.**

**LEFT BACKUP GENERATOR switch Off, then ON
Attempt only one reset.**

**RIGHT BACKUP GENERATOR switch Off, then ON
Attempt only one reset.**



ELEC BATTERY OFF

Condition: **Battery switch is Off.**



ELEC BUS ISLN L, R

Condition: **Bus tie breaker is open due to an AC electrical system
fault or bus tie switch is Off.**



ELEC CABIN/UTIL OFF

Ships 7008, 7101 & Subsequent

Condition: **Cabin/utility power switch is Off.**



□ ELEC GEN DRIVE L, R

Condition: **Generator drive oil pressure is low.**

DRIVE DISCONNECT switch Push
Push and hold for 1 second.
[Prevents generator drive damage.]

APU selector
(If APU available) **START, then ON**
[Provides an additional source of electrical power.]

Do not accomplish the following checklist:
ELEC GEN OFF



□ ELEC GEN OFF APU

Condition: **APU generator control breaker is open.**

APU GENERATOR switch **Off, then ON**
Attempt only one reset.



□ ELEC GEN OFF L, R

Condition: **Generator control breaker is open.**

GENERATOR CONTROL switch **Off, then ON**
Attempt only one reset.

If ELEC GEN OFF message remains displayed:

APU selector
(If APU available) **START, then ON**
[Provides an additional source of electrical power.]



ELEC GND HDLG BUS

Condition: **Ground handling bus relay has failed.**

**ELEC IFE/SEATS OFF**

Ships 7008, 7101 & Subsequent

Condition: **In-flight entertainment system/passenger seats power switch is Off.**

**ELEC STANDBY SYS**

Condition: **A fault is detected in the standby power system.**

**MAIN BATTERY DISCH**

Condition: **Main battery is discharging or hot battery bus is unpowered.**



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U ABORTED ENGINE START L, R

Condition: **During a ground start, an abort engine start condition occurs.**

FUEL CONTROL switch CUTOFF

START selector START

Motor the engine for 30 seconds.

START selector NORM



□ APU LIMIT

Condition: **APU operation has exceeded a limit.**

APU selector OFF



□ APU SHUTDOWN

Condition: **APU has automatically shut down.**

APU selector OFF

[Attempts to reset APU controller.]

APU selector START, then ON



U DUAL ENG FAIL/STALL

Condition: **Engine speed for both engines is below idle.**

FUEL CONTROL switches

(Both) CUTOFF, then RUN

[Attempts to clear stall condition and allows engines to be put into start mode.]

RAM AIR TURBINE switch Push

Push and hold for 1 second.

[Backs up automatic deployment of the RAT.]

Ships 7101 & Subsequent

For a dual engine in-flight start, do not manually abort the start if the EGT indication turns red. AUTOSTART allows EGT to exceed the in-flight start limit, however AUTOSTART aborts the start before EGT becomes too high for continued engine operation.

Ships 7101 & Subsequent

Airspeed Above 270 KTS

[Ensures best windmill start capability.]

Ships 7001 – 7008

Airspeed Above 250 KTS

[Ensures best windmill start capability.]

APU selector

(If APU available) START, then ON

[Backs up automatic APU start.]

Ships 7101 & Subsequent

Engines may accelerate to idle very slowly, especially at high altitudes. The time from fuel control switch to RUN to stabilized idle may be as long as two and a half minutes. Slow acceleration may be incorrectly interpreted as a hung start or engine malfunction. If N2 is steadily increasing and EGT remains within limits, the start is progressing normally.

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Ships 7001 – 7008

Engines may accelerate to idle very slowly, especially at high altitudes. Slow acceleration may be incorrectly interpreted as a hung start or engine malfunction. If N3 is steadily increasing and EGT remains within limits, the start is progressing normally. Any further cycling of the fuel control switches will result in longer start times.

When HEAT PITOT L+C+R message no longer displayed:

PRIMARY FLIGHT COMPUTERS

DISCONNECT switch DISC, then AUTO

[Restores flight control normal mode following reversion to secondary mode caused by loss of pitot heat.]

Autopilot can be re-engaged when flight control normal mode is restored.



☐ ENG AUTOSTART L, R

Condition: **During a ground start, any of the following conditions occur:**

- **AUTOSTART did not start the engine**
- **fuel control switch is in RUN at low engine RPM with the AUTOSTART switch off.**

FUEL CONTROL switch CUTOFF

START selector START

Motor the engine for 30 seconds.

START selector NORM



ENG AUTOSTART OFF

Condition: **Engine AUTOSTART switch is Off.**



ENG CONTROL L, R

Condition: **Fault is detected in the affected engine control system.**



☐ ENG EEC MODE L, R

Condition: **Control for the affected engine is operating in alternate mode.**

Autothrottle disconnect switch Push

[Allows thrust levers to remain where manually positioned.]

Thrust levers (Both) Retard to mid position

[Prevents exceeding thrust limits when switching to alternate mode.]

Continued on next page

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EEC MODE switches (Both) Off
Push one switch at a time.

[Ensures both engines operate in alternate mode.]

AUTOTHROTTLE ENGAGE switch Push

**Note: Maximum thrust limiting is not available with
autothrottle disconnected. Alternate thrust setting
information is displayed on N1 indications.**

Do not accomplish the following checklist:

ENG EEC MODE (for other engine)



ENG FAIL L, R

Ships 7101 & Subsequent

Condition: Engine speed is below idle.

AUTOTHROTTLE ARM switch **OFF**
[Allows thrust lever to remain where manually positioned.]

Thrust lever **Close**
[Assists in recognition of affected engine.]

FUEL CONTROL switch **CUTOFF**
[Shuts off fuel and allows engine to be put into start mode.]

Restart may be attempted if no apparent damage.

If restart desired:

Monitor EGT during start.

[Prevents EGT exceedance because AUTOSTART allows EGT to exceed the in-flight start limit.]

If X-BLD is displayed:

START selector **START**
[Allows air to starter for a crossbleed start.]

FUEL CONTROL switch **RUN**
For AUTOSTART OFF, move to RUN at maximum motoring.

If an abort start condition as listed in normal procedures occurs:

FUEL CONTROL switch **CUTOFF**
START selector **NORM**

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If restart desired: (continued)

If X-BLD is not displayed:

FUEL CONTROL switch RUN

If an abort start condition as listed in normal procedures occurs:

FUEL CONTROL switch CUTOFF

Engine may accelerate to idle very slowly, especially at high altitudes. The time from fuel control switch to RUN to stabilized idle may be as long as two and a half minutes. Slow acceleration may be incorrectly interpreted as a hung start or engine malfunction. If N2 is steadily increasing and EGT remains within limits, the start is progressing normally.

If engine remains failed or is damaged:

FUEL CONTROL switch CUTOFF

[Returns switch to proper position in case of unsuccessful start attempt.]

START selector NORM

[Returns selector to proper position in case of unsuccessful start attempt.]

APU selector

(If APU available) START, then ON

[Provides an additional source of electrical power.]

Transponder mode selector TA ONLY

[Prevents climb commands which can exceed single engine performance capability.]

Plan to land at the nearest suitable airport.

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If landing using flaps 20:

GROUND PROXIMITY FLAP OVERRIDE

switch OVRD

Note: Use flaps 20 and VREF20 for landing and flaps 5 for go-around.

If landing using flaps 30 (performance permitting):

Note: Use flaps 30 and VREF30 for landing and flaps 20 for go-around.

Do not accomplish the following checklist:

AUTOTHROTTLE



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ENG FAIL L, R

Ships 7001 – 7008

Condition: **Engine speed is below idle.**

AUTOTHROTTLE ARM switch **OFF**
[Allows thrust lever to remain where manually positioned.]

Thrust lever **Close**
[Assists in recognition of affected engine.]

FUEL CONTROL switch **CUTOFF**
[Shuts off fuel and allows engine to be put into start mode.]

Restart may be attempted if no apparent damage.

If restart desired:

Monitor EGT during start.

[Prevents EGT exceedance because AUTOSTART allows EGT to exceed the in-flight start limit.]

If X-BLD is displayed:

START selector **START**
[Allows air to starter for a crossbleed start.]

FUEL CONTROL switch **RUN**
For AUTOSTART OFF, move to RUN at maximum motoring.

If an abort start condition as listed in normal procedures occurs:

FUEL CONTROL switch **CUTOFF**
START selector **NORM**

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If restart desired: (continued)

If X-BLD is not displayed:

FUEL CONTROL switch RUN

If an abort start condition as listed in normal procedures occurs:

FUEL CONTROL switch CUTOFF

Engine may accelerate to idle very slowly, especially at high altitudes. Slow acceleration may be incorrectly interpreted as a hung start or engine malfunction. If N3 is steadily increasing and EGT remains within limits, the start is progressing normally. Any further cycling of the fuel control switches will result in longer start times.

If engine remains failed or is damaged:

FUEL CONTROL switch CUTOFF

[Returns switch to proper position in case of unsuccessful start attempt.]

START selector NORM

[Returns selector to proper position in case of unsuccessful start attempt.]

APU selector

(If APU available) START, then ON

[Provides an additional source of electrical power.]

Transponder mode selector TA ONLY

[Prevents climb commands which can exceed single engine performance capability.]

Plan to land at the nearest suitable airport.

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If landing using flaps 20:

GROUND PROXIMITY FLAP OVERRIDE

switch OVRD

Note: Use flaps 20 and VREF20 for landing and flaps 5 for go-around.

If landing using flaps 30 (performance permitting):

Note: Use flaps 30 and VREF30 for landing and flaps 20 for go-around.

Do not accomplish the following checklist:

AUTOTHROTTLE



ENG FUEL FILTER L, R

Condition: **An impending fuel filter bypass condition exists on the affected engine.**

Note: Erratic engine operation and flameout may occur due to fuel contamination.



ENG FUEL VALVE L, R

Condition: **Engine fuel or spar valve position disagrees with commanded position.**

Ships 7101 & Subsequent

If ENG FUEL VALVE message is displayed when the fuel control switch is positioned to CUTOFF, the engine may continue to run for approximately 10 seconds.

Ships 7001 – 7008

If ENG FUEL VALVE message is displayed when the fuel control switch is positioned to CUTOFF, the engine may continue to run for approximately 1 minute.

If on the ground:

Do not attempt engine start.

[Prevents possibility of not being able to shutdown the engine if both valves subsequently fail open.]



ENG IDLE DISAGREE

Condition: **One engine is at approach idle and the other engine is at minimum idle.**



U ENG IN-FLIGHT START L, R

Ships 7101 & Subsequent

Condition: Engine start is needed after a shutdown with no fire or apparent damage.

Monitor EGT during start.

[Prevents EGT exceedance because AUTOSTART allows EGT to exceed the in-flight start limit.]

Engine may accelerate to idle very slowly, especially at high altitudes. The time from fuel control switch to RUN to stabilized idle may be as long as two and a half minutes. Slow acceleration may be incorrectly interpreted as a hung start or engine malfunction. If N2 is steadily increasing and EGT remains within limits, the start is progressing normally.

If X-BLD is displayed:

START selectorSTART

[Allows air to starter for a crossbleed start.]

FUEL CONTROL switchRUN

For AUTOSTART OFF, move to RUN at maximum motoring.

If an abort start condition as listed in normal procedures occurs:

FUEL CONTROL switch CUTOFF

START selector NORM

If X-BLD is not displayed:

FUEL CONTROL switchRUN

If an abort start condition as listed in normal procedures occurs:

FUEL CONTROL switch CUTOFF

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If engine starts and runs normally:

GROUND PROXIMITY FLAP OVERRIDE switch Off

Transponder mode selector TA/RA



U ENG IN-FLIGHT START L, R

Ships 7001 – 7008

Condition: Engine start is needed after a shutdown with no fire or apparent damage.

Monitor EGT during start.

[Prevents EGT exceedance because AUTOSTART allows EGT to exceed the in-flight start limit.]

Engine may accelerate to idle very slowly, especially at high altitudes. Slow acceleration may be incorrectly interpreted as a hung start or engine malfunction. If N3 is steadily increasing and EGT remains within limits, the start is progressing normally. Any further cycling of the fuel control switches will result in longer start times.

If X-BLD is displayed:

START selectorSTART

[Allows air to starter for a crossbleed start.]

FUEL CONTROL switchRUN

For AUTOSTART OFF, move to RUN at maximum motoring.

If an abort start condition as listed in normal procedures occurs:

FUEL CONTROL switch CUTOFF

START selector NORM

If X-BLD is not displayed:

FUEL CONTROL switchRUN

If an abort start condition as listed in normal procedures occurs:

FUEL CONTROL switch CUTOFF

Continued on next page

Continued from previous page

If engine starts and runs normally:

GROUND PROXIMITY FLAP OVERRIDE switch Off

Transponder mode selector TA/RA



ENG LIMIT PROT L, R

Condition: **Engine control is operating in alternate mode and
commanded N1 exceeds maximum N1.**

Thrust lever Retard

Retard until N1 remains within appropriate limits.



U ENG LIM/SURGE/STALL L, R

Condition: Engine indications are abnormal or are approaching or exceeding limits, abnormal engine noises are heard, or there is no response to thrust lever movement.

AUTOTHROTTLE ARM switch OFF

[Allows thrust lever to remain where manually positioned.]

Thrust lever Retard

Retard until indications remain within appropriate limits or the thrust lever is closed.

[Stabilizes air flow through engine.]

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

If indications abnormal or EGT continues to increase:

FUEL CONTROL switch CUTOFF

APU selector

(If APU available) START, then ON

[Provides an additional source of electrical power.]

Transponder mode selector TA ONLY

[Prevents climb commands which can exceed single engine performance capability.]

Plan to land at the nearest suitable airport.

If indications stabilized/EGT decreasing:

Thrust lever Advance

Advance slowly. Check that RPM and EGT follow thrust lever movement.

[Attempts to restore normal control of engine operation.]

Operate engine normally or at a reduced thrust level which is surge and stall free.

Continued on next page

Continued from previous page

If landing using flaps 20:

GROUND PROXIMITY FLAP OVERRIDE

switch OVRD

Note: Use flaps 20 and VREF20 for landing and flaps 5 for go-around.

If landing using flaps 30 (performance permitting):

Note: Use flaps 30 and VREF30 for landing and flaps 20 for go-around.

Do not accomplish the following checklist:

AUTOTHROTTLE



ENG OIL FILTER L, R

Ships 7101 & Subsequent

Condition: **Affected engine oil filter contamination has caused filter bypass.**

AUTOTHROTTLE ARM switch **OFF**
[Allows thrust lever to remain where manually positioned.]

Thrust lever **Retard**
Retard slowly until ENG OIL FILTER message is no longer displayed or the thrust lever is closed.
[Decreases oil pressure in an attempt to stop filter bypass.]

If ENG OIL FILTER message remains displayed:

FUEL CONTROL switch **CUTOFF**

APU selector
(If APU available) **START, then ON**
[Provides an additional source of electrical power.]

Transponder mode selector **TA ONLY**
[Prevents climb commands which can exceed single engine performance capability.]

Plan to land at the nearest suitable airport.

If landing using flaps 20:

GROUND PROXIMITY FLAP OVERRIDE
switch **OVRD**
Note: Use flaps 20 and VREF20 for landing and flaps 5 for go-around.

If landing using flaps 30 (performance permitting):

Note: Use flaps 30 and VREF30 for landing and flaps 20 for go-around.

Do not accomplish the following checklist:

AUTOTHROTTLE



ENG OIL PRESS L, R

Ships 7101 & Subsequent

Condition: **Engine oil pressure is low.**

AUTOTHROTTLE ARM switch **OFF**
[Allows thrust lever to remain where manually positioned.]

Thrust lever **Close**
[Stabilizes air flow through engine.]

FUEL CONTROL switch **CUTOFF**

APU selector
(If APU available) **START, then ON**
[Provides an additional source of electrical power.]

Transponder mode selector **TA ONLY**
[Prevents climb commands which can exceed single engine performance capability.]

Plan to land at the nearest suitable airport.

If landing using flaps 20:

GROUND PROXIMITY FLAP OVERRIDE
switch **OVRD**

Note: Use flaps 20 and VREF20 for landing and flaps 5 for go-around.

If landing using flaps 30 (performance permitting):

Note: Use flaps 30 and VREF30 for landing and flaps 20 for go-around.

Do not accomplish the following checklist:

AUTOTHROTTLE



ENG OIL PRESS L, R

Ships 7001 – 7008

Condition: **Engine oil pressure is low.**

AUTOTHROTTLE ARM switch **OFF**
 [Allows thrust lever to remain where manually positioned.]

Thrust lever **Close**
 [Stabilizes air flow through engine.]

If ENG OIL PRESS message remains displayed:

FUEL CONTROL switch **CUTOFF**

APU selector
(If APU available) **START, then ON**
 [Provides an additional source of electrical power.]

Transponder mode selector **TA ONLY**
 [Prevents climb commands which can exceed single engine performance capability.]

Plan to land at the nearest suitable airport.

If landing using flaps 20:

GROUND PROXIMITY FLAP OVERRIDE
switch **OVRD**

Note: Use flaps 20 and VREF20 for landing and flaps 5 for go-around.

If landing using flaps 30 (performance permitting):

Note: Use flaps 30 and VREF30 for landing and flaps 20 for go-around.

Do not accomplish the following checklist:

AUTOTHROTTLE



ENG OIL TEMP L, R

Ships 7101 & Subsequent

Condition: **Engine oil temperature is high.**

AUTOTHROTTLE ARM switch **OFF**
[Allows thrust lever to remain where manually positioned.]

Thrust lever **Move to mid position**
[Allows oil to cool.]

If oil temperature above red line limit, or in amber band for 15 minutes:

Thrust lever **Close**

FUEL CONTROL switch **CUTOFF**

APU selector
(If APU available) **START, then ON**
[Provides an additional source of electrical power.]

Transponder mode selector **TA ONLY**
[Prevents climb commands which can exceed single engine performance capability.]

Plan to land at the nearest suitable airport.

If landing using flaps 20:

GROUND PROXIMITY FLAP OVERRIDE
switch **OVRD**

Note: Use flaps 20 and VREF20 for landing and flaps 5 for go-around.

If landing using flaps 30 (performance permitting):

Note: Use flaps 30 and VREF30 for landing and flaps 20 for go-around.

Do not accomplish the following checklist:

AUTOTHROTTLE



ENG OIL TEMP L, R

Ships 7001 – 7008

Condition: **Engine oil temperature is high.**

AUTOTHROTTLE ARM switch **OFF**
[Allows thrust lever to remain where manually positioned.]

Thrust lever **Move to mid position**
[Allows oil to cool.]

If oil temperature above red line limit:

Thrust lever **Close**

FUEL CONTROL switch **CUTOFF**

APU selector
(If APU available) **START, then ON**
[Provides an additional source of electrical power.]

Transponder mode selector **TA ONLY**
[Prevents climb commands which can exceed single engine performance capability.]

Plan to land at the nearest suitable airport.

If landing using flaps 20:

GROUND PROXIMITY FLAP OVERRIDE
switch **OVRD**

Note: Use flaps 20 and VREF20 for landing and flaps 5 for go-around.

If landing using flaps 30 (performance permitting):

Note: Use flaps 30 and VREF30 for landing and flaps 20 for go-around.

Do not accomplish the following checklist:

AUTOTHROTTLE



ENG REV LIMITED L, R

Condition: **Engine thrust reverser will not deploy or reverse thrust will be limited to idle on landing.**



ENG REVERSER L, R

Condition: **Fault is detected in the affected engine reverser system.**



ENG RPM LIMITED L, R

Ships 7101 & Subsequent

Condition: **Engine control is limiting affected engine thrust to prevent N1 or N2 from exceeding the RPM operating limit.**



ENG RPM LIMITED L, R

Ships 7001 – 7008

Condition: **Engine control is limiting affected engine thrust to prevent N1, N2, or N3 from exceeding the RPM operating limit.**



ENG SHUTDOWN

Condition: **Both engines were shutdown on the ground by the fuel control switches or fire switches.**



ENG SHUTDOWN L, R

Condition: **Engine was shutdown by the fuel control switch or fire switch.**



ENG START VALVE L, R

Condition: **Engine start valve is not in commanded position.**

Ground or in-flight start using a bleed air source may be unsuccessful.

[Bleed air is not available to the starter.]

If on the ground:

FUEL CONTROL switch CUTOFF

START selector NORM

[Prevents bleed air from entering starter if valve subsequently opens.]



If in flight:

START selector NORM

[Prevents bleed air from entering starter if valve subsequently opens.]

Increase airspeed until X-BLD is no longer displayed.

[Assures sufficient air flow for windmill start.]



ENG STARTER CUTOUT L, R

Condition: **Start selector remains in START or engine start valve is open when commanded closed.**

START selector NORM

If ENG STARTER CUTOUT message remains displayed:

ENGINE BLEED switch Off

[Removes bleed air source from starter.]

**BLEED ISOLATION switch
(Affected side) Off**

[Removes bleed air source from starter.]

If on the ground:

Ground air source (If in use) Disconnect

[Removes bleed air source from starter.]

WING ANTI-ICE selector OFF

[From BLEED LOSS WING checklist. Prevents possible asymmetrical ice buildup on the wings.]

Do not accomplish the following checklists:

**BLEED LOSS WING
PACK**



U ENG SVR DAMAGE/SEP L, R

Condition: **Engine has severe damage, vibration, or has separated.**

AUTOTHROTTLE ARM switch OFF

[Allows thrust lever to remain where manually positioned.]

Thrust lever Close

[Assists in recognition of affected engine.]

FUEL CONTROL switch CUTOFF

ENGINE FIRE switch Pull

[Shuts off fuel and hydraulic fluid.]

If high airframe vibration occurs and continues after engine shutdown:

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

If high vibration returns and further airspeed reduction and descent is not practical, increasing the airspeed may reduce the vibration.

**APU selector
(If APU available) START, then ON**

[Provides an additional source of electrical power.]

Transponder mode selector TA ONLY

[Prevents climb commands which can exceed single engine performance capability.]

Plan to land at the nearest suitable airport.

Consider an evacuation.

If landing using flaps 20:

**GROUND PROXIMITY FLAP OVERRIDE
switch OVRD**

Note: Use flaps 20 and VREF20 for landing and flaps 5 for go-around.

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If landing using flaps 30 (performance permitting):

Note: Use flaps 30 and VREF30 for landing and flaps 20 for go-around.

Do not accomplish the following checklist:

AUTOTHROTTLE



ENG THRUST L, R

Condition: **Engine is not producing commanded thrust.**



U VOLCANIC ASH

Condition: Static discharge around the windshield, bright glow in the engine inlets, smoke or dust on the flight deck, or acrid odor indicates the airplane is in volcanic ash.

Exit volcanic ash as quickly as possible. Consider a 180 degree turn.

Oxygen masks **On**

Crew communications **Establish**

AUTOTHROTTLE DISCONNECT switch **Push**

[Allows thrust levers to remain where manually positioned.]

Thrust levers **Close**

Conditions permitting, operate engines at idle.

[Reduces possible engine damage and/or flameout by decreasing EGT.]

ENGINE ANTI-ICE selectors (Both) **ON**

[Increases bleed air extraction to improve engine stall margin.]

WING ANTI-ICE selector **ON**

[Increases bleed air extraction to improve engine stall margin.]

RECIRCULATION FANS switches (Both) **Off**

[Increases bleed air extraction to improve engine stall margin by putting packs into high flow.]

APU selector

(If APU available) **START, then ON**

[Provides an electrical power source in the event one or both engines flame out.]

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

- engine malfunctions, increasing EGT, engine stall or flameout
- decrease or loss of airspeed indications
- EQUIP COOLING OVRD indications
- FIRE CARGO FWD or AFT indications.

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If engines flamed out or stalled, or EGT rapidly approaching or exceeding limit:

FUEL CONTROL switches

(Both) CUTOFF, then RUN

[Attempts to clear stall condition and allows engines to be put into start mode.]

RAM AIR TURBINE switch Push

Push and hold for 1 second.

[Backs up automatic deployment of the RAT.]

Ships 7101 & Subsequent

For a dual engine in-flight start, do not manually abort the start if the EGT indication turns red. AUTOSTART allows EGT to exceed the in-flight start limit, however AUTOSTART aborts the start before EGT becomes too high for continued engine operation.

Ships 7101 & Subsequent

Airspeed Above 270 KTS

[Ensures best windmill start capability.]

Ships 7101 & Subsequent

Engines may accelerate to idle very slowly, especially at high altitudes. The time from fuel control switch to RUN to stabilized idle may be as long as two and a half minutes. Slow acceleration may be incorrectly interpreted as a hung start or engine malfunction. If N2 is steadily increasing and EGT remains within limits, the start is progressing normally.

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I Ships 7001 – 7008

Airspeed Above 250 KTS

[Ensures best windmill start capability.]

I Ships 7001 – 7008

Engines may accelerate to idle very slowly, especially at high altitudes. Slow acceleration may be incorrectly interpreted as a hung start or engine malfunction. If N3 is steadily increasing and EGT remains within limits, the start is progressing normally. Any further cycling of the fuel control switches will result in longer start times.

When HEAT PITOT L+C+R message no longer displayed:

PRIMARY FLIGHT COMPUTERS

DISCONNECT switch DISC, then AUTO

[Restores flight control normal mode following reversion to secondary mode caused by loss of pitot heat.]

Autopilot can be re-engaged when flight control normal mode is restored.

Plan to land at the nearest suitable airport.



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BOTTLE 1, 2 DISCH ENG

Condition: **Engine fire extinguisher bottle 1 or bottle 2 pressure is low.**



BOTTLE DISCH APU

Condition: **APU fire extinguisher bottle pressure is low.**



BOTTLE DISCH CARGO

Condition: **Both rapid discharge cargo fire extinguisher bottle pressures are low.**



□ DET FIRE APU

Condition: **APU fire detection is inoperative.**

If APU not running:

Note: Do not start the APU unless use is required.



If APU running:

Plan to shut down the APU as soon as practical.



DET FIRE CARGO AFT, FWD

Condition: **Affected cargo compartment smoke detection is inoperative.**



DET FIRE ENG L, R

Condition: **Affected engine fire detection is inoperative.**



□ FIRE APU

Condition: **Fire is detected in the APU.**

**APU FIRE switch Pull, rotate, and hold
Rotate to the stop and hold for 1 second.**

If the FIRE APU message remains displayed:

Plan to land at the nearest suitable airport.

Do not accomplish the following checklist:

APU SHUTDOWN



▣ FIRE CARGO AFT

Condition: **Smoke is detected in the aft cargo compartment.**

AFT CARGO FIRE ARM switch ARMED

CARGO FIRE DISCHARGE switch Push
Push and hold for 1 second.

LANDING ALTITUDE selector Pull, set 8,000
[Minimizes extinguisher agent leakage out of the compartment.]

Plan to land at the nearest suitable airport.
Consider an evacuation.

Do not accomplish the following checklist:
LANDING ALTITUDE

When at top of descent:

LANDING ALTITUDE selector Push
[Restores automatic selection of the FMC landing altitude.]

**Note: After landing, inform ground personnel NOT to
open the cargo door until all passengers and crew
have exited the airplane and fire fighting
equipment is nearby.**



□ FIRE CARGO FWD

Condition: **Smoke is detected in the forward cargo compartment.**

FORWARD CARGO FIRE ARM switch ARMED

CARGO FIRE DISCHARGE switch Push
Push and hold for 1 second.

LANDING ALTITUDE selector Pull, set 8,000

[Minimizes extinguisher agent leakage out of the compartment.]

Plan to land at the nearest suitable airport.

Consider an evacuation.

Note: Equipment cooling normal mode is inoperative. After 30 minutes of operation at low altitude and low cabin differential pressure, electronic equipment and displays may fail.

[From EQUIP COOLING OVRD checklist.]

Do not accomplish the following checklists:

EQUIP COOLING OVRD

LANDING ALTITUDE

When at top of descent:

LANDING ALTITUDE selector Push

[Restores automatic selection of the FMC landing altitude.]

Note: After landing, inform ground personnel NOT to open the cargo door until all passengers and crew have exited the airplane and fire fighting equipment is nearby.



Intentionally
Blank

□ FIRE ENG L, R

Condition: **Fire is detected in the engine.**

AUTOTHROTTLE ARM switch OFF

[Allows thrust lever to remain where manually positioned.]

Thrust lever Close

[Assists in recognition of affected engine.]

FUEL CONTROL switch CUTOFF

ENGINE FIRE switch Pull

[Shuts off fuel and hydraulic fluid and arms the fire extinguishing system.]

If FIRE ENG message remains displayed:

ENGINE FIRE switch Rotate

Rotate to the stop and hold for 1 second.

After 30 seconds, if FIRE ENG message remains displayed:

ENGINE FIRE

switch Rotate to other bottle

Rotate to the stop and hold for 1 second.

APU selector

(If APU available) START, then ON

[Provides an additional source of electrical power.]

Transponder mode selector TA ONLY

[Prevents climb commands which can exceed single engine performance capability.]

Plan to land at the nearest suitable airport.

Consider an evacuation.

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If landing using flaps 20:

GROUND PROXIMITY FLAP OVERRIDE

switch OVRD

Note: Use flaps 20 and VREF20 for landing and flaps 5 for go-around.

If landing using flaps 30 (performance permitting):

Note: Use flaps 30 and VREF30 for landing and flaps 20 for go-around.

Do not accomplish the following checklist:

AUTOTHROTTLE



U FIRE ENG TAILPIPE L, R

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

FUEL CONTROL switch (Affected engine) CUTOFF

Advise the cabin.

If bleed air is available:

START selector (Affected engine) START

Advise the tower.

If the engine is being motored:

Continue to motor until the tailpipe fire is extinguished.

START selector (Affected engine) NORM



▣ FIRE WHEEL WELL

Condition: **Fire is detected in a main wheel well.**

Observe gear EXTEND limit speed (270K/.82M).

Landing gear lever DN

[Attempts to remove and extinguish the fire source.]

Plan to land at the nearest suitable airport.

Consider an evacuation.

Flight with gear down increases fuel consumption and decreases climb performance. Refer to Operational Data Manual (ODM), Abnormal section, for flight planning.

If landing gear must be retracted for airplane performance:

When FIRE WHEEL WELL message no longer displayed:

Wait 20 minutes.

[Attempts to ensure that wheel well fire is extinguished.]

Landing gear lever UP



Intentionally
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OVERHEAT ENG L, R

Condition: **Overheat is detected in the nacelle.**

ENGINE BLEED switch **Off**

[Attempts to stop the flow of bleed air through the leak.]

AUTOTHROTTLE ARM switch **OFF**

[Allows thrust lever to remain where manually positioned.]

Thrust lever **Retard**

Retard slowly until OVERHEAT ENG message is no longer displayed or the thrust lever is closed.

[Reduces temperature in the nacelle.]

If OVERHEAT ENG message no longer displayed:

Note: Operate engine at the reduced thrust level for remainder of flight.

If OVERHEAT ENG message remains displayed:

FUEL CONTROL switch **CUTOFF**

APU selector

(If APU available) **START, then ON**

[Provides an additional source of electrical power.]

Transponder mode selector **TA ONLY**

[Prevents climb commands which can exceed single engine performance capability.]

Plan to land at the nearest suitable airport.

If landing using flaps 20:

GROUND PROXIMITY FLAP OVERRIDE

switch **OVRD**

Note: Use flaps 20 and VREF20 for landing and flaps 5 for go-around.

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If landing using flaps 30 (performance permitting):

Note: Use flaps 30 and VREF30 for landing and flaps 20 for go-around.

Do not accomplish the following checklist:

AUTOTHROTTLE



U SMOKE, FIRE OR FUMES

Condition: **Smoke, fire or fumes is identified.**

Diversion may be needed.

Oxygen masks (as required) On, 100%

Crew and cabin communications Establish

**Ships 7008, 7101 & Subsequent
IFE/PASS SEATS switch Off**

**Ships 7001 – 7007
Advise the cabin crew to turn off main IFE and PC power
switches (as installed).**

RECIRCULATION FANS switches (Both) Off

GASPER switch Off

APU BLEED AIR switch Off

**Any time the smoke or fumes becomes the greatest threat,
do the SMOKE OR FUMES REMOVAL checklist.**

**If the source of the smoke, fire or fumes is both obvious and
can be extinguished quickly:**

Source Isolate and extinguish

**If possible, remove power from the affected equipment
by switch or circuit breaker in the flight deck or cabin.**

If both of the following are true:

- **The source is visually confirmed to be extinguished,
and**
- **The smoke or fumes are decreasing**

Continue the flight at the Captain’s discretion.

Restore unpowered items at the Captain’s discretion.

Do the SMOKE OR FUMES REMOVAL checklist if needed.



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Ships 7001 – 7007

Advise the cabin crew to:

- **turn on cabin reading lights switches**
- **turn on galley attendant work lights switches**
- **turn off galley power switches**
- **turn off cabin fluorescent light switches**

Ships 7008, 7101 & Subsequent

Advise the cabin crew that main cabin lighting will be turned off.

Ships 7008, 7101 & Subsequent

CABIN/UTILITY power switch Off

Initiate a diversion to the nearest suitable airport while continuing the checklist.

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

Do not delay landing in an attempt to complete the following steps:

CENTER BLEED ISOLATION switch Off

[Isolates left and right sides of the bleed air system.]

LEFT PACK switch Off

[Removes left side of the air conditioning system as a possible source of smoke/fumes.]

LEFT TRIM AIR switch Off

[Removes left side of the trim air system as a possible source of smoke/fumes.]

Do not accomplish the following checklists:

PACK L

TRIM AIR L

Wait 2 minutes unless the smoke or fumes are increasing.

[Allows time for the smoke or fumes to clear.]

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If the smoke or fumes continue or are increasing:

LEFT PACK switch **AUTO**

[Restores left side of the air conditioning system.]

LEFT TRIM AIR switch **ON**

[Restores left side of the trim air system.]

RIGHT PACK switch **Off**

[Removes right side of the air conditioning system as a possible source of smoke/fumes.]

RIGHT TRIM AIR switch **Off**

[Removes right side of the trim air system as a possible source of smoke/fumes.]

Do not accomplish the following checklists:

PACK R

TRIM AIR R

Wait 2 minutes unless the smoke or fumes are increasing.

[Allows time for the smoke or fumes to clear.]

If smoke or fumes continue or are increasing:

CENTER BLEED ISOLATION switch **AUTO**

[Isolates left and right sides of the bleed air system.]

RIGHT PACK switch **AUTO**

[Restores the right side of the air conditioning system.]

RIGHT TRIM AIR switch **ON**

[Restores the right side of the trim air system.]

Consider an immediate landing.

Do the SMOKE OR FUMES REMOVAL checklist if needed.



U SMOKE OR FUMES REMOVAL

Condition: **Smoke/fumes removal is needed.**

Do this checklist only when directed by the SMOKE, FIRE OR FUMES checklist.

Do not delay landing in an attempt to complete the following steps:

EQUIPMENT COOLING switch Off

Note: After 30 minutes of operation at low altitude and low cabin differential pressure, electronic equipment and displays may fail.

Do not accomplish the following checklist:

EQUIP COOLING OVRD

If most smoke/fumes are in cabin forward of mid-wing and outflow valve manual control available:

AFT OUTFLOW VALVE switch MAN

AFT OUTFLOW VALVE MANUAL switch Close

Position outflow valve fully closed.

Do not accomplish the following checklist:

OUTFLOW VALVE AFT

Return to the SMOKE, FIRE OR FUMES checklist and complete the remaining steps.



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If most smoke/fumes are in cabin aft of mid-wing and outflow valve manual control available:

FORWARD OUTFLOW VALVE switch MAN

FORWARD OUTFLOW VALVE MANUAL switchClose

Position outflow valve fully closed.

Do not accomplish the following checklist:

OUTFLOW VALVE FWD

Return to the SMOKE, FIRE OR FUMES checklist and complete the remaining steps.



SMOKE LAVATORY

Condition: **Smoke is detected in one or more lavatories.**



☐ SMOKE REST UPR DR 1

Condition: **Smoke is detected in door 1 upper crew rest compartment.**

Cabin crew communications Establish

If smoke is persistent:

Plan to land at the nearest suitable airport.

Consider an evacuation.



☐ SMOKE REST UPR DR 3

Ships 7001 – 7008

Condition: **Smoke is detected in door 3 upper crew rest compartment.**

Cabin crew communications Establish

If smoke is persistent:

Plan to land at the nearest suitable airport.

Consider an evacuation.



☐ SMOKE REST UPR DR 4

Ships 7101 & Subsequent

Condition: Smoke is detected in door 4 upper crew rest compartment.

Cabin crew communications Establish

If smoke is persistent:

Plan to land at the nearest suitable airport.

Consider an evacuation.



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▣ AUTO SPEEDBRAKE

Condition: **A fault is detected in the automatic speedbrake system.**

Note: Do not arm speedbrake lever.

[Prevents inadvertent inflight extension.]

Note: Manually extend speedbrakes after landing.



▣ FLAPS DRIVE

Condition: **Flap drive mechanism has failed.**

Do not use alternate flaps.

[Asymmetry and uncommanded motion protection is not provided in alternate mode.]

GROUND PROXIMITY FLAP OVERRIDE

switch OVRD

Note: Do not use FMC fuel predictions with flaps extended.

If flap position 5 or less:

Note: Position flap lever to 1 and use VREF30 + 40 for landing.

[Ensures slats are extended.]

If flap position between 5 and 20:

Note: Use current flaps and VREF30 + 20 for landing.

If flap position 20 or greater:

Note: Use current flaps and VREF20 for landing.

Do not accomplish the following checklist:

FLAPS PRIMARY FAIL



[] FLAPS PRIMARY FAIL

Condition: **Flaps are operating in secondary mode.**

GROUND PROXIMITY FLAP OVERRIDE
switch OVRD

Note: Plan additional time for slower flap operation.

Note: Use flaps 20 and VREF20 for landing.

[Provides improved go-around performance.]



[] FLAP/SLAT CONTROL

Condition: **Flap/slat electronics units are inoperative.**

If flap retraction required:

FLAP lever UP

[Allows maximum speed indication on PFD to increase to VMO/MMO.]

ALTERNATE FLAPS ARM switch ALTN

ALTERNATE FLAPS selector RET

Monitor airspeed during retraction.

GROUND PROXIMITY FLAP OVERRIDE
switch OVRD

Note: Plan additional time for alternate slat and flap extension.

[Flap operation is slower in alternate mode.]

Note: Use flaps 20 and VREF20 for landing.

[Alternate mode is limited to a maximum of flaps 20.]

Continued on next page

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-----DEFERRED ITEMS-----

==> **APPROACH CHECKLIST**

ALTERNATE FLAPS ARM switchALTN

ALTERNATE FLAPS selectorEXT

Monitor airspeed during extension.

[Extends flaps to flaps 20 position.]



FLIGHT CONTROL MODE

Condition: **Flight control system is operating in secondary mode.**

PRIMARY FLIGHT COMPUTERS DISCONNECT switch DISC, then AUTO

[Attempts to restore flight control normal mode.]

If FLIGHT CONTROL MODE message remains displayed:

Avoid abrupt control inputs.

[Airplane response is changed by simplified elevator feel and rudder ratio systems.]

GROUND PROXIMITY FLAP OVERRIDE switch OVRD

Note: Inoperative items:

- envelope protection functions
- autopilot.

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

Note: Yaw damper is degraded.

Note: Manual control inputs are required to compensate for asymmetric thrust conditions.

[From THRUST ASYM COMP checklist.]

Note: Use flaps 20 and VREF20 for landing.

[Ensures sufficient pitch trim capability for landing.]

Note: Do not arm speedbrake lever.

[From AUTO SPEEDBRAKE checklist. Prevents inadvertent inflight extension.]

Note: Manually extend speedbrakes after landing.

[From AUTO SPEEDBRAKE checklist.]

Do not accomplish the following checklists:

**AUTO SPEEDBRAKE
THRUST ASYM COMP**



FLIGHT CONTROLS

Condition: **Multiple flight control surfaces are inoperative or other flight control system faults are detected.**

Handling qualities are degraded.

[Pitch and roll control capability is reduced with fewer operating control surfaces.]

Plan to land at the nearest suitable airport.

GROUND PROXIMITY FLAP OVERRIDE

switch OVRD

Note: Use flaps 20 and VREF30 + 20 for landing.

[Higher approach speeds improve airplane maneuvering characteristics.]

Note: Crosswind limit for landing is 20 knots.

[Less control authority decreases crosswind landing capability.]

Note: Roll rate may be reduced in flight. Speedbrake effectiveness may be reduced in flight and during landing.

[From SPOILERS checklist.]

Do not accomplish the following checklist:

SPOILERS



FLT CONTROL VALVE

Condition: **One or more flight control valves remain closed when commanded open or one or more flight control shutoff switches are in SHUTOFF.**



□ PITCH DOWN AUTHORITY

Condition: **Pitch down authority is limited.**

Slower airspeeds assist nose down pitch control.

[Airplane is approaching its nose down pitch control limit.]

Note: Avoid speedbrake use and rapid thrust increases.

[Only limited elevator authority is available to counter nose up pitching.]



□ PITCH UP AUTHORITY

Condition: **Pitch up and flare authority are limited.**

Do not extend flaps any further until on approach.

[Airplane is approaching its nose up pitch control limit.]

GROUND PROXIMITY FLAP OVERRIDE switch OVRD

Note: Do not use autoland.

If flap position 15 or less:

Note: Use flaps 5 and VREF30 + 40 for landing.

[Higher approach speeds provide better pitch up control authority.]



If flap position 20 or greater:

Note: Use flaps 20 and VREF30 + 20 for landing.

[Higher approach speeds provide better pitch up control authority.]



▣ PRI FLIGHT COMPUTERS

Condition: **Flight control system is operating in direct mode.**

PRIMARY FLIGHT COMPUTERS

DISCONNECT switch DISC, then AUTO

[Attempts to restore flight control normal mode.]

If PRI FLIGHT COMPUTERS message remains displayed:

Avoid abrupt control inputs.

[Airplane response is changed by simplified elevator feel and rudder ratio systems.]

GROUND PROXIMITY FLAP OVERRIDE

switch OVRD

Note: Inoperative items:

- envelope protection functions
- autopilot
- yaw damping
- rudder manual trim cancel switch.

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

Note: Manual control inputs are required to compensate for asymmetric thrust conditions.

[From THRUST ASYM COMP checklist.]

Note: Use flaps 20 and VREF20 for landing.

[Ensures sufficient pitch trim capability for landing.]

Note: Do not arm speedbrake lever.

[From AUTO SPEEDBRAKE checklist. Prevents inadvertent inflight extension.]

Note: Manually extend speedbrakes after landing.

[From AUTO SPEEDBRAKE checklist.]

Do not accomplish the following checklists:

AUTO SPEEDBRAKE

THRUST ASYM COMP



□ SLATS DRIVE

Condition: **Slat drive mechanism has failed.**

Do not use alternate flaps.

[Asymmetry and uncommanded motion protection are not provided in alternate mode.]

GROUND PROXIMITY FLAP OVERRIDE
switch OVRD

Note: Do not use FMC fuel predictions with slats extended.

Note: Do not use autoland.

Note: Use flaps 20 and VREF30 + 30 for landing.

[Provides better handling qualities when slats are not fully extended.]

Do not accomplish the following checklist:

SLATS PRIMARY FAIL



□ SLATS PRIMARY FAIL

Condition: **Slats are operating in secondary mode.**

Note: Plan additional time for slower slat operation.

Ships 7101 & Subsequent

Note: Slats will extend beyond midrange when airspeed is below 256 knots. For go-around, do not exceed 256 knots until slats retract to midrange.



Ships 7001 – 7008

Note: Slats will extend beyond midrange when airspeed is below 239 knots. For go-around, do not exceed 239 knots until slats retract to midrange.



SPEEDBRAKE EXTENDED

Condition: **Speedbrake is extended when radio altitude is between 15 and 800 feet, or when the flap lever is in a landing position, or when either thrust lever is not closed.**



□ SPOILERS

Condition: **One or more spoiler pairs are inoperative.**

Note: Roll rate may be reduced in flight. Speedbrake effectiveness may be reduced in flight and during landing.



□ STAB GREENBAND

Condition: **Nose gear pressure switch disagrees with computed stabilizer greenband.**

FMC weight and CG entries Check
[An incorrect entry may cause an incorrect stab greenband calculation.]



STABILIZER

Condition: **Uncommanded stabilizer motion is detected or stabilizer is inoperative.**

STABILIZER CUTOUT switches (Both) CUTOUT

[Prevents subsequent uncommanded or inappropriate stabilizer motion.]

Do not exceed current airspeed.

[Nose down elevator authority is limited.]

Stabilizer is inoperative. Pitch trim remains available in the normal flight control mode.

GROUND PROXIMITY FLAP OVERRIDE switch OVRD

Note: Use flaps 20 and VREF30 + 20 for landing.

[Provides sufficient elevator authority for landing.]

Do not accomplish the following checklist:

FLIGHT CONTROLS



STABILIZER C

Condition: **Center stabilizer control path is inoperative.**

CENTER STABILIZER CUTOUT switch CUTOUT

[Prevents subsequent uncommanded or inappropriate stabilizer motion.]

Note: Left control wheel pitch trim switches may be inoperative.



STABILIZER CUTOUT

Condition: **Both stabilizer cutout switches are in CUTOUT.**



STABILIZER R

Condition: **Right stabilizer control path is inoperative.**

RIGHT STABILIZER CUTOUT switch CUTOUT

[Prevents subsequent uncommanded or inappropriate stabilizer motion.]

Note: Right control wheel pitch trim switches may be inoperative.



THRUST ASYM COMP

Condition: **Thrust asymmetry compensation is inoperative.**

THRUST ASYMMETRY COMPENSATION

switch Off, then AUTO

If THRUST ASYM COMP message remains displayed:

Note: Manual control inputs are required to compensate for asymmetric thrust conditions.



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U AIRSPEED UNRELIABLE

Condition: **Airspeed or Mach indication suspected to be unreliable.**

One or more of the following may be evidence of unreliable airspeed/Mach indication:

- **speed/altitude information not consistent with pitch attitude and thrust setting**
- **airspeed failure flags**
- **PFD current airspeed box amber**
- **blank or fluctuating airspeed displays**
- **amber line through one or more PFD flight mode annunciations**
- **overspeed indications**
- **radome damage or loss**
- **simultaneous overspeed and stall warnings.**

One or more of the following EICAS messages may be displayed:

- AIRSPEED LOW**
- GND PROX SYS**
- HEAT PITOT C**
- HEAT PITOT L**
- HEAT PITOT R**
- HEAT PITOT L+C+R**
- NAV AIR DATA SYS**
- OVERSPEED**
- SGL SOURCE AIR DATA**
- SGL SOURCE DISPLAYS**
- WINDSHEAR SYS**

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

Pitch attitude and thrust Check

Continued on next page

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If pitch attitude or thrust are NOT normal for phase of flight:

AUTOPILOT Disengage

AUTOTHROTTLE Disconnect

FLIGHT DIRECTORS OFF

Pitch attitude and thrust Adjust

Establish normal pitch attitude and thrust setting for phase of flight.

Note: Normal pitch attitude and thrust settings are available in the Operational Data Manual, Abnormal section.

Ships 7101 & Subsequent

Note: Altitude, Vertical Speed, Reference N1, and Maximum N1 may be unreliable.

Ships 7001 – 7008

Note: Altitude, Vertical Speed, Reference EPR, and Maximum EPR may be unreliable.

Compare pitch attitude, thrust setting, and airspeed with ground speed and the Operational Data Manual, Abnormal section.

If reliable airspeed data source can be determined:

Use reliable airspeed indication.



Continued on next page

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If reliable airspeed data source can NOT be determined:

Pitch attitude and thrust Adjust
Maintain normal pitch attitude and thrust setting for phase of flight. Refer to the Operational Data Manual, Abnormal section.

-----DEFERRED ITEMS -----

==> APPROACH CHECKLIST

Plan to do the following:

- **maintain visual conditions if possible**
- **establish landing configuration early**
- **use electronic and visual glide slope indicators, where available, for approach and landing**
- **refer to ground speed on ND and reported wind for approach.**



□ ALTN ATTITUDE

Condition: **Both AIR DATA/ATTITUDE source switches are in the ALTN position.**

Ships 7101 & Subsequent

Note: Both PFDs are displaying SAARU attitude information.



Ships 7001 – 7008

Note: Both PFDs and the standby attitude indicator are displaying SAARU attitude information.



BARO SET DISAGREE

Condition: **Captain's and First Officer's barometric settings disagree.**

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



DISPLAY SELECT PNL

Condition: **Left, center, or right CDU control of the display select panel is active.**



□ EFIS CONTROL PNL L, R

Condition: **EFIS control panel is inoperative or CDU control of the EFIS control panel is active.**

Note: CDU control of the EFIS control panel is accessed from the CDU menu page.



SGL SOURCE AIR DATA

Condition: **Both PFDs are receiving air data from the same single channel source.**

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



□ SGL SOURCE DISPLAYS

Condition: **A single source of display information is being used by some or all display units.**

Note: Both PFDs and NDs, or just both NDs are displaying information generated from a single source. Lower center display unit may be blank or may not be capable of displaying all normal formats. Left EFIS control panel controls either right PFD and ND or right ND only.



SGL SOURCE RAD ALT

Condition: **Both PFDs are using the same source for radio altimeter information.**



SINGLE SOURCE F/D

Condition: **Both PFDs are using the same source for flight director information.**



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□ FMC

Condition: **Both FMCs have failed or FMC selector is in L with left FMC failed or in R with right FMC failed.**

Select autopilot roll and pitch modes appropriate for the desired flight path.

[LNAV and VNAV modes fail and VNAV guidance is lost when both FMCs fail.]

Note: LNAV can be re-engaged. Plan to enter new waypoints by latitude and longitude into any CDU.

Note: Manually tune navigation radios through the CDUs.

Note: Refer to Operational Data Manual (ODM), Approach/Landing section, for VREF speed and other applicable performance information.

LANDING ALTITUDE selector Pull, set manually

[From LANDING ALTITUDE checklist.]

Do not accomplish the following checklist:

LANDING ALTITUDE



FMC L, R

Condition: **Affected FMC has failed.**



FMC MESSAGE

Condition: **A message is in the FMC scratch pad.**



FMC RUNWAY DISAGREE

Condition: **Airplane is not on FMC origin runway when either engine's thrust is in the takeoff range.**



GPS

Condition: **GPS has failed.**



□ ILS ANTENNA

Condition: **Two or more ILS receivers are not using the correct antennas for best reception.**

Note: AFDS may have difficulty capturing and/or tracking localizer and/or glideslope. Airplane path may be lower than indicated by glideslope pointer.



□ NAV ADIRU INERTIAL

Condition: **ADIRU is not capable of providing valid attitude, position, heading, track, and groundspeed.**

Heading information is displayed for 3 minutes after the NAV ADIRU INERTIAL message is displayed. If the airplane is in the polar region, heading information is removed immediately.

GPS continues to provide position and track information.

Transponder ALTITUDE SOURCE selectorALTN

[Selects SAARU as air data source for transponder altitude reporting in case the NAV ADIRU INERTIAL message was due to a complete failure of the ADIRU.]

Note: Inoperative items:

- **FMC VNAV pages**
- **FMC performance predictions**
- **PFD flap maneuvering speeds; refer to Pattern and Approach speeds table in Operational Data Manual (ODM), Approach/Landing section**
- **ND wind direction/speed and wind arrow**
- **autobrake.**

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Note: Inoperative AFDS modes:

- LNAV
- VNAV
- TO/GA
- LOC
- GS
- FPA
- TRK HOLD/SEL.

When heading no longer displayed and SET HDG line displayed on POS INIT page 1/3:

Heading **Enter**

[Sets SAARU heading to proper reference for display.]

AUTOPILOT **Re-engage**

Note: Crosscheck heading periodically for drift with the magnetic compass and update SAARU heading as necessary. If magnetic compass information is unreliable or unavailable, track information may be used.

Note: VOR course deviation is available in the ND VOR mode. ILS localizer and glideslope deviation raw data is available on both the PFD and the ND.

Note: If GPS is not available, the following additional items are inoperative:

- ND map mode
- active leg course and distance
- direct to waypoint function
- alternate page DIVERT NOW function
- navigation radio autotuning.

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



NAV AIR DATA SYS

Condition: Information from air data sources is no longer being combined for display.

Avoid abrupt control inputs.

[From FLIGHT CONTROL MODE checklist. Airplane response is changed by simplified elevator feel and rudder ratio systems.]

Crosscheck airspeed and altitude on the PFDs and standby flight instruments for accuracy.

[Each display is receiving data from an independent source.]

Note: Normal pitch attitude and thrust settings are available in Flight With Unreliable Airspeed table in Operational Data Manual (ODM), Abnormal section.

Note: Select alternate air data/attitude source if airspeed or altitude on respective PFD is determined to be in error and airspeed or altitude on opposite side PFD is verified to be correct.

[Attempts to remove erroneous data from PFD.]

GROUND PROXIMITY FLAP OVERRIDE switch OVRD

[From FLIGHT CONTROL MODE checklist.]

Note: Inoperative items:

- envelope protection functions
- autopilot
- flight directors
- autothrottles
- PFD flap maneuvering speeds; refer to Pattern and Approach Speeds table in Operational Data Manual (ODM), Approach/Landing section.

[Inoperative items envelope protection functions and autopilot from FLIGHT CONTROL MODE checklist.]

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

Note: Yaw damper is degraded.

[From FLIGHT CONTROL MODE checklist.]

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Note: Manual control inputs are required to compensate for asymmetric thrust conditions.

[From THRUST ASYM COMP checklist.]

Note: Use flaps 20 and VREF20 for landing.

[From FLIGHT CONTROL MODE checklist. Ensures sufficient pitch control for landing.]

Note: Do not arm speedbrake lever.

[From AUTO SPEEDBRAKE checklist. Prevents inadvertent inflight extension.]

Note: Manually extend speedbrakes after landing.

[From AUTO SPEEDBRAKE checklist.]

Do not accomplish the following checklists:

AUTO SPEEDBRAKE

FLIGHT CONTROL MODE

THRUST ASYM COMP



NAV UNABLE RNP

Condition: **Navigation performance does not meet required accuracy.**

If in flight:

If on procedure or airway that has an RNP alerting requirement:

Select alternate procedure or airway. During an approach, initiate a go-around unless suitable visual reference can be established and maintained.

If on procedure or airway without RNP:

Verify position.



If on the ground:

Message may display with GPS disabled.



SINGLE SOURCE ILS

Condition: **Both PFDs and NDs are using the same source for ILS information.**



TRANSPONDER L, R

Condition: **Affected transponder has failed.**

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



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□ FUEL AUTO JETTISON

Condition: **Fuel jettison automatic shutoff has failed, or total fuel quantity is less than selected TO REMAIN quantity and a nozzle valve is open.**

If one or more tank quantity indications blank:

Determine jettison time using the following rates:

- **Fuel in center tank: 5,400 lbs/minute**
- **Center tank empty: 3,100 lbs/minute**

FUEL JETTISON NOZZLE switches (Both) ON

[From FUEL JETTISON checklist.]

**Do not complete the following checklist:
FUEL JETTISON**

When fuel jettison complete:

FUEL JETTISON NOZZLE switches (Both) Off

[Closes fuel jettison nozzle valves.]

FUEL JETTISON ARM switch Off

[Disarms fuel jettison system and removes FUEL TO REMAIN quantity from EICAS.]

If FUEL line on PERF INIT page is blank:

Wait 5 minutes after FUEL JETTISON ARM switch was positioned off.

[Manual entry of fuel quantity is not possible until 5 minutes after jettison is complete.]

Enter current estimated total fuel in the FUEL line box prompts on the PERF INIT page.

[Provides gross weight data for FMC performance calculations and allows VNAV to be re-engaged.]



□ FUEL CROSSFEED AFT

Condition: **Aft crossfeed valve is not in the commanded position.**

If AFT CROSSFEED switch ON:

FORWARD CROSSFEED switch On

[Provides alternate path for fuel crossfeed.]



□ FUEL CROSSFEED FWD

Condition: **Forward crossfeed valve is not in the commanded position.**

If FORWARD CROSSFEED switch ON:

AFT CROSSFEED switch On

[Provides alternate path for fuel crossfeed.]



FUEL DISAGREE

Condition: **Totalizer fuel quantity and FMC calculated fuel quantity disagree.**

The **FUEL DISAGREE** message may be caused by an engine fuel leak. For indications of an engine fuel leak, check:

- total fuel remaining on EICAS compared to planned fuel remaining
- fuel flow indications, for an engine with excessive fuel flow
- individual tank quantities
- totalizer compared to calculated quantities (**PROGRESS** page 2). The **TOTALIZER** value is the sum of the individual tank quantities. The **CALCULATED** value is the totalizer value at engine start minus fuel used (calculated using fuel flow rates and time).

If there is an indication of an engine fuel leak:

Accomplish the **FUEL LEAK** checklist.



If **FUEL DISAGREE** message is displayed without any indication of an engine fuel leak:

PROGRESS page 2 Select

TOTALIZER or **CALCULATED** Select **USE**

Select the most accurate value.



▣ FUEL IMBALANCE

Condition: **Fuel imbalance between main tanks is excessive.**

The **FUEL IMBALANCE** message may be caused by an engine fuel leak. For indications of an engine fuel leak, check:

- total fuel remaining on EICAS compared to planned fuel remaining
- fuel flow indications, for an engine with excessive fuel flow
- individual tank quantities
- totalizer compared to calculated quantities (**PROGRESS** page 2). The **TOTALIZER** value is the sum of the individual tank quantities. The **CALCULATED** value is the totalizer value at engine start minus fuel used (calculated using fuel flow rates and time).

If there is an indication of an engine fuel leak:

Accomplish the **FUEL LEAK** checklist.



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If FUEL IMBALANCE message displayed without any indication of an engine fuel leak:

CROSSFEED switch (Either) On
[Allows fuel from the high tank to feed both engines.]

If left main tank quantity low:

LEFT FORWARD and AFT FUEL PUMP switches Off
[Allows fuel from the high tank to feed both engines.]

Do not accomplish the following checklists:

- FUEL PUMP L AFT**
- FUEL PUMP L FWD**

If right main tank quantity low:

RIGHT FORWARD and AFT FUEL PUMP switches Off
[Allows fuel from the high tank to feed both engines.]

Do not accomplish the following checklists:

- FUEL PUMP R AFT**
- FUEL PUMP R FWD**

When fuel balancing complete:

FORWARD and AFT FUEL PUMP switches (All) ON
[Restores fuel feed from low tank.]

CROSSFEED switches (Both) Off
[Restores main tank-to-engine fuel feed.]



FUEL IN CENTER

Condition: **Both center fuel pump switches are off with fuel in the center tank.**



FUEL JETT NOZZLE L, R

Condition: **Jettison nozzle valve is not in the commanded position.**



***U* FUEL JETTISON**

Condition: **Fuel jettison is required.**

FUEL JETTISON ARM switch ARMED

If desired FUEL TO REMAIN different than displayed FUEL TO REMAIN:

FUEL TO REMAIN selector Pull, set manually

FUEL JETTISON NOZZLE switches (Both) ON

Do not accomplish the following checklists:

FUEL PUMP CENTER L

FUEL PUMP CENTER R

When fuel jettison complete:

FUEL JETTISON NOZZLE switches (Both) Off

FUEL JETTISON ARM switch Off



☐ FUEL JETTISON MAIN

Condition: **Fuel jettison from main tanks is inoperative.**

Fuel jettison can occur only from the center tank.

Do not complete the following checklist:

FUEL JETTISON

When center tank empty or FUEL TO REMAIN quantity reached:

FUEL JETTISON NOZZLE switches (Both) Off

FUEL JETTISON ARM switch Off



☐ FUEL JETTISON SYS

Condition: **Fuel jettison system is inoperative.**

FUEL JETTISON NOZZLE switches (Both) Off

[Closes fuel jettison nozzle valves.]

FUEL JETTISON ARM switch Off

[Disarms fuel jettison system and removes TO REMAIN quantity from EICAS.]

Do not complete the following checklist:

FUEL JETTISON



U FUEL LEAK

Condition: **An in flight fuel leak is suspected or confirmed.**

One or more of the following may be evidence of a fuel leak:

- **visual observation of fuel spray from strut/engine**
- **excessive engine fuel flow**
- **total fuel quantity decreasing at an abnormal rate**
- **FUEL DISAGREE message on EICAS**
- **FUEL IMBALANCE message on EICAS**
- **FUEL QTY LOW message on EICAS**
- **INSUFFICIENT FUEL message on CDU scratchpad.**

CENTER FUEL PUMP switches (Both) Off

CROSSFEED switches (Both) Off

Identify an engine fuel leak by observing a left or right main fuel tank quantity decreasing faster than the other.

An increase in fuel imbalance of approximately 1000 lbs or more in 30 minutes should be considered a fuel leak.

Conditions permitting, visually check for engine fuel leak.

If left and right main tank quantities decrease at same rate:

Resume normal fuel management procedures.

If FUEL DISAGREE message displayed:

PROGRESS page 2 Select

TOTALIZER or CALCULATED Select USE

Select most accurate value.

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If engine fuel leak confirmed:

AUTOTHROTTLE ARM switch
(Affected engine) OFF

[Allows thrust lever to remain where manually positioned.]

Thrust lever (Affected engine) Close

[Assists in recognition of affected engine.]

FUEL CONTROL switch
(Affected engine) CUTOFF

APU selector
(If APU available) START, then ON

[Provides an additional source of electrical power.]

Transponder mode selector TA ONLY

[Prevents climb commands which can exceed single engine performance capability.]

If FUEL DISAGREE message displayed:

PROGRESS page 2 Select

TOTALIZER Select USE

Use TOTALIZER to determine fuel remaining.

Note: After engine shutdown, all remaining fuel can be used for the operating engine. Resume normal fuel management procedures. Plan to balance fuel when the FUEL IMBALANCE message is displayed.

Plan to land at the nearest suitable airport.

If landing using flaps 20:

GROUND PROXIMITY FLAP
OVERRIDE switch OVRD

Note: Use flaps 20 and VREF20 for landing and flaps 5 for go-around.

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If engine fuel leak confirmed: (continued)

If landing using flaps 30 (performance permitting):

Note: Use flaps 30 and VREF30 for landing and flaps 20 for go-around.

If FUEL QTY LOW message displayed:

CROSSFEED switch (Either) ON

[From FUEL QTY LOW checklist. Ensures fuel is available to both engines if the low tank empties.]

FUEL PUMP switches (All) ON

[From FUEL QTY LOW checklist. Ensures all fuel is available for use.]

Plan to land at the nearest suitable airport.

[From FUEL QTY LOW checklist.]

GROUND PROXIMITY FLAP

VERRIDE switch OVRD

Note: Use flaps 20 and VREF20 for landing.

[From FUEL QTY LOW checklist. Provides improved elevator authority in event of dual engine flameout.]

Note: Avoid high nose up attitude and excessive acceleration or deceleration.

[From FUEL QTY LOW checklist. Prevents forward pumps from uncovering.]

Do not complete the following checklist:

FUEL QTY LOW



FUEL LOW CENTER

Condition: **One or both center fuel pump switches are ON and center tank quantity is low.**



FUEL PRESS ENG L, R

Condition: **Engine is on suction feed.**

**FORWARD and AFT FUEL PUMP switches
(Affected side) Off**

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

Do not accomplish the following checklists:

- FUEL IMBALANCE**
- FUEL PUMP AFT**
- FUEL PUMP FWD**

If unable to maintain required thrust on affected engine:

CROSSFEED switch (Either) On

[Allows fuel from operative pump side to feed both engines.]

**Note: Continued operation with a crossfeed valve open
will result in a progressive fuel imbalance due to
both engines feeding from the same main tank.**

Do not balance fuel.

When FUEL IMBALANCE message displays:

CROSSFEED switches (Both) Off

[Restores main tank-to-engine fuel feed.]

**Continue suction feed operation. Sufficient roll control
is available to compensate for any main tank fuel
imbalance.**

**If unable to maintain required thrust on affected
engine, operate at lower altitude.**



FUEL PRESS ENG L+R

Condition: **All fuel pump output pressures are low.**



□ FUEL PUMP CENTER L, R

Condition: **Center fuel pump output pressure is low.**

CROSSFEED switch (Either) On

[Prevents fuel imbalance by feeding both engines from the same center fuel pump.]

FUEL PUMP switch (Affected pump) Off

If both center fuel pump output pressures low:

Check available left and right main tank quantity is sufficient for the planned flight.

[Center tank fuel is not available.]

CROSSFEED switches (Both) Off

[Restores main tank-to-engine fuel feed.]



□ FUEL PUMP L AFT, FWD

Condition: **Left aft or forward fuel pump output pressure is low.**

FUEL PUMP switch (Affected pump) Off



□ FUEL PUMP R AFT, FWD

Condition: **Right aft or forward fuel pump output pressure is low.**

FUEL PUMP switch (Affected pump) Off



□ FUEL QTY LOW

Condition: **Fuel quantity is low in either main tank.**

The **FUEL QTY LOW** message may be caused by an engine fuel leak. For indications of an engine fuel leak, check:

- total fuel remaining on EICAS compared to planned fuel remaining
- fuel flow indications, for an engine with excessive fuel flow
- individual tank quantities
- totalizer compared to calculated quantities (**PROGRESS** page 2). The **TOTALIZER** value is the sum of the individual tank quantities. The **CALCULATED** value is the totalizer value at engine start minus fuel used (calculated using fuel flow rates and time).

If there is an indication of an engine fuel leak:

Accomplish the **FUEL LEAK** checklist.



If **FUEL QTY LOW** message displayed without any indication of an engine fuel leak:

CROSSFEED switch (Either) **On**

[Ensures fuel is available to both engines if the low tank empties.]

FUEL PUMP switches (**All**) **ON**

[Ensures all fuel is available for use.]

Plan to land at the nearest suitable airport.

GROUND PROXIMITY FLAP

OVERRIDE switch **OVRD**

Note: Use flaps 20 and VREF 20 for landing.

[Increased speed at Flaps 20 provides improved elevator control for landing flare in the event of a dual engine flameout.]

Note: Avoid high nose up attitude and excessive acceleration or deceleration.

[Prevents forward pumps from uncovering.]



☐ FUEL TEMP LOW

Condition: **Fuel temperature is approaching minimum.**

Increase airspeed, change altitude, and/or deviate to a warmer air mass to achieve a TAT equal to or higher than the fuel temperature limit (3 degrees C above the fuel freeze point).

TAT increases approximately 0.5 to 0.7 degrees C for each .01 Mach increase in airspeed. In extreme conditions it may be necessary to descend as low as FL250.

**☐ FUEL VALVE APU**

Condition: **APU fuel valve is not in the commanded position.**

Do not start the APU.

[Prevents a potential fire hazard.]

Note: APU is not available for remainder of flight.

Do not accomplish the following checklist:

APU SHUTDOWN



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[] HYD AUTO CONTROL C

Condition: **Both center demand pump AUTO functions and all center hydraulic system indications are inoperative.**

C1 DEMAND PUMP selectorON

[Provides continuous demand pump pressure.]



[] HYD AUTO CONTROL L, R

Condition: **Demand pump AUTO function and all left or right hydraulic system indications are inoperative.**

DEMAND PUMP selector (Affected system)ON

[Provides continuous demand pump pressure.]



[] HYD OVERHEAT DEM C1, C2, L, R

Condition: **Demand pump temperature is high.**

DEMAND PUMP selectorOFF

[Attempts to eliminate source of overheat.]

Do not accomplish the following checklist:

HYD PRESS DEM



[] HYD OVERHEAT PRI C1, C2

Condition: **Primary pump temperature is high.**

PRIMARY PUMP switchOff

[Attempts to eliminate source of overheat.]

Do not accomplish the following checklist:

HYD PRESS PRI



[] HYD OVERHEAT PRI L, R

Condition: **Primary pump temperature is high.**

PRIMARY PUMP switch **Off**

[Attempts to eliminate source of overheat.]

Note: Thrust reverser on the affected side may be inoperative.

Do not accomplish the following checklist:

HYD PRESS PRI



[] HYD PRESS DEM C1, C2, L, R

Condition: **Demand pump output pressure is low when commanded on.**

DEMAND PUMP selector **ON**

[Restores system pressure if AUTO demand function failed to operate.]

If HYD PRESS DEM message remains displayed:

DEMAND PUMP selector **OFF**

[Avoids system contamination and/or pump damage.]



[] HYD PRESS PRI C1, C2

Condition: **Primary pump output pressure is low.**

PRIMARY PUMP switch **Off**

[Avoids system contamination and/or damage.]



□ HYD PRESS PRI L, R

Condition: **Primary pump output pressure is low.**

PRIMARY PUMP switch **Off**

Note: Thrust reverser on the affected side may be inoperative.



□ HYD PRESS SYS C

Condition: **Center hydraulic system pressure is low.**

C1 or C2 DEMAND PUMP selector ON

[Restores system pressure if AUTO demand function failed to operate.]

If HYD PRESS SYS C message remains displayed:

C2 PRIMARY PUMP switch Off

[Avoids system contamination and/or pump damage.]

C1 and C2 DEMAND PUMP selectors OFF

[Avoids system contamination and/or pump damage and prevents an air system low flow condition.]

GROUND PROXIMITY FLAP OVERRIDE

switch OVRD

[From FLAPS PRIMARY FAIL checklist.]

Note: Inoperative items:

- main landing gear hydraulic operation
- main gear steering.

Note: Plan additional time for slower slat and flap operation.

[From FLAPS PRIMARY FAIL and SLATS PRIMARY FAIL checklists.]

Ships 7101 & Subsequent

Note: Slats will extend beyond midrange when airspeed is below 256 knots. For go-around, do not exceed 256 knots until slats retract to midrange.

[From SLATS PRIMARY FAIL checklist.]

Ships 7001 – 7008

Note: Slats will extend beyond midrange when airspeed is below 239 knots. For go-around, do not exceed 239 knots until slats retract to midrange.

[From SLATS PRIMARY FAIL checklist.]

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If HYD PRESS SYS C message remains displayed: (continued)

Note: Use flaps 20 and VREF20 for landing.

[From FLAPS PRIMARY FAIL checklist. Ensures adequate go-around performance due to slower slat/flap operation in secondary mode.]

Note: Roll rate may be reduced in flight. Speedbrake effectiveness may be reduced in flight and during landing.

[From SPOILERS checklist.]

Note: Do not arm speedbrake lever.

[From AUTO SPEEDBRAKE checklist. Prevents inadvertent inflight extension.]

Note: Manually extend speedbrakes after landing.

[From AUTO SPEEDBRAKE checklist.]

Note: For go-around, observe gear EXTEND limit speed (270K/.82M).

[From GEAR DOOR checklist.]

Do not accomplish the following checklists:

**AUTO SPEEDBRAKE
SPOILERS**

Continued on next page

Continued from previous page

If HYD PRESS SYS C message remains displayed: (continued)

-----DEFERRED ITEMS-----

==> **APPROACH CHECKLIST**

Initiate flap extension as required.

Landing gear lever DN

[Ensures nose gear extension if pressure still exists in that part of the system.]

ALTERNATE GEAR switch DOWN and hold

Push and hold until all gear indicate in-transit.

[Releases gear uplocks and gear door locks allowing gear to free fall.]

Reduction of airspeed to below 240 knots may be necessary for landing gear to lock down.

Do not accomplish the following checklists:

FLAPS PRIMARY FAIL

SLATS PRIMARY FAIL

GEAR DOOR



[] HYD PRESS SYS L

Condition: **Left hydraulic system pressure is low.**

LEFT DEMAND PUMP selectorON

[Restores system pressure if AUTO demand function failed to operate.]

If HYD PRESS SYS L message remains displayed:

LEFT PRIMARY PUMP switchOff

LEFT DEMAND PUMP selectorOFF

[Avoids system contamination and/or pump damage.]

Note: Left thrust reverser is inoperative.

Note: Roll rate may be reduced in flight. Speedbrake effectiveness may be reduced in flight and during landing.

[From SPOILERS checklist.]

Do not accomplish the following checklist:

SPOILERS



▣ HYD PRESS SYS L+C

Condition: **Left and center hydraulic system pressures are low.**

LEFT DEMAND PUMP selector ON
[Restores system pressure if AUTO demand function failed to operate.]

C1 or C2 DEMAND PUMP selector ON
[Restores system pressure if AUTO demand function failed to operate.]

If HYD PRESS SYS L+C message remains displayed:

LEFT PRIMARY PUMP switch Off

C2 PRIMARY PUMP switch Off
[Avoids system contamination and/or pump damage.]

LEFT DEMAND PUMP selector OFF
[Avoids system contamination and/or pump damage.]

C1 and C2 DEMAND PUMP selectors OFF
[Avoids system contamination and/or pump damage and prevents an air system low flow condition.]

Handling qualities are degraded.

[From FLIGHT CONTROLS checklist. Pitch and roll control capability is reduced with fewer operating control surfaces.]

Plan to land at the nearest suitable airport.

[From FLIGHT CONTROLS checklist.]

GROUND PROXIMITY FLAP OVERRIDE switch OVRD

[From FLIGHT CONTROLS and FLAPS PRIMARY FAIL checklists.]

Note: Inoperative items:

- **multiple flight control surfaces**
- **main landing gear hydraulic operation**
- **left thrust reverser**
- **main gear steering.**

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If HYD PRESS SYS L+C message remains displayed: (continued)

Note: Plan additional time for slower slat and flap operation.

[From FLAPS PRIMARY FAIL and SLATS PRIMARY FAIL checklists.]

Ships 7101 & Subsequent

Note: Slats will extend beyond midrange when airspeed is below 256 knots. For go-around, do not exceed 256 knots until slats retract to midrange.

[From SLATS PRIMARY FAIL checklist.]

Ships 7001 – 7008

Note: Slats will extend beyond midrange when airspeed is below 239 knots. For go-around, do not exceed 239 knots until slats retract to midrange.

[From SLATS PRIMARY FAIL checklist.]

Note: Use flaps 20 and VREF30 + 20 for landing.

[From FLIGHT CONTROLS checklist. Higher approach speeds improve airplane maneuvering characteristics.]

Note: Crosswind limit for landing is 20 knots.

[From FLIGHT CONTROLS checklist. Less control authority decreases crosswind landing capability.]

Note: Roll rate may be reduced in flight. Speedbrake effectiveness may be reduced in flight and during landing.

[From SPOILERS checklist.]

Note: Do not arm speedbrake lever.

[From AUTO SPEEDBRAKE checklist. Prevents inadvertent inflight extension.]

Note: Manually extend speedbrakes after landing.

[From AUTO SPEEDBRAKE checklist.]

Note: For go-around, observe gear EXTEND limit speed (270K/.82M).

[From GEAR DOOR checklist.]

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If HYD PRESS SYS L+C message remains displayed: (continued)

Do not accomplish the following checklists:

- AUTO SPEEDBRAKE**
- FLIGHT CONTROLS**
- SPOILERS**

-----DEFERRED ITEMS-----

==> APPROACH CHECKLIST

Initiate flap extension as required.

Landing gear lever DN

[Ensures nose gear extension if pressure still exists in that part of the system.]

ALTERNATE GEAR switch DOWN and hold

Push and hold until all gear indicate in-transit.

[Releases gear uplocks and gear door locks allowing gear to free fall.]

Reduction of airspeed to below 240 knots may be necessary for landing gear to lock down.

Do not accomplish the following checklists:

- FLAPS PRIMARY FAIL**
- SLATS PRIMARY FAIL**
- GEAR DOOR**



HYD PRESS SYS L+C+R

Condition: **All hydraulic system pressures are low.**



▣ HYD PRESS SYS L+R

Condition: **Left and right hydraulic system pressures are low.**

LEFT DEMAND PUMP selector ON

[Restores system pressure if AUTO demand function failed to operate.]

RIGHT DEMAND PUMP selector ON

[Restores system pressure if AUTO demand function failed to operate.]

If HYD PRESS SYS L+R message remains displayed:

LEFT PRIMARY PUMP switch Off

RIGHT PRIMARY PUMP switch Off

LEFT DEMAND PUMP selector OFF

[Avoids system contamination and/or pump damage.]

RIGHT DEMAND PUMP selector OFF

[Avoids system contamination and/or pump damage.]

Handling qualities are degraded.

[From FLIGHT CONTROLS checklist. Pitch and roll control capability is reduced with fewer operating control surfaces.]

Plan to land at the nearest suitable airport.

[From FLIGHT CONTROLS checklist.]

**GROUND PROXIMITY FLAP OVERRIDE
switch OVRD**

[From FLIGHT CONTROLS checklist.]

Note: Inoperative items:

- multiple flight control surfaces
- left and right thrust reversers
- autobrake
- normal brakes.

Note: Use flaps 20 and VREF30 + 20 for landing.

[From FLIGHT CONTROLS checklist. Higher approach speeds improve airplane maneuvering characteristics.]

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If HYD PRESS SYS L+R message remains displayed: (continued)

Note: Crosswind limit for landing is 20 knots.

[From FLIGHT CONTROLS checklist. Less control authority decreases crosswind landing capability.]

Note: Roll rate may be reduced in flight. Speedbrake effectiveness may be reduced in flight and during landing.

[From SPOILERS checklist.]

Do not accomplish the following checklists:

FLIGHT CONTROLS

SPOILERS



▣ HYD PRESS SYS R

Condition: **Right hydraulic system pressure is low.**

RIGHT DEMAND PUMP selectorON

[Restores system pressure if AUTO demand function failed to operate.]

If HYD PRESS SYS R message remains displayed:

RIGHT PRIMARY PUMP switchOff

RIGHT DEMAND PUMP selectorOFF

[Avoids system contamination and/or pump damage.]

Note: Inoperative items:

- right thrust reverser
- autobrake
- normal brakes.

Note: Roll rate may be reduced in flight. Speedbrake effectiveness may be reduced in flight and during landing.

[From SPOILERS checklist.]

Do not accomplish the following checklist:

SPOILERS



▣ HYD PRESS SYS R+C

Condition: **Right and center hydraulic system pressures are low.**

C1 or C2 DEMAND PUMP selector ON
[Restores system pressure if AUTO demand function failed to operate.]

RIGHT DEMAND PUMP selector ON
[Restores system pressure if AUTO demand function failed to operate.]

If HYD PRESS SYS R+C message remains displayed:

STABILIZER CUTOUT switches (Both) CUTOUT
[Prevents display of STABILIZER message.]

Do not exceed current airspeed.
[From STABILIZER checklist. Nose down elevator authority is limited.]

C2 PRIMARY PUMP switch Off
[Avoids system contamination and/or pump damage.]

RIGHT PRIMARY PUMP switch Off

C1 and C2 DEMAND PUMP selectors OFF
[Avoids system contamination and/or pump damage and prevents an air system low flow condition.]

RIGHT DEMAND PUMP selector OFF
[Avoids system contamination and/or pump damage.]

Handling qualities are degraded.
[From FLIGHT CONTROLS checklist. Pitch and roll control capability is reduced with fewer operating control surfaces.]

Plan to land at the nearest suitable airport.
[From FLIGHT CONTROLS checklist.]

GROUND PROXIMITY FLAP OVERRIDE switch OVRD
[From STABILIZER, FLIGHT CONTROLS, and FLAPS PRIMARY FAIL checklists.]

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If HYD PRESS SYS R+C message remains displayed: (continued)

Note: Inoperative items:

- multiple flight control surfaces
- stabilizer
- main landing gear hydraulic operation
- right thrust reverser
- autobrake
- normal and alternate brakes
- main gear steering.

Note: Plan additional time for slower slat and flap operation.

[From FLAPS PRIMARY FAIL and SLATS PRIMARY FAIL checklists.]

Ships 7101 & Subsequent

Note: Slats will extend beyond midrange when airspeed is below 256 knots. For go-around, do not exceed 256 knots until slats retract to midrange.

[From SLATS PRIMARY FAIL checklist.]

Ships 7001 – 7008

Note: Slats will extend beyond midrange when airspeed is below 239 knots. For go-around, do not exceed 239 knots until slats retract to midrange.

[From SLATS PRIMARY FAIL checklist.]

Note: Use flaps 20 and VREF30 + 20 for landing.

[From STABILIZER and FLIGHT CONTROLS checklists. Higher approach speeds improve airplane maneuvering characteristics.]

Note: Crosswind limit for landing is 20 knots.

[From FLIGHT CONTROLS checklist. Less control authority decreases crosswind landing capability.]

Note: Roll rate may be reduced in flight. Speedbrake effectiveness may be reduced in flight and during landing.

[From SPOILERS checklist.]

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If HYD PRESS SYS R+C message remains displayed: (continued)

Note: Do not arm speedbrake lever.

[From AUTO SPEEDBRAKE checklist. Prevents inadvertent inflight extension.]

Note: Manually extend speedbrakes after landing.

[From AUTO SPEEDBRAKE checklist.]

Note: For go-around, observe gear EXTEND limit speed (270K/.82M).

[From GEAR DOOR checklist.]

Do not accomplish the following checklists:

- AUTO SPEEDBRAKE**
- FLIGHT CONTROLS**
- SPOILERS**
- STABILIZER**

-----DEFERRED ITEMS -----

==> APPROACH CHECKLIST

Initiate flap extension as required.

Landing gear leverDN

[Ensures nose gear extension if pressure still exists in that part of the system.]

ALTERNATE GEAR switchDOWN and hold

Push and hold until all gear indicate in-transit.

[Releases gear uplocks and gear door locks allowing gear to free fall.]

Reduction of airspeed to below 240 knots may be necessary for landing gear to lock down.

Do not accomplish the following checklists:

- FLAPS PRIMARY FAIL**
- SLATS PRIMARY FAIL**
- GEAR DOOR**



□ HYD QTY LOW C

Condition: **Center hydraulic system quantity is low.**

Note: Nose wheel steering may be slow to react. Excessive force on the nose wheel steering tiller may cause abrupt tiller movement in the opposite direction.



HYD QTY LOW L, R

Condition: **Hydraulic quantity is low.**



□ HYD QTY LOW L+C

Condition: **Left and center hydraulic system quantities are low.**

Plan to land at the nearest suitable airport.

Note: Nose wheel steering may be slow to react. Excessive force on the nose wheel steering tiller may cause abrupt tiller movement in the opposite direction.



□ HYD QTY LOW L+C+R

Condition: **All three hydraulic system quantities are low.**

Plan to land at the nearest suitable airport.

Note: Nose wheel steering may be slow to react. Excessive force on the nose wheel steering tiller may cause abrupt tiller movement in the opposite direction.



□ HYD QTY LOW L+R

Condition: **Left and right hydraulic system quantities are low.**

Plan to land at the nearest suitable airport.



□ HYD QTY LOW R+C

Condition: **Right and center hydraulic system quantities are low.**

C1 PRIMARY PUMP switch Off

[Prevents fluid loss through the brake system.]

Plan to land at the nearest suitable airport.

Note: Nose wheel steering may be slow to react. Excessive force on the nose wheel steering tiller may cause abrupt tiller movement in the opposite direction.

Note: Do not taxi with loss of steering.

[From RESERVE BRAKES/STRG checklist.]

Do not accomplish the following checklists:

BRAKE SOURCE

RESERVE BRAKES/STRG

-----DEFERRED ITEMS-----

==> APPROACH CHECKLIST

C1 PRIMARY PUMP switch ON

[Restores reserve brakes and steering.]



RAT UNLOCKED

Condition: **Ram air turbine is not stowed and locked.**



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▣ ANTISKID

Condition: **A fault is detected in the antiskid system.**

Note: Autobrake system is inoperative. Use minimum braking consistent with runway conditions to reduce the possibility of tire blowout.



AUTOBRAKE

Condition: **Autobrake is disarmed or inoperative.**



▣ BRAKE SOURCE

Condition: **Normal, alternate, and reserve brakes are not available.**

Note: Only accumulator pressure is available for braking. During landing rollout, apply steady, increasing brake pressure and hold to a full stop. Do not taxi.



▣ BRAKE TEMP

Condition: **Temperature of one or more brakes is excessive.**

If in flight:

Observe gear EXTEND limit speed (270K/.82M).

Landing gear lever DN

[Allows cooling air to flow around brakes.]

When BRAKE TEMP message no longer displayed:

Wait 8 minutes.

[Ensures sufficient cooling time.]

Landing gear lever UP



If on the ground:

Refer to Brake Cooling Schedule table in Operational Data Manual (ODM), Abnormal section for required cooling time.



□ GEAR DISAGREE

Condition: **Gear position disagrees with landing gear lever position.**

If landing gear lever UP:

Note: Observe gear EXTEND limit speed (270K/.82M).

[From GEAR DOOR checklist.]

Note: Flight with gear down increases fuel consumption and decreases climb performance. Refer to Gear Down performance tables in Operational Data Manual (ODM), Abnormal section for flight planning.

Do not accomplish the following checklists:

**AUTO SPEEDBRAKE
GEAR DOOR**



If landing gear lever DN:

Note: Observe gear EXTEND limit speed (270K/.82M).

[From GEAR DOOR checklist.]

**ALTERNATE GEAR switch DOWN and hold
Push and hold until all gear indicate in-transit.**

[Releases gear uplocks and gear door locks allowing gear to free fall.]

Reduction of airspeed to below 240 knots may be necessary for landing gear to lock down.

Do not accomplish the following checklist:

GEAR DOOR

Wait 30 seconds.

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If landing gear lever DN: (continued)

If any gear remains UP or in transit:

Plan to land on available gear.

Consider jettisoning fuel to reduce touchdown weight and speed.

Consider an evacuation.

GROUND PROXIMITY GEAR OVERRIDE

switch OVRD

Note: Use flaps 30 for landing.

[Provides slowest landing speed.]

Note: Do not arm speedbrake lever.

Note: When stopping distance is critical, extend the speedbrakes after all gear, or the nose, or engine nacelle have contacted the runway.

Note: Do not use the thrust reversers unless stopping distance is critical.

When at pattern altitude:

OUTFLOW VALVE switches (Both) MAN

**OUTFLOW VALVE MANUAL switches
(Both) OPEN**

Position outflow valves fully open to depressurize airplane.

FUEL PUMP switches (All) Off

[Reduces possibility of fire.]

Do not accomplish the following checklists:

CABIN ALTITUDE AUTO

FUEL PRESS ENG L

FUEL PRESS ENG R



☐ GEAR DOOR

Condition: **One or more gear doors are not closed.**

Note: Observe gear EXTEND limit speed (270K/.82M).



***U* GEAR LEVER LOCKED DN**

Condition: **Landing gear lever cannot be positioned to UP.**

**Landing gear lever LOCK
OVERRIDE switch** Push and hold

Landing gear lever UP



☐ MAIN GEAR BRACE L, R

Condition: **Affected main gear is down with one brace unlocked.**

**GROUND PROXIMITY GEAR OVERRIDE
switch** OVRD

Note: Use flaps 30 for landing.

[Provides slowest landing speed.]

Note: Do not arm speedbrake lever.

Note: Manually extend speedbrakes after landing.

[Allows coordinated speedbrake extension.]

When at pattern altitude:

FUEL PUMP switches (All) Off

[Reduces possibility of fire.]

Do not accomplish the following checklists:

FUEL PRESS ENG L

FUEL PRESS ENG R



MAIN GEAR STEERING

Condition: **Main gear steering is unlocked when centered.**



▣ RESERVE BRAKES/STRG

Condition: **Reserve brakes, normal nose gear extension, and nose wheel steering may not be available.**

Note: Plan for possible alternate gear extension. Do not taxi with loss of steering.



TIRE PRESS

Ships 7101 & Subsequent

Condition: **One or more tire pressures are not normal.**



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AIRSPEED LOW

Condition: **Airspeed is below minimum maneuvering speed.**



ALTITUDE ALERT

Condition: **Airplane has deviated from the MCP selected altitude.**



ALTITUDE CALLOUTS

Condition: **Altitude and minimums voice annunciations during approach are no longer provided.**



CONFIG DOORS

Condition: **An entry, forward cargo, or aft cargo door is not closed and latched and locked when either engine's thrust is in the takeoff range on the ground.**



CONFIG FLAPS

Condition: **Flaps are not in a takeoff position when either engine's thrust is in the takeoff range on the ground.**



CONFIG GEAR

Condition: **Any landing gear is not down and locked when either thrust lever is closed below 800 feet radio altitude or when flaps are in a landing position.**



CONFIG GEAR STEERING

Condition: **Main gear steering is unlocked when either engine's thrust is in the takeoff range on the ground.**



CONFIG PARKING BRAKE

Condition: **Parking brake is set when either engine's thrust is in the takeoff range on the ground.**



CONFIG RUDDER

Condition: **Rudder trim is not centered when either engine's thrust is in the takeoff range on the ground.**



CONFIG SPOILERS

Ships 7101 & Subsequent

Condition: **Speedbrake lever is not DOWN when either engine's thrust is in the takeoff range on the ground; or, speedbrake lever is extended beyond ARMED in flight, and climb thrust or greater is set on either thrust lever.**

Ships 7001 – 7008

Condition: **Speedbrake lever is not DOWN when either engine's thrust is in the takeoff range on the ground.**



CONFIG STABILIZER

Condition: **Stabilizer is not within the greenband when either engine's thrust is in the takeoff range on the ground.**



▣ CONFIG WARNING SYS

Condition: **A fault is detected in the configuration warning system.**

Note: Radio altitude voice callouts and other aural alerts may not be available.



▣ GND PROX SYS

Condition: **Ground proximity alerts may not be provided.**

Note: Some or all ground proximity alerts are not available. Ground proximity alerts which occur are valid.



OVERSPEED

Condition: **Airspeed has exceeded Vmo/Mmo.**



▣ TAIL STRIKE

Condition: **A tail strike has been detected.**

OUTFLOW VALVE switches (Both) MAN
OUTFLOW VALVE MANUAL switches (Both) OPEN
Position outflow valves fully open to depressurize airplane.

Plan to land at the nearest suitable airport.

Do not accomplish the following checklist:

CABIN ALTITUDE AUTO



TCAS

Condition: **TCAS has failed.**



TCAS OFF

Condition: **TCAS is in standby mode.**



TCAS RA CAPTAIN, F/O

Condition: **TCAS cannot display RA guidance on the affected PFD.**



TERR OVRD

Condition: **Ground proximity terrain override switch is in OVRD.**



□ TERR POS

Condition: **Terrain position data has been lost.**

Note: Position data for the ND terrain map and look-ahead terrain alerts are lost. Ground proximity alerts which occur are valid.



□ WINDSHEAR SYS

Condition: **Windshear alerts may not be provided.**

Note: Some or all windshear alerts are not available. Windshear alerts which occur are still valid.



Maneuvers

Chapter MAN

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Approach to Stall Recovery

The following is immediately accomplished at the first indication of stall buffet or stick shaker.

Pilot Flying	Pilot Monitoring
<ul style="list-style-type: none">• Advance the thrust levers to maximum thrust.• Smoothly adjust the pitch attitude* to avoid ground contact or obstacles.• Level the wings (do not change flaps or landing gear configuration).• Retract the speedbrakes.	<ul style="list-style-type: none">• Verify maximum thrust.• Monitor altitude and airspeed.• Call out any trend toward terrain contact.• Verify all required actions have been completed and call out any omissions.
When ground contact is no longer a factor: <ul style="list-style-type: none">• Adjust the pitch attitude to accelerate while minimizing altitude loss.• Return to a speed appropriate for the configuration.	

Note: *At high altitudes it may be necessary to decrease pitch attitude below the horizon to achieve acceleration.

Rejected Takeoff

Rejected Takeoff Decision

The Captain has the sole responsibility for the decision to reject the takeoff. The decision must be made in time to start the rejected takeoff maneuver by V1.

During the takeoff, the crew member recognizing a malfunction will call it out clearly and precisely.

The takeoff should be rejected for the following:

Event	Prior to 80 knots	80 knots to V1	Above V1
Activation of the master caution system	X		
System failure(s)	X		
Unusual noise or vibration	X		
Tire failure	X		
Abnormally slow acceleration	X		
Unsafe takeoff configuration warning	X		
Engine failure	X	X	
Fire or fire warning	X	X	
Predictive windshear caution or warning	X	X	
If the airplane is unsafe or unable to fly	X	X	X

If the Captain is making the takeoff, the Captain must:

- clearly announce "ABORT"
- immediately start the rejected takeoff maneuver.

If the Captain is not making the takeoff, the Captain must:

- clearly announce "ABORT"
- immediately start the rejected takeoff maneuver.
- assume control of the airplane
- announce "I HAVE THE AIRCRAFT."

Note: If the first officer will maintain control of the airplane until the Captain makes a positive input to the controls and states "I HAVE THE AIRCRAFT."

Rejected Takeoff Maneuver

Captain	First Officer
<p>Without delay, simultaneously:</p> <ul style="list-style-type: none"> • Close the thrust levers, • Disengage the autothrottles • Apply maximum manual wheel brakes or verify operation of RTO autobrakes. <p>Note: If RTO autobrakes is selected, monitor system performance and apply manual wheel brakes if the AUTOBRAKES DISARM light is displayed or deceleration is not adequate.</p>	<p>Verify actions as follows:</p> <ul style="list-style-type: none"> • Thrust levers closed. • Autothrottles disengaged. • Maximum brakes applied.
<p>Apply maximum reverse thrust consistent with conditions.</p>	<p>Verify reverse thrust applied.</p>
<p>Raise SPEEDBRAKE lever*.</p>	<p>If speedbrake lever UP, Call "SPEEDBRAKES UP." If speedbrake lever not UP, Call "SPEEDBRAKES NOT UP."</p>
<p>Continue maximum braking until certain the airplane will stop on the runway.</p>	<p>Callout any omitted action items.</p>
<p>Field length permitting: Initiate movement of the reverse thrust levers to reach the reverse idle detent by taxi speed.</p>	<p>Call out 60 knots.</p>
<p>Notify the tower of the abort and request emergency equipment, if necessary. As soon as practical, make the appropriate RTO PA in accordance with the FOM.</p>	

* The Captain has the option to manually deploy the speedbrakes prior to thrust reverser action.

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Captain	First Officer
<p>Post Reject Considerations:</p> <ul style="list-style-type: none">• Completion of Non-Normal checklist for conditions causing the RTO.• Brake cooling schedule and precautions in ODM.• The possibility of wheel fuse plugs melting and/or remote parking.• The need to clear the runway, check entry door/exit status, ensure passengers are seated prior to taxi.• Wind direction in case of fire.• Not setting the parking brake unless passenger evacuation is necessary.• Advising the ground crew of the hot brake hazard.• Contact Flight Control.	

Terrain Avoidance

Ground Proximity Caution

Accomplish the following maneuver for any of these aural alerts*:

- CAUTION OBSTACLE
- CAUTION TERRAIN
- SINK RATE
- TERRAIN.
- DON'T SINK
- TOO LOW FLAPS
- TOO LOW GEAR
- TOO LOW TERRAIN
- GLIDESLOPE

Pilot Flying	Pilot Monitoring
Correct the flight path or the airplane configuration.	

The below glideslope deviation alert may be cancelled or inhibited for:

- localizer or backcourse approach
- circling approach from an ILS
- when conditions require a deliberate approach below glideslope
- unreliable glideslope signal.

Note: If a terrain caution occurs when flying under daylight VMC, and positive visual verification is made that no obstacle or terrain hazard exists, the alert may be regarded as cautionary and the approach may be continued.

Note: *As installed, some repeat.

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Ground Proximity Warning

Accomplish the following maneuver for any of these conditions:

activation of the “PULL UP”, “OBSTACLE OBSTACLE PULL UP”, or “TERRAIN TERRAIN PULL UP” warning

- other situations resulting in unacceptable flight toward terrain.

Pilot Flying	Pilot Monitoring
<ul style="list-style-type: none">• Disconnect autopilot.• Disconnect autothrottle(s).• Aggressively apply maximum* thrust.• Simultaneously roll wings level and rotate to an initial pitch attitude of 20°.• Retract speedbrakes.• If terrain remains a threat, continue rotation up to the pitch limit indicator or stick shaker or initial buffet.	<ul style="list-style-type: none">• Assure maximum* thrust.• Verify all required actions have been completed and call out any omissions.
<ul style="list-style-type: none">• Do not change gear or flap configuration until terrain separation is assured.• Monitor radio altimeter for sustained or increasing terrain separation.• When clear of the terrain, slowly decrease pitch attitude and accelerate.	<ul style="list-style-type: none">• Monitor vertical speed and altitude (radio altitude for terrain clearance and barometric altitude for a minimum safe altitude).• Call out any trend toward terrain contact.

Note: Aft control column force increases as the airspeed decreases. In all cases, the pitch attitude that results in intermittent stick shaker or initial buffet is the upper pitch attitude limit. Flight at intermittent stick shaker may be required to obtain positive terrain separation. Smooth, steady control will avoid a pitch attitude overshoot and stall.

Note: Do not use flight director commands.

Note: * Maximum thrust can be obtained by advancing the thrust levers full forward if the EECs are in the normal mode. If terrain contact is imminent, advance thrust levers full forward.

Note: If positive visual verification is made that no obstacle or terrain hazard exists when flying under daylight VMC conditions prior to a terrain or obstacle (as installed) warning, the alert may be regarded as cautionary and the approach may be continued.

Traffic Avoidance

Immediately accomplish the following by recall whenever a TCAS traffic advisory (TA) or resolution advisory (RA) occurs.

WARNING: Comply with RA if there is conflict between RA and air traffic control.

WARNING: Once an RA has been issued, safe separation could be compromised if current vertical speed is changed, except as necessary to comply with the RA. This is because TCAS II-to-TCAS II coordination may be in progress with the intruder aircraft, and any change in vertical speed that does not comply with the RA may negate the effectiveness of the other aircraft's compliance with the RA.

Note: If stick shaker or initial buffet occurs during the maneuver, immediately accomplish the APPROACH TO STALL RECOVERY procedure.

Note: If high speed buffet occurs during the maneuver, relax pitch force as necessary to reduce buffet, but continue the maneuver.

Note: Do not use flight director pitch commands until clear of conflict.

For TA:

Pilot Flying	Pilot Monitoring
Look for traffic using traffic display as a guide. Call out any conflicting traffic	
If traffic is sighted, maneuver as required.	

For RA, except a climb in landing configuration:

WARNING: A DESCEND (fly down) RA issued below 1,000 feet AGL should not be followed.

Pilot Flying	Pilot Monitoring
If maneuvering is required, disengage the autopilot and autothrottle. Smoothly adjust pitch and thrust to satisfy the RA command. Follow the planned lateral flight path unless visual contact with the conflicting traffic requires other action.	
Attempt to establish visual contact. Call out any conflicting traffic.	

For a climb RA in landing configuration:

Pilot Flying	Pilot Monitoring
Disengage the autopilot and autothrottle. Advance thrust levers forward to ensure maximum thrust is attained and call for FLAPS 20. Smoothly adjust pitch to satisfy the RA command. Follow the planned lateral flight path unless visual contact with the conflicting traffic requires other action.	Verify maximum thrust set. Position flap lever to 20 detent.
Verify a positive rate of climb on the altimeter and call "GEAR UP."	Verify a positive rate of climb on the altimeter and call "POSITIVE RATE." Set landing gear lever to UP.
Attempt to establish visual contact. Call out any conflicting traffic.	

Upset Recovery

An upset can generally be defined as unintentionally exceeding the following conditions:

- pitch attitude greater than 25 degrees nose up, or
- pitch attitude greater than 10 degrees nose down, or
- bank angle greater than 45 degrees, or
- within above parameters but flying at airspeeds inappropriate for the conditions.

The following techniques represent a logical progression for recovering the airplane. The sequence of actions is for guidance only and represents a series of options to be considered and used depending on the situation. Not all the actions may be necessary once recovery is underway. If needed, use pitch trim sparingly. Careful use of rudder to aid roll control should be considered only if roll control is ineffective and the airplane is not stalled.

These techniques assume that the airplane is not stalled. A stalled condition can exist at any attitude and may be recognized by continuous stick shaker activation accompanied by one or more of the following:

- buffeting, which could be heavy at times
- lack of pitch authority and/or roll control
- inability to arrest descent rate.

If the airplane is stalled, recovery from the stall must be accomplished first by applying and maintaining nose down elevator until stall recovery is complete and stick shaker activation ceases.

Nose High Recovery

Pilot Flying	Pilot Monitoring
<ul style="list-style-type: none"> • Recognize and confirm the situation. 	
<ul style="list-style-type: none"> • Disconnect autopilot and autothrottle. • Apply as much as full nose down elevator. • *Apply appropriate nose down stabilizer trim. • Reduce thrust. • *Roll (adjust bank angle) to obtain a nose down pitch rate. • Complete the recovery: <ul style="list-style-type: none"> - when approaching the horizon, roll to wings level - check airspeed and adjust thrust - establish pitch attitude. 	<ul style="list-style-type: none"> • Call out attitude, airspeed and altitude throughout the recovery. • Verify all required actions have been completed and call out any omissions.

Nose Low Recovery

Pilot Flying	Pilot Monitoring
<ul style="list-style-type: none"> • Recognize and confirm the situation. 	
<ul style="list-style-type: none"> • Disconnect autopilot and autothrottle. • Recover from stall, if required. • *Roll in the shortest direction to wings level (unload and roll if bank angle is more than 90 degrees). • Recover to level flight: <ul style="list-style-type: none"> - apply nose up elevator - *apply nose up trim, if required - adjust thrust and drag as required. 	<ul style="list-style-type: none"> • Call out attitude, airspeed and altitude throughout the recovery. • Verify all required actions have been completed and call out any omissions.

WARNING: * EXCESSIVE USE OF PITCH TRIM OR RUDDER MAY AGGRAVATE AN UPSET SITUATION OR MAY RESULT IN LOSS OF CONTROL AND/OR HIGH STRUCTURAL LOADS.

Windshear

Windshear Caution

For predictive windshear caution alert: (“MONITOR RADAR DISPLAY” aural)

Pilot Flying	Pilot Monitoring
<ul style="list-style-type: none">Maneuver as required to avoid the windshear.	

Windshear Warning

Predictive windshear warning during takeoff roll: (“WINDSHEAR AHEAD, WINDSHEAR AHEAD” aural)

- Prior to V1, reject takeoff.
- After V1, perform the Windshear Escape Maneuver.

Windshear encountered during takeoff roll:

- If windshear is encountered prior to V1, there may not be sufficient runway remaining to stop if an RTO is initiated at V1. At VR, rotate at a normal rate toward a 15 degree pitch attitude. Once airborne, perform the Windshear Escape Maneuver.
- If windshear is encountered near the normal rotation speed and airspeed suddenly decreases, there may not be sufficient runway left to accelerate back to normal takeoff speed. If there is insufficient runway left to stop, initiate a normal rotation at least 2,000 feet before the end of the runway even if airspeed is low. Higher than normal attitudes may be required to lift off in the remaining runway. Ensure maximum thrust is set.

Predictive windshear warning during approach: (“GO-AROUND, WINDSHEAR AHEAD” aural)

- perform Windshear Escape Maneuver or, at pilot’s discretion, perform a normal go-around.

Windshear encountered in flight:

- perform the Windshear Escape Maneuver.

Note: The following are indications the airplane is in windshear:

- windshear warning (two-tone siren followed by “WINDSHEAR,WINDSHEAR,WINDSHEAR”) or
- unacceptable flight path deviations.

Note: Unacceptable flight path deviations are recognized as uncontrolled changes from normal steady state flight conditions below 1000 feet AGL, in excess of any of the following:

- 15 knots indicated airspeed
- 500 FPM vertical speed
- 5 degrees pitch attitude
- 1 dot displacement from the glideslope
- unusual thrust lever position for a significant period of time.

Windshear Escape Maneuver

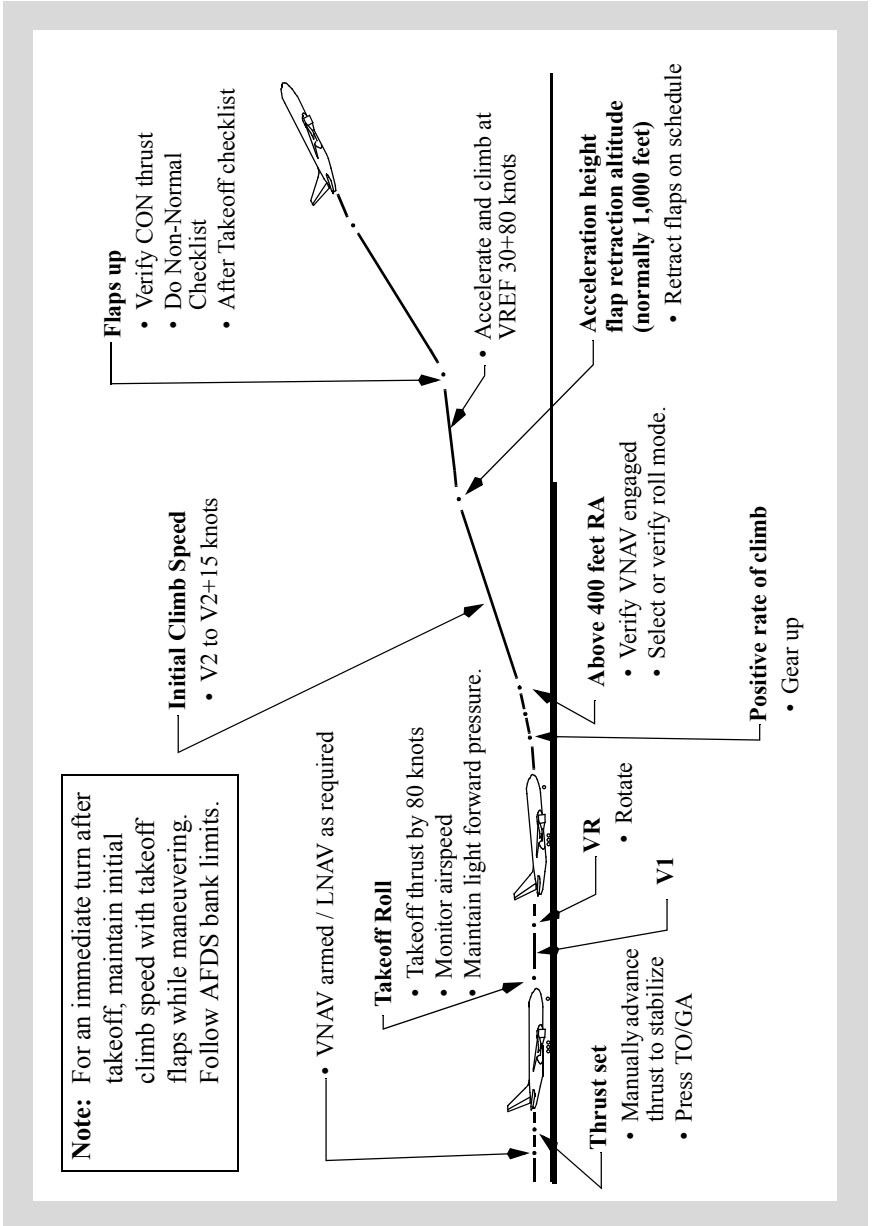
Pilot Flying	Pilot Monitoring
<p>MANUAL FLIGHT</p> <ul style="list-style-type: none"> • Disconnect autopilot. • Push either TO/GA switch. • Aggressively apply maximum* thrust. • Disconnect autothrottle(s). • Simultaneously roll wings level and rotate toward an initial pitch attitude of 15°. • Retract speedbrakes. • Follow flight director TO/GA guidance (if available). 	<ul style="list-style-type: none"> • Assure maximum* thrust. • Verify all required actions have been completed and call out any omissions.

Note: Aft control column force increases as the airspeed decreases. In all cases, the pitch attitude that results in intermittent stick shaker or initial buffet is the upper pitch attitude limit. Flight at intermittent stick shaker may be required to obtain positive terrain separation. Smooth, steady control will avoid a pitch attitude overshoot and stall.

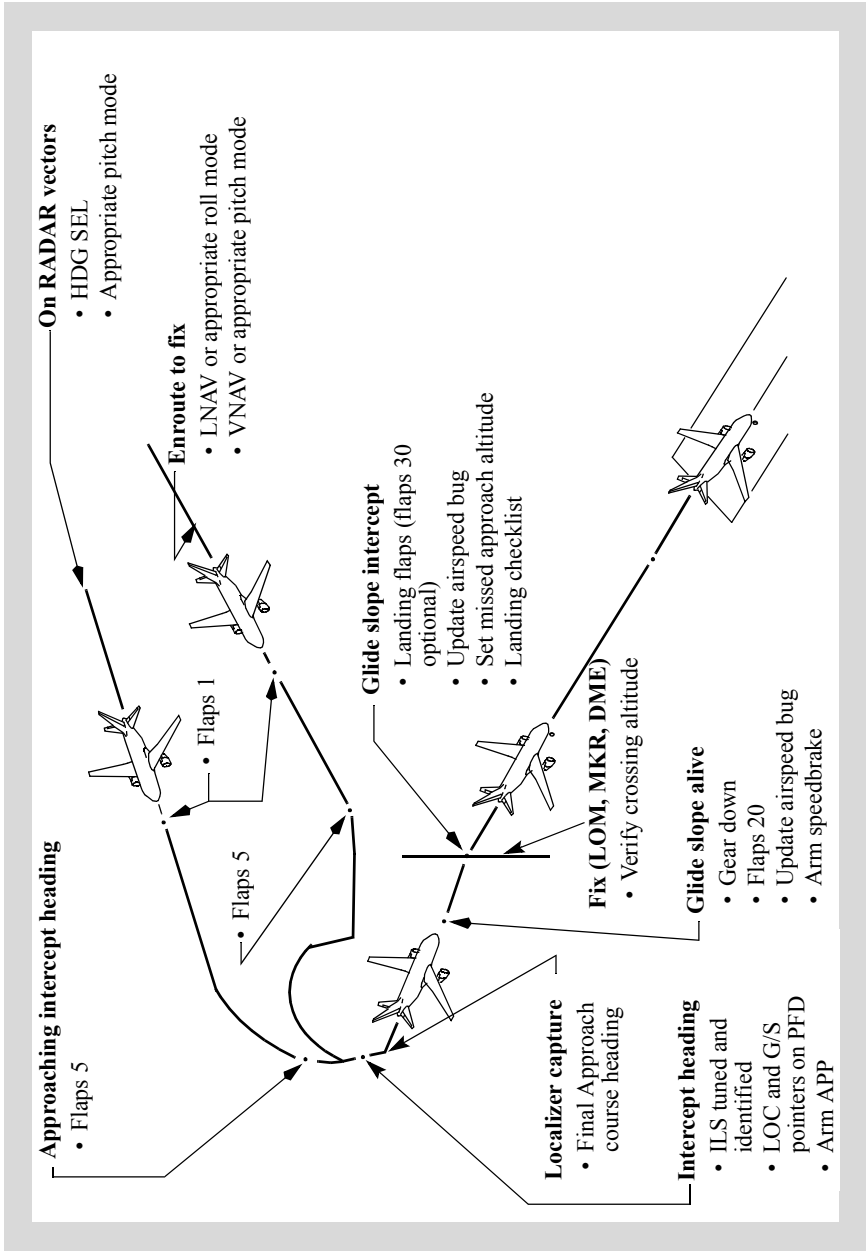
Note: * Maximum thrust can be obtained by advancing the thrust levers full forward if the EECs are in the normal mode. If terrain contact is imminent, advance thrust levers full forward.

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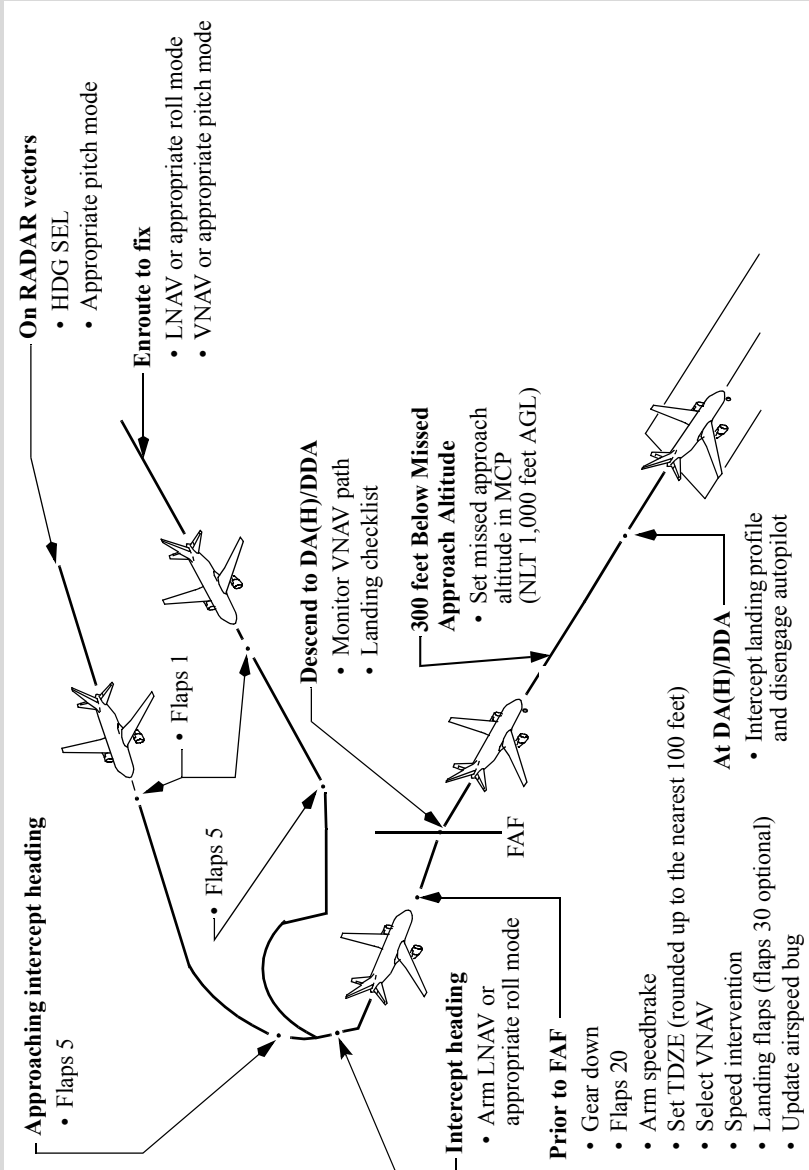
Takeoff - Engine Failure



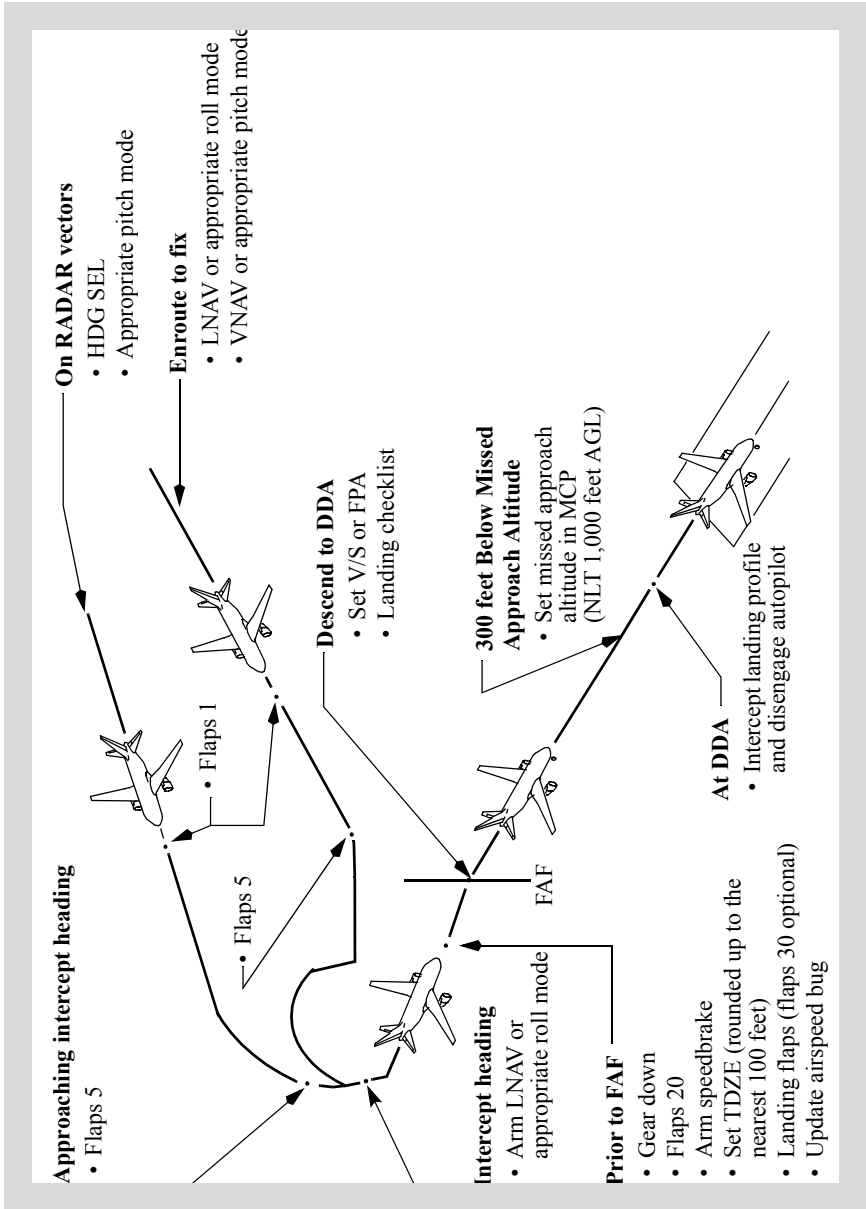
ILS Approach - One Engine Inoperative



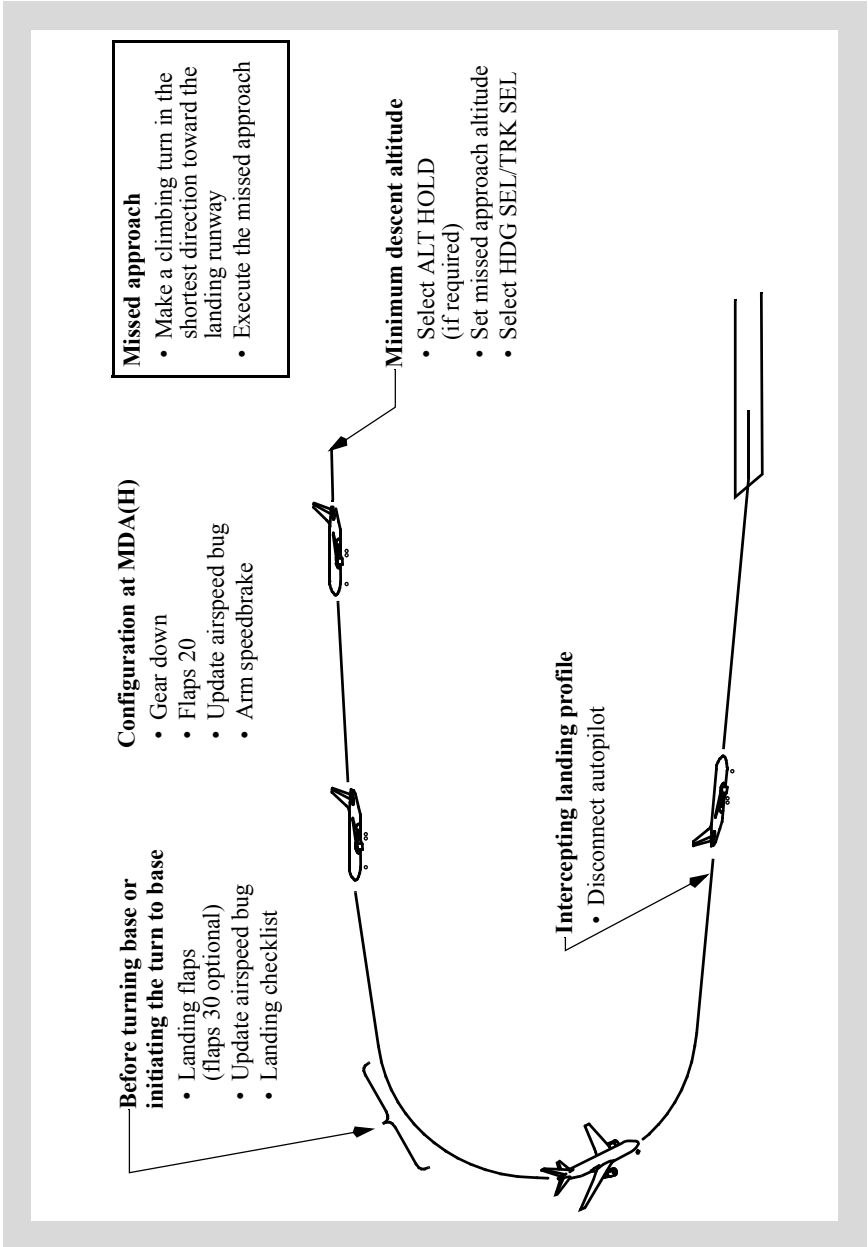
Instrument Approach Using VNAV - One Engine Inoperative



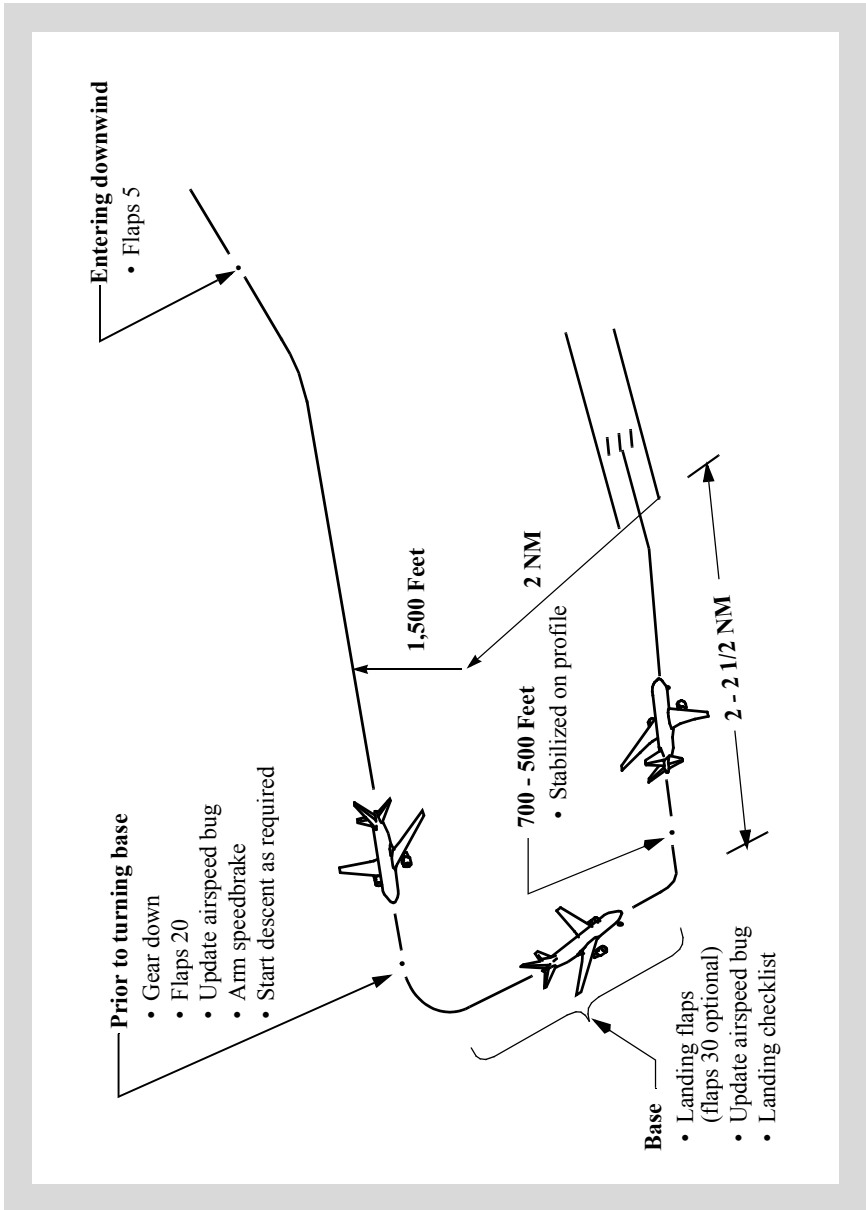
Instrument Approach Using V/S or FPA - One Engine Inoperative



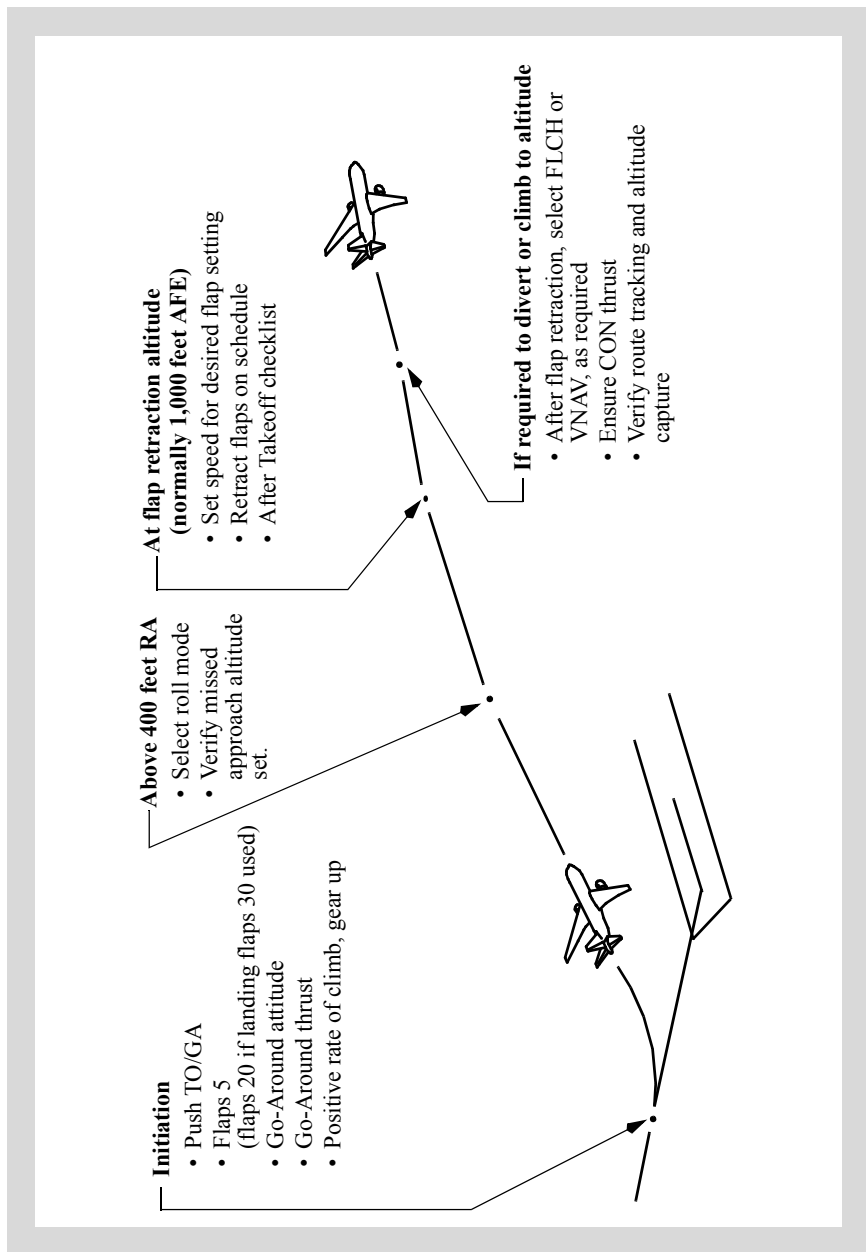
Circling Approach - One Engine Inoperative



Visual Traffic Pattern - One Engine Inoperative



Go-Around and Missed Approach - One Engine Inoperative



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VOLCANIC ASH	0.33, 7.30

W

WINDOW DAMAGE L, R	0.36, 1.6
WINDOW FLT DECK L, R	1.6
WINDOW HEAT	3.11
WINDOW HEAT L, R FWD	3.12
WINDOW HEAT L, R SIDE	3.12
WINDOWS	1.8
WINDSHEAR SYS	15.4

**Evacuation Checklist is on the
reverse side of this page.**

U EVACUATION

Condition: **Evacuation is needed.**

PARKING BRAKESet

OUTFLOW VALVE switches (Both) **MAN**

Outflow valve MANUAL switches (Both) **OPEN**

Hold until the outflow valves are fully open.

FUEL CONTROL switches (Both) **CUTOFF**

Advise the cabin to evacuate.

Advise the tower.

ENGINE FIRE switches (Both) Pull

APU FIRE switchOverride and pull

If an engine or APU fire warning light is illuminated:

Related fire switch. Rotate and hold

Rotate to the stop and hold for 1 second.

