Falcon 900B
Operating Handbook

CAE SimuFlite

Use of Operating Handbook

The CAE SimuFlite Operating Handbook is both a training aid for the simulator and a practical tool for the cockpit. Three sections comprise this handbook.

- **The normal procedures section (N-pages) are inserted in vinyl sleeves for increased durability and ease of page replacement. The checklists provided are CAE SimuFlite-developed Standard Operating Procedures (SOP). If your company has its own SOP, you may replace the CAE SimuFlite SOP with your own SOP.**
- **The flight planning section (F-pages) contains charts and graphs to facilitate flight planning.**
- **The emergency/abnormal procedures section (E-pages) contains checklists for emergency and abnormal situations. All procedures included in the EMERGENCY section of the Airplane Flight Manual have red titles. Additionally, all Phase One (memory) items are printed in red.**

  This section may be accessed in one of three ways: by table of contents (EMER tab, front), by system table (front), or by numbered tab (back).
  If you are accessing a procedure by the table of contents or by system, simply place your thumb on the proper tab and open the book. For example, place your thumb on the EMER tab and open the handbook; the E-pages table of contents is displayed.
  If you are accessing the procedures by cockpit indication, reference the back page of this handbook. Locate the appropriate item and note the number in the adjacent circle. Next, locate the similarly numbered tab; place your thumb on that page and open the handbook. The procedure will be on one of the two pages now open or immediately following.

DEFINITIONS

Land As Soon As Possible: Land at the nearest suitable airport. Extreme situations could require an off-airport landing. Primary consideration is safety of occupants.

Land As Soon As Practical: Land at a suitable airport. Primary consideration is the urgency of the emergency or abnormal situation. Continuing to the destination or an alternate with appropriate service facilities may be an option.

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.**

Items marked with an S indicate CAE SimuFlite recommendations or additional steps integrated from other appropriate sources to allow uninterrupted procedural flow.

NOTICE: This Falcon 900B Operating Handbook is to be used for aircraft familiarization and training purposes only. It is not to be used as, nor considered a substitute for, the manufacturer's Pilot or Maintenance Manuals.

◗. . . . Check on First Flight of the Day
Bus Tie . . . RH, LH Electrical Bus Tie

Prior to starting the following checks, carry out the Interior, Exterior and Cockpit Preflight checks, using the Initial Pilot Training Manual.

BEFORE STARTING ENGINES

POWER OFF

Cockpit Flow Check Complete . . . . . COMPLETE
IRS . . . . . OFF
Audio Panel Set . . . . . SET
Parking Brake . . . . . SET
Fuel Shutoff Switches . . . . . DOWN AND GUARDED
Extinguishers . . . . . ALL 0 / SAFETIED
Gear Pull Handle. . . . . PUSHED IN
ST-BY Pump . . . . . OFF
Power Levers . . . . . CUTOFF
Airbrake. . . . . RETRACT
Slat / Flap Handle . . . . . CLEAN
Emergency Slat Switch . . . . . GUARDED
Oxygen Press / Control . . . . . CHECKED / NORMAL
Pitot / Anti-ice / Window . . . . . ALL OFF
Bleed Air Panel. . . . . SET
Fuel Panel . . . . . SET
Ignition . . . . . GND START
Engine Computers . . . . . AUTO
IRS and “E” Batteries. . . . . CHECKED
Electrical Panel. . . . . SET
Circuit Breakers . . . . . ALL IN

POWER ON

Batteries . . . . . ON / CHECKED
HRZN BAT Voltage . . . . . CHECKED
Bus Tie . . . . . TIED / LIGHT ON
Fire Warning . . . . . TESTED
Exterior Lights . . . . . NAV
◗ Master Warning Panel . . . . . TESTED DIM / BRIGHT
◗ Landing Gear Panel . . . . . TESTED
◗ Takeoff Config / No. 2 ENG Fail. . . . . TESTED
28 V Supply (APU, GPU, No. 3 ENG). . . . . DECIDE

IF APU START

BOOSTER 2 . . . . . STANDBY / LIGHT OUT
APU Master . . . . . PUSHED
APU Start Pushbutton. . . . . PUSH
(If no IIT rise within 10 seconds, ABORT START, wait 5 minutes.)
APU Generator Ammeter . . . . . CHECKED
Batteries . . . . . CHARGE RATE
APU Bleed Air Switch . . . . . ON AFTER 1 MINUTE

IF GROUND POWER UNIT

Power Select Switch . . . . . EXT POWER
BAT Lights . . . . . BOTH ON

IF NO. 3 ENGINE STARTED
(If entry door closed, crack LH DV window)

BOOSTER 3 . . . . . ON / LIGHT OUT
ENG 3 . . . . . START
ENG Generator. . . . . CHECK AMPS / VOLTS
Batteries . . . . . CHARGING

Avionics Masters . . . . . ON
FMS Masters . . . . . ON
IRS . . . . . NAV
Voice / Flight Recorders . . . . . TEST / SET
Seats and Pedals . . . . . ADJUSTED
FMS . . . . . INITIALIZE / PROGRAM
#2 P. BK Annunciator. . . . . ON, STEADY
Fuel Quantity Gauges . . . . . VERIFY
Fuel Used Counters . . . . . RESET ZERO
Standby Horizon. . . . . UNCAGED
Seat and Smoke . . . . . ON
NAV / EMERG LIGHTS . . . . . ON / ARMED
Hydraulic Quantity . . . . . CHECKED
Standby Pump . . . . . ON / AUTO
Airbrake. . . . . EXTEND
STALL 2. . . . . TESTED
Airbrake. . . . . AUTO RETRACT
Trims (5) . . . . . CHECKED / SET
STBY PUMP . . . . . OFF
ADC 1 and 2 . . . . . TEST
Oxygen Mask / Communications . . . . . TEST 100%
VHF 1 COMM. . . . . ON
Altimeters and ASEL . . . . . SET
Radar Altimeter. . . . . TEST AND SET
TOLD Card / Bugs / T.O. Trim (Pg. N-4) . . . . . SET
GPWS . . . . . TESTED
Battery Temp. . . . . TEST
Pressurization Controller . . . . . SET / TEST

STARTING ENGINES

Avionics Masters . . . . . **OFF**
Park Brake . . . . . **FULL AFT**
#2 P BK Light . . . . . **ON STEADY**
All Doors Lights . . . . . **OUT**
Beacon . . . . . **RED**
Fuel Boost Pumps . . . . . **ON / NORMAL**
Engines 2, 3, 1 . . . . . **START**

ABORTED ENGINE START
(See bottom of page)

Power Lever . . . . . **CUTOFF**
Start Switch . . . . . **MOTOR-STOP START**

DRY MOTORING

Power Lever . . . . . **CUTOFF**
Start Switch . . . . . **MOTOR-STOP START**
Start Button . . . . . **PUSH-HOLD 15 SECONDS**

AFTER START

Avionics Masters . . . . . **ON**
Engine Instruments . . . . . **CHECKED**
Hydraulics . . . . . **CHECKED**
Power Select Switch (if GPU) . . . . . **NORMAL / REMOVED**
Master Warning Panel . . . . . **NORMAL**
Bus Tie . . . . . **FLIGHT NORM**
LH / RH Voltage . . . . . **CHECKED**
LH / RH Ammeters . . . . . **SELECT / CHECK**
Windshield Heat . . . . . **3 ON**
ST-BY Pump . . . . . **ON**
Antiskid . . . . . **TEST**
Bleed Air isolation . . . . . **CYCLE CLOSED / OPEN**
Engine Computers . . . . . **CHECK**
Stall 1 . . . . . **TEST**
Anti-ice Check, APU Bleed OFF
Wing . . . . . **CHECK / OFF**
Engine . . . . . **CHECK / ON IF NEEDED**
Slats / Flaps . . . . . **SET FOR TAKEOFF**
STALL 1 then STALL 2 . . . . . **TEST**
MACH Trim and Yaw Damp . . . . . **ON**
Radar and Transponder . . . . . **STANDBY**
Radios / NAV / E-BAT . . . . . **ON / CHECKED**

NOTE: **The following are cause for aborting an engine start:**

- **No N_1 rotation.**
- **The ITT or oil pressure does not rise within ten seconds.**
- **The ITT continues above normal and approaches 978°.**
- **The N_2 speed does not rise rapidly and smoothly.**

TAXI

Taxi Light. . . . . ON
Park Brake. . . . . RELEASE
Brakes (No. 2 and No. 1) . . . . . CHECKED
Headings and Horizons . . . . . CHECKED
Thrust Reverser . . . . . CHECKED
Flight Controls . . . . . FREE
F.A.T.S . . . . . CHECKED
Flight Instruments . . . . . SET FOR DEPARTURE
Crew Brief . . . . . ACCOMPLISHED

BEFORE TAKEOFF

APU and Bleed . . . . . STOP / OFF
DV Window . . . . . CLOSED
Radar / Transponder . . . . . ON
Brakes . . . . . #1 ANTI-SKID ON
Landing Lights . . . . . ON
Anti-collision. . . . . ALL
Ignition (optional). . . . . AIRSTART
Pitot Heat (3) . . . . . ON
Warning Lights / Flags. . . . . CLEAR

AFTER TAKEOFF

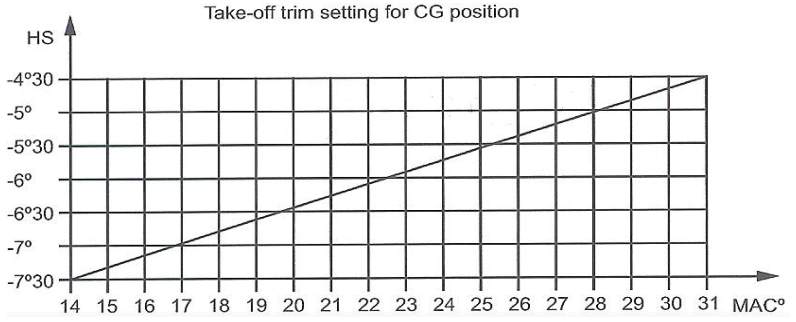
Ignition . . . . . OFF
Anti-ice . . . . . OFF (ON)
Taxi Light. . . . . OFF
Seat and Smoke . . . . . OFF
Climb Power . . . . . SET
ST-BY Pump . . . . . AUTO
Cabin Press / Temp . . . . . CHECKED

AT TRANSITION ALTITUDE

Landing Lights . . . . . OFF
Altimeters 29.92

CRUISE

Engine Parameters. . . . . CHECKED
Generators . . . . . LOAD SHARE
Hydraulics. . . . . CHECKEDCRUISE



MAXIMUM CLIMB THRUST 300 KT / M 0.80

Maximum ITT: 968°C

		Pressure Altitude in 1,000 ft									
		5	10	15	20	25	30	35	40	45	50
TAT (°C)	30	96.6	95.4	93.4	93.4	92.9					
	25	97.5	96.3	94.5	94.4	94.1	94.3				
	20	97.8	97.2	95.4	95.3	95.2	95.4				
	15	96.9	97.9	96.3	96.2	96.2	96.5	95.9			
	10	96.1	98.6	97.1	97.1	97.1	97.4	96.9			
	5	95.2	99.2	97.8	97.8	97.8	98.3	97.7	97.1		
	0	94.4	99.9	98.4	98.4	98.5	99.0	98.6	97.9	96.2	
	-5	93.5	99.5	99.1	99.1	99.1	99.8	99.4	98.8	97.2	95.0
	-10	92.6	98.5	99.8	99.8	99.8	100	100	99.7	98.1	96.1
	-15	91.8	97.6	100	100	100	100	100	100	99.0	97.1
	-20	90.9	96.6	100	100	100	100	100	100	98.9	98.1
	-25	90.0	95.7	100	100	100	100	100	100	100	98.9
	-30	89.0	94.7	100	100	100	100	100	100	100	100
	-35	88.1	93.8	100	100		100	100	100	100	100
	-40	87.2	92.8					99.6	99.6	99.6	99.6

- **For Anti-ice, decrease by 4%.**
- **Value in shaded areas are given for ISA.**
- **For 260 / 0.72, deduct 2%.**

MINIMUM N_1 FOR ANTI-ICE

CONFIGURATION	TOTAL AIR TEMP °C			
	-30 to -20	-20 to -10	-10 to 0	0 to +10
Above 20,000	80%	76%	73%	65%
Above 10,000	76%	73%	65%	58%
Below 10,000	68%	65%	61%	58%
One engine inoperative	84%	71%	65%	62%

When brake heating system is used, increase minimum N_1 speed 1%.

LANDING DATA SLATS +40°

LANDING FIELD LENGTH (LD X 1.67)
LANDING DISTANCE

GW	V_{REF}	1.43 V_S	PRESSURE ALTITUDE					
			SL	2,000	4,000	6,000	8,000	10.000
26	104	141	3750 2250	3900 2350	4050 2450	4250 2550	4500 2700	4700 2800
28	108	146	3900 2350	4050 2450	4300 2600	4500 2700	4750 2850	4900 2950
30	112	151	4100 2500	4300 2600	4500 2700	4725 2875	4900 2950	5225 3125
32	116	156	4300 2600	4600 2750	4750 2850	5000 3000	5250 3150	5500 3300
34	119	161	4700 2800	4800 2900	5100 3050	5250 3150	5500 3300	5850 3500
36	122	166	4900 2950	5200 3100	5350 3200	5600 3350	5950 3550	6200 3700
38	126	170	5250 3150	5500 3300	5700 3400	6000 3600	6250 3750	6600 3950
40	129	175	5600 3350	5850 3500	6100 3650	6450 3850	6700 4000	7000 4160
42	132	180	5950 3550	6200 3700	6450 3850	6700 4000	7000 4200	7400 4400
44	135	185	6030 3610	6350 3800	6620 3960	6890 4125	7230 4330	7620 4560
46	138	190	6260 3750	6530 3910	6529 4100	7140 4275	7520 4500	7870 4710

ABNORMAL CONFIGURATION ADDITIONS

CONFIGURATION	V_{REF}	LANDING DISTANCE	LANDING FIELD LENGTH
CLEAN WING	+30	+50%	+50%
FULL SLATS			
FLAPS 0°	+20	+800	+1,335
FLAPS 7°	+15	+600	+1,000
FLAPS 20°	+5	+200	+335
OUTBOARD SLATS ONLY			
FLAPS 7°	+20	+800	+1,335
FLAPS 20°	+10	+400	+670
FLAPS 40°	+5	+200	+335
STUCK PITCH TRIM			
+2° TO -4° USE S + 20°	+20	+800	+1,335
JAMMED ELEVATOR			
S + 40°	+10	+1,800	+3,000
AIRBRAKES UP			
POSITION 1	+10	+600	+1,000
POSITION 2	+15	+600	+1,000
AIRBRAKES INOPERATIVE		+10%	+10%
ANTISKID INOPERATIVE		+50%	+50%

DESCENT

Cabin Press / Temp . . . . . SET FOR LANDING
TOLD Card / Bugs . . . . . COMPLETE / SET
Anti-icing. . . . . OFF(ON)
Altimeters (at transition) . . . . . SET
Landing Lights . . . . . ON
Seat and Smoke . . . . . ON
Entry Door Curtain . . . . . STOWED

APPROACH

Crew Briefing . . . . . COMPLETE
ST-BY Pump . . . . . ON
X-BP (3) . . . . . ALL CLOSED
Slats–Flaps . . . . . APPROACH

LANDING

Landing Gear . . . . . DOWN / CHECKED
Hydraulic pressure. . . . . CHECKED
Antiskid . . . . . TEST
Airbrake (optional) . . . . . RETRACT
Ignition (optional). . . . . AIRSTART
Slats–Flaps . . . . . S + 40°
Autopilot . . . . . DISENGAGED

HOLDING

G.W.	28	30	32	34	36	38	40	42	44	46
IAS	187	193	200	205	213	219	225	231	237	242

MINIMUM N_1 FOR ANTI-ICE

CONFIGURATION	TOTAL AIR TEMP °C			
	-30 to -20	-20 to -10	-10 to 0	0 to +10
Above 20,000	80%	76%	73%	65%
Above 10,000	76%	73%	65%	58%
Below 10,000	68%	65%	61%	58%
One engine inoperative	84%	71%	65%	62%

When brake heating system is used, increase minimum N_1 speed 1%.

AFTER LANDING

Thrust Reverser . . . . . **STOWED**
Anti-ice . . . . . **ALL OFF**
Windshield Heat . . . . . **ALL OFF**
PITOT Heat . . . . . **ALL OFF**
Ignition . . . . . **GRD START**
Landing Lights, Strobes . . . . . **OFF**
Slats–Flaps . . . . . **CLEAN**
Airbrake . . . . . **RETRACT**
Trim . . . . . **RESET**
Radar / Transponder . . . . . **OFF / STBY**
Bus Tie . . . . . **TIED**
APU (as applicable) . . . . . **START**

SHUTDOWN

Taxi Light . . . . . **OFF**
Park Brake . . . . . **SET**
ST-BY Pump . . . . . **OFF**
Avionics Master . . . . . **OFF**
FMS Master . . . . . **OFF**
IRS . . . . . **OFF**
Standby Horizon . . . . . **CAGED**
VHF 1 . . . . . **OFF**
E-BAT . . . . . **OFF**
Power Levers . . . . . **CUTOFF**
Boost Pumps (3) . . . . . **OFF**
Seat and Smoke . . . . . **OFF**
NAV Lights . . . . . **OFF**
Emergency Exit Lights . . . . . **OFF**
APU . . . . . **SHUTDOWN**
BAT 1 and BAT 2 . . . . . **OFF**
Chocks / Park Brake . . . . . **IN / RELEASE**

QUICK TURN

(A checklist meant to bridge between the After Landing and Taxi checklists)

Power Lever . . . . . **CUTOFF**
FMS Flight time / Fuel . . . . . **RECORD / ZERO**
Clocks . . . . . **ZERO**
Fuel Quantity / Counters . . . . . **CHECKED / ZERO**
ATC Clearance and Code . . . . . **COPY AND SET**
Cabin Press . . . . . **SET**
FMS Flight Plan . . . . . **LOAD**
Avionics . . . . . **SET**
TOLD CARD . . . . . **COMPLETE**
Engine . . . . . **START**
Bus Tie . . . . . **FLIGHT NORM**
Generator Amps . . . . . **NORMAL**
Windshield Heat . . . . . **(3) ON**
Anti-ice . . . . . **OFF (ON)**
Slats–Flaps . . . . . **SET FOR TAKEOFF**
Taxi Checklist . . . . . **BEGIN (N-4)**

TAKEOFF S + 20° P.A. SEA LEVEL

SIDE CENTER ANTI-ICE

V_R/V_2 1.43 V_S V_{REF}	GW X 1,000 MAX TEMP FOR GWT		OAT °C	-20	-10	0	10	20	30	40	50
			OAT °F	-4	14	32	50	68	86	104	122
		T.O. N_1		90.8	92.5	94.3	95.9	97.6	96.9	94.4	91.6
				90.3	92.0	93.8	95.4	97.1	95.7	92.8	89.7
				90.0	91.7	93.5	95.1				
		CLB N_1		92.1	93.9	95.7	97.4	98.2	96.4	93.8	91.1
130	46	BFL		4530	4620	4800	4980	5170	5710	6820	*
190	44°C	V_1		114	114	114	114	114	117	122	
138											
127	44	BFL		4050	4190	4460	4520	4720	5180	6190	*
185	46°C	V_1		111	111	111	111	111	114	118	
135											
124	42	BFL		3710	3820	4150	4220	4340	4700	5610	*
180	50°C	V_1		108	108	108	108	108	111	114	
132											
122	40	BFL		3460	3590	3730	3800	3950	4270	5080	6020
174	50°C	V_1		105	105	106	105	105	107	110	114
129											
119	38	BFL		3100	3330	3440	3550	3680	3890	4590	5410
170	50°C	V_1		101	101	101	101	101	104	107	109
126											
117	37	BFL		3050	3110	3280	3350	3430	3710	4370	5130
168	50°C	V_1		99	99	99	99	99	102	105	107
124											
116	36	BFL		2890	2990	2990	3190	3290	3540	4150	4850
166	50°C	V_1		98	98	98	98	98	100	103	105
122											
114	35	BFL		2780	2850	2980	3010	3070	3390	3940	4580
163	50°C	V_1		96	96	96	96	96	98	101	103
121											
112	34	BFL		2610	2690	2780	2860	2940	3240	3740	4330
161	50°C	V_1		94	94	94	94	94	96	98	101
119											
109	32	BFL		2600	2600	2600	2730	2800	2960	3270	3840
156	50°C	V_1		90	90	90	90	90	91	94	97
115											
105	30	BFL		2600	2600	2600	2650	2800	2850	3280	3500
152	50°C	V_1		90	90	90	90	90	90	90	93
112											
102	28	BFL		2580	2580	2610	2650	2710	2850	3180	3500
146	50°C	V_1		90	90	90	90	90	90	90	90
108											

NO WIND/NO SLOPE
PINK SHADED CANNOT MAKE 3.3% CLIMB
***TAKEOFF LIMITED BY 2.7% CLIMB**
FOR WET RUNWAY SEE AFM
Anti-ice ON, increase V_1 by 0.5 kt.

TAKEOFF S + 20° P.A. 1000 FT

SIDE CENTER ANTI-ICE

V_R/V_2 1.43 V_S V_{REF}	GW X 1,000	OAT °C	-20	-10	0	10	20	30	40	50
		OAT °F	-4	14	32	50	68	86	104	122
	MAX TEMP FOR GWT	T.O. N_1	92.1	93.8	95.6	97.3	98.7	96.8	94.3	91.6
			91.7	93.5	95.3	97.0	98.1	95.7	92.8	89.7
			91.3	93.1	94.9	96.5				
		CLB N_1	92.1	93.9	95.7	97.4	98.2	96.4	93.8	91.1
130 190 138	46 40°C	BFL	4580	4800	5010	5230	5450	6210	7390	*
		V_1	114	114	114	114	115	119	123	
127 185 135	44 43°C	BFL	4150	4340	4540	4740	4940	5630	6710	*
		V_1	111	111	111	111	112	115	119	
124 180 132	42 47°C	BFL	3770	3950	4120	4300	4480	5110	6070	*
		V_1	108	108	108	108	109	112	115	
122 174 129	40 47°C	BFL	3450	3600	3760	3920	4080	4630	5490	6480
		V_1	105	105	105	105	105	108	111	114
119 170 126	38 47°C	BFL	3170	3310	3440	3580	3720	4200	4950	5820
		V_1	101	101	101	101	102	104	107	110
117 168 124	37 47°C	BFL	3050	3170	3300	3430	3560	4010	4700	4700
		V_1	100	100	100	100	100	103	105	105
116 166 122	36 47°C	BFL	2930	3050	3160	3280	3400	3820	4460	5200
		V_1	98	98	98	98	98	101	103	106
114 163 121	35 47°C	BFL	2820	2930	3040	3150	3260	3640	4220	4900
		V_1	96	96	96	96	96	99	101	104
112 161 119	34 47°C	BFL	2720	2820	2920	3020	3120	3460	4000	4610
		V_1	94	94	94	94	94	97	99	102
109 156 115	32 47°C	BFL	2550	2630	2690	2780	2860	3140	3580	4070
		V_1	90	90	90	90	90	92	95	98
105 152 112	30 47°C	BFL	2470	2550	2620	2700	2770	3010	3330	3570
		V_1	90	90	90	90	90	90	91	93
102 146 108	28 47°C	BFL	2470	2550	2620	2700	2770	3010	3330	3650
		V_1	90	90	90	90	90	90	90	90

NO WIND/NO SLOPE
PINK SHADED CANNOT MAKE 3.3% CLIMB
***TAKEOFF LIMITED BY 2.7% CLIMB**
FOR WET RUNWAY SEE AFM
Anti-ice ON, increase V_1 by 0.5 kt.

TAKEOFF S + 20° P.A. 2000 FT

SIDE CENTER ANTI-ICE

V_R/V_2 / 1.43 V_S / V_{REF}	GW X 1,000 MAX TEMP FOR GWT	OAT °C	-20	-10	0	10	20	30	40	48
		OAT °F	-4	14	32	50	68	86	104	118
		T.O. N_1	93.3	95.1	96.9	98.6	98.7	96.8	94.3	92.1
			93.2	95.0	96.8	98.5	98.1	95.6	92.8	90.2
			92.6	94.4	96.2	97.9				
		CLB N_1	92.1	93.9	95.7	97.4	98.2	96.4	93.8	91.1
130	46	BFL	4840	5090	5130	5350	5710	6750	*	*
190	31°C	V_1	115	115	115	115	116	120		
138										
127	44	BFL	4370	4510	4630	4860	5340	6120	7260	*
185	35°C	V_1	112	112	112	112	113	116	120	
135										
124	42	BFL	4110	4180	4290	4590	4900	5550	6570	*
180	38°C	V_1	108	108	108	108	110	113	116	
132										
122	40	BFL	3740	3810	3890	4180	4510	5020	5930	*
174	43°C	V_1	105	105	105	105	106	109	112	
129										
119	38	BFL	3340	3490	3650	3810	4100	4540	5340	6060
170	46°C	V_1	102	102	102	102	103	105	108	110
126										
117	37	BFL	3200	3300	3490	3500	3680	4250	5060	5720
168	47°C	V_1	100	100	100	100	101	103	106	108
124										
116	36	BFL	3070	3200	3340	3400	3520	4110	4780	5600
166	47°C	V_1	98	98	98	98	99	101	104	106
122										
114	35	BFL	2950	3070	3200	3220	3360	3900	4520	5350
163	47°C	V_1	96	96	96	96	97	99	102	104
121										
112	34	BFL	2840	2950	3060	3080	3220	3710	4570	5010
161	47°C	V_1	94	94	94	94	95	97	100	102
119										
109	32	BFL	2640	2650	2820	2910	2980	3380	3800	4450
156	47°C	V_1	90	90	90	90	91	93	96	98
115										
105	30	BFL	2560	2650	2730	2810	2980	3210	3480	4050
152	47°C	V_1	90	90	90	90	90	90	91	93
112										
102	28	BFL	2560	2650	2730	2810	2900	3200	3450	3930
146	47°C	V_1	90	90	90	90	90	90	90	90
108										

NO WIND/NO SLOPE
PINK SHADED CANNOT MAKE 3.3% CLIMB
***TAKEOFF LIMITED BY 2.7% CLIMB**
FOR WET RUNWAY SEE AFM
Anti-ice ON, increase V_1 by 0.5 kt.

TAKEOFF S + 20° P.A. 4000 FT

SIDE CENTER ANTI-ICE

V_R/V_2 1.43 V_S V_{REF}	GW X 1,000	OAT °C	-20	-10	0	10	20	30	40	44
		OAT °F	-4	14	32	50	68	86	104	111
	MAX TEMP FOR GWT	T.O. N_1	96.1	98.1	99.8	100.0	98.7	96.8	94.3	93.2
			96.5	98.4	100.0	100.0	98.1	95.6	92.7	91.4
			95.5	97.3	99.1	98.1				
		CLB N_1	92.1	93.9	95.7	97.4	98.2	96.4	93.8	91.1
130 190 138	46 30°C	BFL V_1	5140 115	5400 116	5550 115	6200 5900 116	6720 119	7930 122	*	*
127 185 135	44 35°C	BFL V_1	4710 112	5100 112	5130 112	5680 5400 113	6100 113	7200 119	*	*
124 180 132	42 38°C	BFL V_1	4340 109	4480 109	4750 109	5780 4900 106	5530 112	6520 115	*	*
122 174 129	40 42°C	BFL V_1	3940 105	4100 105	4240 405	4680 4500 106	5000 108	5890 111	6910 114	*
119 170 126	38 45°C	BFL V_1	3610 102	3780 102	4080 102	4280 4100 102	4530 105	5300 107	6190 109	6580 110
117 168 124	37 45°C	BFL V_1	3430 100	3570 100	3700 100	4030 3850 100	4300 103	5020 105	5850 107	6210 108
116 166 122	36 45°C	BFL V_1	3270 98	3410 98	3450 98	3860 3700 98	4090 101	4750 103	5510 105	5850 106
114 163 121	35 45°C	BFL V_1	3150 96	3230 96	3320 96	3740 3640 96	3890 99	4490 101	5190 103	5500 107
112 161 119	34 45°C	BFL V_1	2990 94	3130 94	3200 94	3400 3300 94	3690 97	4250 99	4880 101	5160 102
109 156 115	32 45°C	BFL V_1	2880 90	2900 90	2910 90	3110 3010 90	3330 92	3780 95	4290 97	5420 98
105 152 112	30 45°C	BFL V_1	2850 90	2850 90	2950 90	3100 3000 90	3220 90	3460 90	3700 93	4210 94
102 146 108	28 45°C	BFL V_1	2850 90	2850 90	2950 90	3100 3000 90	3150 90	3460 90	3770 90	3900 90

NO WIND/NO SLOPE
PINK SHADED CANNOT MAKE 3.3% CLIMB
***TAKEOFF LIMITED BY 2.7% CLIMB**
FOR WET RUNWAY SEE AFM
Anti-ice ON, increase V_1 by 0.5 kt.

TAKEOFF S + 20° P.A. 6000 FT

SIDE CENTER ANTI-ICE

V_R/V_2 / 1.43 V_S / V_{REF}	GW X 1,000 MAX TEMP FOR GWT		OAT °C	-20	-10	0	10	20	30	40
			OAT °F	-4	14	32	50	68	86	104
		T.O. N_1		99.3	100.0	100.0	100.0	98.6	96.7	94.2
				100.0	100.0	100.0	100.0	98.0	95.6	92.6
				99.0	100.0	99.5	98.1			
		CLB N_1		95.5	97.0	97.7	97.9	97.6	95.4	93.8
130	46	BFL		6000	6360	6450	*	7930	*	*
190	24°C	V_1					6730			
138				115	116	118	119	122		
127	44	BFL		5240	5400	5900	6800	7250	*	*
185	28°C	V_1					6300			
135				112	113	114	116	118		
124	42	BFL		4530	4850	5350	6190	6520	7640	*
180	33°C	V_1					5790			
132				109	110	111	112	114	117	
122	40	BFL		4200	4450	5030	5550	5880	6880	*
174	36°C	V_1					5250			
129				106	106	107	108	111	113	
119	38	BFL		3810	4110	4660	5000	5300	6170	7170
170	40°C	V_1				4410	4750			
126				102	103	104	105	107	109	111
117	37	BFL		3880	4000	4520	4800	5020	5830	6760
168	40°C	V_1				4320	4400			
124				100	101	102	103	105	107	109
116	36	BFL		3500	3610	4150	4550	4720	5490	6350
166	40°C	V_1				3950	4300			
122				98	99	100	103	103	105	107
114	35	BFL		3400	3510	3900	4000	4490	5170	5960
163	40°C	V_1				3700				
121				96	97	98	99	101	103	105
112	34	BFL		3170	3300	3800	3850	4240	4860	5800
161	40°C	V_1				3600				
119				94	95	96	97	99	101	103
109	32	BFL		2900	3000	3400	3400	3850	4400	5150
156	40°C	V_1				3200				
115				90	90	91	92	94	96	98
105	30	BFL		2940	3050	3360	3200	3460	3730	4180
152	40°C	V_1				3160				
112				90	90	90	90	90	92	94
102	28	BFL		2900	2950	3050	3200	3480	3750	4150
146	40°C	V_1								
108				90	90	90	90	90	90	90

NO WIND/NO SLOPE
PINK SHADED CANNOT MAKE 3.3% CLIMB
***TAKEOFF LIMITED BY 2.7% CLIMB**
FOR WET RUNWAY SEE AFM
Anti-ice ON, increase V_1 by 0.5 kt.

TAKEOFF S + 20° P.A. 8000 FT

SIDE CENTER ANTI-ICE

V_R/V_2 1.43 V_S V_{REF}	GW X 1,000	OAT °C	-20	-10	0	10	20	30	36
		OAT °F	-4	14	32	50	68	86	97
	MAX TEMP FOR GWT	T.O. N_1	100.0	100.0	100.0	100.0	98.6	96.7	95.1
			100.0	100.0	100.0	100.0	98.0	95.5	93.3
			100.0	100.0	99.4	98.0			
		CLB N_1	98.5	100.0	99.7	98.4	97.0	95.1	94.0
130 190 138	46 17°C	BFL	6640	7080	7640	*	*	*	*
		V_1	118	119	120	8200 120			
127 185 135	44 20°C	BFL	2700	3660	6850	8100	8620	*	*
		V_1	114	116	117	7300 118	121		
124 180 132	42 25°C	BFL	5460	5820	6200	7200	7780	*	*
		V_1	111	112	113	6610 115	117		
122 174 129	40 30°C	BFL	4950	5270	5610	6500	6990	*	*
		V_1	108	108	109	5910 111	113		
119 170 126	38 34°C	BFL	4480	4700	5050	5900	6230	7160	*
		V_1	104	105	106	5320 107	109	111	
117 168 124	37 36°C	BFL	4260	4320	4790	5500	5900	6750	7360
		V_1	102	103	104	5040 105	107	109	110
116 166 122	36 36°C	BFL	4050	4290	4540	5300	5550	6350	6910
		V_1	100	101	102	4900 103	105	106	107
114 163 121	35 36°C	BFL	3850	4070	4300	5000	5280	5960	6470
		V_1	98	99	100	4600 101	103	104	105
112 161 119	34 36°C	BFL	3660	3760	4070	4710	5000	5580	6050
		V_1	96	97	98	4360 99	101	102	103
109 156 115	32 36°C	BFL	3300	3460	3630	4250	4410	4850	5230
		V_1	92	92	93	3880 95	96	98	99
105 152 112	30 36°C	BFL	3130	3250	3470	3520	3930	4170	4470
		V_1	90	90	90	3470 90	92	94	95
102 146 108	28 36°C	BFL	3130	3250	3400	3520	3770	4070	4250
		V_1	90	90	90	3470 90	90	90	91

NO WIND/NO SLOPE
PINK SHADED CANNOT MAKE 3.3% CLIMB
***TAKEOFF LIMITED BY 2.7% CLIMB**
FOR WET RUNWAY SEE AFM
Anti-ice ON, increase V_1 by 0.5 kt.

TAKEOFF S + 7° P.A. 4000 FT

SIDE CENTER ANTI-ICE

V_R/V_2 1.43 V_S V_{REF}	GW X 1,000 MAX TEMP FOR GWT	OAT °C	-20	-10	0	10	20	30	40	50
		OAT °F	-4	14	32	50	68	86	104	122
		T.O. N_1	96.1	98.1	99.8	100.0	98.7	96.8	94.3	93.2
			96.5	98.4	100.0	100.0	98.1	95.6	92.7	91.4
			95.5	97.3	99.1	98.1				
		CLB N_1	92.1	93.9	95.7	97.4	98.2	96.4	93.8	91.1
140	46	BFL	5710	5910	6000	7000	7500	8850	*	*
190	38°C	V_1				6680				
138			122	122	123	123	124	127		
136	44	BFL	5200	5320	5500	6300	6860	7830	9340	*
185	42°C	V_1				6000				
135			119	119	119	119	121	123	126	
132	42	BFL	4760	4880	5020	5760	6250	7150	8680	9380
180	45°C	V_1				5460				
132			115	115	115	115	117	119	122	123
129	40	BFL	4310	4500	4550	5200	5680	6400	7540	8250
174	44°C	V_1				4970				
129			112	112	112	112	113	116	118	119
126	38	BFL	3980	4070	4170	4750	5110	5790	6750	7450
170	44°C	V_1				4600				
126			108	108	108	108	110	112	114	116
124	37	BFL	3800	3850	3960	4530	4800	5500	6350	7100
168	44°C	V_1				4350				
124			106	106	106	106	108	110	112	113
122	36	BFL	3600	3700	3800	4210	4600	5210	6040	6670
166	44°C	V_1				4110				
122			104	104	104	104	106	108	110	111
121	35	BFL	3480	3550	3580	3910	4380	4950	5730	6360
163	44°C	V_1								
121			102	102	102	102	104	106	108	109
119	34	BFL	3290	3390	3490	3700	4120	4720	5460	5950
161	44°C	V_1								
119			100	100	100	100	102	104	106	107
115	32	BFL	2880	3020	3100	3380	3680	4190	4800	5260
156	44°C	V_1								
115			96	96	96	96	98	100	102	103
111	30	BFL	2700	2700	2780	3020	3380	3780	4300	4680
152	44°C	V_1								
112			92	92	92	92	94	96	98	98
108	28	BFL	2700	2700	2700	2940	3150	3400	2810	4110
146	44°C	V_1								
108			90	90	90	90	91	91	93	94

NO WIND/NO SLOPE
PINK SHADED CANNOT MAKE 3.3% CLIMB
***TAKEOFF LIMITED BY 2.7% CLIMB**
FOR WET RUNWAY SEE AFM
Anti-ice ON, increase V_1 by 0.5 kt.

TAKEOFF S + 7° P.A. 5000 FT

SIDE CENTER ANTI-ICE

V_R/V_2 1.43 V_S V_{REF}	GW X 1,000	OAT °C	-20	-10	0	10	20	30	40	42
		OAT °F	-4	14	32	50	68	86	104	108
	MAX TEMP FOR GWT	T.O. N_1	97.6	99.5	100.0	100.0	98.7	96.8	94.3	93.7
			98.3	100.0	100.0	100.0	98.0	95.6	92.6	92.0
			97.2	99.1	99.5	98.1				
		CLB N_1	95.0	97.0	97.6	98.3	98.0	95.6	93.2	
140	46	BFL	5950	6300	6600	7700	8460	9500	*	*
190	35°C					7220				
138		V_1	123	123	123	123	125	127		
136	44	BFL	5350	5750	6050	6900	7700	8550	*	*
185	38°C					6610				
135		V_1	119	119	120	120	121	124		
132	42	BFL	4900	5300	5500	6210	6950	7740	9030	*
180	41°C					6000				
132		V_1	115	115	116	116	118	120	122	
129	40	BFL	4500	4820	4950	5620	6300	7000	8150	8420
174	42°C					5420				
129		V_1	112	112	112	112	114	116	119	119
126	38	BFL	4080	4350	4560	5100	5690	6220	7280	7500
170	42°C					4900				
126		V_1	108	108	109	109	110	112	115	115
124	37	BFL	3880	4200	4600	4960	5230	5940	6880	7080
168	42°C					4650				
124		V_1	106	106	107	107	108	110	113	113
122	36	BFL	3720	3990	4080	4620	5100	5620	6500	6680
166	42°C					4420				
122		V_1	104	104	105	105	106	108	111	111
121	35	BFL	3540	3760	3850	4410	4840	5340	6180	6310
163	42°C					4210				
121		V_1	102	102	103	103	104	107	109	109
119	34	BFL	3400	3560	3710	4170	4550	5110	5840	5950
161	42°C					4000				
119		V_1	100	100	101	101	102	104	107	107
115	32	BFL	3020	3260	3320	3800	4150	4530	5210	5300
156	42°C					3640				
115		V_1	96	96	97	97	98	100	102	103
111	30	BFL	2750	2960	3000	3330	3740	4070	4620	4720
152	42°C					3230				
112		V_1	92	92	93	93	94	96	98	99
108	28	BFL	2750	2900	2900	3080	3400	3630	4100	4200
146	42°C									
108		V_1	90	90	90	90	90	92	94	94

NO WIND/NO SLOPE
PINK SHADED CANNOT MAKE 3.3% CLIMB
***TAKEOFF LIMITED BY 2.7% CLIMB**
FOR WET RUNWAY SEE AFM
Anti-ice ON, increase V_1 by 0.5 kt.

TAKEOFF S + 7° P.A. 6000 FT

SIDE CENTER ANTI-ICE

V_R/V_2 / 1.43 V_S / V_{REF}	GW X 1,000	OAT °C	-20	-10	0	10	20	30	40
		OAT °F	-4	14	32	50	68	86	104
	MAX TEMP FOR GWT	T.O. N_1	99.3	100.0	100.0	100.0	98.6	96.7	94.2
			100.0	100.0	100.0	100.0	98.0	95.6	92.6
			99.0	100.0	99.5	98.1			
		CLB N_1	95.5	97.0	97.7	97.9	97.6	95.4	93.8
140	46	BFL	6130	6580	7100	8300	8950	10,400	*
190	32°C	V_1	123	123	124	7640 124	126	128	
138									
136	44	BFL	5590	6000	6440	7450	8050	9300	*
185	35°C	V_1	119	120	120	6950 120	122	124	
135									
132	42	BFL	5110	5450	5830	6750	7230	8360	*
180	39°C	V_1	115	116	117	6300 117	118	121	
132									
129	40	BFL	4650	4960	5300	6100	6570	7510	8880
174	40°C	V_1	112	112	113	5700 113	115	117	119
129									
126	38	BFL	4240	4500	4800	5460	5860	6760	7900
170	40°C	V_1	108	109	109	5160 109	111	113	115
126									
124	37	BFL	4060	4260	4550	5170	5600	6390	7500
168	40°C	V_1	106	107	107	4870 107	109	111	113
124									
122	36	BFL	3860	4090	4330	4940	5280	6050	7110
166	40°C	V_1	104	105	105	4640 107	107	109	111
122									
121	35	BFL	3700	3900	4140	4650	5030	5600	6690
163	40°C	V_1	102	103	103	4400 103	105	107	109
121									
119	34	BFL	3460	3710	3910	4450	4740	5410	6300
161	40°C	V_1	100	101	101	4200 103	103	105	107
119									
115	32	BFL	3170	3350	3540	3980	4280	4800	5610
156	40°C	V_1	97	97	97	3780 97	99	101	103
115									
111	30	BFL	2860	3000	3180	3470	3800	4300	4990
152	40°C	V_1	92	93	93	3370 93	92	97	99
112									
108	28	BFL	2800	2940	3000	3290	3420	3810	4440
146	40°C	V_1	90	90	90	3190 90	91	92	94
108									

NO WIND/NO SLOPE
PINK SHADED CANNOT MAKE 3.3% CLIMB
***TAKEOFF LIMITED BY 2.7% CLIMB**
FOR WET RUNWAY SEE AFM
Anti-ice ON, increase V_1 by 0.5 kt.

TAKEOFF S + 7° P.A. 8000 FT

SIDE CENTER ANTI-ICE

V_R/V_2 1.43 V_S V_{REF}	GW X 1,000	OAT °C	-20	-10	0	10	20	30	36
		OAT °F	-4	14	32	50	68	86	97
	MAX TEMP FOR GWT	T.O. N_1	100.0	100.0	100.0	100.00	98.6	96.7	95.1
			100.0	100.0	100.0	100.0	98.0	95.5	93.7
			100.0	100.0	99.4	97.9			
		CLB N_1	98.5	100.0	99.7	98.4	97.0	95.1	94.0
140	46	BFL	7100	7900	8380	*	10,380	*	*
190	47°C	V_1				8960			
138			125	125	125	125	127		
136	44	BFL	6490	7130	7580	8710	9350	*	*
185	42°C	V_1				8110			
135			120	121	121	121	123		
132	42	BFL	5850	6450	6850	8020	8680	9910	*
180	45°C	V_1				7300			
132			117	117	118	118	120	122	
129	40	BFL	5300	5820	6190	7170	7530	8850	*
174	48°C	V_1				6620			
129			113	114	114	114	116	118	
126	38	BFL	4800	5210	5570	6400	6720	7910	8700
170	48°C	V_1				5900			
126			109	110	110	110	112	114	116
124	37	BFL	4550	4920	5250	6070	6350	7560	8210
168	48°C	V_1				5670			
124			107	108	108	108	110	112	114
122	36	BFL	4330	4700	5000	5770	6040	7070	7740
166	48°C	V_1				5370			
122			106	106	106	106	408	110	112
121	35	BFL	4150	4500	4750	5470	5700	6680	7610
163	48°C	V_1				5120			
121			104	104	105	105	106	108	110
119	34	BFL	3920	4210	4510	5125	5400	6290	6900
161	48°C	V_1				4800			
119			102	102	103	103	104	106	108
115	32	BFL	3510	3840	4060	4610	4810	5600	6100
156	48°C	V_1				4390			
115			98	98	99	99	100	102	103
111	30	BFL	3450	3460	3620	4060	4300	4980	5400
152	48°C	V_1				3840			
112			94	94	94	94	96	98	99
108	28	BFL	3000	3200	3300	3460	3820	4440	4740
146	48°C	V_1							
108			90	90	90	90	92	94	95

NO WIND/NO SLOPE
PINK SHADED CANNOT MAKE 3.3% CLIMB
***TAKEOFF LIMITED BY 2.7% CLIMB**
FOR WET RUNWAY SEE AFM
Anti-ice ON, increase V_1 by 0.5 kt.

TAKEOFF S + 7° P.A. 10000 FT

SIDE CENTER ANTI-ICE

V_R/V_2 1.43 V_S V_{REF}	GW X 1,000	OAT °C	-20	-10	0	10	20	30	32
		OAT °F	-4	14	32	50	68	86	90
	MAX TEMP FOR GWT	T.O. N_1	100.0	100.0	100.0	100.0	98.6	96.6	96.0
			100.0	100.0	100.0	100.0	97.9	95.3	94.7
			100.0	100.0	99.3	97.9			
		CLB N_1	98.5	100.0	99.7	99.4	97.0	95.1	92.0
140 190 138	46 20°C	BFL V_1	8600 125	9100 126	9900 126	* 10,300 126	*	*	
136 185 135	44 25°C	BFL V_1	7700 122	8180 122	8920 123	* 9770 123	11,120 125	*	
132 180 132	42 30°C	BFL V_1	7000 118	7400 119	8010 119	* 8750 119	9970 121	*	
129 174 129	40 31°C	BFL V_1	6290 114	6620 115	7200 115	8680 7880 115	8930 117	10,550 119	
126 170 126	38 31°C	BFL V_1	5670 111	5960 111	6480 111	7490 7090 111	7950 113	9390 116	
124 168 124	37 31°C	BFL V_1	5380 109	5710 109	6090 110	7075 6700 110	7540 111	8850 114	
122 166 122	36 31°C	BFL V_1	5050 107	5360 107	5510 108	6690 6340 108	7110 109	8310 112	
121 163 121	35 31°C	BFL V_1	4820 105	5130 105	5280 106	6320 6000 106	6720 107	7820 109	
112 161 119	34 31°C	BFL V_1	4630 103	4810 103	5210 104	5910 5610 104	6300 105	7510 107	
115 156 115	32 31°C	BFL V_1	4160 99	4310 99	4690 100	5325 5100 100	5640 101	6550 103	
111 152 112	30 31°C	BFL V_1	3700 95	3860 95	4170 95	4700 4500 95	5000 97	8500 99	
108 146 108	28 31°C	BFL V_1	3340 90	3440 91	3700 91	4175 4000 91	4450 93	5100 95	

NO WIND/NO SLOPE
PINK SHADED CANNOT MAKE 3.3% CLIMB
***TAKEOFF LIMITED BY 2.7% CLIMB**
FOR WET RUNWAY SEE AFM
Anti-ice ON, increase V_1 by 0.5 kt.

CLIMB

260 KT/M 0.72

ALL ENGINE OPERATING CHART

Temp. Dev.	Weight x 1,000 lb	44	42	40	38	36	34	32	30	28
Pressure altitude: 35,000 ft										**243 KIAS**
-10°C	TAT (°C)	-43	-43	-43	-43	-43	-43	-43	-43	-43
	TIME (min)	16	15	14	13	12	11	10	10	9
	DISTANCE (NM)	92	85	79	73	68	63	58	54	49
	FUEL USED (lb)	1,155	1,076	1,003	934	869	808	750	694	641
0°C	TAT (°C)	-32	-32	-32	-32	-32	-32	-32	-32	-32
	TIME (min)	19	18	16	15	14	13	12	11	10
	DISTANCE (NM)	112	103	95	88	82	75	70	64	59
	FUEL USED (lb)	1,307	1,213	1,126	1,046	971	901	834	770	710
10°C	TAT (°C)	-21	-21	-21	-21	-21	-21	-21	-21	-21
	TIME (min)	26	23	21	20	18	17	15	14	13
	DISTANCE (NM)	155	141	129	118	108	99	91	84	77
	FUEL USED (lb)	1,586	1,456	1,341	1,236	1,141	1,053	970	893	820
Pressure altitude: 37,000 ft										**231 KIAS**
-10°C	TAT (°C)	-45	-45	-45	-45	-45	-45	-45	-45	-45
	TIME (min)	18	17	15	14	13	12	11	10	10
	DISTANCE (NM)	106	97	89	83	76	70	65	60	55
	FUEL USED (lb)	1,251	1,157	1,073	996	925	857	794	734	676
0°C	TAT (°C)	-34	-34	-34	-34	-34	-34	-34	-34	-34
	TIME (min)	22	20	18	17	16	14	13	12	11
	DISTANCE (NM)	131	119	109	100	92	85	78	71	65
	FUEL USED (lb)	1,428	1,314	1,212	1,121	1,037	959	885	816	751
10°C	TAT (°C)	-23	-23	-23	-23	-23	-23	-23	-23	-23
	TIME (min)	30	27	24	22	20	19	17	16	14
	DISTANCE (NM)	186	165	149	135	123	112	103	94	86
	FUEL USED (lb)	1,770	1,599	1,460	1,337	1,228	1,128	1,037	951	872
Pressure altitude: 39,000 ft										**221 KIAS**
-10°C	TAT (°C)	-45	-45	-45	-45	-45	-45	-45	-45	-45
	TIME (min)	21	19	18	16	15	14	13	12	11
	DISTANCE (NM)	128	115	104	95	87	80	73	67	61
	FUEL USED (lb)	1,383	1,265	1,163	1,072	990	915	845	779	717
0°C	TAT (°C)	-34	-34	-34	-34	-34	-34	-34	-34	-34
	TIME (min)	27	24	21	19	18	16	15	13	12
	DISTANCE (NM)	163	143	128	116	106	96	88	80	73
	FUEL USED (lb)	1,612	1,454	1,324	1,213	1,115	1,027	945	869	798
10°C	TAT (°C)	-23	-23	-23	-23	-23	-23	-23	-23	-23
	TIME (min)	40	33	29	26	23	21	19	17	16
	DISTANCE (NM)	256	209	180	159	143	129	117	106	96
	FUEL USED (lb)	2,143	1,832	1,628	1,467	1,333	1,217	1,113	1,018	930

- **Climb ITT is 968°C. Recommend 30 minutes maximum.**
- **For climb times greater than 30 minutes, use maximum cruise thrust (927°C) at beginning of climb for time exceeding 30 minutes.**
- **Outlined boxes are unattainable at 200 ft/min. Use for interpolation.**

CLIMB 260 KT/M 0.72

ALL ENGINE OPERATING CHART

Temp. Dev.	Weight x 1,000 lb	44	42	40	38	36	34	32	30	28
Pressure altitude: 41,000 ft										**211 KIAS**
-10°C	TAT (°C)	-45	-45	-45	-45	-45	-45	-45	-45	-45
	TIME (min)	30	24	21	19	17	15	14	13	12
	DISTANCE (NM)	186	147	127	113	101	92	83	76	69
	FUEL USED (lb)	1,702	1,441	1,289	1,171	1,071	983	903	830	761
0°C	TAT (°C)	-34	-34	-34	-34	-34	-34	-34	-34	-34
	TIME (min)	40	32	26	23	20	18	17	15	14
	DISTANCE (NM)	254	201	163	141	125	112	101	92	83
	FUEL USED (lb)	2,087	1,754	1,508	1,347	1,220	1,111	1,016	930	850
10°C	TAT (°C)		-23	-23	-23	-23	-23	-23	-23	-23
	TIME (min)		49	40	32	28	24	22	20	18
	DISTANCE (NM)		322	261	207	175	153	136	122	110
	FUEL USED (lb)		2,373	2,018	1,697	1,490	1,335	1,207	1,096	996
Pressure altitude: 43,000 ft										**201 KIAS**
-10°C	TAT (°C)		-45	-45	-45	-45	-45	-45	-45	-45
	TIME (min)		39	31	24	20	18	16	15	13
	DISTANCE (NM)		246	192	146	124	109	98	88	79
	FUEL USED (lb)		1,925	1,610	1,337	1,186	1,071	974	888	811
0°C	TAT (°C)			-34	-34	-34	-34	-34	-34	-34
	TIME (min)			39	32	26	22	19	17	16
	DISTANCE (NM)			254	204	161	138	121	107	96
	FUEL USED (lb)			1,931	1,641	1,391	1,231	1,107	1,003	911
10°C	TAT (°C)					-23	-23	-23	-23	-23
	TIME (min)					41	31	26	23	20
	DISTANCE (NM)					268	203	168	146	128
	FUEL USED (lb)					1,895	1,554	1,349	1,200	1,078
Pressure altitude: 45,000 ft										**192 KIAS**
-10°C	TAT (°C)				-45	-45	-45	-45	-45	-45
	TIME (min)				38	30	23	19	17	15
	DISTANCE (NM)				241	186	141	119	104	92
	FUEL USED (lb)				1,758	1,463	1,213	1,073	963	870
0°C	TAT (°C)					-34	-34	-34	-34	-34
	TIME (min)					41	31	24	21	18
	DISTANCE (NM)					265	197	154	131	114
	FUEL USED (lb)					1,825	1,485	1,253	1,103	987
10°C	TAT (°C)						-23	-23	-23	-23
	TIME (min)						50	39	30	25
	DISTANCE (NM)						338	260	193	159
	FUEL USED (lb)						2,067	1,707	1,386	1,197

- **Climb ITT is 968°C. Recommend 30 minutes maximum.**
- **For climb times greater than 30 minutes, use maximum cruise thrust (927°C) at beginning of climb for time exceeding 30 minutes.**
- **Colored boxes are unattainable at 200 ft/min. Use for interpolation.**

CLIMB

300 KT/M 0.8

ALL ENGINE OPERATING CHART

Temp. Dev.	Weight x 1,000 lb	44	42	40	38	36	34	32	30	28
Pressure altitude: 35,000 ft										**274 KIAS**
-10°C	TAT (°C)	-38	-38	-38	-38	-38	-38	-38	-38	-38
	TIME (min)	19	17	16	15	14	13	12	11	10
	DISTANCE (NM)	120	110	102	94	87	81	75	69	63
	FUEL USED (lb)	1,358	1,261	1,173	1,091	1,014	942	873	808	745
0°C	TAT (°C)	-27	-27	-27	-27	-27	-27	-27	-27	-27
	TIME (min)	24	22	20	18	17	16	14	13	12
	DISTANCE (NM)	157	143	131	121	111	102	94	87	80
	FUEL USED (lb)	1,625	1,498	1,384	1,280	1,185	1,096	1,013	935	861
10°C	TAT (°C)	-15	-15	-15	-15	-15	-15	-15	-15	-15
	TIME (min)	38	34	30	27	25	23	21	19	17
	DISTANCE (NM)	268	235	210	188	170	154	140	128	116
	FUEL USED (lb)	2,340	2,089	1,886	1,713	1,559	1,425	1,306	1,196	1,094
Pressure altitude: 37,000 ft										**261 KIAS**
-10°C	TAT (°C)	-40	-40	-40	-40	-40	-40	-40	-40	-40
	TIME (min)	21	20	18	16	15	14	13	12	11
	DISTANCE (NM)	141	128	117	107	98	90	83	76	70
	FUEL USED (lb)	1,494	1,371	1,266	1,171	1,084	1,003	927	856	788
0°C	TAT (°C)	-29	-29	-29	-29	-29	-29	-29	-29	-29
	TIME (min)	28	25	23	21	19	17	16	15	13
	DISTANCE (NM)	188	168	151	138	126	115	105	96	88
	FUEL USED (lb)	1,811	1,644	1,505	1,383	1,273	1,172	1,080	993	912
10°C	TAT (°C)		-18	-18	-18	-18	-18	-18	-18	-18
	TIME (min)		41	36	31	28	25	23	21	19
	DISTANCE (NM)		289	250	220	195	175	158	143	130
	FUEL USED (lb)		2,388	2,107	1,885	1,698	1,544	1,406	1,281	1,167
Pressure altitude: 39,000 ft										**250 KIAS**
-10°C	TAT (°C)	-40	-40	-40	-40	-40	-40	-40	-40	-40
	TIME (min)	28	24	21	19	17	16	14	13	12
	DISTANCE (NM)	191	158	138	124	113	103	94	86	79
	FUEL USED (lb)	1,777	1,544	1,390	1,271	1,169	1,076	991	912	838
0°C	TAT (°C)	-29	-29	-29	-29	-29	-29	-29	-29	-29
	TIME (min)	39	32	27	24	21	20	18	16	15
	DISTANCE (NM)	278	220	184	162	146	132	120	109	99
	FUEL USED (lb)	2,301	1,934	1,684	1,518	1,384	1,266	1,159	1,062	972
10°C	TAT (°C)			-18	-18	-18	-18	-18	-18	-18
	TIME (min)			46	38	33	29	26	23	21
	DISTANCE (NM)			331	270	232	204	182	163	146
	FUEL USED (lb)			2,519	2,144	1,887	1,691	1,525	1,380	1,251

- **Climb ITT is 968°C. Recommend 30 minutes maximum.**
- **For climb times greater than 30 minutes, use maximum cruise thrust (927°C) at beginning of climb for time exceeding 30 minutes.**
- **Colored boxes are unattainable at 200 ft/min. Use for interpolation.**

CLIMB

300 KT/M 0.8

ALL ENGINE OPERATING CHART

Temp. Dev.	Weight x 1,000 lb	44	42	40	38	36	34	32	30	28
Pressure altitude: 41,000 ft										**239 KIAS**
-10°C	TAT (°C)		-40	-40	-40	-40	-40	-40	-40	-40
	TIME (min)		38	28	23	20	18	16	15	13
	DISTANCE (NM)		262	196	156	135	120	109	98	89
	FUEL USED (lb)		2,093	1,689	1,434	1,282	1,166	1,066	976	893
0°C	TAT (°C)			-29	-29	-29	-29	-29	-29	-29
	TIME (min)			42	32	26	23	20	18	17
	DISTANCE (NM)			298	225	181	157	140	126	113
	FUEL USED (lb)			2,251	1,826	1,555	1,393	1,261	1,146	1,042
10°C	TAT (°C)					-18	-18	-18	-18	-18
	TIME (min)					44	36	31	27	24
	DISTANCE (NM)					321	259	220	191	169
	FUEL USED (lb)					2,297	1,941	1,699	1,512	1,356
Pressure altitude: 43,000 ft										**228 KIAS**
-10°C	TAT (°C)				-40	-40	-40	-40	-40	-40
	TIME (min)				38	28	22	19	17	15
	DISTANCE (NM)				267	193	151	129	115	103
	FUEL USED (lb)				1,978	1,557	1,309	1,165	1,055	958
0°C	TAT (°C)					-29	-29	-29	-29	-29
	TIME (min)					41	31	25	22	19
	DISTANCE (NM)					294	217	173	150	133
	FUEL USED (lb)					2,057	1,659	1,411	1,258	1,130
10°C	TAT (°C)							-18	-18	-18
	TIME (min)							44	34	29
	DISTANCE (NM)							321	249	207
	FUEL USED (lb)							2,119	1,750	1,514
Pressure altitude: 45,000 ft										**218 KIAS**
-10°C	TAT (°C)						-40	-40	-40	-40
	TIME (min)						36	26	21	18
	DISTANCE (NM)						252	179	142	122
	FUEL USED (lb)						1,731	1,375	1,169	1,041
0°C	TAT (°C)							-29	-29	-29
	TIME (min)							38	28	23
	DISTANCE (NM)							271	199	163
	FUEL USED (lb)							1,799	1,454	1,254
10°C	TAT (°C)									-18
	TIME (min)									42
	DISTANCE (NM)									312
	FUEL USED (lb)									1,900

- Climb ITT is 968°C. Recommend 30 minutes maximum.
- For climb times greater than 30 minutes, use maximum cruise thrust (927°C) at beginning of climb for time exceeding 30 minutes.
- Colored boxes are unattainable at 200 ft/min. Use for interpolation.

MAXIMUM WEIGHT IN LEVEL FLIGHT LIMITED BY MAXIMUM CRUISE THRUST

NOTE: **An approximate maximum takeoff weight can be estimated by assuming 1,500 lb fuel used in the climb.**

Temp. Dev.	MI		
	0.75	0.80	0.84
Pressure altitude: 37,000 ft			
-10°C	N.L.	N.L.	43,400
0°C	N.L.	N.L	41,200
10°C	N.L.	44,700	36,500
Pressure altitude: 39,000 ft			
-10°C	48,000	45,200	39,200
0°C	46,600	43,300	37,000
10°C	43,000	39,700	31,500
Pressure altitude: 41,000 ft			
-10°C	43,400	40,800	35,300
0°C	41,900	38,900	33,100
10°C	38,200	35,300	27,200
Pressure altitude: 43,000 ft			
-10°C	39,300	36,900	31,900
0°C	37,700	35,000	29,600
10°C	34,100	31,500	
Pressure altitude: 45,000 ft			
-10°C	35,500	33,300	28,800
0°C	33,900	31,400	26,600
10°C	30,400	28,100	

NL: Not limiting.
For A/C with 731-5BR

CRUISE M 0.75

ALL ENGINE OPERATING CHART

Temp. Dev.	Weight x 1,000 lb	43	41	39	37	35	33	31	29	27
Pressure altitude: 37,000 ft										
-10°C	IND. MACH	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750
	NM / lb	0.2060	0.2144	0.2226	0.2295	0.2358	0.2415	0.2469	0.2521	0.2569
	TAT (°C)	-44	-44	-44	-44	-44	-44	-44	-44	-44
	TAS (kt)	418	418	418	418	418	418	418	418	418
	N_1 (%)	91.0	89.8	88.7	87.9	87.1	86.4	85.8	85.2	84.7
	FF (lb / hr)	676	649	625	607	591	577	564	552	542
0°C	IND. MACH	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750
	NM / lb	0.2041	0.2126	0.2209	0.2277	0.2341	0.2399	0.2453	0.2505	0.2554
	TAT (°C)	-33	-33	-33	-33	-33	-33	-33	-33	-33
	TAS (kt)	428	428	428	428	428	428	428	428	428
	N_1 (%)	93.2	92.0	90.8	90.0	89.2	88.5	87.9	87.3	86.7
	FF (lb / hr)	699	671	646	626	609	594	581	569	558
10°C	0.2191	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750
	NM / lb	0.2023	0.2108	0.2191	0.2260	0.2325	0.2383	0.2437	0.2489	0.2539
	TAT (°C)	-22	-22	-22	-22	-22	-22	-22	-22	-22
	TAS (kt)	438	438	438	438	438	438	438	438	438
	N_1 (%)	95.3	94.1	92.9	92.0	91.2	90.5	89.9	89.2	88.7
	FF (lb / hr)	721	692	665	645	627	612	598	586	574
Pressure altitude: 39,000 ft										
-10°C	IND. MACH	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750
	NM / lb	0.2042	0.2143	0.2248	0.2348	0.2444	0.2519	0.2592	0.2656	0.2717
	TAT (°C)	-44	-44	-44	-44	-44	-44	-44	-44	-44
	TAS (kt)	418	418	418	418	418	418	418	418	418
	N_1 (%)	94.4	92.7	91.3	90.0	88.7	87.9	87.1	86.4	85.7
	FF (lb / hr)	682	650	620	593	570	553	537	524	512
0°C	IND. MACH	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750
	NM / lb	0.2021	0.2122	0.2228	0.2328	0.2424	0.2500	0.2574	0.2638	0.2700
	TAT (°C)	-33	-33	-33	-33	-33	-33	-33	-33	-33
	TAS (kt)	428	428	428	428	428	428	428	428	428
	N_1 (%)	96.7	95.0	93.5	92.1	90.9	90.0	89.2	88.4	87.8
	FF (lb / hr)	705	672	640	612	588	570	554	540	528
10°C	IND. MACH	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750
	NM / lb	0.2001	0.2102	0.2208	0.2309	0.2406	0.2482	0.2556	0.2621	0.2683
	TAT (°C)	-22	-22	-22	-22	-22	-22	-22	-22	-22
	TAS (kt)	438	438	438	438	438	438	438	438	438
	N_1 (%)	98.9	97.1	95.6	94.2	92.9	92.0	91.2	90.5	89.8
	FF (lb / hr)	729	694	661	632	606	588	571	556	544

For A/C with 731-5BR

CRUISE M 0.75

ALL ENGINE OPERATING CHART

Temp. Dev.	Weight x 1,000 lb	43	41	39	37	35	33	31	29	27
Pressure altitude: 41,000 ft										
-10°C	IND. MACH	0.766	0.754	0.750	0.750	0.750	0.750	0.750	0.750	0.750
	NM / lb	0.1969	0.2104	0.2230	0.2349	0.2473	0.2588	0.2691	0.2777	0.2858
	TAT (°C)	-43	-43	-44	-44	-44	-44	-44	-44	-44
	TAS (kt)	426	420	418	418	418	418	418	418	418
	N_1 (%)	99.6	96.9	94.7	92.9	91.3	89.9	88.6	87.7	86.9
	FF (lb / hr)	720	666	625	593	563	538	518	501	487
0°C	IND. MACH	0.772	0.754	0.750	0.750	0.750	0.750	0.750	0.750	0.750
	NM / lb	0.1955	0.2080	0.2207	0.2326	0.2451	0.2567	0.2670	0.2757	0.2838
	TAT (°C)	-31	-32	-33	-33	-33	-33	-33	-33	-33
	TAS (kt)	439	430	428	428	428	428	428	428	428
	N_1 (%)	101.8	99.2	97.0	95.1	93.5	92.0	90.8	89.8	89.0
	FF (lb / hr)	749	689	646	613	582	555	534	517	502
10°C	IND. MACH			0.750	0.750	0.750	0.750	0.750	0.750	0.750
	NM / lb			0.2185	0.2304	0.2429	0.2546	0.2649	0.2737	0.2819
	TAT (°C)			-22	-22	-22	-22	-22	-22	-22
	TAS (kt)			438	438	438	438	438	438	438
	N_1 (%)			99.2	97.3	95.6	94.1	92.8	91.9	91.0
	FF (lb / hr)			667	633	600	573	550	533	517
Pressure altitude: 43,000 ft										
-10°C	IND. MACH			0.769	0.753	0.750	0.750	0.750	0.750	0.750
	NM / lb			0.2162	0.2310	0.2458	0.2600	0.2744	0.2876	0.2978
	TAT (°C)			-43	-44	-44	-44	-44	-44	-44
	TAS (kt)			427	420	418	418	418	418	418
	N_1 (%)			99.8	96.9	94.6	92.7	91.0	89.4	88.3
	FF (lb / hr)			659	605	566	536	507	484	468
0°C	IND. MACH			0.767	0.753	0.750	0.750	0.750	0.750	0.750
	NM / lb			0.2139	0.2284	0.2433	0.2575	0.2721	0.2852	0.2956
	TAT (°C)			-32	-32	-33	-33	-33	-33	-33
	TAS (kt)			436	430	428	428	428	428	428
	N_1 (%)			102.1	99.3	96.9	94.9	93.1	91.5	90.4
	FF (lb / hr)			680	627	586	554	524	500	482
10°C	IND. MACH					0.750	0.750	0.750	0.750	0.750
	NM / lb					0.2395	0.2551	0.2697	0.2830	0.2934
	TAT (°C)					-22	-22	-22	-22	-22
	TAS (kt)					438	438	438	438	438
	N_1 (%)					99.4	97.0	95.3	93.6	92.5
	FF (lb / hr)					609	572	541	515	497

Colored area indicates unattainable operations, to be used for interpolation only. For A/C with 731-5BR

CRUISE M 0.75

ALL ENGINE OPERATING CHART

Temp. Dev.	Weight x 1,000 lb	43	41	39	37	35	33	31	29	27
Pressure altitude: 45,000 ft										
-10°C	IND. MACH				0.771	0.760	0.752	0.750	0.750	0.750
	NM / lb				0.2236	0.2395	0.2571	0.2743	0.2912	0.3072
	TAT (°C)				-43	-43	-44	-44	-44	-44
	TAS (kt)				429	423	419	418	418	418
	N_1 (%)				102.3	99.4	96.5	94.1	92.0	90.3
	FF (lb / hr)				639	589	543	508	478	453
0°C	IND. MACH					0.761	0.752	0.750	0.750	0.750
	NM / lb					0.2372	0.2543	0.2716	0.2885	0.3047
	TAT (°C)					-32	-32	-33	-33	-33
	TAS (kt)					434	429	428	428	428
	N_1 (%)					101.5	98.8	96.3	94.2	92.4
	FF (lb / hr)					609	562	525	494	468
10°C	IND. MACH							0.750	0.750	0.750
	NM / lb							0.2691	0.2859	0.3021
	TAT (°C)							-22	-22	-22
	TAS (kt)							438	438	438
	N_1 (%)							98.5	96.4	94.5
	FF (lb / hr)							542	510	483
Pressure altitude: 47,000 ft										
-10°C	IND. MACH						0.762	0.762	0.762	0.762
	NM / lb						0.2496	0.2681	0.2884	0.3076
	TAT (°C)						-43	-43	-43	-43
	TAS (kt)						424	424	424	424
	N_1 (%)						101.6	98.7	95.9	93.4
	FF (lb / hr)						566	527	490	459
0°C	IND. MACH							0.762	0.762	0.762
	NM / lb							0.2677	0.2853	0.3047
	TAT (°C)							-32	-32	-32
	TAS (kt)							434	434	434
	N_1 (%)							100.9	98.2	95.6
	FF (lb / hr)							540	507	475
10°C	IND. MACH									0.762
	NM / lb									0.3023
	TAT (°C)									-21
	TAS (kt)									444
	N_1 (%)									97.8
	FF (lb / hr)									490

Colored area indicates unattainable operations, to be used for interpolation only. For A/C with 731-5BR

CRUISE M 0.8

ALL ENGINE OPERATING CHART

Temp. Dev.	Weight x 1,000 lb	43	41	39	37	35	33	31	29	27
Pressure altitude: 37,000 ft										
-10°C	IND. MACH	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
	NM / lb	0.1977	0.2076	0.2143	0.2204	0.2260	0.2314	0.2366	0.2416	0.2463
	TAT (°C)	-41	-41	-41	-41	-41	-41	-41	-41	-41
	TAS (kt)	444	444	444	444	444	444	444	444	444
	N_1 (%)	93.2	91.7	90.7	89.9	89.2	88.5	87.9	87.3	86.8
	FF (lb / hr)	748	712	690	671	654	639	625	612	600
0°C	IND. MACH	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
	NM / lb	0.1958	0.2057	0.2124	0.2185	0.2241	0.2295	0.2348	0.2398	0.2445
	TAT (°C)	-30	-30	-30	-30	-30	-30	-30	-30	-30
	TAS (kt)	454	454	454	454	454	454	454	454	454
	N_1 (%)	95.4	93.9	92.9	92.1	91.3	90.6	90.0	89.4	88.9
	FF (lb / hr)	773	736	713	693	675	659	645	631	619
10°C	IND. MACH	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
	NM / lb	0.1938	0.2037	0.2105	0.2166	0.2223	0.2277	0.2330	0.2381	0.2428
	TAT (°C)	-18	-18	-18	-18	-18	-18	-18	-18	-18
	TAS (kt)	465	465	465	465	465	465	465	465	465
	N_1 (%)	97.6	96.0	95.0	94.2	93.4	92.7	92.1	91.5	90.9
	FF (lb / hr)	799	760	735	715	697	680	664	650	638
Pressure altitude: 39,000 ft										
-10°C	IND. MACH	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
	NM / lb	0.1927	0.2042	0.2160	0.2276	0.2352	0.2422	0.2487	0.2549	0.2609
	TAT (°C)	-41	-41	-41	-41	-41	-41	-41	-41	-41
	TAS (kt)	444	444	444	444	444	444	444	444	444
	N_1 (%)	97.4	95.3	93.5	91.8	90.9	90.0	89.2	88.5	87.8
	FF (lb / hr)	767	724	684	650	629	611	595	580	567
0°C	IND. MACH	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
	NM / lb	0.1900	0.2020	0.2138	0.2255	0.2331	0.2401	0.2467	0.2530	0.2590
	TAT (°C)	-30	-30	-30	-30	-30	-30	-30	-30	-30
	TAS (kt)	454	454	454	454	454	454	454	454	454
	N_1 (%)	99.8	97.6	95.7	94.0	93.0	92.1	91.3	90.6	89.9
	FF (lb / hr)	797	749	708	671	649	630	614	598	584
10°C	IND. MACH		0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
	NM / lb		0.2005	0.2117	0.2234	0.2310	0.2381	0.2447	0.2510	0.2571
	TAT (°C)		-18	-18	-18	-18	-18	-18	-18	-18
	TAS (kt)		465	465	465	465	465	465	465	465
	N_1 (%)		99.8	97.9	96.2	95.2	94.2	93.4	92.6	92.0
	FF (lb / hr)		772	731	693	670	650	633	617	602

Colored area indicates unattainable operations, to be used for interpolation only. For A/C with 731-5BR.

CRUISE M 0.8

ALL ENGINE OPERATING CHART

Temp. Dev.	Weight x 1,000 lb	43	41	39	37	35	33	31	29	27
Pressure altitude: 41,000 ft										
-10°C	IND. MACH		0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
	NM / lb		0.1973	0.2104	0.2243	0.2383	0.2505	0.2594	0.2673	0.2747
	TAT (°C)		-41	-41	-41	-41	-41	-41	-41	-41
	TAS (kt)		444	444	444	444	444	444	444	444
	N_1 (%)		100.1	97.7	95.4	93.4	91.8	90.8	89.8	89.0
	FF (lb / hr)		749	703	659	620	590	570	553	538
0°C	IND. MACH			0.800	0.800	0.800	0.800	0.800	0.800	0.800
	NM / lb			0.2079	0.2219	0.2359	0.2482	0.2571	0.2650	0.2726
	TAT (°C)			-30	-30	-30	-30	-30	-30	-30
	TAS (kt)			454	454	454	454	454	454	454
	N_1 (%)			100.0	97.7	95.6	94.0	92.9	92.0	91.1
	FF (lb / hr)			728	682	642	610	589	571	555
10°C	IND. MACH				0.800	0.800	0.800	0.800	0.800	0.800
	NM / lb				0.2206	0.2336	0.2459	0.2549	0.2628	0.2704
	TAT (°C)				-18	-18	-18	-18	-18	-18
	TAS (kt)				465	465	465	465	465	465
	N_1 (%)				99.8	97.8	96.2	95.1	94.1	93.2
	FF (lb / hr)				702	663	630	607	589	573
Pressure altitude: 43,000 ft										
-10°C	IND. MACH				0.800	0.800	0.800	0.800	0.800	0.800
	NM / lb				0.2168	0.2326	0.2496	0.2659	0.2776	0.2874
	TAT (°C)				-41	-41	-41	-41	-41	-41
	TAS (kt)				444	444	444	444	444	444
	N_1 (%)				100.2	97.5	95.0	92.9	91.6	90.4
	FF (lb / hr)				682	636	592	556	533	514
0°C	IND. MACH				0.800	0.800	0.800	0.800	0.800	0.800
	NM / lb				0.2149	0.2299	0.2469	0.2633	0.2751	0.2850
	TAT (°C)				-30	-30	-30	-30	-30	-30
	TAS (kt)				454	454	454	454	454	454
	N_1 (%)				102.5	99.9	97.3	95.1	93.7	92.6
	FF (lb / hr)				704	658	613	575	550	531
10°C	IND. MACH						0.800	0.800	0.800	0.800
	NM / lb						0.2463	0.2608	0.2726	0.2825
	TAT (°C)						-18	-18	-18	-18
	TAS (kt)						465	465	465	465
	N_1 (%)						99.2	97.3	95.9	94.7
	FF (lb / hr)						629	594	568	548

Colored area indicates unattainable operations, to be used for interpolation only. For A/C with 731-5BR

CRUISE M 0.8

ALL ENGINE OPERATING CHART

Temp. Dev.	Weight x 1,000 lb	43	41	39	37	35	33	31	29	27
Pressure altitude: 45,000 ft										
-10°C	IND. MACH					0.800	0.800	0.800	0.800	0.800
	NM / lb					0.2244	0.2417	0.2612	0.2815	0.2978
	TAT (°C)					-41	-41	-41	-41	-41
	TAS (kt)					444	444	444	444	444
	N_1 (%)					102.7	99.7	96.8	94.2	92.3
	FF (lb / hr)					659	612	566	525	496
0°C	IND. MACH						0.800	0.800	0.800	0.800
	NM / lb						0.2396	0.2583	0.2786	0.2951
	TAT (°C)						-30	-30	-30	-30
	TAS (kt)						454	454	454	454
	N_1 (%)						102.0	99.1	96.5	94.5
	FF (lb / hr)						632	586	543	513
10°C	IND. MACH								0.800	0.800
	NM / lb								0.2766	0.2924
	TAT (°C)								-18	-18
	TAS (kt)								465	465
	N_1 (%)								98.6	96.7
	FF (lb / hr)								560	530
Pressure altitude: 47,000 ft										
-10°C	IND. MACH							0.800	0.800	0.800
	NM / lb							0.2531	0.2743	0.2979
	TAT (°C)							-41	-41	-41
	TAS (kt)							444	444	444
	N_1 (%)							101.7	98.5	95.4
	FF (lb / hr)							584	539	496
0°C	IND. MACH							0.800	0.800	0.800
	NM / lb							0.2522	0.2718	0.2947
	TAT (°C)							-30	-30	-30
	TAS (kt)							454	454	454
	N_1 (%)							103.8	100.7	997.7
	FF (lb / hr)							600	557	514
10°C	IND. MACH								0.800	0.800
	NM / lb								0.2889	0.3007
	TAT (°C)								-18	-18
	TAS (kt)								465	465
	N_1 (%)								100.3	98.8
	FF (lb / hr)								536	515

Colored area indicates unattainable operations, to be used for interpolation only. For A/C with 731-5BR

CRUISE MAX CRUISE THRUST

ALL ENGINE OPERATING CHART

Temp. Dev.	Weight x 1,000 lb	43	41	39	37	35	33	31	29	27
Pressure altitude: 35,000 ft										
-10°C	IND. MACH	0.854	0.854	0.854	0.854	0.870	0.870	0.870	0.870	0.870
	NM / lb	0.1543	0.1592	0.1640	0.1688	0.1540	0.1574	0.1616	0.1655	0.1692
	TAT (°C)	-35	-35	-35	-35	-34	-34	-34	-34	-34
	TAS (kt)	473	473	473	473	480	480	480	480	480
	N_1 (%)	99.1	97.9	96.9	95.9	99.1	98.3	97.4	96.6	95.9
	FF (lb / hr)	1,022	990	961	934	1,039	1,017	990	967	946
0°C	IND. MACH	0.847	0.852	0.854	0.854	0.854	0.868	0.869	0.870	0.870
	NM / lb	0.1600	0.1602	0.1620	0.1668	0.1715	0.1610	0.1611	0.1635	0.1672
	TAT (°C)	-24	-24	-24	-24	-24	-23	-23	-23	-23
	TAS (kt)	480	483	484	484	484	491	491	492	492
	N_1 (%)	99.6	99.6	99.2	98.2	97.3	99.4	99.4	98.9	98.1
	FF (lb / hr)	1,001	1,004	996	967	941	1,015	1,016	1,002	980
10°C	IND. MACH	0.833	0.838	0.842	0.846	0.850	0.854	0.857	0.861	0.865
	NM / lb	0.1732	0.1737	0.1740	0.1744	0.1747	0.1751	0.1754	0.1757	0.1760
	TAT (°C)	-14	-13	-13	-13	-13	-12	-12	-12	-12
	TAS (kt)	484	487	489	491	493	495	497	499	500
	N_1 (%)	98.8	98.7	98.6	98.6	98.5	98.4	98.4	98.3	98.3
	FF (lb / hr)	931	934	936	938	940	942	943	945	947
Pressure altitude: 37,000 ft										
-10°C	IND. MACH	0.840	0.840	0.840	0.840	0.866	0.868	0.870	0.870	0.870
	NM / lb	0.1682	0.1768	0.1858	0.1920	0.1675	0.1676	0.1691	0.1742	0.1790
	TAT (°C)	-39	-39	-39	-39	-37	-37	-37	-37	-37
	TAS (kt)	463	463	463	463	476	477	478	478	478
	N_1 (%)	99.0	97.1	95.4	94.4	99.1	99.1	98.8	97.7	96.7
	FF (lb / hr)	918	873	831	804	947	949	941	914	889
0°C	IND. MACH	0.833	0.840	0.840	0.840	0.840	0.863	0.867	0.869	0.870
	NM / lb	0.1731	0.1747	0.1837	0.1899	0.1960	0.1749	0.1751	0.1752	0.1768
	TAT (°C)	-28	-27	-27	-27	-27	-26	-25	-25	-25
	TAS (kt)	471	474	474	474	474	486	488	489	489
	N_1 (%)	99.8	99.5	97.7	96.6	95.6	99.4	99.4	99.3	99.0
	FF (lb / hr)	906	905	860	832	806	926	928	929	922
10°C	IND. MACH	0.813	0.823	0.833	0.839	0.840	0.847	0.852	0.856	0.860
	NM / lb	0.1868	0.1878	0.1888	0.1894	0.1940	0.1902	0.1907	0.1911	0.1915
	TAT (°C)	-18	-17	-16	-16	-16	-15	-15	-15	-14
	TAS (kt)	471	477	482	485	485	489	491	493	495
	N_1 (%)	99.0	98.8	98.6	98.6	97.8	98.4	98.4	98.3	98.2
	FF (lb / hr)	841	845	850	853	834	857	859	860	862

For A/C with 731-5BR

CRUISE

MAX CRUISE THRUST

ALL ENGINE OPERATING CHART

Temp. Dev.	Weight x 1,000 lb	43	41	39	37	35	33	31	29	27
Pressure altitude: 39,000 ft										
-10°C	IND. MACH	0.817	0.831	0.840	0.840	0.856	0.862	0.862	0.862	0.862
	NM / lb	0.1817	0.1825	0.1838	0.1942	0.1838	0.1841	0.1899	0.1965	0.2029
	TAT (°C)	-40	-39	-39	-39	-38	-37	-37	-37	-37
	TAS (kt)	452	459	463	463	471	474	474	474	474
	N_1 (%)	99.7	99.6	99.3	97.3	99.3	99.2	98.1	96.9	95.8
	FF (lb / hr)	830	838	840	795	854	858	832	805	779
0°C	IND. MACH	0.803	0.817	0.831	0.840	0.840	0.852	0.857	0.862	0.862
	NM / lb	0.1890	0.1902	0.1912	0.1920	0.2020	0.1929	0.1933	0.1941	0.2005
	TAT (°C)	-29	-29	-28	-27	-27	-26	-26	-26	-26
	TAS (kt)	456	463	469	474	474	481	483	486	486
	N_1 (%)	100.0	99.9	99.7	99.6	97.8	99.4	99.3	99.2	98.1
	FF (lb / hr)	804	811	818	823	782	830	833	834	808
10°C	IND. MACH	0.750	0.782	0.807	0.819	0.831	0.836	0.841	0.846	0.850
	NM / lb	0.2001	0.2050	0.2085	0.2100	0.2113	0.2120	0.2126	0.2132	0.2137
	TAT (°C)	-22	-19	-18	-17	-16	-16	-16	-15	-15
	TAS (kt)	438	455	468	475	480	483	486	488	490
	N_1 (%)	98.9	98.7	98.5	98.3	98.2	98.1	98.0	97.9	97.8
	FF (lb / hr)	729	740	749	753	757	759	761	763	765
Pressure altitude: 41,000 ft										
-10°C	IND. MACH	0.768	0.798	0.816	0.831	0.842	0.848	0.848	0.848	0.848
	NM / lb	0.1960	0.1984	0.1997	0.2006	0.2013	0.2053	0.2148	0.2232	0.2314
	TAT (°C)	-43	-41	-40	-39	-38	-38	-38	-38	-38
	TAS (kt)	427	442	452	459	464	467	467	467	467
	N_1 (%)	99.8	99.9	99.8	99.6	99.5	98.8	97.1	95.8	94.6
	FF (lb / hr)	725	743	754	762	768	758	725	698	673
0°C	IND. MACH	0.744	0.769	0.799	0.816	0.830	0.840	0.847	0.848	0.848
	NM / lb	0.2021	0.2049	0.2084	0.2102	0.2115	0.2125	0.2131	0.2206	0.2289
	TAT (°C)	-33	-32	-30	-29	-28	-27	-27	-27	-27
	TAS (kt)	425	438	454	463	469	475	478	478	478
	N_1 (%)	100.1	100.0	99.9	99.8	99.6	99.4	99.3	98.1	96.9
	FF (lb / hr)	701	712	726	733	739	744	747	723	697
10°C	IND. MACH			0.732	0.773	0.804	0.818	0.828	0.835	0.841
	NM / lb			0.2198	0.2268	0.2319	0.2340	0.2355	0.2364	0.2372
	TAT (°C)			-23	-20	-18	-17	-17	-16	-16
	TAS (kt)			428	450	467	474	479	483	485
	N_1 (%)			98.6	98.3	98.1	97.9	97.7	97.6	97.5
	FF (lb / hr)			649	661	671	675	678	680	682

Colored area indicates unattainable operations, to be used for interpolation only. For A/C with 731-5BR

CRUISE

MAX CRUISE THRUST

ALL ENGINE OPERATING CHART

Temp. Dev.	Weight x 1,000 lb	43	41	39	37	35	33	31	29	27
Pressure altitude: 43,000 ft										
-10°C	IND. MACH			0.766	0.798	0.818	0.834	0.840	0.840	0.840
	NM / lb			0.2149	0.2175	0.2190	0.2201	0.2270	0.2419	0.2523
	TAT (°C)			-43	-41	-40	-39	-39	-39	-39
	TAS (kt)			426	443	453	460	463	463	463
	N_1 (%)			99.9	100.0	99.9	99.7	98.6	96.3	94.9
	FF (lb / hr)			660	678	689	696	680	638	612
0°C	IND. MACH			0.730	0.767	0.800	0.818	0.833	0.840	0.840
	NM / lb			0.2208	0.2258	0.2300	0.2321	0.2337	0.2391	0.2496
	TAT (°C)			-34	-32	-30	-28	-28	-27	-27
	TAS (kt)			417	437	454	463	471	474	474
	N_1 (%)			100.0	100.0	99.9	99.7	99.4	98.6	97.2
	FF (lb / hr)			629	645	658	665	671	661	633
10°C	IND. MACH					0.728	0.773	0.806	0.819	0.830
	NM / lb					0.2428	0.2515	0.2576	0.2597	0.2612
	TAT (°C)					-23	-20	-18	-17	-16
	TAS (kt)					425	450	468	475	480
	N_1 (%)					98.3	98.0	97.8	97.6	97.5
	FF (lb / hr)					584	597	605	609	612
Pressure altitude: 45,000 ft										
-10°C	IND. MACH				0.737	0.770	0.805	0.823	0.839	0.840
	NM / lb				0.2332	0.2360	0.2390	0.2405	0.2418	0.2578
	TAT (°C)				-44	-43	-41	-39	-39	-39
	TAS (kt)				411	428	446	455	463	463
	N_1 (%)				100.0	100.1	100.2	100.0	99.8	97.4
	FF (lb / hr)				587	604	622	631	637	599
0°C	IND. MACH					0.739	0.772	0.806	0.823	0.837
	NM / lb					0.2449	0.2496	0.2546	0.2568	0.2586
	TAT (°C)					-33	-31	-29	-28	-27
	TAS (kt)					422	439	457	466	473
	N_1 (%)					100.0	99.9	99.8	99.5	99.2
	FF (lb / hr)					575	586	599	605	610
10°C	IND. MACH							0.734	0.783	0.811
	NM / lb							0.2703	0.2809	0.2865
	TAT (°C)							-23	-19	-18
	TAS (kt)							429	456	471
	N_1 (%)							97.9	97.7	97.5
	FF (lb / hr)							528	541	547

Colored area indicates unattainable operations, to be used for interpolation only. For A/C with 731-5BR

HOLDING

ALL ENGINE OPERATING FUEL FLOW PER ENGINE

Gross Weight (lb)	Holding Speed	Pressure Altitude							
		0 - 1,500	5,000	10,000	15,000	20,000	25,000	30,000	35,000
24,000	172	472	453	435	422	407	397	382	379
26,000	179	501	481	462	450	433	422	409	407
28,000	187	532	509	489	479	460	449	436	434
30,000	193	561	537	518	507	486	474	462	461
32,000	200	590	565	550	535	512	503	491	490
34,000	205	620	594	582	562	541	530	520	519
36,000	213	648	625	610	591	567	559	548	549
38,000	219	677	658	640	618	594	588	577	582
40,000	225	708	690	668	647	623	616	608	615
42,000	231	739	722	697	675	653	647	638	650
44,000	237	771	752	726	704	682	677	671	694
46,000	242	804	783	755	732	712	708	703	739

The above fuel flows are for ISA temperature conditions.

The fuel flow increases (decreases) 1.4 lb/hr/engine for each 1°C above (below) ISA.

U.S. MAXIMUM HOLDING AIRSPEEDS

Up to 6,000 ft	200 kt
6,001 to 14,000 ft	230 kt
14,001 ft and above	265 kt

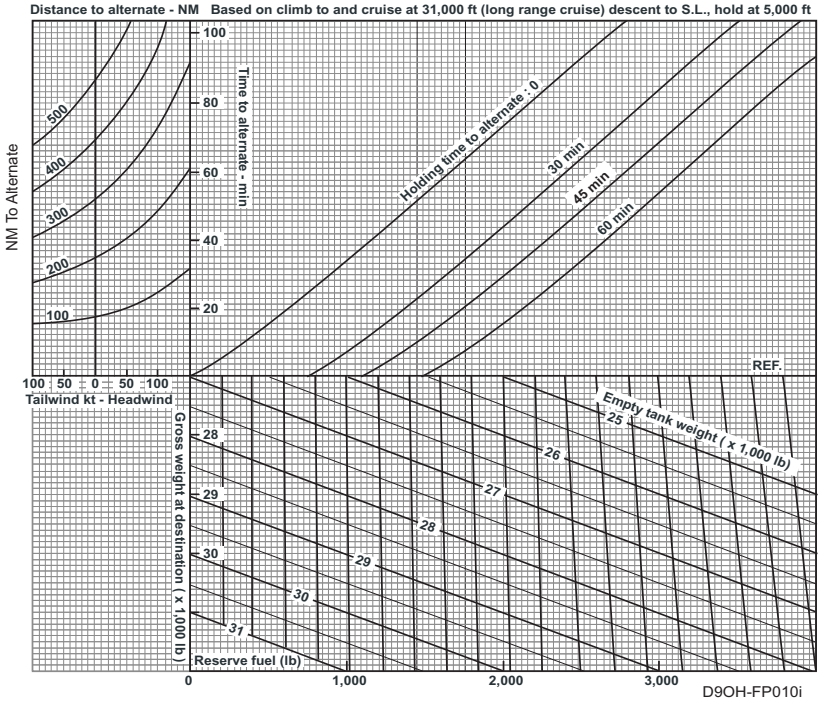
THE ICAO MAXIMUM HOLDING AIRSPEEDS

Up to 14,000 ft	230 kt
14,001 to 20,000 ft	240 kt
20,001 ft to 34,000 ft	265 kt
34,000 and above	0.83 M

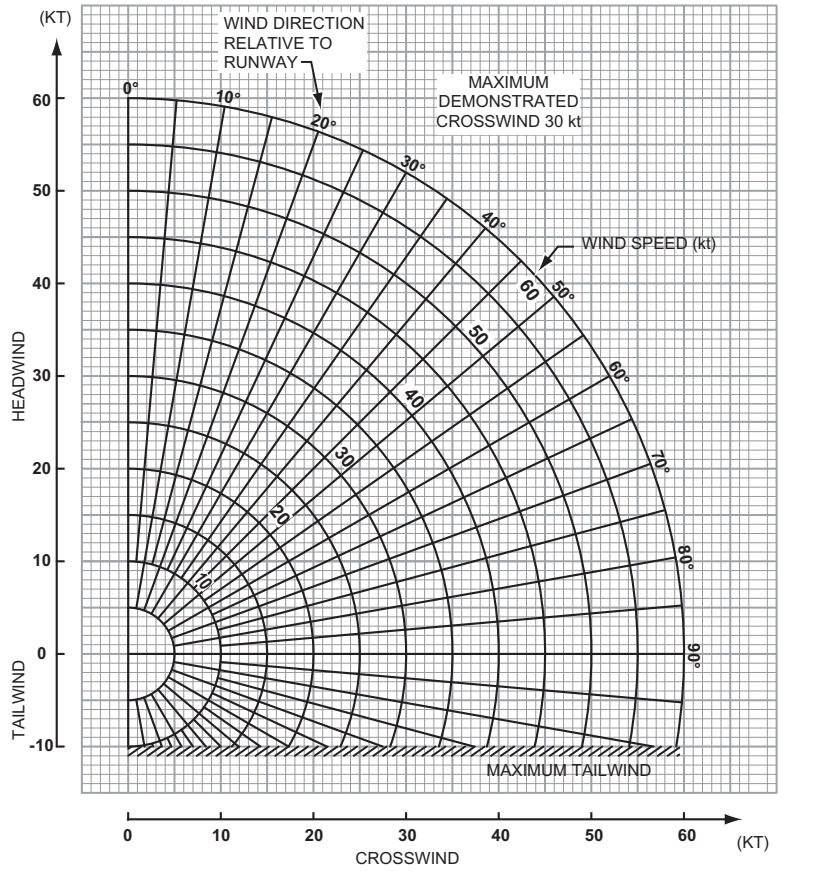
TIMING INBOUND LEG

Below 14,000 ft = 1 minute
Above 14,000 ft = 1 1/2 minute

Flight Planning: All Engine Operating Reserve Fuel



Wind Components



Fuel Weight to Volume Conversion

TURBINE FUEL Volume/Weight *(up to 5 lb variation per 100 gallons due to fuel grade and temperature)*								
US Gal	lb	US Gal	lb	Ltr	lb	Ltr	lb	Ltr	kg	Ltr	kg
15	100	670	57	100	180	125	100	80
30	200	1340	114	200	360	250	200	160
45	300	2010	171	300	540	375	300	240
60	400	2680	228	400	720	500	400	320
75	500	3350	285	500	900	625	500	400
90	600	4020	342	600	1080	750	600	480
105	700	4690	399	700	1260	875	700	560
120	800	5360	456	800	1440	1000	800	640
135	900	6030	513	900	1620	1125	900	720
150	1000	6700	570	1000	1800	1250	1000	800
300	2000	13400	1140	2000	3600	2500	2000	1600
450	3000	20100	1710	3000	5400	3750	3000	2400
600	4000	26800	2280	4000	7200	5000	4000	3200
750	5000	33500	2850	5000	9000	6250	5000	4000
900	6000	40200	3420	6000	10800	7500	6000	4800
1050	7000	46900	3990	7000	12600	8750	7000	5600
1200	8000	53600	4560	8000	14400	10000	8000	6400
1350	9000	60300	5130	9000	16200	11350	9000	7200
1500	10000	67000	5700	10000	18000	12500	10000	8000
1650	11000	73700	6270	11000	19800	13750	11000	8800
1800	12000	80400	6840	12000	21600	15000	12000	9600
1950	13000	87100	7410	13000	23400	16250	13000	10400
2100	14000	93800	7980	14000	25200	17500	14000	11200
2250	15000	100500	8550	15000	27000	18750	15000	12000
2400	16000	107200	9120	16000	28800	20000	16000	12800
2550	17000	113900	9690	17000	30600	21250	17000	13600
2700	18000	120600	10260	18000	32400	22500	18000	14400
2850	19000	127300	10830	19000	34200	23750	19000	15200
3000	20000	134000	11400	20000	36000	25000	20000	16000

LIMITATIONS

WEIGHTS

Ramp . . . . . 46,700 lb (21,183 kg)
Take-off . . . . . 46,500 lb (21,092 kg)
Landing . . . . . 42,000 lb (19,051 kg)
Zero Fuel . . . . . 30,870 lb (14,000 kg)
Max Baggage . . . . . 2,866 lb (1,300 kg)

NOISE

The airplane complies with all the limitations in CFR Part 36 Stage 3 and ICAO Annex 16, Volume 1, Part 2, Chapter 3.

SPEEDS

V_A (Maneuvering) . . . . . 228 kt
V_{MCA} . . . . . 85.5 kt
V_{LO} . . . . . 190 kt/0.70 M
V_{LE} . . . . . 245 kt/0.75 M
V_{FE} S + 7 . . . . . 200 kt
V_{FE} S + 20 . . . . . 190 kt
V_{FE} S + 40 . . . . . 180 kt
Windshield Wipers . . . . . 215 kt
Pilot's DV Window . . . . . 215 kt
Tires . . . . . 195 kt
Auto Slat Light On . . . . . 270 kt

POWERPLANT

N_1 (Takeoff/Transient) 100%/103%
N_2 (Takeoff/Transient) 100.8%/103%
ITT Start . . . . . 978°C
  Takeoff W / INC PWR . . . . . 5 min. 996°C
    WO / INC PWR 978ºC
  Max Continuous . . . . . 968°C
  Max Cruise . . . . . 927°C
Oil Pressure . . . . . 38 - 46 psi 55 for 3 min.
Oil Temperature:
  SL-FL300 . . . . . 127°C
  > FL300 . . . . . 140°C
  Transient . . . . . Less than 2 min 149°C
Oil Types: (OK to mix)

- Aeroshell/Royco Turbine Oil 500 and 560
- Castrol 500
- Exxon/Esso 2380 Turbo
- Mobile Jet II
- Mobile 254

ELECTRICAL

Max DC Voltage . . . . . 32 V
Max Generator Output:
  Transient . . . . . 350 A
  Below FL430 . . . . . 300 A
  Above FL430 . . . . . 260 A

FMS INITIALIZATION CHECKLIST

1. **Select Avionics switches ON.**
2. **NAV IDENT page comes into view.**
3. **Check date, UTC, active NDB.**
4. **Select MAINTENANCE page (4L).**
5. **Check configuration.**
6. **Select IRS control to NAV.**
7. **Select NAV IDENT (4R).**
8. **Select POS IDENT (4R).**
9. **Enter present position and load.**
   (Must be done on both sides)
   - **By last position, or**
   - **By ramp position name, or**
   - **By coordinates, if known, or**
   - **By airport ident (four letters).**
10. **Select FLT PLAN; ACTIVE FLT PLAN page displayed.**
11. **Enter stored flight plan by name; go to 16, or**
12. **Enter new plan name for adding to data base.**
13. **Build new flight plan.**
14. **Select FPL SEL (4R).**
15. **Select ACTIVATE *(RETURN in early software).***
16. **Select PERF INIT (4R).**
17. **Go to 5/5 PREV key *(2/3 in early software*).**
18. **Enter fuel, passengers and cargo.**
19. **Select PERF DATA *(FPL in early software)*.**
20. **Select DEPARTURE (4R or *4L).***
21. **Select Runway or SID.**
22. **Select ACTIVATE (4R)**

TO CHANGE CONFIGURATION

1. Press NAV key.
2. Press NEXT to view NAV INDEX 2/2.
3. Select MAINTENANCE (2R).
4. Select CHANGE CONFIG.
5. Select desired configuration.

DATA LOADING

1. Insert disc into Data Loader.
2. Turn unit ON.
3. Select desired CDU (Left, Right or Aux.).
4. Press NAV key.
5. Select DATA LOAD (4L from 2/2).
6. Select NAV DB (3L).
7. Select FR LOADER (3R).
8. Select YES (4R)
9. Select MAINTENANCE (4R).

MISCELLANEOUS

In the early software a flight plan has to be stored as a flight plan before it can be activated. In current software one can build an Active Flight Plan and then store it as a named plan in the Flight Plan List (FPL).

The DEPARTURE prompt remains on the ACTIVE FLT PLAN page until 50 nm from departure. The ARRIVE prompt is displayed within 200 nm of destination.

Pressing the DIR key causes three prompts to appear in the ACTIVE FLT PLAN page: DIRECT, PATTERN *(HOLD in early software*), and INTERCEPT. Selecting PATTERN allows selection of the HOLD page.

Pressing the DEL key deletes the entire scratch pad.

ALL ENGINES OUT

1. Communications — VHF1 / ATC1
2. Establish A/C within airstart envelope (page E-5)
3. Elec Load — REDUCE (Switch off as many systems as possible to maintain as low battery current drains as possible - page E-29)
4. Relight Engines (3) — ATTEMPT (See procedure pages E-7 / 8)

If no engine can be relighted:

5. Forced Landing / Ditching — PREPARE (See procedure below)
   1. ST-BY Pump Switch — ON
   2. Slats at V_{FE} (200 KIAS) — EXTEND (Use Emerg if necessary)

   If forced landing anticipated:

   3. Ldg Gear at V_{LO} (190 KIAS) — EXTEND (Use Emerg if necessary, see procedure on page E-45)

FORCED LANDING / DITCHING

NOTE: Either situation (black print),
Forced Landing only (green print),
Ditching only (blue print).

1. Transmit — MAYDAY
2. ATC Transponder — 7700
3. Passengers — BRIEF

   LIFE JACKETS
4. Seat Belt / No Smoking Lights — ON
5. AFT CABIN Isolation Light — OFF (Optional Equipment)
6. Third Cockpit Seat — UNOCCUPIED AND STOWED
7. AUDIO WARN C/Bs — PULLED

APPROACH

8. ANTI-ICE: WING Switch — OFF
9. Bleed Air: PASSENGER / CREW / BAG — OFF
10. Bleed Air: HP 1, PRV 2, PRV 3 — OFF
11. Pressurization Switch — DUMP
12. Landing Gear — DOWN / UP
13. Slats / Flaps 40° — EXTEND
14. Speed — V_{REF}

JUST BEFORE TOUCHDOWN

15. Vertical Speed — 300 FT / MINUTE
16. FUEL SHUTOFF Switches (all 3) — ACTUATE
17. GEN and BAT Switches (all 5) — OFF
18. Power Levers — CUTOFF
19. Parallel to Swell — PITCH ATTITUDE 12° TO 15.5°

AFTER TOUCHDOWN

20. Power Levers — CUTOFF
21. Engine Fire Extinguisher (3) — POSITION 2
22. Third Cockpit Seat — STOWED
23. A/C — EVACUATE (OVERWING EXIT and CABIN DOOR)

ENGINE FAILURE DURING TAKEOFF

Before V_1 — Rejected Takeoff

1. **Brakes — MAX PRESSURE**
2. **Power Levers — IDLE**
3. **Airbrake Handle — POSITION 2**
4. **Thrust Reverser — DEPLOYED**

After V_1 — Continued Takeoff

1. **At V_R — ROTATE AIRPLANE**
2. **Establish and Maintain — V_2**
3. **Landing Gear Control — UP, WHEN POSITIVE RATE OF CLIMB**
4. **Bleed Air Passenger and Crew — OFF**
5. **ANTI-ICE: WING — ON / OFF**

CAUTION: **If the engine failure occurs at a speed above V_2, maintain the speed attained.**

At not less than 400 ft above runway (level flight acceleration):

6. **ST-BY Pump Switch – CHECK ON**
7. **At V_2 + 25 — CLEAN WING**
8. **Enroute Climb Speed — 1.43 V_S**

S 9. **Start Selectors (3) — GND START**
S 10. **Power Levers — REDUCE TO MAX CONT**
S 11. **Standby Pump — AUTO**
S 12. **Electrical Load — REDUCE**

Five minutes maximum after brake release:

13. **Bleed Air Passenger and Crew — AUTO**
14. **Inoperative Engine — SHUT DOWN (page E-4) or AIRSTART (page E-7/8)**

EMERGENCY SHUTDOWN AND EVACUATION

S 1. **Airbrake — POSITION 0**
S 2. **Power Levers — CUTOFF**
S 3. **FUEL SHUTOFF Switches (3) — ACTUATE**
S 4. **Parking Brake — SET**
S 5. **GEN and BAT Switches (5) — OFF**
S 6. **Pilot's DV Window — OPEN**
S 7. **Aircraft — EVACUATE**

ENGINE FAILURE (SHUTDOWN) IN FLIGHT

Determine Which Engine Failed

ENGINE SHUTDOWN

1. **Power Lever — RETARD TO IDLE FOR 1 MINUTE IF POSSIBLE**
2. **Power Lever — CUTOFF**
3. **BOOSTER Switch — OFF**
4. **GEN Switch — OFF**
5. **ANTI-ICE: ENG Switch — OFF (IF #2 ENG INOP, LEAVE ON)**

S6. **Electrical Load — REDUCE (See page E-29)**

If engine 2 is shut down:

7. **Bus Tie — TIED**
8. **ST-BY PUMP Switch — ON (WHEN REQUIRED)**

WARNING: **Do not attempt to relight an engine after an engine fire or if engine integrity is questioned.**

If airstart can be attempted:

If airstart cannot be attempted:

9. **Fuel Shutoff — ACTUATE**
10. **Fuel System — MANAGE**

Go to One Engine Inop Approach and Landing page E-9, or see Drift-down Note below.

If airstart can be attempted:

9. **If CMPTR Light is ON, SEE PAGE E-8**

   If CMPTR Light is OFF, SEE PAGE E-7

CAUTION: **Wait 10 seconds between start attempts. Do not make more than 3 successive airstart attempts.**

NOTE: **Driftdown is a procedure to maximize range after an engine failure.**

- **Maintain altitude with two engines at maximum continuous power (968°C)**
- **When airspeed slows to 1.43 V_S begin an airspeed descent.**
- **Descend to low 30s or high 20s, depending on weight, where two engine cruise will not exceed 927°C ITT.**
- **Drift down and Long Range Two Engine Cruise charts are found in Dassault Performance Manual Section 6-25A and 30A.**

FLAME OUT AND HIGH SPEED AIRSTART

N_2 RPM — 15% or above:

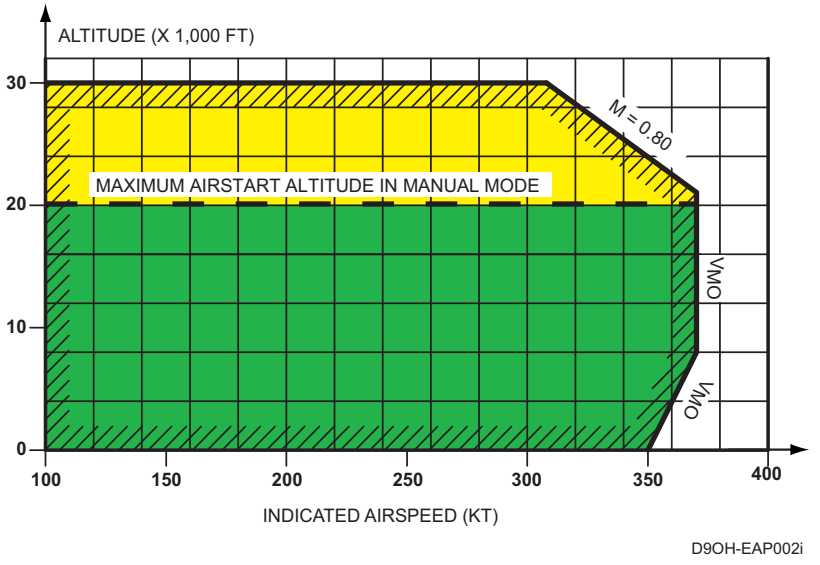
NOTE: **This immediate airstart may be attempted at high altitude, even altitudes above the maximum start envelope.**

1. **Power Lever — IMMEDIATELY TO IDLE**
2. **Start Selector Switch — AIRSTART**
   IGN Annunciator — ON
3. **ITT — RISE WITHIN 10 SECONDS**
4. **Power Lever — ADVANCE**

After relight:

5. **Start Selector Switch — GRD START**
   IGN Annunciator — OFF
6. **Engine Instruments — CHECK**

INFLIGHT RELIGHT ENVELOPE



D9OH-EAP002i

ABNORMAL AIRSTARTS

ABORT AIRSTART WHENEVER:

- **OIL PRESSURE DOES NOT RISE WITHIN 10 SEC. OF LIGHT-OFF.**
- **ITT DOES NOT RISE WITHIN 10 SECONDS.**
- **ITT IS RISING RAPIDLY AND APPROACHING THE 978°C LIMIT.**
- **N_1 REMAINS CLOSE TO ZERO WHEN N_2 = 20%.**
- **N_2 SPEED IS NOT RISING RAPIDLY AND SMOOTHLY.**

1. **Power Lever — CUTOFF**
2. **Start Selector Switch — MOTOR START STOP**

IGN light remains on though N_2 speed is greater than 50% (and all idle speed parameters are within limits):

1. **Start Selector Switch — MOTOR START STOP**
   IGN Annunciator — OFF
2. **Start Selector Switch — GRD START**

BUS TIED Annunciator remains on when Bus Tie selector is returned to FLIGHT NORM:

1. **Generator Voltages and Loads — MONITORED**

AIRSTART — NORMAL MODE

1. A/C — ESTABLISH WITHIN AIRSTART ENVELOPE (page E-5)
2. Power Lever — CUTOFF
3. Fuel Shutoff Switch — NORMAL (GUARDED)
4. GEN / CMPTR / BOOSTER Switches — ON
5. Anti-ice: Eng And Wing Switches — OFF
6. Bus Tie — TIED
   (Review Abnormal Airstarts page E-6)

If N_2 above 15% with N_1 indication, WINDMILLING AIRSTART

If N_2 below 15%, STARTER ASSIST AIRSTART

7. Start Selector Switch — AIRSTART
   IGN Annunciator — ON
8. Start Switch — PRESS (2 Seconds max)
   At N_2 >10% and N_1 rotation indicated:
9. Power Lever — IDLE
10. ITT — RISE WITHIN 10 SECONDS
11. N_1, Fuel Flow, Oil Pressure — RISING
12. When N_2 is above 50%:
    Start Selector Switch — GRD START
    IGN, GEN, OIL, HYD PUMP Annunciators — OFF
13. Engine Instruments — CHECKED
14. Bus Tie — FLIGHT NORM
    BUS TIED Annunciator — OFF

END

WINDMILLING AIRSTART (N_2 RPM above 15% and N_1 indication)

7. Start Selector Switch — AIRSTART
   IGN Annunciator — ON
8. Power Lever — IDLE
9. ITT — RISE WITHIN 10 SECONDS
10. When N_2 is above 50%:
    Start Selector Switch — GRD START
    IGN, GEN, OIL, Hyd PUMP Annunciators — OFF
11. Engine Instruments — CHECKED
12. Bus Tie — FLIGHT NORM
    BUS TIED Annunciator — OFF

END

NOTE: IF AIRSTART SUCCESSFUL:

1. Return all aircraft systems to normal.

IF AIRSTART UNSUCCESSFUL:

1. Motor start stop
2. If engine 2 running, Bus Tie — FLIGHT NORMAL
3. Complete the engine shutdown (page E-4).

AIRSTART WITH FUEL CONTROL COMPUTER IN MANUAL MODE

1. A/C — ESTABLISH WITHIN AIRSTART ENVELOPE (page E-5)
2. Power Lever — CUTOFF
3. Fuel Shutoff Switch — NORMAL (GUARDED)
4. GEN / CMPTR / BOOSTER Switches — ON
5. Anti-ice: Eng And Wing Switches — OFF
6. Bus Tie — TIED

If N_2 above 15% with N_1 indication, WINDMILLING AIRSTART

If N_2 below 15%, STARTER ASSIST AIRSTART

7. Start Selector Switch — AIRSTART
   IGN Annunciator — ON
8. Start Switch — PRESS (2 Seconds max)
   At N_2 >10% and N_1 rotation indicated:
9. Power Lever — IDLE
10. ITT — RISE WITHIN 10 SECONDS
11. N_1, Fuel Flow, Oil Pressure — RISING
12. When N_2 is above 50%:
    Start Selector Switch — MOTOR START STOP
    IGN, GEN, OIL, Hyd PUMP Annunciators — OFF
13. Engine Instruments — CHECKED
14. Bus Tie — FLIGHT NORM
    BUS TIED Annunciator — OFF

END

WINDMILLING AIRSTART (N_2 RPM above 15% and N_1 indication)

7. Start Selector Switch — AIRSTART
   IGN Annunciator — ON
8. Power Lever — IDLE
9. ITT — RISE WITHIN 10 SECONDS
10. When N_2 is above 50%:
    Start Selector Switch — GRD START
    IGN, GEN, OIL, Hyd PUMP Annunciators — OFF
11. Engine Instruments — CHECKED
12. Bus Tie — FLIGHT NORM
    BUS TIED Annunciator — OFF

END

ABNORMAL AIRSTART WITH FUEL CONTROL COMPUTER IN MANUAL MODE

ABORT AIRSTART:

- IF ANY ABNORMAL SITUATIONS ARISE AS DESCRIBED IN ABNORMAL AIRSTART, page E-6.
- IF N_1 EXCEEDS 80% WITH THE POWER LEVER AT IDLE.

APPROACH AND LANDING WITH 1 ENGINE INOPERATIVE

S 1. Told Card / Bugs — COMPUTED / SET
S 2. Crew Briefing — COMPLETE
S 3. Circuit Breakers — CHECKED
S 4. Altimeters — SET
S 5. Brakes — #1 ON
S 6. Pressurization — SET
S 7. Avionics — SET
S 8. X-BP — ALL CLOSED
S 9. Standby Pump — ON
10. Approach Slats / Flaps — SELECT
- If S + 7° — V_{REF} + 15 kt
- If S + 20° — V_{REF} + 5 kt

S 11. GPWS Flap O'Ride Switch - ON
12. Landing Gear — DOWN
S 13. Landing Lights — ON
S 14. Hydraulic Pressure — CHECKED
S 15. Antiskid — TEST
S 16. Start Switches — AIRSTART

When committed to landing, and possibility of go-around is excluded:

17. Slat / Flap Handle — S + 40° (AS REQUIRED)
18. Airspeed — V_{REF}

NOTE: In case of landing with S + 20° add to LD / LFL 200 ft / 335 ft.
In case of landing with S + 7°, add to LD / LFL 600 ft / 1,000 ft.

NOTE: In case landing with engine 2 inoperative flap movement will be twice normal time (ST/BY pump in use).

GO-AROUND WITH 1 ENGINE INOPERATIVE

1. Takeoff Thrust — SET
2. Landing Climb Attitude — SET
3. Airbrake Handle — 0
4. Slat / Flap Handle — Retain Approach Setting
- If S + 7° – V_{REF} + 15kt
- If S + 20° – V_{REF} + 5kt

5. Landing Gear Control (at positive rate of climb) — UP

APPROACH AND LANDING WITH 2 ENGINES INOPERATIVE

1. A/C Weight — REDUCE TO MINIMUM PRACTICABLE
2. Enroute Climb Gradient Limited Weight — DETERMINED (page E-11)
3. Fuel Supply to Remaining Engine — CHECKED
4. Bus Tie — TIED
5. On-line Gen Load — REDUCE (300A OR LESS)
6. Bleed Air Crew and Passenger — OFF
7. If the inoperative engines are 1 and 3: Brakes — #2 / ASKID OFF
8. ST-BY PUMP Switch — ON
9. Icing Conditions — AVOID

S 10. Airspeed (Clean Configuration) — 1.43 V_S MINIMUM

APPROACH

1. Slat / Flap Handle — 7° FLAPS + SLATS
2. GPWS Flap O'Ride Switch - ON

At not less than 1,000 ft:

3. Decision — ABORT LANDING (E-11) OR LAND

When committed for landing:

4. Landing Gear — EXTEND
5. Flaps 20° — EXTEND, AS REQUIRED
6. Approach Speed:
   a. S + 7° — V_{REF} + 20 kt
      Increase the landing distance by 800 ft / 244 m (1,335 ft / 407 m added to the landing field length).
   b. S + 20° — V_{REF} + 10 kt
      Increase the landing distance by 400 ft / 122 m (670 ft / 204 m added to the landing field length).

NOTE: With engines 1 and 3 inoperative:

- Extend slats at V_{FE} (200 KIAS) using emergency slat system if necessary.
- Extend landing gear at V_{LO} = 190 KIAS if possible and, if necessary, perform an emergency extension (manual unlocking, see page E-44).

AFTER TOUCHDOWN

Slow the airplane down as usual, using reverse thrust if possible and moderate braking action if the #2 braking system is used.

If the #2 braking system is used, increase the landing distance and the landing field length calculated above by 50%.

GO-AROUND WITH 2 ENGINES INOPERATIVE

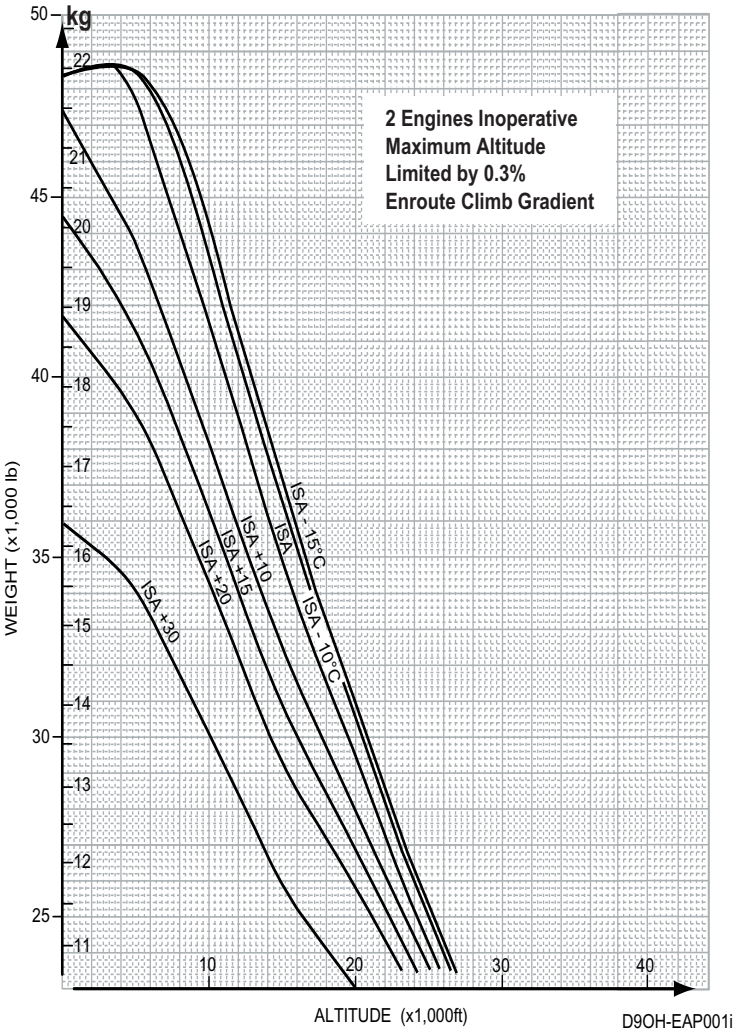
CAUTION: **The decision to execute a missed approach procedure must be taken by 1,000 ft AGL.**

1. **Takeoff Thrust — SET**
2. **While in Descent on Normal Slope — ACCELERATE**
3. **At V_{REF} + 25 kt: Slat / Flap Handle — CLEAN**
4. **Enroute Climb Speed — 1.43 V_S MINIMUM**

CAUTION: **The altitude loss associated with the missed approach procedure is approximately 500 ft.**

CAUTION: **The landing gear cannot be retracted when engines 1 and 3 are inoperative.**

GW X 1,000	26	28	30	32	34	36	38	40	42	44	46
V_{REF}	104	108	112	116	119	122	126	129	132	135	138
1.43 V_S	141	146	152	156	161	166	170	174	180	185	190



① 

Illumination indicates the presence of a fire or overheat situation in the engine 1, 2 or 3 compartment.

ENGINE FIRE

NOTE: **The following procedure must be applied, whether or not the FAULT light is on.**

1. **Power Lever — CUTOFF**
2. **FUEL SHUTOFF Switch — ACTUATED**
   TRANS Light — ON, THEN OFF
3. **Airspeed — BELOW 250 KIAS**
4. **Fire Extinguisher DISCH — POSITION 1**

If fire warning persists:

5. **Fire Extinguisher DISCH — POSITION 2**
6. **Affected Engine — SHUT DOWN (PAGE E-4)**
7. **As soon as possible — LAND**

② 

Illumination indicates loss of detector tube integrity pressure.

FAILURE OF ENGINE FIRE DETECTION SYSTEM

If the FAULT light is on:

Land as soon as possible.

③ 

Illumination indicates the presence of a fire or overheat situation in the APU compartment.

APU FIRE

NOTE: The following procedure must be applied, whether or not the FAULT light is on.

1. APU MASTER Pushbutton — SHUT DOWN
2. APU GEN Pushbutton Light — OUT
3. BLEED AIR APU Switch — OFF

Wait for 10 seconds, then:

4. APU Extinguisher Switch — POSITION 1

If fire warning persists:

5. Engine 2 FUEL SHUTOFF — ACTUATED
   TRANS Light — ON, THEN OFF
6. Engine 2 — SHUT DOWN (PAGE E-4)

FAILURE OF APU FIRE DETECTION SYSTEM

If the FAULT light is on:

Shut down the APU.

④ 

Illumination indicates that the thrust reverser clamshell doors are not locked in the stowed position and they should be. Also comes on during the thrust reverser retraction phase.

⑤ 

Illumination indicates that the thrust reverser clamshell doors are in movement or are not locked.

⑥ 

Illumination indicates that the thrust reverser clamshell doors are completely deployed.

INADVERTENT FLIGHT THRUST REVERSAL

1. **Engine 2 — IDLE**
2. **Thrust Reverser EMERG STOW Switch — STOW**
3. **Reduce Airspeed to — 230 KIAS OR LESS**

If thrust reverser stows:

4. **Leave the EMERG STOW switch in the stow position and continue the flight with no restriction.**

If the thrust reverser remains deployed:

4. **NORM / STOW Switch — MAINTAINED IN STOW**
5. **As soon as possible — LAND**

NOTE: **The drag resulting from an idling No. 2 engine with the thrust reverser deployed adversely affects performance characteristics. The engine should, therefore, be shut down whenever necessary. (page E-4)**

⑦ 

Light illuminates anytime the #2 engine S-duct door microswitch is open. Light illuminates on ground during takeoff when #2 engine power does not match throttle position.

ENGINE 2 AIR INLET DOOR OPENING

1. **Power Lever — IDLE**

If engine surges or abnormal conditions are observed:

2. **Engine 2 — SHUT DOWN (page E-4)**

⑧ 

Illumination indicates that the control switch of the relevant computer is in the OFF or MAN position, or that the corresponding computer has failed (electrical power supply failure, internal failure or incorrect data).

FUEL CONTROL COMPUTER INOPERATIVE

1. Power Lever of Affected Engine — IDLE
2. Engine CMPTR Switch — OFF, THEN AUTO

If the CMPTR light extinguishes:

END

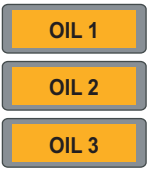
If the CMPTR light remains on:

3. Engine CMPTR Switch — MAN

Do not let ITT of affected engine exceed indicated ITT of the other engines.

Avoid rapid displacements of the power lever.

CAUTION: Maximum thrust may not be possible.
Idle thrust for landing may be higher than normal.
Fuel flow for matched N_1 speeds may be approximately 5% greater.
The acceleration time is longer in manual mode.

⑨ 

Illumination indicates that the oil pressure of the corresponding engine is lower than 25 psi or that metal chips are detected in the corresponding engine oil system.

LUBRICATION SYSTEM

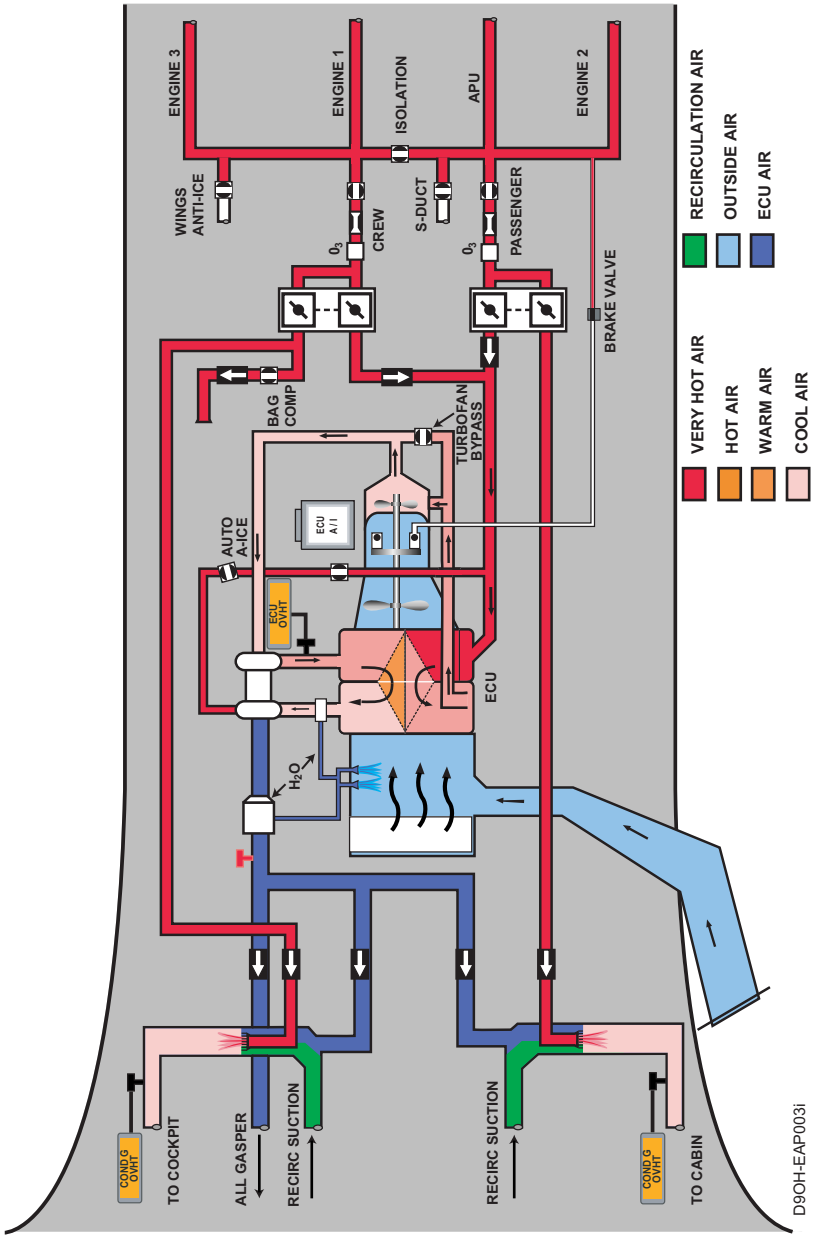
If the indicated pressure exceeds 25 psi:

1. Thrust of Affected Engine — REDUCE IF POSSIBLE

If the indicated pressure is less than 25 psi:

1. Power Lever — RETARD
2. Affected Engine — SHUT DOWN AS SOON AS POSSIBLE (page E-4)

AIR CONDITIONING



AIR CONDITIONING SMOKE

1. Oxygen Masks and Smoke Goggles — 100% / DONNED
2. Microphone Selector — MASK AND C'PIT (TEST)
3. No Smoking Sign — ON
4. Oxygen Controller and Passenger Masks — OVERRIDE / DONNED
5. Crew Air Gaspers — OPEN
6. Isolation Valve Knob — ISOLATION
   ISOL Annunciator — ON
7. Bleed Air Crew — OFF
8. COND Control Lever — TIED

If smoke persists:

9. Bleed Air Crew — ON
10. Bleed Air PASSENGER — OFF

If smoke disappears:

11. Continue the flight with the faulty bleed air system isolated

END

If smoke persists:

ECU is now suspect.

11. CREW Temperature Controller — MANUAL / MOSTLY HOT

If smoke disappears:

Continue the flight and use the CREW temperature controller as required to establish the appropriate cabin temperature. Do not select a position lower than 40% HOT (right of center).

END

If smoke persists:

12. CREW Bleed Air — OFF

Apply smoke removal procedure, starting at checklist item 5 (page E-18).

NOTE: If range is an issue, consider emergency Pressurization. See Too High Cabin Altitude procedure page E-20.

SMOKE REMOVAL

1. Oxygen Masks and Smoke Goggles — 100% / DONNED
2. Microphone Selector — MASK AND C'PIT (TEST)
3. No Smoking Sign — ON

Only if no flame in cabin:

4. Oxygen Controller and Passenger Masks — OVERRIDE / DONNED
5. Crew Air Gaspers — OPEN
6. Descend — 14,000 FT OR TO A SAFE ALTITUDE

CAUTION: The following procedure must not be applied if flames are present in the cabin or cockpit.

At 14,000 ft or below:

7. Pressurization Switch — DUMP

At a speed below 215 KIAS:

8. LH direct vision window — OPEN
9. Descend — 10,000 FT OR TO A SAFE ALTITUDE
10. As soon as possible — LAND

⑩ COND'G OVHT

Illuminates when overheating is detected in one of the cabin or cockpit supply ducts (temperatures higher than 203°F (95°C)).

CABIN AIR CONDITIONING OVERHEAT

Affected Controller(s) — MANUAL / COLD

END

If temperature is not decreasing:

1. PASSENGER Switch — OFF
2. COND Control Lever — TIED

The preceding procedure assumes a failure of the automatic temperature system. If this procedure does not remedy the situation, and the aircraft is equipped with an ECU A/I push button, accomplish the following:

CAUTION: Since internal anti-icing of the ECU is no longer assured, the ECU A/I can only be used at high altitudes (>FL350) where moisture is near zero.

If temperature is not decreasing

2. ECU A/I Push Button — DEPRESS

If system does not Normalize

If system does Normalize

At beginning of descent:

3. Temperature controllers — AUTO
4. Pressure Emergency Switch — EMERG
5. ECU A/I Push Button — RELEASE
3. Bleed Air PASSENGER — OFF
4. Cond Control Lever — TIED

⑪ ECU OVHT

Illuminates if overheat is detected at the compressor outlet of the turbocooling unit, or if the turbofan bypass valve is not closed with the landing gear extended.

ECU OVERHEAT

1. PASSENGER Temperature Controller — MANUAL / WARMER TEMPERATURE
2. PASSENGER Switch (if necessary) — OFF
3. COND Control Lever — TIED

If ECU OVHT annunciator stays on:

4. PASSENGER Switch — AUTO
5. CREW Temperature Controller — MANUAL / WARMER TEMPERATURE
6. CREW Switch (if necessary) — OFF

If ECU OVHT annunciator is still on:

7. Airspeed — SLOWER THAN 300 kts TAS

If warning persists:

8. PASSENGER Switch — OFF
9. As soon as possible — LAND

NOTE: In non-icing conditions, HP 1, PRV 2 and PRV 3 switches may be selected to the OFF position.

⑫ NOSE CONE OVHT

Illuminates if overheat is detected in the nose cone (temperature higher than 158°F (70°C)).

NOSE CONE OVERHEAT

1. NOSE Control Lever (if installed), NORM Position — CHECKED
2. Avionics Systems — SWITCH OFF AS MANY AS POSSIBLE

⑬ 

Illuminates if cabin altitude is greater than 10,000 ft or entry door not locked (page E-21).

TOO HIGH CABIN ALTITUDE OR SLOW DEPRESSURIZATION

Light on and an aural warning sounds.

1. **Crew Oxygen Masks — DONNED/NORMAL**
2. **Microphone Selector — MASK AND C'PIT**
3. **Bleed Air Switches Crew/Passenger — CHECKED**
4. **PRV 2 and PRV 3 — CHECKED**
5. **Bag Switch — ISOL**
   BAG ISOL Annunciator — ON
6. **Nose Control Lever (If Installed) — CLOSED**
7. **UP-DN Control — BETWEEN 1 AND 2 O'CLOCK**
8. **AUTO / MAN Pressure Selector Switch — MAN**
9. **UP-DN Control — DN AS REQUIRED**

If cabin pressure cannot be restored:

10. **Isolation Valve Knob — ISOLATION**
    ISOL Annunciator — ON

If cabin pressure is restored:

11. **Passenger and/or Crew BleedAir Valves — ALTERNATIVELY OFF AND ON**
    Retain condition for which cabin pressure is maintained.
12. **COND Control Lever — TIED**

END

If cabin pressure is not restored:

Suspect ECU failure (rupture).

11. **NORM / EMERG Pressure Selector Switch — EMERG**

If cabin pressure is restored:

12. **Continue flight at highest possible altitude.**
13. **CREW Temperature Controller — AS REQUIRED**
    If temperature gets too high during descent.
14. **CREW Bleed Air Switch — OFF**

END

If cabin pressure cannot be restored:

12. **No Smoking Sign — ON**
13. **Passenger Oxygen Masks — OVERIDE / DONNED**
14. **Execute an emergency descent down to a safe altitude or 14,000 ft.**

⑭ 

Illuminates if entry door or forward lavatory service door not secure (some aircraft).

⑮ 

Illuminates if the baggage compartment outer door or rear compartment door is not locked.

⑯ 

Illuminates if the baggage compartment inner door is not closed.

DOORS UNLOCKED INDICATION

If the CABIN annunciator is on and no aural warning:

1. Fasten Belts Light — ON
2. Cabin Access Door — CHECKED (VISUALLY)

If door is or seems improperly locked:

1. Cabin Δp — REDUCE IF POSSIBLE
2. As soon as possible — LAND

If the REAR DOORS annunciator is on:

Access to the baggage compartment is not permitted.

1. BAG ACCESS Annunciator — OFF

If the BAG ACCESS annunciator is on:

Check the door to make sure it is closed and latched.

CABIN PRESSURE TOO HIGH

1. Cabin Pressure Controller — SELECT FL MODE
2. Higher Flight Level — ENTER +

If cabin pressure does not decrease:

3. UP-DN Control — BETWEEN 1 AND 2 O'CLOCK
4. AUTO / MAN Pressure Selector Switch — MAN
5. UP-DN Control — UP AS REQUIRED

If cabin pressure keeps increasing:

3. CREW and PASSENGER Bleed Air — OFF and ON (AS REQUIRED)

Continue flight using CREW and PASSENGER switches to maintain a cabin altitude not higher than 8,000 ft or a cabin differential pressure not greater than approximately 9 psi.

NOTE: If not in icing conditions, an alternative method of cabin pressure control is available if differential continues to increase:

- Isolation Valve — CLOSED
- Crew Bleed Air — OFF
- PRV 2 — OFF
- #2 Throttle — CONTROL CABIN ALTITUDE
- #1 and #3 Throttle — Maneuver Aircraft

IMPROPER CABIN VERTICAL SPEED

1. UP-DN Control Aligned with Green Mark — CHECKED
2. CREW, PASSENGER, PRV 2 and PRV 3 Bleed Air — CHECKED

If normal operation is not restored:

3. UP-DN Control — BETWEEN 1 AND 2 O'CLOCK
4. AUTO / MAN Pressure Selector Switch — MAN

Use the UP-DN control to adjust cabin vertical speed.

RAPID DEPRESSURIZATION

1. Crew Oxygen Masks — 100% / DONNED
2. Microphone Selector — MASK and C'PIT (TEST)
3. Fasten Belts and No Smoking Light Pushbuttons — ON
4. Oxygen Controller and Passenger Masks — OVERRIDE / DONNED
5. Emergency Descent — INITIATED

EMERGENCY DESCENT

1. AP — DISENGAGED
2. Power Levers — IDLE
3. Airbrake Handle — POSITION 2
4. Descent Airspeed (Smooth Air Conditions) — M_{MO} / V_{MO}
5. ATC Transponder — MAYDAY CODE

CAUTION: The above procedure assumes structural integrity of the airplane. If structural integrity is questioned, limit airspeed to the lowest practical value and avoid high maneuvering loads.

NO AUTOMATIC PRESENTATION OF PASSENGER MASKS

1. Oxygen Controller — OVERRIDE
2. Passenger Masks — DONNED / CHECKED

⑰ 

Illuminates if smoke is detected in the baggage compartment.

FIRE IN BAGGAGE COMPARTMENT

1. BAG Switch — ~~HEAT~~ POSITION

In flight below FL410 and with the baggage compartment pressurized:

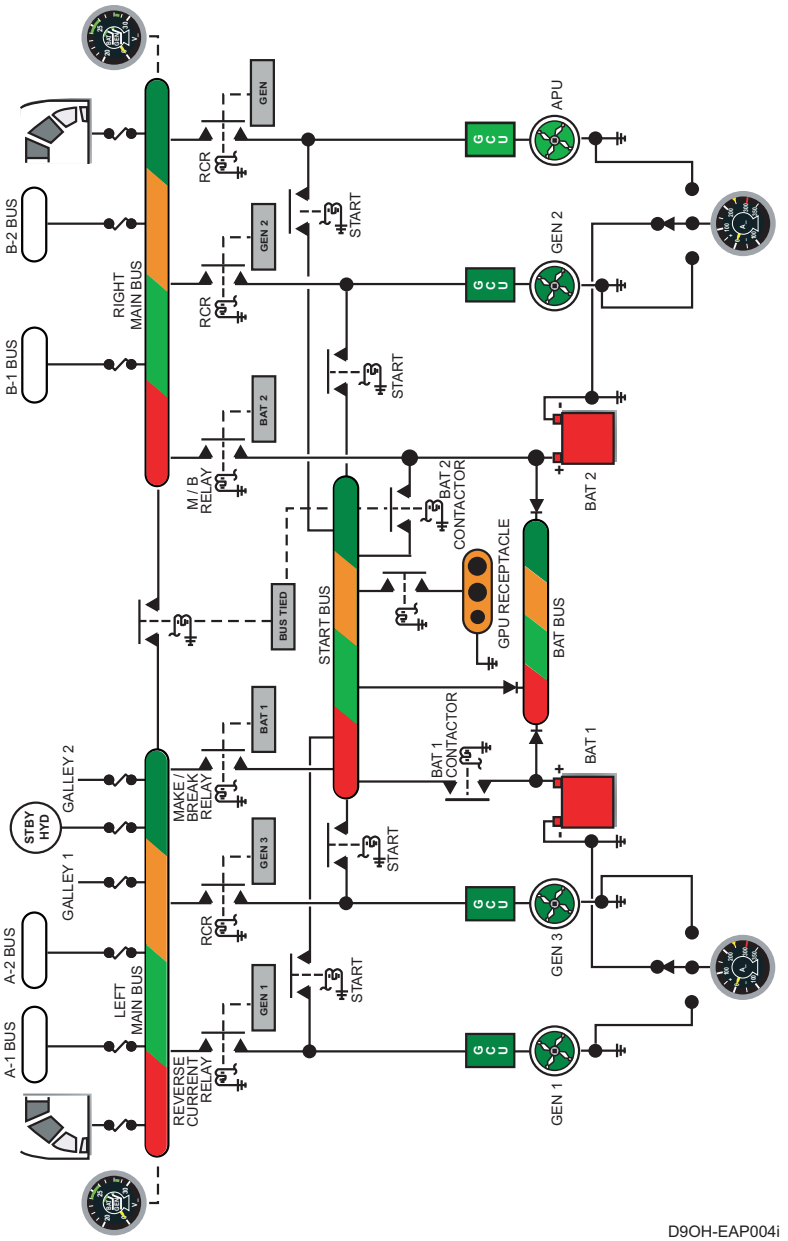
2. The copilot puts on the smoke hood and fights the fire with the hand extinguisher.

CAUTION: The lavatory door must be properly closed prior to opening the baggage compartment door, to prevent smoke from entering the passenger cabin.

During takeoff or landing, or above FL410, or in flight with the baggage compartment not pressurized:

2. BAG Switch — ISOL
3. Baggage Compartment Extinguisher Switch — POSITION 1
4. Do not open the baggage compartment door until the airplane has landed.
5. As soon as possible — LAND

DC ELECTRICAL SYSTEM



ELECTRICAL SMOKE OR FIRE

1. Oxygen Masks and Smoke Goggles — 100% – DONNED
2. Microphone Selector — MASK AND C'PIT (TEST)
3. No Smoking Sign — ON

ONLY IF NO FLAME IN CABIN:

4. Oxygen Controller and Passenger Masks — OVERRIDE / DONNED
5. Crew Air Gaspers — OPEN

If the origin of the fire or smoke is evident:

6. Suspected Equipment — TURN OFF

If the origin of the fire or smoke is not evident and flight conditions permit a total electrical power shutdown:

6. BAT 1, GEN 1, BAT 2, GEN 2, GEN 3 — OFF
7. E-BAT Switch — OFF (IF INSTALLED)

After smoke has stopped, determine which power system causes smoke to recur (LH side with battery 1 or RH side with battery 2) by switching the batteries on one at a time:

8. Suspected Side, BAT Switch — OFF
9. Other Side, BAT + GEN Switch(es) — ON

Do not tie buses.

If flight conditions do not permit a total electrical power shutdown, shut down the following, selectively:

6. BAT 2 and GEN 2 Switches — OFF
7. Bus Tie: FLIGHT NORM — CHECKED
8. BUS TIED Annunciator — OFF
9. PASSENGER Temperature Controller — MANUAL / COLD

If smoke persists:

10. AUTO / MAN Pressure Selector Switch — MAN
11. BAT 2 and GEN 2 Switches — ON
12. BAT 1, GEN 1 and GEN 3 Switches — OFF
13. CREW Temperature Controller — MANUAL / COLD

If fire is visibly verified to be out:

Continue the flight.

END

If fire is not visibly verified to be out:

Land as soon as possible.

Continued on next page

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ELECTRICAL SMOKE OR FIRE – CONTINUED

If smoke persists:

1. **Crew Air Gaspers — OPEN**
2. **Descent — TO BELOW 14,000 FT OR TO A SAFE ALTITUDE**

CAUTION: **The following procedure must not be applied if flames are present in cabin or cockpit.**

At 14,000 ft or below:

3. **UP-DN Control — UP**

At a speed below 215 KIAS:

4. **LH Direct Vision Window — OPEN**
5. **Descent — TO 10,000 FT OR TO A SAFE ALTITUDE**

If smoke persists or if fire is not visibly verified to be out:

Land as soon as possible.

⑱ 

Illuminates to indicate that the corresponding generator is not connected to its bus (associated reverse current relay open), or the corresponding START relay remains closed at the end of the START sequence. The matching GEN switch has possibly tripped.

FAILURE OF ALL THREE GENERATORS

1. Bus Voltages — CHECKED
2. Current Output of Generators and Batteries — CHECKED
3. Electrical Load — SHED AS MUCH AS POSSIBLE (page E-29)

Attempt to reset any generator beginning with last failed.

4. Bus Tie — FLIGHT NORM
5. BAT Switch of Side Concerned — ON / CHECKED
6. Power Lever of Engine Concerned — IDLE
7. Engine Idle — VERIFY
8. GEN Switch of Generator Concerned — RESET

If the voltmeter deviates to maximum:

9. GEN Switch of Generator Concerned — OFF

If resetting cannot be achieved:

10. Bus Tie — TIED

Switch off as many systems as possible to maintain as low battery current drains as possible.

Land as soon as possible, avoiding icing conditions.

CAUTION: The batteries, in good condition, will provide:

- 40 minutes of operation with an average load of 25 amps per battery (approximate load after load shedding in non-icing conditions).
- 20 minutes of operation with an average load of 45 amps per battery (approximate load after shedding in icing conditions).

CAUTION: To limit battery current drain, first switch off:

- the four fuel boost pumps
- pilot, copilot and side window heat
- pilot and copilot PITOT heating, and
- RH AV MASTER pushbutton
- Pull LAV MASTER and GALLEY MASTER circuit breakers.

CAUTION: Flight Altitude is limited to:

- 31,000 when using JET A or JET A1
- 17,000 when using JP4 or JET B

CAUTION: In icing conditions, it is imperative to keep the following switched on:

- pilot windshield heating system
- engine and wing anti-ice systems.

⑱ GEN..
GEN..

Corresponding generator is not connected to its bus.
Corresponding GEN switch possibly tripped.

ANY TWO GENERATORS INOPERATIVE

1. Bus Voltages — CHECKED (28.5V vs 24V)
2. Ammeter Loads — CHECKED

   Shed load to keep the load on remaining generator within limits (page E-29).

CAUTION: Never tie buses if any voltage is above the green range.

GEN 1 and GEN 3 switches tripped

GEN 2 and GEN 1 or GEN 3 switches tripped

Any two GENS inop. - One Or No Switches Tripped:

CAUTION: Do not attempt reset of tripped generator.

For the non-tripped generator(s)

3. GEN Switch — TWO RESET ATTEMPTS MAXIMUM
   (See RESET procedure, page E-29.)

   If resetting is not accomplished
4. LH and RH Voltages Normal — CHECKED
5. Bus Tie — TIED

END

GEN 2 and GEN 1 or GEN 3 Switches Tripped

3. GEN 2 Switch — ONE RESET ATTEMPT MAXIMUM
   (See RESET procedure, page E-29.)

   If resetting is not accomplished
4. LH Voltage Normal — CHECKED
5. Bus Tie — TIED

END

GEN 1 and GEN 3 Switches Tripped

3. GEN 1 Switch — ONE RESET ATTEMPT MAXIMUM
   (See RESET procedure, page E-29.)

   If resetting is not accomplished
3. GEN 3 Switch — ONE RESET ATTEMPT MAXIMUM

   If resetting is not accomplished
4. RH Voltage Normal — CHECKED
5. Bus Tie — TIED

END

GENERATOR RESET PROCEDURE

1. Bus Tie — FLIGHT NORMAL
2. BAT Switch on the Same Side — CHECKED ON
3. Power Lever Associated Engine — IDLE
4. GEN Switch — ON

If voltmeter deviates to maximum:

5. GEN Switch — OFF

LOAD SHEDDING

Depending on the aircraft flight conditions, the total electrical load may be reduced by:

- Pilot, copilot and side window heat
- Pilot and copilot pitot heat (keep standby)
- Right avionics master
- Lavatory and galley master circuit breakers
- Non-essential navigation and lighting switches/circuit breakers.

SYSTEMS REMAINING AFTER LOAD SHEDDING	
Engine Computers	Navigation Lights (as needed)
Engine Gauges	Shield Lights
Fuel Gauges	Overhead Panel Lights (as needed)
Hydraulic Control	Circuit Breaker Lights (as needed)
Pressurization	ADC-1
Bleed Air	IRS-1
ST BY Pitot Heat	EFIS-1
Flight Control Surfaces	ATC 1, DME 1, VOR 1
Fire Detection	VHF COMM 1
Fire Extinguishers	RMI 1
Warning Indications	Standby Horizon
BAT Temperature	Emergency Lights
Passenger Signs (as needed)	

⑱ GEN 1 OR GEN 2 OR GEN 3

Associated generator no longer connected to its bus, or the start relay failed to open after a start.

Corresponding generator switch may or may not be tripped.

ONE GENERATOR INOPERATIVE

If GEN Switch is Not Tripped

If GEN Switch is Tripped

1. LH and RH Voltmeters — CHECK IN GREEN RANGE
2. Ammeters (BAT and GEN) — CHECKED

   Shed load to keep current drain on remaining generators within limits (page E- 29).

CAUTION: Do not attempt to reset generator.

If GEN 2 inoperative

3. Bus Tie — TIED

END

If GEN Switch is not tripped:

GEN 2 Light ON

GEN 1 or 3 Light ON

1. Left Ammeter Loads — CHECKED
2. Left Voltmeter — CHECKED IN THE GREEN RANGE

If LH voltage normal

3. Failed GEN Switch — MAX TWO RESET ATTEMPTS (page E- 29)

END

If LH voltage is above the green range

3. Operating GEN Switch — OFF
   Corresponding GEN light ON and original failed GEN light OFF.

END

If both GEN lights remain ON

3. Original Failed GEN — MAX TWO RESET ATTEMPTS (page E- 29)

If RESET not successful

4. Original Failed Generator — OFF

NOTE: The final step leaves the Left Main bus powered by Battery only. Consideration must be given to eventual loss of the bus.

END

Continued on next page

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GEN 2 Light ON, switch not tripped

1. RH Voltage — CHECK FOR BATT NORMAL VOLTAGE
2. BAT 2 Ammeter — CHECKED NORMAL LOAD
3. GEN 2 Switch — MAX TWO RESET ATTEMPTS (page E- 29)

If reset not successful

4. GEN 2 Switch — OFF
5. RH Voltage and Load — NORMAL FOR BATTERY
6. Bus Tie — TIED

Reduce electrical load (see Load Shed, page E-29.)

⑲ 

Illuminates to indicate that the corresponding battery is not connected to its bus.

BATTERY FAILURE

Associated battery switch tripped.

1. Associated BAT Switch — ON (TWO RESET ATTEMPTS MAXIMUM)

⑳ 

Illuminates to indicate that one of the batteries has reached a temperature exceeding 160°F (71.1°C).

Battery temperature indicator red light is also on.

BATTERY OVERHEAT

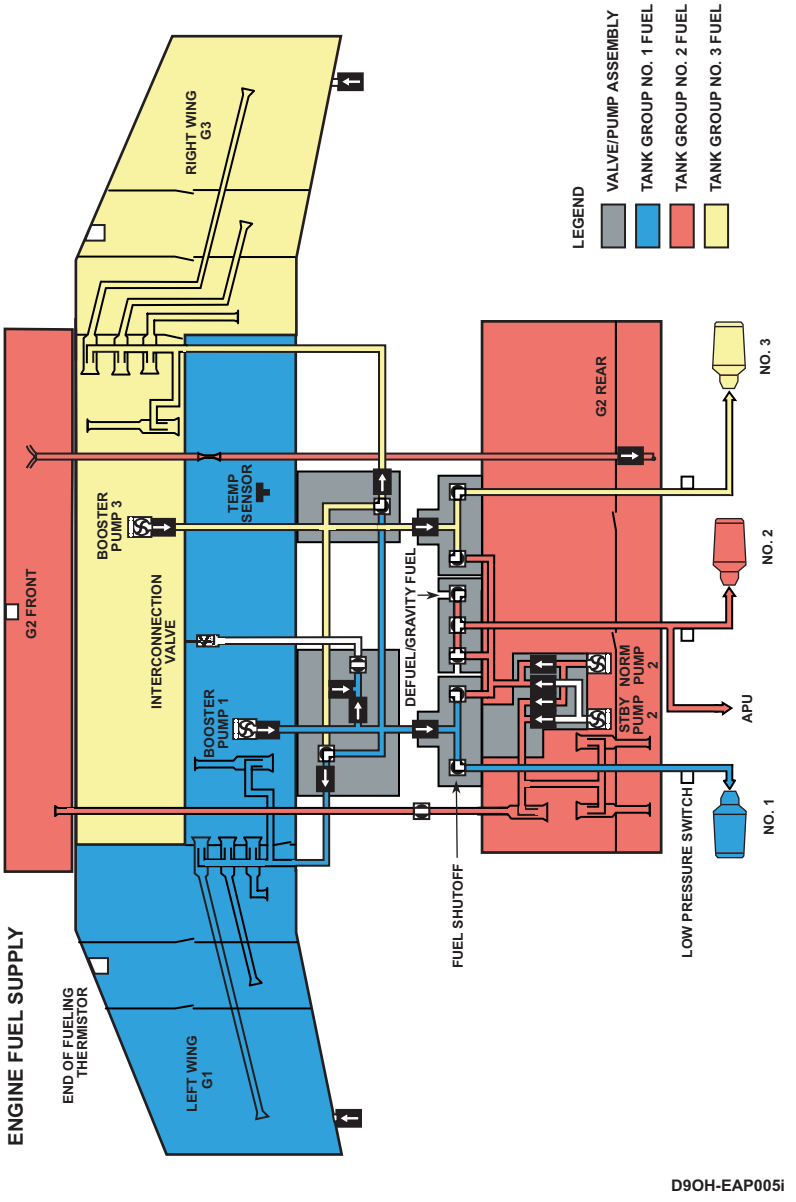
1. Associated BAT Switch — OFF

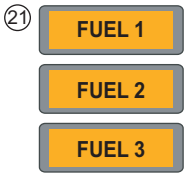
If battery temperature keeps increasing:

2. As soon as possible — LAND

NOTE: If necessary, the faulty battery may be switched back on for landing, provided the HOT BAT annunciator has extinguished.

FUEL SYSTEM


LEGEND
VALVE/PUMP ASSEMBLY
TANK GROUP NO. 1 FUEL
TANK GROUP NO. 2 FUEL
TANK GROUP NO. 3 FUEL
RIGHT WING G3
LEFT WING G1
G2 FRONT
G2 REAR
BOOSTER PUMP 3
TEMP SENSOR
INTERCONNECTION VALVE
BOOSTER PUMP 1
DEFUEL/GRAVITY FUEL
STBY PUMP
NORM PUMP 2
NO. 3
NO. 2
APU
NO. 1
LOW PRESSURE SWITCH
FUEL SHUTOFF
END OF FUELING THERMISTOR
ENGINE FUEL SUPPLY
D9OH-EAP005i



Illuminates if the pressure switch located on the associated engine fuel supply line indicates a pressure drop (pressure less than 4.6 psi).

LOW BOOSTER PUMP PRESSURE

If FUEL 1 and FUEL 3 Lights are ON with X-BP 1-3 open:

If FUEL 1 or FUEL 3 Lights are ON:

If FUEL 2 Light is ON:

1. BOOSTER 2 Switch — ST-BY.

END

If the light remains on

2. Center Fuel Quantity — MONITOR

If Fuel Leak is suspected

3. Engine 2 Power Lever — CUTOFF
4. Engine 2 Fuel Shutoff — ACTUATE

Consume from group 2 first:

5. Booster 2 Switch - NORM
6. X-BP 1-2 and X-BP 2-3 Rotary Switch — OPEN

If No Fuel Leak is suspected

3. Continue flight keeping engine 2 fed by gravity and from Group 2 only, except for descent phase above FL 310, which must be performed with:
4. X-BP 1-2 and X-BP 2-3 open.

END

If FUEL 1 or FUEL 3 Annunciator is ON

1. X-BP 1-3 — OPEN
2. Associated Booster — OFF

If the annunciator goes OUT

3. Continue the flight maintaining wings balanced.
4. XTK Switch to the low side— AS NEEDED

If the annunciator remains ON

3. Associated Booster — ON
4. X-BP 1-3 — CLOSED
5. Associated Fuel Quantity — MONITOR

If fuel leak is suspected:

6. Associated Engine Power Lever — CUTOFF
7. Associated Engine FUEL SHUTOFF Switch — ACTUATE

END

Continued on next page

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LOW BOOSTER PUMP PRESSURE – CONTINUED

If FUEL 1 and FUEL 3 Lights are ON with X-BP 1-3 OPEN

1. **X-BP 1-3 — CLOSE**
2. **X-BP 1-2 and X-BP 2-3 — OPEN**

If FUEL 1 and FUEL 3 lights go OUT

3. **BOOSTER 1 and 3 — OFF**
4. **Fuel Quantity — MONITOR**

If FUEL 1 and FUEL 3 lights remain ON

3. **X-BP 1-2 and X-BP 2-3 — SUCCESSIVELY CLOSED**
   Monitor FUEL 2 for best result.
4. **X-BP 1-2 or X-BP 2-3 — CLOSED**

If significant fuel loss is evident

5. **Associated Engine Power Lever — CUTOFF**
6. **Associated FUEL SHUTOFF Switch — ACTUATE**

END

NOTE: **To consume fuel in side tanks when no leak is suspected:**

4. **Flight Altitude — BELOW FL 310**
5. **All X-BP Valves — CLOSED**
   - **FUEL 1 and FUEL 3 Lights will be ON**
6. **Fuel Quantity and Engine Operation — MONITOR**

CAUTION: **Take into account the reduction in range.**

FUEL QUANTITY ASYMMETRY

Verify asymmetry with abnormal aileron trim.
Check that asymmetry is not caused by a fuel leak.

If there is asymmetry in the side tanks, do the following:

1. **X-BP 1-3 — OPEN**
   X-BP Annunciator Checked — ON
2. **XTK Switch — LOW LEVEL SIDE**
   XTK Annunciator Checked — ON

If BOOSTERS 1 and 3 are on:

3. **BOOSTER on Low Level Side — OFF**

If there is tank 2-to-side tank asymmetry:

1. **X-BP 1-2 OR 2-3 — OPEN**
   X-BP Light Checked — ON

If tank 2 level is higher:

2. **BOOSTER 1 or 3 as required — OFF**

If tank 2 level is lower:

2. **BOOSTER 2 — OFF**

Illuminates if the front-to-rear tank transfer valve XTK2 is open when it should be closed.

Illuminates if the front-to-rear tank transfer valve XTK2 is closed when it should be open.

TRANSFER SYSTEM MALFUNCTION ON AIRPLANES EQUIPPED WITH XTK 2 SYSTEM

If the XTK 2 OPEN annunciator is on and the #2 total indication is approximately 4,400 lb (green range):

1. #2 REAR Indication — CHECKED

If #2 REAR is 3,300 lb steady:

2. XTK 2 Switch — CLOSED
   XTK 2 OPEN Annunciator Checked — OFF

If the XTK 2 OPEN light does not go out and there is a possibility of the rear CG limit being reached:

2. Manual Control XTK 2 Valve — CLOSED, THEN NORM
   XTK 2 OPEN Annunciator Checked — OFF

If #2 total indication is around 2,200 lb (amber range):

2. #2 REAR Indication — CHECKED

If #2 REAR is above 1,400 lb:

2. XTK 2 Switch — CLOSED
   XTK 2 OPEN Annunciator Checked — OFF

NOTE: If the XTK 2 OPEN annunciator does not extinguish, and BP 1 or 3 has failed, or the side tank interconnection has been used, the attitude shall be limited to 10° pitch-up, as long as the light remains on.

If the XTK 2 CLOSED annunciator is on and the #2 REAR indication is lower than 1,100 lb:

1. XTK 2 Switch — OPEN
   XTK 2 CLOSED Annunciator Checked — OFF

If the XTK 2 CLOSED annunciator remains on:

2. Manual Control XTK 2 Valve — OPEN, THEN NORM
   XTK 2 CLOSED Annunciator Checked — OFF

NOTE: The manually controlled opening of the XTK 2 valve will cause the XTK 2 OPEN light to come on later. In such a case, the limitation of the above NOTE shall apply.

TANK LEVEL ABNORMALLY LOW ON AIRPLANES EQUIPPED WITH XTK 2 SYSTEM

1. **Associated Fuel Quantity Indicator — CHECKED**
2. **Associated X-BP — OPEN**
   X-BP Annunciator Checked — ON
3. **BOOSTER of Affected Tank — OFF**

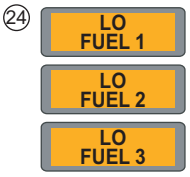
If LO FUEL 2 light is on and 2 total indication is higher than #2 REAR:

4. **XTK 2 Switch — OPEN**
5. **Manual Control XTK 2 Valve (if necessary) — OPEN, THEN NORM**

NOTE: **Disregard illumination of the XTK 2 OPEN light.**

When level in rear fuel tank has increased:

6. **BOOSTER 2 — NORM**
7. **X-BP — CLOSED**
   X-BP Annunciator — OFF



If a fuel level below 200 lb is detected in one of the three tank groups, the corresponding annunciator illuminates.

If equipped with XTK-2 System, see page E-36.

TANK LEVEL ABNORMALLY LOW ON AIRPLANES WITHOUT XTK 2 SYSTEM

1. Associated Fuel Quantity Indicator — CHECKED
2. Associated X-BP — OPEN
   X-BP Annunciator Checked — ON
3. BOOSTER of Affected Tank — OFF

Illuminates under the following conditions:

- one of the two fuel vents is not closed
- the defueling / refueling valve is not closed
- the refueling connector access door is not closed
- the refueling control panel access door is not closed
- the GRAVITY FUELING switch is set to ON
- the DEFUELING switch is set to ON
- the vent valve control lever is raised
- Bus B-2 is not powered.

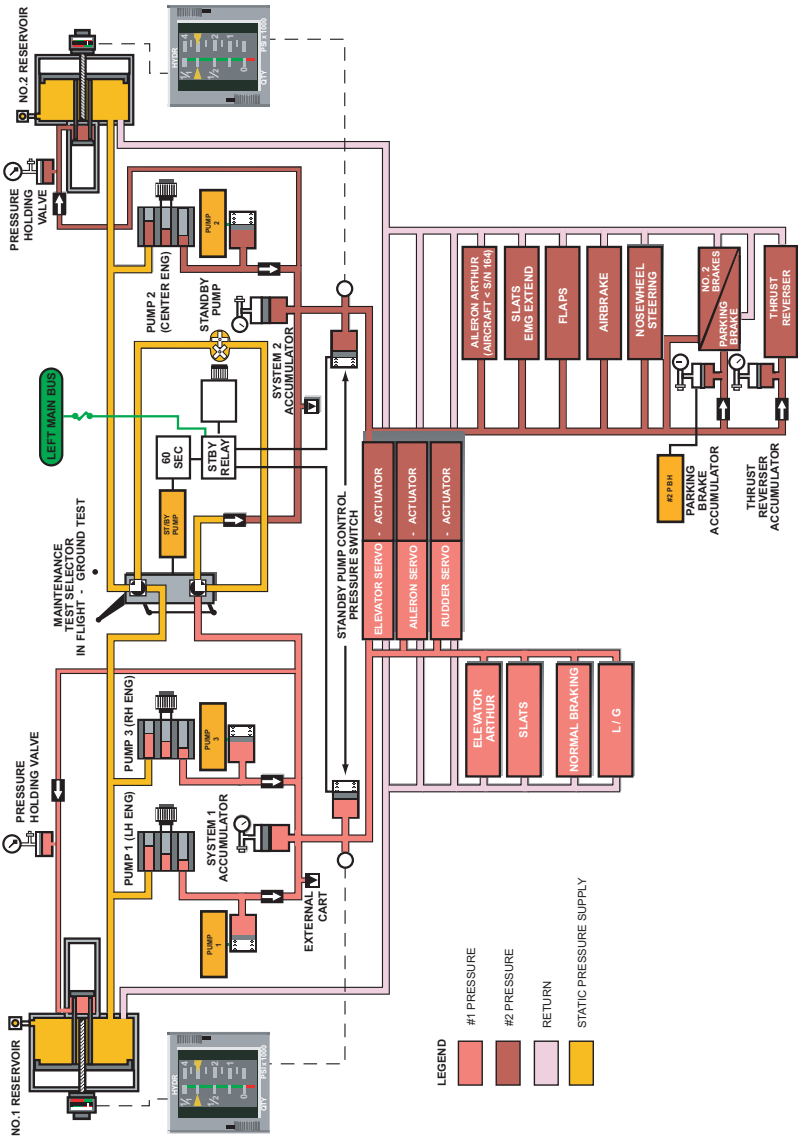
FUELING LIGHT ON IN FLIGHT

Reduce airspeed if possible.

Avoid high nose-up or nose-down attitudes and rapid changes in pitch or roll.

Monitor fuel quantity indicators to identify a possible fuel leak and discontinue the flight if necessary.

HYDRAULIC SYSTEM



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PUMP 1 PUMP 2 PUMP 3

Illuminates if the pressure of the corresponding pump is lower than 1,500 psi.

POSSIBLY AIL FEEL (S/N <165)

Illuminates when Hydraulic #2 failure drives the Aileron ARTHUR unit to the low speed position. May extinguish at low speeds.

POSSIBLY PITCH FEEL

Illuminates when Hydraulic #1 fail drives the Elevator ARTHUR unit to the low speed position. May extinguish at low speeds.

LOSS OF BOTH HYDRAULIC SYSTEMS

1. AP and YD — DISENGAGED
2. Airspeed — 260 KIAS MAX OR MI 0.76 MAX

Avoid high pitch attitudes and zones of turbulence.

Execute landing with the following conditions

1. Slat / Flap Handle — CLEAN
2. Landing Gear — FREE FALL EXTENSION (PAGE E- 44)
3. Approach Speed — V_{REF} + 30 kt
4. Final Approach Vertical Speed — APPROX 300 FT / MIN

CAUTION: The landing distance is practically twice the nominal distance (normal configuration slats and flaps 40°).

After touchdown

1. Reverse Thrust — FULL POWER
2. PARK BRAKE — INTERMEDIATE DETENT ONLY (Be cautious, avoid cycling pressure ON and OFF)

CAUTION: The loss of hydraulic boost condition requires greater pilot forces and landing requires increased caution, because directional control relies on the rudder. Differential thrust may be helpful.

In a situation where hydraulic loss occurred during slat / flap retraction or extension, observe the following approach speeds:

- Slats only — V_{REF} + 20 kt
- Slats and Flaps 7° — V_{REF} + 20 kt
- Slats and Flaps 20° — V_{REF} + 15 kt
- Slats and Flaps 40° — V_{REF} + 10 kt

Illuminates if the pressure of the corresponding pump is lower than 1,500 psi.

Illuminates when Hydraulic #1 failure drives the Elevator ARTHUR unit to the low speed position. May extinguish at low speeds.

LOSS OF NO. 1 HYDRAULIC SYSTEM

Pressure drop in #1 system.
Fluid Quantity may read 0.

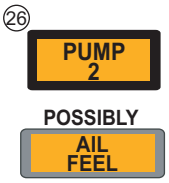
1. **Reduce airspeed to 260 KIAS or MI 0.76 MAX.**

Loss Of	Remarks
Servo-actuator No. 1	Servo barrel No. 2 active
Normal slat control system	Use EMERG SLATS control switch and land with flaps extended to 40° Speed - V_{REF} + 5 kt. ***NOTE:*** • The EMER SLATS switch must only be activated when the normal control handle is in a position other than CLEAN. • The EMER SLATS switch must, under no circumstances, be moved back to NORMAL (under cover) after an emergency extension.
Normal and emergency landing gear control systems	Free fall extension of landing gear. (page E-44)
#1 braking system	Select #2 braking system and test (landing with antiskid system inoperative).
Pitch ARTHUR Unit (Pitch Feel)	Light should extinguish at low speeds.

NOTE: **With No. 1 Hydraulic loss, increase the landing distance and the landing field length by 60%.**

FAILURE OF A PUMP OF NO. 1 HYDRAULIC SYSTEM

Expect longer operating times for the No. 1 hydraulic system components.



(S/N <165)

Illuminates if the pressure of the corresponding pump is lower than 1,500 psi.

Illuminates when Hydraulic #2 failure drives the Aileron ARTHUR unit to the low speed position. May extinguish at low speeds.

LOSS OF NO. 2 HYDRAULIC SYSTEM

If No. 2 fluid quantity reading is normal and if the standby pump is needed:

1. ST-BY PUMP Switch — ON
2. No. 2 System Pressure (1,500 - 2,150 psi) — CHECKED
3. No. 2 Fluid Quantity Indicator — MONITORED

If No. 2 fluid quantity indicator reads zero or if the standby pump is not needed:

1. Airspeed — REDUCE TO 260 KIAS OR MI 0.76 MAX
2. ST-BY PUMP Switch — OFF

Loss Of	Remarks
Servo-actuator barrel No. 2	Servo barrel No. 1 active
Roll ARTHUR unit (Ail. Feel)	Light should extinguish at slow speed
EMERG SLATS	Use normal slat control system.
No. 2 braking system	The park brake system can still operate with accumulator pressure.
Nosewheel steering system	Use #1 braking system and differential brake pressure.
Flaps system If flap setting is as at right:	• 0°: Land with slats extended at V_{REF} + 20 kt Increase the landing distance / landing field length 800 ft / 1,335 ft. • 7°: Land at V_{REF} + 15 kt Increase the landing distance / landing field length 600 ft / 1,000 ft. • 20°: Land at V_{REF} + 5 kt Increase the landing distance / landing field length 200 ft / 335 ft. • 40°: Land at V_{REF}
Airbrake system	Increase the landing distance and the landing field length by 10%. This increase is added to the flap increases above.

Illumination indicates that:

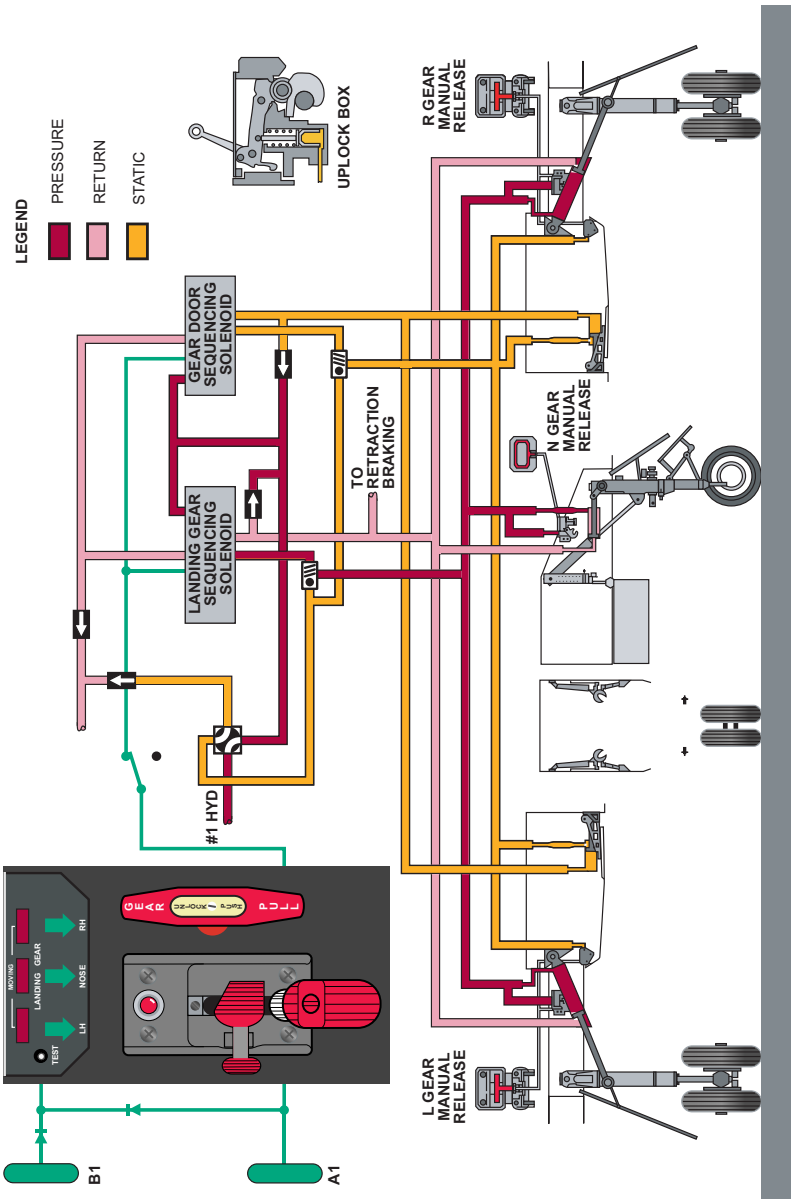
- **the standby pump selector, located in the rear compartment, is not in the normal flight position.**
- **the ST-BY pump has operated continuously for more than 60 seconds.**

UNWANTED OPERATION OF STANDBY PUMP

1. ST-BY PUMP Switch — OFF

NOTE: **If light remains on or system #2 pressure indicates the pump is still operating, consider shutdown of the left main bus if conditions permit.**

LANDING GEAR SYSTEM



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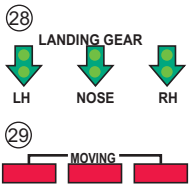
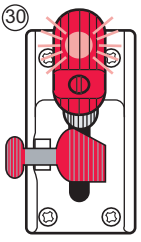


Illumination of a green arrow indicates that the corresponding landing gear is down and locked.

See page E-45.



The light on the landing gear control handle flashes when:

- all three gears do not match the gear handle position.
- the handle is in the down position, speed is lower than 160 kt, at least one of the power levers is at a reduced setting, and at least one of the three gears is not downlocked.

Abnormal Gear Down Indications:

- One or more green light(s) OUT
- One or more red light(s) ON
- Gear handle light blinking
- Aural warning sounding.

EMERGENCY EXTENSION

CAUTION: Landing Gear Control Handle must be maintained down.

S1. LDG Gear Control — DOWN
S2. Indicator Lights — TEST
3. GEAR PULL Handle — PULLED

If three green gear lights come on and the landing gear handle light goes out:

The landing gear is down and locked. DO NOT actuate landing gear controls. Keep landing gear down.

END

If at least one green light DOES NOT come on, and landing gear control handle light remains blinking:

Complete FREE FALL EXTENSION procedure as follows:

4. Airspeed — NOT LESS THAN 160 KIAS

Extend main gears first, one after the other:

5. LH MAIN GEAR EMERGENCY Handle — PULLED
   Gently apply full left rudder while accelerating (190 KIAS max.) until left green gear light comes on.
   Gently move rudder to neutral.
6. RH MAIN GEAR EMERGENCY Handle — PULLED
   Gently apply full right rudder while accelerating (190 KIAS max.) until right green gear light comes on.
   Gently move rudder to neutral.

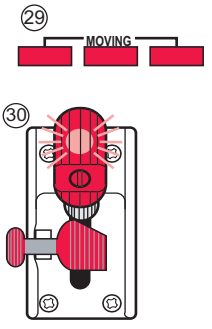
NOTE: Illumination of each green light may take more than 30 seconds.

If necessary, then extend the nose gear:

7. NOSE GEAR EMERGENCY Handle — PULLED
   accelerate until nose gear light comes on. (190 KIAS max.)

NOTE: Free fall extension of all 3 gears takes approximately 2 minutes.

CAUTION: Do not actuate landing gear controls once the three gears are locked down. The landing gear must remain extended.



Illumination of one of the main gear red lights indicates that the corresponding door is not closed and locked. Illumination of the nose gear red light could indicate one of the following conditions:

- the nose gear is not locked up or down
- the nose gear is downlocked and one of the doors is not fully open.

ABNORMAL RETRACTION

At least one red light remains on.

1. Airspeed — AT OR BELOW 190 KIAS (V_{LO})

If in icing conditions or takeoff was made with snow or slush on the runway:

If the red landing gear lights fail to go out upon retraction of the landing gear, ice may be preventing the main landing gear from locking in the UP position.

1. Cycle the gear down and up to get rid of the ice.

If in non-icing conditions or if takeoff was made without snow or slush on the runway:

1. Extend and keep the landing gear down.

GEAR HANDLE JAMMED IN DOWN POSITION

Impossible to retract the landing gear.

1. Airspeed - 245 KIAS (V_{LE}) (maximum)

   May be caused by misalignment of the nose wheels. Do not attempt to free handle by pushing the red safety override push-button.
2. Keep Gear Extended - LAND

Illuminates if an overheat condition is detected in the LH or RH landing gear wheel well and is usually caused by hot brakes.

MAIN WHEEL WELL OVERHEAT

Airspeed 190 kt maximum.

1. **Landing Gear — EXTENDED**
2. **Brake Heating System — OFF**

Keep the landing gear extended until warning light is out, and for at least 10 minutes, at an airspeed not greater than V_{LE} (245 KIAS).

CAUTION: **The overheat condition may have caused the tires to deflate. Prepare for a shallow approach and soft landing.**

NOTE: **The antiskid system has a blown tire discriminator. Select #1 ASKID ON for landing.**

Illuminates steadily if at least 225 psi Hydraulic System 2 pressure is applied to the brakes. Flashes if accumulator pressure is low.

Illuminates steadily if at least 225 psi Hydraulic System 1 pressure is applied to the brakes. Also used in anti-skid testing.

BRAKE SYSTEM MALFUNCTION

If the #1 brake system or antiskid is inoperative, do the following:

1. **Brake Selector Switch — #2 / ASKID OFF (TEST)**
2. **Braking — APPLY PROGRESSIVELY**

Increase the landing distance and the landing field length by 50%.

If the #1 and #2 brake systems are inoperative:

The airplane can be brought to a safe stop by simultaneous use of the thrust reverser and the parking brake.

Apply brake pressure cautiously by pulling the PARK BRAKE handle to intermediate detent, avoid alternate application and release actions.

Increase the landing distance and the landing field length by 50%.

NOTE: **With the #2 P. BK light blinking, residual pressure allows for one brake application only.**

STEERING SYSTEM INOPERATIVE

Release or return the steering control to the neutral position.

NOSEWHEEL SHIMMY

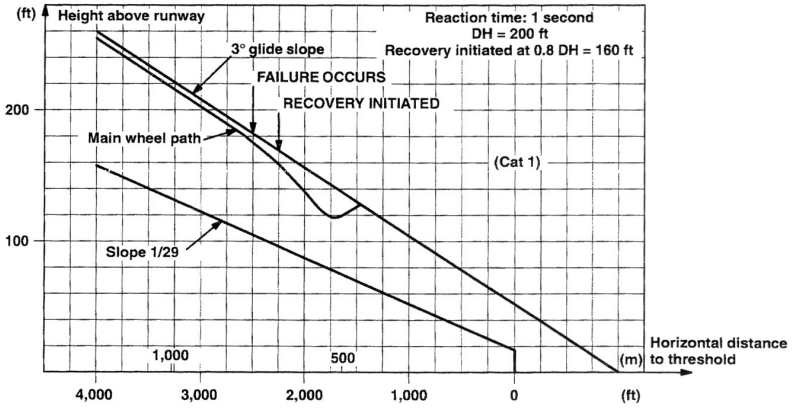
Hold the nosewheel steering control pressed.

SPERRY FDZ 800 AUTOPILOT NOSE HARD OVER

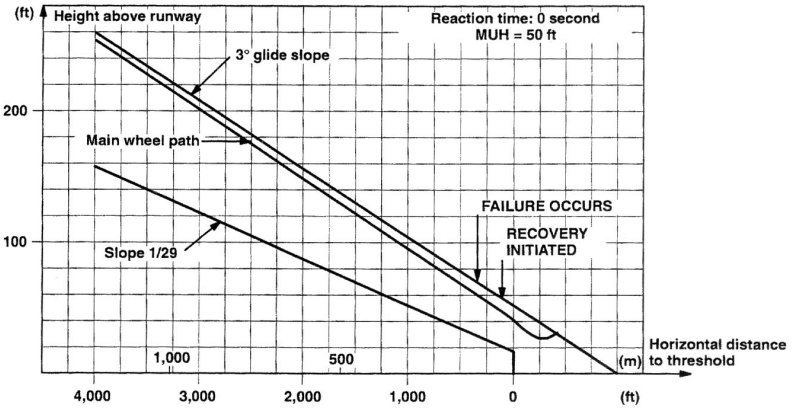
The maximum altitude loss due to a demonstrated nose down hardover is as follows:

Approach category I APP mode (ILS approach):

Recovery initiated 1 second after recognition.



Recovery initiated immediately after recognition.



LANDING WITH INOPERATIVE STABILIZER

1. Autopilot — DISENGAGED

NOTE: As flaps and slats are extending, the ARTHUR Unit returns to the low speed position, which results in a significant decrease in elevator feel force.

If the stabilizer is jammed in the +2° to -4° (upper) range:

2. Slat / Flap Handle — 20° FLAPS + SLATS
3. Airspeed — V_{REF} + 20 kt

Increase the landing distance / landing field length 800 ft / 1,335 ft.

CAUTION: The landing gear not extended aural warning might not sound with S + 20°.

If the stabilizer is jammed in the -4° to -10° (lower) range:

2. Slat / Flap Handle — 40° FLAPS + SLATS
3. Airspeed — V_{REF}

INOPERATIVE ELEVATOR LANDING

1. Make Approach with SLATS + FLAPS 40° at V_{REF} + 10 kt

Use very short inputs to set the stabilizer to the desired position.

Perform a shallow final approach. Resist the temptation to flare using stab trim only.

Increase the landing distance / landing field length 1,800 ft / 3,000 ft.

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Indicates takeoff is not possible due to one or more of the following conditions being present.

TAKEOFF CONFIGURATION WARNING

Accompanied by voice warning. Aircraft on ground, at least one throttle in Takeoff range, and:

- Slat/Flap handle clean
- Flap deflection >20°
- Any airbrake not retracted
- Takeoff stabilizer trim out of green range
- Park brake handle pulled out (with Mod. 880C).

Illuminates if the position of the elevator ARTHUR unit is not appropriate for the current airspeed as determined by the stabilizer position, or an elevator ARTHUR box malfunction.

Illuminates if the position of the aileron ARTHUR unit is not appropriate for the airspeed as sensed by the ADC.

ARTHUR UNIT INOPERATIVE

If the PITCH FEEL or AIL FEEL annunciator is on:

1. **Airspeed Reduce - BELOW 260 KIAS or MI 0.76**

   Autopilot can still be used.

CAUTION: **The pitch and roll control forces may be higher or lower than normal, depending on whether the ARTHUR unit has failed in the "high" or "low" speed position.**

- **Light Forces - avoid large displacements and rapid movement of the control surfaces.**
- **High Forces - use normal or emergency trim to assist maneuvering and if PITCH FEEL, fly approach at V_{REF} +10 kt and add to LD/LFL 800 ft / 1335 ft.**

Illumination indicates an asymmetry between the LH and RH flap positions.

FLAP SYSTEM JAMMING OR ASYMMETRY

With flaps extended up to 7°:

1. **Approach Speed — V_{REF} + 20 kt**

Increase the landing distance / landing field length 800 ft / 1,335 ft.

With flaps extended between 7° and 20°:

1. **Approach Speed — V_{REF} + 15 kt**

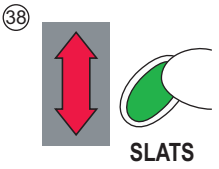
Increase the landing distance / landing field length 600 ft / 1000 ft.

CAUTION: **The landing gear not extended aural warning might not sound with flaps less than 40°.**

With flaps extended between 20° and 40°:

1. **Approach Speed — V_{REF} + 5 kt**

Increase the landing distance / landing field length 200 ft / 335 ft.



The red arrow illuminates during any movement of slats, or if any slat failed to extend or retract. The green indicator illuminates steadily if all slats are extended; it flashes if only the outboard slats are extended, and in most cases the slat/flap handle is clean.

SLAT SYSTEM ABNORMAL OPERATION

WITH SLAT / FLAP HANDLE CLEAN

If the red slat transit light is on and the aircraft tends to roll:

1. Limit Airspeed to Below — 200 kt
2. Autopilot — DISENGAGED

WITH SLAT / FLAP HANDLE NOT CLEAN

If the green light is flashing and the red light is off:

Only the outboard slats are extended.

1. Slat / Flap Handle — 40° FLAPS + SLATS
2. Approach Speed — V_{REF} + 5 kt

   Increase landing distance / landing field length 200 ft / 335 ft.

END

If the green light is not on and the red light is probably on during approach and the aircraft may tend to roll:

1. Slat / Flap Handle — LEAVE IN 7° FLAPS + SLATS
2. EMERG SLATS Switch — ON

If the green light is on and steady, all slats are extended:

3. Slat / Flap Handle — 40° FLAPS + SLATS
4. Normal Approach at — V_{REF}

END

Or if the red light stays on and only the outboard slats are visually checked extended:

3. Slat / Flap Handle — 40° FLAPS + SLATS
4. Approach Speed — V_{REF} + 5 kt

   Increase the landing distance / landing field length 200 ft / 335 ft.

END

Or if the red light stays on and neither inboard nor outboard slats are fully extended:

3. Slat / Flap Handle — CLEAN
4. Approach Speed — V_{REF} + 30 kt

   Increase the landing distance / landing field length each by 60%.

END

CAUTION: Do not change the position of the EMERG SLATS switch. The landing gear not extended aural warning might not sound with less than 40° flaps.

Illuminates under the following conditions:

- if there is a discrepancy between the two slat control flight / ground contacts.
- if the discrepancy between the two angle-of-attack sensors exceeds 5° (inflight configuration only).
- if one of the ADC contacts controlling the slats detects an IAS lower than 265 kt, whereas the ADC monitoring contacts detect an IAS greater than 280 kt.

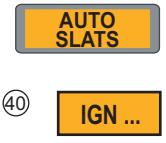
SLAT MONITORING SYSTEM

If the AUTO SLATS annunciator is on after takeoff or at a speed lower than 280 kt:

1. IAS Range — BETWEEN 1.3 V_S AND 270 kt.

If the AUTO SLATS annunciator comes on at a speed of 280 kt or above:

1. Limit Airspeed to Below — 270 KIAS



Illuminates if the igniter unit of the corresponding engine is energized.

UNWANTED OUTBOARD SLAT EXTENSION — WITH AUTO SLATS ANNUNCIATOR ON

If the AUTO SLATS and IGN annunciators are on and if the red slats transit light comes on and goes out with the green light flashing, with stall warning audio:

The malfunction is due to erroneous stall vane information.

1. RH AUTO SLAT Circuit Breaker — PULLED

If the slats do not retract:

2. LH AUTO SLAT Circuit Breaker — PULLED
3. RH AUTO SLAT Circuit Breaker — ENGAGED

Continue flight at IAS $<$ 270 kts, with the affected circuit breaker pulled.

NOTE: With LH AUTOSLATS circuit breaker pulled, the normal Slat / Flap handle is effected. At S + 7°, only the outboard slats move. At S + 20° and 40°, the flaps respond normally.

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Illuminates if at least one of the six airbrakes is not in the retracted position.

Flashes after automatic retraction as long as the handle remains in 1 or 2.

AIRBRAKES DO NOT RETRACT

If the AIRBRAKE annunciator is on:

1. Make an Approach with Slat / Flap Handle in — 40° FLAPS + SLATS

With airbrakes extended to position 1:

2. Airspeed — V_{REF} + 10 kt

With airbrakes extended to position 2:

2. Airspeed — V_{REF} + 15 kt

   If unable to determine actual position, assume 2.

   In both cases, increase the landing distance / landing field length 600 ft / 1,000 ft.

AIRBRAKES DO NOT EXTEND IN FLIGHT

Increase the landing distance and landing field length by 10%.

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Illuminates if the AP trim coupler system has failed.

OUT-OF-TRIM CONDITION

If PITCH message on ID 802

Hold the control wheel firmly.

1. Autopilot — DISENGAGED
2. Airplane — MANUALLY TRIM
3. Autopilot — REENGAGE

If AILERON message on ID 802

4. Airplane — RETRIM

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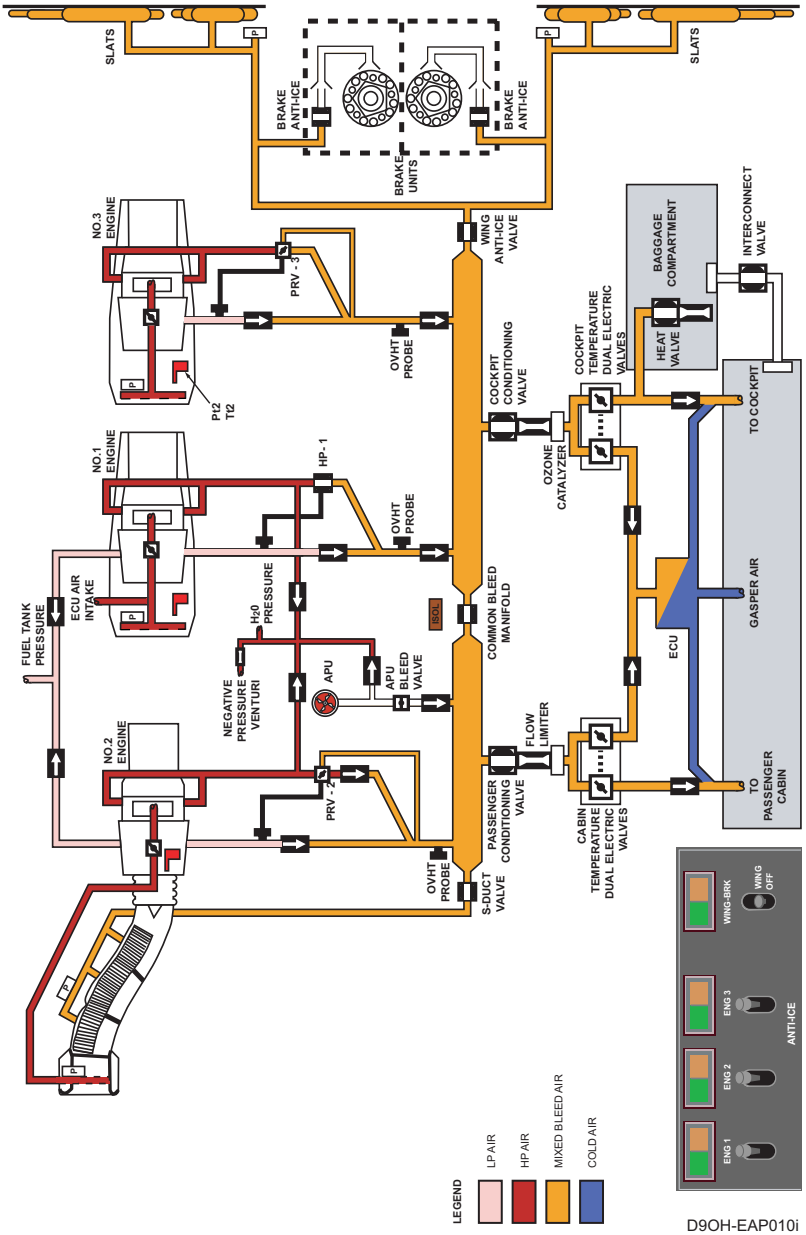
Illuminates if the Mach trim system is disengaged or a failure is detected.

MACH TRIM INOPERATIVE

If the MACH TRIM annunciator is on:

Do not exceed MI = 0.80 with autopilot not engaged.

ANTI-ICING SYSTEM



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Illuminates when overheat of HP / LP bleed air is detected (temperature higher than 635°F (335°C).

BLEED AIR SYSTEM OVERHEAT

1. Failed System — IDENTIFY

   Starting with Bleed Air PRV-3, then HP-1 and PRV-2, switch the bleed OFF. If the BLEED OVHT light does not blink, switch back ON and proceed to the next.

If BLEED OVHT annunciator starts blinking and then goes out:

2. Continue flight with the switch OFF.

END

If BLEED OVHT annunciator keeps blinking:

2. Associated Power Lever — IDLE

NOTE: In non-icing conditions, an alternate procedure is possible. Instead of setting the power lever to idle, turn the isolation valve knob to the isolation position and set the PASSENGER switch to OFF if the overheat is from engine 2 bleed air. Set the CREW switch to OFF if the overheat is from engine 1 or 3. In both cases, set the COND control lever to TIED.

Minimum N_1 RPM in Icing Conditions

TAT	-30°C to -20°C	-20°C to -10°C	-10°C to 0°C	0°C to +10°C
Above 20,000 ft	80%	76%	73%	65%
From 20,000 to 10,000 ft	76%	73%	65%	58%
Below 10,000 ft	68%	65%	61%	58%
One engine inoperative	84%	71%	65%	62%

NOTE: When brake heating system is used increase minimum by 1%.

The amber light illuminates steady if the ENG 1, ENG 2, or ENG 3 switch is in the ON position and inadequate pressure is detected.

ENGINE ANTI-ICE SYSTEM INOPERATIVE:

If ENG 2 green light does not illuminate with at least min. N_1.

If switch ON and amber and green light are on simultaneously:

If switch ON amber ENG 1, ENG 2 or ENG 3 light is on:

1. **Thrust Lever — INCREASE UNTIL AMBER OUT AND GREEN ON**
   Maintain at least minimum N_1 page E-55.

END

If amber light remains on steady:

Maintain at least minimum N_1 in icing. Leave / avoid icing

If switch ON amber and green light are on simultaneously:

This indicates a malfunction of the anti-ice system for that engine.

Maintain at least minimum N_1 in icing. Leave / avoid icing conditions.

If ENG 2 green light does not illuminate with at least min. N_1.

1. **ENG 2 Switch — CYCLE OFF, THEN ON**
   Look for amber to come on then go out; this signifies a malfunctioning green indicating system.

If amber light does not illuminate and then extinguish:

Maintain at least minimum N_1 in icing. Leave / avoid icing conditions.

FLASHING amber warns of an overpressure or valve failure, regardless of switch position.

ENGINE ANTI-ICE SYSTEM OVERPRESSURE

Amber light is flashing with switch on:

1. Power Lever Affected Engine — Reduce until flashing amber light extinguishes and green on. Retain this power setting.

ENGINE ANTI-ICE SYSTEM UNWANTED OPERATION

ENG 2 light is flashing with switch OFF

ENG 1 or ENG 3 light is flashing with switch OFF

1. Associated ENG Switch — ON

If the green ENG light does not immediately come on:

2. Associated ENG Switch — OFF

END

If the green ENG light comes on immediately and if TAT is > +10°C:

2. Associated Engine Power — REDUCED

END

ENG 2 light is flashing with switch OFF

1. ENG 2 Switch — ON

If the green ENG 2 light does not immediately come on:

2. ENG 2 Switch — OFF

END

If the green ENG 2 light comes on immediately:

2. ENG 2 Switch — OFF
3. Isolation Valve Knob — ISOLATION
4. PRV 2 Switch — OFF

If these steps fail to extinguish flashing amber light and if TAT is > +10°C:

5. Engine 2 — POWER REDUCE

LATE ACTIVATION

CAUTION: Perform steps in sequence.

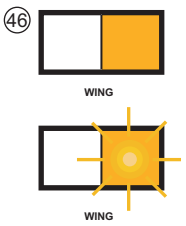
1. Start Selector Switches (all 3) — AIRSTART
2. ENG 1 and ENG 2 Switches — ON

30 seconds later:

3. ENG 3 Switch — ON

30 seconds later:

4. Wing Switch — ON



Amber light is on steady if the WING switch is ON and inadequate pressure is detected in the system or switch / valve mis-compare

FLASHING amber light warns of excessive anti-icing due to valve mis-position, regardless of switch position.

WING ANTI-ICE SYSTEM INOPERATIVE

If switch ON, with both Amber and Green light ON

If switch ON, with both lights out:

If switch ON, with amber light flashing, green light off:

If switch ON, amber light on steady:

1. ENG 1 and ENG 3 N_1 — INCREASE until green light illuminates
   Maintain at least minimum N_1 page E- 55.

   If the amber light remains on and steady:

   Maintain minimum N_1 if in icing. Leave / avoid icing condition.

END

If switch ON, with amber light flashing, green light off:

1. ENG 1 and ENG 3 N_1 — REDUCE until flashing light off and green light on. Do not reduce below minimum N_1 page E- 55.

END

If switch ON, with both lights out:

1. WING Switch — OFF
   Amber light flashes on and extinguishes.
2. WING Switch — ON
   Amber light on, then off. Correct operation of the amber light confirms proper operation of the wing anti-ice valve.

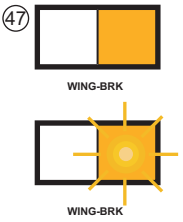
END

If proper operation not confirmed

Leave or avoid icing conditions.

If switch ON, with both Amber and Green light ON

Wing anti-ice system malfunction indicated. Leave or avoid icing conditions.



Amber on steady, if the WING-BRK switch is ON and inadequate pressure is detected in the system, or switch / valve mis-compare.

FLASHING amber warns of an overpressure detected in the system regardless of switch position.

WING-BRK ANTI-ICE SYSTEM INOPERATIVE

Amber light ON steady, green light OUT.

If switch in WING-BRK position

If switch in WING position

1. ENG 1 RPM – INCREASE:

If the light does not turn green:

2. ENG 3 RPM – INCREASE

If light turns green:

3. ENG RPM – MAINTAIN

END

If the amber light remains on steady:

4. WING-BRK switch – WING-BRK

If the green light comes on:

5. In icing conditions – MAINTAIN MINIMUM N_1

END

If the amber light remains on steady:

6. WING-BRK switch – WING
7. In icing conditions – MAINTAIN MINIMUM N_1

   Adequate wing anti-icing no longer provided. Leave or avoid icing conditions.

If switch in WING-BRK position

1. WING-BRK Switch — WING

If the green light comes on brake heating is inoperative.

END

If the green light remains out:

2. WING-BRK switch – WING-BRK
3. Increase ENG 1 then ENG 3 N_1 in turn attempting to get green light to come on.
4. If green light on – MAINTAIN MINIMUM N_1.

END

If the amber light remains on steady:

5. Maintain minimum N_1 and leave or avoid icing conditions. Consider wing and brake heating inoperative

Continued on next page

Continued from previous page

Amber light FLASHING, green light OUT.

Switch either WING or WING-BRK Position

1. **Reduce N_1 on ENG 1 then ENG 3 in turn to stop flashing.**
2. **Maintain at least minimum N_1 in icing conditions E-55.**

Both Amber and Green lights OUT.

If switch in WING-BRK position

If switch in WING position

3. **WING-BRK switch – OFF**
   Amber light flashes then goes out
4. **WING-BRK switch – WING**
   Amber light ON steady then goes out

Conformation of proper operation.

END

If above not observed:

5. **Minimum N_1 – MAINTAIN**

Leave or avoid icing conditions.

If switch in WING-BRK position

6. **WING-BRK Switch — OFF**
   Amber light flashes then goes out
7. **WING-BRK Switch — WING-BRK**
   Amber light ON steady then goes out

Conformation of proper operation.

END

If above not observed:

8. **Minimum N_1 – MAINTAIN**

Leave or avoid icing conditions. Consider wing and brake heating inoperative.

Both Amber and Green lights ON.

This condition indicates a malfunctioning system. Leave or avoid icing conditions.

WING -BRK SYSTEM UNWANTED OPERATION

Procedures are same for Wing Anti-ice System Unwanted Operation, next page.

FLASHING amber with switch OFF warns of uncommanded operation or failure of wing valve to close.

WING ANTI-ICE SYSTEM UNWANTED OPERATION

If switch OFF, amber light is flashing:

1. WING Switch — ON

If green light does not immediately come on:

2. WING Switch — OFF

Malfunction of the indicating system

END

If green light does come on immediately:

2. Isolation Valve Knob — ISOLATION
3. HP 1 and PRV 3 Switches — OFF

Reduce engine 1 and 3 power settings as soon as possible. Inflight slat cooling is adequate with reduced power. Consider engine 1 and 3 shut-down after landing. If 1 and 3 shut down, select No. 2 Brakes.

Illuminates if either the pilot or copilot sensor is defective. Detection and regulation are automatically transferred to the other system (pilot or copilot).

WINDSHIELD HEAT SYSTEM INOPERATIVE

1. WINDSHIELD Heat Switches (Pilot and Copilot) — SAME POSITION

If possible, before landing:

2. WINDSHIELD Heat Switches (Pilot and Copilot) — OFF

CRACK OR BUBBLES IN WINDSHIELD

1. Limit Airspeed to — 230 KIAS
2. Cabin Differential Pressure Not to Exceed — 7.5 PSI
3. Associated WINDSHIELD Heat Switch — NORM

Illuminates if the heating systems are not on, or pitot or static probe heating has failed.

Illuminates if the heating system is not on, or if the standby pitot probe heating has failed.

PITOT / STATIC PROBE ANTI-ICING MALFUNCTION

If the L PITOT or R PITOT or ST BY PITOT annunciator is on:

Compare the readings with the other two.

Illuminates if the stall vane heating has failed.

ANGLE-OF-ATTACK STALL PROBE — HEAT SYSTEM INOPERATIVE

If the L AOA or R AOA annunciator is on:

Avoid icing conditions.

AOA probe heating has failed.

ANGLE-OF-ATTACK INDICATOR PROBE — HEAT SYSTEM INOPERATIVE

If the AOA PROBE annunciator is on:

The angle-of-attack indicator system must not be used in icing conditions.

EITHER AIR DATA COMPUTER INOPERATIVE

Function	Loss of	Indications	Remarks
On-side EFIS	Airspeed scale	IAS flag on EADI	Data from other ADC recovered using XFR IAS / M.
	ASEL	ASEL flag on EADI	Coupling to remaining source by cross-side CPLD.
On-side AP-FD CPLD	Vertical Modes	Reversion to basic mode MSG: CPLD DATA INVALID on advisory display	Coupling to remaining source by cross-side CPLD.
On-side flight instruments	Altimeter, rate-of-climb indicators	Flags	Use the instruments of the other instrument panel side.
Advisory display CPLD On-side (ID-802)	SAT-TAT-TAS	Dashes on corresponding line	Data recovered using cross-side CPLD.
Autoslats	Extension inhibition at high speed	Possible illumination of AUTO SLATS light	See SLAT SYSTEM MALFUNCTIONS.
Horizontal stabilizer trim	If ADC 1 has failed: the 4° limitation at high speed or the overriding of the stop at low speed.	Normal trim limited to 4°	Use the emergency trim control.
On-side XPDR	Altitude coding		Use the cross-side XPDR.

NOTE: **If V_{MO} / M_{MO} warning sounds indefinitely, pull out the inoperative air data computer circuit breaker.**

BOTH AIR DATA COMPUTERS INOPERATIVE

Function	Loss of	Indications	Remarks
EFIS	Airspeed scale ASEL Wind on EHSI	IAS flags on EADI ASEL flags on EADI	Use the standby Mach airspeed indicator.
AP-M TRIM YD-FD	Autopilot, Mach trim and yaw damper	AP flashing amber on EADI. Command bars go out of view. AP in red on warning panel and MACH TRIM in amber. MSG: DADC DATA INVALID in advisory display.	
Flight instruments	Altimeters, rate-of-climb indicators	Flags	Use the standby instruments.
Advisory display (ID-802)	SAT—TAT—TAS	Dashes on corresponding line	Avoid or leave icing conditions.
Autoslats	Extension inhibition at high speed	AUTO SLATS light	See SLAT SYSTEM MALFUNCTIONS.
Horizontal stabilizer trim	4° limitation at high speed or stop overriding at low speed	Normal trim limited to 4°	Use the emergency trim control.
Aileron ARTHUR Q unit	Monitoring	AIL FEEL light	
Warnings	V_{MO} / M_{MO}. Landing gear not extended.		Operative with slats / flaps 40° and gear up.
FMS	VNAV Wind Page data FLT TIME	Message in the SCRATCH PAD	
ATC-XPDR	Altitude report		

NOTE: **If the V_{MO} / M_{MO} warning sounds indefinitely, pull out both air data computer circuit breakers.**

NOTE: **If ID 802 is lost and icing conditions cannot be avoided, engine N_1 speed must not be less than the figure corresponding to the coldest temperature of the table on page E- 55.**

The V_{MO} / M_{MO} audio warning sounds and the IAS comparison annunciator on the EADI is illuminated. There will also be disagreement with standby IAS / MI indications and perhaps AP disengagement, and/or a DADC DATA INVALID message on advisory display.

JAMMED OR ABNORMAL PILOT, COPILOT AND POSSIBLY STANDBY IAS / MI INDICATION AT HIGH ALTITUDE

CAUTION: If it is certain that the V_{MO} / M_{MO} warning is false, do not modify flying parameters.

1. AP and YD — DISENGAGED

   Avoid large displacements and rapid movements of control surfaces.

If V_{MO} / M_{MO} audio warning sounds:

2. AUDIO WARN A / AUDIO WARN B Circuit Breakers — PULLED

Stabilize airplane altitude using, if necessary, the standby altimeter.

3. Engine Power — MAX CRUISE
4. Attitude — 0 TO 4° NOSE UP

After a positive identification of the fault, continue the flight while respecting procedures for climb, level flight and descent phases.

Climb

- N_1 – CLIMB POWER
- Attitude – 4° TO 5° NOSE UP

DESCENT WITHOUT ANTI-ICE

- N_1 – IDLE
- VSI – -2,000 TO -3,000 FT / MIN

DESCENT WITH ANTI-ICE

- N_1 – MINIMUM (E-55)
- Air Brakes – POSITION 1
- VSI – -1,500 TO -2,000 FT / MIN
- Attitude – 0° TO 2° NOSE DOWN

EFIS (SPERRY EDZ 820)

NOTE: **In the event of either pilot or copilot CRT loss, the approach will be made by the pilot whose CRTs are both operative.**

EITHER EADI OR EHSI CRT FAILURE

If the display goes blank, or color is altered, do the following:

On the associated EFIS reversion controller:

1. **Corresponding ON / OFF Dimmer Knob — OFF / COMPOS**

SIMULTANEOUS FAILURE OF EADI AND EHSI CRTS ON SAME SIDE

If both displays go blank, SG flags appear on EADI and EHSI, or if color is altered, do the following:

On the associated EFIS reversion controller:

1. **SG Pushbutton — PRESSED**
2. **XSG Annunciators on EADI and EHSI — ILLUMINATED**

SUCCESSIVE FAILURE OF EADI AND EHSI CRTS ON SAME SIDE

If both displays successively go blank, do the following:

1. **Use the standby instruments.**

LOSS OF ASCB CONTROL

If the X DATA flag is visible on both EADIs:

Consequences:

1. **Loss of cross-side data.**
2. **Loss of GS-LOC and RA comparison annunciators.**

IAS / MACH DATA INVALID

If the IAS flag is visible on the EADI and there is a loss of IAS / Mach data:

On associated EFIS reversion controller:

1. **IAS / M Pushbutton — PRESSED**
2. **XIAS Annunciators in EADIs — ILLUMINATED**

RADIOALTIMETER DATA INVALID

If the RA flag is visible on the EADI:

1. **Corresponding XRA Pushbutton — PRESSED**
   Amber LIGHT is illuminated.

RA MISCOMPARE ANNUNCIATION

If the RA comparison annunciators are illuminated on the EADIs and if determination of the doubtful radioaltimeter is possible:

1. **Corresponding XRA Pushbutton — PRESSED**
   Amber light is illuminated.

IAS MISCOMPARE ANNUNCIATION

If the IAS comparison annunciators are illuminated on the EADIs and there is possibly a DADC DATA INVALID message in the advisory display:

Crosscheck with the standby airspeed indicator and determination of the faulty ADC.

On the EFIS reversion controller, on the faulty side:

1. **IAS / M Pushbutton — PRESSED**
2. **XIAS Annunciator on the EADIs — ILLUMINATED**

LOC OR GS MISCOMPARE ANNUNCIATION

If the LOC and / or GS comparison annunciators are illuminated on the EADIs for any height below 1,200 ft:

1. **Faulty ILS — DETERMINE**
2. **ILS Source for both EHSIs — SELECT**

ANY ATTITUDE AND / OR HEADING DATA INVALID

If the IRS flag is illuminated on the EADI and EHSI, and there is loss of attitude reference on one EADI, and loss of heading reference on one EHSI and on the cross-side DDRMI:

1. **On associated EFIS Reversion Controller:**
   - **IRS Pushbutton — PRESSED**
   - **XIRS Annunciators on EADI and EHSI — ILLUMINATED**

NOTE: **IRS 3 may be used in backup mode for both IRS 1 and IRS 2 simultaneously. The associated display is an amber IRS annunciator on all four CRTs.**

IRS ATTITUDE OR HEADING MISCOMPARE ANNUNCIATION

If the IRS comparison annunciators in both EADIs and / or both EHSIs are illuminated:

There may be an IRS DATA INVALID message on the advisory display.

1. **Cross-check with standby horizon indication and determine which IRS is faulty.**
2. **On the EFIS reversion controller, faulty side:**
   - **IRS Pushbutton — PRESSED**
   - **XIRS Annunciators on EADI and EHSI — ILLUMINATED**

Reversion Logic for 3 IRS Installation

Choice	Pilot Side	Copilot Side	Pilot EFIS Annunciation	Copilot EFIS Annunciation
Power Up	IRS 1	IRS 2	—	—
First PUSH	IRS 3	IRS 3	IRS 3 (White)	IRS 3 (White)
Second PUSH	IRS 1	IRS 2	—	—
After Pilot and Copilot Reversion	IRS 3	IRS 3	IRS 3 (Amber)	IRS 3 (Amber)

NOTE: **If IRS 3 is selected and fails, access to off-side IRS is only possible if IRS 3 is removed from the equipment rack. IRS reversionary then operates as a dual installation.**

FMS (SPERRY FMZ 800)

FAILURE OF FMS

If there is a failure of one SPERRY FMZ 800 FMS:

1. **Operative SPERRY FMS, from Coupled Side — SELECT**
2. **Autopilot — NAV MODE (COUPLED FMS)**

NOTE: **On the failing FMS side, the true heading (TRU) can no longer be selected on the EHSI.**

If there is a failure of two SPERRY FMZ 800 FMSs outside the VOR, DME or ADF coverages:

1. **Use the LASERTRAK as primary means of navigation, using the autopilot in TRK mode (keeping a selected course).**
2. **Use the XTK / DTK or DIS / TIM functions of the LASERTRAK's CDU for the navigation tracking.**

NOTE: **The IRSs provide magnetic headings (MAG) for latitudes below 73° and automatically switch to true headings (TRU) for latitudes over 73°. IRSs automatically switch to magnetic heading (MAG) upon return to latitudes below 73°.**

AFCS PROBLEMS

MALFUNCTIONS OF AUTOPILOT, FLT. DIRECTOR, YAW DAMPER, M. TRIM

While many left AFCS problems can be corrected by automatic or manual switching to the right AFCS, a built-in diagnostic system will aid maintenance and amplify pilot write-ups. A guarded ground A/P TEST switch is located on the copilot's side maintenance panel. The test can only be entered on the ground. All flight fault summary data is lost if DC power is interrupted to the avionics.

1. **Activate the AP TEST switch.**
2. **Press the L AFCS button on the ID 802 until 98 L. FLT. FAULT SUMMARY is displayed.**
3. **Press RESET. Record all Data.**
4. **Press RESET. Record all Data.**

COCKPIT ANNUNCIATORS