



Beechjet 400A



Operating Handbook

Revision **AG**



cae.com

Use of Operating Handbook

The CAE Operating Handbook is both a training aid for the simulator and a practical tool for the cockpit. This handbook is comprised of four sections.

- The aircraft preflight section (P-pages) are inserted in vinyl sleeves for increased durability and ease of page replacement. This section is an abbreviated listing of major items to be checked on preflight inspection.
- The normal procedures section (N-pages) are inserted in vinyl sleeves for increased durability and ease of page replacement. The checklists provided are CAE developed Standard Operating Procedures (SOP). If your company has its own SOP, you may replace the CAE 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 immediate action (memory) items are printed in red; procedures with immediate action items also have red titles. This section may be accessed in one of three ways: by table of contents (EMER tab, front), by system tab (front), or by numbered tab (back).

NOTE: For aircraft RK-1 and after, aircraft weight references above 16,100 lbs. can be used only if modified by kit 128-5052.

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

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.

NOTICE: This 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.



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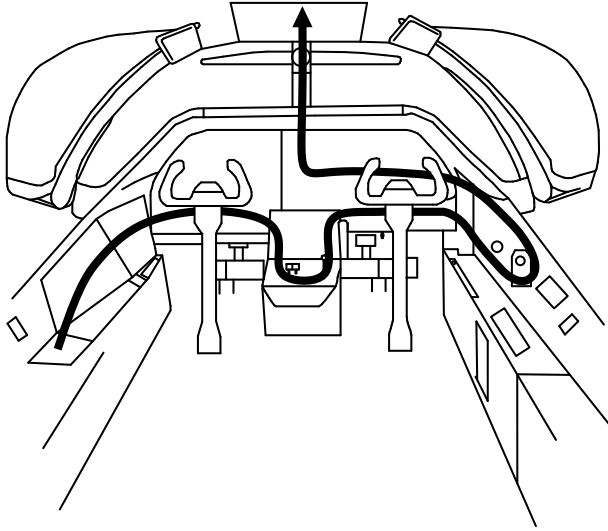
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COCKPIT/CABIN INSPECTION

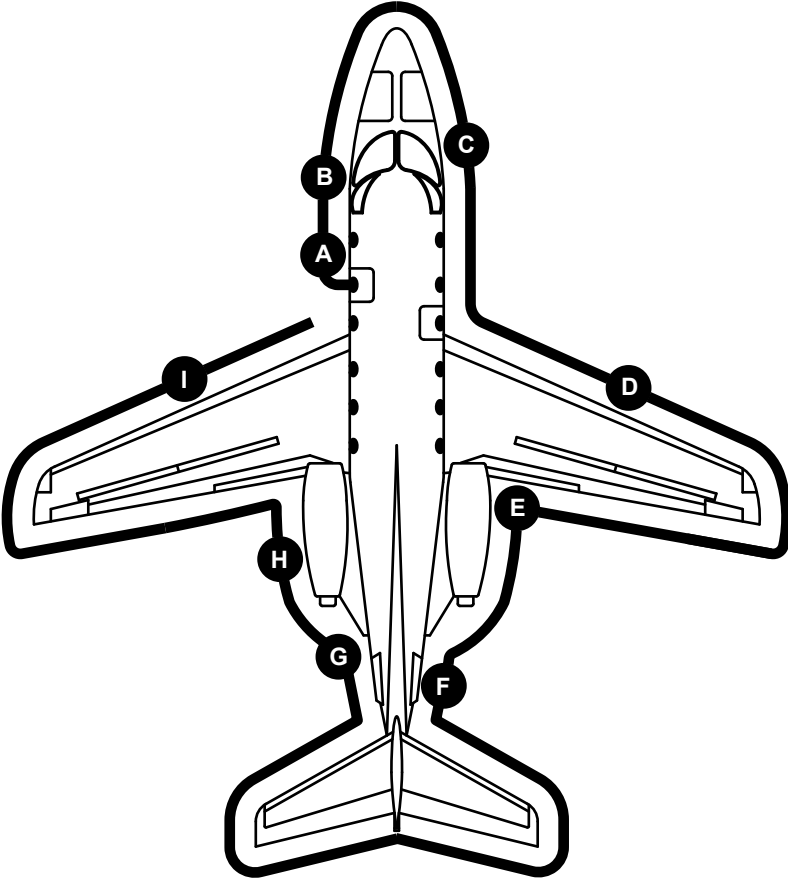


1. Parking BrakeSET

NOTE: When the engines are not running, the parking brake must be set from the pilot's side only.

2. Battery ON
3. Fuel Quantity and BalanceCHECK
4. Battery OFF
5. Oxygen/Nitrogen PressureCHECK
6. Microphones and Headsets ABOARD
7. Airplane Flight Manual/Pilot's
Operating Manual ABOARD
8. Flashlight ABOARD
9. Emergency ExitCLEAR AND SECURE
10. Lock Pin REMOVE AND STOW
11. First Aid Kit ABOARD
12. Portable Fire Extinguishers (cabin/cockpit) SERVICED
13. Weight and CGCHECK

EXTERIOR INSPECTION WALK AROUND PATH



EXTERIOR INSPECTION

NOTE: The term “daily” refers to the first flight of the day.

A. Cabin Door

1. Door Seal CONDITION
2. Exterior Handle STOWED

B Left Nose

1. Ice Detector (if installed)CHECK
2. Static Ports (2) CLEAR
3. Angle-of-Attack SensorCLEAR, ROTATES
4. Windshield Wiper (if installed) CONDITION, SECURE
5. Avionics Compartment DoorSECURE
6. Pitot and Static Drain Ports (2)CLOSED
7. Nose Gear, Doors, Tire, Torque Link CONDITION, SECURE
8. Cabin Air Discharge Duct CLEAR
9. Landing Light DoorSECURE
10. Pitot Mast CLEAR

C Right Nose

1. Pitot Mast CLEAR
2. Landing Light Door SECURE
3. Cabin Air Discharge Duct CLEAR
4. Pitot and Static Drain Ports (2) CLOSED
5. Oxygen Blowout Disc GREEN
6. Avionics Compartment Door SECURE
7. Windshield Wiper (if installed) CONDITION, SECURE
8. Angle-of-Attack Sensor LEAR, ROTATES
9. Static Ports (2) CLEAR

D Right Wing

1. Emergency Exit SECURE
2. Dorsal Fin Inlet CLEAR
3. Wing Inspection Light CONDITION
4. Wing Leading Edge Inlet CLEAR
5. Center Fuselage Tank Drain (daily) DRAIN, SECURE
6. Fuel Quick Drains (3) (daily) DRAIN, SECURE
7. Wing Leading Edge and Upper Surface CHECK,
FREE OF FROST OR OTHER CONTAMINANTS
8. Fuel Filler Cap SECURE
9. Fuel Tank Vent Inlet CLEAR
10. Sniffle Valves (2) (daily) PUSH, PULL, CHECK FOR LEAKS
11. Wing Tip Vent Inlet CLEAR
12. Navigation and Strobe Lights CONDITION
13. Wing Anti-Ice Exhaust Port CLEAR
14. Roll Trim Tab, Static Wicks (3), Spoilers, Flaps CONDITION
15. Main Gear, Doors, Tire, Brake CONDITION
16. Center Tank Vent Outlet CLEAR
17. Mixer Bay Vent Outlet CLEAR
18. Fuel Filter Drain (daily) DRAIN, SECURE
19. Lower Fuselage Vent Outlets (2) CLEAR

E Right Nacelle

1. Cowling Fasteners CHECK, SECURE
2. Engine Fan Duct and Fan CONDITION
3. Engine Inlet CHECK FOR MISSING FASTENERS
4. Generator Inlet CLEAR
5. Oil Level and Filler Door CHECK, SECURE
6. Drain Lines CLEAR
7. Thrust Reverser CONDITION
8. Engine Exhaust and Bypass Duct CONDITION

F Empennage

1. Fuselage Fuel
 Filler Sniffle Valve (daily) PUSH, PULL, CHECK FOR LEAKS
2. Fuselage Fuel Filler Door SECURE
3. Upper Aft Fuselage Vent Outlet (right) CLEAR
4. Cooling Air Discharge Duct CLEAR
5. Aft Fuselage Vent Inlet (right) CLEAR
6. Fuel Vent Ports (2) CLEAR
7. Stabilizer Trim, Elevator, Static Wicks (4) CONDITION
8. Rudder, Trim Tab, Static Wicks (2) CONDITION
9. Navigation and Strobe Lights CONDITION
10. Temperature Sensor (if installed) CHECK
11. Aft Fuselage Vent Inlet (left) CLEAR
12. Fire Extinguisher Relief Indicator RED
13. Upper Aft Fuselage Vent Outlet (left) CLEAR

G Aft Baggage Compartment

1. Hydraulic Fluid Reservoir Sight Gauge FLUID VISIBLE
2. Fire Bottle Pressure Gauges (2) CHECK
3. Aft Compartment Light OFF
4. Access Door SECURE
5. External Power Service Door (GPU not used) SECURE

H Left Nacelle

1. Cowling Fasteners CHECK, SECURE
2. Engine Exhaust and Bypass Duct CONDITION
3. Thrust Reverser CONDITION
4. Drain Lines CLEAR
5. Oil Level and Filler Door CHECK, SECURE
6. Generator Inlet CLEAR
7. Engine Inlet CHECK FOR MISSING FASTENERS
8. Engine Fan Duct and Fan CONDITION

I Left Wing

1. Brake System Accumulator PressureCHECK
2. Fuel Filter Drain (daily) RAIN, SECURE
3. Main Gear, Doors, Tire, Brake..... CONDITION
4. Flaps, Spoilers, Static Wicks (3), Roll Trim Tab CONDITION
5. Wing Anti-Ice Exhaust Port..... CLEAR
6. Navigation and Strobe Lights..... CONDITION
7. Wing Tip Vent Inlet..... CLEAR
8. Sniffle Valves (2) (daily)..... PUSH, PULL, CHECK FOR LEAKS
9. Fuel Tank Vent Inlet..... CLEAR
10. Fuel Filler CapSECURE
11. Wing Leading Edge and Upper surface..... INANTS
12. Fuel Quick Drains (3) (daily)..... DRAIN, SECURE
13. Center Fuselage Tank Drain (daily) DRAIN, SECURE
14. Wing Leading Edge Inlet..... CLEAR
15. Wing Inspection Light..... CONDITION
16. Dorsal Fin Inlet..... CLEAR

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BEFORE STARTING ENGINES

CAUTION: If operation of the vent blower fan is desired prior to starting engines, do not attempt to open cabin door or emergency exit until vent blower has been turned off for at least 45 seconds.

1. Oxygen System Ready Control PULL ON
2. Oxygen Mask (pilot and copilot) CHECK, SELECT 100%

WARNING: Beards and mustaches should be carefully trimmed so that they will not interfere with the proper sealing of an oxygen mask. The fit of the oxygen mask around the beard and mustache should be checked on the ground for proper sealing. Studies conducted by the military and FAA conclude that oxygen masks do not seal over beards and mustaches.

3. Circuit Breakers and Guarded Switch (C.B. Panels) SET
4. Nonessential Bus Switches ON
5. Radio Master Switches OFF
6. Defog Blower (pilot and copilot) OFF
7. AHRS Battery Test Switch. PUSH
(HOLD FOR 5 SECONDS. CHECK FOR ANY ILLUMINATION OF
AHRS BAT TEST ANNUNCIATOR WITHIN THE 5 SECONDS).
8. Hydraulic Pressure Switch GUARD DOWN (NORM)
9. Emergency Landing Gear Door Close Handle SAFETIED
10. Emergency Landing Gear Down Handle SAFETIED
11. Engine Start Select OFF
12. Thrust Levers. FREE MOVEMENT, THEN CUTOFF
13. Roll Trim Select Switch BOTH
14. Roll and Rudder Trim Disconnect Switch NORM
15. Pitch Trim Switch. NORM
16. Engine Synchronizer Switch OFF
17. Flap Handle 0°
18. Landing Select Switch. GUARD DOWN (FLAPS 30°)
19. Emergency Brake Handle SAFETIED
20. Landing Gear Handle. DOWN
21. Cabin Dump Valve SAFETIED
22. Cabin Pressure Source Selector OFF
23. Cockpit Temperature Controls SET
24. Manual Pressurization Control Knob. FULL INC
25. Cabin Temperature Control. SET
26. Refrigeration Air Conditioning OFF
27. Fuel Counter. ZERO
28. Master Generator Switches GUARD DOWN (NORM)
29. Indicator Lights Switch AS DESIRED
30. Instrument Light Switches AS DESIRED

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- 31. Exterior Light Switches. OFF
- 32. Landing Light Switches RET/OFF
- 33. Anti-Ice/Deice Switches OFF
- 34. Heater Switches. OFF
- 35. Wiper Switches (if installed). OFF
- 36. Inverter Switches. ON
- 37. Ignition Switches STBY
- 38. Jet Pump Switches NORM
- 39. Fuel Crossfeed Switch NORM
- 40. Standby Power. ON
(STBY PWR ILLUMINATES ON)
- 41. Battery ON
(STBY PWR ANNUNCIATION MAY BE EITHER ON OR ARM)
- 42. Battery Feed Test. PUSH
(STBY PWR ILLUMINATES ON, FDR FAIL LIGHT ILLUMINATES)
- 43. Battery EMER, THEN ON (FDR FAIL LIGHT EXTINGUISHES)
(STBY PWR ANNUNCIATION MAY BE EITHER ON OR ARM)
- 44. SPKR Switches ON OR DON HEADSET
- 45. INTPH Switch ON
- 46. Emergency Lights GUARD UP (TEST/OFF)
- 47. Master Test (All Except Generators) TEST

NOTE: When checking the stall warning systems, the master test switch must remain in the L or R STALL position until the column shaker and stall annunciator lights/horn actuate twice to check the altitude compensator. The second shaker actuation will occur at a higher AOA indication than the first actuation due to the high altitude bias. The stall annunciator lights/horn will actuate when the AOA indication approaches full travel. Observation of the two different shaker actuations and illumination of the green pass test light identify a successful test of the stall warning system.

It is permissible to recheck the STBY PWR during the TAXI procedures if the No-Go light illuminates during the initial standby power check. It will be necessary to reset a generator if the master test switch is rotated out of the OFF position subsequent to engine starting.

- 48. Airspeed/Landing Gear Aural Warnings TEST
- 49. Indicator Lights TEST
- 50. Fuel System CHECK (N-16)
- 51. Boost Pumps AUTO
- 52. Fuel Transfer ON MOMENTARILY,
CHECK THAT BOTH PUMPS OPERATE
AND THEN POSITION SWITCHES TO AUTO
- 53. Fuel Crossfeed. CHECK (N-16)

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- 54. Trim SystemCHECK(N-18)
 - 55. Cockpit Voice Recorder TEST
- If BEFORE STARTING ENGINES procedures are not to be immediately followed by STARTING ENGINES:
- 56. Standby Power..... OFF
 - 57. Battery OFF

STARTING ENGINES

A GPU start is recommended at ambient temperatures below approximately - 15°C. External power requirements are 28 VDC, 1,000 to 1,500 Amps output.

WARNING: Verify cabin door security by attempting to turn the handle to the unlocked position without depressing the release button. Confirm the eight lock pins on the forward and aft sides of the door are properly engaged as indicated by the white flags fully covering the red background. Only a crew member should close and lock the door.

- 1. Cabin Door LOCKED
- 2. Passenger Briefing COMPLETE
- 3. Control Lock..... REMOVE AND STOW
- 4. Seats, Belts, and Shoulder Harnesses
(pilot and copilot)..... FASTENED AND ADJUSTED
- 5. Parking Brake.....SET

NOTE: When the engines are not running, the parking brake must be set from the pilot's side only.

- 6. Standby Power..... ON
- 7. Battery ON
- 8. SPKR SwitchesON OR DON HEADSET
- 9. INTPH Switch ON
- 10. DC VoltageCHECK
22 V MINIMUM FOR BATTERY START, 28 V FOR GPU START
- 11. Navigation Lights.....AS REQUIRED
- 12. Rotating Beacon GUARD DOWN (ARM)
- 13. Generator Reset SwitchesSET FOR START
- 14. Refrigeration Air Conditioning OFF
- 15. Engine EFCs..... ON
- 16. Engine Start Select SELECT L OR R
- 17. EFC AUX PWR ON Annunciator ILLUMINATED
- 18. Engine Start Switch..... DEPRESS
- 19. Thrust Lever.....IDLE AT 8% N₂
- 20. ENG EFC OFF Annunciator..... EXTINGUISHED ABOVE 26% N₂

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CAUTION: Check starter disengagement approximately 35% N₂.
If starter has not disengaged b 45% N₂, place thrust lever
in CUT OFF position and remove all electrical power.

If engine does not start within 10 seconds, place thrust
lever in CUT OFF position, place ignition switch in
OFF position, motor engine for 15 seconds, then press
START DISENGAGE button.

Maximum ITT limitations are:

550 to 600°C for 4 seconds

600 to 700°C for 2 seconds

Maximum starter limitations are:

30 seconds on, 5 minutes off, 30 seconds on, 15 minutes off, 30
seconds on, one hour off.

- | | |
|--|-------------------------------------|
| 21. Engine Instruments | MONITOR (52-54% N ₂) |
| 22. Engine Start Select | OFF |
| 23. Hydraulic Pressure | NORMAL |
| 24. Cabin Pressure Source | OPERATING ENGINE |
| 25. Operating Generator (if battery start) | CHECK CURRENT LESS
THAN 150 Amps |
| 26. Engine Start Select | SELECT OTHER ENGINE |
| 27. FUEL PRESS LO Annunciator (other engine) | .ILLUMINATED |
| 28. Other Engine | REPEAT STEPS (18-23) |
| 29. EFC AUX PWR ON Annunciator | .EXTINGUISHED |
| 30. Ignition and Boost Pump Lights | .EXTINGUISHED |
| 31. FUEL/H PMP PRESS LO Annunciators | .EXTINGUISHED |
| 32. Ground Power Unit (if used) | DISCONNECT |
| 33. Generator Reset Switches | .NORM |
| 34. DC Amperes and Voltage | .CHECK |
| 35. Standby Power Annunciator | ARM |

BEFORE TAXI

CAUTION: Engine anti-ice systems must be ON for taxi and take-off when in visible moisture at 5°C or colder. Except for a preflight check, do not operate system during ground operations at temperatures above 10°C.

NOTE: Do not taxi until AHRS ALIGNING - DO NOT TAXI annunciators extinguish on both pilot's and copilot's panels.

For maximum heating or cooling, the cabin pressure source selector should be in the BOTH HIGH position.

Except during taxi conditions invisible moisture at 5°C or colder, the engine EFC system may be selected OFF during ground operations provided the engine speed is manually maintained at a minimum of 46% N₂. With the EFC system selected OFF, a potential exists for the generators to drop off line with the thrust levers at idle.

1. Refrigeration Air ConditioningAS REQUIRED
2. Radio Masters ON
3. AC VoltagesCHECK
4. Standby Gyro UNCAGE
5. Cabin Pressure Source BOTH HIGH OR BOTH NORM
6. Master Test L/R GENERATORS
7. Engine Anti-IceAS REQUIRED
8. Windshield Anti-IceOFF OR LOW

NOTE: In misting conditions on airplanes without windshield wipers, Windshield Anti-Ice on LOW will improve visibility.

9. Cabin Sign SAFETY
10. Galley PowerAS REQUIRED
11. Flight Management SystemAS REQUIRED

TAXI

1. Wheel BrakesCHECK
2. Speedbrakes CHECK (N-18)
3. Flight ControlsCHECK
4. Anti-Skid CHECK (N-18)
5. Thrust Reversers CHECK (N-19)
6. Jet Pumps CHECK (N-19)
7. Fuel Transfer (if fuel in fuselage tanks) CHECK TRANSFER
PUMPS OPERATING
8. Fuel Crossfeed NORM
9. Fuel Quantity and Balance RECHECK
10. Engine InstrumentsCHECK
11. Flight InstrumentsCHECK
12. Cabin Pressure Control SET CRUISE ALTITUDE
13. Flaps SET FOR TAKEOFF
14. Rudder Boost CHECK (N-20)
15. Autopilot CHECK AND DISENGAGE (N-20)
16. Trim SET FOR TAKEOFF
17. Engine EFC System TEST (N-21)
18. Engine EFCs AS DESIRED
19. Anti-Ice/Deice Systems (if required) CHECK (N-22)
20. AvionicsSET
21. V₁, V_R, V₂, AOA, N₁, Flap SettingCONFIRM
22. Crew Briefing COMPLETE

BEFORE TAKEOFF

1. Engine EFCs ON
- NOTE:** Check for N₂ of 52% to 54% and ENG EFC OFF annunciators extinguished.
2. Anti-Collision Lights ON
 3. Landing LightsAS REQUIRED
 4. Engine Anti-IceAS REQUIRED
 5. Windshield Anti-Ice LOW
 6. AOA Heat ON
 7. Pitot Heat ON
 8. Static Heat ON
 9. Ignitions ON
 10. Annunciators CLEAR
 11. RadarAS REQUIRED
 12. Transponder ON
 13. Refrigeration Air Conditioning OFF
 14. Flight Controls CHECK

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If ECS OFF takeoff is planned:

- 15. Cabin Pressure Source OFF
- 16. Rate Control 11 O'CLOCK POSITION
- 17. Manual Pressure Control FULL DECREASE
- 18. Vent Blower ON

NOTE: When taking off at an airport above 9,000 ft pressure altitude, CABIN PRESSURE LO annunciator may be illuminated. After takeoff, the cabin altitude should be set to extinguish the light.

TAKEOFF

- 1. Thrust APPROXIMATELY 90% N₁
- 2. Engine Instruments CHECK
- 3. Wheel Brakes RELEASE
- 4. Thrust TAKEOFF THRUST SET PRIOR TO 80 KNOTS
- 5. Nose Up Pitch Attitude at Rotation (V_R) 13-15° DESIRED

AFTER TAKEOFF

- 1. Landing Gear UP
- 2. Yaw Damp. ON
- 3. Flaps 0°
- 4. Thrust SET MCT
- 5. Engine Sync AS REQUIRED
- 6. Recognition Light AS REQUIRED
- 7. Landing Lights RET/OFF
- 8. Ignition STBY
- 9. Anti-Ice/Deice Systems (above 400 ft. AGL) AS REQUIRED
- 10. Cabin Sign AS REQUIRED
- 11. Refrigeration Air Conditioning AS REQUIRED

NOTE: If takeoff was made on a snow or slush covered runway, cycle landing gear one or two times at a safe altitude to shed any ice accumulation.

If ECS (OFF) Takeoff Was Made and Above 400 ft AGL:

- 12. Cabin Pressure Source BOTH HIGH OR BOTH NORM
- 13. Vent Blower OFF
- 14. Manual Pressure Control FULL INCREASE

NOTE: Operate manual pressure controller slowly to avoid sudden cabin pressure changes.

MAXIMUM CONTINUOUS THRUST (N₁)

ECS ON/Anti-Ice OFF

PA/RAT	-40	-30	-20	-10	0	10	20	30	40
10,000	103.7	102	100.6	99.2	98	96.8	95.6	94.5	93.5
5000	92	94	95.9	97.7	98	96.8	95.6	94.5	93.5
SL	86.6	88.3	90.1	91.9	93.7	95.4	95.6	94.5	93.5

Engine Anti-Ice ON/ECS ON

PA/RAT	-40	-30	-20	-10	0	10	20	30	40
10,000	100.8	98.7	97.2	96.1	95.2	94.4	-	-	-
5000	92	94	95.9	96.1	95.2	94.4	-	-	-
SL	86.6	88.3	90.1	91.9	93.7	94.4	-	-	-

Engine and Wing Anti-Ice ON/ECS ON

PA/RAT	-40	-30	-20	-10	0	10	20	30	40
10,000	98.8	96.7	95.4	94.2	93.4	92.7	-	-	-
5000	92	94	95.4	94.2	93.4	92.7	-	-	-
SL	86.6	88.3	90.1	91.9	93.4	92.7	-	-	-

ECS OFF and Anti-Ice OFF

PA/RAT	-40	-30	-20	-10	0	10	20	30	40
10,000	104	102.6	101.2	99.9	98.6	97.4	96.3	95.2	94.1
5000	92	94	95.9	97.7	98.6	97.4	96.3	95.2	94.1
SL	86.6	88.3	90.1	91.9	93.7	95.4	96.3	95.2	94.1

ANTI-ICE/DEICE SYSTEM (IN-FLIGHT OPERATION)

CAUTION: Do not operate anti/deice systems at Ram Air Temperatures greater than 10°C unless in icing conditions, as indicated by illumination of the ICING annunciator (if installed) or airframe ice accumulation. Ice protection systems should be on prior to encountering icing conditions. Turn systems off when clear of icing conditions.

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GENERAL

Engine icing conditions are defined as:

- Illumination of the ICING annunciator
- Airframe ice accumulation
- At all altitudes and RAT of 10°C or less in visible moisture (Any obstruction to visibility should be considered visible moisture unless it can be determined to be smoke, dust or ash)
- Above 20,000 ft MSL and at RAT of 10°C or less and any of the following conditions:
 - Within approximately 5,000 ft. above visible moisture associated with convective activity
 - Within approximately 10 NM horizontally of visible moisture associated with convective activity
 - In visible moisture
 - At any time that the conditions listed above cannot be verified

NOTE: Industry studies indicate that engine icing may be encountered in flight conditions with no indication of airframe icing, especially at high altitude in the vicinity of convective weather activity.

There is no lower temperature limit for the operation of anti-ice systems. Do not assume ice formation is not possible at very low ambient temperatures (i.e. -30°C or colder).

Airframe icing conditions are defined as:

- Illumination of the ICING annunciator
- Airframe ice accumulation

Engine and Wing Anti-Ice System Operation

1. Thrust 90% N1 OR LOWER
2. Engine Anti-Ice..... ON
3. Thrust AS REQUIRED
4. ENGINE ICE TEMP LO Annunciators..... ILLUMINATED
MOMENTARILY
5. Engine Anti-Ice Lights..... ILLUMINATED
6. Ignition Lights ILLUMINATED

Wing Anti-Ice System (If Desired)

1. Thrust 90% N₁ OR LOWER
2. Wing Anti-ice ON
3. Engine ITTs..... CHECK INCREASE
4. Thrust AS REQUIRED
5. Wing Anti-Ice Light ILLUMINATED, AFTER WINGS
HEAT TO TEMPERATURE

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Horizontal Stabilizer Deice System Operation

1. H Stab Deice ON
2. H Stab Deice Light ILLUMINATED

CLIMB (FL 180)

1. Altimeters SET
2. Cabin Pressurization CHECK
3. Cabin Pressure Source AS REQUIRED

NOTE: The cabin pressure source selector may be kept in the BOTH HIGH position until cabin temperature comfort is achieved, then select BOTH NORM.

4. Refrigeration Air Conditioning OFF
5. Oxygen System CHECK
6. Recognition Light OFF
7. Anti/Deice Systems AS REQUIRED

NOTE: Ignition should be turned ON for turbulence and/or precipitation conditions. Flight below column shaker onset speed should be avoided. Intentional operation at speeds approaching the onset of stall buffet may result in engine compressor stalls.

CRUISE

1. Systems MONITOR

FUEL MANAGEMENT PROCEDURES

Fuel Crossfeed NORM for takeoff and landing.

1. Fuel Crossfeed L TANK OR R TANK
AS REQUIRED TO BALANCE FUEL
 - a. Monitor wing and fuselage fuel quantity indicators to verify fuel transfer from fuselage tanks to engine feed tanks.

DESCENT

1. Seat Belts/Shoulder Harnesses FASTENED
2. Cabin Sign AS REQUIRED
3. Recognition Light AS REQUIRED
4. Anti/Deice Systems AS REQUIRED

CAUTION: If icing conditions are anticipated during descent and approach, turn ice protection systems ON as early as possible prior to penetrating icing conditions. Maintain wing anti/deice operation light ON (approximately 70% N₂) ring descent to assure proper wing anti-ice operation.

5. Cabin Pressure Control SET FIELD ELEVATION +500 FT
6. Windshield Defog AS REQUIRED
7. Altimeters SET
8. Refrigeration Air Conditioning below FL 180 AS REQUIRED

APPROACH

1. Crew Briefing COMPLETE
2. Fuel Management CHECK
3. V_{REF} , V_{AC} , N_1 , AOA, LDG DIST..... CONFIRM
4. Cabin Sign SAFETY
5. Windshield Anti-Ice LOW
6. Hydraulic/Nitrogen Pressure CHECK
7. Engine Sync OFF
8. Flaps 10°

WARNING: During flight in icing conditions, wait at least 15 seconds after selecting 10° flaps before selecting 30° flaps. This delay provides the stabilizer deice system the time required to remove any ice accumulation from the stabilizer leading edge.

If icing conditions are encountered for more than 20 min after initial selection of 10° flaps, land using 10° flaps.

If a missed approach is executed and the flight is diverted to an alternate airport, the landing must be made using 10° flaps, unless a Ram Air Temperature of 5°C or greater is observed during APPROACH and BEFORE LANDING.

Do not operate anti/deice systems at Ram Air Temperatures greater than 10°C unless in icing conditions, as indicated by illumination of the ICING annunciator or airframe ice accumulation.

APPROACH AND APPROACH CLIMB SPEEDS

FLAPS	WEIGHT X 1000 (LBS)						
	16.3	16.1	15.7	15	14	13	12
V_{REF} at 30°	119	118	117	114	110	106	102
V_{AC} at 10°	141	140	139	136	132	128	124

BEFORE LANDING

1. Landing Gear DOWN
2. Refrigeration Air Conditioning OFF
3. Recognition Light OFF
4. Landing Lights AS REQUIRED
5. Ignition Switches ON
6. Flaps 30°
7. Fuel Crossfeed NORMAL, BEFORE LANDING
8. Yaw Damp OFF

NOTE: Increase final approach speed to $V_{REF} + 5$ Kts for autopilot coupled approaches.

LANDING

1. Thrust IDLE
2. Brakes (After touchdown) APPLY
3. Thrust Reversers DEPLOY
4. Reverser Lights VERIFY
5. Reverse Thrust. AS REQUIRED
6. Speed Brakes EXTEND

NOTE: If a go-around becomes necessary after the thrust reversers are deployed, place the reverser levers to the stow position before advancing the thrust levers.

BALKED LANDING

1. Thrust TAKEOFF N₁
2. Climb Airspeed V_{REF}

When positive climb is established :

3. Flaps 10°
4. Landing Gear UP
5. Yaw Damp. ON
6. Flaps 0°
7. Landing Lights RET/OFF

AFTER LANDING

1. Engine EFCs AS REQUIRED
2. Anti-Collision Lights OFF
3. Anti/Deice Systems:
 - a. Wing, Engine and H Stab OFF
 - b. Windshield Anti-Ice OFF OR LOW

NOTE: In misting conditions on airplanes without windshield wipers, Windshield Anti-Ice on LOW will improve visibility.

4. AOA Heat OFF
5. Pitot Heat OFF
6. Static Heat OFF
7. Ignitions STBY
8. Radar STBY
9. Transponder STBY
10. Speed Brakes RETRACT
11. Flaps 0°
12. Trim SET FOR TAKEOFF
13. Refrigeration Air Conditioning AS REQUIRED

SHUTDOWN

1. Parking Brake.....AS REQUIRED

NOTE: If the engines are not running, the parking brake must be set from the pilot's side only.

2. Standby Power..... OFF

3. Standby Gyro.....CAGE

4. Cabin Pressure Source..... OFF

5. Oxygen System..... OFF

6. Refrigeration Air Conditioning..... OFF

7. Exterior Lights..... OFF

8. Emergency Lights..... GUARD UP (OFF)

9. Windshield Anti-Ice..... OFF

10. Galley Power..... OFF

11. Radio Masters..... OFF

12. Thrust Levers.....CUTOFF

13. Battery..... OFF

14. Control Lock.....INSTALL

TURNAROUND

Prior to Enplaning or Deplaning:

1. L Thrust Lever CUTOFF
2. Cabin Pressure Source R ENG
3. Check Brake Energy and Turnaround Charts SEE PERFORMANCE
4. Left and Right Wing Leading Edges and Upper Surfaces . . . CHECK,
FREE OF FROST OR OTHER CONTAMINANTS

WARNING: Ice and frost accumulations have been observed on the upper inboard wing root sections after extended flight at high altitude followed by rapid descent and landing in areas of high humidity conditions. During rapid turnarounds, upper wing surfaces should be inspected. If ice or frost is present, it must be removed prior to departure.

Restarting L Engine:

5. Radio Masters OFF
6. Left Engine EFC OFF, THEN ON
7. Refrigeration Air Conditioning OFF
8. Windshield Anti-Ice OFF
9. Perform STARTING ENGINE Procedures.

Before Taxi:

10. Refrigeration Air Conditioning AS REQUIRED
11. Radio Masters ON
12. Cabin Pressure Source BOTH HIGH OR BOTH NORM
13. Engine EFCs AS DESIRED
14. Engine Anti-Ice AS REQUIRED
15. Windshield Anti-Ice OFF OR LOW

NOTE: In misting conditions on airplanes without windshield wipers, Windshield Anti-Ice on LOW will improve visibility.

Taxi:

16. Wheel Brakes CHECK
17. Flight Controls CHECK
18. Fuel Crossfeed NORM
19. Fuel Quantity and Balance CHECK
20. Engine Instruments CHECK
21. Flight Instruments CHECK
22. Cabin Pressure Control SET CRUISE ALTITUDE
23. Flaps SET FOR TAKEOFF
24. Trim SET FOR TAKEOFF
25. Avionics SET
26. V₁, V_R, V₂, N₁, AOA, Flap Setting CONFIRM
27. Crew Briefing COMPLETE
28. Perform BEFORE TAKEOFF procedures.

LOCAL TRAINING

BEFORE TAKEOFF

- 1. Anti/Deice Systems (Wing and H Stab) OFF
- 2. Speed Brakes RETRACT
- 3. Flight Management SystemAS REQUIRED
- 4. Fuel CrossfeedNORM
- 5. Fuel Quantity and Balance RECHECK
- 6. Engine InstrumentsCHECK
- 7. Flight InstrumentsCHECK
- 8. Cabin Pressure Control..... SET CRUISE ALTITUDE
- 9. Flaps SET FOR TAKEOFF
- 10. Trim SET FOR TAKEOFF
- 11. AvionicsSET
- 12. V₁, V_R, V₂, N₁, AOA, Flap SettingCONFIRM
- 13. Crew Briefing COMPLETE
- 14. Engine EFC's ON
- 15. Anti-Collision Lights ON
- 16. Landing LightsAS REQUIRED
- 17. Engine Anti-Ice AS REQUIRED
- 18. Windshield Anti-Ice LOW
- 19. AOA Heat ON
- 20. Pitot Heat ON
- 21. Static Heat ON
- 22. Ignition ON
- 23. Annunciators CLEAR
- 24. RadarAS REQUIRED
- 25. Transponder ON
- 26. Refrigeration Air Conditioning OFF
- 27. Flight ControlsCHECK

If ECS OFF takeoff is planned:

- 28. Cabin Pressure Source OFF
- 29. Rate Control 11 O’CLOCK POSITION
- 30. Manual Pressure Control FULL DECREASE
- 31. Vent Blower ON

EXPANDED NORMALS

FUEL SYSTEM

1. FUEL PRESS LO Annunciators ILLUMINATED
2. Left Fuel/Hydraulic Valve CLOSE
CLOSE LIGHT ILLUMINATES
3. Left Boost Pump ON,
L AND R FUEL PRESS LO ANNUNCIATORS
REMAIN ILLUMINATED, L BOOST
PUMP LIGHT ILLUMINATES
4. Left Fuel/Hydraulic Valve OPEN,
OPEN LIGHT ILLUMINATES, L FUEL PRESS LO
ANNUNCIATOR EXTINGUISHES, R FUEL PRESS
LO ANNUNCIATOR REMAINS ILLUMINATED
5. Left Boost Pump AUTO,
L AND R FUEL PRESS LO ANNUNCIATORS
ILLUMINATE, L BOOST PUMP LIGHT
EXTINGUISHES
6. Repeat steps 2 through 5 for right engine.

RETURN TO PAGE N-2, FUEL SYSTEM CHECK

FUEL CROSSFEED

NOTE: Delay 3-5 seconds between changing fuel crossfeed modes.

1. Fuel Crossfeed.....L TANK
2. Check the following :
 - a. L BOOST PUMP light illuminates.
 - b. R JET PUMP transit light illuminates momentarily.
 - c. XFEED light illuminates momentarily.
 - d. FUEL XFEED light illuminates.
3. FUEL PRESS LO Annunciators.....EXTINGUISHED
4. Fuel Crossfeed.....NORM
5. Check the following :
 - a. FUEL XFEED light extinguishes.
 - b. XFEED light illuminates momentarily.
 - c. R JET PUMP light illuminates momentarily.
 - d. L BOOST PUMP light extinguishes.
6. FUEL PRESS LO Annunciators..... ILLUMINATED
7. Repeat steps 1 through 6 for right tank

RETURN TO PAGE N-2, FUEL CROSSFEED CHECK

TRIM SYSTEM

Pitch Trim:

1. Copilot Depress Trim
Arming Button for 5 Seconds. CHECK FOR NO MOTION
AND CHECK AURAL TONE SOUNDS
2. Pilot Repeats Step 1 On Pilot's Side.
3. Copilot Not Depressing Trim
Arming Button, Move Trim Switch
to NOSE UP for 5 Seconds CHECK FOR NO MOTION
AND CHECK AURAL TONE SOUNDS
4. Pilot Repeats Step 3 On Pilot's Side.
5. Copilot Not Depressing
Trim Arming Button, Move
Trim Switch to LWD and RWD CHECK FOR NO MOTION
6. Pilot Repeats Step 5 On Pilot's Side.
7. Copilot Move Trim
to NOSE UP and Hold CHECK NOSE UP MOVEMENT
8. Pilot Move Trim to
NOSE DOWN and Hold CHECK NOSE DOWN MOVEMENT
 - a. Copilot Push TRIM INT/AP DISENG
Switch CHECK FOR NO MOTION
 - b. Copilot Release TRIM INT/AP DISENG
Switch; then Pilot Select
PITCH TRIM EMER CHECK FOR NO MOTION
9. EMER PITCH TRIM Switch N. DN AND N. UP,
CHECK FOR MOTION
10. PITCH TRIM Selector. NORM
11. PITCH TRIM SPEED TEST. TEST
12. Pitch Trim SET FOR TAKEOFF

Roll Trim:

13. Copilot Move Trim to RWD CHECK FOR MOTION
 - a. Pilot Push TRIM INT/AP
DISENG Switch CHECK FOR NO MOTION
14. Pilot Move Trim to LWD. CHECK FOR MOTION
 - a. Copilot Push TRIM INT/AP
DISENG Switch CHECK FOR NO MOTION
15. Pilot Move Trim to RWD, and Copilot Select
ROLL and RUD TRIM DISC CHECK FOR NO MOTION
16. ROLL and RUD TRIM DISC Switch. NORM
17. Roll Trim SET NEUTRAL

continued on next page

continued from previous page

Rudder Trim:

18. RUD TRIM Knob Centered DEPRESS,CHECK FOR NO MOTION
19. Without Depressing,
Turn RUD TRIM Knob NOSE L AND R,
CHECK FOR NO MOTION
20. Depress and Turn
RUD TRIM Knob. NOSE L AND R, CHECK TRIM MOTION
21. Push TRIM INT/AP DISENG
Switch When Trim is In-transitCHECK INTERRUPTION OF
TRIM MOTION
22. Place ROLL and RUD TRIM DISC
Switch to DISC While Rudder
Trim is In-transit.CHECK INTERRUPTION
OF TRIM MOTION
23. ROLL and RUD TRIM DISC Switch.NORM
24. RUD Trim SET NEUTRAL

RETURN TO PAGE N-3, TRIM SYSTEM CHECK

SPEED BRAKES

1. Speed Brake Emer Retract GUARD UP (EMER RET)
2. Speed Brakes.EXTEND, NOTE NO MOVEMENT
3. Speed Brake Emer Retract GUARD DOWN (NORM)
4. Speed Brakes. NOTE EXTENSION
5. SPD BRAKE EXT Annunciator ILLUMINATED
6. Speed Brakes. RETRACT

RETURN TO PAGE N-6, SPEED BRAKES CHECK

ANTI-SKID

1. Wheel Brakes APPLY WHILE ROLLING
2. Anti-Skid. TEST,
CHECK FOR BRAKE RELEASE, THEN OFF. RECOVER BRAKE
EFFECTIVENESS. CHECK FOR ILLUMINATION OF ANTISKID
FAIL ANNUNCIATOR.

CAUTION: When turning the anti-skid switch from TEST to ON, pause momentarily in OFF to allow for system cycling. The antiskid test should not be performed in a congested area.

3. Anti-Skid.ON,CHECK ANTI-SKID FAIL
ANNUNCIATOR EXTINGUISHED AND NORMAL BRAKING.

RETURN TO PAGE N-6, ANTI-SKID CHECK

THRUST REVERSERS

NOTE: Thrust reversers must be checked on the first flight of the day, and on any flight that is predicated on the use of thrust reversers for performance.

1. Thrust ReversersDEPLOY
2. Check ARM, UNLOCK, and DEPLOY Annunciators ILLUMINATED
3. EMER STOW PUSH
4. Check:
 - a. EMER STOW Lights ILLUMINATED
 - b. UNLOCK and DEPLOY AnnunciatorsEXTINGUISHED
5. EMER STOW PUSH
6. Check:
 - a. EMER STOW LightsEXTINGUISHED
 - b. ARM, UNLOCK and DEPLOY Annunciators ILLUMINATED
7. Thrust ReversersSTOW
8. Check all Thrust Reverser Lights and AnnunciatorsEXTINGUISHED

NOTE: It is desirable to perform thrust reverser check into the wind. Do not exceed five seconds with the buckets deployed.

RETURN TO PAGE N-6, THRUST REVERSERS CHECK

JET PUMPS

1. Jet Pumps OFF
2. Jet Pump Lights ILLUMINATED MOMENTARILY
3. FUEL PRESS LO Annunciators ILLUMINATED MOMENTARILY
4. Boost Pump Lights ILLUMINATED
5. FUEL PRESS LO AnnunciatorsEXTINGUISHED
6. Jet Pumps NORM
7. Jet Pump Lights ILLUMINATED MOMENTARILY
8. Boost Pumps OFF, THEN AUTO
9. Boost Pump LightsEXTINGUISHED
10. FUEL PRESS LO AnnunciatorsEXTINGUISHED

RETURN TO PAGE N-6, JET PUMPS CHECK

RUDDER BOOST

1. Rudder Boost OFF
2. Verify RUD BST FAIL Annunciator ILLUMINATED
3. Rudder Boost ARM
4. Verify RUD BST FAIL Annunciator EXTINGUISHED

RETURN TO PAGE N-6, RUDDER BOOST CHECK

AUTOPILOT

NOTE: TRIM FAIL annunciations may occur during this preflight test if the autopilot drives the trim to full travel. If this occurs, disengage the autopilot, neutralize the trim and continue the preflight check.

1. Engage the autopilot. Verify that the pilot's PFD displays the following messages:
 - a. ROLL (Green)
 - b. PTCH (Green)
 - c. ALTS (White)
 - d. AP ← (Green)
2. Actuate the center button on the pilot's control wheel trim switch. Verify AP disconnect with YD remaining engaged. Re-engage the autopilot.
3. Depress the pilot's A/P DISENG pushbutton. Verify AP and YD disconnect. Re-engage the autopilot.
4. Actuate the center button on the copilot's control wheel trim switch. Verify AP disconnect with YD remaining engaged. Re-engage the autopilot.
5. Depress the copilot's A/P DISENG push button. Verify AP and YD disconnect.
6. Depress the GO AROUND button. Verify AP disconnect with YD remaining engaged.
7. Reset all trims to the takeoff position.

WARNING: During normal preflight checks, it is likely that the pitch and roll trims will be run to their extreme positions. Therefore, all trims must be returned to the proper settings prior to takeoff.

8. Move the primary flight controls through the full range of travel in pitch, roll and yaw axis. Verify proper movement and freedom of travel.

RETURN TO PAGE N-6, AUTOPILOT CHECK

ENGINE EFC SYSTEM

Conduct this test procedure on the first flight of the day.

1. Thrust 70% N₂
2. Engine EFC Test PUSH, CHECK ENG EFC OFF
ANNUNCIATORS ILLUMINATE
3. Thrust IDLE
4. Engine EFCs.....OFF, THEN ON, CHECK ENG EFC OFF
ANNUNCIATORS EXTINGUISH

NOTE: When observing the EFC test, differing amounts of N₂ rollback may be noted along with variations in the speed at which rollback takes place. At high field elevations, minimal rollback may be observed. These differences are considered normal.

RETURN TO PAGE N-6, ENGINE EFC SYSTEM CHECK

ANTI/DEICE SYSTEM PREFLIGHT CHECK

Engine and Wing Anti-ice Systems Check

1. Thrust Levers 60-70% N₂
2. Engine Anti-Ice ON
3. Wing Anti-Ice ON
4. Engine ITT CHECK INCREASE
5. ENG ICE TEMP LO Annunciators ILLUMINATED MOMENTARILY
6. Engine Anti-Ice Lights ILLUMINATED
7. Ignition Lights ILLUMINATED
8. Wing Anti-Ice Light ILLUMINATED, AFTER WINGS HEAT TO
TEMPERATURE
9. Engine Anti-Ice AS REQUIRED
10. Wing Anti-Ice OFF
11. Thrust Levers IDLE

Horizontal Stabilizer Deice System Check

1. Flaps 0°
2. H Stab Deice TEST AND HOLD
3. H STAB ICE FAIL Annunciator EXTINGUISHED
4. H Stab Deice Light ILLUMINATED

After Approximately 10 Seconds:

5. H STAB ICE FAIL Annunciator ILLUMINATED FOR 3 SECONDS
6. H Stab Deice Light EXTINGUISHED
7. H STAB ICE FAIL Annunciator EXTINGUISHED
8. H Stab Deice Light ILLUMINATED
9. H Stab Deice OFF
10. H Stab Deice TEST AND HOLD
11. Flaps SELECT 30°
12. LDG FLAP DELAY Annunciator ILLUMINATED
13. Flaps Travel FLAPS STOP AT APPROXIMATELY 10°
14. H Stab Deice OFF
15. LDG FLAP DELAY Annunciator EXTINGUISHED
16. Flap Travel FLAPS MOVE TO 30°
17. Flaps SET FOR TAKEOFF

**RETURN TO PAGE N-6, ANTI-ICE/DEICE SYSTEM
PREFLIGHT CHECK**

TAKEOFF DATA FOR SPEEDS AND FIELD LENGTH TABLES

1. Takeoff Field Length values, obtained from the following tables, must be adjusted using the Takeoff Field Length Correction graph if any of the following conditions are true:
 - a. Runway gradient is not zero.
 - b. Headwind/tailwind component is not zero.
 - c. Anti-Skid is OFF.
 - d. Engine Anti-Ice is ON.
2. Combined selection of ECS OFF and engine Anti-Ice ON is not approved.
3. Obtain V_1 , V_R , and V_2 from the Takeoff Field Length Tables and adjust V_1 , using the Takeoff Decision Speed (V_1) Correction graph.
4. For takeoff weights below 12,000 lbs, use the 12,000 lbs. takeoff field length and speeds.
5. The fan RPM values are valid only for Engine Anti-Ice OFF/ECS ON conditions. Target fan speeds for any other conditions must be obtained from the Takeoff Thrust Setting chart.
6. Do not interpolate between Fan RPM Values marked by an asterisk (*). Consult the Takeoff Thrust Setting chart for target fan speeds in these regions.

ASSOCIATED CONDITIONS:

Thrust.....	Takeoff
Runway	Paved, Dry Surface
Flaps	0°, 10° or 20°
Obstacle Height	35 ft.

SIMPLIFIED TAKEOFF PERFORMANCE (TAB DATA)

Many situations will allow the pilot to use a simplified method for determining takeoff performance. Regions of the Takeoff Speeds and Field Length tables have red-colored values. If weight/pressure altitude/temperature conditions fall within the black-colored values and if all of the following conditions are true:

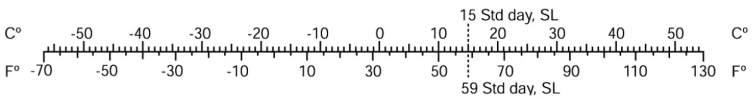
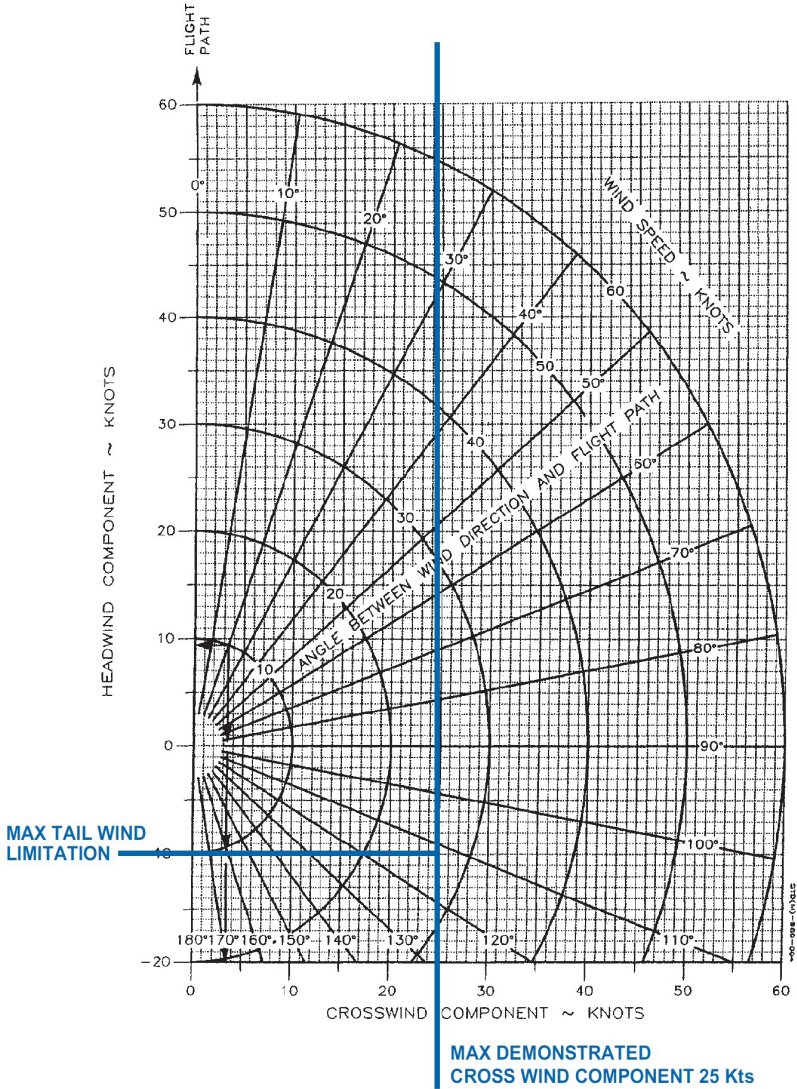
- a. Runway gradient is zero
- b. No tailwind
- c. ECS is ON
- d. Engine anti-ice is OFF
- e. Anti-skid is ON

then (1) takeoff climb requirements will be met, and (2) brake energy limitations will not be exceeded. Under these circumstances, there is no need to consult the Maximum Takeoff Weight to Achieve Takeoff Climb Requirements or Maximum Takeoff Weight Limited by Maximum Brake Energy charts. If any of the above conditions are not true, then these charts must be consulted. There are no Brake Energy Limitations for 20° flaps.

WIND COMPONENTS

EXAMPLE:

WIND SPEED	10 Kts
ANGLE BETWEEN WIND DIRECTION AND FLIGHT PATH	20°
HEADWIND COMPONENT	9.4 Kts
CROSSWIND COMPONENT	3.4 Kts



TAKEOFF THRUST SETTING

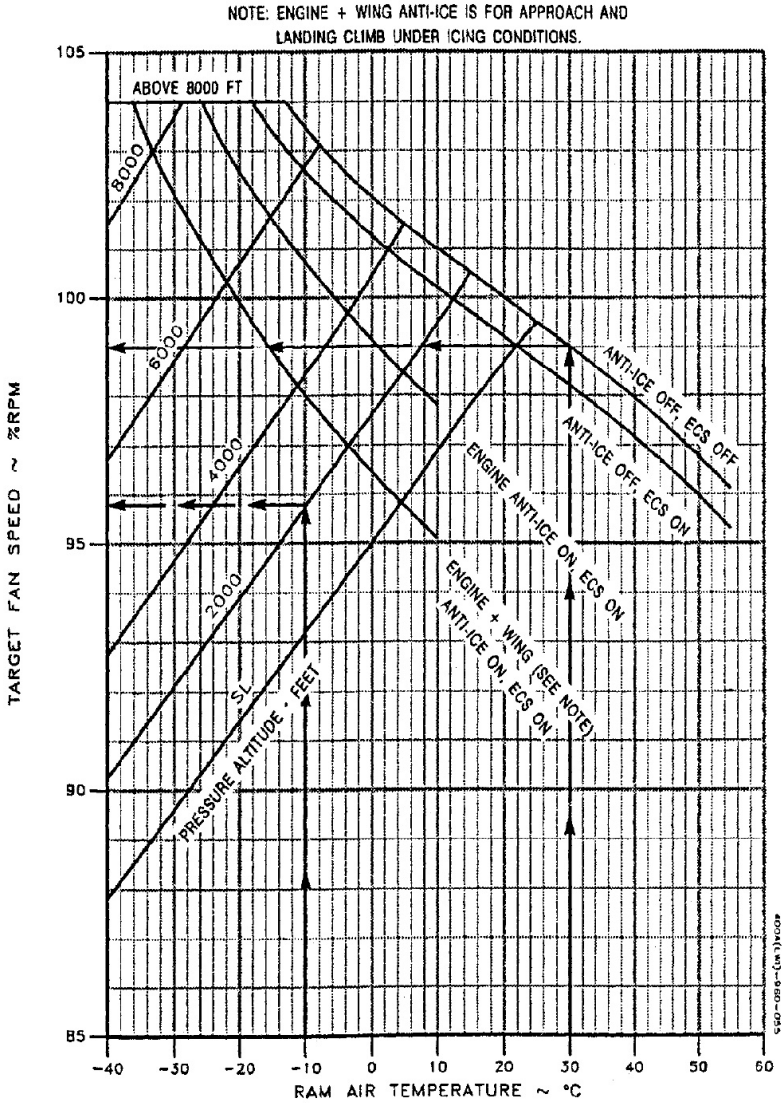
TAKEOFF, APPROACH AND LANDING CLIMB

EXAMPLE: 1

RAT	30° C
FIELD PRESSURE ALTITUDE	6,000 FT
ECS	OFF
ANTI-ICE	ENGINE OFF
TARGET FAN SPEED	99.0%

EXAMPLE: 2

RAT	-10° C
FIELD PRESSURE ALTITUDE	2,000 FT
ECS	ON
ANTI-ICE	ENGINE ON
TARGET FAN SPEED	95.8%



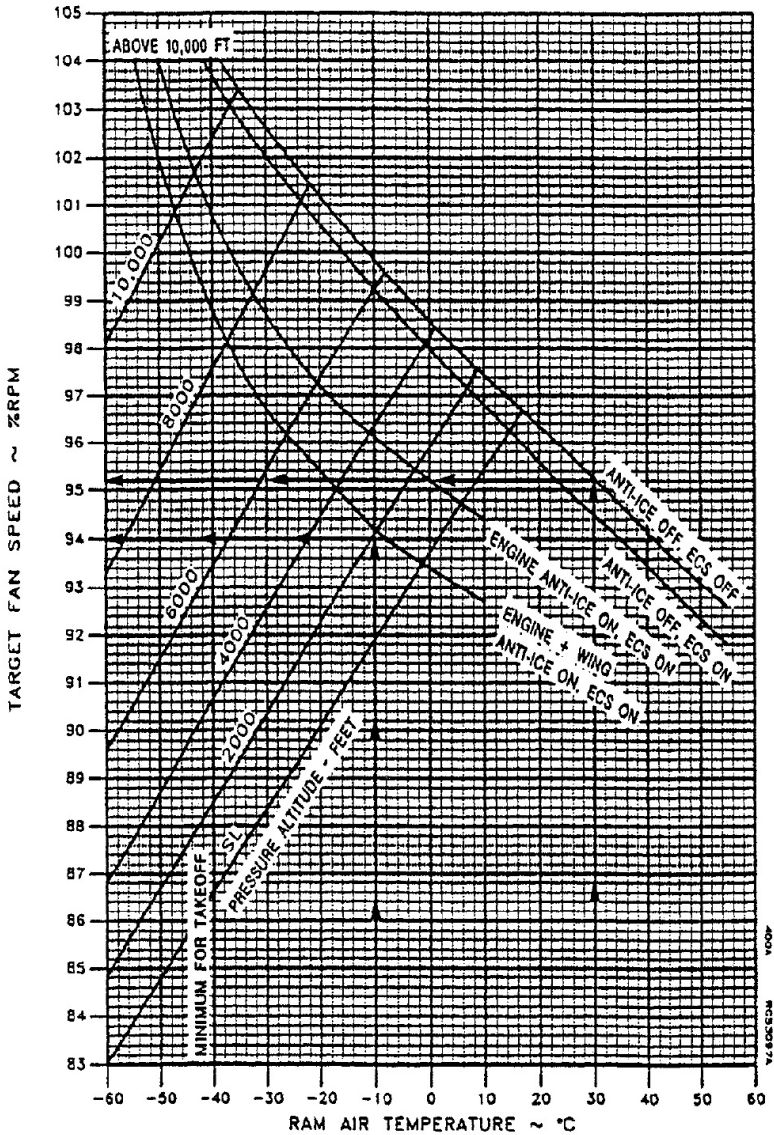
MAXIMUM CONTINUOUS THRUST SETTING FINAL SEGMENT AND ENROUTE CLIMB

EXAMPLE: 1

RAT 30° C
 FIELD PRESSURE ALTITUDE 6,000 FT
 ECS OFF
 ANTI-ICE OFF
 ECS 95.2%

EXAMPLE: 2

RAT -10° C
 FIELD PRESSURE ALTITUDE 2,000 FT
 ECS ON
 ANTI-ICE ENGINE + WING ON
 ECS 94.0%



MAXIMUM TAKE-OFF WEIGHT - ECS (ON) - FLAPS 0°

TO ACHIEVE TAKE-OFF CLIMB REQUIREMENTS

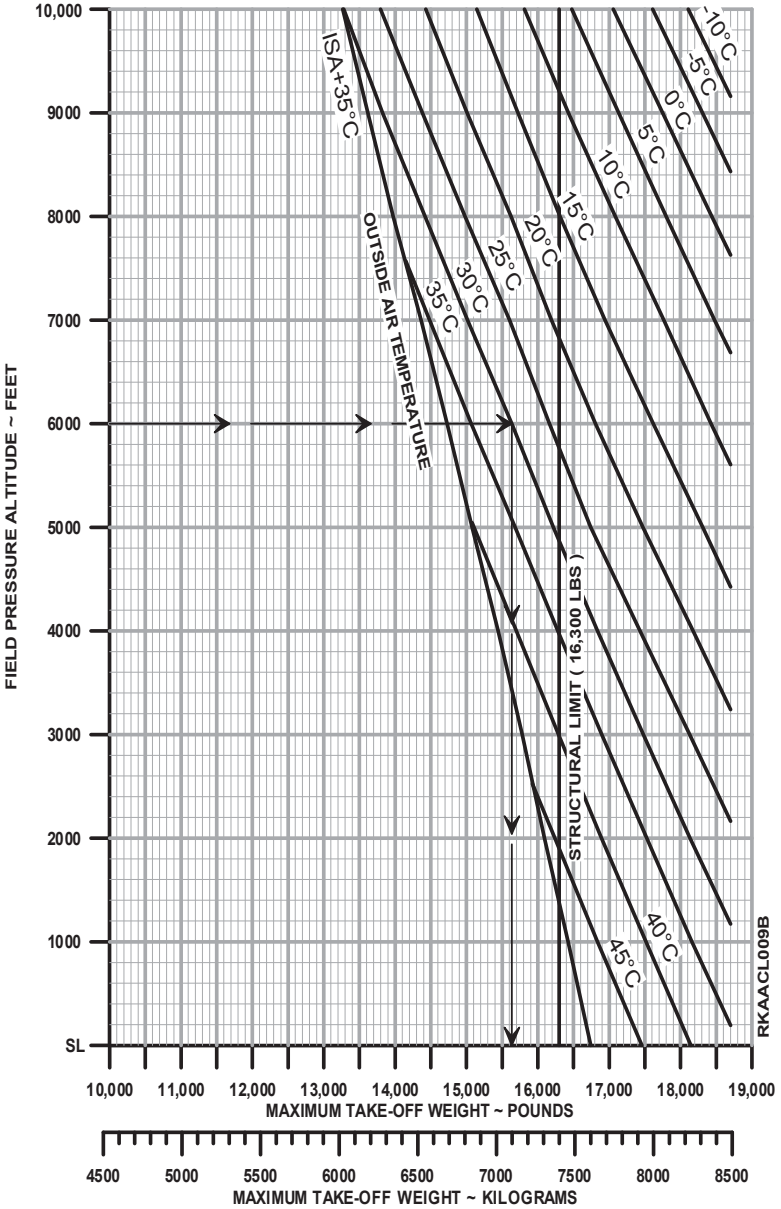
FLAPS 0°
ASSOCIATED CONDITIONS:

 THRUST TAKE-OFF
 LANDING GEAR SELECTED UP AT 35 FT

EXAMPLE:

 FIELD PRESSURE ALTITUDE 6,000 FT
 OAT 30°C
 MAXIMUM TAKE-OFF WEIGHT 15,636 LBS

NOTE: WITH ENGINE ANTI-ICE (ON), SUBTRACT 1,500 LBS FROM THE WEIGHT READ FROM THIS GRAPH.



FLAPS 0°

MAXIMUM TAKE-OFF WEIGHT - ECS (OFF) - FLAPS 0° TO ACHIEVE TAKE-OFF CLIMB REQUIREMENTS

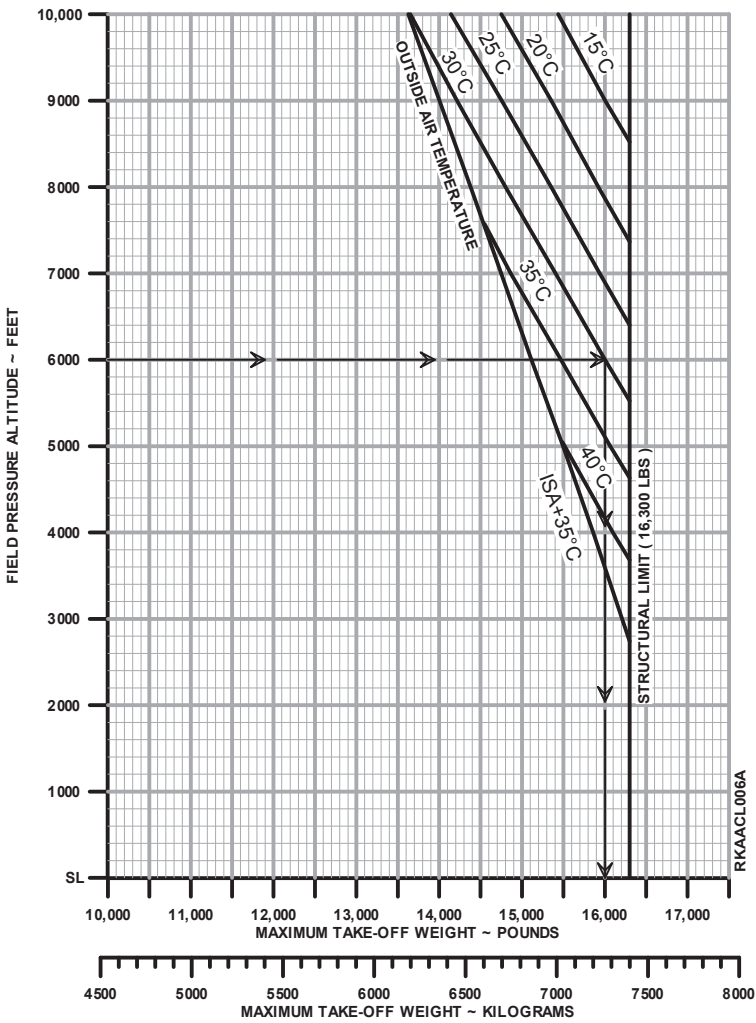
ASSOCIATED CONDITIONS:

THRUST TAKE-OFF
 LANDING GEAR SELECTED UP AT 35 FT
 ANTI-ICE OFF

EXAMPLE:

FIELD PRESSURE ALTITUDE ... 6,000 FT
 OAT 30° C
 MAXIMUM TAKEOFF WEIGHT. 16,002 LBS

NOTE: COMBINED SELECTION OF ECS (OFF) AND ANTI-ICE (ON) IS NOT APPROVED.



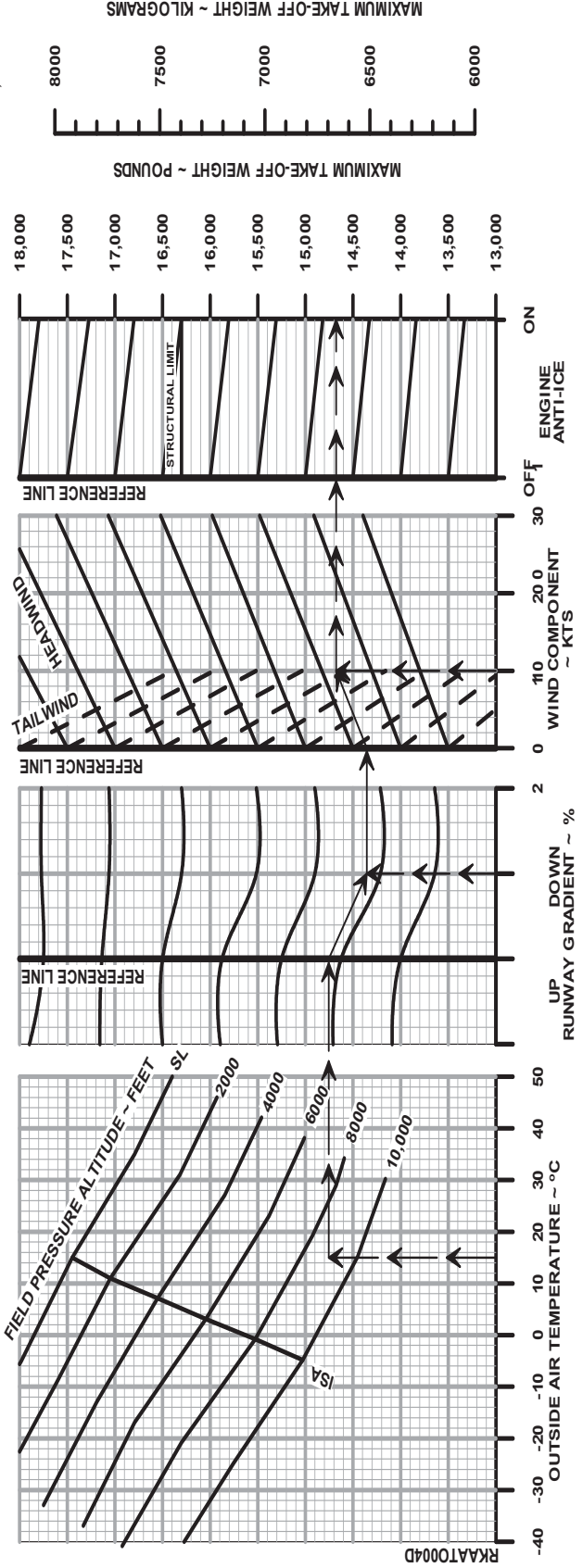
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MAXIMUM TAKE-OFF WEIGHT LIMITED BY MAXIMUM BRAKE ENERGY FLAPS 0°

ASSOCIATED CONDITIONS:
ECS: ... (ON) OR (OFF)
ANTI-SKID ... (ON) OR (OFF)

- NOTES: 1. ALL ANTI-ICE SYSTEMS EXCEPT ENGINE ANTI-ICE MUST BE OFF DURING TAKEOFF.
2. COMBINED SELECTION OF ECS (OFF) AND ENGINE ANTI-ICE (ON) IS NOT APPROVED.

EXAMPLE:
OAT 15°C
FIELD PRESSURE ALTITUDE ... 9000 FT
RUNWAY GRADIENT 1% DN
HEADWIND COMPONENT 10 KTS
ENGINE ANTI-ICE OFF
MAXIMUM TAKE-OFF WEIGHT: ... 14,676 LBS

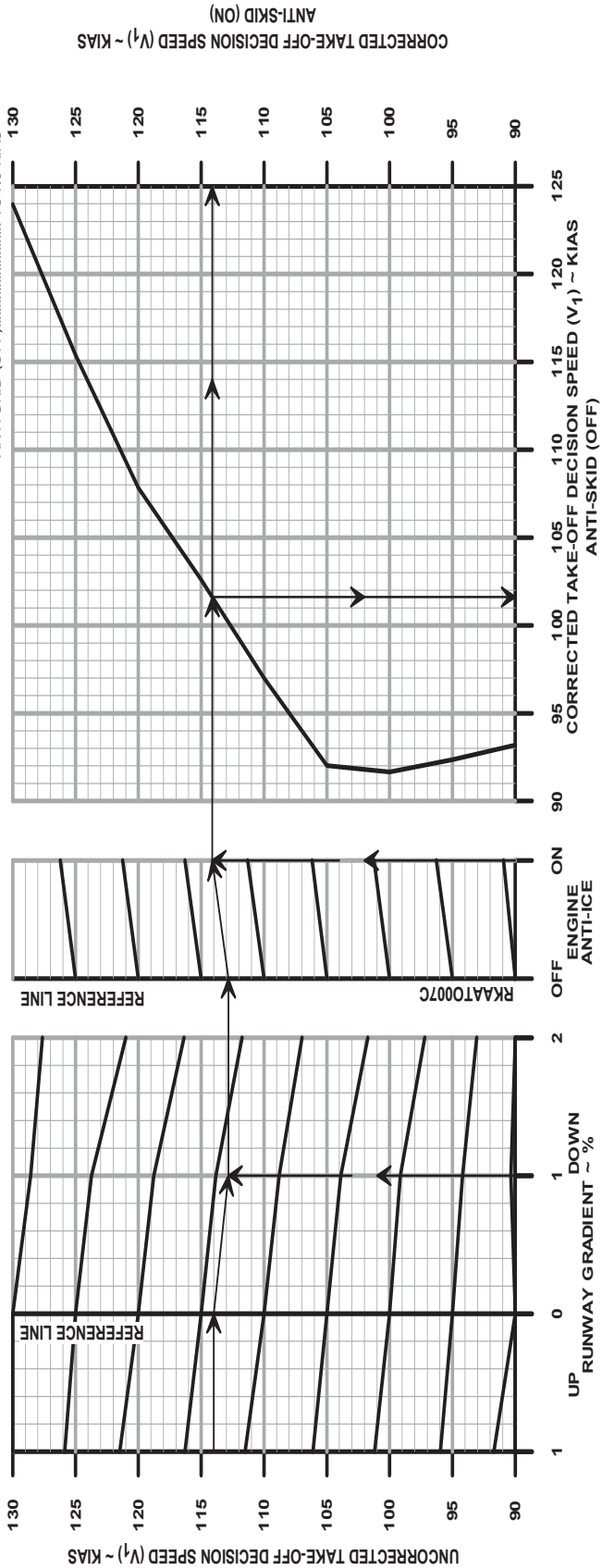


TAKE-OFF DECISION SPEED (V₁) CORRECTION - FLAPS 0°

NOTES: 1. OBTAIN THE UNCORRECTED DECISION SPEED (V₁) FROM THE "TAKE-OFF SPEEDS AND FIELD LENGTH - FLAPS 0°" TABLES. ENTER THE GRAPH BELOW WITH THAT VALUE, AND DETERMINE THE DECISION SPEED (V₁) CORRECTED FOR RUNWAY GRADIENT, ENGINE ANTI-ICE, AND ANTI-SKID.

2. THE EFFECTS OF ECS (OFF) AND WINDS ON V₁ ARE BOTH NEGLIGIBLE.
3. IF THE CORRECTED V₁ IS GREATER THAN V₁ OR THE VALUE OF VR MUST BE USED FOR V₁.

EXAMPLE:
 UNCORRECTED TAKE-OFF DECISION SPEED, V₁..... 114 KIAS
 RUNWAY GRADIENT..... 1.0% DN
 ENGINE ANTI-ICE..... ON
 CORRECTED TAKE-OFF DECISION SPEED, V₁;
 ANTI-SKID (ON)..... 114.1 KIAS
 ANTI-SKID (OFF)..... 101.6 KIAS

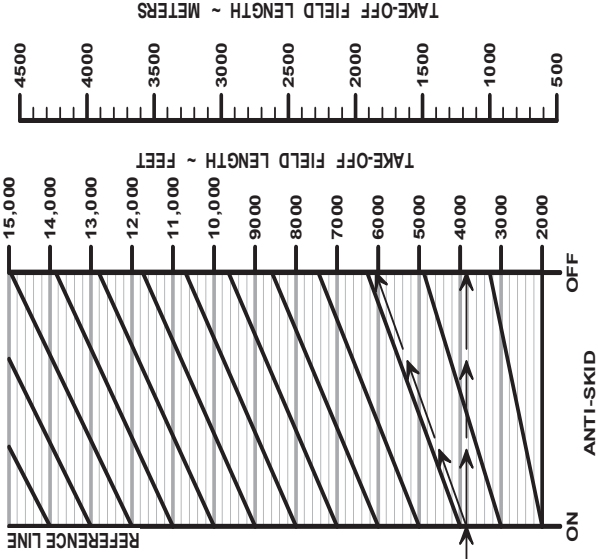
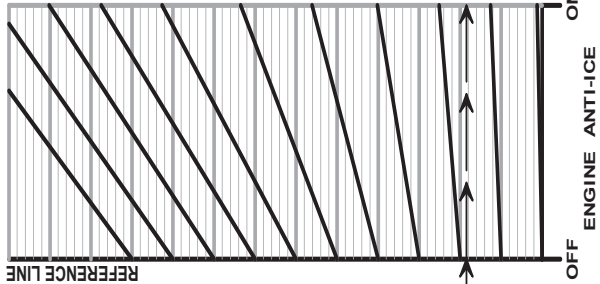
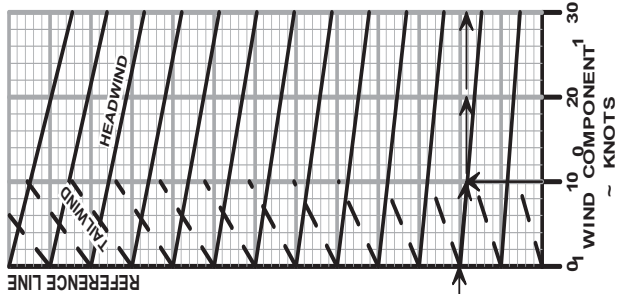
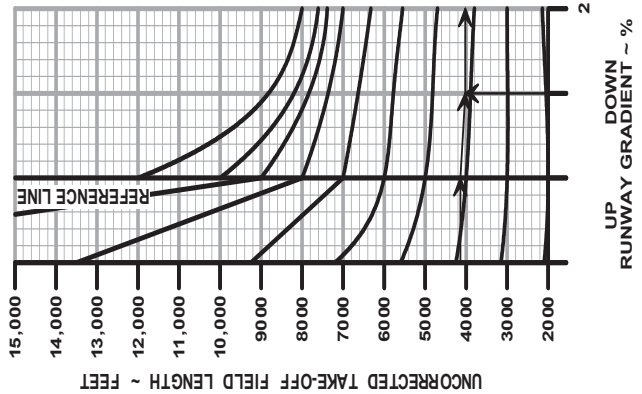


TAKE-OFF FIELD LENGTH CORRECTION - FLAPS 0°

EXAMPLE:
 UNCORRECTED TAKE-OFF FIELD LENGTH.....4141 FT
 RUNWAY GRADIENT.....1.0% DN
 HEADWIND COMPONENT.....10 KTS
 ENGINE ANTI-ICE.....OFF
 TAKE-OFF FIELD LENGTH:
 ANTI-SKID (ON).....3848 FT
 ANTI-SKID (OFF).....6061 FT

NOTES: 1. OBTAIN V1, VR, AND V2 FROM THE "TAKE-OFF SPEEDS AND FIELD LENGTH" TABLE AND "TAKE-OFF DECISION SPEED (V1) CORRECTION" GRAPH.
 2. FOR RUNWAY GRADIENTS GREATER THAN 1% UP, USE DIFFERENT TAKE-OFF FLAP SETTING.

ASSOCIATED CONDITIONS:
 THRUST.....TAKE-OFF
 RUNWAY.....PAVED, DRY SURFACE
 OBSTACLE HEIGHT.....35 FT
 ECS.....(ON) OR (OFF)



STANDARD INSTRUMENT DEPARTURE NET GRADIENT - FLAPS 0° ANTI-ICE OFF

ONE ENGINE INOPERATIVE
 CLIMB SPEED: V_2

ASSOCIATED CONDITIONS:
 ALL ANTI-ICE... OFF
 THRUST... TAKE-OFF
 LANDING GEAR... UP
 ECS... (ON)

- NOTES:
- DO NOT EXCEED 10 MINUTES AT TAKEOFF THRUST FROM FIRST ADVANCE OF THRUST LEVER.
 - COMBINED SELECTION OF ECS (OFF) AND ANTI-ICE (ON) IS NOT APPROVED.
 - FOR TAKE-OFF WEIGHTS BELOW 12,000-LBS NET CLIMB GRADIENT.

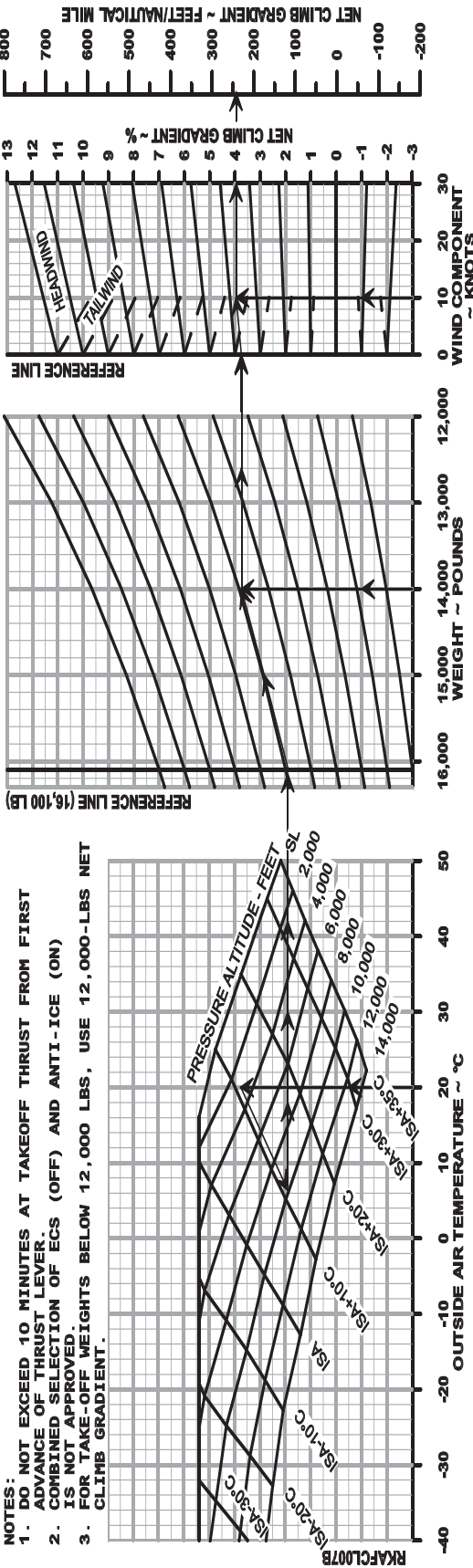


FIG 002
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STANDARD INSTRUMENT DEPARTURE NET GRADIENT - FLAPS 0° ANTI-ICE ON

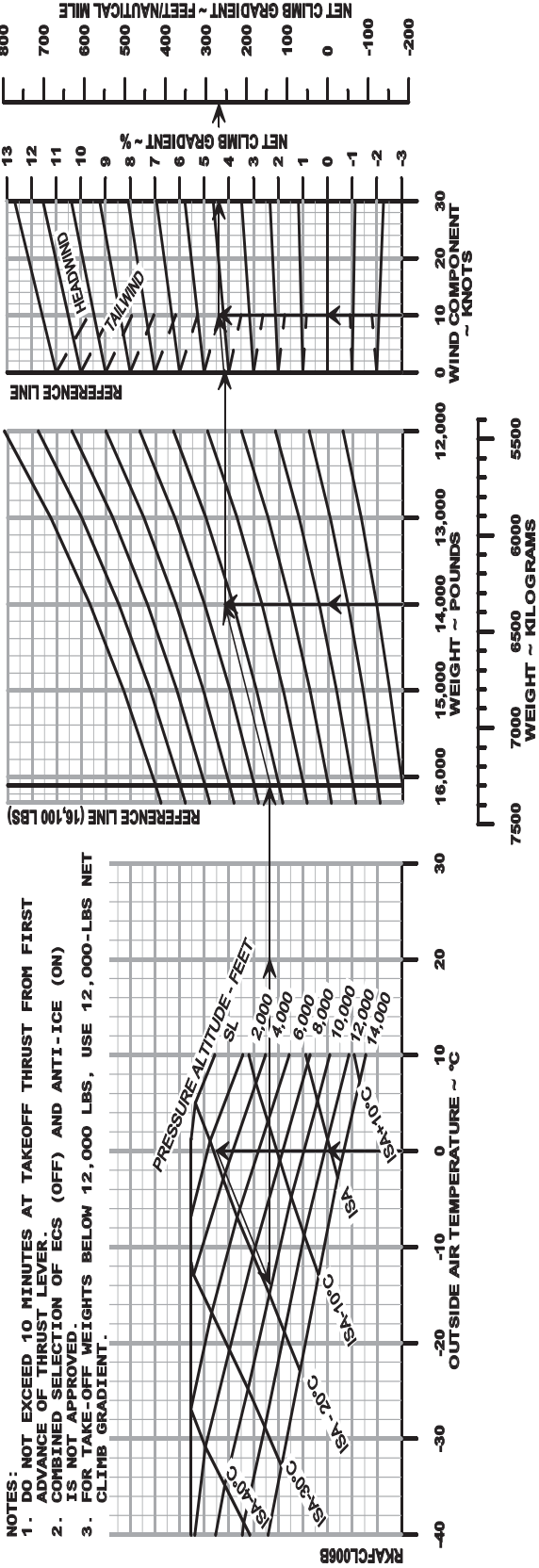
EXAMPLE:
 OAT 0°C
 FIELD PRESSURE ALTITUDE 3,000 FT
 SID PRESS. ALT. REQUIREMENT 10,000 FT
 WEIGHT 14,000 LBS
 HEADWIND COMPONENT 10 KTS
 NET CLIMB GRADIENT 267 FT/NM

ONE ENGINE INOPERATIVE

CLIMB SPEED: V_2

ASSOCIATED CONDITIONS:
 ALL ANTI-ICE... ON
 THRUST..... TAKE-OFF
 LANDING GEAR.... UP
 ECS..... (ON)

- NOTES:
 1. DO NOT EXCEED 10 MINUTES AT TAKEOFF THRUST FROM FIRST ADVANCE OF THRUST LEVER.
 2. COMBINED SELECTION OF ECS (OFF) AND ANTI-ICE (ON) IS NOT APPROVED.
 3. FOR TAKE-OFF WEIGHTS BELOW 12,000 LBS, USE 12,000-LBS NET CLIMB GRADIENT.



PK600
 00625AAA.A1

FLAPS 0°

TAKEOFF
Zero Wind and Gradient
1,000 FT
FLAPS 0°

T.O. Gross Weight x 1000	Temp (°C) (°F) T.O. Power	-40	-20	-10	0	10	20	30	40	50
		89.0	92.7	94.5	96.3	98.2*	99.2*	98.2	97.2	96.0
16.3	V ₁	120	119	119	119	119	121	122	123	124
	V _R	121	121	121	121	121	122	122	123	124
	V _{REF 119}	133	133	133	133	133	133	133	133	133
	TOFL	4215	4522	4692	4836	4967	5452	6215	7541	10,487
16.1	V ₁	118	118	118	118	118	119	122	122	123
	V _R	120	120	120	120	120	121	122	122	123
	V _{REF 118}	132	132	132	132	132	132	132	132	132
	TOFL	4107	4410	4574	4716	4840	5311	6008	7241	9763
15.5	V ₁	115	115	115	114	114	116	118	119	120
	V _R	118	118	118	118	118	118	119	119	120
	V _{REF 116}	130	130	130	130	130	130	130	130	130
	TOFL	3807	4082	4239	4370	4480	4913	5500	6425	8161
15.0	V ₁	112	112	112	112	111	113	115	117	118
	V _R	115	115	115	115	115	116	116	117	118
	V _{REF 114}	128	128	128	128	128	128	128	128	128
	TOFL	3567	3825	3971	4094	4197	4595	5132	5846	7218
14.5	V ₁	109	109	109	109	108	110	112	114	115
	V _R	113	113	113	113	113	113	114	115	115
	V _{REF 112}	126	126	126	126	126	126	126	126	126
	TOFL	3334	3576	3711	3827	3926	4288	4787	5374	6454
14.0	V ₁	106	106	106	106	105	107	109	111	113
	V _R	111	111	111	111	110	111	112	112	113
	V _{REF 110}	123	123	123	123	123	123	123	123	123
	TOFL	3113	3341	3465	3573	3666	4001	4455	4998	5812
13.5	V ₁	103	103	103	103	102	104	106	108	110
	V _R	108	108	108	108	108	109	109	110	111
	V _{REF 108}	121	121	121	121	121	121	121	121	121
	TOFL	2900	3112	3227	3328	3414	3720	4137	4631	5260
13.0	V ₁	100	100	100	100	99	101	103	105	107
	V _R	106	106	106	105	105	106	107	107	108
	V _{REF 106}	119	119	119	119	119	119	119	119	119
	TOFL	2697	2894	3001	3095	3175	3455	3838	4293	4852
12.5	V ₁	97	96	96	96	96	98	100	102	104
	V _R	103	103	103	103	103	103	104	105	106
	V _{REF 104}	116	116	116	116	116	116	116	116	116
	TOFL	2501	2683	2782	2870	2944	3200	3552	3964	4475
12.0	V ₁	93	93	93	93	93	95	97	98	101
	V _R	100	100	100	100	100	101	102	102	103
	V _{REF 102}	114	114	114	114	114	114	114	114	114
	TOFL	2315	2483	2575	2657	2725	2958	3280	3658	4117

TAKEOFF
Zero Wind and Gradient
3,000 FT
FLAPS 0°
FLAPS 0°

T.O. Gross Weight x 1000	Temp (°C) (°F) T.O. Power	-40	-20	-10	0	10	20	30	40	50
		91.5	95.2	97.1	99.0*	100.2*	99.2	98.2	97.2	96.0
16.3	V ₁	119	119	119	119	120	122	123	124	124
	V _R	121	121	121	121	122	122	123	124	124
	V ₂	133	133	133	133	133	133	133	133	133
	V _{REF} 119									
	TOFL	4480	4820	4970	5129	5516	6391	7791	10,209	45,741
16.1	V ₁	118	118	118	117	119	121	122	123	123
	V _R	120	120	120	120	121	121	122	123	123
	V ₂	132	132	132	132	132	132	132	132	132
	V _{REF} 118									
	TOFL	4367	4705	4842	5002	5384	6178	7482	9596	26,252
15.5	V ₁	114	114	114	114	115	118	119	120	121
	V _R	118	118	118	118	118	119	119	120	121
	V ₂	130	130	130	130	130	130	130	130	130
	V _{REF} 116									
	TOFL	4043	4356	4483	4636	4976	5674	6642	8152	12,854
15.0	V ₁	112	112	111	111	112	115	117	118	118
	V _R	115	115	115	115	116	116	117	118	118
	V ₂	128	128	128	128	128	128	128	128	128
	V _{REF} 114									
	TOFL	3790	4081	4202	4344	4657	5296	6048	7261	9942
14.5	V ₁	109	109	108	108	109	112	114	115	116
	V _R	113	113	113	113	113	114	115	115	116
	V ₂	126	126	126	126	126	126	126	126	126
	V _{REF} 112									
	TOFL	3547	3815	3928	4061	4350	4940	5566	6521	8406
14.0	V ₁	106	106	105	105	106	109	111	113	114
	V _R	111	110	110	110	111	112	112	113	114
	V ₂	123	123	123	123	123	123	123	123	123
	V _{REF} 110									
	TOFL	3313	3563	3671	3792	4060	4597	5177	5890	7339
13.5	V ₁	103	103	102	102	103	106	108	110	111
	V _R	108	108	108	108	108	109	110	111	111
	V ₂	121	121	121	121	121	121	121	121	121
	V _{REF} 108									
	TOFL	3087	3318	3420	3532	3778	4269	4797	5378	6498
13.0	V ₁	100	99	99	99	100	103	105	107	109
	V _R	106	105	105	105	106	107	107	108	109
	V ₂	119	119	119	119	119	119	119	119	119
	V _{REF} 106									
	TOFL	2872	3087	3181	3285	3511	3962	4445	4975	5803
12.5	V ₁	96	96	96	96	97	100	102	104	106
	V _R	103	103	103	103	103	104	105	105	106
	V ₂	116	116	116	116	116	116	116	116	116
	V _{REF} 104									
	TOFL	2663	2862	2950	3046	3253	3664	4105	4588	5218
12.0	V ₁	93	93	93	93	94	96	99	100	103
	V _R	100	100	100	100	101	102	102	103	104
	V ₂	114	114	114	114	114	114	114	114	114
	V _{REF} 102									
	TOFL	2465	2650	2730	2820	3009	3383	3788	4222	4793

FLAPS 0°

TAKEOFF

Zero Wind and Gradient

4,000 FT

FLAPS 0°

T.O. Gross Weight x 1000	Temp (°C) (°F)	-40	-20	-10	0	10	20	30	40	50
		T.O. Power	92.8	96.5	98.5	100.3*	100.2*	99.2	98.2	97.2
16.3	V ₁	119	119	119	119	121	123	123	124	-
	V _R	121	121	121	121	122	123	123	124	-
	V _{REF 119}	133	133	133	133	133	133	133	133	-
	TOFL	4630	4974	5118	5372	5960	7107	8918	13,547	-
16.1	V ₁	118	118	117	118	120	122	122	123	-
	V _R	120	120	120	120	121	122	122	123	-
	V _{REF 118}	132	132	132	132	132	132	132	132	-
	TOFL	4513	4856	4990	5245	5807	6853	8504	12,059	-
15.5	V ₁	114	114	114	114	116	119	120	120	121
	V _R	118	118	118	118	118	119	120	120	121
	V _{REF 116}	130	130	130	130	130	130	130	130	130
	TOFL	4184	4496	4626	4854	5366	6149	7435	9541	25,777
15.0	V ₁	112	111	111	112	113	116	117	118	119
	V _R	115	115	115	115	116	117	117	118	119
	V _{REF 114}	128	128	128	128	128	128	128	128	128
	TOFL	3921	4213	4336	4548	5017	5722	6713	8284	13,649
14.5	V ₁	109	108	108	109	110	113	115	116	116
	V _R	113	113	113	113	114	114	115	116	116
	V _{REF 112}	126	126	126	126	126	126	126	126	126
	TOFL	3667	3939	4054	4250	4681	5324	6084	7331	10,145
14.0	V ₁	106	106	105	106	107	110	112	113	114
	V _R	111	110	110	111	111	112	113	113	114
	V _{REF 110}	123	123	123	123	123	123	123	123	123
	TOFL	3425	3679	3787	3971	4363	4957	5582	6558	8492
13.5	V ₁	103	103	102	103	104	107	109	111	111
	V _R	108	108	108	108	109	110	110	111	111
	V _{REF 108}	121	121	121	121	121	121	121	121	121
	TOFL	3191	3429	3527	3697	4059	4598	5174	5896	7361
13.0	V ₁	100	99	99	100	101	104	106	108	109
	V _R	106	105	105	106	106	107	108	108	109
	V _{REF 106}	119	119	119	119	119	119	119	119	119
	TOFL	2969	3189	3281	3438	3769	4264	4790	5369	6491
12.5	V ₁	96	96	96	96	98	101	103	105	106
	V _R	103	103	103	103	104	104	105	106	106
	V _{REF 104}	116	116	116	116	116	116	116	116	116
	TOFL	2753	2957	3043	3187	3490	3940	4417	4946	5769
12.0	V ₁	93	93	93	93	95	97	99	101	104
	V _R	100	100	100	100	101	102	103	103	104
	V _{REF 102}	114	114	114	114	114	114	114	114	114
	TOFL	2549	2737	2816	2949	3226	3636	4069	4552	5180

TAKEOFF

Zero Wind and Gradient

5,000 FT

FLAPS 0°

T.O. Gross Weight x 1000	Temp(°C) (°F) T.O. Power	-40	-20	-10	0	10	20	30	40	50
		-40	-4	14	32	50	68	86	104	122
		94.8	98.6	100.6*	101.3*	100.2	99.2	98.2	97.2	96.0
16.3	V ₁	119	119	119	120	122	123	124	124	-
	V _R	121	121	121	122	122	123	124	124	-
	V ₂	133	133	133	133	133	133	133	133	-
	TOFL	4773	5118	5309	5722	6462	8049	10,639	36,735	-
16.1	V ₁	118	117	117	119	121	122	123	123	-
	V _R	120	120	120	121	121	122	123	123	-
	V ₂	132	132	132	132	132	132	132	132	-
	TOFL	4659	4990	5117	5585	6297	7729	9989	23,804	-
15.5	V ₁	114	114	114	115	117	119	120	121	-
	V _R	118	118	118	118	119	119	120	121	-
	V ₂	130	130	130	130	130	130	130	130	-
	TOFL	4316	4626	4798	5164	5802	6864	8480	12,066	-
15.0	V ₁	111	111	111	112	115	117	118	118	-
	V _R	115	115	115	116	116	117	118	118	-
	V ₂	128	128	128	128	128	128	128	128	-
	TOFL	4045	4336	4497	4834	5424	6249	7551	9802	-
14.5	V ₁	108	108	108	109	112	114	115	116	117
	V _R	113	113	113	113	114	115	115	116	117
	V ₂	126	126	126	126	126	126	126	126	126
	TOFL	3783	4055	4205	4519	5055	5775	6780	8420	14,223
14.0	V ₁	106	105	105	106	109	111	113	114	114
	V _R	110	110	110	111	112	112	113	114	114
	V ₂	123	123	123	123	123	123	123	123	123
	TOFL	3534	3788	3927	4216	4707	5361	6125	7409	10,255
13.5	V ₁	102	102	102	103	105	108	110	111	112
	V _R	108	108	108	108	109	110	111	111	112
	V ₂	121	121	121	121	121	121	121	121	121
	TOFL	3293	3529	3658	3924	4373	4974	5591	6591	8505
13.0	V ₁	99	99	99	100	102	105	107	109	109
	V _R	105	105	105	106	107	107	108	109	109
	V ₂	119	119	119	119	119	119	119	119	119
	TOFL	3064	3283	3402	3647	4060	4604	5170	5905	7341
12.5	V ₁	96	96	96	97	99	102	104	106	107
	V _R	103	103	103	103	104	105	106	106	107
	V ₂	116	116	116	116	116	116	116	116	116
	TOFL	2842	3045	3155	3379	3756	4250	4767	5352	6445
12.0	V ₁	93	93	93	94	96	98	100	102	104
	V _R	100	100	100	101	101	102	103	104	104
	V ₂	114	114	114	114	114	114	114	114	114
	TOFL	2633	2819	2922	3127	3469	3921	4386	4918	5712

TAKEOFF

Zero Wind and Gradient

6,000 FT

FLAPS 0°

T.O. Gross Weight x 1000	Temp(°C) (°F) T.O. Power	-40	-20	-10	0	10	20	30	40	50
		-40	-4	14	32	50	68	86	104	122
		96.7	100.7	102.7	101.3	100.2	99.2	98.2	97.2	96.0
16.3	V ₁	119	119	119	121	123	123	124	-	-
	V _R	121	121	121	122	123	123	124	-	-
	V _{REF 119}	133	133	133	133	133	133	133	-	-
	TOFL	4930	5292	5596	6166	7168	9305	14,267	-	-
16.1	V ₁	118	117	118	120	122	122	123	-	-
	V _R	120	120	120	121	122	122	123	-	-
	V _{REF 118}	132	132	132	132	132	132	132	-	-
	TOFL	4813	5166	5462	6014	6919	8865	12,630	-	-
15.5	V ₁	114	114	115	116	118	120	120	121	-
	V _R	118	118	118	118	119	120	120	121	-
	V _{REF 116}	130	130	130	130	130	130	130	130	-
	TOFL	4457	4786	5055	5554	6285	7741	9952	21,524	-
15.0	V ₁	111	111	112	113	116	117	118	119	-
	V _R	115	115	115	116	117	117	118	119	-
	V _{REF 114}	128	128	128	128	128	128	128	128	-
	TOFL	4179	4486	4735	5194	5861	6983	8634	12,718	-
14.5	V ₁	108	108	109	110	113	115	116	116	117
	V _R	113	113	113	114	114	115	116	116	117
	V _{REF 112}	126	126	126	126	126	126	126	126	126
	TOFL	3908	4196	4425	4848	5454	6326	7636	10,040	29,886
14.0	V ₁	105	105	106	107	110	112	113	114	114
	V _R	110	110	111	111	112	113	113	114	114
	V _{REF 110}	123	123	123	123	123	123	123	123	123
	TOFL	3651	3919	4134	4523	5079	5814	6830	8539	14,530
13.5	V ₁	102	102	103	104	106	109	111	111	112
	V _R	108	108	108	109	109	110	111	111	112
	V _{REF 108}	121	121	121	121	121	121	121	121	121
	TOFL	3404	3652	3849	4206	4714	5378	6141	7458	10,252
13.0	V ₁	99	99	100	101	103	106	108	109	110
	V _R	105	105	106	106	107	108	108	109	110
	V _{REF 106}	119	119	119	119	119	119	119	119	119
	TOFL	3167	3398	3579	3907	4370	4979	5588	6606	8463
12.5	V ₁	96	96	97	98	100	103	105	106	107
	V _R	103	103	103	104	104	105	106	106	107
	V _{REF 104}	116	116	116	116	116	116	116	116	116
	TOFL	2938	3153	3318	3618	4042	4590	5147	6888	7272
12.0	V ₁	93	93	94	95	97	100	101	103	104
	V _R	100	100	100	101	102	103	103	104	104
	V _{REF 102}	114	114	114	114	114	114	114	114	114
	TOFL	2720	2919	3070	3346	3731	4231	4736	5335	6367

TAKEOFF Zero Wind and Gradient 7,000 FT

FLAPS 0°

T.O. Gross Weight x 1000	Temp(°C) (°F) T.O. Power	-40	-20	-10	0	10	20	30	40	50
		-40	-4	14	32	50	68	86	104	122
		99.1	103.3*	102.7*	101.3	100.2	99.2	98.2	97.2	96.0
16.3	V ₁	119	119	120	122	123	124	124	-	-
	V _R	121	121	122	122	123	124	124	-	-
	V _{REF 119}	133	133	133	133	133	133	133	-	-
	TOFL	5093	5536	6031	6679	8006	11,121	35,731	-	-
16.1	V ₁	117	118	119	121	122	123	123	-	-
	V _R	120	120	121	121	122	123	123	-	-
	V _{REF 118}	132	132	132	132	132	132	132	-	-
	TOFL	4965	5398	5877	6513	7704	10,420	25,091	-	-
15.5	V ₁	114	114	116	117	119	120	121	-	-
	V _R	118	118	118	119	119	120	121	-	-
	V _{REF 116}	130	130	130	130	130	130	130	-	-
	TOFL	4603	5002	5439	6009	6880	8820	12,686	-	-
15.0	V ₁	111	111	113	114	117	118	118	119	-
	V _R	115	115	116	116	117	118	118	119	-
	V _{REF 114}	128	128	128	128	128	128	128	128	-
	TOFL	4315	4686	5090	5614	6326	7846	10,241	24,944	-
14.5	V ₁	108	109	110	111	114	115	116	116	-
	V _R	113	113	113	114	115	115	116	116	-
	V _{REF 112}	126	126	126	126	126	126	126	126	-
	TOFL	4035	4381	4753	5233	5890	7038	8780	13,367	-
14.0	V ₁	105	106	107	108	110	113	114	114	-
	V _R	110	111	111	112	112	113	114	114	-
	V _{REF 110}	123	123	123	123	123	123	123	123	-
	TOFL	3770	4091	4434	4874	5470	6354	7719	10,230	-
13.5	V ₁	102	103	104	105	107	110	111	112	-
	V _R	108	108	109	109	110	111	111	112	-
	V _{REF 108}	121	121	121	121	121	121	121	121	-
	TOFL	3512	3810	4129	4532	5077	5818	6863	8601	-
13.0	V ₁	99	100	101	102	104	107	109	109	-
	V _R	105	106	106	107	107	108	109	109	-
	V _{REF 106}	119	119	119	119	119	119	119	119	-
	TOFL	3268	3544	3836	4206	4702	5367	6148	7470	-
12.5	V ₁	96	96	98	99	101	104	106	107	-
	V _R	103	103	103	104	105	106	106	107	-
	V _{REF 104}	116	116	116	116	116	116	116	116	-
	TOFL	3031	3286	3555	3892	4347	4949	5571	6579	-
12.0	V ₁	93	93	94	96	98	100	102	104	-
	V _R	100	100	101	101	102	103	104	104	-
	V _{REF 102}	114	114	114	114	114	114	114	114	-
	TOFL	2806	3042	3288	3598	4009	4552	5118	5843	-

FLAPS 0°

TAKEOFF

Zero Wind and Gradient

8,000 FT

FLAPS 0°

T.O. Gross Weight x 1000	Temp (°C) (°F)	-40	-20	-10	0	10	20	30	40	50
T.O. Power		101.5*	104.0*	102.7*	101.3	100.2	99.2	98.2	97.2	96.0
16.3	V ₁	119	120	121	123	123	124	-	-	-
	V _R	121	122	122	123	123	124	-	-	-
	V _{REF 119}	133	133	133	133	133	133	-	-	-
	TOFL	5278	5902	6529	7388	9124	15,034	-	-	-
16.1	V ₁	117	118	120	122	122	123	-	-	-
	V _R	120	121	121	122	122	123	-	-	-
	V _{REF 118}	132	132	132	132	132	132	-	-	-
	TOFL	5147	5753	6368	7133	8729	13,200	-	-	-
15.5	V ₁	114	115	117	118	120	120	121	-	-
	V _R	118	118	118	119	120	120	121	-	-
	V _{REF 116}	130	130	130	130	130	130	130	-	-
	TOFL	4772	5326	5876	6508	7699	10,343	29,883	-	-
15.0	V ₁	111	112	114	115	117	118	119	-	-
	V _R	115	116	116	117	117	118	119	-	-
	V _{REF 114}	128	128	128	128	128	128	128	-	-
	TOFL	4472	4987	5500	6069	6983	8958	13,615	-	-
14.5	V ₁	108	109	111	112	115	116	116	-	-
	V _R	113	113	114	114	115	116	116	-	-
	V _{REF 112}	126	126	126	126	126	126	126	-	-
	TOFL	4182	4658	5131	5658	6380	7916	10,572	-	-
14.0	V ₁	105	106	108	109	112	113	114	114	-
	V _R	110	111	111	112	113	113	114	114	-
	V _{REF 110}	123	123	123	123	123	123	123	123	-
	TOFL	3907	4347	4782	5264	5927	7077	8949	13,792	-
13.5	V ₁	102	103	105	106	108	111	111	112	-
	V _R	108	108	109	109	110	111	111	112	-
	V _{REF 108}	121	121	121	121	121	121	121	121	-
	TOFL	3640	4046	4446	4886	5485	6359	7799	10,297	-
13.0	V ₁	99	100	102	103	105	108	109	110	-
	V _R	105	106	106	107	108	108	109	110	-
	V _{REF 106}	119	119	119	119	119	119	119	119	-
	TOFL	3386	3763	4131	4534	5080	5812	6899	8596	-
12.5	V ₁	96	97	99	100	102	105	106	107	-
	V _R	103	103	104	104	105	106	106	107	-
	V _{REF 104}	116	116	116	116	116	116	116	116	-
	TOFL	3141	3488	3825	4192	4687	5342	6147	7424	-
12.0	V ₁	93	94	95	97	99	101	103	104	-
	V _R	100	101	101	102	102	103	104	104	-
	V _{REF 102}	114	114	114	114	114	114	114	114	-
	TOFL	2909	3227	3536	3871	4322	4913	5550	6516	-

TAKEOFF

Zero Wind and Gradient

9,000 FT

FLAPS 0°

**FLAPS
0°**

T.O. Gross Weight x 1000	Temp (°C) (°F) T.O. Power	-40	-20	-10	0	10	20	30	40	50
		-40	-4	14	32	50	68	86	104	122
		104.0	104.0*	102.7*	101.3	100.2	99.2	98.2	97.2	96.0
16.3	V ₁	119	121	122	123	124	124	-	-	-
V _{REF} 119	V _R	121	122	122	123	124	124	-	-	-
	V ₂	133	133	133	133	133	133	-	-	-
	TOFL	5545	6399	7104	8281	10,765	41,453	-	-	-
	V ₁	118	120	121	122	123	123	-	-	-
V _{REF} 118	V _R	120	121	122	122	123	123	-	-	-
	V ₂	132	132	132	132	132	132	-	-	-
	TOFL	5411	6241	6896	7971	10,181	23,706	-	-	-
	V ₁	114	116	118	119	120	121	-	-	-
V _{REF} 116	V _R	118	118	119	119	120	121	-	-	-
	V ₂	130	130	130	130	130	130	-	-	-
	TOFL	5009	5764	6362	7127	8771	13,180	-	-	-
	V ₁	112	113	115	116	118	118	119	-	-
V _{REF} 114	V _R	115	116	116	117	118	118	119	-	-
	V ₂	128	128	128	128	128	128	128	-	-
	TOFL	4697	5393	5939	6586	7864	10,631	30,079	-	-
	V ₁	109	110	112	113	115	116	117	-	-
V _{REF} 112	V _R	113	114	114	115	115	116	117	-	-
	V ₂	126	126	126	126	126	126	126	-	-
	TOFL	4391	5038	5541	6122	7093	9111	15,053	-	-
	V ₁	106	107	109	110	113	114	114	114	-
V _{REF} 110	V _R	111	111	112	112	113	114	114	114	-
	V ₂	123	123	123	123	123	123	123	123	-
	TOFL	4100	4698	5159	5690	6446	8010	10,975	32,160	-
	V ₁	103	104	106	107	110	111	112	112	-
V _{REF} 108	V _R	108	109	109	110	110	111	112	112	-
	V ₂	121	121	121	121	121	121	121	121	-
	TOFL	3818	4370	4793	5282	5965	7122	9129	14,002	-
	V ₁	100	101	103	104	106	109	109	110	-
V _{REF} 106	V _R	106	106	107	107	108	109	109	110	-
	V ₂	119	119	119	119	119	119	119	119	-
	TOFL	3551	4059	4447	4893	5508	6378	7890	10,302	-
	V ₁	97	98	100	101	103	106	107	107	-
V _{REF} 104	V _R	103	104	104	105	105	106	107	107	-
	V ₂	116	116	116	116	116	116	116	116	-
	TOFL	3293	3762	4117	4524	5081	5804	6931	8546	-
	V ₁	93	95	96	98	100	102	104	105	-
V _{REF} 102	V _R	100	101	102	102	103	104	104	105	-
	V ₂	114	114	114	114	114	114	114	114	-
	TOFL	3047	3478	3803	4174	4677	5322	6148	7355	-

TAKEOFF

Zero Wind and Gradient

10,000 FT

FLAPS 0°

T.O. Gross Weight x 1000	Temp(°C) (°F)	-40	-20	-10	0	10	20	30	40	50
T.O. Power		104.0	104.0*	102.7*	101.3	100.2	99.2	98.2	97.2	96.0
16.3	V ₁	120	122	123	123	124	-	-	-	-
	V _R	122	122	123	123	124	-	-	-	-
	V _{REF 119}	133	133	133	133	133	-	-	-	-
	TOFL	5954	6980	7948	9465	13,690	-	-	-	-
16.1	V ₁	119	121	122	122	123	-	-	-	-
	V _R	121	121	122	122	123	-	-	-	-
	V _{REF 118}	132	132	132	132	132	-	-	-	-
	TOFL	5808	6806	7665	9062	12,520	-	-	-	-
15.5	V ₁	115	117	119	120	120	121	-	-	-
	V _R	118	119	119	120	120	121	-	-	-
	V _{REF 116}	130	130	130	130	130	130	-	-	-
	TOFL	5372	6283	6921	8009	10,241	25,528	-	-	-
15.0	V ₁	112	114	116	117	118	119	-	-	-
	V _R	116	116	117	117	118	119	-	-	-
	V _{REF 114}	128	128	128	128	128	128	-	-	-
	TOFL	5034	5870	6462	7273	8994	14,208	-	-	-
14.5	V ₁	109	111	113	115	116	116	-	-	-
	V _R	113	114	114	115	116	116	-	-	-
	V _{REF 112}	126	126	126	126	126	126	-	-	-
	TOFL	4702	5474	6013	6665	8010	11,021	-	-	-
14.0	V ₁	107	108	110	112	113	114	114	-	-
	V _R	111	112	112	113	113	114	114	-	-
	V _{REF 110}	123	123	123	123	123	123	123	-	-
	TOFL	4388	5104	5593	6195	7198	9330	16,719	-	-
13.5	V ₁	104	105	107	108	111	111	112	-	-
	V _R	108	109	110	110	111	111	112	-	-
	V _{REF 108}	121	121	121	121	121	121	121	-	-
	TOFL	4085	4743	5196	5737	6504	8133	11,263	-	-
13.0	V ₁	100	102	104	105	107	109	110	110	-
	V _R	106	107	107	108	108	109	110	110	-
	V _{REF 106}	119	119	119	119	119	119	119	119	-
	TOFL	3797	4403	4817	5315	6004	7195	9250	14,254	-
12.5	V ₁	97	99	101	102	104	106	107	108	-
	V _R	103	104	105	105	106	106	107	108	-
	V _{REF 104}	116	116	116	116	116	116	116	116	-
	TOFL	3519	4075	4456	4906	5522	6410	7929	10,313	-
12.0	V ₁	94	96	97	99	101	103	105	105	-
	V _R	101	101	102	103	103	104	105	105	-
	V _{REF 102}	114	114	114	114	114	114	114	114	-
	TOFL	3257	3768	4113	4526	5082	5812	6933	8516	-

MAXIMUM TAKE-OFF WEIGHT - ECS (ON) - FLAPS 10° TO ACHIEVE TAKE-OFF CLIMB REQUIREMENTS

ASSOCIATED CONDITIONS:

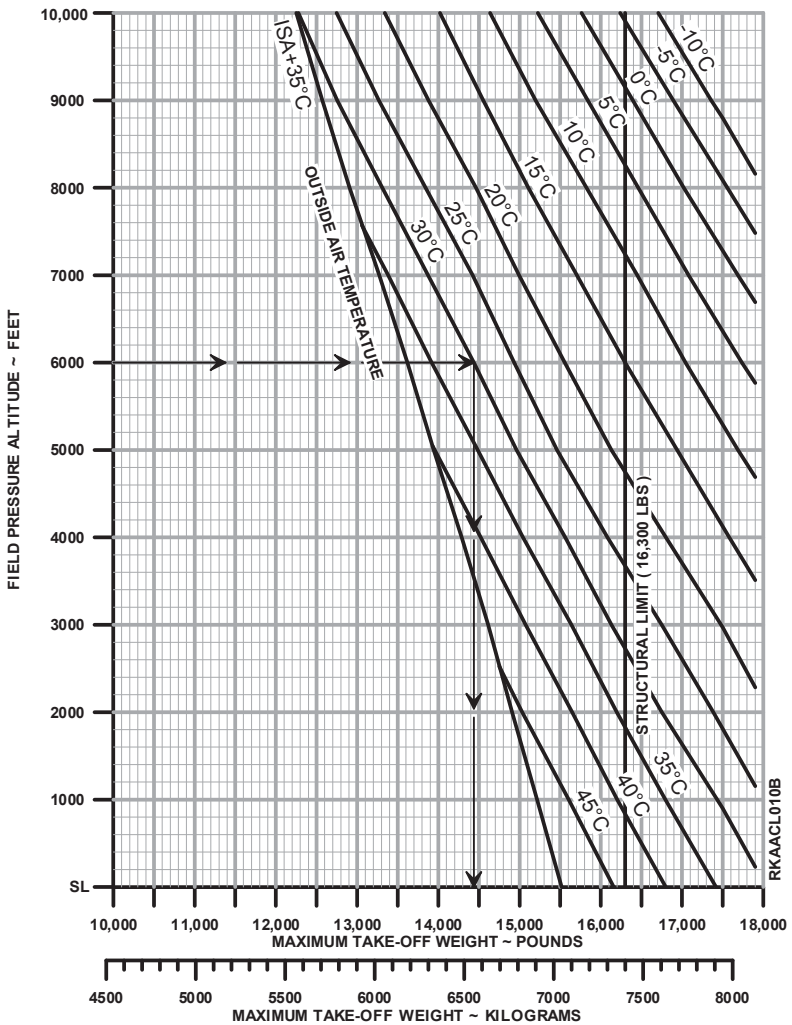
THRUST TAKE-OFF
LANDING GEAR SELECTED UP AT 35 FT

EXAMPLE:

FIELD PRESSURE ALTITUDE ... 6,000 FT
OAT 30° C
MAXIMUM TAKE-OFF WEIGHT 14,436 LBS

**NOTE: WITH ENGINE ANTI-ICE (ON), SUBTRACT
1,400 LBS FROM THE WEIGHT READ
FROM THIS GRAPH.**

FLAPS 10°



MAXIMUM TAKE-OFF WEIGHT - ECS (OFF) - FLAPS 10° TO ACHIEVE TAKE-OFF CLIMB REQUIREMENTS

ASSOCIATED CONDITIONS:

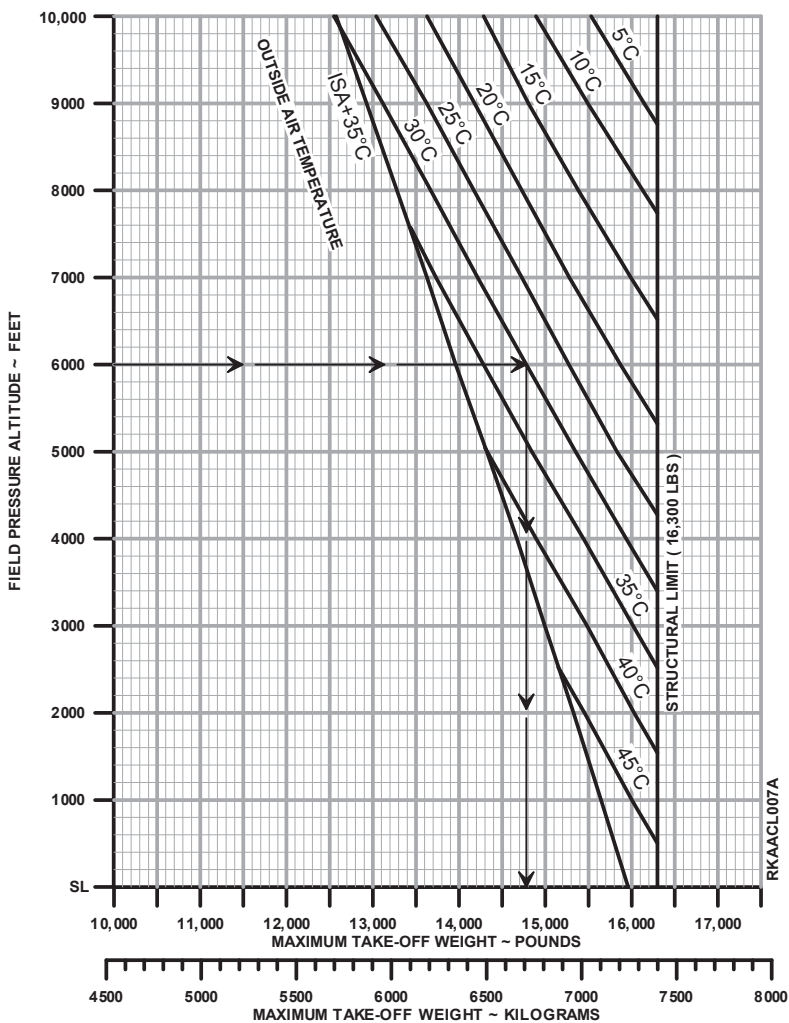
THRUST TAKE-OFF
 LANDING GEAR SELECTED UP AT 35 FT
 ANTI-ICE OFF

EXAMPLE:

FIELD PRESSURE ALTITUDE ... 6,000 FT
OAT 30°C
 MAXIMUM TAKE-OFF WEIGHT 14,778 LBS

NOTE: COMBINED SELECTION OF ECS (OFF) AND ANTI-ICE (ON) IS NOT APPROVED.

FLAPS 10°



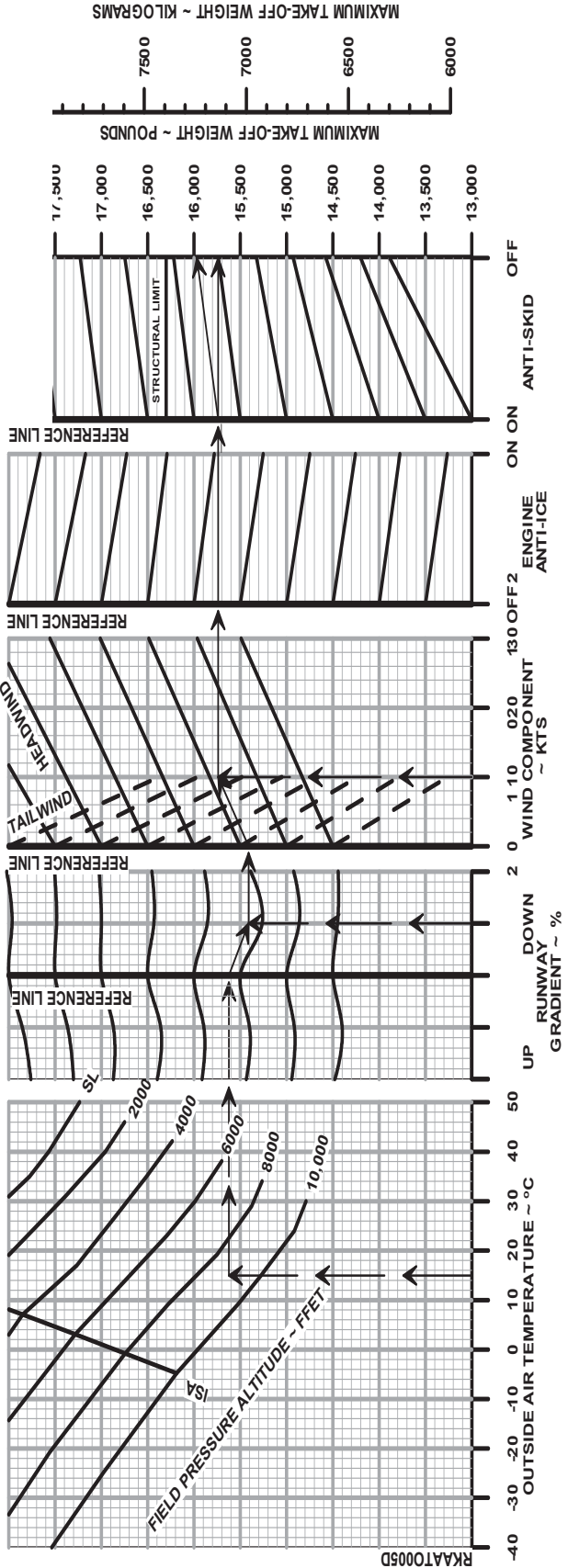
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MAXIMUM TAKE-OFF WEIGHT LIMITED BY MAXIMUM BRAKE ENERGY FLAPS 10°

ASSOCIATED CONDITIONS:
ECS (ON) OR (OFF)

- NOTES: 1. ALL ANTI-ICE SYSTEMS EXCEPT ENGINE ANTI-ICE MUST BE OFF DURING TAKEOFF.
2. COMBINED SELECTION OF ECS (OFF) AND ENGINE ANTI-ICE (ON) IS NOT APPROVED.

EXAMPLE:
OAT 15 °C
FIELD PRESSURE ALTITUDE ... 9000 FT
RUNWAY GRADIENT 1% DN
HEADWIND COMPONENT TO KTS
ENGINE ANTI-ICE OFF
MAXIMUM TAKE-OFF WEIGHT:
ANTI-SKID (ON) ... 15,739 LBS
ANTI-SKID (OFF) ... 15,968 LBS



FLAPS 10°

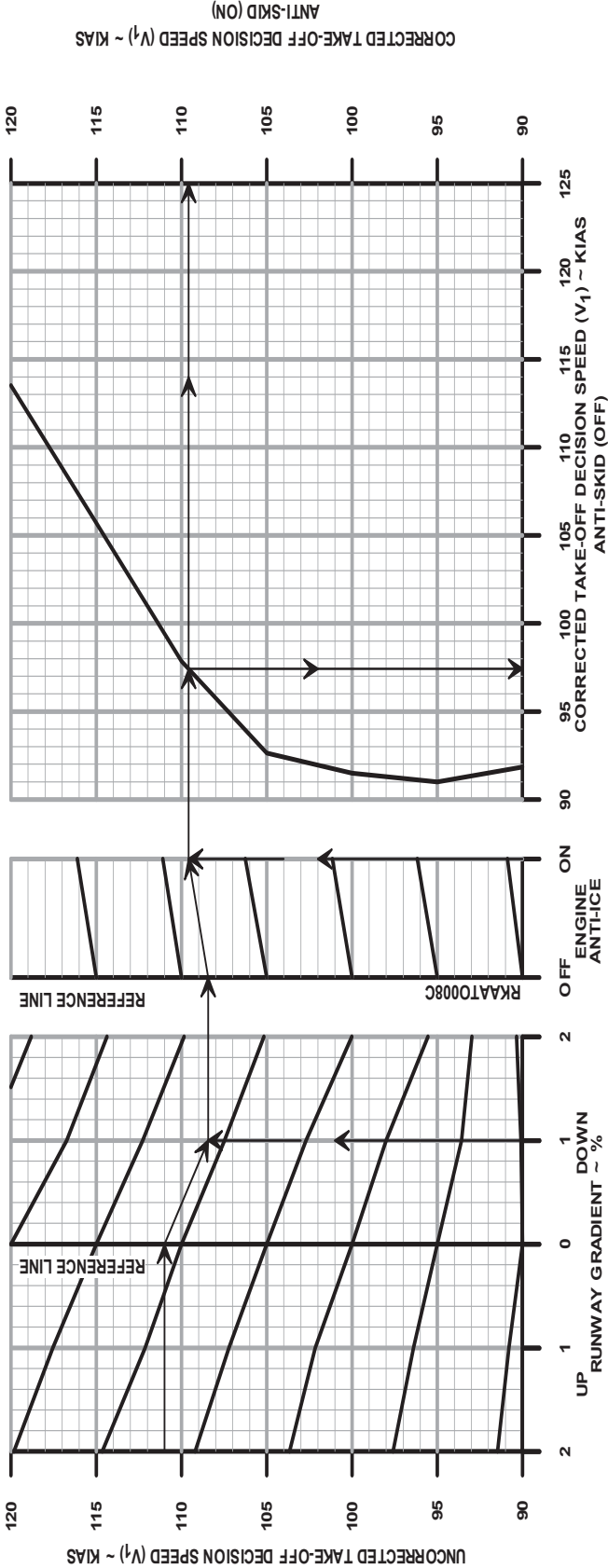
FLAPS 10°

TAKE-OFF DECISION SPEED (V₁) CORRECTION - FLAPS 10°

EXAMPLE:
 UNCORRECTED TAKE-OFF DECISION SPEED, V₁..... 111 KIAS
 RUNWAY GRADIENT..... 1.0% DN
 ENGINE ANTI-SKID..... I CE
 CORRECTED TAKE-OFF DECISION SPEED, V₁:
 ANTI-SKID (ON)..... 109.6 KIAS
 ANTI-SKID (OFF)..... 97.4 KIAS

NOTES: 1. OBTAIN THE UNCORRECTED DECISION SPEED (V₁) FROM THE "TAKE-OFF SPEEDS AND FIELD LENGTH - FLAPS 10°" TABLES. ENTER THE GRAPH BELOW WITH THAT VALUE AND DETERMINE THE DECISION SPEED (V₁) CORRECTED FOR RUNWAY GRADIENT, ENGINE ANTI-SKID, AND ANTI-SKID.

2. THE EFFECTS OF ECS (OFF) AND WINDS ON V₁ ARE BOTH NEGLIGIBLE.
 3. IF THE CORRECTED V₁ IS GREATER THAN V₁_{WR}, THE VALUE OF VR MUST BE USED FOR V₁.

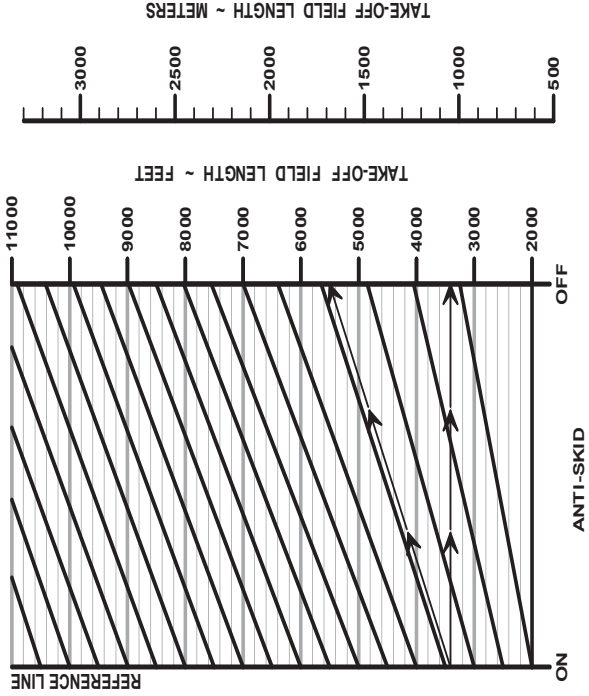
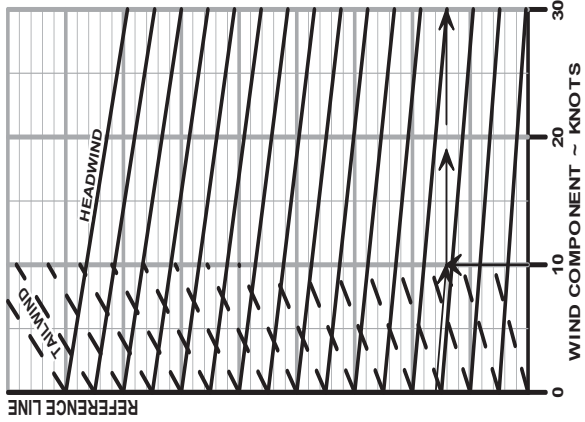
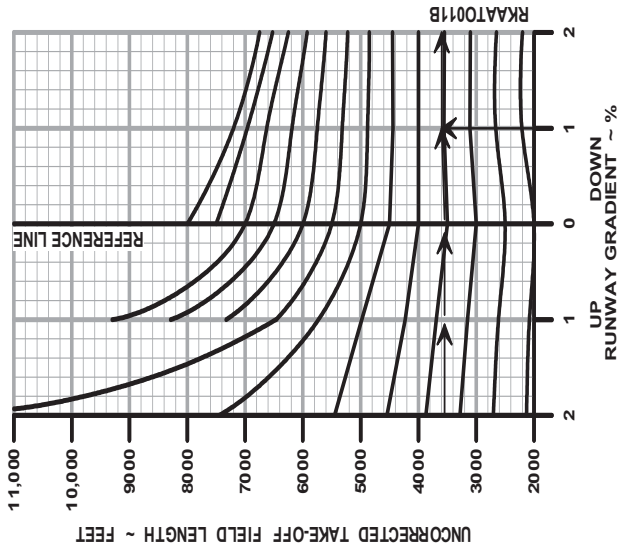


TAKE-OFF FIELD LENGTH CORRECTION - FLAPS 10°

ASSOCIATED CONDITIONS:
 THRUST.....TAKE-OFF
 RUNWAY.....PAVED, DRY SURFACE
 OBSTACLE HEIGHT...35 FT
 ECS.....(ON) OR (OFF)

NOTES: 1. OBTAIN V_L AND V_R FROM THE "TAKE-OFF SPEEDS AND FIELD LENGTH" TABLE AND "TAKE-OFF DECISION SPEED (V_L) CORRECTION" GRAPH.
 2. FOR TAKE-OFF WITH ENGINE ANTI-ICE (ON), INCREASE CORRECTED TAKE-OFF FIELD LENGTH BY 18%.
 IF RUNWAY HAS UPHILL GRADIENT GREATER THAN 1%, THEN INCREASE CORRECTED TAKE-OFF FIELD LENGTH BY 78%.

EXAMPLE:
 UNCORRECTED TAKE-OFF FIELD LENGTH...3547 FT
 RUNWAY GRADIENT.....1.0% DN
 HEADWIND COMPONENT.....10 KTS
 ENGINE ANTI-ICE.....OFF
 TAKE-OFF FIELD LENGTH:
 ANTI-SKID (ON).....3411 FT
 ANTI-SKID (OFF).....3507 FT



FLAPS 10°

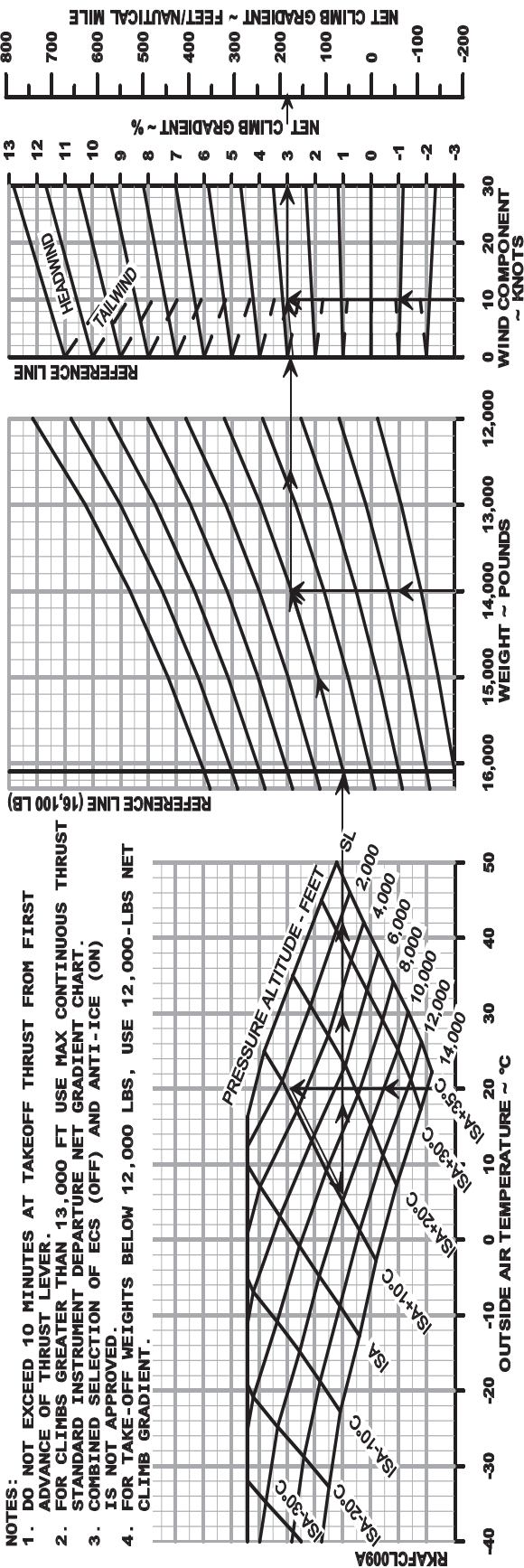
FLAPS 10°

STANDARD INSTRUMENT DEPARTURE NET GRADIENT - FLAPS 10° ANTI-ICE OFF
ONE ENGINE INOPERATIVE

ASSOCIATED CONDITIONS:
 ALL ANTI-ICE... OFF
 THRUST... TAKE-OFF
 LANDING GEAR... UP
 ECS... (ON)

EXAMPLE:
 OAT... 20°C
 FIELD PRESSURE ALTITUDE... 3,000 FT
 SID PRESS. ALT. REQUIREMENT... 10,000 FT
 WEIGHT... 14,000 LBS
 HEADWIND COMPONENT... 10 KTS
 NET CLIMB GRADIENT... 182 FT/NM

- NOTES:**
- DO NOT EXCEED 10 MINUTES AT TAKEOFF THRUST FROM FIRST ADVANCE OF THRUST LEVER.
 - FOR CLIMBS GREATER THAN 13,000 FT USE MAX CONTINUOUS THRUST STANDARD INSTRUMENT DEPARTURE NET GRADIENT CHART.
 - COMBINED SELECTION OF ECS (OFF) AND ANTI-ICE (ON) IS NOT APPROVED.
 - FOR TAKE-OFF WEIGHTS BELOW 12,000 LBS, USE 12,000-LBS NET CLIMB GRADIENT.



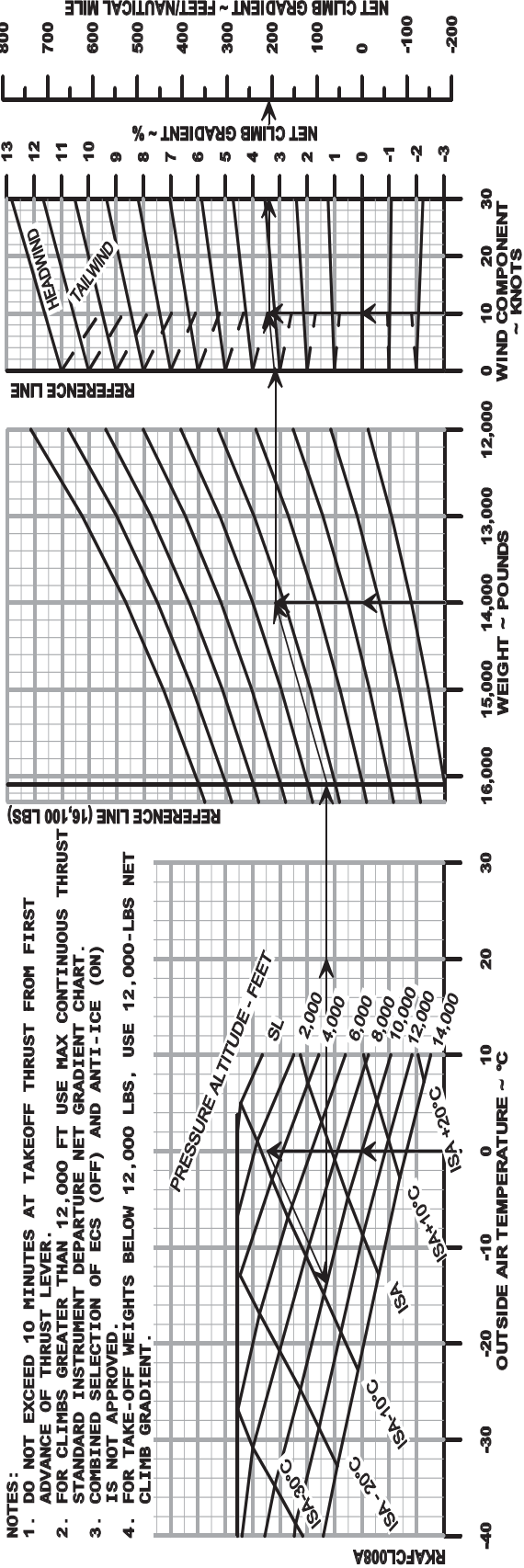
STANDARD INSTRUMENT DEPARTURE NET GRADIENT - FLAPS 10° ANTI-ICE ON

ASSOCIATED CONDITIONS:
 ALL ANTI-ICE... ON
 THRUST... TAKE-OFF
 LANDING GEAR... UP
 ECS... (ON)

ONE ENGINE INOPERATIVE
 CLIMB SPEED: V_2

EXAMPLE:
 OAT... 0°C
 FIELD PRESSURE ALTITUDE... 3,000 FT
 SID PRESS. ALT. REQUIREMENT... 10,000 FT
 WEIGHT... 14,000 LBS
 HEADWIND COMPONENT... 10 KTS
 NET CLIMB GRADIENT... 207 FT/NM

- NOTES:
- DO NOT EXCEED 10 MINUTES AT TAKEOFF THRUST FROM FIRST ADVANCE OF THRUST LEVER.
 - FOR CLIMBS GREATER THAN 12,000 FT USE MAX CONTINUOUS THRUST
 - STANDARD INSTRUMENT DEPARTURE NET GRADIENT CHART.
 - COMBINED SELECTION OF ECS (OFF) AND ANTI-ICE (ON) IS NOT APPROVED.
 - FOR TAKE-OFF WEIGHTS BELOW 12,000 LBS, USE 12,000-LBS NET CLIMB GRADIENT.



FLAPS 10°

TAKEOFF

Zero Wind and Gradient

SEA LEVEL

FLAPS 10°

FLAPS 10°

T.O. Gross Weight x 1000	Temp(°C) (°F)	-40	-20	-10	0	10	15	20	30	40	50
T.O. Power		87.8	91.4	93.2	95.0	96.9	97.8	98.7*	98.2*	97.2	96.0
16.3 V _{REF} 119	V ₁	110	110	110	110	109	109	110	111	114	116
	V _R	115	115	115	115	115	115	116	116	117	118
	V ₂	123	123	123	123	123	123	123	123	123	123
	TOFL	3557	3803	3945	4080	4184	4270	4406	4848	5473	6303
16.1 V _{REF} 118	V ₁	109	109	109	108	108	108	109	110	112	115
	V _R	114	114	114	114	114	114	115	115	116	117
	V ₂	122	122	122	122	122	122	122	122	122	122
	TOFL	3470	3711	3852	3983	4086	4169	4302	4731	5328	6113
15.5 V _{REF} 116	V ₁	106	105	105	105	105	105	106	107	109	112
	V _R	112	112	112	112	112	112	112	113	113	114
	V ₂	120	120	120	120	120	120	120	120	120	120
	TOFL	3218	3443	3572	3694	3790	3867	3987	4379	4914	5598
15.0 V _{REF} 114	V ₁	103	103	103	103	102	102	103	104	106	109
	V _R	109	109	109	109	109	109	110	110	111	112
	V ₂	118	118	118	118	118	118	118	118	118	118
	TOFL	3019	3230	3351	3465	3555	3627	3739	4102	4595	5222
14.5 V _{REF} 112	V ₁	100	100	100	100	100	100	100	102	104	106
	V _R	107	107	107	107	107	107	107	108	109	110
	V ₂	116	116	116	116	116	116	116	116	116	116
	TOFL	2825	3023	3135	3242	3327	3394	3497	3833	4288	4851
14.0 V _{REF} 110	V ₁	97	97	97	97	97	97	97	99	101	103
	V _R	105	105	105	105	105	105	105	106	106	107
	V ₂	114	114	114	114	114	114	114	114	114	114
	TOFL	2640	2824	2930	3030	3109	3172	3267	3578	3997	4512
13.5 V _{REF} 108	V ₁	95	94	94	94	94	94	95	96	98	100
	V _R	102	102	102	102	102	102	102	103	104	105
	V ₂	112	112	112	112	112	112	112	112	112	112
	TOFL	2459	2633	2730	2824	2898	2956	3044	3332	3717	4188
13.0 V _{REF} 106	V ₁	93	93	92	92	92	92	92	93	95	97
	V _R	100	100	100	100	100	100	100	101	102	102
	V ₂	110	110	110	110	110	110	110	110	110	110
	TOFL	2338	2506	2590	2676	2758	2804	2854	3097	3453	3883
12.5 V _{REF} 104	V ₁	93	93	93	93	93	92	92	92	92	94
	V _R	97	97	97	97	97	97	97	98	99	100
	V ₂	108	108	108	108	108	108	108	108	108	108
	TOFL	2317	2482	2565	2649	2730	2775	2824	2965	3197	3591
12.0 V _{REF} 102	V ₁	93	93	93	93	93	93	93	92	92	91
	V _R	95	95	95	95	94	95	95	95	96	97
	V ₂	106	106	106	106	106	106	106	106	106	106
	TOFL	2297	2459	2541	2625	2705	2748	2796	2932	3104	3316

TAKEOFF
Zero Wind and Gradient
1,000 FT
FLAPS 10°

T.O. Gross Weight x 1000	Temp (°C) (°F)	-40	-20	-10	0	10	20	30	40	50
T.O. Power		89.0	92.7	94.5	96.3	98.2*	99.2*	98.2	97.2	96.0
16.3 V _{REF} 119	V ₁	110	109	109	109	109	110	112	115	118
	V _R	115	115	115	115	115	116	117	117	118
	V ₂	123	123	123	123	123	123	123	123	123
	TOFL	3609	3869	4011	4135	4239	4634	5179	5849	6940
16.1 V _{REF} 118	V ₁	108	108	108	108	108	109	111	113	116
	V _R	114	114	114	114	114	115	116	116	117
	V ₂	122	122	122	122	122	122	122	122	122
	TOFL	3522	3777	3916	4038	4139	4523	5053	5706	6590
15.5 V _{REF} 116	V ₁	105	105	105	105	105	106	108	110	113
	V _R	112	112	112	112	111	112	113	114	114
	V ₂	120	120	120	120	120	120	120	120	120
	TOFL	3268	3504	3633	3746	3840	4190	4672	5258	6032
15.0 V _{REF} 114	V ₁	103	102	102	102	102	104	105	107	110
	V _R	109	109	109	109	110	110	111	111	112
	V ₂	118	118	118	118	118	118	118	118	118
	TOFL	3066	3288	3408	3514	3604	3926	4372	4905	5593
14.5 V _{REF} 112	V ₁	100	100	100	100	99	101	103	105	107
	V _R	107	107	107	107	107	108	108	109	110
	V ₂	116	116	116	116	116	116	116	116	116
	TOFL	2869	3076	3190	3290	3373	3671	4083	4573	5198
14.0 V _{REF} 110	V ₁	97	97	97	97	97	98	100	102	104
	V _R	105	105	105	105	104	105	106	107	108
	V ₂	114	114	114	114	114	114	114	114	114
	TOFL	2682	2876	2981	3075	3152	3428	3809	4259	4821
13.5 V _{REF} 108	V ₁	94	94	94	94	94	95	97	99	101
	V _R	102	102	102	102	102	103	104	104	105
	V ₂	112	112	112	112	112	112	112	112	112
	TOFL	2501	2681	2779	2866	2939	3192	3545	3958	4469
13.0 V _{REF} 106	V ₁	93	93	92	92	92	92	94	96	98
	V _R	100	100	100	100	99	100	101	102	103
	V ₂	110	110	110	110	110	110	110	110	110
	TOFL	2391	2563	2649	2735	2817	2968	3294	3673	4139
12.5 V _{REF} 104	V ₁	93	93	93	93	93	92	92	93	95
	V _R	97	97	97	97	97	98	99	99	100
	V ₂	108	108	108	108	108	108	108	108	108
	TOFL	2369	2538	2622	2708	2789	2910	3074	3400	3824
12.0 V _{REF} 102	V ₁	93	93	93	93	93	92	92	91	92
	V _R	94	94	94	94	94	95	96	97	98
	V ₂	106	106	106	106	106	106	106	106	106
	TOFL	2349	2515	2599	2682	2763	2879	3037	3222	3528

FLAPS 10°

TAKEOFF

Zero Wind and Gradient

2,000 FT

FLAPS 10°

FLAPS 10°

T.O. Gross Weight x 1000	Temp (°C) (°F) T.O. Power	-40	-20	-10	0	10	20	30	40	50
		90.2	93.9	95.7	97.6	99.4*	99.2*	98.2	97.2	96.0
16.3 V _{REF} 119	V ₁	109	109	109	109	109	111	114	116	118
	V _R	115	115	115	115	115	116	117	118	118
	V ₂	123	123	123	123	123	123	123	123	123
	TOFL	3708	3983	4121	4245	4404	4970	5608	6357	10,587
16.1 V _{REF} 118	V ₁	108	108	108	108	108	110	112	115	117
	V _R	114	114	114	114	114	115	116	117	117
	V ₂	122	122	122	122	122	122	122	122	122
	TOFL	3620	3889	4024	4145	4300	4849	5458	6178	8403
15.5 V _{REF} 116	V ₁	105	105	105	105	105	107	109	111	114
	V _R	112	112	112	111	112	113	113	114	115
	V ₂	120	120	120	120	120	120	120	120	120
	TOFL	3359	3608	3733	3847	3989	4487	5035	5680	6591
15.0 V _{REF} 114	V ₁	102	102	102	102	102	104	106	108	111
	V _R	109	109	109	109	109	110	111	112	113
	V ₂	118	118	118	118	118	118	118	118	118
	TOFL	3152	3386	3503	3610	3743	4202	4707	5294	6085
14.5 V _{REF} 112	V ₁	100	100	99	99	99	102	104	105	108
	V _R	107	107	107	107	107	108	109	109	110
	V ₂	116	116	116	116	116	116	116	116	116
	TOFL	2951	3169	3279	3379	3503	3927	4392	4924	5623
14.0 V _{REF} 110	V ₁	97	97	97	97	97	99	101	103	105
	V _R	105	105	105	104	105	106	106	107	108
	V ₂	114	114	114	114	114	114	114	114	114
	TOFL	2759	2962	3065	3159	3273	3665	4095	4582	5214
13.5 V _{REF} 108	V ₁	94	94	94	94	94	96	98	100	102
	V _R	102	102	102	102	102	103	104	105	106
	V ₂	112	112	112	112	112	112	112	112	112
	TOFL	2572	2761	2858	2945	3051	3411	3808	4254	4820
13.0 V _{REF} 106	V ₁	93	92	92	92	92	93	95	97	99
	V _R	100	100	100	100	100	101	102	102	103
	V ₂	110	110	110	110	110	110	110	110	110
	TOFL	2467	2644	2732	2820	2912	3170	3537	3945	4458
12.5 V _{REF} 104	V ₁	93	93	93	93	92	92	92	94	96
	V _R	97	97	97	97	97	98	99	100	101
	V ₂	108	108	108	108	108	108	108	108	108
	TOFL	2444	2618	2705	2792	2883	3035	3274	3648	4114
12.0 V _{REF} 102	V ₁	93	93	93	93	93	92	92	91	93
	V _R	94	94	94	94	94	95	96	97	98
	V ₂	106	106	106	106	106	106	106	106	106
	TOFL	2423	2594	2680	2765	2855	3000	3177	3377	3793

TAKEOFF
Zero Wind and Gradient
3,000 FT
FLAPS 10°

T.O. Gross Weight x 1000	Temp (°C) (°F) T.O. Power	-40	-20	-10	0	10	20	30	40	50
		-40	-4	14	32	50	68	86	104	122
		91.5	95.2	97.1	99.0*	100.2*	99.2	98.2	97.2	96.0
16.3	V ₁	109	109	109	109	110	112	114	117	-
	V _R	115	115	115	115	116	117	117	118	-
	V ₂	123	123	123	123	123	123	123	123	-
	TOFL	3836	4124	4245	4384	4698	5345	6057	6939	-
16.1	V ₁	108	108	108	108	109	111	113	116	117
	V _R	114	114	114	114	115	116	116	117	117
	V ₂	122	122	122	122	122	122	122	122	123
	TOFL	3744	4026	4145	4281	4587	5213	5909	6730	16,873
15.5	V ₁	105	105	105	105	106	108	110	112	115
	V _R	112	112	112	111	112	113	114	114	115
	V ₂	120	120	120	120	120	120	120	120	120
	TOFL	3475	3736	3846	3973	4251	4819	5442	6147	8370
15.0	V ₁	102	102	102	102	103	105	107	109	112
	V _R	109	109	109	109	110	111	111	112	113
	V ₂	118	118	118	118	118	118	118	118	118
	TOFL	3261	3505	3610	3728	3987	4511	5078	5717	6648
14.5	V ₁	100	100	99	99	100	103	105	107	109
	V _R	107	107	107	107	107	108	109	110	111
	V ₂	116	116	116	116	116	116	116	116	116
	TOFL	3052	3281	3379	3490	3729	4212	4733	5328	6128
14.0	V ₁	97	97	97	97	97	100	102	104	106
	V _R	105	105	104	104	105	106	107	108	108
	V ₂	114	114	114	114	114	114	114	114	114
	TOFL	2854	3067	3158	3262	3484	3929	4408	4935	5650
13.5	V ₁	94	94	94	94	95	97	99	101	103
	V _R	102	102	102	102	102	104	104	105	106
	V ₂	112	112	112	112	112	112	112	112	112
	TOFL	2661	2859	2945	3041	3246	3655	4096	4577	5219
13.0	V ₁	93	92	92	92	92	94	96	98	100
	V _R	100	100	100	100	100	101	102	103	103
	V ₂	110	110	110	110	110	110	110	110	110
	TOFL	2547	2730	2817	2909	3030	3396	3801	4241	4814
12.5	V ₁	93	93	93	92	92	92	93	95	97
	V _R	97	97	97	97	97	98	99	100	101
	V ₂	108	108	108	108	108	108	108	108	108
	TOFL	2523	2702	2789	2880	2997	3174	3518	3919	4437
12.0	V ₁	93	93	93	93	92	92	91	92	94
	V _R	94	94	94	94	95	96	97	98	98
	V ₂	106	106	106	106	106	106	106	106	106
	TOFL	2501	2677	2762	2852	2965	3135	3329	3616	4086

FLAPS 10°

TAKEOFF

Zero Wind and Gradient

4,000 FT

FLAPS 10°

FLAPS 10°

T.O. Gross Weight x 1000	Temp (°C) (°F) T.O. Power	-40	-20	-10	0	10	20	30	40	50
		-40	-4	14	32	50	68	86	104	122
		92.8	96.5	98.5	100.3*	100.2*	99.2	98.2	97.2	96.0
16.3 V _{REF} 119	V ₁	109	109	109	109	111	113	116	118	-
	V _R	115	115	115	115	116	117	118	118	-
	V ₂	123	123	123	123	123	123	123	123	-
	TOFL	3965	4257	4377	4590	5057	5776	6599	8625	-
16.1 V _{REF} 118	V ₁	108	108	108	108	110	112	114	117	-
	V _R	114	114	114	114	115	116	117	117	-
	V ₂	122	122	122	122	122	122	122	122	-
	TOFL	3871	4156	4274	4482	4936	5627	6395	7751	-
15.5 V _{REF} 116	V ₁	105	105	105	105	106	109	111	114	115
	V _R	112	112	111	112	112	113	114	115	115
	V ₂	120	120	120	120	120	120	120	120	120
	TOFL	3592	3857	3967	4158	4571	5196	5887	6711	17,471
15.0 V _{REF} 114	V ₁	102	102	102	102	104	106	108	110	113
	V _R	109	109	109	109	110	111	112	112	113
	V ₂	118	118	118	118	118	118	118	118	118
	TOFL	3371	3619	3723	3901	4283	4859	5484	6206	8716
14.5 V _{REF} 112	V ₁	100	99	99	100	101	103	105	107	111
	V _R	107	107	107	107	108	109	110	110	111
	V ₂	116	116	116	116	116	116	116	116	116
	TOFL	3156	3388	3485	3651	4004	4534	5101	5751	6786
14.0 V _{REF} 110	V ₁	97	97	97	97	98	101	103	105	107
	V _R	105	105	104	105	105	106	107	108	109
	V ₂	114	114	114	114	114	114	114	114	114
	TOFL	2950	3167	3258	3412	3739	4226	4746	5347	6162
13.5 V _{REF} 108	V ₁	94	94	94	94	96	98	100	102	104
	V _R	102	102	102	102	103	104	105	105	106
	V ₂	112	112	112	112	112	112	112	112	112
	TOFL	2751	2952	3037	3180	3482	3930	4406	4938	5661
13.0 V _{REF} 106	V ₁	92	92	92	92	93	95	97	99	101
	V _R	100	100	100	100	100	101	102	103	104
	V ₂	110	110	110	110	110	110	110	110	110
	TOFL	2630	2817	2907	3013	3237	3650	4086	4570	5217
12.5 V _{REF} 104	V ₁	93	92	92	92	92	92	94	96	98
	V _R	97	97	97	97	98	99	100	101	101
	V ₂	108	108	108	108	108	108	108	108	108
	TOFL	2604	2788	2877	2981	3129	3379	3778	4219	4794
12.0 V _{REF} 102	V ₁	93	93	93	92	92	92	91	93	95
	V _R	94	94	94	94	95	96	97	98	99
	V ₂	106	106	106	106	106	106	106	106	106
	TOFL	2581	2762	2849	2951	3094	3282	3491	3890	4409

TAKEOFF
Zero Wind and Gradient
5,000 FT
FLAPS 10°

T.O. Gross Weight x 1000	Temp (°C) (°F) T.O. Power	-40	-20	-10	0	10	20	30	40	50
		-40	-4	14	32	50	68	86	104	122
		94.8	98.6	100.6*	101.3*	100.2	99.2	98.2	97.2	96.0
16.3	V ₁	109	109	109	110	112	114	117	-	-
V _{REF} 119	V _R	115	115	115	116	116	117	118	-	-
	V ₂	123	123	123	123	123	123	123	-	-
	TOFL	4090	4379	4539	4878	5465	6267	7215	-	-
	V ₁	108	108	108	109	111	113	116	117	-
V _{REF} 118	V _R	114	114	114	115	115	116	117	117	-
	V ₂	122	122	122	122	122	122	122	123	-
	TOFL	3993	4276	4432	4762	5331	6108	6984	15,156	-
	V ₁	105	105	105	106	107	110	112	115	-
V _{REF} 116	V _R	112	112	112	112	113	114	114	115	-
	V ₂	120	120	120	120	120	120	120	120	-
	TOFL	3706	3969	4113	4415	4932	5636	6382	7787	-
	V ₁	102	102	102	103	105	107	109	112	113
V _{REF} 114	V _R	109	109	109	110	111	111	112	113	113
	V ₂	118	118	118	118	118	118	118	118	118
	TOFL	3478	3725	3860	4140	4618	5257	5937	6790	17,085
	V ₁	99	99	99	100	102	104	106	109	111
V _{REF} 112	V _R	107	107	107	107	108	109	110	111	111
	V ₂	116	116	116	116	116	116	116	116	116
	TOFL	3257	3488	3614	3874	4314	4900	5520	6264	9038
	V ₁	97	97	97	98	99	102	104	106	109
V _{REF} 110	V _R	105	104	105	105	106	107	108	108	109
	V ₂	114	114	114	114	114	114	114	114	114
	TOFL	3045	3261	3378	3619	4026	4563	5124	5789	6841
	V ₁	94	94	94	95	97	99	101	103	105
V _{REF} 108	V _R	102	102	102	102	103	104	105	106	107
	V ₂	112	112	112	112	112	112	112	112	112
	TOFL	2840	3040	3149	3372	3747	4240	4751	5362	6175
	V ₁	92	92	92	92	94	96	98	100	102
V _{REF} 106	V _R	100	100	100	100	101	102	103	103	104
	V ₂	110	110	110	110	110	110	110	110	110
	TOFL	2714	2906	3003	3137	3482	3934	4402	4941	5659
	V ₁	93	92	92	92	92	93	95	97	99
V _{REF} 104	V _R	97	97	97	97	98	99	100	101	102
	V ₂	108	108	108	108	108	108	108	108	108
	TOFL	2688	2876	2971	3101	3279	3640	4067	4556	5197
	V ₁	93	93	93	92	92	91	92	94	96
V _{REF} 102	V _R	94	94	94	95	96	97	98	98	99
	V ₂	106	106	106	106	106	106	106	106	106
	TOFL	2663	2848	2942	3067	3238	3442	3752	4196	4765

**FLAPS
10°**

TAKEOFF

Zero Wind and Gradient

6,000 FT

FLAPS 10°

FLAPS 10°

T.O. Gross Weight x 1000	Temp (°C) (°F) T.O. Power	-40	-20	-10	0	10	20	30	40	50
		96.7	100.7	102.7	101.3	100.2	99.2	98.2	97.2	96.0
16.3	V ₁	109	109	109	111	113	116	118	-	-
	V _R	115	115	115	116	117	118	118	-	-
	V _{REF 119}	123	123	123	123	123	123	123	-	-
	TOFL	4225	4531	4778	5238	5906	6828	9294	-	-
16.1	V ₁	108	108	108	110	112	114	117	-	-
	V _R	114	114	114	115	116	117	117	-	-
	V _{REF 118}	122	122	122	122	122	122	122	-	-
	TOFL	4124	4424	4666	5112	5759	6651	8130	-	-
15.5	V ₁	105	105	105	106	108	111	114	-	-
	V _R	112	112	112	112	113	114	115	-	-
	V _{REF 116}	120	120	120	120	120	120	120	-	-
	TOFL	3828	4107	4328	4736	5322	6119	6970	-	-
15.0	V ₁	102	102	102	104	106	108	110	113	-
	V _R	109	109	109	110	111	112	113	113	-
	V _{REF 114}	118	118	118	118	118	118	118	118	-
	TOFL	3593	3855	4061	4439	4979	5700	6453	8233	-
14.5	V ₁	99	99	100	101	103	105	107	110	-
	V _R	107	107	107	108	109	110	110	111	-
	V _{REF 112}	116	116	116	116	116	116	116	116	-
	TOFL	3364	3609	3801	4151	4647	5300	5980	6875	-
14.0	V ₁	97	97	97	98	100	103	105	107	109
	V _R	105	104	105	105	106	107	108	109	109
	V _{REF 110}	114	114	114	114	114	114	114	114	114
	TOFL	3146	3374	3552	3876	4334	4930	5559	6318	9074
13.5	V ₁	94	94	94	96	97	100	102	104	107
	V _R	102	102	102	103	104	105	106	106	107
	V _{REF 108}	112	112	112	112	112	112	112	112	112
	TOFL	2934	3147	3311	3610	4031	4576	5133	5805	6844
13.0	V ₁	92	92	92	93	95	97	99	101	103
	V _R	100	100	100	100	101	102	103	104	104
	V _{REF 106}	110	110	110	110	110	110	110	110	110
	TOFL	2801	3002	3116	3357	3745	4242	4750	5368	6168
12.5	V ₁	93	92	92	92	92	94	96	98	100
	V _R	97	97	97	98	99	100	101	101	102
	V _{REF 104}	108	108	108	108	108	108	108	108	108
	TOFL	2774	2971	3082	3240	3467	3922	4384	4929	5630
12.0	V ₁	93	93	92	92	91	91	93	95	97
	V _R	94	94	95	95	96	97	98	99	99
	V _{REF 102}	106	106	106	106	106	106	106	106	106
	TOFL	2748	2942	3050	3202	3394	3621	4041	4533	5160

TAKEOFF
Zero Wind and Gradient
7,000 FT
FLAPS 10°

T.O. Gross Weight x 1000	Temp (°C) (°F)	-40	-20	-10	0	10	20	30	40	50
T.O. Power		99.1	103.3*	102.7*	101.3	100.2	99.2	98.2	97.2	96.0
16.3 V _{REF} 119	V ₁	109	109	110	112	114	117	-	-	-
	V _R	115	115	116	116	117	118	-	-	-
	V ₂	123	123	123	123	123	123	-	-	-
	TOFL	4359	4729	5134	5657	6395	7490	-	-	-
16.1 V _{REF} 118	V ₁	108	108	109	110	113	116	117	-	-
	V _R	114	114	115	115	116	117	117	-	-
	V ₂	122	122	122	122	122	122	123	-	-
	TOFL	4255	4617	5011	5519	6226	7259	14,798	-	-
15.5 V _{REF} 116	V ₁	105	105	106	107	109	112	115	-	-
	V _R	112	112	112	113	114	114	115	-	-
	V ₂	120	120	120	120	120	120	120	-	-
	TOFL	3950	4284	4645	5108	5738	6633	8148	-	-
15.0 V _{REF} 114	V ₁	102	102	103	105	107	109	112	-	-
	V _R	109	109	110	111	111	112	113	-	-
	V ₂	118	118	118	118	118	118	118	-	-
	TOFL	3708	4020	4356	4783	5363	6172	7067	-	-
14.5 V _{REF} 112	V ₁	99	99	101	102	104	106	109	111	-
	V _R	107	107	108	108	109	110	111	111	-
	V ₂	116	116	116	116	116	116	116	116	-
	TOFL	3472	3763	4075	4470	5002	5732	6512	8571	-
14.0 V _{REF} 110	V ₁	97	97	98	99	101	104	106	108	-
	V _R	105	105	105	106	107	108	108	109	-
	V ₂	114	114	114	114	114	114	114	114	-
	TOFL	3246	3517	3807	4172	4661	5319	6020	6936	-
13.5 V _{REF} 108	V ₁	94	94	95	97	98	101	103	105	-
	V _R	102	102	103	103	104	105	106	107	-
	V ₂	112	112	112	112	112	112	112	112	-
	TOFL	3026	3279	3547	3883	4333	4931	5576	6336	-
13.0 V _{REF} 106	V ₁	92	92	92	94	95	98	100	102	-
	V _R	100	100	100	101	102	103	103	104	-
	V ₂	110	110	110	110	110	110	110	110	-
	TOFL	2892	3106	3300	3610	4023	4567	5137	5808	-
12.5 V _{REF} 104	V ₁	92	92	92	92	93	95	97	99	-
	V _R	97	97	98	98	99	100	101	102	-
	V ₂	108	108	108	108	108	108	108	108	-
	TOFL	2863	3073	3222	3395	3724	4218	4736	5349	-
12.0 V _{REF} 102	V ₁	93	92	92	92	91	92	94	95	-
	V _R	94	94	95	96	97	98	98	99	-
	V ₂	106	106	106	106	106	106	106	106	-
	TOFL	2835	3042	3186	3353	3559	3891	4362	4899	-

FLAPS 10°

TAKEOFF

Zero Wind and Gradient

8,000 FT

FLAPS 10°

FLAPS 10°

T.O. Gross Weight x 1000	Temp (°C) (°F) T.O. Power	-40	-20	-10	0	10	20	30	40	50
		-40	-4	14	32	50	68	86	104	122
		101.5*	104.0*	102.7*	101.3	100.2	99.2	98.2	97.2	96.0
16.3 V _{REF} 119	V ₁	109	110	111	113	115	118	-	-	-
	V _R	115	116	116	117	118	118	-	-	-
	V ₂	123	123	123	123	123	123	-	-	-
	TOFL	4517	5029	5543	6118	6932	9365	-	-	-
16.1 V _{REF} 118	V ₁	108	108	110	111	114	117	-	-	-
	V _R	114	115	115	116	117	117	-	-	-
	V ₂	122	122	122	122	122	122	-	-	-
	TOFL	4409	4909	5409	5966	6750	8333	-	-	-
15.5 V _{REF} 116	V ₁	105	105	107	108	110	113	115	-	-
	V _R	112	112	113	113	114	115	115	-	-
	V ₂	120	120	120	120	120	120	120	-	-
	TOFL	4093	4552	5010	5515	6222	7251	14,550	-	-
15.0 V _{REF} 114	V ₁	102	103	104	106	108	110	113	-	-
	V _R	109	110	110	111	112	113	113	-	-
	V ₂	118	118	118	118	118	118	118	-	-
	TOFL	3842	4270	4695	5161	5801	6701	8779	-	-
14.5 V _{REF} 112	V ₁	99	100	102	103	105	107	110	-	-
	V _R	107	107	108	109	109	110	111	-	-
	V ₂	116	116	116	116	116	116	116	-	-
	TOFL	3597	3996	4389	4819	5405	6210	7178	-	-
14.0 V _{REF} 110	V ₁	97	97	99	100	102	104	107	109	-
	V _R	105	105	106	106	107	108	109	109	-
	V ₂	114	114	114	114	114	114	114	114	-
	TOFL	3363	3734	4098	4494	5031	5758	6594	8926	-
13.5 V _{REF} 108	V ₁	94	95	96	97	99	101	104	106	-
	V _R	102	102	103	104	105	105	106	107	-
	V ₂	112	112	112	112	112	112	112	112	-
	TOFL	3135	3479	3817	4181	4673	5325	6052	6926	-
13.0 V _{REF} 106	V ₁	92	92	93	95	96	99	101	103	-
	V _R	100	100	101	101	102	103	104	104	-
	V ₂	110	110	110	110	110	110	110	110	-
	TOFL	2989	3237	3549	3885	4335	4927	5590	6335	-
12.5 V _{REF} 104	V ₁	92	92	92	92	93	96	98	99	-
	V _R	97	97	98	99	100	101	101	102	-
	V ₂	108	108	108	108	108	108	108	108	-
	TOFL	2958	3201	3377	3598	4010	4546	5131	5783	-
12.0 V _{REF} 102	V ₁	93	92	92	91	91	93	95	96	-
	V _R	94	95	96	96	97	98	99	99	-
	V ₂	106	106	106	106	106	106	106	106	-
	TOFL	2929	3166	3336	3516	3739	4190	4719	5315	-

TAKEOFF
Zero Wind and Gradient
9,000 FT
FLAPS 10°

T.O. Gross Weight x 1000	Temp (°C) (°F)	-40	-20	-10	0	10	20	30	40	50
T.O. Power		104.0	104.0*	102.7*	101.3	100.2	99.2	98.2	97.2	96.0
16.3 V _{REF} 119	V ₁	109	111	112	114	116	118	-	-	-
	V _R	115	116	117	117	118	118	-	-	-
	V ₂	123	123	123	123	123	123	-	-	-
	TOFL	4740	5441	5988	6637	7614	19,164	-	-	-
16.1 V _{REF} 118	V ₁	108	109	111	112	115	117	-	-	-
	V _R	114	115	116	116	117	117	-	-	-
	V ₂	122	122	122	122	122	123	-	-	-
	TOFL	4627	5310	5841	6471	7382	14,720	-	-	-
15.5 V _{REF} 116	V ₁	105	106	108	109	111	115	-	-	-
	V _R	112	112	113	114	114	115	-	-	-
	V ₂	120	120	120	120	120	120	-	-	-
	TOFL	4293	4920	5404	5966	6769	8384	-	-	-
15.0 V _{REF} 114	V ₁	102	104	105	107	109	112	-	-	-
	V _R	109	110	111	111	112	113	-	-	-
	V ₂	118	118	118	118	118	118	-	-	-
	TOFL	4029	4612	5060	5579	6323	7348	-	-	-
14.5 V _{REF} 112	V ₁	100	101	102	104	106	109	111	-	-
	V _R	107	108	108	109	110	111	111	-	-
	V ₂	116	116	116	116	116	116	116	-	-
	TOFL	3771	4313	4728	5205	5867	6772	9731	-	-
14.0 V _{REF} 110	V ₁	97	98	100	101	103	105	109	-	-
	V _R	105	105	106	107	107	108	109	-	-
	V ₂	114	114	114	114	114	114	114	-	-
	TOFL	3525	4029	4412	4851	5456	6254	7333	-	-
13.5 V _{REF} 108	V ₁	94	96	97	98	100	103	105	107	-
	V _R	102	103	104	104	105	106	107	107	-
	V ₂	112	112	112	112	112	112	112	112	-
	TOFL	3286	3753	4107	4510	5061	5784	6634	9051	-
13.0 V _{REF} 106	V ₁	92	93	94	95	97	100	102	104	-
	V _R	100	100	101	102	103	103	104	105	-
	V ₂	110	110	110	110	110	110	110	110	-
	TOFL	3100	3490	3817	4188	4691	5340	6083	6938	-
12.5 V _{REF} 104	V ₁	92	92	91	93	94	97	99	101	-
	V _R	97	98	99	99	100	101	102	102	-
	V ₂	108	108	108	108	108	108	108	108	-
	TOFL	3067	3358	3545	3878	4335	4922	5595	6319	-
12.0 V _{REF} 102	V ₁	92	92	91	91	91	94	96	97	-
	V _R	95	95	96	97	98	98	99	100	-
	V ₂	106	106	106	106	106	106	106	106	-
	TOFL	3036	3320	3498	3696	4001	4532	5124	5759	-

FLAPS 10°

TAKEOFF

Zero Wind and Gradient

10,000 FT

FLAPS 10°

FLAPS 10°

T.O. Gross Weight x 1000	Temp (°C) (°F) T.O. Power	-40	-20	-10	0	10	20	30	40	50
		-40	-4	14	32	50	68	86	104	122
		104.0	104.0*	102.7*	101.3	100.2	99.2	98.2	97.2	96.0
16.3 V _{REF} 119	V ₁	110	112	113	115	118	-	-	-	-
	V _R	116	116	117	118	118	-	-	-	-
	V ₂	123	123	123	123	123	-	-	-	-
	TOFL	5079	5918	6508	7239	8800	-	-	-	-
16.1 V _{REF} 118	V ₁	109	110	112	114	117	-	-	-	-
	V _R	115	116	116	117	117	-	-	-	-
	V ₂	122	122	122	122	122	-	-	-	-
	TOFL	4956	5773	6345	7068	8216	-	-	-	-
15.5 V _{REF} 116	V ₁	106	107	109	110	113	115	-	-	-
	V _R	112	113	113	114	115	115	-	-	-
	V ₂	120	120	120	120	120	120	-	-	-
	TOFL	4595	5344	5864	6504	7424	22,179	-	-	-
15.0 V _{REF} 114	V ₁	103	105	106	107	110	113	-	-	-
	V _R	110	111	111	112	112	113	-	-	-
	V ₂	118	118	118	118	118	118	-	-	-
	TOFL	4310	5006	5486	6066	6890	9095	-	-	-
14.5 V _{REF} 112	V ₁	100	102	103	105	107	110	-	-	-
	V _R	107	108	109	109	110	111	-	-	-
	V ₂	116	116	116	116	116	116	-	-	-
	TOFL	4033	4679	5122	5655	6410	7489	-	-	-
14.0 V _{REF} 110	V ₁	98	99	101	102	104	107	109	-	-
	V _R	105	106	106	107	108	109	109	-	-
	V ₂	114	114	114	114	114	114	114	-	-
	TOFL	3769	4368	4776	5266	5939	6862	11,053	-	-
13.5 V _{REF} 108	V ₁	95	97	98	99	101	104	107	-	-
	V _R	103	103	104	105	105	106	107	-	-
	V ₂	112	112	112	112	112	112	112	-	-
	TOFL	3512	4067	4443	4892	5503	6319	7470	-	-
13.0 V _{REF} 106	V ₁	92	94	95	96	98	101	103	105	-
	V _R	100	101	102	102	103	104	105	105	-
	V ₂	110	110	110	110	110	110	110	110	-
	TOFL	3267	3781	4128	4540	5094	5841	6686	9408	-
12.5 V _{REF} 104	V ₁	92	91	92	94	95	98	100	102	-
	V _R	98	98	99	100	100	101	102	102	--
	V ₂	108	108	108	108	108	108	108	108	-
	TOFL	3212	3543	3823	4200	4704	5362	6104	6960	-
12.0 V _{REF} 102	V ₁	92	92	91	91	92	95	97	99	-
	V _R	95	96	96	97	98	99	100	100	--
	V ₂	106	106	106	106	106	106	106	106	-
	TOFL	3177	3498	3689	3906	4337	4930	5599	6320	-

MAXIMUM TAKE-OFF WEIGHT - ECS (ON) - FLAPS 20° TO ACHIEVE TAKE-OFF CLIMB REQUIREMENTS

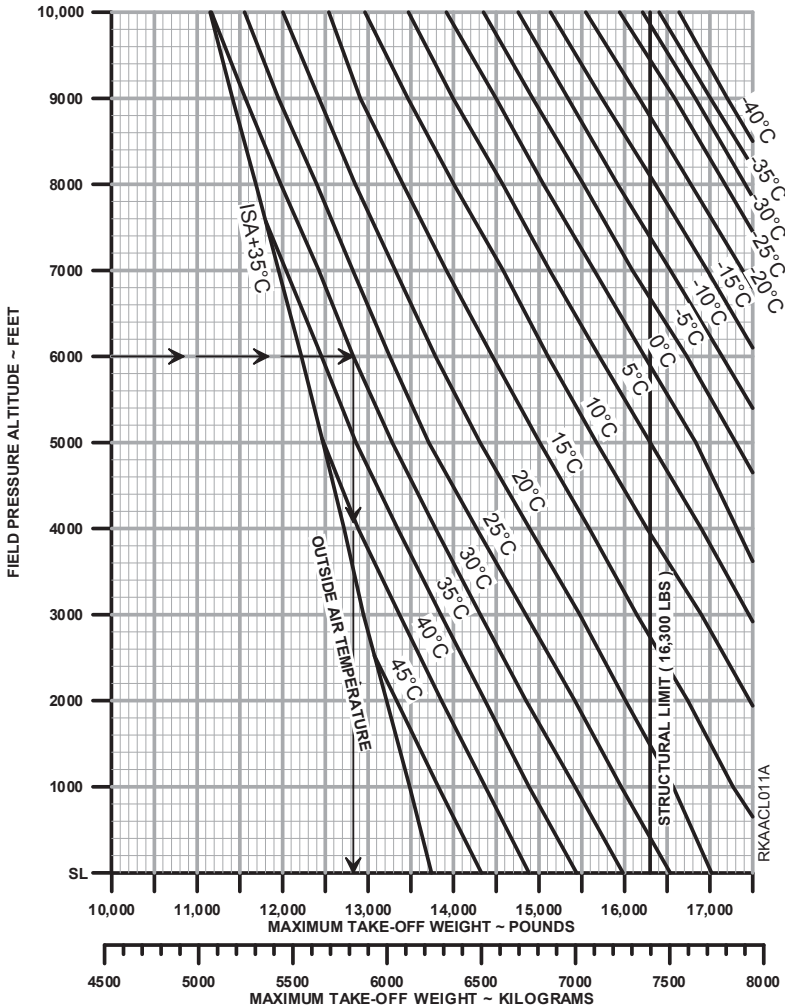
ASSOCIATED CONDITIONS:

THRUST TAKE-OFF
 LANDING GEAR SELECTED UP AT 35 FT
 ANTI-ICE OFF

EXAMPLE:

FIELD PRESSURE ALTITUDE ... 6,000 FT
OAT 30°C
 MAXIMUM TAKE-OFF WEIGHT 12,827 LBS

NOTE: WITH ENGINE ANTI-ICE (ON), SUBTRACT 1,100 LBS FROM THE WEIGHT READ FROM THIS GRAPH.



FLAPS 20°

MAXIMUM TAKE-OFF WEIGHT - ECS (OFF) - FLAPS 20° TO ACHIEVE TAKE-OFF CLIMB REQUIREMENTS

ASSOCIATED CONDITIONS:

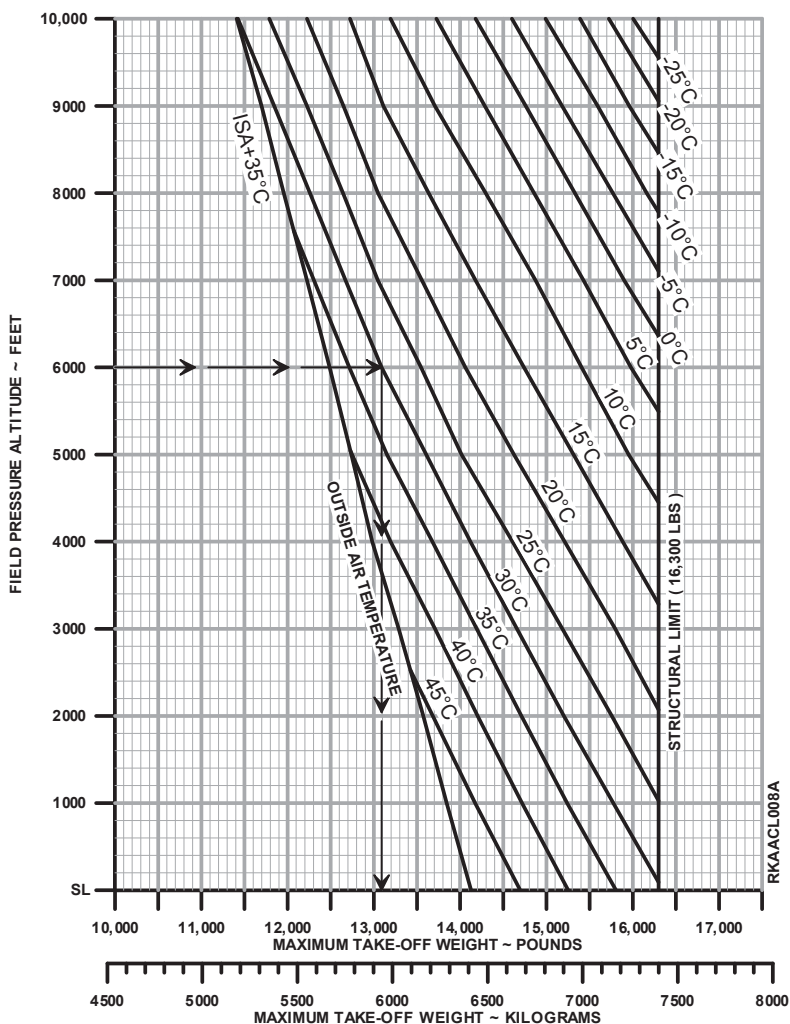
THRUST TAKE-OFF
 LANDING GEAR SELECTED UP AT 35 FT
 ANTI-ICE OFF

EXAMPLE:

FIELD PRESSURE ALTITUDE ... 6,000 FT
OAT 30° C
 MAXIMUM TAKE-OFF WEIGHT 13,090 LBS

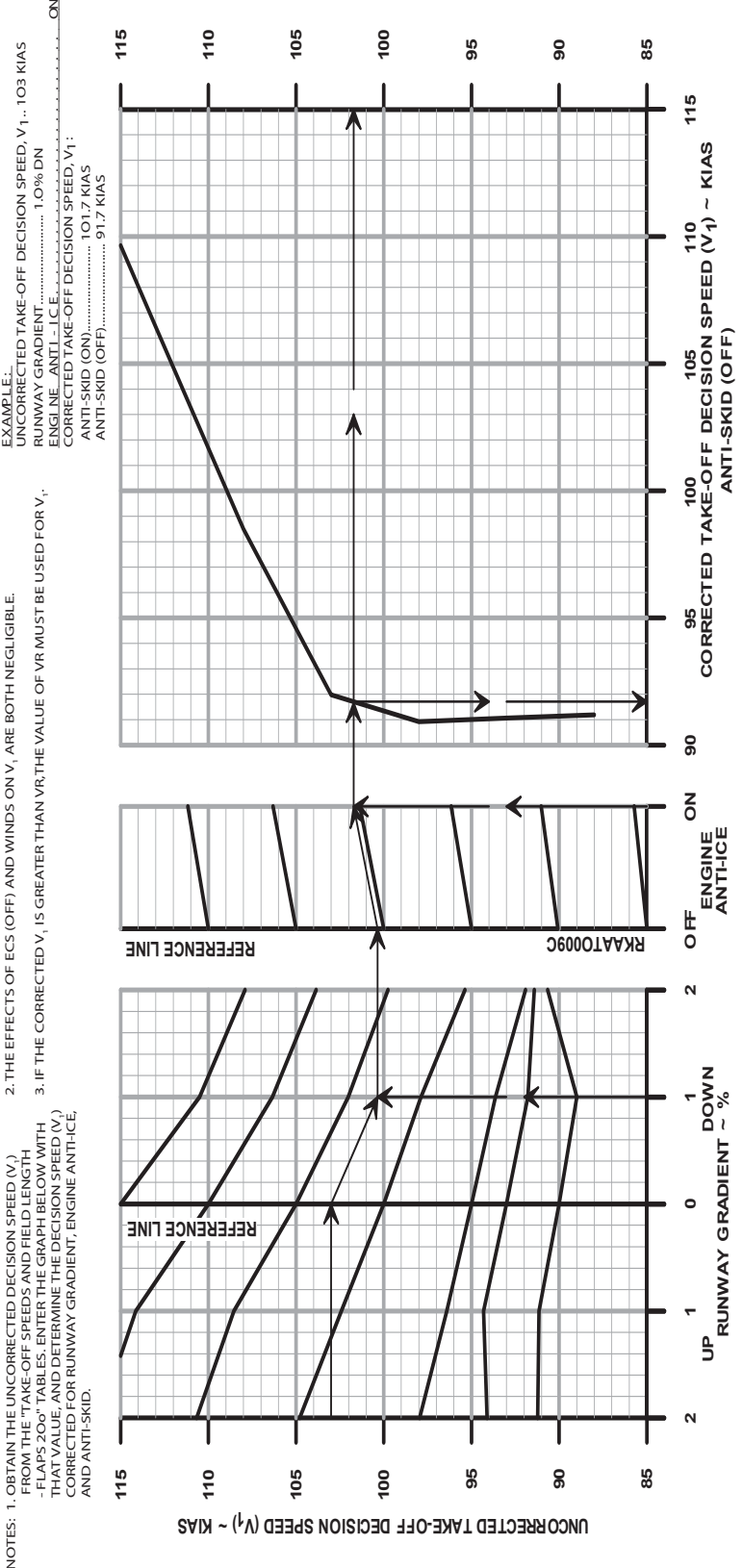
NOTE: COMBINED SELECTION OF ECS (OFF) AND ANTI-ICE (ON) IS NOT APPROVED.

FLAPS 20°



RKAACL008A

TAKE-OFF DECISION SPEED (V₁) CORRECTION - FLAPS 20°



FLAPS 20°

FLAPS 20°

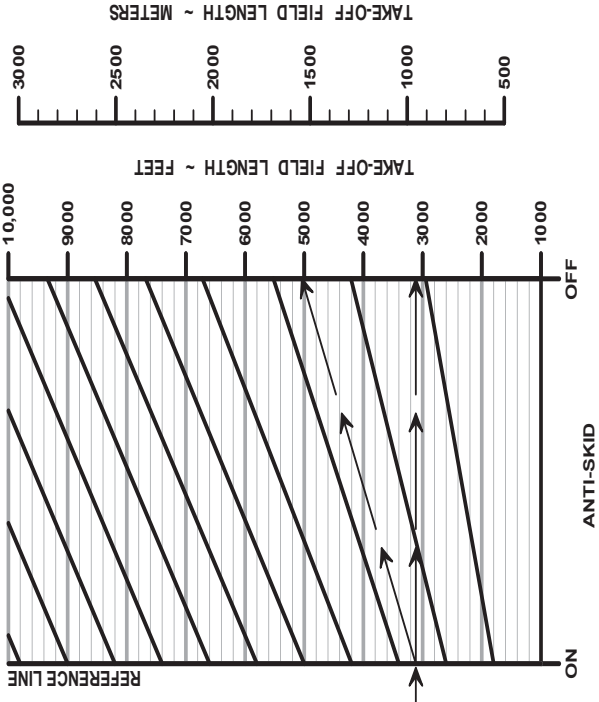
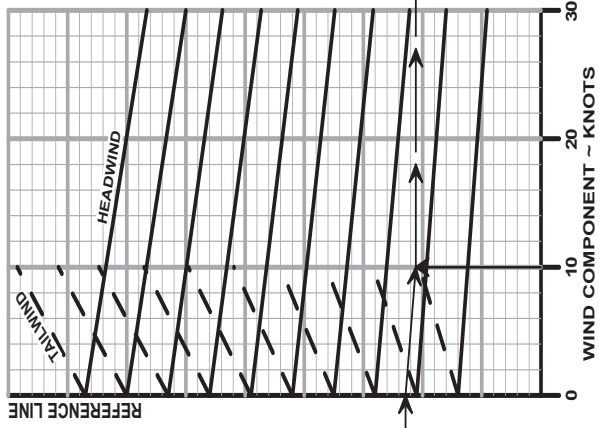
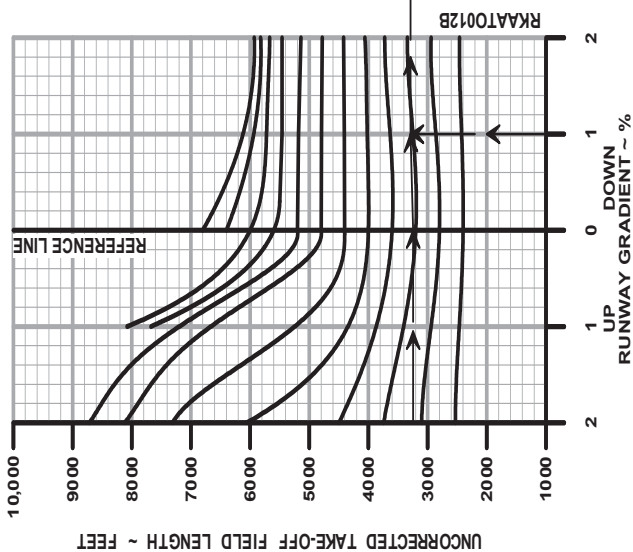
TAKE-OFF FIELD LENGTH CORRECTION - FLAPS 20°

ASSOCIATED CONDITIONS:
 THRUST.....TAKE-OFF
 RUNWAY.....PAVED DRY SURFACE
 OBSTACLE HEIGHT.....35 FT
 ECS.....(ON) OR (OFF)

NOTES: 1. OBTAIN V_{LO} AND V_L FROM THE "TAKE-OFF SPEEDS AND FIELD LENGTH" TABLE AND "TAKE-OFF SPEED (V_L) CORRECTION" GRAPH.

2. FOR TAKEOFF WITH ENGINE ANTI-ICE (ON), INCREASE CORRECTED TAKE-OFF FIELD LENGTH BY 21%. IF RUNWAY SLOPE GRADIENT GREATER THAN 1%, THEN INCREASE CORRECTED TAKE-OFF FIELD LENGTH BY 57%.

EXAMPLE:
 UNCORRECTED TAKE-OFF FIELD LENGTH.....3244 FT
 RUNWAY GRADIENT.....1.0% DN
 HEADWIND COMPONENT.....10 KTS
 ENGL NE - ANTI - ICE.....OFF
 TAKE-OFF FIELD LENGTH:
 ANTI-SKID (ON).....3115 FT
 ANTI-SKID (OFF).....5041 FT



TAKE-OFF FIELD LENGTH ~ METERS



STANDARD INSTRUMENT DEPARTURE NET GRADIENT-FLAPS 20° ANTI-ICE OFF OR ON

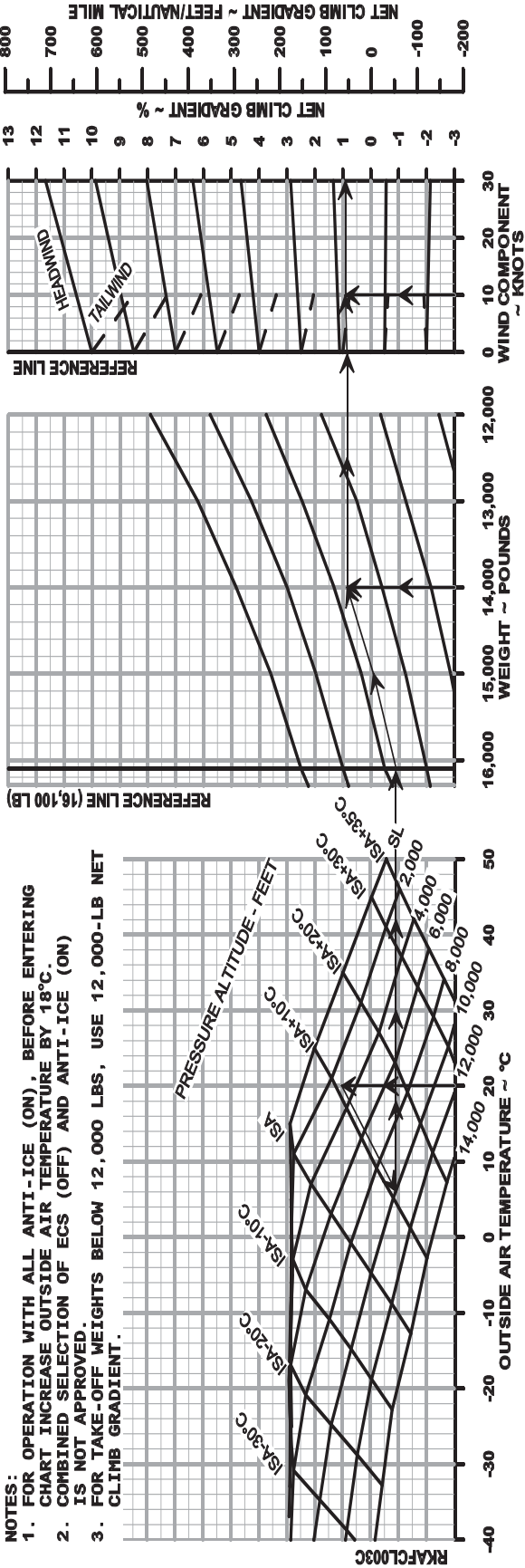
ONE ENGINE INOPERATIVE

ASSOCIATED CONDITIONS:
 THRUST..... MAXIMUM CONTINUOUS
 LANDING GEAR.... UP
 ECS..... (ON) OR (OFF)

CLIMB SPEED: V_2

EXAMPLE:
 OAT..... 20°C
 FIELD PRESSURE ALTITUDE..... 3,000 FT
 SID PRESS. ALT. REQUIREMENT..... 10,000 FT
 WEIGHT..... 14,000 LBS
 HEADWIND COMPONENT..... 10 KTS
 NET CLIMB GRADIENT..... 55 FT/NM

- NOTES:
- FOR OPERATION WITH ALL ANTI-ICE (ON), BEFORE ENTERING CHART INCREASE OUTSIDE AIR TEMPERATURE BY 18°C.
 - COMBINED SELECTION OF ECS (OFF) AND ANTI-ICE (ON) IS NOT APPROVED.
 - FOR TAKE-OFF WEIGHTS BELOW 12,000 LBS, USE 12,000-LB NET CLIMB GRADIENT.



TAKEOFF

Zero Wind and Gradient

SEA LEVEL

FLAPS 20°

T.O. Gross Weight x 1000	Temp(°C) (°F)	-40	-20	-10	0	10	15	20	30	40	50
T.O. Power		87.8	91.4	93.2	95.0	96.9	97.8	98.7*	98.2*	97.2	96.0
16.3	V ₁	104	103	103	103	103	103	103	106	109	-
	V _R	110	110	110	110	110	110	110	110	111	-
	V ₂	116	116	116	116	116	116	116	116	116	-
	TOFL	3274	3485	3615	3736	3827	3906	4037	4513	5265	-
16.1	V ₁	103	102	102	102	102	102	102	104	107	-
	V _R	109	109	109	109	109	109	109	109	110	-
	V ₂	116	116	116	116	116	116	116	116	116	-
	TOFL	3192	3396	3523	3642	3724	3802	3936	4380	5075	-
15.5	V ₁	99	99	99	99	99	99	99	101	104	108
	V _R	106	106	106	106	106	106	106	107	107	108
	V ₂	113	113	113	113	113	113	113	113	113	113
	TOFL	2930	3132	3249	3360	3439	3509	3627	4028	4604	5721
15.0	V ₁	97	96	96	96	96	96	97	98	101	105
	V _R	104	104	104	104	104	104	104	105	105	106
	V ₂	111	111	111	111	111	111	111	111	111	111
	TOFL	2743	2925	3034	3137	3212	3283	3386	3747	4261	5037
14.5	V ₁	94	94	94	94	93	93	94	96	98	101
	V _R	102	102	102	102	102	102	102	103	103	104
	V ₂	110	110	110	110	110	110	110	110	110	110
	TOFL	2554	2728	2829	2925	2994	3054	3154	3486	3949	4588
14.0	V ₁	92	92	92	92	92	92	92	93	95	98
	V _R	100	100	100	100	100	100	100	101	101	102
	V ₂	108	108	108	108	108	108	108	108	108	108
	TOFL	2412	2589	2679	2770	2857	2906	2960	3239	3657	4211
13.5	V ₁	92	92	92	92	92	92	92	91	92	95
	V _R	97	97	97	97	97	97	97	98	99	100
	V ₂	106	106	106	106	106	106	106	106	106	106
	TOFL	2397	2572	2660	2750	2837	2885	2937	3092	3382	3876
13.0	V ₁	93	92	92	92	92	92	92	92	91	92
	V _R	95	95	95	95	94	95	95	96	97	97
	V ₂	104	104	104	104	104	104	104	104	104	104
	TOFL	2384	2557	2644	2733	2819	2866	2917	3066	3256	3560
12.5	V ₁	93	93	92	92	92	92	92	92	91	91
	V _R	93	93	92	92	92	92	92	93	94	95
	V ₂	102	102	102	102	102	102	101	101	101	101
	TOFL	2374	2544	2631	2719	2804	2850	2900	3043	3225	3436
12.0	V ₁	93	93	93	93	93	92	92	92	91	91
	V _R	93	93	93	93	93	92	92	92	92	93
	V ₂	103	103	103	103	103	103	102	101	99	99
	TOFL	2367	2535	2620	2708	2792	2838	2887	3024	3198	3398

FLAPS 20°

TAKEOFF
Zero Wind and Gradient
1,000 FT
FLAPS 20°

T.O. Gross Weight x 1000	Temp (°C) (°F) T.O. Power	-40	-20	-10	0	10	20	30	40	50
		-40	-4	14	32	50	68	86	104	122
		89.0	92.7	94.5	96.3	98.2*	99.2*	98.2	97.2	96.0
16.3	V ₁	103	103	103	103	102	104	107	111	-
	V _R	110	110	110	110	110	110	110	111	-
	V _{REF 119}	116	116	116	116	116	116	116	116	-
	TOFL	3336	3569	3700	3812	3900	4301	4928	6054	-
16.1	V ₁	102	102	102	102	101	103	106	109	-
	V _R	109	109	109	109	109	109	110	110	-
	V _{REF 118}	116	116	116	116	116	116	116	116	-
	TOFL	3521	3480	3601	3715	3801	4195	4770	5600	-
15.5	V ₁	99	99	99	98	98	100	102	105	-
	V _R	106	106	106	106	106	107	107	108	-
	V _{REF 116}	113	113	113	113	113	113	113	113	-
	TOFL	2998	3206	3324	3426	3510	3856	4358	5051	-
15.0	V ₁	96	96	96	96	96	97	99	102	106
	V _R	104	104	104	104	104	105	105	106	106
	V _{REF 114}	111	111	111	111	111	111	111	111	111
	TOFL	2800	3001	3111	3201	3279	3591	4056	4652	5868
14.5	V ₁	94	93	93	93	93	95	97	99	103
	V _R	102	102	102	102	102	102	103	104	104
	V _{REF 112}	110	110	110	110	110	110	110	110	110
	TOFL	2613	2794	2895	2984	3060	3348	3762	4276	5045
14.0	V ₁	92	92	92	92	92	92	94	96	99
	V _R	100	99	100	99	99	100	101	101	102
	V _{REF 110}	108	108	108	108	108	108	108	108	108
	TOFL	2489	2672	2765	2857	2945	3107	3493	3955	4598
13.5	V ₁	92	92	92	92	92	92	91	93	96
	V _R	97	97	97	97	97	98	99	99	100
	V _{REF 108}	106	106	106	106	106	106	106	106	106
	TOFL	2473	2654	2745	2836	2923	3056	3238	3649	4204
13.0	V ₁	92	92	92	92	92	92	91	91	93
	V _R	94	94	94	94	94	95	96	97	98
	V _{REF 106}	104	104	104	104	104	104	104	104	104
	TOFL	2460	2638	2728	2818	2905	3033	3208	3415	3865
12.5	V ₁	93	92	92	92	92	92	91	91	91
	V _R	93	92	92	92	92	93	94	95	95
	V _{REF 104}	102	102	102	102	102	101	101	101	101
	TOFL	2449	2624	2714	2803	2889	3013	3180	3379	3608
12.0	V ₁	93	93	93	93	92	92	92	91	91
	V _R	93	93	93	93	92	92	92	92	93
	V _{REF 102}	103	103	103	103	103	102	100	99	99
	TOFL	2442	2615	2703	2792	2877	2996	3156	3346	3566

**FLAPS
20°**

TAKEOFF

Zero Wind and Gradient

2,000 FT

FLAPS 20°

T.O. Gross Weight x 1000	Temp (°C) (°F)	-40	-20	-10	0	10	20	30	40	50
T.O. Power		90.2	93.9	95.7	97.6	99.4*	99.2*	98.2	97.2	96.0
16.3	V ₁	103	103	103	102	102	105	109	-	-
	V _R	110	110	110	110	110	110	111	-	-
	V _{REF 119}	116	116	116	116	116	116	116	-	-
	TOFL	3424	3673	3798	3907	4050	4644	5431	-	-
16.1	V ₁	102	102	101	101	101	104	107	-	-
	V _R	109	109	109	109	109	109	110	-	-
	V _{REF 118}	116	116	116	116	116	116	116	-	-
	TOFL	3337	3578	3697	3809	3949	4519	5241	-	-
15.5	V ₁	99	98	98	98	98	101	103	107	-
	V _R	106	106	106	106	106	107	107	108	-
	V _{REF 116}	113	113	113	113	113	113	113	113	-
	TOFL	3082	3300	3414	3517	3646	4146	4750	5559	-
15.0	V ₁	96	96	96	96	96	98	101	104	-
	V _R	104	104	104	104	104	105	105	106	-
	V _{REF 114}	111	111	111	111	111	111	111	111	-
	TOFL	2879	3084	3191	3287	3406	3867	4396	5085	-
14.5	V ₁	94	93	93	93	93	95	98	100	104
	V _R	102	102	102	102	102	103	103	104	104
	V _{REF 112}	110	110	110	110	110	110	110	110	110
	TOFL	2687	2876	2975	3067	3180	3590	4076	4665	6122
14.0	V ₁	92	92	92	92	92	93	95	97	101
	V _R	99	99	99	99	99	101	101	102	102
	V _{REF 110}	108	108	108	108	108	108	108	108	108
	TOFL	2570	2759	2854	2948	3047	3341	3774	4302	5069
13.5	V ₁	92	92	92	92	92	91	92	94	97
	V _R	97	97	97	97	97	98	99	99	100
	V _{REF 108}	106	106	106	106	106	106	106	106	106
	TOFL	2553	2739	2832	2926	3024	3192	3491	3949	4597
13.0	V ₁	92	92	92	92	92	91	91	91	94
	V _R	94	94	94	94	94	96	97	97	98
	V _{REF 106}	104	104	104	104	104	104	104	104	104
	TOFL	2539	2723	2815	2907	3004	3165	3362	3636	4194
12.5	V ₁	93	92	92	92	92	92	91	91	91
	V _R	93	92	92	92	92	93	94	95	96
	V _{REF 104}	102	102	102	102	102	101	101	101	101
	TOFL	2527	2708	2800	2891	2987	3141	3330	3545	3828
12.0	V ₁	93	93	93	92	92	92	91	91	90
	V _R	93	93	93	92	92	92	92	93	93
	V _{REF 102}	103	103	103	103	103	101	99	99	99
	TOFL	2519	2697	2788	2879	2973	3121	3301	3507	3747

FLAPS 20°

TAKEOFF
Zero Wind and Gradient
3,000 FT
FLAPS 20°

T.O. Gross Weight x 1000	Temp (°C) (°F) T.O. Power	-40	-20	-10	0	10	20	30	40	50
		-40	-4	14	32	50	68	86	104	122
		91.5	95.2	97.1	99.0*	100.2*	99.2	98.2	97.2	96.0
16.3	V ₁	103	103	102	102	103	107	111	-	-
V _{REF} 119	V _R	110	110	110	110	110	110	111	-	-
	V ₂	116	116	116	116	116	116	116	-	-
	TOFL	3541	3802	3905	4029	4339	5058	6279	-	-
	16.1	V ₁	102	102	101	101	102	105	109	-
V _{REF} 118	V _R	109	109	109	109	109	110	110	-	-
	V ₂	116	116	116	116	116	116	116	-	-
	TOFL	3452	3706	3808	3933	4231	4906	5799	-	-
	15.5	V ₁	99	98	98	98	99	102	105	-
V _{REF} 116	V _R	106	106	106	106	107	107	108	-	-
	V ₂	113	113	113	113	113	113	113	-	-
	TOFL	3182	3417	3517	3632	3901	4485	5221	-	-
	15.0	V ₁	96	96	96	95	96	99	102	105
V _{REF} 114	V _R	104	104	104	104	104	105	106	106	-
	V ₂	111	111	111	111	111	111	111	111	-
	TOFL	2978	3193	3287	3386	3642	4169	4812	5619	-
	14.5	V ₁	93	93	93	93	94	96	99	102
V _{REF} 112	V _R	102	102	102	102	102	103	104	104	-
	V ₂	110	110	110	110	110	110	110	110	-
	TOFL	2774	2977	3066	3170	3385	3876	4423	5144	-
	14.0	V ₁	92	92	92	92	91	94	96	98
V _{REF} 110	V _R	99	99	99	99	100	101	101	102	102
	V ₂	108	108	108	108	108	108	108	108	108
	TOFL	2656	2851	2945	3043	3174	3592	4091	4675	6255
	13.5	V ₁	92	92	92	92	92	91	93	95
V _{REF} 108	V _R	97	97	97	97	97	99	99	100	100
	V ₂	106	106	106	106	106	106	106	106	106
	TOFL	2638	2830	2923	3021	3148	3345	3775	4281	5081
	13.0	V ₁	92	92	92	92	92	91	91	92
V _{REF} 106	V _R	94	94	94	94	95	96	97	97	98
	V ₂	104	104	104	104	104	104	104	104	104
	TOFL	2623	2812	2903	3001	3125	3313	3530	3937	4592
	12.5	V ₁	93	92	92	92	92	91	91	91
V _{REF} 104	V _R	93	92	92	92	92	94	95	95	96
	V ₂	102	102	102	102	101	101	101	101	101
	TOFL	2611	2797	2888	2983	3105	3285	3493	3723	4172
	12.0	V ₁	93	93	92	92	92	92	91	91
V _{REF} 102	V _R	93	93	92	92	92	92	92	93	93
	V ₂	103	103	103	103	102	100	99	99	99
	TOFL	2602	2785	2876	2971	3088	3260	3459	3680	3945

**FLAPS
20°**

TAKEOFF

Zero Wind and Gradient

4,000 FT

FLAPS 20°

FLAPS 20°

T.O. Gross Weight x 1000	Temp (°C) (°F)	-40	-20	-10	0	10	20	30	40	50
T.O. Power		92.8	96.5	98.5	100.3*	100.2*	99.2	98.2	97.2	96.0
16.3	V ₁	103	103	102	103	105	109	-	-	-
	V _R	110	110	110	110	110	111	-	-	-
	V ₂	116	116	116	116	116	116	-	-	-
	TOFL	3660	3916	4023	4221	4714	5581	-	-	-
V _{REF} 119	V ₁	102	101	101	101	103	107	-	-	-
	V _R	109	109	109	109	109	110	-	-	-
	V ₂	116	116	116	116	116	116	-	-	-
	TOFL	3561	3820	3928	4118	4583	5387	-	-	-
15.5	V ₁	99	98	98	98	100	103	107	-	-
	V _R	106	106	106	106	107	107	108	-	-
	V ₂	113	113	113	113	113	113	113	-	-
	TOFL	3289	3528	3627	3803	4214	4889	5796	-	-
V _{REF} 116	V ₁	96	96	95	96	98	100	104	-	-
	V _R	104	104	104	104	105	105	106	-	-
	V ₂	111	111	111	111	111	111	111	-	-
	TOFL	3079	3297	3382	3553	3929	4529	5274	-	-
15.0	V ₁	93	93	93	93	95	98	100	104	-
	V _R	102	102	102	102	103	103	104	104	-
	V ₂	110	110	110	110	110	110	110	110	-
	TOFL	2867	3074	3166	3317	3657	4204	4829	5747	-
V _{REF} 112	V ₁	92	92	92	92	92	95	97	100	-
	V _R	99	99	99	100	100	101	102	102	-
	V ₂	108	108	108	108	108	108	108	108	-
	TOFL	2745	2944	3040	3155	3400	3891	4437	5162	-
14.0	V ₁	92	92	92	92	91	92	94	97	100
	V _R	97	97	97	97	98	99	99	100	100
	V ₂	106	106	106	106	106	106	106	106	106
	TOFL	2726	2923	3018	3130	3293	3594	4089	4678	6307
V _{REF} 108	V ₁	92	92	92	92	91	91	91	93	97
	V _R	94	94	94	94	95	97	97	98	98
	V ₂	104	104	104	104	104	104	104	104	104
	TOFL	2709	2904	2998	3108	3266	3476	3765	4275	5077
13.5	V ₁	92	92	92	92	92	91	91	90	93
	V _R	92	92	92	92	93	94	95	95	96
	V ₂	102	102	102	102	101	101	101	101	101
	TOFL	2696	2888	2981	3090	3241	3443	3667	3919	4570
V _{REF} 104	V ₁	93	92	92	92	92	91	91	90	90
	V _R	93	92	92	92	92	92	93	93	94
	V ₂	103	103	103	102	101	99	99	99	99
	TOFL	2686	2875	2968	3075	3220	3413	3627	3868	4162

TAKEOFF
Zero Wind and Gradient
5,000 FT
FLAPS 20°

T.O. Gross Weight x 1000	Temp (°C) (°F) T.O. Power	-40 -40	-20 -4	-10 14	0 32	10 50	20 68	30 86	40 104	50 122
		94.8	98.6	100.6*	101.3*	100.2	99.2	98.2	97.2	96.0
16.3	V ₁	103	102	102	103	106	111	-	-	-
	V _R	110	110	110	110	110	111	-	-	-
	V _{REF 119}	116	116	116	116	116	116	-	-	-
	TOFL	3774	4035	4172	4508	5137	6440	-	-	-
16.1	V ₁	102	101	101	102	105	109	-	-	-
	V _R	109	109	109	109	110	110	-	-	-
	V _{REF 118}	116	116	116	116	116	116	-	-	-
	TOFL	3678	3931	4073	4395	5005	6027	-	-	-
15.5	V ₁	98	98	98	99	101	105	-	-	-
	V _R	106	106	106	107	107	108	-	-	-
	V _{REF 116}	113	113	113	113	113	113	-	-	-
	TOFL	3393	3631	3761	4053	4578	5391	-	-	-
15.0	V ₁	96	95	95	97	99	102	106	-	-
	V _R	104	104	104	104	105	106	106	-	-
	V _{REF 114}	111	111	111	111	111	111	111	-	-
	TOFL	3172	3387	3507	3784	4260	4959	5915	-	-
14.5	V ₁	93	93	93	94	96	99	102	-	-
	V _R	102	102	102	102	103	104	104	-	-
	V _{REF 112}	110	110	110	110	110	110	110	-	-
	TOFL	2958	3170	3280	3518	3958	4573	5334	-	-
14.0	V ₁	92	92	92	91	93	96	98	102	-
	V _R	99	99	99	100	101	101	102	102	-
	V _{REF 110}	108	108	108	108	108	108	108	108	-
	TOFL	2835	3040	3143	3288	3678	4232	4853	5835	-
13.5	V ₁	92	92	92	91	91	93	95	98	-
	V _R	97	97	97	97	99	99	100	100	-
	V _{REF 108}	106	106	106	106	106	106	106	106	-
	TOFL	2815	3017	3119	3260	3457	3904	4459	5172	-
13.0	V ₁	92	92	92	92	91	91	92	95	98
	V _R	94	94	94	95	96	97	98	98	98
	V _{REF 106}	104	104	104	104	104	104	104	104	104
	TOFL	2797	2997	3098	3235	3424	3653	4085	4686	6251
12.5	V ₁	92	92	92	92	91	91	90	91	95
	V _R	92	92	92	92	93	95	95	96	96
	V _{REF 104}	102	102	102	101	101	101	101	101	101
	TOFL	2783	2980	3080	3213	3395	3614	3855	4261	5043
12.0	V ₁	93	92	92	92	92	91	91	90	91
	V _R	93	92	92	92	92	92	93	93	94
	V _{REF 102}	103	103	103	102	100	99	99	99	99
	TOFL	2772	2966	3065	3195	3369	3578	3809	4076	4537

**FLAPS
20°**

TAKEOFF

Zero Wind and Gradient

6,000 FT

FLAPS 20°

FLAPS 20°

T.O. Gross Weight x 1000	Temp (°C) (°F)	-40	-20	-10	0	10	20	30	40	50
T.O. Power		96.7	100.7	102.7	101.3	100.2	99.2	98.2	97.2	96.0
16.3	V ₁	102	102	103	104	107	-	-	-	-
	V _R	110	110	110	110	111	-	-	-	-
	V ₂	116	116	116	116	116	-	-	-	-
	TOFL	3889	4167	4408	4871	5644	-	-	-	-
16.1	V ₁	101	101	102	103	106	110	-	-	-
	V _R	109	109	109	109	110	110	-	-	-
	V ₂	116	116	116	116	116	116	-	-	-
	TOFL	3793	4068	4297	4749	5478	8955	-	-	-
15.5	V ₁	98	98	99	100	103	107	-	-	-
	V _R	106	106	106	107	107	108	-	-	-
	V ₂	113	113	113	113	113	113	-	-	-
	TOFL	3504	3757	3961	4368	4995	5996	-	-	-
15.0	V ₁	96	95	96	97	100	104	-	-	-
	V _R	104	104	104	105	105	106	-	-	-
	V ₂	111	111	111	111	111	111	-	-	-
	TOFL	3276	3505	3701	4074	4624	5481	-	-	-
14.5	V ₁	93	93	93	95	97	100	104	-	-
	V _R	102	102	102	103	103	104	104	-	-
	V ₂	110	110	110	110	110	110	110	-	-
	TOFL	3054	3278	3452	3793	4289	5016	5994	-	-
14.0	V ₁	92	92	91	92	94	97	100	-	-
	V _R	99	99	100	100	101	102	102	-	-
	V ₂	108	108	108	108	108	108	108	-	-
	TOFL	2929	3143	3266	3520	3977	4606	5358	-	-
13.5	V ₁	92	92	92	91	91	94	97	100	-
	V _R	97	97	97	98	99	99	100	100	-
	V ₂	106	106	106	106	106	106	106	106	-
	TOFL	2908	3118	3239	3412	3683	4244	4866	5968	-
13.0	V ₁	92	92	92	91	91	91	94	96	-
	V _R	94	94	95	96	97	97	98	98	-
	V ₂	104	104	104	104	104	104	104	104	-
	TOFL	2889	3097	3216	3382	3596	3907	4458	5174	-
12.5	V ₁	92	92	92	92	91	91	90	93	96
	V _R	92	92	92	93	94	95	95	96	96
	V ₂	102	102	101	101	101	101	101	101	101
	TOFL	2874	3079	3195	3357	3562	3799	4068	4673	6091
12.0	V ₁	92	92	92	92	91	91	90	90	93
	V _R	92	92	92	92	91	93	93	94	94
	V ₂	103	103	102	101	99	99	99	99	99
	TOFL	2862	3065	3178	3334	3530	3757	4008	4302	5009

TAKEOFF
Zero Wind and Gradient
7,000 FT
FLAPS 20°

T.O. Gross Weight x 1000	Temp (°C) (°F)	-40	-20	-10	0	10	20	30	40	50
T.O. Power		99.1	103.3*	102.7*	101.3	100.2	99.2	98.2	97.2	96.0
16.3	V ₁	102	102	104	106	109	-	-	-	-
	V _R	110	110	110	110	111	-	-	-	-
	V ₂	116	116	116	116	116	-	-	-	-
	TOFL	4013	4353	4756	5317	6239	-	-	-	-
16.1	V ₁	101	101	103	104	108	-	-	-	-
	V _R	109	109	109	110	110	-	-	-	-
	V ₂	116	116	116	116	116	-	-	-	-
	TOFL	3913	4244	4635	5163	6015	-	-	-	-
15.5	V ₁	98	98	99	101	104	108	-	-	-
	V _R	106	106	107	107	108	108	-	-	-
	V ₂	113	113	113	113	113	113	-	-	-
	TOFL	3615	3920	4269	4743	5435	11,083	-	-	-
15.0	V ₁	96	96	97	98	101	105	-	-	-
	V _R	104	104	105	105	106	106	-	-	-
	V ₂	111	111	111	111	111	111	-	-	-
	TOFL	3378	3662	3987	4413	5035	6062	-	-	-
14.5	V ₁	93	93	94	96	98	102	-	-	-
	V _R	102	102	102	103	103	104	-	-	-
	V ₂	110	110	110	110	110	110	-	-	-
	TOFL	3155	3417	3714	4102	4647	5511	-	-	-
14.0	V ₁	92	91	92	93	95	98	102	-	-
	V _R	99	100	100	101	101	102	102	-	-
	V ₂	108	108	108	108	108	108	108	-	-
	TOFL	3025	3255	3457	3813	4302	5036	6184	-	-
13.5	V ₁	92	92	91	91	92	95	98	-	-
	V _R	97	97	98	99	99	100	100	-	-
	V ₂	106	106	106	106	106	106	106	-	-
	TOFL	3003	3229	3392	3583	3976	4604	5385	-	-
13.0	V ₁	92	92	91	91	91	92	95	98	-
	V _R	94	94	95	96	97	98	98	98	-
	V ₂	104	104	104	104	104	104	104	104	-
	TOFL	2984	3206	3364	3549	3779	4235	4889	5986	-
12.5	V ₁	92	92	92	91	91	90	91	94	-
	V _R	92	92	93	93	95	95	96	96	-
	V ₂	102	101	101	101	101	101	101	101	-
	TOFL	2967	3178	3339	3518	3739	4000	4429	5159	-
12.0	V ₁	92	92	92	91	91	91	90	91	-
	V _R	92	92	92	91	92	93	93	94	-
	V ₂	103	102	101	100	99	99	99	99	-
	TOFL	2955	3171	3318	3490	3702	3952	4227	4641	-

FLAPS 20°

TAKEOFF

Zero Wind and Gradient

8,000 FT

FLAPS 20°

FLAPS 20°

T.O. Gross Weight x 1000	Temp (°C) (°F)	-40	-20	-10	0	10	20	30	40	50
T.O. Power		101.5*	104.0*	102.7*	101.3	100.2	99.2	98.2	97.2	96.0
16.3	V ₁	102	103	105	107	-	-	-	-	-
	V _R	110	110	110	111	-	-	-	-	-
	V ₂	116	116	116	116	-	-	-	-	-
	TOFL	4161	4646	5178	5838	-	-	-	-	-
16.1	V ₁	101	102	104	106	110	-	-	-	-
	V _R	109	109	109	110	110	-	-	-	-
	V ₂	116	116	116	116	116	-	-	-	-
	TOFL	4055	4530	5046	5652	7081	-	-	-	-
15.5	V ₁	98	99	101	102	106	-	-	-	-
	V _R	106	107	107	107	108	-	-	-	-
	V ₂	113	113	113	113	113	-	-	-	-
	TOFL	3746	4172	4632	5158	6011	-	-	-	-
15.0	V ₁	96	96	98	100	102	106	-	-	-
	V _R	104	104	105	105	106	106	-	-	-
	V ₂	111	111	111	111	111	112	-	-	-
	TOFL	3501	3897	4320	4794	5519	8901	-	-	-
14.5	V ₁	93	94	95	97	99	104	-	-	-
	V _R	102	102	103	103	104	104	-	-	-
	V ₂	110	110	110	110	110	110	-	-	-
	TOFL	3266	3632	4018	4448	5076	6163	-	-	-
14.0	V ₁	92	91	93	94	96	100	-	-	-
	V _R	99	100	101	101	102	102	-	-	-
	V ₂	108	108	108	108	108	108	-	-	-
	TOFL	3129	3397	3736	4126	4676	5538	-	-	-
13.5	V ₁	92	91	91	91	93	96	100	-	-
	V _R	97	97	98	99	99	100	100	-	-
	V ₂	106	106	106	106	106	106	106	-	-
	TOFL	3106	3368	3562	3822	4314	5044	6399	-	-
13.0	V ₁	92	92	91	91	90	93	97	-	-
	V _R	94	95	96	97	97	98	98	-	-
	V ₂	104	104	104	104	104	104	104	-	-
	TOFL	3085	3341	3529	3729	3979	4598	5426	-	-
12.5	V ₁	92	92	91	91	91	90	93	96	-
	V _R	92	92	93	94	95	95	96	96	-
	V ₂	102	101	101	101	101	101	101	101	-
	TOFL	3067	3319	3499	3693	3932	4219	4884	5861	-
12.0	V ₁	92	92	92	91	91	90	90	92	-
	V _R	92	92	92	91	93	93	94	94	-
	V ₂	103	102	100	99	99	99	99	99	-
	TOFL	3054	3299	3473	3659	3889	4164	4465	5130	-

TAKEOFF
Zero Wind and Gradient
9,000 FT
FLAPS 20°

T.O. Gross Weight x 1000	Temp (°C) (°F)	-40	-20	-10	0	10	20	30	40	50
T.O. Power	T.O. Power	104.0	104.0*	102.7*	101.3	100.2	99.2	98.2	97.2	96.0
16.3	V ₁	103	104	106	109	-	-	-	-	-
	V _R	110	110	110	111	-	-	-	-	-
	V ₂	116	116	116	116	-	-	-	-	-
	TOFL	4375	5062	5653	6513	-	-	-	-	-
16.1	V ₁	102	103	105	108	-	-	-	-	-
	V _R	109	109	110	110	-	-	-	-	-
	V ₂	116	116	116	116	-	-	-	-	-
	TOFL	4264	4935	5497	6251	-	-	-	-	-
15.5	V ₁	98	100	102	104	108	-	-	-	-
	V _R	106	107	107	108	108	-	-	-	-
	V ₂	113	113	113	113	113	-	-	-	-
	TOFL	3931	4541	5041	5654	7409	-	-	-	-
15.0	V ₁	96	97	99	101	105	-	-	-	-
	V _R	104	105	105	106	106	-	-	-	-
	V ₂	111	111	111	111	111	-	-	-	-
	TOFL	3673	4237	4681	5240	6170	-	-	-	-
14.5	V ₁	93	95	96	98	101	104	-	-	-
	V _R	102	103	103	103	104	104	-	-	-
	V ₂	110	110	110	110	110	110	-	-	-
	TOFL	3426	3945	4347	4838	5596	10,554	-	-	-
14.0	V ₁	91	92	94	95	98	102	-	-	-
	V _R	100	101	101	101	102	102	-	-	-
	V ₂	108	108	108	108	108	108	-	-	-
	TOFL	3249	3661	4040	4481	5129	6293	-	-	-
13.5	V ₁	92	91	91	92	95	98	-	-	-
	V _R	97	98	99	99	100	100	-	-	-
	V ₂	106	106	106	106	106	106	-	-	-
	TOFL	3224	3541	3747	4142	4718	5583	-	-	-
13.0	V ₁	92	91	91	91	92	95	98	-	-
	V _R	95	96	96	97	97	98	98	-	-
	V ₂	104	104	104	104	104	104	104	-	-
	TOFL	3201	3510	3708	3928	4332	5052	6831	-	-
12.5	V ₁	92	91	91	91	90	91	95	-	-
	V _R	92	93	94	95	95	96	96	-	-
	V ₂	101	101	101	101	101	101	101	-	-
	TOFL	3181	3482	3673	3886	4149	4596	5446	-	-
12.0	V ₁	92	92	91	91	91	90	91	-	-
	V _R	92	92	91	92	93	93	94	-	-
	V ₂	102	101	99	99	99	99	99	-	-
	TOFL	3165	3458	3635	3846	4098	4396	4878	-	-

FLAPS 20°

TAKEOFF

Zero Wind and Gradient

10,000 FT

FLAPS 20°

FLAPS 20°

T.O. Gross Weight x 1000	Temp (°C) (°F)	-40	-20	-10	0	10	20	30	40	50
T.O. Power		104.0	104.0*	102.7*	101.3	100.2	99.2	98.2	97.2	96.0
16.3	V ₁	103	106	108	-	-	-	-	-	-
	V _R	110	110	111	-	-	-	-	-	-
	V ₂	116	116	116	-	-	-	-	-	-
	TOFL	4683	5547	6242	-	-	-	-	-	-
16.1	V ₁	102	104	107	110	-	-	-	-	-
	V _R	109	110	110	110	-	-	-	-	-
	V ₂	116	116	116	116	-	-	-	-	-
	TOFL	4563	5386	6048	7409	-	-	-	-	-
15.5	V ₁	99	101	103	106	-	-	-	-	-
	V _R	107	107	107	108	-	-	-	-	-
	V ₂	113	113	113	113	-	-	-	-	-
	TOFL	4207	4948	5497	6267	-	-	-	-	-
15.0	V ₁	97	99	100	102	106	-	-	-	-
	V _R	105	105	105	106	106	-	-	-	-
	V ₂	111	111	111	111	111	-	-	-	-
	TOFL	3929	4606	5092	5759	7934	-	-	-	-
14.5	V ₁	94	96	97	99	103	-	-	-	-
	V _R	102	103	103	104	104	-	-	-	-
	V ₂	110	110	110	110	110	-	-	-	-
	TOFL	3661	4283	4723	5296	6237	-	-	-	-
14.0	V ₁	91	93	94	96	99	-	-	-	-
	V _R	100	101	101	102	102	-	-	-	-
	V ₂	108	108	108	108	108	-	-	-	-
	TOFL	3409	3982	4376	4880	5652	-	-	-	-
13.5	V ₁	91	91	92	93	96	100	-	-	-
	V _R	98	99	99	99	100	100	-	-	-
	V ₂	106	106	106	106	106	106	-	-	-
	TOFL	3368	3730	4054	4504	5156	6609	-	-	-
13.0	V ₁	92	91	91	91	93	96	-	-	-
	V _R	95	96	97	97	98	98	-	-	-
	V ₂	104	104	104	104	104	104	-	-	-
	TOFL	3342	3693	3904	4154	4729	5627	-	-	-
12.5	V ₁	92	91	91	91	90	93	96	-	-
	V _R	92	94	94	95	95	96	96	-	-
	V ₂	101	101	101	101	101	101	101	-	-
	TOFL	3319	3660	3863	4095	4383	5059	7006	-	-
12.0	V ₁	92	91	91	91	90	90	93	-	-
	V _R	92	91	92	93	93	94	94	-	-
	V ₂	101	100	99	99	99	99	99	-	-
	TOFL	3300	3630	3826	4050	4326	4650	5410	-	-

CLIMB/CRUISE/DESCENT CHARTS

The following charts in the CAE checklist are high use performance charts taken from the Airplane Flight Manual and Pilot's Operating Manual. Refer to your aircraft's AFM and POM, including the supplements, for a complete set of performance charts including the following:

AFM Section 5:

- Buffet Boundary
- Close-In Takeoff Flight Path
- Distant Takeoff Flight Path

AFM Supplements:

- For Increased Gross Take-off Weight of 16,300 lbs
- Operation on Wet or Contaminated Runways
- Operation with Type I, Type II, Type III, and/or Type IV Deicing/Anti-Icing Fluid
- Standard Instrument Departure (SID) Charts

POM Section 4:

- Time, Distance, and Fuel to Climb - 220 KIAS/0.64 Mi from altitudes of 5,000 ft to 45,000 ft and temperatures from ISA + 20°C to ISA - 10°C
- Time, Distance, and Fuel to Climb - 250 KIAS/0.64 Mi from altitudes of 5,000 ft to 45,000 ft and temperatures from ISA + 20°C to ISA - 10°C
- Initial Cruise Altitude
- High Speed Cruise Performance from altitudes of 5,000 ft to 45,000 ft and temperatures from ISA + 20°C to ISA - 10°C
- Constant Mach Cruise 0.73 Mi Performance from altitudes of 23,000 ft to 45,000 ft and temperatures from ISA + 20°C to ISA - 10°C
- Long Range Cruise Performance from altitudes of 5,000 ft to 45,000 ft and temperatures from ISA + 20°C to ISA - 10°C
- Single Engine Cruise Performance from altitudes of 5,000 ft to 33,000 ft and temperatures from ISA + 20°C to ISA - 10°C
- Service Ceiling - One Engine Inoperative
- Drift Down Performance from 27,000 ft to 45,000 ft and temperatures from ISA + 20°C to ISA - 10°C

POM Supplements:

- For Increased Gross Take-off Weight of 16,300 lbs including:
 - Time, Distance, and Fuel to Climb with Gear Down from altitudes of 5,000 ft to 20,000 ft and temperatures from ISA + 20°C to ISA - 10°C
 - Cruise Performance with Gear Down from altitudes of 5,000 ft to 20,000 ft and temperatures from ISA + 20°C to ISA - 10°C
 - Time, Fuel, and Distance to Descend with Gear Down

CLIMB PERFORMANCE

The following performance data is based on a high speed climb profile with both engines operating at the maximum continuous thrust setting.

Time, Distance, and Fuel To Climb

This table give time, distance, and fuel used to climb from sea level to various altitudes during no wind conditions.

TIME/DISTANCE/FUEL
HIGH SPEED

 250 KIAS/.64 M_I

CLIMB

ALT x 1000	GWT x 1000	16.3			16.0			15			14			13		
		+10	ISA	-10	+10	ISA	-10	+10	ISA	-10	+10	ISA	-10	+10	ISA	-10
29	MIN	15	12	11	15	12	10	13	11	10	12	10	9	11	9	8
	NM	84	67	56	81	65	55	74	59	50	66	54	46	60	49	41
	LBS	528	467	430	513	455	419	466	415	385	422	379	352	382	345	321
31	MIN	17	14	12	16	13	11	15	12	11	13	11	10	12	10	9
	NM	95	75	63	92	73	61	83	66	56	74	60	51	67	54	46
	LBS	572	503	462	555	490	450	502	446	412	454	406	377	410	369	343
33	MIN	19	15	13	18	15	13	16	13	12	15	12	11	13	11	10
	NM	107	85	71	104	82	69	93	74	62	83	67	57	74	60	51
	LBS	617	541	495	598	526	482	540	478	441	487	434	402	438	394	366
35	MIN	21	17	15	20	17	14	18	15	13	16	13	12	15	12	11
	NM	121	95	80	117	92	77	104	83	70	93	75	63	83	67	57
	LBS	666	582	531	645	565	517	579	512	471	520	463	428	467	419	389
37	MIN	24	19	16	23	19	16	20	17	14	18	15	13	16	13	12
	NM	138	109	91	133	105	88	117	94	79	104	84	71	92	75	64
	LBS	724	629	573	699	609	556	623	549	505	557	495	457	498	446	414
39	MIN	28	22	19	27	21	18	23	19	16	20	17	15	18	15	13
	NM	165	127	106	158	122	102	136	107	91	118	95	81	104	84	72
	LBS	805	689	625	772	665	605	679	594	545	601	532	491	534	477	442
41	MIN	37	27	23	34	26	22	28	22	19	24	19	17	20	17	15
	NM	220	157	129	204	149	123	165	127	107	139	110	94	120	96	83
	LBS	955	777	696	898	744	670	758	651	594	657	576	530	577	512	474
43	MIN	-	-	30	-	35	28	38	27	23	29	23	20	24	19	17
	NM	-	-	173	-	208	161	229	160	131	173	132	111	142	113	96
	LBS	-	-	820	-	901	775	916	739	663	743	635	580	634	556	513
45	MIN	-	-	-	-	-	-	-	-	31	35	29	24	28	23	20
	NM	-	-	-	-	-	-	-	-	181	212	172	140	167	137	115
	98	-	-	-	-	-	-	-	-	790	835	733	653	693	616	562

CRUISE PERFORMANCE

HIGH SPEED CRUISE

These tables show airspeed and fuel flow for high speed cruise at each condition of ambient temperature, pressure altitude, and gross weight. They also show N_1 (fan RPM) that corresponds to the maximum cruise thrust. At some conditions the airspeed is limited by the maximum operating airspeed (V_{MO}/M_{MO}).

CONSTANT MACH CRUISE (MACH – 0.73)

These tables show N_1 (fan RPM) and fuel flow for normal cruise (Mach – 0.73) at each condition of temperature, pressure altitude, and gross weight.

LONG RANGE CRUISE

These table show airspeed, N_1 (fan RPM) and fuel flow for long range cruise at each condition of temperature, pressure altitude, and gross weight. The long range cruise speed is 99% of the maximum specific range (NM/LBS).

For all these tables, the fuel flow PPH is total fuel flow for both engines.

CRUISE PERFORMANCE

HIGH SPEED

ALT x 1000	GWT x 1000	15.5			14			13			12		
		+10	ISA	-10	+10	ISA	-10	+10	ISA	-10	+10	ISA	-10
29	TAS	449	462	451	453	462	451	456	462	451	459	462	451
	N ₁	96.5	97.9	96.7	96.4	97.2	95.9	96.3	97.2	95.4	96.3	96.8	94.9
	PPH	1509	1714	1679	1508	1672	1635	1507	1647	1608	1506	1623	1583
31	TAS	456	458	448	460	458	448	462	458	448	464	458	448
	N ₁	97.4	98.5	97.0	97.3	97.6	96.0	97.2	97.0	95.3	97.1	96.5	94.7
	PPH	1479	1608	1575	1479	1561	1526	1479	1533	1496	1479	1506	1442
33	TAS	456	455	444	460	455	444	463	455	444	465	455	444
	N ₁	98.5	99.4	97.5	98.4	98.2	96.1	98.3	97.5	95.3	98.1	96.9	94.5
	PPH	1423	1510	1477	1426	1457	1422	1427	1425	1388	1421	1396	1357
35	TAS	455	451	441	460	451	441	461	451	441	461	451	441
	N ₁	99.7	100.5	98.2	99.5	99.0	96.5	99.1	98.0	95.4	98.4	97.2	94.4
	PPH	1369	1431	1394	1373	1372	1333	1360	1336	1296	1328	1302	1261
37	TAS	450	449	439	456	449	439	459	449	439	460	449	439
	N ₁	100.4	102.1	99.9	100.2	100.2	97.7	100.1	99.1	96.4	99.3	98.0	95.2
	PPH	1272	1369	1332	1277	1303	1265	1280	1262	1223	1248	1225	1185
39	TAS	441	446	440	451	450	440	455	450	440	459	450	440
	N ₁	100.7	103.1	102.6	100.4	102.2	100.0	100.3	100.8	98.4	100.2	99.5	96.9
	PPH	1152	1271	1291	1159	1250	1216	1162	1206	1171	1165	1164	1129
41	TAS	422	438	436	442	447	440	449	451	440	454	451	440
	N ₁	101.3	103.3	104.0	100.7	103.1	102.7	100.5	102.9	100.7	100.3	101.3	99.0
	PPH	1034	1146	1206	1050	1158	1179	1055	1160	1129	1058	1114	1082
43	TAS	-	-	426	423	438	436	439	445	441	448	450	441
	N ₁	-	-	104.0	101.3	103.3	104.0	100.8	103.1	103.6	100.5	103.0	101.4
	PPH	-	-	1078	942	1043	1097	953	1052	1095	959	1059	1044
45	TAS	-	-	-	-	422	427	415	436	435	437	444	440
	N ₁	-	-	-	-	103.5	104.0	101.5	103.3	104.0	100.8	103.2	104.0
	PPH	-	-	-	-	931	983	852	948	996	867	957	1006

CRUISE PERFORMANCE

CONSTANT MACH

0.73Mi

ALT x 1000	GWT x 1000	15.5			14			13			12		
		+10	ISA	-10	+10	ISA	-10	+10	ISA	-10	+10	ISA	-10
29	TAS	439	430	421	439	430	421	439	430	421	439	430	421
	N ₁	95.6	94.0	91.7	95.0	93.3	91.0	94.6	92.9	90.6	94.2	92.5	90.3
	PPH	1448	1420	1374	1414	1384	1337	1393	1362	1318	1373	1342	1300
31	TAS	436	427	417	436	427	417	436	427	417	436	427	417
	N ₁	95.6	94.2	91.4	94.8	93.3	90.7	94.4	92.8	90.2	93.9	92.3	89.8
	PPH	1355	1325	1279	1317	1285	1243	1294	1260	1222	1272	1237	1202
33	TAS	433	424	414	433	424	414	433	424	414	433	424	414
	N ₁	96.1	94.4	91.5	95.1	93.3	90.6	94.5	92.6	90.1	94.0	92.0	89.6
	PPH	1269	1236	1195	1226	1192	1156	1200	1164	1132	1175	1139	1110
35	TAS	430	420	411	430	420	411	430	420	411	430	420	411
	N ₁	96.7	94.8	91.7	95.5	93.4	90.7	94.8	92.5	90.1	94.1	91.7	89.5
	PPH	1194	1163	1124	1147	1113	1080	1117	1082	1054	1090	1054	1029
37	TAS	428	419	409	428	419	409	428	419	409	428	419	409
	N ₁	97.9	95.9	92.7	96.4	94.1	91.3	95.5	93.1	90.5	94.6	92.1	89.8
	PPH	1135	1107	1068	1082	1052	1019	1050	1018	989	1020	986	962
39	TAS	429	419	410	429	419	410	429	419	410	429	419	410
	N ₁	99.6	98.0	95.0	97.8	95.9	92.6	96.7	94.6	91.5	95.7	93.4	90.7
	PPH	1091	1068	1034	1033	1008	973	998	971	938	965	936	908
41	TAS	-	420	410	430	420	410	430	420	410	430	420	410
	N ₁	-	100.5	97.8	99.5	97.9	94.9	98.2	96.4	93.2	97.0	95.0	91.7
	PPH	-	1038	1008	993	972	941	954	931	900	918	894	862
43	TAS	-	-	411	-	421	411	430	421	411	430	421	411
	N ₁	-	-	101.2	-	100.4	97.7	100.0	98.5	95.6	98.5	96.8	93.7
	PPH	-	-	990	-	944	915	918	899	870	878	858	829
45	TAS	-	-	-	-	421	411	-	421	411	431	421	411
	N ₁	-	-	-	-	103.4	101.1	-	101.1	98.5	100.3	99.0	96.1
	PPH	-	-	-	-	926	900	-	875	848	846	830	803

CRUISE PERFORMANCE

LONG RANGE

ALT x 1000	GWT x 1000	15.5			14			13			12		
		+10	ISA	-10	+10	ISA	-10	+10	ISA	-10	+10	ISA	-10
29	TAS	358	347	343	342	334	329	328	327	317	321	315	305
	N ₁	89.2	87.0	85.4	86.7	85.0	83.1	84.8	83.5	81.2	83.3	81.4	79.3
	PPH	1027	994	977	927	902	887	854	847	820	801	784	756
31	TAS	364	356	349	353	342	339	341	336	328	329	325	314
	N ₁	90.3	88.1	86.4	88.2	86.0	84.4	86.4	84.8	82.6	84.5	83.0	80.6
	PPH	1009	986	959	923	888	880	853	838	816	786	777	747
33	TAS	369	367	354	362	348	347	351	343	337	337	336	325
	N ₁	91.3	89.4	87.3	89.4	87.0	85.5	87.7	85.9	83.8	85.7	84.4	82.0
	PPH	984	978	938	907	867	864	842	818	803	771	767	739
35	TAS	378	380	364	373	359	358	360	347	345	348	343	334
	N ₁	92.9	90.9	88.6	90.7	88.3	86.7	88.9	86.7	84.9	87.1	85.5	83.2
	PPH	984	986	938	904	868	862	834	798	795	767	754	732
37	TAS	394	385	379	375	377	361	374	362	358	361	348	346
	N ₁	95.6	92.7	90.7	92.2	90.3	88.0	90.8	88.4	86.7	88.8	86.6	84.8
	PPH	1006	973	957	883	888	844	839	808	798	768	735	732
39	TAS	413	399	392	393	384	378	379	380	364	374	365	359
	N ₁	98.7	96.4	93.4	95.4	92.6	90.5	92.9	90.8	88.5	91.1	88.8	87.0
	PPH	1038	996	972	911	881	866	827	829	788	772	753	736
41	TAS	422	414	404	412	398	391	397	384	383	383	381	369
	N ₁	101.3	100.2	97.4	98.6	96.2	93.2	96.2	93.2	91.1	93.6	91.2	89.0
	PPH	1034	1022	991	939	901	879	854	816	814	773	765	737
43	TAS	-	-	407	423	413	404	417	402	392	402	388	386
	N ₁	-	-	101.3	101.3	100.0	97.2	99.3	97.1	93.9	96.8	94.0	91.5
	PPH	-	-	987	942	925	896	881	844	814	798	762	756
45	TAS	-	-	-	-	422	407	415	414	405	421	405	393
	N ₁	-	-	-	-	103.5	101.0	101.5	100.8	98.1	99.9	97.8	94.5
	PPH	-	-	-	-	931	894	852	861	834	821	786	755

DESCENT AND HOLDING PERFORMANCE

TIME, FUEL AND DISTANCE TO DESCEND

HIGH SPEED DESCENT

Descent Speed

0.76 MI/310 KIAS ABOVE 14,000 FT

310 KIAS decreasing linearly
to 250 KIAS BETWEEN 14,000 AND 10,000 FT

250 KIAS. BELOW 10,000 FT

Rate Of Descent

3,000 ft/min

LOW POWER DESCENT

Descent Speed

0.70 MI/250 KIAS

Engine Thrust

Idle, or maximum rate of descent is 3,000 ft/min.

HOLDING FUEL FLOW

These tables give holding fuel flow for the airspeeds of 160 KIAS and 140 KIAS at each condition of pressure altitude and gross weight. Each value is the total fuel flow for both engines.

**TIME, FUEL AND DISTANCE TO DESCEND
11,000 LBS ISA**

Initial Altitude (ft)	Time to Descend (min)		Fuel to Descend (lbs.)		Distance to Descend (nm)	
	High Speed	Low Speed	High Speed	Low Speed	High Speed	Low Speed
45,000	15.1	17.4	165	93	96.0	94.6
43,000	14.3	16.5	161	88	90.8	88.5
41,000	13.7	15.6	157	83	86.0	82.9
39,000	13.0	14.9	153	79	81.2	77.8
37,000	12.3	14.2	148	76	76.5	73.2
35,000	11.7	13.5	143	72	71.7	68.6
33,000	11.0	12.7	136	68	67.0	63.4
31,000	10.3	11.9	128	63	62.1	58.3
29,000	9.7	11.1	119	59	57.3	53.4
27,000	9.0	10.3	106	55	52.4	48.8
25,000	8.3	9.5	97	51	47.4	44.2
23,000	7.7	8.7	85	47	42.4	39.9
21,000	7.0	7.9	74	42	37.6	35.6
19,000	6.3	7.1	62	38	32.9	31.6
17,000	5.7	6.4	51	34	28.3	27.7
15,000	5.0	5.6	40	30	24.0	23.9
10,000	3.3	3.6	23	20	14.9	15.1
5,000	1.6	1.8	12	10	7.2	7.2

**TIME, FUEL AND DISTANCE TO DESCEND
13,000 LBS ISA**

Initial Altitude (ft)	Time to Descend (min)		Fuel to Descend (lbs.)		Distance to Descend (nm)	
	High Speed	Low Speed	High Speed	Low Speed	High Speed	Low Speed
45,000	15.2	19.2	146	102	96.7	103.7
43,000	14.4	18.2	143	97	96.3	97.5
41,000	13.7	17.4	139	92	86.3	91.7
39,000	13.1	16.6	135	88	81.3	86.4
37,000	12.4	15.8	131	84	76.8	81.4
35,000	11.7	15.1	126	80	72.1	76.5
33,000	11.1	14.2	120	76	67.3	70.8
31,000	10.4	13.3	113	71	62.5	65.2
29,000	9.7	12.4	104	65	57.8	59.9
27,000	9.1	11.6	95	61	52.7	54.7
25,000	8.4	10.7	84	57	47.8	49.6
23,000	7.7	9.8	73	52	42.8	44.8
21,000	7.1	8.9	62	48	38.0	40.1
19,000	6.4	8.0	52	43	33.3	35.6
17,000	5.8	7.2	42	38	28.7	31.2
15,000	5.1	6.3	33	34	24.4	27.0
10,000	3.4	4.2	19	22	15.3	17.1
5,000	1.6	2.1	9	11	7.3	8.2

**TIME, FUEL AND DISTANCE TO DESCEND
15,000 LBS ISA**

Initial Altitude (ft)	Time to Descend (min)		Fuel to Descend (lbs.)		Distance to Descend (nm)	
	High Speed	Low Speed	High Speed	Low Speed	High Speed	Low Speed
45,000	15.7	20.5	138	109	98.9	110.6
43,000	14.9	19.6	134	104	93.5	104.6
41,000	14.2	18.7	130	100	88.3	98.7
39,000	13.5	17.9	126	95	83.5	93.3
37,000	12.9	17.1	123	91	78.7	88.1
35,000	12.2	16.4	118	87	74.0	82.9
33,000	11.5	15.4	112	82	69.2	76.8
31,000	10.9	14.5	106	77	64.4	70.6
29,000	10.2	13.5	98	72	59.5	65.1
27,000	9.6	12.0	89	67	54.6	59.3
25,000	8.9	11.6	79	62	49.7	54.1
23,000	8.2	10.7	68	57	44.7	46.9
21,000	7.5	9.7	59	52	39.9	43.8
19,000	6.9	8.8	50	47	35.2	38.9
17,000	6.2	7.8	41	42	30.6	34.2
15,000	5.6	6.9	33	37	26.3	29.6
10,000	3.8	4.6	21	25	17.0	18.8
5,000	1.9	2.3	10	12	8.1	9.0

**HOLDING FUEL FLOW – LBS/HR
140 KIAS ISA**

ALT – FT	WEIGHT – LBS					
	15,500	15,000	14,000	13,000	12,000	11,000
0	1003	976	924	875	830	788
5,000	946	918	865	816	770	727
10,000	900	871	817	767	720	677
15,000	865	836	781	730	683	639
20,000	839	810	754	702	654	610
25,000	821	791	734	681	632	587
30,000	813	782	723	668	617	570

**HOLDING FUEL FLOW – LBS/HR
160 KIAS ISA**

ALT – FT	WEIGHT – LBS					
	15,500	15,000	14,000	13,000	12,000	11,000
0	999	977	936	897	862	829
5,000	941	919	878	839	802	769
10,000	894	872	829	790	753	719
15,000	858	836	792	752	715	680
20,000	831	807	763	722	684	649
25,000	810	787	741	699	660	624
30,000	799	774	727	683	643	605

MAXIMUM LANDING WEIGHT TO ACHIEVE APPROACH CLIMB REQUIREMENTS ALL ANTI-ICE SYSTEMS (OFF)

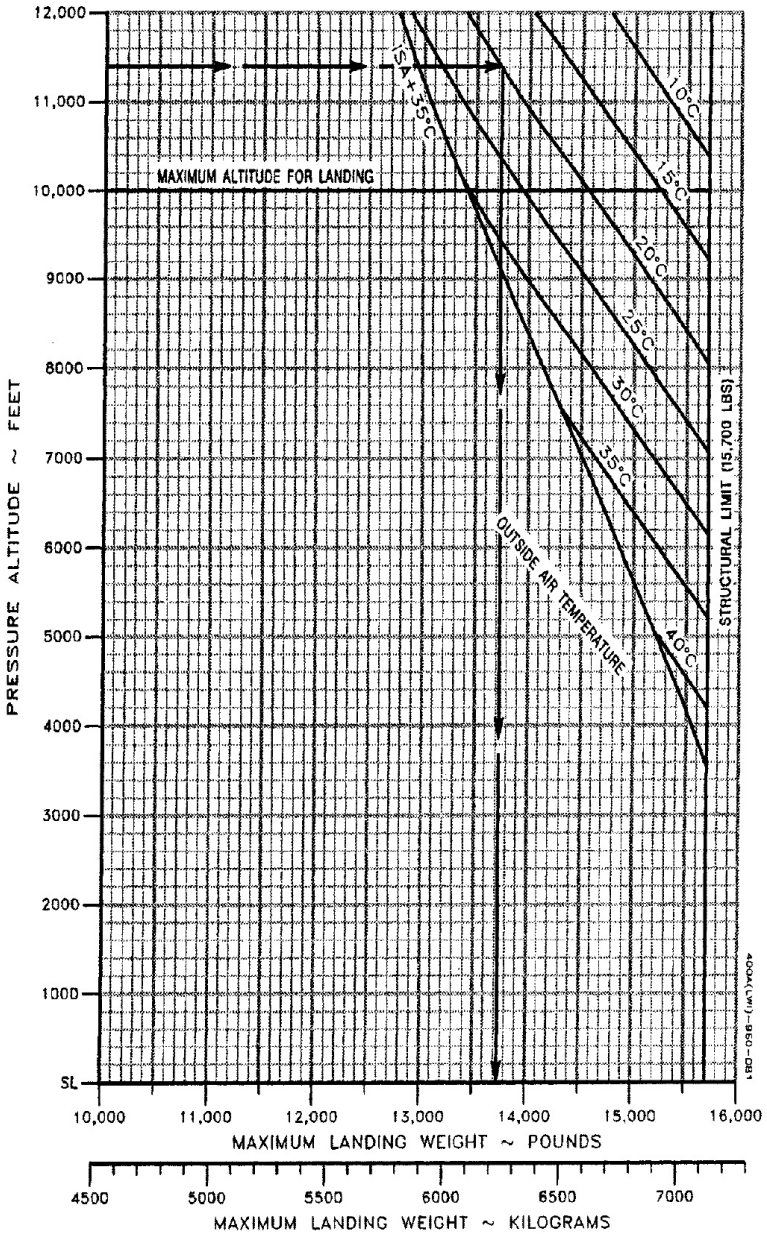
EXAMPLE:

PRESSURE ALTITUDE 11,000 FT

OAT 20°C

MAXIMUM LANDING WEIGHT 13,733 LBS

NOTE: ENTER GRAPH AT THE PRESSURE ALTITUDE FROM WHICH A GO-AROUND WOULD BE INITIATED.



MAXIMUM LANDING WEIGHT TO ACHIEVE APPROACH CLIMB REQUIREMENTS ALL ANTI-ICE SYSTEMS (ON)

EXAMPLE:

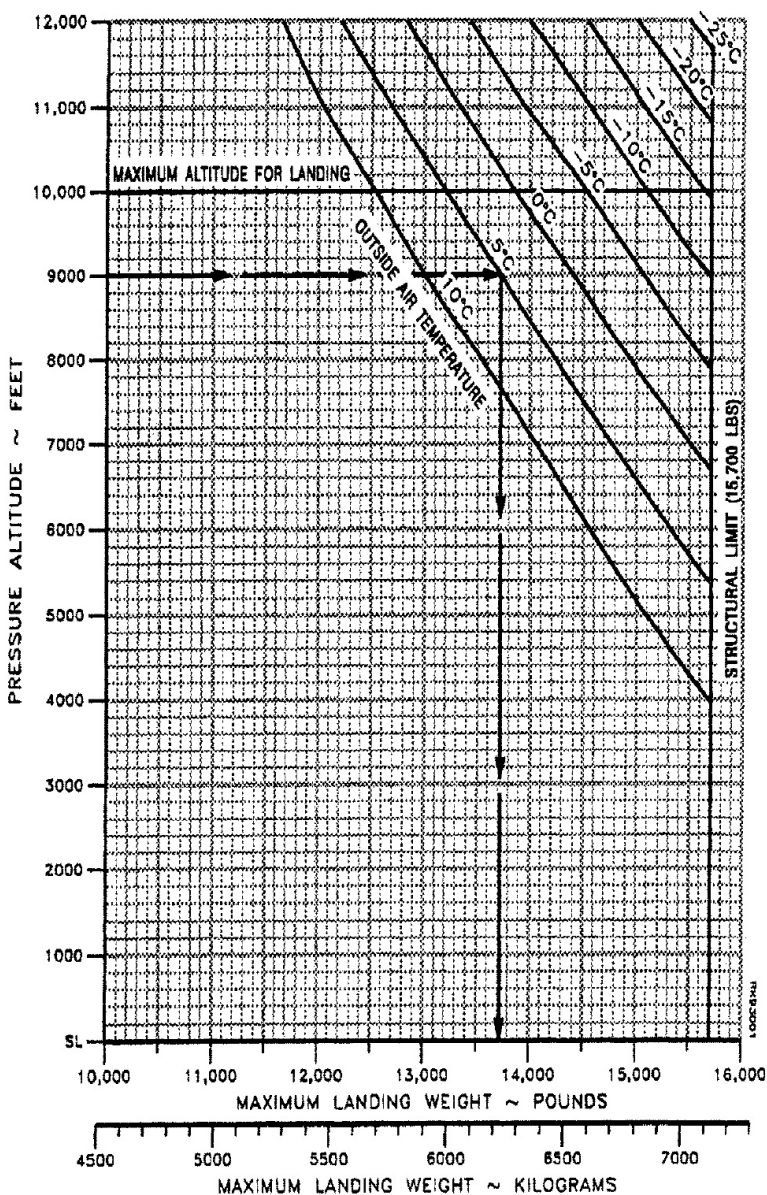
PRESSURE ALTITUDE 9,000 FT

OAT 5°C

MAXIMUM LANDING WEIGHT 13,721 LBS

NOTE: 1. ENTER GRAPH AT THE PRESSURE ALTITUDE FROM WHICH A GO-AROUND WOULD BE INITIATED.

2. COMBINED SECTION OF ECS (OFF) AND ANTI-ICE IS NOT APPROVED.

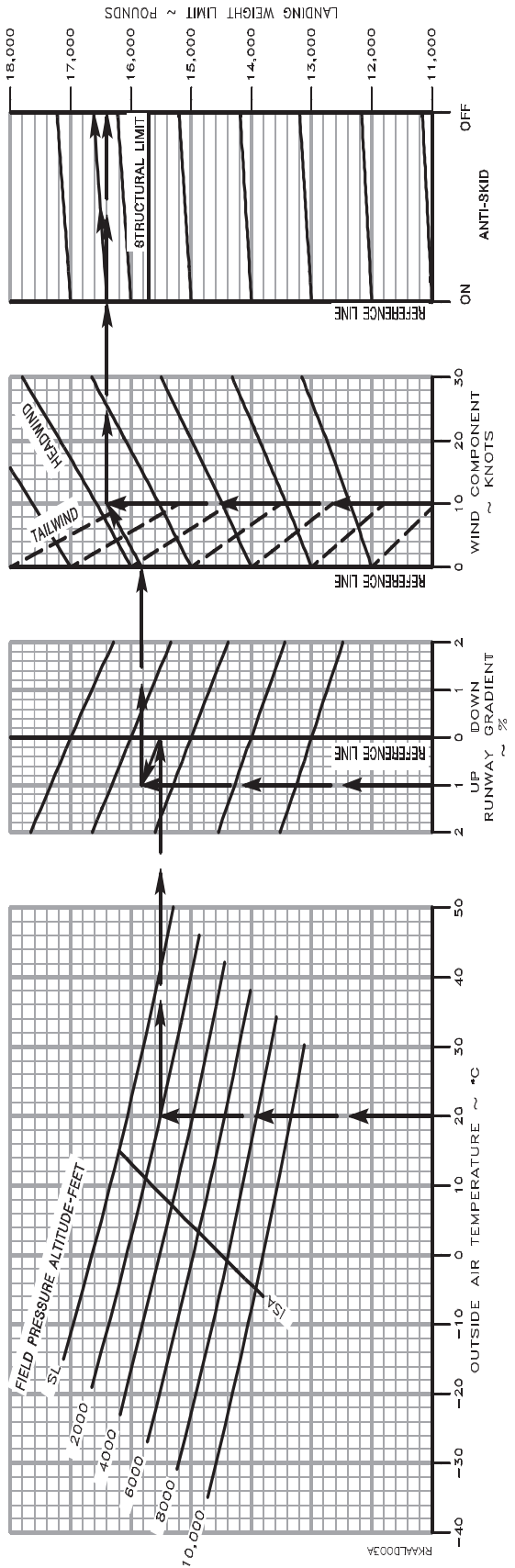


MAXIMUM LANDING WEIGHT LIMITED BY MAXIMUM BRAKE ENERGY

ASSOCIATED CONDITIONS:
 FLAPS 30°
 BRAKING MAXIMUM

EXAMPLE:
 OAT 20°C
 FIELD PRESSURE ALTITUDE 2000 FT
 RUNWAY GRADIENT 1% UP
 HEADWIND 10 KTS

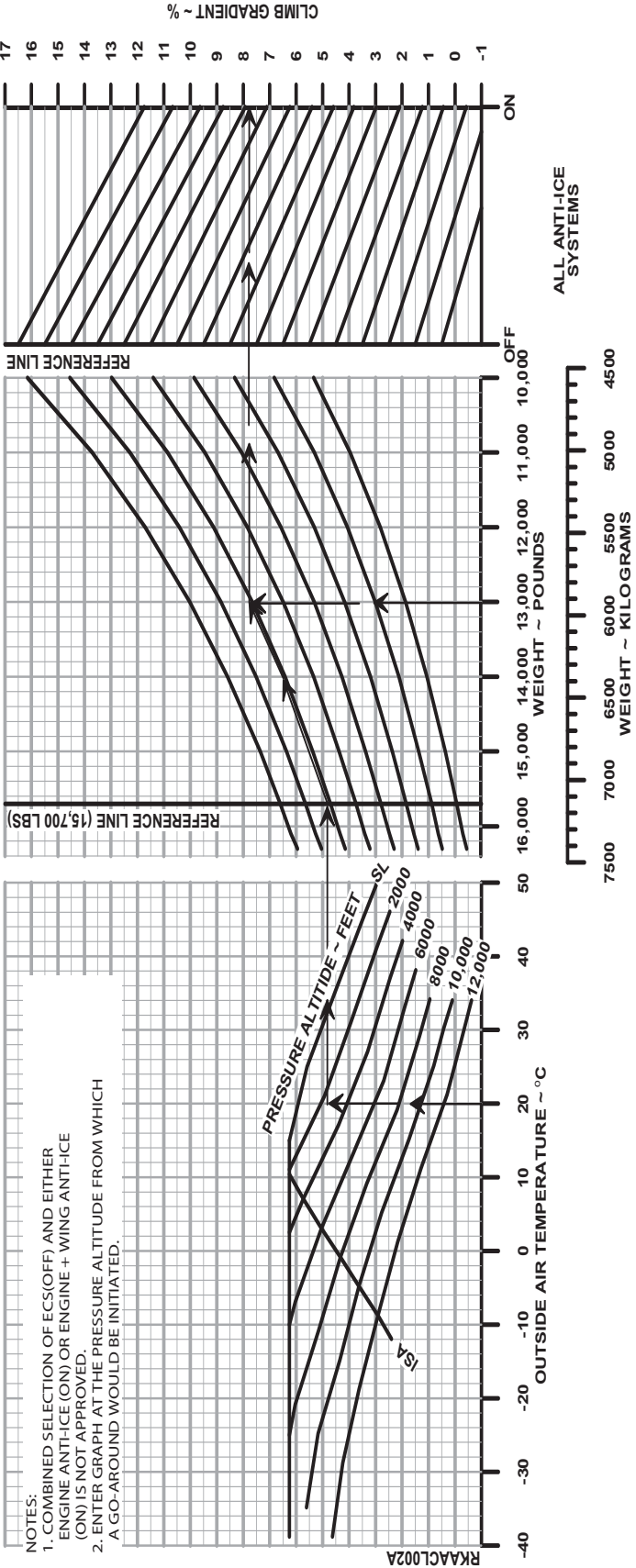
LANDING WEIGHT LIMIT:
 ANTI-SKID (ON) EXCEEDS STRUCTURAL LIMIT
 ANTI-SKID (OFF) EXCEEDS STRUCTURAL LIMIT



APPROACH CLIMB GRADIENT ONE ENGINE INOPERATIVE

ASSOCIATED CONDITIONS:
 THRUST TAKE-OFF
 FLAPS 10°
 LANDING GEAR UP
 AIRSPEED V_{LO} + 22 KIAS
 ECS (ON) OR (OFF)

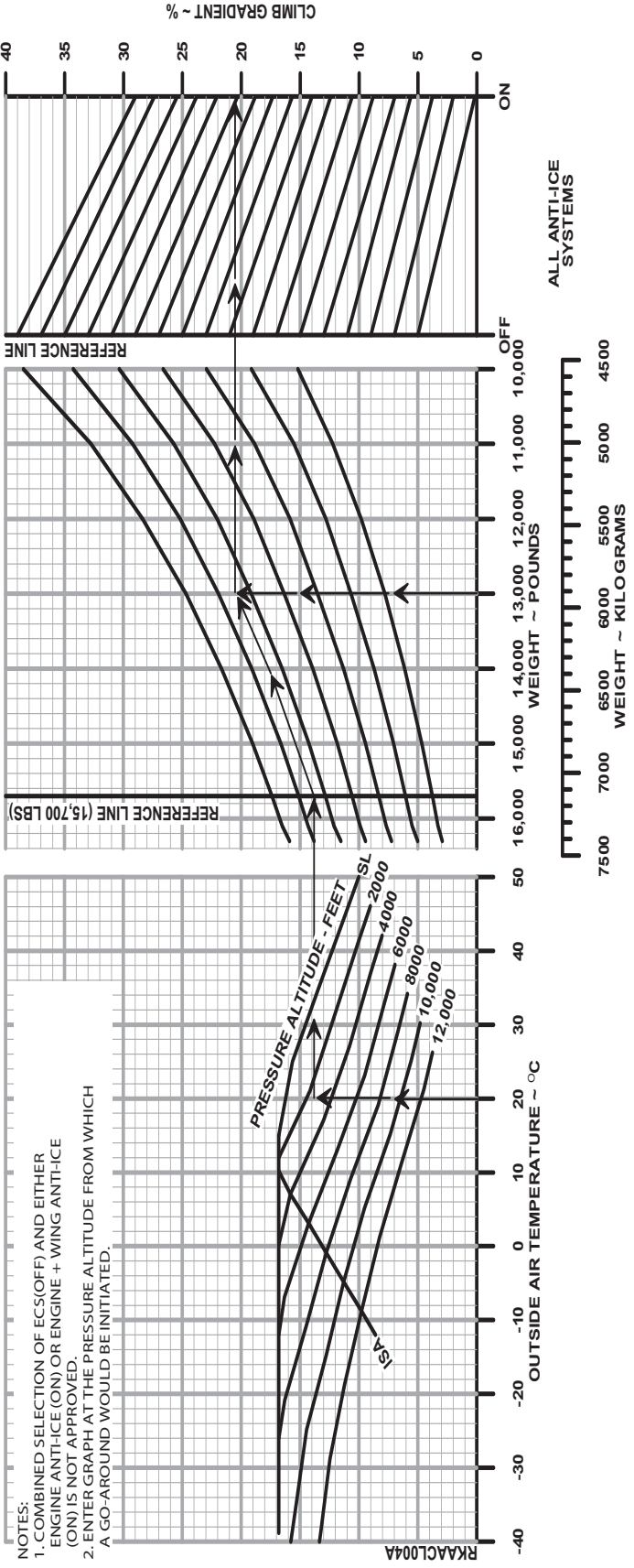
NOTES:
 1. COMBINED SELECTION OF ECS(OFF) AND EITHER ENGINE ANTI-ICE (ON) OR ENGINE + WING ANTI-ICE (ON) IS NOT APPROVED.
 2. ENTER GRAPH AT THE PRESSURE ALTITUDE FROM WHICH A GO-AROUND WOULD BE INITIATED.



BALKED LANDING CLIMB GRADIENT

ASSOCIATED CONDITIONS:
 THRUST TAKE-OFF
 FLAPS 30°
 LANDING GEAR, DOWN
 AIRSPEED VREF
 ECS (ON) OR (OFF)

NOTES:
 1. COMBINED SELECTION OF ECS(OFF) AND EITHER ENGINE ANTI-ICE (ON) OR ENGINE + WING ANTI-ICE (ON) IS NOT APPROVED.
 2. ENTER GRAPH AT THE PRESSURE ALTITUDE FROM WHICH A GO-AROUND WOULD BE INITIATED.



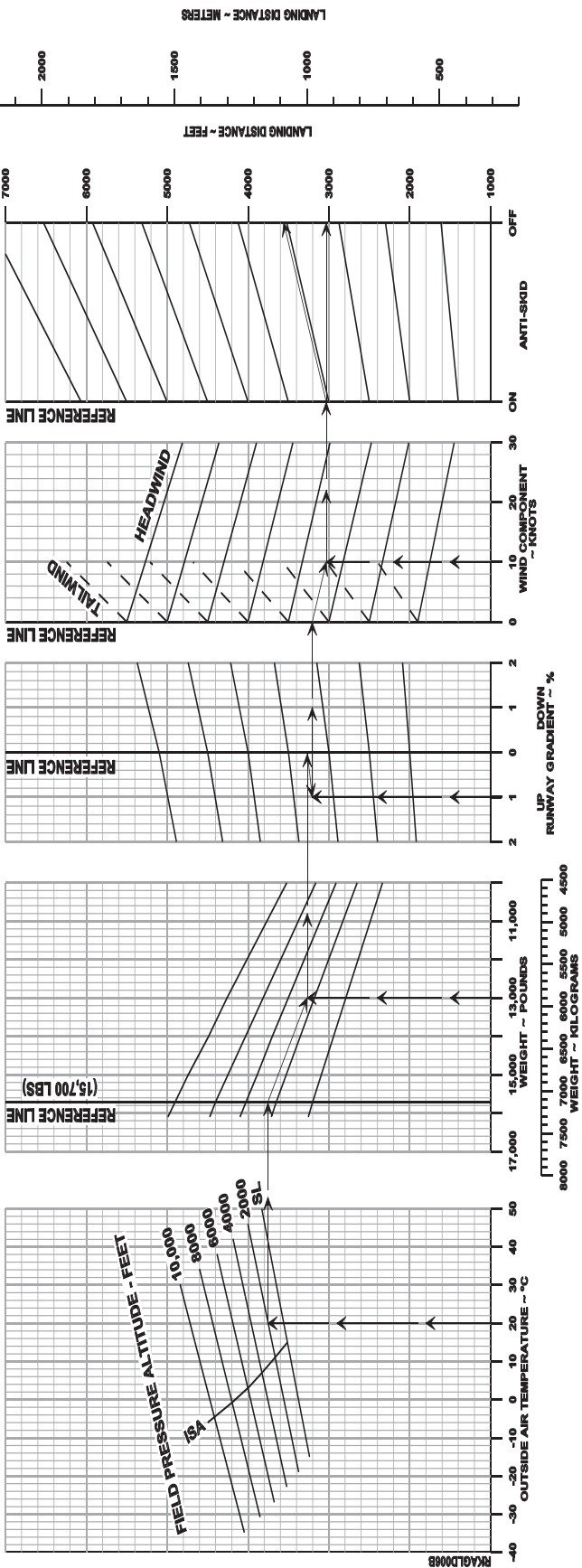
EXAMPLE:
 OAT 20°C
 PRESSURE ALTITUDE 2500 FT
 WEIGHT 13,000 LBS
 ALL ANTI-ICE SYSTEMS ... OFF
 CLIMB GRADIENT 20.5%

UNFACTORED LANDING DISTANCE

ASSOCIATED CONDITIONS:
 THRUST.....RETARD TO MAINTAIN 3-
 DEGREE APPROACH ANGLE
 RUNWAY.....PAVED, DRY SURFACE
 FLAPS.....30°
 BRAKING.....MAXIMUM

WEIGHT - POUNDS	V _{REF} - KNOTS
16,100	118
15,000	114
14,000	110
13,000	106
12,000	102
11,000	97
10,000	93

EXAMPLE:
 OAT.....20°C
 FIELD PRESSURE ALTITUDE...2000 FT
 WEIGHT.....13,000 LBS
 WIND GRADIENT.....10 KTS
 HEADWIND COMPONENT.....10 KTS
 LANDING DISTANCE.....3033 FT
 ANTI-SKID (ON).....106 KTS
 ANTI-SKID (OFF).....108 KTS
 V_{REF}.....106 KTS



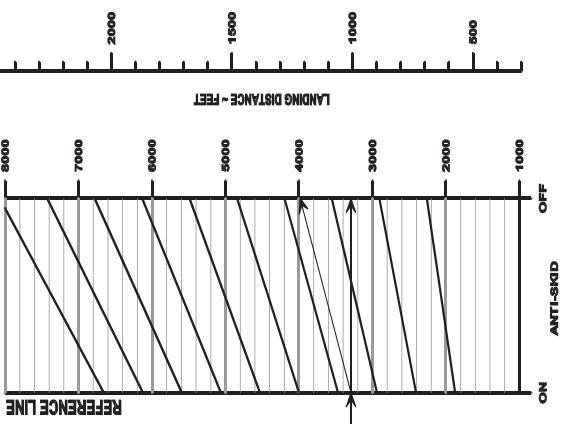
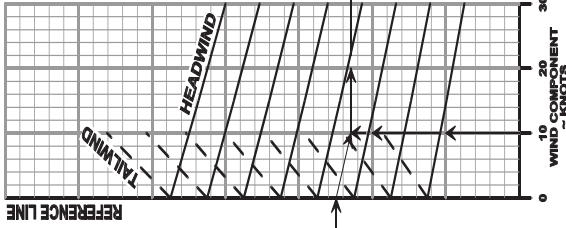
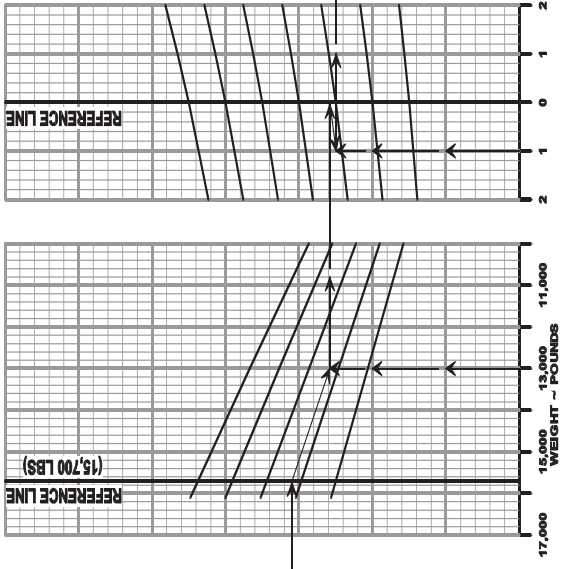
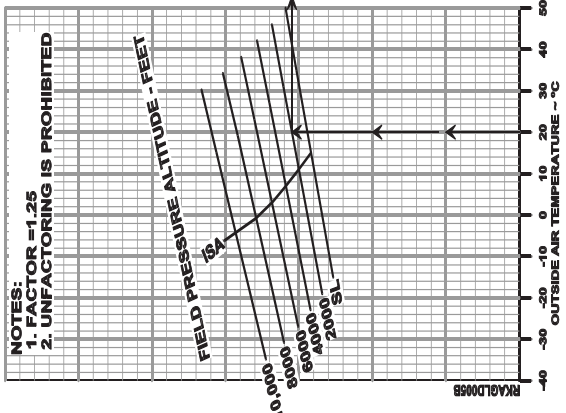
RKAGLD008B

FACTORED LANDING DISTANCE FOR PART 91 SUBPART K OPERATIONS

ASSOCIATED CONDITIONS:
 THRUST.....RETARD TO MAINTAIN 3.27-
 DEGREE APPROACH ANGLE
 TO 50 FT AT 50 FT,
 RUNWAY.....PAVED, DRY SURFACE
 APPROACH SPEED.....VREF
 FLAPS.....30°
 BRAKING.....MAXIMUM

WEIGHT - POUNDS	VREF - KNOTS
15,100	116
15,000	117
14,900	117
14,800	117
14,700	117
14,600	117
14,500	117
14,400	117
14,300	117
14,200	117
14,100	117
14,000	117
13,900	117
13,800	117
13,700	117
13,600	117
13,500	117
13,400	117
13,300	117
13,200	117
13,100	117
13,000	117
12,900	117
12,800	117
12,700	117
12,600	117
12,500	117
12,400	117
12,300	117
12,200	117
12,100	117
12,000	117
11,900	117
11,800	117
11,700	117
11,600	117
11,500	117
11,400	117
11,300	117
11,200	117
11,100	117
11,000	117
10,900	117
10,800	117
10,700	117
10,600	117
10,500	117
10,400	117
10,300	117
10,200	117
10,100	117
10,000	117

EXAMPLE:
 OAT.....200°C
 FIELD PRESSURE ALTITUDE.....2000 FT
 WEIGHT.....13,000 LBS
 WIND COMPONENT.....-10 KTS
 HEADWIND COMPONENT.....-10 KTS
 LANDING DISTANCE:
 ANTI-SKID (ON).....3292 FT
 ANTI-SKID (OFF).....3492 FT
 VREF.....108 KTS



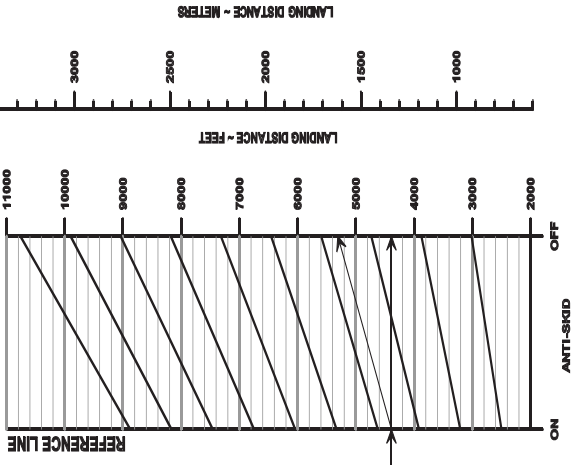
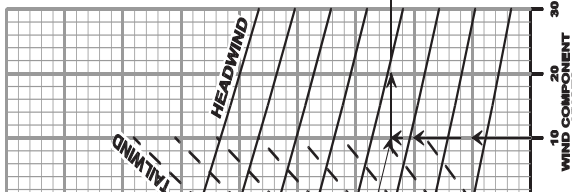
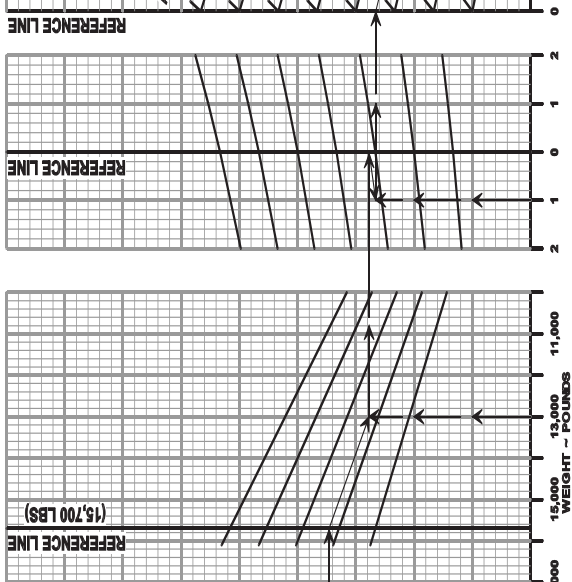
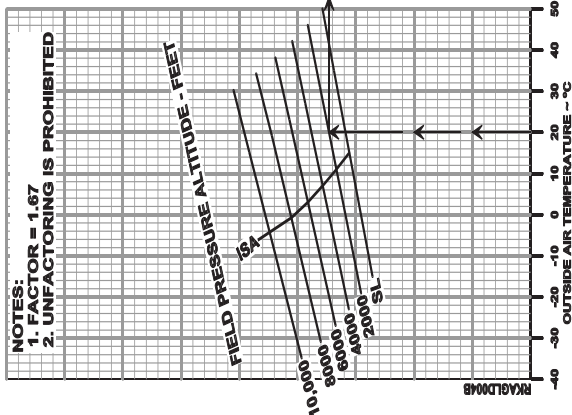
UP RUNWAY GRADIENT ~ %
 DOWN RUNWAY GRADIENT ~ %
 WEIGHT - POUNDS
 WEIGHT - KILOGRAMS

FACTORED LANDING DISTANCE FOR PART 121 AND PART 135 OPERATIONS

ASSOCIATED CONDITIONS:
 THRUST.....RETARD TO MAINTAIN 3.27-
 DEGREE APPROACH ANGLE
 TO 50 FT. AT 50 FT.
 RUNWAY.....PAVED, DRY SURFACE
 APPROACH SPEED...VREF
 FLAPS.....30°
 BRAKING.....MAXIMUM

WEIGHT - POUNDS	VREF - KNOTS
16,100	116
15,000	114
14,000	111
13,000	108
12,000	106
11,000	102
10,000	99

EXAMPLE:
 OAT.....20°C
 FIELD PRESSURE ALTITUDE...2000 FT
 WEIGHT...13,000 LBS
 WIND COMPONENT...10 KTS
 LANDING DISTANCE:
 ANTI-SKID (ON).....4390 FT
 ANTI-SKID (OFF).....4990 FT
 VREF.....106 KTS



NOTES:
 1. FACTOR = 1.67
 2. UNFACTORED IS PROHIBITED

UP RUNWAY GRADIENT - %
 2 1 0 1 2
 DOWN RUNWAY GRADIENT - %
 1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
 WEIGHT - POUNDS
 17,000 15,000 13,000 11,000
 WEIGHT - KILOGRAMS
 8000 7500 7000 6500 6000 5500 5000 4500

FLAPS 30°

DRY

LANDING DISTANCES and SPEEDS
ISA CONDITIONS, ZERO WIND AND LEVEL RUNWAY, ANTI-SKID ON

FIELD PRESSURE ALTITUDE ~ FT	RUNWAY UTILIZATION	LANDING WEIGHT ~ LB						
		15,700	15,000	14,000	13,000	12,000	11,000	10,000
10,000	100%	4416	4269	4053	3841	3625	3405	3183
	80%	5520	5336	5066	4801	4531	4256	3979
	60%	7360	7115	6755	6402	6042	5675	5305
8000	100%	4200	4060	3855	3654	3449	3241	3030
	80%	5250	5075	4819	4568	4311	4051	3788
	60%	7000	6767	6425	6090	5748	5402	5050
6000	100%	4000	3868	3673	3482	3287	3089	2888
	80%	5000	4835	4591	4353	4109	3861	3610
	60%	6667	6447	6122	5803	5478	5148	4813
4000	100%	3827	3701	3516	3335	3149	2961	2771
	80%	4784	4626	4395	4169	3936	3701	3464
	60%	6378	6168	5860	5558	5248	4935	4618
2000	100%	3667	3547	3371	3199	3022	2844	2663
	80%	4584	4434	4214	3999	3778	3555	3329
	60%	6112	5912	5618	5332	5037	4740	4438
Sea level	100%	3515	3401	3234	3069	2902	2732	2559
	80%	4394	4251	4043	3836	3628	3415	3199
	60%	5858	5668	5390	5115	4837	4553	4265
V _{REF} ~ KIAS		117	114	110	106	102	97	93

Runway Utilization distances equate to :
 100% = unfactored landing distance
 80% = unfactored landing distance x 1.25
 60% = unfactored landing distance x 1.67

**LANDING DISTANCES and SPEEDS
ISA CONDITIONS, ZERO WIND AND LEVEL RUNWAY, ANTI-SKID ON**

RKADLD002A

FLAPS 30°

WET

FIELD PRESSURE ALTITUDE ~ FT	RUNWAY UTILIZATION	LANDING WEIGHT ~ LB						
		15,700	15,000	14,000	13,000	12,000	11,000	10,000
		LANDING DISTANCE REQUIRED ~ FT						
10,000	Mfr. Approved	6559	6334	6007	5687	5363	5036	4709
	80% Dry x 115%	6348	6137	5826	5521	5211	4895	4576
	60% Dry x 115%	8464	8182	7768	7362	6948	6526	6101
8000	Mfr. Approved	6194	5982	5673	5371	5064	4756	4446
	80% Dry x 115%	6038	5836	5542	5253	4958	4659	4356
	60% Dry x 115%	8050	7782	7389	7004	6611	6212	5808
6000	Mfr. Approved	5864	5664	5370	5085	4794	4502	4209
	80% Dry x 115%	5750	5560	5280	5005	4725	4440	4152
	60% Dry x 115%	7667	7414	7040	6674	6300	5921	5535
4000	Mfr. Approved	5602	5412	5135	4865	4592	4316	4040
	80% Dry x 115%	5501	5320	5054	4794	4527	4256	3983
	60% Dry x 115%	7335	7094	6739	6392	6036	5675	5311
2000	Mfr. Approved	5365	5186	4924	4669	4411	4151	3892
	80% Dry x 115%	5271	5099	4846	4599	4344	4088	3828
	60% Dry x 115%	7028	6798	6461	6131	5792	5451	5104
Sea level	Mfr. Approved	5140	4970	4722	4481	4237	3992	3748
	80% Dry x 115%	5053	4889	4649	4412	4172	3927	3679
	60% Dry x 115%	6737	6519	6199	5882	5562	5236	4905
V_{REF} ~ KIAS		117	114	110	106	102	97	93

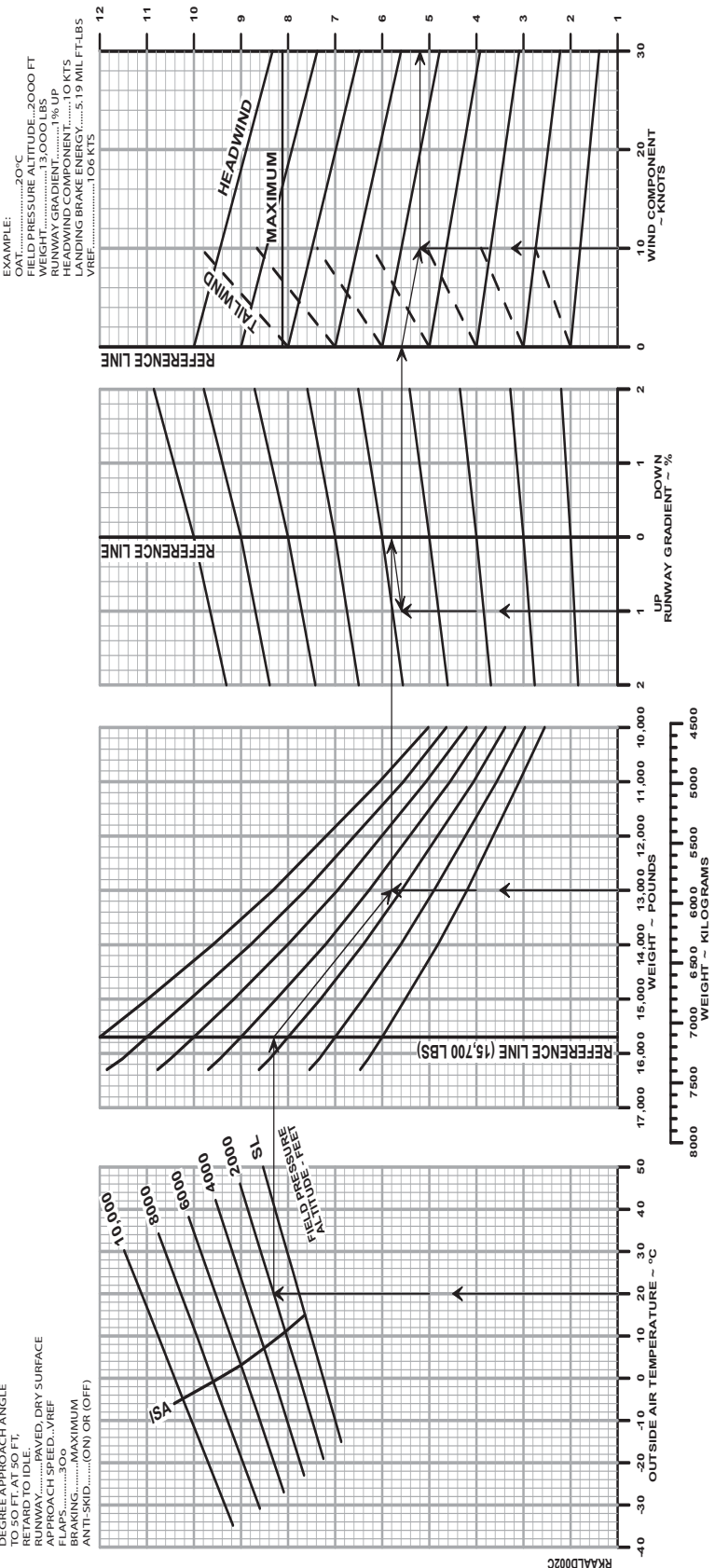
Runway Utilization distances equate to: Mfr. Approved = unfactored wet landing distance
 80% Dry x 115% = unfactored dry landing distance x 1.44
 60% Dry x 115% = unfactored dry landing distance x 1.92

RKADLD002A

LANDING BRAKE ENERGY

NOTE: MAXIMUM LANDING BRAKE ENERGY = 8.12 MIL FT-LBS.

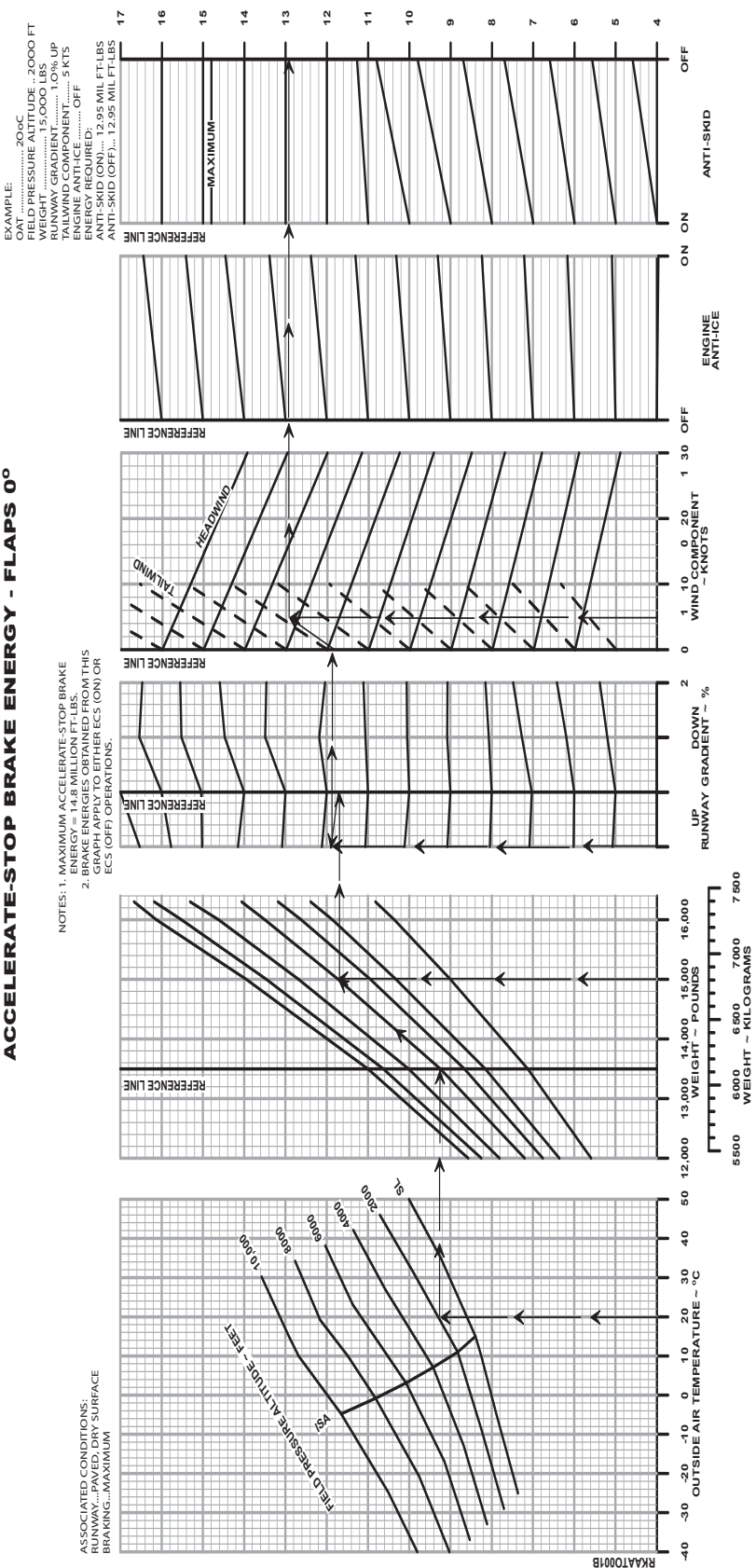
ASSOCIATED CONDITIONS:
 THRUST.....RETARD TO MAINTAIN 3-
 DEGREE APPROACH ANGLE
 FLAPS.....30°
 RETARD TO IDLE
 RUNWAY.....PAVED, DRY SURFACE
 APPROACH SPEED...VREF
 FLAPS.....30°
 ANTI-SKID.....(ON) OR (OFF)



EXAMPLE:
 OAT.....20°C
 FIELD PRESSURE ALTITUDE...2000 FT
 RUNWAY GRADIENT.....1% UP
 HEADWIND COMPONENT.....10 KTS
 LANDING BRAKE ENERGY.....5.19 MIL FT-LBS
 VREF.....106 KTS

RKALD002C

ACCELERATE-STOP BRAKE ENERGY - FLAPS 0°



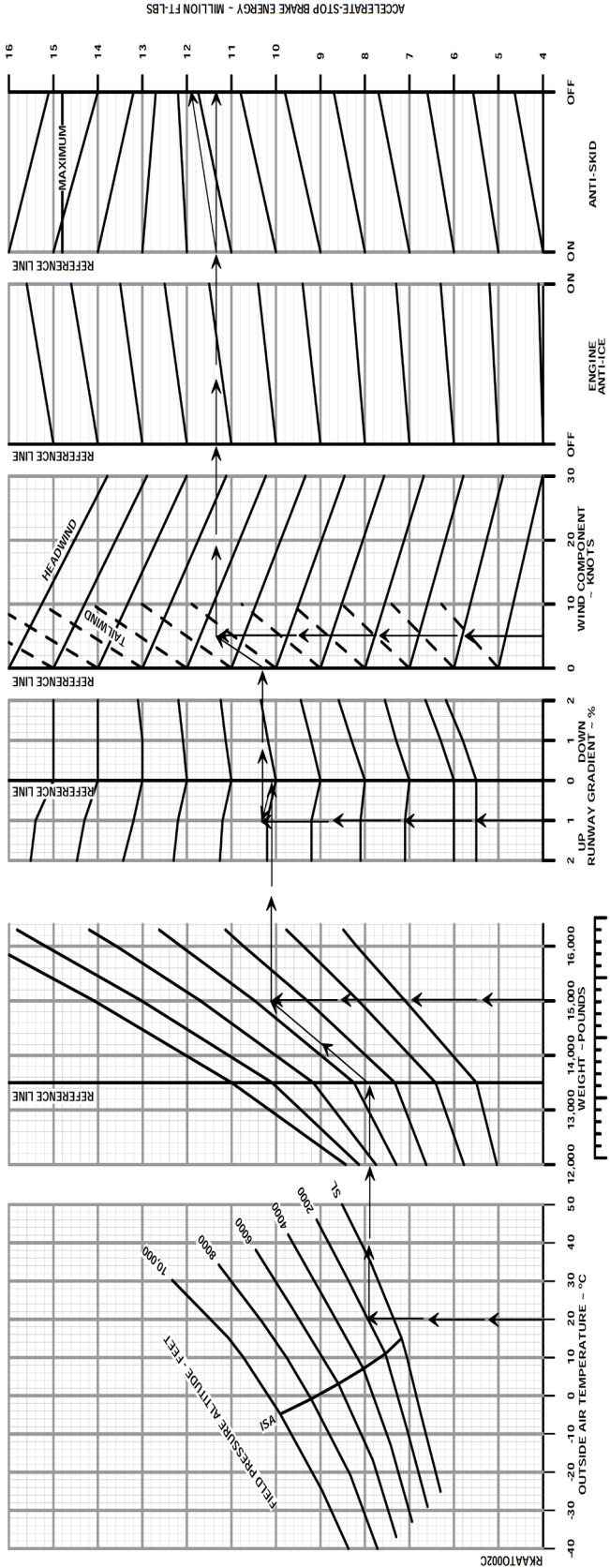
ACCELERATE-STOP BRAKE ENERGY - FLAPS 10°

EXAMPLE:

OAT 20°C
 FIELD PRESSURE ALTITUDE 2000 FT
 RUNWAY GRADIENT 1.0% UP
 TAILWIND COMPONENT 5 KTS
 ENGINE ANTI-ICE OFF
 ANTI-SKID (ON) 11.34 MIL FT-LBS
 ANTI-SKID (OFF) 11.90 MIL FT-LBS

- NOTES:
1. MAXIMUM ACCELERATE-STOP BRAKE ENERGY = 14.8 MILLION FT-LBS. THIS ENERGY IS NOT TO BE EXCEEDED. THIS GRAPH APPLIES TO EITHER ECS (ON) OR ECS (OFF) OPERATIONS.
 2. MAXIMUM ACCELERATE-STOP BRAKE ENERGY = 14.8 MILLION FT-LBS. THIS ENERGY IS NOT TO BE EXCEEDED. THIS GRAPH APPLIES TO EITHER ECS (ON) OR ECS (OFF) OPERATIONS.

ASSOCIATED CONDITIONS:
 BRAKING MAXIMUM
 SURFACE DRY

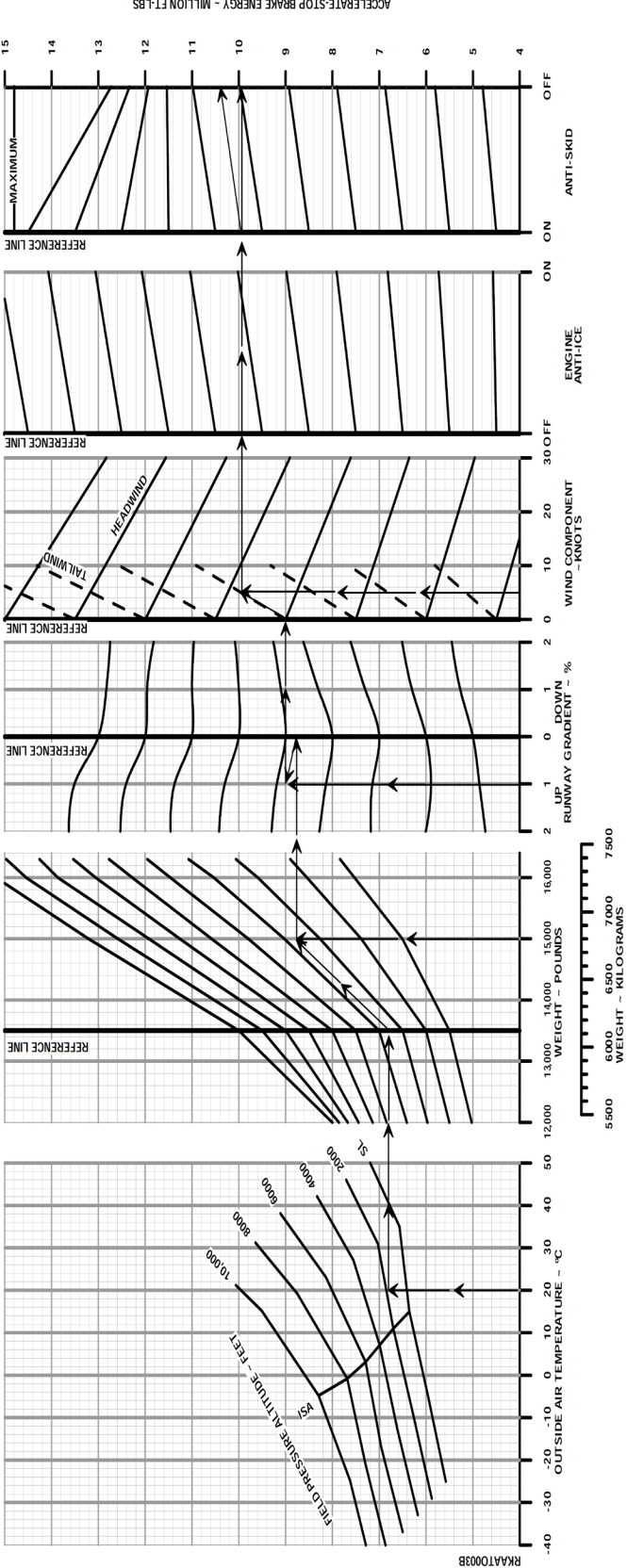


ACCELERATE-STOP BRAKE ENERGY - FLAPS 20°

ASSOCIATED CONDITIONS:
 RUNWAY PAVED, DRY SURFACE
 BRAKING MAXIMUM

- NOTES: 1. MAXIMUM ACCELERATE-STOP BRAKE ENERGY OBTAINED FROM THIS GRAPH APPLY TO EITHER ECS (ON) OR ECS (OFF) OPERATIONS.
2. BRAKE ENERGIES OBTAINED FROM THIS GRAPH APPLY TO EITHER ECS (ON) OR ECS (OFF) OPERATIONS.

EXAMPLE:
 FIELD PRESSURE ALTITUDE 20°C
 TAKE-OFF WEIGHT 15,000 LBS
 WIND COMPONENT 5 KTS UP
 TAILWIND COMPONENT 5 KTS
 ENERGY REQUIRED:
 ANTI-SKID (ON) 9.95 MIL FT-LBS
 ANTI-SKID (OFF) 10.4 MIL FT-LBS



RKAT003B

TURNAROUND TIME

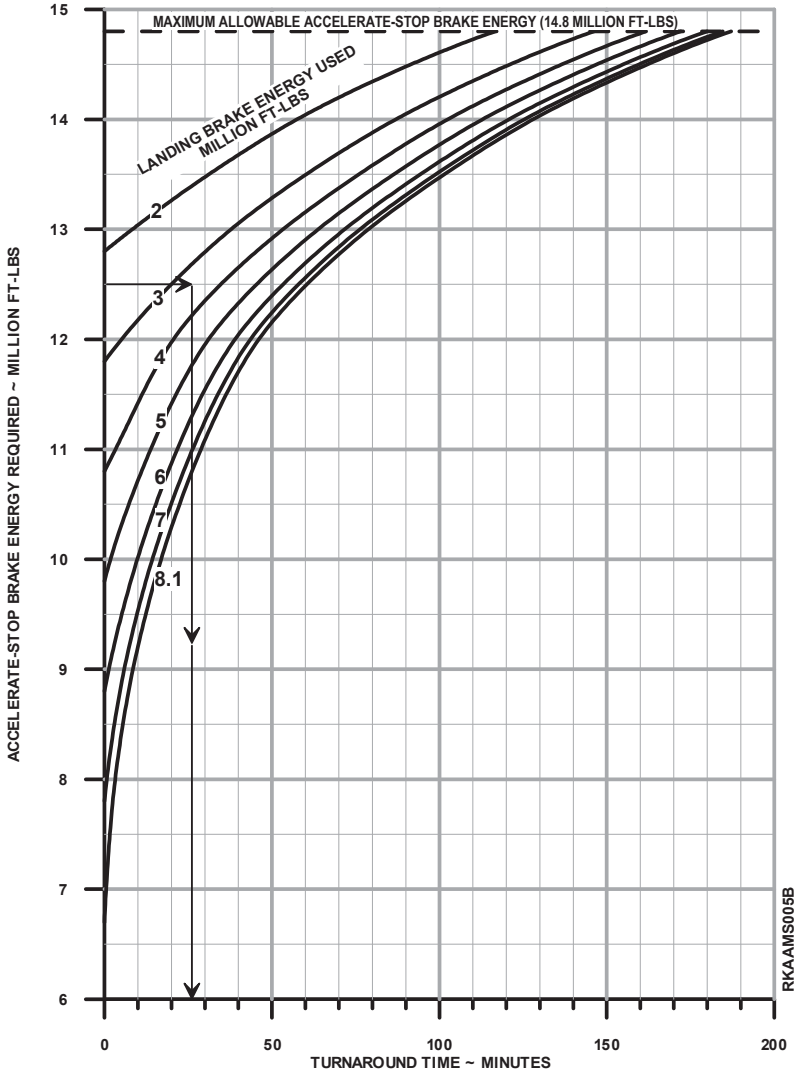
EXAMPLE:

TAKE-OFF BRAKE ENERGY REQ'D 12.5 MIL FT-LBS

LANDING BRAKE ENERGY USED..... 3.5 MIL FT-LBS

WAITING TIME REQ'D..... .27 MINUTES

NOTE: MAXIMUM BRAKE ENERGY FOR FUSE-PLUG INTEGRITY IS 8.1 MILLION FT-LBS.



WEIGHT AND BALANCE LOADING FORM

SERIAL NO: _____		REG. NO: _____		DATE: _____	
LINE	ITEM	WEIGHT (LB)	C.G. (IN)	MOM/100 (LB/IN)	C.G. (% MAC)
1.	Basic Empty Weight				
2.	Pilot				
3.	Copilot				
4.	Provisions				
5.	Provisions				
6.	Miscellaneous				
7.	Subtotal-Operating Weight Empty				
8.	Passenger 1				
9.	Passenger 2				
10.	Passenger 3				
11.	Passenger 4				
12.	Passenger 5				
13.	Passenger 6				
14.	Passenger 7				
15.	Passenger 8				
16.	Passenger 9				
17.	Baggage				
18.	Baggage				
19.	Baggage				
20.	Subtotal-Zero Fuel Weight (ZFW) Do Not Exceed 13,000 Lbs.				
21.	Fuel Wing and Fuselage Tanks				
22.	Subtotal-Ramp Weight Do Not Exceed 16,500 Lbs.				
23.	Less Fuel for Start and Taxi.				
24.	Total-Take-off Weight Do Not Exceed 16,300 Lbs				
25.	Total Fuel from Line 21				
26.	Less Total Fuel Used to Destination Including Start and Taxi				
27.	Total Fuel Remaining - MOM/100 from Usable Fuel Moment Table.				
28.	Zero Fuel Weight From Line 20				
29.	Add Fuel Remaining From Line 27				
30.	Total-Landing Weight Do Not Exceed 15,700 Lbs.				

LOADING ENVELOPE TABLE

Gross Weight (lb.)	Forward Limit			Aft Limit		
	%MAC	F.S. (in.)	MOM/100 (lb.-in.)	%MAC	F.S. (in.)	MOM/100 (lb.-in.)
10,000	13.27	260.79	26,079	31.72	274.28	27,428
10,100	13.27	260.79	26,340	31.72	274.28	27,702
10,200	13.27	260.79	26,601	31.72	274.28	27,977
10,300	13.27	260.79	26,861	31.72	274.28	28,251
10,400	13.27	260.79	27,122	31.72	274.28	28,525
10,500	13.27	260.79	27,383	31.72	274.28	28,799
10,600	13.27	260.79	27,644	31.72	274.28	29,074
10,700	13.27	260.79	27,905	31.72	274.28	29,348
10,800	13.27	260.79	28,165	31.72	274.28	29,622
10,900	13.27	260.79	28,426	31.72	274.28	29,897
11,000	13.27	260.79	28,687	31.72	274.28	30,171
11,100	13.27	260.79	28,948	31.72	274.28	30,445
11,200	13.27	260.79	29,208	31.72	274.28	30,719
11,300	13.27	260.79	29,469	31.72	274.28	30,994
11,400	13.27	260.79	29,730	31.72	274.28	31,268
11,500	13.27	260.79	29,991	31.72	274.28	31,542
11,600	13.27	260.79	30,252	31.72	274.28	31,816
11,700	13.27	260.79	30,512	31.72	274.28	32,091
11,800	13.27	260.79	30,773	31.72	274.28	32,365
11,900	13.27	260.79	31,034	31.72	274.28	32,639
12,000	13.27	260.79	31,295	31.72	274.28	32,914
12,100	13.27	260.79	31,556	31.72	274.28	33,188
12,200	13.27	260.79	31,816	31.72	274.28	33,462
12,300	13.27	260.79	32,077	31.72	274.28	33,736
12,400	13.27	260.79	32,338	31.72	274.28	34,011
12,500	13.27	260.79	32,599	31.72	274.28	34,285
12,600	13.27	260.79	32,860	31.72	274.28	34,559
12,700	13.27	260.79	33,120	31.72	274.28	34,834
12,800	13.27	260.79	33,381	31.72	274.28	35,108
12,900	13.27	260.79	33,642	31.72	274.28	35,382
13,000	13.27	260.79	33,903	31.72	274.28	35,656
13,100	13.27	260.79	34,163	31.72	274.28	35,931
13,200	13.27	260.79	34,424	31.72	274.28	36,205

LOADING ENVELOPE TABLE (CONT'D.)

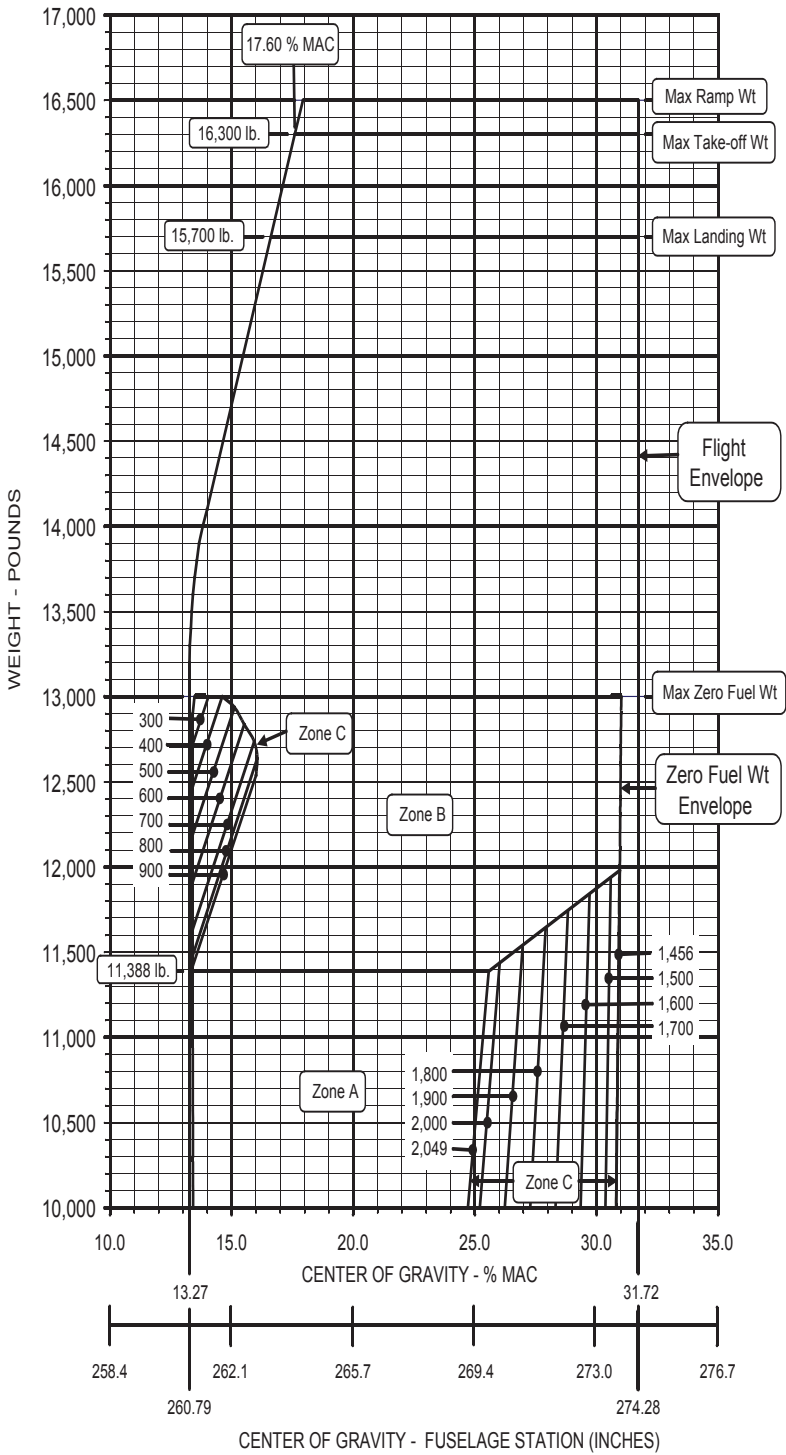
Gross Weight (lb.)	Forward Limit			Aft Limit		
	%MAC	F.S. (in.)	MOM/100 (lb.-in.)	%MAC	F.S. (in.)	MOM/100 (lb.-in.)
13,300	13.28	260.80	34,686	31.72	274.28	36,479
13,400	13.32	260.83	34,951	31.72	274.28	36,754
13,500	13.35	260.85	35,215	31.72	274.28	37,028
13,600	13.40	260.89	35,481	31.72	274.28	37,302
13,700	13.47	260.94	35,749	31.72	274.28	37,576
13,800	13.57	261.01	36,019	31.72	274.28	37,851
13,900	13.66	261.08	36,290	31.72	274.28	38,125
14,000	13.81	261.19	36,567	31.72	274.28	38,399
14,100	13.99	261.32	36,846	31.72	274.28	38,673
14,200	14.16	261.44	37,124	31.72	274.28	38,948
14,300	14.32	261.56	37,403	31.72	274.28	39,222
14,400	14.49	261.68	37,682	31.72	274.28	39,496
14,500	14.64	261.79	37,960	31.72	274.28	39,771
14,600	14.81	261.92	38,240	31.72	274.28	40,045
14,700	14.98	262.04	38,520	31.72	274.28	40,319
14,800	15.14	262.16	38,800	31.72	274.28	40,593
14,900	15.31	262.28	39,080	31.72	274.28	40,868
15,000	15.47	262.40	39,360	31.72	274.28	41,142
15,100	15.63	262.52	39,641	31.72	274.28	41,416
15,200	15.80	262.64	39,921	31.72	274.28	41,691
15,300	15.96	262.76	40,202	31.72	274.28	41,965
15,400	16.13	262.88	40,484	31.72	274.28	42,239
15,500	16.29	263.00	40,765	31.72	274.28	42,513
15,600	16.45	263.12	41,047	31.72	274.28	42,788
15,700	16.62	263.24	41,329	31.72	274.28	43,062
15,800	16.78	263.36	41,611	31.72	274.28	43,336
15,900	16.95	263.48	41,893	31.72	274.28	43,611
16,000	17.12	263.61	42,178	31.72	274.28	43,885
16,100	17.28	263.72	42,459	31.72	274.28	44,159
16,200	17.44	263.84	42,742	31.72	274.28	44,433
16,300	17.60	263.96	43,025	31.72	274.28	44,708
16,400	17.77	264.08	43,309	31.72	274.28	44,982
16,500	17.93	264.20	43,593	31.72	274.28	45,256

Fuselage fuel is restricted as specified for Zones B and C with full wing fuel:

Zone A No restriction - any amount in fuselage tanks.

Zone B The difference between ZFW and 13,637 lb. may be loaded in fuselage tanks.

Zone C Fuselage tanks limited to the guideline amount versus the ZFW location.



LOADING ENVELOPE GRAPH

USABLE FUEL MOMENT TABLE

FUEL DENSITY WEIGHT (LB)	6.5 LB/GAL		6.7 LB/GAL		6.9 LB/GAL	
	F.S. (IN)	MOMENT/100 (LB-IN)	F.S. (IN)	MOMENT/100 (LB-IN)	F.S. (IN)	MOMENT/100 (LB-IN)
200	254.9	510	254.6	509	254.3	509
300	257.6	773	257.5	772	257.3	772
400	259.5	1038	259.3	1037	259.1	1036
500	260.9	1305	260.8	1304	260.6	1303
600	262.0	1572	261.8	1571	261.6	1570
700	262.9	1841	262.8	1839	262.6	1838
800	263.8	2110	263.5	2108	263.3	2107
900	264.9	2384	264.6	2382	264.3	2379
1000	265.8	2658	265.6	2656	265.3	2653
1100	266.5	2932	266.3	2929	266.1	2927
1200	267.3	3208	267.0	3204	266.7	3201
1300	268.2	3486	267.8	3482	267.5	3478
1400	268.9	3764	268.6	3760	268.3	3756
1500	269.5	4043	269.2	4038	269.0	4034
1600	270.3	4325	270.0	4319	269.6	4314
1700	271.0	4606	270.6	4601	270.3	4595
1800	271.5	4888	271.2	4882	270.9	4877
1900	272.1	5169	271.8	5164	271.5	5158
2000	272.7	5454	272.3	5445	272.0	5440
2100	273.3	5739	272.9	5731	272.5	5723
2200	273.9	6025	273.5	6017	273.1	6009
2300	274.4	6311	274.1	6303	273.7	6295
2400	274.8	6596	274.5	6589	274.2	6581
2500	275.2	6880	274.9	6873	274.6	6866
2600	275.5	7164	275.3	7157	275.0	7150
2700	276.0	7452	275.6	7442	275.4	7435
2777	276.6	7681	276.0	7664	275.6	7653
2800	276.4	7738	276.1	7732	275.7	7719
2863	275.8	7895	276.6	7918	276.0	7902
2900	275.4	7988	276.2	8011	276.2	8011
2948	275.0	8108	275.8	8131	276.6	8154
3000	274.6	8237	275.3	8260	276.1	8283
3100	273.5	8478	274.5	8510	275.3	8533
3200	271.9	8700	273.4	8749	274.5	8783
3300	270.4	8924	271.9	8972	273.3	9020
3400	269.1	9148	270.4	9195	271.8	9243
3500	267.8	9373	269.1	9419	270.4	9466
3600	267.8	9642	267.9	9644	269.2	9690
3700	267.9	9913	267.8	9910	268.0	9915
3800	269.4	10238	267.9	10180	267.8	10177
3900	270.9	10566	269.2	10498	267.9	10447
4000	272.4	10898	270.6	10825	269.0	10758
4100	274.3	11245	272.0	11154	270.3	11084
4200	276.0	11592	273.8	11500	271.7	11413
4300	277.7	11941	275.5	11847	273.4	11755
4400	279.3	12290	277.2	12195	275.0	12102
4500	280.9	12640	278.8	12544	276.7	12450
4600	282.4	12990	280.3	12894	278.2	12799
4700	283.9	13341	281.8	13244	279.8	13148
4765	284.7	13567	282.7	13473	280.7	13376
4800	---	---	283.2	13595	281.2	13498
4900	---	---	284.6	13944	282.6	13849
4912	---	---	284.7	13985	282.8	13891
5058	---	---	---	---	284.7	14402

Horizontal Lines Indicate Full Wing Tanks.

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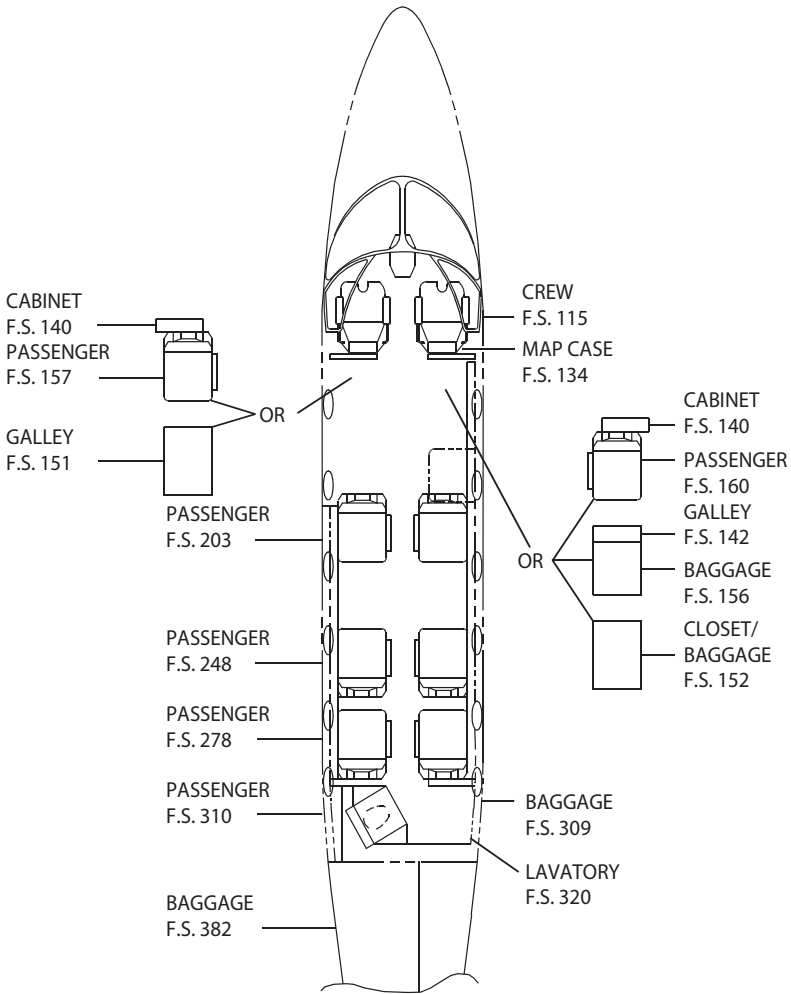
PAYLOAD DATA
RK-98, RK-110 THRU RK-379

Item	Fuselage Station (inches)	Maximum Weight (pounds)
OCCUPANTS:		
Crew	115 in	n/a
Cabin Chairs		
Forward LH Aft Facing	157 in.	n/a
Forward R H Aft Facing	160 in.	n/a
Center Aft Facing	203 in.	n/a
Center Forward Facing	248 in.	n/a
Aft Forward Facing	278 in.	n/a
Toilet	310 in.	n/a
BAGGAGE:		
C closet/Baggage C abinet (see Note 1)	152 in.	120 lb.
with Airshow Option	152 in.	100 lb.
Baggage/Galley C abinet (see Note 1)	156 in.	80 lb.
with Airshow Option	156 in.	60 lb.
Aft Cabin (see Note 2)	309 in.	350 lb.
Aft Fuselage	382 in.	450 lb.
CABINET CONTENTS (Service Items - see Note 3):		
Map Case	134 in.	10 lb.
Storage Cabinet	140 in.	12 lb.
with Airshow Option	140 in.	9 lb.
Closet/Baggage/Galley Cabinet	142 in.	13 lb.
(with or without Airshow Option)		
Galley	151 in.	62 lb.
with Airshow Option	151 in.	60 lb.
Lavatory	320 in.	12 lb.
with S ink Option	320 in.	6 lb.

Notes:

1. Maximum Weight includes items hung from the hanger rod, and hooks if provided.
2. Maximum Weight includes optional furnishings, baggage, items hung from the hanger rod and toilet occupant.
3. Each cabinet has the drawers and compartments individually placarded for Maximum Weight Capacity. Liquid dispensers are not placarded and the contents are in addition to the cabinet Maximum Weights.
4. "n/a" means not applicable.

CABIN ARRANGEMENT DIAGRAM/PAYLOAD LOCATIONS RK-98, RK-110 THRU RK-379



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NOTE: Checklist items marked in **RED** require immediate action.
Closed [BRACKETS] in this section denote annunciator(s)

**ENGINE FAILURE DURING TAKEOFF
(BELOW V_1 — TAKEOFF ABORTED)**

WARNING: If engine fire indications exist, do not deploy reverser on the affected engine.

1. Brakes — APPLY
2. Thrust — IDLE
3. Thrust Reverser(s) — DEPLOY
4. Reverser Lights — VERIFY
5. Reverse Thrust — AS REQUIRED
6. Speed Brakes — EXTEND

NOTE: Aborted takeoff requires that the wheel brakes be applied at the scheduled V_1 speed to meet the scheduled takeoff field length.

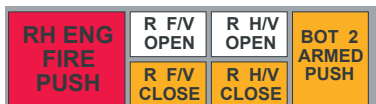
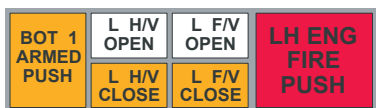
**ENGINE FAILURE DURING TAKEOFF
(ABOVE V_1 — TAKEOFF CONTINUED)**

1. Nose Up Pitch Attitude at Rotation (V_R) — 13 - 5° DESIRED
2. Landing Gear (when positive climb established) — UP
3. Airspeed — MAINTAIN V_2
4. Landing Lights — RET/OFF
5. Airspeed (at 400 ft. AGL) — ACCELERATE
FLAPS 10°: $V_2 + 10$ KIAS
FLAPS 20°: $V_2 + 20$ KIAS
6. Flaps — 0°
7. Airspeed — ACCELERATE TO 140 KIAS
8. Continue With Planned Takeoff Flight Path.
9. Anti-Ice/Deice Systems — AS REQUIRED
10. Complete ENGINE SHUTDOWN OR FAILURE IN FLIGHT procedure (after reaching 1500 FT AGL) (E-11).

NOTE: If takeoff was made using ECS (OFF) procedures, the ECS must remain OFF until 1,500 ft AGL is attained. If a return to land at departure airport is necessary, ECS (OFF) procedures are required. See configurations in Performance section. In the event of an over weight landing, refer to the Beechjet 400/400A Maintenance Manual Hard or Over weight Landing.

ENGINE FIRE

①



Illumination of the [LH or RH ENG FIRE PUSH] warning annunciator indicates a fire or overheat condition exists in the designated engine.

Pushing either ENG FIRE PUSH button will arm the extinguisher bottles and illuminate both BOT 1 and BOT 2 ARMED PUSH switch lights. The ENG FIRE PUSH buttons will also close the respective fuel and hydraulic shutoff valves. Valve positions will be indicated by the fuel/hydraulic valve close indicator lights.

NOTE: In the event of an engine fire, the appropriate [ENG FIRE PUSH] switch will illuminate and the aural tone will sound.

1. Thrust (affected engine) — IDLE

If [ENG FIRE PUSH] Switch Remains Illuminated:

2. Thrust Lever (affected engine) — CUTOFF

3. Illuminated Engine Fire Switch — PUSH

4. Either Fire Bottle Switch — PUSH

NOTE: The aural fire warning tone may be silenced by pushing the ENG FIRE BELL OFF button.

5. Engine Sync — OFF

6. Generator Reset (affected engine) — OFF

7. Jet Pump (affected engine) — OFF

8. Boost Pump (affected engine) — OFF

9. Engine EFC (affected engine) — OFF

10. Cabin Pressure Source — OPERATING ENGINE

WARNING: If fire occurs immediately after takeoff when using the ECS OFF takeoff procedures, the CABIN PRESS source selector must remain in the OFF position to ensure airplane performance.

11. Fuel/Hydraulic Valve Close Lights (affected engine) — ILLUMINATED

If Indications of Fire Persist:

12. Remaining Illuminated Fire Bottle Switch — PUSH

WARNING: If it has not or cannot be visibly verified that the fire has been extinguished, immediately land at the nearest suitable airport.

If Fuel Crossfeed is Required:

13. Boost Pump (affected engine) — ON, PRIOR TO SELECTING CROSSFEED

ENGINE FIRE DETECTOR FAILURE ([L OR R FIRE DET FAIL] ANNUNCIATOR ILLUMINATED)

②



Illumination of either [L or R FIRE DET FAIL] annunciator indicates that the designated fire detector has failed.

If the [FIRE DET FAIL] annunciator illuminates following an [ENG FIRE PUSH] switch illumination, the fire should be considered to still be burning.

1. Engine Fire Procedures — COMPLETE
2. Remaining Illuminated Fire Bottle Switch — PUSH
3. Land — NEAREST SUITABLE AIRPORT

If the [FIRE DET FAIL] annunciator illuminates without an [ENG FIRE PUSH] switch illumination or any other indication of an engine fire:

4. Repair Fault — PRIOR TO NEXT FLIGHT

NOTE: The loss of either the Left or Right Electrical Load Bus will result in the respective engine fire detector becoming inoperative. The loss of the Emergency Bus will cause the loss of aural fire warning and the [FIRE DET FAIL] warning annunciators. However, both engine fire detectors and respective fire warning lights will remain operative.

DUAL ENGINE FLAMEOUT

Immediate Relight:

1. N₂ — VERIFY ABOVE 52%

CAUTION: Engine damage may result if an immediate relight is attempted below 52% N₂.

2. Ignitions — ON

If N₂ is Not Above 52% or Neither Engine Relights:

3. Battery — EMER
4. Thrust Levers — CUTOFF

Once Aircraft is established within the Air Start Envelope (Page E-13):

5. Battery — ON
6. Cabin Pressure Source — OFF
7. Complete AIR START Procedure (windmilling preferred) with left or right engine (Page E-12).

If Neither Engine Airstarts:

8. Initiate EMERGENCY LANDING (Page E-22) or DITCHING PROCEDURES (Page E-24) as appropriate.

ENGINE FAILURE IN LANDING CONFIGURATION

1. Thrust (Operating Engine) — AS REQUIRED
2. Airspeed — V_{REF}
3. Thrust Lever (Inoperative Engine) — CUTOFF
4. Boost Pump (Inoperative Engine) — ON
5. BEFORE LANDING Check (Page N-11) — COMPLETE

INADVERTENT THRUST REVERSER DEPLOYMENT DURING TAKEOFF (BELOW V_1 — TAKEOFF ABORTED)

③

L TR ARM	R TR ARM	LDG LT EXT
UNLOCK	UNLOCK	PASS OXY ON
DEPLOY	DEPLOY	FUEL XFEED ON

Illumination of the amber [TR ARM] and [UNLOCK] annunciators indicates that the thrust reverser doors have begun to open. The white [DEPLOY] annunciator indicates the doors are in the fully deployed position.

1. Brakes — APPLY
2. Thrust — IDLE
3. Thrust Reversers — BOTH DEPLOY
4. Reverser Lights — VERIFY
5. Reverse Thrust — AS REQUIRED
6. Speed Brakes — EXTEND

NOTE: Aborted takeoff requires that the wheel brakes be applied at the scheduled V_1 speed to meet the scheduled takeoff field length.

INADVERTENT THRUST REVERSER DEPLOYMENT DURING TAKEOFF (ABOVE V_1 — TAKEOFF CONTINUED)

④



The lights in the [TR PUSH] and [EMER STOW] switches illuminate if an ARM or UNLOCK condition occurs while the airplane is in the air.

WARNING: Planned takeoff flight path performance may not be achieved.

1. Emergency Stow Push-Switch (affected engine) — PUSH
2. Nose Up Pitch Attitude at Rotation (V_R) — 13-15° DESIRED
3. Landing Gear (when positive climb established) — UP
4. Airspeed — V_2 (MIN).

NOTE: Airspeed must remain below 135 KIAS until thrust reverser is stowed and locked.

If reverser will not stow and lock:

5. Thrust Lever (affected engine) — CUTOFF
6. Thrust Reverser POS/CONT/EMER STOW
Circuit Breakers (AFT MAIN PANEL) (affected engine) — IN
7. Airspeed — NOT TO EXCEED 200 KIAS
8. Land — NEAREST SUITABLE AIRPORT
9. Refer to ONE ENGINE INOPERATIVE APPROACH AND LANDING WITH A REVERSER DEPLOYED procedure (E-26).

If reverser stows and locks:

10. Planned Takeoff Flight Path — CONTINUE
11. Thrust — AS REQUIRED
12. Thrust Reverser CONT Circuit Breaker
(AFT MAIN PANEL) (affected engine) — PULL
13. Land — NEAREST SUITABLE AIRPORT

INADVERTENT THRUST REVERSER DEPLOYMENT IN FLIGHT (UNLOCK/DEPLOY ANNUNCIATOR ILLUMINATED)

④



and

③



1. Emergency Stow Push-Switch (affected engine) — PUSH
2. Altitude — BELOW 30,000 ft
3. Airspeed (until reverser stows/locks) — BELOW 135 KIAS
4. Thrust (affected engine) — IDLE
5. Thrust Reverser POS/CONT/EMER STOW
Circuit Breakers (AFT MAIN PANEL) (affected engine) — IN

If reverser will not stow and lock (UNLOCK/DEPLOY annunciators and EMER STOW illuminated):

6. Thrust Lever (affected engine) — CUTOFF
7. Airspeed — NOT TO EXCEED 200 KIAS
8. Land — NEAREST SUITABLE AIRPORT
9. Refer to ONE ENGINE INOPERATIVE APPROACH AND LANDING WITH A REVERSER DEPLOYED procedure (E-26)

If reverser stows and locks (UNLOCK/DEPLOY annunciators extinguish and EMER STOW illuminated):

10. Thrust — AS REQUIRED
11. Thrust Reverser CONT Circuit Breaker
(AFT MAIN PANEL) (affected engine) — PULL
12. Land — NEAREST SUITABLE AIRPORT

ENGINE SHUTDOWN OR FAILURE IN FLIGHT

NOTE: If the engine is being shut down for training or with no mechanical difficulty, stabilize the ITT at IDLE thrust for one minute. If shutdown is caused by mechanical difficulty, no stabilization is required.

1. Thrust Lever — CUTOFF
2. Engine Anti-ice (inoperative engine) — OFF
3. Generator Reset (inoperative engine) — OFF
4. Ignition (inoperative engine) — OFF
5. Boost Pump (inoperative engine) — ON
6. Fuel Crossfeed — AS REQUIRED
7. Cabin Pressure Source — OPERATING ENGINE
8. Engine Sync — OFF
9. Engine EFC (inoperative engine) — OFF
10. TCAS — TA ONLY
11. Electrical Load (operating engine) — WITHIN LIMITS

CAUTION: If no fire hazard exists, do not push engine fire (ENG FIRE PUSH) button. Keep boost pump on to prevent damage to engine fuel pump. If engine shutdown or failure occurs at high altitude and maximum range is necessary, establish enroute climb configuration (170 KIAS).

ENGINE FAILURE (AUTOPILOT COUPLED)

The autopilot is able to satisfactorily control the airplane in the event of an engine failure. If on an instrument approach, advance the thrust lever on the operable engine to maintain speed.

NOTE: Maintain a final approach speed of $V_{REF} + 5$ Kts for autopilot coupled approach.

NOTE: Rudder boost is provided by the yaw servo of the autopilot. The yaw damper is disabled when the rudder boost is activated.

FALSE ENGINE START (AFFECTED ENGINE)

If ground start or starter assisted air start:

1. Thrust Lever — CUTOFF
2. Ignition Switch — OFF
3. Motor engine for 15 seconds to purge fuel, then press Engine Start Disengage (PUSH TO DISENGAGE) button.

If windmilling air start:

4. Thrust Lever — CUTOFF
5. Windmill engine for 30 seconds before attempting another start.

AIR START

CAUTION: Do not attempt to restart an engine that has been shut down due to obvious mechanical difficulties or fire.

PRE-START CHECK (INOPERATIVE ENGINE)

1. Engine EFC — OFF, THEN ON
2. Thrust Lever — CUTOFF
3. Cabin Pressure Source — OPERATIVE ENGINE
4. Boost Pump — ON
5. Jet Pump — OFF
6. Ignition — ON
7. Engine Anti-Ice — OFF
8. Airspeed and Altitude — SEE AIR START ENVELOPE GRAPHS (E-13)

NOTE: In-flight, starter assisted air starts are accomplished with the battery, regardless of the position of the generator reset switches.

STARTER ASSISTED START (INOPERATIVE ENGINE)

1. Engine Start Select — INOPERATIVE ENGINE
2. Engine Start — DEPRESS
3. Thrust Lever — IDLE AT 8% N₂
4. Engine Instruments — IN LIMITS

WINDMILLING START (INOPERATIVE ENGINE)

1. N₂ — 8% OR ABOVE
2. Thrust Lever — IDLE
3. Engine Instruments — IN LIMITS

NOTE: A right light should normally be obtained within 10 seconds after the thrust lever is positioned to IDLE and will be confirmed by fuel flow indication and increase in RPM and ITT.

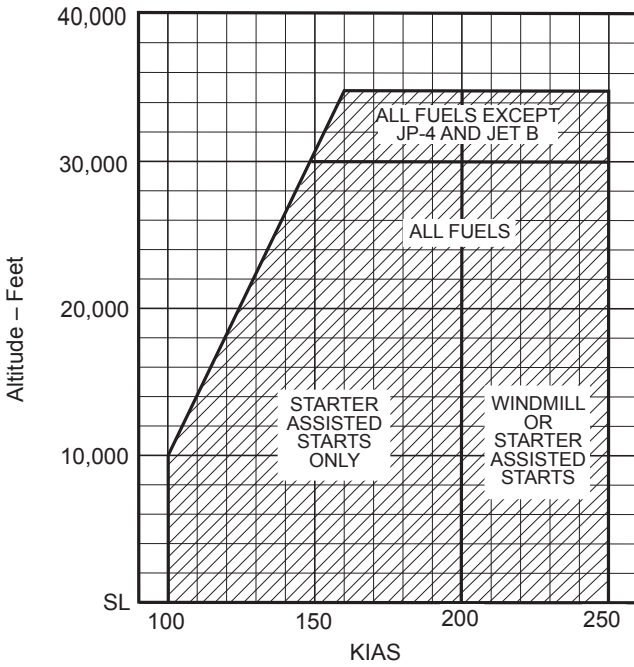
POST-START CHECK (AFFECTED ENGINE)

1. Thrust — AS REQUIRED
2. Engine Start Select — OFF
3. Cabin Pressure Source — BOTH NORM
4. Engine Anti-Ice — AS REQUIRED
5. Generator Reset — RESET/NORM
6. Ignition — STBY
7. Jet Pump — NORM
8. Boost Pump — AUTO

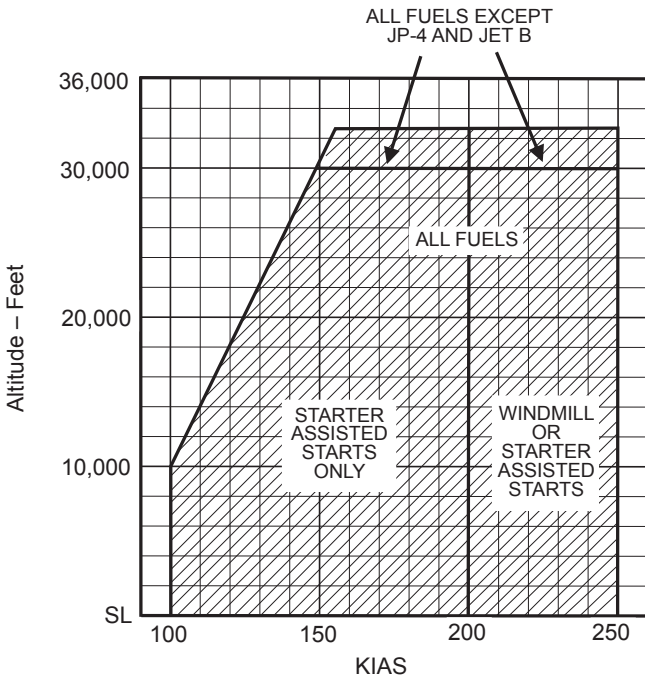
NOTE: When the battery switch has been turned OFF due to a depleted or overheated battery, air start should be accomplished by the WINDMILLING START procedure.

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Air Start Envelope 1
 Prior to RK-212, or Those Airplanes
 Not Modified by Raytheon Aircraft Service Bulletin 28-3203
 and Pratt & Whitney Service Bulletin 7526R1



Air Start Envelope 2
 RK-212 or After, or Those Airplanes
 Modified by Raytheon Aircraft Service Bulletin 28-3203
 and Pratt & Whitney Service Bulletin 7526R1

LOW OIL PRESSURE

⑤



Illumination of either the [L or R OIL PRESS LO] annunciator indicates that the oil pressure has dropped below 40 PSI.

Between 40 and 60 PSI:

1. Thrust (Affected Engine) — REDUCE

NOTE: Normal oil pressure is 60 to 83 PSI at N₂ speeds above 60%. Oil pressure below 60 PSI is undesirable and should be tolerated only for the completion of the flight, preferably at reduced power setting.

Below 40 PSI or [L or R OIL PRESS LO] Annunciator Illuminated:

2. Initiate ENGINE SHUTDOWN or FAILURE IN FLIGHT Procedure (E-11)

CAUTION: Windmilling in excess of 15 minutes in the absence of a positive indication of oil pressure requires an inspection in accordance with the engine maintenance manual. If the affected engine is not shut down, use only the minimum required power to sustain flight and land at the nearest suitable airport.

LOW FUEL PRESSURE ([L OR R FUEL PRESS LO] ANNUNCIATOR ILLUMINATED)

⑥

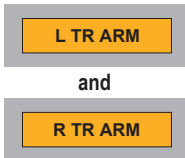


Illumination of the [L or R FUEL PRESS LO] annunciator indicates the pressure in the fuel feed line to the respective engine has dropped below $5 \pm .5$ PSI.

1. Boost Pump (Affected Engine) — ON
2. Jet Pump (Affected Engine) — OFF
3. [FUEL PRESS LO] Annunciator — EXTINGUISHED
4. If [FUEL PRESS LO] annunciator remains illuminated, complete ENGINE SHUTDOWN or FAILURE IN FLIGHT procedure (E-11).

MAIN LANDING GEAR GROUND SAFETY SWITCH FAILURE ON TAKEOFF

③



Failure of one or both landing gear ground safety switches to transfer from the ground to flight mode will be indicated by illumination of both [TR ARM] annunciators and flashing MASTER WARNING lights when the gear is retracted. If this occurs, do not raise the thrust reverser levers. In-flight deployment of one or both reversers could occur.

1. Thrust Reverser CONT circuit breakers (Aft Main Panel) — PULL
2. Land at Nearest Suitable Airport

NOTE: With the Thrust Reverser CONT circuit breakers pulled, the thrust reversers will not be available during landing.

For supplemental information see below table for Ground Safety Switch Functions.

GROUND SAFETY SWITCH FUNCTIONS

LH GROUND SAFETY SWITCH FUNCTION	
SYSTEM	FUNCTION
(A) LH STALL	Inhibits shaker actuation on ground
(G) ANTI-SKID	Brake function released in air
(A) SPEED BRAKE	Overrides safety check on ground
(A) LH AOA HEATER	Switched to low heat mode on ground
(A) GEN FEEDER PROTECTION TEST - CHECK	Inhibits protection test check in air
(A) H STAB ANTI-ICE	Inhibits operation on ground
(A) ENGINE START IGN	Controls generator assist start control -on ground only
(G) AIR CONDITIONING	Inhibits operation of emergency pressure valve on ground
(A) LH AIR DATA COMPUTER	Inhibits IAS trend vector, 1.3V _S line, and low-speed cue on ground
(A) TRIM WARNING	Inhibits takeoff trim warning in air
(S) GEAR LEVER	Locks gear lever at down position
(A) CABIN PRESS	Opens door seal on ground. Inhibits cabin pressurization on ground.
(A) AP	Roll trim computer inhibited on ground
(G) DIGITAL CLOCK (G) FLT HOURMETER	Count flight hours
(S) LEFT REVERSER	Prevents in-flight reversing

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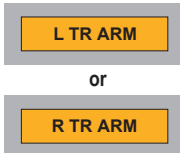
RH GROUND SAFETY SWITCH FUNCTION	
(A) RH STALL	Inhibits shaker actuation on ground
(G) ANTI-SKID	Brake function released in air
(A) SPEED BRAKE	Overrides safety check on ground
(A) RH AOA HEATER	Switched to low heat mode on ground
(A) H STAB DEICE	Inhibits operation on ground
(S) RIGHT REVERSER	Prevents in-flight reversing
(A) RH AIR DATA COMPUTER	Inhibits IAS trend vector, 1.3V _S line, and low-speed cue on ground

LEGEND

- (A) If ground safe circuit breaker is pulled out, system operates in air mode
 (G) If ground safe circuit breaker is pulled out, system operates in ground mode
 (S) Connected directly to safety switch

THRUST REVERSER ARM ANNUNCIATOR ILLUMINATED IN FLIGHT

③



1. Thrust Reverser Lever — STOWED POSITION
2. Emergency Stow Push-Switch — NOT ILLUMINATED
3. Thrust Reverser Unlock Light — NOT ILLUMINATED
4. Thrust Reverser POS/CONT/EMER STOW
Circuit Breakers (AFT MAIN PANEL) (affected engine) — IN

If ARM annunciator remains illuminated:

5. Thrust Reverser CONT Circuit Breaker
(AFT MAIN PANEL) (affected engine) — PULL
6. Airspeed — DO NOT EXCEED 200 KIAS
7. Land — NEAREST SUITABLE AIRPORT

THRUST REVERSER UNLOCK ANNUNCIATOR ILLUMINATED IN FLIGHT

③

UNLOCK

1. Emergency Stow Push-Switch (T/R PUSH/EMER STOW illuminated) — PUSH TO ACTUATE ON AFFECTED ENGINE (T/R PUSH EXTINGUISHED)
2. Thrust Reverser Lever — CHECK IN STOWED POSITION
3. Altitude/Airspeed — ATTAIN 30,000 FT OR LOWER AND REDUCE TO 135 KIAS OR BELOW UNTIL THRUST REVERSER STOWS AND LOCKS

If UNLOCK annunciator remains illuminated:

4. Thrust Reverser POS/CONT/EMER STOW Circuit Breakers (AFT MAIN PANEL) (affected engine) — IN
5. Thrust Reverser CONT Circuit Breaker (AFT MAIN PANEL) (affected engine) — PULL
6. Airspeed — DO NOT EXCEED 200 KIAS
7. Land — NEAREST SUITABLE AIRPORT

HIGH OIL TEMPERATURES

1. Thrust (affected engine) — INCREASE WITHIN N_1 LIMIT
2. Avoid rapid thrust reduction.

**OIL FILTER BYPASS
([L OR R O FLTR BYPASS] ANNUNCIATOR ILLUMINATED)**

⑦



The [L or R O FLTR BYPASS] indicates that the oil filter is clogged and the oil is bypassing the filter.

1. Oil Pressure — CHECK
2. If Normal — CONTINUE FLIGHT
3. If Below Normal — SEE LOW OIL PRESS PROCEDURES (E-14).

NOTE: Illumination of an [O FLTR BYPASS] annunciator indicates the oil filter element is being bypassed due to contaminants.

ENGINE ANTI-ICE SYSTEM INOPERATIVE ([L OR R ENG ICE TEMP LO] ANNUNCIATOR ILLUMINATED)

⑧



[L or R ENG ICE TEMP LO] annunciator illumination indicates that the temperature of the bleed air temperature switch has decreased below 120 ±5°F (65.5°C).

1. Thrust (affected engine) — INCREASE
2. Engine Anti-Ice (affected engine) — OFF, THEN ON

NOTE: If either [ENG ICE TEMP LO] annunciator remains illuminated, assume that engine anti-ice system has failed. Avoid icing environment.

EFC FAILURE ([L OR R ENG EFC OFF] ANNUNCIATOR ILLUMINATED)

⑨



The illumination of the [L or R ENG EFC OFF] annunciator indicates that the applicable engine EFC has been disengaged.

1. Engine EFC (affected engine) — OFF, THEN ON

If ENG EFC OFF annunciator remains illuminated:

2. Engine EFC (affected engine) — OFF
3. Thrust Lever (affected engine) — ADVANCE TO RESTORE THRUST REQUIRED
4. Engine Sync — OFF

NOTE: If attempting to restore normal engine EFC operation, turn the EFC ON only with the thrust lever below NORM T.O. position. If normal EFC operation is not recovered, then the EFC should be placed to OFF and the flight completed in the manual mode. When restoring thrust with the EFC OFF, thrust lever movement from idle to maximum power should be accomplished slowly (minimum 1.5 seconds) to avoid possible compressor stalls.

INADVERTANT OVERSPEED

1. Thrust — IDLE
2. Speed Brakes — EXTEND
3. If airplane is in a nose-down attitude, initiate a wings-level pull-up without exceeding structural limits (3.2 g's).

EGPWS WARNING**([PULL UP] WARNING ANNUNCIATOR ILLUMINATED)**

⑩



And/or activation of the aural warning “Pull Up,” “Terrain, Terrain, Pull Up,” or “Obstacle, Obstacle, Pull Up.”

1. Go Around Button — PUSH
2. Thrust — TAKEOFF N_1
3. Pitch Attitude — INCREASE AND CLIMB AS REQUIRED TO AVOID TERRAIN
4. Flaps — RETRACT (10°) IF REQUIRED
5. Landing Gear — UP
6. Flaps — UP
7. Speed Brakes — VERIFY RETRACTED
8. Terrain Awareness Display — MONITOR
(SELECT PRESENT POSITION MAP DISPLAY IF REQUIRED)
9. Pitch Attitude — MAINTAIN UNTIL WARNING CEASES
10. Controlling Agency — NOTIFY

WINDSHEAR WARNING ([W/S WARN] WARNING ANNUNCIATOR ILLUMINATED)

⑪



And/or activation of the aural warning “Windshear, Windshear, Windshear.”

1. Go-Around Button — PUSH
2. Thrust — TAKEOFF N₁
3. Pitch Attitude — SMOOTHLY ROTATE TO GO-AROUND ATTITUDE. CONTINUE TO PITCH UP AS REQUIRED TO ARREST DESCENT, LETTING AIRSPEED DECREASE. USE INTERMITTENT STICK SHAKER AS UPPER LIMIT OF PITCH ATTITUDE.
4. Thrust — AVOID EXCEEDING LIMITS UNLESS AIRPLANE CONTINUES TO DESCEND AND SAFETY IS IN DOUBT. WHEN SAFETY IS ASSURED, RESET THRUST WITHIN LIMITS.

NOTE: Exceeding engine limits while at an angle-of-attack near stick shaker may cause engine stall, surge, or flameout.

5. Flaps/Landing Gear — DO NOT RETRACT UNTIL SAFETY IS ASSURED.

LOSS OF AIRSPEED INDICATION

NOTE: If the pilot’s, or copilot’s and standby, or all three airspeed(s) are noted to be decreasing toward zero, refer to the standby attitude indicator, standby altimeter, standby heading, and the AOA indicator for airplane control and land at the nearest suitable airport. On PFD equipped airplanes, the pilot’s and copilot’s altimeters, attitude displays and heading displays may be unreliable and the autopilot may disconnect. This may be accompanied by amber boxed IAS, ALT, ATT and/or HDG comparator flags. The comparator flags may be followed by red FAIL flags and removal of airspeed and altitude tapes and attitude/heading displays.



1. Autopilot — DISCONNECT
2. Airspeed — SLOW AND MAINTAIN 0.2 AOA
3. Thrust — AS REQUIRED
4. Speed Brakes — AS REQUIRED
(SLOW TO 0.25 WITH THE SPEED BRAKES EXTENDED)

NOTE: An AOA of 0.2 (0.25 with speed brakes extended) will yield an airspeed of about 210 Kts. Use pitch attitude as primary reference. Make small changes in pitch attitude and wait for AOA to stabilize.

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When Ready for Descent:

5. Seat Belts/Shoulder Harnesses — FASTENED
6. Cabin Sign — AS REQUIRED
7. Recognition Light — AS REQUIRED
8. Anti/Deice Systems — AS REQUIRED

CAUTION: If icing conditions are anticipated during the descent and approach, turn ice protection systems ON as early as possible prior to penetrating icing conditions. Maintain wing anti/de-ice operation light ON (approximately 70% N₂) during descent to assure proper wing anti-ice operation.

9. Cabin Pressure Control — SET FIELD ELEVATION + 500 FT
10. Windshield Defog — AS REQUIRED
11. Altimeters — SET

When Ready for Approach:

12. Airspeed — SLOW TO AND MAINTAIN 0.3 AOA

NOTE: Maintain 0.3 AOA throughout the configuration change to Flaps 10°, Gear Down. This will yield an airspeed of about 180 Kts.

13. Fuel Management — CHECK
14. N₁, Landing Distance — CONFIRM
15. Cabin Sign — SAFETY
16. Windshield Anti-Ice — LOW
17. Hydraulic/Nitrogen Pressure — CHECK
18. Engine Sync — OFF
19. Flaps — 10°

Before Landing:

20. AOA Index — PRESET 1.3 V/V_S
21. Landing Gear — DOWN
22. Airspeed — SLOW TO 0.4 AOA
23. Recognition Light — OFF
24. Landing Lights — AS REQUIRED
25. Ignitions — ON
26. Flaps — 30°
27. Approach Airspeed (V_{REF}) — SLOW TO AND MAINTAIN 0.57 AOA

NOTE: This will yield a normal approach speed of V_{REF} (0.57 AOA) and normal landing distances.

28. Yaw Damp — OFF

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Balked Landing:

29. Thrust — TAKEOFF N₁
30. Pitch Attitude — 10°

When Positive Climb Has Been Established:

31. Flaps — 10°
32. Landing Gear — UP
33. Yaw Damp — ON
34. Airspeed — ACCELERATE TO 0.3 AOA
35. Flaps — UP
36. Airspeed — ACCELERATE AND MAINTAIN 0.2 AOA
37. Landing Lights — RET/OFF

EMERGENCY LANDING

1. Cabin Sign — SAFETY
2. Seat Belts and Shoulder Harnesses — FASTENED
3. Landing Gear — DOWN

NOTE: If landing gear does not operate, initiate ALTERNATE GEAR EXTENSION procedure (E-70).

4. Cabin Pressure — DUMP
5. Flaps — 30°
6. Yaw Damp — OFF
7. Airspeed — V_{REF}

EGPWS LANDING

For off-airport landings, the Terrain (or Obstacle) Alerting and Display (TAD) and Terrain Clearance Floor (TCF) functions should be inhibited by selecting the TERR INHIBIT switch/annunciator.

The GPWS circuit breaker may be used to deactivate the EGPWS for ditching, landing with an unsafe gear indication, or landing with the gear up.

When a procedure in the basic Airplane Flight Manual specifies landing with flap settings not normally used for landing, the GPWS FLAPS OVRD switch/annunciator can be used to simulate landing flaps. This will prevent the aural alert "Too Low Flaps".

EGPWS CAUTION ([GPWS] CAUTION ANNUNCIATOR ILLUMINATED)

⑫



And/or activation of aural alerts "Sink Rate", "Terrain", "Too Low Terrain", "Don't Sink", "Too Low Gear", "Too Low Flaps", "Glideslope", "Caution Terrain" or "Caution Obstacle".

"Sink Rate" — REDUCE SINK RATE AS REQUIRED

"Terrain", "Too Low Terrain", "Caution Terrain" or "Caution Obstacle" — MONITOR TERRAIN AWARENESS DISPLAY AND STOP DESCENT OR CLIMB AS REQUIRED

"Don't Sink" — ARREST SINK RATE AND CONTINUE TAKEOFF CLIMB AS REQUIRED

"Too Low Gear" — EXTEND LANDING GEAR OR EXECUTE GO-AROUND

"Too Low Flaps" — EXTEND FLAPS, GO-AROUND OR SELECT GPWS FLAP OVRD IF CONDUCTING ABNORMAL LANDING

"Glideslope" — CORRECT FLIGHT PATH BACK TO GLIDESLOPE OR SELECT BELOW GS P/CANCEL IF DESIRED

WINDSHEAR CAUTION ([W/S CAUTION] ANNUNCIATOR ILLUMINATED)

⑬



And/or activation of the aural alert "Caution Windshear"

NOTE: The alert occurs during increasing performance conditions (i.e., Increasing headwind or decreasing tailwind and/or updraft). The crew should be alerted to the possibility of subsequent significant airspeed loss and down draft conditions.

Takeoff — VERIFY TAKEOFF N_1 IS SET AND MAINTAIN TAKEOFF PITCH ATTITUDE

Approach — CONSIDER A GO-AROUND. IF APPROACH IS CONTINUED, ADD WIND AND GUST AIRSPEED ALLOWANCE, AVOID DESCENDING BELOW GLIDEPATH AND AVOID PROLONGED THRUST REDUCTIONS

DITCHING PROCEDURES

NOTE: Ditching has not been demonstrated, however, the following procedures are recommended.

Preliminary:

1. Passengers — ADVISE
2. Life Vests — DON

WARNING: Do not inflate life vests prior to cabin evacuation.

3. Cabin Sign — Safety
4. Transponder — SET 7700
5. Fuel — LITTLE AS PRACTICAL
6. LDG GEAR Circuit Breaker (SYSTEMS) — PULL

Approach:

7. Flaps — 10°
8. Speed Brakes — RETRACT
9. Cabin Pressure — DUMP

NOTE: Ditch parallel to and near the crest of the swell unless there is a crosswind of 20 Kts or more. In strong winds, heading should be more into the wind and slightly across the swell, planning to touch down on the upslope of the swell near the top.

Wave motion is indicative of wind direction, but the swell does not necessarily move with the wind. Water surface conditions are indicative of wind speed, as related below.

SURFACE CONDITION	WIND SPEED KTS
Few White Crests	10 — 15
Many White Crests	15 — 25
Streaks of Foam from Crests	25 — 35
Spray Blown from Tops of Waves	35 — 45

NOTE: It is difficult to judge height above a calm sea. Use of landing lights at night will make the estimate even more difficult. It is recommended that a constant rate of descent be maintained in the landing attitude until touchdown.

10. LDG GR POSN Circuit Breaker (SYSTEMS) — PULL
11. EMER LDG GR POSN Circuit Breaker (AFT MAIN PANEL) — PULL
12. Flaps (Ditching Imminent) — 30°
13. Master Generator Switches — EMER

After Touchdown:

14. Emergency Exit — OPEN, EVACUATE AIRPLANE

ONE ENGINE INOPERATIVE APPROACH AND LANDING

1. Crew Briefing — COMPLETE
2. Fuel Management — CHECK
3. V_{REF} , V_{AC} , N_1 , AOA, LDG DIST — CONFIRM
4. Cabin Sign — SAFETY
5. Windshield Anti-Ice — LOW
6. Hydraulic/Nitrogen Pressure — CHECK
7. Flaps — 10°
8. Landing Gear — DOWN
9. Refrigeration Air Conditioning — OFF
10. Airspeed — $V_{REF} + 10$ KIAS
11. Recognition Light — OFF
12. Landing Lights — AS REQUIRED
13. Ignition — ON
14. Fuel Crossfeed — NORM, BEFORE LANDING

When It Is Certain There Is No Possibility Of A Go-Around:

15. Flaps — 30°
16. Airspeed — V_{REF}
17. Yaw Damp — OFF

NOTE: Do not select flaps beyond 10° until landing is assured.

NOTE: If not landing with 30° flaps, the GPWS FLAPS OVRD switch/annunciator can be used to prevent the aural alert "Too Low Flaps".

NOTE: If landing with 10° flaps, landing distance will increase approximately 20%.

SINGLE ENGINE REVERSING

1. Thrust — IDLE
2. Brakes (after touchdown) — APPLY
3. Thrust Reverser — DEPLOY ON UNAFFECTED ENGINE
4. Reverser Lights — VERIFY
5. Reverse Thrust — AS REQUIRED
6. Speed Brakes — EXTEND

ONE ENGINE INOPERATIVE APPROACH AND LANDING WITH A REVERSER DEPLOYED

1. Crew Briefing — COMPLETE
2. Fuel Management — CHECK
3. V_{REF} , V_{AC} , N_1 , AOA, LDG DIST — CONFIRM
4. Cabin Sign — SAFETY
5. Windshield Anti-Ice — LOW
6. Hydraulic/Nitrogen Pressure — CHECK
7. Flaps — 10°
8. Landing Gear — DOWN
9. Refrigeration Air Conditioning — OFF
10. Airspeed — Maneuvering - 140 KIAS
 $V_{REF} + 20$ KIAS (MIN) on Final
11. Recognition Light — OFF
12. Landing Lights — AS REQUIRED
13. Ignition — ON
14. Fuel Crossfeed — NORM, BEFORE LANDING

When It Is Certain There Is No Possibility Of A Go-Around:

15. Flaps — 30°
16. Airspeed — $V_{REF} + 10$ KIAS (MIN)
17. Yaw Damp — OFF

NOTE: Landing distance will increase approximately 20%.

Airplane control inputs needed for landing will not be significantly different than required for an engine inoperative landing with the reverser stowed. Use shallow banked turns and an extended final approach. Avoid steep approach angles and unnecessarily large nose high pitch attitudes or pitch changes at touchdown. Maintain stabilized approach airspeed and power until landing is assured.

NOTE: If not landing with 30° flaps, the GPWS FLAPS OVRD switch/annunciator can be used to prevent the aural alert "Too Low Flaps".

APPROACH CLIMB (ONE ENGINE GO-AROUND)

1. Thrust — TAKEOFF N_1
2. Flaps — 10°
3. Landing Gear (when positive climb established) — UP
4. Landing Lights — RET/OFF
5. Airspeed — APPROACH CLIMB SPEED
6. Flaps — 0°

NOTE: Approach climb performance cannot be achieved with flaps 20° or 30° .

NO-FLAP APPROACH AND LANDING

1. Crew Briefing — COMPLETE
2. Fuel Management — CHECK
3. V_{REF} , N_1 , AOA, LDG DIST — CONFIRM
4. GPWS FLAP OVRD (if installed) — PUSH
5. Cabin Sign — SAFETY
6. Windshield Anti-Ice — LOW
7. Hydraulic/Nitrogen Pressure — CHECK
8. Engine Sync — OFF
9. Landing Gear — DOWN
10. Refrigeration Air Conditioning — OFF
11. Airspeed — $V_{REF} + 20$ KIAS
12. Recognition Light — OFF
13. Landing Lights — AS REQUIRED
14. Ignitions — ON
15. Yaw Damp — OFF

NOTE: Landing distance will increase approximately 40%. If combined with the loss of hydraulic pressure, see LOW HYDRAULIC PRESSURE procedures (E-66).

FLAPS 10° APPROACH AND LANDING

1. Crew Briefing — COMPLETE
2. Fuel Management — CHECK
3. V_{REF} , V_{AC} , N_1 , AOA, LDG DIST — CONFIRM
4. GPWS FLAP OVRD (if installed) — PUSH
5. Cabin Sign — SAFETY
6. Windshield Anti-Ice — LOW
7. Hydraulic/Nitrogen Pressure — CHECK
8. Engine Sync — OFF
9. Land Select Switch — FLAPS 10°
10. Landing Gear — DOWN
11. Flaps (landing flap setting) — 10°
12. Refrigeration Air Conditioning — OFF
13. Recognition Light — OFF
14. Landing Lights — AS REQUIRED
15. Ignitions — ON
16. Airspeed — $V_{REF} + 10$ KIAS
17. Yaw Damp — OFF

NOTE: Landing Distance will increase approximately 20%.

LANDING WITH ICE ACCUMULATION ON THE WINGS

WARNING: Due to distortion of the wing airfoil, ice formations on the wing leading edges can cause significant losses in rate of climb, cruise speed and range, as well as increases in buffet and stall speeds. The stall warning system should not be relied upon. However, with ice accumulations on the wing leading edges, significant aerodynamic buffet will occur well in advance of the actual stall. Do not attempt flight at speeds below the onset of aerodynamic buffet.

If any ice accumulation is visible on the wing leading edges, the following approach and landing procedures must be followed:

1. Crew Briefing — COMPLETE
2. Airspeed — MAINTAIN 200-250 KIAS
3. Fuel Management — CHECK
4. V_{REF} , N_1 , LDG DIST — CONFIRM

NOTE: Increase final approach airspeed to $V_{REF} + 25$ KIAS. Landing distance will increase approximately 55%.

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5. Cabin Sign — SAFETY
6. Windshield Anti-Ice — LOW
7. Hydraulic/Nitrogen Pressure — CHECK
8. Engine Sync — OFF
9. Airspeed — DECREASE TO 200 KIAS
10. Flaps — 10°
11. Landing Gear — DOWN
12. Refrigeration Air Conditioning — OFF
13. Recognition Light — OFF
14. Landing Lights — AS REQUIRED
15. Ignitions — ON
16. Airspeed — DECREASE TO 165 KIAS
17. Flaps — 30°
18. Approach Airspeed — $V_{REF} + 25$ KIAS
19. Yaw Damp — OFF

NOTE: Airplane control inputs needed for landing will not be significantly different than required for a normal landing. Use shallow banked turns and an extended final approach. Avoid steep approach angles and unnecessarily large pitch changes at touchdown. Maintain stabilized approach airspeed and power until just prior to touchdown.

If A Balked Landing Becomes Necessary:

20. Thrust — TAKEOFF N_1
21. Climb Airspeed — $V_{REF} + 25$ KIAS

When Positive Climb Is Established:

22. Landing Gear — UP

NOTE: Since the landing gear retraction is prior to flap retraction, the aural landing gear warning will sound.

23. Yaw Damp — ON
24. Airspeed — ACCELERATE TO 165 KIAS
25. Flaps — 10°
26. Airspeed — ACCELERATE TO 200 KIAS
27. Flaps — 0°
28. Landing Lights — RET/OFF

SIDE WINDOW LANDING

Plan a straight-in approach, ILS preferred.

1. Adjust pilot seat in order to look through upper forward portion of side window.
2. Copilot adjusts power to maintain $V_{REF} + 10$ KIAS until landing is assured.
3. At 200-500 ft AGL, pilot looks through side window and makes landing using normal techniques.

NOTE: Landing distance will increase approximately 20%.

INADVERTENT ICING ENCOUNTER

1. Ignitions — ON
2. L Engine Anti-Ice — ON
3. H Stab Anti/Deice — ON

When Nacelle Ice Ingestion On The Left Engine Is No Longer Considered A Factor (Approximately One Minute):

4. R Engine Anti-Ice — ON
5. Thrust — 90% N_1 or LOWER
6. Wing Anti-ice — ON
7. Thrust — AS REQUIRED

CAUTION: Turning wing anti-ice ON with significant wing ice accumulation could result in engine ice ingestion.

NOTE: If inadvertent icing conditions are encountered while using 30° flaps, abnormal pitch-control forces may be experienced. Airplane response to pilot control input will remain normal. Pitch-control forces will return to normal when the horizontal stabilizer deice system clears the ice accumulation (approximately one minute).

ICE DETECTOR FAIL ([ICE DETECT FAIL] ANNUNCIATOR ILLUMINATED)

14



Illumination of the [ICE DETECT FAIL] annunciator indicates detector failure or a power loss to the detector.

1. Flight Conditions — MONITOR

TURBULENT AIR PENETRATION

1. Airspeed — 200 KIAS (0.58 M_I)
2. Ignitions — ON
3. Autopilot — DESELECT VERTICAL MODES

NOTE: Ignition should be turned ON for turbulence and/or precipitation conditions. Flight below column shaker onset speed should be avoided. Intentional operation at speeds approaching the onset of stall buffet may result in engine compressor stalls.

**STALL WARNING SHAKER/SUPPLEMENTAL STALL RECOGNITION SYSTEM FAILURE
([L OR R STALL WRN FAIL] ANNUNCIATOR ILLUMINATED)**

⑮

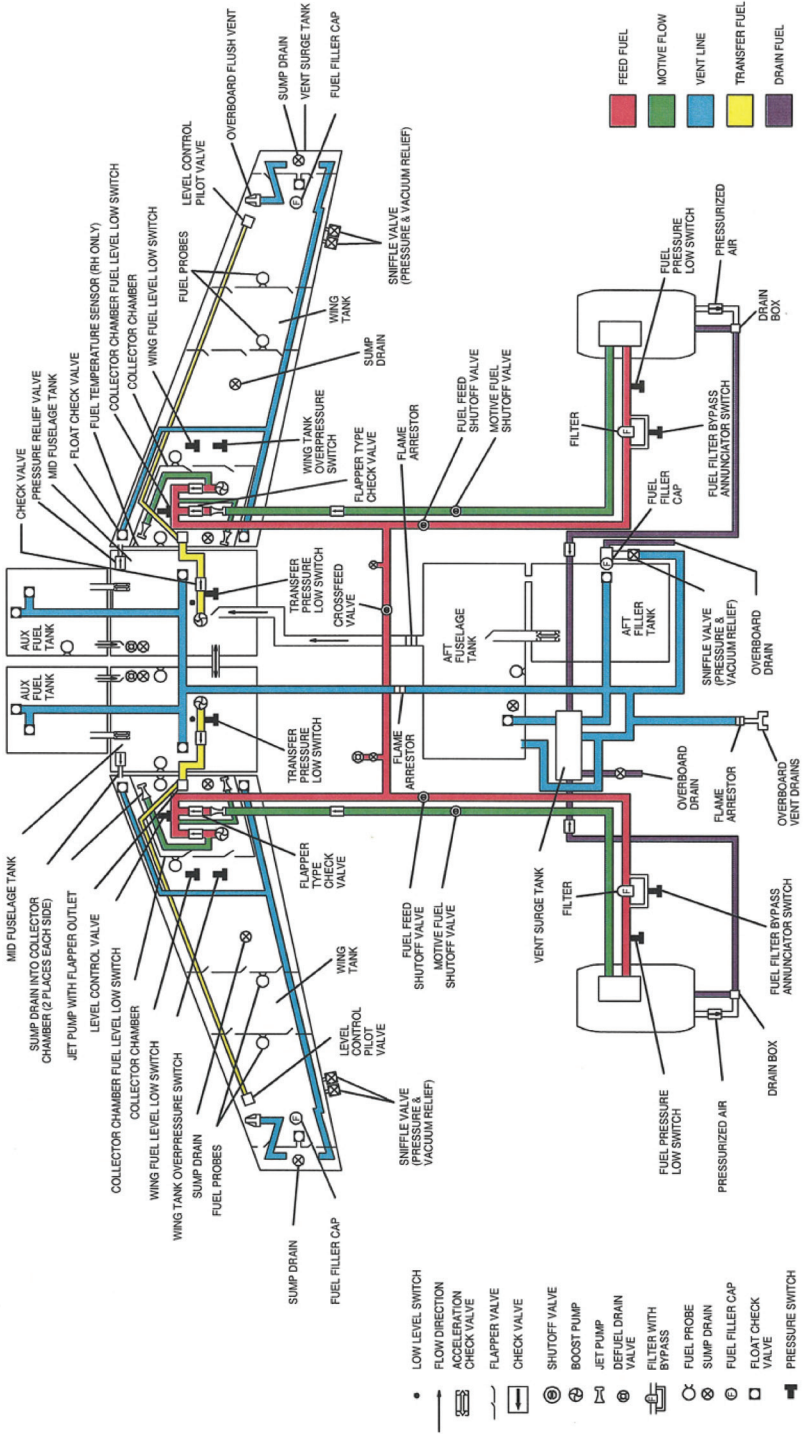


[L or R STALL WRN FAIL] annunciator illuminates to indicate that the indicated stick shaker is inoperative.

1. Stall Warn Circuit Breaker (FLT INST) (affected side) — CHECK IN
2. Avoid low indicated airspeeds at high altitudes and monitor landing approach airspeeds closely.

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FUEL SYSTEM



WING TANK OVERPRESSURE ([L OR R WG TK OV PRESS] ANNUNCIATOR ILLUMINATED)

⑩



Illumination of the [L or R WG TK OV PRESS] annunciator indicates that the fuel pressure in the wing tanks has exceeded 3.5 PSI.

During Fuselage Fuel Transfer:

1. Fuel Transfer Pump (affected side) — VERIFY SHUT OFF

If Annunciator Extinguishes:

2. Fuel Transfer Switch (affected side) — RESET ONE TIME

If Annunciator Re-Illuminates Or Pump Fails To Shut Off Automatically:

3. FUEL TRANS Circuit Breaker (ENG FUEL) (affected side) — PULL
4. Use fuel crossfeed as necessary to maintain fuel system balance until fuselage tank is empty.

JET PUMP FAILURE

Indications of a jet pump failure can include momentary illumination of the associated FUEL PRESS LO annunciator and the affected side Boost Pump turning ON.

1. Boost Pump (affected engine) — ON
2. Jet Pump (affected engine) — OFF
3. Repair fault prior to next flight.

LOW FUEL TRANSFER PRESSURE ([L OR R F XFR PRESS LO] ANNUNCIATOR ILLUMINATED)

⑪



The [L or R F XFR PRESS LO] annunciator will illuminate when the mid-fuselage tanks are empty.

1. Fuel Transfer Pump (affected side) — VERIFY SHUT OFF

If Fuselage Tank Is Empty And Pump Fails To Shut Off Automatically:

2. FUEL TRANS Circuit Breaker (ENG FUEL) (affected side) — PULL

If Fuel Remains In Fuselage Tank:

3. Fuel Transfer Switch (affected side) — ON

If [XFR PRESS LO] Annunciator Remains Illuminated:

4. Fuel Transfer Switch (affected side) — AUTO
5. Use fuel crossfeed as necessary to maintain fuel system balance until tank is empty.

FAILURE OF AFT FUSELAGE FUEL TO TRANSFER

NOTE: The failure of the aft-fuselage fuel tanks to gravity feed into the mid-fuselage tanks will be indicated as follows:

- Fuselage fuel transfer will cease with up to 1,160 lbs of fuel remaining on the fuselage fuel quantity indicator.
- Both fuel transfer operating lights will be extinguished, indicating that the transfer pumps are not operating.
- Wing fuel quantity will decrease while the fuselage fuel quantity indicator remains constant.

1. Fuel Transfer — RESET, THEN AUTO

If Fuel Transfer Pump Operating Lights Remain Illuminated:

2. Wing and Fuselage Fuel Quantity — MONITOR TO ENSURE FUEL IS TRANSFERRING
3. Continue normal operation.

If Fuel Transfer Pump Operating Lights Illuminate And Then Immediately Extinguish:

4. Fuel Transfer — ON

NOTE: If both [F XFR PRESS LO] annunciators illuminate, the fuel remaining in the fuselage tanks is unusable.

5. Fuel Transfer — AUTO
6. Re-compute range and/or endurance with remaining wing fuel.
7. Land using normal landing procedures.

LOW FUEL QUANTITY ([L OR R FUEL LEVEL LO] ANNUNCIATOR ILLUMINATED)

18

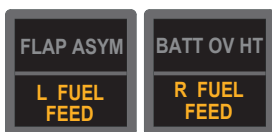


[L or R FUEL LEVEL LO] annunciator illumination indicates that approximately 225 lbs of fuel remains in the affected wing tank.

1. Land — NEAREST SUITABLE AIRPORT

**LOW ENGINE FUEL FEED TANK QUANTITY
([L OR R FUEL FEED] ANNUNCIATOR ILLUMINATED)**

①9



Illumination of the [L or R FUEL FEED] annunciators indicate that fuel level in the wing collector chamber is at approximately 77 lbs.

1. Land — NEAREST SUITABLE AIRPORT

**FUEL FILTER BYPASS
([L OR R F FLTR BYPASS] ANNUNCIATOR ILLUMINATED)**

②0



An illuminated [L or R F FLTR BYPASS] annunciator senses an impending fuel filter bypass situation.

1. Clogged filter possible.
2. Precautionary Landing Advised — NEAREST SUITABLE AIRPORT

Attempt to identify the source of smoke or fumes. Smoke associated with electrical failures is usually grey or tan in color, and irritating to the nose and eyes. Smoke produced by environmental system failures is generally white in color, and much less irritating.

ELECTRICAL FIRE OR SMOKE

1. Oxygen Masks — DON
2. Smoke Goggles — DON
3. Mic Selectors — OXY MASK
4. SPKR Switches — ON or DON HEADSET
5. INTPH Switch — ON
6. Smoke Removal Procedures (E-39) — IF NECESSARY

If Known Source:

7. Faulted Circuits — ISOLATE

WARNING: If it has not or cannot be visibly verified that the fire has been extinguished, immediately land at the nearest suitable airport.

If Unknown Source:

8. Battery — EMER
9. Master Generator Switches — EMER
10. Pitch Trim — EMER
11. Icing Environment — AVOID
12. Land — NEAREST SUITABLE AIRPORT
13. Cabin Pressure Control — SET
14. Standby Altimeter — SET
15. V_{REF} , N_1 , AOA, LDG DIST — CONFIRM
16. Cabin Sign — VERBAL BRIEFING REQUIRED
17. Flaps — WILL NOT EXTEND
18. Airspeed — $V_{REF} + 20$ KIAS
19. Landing Gear — ALTERNATE GEAR EXTENSION procedure (E-70)

NOTE: Refer to LOSS OF BOTH GENERATORS procedure (E-53) for equipment that will remain operable.

If Fire/Smoke Continue:

20. Battery — OFF
21. EMER BUS FDR & EMER BUS TIE Circuit Breakers (DC PWR) — PULL
22. Master Generator Switches — NORM
23. Battery — ON
24. Pitch Trim — NORM

NOTE: All electrical equipment except those on the Emergency Bus will be available.

25. Master Generator Switches — EMER
26. Battery — OFF

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WARNING: When both Master Generator (MASTER) switches are selected to EMER and the battery selected OFF, all electrical power except standby power is lost. Operative components are as follows:

RK-1 THRU RK-48, EXCEPT RK-45

- Left ITT Indicator and Lighting
- Standby Attitude Indicator and Lighting
- Standby Airspeed Indicator Lighting
- Standby Altimeter Lighting
- Standby Magnetic Compass Lighting
- No.1 Comm
- No.1 Radio Tuning Unit
- Pilot's and Copilot's Headphone and Hand Mic (Interphone will be inoperative)
- Engine EFC will revert to manual and engine thrust loss will be noted.
- Engine anti-ice valves will open and appropriate thrust settings must be used.
- The following hydraulically powered systems will not be functional:
 - Landing Gear (use ALTERNATE GEAR EXTENSION (E-70))
 - Flaps
 - Speed Brakes
 - Thrust Reversers
 - Anti-Skid System
- Landing Distance will increase approximately 40%.

RK-45, RK-49 AND AFTER

- Left ITT Indicator and Lighting
- Standby Attitude Indicator and Lighting
- Standby Airspeed Indicator Lighting
- Standby Altimeter Lighting
- Standby Magnetic Compass Lighting
- No.1 Comm
- No.1 Radio Tuning Unit
- Pilot's and Copilot's Headphone and Boom Mic/Hand Mic (Interphone will be inoperative)
- Engine EFC will revert to manual and engine thrust loss will be noted.
- Engine anti-ice valves will open and appropriate thrust settings must be used.
- The following hydraulically powered systems will not be functional:
 - Landing Gear (Use ALTERNATE GEAR EXTENSION (E-70))
 - Flaps
 - Speed Brakes
 - Thrust Reversers
 - Anti-Skid System
- Landing Distance will increase approximately 40%.

ENVIRONMENTAL SYSTEM SMOKE OR ODOR

1. Oxygen Masks — DON
2. Smoke Goggles — DON
3. Mic Selectors — OXY MASK
4. SPKR Switches — ON or DON HEADSET
5. INTPH Switch — ON
6. Cabin Pressure Source — ISOLATE SOURCE BY
SELECTING L ENG OR R ENG

NOTE: Cabin pressure source selector must remain in each position long enough (approximately 20 seconds) to allow adequate system purging to determine the source of smoke. Refer to SMOKE REMOVAL procedures if necessary. If the smoke or odor persists, immediately land at the nearest suitable airport.

SMOKE REMOVAL

1. Oxygen Masks — DON
2. Smoke Goggles — DON
3. Mic Selectors — OXY MASK
4. SPKR Switches — ON or DON HEADSET
5. INTPH Switch — ON
6. Manual Pressurization Control — DECREASE TO ABSOLUTE
PRESSURE REGULATOR SETTING (14,000 FT MAX)
7. Descend — 15,000 FT OR MINIMUM SAFE ALTITUDE

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CABIN DECOMPRESSION ([CABIN PRESSURE LO] ANNUNCIATOR ILLUMINATED)

⑳



The [CABIN PRESSURE LO] annunciator provides a warning when the cabin altitude exceeds 9,500 ±500 ft.

1. Oxygen Masks — DON
2. Mic Selectors — OXY MASK
3. SPKR Switches — ON or DON HEADSET
4. INTPH Switch — ON
5. Cabin Altitude — CHECK

If Cabin Above 12,500 ft:

6. Passenger Oxygen Control — PULL
7. Determine Cause of Pressure Loss:
 - a. Cabin Pressure Source — BOTH HIGH
 - b. Manual Pressurization Control — FULL INCR
 - c. Cabin Dump Control — CHECK PROPER POSITION

If Cabin Above 14,000 ft:

8. EMERGENCY DESCENT (E-41) — INITIATE
9. CABIN PRESSURE SOURCE — EMER

WARNING: The passenger oxygen system is not capable of providing an adequate oxygen supply for prolonged unpressurized flight at the maximum operating altitude. The highest recommended cabin altitude to which passengers should be exposed for extended flight is 25,000 ft. Passenger safety is not assured for prolonged unpressurized flight above 34,000 ft, since pressure breathing masks are not provided.

If a descent becomes necessary in the event of cabin decompression, allowances should be made for the change in range performance at the lower altitude.

NOTE: Cockpit masks are assumed to be on diluter demand at 30,000 ft and below, 100% oxygen from 30,000 ft to 35,000 ft and pressure breathing above 35,000 ft.

EMERGENCY DESCENT

1. Thrust — IDLE
2. Speed Brakes — EXTEND
3. Autopilot — OFF
4. Initiate Moderate Bank — 45° MAX
5. Cabin Sign — SAFETY
6. Maximum Airspeed — M_{MO}/V_{MO}
7. Transponder — SET 7700

OVERPRESSURIZATION ([CABIN PRESSURE HI] ANNUNCIATOR ILLUMINATED)

②



The [CABIN PRESSURE HI] annunciator provides a warning when the cabin pressure exceeds 9.1 ±.1 PSIG.

1. Cabin Pressure Source — OFF
2. Oxygen Masks — DON
3. Mic Selectors — OXY MASK
4. SPKR Switches — ON or DON HEADSET
5. INTPH Switch — ON

When Differential Pressure Decreases Below 9.1 PSI:

6. Cabin Pressure Source — L ENG or R ENG
7. Manual Pressurization Control — CONTROL DIFFERENTIAL PRESSURE LESS THAN 9.1 PSI

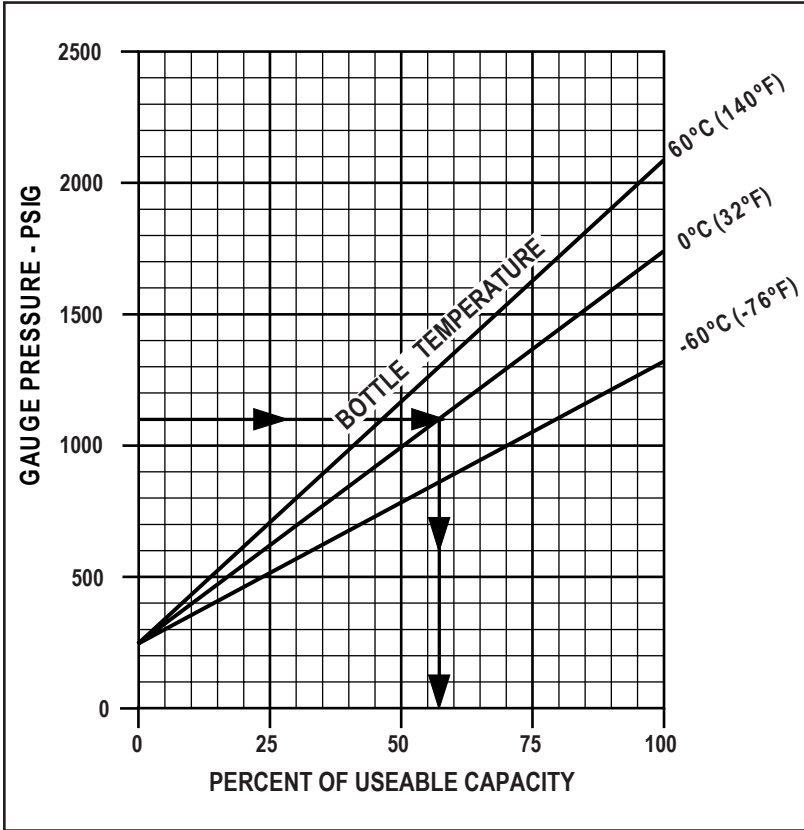
If Differential Pressure Does Not Decrease:

6. Cabin Pressure — DUMP
7. Emergency Descent (E-41) — INITIATE
8. Passenger Oxygen Control — PULL

OXYGEN DURATION

NOTE: A bottle pressure of 1,850 PSIG at 15°C is fully charged (100% capacity). Read duration directly from the Oxygen Duration table.

1. Read the oxygen pressure from the gauge.
2. Determine the OAT (assume OAT to be equal to BOTTLE TEMPERATURE).
3. Determine the percent of usable capacity from the OXYGEN AVAILABLE WITH PARTIALLY FULL BOTTLE graph (E-43) (e.g., 1,100 PSI at 0°C = 57%)
4. Compute the oxygen duration in minutes from the OXYGEN DURATION TABLE (E-43) by multiplying the full bottle duration by the percent of usable capacity, e.g.:
 1. Pilot and copilot plus six passengers.
 2. Cylinder volume = 77 cubic ft.
 3. Duration with a full bottle (30,000 ft = 61 minutes)
 4. Duration with 57% capacity = 0.57 x 61 = 35 minutes

OXYGEN AVAILABLE WITH PARTIALLY FULL BOTTLE

OXYGEN DURATION (MINUTES)

NO. OF USERS	CABIN ALTITUDE (FT)						
	10,000	15,000	20,000	25,000	30,000	35,000	40,000
CREW (2)	373	373	292	188	214	292	359
Passengers							
1	207	209	182	136	150	186	211
2	143	145	132	107	116	136	150
3	109	111	104	88	94	107	116
4	89	90	86	75	80	89	95
5	74	76	72	65	69	75	80
6	64	65	63	57	61	66	69
7	56	57	56	51	54	58	61
8	50	51	50	47	49	52	55
9	45	46	45	45	45	47	49

Based on 100% charge (1,850 PSIG) (1,903 usable Liters - NTPD) (Crew Masks on NORMAL)

WINDSHIELD OVERHEAT ([WSHLD OV HT] ANNUNCIATOR ILLUMINATED)

②③



The [L or R WSHLD OVHT] annunciator will illuminate to warn the pilot of a malfunction in the windshield heating system, which would require manual shutoff of the system.

1. Windshield Anti-Ice (affected side) — OFF

When Annunciator Extinguishes:

2. Windshield Anti-Ice (affected side) — AS REQUIRED, MONITOR WSHLD OV HT ANNUNCIATOR

If Annunciator Remains Illuminated:

3. WSHLD and WSHLD CONT Circuit Breakers (ICE RAIN) (affected side) — PULL

WING ANTI-ICE OVERHEAT ([WING OV HT] ANNUNCIATOR ILLUMINATED)

②④



The [WING OV HT] annunciator will illuminate whenever any one of the six wing over temperature switches closes, indicating an over temperature condition.

1. Wing Anti-Ice — OFF
2. Thrust — REDUCE
3. Icing Environment — AVOID

NOTE: Refer to LANDING WITH ICE ACCUMULATION ON THE WINGS (E-28).

HORIZONTAL STABILIZER ICE PROTECTION SYSTEM FAILURE ([H STAB ICE FAIL] ANNUNCIATOR ILLUMINATED)

25



The [H STAB ICE FAIL] annunciator indicates that the horizontal stabilizer ice protection system has failed.

1. H STAB PROTECT Circuit Breaker (ICE RAIN) — PULL
2. H Stab Deice — OFF
3. Icing Environment — AVOID
4. Flaps (Landing Flaps Setting) — 10°
5. Land Select Switch — FLAP 10°
6. Approach Airspeed — $V_{REF} + 10$ KIAS

NOTE: Refer to the FLAPS 10° APPROACH AND LANDING (E-28). Landing distance will increase approximately 20%.

AIR CONDITIONING SYSTEM OVERPRESSURE OR OVERTEMPERATURE ([AIR COND FAIL] ANNUNCIATOR ILLUMINATED)

26



[AIR COND FAIL] annunciator automatically illuminates when there is a bleed air over temperature/over pressure condition which results in emergency pressurization. This light also illuminates when the cabin air selector switch is placed in the EMER position.

The air conditioning system will switch from normal to emergency pressure mode automatically. Normal system operation may be restored by cycling the cabin pressure source selector (CABIN PRESS) to EMER and back to L ENG or R ENG. If the failure condition persists, the system will again revert to the emergency pressure mode of operation.

1. Cabin Pressure Source — EMER, THEN L ENG OR R ENG

If Annunciator Remains Illuminated:

2. Cabin Pressure Source — EMER, THEN OPPOSITE ENGINE

If Annunciator Illumination Persists:

3. Cabin Pressure Source:
 1. High Altitude — EMER
 2. Low Altitude — OFF

NOTE: If failure persists, the system is operating in emergency pressure mode (automatic provision) and a thrust reduction will be necessary to avoid excessive cabin temperatures. Descent to an altitude where emergency pressurization is not required should be considered.

REFRIGERATION AIR CONDITIONING MALFUNCTION

1. Refrigeration Air Conditioning — OFF, AIR COND ON LIGHT EXTINGUISHED.

If AIR COND ON Light Remains Illuminated:

2. REFRIG COMPR and REFRIG BLOWER CONT
Circuit Breakers (SYSTEMS) — PULL

BLEED AIR DUCT FAILURE ([BL AIR DCT FAIL] ANNUNCIATOR ILLUMINATED)

27



The [BL AIR DCT FAIL] annunciator illuminates when any of the four thermal switches in the aft fuselage closes, indicating bleed air temperature exceeds $350 \pm 10^{\circ}\text{F}$ ($177 \pm 5.5^{\circ}\text{C}$). This may be caused by either a bleed air duct rupture or a bleed air leak in the wing anti-ice manifold.

1. Thrust — REDUCE
2. Wing Anti-Ice (if ON) — OFF
3. Cabin Pressure Source:
 - a. High Altitude — EMER
 - b. Low Altitude — OFF

NOTE: Allow approximately two minutes for system purging. Three shutoff valves are in the bleed air system. Two of them are operated by the cabin pressure source selector (CABIN PRESS) and another is operated by the wing anti-ice (WING ANTI/DEICE) switch. If the annunciator remains illuminated, failure is probably upstream of one of the shutoff valves. If the annunciator extinguishes, failure is probably in the air conditioning system or wing anti-ice system.

If Annunciator Remains Illuminated:

4. Land — NEAREST SUITABLE AIRPORT

If Annunciator Extinguishes:

5. Cabin Pressure Source — BOTH NORM

If Annunciator Re-Illuminates:

6. Cabin Pressure Source — EMER OR OFF

NOTE: If the [BL AIR DCT FAIL] annunciator remains extinguished with the cabin pressure source selector in the EMER or OFF positions, the wing anti-ice may be available for use, provided the annunciator does not re-illuminate.

Refer to LANDING WITH ICE ACCUMULATION ON THE WINGS (E-28).

CABIN AIR TEMPERATURE ([CABIN AIR OV HT] ANNUNCIATOR ILLUMINATED)

⑳



Illumination of the [CABIN AIR OV HT] annunciator indicates excessive temperature in the cabin air duct.

1. Cabin Temperature Control — MAN OR AUTO, FULL COLD

If Annunciator Extinguishes:

2. Cabin Temperature Control — ADJUST AS REQUIRED

If Annunciator Remains Illuminated:

3. Cabin Pressure Source:
 - a. High Altitude — EMER
 - b. Low Altitude — OFF
4. Land — NEAREST SUITABLE AIRPORT

DEFOG OVERTEMPERATURE ([DEFOG AIR OV HT] ANNUNCIATOR ILLUMINATED)

㉑



The [DEFOG AIR OV HT] annunciator will illuminate when the temperature to the defog system exceeds 200°F.

1. Cabin/Cockpit Temperature Controls — MAN OR AUTO, FULL COLD
2. DEFOG AIR OV HT light extinguishes, temperature controls as required.

VACUUM SOURCE FAILURE

1. Cabin Pressure Source (before landing) — OFF

NOTE: Pressurization control will be inoperative. Cabin pressure will go to maximum differential. Turn the cabin pressure control OFF at a reasonable altitude prior to landing. Allow sufficient time (approximately 5-10 minutes) for the cabin pressure to bleed off to zero differential.

CABIN OR AFT FUSELAGE DOOR UNLOCKED ([DOOR UNLOCK] ANNUNCIATOR ILLUMINATED)

30



An illuminated [DOOR UNLOCK] annunciator indicates that either the entrance or aft fuselage door has not been locked.

WARNING: Do not attempt to check the security of the cabin door in flight. Remain as far from the door as possible with seat belts securely fastened.

1. Ensure all occupants have seat belts fastened and remain clear of the door.
2. Cabin Sign — SAFETY
3. Cabin Pressure — REDUCE TO LOWEST VALUE PRACTICAL (ZERO PREFERRED) BY DESCENDING AND/OR SELECTING HIGHER CABIN ALTITUDE SETTING
4. Oxygen — AS REQUIRED
5. Land — NEAREST SUITABLE AIRPORT.

WINDSHIELD CRACKED

The windshield is constructed of two inner structural plies of 0.350 inch stretched acrylic and an outer non-structural ply of 0.125 inch tempered glass. All plies are laminated together with interlayer material. The anti-ice heating system is encapsulated in the interlayer inboard of the outer glass ply.

If a crack develops in the windshield, use of the following procedures will identify which portion of the windshield structure contains the crack and the crew action required.

OUTER GLASS PLY:

View the silver bus bars at each end of the windshield. If the crack appears to be outboard of a bus bar, then it is in the outer glass ply.

1. Pressurized Flight — CONTINUE

CAUTION: Windshield wiper (if installed) may be damaged if used on a cracked surface.

NOTE: Visibility through the windshield may be impaired.

Windshield anti-ice may be inoperative in the area of the crack.

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EITHER ACRYLIC STRUCTURAL PLY:

The crack will appear to be inboard of a silver bus bar. Place a dot on the inboard surface of the windshield with a pen. Viewing the windshield and dot at an angle (45°) will assist in judging how deep into the windshield the crack has penetrated. Each ply is 0.350 inch.

1. Oxygen Masks — DON
2. Mic Selectors — OXY MASK
3. SPKR Switches — ON OR DON HEADSET
4. INTPH Switch — ON
5. Manual Pressurization Control — DECREASE TO ABSOLUTE PRESSURE REGULATOR SETTING (14,000 FT MAX).
6. Passenger Oxygen Control — PULL
7. Descend — 15,000 FT OR MINIMUM SAFE ALTITUDE
8. Unpressurized Flight — CONTINUE

BOTH ACRYLIC STRUCTURAL PLIES:

A crack through both plies will appear to be nearly an inch deep.

1. Oxygen Masks — DON
2. Mic Selectors — OXY MASK
3. SPKR Switches — ON OR DON HEADSET
4. INTPH Switch — ON
5. Manual Pressurization Control — DECREASE TO ABSOLUTE PRESSURE REGULATOR SETTING (14,000 FT MAX)
6. Passenger Oxygen Control — PULL
7. Descend — 15,000 FT OR MINIMUM SAFE ALTITUDE
8. Land — NEAREST SUITABLE AIRPORT

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DC ELECTRICAL

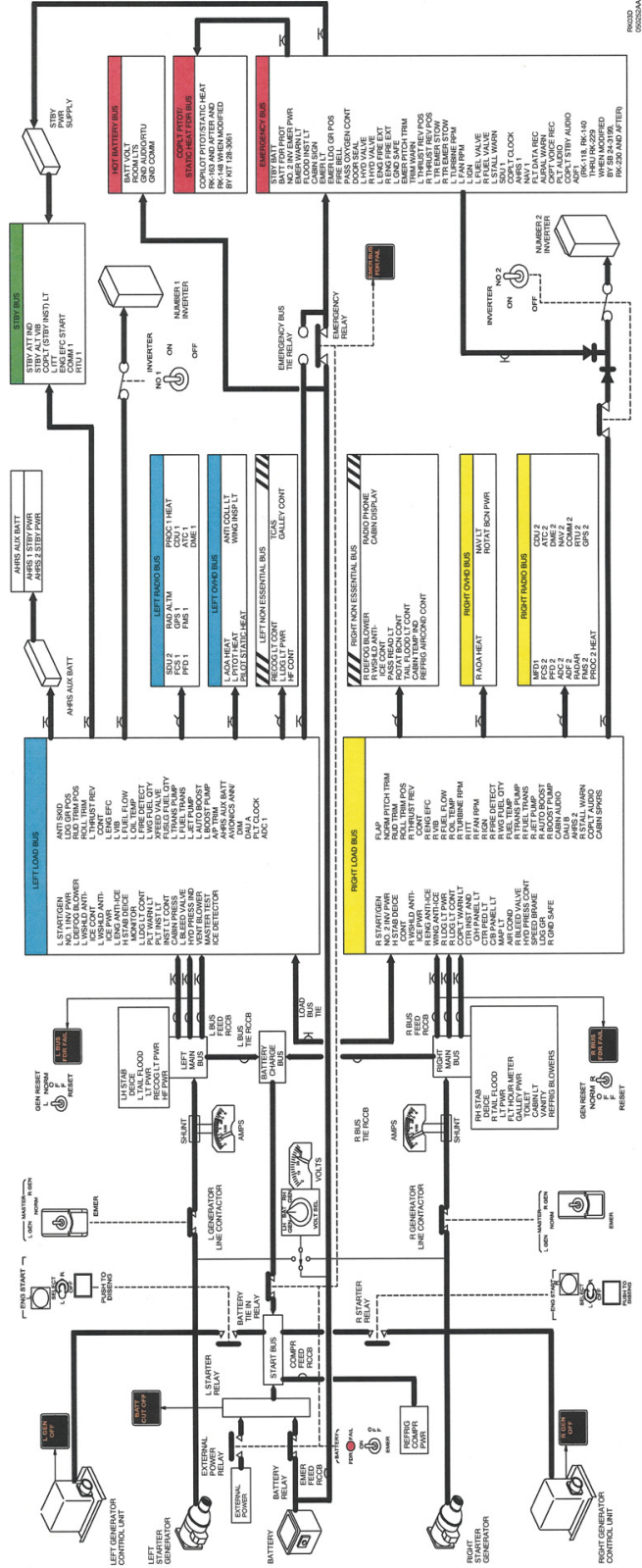
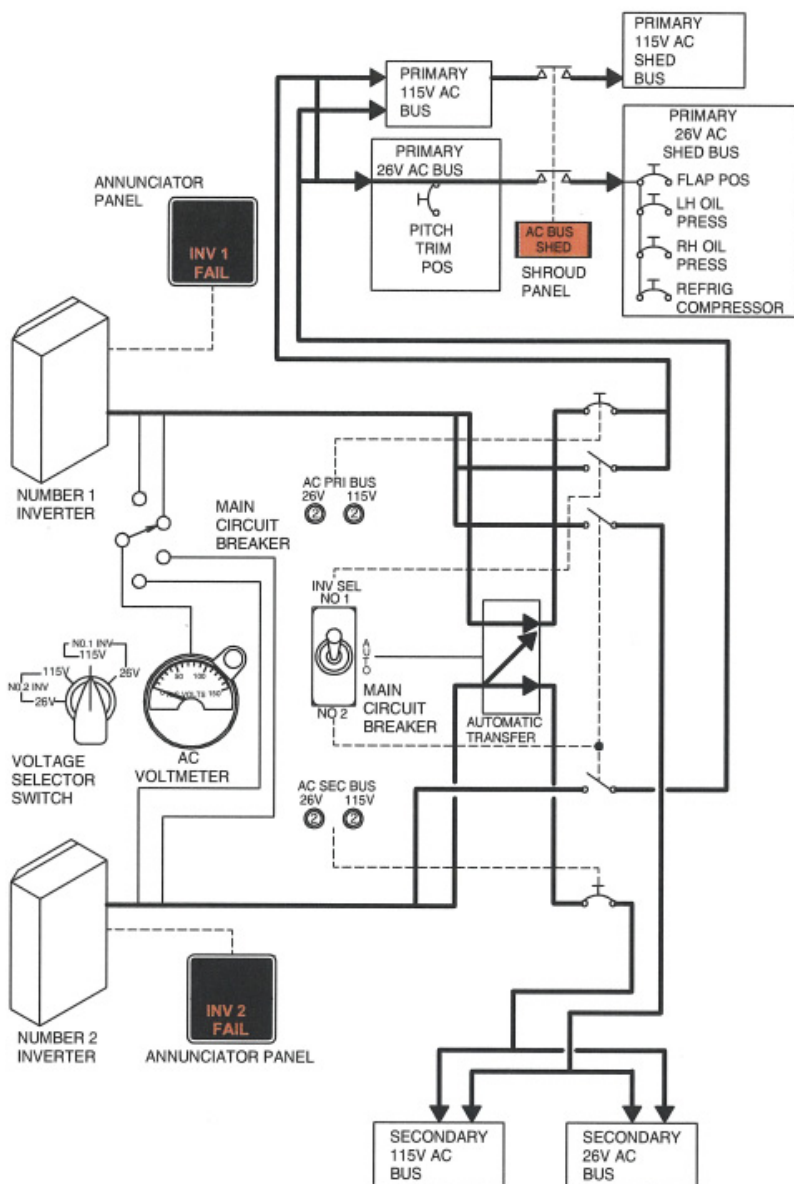


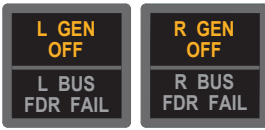
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AC ELECTRICAL



LOSS OF BOTH GENERATORS (L & R GEN OFF ANNUNCIATORS ILLUMINATED)

③1



Illumination of the [L and R GEN OFF] annunciators indicates that the respective generator has been isolated from the main bus.

1. GEN FLD and START/GEN Circuit Breakers (Aft Main Panel) — CHECK
2. Generator Reset (L & R) — RESET/NORM

If Only One Generator Comes ON:

3. Perform SINGLE GENERATOR FAILURE procedure (Page E-57).

If Neither Generator Comes ON:

4. Battery — EMER
5. Master Generator Switches — EMER
6. Pitch Trim — EMER
7. Icing Environment — AVOID
8. Land — NEAREST SUITABLE AIRPORT
9. Cabin Pressure Control — SET
10. Standby Altimeter — SET
11. V_{REF} , N_1 , AOA, LDG DIST — CONFIRM
12. Cabin Sign — VERBAL BRIEFING REQUIRED
13. Flaps — WILL NOT EXTEND
14. Airspeed — $V_{REF} + 20$ KIAS
15. Landing Gear — ALTERNATE GEAR EXTENSION (E-70)

WARNING: When both Master Generator (MASTER) switches and the BATTERY switch are selected to EMER, all electrical power except standby power and the battery fed Emergency Bus is lost.

Normal pitch trim is inoperative. Use Emergency Pitch Trim when operating on the Emergency Bus. All right engine instrument indications will be lost. Each engine EFC will revert to manual with associated thrust loss. Engine anti-ice valves will open, and appropriate thrust settings must be used. The listed equipment (E-54 - E-55) will remain operable, some for a limited duration, after the loss of both generators.

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RK-1 THRU RK-48, EXCEPT RK-45

- Standby Attitude Indicator
- *Standby Airspeed Indicator
- *Standby Altimeter
- *Standby Magnetic Compass
- Left Engine N₁, N₂, ITT and Lighting
- Instrument Flood lights
- Swivel (gooseneck) Lights
- No.1 Comm
- No.1 Radio Tuning Unit
- Pilot's Headphone and Hand Mic (Interphone will be inoperative)
- Copilot's Headphone/Speaker and Boom Mic/Hand Mic
- No. 1 Nav
- Pilot's Sensor Display Unit (SDU 1)
- Pilot's Attitude Heading Reference System (AHRS 1)
- The following hydraulically powered systems will not be functional:
 - Landing Gear (use ALTERNATE GEAR EXTENSION (E-70))
 - Flaps
 - Speed Brakes
 - Thrust Reversers
 - Anti-Skid System
- Landing Distance will increase approximately 40%.

* Equipment operation is not time limited.

RK-45, RK-49 THRU RK-162

- Standby Attitude Indicator
- *Standby Airspeed Indicator
- *Standby Altimeter
- *Standby Magnetic Compass
- Left Engine N₁, N₂, ITT and Lighting
- Instrument Flood Lights
- Swivel (gooseneck) Lights or Map Lights
- No.1 Comm
- No.1 Radio Tuning Unit
- ADF 1 (when modified in accordance with Raytheon Aircraft Service Bulletin 24-3199)
- Interphone
- Pilot's and Copilot's Headphone/Speaker and Boom Mic/Hand Mic
- No. 1 Nav
- Pilot's Sensor Display Unit (SDU 1)
- Pilot's Attitude Heading Reference System (AHRS 1)

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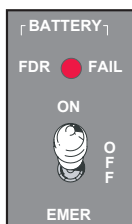
- The following hydraulically powered systems will not be functional:
 - Landing Gear (use ALTERNATE GEAR EXTENSION (E-70))
 - Flaps
 - Speed Brakes
 - Thrust Reversers
 - Anti-Skid System
 - Landing Distance will increase approximately 40%.
- * Equipment operation is not time limited.

RK-163 AND AFTER

- Standby Attitude Indicator
 - * Standby Airspeed Indicator
 - * Standby Altimeter
 - * Standby Magnetic Compass
 - Left Engine N₁, N₂, ITT and Lighting
 - Instrument Flood Lights
 - Swivel (gooseneck) Lights or Map Lights
 - No.1 Comm
 - No.1 Radio Tuning Unit
 - ADF 1 (when modified in accordance with Raytheon Aircraft Service Bulletin 24-3199, and RK-230 and after)
 - Interphone
 - Pilot's and Copilot's Headphone/Speaker and Boom Mic/Hand Mic
 - No.1 Nav
 - Pilot's Sensor Display Unit (SDU 1)
 - Pilot's Attitude Heading Reference System (AHRS 1)
 - Copilot Pitot/Static Heat
 - The following hydraulically powered systems will not be functional:
 - Landing Gear (use ALTERNATE GEAR EXTENSION (E-70))
 - Flaps
 - Speed Brakes
 - Thrust Reversers
 - Anti-Skid System
 - Landing Distance will increase approximately 40%.
- *Equipment operation is not time limited.

BATTERY FEEDER FAILURE ([BATT FDR FAIL] LIGHT ILLUMINATED) (OVERHEAD PANEL)

32



The [BATT FDR FAIL] light illuminates anytime a feeder-fault-sensing signal is supplied from the fault-protection unit, the battery-feeder-protection circuit breaker is tripped or the EMER feed RCCB is tripped.

Denotes One Of Three Conditions:

1. Battery ground fault (BATT CUT OFF and EMER BUS FDR FAIL annunciators will also be illuminated).
2. EMER BUS FDR circuit breaker (DC PWR) disengaged (EMER BUS FDR FAIL annunciator illuminated).
3. BATT FDR PROT circuit breaker (BATT) disengaged.

If [BATT CUT OFF] Annunciator Is Illuminated:

4. Battery — OFF, THEN ON

If Annunciator Re-Illuminates, Or Will Not Extinguish:

5. Battery — OFF

If [EMER BUS FDR FAIL] Annunciator Is Illuminated:

6. EMER BUS FDR Circuit Breaker (DC PWR) — CHECK

If Neither Of The Above Annunciators Are Illuminated:

7. BATT FDR PROT Circuit Breaker (BATT) — CHECK

EMERGENCY BUS FEEDER FAILURE ([EMER BUS FDR FAIL] ANNUNCIATOR ILLUMINATED)

33



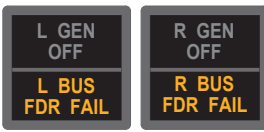
The [EMER BUS FDR FAIL] annunciator illuminates whenever the circuit between the emergency relay and emergency feed RCCB opens.

1. EMER BUS FDR Circuit Breaker (DC PWR) — CHECK

NOTE: The Emergency Bus is powered by the Left Load Bus with the Emergency Bus feeder circuit breaker disengaged. The battery can no longer power the Emergency Bus. Should the Left Load Bus fail in this condition, the Emergency Bus cannot be powered.

BUS FEEDER FAILURE ([L OR R BUS FDR FAIL] ANNUNCIATOR ILLUMINATED)

34



Illumination of the [L or R BUS FDR FAIL] annunciator indicates that the No.1 or No.2 bus feed RCCB has tripped and the No.3 bus feed RCCB has energized.

NOTE: Annunciator illumination indicates a feeder cable circuit breaker has opened between a Main Bus and its respective Load Bus. The standby feeder has been activated.

1. No. 1 and No. 2 BUS FDR Circuit Breakers
(DC PWR) (affected side) — INDIVIDUALLY PULL AND RESET
2. Ammeters — MONITOR

BATTERY CUTOFF ([BATT CUT OFF] ANNUNCIATOR ILLUMINATED)

35



[BATT CUT OFF] annunciator illumination occurs when the battery relay has opened.

Annunciator illumination indicates the battery relay is open. Normally, this annunciator illuminates any time the battery switch is in the OFF or EMER position, and electrical power is being supplied by a generator. Battery charging will not occur with the [BATT CUT OFF] annunciator illuminated.

SINGLE GENERATOR FAILURE ([GEN OFF] ANNUNCIATOR ILLUMINATED)

1. Voltage — DETERMINE MALFUNCTIONING GENERATOR
2. Generator Circuit Breakers (GEN) (affected side) — CHECK
3. Generator Reset (affected side) — RESET/NORM

If Unable To Reset:

4. Electrical Load — MONITOR/REDUCE IF NECESSARY
5. Generator Reset (affected side) — OFF
6. N₂ (operating generator) — 58% (MIN)

INVERTER FAILURE ([INV 1 FAIL OR INV 2 FAIL] ANNUNCIATOR ILLUMINATED)

36



Illumination of the [INV 1 FAIL] or [INV 2 FAIL] annunciators indicates that there is a fault in the AC inverter system.

1. Inverter and Inverter Control Circuit Breakers
(AC PWR & CONT) — CHECK
2. Inoperative Inverter (if annunciator stays illuminated) — OFF
3. AC Volts (select operative inverter) — MONITOR
4. Inverter Select — SELECT OPERATING INVERTER IF REQUIRED

NOTE: Illumination of the AC BUS SHED annunciator is advisory only and indicates a combination inverter/load bus malfunction that will result in the loss of the flap position indicator and both oil pressure indicators.

PITOT HEAT FAILURE ([PITOT HT OFF] ANNUNCIATOR ILLUMINATED)

37



Illumination of the [PITOT HT OFF] annunciator indicates that either the pitot heater switches are not ON, or there is a failure in the system.

1. Pitot Heat — VERIFY ON
2. Operating Lights — DETERMINE INOPERATIVE SYSTEM

WARNING: Flight in visible moisture without pitot heat may result in erratic operation of the airspeed and mach indicators.

If Erratic Operation Of The Airspeed And Mach Indicator Is Observed:

3. Air Data Reversion — SELECT CROSS-SIDE ADC
4. Air Data Control — USE CROSS-SIDE AIR DATA SELECT PANEL

TRIM SYSTEM MALFUNCTIONS

When the trim interrupt (TRIM INT/AP DISENG) switch is engaged, all trim systems except the emergency pitch trim are interrupted and the autopilot and yaw damper are disengaged. When the pitch trim or roll and rudder trim (ROLL & RUD TRIM) selector switch is set to DISC, the respective pitch or roll and rudder trim system will be inoperative.

PITCH TRIM RUNAWAY OR FAILURE

1. Trim Int/AP Disengage Switch — PUSH AND HOLD
2. Pitch Trim Selector — DISC
3. Trim Int/AP Disengage Switch — RELEASE
4. Pitch Trim Selector — EMER
5. Emergency Pitch Trim — AS REQUIRED
6. Land — AS SOON AS PRACTICAL

WARNING: If a trim system malfunction has occurred, do not attempt to use the failed trim system.

NOTE: If trim is in motion for more than five seconds, a warning tone sounds. Autopilot engagement is not possible with the Pitch Trim Selector in the EMER position; however, the yaw damp can be engaged.

ROLL TRIM RUNAWAY OR FAILURE

1. Trim Int/AP Disengage Switch — PUSH AND HOLD
2. Roll Trim Select Switch — L or R
3. Trim Int/AP Disengage Switch — RELEASE

NOTE: Only the selected roll trim surface is operable with the control wheel switch.

If Runaway Stops:

4. Control Wheel Trim — RETRIM
5. Land — AS SOON AS PRACTICAL

If Runaway Resumes:

6. Repeat Steps 1 through 3 and select opposite at Step 2.

If Runaway Stops:

7. Control Wheel Trim — RETRIM
8. Land — AS SOON AS PRACTICAL

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If Runaway Persists:

9. Trim Int/AP Disengage Switch — PUSH AND HOLD
10. Roll & Rudder Trim Switch — DISC
11. Trim Int/AP Disengage Switch — RELEASE
12. ROLL TRIM Circuit Breaker (SYSTEMS) — PULL
13. Roll & Rudder Trim Switch — NORM
14. Land — AS SOON AS PRACTICAL

RUDDER TRIM RUNAWAY OR FAILURE

1. Trim Int/AP Disengage Switch — PUSH AND HOLD
2. Roll & Rudder Trim Switch — DISC
3. Trim Int/AP Disengage Switch — RELEASE
4. RUD TRIM Circuit Breaker (SYSTEMS) — PULL
5. Roll & Rudder Trim Switch — NORM
6. Land — AS SOON AS PRACTICAL

**SPEED BRAKES REMAIN EXTENDED
([SPD BRAKE EXT] ANNUNCIATOR ILLUMINATED)**

38

AC BUS SHED	SPD BRAKE EXT	ICING
_____	ENG SYNC ON	LDG FLAP DELAY
EFC AUX PWR ON	EMER LT NO ARM	_____

When the speed brake is not fully retracted, the [SPD BRAKE EXT] annunciator will illuminate.

1. Speed Brake Emergency Retract — ACTUATE

NOTE: If [SPD BRAKE EXT] annunciator remains illuminated, visually check the speed brake position. Roll forces with the speed brakes extended will increase and higher thrust settings will reduce range.

If still extended, land using the following procedures:

2. Flaps (landing flap setting) — 10°
3. Land Select Switch — FLAPS 10°
4. Airspeed — $V_{REF} + 15$ KIAS

CAUTION: With speed brake extended, do not extend flaps beyond 10° in flight.

NOTE: Level flight stall speeds will increase 5 Kts and landing distance will increase approximately 20%.

RUDDER BOOST FAILURE ([RUD BST FAIL] ANNUNCIATOR ILLUMINATED)

③9



Illumination of the [RUD BST FAIL] annunciator indicates a failure in the rudder boost system.

1. FCS 1 and FCS 2 Circuit Breakers (FLT INST) — CHECK
2. Rudder Boost — OFF, THEN ARM
3. RUD BST FAIL Annunciator — EXTINGUISHED

If Annunciator Remains Illuminated:

4. Rudder Boost — OFF

NOTE: Significantly higher rudder pedal forces will occur during single engine operation with the rudder boost system inoperative.

TAKEOFF MISTRIM (HORN SOUNDS)

1. Thrust — IDLE
2. Pitch Trim Position — CHECK

NOTE: If pitch trim is not in the takeoff range, takeoff mistrim warning horn will sound when either thrust lever is advanced to takeoff position.

MAIN FLAP ASYMMETRY ([FLAP ASYM] ANNUNCIATOR ILLUMINATED)

④0



The [FLAP ASYM] annunciator illuminates when an asymmetrical difference of 5°-7° between the main flaps is detected.

WARNING: During operation in icing conditions, if the flap position indication is greater than 10°, maintain the flap lever position at 10°. Land or exit icing conditions within twenty minutes after initial flap selection.

CAUTION: Flaps cannot be moved from position where asymmetry occurred. Observe maximum speed limits appropriate to flap position of most extended flap. The flap position indicator shows position of right flap only. The relative position of the left flap may be determined by the direction of airplane roll.

1. Maintain control using spoilers and rudder
2. Speed Brakes (if extended) — RET
3. Re-trim to reduce control forces
4. Airspeed — 160 KIAS (MAX)

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5. FLAP Circuit Breaker (SYSTEMS) — PULL
6. Landing Approach Airspeed:
 - a. Flap Position Indicator 0 - 15° — $V_{REF} + 20$ KIAS
 - b. Flap Position Indicator 15 - 30° — $V_{REF} + 10$ KIAS
7. Land — NEAREST SUITABLE AIRPORT

NOTE: Landing distance will increase approximately 35% for $V_{REF} + 20$ KIAS approach and 20% for $V_{REF} + 10$ KIAS approach.

AFT FLAP ASYMMETRY ([FLAP ASYM] ANNUNCIATOR NOT ILLUMINATED)

1. Maintain control using spoilers and rudder.
2. Speed Brakes (if extended) — RET
3. Retrim to reduce control forces.
4. Airspeed — 200 KIAS (Max)
5. FLAP ASYM Annunciator — EXTINGUISHED
6. Airspeed (flaps 30°) — $V_{REF} + 10$ KIAS

NOTE: Lack of illumination of the [FLAP ASYM] annunciator confirms the main flaps are not asymmetrical.

NOTE: Landing distance will increase approximately 20%.

ELEVATOR/RUDDER CONTROL SYSTEM BINDING

NOTE: If high control forces are encountered after the autopilot or yaw damp has been disconnected or rudder boost deactivates, an autopilot servo may have failed to disengage. The forces encountered may be as high as 50 lbs in roll, 100 lbs in pitch, or 200 lbs in yaw.

If This Condition Occurs:

1. Airplane — STABILIZE
2. FCS 1 and FCS 2 Circuit Breakers (FLT INST) — PULL
3. Descend — 28,000 FT OR LOWER
4. Icing Conditions — AVOID
5. Land — NEAREST SUITABLE AIRPORT

NOTE: Pulling the FCS 1 and FCS 2 circuit breakers will eliminate most of the control resistance and will deactivate the rudder boost, yaw damp and flight director/autopilot.

Significantly higher rudder pedal forces will occur during single-engine operation with the rudder boost system inoperative.

JAMMED STABILIZER**NOSE DOWN POSITION**

1. Move the center of gravity aft by moving passengers to aft seats if possible.
2. Follow NO-FLAP APPROACH AND LANDING procedures (E-27) with help of copilot if necessary to ease control forces.

NOSE UP POSITION

1. Follow normal procedures for landing.

JAMMED ELEVATOR

1. Use pitch trim to control airplane longitudinally.
2. Fly a flat approach using 30° flaps.
3. Airspeed — $V_{REF} + 10$ KIAS (MIN)
4. Plan to touch down with minimum flare using stabilizer trim in flare.

NOTE: Landing distance will increase approximately 20%.

JAMMED SPOILER

1. Use roll trim for lateral control.
2. Flaps — 30°
3. Approach Speed — $V_{REF} + 10$ KIAS
4. Land — NEAREST SUITABLE AIRPORT

NOTE: Landing distance will increase approximately 20%.

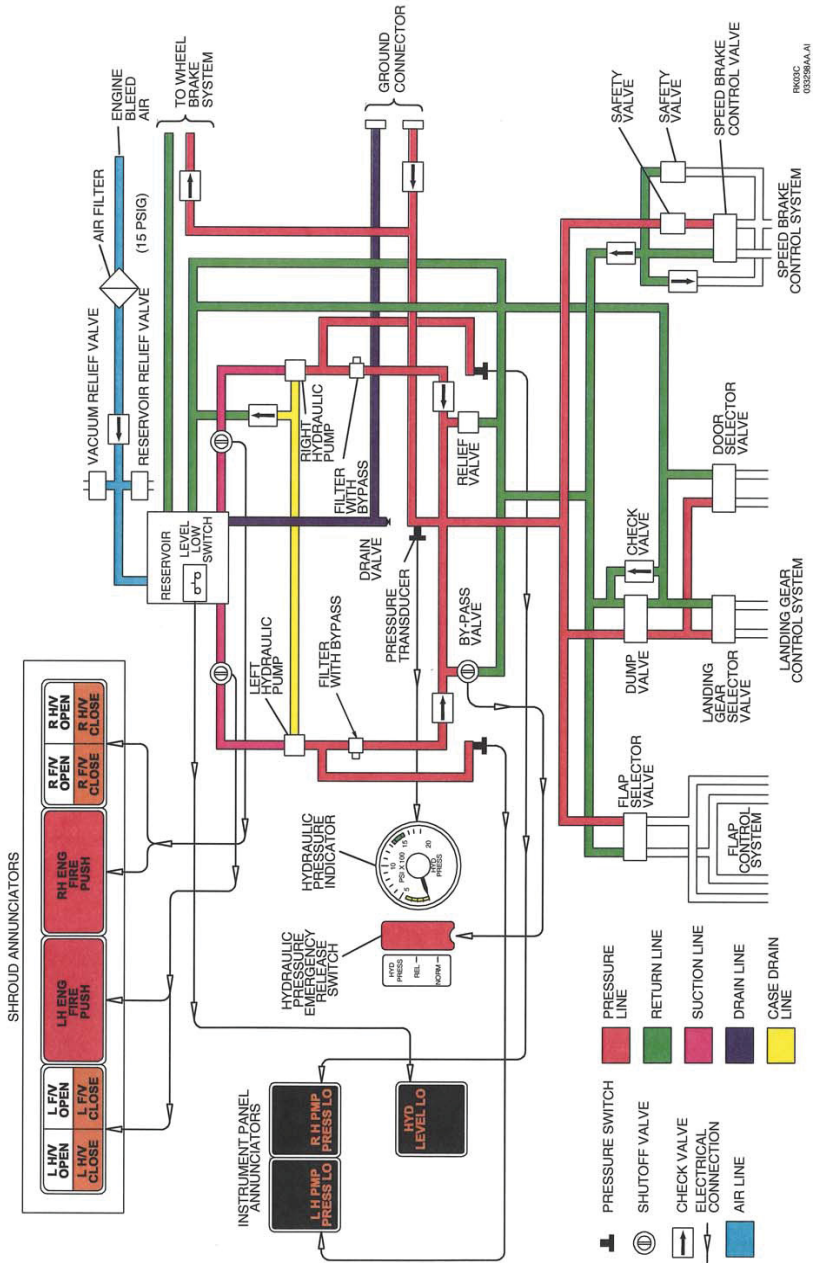
JAMMED RUDDER

1. Land on a runway most nearly aligned with the wind.
2. Follow normal procedures for landing.

WARNING: If the rudder is jammed out of the neutral position, the nosewheel will be cocked on landing. Move center of gravity aft if possible and hold nosewheel off as long as possible during the landing roll. Use differential braking to maintain directional control.

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HYDRAULIC SYSTEMS


 R6203C
 032596AA-1

LOW HYDRAULIC FLUID QUANTITY ([HYD LEVEL LO] ANNUNCIATOR ILLUMINATED)

④1



The [HYD LEVEL LO] annunciator gives warning that the hydraulic fluid level in the reservoir is approximately 0.61 ±0.09 GAL.

If Hydraulic Pressure Is Normal:

1. Limit use of systems requiring hydraulic power to the minimum necessary to complete the flight.

LOW HYDRAULIC PRESSURE ([L OR R H PMP PRESS LO] ANNUNCIATOR ILLUMINATED)

④2



An illuminated [L or R H PMP PRESS LO] annunciator indicates that the hydraulic pressure upstream of the pressure line filter is below 750 ±100 PSIG.

1. Hydraulic Pressure Gauge — CHECK

If hydraulic pressure gauge reading is normal, this indicates one hydraulic pump is inoperative.

NOTE: After prolonged flight in cold temperatures, followed by a rapid descent, one or both [H PMP PRESS LO] annunciators may illuminate momentarily when gear down is selected, accompanied by a low pressure indication. Gear extension time may be increased slightly. Increasing N₂ may assist pressure recovery.

If Hydraulic Pressure Is Zero:

2. HYD PRESS REL Switch — GUARD DOWN/NORM
3. Plan to execute ALTERNATE GEAR EXTENSION (E-70), NO-FLAP APPROACH AND LANDING (E-27) and POWER BRAKE FAILURE (E-71).
4. THE FOLLOWING HYDRAULICALLY POWERED SYSTEMS WILL NOT BE FUNCTIONAL:
 - Landing Gear (Use ALTERNATE GEAR EXTENSION (E-70))
 - Flaps
 - Speed Brakes
 - Thrust Reversers
 - Power Brakes (use EMER brakes)

NOTE: Landing distance will increase approximately 90%.

HIGH HYDRAULIC PRESSURE

1. HYD PRESS REL Switch — GUARD UP/REL

CAUTION: If hydraulic pressure was 1,850 PSI or above, do not move switch to NORM position. Plan to execute ALTERNATE GEAR EXTENSION (E-70), NO FLAP APPROACH AND LANDING (E-27) and POWER BRAKE FAILURE (E-71).

NOTE: Both [L and R H PMP PRESS LO] annunciators will illuminate when the hydraulic pressure (HYD PRESS) switch is placed in the REL position.

When Hydraulic Power Is Required:

2. HYD PRESS REL Switch — GUARD DOWN/NORM

After Using Hydraulic Power:

3. HYD PRESS REL Switch — GUARD UP/REL

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LANDING GEAR HANDLE LOCK**If Landing Gear Handle Is Locked In Down Position In Flight:**

1. Landing Gear Handle
DOWN LOCK RELEASE Button — PUSH AND HOLD
2. Landing Gear Handle — UP
3. Landing Gear Circuit Breaker (SYSTEMS) — CHECK

LANDING GEAR NOT DOWN AND LOCKED

Gear handle down, no gear movement (no sound of movement, no green down and locked lights and no red in transit light). Use ALTERNATE GEAR EXTENSION procedure (E-70).

One or more green down and locked light(s) not illuminated and red in transit light is illuminated or two or more green down and locked lights not illuminated. Use ALTERNATE GEAR EXTENSION procedure (E-70).

One green down and locked light not illuminated and red in transit light is not illuminated. Red in transit light was illuminated while gear extension was in process.

1. Press IND LTS Test Switch — CHECK RED IN TRANSIT LIGHT

If Red In Transit Light Illuminates:

2. Set flaps greater than 20°.
If warning horn does not sound, land the airplane normally.
If warning horn does sound, proceed to ALTERNATE GEAR EXTENSION procedure (E-70).

If Red In-Transit Light Does Not Illuminate:

3. Proceed to ALTERNATE GEAR EXTENSION procedure (E-70)

ALTERNATE GEAR EXTENSION

1. Landing Gear Handle — DOWN
2. Landing Gear Circuit Breaker (SYSTEMS) — PULL
3. Airspeed — 150 KIAS (MAX)
4. Emergency Landing Gear Down Handle (AUX GEAR CONTROL) — PULL
5. If necessary, yaw airplane to achieve gear down lock.
6. One Red and Three Green Lights — ILLUMINATED
7. Emergency Landing Gear Down Handle (AUX GEAR CONTROL) — PUSH IN
8. Emergency Door Close Handle — PULL
9. Unlocked Light (red) — EXTINGUISHED
10. Emergency Door Close Handle — PUSH IN

CAUTION: Do not recycle the landing gear handle.

NOTE: Once the emergency door close handle is pulled, the nitrogen system and the landing gear hydraulic system must be serviced prior to the next flight.

POWER BRAKE FAILURE

1. Break Safety Wire and Remove Guard Clip on Emergency Brake Handle.
2. Emergency Brakes — APPLY GRADUALLY

CAUTION: Landing distance will increase approximately 50%.

Pull emergency brake handle, gradually increasing force. Avoid cycling the brake handle to conserve air pressure. At least (7) applications are available with full system.

ANTI-SKID SYSTEM FAILURE ([ANTI SKID FAIL] ANNUNCIATOR ILLUMINATED)

(43)



[ANTI SKID FAIL] annunciator illumination indicates the anti-skid system has failed or the Anti-Skid switch is in the OFF position.

1. Anti-Skid — OFF

CAUTION: Landing distance will increase with Anti-Skid OFF.

Refer to Anti-Skid OFF landing performance data. Apply brakes steadily, gradually increasing force to avoid skidding.

ANTI-SKID SYSTEM MALFUNCTIONS

MALFUNCTION	RESULTS
One ground safety switch is inoperative	Normal power brakes with anti-skid down to approximately 10 Kts. Then power brakes to a stop.
One spin generator is inoperative	Normal power brakes and anti-skid appears normal; however, anti-skid will be using one signal. Therefore, there will be reduced efficiency, and the anti-skid will drop out at approximately 20 Kts.
Both ground safety switches are inoperative	Anti-skid spinup override provides normal brakes and anti-skid down to 37-47 Kts. Then no brakes with anti-skid switch ON.
Both spin generators are inoperative.	No anti-skid. Power brakes to a stop.
Hubcap comes off after touchdown	No brakes until anti-skid switch is placed in the OFF position.

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**AUTOPILOT TRIM FAIL
([AP PITCH TRM FAIL OR AP ROLL TRM FAIL]
ANNUNCIATOR ILLUMINATED)**

(44)



[AP PITCH TRM FAIL] or [AP ROLL TRM FAIL] annunciators illuminate when the pitch or roll trim follow-up function of the autopilot has failed.

NOTE: Illumination of the AP PITCH TRM FAIL/AP ROLL TRM FAIL annunciators alerts the pilot that the pitch or roll trim follow-up function of the autopilot has failed. Upon disconnect, be prepared to accept the out-of-trim forces.

1. Trim Indicators — CHECK FOR PROPER POSITION FOR FLIGHT CONDITION
2. Trim Int/AP Disengage Switch — PUSH
3. Trim — RETRIM AS NECESSARY

AUTOPILOT OVERSPEED RECOVERY

If the airspeed exceeds $V_{MO} + 10$ KIAS/ $M_{MO} + 0.015$ Mach, the autopilot will enter an overspeed recovery mode. Overspeed recovery mode commands a pitch up to decelerate and maintain $V_{MO} - 5$ KIAS/ $M_{MO} - 0.01$ Mach. If an overspeed occurs while the autopilot is engaged:

1. Thrust — IDLE
2. Vertical Mode — RESELECT AS REQUIRED

FLIGHT DIRECTOR MALFUNCTIONS

NOTE: Symptoms of this type of failure include departure from the intended flight path, failure to follow NAV, LOC or GS commands and attitudes exceeding defined limits. Attitude information on the PFD should remain usable. The automatic trim system will operate correctly, such that no excessive control wheel loads will be present upon disconnect. Due to the level of redundancy and monitoring in the autopilot, only Flight Director malfunctions can occur.

1. Trim Int/AP Disengage Switch — PUSH
2. Airplane Altitude — RECOVER
3. On an Instrument Approach — INITIATE MISSED APPROACH

MAXIMUM ALTITUDE LOSSES

The maximum altitude losses observed during malfunction tests were:

- Climb — 150 ft
- Cruise — 180 ft
- Descent — 200 ft
- Maneuvering — 100 ft
- Approach/ILS Coupled — 23 ft
- One Engine Inoperative Approach/ILS Coupled — 16 ft

AUTOPILOT DISENGAGEMENT

The autopilot can be disengaged by:

1. Depressing the Trim Int/AP disengage switch on either control wheel (Yaw Damp will disengage).
2. Depressing the go-around button on the left thrust lever (Yaw Damp remains engaged).
3. Actuation of the center button on either control wheel trim switch (Yaw Damp remains engaged).
4. Moving the A/P engage lever to the disengaged position (Yaw Damp remains engaged).
5. Selecting the EMER position of the pitch trim selector switch (Yaw Damp remains engaged).

Autopilot disengagement will initiate an aural tone. The tone can be cancelled by a second actuation of the:

6. Trim Int/AP disengage switch.
7. Go-around button.
8. Center button on the control wheel trim switch.

WARNING: In flight, do not overpower the autopilot in pitch or roll. The trim will operate in the direction opposing the overpower force, which will result in large out-of-trim forces.

AIR DATA COMPUTER FAILURE**Cockpit Indications:**

Red boxed IAS, ALT, or VS displayed on PFD.

Pitch trim reverts to low trim rate (pilot's side Air Data Computer failure).

1. Standby Instruments — MONITOR
2. ADC Circuit Breaker (FLT INST) (Affected Side) — CHECK

If Circuit Breaker Will Not Reset:

3. Air Data Reversion — SELECT CROSS-SIDE ADC
4. Air Data Control — USE CROSS-SIDE AIR DATA SELECT PANEL
5. Continue flight.

NOTE: In the event of a balked landing go-around with the pilot's ADC inoperative, the low trim rate may result in control forces higher than normal.

YAW DAMP FAILURE

1. FCS 1 and FCS 2 Circuit Breakers (FLT INST) — CHECK
2. Yaw Damp — TRY TO ENGAGE

If Unsuccessful:

3. Yaw Damp — OFF
4. Flight may be continued below 28,000 ft.

SINGLE RADIO TUNING UNIT (RTU) FAILURE

1. Failed RTU Switch (Reversionary Panel) — DSABL
2. Tune All Radios — USE CROSS-SIDE RTU OR EITHER CDU

DUAL RADIO TUNING UNIT (RTU) FAILURE

1. Both RTU Switches (Reversionary Panel) — DSABL
2. COMM 1 and NAV 1 — TUNE USING THE PILOT'S CDU

NOTE: COMM 2 and NAV 2 radios cannot be retuned. ADF frequencies and ATC (transponder) codes cannot be retuned. DME frequencies cannot be retuned. Frequencies and codes that were tuned at the time of failure will remain active.

TUNING RADIOS WITH RADIO REMOTE TUNING DISABLED (RMT TUNE DSABL)

If a malfunction occurs that causes any radios to tune themselves (other than NAV Auto-Tuning) or radio tuning is unsuccessful through the CDUs:

1. REMOTE TUNE DSABL Switch — RMT TUNE DSABL
2. Tune all radios by using the RTUs.

NOTE: When not required, the RMT TUNE DSABL switch should be in the NORM position. NAV Auto-Tuning is disabled when the switch is in the RMT TUNE DSABL position.

ELECTRONIC FLIGHT DISPLAY MESSAGES

Each of the Electronic Flight Displays (EFD) is programmed with messages to indicate specific faults within that system. Those messages are summarized as follows:

PRIMARY FLIGHT DISPLAYS (PFD)			
MESSAGE	COLOR	CAUSE	ACTION REQUIRED
None	None	Display failure	Monitor standby instruments. Select PFD REV. Note: Copilot may not have reversionary capability depending on panel configuration.
DISPLAY TEMP	Red boxed	PFD over temp	Monitor standby instruments. Select PFD REV. Note: Copilot may not have reversionary capability depending on panel configuration.
ATT	Red	On-side attitude failed	Monitor standby attitude gyro. Select cross-side AHRS.
ATT 1 or ATT 2	Yellow	Cross-side attitude displayed	None. Comparators are OFF. Autopilot cannot be engaged in a cross-side display mode.
HDG	Yellow boxed	Pilot's and copilot's AHRS disagree in magnetic heading	Depress pilot's and copilot's FAST SLAVE buttons. If conditions persist: Select windshield heat to LOW; defog fans OFF. Monitor magnetic compass. Select cross-side AHRS on reversionary panel with failed AHRS.
MAG	Red boxed	Displayed heading failed	Select cross-side AHRS.
MAG 1 or MAG 2	Yellow	Cross-side heading displayed	None. Heading comparators are OFF.
PITCH	Yellow boxed	Pilot's and copilot's AHRS disagree in pitch attitude	Monitor standby attitude gyro. Select cross-side AHRS on reversionary panel with failed AHRS.
ROLL	Yellow boxed	Pilot's and copilot's AHRS disagree in roll attitude	Monitor standby attitude gyro. Select cross-side AHRS on reversionary panel with failed AHRS.
LOC1/2	Red boxed	Displayed localizer failed	Select another source or use alternate display.

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PRIMARY FLIGHT DISPLAYS (PFD) (Continued)			
MESSAGE	COLOR	CAUSE	ACTION REQUIRED
VOR1/2	Red boxed	Displayed VOR failed	Select another source or use alternate display.
FMS	Red boxed	FMS navigator failed	Select another NAV source.
GS	Red boxed	Displayed glideslope failed	Select another source or use alternate display.
VNV	Red boxed	Displayed VNAV failed	Utilize barometric altimeters for vertical guidance.
BRG VOR 1/2 (Only VOR1/2 in red; boxed)	Red	Displayed VOR failed	Select another source or use alternate display.
BRG FMS (Only FMS in red; boxed)	Red	FMS Navigator failed	Select another source or use alternate display.
BRG ADF (Only ADF in red; boxed)	Red	Displayed ADF failed	Select another source or use alternate display.
DR	Yellow	FMS navigator is in dead reckoning mode	Be aware FMS Navigator in DR mode.
RA	Red boxed	Displayed radio altitude failed	Use cross-side display or be aware decision height function is not available.
MDA/RPT --- (Only dashes red)	Red	MDA/RPT function failed	Use cross-side display or be aware MDA/RPT function is not available.
DH --- (Only dashes red)	RED	Decision height function failed	Use cross-side display or be aware decision height function is not available.
IAS	Yellow boxed	Pilot's and copilot's indicated airspeed disagree	Establish airplane in straight and level, unaccelerated flight. Compare indications with standby airspeed indicator. Determine if pilot's or copilot's airspeed display is in error. Relevant Air Data Transfer switch to the operative side.
IAS	Red boxed	Air data computer failed	Monitor standby airspeed. Select cross-side ADC.
ALT	Red boxed	Air data computer failed	Monitor standby altimeter. Select cross-side ADC.
VS	Red boxed	Air data computer failed	May select cross-side ADC. Pilot's Option.
RAT/SAT/ISA dashes	Red	No temperature probe data	Use cross-side display.
Flashing presel alt digits	Yellow/Off	More than 200 foot deviation from preselected altitude	Cancel or fly towards preselected altitude.

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PRIMARY FLIGHT DISPLAYS (PFD) (Continued)			
MESSAGE	COLOR	CAUSE	ACTION REQUIRED
Flashing preselected alt digits	Magenta/Off	Within 1,000 ft but more than 200 ft from preselected altitude	Cancel alert or fly towards preselected altitude
CDU	Red boxed	On-side CDU failed or FMS failed	Select cross-side CDU for display control.
CDU 1 or CDU 2	Yellow	Cross-side CDU selected	Control display with cross-side CDU.
CDU 1 or CDU 2	Red boxed	Cross-side CDU failed	Select on-side CDU if on-side CDU not failed.
E	Yellow boxed	Pitch servo is applying residual force to the indicated control surface	Be prepared to hold residual force in the event of a manual or automatic disconnect.
A	Yellow boxed	Roll servo is applying residual force to the indicated control surface	Be prepared to hold residual force in the event of a manual or automatic disconnect.
R	Yellow boxed	Yaw servo is applying residual force to the indicated control surface. Message is normal during conditions of high asymmetric thrust.	Be prepared to hold residual force in the event of a manual or automatic disconnect.

MULTIFUNCTION DISPLAY (MFD) and NAVIGATION DISPLAY (ND)			
MESSAGE	COLOR	CAUSE	ACTION REQUIRED
None	None	Display failure.	None.
DISPLAY TEMP	Red boxed	MFD/ND over temp.	Pull circuit breaker or be prepared for loss of MFD/ND display.
RDR FAULT	Red	Radar Failed.	None. Be aware of loss of weather radar.
USTB	Cyan	Radar stabilization selected OFF.	Be aware of loss of radar antenna stabilization. Check stab ON/OFF on CDU.
USTB	Yellow	Radar stabilization failed.	None. Be aware of loss of radar antenna stabilization.
RDR CTL FAULT	Yellow	Display radar control failed.	None. Be aware of loss of weather radar control from CDU.
MAG	Red boxed	Displayed heading failed.	Select cross-side AHRS.
MAG 1 or MAG 2	Yellow	Cross-side heading displayed.	None. Heading comparators are OFF.
CDU 1 or CDU 2	Yellow	Cross-side CDU selected.	Control display with cross-side CDU.
NO FLIGHT PLAN	White	No FMS flight plan is entered.	Enter flight plan into FMS.
MAP CTL FAULT	Yellow	Map range control failed.	Be aware of loss of map presentations.
NO DATA AVAILABLE (MFD only)	Yellow	No text data from FMS for maps or text.	Be aware of loss of maps and text data.

SENSOR DISPLAY UNITS (SDU)			
MESSAGE	COLOR	CAUSE	ACTION REQUIRED
HDG	Crossed Out and boxed.	Displayed heading failed.	Be aware no heading information is available on SDU.
Bearing Source	Crossed Out and Pointer Removed.	Displayed bearing failed	Select another source or use alternate display.
DME Source	Crossed Out and boxed.	Displayed DME failed.	Select another source or use alternate display.
VOR 1 VOR 2 ← → ADF 1 ADF 2 ← → FMS ←	Crossed Out	No usable signal	Select another source or use alternate display.
VOR Source	Crossed Out Scale and Deviation Bar Removed	Displayed VOR failed or no usable VOR signal.	Select another source or use alternate display.
Deviation Bar	Deviation Bar Removed	No usable VOR signal	Select another source or station.

*Sensor Display Unit is a monochromatic display.

CONTROL DISPLAY UNITS (CDU)			
MESSAGE	COLOR	CAUSE	ACTION REQUIRED
CDU FAULT	Red	CDU has a fault	Select Cross-side CDU 1. Failed CDU will blank and all CDU functions should be controlled from operative CDU. 2. Altitude Awareness Panel (AAP) -Inoperative. Make selections from AAP on the side with the operative CDU. 3. Course/Heading Panel (CHP) - course knob inoperative. Make course selections using CRS knob on the side with the operative CDU.
FMS FAULT	Red	FMS has a fault.	Select Cross-side CDU.
SELF-TEST IN PROGRESS	Yellow	Normal cold start test.	None
SELF-TEST IN PROGRESS NO DATA BASE CONTINUE >	Yellow	Normal cold start test. Some portion of the database is corrupted.	Press CONTINUE> (database will need to be reloaded).
MSG	Yellow	New message to read.	Press the MSG key and review messages.
Active frequency numerals	Red	Failed radio.	Use other radio.

EMERGENCY EVACUATION

In situations that require emergency evacuation of the aircraft, use of safety equipment such as fire extinguishers may be necessary. Crew members should be familiar with the location and operation of emergency equipment.

Exit from the aircraft will be through the cabin door and/or emergency escape hatch, depending on such conditions as fire or obstructions outside one of the exits. If the escape hatch is used, consider placing it outside the aircraft to facilitate a more timely exit. The hatch base is approximately 4.5 ft above the ground when the landing gear is extended. Use caution to avoid personal injury when using this exit.

1. Crew and Passengers — ADVISE
2. Thrust Levers — CUTOFF
3. Parking Brake — AS REQUIRED (Do not set if hot brakes are suspected.)
4. Oxygen System Ready Control — PUSH OFF
5. Controlling Agency — NOTIFY
6. MASTER GEN Switches — EMER
7. Battery — OFF
8. STBY PWR — OFF
9. Aircraft — EVACUATE

ANNUNCIATOR PANEL

