HALO 250

CENTEX AEROSPACE GW I STC SERIES

SUPPLEMENTAL TYPE CERTIFICATE NUMBER SA11103SC
HALO 250 COMMUTER CATEGORY CONVERSION OF
BEECHCRAFT KING AIR 200 AND B200 AIRPLANES
WITH COMMUTER AIR TECHNOLOGY SUPER 60 (CARGO) POD

FAA APPROVED
AIRPLANE FLIGHT MANUAL SUPPLEMENT

Airplane Serial No:_____

This supplement must be attached to the appropriate FAA Approved Airplane Flight Manual when the aircraft is modified in accordance with STC SA11103SC. The information contained herein supplements or supersedes the basic Airplane Flight Manual only in those areas listed herein. For limitations, procedures and performance information not contained in this supplement, consult the basic Beechcraft 200 Series Airplane Flight Manual, as applicable.

FAA APPROVED

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Fort Worth, Texas 76137

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DOCUMENT NO. AFM 006-3, REVISION 2
(only for airplanes with Commuter Air Technology Super 60 Pod)
CENTEX AEROSPACE INCORPORATED, 7925 KARL MAY DRIVE, WACO, TX 76708

REFERENCE ONLY

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AIRPLANE FLIGHT MANUAL SUPPLEMENT
FOR KING AIR 200 SERIES AIRPLANES WITH
HALO 250 COMMUTER CATEGORY CONVERSION

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INTRODUCTION

This supplement pertains to only King Air 200 series airplanes modified by the installation of Commuter Air Technology's "Super 60 Pod" (STC No. SA2451CE). According to the AFM Supplement for the Super 60 Pod, the installation of the pod results in the following performance penalties.

1. Climb - One Engine Inoperative: minus 30 feet per minute.
2. Climb - Two Engine: minus 40 feet per minute.
3. Climb – Balked Landing: minus 30 feet per minute.

The performance data found in Section 5 Performance of this supplement have been updated with these penalties in an effort to make the Halo 250 conversion and the Super 60 Pod installation compatible.

This supplement should be read carefully by the owner and the operator in order to become familiar with the operation of the airplane having now been modified by the installation of the CenTex Aerospace Halo 250 Commuter Category conversion. The maximum takeoff weight has been increased to 13,420 pounds and new systems have been added. This increase in the takeoff weight allows an additional 920 pounds of fuel or payload, which equates to an additional hour and a half of flight time or five more passengers plus baggage. Also, a BE-200 type rating is now required for pilots who operate King Air 200 series airplanes modified with the Halo 250 Commuter Category conversion because these airplanes are approved to operate above 12,500 pounds gross weight.

With the change to Commuter category comes additional performance data to predict airplane performance at the higher weight and the corresponding profiles for executing takeoffs and discontinued approach climbs. As a result, the format and presentation of takeoff and climb performance data in Section 5 is somewhat different. The takeoff distance or "balanced field length" tables now includes the runway length required when an engine failure occurs during takeoff, which gives the pilot the option to stop the airplane on the available runway or continue the takeoff with an engine inoperative. Maximum allowed takeoff weight tables and maximum allowed landing weight tables identify the highest gross weight at which the airplane climb performance will meet the required minimum gradients with an inoperative engine. Together, the new takeoff profile, balanced field length tables, and maximum allowed takeoff and landing weight tables increase operational safety by ensuring there is sufficient available runway and airplane climb performance should an engine failure occur.

REFERENCE ONLY

The new systems, likewise, increase the level of safety by providing safety functions that were not previously available. Below is a list of the new systems and associated functions.

- Over-speed warning system – aural alert when V_{MO}/M_{MO} exceeded.
- Takeoff trim warning system – aural alert when elevator trim is not set properly for takeoff.
- Stall warning system ice mode – aural alert when stall is imminent due to ice accumulation on wings.
- Engine fire extinguisher system – extinguish fire in engine compartment.
- Emergency cabin lighting system – illumination of cabin during emergency situations
- Escape path markings – show pathway along the cabin floor to main door and emergency exit.

Additionally, the Kinds of Equipment List has been updated to require that the display of attitude, altitude and airspeed information is provided by at least two instruments powered by separate sources so that in the event one source failed there would be an operating alternate display. Note that the King Air 200 series airplanes were originally equipped this way; the change is that such a configuration is a requirement now, except for airplanes with the Rockwell Collins Proline 21 suite. It is noted the number of passenger seats in the cabin is now limited to maximum of nine seats due to a single emergency exit.

The terminology used in this supplement matches the terminology used in the basic AFM and POH. This includes the definitions of warnings, cautions, and notes. Also, you will find the format of limitations, procedures, and checklists herein match the AFM and POH format for B200 series airplanes.

REFERENCE ONLY

DESCRIPTIVE DATA

MAXIMUM CERTIFICATED WEIGHTS

Maximum Ramp Weight .....13,510 pounds
Maximum Take-off Weight .....13,420 pounds
Maximum Zero Fuel Weight .....Unchanged, see basic AFM/POH
Maximum Landing Weight (Standard landing gear) .....12,500 pounds
Maximum Landing Weight (High Flotation landing gear) .....13,420 pounds

SPECIFIC LOADINGS

Wing Loading: 44.3 pounds per square foot
Power Loading: 7.9 pounds per shaft horsepower

COMPATIBLE MODIFICATIONS

The following STC-approved modifications have been found to be compatible with the Halo 250 Commuter category conversion:

1. SA2698NM-S, Raisbeck Eng. Hartzell HC-D4N-3A/D9383K propeller.
2. SA02130SE, BLR Hartzell HC-E4N-3A/NC9208K propellers
3. STC SA3366NM, Raisbeck Ram Air Recovery System
4. SA3831NM, Raisbeck Inboard Leading Edges
5. SA3519NM, Raisbeck Aft Body Strakes
6. SA4175NM, Raisbeck MLG Doors
7. SA3857NM, Raisbeck Storage Lockers
8. SA3683NM, Raisbeck Exhaust Stack Fairings
9. SA00433AT, Blackhawk Modifications PWC PT6A-42 Engine Conversion
10. SA10824SC, Blackhawk Modifications PWC PT6A-52 Engine Conversion
11. SA10842SC, Enhanced Aero PWC PT6A-52 Engine Conversion
12. SA02715CH-D, Standard Aero PWC PT6A-52 Engine Conversion
13. SA10737SC, Blackhawk Modifications PWC PT6A-61 Engine Conversion
14. SA01615SE, BLR Winglets
15. SA00184LA, Commuter Air Technology Wildness Tires Conversion
16. SA01535WI-D, Garmin G1000 Avionics (GDC 7400 ADC required)
17. SA02738CH, L-3 Comm ESI-1000 standby instrument
18. SA1036GL, McCauley 4HFR34C7 (54,55,71)/94LA-0 Propellers
19. SA01157CH, McCauley 5HFR34C1008/96LTA-0 Propellers
20. SA890GL and SA757GL, Parker Cleveland wheels and brakes
21. SA2451CE, Commuter Air Technology Super 60 (Cargo) Pod
22. SA2300CE, Avcon Industries Aeropak cargo pod (requires AFM Supplement no. 006-3A instead of this supplement)
23. SA03209NY, MT-Propeller MTV-27-1-E-C-F-R(P)/CFR225-55f 5-blade propeller
24. SA03289CH, Elliott Aviation Mid-Continent MD302 Electronic Standby Indicator
25. SA2633CE, Aviation Fabricators 4-place side facing divan seat.
    NOTE: Only airplanes manufactured prior to 12/12/86 with passenger seating configurations of 9 or less are compatible.
26. SA2671CE, Aviation Fabricators stretcher installation.
27. SA4157SW, Aviation Fabricators 2-place attendant divan seat.
28. SA02468LA, Aviation Fabricators aft toilet cabinet seat.
29. SA00635WI, Aviation Fabricators jump seat.
    NOTE: Seating configuration may not exceed 9 passenger seats.
30. SA10478SC, Hawker Beechcraft Services flight data recorder/cockpit voice recorder
31. SA00273WI, LifePort stretcher, patient loading, and support system
32. SA02235LA, LifePort Patient Loading and Utility System (PLUS) and ServiPlex
33. SA00882CH, Spectrum Aeromed air ambulance conversion
34. SA01213CH, Spectrum Aeromed air ambulance conversion

REFERENCE ONLY

It is up to the installer to determine whether any other STC-approved modifications are compatible with the Halo 250 Commuter category conversion. When determining compatibility regulatory requirements applicable to Commuter category airplanes must be considered. Note, other modifications affecting the display of flight attitude, airspeed, and altitude; and autopilot functionality must meet the design assurance levels required for Commuter category airplanes.

REFERENCE ONLY

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LIST OF EFFECTIVE PAGES

The list of effective pages shown below contains all current pages with the page version date. This list should be used to verify this supplement contains all of the applicable and required pages. When inserting revised pages into this supplement the List of Effective Pages should be updated, as well, to the corresponding new list.

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8-1 thru 8-2 ..... August 2012
9-1 thru 9-4 ..... December 2014

LOG OF REVISIONS

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REFERENCE ONLY

The limitations shown in this section are approved by the Federal Aviation Administration and must be observed while operating Beechcraft King Air 200 series airplanes that have been modified by the CenTex Aerospace Halo 250 Commuter Category STC. This STC approves an increase in the maximum takeoff weight from 12,500 pounds to 13,420 pounds and a change from Normal Category to Commuter Category.

It is noted that not all of the information presented in this Supplement is changed from the basic Airplane Flight Manual or Pilot Operating Handbook information. This was done to aid the pilot in the retention of the changed limitations by presenting together changed and unchanged limitations that are relational. The changed information or value is identified either by a note or by simple underline.

AIRSPEED LIMITATIONS

SPEED	KCAS	KIAS	REMARKS
Operating Maneuvering Speed, V_O	182	181	Do not make full or abrupt control movements above this speed.
Maximum Flap Extension/ Extended Speed, V_{FE}			Do not extend flaps or operate with flaps in prescribed position above these speeds.
Approach Position – 40%	NC	NC	
Full Down Position – 100%	NC	NC	
Maximum Landing Gear Operating Speed, V_{LO}			Do not exceed or retract landing gear above the speeds given.
Extension	NC	NC	
Retraction	NC	NC	
Maximum Landing Gear Extended Speed, V_{LE}	NC	NC	Do not exceed this speed with landing gear extended.
Air Minimum Control Speed V_{MCA}			This is the lowest airspeed at which the airplane is directionally controllable when one engine suddenly becomes inoperative and the other engine is at takeoff power. (See definition in Section I of the basic AFM or POH)
Hartzell Propellers.....	NC	NC	
McCauley Propellers.....	NC	NC	
[1]STC SA2698NM....Flaps Up...	NC	NC	
Flaps Approach...	NC	NC	
[2]STC SA02130SE...Flaps Up	NC	NC	
Flaps Approach...	NC	NC	
Maximum Operating Speed V_{MO}	NC	NC	Do not exceed this airspeed or Mach number in any operation.
M_{MO}	0.58 Mach[3]		

NC-No change to original airspeed limitation. See basic AFM / POH.
1-Hartzell HC-D4N-3A/D9383K prop installed per Raisbeck Engineering STC SA2698NM-S.
2-Hartzell HC-E4N-3A/NC9208K prop installed per BLR Hartzell STC SA02130SE.
3 Except King Air 200T, 200CT, A200CT, B200T, and B200CT where M_{MO} is unchanged.

REFERENCE ONLY

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POWER PLANT LIMITATIONS

Engine Model(s) .....PT6A-41 or PT6A-42 or PT6A-52 or PT6A-61

Engine Operating Limits:

Takeoff & Max Continuous Power	850 SHP	2230 FT-LBS	2000 RPM

Propeller Limitation: Autofeather must be in operation during takeoff.

WEIGHT LIMITS

Maximum Ramp Weight .....13,510 pounds

Maximum Take-off Weight is 13,420 pounds or as limited by (see Section 5):

- Maximum Allowed Takeoff Weight tables
- Takeoff Speeds and Balanced Field Length tables

For 14 CFR Part 135 Operations:

- Maximum Enroute Weight chart

Maximum Landing Weight is 12,500 pounds or 13,420 pounds for airplanes equipped with Beechcraft High Flotation landing gear, or, as limited by (see Section 5)

- Maximum Allowed Landing Weight tables
- Landing Distance charts

Maximum Zero Fuel Weight:
Model 200 and A200 series .....No Change
Model B200 series .....No Change

REFERENCE ONLY

CENTER OF GRAVITY LIMITS

Aft Limits

195.8 inches aft of datum at 13,420 pounds gross weight with straight line variation to 196.4 inches aft of datum at 12,500 pounds gross weight.
196.4 inches aft of datum at gross weights less than 12,500 pounds.

Forward Limits

188.0 inches aft of datum at 13,420 pounds gross weight with straight line variation to 181.0 inches aft of datum at 11,279 pounds gross weight.
181.0 inches aft of datum at gross weights less than 11,279 pounds.

MANUEVER LIMITS

The Beechcraft King Air 200 series airplanes modified in accordance with the CenTex Aerospace HALO 250 gross weight increase STC are Commuter Category airplanes. Acrobatic maneuvers, including spins, are prohibited.

FLIGHT LOAD FACTOR LIMITS

FLAPS UP	FLAPS DOWN
3.12 positive g's	2.00 positive g's
1.25 negative g's	0.00 g

MINIMUM FLIGHT CREW .....One Pilot

MAXIMUM OCCUPANCY LIMIT

Flight Crew .....Two (Pilot and Co-pilot)
Passengers .....Nine (9)

ICING LIMITATIONS

The limitations and information presented in this subsection have been changed from the basic Airplane Flight Manual and Pilot Operation Handbook. The changes are considered by the FAA to be essential in ensuring the safe operation of the airplane in icing conditions.

Minimum Ambient Temperature for Operation of Deicing Boots .....-40°C
Minimum Airspeed for Sustained Icing Flight ..... 145 Knots

Sustained flight in icing conditions with flaps extended is prohibited except for approach and landing.

ENGINE ANTI-ICE shall be ON for operations in ambient temperatures of +5°C or below when flight free of visible moisture cannot be assured.

ENGINE ANTI-ICE shall be OFF for all takeoff and flight operations in ambient temperatures above + 15°C.

REFERENCE ONLY

Takeoff is prohibited with any frost, ice, snow, or slush adhering to the wings, horizontal stabilizer, control surfaces, propeller blades, or engine inlet.

In icing conditions the airplane must be operated and its ice protection system used as described in the operating procedures section of this AFM Supplement. Where specific operational speeds and performance information have been established for such conditions, this information must be used.

WARNING

Severe icing may result from environment conditions outside of those for which the airplane is certificated. Flight in freezing rain, freezing drizzle, or mixed icing conditions (supercooled liquid water and ice crystals) may result in ice build-up on protected surfaces exceeding the capacity of the ice protection system, or may result in ice forming aft of the protected surfaces. This ice may not be shed using the ice protection systems, and may seriously degrade the performance and controllability of the airplane and an unsafe situation will likely result. It is the responsibility of the pilot to identify severe icing conditions and to exit such condition to ensure safe flight operations.

1. Severe icing conditions that exceed those for which the airplane is certificated shall be determined by the following visual cues. If one or more of these visual cues exists, immediately request priority handling from Air Traffic Control to facilitate a route or an altitude change to exit the icing conditions.
   - Extensive ice accumulation on the airframe and windshield in areas not observed to collect ice during light or moderate icing conditions.
   - Accumulation of ice on the upper surface of the wing, aft of the protected area (i.e., leading-edge boot).
   - Accumulation of ice on the engine nacelles and propeller spinners farther aft than observed during light or moderate icing conditions.
2. DO NOT USE THE AUTOPILOT in severe icing conditions or whenever:
   - Visual cues specified above exist.
   - Unusual aileron trim settings are required.
   - Autopilot trim warnings occur.

   Note: an unsafe condition exists when the autopilot is engaged and the airplane handling characteristics are degrading due to ice accumulating on the airplane. The pilot will not be aware of this unsafe condition, which requires an immediate exit from icing conditions, if he/she is not manually flying the airplane.
3. All icing detection lights must be operative prior to flight into known or forecast icing conditions at night.

REFERENCE ONLY

OTHER LIMITATIONS

STRUCTURAL LIMITATIONS

Refer to Chapter Four of the *Super King Air 200 Series Maintenance Manual* and to the *CenTex Aerospace Halo 250 Commuter Category Conversion Instructions for Continued Airworthiness* for structural limitations.

MAXIMUM TAILWIND COMPONENT LIMITATION

Do not takeoff or landing with more than a 10 knot component of tailwind.

MAXIMUM HEADWIND COMPONENT LIMITATION

Do not extrapolate for a headwind component that exceeds 30 knots. Assume a 30 knot headwind component when correcting takeoff field length whenever there is a 30 knot or greater headwind.

REFERENCE ONLY

KINDS OF OPERATIONS

The Beechcraft King Air 200 series airplanes are approved for the following type of operations when the required equipment is installed and operational as defined within the KINDS OF OPERATIONS EQUIPMENT LIST.

VFR Day
VFR Night
IFR Day
IFR Night
Known Icing Conditions

KINDS OF OPERATIONS EQUIPMENT LIST

This airplane may be operated in day or night VFR, or day and night IFR, when the appropriate equipment is installed and operable.

The following equipment list identifies the systems and equipment upon which type certification for each kind of operation was predicated. The systems and items of equipment listed must be installed and operable unless:

1. The airplane is operated in accordance with a current Minimum Equipment List (MEL) issued by the FAA.

   or;

2. An alternate procedure is provided in the Pilot Operating Handbook and FAA Approved Airplane Flight Manual for the inoperative state of the listed equipment.

Numbers on the Kinds of Operations Equipment List refer to quantities required to be operative for a specified condition.

NOTE

The following systems and equipment list does not include all equipment required by the 14 CFR Part 91 and 135 operating requirements. It also does not include components obviously required for the airplane to be airworthy, such as wings, empennage, engine, etc.

REFERENCE ONLY

SYSTEM and/or COMPONENT	VFR DAY	VFR NIGHT	IFR DAY	IFR NIGHT	ICING CONDITIONS	
ELECTRICAL POWER						
1. AC Volts/Frequency Meter	1	1	1	1	1	
2. Battery	1	1	1	1	1	
3. Battery Charger Monitor System & Annunciator	1	1	1	1	1	
4.DC Generator	2	2	2	2	2	
5. DC GEN Annunciator	2	2	2	2	2	
6. DC Load Meter	2	2	2	2	2	
7. Inverter	2	2	2	2	2	
8. INVERTER Annunciator	1	1	1	1	1	
ENGINE INDICATIONS						
1. ITT Indicator	2	2	2	2	2	
2. Tachometer (Gas Generator)	2	2	2	2	2	
3. Tachometer (Propeller)	2	2	2	2	2	
4. Torque Indicator	2	2	2	2	2	
ENGINE OIL						
1. Chip Detector System including Annunciators	2	2	2	2	2	
2. Oil Pressure Indicator	2	2	2	2	2	
3. Oil Temperature Indicator	2	2	2	2	2	
4. OIL PRESS annunciator	2	2	2	2	2	
ENVIRONMENTAL						
1. BL AIR FAIL Annunciator	2	2	2	2	2	
2. ALT WARN Annunciator (Cabin)	1	1	1	1	1	
3. Cabin Rate of Climb Indicator	1	1	1	1	1	
4. Differential Pressure/Cabin Altitude Indicator	1	1	1	1	1	
5. DUCT OVERTEMP Annunciator	1	1	1	1	1	
6. Outflow Valve	1	1	1	1	1	
7. Pressurization Controller	1	1	1	1	1	
8. Safety Valve	1	1	1	1	1	
9. Bleed Air Shutoff Valve	2	2	2	2	2	
FIRE PROTECTION						
1. Engine Fire Detector System and Annunciator	2	2	2	2	2	
2. Engine Fire Extinguisher Sys & Annunciator	2	2	2	2	2	
FLIGHT CONTROLS						
1. Flap Position Indicator	1	1	1	1	1	
2. Flap System	1	1	1	1	1	
3. Stall Warning Horn	1	1	1	1	1	
4. Stall Warning System Ice Mode	0	0	0	0	1	
5. Trim Tab Position Indicator (Rudder, Aileron, and Elevator)	3	3	3	3	3	
6. Yaw Damper System	1	1	1	1	1	
7. Elevator Trim Warning System	1	1	1	1	1	

REFERENCE ONLY

SYSTEM and/or COMPONENT	VFR DAY	VFR NIGHT	IFR DAY	IFR NIGHT	ICING CONDITIONS	
FUEL						
1. Engine Driven Boost Pump	2	2	2	2	2	
2. Fuel Crossfeed System including Annunciator	1	1	1	1	1	
3. Standby Fuel Boost Pump	2	2	2	2	2	
4. FUEL PRESS Annunciator	2	2	2	2	2	
5. Fuel Quantity Indicating System incl. Annunciators	2	2	2	2	2	
6. Firewall Fuel Shutoff System incl. Annunciators	2	2	2	2	2	
7. Jet Transfer Pump	2	2	2	2	2	
8. Motive Flow Valve	2	2	2	2	2	
9. Fuel Flow Indicator	2	2	2	2	2	
ICE AND RAIN PROTECTION						
1. Alternate Static Air Source	0	0	1	1	1	
2. Engine Auto Ignition and Annunciators	2	2	2	2	2	
3. Engine Anti-Ice System and Annunciators	2	2	2	2	2	
4. Heated Fuel Vent	0	0	0	0	1	
5. Heated Windshield (Left)	0	0	0	0	1	
6. Pitot Heat	0	0	2	2	2	
7. Pneumatic Pressure Indicator	0	0	1	1	1	
8. Propeller Deicer System	0	0	0	0	1	
9. Stall Warning Heat (Lift Transducer and Mounting Plate)	0	0	0	0	1	
10. Surface Deicer System	0	0	0	0	1	
11. Wing Ice Light (Left)	0	0	0	0	1	
LANDING GEAR						
1. Landing Gear Position Indicator Lights	3	3	3	3	3	
2. Landing Gear Handle Light	1	1	1	1	1	
3. Landing Gear Aural Warning	1	1	1	1	1	
4. Alternate Landing Gear Extension System	1	1	1	1	1	
5. HYD FLUID LOW Annunciator	1	1	1	1	1	
6. Landing Gear Actuation System	1	1	1	1	1	
LIGHTS						
1. Cockpit and Instrument Lighting system	0	1	0	1	0	
2. DOOR UNLOCKED Annunciator	1	1	1	1	1	
3. Landing Lights	0	1	0	1	0	
4. Position Lights	0	3	0	3	0	
5. Anti-collision Lights System	0	1	0	1	0	
6. Cabin Emergency Lighting System and Escape Path Markings	Required when carrying passengers					

REFERENCE ONLY

SYSTEM and/or COMPONENT	VFR DAY	VFR NIGHT	IFR DAY	IFR NIGHT	ICING CONDITIONS	
NAVIGATION INSTRUMENTS						
1. Electrically-Powered Attitude Indicator (Left)	1	1	1	1	1	
1. Airspeed Indicator (Left)	1	1	1	1	1	
2. Altimeter (Left)	1	1	1	1	1	
3. Magnetic Compass	1	1	1	1	1	
4. Outside Air Temperature	1	1	1	1	1	
5. Over-speed Warning System	1	1	1	1	1	
6. Pneumatically-Powered Attitude Indicator (Right)*	0	1	1	1	1	
7. Non-Powered Altimeter (Right)*	0	1	1	1	1	
8. Non-Powered Airspeed Indicator (Right)*	0	1	1	1	1	
*Items 6, 7, & 8 are not required in airplanes with left and right side EFIS.						
9. Separately-powered, attitude, airspeed, altitude, indicators are required in airplanes with left and right side EFIS.	0	1	1	1	1	
OXYGEN						
1. Oxygen System	1	1	1	1	1	
PROPELLER						
1. Prop Reversing System including Annunciators	2	2	2	2	2	
2. Prop Governor Test Switch	1	1	1	1	1	
3. Prop Over-speed Governor	2	2	2	2	2	
4. Prop Low-Pitch Stop	2	2	2	2	2	
5. Autofeather System including Annunciators	1	1	1	1	1	
VACUUM SYSTEM						
1. Instrument Air system	1	1	1	1	1	
2. Gyro Suction Indicator	1	1	1	1	1	

NOTE

The above Kinds of Operations Equipment List does not include all specific flight instruments and communication/navigation equipment required by 14 CFR Part 91 and 135 Operating Requirements.

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EMERGENCY ESCAPE PATH 3-3

REFERENCE ONLY

All airspeeds quoted in this section are indicated airspeeds (IAS) and assume zero instrument error.

EMERGENCY AIRSPEEDS

One-Engine Inoperative Best Angle-of-Climb (V_{XSE}) ..... 115 Knots
One-Engine Inoperative Best Rate-of-Climb (V_{YSE}) ..... 121 Knots
One-Engine-Inoperative Enroute Climb (V_{ENR}):
13,420 pounds ..... 125 Knots
13,000 pounds ..... 123 Knots
12,000 pounds ..... 120 Knots
11,000 pounds ..... 115 Knots
10,000 pounds ..... 111 Knots
9,000 pounds ..... 108 Knots
Air Minimum Control Speed (V_{MCA}) ..... 86 Knots
Raisbeck Engineering STC Prop Installation (V_{MCA}) ..... 91 Knots
BLR Aerospace STC Prop Installation (V_{MCA}) ..... 92 Knots
Emergency Descent ..... 181 Knots
Maximum Range Glide ..... 136 Knots

ENGINE FAILURE DURING TAKEOFF (AT OR BELOW V_1) – TAKEOFF ABORTED

1. Power Levers ..... GROUND FINE
2. Brakes ..... MAXIMUM or AS REQUIRED (to stop on runway)
3. Operative Engine ..... MAXIMUM REVERSE or AS REQUIRED

WARNING

Extreme care must be exercised when using single-engine reversing on surfaces with reduced traction.

REFERENCE ONLY

ENGINE FAILURE DURING TAKEOFF (AT OR ABOVE V_1) – TAKEOFF CONTINUED

1. V_R Speed ..... ROTATE TO APPROX 8° NOSE UP ATTITUDE
2. Landing Gear (when positive climb established) ..... UP
3. Airspeed ..... V_2 (MAINTAIN TO 400 FEET AGL)
4. Propeller Inoperative Engine ..... VERIFY FEATHERED
5. Airspeed at 400 Feet AGL..... V_{ENR}
6. Flaps (if extended) ..... UP AT V_2 + 5 KNOTS
7. Climb to 1,500 Feet AGL

WARNING

Do not retard the failed engine power lever until the Autofeather system has completely feathered the propeller and propeller rotation has stopped.

8. Clean up (Inoperative engine)
   a. Condition Lever - FUEL CUT OFF
   b. Propeller Lever - FEATHER
   c. Firewall Shutoff Valve - CLOSED
   d. Auto Ignition - OFF
   e. Autofeather - OFF
   f. Generator - OFF
   g. Prop Sync - OFF
9. Electrical Load ..... MONITOR

CABIN EMERGENCY LIGHTING ACTIVATION

An emergency lighting system has been added to provide lighting in key areas of the passenger cabin in case there is an emergency situation, such as a loss of electrical power or when an evacuation of the aircraft is required. To manually activate the system, place the control switch located on the copilot instrument panel in the ON position. The emergency cabin flood lamps will illuminate the cabin areas near the emergency exit and door. Also, the system will automatically activate the emergency cabin flood lamps whenever the control switch is in the ARM position, and the aircraft experiences a horizontal deceleration of 2g's, or more.

EMERGENCY ESCAPE PATH

Photoluminescent markings have been installed on the cabin floor outlining the aisle and the location of the emergency exit door and cabin door. Under conditions of reduced visibility, such as a cabin filled with smoke, occupants can follow this marked escape path to the exit from the aircraft.

REFERENCE ONLY

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REFERENCE ONLY

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ONE-ENGINE-INOPERATIVE APPROACH AND LANDING 3A-3

ONE-ENGINE-INOPERATIVE GO-AROUND 3A-5

OVERWEIGHT LANDING 3A-5

REFERENCE ONLY

FLAPS UP LANDING

Refer to Section 5 of Supplement AFM 006-2 for Flaps Up Landing Distance.

WEIGHT POUNDS	**V_{REF} (FLAPS UP)** KNOTS
13,420	135
13,000	133
12,500	131
12,000	129
11,000	125
10,000	121
9,000	117

1. Approach Speed, V_{REF} (Flaps Up) ..... CONFIRM
2. Autofeather ..... ARM
3. Pressurization ..... CHECK
4. Cabin Sign ..... NO SMOKE & FSB
5. Flaps ..... UP

CAUTION

Do not silence the landing gear warning horn, since the flap actuated portion of the landing gear warning system will not be actuated during a flap up landing.

6. Flap Override (If installed) ..... SELECT
7. Landing Gear ..... DOWN
8. Lights ..... AS REQUIRED

NOTE

Under low visibility conditions, landing and taxi lights should be left off due to light reflections.

9. Radar ..... AS REQUIRED
10. Surface Deice ..... CYCLE (as required)

If wings are free of ice:

11. Stall Warning Ice Mode Switch – PRESS (to select Normal Mode)

If residual ice remains on wing boots:

12. Surface Deice ..... CYCLE
13. Stall Warning Ice Mode Annunciator ..... ILLUMINATED
14. Approach Speed and Landing Distance ..... INCREASE V_{REF} BY 15 KNOTS AND INCREASE LANDING DISTANCE BY 25 PER CENT.

See LANDING DISTANCE chart in Section 5 of Supplement AFM 006-2

REFERENCE ONLY

NOTE

Prior to the landing approach, cycle the wing deice boots to shed as much residual ice as possible, regardless of the amount of ice remaining on the boots. Stall speeds can be expected to increase if ice is not shed from the deice boots.

NOTE

If crosswind landing is anticipated, determine Crosswind Component from Section 5, PERFORMANCE. Immediately prior to touchdown, lower upwind wing and align the fuselage with the runway. During rollout, hold aileron control into the wind and maintain directional control with rudder and brakes. Use propeller reverse as desired.

When Landing Is Assured:

15. Approach Speed..... V_{REF} – ESTABLISHED (With ice on wings, V_{REF} + 15)
16. Yaw Damp ..... OFF
17. Power Levers..... IDLE
18. Propeller Levers ..... FULL FORWARD

After Touchdown:

14. Power Levers.....LIFT AND SELECT GROUND FINE OR REVERSE (as required)
15. Brakes .....AS REQUIRED

ONE-ENGINE-INOPERATIVE APPROACH AND LANDING

WEIGHT POUNDS	Flaps DOWN V_{REF} Speeds, KNOTS
13,420	105
13,000	104
12,500	103
12,000	102
11,000	99
10,000	96
9,000	93

1. Approach Speed (V_{REF}) .....CONFIRM
2. Fuel Balance.....CHECK
3. Pressurization .....CHECK
4. Cabin Sign ..... NO SMOKE & FSB

When It Is Certain that the Field Can Be Reached:

5. Flaps..... APPROACH
6. Landing Gear..... DOWN
7. Propeller Lever (operating engine) ..... FULL FORWARD
8. Airspeed .....V_{REF} + 10 KNOTS

REFERENCE ONLY

9. Interior and Exterior lights .....AS REQUIRED
10. Radar .....AS REQUIRED
11. Surface Deice ..... CYCLE (as required)

If wings are free of ice:

12. Stall Warning Ice Mode Switch ..... PRESS (to select Normal Mode)

If residual ice remains on wing boots:

13. Surface Deice .....CYCLE
14. Stall Warning Ice Mode Annunciator ..... ILLUMINATED
15. Approach Speed and Landing Distance INCREASE V_{REF} BY 15 KNOTS AND INCREASE LANDING DISTANCE BY 25 PER CENT

See LANDING DISTANCE chart in Section 5 of Supplement AFM 006-2.

NOTE

Prior to the landing approach, cycle the wing deice boots to shed as much residual ice as possible, regardless of the amount of ice remaining on the boots. Stall speeds can be expected to increase if ice is not shed from the deice boots.

NOTE

If crosswind landing is anticipated, determine Crosswind Component from Section 5, PERFORMANCE. Immediately prior to touchdown, lower upwind wing and align the fuselage with the runway. During rollout, hold aileron control into the wind and maintain directional control with rudder and brakes.

When It is Certain There is No Possibility of a Go-Around

16. Flaps ..... DN
17. Airspeed .....V_{REF} (With ice on wings, V_{REF} + 15)
19. Perform normal landing.

NOTE

Single-engine reverse thrust may be used with caution after touchdown on smooth, dry, paved surfaces.

REFERENCE ONLY

ONE-ENGINE-INOPERATIVE GO-AROUND

1. Power ..... MAXIMUM ALLOWABLE
2. Landing Gear ..... UP
3. Flaps ..... UP AT V_{REF} + 10 KNOTS
4. Airspeed ..... V_{REF} + 20 KNOTS

OVERWEIGHT LANDING

WEIGHT POUNDS	**V_{REF}** KNOTS
13,420	105
13,000	104
12,500	103

When Landing Is Assured:

1. Flaps ..... DOWN
2. Airspeed ..... V_{REF}
3. Yaw Damp ..... OFF
4. Power Levers ..... IDLE
5. Propeller Levers ..... FULL FORWARD

CAUTION

To ensure constant reversing characteristics, the propeller levers must be in the high rpm position.

6. Sink Rate ..... TOUCHDOWN WITH NOMINAL OR LESS SINK RATE

After Touchdown:

7. Power Levers ..... LIFT AND SELECT GROUND FINE
8. Brakes ..... AS REQUIRED

NOTE

An overweight landing is defined as any landing made when the airplane gross weight is greater than 12,500 pounds, which is the maximum landing weight limitation (except for an airplane equipped with Beechcraft High Flotation landing gear). When the airplane is landed at a gross weight above 12,500 pounds (except an airplane equipped with Beechcraft High Flotation landing gear) the pilot should request that an inspection in accordance with the King Air 200 Series Maintenance Manual Section 5-50-00 Inspection After Hard Landing be performed before the next flight. Note that components in the standard landing gear have less overall strength margin than the corresponding components in the high flotation landing gear. Also, an overweight landing where the touchdown sink rate is nominal will not result in damage to the landing gear or airframe structure.

REFERENCE ONLY

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REFERENCE ONLY

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REFERENCE ONLY

All airspeeds quoted in this section are indicated airspeeds (IAS) and assume zero instrument error.

AIRSPEEDS FOR SAFE OPERATION

Maximum Demonstrated Crosswind Component ..... 25 Knots
Maximum Demonstrated Wind Components for Coupled Approaches
- Crosswind.....See basic AFM / POH
- Tailwind.....See basic AFM / POH

Takeoff (Flaps UP)
- Decision Speed, V_1 .....
- Rotation, V_R.....
- Safety Speed, V_2.....
- Enroute Climb, V_{ENR}.....

Takeoff (Flaps Approach)
- Decision Speed, V_1 .....
- Rotation, V_R.....
- Safety Speed, V_2.....
- Enroute Climb, V_{ENR}.....

See Section 5 Performance for Takeoff Speeds

Two-Engine Best Angle-of-Climb (V_X)..... 100 Knots
Two-Engine Best Rate-of-Climb (V_Y) ..... 125 Knots
Cruise Climb:
- Sea level to 10,000 feet ..... 160 Knots
- 10,000 feet to 20,000 feet ..... 140 Knots
- 20,000 feet to 25,000 feet ..... 130 Knots
- 25,000 feet to 35,000 feet ..... 120 Knots

Maximum Airspeed for Effective Windshield Anti-icing ..... 226 Knots
Operating Maneuvering Speed (V_O)..... 181 Knots
Turbulent Air Penetration ..... 170 Knots
Landing Approach:
- Flaps Down..... V_{REF}, see Section 5 Performance

Balked Landing Climb..... V_{REF}, see Section 5 Performance
Intentional One-Engine-Inoperative Speed (V_{SSE}) ..... 104 Knots
Air Minimum Control Speed (VMCA)
- Hartzell & McCauley propellers ..... 86 Knots
- Raisbeck Engineering STC SA2698NM-S, Flaps Up ..... 91 Knots; Flaps Approach ..... 88 Knots
- BLR Hartzell STC SA02130SE, Flaps Up ..... 92 Knots; Flaps Approach ..... 87 Knots

REFERENCE ONLY

PROCEDURES BY FLIGHT PHASE

NOTE

Refer to all applicable Supplements for flight phase procedures for optional equipment installed in the airplane. The procedures listed below are required for airplanes modified by the installation of the CenTex Aerospace Halo 250 Commuter Category STC.

PREFLIGHT INSPECTION

CABIN/COCKPIT

Add the following steps while Battery Switch is OFF.

Emergency Lighting Cabin Switch ..... ON
Emerg Cabin Lt Control Switch..... ARM
Emergency Cabin Flood Lamps ..... CHECK (illuminated)

Add the following step when Battery Switch is ON

Emergency Cabin Flood Lamps ..... CHECK (not illuminated)

Add the following step after the Battery Switch is turned OFF.

Emergency Lighting Cabin Switch ..... OFF

BEFORE ENGINE STARTING

Add the following step after airstair door is LOCKED.

Emergency Lighting Cabin Switch ..... ON

Add the following steps after the Battery Switch is ON.

Left Power Lever ..... ADVANCE TO AT LEAST 80% POSITION
Autofeather Switch ..... ARM
Elevator Trim Warning System ..... TEST
Elevator Trim Control ..... SET FOR TAKEOFF
Autofeather Switch ..... OFF
Left and Right Power Levers ..... IDLE
Over-speed Aural Warning ..... TEST

BEFORE TAKEOFF (RUNUP)

Add the following steps after the Surface Deice System check.

Stall Warning Ice Mode Annunciator ..... ILLUMINATED
Stall Warning..... TEST
Stall Warning Ice Mode Annunciator ..... PRESS (to select Normal Mode)

NOTE

The stall warning system must be in the Normal Mode during takeoff and initial climb-out. If a takeoff is conducting with the stall warning system in the Ice Mode, a misleading stall warning following lift-off will likely occur.

REFERENCE ONLY

TAKEOFF

1. Brakes ..... HOLD
2. Power ..... SET (ensure minimum takeoff power is available)
3. Autofeather Annunciator ..... ILLUMINATED
4. Brakes ..... RELEASE
5. V_R ..... ROTATE TO APPROX. 8° NOSE UP ATTITUDE
6. Landing Gear (when positive climb established) ..... UP
7. Airspeed ..... MAINTAIN V_2 UNTIL CLEAR OF OBSTACLES
8. Flaps (at V_2 + 5 Knots) ..... UP

CLIMB

ICING CONDITIONS

1. Engine Anti-Ice ..... CONFIRM ON
   L & R ENG ANTI-ICE annunciators ILLUMINATED
2. Auto Ignition ..... ARM
3. Prop Deice ..... AUTO
4. Stall Warning Heat ..... CONFIRM ON
5. Left and Right Fuel Vent Heat ..... CONFIRM ON
6. Left and Right Pitot Heat ..... CONFIRM ON
7. Windshield Anti-Ice ..... CONFIRM NORMAL OR HI
   At first sign of ice accretion on aircraft.
8. Surface Deice Switch ..... SINGLE AND RELEASE (repeat as required)
9. Stall Warning Ice Mode Annunciator ..... ILLUMINATED
10. Climb Power ..... SET MAX CONT POWER (to expedite climb)
11. Airspeed ..... 145 KNOTS MINIMUM AIRSPEED

REFERENCE ONLY

CRUISE

Add the following after normal cruise checklist.

CRUISE IN ICING CONDITIONS

At first sign of ice accretion on aircraft.

1. Airspeed – 145 KNOTS MINIMUM
2. Surface Deice Switch – SINGLE AND RELEASE
3. Stall Warning Ice Mode Annunciator – VERIFY ILLUMINATED

OUTSIDE OF ICING CONDITIONS AND WINGS FREE OF ICE

1. Stall Warning Ice Mode Annunciator – PRESS (to select Normal Mode)
2. Stall Warning Ice Mode Annunciator – EXTINGUISHED

ICING CONDITIONS

Replace the warning statement with the following:

WARNING

Due to distortion of the wing airfoil, ice accumulation on the leading edges can cause a significant loss in rate of climb and in cruise speed, as well as increases in stall speed. Even after cycling deicing boots, the ice accumulation remaining on the boots plus ice accumulations on unprotected areas can cause large performance losses. In order to minimize ice accumulation on unprotected surfaces of the wing, maintain a minimum of 145 knots during operations in sustained icing conditions. In the event of windshield icing, reduce airspeed to 226 knots or below. Prior to a landing approach, cycle the deicing boots to shed any accumulated ice. The stall warning system will sound the aural warning at 15 to 20 knots above the normal warning speed when it is in the ice mode, which is appropriate when there is ice on the wings.

Add the following after Surface Deice.

At first sign of ice accretion on aircraft.

a. Airspeed – 145 KNOTS MINIMUM
b. Surface Deice Switch – SINGLE AND RELEASE
c. Stall Warning Ice Mode Annunciator – VERIFY ILLUMINATED
d. Repeat as required

If Single Position of the Surface Deice Switch Fails:

e. Surface Deice Switch – MANUAL AND HOLD
FOR A MINIMUM OF 6 SECONDS, THEN RELEASE
f. Stall Warning Ice Mode Annunciator – VERIFY ILLUMINATED
g. Repeat as required.

Add the following.

OUTSIDE OF ICING CONDITIONS AND WINGS FREE OF ICE

a. Stall Warning Ice Mode Annunciator PRESS (to select Normal Mode)
b. Stall Warning Ice Mode Annunciator EXTINGUISHED

REFERENCE ONLY

BEFORE LANDING

1. Approach Speed ..... CONFIRM
2. Autofeather ..... ARM
3. Pressurization ..... CHECK
4. Cabin Sign ..... NO SMOKE & FSB
5. Flaps ..... APPROACH
6. Landing Gear ..... DN
7. Lights ..... AS REQUIRED

NOTE

Under low visibility conditions, landing and taxi lights should be left off due to light reflections.

8. Radar ..... AS REQUIRED
9. Surface Deice ..... CYCLE AS REQUIRED

If wings are free of ice:

10. Stall Warning Ice Mode Switch ..... PRESS (to select Normal Mode)

If residual ice remains on wing boots:

11. Surface Deice ..... CYCLE
12. Stall Warning Ice Mode Annunciator ..... ILLUMINATED
13. Approach Speed and Landing Distance ..... INCREASE V_{REF} BY 15 KNOTS AND INCREASE EXPECTED LANDING DISTANCE BY 25 PER CENT

In the **NOTE** *replace last sentence with "*Stall speeds can be expected to increase as much as 15 knots if ice is present on the wings and/or horizontal tail surfaces."

REFERENCE ONLY

NORMAL LANDING

1. Flaps ..... DOWN
3. Airspeed ..... V_{REF} (With ice on wings, V_{REF} + 15)
4. Yaw Damper ..... OFF
5. Power Levers ..... IDLE
6. Prop Levers ..... FULL FORWARD

After Touchdown:

7. Power Levers ..... LIFT AND SELECT GROUND FINE
8. Brakes ..... AS REQUIRED

MAXIMUM REVERSE THRUST LANDING

Replace step 2:

2. Airspeed ..... V_{REF} (With ice on wings, V_{REF} + 15)

BALKED LANDING

1. Power ..... MAXIMUM ALLOWABLE
2. Airspeed ..... MAINTAIN V_{REF}

When clear of obstacles or 400 feet AGL, whichever is higher:

3. Airspeed ..... V_{REF} + 10 knots
4. Flaps ..... UP
5. Landing Gear ..... UP
6. Airspeed ..... 125 KNOTS

SHUT DOWN AND SECURING

1. Emerg Cabin Lt Switch ..... OFF

Add the following step when exiting the cabin.

2. Emergency Cabin Light Power Switch ..... OFF

REFERENCE ONLY

OTHER PROCEDURES

ICING FLIGHT

Refer to Section 2 Limitations of this Supplement for limitations relating to icing flight. See Section 3A for abnormal procedures associated with icing equipment malfunctions and procedures required for severe icing conditions. See the BEFORE TAKEOFF (RUNUP) and CRUISE checklists in this section for normal ground and in-flight procedures pertaining to flight in icing conditions.
At first sign of ice accretion on aircraft:

a. Airspeed ..... 145 KNOTS MINIMUM
b. Surface Deice Switch ..... SINGLE AND RELEASE
c. Stall Warning Ice Mode Annunciator ..... VERIFY ILLUMINATED
d. Repeat as required

TAKEOFF TRIM WARNING TEST

A warning system has been added that provides a constant tone aural alert in the cockpit when the elevator trim tab is not set within the acceptable range for takeoff and engine power is increased above approximately 80% N_1. The system should be tested for proper operation before the first flight of each day while conducting the BEFORE ENGINE STARTING procedure. To perform this test the trim warning system must first be activated by placing the Autofeather switch to ARM. Then the left power lever must be advanced past the 80% N_1 position. The system should now be tested by adjusting the elevator trim tab to a position outside of the takeoff range marked on the tab position indicator in both the nose up and the nose down directions. The aural alert should sound just as the tab position indicator moves outside of the takeoff range. The aural alert should be silent when the tab position is inside of the takeoff range.

When the power levers are advanced to initiate a takeoff and the aural alert sounds, immediately reduce power to idle and abort the takeoff. Do not takeoff when the elevator trim tab position is not set within the takeoff range.

OVER-SPEED WARNING TEST

A warning system has been added to the aircraft (except Proline 21 equipped airplanes) that provides a pulsing tone aural alert in the cockpit when the airspeed is greater than V_{MO} or the Mach number is greater than M_{MO}. When the alert is heard the pilot must take immediate action to reduce airspeed below the maximum operating limit. The system should be tested while conducting the BEFORE ENGINE STARTING procedure by simply selecting the TEST position on the OVERSPEED WARNING TEST switch. A loud pulsing tone should sound if the system is functioning properly.

REFERENCE ONLY

STALL WARNING SYSTEM OPERATION

An ICE MODE feature has been added to the stall warning system. The ice mode is automatically activated when the Surface Deice system is selected by the pilot. Illumination of the STALL WARNING ICE MODE annunciator indicates the stall warning system is operating in the ice mode. After exiting icing conditions and when the aircraft is free of ice, transfer the stall warning system to the normal mode by pressing and releasing the STALL WARNING ICE MODE annunciator.

CABIN EMERGENCY LIGHTING SYSTEM OPERATION

An emergency lighting system has been added to provide supplemental lighting in the passenger cabin around the emergency exit door and cabin door. Two switches – a cabin switch located in the ceiling and a control switch located in the copilot instrument panel – control operation of the system.

When entering the cabin during the preflight inspection the charge level of the emergency lighting system battery pack should be verified. To do this, place the cabin switch to ON with the aircraft battery switch OFF. The emergency cabin flood lamps should illuminate. If the lamps do not illuminate, the emergency lighting system batteries have been discharged or there is a malfunction in the system. Discharged batteries must be removed and recharged or replaced. The Halo 250 Instructions for Continued Airworthiness manual describes the proper procedures for removing and recharging or replacing the cabin emergency lighting system batteries.

Before taxiing, place the cabin switch to ON and the control switch to ARMED. This is the switch configuration for normal taxiing and flight operations.

When shutting down and exiting the airplane, place both the control switch and the cabin switch to OFF.

It is acceptable to utilize the flood lamps to illuminate the cabin whenever needed, such as for boarding or to charge the photoluminescent escape path markings. Limit the time the flood lamps are being powered by the emergency lighting system battery to no more than 20 minutes to ensure the battery will have remaining capacity in case of an emergency.

REFERENCE ONLY

CHARGING EMERGENCY ESCAPE PATH MARKINGS

Photoluminescent markings have been installed on the cabin floor outlining the aisle and the paths to the emergency exit door and cabin door. The markings must be charged during preflight operations by illuminating the cabin with either or a combination of sunlight through the cabin windows, the cabin lights, or the emergency cabin flood lamps when any part of that flight will be conducted in darkness. The table below lists the minimum charging time to ensure the markings will perform as intended throughout the respective flight.

Required Charging of Emergency Escape Path Markings

Charging Time	Duration of Acceptable Luminance
5 minutes	1.5 hours
10 minutes	2.5 hours
20 minutes	4 hours
30 minutes	5 hours

OVERWEIGHT LANDING

An overweight landing is defined as any landing made when the airplane gross weight is greater than 12,500 pounds, which is the maximum landing weight limitation (except for an airplane equipped with Beechcraft High Flotation landing gear that has a maximum landing weight limitation of 13,420 pounds). If it becomes necessary to land the airplane at a gross weight above 12,500 pounds the pilot should request that an inspection in accordance with the King Air 200 Series Maintenance Manual Section 5-50-00 Inspection After Hard Landing be performed before the next flight (except for an airplane equipped with Beechcraft High Flotation landing gear that has a maximum landing weight limitation of 13,420 pounds). Note that components in the standard landing gear have less overall strength margin than the corresponding components in the high flotation landing gear. Also, an overweight landing where the touchdown sink rate is nominal will not result in damage to the landing gear or airframe structure.

NOISE CHARACTERISTICS

The takeoff noise level of King Air 200 series airplanes modified in accordance with the CenTex Aerospace Halo 250 Commuter Category STC established in compliance with 14 CFR Part 36, Appendix G and ICOA Annex 16, Chapter 10 is 85.3 dB(A). The limit is 88.0 dB(A).

No determination has been made by the Federal Aviation Administration that the noise level of this airplane is, or should be, acceptable or unacceptable for operation at, into, or out of any airport.

REFERENCE ONLY

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REFERENCE ONLY

INTRODUCTION TO COMMUTER CATEGORY PERFORMANCE AND FLIGHT PLANNING

REGULATORY COMPLIANCE

Information in this section is provided for the purpose of maintaining compliance with the applicable certification requirements of 14 CFR Part 23, which imposes specific performance based limitations. The airplane will not meet these performance limitations under all atmospheric conditions for which it is approved at the maximum takeoff weight of 13,420 pounds and at the maximum landing weight of 12,500 pounds. Therefore, the operating weight must be reduced under some atmospheric conditions. The maximum operating weights are limited by the following performance data and compliance therewith is mandatory. Please note that brake energy and tire speed are not limiting factors when the brakes and tires specified by this conversion are installed on the airplane.

For all 14 CFR Part 91 and Part 135 operations:

1. Maximum Takeoff Weight (takeoff climb requirements)
2. Takeoff Field Length
3. Maximum Landing Weight (discontinued approach and balked landing climb requirements)
4. Landing Distance

For 14 CFR Part 135 operations only:

5. Maximum Enroute Weight (one engine inoperative service ceiling)

FLIGHT TEST PERFORMANCE CONDITIONS

All performance data presented in this section is based on FAA-approved performance data taken from applicable King Air 200 series Airplane Flight Manual(s) and verified by FAA flight testing. Also, included is the incremental performance effects due to the installation of Commuter Air Technology's Super 60 Cargo Pod".

1. Power ratings include the installation, bleed air, and accessory losses.
2. Full temperature accountability within the operational limits for which the airplane is certified.

NOTE

Should ambient air temperature or altitude be below the lowest temperature or altitude shown on the performance charts, use the performance at the lowest value shown.

3. All takeoff and landing performance is based on paved, dry runway.
4. Runway or takeoff and landing performance was obtained using the following procedures and conditions:

REFERENCE ONLY

ONE ENGINE INOPERATIVE TAKEOFF (ACCELERATE-GO)

- Static takeoff power was set.
- The critical engine was shutdown with the condition lever just prior to V_1. The Autofeather system was allowed to feather the inoperative engine propeller.
- The acceleration was continued to V_R and the airplane was rotated to an attitude of approximately 8° nose up.
- The landing gear was retracted when a positive rate of climb was established.
- V_2 was attained by 35 feet AGL and maintained until 400 feet AGL.

REJECTED TAKEOFF (ACCELERATE STOP)

- Static takeoff power was set.
- The critical engine was shut down with the condition lever just prior to V_1.
- Both power levers were rapidly moved to the idle position in one continuous motion at V_1.
- Maximum braking was immediately initiated and maintained until the airplane came to a complete stop.

ALL ENGINES TAKEOFF

- Static takeoff power was set.
- The airplane was accelerated to V_R and the airplane was rotated to an attitude of approximately 8° nose up.
- The landing gear was retracted when a positive rate of climb was established.
- V_2 was attained by 35 feet AGL and maintained until 400 feet AGL.

LANDING

- Power was set to maintain a 3° approach angle with the airspeed stabilized at V_{REF}.
- Both power levers were moved to the idle position when the airplane reached 50 feet AGL.
- Maximum braking was immediately initiated and maintained until the airplane came to a complete stop.

REFERENCE ONLY

PERFORMANCE CONFIGURATIONS

	No. of Oper-ating Engines	Power	Flap Setting	Landing Gear
1st Segment Takeoff Climb	1	Takeoff	Up or Approach	Down
2nd Segment Takeoff Climb	1	Takeoff	Up or Approach	Up
Horizontal Acceleration	1	Takeoff	Up	Up
Enroute Climb	1	Max Continuous	Up	Up
Approach Climb	1	Max Continuous	Approach	Up
Balked Landing Climb	2	Takeoff	Landing	Down

FLIGHT PLANNING

Flight planning is an essential part of operating this airplane. Proper flight planning ensures that the pilot is complying with the applicable 14 CFR Part 23 regulatory requirements, which are intended to increase the level of safety. The regulations applicable to Commuter category airplanes impose performance minimums that must be met in order for the airplane to takeoff and land using a specified departure and destination runway. These additional performance minimums make sure, in the event there is an engine failure during takeoff, the airplane can be stopped on the available runway or the airplane's climb performance is adequate to clear obstacles within the takeoff flight path. It is the pilot's responsibility to do the proper flight planning and thereby make certain the airplane's performance will meet the required minimums under the actual conditions. When the actual conditions are such that the performance minimums cannot be met, the pilot must elect to lower the gross weight of the airplane, select a longer runway, or wait until outside air temperatures cool sufficiently so the performance minimums will be met.

Furthermore, the takeoff flight path profile that the pilot must fly is defined in this section. The subsequent paragraph TAKEOFF PATH PROFILE shows and explains the new takeoff flight path profile, which is typical for commuter and transport category airplanes. The profile has multiple segments where the takeoff speeds and airplane configurations are applicable from the beginning of the takeoff run until the airplane reaches 1,500 feet above ground level.

REFERENCE ONLY

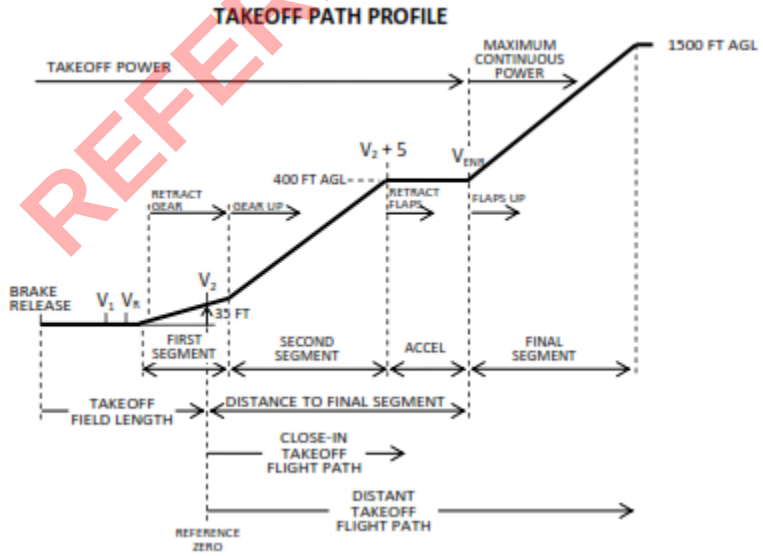
The performance data in this section are presented in a familiar format, similar to the Beechcraft performance charts, tables, and graphs in the basic AFM/POH. However, the tabular presentations of takeoff field lengths and of maximum allowed takeoff and landing weight to meet minimum climb requirements are new to the operators and pilots of the King Air 200 series airplanes. These tables should prove to be straightforward and easy to use. It is noted interpolation of the tabulated data can be utilized when needed.

An example of a flight from Denver's Stapleton International airport (now closed) to Reno-Tahoe International airport shows how to properly plan for a typical flight. This departure airport and destination airport were selected for the following example so that there is similarity with the flight planning example found in the Beechcraft King Air 200 series AFM/POH. Please note the airport, weather, and route information presented in this example are not to be considered accurate or reliable and should not be used for any actual flight plan. It is presented here only as an example of how to properly plan a flight and how to correctly utilize the performance data in this section.

REFERENCE ONLY

TAKEOFF PATH PROFILE

For the King Air 200 series airplanes with the Halo 250 Commuter category conversion, the takeoff path is defined as shown below. The performance data presented in this section provide the parameters that are needed to construct such a takeoff path for a given departure runway and location. The variable the pilot must consider and restrict, if necessary, is the takeoff weight. This is required to ensure the takeoff path of the airplane will not require more runway than is available and will clear all obstacles.



MAXIMUM ALLOWED TAKEOFF WEIGHT

The maximum takeoff weight limit from Section 2 Limitations is 13,420 pounds. However, the maximum allowed takeoff weight may be less than the maximum takeoff weight limit depending on the available runway length and any obstacles in the takeoff path, and on the engine inoperative climb performance of the airplane. Below is a list of the performance data tables and charts contained in the section that establish the maximum allowed takeoff weight.

- MAXIMUM ALLOWED TAKEOFF WEIGHT – FLAPS UP
  TO MEET FIRST, SECOND AND FINAL SEGMENT CLIMB REQUIREMENTS
- MAXIMUM ALLOWED TAKEOFF WEIGHT – FLAPS APPROACH
  TO MEET FIRST, SECOND AND FINAL SEGMENT CLIMB REQUIREMENTS
- MAXIMUM ENROUTE WEIGHT (14 CFR PART 135 OPERATIONS)
- TAKEOFF SPEEDS & BALANCED FIELD LENGTHES – FLAPS UP
- TAKEOFF SPEEDS & BALANCED FIELD LENGTHES – FLAPS APPROACH

MAXIMUM ALLOWED LANDING WEIGHT

The maximum landing weight limit from Section 2 Limitations is 12,500 pounds or 13,420 pounds for an airplane equipped with Beechcraft High Flotation landing gear. However, the maximum allowed landing weight may be less if a reduction in weight is required so that the engine inoperative climb performance during a discontinued/missed approach meets the minimum requirement. The following chart(s) should be used to determine the maximum allowed landing weight:

- MAXIMUM ALLOWED LANDING WEIGHT - TO ACHIEVE LANDING CLIMB REQUIREMENTS
- MAXIMUM ALLOWED LANDING WEIGHT - TO ACHIEVE LANDING CLIMB REQUIREMENT WITH ICE ACCUMULATIONS PRESENT
- LANDING DISTANCE (WITHOUT/WITH) PROPELLER REVERSE
- CLIMB -BALKED LANDING (Note-requirement met at all weights)

PERFORMANCE EXAMPLE

CONDITIONS

At Stapleton International Airport (DEN):
Outside Air Temperature ..... 28°C
Field Elevation..... 5,333 feet
Altimeter Setting..... 29.82 Inches Hg
Wind ..... 330° at 10 knots
Runway 35L length..... 11,500 feet
Runway 35L gradient ..... 0.4% Down
Pressure Altitude .....5,333 ft + (29.92-29.82) x 1,000 ft = 5,433 feet
Temperature Relative to ISA ..... 28°C - (ISA @ 5,333 ft) = 28° - 4° => ISA+24°C
Routing: DEN J116 EKR J173 SLC J154 BAM J32 RNO

REFERENCE ONLY

Route Segment	Course	Dist. NM	Wind, Temp. at FL 260	Temp. FL 180
DEN J116 EKR	265° M 252° T	143	350°/40ks, -10°C	-6°C
EKR J173 SLC	321° M 255° T	192	350°/40ks, -10°C	-6°C
SLC J154 BVL	270° M 233° T	81	340°/35ks, -20°C	0°C
BVL J154 BAM	250° M 234° T	145	340°/35ks, -20°C	0°C
BAM J32 RNO	227° M 210° T	146	290°/45ks, -20°C	-4°C

At Reno-Tahoe International Airport (RNO):
Outside Air Temperature ..... 26°C
Field Elevation..... 4,412 feet
Altimeter Setting..... 29.60 Inches Hg
Wind ..... 270° at 5 knots
Runway 25 length ..... 6,101 feet
Pressure Altitude .....4,412 ft + (29.92-29.60) x 1,000 ft = 4,732 feet

MAXIMUM ALLOWED TAKEOFF WEIGHT TABLES

TO MEET FIRST, SECOND AND FINAL SEGMENT CLIMB REQUIREMENTS

The maximum allowed takeoff weight must be established for the takeoff configuration (i.e, flaps up or flaps approach) and the departure conditions (i.e., pressure altitude and outside air temperature). These two tables list the maximum allowed takeoff weight for the corresponding configuration at which the airplane will meet the first, second, and final segment climb requirements.

A check of the example shown on the table for flaps up shows the maximum allowed takeoff weight to be 13,230 pounds, and for flaps approach, 12,422 pounds.

NOTE: Similarly, the maximum allowed landing weight should be established for the arrival conditions during preflight planning. The landing weight (i.e., takeoff weight minus the fuel consumed enroute to the destination) must not be greater than the maximum allowed landing weight.

REFERENCE ONLY

MAXIMUM ENROUTE WEIGHT (14 CFR PART 135 OPERATIONS) CHART

This chart establishes the maximum weight at which the airplane can meet the 14 CFR Part 135.181 performance requirements. A determination of the maximum enroute weight is only required when operating under Part 135.

A check of the example shown on the MAXIMUM ENROUTE WEIGHT (14 CFR PART 135 OPERATIONS) chart shows the maximum weight for the most critical route segment (-6°C, 18,000 ft, 29.92 Inches Hg):
Maximum Enroute Weight (14 CFR Part 135 Operations) .....12,530 pounds

The performance example route segment conditions show there are no MEAs above 18,000 feet, which is the lowest altitude for navigating via jet airways, therefore, 18,000 feet is selected as the highest MEA for the example trip. To determine the maximum takeoff weight, the weight of the fuel used to reach the MEA is added to the maximum enroute weight. A check of the example shown on the TIME, FUEL, and DISTANCE TO CLIMB chart provides the following information:

Time to climb from 5,333 feet (28°C) to FL180 (-6°C)..... 8 minutes
Fuel ..... 90 (Fuel to start, taxi, & takeoff) + 122 = 212 pounds
Distance ..... 23 nautical miles

Adding the fuel to reach the MEA (212 pounds) to the maximum enroute weight shows the maximum allowed takeoff weight cannot exceed 12,742 pounds if the flight is to be operated in accordance with 14 CFR Part 135.181 requirements.

REFERENCE ONLY

TAKEOFF SPEEDS & BALANCED FIELD LENGTHS TABLES

There are two sets of takeoff speeds and field length tables - one set for flaps up and the other set for flaps approach. The pilot can choose either of these two flap settings for takeoff, but the corresponding maximum allowed takeoff weight, accelerate stop distance, and net gradient of climb data must be applied. Takeoff speeds are the takeoff decision speed (V_1), rotation speed (V_R), safety speed (V_2), and final segment climb speed (V_{ENR}) that apply to the takeoff condition. Takeoff field length is said to be "balanced" when upon reaching the takeoff decision speed the pilot can elect to abort the takeoff and stop the airplane, or, continue the takeoff and reach a height of 35 feet above the point of lift off; either within the available runway length. Typically, a takeoff with flaps set to approach is advantageous only when there is a relatively short runway and no obstacles in the takeoff path.

A preliminary look at the takeoff field length required for a flaps-up takeoff at the performance example departure conditions and at a gross weight of 13,420 pounds shows the required field length to be very close to the available runway length of 11,500 feet. As you can see, interpolation is required to determine whether the takeoff field length is greater than the available runway. Also, if pressure altitude is in-between table values, select the next higher pressure altitude. Below is an example of how to interpolate takeoff field length for temperatures that are in-between values shown in the table.

For Flaps Up:

TOW of 13,420 lbs, Pressure Altitude 5,500 ft, and, OAT of 24°C and 34°C; TFL is 9,004 ft and 10,817 ft, respectively. Interpolate to find TFL at 28°C; TFL = 11,181 + (13,452-11,181) x 4/10 = 12,089 feet, uncorrected TFL. The corresponding V_1, V_r, V_2, and V_{ENR} takeoff speeds are listed as 114, 115, 125, 125 knots, respectively.

TAKEOFF FIELD LENGTH CORRECTION CHART

Use these charts to correct the takeoff field length for runway slope/gradient and for headwind and tail wind components. When the runway surface is not flat, the takeoff field length should be corrected to account for the effect of a sloping takeoff surface. A downward slope will aid in accelerating the airplane and thus reduces the field length. However, if the accelerate-stop distance is the deciding field length, a downward slope will result in a longer field length. This effect can be seen for field lengths less than approximately 4,000 feet.

REFERENCE ONLY

The uncorrected TFL distance of 12,089 feet can now be corrected for the runway 35L downward gradient of 0.4% and effect of wind (330° at 10 knots) using this chart. For determining headwind or tail wind component see the WIND COMPONENTS graph in the basic AFM/POH. The example on the chart shows the corrected TFL to be 11,470 feet, which is less than the available length of runway 35L at DEN.

CLEARWAYS

If the runway to be used for takeoff has a clearway, up to 20% of the balanced field length required for takeoff can be over the clearway. Check the runway declared distance information to determine whether the runway has a clearway. This information will include the following lengths if a clearway exists:

- TORA (takeoff run available)
- TODA (takeoff distance available)
- ASDA (accelerate-stop distance available)

Note - The length of a clearway is TODA minus TORA.

To utilize a clearway all of the following conditions must be met:

1. The TORA must be at least 80% of the required balanced field length.
2. The TODA must be at least equal to the required balanced field length.
3. The ASDA must be equal to or greater than the required accelerate-stop distance (see the ACCELERATE-STOP DISTANCE chart in this section).

CLOSE IN and DISTANT TAKEOFF FLIGHT PATH CHARTS

The Close-In Takeoff Flight Path and Distant Takeoff Flight Path charts are used to determine the minimum climb gradient required from the zero reference point in the takeoff path to clear any obstacles in the takeoff path. To demonstrate how to use the charts assume there is a 175 feet high ridge located 9,970 feet from the end of the departure runway (35L at DEN) in the performance example.

The corrected takeoff field length from the example is 11,470 feet. Since the departure runway is 11,500 feet long, from reference zero to the end of the runway is only 30 feet. This distance is added to the 9,970 feet to place the 175 feet high ridge 10,000 feet from reference zero. A check of the Close-In Takeoff Flight Path chart example shows the minimum climb gradient must be 1.4%.

Next, check the Net Gradient of Climb chart to see whether the climb gradient produced by the airplane will meet the minimum climb gradient. The example on this chart shows the airplane will deliver a climb gradient of 1.60%, which will allow the airplane to clear the ridge.

REFERENCE ONLY

Note, when a takeoff is made with flaps set to approach there is a period upon reaching 400 feet AGL where the pilot momentarily levels off and accelerates to V_2 + 5, and then retracts the flaps before climbing again at V_{ENR}. The airplane travels approximately 6,000 feet horizontally during this period. This 6,000 feet should be subtracted from the distance to the obstacle when determining the minimum climb gradient. The reduction in the distance to the obstacle is a means to account for the distance the aircraft travels while it is accelerating and not climbing.

MAXIMUM ALLOWED LANDING WEIGHT TABLES

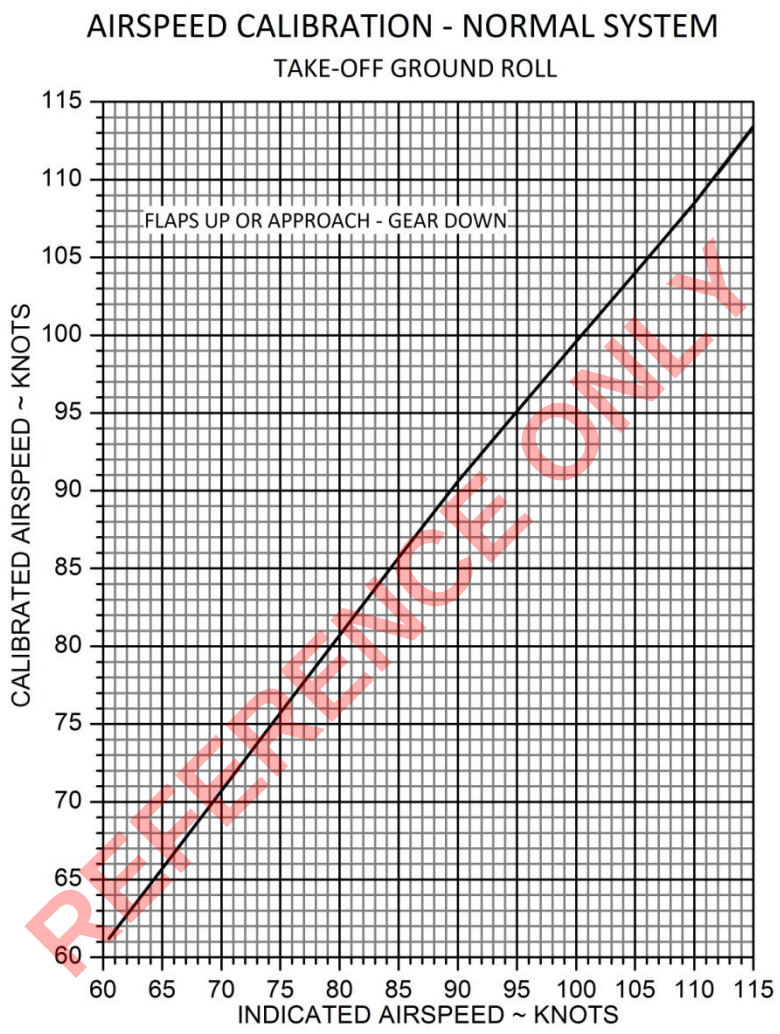
The maximum landing weight limitation from Section 2 Limitations is 12,500 pounds. However, the maximum allowed landing weight may be less than the maximum landing weight limit depending on the airplane's climb performance. In the event of a discontinued approach with one engine inoperative the climb gradient must not be less than 2.1%. Following the data in the maximum allowed landing weight table ensures the airplane will be at a weight allowing the climb requirements to be met.

The fuel required to reach the destination should be subtracted from the takeoff weight to determine the predicted landing weight. If the predicted landing weight is greater than the maximum allowed landing weight, then the takeoff weight must be reduced so that the maximum allowed landing weight is not exceeded at the destination. A check of the example shown on the MAXIMUM ALLOWED LANDING WEIGHT table, which corresponds to the DEN to RNO example trip, shows the maximum allowed landing weight to be 12,500 pounds. The following charts contained in this section are provided to aid in determining the fuel required to reach the destination. See the basic AFM/POH for more detailed information regarding cruise performance and the associated fuel consumption.

- TIME, FUEL, AND DISTANCE TO CLIMB
- MAXIMUM CRUISE POWER 1700 RPM (ISA and ISA+20°C tables)
- MAXIMUM RANGE POWER 1700 RPM (ISA and ISA+20°C tables)
- TIME, FUEL, AND DISTANCE TO DESCEND

Please note when icing is expected during the landing approach, the MAXIMUM ALLOWED LANDING WEIGHT - TO ACHIEVE LANDING CLIMB REQUIREMENTS WITH ICE ACCUMULATIONS PRESENT table must be used to determine the maximum allowed landing weight. The data presented in this table takes into account the increased drag and loss of propeller efficiency caused by ice accumulations on the airplane.

REFERENCE ONLY

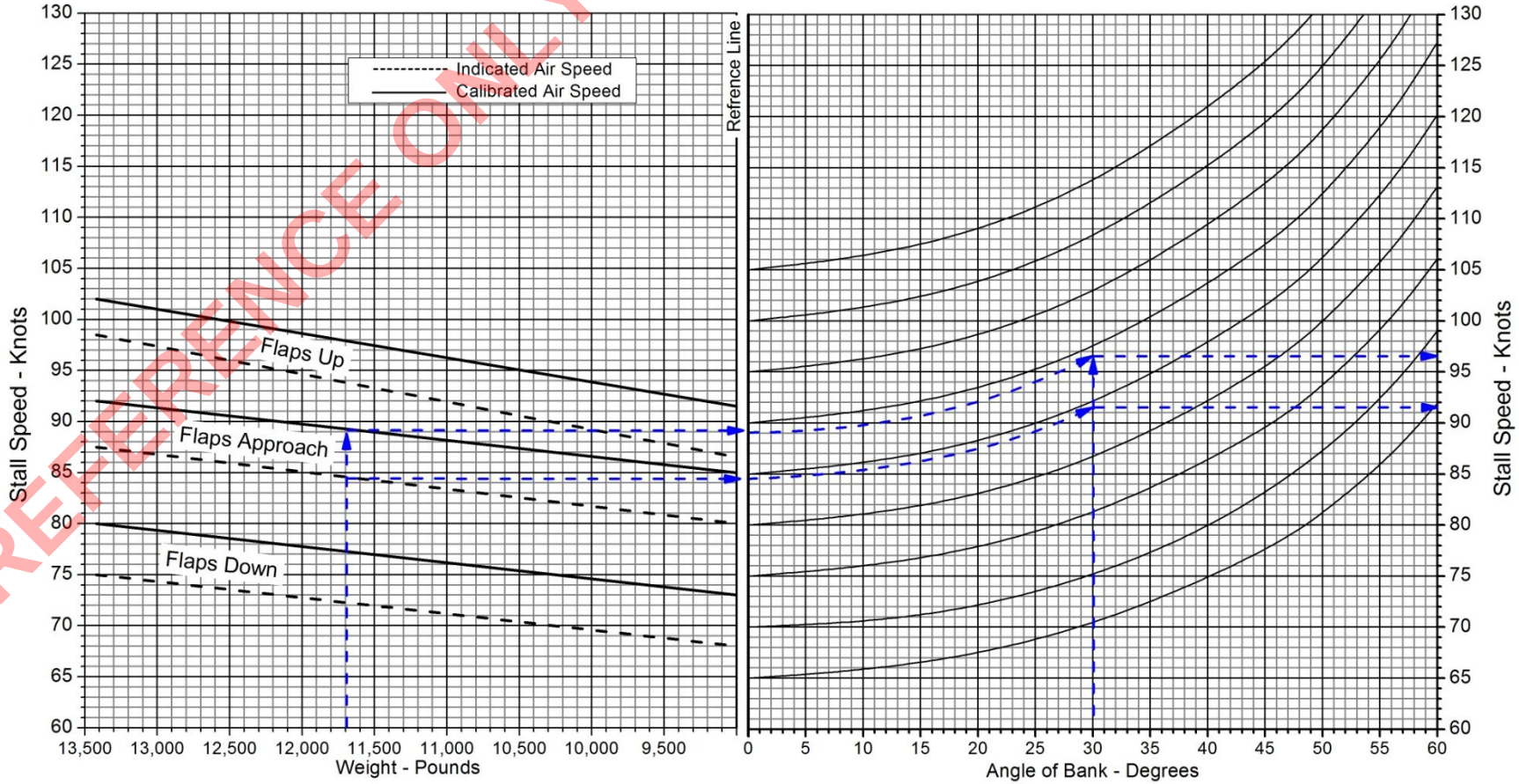

AIRSPEED CALIBRATION - NORMAL SYSTEM
TAKE-OFF GROUND ROLL
FLAPS UP OR APPROACH - GEAR DOWN
CALIBRATED AIRSPEED ~ KNOTS
INDICATED AIRSPEED ~ KNOTS
115
110
105
100
95
90
85
80
75
70
65
60
60 65 70 75 80 85 90 95 100 105 110 115
REFERENCE ONLY

Stall Speeds - Power Idle

Notes:

1. Maximum altitude loss during normal stall recovery is approximately 800 feet.
2. Maximum nose down pitch attitude and altitude loss durring recovery from one engine inoperative stalls per FAR 23.205 are approximately 8 degrees and 300 feet respectively.
3. The pilot should respond to a stall warning by pitching the aircraft nose down until the stall warning ceases, leveling the wings to orient lift vector for recovery, and adding power to assist in the recovery. Level the airplane after the stall warning has ceased and airspeed has increased at least 25 knots.
4. For operations with ice accumulations present, stall speeds may increase 15 knots.

Example
Weight..... 11,700 pounds
Flaps ..... Approach
Angle of Bank..... 30 degrees
Stall Speed ..... 97 Knots CAS
92 Knots IAS



REFERENCE ONLY

MAXIMUM ALLOWED TAKEOFF WEIGHT – FLAPS UP

TO MEET FIRST, SECOND, AND FINAL SEGMENT CLIMB REQUIREMENTS WITH CARGO POD INSTALLED

NOTES:

1. For operations with ice vanes extended, add 6°C to the actual Outside Air Temperature and use this adjusted Outside Air Temperature in the table.
2. For takeoff, the gross weight of the airplane must not exceed the maximum allowed takeoff weight at the corresponding pressure altitude and temperature shown in this table. This ensures compliance to the regulatory requirement for a climb gradient of not less than 2% in the event of an engine failure.
3. Blue background indicates under the respective conditions the maximum allowed takeoff weight is less than 13,420 pounds.
4. No reduction in gross weight is required when pressure altitude is 2,000 feet or less; or, when outside air temperature is equal to or less than the corresponding ISA+3°C temperature.

EXAMPLE
OAT .....28°C
Pressure Altitude ..... 5,433 Ft
Enter table at 5,500 Feet, interpolation is not required when the next higher pressure altitude is selected.
Interpolation is required between 13,290 lbs @ 27°C and 13,170 lbs @ 29°C.
13,290 + (-121 x1/2) = 13,230

Max Allowed TOW
..... 13,230 Pounds

Pressure Altitude Feet	**Outside Air Temperature** **Maximum Allowed Takeoff Weight - Pounds**																	
10,000	-2°C 13,420	0°C 13,330	2°C 13,195	4°C 13,030	6°C 12,890	8°C 12,750	10°C 12,584	12°C 12,417	14°C 12,250	16°C 12,084	18°C 11,917	20°C 11,750	22°C 11,584	24°C 11,417	26°C 11,250	28°C 11,083	30°C 10,916	32°C 10,749
9,500	-1°C 13,420	1°C 13,420	3°C 13,310	5°C 13,180	7°C 13,030	9°C 12,890	11°C 12,750	13°C 12,584	15°C 12,417	17°C 12,250	19°C 12,084	21°C 11,917	23°C 11,750	25°C 11,584	27°C 11,417	29°C 11,250	31°C 11,083	33°C 10,916
9,000	0°C 13,420	2°C 13,420	4°C 13,420	6°C 13,340	8°C 13,210	10°C 13,050	12°C 12,890	14°C 12,750	16°C 12,584	18°C 12,417	20°C 12,250	22°C 12,084	24°C 11,917	26°C 11,750	28°C 11,583	30°C 11,416	32°C 11,249	34°C 11,082
8,500	1°C 13,420	3°C 13,420	5°C 13,420	7°C 13,420	9°C 13,340	11°C 13,200	13°C 13,030	15°C 12,890	17°C 12,750	19°C 12,584	21°C 12,417	23°C 12,250	25°C 12,084	27°C 11,917	29°C 11,750	31°C 11,583	33°C 11,416	35°C 11,249
8,000	2°C 13,420	4°C 13,420	6°C 13,420	8°C 13,420	10°C 13,420	12°C 13,340	14°C 13,200	16°C 13,030	18°C 12,890	20°C 12,750	22°C 12,584	24°C 12,417	26°C 12,250	28°C 12,084	30°C 11,917	32°C 11,750	34°C 11,583	36°C 11,416
7,500	3°C 13,420	5°C 13,420	7°C 13,420	9°C 13,420	11°C 13,420	13°C 13,420	15°C 13,310	17°C 13,180	19°C 13,030	21°C 12,890	23°C 12,750	25°C 12,584	27°C 12,417	29°C 12,250	31°C 12,083	33°C 11,916	35°C 11,749	37°C 11,582
7,000	4°C 13,420	6°C 13,420	8°C 13,420	10°C 13,420	12°C 13,420	14°C 13,420	16°C 13,420	18°C 13,320	20°C 13,190	22°C 13,030	24°C 12,890	26°C 12,750	28°C 12,584	30°C 12,417	32°C 12,250	34°C 12,083	36°C 11,916	38°C 11,749
6,500	5°C 13,420	7°C 13,420	9°C 13,420	11°C 13,420	13°C 13,420	15°C 13,420	17°C 13,420	19°C 13,420	21°C 13,295	23°C 13,170	25°C 13,030	27°C 12,890	29°C 12,750	31°C 12,584	33°C 12,417	35°C 12,250	37°C 12,083	39°C 11,916
6,000	6°C 13,420	8°C 13,420	10°C 13,420	12°C 13,420	14°C 13,420	16°C 13,420	18°C 13,420	20°C 13,420	22°C 13,420	24°C 13,290	26°C 13,170	28°C 13,030	30°C 12,890	32°C 12,750	34°C 12,583	36°C 12,416	38°C 12,249	40°C 12,082
5,500	7°C 13,420	9°C 13,420	11°C 13,420	13°C 13,420	15°C 13,420	17°C 13,420	19°C 13,420	21°C 13,420	23°C 13,420	25°C 13,420	27°C 13,290	29°C 13,170	31°C 13,030	33°C 12,890	35°C 12,723	37°C 12,556	39°C 12,389	41°C 12,222
5,000	8°C 13,420	10°C 13,420	12°C 13,420	14°C 13,420	16°C 13,420	18°C 13,420	20°C 13,420	22°C 13,420	24°C 13,420	26°C 13,420	28°C 13,420	30°C 13,290	32°C 13,170	34°C 13,030	36°C 12,863	38°C 12,696	40°C 12,529	42°C 12,362
4,500	9°C 13,420	11°C 13,420	13°C 13,420	15°C 13,420	17°C 13,420	19°C 13,420	21°C 13,420	23°C 13,420	25°C 13,420	27°C 13,420	29°C 13,420	31°C 13,420	33°C 13,300	35°C 13,170	37°C 13,003	39°C 12,836	41°C 12,669	43°C 12,502
4,000	10°C 13,420	12°C 13,420	14°C 13,420	16°C 13,420	18°C 13,420	20°C 13,420	22°C 13,420	24°C 13,420	26°C 13,420	28°C 13,420	30°C 13,420	32°C 13,420	34°C 13,420	36°C 13,280	38°C 13,143	40°C 12,976	42°C 12,809	44°C 12,642
3,500	11°C 13,420	13°C 13,420	15°C 13,420	17°C 13,420	19°C 13,420	21°C 13,420	23°C 13,420	25°C 13,420	27°C 13,420	29°C 13,420	31°C 13,420	33°C 13,420	35°C 13,420	37°C 13,420	39°C 13,280	41°C 13,116	43°C 12,949	45°C 12,782
3,000	12°C 13,420	14°C 13,420	16°C 13,420	18°C 13,420	20°C 13,420	22°C 13,420	24°C 13,420	26°C 13,420	28°C 13,420	30°C 13,420	32°C 13,420	34°C 13,420	36°C 13,420	38°C 13,420	40°C 13,420	42°C 13,270	44°C 13,089	46°C 12,922
2,500	13°C 13,420	15°C 13,420	17°C 13,420	19°C 13,420	21°C 13,420	23°C 13,420	25°C 13,420	27°C 13,420	29°C 13,420	31°C 13,420	33°C 13,420	35°C 13,420	37°C 13,420	39°C 13,420	41°C 13,420	43°C 13,420	45°C 13,250	47°C 13,062
2,000	14°C 13,420	16°C 13,420	18°C 13,420	20°C 13,420	22°C 13,420	24°C 13,420	26°C 13,420	28°C 13,420	30°C 13,420	32°C 13,420	34°C 13,420	36°C 13,420	38°C 13,420	40°C 13,420	42°C 13,420	44°C 13,420	46°C 13,420	48°C 13,420

REFERENCE ONLY

MAXIMUM ALLOWED TAKEOFF WEIGHT (LBS) – FLAPS APPROACH

TO MEET FIRST, SECOND, AND FINAL SEGMENT CLIMB REQUIREMENTS WITH CARGO POD INSTALLED

Pressure Altitude Feet	Outside Air Temperature Maximum Allowed Takeoff Weight - Pounds														
10,000	-35°C 13,420	-30°C 13,420	-25°C 13,200	-20°C 13,000	-15°C 12,750	-10°C 12,500	-5°C 12,250	0°C 11,980	5°C 11,660	10°C 11,290	15°C 10,950	20°C 10,590	25°C 10,250	30°C 9,900	32°C 9,750
9,500	-34°C 13,420	-29°C 13,420	-24°C 13,420	-19°C 13,200	-14°C 12,950	-9°C 12,680	-4°C 12,450	1°C 12,190	6°C 11,890	11°C 11,550	16°C 11,130	21°C 10,775	26°C 10,440	31°C 10,050	33°C 9,900
9,000	-33°C 13,420	-28°C 13,420	-23°C 13,420	-18°C 13,380	-13°C 13,120	-8°C 12,880	-3°C 12,600	2°C 12,350	7°C 12,080	12°C 11,750	17°C 11,350	22°C 10,950	27°C 10,600	32°C 10,200	34°C 10,050
8,500	-32°C 13,420	-27°C 13,420	-22°C 13,420	-17°C 13,420	-12°C 13,340	-7°C 13,050	-2°C 12,800	3°C 12,530	8°C 12,270	13°C 11,960	18°C 11,600	23°C 11,170	28°C 10,800	33°C 10,400	35°C 10,220
8,000	-31°C 13,420	-26°C 13,420	-21°C 13,420	-16°C 13,420	-11°C 13,420	-6°C 13,240	-1°C 12,950	4°C 12,700	9°C 12,450	14°C 12,175	19°C 11,850	24°C 11,450	29°C 11,000	34°C 10,575	36°C 10,400
7,500	-30°C 13,420	-25°C 13,420	-20°C 13,420	-15°C 13,420	-10°C 13,420	-5°C 13,420	0°C 13,200	5°C 12,910	10°C 12,650	15°C 12,350	20°C 12,030	25°C 11,600	30°C 11,150	35°C 10,750	37°C 10,570
7,000	-29°C 13,420	-24°C 13,420	-19°C 13,420	-14°C 13,420	-9°C 13,420	-4°C 13,420	1°C 13,350	6°C 13,070	11°C 12,780	16°C 12,480	21°C 12,200	26°C 11,830	31°C 11,330	36°C 10,900	38°C 10,750
6,500	-28°C 13,420	-23°C 13,420	-18°C 13,420	-13°C 13,420	-8°C 13,420	-3°C 13,420	2°C 13,420	7°C 13,280	12°C 13,000	17°C 12,670	22°C 12,370	27°C 12,000	32°C 11,520	37°C 11,090	39°C 10,900
6,000	-27°C 13,420	-22°C 13,420	-17°C 13,420	-12°C 13,420	-7°C 13,420	-2°C 13,420	3°C 13,420	8°C 13,420	13°C 13,170	18°C 12,870	23°C 12,530	28°C 12,170	33°C 11,750	38°C 11,280	40°C 11,100
5,500	-26°C 13,420	-21°C 13,420	-16°C 13,420	-11°C 13,420	-6°C 13,420	-1°C 13,420	4°C 13,420	9°C 13,420	14°C 13,270	19°C 12,980	24°C 12,710	29°C 12,350	34°C 11,950	39°C 11,480	41°C 11,280
5,000	-25°C 13,420	-20°C 13,420	-15°C 13,420	-10°C 13,420	-5°C 13,420	0°C 13,420	5°C 13,420	10°C 13,420	15°C 13,420	20°C 13,150	25°C 12,850	30°C 12,490	35°C 12,130	40°C 11,680	42°C 11,450
4,500	-24°C 13,420	-19°C 13,420	-14°C 13,420	-9°C 13,420	-4°C 13,420	1°C 13,420	6°C 13,420	11°C 13,420	16°C 13,420	21°C 13,350	26°C 13,050	31°C 12,670	36°C 12,300	41°C 11,880	43°C 11,700
4,000	-23°C 13,420	-18°C 13,420	-13°C 13,420	-8°C 13,420	-3°C 13,420	2°C 13,420	7°C 13,420	12°C 13,420	17°C 13,420	22°C 13,420	27°C 13,250	32°C 12,860	37°C 12,500	42°C 12,080	44°C 11,900
3,500	-22°C 13,420	-17°C 13,420	-12°C 13,420	-7°C 13,420	-2°C 13,420	3°C 13,420	8°C 13,420	13°C 13,420	18°C 13,420	23°C 13,420	28°C 13,350	33°C 13,000	38°C 12,600	43°C 12,220	45°C 12,060
3,000	-21°C 13,420	-16°C 13,420	-11°C 13,420	-6°C 13,420	-1°C 13,420	4°C 13,420	9°C 13,420	14°C 13,420	19°C 13,420	24°C 13,420	29°C 13,420	34°C 13,150	39°C 12,700	44°C 12,330	46°C 12,175
2,500	-20°C 13,420	-15°C 13,420	-10°C 13,420	-5°C 13,420	0°C 13,420	5°C 13,420	10°C 13,420	15°C 13,420	20°C 13,420	25°C 13,420	30°C 13,420	35°C 13,300	40°C 12,890	45°C 12,430	47°C 12,280
2,000	-19°C°C 13,420	-14°C 13,420	-9°C 13,420	-4°C 13,420	1°C 13,420	6°C 13,420	11°C 13,420	16°C 13,420	21°C 13,420	26°C 13,420	31°C 13,420	36°C 13,420	41°C 13,050	46°C 12,550	48°C 12,370
1,500	-18°C 13,420	-13°C 13,420	-8°C 13,420	-3°C 13,420	2°C 13,420	7°C 13,420	12°C 13,420	17°C 13,420	22°C 13,420	27°C 13,420	32°C 13,420	37°C 13,420	42°C 13,170	47°C 12,700	49°C 12,500
1,000	-17°C 13,420	-12°C 13,420	-7°C 13,420	-2°C 13,420	3°C 13,420	8°C 13,420	13°C 13,420	18°C 13,420	23°C 13,420	28°C 13,420	33°C 13,420	38°C 13,420	43°C 13,300	48°C 12,800	50°C 12,600
500	-16°C 13,420	-11°C 13,420	-6°C 13,420	-1°C 13,420	4°C 13,420	9°C 13,420	14°C 13,420	19°C 13,420	24°C 13,420	29°C 13,420	34°C 13,420	39°C 13,420	44°C 13,420	49°C 12,980	51°C 12,750
Sea Level	-15°C 13,420	-10°C 13,420	-5°C 13,420	0°C 13,420	5°C 13,420	10°C 13,420	15°C 13,420	20°C 13,420	25°C 13,420	30°C 13,420	35°C 13,420	40°C 13,420	45°C 13,420	50°C 13,100	52°C 12,900

REFERENCE ONLY

NOTES

1. For operations with ice vanes extended, add 6°C to the actual Outside Air Temperature and use this adjusted Outside Air Temperature in the table.
2. For takeoff, the gross weight of the airplane must not exceed the maximum allowed takeoff weight at the corresponding pressure altitude and temperature shown in this table. This ensures compliance to the regulatory requirement for a climb gradient in the event of an engine failure of not less than 2%.
3. Blue background indicates under the respective conditions the takeoff weight is less than 13,420 pounds.

EXAMPLE

OAT .....28°C
Pressure Altitude ..... 5,433 Ft

Enter table at 5,500 Feet, interpolation is not required when the next higher pressure altitude is selected.
Interpolation is required between 12,710 lbs @ 24°C and 12,350 lbs @ 29°C.
12,710 + (-360 x 4/5) = 12,422

Max Allowed TOW
.....12,422 Pounds

MAXIMUM ENROUTE WEIGHT

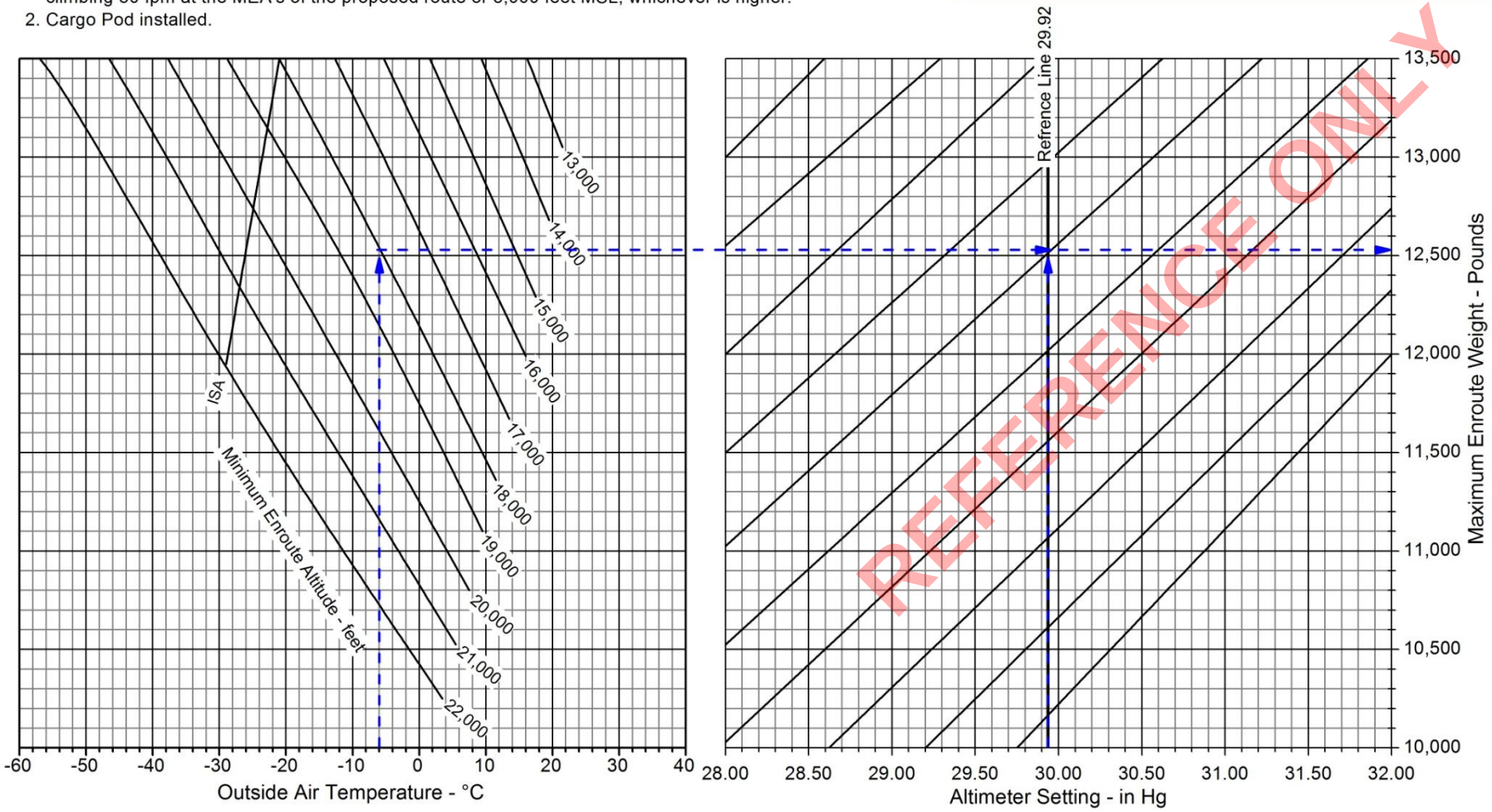
14 CFR PART 135 OPERATIONS

Associated conditions

Power..... Maximum Continuous
Flaps..... Up
Landing Gear..... Up
Inoperative Propeller... Feathered

Notes: 1. Per 14 CFR Part 135, operations over the top or in IFR conditions require that the airplane be capable of climbing 50 fpm at the MEA's of the proposed route or 5,000 feet MSL, whichever is higher.
2. Cargo Pod installed.

Example
OAT..... -6 °C
Minimum Enroute Altitude..... 18,000 feet
Altimeter Setting..... 29.92 in Hg
Maximum Enroute Weight..... 12,530 pounds



REFERENCE ONLY

USING TAKEOFF SPEEDS & BALANCED FIELD LENGTHS TABLES

The first group of tables applies to aircraft operating with flaps set at the approach setting for takeoff and the second group for takeoff with flaps up. In each group, tables are provided for each 500 foot increment in pressure altitude starting with sea level pressure up through 10,000 feet. Each chart is arranged by aircraft weight and ambient outside air temperature. Starting with the maximum takeoff weight of 13,420 pounds in the top row, subsequent rows provide takeoff data for aircraft from 13,000 pound to 9,000 pound weights at 500 pound increments. For each row, the takeoff speeds in knots indicated airspeed (KIAS) and takeoff field length (TOFL) in feet are listed for each temperature. Outside air temperatures in degrees Celsius are given in 10°C increments, starting with 30°C below standard atmospheric (ISA) conditions and ending with 37°C above ISA, which equates to the maximum operating temperature limit of the aircraft. In the tables, the ambient temperatures are organized as follows:

Pres. Alt. Feet	OUTSIDE AIR TEMPERATURE (°C)							
	ISA-30	ISA-20	ISA-10	ISA	ISA+10	ISA+20	ISA+30	ISA+37
Sea level	-15	-5	5	15	25	35	45	52
1,000	-17	-7	3	13	23	33	43	50
2,000	-19	-9	1	11	21	31	41	48
3,000	-21	-11	-1	9	19	29	39	46
4,000	-23	-13	-3	7	17	27	37	44
5,000	-25	-15	-5	5	15	25	35	42
6,000	-27	-17	-7	3	13	23	33	40
7,000	-29	-19	-9	1	11	21	31	38
8,000	-31	-21	-11	-1	9	19	29	36
9,000	-33	-23	-13	-3	7	17	27	34
10,000	-35	-25	-15	-5	5	15	25	32

NOTE: The standard day (ISA) temperature column is lightly shaded for ease of reference.

REFERENCE ONLY

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REFERENCE ONLY

TAKEOFF SPEEDS & BAL. FIELD LENGTHS - FLAPS APPROACH
SEA LEVEL PRESSURE ALTITUDE

Notes:

For operations with ice vanes extended, add 6°C to actual Outside Air Temperature. Red shading indicates performance requirements are not met.

T.O. WEIGHT	ITEM	OUTSIDE AIR TEMPERATURE (°C)							
		-15	-5	5	15	25	35	45	52
13,420 LB	V_1	96	96	96	96	96	96	96	96
6087 KG	V_R	97	97	97	97	97	97	97	97
	V_2	107	107	107	107	107	107	107	107
V_{ENR} = 125	TOFL-FT	**3,538**	**3,687**	**3,911**	**4,159**	**4,659**	**5,304**	**6,228**	**7,052**
13,000 LB	V_1	95	95	95	95	95	95	95	95
5897 KG	V_R	97	97	97	97	97	97	97	97
	V_2	106	106	106	106	106	106	106	106
V_{ENR} = 123	TOFL-FT	**3,262**	**3,397**	**3,598**	**3,821**	**4,270**	**4,841**	**5,659**	**6,389**
12,500 LB	V_1	95	95	95	95	95	95	95	95
5670 KG	V_R	97	97	97	97	97	97	97	97
	V_2	105	105	105	105	105	105	105	105
V_{ENR} = 121	TOFL-FT	**3,182**	**3,309**	**3,498**	**3,709**	**4,132**	**4,660**	**5,418**	**6,094**
12,000 LB	V_1	94	94	94	94	94	94	94	94
5443 KG	V_R	97	97	97	97	97	97	97	97
	V_2	104	104	104	104	104	104	104	104
V_{ENR} = 120	TOFL-FT	**3,086**	**3,205**	**3,382**	**3,579**	**3,973**	**4,458**	**5,153**	**5,773**
11,500 LB	V_1	94	94	94	94	94	94	94	94
5216 KG	V_R	97	97	97	97	97	97	97	97
	V_2	104	104	104	104	104	104	104	104
V_{ENR} = 118	TOFL-FT	**2,982**	**3,091**	**3,256**	**3,439**	**3,803**	**4,245**	**4,877**	**5,441**
11,000 LB	V_1	93	93	93	93	93	93	93	93
4990 KG	V_R	97	97	97	97	97	97	97	97
	V_2	103	103	103	103	103	103	103	103
V_{ENR} = 115	TOFL-FT	**2,946**	**3,029**	**3,155**	**3,321**	**3,629**	**4,031**	**4,605**	**5,115**
10,500 LB	V_1	91	91	91	91	93	93	93	93
4763 KG	V_R	97	97	97	97	97	97	97	97
	V_2	102	102	102	102	102	102	102	102
V_{ENR} = 113	TOFL-FT	**2,757**	**2,843**	**2,966**	**3,111**	**3,288**	**3,620**	**4,113**	**4,549**
10,000 LB	V_1	90	90	90	90	91	92	93	93
4536 KG	V_R	97	97	97	97	97	97	97	97
	V_2	101	101	101	101	101	101	101	101
V_{ENR} = 111	TOFL-FT	**2,628**	**2,705**	**2,813**	**2,943**	**3,131**	**3,362**	**3,698**	**4,074**
9,500 LB	V_1	89	89	89	89	89	90	92	93
4309 KG	V_R	97	97	97	97	97	97	97	97
	V_2	100	100	100	100	100	100	100	100
V_{ENR} = 110	TOFL-FT	**2,515**	**2,584**	**2,683**	**2,801**	**2,970**	**3,178**	**3,447**	**3,691**
9,000 LB	V_1	88	88	88	88	89	89	91	92
4082 KG	V_R	97	97	97	97	97	97	97	97
OR LESS	V_2	99	99	99	99	99	99	99	99
V_{ENR} = 108	TOFL-FT	**2,418**	**2,482**	**2,573**	**2,681**	**2,833**	**3,026**	**3,272**	**3,499**

REFERENCE ONLY

TAKEOFF SPEEDS & BAL. FIELD LENGTHS - FLAPS APPROACH
500 FEET PRESSURE ALTITUDE

Notes:

For operations with ice vanes extended, add 6°C to actual Outside Air Temperature. Red shading indicates performance requirements are not met.

T.O. WEIGHT	ITEM	OUTSIDE AIR TEMPERATURE (°C)							
		-16	-6	4	14	24	34	44	51
13,420 LB	V_1	96	96	96	96	96	96	96	96
6087 KG	V_R	97	97	97	97	97	97	97	97
	V_2	107	107	107	107	107	107	107	107
V_{ENR} = 125	TOFL-FT	**3,897**	**4,089**	**4,336**	**4,643**	**5,141**	**5,872**	**6,958**	**7,972**
13,000 LB	V_1	95	95	95	95	95	95	95	95
5897 KG	V_R	97	97	97	97	97	97	97	97
	V_2	106	106	106	106	106	106	106	106
V_{ENR} = 123	TOFL-FT	**3,592**	**3,763**	**3,985**	**4,261**	**4,706**	**5,353**	**6,316**	**7,221**
12,500 LB	V_1	95	95	95	95	95	95	95	95
5670 KG	V_R	97	97	97	97	97	97	97	97
	V_2	105	105	105	105	105	105	105	105
V_{ENR} = 121	TOFL-FT	**3,428**	**3,585**	**3,790**	**4,043**	**4,454**	**5,040**	**5,910**	**6,734**
12,000 LB	V_1	94	94	94	94	94	94	94	94
5443 KG	V_R	97	97	97	97	97	97	97	97
	V_2	104	104	104	104	104	104	104	104
V_{ENR} = 120	TOFL-FT	**3,256**	**3,400**	**3,588**	**3,817**	**4,193**	**4,720**	**5,500**	**6,242**
11,500 LB	V_1	94	94	94	94	94	94	94	94
5216 KG	V_R	97	97	97	97	97	97	97	97
	V_2	104	104	104	104	104	104	104	104
V_{ENR} = 118	TOFL-FT	**3,091**	**3,221**	**3,393**	**3,601**	**3,943**	**4,415**	**5,112**	**5,776**
11,000 LB	V_1	93	93	93	93	93	93	93	93
4990 KG	V_R	97	97	97	97	97	97	97	97
	V_2	103	103	103	103	103	103	103	103
V_{ENR} = 115	TOFL-FT	**2,987**	**3,092**	**3,228**	**3,413**	**3,705**	**4,127**	**4,747**	**5,338**
10,500 LB	V_1	91	91	91	92	93	93	93	93
4763 KG	V_R	97	97	97	97	97	97	97	97
	V_2	102	102	102	102	102	102	102	102
V_{ENR} = 113	TOFL-FT	**2,809**	**2,906**	**3,032**	**3,174**	**3,354**	**3,707**	**4,240**	**4,745**
10,000 LB	V_1	90	90	90	90	91	92	93	93
4536 KG	V_R	97	97	97	97	97	97	97	97
	V_2	101	101	101	101	101	101	101	101
V_{ENR} = 111	TOFL-FT	**2,675**	**2,761**	**2,870**	**3,005**	**3,183**	**3,420**	**3,808**	**4,239**
9,500 LB	V_1	89	89	89	89	90	90	92	93
4309 KG	V_R	97	97	97	97	97	97	97	97
	V_2	100	100	100	100	100	100	100	100
V_{ENR} = 110	TOFL-FT	**2,557**	**2,635**	**2,735**	**2,856**	**3,017**	**3,232**	**3,522**	**3,828**
9,000 LB	V_1	88	88	88	88	89	89	91	92
4082 KG	V_R	97	97	97	97	97	97	97	97
OR LESS	V_2	99	99	99	99	99	99	99	99
V_{ENR} = 108	TOFL-FT	**2,457**	**2,528**	**2,620**	**2,731**	**2,875**	**3,075**	**3,338**	**3,587**

REFERENCE ONLY

TAKEOFF SPEEDS & BAL. FIELD LENGTHS - FLAPS APPROACH
1,000 FEET PRESSURE ALTITUDE

Notes:

For operations with ice vanes extended, add 6°C to actual Outside Air Temperature. Red shading indicates performance requirements are not met.

T.O. WEIGHT	ITEM	OUTSIDE AIR TEMPERATURE (°C)							
		-17	-7	3	13	23	33	43	50
13,420 LB	V_1	96	96	96	96	96	96	96	---
6087 KG	V_R	97	97	97	97	97	97	97	---
	V_2	107	107	107	107	107	107	107	---
V_{ENR} = 125	TOFL-FT	**4,257**	**4,490**	**4,760**	**5,127**	**5,623**	**6,440**	**7,689**	---
13,000 LB	V_1	95	95	95	95	95	95	95	95
5897 KG	V_R	97	97	97	97	97	97	97	97
	V_2	106	106	106	106	106	106	106	106
V_{ENR} = 123	TOFL-FT	**3,921**	**4,130**	**4,373**	**4,701**	**5,143**	**5,866**	**6,973**	**8,052**
12,500 LB	V_1	95	95	95	95	95	95	95	95
5670 KG	V_R	97	97	97	97	97	97	97	97
	V_2	105	105	105	105	105	105	105	105
V_{ENR} = 121	TOFL-FT	**3,673**	**3,862**	**4,083**	**4,377**	**4,776**	**5,420**	**6,403**	**7,374**
12,000 LB	V_1	94	94	94	94	94	94	94	94
5443 KG	V_R	97	97	97	97	97	97	97	97
	V_2	104	104	104	104	104	104	104	104
V_{ENR} = 120	TOFL-FT	**3,425**	**3,594**	**3,793**	**4,055**	**4,413**	**4,981**	**5,846**	**6,711**
11,500 LB	V_1	94	94	94	94	94	94	94	94
5216 KG	V_R	97	97	97	97	97	97	97	97
	V_2	104	104	104	104	104	104	104	104
V_{ENR} = 118	TOFL-FT	**3,201**	**3,352**	**3,530**	**3,763**	**4,084**	**4,585**	**5,346**	**6,111**
11,000 LB	V_1	93	93	93	93	93	93	93	93
4990 KG	V_R	97	97	97	97	97	97	97	97
	V_2	103	103	103	103	103	103	103	103
V_{ENR} = 115	TOFL-FT	**3,028**	**3,154**	**3,300**	**3,506**	**3,780**	**4,222**	**4,890**	**5,561**
10,500 LB	V_1	91	91	91	92	93	93	93	93
4763 KG	V_R	97	97	97	97	97	97	97	97
	V_2	102	102	102	102	102	102	102	102
V_{ENR} = 113	TOFL-FT	**2,862**	**2,969**	**3,097**	**3,237**	**3,419**	**3,794**	**4,367**	**4,941**
10,000 LB	V_1	90	90	90	90	91	92	93	93
4536 KG	V_R	97	97	97	97	97	97	97	97
	V_2	101	101	101	101	101	101	101	101
V_{ENR} = 111	TOFL-FT	**2,721**	**2,816**	**2,928**	**3,067**	**3,235**	**3,478**	**3,917**	**4,404**
9,500 LB	V_1	89	89	89	89	90	91	92	93
4309 KG	V_R	97	97	97	97	97	97	97	97
	V_2	100	100	100	100	100	100	100	100
V_{ENR} = 110	TOFL-FT	**2,600**	**2,685**	**2,787**	**2,911**	**3,063**	**3,285**	**3,596**	**3,965**
9,000 LB	V_1	88	88	88	88	89	90	91	92
4082 KG	V_R	97	97	97	97	97	97	97	97
OR LESS	V_2	99	99	99	99	99	99	99	99
V_{ENR} = 108	TOFL-FT	**2,496**	**2,574**	**2,667**	**2,781**	**2,918**	**3,124**	**3,405**	**3,674**

REFERENCE ONLY

TAKEOFF SPEEDS & BAL. FIELD LENGTHS - FLAPS APPROACH
1,500 FEET PRESSURE ALTITUDE

Notes:

For operations with ice vanes extended, add 6°C to actual Outside Air Temperature. Red shading indicates performance requirements are not met.

T.O. WEIGHT	ITEM	OUTSIDE AIR TEMPERATURE (°C)							
		-18	-8	2	12	22	32	42	49
13,420 LB	V_1	96	96	96	96	96	96	96	---
6087 KG	V_R	97	97	97	97	97	97	97	---
	V_2	107	107	107	107	107	107	107	---
V_{ENR} = 125	TOFL-FT	**4,617**	**4,892**	**5,185**	**5,611**	**6,105**	**7,008**	**8,420**	---
13,000 LB	V_1	95	95	95	95	95	95	95	95
5897 KG	V_R	97	97	97	97	97	97	97	97
	V_2	106	106	106	106	106	106	106	106
V_{ENR} = 123	TOFL-FT	**4,250**	**4,497**	**4,761**	**5,140**	**5,579**	**6,379**	**7,630**	**8,884**
12,500 LB	V_1	95	95	95	95	95	95	95	95
5670 KG	V_R	97	97	97	97	97	97	97	97
	V_2	105	105	105	105	105	105	105	105
V_{ENR} = 121	TOFL-FT	**3,919**	**4,139**	**4,375**	**4,710**	**5,099**	**5,800**	**6,896**	**8,015**
12,000 LB	V_1	94	94	94	94	94	94	94	94
5443 KG	V_R	97	97	97	97	97	97	97	97
	V_2	104	104	104	104	104	104	104	104
V_{ENR} = 120	TOFL-FT	**3,595**	**3,789**	**3,998**	**4,292**	**4,633**	**5,243**	**6,193**	**7,179**
11,500 LB	V_1	94	94	94	94	94	94	94	94
5216 KG	V_R	97	97	97	97	97	97	97	97
	V_2	104	104	104	104	104	104	104	104
V_{ENR} = 118	TOFL-FT	**3,310**	**3,482**	**3,667**	**3,925**	**4,225**	**4,756**	**5,580**	**6,445**
11,000 LB	V_1	93	93	93	93	93	93	93	93
4990 KG	V_R	97	97	97	97	97	97	97	97
	V_2	103	103	103	103	103	103	103	103
V_{ENR} = 115	TOFL-FT	**3,069**	**3,216**	**3,373**	**3,599**	**3,856**	**4,318**	**5,032**	**5,785**
10,500 LB	V_1	91	91	92	93	93	93	93	93
4763 KG	V_R	97	97	97	97	97	97	97	97
	V_2	102	102	102	102	102	102	102	102
V_{ENR} = 113	TOFL-FT	**2,914**	**3,031**	**3,163**	**3,300**	**3,485**	**3,881**	**4,494**	**5,137**
10,000 LB	V_1	90	90	90	90	91	92	93	93
4536 KG	V_R	97	97	97	97	97	97	97	97
	V_2	101	101	101	101	101	101	101	101
V_{ENR} = 111	TOFL-FT	**2,767**	**2,871**	**2,985**	**3,128**	**3,287**	**3,536**	**4,027**	**4,568**
9,500 LB	V_1	89	89	89	89	90	91	93	93
4309 KG	V_R	97	97	97	97	97	97	97	97
	V_2	100	100	100	100	100	100	100	100
V_{ENR} = 110	TOFL-FT	**2,643**	**2,736**	**2,839**	**2,966**	**3,110**	**3,339**	**3,671**	**4,102**
9,000 LB	V_1	88	88	88	88	89	90	91	93
4082 KG	V_R	97	97	97	97	97	97	97	97
OR LESS	V_2	99	99	99	99	99	99	99	99
V_{ENR} = 108	TOFL-FT	**2,535**	**2,620**	**2,714**	**2,831**	**2,961**	**3,172**	**3,472**	**3,762**

REFERENCE ONLY

TAKEOFF SPEEDS & BAL. FIELD LENGTHS - FLAPS APPROACH
2,000 FEET PRESSURE ALTITUDE

Notes:

For operations with ice vanes extended, add 6°C to actual Outside Air Temperature. Red shading indicates performance requirements are not met.

T.O. WEIGHT	ITEM	OUTSIDE AIR TEMPERATURE (°C)							
		-19	-9	1	11	21	31	41	48
13,420 LB	V_1	96	96	96	96	96	96	96	---
6087 KG	V_R	97	97	97	97	97	97	97	---
	V_2	107	107	107	107	107	107	107	---
V_{ENR} = 125	TOFL-FT	**4,977**	**5,294**	**5,610**	**6,094**	**6,586**	**7,576**	**9,151**	---
13,000 LB	V_1	95	95	95	95	95	95	95	95
5897 KG	V_R	97	97	97	97	97	97	97	97
	V_2	106	106	106	106	106	106	106	106
V_{ENR} = 123	TOFL-FT	**4,579**	**4,864**	**5,148**	**5,580**	**6,016**	**6,892**	**8,287**	**9,715**
12,500 LB	V_1	95	95	95	95	95	95	95	95
5670 KG	V_R	97	97	97	97	97	97	97	97
	V_2	105	105	105	105	105	105	105	105
V_{ENR} = 121	TOFL-FT	**4,164**	**4,415**	**4,667**	**5,044**	**5,421**	**6,180**	**7,388**	**8,655**
12,000 LB	V_1	94	94	94	94	94	94	94	94
5443 KG	V_R	97	97	97	97	97	97	97	97
	V_2	104	104	104	104	104	104	104	104
V_{ENR} = 120	TOFL-FT	**3,764**	**3,984**	**4,203**	**4,530**	**4,854**	**5,505**	**6,540**	**7,648**
11,500 LB	V_1	94	94	94	94	94	94	94	94
5216 KG	V_R	97	97	97	97	97	97	97	97
	V_2	104	104	104	104	104	104	104	104
V_{ENR} = 118	TOFL-FT	**3,420**	**3,612**	**3,804**	**4,087**	**4,366**	**4,926**	**5,814**	**6,780**
11,000 LB	V_1	93	93	93	93	93	93	93	93
4990 KG	V_R	97	97	97	97	97	97	97	97
	V_2	103	103	103	103	103	103	103	103
V_{ENR} = 115	TOFL-FT	**3,110**	**3,278**	**3,446**	**3,691**	**3,931**	**4,413**	**5,174**	**6,008**
10,500 LB	V_1	91	91	92	93	93	93	93	93
4763 KG	V_R	97	97	97	97	97	97	97	97
	V_2	102	102	102	102	102	102	102	102
V_{ENR} = 113	TOFL-FT	**2,966**	**3,094**	**3,228**	**3,363**	**3,550**	**3,968**	**4,621**	**5,333**
10,000 LB	V_1	90	90	90	91	91	92	93	93
4536 KG	V_R	97	97	97	97	97	97	97	97
	V_2	101	101	101	101	101	101	101	101
V_{ENR} = 111	TOFL-FT	**2,814**	**2,927**	**3,043**	**3,190**	**3,339**	**3,594**	**4,137**	**4,733**
9,500 LB	V_1	89	89	89	89	90	91	93	93
4309 KG	V_R	97	97	97	97	97	97	97	97
	V_2	100	100	100	100	100	100	100	100
V_{ENR} = 110	TOFL-FT	**2,685**	**2,786**	**2,891**	**3,021**	**3,156**	**3,392**	**3,746**	**4,239**
9,000 LB	V_1	88	88	88	89	89	90	92	93
4082 KG	V_R	97	97	97	97	97	97	97	97
OR LESS	V_2	99	99	99	99	99	99	99	99
V_{ENR} = 108	TOFL-FT	**2,574**	**2,667**	**2,761**	**2,881**	**3,004**	**3,221**	**3,539**	**3,850**

REFERENCE ONLY

TAKEOFF SPEEDS & BAL. FIELD LENGTHS - FLAPS APPROACH
2,500 FEET PRESSURE ALTITUDE

Notes:

For operations with ice vanes extended, add 6°C to actual Outside Air Temperature. Red shading indicates performance requirements are not met.

T.O. WEIGHT	ITEM	OUTSIDE AIR TEMPERATURE (°C)							
		-20	-10	0	10	20	30	40	47
13,420 LB	V_1	96	96	96	96	96	96	96	---
6087 KG	V_R	97	97	97	97	97	97	97	---
	V_2	107	107	107	107	107	107	107	---
V_{ENR} = 125	TOFL-FT	**5,164**	**5,483**	**5,846**	**6,355**	**6,917**	**7,972**	**9,651**	---
13,000 LB	V_1	95	95	95	95	95	95	95	---
5897 KG	V_R	97	97	97	97	97	97	97	---
	V_2	106	106	106	106	106	106	106	---
V_{ENR} = 123	TOFL-FT	**4,748**	**5,034**	**5,359**	**5,812**	**6,309**	**7,243**	**8,740**	---
12,500 LB	V_1	95	95	95	95	95	95	95	95
5670 KG	V_R	97	97	97	97	97	97	97	97
	V_2	105	105	105	105	105	105	105	105
V_{ENR} = 121	TOFL-FT	**4,308**	**4,560**	**4,844**	**5,238**	**5,668**	**6,476**	**7,779**	**9,105**
12,000 LB	V_1	94	94	94	94	94	94	94	94
5443 KG	V_R	97	97	97	97	97	97	97	97
	V_2	104	104	104	104	104	104	104	104
V_{ENR} = 120	TOFL-FT	**3,890**	**4,110**	**4,357**	**4,698**	**5,067**	**5,759**	**6,882**	**8,018**
11,500 LB	V_1	94	94	94	94	94	94	94	94
5216 KG	V_R	97	97	97	97	97	97	97	97
	V_2	104	104	104	104	104	104	104	104
V_{ENR} = 118	TOFL-FT	**3,526**	**3,718**	**3,932**	**4,226**	**4,543**	**5,138**	**6,104**	**7,072**
11,000 LB	V_1	93	93	93	93	93	93	93	93
4990 KG	V_R	97	97	97	97	97	97	97	97
	V_2	103	103	103	103	103	103	103	103
V_{ENR} = 115	TOFL-FT	**3,199**	**3,366**	**3,552**	**3,806**	**4,078**	**4,589**	**5,417**	**6,236**
10,500 LB	V_1	92	92	92	93	93	93	93	93
4763 KG	V_R	97	97	97	97	97	97	97	97
	V_2	102	102	102	102	102	102	102	102
V_{ENR} = 113	TOFL-FT	**3,028**	**3,152**	**3,291**	**3,453**	**3,673**	**4,113**	**4,822**	**5,510**
10,000 LB	V_1	90	90	90	91	91	93	93	93
4536 KG	V_R	97	97	97	97	97	97	97	97
	V_2	101	101	101	101	101	101	101	101
V_{ENR} = 111	TOFL-FT	**2,870**	**2,981**	**3,106**	**3,259**	**3,425**	**3,714**	**4,305**	**4,878**
9,500 LB	V_1	89	89	89	90	90	91	93	93
4309 KG	V_R	97	97	97	97	97	97	97	97
	V_2	100	100	100	100	100	100	100	100
V_{ENR} = 110	TOFL-FT	**2,736**	**2,835**	**2,948**	**3,084**	**3,232**	**3,481**	**3,885**	**4,362**
9,000 LB	V_1	88	88	88	89	89	90	92	93
4082 KG	V_R	97	97	97	97	97	97	97	97
OR LESS	V_2	99	99	99	99	99	99	99	99
V_{ENR} = 108	TOFL-FT	**2,621**	**2,712**	**2,813**	**2,938**	**3,074**	**3,301**	**3,631**	**3,963**

REFERENCE ONLY

TAKEOFF SPEEDS & BAL. FIELD LENGTHS - FLAPS APPROACH
3,000 FEET PRESSURE ALTITUDE

Notes:

For operations with ice vanes extended, add 6°C to actual Outside Air Temperature. Red shading indicates performance requirements are not met.

T.O. WEIGHT	ITEM	OUTSIDE AIR TEMPERATURE (°C)							
		-21	-11	-1	9	19	29	39	46
13,420 LB	V_1	96	96	96	96	96	96	96	---
6087 KG	V_R	97	97	97	97	97	97	97	---
	V_2	107	107	107	107	107	107	107	---
V_{ENR} = 125	TOFL-FT	**5,351**	**5,672**	**6,082**	**6,617**	**7,248**	**8,367**	**10,152**	---
13,000 LB	V_1	95	95	95	95	95	95	95	---
5897 KG	V_R	97	97	97	97	97	97	97	---
	V_2	106	106	106	106	106	106	106	---
V_{ENR} = 123	TOFL-FT	**4,916**	**5,205**	**5,569**	**6,044**	**6,603**	**7,595**	**9,193**	---
12,500 LB	V_1	95	95	95	95	95	95	95	95
5670 KG	V_R	97	97	97	97	97	97	97	97
	V_2	105	105	105	105	105	105	105	105
V_{ENR} = 121	TOFL-FT	**4,451**	**4,704**	**5,021**	**5,433**	**5,916**	**6,772**	**8,169**	**9,555**
12,000 LB	V_1	94	94	94	94	94	94	94	94
5443 KG	V_R	97	97	97	97	97	97	97	97
	V_2	104	104	104	104	104	104	104	104
V_{ENR} = 120	TOFL-FT	**4,016**	**4,237**	**4,511**	**4,866**	**5,280**	**6,014**	**7,225**	**8,388**
11,500 LB	V_1	94	94	94	94	94	94	94	94
5216 KG	V_R	97	97	97	97	97	97	97	97
	V_2	104	104	104	104	104	104	104	104
V_{ENR} = 118	TOFL-FT	**3,631**	**3,823**	**4,060**	**4,366**	**4,721**	**5,349**	**6,394**	**7,365**
11,000 LB	V_1	93	93	93	93	93	93	93	93
4990 KG	V_R	97	97	97	97	97	97	97	97
	V_2	103	103	103	103	103	103	103	103
V_{ENR} = 115	TOFL-FT	**3,287**	**3,454**	**3,658**	**3,921**	**4,226**	**4,764**	**5,660**	**6,464**
10,500 LB	V_1	92	92	92	93	93	93	93	93
4763 KG	V_R	97	97	97	97	97	97	97	97
	V_2	102	102	102	102	102	102	102	102
V_{ENR} = 113	TOFL-FT	**3,090**	**3,210**	**3,355**	**3,543**	**3,795**	**4,258**	**5,023**	**5,687**
10,000 LB	V_1	90	90	91	91	92	93	93	93
4536 KG	V_R	97	97	97	97	97	97	97	97
	V_2	101	101	101	101	101	101	101	101
V_{ENR} = 111	TOFL-FT	**2,927**	**3,036**	**3,169**	**3,329**	**3,510**	**3,834**	**4,473**	**5,022**
9,500 LB	V_1	89	89	89	90	90	92	93	93
4309 KG	V_R	97	97	97	97	97	97	97	97
	V_2	100	100	100	100	100	100	100	100
V_{ENR} = 110	TOFL-FT	**2,787**	**2,885**	**3,004**	**3,146**	**3,309**	**3,570**	**4,024**	**4,485**
9,000 LB	V_1	88	88	88	89	89	90	92	93
4082 KG	V_R	97	97	97	97	97	97	97	97
OR LESS	V_2	99	99	99	99	99	99	99	99
V_{ENR} = 108	TOFL-FT	**2,667**	**2,756**	**2,865**	**2,995**	**3,144**	**3,382**	**3,723**	**4,075**

REFERENCE ONLY

TAKEOFF SPEEDS & BAL. FIELD LENGTHS - FLAPS APPROACH
3,500 FEET PRESSURE ALTITUDE

Notes:

For operations with ice vanes extended, add 6°C to actual Outside Air Temperature. Red shading indicates performance requirements are not met.

T.O. WEIGHT	ITEM	OUTSIDE AIR TEMPERATURE (°C)							
		-22	-12	-2	8	18	28	38	45
13,420 LB	V_1	96	96	96	96	96	96	---	---
6087 KG	V_R	97	97	97	97	97	97	---	---
	V_2	107	107	107	107	107	107	---	---
V_{ENR} = 125	TOFL-FT	**5,538**	**5,862**	**6,318**	**6,878**	**7,578**	**8,763**	---	---
13,000 LB	V_1	95	95	95	95	95	95	95	---
5897 KG	V_R	97	97	97	97	97	97	97	---
	V_2	106	106	106	106	106	106	106	---
V_{ENR} = 123	TOFL-FT	**5,085**	**5,375**	**5,780**	**6,277**	**6,897**	**7,946**	**9,646**	---
12,500 LB	V_1	95	95	95	95	95	95	95	95
5670 KG	V_R	97	97	97	97	97	97	97	97
	V_2	105	105	105	105	105	105	105	105
V_{ENR} = 121	TOFL-FT	**4,594**	**4,848**	**5,199**	**5,628**	**6,163**	**7,068**	**8,560**	**10,005**
12,000 LB	V_1	94	94	94	94	94	94	94	94
5443 KG	V_R	97	97	97	97	97	97	97	97
	V_2	104	104	104	104	104	104	104	104
V_{ENR} = 120	TOFL-FT	**4,142**	**4,363**	**4,664**	**5,033**	**5,492**	**6,268**	**7,567**	**8,758**
11,500 LB	V_1	94	94	94	94	94	94	94	94
5216 KG	V_R	97	97	97	97	97	97	97	97
	V_2	104	104	104	104	104	104	104	104
V_{ENR} = 118	TOFL-FT	**3,737**	**3,929**	**4,188**	**4,505**	**4,898**	**5,561**	**6,684**	**7,657**
11,000 LB	V_1	93	93	93	93	93	93	93	93
4990 KG	V_R	97	97	97	97	97	97	97	97
	V_2	103	103	103	103	103	103	103	103
V_{ENR} = 115	TOFL-FT	**3,375**	**3,542**	**3,764**	**4,037**	**4,373**	**4,940**	**5,903**	**6,693**
10,500 LB	V_1	93	93	93	93	93	93	93	93
4763 KG	V_R	97	97	97	97	97	97	97	97
	V_2	102	102	102	102	102	102	102	102
V_{ENR} = 113	TOFL-FT	**3,151**	**3,267**	**3,418**	**3,633**	**3,918**	**4,403**	**5,223**	**5,864**
10,000 LB	V_1	90	90	91	91	92	93	93	93
4536 KG	V_R	97	97	97	97	97	97	97	97
	V_2	101	101	101	101	101	101	101	101
V_{ENR} = 111	TOFL-FT	**2,984**	**3,091**	**3,232**	**3,398**	**3,596**	**3,954**	**4,641**	**5,167**
9,500 LB	V_1	89	89	89	90	91	92	93	93
4309 KG	V_R	97	97	97	97	97	97	97	97
	V_2	100	100	100	100	100	100	100	100
V_{ENR} = 110	TOFL-FT	**2,838**	**2,934**	**3,061**	**3,209**	**3,385**	**3,658**	**4,163**	**4,608**
9,000 LB	V_1	88	88	89	89	90	91	93	93
4082 KG	V_R	97	97	97	97	97	97	97	97
OR LESS	V_2	99	99	99	99	99	99	99	99
V_{ENR} = 108	TOFL-FT	**2,714**	**2,801**	**2,917**	**3,053**	**3,214**	**3,462**	**3,815**	**4,188**

REFERENCE ONLY

TAKEOFF SPEEDS & BAL. FIELD LENGTHS - FLAPS APPROACH
4,000 FEET PRESSURE ALTITUDE

Notes:

For operations with ice vanes extended, add 6°C to actual Outside Air Temperature. Red shading indicates performance requirements are not met.

T.O. WEIGHT	ITEM	OUTSIDE AIR TEMPERATURE (°C)							
		-23	-13	-3	7	17	27	37	44
13,420 LB	V_1	96	96	96	96	96	96	---	---
6087 KG	V_R	97	97	97	97	97	97	---	---
	V_2	107	107	107	107	107	107	---	---
V_{ENR} = 125	TOFL-FT	**5,725**	**6,051**	**6,553**	**7,139**	**7,909**	**9,159**	---	---
13,000 LB	V_1	95	95	95	95	95	95	95	---
5897 KG	V_R	97	97	97	97	97	97	97	---
	V_2	106	106	106	106	106	106	106	---
V_{ENR} = 123	TOFL-FT	**5,253**	**5,546**	**5,990**	**6,509**	**7,191**	**8,298**	**10,099**	---
12,500 LB	V_1	95	95	95	95	95	95	95	95
5670 KG	V_R	97	97	97	97	97	97	97	97
	V_2	105	105	105	105	105	105	105	105
V_{ENR} = 121	TOFL-FT	**4,738**	**4,993**	**5,376**	**5,823**	**6,411**	**7,365**	**8,951**	**10,455**
12,000 LB	V_1	94	94	94	94	94	94	94	94
5443 KG	V_R	97	97	97	97	97	97	97	97
	V_2	104	104	104	104	104	104	104	104
V_{ENR} = 120	TOFL-FT	**4,267**	**4,489**	**4,818**	**5,201**	**5,705**	**6,523**	**7,909**	**9,127**
11,500 LB	V_1	94	94	94	94	94	94	94	94
5216 KG	V_R	97	97	97	97	97	97	97	97
	V_2	104	104	104	104	104	104	104	104
V_{ENR} = 118	TOFL-FT	**3,843**	**4,035**	**4,316**	**4,644**	**5,075**	**5,773**	**6,974**	**7,949**
11,000 LB	V_1	93	93	93	93	93	93	93	93
4990 KG	V_R	97	97	97	97	97	97	97	97
	V_2	103	103	103	103	103	103	103	103
V_{ENR} = 115	TOFL-FT	**3,463**	**3,629**	**3,870**	**4,152**	**4,520**	**5,115**	**6,146**	**6,921**
10,500 LB	V_1	93	93	93	93	93	93	93	93
4763 KG	V_R	97	97	97	97	97	97	97	97
	V_2	102	102	102	102	102	102	102	102
V_{ENR} = 113	TOFL-FT	**3,213**	**3,325**	**3,481**	**3,723**	**4,040**	**4,549**	**5,424**	**6,042**
10,000 LB	V_1	90	90	91	91	92	93	93	93
4536 KG	V_R	97	97	97	97	97	97	97	97
	V_2	101	101	101	101	101	101	101	101
V_{ENR} = 111	TOFL-FT	**3,040**	**3,146**	**3,296**	**3,467**	**3,681**	**4,074**	**4,809**	**5,312**
9,500 LB	V_1	89	89	90	90	91	92	93	93
4309 KG	V_R	97	97	97	97	97	97	97	97
	V_2	100	100	100	100	100	100	100	100
V_{ENR} = 110	TOFL-FT	**2,889**	**2,984**	**3,117**	**3,271**	**3,461**	**3,747**	**4,301**	**4,731**
9,000 LB	V_1	88	88	89	89	90	91	93	93
4082 KG	V_R	97	97	97	97	97	97	97	97
OR LESS	V_2	99	99	99	99	99	99	99	99
V_{ENR} = 108	TOFL-FT	**2,761**	**2,846**	**2,969**	**3,110**	**3,284**	**3,543**	**3,908**	**4,300**

REFERENCE ONLY

TAKEOFF SPEEDS & BAL. FIELD LENGTHS - FLAPS APPROACH
4,500 FEET PRESSURE ALTITUDE

Notes:

For operations with ice vanes extended, add 6°C to actual Outside Air Temperature. Red shading indicates performance requirements are not met.

T.O. WEIGHT	ITEM	OUTSIDE AIR TEMPERATURE (°C)							
		-24	-14	-4	6	16	26	36	43
13,420 LB	V_1	96	96	96	96	96	96	---	---
6087 KG	V_R	97	97	97	97	97	97	---	---
	V_2	107	107	107	107	107	107	---	---
V_{ENR} = 125	TOFL-FT	**5,890**	**6,286**	**6,825**	**7,465**	**8,311**	**9,668**	---	---
13,000 LB	V_1	95	95	95	95	95	95	95	---
5897 KG	V_R	97	97	97	97	97	97	97	---
	V_2	106	106	106	106	106	106	106	---
V_{ENR} = 123	TOFL-FT	**5,401**	**5,753**	**6,231**	**6,798**	**7,547**	**8,757**	**10,791**	---
12,500 LB	V_1	95	95	95	95	95	95	95	---
5670 KG	V_R	97	97	97	97	97	97	97	---
	V_2	105	105	105	105	105	105	105	---
V_{ENR} = 121	TOFL-FT	**4,865**	**5,172**	**5,583**	**6,072**	**6,717**	**7,769**	**9,517**	---
12,000 LB	V_1	94	94	94	94	94	94	94	94
5443 KG	V_R	97	97	97	97	97	97	97	97
	V_2	104	104	104	104	104	104	104	104
V_{ENR} = 120	TOFL-FT	**4,378**	**4,643**	**4,996**	**5,415**	**5,968**	**6,877**	**8,367**	**9,665**
11,500 LB	V_1	94	94	94	94	94	94	94	94
5216 KG	V_R	97	97	97	97	97	97	97	97
	V_2	104	104	104	104	104	104	104	104
V_{ENR} = 118	TOFL-FT	**3,938**	**4,166**	**4,469**	**4,827**	**5,300**	**6,080**	**7,340**	**8,387**
11,000 LB	V_1	93	93	93	93	93	93	93	93
4990 KG	V_R	97	97	97	97	97	97	97	97
	V_2	103	103	103	103	103	103	103	103
V_{ENR} = 115	TOFL-FT	**3,545**	**3,742**	**4,001**	**4,308**	**4,711**	**5,378**	**6,436**	**7,275**
10,500 LB	V_1	93	93	93	93	93	93	93	93
4763 KG	V_R	97	97	97	97	97	97	97	97
	V_2	102	102	102	102	102	102	102	102
V_{ENR} = 113	TOFL-FT	**3,263**	**3,409**	**3,594**	**3,857**	**4,204**	**4,772**	**5,654**	**6,328**
10,000 LB	V_1	90	91	91	92	93	93	93	93
4536 KG	V_R	97	97	97	97	97	97	97	97
	V_2	101	101	101	101	101	101	101	101
V_{ENR} = 111	TOFL-FT	**3,085**	**3,210**	**3,371**	**3,556**	**3,811**	**4,262**	**4,997**	**5,545**
9,500 LB	V_1	89	89	90	90	91	92	93	93
4309 KG	V_R	97	97	97	97	97	97	97	97
	V_2	100	100	100	100	100	100	100	100
V_{ENR} = 110	TOFL-FT	**2,929**	**3,041**	**3,184**	**3,348**	**3,556**	**3,889**	**4,462**	**4,928**
9,000 LB	V_1	88	89	89	89	90	91	93	93
4082 KG	V_R	97	97	97	97	97	97	97	97
OR LESS	V_2	99	99	99	99	99	99	99	99
V_{ENR} = 108	TOFL-FT	**2,797**	**2,899**	**3,030**	**3,180**	**3,369**	**3,642**	**4,056**	**4,475**

REFERENCE ONLY

TAKEOFF SPEEDS & BAL. FIELD LENGTHS - FLAPS APPROACH
5,000 FEET PRESSURE ALTITUDE

Notes:

For operations with ice vanes extended, add 6°C to actual Outside Air Temperature. Red shading indicates performance requirements are not met.

T.O. WEIGHT	ITEM	OUTSIDE AIR TEMPERATURE (°C)							
		-25	-15	-5	5	15	25	35	42
13,420 LB	V_1	96	96	96	96	96	96	---	---
6087 KG	V_R	97	97	97	97	97	97	---	---
	V_2	107	107	107	107	107	107	---	---
V_{ENR} = 125	TOFL-FT	**6,055**	**6,520**	**7,097**	**7,792**	**8,713**	**10,177**	---	---
13,000 LB	V_1	95	95	95	95	95	95	---	---
5897 KG	V_R	97	97	97	97	97	97	---	---
	V_2	106	106	106	106	106	106	---	---
V_{ENR} = 123	TOFL-FT	**5,548**	**5,960**	**6,472**	**7,087**	**7,902**	**9,217**	---	---
12,500 LB	V_1	95	95	95	95	95	95	95	---
5670 KG	V_R	97	97	97	97	97	97	97	---
	V_2	105	105	105	105	105	105	105	---
V_{ENR} = 121	TOFL-FT	**4,993**	**5,350**	**5,791**	**6,321**	**7,024**	**8,174**	**10,084**	---
12,000 LB	V_1	94	94	94	94	94	94	94	94
5443 KG	V_R	97	97	97	97	97	97	97	97
	V_2	104	104	104	104	104	104	104	104
V_{ENR} = 120	TOFL-FT	**4,488**	**4,796**	**5,174**	**5,629**	**6,231**	**7,230**	**8,825**	**10,202**
11,500 LB	V_1	94	94	94	94	94	94	94	94
5216 KG	V_R	97	97	97	97	97	97	97	97
	V_2	104	104	104	104	104	104	104	104
V_{ENR} = 118	TOFL-FT	**4,032**	**4,297**	**4,621**	**5,009**	**5,524**	**6,386**	**7,706**	**8,826**
11,000 LB	V_1	93	93	93	93	93	93	93	93
4990 KG	V_R	97	97	97	97	97	97	97	97
	V_2	103	103	103	103	103	103	103	103
V_{ENR} = 115	TOFL-FT	**3,627**	**3,854**	**4,132**	**4,463**	**4,903**	**5,641**	**6,726**	**7,629**
10,500 LB	V_1	93	93	93	93	93	93	93	93
4763 KG	V_R	97	97	97	97	97	97	97	97
	V_2	102	102	102	102	102	102	102	102
V_{ENR} = 113	TOFL-FT	**3,313**	**3,493**	**3,706**	**3,991**	**4,367**	**4,995**	**5,885**	**6,614**
10,000 LB	V_1	91	91	92	92	93	93	93	93
4536 KG	V_R	97	97	97	97	97	97	97	97
	V_2	101	101	101	101	101	101	101	101
V_{ENR} = 111	TOFL-FT	**3,130**	**3,275**	**3,446**	**3,645**	**3,940**	**4,449**	**5,184**	**5,779**
9,500 LB	V_1	89	90	90	91	92	93	93	93
4309 KG	V_R	97	97	97	97	97	97	97	97
	V_2	100	100	100	100	100	100	100	100
V_{ENR} = 110	TOFL-FT	**2,968**	**3,098**	**3,252**	**3,425**	**3,650**	**4,031**	**4,622**	**5,124**
9,000 LB	V_1	89	89	89	90	91	92	93	93
4082 KG	V_R	97	97	97	97	97	97	97	97
OR LESS	V_2	99	99	99	99	99	99	99	99
V_{ENR} = 108	TOFL-FT	**2,832**	**2,951**	**3,092**	**3,250**	**3,454**	**3,740**	**4,204**	**4,650**

REFERENCE ONLY

TAKEOFF SPEEDS & BAL. FIELD LENGTHS - FLAPS APPROACH
5,500 FEET PRESSURE ALTITUDE

Notes:

For operations with ice vanes extended, add 6°C to actual Outside Air Temperature. Red shading indicates performance requirements are not met.

T.O. WEIGHT	ITEM	OUTSIDE AIR TEMPERATURE (°C)							
		-26	-16	-6	4	14	24	34	41
13,420 LB	V_1	96	96	96	96	96	---	---	---
6087 KG	V_R	97	97	97	97	97	---	---	---
	V_2	107	107	107	107	107	---	---	---
V_{ENR} = 125	TOFL-FT	**6,221**	**6,754**	**7,369**	**8,118**	**9,114**	---	---	---
13,000 LB	V_1	95	95	95	95	95	95	---	---
5897 KG	V_R	97	97	97	97	97	97	---	---
	V_2	106	106	106	106	106	106	---	---
V_{ENR} = 123	TOFL-FT	**5,695**	**6,168**	**6,713**	**7,376**	**8,258**	**9,677**	---	---
12,500 LB	V_1	95	95	95	95	95	95	95	---
5670 KG	V_R	97	97	97	97	97	97	97	---
	V_2	105	105	105	105	105	105	105	---
V_{ENR} = 121	TOFL-FT	**5,121**	**5,529**	**5,999**	**6,570**	**7,330**	**8,579**	**10,651**	---
12,000 LB	V_1	94	94	94	94	94	94	94	---
5443 KG	V_R	97	97	97	97	97	97	97	---
	V_2	104	104	104	104	104	104	104	---
V_{ENR} = 120	TOFL-FT	**4,598**	**4,949**	**5,352**	**5,842**	**6,494**	**7,584**	**9,283**	---
11,500 LB	V_1	94	94	94	94	94	94	94	94
5216 KG	V_R	97	97	97	97	97	97	97	97
	V_2	104	104	104	104	104	104	104	104
V_{ENR} = 118	TOFL-FT	**4,127**	**4,429**	**4,773**	**5,192**	**5,748**	**6,692**	**8,071**	**9,264**
11,000 LB	V_1	93	93	93	93	93	93	93	93
4990 KG	V_R	97	97	97	97	97	97	97	97
	V_2	103	103	103	103	103	103	103	103
V_{ENR} = 115	TOFL-FT	**3,708**	**3,967**	**4,262**	**4,619**	**5,094**	**5,904**	**7,015**	**7,984**
10,500 LB	V_1	93	93	93	93	93	93	93	93
4763 KG	V_R	97	97	97	97	97	97	97	97
	V_2	102	102	102	102	102	102	102	102
V_{ENR} = 113	TOFL-FT	**3,362**	**3,577**	**3,819**	**4,124**	**4,530**	**5,219**	**6,115**	**6,900**
10,000 LB	V_1	91	91	92	93	93	93	93	93
4536 KG	V_R	97	97	97	97	97	97	97	97
	V_2	101	101	101	101	101	101	101	101
V_{ENR} = 111	TOFL-FT	**3,175**	**3,340**	**3,522**	**3,734**	**4,070**	**4,637**	**5,371**	**6,012**
9,500 LB	V_1	90	90	90	91	92	93	93	93
4309 KG	V_R	97	97	97	97	97	97	97	97
	V_2	100	100	100	100	100	100	100	100
V_{ENR} = 110	TOFL-FT	**3,008**	**3,156**	**3,319**	**3,503**	**3,744**	**4,172**	**4,783**	**5,320**
9,000 LB	V_1	89	89	89	90	91	92	93	93
4082 KG	V_R	97	97	97	97	97	97	97	97
OR LESS	V_2	99	99	99	99	99	99	99	99
V_{ENR} = 108	TOFL-FT	**2,868**	**3,004**	**3,154**	**3,320**	**3,538**	**3,839**	**4,352**	**4,825**

REFERENCE ONLY

TAKEOFF SPEEDS & BAL. FIELD LENGTHS - FLAPS APPROACH
6,000 FEET PRESSURE ALTITUDE

Notes:

For operations with ice vanes extended, add 6°C to actual Outside Air Temperature. Red shading indicates performance requirements are not met.

T.O. WEIGHT	ITEM	OUTSIDE AIR TEMPERATURE (°C)							
		-27	-17	-7	3	13	23	33	40
13,420 LB	V_1	96	96	96	96	96	---	---	---
6087 KG	V_R	97	97	97	97	97	---	---	---
	V_2	107	107	107	107	107	---	---	---
V_{ENR} = 125	TOFL-FT	**6,386**	**6,988**	**7,641**	**8,445**	**9,516**	---	---	---
13,000 LB	V_1	95	95	95	95	95	95	---	---
5897 KG	V_R	97	97	97	97	97	97	---	---
	V_2	106	106	106	106	106	106	---	---
V_{ENR} = 123	TOFL-FT	**5,842**	**6,375**	**6,954**	**7,665**	**8,614**	**10,136**	---	---
12,500 LB	V_1	95	95	95	95	95	95	95	---
5670 KG	V_R	97	97	97	97	97	97	97	---
	V_2	105	105	105	105	105	105	105	---
V_{ENR} = 121	TOFL-FT	**5,248**	**5,708**	**6,206**	**6,819**	**7,637**	**8,984**	**11,217**	---
12,000 LB	V_1	94	94	94	94	94	94	94	---
5443 KG	V_R	97	97	97	97	97	97	97	---
	V_2	104	104	104	104	104	104	104	---
V_{ENR} = 120	TOFL-FT	**4,708**	**5,103**	**5,530**	**6,056**	**6,756**	**7,938**	**9,741**	---
11,500 LB	V_1	94	94	94	94	94	94	94	94
5216 KG	V_R	97	97	97	97	97	97	97	97
	V_2	104	104	104	104	104	104	104	104
V_{ENR} = 118	TOFL-FT	**4,222**	**4,560**	**4,926**	**5,374**	**5,972**	**6,999**	**8,437**	**9,702**
11,000 LB	V_1	93	93	93	93	93	93	93	93
4990 KG	V_R	97	97	97	97	97	97	97	97
	V_2	103	103	103	103	103	103	103	103
V_{ENR} = 115	TOFL-FT	**3,790**	**4,079**	**4,393**	**4,775**	**5,285**	**6,167**	**7,305**	**8,338**
10,500 LB	V_1	93	93	93	93	93	93	93	93
4763 KG	V_R	97	97	97	97	97	97	97	97
	V_2	102	102	102	102	102	102	102	102
V_{ENR} = 113	TOFL-FT	**3,412**	**3,661**	**3,931**	**4,258**	**4,694**	**5,442**	**6,346**	**7,186**
10,000 LB	V_1	91	92	92	93	93	93	93	93
4536 KG	V_R	97	97	97	97	97	97	97	97
	V_2	101	101	101	101	101	101	101	101
V_{ENR} = 111	TOFL-FT	**3,220**	**3,404**	**3,597**	**3,823**	**4,199**	**4,825**	**5,558**	**6,245**
9,500 LB	V_1	90	90	91	91	92	93	93	93
4309 KG	V_R	97	97	97	97	97	97	97	97
	V_2	100	100	100	100	100	100	100	100
V_{ENR} = 110	TOFL-FT	**3,048**	**3,213**	**3,386**	**3,580**	**3,838**	**4,314**	**4,943**	**5,517**
9,000 LB	V_1	89	89	90	90	91	93	93	93
4082 KG	V_R	97	97	97	97	97	97	97	97
OR LESS	V_2	99	99	99	99	99	99	99	99
V_{ENR} = 108	TOFL-FT	**2,904**	**3,056**	**3,215**	**3,390**	**3,623**	**3,938**	**4,500**	**5,000**

REFERENCE ONLY

TAKEOFF SPEEDS & BAL. FIELD LENGTHS - FLAPS APPROACH
6,500 FEET PRESSURE ALTITUDE

Notes:

For operations with ice vanes extended, add 6°C to actual Outside Air Temperature. Red shading indicates performance requirements are not met.

T.O. WEIGHT	ITEM	OUTSIDE AIR TEMPERATURE (°C)							
		-28	-18	-8	2	12	22	32	39
13,420 LB	V_1	96	96	96	96	96	---	---	---
6087 KG	V_R	97	97	97	97	97	---	---	---
	V_2	107	107	107	107	107	---	---	---
V_{ENR} = 125	TOFL-FT	**6,637**	**7,263**	**8,021**	**8,968**	**10,255**	---	---	---
13,000 LB	V_1	95	95	95	95	95	95	---	---
5897 KG	V_R	97	97	97	97	97	97	---	---
	V_2	106	106	106	106	106	106	---	---
V_{ENR} = 123	TOFL-FT	**6,064**	**6,619**	**7,290**	**8,135**	**9,268**	**10,989**	---	---
12,500 LB	V_1	95	95	95	95	95	95	---	---
5670 KG	V_R	97	97	97	97	97	97	---	---
	V_2	105	105	105	105	105	105	---	---
V_{ENR} = 121	TOFL-FT	**5,440**	**5,918**	**6,496**	**7,229**	**8,198**	**9,684**	---	---
12,000 LB	V_1	94	94	94	94	94	94	94	---
5443 KG	V_R	97	97	97	97	97	97	97	---
	V_2	104	104	104	104	104	104	104	---
V_{ENR} = 120	TOFL-FT	**4,873**	**5,283**	**5,778**	**6,411**	**7,234**	**8,506**	**10,316**	---
11,500 LB	V_1	94	94	94	94	94	94	94	94
5216 KG	V_R	97	97	97	97	97	97	97	97
	V_2	104	104	104	104	104	104	104	104
V_{ENR} = 118	TOFL-FT	**4,363**	**4,714**	**5,138**	**5,680**	**6,375**	**7,455**	**8,933**	**10,310**
11,000 LB	V_1	93	93	93	93	93	93	93	93
4990 KG	V_R	97	97	97	97	97	97	97	97
	V_2	103	103	103	103	103	103	103	103
V_{ENR} = 115	TOFL-FT	**3,911**	**4,211**	**4,573**	**5,037**	**5,622**	**6,530**	**7,730**	**8,860**
10,500 LB	V_1	93	93	93	93	93	93	93	93
4763 KG	V_R	97	97	97	97	97	97	97	97
	V_2	102	102	102	102	102	102	102	102
V_{ENR} = 113	TOFL-FT	**3,516**	**3,774**	**4,086**	**4,481**	**4,974**	**5,731**	**6,707**	**7,628**
10,000 LB	V_1	91	92	92	93	93	93	93	93
4536 KG	V_R	97	97	97	97	97	97	97	97
	V_2	101	101	101	101	101	101	101	101
V_{ENR} = 111	TOFL-FT	**3,295**	**3,484**	**3,716**	**4,013**	**4,432**	**5,059**	**5,864**	**6,613**
9,500 LB	V_1	90	90	91	92	93	93	93	93
4309 KG	V_R	97	97	97	97	97	97	97	97
	V_2	100	100	100	100	100	100	100	100
V_{ENR} = 110	TOFL-FT	**3,116**	**3,284**	**3,474**	**3,713**	**4,022**	**4,514**	**5,199**	**5,816**
9,000 LB	V_1	89	89	90	91	92	93	93	93
4082 KG	V_R	97	97	97	97	97	97	97	97
OR LESS	V_2	99	99	99	99	99	99	99	99
V_{ENR} = 108	TOFL-FT	**2,967**	**3,121**	**3,294**	**3,492**	**3,755**	**4,116**	**4,715**	**5,238**

REFERENCE ONLY

TAKEOFF SPEEDS & BAL. FIELD LENGTHS - FLAPS APPROACH
7,000 FEET PRESSURE ALTITUDE

Notes:

For operations with ice vanes extended, add 6°C to actual Outside Air Temperature. Red shading indicates performance requirements are not met.

T.O. WEIGHT	ITEM	OUTSIDE AIR TEMPERATURE (°C)							
		-29	-19	-9	1	11	21	31	38
13,420 LB	V_1	96	96	96	96	---	---	---	---
6087 KG	V_R	97	97	97	97	---	---	---	---
	V_2	107	107	107	107	---	---	---	---
V_{ENR} = 125	TOFL-FT	**6,888**	**7,538**	**8,400**	**9,492**	---	---	---	---
13,000 LB	V_1	95	95	95	95	95	---	---	---
5897 KG	V_R	97	97	97	97	97	---	---	---
	V_2	106	106	106	106	106	---	---	---
V_{ENR} = 123	TOFL-FT	**6,286**	**6,862**	**7,626**	**8,604**	**9,922**	---	---	---
12,500 LB	V_1	95	95	95	95	95	95	---	---
5670 KG	V_R	97	97	97	97	97	97	---	---
	V_2	105	105	105	105	105	105	---	---
V_{ENR} = 121	TOFL-FT	**5,631**	**6,127**	**6,785**	**7,639**	**8,760**	**10,385**	---	---
12,000 LB	V_1	94	94	94	94	94	94	94	---
5443 KG	V_R	97	97	97	97	97	97	97	---
	V_2	104	104	104	104	104	104	104	---
V_{ENR} = 120	TOFL-FT	**5,037**	**5,463**	**6,027**	**6,766**	**7,712**	**9,074**	**10,890**	---
11,500 LB	V_1	94	94	94	94	94	94	94	---
5216 KG	V_R	97	97	97	97	97	97	97	---
	V_2	104	104	104	104	104	104	104	---
V_{ENR} = 118	TOFL-FT	**4,504**	**4,867**	**5,349**	**5,986**	**6,779**	**7,910**	**9,429**	---
11,000 LB	V_1	93	93	93	93	93	93	93	93
4990 KG	V_R	97	97	97	97	97	97	97	97
	V_2	103	103	103	103	103	103	103	103
V_{ENR} = 115	TOFL-FT	**4,031**	**4,342**	**4,754**	**5,299**	**5,959**	**6,892**	**8,155**	**9,382**
10,500 LB	V_1	93	93	93	93	93	93	93	93
4763 KG	V_R	97	97	97	97	97	97	97	97
	V_2	102	102	102	102	102	102	102	102
V_{ENR} = 113	TOFL-FT	**3,620**	**3,887**	**4,240**	**4,704**	**5,254**	**6,020**	**7,068**	**8,069**
10,000 LB	V_1	92	92	93	93	93	93	93	93
4536 KG	V_R	97	97	97	97	97	97	97	97
	V_2	101	101	101	101	101	101	101	101
V_{ENR} = 111	TOFL-FT	**3,371**	**3,563**	**3,835**	**4,202**	**4,664**	**5,294**	**6,169**	**6,981**
9,500 LB	V_1	90	91	92	92	93	93	93	93
4309 KG	V_R	97	97	97	97	97	97	97	97
	V_2	100	100	100	100	100	100	100	100
V_{ENR} = 110	TOFL-FT	**3,184**	**3,355**	**3,562**	**3,847**	**4,206**	**4,714**	**5,456**	**6,116**
9,000 LB	V_1	89	90	90	91	92	93	93	93
4082 KG	V_R	97	97	97	97	97	97	97	97
OR LESS	V_2	99	99	99	99	99	99	99	99
V_{ENR} = 108	TOFL-FT	**3,030**	**3,186**	**3,373**	**3,594**	**3,887**	**4,294**	**4,930**	**5,475**

REFERENCE ONLY

TAKEOFF SPEEDS & BAL. FIELD LENGTHS - FLAPS APPROACH
7,500 FEET PRESSURE ALTITUDE

Notes:

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T.O. WEIGHT	ITEM	OUTSIDE AIR TEMPERATURE (°C)							
		-30	-20	-10	0	10	20	30	37
13,420 LB	V_1	96	96	96	96	---	---	---	---
6087 KG	V_R	97	97	97	97	---	---	---	---
	V_2	107	107	107	107	---	---	---	---
V_{ENR} = 125	TOFL-FT	**7,139**	**7,813**	**8,780**	**10,016**	---	---	---	---
13,000 LB	V_1	95	95	95	95	95	---	---	---
5897 KG	V_R	97	97	97	97	97	---	---	---
	V_2	106	106	106	106	106	---	---	---
V_{ENR} = 123	TOFL-FT	**6,509**	**7,106**	**7,962**	**9,073**	**10,575**	---	---	---
12,500 LB	V_1	95	95	95	95	95	95	---	---
5670 KG	V_R	97	97	97	97	97	97	---	---
	V_2	105	105	105	105	105	105	---	---
V_{ENR} = 121	TOFL-FT	**5,823**	**6,337**	**7,075**	**8,048**	**9,321**	**11,085**	---	---
12,000 LB	V_1	94	94	94	94	94	94	94	---
5443 KG	V_R	97	97	97	97	97	97	97	---
	V_2	104	104	104	104	104	104	104	---
V_{ENR} = 120	TOFL-FT	**5,201**	**5,642**	**6,275**	**7,122**	**8,190**	**9,643**	**11,464**	---
11,500 LB	V_1	94	94	94	94	94	94	94	---
5216 KG	V_R	97	97	97	97	97	97	97	---
	V_2	104	104	104	104	104	104	104	---
V_{ENR} = 118	TOFL-FT	**4,644**	**5,021**	**5,561**	**6,292**	**7,182**	**8,366**	**9,925**	---
11,000 LB	V_1	93	93	93	93	93	93	93	93
4990 KG	V_R	97	97	97	97	97	97	97	97
	V_2	103	103	103	103	103	103	103	103
V_{ENR} = 115	TOFL-FT	**4,152**	**4,474**	**4,934**	**5,561**	**6,297**	**7,255**	**8,580**	**9,904**
10,500 LB	V_1	93	93	93	93	93	93	93	93
4763 KG	V_R	97	97	97	97	97	97	97	97
	V_2	102	102	102	102	102	102	102	102
V_{ENR} = 113	TOFL-FT	**3,723**	**4,000**	**4,394**	**4,927**	**5,535**	**6,309**	**7,430**	**8,511**
10,000 LB	V_1	92	92	93	93	93	93	93	93
4536 KG	V_R	97	97	97	97	97	97	97	97
	V_2	101	101	101	101	101	101	101	101
V_{ENR} = 111	TOFL-FT	**3,447**	**3,643**	**3,955**	**4,391**	**4,896**	**5,529**	**6,474**	**7,348**
9,500 LB	V_1	90	91	92	93	93	93	93	93
4309 KG	V_R	97	97	97	97	97	97	97	97
	V_2	100	100	100	100	100	100	100	100
V_{ENR} = 110	TOFL-FT	**3,253**	**3,426**	**3,650**	**3,980**	**4,389**	**4,914**	**5,712**	**6,415**
9,000 LB	V_1	89	90	91	92	93	93	93	93
4082 KG	V_R	97	97	97	97	97	97	97	97
OR LESS	V_2	99	99	99	99	99	99	99	99
V_{ENR} = 108	TOFL-FT	**3,093**	**3,250**	**3,452**	**3,696**	**4,018**	**4,472**	**5,145**	**5,713**

REFERENCE ONLY

TAKEOFF SPEEDS & BAL. FIELD LENGTHS - FLAPS APPROACH
8,000 FEET PRESSURE ALTITUDE

Notes:

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T.O. WEIGHT	ITEM	OUTSIDE AIR TEMPERATURE (°C)							
		-31	-21	-11	-1	9	19	29	36
13,420 LB	V_1	96	96	96	96	---	---	---	---
6087 KG	V_R	97	97	97	97	---	---	---	---
	V_2	107	107	107	107	---	---	---	---
V_{ENR} = 125	TOFL-FT	**7,390**	**8,088**	**9,159**	**10,540**	---	---	---	---
13,000 LB	V_1	95	95	95	95	---	---	---	---
5897 KG	V_R	97	97	97	97	---	---	---	---
	V_2	106	106	106	106	---	---	---	---
V_{ENR} = 123	TOFL-FT	**6,731**	**7,349**	**8,298**	**9,542**	---	---	---	---
12,500 LB	V_1	95	95	95	95	95	---	---	---
5670 KG	V_R	97	97	97	97	97	---	---	---
	V_2	105	105	105	105	105	---	---	---
V_{ENR} = 121	TOFL-FT	**6,014**	**6,547**	**7,365**	**8,458**	**9,882**	---	---	---
12,000 LB	V_1	94	94	94	94	94	94	---	---
5443 KG	V_R	97	97	97	97	97	97	---	---
	V_2	104	104	104	104	104	104	---	---
V_{ENR} = 120	TOFL-FT	**5,366**	**5,822**	**6,523**	**7,477**	**8,668**	**10,211**	---	---
11,500 LB	V_1	94	94	94	94	94	94	94	---
5216 KG	V_R	97	97	97	97	97	97	97	---
	V_2	104	104	104	104	104	104	104	---
V_{ENR} = 118	TOFL-FT	**4,785**	**5,175**	**5,773**	**6,598**	**7,585**	**8,822**	**10,421**	---
11,000 LB	V_1	93	93	93	93	93	93	93	93
4990 KG	V_R	97	97	97	97	97	97	97	97
	V_2	103	103	103	103	103	103	103	103
V_{ENR} = 115	TOFL-FT	**4,272**	**4,605**	**5,115**	**5,823**	**6,634**	**7,617**	**9,005**	**10,426**
10,500 LB	V_1	93	93	93	93	93	93	93	93
4763 KG	V_R	97	97	97	97	97	97	97	97
	V_2	102	102	102	102	102	102	102	102
V_{ENR} = 113	TOFL-FT	**3,827**	**4,113**	**4,549**	**5,150**	**5,815**	**6,598**	**7,791**	**8,953**
10,000 LB	V_1	92	93	93	93	93	93	93	93
4536 KG	V_R	97	97	97	97	97	97	97	97
	V_2	101	101	101	101	101	101	101	101
V_{ENR} = 111	TOFL-FT	**3,523**	**3,723**	**4,074**	**4,581**	**5,128**	**5,763**	**6,779**	**7,716**
9,500 LB	V_1	90	91	92	93	93	93	93	93
4309 KG	V_R	97	97	97	97	97	97	97	97
	V_2	100	100	100	100	100	100	100	100
V_{ENR} = 110	TOFL-FT	**3,321**	**3,496**	**3,738**	**4,114**	**4,573**	**5,114**	**5,969**	**6,715**
9,000 LB	V_1	89	90	91	92	93	93	93	93
4082 KG	V_R	97	97	97	97	97	97	97	97
OR LESS	V_2	99	99	99	99	99	99	99	99
V_{ENR} = 108	TOFL-FT	**3,156**	**3,315**	**3,531**	**3,798**	**4,150**	**4,650**	**5,360**	**5,950**

REFERENCE ONLY

TAKEOFF SPEEDS & BAL. FIELD LENGTHS - FLAPS APPROACH
8,500 FEET PRESSURE ALTITUDE

Notes:

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T.O. WEIGHT	ITEM	OUTSIDE AIR TEMPERATURE (°C)							
		-32	-22	-12	-2	8	18	28	35
13,420 LB	V_1	96	96	96	---	---	---	---	---
6087 KG	V_R	97	97	97	---	---	---	---	---
	V_2	107	107	107	---	---	---	---	---
V_{ENR} = 125	TOFL-FT	**7,698**	**8,547**	**9,781**	---	---	---	---	---
13,000 LB	V_1	95	95	95	95	---	---	---	---
5897 KG	V_R	97	97	97	97	---	---	---	---
	V_2	106	106	106	106	---	---	---	---
V_{ENR} = 123	TOFL-FT	**7,004**	**7,758**	**8,855**	**10,315**	---	---	---	---
12,500 LB	V_1	95	95	95	95	95	---	---	---
5670 KG	V_R	97	97	97	97	97	---	---	---
	V_2	105	105	105	105	105	---	---	---
V_{ENR} = 121	TOFL-FT	**6,250**	**6,902**	**7,851**	**9,100**	**10,642**	---	---	---
12,000 LB	V_1	94	94	94	94	94	94	---	---
5443 KG	V_R	97	97	97	97	97	97	---	---
	V_2	104	104	104	104	104	104	---	---
V_{ENR} = 120	TOFL-FT	**5,567**	**6,128**	**6,944**	**8,004**	**9,288**	**10,863**	---	---
11,500 LB	V_1	94	94	94	94	94	94	94	---
5216 KG	V_R	97	97	97	97	97	97	97	---
	V_2	104	104	104	104	104	104	104	---
V_{ENR} = 118	TOFL-FT	**4,957**	**5,437**	**6,135**	**7,027**	**8,086**	**9,388**	**11,097**	---
11,000 LB	V_1	93	93	93	93	93	93	93	---
4990 KG	V_R	97	97	97	97	97	97	97	---
	V_2	103	103	103	103	103	103	103	---
V_{ENR} = 115	TOFL-FT	**4,419**	**4,829**	**5,423**	**6,169**	**7,036**	**8,105**	**9,564**	---
10,500 LB	V_1	93	93	93	93	93	93	93	93
4763 KG	V_R	97	97	97	97	97	97	97	97
	V_2	102	102	102	102	102	102	102	102
V_{ENR} = 113	TOFL-FT	**3,953**	**4,304**	**4,809**	**5,430**	**6,137**	**7,013**	**8,250**	**9,446**
10,000 LB	V_1	92	93	93	93	93	93	93	93
4536 KG	V_R	97	97	97	97	97	97	97	97
	V_2	101	101	101	101	101	101	101	101
V_{ENR} = 111	TOFL-FT	**3,614**	**3,880**	**4,292**	**4,809**	**5,389**	**6,113**	**7,155**	**8,117**
9,500 LB	V_1	91	92	93	93	93	93	93	93
4309 KG	V_R	97	97	97	97	97	97	97	97
	V_2	100	100	100	100	100	100	100	100
V_{ENR} = 110	TOFL-FT	**3,397**	**3,610**	**3,907**	**4,308**	**4,794**	**5,405**	**6,278**	**7,056**
9,000 LB	V_1	90	90	92	92	93	93	93	93
4082 KG	V_R	97	97	97	97	97	97	97	97
OR LESS	V_2	99	99	99	99	99	99	99	99
V_{ENR} = 108	TOFL-FT	**3,224**	**3,409**	**3,649**	**3,961**	**4,350**	**4,888**	**5,620**	**6,263**

REFERENCE ONLY

TAKEOFF SPEEDS & BAL. FIELD LENGTHS - FLAPS APPROACH
9,000 FEET PRESSURE ALTITUDE

Notes:

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T.O. WEIGHT	ITEM	OUTSIDE AIR TEMPERATURE (°C)							
		-33	-23	-13	-3	7	17	27	34
13,420 LB	V_1	96	96	96	---	---	---	---	---
6087 KG	V_R	97	97	97	---	---	---	---	---
	V_2	107	107	107	---	---	---	---	---
V_{ENR} = 125	TOFL-FT	**8,007**	**9,007**	**10,402**	---	---	---	---	---
13,000 LB	V_1	95	95	95	95	---	---	---	---
5897 KG	V_R	97	97	97	97	---	---	---	---
	V_2	106	106	106	106	---	---	---	---
V_{ENR} = 123	TOFL-FT	**7,277**	**8,167**	**9,412**	**11,088**	---	---	---	---
12,500 LB	V_1	95	95	95	95	95	---	---	---
5670 KG	V_R	97	97	97	97	97	---	---	---
	V_2	105	105	105	105	105	---	---	---
V_{ENR} = 121	TOFL-FT	**6,485**	**7,256**	**8,337**	**9,742**	**11,403**	---	---	---
12,000 LB	V_1	94	94	94	94	94	94	---	---
5443 KG	V_R	97	97	97	97	97	97	---	---
	V_2	104	104	104	104	104	104	---	---
V_{ENR} = 120	TOFL-FT	**5,769**	**6,433**	**7,365**	**8,532**	**9,909**	**11,514**	---	---
11,500 LB	V_1	94	94	94	94	94	94	---	---
5216 KG	V_R	97	97	97	97	97	97	---	---
	V_2	104	104	104	104	104	104	---	---
V_{ENR} = 118	TOFL-FT	**5,130**	**5,699**	**6,497**	**7,456**	**8,588**	**9,955**	---	---
11,000 LB	V_1	93	93	93	93	93	93	93	---
4990 KG	V_R	97	97	97	97	97	97	97	---
	V_2	103	103	103	103	103	103	103	---
V_{ENR} = 115	TOFL-FT	**4,566**	**5,053**	**5,731**	**6,515**	**7,437**	**8,593**	**10,123**	---
10,500 LB	V_1	93	93	93	93	93	93	93	93
4763 KG	V_R	97	97	97	97	97	97	97	97
	V_2	102	102	102	102	102	102	102	102
V_{ENR} = 113	TOFL-FT	**4,079**	**4,495**	**5,068**	**5,709**	**6,458**	**7,429**	**8,709**	**9,940**
10,000 LB	V_1	92	93	93	93	93	93	93	93
4536 KG	V_R	97	97	97	97	97	97	97	97
	V_2	101	101	101	101	101	101	101	101
V_{ENR} = 111	TOFL-FT	**3,704**	**4,037**	**4,509**	**5,038**	**5,651**	**6,463**	**7,530**	**8,518**
9,500 LB	V_1	91	92	93	93	93	93	93	93
4309 KG	V_R	97	97	97	97	97	97	97	97
	V_2	100	100	100	100	100	100	100	100
V_{ENR} = 110	TOFL-FT	**3,473**	**3,723**	**4,076**	**4,502**	**5,015**	**5,695**	**6,587**	**7,396**
9,000 LB	V_1	90	91	92	93	93	93	93	93
4082 KG	V_R	97	97	97	97	97	97	97	97
OR LESS	V_2	99	99	99	99	99	99	99	99
V_{ENR} = 108	TOFL-FT	**3,293**	**3,502**	**3,766**	**4,124**	**4,550**	**5,125**	**5,880**	**6,575**

REFERENCE ONLY

TAKEOFF SPEEDS & BAL. FIELD LENGTHS - FLAPS APPROACH
9,500 FEET PRESSURE ALTITUDE

Notes:

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T.O. WEIGHT	ITEM	OUTSIDE AIR TEMPERATURE (°C)							
		-34	-24	-14	-4	6	16	26	33
13,420 LB	V_1	96	96	96	---	---	---	---	---
6087 KG	V_R	97	97	97	---	---	---	---	---
	V_2	107	107	107	---	---	---	---	---
V_{ENR} = 125	TOFL-FT	**8,315**	**9,466**	**11,024**	---	---	---	---	---
13,000 LB	V_1	95	95	95	---	---	---	---	---
5897 KG	V_R	97	97	97	---	---	---	---	---
	V_2	106	106	106	---	---	---	---	---
V_{ENR} = 123	TOFL-FT	**7,550**	**8,576**	**9,970**	---	---	---	---	---
12,500 LB	V_1	95	95	95	95	---	---	---	---
5670 KG	V_R	97	97	97	97	---	---	---	---
	V_2	105	105	105	105	---	---	---	---
V_{ENR} = 121	TOFL-FT	**6,720**	**7,611**	**8,824**	**10,385**	---	---	---	---
12,000 LB	V_1	94	94	94	94	94	---	---	---
5443 KG	V_R	97	97	97	97	97	---	---	---
	V_2	104	104	104	104	104	---	---	---
V_{ENR} = 120	TOFL-FT	**5,971**	**6,739**	**7,787**	**9,059**	**10,530**	---	---	---
11,500 LB	V_1	94	94	94	94	94	94	---	---
5216 KG	V_R	97	97	97	97	97	97	---	---
	V_2	104	104	104	104	104	104	---	---
V_{ENR} = 118	TOFL-FT	**5,302**	**5,961**	**6,858**	**7,885**	**9,089**	**10,521**	---	---
11,000 LB	V_1	93	93	93	93	93	93	93	---
4990 KG	V_R	97	97	97	97	97	97	97	---
	V_2	103	103	103	103	103	103	103	---
V_{ENR} = 115	TOFL-FT	**4,713**	**5,276**	**6,039**	**6,862**	**7,839**	**9,080**	**10,682**	---
10,500 LB	V_1	93	93	93	93	93	93	93	---
4763 KG	V_R	97	97	97	97	97	97	97	---
	V_2	102	102	102	102	102	102	102	---
V_{ENR} = 113	TOFL-FT	**4,205**	**4,686**	**5,328**	**5,989**	**6,780**	**7,844**	**9,168**	---
10,000 LB	V_1	93	93	93	93	93	93	93	93
4536 KG	V_R	97	97	97	97	97	97	97	97
	V_2	101	101	101	101	101	101	101	101
V_{ENR} = 111	TOFL-FT	**3,795**	**4,195**	**4,727**	**5,267**	**5,912**	**6,813**	**7,906**	**8,918**
9,500 LB	V_1	91	93	93	93	93	93	93	93
4309 KG	V_R	97	97	97	97	97	97	97	97
	V_2	100	100	100	100	100	100	100	100
V_{ENR} = 110	TOFL-FT	**3,548**	**3,836**	**4,246**	**4,695**	**5,236**	**5,985**	**6,897**	**7,737**
9,000 LB	V_1	90	91	93	93	93	93	93	93
4082 KG	V_R	97	97	97	97	97	97	97	97
OR LESS	V_2	99	99	99	99	99	99	99	99
V_{ENR} = 108	TOFL-FT	**3,361**	**3,596**	**3,884**	**4,287**	**4,750**	**5,363**	**6,140**	**6,888**

REFERENCE ONLY

TAKEOFF SPEEDS & BAL. FIELD LENGTHS - FLAPS APPROACH
10,000 FEET PRESSURE ALTITUDE

Notes:

For operations with ice vanes extended, add 6°C to actual Outside Air Temperature. Red shading indicates performance requirements are not met.

T.O. WEIGHT	ITEM	OUTSIDE AIR TEMPERATURE (°C)							
		-35	-25	-15	-5	5	15	25	32
13,420 LB	V_1	96	96	---	---	---	---	---	---
6087 KG	V_R	97	97	---	---	---	---	---	---
	V_2	107	107	---	---	---	---	---	---
V_{ENR} = 125	TOFL-FT	**8,623**	**9,925**	---	---	---	---	---	---
13,000 LB	V_1	95	95	95	---	---	---	---	---
5897 KG	V_R	97	97	97	---	---	---	---	---
	V_2	106	106	106	---	---	---	---	---
V_{ENR} = 123	TOFL-FT	**7,823**	**8,985**	**10,527**	---	---	---	---	---
12,500 LB	V_1	95	95	95	95	---	---	---	---
5670 KG	V_R	97	97	97	97	---	---	---	---
	V_2	105	105	105	105	---	---	---	---
V_{ENR} = 121	TOFL-FT	**6,956**	**7,965**	**9,310**	**11,027**	---	---	---	---
12,000 LB	V_1	94	94	94	94	94	---	---	---
5443 KG	V_R	97	97	97	97	97	---	---	---
	V_2	104	104	104	104	104	---	---	---
V_{ENR} = 120	TOFL-FT	**6,173**	**7,045**	**8,208**	**9,587**	**11,151**	---	---	---
11,500 LB	V_1	94	94	94	94	94	94	---	---
5216 KG	V_R	97	97	97	97	97	97	---	---
	V_2	104	104	104	104	104	104	---	---
V_{ENR} = 118	TOFL-FT	**5,474**	**6,223**	**7,220**	**8,314**	**9,591**	**11,087**	---	---
11,000 LB	V_1	93	93	93	93	93	93	---	---
4990 KG	V_R	97	97	97	97	97	97	---	---
	V_2	103	103	103	103	103	103	---	---
V_{ENR} = 115	TOFL-FT	**4,860**	**5,500**	**6,347**	**7,208**	**8,241**	**9,568**	---	---
10,500 LB	V_1	93	93	93	93	93	93	93	---
4763 KG	V_R	97	97	97	97	97	97	97	---
	V_2	102	102	102	102	102	102	102	---
V_{ENR} = 113	TOFL-FT	**4,331**	**4,876**	**5,588**	**6,268**	**7,102**	**8,260**	**9,627**	---
10,000 LB	V_1	93	93	93	93	93	93	93	93
4536 KG	V_R	97	97	97	97	97	97	97	97
	V_2	101	101	101	101	101	101	101	101
V_{ENR} = 111	TOFL-FT	**3,886**	**4,352**	**4,944**	**5,495**	**6,174**	**7,162**	**8,282**	**9,319**
9,500 LB	V_1	92	93	93	93	93	93	93	93
4309 KG	V_R	97	97	97	97	97	97	97	97
	V_2	100	100	100	100	100	100	100	100
V_{ENR} = 110	TOFL-FT	**3,624**	**3,949**	**4,415**	**4,889**	**5,456**	**6,276**	**7,206**	**8,077**
9,000 LB	V_1	90	92	93	93	93	93	93	93
4082 KG	V_R	97	97	97	97	97	97	97	97
OR LESS	V_2	99	99	99	99	99	99	99	99
V_{ENR} = 108	TOFL-FT	**3,430**	**3,689**	**4,001**	**4,450**	**4,950**	**5,600**	**6,400**	**7,200**

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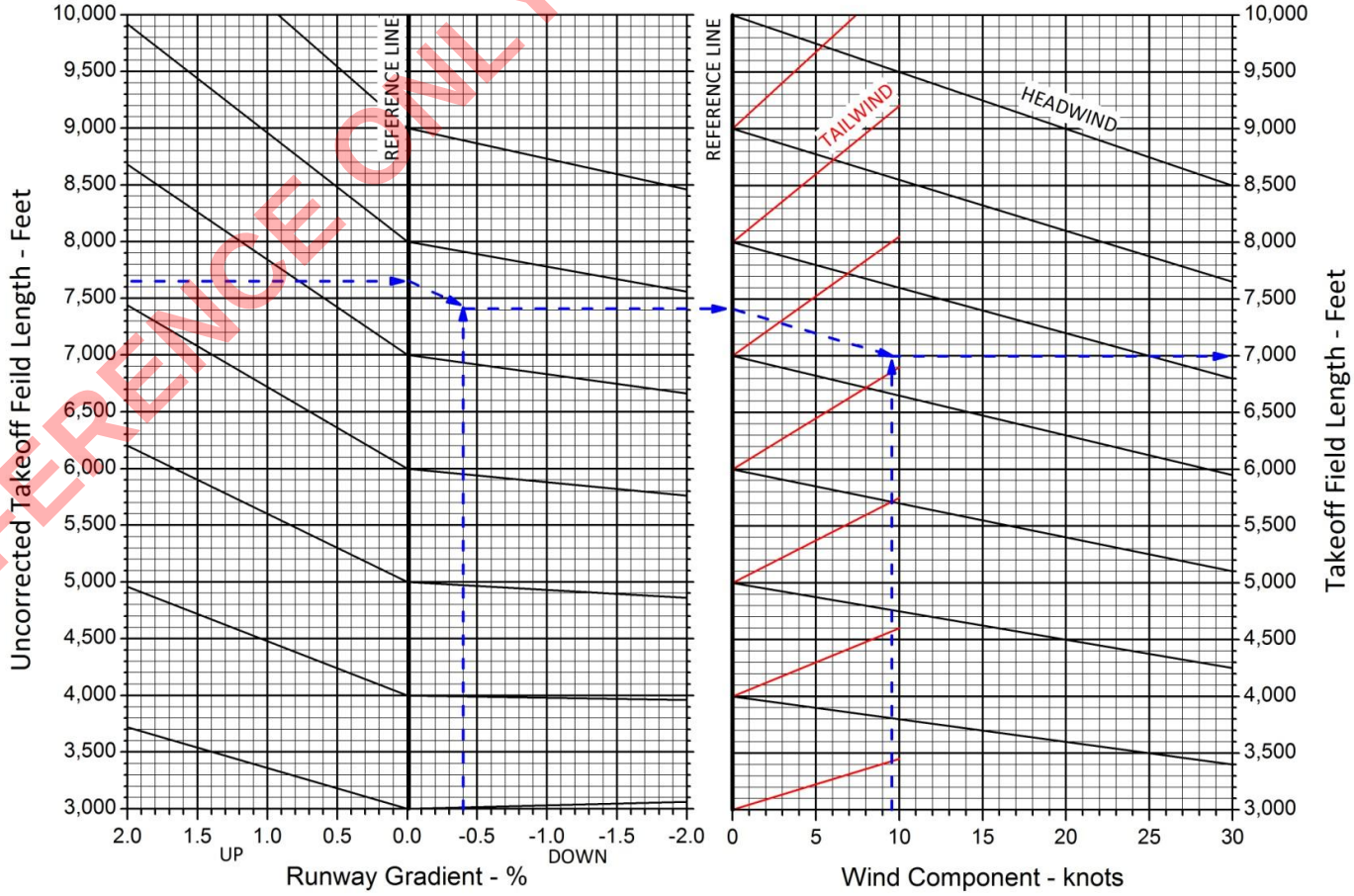
TAKE-OFF FIELD LENGTH CORRECTION - FLAPS APPROACH

FOR RUNWAY GRADIENT AND WIND COMPONENT

Notes:

1. Obtain take-off field length from the appropriate Take-Off Speeds and Balanced Field Lengths table and enter the graph below with that value to determine the field length corrected for runway gradient and wind component.
2. The wind grid includes factors of 50% for headwinds and 150% for tailwinds. Components of reported winds may be used directly in the graph.
3. Do not extrapolate for headwind components greater than 30 knots. Use a 30 knot headwind component for correcting Takeoff Field Length when headwind component is 30 knots or greater.
4. Do not takeoff with more than a 10 knot tail wind component.

Example:
Uncorrected Takeoff Field Length.. 7,650 ft
Runway gradient..... 0.4% Down
Headwind component..... 9.5 knots
Corrected take-off field length..... 7,000 feet



REFERENCE ONLY

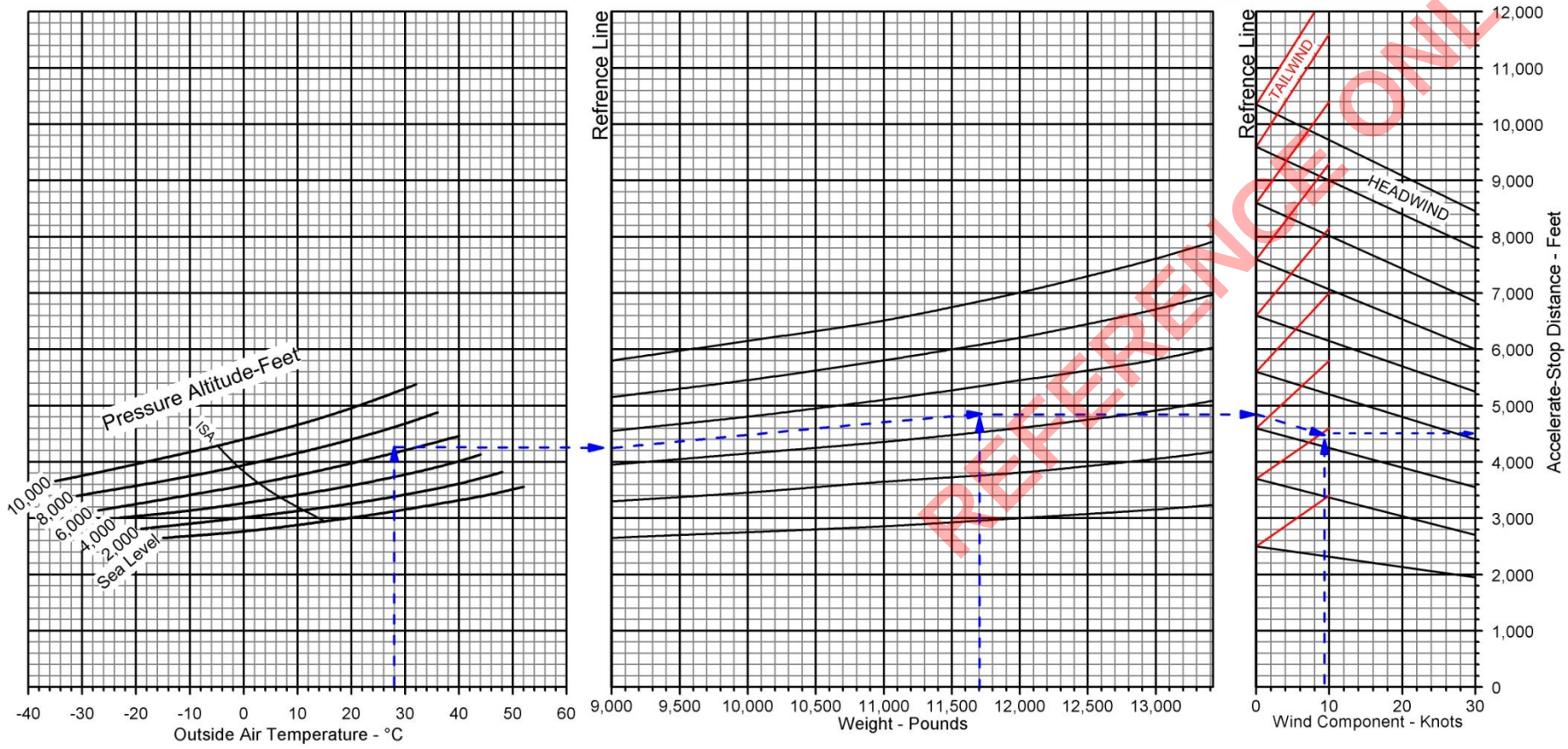
ACCELERATE STOP DISTANCE - FLAPS APPROACH

Associated conditions

Power..... 1. Take-off power set before brake release.
2. Both engines idle at V_1 speed and reverse on operating engine.
Flaps..... Approach
Autofeather..... Armed
Braking..... Maximum
Runway..... Paved, Level, Dry Surface

Weight - Pounds	V_1 - Knots
13,420	96
13,000	95
12,500	95
12,000	94
11,000	93
10,000	93
9,000	93

Example
OAT..... 28 °C
Pressure Altitude..... 5,430 feet
Weight..... 11,704 pounds
Headwind Component..... 9.5 knots
Field Length ..... 4,500 feet
V_1 ..... 94 knots



REFERENCE ONLY

NET GRADIENT OF CLIMB - FLAPS APPROACH

Associated conditions
Power..... Take-Off
Flaps..... Approach
Landing Gear..... Up
Inoperative Propeller... Feathered

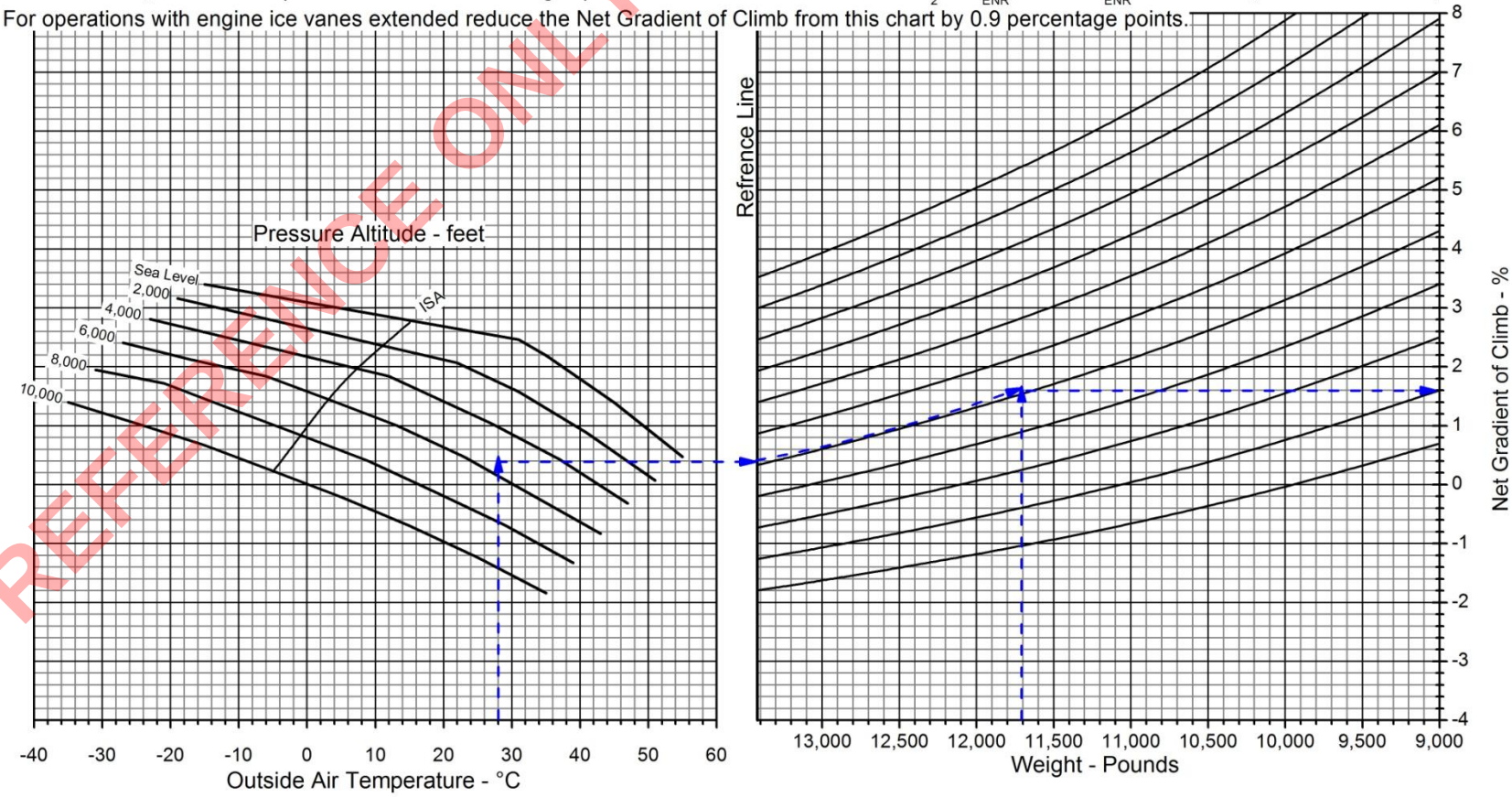
Weight - Pounds	V_2 - Knots
13,420	107
13,000	106
12,000	104
11,000	103
10,000	101
9,000	99

Example
OAT..... 28 °C
Pressure Altitude..... 5,430 feet

Take-Off Weight - Pounds	Net Gradient - %
11,704	1.6

Climb Speed at 11,704 pounds ..... 104 knots

Notes:
1. Use this chart for the second segment of the takeoff flight path when executing a takeoff with flaps set to approach.
2. A distance of 6,000 feet is required for acceleration during flap retraction and the transition from V_2 to V_{ENR}. When V_{ENR} is 145 knots, this distance is 11,000 feet.
3. For operations with engine ice vanes extended reduce the Net Gradient of Climb from this chart by 0.9 percentage points.



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TAKEOFF SPEEDS & BALANCED FIELD LENGTHS - FLAPS UP
SEA LEVEL PRESSURE ALTITUDE

Notes:

For operations with ice vanes extended, add 6°C to actual Outside Air Temperature.

T.O. WEIGHT	ITEM	OUTSIDE AIR TEMPERATURE (°C)							
		-15	-5	5	15	25	35	45	52
13,420 LB	V_1	114	114	114	114	114	114	114	114
6087 KG	V_R	115	115	115	115	115	115	115	115
	V_2	125	125	125	125	125	125	125	125
V_{ENR} = 125	TOFL-FT	**4,537**	**4,668**	**4,821**	**5,054**	**5,366**	**5,756**	**6,362**	**7,196**
13,000 LB	V_1	112	112	112	112	112	112	112	112
5897 KG	V_R	113	113	113	113	113	113	113	113
	V_2	123	123	123	123	123	123	123	123
V_{ENR} = 123	TOFL-FT	**4,162**	**4,282**	**4,424**	**4,636**	**4,917**	**5,268**	**5,808**	**6,536**
12,500 LB	V_1	110	110	110	110	110	110	110	110
5670 KG	V_R	111	111	111	111	111	111	111	111
	V_2	121	121	121	121	121	121	121	121
V_{ENR} = 121	TOFL-FT	**4,041**	**4,161**	**4,301**	**4,504**	**4,772**	**5,108**	**5,616**	**6,283**
12,000 LB	V_1	108	108	108	108	108	108	108	108
5443 KG	V_R	109	109	109	109	109	109	109	109
	V_2	120	120	120	120	120	120	120	120
V_{ENR} = 120	TOFL-FT	**3,892**	**4,009**	**4,147**	**4,342**	**4,598**	**4,918**	**5,395**	**6,002**
11,500 LB	V_1	106	106	106	106	106	106	106	106
5216 KG	V_R	107	107	107	107	107	107	107	107
	V_2	118	118	118	118	118	118	118	118
V_{ENR} = 118	TOFL-FT	**3,722**	**3,836**	**3,971**	**4,158**	**4,403**	**4,709**	**5,158**	**5,711**
11,000 LB	V_1	104	104	104	104	104	104	104	104
4990 KG	V_R	105	105	105	105	105	105	105	105
	V_2	115	115	115	115	115	115	115	115
V_{ENR} = 115	TOFL-FT	**3,537**	**3,649**	**3,781**	**3,962**	**4,198**	**4,494**	**4,919**	**5,426**
10,500 LB	V_1	102	102	102	102	102	102	102	102
4763 KG	V_R	103	103	103	103	103	103	103	103
	V_2	113	113	113	113	113	113	113	113
V_{ENR} = 113	TOFL-FT	**3,157**	**3,260**	**3,381**	**3,549**	**3,767**	**4,040**	**4,427**	**4,873**
10,000 LB	V_1	100	99	99	99	99	100	100	100
4536 KG	V_R	101	101	101	101	101	101	101	101
	V_2	111	111	111	111	111	111	111	111
V_{ENR} = 111	TOFL-FT	**2,846**	**2,970**	**3,097**	**3,247**	**3,432**	**3,648**	**4,009**	**4,416**
9,500 LB	V_1	97	97	97	97	97	98	99	99
4309 KG	V_R	101	101	101	101	101	101	101	101
	V_2	110	110	110	110	110	110	110	110
V_{ENR} = 110	TOFL-FT	**2,608**	**2,724**	**2,845**	**2,986**	**3,162**	**3,368**	**3,667**	**4,055**
9,000 LB	V_1	95	95	95	95	95	96	97	97
4082 KG	V_R	101	101	101	101	101	101	101	101
OR LESS	V_2	108	108	108	108	108	108	108	108
V_{ENR} = 108	TOFL-FT	**2,394**	**2,505**	**2,618**	**2,754**	**2,924**	**3,128**	**3,425**	**3,790**

REFERENCE ONLY

TAKEOFF SPEEDS & BALANCED FIELD LENGTHS - FLAPS UP
500 FEET PRESSURE ALTITUDE

Notes:

For operations with ice vanes extended, add 6°C to actual Outside Air Temperature.

T.O. WEIGHT	ITEM	OUTSIDE AIR TEMPERATURE (°C)							
		-16	-6	4	14	24	34	44	51
13,420 LB	V_1	114	114	114	114	114	114	114	114
6087 KG	V_R	115	115	115	115	115	115	115	115
	V_2	125	125	125	125	125	125	125	125
V_{ENR} = 125	TOFL-FT	**4,952**	**5,105**	**5,295**	**5,558**	**5,906**	**6,368**	**7,098**	**8,102**
13,000 LB	V_1	112	112	112	112	112	112	112	112
5897 KG	V_R	113	113	113	113	113	113	113	113
	V_2	123	123	123	123	123	123	123	123
V_{ENR} = 123	TOFL-FT	**4,543**	**4,683**	**4,858**	**5,096**	**5,408**	**5,823**	**6,469**	**7,354**
12,500 LB	V_1	110	110	110	110	110	110	110	110
5670 KG	V_R	111	111	111	111	111	111	111	111
	V_2	121	121	121	121	121	121	121	121
V_{ENR} = 121	TOFL-FT	**4,318**	**4,453**	**4,618**	**4,841**	**5,133**	**5,517**	**6,104**	**6,902**
12,000 LB	V_1	108	108	108	108	108	108	108	108
5443 KG	V_R	109	109	109	109	109	109	109	109
	V_2	120	120	120	120	120	120	120	120
V_{ENR} = 120	TOFL-FT	**4,076**	**4,204**	**4,361**	**4,570**	**4,842**	**5,198**	**5,730**	**6,443**
11,500 LB	V_1	106	106	106	106	106	106	106	106
5216 KG	V_R	107	107	107	107	107	107	107	107
	V_2	118	118	118	118	118	118	118	118
V_{ENR} = 118	TOFL-FT	**3,833**	**3,956**	**4,105**	**4,302**	**4,558**	**4,890**	**5,376**	**6,013**
11,000 LB	V_1	104	104	104	104	104	104	104	104
4990 KG	V_R	105	105	105	105	105	105	105	105
	V_2	115	115	115	115	115	115	115	115
V_{ENR} = 115	TOFL-FT	**3,590**	**3,708**	**3,850**	**4,038**	**4,281**	**4,594**	**5,042**	**5,614**
10,500 LB	V_1	102	102	102	102	102	102	102	102
4763 KG	V_R	103	103	103	103	103	103	103	103
	V_2	113	113	113	113	113	113	113	113
V_{ENR} = 113	TOFL-FT	**3,210**	**3,318**	**3,450**	**3,624**	**3,849**	**4,136**	**4,541**	**5,039**
10,000 LB	V_1	99	99	99	99	100	100	100	100
4536 KG	V_R	101	101	101	101	101	101	101	101
	V_2	111	111	111	111	111	111	111	111
V_{ENR} = 111	TOFL-FT	**2,902**	**3,028**	**3,159**	**3,314**	**3,498**	**3,738**	**4,114**	**4,557**
9,500 LB	V_1	97	97	97	97	97	98	99	99
4309 KG	V_R	101	101	101	101	101	101	101	101
	V_2	110	110	110	110	110	110	110	110
V_{ENR} = 110	TOFL-FT	**2,661**	**2,779**	**2,904**	**3,050**	**3,228**	**3,443**	**3,766**	**4,175**
9,000 LB	V_1	95	95	95	95	95	96	97	97
4082 KG	V_R	101	101	101	101	101	101	101	101
OR LESS	V_2	108	108	108	108	108	108	108	108
V_{ENR} = 108	TOFL-FT	**2,444**	**2,556**	**2,675**	**2,816**	**2,990**	**3,205**	**3,519**	**3,893**

REFERENCE ONLY

TAKEOFF SPEEDS & BALANCED FIELD LENGTHS - FLAPS UP
1,000 FEET PRESSURE ALTITUDE

Notes:

For operations with ice vanes extended, add 6°C to actual Outside Air Temperature.

T.O. WEIGHT	ITEM	OUTSIDE AIR TEMPERATURE (°C)							
		-17	-7	3	13	23	33	43	50
13,420 LB	V_1	114	114	114	114	114	114	114	114
6087 KG	V_R	115	115	115	115	115	115	115	115
	V_2	125	125	125	125	125	125	125	125
V_{ENR} = 125	TOFL-FT	**5,367**	**5,542**	**5,770**	**6,062**	**6,445**	**6,980**	**7,834**	**9,009**
13,000 LB	V_1	112	112	112	112	112	112	112	112
5897 KG	V_R	113	113	113	113	113	113	113	113
	V_2	123	123	123	123	123	123	123	123
V_{ENR} = 123	TOFL-FT	**4,924**	**5,085**	**5,291**	**5,556**	**5,900**	**6,379**	**7,130**	**8,172**
12,500 LB	V_1	110	110	110	110	110	110	110	110
5670 KG	V_R	111	111	111	111	111	111	111	111
	V_2	121	121	121	121	121	121	121	121
V_{ENR} = 121	TOFL-FT	**4,595**	**4,745**	**4,936**	**5,179**	**5,494**	**5,927**	**6,592**	**7,520**
12,000 LB	V_1	108	108	108	108	108	108	108	108
5443 KG	V_R	109	109	109	109	109	109	109	109
	V_2	120	120	120	120	120	120	120	120
V_{ENR} = 120	TOFL-FT	**4,259**	**4,399**	**4,575**	**4,798**	**5,087**	**5,478**	**6,065**	**6,884**
11,500 LB	V_1	106	106	106	106	106	106	106	106
5216 KG	V_R	107	107	107	107	107	107	107	107
	V_2	118	118	118	118	118	118	118	118
V_{ENR} = 118	TOFL-FT	**3,945**	**4,075**	**4,240**	**4,446**	**4,714**	**5,071**	**5,594**	**6,315**
11,000 LB	V_1	104	104	104	104	104	104	104	104
4990 KG	V_R	105	105	105	105	105	105	105	105
	V_2	115	115	115	115	115	115	115	115
V_{ENR} = 115	TOFL-FT	**3,643**	**3,766**	**3,920**	**4,114**	**4,364**	**4,694**	**5,166**	**5,801**
10,500 LB	V_1	102	102	102	102	102	102	102	102
4763 KG	V_R	103	103	103	103	103	103	103	103
	V_2	113	113	113	113	113	113	113	113
V_{ENR} = 113	TOFL-FT	**3,263**	**3,377**	**3,520**	**3,699**	**3,930**	**4,233**	**4,655**	**5,205**
10,000 LB	V_1	99	99	99	99	100	100	100	100
4536 KG	V_R	101	101	101	101	101	101	101	101
	V_2	111	111	111	111	111	111	111	111
V_{ENR} = 111	TOFL-FT	**2,959**	**3,085**	**3,222**	**3,380**	**3,565**	**3,828**	**4,218**	**4,698**
9,500 LB	V_1	97	97	97	97	97	98	99	99
4309 KG	V_R	101	101	101	101	101	101	101	101
	V_2	110	110	110	110	110	110	110	110
V_{ENR} = 110	TOFL-FT	**2,714**	**2,833**	**2,963**	**3,113**	**3,295**	**3,518**	**3,866**	**4,294**
9,000 LB	V_1	95	95	95	95	95	96	97	97
4082 KG	V_R	101	101	101	101	101	101	101	101
OR LESS	V_2	108	108	108	108	108	108	108	108
V_{ENR} = 108	TOFL-FT	**2,494**	**2,608**	**2,732**	**2,877**	**3,056**	**3,282**	**3,613**	**3,995**

REFERENCE ONLY

TAKEOFF SPEEDS & BALANCED FIELD LENGTHS - FLAPS UP
1,500 FEET PRESSURE ALTITUDE

Notes:

For operations with ice vanes extended, add 6°C to actual Outside Air Temperature.

T.O. WEIGHT	ITEM	OUTSIDE AIR TEMPERATURE (°C)							
		-18	-8	2	12	22	32	42	49
13,420 LB	V_1	114	114	114	114	114	114	114	114
6087 KG	V_R	115	115	115	115	115	115	115	115
	V_2	125	125	125	125	125	125	125	125
V_{ENR} = 125	TOFL-FT	**5,782**	**5,979**	**6,244**	**6,566**	**6,984**	**7,592**	**8,571**	**9,915**
13,000 LB	V_1	112	112	112	112	112	112	112	112
5897 KG	V_R	113	113	113	113	113	113	113	113
	V_2	123	123	123	123	123	123	123	123
V_{ENR} = 123	TOFL-FT	**5,305**	**5,486**	**5,725**	**6,016**	**6,392**	**6,934**	**7,791**	**8,990**
12,500 LB	V_1	110	110	110	110	110	110	110	110
5670 KG	V_R	111	111	111	111	111	111	111	111
	V_2	121	121	121	121	121	121	121	121
V_{ENR} = 121	TOFL-FT	**4,872**	**5,037**	**5,254**	**5,516**	**5,855**	**6,336**	**7,080**	**8,138**
12,000 LB	V_1	108	108	108	108	108	108	108	108
5443 KG	V_R	109	109	109	109	109	109	109	109
	V_2	120	120	120	120	120	120	120	120
V_{ENR} = 120	TOFL-FT	**4,443**	**4,593**	**4,789**	**5,026**	**5,332**	**5,758**	**6,400**	**7,325**
11,500 LB	V_1	106	106	106	106	106	106	106	106
5216 KG	V_R	107	107	107	107	107	107	107	107
	V_2	118	118	118	118	118	118	118	118
V_{ENR} = 118	TOFL-FT	**4,056**	**4,195**	**4,374**	**4,590**	**4,869**	**5,252**	**5,811**	**6,618**
11,000 LB	V_1	104	104	104	104	104	104	104	104
4990 KG	V_R	105	105	105	105	105	105	105	105
	V_2	115	115	115	115	115	115	115	115
V_{ENR} = 115	TOFL-FT	**3,696**	**3,825**	**3,990**	**4,190**	**4,447**	**4,795**	**5,289**	**5,989**
10,500 LB	V_1	102	102	102	102	102	102	102	102
4763 KG	V_R	103	103	103	103	103	103	103	103
	V_2	113	113	113	113	113	113	113	113
V_{ENR} = 113	TOFL-FT	**3,316**	**3,436**	**3,589**	**3,774**	**4,012**	**4,330**	**4,770**	**5,372**
10,000 LB	V_1	99	99	99	99	100	100	100	100
4536 KG	V_R	101	101	101	101	101	101	101	101
	V_2	111	111	111	111	111	111	111	111
V_{ENR} = 111	TOFL-FT	**3,015**	**3,143**	**3,284**	**3,446**	**3,632**	**3,919**	**4,322**	**4,839**
9,500 LB	V_1	97	97	97	97	97	98	99	99
4309 KG	V_R	101	101	101	101	101	101	101	101
	V_2	110	110	110	110	110	110	110	110
V_{ENR} = 110	TOFL-FT	**2,767**	**2,888**	**3,022**	**3,176**	**3,362**	**3,592**	**3,965**	**4,414**
9,000 LB	V_1	95	95	95	95	96	96	97	97
4082 KG	V_R	101	101	101	101	101	101	101	101
OR LESS	V_2	108	108	108	108	108	108	108	108
V_{ENR} = 108	TOFL-FT	**2,544**	**2,660**	**2,789**	**2,939**	**3,122**	**3,359**	**3,706**	**4,098**

REFERENCE ONLY

TAKEOFF SPEEDS & BALANCED FIELD LENGTHS - FLAPS UP
2,000 FEET PRESSURE ALTITUDE

Notes:

For operations with ice vanes extended, add 6°C to actual Outside Air Temperature.

T.O. WEIGHT	ITEM	OUTSIDE AIR TEMPERATURE (°C)							
		-19	-9	1	11	21	31	41	48
13,420 LB	V_1	114	114	114	114	114	114	114	114
6087 KG	V_R	115	115	115	115	115	115	115	115
	V_2	125	125	125	125	125	125	125	125
V_{ENR} = 125	TOFL-FT	**6,197**	**6,416**	**6,718**	**7,071**	**7,523**	**8,204**	**9,307**	**10,821**
13,000 LB	V_1	112	112	112	112	112	112	112	112
5897 KG	V_R	113	113	113	113	113	113	113	113
	V_2	123	123	123	123	123	123	123	123
V_{ENR} = 123	TOFL-FT	**5,687**	**5,887**	**6,159**	**6,476**	**6,884**	**7,489**	**8,452**	**9,808**
12,500 LB	V_1	110	110	110	110	110	110	110	110
5670 KG	V_R	111	111	111	111	111	111	111	111
	V_2	121	121	121	121	121	121	121	121
V_{ENR} = 121	TOFL-FT	**5,149**	**5,329**	**5,571**	**5,853**	**6,216**	**6,746**	**7,568**	**8,757**
12,000 LB	V_1	108	108	108	108	108	108	108	108
5443 KG	V_R	109	109	109	109	109	109	109	109
	V_2	120	120	120	120	120	120	120	120
V_{ENR} = 120	TOFL-FT	**4,626**	**4,788**	**5,003**	**5,254**	**5,576**	**6,038**	**6,736**	**7,766**
11,500 LB	V_1	106	106	106	106	106	106	106	106
5216 KG	V_R	107	107	107	107	107	107	107	107
	V_2	118	118	118	118	118	118	118	118
V_{ENR} = 118	TOFL-FT	**4,168**	**4,315**	**4,508**	**4,734**	**5,024**	**5,432**	**6,029**	**6,920**
11,000 LB	V_1	104	104	104	104	104	104	104	104
4990 KG	V_R	105	105	105	105	105	105	105	105
	V_2	115	115	115	115	115	115	115	115
V_{ENR} = 115	TOFL-FT	**3,749**	**3,883**	**4,060**	**4,265**	**4,530**	**4,895**	**5,412**	**6,177**
10,500 LB	V_1	102	102	102	102	102	102	102	102
4763 KG	V_R	103	103	103	103	103	103	103	103
	V_2	113	113	113	113	113	113	113	113
V_{ENR} = 113	TOFL-FT	**3,369**	**3,494**	**3,658**	**3,849**	**4,094**	**4,427**	**4,884**	**5,538**
10,000 LB	V_1	99	99	99	99	100	100	100	100
4536 KG	V_R	101	101	101	101	101	101	101	101
	V_2	111	111	111	111	111	111	111	111
V_{ENR} = 111	TOFL-FT	**3,072**	**3,201**	**3,347**	**3,513**	**3,699**	**4,009**	**4,426**	**4,980**
9,500 LB	V_1	97	97	97	97	98	99	99	99
4309 KG	V_R	101	101	101	101	101	101	101	101
	V_2	110	110	110	110	110	110	110	110
V_{ENR} = 110	TOFL-FT	**2,820**	**2,942**	**3,081**	**3,240**	**3,428**	**3,667**	**4,065**	**4,534**
9,000 LB	V_1	95	95	95	95	96	96	97	97
4082 KG	V_R	101	101	101	101	101	101	101	101
OR LESS	V_2	108	108	108	108	108	108	108	108
V_{ENR} = 108	TOFL-FT	**2,593**	**2,711**	**2,846**	**3,001**	**3,188**	**3,437**	**3,800**	**4,200**

REFERENCE ONLY

TAKEOFF SPEEDS & BALANCED FIELD LENGTHS - FLAPS UP
2,500 FEET PRESSURE ALTITUDE

Notes:

For operations with ice vanes extended, add 6°C to actual Outside Air Temperature. Red shading indicates performance requirements are not met.

T.O. WEIGHT	ITEM	OUTSIDE AIR TEMPERATURE (°C)							
		-20	-10	0	10	20	30	40	47
13,420 LB	V_1	114	114	114	114	114	114	114	114
6087 KG	V_R	115	115	115	115	115	115	115	115
	V_2	125	125	125	125	125	125	125	125
V_{ENR} = 125	TOFL-FT	**6,361**	**6,603**	**6,932**	**7,299**	**7,806**	**8,562**	**9,904**	**11,572**
13,000 LB	V_1	112	112	112	112	112	112	112	112
5897 KG	V_R	113	113	113	113	113	113	113	113
	V_2	123	123	123	123	123	123	123	123
V_{ENR} = 123	TOFL-FT	**5,836**	**6,056**	**6,352**	**6,682**	**7,135**	**7,804**	**8,989**	**10,489**
12,500 LB	V_1	110	110	110	110	110	110	110	110
5670 KG	V_R	111	111	111	111	111	111	111	111
	V_2	121	121	121	121	121	121	121	121
V_{ENR} = 121	TOFL-FT	**5,276**	**5,472**	**5,736**	**6,029**	**6,426**	**7,006**	**8,028**	**9,347**
12,000 LB	V_1	108	108	108	108	108	108	108	108
5443 KG	V_R	109	109	109	109	109	109	109	109
	V_2	120	120	120	120	120	120	120	120
V_{ENR} = 120	TOFL-FT	**4,739**	**4,915**	**5,149**	**5,410**	**5,759**	**6,260**	**7,136**	**8,282**
11,500 LB	V_1	106	106	106	106	106	106	106	106
5216 KG	V_R	107	107	107	107	107	107	107	107
	V_2	118	118	118	118	118	118	118	118
V_{ENR} = 118	TOFL-FT	**4,264**	**4,423**	**4,634**	**4,868**	**5,178**	**5,616**	**6,367**	**7,359**
11,000 LB	V_1	104	104	104	104	104	104	104	104
4990 KG	V_R	105	105	105	105	105	105	105	105
	V_2	115	115	115	115	115	115	115	115
V_{ENR} = 115	TOFL-FT	**3,831**	**3,977**	**4,168**	**4,382**	**4,660**	**5,047**	**5,694**	**6,546**
10,500 LB	V_1	102	102	102	102	102	102	102	102
4763 KG	V_R	103	103	103	103	103	103	103	103
	V_2	113	113	113	113	113	113	113	113
V_{ENR} = 113	TOFL-FT	**3,441**	**3,576**	**3,753**	**3,951**	**4,206**	**4,555**	**5,118**	**5,843**
10,000 LB	V_1	99	99	99	99	100	100	100	100
4536 KG	V_R	101	101	101	101	101	101	101	101
	V_2	111	111	111	111	111	111	111	111
V_{ENR} = 111	TOFL-FT	**3,136**	**3,269**	**3,422**	**3,598**	**3,803**	**4,127**	**4,623**	**5,233**
9,500 LB	V_1	97	97	97	97	98	99	99	99
4309 KG	V_R	101	101	101	101	101	101	101	101
	V_2	110	110	110	110	110	110	110	110
V_{ENR} = 110	TOFL-FT	**2,881**	**3,007**	**3,153**	**3,318**	**3,513**	**3,779**	**4,229**	**4,739**
9,000 LB	V_1	95	95	95	95	96	97	97	97
4082 KG	V_R	101	101	101	101	101	101	101	101
OR LESS	V_2	108	108	108	108	108	108	108	108
V_{ENR} = 108	TOFL-FT	**2,652**	**2,774**	**2,917**	**3,077**	**3,266**	**3,540**	**3,938**	**4,363**

REFERENCE ONLY

TAKEOFF SPEEDS & BALANCED FIELD LENGTHS - FLAPS UP
3,000 FEET PRESSURE ALTITUDE

Notes:

For operations with ice vanes extended, add 6°C to actual Outside Air Temperature. Red shading indicates performance requirements are not met.

T.O. WEIGHT	ITEM	OUTSIDE AIR TEMPERATURE (°C)							
		-21	-11	-1	9	19	29	39	46
13,420 LB	V_1	114	114	114	114	114	114	114	114
6087 KG	V_R	115	115	115	115	115	115	115	115
	V_2	125	125	125	125	125	125	125	125
V_{ENR} = 125	TOFL-FT	**6,526**	**6,790**	**7,146**	**7,528**	**8,088**	**8,921**	**10,501**	**12,324**
13,000 LB	V_1	112	112	112	112	112	112	112	112
5897 KG	V_R	113	113	113	113	113	113	113	113
	V_2	123	123	123	123	123	123	123	123
V_{ENR} = 123	TOFL-FT	**5,985**	**6,224**	**6,545**	**6,889**	**7,386**	**8,118**	**9,525**	**11,169**
12,500 LB	V_1	110	110	110	110	110	110	110	110
5670 KG	V_R	111	111	111	111	111	111	111	111
	V_2	121	121	121	121	121	121	121	121
V_{ENR} = 121	TOFL-FT	**5,403**	**5,615**	**5,900**	**6,205**	**6,637**	**7,267**	**8,488**	**9,937**
12,000 LB	V_1	108	108	108	108	108	108	108	108
5443 KG	V_R	109	109	109	109	109	109	109	109
	V_2	120	120	120	120	120	120	120	120
V_{ENR} = 120	TOFL-FT	**4,853**	**5,043**	**5,296**	**5,567**	**5,942**	**6,483**	**7,536**	**8,799**
11,500 LB	V_1	106	106	106	106	106	106	106	106
5216 KG	V_R	107	107	107	107	107	107	107	107
	V_2	118	118	118	118	118	118	118	118
V_{ENR} = 118	TOFL-FT	**4,361**	**4,532**	**4,759**	**5,002**	**5,331**	**5,799**	**6,705**	**7,799**
11,000 LB	V_1	104	104	104	104	104	104	104	104
4990 KG	V_R	105	105	105	105	105	105	105	105
	V_2	115	115	115	115	115	115	115	115
V_{ENR} = 115	TOFL-FT	**3,914**	**4,070**	**4,277**	**4,498**	**4,790**	**5,199**	**5,976**	**6,915**
10,500 LB	V_1	102	102	102	102	102	102	102	102
4763 KG	V_R	103	103	103	103	103	103	103	103
	V_2	113	113	113	113	113	113	113	113
V_{ENR} = 113	TOFL-FT	**3,513**	**3,658**	**3,849**	**4,053**	**4,318**	**4,684**	**5,351**	**6,148**
10,000 LB	V_1	99	99	100	100	100	100	100	100
4536 KG	V_R	101	101	101	101	101	101	101	101
	V_2	111	111	111	111	111	111	111	111
V_{ENR} = 111	TOFL-FT	**3,200**	**3,338**	**3,497**	**3,683**	**3,906**	**4,244**	**4,819**	**5,486**
9,500 LB	V_1	97	97	97	98	98	99	99	99
4309 KG	V_R	101	101	101	101	101	101	101	101
	V_2	110	110	110	110	110	110	110	110
V_{ENR} = 110	TOFL-FT	**2,942**	**3,072**	**3,225**	**3,397**	**3,597**	**3,891**	**4,394**	**4,945**
9,000 LB	V_1	95	95	95	96	96	97	97	97
4082 KG	V_R	101	101	101	101	101	101	101	101
OR LESS	V_2	108	108	108	108	108	108	108	108
V_{ENR} = 108	TOFL-FT	**2,711**	**2,838**	**2,988**	**3,153**	**3,344**	**3,643**	**4,075**	**4,525**

REFERENCE ONLY

TAKEOFF SPEEDS & BALANCED FIELD LENGTHS - FLAPS UP
3,500 FEET PRESSURE ALTITUDE

Notes:

For operations with ice vanes extended, add 6°C to actual Outside Air Temperature. Red shading indicates performance requirements are not met.

T.O. WEIGHT	ITEM	OUTSIDE AIR TEMPERATURE (°C)							
		-22	-12	-2	8	18	28	38	45
13,420 LB	V_1	114	114	114	114	114	114	114	114
6087 KG	V_R	115	115	115	115	115	115	115	115
	V_2	125	125	125	125	125	125	125	125
V_{ENR} = 125	TOFL-FT	**6,691**	**6,977**	**7,360**	**7,756**	**8,370**	**9,279**	**11,099**	**13,075**
13,000 LB	V_1	112	112	112	112	112	112	112	112
5897 KG	V_R	113	113	113	113	113	113	113	113
	V_2	123	123	123	123	123	123	123	123
V_{ENR} = 123	TOFL-FT	**6,135**	**6,393**	**6,738**	**7,095**	**7,637**	**8,433**	**10,062**	**11,849**
12,500 LB	V_1	110	110	110	110	110	110	110	110
5670 KG	V_R	111	111	111	111	111	111	111	111
	V_2	121	121	121	121	121	121	121	121
V_{ENR} = 121	TOFL-FT	**5,529**	**5,758**	**6,065**	**6,381**	**6,847**	**7,527**	**8,949**	**10,526**
12,000 LB	V_1	108	108	108	108	108	108	108	108
5443 KG	V_R	109	109	109	109	109	109	109	109
	V_2	120	120	120	120	120	120	120	120
V_{ENR} = 120	TOFL-FT	**4,966**	**5,170**	**5,442**	**5,723**	**6,125**	**6,705**	**7,936**	**9,315**
11,500 LB	V_1	106	106	106	106	106	106	106	106
5216 KG	V_R	107	107	107	107	107	107	107	107
	V_2	118	118	118	118	118	118	118	118
V_{ENR} = 118	TOFL-FT	**4,457**	**4,641**	**4,885**	**5,137**	**5,485**	**5,982**	**7,042**	**8,238**
11,000 LB	V_1	104	104	104	104	104	104	104	104
4990 KG	V_R	105	105	105	105	105	105	105	105
	V_2	115	115	115	115	115	115	115	115
V_{ENR} = 115	TOFL-FT	**3,997**	**4,164**	**4,385**	**4,614**	**4,919**	**5,352**	**6,258**	**7,284**
10,500 LB	V_1	102	102	102	102	102	102	102	102
4763 KG	V_R	103	103	103	103	103	103	103	103
	V_2	113	113	113	113	113	113	113	113
V_{ENR} = 113	TOFL-FT	**3,586**	**3,740**	**3,944**	**4,155**	**4,429**	**4,813**	**5,584**	**6,453**
10,000 LB	V_1	99	99	100	100	100	100	100	100
4536 KG	V_R	101	101	101	101	101	101	101	101
	V_2	111	111	111	111	111	111	111	111
V_{ENR} = 111	TOFL-FT	**3,265**	**3,406**	**3,572**	**3,768**	**4,010**	**4,361**	**5,015**	**5,739**
9,500 LB	V_1	97	97	98	98	98	99	99	99
4309 KG	V_R	101	101	101	101	101	101	101	101
	V_2	110	110	110	110	110	110	110	110
V_{ENR} = 110	TOFL-FT	**3,003**	**3,137**	**3,298**	**3,476**	**3,682**	**4,003**	**4,558**	**5,151**
9,000 LB	V_1	95	95	96	96	97	97	97	97
4082 KG	V_R	101	101	101	101	101	101	101	101
OR LESS	V_2	108	108	108	108	108	108	108	108
V_{ENR} = 108	TOFL-FT	**2,770**	**2,901**	**3,059**	**3,228**	**3,422**	**3,747**	**4,213**	**4,688**

REFERENCE ONLY

TAKEOFF SPEEDS & BALANCED FIELD LENGTHS - FLAPS UP
4,000 FEET PRESSURE ALTITUDE

Notes:

For operations with ice vanes extended, add 6°C to actual Outside Air Temperature. Red shading indicates performance requirements are not met.

T.O. WEIGHT	ITEM	OUTSIDE AIR TEMPERATURE (°C)							
		-23	-13	-3	7	17	27	37	44
13,420 LB	V_1	114	114	114	114	114	114	114	114
6087 KG	V_R	115	115	115	115	115	115	115	115
	V_2	125	125	125	125	125	125	125	125
V_{ENR} = 125	TOFL-FT	**6,855**	**7,163**	**7,574**	**7,985**	**8,653**	**9,637**	**11,696**	**13,826**
13,000 LB	V_1	112	112	112	112	112	112	112	112
5897 KG	V_R	113	113	113	113	113	113	113	113
	V_2	123	123	123	123	123	123	123	123
V_{ENR} = 123	TOFL-FT	**6,284**	**6,562**	**6,932**	**7,302**	**7,888**	**8,747**	**10,599**	**12,530**
12,500 LB	V_1	110	110	110	110	110	110	110	110
5670 KG	V_R	111	111	111	111	111	111	111	111
	V_2	121	121	121	121	121	121	121	121
V_{ENR} = 121	TOFL-FT	**5,656**	**5,902**	**6,229**	**6,556**	**7,057**	**7,787**	**9,409**	**11,116**
12,000 LB	V_1	108	108	108	108	108	108	108	108
5443 KG	V_R	109	109	109	109	109	109	109	109
	V_2	120	120	120	120	120	120	120	120
V_{ENR} = 120	TOFL-FT	**5,079**	**5,297**	**5,588**	**5,879**	**6,307**	**6,927**	**8,336**	**9,832**
11,500 LB	V_1	106	106	106	106	106	106	106	106
5216 KG	V_R	107	107	107	107	107	107	107	107
	V_2	118	118	118	118	118	118	118	118
V_{ENR} = 118	TOFL-FT	**4,554**	**4,749**	**5,010**	**5,271**	**5,638**	**6,166**	**7,380**	**8,678**
11,000 LB	V_1	104	104	104	104	104	104	104	104
4990 KG	V_R	105	105	105	105	105	105	105	105
	V_2	115	115	115	115	115	115	115	115
V_{ENR} = 115	TOFL-FT	**4,080**	**4,257**	**4,494**	**4,730**	**5,049**	**5,504**	**6,541**	**7,653**
10,500 LB	V_1	102	102	102	102	102	102	102	102
4763 KG	V_R	103	103	103	103	103	103	103	103
	V_2	113	113	113	113	113	113	113	113
V_{ENR} = 113	TOFL-FT	**3,658**	**3,821**	**4,040**	**4,258**	**4,541**	**4,941**	**5,818**	**6,758**
10,000 LB	V_1	99	100	100	100	100	100	100	100
4536 KG	V_R	101	101	101	101	101	101	101	101
	V_2	111	111	111	111	111	111	111	111
V_{ENR} = 111	TOFL-FT	**3,329**	**3,475**	**3,648**	**3,854**	**4,114**	**4,478**	**5,212**	**5,992**
9,500 LB	V_1	97	97	98	98	99	99	99	99
4309 KG	V_R	101	101	101	101	101	101	101	101
	V_2	110	110	110	110	110	110	110	110
V_{ENR} = 110	TOFL-FT	**3,064**	**3,203**	**3,370**	**3,554**	**3,766**	**4,114**	**4,723**	**5,356**
9,000 LB	V_1	95	95	96	96	97	97	97	97
4082 KG	V_R	101	101	101	101	101	101	101	101
OR LESS	V_2	108	108	108	108	108	108	108	108
V_{ENR} = 108	TOFL-FT	**2,830**	**2,964**	**3,130**	**3,304**	**3,500**	**3,850**	**4,350**	**4,850**

REFERENCE ONLY

TAKEOFF SPEEDS & BALANCED FIELD LENGTHS - FLAPS UP
4,500 FEET PRESSURE ALTITUDE

Notes:

For operations with ice vanes extended, add 6°C to actual Outside Air Temperature. Red shading indicates performance requirements are not met.

T.O. WEIGHT	ITEM	OUTSIDE AIR TEMPERATURE (°C)							
		-24	-14	-4	6	16	26	36	43
13,420 LB	V_1	114	114	114	114	114	114	114	
6087 KG	V_R	115	115	115	115	115	115	115	
	V_2	125	125	125	125	125	125	125	
V_{ENR} = 125	TOFL-FT	**6,958**	**7,292**	**7,703**	**8,187**	**8,934**	**10,152**	**12,281**	
13,000 LB	V_1	112	112	112	112	112	112	112	112
5897 KG	V_R	113	113	113	113	113	113	113	113
	V_2	123	123	123	123	123	123	123	123
V_{ENR} = 123	TOFL-FT	**6,377**	**6,677**	**7,048**	**7,479**	**8,133**	**9,210**	**11,129**	**13,063**
12,500 LB	V_1	110	110	110	110	110	110	110	110
5670 KG	V_R	111	111	111	111	111	111	111	111
	V_2	121	121	121	121	121	121	121	121
V_{ENR} = 121	TOFL-FT	**5,738**	**6,004**	**6,332**	**6,708**	**7,266**	**8,193**	**9,878**	**11,582**
12,000 LB	V_1	108	108	108	108	108	108	108	108
5443 KG	V_R	109	109	109	109	109	109	109	109
	V_2	120	120	120	120	120	120	120	120
V_{ENR} = 120	TOFL-FT	**5,152**	**5,388**	**5,680**	**6,009**	**6,484**	**7,279**	**8,747**	**10,236**
11,500 LB	V_1	106	106	106	106	106	106	106	106
5216 KG	V_R	107	107	107	107	107	107	107	107
	V_2	118	118	118	118	118	118	118	118
V_{ENR} = 118	TOFL-FT	**4,619**	**4,831**	**5,092**	**5,381**	**5,789**	**6,469**	**7,737**	**9,025**
11,000 LB	V_1	104	104	104	104	104	104	104	104
4990 KG	V_R	105	105	105	105	105	105	105	105
	V_2	115	115	115	115	115	115	115	115
V_{ENR} = 115	TOFL-FT	**4,139**	**4,331**	**4,568**	**4,826**	**5,179**	**5,763**	**6,847**	**7,948**
10,500 LB	V_1	102	102	102	102	102	102	102	102
4763 KG	V_R	103	103	103	103	103	103	103	103
	V_2	113	113	113	113	113	113	113	113
V_{ENR} = 113	TOFL-FT	**3,712**	**3,890**	**4,108**	**4,343**	**4,655**	**5,160**	**6,076**	**7,006**
10,000 LB	V_1	99	100	100	100	100	100	100	100
4536 KG	V_R	101	101	101	101	101	101	101	101
	V_2	111	111	111	111	111	111	111	111
V_{ENR} = 111	TOFL-FT	**3,381**	**3,531**	**3,712**	**3,932**	**4,218**	**4,662**	**5,427**	**6,198**
9,500 LB	V_1	97	97	98	98	99	99	99	99
4309 KG	V_R	101	101	101	101	101	101	101	101
	V_2	110	110	110	110	110	110	110	110
V_{ENR} = 110	TOFL-FT	**3,114**	**3,262**	**3,431**	**3,620**	**3,866**	**4,266**	**4,897**	**5,526**
9,000 LB	V_1	95	95	96	96	97	97	97	97
4082 KG	V_R	101	101	101	101	101	101	101	101
OR LESS	V_2	108	108	108	108	108	108	108	108
V_{ENR} = 108	TOFL-FT	**2,878**	**3,023**	**3,191**	**3,376**	**3,600**	**3,975**	**4,488**	**4,988**

REFERENCE ONLY

TAKEOFF SPEEDS & BALANCED FIELD LENGTHS - FLAPS UP
5,000 FEET PRESSURE ALTITUDE

Notes:

For operations with ice vanes extended, add 6°C to actual Outside Air Temperature. Red shading indicates performance requirements are not met.

T.O. WEIGHT	ITEM	OUTSIDE AIR TEMPERATURE (°C)							
		-25	-15	-5	5	15	25	35	42
13,420 LB	V_1	114	114	114	114	114	114	114	---
6087 KG	V_R	115	115	115	115	115	115	115	---
	V_2	125	125	125	125	125	125	125	---
V_{ENR} = 125	TOFL-FT	**7,061**	**7,420**	**7,832**	**8,389**	**9,215**	**10,667**	**12,866**	---
13,000 LB	V_1	112	112	112	112	112	112	112	---
5897 KG	V_R	113	113	113	113	113	113	113	---
	V_2	123	123	123	123	123	123	123	---
V_{ENR} = 123	TOFL-FT	**6,469**	**6,793**	**7,164**	**7,656**	**8,379**	**9,673**	**11,660**	---
12,500 LB	V_1	110	110	110	110	110	110	110	110
5670 KG	V_R	111	111	111	111	111	111	111	111
	V_2	121	121	121	121	121	121	121	121
V_{ENR} = 121	TOFL-FT	**5,820**	**6,106**	**6,434**	**6,859**	**7,474**	**8,598**	**10,347**	**12,048**
12,000 LB	V_1	108	108	108	108	108	108	108	108
5443 KG	V_R	109	109	109	109	109	109	109	109
	V_2	120	120	120	120	120	120	120	120
V_{ENR} = 120	TOFL-FT	**5,225**	**5,479**	**5,771**	**6,138**	**6,661**	**7,632**	**9,159**	**10,640**
11,500 LB	V_1	106	106	106	106	106	106	106	106
5216 KG	V_R	107	107	107	107	107	107	107	107
	V_2	118	118	118	118	118	118	118	118
V_{ENR} = 118	TOFL-FT	**4,684**	**4,912**	**5,173**	**5,492**	**5,939**	**6,773**	**8,094**	**9,372**
11,000 LB	V_1	104	104	104	104	104	104	104	104
4990 KG	V_R	105	105	105	105	105	105	105	105
	V_2	115	115	115	115	115	115	115	115
V_{ENR} = 115	TOFL-FT	**4,198**	**4,405**	**4,642**	**4,922**	**5,309**	**6,022**	**7,152**	**8,243**
10,500 LB	V_1	102	102	102	102	102	102	102	102
4763 KG	V_R	103	103	103	103	103	103	103	103
	V_2	113	113	113	113	113	113	113	113
V_{ENR} = 113	TOFL-FT	**3,767**	**3,958**	**4,176**	**4,428**	**4,770**	**5,380**	**6,335**	**7,254**
10,000 LB	V_1	99	100	100	100	100	100	100	100
4536 KG	V_R	101	101	101	101	101	101	101	101
	V_2	111	111	111	111	111	111	111	111
V_{ENR} = 111	TOFL-FT	**3,433**	**3,587**	**3,776**	**4,010**	**4,322**	**4,845**	**5,641**	**6,405**
9,500 LB	V_1	97	97	98	98	99	99	99	99
4309 KG	V_R	101	101	101	101	101	101	101	101
	V_2	110	110	110	110	110	110	110	110
V_{ENR} = 110	TOFL-FT	**3,164**	**3,321**	**3,492**	**3,685**	**3,965**	**4,418**	**5,071**	**5,695**
9,000 LB	V_1	95	95	96	96	97	97	97	97
4082 KG	V_R	101	101	101	101	101	101	101	101
OR LESS	V_2	108	108	108	108	108	108	108	108
V_{ENR} = 108	TOFL-FT	**2,927**	**3,082**	**3,251**	**3,449**	**3,700**	**4,100**	**4,625**	**5,125**

REFERENCE ONLY

TAKEOFF SPEEDS & BALANCED FIELD LENGTHS - FLAPS UP
5,500 FEET PRESSURE ALTITUDE

Notes:

For operations with ice vanes extended, add 6°C to actual Outside Air Temperature. Red shading indicates performance requirements are not met.

T.O. WEIGHT	ITEM	OUTSIDE AIR TEMPERATURE (°C)							
		-26	-16	-6	4	14	24	34	41
13,420 LB	V_1	114	114	114	114	114	114	114	---
6087 KG	V_R	115	115	115	115	115	115	115	---
	V_2	125	125	125	125	125	125	125	---
V_{ENR} = 125	TOFL-FT	**7,163**	**7,549**	**7,961**	**8,591**	**9,497**	**11,181**	**13,452**	---
13,000 LB	V_1	112	112	112	112	112	112	112	---
5897 KG	V_R	113	113	113	113	113	113	113	---
	V_2	123	123	123	123	123	123	123	---
V_{ENR} = 123	TOFL-FT	**6,562**	**6,909**	**7,280**	**7,833**	**8,625**	**10,136**	**12,191**	---
12,500 LB	V_1	110	110	110	110	110	110	110	110
5670 KG	V_R	111	111	111	111	111	111	111	111
	V_2	121	121	121	121	121	121	121	121
V_{ENR} = 121	TOFL-FT	**5,902**	**6,209**	**6,537**	**7,010**	**7,683**	**9,004**	**10,817**	**12,514**
12,000 LB	V_1	108	108	108	108	108	108	108	108
5443 KG	V_R	109	109	109	109	109	109	109	109
	V_2	120	120	120	120	120	120	120	120
V_{ENR} = 120	TOFL-FT	**5,297**	**5,570**	**5,862**	**6,267**	**6,838**	**7,984**	**9,570**	**11,044**
11,500 LB	V_1	106	106	106	106	106	106	106	106
5216 KG	V_R	107	107	107	107	107	107	107	107
	V_2	118	118	118	118	118	118	118	118
V_{ENR} = 118	TOFL-FT	**4,749**	**4,994**	**5,255**	**5,603**	**6,090**	**7,076**	**8,450**	**9,719**
11,000 LB	V_1	104	104	104	104	104	104	104	104
4990 KG	V_R	105	105	105	105	105	105	105	105
	V_2	115	115	115	115	115	115	115	115
V_{ENR} = 115	TOFL-FT	**4,257**	**4,479**	**4,716**	**5,018**	**5,439**	**6,281**	**7,458**	**8,538**
10,500 LB	V_1	102	102	102	102	102	102	102	102
4763 KG	V_R	103	103	103	103	103	103	103	103
	V_2	113	113	113	113	113	113	113	113
V_{ENR} = 113	TOFL-FT	**3,821**	**4,026**	**4,244**	**4,513**	**4,884**	**5,599**	**6,593**	**7,502**
10,000 LB	V_1	99	100	100	100	100	100	100	100
4536 KG	V_R	101	101	101	101	101	101	101	101
	V_2	111	111	111	111	111	111	111	111
V_{ENR} = 111	TOFL-FT	**3,486**	**3,643**	**3,841**	**4,088**	**4,426**	**5,028**	**5,856**	**6,611**
9,500 LB	V_1	97	97	98	98	99	99	99	99
4309 KG	V_R	101	101	101	101	101	101	101	101
	V_2	110	110	110	110	110	110	110	110
V_{ENR} = 110	TOFL-FT	**3,214**	**3,380**	**3,553**	**3,751**	**4,065**	**4,571**	**5,246**	**5,864**
9,000 LB	V_1	95	95	96	96	97	97	97	97
4082 KG	V_R	101	101	101	101	101	101	101	101
OR LESS	V_2	108	108	108	108	108	108	108	108
V_{ENR} = 108	TOFL-FT	**2,976**	**3,140**	**3,311**	**3,521**	**3,800**	**4,225**	**4,763**	**5,263**

.

REFERENCE ONLY

TAKEOFF SPEEDS & BALANCED FIELD LENGTHS - FLAPS UP
6,000 FEET PRESSURE ALTITUDE

Notes:

For operations with ice vanes extended, add 6°C to actual Outside Air Temperature. Red shading indicates performance requirements are not met.

T.O. WEIGHT	ITEM	OUTSIDE AIR TEMPERATURE (°C)							
		-27	-17	-7	3	13	23	33	40
13,420 LB	V_1	114	114	114	114	114	114	114	---
6087 KG	V_R	115	115	115	115	115	115	115	---
	V_2	125	125	125	125	125	125	125	---
V_{ENR} = 125	TOFL-FT	**7,266**	**7,677**	**8,090**	**8,793**	**9,778**	**11,696**	**14,037**	---
13,000 LB	V_1	112	112	112	112	112	112	112	---
5897 KG	V_R	113	113	113	113	113	113	113	---
	V_2	123	123	123	123	123	123	123	---
V_{ENR} = 123	TOFL-FT	**6,654**	**7,024**	**7,396**	**8,010**	**8,870**	**10,599**	**12,721**	---
12,500 LB	V_1	110	110	110	110	110	110	110	110
5670 KG	V_R	111	111	111	111	111	111	111	111
	V_2	121	121	121	121	121	121	121	121
V_{ENR} = 121	TOFL-FT	**5,983**	**6,311**	**6,640**	**7,161**	**7,892**	**9,409**	**11,286**	**12,981**
12,000 LB	V_1	108	108	108	108	108	108	108	108
5443 KG	V_R	109	109	109	109	109	109	109	109
	V_2	120	120	120	120	120	120	120	120
V_{ENR} = 120	TOFL-FT	**5,370**	**5,661**	**5,953**	**6,396**	**7,015**	**8,336**	**9,981**	**11,449**
11,500 LB	V_1	106	106	106	106	106	106	106	106
5216 KG	V_R	107	107	107	107	107	107	107	107
	V_2	118	118	118	118	118	118	118	118
V_{ENR} = 118	TOFL-FT	**4,814**	**5,075**	**5,336**	**5,713**	**6,241**	**7,380**	**8,807**	**10,066**
11,000 LB	V_1	104	104	104	104	104	104	104	104
4990 KG	V_R	105	105	105	105	105	105	105	105
	V_2	115	115	115	115	115	115	115	115
V_{ENR} = 115	TOFL-FT	**4,316**	**4,553**	**4,790**	**5,114**	**5,569**	**6,541**	**7,764**	**8,834**
10,500 LB	V_1	102	102	102	102	102	102	102	102
4763 KG	V_R	103	103	103	103	103	103	103	103
	V_2	113	113	113	113	113	113	113	113
V_{ENR} = 113	TOFL-FT	**3,876**	**4,094**	**4,312**	**4,598**	**4,998**	**5,818**	**6,852**	**7,751**
10,000 LB	V_1	99	100	100	100	100	100	100	100
4536 KG	V_R	101	101	101	101	101	101	101	101
	V_2	111	111	111	111	111	111	111	111
V_{ENR} = 111	TOFL-FT	**3,538**	**3,699**	**3,905**	**4,166**	**4,530**	**5,212**	**6,070**	**6,817**
9,500 LB	V_1	97	97	98	99	99	99	99	99
4309 KG	V_R	101	101	101	101	101	101	101	101
	V_2	110	110	110	110	110	110	110	110
V_{ENR} = 110	TOFL-FT	**3,264**	**3,440**	**3,614**	**3,816**	**4,164**	**4,723**	**5,420**	**6,034**
9,000 LB	V_1	95	96	96	96	97	97	97	97
4082 KG	V_R	101	101	101	101	101	101	101	101
OR LESS	V_2	108	108	108	108	108	108	108	108
V_{ENR} = 108	TOFL-FT	**3,025**	**3,199**	**3,372**	**3,593**	**3,900**	**4,350**	**4,900**	**5,400**

REFERENCE ONLY

TAKEOFF SPEEDS & BALANCED FIELD LENGTHS - FLAPS UP
6,500 FEET PRESSURE ALTITUDE

Notes:

For operations with ice vanes extended, add 6°C to actual Outside Air Temperature. Red shading indicates performance requirements are not met.

T.O. WEIGHT	ITEM	OUTSIDE AIR TEMPERATURE (°C)							
		-28	-18	-8	2	12	22	32	39
13,420 LB	V_1	114	114	114	114	114	114	114	---
6087 KG	V_R	115	115	115	115	115	115	115	---
	V_2	125	125	125	125	125	125	125	---
V_{ENR} = 125	TOFL-FT	**7,420**	**7,886**	**8,407**	**9,301**	**10,527**	**12,492**	**14,987**	---
13,000 LB	V_1	112	112	112	112	112	112	112	---
5897 KG	V_R	113	113	113	113	113	113	113	---
	V_2	123	123	123	123	123	123	123	---
V_{ENR} = 123	TOFL-FT	**6,793**	**7,209**	**7,673**	**8,461**	**9,546**	**11,321**	**13,561**	---
12,500 LB	V_1	110	110	110	110	110	110	110	110
5670 KG	V_R	111	111	111	111	111	111	111	111
	V_2	121	121	121	121	121	121	121	121
V_{ENR} = 121	TOFL-FT	**6,106**	**6,471**	**6,875**	**7,550**	**8,486**	**10,048**	**12,006**	**13,866**
12,000 LB	V_1	108	108	108	108	108	108	108	108
5443 KG	V_R	109	109	109	109	109	109	109	109
	V_2	120	120	120	120	120	120	120	120
V_{ENR} = 120	TOFL-FT	**5,479**	**5,801**	**6,152**	**6,730**	**7,533**	**8,896**	**10,593**	**12,177**
11,500 LB	V_1	106	106	106	106	106	106	106	106
5216 KG	V_R	107	107	107	107	107	107	107	107
	V_2	118	118	118	118	118	118	118	118
V_{ENR} = 118	TOFL-FT	**4,912**	**5,197**	**5,506**	**6,000**	**6,688**	**7,866**	**9,323**	**10,660**
11,000 LB	V_1	104	104	104	104	104	104	104	104
4990 KG	V_R	105	105	105	105	105	105	105	105
	V_2	115	115	115	115	115	115	115	115
V_{ENR} = 115	TOFL-FT	**4,405**	**4,661**	**4,936**	**5,360**	**5,950**	**6,958**	**8,196**	**9,315**
10,500 LB	V_1	102	102	102	102	102	102	102	102
4763 KG	V_R	103	103	103	103	103	103	103	103
	V_2	113	113	113	113	113	113	113	113
V_{ENR} = 113	TOFL-FT	**3,958**	**4,192**	**4,441**	**4,810**	**5,320**	**6,171**	**7,211**	**8,141**
10,000 LB	V_1	100	100	100	100	100	100	100	100
4536 KG	V_R	101	101	101	101	101	101	101	101
	V_2	111	111	111	111	111	111	111	111
V_{ENR} = 111	TOFL-FT	**3,604**	**3,790**	**4,022**	**4,350**	**4,798**	**5,505**	**6,369**	**7,139**
9,500 LB	V_1	97	98	98	99	99	99	99	99
4309 KG	V_R	101	101	101	101	101	101	101	101
	V_2	110	110	110	110	110	110	110	110
V_{ENR} = 110	TOFL-FT	**3,327**	**3,509**	**3,714**	**3,980**	**4,383**	**4,961**	**5,669**	**6,309**
9,000 LB	V_1	95	96	96	97	97	97	97	97
4082 KG	V_R	101	101	101	101	101	101	101	101
OR LESS	V_2	108	108	108	108	108	108	108	108
V_{ENR} = 108	TOFL-FT	**3,088**	**3,273**	**3,466**	**3,732**	**4,075**	**4,538**	**5,113**	**5,650**

REFERENCE ONLY

TAKEOFF SPEEDS & BALANCED FIELD LENGTHS - FLAPS UP
7,000 FEET PRESSURE ALTITUDE

Notes:

For operations with ice vanes extended, add 6°C to actual Outside Air Temperature. Red shading indicates performance requirements are not met.

T.O. WEIGHT	ITEM	OUTSIDE AIR TEMPERATURE (°C)							
		-29	-19	-9	1	11	21	31	38
13,420 LB	V_1	114	114	114	114	114	114	---	---
6087 KG	V_R	115	115	115	115	115	115	---	---
	V_2	125	125	125	125	125	125	---	---
V_{ENR} = 125	TOFL-FT	**7,574**	**8,094**	**8,723**	**9,809**	**11,276**	**13,287**	---	---
13,000 LB	V_1	112	112	112	112	112	112	112	---
5897 KG	V_R	113	113	113	113	113	113	113	---
	V_2	123	123	123	123	123	123	123	---
V_{ENR} = 123	TOFL-FT	**6,932**	**7,394**	**7,949**	**8,911**	**10,222**	**12,042**	**14,400**	---
12,500 LB	V_1	110	110	110	110	110	110	110	110
5670 KG	V_R	111	111	111	111	111	111	111	111
	V_2	121	121	121	121	121	121	121	121
V_{ENR} = 121	TOFL-FT	**6,229**	**6,632**	**7,109**	**7,939**	**9,080**	**10,687**	**12,725**	**14,751**
12,000 LB	V_1	108	108	108	108	108	108	108	108
5443 KG	V_R	109	109	109	109	109	109	109	109
	V_2	120	120	120	120	120	120	120	120
V_{ENR} = 120	TOFL-FT	**5,588**	**5,940**	**6,352**	**7,065**	**8,051**	**9,457**	**11,205**	**12,906**
11,500 LB	V_1	106	106	106	106	106	106	106	106
5216 KG	V_R	107	107	107	107	107	107	107	107
	V_2	118	118	118	118	118	118	118	118
V_{ENR} = 118	TOFL-FT	**5,010**	**5,319**	**5,676**	**6,287**	**7,135**	**8,353**	**9,839**	**11,254**
11,000 LB	V_1	104	104	104	104	104	104	104	104
4990 KG	V_R	105	105	105	105	105	105	105	105
	V_2	115	115	115	115	115	115	115	115
V_{ENR} = 115	TOFL-FT	**4,494**	**4,769**	**5,082**	**5,606**	**6,332**	**7,375**	**8,627**	**9,796**
10,500 LB	V_1	102	102	102	102	102	102	102	102
4763 KG	V_R	103	103	103	103	103	103	103	103
	V_2	113	113	113	113	113	113	113	113
V_{ENR} = 113	TOFL-FT	**4,040**	**4,289**	**4,570**	**5,021**	**5,642**	**6,523**	**7,570**	**8,532**
10,000 LB	V_1	100	100	100	100	100	100	100	100
4536 KG	V_R	101	101	101	101	101	101	101	101
	V_2	111	111	111	111	111	111	111	111
V_{ENR} = 111	TOFL-FT	**3,670**	**3,880**	**4,140**	**4,534**	**5,065**	**5,798**	**6,667**	**7,461**
9,500 LB	V_1	97	98	98	99	99	99	99	99
4309 KG	V_R	101	101	101	101	101	101	101	101
	V_2	110	110	110	110	110	110	110	110
V_{ENR} = 110	TOFL-FT	**3,390**	**3,578**	**3,814**	**4,144**	**4,601**	**5,198**	**5,919**	**6,584**
9,000 LB	V_1	96	96	96	97	97	97	97	97
4082 KG	V_R	101	101	101	101	101	101	101	101
OR LESS	V_2	108	108	108	108	108	108	108	108
V_{ENR} = 108	TOFL-FT	**3,151**	**3,348**	**3,561**	**3,871**	**4,250**	**4,725**	**5,325**	**5,900**

REFERENCE ONLY

TAKEOFF SPEEDS & BALANCED FIELD LENGTHS - FLAPS UP
7,500 FEET PRESSURE ALTITUDE

Notes:

For operations with ice vanes extended, add 6°C to actual Outside Air Temperature. Red shading indicates performance requirements are not met.

T.O. WEIGHT	ITEM	OUTSIDE AIR TEMPERATURE (°C)							
		-30	-20	-10	0	10	20	30	37
13,420 LB	V_1	114	114	114	114	114	114	---	---
6087 KG	V_R	115	115	115	115	115	115	---	---
	V_2	125	125	125	125	125	125	---	---
V_{ENR} = 125	TOFL-FT	**7,728**	**8,303**	**9,040**	**10,316**	**12,025**	**14,083**	---	---
13,000 LB	V_1	112	112	112	112	112	112	112	---
5897 KG	V_R	113	113	113	113	113	113	113	---
	V_2	123	123	123	123	123	123	123	---
V_{ENR} = 123	TOFL-FT	**7,070**	**7,580**	**8,225**	**9,361**	**10,898**	**12,764**	**15,240**	---
12,500 LB	V_1	110	110	110	110	110	110	110	---
5670 KG	V_R	111	111	111	111	111	111	111	---
	V_2	121	121	121	121	121	121	121	---
V_{ENR} = 121	TOFL-FT	**6,352**	**6,792**	**7,344**	**8,328**	**9,674**	**11,325**	**13,445**	---
12,000 LB	V_1	108	108	108	108	108	108	108	108
5443 KG	V_R	109	109	109	109	109	109	109	109
	V_2	120	120	120	120	120	120	120	120
V_{ENR} = 120	TOFL-FT	**5,698**	**6,079**	**6,551**	**7,399**	**8,569**	**10,017**	**11,817**	**13,635**
11,500 LB	V_1	106	106	106	106	106	106	106	106
5216 KG	V_R	107	107	107	107	107	107	107	107
	V_2	118	118	118	118	118	118	118	118
V_{ENR} = 118	TOFL-FT	**5,108**	**5,441**	**5,845**	**6,573**	**7,582**	**8,839**	**10,355**	**11,848**
11,000 LB	V_1	104	104	104	104	104	104	104	104
4990 KG	V_R	105	105	105	105	105	105	105	105
	V_2	115	115	115	115	115	115	115	115
V_{ENR} = 115	TOFL-FT	**4,582**	**4,876**	**5,228**	**5,851**	**6,714**	**7,792**	**9,059**	**10,277**
10,500 LB	V_1	102	102	102	102	102	102	102	102
4763 KG	V_R	103	103	103	103	103	103	103	103
	V_2	113	113	113	113	113	113	113	113
V_{ENR} = 113	TOFL-FT	**4,121**	**4,386**	**4,698**	**5,233**	**5,964**	**6,876**	**7,929**	**8,922**
10,000 LB	V_1	100	100	100	100	100	100	100	100
4536 KG	V_R	101	101	101	101	101	101	101	101
	V_2	111	111	111	111	111	111	111	111
V_{ENR} = 111	TOFL-FT	**3,736**	**3,971**	**4,257**	**4,718**	**5,333**	**6,091**	**6,966**	**7,782**
9,500 LB	V_1	98	98	98	99	99	99	99	99
4309 KG	V_R	101	101	101	101	101	101	101	101
	V_2	110	110	110	110	110	110	110	110
V_{ENR} = 110	TOFL-FT	**3,454**	**3,647**	**3,915**	**4,307**	**4,820**	**5,436**	**6,168**	**6,858**
9,000 LB	V_1	96	96	97	97	97	97	97	97
4082 KG	V_R	101	101	101	101	101	101	101	101
OR LESS	V_2	108	108	108	108	108	108	108	108
V_{ENR} = 108	TOFL-FT	**3,214**	**3,422**	**3,655**	**4,011**	**4,425**	**4,913**	**5,538**	**6,150**

REFERENCE ONLY

TAKEOFF SPEEDS & BALANCED FIELD LENGTHS - FLAPS UP
8,000 FEET PRESSURE ALTITUDE

Notes:

For operations with ice vanes extended, add 6°C to actual Outside Air Temperature. Red shading indicates performance requirements are not met.

T.O. WEIGHT	ITEM	OUTSIDE AIR TEMPERATURE (°C)							
		-31	-21	-11	-1	9	19	29	36
13,420 LB	V_1	114	114	114	114	114	114	---	---
6087 KG	V_R	115	115	115	115	115	115	---	---
	V_2	125	125	125	125	125	125	---	---
V_{ENR} = 125	TOFL-FT	**7,882**	**8,512**	**9,356**	**10,824**	**12,774**	**14,879**	---	---
13,000 LB	V_1	112	112	112	112	112	112	---	---
5897 KG	V_R	113	113	113	113	113	113	---	---
	V_2	123	123	123	123	123	123	---	---
V_{ENR} = 123	TOFL-FT	**7,209**	**7,765**	**8,502**	**9,812**	**11,573**	**13,486**	---	---
12,500 LB	V_1	110	110	110	110	110	110	110	---
5670 KG	V_R	111	111	111	111	111	111	111	---
	V_2	121	121	121	121	121	121	121	---
V_{ENR} = 121	TOFL-FT	**6,475**	**6,953**	**7,579**	**8,717**	**10,268**	**11,964**	**14,165**	---
12,000 LB	V_1	108	108	108	108	108	108	108	108
5443 KG	V_R	109	109	109	109	109	109	109	109
	V_2	120	120	120	120	120	120	120	120
V_{ENR} = 120	TOFL-FT	**5,807**	**6,219**	**6,750**	**7,733**	**9,087**	**10,577**	**12,429**	**14,363**
11,500 LB	V_1	106	106	106	106	106	106	106	106
5216 KG	V_R	107	107	107	107	107	107	107	107
	V_2	118	118	118	118	118	118	118	118
V_{ENR} = 118	TOFL-FT	**5,205**	**5,563**	**6,015**	**6,860**	**8,030**	**9,326**	**10,870**	**12,442**
11,000 LB	V_1	104	104	104	104	104	104	104	104
4990 KG	V_R	105	105	105	105	105	105	105	105
	V_2	115	115	115	115	115	115	115	115
V_{ENR} = 115	TOFL-FT	**4,671**	**4,984**	**5,374**	**6,097**	**7,096**	**8,210**	**9,490**	**10,758**
10,500 LB	V_1	102	102	102	102	102	102	102	102
4763 KG	V_R	103	103	103	103	103	103	103	103
	V_2	113	113	113	113	113	113	113	113
V_{ENR} = 113	TOFL-FT	**4,203**	**4,484**	**4,827**	**5,444**	**6,286**	**7,229**	**8,288**	**9,312**
10,000 LB	V_1	100	100	100	100	100	100	100	100
4536 KG	V_R	101	101	101	101	101	101	101	101
	V_2	111	111	111	111	111	111	111	111
V_{ENR} = 111	TOFL-FT	**3,802**	**4,061**	**4,374**	**4,903**	**5,600**	**6,384**	**7,264**	**8,104**
9,500 LB	V_1	98	99	99	99	99	99	99	99
4309 KG	V_R	101	101	101	101	101	101	101	101
	V_2	110	110	110	110	110	110	110	110
V_{ENR} = 110	TOFL-FT	**3,517**	**3,717**	**4,015**	**4,471**	**5,038**	**5,674**	**6,418**	**7,133**
9,000 LB	V_1	96	96	97	97	97	97	97	97
4082 KG	V_R	101	101	101	101	101	101	101	101
OR LESS	V_2	108	108	108	108	108	108	108	108
V_{ENR} = 108	TOFL-FT	**3,276**	**3,496**	**3,750**	**4,150**	**4,600**	**5,100**	**5,750**	**6,400**

REFERENCE ONLY

TAKEOFF SPEEDS & BALANCED FIELD LENGTHS - FLAPS UP
8,500 FEET PRESSURE ALTITUDE

Notes:

For operations with ice vanes extended, add 6°C to actual Outside Air Temperature. Red shading indicates performance requirements are not met.

T.O. WEIGHT	ITEM	OUTSIDE AIR TEMPERATURE (°C)							
		-32	-22	-12	-2	8	18	28	35
13,420 LB	V_1	114	114	114	114	114	---	---	---
6087 KG	V_R	115	115	115	115	115	---	---	---
	V_2	125	125	125	125	125	---	---	---
V_{ENR} = 125	TOFL-FT	**8,180**	**8,981**	**10,050**	**11,627**	**13,630**	---	---	---
13,000 LB	V_1	112	112	112	112	112	112	---	---
5897 KG	V_R	113	113	113	113	113	113	---	---
	V_2	123	123	123	123	123	123	---	---
V_{ENR} = 123	TOFL-FT	**7,471**	**8,178**	**9,124**	**10,539**	**12,346**	**14,388**	---	---
12,500 LB	V_1	110	110	110	110	110	110	110	---
5670 KG	V_R	111	111	111	111	111	111	111	---
	V_2	121	121	121	121	121	121	121	---
V_{ENR} = 121	TOFL-FT	**6,698**	**7,307**	**8,123**	**9,359**	**10,946**	**12,726**	**15,326**	---
12,000 LB	V_1	108	108	108	108	108	108	108	---
5443 KG	V_R	109	109	109	109	109	109	109	---
	V_2	120	120	120	120	120	120	120	---
V_{ENR} = 120	TOFL-FT	**5,998**	**6,522**	**7,222**	**8,295**	**9,677**	**11,215**	**13,366**	---
11,500 LB	V_1	106	106	106	106	106	106	106	106
5216 KG	V_R	107	107	107	107	107	107	107	107
	V_2	118	118	118	118	118	118	118	118
V_{ENR} = 118	TOFL-FT	**5,370**	**5,822**	**6,421**	**7,347**	**8,539**	**9,855**	**11,617**	**13,385**
11,000 LB	V_1	104	104	104	104	104	104	104	104
4990 KG	V_R	105	105	105	105	105	105	105	105
	V_2	115	115	115	115	115	115	115	115
V_{ENR} = 115	TOFL-FT	**4,814**	**5,207**	**5,721**	**6,514**	**7,530**	**8,647**	**10,078**	**11,480**
10,500 LB	V_1	102	102	102	102	102	102	102	102
4763 KG	V_R	103	103	103	103	103	103	103	103
	V_2	113	113	113	113	113	113	113	113
V_{ENR} = 113	TOFL-FT	**4,331**	**4,677**	**5,121**	**5,796**	**6,652**	**7,590**	**8,749**	**9,859**
10,000 LB	V_1	100	100	100	100	100	100	100	100
4536 KG	V_R	101	101	101	101	101	101	101	101
	V_2	111	111	111	111	111	111	111	111
V_{ENR} = 111	TOFL-FT	**3,919**	**4,233**	**4,622**	**5,195**	**5,905**	**6,684**	**7,631**	**8,522**
9,500 LB	V_1	98	99	99	99	99	99	99	99
4309 KG	V_R	101	101	101	101	101	101	101	101
	V_2	110	110	110	110	110	110	110	110
V_{ENR} = 110	TOFL-FT	**3,617**	**3,874**	**4,223**	**4,708**	**5,287**	**5,929**	**6,723**	**7,469**
9,000 LB	V_1	96	96	97	97	97	97	97	97
4082 KG	V_R	101	101	101	101	101	101	101	101
OR LESS	V_2	108	108	108	108	108	108	108	108
V_{ENR} = 108	TOFL-FT	**3,370**	**3,634**	**3,925**	**4,338**	**4,800**	**5,325**	**6,025**	**6,700**

REFERENCE ONLY

TAKEOFF SPEEDS & BALANCED FIELD LENGTHS - FLAPS UP
9,000 FEET PRESSURE ALTITUDE

Notes:

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T.O. WEIGHT	ITEM	OUTSIDE AIR TEMPERATURE (°C)							
		-33	-23	-13	-3	7	17	27	34
13,420 LB	V_1	114	114	114	114	114	---	---	---
6087 KG	V_R	115	115	115	115	115	---	---	---
	V_2	125	125	125	125	125	---	---	---
V_{ENR} = 125	TOFL-FT	**8,478**	**9,450**	**10,744**	**12,430**	**14,487**	---	---	---
13,000 LB	V_1	112	112	112	112	112	---	---	---
5897 KG	V_R	113	113	113	113	113	---	---	---
	V_2	123	123	123	123	123	---	---	---
V_{ENR} = 123	TOFL-FT	**7,733**	**8,591**	**9,747**	**11,266**	**13,118**	---	---	---
12,500 LB	V_1	110	110	110	110	110	110	---	---
5670 KG	V_R	111	111	111	111	111	111	---	---
	V_2	121	121	121	121	121	121	---	---
V_{ENR} = 121	TOFL-FT	**6,922**	**7,662**	**8,667**	**10,001**	**11,624**	**13,488**	---	---
12,000 LB	V_1	108	108	108	108	108	108	108	---
5443 KG	V_R	109	109	109	109	109	109	109	---
	V_2	120	120	120	120	120	120	120	---
V_{ENR} = 120	TOFL-FT	**6,190**	**6,825**	**7,694**	**8,857**	**10,268**	**11,853**	**14,303**	---
11,500 LB	V_1	106	106	106	106	106	106	106	106
5216 KG	V_R	107	107	107	107	107	107	107	107
	V_2	118	118	118	118	118	118	118	118
V_{ENR} = 118	TOFL-FT	**5,535**	**6,081**	**6,828**	**7,834**	**9,048**	**10,385**	**12,363**	**14,327**
11,000 LB	V_1	104	104	104	104	104	104	104	104
4990 KG	V_R	105	105	105	105	105	105	105	105
	V_2	115	115	115	115	115	115	115	115
V_{ENR} = 115	TOFL-FT	**4,958**	**5,430**	**6,068**	**6,931**	**7,965**	**9,084**	**10,666**	**12,202**
10,500 LB	V_1	102	102	102	102	102	102	102	102
4763 KG	V_R	103	103	103	103	103	103	103	103
	V_2	113	113	113	113	113	113	113	113
V_{ENR} = 113	TOFL-FT	**4,458**	**4,871**	**5,416**	**6,148**	**7,018**	**7,950**	**9,210**	**10,406**
10,000 LB	V_1	100	100	100	100	100	100	100	100
4536 KG	V_R	101	101	101	101	101	101	101	101
	V_2	111	111	111	111	111	111	111	111
V_{ENR} = 111	TOFL-FT	**4,036**	**4,405**	**4,870**	**5,486**	**6,209**	**6,983**	**7,998**	**8,941**
9,500 LB	V_1	98	99	99	99	99	99	99	99
4309 KG	V_R	101	101	101	101	101	101	101	101
	V_2	110	110	110	110	110	110	110	110
V_{ENR} = 110	TOFL-FT	**3,716**	**4,031**	**4,432**	**4,945**	**5,536**	**6,183**	**7,028**	**7,806**
9,000 LB	V_1	96	97	97	97	97	97	97	97
4082 KG	V_R	101	101	101	101	101	101	101	101
OR LESS	V_2	108	108	108	108	108	108	108	108
V_{ENR} = 108	TOFL-FT	**3,463**	**3,773**	**4,100**	**4,525**	**5,000**	**5,550**	**6,300**	**7,000**

REFERENCE ONLY

TAKEOFF SPEEDS & BALANCED FIELD LENGTHS - FLAPS UP
9,500 FEET PRESSURE ALTITUDE

Notes:

For operations with ice vanes extended, add 6°C to actual Outside Air Temperature. Red shading indicates performance requirements are not met.

T.O. WEIGHT	ITEM	OUTSIDE AIR TEMPERATURE (°C)							
		-34	-24	-14	-4	6	16	26	33
13,420 LB	V_1	114	114	114	114	---	---	---	---
6087 KG	V_R	115	115	115	115	---	---	---	---
	V_2	125	125	125	125	---	---	---	---
V_{ENR} = 125	TOFL-FT	**8,777**	**9,919**	**11,438**	**13,234**	---	---	---	---
13,000 LB	V_1	112	112	112	112	112	---	---	---
5897 KG	V_R	113	113	113	113	113	---	---	---
	V_2	123	123	123	123	123	---	---	---
V_{ENR} = 123	TOFL-FT	**7,994**	**9,005**	**10,370**	**11,994**	**13,890**	---	---	---
12,500 LB	V_1	110	110	110	110	110	110	---	---
5670 KG	V_R	111	111	111	111	111	111	---	---
	V_2	121	121	121	121	121	121	---	---
V_{ENR} = 121	TOFL-FT	**7,146**	**8,017**	**9,211**	**10,644**	**12,302**	**14,250**	---	---
12,000 LB	V_1	108	108	108	108	108	108	108	---
5443 KG	V_R	109	109	109	109	109	109	109	---
	V_2	120	120	120	120	120	120	120	---
V_{ENR} = 120	TOFL-FT	**6,381**	**7,129**	**8,166**	**9,419**	**10,858**	**12,491**	**15,241**	---
11,500 LB	V_1	106	106	106	106	106	106	106	---
5216 KG	V_R	107	107	107	107	107	107	107	---
	V_2	118	118	118	118	118	118	118	---
V_{ENR} = 118	TOFL-FT	**5,699**	**6,341**	**7,234**	**8,320**	**9,557**	**10,915**	**13,110**	---
11,000 LB	V_1	104	104	104	104	104	104	104	104
4990 KG	V_R	105	105	105	105	105	105	105	105
	V_2	115	115	115	115	115	115	115	115
V_{ENR} = 115	TOFL-FT	**5,101**	**5,652**	**6,415**	**7,347**	**8,399**	**9,522**	**11,253**	**12,924**
10,500 LB	V_1	102	102	102	102	102	102	102	102
4763 KG	V_R	103	103	103	103	103	103	103	103
	V_2	113	113	113	113	113	113	113	113
V_{ENR} = 113	TOFL-FT	**4,585**	**5,064**	**5,710**	**6,500**	**7,385**	**8,311**	**9,672**	**10,954**
10,000 LB	V_1	100	100	100	100	100	100	100	100
4536 KG	V_R	101	101	101	101	101	101	101	101
	V_2	111	111	111	111	111	111	111	111
V_{ENR} = 111	TOFL-FT	**4,153**	**4,576**	**5,118**	**5,778**	**6,513**	**7,283**	**8,365**	**9,360**
9,500 LB	V_1	98	99	99	99	99	99	99	99
4309 KG	V_R	101	101	101	101	101	101	101	101
	V_2	110	110	110	110	110	110	110	110
V_{ENR} = 110	TOFL-FT	**3,816**	**4,188**	**4,640**	**5,183**	**5,785**	**6,438**	**7,333**	**8,142**
9,000 LB	V_1	97	97	97	97	97	97	97	97
4082 KG	V_R	101	101	101	101	101	101	101	101
OR LESS	V_2	108	108	108	108	108	108	108	108
V_{ENR} = 108	TOFL-FT	**3,557**	**3,911**	**4,275**	**4,713**	**5,200**	**5,775**	**6,575**	**7,300**

REFERENCE ONLY

TAKEOFF SPEEDS & BALANCED FIELD LENGTHS - FLAPS UP
10,000 FEET PRESSURE ALTITUDE

Notes:

For operations with ice vanes extended, add 6°C to actual Outside Air Temperature. Red shading indicates performance requirements are not met.

T.O. WEIGHT	ITEM	OUTSIDE AIR TEMPERATURE (°C)							
		-35	-25	-15	-5	5	15	25	32
13,420 LB	V_1	114	114	114	114	---	---	---	---
6087 KG	V_R	115	115	115	115	---	---	---	---
	V_2	125	125	125	125	---	---	---	---
V_{ENR} = 125	TOFL-FT	**9,075**	**10,388**	**12,132**	**14,037**	---	---	---	---
13,000 LB	V_1	112	112	112	112	112	---	---	---
5897 KG	V_R	113	113	113	113	113	---	---	---
	V_2	123	123	123	123	123	---	---	---
V_{ENR} = 123	TOFL-FT	**8,256**	**9,418**	**10,992**	**12,721**	**14,662**	---	---	---
12,500 LB	V_1	110	110	110	110	110	110	---	---
5670 KG	V_R	111	111	111	111	111	111	---	---
	V_2	121	121	121	121	121	121	---	---
V_{ENR} = 121	TOFL-FT	**7,370**	**8,371**	**9,755**	**11,286**	**12,981**	**15,011**	---	---
12,000 LB	V_1	108	108	108	108	108	108	---	---
5443 KG	V_R	109	109	109	109	109	109	---	---
	V_2	120	120	120	120	120	120	---	---
V_{ENR} = 120	TOFL-FT	**6,573**	**7,432**	**8,638**	**9,981**	**11,449**	**13,129**	---	---
11,500 LB	V_1	106	106	106	106	106	106	106	---
5216 KG	V_R	107	107	107	107	107	107	107	---
	V_2	118	118	118	118	118	118	118	---
V_{ENR} = 118	TOFL-FT	**5,864**	**6,600**	**7,640**	**8,807**	**10,066**	**11,445**	**13,856**	---
11,000 LB	V_1	104	104	104	104	104	104	104	104
4990 KG	V_R	105	105	105	105	105	105	105	105
	V_2	115	115	115	115	115	115	115	115
V_{ENR} = 115	TOFL-FT	**5,244**	**5,875**	**6,763**	**7,764**	**8,834**	**9,959**	**11,841**	**13,645**
10,500 LB	V_1	102	102	102	102	102	102	102	102
4763 KG	V_R	103	103	103	103	103	103	103	103
	V_2	113	113	113	113	113	113	113	113
V_{ENR} = 113	TOFL-FT	**4,713**	**5,258**	**6,005**	**6,852**	**7,751**	**8,672**	**10,133**	**11,501**
10,000 LB	V_1	100	100	100	100	100	100	100	100
4536 KG	V_R	101	101	101	101	101	101	101	101
	V_2	111	111	111	111	111	111	111	111
V_{ENR} = 111	TOFL-FT	**4,270**	**4,748**	**5,367**	**6,070**	**6,817**	**7,583**	**8,732**	**9,778**
9,500 LB	V_1	99	99	99	99	99	99	99	99
4309 KG	V_R	101	101	101	101	101	101	101	101
	V_2	110	110	110	110	110	110	110	110
V_{ENR} = 110	TOFL-FT	**3,916**	**4,345**	**4,848**	**5,420**	**6,034**	**6,692**	**7,637**	**8,478**
9,000 LB	V_1	97	97	97	97	97	97	97	97
4082 KG	V_R	101	101	101	101	101	101	101	101
OR LESS	V_2	108	108	108	108	108	108	108	108
V_{ENR} = 108	TOFL-FT	**3,650**	**4,050**	**4,450**	**4,900**	**5,400**	**6,000**	**6,850**	**7,600**

REFERENCE ONLY

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REFERENCE ONLY

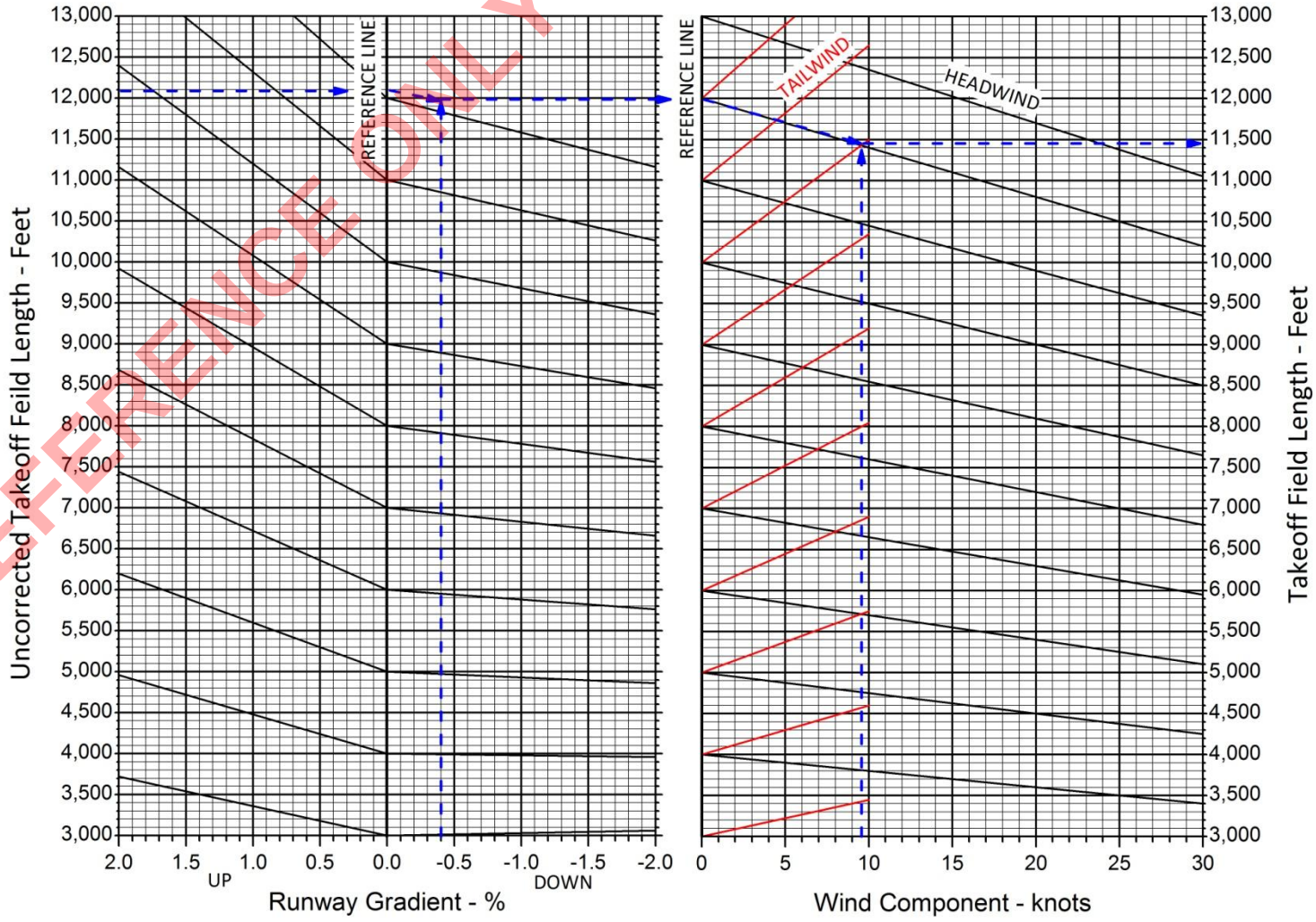
TAKE-OFF FIELD LENGTH CORRECTION - FLAPS UP

FOR RUNWAY GRADIENT AND WIND COMPONENT

Notes:

1. Obtain take-off field length from the appropriate Take-Off Speeds and Balanced Field Lengths table and enter the graph below with that value to determine the field length corrected for runway gradient and wind component.
2. The wind grid includes factors of 50% for headwinds and 150% for tailwinds. Components of reported winds may be used directly in the graph.
3. Do not extrapolate for headwind components greater than 30 knots. Use a 30 knot headwind component for correcting Takeoff Field Length when headwind component is 30 knots or greater.
4. Do not takeoff with more than a 10 knot tail wind component.

Example:
Uncorrected Takeoff Field Length.. 12,089 ft
Runway gradient..... 0.4% Down
Headwind component..... 9.5 knots
Corrected take-off field length..... 11,470 feet



REFERENCE ONLY

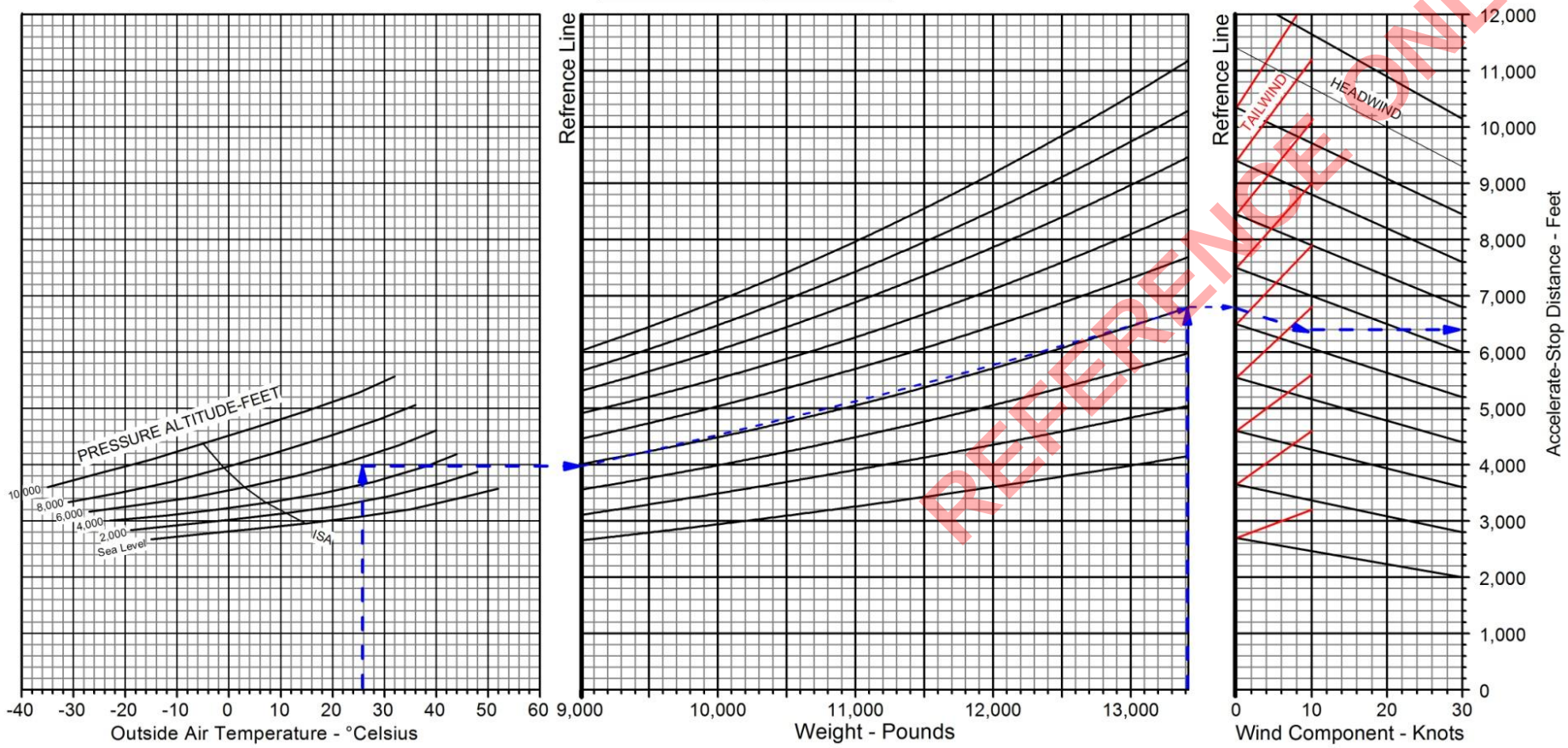
ACCELERATE STOP DISTANCE - FLAPS UP

Associated conditions

Power.....1. Take-off power set before brake release.
2. Both engines idle at V_1 speed and reverse on operating engine.
Flaps..... Up
Autofeather..... Armed
Braking..... Maximum
Runway..... Paved, Level, Dry Surface

Weight - Pounds	V_1 - Knots
13,420	114
13,000	112
12,500	110
12,000	108
11,000	104
10,000	100
9,000	97

Example
OAT..... 28 °C
Pressure Altitude..... 5,430 feet
Weight..... 13,420 pounds
Headwind Component..... 9.5 knots
Field Length ..... 6,400 feet
V_1 ..... 114 knots



REFERENCE ONLY

NET GRADIENT OF CLIMB - FLAPS UP

Associated Conditions
Power..... Take-Off
Flaps..... Up
Landing Gear..... Up
Inoperative Propeller... Feathered

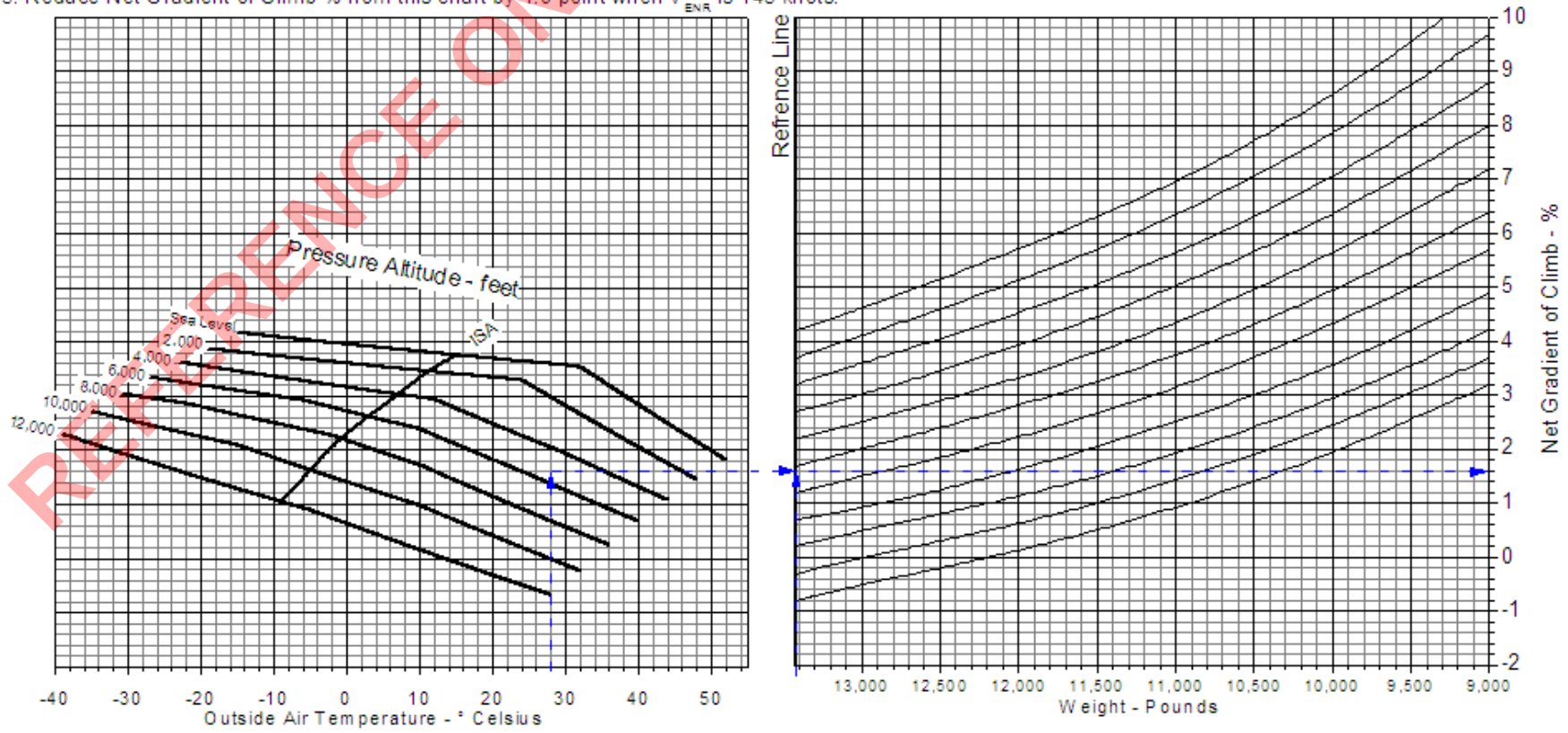
Weight - Pounds	V_2 Speed - Knots
13,420	125
13,000	122
12,000	119
11,000	117
10,000	114
9,000	111

Example
OAT..... 28 °C
Pressure Altitude..... 5,430 feet

Take-Off Weight - Pounds	Net Gradient - %
13,420	1.60

V_2 Speed at 13,420 pounds..... 125 knots

Notes:
1. Cargo Pod installed.
2. Use this chart for the final segment and for the second segment of the takeoff flight path when the respective takeoff was conducted with flaps up.
3. V_2 and V_{ENR} are the same speed when the corresponding takeoff was conducted with flaps up, except in icing conditions.
4. For operations with engine ice vanes extended reduce the Net Gradient of Climb from this chart by 0.9 percentage points.
5. Reduce Net Gradient of Climb % from this chart by 1.0 point when V_{ENR} is 145 knots.



REFERENCE ONLY

CLIMB - ONE ENGINE INOPERATIVE

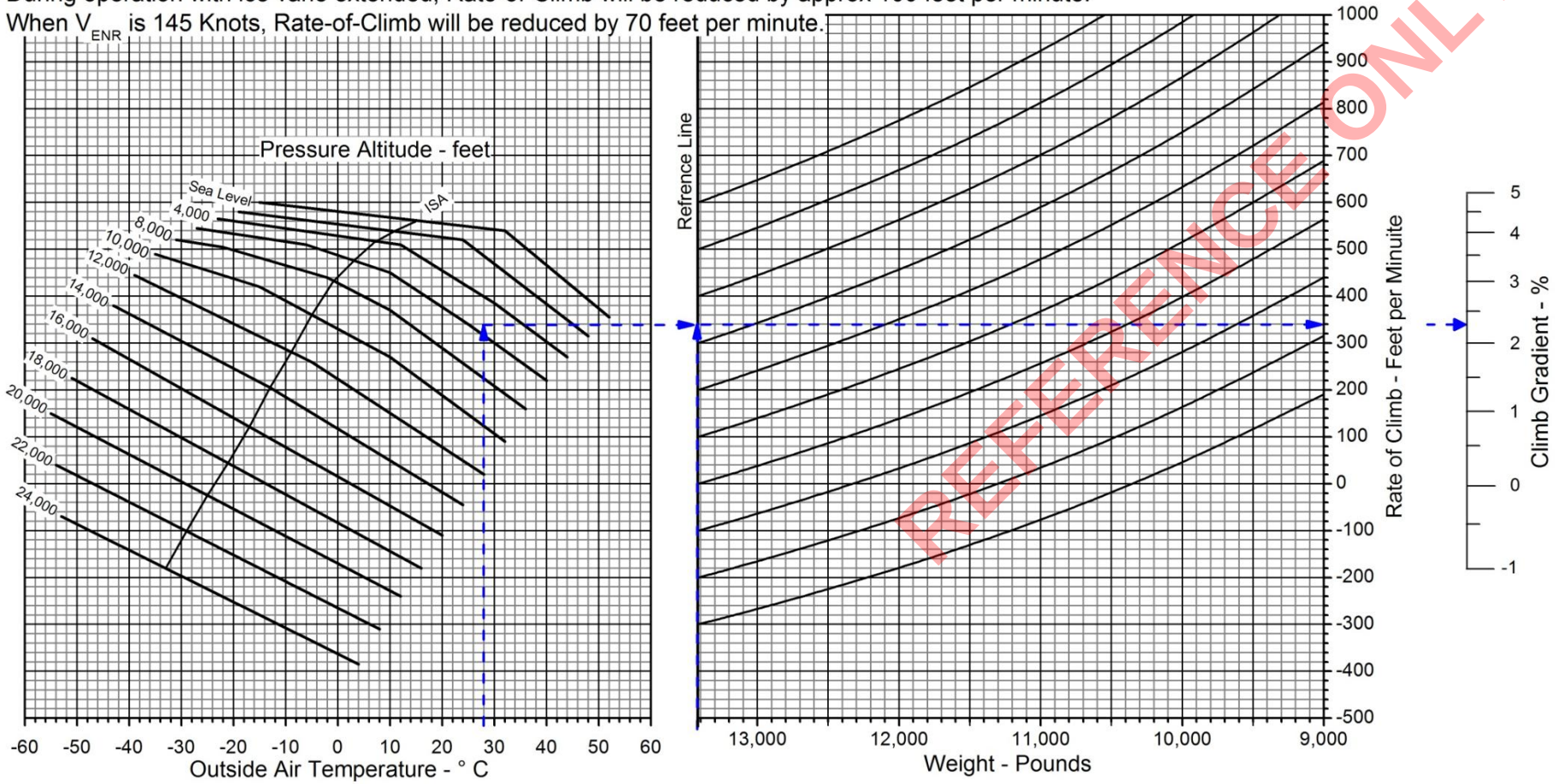
Associated conditions

Power..... Maximum Continuous
Flaps..... Up
Landing Gear..... Up
Inoperative Propeller... Feathered

Weight - Pounds	V_{ENR} Speed - Knots
13,420	125
13,000	122
12,000	119
11,000	117
10,000	114
9,000	111

Example
OAT..... 28 °C
Pressure Altitude..... 5,430 feet
Weight..... 13,420 pounds
Rate of Climb ..... 335 fpm
Climb Gradient..... 2.30%
V_{ENR} Speed..... 125 knots

Notes:
1. Cargo Pod installed.
2. During operation with ice vane extended, Rate-of-Climb will be reduced by approx 100 feet per minute.
3. When V_{ENR} is 145 Knots, Rate-of-Climb will be reduced by 70 feet per minute.



REFERENCE ONLY

CLIMB - TWO ENGINES - FLAPS UP

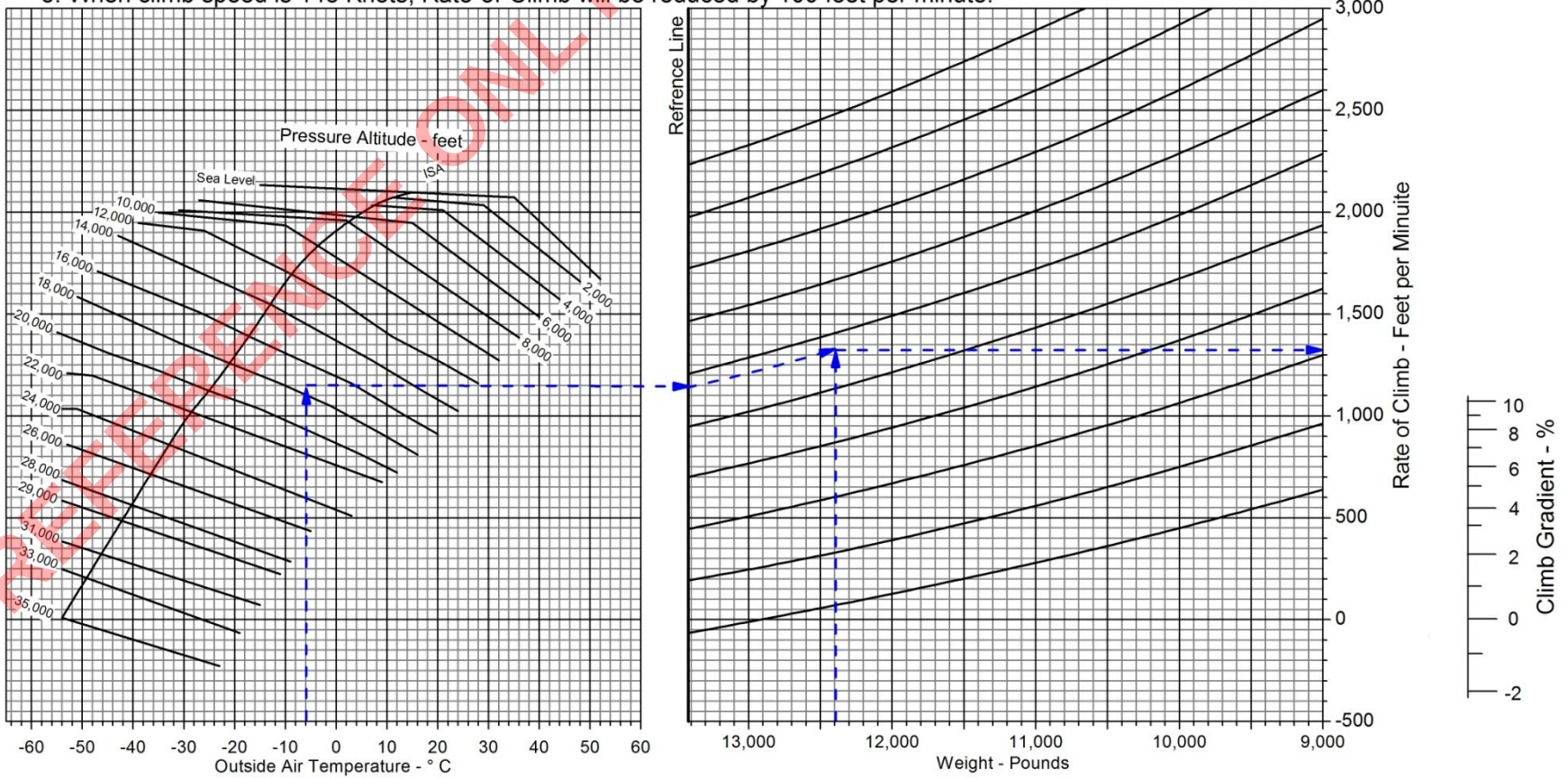
Weight - Pounds	Climb Speed - Knots
13,420	125
13,000	122
12,000	119
11,000	117
10,000	114
9,000	111

Example
OAT..... -6 °C
Pressure Altitude..... 18,000 feet
Weight..... 12,391 pounds
Rate of Climb ..... 1,320 feet/minuite
Climb Gradient..... >10%
Climb Speed.....120 knots

Associated conditions

Power..... Maximum Continuous
Flaps..... Up
Landing Gear..... Up

Notes: 1. Cargo Pod installed.
2. During operation with ice vane extended, Rate-of-Climb will be reduced approximately 250 feet per minute.
3. When climb speed is 145 Knots, Rate-of-Climb will be reduced by 100 feet per minute.



REFERENCE ONLY

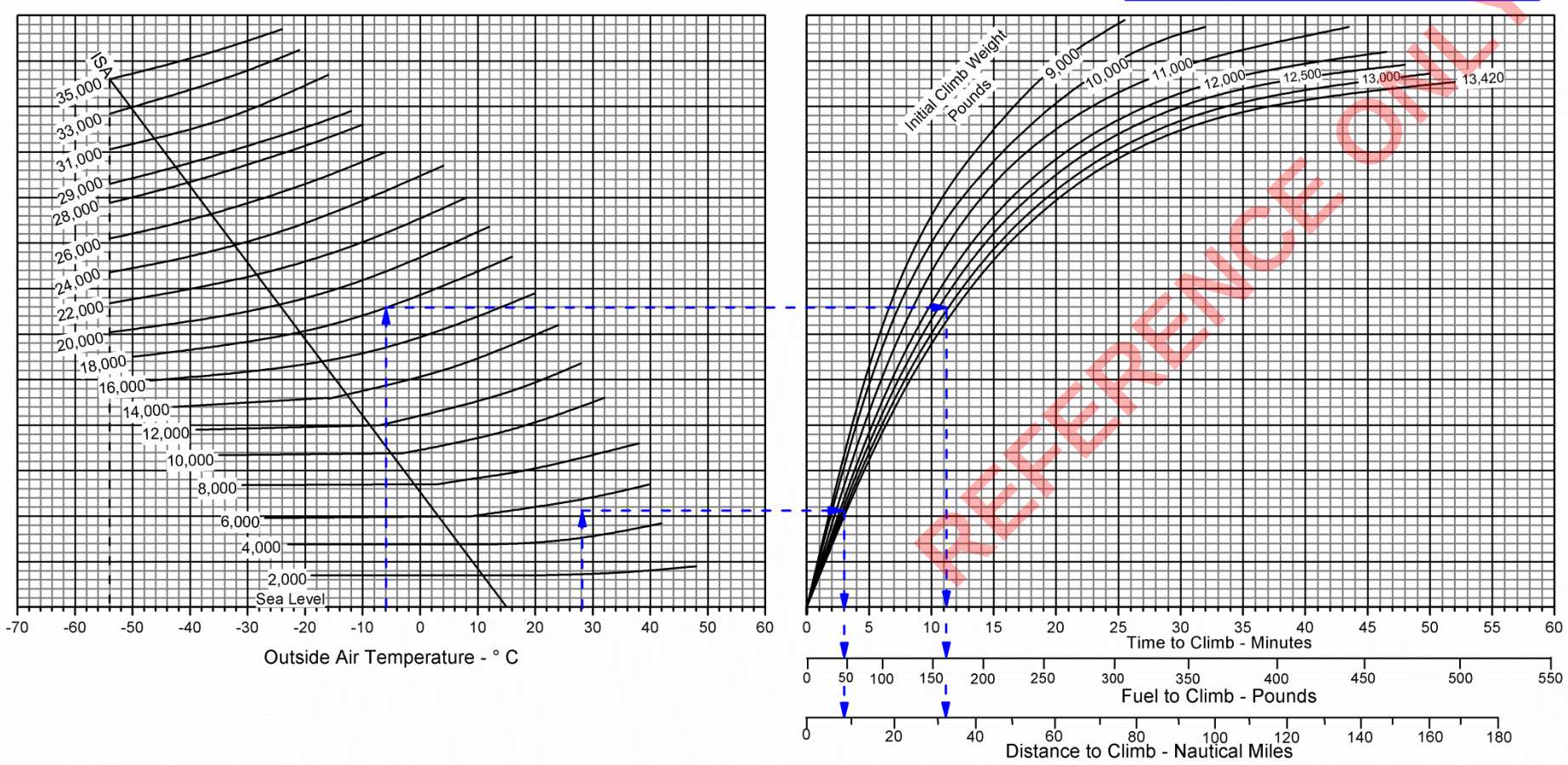
TIME, FUEL, AND DISTANCE TO CLIMB

Associated conditions
Propeller speed..... 1,900 RPM
ITT..... 770 °C
or Torque..... 2230 foot-pounds

Altitude - Feet	Climb Speed - Knots
Sea Level to 10,000	160
10,000 to 20,000	140
20,000 to 25,000	130
25,000 to 35,000	120

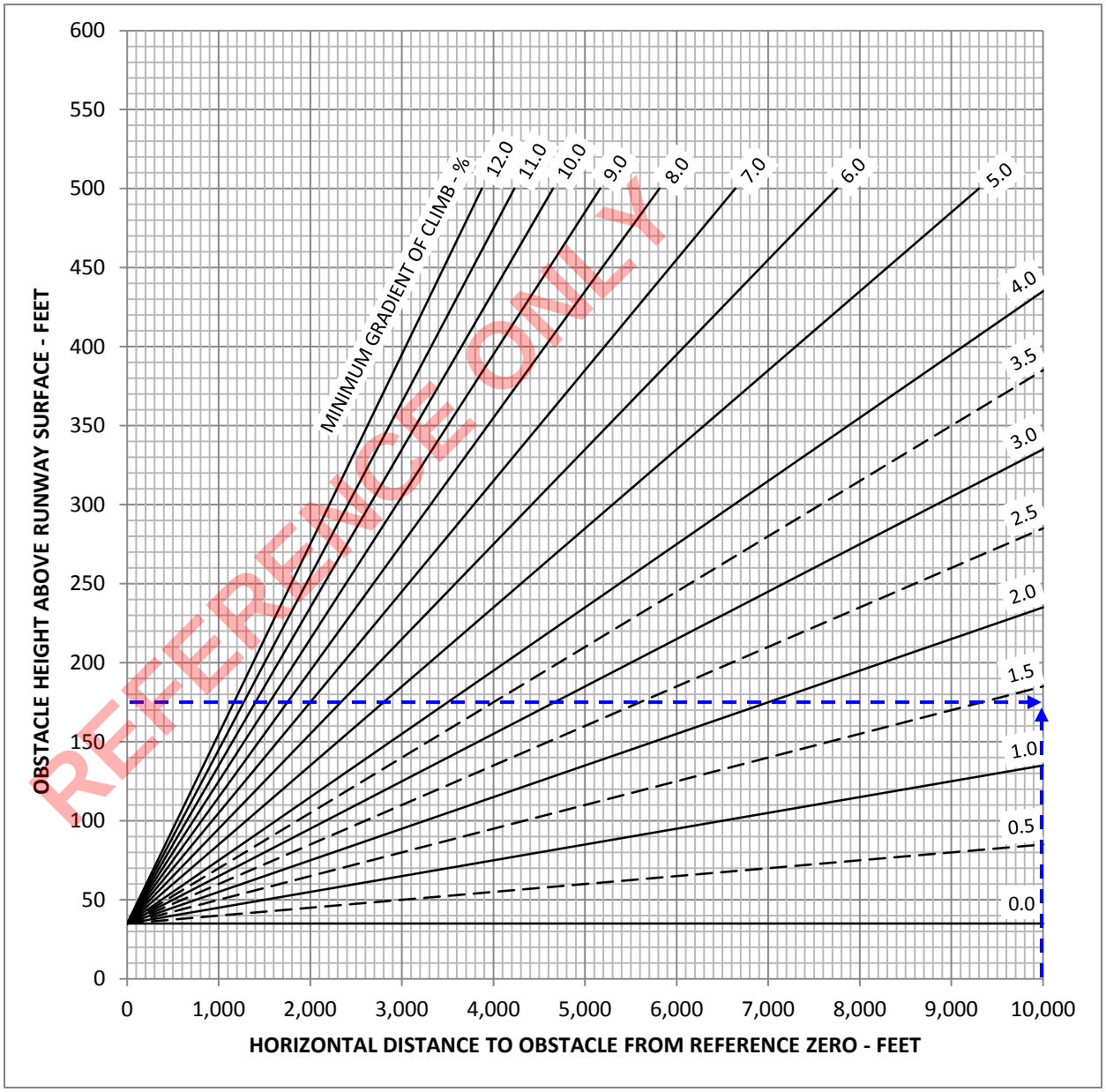
Notes: 1. Add 90 pounds of fuel fo start, taxi, and takeoff.
2. For operation with ice vanes extended add 20°C to the actual OAT before entering the chart.

Example
OAT at takeoff..... 28 °C
OAT at cruise..... -6 °C
Airport altitude..... 5,333 feet
Cruise altitude..... 18,000 feet
Weight..... 12,860 pounds
Time to climb (11-3)..... 8 minutes
Fuel to climb (165-43)..... 122 pounds
Distance to Climb (31-8)..... 23 nautical miles



REFERENCE ONLY

CLOSE-IN
TAKEOFF FLIGHT PATH

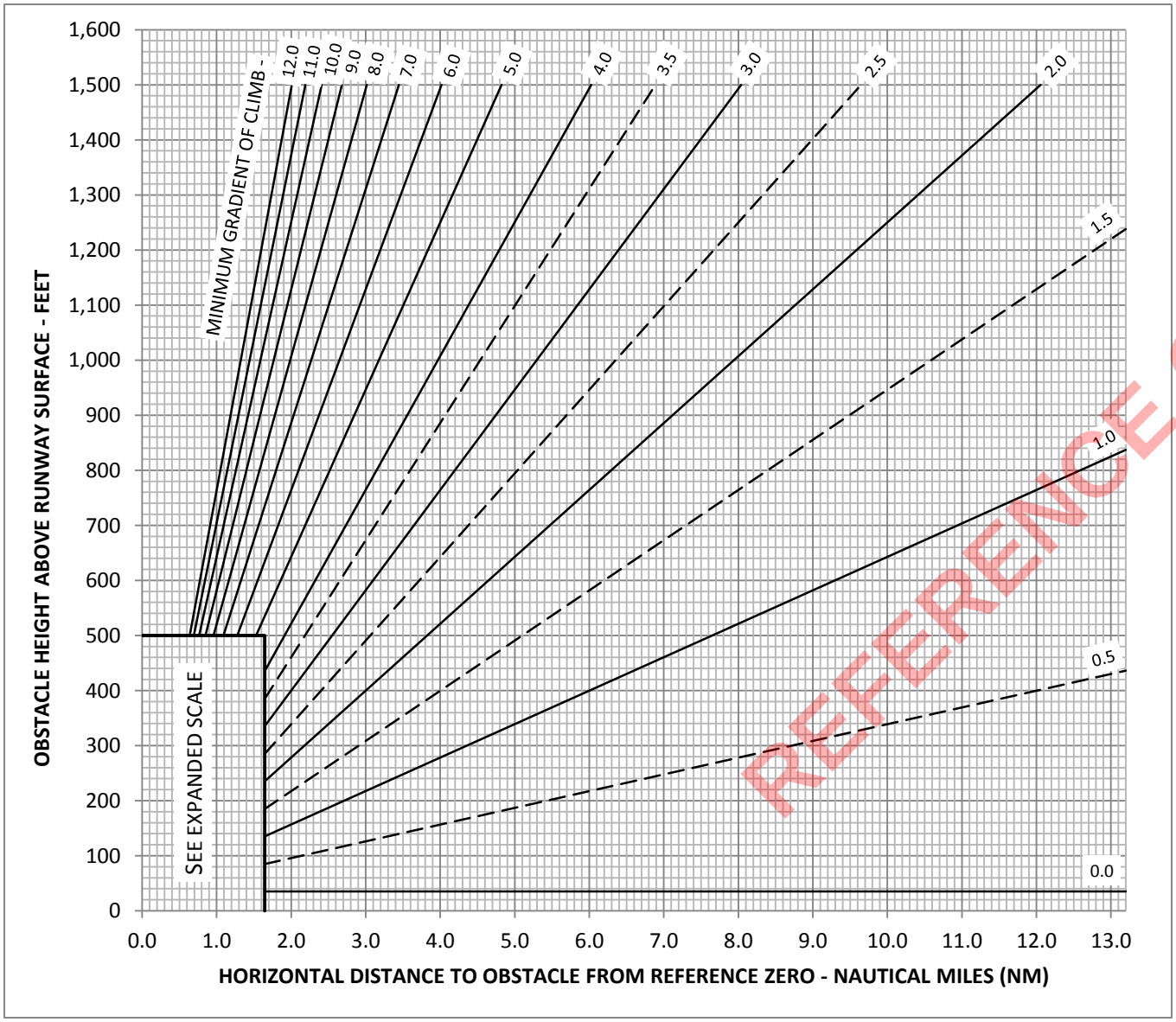


REFERENCE ZERO: THE POINT AT THE END OF THE TAKEOFF RUN AT WHICH THE AIRPLANE IS 35 FEET ABOVE THE RUNWAY SURFACE.

EXAMPLE:
OBSTACLE HEIGHT. . . . . 175 FEET

HORIZONTAL DISTANCE FROM REFERENCE ZERO FEET	MINIMUM GRADIENT OF CLIMB %
10,000	1.4

DISTANT
TAKEOFF FLIGHT PATH



REFERENCE ONLY

MAXIMUM CRUISE POWER
1700 RPM
ISA

NOTES:
1. See basic AFM/POH for other weights and temperatures.
2. IOAT, Torque, and fuel flow based on 12,000 pounds.
3. During operation with ice vanes extended and with ice accumulations present, torque will decrease approx 14% if handbook power is not or cannot be reset, true airspeed will decrease approx 75 knots, and fuel flow will decrease approx 50 lb/hr/engine. If handbook power is reset true airspeed will decrease approx 55 knots and fuel flow will increase approx 25 lb/hr/engine.

Pressure Altitude	IOAT	OAT	Torque per Engine	Total Fuel Flow	Airspeed ~ Knots			
					@13,000 LBS		@12,000 LBS	
Feet	°C	°C	FT-LBS	LBS/HR	IAS	TAS	IAS	TAS
SL	20	15	2230	946	235	236	236	237
2000	16	11	2230	920	232	240	234	241
4000	13	7	2230	892	230	245	231	246
6000	9	3	2230	866	228	249	229	251
8000	5	-1	2230	844	225	254	226	255
10,000	1	-5	2230	822	223	259	224	260
12,000	-2	-9	2230	800	220	264	222	266
14,000	-6	-13	2230	786	218	269	219	271
16,000	-10	-17	2230	776	215	274	216	276
18,000	-13	-21	2230	772	212	278	213	281
20,000	-17	-25	2131	734	205	279	207	281
22,000	-21	-29	2031	698	199	278	200	281
24,000	-25	-33	1905	652	191	276	193	280
26,000	-29	-37	1771	604	181	272	184	277
28,000	-34	-41	1634	558	171	266	175	272

REFERENCE ONLY

MAXIMUM CRUISE POWER
1700 RPM
ISA+20°C

NOTES:
1. See basic AFM/POH for other weights and temperatures.
2. IOAT, Torque, and fuel flow based on 12,000 pounds.
3. During operation with ice vanes extended and with ice accumulations present, torque will decrease approx 14% if handbook power is not or cannot be reset, true airspeed will decrease approx 75 knots, and fuel flow will decrease approx 50 lb/hr/engine. If handbook power is reset true airspeed will decrease approx 55 knots and fuel flow will increase approx 25 lb/hr/engine.

Pressure Altitude	IOAT	OAT	Torque per Engine	Total Fuel Flow	Airspeed ~ Knots			
					@13,000 LBS		@12,000 LBS	
Feet	°C	°C	FT-LBS	LBS/HR	IAS	TAS	IAS	TAS
SL	40	35	2230	958	232	241	233	242
2000	37	31	2230	932	229	245	231	247
4000	33	27	2230	904	229	240	228	251
6000	29	23	2230	878	225	255	226	256
8000	25	19	2230	854	222	260	223	261
10,000	22	15	2230	832	220	265	221	266
12,000	18	11	2230	810	217	270	218	271
14,000	14	7	2184	780	212	272	214	274
16,000	10	3	2104	744	206	273	208	275
18,000	6	-1	2023	708	200	274	202	276
20,000	3	-5	1944	678	194	274	196	277
22,000	-1	-9	1862	646	187	274	190	278
24,000	-6	-13	1745	604	179	271	182	275
26,000	-10	-17	1610	558	169	265	173	271
28,000	-14	-21	1472	514	157	257	162	264

MAXIMUM RANGE POWER
1700 RPM
ISA

NOTES:
1. See basic AFM/POH for other weights and temperatures.
2. During operation with ice vanes extended, torque will decrease. In order to maintain maximum range configuration, do not reset power to original setting. Fuel flow will remain about the same, but true airspeed will decrease approx 10 knots.

WEIGHT →			13,000 POUNDS				12,000 POUNDS			
Pressure Altitude	IOAT	OAT	Torque per Engine	Total Fuel Flow	IAS	TAS	Torque per Engine	Total Fuel Flow	IAS	TAS
Feet	°C	°C	FT-LBS	LBS/HR	KTS	KTS	FT-LBS	LBS/HR	KTS	KTS
SL	19	15	1801	840	217	218	1730	822	214	215
2000	15	11	1718	790	210	217	1630	770	207	214
4000	11	7	1656	746	204	217	1564	724	201	214
6000	7	3	1560	696	197	216	1459	672	193	211
8000	3	-1	1505	656	191	216	1406	632	188	212
10,000	-1	-5	1448	614	186	216	1343	588	182	212
12,000	-5	-9	1413	582	181	218	1302	554	177	212
14,000	-9	-13	1379	554	177	219	1261	526	172	213
16,000	-12	-17	1355	532	173	221	1228	500	167	214
18,000	-16	-21	1338	514	169	223	1209	482	163	216
20,000	-20	-25	1326	500	165	226	1192	464	160	218
22,000	-24	-29	1324	488	162	229	1187	452	157	221
24,000	-28	-33	1341	482	161	235	1205	444	155	227
26,000	-31	-37	1309	464	155	235	1223	438	154	232
28,000	-35	-41	1320	462	153	240	1207	428	150	234

MAXIMUM RANGE POWER
1700 RPM
ISA+20°C

NOTES:
1. See basic AFM/POH for other weights and temperatures.
2. During operation with ice vanes extended, torque will decrease. In order to maintain maximum range configuration, do not reset power to original setting. Fuel flow will remain about the same, but true airspeed will decrease approx 10 knots.

WEIGHT →			13,000 POUNDS				12,000 POUNDS			
Pressure Altitude	IOAT	OAT	Torque per Engine	Total Fuel Flow	IAS	TAS	Torque per Engine	Total Fuel Flow	IAS	TAS
Feet	°C	°C	FT-LBS	LBS/HR	KTS	KTS	FT-LBS	LBS/HR	KTS	KTS
SL	39	35	1635	810	205	213	1588	798	204	212
2000	35	31	1596	722	201	215	1548	758	200	214
4000	31	27	1566	734	197	217	1531	726	197	217
6000	28	23	1532	698	193	219	1496	688	193	219
8000	24	19	1490	660	188	220	1452	650	188	221
10,000	20	15	1447	622	183	222	1404	610	183	222
12,000	16	11	1410	588	179	223	1371	578	179	223
14,000	12	7	1384	562	174	224	1341	550	175	225
16,000	8	3	1361	538	170	226	1315	526	171	227
18,000	4	-1	1337	516	166	228	1295	504	167	229
20,000	0	-5	1334	502	163	231	1285	488	163	232
22,000	-3	-9	1325	490	159	234	1267	472	159	234
24,000	-7	-13	1341	484	157	239	1231	452	154	234
26,000	-11	-17	1366	484	156	245	1230	444	151	238
28,000	-15	-21	1362	480	152	247	1254	446	149	244

REFERENCE ONLY

ONE ENGINE INOPERATIVE
MAXIMUM CRUISE POWER
1900 RPM
ISA

NOTES:
1. See basic AFM/POH for other weights and temperatures.
2. During operation with ice vanes extended and ice accumulations present, torque will decrease approx 10%. If original power is not or cannot be reset, true airspeed will decrease approximately 65 knots and fuel flow will decrease approximately 7%. If original power is reset, true airspeed will decrease approx 45 knots and fuel flow will increase approximately 30 pounds per hour per engine.

Pressure Altitude	IOAT	OAT	Operative Engine Torque	Fuel Flow	Airspeed ~ Knots			
					@13,000 LBS		@12,000 LBS	
Feet	°C	°C	FT-LBS	LBS/HR	IAS	TAS	IAS	TAS
SL	18	15	2230	525	184	185	186	187
2000	14	11	2230	511	181	188	184	190
4000	11	7	2230	497	179	190	181	193
6000	7	3	2230	483	176	193	179	196
8000	3	-1	2230	469	173	196	176	200
10,000	-1	-5	2230	457	170	199	174	202
12,000	-5	-9	2169	436	165	198	169	203
14,000	-9	-13	2065	412	157	195	162	201
16,000	-13	-17	1961	390	148	190	154	198
18,000	-17	-21	1855	369	138	183	146	194
20,000	-21	-25	1767	351	119	163	137	188

REFERENCE ONLY

ONE ENGINE INOPERATIVE
MAXIMUM CRUISE POWER
1900 RPM
ISA+20°C

NOTES:
1. See basic AFM/POH for other weights and temperatures.
2. During operation with ice vanes extended and ice accumulations present, torque will decrease approx 10%. If original power is not or cannot be reset, true airspeed will decrease approximately 65 knots and fuel flow will decrease approximately 7%. If original power is reset, true airspeed will decrease approx 45 knots and fuel flow will increase approximately 30 pounds per hour per engine.

Pressure Altitude	IOAT	OAT	Operative Engine Torque	Fuel Flow	Airspeed ~ Knots			
					@13,000 LBS		@12,000 LBS	
Feet	°C	°C	FT-LBS	LBS/HR	IAS	TAS	IAS	TAS
SL	38	35	2230	530	181	188	183	191
2000	35	31	2230	515	178	191	181	194
4000	31	27	2230	500	176	194	178	197
6000	27	23	2156	475	170	193	173	197
8000	23	19	2060	447	163	191	167	196
10,000	19	15	1962	418	155	188	160	194
12,000	15	11	1878	394	148	185	153	192
14,000	11	7	1818	376	140	180	147	190
16,000	7	3	1758	359	129	172	140	187

TIME, FUEL, AND DISTANCE TO DESCEND

ASSOCIATED CONDITIONS:

POWER.....AS REQUIRED TO DESCEND AT 1500 FPM

GEAR.....UP

FLAPS.....UP

NOTE: Descent speed - M_{MO} or 250 knots, whichever is less.

EXAMPLE:

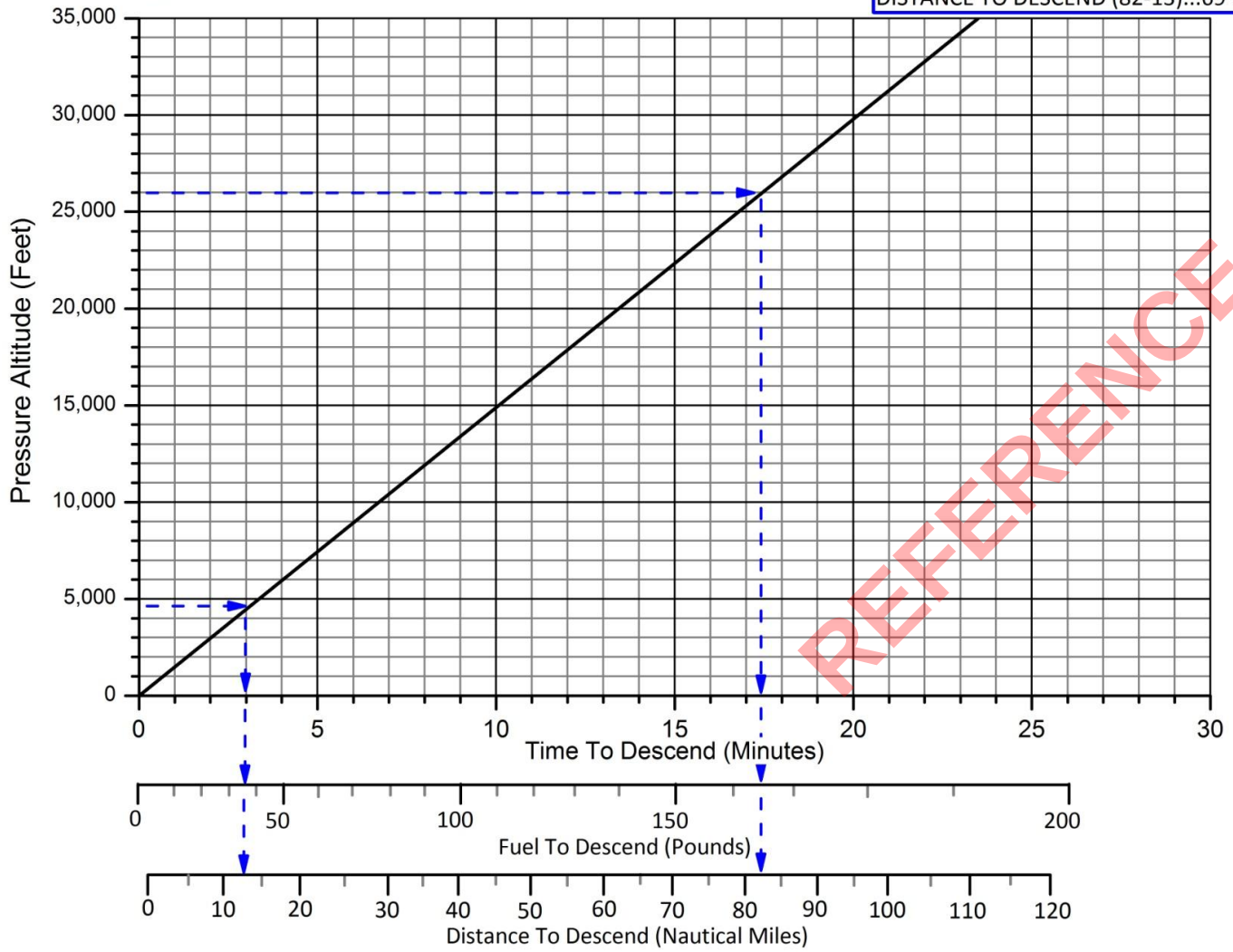
INITIAL ALTITUDE.....26,000 FT

FINAL ALTITUDE.....4732 FT

TIME TO DESCEND (17-3).....14 MINUTES

FUEL TO DESCEND (164-36).....128 LBS

DISTANCE TO DESCEND (82-13)...69 NM



REFERENCE ONLY

MAXIMUM ALLOWED LANDING WEIGHT
TO ACHIEVE LANDING CLIMB REQUIREMENTS

NOTES:
1. Airplanes without Beechcraft High Flotation landing gear are limited to a maximum landing weight of 12,500 pounds.
2. Enter the table at the pressure altitude and temperature from which a go-around would be initiated at the destination. The predicted landing weight at the destination must not exceed the corresponding maximum allowed landing weight shown in this table.

EXAMPLE:
Destination
OAT….. 26°C Pressure Altitude…..4,732 feet
Note - Airplane wo/High Flotation landing gear.

Maximum Allowed Landing Weight – 12,500 lbs

REFERENCE ONLY

Pressure Altitude Feet	Outside Air Temperature Maximum Allowed Landing Weight - Pounds																	
12,000	-39°C 12,850	-35°C 12,650	-31°C 12,450	-27°C 12,250	-23°C 12,050	-19°C 11,750	-15°C 11,438	-11°C 11,188	-7°C 10,938	-3°C 10,688	1°C 10,429	5°C 10,143	9°C 9,857	13°C 9,571	17°C 9,200	21°C 8,833	25°C 8,500	28°C 8,230
11,000	-37°C 13,124	-33°C 13,000	-29°C 12,750	-25°C 12,500	-21°C 12,318	-17°C 12,136	-13°C 11,917	-9°C 11,583	-5°C 11,312	-1°C 11,062	3°C 10,812	7°C 10,562	11°C 10,312	15°C 10,062	19°C 9,750	23°C 9,417	27°C 9,083	30°C 8,834
10,000	-35°C 13,420	-31°C 13,300	-27°C 13,060	-23°C 12,833	-19°C 12,611	-15°C 12,409	-11°C 12,227	-7°C 12,045	-3°C 11,750	1°C 11,438	5°C 11,188	9°C 10,944	13°C 10,722	17°C 10,500	21°C 10,214	25°C 9,929	29°C 9,644	32°C 9,431
9,000	-33°C 13,420	-29°C 13,420	-25°C 13,420	-21°C 13,262	-17°C 13,052	-13°C 12,812	-9°C 12,562	-5°C 12,364	-1°C 12,182	3°C 12,000	7°C 11,714	11°C 11,429	15°C 11,143	19°C 10,889	23°C 10,667	27°C 10,438	31°C 10,188	34°C 10,000
8,000	-31°C 13,420	-27°C 13,420	-23°C 13,420	-19°C 13,420	-15°C 13,420	-11°C 13,210	-7°C 13,000	-3°C 12,750	1°C 12,500	5°C 12,318	9°C 12,136	13°C 11,929	17°C 11,643	21°C 11,357	25°C 11,071	29°C 10,833	33°C 10,611	36°C 10,446
7,000	-29°C 13,420	-25°C 13,420	-21°C 13,420	-17°C 13,420	-13°C 13,420	-9°C 13,420	-5°C 13,315	-1°C 13,105	3°C 12,889	7°C 12,667	11°C 12,455	15°C 12,273	19°C 12,091	23°C 11,833	27°C 11,500	31°C 11,250	35°C 11,000	38°C 10,709
6,000	-27°C 13,420	-23°C 13,420	-19°C 13,420	-15°C 13,420	-11°C 13,420	-7°C 13,420	-3°C 13,420	1°C 13,420	5°C 13,240	9°C 13,000	13°C 12,778	17°C 12,556	21°C 12,364	25°C 12,182	29°C 12,000	33°C 11,714	37°C 11,428	40°C 11,212
5,000	-25°C 13,420	-21°C 13,420	-17°C 13,420	-13°C 13,420	-9°C 13,420	-5°C 13,420	-1°C 13,420	3°C 13,420	7°C 13,420	11°C 13,420	15°C 13,180	19°C 12,938	23°C 12,688	27°C 12,450	31°C 12,250	35°C 12,050	39°C 11,835	42°C 11,670
4,000	-23°C 13,420	-19°C 13,420	-15°C 13,420	-11°C 13,420	-7°C 13,420	-3°C 13,420	1°C 13,420	5°C 13,420	9°C 13,420	13°C 13,420	17°C 13,420	21°C 13,280	25°C 13,000	29°C 12,714	33°C 12,444	37°C 12,222	41°C 12,000	44°C 11,835
3,000	-21°C 13,420	-17°C 13,420	-13°C 13,420	-9°C 13,420	-5°C 13,420	-1°C 13,420	3°C 13,420	7°C 13,420	11°C 13,420	15°C 13,420	19°C 13,420	23°C 13,420	27°C 13,420	31°C 13,168	35°C 12,833	39°C 12,500	43°C 12,214	46°C 12,000
2,000	-19°C 13,420	-15°C 13,420	-11°C 13,420	-7°C 13,420	-3°C 13,420	1°C 13,420	5°C 13,420	9°C 13,420	13°C 13,420	17°C 13,420	21°C 13,420	25°C 13,420	29°C 13,420	33°C 13,420	37°C 13,192	41°C 12,856	45°C 12,520	48°C 12,268
1,000	-17°C 13,420	-13°C 13,420	-9°C 13,420	-5°C 13,420	-1°C 13,420	3°C 13,420	7°C 13,420	11°C 13,420	15°C 13,420	19°C 13,420	23°C 13,420	27°C 13,420	31°C 13,420	35°C 13,420	39°C 13,420	43°C 13,084	47°C 12,748	50°C 12,496
0	-15°C 13,420	-11°C 13,420	-7°C 13,420	-3°C 13,420	1°C 13,420	5°C 13,420	9°C 13,420	13°C 13,420	17°C 13,420	21°C 13,420	25°C 13,420	29°C 13,420	33°C 13,420	37°C 13,420	41°C 13,420	45°C 13,252	49°C 12,916	52°C 12,664

MAXIMUM ALLOWED LANDING WEIGHT

TO ACHIEVE LANDING CLIMB REQUIREMENTS WITH ICE ACCUMULATIONS PRESENT

Pressure Altitude Feet	Outside Air Temperature, °C / Maximum Allowed Landing Weight, Pounds									
10,000	-35°C 10,082	-31°C 9,951	-27°C 9,828	-23°C 9,705	-19°C 9,586	-15°C 9,468	-1°C 1 9,290	-7°C 9,108	- -	- -
9,500	-34°C 10,168	-30°C 10,048	-26°C 9,935	-22°C 9,814	-18°C 9,695	-14°C 9,576	-10°C 9,415	-6°C 9,249	-2°C 9,064	- -
9,000	-33°C 10,254	-29°C 10,146	-25°C 10,042	-21°C 9,923	-17°C 9,803	-13°C 9,684	-9°C 9,539	-5°C 9,384	-1°C 9,209	3°C 9,034
8,500	-32°C 10,340	-28°C 10,243	-24°C 10,148	-20°C 10,031	-16°C 9,912	-12°C 9,792	-8°C 9,664	-4°C 9,525	0°C 9,377	4°C 9,198
8,000	-31°C 10,426	-27°C 10,340	-23°C 10,255	-19°C 10,140	-15°C 10,020	-11°C 9,900	-7°C 9,788	-3°C 9,673	1°C 9,518	5°C 9,347
7,500	-30°C 10,507	-26°C 10,420	-22°C 10,334	-18°C 10,227	-14°C 10,116	-10°C 10,003	-6°C 9,889	-2°C 9,771	2°C 9,624	6°C 9,464
7,000	-29°C 10,588	-25°C 10,500	-21°C 10,414	-17°C 10,315	-13°C 10,212	-9°C 10,105	-5°C 9,989	-1°C 9,869	3°C 9,729	7°C 9,581
6,500	-28°C 10,669	-24°C 10,580	-20°C 10,493	-16°C 10,402	-12°C 10,308	-8°C 10,208	-4°C 10,090	0°C 9,967	4°C 9,835	8°C 9,698
6,000	-27°C 10,750	-23°C 10,660	-19°C 10,572	-15°C 10,489	-11°C 10,404	-7°C 10,310	-3°C 10,190	1°C 10,065	5°C 9,940	9°C 9,815
5,500	-26°C 10,823	-22°C 10,734	-18°C 10,647	-14°C 10,563	-10°C 10,479	-6°C 10,388	-2°C 10,277	2°C 10,164	6°C 10,050	10°C 9,937
5,000	-25°C 10,895	-21°C 10,807	-17°C 10,721	-13°C 10,637	-9°C 10,553	-5°C 10,465	-1°C 10,365	3°C 10,262	7°C 10,160	- -
4,500	-24°C 10,968	-20°C 10,881	-16°C 10,796	-12°C 10,711	-8°C 10,628	-4°C 10,543	0°C 10,452	4°C 10,361	8°C 10,270	- -
4,000	-23°C 11,040	-19°C 10,954	-15°C 10,870	-11°C 10,785	-7°C 10,702	-3°C 10,620	1°C 10,539	5°C 10,459	9°C 10,380	- -
3,500	-22°C 11,106	-18°C 11,021	-14°C 10,937	-10°C 10,853	-6°C 10,771	-2°C 10,690	2°C 10,610	6°C 10,531	10°C 10,454	- -
3,000	-21°C 11,172	-17°C 11,087	-13°C 11,004	-9°C 10,922	-5°C 10,840	-1°C 10,760	3°C 10,681	7°C 10,604	- -	- -
2,500	-20°C 11,238	-16°C 11,154	-12°C 11,071	-8°C 10,990	-4°C 10,909	0°C 10,830	4°C 10,751	8°C 10,676	- -	- -
2,000	-19°C 11,304	-15°C 11,220	-11°C 11,138	-7°C 11,058	-3°C 10,978	1°C 10,900	5°C 10,822	9°C 10,748	- -	- -
1,500	-18°C 11,381	-14°C 11,298	-10°C 11,216	-6°C 11,136	-2°C 11,056	2°C 10,979	6°C 10,901	10°C 10,824	- -	- -
1,000	-17°C 11,457	-13°C 11,375	-9°C 11,294	-5°C 11,214	-1°C 11,134	3°C 11,057	7°C 10,980	- -	- -	- -
500	-16°C 11,534	-12°C 11,453	-8°C 11,372	-4°C 11,292	0°C 11,212	4°C 11,136	8°C 11,059	- -	- -	- -
Sea Level	-15°C 11,610	-11°C 11,530	-7°C 11,450	-3°C 11,370	1°C 11,290	5°C 11,214	9°C 11,138	- -	- -	- -

NOTES

1. Use of this table is required when icing is expected during the landing approach at the destination airport.
2. Enter the table at the pressure altitude and temperature from which a go-around would be initiated at the destination. The predicted landing weight at the destination must not exceed the corresponding maximum allowed landing weight shown in this table.

REFERENCE ONLY

DISCONTINUED APPROACH CLIMB GRADIENT

ONE ENGINE INOPERATIVE

Associated Conditions
Power..... Max Cont.
Flaps..... Approach
Landing Gear..... Up
Inoperative Propeller... Feathered

Weight - LBS	V_{REF}+10 (Knots)
13,420	115
13,000	114
12,000	112
11,000	109
10,000	106
9,000	103

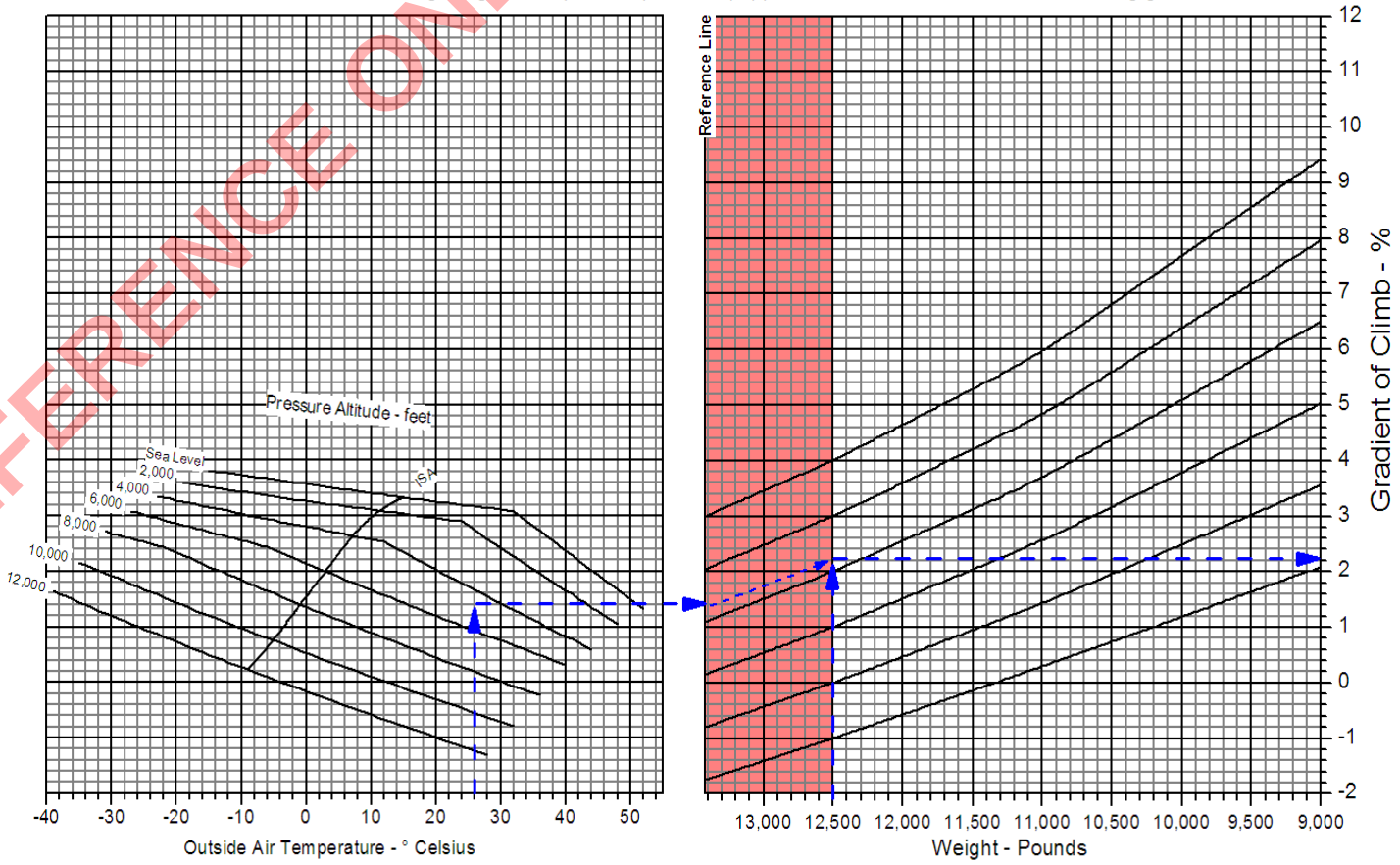
Example
OAT..... 26°C
Pressure Altitude..... 4,730 feet

Weight - LBS	Gradient - %
12,500	2.21

Climb Speed at 12,500 pounds..... 113 knots

Notes:
1. Decrease the percent gradient from this chart by 0.9 points when engine ice vanes are extended.
2. Decrease the percent gradient from this chart by 5.0 points when icing conditions are present.
   Note- climb airspeed is 145 KIAS in icing conditions.
3. When the discontinued approach climb path requires turns, do not exceed 15° of bank and reduce Gradient of Climb from this chart by 1 percentage point.
4. Red shaded area is above maximum landing weight, except for airplanes equipped with Beechcraft Hi-Flotation landing gear.

REFERENCE ONLY



CLIMB - BALKED LANDING

Weight - Pounds	Climb Speed (V_{REF})-Knots
13,420	105
13,000	104
12,000	101
11,000	99
10,000	96
9,000	94

Associated conditions

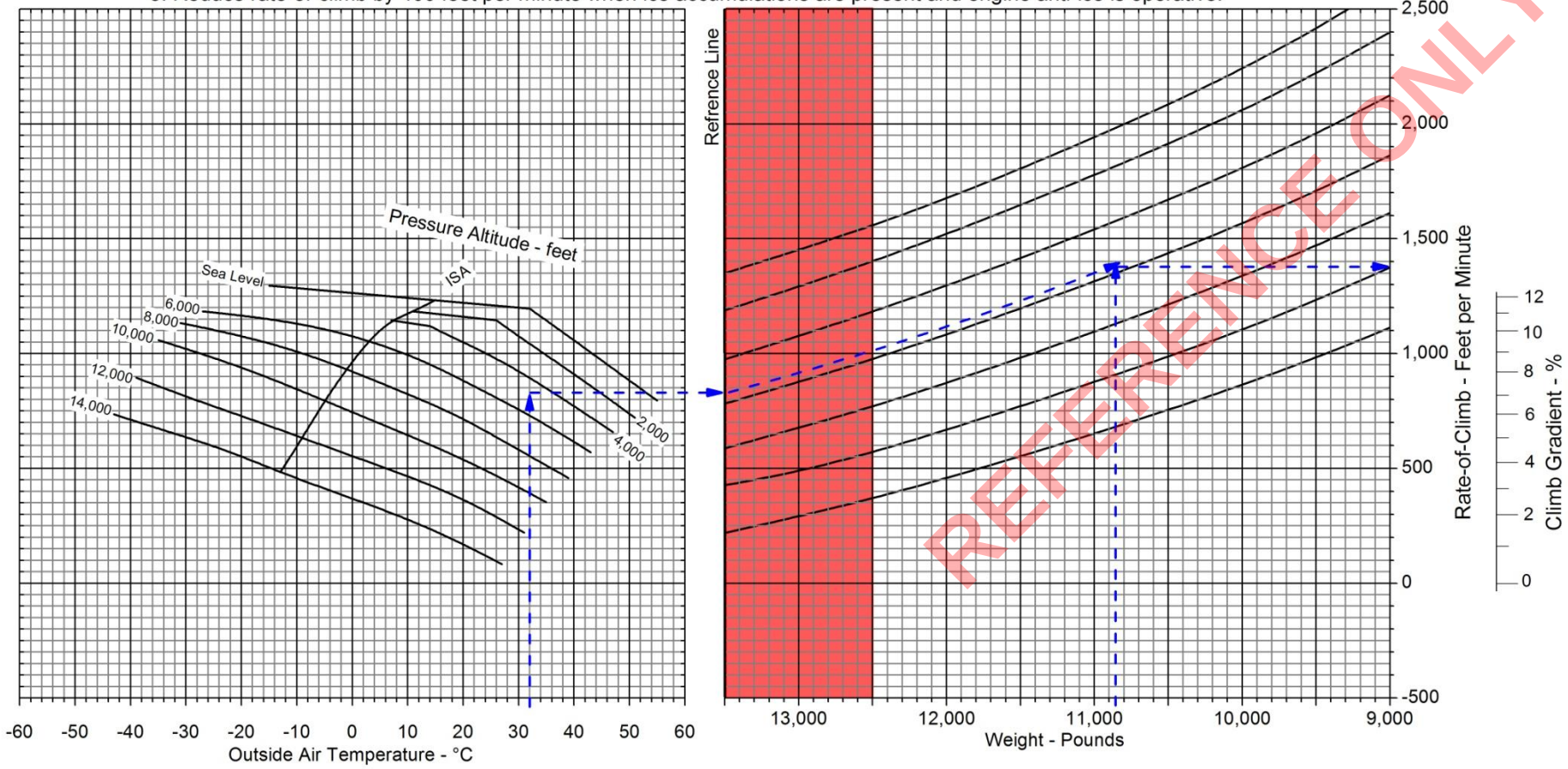
Power..... Take-Off
Flaps..... Down
Landing Gear..... Down

Example

OAT..... 32 °C
Pressure Altitude..... 4,732 feet
Weight..... 10,854 pounds

Rate-of-Climb..... 1,380 fpm
Climb Gradient..... > 12 %

Notes: 1. Cargo Pod installed.
2. The red area is above the maximum landing weight except for an airplane equipped with Beechcraft High Flotation landing gear.
3. Reduce rate-of-climb by 400 feet per minute when ice accumulations are present and engine anti-ice is operative.



REFERENCE ONLY

LANDING DISTANCE WITHOUT PROPELLER REVERSING

Associated conditions

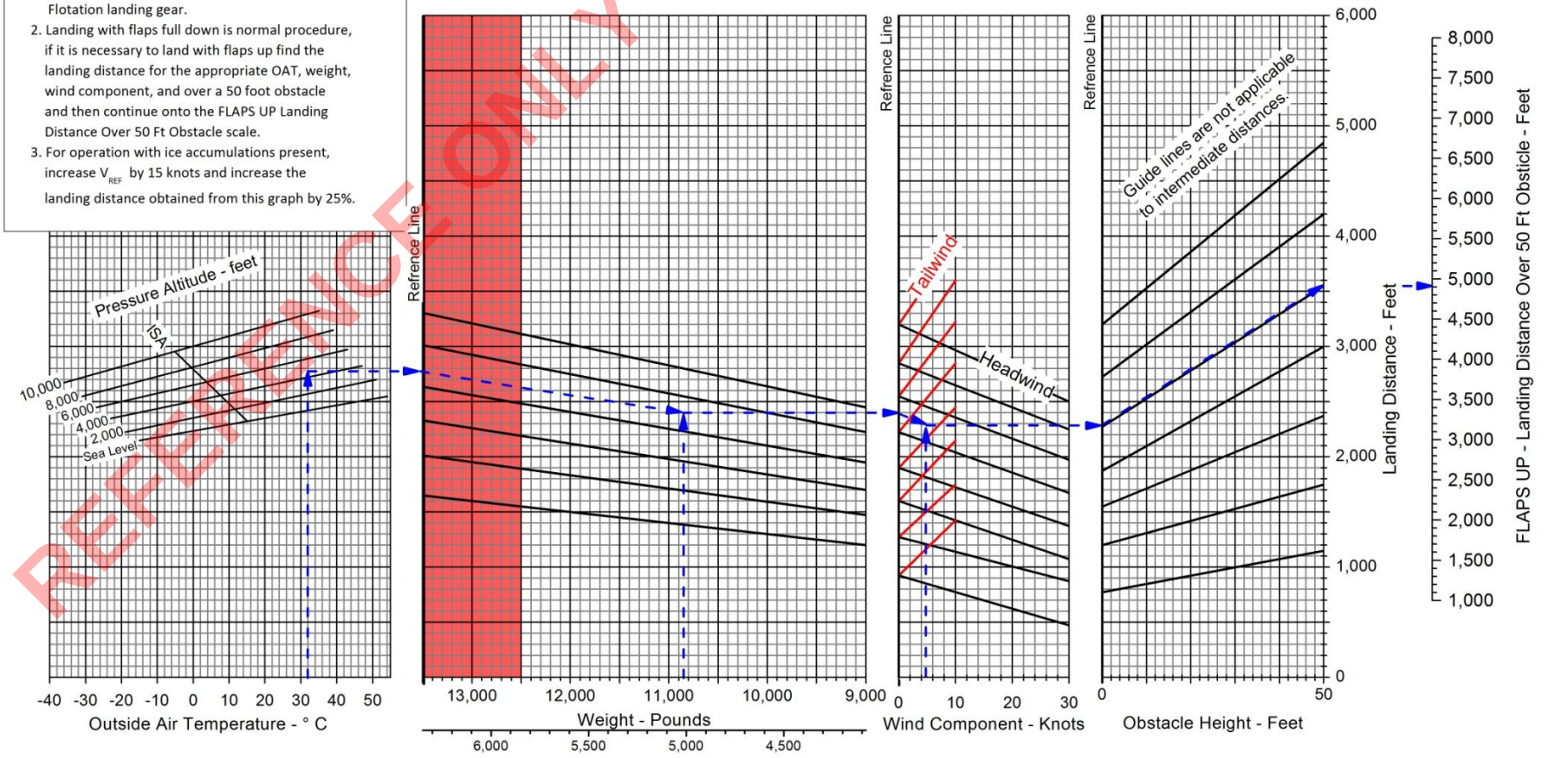
Power..... Retard to maintain 800 fpm on final approach.
Flaps..... Down
Runway..... Paved, Dry, Level Surface
Approach Speed..... See Table, Flaps Down
Braking..... Maximum

Weight - Pounds	V_{REF} Speeds - Knots	
	Flaps Down	Flaps Up
13,420	105	135
13,000	104	133
12,000	101	129
11,000	99	125
10,000	96	121
9,000	94	117

Example

OAT..... 32 °C
Pressure Altitude..... 4,732 feet
Weight..... 10,854 pounds
Headwind Component..... 4.7 knots
Ground Roll ..... 2,300 feet
Distance over 50 ft Obstacle Flaps Down... 3,550 feet
Approach Speed Flaps Down..... 99 knots
Distance over 50 ft Obstacle Flaps Up..... 4,900 feet
Approach Speed Flaps Up..... 124 knots

NOTES:
1. The red area is above the maximum landing weight except for an airplane equipped with Beechcraft High Flotation landing gear.
2. Landing with flaps full down is normal procedure, if it is necessary to land with flaps up find the landing distance for the appropriate OAT, weight, wind component, and over a 50 foot obstacle and then continue onto the FLAPS UP Landing Distance Over 50 Ft Obstacle scale.
3. For operation with ice accumulations present, increase V_{REF} by 15 knots and increase the landing distance obtained from this graph by 25%.



REFERENCE ONLY

LANDING DISTANCE WITH PROPELLER REVERSING

Associated conditions

Power..... Retard to maintain 1,000 fpm on final approach.
Flaps..... Down
Runway..... Paved, Dry, Level Surface
Braking..... Maximum
Condition Levers..... High Idle
Propeller Controls..... Full Forward
Power Levers..... Maximum reverse after touchdown.

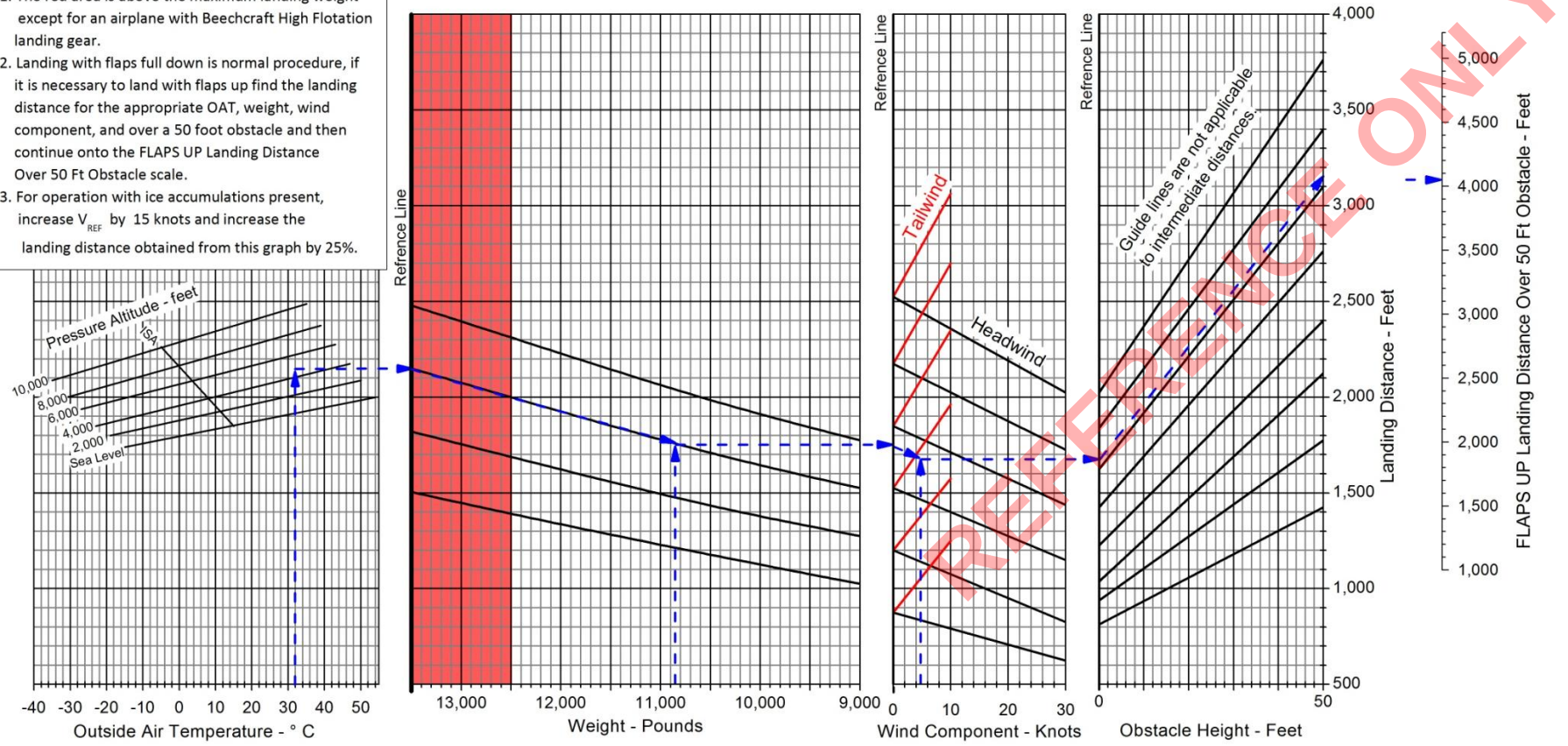
Weight - Pounds	V_{REF} Speeds - Knots	
	Flaps Down	Flaps Up
13,420	105	135
13,000	104	133
12,000	101	129
11,000	99	125
10,000	96	121
9,000	94	117

Example

OAT..... 32 °C
Pressure Altitude..... 4,732 feet
Weight..... 10,854 pounds
Headwind Component..... 4.7 knots
Ground Roll ..... 1,695 feet
Distance over 50 ft Obstacle Flaps Down... 3,150 feet
Approach Speed Flaps Down..... 99 knots
Distance over 50 ft Obstacle Flaps Up..... 4,060 feet
Approach Speed Flaps Up..... 124 knots

NOTES:

1. The red area is above the maximum landing weight except for an airplane with Beechcraft High Flotation landing gear.
2. Landing with flaps full down is normal procedure, if it is necessary to land with flaps up find the landing distance for the appropriate OAT, weight, wind component, and over a 50 foot obstacle and then continue onto the FLAPS UP Landing Distance Over 50 Ft Obstacle scale.
3. For operation with ice accumulations present, increase V_{REF} by 15 knots and increase the landing distance obtained from this graph by 25%.



REFERENCE ONLY

SECTION 6
WEIGHT AND BALANCE

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REFERENCE ONLY

INTRODUCTION

The CenTex Aerospace Halo 250 Commuter Category STC approves operating the King Air 200 series airplanes at a new, increased maximum takeoff weight of 13,420 pounds. This is an increase of 920 pounds over the original maximum takeoff weight of 12,500 pounds. Other weight limitations are unchanged; exception for an airplane equipped with Beechcraft High Flotation landing gear, which now has a maximum landing weight of 13,420 pounds. The forward and aft center-of-gravity limits change above 12,500 pounds, but, at 12,500 pounds and below, the center-of-gravity limits are unchanged.

Other changes include a move from Normal category to Commuter category and the addition of several safety systems, which are required by 14 CFR Part 23 requirements for Commuter category airplanes. Another change is a new limitation that restricts each airplane modified by this STC to have no more than nine passenger seats. The restriction in the number of passenger seats is applicable to all airplanes certificated in the Commuter category that have a single emergency exit (such as the King Air 200 series airplanes).

There are no changes to weighing instructions, computing basic empty weight and balance, dimensional and loading data, cabin arrangements (other than a limitation of nine passenger seats), and the procedure for computing weight and balance. See the basic Airplane Flight Manual or Pilot Operating Handbook for weight and balance information and procedures not contained in this section.

Two new weight and balance diagrams are in this section that incorporates the new maximum takeoff weight and center-of-gravity limitations. The first diagram is useful for verifying the loaded airplane is within the approved center-of-gravity limits when weight computations are made in pounds gross weight. The second diagram should be used when weight and balance computations are made in kilograms.

REFERENCE ONLY

WEIGHT AND CENTER-OF-GRAVITY LIMITS

The following weight and center-of-gravity limits are taken from Section 2 Limitations of this AFM Supplement and repeated here for convenience to the airplane operator. Values that are underline have been changed by the CenTex Aerospace Halo 250 Commuter Category STC.

WEIGHT LIMITS

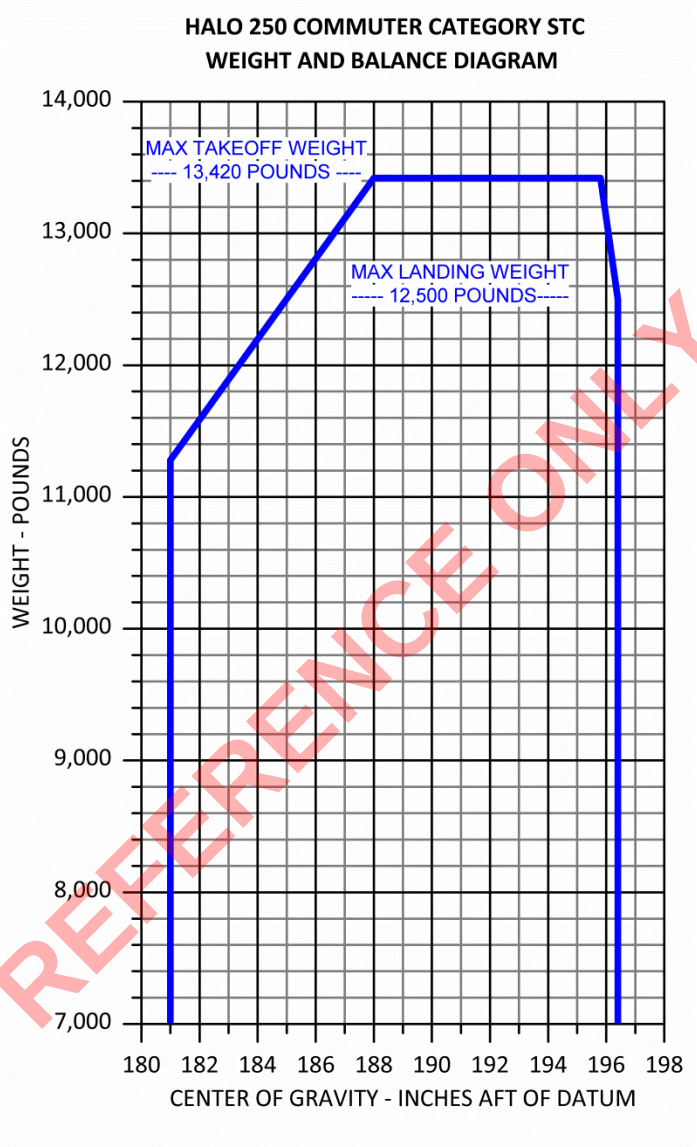
Maximum Ramp Weight .....13,510 pounds
Maximum Take-off Weight: .....13,420 pounds
Maximum Landing Weight..... 12,500 pounds or
13,420 pounds for an airplane equipped with Beechcraft High Flotation landing gear.
Maximum Zero Fuel Weight:
Model 200 and A200 series .....No Change (10,400 pounds)
Model B200 series .....No Change (11,000 pounds)

CENTER OF GRAVITY LIMITS

AFT LIMITS
195.8 inches aft of datum at 13,420 pounds gross weight with straight line variation to 196.4 inches aft of datum at 12,500 pounds gross weight.
196.4 inches aft of datum at gross weights less than 12,500 pounds.

FORWARD LIMITS
188.0 inches aft of datum at 13,420 pounds gross weight with straight line variation to 181.0 inches aft of datum at 11,279 pounds gross weight.
181.0 inches aft of datum at gross weights less than 11,279 pounds.

REFERENCE ONLY



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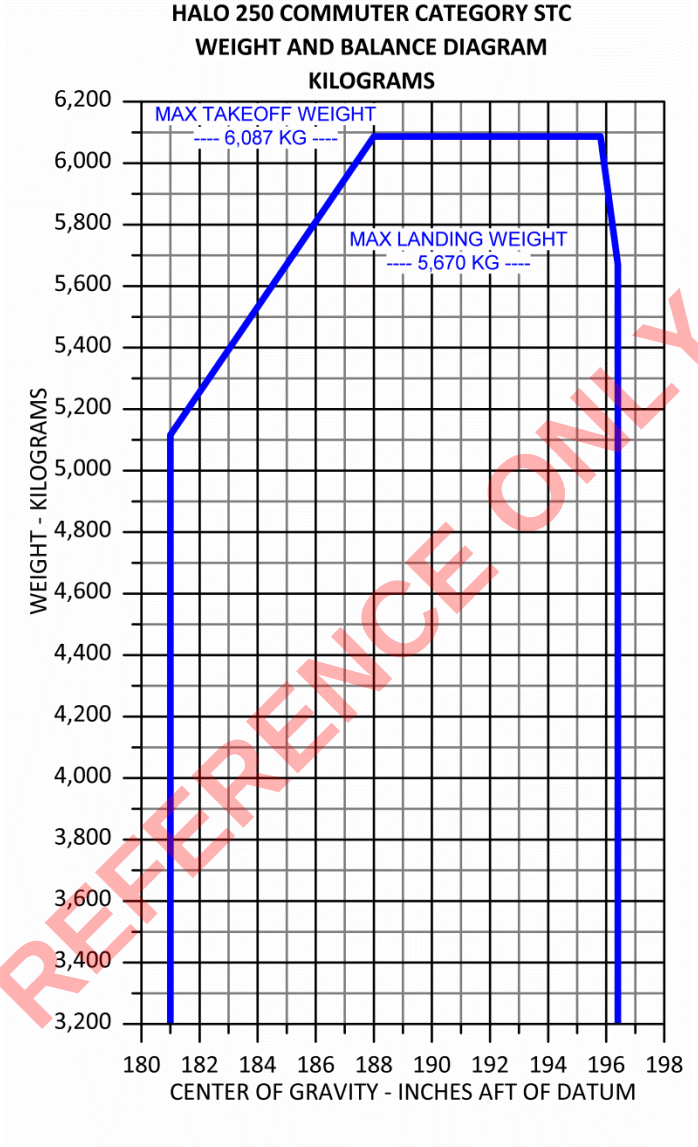

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SYSTEMS DESCRIPTION
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REFERENCE ONLY

INTRODUCTION

New safety systems are installed under the Halo 250 conversion. These systems provide safety functions that are required for airplanes certificated in the Commuter category. Also, the stall warning system has been modified and will now provide accurate and reliable warning when the airplane is operated in icing conditions. The result is a King Air 200 series airplane that operates at a higher level of safety.

Below is a list of the added functions:

- Takeoff Trim Warning
- Over-Speed Warning
- Engine Fire Extinguisher
- Stall Warning Ice Mode
- Emergency Cabin Lighting
- Escape Path Markings

This section describes the functionality of these systems and the pertinent design details. It is imperative that the pilot be knowledgeable of this information so he/she can fully utilize these new features and thereby realize the added safety they provide. For information on systems other than those described in this section see the applicable King Air 200 series basic AFM or Pilot Operating Handbook.

REFERENCE ONLY

TAKEOFF TRIM WARNING

The Halo 250 conversion adds a takeoff trim warning system. The system detects if the elevator trim tab has not been properly set before takeoff and sounds a warning when the pilot initiates a takeoff. The pilot should respond to the warning by immediately aborting the takeoff run.

The trim warning system utilizes the existing elevator tab position indicator to determine tab position. A micro switch actuated by the tab position indicator activates the warning horn when the tab position is outside of the approved range for takeoff. The horn emits a constant, mid-frequency tone. It is located beneath the lower edge of the pilot's instrument panel next to the console. The micro switch is mounted to the console beneath the elevator trim wheel.

Power to the elevator trim warning system comes through the Autofeather system switch when it is in the ARMED position. Power must also pass through the weight-on-wheels switch and the 90% N_1 switch associated with the left engine power lever. The system becomes fully operational once the Autofeather system is ARMED and the left power lever is advance to the 90% N_1, or higher, position. The takeoff trim warning system is deactivated through the weight-on-wheels switch after liftoff so no misleading warnings occur during flight. Note the Halo 250 STC conversion requires the Autofeather system to be operative for takeoff.

The warning system should be tested before the first flight of each day, as specified in Section 4 Normal Procedures.

REFERENCE ONLY

OVER-SPEED WARNING

The Halo 250 conversion adds an over-speed warning system, except when the airplane is equipped with Rockwell Collins Proline 21 integrated avionics (the Proline 21 system provides an aural over-speed warning). The aural warning automatically alerts the pilot whenever airspeed is greater than V_{MO} or Mach number is greater than M_{MO}. This system provides a backup to the function provided by the maximum allowable airspeed pointer on the pilot and copilot airspeed indicators. The pilot should respond to a warning by immediately taking the necessary action to reduce airspeed.

The system consists of a pressure sensing switch, an aural warning device, and a test switch. The pressure switch is connected to the pitot and static system lines feeding the pilot's airspeed indicator. The pressure switch activates the aural warning whenever V_{MO} or M_{MO} is exceeded. The warning is a pulsing, high-frequency tone. The aural warning device is located beneath the glareshield in front of the pilot. Power to the system is fed from the main electrical bus through a five (5) amp circuit breaker labeled O/S WARN located in the Warning section of the copilot circuit breaker panel. The pressure sensing switch is mounted inside the aft end of the console. The pressure lines are routed through the console and upward behind the pilot's instrument panel where they connect to the pitot-static system lines.

The system should be tested when conducting the BEFORE ENGINE STARTING procedure by selecting TEST on the OVERSPEED WARN TEST switch (See FIGURE 7-1).

FIGURE 7-1
OVERSPEED WARNING TEST SWITCH

REFERENCE ONLY

SEATING ARRANGEMENTS

Various configurations of passenger chairs and one-place couch installations may be installed on the continuous tracks mounted to the cabin floor. Seating for up to nine (9) persons, excluding crew, may be installed. This is a new limitation imposed by the Commuter category requirements.

EMERGENCY ESCAPE PATH MARKINGS

The Halo 250 conversion adds photoluminescent markings that highlight the escape path along the floor to the emergency exit door and cabin door. The photoluminescent markings must be adequately charged before conducting any part of a flight in darkness. Charging can be accomplished with sunlight or with the interior lights or with the emergency flood lamps. See Section 4 Normal Procedures for the required charging time.

ENGINE FIRE EXTINGUISHER

The Halo 250 conversion requires installation of the optional engine fire extinguisher system. Information regarding this system is contained in the basic Airplane Flight Manual or Pilot Operating Handbook.

STALL WARNING ICE MODE

The King Air 200 series stall warning system does not have the capability to adjust for the effect that icing has on stall speed. Ice accretion causes the wing to stall at a lower angle-of-attack and can result in a 15% to 20% increase in stall speed. The Halo 250 conversion adds additional capability so a reliable and accurate stall warning is available in icing conditions. This new stall warning functionality is called the “ice mode”.

The stall warning system will activate the warning horn when the output of the lift transducer reaches a preset voltage. The system has three different voltage settings, one for each flap position; which enables it to provide accurate warning at each flap setting. The Halo 250 conversion adds components to the stall warning system that allow three different preset voltages to become active when it is in the ice mode. These voltage settings are uniquely selected so that the effect of ice on the wings is considered. With wing flaps up, the stall warning activates at approximately 20 knots higher airspeed in the ice mode.

The initial sound of the stall warning horn in the ice mode is a 1-Hertz pulsing tone. If angle-of-attack increases further, the duration of the pulsing increases until the tone becomes continuous. The pilot should respond to the initial warning by pitching the aircraft nose down until the warning ceases, leveling the wings to orient lift vector for recovery, and adding power to assist in the recovery. The pilot’s failure to respond to a stall warning can result in a stall and subsequent loss of control of the airplane.

Switching to the ice mode occurs automatically when the pilot selects either SINGLE or MANUAL on the Surface Deice switch. The STALL WARNING ICE MODE annunciator, which is located in the glareshield in front of the pilot, will illuminate whenever the ice mode is active (See FIGURE 7-2). The ice mode will stay active until it is manually deactivated by the pilot pressing the illuminated annunciator. This should be done when the airplane is outside of icing conditions and is free of ice. Pressing the annunciator when it is extinguished has no effect. Note the stall warning heat must be operating when flying in icing conditions to keep the lift transducer free of ice.

When testing the stall warning system, the mode in operation when the test is performed is the mode that is tested. A constant tone will be heard if the system is functioning properly. The new system components are located inside the aft end of the console.

REFERENCE ONLY

FIGURE 7-2
STALL WARNING ICE MODE ANNUNCIATOR

CABIN EMERGENCY LIGHTING

The Halo 250 conversion adds a cabin emergency lighting system. It provides supplemental lighting in the cabin around the emergency exit door and cabin door. The system has two LED flood lamps located in the cabin ceiling that are powered by a dedicated battery pack, which contains two 12-volt, sealed lead-acid batteries connected in series, installed under the floor just forward of the cabin door.

The system automatically turns on the flood lamps in the event of a 2-g, or greater, deceleration or a loss of power on the main electrical bus. This keeps the cabin from becoming unlighted during such critical events. Additionally, the lamps can be used for lighting the cabin when boarding or to charge the photoluminescent escape path markings.

Two switches operate the system and provide required functionality. A cabin switch located next to the aft flood lamp connects the battery pack to the system (See FIGURE 7-3). A control switch located in the copilot instrument panel arms automatic operation or provides manual operation of the flood lamps from the cockpit (See FIGURE 7-4). Power to charge the battery pack is fed from the main electrical bus through a five (5) amp circuit breaker labeled EMERG CABIN LT in the copilot circuit breaker panel.

Two amber indicator lights located in the copilot instrument panel above the control switch (See FIGURE 7-5) warn the pilot when the system switches are not set as required for taxi and takeoff operations. The amber indicator lights will be extinguished when the cockpit control switch is ARMED and the cabin switch is ON. Note these are the required positions for taxi and flight operations.

REFERENCE ONLY

When exiting the airplane both the control switch and the cabin switch should be placed in the OFF position. If left on, a timer prevents the battery from becoming totally discharged by disconnecting the battery pack from the system after 10 minutes. Selecting OFF on the cabin switch reconnects the battery pack and resets the timer. Note recharging of the battery pack occurs automatically whenever the airplane battery switch is ON and the main electrical bus is powered by either the generators or an external power source.

The level of charge of the emergency lighting system battery pack should be checked before the first flight of each day as described in Section 4 NORMAL PROCEDURES. The system must be operational when carrying passengers. If the lamps do not illuminate, the emergency lighting system batteries have been discharged or there is a malfunction in the system. A discharged battery pack must be removed and the batteries recharged or replaced. The Halo 250 Instructions for Continued Airworthiness, Manual no. 006-30 describes the proper procedures for removing and recharging or replacing the cabin emergency lighting system battery pack.

The battery pack and relays are located beneath the cabin floor at approximately Fuselage Station 270. Also, the battery pack should be inspected at each maintenance Phase inspection for general condition and the time-in-service for the batteries. The batteries must be replaced after 36 calendar months from the time they were installed.

FIGURE 7-3
EMERGENCY CABIN LIGHTING SYSTEM
CABIN SWITCH & FLOOD LAMP

REFERENCE ONLY

FIGURE 7-4
EMERGENCY CABIN LIGHTING SYSTEM
COCKPIT CONTROL SWITCH

FIGURE 7-5
EMERGENCY CABIN LIGHTING
SYSTEM WARNING LIGHTS

REFERENCE ONLY

SECTION 8
HANDLING, SERVICING, & MAINTENANCE

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TIRES 8-2

CABIN EMERGENCY LIGHTING SYSTEM 8-2

REFERENCE ONLY

TIRE PRESSURES

The tire inflation pressures have increased slightly as a result of the increase in maximum takeoff weight. Keep the tires inflated at the following pressures:

Nose Wheel Tires

Tire Size	Inflation Pressure
22 X 6.75-10, 8-ply	55 to 60 psi
22 X 6.50-10, 6-ply (Type III)	55 to 60 psi

Main Wheel Tires

Tire Size	Inflation Pressure
18 X 5.5, 10-ply (Type VII)	107 ± 2 psi
19.5 X 6.75, 10-ply	95 ± 2 psi
22 X 6.75-10, 8-ply	66 ± 2 psi
22 X 6.50-10, 8-ply (Type III)	66 ± 2 psi

Note: All tires on main and nose wheels must have a speed rating 160 mph (139 knots) or greater. Replace any tires not meeting this speed rating.

CABIN EMERGENCY LIGHTING SYSTEM

The battery pack that powers the cabin emergency lighting system must be replaced every 36 calendar months.

REFERENCE ONLY

SECTION 9
SUPPLEMENTS

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TAKEOFF DISTANCE – FLAPS APPROACH 9-4

REFERENCE ONLY

TAKEOFF DISTANCE FOR SPECIAL AND CANADIAN OPERATORS

The takeoff distance charts shown on pages 9-3 and 9-4 are provided as supplemental performance planning data for special mission operators with approved regulatory exemptions and Canadian operations under Transport Canada Civil Aviation Operating and Flight Rules. These two charts show the takeoff ground roll distance and the takeoff distance to clear a 50-foot obstacle with two engines operating.

REFERENCE ONLY

TAKE-OFF DISTANCE - FLAPS UP

Associated conditions

Power..... Takeoff power set before brake release.
Flaps..... Up
Landing Gear..... Retract after lift off.
Runway..... Paved, Dry, Level Surface

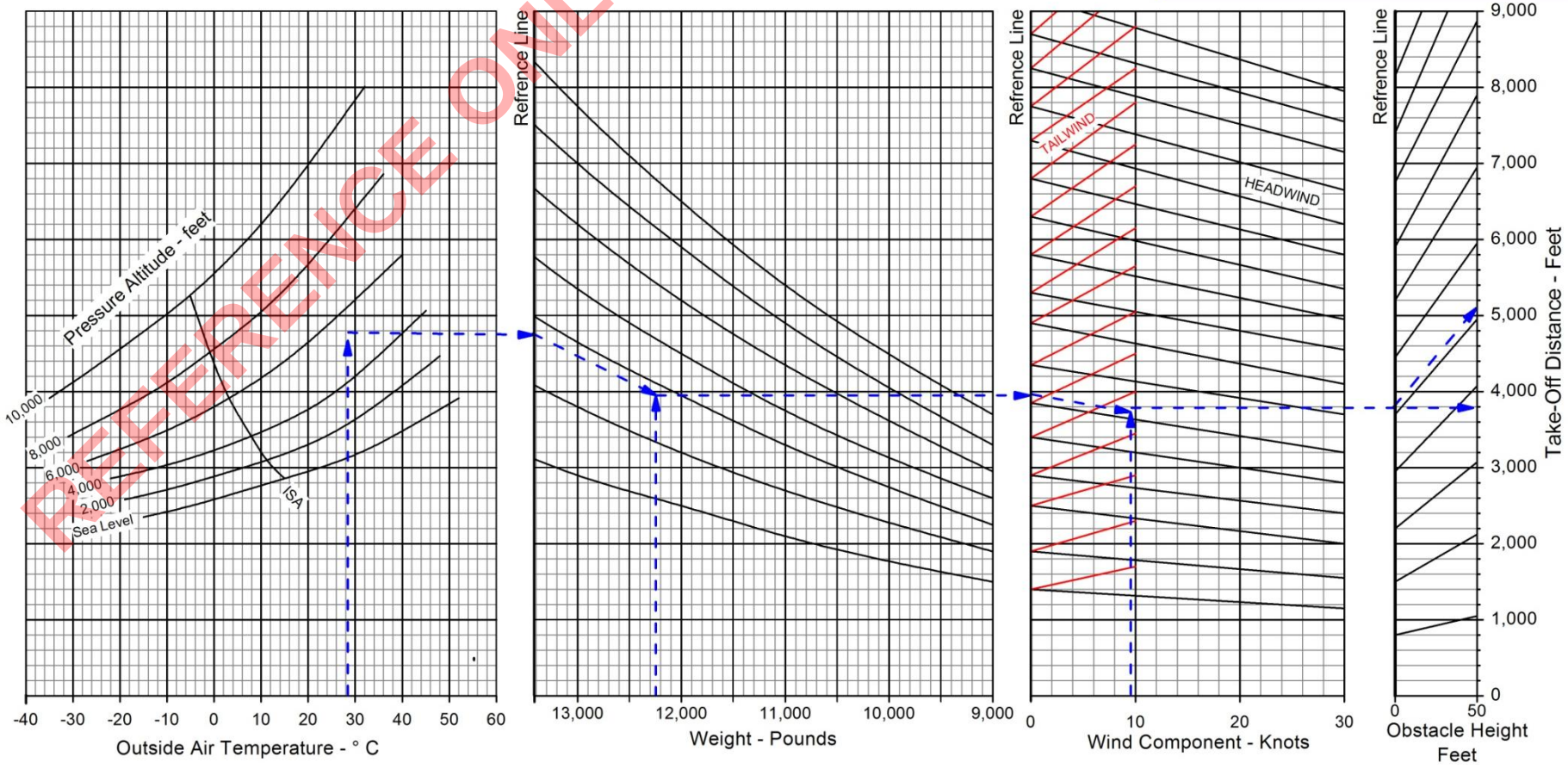
Notes:

1. Obstacle clearance guide lines are not applicable to intermediate obstacle heights.

Weight Pounds	Take-Off Speed - Knots	
	V_R	V_2
13,420	115	125
13,000	113	123
12,500	111	121
12,000	109	120
11,000	105	115
10,000	101	111
9,000	98	108

Example

OAT..... 28 °C
Pressure Altitude..... 5,430 feet
Weight..... 12,250 pounds
Headwind Component..... 9.5 knots
Ground Roll .....3,800 feet
Distance over 50 ft obsticle....5,100 feet
Take-off Speeds
Rotation..... 111 knots
50 feet..... 121 knots



REFERENCE ONLY

TAKE-OFF DISTANCE - FLAPS APPROACH

Associated conditions

Power..... Takeoff power set before brake release.
Flaps..... Approach
Landing Gear..... Retract after lift off.
Runway..... Paved, Dry, Level Surface

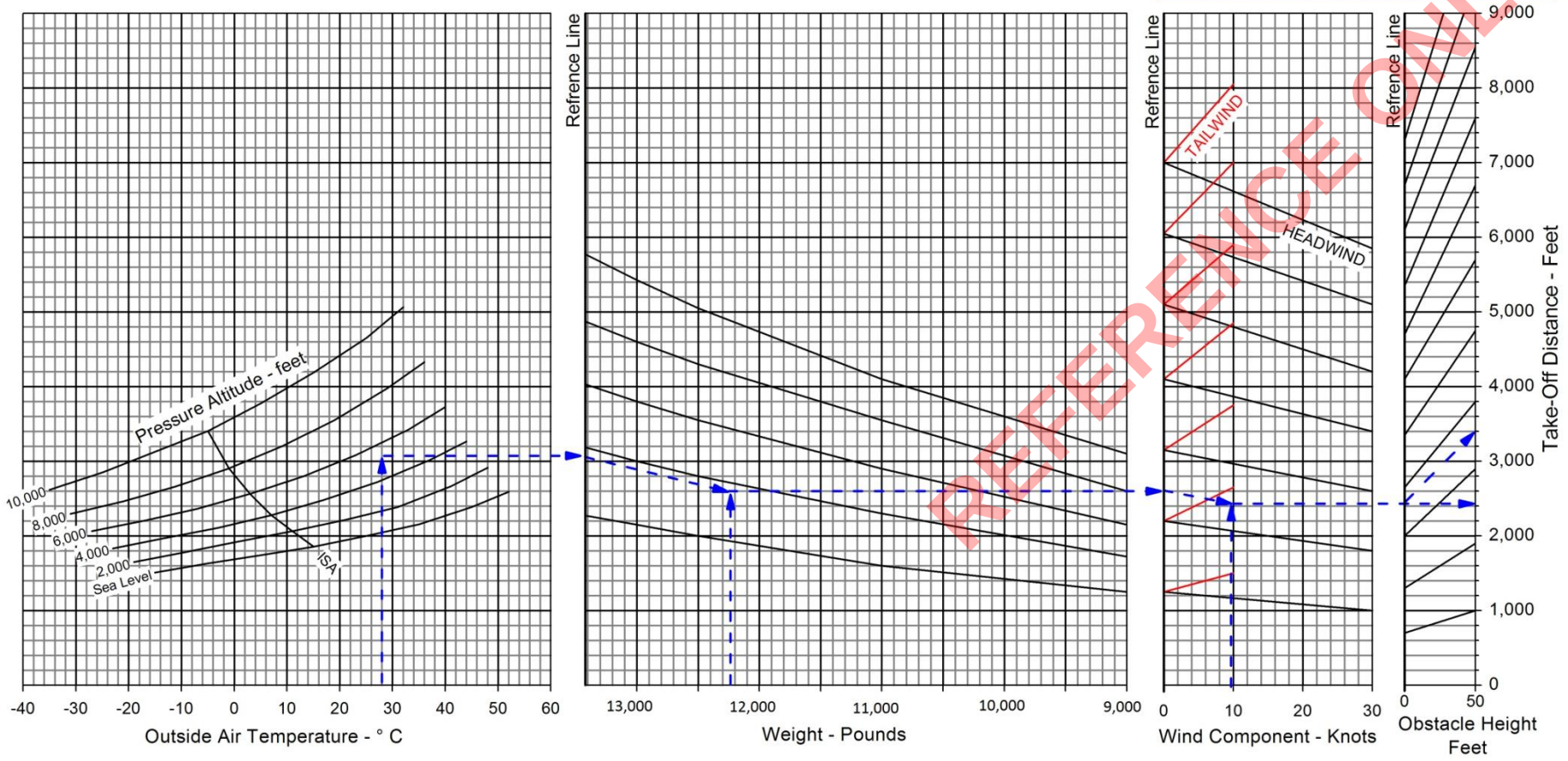
Notes:

1. Obstacle clearance guide lines are not applicable to intermediate obstacle heights.

Weight Pounds	Take-Off Speeds - Knots	
	V_R	V_2
13,420	97	107
13,000	97	106
12,500	97	105
12,000	97	104
11,000	97	103
10,000	97	101
9,000	97	99

Example

OAT..... 28 °C
Pressure Altitude..... 5,430 feet
Weight..... 12,220 pounds
Headwind Component..... 9.5 knots
Ground Roll .....2,430 feet
Distance over 50 ft obstacle....3,590 feet
Take-off Speeds
Rotation..... 97 knots
50 feet..... 104 knots



REFERENCE ONLY