

**SECTION 5
PERFORMANCE
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**SECTION 5
PERFORMANCE**

GENERAL

Hover controllability has been substantiated in 17 knot wind from any direction up to 11,000 feet density altitude. Refer to hover performance charts for allowable gross weight.

Indicated airspeed (KIAS) shown on charts assumes zero instrument error.

CAUTION

Performance data presented in this section was obtained under ideal conditions. Performance under other conditions may be substantially less.

USE OF CHARTS

POWER ASSURANCE CHART

The power assurance chart shows maximum allowable MGT at a specified torque. If the observed MGT is greater than indicated by the chart, the engine may not produce the power necessary to achieve the performance data given in this section without exceeding MGT limits.

A power assurance check may be done in a hover or in forward flight and should be performed at the maximum practical power for best accuracy. The chart assumes no generator load and stabilized conditions. Temperature stabilization may take up to two minutes. Generator load should be minimal or the generator may be switched OFF during the check. An example on the chart shows correct use.

The chart may also be read in reverse, giving the minimum allowable torque at a specified MGT. It may be useful to use the chart to predict the torque available at MGT limits for a given pressure altitude and OAT.

USE OF CHARTS (cont'd)

HOVER PERFORMANCE

In-ground-effect (IGE) and out-of-ground-effect (OGE) hover performance is given in the Hover Ceiling vs. Gross Weight charts on pages 5-7 and 5-8, respectively. Note that hover performance is limited by the MGT five-minute limit, not by torque. Hover performance is substantiated up to 11,000 feet density altitude; however, data is presented beyond 11,000 feet density altitude only to determine performance with engine anti-ice, cabin heat, and/or generator loads over 50 amps. With anti-ice and cabin heat OFF, maximum IGE hover gross weight is 2700 lb up to 11,000 feet density altitude at any OAT within limits.

To correct for anti-ice, cabin heat, and/or high generator load, increase the actual OAT as specified on the charts. The following example illustrates the calculation of an effective OAT when anti-ice and cabin heat are turned ON, and there is a 90-amp generator load (40 amps over the 50-amp load on which the charts are based):

| | |
|---------------------------|--------------------------------------|
| Pressure altitude: | 9000 ft |
| Actual OAT: | 0°C |
| Anti-ice ON correction: | 10°C |
| Cabin heat ON correction: | 20°C |
| 90-amp load correction: | $(90 - 50)/20 = 2^\circ\text{C}$ |
| Effective OAT: | $0 + 10 + 20 + 2 = 32^\circ\text{C}$ |

A pressure altitude of 9000 ft and OAT of 32°C are therefore used with the charts, giving a maximum gross weight of 2580 lb for IGE hover and 2320 lb for OGE hover.

CLIMB PERFORMANCE

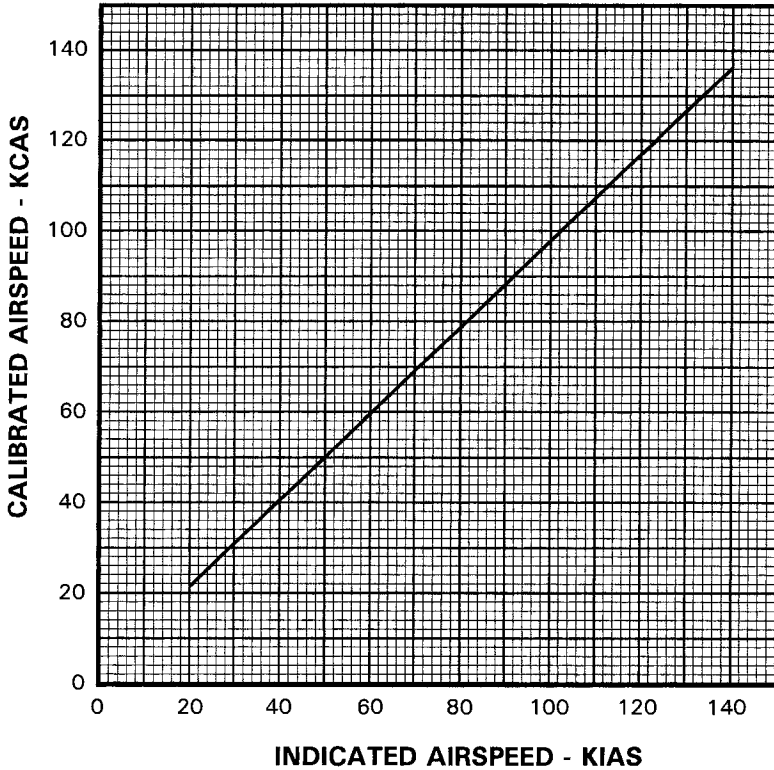
Climb performance charts are given for maximum gross weight (2700 lb) and for 2200 lb gross weight at 60 KIAS climb speed and maximum continuous torque or MGT (whichever is less). Each chart gives the potential reduction in climb rate due to anti-ice and cabin heat. The charts assume a 50-amp generator load; generator load has a small effect on climb rate. Note that predicted climb rate is approximate; variations in aircraft and operating conditions may significantly affect performance.

USE OF CHARTS (cont'd)

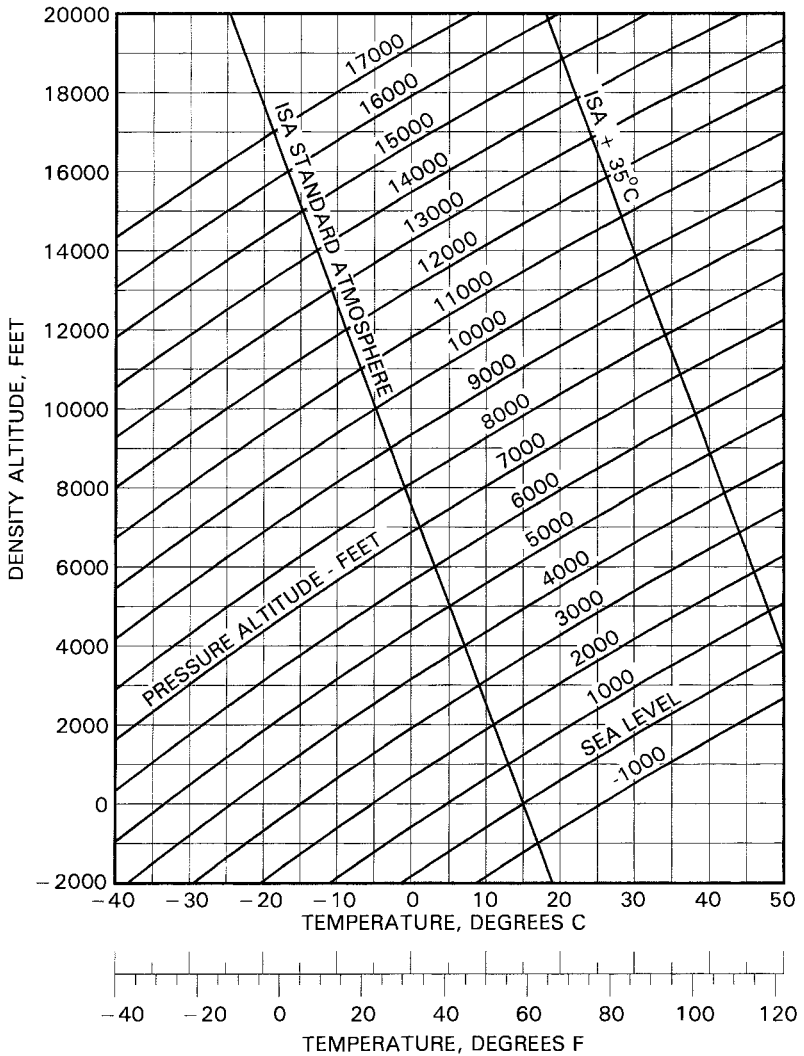
HEIGHT-VELOCITY DIAGRAM

The height-velocity diagram is given for maximum gross weight at sea level and at 7800 feet density altitude. An appropriate curve for altitudes between sea level and 7800 feet may be estimated by interpolation. For example, a curve with a hover point at 600 feet AGL may be used for 3900 feet density altitude.

NOTE: INDICATED AIRSPEED ASSUMES ZERO INSTRUMENT ERROR



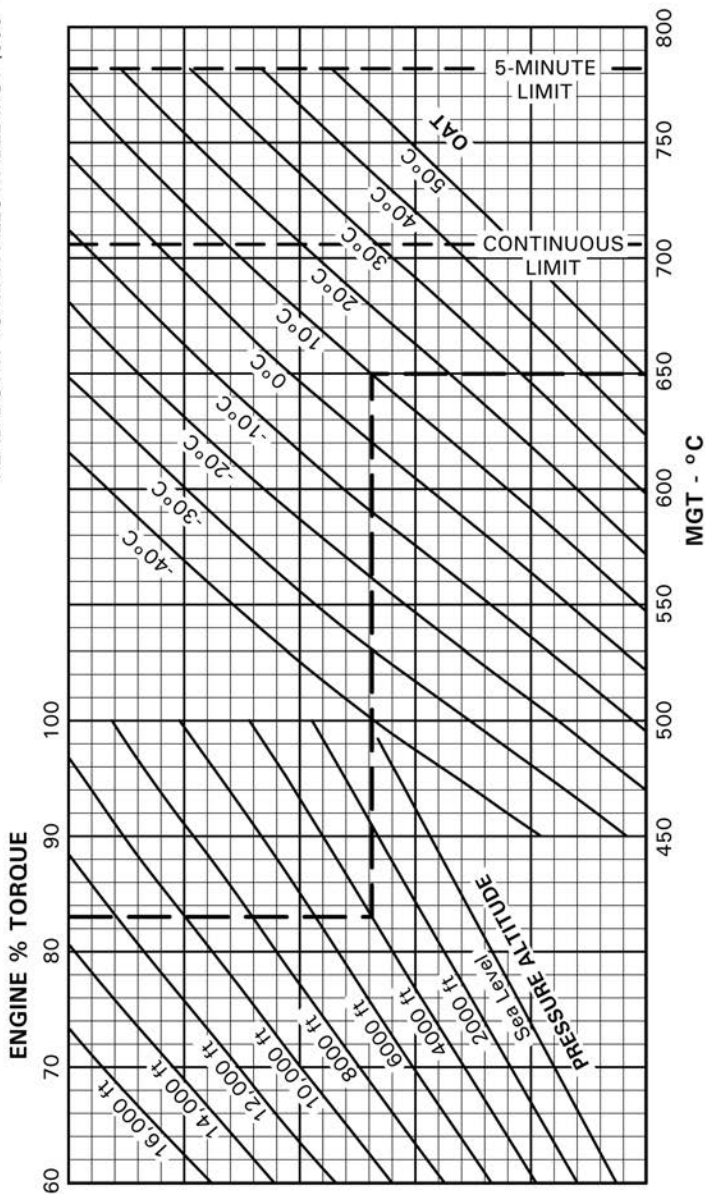
AIRSPEED CALIBRATION CURVE



DENSITY ALTITUDE CHART

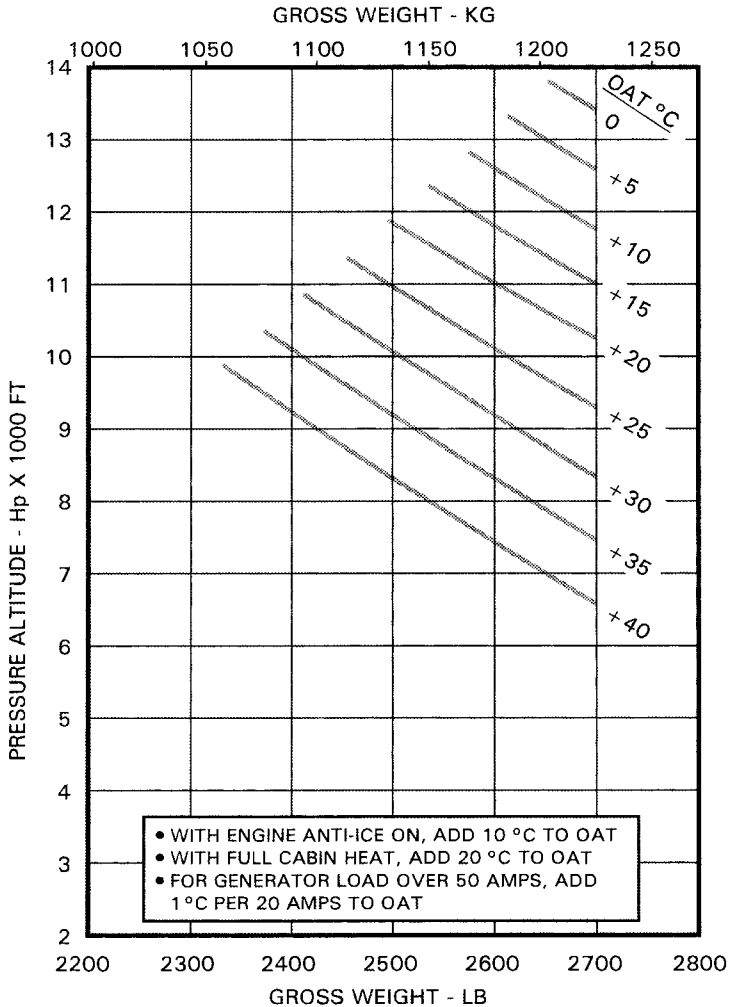
NOTES: USE CHART IN HOVER OR LEVEL FLIGHT
HEATER AND ANTI-ICE OFF
NO GENERATOR LOAD

EXAMPLE: ENTER CHART AT OBSERVED TORQUE (83%)
READ DOWN TO PRESSURE ALTITUDE (4000 ft)
READ ACROSS TO OBSERVED OAT (10°C)
READ DOWN TO MAX ALLOWABLE MGT (650°C)



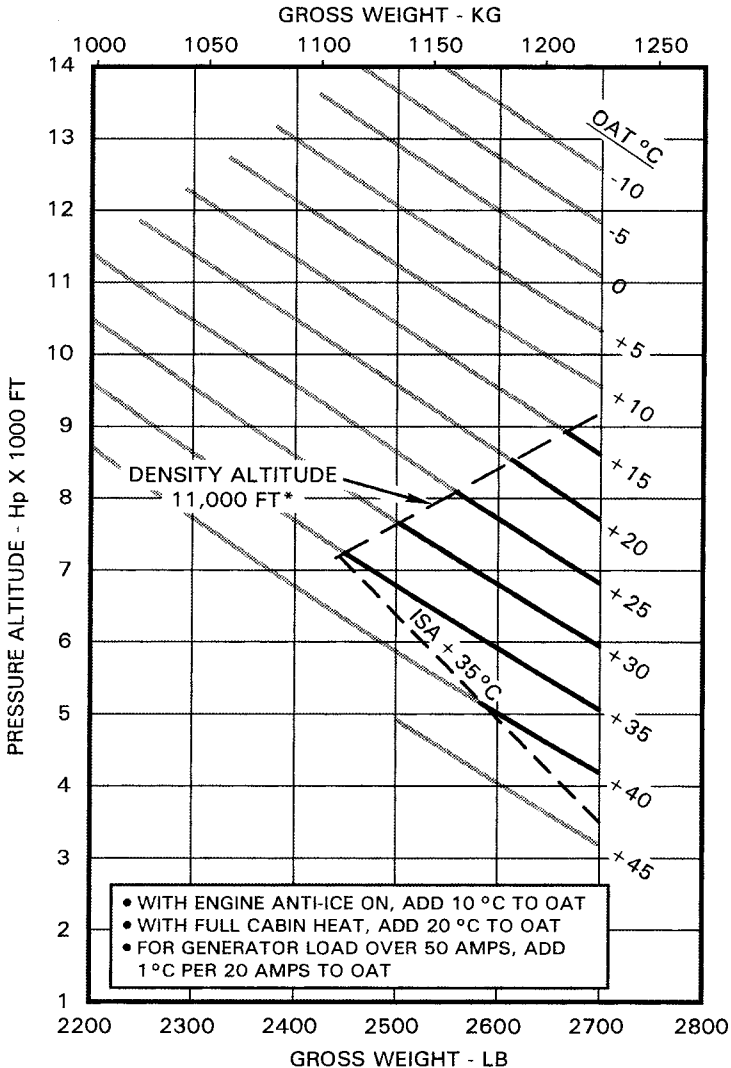
POWER ASSURANCE CHART

IN GROUND EFFECT AT 2 FOOT SKID HEIGHT AND ZERO WIND
MGT 5-MINUTE LIMIT
ENGINE ANTI-ICE AND CABIN HEAT OFF
50 AMP GENERATOR LOAD



NOTE: Hover performance substantiated up to 11,000 feet density altitude. Data is presented only to determine performance with engine anti-ice, cabin heat and/or generator loads over 50 amps.

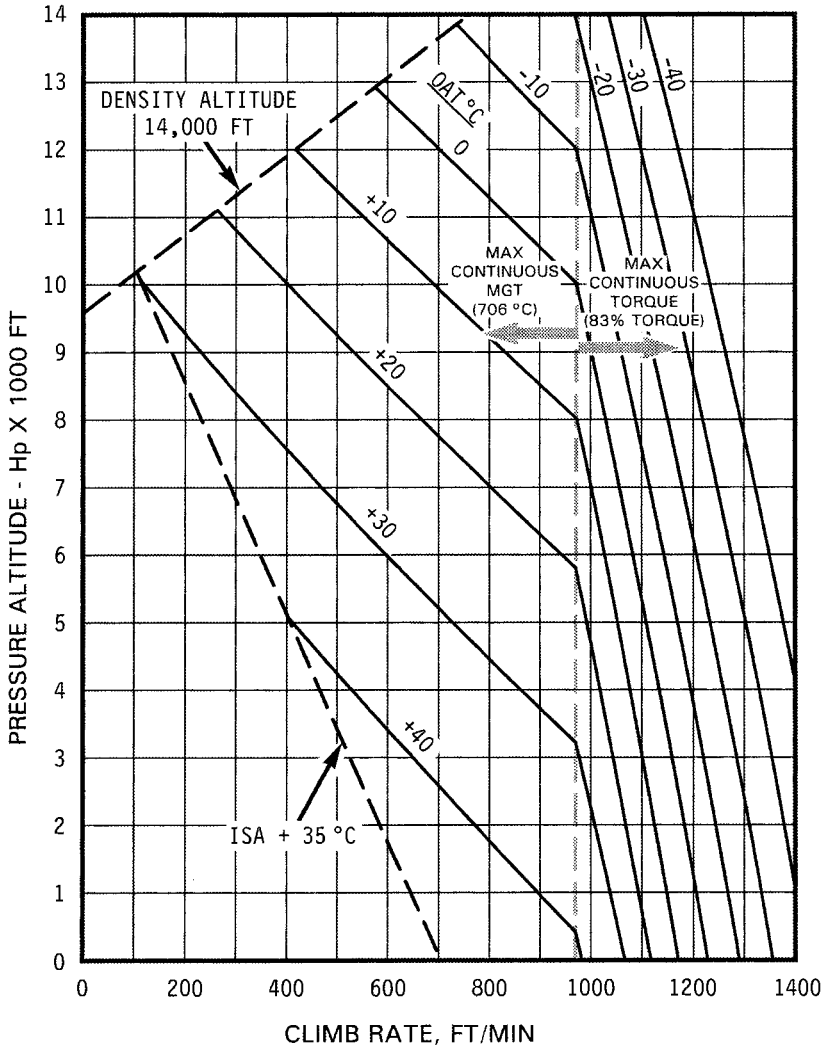
OUT OF GROUND EFFECT, ZERO WIND
MGT 5-MINUTE LIMIT
ENGINE ANTI-ICE AND CABIN HEAT OFF
50 AMP GENERATOR LOAD



OGE HOVER CEILING VS. GROSS WEIGHT

*Hover performance substantiated up to 11,000 feet density altitude. Data beyond ISA + 35°C and above 11,000 feet density altitude is presented only to determine performance with engine anti-ice, cabin heat, and/or generator loads over 50 amps.

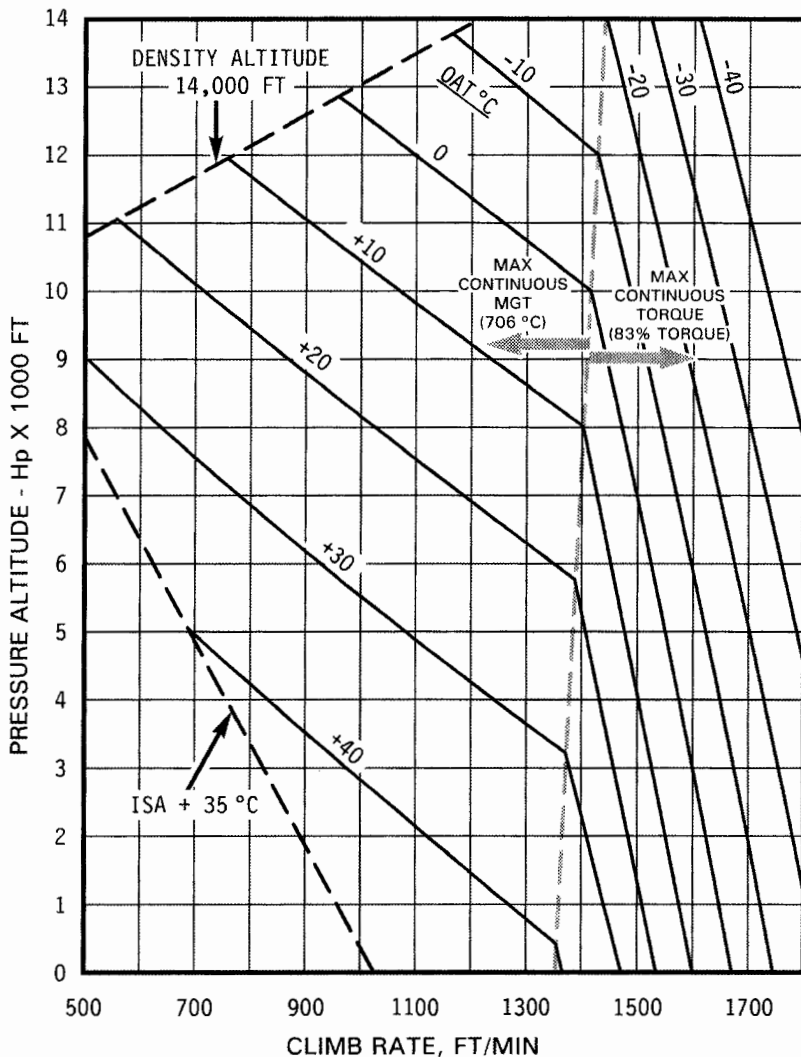
MAXIMUM CONTINUOUS TORQUE OR MAXIMUM CONTINUOUS MGT
60 KIAS CLIMB SPEED
ENGINE ANTI-ICE AND CABIN HEAT OFF



ENGINE ANTI-ICE MAY REDUCE CLIMB RATE UP TO 300 FT/MIN
FULL CABIN HEAT MAY REDUCE CLIMB RATE UP TO 600 FT/MIN

CLIMB PERFORMANCE, 2700 LB GROSS WEIGHT

MAXIMUM CONTINUOUS TORQUE OR MAXIMUM CONTINUOUS MGT
60 KIAS CLIMB SPEED
ENGINE ANTI-ICE AND CABIN HEAT OFF

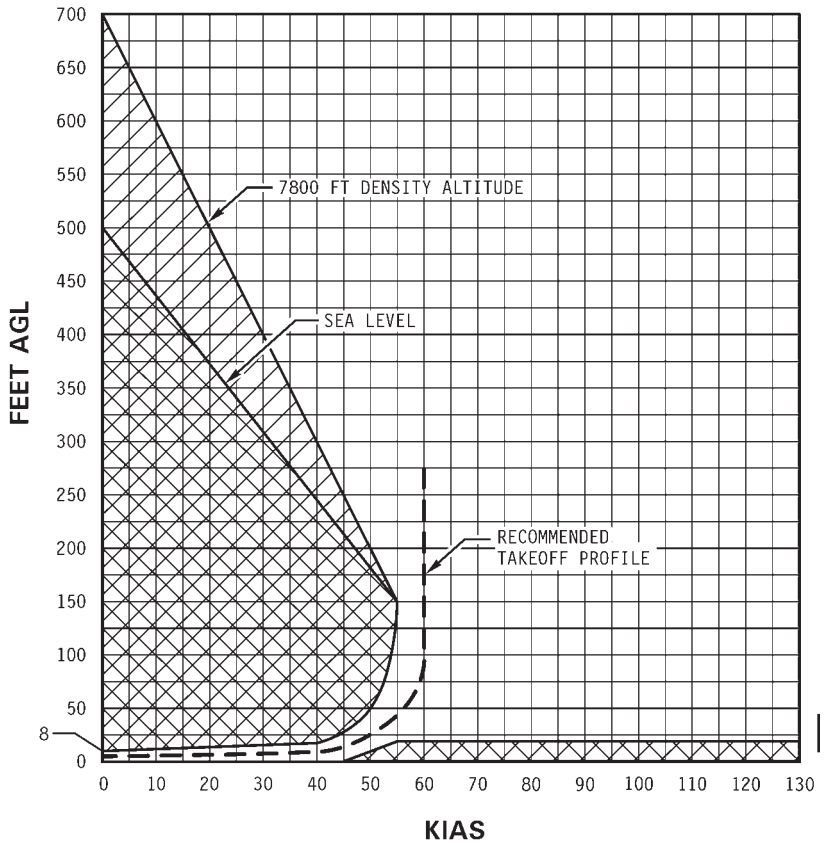


ENGINE ANTI-ICE MAY REDUCE CLIMB RATE UP TO 400 FT/MIN
FULL CABIN HEAT MAY REDUCE CLIMB RATE UP TO 700 FT/MIN

CLIMB PERFORMANCE, 2200 LB GROSS WEIGHT

DEMONSTRATED CONDITIONS:
SMOOTH HARD SURFACE
WIND CALM
2700 LB GROSS WEIGHT
HOVER POWER + 10% TORQUE FOR TAKEOFF

AVOID OPERATION IN CROSS-HATCHED AREAS



HEIGHT - VELOCITY DIAGRAM

NOISE CHARACTERISTICS

The following noise levels comply with 14 CFR Part 36, Appendix H and ICAO Annex 16, Volume 1, Chapter 8 noise requirements and were obtained from FAA-approved data from actual noise tests.

Model: R66
 Engine: Rolls-Royce Model 250-C300/A1
 Gross Weight: 2700 lb (1225 kg)

| Configuration | V _h KTAS | Noise Level (EPNdB) | | |
|---------------|------------------------|---------------------|---------|----------|
| | | Flyover | Takeoff | Approach |
| Clean | 117 | 84.5 | 87.8 | 87.8 |
| Dirty* | 108 | 84.8 | 87.8 | 88.6 |

*Landing gear strut fairings removed. Air conditioning and four doors with bubble windows installed.

NOTE

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