AIR COMM CORPORATION
3300 AIRPORT ROAD
BOULDER, COLORADO 80301

FAA APPROVED

BELL HELICOPTERS
MODEL 206B
C20B, C20J, and C-20R/2 ENGINES

FLIGHT MANUAL SUPPLEMENT
FOR
CABIN HEATING SYSTEM

206H-201

REG: _____
S/N: _____

The information contained in this document is FAA approved material, which must be carried in the basic Flight Manual, after the rotorcraft has been modified by installation of the cabin heater system in accordance with Air Comm Corporation STC No. SH3887NM.

The information in this document supplements or supercedes the basic manual only in the items contained herein. For Limitations, Procedures, and Performance Data not contained in this supplement, consult the basic Flight Manual.

MODEL 206B
FLIGHT MANUAL

CABIN HEATING SYSTEM

Log of Pages

Original 0

Pages	Rev. No.	Pages	Rev. No.
1-27	0		
1-28	2		
1-28	3		

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1	JAN 4 1993	4, 8 & 10	R.E.
2	AUG 10 1993	1, 5, 6, 7, 8 & 9	R.E.
3	SEP 2 3 1997	11	

Note: Revisions are indicated by a black vertical line.

INTRODUCTION

The cabin heating system is a bleed air type which consists of bleed air plumbing, a firewall shut-off valve, a heater control valve, and four heater ejectors, as shown in figure 1.

The bleed air flows from the engine compressor through the bleed lines to the ejectors, where it is mixed with cabin air and exhausted to both the front and rear passengers. The ejectors are located under the front seats. The warm air is ducted forward and aft through swivel outlets which are located in the seat box structure. The outlet flow can be individually adjusted by rotation of the swivel outlet (two fwd outlets).

The firewall-mounted shut-off valve is electrically activated. The ON-OFF switch is mounted in the overhead console. The valve will automatically close if there is a loss of electrical power to the valve.

Temperature sensors are installed as a part of the heater system. In the case of an over-temperature condition, the sensors will close, resulting in illumination of an amber "heater over-temp" light, and automatic closure of the firewall shut-off valve. The heater ON/OFF switch must be set to OFF in order to reset the firewall shut-off valve and the heater over-temp light. The heater control is located on the front of the seat box.

CABIN HEATING SYSTEM

INTRODUCTION (cont'd)

The system features a windshield defroster system. This system consists of an ON-OFF valve located in the center console and ejectors located in each defroster diffuser. The ejectors pump warm air across the windshield. The original defroster blowers are not required but may remain installed at the option of the operator. The defroster and heater may be used simultaneously. The system components and general arrangement is shown by Figure 1.

A drain valve is also incorporated as a part of the heater system. This valve is used to drain cleaning solution overboard when washing the internal parts of the engine.

The valve, which is located inside the LH engine access door, is automatic (closed by engine pressure).

An alternate heater ejector configuration, which is shown by figure 2, consists of two forward and one RH rear ejector. All ejectors are configured with the outlet flow control feature.

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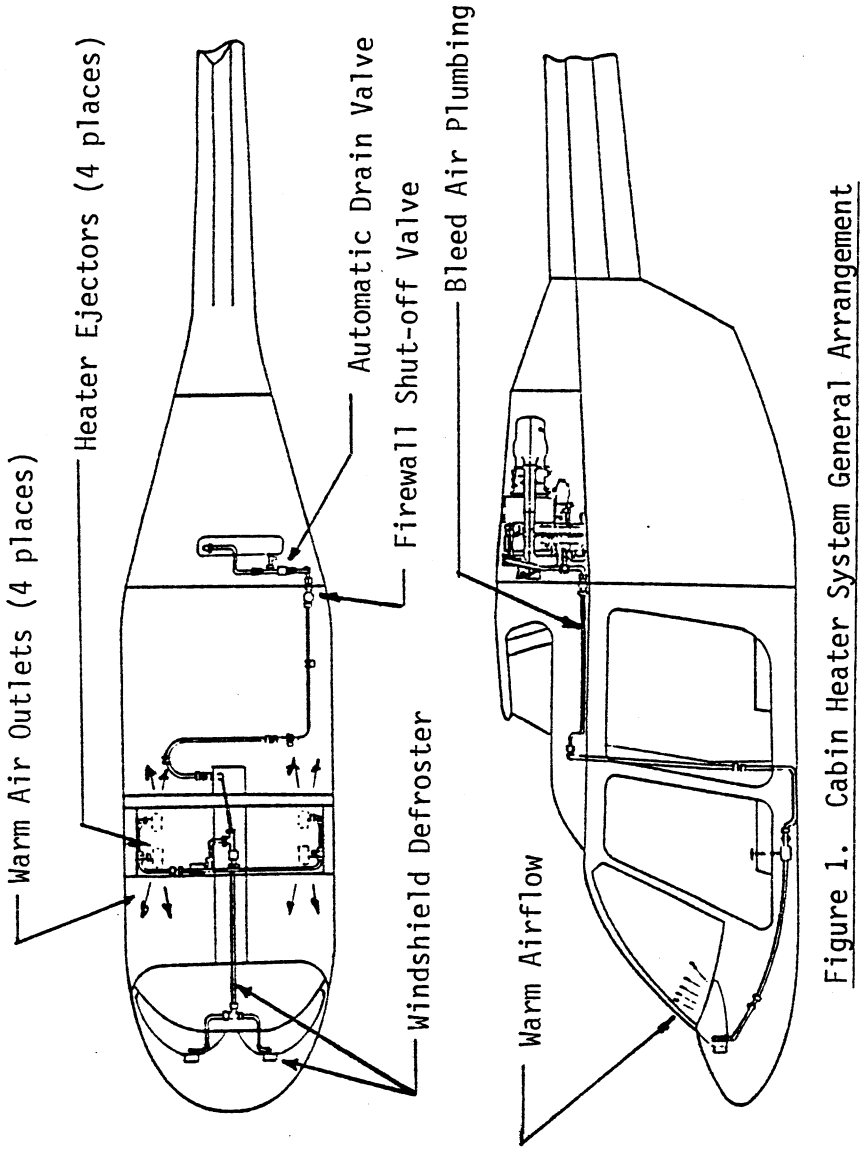


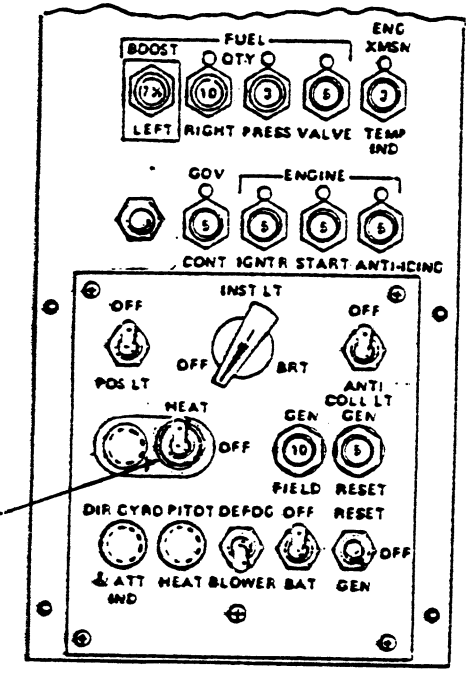
Figure 1. Cabin Heater System General Arrangement

Figure 2. Cabin Heater System General Arrangement
(NTH Configuration)

CABIN HEATING SYSTEM

SECTION 1 OPERATING LIMITATIONS

PLACARDS AND MARKINGS



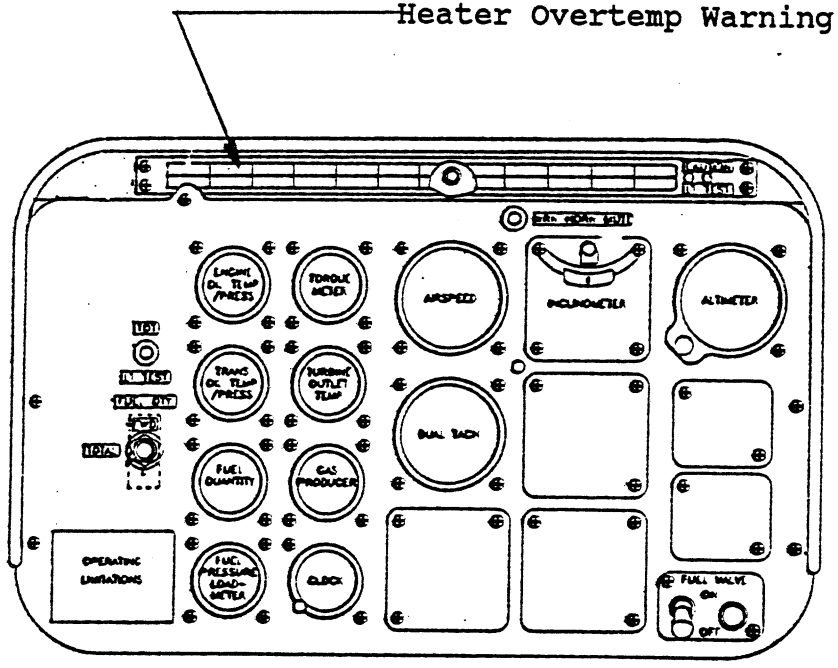
Heater ON-OFF Switch

Heater ON-OFF Switch location in overhead console.

CABIN HEATING SYSTEM

SECTION 1 (cont'd) OPERATING LIMITATIONS

PLACARDS AND MARKINGS (cont'd)

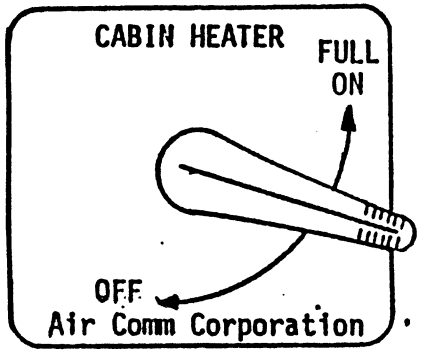


Heater "over-temp" light location on instrument panel.

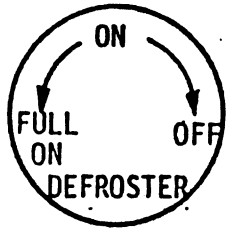
CABIN HEATING SYSTEM

SECTION 1 (cont'd) OPERATING LIMITATIONS

PLACARDS AND MARKINGS (cont'd)



Located on front side of RH seat support box.



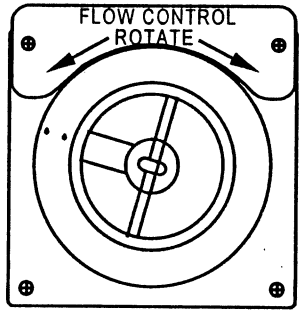
Located on the Defroster Control Knob, which is located in the center console.

CABIN HEATING SYSTEM

SECTION 1 (cont'd) OPERATING LIMITATIONS

PLACARDS AND MARKINGS (cont'd)

Located on the Defroster Control Knob.



Located adjacent to two forward air outlets. (Optional flow control feature)

CABIN HEATING SYSTEM

SECTION 2 NORMAL PROCEDURES

ENGINE PRESTART CHECK
Heater ON-OFF switch - OFF
Heater Control - OFF

BEFORE TAKEOFF
Heater and Defroster Control - as desired.

Note
For maximum heater performance all air outlets must be rotated to the full on position.

IN FLIGHT OPERATIONS
Note: TOT increases with bleed air heater operations. Observe turbine outlet temperature limitation. Heater Control - as desired.

DESCENT AND LANDING
Heater and Defroster Control - as desired.

SECTION 3 EMERGENCY PROCEDURES

Operate cabin heater ON-OFF Switch to OFF for any of the following emergencies:
Heater "over-temp" light illuminated
Engine Failure
Engine Over-temperature
Fuel Control and/or Governor Failure
Insufficient Power

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CABIN HEATING SYSTEM

SECTION 3 (cont'd) EMERGENCY PROCEDURES

Note
Illumination of the heater "over-temp" warning light may be an indication of an overheat condition. The heater ON-OFF switch should be placed in the OFF position. Do not attempt to use the heater until the cause of the "over-temp" indication has been determined.

SECTION 4 MALFUNCTION PROCEDURES

No change.

SECTION 5 PERFORMANCE DATA

Applicable to aircraft with C-20J or C-20R/2 engines:

Reduce the performance data in basic flight manual or optional equipment supplement in accordance with the following data and/or charts when the bleed air heater or defroster is operating. Performance decrements are shown for the standard engine air inlet and for the particle separator induction system.

CABIN HEATING SYSTEM

SECTION 5 (cont'd) PERFORMANCE DATA

Complete hover performance is presented herein for the snow deflector, which includes losses due to the particle separator. EXAMPLE: What gross weight loss in hover performance could be expected under the following conditions:

Standard engine inlet — Standard skid gear
IGE Hover — Takeoff power
Outside air temp = -15° — Anti-ice off
Pressure altitude = 14,000 feet

Using the appropriate IGE chart, enter OAT (-15°C), move vertically to intersect pressure altitude curve (or outermost curve, whichever comes first), then proceed horizontally to obtain the gross weight loss to the weight obtained from appropriate hover performance chart in basic flight manual supplement.

There is no loss in hover performance when the outside air temperature is to the left of the pressure altitude curve. It can be seen on the chart covering the above conditions that at -15°C there is no loss in IGE hover performance from sea level to 12,000 feet.

Applicable to aircraft with C-20B, C-20J and C-20R/2 engines:

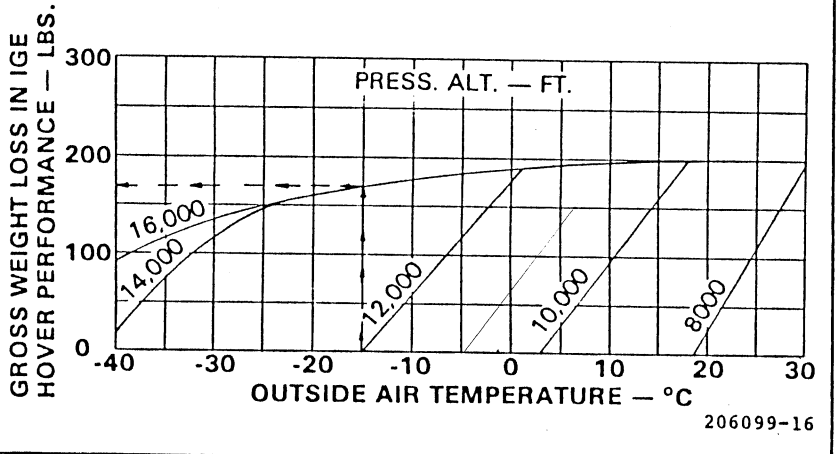
HOVER CEILING DECREASE DUE TO BLEED AIR HEATER OPERATION

STANDARD INLET WITH STANDARD SKID GEAR

IN GROUND EFFECT TAKEOFF POWER

-40° TO 30°C

GENERATOR 22.3 AMPS ANTI-ICE OFF
SKID HEIGHT 2.0 FT. (0.6 METER) ENGINE RPM 100%
WITH ANTI-ICE ON APPLY ADDITIONAL DECREMENT FROM BASIC MANUAL OR APPROPRIATE SUPPLEMENT



Applicable to aircraft with C-20B, C-207J and C-20R/2 engines:

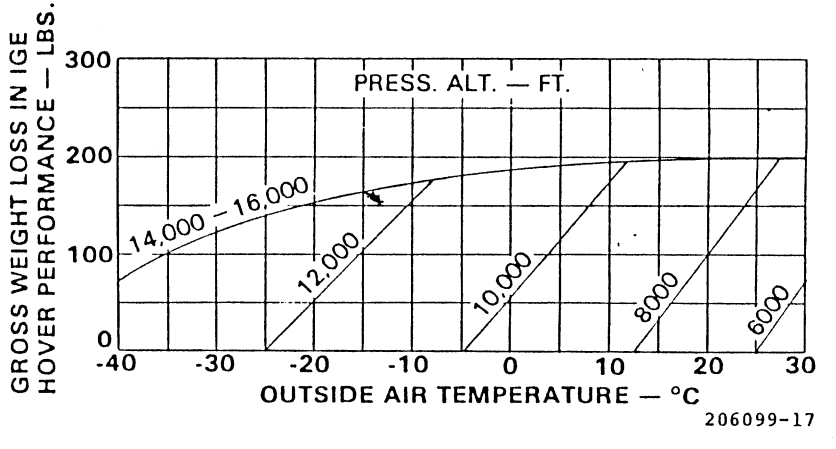
HOVER CEILING DECREASE DUE TO BLEED AIR HEATER OPERATION

STANDARD INLET WITH HIGH SKID OR ANY FLOAT GEAR

IN GROUND EFFECT TAKEOFF POWER

-40° TO 30°C

GENERATOR 22.3 AMPS ANTI-ICE OFF
SKID HEIGHT 3.0 FT. (0.9 METER) ENGINE RPM 100%
WITH ANTI-ICE ON APPLY ADDITIONAL DECREMENT FROM APPROPRIATE SUPPLEMENT



Applicable to aircraft with C-20B, C-20J and C-20R/2 engines:

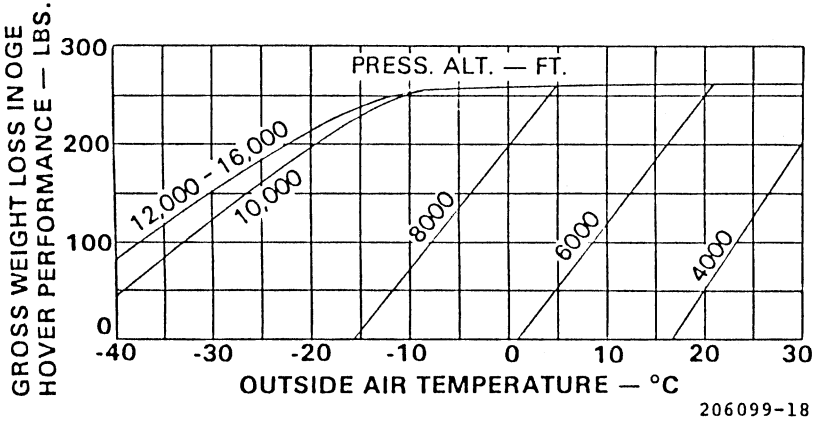
HOVER CEILING DECREASE DUE TO BLEED AIR HEATER OPERATION

STANDARD INLET WITH ANY SKID OR FLOAT GEAR

OUT OF GROUND EFFECT TAKEOFF POWER

-40° TO 30°C

GENERATOR 22.3 AMPS ANTI-ICE OFF
SKID HEIGHT 40 FT. (12.2 METERS) ENGINE RPM 100%
WITH ANTI-ICE ON APPLY ADDITIONAL DECREMENT FROM BASIC MANUAL OR APPROPRIATE SUPPLEMENT



Applicable to aircraft with C-20B, C-20J and C-20R/2 engines:

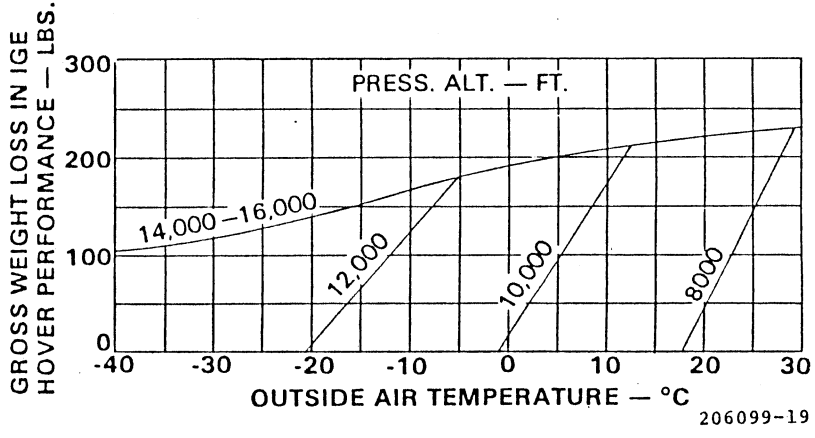
HOVER CEILING DECREASE DUE TO BLEED AIR HEATER OPERATION

PARTICLE SEPARATOR WITH STANDARD SKID GEAR

IN GROUND EFFECT TAKEOFF POWER

-40° TO 30°C

GENERATOR 22.3 AMPS ANTI-ICE OFF
SKID HEIGHT 2.0 FT. (0.6 METER) ENGINE RPM 100%
WITH ANTI-ICE ON APPLY ADDITIONAL DECREMENT FROM PARTICLE SEPARATOR SUPPLEMENT



Applicable to aircraft with C-20B, C-20J and C-20R/2 engines:

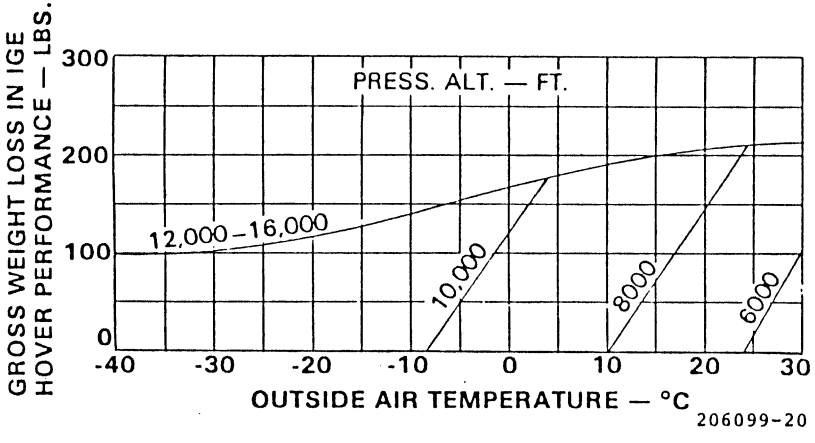
HOVER CEILING DECREASE DUE TO BLEED AIR HEATER OPERATION

PARTICLE SEP. WITH HIGH SKID OR ANY FLOAT GEAR

IN GROUND EFFECT TAKEOFF POWER

-40° TO 30°C

GENERATOR 22.3 AMPS ANTI-ICE OFF
SKID HEIGHT 3.0 FT.(0.9 METER) ENGINE RPM 100%
WITH ANTI-ICE ON APPLY ADDITIONAL DECREMENT FROM PARTICLE SEPARATOR SUPPLEMENT



Applicable to aircraft with C-20B, C-20J and C-20R/2 engines:

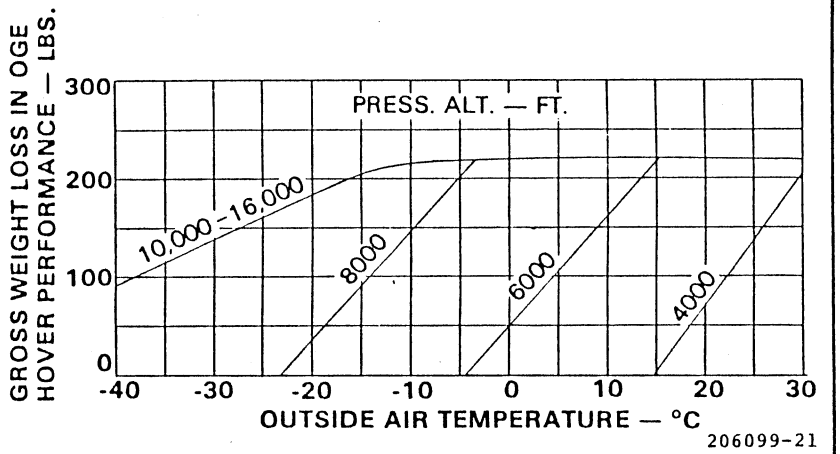
HOVER CEILING DECREASE DUE TO BLEED AIR HEATER OPERATION

PARTICLE SEPARATOR WITH ANY SKID OR FLOAT GEAR

OUT OF GROUND EFFECT TAKEOFF POWER

-40° TO 30°C

GENERATOR 22.3 AMPS ANTI-ICE OFF
SKID HEIGHT 40 FT. (12.2 METERS) ENGINE RPM 100%
WITH ANTI-ICE ON APPLY ADDITIONAL DECREMENT FROM PARTICLE SEPARATOR SUPPLEMENT



Applicable to aircraft with C-20B, C-20J and C-20R/2 engines:

HOVER CEILING

SNOW DEFLECTOR WITH STANDARD SKID GEAR

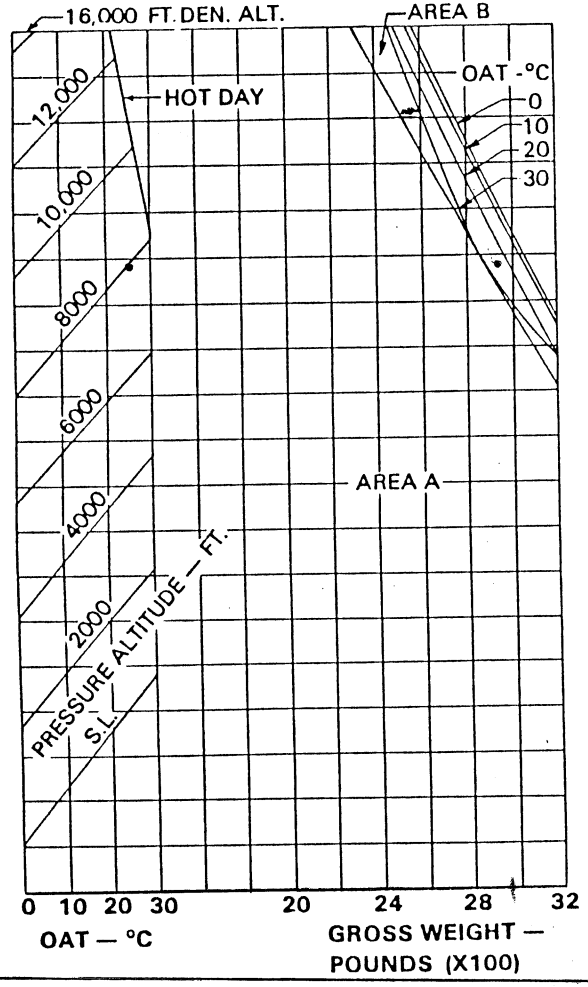
IN GROUND EFFECT TAKEOFF POWER

0° TO 30°C

GENERATOR 22.3 AMPS ANTI-ICE OFF

SKID HEIGHT 2.0 FT. (0.6 METER) ENGINE RPM 100%

WITH ANTI-ICE ON GROSS WEIGHT IS 245 LBS (111.1 Kg) LESS



Applicable to aircraft with C-20B, C-20J & C-20R/2 engines:

HOVER CEILING

SNOW DEFLECTOR WITH STANDARD SKID GEAR

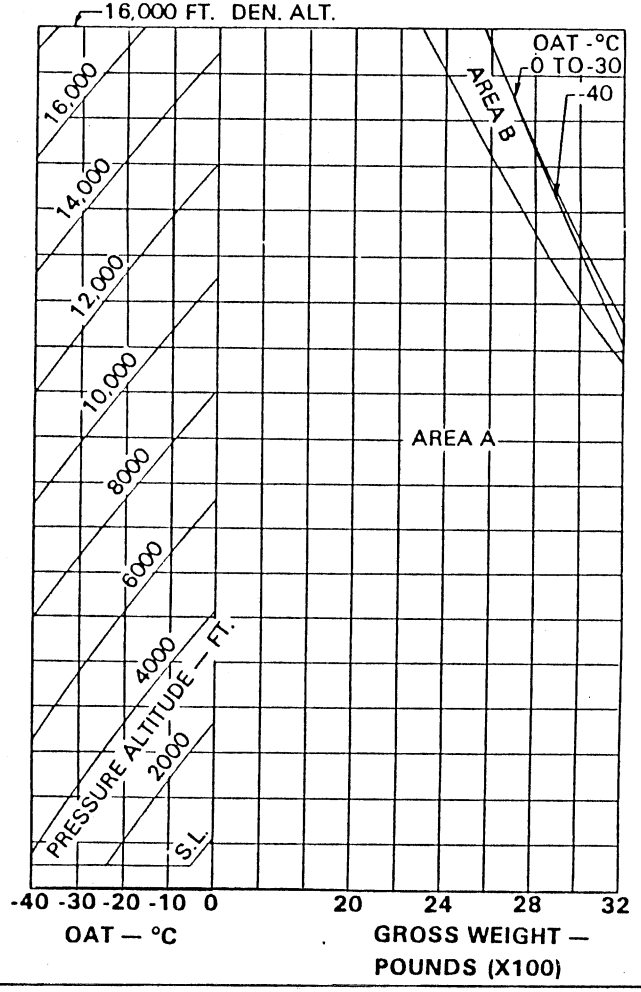
IN GROUND EFFECT TAKEOFF POWER

0° TO -40°C

GENERATOR 22.3 AMPS ANTI-ICE OFF

SKID HEIGHT 2.0 FT. (0.6 METER) ENGINE RPM 100%

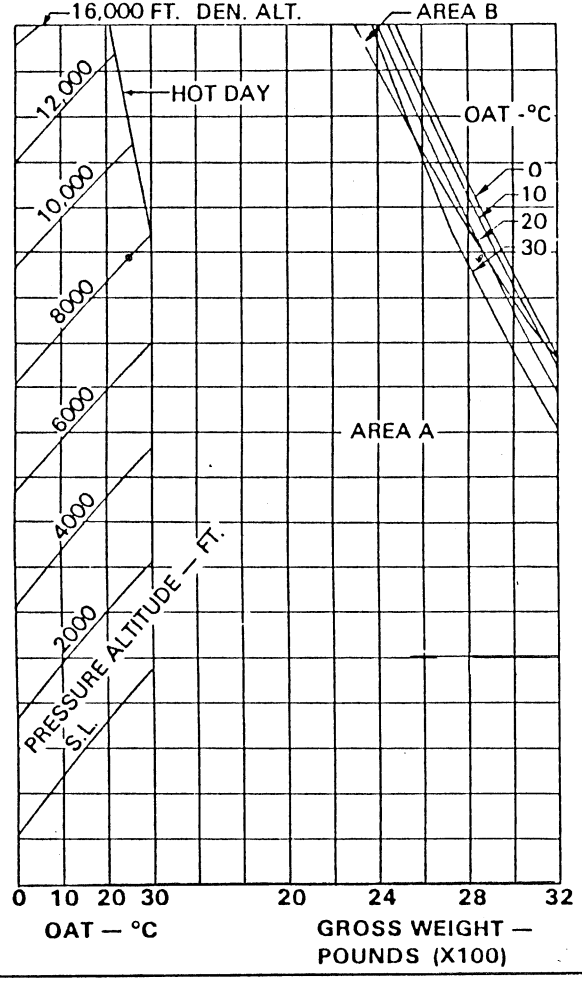
WITH ANTI-ICE ON GROSS WEIGHT IS 245 LBS (111.1 Kg) LESS



Applicable to aircraft with C-20B, C-20J and C-20R/2 engines:

HOVER CEILING

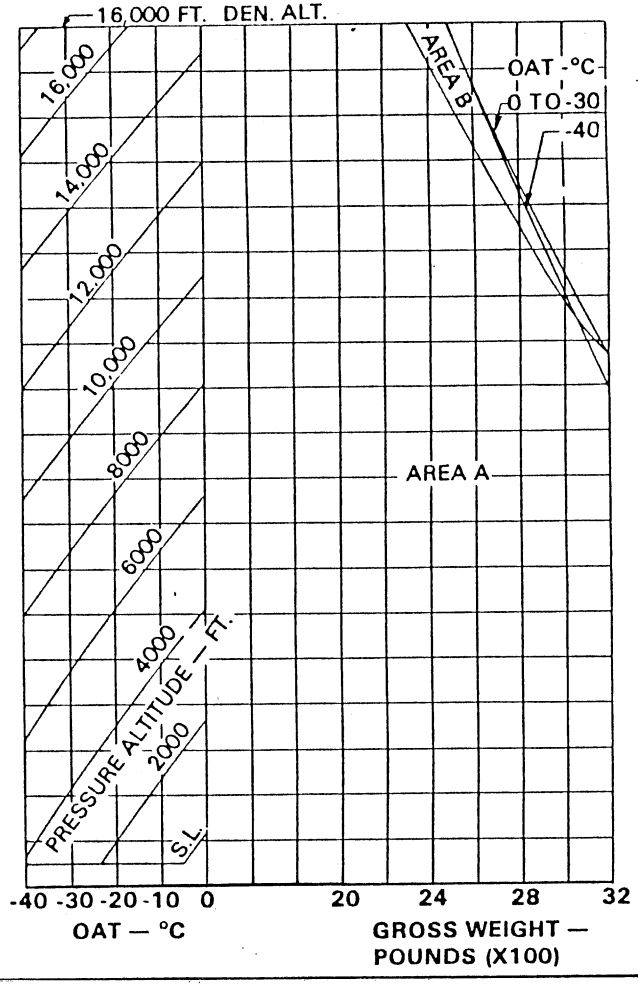
SNOW DEFLECTOR WITH HIGH SKID OR ANY FLOAT GEAR
IN GROUND EFFECT TAKEOFF POWER
0° TO 30°C
GENERATOR 22.3 AMPS ANTI-ICE OFF
SKID HEIGHT 3.0 FT.(0.9 METER) ENGINE RPM 100%
WITH ANTI-ICE ON GROSS WEIGHT IS 225 LBS (102.1 Kg) LESS



Applicable to aircraft with C-20B, C-20J and C-20R/2 engines:

HOVER CEILING

SNOW DEFLECTOR WITH HIGH SKID OR ANY FLOAT GEAR
IN GROUND EFFECT TAKEOFF POWER
0° TO -40°C
GENERATOR 22.3 AMPS ANTI-ICE OFF
SKID HEIGHT 3.0 FT.(0.9 METER) ENGINE RPM 100%
WITH ANTI-ICE ON GROSS WEIGHT IS 225 LBS (102.1 Kg) LESS



Applicable to aircraft with C-20B, C-20J & C-20R/2 engines:

HOVER CEILING

SNOW DEFLECTOR WITH ANY SKID OR FLOAT GEAR

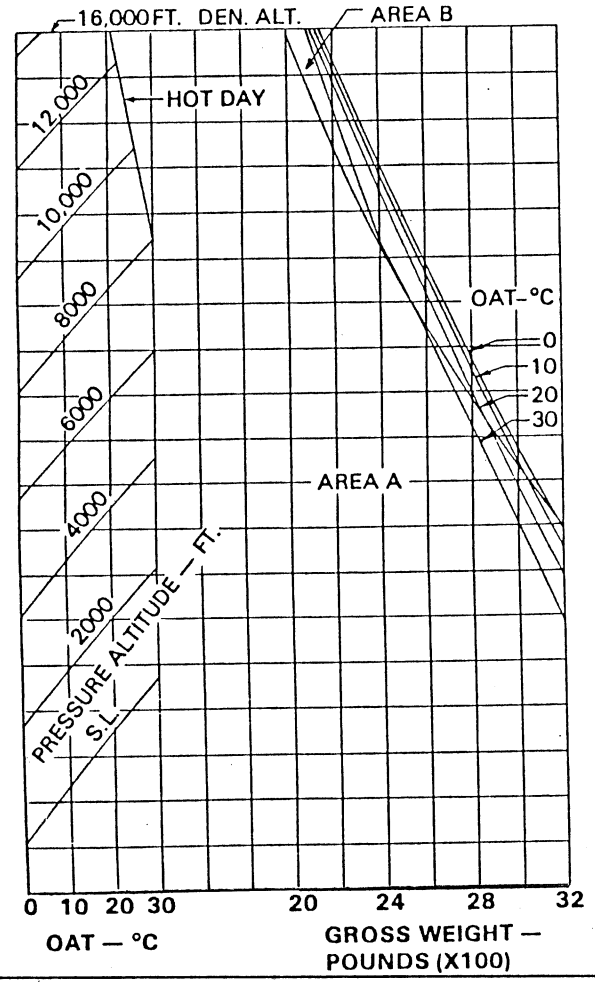
OUT OF GROUND EFFECT TAKEOFF POWER

0° TO 30°C

GENERATOR 22.3 AMPS ANTI-ICE OFF

SKID HEIGHT 40 FT. (12.2 METERS) ENGINE RPM 100%

WITH ANTI-ICE ON GROSS WEIGHT IS 260 LBS (117.9 Kg) LESS



Applicable to aircraft with C-20B, C-20J & C-20R/2 engines:

HOVER CEILING

SNOW DEFLECTOR WITH ANY SKID OR FLOAT GEAR

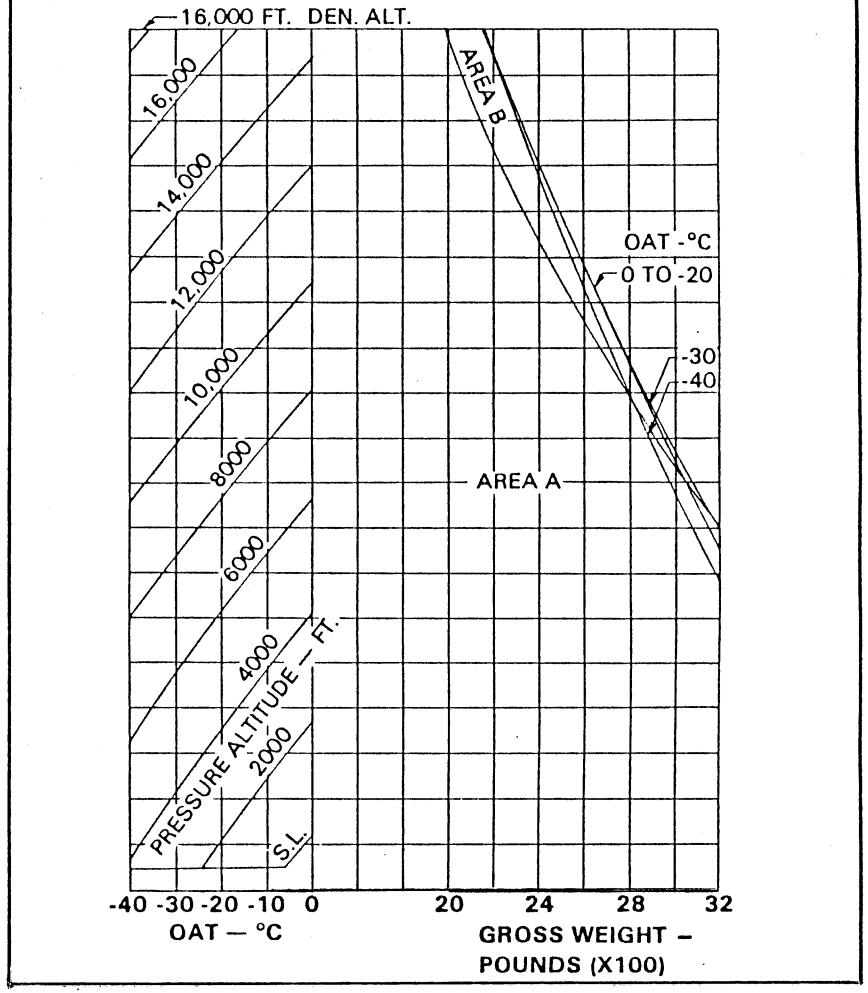
OUT OF GROUND EFFECT TAKEOFF POWER

0° TO -40°C

GENERATOR 22.3 AMPS ANTI-ICE OFF

SKID HEIGHT 40 FT. (12.2 METERS) ENGINE RPM 100%

WITH ANTI-ICE ON GROSS WEIGHT IS 260 LBS (117.9 Kg) LESS



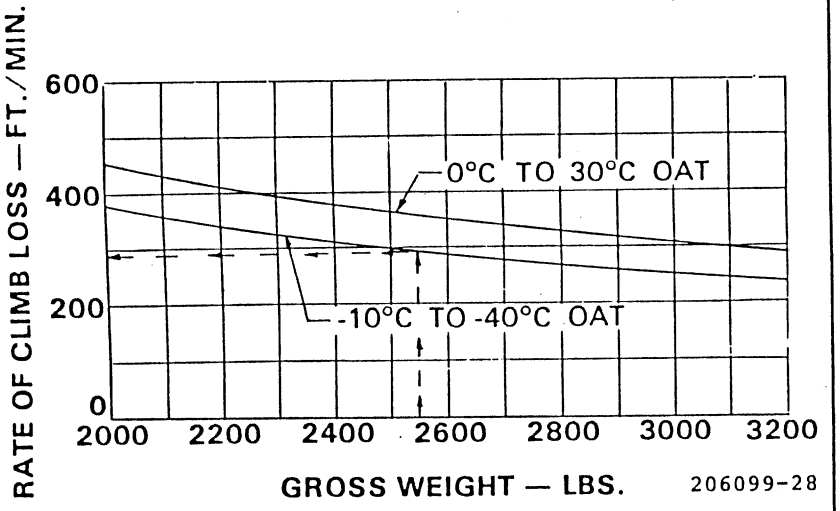
Applicable to aircraft with C-20B, C-20J and C-20R/2 engines:

RATE OF CLIMB DECREASE DUE TO BLEED AIR HEATER OPERATION

ANY INLET WITH ANY SKID OR FLOAT GEAR

TAKEOFF POWER

GENERATOR 22.3 AMPS — ANTI-ICE OFF
V IND 60 MPH (52 KNOTS) — ENGINE RPM 100%
WITH ANTI-ICE ON APPLY ADDITIONAL DECREMENT FROM BASIC MANUAL OR APPROPRIATE SUPPLEMENT.



Applicable to aircraft with C-20B, C-20J and C-20R/2 engines:

RATE OF CLIMB DECREASE DUE TO BLEED AIR HEATER OPERATION

ANY INLET WITH ANY SKID OR FLOAT GEAR

MAXIMUM CONTINUOUS POWER

GENERATOR 22.3 AMPS — ANTI-ICE OFF
V IND 60 MPH (52 KNOTS) — ENGINE RPM 100%
WITH ANTI-ICE ON APPLY ADDITIONAL DECREMENT FROM BASIC MANUAL OR APPROPRIATE SUPPLEMENT.