AIR COMM CORPORATION
3300 AIRPORT ROAD
BOULDER, COLORADO 80301

BELL HELICOPTERS
MODEL 206A, 206B
250-C20, C20B, C20J, and C-20R/2 ENGINES

FLIGHT MANUAL SUPPLEMENT FOR CABIN HEATING SYSTEM

206H-200

FAA APPROVED

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 windshield defroster 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.

Cabin Heater

FAA APPROVAL 12/24/87
REVISED 7/10/89
REVISED 12/18/89

Log of Pages

Original 0

Pages	Rev. No.	Pages	Rev. No.
1-24	0		

FAA APPROVAL DATE: 12/24/87
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CABIN HEATING SYSTEM

Log of Revisions			
No.	Rev Date	Pgs Revised	FAA Appl
0		Original Issue	
1	12/5/88	3, 4, 5 & 6	[signature]
2	7/10/89	1, 7, 10, and 11 thru 24	[signature]
3	12/18/89	1 & 5	[signature]
4	9/5/91	4, 5, 6 & 7	[signature]
5		4	[signature] JAN 4 1993

Note: Revisions are indicated by a black vertical line.

CABIN HEATING SYSTEM

INTRODUCTION

The cabin heating system is a bleed air type which consists of bleed air plumbing, a bleed air valve, and four heater ejectors.

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 (optional - two fwd outlets).

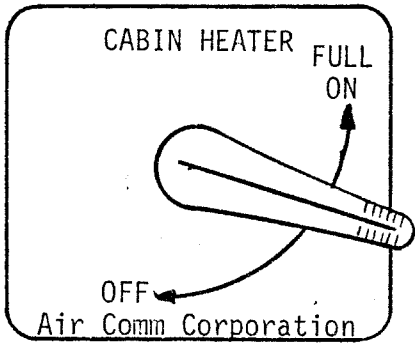
The heater control valve is mounted under the pilot's seat, and the heater control is located on the front of the seat box. The system features an optional defroster system. The system consists of an ON-OFF valve, located in the center console, and ejectors, located in each defroster eyebrow. The ejectors 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. 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.

CABIN HEATING SYSTEM

The valve, which is located inside the LH engine access door, is automatic (closed by engine pressure). Both the "heater" and "defroster" valves are infinitely adjustable from OFF to FULL ON, and may be set at the discretion of the operator.

SECTION 1 OPERATING LIMITATIONS

PLACARDS AND MARKINGS

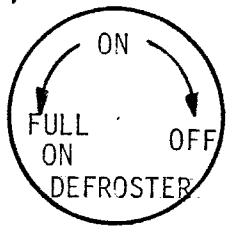


Applicable to 206A and 206B. Located on front side of RH seat support box.

CABIN HEATING SYSTEM

SECTION 1 (cont'd) OPERATING LIMITATIONS

PLACARDS AND MARKINGS



(optional)

Applicable to 206A and 206B. Located on the Defroster Control Knob.

HEATER AND DEFROSTER OFF FOR TAKEOFF LANDING HOVER

Applicable aircraft with C-20 engine. Locate on instrument panel.

TYPE OF OPERATION

Aircraft with C-20 engine:
Flight with heater operating is prohibited during take-off, hover and landing. External cargo loading LIMITED to 3200 pounds gross weight with heater in operation.

CABIN HEATING SYSTEM

SECTION 2 NORMAL PROCEDURES

ENGINE PRESTART CHECK
Heater Control - OFF.

BEFORE TAKEOFF
Aircraft with C-20 engine; Heater and Defroster control - OFF. Aircraft with C-20B, C-20J or C-20R/2 engines; Heater and Defroster Control - as desired.

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

DESCENT AND LANDING
Aircraft with C-20 engine; Heater and Defroster Control - OFF.
Aircraft with C-20B, C-20J or C-20R/2 engine; Heater & Defroster Control - as desired.

WARNING

Flight with heater and defroster operating is prohibited during take-off, hover and landing for aircraft equipped with C-20 engine.

SECTION 3 EMERGENCY PROCEDURES

Operate cabin heater and defroster control to - OFF, for any of the following emergencies:
Engine Failure
Engine Overtemperature
Fuel Control and/or Governor Failure
Insufficient Power

SECTION 4 MALFUNCTION PROCEDURES

No change.

CABIN HEATING SYSTEM

SECTION 5 PERFORMANCE DATA

Applicable to aircraft with C-20 engine:

Rate of Climb

Enter chart at gross weight and proceed vertically to intersect curve, then move left to obtain R/C decrement.

Subtract △R/C decrement from Flight Manual or Supplement R/C chart to obtain R/C with heater operating.

Hover Ceiling

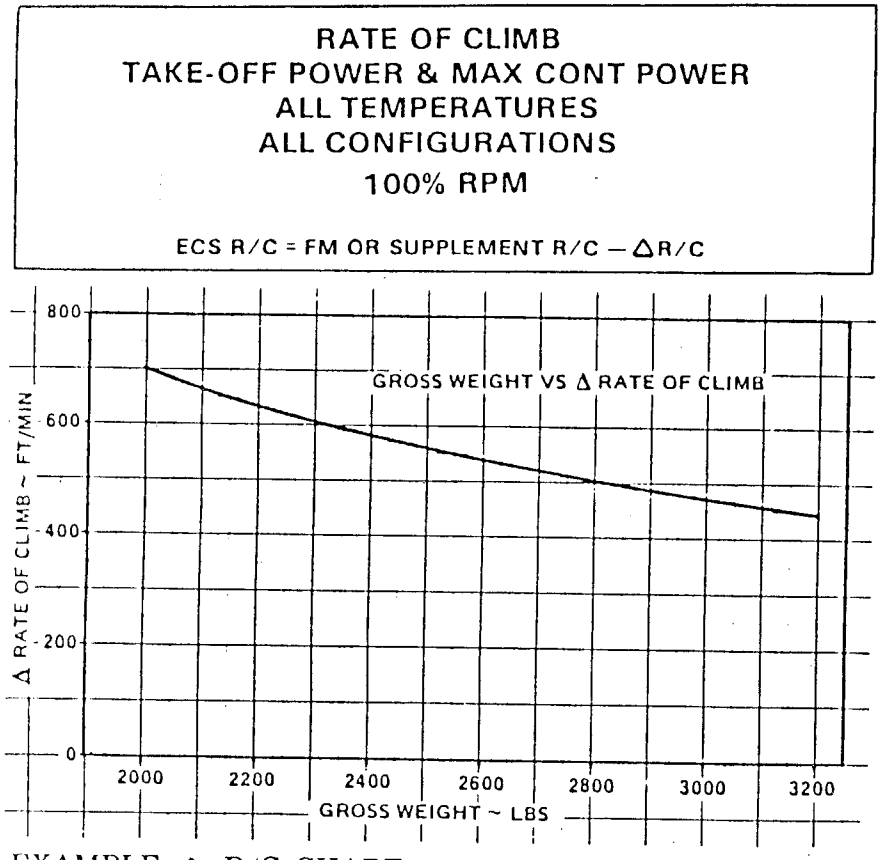
Flight operations with the bleed air heater or defroster being operated results in a hover ceiling decrement of 4500 feet.

EXAMPLE:

If pressure altitude is 2000 feet plus the decrement of 4500 feet equals 6500 feet to be used as the chart entry pressure altitude. The chart is then used the same as previously, to determine Gross Weight and Hovering Ceiling for the current condition.

SECTION 5 PERFORMANCE DATA

Applicable to aircraft with C-20 engine:



EXAMPLE: Δ R/C CHART

Determine rate of climb for desired altitude, temperature and gross weight from Flight Manual or appropriate Supplement Chart.
Enter Chart at gross weight and proceed vertically to intersect curve, then move left to obtain ΔR/C decrement.
Subtract ΔR/C decrement from Flight Manual or supplement R/C Chart to obtain R/C with ECS operating.

CABIN HEATING SYSTEM

SECTION 5 PERFORMANCE DATA

Applicable to aircraft with C-20B, 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.

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.

CABIN HEATING SYSTEM

SECTION 5 PERFORMANCE DATA

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

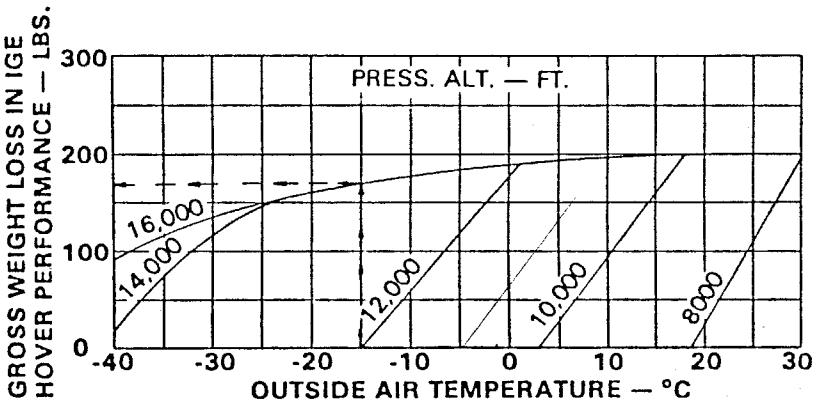
HOVER CEILING DECREASE DUE TO BLEED AIR HEATER OPERATION

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



CABIN HEATING SYSTEM

SECTION 5 PERFORMANCE DATA

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

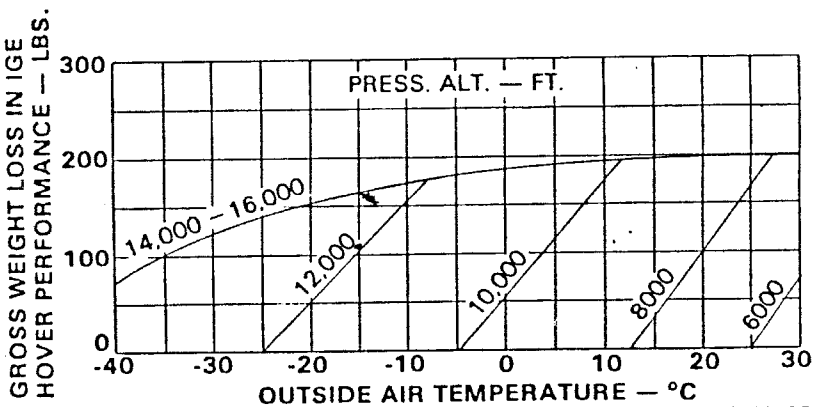
HOVER CEILING DECREASE DUE TO BLEED AIR HEATER OPERATION

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



CABIN HEATING SYSTEM

SECTION 5 PERFORMANCE DATA

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

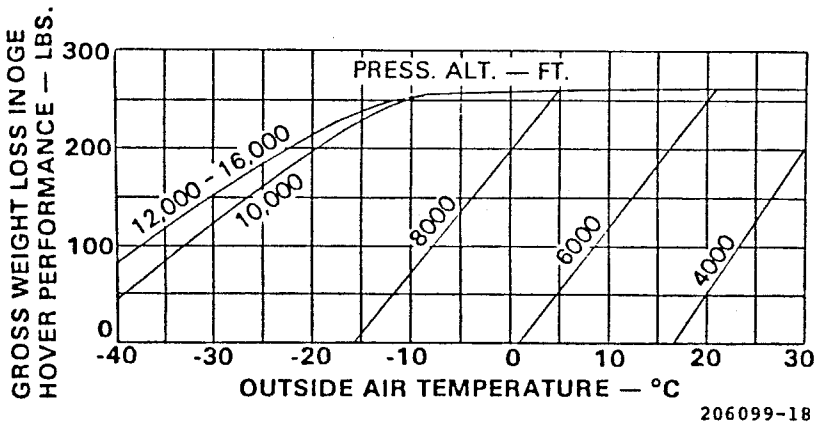
HOVER CEILING DECREASE DUE TO BLEED AIR HEATER OPERATION

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



FAA APPROVED
SUPPLEMENT

MODEL 206A, 206B
FLIGHT MANUAL

CABIN HEATING SYSTEM

SECTION 5 PERFORMANCE DATA

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

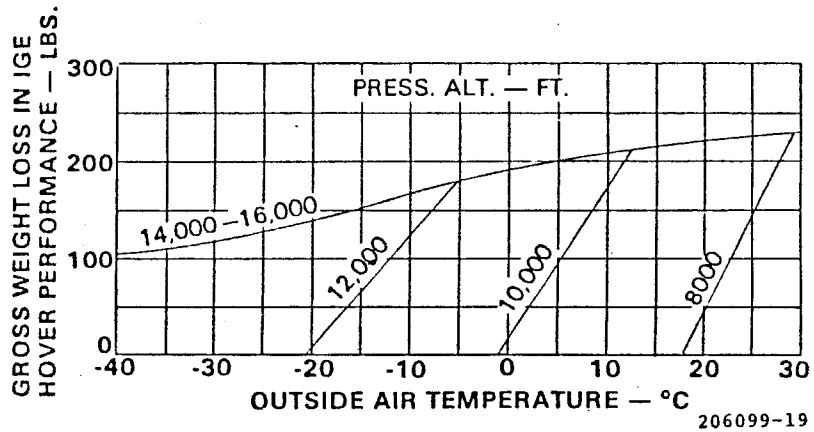
HOVER CEILING DECREASE DUE TO BLEED AIR HEATER OPERATION

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



CABIN HEATING SYSTEM

SECTION 5 PERFROMANCE DATA

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

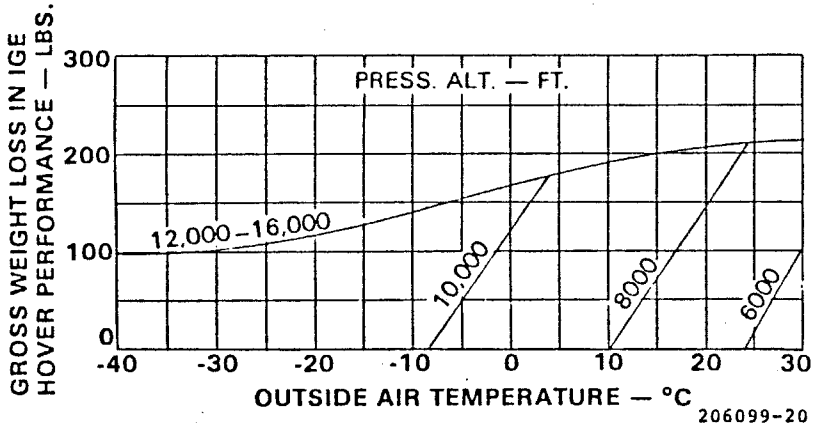
HOVER CEILING DECREASE DUE TO BLEED AIR HEATER OPERATION

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



CABIN HEATING SYSTEM

SECTION 5 PERFORMANCE DATA

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

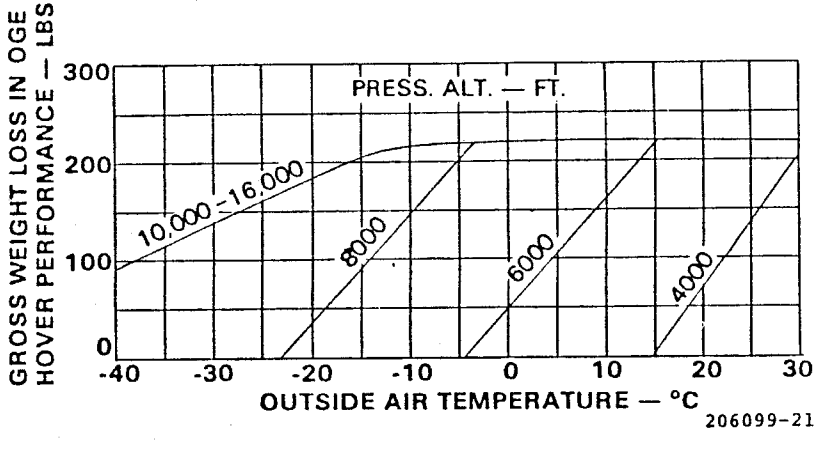
HOVER CEILING DECREASE DUE TO BLEED AIR HEATER OPERATION

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:

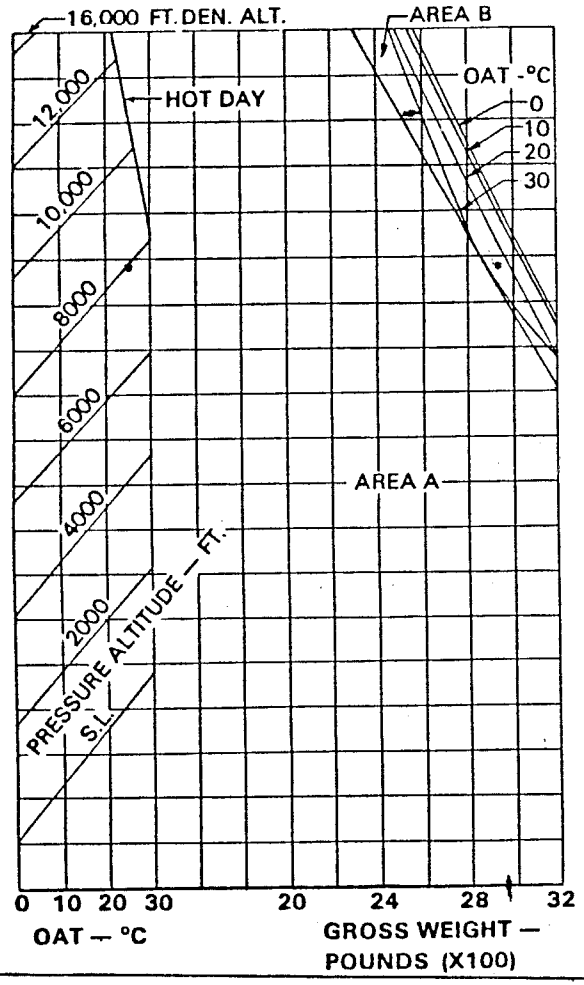
HOVER CEILING

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:

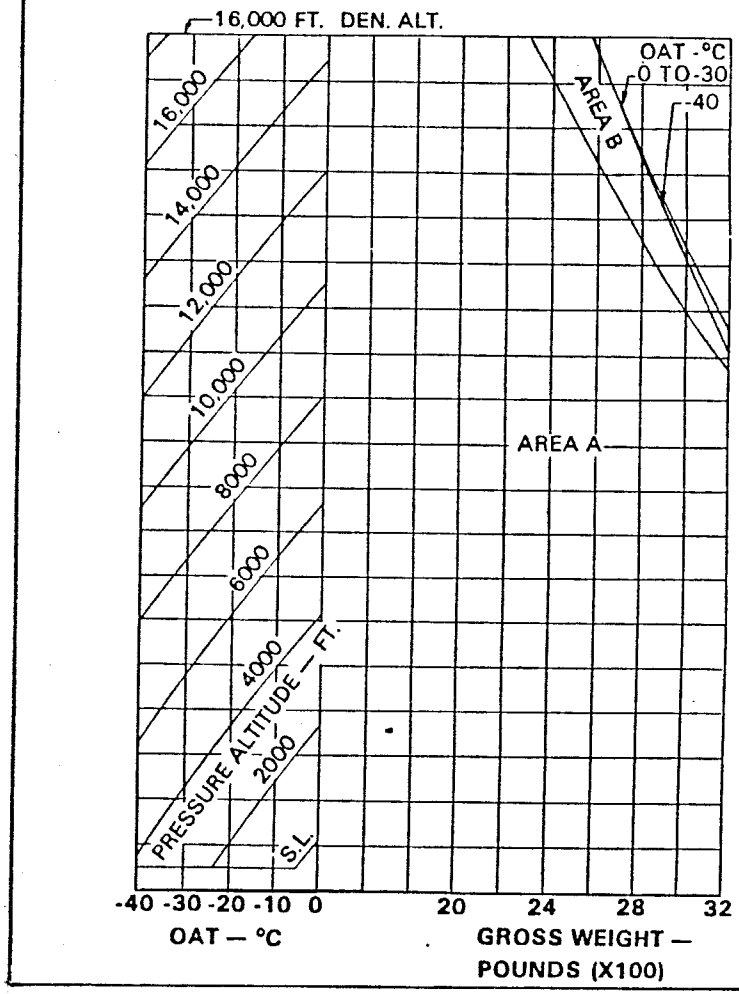
HOVER CEILING

SNOW DEFLECTOR WITH STANDARD SKID GEAR

IN GROUND EFFECT TAKEOFF POWER

0° TO -40°C

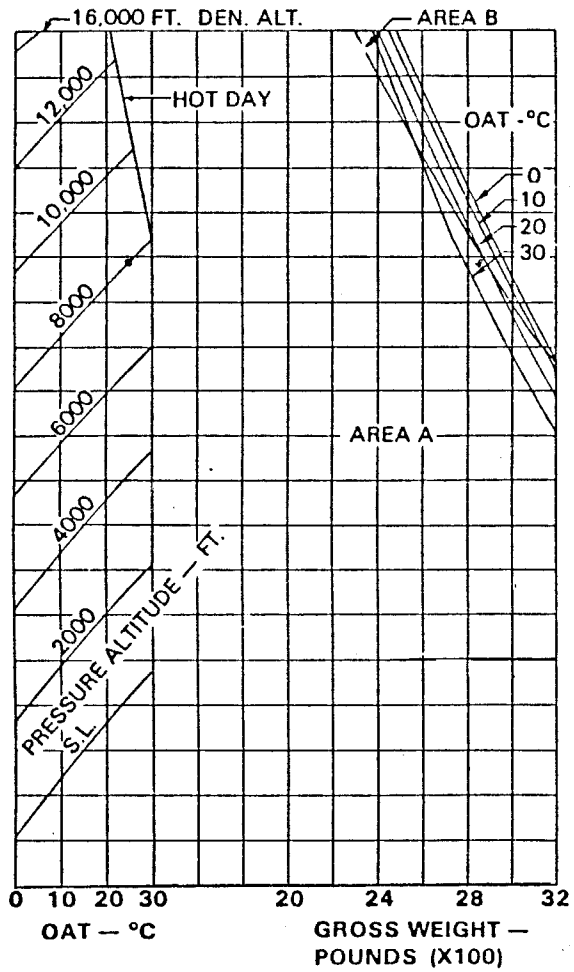
GENERATOR 22.3 AMPS ANTI-ICE OFF
SKID HEIGHT 2.0 FT. (0.6 METER) ENGINE RPM 100%
WITH ANTI-ICE ON GROSS WEIGHT IS 245 LBS (111.1 Kg) LESS



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

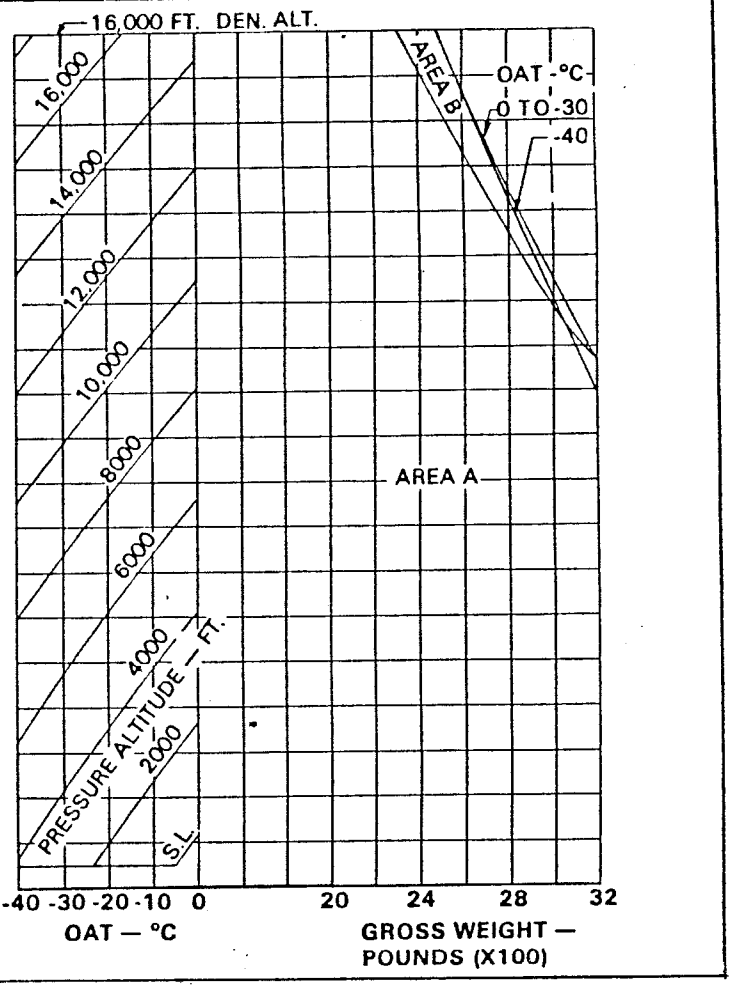


SUPPLEMENT
MODEL 206A, 206B
FLIGHT MANUAL
CABIN HEATING SYSTEM
SECTION 5 PERFORMANCE DATA

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:

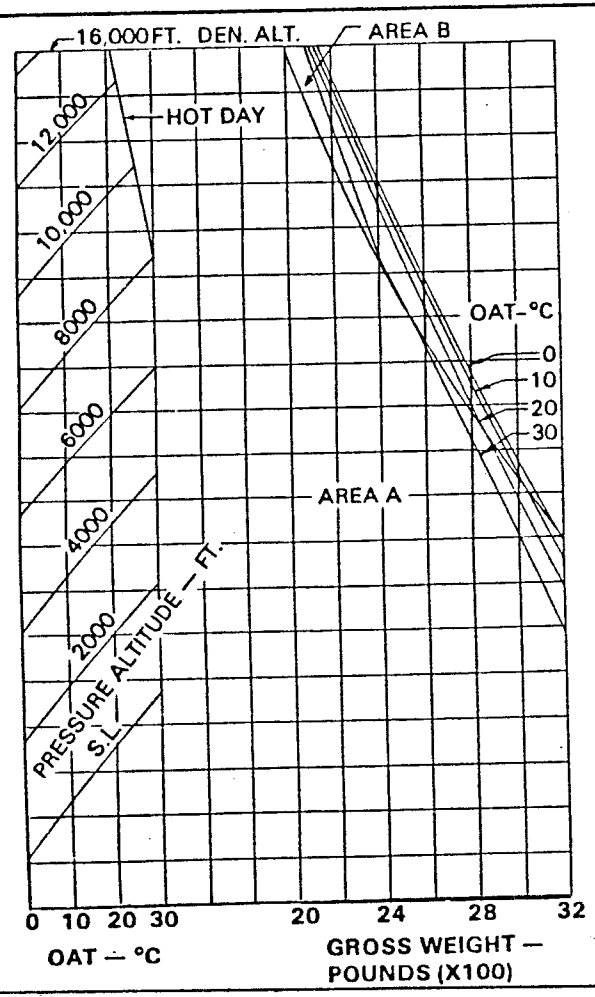
HOVER CEILING

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:

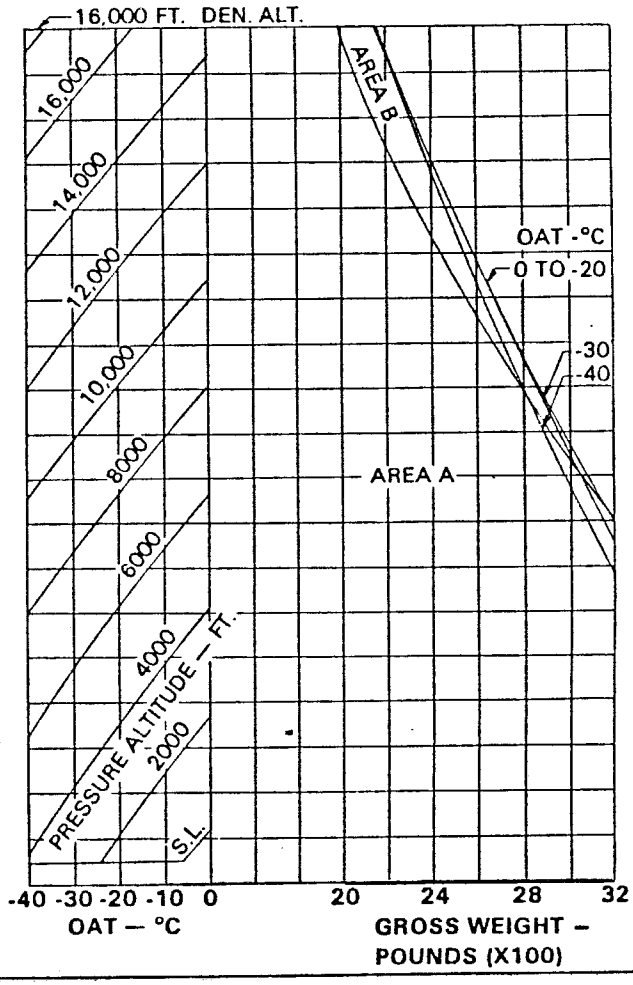
HOVER CEILING

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



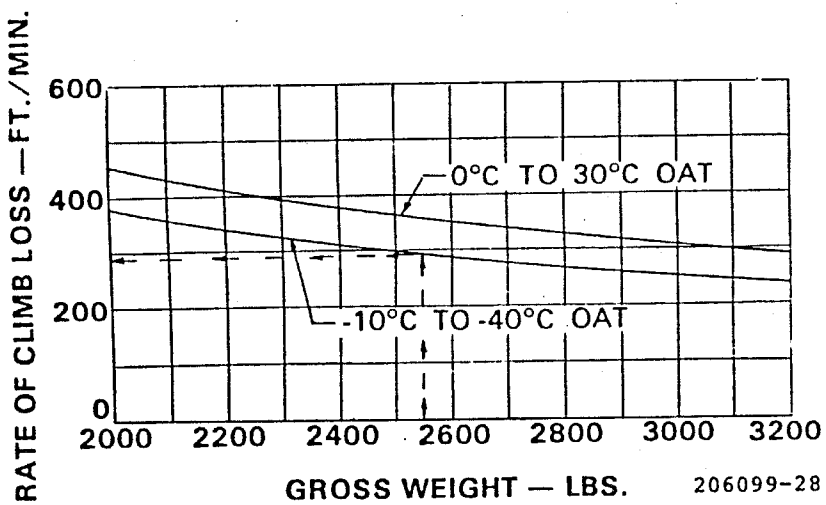
Applicable to aircraft with C-20B, C-20J and C-20R/2 engines:

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.