BOULDER, COLORADO 80301 AIR COMM CORPORATION 3300 AIRPORT ROAD

# FAA APPROVED

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

FLIGHT MANUAL SUPPLEMENT CABIN HEATING SYSTEM FOR

206H-201

S/N:	XEG:

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

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

FAA APPROVAL REVISED August 10, 1993 Jan 3, 1992

> of 28

> > Log of Pages

SUPPLEMENT FAA APPROVED

FLIGHT MANUAL MODEL 206B

# CABIN HEATING SYSTEM

FAA APPROVAL DATE: Jan 3, 1992 APPROVED: Richard Jennings, Supervisor Denver Aircraft Certification Field Office Denver, Colorado	1-27 1-28 1-28	Original . Pages
		Log of 0 Rev. No.
		Pages Pages
isor ation		Rev. No.

FAA APPROVAL Jan 3,

N of 28

1992

FAA APPROVED SUPPLEMENT

SUPPLEMI 206B

FLIGHT MANUAL CABIN HEATING SYSTEM

MODEL

		_				
Note:		3	2	ר	0	No.
Revisions are vertical line.		SEP 2 3 1997	AU0 10 1903	JAN 4 1993	JAN 3 1992	Rev. Date
e indicated by a	•	11	1, 5, 6, 7, 8 & 9	4,8 & 10	Original Issue	Pgs Revised
black		The state of the s	K-153	K.E. 7		FAA Appl

3 of 28

FAA APPROVED

Jan 3 1992

FAA APPROVED SUPPLEMENT

MODEL 206B FLIGHT MANUAL CABIN HEATING SYSTEM

.

# 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.

FAA APPROVED Jan 3 1992 REVISED Jan 4, 1993

4 of 28

1992

FLIGHT

MANUAL 206B

MODEL

FLIGHT MANUAL MODEL 206B

INTRODUCTION (cont'd) CABIN HEATING SYSTEM

shown by Figure 1. components and general arrangement may be used simultaneously. may defroster blowers are not required but across the windshield. diffuser. and ejectors located in each defroster OFF valve located in system. The system features a windshield remain installed at the option of operator. This system The ejectors The defroster and heater consists of an ONthe center console The original pump warm air The system defroster 18

parts of the engine tion overboard when washing the internal valve part of the drain valve is used to drain cleaning soluis also incorporated heater system. as

ejectors are configured which is shown by figure 2, An alternate heater ejector configuration, LH engine access door, The valve, which (closed by engine pressure). and one RH rear ejector. is located inside the is automatic with the consists of outlet

TWO

flow control

feature.

Warm Air Outlets (4 places) Heater Ejectors (4 places) Automatic Drain Valve Firewall Shut-off Valve Windshield Defroster Bleed Air Plumbing Warm Airflow

> Figure 1. Cabin Heater System General Arrangement

G 0 f 28

REVISED

FAA APPROVED

Jan

9 0 f

28

1993 1992

Automatic Drain Valve

Cabin Heater System General Arrangement
(NTH Configuration)

MODEL 206B FLIGHT MANUAL

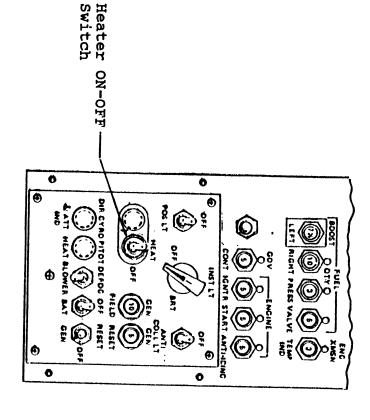
MODEL 206B FLIGHT MANUAL

CABIN HEATING SYSTEM

SECTION 1

OPERATING LIMITATIONS

PLACARDS AND MARKINGS



console. Heater ON-OFF Switch location in overhead

ω of 28

CABIN HEATING SYSTEM

SECTION 1 (cont'd)

OPERATING LIMITATIONS

PLACARDS AND MARKINGS (cont'd)

Heater Overtemp Warning (O m. ... 

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

FAA APPROVED REVISED \_\_\_\_\_J Jan. ( 1993 , 1992 1993

> ဖ of 28

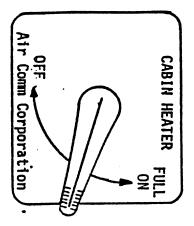
MODEL 206B FLIGHT MANUAL

CABIN HEATING SYSTEM

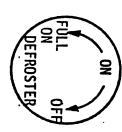
SECTION 1 (cont'd)

OPERATING LIMITATIONS

PLACARDS AND MARKINGS (cont'd)



Located on front side of RH seat support



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

FAA APPROVED Jan 3, 1992

10 of 28

CABIN HEATING SYSTEM

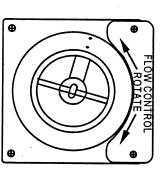
FLIGHT MANUAL MODEL 206B

SECTION 1 (cont'd)

OPERATING LIMITATIONS

PLACARDS AND MARKINGS (cont'd)

Located on the Defroster Control Knob.



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

FAA APPROVED Jan. 3, 1992 REVISED Jan. 4, 1993 REVISED SEP 2 3 1997

CABIN HEATING SYSTEM

SECTION 2

NORMAL PROCEDURES

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

BEFORE TAKEOFF Heater and Defroster Control - as desired.

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

IN FLIGHT OPERATIONS ture limitation. operations. Note: TOT increases with bleed air heater Observe turbine outlet tempera-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: Engine Over-temperature Heater "over-temp" light illuminated Fuel Control and/or Governor Failure **Engine Failure** Insufficient Power

12 of 28

> FLIGHT MANUAL MODEL 206B

CABIN HEATING SYSTEM

SECTION 3 (cont'd)

**EMERGENCY PROCEDURES** 

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

SECTION 4

MALFUNCTION PROCEDURES

No change.

SECTION 5

PERFORMANCE DATA

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

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

#### FAA APPROVED SUPPLEMENT

#### MODEL 206B FLIGHT MANUAL

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.

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

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

#### IN GROUND EFFECT STANDARD INLET WITH STANDARD SKID GEAR **DUE TO BLEED AIR HEATER OPERATION** HOVER CEILING DECREASE

-40° TO 30°C TAKEOFF POWER

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

**GROSS WEIGHT LOSS IN IGE HOVER PERFORMANCE** - LBS 300 200 100 b 1200 60 1 16.000 ώ **OUTSIDE AIR TEMPERATURE —** 1200 PRESS. ALT. -10 10,00  $\Box$ ငိ 206099-16 30

FAA APPROVED Jan. 3, 1992

15 of. 28

> SUPPLEMENT FAA APPROVED

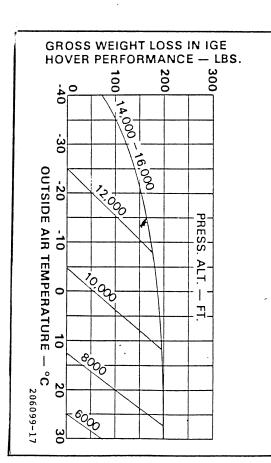
MODEL 206B

SECTION 5 CABIN HEATING SYSTEM

FLIGHT MANUAL PERFORMANCE DATA

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

WITH ANTI-ICE ON APPLY ADDITIONAL DECREMENT FROM SKID HEIGHT 3.0 FT. (0.9 METER) APPROPRIATE SUPPLEMENT **GENERATOR 22.3 AMPS** IN GROUND EFFECT STANDARD INLET WITH HIGH SKID OR ANY FLOAT GEAR **DUE TO BLEED AIR HEATER OPERATION** HOVER CEILING DECREASE -40° TO 30°C TAKEOFF POWER **ENGINE RPM 100% ANTI-ICE OFF** 



FAA APPROVED Jan. 3, 1992

16 0f 28

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

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

**OUT OF GROUND EFFECT** STANDARD INLET WITH ANY SKID OR FLOAT GEAR DUE TO BLEED AIR HEATER OPERATION HOVER CEILING DECREASE -40° TO 30°C TAKEOFF POWER

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

GROSS WEIGHT LOSS IN OGE HOVER PERFORMANCE 200 300 100 40 ج -30 1/6/000 **OUTSIDE AIR TEMPERATURE — °C** PRESS. ALT. Ī 6000 10 20 206099-18 30

FAA APPROVED Jan. ω 1992

> 17 0f 28

> > 206B SUPPLEMENT FAA APPROVED

FLIGHT MODEL MANUAL

CABIN HEATING SYSTEM

SECTION 5 PERFORMANCE DATA

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

engines:

PARTICLE SEPARATOR WITH STANDARD SKID GEAR **DUE TO BLEED AIR HEATER OPERATION** HOVER CEILING DECREASE

IN GROUND EFFECT -40° TO 30°C TAKEOFF POWER

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

GROSS WEIGHT LOSS IN IGE HOVER PERFORMANCE - LBS. 300 200 100 40 14,000-16,000 **OUTSIDE AIR TEMPERATURE** 12,000 PRESS. ALT. -10 70,00 I 10 1 ငိ 1800% 20 206099-19

FAA APPROVED Jan. ω 1992

> 18 of. 28

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

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

IN GROUND EFFECT PARTICLE SEP. WITH HIGH SKID OR ANY FLOAT GEAR DUE TO BLEED AIR HEATER OPERATION **HOVER CEILING DECREASE** -40° TO 30°C TAKEOFF POWER

**ENGINE RPM 100%** ANTI-ICE OFF

GENERATOR 22.3 AMPS SKID HEIGHT 3.0 FT.(0.9 METER)

WITH ANTI-ICE ON APPLY ADDITIONAL DECREMENT FROM PARTICLE SEPARATOR SUPPLEMENT

FAA APPROVED Jan. ω 1992

**GROSS WEIGHT LOSS IN IGE** 

200

300

PRESS.

ALT.

 $\Xi$ 

HOVER PERFORMANCE

100

12,000-16,000

70.00

500

40

မွ

10

10

20

**OUTSIDE AIR TEMPERATURE —** 

ငိ

206099-20

19 9 28

> SUPPLEMENT FAA APPROVED

FLIGHT MODEL 206B MANUAL

SECTION 5 CABIN HEATING SYSTEM

PERFORMANCE DATA

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

PARTICLE SEPARATOR WITH ANY SKID OR FLOAT GEAR DUE TO BLEED AIR HEATER OPERATION HOVER CEILING DECREASE

**OUT OF GROUND EFFECT** -40° TO 30°C TAKEOFF POWER

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

GROSS WEIGHT LOSS IN OGE HOVER PERFORMANCE — LBS. 40 10,000-မွ 1,76,0007 **OUTSIDE AIR TEMPERATURE —** -20 -800 PRESS. ALT. — -10 600 7 5 - °C 206099-21 \*200b 20 30

FAA APPROVEDJan. သ 1992

20 of. 8

L,

CABIN HEATING SYSTEM FLIGHT MODEL MANUAL 206B PERFORMANCE DATA SUPPLEMENT FAA APPROVED

Applicable to aircraft with C-20B, C-20J and C-20R/2 engines: SECTION 5

HOVER CEILING

IN GROUND EFFECT SNOW DEFLECTOR WITH STANDARD SKID GEAR TAKEOFF POWER

GENERATOR 22.3 AMPS 0° TO 30°C

ANTI-ICE OFF ENGINE RPM 100%

WITH ANTI-ICE ON GROSS WEIGHT IS 245 LBS (111.1 Kg) LESS SKID HEIGHT 2.0 FT. (0.6 METER)

PRESSURE ALTITION 70,90 egg, &do -16,000 FT.DEN. ALT \*Q0! -HOT DAY AREA -AREA B 9 30 10

21 0f

28

POUNDS (X100) GROSS WEIGHT —

FAA APPROVED Jan.

ω

1992

OAT - °C

10 20 30

20

24

28

32

SECTION 5 CABIN HEATING SYSTEM FLIGHT MODEL 206B MANUAL PERFORMANCE DATA SUPPLEMENT FAA APPROVED

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

#### IN GROUND EFFECT SNOW DEFLECTOR WITH STANDARD SKID GEAR HOVER CEILING 0° TO -40°C TAKEOFF POWER

SKID HEIGHT 2.0 FT. (0.6 METER) **GENERATOR 22.3 AMPS** ANTI-ICE OFF ENGINE RPM 100%

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

PRESSURE ALTITUDE. 40 -30 -20 -10 7,800 76.90 OAT - °C 10,00 90 -16,000 FT. DEN. ALT 600 ¥000 0 20 **GROSS WEIGHT** POUNDS (X100) AREA 8 28 0AT -°C 0 TO-30 40

FAA APPROVED Jan. 3, 1992

> 22 of 28

FLIGHT MANUAL MODEL 206B SUPPLEMENT FAA APPROVED

SECTION 5 CABIN HEATING SYSTEM PERFORMANCE DATA

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

# HOVER CEILING

IN GROUND EFFECT SNOW DEFLECTOR WITH HIGH SKID OR ANY FLOAT GEAR TAKEOFF POWER

0° TO 30°C

SKID HEIGHT 3.0 FT.(0.9 METER) GENERATOR 22.3 AMPS **ENGINE RPM 100%** ANTI-ICE OFF

WITH ANTI-ICE ON GROSS WEIGHT IS 225 LBS (102.1 Kg) LESS

RRESCURE ALTITUDE: -10,00 -100 600 -16,000 FT. DEN. ALT. -HOT DAY AREA OAT -20 30 ò

FAA APPROVED Jan. w 1992

OAT - °C

10 20 30

20

28

**GROSS WEIGHT —** POUNDS (X100)

23 0f 28

> FLIGHT MODEL 206B MANUAL SUPPLEMENT FAA APPROVED

SECTION 5 CABIN HEATING SYSTEM PERFORMANCE DATA

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

HOVER CEILING

IN GROUND EFFECT SNOW DEFLECTOR WITH HIGH SKID OR ANY FLOAT GEAR TAKEOFF POWER

0° TO -40°C

WITH ANTI-ICE ON GROSS WEIGHT IS 225 LBS (102.1 Kg) LESS SKID HEIGHT 3.0 FT.(0.9 METER) **GENERATOR 22.3 AMPS ENGINE RPM 100%** ANTI-ICE OFF

LARESSURE ALTITION ... 40 -30 -20 -10 16:00 1200 OAT - °C 16,000 FT. 300 teac - A00 0 DEN. ALT. 20 POUNDS (X100) AREA A 28 OAT -°C 10-30 -40 32

FAA APPROVED Jan. ယ 1992

> 24 of 28

CABIN HEATING SYSTEM FLIGHT MODEL MANUAL 206B PERFORMANCE DATA SUPPLEMENT FAA APPROVED

SECTION 5

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

# HOVER CEILING

**OUT OF GROUND EFFECT** SNOW DEFLECTOR WITH ANY SKID OR FLOAT GEAR TAKEOFF POWER

0° TO 30°C

ANTI-ICE OFF

ENGINE RPM 100%

GENERATOR 22.3 AMPS SKID HEIGHT 40 FT. (12.2 METERS) WITH ANTI-ICE ON GROSS WEIGHT IS 260 LBS (117.9 Kg) LESS

ARESSURE ALTITION. 10,00 800 OAT - °C - Tab! \_16,000FT. DEN. ALT 10 20 30 9 -HOT DAY 20 AREA POUNDS (X100) GROSS WEIGHT -AREA B Þ 28 OAT-°C =20 -30 -10 32

25 0f

FAA APPROVED

Jan.

ůΩ

1992

CABIN HEATING SYSTEM FLIGHT MODEL 206B MANUAL PERFORMANCE DATA SUPPLEMENT

FAA APPROVED

SECTION 5

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

### **OUT OF GROUND EFFECT** SNOW DEFLECTOR WITH ANY SKID OR FLOAT GEAR HOVER CEILING TAKEOFF POWER

**GENERATOR 22.3 AMPS** 0° TO -40°C

**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

40 -30 -20 -10 PRESSURE ALTITUDE 1,6,00 1200 -16,000 FT. +,0,00 0AT -[aq 000 ---¥000 0 DEN. ALT 20 **43AA** AREA **GROSS WEIGHT -**POUNDS (X100) B 24 28 0 TO -20 OAT -°C

28

5 0f 28

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

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

## DUE TO BLEED AIR HEATER OPERATION ANY INLET WITH ANY SKID OR FLOAT GEAR RATE OF CLIMB DECREASE

TAKEOFF POWER

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

RATE OF CLIMB LOSS -FT./MIN. 600 400 200 2000 2200 GROSS WEIGHT — LBS 2400 10°C 2600 TO -40°C ၁<sup>°</sup> 0 2800 OA 30°C 3000 OAT 206099-28 3200

27 0f 28

FAA APPROVED Jan.

ω

1992

SUPPLEMENT FAA APPROVED

FLIGHT MODEL 206B MANUAL

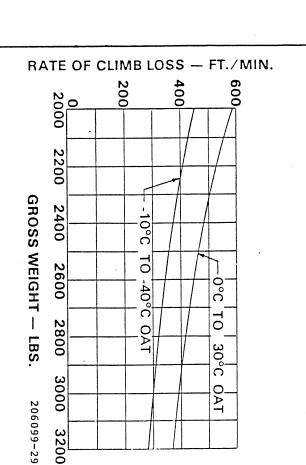
SECTION 5 CABIN HEATING SYSTEM

PERFORMANCE DATA

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

#### DUE TO BLEED AIR HEATER OPERATION ANY INLET WITH ANY SKID OR FLOAT GEAR MAXIMUM CONTINUOUS POWER RATE OF CLIMB DECREASE

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



FAA APPROVED Jan. ယ 1992

> 28 0f 28