

AIR COMM CORPORATION
Boulder Municipal Airport
3300 Airport Road
Boulder, CO 80301

Report 206H-224M

BELL 206L-4 TWIN RANGER CABIN HEATER SYSTEM
INSTALLATION INSTRUCTIONS
(to be used with helicopters modified
in accordance with STC SR00036SE)

February 15, 1994

This document contains:

Flight Manual Supplement
STC Certificate
Service Instructions
Weight & Balance Data

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Introduction

This document presents a step-by-step procedure for installation of the ACC 206H-204 Cabin Heater System in the Bell 206L4 Twin Ranger Helicopter. The instructions contained herein are intended to supplement the information contained on the installation drawings.

This manual provides additional information which is required for operation and maintenance of the aircraft. This data is contained in sections V, VI, and VII. After completion of this installation, the applicable sections are to be removed from this document, and placed with the appropriate existing documents.

References

1. ACC Drawing 206H-204; Bell 206L4 Cabin Heater Installation.
2. ACC Drawing 206H-516; 206L4 (TR) Bleed Air Plumbing Installation.
3. ACC Drawing 206H-840; Installation - Temp Sensors.
4. ACC Drawing 206H-940; Bell 206L4 Heater Ejector Installation.
7. ACC Drawing 206H-986; Windshield Defroster Installation (optional).
8. ACC Report 206H-244; Bell 206L-4 Twin Ranger Cabin Heater Installation Photographs.

Installation Instructions - Basic Heater System

1. Review the system installation drawings and read completely through the Installation Instructions. BE SURE TO READ THE NOTES ON ALL DRAWINGS.
2. Open up the aircraft.
 - a. Remove the upper fairing.
 - b. Open engine cowling.
 - c. Remove both forward seat panels and the panel under the collective stick.
 - d. Remove the cover between the center row of seat.
3. Install firewall penetration holes as shown on Sht 5, Dwg 206H-516.
4. Install center console penetration holes as shown on sht 13, Dwg. 206H-516.
5. Mount heater ejectors per Dwg 206H-940.

Note

Ejectors flow control valve must be indexed as shown on pg 5 & 6, Dwg 206H-940.

6. Install "heater control" valve as shown by Dwg 206H-204, page 3.
7. Install "firewall shut-off" valve as shown on the plumbing installation drawing.
8. Install plumbing in engine compartment and on cabin top as shown by plumbing Installation drawing.
9. Install S-9298EC-5 Tube in control column (broom closet). Insert tube into broom closet from inside aircraft.
10. Drill tube penetration holes in center console and install S-9726EC-1 Doublers as shown on the plumbing Installation drawing.
11. Connect remaining heater plumbing and review all notes on drawing.
12. If defroster is to be installed, refer to Section III.
13. Install S-9701EC-3 Inlet Screens and S-9701EC-1 Plates per sht 3, Dwg 206H-940. Inspect all plumbing fittings and hardware for security.

Revisions

<u>Rev</u>	<u>Description</u>	<u>Date</u>	<u>Appl</u>
A	Revised Pg IV-1 to add option wts	11-28-94	<i>J/S</i>

Installation Instructions - Basic Heater System (cont'd)

14. Install "temp sensors," switch, warning light, and wiring as shown by the Temp Sensor Installation drawing.
15. Verify operation of the warning light and firewall shut-off valve.

Note

- a. Air pressure (shop air or bleed) must exist for the valve to operate.
- b. Temp sensor specifications:
 1. Normally open
 2. Close at 220^oF
 3. Open at 200^oF
- c. Heater ON-OFF switch must be moved to the "OFF" position to extinguish the Htr "Over-Temp" light.

Installation Instructions - Defroster System

1. Review Dwg 206H-986.
2. Install ES49016-1 Fitting as shown on sht 3 of Dwg 206H-986.
3. Connect the S-9219EC-1 Hose Assy as shown on sht 3, Dwg 206H-986.
4. Locate and drill .625 dia hole in center console panel for defroster valve rod.
5. Install defroster control knob as shown on Dwg 206H-986.
6. Remove defroster eyebrows and install ejectors per shts 4 and 5, Dwg 206H-986. Re-install eyebrows.

Note

- a. Make sure that ejectors are installed with outlet slot oriented aft toward the eyebrow.
 - b. The existing defroster blowers may be retained or deleted. The blowers do not significantly affect the airflow of the ejector system when the blower is installed but not operating.
7. Connect the S-9221EC-1 and S-9221EC-2 Tubes to the S-9219EC-1 Hose, as shown on sht 4, Dwg 206H-986.
 8. Notch console side panels and install grommet as shown on sht 4, Dwg 206H-986.
 9. Review all notes on sht 1, Dwg 206-986. Check all fittings and fasteners for security.
 10. Safety wire all fittings per AC-65-9A.

206L4 TR; 206H-204-1 Cabin Heater Weight and Balance Data

Correct the aircraft licensed empty weight and center of gravity data as indicated below:

	Wt (lbs)	X (in)	Y (in)	Wx (in-lbs)	Wy (in-lb)
1 Cabin Heater System (incl Windshield Defogger)	24.70	126.4	-3.3	3121	-81
Add on options:					
2 Chin Bubble Defogger	.50	19.5	0	10	0
3 Forward Outlet Side Window Defog 206H-928-1	.49	56.0	0	27	0
4 Forward & Aft Outlet Side Window Defog 206H-928-2	1.31	82.0	0	108	0

FLIGHT MANUAL SUPPLEMENT

**AIR COMM CORPORATION
3300 AIRPORT RD
BOULDER, COLORADO 80301**

**BELL HELICOPTER
MODEL 206L4/TWIN ENGINE**

**SUPPLEMENT TO BHT-206L4T-FM-1
FLIGHT MANUAL**

for

CABIN HEATING SYSTEM

FMS 206H-240

This supplement will be attached to the rotorcraft Flight Manual on helicopters modified in accordance with STC SR00036SE, after the helicopter has been modified by installation of the Air Comm Corporation cabin heater in accordance with STC No. SH3887NM.

Information contained herein supplements information of basic Flight Manual. For Limitations, Procedures, and Performance Data not contained in this supplement, consult applicable documents.

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MODEL 206L4/TWIN ENGINE
FLIGHT MANUAL

CABIN HEATING SYSTEM

Log of Pages				
Pages		Date	Appl	Rev No.
1 - 36			----	N/C
1 - 36	(206L-4 RFMS-TH-1 was RFMS-1)	4-22-94	<i>Richard Jennings</i> 4/22/94	1
1 - 36	Revised all pags: BHT-206L4T-FM-1 was Tridair 206L-4 RFMS-TH-4	FEB 23 1995	<i>Richard Jennings</i> 2-23-95	2

Revisions are indicated by a black vertical line.

FAA APPROVED DATE February 15, 1994

APPROVED

Richard Jennings

Richard Jennings, Manager
Denver Aircraft Certification
Field Office, Northwest
Mountain Region, Denver
Colorado, 80216

MODEL 206L4/TWIN ENGINE
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.

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 two forward ejectors are located under the front seats. The two aft heater ejectors are located on the aft edge of the two rear facing seats. The outlet flow of the two forward heater outlets can be adjusted by rotation of the swivel 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 a "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.

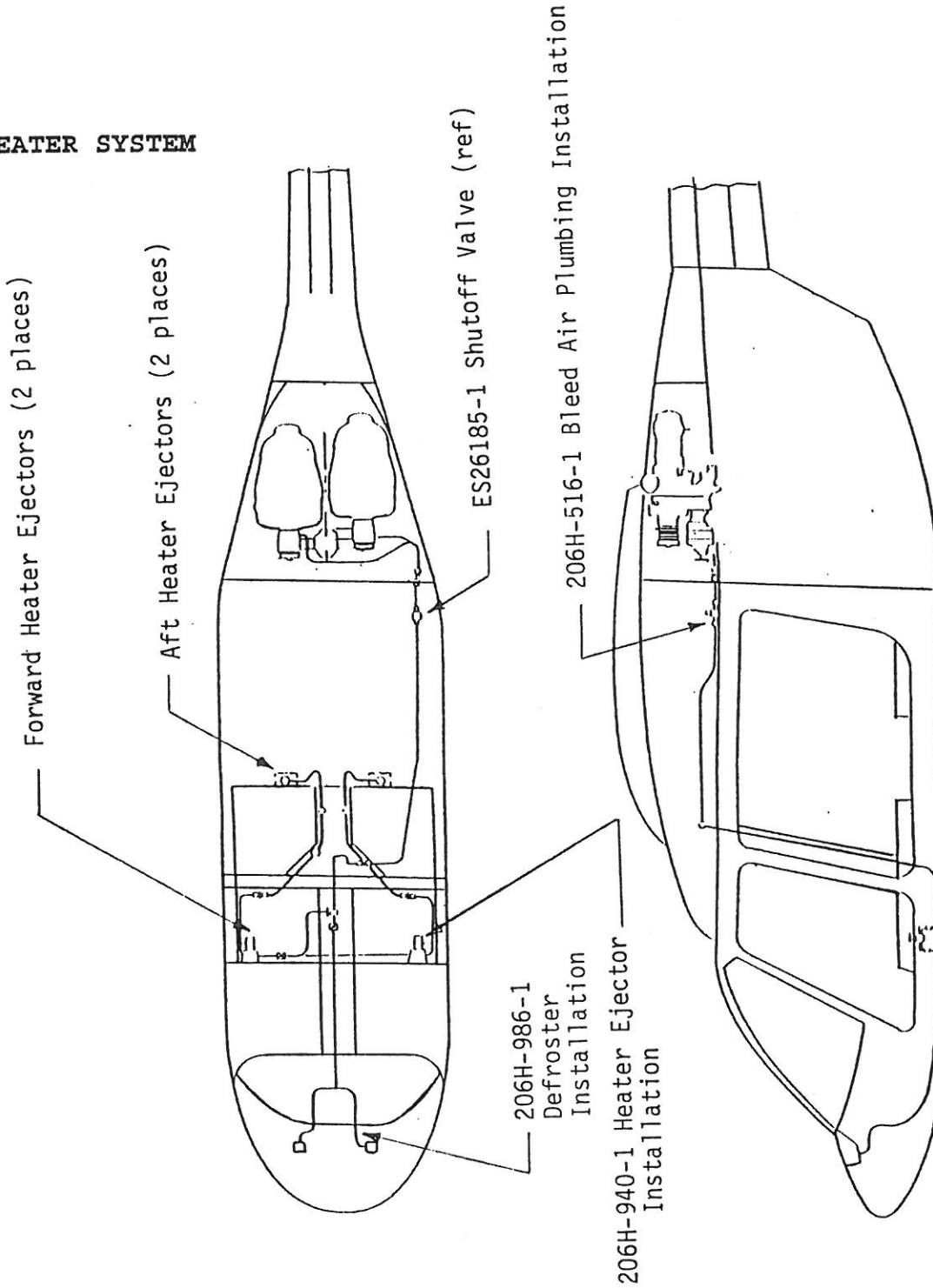
The heater ON-OFF switch is located in the overhead switch panel and the heater volume (temperature) control is located on the front of the RH seat box.

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.

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.

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CABIN HEATER SYSTEM



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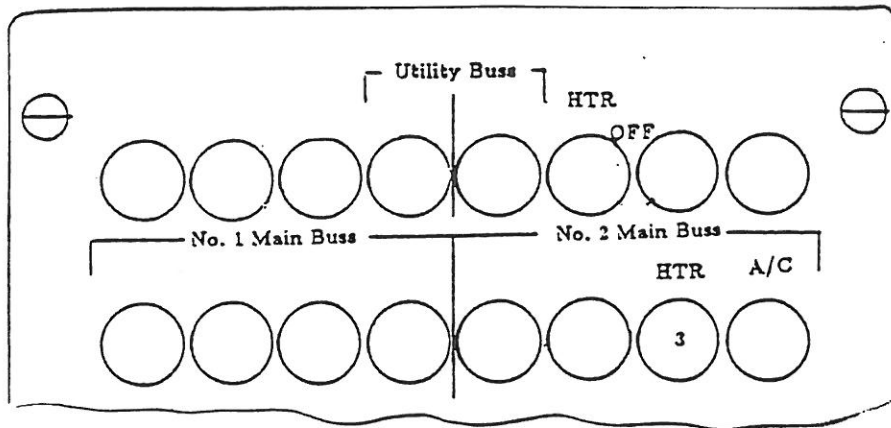
MODEL 206L4/TWIN ENGINE
FLIGHT MANUAL

CABIN HEATER SYSTEM

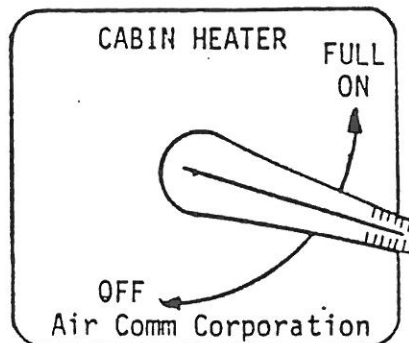
SECTION 1

OPERATING LIMITATIONS

PLACARDS & MARKINGS



Heater ON-OFF Switch location in overhead console.



Located on front side of RH seat support box.

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FLIGHT MANUAL

CABIN HEATER SYSTEM

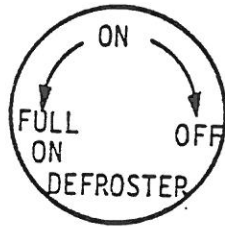
SECTION 1

OPERATING LIMITATIONS

PLACARDS & MARKINGS (cont'd)

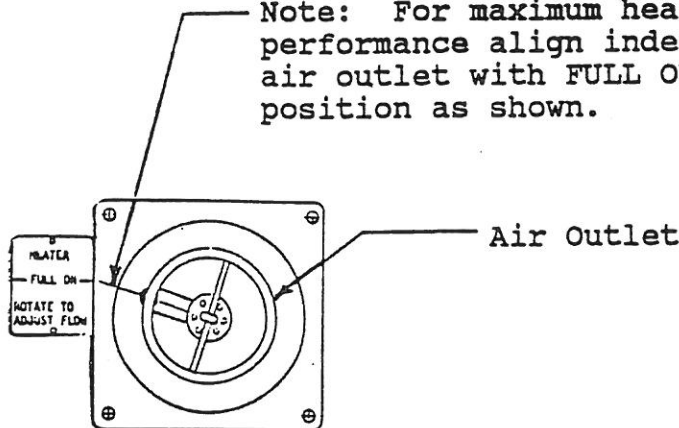
HEATER AND DEFROSTER OFF
DURING TAKEOFF & LANDING

Located on instrument panel
in direct view of pilot



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

Note: For maximum heater
performance align index on
air outlet with FULL ON
position as shown.



Locate adjacent to two forward air outlets
as shown.

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FLIGHT MANUAL

CABIN HEATER 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 OPERATION

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

DECENT AND LANDING

Heater and Defroster Control - as desired.

SECTION 3

EMERGENCY PROCEDURES & MALFUNCTION

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

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.

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MODEL 206L4/TWIN ENGINE
FLIGHT MANUAL

CABIN HEATER SYSTEM

SECTION 4

PERFORMANCE DATA

When the Bleed Air Heater Kit is installed, there is no loss in helicopter performance when heater is turned off. With heater on, performance will be as shown in the following charts.

In ground effect hover performance at takeoff power is shown in figure 4-1.

In ground effect hover performance at maximum continuous power is shown in figure 4-2.

Out of ground effect hover performance at takeoff power with any skid or float landing gear is shown in figure 4-3.

Out of ground effect hover performance at maximum continuous power with any skid or float landing gear is shown in figure 4-4.

Rate of climb at twin engine takeoff power with heater or part. sep. purge and anti-ice on is shown in figure 4-5.

Rate of climb at twin engine maximum continuous power with heater or part. sep. purge and anti-ice on is shown in figure 4-7.

Rate of climb at twin engine maximum continuous power with heater, part. sep. purge and anti-ice off is shown in figure 4-8.

A maximum rate of climb correction chart due to part. sep. purge or heater on is shown in figure 4-9.

Rate of climb adjustment using adjustment chart:

EXAMPLE: What rate of climb can be expected under the following conditions:

Twin engine maximum continuous power : Outside air temperature = +10°C
Pressure altitude = 14,000 ft.
Gross weight = 3,600 lbs.
Heater part.sep. purge = ON

ANSWER: 1152 feet per minute rate of climb.

Select figure 4-7, Sheet 2, for 3,600 lbs. and all ON. Enter the chart at a pressure altitude of 14,000 ft. and move horizontally to the right to 10°C. Move down and read rate of climb of 1105 feet per minute. Enter this rate of climb as Point B on the correction chart.

Select figure 4-8, Sheet 2, for 3,600 lbs. and all OFF. Enter the chart at a pressure altitude of 14,000 ft. and move horizontally to the right to 10°C. Move down and read rate of climb of 1255 feet per minute. Enter this rate of climb as Point A on the correction chart.

Draw a line between A and B on the correction chart, figure 4-9.

Enter this chart at the line for heater or part. sep. purge. Move vertically up to the line connecting the point A and B. From this intersection, move left to read the answer of 1152 feet per minute.

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SECTION 4 PERFORMANCE DATA

**HOVER CEILING
IN GROUND EFFECT**

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 3.5 FT (1.0 METER)
HEATER/PART. SEP. PURGE OFF OR ON
ANTI-ICE OFF OR ON

4150 LB AND BELOW

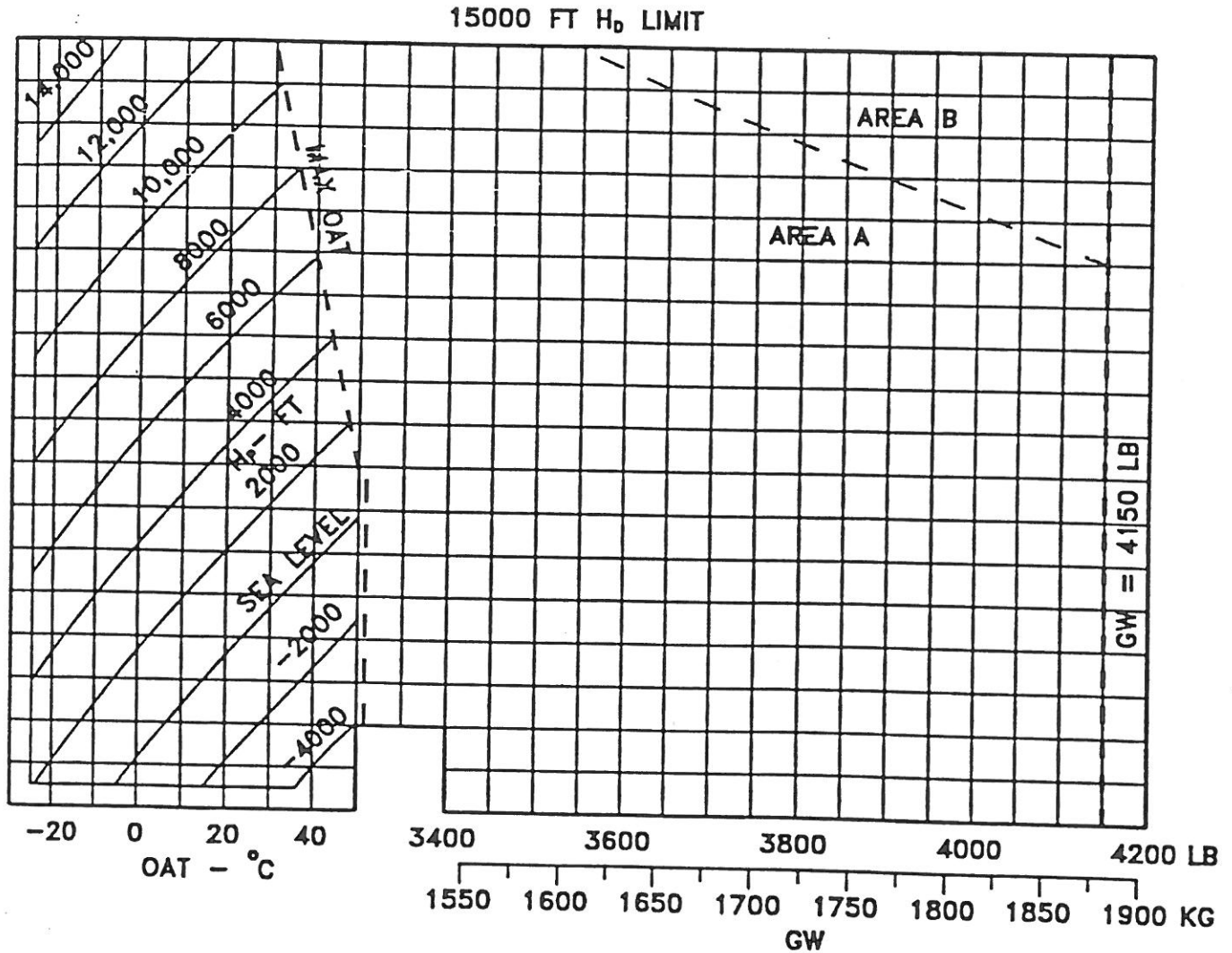


Figure 4-1. Hover ceiling in ground effect - takeoff power
(Sheet 1 of 2)

SECTION 4 PERFORMANCE DATA

**HOVER CEILING
IN GROUND EFFECT**

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 3.5 FT (1.0 METER)
HEATER/PART. SEP. PURGE OFF OR ON
ANTI-ICE OFF OR ON

4151 LB TO 4550 LB

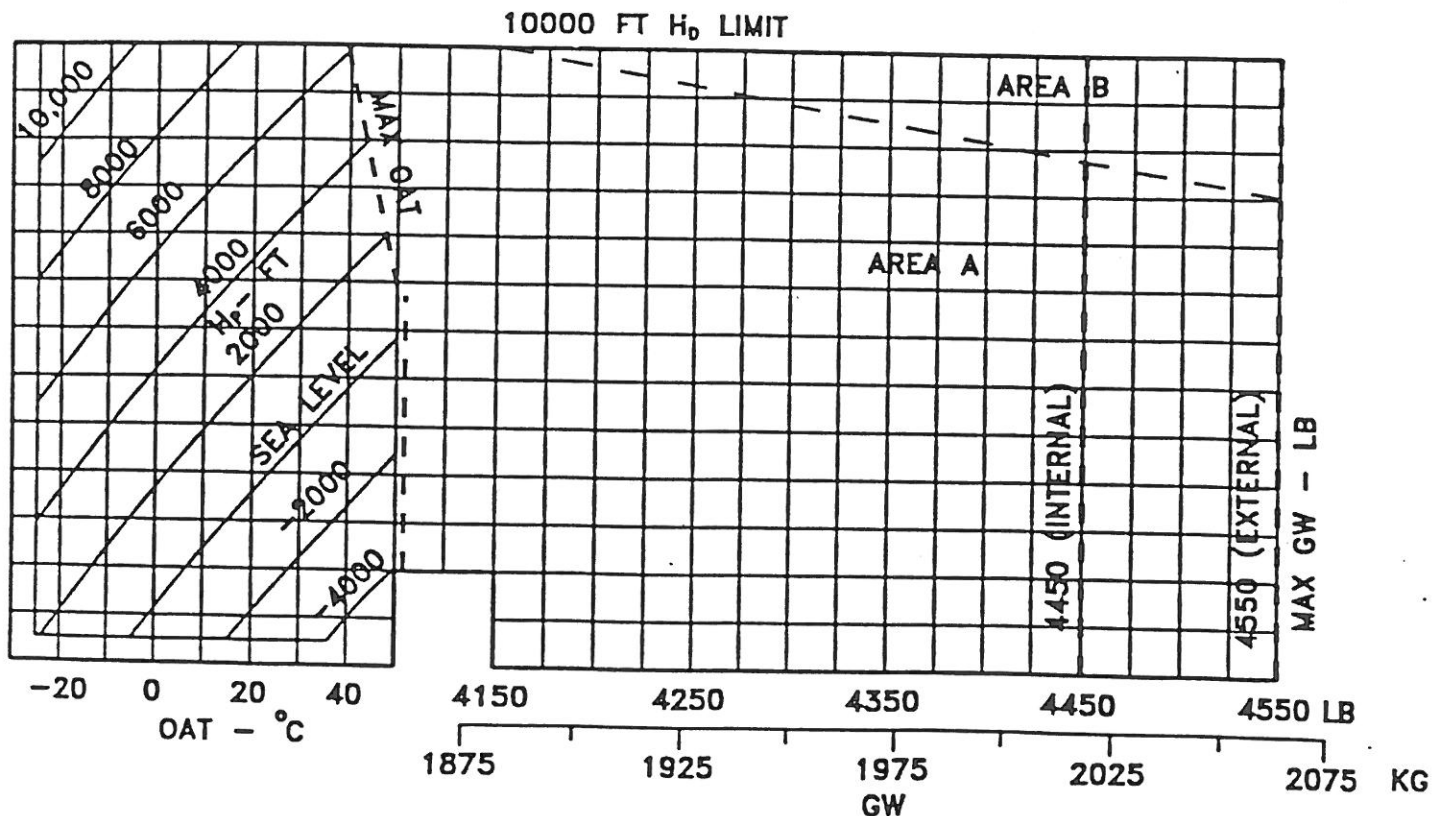


Figure 4-1. Hover ceiling in ground effect - takeoff power
(Sheet 2 of 2)

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HOVER CEILING
IN GROUND EFFECT

MAXIMUM CONTINUOUS POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 3.5 FT (1.0 METER)
HEATER/PART. SEP. PURGE OFF
ANTI-ICE OFF

4150 LB AND BELOW

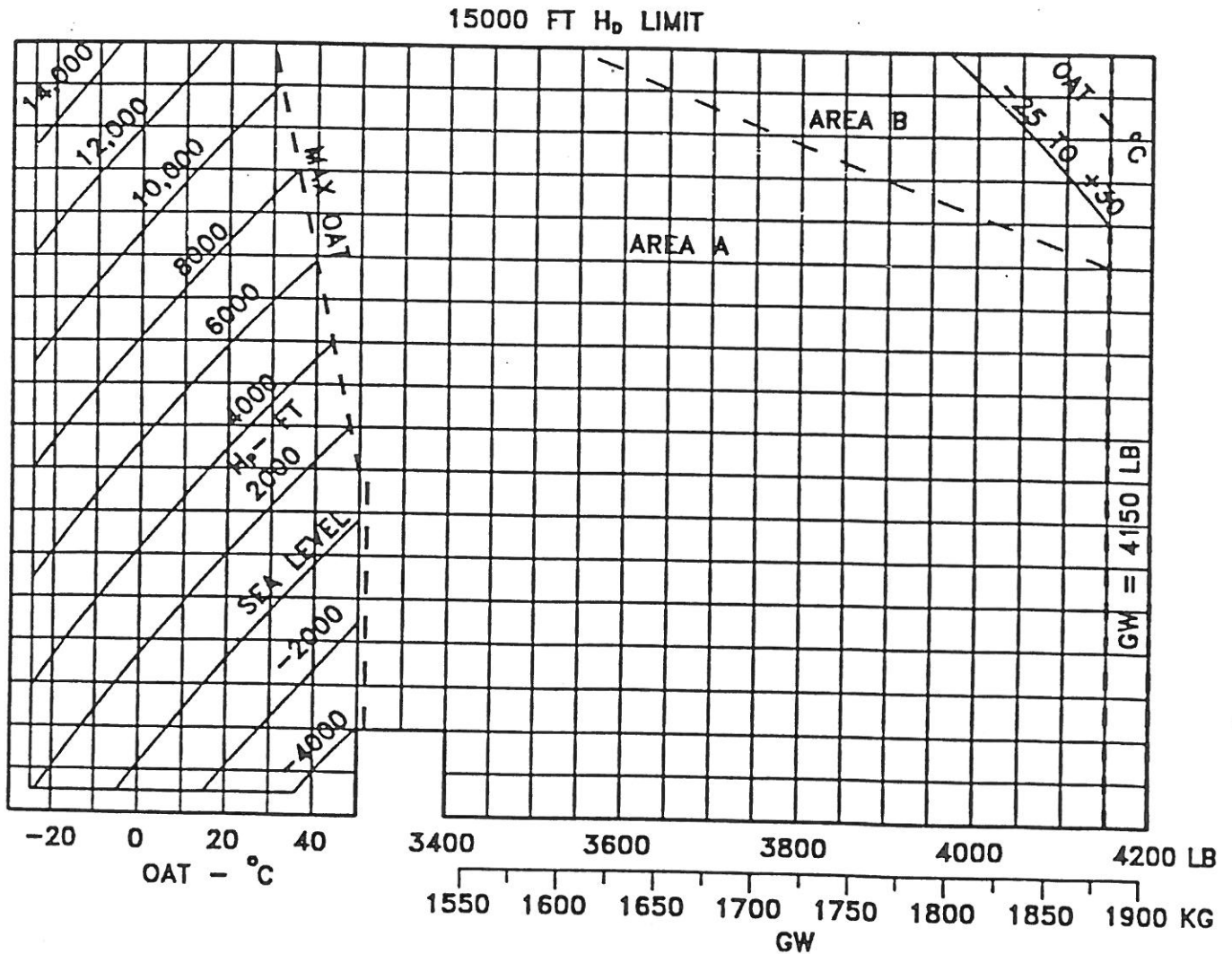


Figure 4-2. Hover ceiling in ground effect - maximum continuous power
(Sheet 1 of 2)

SECTION 4 PERFORMANCE DATA

SUPPLEMENT TO
BHT-206L4T-FM-1

HOVER CEILING IN GROUND EFFECT

MAXIMUM CONTINUOUS POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 3.5 FT (1.0 METER)
HEATER/PART. SEP. PURGE OFF
ANTI-ICE OFF

4151 LB TO 4550 LB

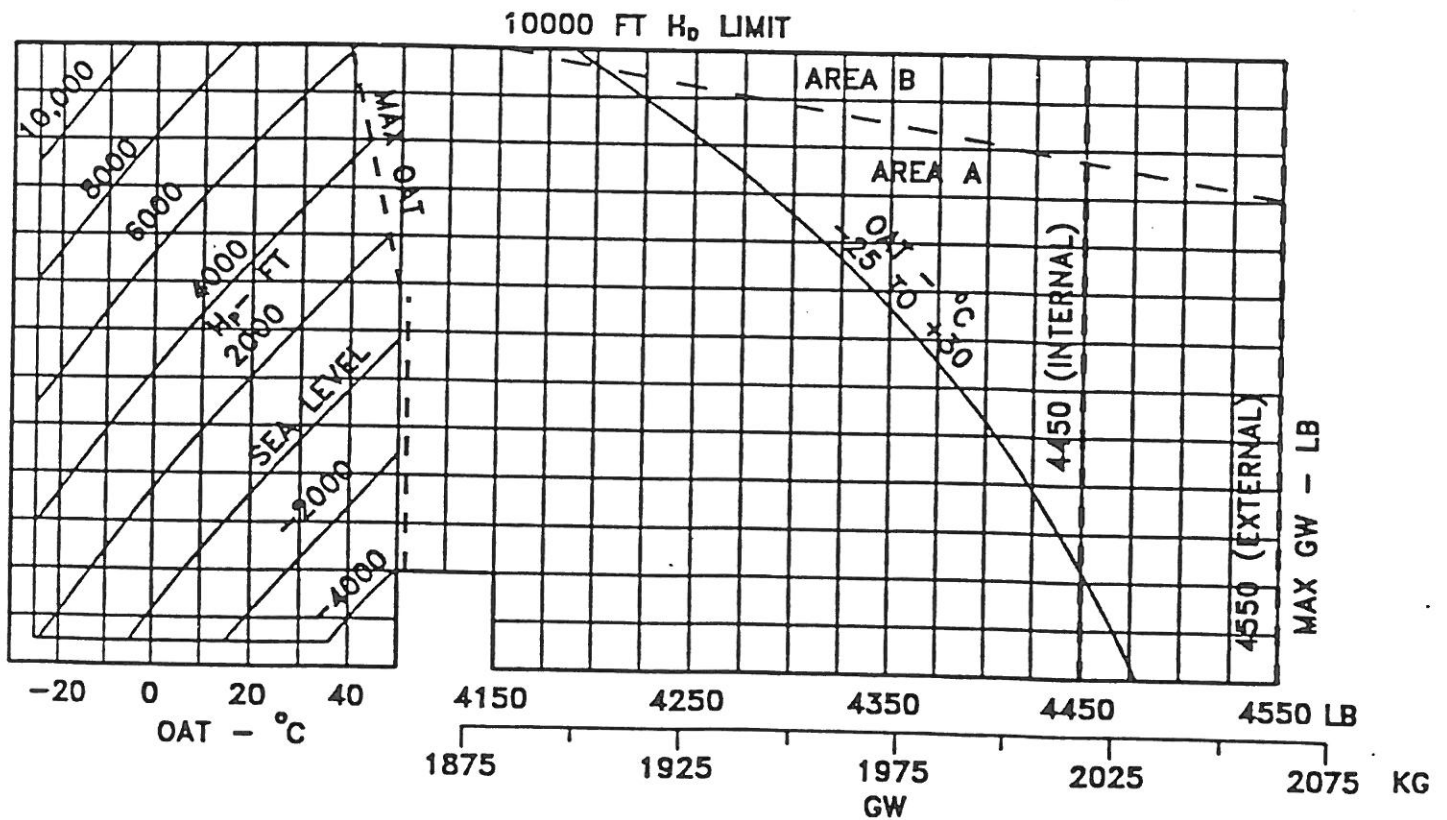


Figure 4-2. Hover ceiling in ground effect - maximum continuous power
(Sheet 2 of 2)

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**HOVER CEILING
OUT OF GROUND EFFECT
WITH ANY SKID OR FLOAT LANDING GEAR**

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 40 FT (12.2 METER)
HEATER/PART. SEP. PURGE OFF
ANTI-ICE OFF

4150 LB AND BELOW

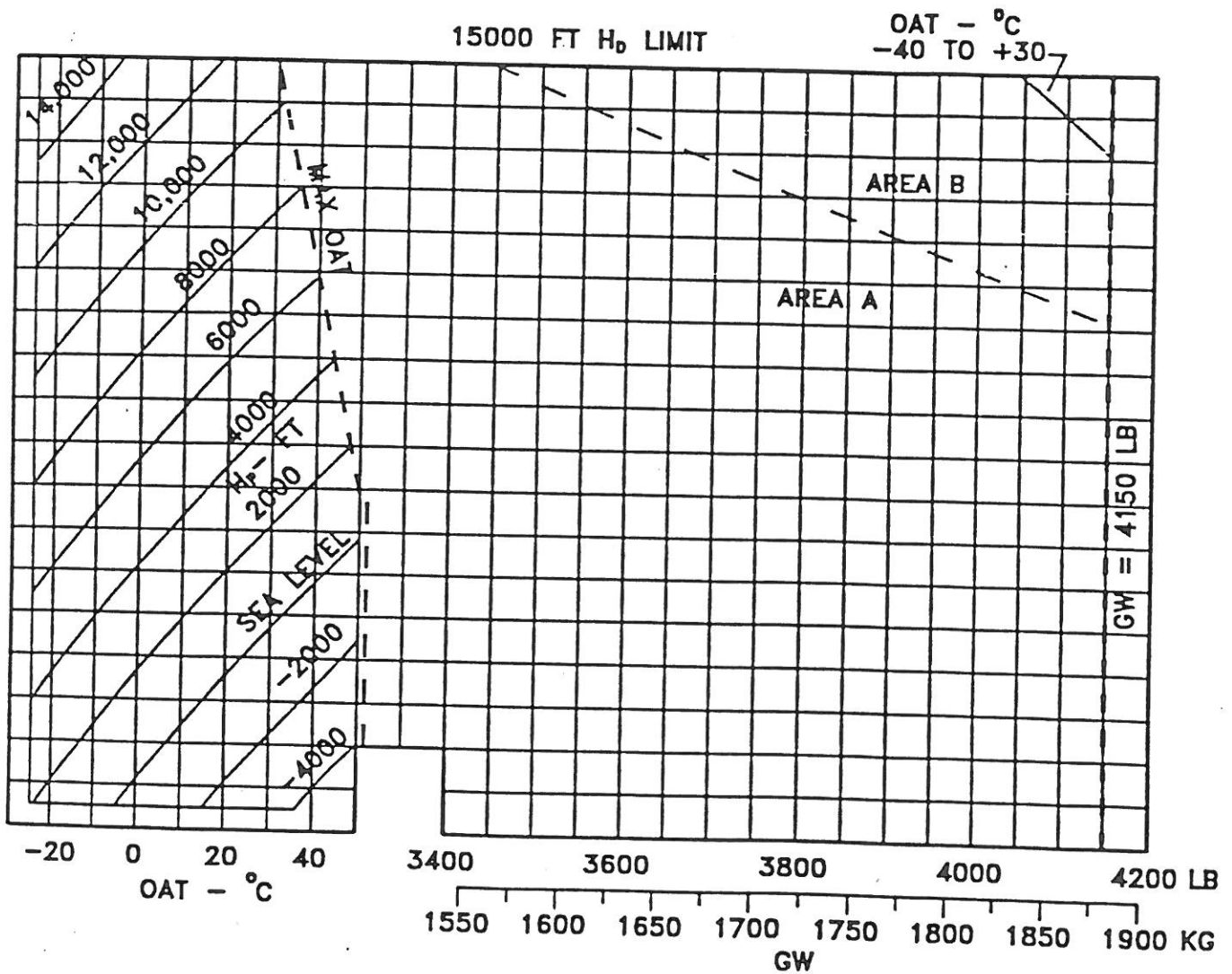


Figure 4-3. Hover ceiling out of ground effect - takeoff power
(Sheet 1 of 2)

SECTION 4 PERFORMANCE DATA

SUPPLEMENT TO
BHT-206L4T-FM-1

HOVER CEILING OUT OF GROUND EFFECT WITH ANY SKID OR FLOAT LANDING GEAR

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 40 FT (12.2 METER)
HEATER/PART. SEP. PURGE OFF OR ON
ANTI-ICE OFF OR ON

4151 LB TO 4550 LB

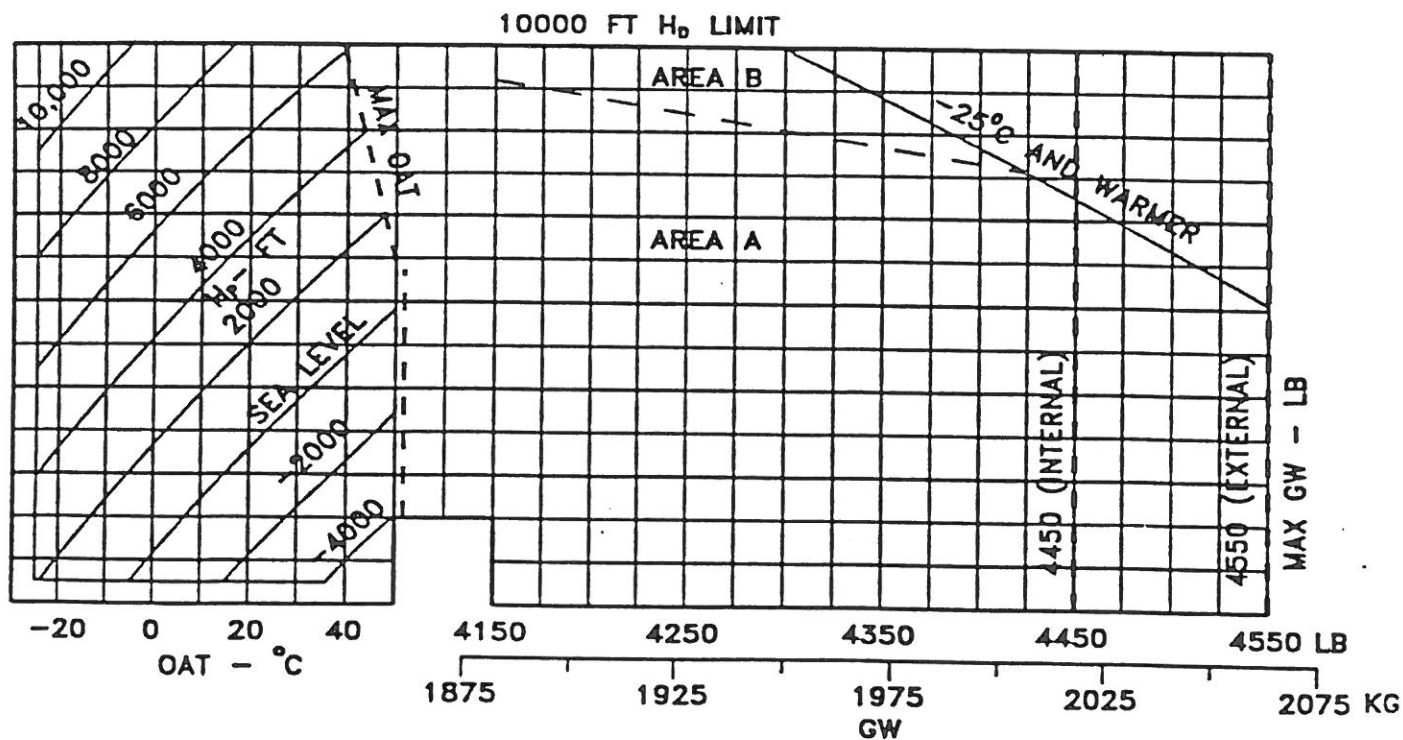


Figure 4-3. Hover ceiling out of ground effect - takeoff power
(Sheet 2 of 2)

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SECTION 4 PERFORMANCE DATA

SUPPLEMENT TO
BHT-206L4T-FM-1

**HOVER CEILING
OUT OF GROUND EFFECT
WITH ANY SKID OR FLOAT LANDING GEAR**

MAXIMUM CONTINUOUS POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 40 FT (12.2 METER)
HEATER/PART. SEP. PURGE OFF
ANTI-ICE OFF

4150 LB AND BELOW

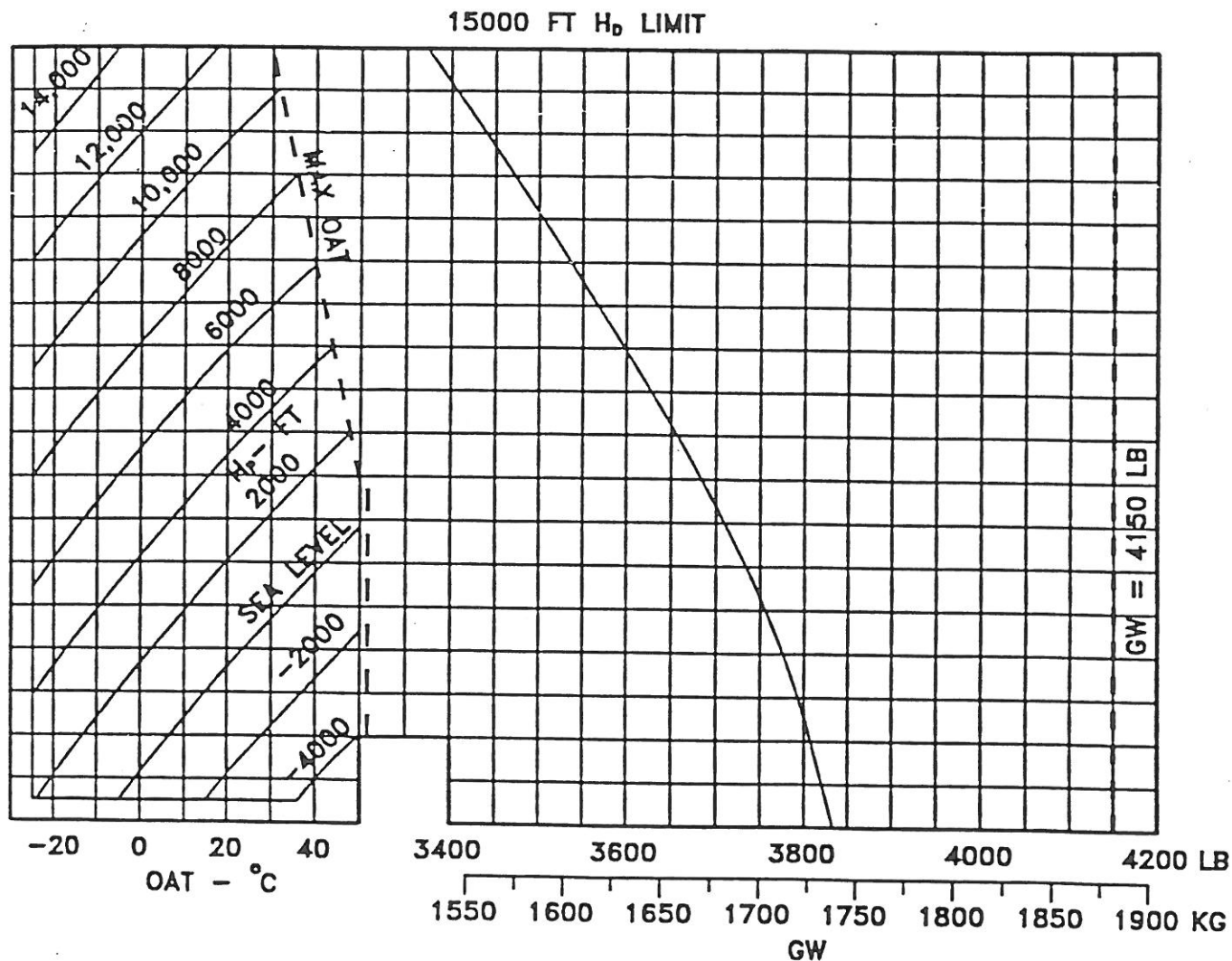


Figure 4-4. Hover ceiling out of ground effect - maximum continuous power

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MAXIMUM RATE OF CLIMB

CLEAN CONFIGURATION
ENGINE RPM 100%
GENERATOR 17.5%

TWIN TAKEOFF POWER
(5 MINUTE LIMIT)
3200 LB

57 KIAS
HEATER/PART. SEP. PURGE ON
ANTI-ICE ON

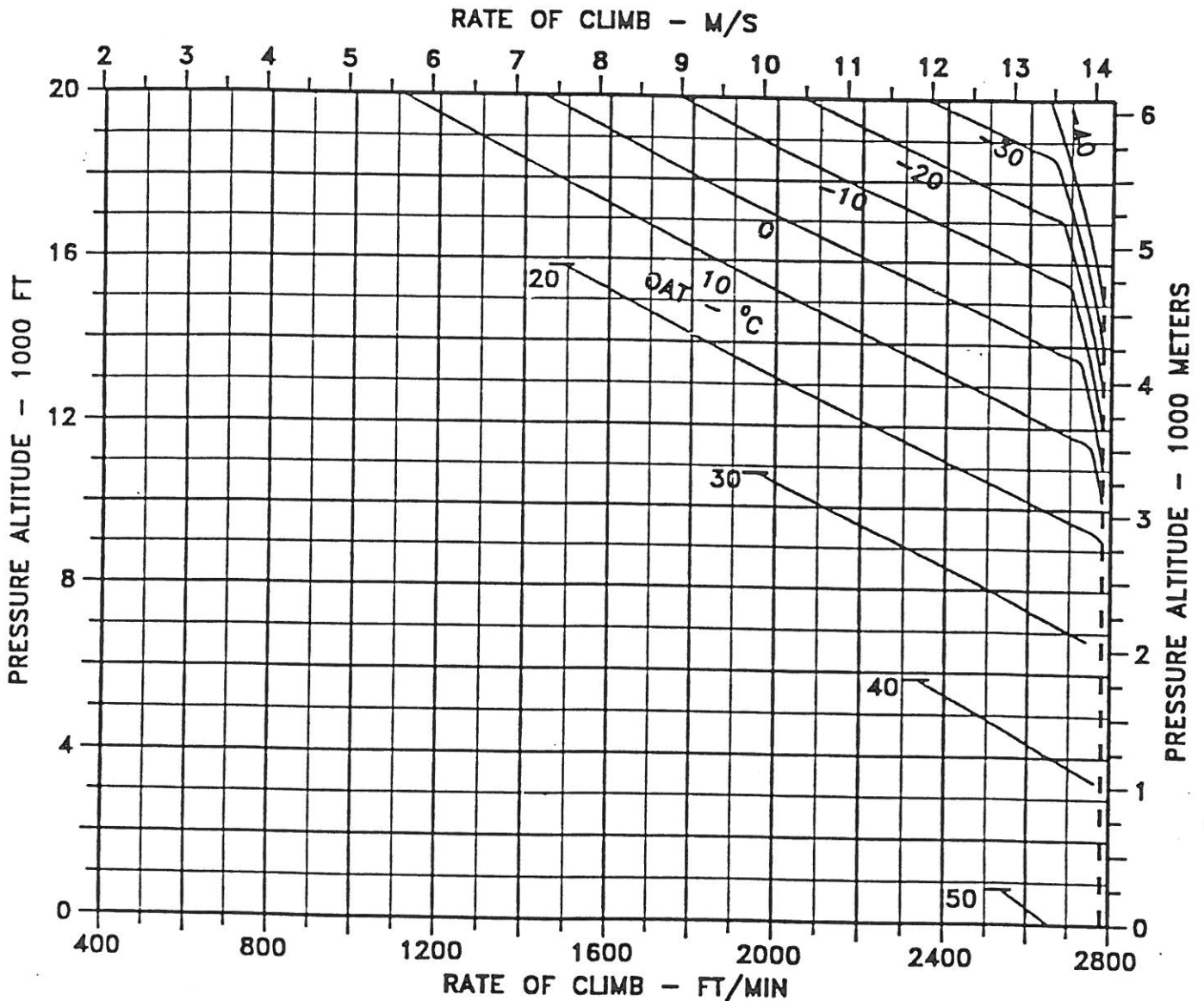


Figure 4-5. Rate of climb, twin takeoff power
(Sheet 1 of 5)

MAXIMUM RATE OF CLIMB

CLEAN CONFIGURATION
ENGINE RPM 100%
GENERATOR 17.5%

57 KIAS
HEATER/PART. SEP. PURGE ON
ANTI-ICE ON

TWIN TAKEOFF POWER
(5 MINUTE LIMIT)
3600 LB

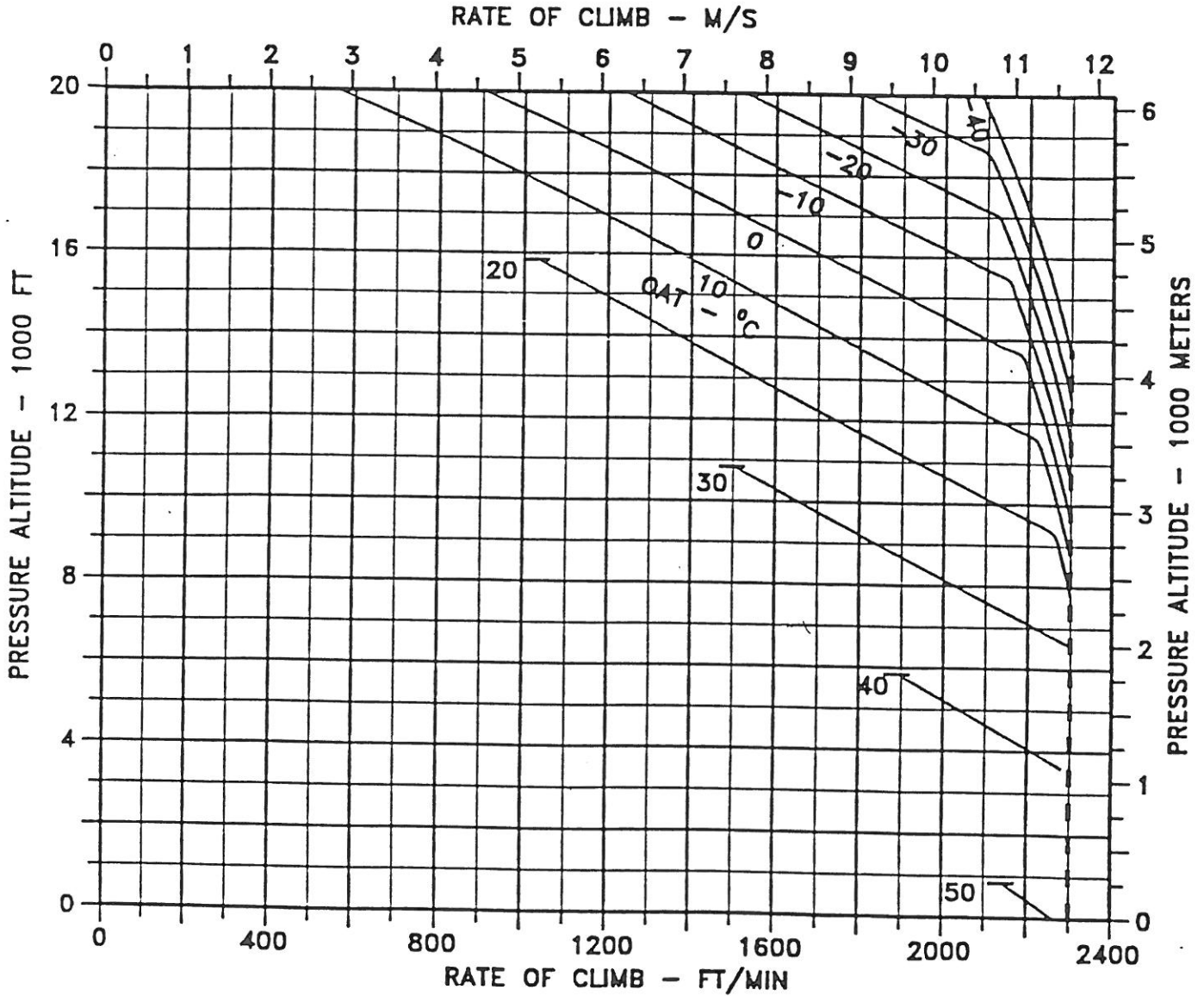


Figure 4-5. Rate of climb, twin takeoff power
(Sheet 2 of 5)

MAXIMUM RATE OF CLIMB

CLEAN CONFIGURATION
ENGINE RPM 100%
GENERATOR 17.5%

TWIN TAKEOFF POWER
(5 MINUTE LIMIT)
4000 LB

57 KIAS
HEATER/PART. SEP. PURGE ON
ANTI-ICE ON

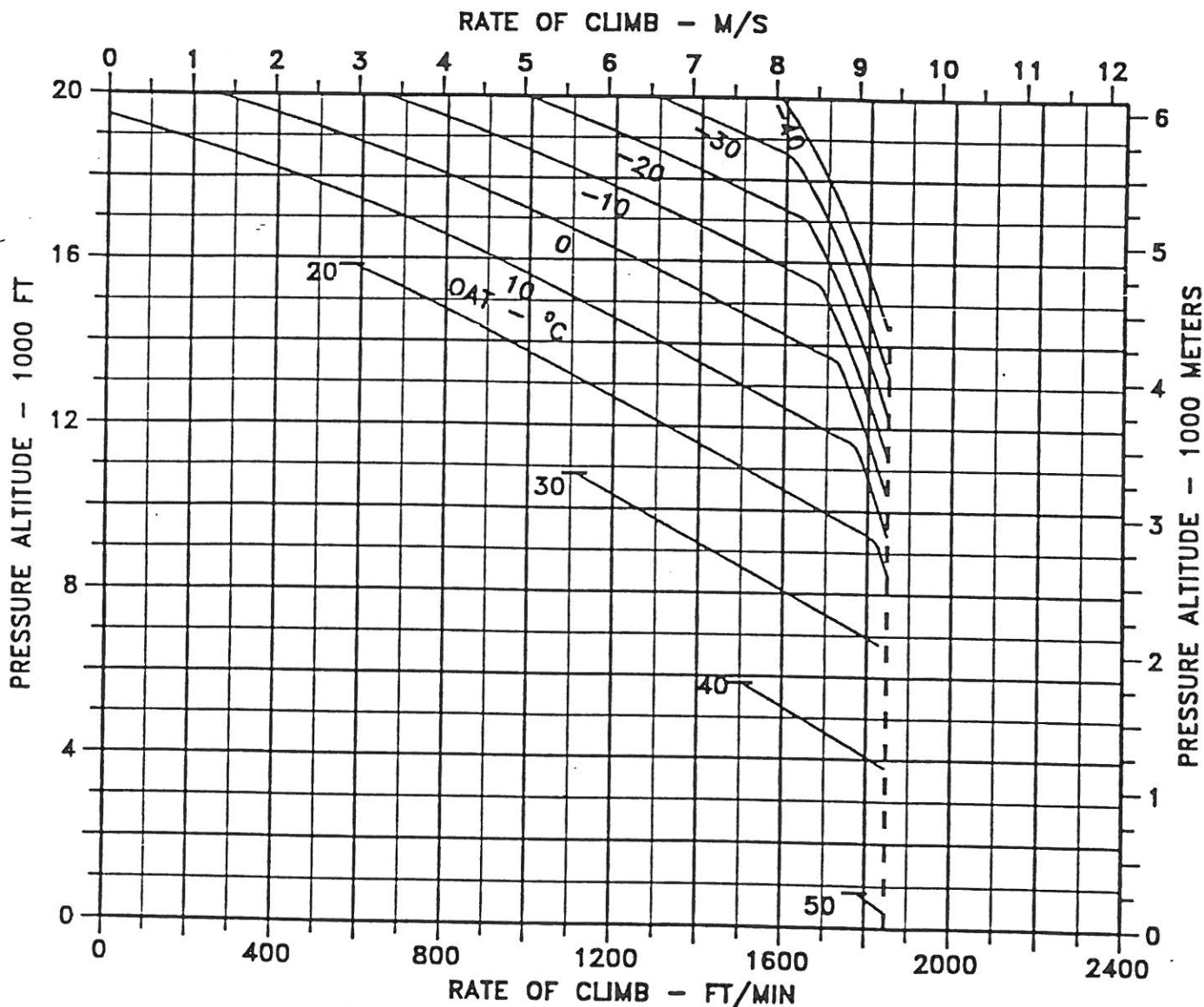


Figure 4-5. Rate of climb, twin takeoff power
(Sheet 3 of 5)

MAXIMUM RATE OF CLIMB

CLEAN CONFIGURATION
ENGINE RPM 100%
GENERATOR 17.5%

57 KIAS
HEATER/PART. SEP. PURGE ON
ANTI-ICE ON

TWIN TAKEOFF POWER
(5 MINUTE LIMIT)
4150 LB

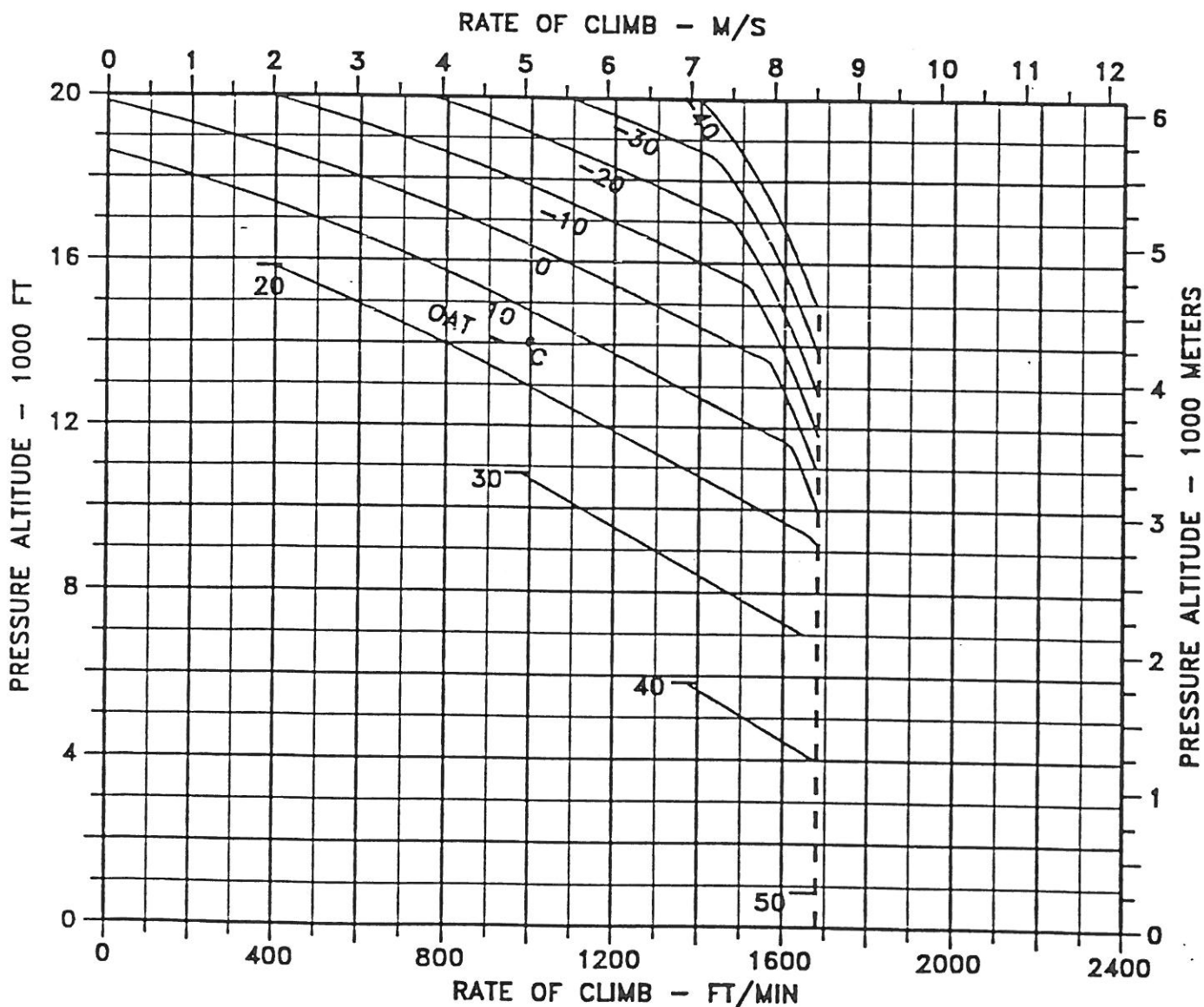


Figure 4-5. Rate of climb, twin takeoff power
(Sheet 4 of 5)

MAXIMUM RATE OF CLIMB

CLEAN CONFIGURATION
ENGINE RPM 100%
GENERATOR 17.5%

57 KIAS
HEATER/PART. SEP. PURGE OFF OR ON
ANTI-ICE OFF OR ON

TWIN TAKEOFF POWER
(5 MINUTE LIMIT)
4151 TO 4450 LB

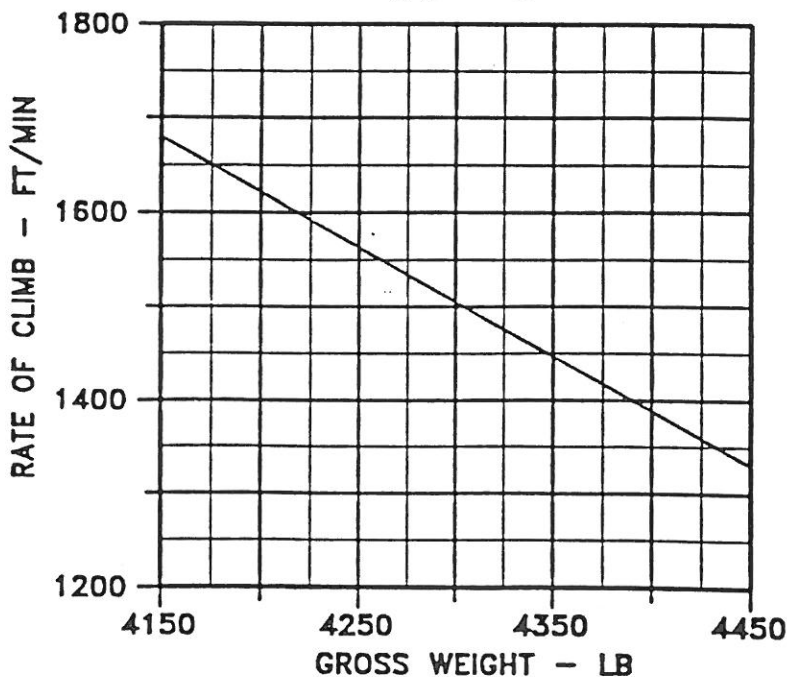
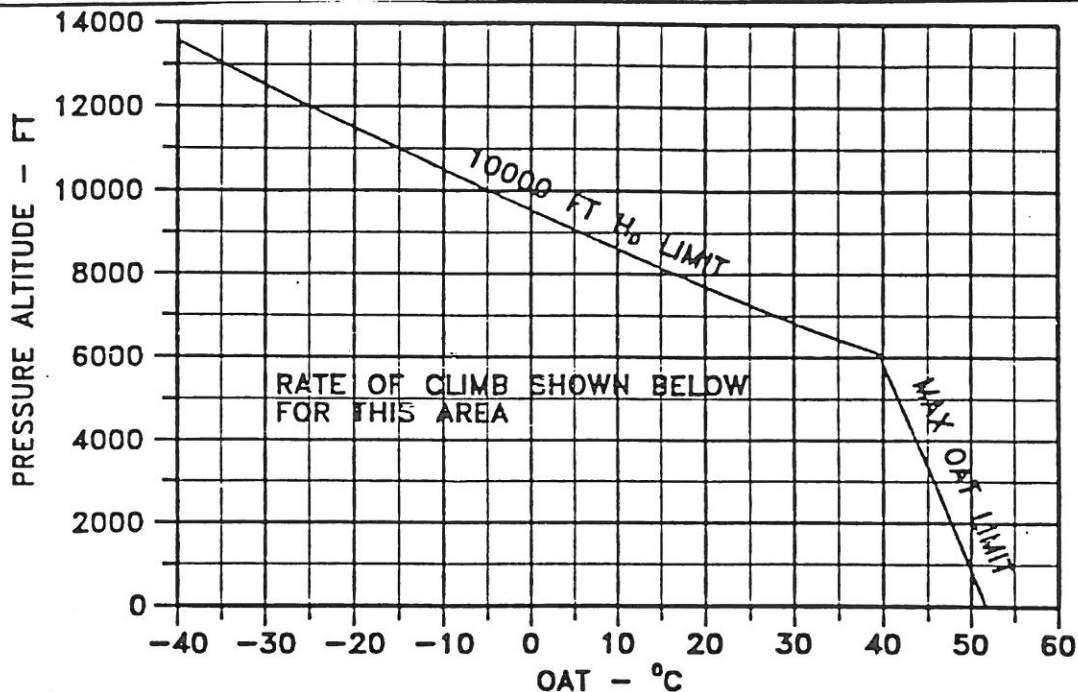


Figure 4-5. Rate of climb, twin takeoff power
(Sheet 5 of 5)

MAXIMUM RATE OF CLIMB

CLEAN CONFIGURATION
ENGINE RPM 100%
GENERATOR 17.5%

TWIN TAKEOFF POWER
(5 MINUTE LIMIT)
3200 LB

57 KIAS
HEATER/PART. SEP. PURGE OFF
ANTI-ICE OFF

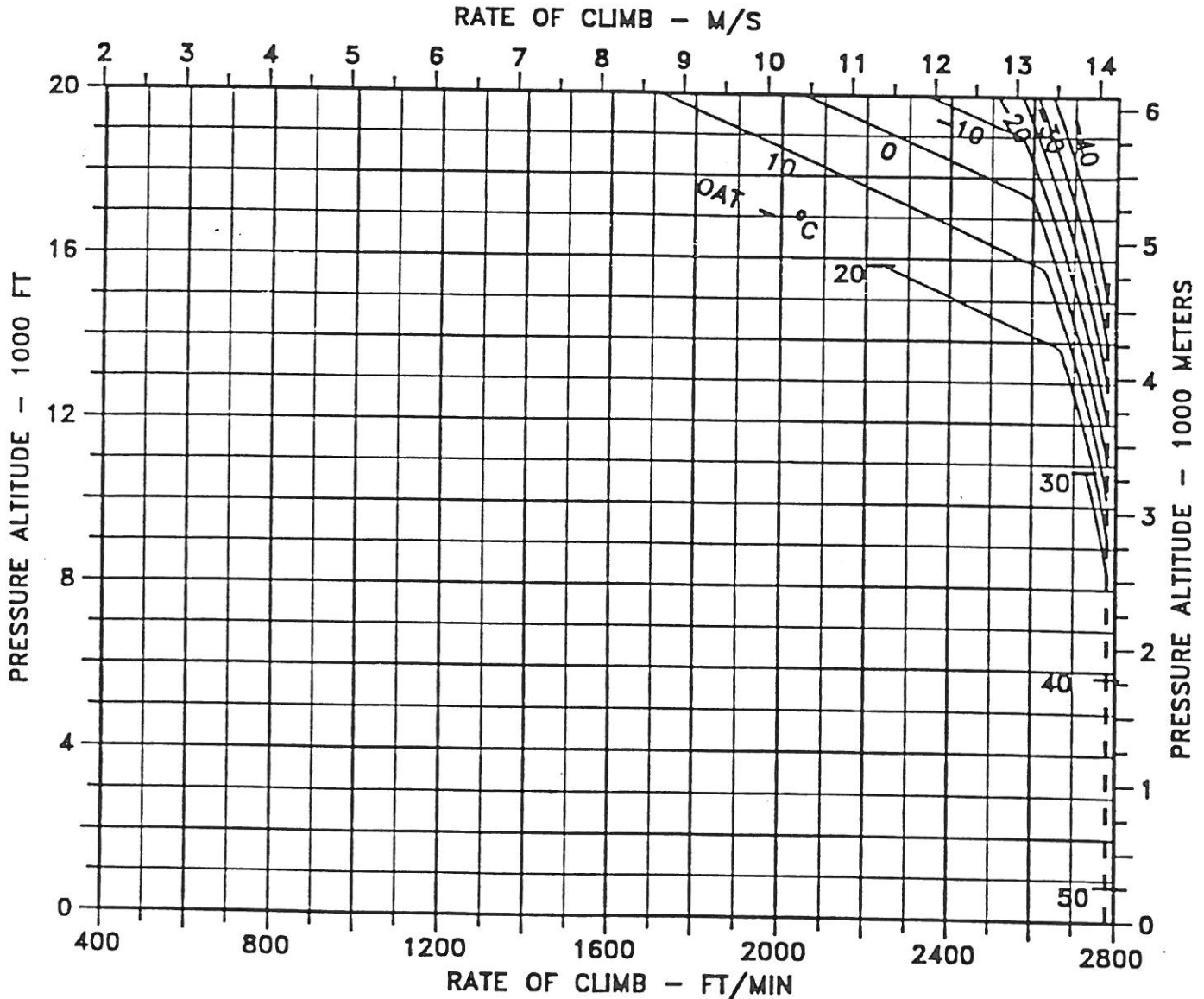


Figure 4-6. Twin engine rate of climb, takeoff power
(Sheet 1 of 5)

MAXIMUM RATE OF CLIMB

CLEAN CONFIGURATION
ENGINE RPM 100%
GENERATOR 17.5%

TWIN TAKEOFF POWER
(5 MINUTE LIMIT)
3600 LB

57 KIAS
HEATER/PART. SEP. PURGE OFF
ANTI-ICE OFF

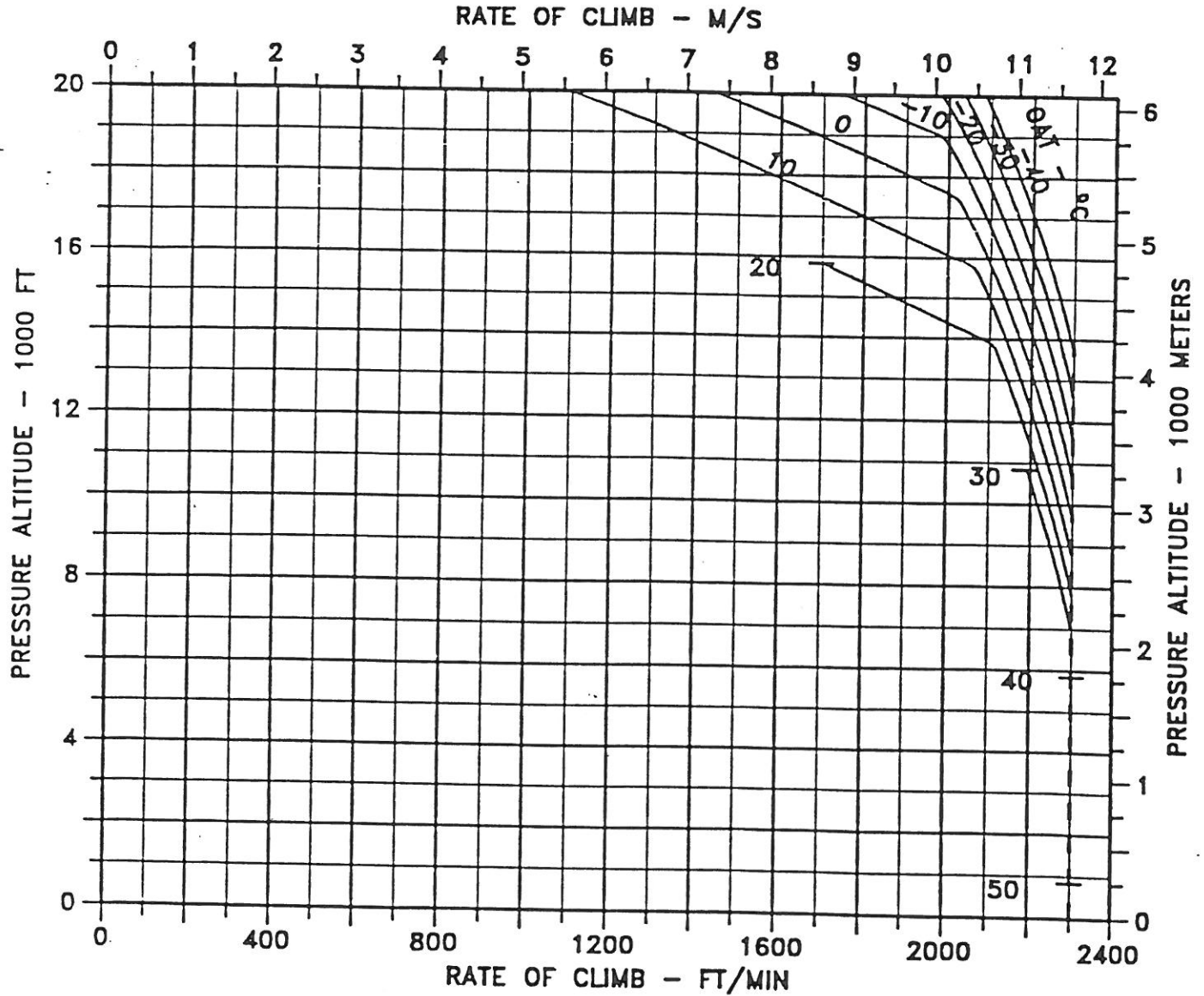


Figure 4-6. Twin engine rate of climb, takeoff power
(Sheet 2 of 5)

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SECTION 4 PERFORMANCE DATA

MAXIMUM RATE OF CLIMB

CLEAN CONFIGURATION
ENGINE RPM 100%
GENERATOR 17.5%

TWIN TAKEOFF POWER
(5 MINUTE LIMIT)
4000 LB

57 KIAS
HEATER/PART. SEP. PURGE OFF
ANTI-ICE OFF

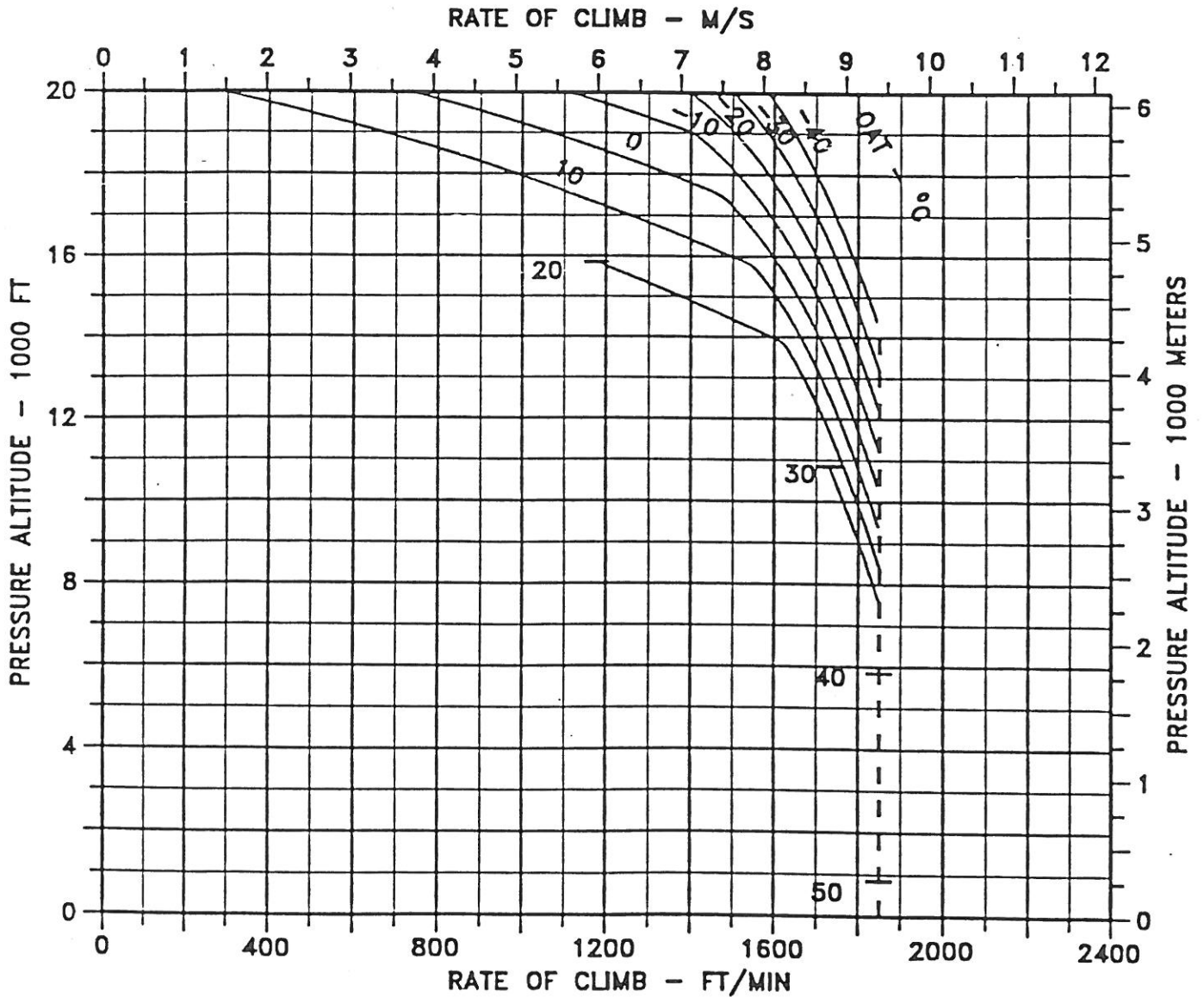


Figure 4-6. Twin engine rate of climb, takeoff power
(Sheet 3 of 5)

SECTION 4 PERFORMANCE DATA

MAXIMUM RATE OF CLIMB

CLEAN CONFIGURATION
ENGINE RPM 100%
GENERATOR 17.5%

TWIN TAKEOFF POWER
(5 MINUTE LIMIT)
4150 LB

57 KIAS
HEATER/PART. SEP. PURGE OFF
ANTI-ICE OFF

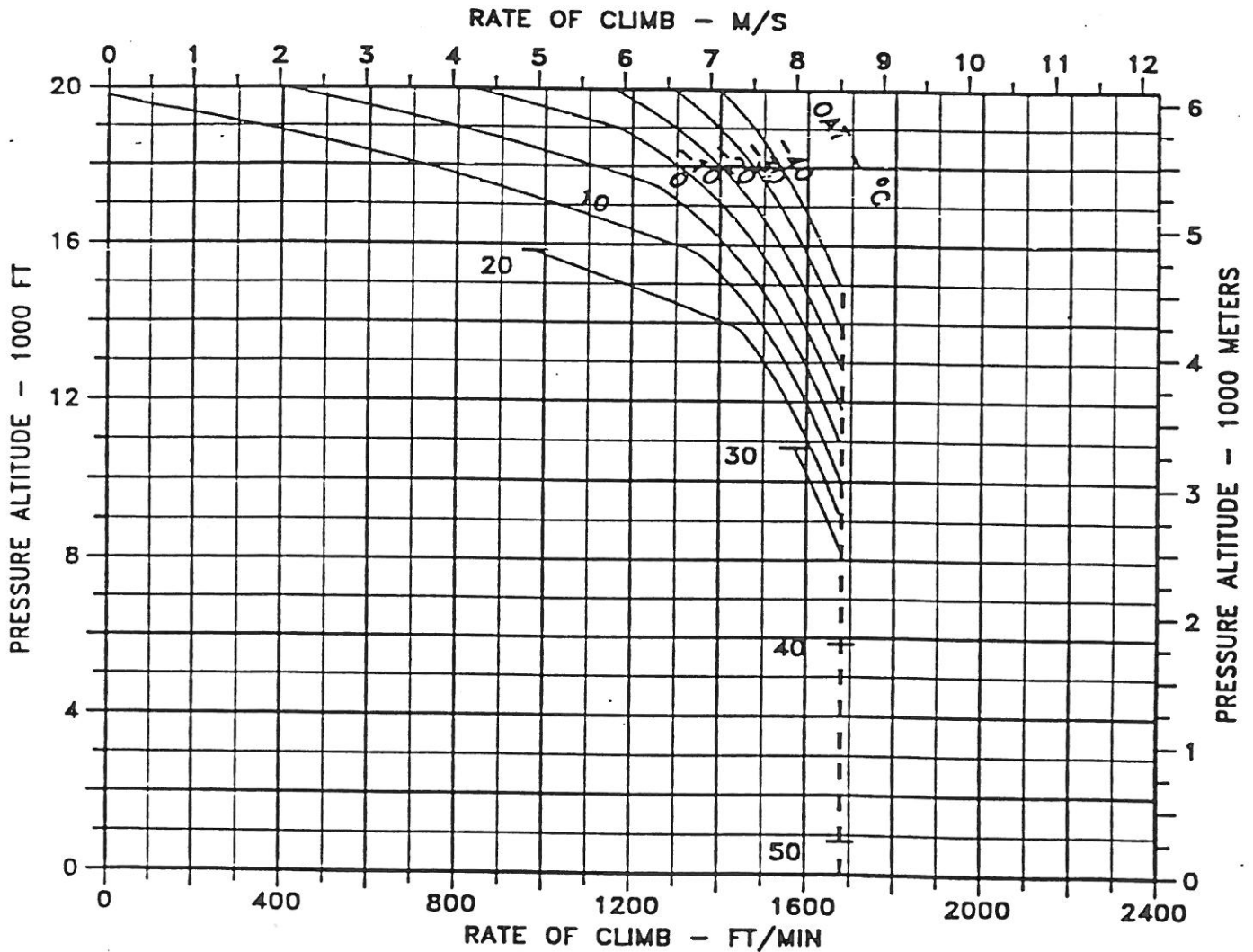


Figure 4-6. Twin engine rate of climb, takeoff power
(Sheet 4 of 5)

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SECTION 4 PERFORMANCE DATA

MAXIMUM RATE OF CLIMB

CLEAN CONFIGURATION
ENGINE RPM 100%
GENERATOR 17.5%

57 KIAS
HEATER/PART. SEP. PURGE OFF OR ON
ANTI-ICE OFF OR ON

TWIN TAKEOFF POWER
(5 MINUTE LIMIT)
4151 TO 4450 LB

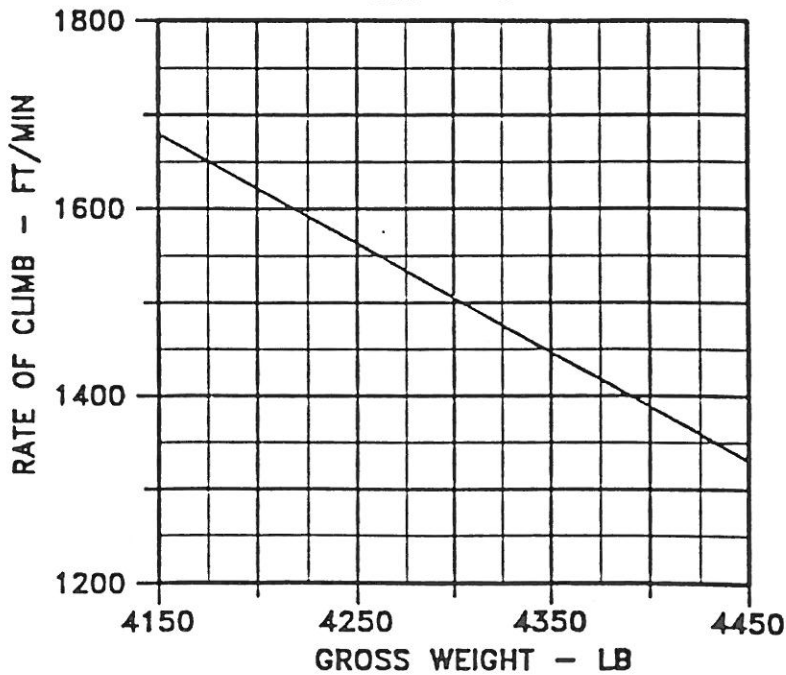
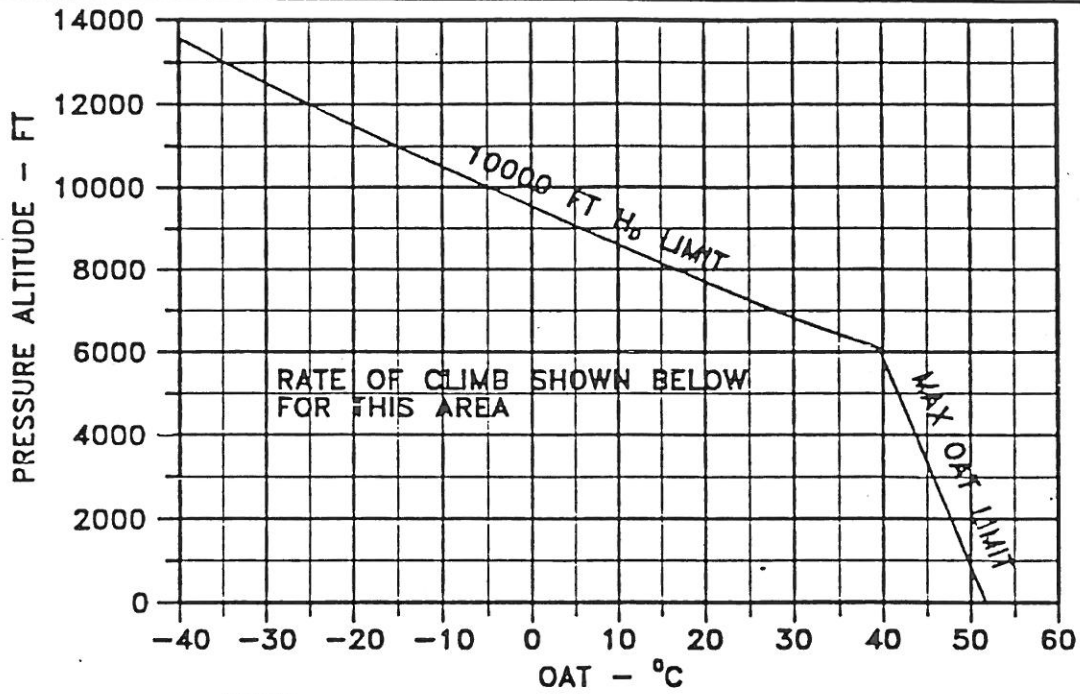


Figure 4-6. Twin engine rate of climb, takeoff power (Sheet 5 of 5)

MAXIMUM RATE OF CLIMB

CLEAN CONFIGURATION
ENGINE RPM 100%
GENERATOR 17.5%

57 KIAS
HEATER/PART. SEP. PURGE ON
ANTI-ICE ON

TWIN MAXIMUM CONTINUOUS POWER
3200 LB

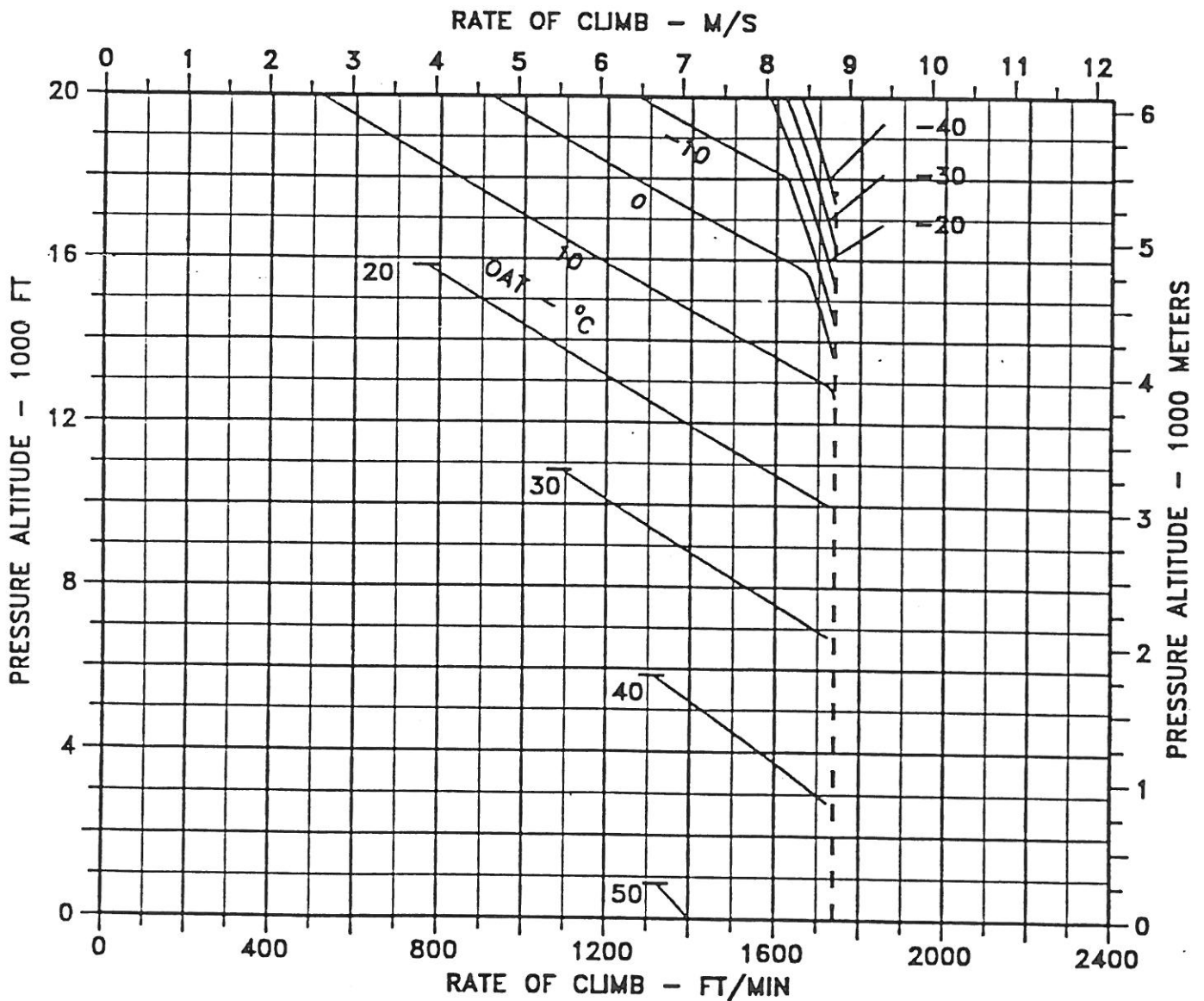


Figure 4-7. Rate of climb, twin maximum continuous power
(Sheet 1 of 5)

SECTION 4 PERFORMANCE DATA

MAXIMUM RATE OF CLIMB

CLEAN CONFIGURATION
ENGINE RPM 100%
GENERATOR 17.5%

57 KIAS
HEATER/PART. SEP. PURGE ON
ANTI-ICE ON

TWIN MAXIMUM CONTINUOUS POWER
3600 LB

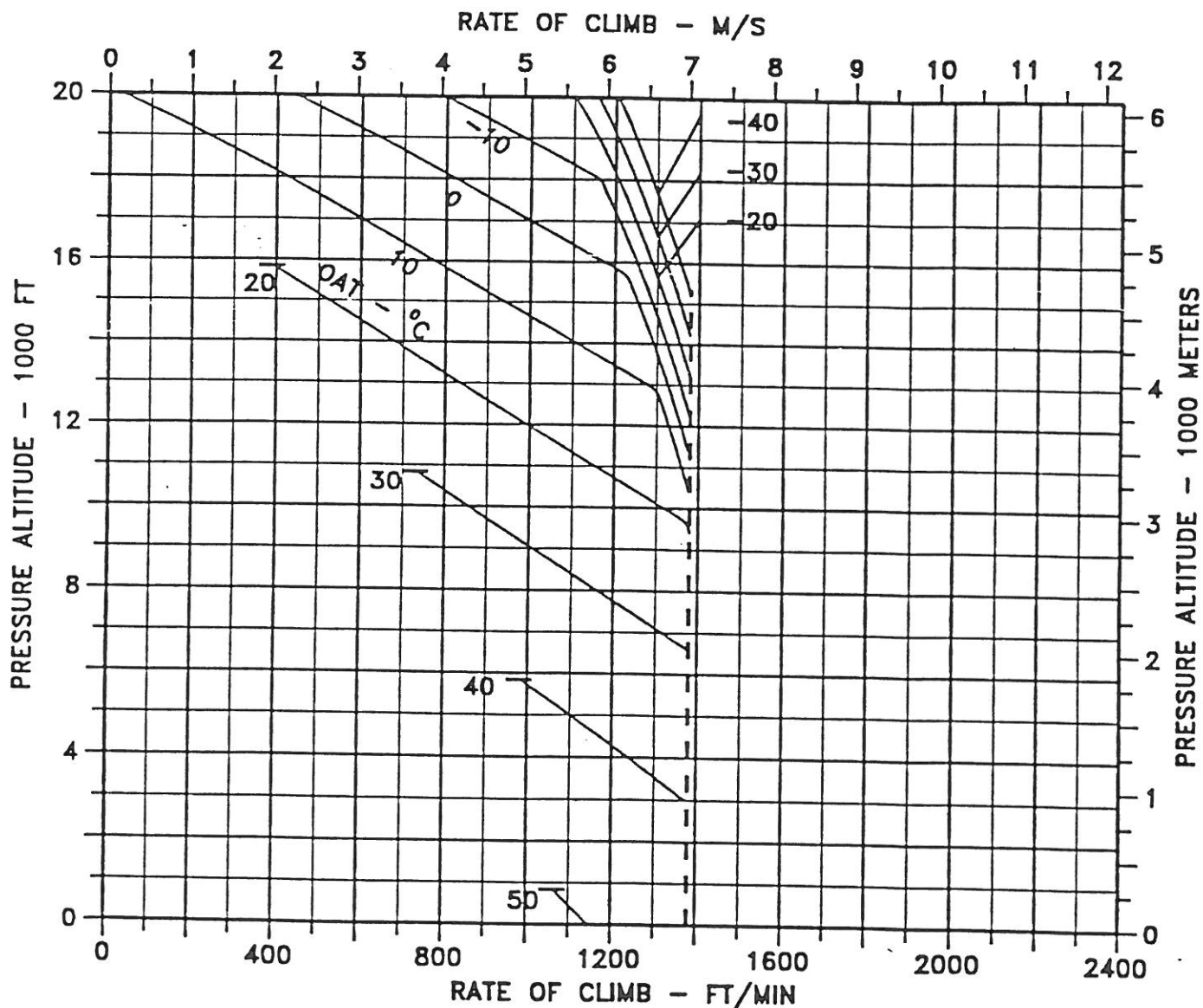


Figure 4-7. Rate of climb, twin maximum continuous power
(Sheet 2 of 5)

SECTION 4 PERFORMANCE DATA

MAXIMUM RATE OF CLIMB

CLEAN CONFIGURATION
ENGINE RPM 100%
GENERATOR 17.5%

57 KIAS
HEATER/PART. SEP. PURGE ON
ANTI-ICE ON

TWIN MAXIMUM CONTINUOUS POWER
4000 LB

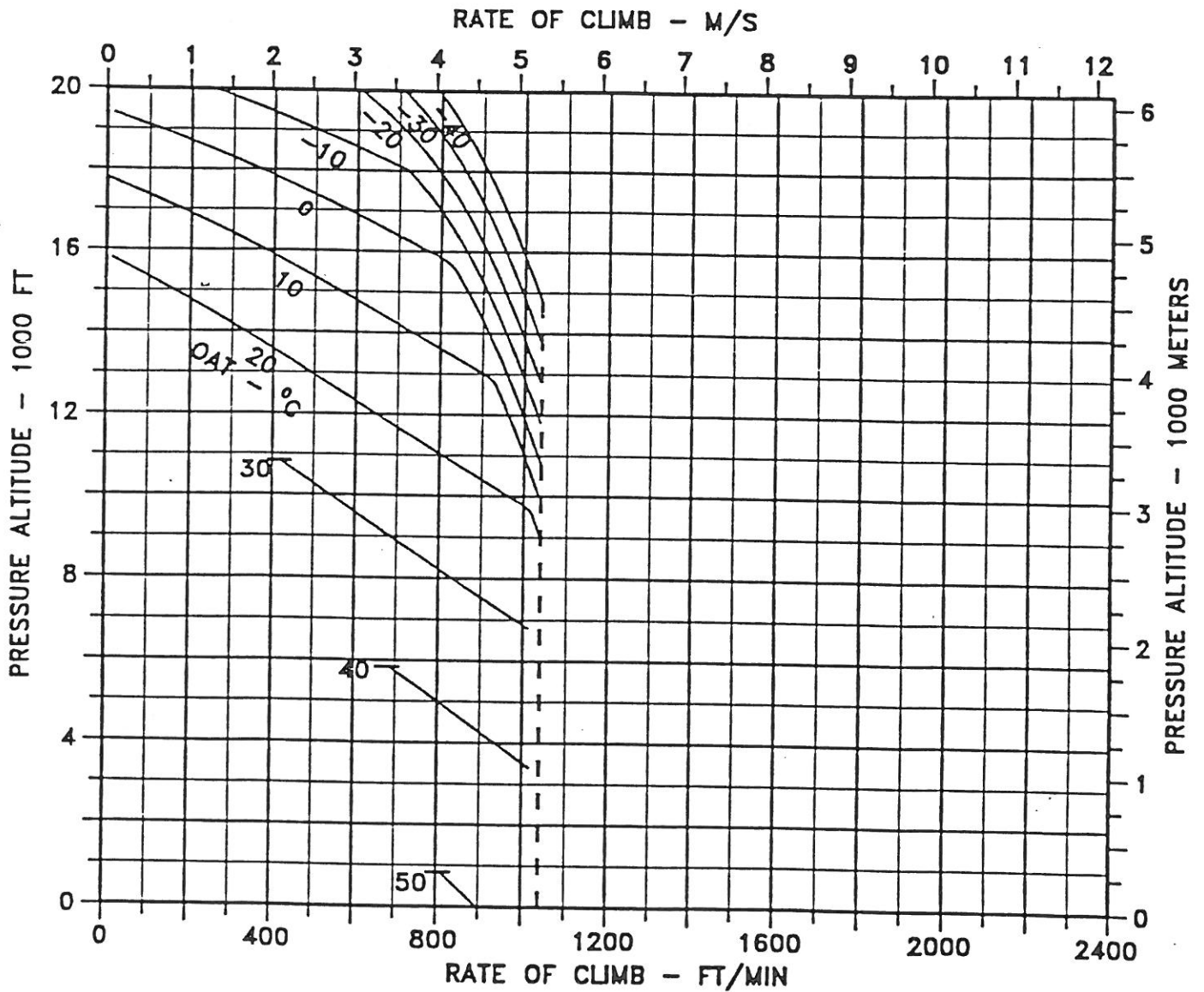


Figure 4-7. Rate of climb, twin maximum continuous power
(Sheet 3 of 5)

SECTION 4 PERFORMANCE DATA

MAXIMUM RATE OF CLIMB

CLEAN CONFIGURATION
ENGINE RPM 100%
GENERATOR 17.5%

57 KIAS
HEATER/PART. SEP. PURGE ON
ANTI-ICE ON

TWIN MAXIMUM CONTINUOUS POWER
4150 LB

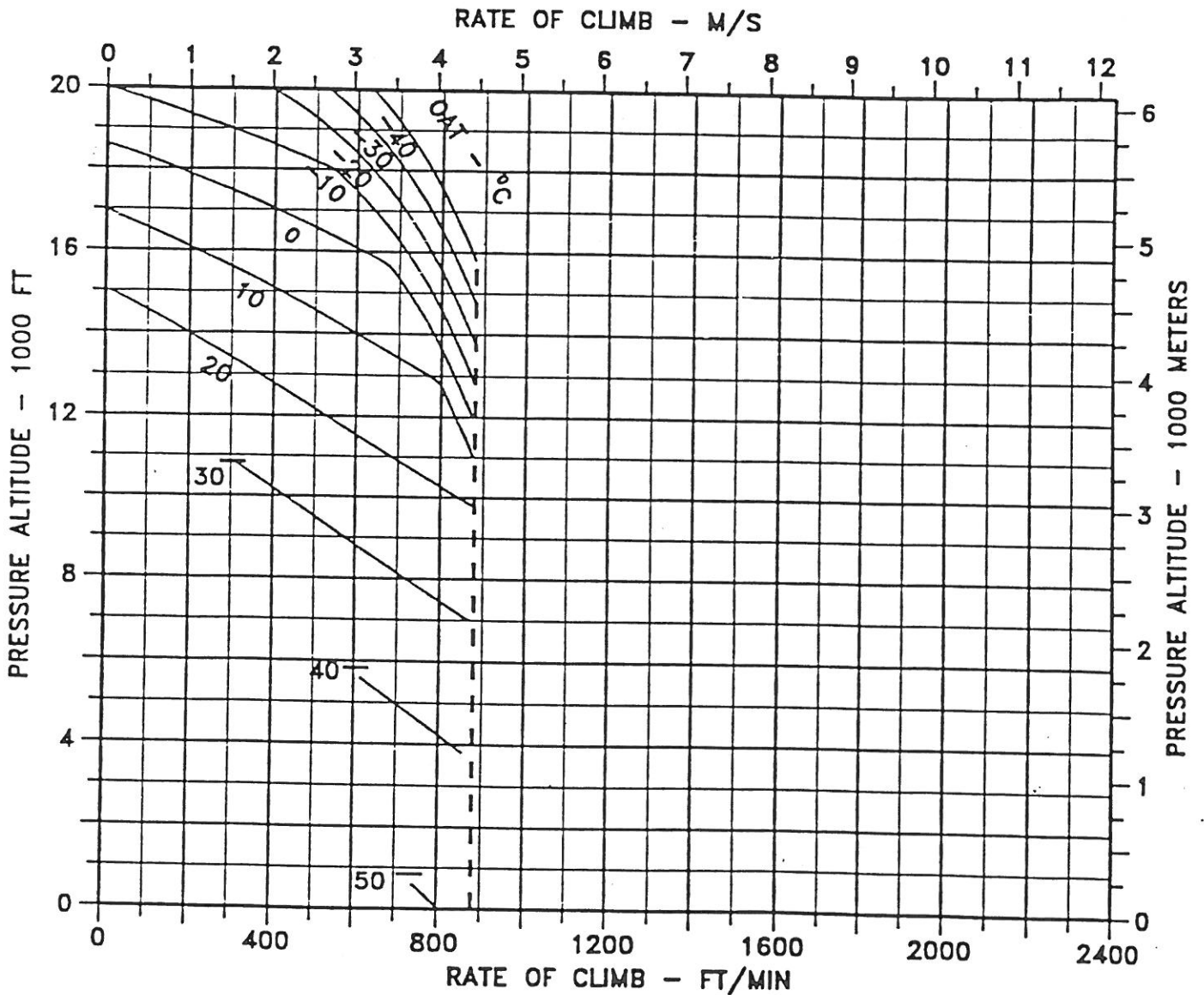


Figure 4-7. Rate of climb, twin maximum continuous power
(Sheet 4 of 5)

SECTION 4 PERFORMANCE DATA

MAXIMUM RATE OF CLIMB

CLEAN CONFIGURATION
ENGINE RPM 100%
GENERATOR 17.5%

57 KIAS
HEATER/PART. SEP. PURGE OFF OR ON
ANTI-ICE OFF OR ON

TWIN MAXIMUM CONTINUOUS POWER
4151 TO 4450 LB

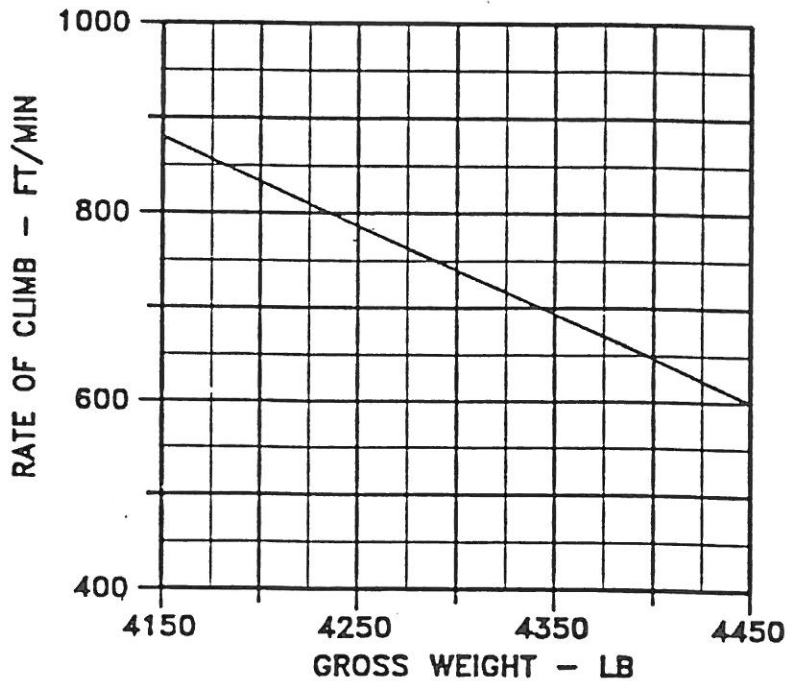
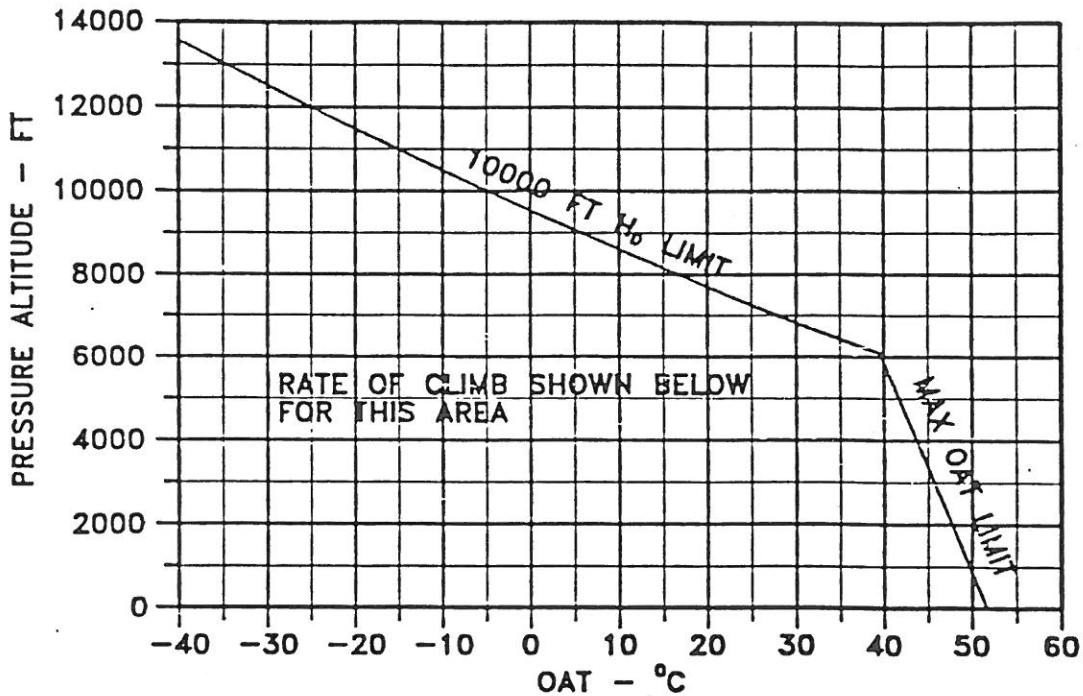


Figure 4-7. Rate of climb, twin maximum continuous power
(Sheet 5 of 5)

SECTION 4 PERFORMANCE DATA

MAXIMUM RATE OF CLIMB

CLEAN CONFIGURATION
ENGINE RPM 100%
GENERATOR 17.5%

57 KIAS
HEATER/PART. SEP. PURGE OFF
ANTI-ICE OFF

TWIN MAXIMUM CONTINUOUS POWER
3200 LB

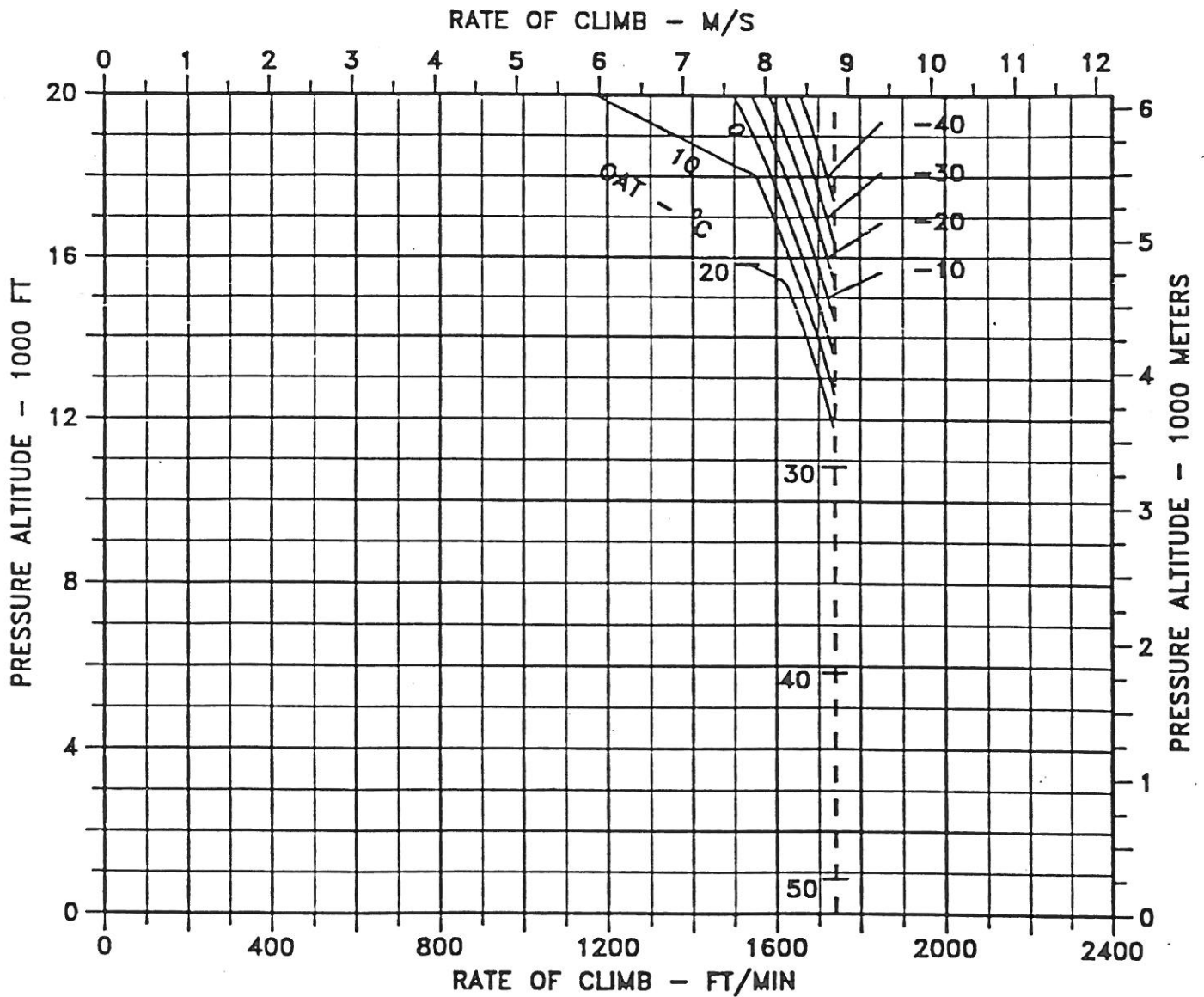


Figure 4-8. Twin engine rate of climb, maximum continuous power
(Sheet 1 of 5)

SECTION 4 PERFORMANCE DATA

MAXIMUM RATE OF CLIMB

CLEAN CONFIGURATION
ENGINE RPM 100%
GENERATOR 17.5%

57 KIAS
HEATER/PART. SEP. PURGE OFF
ANTI-ICE OFF

TWIN MAXIMUM CONTINUOUS POWER
4150 LB

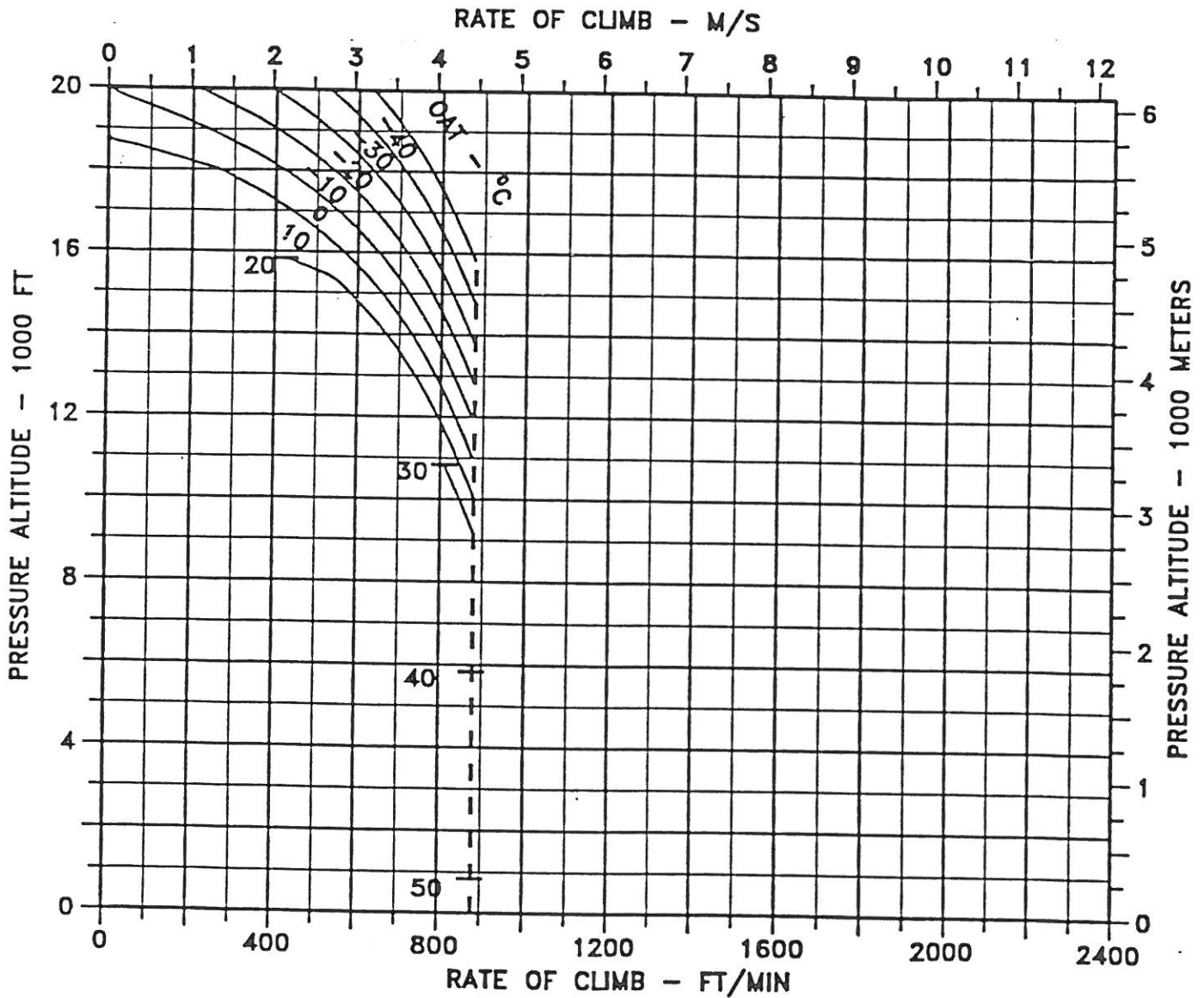


Figure 4-8. Twin engine rate of climb, maximum continuous power
(Sheet 4 of 5)

SECTION 4 PERFORMANCE DATA

MAXIMUM RATE OF CLIMB

CLEAN CONFIGURATION
ENGINE RPM 100%
GENERATOR 17.5%

57 KIAS
HEATER/PART. SEP. PURGE OFF OR ON
ANTI-ICE OFF OR ON

TWIN MAXIMUM CONTINUOUS POWER
4151 TO 4450 LB

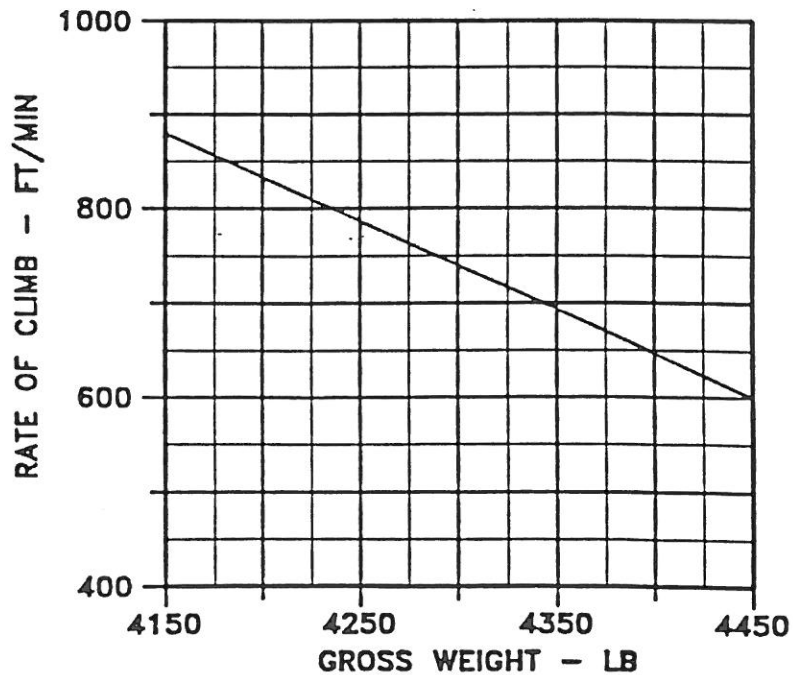
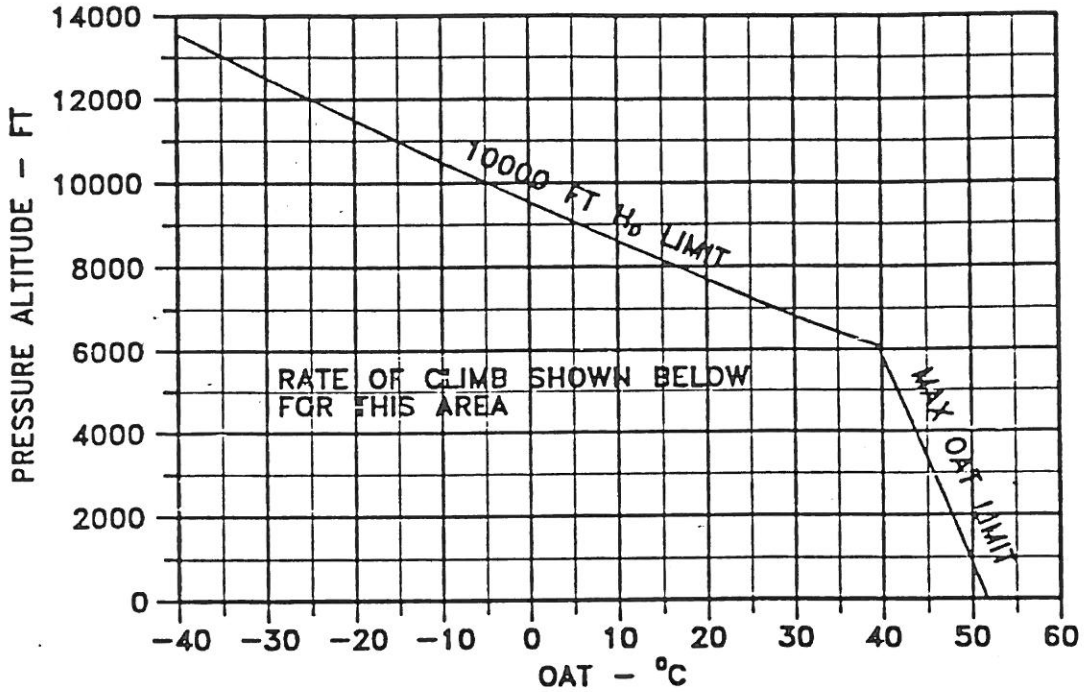


Figure 4-8. Twin engine rate of climb, maximum continuous power
(Sheet 5 of 5)

SECTION 4 PERFORMANCE DATA

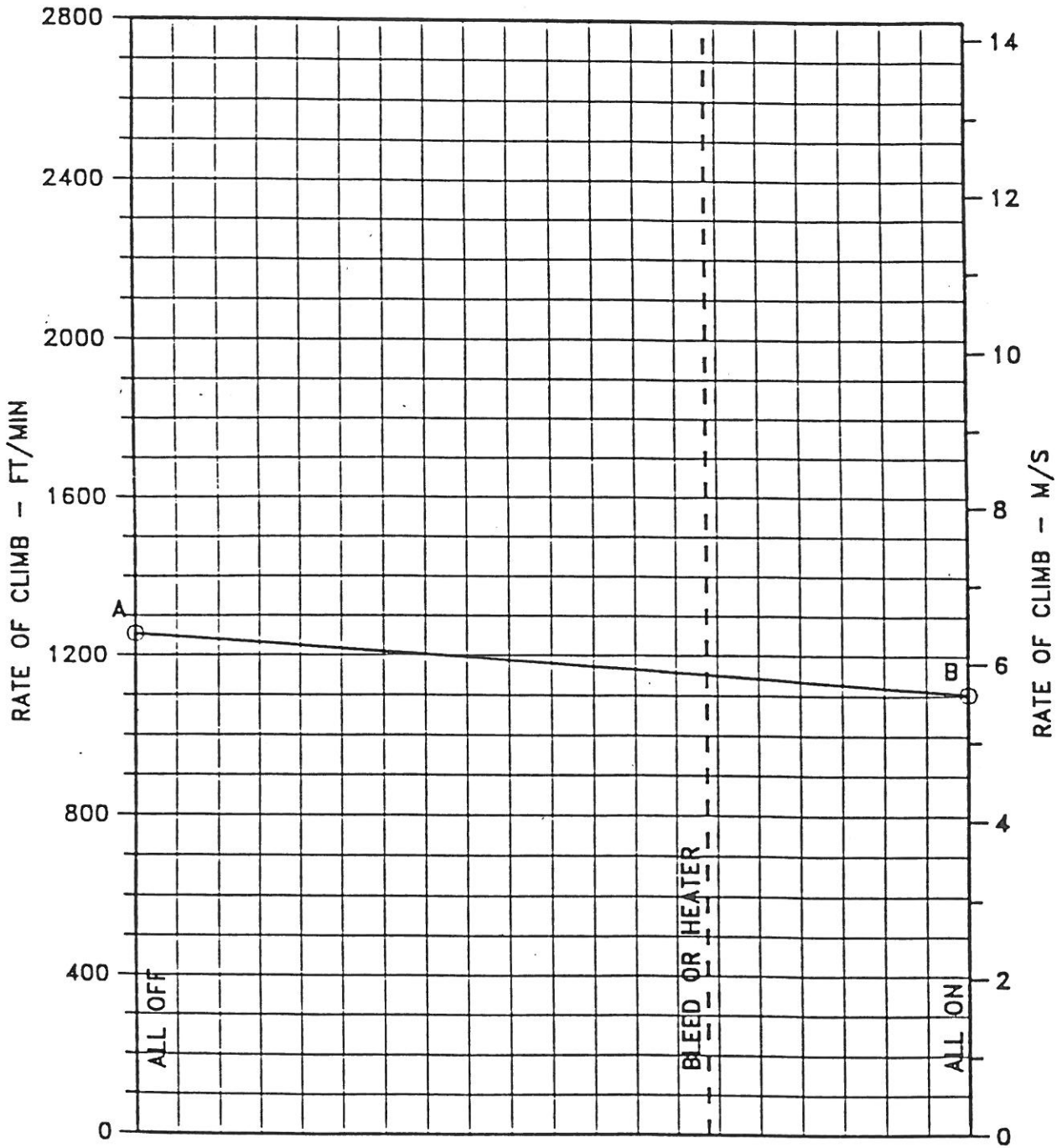


Figure 4-9. Maximum rate of climb correction due to bleed or heater

STC CERTIFICATE

United States of America
Department of Transportation — Federal Aviation Administration
Supplemental Type Certificate

Number SH3887NM

This certificate, issued to Air Comm Corporation

certifies that the change in the type design for the following product with the limitations and conditions therefor as specified hereon meets the airworthiness requirements of Part 6 of the Civil Air Regulations:

Original Product — Type Certificate Number: H2SW

Make: Bell Helicopter Textron

Model: 206A, 206B, 206L, 206L-1, 206L-3, 206L-4

Description of Type Design Change:

Installation of bleed air cabin heating system and/or windshield defroster system in accordance with Air Comm Corp. Drawing List DL-206H, Revision N, dated February 9, 1994, or later FAA approved revision.

Limitations and Conditions:

1. FAA approved Flight Manual Supplement for the 206H-200 bleed air cabin heater in Bell Helicopter Models 206A and 206B dated December 24, 1987, or later FAA approved revision is required.
2. FAA approved Flight Manual Supplement for the 206H-202 bleed air cabin heater in Bell Helicopter Models 206L, 206L-1, 206L-3, and 206L-4 dated December 24, 1987, or later FAA approved revision is required.

This certificate and the supporting data which is the basis for approval shall remain in effect until surrendered, suspended, revoked, or a termination date is otherwise established by the Administrator of the Federal Aviation Administration. (See continuation sheet, page 3 of 3)

Date of application: October 12, 1987

Date issued:

Date of issuance: December 24, 1987

Date amended: 7/19/89, 11/2/90, 12/3/92
1/4/93; February 15, 1994

By direction of the Administrator



Richard Jennings
RICHARD E. JENNINGS (Signature) Manager
Denver Aircraft Certification Field Office
Northwest Mountain Region, Denver, Colorado
(Title)

Any alteration of this certificate is punishable by a fine of not exceeding \$1,000, or imprisonment not exceeding 3 years, or both.

United States of America
Department of Transportation—Federal Aviation Administration
Supplemental Type Certificate
(Continuation Sheet)

Number SH3887NM

3. FAA approved Flight Manual Supplement for the 206H-990 windshield defroster system ("defroster only" system for rotorcraft with a non Air Comm Corp. bleed air cabin heater installation) in Bell Helicopter Models 206A, and 206B dated November 2, 1990, or later FAA approved revision is required.
4. FAA approved Flight Manual Supplement for the 206H-992/-994 windshield defroster system ("defroster only" system for rotorcraft with a non Air Comm Corp. bleed air cabin heater installation) in Bell Helicopter Models 206L, 206L-1 and 206L-3 dated November 2, 1990, or later FAA approved revision is required.
5. FAA approved Flight Manual Supplement for the 206H-201 bleed air cabin heater in Bell Helicopter Model 206B dated January 3, 1992, or later FAA approved revision is required.
6. FAA approved Flight Manual Supplement for the 206H-203 bleed air cabin heater in Bell Helicopter Model 206L-3 dated January 3, 1992, or later FAA approved revision is required.
7. FAA approved Flight Manual Supplement for the 206H-204 bleed air cabin heater in Bell Helicopter Model 206L-4 dated January 4, 1993, or later FAA approved revision is required.
8. FAA Approved Flight Manual Supplement for the 206H-204 Bleed Air Cabin Heater in Bell Helicopter Model 206L-4 with Tridair STC SR00036SE (Twin Engine), dated February 15, 1994 or later FAA approved revision is required.
9. This STC also applies to Bell Model 206L-4 with Twin Engines installed in accordance with STC SR00036SE.
10. This STC also applies to Bell Models 206A/B, and 206L helicopters with Allison 250-C20R/2 engine installed in accordance with STC SH4179NM and SH4169NM, respectively.
11. Approval of this change in type design applies to the above model aircraft only. This approval should not be extended to aircraft of this model on which other previously approved modifications are incorporated unless it is determined that the interrelationship between this change and any of those other previously approved modifications, including changes in type design, will introduce no adverse effect upon the airworthiness of that aircraft. A copy of this Certificate, Continuation Sheet, and FAA Approved Flight Manual Supplement or later FAA approved revision, must be maintained as part of the permanent records for the modified aircraft.

-----E N D-----

Any alteration of this certificate is punishable by a fine of not exceeding \$1,000, or imprisonment not exceeding 3 years, or both.

Service Instructions

Remove the following section
and retain with the
aircraft documents.

Air Comm Corporation
Boulder, CO 80301

SERVICE INSTRUCTIONS

for

BELL 206L4 TWIN RANGER CABIN HEATER

(206H-204)

March 1994

INTRODUCTION

This document provides maintenance and service information for the ACC 206H-204 cabin heater installation in the Bell 206L4 Twin Ranger helicopter.

REFERENCE DOCUMENTS

1. Basic Bell Service Instructions.
2. AC43.13.1A, Acceptable Practices, Aircraft Alternation and Repair.
3. ACC Drawings:
 - 206H-204; Heater Installation.
 - 206H-516; Bleed Air Plumbing Installation.
 - 206H-840; Installation - Temp Sensors.
 - 206H-940; Heater Ejector Installation.
 - 206H-986; Windshield Defroster Installation.
 - 206H-988; Chin Bubble Defroster Installation.

SYSTEM DESCRIPTION AND OPERATION

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.

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 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 for the two forward outlets, by rotation of the swivel outlet.

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.

The system features a bleed air type defroster system. This system consists of an ON-OFF valve located in the center console and heater ejectors located in each defroster diffuser. The ejectors pump warm air across the windshield. The defroster and heater may be used simultaneously.

System Description and Operation (cont'd)

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).

MAINTENANCE INSTRUCTIONS

Conduct the following inspection functions at each annual inspection.

1. Inspect bleed air hose and tube assemblies for evidence of damage or deterioration. Replace if any of the above exists.
2. Inspect heater control valve for mounting security and freedom of operation.
3. Inspect "firewall shut-off" valve for security and operation.

Note

Air pressure (shop air, or bleed) must exist at the inlet side of the valve for valve operation.

4. Inspect bleed plumbing for insulation and security.
5. Verify security of control knobs and placards.
6. Check the function of the automatic drain valve to insure that the valve is closed when the engine is operating. The valve should be checked with the heater "full ON." Slight leakage is permitted.
7. Remove heater ejectors. Inspect nozzles for evidence of deterioration. Check flow control valve for freedom of operation.

Note

Index Ejector Flow Control Valve as shown on page 8.

8. Verify operation of the "heater overtemp" warning light (press to test).

Note

Temp sensor specifications:

- a. Normally open
- b. Close at 220°F. This results in illumination of the "overtemp" light and closure of the "firewall shut-off" valve.
- c. Heater ON-OFF switch must be moved to the "OFF" position to extinguish the Htr "Over-Temp" light.

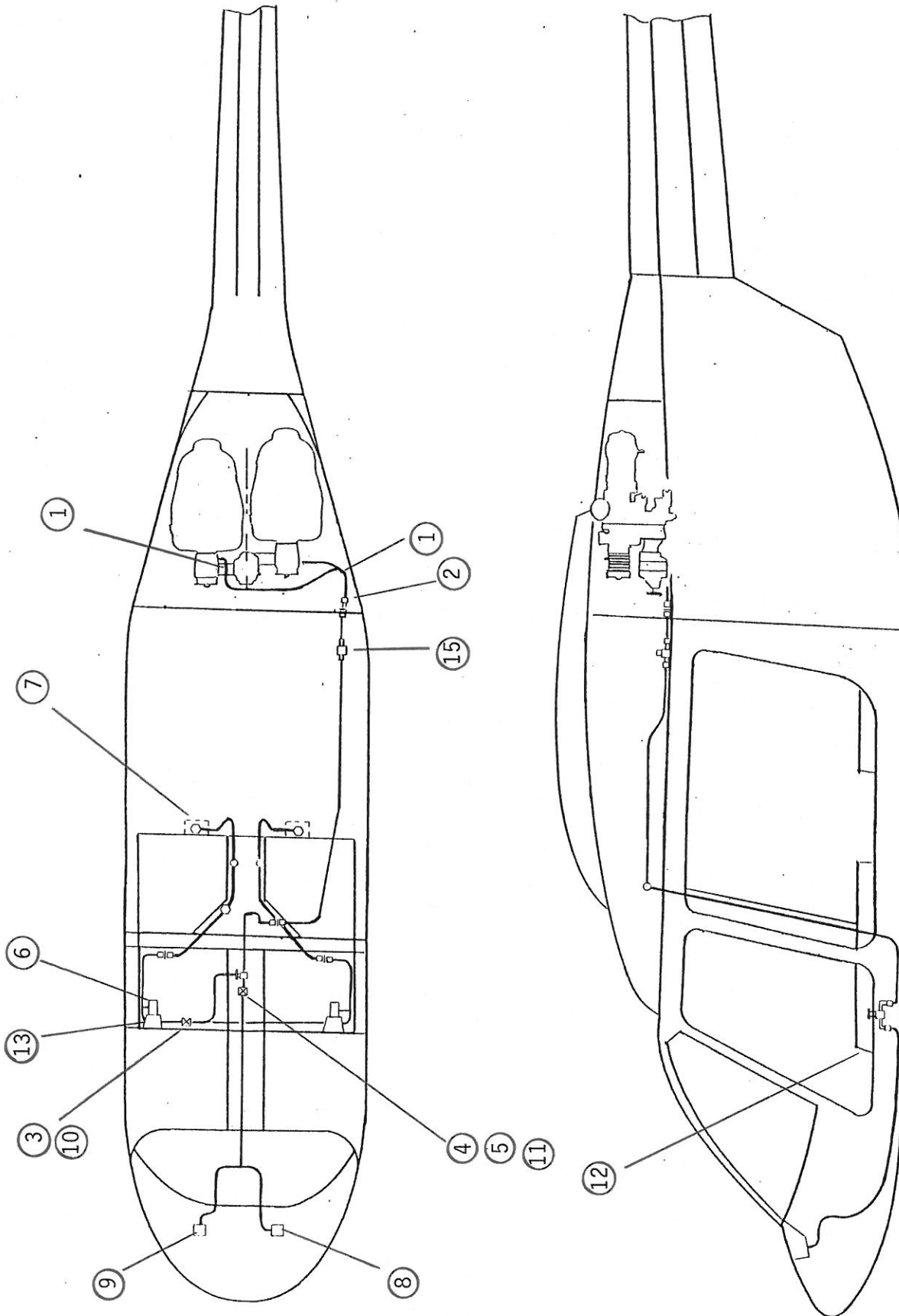
Maintenance Instructions (cont'd)

Spares List - 206H-204 Heater System Installation

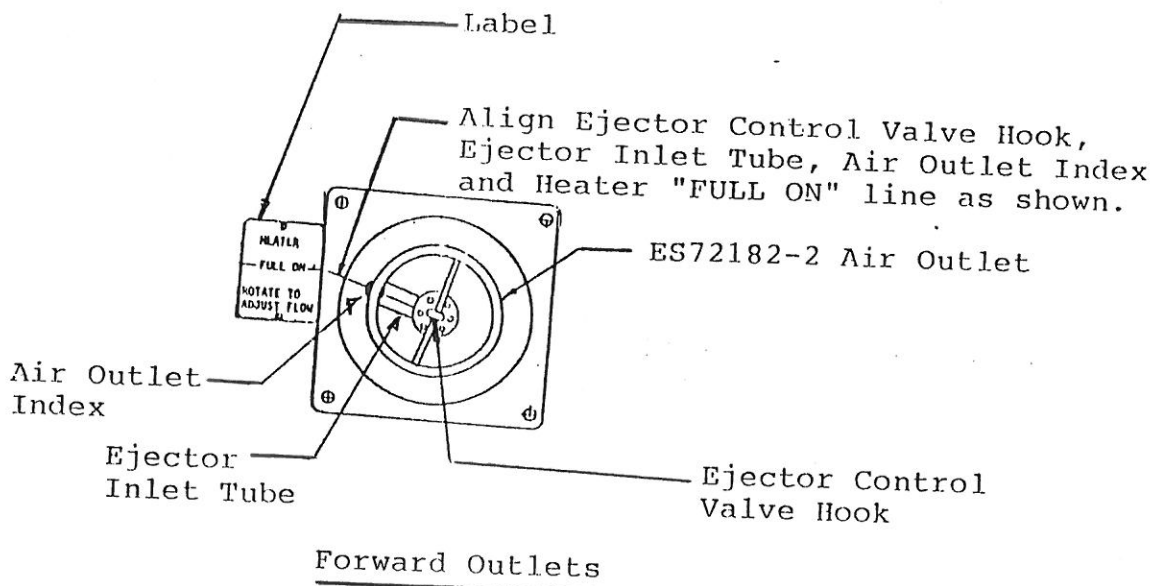
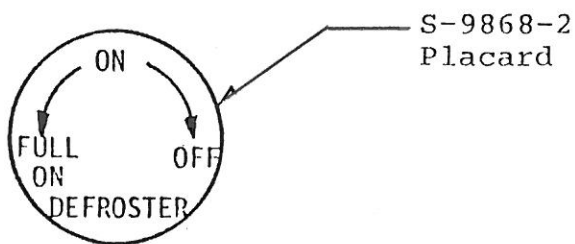
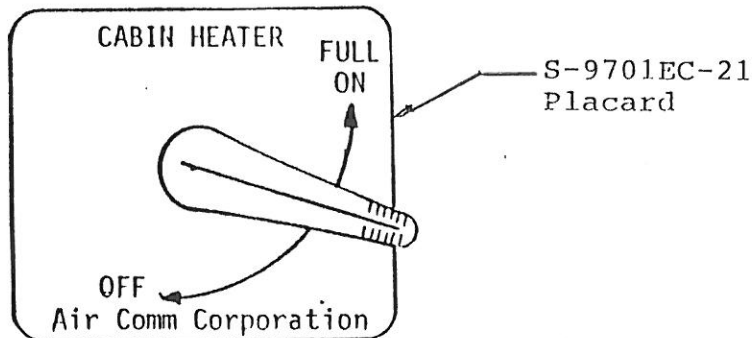
Item No.	Description	P/N	Qty/System
1	Bleed Air Hose Assy	S-9213EC-2	2
2	Valve Assy-Drain	S-9230EC-1	1
3	Valve Assy-Heater Control	S-9209EC-1	1
4	Valve Assy-Opt Defroster	S-9209EC-3	1
5	Knob	ES39300-1	1
6	Ejector Assy-Heater (fwd)	S-6450EC-1	2
7	Ejector Assy - Heater (Aft)	S-6424EC-4	2
8	Ejector Assy-Defroster (LH)	S-9225EC-1	1
9	Ejector Assy Defroster (RH)	S-9225EC-2	1
10	Heater Placard (Fwd)	S-9701EC-21	1
11	Placard - Defroster Knob	S-9868-2	1
12	Label - Swivel Outlet ON-OFF	S-9722EC-3	2
13	Ejector Adapter	S-9704EC-1	4
14	Sensor - Temperature	ES52130-1	5
15	Valve - Firewall Shut-off	ES26185-1	1

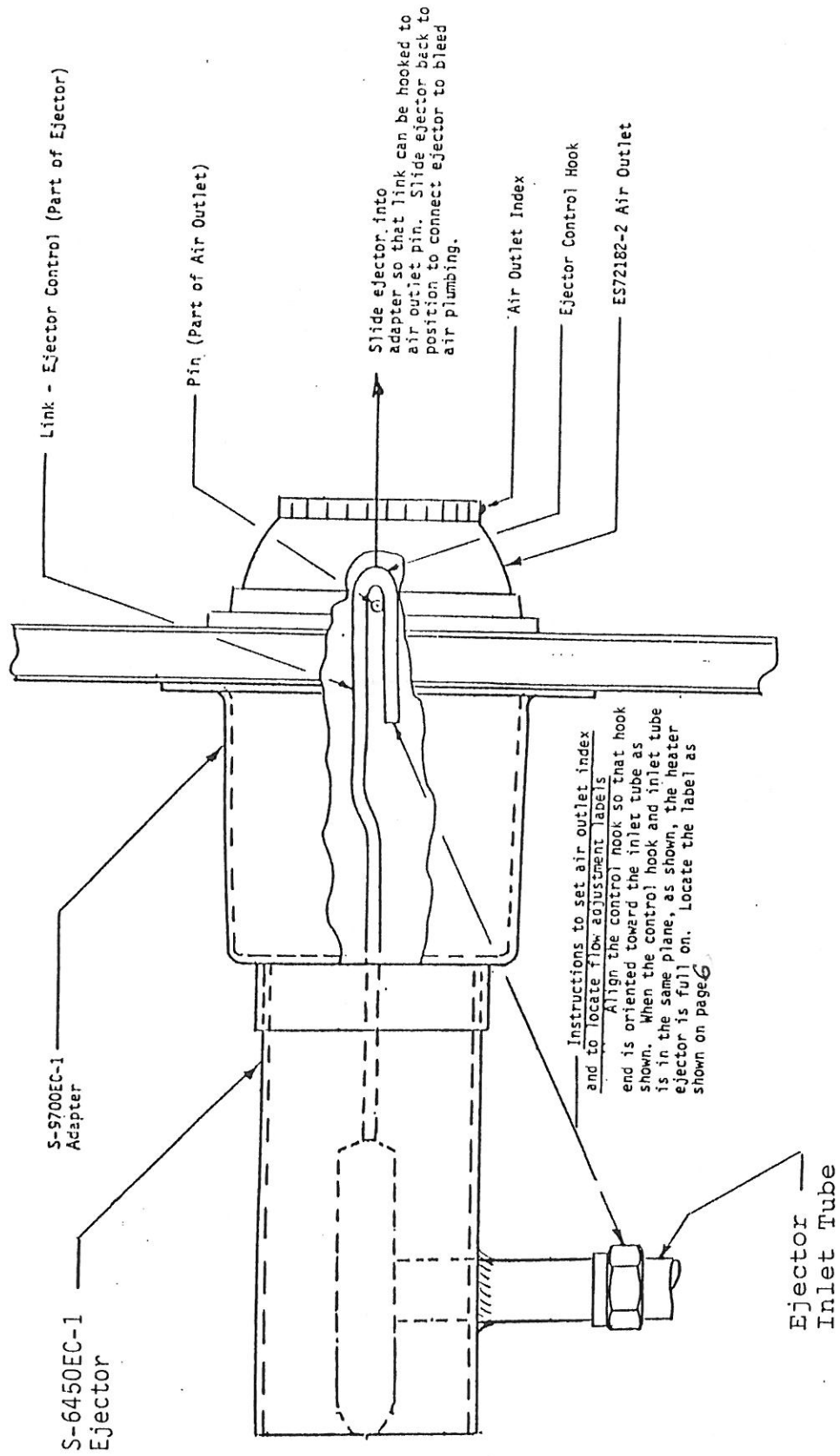
Notes:

1. See Page 10 for electrical components.

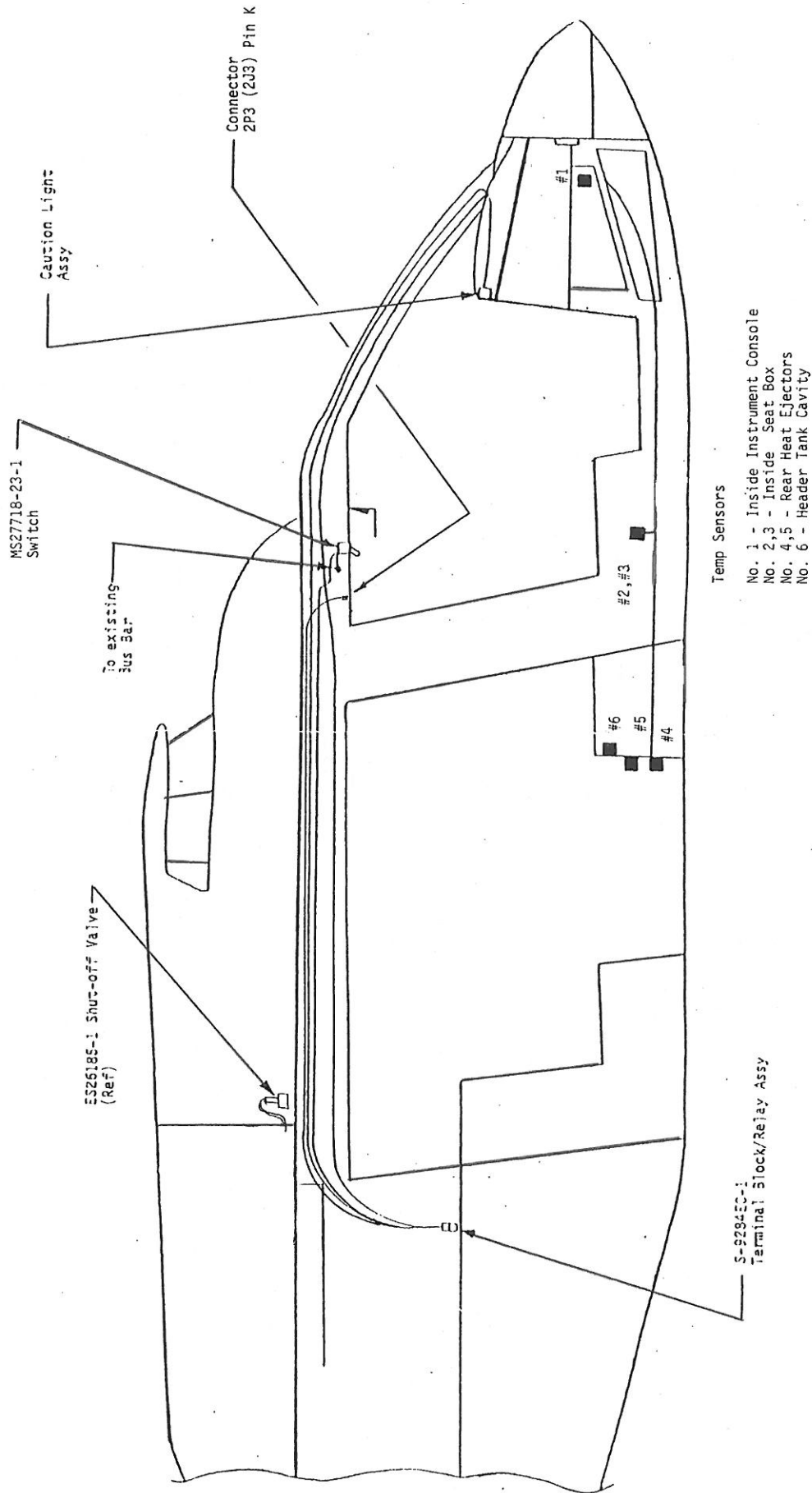


Cabin Heater Component Location

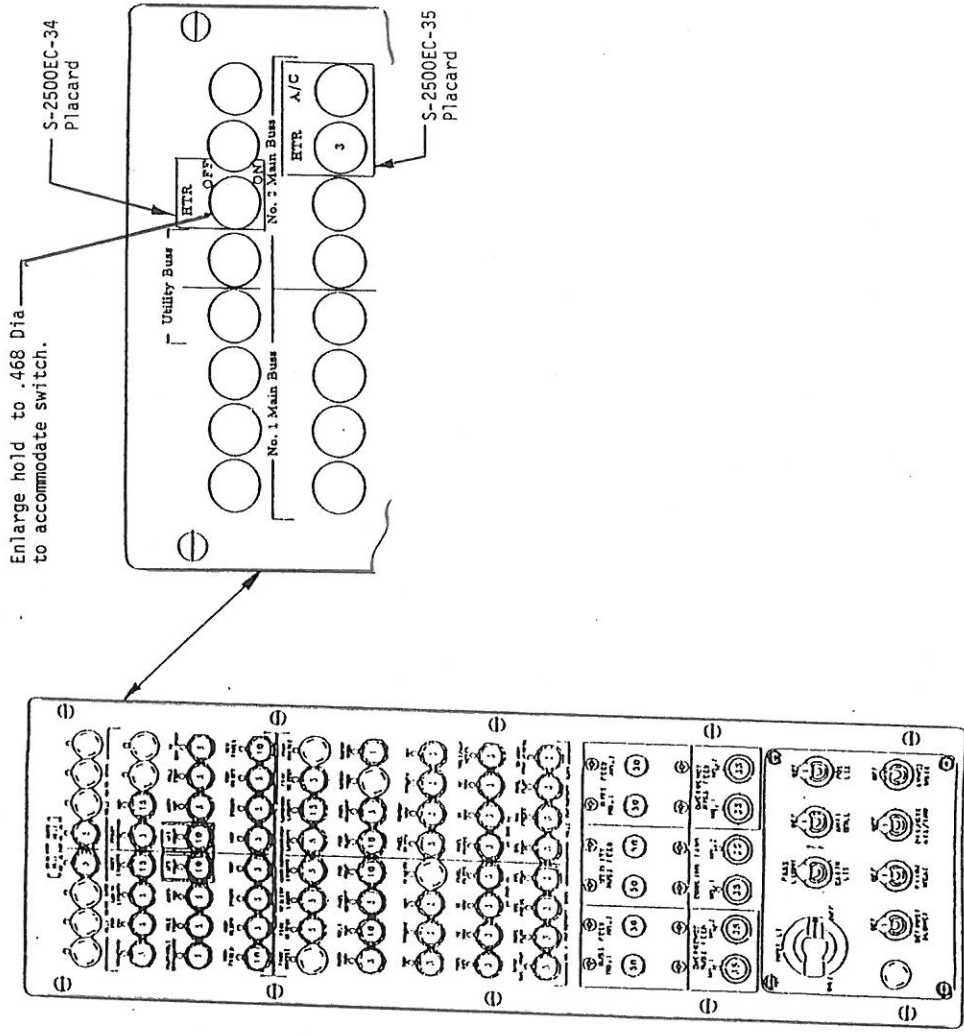


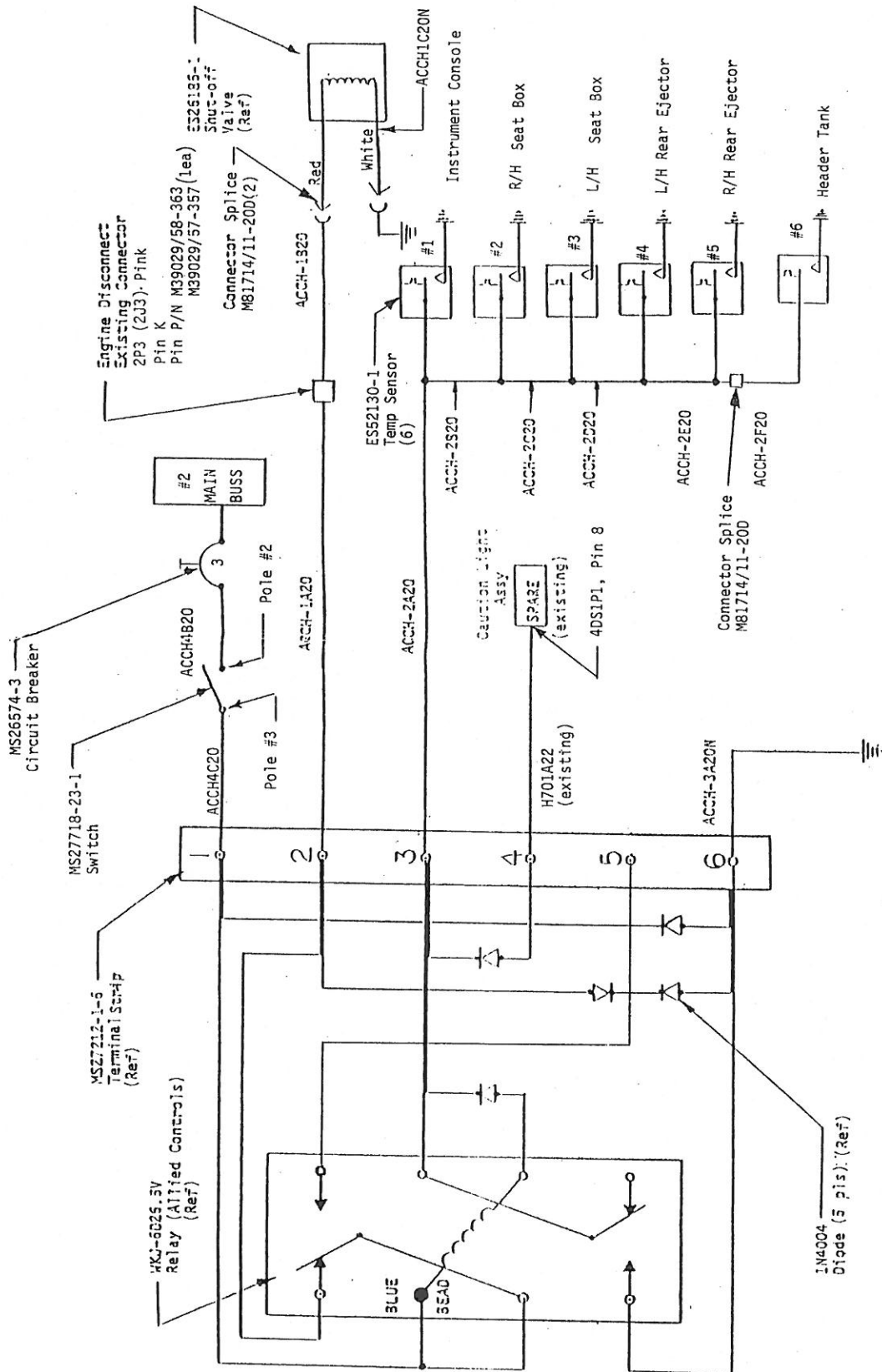


Heater Ejector Flow Control Indexing Procedure



Electrical System Installation





Electrical Schematic

WARRANTY

AIR COMM CORPORATION **Cabin Heating & Air Conditioning Systems**

Warranty Terms

Air Comm Corporation (hereafter referred to by ACC) warrants that products manufactured by ACC shall be free of defects in materials and workmanship for a period of one year from the date of purchase and / or 1000 hours of flying time whichever comes first.

Limitations and Exclusions

Installation, maintenance and operation of the product must be in accordance with the specifications and instructions provided by ACC. The warranty registration must be returned to ACC within 30 days of the date of installation.

This warranty shall not apply to any product repaired or altered by parties other than ACC unless express prior authorization is granted; nor shall this warranty apply to any product subjected to misuse or accident unless proof is submitted to the satisfaction of ACC that such misuse or accident was not a cause for the claimed defect.

The sole responsibility and liability of ACC and your exclusive remedy under any claim arising out of, connected with, or resulting from, this sale or the performance of breach of any condition of warranty thereunder, or from the manufacture, delivery, or use of the product shall be the rebuild or replacement of defective parts. Labor costs shall not be covered under any circumstances.

In no event, whether as a result of a breach of contract, warranty, tort (including negligence) or otherwise, shall ACC be liable for any special, consequential, incidental or penal damages or expenses including but not limited to loss of profit, goodwill, or revenues, loss of use of the equipment or any associated equipment, damage to associated equipment, cost of capital, cost of substitute products, facilities or services, down time, or cost or claims of third parties for such damages or expenses.

THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES OR REMEDIES WHETHER WRITTEN, ORAL, IMPLIED OR STATUTORY. ANY AND ALL IMPLIED WARRANTIES OR MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, COURSE OF DEALING OR USAGE OF TRADE ARE HEREBY EXPRESSLY DISCLAIMED AND EXCLUDED.

Acceptance of the product by you shall constitute your acknowledgment and acceptance of the terms, provisions, limitations and exclusions set forth herein. Such terms, provisions, limitations and exclusions shall not be modified, deleted or supplemented except by an express written acknowledgment of ACC.

WARRANTEE PERFORMANCE: All claims under this warranty shall be made to ACC. All returned parts must be shipped prepaid for evaluation. Full details of the symptoms of the malfunction should be included to assist in the evaluation. Warranty credit or replacement will be extended only after ACC has determined that all conditions of this warranty have been met.

Air Comm Corporation
3300 Airport Road
Boulder, CO. 80301
Phone 303-440-4075
Fax 303-440-6355

Air Comm Corporation

Warranty Registration Form

NOTE:

Failure to complete and return this form to Air Comm Corporation within ten (10) days of the date of installation will render this warranty null and void.

Aircraft Model: _____ Serial Number: _____

Kit Serial Number: _____ Purchase Order No.: _____

Date of Installation: _____ Date Kit Received: _____

Product: (example Air Conditioner) _____

Part Number: (example 206H-200-2) _____

Total Time on Aircraft: _____

Submitted By: Installer _____

Contact Name: _____ Company Name: _____

Address: _____ City: _____

State: _____ Country: _____ Postal Code: _____

Phone Number: _____ Fax Number: _____

Email Address: _____

Contact Name:(if other than above) _____

Address: _____ City: _____

State: _____ Country: _____ Postal Code: _____

Phone Number: _____ Fax Number: _____

Email Address: _____

Mail To:
Air Comm Corporation
3330 Airport Road
Boulder, CO 80301

Phone: 303-440-4075

Fax 303-440-6355

Air Comm Corporation Malfunction Report

Submitted To:

Air Comm Corporation
3300 Airport Road
Boulder, CO. 80301
Attn: Service Manager
Phone No. 303-440-4075
Fax No. 303-440-6355

Date Reported or Claim Filled _____/_____/_____
Date Discrepancy Occurred _____/_____/_____

Submitted By: (Company Name, Address, Phone No.)

Submitted For: (Company Name, Address, Phone No.)

Phone Number _____

Phone Number _____

Fax Number _____

Fax Number _____

Person to contact _____

Person to contact _____

All warranty parts claims must be accompanied by the following information, failure to provide complete and accurate information will result in the warranty claim being disapproved.

Aircraft Data: (Please complete all sections)

Model No.	Registration No.	Serial No.	Delivery Date	Total Hrs. at Delivery	Hrs. at Occurrence

Part Data: (Please complete all sections)

Quantity	Part Number	Part Name	Serial No. (if available)	Hrs. at Occurrence

Is this original equipment Yes No (if no, please complete these two blocks ➤)	Date Installed	Total A/C Hrs. when installed

Describe (in detail) of how the part failed, or reason for its return, (Please give any information that may be helpful in the evaluation of this part). _____

Warranty: Approved	Disapproved
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