



**ROTORCRAFT
FLIGHT MANUAL
SUPPLEMENT**

INCREASED TAKEOFF HORSEPOWER

212-704-153

**CERTIFIED
16 DECEMBER 1991**

This supplement shall be attached to the Bell Helicopter 212 Flight Manual when the Increased Takeoff Horsepower kit has been installed.

Information contained herein supplements information in the basic Flight Manual. For Limitations, Procedures, and Performance Data not contained in this supplement, refer to the basic Flight Manual.

COPYRIGHT NOTICE
COPYRIGHT 2009
BELL © HELICOPTER TEXTRON INC.
AND BELL HELICOPTER TEXTRON
CANADA LTD.
ALL RIGHTS RESERVED

Bell Helicopter

A Textron Company

POST OFFICE BOX 482 • FORT WORTH, TEXAS 76101

**14 AUGUST 1995
REVISION 1 — 20 JULY 2009**

NOTICE PAGE

PROPRIETARY RIGHTS NOTICE

These data are proprietary to Bell Helicopter Textron Inc. Disclosure, reproduction, or use of these data for any purpose other than helicopter operation or maintenance is forbidden without prior written authorization from Bell Helicopter Textron Inc.

DESTINATION CONTROL STATEMENT

These commodities, technology, or software were exported from the United States in accordance with the Export Administration Regulations (EAR). Diversion contrary to U.S. law prohibited. The data contained in this manual are classified as ECCN EAR99.

Additional copies of this publication may be obtained by contacting:
Commercial Publication Distribution Center
Bell Helicopter Textron Inc.
P. O. Box 482
Fort Worth, Texas 76101-0482

LOG OF REVISIONS

Original 0..... 16 DEC 91	Reissue.....0 14 AUG 95
Reissue 0..... 22 OCT 92	Revision..... 1 20 JUL 09

LOG OF PAGES

PAGE	REVISION NO.	PAGE	REVISION NO.
FLIGHT MANUAL		MANUFACTURER'S DATA	
Title.....	1	35/36.....	0
NP.....	1		
A/B.....	1		
C/D.....	1		
1.....	1		
2 – 34.....	0		

NOTE

Revised text is indicated by a black vertical line. A revised page with only a vertical line next to the page number indicates that text has shifted or that non-technical correction(s) were made on that page. Insert latest revision pages; dispose of superseded pages.

LOG OF FAA/ODA* APPROVED REVISIONS

Original	0.....	16 DEC 91	Reissue.....0	14 AUG 95
Reissue	0.....	22 OCT 92	Revision..... 1*	20 JUL 09

ORGANIZATION DESIGNATION AUTHORIZATION (ODA)

APPROVED

DATE



20 JULY 2009

WAYNE BARBINI
BHTI ODA LEAD ADMINISTRATOR
ODA-710621-SW
P.O. BOX 482
FT. WORTH, TX 76101

Section 1

LIMITATIONS

1-13. POWER PLANT

1-13-D. ENGINE TORQUE

NOTE

For normal twin engine operation, maximum permissible ENG TORQUE differential of 4% is not applicable with engine No. 2 Governor Trim Switch installed.

1-13-D-1. PT6T-3B

SINGLE ENGINE OPERATION ENGINE SCALE

30-Minute Power Range 63.9 to 79.4%
 Maximum 79.4%

1-13-D-2. PT6T-3

SINGLE ENGINE OPERATION ENGINE SCALE

30-Minute Power Range 63.9 to 71.8%
 Maximum 71.8%

1-14. TRANSMISSION

1-14-C. TRANSMISSION TORQUE

1-14-C-1. PT6T-3B

TWIN ENGINE OPERATION TRANSMISSION SCALE (Δ)

Maximum Continuous Limit 87.5%
 Takeoff Power Range (5 minute) 87.5 to 104.3%
 Maximum 104.3%

1-14-C-2. PT6T-3

TWIN ENGINE OPERATION TRANSMISSION SCALE (Δ)

Maximum Continuous Limit 87.5%
 Takeoff Power Range (5 minute) 87.5 to 104.3%
 Maximum 104.3%

INSTRUMENT MARKINGS

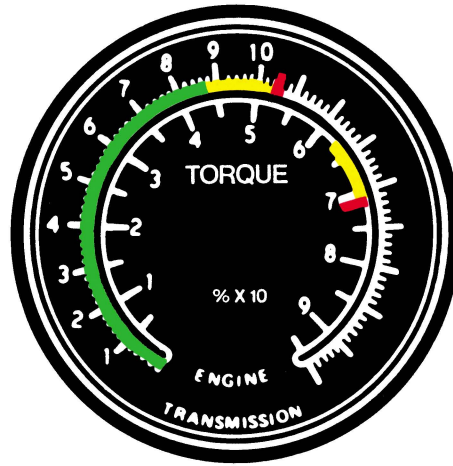
DUAL TORQUE INDICATOR PT6T-3

TRANSMISSION (TWIN
ENGINE OPERATION)

- 0 to 87.5%
- 87.5 to 104.3%
- 104.3%

ENGINE (SINGLE ENGINE
OPERATION)

- 63.9 to 71.8%
- 71.8%



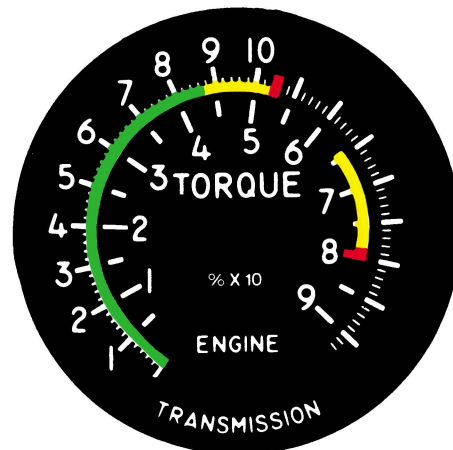
DUAL TORQUE INDICATOR PT6T-3B

TRANSMISSION (TWIN
ENGINE OPERATION)

- 0 to 87.5%
- 87.5% to 104.3%
- 104.3%

ENGINE (SINGLE
ENGINE OPERATION)

- 63.9 to 79.4%
- 79.4%



212-FMS29-1

Figure 1-1. Instrument markings

Section 2

NORMAL PROCEDURES

2-7. BEFORE TAKEOFF

Throttles — Full open. Adjust friction.

RPM switch — Minimum beep (DECR for 4 to 5 seconds).

RPM switch — Minimum trim (-2 for 4 to 5 seconds).

ROTOR — Check 95% or greater.

RPM switch — Adjust to obtain matching TORQUE or ITT at 100% ROTOR.

Flight instruments — Check operation and set.

2-8. TAKEOFF

Area — Clear.

NOTE

As collective is increased, it may be necessary to rematch engine torques prior to reaching hover.

RPM switch — Adjust to obtain matching TORQUE or ITT, as required, and 100% ROTOR.

Hover power — Check TORQUE required to hover at four feet skid height

Section 3

EMERGENCY/MALFUNCTION PROCEDURES

No change from basic manual.

Section 4

PERFORMANCE

4-1. INTRODUCTION

Performance data presented herein are derived from engine manufacturer's specification power for engine less installation losses when used with Increased Takeoff Horsepower modification. These data are applicable to basic helicopter without any optional

equipment which would appreciably affect lift, drag, or power available (Figure 4-1 and 4-2).

Figures 4-3 through 4-6 present performance data for winterization heater, external cargo, and amphibious operations.

HOVER CEILING
OUT OF GROUND EFFECT

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 150 AMPS EACH

SKID HEIGHT 60 FEET
HEATER OFF
0° TO 52°C

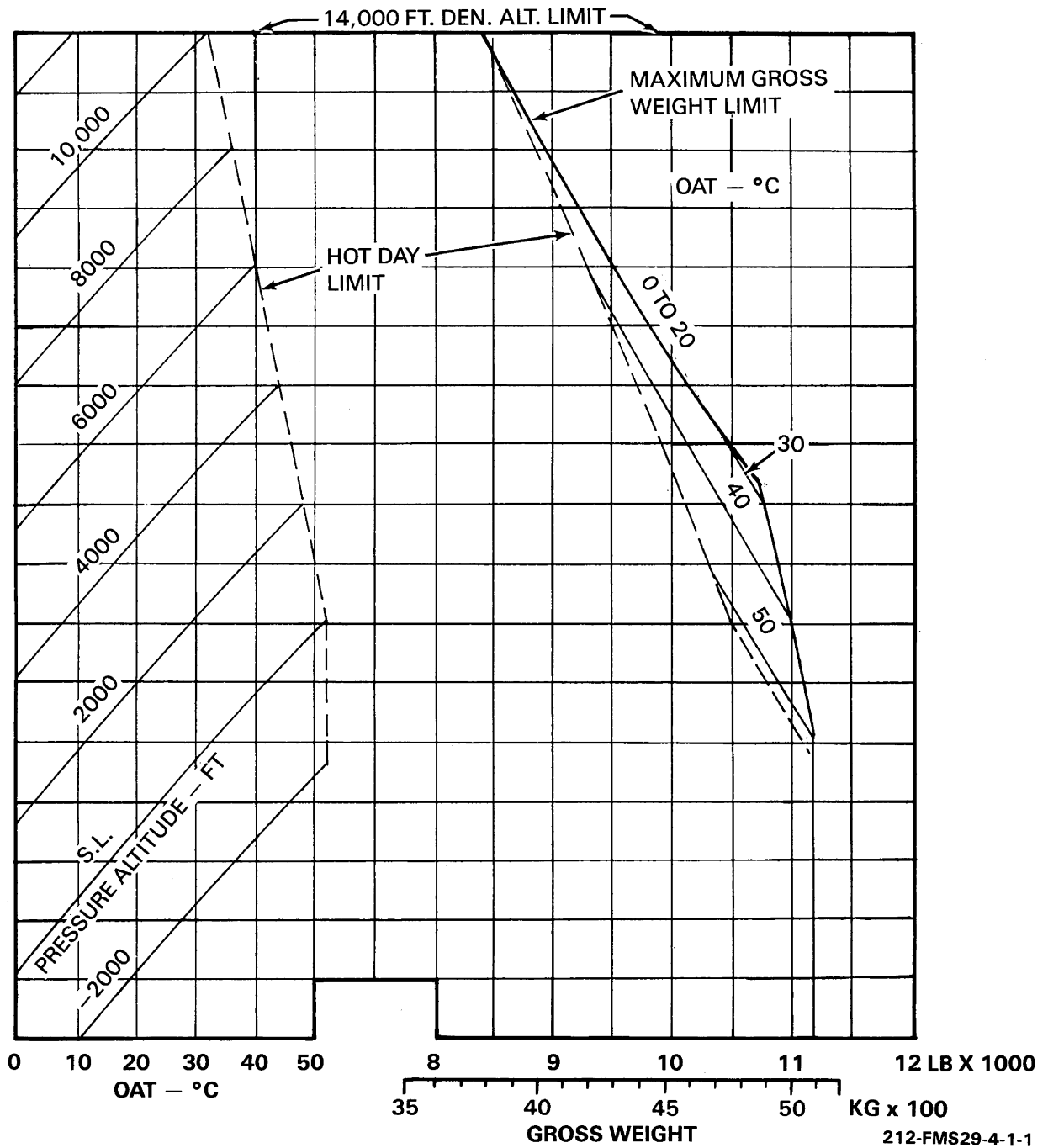


Figure 4-1. Hover ceiling chart (sheet 1 of 4)

**HOVER CEILING
OUT OF GROUND EFFECT**

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 150 AMPS EACH

SKID HEIGHT 60 FEET
HEATER ON
0° TO 20°C

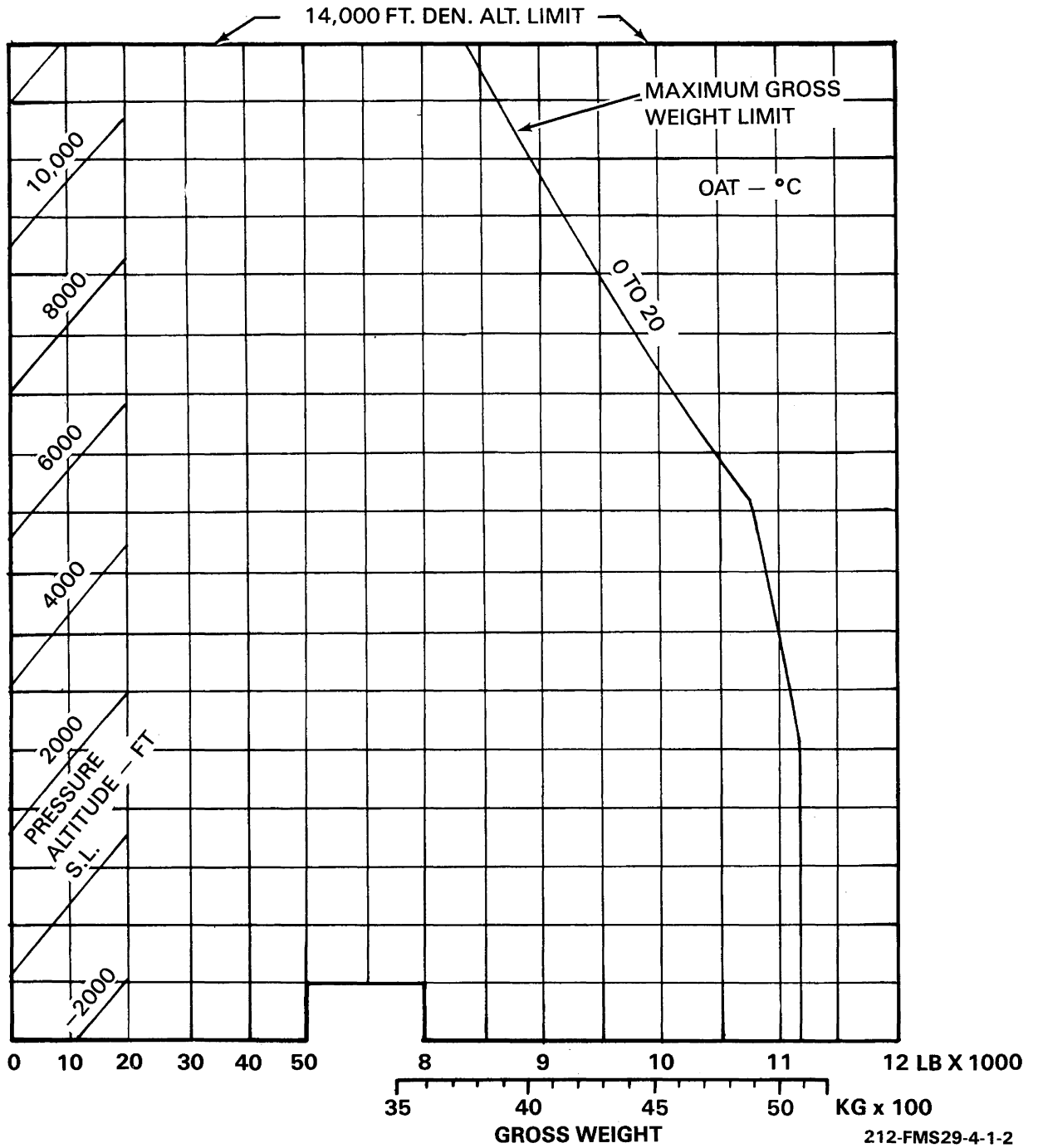


Figure 4-1. Hover ceiling chart (sheet 2 of 4)

**HOVER CEILING
OUT OF GROUND EFFECT**

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 150 AMPS EACH

SKID HEIGHT 60 FEET
HEATER OFF
0° TO -54°C

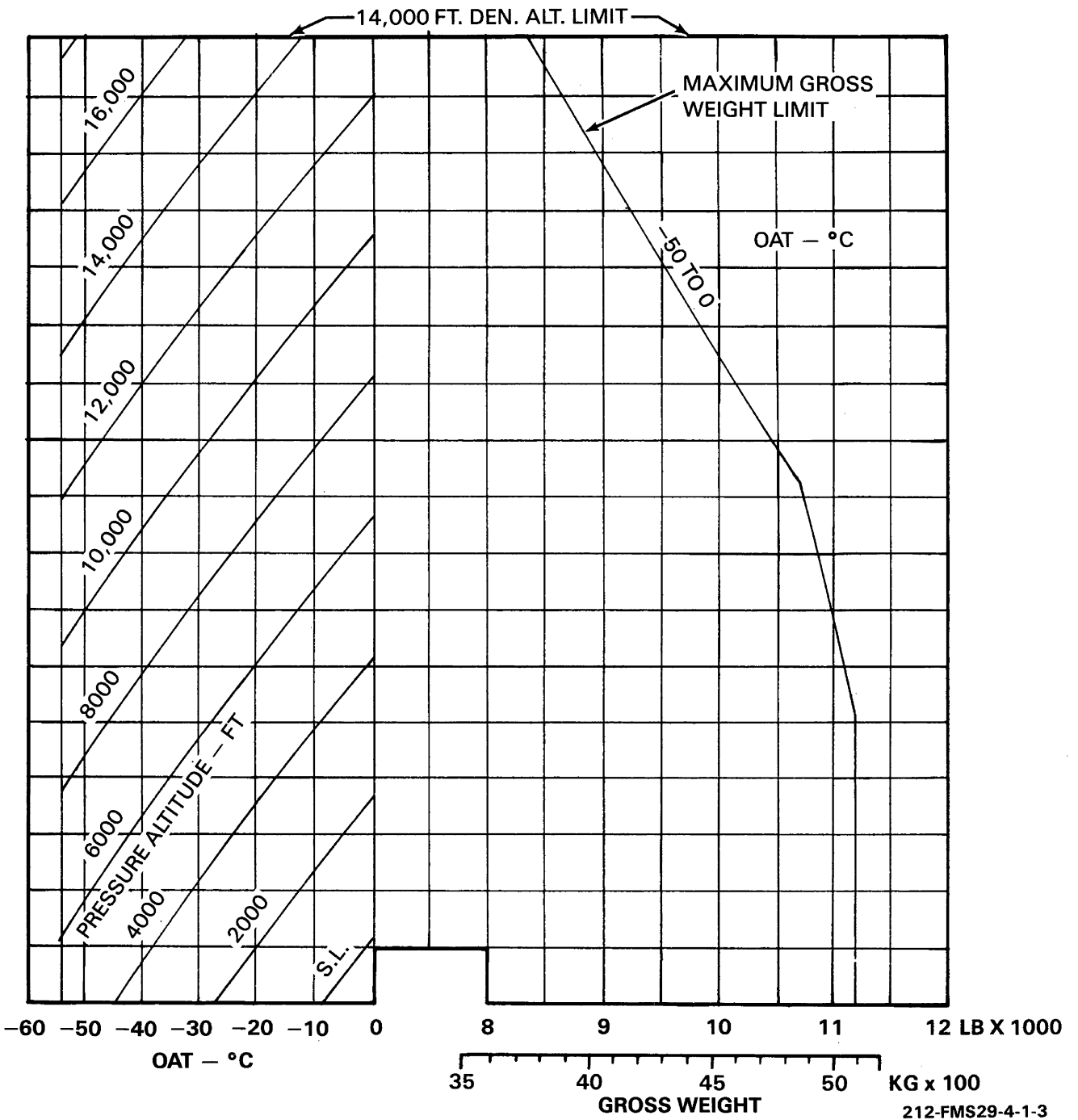


Figure 4-1. Hover ceiling chart (sheet 3 of 4)

**HOVER CEILING
OUT OF GROUND EFFECT**

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 150 AMPS EACH

SKID HEIGHT 60 FEET
HEATER ON
0° TO -54°C

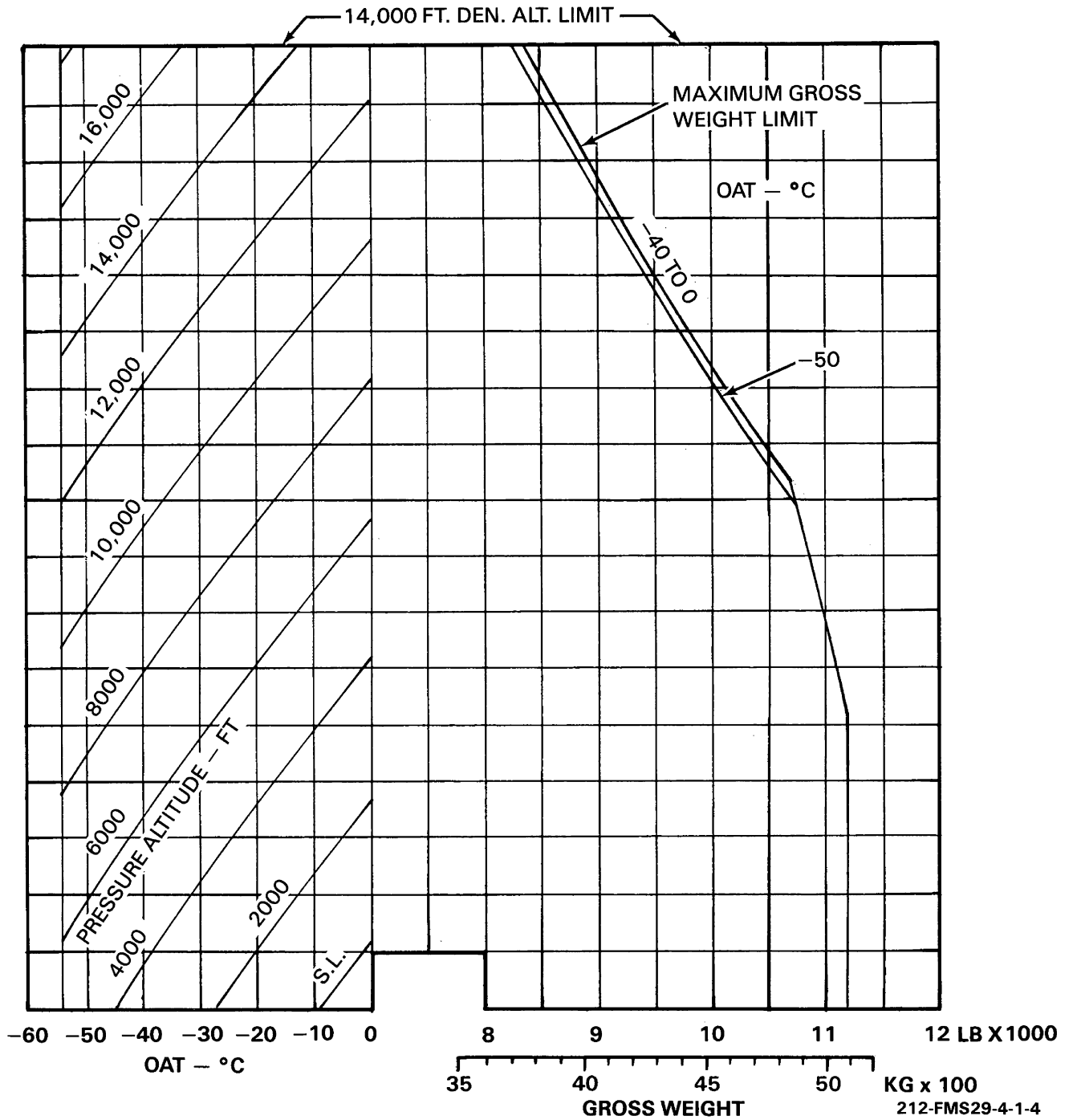


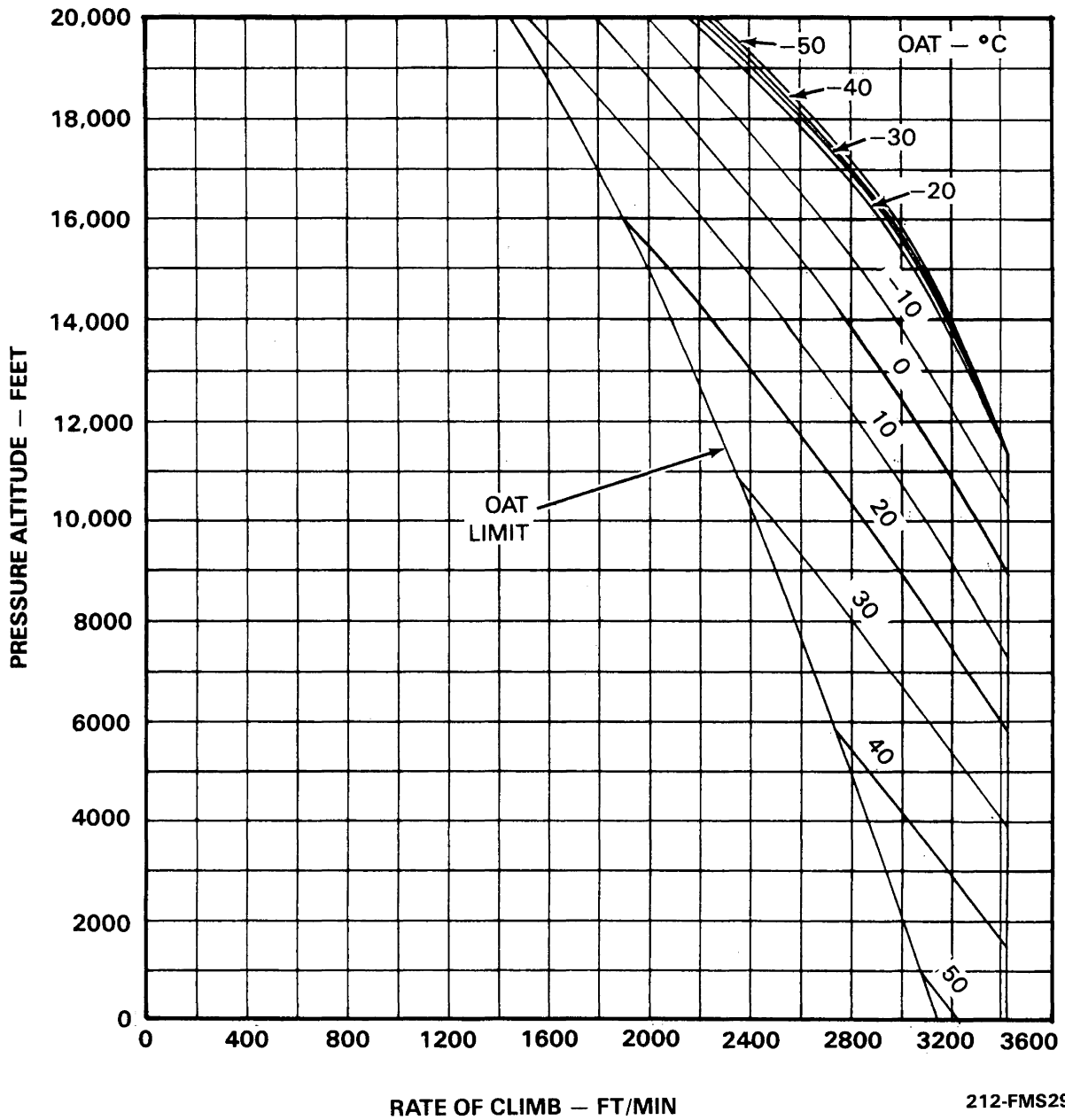
Figure 4-1. Hover ceiling chart (sheet 4 of 4)

**TWIN ENGINE RATE OF CLIMB
WITH ALL DOORS OPEN, RATE OF
CLIMB WILL DECREASE 200 FT/MIN**

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 150 AMPS EACH

VCAL 55 KNOTS
HEATER OFF

GROSS WEIGHT 7000 LB.



212-FMS29-4-2-1

Figure 4-2. Twin engine rate of climb (sheet 1 of 10)

TWIN ENGINE RATE OF CLIMB
WITH ALL DOORS OPEN, RATE OF
CLIMB WILL DECREASE 200 FT/MIN

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 150 AMPS EACH

VCAL 55 KNOTS
HEATER ON

GROSS WEIGHT 7000 LB.

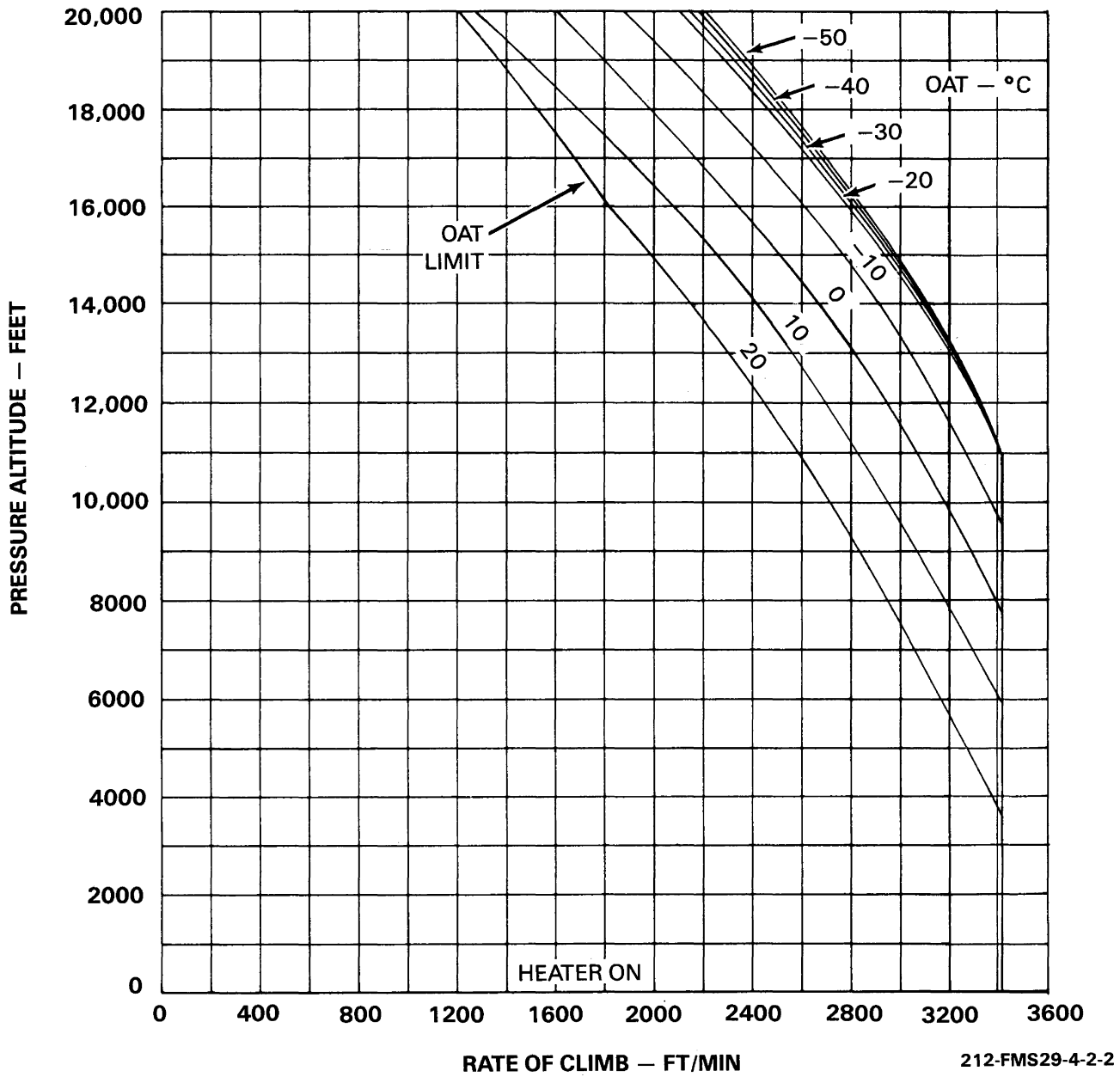


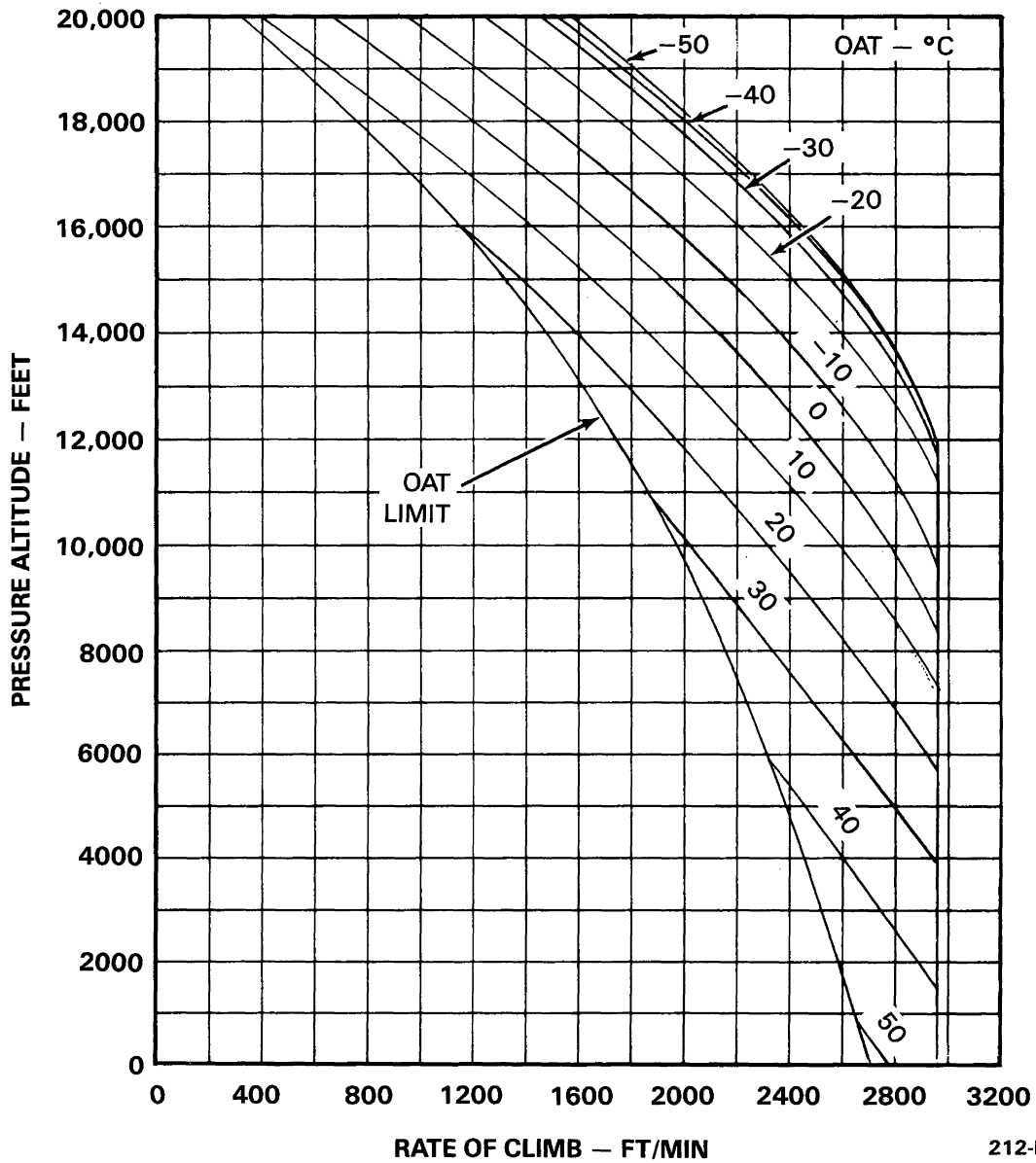
Figure 4-2. Twin engine rate of climb (sheet 2 of 10)

TWIN ENGINE RATE OF CLIMB
WITH ALL DOORS OPEN, RATE OF
CLIMB WILL DECREASE 200 FT/MIN

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 150 AMPS EACH

VCAL 55 KNOTS
HEATER OFF

GROSS WEIGHT 8000 LB.



212-FMS29-4-2-3

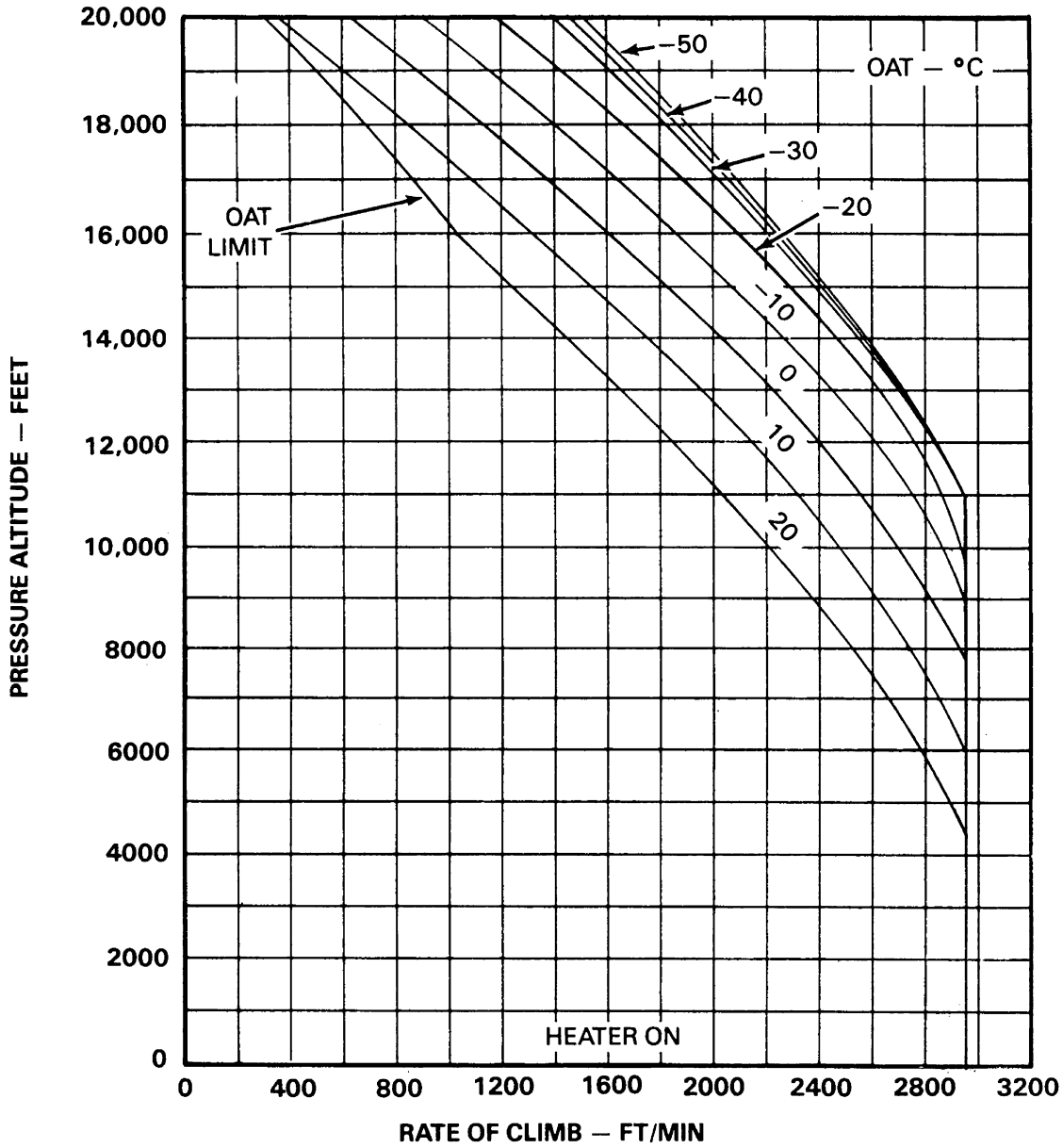
Figure 4-2. Twin engine rate of climb (sheet 3 of 10)

TWIN ENGINE RATE OF CLIMB
WITH ALL DOORS OPEN, RATE OF
CLIMB WILL DECREASE 200 FT/MIN

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 150 AMPS EACH

VCAL 55 KNOTS
HEATER ON

GROSS WEIGHT 8000 LB.



212-FMS29-4-2-4

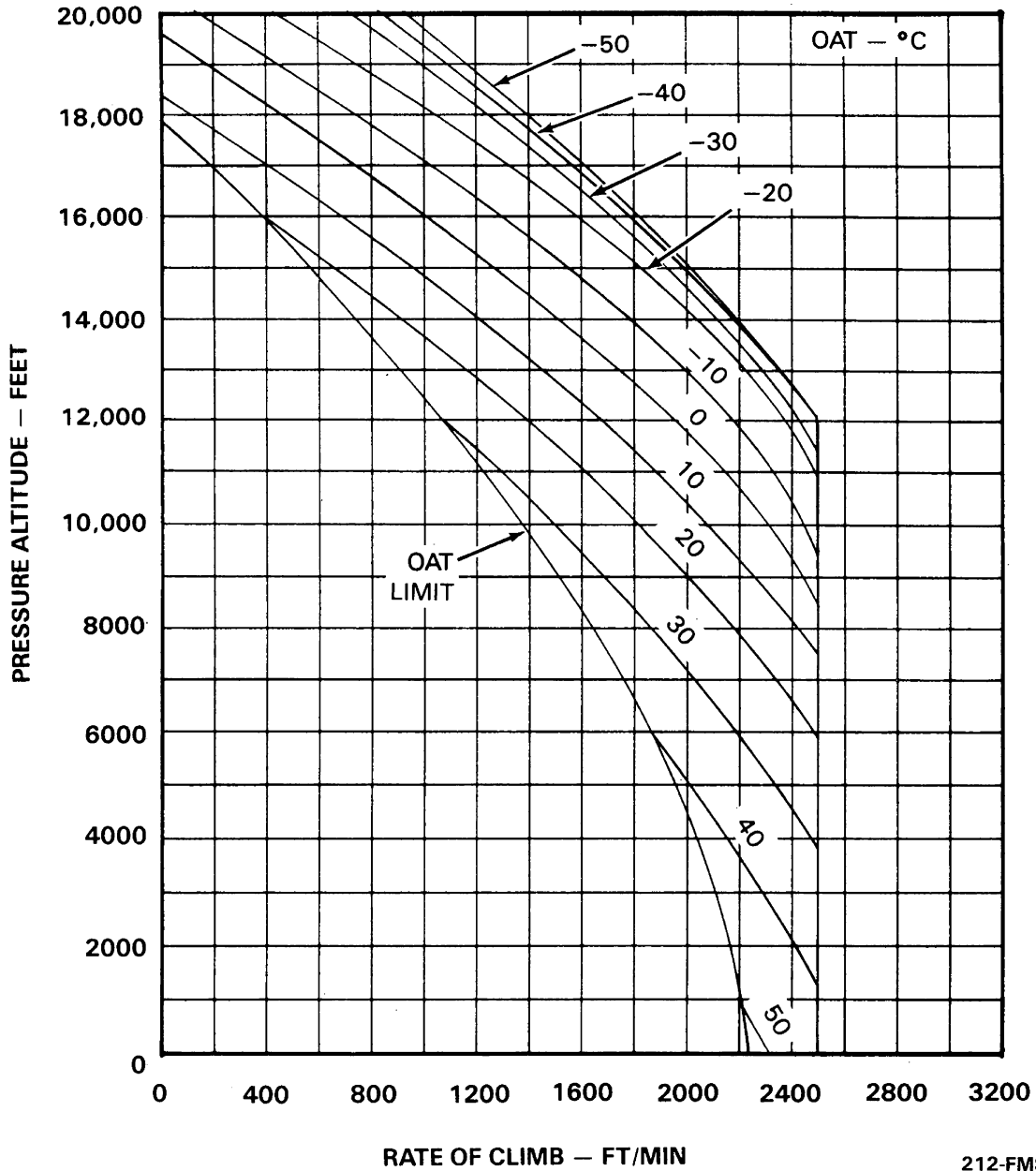
Figure 4-2. Twin engine rate of climb (sheet 4 of 10)

TWIN ENGINE RATE OF CLIMB
WITH ALL DOORS OPEN, RATE OF CLIMB WILL DECREASE 200 FT/MIN

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 150 AMPS EACH

VCAL 55 KNOTS
HEATER OFF

GROSS WEIGHT 9000 LB.



212-FMS29-4-2-5

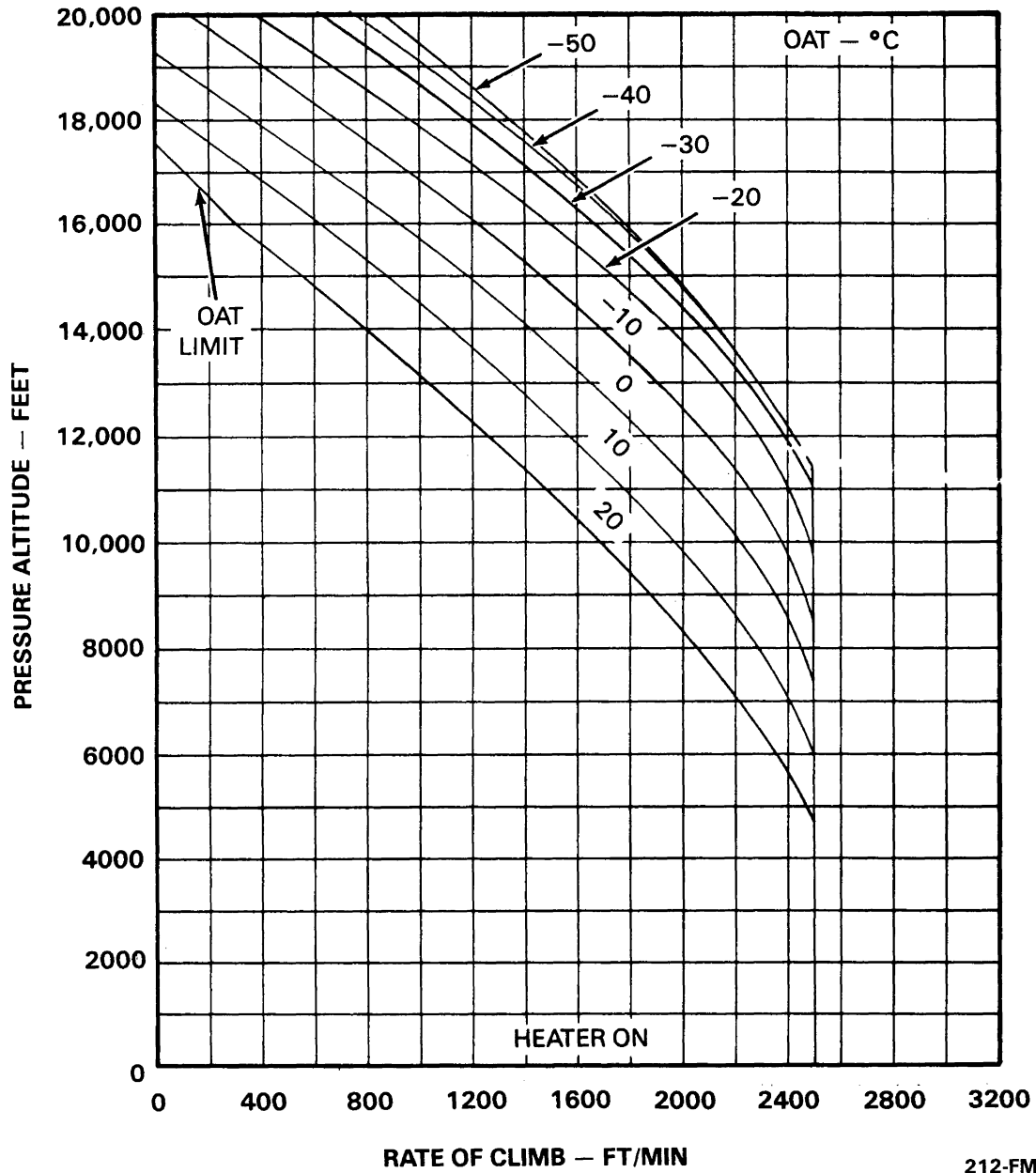
Figure 4-2. Twin engine rate of climb (sheet 5 of 10)

TWIN ENGINE RATE OF CLIMB
WITH ALL DOORS OPEN, RATE OF
CLIMB WILL DECREASE 200 FT/MIN

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 150 AMPS EACH

VCAL 55 KNOTS
HEATER ON

GROSS WEIGHT 9000 LB.



212-FMS29-4-2-6

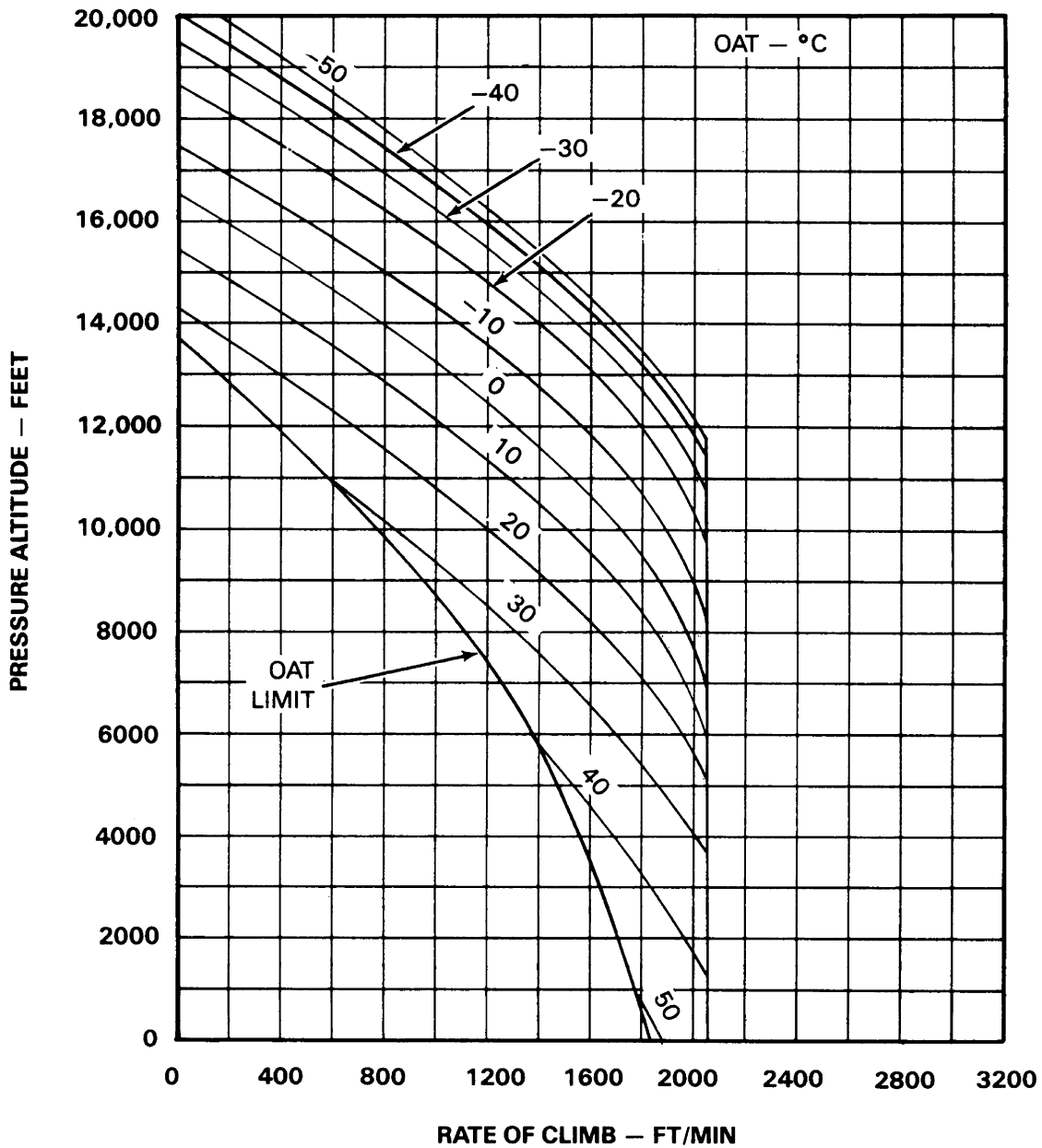
Figure 4-2. Twin engine rate of climb (sheet 6 of 10)

TWIN ENGINE RATE OF CLIMB
WITH ALL DOORS OPEN, RATE OF CLIMB WILL DECREASE 200 FT/MIN

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 150 AMPS EACH

VCAL 55 KNOTS
HEATER OFF

GROSS WEIGHT 10,000 LB.



212-FMS29-4-2-7

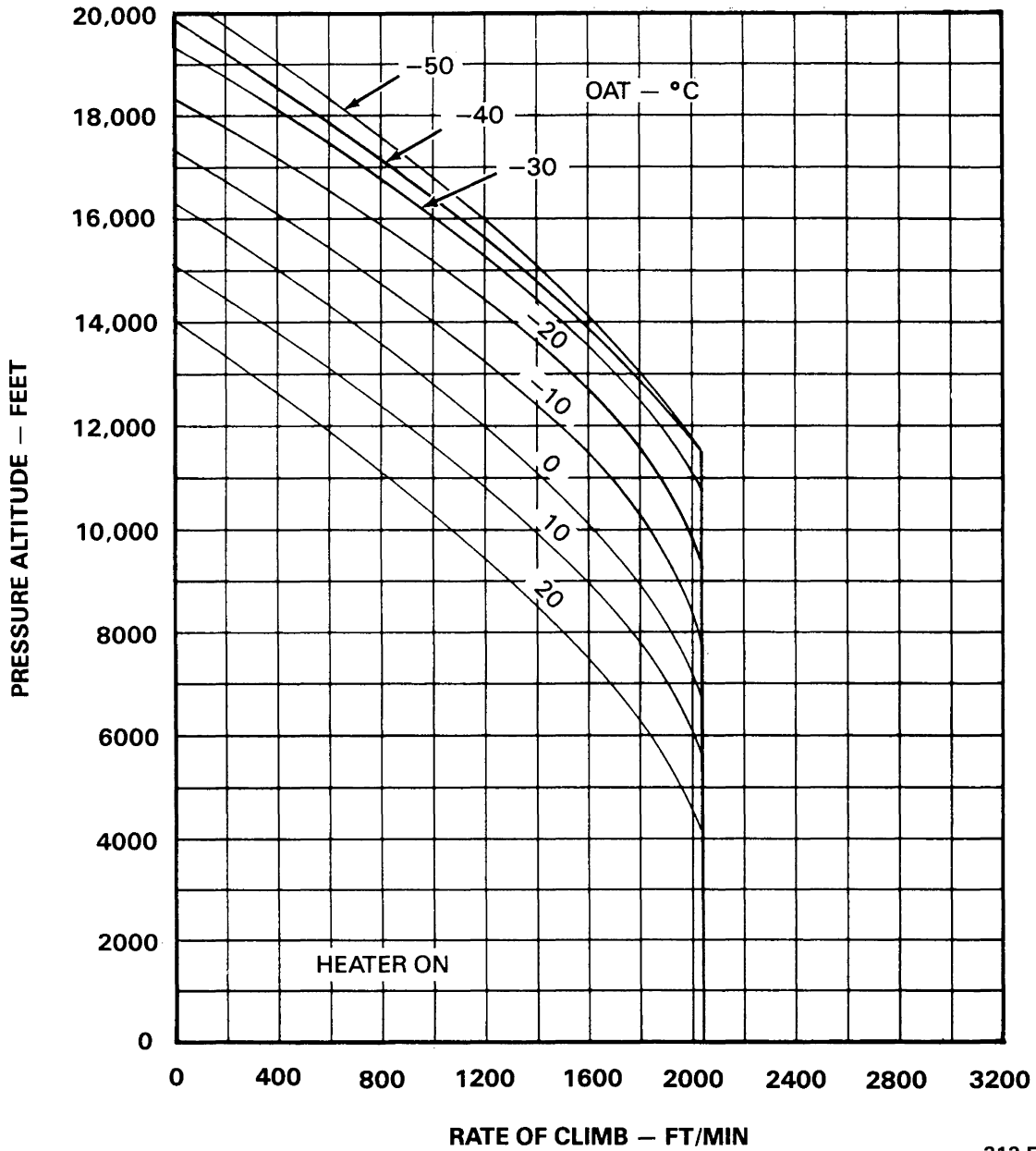
Figure 4-2. Twin engine rate of climb (sheet 7 of 10)

TWIN ENGINE RATE OF CLIMB
WITH ALL DOORS OPEN, RATE OF CLIMB WILL DECREASE 200 FT/MIN

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 150 AMPS EACH

VCAL 55 KNOTS
HEATER ON

GROSS WEIGHT 10,000 LB.



212-FMS29-4-2-8

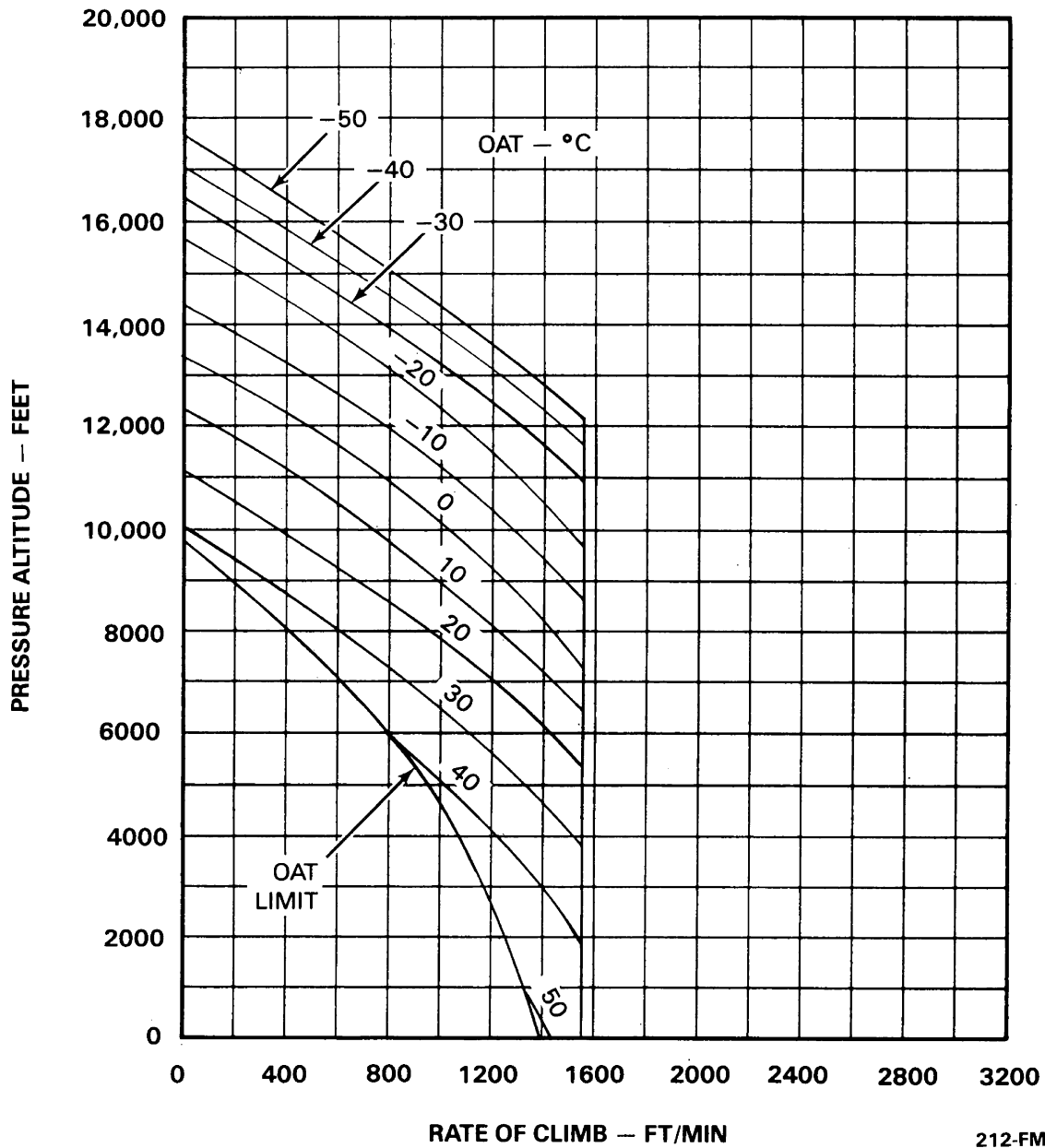
Figure 4-2. Twin engine rate of climb (sheet 8 of 10)

TWIN ENGINE RATE OF CLIMB
WITH ALL DOORS OPEN, RATE OF CLIMB WILL DECREASE 200 FT/MIN

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 150 AMPS EACH

VCAL 55 KNOTS
HEATER OFF

GROSS WEIGHT 11,200 LB.



212-FMS29-4-2-9

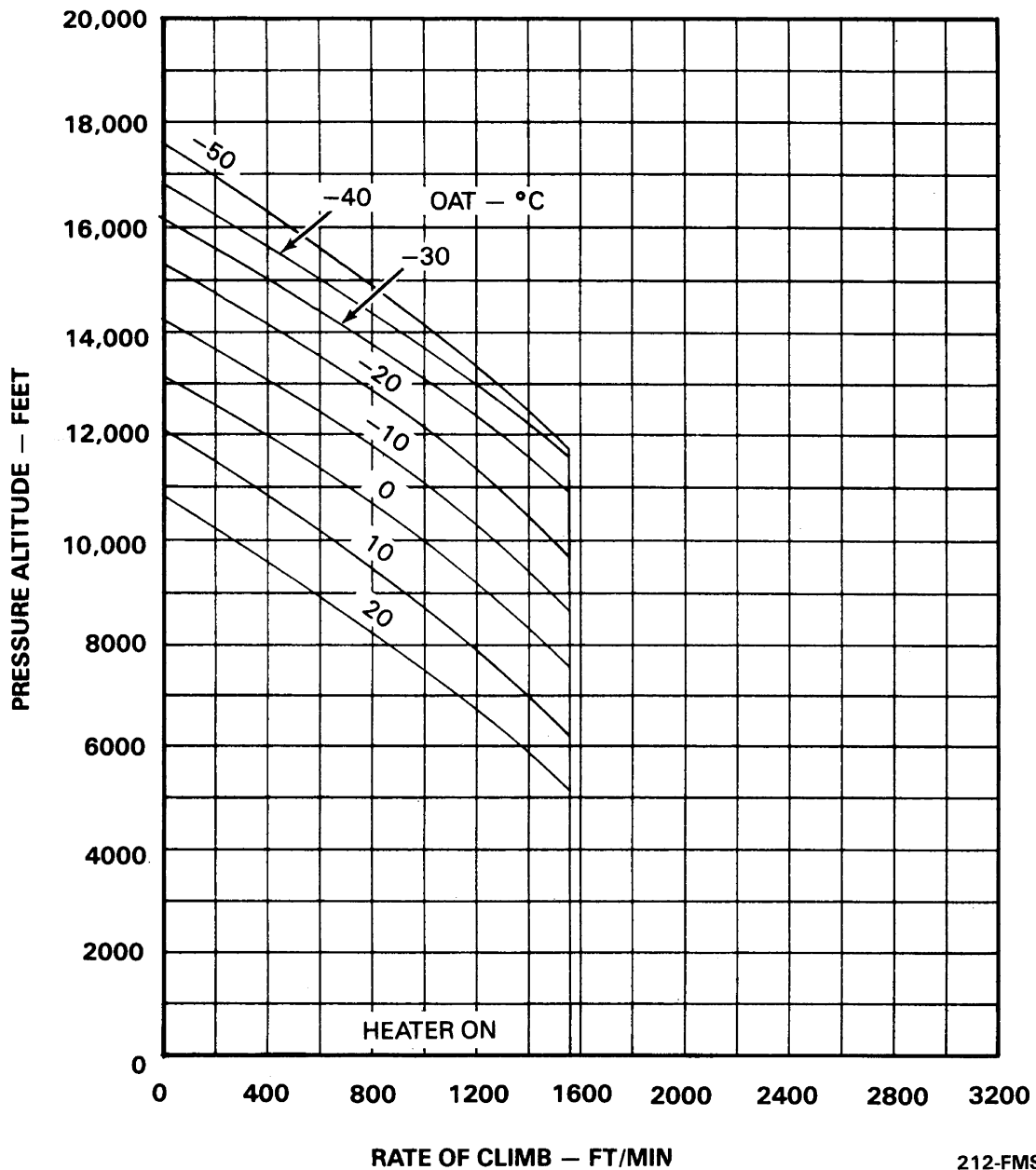
Figure 4-2. Twin engine rate of climb (sheet 9 of 10)

TWIN ENGINE RATE OF CLIMB
WITH ALL DOORS OPEN, RATE OF CLIMB WILL DECREASE 200 FT/MIN

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 150 AMPS EACH

VCAL 55 KNOTS
HEATER ON

GROSS WEIGHT 11,200 LB.



212-FMS29-4-2-10

Figure 4-2. Twin engine rate of climb (sheet 10 of 10)

WINTERIZATION HEATER

**TWIN ENGINE RATE OF CLIMB
WITH ALL DOORS OPEN, RATE OF
CLIMB WILL DECREASE 200 FT/MIN.**

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 150 AMPS EACH

55 KCAS
WINTERIZATION HEATER ON

GROSS WEIGHT 7000 LB.

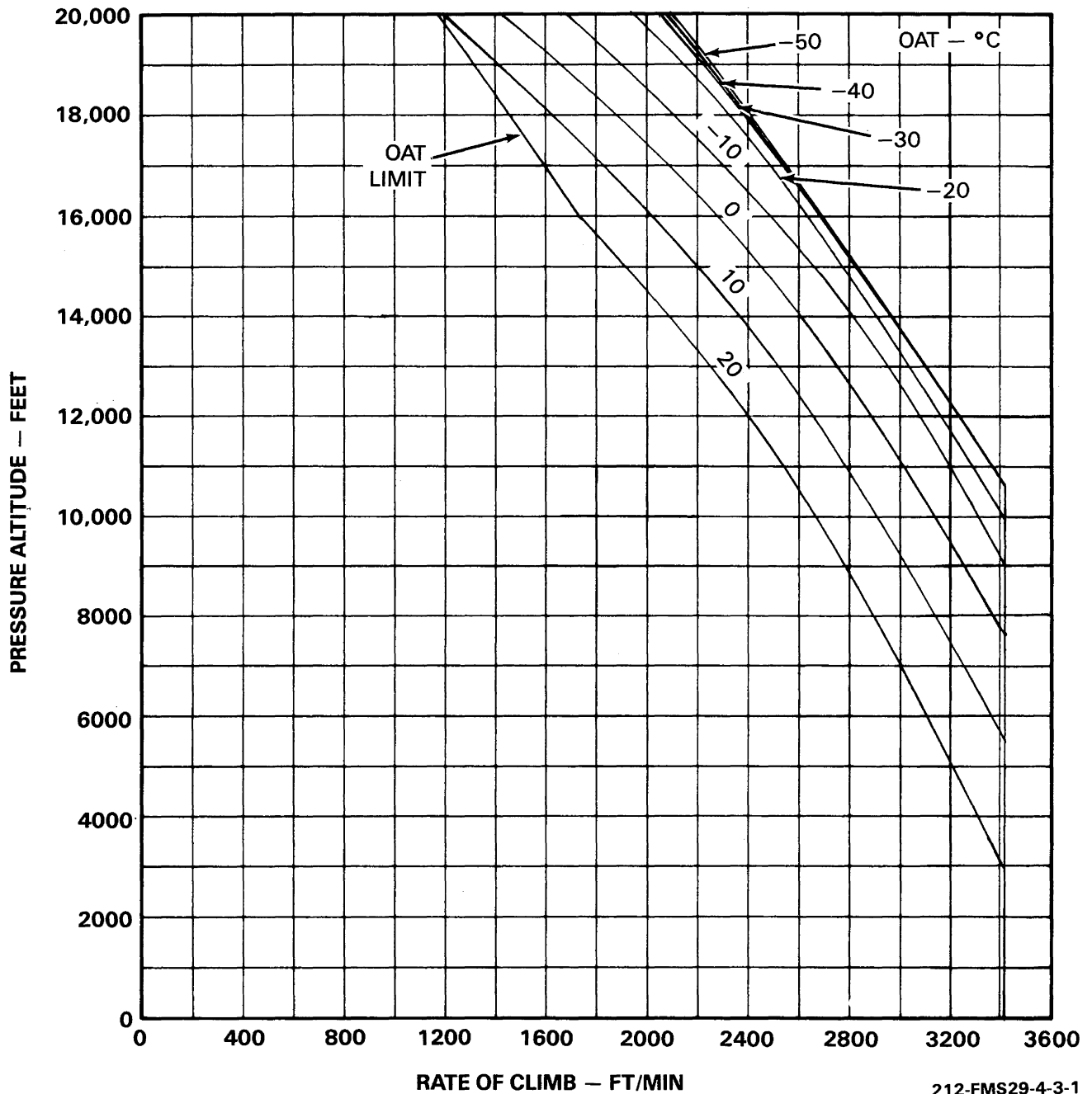


Figure 4-3. Twin engine rate of climb with winterization heater (sheet 1 of 5)

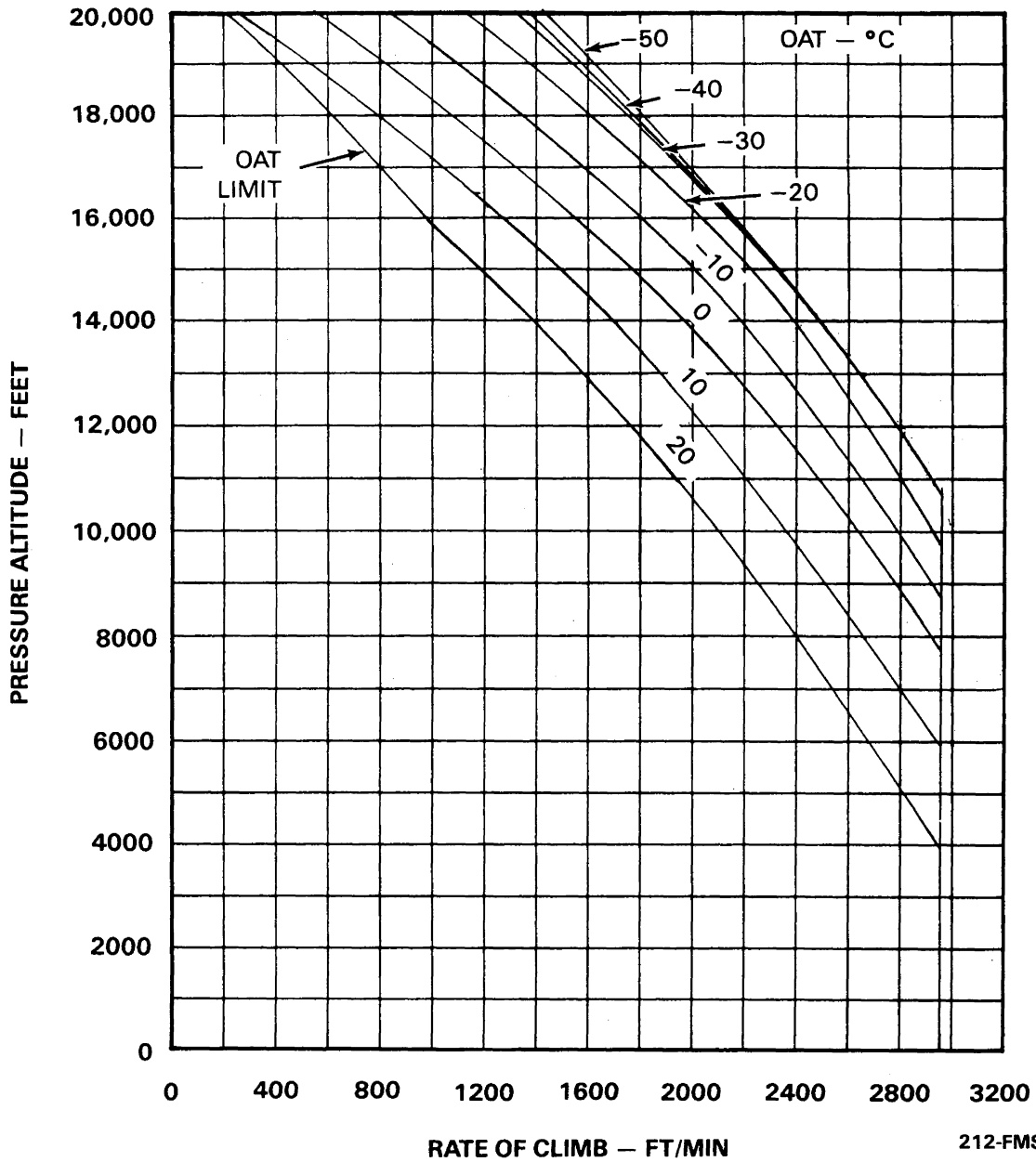
WINTERIZATION HEATER

**TWIN ENGINE RATE OF CLIMB
WITH ALL DOORS OPEN, RATE OF
CLIMB WILL DECREASE 200 FT/MIN.**

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 150 AMPS EACH

55 KCAS
WINTERIZATION HEATER ON

GROSS WEIGHT 8000 LB.



212-FMS29-4-3-2

Figure 4-3. Twin engine rate of climb with winterization heater (sheet 2 of 5)

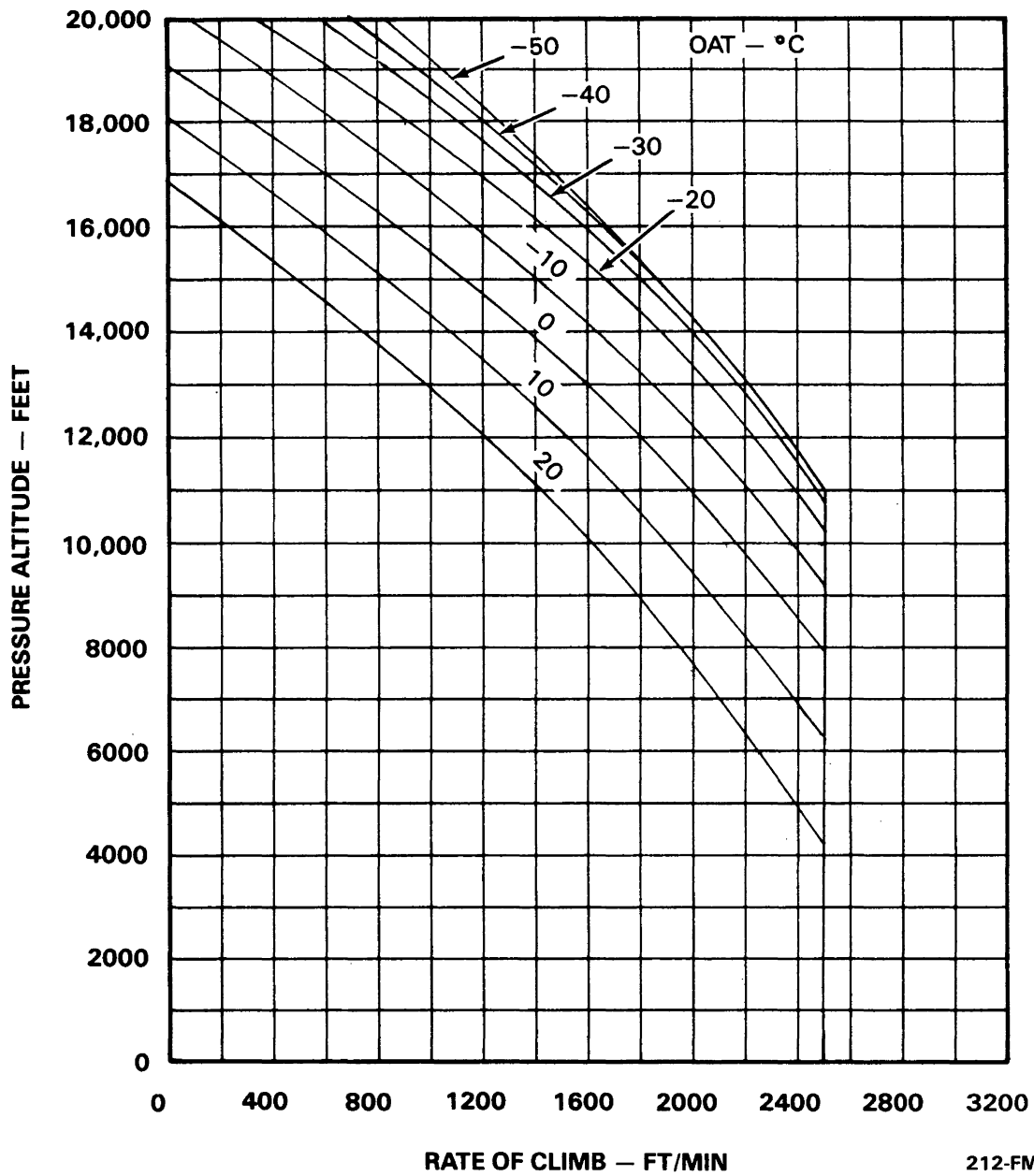
WINTERIZATION HEATER

**TWIN ENGINE RATE OF CLIMB
WITH ALL DOORS OPEN, RATE OF
CLIMB WILL DECREASE 200 FT/MIN.**

**TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 150 AMPS EACH**

**55 KCAS
WINTERIZATION HEATER ON**

GROSS WEIGHT 9000 LB.



212-FMS29-4-3-3

Figure 4-3. Twin engine rate of climb with winterization heater (sheet 3 of 5)

WINTERIZATION HEATER

**TWIN ENGINE RATE OF CLIMB
WITH ALL DOORS OPEN, RATE OF
CLIMB WILL DECREASE 200 FT/MIN.**

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 150 AMPS EACH

55 KCAS
WINTERIZATION HEATER ON

GROSS WEIGHT 10,000 LB.

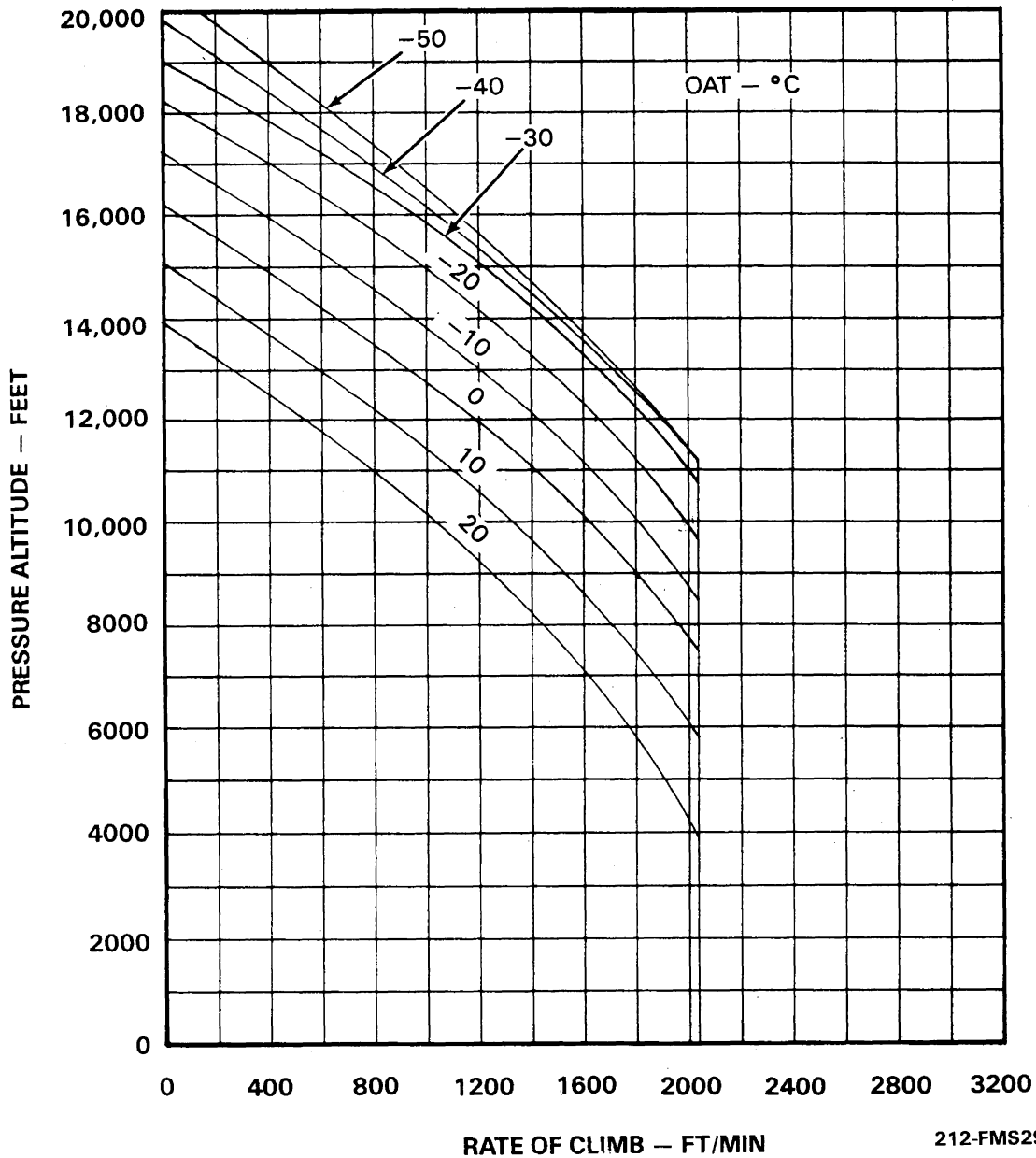


Figure 4-3. Twin engine rate of climb with winterization heater (sheet 4 of 5)

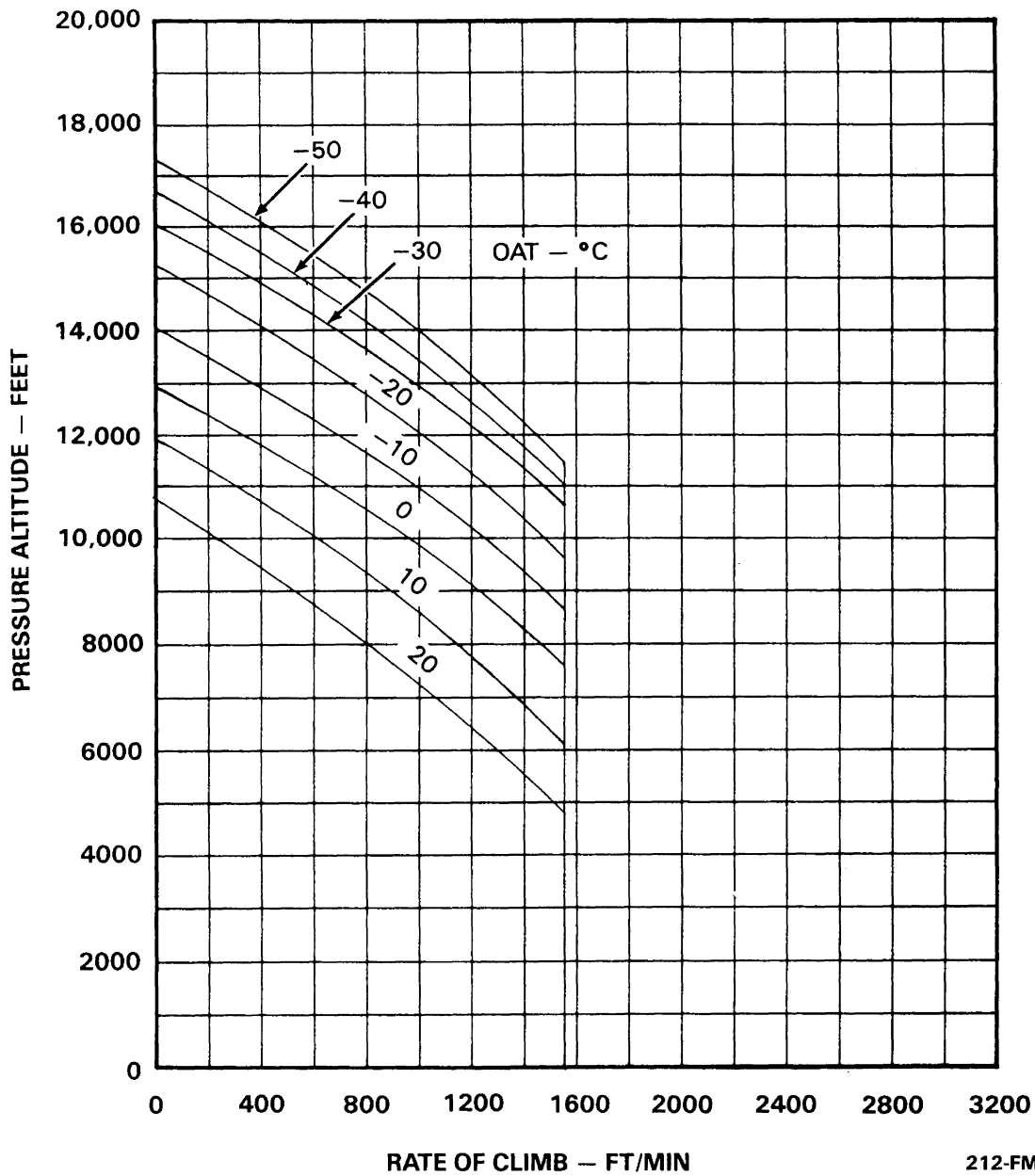
WINTERIZATION HEATER

TWIN ENGINE RATE OF CLIMB
WITH ALL DOORS OPEN, RATE OF CLIMB WILL DECREASE 200 FT/MIN.

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 150 AMPS EACH

55 KCAS
WINTERIZATION HEATER ON

GROSS WEIGHT 11,200 LB.



212-FMS29-4-3-5

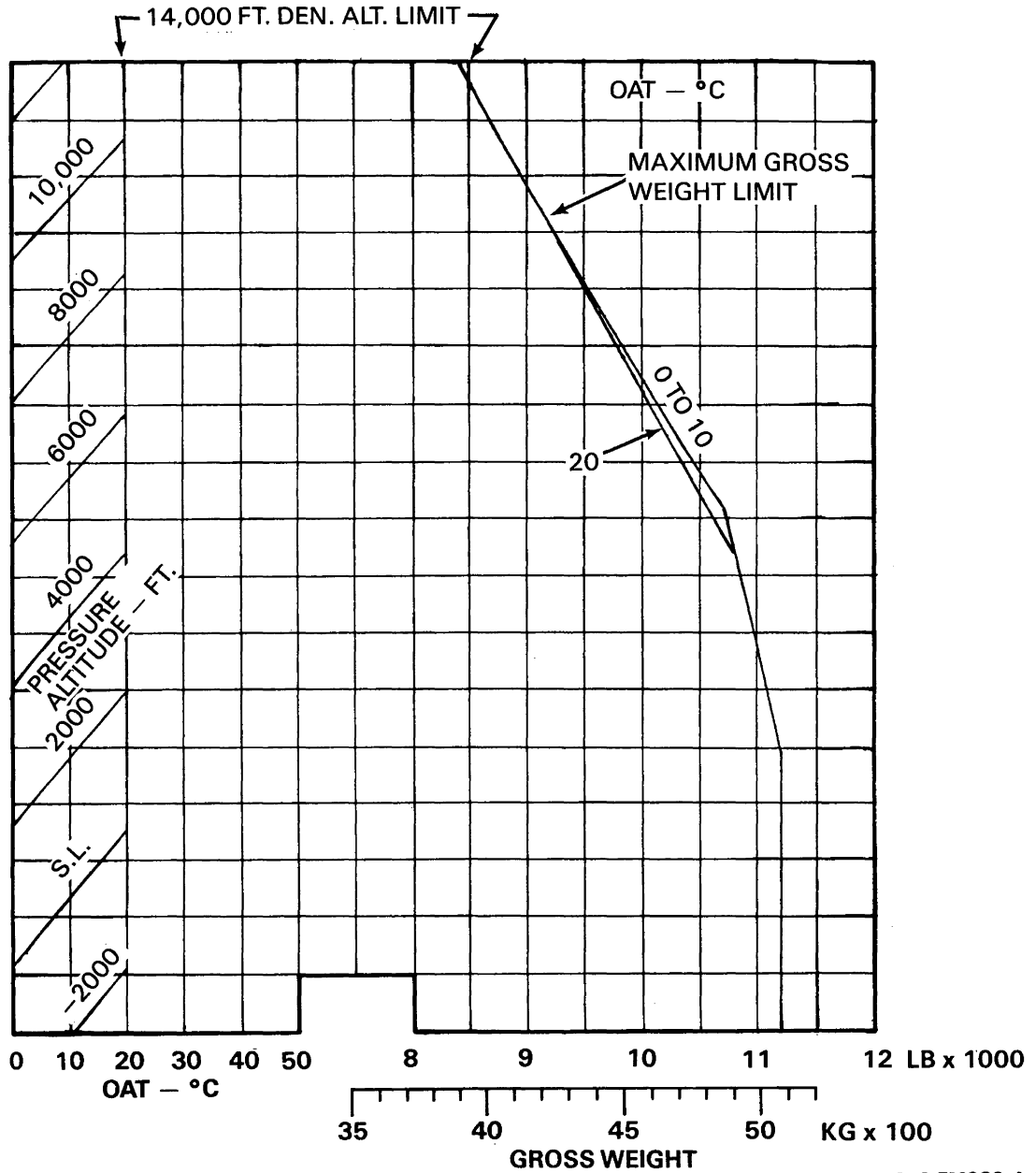
Figure 4-3. Twin engine rate of climb with winterization heater (sheet 5 of 5)

WINTERIZATION HEATER

**HOVER CEILING
OUT OF GROUND EFFECT**

**TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 150 AMPS EACH**

**SKID HEIGHT 60 FEET
WINTERIZATION HEATER ON
0° TO 20°C**



212-FMS29-4-4-1

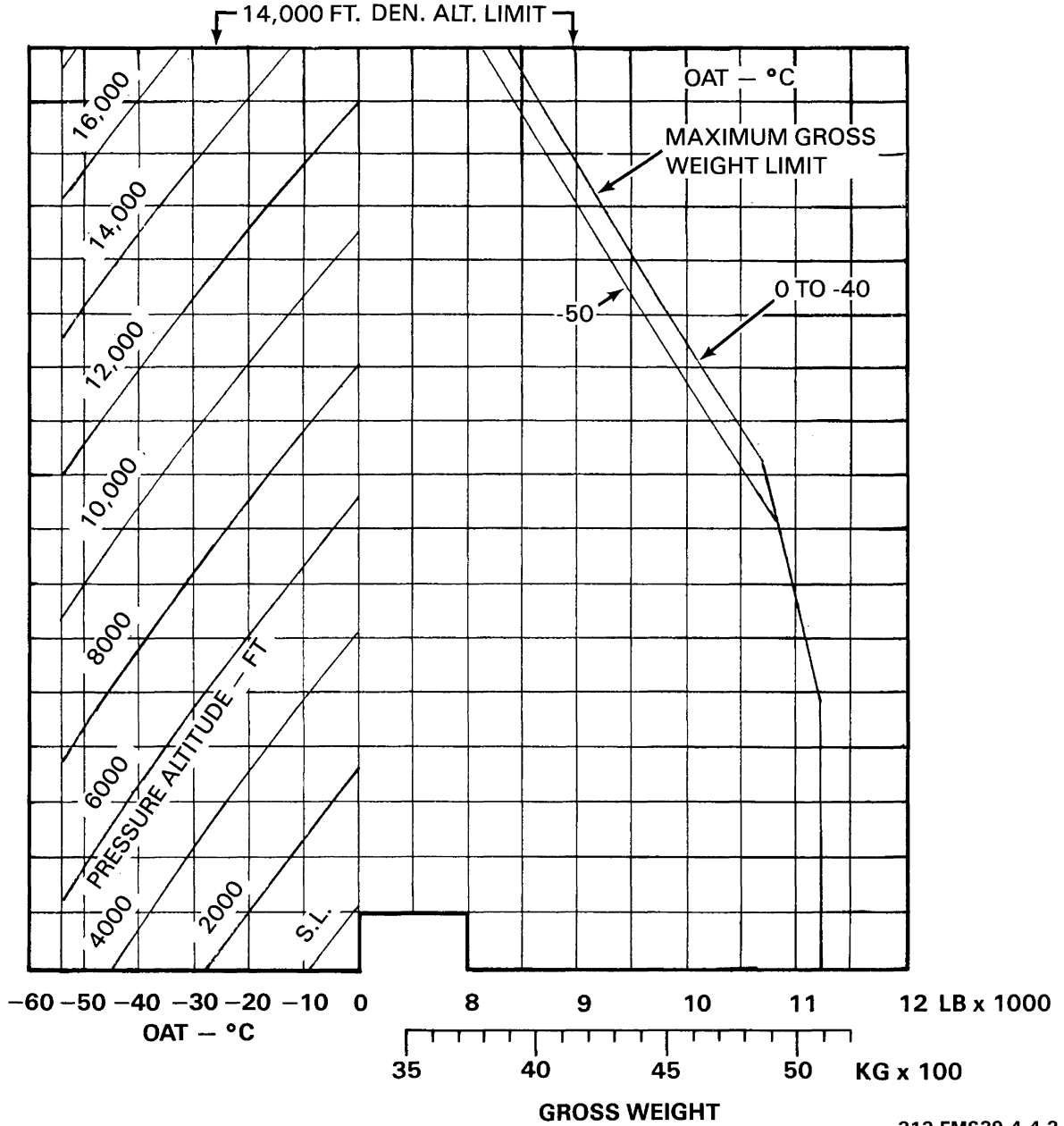
Figure 4-4. Hover ceiling with winterization heater (sheet 1 of 2)

WINTERIZATION HEATER

**HOVER CEILING
OUT OF GROUND EFFECT**

**TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 150 AMPS EACH**

**SKID HEIGHT 60 FEET
WINTERIZATION HEATER ON
0° TO -54°C**



212-FMS29-4-4-2

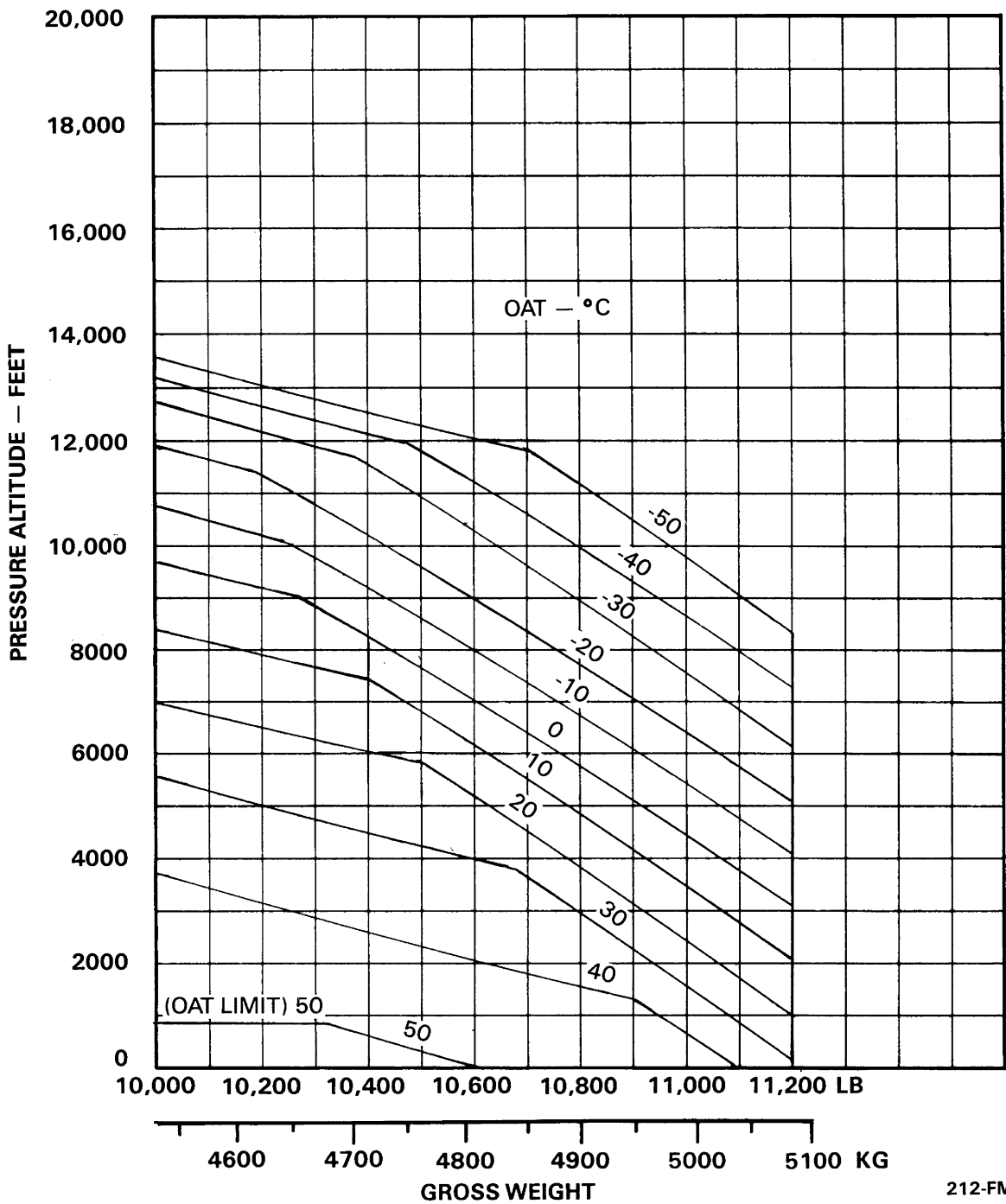
Figure 4-4. Hover ceiling with winterization heater (sheet 2 of 2)

EXTERNAL CARGO

**HOVER CEILING
OUT OF GROUND EFFECT**

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 150 AMPS EACH

SKID HEIGHT 60 FEET
HEATER OFF
GROSS WEIGHT 10,000 TO 11,200 LB.



212-FMS29-4-5-1

Figure 4-5. External cargo (sheet 1 of 6)

EXTERNAL CARGO

HOVER CEILING OUT OF GROUND EFFECT

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 150 AMPS EACH

SKID HEIGHT 60 FEET
HEATER OFF
GROSS WEIGHT UP TO 10,000 LB.

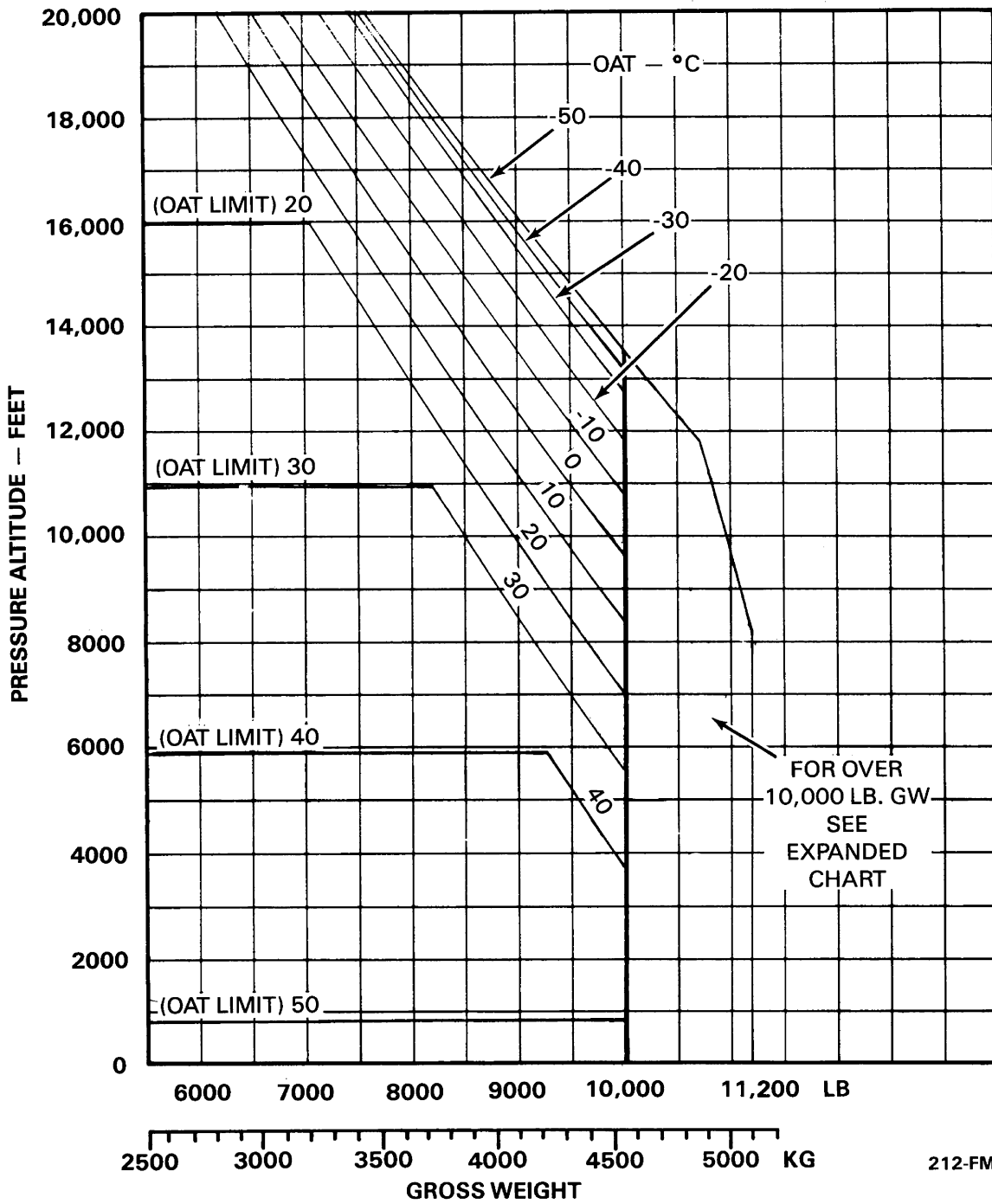


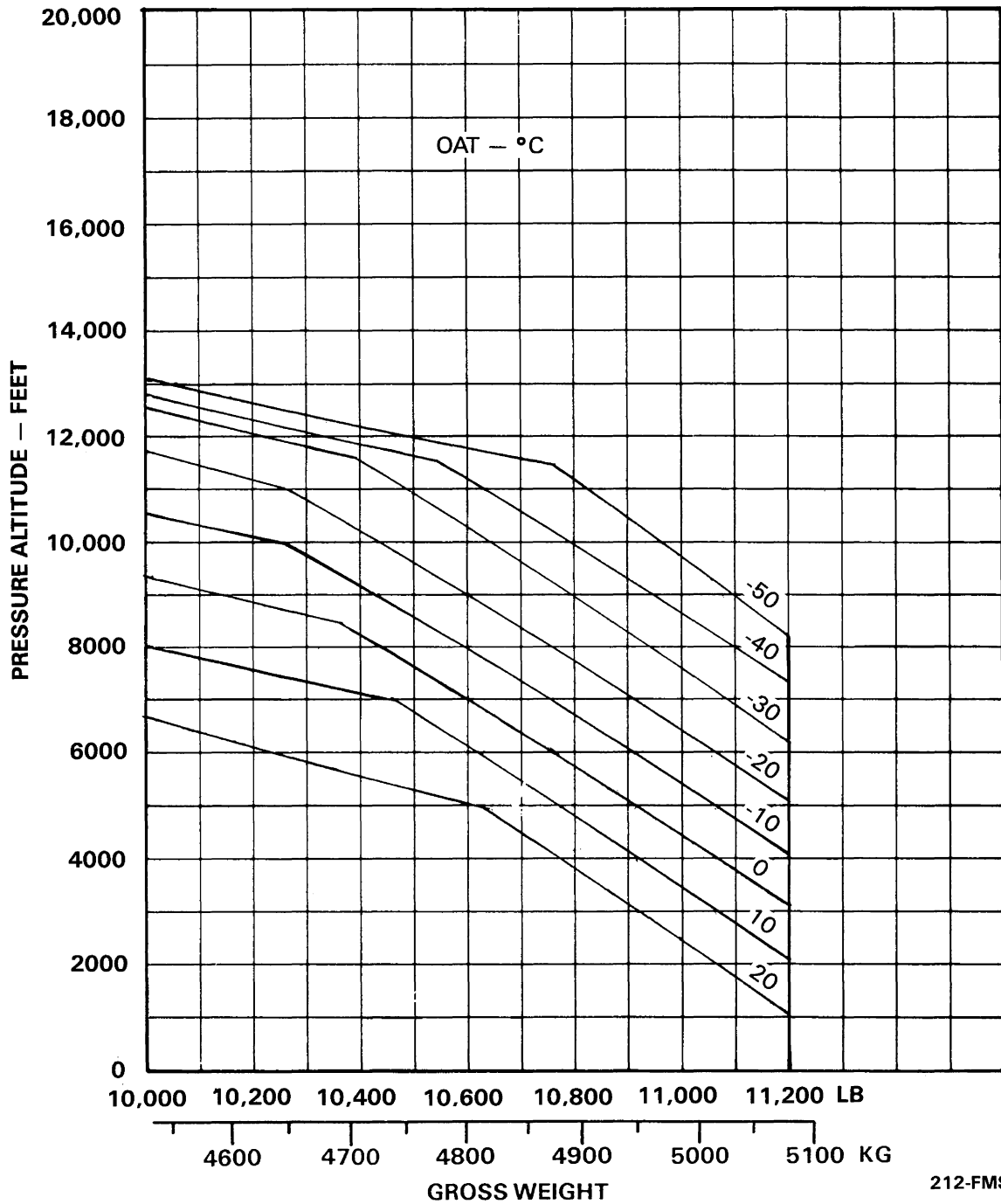
Figure 4-5. External cargo (sheet 2 of 6)

EXTERNAL CARGO

**HOVER CEILING
OUT OF GROUND EFFECT**

**TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 150 AMPS EACH**

**SKID HEIGHT 60 FEET
HEATER ON
GROSS WEIGHT 10,000 TO 11,200 LB.**



212-FMS29-4-5-3

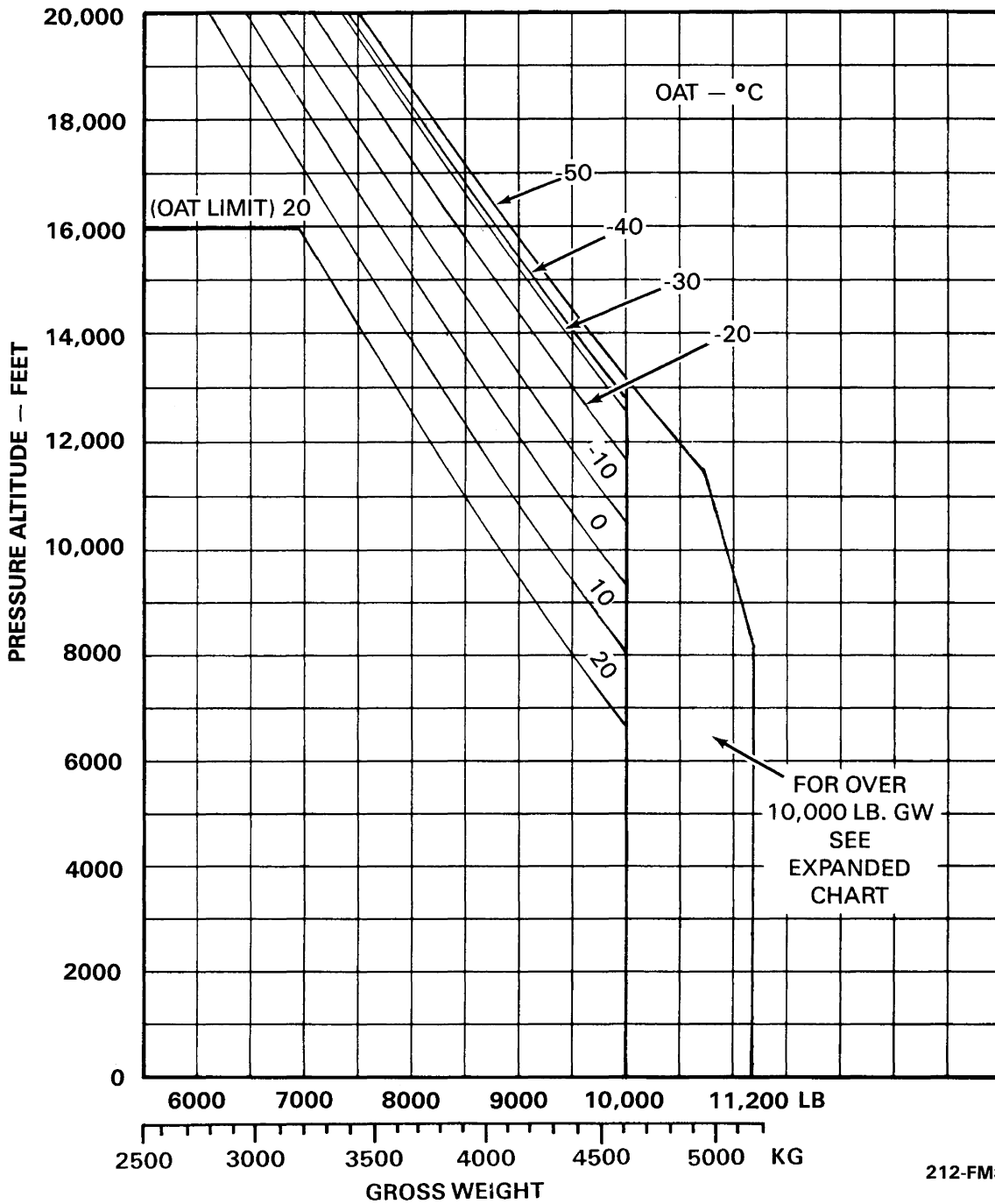
Figure 4-5. External cargo (sheet 3 of 6)

EXTERNAL CARGO

**HOVER CEILING
OUT OF GROUND EFFECT**

**TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 150 AMPS EACH**

**SKID HEIGHT 60 FEET
HEATER ON
GROSS WEIGHT UP TO 10,000 LB.**



212-FMS29-4-5-4

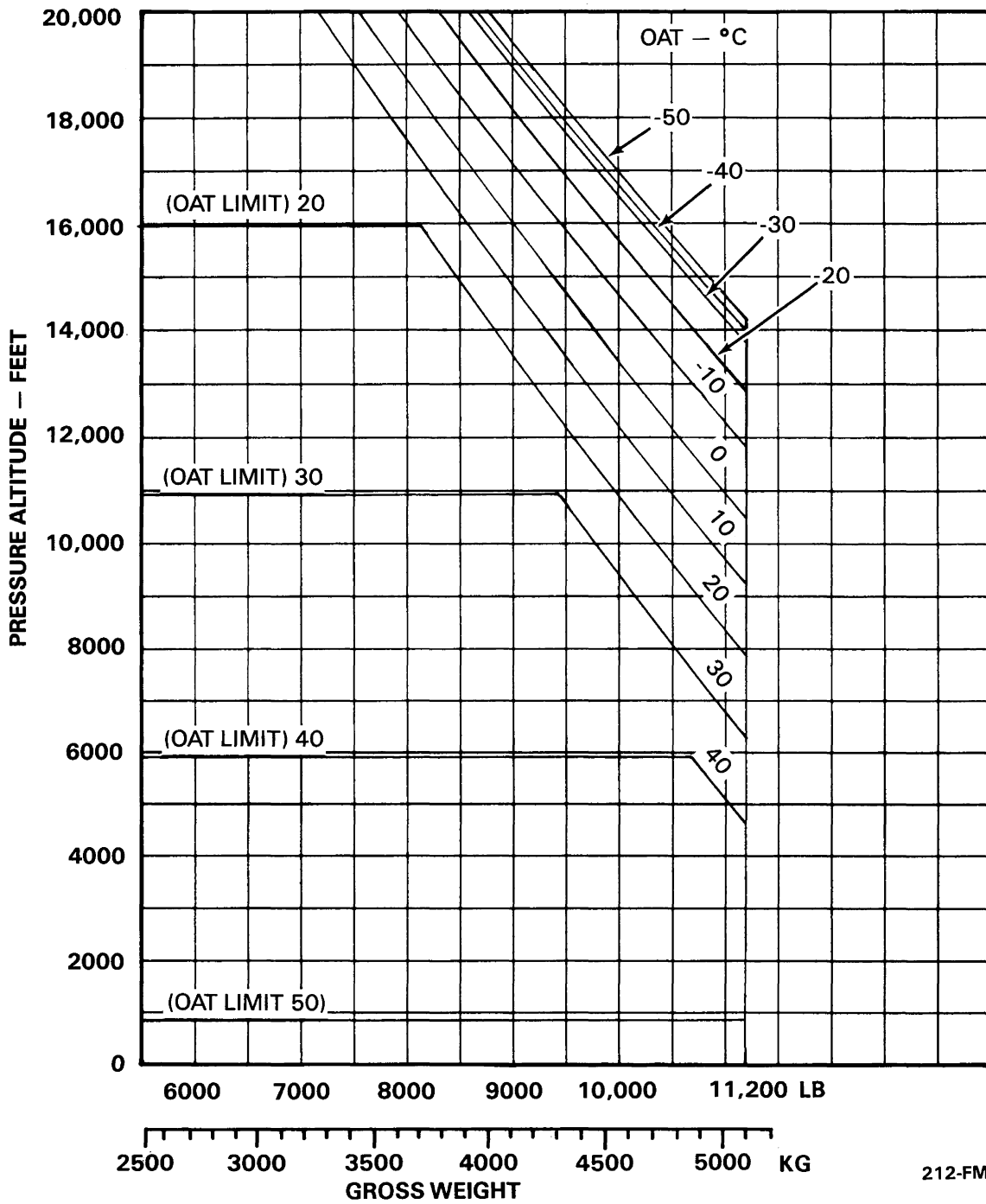
Figure 4-5. External cargo (sheet 4 of 6)

EXTERNAL CARGO

**HOVER CEILING
IN GROUND EFFECT**

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 150 AMPS EACH

SKID HEIGHT 4 FEET
HEATER OFF



212-FMS29-4-5-5

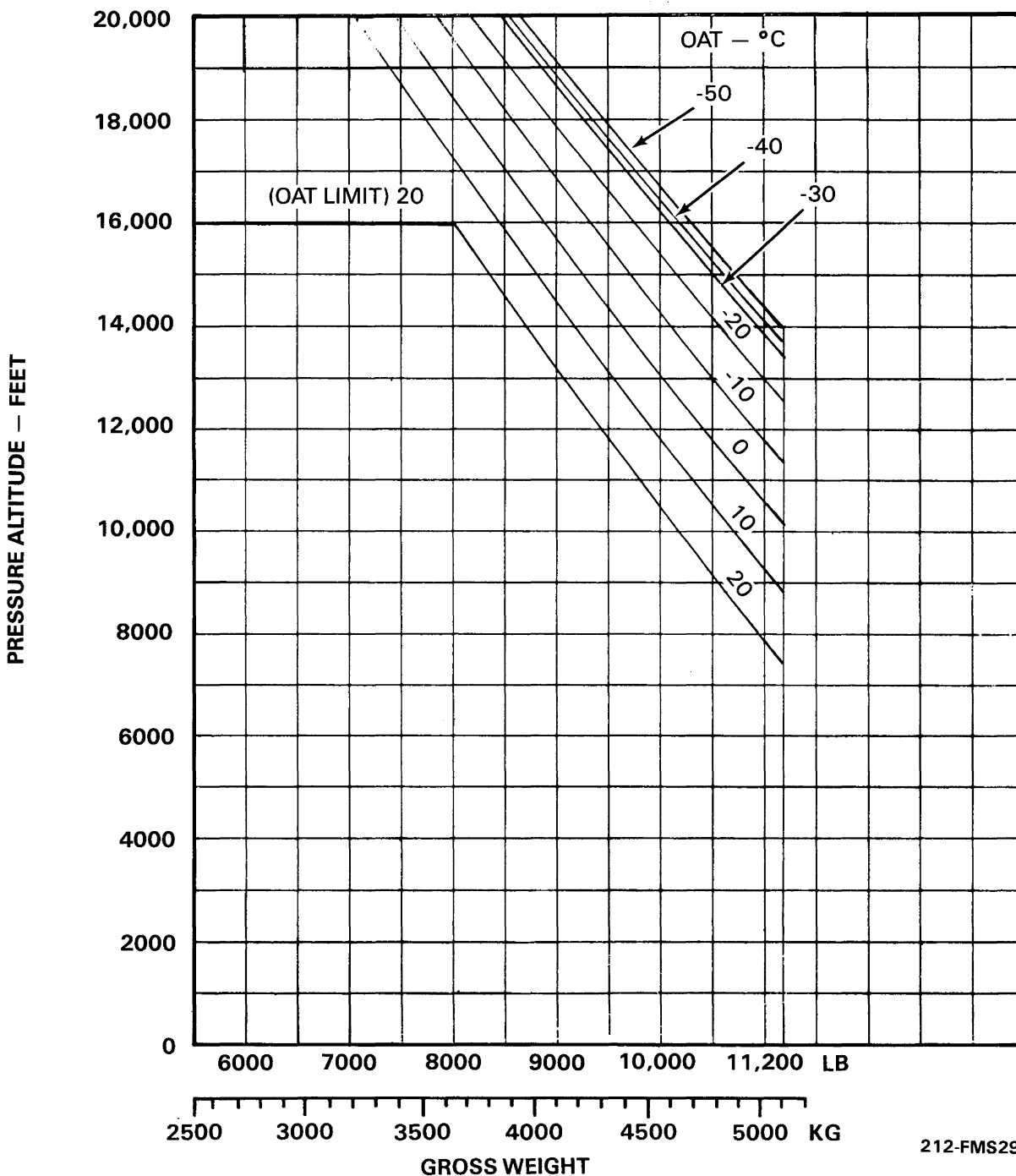
Figure 4-5. External cargo (sheet 5 of 6)

EXTERNAL CARGO

HOVER CEILING IN GROUND EFFECT

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 150 AMPS EACH

SKID HEIGHT 4 FEET
HEATER ON



212-FMS29-4-5-6

Figure 4-5. External cargo (sheet 6 of 6)

AMPHIBIOUS OPERATIONS

**HOVER CEILING
OUT OF GROUND EFFECT**

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 150 AMPS EACH

SKID HEIGHT 60 FEET
HEATER ON
AMPHIBIOUS OPERATIONS

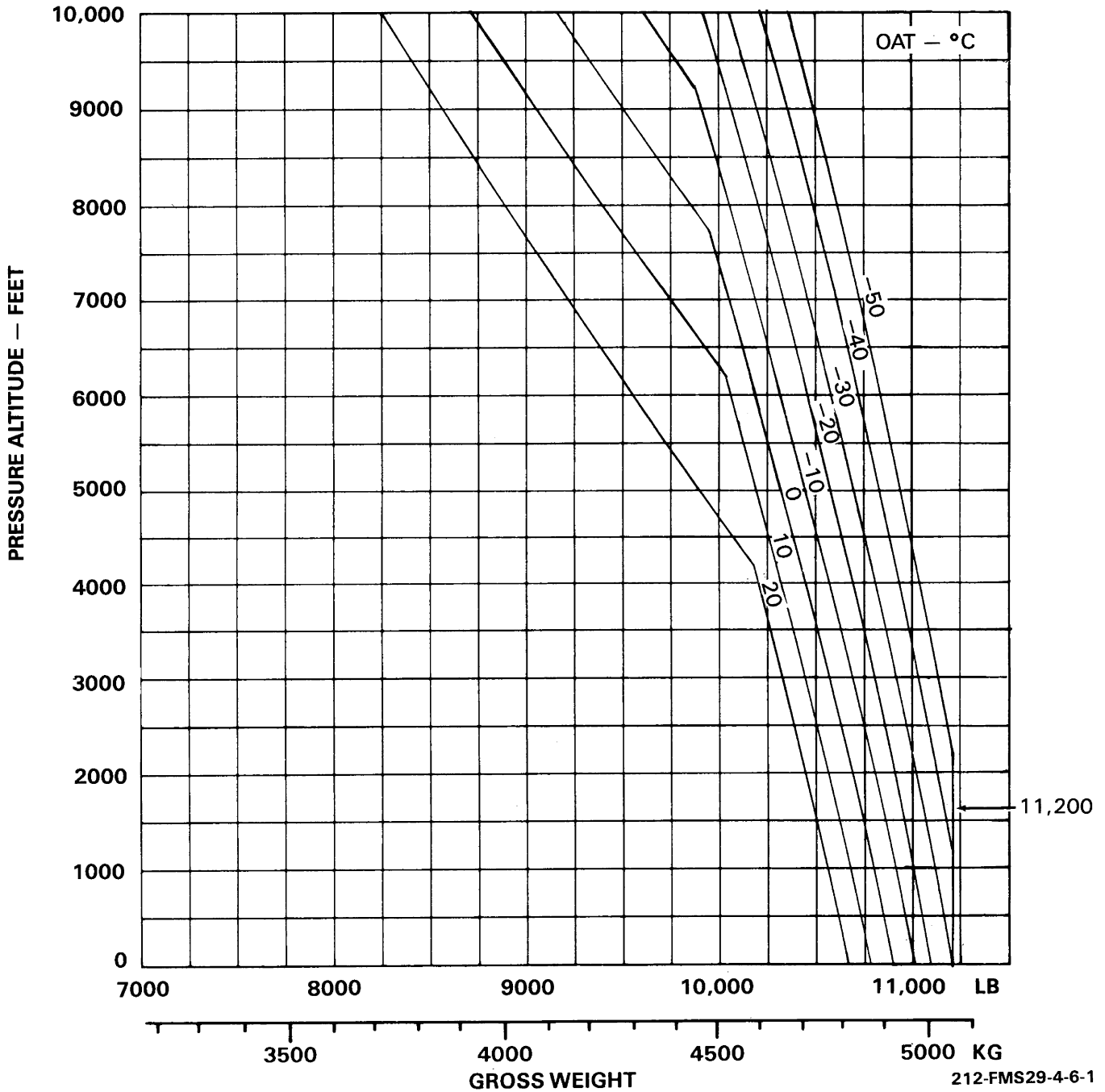


Figure 4-6. Amphibious operations (sheet 1 of 3)

AMPHIBIOUS OPERATIONS

**HOVER CEILING
OUT OF GROUND EFFECT**

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 150 AMPS EACH

SKID HEIGHT 60 FEET
HEATER OFF
AMPHIBIOUS OPERATIONS

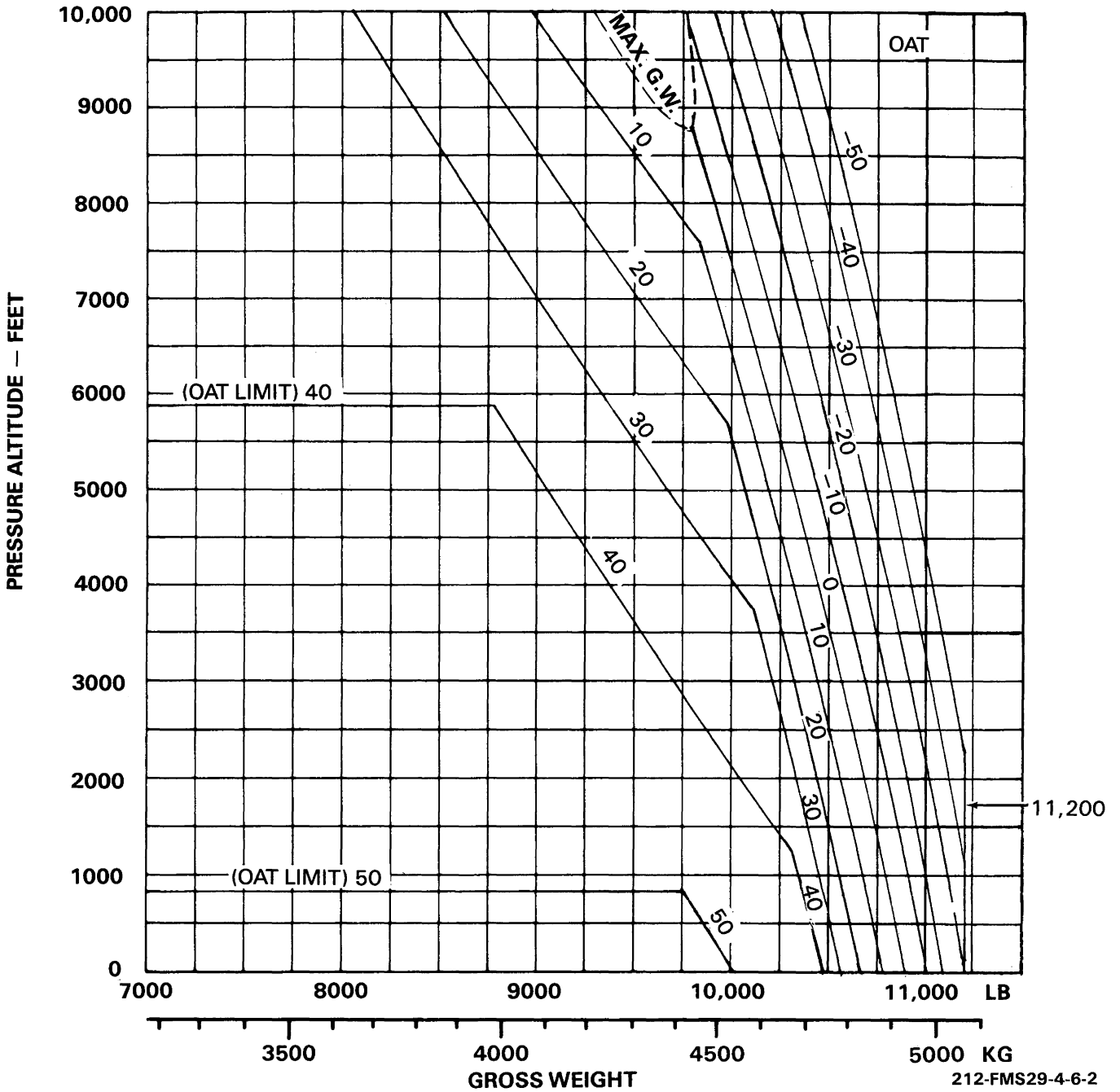


Figure 4-6. Amphibious operations (sheet 2 of 3)

AMPHIBIOUS OPERATIONS

**HOVER CEILING
OUT OF GROUND EFFECT**

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 150 AMPS EACH

SKID HEIGHT 60 FEET
HEATER ON
AMPHIBIOUS OPERATIONS

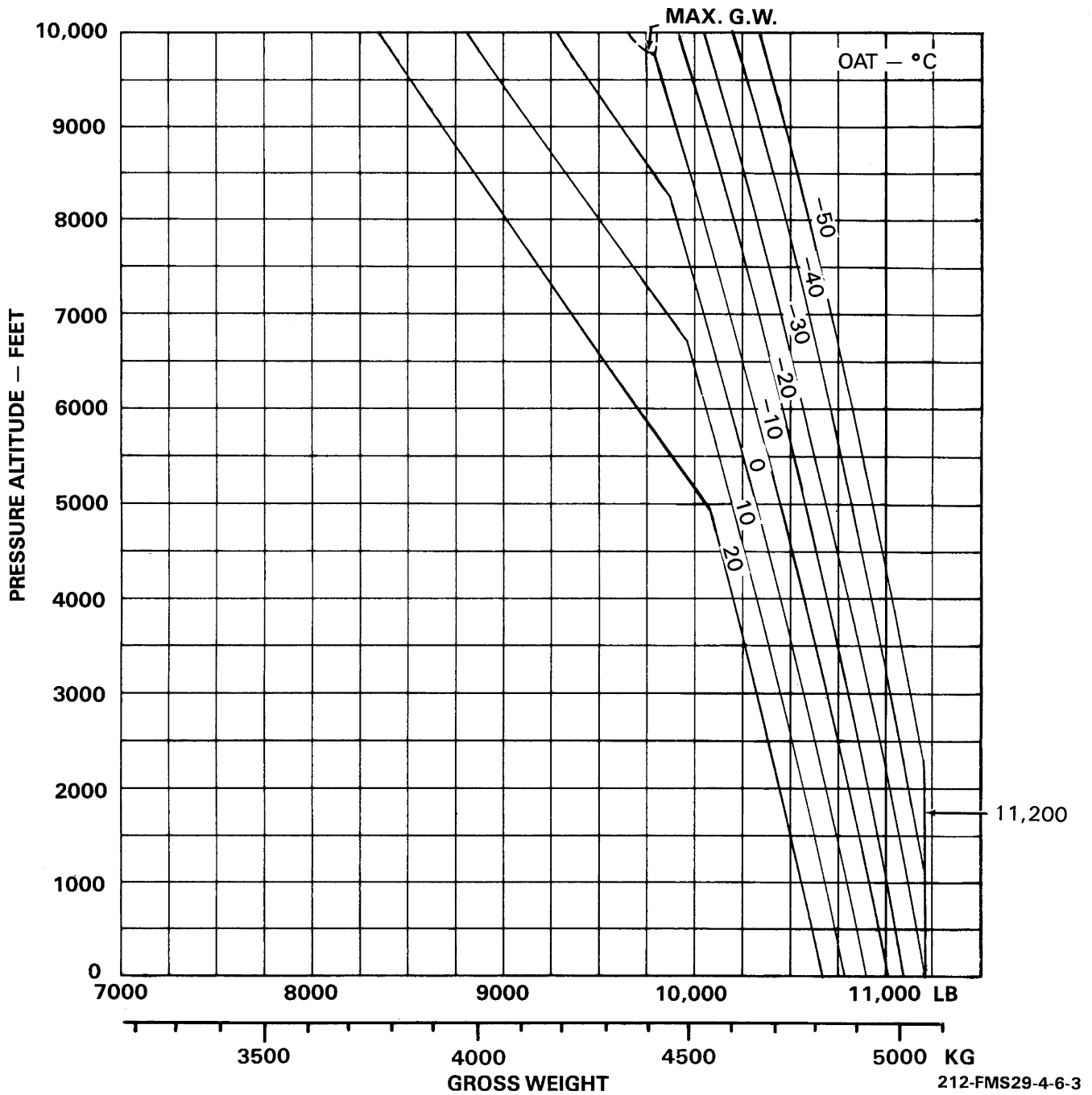


Figure 4-6. Amphibious operations (sheet 3 of 3)

Section 5

WEIGHT AND BALANCE

No change from basic manual.

Section 1

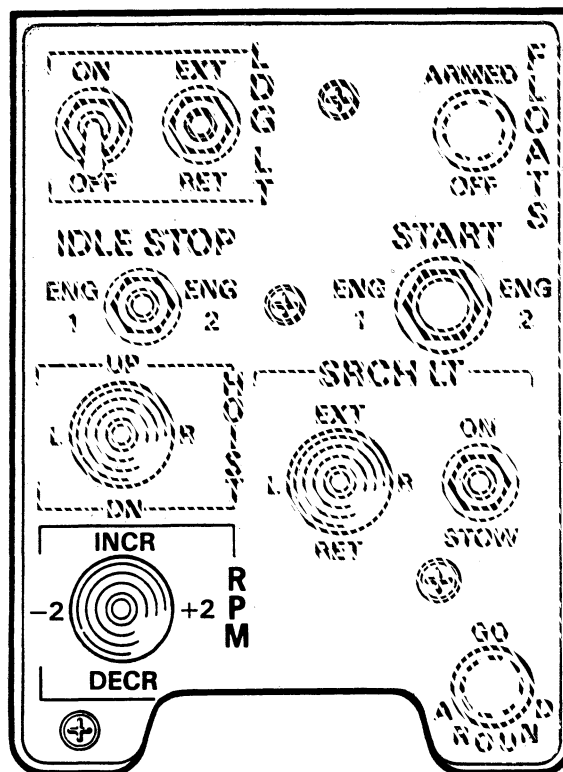
SYSTEMS DESCRIPTION

1-1. RPM SWITCH

RPM switch, located on pilot collective control panel, is a five position, momentary on type switch.

INCR/DECR positions increase/decrease ENG RPM (N_2) by controlling governors on both engines simultaneously.

-2/+2 positions (trim) increase/decrease engine 2 ENG RPM (N_2) to provide TORQUE or ITT matching. Trim range is 2.0 to 2.5% ENG RPM (N_2). Engine 2 governor should be at least 95% minimum trim and beep.



212-FMS29-MD-1

Figure 1-1. Pilot collective control panel

