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EASA APPROVED
ROTORCRAFT FLIGHT MANUAL SUPPLEMENT
TO THE

AGUSTA S.p.A.
MODEL A119 and AW119 MKII
ROTORCRAFT FLIGHT MANUAL
FOR THE
INLET BARRIER FILTER SYSTEM
INSTALLATION

Aircraft S/N _____ Aircraft Reg. No. _____

This supplement must be attached to applicable EASA Approved Rotorcraft Flight Manual, when the rotorcraft is modified by the installation of the AFS Inlet Barrier Filter (IBF) System in accordance with STC No._____

The information contained herein supplements or supersedes the basic manual only in those areas listed herein. For limitations, procedures, and performance information not contained in this supplement, consult the basic Rotorcraft Flight Manual.

EASA Approved _____

Approval Date: _____ Rev.: IR

LOG OF REVISIONS

Rev. No.	Revision Description	Pages Effected	EASA Approved:	Date:
IR	Initial Release	All		

NOTE
Revised text from previous revision is indicated by a black vertical line in the right border.

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GENERAL INFORMATION

It is responsibility of the flight crew to be familiar with the contents of this Flight Manual Supplement (FMS) including all revisions and any temporary revision which is applicable at the time of flight.

TERMINOLOGY

WARNINGS, CAUTIONS AND NOTES

Warnings, Cautions and Notes are used throughout this manual to emphasize important and critical instructions and are used as follows:

WARNING

An operating procedure, practice, etc., which, if not correctly followed, could result in personal injury or loss of life.

CAUTION

An operating procedure, practice, etc., which, if not strictly observed, could result in damage to, or destruction of, equipment.

NOTE

An operating procedure, condition, etc., which is essential to highlight.

USE OF PROCEDURAL WORDS

The concept of procedural word usage and intended meaning which has been adhered to in preparing this RFM is as follows:

"**Shall**" or "**Must**" are used to indicate a mandatory requirement.

"**Should**" is used to indicate a non-mandatory but preferred method of accomplishment.

"**May**" is used to indicate an acceptable method of accomplishment.

ABBREVIATIONS

AFS – Aerospace Filtration Systems, Inc.
EAPS – Engine Air Particle Separator
EASA – European Aviation Safety Agency
FMA – Filter Maintenance Aid
FMS – Flight Manual Supplement
IBF – Inlet Barrier Filter
ICA – Instructions for Continued Airworthiness
IMC – Instrument Meteorological Conditions
N1 – Gas Generator Turbine Speed
OEM – Original Equipment Manufacturer
PAC – Power Assurance Check
RFM – Rotorcraft Flight Manual
STC – Supplemental Type Certificate
ITT – Interturbine Temperature

SECTION 1
LIMITATIONS

TYPE OF OPERATION

The installation of the Inlet Barrier Filter (IBF) system does not change the existing operational restrictions listed in the basic Rotorcraft Flight Manual (RFM) or existing flight manual supplements. Refer to the Limitations Section of the RFM and/or supplements for Types of Operation.

The installation of the IBF system does not restrict the aircraft from flight in falling and blowing snow conditions.

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INSTRUMENT MARKINGS AND PLACARDS

IBF

"IBF" placards for the Engine IBF System (as shown above) are located:

(1) Near the IBF 3-amp circuit breaker in the overhead panel and

(2) Near the IBF cockpit indicator/switch.

NOTE

"IBF" may be engraved or silk-screened in lieu of the placards

The indicator/switch includes a push-button switch used to open/close the filter bypass and two indicator segments used to alert the pilot any time the filter is restricted or the bypass door is open.

The upper segment of the indicator is labeled "FILTER" and will illuminate yellow/amber when the pressure differential across the engine inlet filter is above a preset value.

The lower segment of the indicator is labeled "BYPASS" and will illuminate yellow/amber whenever the bypass door is in the full open position.

NOTE:

"FILTER" segment should extinguish when "BYPASS" segment illuminates indicating differential pressure is again within normal operating range.

SECTION 2
NORMAL PROCEDURES

PRE-FLIGHT CHECK
FUSELAGE – CENTER

Before each flight:

1. Ensure IBF environmental protective cover is removed.

2. Perform a visual check to verify that bypass door is closed.

3. Check IBF Filter Maintenance Aid (FMA) to determine condition of the filters. When indicator enters RED zone (See Figure 2-1 of this document), it is recommended that the filters be serviced per IBF Instructions for Continued Airworthiness, AFS-AA119-IBF-ICA.

4. Check IBF filter element media for security and condition. If any element is torn, has a hole, or the pleats are flattened, contact maintenance for disposition per the IBF ICA.

BEFORE FLIGHT WHEN OPERATING IN SNOW CONDITIONS

1. Thoroughly check cabin roof, transmission cowling, and filter areas. All areas checked shall be clean and free of accumulated snow, slush, and ice before each flight.

2. Ensure that all filters, bypass door, and intake cowling are thoroughly clear of snow, slush, or ice before each flight.

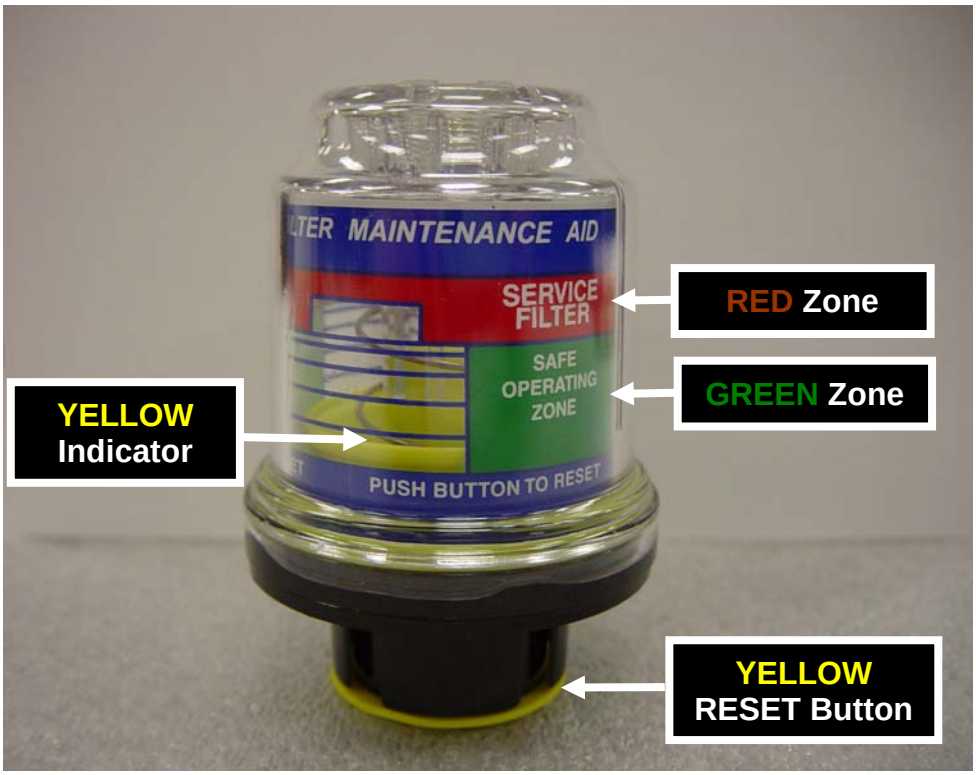

Figure 2-1. FILTER MAINTENANCE AID (FMA) – (ABOVE) "YELLOW Indicator" position relative to SAFE OPERATING ZONE ("GREEN Zone") or SERVICE FILTER ("RED Zone") markings defines current filter condition and pushing "YELLOW RESET Button" resets indicator. NOTE: FMA unit is mounted to LH forward side of the Forward Frame Assembly and is accessed through the LH Engine Cowl Access Door (on the Forward Cowl).

SECTION 3
EMERGENCY AND MALFUNCTIONS PROCEDURES

Caution Lights (YELLOW/AMBER)

Panel wording	Fault condition	Corrective action
	Illumination of "FILTER" segment of the cockpit indicator / switch indicates the pressure differential preset value for the engine has been reached or exceeded. NOTE As the filter becomes more contaminated, certain flight conditions may cause "FILTER" segment to flicker intermittently. Corrective action should be taken only when the "FILTER" segment illumination is continuous.	Monitor ITT for any significant rise, i.e. > 20°C. Monitor engine conditions for any indications of engine degradation or compressor stall, i.e. ITT fluctuations, and decreasing or fluctuating N1 rpm. If rise in ITT or engine performance is unacceptable: ▪ Open the bypass door by pressing illuminated "FILTER" indicator/switch. ▪ "BYPASS" segment of indicator/switch should illuminate and the "FILTER" segment of indicator/switch should extinguish indicating the bypass door is open and the pressure differential is back within the normal range. Service filters prior to next flight. NOTE If the "FILTER" lights illuminate during take-off, recommend servicing filters before continuing flight. CAUTION TO PREVENT COMPRESSOR EROSION AVOID (IF POSSIBLE) OPERATION IN DIRTY OR DUSTY ENVIRONMENT WITH THE BYPASS DOOR OPEN.
	Illumination of "BYPASS" segment of the cockpit indicator / switch indicates the bypass door is open and the filter is being bypassed and is allowing unfiltered air to enter the engine.	If the flight or landing environment has significant dirt or debris, it is recommended that the bypass door be closed, provided no rotorcraft or engine limits will be exceeded. With the bypass closed, the "BYPASS' segment will extinguish and the "FILTER" segment will potentially re-appear under high engine power settings until the filter has been cleaned.
	Inadvertent encounters with icing conditions	Exit condition as soon as practical.

SECTION 4
PERFORMANCE

IBF PERFORMANCE DATA

The applicable RFM (A119 or AW119 MKII), should be used to perform the PAC (Power Assurance Check).

A119 Rotorcraft Only

For A119 rotorcraft, use of the Basic PAC charts/procedures found in Section 4 of the RFM and the EAPS – OFF performance charts, found in Appendix 17 of the RFM are required.

If the PAC is satisfactory (i.e. the recorded ITT or N1 values are less than the maximum allowable values) then EAPS performance can be obtained and the EAPS–OFF performance data charts are applicable.

If the PAC is not satisfactory then clean the filters and conduct another PAC. If the new PAC is found to be satisfactory, then EAPS performance can be obtained and the EAPS–OFF performance data charts are applicable.

If the recorded PAC results after cleaning the filters are still not satisfactory (i.e. the recorded ITT or N1 values are greater than the maximum allowable EAPS chart values), then contact maintenance for troubleshooting.

All Rotorcraft (A119 and AW119 MkII)

CAUTION

HELICOPTER PERFORMANCE IS REDUCED AS THE IBF BECOMES CONTAMINATED WITH DIRT, DUST AND DEBRIS. PILOT / OPERATOR IS RESPONSIBLE TO UTILIZE PAC TO DETERMINE IF ENGINE CAN PRODUCE INSTALLED POWER.

NOTE

Ensure that the IBF "FILTER" and "BYPASS" caution lights are not illuminated during performance of the PAC, and verify that the bypass door is closed.

The frequency at which the PACs are conducted is up to the discretion of the operator and may be based on the current or forecast operating environment, (i.e. temperature, altitude, airborne contaminate) and the requirements of the Flight Manual or applicable Flight Manual Supplement.

If the engine does not pass PAC, published performance may not be achieved. Contact maintenance for appropriate trouble shooting procedures as outlined in the applicable Instructions for Continued Airworthiness or Maintenance Manuals.

AW119 MkII Rotorcraft Only

For AW119 MkII rotorcraft, use of the Basic PAC charts/procedures, found in Section 4 of the RFM and the following performance charts of this RFM Supplement are required.

If the PAC is satisfactory (i.e. the recorded ITT or N1 values are less than the maximum allowable values) then EAPS performance can be obtained and the following performance data charts are applicable.

If the PAC is not satisfactory then clean the filters and conduct another PAC. If the new PAC is found to be satisfactory, then EAPS performance can be obtained and the following performance data charts are applicable.

If the recorded PAC results after cleaning the filters are still not satisfactory (i.e. the recorded ITT or N1 values are greater than the maximum allowable EAPS chart values), then contact maintenance for troubleshooting.

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PERFORMANCE CHARTS
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NOTE: ALL CHARTS – EAPS OFF

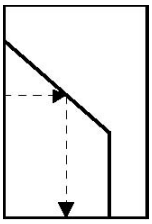
FIGURE 1

ROTOR SPEED: 102 %
ELECTRICAL LOAD: 100 A TOTAL
WHEEL HEIGHT: IGE 3 ft
ZERO WIND

EAPS OFF

HOVER CEILING IN GROUND EFFECT

TAKE-OFF POWER



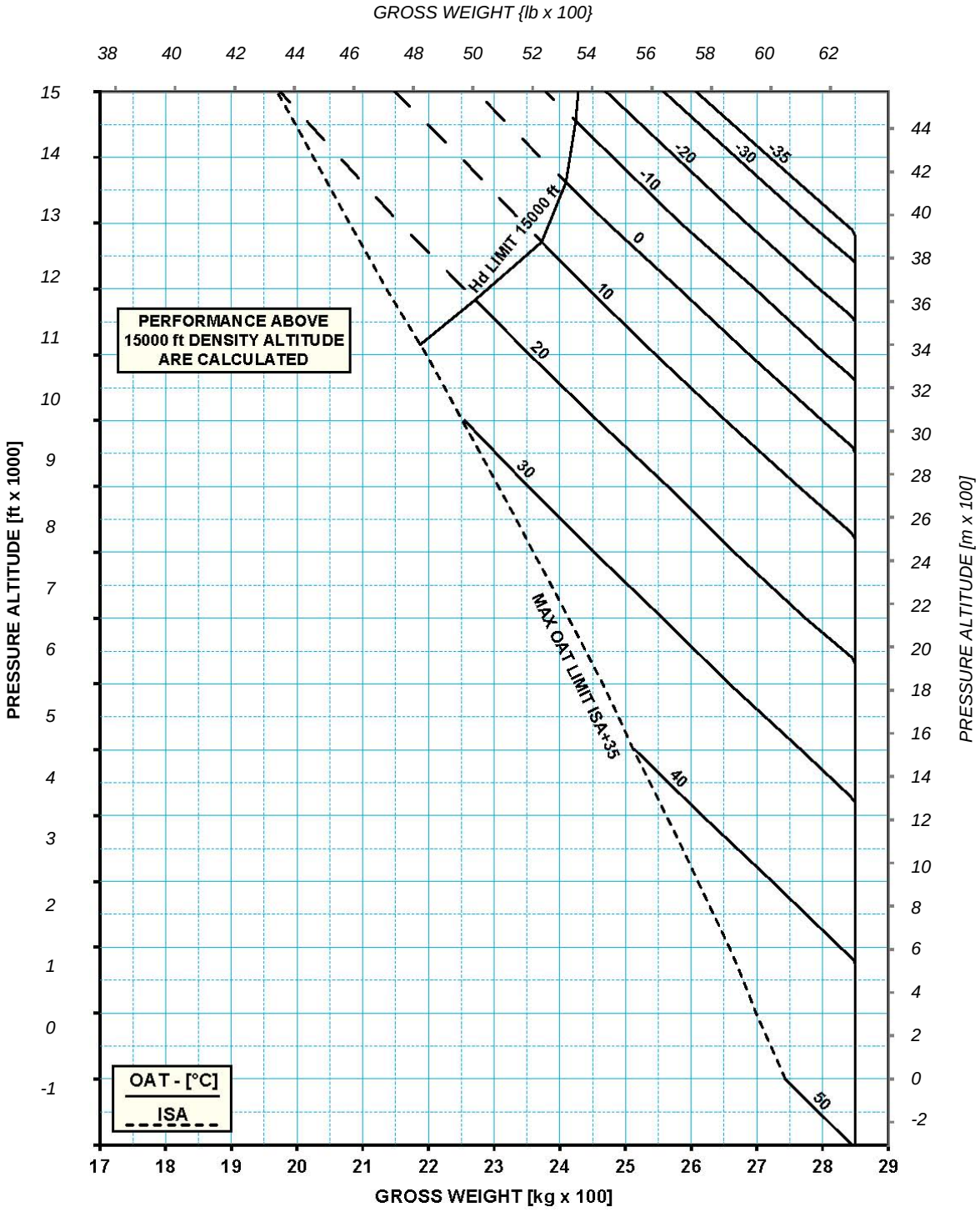
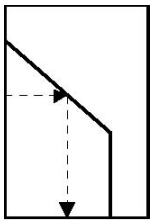


FIGURE 2



ROTOR SPEED: 102 %
ELECTRICAL LOAD: 100 A TOTAL
WHEEL HEIGHT: IGE 3 ft
ZERO WIND

EAPS OFF

HOVER CEILING IN GROUND EFFECT

MAXIMUM CONTINUOUS POWER

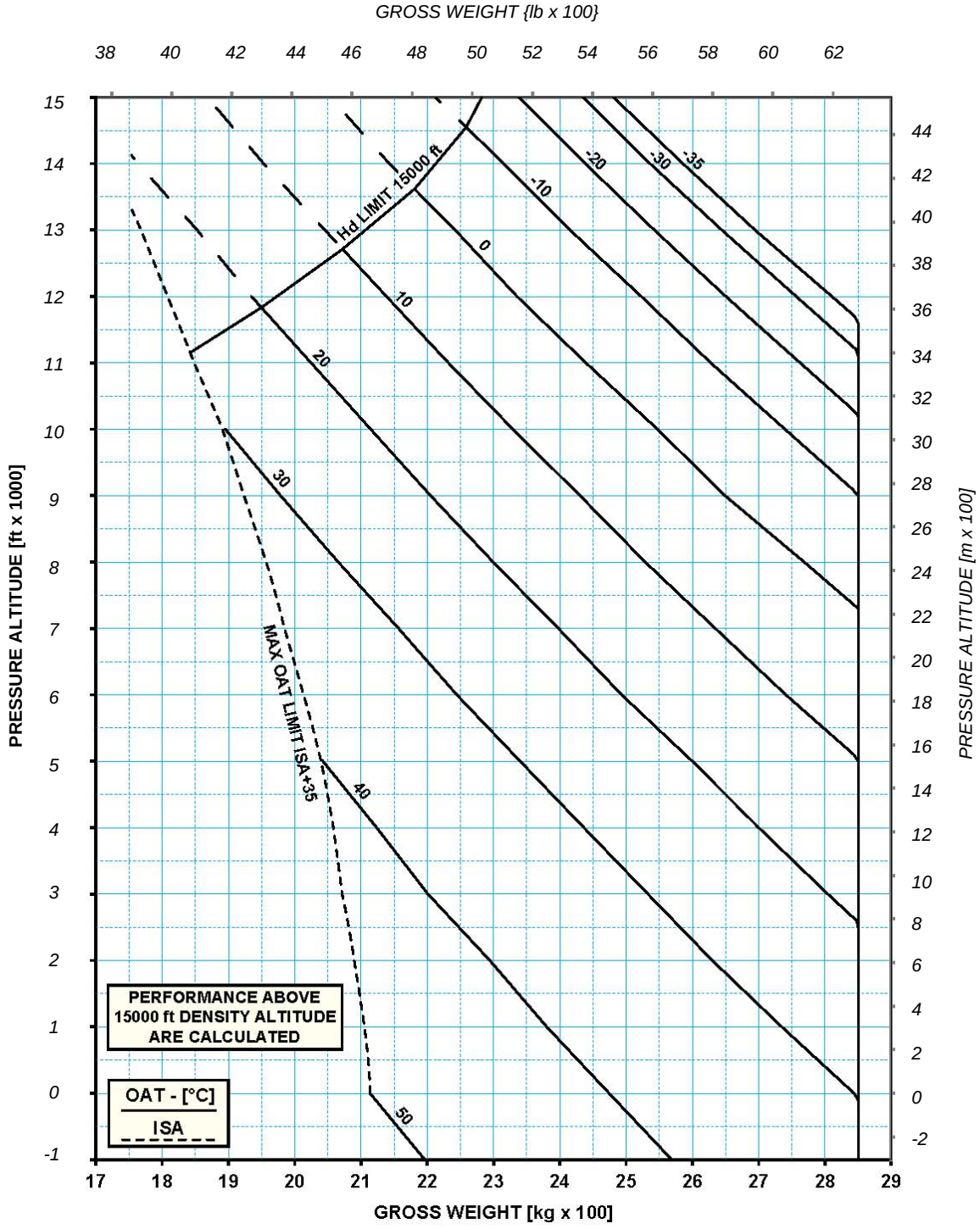
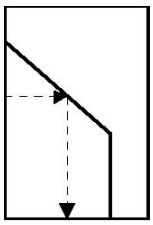


FIGURE 3



ROTOR SPEED: 102 %
ELECTRICAL LOAD: 100 A TOTAL
WHEEL HEIGHT: OGE 60 ft
ZERO WIND

EAPS OFF

HOVER CEILING OUT OF GROUND EFFECT

TAKE-OFF POWER

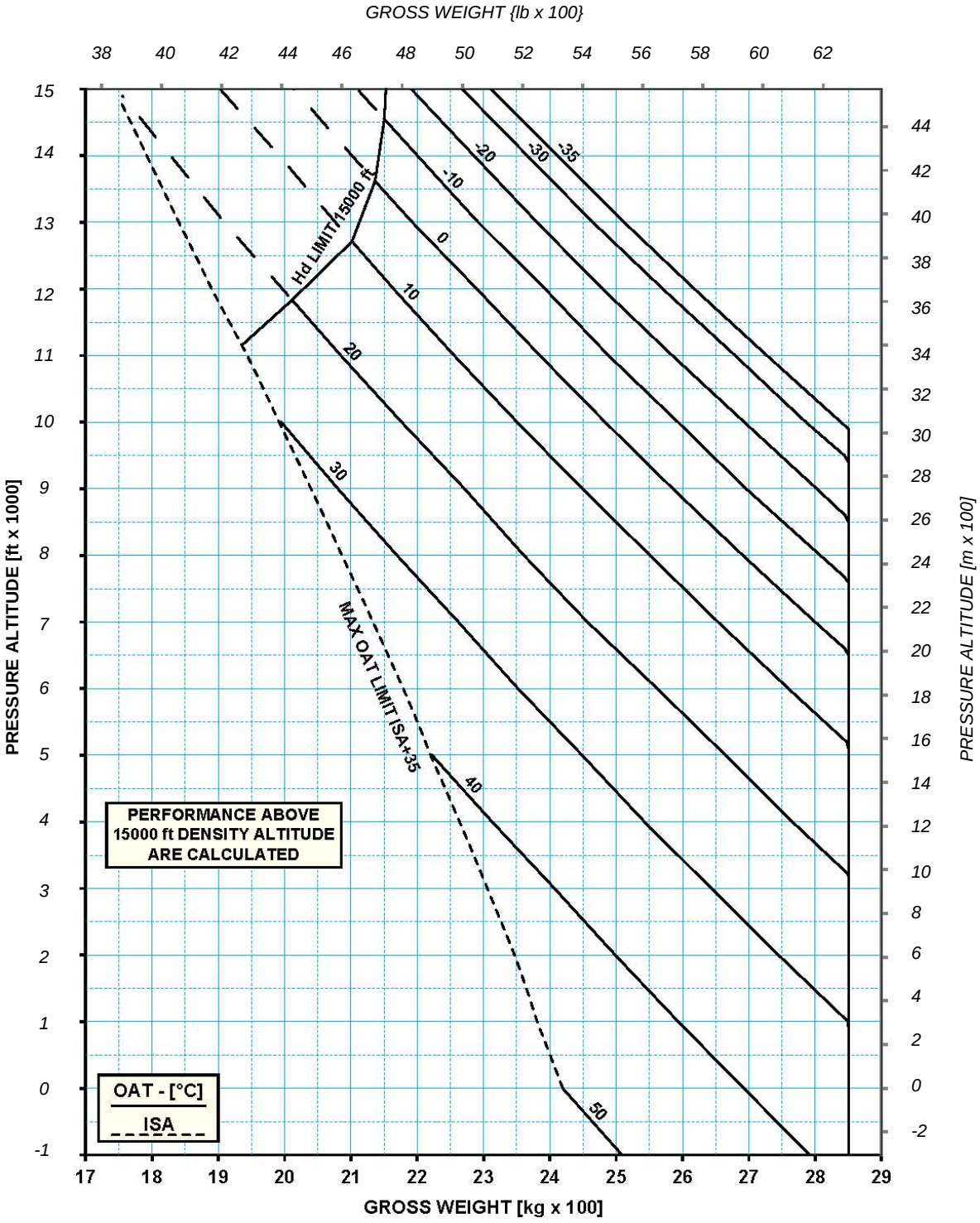


FIGURE 4

ROTOR SPEED: 102 %
ELECTRICAL LOAD: 100 A TOTAL
WHEEL HEIGHT: OGE 60 ft
ZERO WIND

EAPS OFF

HOVER CEILING OUT OF GROUND EFFECT

MAXIMUM CONTINUOUS POWER

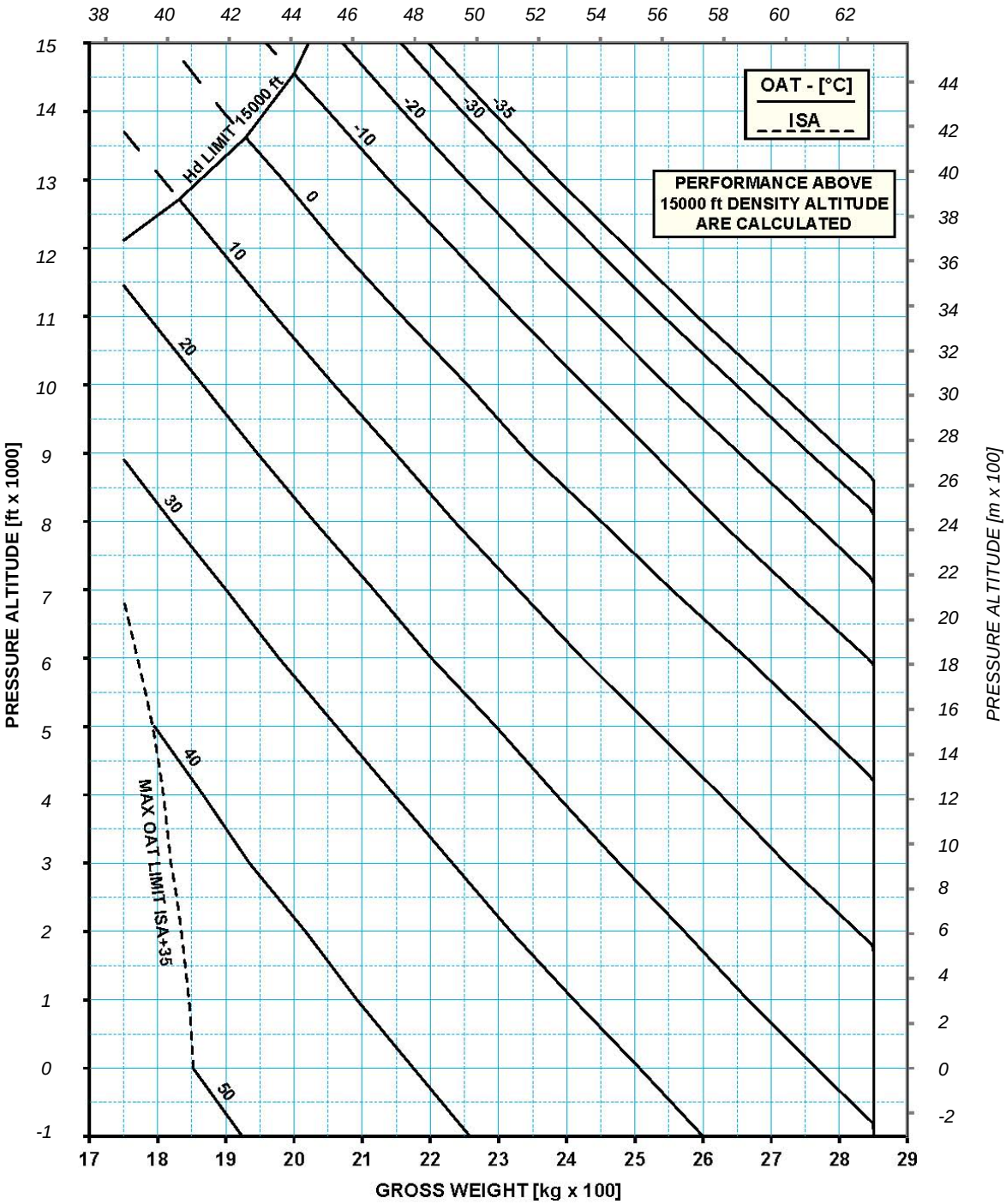
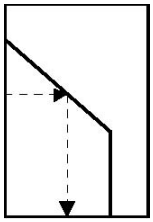


FIGURE 5

ROTOR SPEED: 102 %
ELECTRICAL LOAD: 100 A TOTAL
WHEEL HEIGHT: OGE 60 ft
ZERO WIND

EAPS OFF



HOVER CEILING OUT OF GROUND EFFECT

TAKE-OFF POWER (CARGO HOOK)

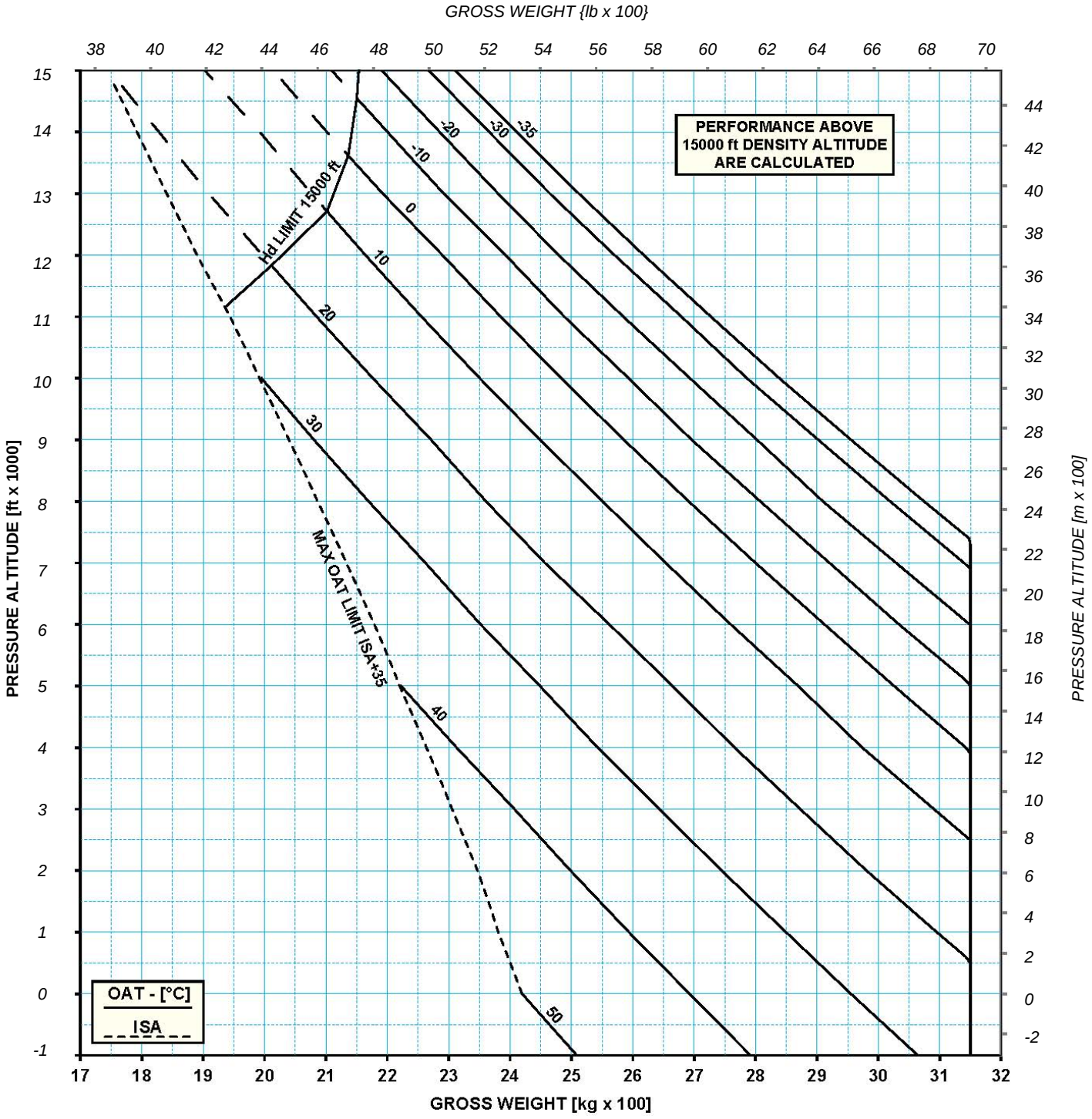


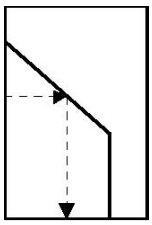
FIGURE 6

ROTOR SPEED: 102 %
ELECTRICAL LOAD: 100 A TOTAL
WHEEL HEIGHT: OGE 60 ft
ZERO WIND

EAPS OFF

HOVER CEILING OUT OF GROUND EFFECT

MAXIMUM CONTINUOUS POWER (CARGO HOOK)



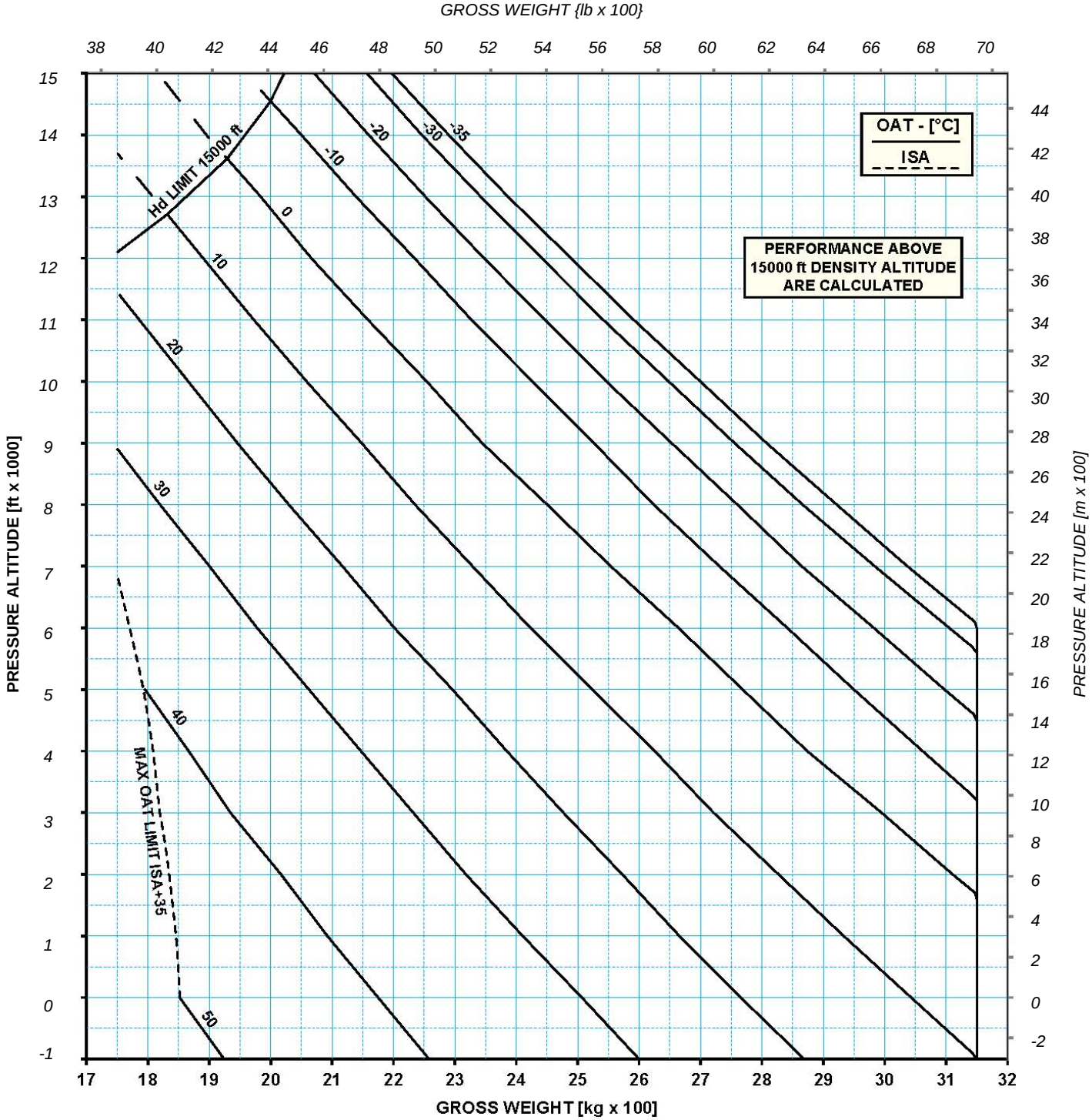
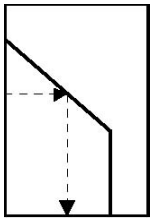


FIGURE 7

ROTOR SPEED: 102 %
ELECTRICAL LOAD: 100 A TOTAL
Vy: 60 KIAS

EAPS OFF



RATE OF CLIMB

TAKE-OFF POWER

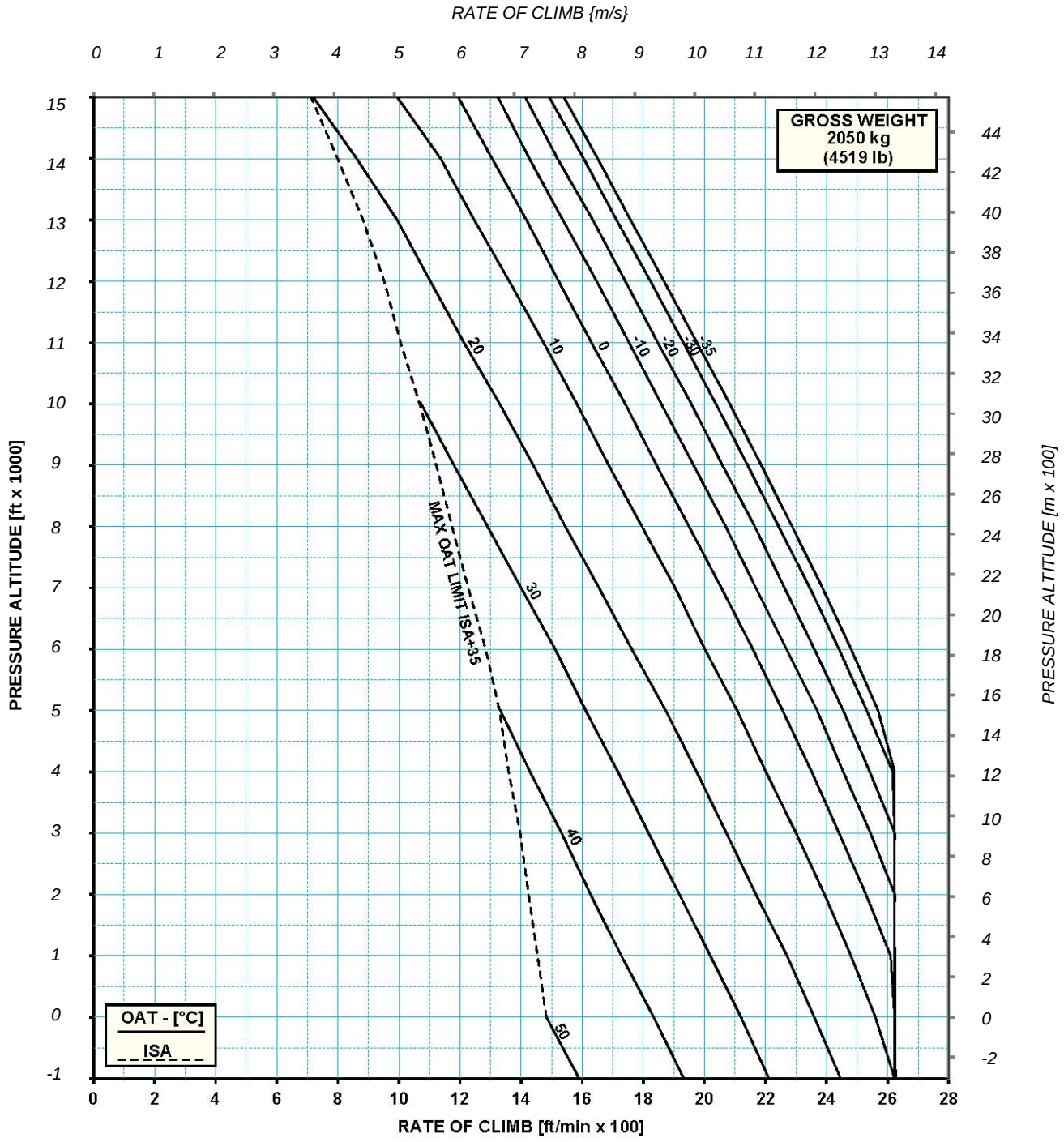


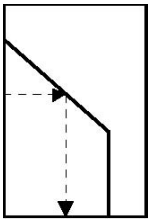
FIGURE 8

ROTOR SPEED: 102 %
ELECTRICAL LOAD: 100 A TOTAL
Vy: 60 KIAS

EAPS OFF

RATE OF CLIMB

TAKE-OFF POWER



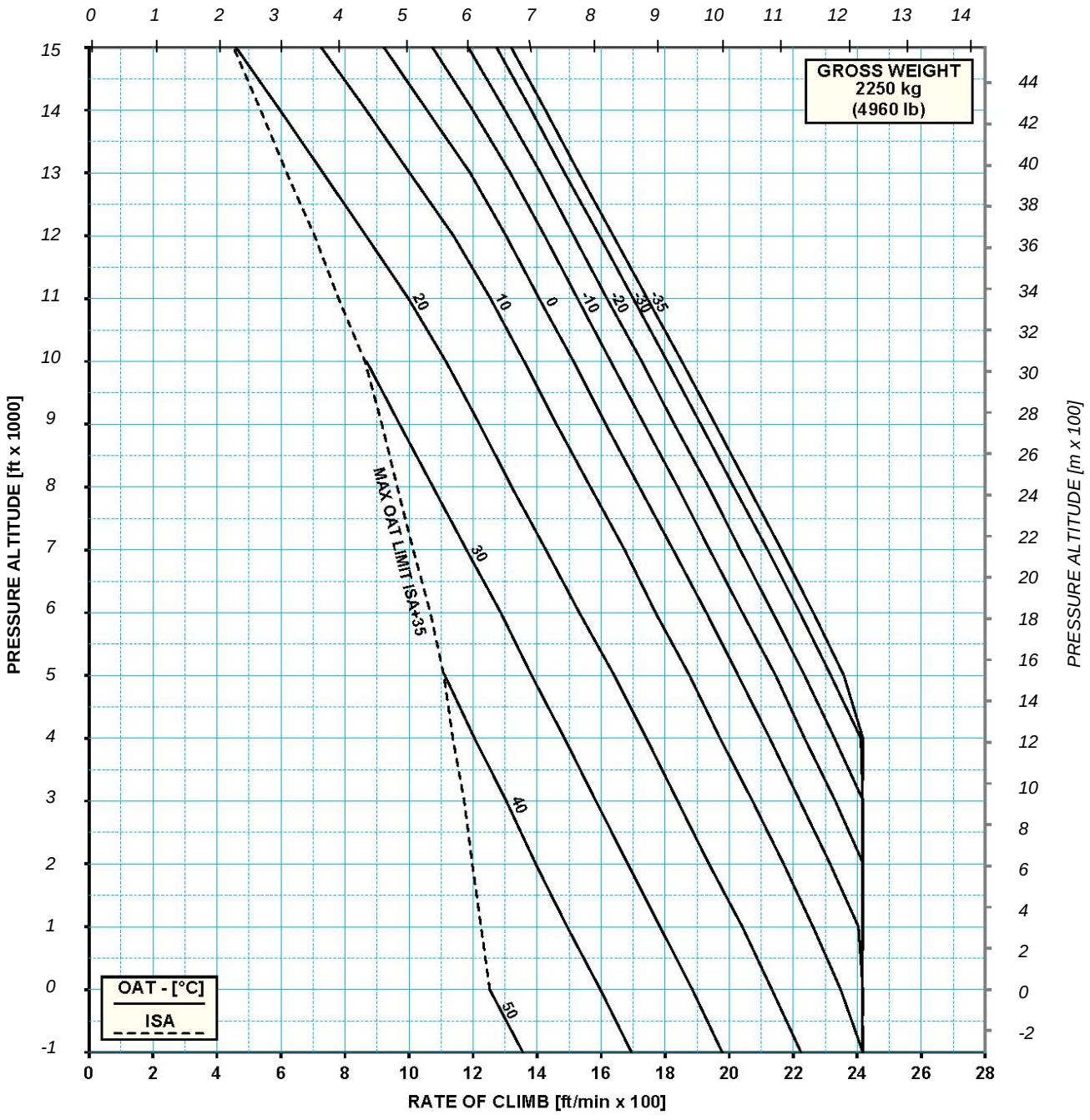
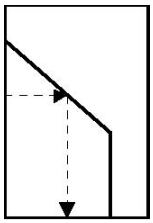


FIGURE 9

ROTOR SPEED: 102 %
ELECTRICAL LOAD: 100 A TOTAL
Vy: 60 KIAS

EAPS OFF



RATE OF CLIMB
TAKE-OFF POWER

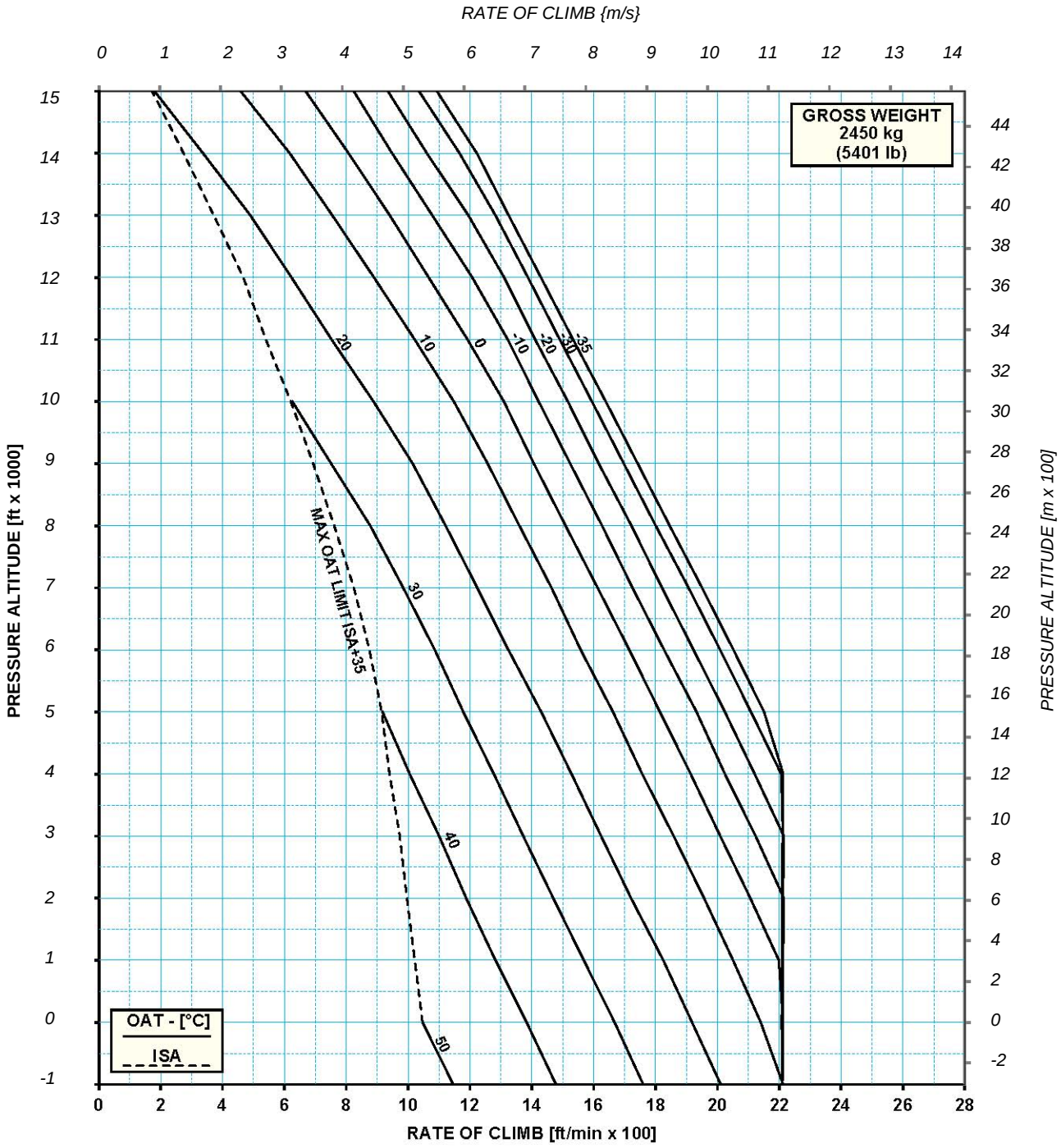
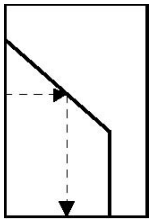


FIGURE 10

ROTOR SPEED: 102 %
ELECTRICAL LOAD: 100 A TOTAL
Vy: 60 KIAS

EAPS OFF

RATE OF CLIMB
TAKE-OFF POWER



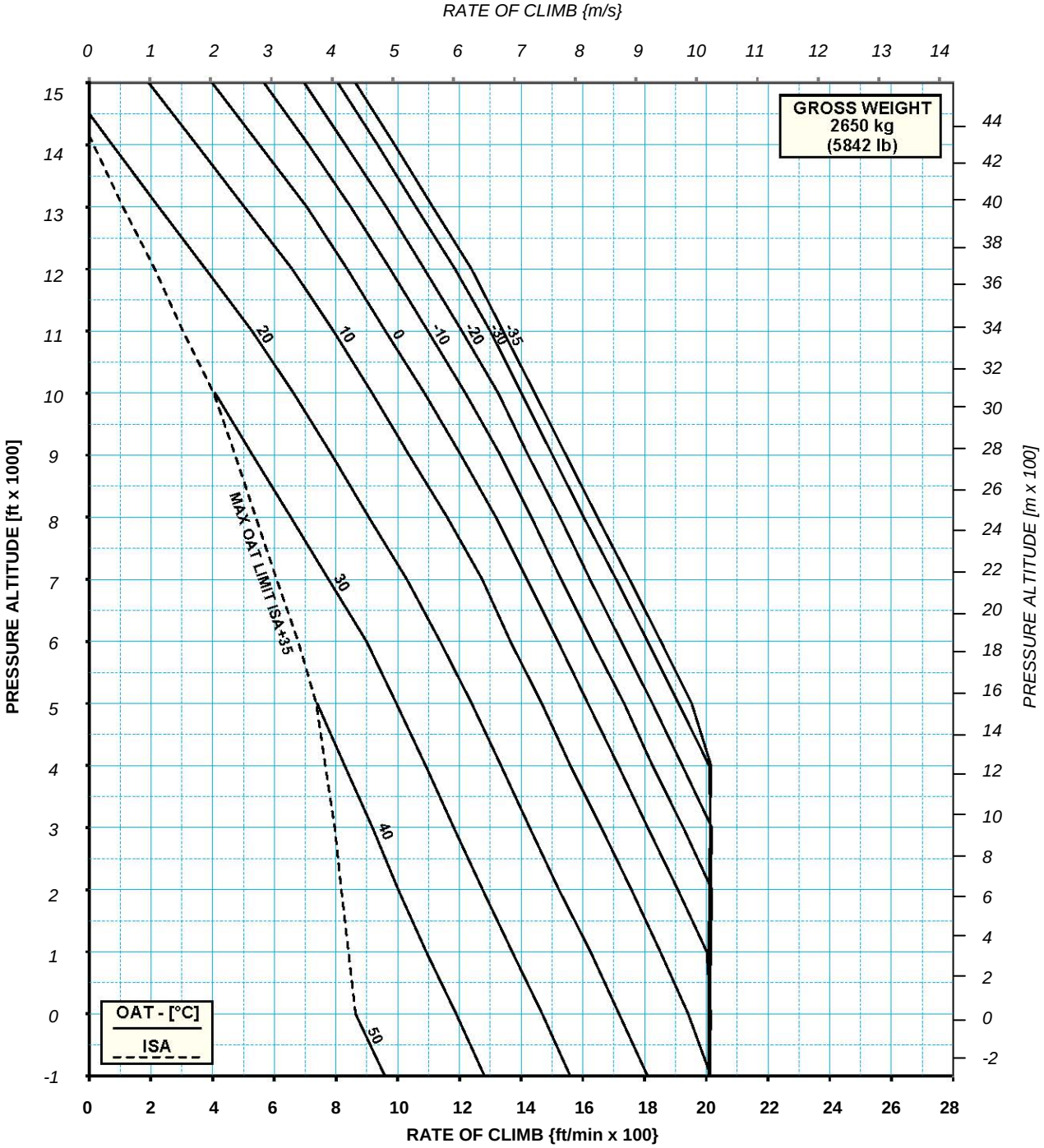
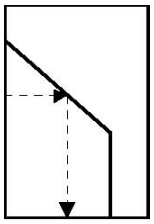


FIGURE 11

ROTOR SPEED: 102 %
ELECTRICAL LOAD: 100 A TOTAL
Vy: 60 KIAS

EAPS OFF

RATE OF CLIMB
TAKE-OFF POWER



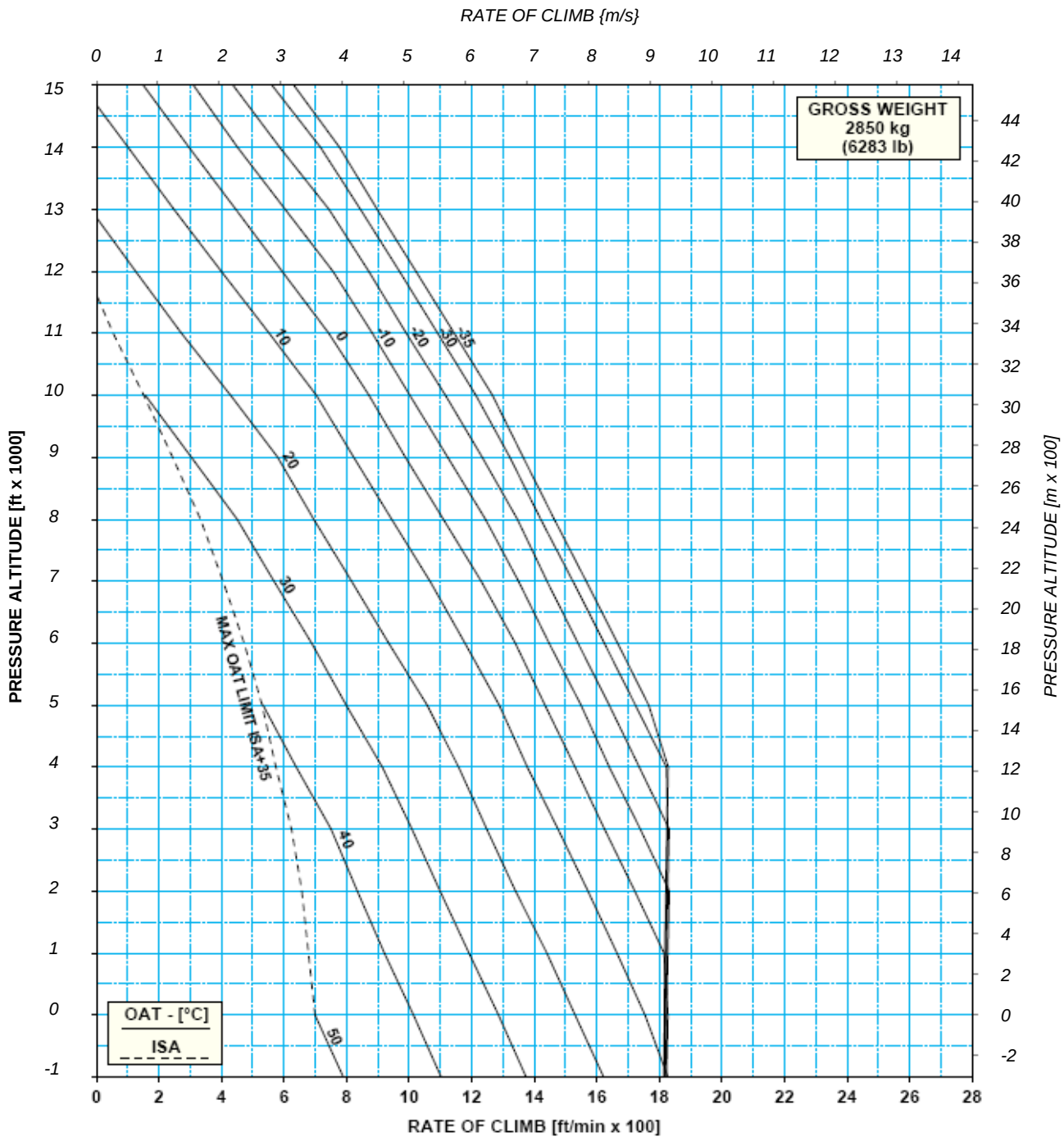
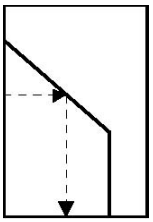


FIGURE 12



ROTOR SPEED: 102 %
ELECTRICAL LOAD: 100 A TOTAL
Vy: 60 KIAS

EAPS OFF

RATE OF CLIMB

TAKE-OFF POWER

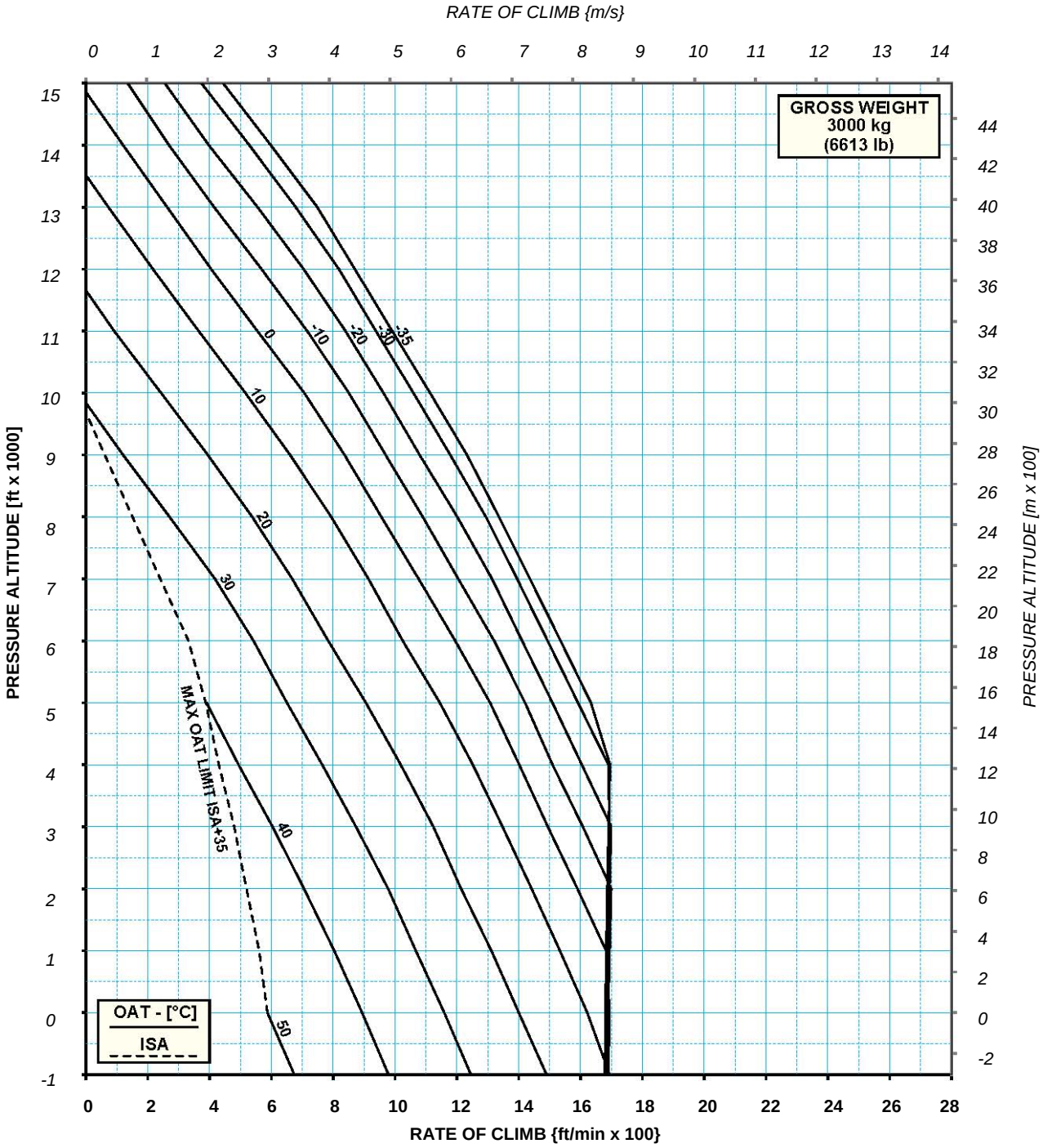


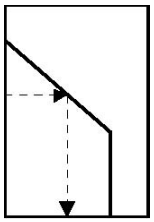
FIGURE 13

ROTOR SPEED: 102 %
ELECTRICAL LOAD: 100 A TOTAL
Vy: 60 KIAS

EAPS OFF

RATE OF CLIMB

TAKE-OFF POWER



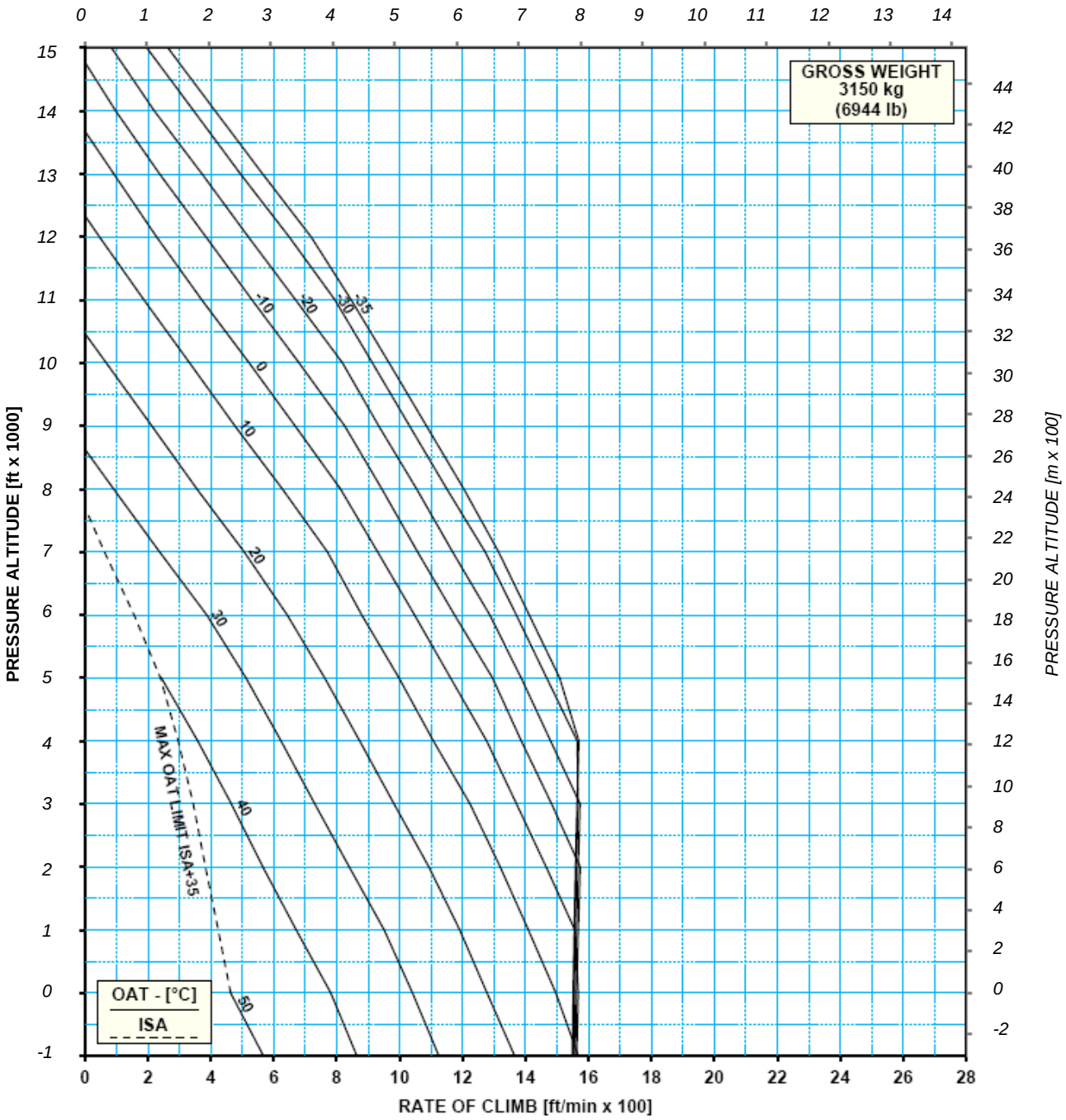


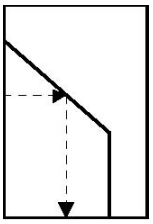
FIGURE 14

ROTOR SPEED: 102 %
ELECTRICAL LOAD: 100 A TOTAL
Vy: 60 KIAS

EAPS OFF

RATE OF CLIMB

MAXIMUM CONTINUOUS POWER



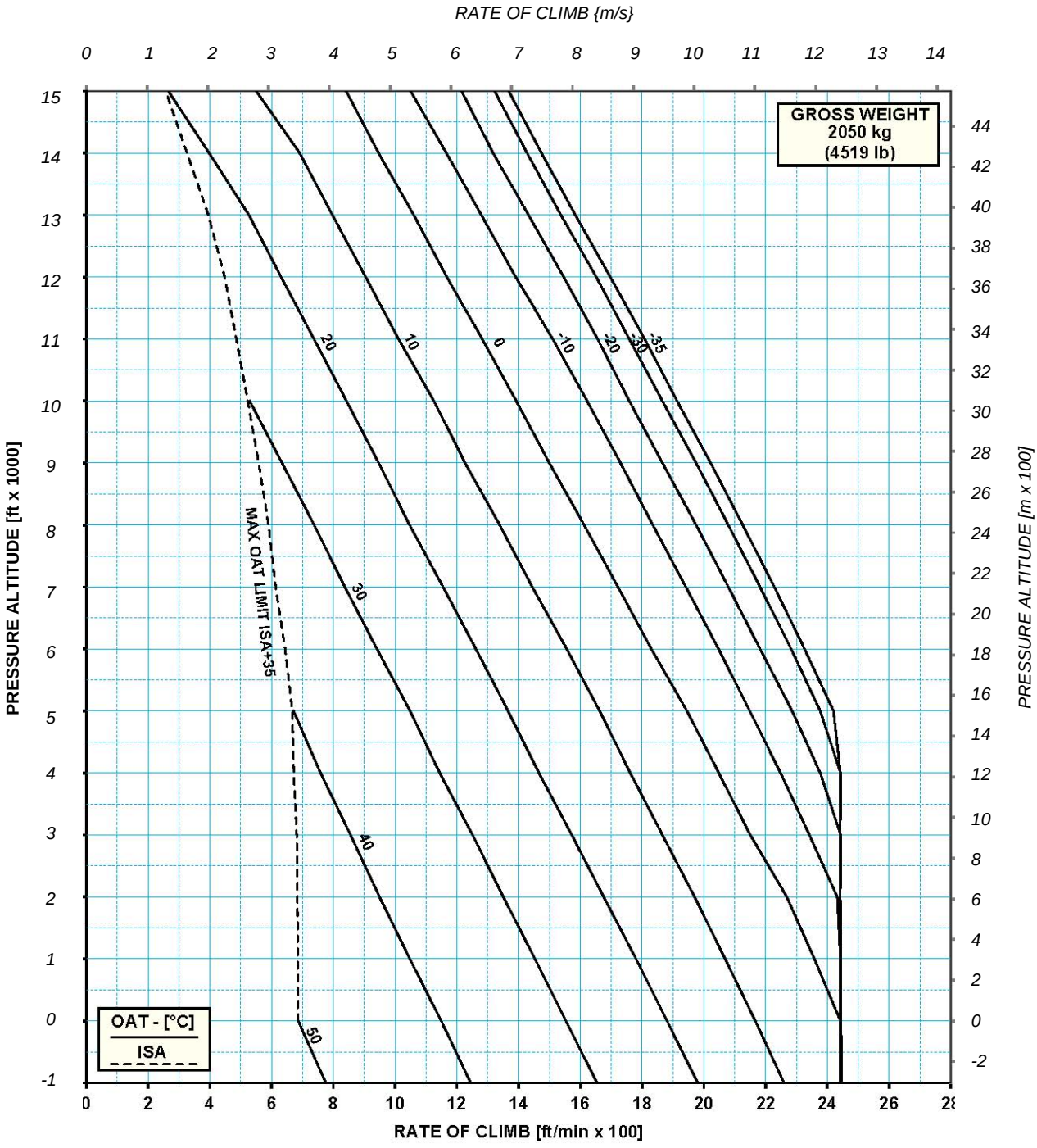


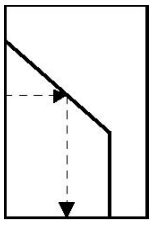
FIGURE 15

ROTOR SPEED: 102 %
ELECTRICAL LOAD: 100 A TOTAL
Vy: 60 KIAS

EAPS OFF

RATE OF CLIMB

MAXIMUM CONTINUOUS POWER



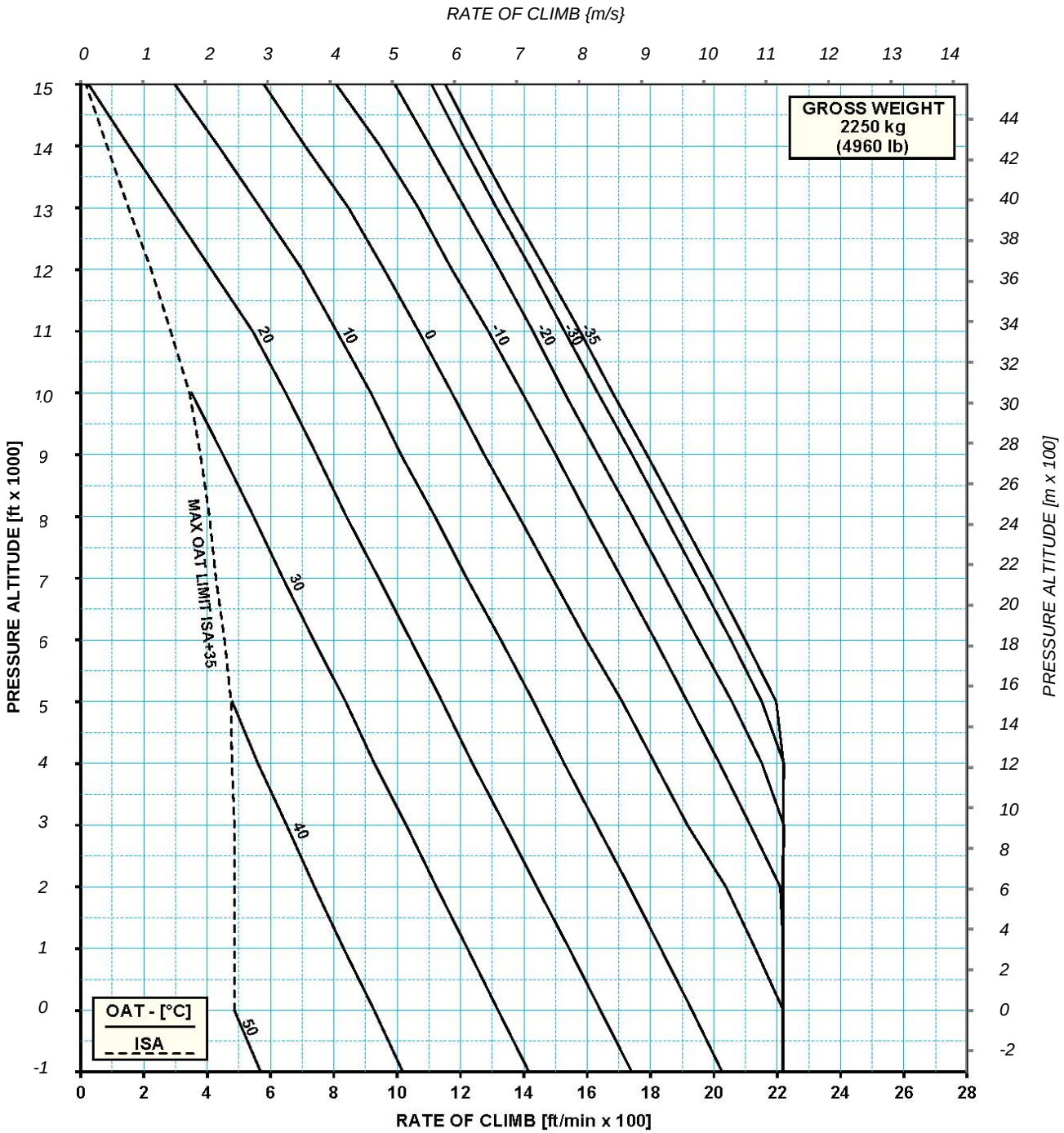
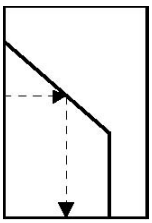


FIGURE 16

ROTOR SPEED: 102 %
ELECTRICAL LOAD: 100 A TOTAL
Vy: 60 KIAS

EAPS OFF



RATE OF CLIMB

MAXIMUM CONTINUOUS POWER

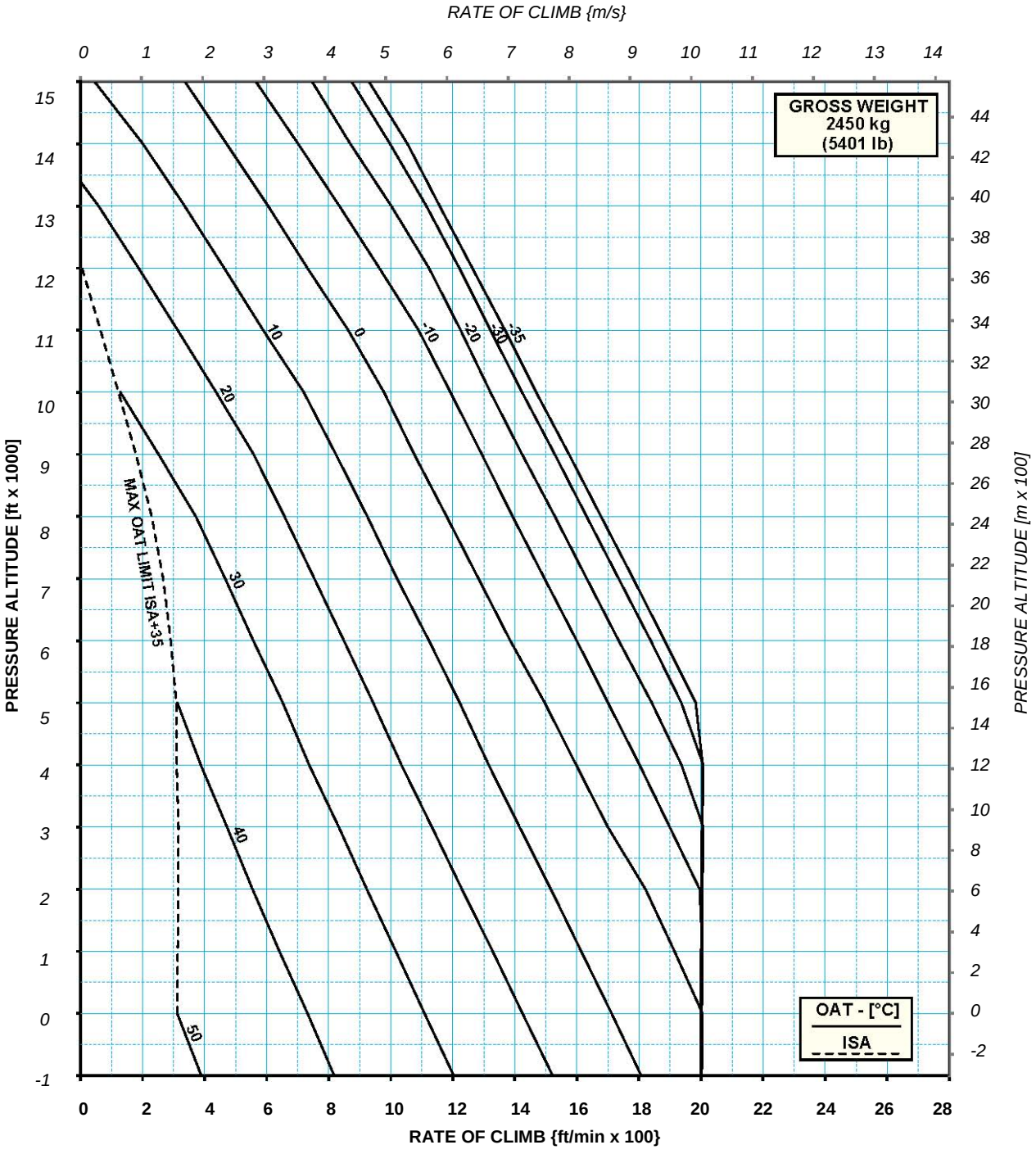
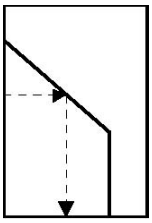


FIGURE 17



ROTOR SPEED: 102 %
ELECTRICAL LOAD: 100 A TOTAL
Vy: 60 KIAS

RATE OF CLIMB

MAXIMUM CONTINUOUS POWER

EAPS OFF

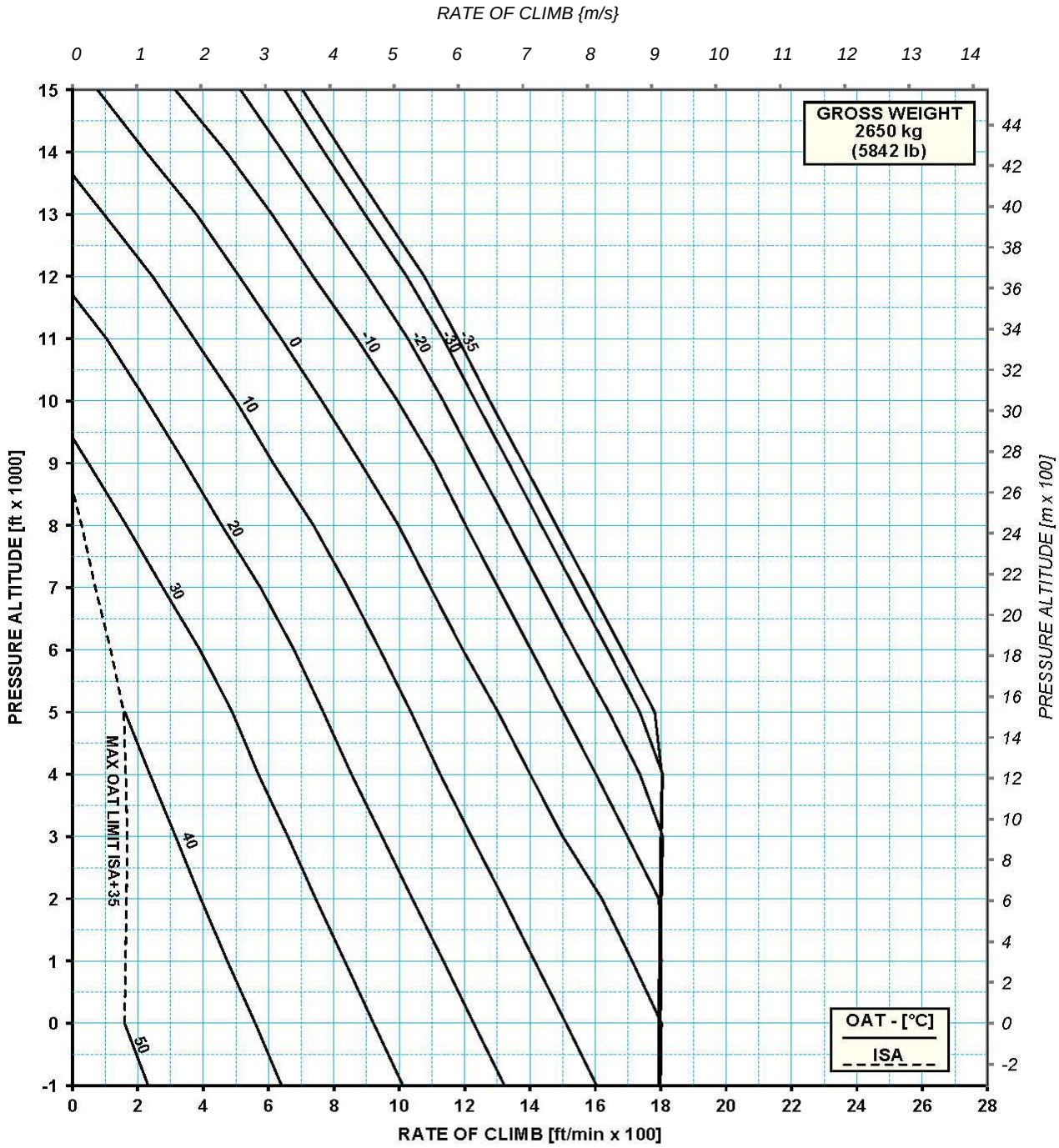
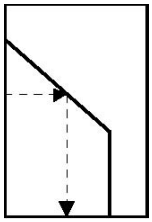


FIGURE 18

ROTOR SPEED: 102 %
ELECTRICAL LOAD: 100 A TOTAL
Vy: 60 KIAS

EAPS OFF



RATE OF CLIMB

MAXIMUM CONTINUOUS POWER

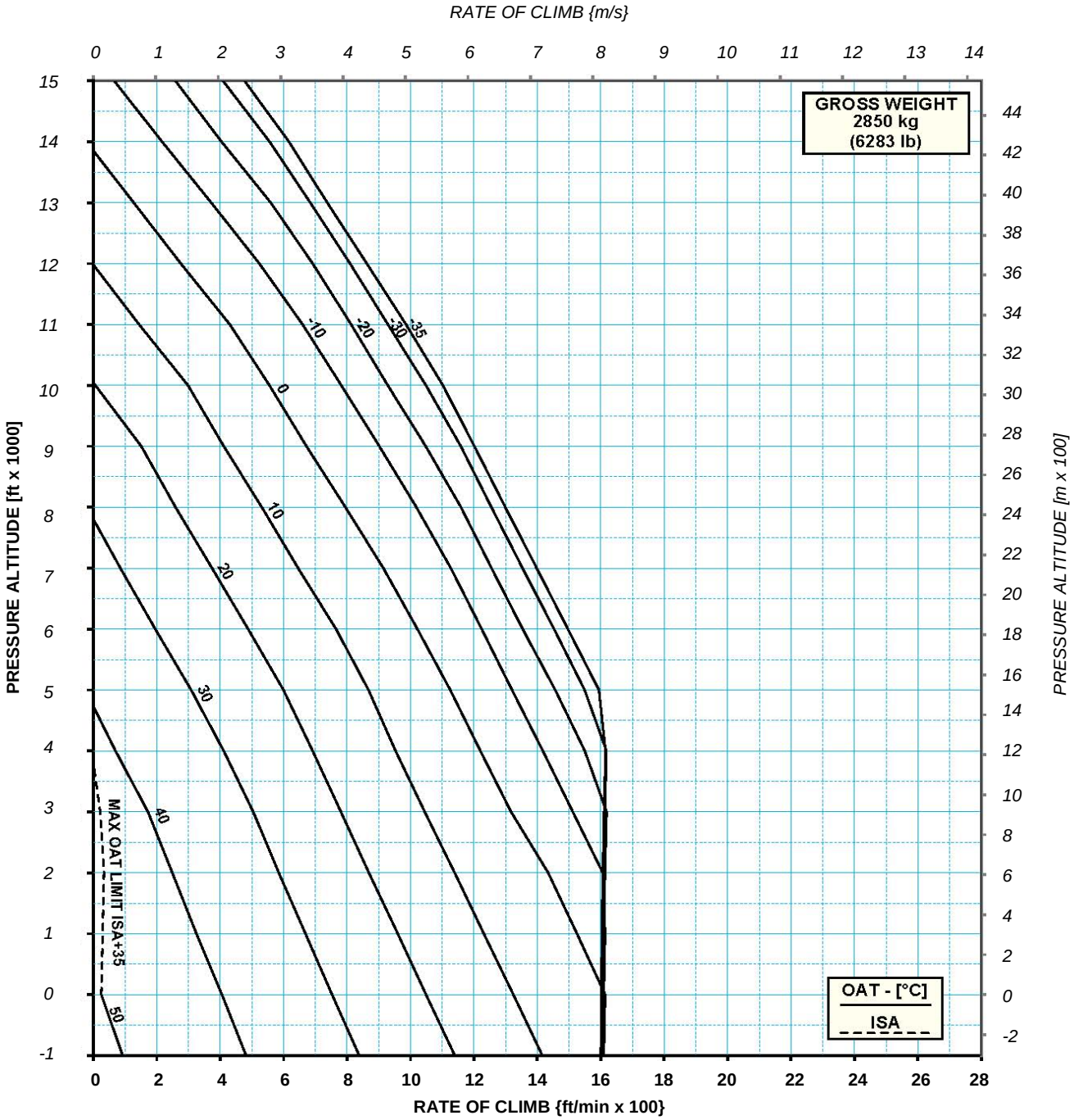


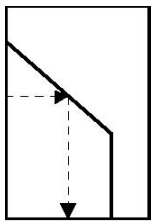
FIGURE 19

ROTOR SPEED: 102 %
ELECTRICAL LOAD: 100 A TOTAL
Vy: 60 KIAS

EAPS OFF

RATE OF CLIMB

MAXIMUM CONTINUOUS POWER



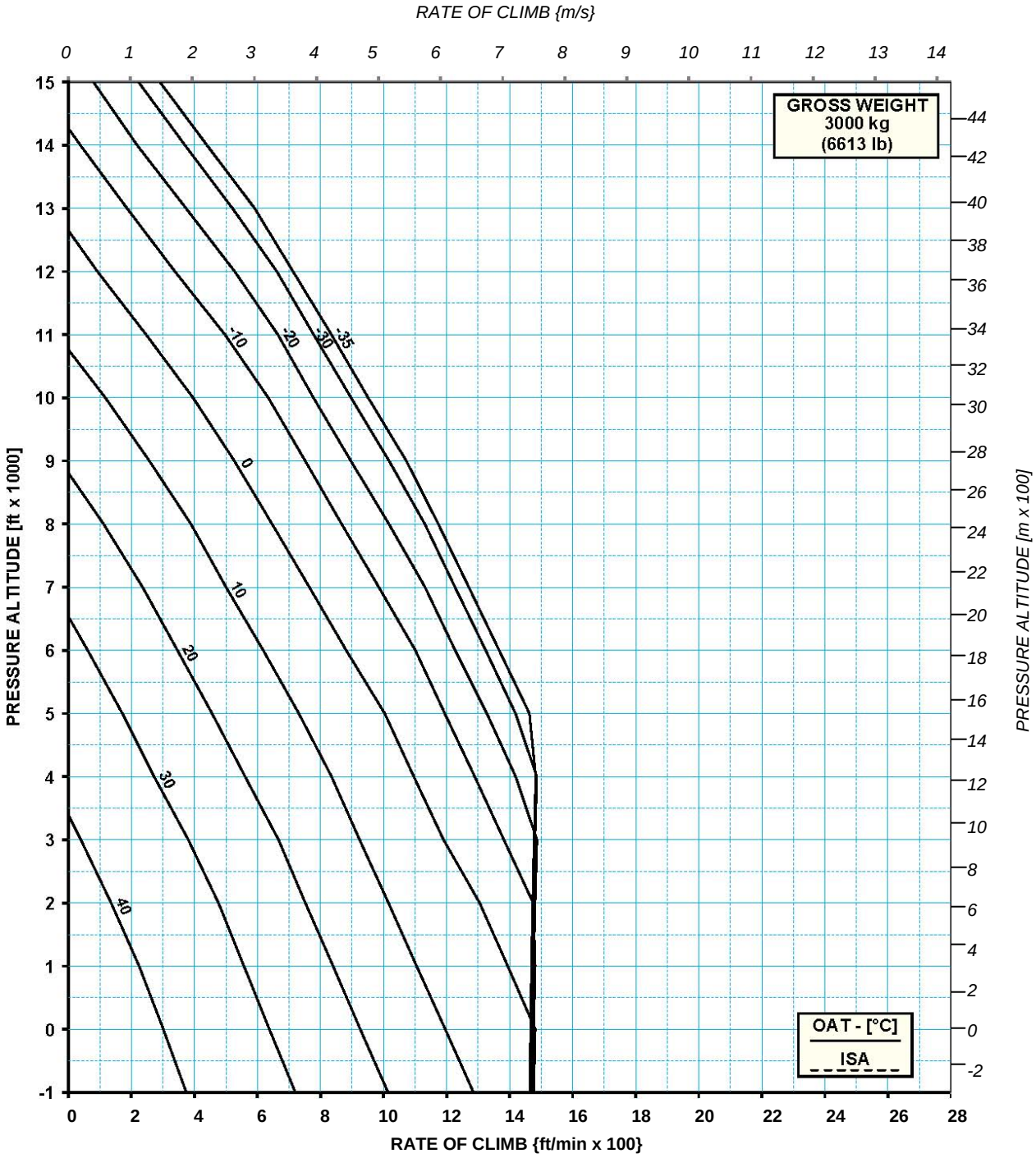
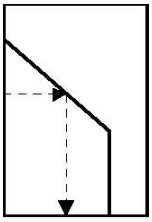


FIGURE 20

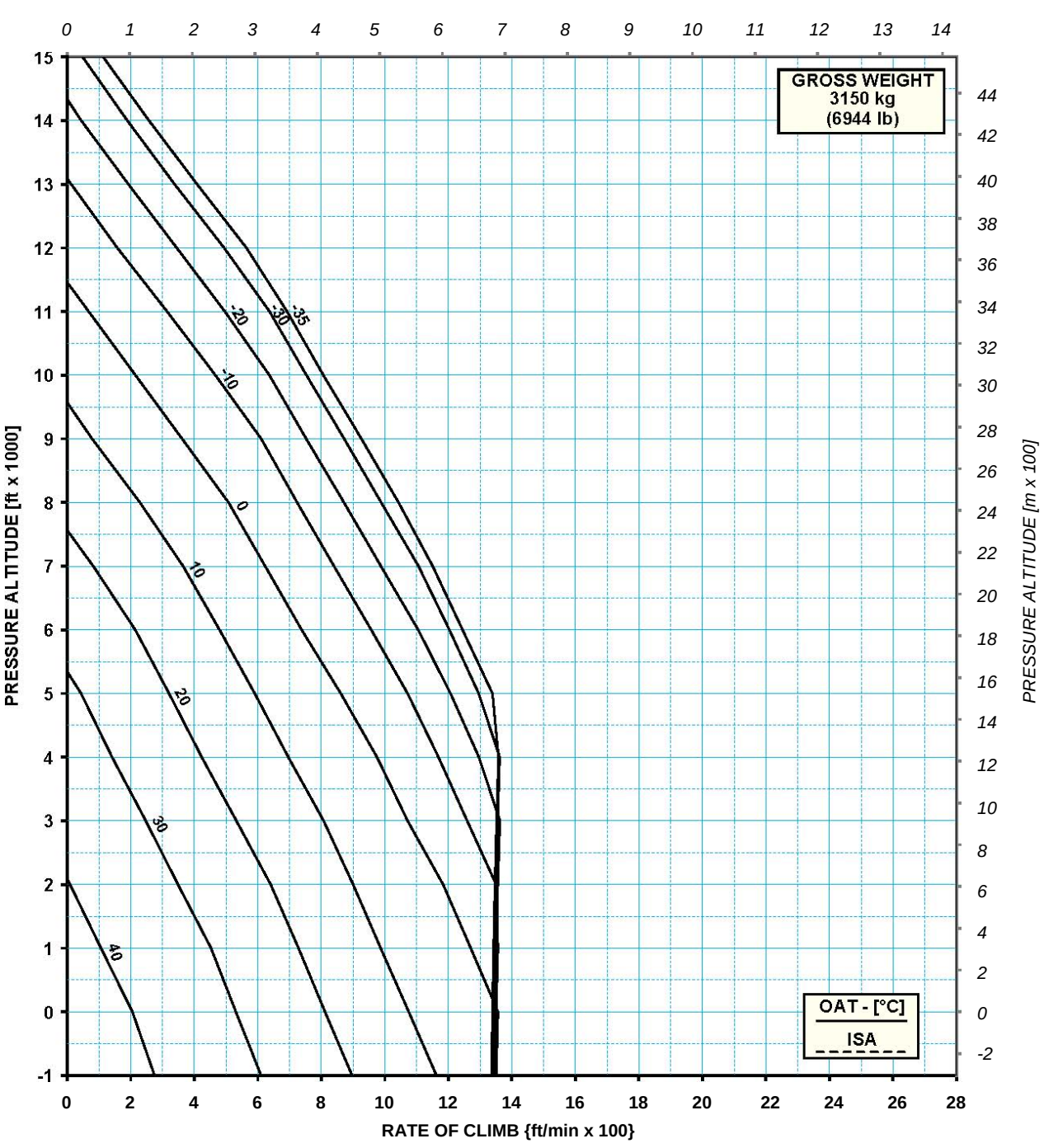


ROTOR SPEED: 102 %
ELECTRICAL LOAD: 100 A TOTAL
Vy: 60 KIAS

EAPS OFF

RATE OF CLIMB

MAXIMUM CONTINUOUS POWER



SECTION 5
OPTIONAL EQUIPMENT

NOT APPLICABLE

SECTION 6
WEIGHT AND BALANCE

NO CHANGE

SECTION 7
SYSTEM DESCRIPTION

The Inlet Barrier Filter (IBF) STC kit (119002-101) consists of a frame assembly, three filter assemblies, a cockpit indicator/switch, and bypass system (which includes the bypass door, actuator, differential pressure switch, and filter maintenance aid).

The IBF system provides a means of monitoring the condition of the filter both in-flight and on the ground, and a bypass capability should flow through the filter become restricted. In-flight, the differential pressure switch continuously measures the drop in pressure across the filter, and triggers the cockpit indicator/ switch cautioning the pilot any time the differential pressure across the filter reaches or exceeds a preset limit.

The electromechanically actuated bypass door permits unfiltered air to enter the engine inlet chamber, should the filter media become obstructed, bypass system can be opened or closed as required by depressing the cockpit indicator/switch on the center console. The bypass system also includes a three amp circuit breaker located in the overhead panel, installation hardware and wiring.

The cockpit indicator/switch is used to energize the actuator by depressing the switch to open the bypass door and depressing it to close the bypass door. When the filter has accumulated enough dirt/debris that causes the differential pressure to reach or exceed a preset value, the “FILTER” segment of the indicator will illuminate. Any time the “FILTER” indication is illuminated, the pilot shall monitor the engine conditions. If conditions warrant (i.e. ITT is approaching the temperature limit or the engine is showing signs of degradation such as stall or surge, etc.) the bypass door should be opened. If the bypass door is opened during flight, the pilot may close the door prior to landing to prevent ingestion of dirt or debris, but the pilot must monitor the instruments to ensure the engine does not exceed limitations such as ITT or N1. When the bypass is fully opened, the “BYPASS” segment of the indicator will illuminate, and the differential pressure will decrease causing the “FILTER” light to extinguish.

On the ground, a Filter Maintenance Aid (FMA), mounted on the front of the forward filter housing frame, displays the maximum differential pressure across the filter reached during the last flight. It is accessible only on the ground, providing the pilot or mechanic the ability to visually gauge the current condition of the filter.

A119 rotorcraft with the IBF system installed require the use of the Basic PAC charts/ procedures found in Section 4 of the RFM and the EAPS–OFF performance charts, found in Appendix 17 of the RFM.

AW119 MkII rotorcraft with the IBF system installed require the use of the Basic PAC charts/procedures, found in Section 4 of the RFM and the EAPS – OFF performance charts, found in Section 4 of this RFM Supplement.

SECTION 8
HANDLING AND SERVICING

Do not push on or step on the IBF filter elements, as this could damage the filter element pleats and affect the ability of the IBF system to filter dirt and debris from entering the engine.

Do not place anything on the filter elements. Only the proper AFS protective cover may be placed on/over the filters.

Contact Maintenance for servicing instructions per the IBF ICA.

SECTION 9
SUPPLEMENTAL PERFORMANCE INFORMATION

NOT APPLICABLE