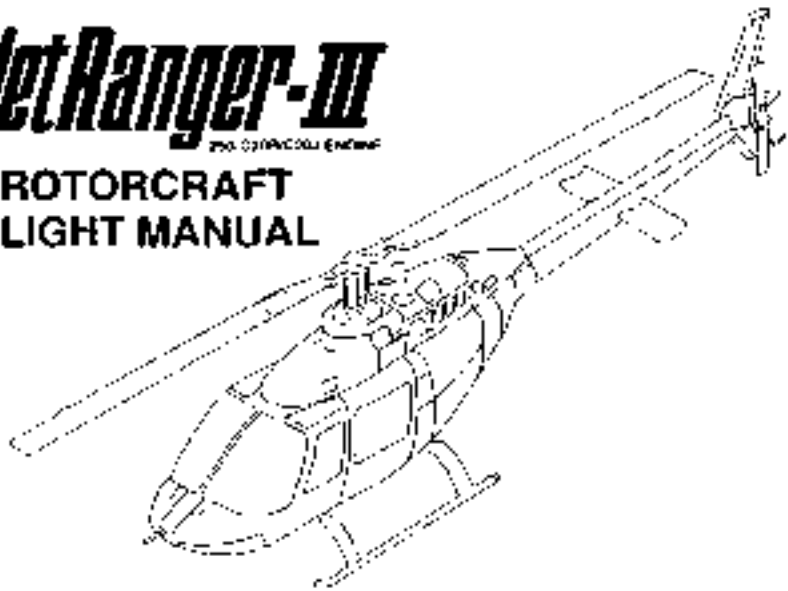
Bell JetRanger-III

MODEL 206B3

250-C20(C20J) ENGINE

ROTORCRAFT FLIGHT MANUAL



THIS MANUAL SHALL BE IN THE HELICOPTER DURING ALL OPERATIONS

TYPE CERTIFICATE NO. H-92

REGISTRATION NO. _____ SERIAL NO. _____

APPROVED BY: _____ DATE 14 SEPTEMBER 1995

DIRECTOR — AIRWORTHINESS BRANCH
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NOTICE PAGE

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FUEL SHUTOFF VALVE

NOTICE

These Temporary Supplementary pages provide approved Flight Manual data for the compliance of Bell Helicopter Alert Service Bulletin 206-82-18.

NOTE

Do not remove pages from Basic Flight Manual. Insert Temporary Supplementary pages opposite corresponding Basic Flight Manual pages.

When fuel shutoff valve plumbing has been installed in accordance with Bell Helicopter Alert Service Bulletin 206-82-18, remove temporary pages from Flight Manual.

LOG OF TEMPORARY PAGES

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Revision	6	20 MAY 81	Reissued	0	13 FEB 92
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NOTE

Revised text is indicated by a black vertical line. Insert latest revision pages; dispose of superseded pages.

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GENERAL INFORMATION

ORGANIZATION

The Rotorcraft Flight Manual is divided into four sections and Appendix A as follows:

Section 1 — LIMITATIONS

Section 2 — NORMAL PROCEDURES

Section 3 — EMERGENCY AND MALFUNCTION PROCEDURES

Section 4 — PERFORMANCE

Appendix A — OPTIONAL EQUIPMENT SUPPLEMENTS

Sections 1 through 4 contain DOT approved data necessary to operate the basic helicopter in a safe and efficient manner.

Appendix A contains a list of approved supplements for optional equipment, which shall be used in conjunction with the basic Flight Manual when the respective optional equipment kits are installed.

The Manufacturer's Data Manual (BHT-206B3-MD-1) contains additional information to be used in conjunction with the Flight Manual and optional equipment supplements, as applicable. The manual is divided into four sections as follows:

Section 1 — WEIGHT AND BALANCE

Section 2 — SYSTEMS DESCRIPTION

Section 3 — OPERATIONAL INFORMATION

Section 4 — HANDLING/SERVICING/ MAINTENANCE

TERMINOLOGY

WARNINGS, CAUTIONS, AND NOTES

Warnings, cautions, and notes are used throughout this manual to emphasize important and critical instructions 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 manual is as follows:

"Shall" has been used only when application of a procedure is mandatory.

"Should" has been used only when application of a procedure is recommended.

"May" and "need not" have been used only when application of a procedure is optional.

"Will" has been used only to indicate futurity, never to indicate a mandatory procedure.

Section 1

LIMITATIONS

TABLE OF CONTENTS

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LIST OF FIGURES

Section 1

LIMITATIONS

LIMITATIONS

Compliance with the limitations section is required by appropriate operating rules.

Intentional use of transient limits is prohibited.

Turn anti-collision light OFF during flight in or near visible moisture to prevent reflections and possible pilot vertigo. Keep cabin glass clean to prevent halation.

TYPE OF OPERATION

The basic helicopter is approved for five place seating and is certified for land operation under day or night VFR nonicing conditions.

Flight operations are approved with the landing gear crosstube fairings installed or removed.

NIGHT FLIGHT LIMITATIONS

Night flight operation is limited to visual contact flight conditions. Orientation shall be maintained through visual reference to ground objects solely as a result of lights on the ground or adequate celestial illumination.

FLIGHT WITH DOOR(S) OFF

All unsecured items must be removed from cabin.

Do not exceed Airspeed and Center of Gravity Limitations.

Protracted rearward and sideward flight prohibited.

External Cargo Loading limited to 3350 pounds (1519.6 kilograms) gross weight with any combination of door(s) OFF.

Flight with forward door(s) OFF is prohibited with litters.

FLIGHT WITH OPTIONAL EQUIPMENT INSTALLED

The following equipment shall be installed when conducting flight operations in falling and/or blowing snow to reduce possibility of engine flameout:

The Particle Separator Engine Air Induction System Kit (BHT-206B3-FMS-10), Deflector Kit (BHT-206B3-FMS-12), and Engine (Automatic) Re-Ignition Kit (BHT-206B3-FMS-15).

Refer to appropriate Flight Manual Supplement(s) for additional Limitations, Procedures, and Performance Data.

FLIGHT CREW

The minimum flight crew consists of one pilot who shall operate the helicopter from the right crew seat.

The left crew seat may be used for an additional pilot when the approved dual controls are installed.

ALTITUDE LIMITATIONS

3000 POUNDS (1360.8 KILOGRAMS) GROSS WEIGHT AND BELOW

Maximum operating — 20,000 feet pressure altitude.

ABOVE 3000 POUNDS (1360.8 KILOGRAMS) GROSS WEIGHT

Maximum operating — 13,500 feet density altitude.

AIRSPEED LIMITATIONS

3,000 POUNDS (1360.8 KILOGRAMS) GROSS WEIGHT AND BELOW

Vne 150 MPH IAS (130 KIAS) sea level to 3,000 feet density altitude. Decrease Vne 4.0 MPH IAS (3.5 KIAS) per 1,000 feet above 3,000 feet density altitude. Maximum pressure altitude — 20,000 feet.

ABOVE 3,000 POUNDS (1360.8 KILOGRAMS) GROSS WEIGHT

Vne 140 MPH IAS (122 KIAS) sea level to 3,000 feet density altitude. Decrease Vne 8.0 MPH IAS (7.0 KIAS) per 1,000 feet above 3,000 feet density altitude. Maximum density altitude — 13,500 feet.

Refer to Airspeed Placard for Indicated Airspeed (IAS).

55 TO 100% TORQUE TAKEOFF POWER RANGE

Vne 92 MPH IAS (80 KIAS).

AFT DOOR(S) OFF

Vne 100 MPH IAS (87 KIAS) power ON or OFF.

FORWARD DOOR(S) OFF

Vne 80 MPH IAS (69 KIAS) power ON or OFF.

WARNING

AIRSPEEDS IN EXCESS OF AIRSPEED LIMITATIONS DOOR(S) OFF WILL CAUSE CYCLIC FORE AND AFT STICK REVERSAL AND FUSELAGE BUFFETING.

WEIGHT LIMITATIONS

CAUTION

LOADS THAT RESULT IN GROSS WEIGHTS ABOVE 3200 POUNDS SHALL BE CARRIED ON THE CARGO HOOK AND SHALL NOT BE IMPOSED ON THE LANDING GEAR.

Maximum gross weight for takeoff and landing:

Internal — 3200 pounds (1451.5 kilograms).

External — 3350 pounds (1519.5 kilograms).

FRONT SEAT WEIGHT

Minimum — 170 pounds (77.1 kilograms).

NOTE

Ballast as required to maintain weight empty CG within limits. Refer to Center of Gravity vs Weight Empty chart in BHT-206B3-MM-1.

LONGITUDINAL CENTER OF GRAVITY LIMITS

Center of gravity limits are from station 106.0 (2692.4 millimeters) to 114.2 (2900.7 millimeters); however, the aft limits are variable depending upon gross weight. Refer to Center of Gravity vs Gross Weight Chart (figure 1-1) and BHT-206B3-MD-1.

NOTE

Station 0 (datum) is located 55.15 inches (1401.1 millimeters) forward of forward jack point centerline.

DOOR(S) OFF

No change from basic helicopter CG with only the aft cabin door(s) OFF.

Center of gravity limits are from station 106.0 (2692.4 millimeters) to 110.0 (2794.0 millimeters) with one or both forward door(s) OFF or any combination of forward and aft cabin door(s) OFF.

Actual weight change shall be determined after doors, etc., have been removed and ballast readjusted, if necessary, to return empty weight center of gravity to within allowable limits.

LATERAL CENTER OF GRAVITY LIMITS

3.0 inches (76.2 millimeters) left of helicopter centerline.

4.0 inches (101.6 millimeters) right of helicopter centerline.

NOTE

Lateral CG limits vary depending on longitudinal CG location. Refer to Lateral vs Longitudinal CG limits chart, figure 1-2.

POWER PLANT LIMITATIONS

ALLISON Model 250-C20B Engine or 250-C20J Engine. The 250-C20B engine limitations contained herein are applicable to the 250-C20J engine.

POWER TURBINE (N2) OPERATING RPM LIMITS

POWER ON

Minimum — 97%.

Maximum — 100%.

WARNING

USE OF THE THROTTLE TO CONTROL RPM IS NOT AUTHORIZED. (REFER TO SECTION 3, EMERGENCY AND MALFUNCTION PROCEDURES FOR EXCEPTION.)

N2 TRANSIENT OVERSPEED LIMITS

Refer to figure 1-3.

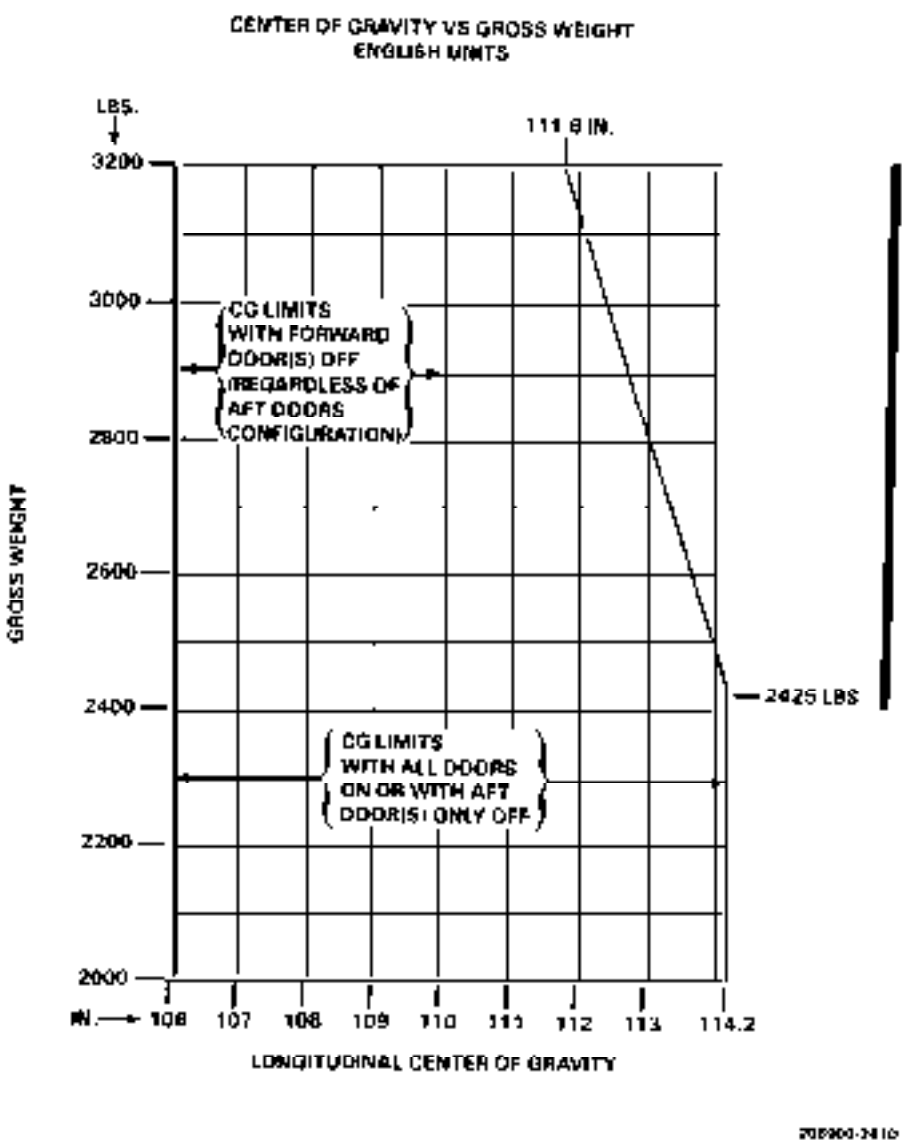


Figure 1-1. Center of gravity vs gross weight (Sheet 1 of 2)

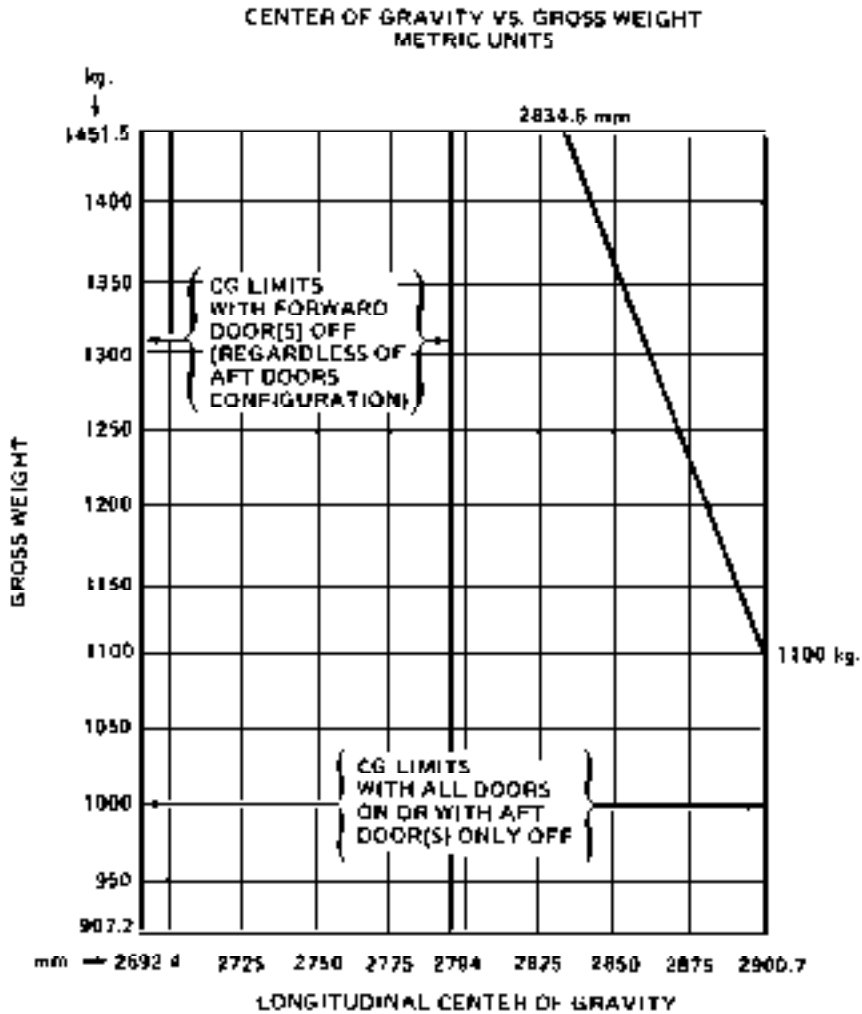


Figure 1-1. Center of gravity vs gross weight (Sheet 2 of 2)

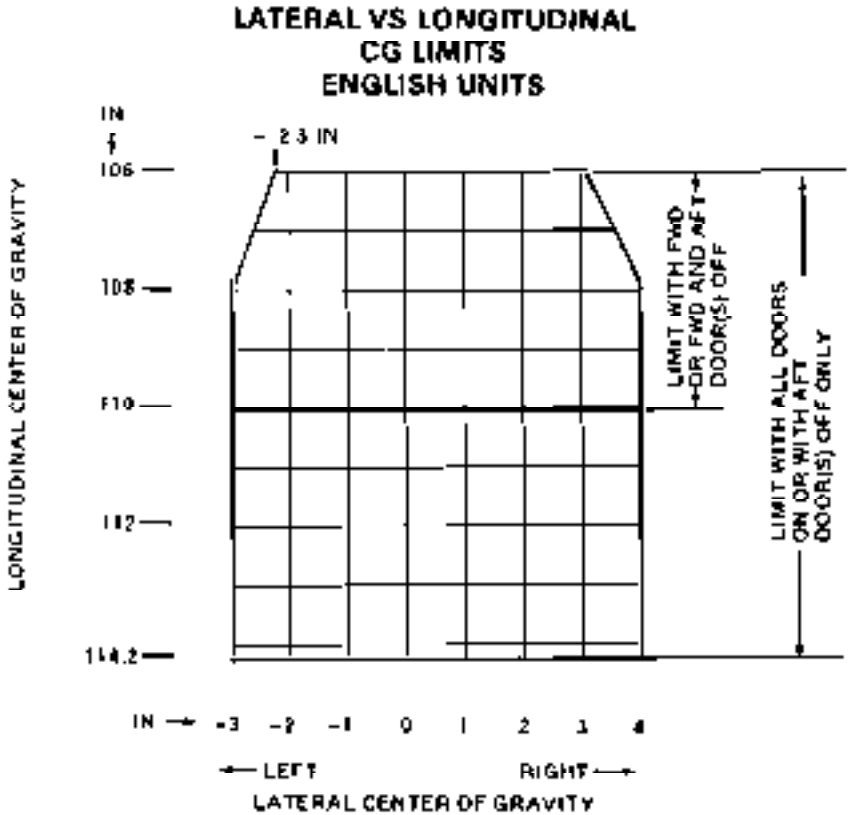


Figure 1-2. Lateral vs longitudinal CG limits (Sheet 1 of 2)

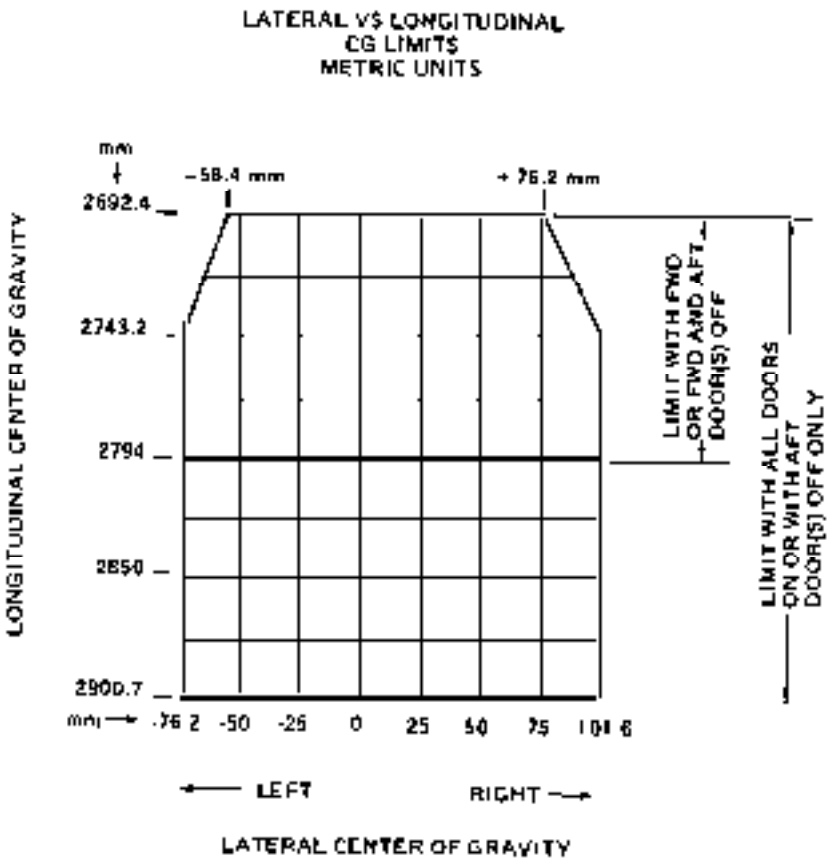


Figure 1-2. Lateral vs longitudinal CG limits (Sheet 2 of 2)

GAS PRODUCER (N1) RPM LIMITS

Maximum — 105%.

Transient 106% (maximum of 15 seconds).

TORQUE LIMITS

Takeoff — 100% (5 minute limit).

Transient — 110% (5 second limit. Intentional use prohibited).

Maximum Continuous — 85%.

TURBINE OUTLET TEMPERATURE (TOT) LIMITS

Takeoff — 810°C (5 minute limit).

Maximum Continuous — 738°C

During Power Transient 810 to 843°C (6 seconds maximum. Intentional use prohibited).

WARNING

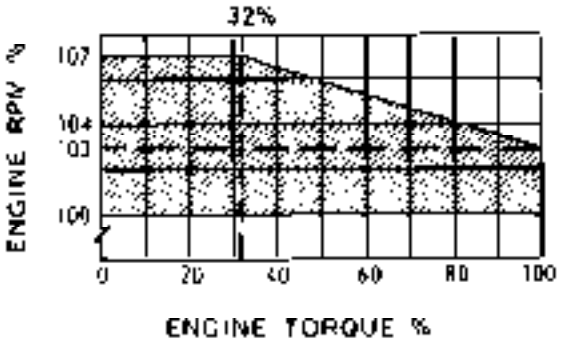
EXCEEDING THE LIMITS OF 810°C TOT OR 100% TORQUE MAY CAUSE N1 TOPPING WITH RESULTANT ROTOR DROOP.

During Starting and Shutdown — 810 to 927°C (10 seconds maximum).

Some helicopters are equipped with a red warning light on the TOT gage. The light illuminates when either of the following conditions are exceeded:

812 to 927°C for 10 seconds

927°C or higher for 1 second



N2 TRANSIENT OVERSPEED LIMITS 15 SECONDS MAXIMUM. SHADED AREA REPRESENTS ALLOWABLE OVERSPEED.

Figure 1-3. N2 transient overspeed limits

Some helicopters are equipped with a red warning light with or without gage marked at 899°C on TOT.

ENGINE OIL PRESSURE LIMITS

Minimum — 50 PSI.

Below 78.5% Gas Producer RPM — 50 PSI Minimum.

Between 78.5 and 94.2% Gas Producer RPM — 90 PSI Minimum.

Above 94.2% Gas Producer RPM — 115 PSI Minimum.

Maximum — 130 PSI.

ENGINE OIL TEMPERATURE LIMITS

Continuous operation — 0°C to 107°C.

Maximum — 107°C.

FUEL PRESSURE LIMITS

Minimum — 4.0 PSI.

Maximum — 30.0 PSI.

Fuel boost pumps shall be ON during normal engine operations.

ENGINE STARTER LIMITATIONS

Limit starter energizing time to the following:

External Power	Battery
25 Seconds — ON	40 Seconds — ON
30 Seconds — OFF	60 Seconds — OFF
25 Seconds — ON	40 Seconds — ON
30 Seconds — OFF	60 Seconds — OFF
25 Seconds — ON	40 Seconds — ON
30 Minutes — OFF	30 Minutes — OFF

ENGINE ANTI-ICE LIMITATIONS

Engine anti-ice shall not be used in ambient temperatures above 4.4°C (40°F).

Engine anti-icing shall be ON for flight in visible moisture in temperature below 4.4°C (40°F).

TRANSMISSION OIL LIMITATIONS

OIL PRESSURE

Minimum	— 30 PSI
Continuous operation	— 30 to 50 PSI
Maximum	— 70 PSI

OIL TEMPERATURE

Continuous operation	— 15 to 110°C
Maximum	— 110°C

ROTOR (NR) LIMITATIONS

POWER ON

Minimum — 97%.

Maximum — 100%.

NOTE

Transient rotor RPM droop down to 95% is permitted but should not exceed 5 seconds.

60% to 80% — Accelerate through this range as rapidly as practical with cyclic control in neutral.

POWER OFF

Minimum — 90% rotor RPM.

Maximum — 107% rotor RPM.

LOADMETER LIMITATIONS

Maximum — 70%.

FUEL LIMITATIONS

Turbine fuel ASTM-D 1655, Type B, or MIL-T-5624, Grade JP-4, may be used at all ambient temperatures.

Operation with turbine fuels ASTM-D 1655, Type A or A-1, MIL-T-5624, Grade JP-5 or MIL-T-83133, Grade JP-8 is limited to ambient temperatures of -18°C (0°F) or above unless helicopter is equipped with a fuel pressure gage which has a red triangle marking at 8 PSI (figure 1-4).

Helicopters equipped with a fuel pressure gage which has a red triangle at 8 PSI (figure 1-4) may operate with turbine fuels ASTM-D 1655, Type A or A-1, MIL-T-5624, Grade JP-5 or MIL-T-83133, Grade JP-8 at temperatures of -32°C (-25°F) and above providing fuel pressure is 8 PSI or above.

Helicopters equipped with airframe mounted fuel filter do not require the use of anti-icing additive at any ambient temperature. Refer to Allison 250-C20 series Operation and Maintenance Manual for AVGAS Mix, Cold Weather Fuel, and Blending Instructions.

ENGINE OIL LIMITATIONS

Aircraft turbine engine oil, MIL-L-7808, MIL-L-23699, or DOD-L-85734 (AS). (Refer to BHT-206B3-MD-1 for list of approved lubricants.)

Operation with MIL-L-23699 and DOD-L-85734 (AS) limited to ambient temperature above -40°C (-40°F).

NOTE

Refer to Allison Model 250-C20 Operation and Maintenance Manual and BHT-206B3-MD-1 regarding mixing of oils of different brands, types, and manufacturers.

TRANSMISSION AND TAIL ROTOR GEARBOX OIL TYPE LIMITATIONS

Oil Type — MIL-L-7808, MIL-L-23699, or DOD-L-85734 (AS)

Operation with MIL-L-23699 and DOD-L-85734 (AS) is limited to ambient temperatures above -40°C (-40°F).

INSTRUMENT MARKINGS

Refer to figure 1-4.

PLACARDS

Refer to figure 1-5.

INSTRUMENT MARKINGS

ENGINE OIL TEMPERATURE

0°C to 107°C Continuous Operation

107°C Maximum

ENGINE OIL PRESSURE

50 to 90 PSI below 78.5% N1

90 to 115 PSI from 78.5 to 94.2% N1

115 to 130 PSI above 94.2% N1 (double wide arc)

50 PSI Minimum, 130 PSI Maximum

TRANSMISSION OIL PRESSURE

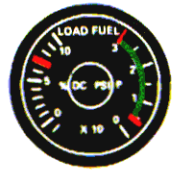
30 to 50 PSI Continuous Operation

30 PSI Minimum, 70 PSI Maximum

TRANSMISSION OIL TEMPERATURE

15° to 110°C Continuous Operation

110°C Maximum



LOADMETER

70.0% Maximum

FUEL PRESSURE

4.0 PSI Minimum

4.0 to 30.0 PSI Continuous Operation

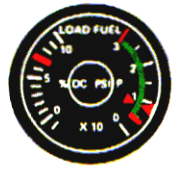
△1 30 PSI Maximum

△1 Not present on all gages.

△2 Red triangle on fuel pressure gage may be located in either position shown.

NOTE

Any one of the depicted Fuel Pressure/Loadmeter gages may be installed in helicopter.



LOADMETER

70% Maximum

FUEL PRESSURE

4 PSI Minimum

4 to 30 PSI Continuous Operation

△2 8 PSI Minimum - Type A, A-1, or JP-5 fuel below −18°C (0°F)

206B3F-1-4-1

Figure 1-4. Instrument markings (Sheet 1 of 4)

AIRSPEED-KNOTS

0 to 130 Knots (0 to 150 MPH) Continuous Operation

130 Knots (150 MPH) Maximum

100 Knots (115 MPH) Maximum for Autorotation

AIRSPEED-MPH

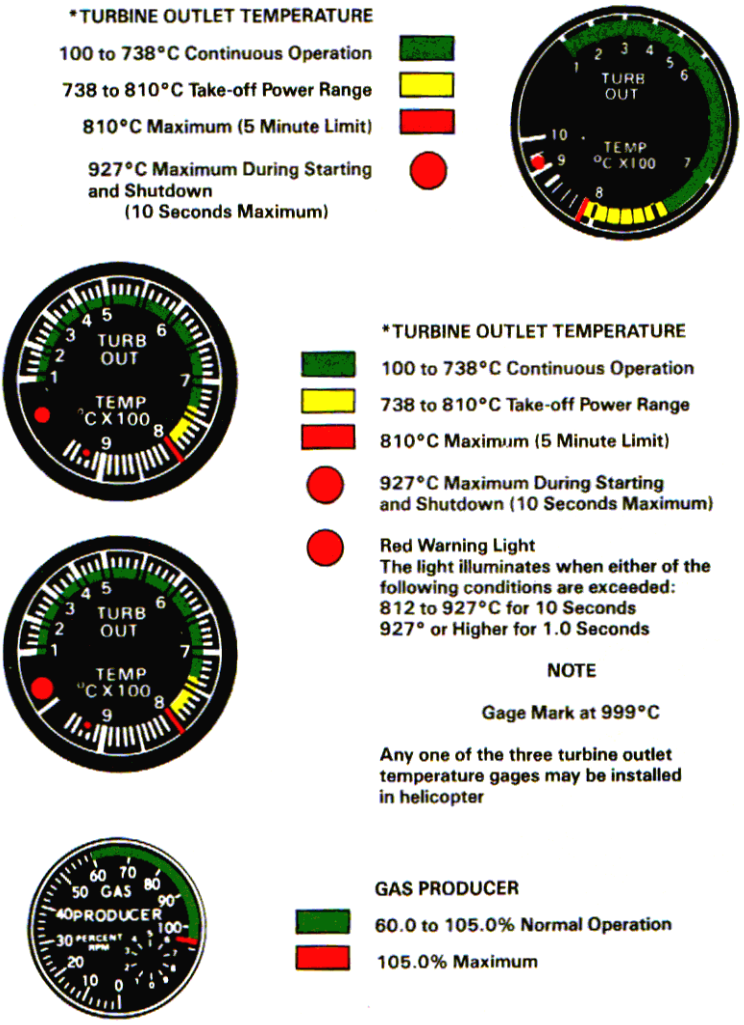
0 to 150 MPH (0 to 130 Knots) Continuous Operation

150 MPH (130 Knots) Maximum

115 MPH (100 Knots) Maximum for Autorotation

Figure 1-4. Instrument markings (Sheet 2 of 4)

INSTRUMENT MARKINGS



206B3F-1-4-3

Figure 1-4. Instrument markings (Sheet 3 of 4)

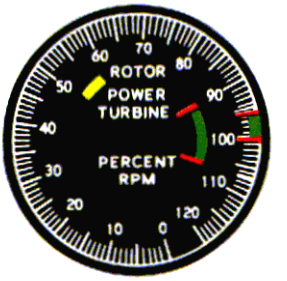
INSTRUMENT MARKINGS

DUAL TACHOMETER POWER TURBINE INDICATOR

97% Minimum Operation

97 to 100% Continuous Operation

100% Maximum



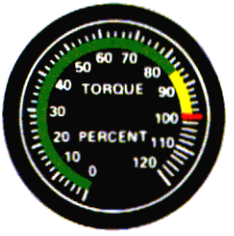
ROTOR INDICATOR

90% Minimum Operation

50 to 60% Accelerate through this Range

90 to 107% Normal Operation

107% Maximum

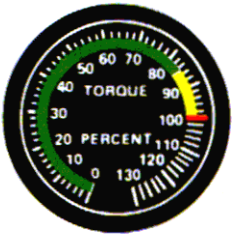


TORQUE

0 to 85.0% Continuous Operation

85.0 to 100.0% Take-off Power Range

100.0% Maximum (5 Minute Limit)



NOTE

Any of the depicted torque indicators may be installed in the helicopter.

206B3F-1-4-4

Figure 1-4. Instrument markings (Sheet 4 of 4)

PLACARDS

206B AIRSPEED LIMITATIONS MPH — IAS						
3000 LB GW AND BELOW						
H_D	OAT °C					
1000 FT	40	40	20	0	20	-40
0	148	150	150	150	150	150
2	139	141	150	150	150	150
4	129	131	140	140	150	150
6	119	122	130	140	150	150
8	110	112	121	130	140	150
10	100	103	111	120	130	140
12	91	93	101	110	120	130
14		84	92	100	110	120
16				90	100	110
18					96	100
20						90

Hp is pressure altitude

ABOVE 3000 LB GW						
H_P	OAT °C					
1000 FT.	40	40	20	0	-20	-40
0	136	140	140	140	140	140
2	117	122	140	140	140	140
4	98	103	120	139	140	140
6	79	84	101	119	139	140
8	60	65	81	99	119	140
10			61	80	99	120
12				60	79	100
14					59	80
16						59

Placards required with MPH airspeed indicator installed.

Figure 1-5. Placards (Sheet 1 of 4)

PLACARDS (Cont)

206B AIRSPEED LIMITS - KNOTS IAS

206B AIRSPEED LIMITATIONS-KNOTS-IAS

3000 LB GW AND BELOW

H_p	OAT-°C					
1000 FT	46	40	20	0	20	-40
0	128	130	130	130	130	130
2	121	122	130	130	130	130
4	112	114	122	129	130	130
6	103	106	113	122	130	130
8	96	97	105	113	122	130
10	87	89	96	104	113	122
12	79	81	88	96	104	113
14		73	80	87	96	104
16				78	87	96
18					78	87
20						78

(1) Either placard may be installed

Hp is pressure altitude

ABOVE 3000 LB GW

H_p	OAT-°C					
1000 FT	96	40	20	0	-20	40
0	118	122	122	122	122	122
2	102	106	122	122	122	122
4	85	89	104	121	122	122
6	69	73	88	103	121	122
8	52	56	70	86	103	122
10			53	69	86	104
12				52	69	87
14					51	69
16						51

Placards required with KNOTS airspeed indicator installed.

Figure 1-5. Placards (Sheet 2 of 4)

PLACARDS (Cont)

The following 206B Airspeed Limitations placard is installed in helicopter serial number 3567 and subsequent.

206B AIRSPEED LIMITATIONS-KNOTS-IAS						
3000 LB GW AND BELOW						
H_p	OAT-°C					
1000 FT	46	40	20	0	-20	-40
0	128	130	130	130	130	130
2	121	122	130	130	130	130
4	112	114	122	129	130	130
6	103	106	113	122	130	130
8	96	97	105	113	122	130
10	87	89	96	104	113	122
12	79	81	88	96	104	113
14		73	80	87	96	104
16				78	87	96
18					79	87
20						78
ABOVE 3000 LB GW						
H_p	OAT-°C					
1000 FT	46	40	20	0	-20	-40
0	118	122	122	122	122	122
2	102	106	122	122	122	122
4	85	89	104	121	122	122
6	69	73	88	103	121	122
8	52	56	70	86	103	122
10			53	69	86	104
12				52	69	87
14					51	69
16						51

Figure 1-5. Placards (Sheet 3 of 4)

PLACARDS (Cont)

FWD DOOR(S) OFF VNE 80 MPH (69 KNOTS) C.G. 106.110

(Located on both forward door frame posts.)

THIS HELICOPTER MUST BE OPERATED IN COMPLIANCE WITH THE OPERATING LIMITATIONS SPECIFIED IN THE APPROVED HELICOPTER FLIGHT MANUAL

MINIMUM PILOT WEIGHT 170 LBS

(These placards located on the inside of baggage compartment door.)

CARGO MUST BE SECURED IN ACCORDANCE WITH FLIGHT MANUAL INSTRUCTION

MAX ALLOWABLE WEIGHT 250 LBS.
MAX ALLOWABLE WEIGHT PER SQ. FT 86 LBS.

Figure 1-5. Placards (Sheet 4 of 4)

Section 2

NORMAL PROCEDURES

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LIST OF FIGURES

Section 2

NORMAL PROCEDURES

INTRODUCTION

This section contains instructions and procedures for operating the helicopter from the planning stage, through actual flight conditions, to securing the helicopter after landing.

Normal and standard conditions are assumed in these procedures. Pertinent data in other sections is referenced when applicable.

The instructions and procedures contained herein are written for the purpose of standardization and are not applicable to all situations.

OPERATING LIMITATIONS

The minimum and maximum limits, and the normal and cautionary operating ranges for the helicopter and its subsystems are indicated by instrument markings and placards. The instrument markings and placards represent careful aerodynamic calculations that are substantiated by flight test data. Refer to Section 1 for a detailed explanation of each operating limitation.

Anytime an operating limitation is exceeded, an appropriate entry shall be made in the helicopter logbook. The entry shall state which limit was exceeded, the duration of time, the extreme value attained, and any additional information essential in determining the maintenance action required.

FLIGHT PLANNING

Each flight should be planned adequately to ensure safe operations and to provide the pilot with the data to be used during flight.

Check type of flight to be performed and destination.

Select appropriate performance charts to be used from Section 4.

TAKEOFF AND LANDING DATA

Refer to Section 1 for takeoff and landing weight limits and to Section 4 for performance information.

WEIGHT AND BALANCE

Determine prior weight and balance of the helicopter as follows:

Consult applicable weight and balance instructions provided in BHT-206B3-MD-1.

Compute takeoff and anticipated landing gross weight, check helicopter center of gravity (CG) locations, and ascertain weight of fuel, oil, payload, etc.

Ensure weight and balance limitations listed in Section 1 have not been exceeded.

PREFLIGHT CHECK

The pilot is responsible for determining whether the helicopter is in condition for

safe flight. Refer to figure 2-1 for preflight check sequence.

NOTE

The preflight check is not intended to be a detailed mechanical inspection, but a guide to help the pilot check the condition of the helicopter. It may be made as comprehensive as conditions warrant at the discretion of the pilot.

All areas checked shall include a visual check for evidence of corrosion, particularly when helicopter is flown near or over salt water or in areas of high industrial emissions.

BEFORE EXTERIOR CHECK

Flight planning — Completed.

Publications — Check.

Ensure that the helicopter has been serviced as required.

Battery — Connected.

EXTERIOR CHECK

1. FUSELAGE — CABIN RIGHT SIDE.

Right static port — Condition.

Cabin doors — Condition and security.

Windows — Condition and security.

Landing gear — Condition. Ground handling wheel removed.

2. FUSELAGE — CENTER RIGHT SIDE.

Cabin roof, transmission fairing, and engine air inlet area — Cleared of all debris and accumulated snow and ice.

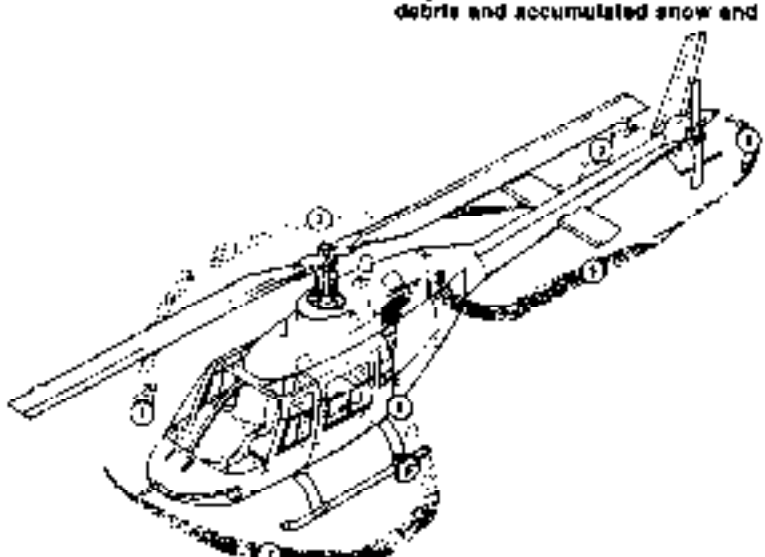

Figure 2-1. Exterior check

Hydraulic reservoir — Oil level.

Hydraulic system filter — Bypass indicator retracted.

Hydraulic actuators and lines — Condition, security, interference, leakage

Forward fairing — Secured.

Access door — Secured.

TRANSMISSION AREA

Main driveshaft forward coupling — Condition, security, and grease leakage. Check Temp-Plates (four places) for evidence of elevated temperature indicated by dot changing color to black.

CAUTION

IF ANY TEMP-PLATE IS MISSING OR HAS BLACK DOTS, MAINTENANCE PERSONNEL SHALL ASSIST IN DETERMINING AIRWORTHINESS.

Transmission — Oil level and area for leaks.

Transmission and mounts — Security and condition.

Isolation mount — Condition.

Drag pin — Security and evidence of contact with static stop plate.

Access door — Secured.

Air induction cowling — Secured.

Engine inlet and plenum — Condition; clear of obstructions.

Fuel filler cap — Visually check level. Secure cap.

Fuel sump — Drain fuel sample as follows:

FUEL BOOST AFT and FWD circuit breakers — Out.

BAT switch — On.

FUEL VALVE switch — OFF.

Fuel drain or button — Depress, drain sample, then release.

NOTE

Apply the following procedure to the airframe (A/F) fuel filter kit and/or engine fuel pump filter.

A/F fuel filter (if installed) — Drain and check before first flight of the day as follows:

FUEL VALVE switch — ON.

FUEL BOOST AFT and FWD circuit breakers — In.

CAUTION LT circuit breaker — In.

Fuel filter drain valve — Open, drain sample, then close.

NOTE

Filter test switch is located on top of fuel filter.

Fuel filter test switch — Depress and check A/F FUEL FILTER caution light on. Release switch and check light out.

FUEL VALVE switch — OFF.

BAT switch — OFF.

POWER PLANT AREA

Main driveshaft forward coupling — Condition, security, and grease leakage. Check Temp-Plates (four places) for evidence of elevated temperature indicated by dot changing color to black.

CAUTION

IF ANY TEMP-PLATE IS MISSING OR HAS BLACK DOTS, MAINTENANCE PERSONNEL SHALL ASSIST IN DETERMINING AIRWORTHINESS.

Engine — Condition; security of attachments.

Engine mounts — Condition and security.

Throttle linkage — Condition, security, and freedom of operation.

Fuel control and governor — Evidence of leakage.

Hoses and tubing — Chafing, security, and condition.

Exhaust stack and clamp — Security and condition.

Engine cowl — Secure.

Generator cooling scoop — Clear of debris.

Right exhaust cover — Removed.

CAUTION

THE ENGINE OIL TANK SIGHT GAGE MOUNTED ON LEFT SIDE IS NOT INDICATIVE OF ACTUAL OIL QUANTITY. OIL QUANTITY SHALL BE CHECKED WITH DIPSTICK.

Oil tank — Oil level, leaks, security, and cap secure.

Access door — Secured.

Aft fairing — Secured.

3. FUSELAGE — AFT RIGHT SIDE.

Fuselage — Condition.

Tail rotor driveshaft cover — Condition and secured.

Tailboom — Condition.

Horizontal stabilizer and position light — Condition and security.

Main rotor blade — Condition.

4. FUSELAGE — FULL AFT.

Vertical fin — Condition.

Tail rotor guard — Condition and security.

Anti-collision light — Condition.

Aft position light — Condition.

Tail rotor gearbox — Oil level, leaks and security.

Tail rotor — Tiedown removed, condition and free movement.

Tail rotor controls — Condition and security.

Tail rotor blade — Condition. Tip block for rivet damage, corrosion, and seal condition.

5. FUSELAGE — AFT LEFT SIDE.

WARNING

FAILURE TO REMOVE ROTOR TIEDOWNS BEFORE ENGINE STARTING MAY RESULT IN SEVERE DAMAGE AND POSSIBLE INJURY.

Main rotor blade — Tiedown removed; condition.

Tailboom — Condition.

Tail rotor driveshaft cover — Condition and secured.

Horizontal stabilizer and position light — Condition and security.

Fuselage — Condition.

Baggage compartment — Cargo tied down; door secure.

Forward tail rotor driveshaft coupling -- Condition of splined adapter and freedom of rotation of witness pin (if installed).

Oil cooler blower shaft hanger bearings — Grease leakage and overheating.

Oil cooler blower — Clear of obstruction and condition.

Oil cooler — Condition and leaks.

Oil cooler access door — Secured.

Aft fairing — Secured.

Left exhaust cover - Removed.

POWERPLANT AREA

Engine Condition; security of attachments.

Engine mounts — Condition and security.

Exhaust stack and clamp — Condition and security.

Evidence of fuel and oil leaks.

Hoses and tubing for chafing and condition.

Linear actuator and governor control linkage — Condition and security.

Engine anti-ice valve and linkage Condition and security.

Tail rotor driveshaft — Condition of splines, couplings and freedom of movement.

Engine cowling — Secured.

Air induction cowling — Secured.

Engine inlet and plenum — Condition; clear of obstruction.

TRANSMISSION AREA

Transmission and mounts Condition and security; area for leaks.

Isolation mount — Condition.

Access door — Secured.

6. FUSELAGE — CABIN LEFT SIDE.

Cabin roof, transmission fairing, and engine air inlet area — Cleaned of all debris and accumulated snow and ice.

Rotor head reservoirs (oil lubricated) — Visible oil levels.

Main rotor hub and yoke — Condition and cracks.

Pitch horn trunnion bearing Wear and security.

Main rotor pitch links — Condition, cracks, and security of attachment bolts and locking hardware.

Swashplate assembly - Condition, security of attached controls, and boot condition.

Control linkages to swashplate — Condition, security of attachment bolts and locking hardware.

Forward fairing and access door -- Secured

Cabin doors — Condition and security.

Windows -- Condition and security.

Landing gear — Condition. Ground handling wheel removed.

Left static port — Condition.

7. FUSELAGE — FRONT.

Exterior surfaces — Condition.

Windshield — Condition and cleanliness.

Battery and vent lines — Condition and security.

Battery access door - Secured.

Pitot tube — Cover removed, clear of obstructions.

External power door — Condition and security.

Landing light glass — Condition.

Antennas — Condition and security.

Main rotor blade - Condition.

External power — Connect (if desired).

INTERIOR CHECK

Cabin interior — Cleanliness and security of equipment

Fire extinguisher — Security and condition.

First aid kit — Secure (if installed).

Copilot controls (if installed) — Security and proper installation.

Copilot seat belt — Secured (if solo).

Cabin loading — Refer to BHT-206B3-MD-1.

Cabin doors — Secured.

ENGINE PRESTART CHECK

NOTE

Helicopters serial number 3567 and subsequent are equipped with ENGINE ANTI-ICING and HYDRAULIC SYSTEM switches. On helicopters prior to this, switches are placarded ENGINE DE-ICING and CONTROL BOOST, respectively.

Flight controls — Release friction; check freedom of movement and adjust to (cyclic) neutral/(collective) flat pitch position and pedals neutral.

Throttle — Check freedom of full travel and flight idle stop operation. Check copilot throttle if installed. Return to closed position.

LDG LTS switch — OFF.

ENGINE DE-ICING or ENGINE ANTI-ICING switch - OFF.

CONTROL BOOST or HYDRAULIC SYSTEM switch — ON

FUEL VALVE switch — ON, guard closed.

Altimeter — Set to field elevation.

Instruments/Gages - Static position at zero.

Overhead switches — OFF.

NOTE

Effective helicopter S/N 4128 and prior: for daylight operations, ensure INST LT switch (rheostat) is OFF. If the INST LT switch is on, the caution lights can be dimmed and may not be visible

Effective helicopter S/N 4129 and subsequent: With the INST LT switch (rheostat) on and caution light selector positioned to DIM, the caution lights are dimmed to a fixed intensity and can not be adjusted by the INST LT switch

GEN switch — OFF.

Circuit breakers — In (as required).

BAT switch — On for battery start; On for GPU start; OFF for battery cart start. Observe TRANS OIL PRESS, ENG OUT, and ROTOR LOW RPM caution/warning light segments illuminated and applicable audio signal(s) operative.

WRN HORN MUTE button (if installed) — Press to mute.

NOTE

Engine out audio may be deactivated.

CAUTION LT TEST button — Press to test illumination of each segment utilized.

Turbine outlet temperature (TOT LT TEST) button (if installed) — Press, check TOT light illuminates.

ROTOR LOW RPM system — Check as follows: (if WRN HORN MUTE button is installed, the following does not apply.)

Collective pitch — Increase; check ROTOR LOW RPM light and audio On

Collective pitch — Full down; check ROTOR LOW RPM light On and audio Off.

Flight controls — Neutral/flat pitch position, apply friction (if needed).

FUEL BOOST AFT and FWD circuit breakers — In; check fuel pressure within limits and FUEL PUMP caution light off.

ANTI COLL LT switch — On (if required).

ENGINE STARTING

Collective pitch Full down.

Throttle — Full closed.

Rotors Clear.

Starter — Engage (observe Engine Starter Limitations, Section I).

Engine oil pressure — Indication of increase.

Throttle - Open to flight idle at 15% gas producer RPM with Turbine Outlet Temperature (TOT) at or below 150°C.

CAUTION

A START SHOULD NOT BE ATTEMPTED AT N1 SPEEDS BELOW 12%.

Use the following guide for desired N1 starting speed versus outside air temperature:

N1 RPM	TEMP °C (°F)
15%	Above 7° (45°)
13%	-18 to +7° (0 to 45°)
12%	Below -18° (0°)

CAUTION

DURING THE FIRST FEW SECONDS OF THE START THE TOT WILL ACCELERATE AT A FAIRLY RAPID RATE AND SHALL BE CLOSELY MONITORED.

Turbine outlet temperature (TOT) — Monitor to avoid hot start. Abort start if either the 927°C maximum or the 810 to 927°C MAXIMUM 10 SECONDS transient limitation is about to be exceeded by depressing the engine IDLE REL button, CLOSE THROTTLE and continue to motor the starter until TOT decreases to less than 810°C. Some helicopters are equipped with a red warning light on the TOT gage. If limits are exceeded or light illuminates, consult Allison Engine Operation and Maintenance Manual.

CAUTION

IF THE MAIN ROTOR IS NOT ROTATING BY 25% GAS PRODUCER SPEED (N1), ABORT THE START.

Starter — Release at 55% gas producer RPM (N1).

Engine and transmission oil — Check pressures increasing.

CAUTION

IF THE ENGINE HAS BEEN SHUT DOWN FOR MORE THAN 15 MINUTES, STABILIZE AT IDLE SPEED FOR ONE MINUTE BEFORE INCREASING POWER.

NOTE

During cold temperature operations, stabilize engine at idle speed of 60 to 62% gas producer RPM (N1) until oil temperature reaches a minimum of 0°C.

Gas producer RPM (N1) — Check for 60 to 62%.

External power — Disconnect; BAT On

Throttle — Open to 70% gas producer RPM.

GEN switch — On.

Radio equipment — On.

ELT (if installed) — Check for inadvertent transmission.

POS LT switch On.

PRELIMINARY HYDRAULICS CHECK

NOTE

Uncommanded control movement or motoring with hydraulic system off may indicate hydraulic system malfunction.

HYDRAULIC SYSTEM or CONTROL BOOST switch — OFF, then ON.

ENGINE RUN-UP CHECK

Smoothly and firmly advance throttle at a continuous rate to full open position, maintaining collective pitch down and cyclic control in neutral.

Power turbine (N2) governor - Check range 97 to 100% RPM.

NOTE

If temperature is 4.4°C (40°F) or below and visible moisture is present, the engine anti-icing system shall be ON.

ENGINE DEICING or ENGINE ANTI-ICING switch — ON (if conditions warrant. Observe TOT rise).

PITOT HEAT switch (if installed) — ON in visible moisture with temperature below 4.4°C (40°F).

HYDRAULICS CHECK

NOTE

The Hydraulic Systems Check is to determine proper operation of the hydraulic actuators for each flight control system. If abnormal forces, unequal forces, control binding or motoring are encountered, it may be an

indication of a malfunctioning control actuator.

Collective — Full down, friction removed.

Rotor rpm (Nr) — Set to 100%.

HYDRAULIC SYSTEM or CONTROL BOOST switch OFF.

Cyclic Centered, friction removed.

Check normal operation of cyclic control by moving cyclic in an "X" pattern right forward to left aft, then left forward to right aft (approximately one inch). Center cyclic

Collective — Check for normal operations by increasing collective control slightly (1 to 2 inches) Repeat 2 to 3 times as required. Return to full down position.

Pedals (If hydraulically boosted) — Displace slightly left and right. Note an increase in force required to move pedal in each direction.

HYDRAULIC SYSTEM or CONTROL BOOST switch ON.

Cyclic and collective friction — Set as desired.

BEFORE TAKEOFF

Electrical equipment — Check; reset as required.

Lighting — As desired.

INST LT switch (rheostat) — As desired.

Radio — Check as required.

Throttle — Full open.

Power and flight instruments — Normal operating range.

Generator load — Below 70% (Note normal load is 10-20%).

Power turbine N2 — Set for 100% in flat pitch.

TAKEOFF

Collective pitch — Increase to hover.

Directional control — As required to maintain desired heading.

Cyclic control — Apply as required to accelerate smoothly.

Collective — Apply as required to obtain desired rate of climb and airspeed. Monitor engine limits and adjust collective, as necessary.

IN-FLIGHT OPERATIONS

Airspeed — As desired (not to exceed Vne at flight altitude or maximum allowable for door(s) off flight configuration).

WARNING

AIRSPEEDS IN EXCESS OF AIRSPEED LIMITATIONS DOOR(S) OFF WILL CAUSE CYCLIC CONTROL REVERSAL OF FORE AND AFT POSITION GRADIENT AND FUSELAGE BUFFETING.

PITOT HEAT switch (If installed) — ON in visible moisture with temperature below 4.4°C (40°F).

ENGINE DEICING or ENGINE ANTI-ICING switch — ON, in visible moisture when temperature is below 4.4°C (40°F).

NOTE

TOT will increase when ENGINE ANTI-ICING is switched ON.

Maximum pressure altitude is 20,000 feet.

NOTE

It is recommended that approved oxygen equipment be used when operating at altitudes above 10,000 feet.

DESCENT AND LANDING

Flight controls — Adjust friction as desired.

Throttle — Full open.

Power turbine RPM (N2) — 97 to 100%.

NOTE

Decreasing the collective pitch into the low power realm may result in a RPM overspeed condition. For prolonged low power approaches the RPM can be controlled by a small amount of collective pitch increase (no significant torque increase) and/or by keeping down the N2 governor speed controller to 100% RPM. This will maintain governing within limits during low power descents, however, the GOV RPM switch should be beeped to INCR as collective is applied. (See N2 Transient Overspeed Limits in Section 1.)

Flight path — As required for type of approach being made

LDG LTS switch — On as required.

ENGINE SHUTDOWN

Throttle — Flight idle. Check engine deceleration time.

Full RPM to 65% N1 should take 3-5 seconds. Consult Allison Engine Operation and Maintenance manual if these times are exceeded.

WRN HORN MUTE button (if installed) — Press to mute.

Flight controls — Position for shutdown; apply friction.

ENGINE DEICING or ENGINE ANTI-ICING switch — OFF.

TOT — Stabilized at flight idle speed for two minutes.

ELT (if installed) — Check for inadvertent transmission.

IDLE REL button — Depress and roll throttle firmly to full closed position.

CAUTION

TO ENSURE ENGINE CUTOFF, HOLD THROTTLE IN CLOSED POSITION UNTIL N1 DECELERATES TO 0 AND TOT IS STABILIZING. DO NOT TURN BAT SWITCH OFF UNTIL N1 IS 0 AND TOT STABILIZED.

TOT — Check decreasing.

During rotor coast down, apply cyclic to minimize static stop contact.

Radio equipment — OFF.

FUEL VALVE switch — OFF.

GEN switch — OFF.

All switches (except BAT) — OFF.

BAT switch — OFF after N1 is zero and TOT stabilized.

Pilot should remain at flight controls until rotor has come to a complete stop.

THESE RESTRICTIONS ARE IN CONJUNCTION WITH THE FUEL SHUTOFF VALVE PROVISION FOR THERMAL RELIEF. REFER TO BELL HELICOPTER ALERT SERVICE BULLETIN 206-82-18. ALL OTHER DATA ON PAGE 2-13 REMAIN UNCHANGED.

ENGINE SHUTDOWN

FUEL VALVE switch — Leave ON.

AFTER EXITING HELICOPTER

Install main and tail rotor tiedown if any of the following conditions exist:

High or gusty winds are predicted.

Other helicopters are operating or expected to be operating in the immediate area

Any time the helicopter is to be left unattended.

Install protective covers (engine inlet, exhaust, and pitot tube).

13 Feb 1992

Section 3

EMERGENCY AND MALFUNCTION PROCEDURES

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Section 3

EMERGENCY AND MALFUNCTION PROCEDURES

This section contains fault conditions considered to constitute an emergency or malfunction condition. Red warning lights and amber caution lights are located on the instrument panel and provide the pilot with a visual indication of a condition, fault, or system malfunction by means of an individual system light. Illumination is an indication that a problem has occurred which, unless treated properly, could affect flight safety. In addition, certain emergency conditions are made known by audio signals. Remedial action as described below should be taken with the urgency each situation warrants.

All corrective action procedures listed herein assume the pilot gives first priority to helicopter control and a safe flight path.

The helicopter should not be operated following any emergency landing or shutdown until the cause of the malfunction has been determined and corrective maintenance action taken.

DEFINITION

The following terms indicate the degree of urgency in landing the helicopter.

Land as soon as possible — Land without delay at nearest suitable area (i.e. open field) at which a safe approach and landing is reasonably assured.

Land as soon as practical — The landing site and duration of the flight are at the discretion of the pilot. Extended flight beyond the nearest approved landing area is not recommended.

WARNING LIGHT (RED) SEGMENTS

WARNING LIGHT	FAULT AND REMEDY
ENG OUT (audio II functional)	Engine power failure (N1 less than 55%). Reduce pitch immediately to autorotate. If ample altitude remains investigate failure, attempt engine relight.
BATTERY HOT	Battery case temperature has reached 140°F (60.0°C) or higher. Turn BAT switch OFF. Land as soon as possible. Maintenance action is required.

ENGINE FIRE DURING STARTING OR SHUTDOWN

An engine fire during start could be caused by an overloading of fuel in the combustion chamber and a delayed ignition of the fuel, resulting in flame emanating from the tailpipe. To extinguish fire, proceed as follows:

Starter — Continue to motor the engine.

Throttle — Full closed.

FUEL VALVE switch — OFF.

IGN ENG circuit breaker — Out.

Complete shutdown.

ENGINE FIRE DURING FLIGHT

Throttle — Close.

Immediately enter autorotation

FUEL VALVE switch — OFF.

BAT switch — OFF.

Accomplish autorotative descent and landing.

CABIN VENTILATION

Ventilation of the cabin to protect occupants from the effects of toxic fumes, smoke, etc., shall be immediately performed as follows:

VENT — Open.

Cabin windows — Open for maximum ventilation.

ENGINE FAILURE AND AUTOROTATION

Collective pitch — Adjust as required to maintain rotor RPM, 90% to 107%.

NOTE

Rotor RPM maintained at the high end of the operating range will provide maximum rotor energy to accomplish the landing; but will cause an increased rate of descent.

WARNING

REDUCE FORWARD SPEED TO DESIRED AUTOROTATIVE AIRSPEED FOR EXISTING CONDITIONS. AIRSPEED FOR MINIMUM DESCENT IS 60 MPH (52 KNOTS) IAS. AIRSPEED FOR MAXIMUM GLIDE DISTANCE IS 80 MPH (69 KNOTS) IAS.

At low altitude, close throttle and flare as required to lose excessive speed.

Apply collective pitch as flare effect decreases to further reduce forward speed and cushion landing.

It is recommended that level touchdown be made prior to passing through 70% rotor RPM. Upon ground contact, collective pitch shall be reduced smoothly while maintaining cyclic in neutral or centered position.

WARNING

EXCESSIVE GROUND RUN WITH COLLECTIVE UP, OR ANY TENDENCY TO FLOAT FOR LONG DISTANCE PRIOR TO GROUND CONTACT SHALL BE AVOIDED.

Maximum airspeed for steady autorotation is 115 MPH (100 knots) IAS. Autorotation above this speed results in high rates of descent and low rotor speed. A blue radial

is installed on the airspeed indicator as a reminder of this condition.

ENGINE AIR START

When cause of the engine failure is believed to be mechanical, do not attempt a restart.

Collective pitch - Adjust as required to maintain rotor RPM, 90 to 107%.

Reduce forward speed to desired autorotative airspeed of 60 to 80 mph (52 to 69 knots) IAS for existing conditions.

GEN switch — OFF.

Perform normal engine start procedure.

CAUTION

DO NOT ATTEMPT AIR START ABOVE 12,000 FEET. (TOT RISES TOO FAST TO CONTROL.)

FUEL CONTROL AND/OR GOVERNOR FAILURE

Engine fuel control and/or governor failure is evidenced by a change of power or RPM. There is no manual fuel control on the engine. Control power with throttle if engine overspeeds.

Maintain RPM with collective pitch if engine underspeeds.

Establish autorotative glide if power is very low or if engine must be shut down.

Prepare for power-off landing.

DRIVESHAFT FAILURE

WARNING

FAILURE OF MAIN DRIVESHAFT TO TRANSMISSION WILL RESULT IN COMPLETE LOSS OF POWER TO MAIN ROTOR. ALTHOUGH COCKPIT INDICATIONS FOR A DRIVESHAFT FAILURE ARE SIMILAR TO AN ENGINE OVERSPEED, IT IS IMPERATIVE THAT AUTOROTATIVE FLIGHT PROCEDURES BE ESTABLISHED IMMEDIATELY. FAILURE TO REACT IMMEDIATELY TO ROTOR LOW RPM LIGHT, AND AUDIO AND DUAL TACHOMETER CAN RESULT IN LOSS OF CONTROL

Indication of a transmission to engine driveshaft failure is a left yaw, rapid decrease of rotor RPM with a ROTOR LOW light, accompanied by an increase of power turbine RPM. Noise level may increase due to overspeeding engine and driveshaft breakage.

Collective pitch — Adjust to maintain rotor RPM, 90 to 107 %.

Cyclic - Maintain heading and attitude control. Adjust to obtain desired autorotation airspeed, 52 to 69 KIAS.

Throttle - Open (engine is providing power to tail rotor).

Complete autorotative landing and helicopter shut down.

TAIL ROTOR CONTROL FAILURE

In the event of a tail rotor failure the failure can be one of two types. Each type requires its own procedure and shall be performed as follows:

COMPLETE LOSS OF THRUST

Reduce throttle to flight idle, immediately enter autorotation and maintain a minimum airspeed of 58 MPH (50 knots) IAS during the descent.

NOTE

Airflow around the vertical fin may permit controlled flight at low power levels and sufficient airspeed when a suitable landing site is not available; however, the touchdown shall be accomplished with the throttle in the full closed position.

FIXED PITCH FAILURE (Pitch change slider, control failure, etc.)

Depending on the pitch position of the tail rotor, at the time of failure, engine power and airspeed shall be varied as follows:

Power — Adjust as required to minimize excessive yawing

Airspeed — Adjust to determine best velocity to minimize excessive yawing.

HYDRAULIC SYSTEM FAILURE

The first indication of hydraulic boost failure will be an increase in the force required for control movement; feedback forces will be noticed as well as rate limiting. Control motions will result in normal flight reactions in all respects, except for the increase in force required for control movement. In the event of hydraulic power failure, proceed as follows:

Reduce airspeed to 70 to 80 MPH (61 to 69 knots) IAS.

HYD BOOST circuit breaker Out; if power is not restored — In.

CONTROL BOOST or HYDRAULIC SYSTEM switch ON; OFF if power is not restored.

Land as soon as practical and investigate.

A run-on landing at 12 to 17 MPH (10 to 15 knots) is recommended. Maintain airspeed above translational lift speed for best control at touchdown.

AUDIO WARNING SYSTEM

ENGINE OUT WARNING SYSTEM

When this system (if functional) is activated an intermittent audio signal is produced and the ENG OUT light is illuminated (N1 less than 55%).

ROTOR LOW RPM WARNING SYSTEM

When this system is activated the ROTOR LOW RPM light is illuminated and a steady audio signal is produced. The low RPM warning system is activated when collective pitch is off the down stop and rotor RPM is less than 90%.

CAUTION LIGHT (AMBER) SEGMENTS

CAUTION LIGHT	FAULT AND REMEDY
ROTOR LOW RPM (audio and light)	Rotor RPM is below normal (approximately 90%). Reduce collective pitch and ensure throttle is full open
TRANS OIL PRESS	Main transmission pressure is below minimum, check gage. Land as soon as possible.
TRANS OIL TEMP	Main transmission oil temperature is at or above red line, check gage. Reducing power will help alleviate the condition. Check transmission oil pressure. Land as soon as possible.
BATTERY TEMP	Battery case temperature has reached 130°F (54.5°C) or higher. Turn BAT switch OFF until battery cools (light extinguishes), then BAT switch ON.

CAUTION LIGHT	FAULT AND REMEDY
	NOTE Frequent and repetitive BATTERY TEMP indications may be indicative of a marginal battery condition. It is recommended that if this occurs the battery should be removed and inspected in accordance with manufacturer's recommendation at the first convenient opportunity.
ENGINE CHIP	Metallic particles in engine oil. Land as soon as possible.
TRANS CHIP	Metallic particles in transmission oil. Land as soon as possible.
T/R CHIP	Metallic particles in tail rotor gearbox oil. Land as soon as possible.
GEN FAIL (If installed)	Generator has failed. GEN switch — RESET, then ON. If GEN FAIL light remains illuminated, GEN switch — OFF. Land as soon as practical.
BAGGAGE DOOR (If installed)	Baggage compartment door open. Land as soon as practical.
FUEL FILTER (If installed)	Engine fuel filter clogged. Land as soon as practical. Clean before next flight.
AF FUEL FILTER (If installed)	Airframe fuel filter clogged. Land as soon as practical. Clean before next flight.

CAUTION LIGHT	FAULT AND REMEDY
	WARNING
	OPERATION WITH BOTH FUEL BOOST PUMPS INOPERATIVE IS NOT AUTHORIZED DUE TO POSSIBLE FUEL SLOSHING IN UNUSUAL ATTITUDES OR OUT OF TRIM CONDITIONS AND ONE OR BOTH FUEL BOOST PUMPS INOPERATIVE, THE UNUSABLE FUEL IS TEN GALLONS.
FUEL PUMP	One or both fuel boost pumps is inoperative. Descend to below 6000 feet pressure altitude if flight permits. Land as soon as practical.
	NOTE
	The engine is designed to operate without boost pump pressure under 6000 feet pressure altitude and one boost pump will supply sufficient fuel for normal engine operations under all conditions of power and altitude. Both fuel boost pumps shall be ON for all normal operations.

CAUTION LIGHT	FAULT AND REMEDY
FUEL LOW (if installed)	Plan landing.
	Effective helicopter S/N 4110 and prior, approximately 20 gallons of fuel remaining.
	Effective helicopter S/N 4111 and subsequent, approximately 17 gallons of fuel remaining.

ELECTRICAL POWER FAILURE

Electrical power for flight is furnished by the starter which is utilized as a generator after the start has been accomplished. Evidence of main generator failure will be provided by observing loadmeter load. There is no provision for standby operation in the event of generator failure. Necessary power can be furnished by the battery for short periods of time, in case of generator failure.

GEN FAIL light (if installed)—Illuminated.

GEN switch — RESET then ON. If power is not restored:

GEN switch — OFF.

All electrical equipment — OFF (to conserve battery).

Required electrical equipment — ON, only as needed.

WARNING

REDUCE ALTITUDE TO BELOW 6000 FEET PRESSURE ALTITUDE IF FLIGHT PERMITS BECAUSE OF POSSIBLE LOSS OF FUEL BOOST PUMPS.

Land as soon as practical.

ENGINE ICING

ENGINE DEICING or ENGINE ANTI-ICING switch (anti-ice) — ON (if conditions warrant).

TOT — Maintain within limits.

NOTE

When anti-ice system is ON, TOT will rise for same power setting.

ENGINE OIL PRESSURE LOW, HIGH, OR FLUCTUATING.

If engine oil pressure is below minimum or above maximum, land as soon as possible.

If engine oil pressure fluctuates but does not exceed a limit, monitor engine oil pressure and temperature, and land as soon as practical.

HIGH ENGINE OIL TEMPERATURE

If engine oil temperature exceeds limits, land as soon as practical.

Section 4

PERFORMANCE

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Section 4

PERFORMANCE

The Bell 206B Jet Ranger III performance data are contained in this section. The data listed on the graphs are derived from actual flight tests and are intended to provide information to be used in conducting flight operations. The performance data contained herein is applicable to the 250-C20B/C20J engine.

POWER CHECK PROCEDURES

The Power Check chart (figure 4-1) indicates the minimum percent torque that must be available from an engine meeting the minimum Allison specification. The engine must develop these values in order to meet the performance data contained in this flight manual.

The takeoff power limits are as follows:

Maximum torque — 100% (5 minutes).

Maximum TOT (turbine outlet temperature) 810°C (5 minutes).

Maximum gas producer RPM (N1) — 105%.

NOTE

Accurate power checks may be accomplished in a hover, in a stabilized 50 MPH (52 knots) IAS climb or in a level flight. Power checks should only be conducted in a hover when altitude, temperature, and gross weight permit safe hovering height. Refer to Height-Velocity Diagram in BHT-206B3-FM-1. More accurate checks are achieved above Maximum Continuous TOT (738°C), which will generally require being above 5,000 feet, to avoid exceeding torque limits.

On cold days, the torque pressure limit may be reached before the TOT limit is reached. On hot days and/or high altitudes, the TOT will be the limiting factor. To perform a power check, ensure the ENGINE DEICING or ENGINE ANTI-ICING switch and GEN switch are OFF. Raise collective to increase power until a stabilized TOT or torque pressure limit is reached. Record OAT, TOT, pressure altitude, torque and (N1). Refer to Power Check chart, figure 4-1.

EXAMPLE

OAT 10°C

TOT 740°C

PRESSURE ALTITUDE 6000 FEET

Actual percent torque (%) reading must equal or exceed chart percent torque (%) reading of 93.6% for power check to be acceptable.

RATE OF CLIMB

The rate of climb as measured with an altimeter will show rates of climb only on a standard day, with a standard temperature lapse rate. Refer to Rate of Climb charts, figure 4-2.

The following example is for use with Rate of Climb — Maximum with Takeoff Power. The example is typical for use with all Rate of Climb charts.

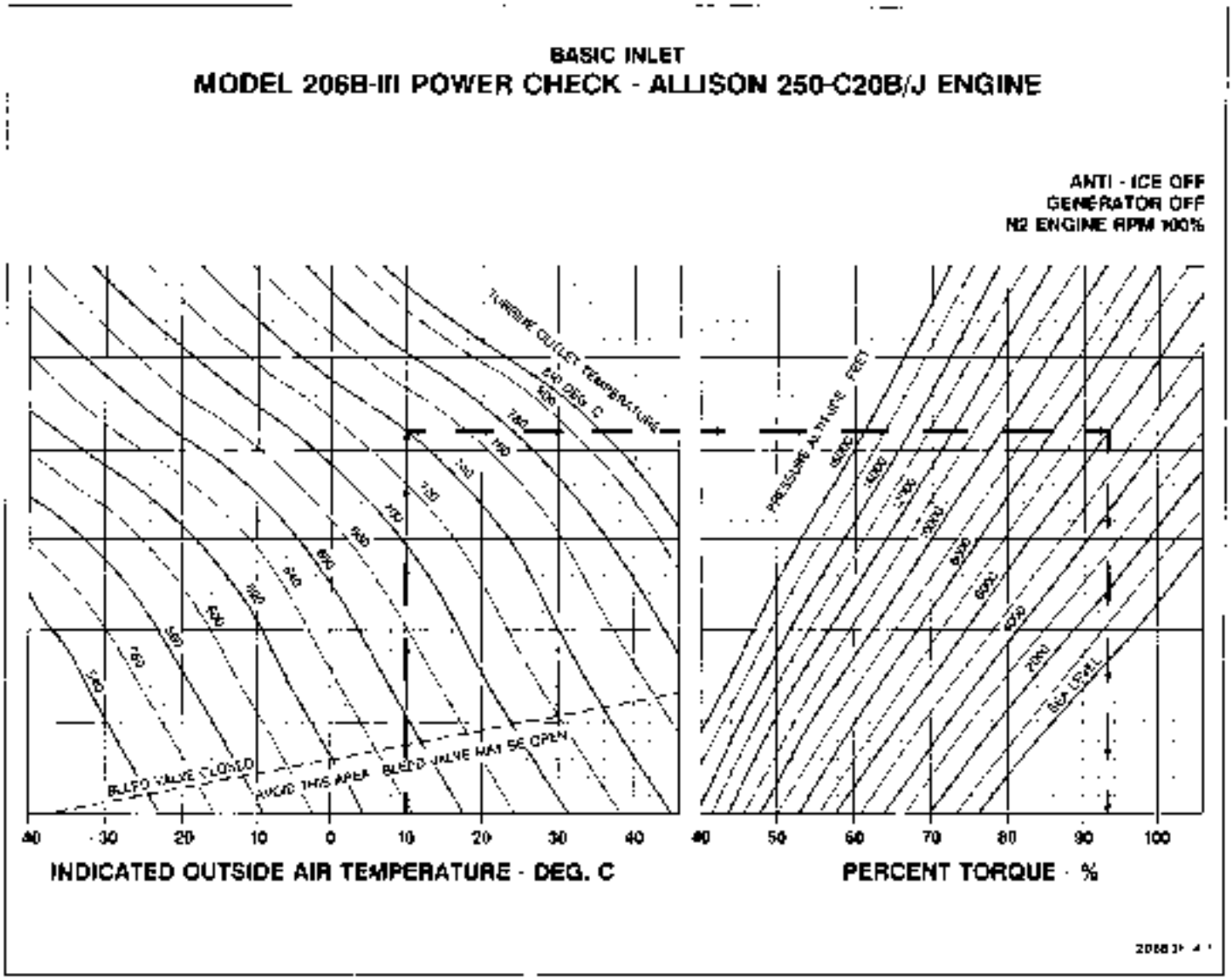


Figure 4-1. Power check chart Allison 250-C20B/C20J engine

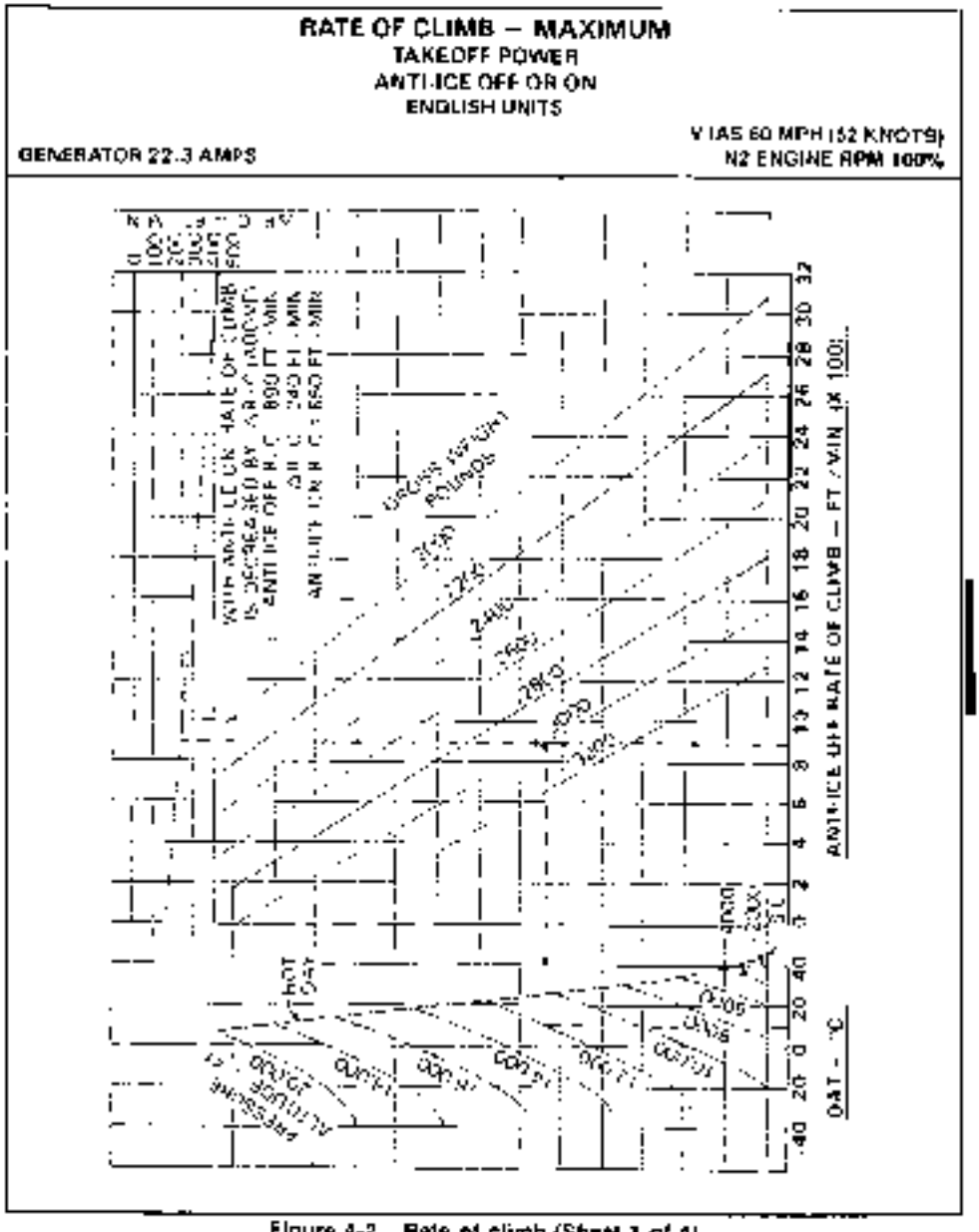


Figure 4-2. Rate of climb (Sheet 1 of 4)

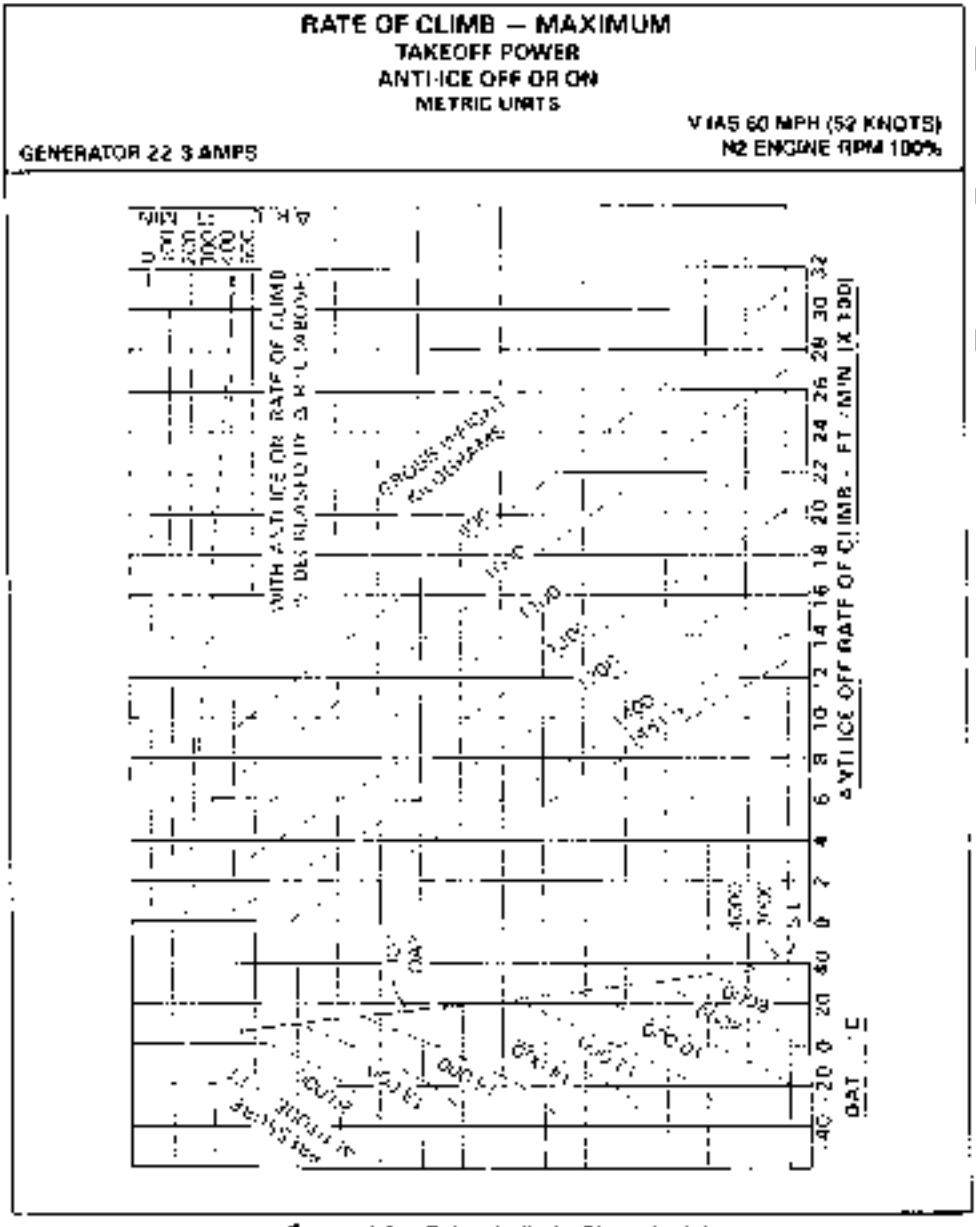


Figure 4-2. Rate of climb (Sheet 2 of 4)

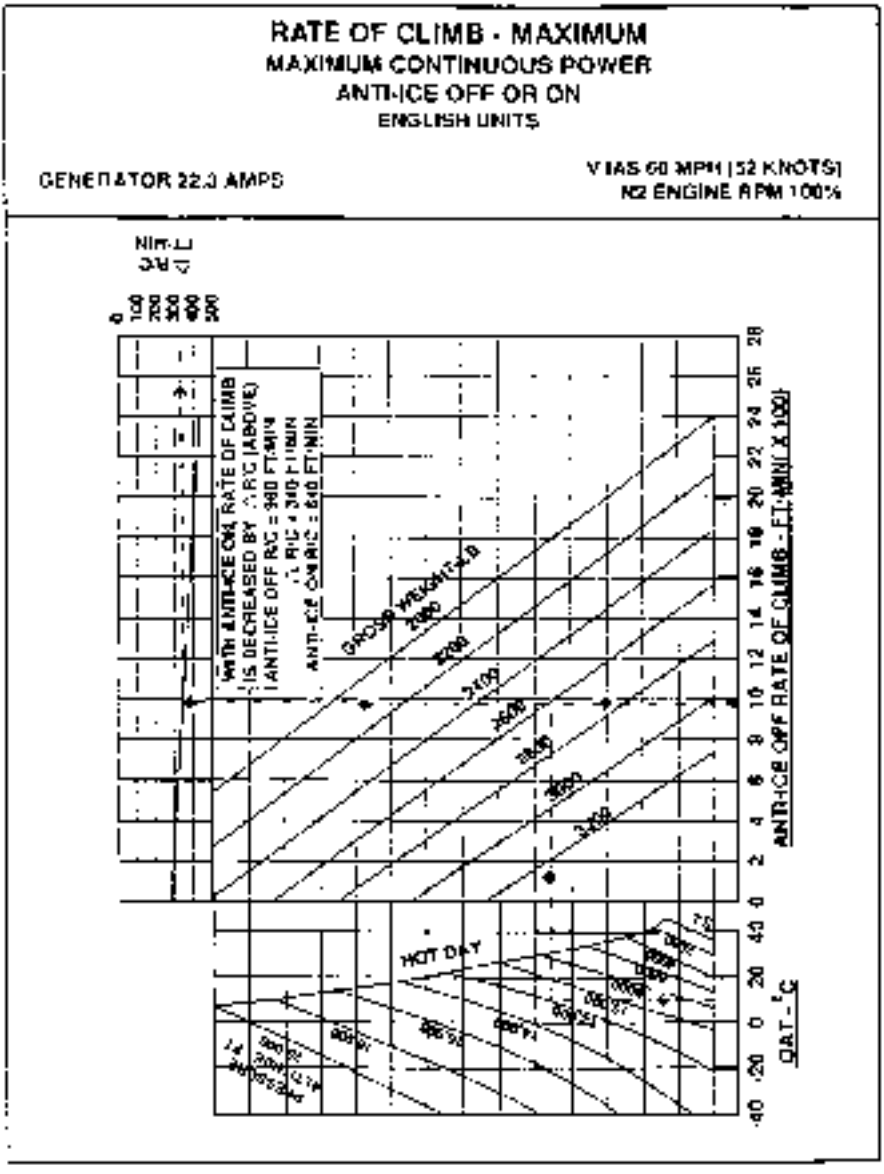


Figure 4-2. Rate of climb (Sheet 3 of 4)

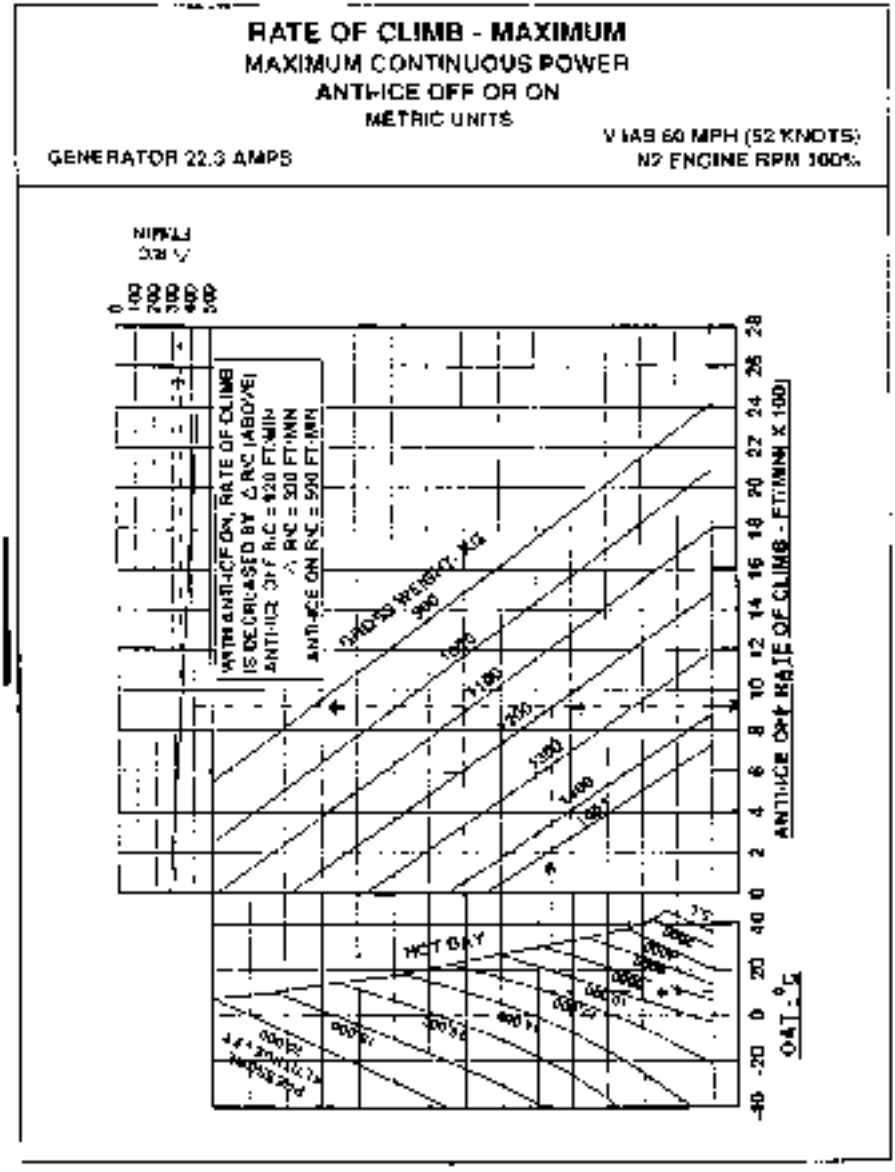


Figure 4-2. Rate of climb (Sheet 4 of 4)

EXAMPLE:

Assume an ambient OAT of 10°C, a pressure altitude of 12,000 feet and a gross weight of 3000 lbs. (1360.8 kilograms).

PART 1 — ANTI-ICE OFF

Enter temperature scale at 10°C, proceed vertically to intersection of the 12,000 feet pressure altitude curve; from this point move horizontally to the right to intersect the 3,000 lb. (1360.8 kg) gross weight line. Drop vertically and read anti-ice OFF rate of climb of 890 feet per minute.

PART 2 — ANTI-ICE ON

From intersection of horizontal example line at 3,000 lbs. (1360.8 kg) gross weight, proceed vertically to the upper Δ R/C FT. MIN section of the chart diagonal line and then move horizontally to the right and read 240 ft./min. Subtract 240 ft./min. Δ R/C from the 890 ft./min. anti-ice OFF R/C and the anti-ice ON R/C is determined to be 650 ft./min. for the same 3000 lb. (1360.8 kg) gross weight.

RATE OF CLIMB — DOOR(S) OFF

Reduce basic Rate of Climb chart data 350 feet per minute when operating with one, all, or any combination of cabin doors off.

OPERATION IN ALLOWABLE RELATIVE WIND

Satisfactory stability and control has been demonstrated in relative winds of 20 MPH (17 knots) sideward and rearward at all loading conditions within Area A of Hover Ceiling charts.

IGE AND OGE HOVER CEILING CHARTS

NOTE

The Hover Ceiling charts presented in this manual reflect performance with the 65 inch diameter tail rotor (P/N 206-016-201) installed. For performance with the 62 inch diameter tail rotor (P/N 206-010-750), refer to BHT-206B3-FM9-22.

The Hover Ceiling In Ground Effect charts (figure 4-3) and Hover Ceiling Out of Ground Effect charts (figure 4-4) present hover performance (allowable gross weight) for conditions of pressure altitude and OAT. The charts are divided into two areas.

AREA A (White area) as shown on the hover ceiling charts presents hover performance for which controllability has been demonstrated in sideward and rearward relative wind conditions up to 20 MPH (17 knots).

CAUTION

ENGINE TOT WILL RISE NOTICEABLY WHEN HOVERING DOWNWIND. AVOID HOVERING DOWNWIND WHEN OPERATING NEAR TOT LIMITS.

AREA B (Shaded area) as shown on Hover Ceiling charts presents hover performance that can be realized in CALM WINDS or winds outside the CRITICAL RELATIVE WIND AZIMUTH AREA in figure 4-5.

HOVER CEILING

The following example is for use with the Hover Ceiling In-Ground-Effect, Takeoff Power, Anti-ice Off chart and is typical for use of Hover Ceiling charts.

HOVER CEILING
IN GROUND EFFECT TAKEOFF POWER
0° TO 46°C

GENERATOR 22.3 AMPS — ANTI-ICE OFF
SKID HEIGHT 2.0 FT (0.6 METERS) — N2 ENGINE RPM 100%
WITH ANTI ICE ON GROSS WEIGHT IS 220 LBS. (99.8 Kg) LESS

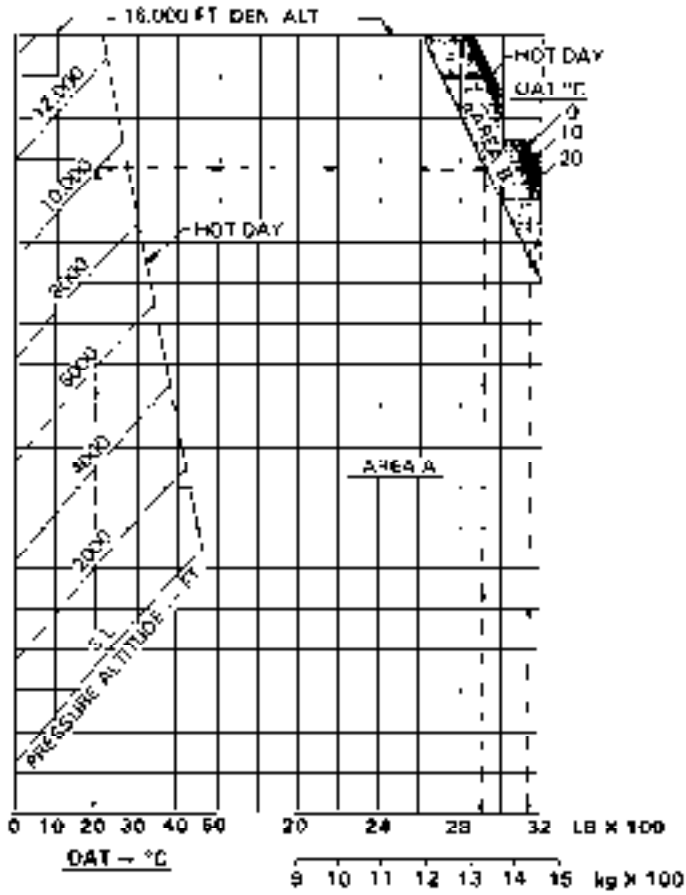


Figure 4-3. Hover ceiling in ground effect (Sheet 1 of 2)

HOVER CEILING
IN GROUND EFFECT TAKEOFF POWER
0° TO −40°C

GENERATOR 22.3 AMPS
SKID HEIGHT 2.0 FT. (0.6 METERS)

ANTI-ICE OFF
N2 ENGINE RPM 100%

WITH ANTI-ICE ON GROSS WEIGHT IS
220 LBS. (99.8 Kg) LESS

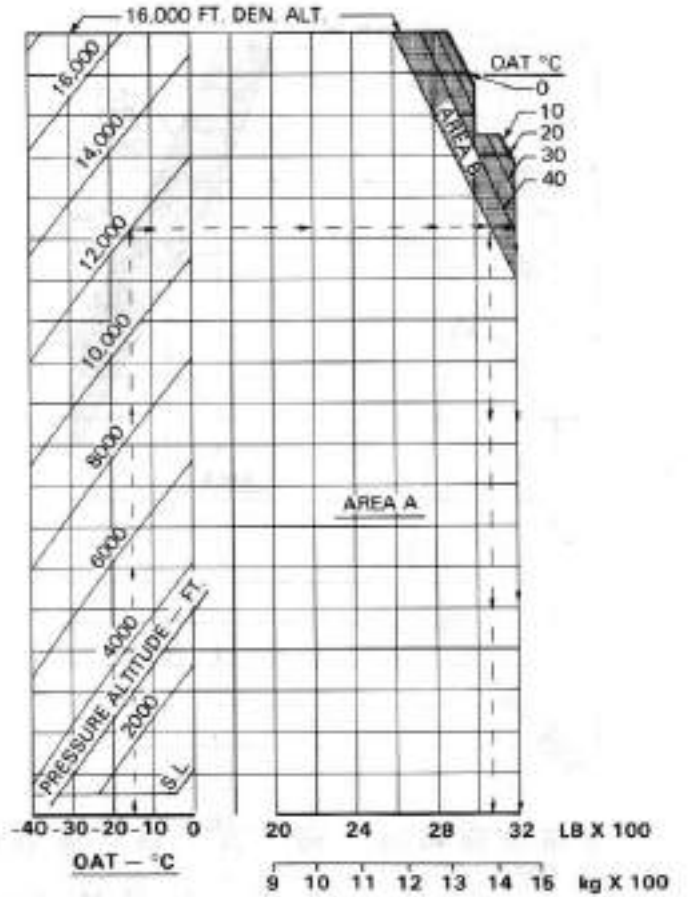


Figure 4-3. Hover ceiling in ground effect (Sheet 2 of 2)

HOVER CEILING
OUT GROUND EFFECT TAKEOFF POWER
0° TO 46°C

GENERATOR 22 3 AMPS
SKID HEIGHT 40 FT (12 2 METERS)

ANTI-ICE OFF
N2 ENGINE RPM 100%

WITH ANTI-ICE ON GROSS WEIGHT IS
295 LBS (133.8 Kg) LESS

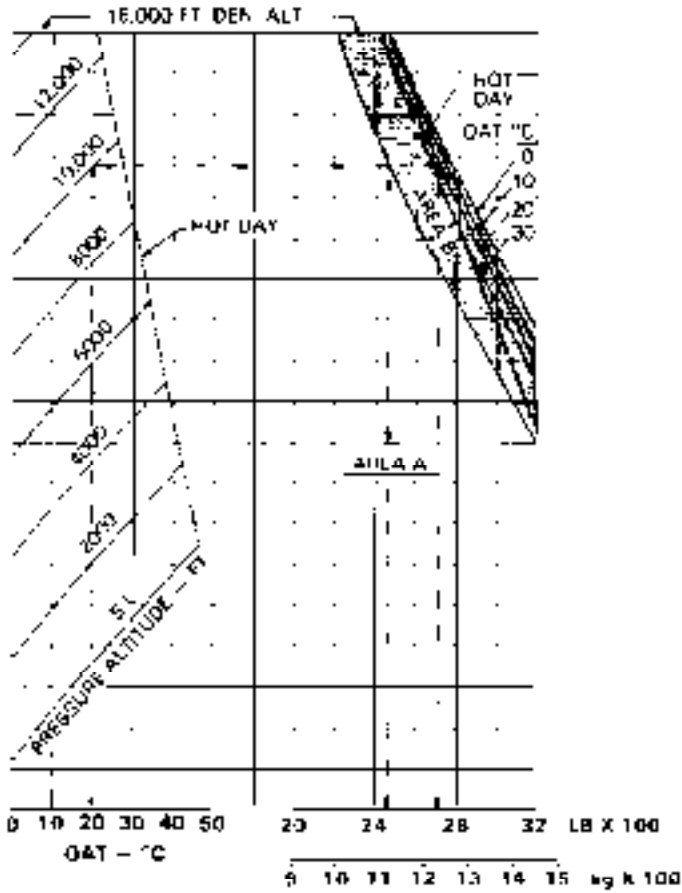


Figure 4-4. Hover ceiling out ground effect (Sheet 1 of 2)

HOVER CEILING

OUT GROUND EFFECT TAKEOFF POWER

0° TO 40°C

GENERATOR 22.3 AMPS

SKID HEIGHT 40 FT. (12.2 METERS)

ANTI-ICE OFF

N2 ENGINE RPM 100%

WITH ANTI-ICE ON GROSS WEIGHT IS 295 LBS. (133.8 Kg) LESS

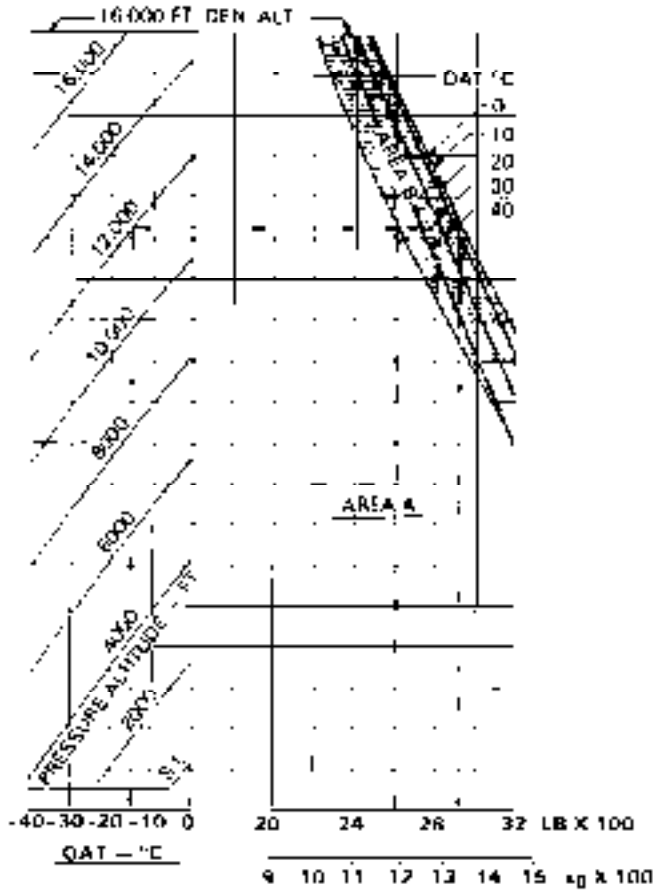
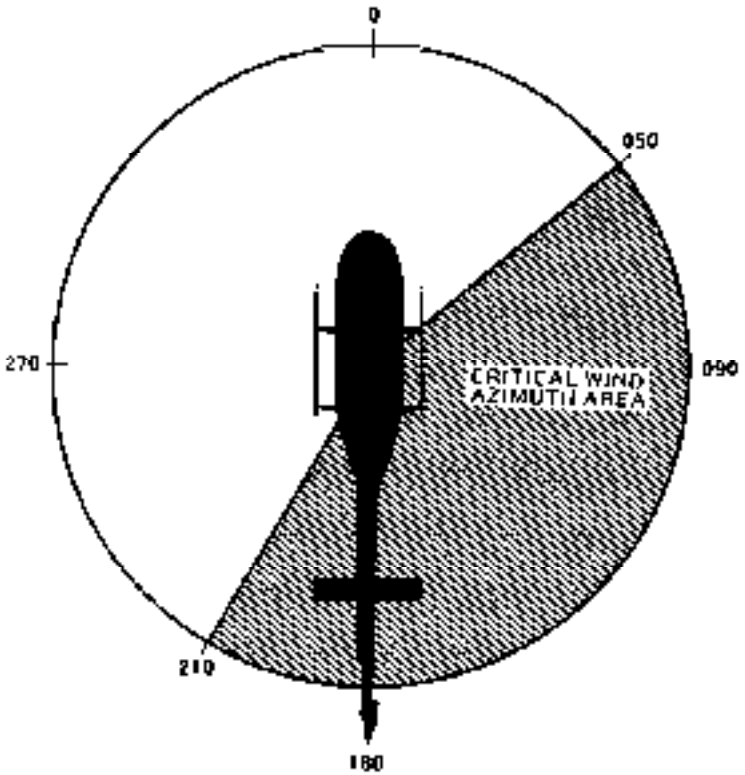


Figure 4-4. Hover ceiling out ground effect (Sheet 2 of 2)



CRITICAL RELATIVE WIND AZIMUTH AREA

Figure 4-5. Critical relative wind azimuth area

NOTE

Tail rotor control margin and/or control of engine parameters (TOT and torque) may preclude operation in AREA B of the Hover Ceiling charts when the relative wind is in the Critical Wind Azimuth Area.

EXAMPLE

Determine gross weight hover capability at a site having the following conditions:

Pressure Altitude = 10,000 Ft.

Outside Air Temperature = 20°C.

For the above example the pilot must refer to the 0°C to 46°C Hover Ceiling charts.

From the appropriate IGE chart obtain:

A maximum of 2915 pounds (1322.2 kilograms) for all allowable wind conditions, and a maximum of 3145 pounds (1426.6 kilograms) when wind conditions are calm or outside the critical wind azimuth area.

From the appropriate OGE chart obtain:

A maximum of 2460 pounds (1115.6 kilograms) for all allowable wind conditions, and a maximum of 2710 pounds (1229.3 kilograms) when wind conditions are calm or outside the critical wind azimuth area.

EXAMPLE:

Determine gross weight hover capability at a site having the following conditions:

Pressure Altitude = 12,000 Ft.

Outside Air Temperature = -15°C

For the above example the pilot must refer to the 0°C to -40°C Hover Ceiling charts.

From the appropriate IGE chart obtain:

A maximum of 3070 pounds (1392.5 kilograms) for all allowable wind conditions, and a maximum of 3290 pounds (1491.8 kilograms) when wind conditions are calm or outside the critical wind azimuth area.

From the appropriate OGE chart obtain:

A maximum of 2610 pounds (1183.9 kilograms) for all allowable wind conditions, and a maximum of 2920 pounds (1324.6 kilograms) when wind conditions are calm or outside the critical wind azimuth area.

NOTE

The In-Ground-Effect (IGE) and Out-Of-Ground-Effect (OGE) Hover Ceiling charts are presented separately for the temperatures from 0°C to 46°C and for temperatures from 0°C to -40°C, only for clarity of presentation.

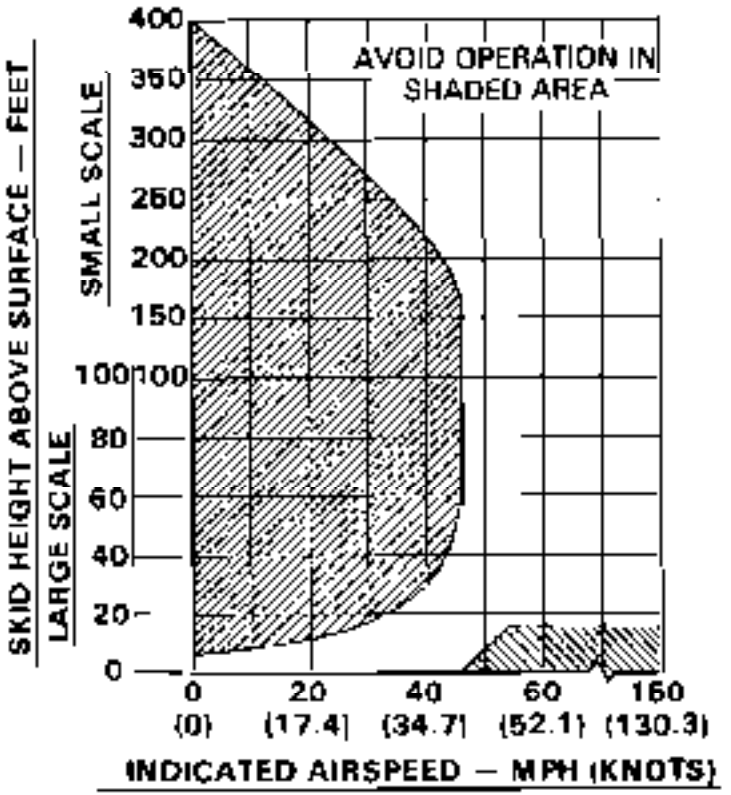
Table 4-1. Airspeed installation correction table

INDICATED A/S — MPH	CALIBRATED A/S — MPH	INDICATED A/S — (KNOTS)	CALIBRATED A/S — (KNOTS)
40	40.5	(35)	(35.5)
45	45	(40)	(40)
50	50	(45)	(45)
60	59.5	(50)	(49.5)
70	69	(55)	(54.5)
80	79	(60)	(59)
90	88.5	(70)	(69)
100	98.5	(80)	(79)
110	108	(90)	(88.5)
120	118	(100)	(98.5)
130	128	(110)	(108.5)
140	138	(120)	(118.5)
150	148	(130)	(128)

Indicated Airspeed (IAS) corrected for position and instrument error equals Calibrated Airspeed (CAS). Determine Calibrated Airspeed (CAS) from the above table.

HEIGHT VELOCITY DIAGRAM

The Height Velocity Diagram defines the conditions from which a safe landing can be made on a smooth, level, firm surface following an engine failure. The Height-Velocity Diagram is valid only when the helicopter gross weight does not exceed the limits of the Altitude Versus Gross Weight Limit for Height-Velocity Diagram.



HEIGHT — VELOCITY DIAGRAM FOR SMOOTH, LEVEL, FIRM SURFACES

Figure 4-6. Height velocity diagram

ALTITUDE VS. GROSS WEIGHT LIMIT FOR HEIGHT — VELOCITY DIAGRAM

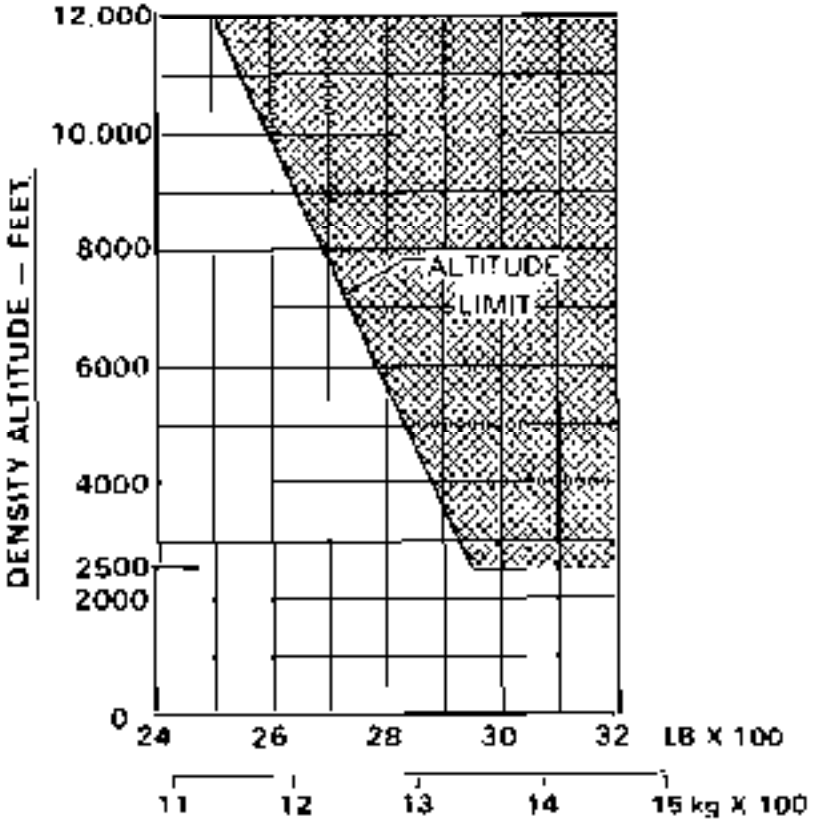


Figure 4-7. Altitude vs gross weight limit for height-velocity diagram

DENSITY ALTITUDE/ TEMPERATURE CONVERSION

A Density altitude/temperature conversion chart (figure 4-8) is provided to aid in calculating performance and limitations. Density altitude (H_D) is an expression of air density in terms of height above sea level. Hence, the less dense the air, the higher the H_D. For standard conditions of temperature and pressure, H_D is the same as pressure altitude (H_P). As temperature increases above standard temperature for any altitude, H_D will increase to values higher than H_P. Figure 4-8 expresses H_D as a function of H_P and temperature.

Also, the Density altitude/temperature conversion chart includes the inverse of the square root of the density ratio ($1/\sqrt{\sigma}$), which is used to calculate KTAS by the relation:

$KTAS = KCAS \times 1/\sqrt{\sigma}$

EXAMPLE

If ambient temperature is 0° C and H_P is 4000 feet, find H_D, $1/\sqrt{\sigma}$, and true airspeed for 100 KCAS

SOLUTION:

a. Enter bottom of chart at 0° C.
b. Move vertically upward to 4000 feet H_P line.
c. From this point, move horizontally to left, and read an H_D of 3150 feet. Then move horizontally right, and read $1/\sqrt{\sigma}$ = 1.048.
d. True airspeed = KCAS x $1/\sqrt{\sigma}$ = 100 x 1.048 = 104.8 KTAS.

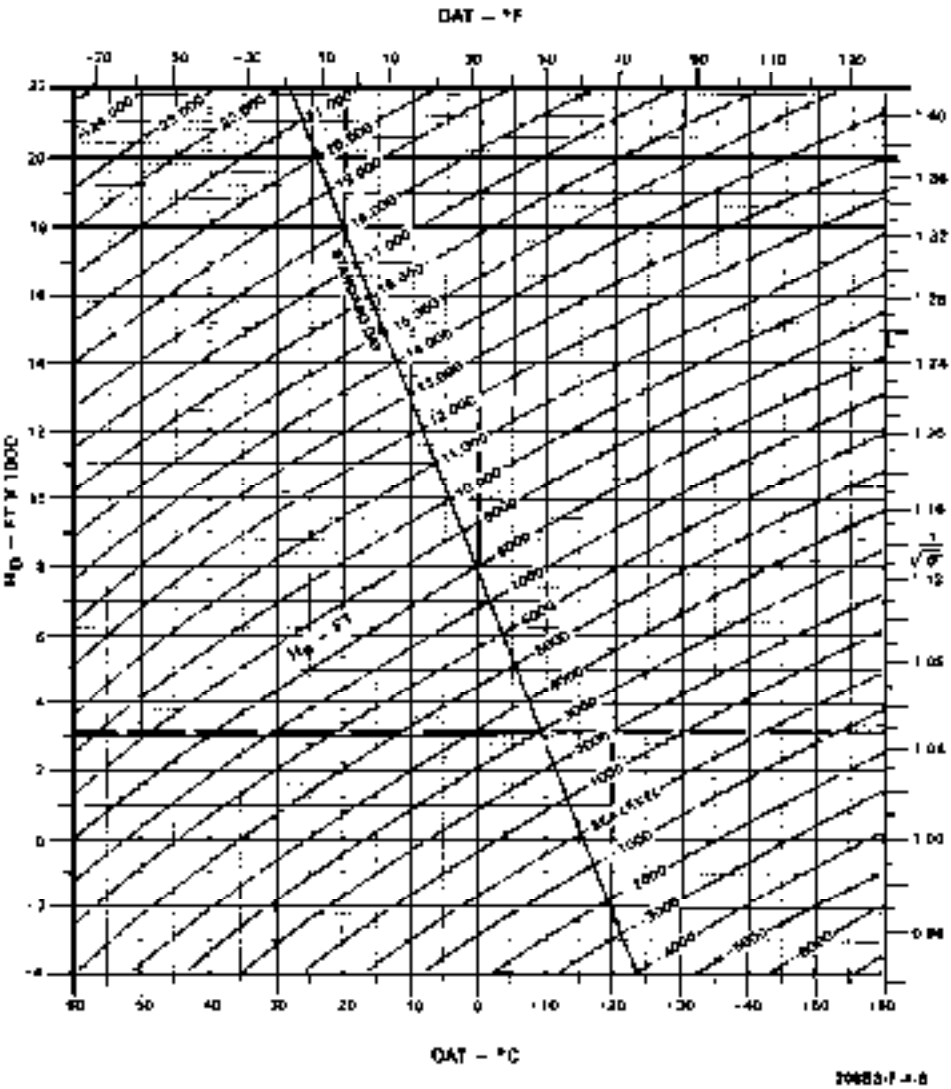


Figure 4-8. Density altitude and temperature conversion chart

Appendix A

OPTIONAL EQUIPMENT SUPPLEMENTS

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Appendix A

OPTIONAL EQUIPMENT SUPPLEMENTS

OPTIONAL EQUIPMENT

Bell Helicopter Textron's policy is one of continuous product improvement. Bell reserves the right to incorporate design changes, make additions to, and improve its products without imposing any obligation upon the company to furnish or install such changes, additions, improvements, etc., on its products previously manufactured.

NOTE

All data contained in the following supplements is applicable for 250-C20B or 250-C20J engine.

Table A-1. Flight Manual Supplements for Optional Equipment

NAME OF EQUIPMENT	KIT NUMBER	DATE	CURRENT REVISION
BHT-206B3-FMS-1 Cabin Heater	206-706-106	7-1-77	Reissued 2-13-92
BHT-206B3-FMS-2 Litter Kit(s)	206-706-122 and 206-706-324	7-1-77	Reissued 2-13-92
BHT-206B3-FMS-3 Hoist — External	206-706-124 or 206-706-126	7-1-77	Reissued 2-13-92
BHT-206B3-FMS-CAN-3 Canadian Addendum for Hoist — External	206-706-124 or 206-706-126	12-5-83	Cancelled
BHT-206B3-FMS-4 Loudhailer	206-899-415	7-1-77	Reissued 5-9-91
BHT-206B3-FMS-5 Dual Rotor Brake	206-706-034	7-1-77	Reissued 2-13-92
BHT-206B3-FMS-6 Night Flying	Incorporated in Flight Manual Section 1		
BHT-206B3-FMS-7 Stability and Control Augmentation System (SCAS)	206-706-305	7-1-77	Reissued 2-13-92

Table A-1. Flight Manual Supplements for Optional Equipment (Cont)

NAME OF EQUIPMENT	KIT NUMBER	DATE CERTIFIED	CURRENT REVISION
BHT-206B3-FMS-8 Float Landing Gear Standard Type (Fixed Float)	206-706-008	7-28-77	Reissued 2-13-92
BHT-206B3-FMS-9 Cargo Hook 1500 Lb (681 kg) Capacity	206-706-335	7-28-77	Released 9-13-95
BHT-206B3-FMS-CAN-9 Cargo Hook 1500 Lb (681 kg) Capacity	206-706-335	7-28-77	Cancelled
BHT-206B3-FMS-10 Deflector Kit – Engine Air Induction System	206-706-136	7-28-77	Released 6 OCT 00
BHT-206B3-FMS-11 High-Skid Gear with Emergency Flotation, which Incorporates Automatic Arming Feature	206-706-010	7-28-77	Released 2-13-92
BHT-206B3-FMS-12 Particle Separator — Engine Air Induction System	206-706-200 or 206-706-201	7-28-77	Revision 6 OCT 00
BHT-206B3-FMS-13 HI-Skid Landing Gear, Tubular Type	206-706-031	7-28-77	Reissued 2-13-92
BHT-206B3-FMS-14 Emergency Flotation on High-Skid Gear with Preflight System Test Feature	206-706-010	7-28-77	Reissued 2-13-92
BHT-206B3-FMS-15 Fixed Cargo Hook	206-706-104	7-28-77	Released 2-13-92
BHT-206B3-FMS-CAN-15 Fixed Cargo Hook	206-706-104	7-28-77	Cancelled
BHT-206B3-FMS-16 Environmental Control System (Cabin Temp Control)	206-706-344 or 206-706-402	7-28-77	Released 2-13-92
BHT-206B3-FMS-17 External Cargo Hook	206-706-101	7-28-77	Released 9-13-95

Table A-1. Flight Manual Supplements for Optional Equipment (Cont)

NAME OF EQUIPMENT	KIT NUMBER	DATE CERTIFIED	CURRENT REVISION
BHT-206B3-FMS-CAN-17 External Cargo Hook	206-706-101	7-28-77	9-13-95 Cancelled
BHT-206B3-FMS-18 Engine (Automatic) Re-ignition	206-706-038	8-11-77	Reissued 6 OCT 00
BHT-206B3-FMS-19 Auxiliary Battery 13 Amp Hour	206-706-330	9-16-77	Reissued 2-13-92
BHT-206B3-FMS-20 Bleed Air Heater	206-706-149 or 206-706-700	10-26-79	Reissued 2-13-92
BHT-206B3-FMS-21 Area Navigation System	206-705-006	11-14-80	Reissued 2-13-92
BHT-206B3-FMS-22 62 Inch Diameter Tail Rotor Blades	206-010-750	2-13-92	Original
BHT-206B3-FMS-23 thru BHT-206B3-FMS-25	Reserved		
BHT-206B3-FMS-26 Lightweight Emergency Flotation Landing Gear	206-706-211	5-7-77	Revision 1 6-9-93
BHT-206B3-FMS-27 Fuel Pressure Gage	Incorporated in Flight Manual Section 1	12-10-84	Cancelled
BHT-206B3-FMS-28 Blade Folding Kit	206-698-014	6-25-88	Reissued 2-13-92
BHT-206B3-CAA-FMS-29 United Kingdom Registered Helicopters		11-9-79	Reissued 1-3-92
BHT-206B3-FMS-30 Engine Fire Detection System	206-899-946	9-19-88	Reissued 2-13-92
BHT-206B3-FMS-CAN-31 Canadian Addendum to Supplements for External Hoist and Cargo Hook		2-13-92	Original
BHT-206B3-FMS-32 Pop-Out Floats with GEN Fail Caution Light	206-706-211	1-15-93	Revision 1 6-9-93

Table A-1. Flight Manual Supplements for Optional Equipment (Cont)

NAME OF EQUIPMENT	KIT NUMBER	DATE CERTIFIED	CURRENT REVISION
BHT-206B3-FMS-33 TH-67 Configuration Fuel System and Torque Indicator	206-075-676 206-075-739 206-075-740 206-350-504	10-6-93	Reissued 09-03-97
BHT-206B3-FMS-34			Not Printed
BHT-206B3-FMS-35	Reserved		
BHT-206B3-FMS-36 Hot Weather Operations Kit	206-706-514	7-7 96	Original
BHT-206B3-FMS-37	Reserved		

Bell JetRanger-III
MODEL 206B
250-C20B/C20J ENGINE

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT

CABIN HEATER
206-706-106

CERTIFIED
JULY 1, 1977

This supplement shall be attached to Model 206B3 Flight Manual when Cabin Heater kit has been installed.

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

Bell Helicopter TEXTRON
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ROTORCRAFT CERTIFICATION OFFICE
FEDERAL AVIATION ADMINISTRATION
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NOTE

Revised text is indicated by a black vertical line. Insert latest revision pages; dispose of superseded pages.

GENERAL INFORMATION

The Bell Cabin Heater Kit (205-706-106) consists of a combustion heater, blower, ducts, fuel system, electrical system, adjustable valves, and heater controls. The heater has a rated capacity of 30000 BTU output, and is designed to operate while the helicopter is on the ground or airborne.

Section 1

LIMITATIONS

CENTER OF GRAVITY LIMITS

Actual weight change shall be determined after kit is installed and ballast readjusted, if necessary, to return empty weight CG to within allowable limits.

Section 2

NORMAL PROCEDURES

HEATER PRE-START CHECK

FUEL BOOST AFT and FWD circuit breakers — In.

FUEL VALVE circuit breaker — In.

HTR PWR circuit breaker — In.

HTR CONT circuit breaker — In.

FIREWALL SHUT OFF RELEASE PULL knob — In.

BAT switch — On.

FUEL VALVE switch — ON.

HEATER FAIL light — Press-to-test.

HEATER START AND OPERATION

HEAT-VENT switch — HEAT. (Combustion air blowers should operate and HEATER FAIL light should illuminate).

NOTE

Heater ignition difficulty may be experienced at -20°F (-29°C) and below when using ASTM Type A or A-1 (JP-5) fuel.

HTR START button switch — Press and hold. (Ignition should occur within 5 seconds and not more than 10 seconds.)

NOTE

HEATER FAIL light should extinguish when heater ignites.

Regulate TEMP CONT knob for desired temperature.

Place HEAT-VENT switch in OFF position, to shut down heater

NOTE

With HEAT-VENT switch in OFF position, the combustion air blower will continue to operate, cooling and purging the heater, and cutting off automatically when the heater has cooled. If

accelerated cooling and purging is desired place switch in VENT position, then return switch to OFF.

Section 3

EMERGENCY AND MALFUNCTION PROCEDURES

HEATER MALFUNCTION

A malfunction in the heater or heater unit controls will cause the heater to become inoperative and result in illumination of the HEATER FAIL light. If the malfunction occurs, proceed as follows:

FIREWALL SHUT OFF RELEASE PULL knob - Out.

HEAT-VENT switch — OFF.

HTR PWR circuit breaker — Out.

HTR CONT circuit breaker — Out.

Section 4

PERFORMANCE

No change from basic manual.

Bell JetRanger-III
MODEL 206B
250-C20B/C20J ENGINE

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT

LITTER KITS
206-706-122 OR -324

CERTIFIED
JULY 1, 1977

This supplement shall be attached to Model 206B3 Flight Manual when Litter Kits kit has been installed.

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

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ROTORCRAFT CERTIFICATION OFFICE
FEDERAL AVIATION ADMINISTRATION
FT. WORTH, TX 76193-0170

NOTE

Revised text is indicated by a black vertical line. Insert latest revision pages; dispose of superseded pages.

GENERAL INFORMATION

The Bell Litter Kits (206-706-122 and 206-706-324) each consist of two litter assemblies mounted longitudinally in the left side of crew and passenger compartments, and all attachment fittings, supports and hardware as installed and secured by Service Instructions 206-7 and 206-65.

Section 1

LIMITATIONS

LITTER PATIENT

Patients shall be restrained by litter straps.

CENTER OF GRAVITY LIMITS

Actual weight change shall be determined after the kit is installed and ballast readjusted, if necessary, to return empty weight CG to within allowable limits.

Section 2

NORMAL PROCEDURES

No change from basic manual.

Section 3

EMERGENCY AND MALFUNCTION PROCEDURES

No change from basic manual.

Section 4

PERFORMANCE

No change from basic manual.

Section 1

MANUFACTURER'S DATA

WEIGHT AND BALANCE

LOADING DATA

SPECIAL INSTRUCTIONS

The litter location weight allowable and litter location weight required charts are "Mileage Type" charts. Correct use of the information presented will assure proper load distribution but will not prevent exceeding the 3200 pound (1451.5 kilograms) gross weight.

With more than 110 pounds (49.9 kilograms) in the baggage compartment, the maximum 250 pound (113.4 kilograms) litter location weight for each location is allowable.

"Litter location weight" includes litter, patient, belts, splints, etc., supported by the resting points of the litter.

The litter provisions kit is included in weight empty and the helicopter should have a permissible weight empty center of gravity with this kit installed.

NOTE

Weight required to be centered in litter area at station 84 (approximately 11 inches (27.9 centimeters) aft of crew compartment bulkhead).

CAUTION

DEPENDING ON HELICOPTER WEIGHT AND FUEL LOADING, THE FOLLOWING COMBINATIONS CAN EXCEED 3200 POUNDS (1451.5 KILOGRAMS) GROSS WEIGHT WHICH IS NOT PERMISSIBLE

LOADING CHARTS

EXAMPLE NO. 1

A 200 pound (90.7 kilograms) pilot and a 150 pound (68.0 kilograms) doctor have 50 pounds (22.7 kilograms) in the baggage compartment. What is the maximum litter load allowable?

Using the litter location weight allowable chart for 50 pounds (22.7 kilograms) baggage compartment weight, the allowable weight at the intersection of the 200 pound (90.7 kilograms) pilot weight column and the 150 pound (68.0 kilograms) attendant line is 495 pounds (224.5 kilograms).

LITTER LOCATION WEIGHT ALLOWABLE CHARTS

Table 1-1. "0" LBS. BAGGAGE COMPARTMENT WEIGHT

LITTER ATTENDANT WEIGHT (LBS) (AFT R.H. SEAT)	PILOT WEIGHT (LBS)			
	170	200	225	250
0	475	420	370	325
150	460	405	360	310
200	450	400	355	305
250	485	395	350	300

Table 1-2. 50 LBS. BAGGAGE COMPARTMENT WEIGHT

LITTER ATTENDANT WEIGHT (LBS) (AFT R.H. SEAT)	PILOT WEIGHT (LBS)			
	170	200	225	250
0	500	500	465	415
150	500	495	450	405
200	500	490	445	400
250	500	485	440	395

Table 1-3. 100 LBS. BAGGAGE COMPARTMENT WEIGHT

LITTER ATTENDANT WEIGHT (LBS) (AFT R.H. SEAT)	PILOT WEIGHT (LBS)			
	170	200	225	250
0	500	500	500	500
150	500	500	500	495
200	500	500	500	490
250	500	500	500	485

Table 1-4. "0" Kg BAGGAGE COMPARTMENT WEIGHT

LITTER ATTENDANT WEIGHT (Kg) (AFT R.H. SEAT)	PILOT WEIGHT (Kg)			
	77.1	90.7	102.1	113.4
0	215.5	190.5	167.6	147.4
68.0	208.7	183.7	160.9	140.6
90.7	208.7	181.4	161.0	138.4
113.4	205.4	179.2	158.8	136.1

Table 1-5. 22.7 Kg BAGGAGE COMPARTMENT WEIGHT

LITTER ATTENDANT WEIGHT (Kg) (AFT R.H. SEAT)	PILOT WEIGHT (Kg)			
	77.1	90.7	102.1	113.4
0	226.8	226.8	210.9	188.2
68.0	226.8	224.5	204.1	183.7
90.7	226.8	222.3	201.9	181.4
113.4	226.8	220.0	199.5	179.2

Table 1-6. 45.4 Kg BAGGAGE COMPARTMENT WEIGHT

LITTER ATTENDANT WEIGHT (Kg) (AFT R.H. SEAT)	PILOT WEIGHT (Kg)			
	77.1	90.7	102.1	113.4
0	226.8	226.8	226.8	226.8
68.0	226.8	226.8	226.8	224.5
90.7	226.8	226.8	226.8	222.3
113.4	226.8	226.8	226.8	220.0

EXAMPLE NO. 2

A 170 pound (77.1 kilograms) pilot has 150 pounds (68.0 kilograms) in the baggage compartment.

1. How much litter location weight is required with the back seat empty?
2. How much litter location weight is required with a 200 pound (90.7 kilograms) passenger in the back seat?

Using the litter location weight required chart for 150 pounds (68.0 kilograms) in the baggage compartment, the required weight is 265 pounds (115.7 kilograms) for each.

LITTER LOCATION WEIGHT REQUIRED CHARTS

Table 1-7. 50 LBS. BAGGAGE COMPARTMENT WEIGHT

LITTER ATTENDANT WEIGHT (LBS) (AFT R.H. SEAT)	PILOT WEIGHT (LBS)			
	170	200	225	250
0	65	0	0	0
150	50	0	0	0
200	45	0	0	0
250	45	0	0	0

Table 1-8. 150 LBS. BAGGAGE COMPARTMENT WEIGHT

LITTER ATTENDANT WEIGHT (LBS) (AFT R.H. SEAT)	PILOT WEIGHT (LBS)			
	170	200	225	250
0	265	200	150	100
150	255	200	150	100
200	255	200	150	100
250	255	200	150	100

Table 1-9. 250 LBS. BAGGAGE COMPARTMENT WEIGHT

LITTER ATTENDANT WEIGHT (LBS) (AFT R.H. SEAT)	PILOT WEIGHT (LBS)			
	170	200	225	250
0	475	420	370	320
150	500	440	390	330
200	500	440	390	340
250	500	450	400	350

Table 1-10. 22.7 Kg BAGGAGE COMPARTMENT WEIGHT

LITTER ATTENDANT WEIGHT (Kg) (AFT R.H. SEAT)	PILOT WEIGHT (Kg)			
	77.1	90.7	102.1	113.4
0	29.5	0	0	0
68.0	22.7	0	0	0
90.7	20.4	0	0	0
113.4	20.4	0	0	0

Table 1-11. 68.0 Kg BAGGAGE COMPARTMENT WEIGHT

LITTER ATTENDANT WEIGHT (Kg) (AFT R.H. SEAT)	PILOT WEIGHT (Kg)			
	77.1	90.7	102.1	113.4
0	115.7	90.7	68.0	45.4
68.0	115.7	90.7	68.0	45.4
90.7	115.7	90.7	68.0	45.4
113.4	115.7	90.7	68.0	45.4

Table 1-12. 113.4 Kg BAGGAGE COMPARTMENT WEIGHT

LITTER ATTENDANT WEIGHT (Kg) (AFT R.H. SEAT)	PILOT WEIGHT (Kg)			
	77.1	90.7	102.1	113.4
0	215.5	190.5	167.8	145.1
68.0	226.8	199.6	172.4	149.7
90.7	226.8	199.6	176.9	154.2
113.4	226.8	204.1	181.4	158.8

Bell JetRanger-III
MODEL 206B
250-C20B/C20J ENGINE

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT

HOIST — EXTERNAL
206-706-124 OR -126

CERTIFIED
JULY 1, 1977

This supplement shall be attached to Model 206B3 Flight Manual when Hoist — External kit has been installed.

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

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NOTE

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GENERAL INFORMATION

The Bell Hoist Kit (206-706-124 or 206-706-126) consists of a hoist motor and winch assembly, mounting frame, master control panel, crew members pendant control, electrical components, wiring, and all the hardware necessary to complete the installation. The winch unit of the 206-706-124 Hoist Kit contains 100 feet (30.5 meters) and the winch unit of the 206-706-126 Hoist Kit contains 110 feet (33.5 meters) of useable cable. Each winch unit when actuated has a rate of cable travel of 50 feet (15.2 meters) per minute. The control panel is edge lighted and contains a HOIST POWER switch, for pilot or crew member hoist operation, and a CABLE CUT switch for use in the event of an emergency. The control panel of the 206-706-124 Hoist Kit also contains an OVERHEAT WARNING light which when illuminated indicates an overtemp condition of the hoist motor. Installation of the hoist will allow the pilot or crew member to deliver or pick up cargo from areas that are not suitable for landing the helicopter.

NOTE

Cable Guard Kit (206-706-214) shall be installed if hoist is to be used with Lightweight Emergency Float Kit (206-706-211).

Section 1

LIMITATIONS

TYPE OF OPERATION

Hoist operations shall be conducted under the appropriate operating rules for external loads.

Passenger operations with hoist installed are approved if the hoist is not used and the hoist electrical system is deactivated.

Flight operations requiring use of the hoist ARE PROHIBITED and the system SHALL BE DEACTIVATED when Float Landing Gear, Standard Type (Fixed) 206-705-005 is installed. Flight operations requiring use of the hoist are approved with Lightweight Emergency Floats (206-705-211) when Cable Guard Kit (206-705-214) is installed.

Simultaneous use of the hoist and the external cargo hook is PROHIBITED.

AIRSPEED LIMITATIONS

The object being hoisted shall be completely in the cabin before forward flight is established.

CENTER OF GRAVITY LIMITS

Actual weight change shall be determined after kit is installed and ballast readjusted, if necessary, to return empty weight CG within allowable limits.

LOADING LIMITATIONS

Hoist loading — Maximum 300 pounds (136 kilograms). (Refer to Hoist Loading Nomograph.)

Section 2

NORMAL PROCEDURES

EXTERIOR CHECK

FUSELAGE CABIN — LEFT SIDE

Hoist — Condition, security, wiring connected. Ensure hook firmly seated against bumper pad.

Cable Guard — Condition and security (if installed).

All cabin door Removed, if hoist is to be used.

INTERIOR CHECK

Crew members hoist control — installed, stowed, wiring connected.

BEFORE TAKEOFF

NOTE

Perform hoist power check if hoist operations are anticipated.

HOIST POWER CHECK

Prior to takeoff perform hoist operation functional check as follows:

HOIST POWER and CABLE CUT circuit breakers — in.

HOIST POWER switch PILOT.

HOIST OVERHEAT WARNING light — PRESS TO TEST (light ON) then release (206-706-124 Hoist Kit ONLY).

HOIST switch, pilots — Press switch ON (down) to lower hook, approximately two feet, then UP to raise hook.

HOIST POWER switch — CREW.

HOIST switch, crewmember — Press switch ON (down) to lower hook approximately two feet, then UP to raise hook.

HOIST POWER switch — OFF.

Pilot or crewmember — Ensure hook firmly seated against bumper pad.

HOIST OPERATING PROCEDURE

HOIST POWER switch — PILOT or CREW position.

Establish zero groundspeed over pickup location.

HOIST switch — DN (Down) to lower hook.

NOTE

Allow a 30 second rest period between each ½ cycle (i.e. full up or full down) of operation. Lift hoist load slightly above contact surface, by application of collective pitch, to obtain a sense of control feel.

HOIST switch — UP to raise hoist load.

CAUTION

TO PREVENT OVERHEATING AND DAMAGE TO THE HOIST MOTOR ONLY THREE (3) CONSECUTIVE CYCLES (I.E. FULL UP AND FULL DOWN) ARE PERMITTED. AFTER THREE (3) FULL CYCLES OF OPERATION, ALLOW A 40 MINUTE PERIOD OF COOLING. OVERHEATING OF THE 206-706-124 WINCH MOTOR WILL BE INDICATED BY ILLUMINATION OF THE OVERHEAT WARNING LIGHT.

HOIST POWER switch OFF after completing hoist operation.

Pilot or crewmember — Ensure hook firmly seated against bumper pad.

AFTER EXITING HELICOPTER

POST FLIGHT CHECK

Hoist — Condition and security. Ensure hook firmly seated against bumper pad.

NOTE

After last flight of the day, if the hoist has been used, maintenance action is required.

Section 3

EMERGENCY AND MALFUNCTION PROCEDURES

In the event of an emergency, LIFT CABLE CUT switch guard and actuate SWITCH to drop the hoist load.

Section 4

PERFORMANCE

No change from basic manual.

Section 1

MANUFACTURER'S DATA

WEIGHT AND BALANCE

Refer to Hoist Loading Nomograph (figure 1-1) to determine allowable hoist load.

HOIST LOADING NOMOGRAPH

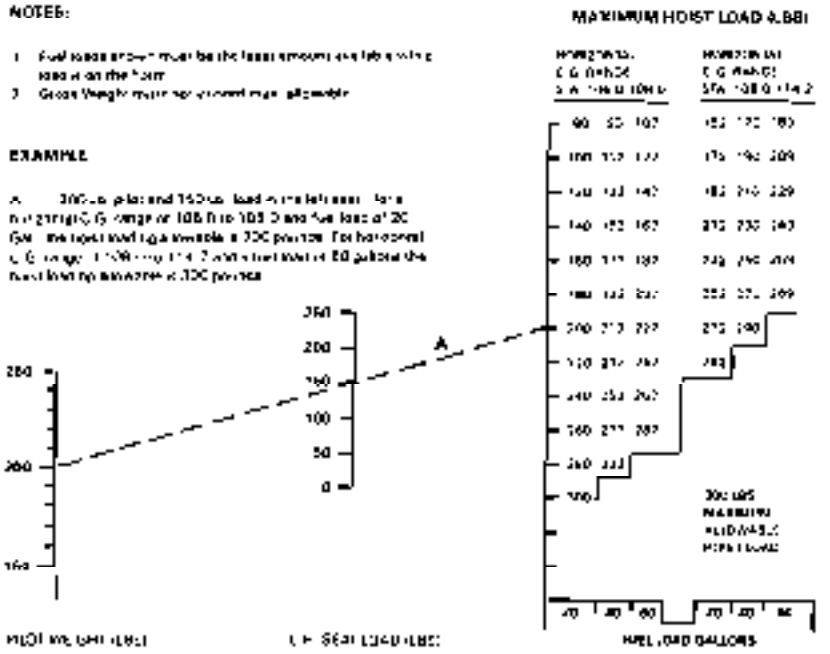

Figure 1-1. Hoist loading nomograph (Sheet 1 of 2)

HOIST LOADING NOMOGRAPH
METRIC

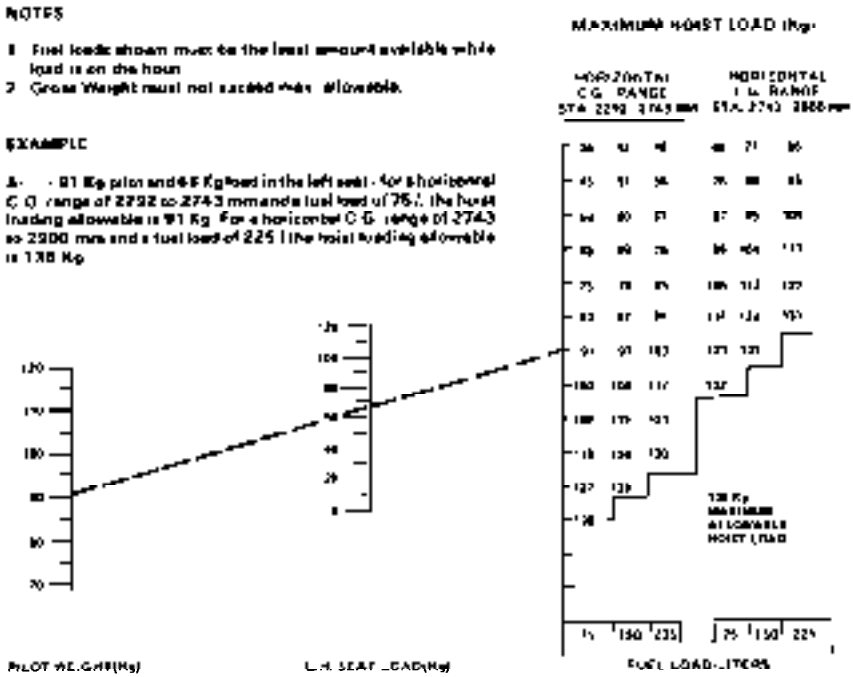

Figure 1-1. Hoist loading nomograph (Sheet 2 of 2)

Bell Model 206B Jet Ranger-III

FLIGHT MANUAL
SUPPLEMENT FOR

206-899-415

LOUDHAILER

FAA APPROVED
JULY 1, 1977

This supplement shall be attached to the Model 206B Jet Ranger III Flight Manual when the 206-899-415 Loudhailer has been installed.

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

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FEDERAL AVIATION ADMINISTRATION
FT. WORTH, TX 76193-0170

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Insert latest revision pages. Dispose of superseded pages.

INTRODUCTION

The LOUDHAILER when installed in accordance with Bell Drawing No. 206-999-415 or STC No. SH 1583SW, will permit the helicopter crew to direct ground personnel while remaining airborne. The kit contains two speakers, amplifier, power light, switches, microphone and the necessary hardware to complete the installation.

Section 1

LIMITATIONS

TYPE OF OPERATION

The helicopter shall be equipped with one of the following landing gear configurations: High Skid Landing Gear (206-706-010), High Skid Gear With Emergency Flotation (206-706-010), Light weight Emergency Flotation Landing Gear (206-706-211), or Hi-Skid Landing Gear-Tubular Type (206-706-031) when the Loudhailer equipment is installed.

The LOUDHAILER is approved for installation in the helicopter for use in directing ground personnel while the helicopter remains airborne. The LOUDHAILER is also approved for installation in conjunction with the NIGHT SUN SEARCHLIGHT.

The LOUDHAILER configuration of the helicopter permits its use as a five place aircraft limited to DAY or NIGHT VFR noniclng conditions.

AIRSPEED LIMITATIONS

3000 POUNDS (1360.8 KILOGRAMS) WEIGHT AND BELOW

Vne 140 MPH (122 knots) sea level to 6000 feet. Decrease Vne 4.0 MPH (3.5 knots) per 1000 feet above 6000 feet. Maximum altitude 20,000 feet.

ABOVE 3000 POUNDS (1360.8 KILOGRAMS) GROSS WEIGHT

No change from basic helicopter limitations for these gross weights.

CENTER OF GRAVITY LIMITS

Actual weight change shall be determined after equipment is installed and ballast readjusted, if necessary, to return empty weight CG to within allowable limits.

ELECTRICAL LOADING LIMITATIONS

All electrical equipment being operated shall not result in a loadmeter reading in excess of 0.7 electrical loading.

PLACARD

With LOUDHAILER SPEAKERS INSTALLED the Vne is 140 MPH (122 knots).

Section 2

NORMAL PROCEDURES

GROUND FUNCTIONAL CHECK

AMPLIFIER CHECK

BAT switch — On.

PA SYST circuit breaker — In.

Power light — Press. light illuminated; release. light extinguished.

Power switch — ON and power indicator light On.

Power switch — OFF/REMOTE position.

Gain control switch — ROTATE to 4-REM position.

REMOTE CONTROL FUNCTIONAL CHECK

Gain control switch — OFF position.

Power switch — ON, indicator light illuminated.

Microphone — Speak into mike and slowly rotate gain control until output meter indicator is in approximately mid-position. (This will be the normal gain setting for in-flight use.)

Power switch — OFF.

IN-FLIGHT LOUDHAILER OPERATION

Remote control power switch - ON, light illuminated.

Microphone — Speak into mike (adjust gain if required).

Remote control power switch — OFF to deactivate system

Section 3

EMERGENCY AND MALFUNCTION PROCEDURES

No Change

Section 4

PERFORMANCE

No Change

Bell JetRanger-III
MODEL 206B
250-C20B/C20J ENGINE

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT

DUAL ROTOR BRAKE SYSTEM

206-706-034

CERTIFIED
JULY 1,1977

This supplement shall be attached to Model 206B3 Flight Manual when Dual Rotor Brake System kit has been installed.

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

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NOTE

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GENERAL INFORMATION

The Bell Dual Rotor Brake System (206-706-034) consists of a brake disc, dual brake assembly, master cylinder, hose assemblies, tube assemblies, operating handle, and the required fittings and hardware to complete the installation. The rotor brake system when installed will permit rapid deceleration of the rotor after engine shutdown

Section 1

LIMITATIONS

CENTER OF GRAVITY LIMITS

Actual weight change shall be determined after kit is installed and ballast readjusted, if necessary, to return empty weight CG to within allowable limits.

PLACARD

ENGAGE ROTOR BRAKE BETWEEN 38% ± 30% ROTOR RPM.

Section 2

NORMAL PROCEDURES

ENGINE PRE-START CHECK

Rotor brake handle — Up and Latched.

ENGINE SHUTDOWN PROCEDURE

CAUTION

AVOID RAPID ENGAGEMENT OF ROTOR BRAKE IF HELICOPTER IS ON ICE OR OTHER SLIPPERY OR LOOSE SURFACE TO PREVENT ROTATION OF HELICOPTER.

Apply rotor brake between 38% and 30% rotor RPM.

Section 3

EMERGENCY AND MALFUNCTION PROCEDURES

No change from basic manual.

Section 4

PERFORMANCE

No change from basic manual.

BHT-206B3-FMS-7

Bell JetRanger-III
MODEL 206B
250-C20B/C20J ENGINE

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT

STABILITY CONTROL AUGMENTATION SYSTEM (SCAS)

206-706-305

CERTIFIED
JULY 1, 1977

This supplement shall be attached to Model 206B3 Flight Manual when Stability Control Augmentation System (SCAS) kit has been installed.

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

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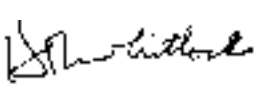

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GENERAL INFORMATION

The Bell Stability and Control System Kit (206-706-305) consists of a sensor-amplifier unit, servo cylinders, transducer assembly, control head and panel, electrical cables, circuit breakers, switches, and the required hardware.

Section 1

LIMITATIONS

CENTER OF GRAVITY LIMITS

Actual weight change shall be determined after kit is installed and ballast readjusted, if necessary, to return empty weight CG to within allowable limits.

Section 2

NORMAL PROCEDURES

BEFORE TAKEOFF

SAS INV circuit breaker — IN.

SAS CONT circuit breaker — IN.

SAS PWR switch — Push in (Amber light illuminates).

Warm up until Red light extinguishes.

SAS CYCLIC switch — Push in (Green light illuminates).

SAS YAW switch — Push in (Green light illuminates).

SAS REL switch (cyclic stick) — Press and Release. (CYCLIC and YAW lights should extinguish — NO GO lights above cyclic and yaw switches should be steady or flashing Red.)

SAS CYCLIC and YAW switches — Push in (Green lights illuminate).

IN-FLIGHT OPERATION

SAS can be manually overridden or disengaged during any phase of flight.

To disengage SAS during flight, depress SAS REL switch.

To reactivate SAS during flight, push SAS CYCLIC and YAW switches in.

NOTE

If system is to be disengaged for an extended period during flight, push SAS PWR switch in.

ENGINE SHUTDOWN

Place all SAS switches in the Off position prior to engine shutdown.

Section 3

EMERGENCY AND MALFUNCTION PROCEDURES

ERRATIC, PITCH, ROLL OR YAW OSCILLATIONS

SAS REL switch — Press. If condition still exists, land as soon as practical.

HYDRAULIC ACTUATOR FAILURE (LOST MOTION IN CONTROL)

SAS REL switch — Press. Land as soon as practical (touch down with slow forward speed).

Section 4

PERFORMANCE

No change from basic manual.

Bell JetRanger-III
MODEL 206B
250-C20B/C20J ENGINE

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT

FLOAT LANDING GEAR STANDARD TYPE (FIXED FLOATS)

206-706-008

CERTIFIED
JULY 28, 1977

This supplement shall be attached to Model 206B3 Flight Manual when Float Landing Gear Standard Type (Fixed Floats) kit has been installed.

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

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NOTE

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GENERAL INFORMATION

The Bell Float Landing Gear Kit (206-706-008) consists of two streamlined multicell inflatable floats, float mounting tubes, mount crosstubes, adapters for relocating the position lights, attachment fittings, and all hardware required to equip the helicopter for water operation. A triangular plate is also included in the kit to mount on the tail skid for controllability purposes. Relocation of the position lights to the end of the float forward crosstube will permit the helicopter to be operated under day or night VFR flight conditions.

Section 1

LIMITATIONS

TYPE OF OPERATION

This helicopter, with standard float landing gear installed, is certified for water operations under day or night VFR nonicing conditions.

INTENTIONAL POWER-OFF LANDINGS ON LAND ARE PROHIBITED.

Flight operations requiring use of the external hoist are PROHIBITED and the system SHALL BE DEACTIVATED.

WEIGHT LIMITATIONS

Maximum approved gross weight 3000 pounds (1360.8 kilograms).

AIRSPEED LIMITATIONS

Vne, 120 MPH (104 knots) sea level to 3000 feet. Above 3000 feet altitude, decrease Vne 5.0 MPH (4.4 knots) per 1000 feet.

Vne 90 MPH (78 knots) with standard floats and left forward door only removed.

ALTITUDE LIMITATIONS

Maximum operating — 15,000 feet pressure altitude.

CENTER OF GRAVITY LIMITS

Actual weight change shall be determined after kit is installed and ballast readjusted, if necessary, to return empty weight CG within allowable limits.

Section 2

NORMAL PROCEDURES

FLOAT PRESSURE VARIATION VERSUS TEMPERATURE AND/ OR ALTITUDE CHANGE

Refer to Float Inflation Chart (figure 2-1).

Temperature changes, when moving from warm hangar to cold outside or vice versa, result in changes in inflation pressure.

Pressure changes, when moving from one altitude to another, also result in changes in inflation pressure.

FLOAT INFLATION

Do not exceed an 8000 foot increase in altitude or 6000 foot decrease in altitude from departure point. If a greater altitude change is desired, establish a new departure altitude/temperature enroute and readjust float pressure accordingly.

The maximum inflation pressure is 4.5 psig. For minimum inflation pressure refer to Float Inflation Chart (figure 2-1).

CAUTION

DO NOT OVER INFLATE.

NOTE

If the combination of pressure altitude change and/or ambient temperature extremes is not shown on the Float Inflation Chart, establish a new departure enroute, and readjust the float pressure as required.
Extremely cold weather may necessitate a cold soak outside the hangar prior to adjusting float pressure.

ENGINE STARTING AND RUNUP

CAUTION

ANCHOR OR MOOR HELICOPTER PRIOR TO STARTING THE ENGINE TO PREVENT ROTATING, DUE TO TORQUE, BEFORE TAIL ROTOR REACHES EFFECTIVE RPM.

TAXIING

Taxi at slow speed to prevent float bows from nosing under.

NOTE

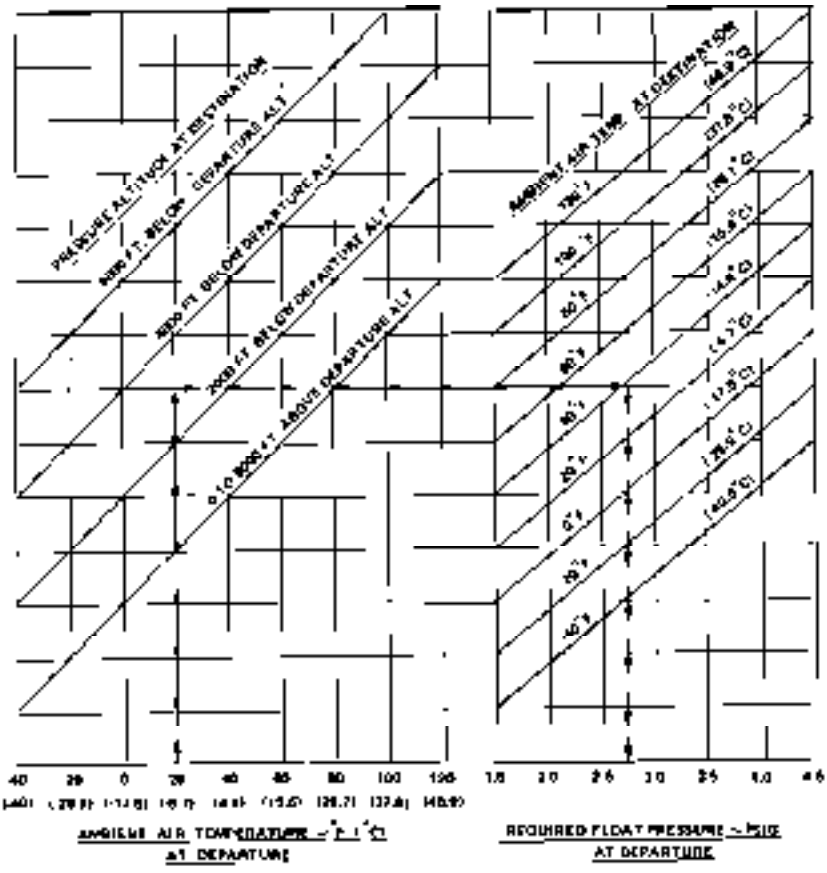
Safe operation can be accomplished in waves up to 18 inches (45.7 centimeters) (trough to crest) and 360° turns can be executed in winds up to 20 MPH (17 knots).

IN-FLIGHT OPERATIONS

CAUTION

OPERATION OVER LAND IS NOT RECOMMENDED.

FLOAT INFLATION CHART



EXAMPLE: For flight to 3000 feet below departure altitude, with departure ambient temperature of 20°F (−6.7°C) and the destination ambient temperature of 38°F (3.3°C), inflate floats to 2.75 psig to ensure 1.8 psig at destination.

Figure 2-1. Float inflation chart

Section 3

EMERGENCY AND MALFUNCTION PROCEDURES

ENGINE FAILURE

WARNING

OVER LAND EMERGENCY POWER-OFF LANDINGS WILL REQUIRE TOUCHDOWN AT ZERO (0) GROUND SPEED

Maximum airspeed for steady state autorotation — 100 mph (87 knots).

ENGINE FAILURE, OVER WATER — NIGHT

Establish an autorotative glide at 60 MPH (52 knots) IAS, for minimum rate of descent, and turn on landing light.

At 100 feet execute a moderate cyclic flare to reduce airspeed to approximately 30 MPH (26 knots).

Adjust collective and cyclic pitch sufficiently to perform a low speed cushioned touchdown at a slight nose-up attitude.

NOTE

Night autorotative touchdown landings to water have been demonstrated at airspeed to 35 MPH (30 knots).

Section 4

PERFORMANCE

Refer to Particle Separator Supplement when the particle separator is installed.

AIRSPEED INSTALLATION CORRECTION

Table 4-1. FLOAT LANDING GEAR

INDICATED A/S MPH	CALIBRATED A/S MPH	INDICATED A/S (KNOTS)	CALIBRATED A/S (KNOTS)
40	42	(35)	(36.5)
45	46	(39)	(40)
50	50.5	(43.5)	(44)
60	60	(52)	(52)
70	59	(51)	(50)
80	78	(69.5)	(68)
90	88	(78)	(76.5)
100	98	(87)	(85)
110	107.5	(95.5)	(93.5)
123	120	(107)	(104)

NOTE

Indicated Airspeed (IAS) corrected for position and instrument error equals Calibrated Airspeed (CAS). Determine Calibrated Airspeed (CAS) from the above table.

RATE OF CLIMB — DOORS ON

Reduce rate of climb data from basic Flight Manual by 400 feet per minute when operating with standard float landing gear.

RATE OF CLIMB — DOOR(S) OFF

Reduce rate of climb chart data from basic Flight Manual by A RATE OF CLIMB value found in figure 4-1, when operating with standard float landing gear and any combination of cabin doors removed.

HOVER CEILING CHARTS

NOTE

The Hover Ceiling charts presented in this manual reflect performance with the 65 inch diameter tail rotor (P/N 206-016-201) installed. For performance with the 62 inch diameter tail rotor (P/N 206-010-750), refer to BHT-206B3-FMS-22.

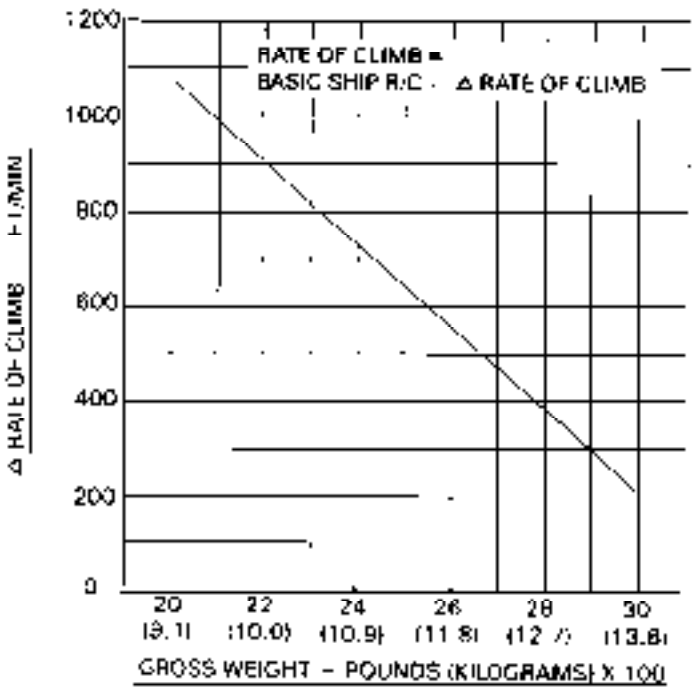


Figure 4-1. Gross Weight — Pounds (Kilograms) x 100

HOVER CEILING IN GROUND EFFECT

TAKEOFF POWER 0° TO 46°C

GENERATOR 22.3 AMPS — ANTI-ICE OFF

FLOAT HEIGHT 3.0 FT (0.9 METERS) — N2 ENGINE RPM 100%

WITH ANTI-ICE ON GROSS WEIGHT IS 200 LBS (90.7 Kg) LESS

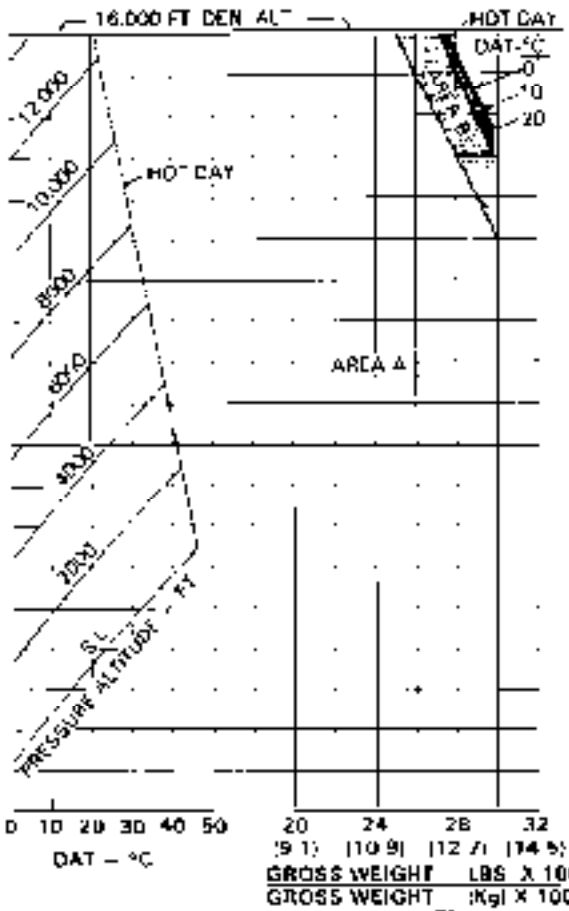


Figure 4-2. Hover ceiling in ground effect (Sheet 1 of 2)

HOVER CEILING IN GROUND EFFECT

TAKEOFF POWER 0° TO – 40°C

GENERATOR 22 3 AMPS
FLOAT HEIGHT 3 0 FT (0 9 METERS)
WITH ANTI-ICE ON GROSS WEIGHT 16 200 LBS (90 7 Kg) LESS

ANTI-ICE OFF
N2 ENGINE RPM 100%

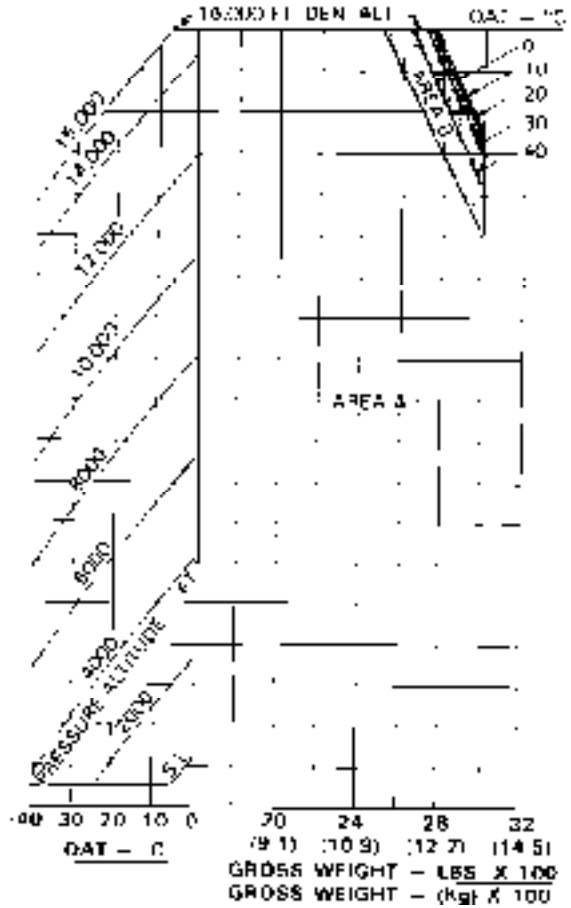


Figure 4-2. Hover ceiling in ground effect (Sheet 2 of 2)

Bell JetRanger-III
MODEL 206B
250-C20B/C20J ENGINE

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT
CARGO HOOK 1500 POUND (681 KILOGRAMS) CAPACITY
206-706-335

CERTIFIED
JULY 26, 1977

This supplement shall be attached to Model 206B3 Flight Manual when cargo hook has been installed.

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

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GENERAL INFORMATION

Bell Cargo Hook Kit (206-706-335) consists of a frame and hook assembly, electrical and manual(emergency) release system, and attaching hardware. A bungee shock cord is attached to the cargo hook which provides automatic stowing when hook is not in use.

NOTE

A swivel link is not supplied with Cargo Hook Kit; however, it is recommended that a link be installed between suspension cable and cargo hook.

Cargo hook is located at station 108.5 IN (2755.9 mm).

Section 1

LIMITATIONS

TYPE OF OPERATION

Operations of the helicopter with no load on the external cargo hook is authorized under the standard airworthiness certificate without removing the unit from the helicopter

External cargo operations shall be conducted in accordance with appropriate operating rules for external loads under VFR conditions.

WEIGHT LIMITATIONS

Maximum approved gross weight is 3350 pounds (1519.5 kilograms) including external load.

Maximum external cargo load is 1500 pounds (681 kilograms).

AIRSPEED LIMITATIONS

Vne is 91 MPH (79 knots) for gross weights above 3000 pounds (1360.8 kilograms).

CAUTION

THE AIRSPEED WITH EXTERNAL CARGO IS LIMITED BY CONTROLLABILITY. CAUTION SHOULD BE EXERCISED WHEN CARRYING EXTERNAL CARGO, AS THE HANDLING CHARACTERISTICS MAY BE AFFECTED DUE TO THE SIZE, WEIGHT, AND SHAPE OF THE CARGO LOAD.

CENTER OF GRAVITY LIMITS

Actual weight change shall be determined after kit is installed and ballast readjusted, if necessary, to return empty weight CG within allowable limits. Refer to External Load Center of Gravity vs Gross Weight chart (figure 1-1).

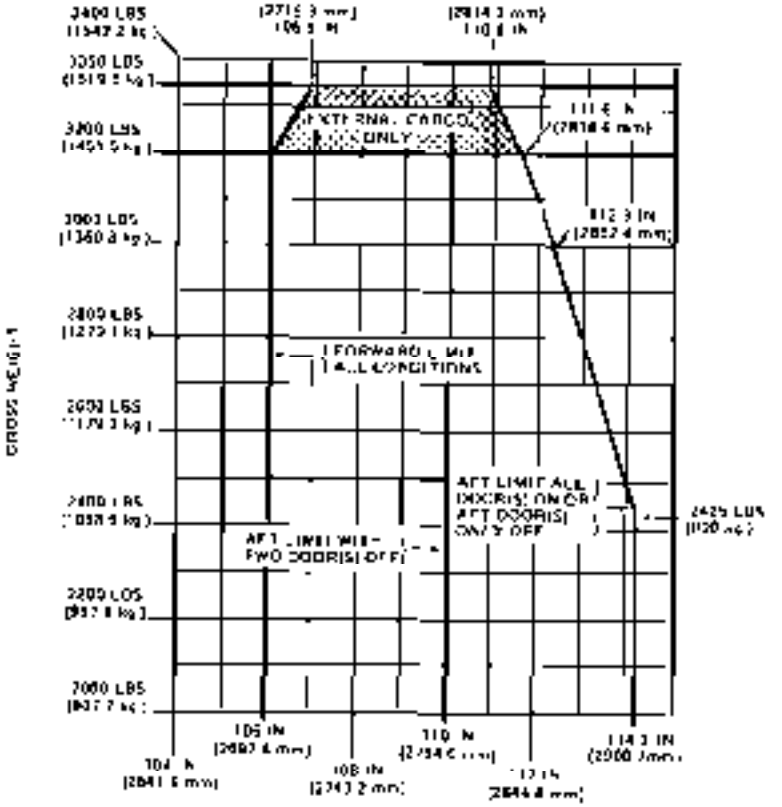


Figure 1-1. External load center of gravity vs gross weight

(LOCATED ON CYCLIC STICK.)

(LOCATED ON T HANDLE OF MANUAL RELEASE CABLE.)

LOAD LIMIT 1500 LB

(LOCATED ON UNDER SIDE OF HELICOPTER ON HOOK FRAME ASSEMBLY.)

Figure 1-2. Placards and markings

Section 2

NORMAL PROCEDURES

GROUND CREW INSTRUCTIONS

Instruct ground crewmember to discharge helicopter static electricity before attaching cargo by touching the airframe with a ground wire, or if a metal sling is used, the hook-up ring can be struck against the cargo hook. If contact has been lost after initial grounding, the helicopter should be electrically regrounded and, if possible, contact maintained until hook-up is completed.

Instruct ground personnel to check primary load ring and secondary load ring for condition and proper size (Table 2-1). Check for proper rigging.

WARNING

USE OF INAPPROPRIATELY SIZED LOAD RINGS MAY RESULT IN LOAD HANG-UP WHEN LOAD RING IS TOO SMALL OR INADVERTENT LOAD RELEASE IF LOAD RING IS TOO LARGE.

Check that only one primary ring is captured in the load beam and only one secondary ring with correct cross-section dimension is captured in the primary ring. Additional rings, slings, or shackles shall be attached to the secondary load ring. See figure 2-1.

Table 2-1. RING SIZE — CARGO HOOK P/N SP-4232-5

PRIMARY RING INSIDE DIAMETER	PRIMARY RING CROSS SECTION	MAXIMUM CROSS SECTION OF SECONDARY RING
2.38 to 2.50 in.	1.0 in.	0.438 in.
(60.452 to 63.50 mm.)	(25.4 mm.)	(11.12 mm.)
2.50 to 2.75 in.	1.0 in.	0.625 in.
(63.50 to 69.85 mm.)	(25.4 mm.)	(15.88 mm.)

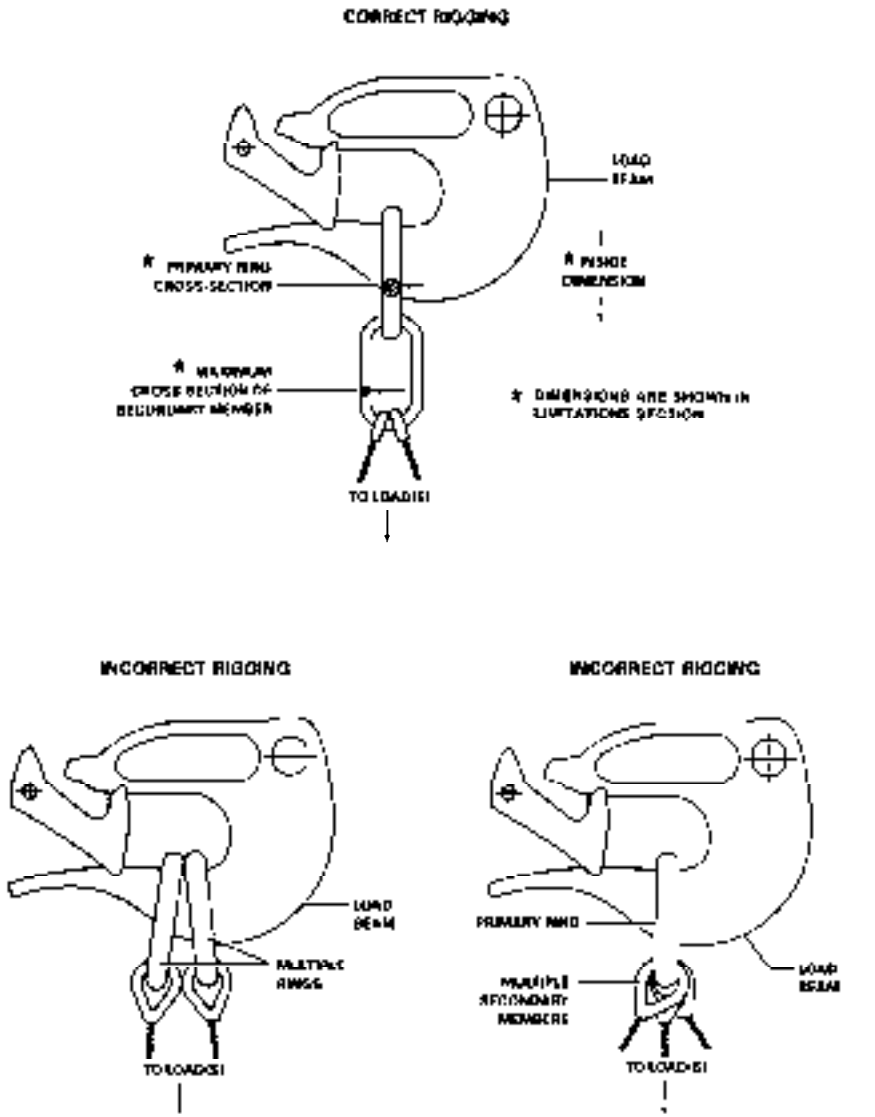


Figure 2-1. External load rigging

EXTERIOR CHECK

Cargo suspension assembly — Condition and security.

Cargo sling — Condition, proper length.

ENGINE PRESTART CHECK

CARGO HOOK circuit breaker — In.

BAT switch — On.

Cyclic CARGO RELEASE switch — Press and hold; pull down on cargo hook; hook should open. Release switch and hook should close and lock.

BEFORE TAKEOFF

Cargo — Secured; sling attached to cargo.

Ground crewmember — Positioned as required

TAKEOFF

WARNING

AVOID CRITICAL RELATIVE WINDS WHILE PERFORMING CARGO OPERATIONS. REFER TO BHT-206B3-FM-1.

Hover helicopter at sufficient height to allow crewmember to discharge static electricity and to attach cargo sling to cargo hook

Ascend vertically directly over cargo, then slowly lift cargo from surface.

Pedals — Check for adequate directional control.

Hover power — Check torque required to hover with external load.

Takeoff into the wind if possible, allowing adequate sling load clearance over obstacles.

IN-FLIGHT OPERATION

NOTE

Control movements should be made smoothly and kept to a minimum to prevent oscillation of sling load.

Airspeed — Within limits for adequate controllability of rotorcraft-load combination.

Flight path — As required to avoid flight with external load over any person, vehicle or structure.

DESCENT AND LANDING

Flight path and approach angle — As required for wind direction and obstacle clearance.

Terminate approach to a high hover. When stabilized at a hover, descend slowly until cargo contacts surface. Maintain tension on sling.

Cyclic CARGO RELEASE switch — Press to release sling from hook.

Section 3

EMERGENCY AND MALFUNCTION PROCEDURES

CARGO FAILS TO RELEASE ELECTRICALLY

In the event that the cargo hook will not release the sling when the cyclic CARGO RELEASE switch is engaged, proceed as follows:

Maintain tension on sling.

PULL EMER CARGO RELEASE PULL mechanical release handle to drop cargo.

Section 4

PERFORMANCE

Refer to Particle Separator Supplement (BHT-206B3-FMS-12) when the particle separator is installed

HOVER CEILING CHARTS

For external cargo operations refer to the hover ceiling charts in this supplement for hover performance and use of these charts.

NOTE

The Hover Ceiling charts presented in this manual reflect performance with the 85 inch diameter tail rotor (P/N 206-016-201) installed. For performance with the 82 inch diameter tail rotor (P/N 206-010-750), refer to BHT-206B3-FMS-22.

HOVER CEILING IN GROUND EFFECT

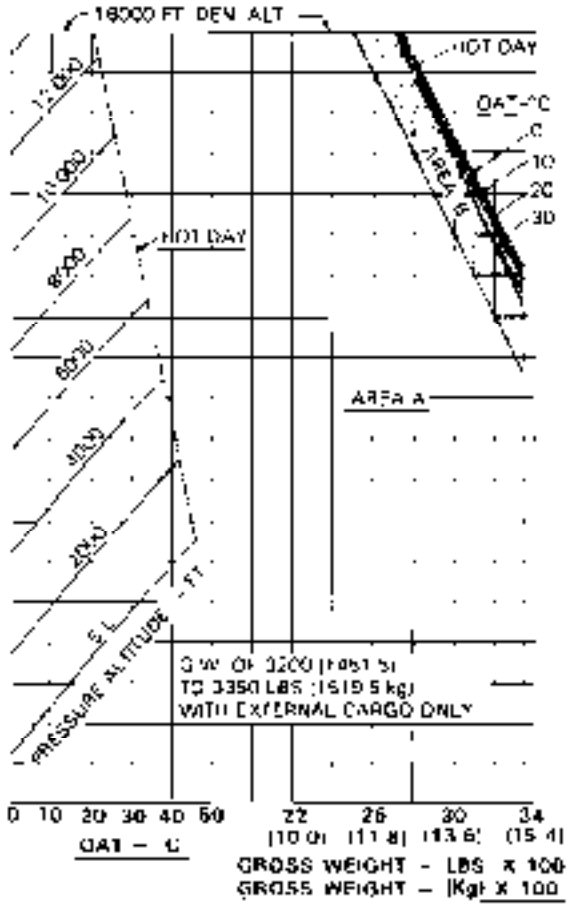
TAKEOFF POWER 0° TO 46°C

GENERATOR 22.3 AMPS ANTI ICE OFF

SKID HEIGHT- LOW SKID GEAR 4.0 FT (1.2 METERS) N2 ENGINE RPM 101%

HIGH SKID GEAR 3.0 FT (0.9 METERS)

WITH ANTI ICE ON GROSS WEIGHT IS 200 LBS (90.7 Kg) LESS



206B) 489-4-1-1

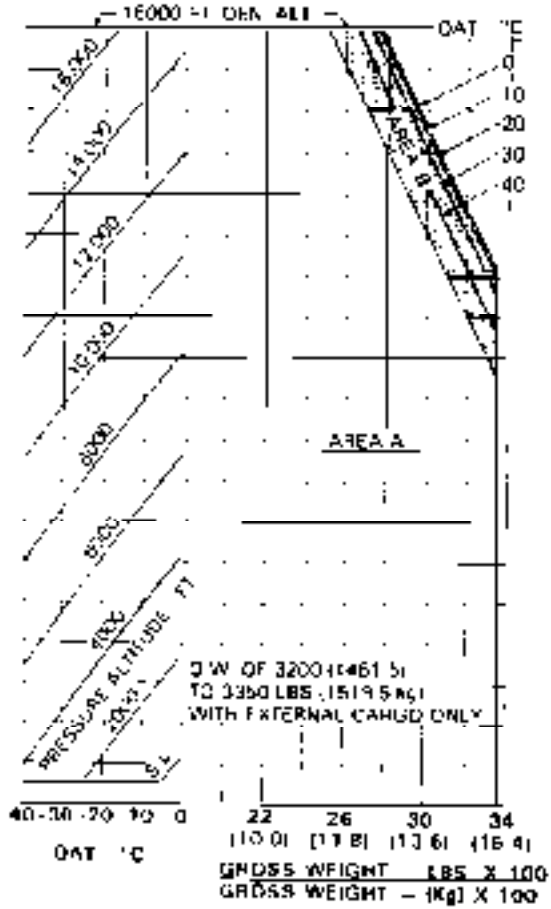
Figure 4-1. Hover ceiling in ground effect (Sheet 1 of 2)

HOVER CEILING IN GROUND EFFECT

TAKEOFF POWER 0° TO −40°C

GENERATOR 22 3 AMPS
SKID HEIGHT- LOW SKID GEAR 4 0 FT (1 2 METERS)
HIGH SKID GEAR 3 0 FT (0 9 METERS)
WITH ANTI-ICE ON GROSS WEIGHT IS 200 LBS (90 7 Kg) LESS

ANTI-ICE OFF
N2 ENGINE RPM 100%



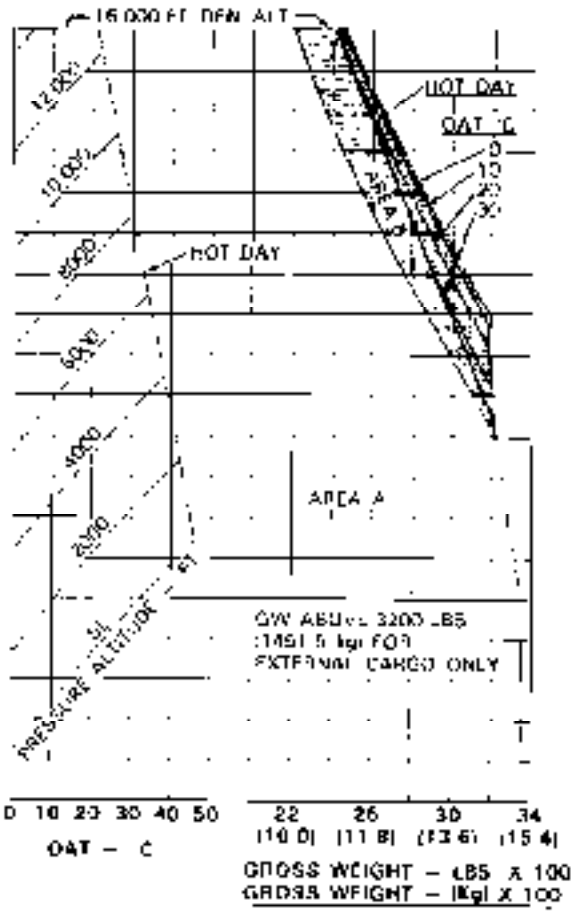
206B3-PSG-4-1-2

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

HOVER CEILING
OUT OF GROUND EFFECT
TAKEOFF POWER 0° TO 46°C

GENERATOR 22.3 AMPS
SKID HEIGHT: 40 FT (12.2 METERS)
WITH ANTI-ICE ON GROSS WEIGHT IS 295 LBS (133.8 kg) LESS

ANTI-ICE OFF
N2 ENGINE RPM 100%



206B3-FM8-4-21

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

HOVER CEILING
OUT OF GROUND EFFECT
TAKEOFF POWER 0° TO −40°C

GENERATOR 22 3 AMPS
SKID HEIGHT 40 FT (12 2 METERS)
WITH ANTI ICE ON GROSS WEIGHT IS 286 LBS (133 0 Kg) LESS

ANTI ICE OFF
N2 ENGINE RPM 100%

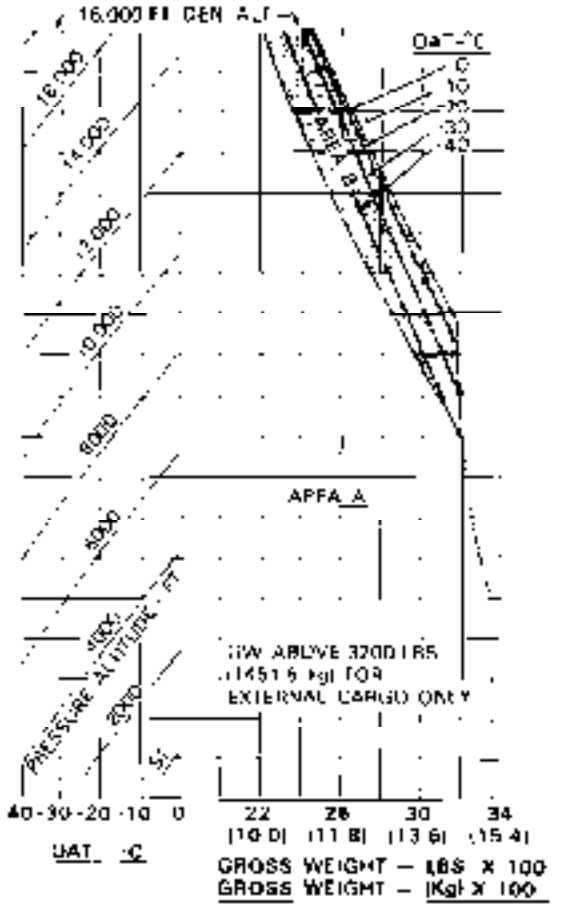


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Figure 4-2. Hover ceiling out of ground effect (Sheet 2 of 2)

Bell JetRanger-III
MODEL 206B
250-C20B/C20J ENGINE

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT
DEFLECTOR KIT — ENGINE AIR INDUCTION SYSTEM
206-706-136

CERTIFIED
JULY 26, 1977

This supplement shall be attached to Model 206B3 Flight Manual when Deflector Kit — Engine Air Induction System has been installed.

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

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GENERAL INFORMATION

The Deflector Kit (206-706-138) consists of the deflector baffle assemblies, flow vanes, fairing assembly, and all required items and hardware to complete installation.

Section 1

LIMITATIONS

TYPE OF OPERATION

The Particle Separator Engine Air Induction System (BHT-206B3-FMS-12) and Engine (Automatic) Re-Ingnition system (BHT-206B3-FMS-18) shall be installed in conjunction with Deflector Kit when conducting operations in falling and/or blowing snow and the following limits apply:

1. Take-off is prohibited with any snow or ice present in the inlet or plenum areas.

2. Ground operations and hover flight time is limited to 20 minutes total duration per occurrence. Ground operations at idle power (twist grip at idle) shall not exceed five (5) minutes. If five (5) minutes idle power time limit is exceeded or ground and hover operations exceed 20 minutes total, helicopter shall be shut down and inspected per Section 2, EXTERIOR CHECK.

NOTE

Particle separator is more efficient at 100% rpm and hover power than at idle.

3. Flight operations are prohibited when visibility in falling and/or blowing snow is less than one-half (1/2) statute mile.

OPERATIONAL EQUIPMENT LIMITATIONS

The Particle Separator shall be installed in the helicopter when the Deflector Kit and Engine (Automatic) Re-Ignition systems are installed.

The Deflector Kit shall be removed at OAT of 80°F (26.7°C) and above. Refer to Particle Separator supplement (BHT-206B3-FMS-12) when Deflector Baffles are removed

CENTER OF GRAVITY LIMITS

Actual weight change shall be determined after kit is installed and ballast readjusted, if necessary, to return weight empty CG within allowable limits.

Section 2

NORMAL PROCEDURES

OPERATION IN FALLING OR BLOWING SNOW

EXTERIOR CHECK

Immediately before each flight, thoroughly check cabin roof, transmission cowling, deflector baffles, and engine air intake areas. All areas checked must be clean and free of accumulated snow, slush and ice before each flight.

Check engine air plenum chamber through the plexiglass windows on each side of the inlet cowling for snow, slush or ice, paying particular attention to the firewalls, rear face of the Particle Separator, bottom corners, and flow vanes. Clean thoroughly before each flight.

AFTER EXITING HELICOPTER

WARNING

FAILURE TO INSTALL ENGINE INLET COVERS COULD ALLOW FALLING/BLOWING SNOW TO ENTER THE PARTICLE SEPARATOR PLENUM.

Install protective covers (engine inlet, exhaust, and pitot tube) during any exposure to falling and/or blowing snow during non-engine operation.

Section 3

EMERGENCY AND MALFUNCTION PROCEDURES

No change from basic manual.

Section 4

PERFORMANCE

DETERMINATION OF PERFORMANCE VARIATION FOR DEFLECTOR KIT WITH PARTICLE SEPARATOR

Allison Model 250-C20B or 250-C20J Engines

EXAMPLE (A): When power condition curve is to the right of the altitude/temperature intersection, there is no loss of performance from that shown for particle separator only configuration.*

EXAMPLE (B): When power condition curve is to the left of the altitude/temperature intersection, hover gross weight is 120 lb less and rate of climb is 170 ft/min less than that shown for the particle separator only configuration. Refer to Particle Separator Engine Air Induction System (BHT-206B3-FMS-12) Performance Data for Power Check, Rate of Climb and Hover Capability charts.

POWER CHECK PROCEDURE

Refer to Snow Particle Separator Engine Air Induction System (BHT-206B3-FMS-12) Performance Data for Power Check Procedure. With Deflector kit installed, reduce resulting Power Check torque by 3% to determine minimum torque available at a hover.

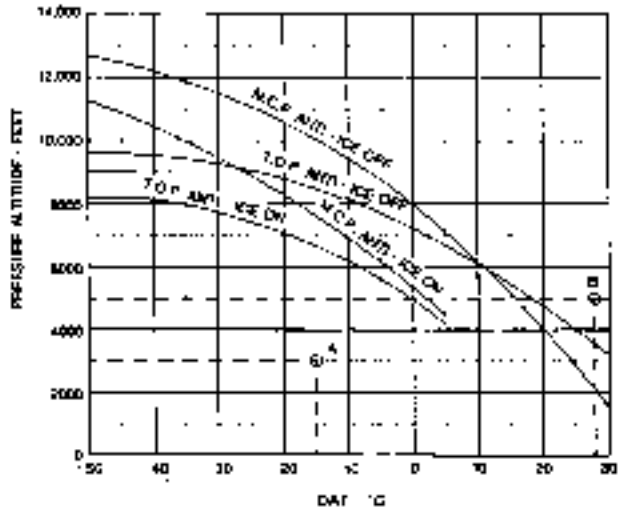

Figure 4-1. Performance variation

BHT-206B3-FMS-11

Bell JetRanger-III

MODEL 206B

250-C20B/C20J ENGINE

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT

HIGH-SKID GEAR WITH EMERGENCY FLOTATION, WHICH INCORPORATES AUTOMATIC ARMING FEATURE 206-706-010

CERTIFIED
JULY 28, 1977

This supplement shall be attached to Model 206B3 Flight Manual when High-Skid Gear with Emergency Flotation, which incorporates Automatic Arming Feature kit has been installed.

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FEDERAL AVIATION ADMINISTRATION
FT. WORTH, TX 76193-0170

NOTE

Revised text is indicated by a black vertical line. Insert latest revision pages; dispose of superseded pages.

GENERAL INFORMATION

The High-Skid Gear with Emergency Flotation Kit (206-706-010) consists of a high-skid landing gear, emergency floats attached to the main skid panels, inflation system, navigation lights, and attaching hardware. Installation of this kit permits operation over land or water. Float inflation time is approximately 5 seconds.

Section 1

LIMITATIONS

TYPE OF OPERATION

Operations with the emergency floats inflated is limited to flight to a servicing facility for repacking and recharging the system.

The floats and covers must be installed for all flight operation.

Flight operations over land or water are approved.

AIRSPEED LIMITATIONS

Maximum inflation airspeed — 70 MPH (61 knots).

Vne with floats inflated 100 MPH (87 knots) with all doors on or 60 MPH (52 knots) with one or both aft doors off.

WEIGHT LIMITATIONS

Maximum approved gross weight — 3200 pounds (1451.5 kilograms).

CENTER OF GRAVITY LIMITS

Actual weight change shall be determined after kit is installed and ballast readjusted, if necessary, to return empty weight CG within allowable limits.

PLACARDS

During the inflation cycle, undesirable pitching will occur at airspeeds above 70 MPH (61 knots).

AIRSPEED LIMITATIONS:

INFLATABLE FLOAT KIT,

INFLATION ABOVE 70

M.P.H. PROHIBITED.

INFLATED VNE 100 M.P.H.

REDUCE VNE 5 M.P.H. PER

1000 FT ALT ABOVE 3000 FT.

(Located on center console)

FLOAT

ARMING

ABOVE 70 MPH

PROHIBITED

(Located on instrument panel)

Section 2

NORMAL PROCEDURES

EXTERIOR CHECK

Floats stowed.

Nitrogen lines — Condition and security.

Float covers clean and secured.

Nitrogen bottle - pressure 2800 to 2900 PSI.

Canon plug — Check security.

IN-FLIGHT OPERATIONS

OVER WATER OPERATION

FLOAT POWER switch - On.

FLOAT POWER caution light — Illuminated.

CAUTION

DURING FLIGHT AT ALTITUDES ABOVE 500 FEET AND AT AIRSPEED OF 70 MPH (61 KNOTS) IAS AND ABOVE, THE SYSTEM SHOULD BE DEACTIVATED BY POSITIONING THE FLOAT POWER SWITCH TO THE OFF POSITION.

OVER LAND OPERATION

FLOAT POWER switch — Off.

LANDING — TOUCHDOWN

WARNING

RUN-ON LANDINGS ON OTHER THAN A HARD FIRM SURFACE SHOULD BE EXERCISED WITH CAUTION, DUE TO THE INCREASED GROUND CONTACT AREA OF THE SKID PANELS.

NOTE

Tail-low run-on landings should be avoided to prevent nose-down pitching.

Section 3

EMERGENCY AND MALFUNCTION PROCEDURES

ENGINE FAILURE — OVER WATER

Airspeed — 70 MPH (61 knots) or less.

FLOAT POWER caution light illuminated.

CAUTION

DO NOT INFLATE FLOATS MORE THAN 5000 FEET ABOVE ANTICIPATED LANDING TERRAIN.

FLOAT INFLATION switch — Pull On.

NOTE

With FLOAT POWER switch On, float inflation system is automatically armed when ENGINE OUT light is illuminated and Audio is On.

MANUAL ARMING INFLATION SYSTEM

The manual inflation arming system will over-ride or back-up the automatic inflation arming system.

This system can be used, when desired or necessary, to perform a water landing for precautionary reasons and shall be accomplished as follows:

Airspeed — 70 MPH (61 knots) or less.

FLOAT POWER caution light — Illuminated.

MANUAL ARM switch — LIN guard and move switch to ON.

CAUTION

DO NOT INFLATE FLOATS MORE THAN 5000 FEET ABOVE ANTICIPATED LANDING TERRAIN.

FLOAT INFLATION switch — Pull On.

AFTER EMERGENCY WATER LANDING

GROSS WEIGHT 3000 POUNDS (1360.8 KILOGRAMS) OR LESS

After landing, check the aircraft for possible damage.

If malfunction was cause of landing, correct malfunction.

If no damage has occurred to aircraft and malfunction has been corrected, the aircraft can be ferried to the nearest maintenance facility to repack floats and charge system. The ferrying airspeed is restricted to 100 MPH (87 knots) with all doors on or to 80 MPH (52 knots) with door or doors off.

GROSS WEIGHT ABOVE 3000 POUNDS (1360.8 KILOGRAMS)

After landing, aircraft must not be flown until the aircraft has been moved to nearest maintenance facility.

Check the aircraft for possible damage.

If malfunction was cause of landing, correct malfunction

Repack floats and charge system.

ENGINE FAILURE, OVER WATER — NIGHT

Establish an autorotative glide at 60 MPH (52 knots), for minimum rate of descent, and turn on landing light.

At 100 feet execute a moderate cyclic flare to reduce airspeed to approximately 30 MPH (25 knots).

Adjust collective and cyclic pitch sufficiently to perform a low speed cushioned touch down at a slight nose-up attitude.

NOTE

Night autorotative touch down landings to water have been demonstrated at airspeeds to 35 MPH (30 knots).

Section 4

PERFORMANCE

Refer to Particle Separator Supplement (BHT-206B3-FMS-12) when the particle separator is installed.

HOVER CEILING

Out-of-ground effect hovering performance is the same as basic helicopter. In-ground-effect hovering performance is shown on the following graphs.

NOTE

The Hover Ceiling charts presented in this manual reflect performance with the 65 inch diameter tail rotor (P/N 206-010-201) installed. For performance with the 62 inch diameter tail rotor (P/N 206-010-750), refer to BHT-206B3-FMS-22.

HOVER CEILING IN GROUND EFFECT

TAKEOFF POWER 0° TO 46°C

GENERATOR 22.3 AMPS — ANTI-ICE OFF

SKID HEIGHT 3.0 FT (0.9 METERS) — N2 ENGINE RPM 100%

WITH ANTI-ICE ON GROSS WEIGHT IS 200 LBS (90.7 kg) LESS

BASIC SHIP WITH HIGH SKID GEAR

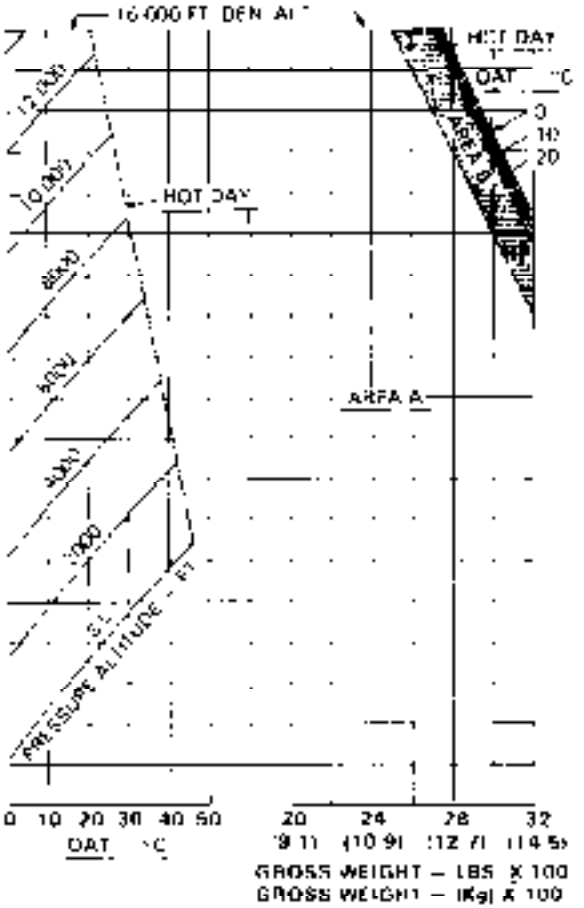

Figure 4-1. Hover ceiling in ground effect (Sheet 1 of 2)

HOVER CEILING IN GROUND EFFECT

TAKEOFF POWER 0° TO 40°C

GENERATOR 22.3 AMPS
SKID HEIGHT 3.0 FT (0.9 METERS)
WITH ANTI-ICE ON GROSS WEIGHT IS 200 LBS (90.7 kg) LESS

ANTI-ICE OFF
N2 ENGINE RPM 100%

BASIC SHIP WITH HIGH SKID GEAR

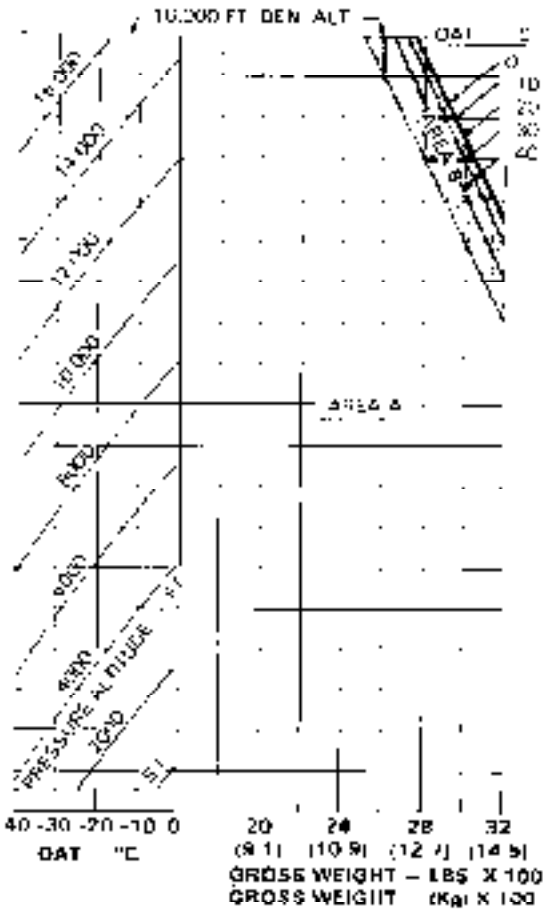

Figure 4-1 Hover ceiling in ground effect (Sheet 2 of 2)

Bell JetRanger-III

MODEL 206B

250-C20B/20J Engine

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT

PARTICLE SEPARATOR — ENGINE AIR INDUCTION SYSTEM

206-706-200 OR 206-706-201

CERTIFIED
JULY 28, 1977

This supplement shall be attached to Model 206B3 Flight Manual when Particle Separator — Engine Air Induction System kit has been installed.

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

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FOR
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GENERAL INFORMATION

The Particle Separator Kits (206-708-200 or 206-708-201) consist of the particle separator, bleed air tubing and hose, electrical cable, and required hardware to complete installation.

Section 1

LIMITATIONS

TYPE OF OPERATION

The Engine Air Induction System Deflector Kit (BHT-206B3-FMS-10) and Engine (Automatic) Re-Ignition System (BHT-206B3-FMS-18) shall be installed in conjunction with Particle Separator Kit when conducting operations in falling and/or blowing snow and the following limits apply:

1. Take-off is prohibited with any snow or ice present in the inlet or plenum areas.

2. Ground operations and hover flight time is limited to 20 minutes total duration per occurrence. Ground operations at idle power (twist grip at idle) shall not exceed five (5) minutes. If five (5) minutes idle power time limit is exceeded or ground and hover operations exceed 20 minutes total, helicopter shall be shut down and inspected per Section 2, EXTERIOR CHECK.

NOTE

Particle separator is more efficient at 100% rpm and hover power than at idle.

3. Flight operations are prohibited when visibility in falling and/or blowing snow is less than one-half (½) statute mile.

OPTIONAL EQUIPMENT LIMITATION

Use basic helicopter performance data when the Particle Separator is removed and the engine air intake screen is reinstalled.

The Deflector Baffles shall be removed if the Particle Separator is removed.

CENTER OF GRAVITY LIMITS

Actual weight change shall be determined after kit is installed and ballast readjusted, if necessary, to return empty weight CG within allowable limits.

Section 2

NORMAL PROCEDURES

EXTERIOR CHECK

BEFORE EACH FLIGHT WHEN OPERATING IN SNOW CONDITIONS

Immediately before each flight, thoroughly check cabin roof, transmission cowling, deflector baffles, and engine intake areas. All areas checked must be clean and free of accumulated snow, slush, and ice before each flight.

Check engine air plenum chamber through the plexiglass windows on each side of the inlet cowling for snow, slush, or ice, paying particular attention to the firewalls, rear face of the Particle Separator, bottom corners and flow vanes. Clean thoroughly before each flight.

AFTER EXITING HELICOPTER

WARNING

FAILURE TO INSTALL ENGINE INLET COVERS COULD ALLOW FALLING/BLOWING SNOW TO ENTER PARTICLE SEPARATOR PLENUM.

Install protective covers (engine inlet, exhaust, and pitot tube) during any exposure to falling snow and/or blowing snow during non-engine operation.

Section 3

EMERGENCY AND MALFUNCTION PROCEDURES

No change from basic manual.

Section 4

PERFORMANCE

PERFORMANCE DATA

With the particle separator kit, the maximum power available is slightly less than that obtainable with a standard inlet, when operating at TOT limit. The helicopter performance is, therefore, also less with the particle separator kit installed. This power loss is caused by an increased pressure drop in the inlet, and compressor bleed air used to purge the particle separator. Refer to Power check chart (figure 4-1).

POWER CHECK PROCEDURE

The Power Check Chart indicates the minimum percent torque that must be available from an engine meeting the minimum Allison specification. The engine must develop these values in order to meet the performance data contained in this flight manual.

The takeoff power limits of the 250-C20B or 250-C20J engine are:

Maximum torque — 100% (5 minutes).
Maximum TOT (turbine outlet temperature) — 810° C (5 minutes).
Maximum gas producer RPM (N1) — 105%.

NOTE

Accurate power checks may be accomplished in a hover, in a stabilized 60 MPH (52 knots) IAS climb or in level flight. Power checks should only be conducted in a hover when altitude, temperature, and gross weight permit safe hovering height. Refer to Height-Velocity Diagram in BHT-206B3-FM-1. More accurate checks are achieved above Maximum Continuous TOT (738° C), which will generally require being above 5,000 feet, to avoid exceeding torque limits

On cold days, the torque pressure limit may be reached before the TOT limit is reached. On hot days or at high altitudes, the TOT will be the limiting factor. To perform a power check, ensure the anti-ice and generator switches are OFF. Raise collective to increase power until a stabilized TOT or torque pressure limit is reached. Record OAT, TOT, pressure altitude, Torque, and (N1). Refer to Power check chart (figure 4-1).

With Deflector Baffles installed, reduce resulting Power check chart torque by 3% to determine minimum torque available at a hover.

NOTE

The Power Check is acceptable when the chart percent torque reading is equalled or exceeded.

RATE OF CLIMB CHART

The maximum rate of climb for takeoff power and for maximum continuous power with Particle Separator installed are shown in the Rate of climb charts (figure 4-2).

HOVER CEILING CHARTS

NOTE

The Hover ceiling charts presented in this manual reflect performance with the 55 inch diameter tail rotor (P/N 206-016-201) installed. For performance with the 62 inch diameter tail rotor (P/N 206-010-750), refer to BHT-206B3-FMS-22.

Hover ceiling capabilities with Particle Separator installed are shown in Hover ceiling charts (figure 4-3).

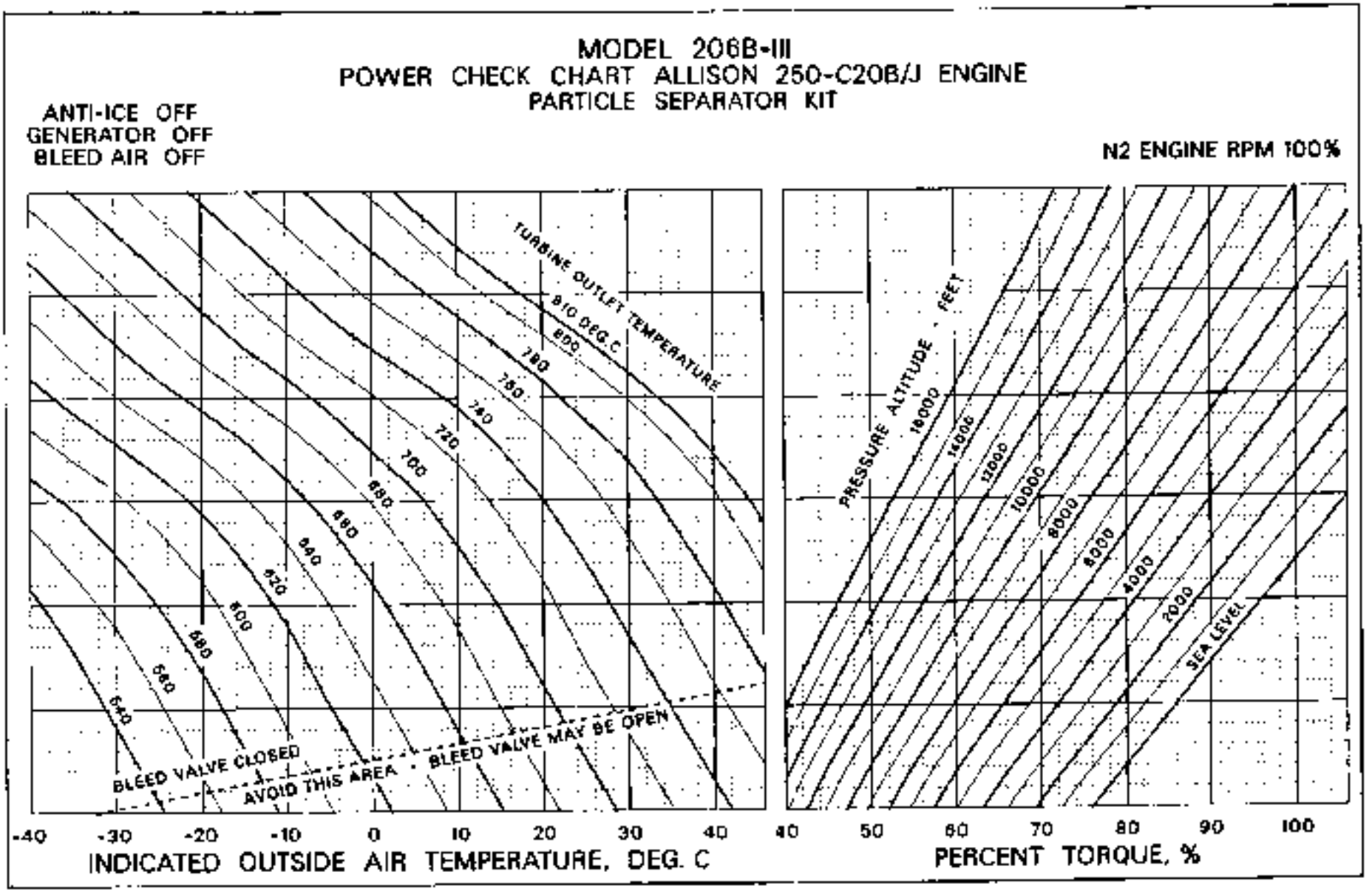


Figure 4-1. Power check chart

RATE OF CLIMB – MAXIMUM
TAKEOFF POWER
ANTI-ICE OFF OR ON

PARTICLE SEPARATOR INSTALLED
GENERATOR 22 3 AMPS

V IND 60 MPH 52 KNOTS
N2 ENGINE RPM 100%

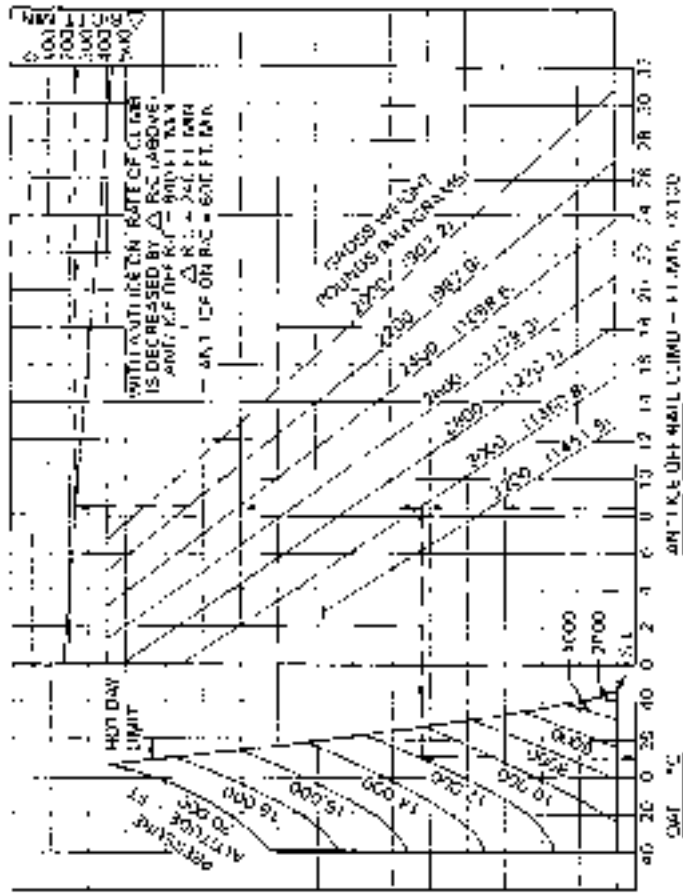


Figure 4-2. Rate of climb (Sheet 1 of 2)

RATE OF CLIMB - MAXIMUM

MAXIMUM CONTINUOUS POWER

ANTI-ICE OFF OR ON

PARTICLE SEPARATOR INSTALLED
GENERATOR 22.3 AMPS

V IAS 60 MPH (52 KNOTS)
N2 ENGINE RPM 100%

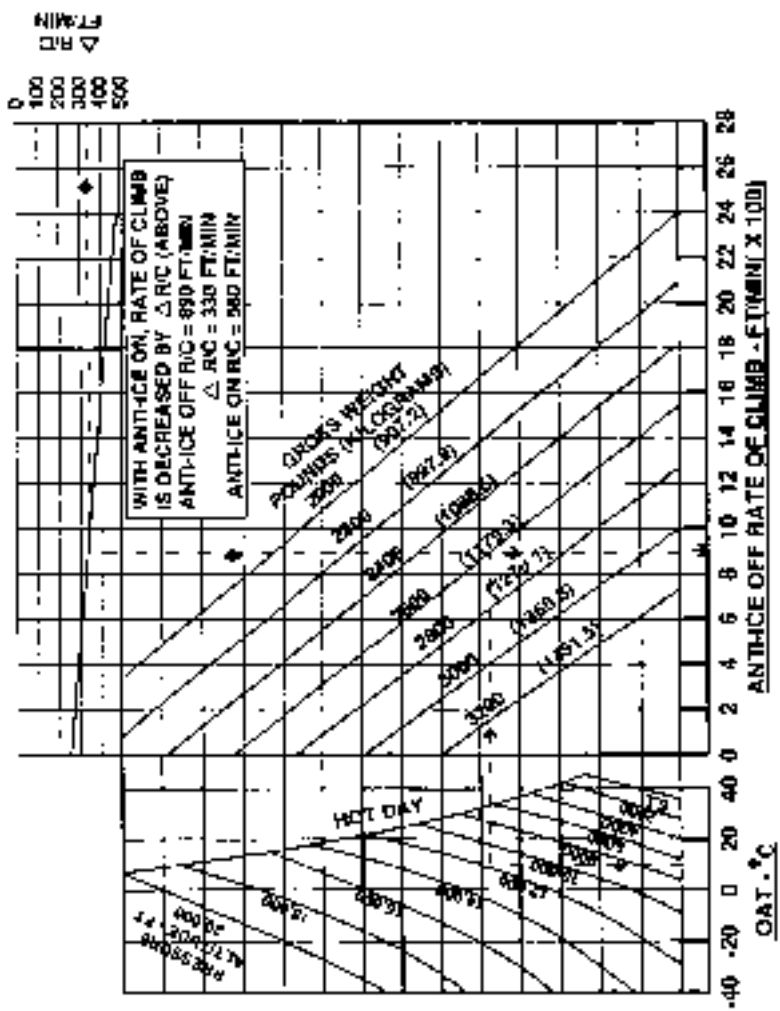


Figure 4-2. Rate of climb (Sheet 2 of 2)

HOVER CEILING IN GROUND EFFECT
TAKEOFF POWER WITH PARTICLE SEPARATOR INSTALLED
0° TO 46°C

GENERATOR 22.3 AMPS
SKID HEIGHT 2.0 FT (0.6 METERS)
WITH ANTI ICE ON GROSS WEIGHT IS 245 LBS (111.1 Kg) LESS

ANTI-ICE OFF
N2 ENGINE RPM 100%

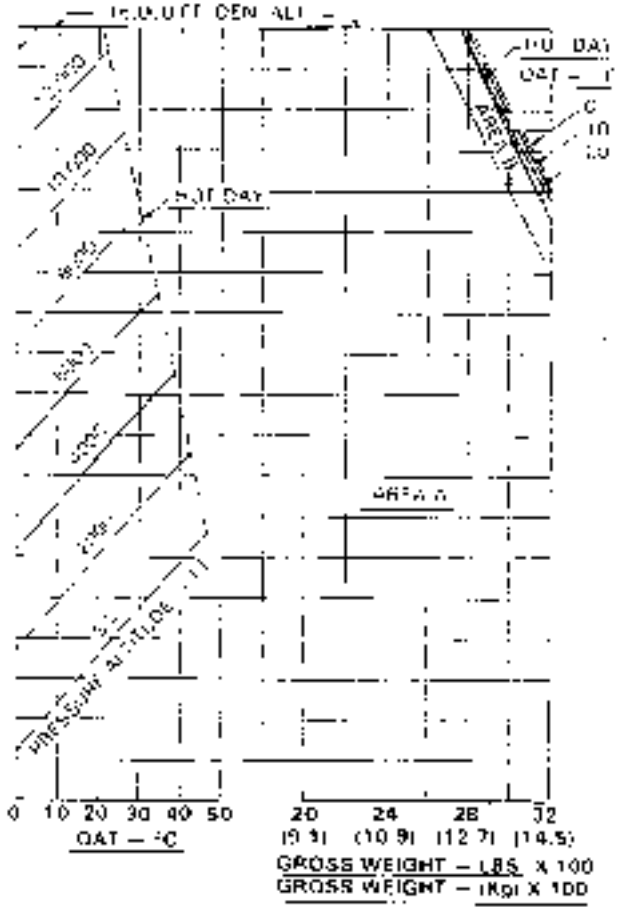


Figure 4-3. Hover ceiling (Sheet 1 of 12)

HOVER CEILING IN GROUND EFFECT
TAKEOFF POWER WITH PARTICLE SEPARATOR INSTALLED
0° TO −40°C

GENERATOR 22.3 AMPS
SKID HEIGHT 2.0 FT (0.6 METERS)
WITH ANTI-ICE ON GROSS WEIGHT IS 245 LBS (111.1 Kg) LESS

ANTI-ICE OFF
N2 ENGINE RPM 100%

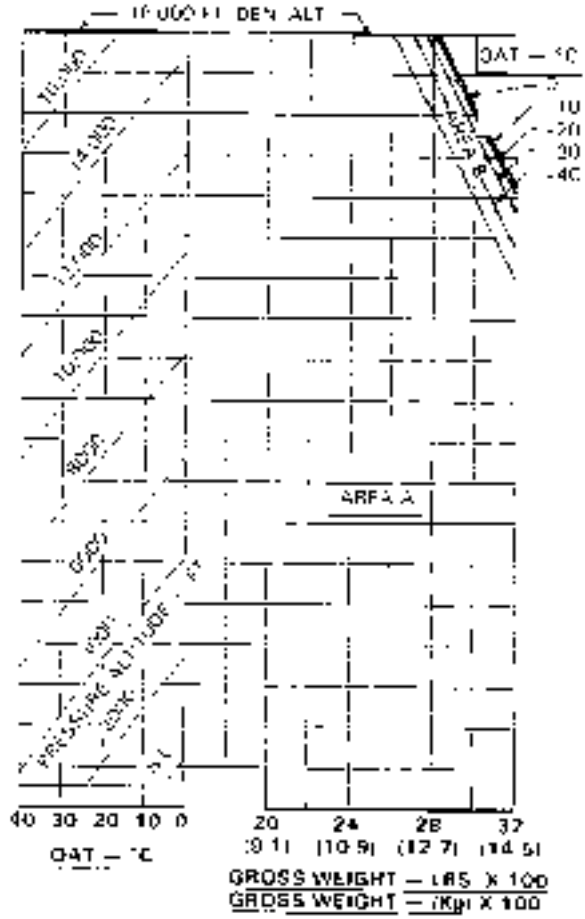


Figure 4-3. Hover ceiling (Sheet 2 of 12)

HOVER CEILING OUT OF GROUND EFFECT
TAKEOFF POWER WITH PARTICLE SEPARATOR INSTALLED
0° TO 46°C

GENERATOR 22.3 AMPS — ANTI ICE OFF
SKID HEIGHT 40 FT (12.2 METERS) — N2 ENGINE RPM 100%
WITH ANTI ICE ON GROSS WEIGHT IS 260 LBS (117.9 Kg) LESS

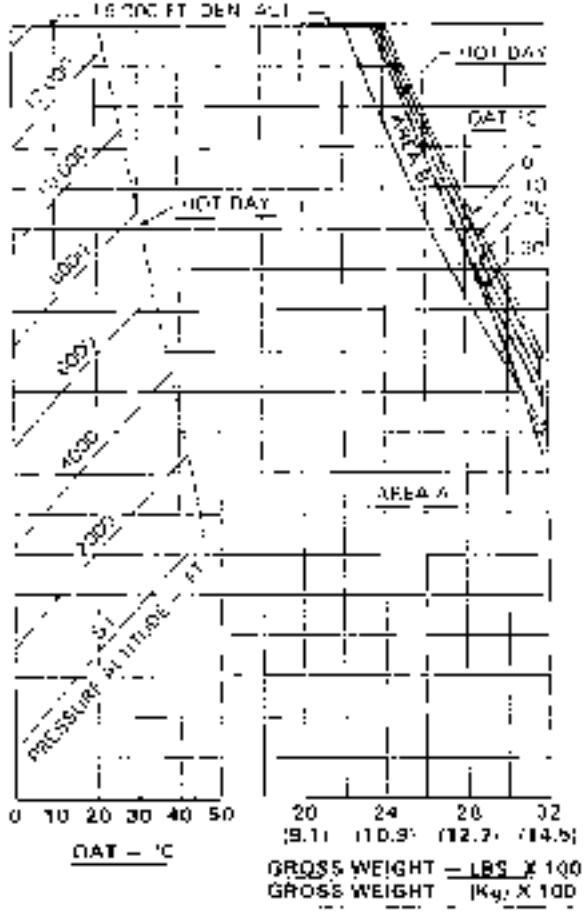


Figure 4-3. Hover ceiling (Sheet 3 of 12)

HOVER CEILING OUT OF GROUND EFFECT
TAKEOFF POWER WITH PARTICLE SEPARATOR INSTALLED
0° TO −40°C

GENERATOR 22.3 AMPS — ANTI-ICE OFF
SKID HEIGHT 40 FT (12.2 METERS) — N2 ENGINE RPM 100%
WITH ANTI-ICE ON GROSS WEIGHT IS 260 LBS (117.9 Kg) LESS

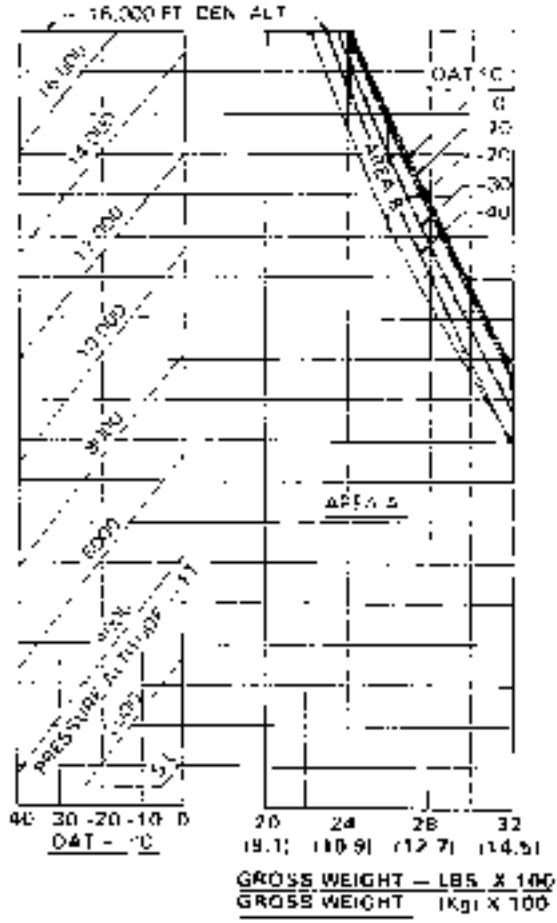


Figure 4-3 Hover ceiling (Sheet 4 of 12)

HOVER CEILING IN GROUND EFFECT

TAKEOFF POWER 0° TO 46°C

GENERATOR 22.3 AMPS
SKID HEIGHT 4.0 FT (1.2 METERS) WITH LOW SKID GEAR
SKID HEIGHT 3.0 FT (0.9 METERS) WITH HIGH SKID GEAR
WITH ANTI-ICE ON GROSS WEIGHT IS 225 LBS (102.1 Kg) LESS PARTICLE SEPARATOR WITH CARGO HOOK

ANTI-ICE OFF
N2 ENGINE RPM 100%

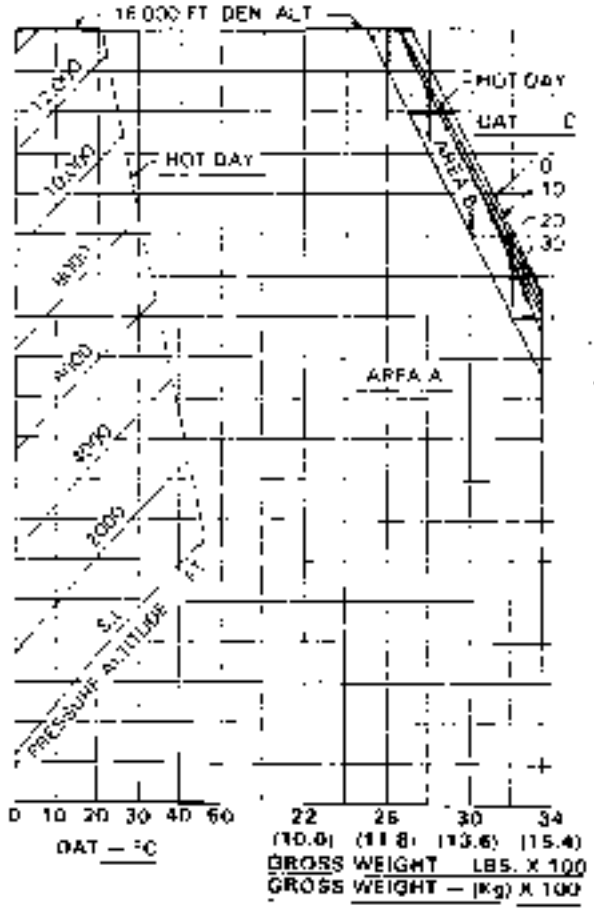


Figure 4-3. Hover ceiling (Sheet 5 of 12)

HOVER CEILING IN GROUND EFFECT

TAKEOFF POWER 0° TO −40°C

GENERATOR 22.3 AMPS
SKID HEIGHT 4.0 FT (1.2 METERS) WITH LOW SKID GEAR
SKID HEIGHT 3.0 FT (0.9 METERS) WITH HIGH SKID GEAR
WITH ANTI-ICE ON GROSS WEIGHT IS 225 LBS (102.1 Kg) LESS
PARTICLE SEPARATOR WITH CARGO HOOK

ANTI-ICE OFF
N2 ENGINE RPM 100%

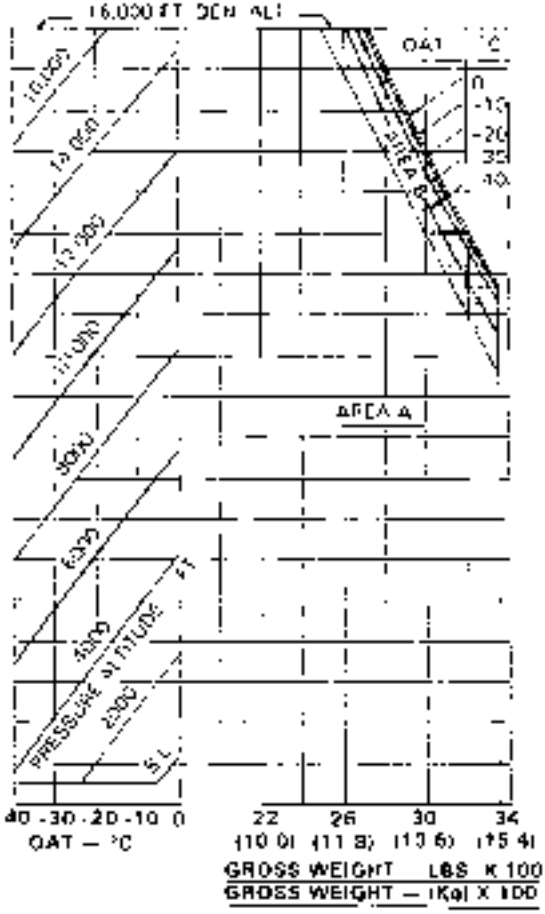
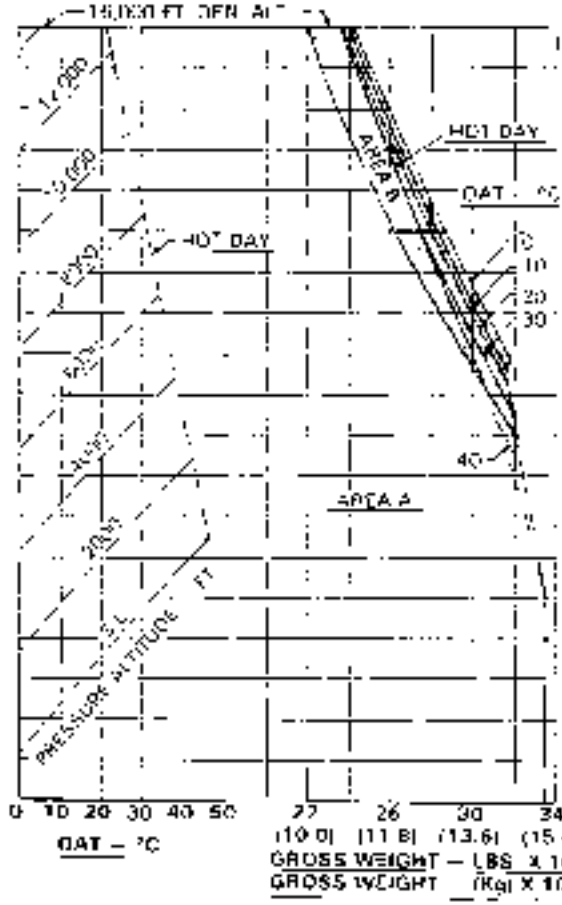


Figure 4-3. Hover ceiling (Sheet 6 of 12)

HOVER CEILING OUT OF GROUND EFFECT
TAKEOFF POWER 0° TO 40°C

GENERATOR 22.3 AMPS
SKID HEIGHT 40 FT (12.2 METERS)
WITH ANTI-ICE ON GROSS WEIGHT IS 250 LBS (113.9 Kg) LESS PARTICLE SEPARATOR WITH CARGO HOOK

ANTI-ICE OFF
N2 ENGINE RPM 100%



206B3 FMS 12 . e 3.7

Figure 4-3 Hover ceiling (Sheet 7 of 12)

HOVER CEILING OUT OF GROUND EFFECT

TAKEOFF POWER 0° TO −40°C

GENERATOR 22 3 AMPS
SKID HEIGHT 40 FT (12.2 METERS)
WITH ANTI-ICE ON GROSS WEIGHT IS 260 LBS (117.9 Kg) LESS PARTICLE SEPARATOR WITH CARGO HOOK

ANTI-ICE OFF
N2 ENGINE RPM 100%

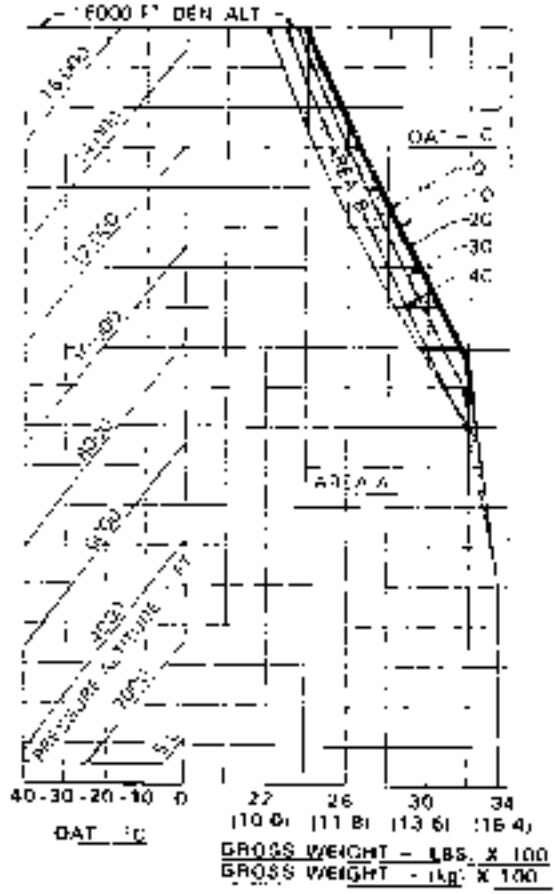


Figure 4-3. Hover ceiling (Sheet 6 of 12)

HOVER CEILING IN GROUND EFFECT

TAKEOFF POWER 0° TO 46°C

GENERATOR 22.3 AMPS — ANTI-ICE OFF

SKID HEIGHT 4.0 FT (1.2 METERS) WITH LOW SKID GEAR — N2 ENGINE RPM 100%

SKID HEIGHT 3.0 FT (0.9 METERS) WITH HIGH SKID GEAR

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

PARTICLE SEPARATOR WITH HIGH SKID OR EMERGENCY

FLOTATION LANDING GEAR

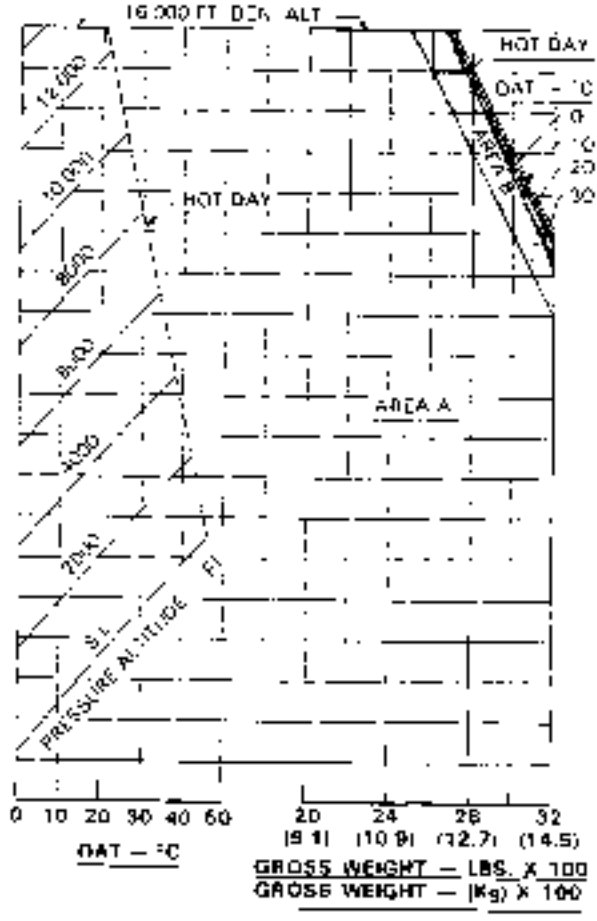


Figure 4-3. Hover ceiling (Sheet 9 of 12)

HOVER CEILING IN GROUND EFFECT
TAKEOFF POWER 0° TO –40°C

GENERATOR 22.3 AMPS — ANTI-ICE OFF
SKID HEIGHT 4.0 FT (1.2 METERS) WITH LOW SKID GEAR — N2 ENGINE RPM 100%
SKID HEIGHT 3.0 FT (0.9 METERS) WITH HIGH SKID GEAR
WITH ANTI-ICE ON GROSS WEIGHT IS 225 LBS (102.1 Kg) LESS
PARTICLE SEPARATOR WITH HIGH SKID OR EMERGENCY
FLOTATION LANDING GEAR

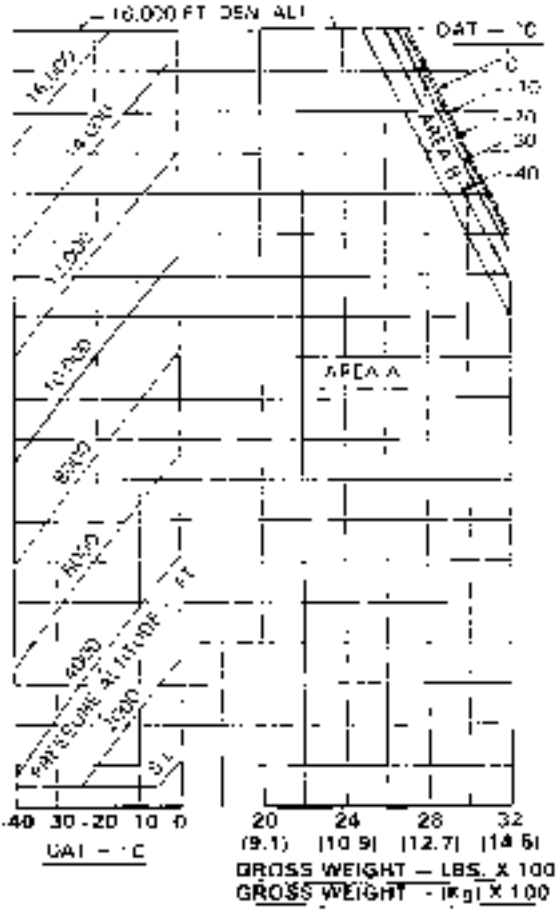


Figure 4-3. Hover ceiling (Sheet 10 of 12)

HOVER CEILING IN GROUND EFFECT
TAKEOFF POWER 0° TO 46°C

GENERATOR 22.3 AMPS
SKID HEIGHT 4.0 FT (1.2 METERS) WITH LOW SKID GEAR
SKID HEIGHT 3.0 FT (0.9 METERS) WITH HIGH SKID GEAR
WITH ANTI-ICE ON GROSS WEIGHT IS 226 LBS (102.1 Kg) LESS PARTICLE SEPARATOR WITH FIXED FLOATS

ANTI-ICE OFF
N2 ENGINE RPM 100%

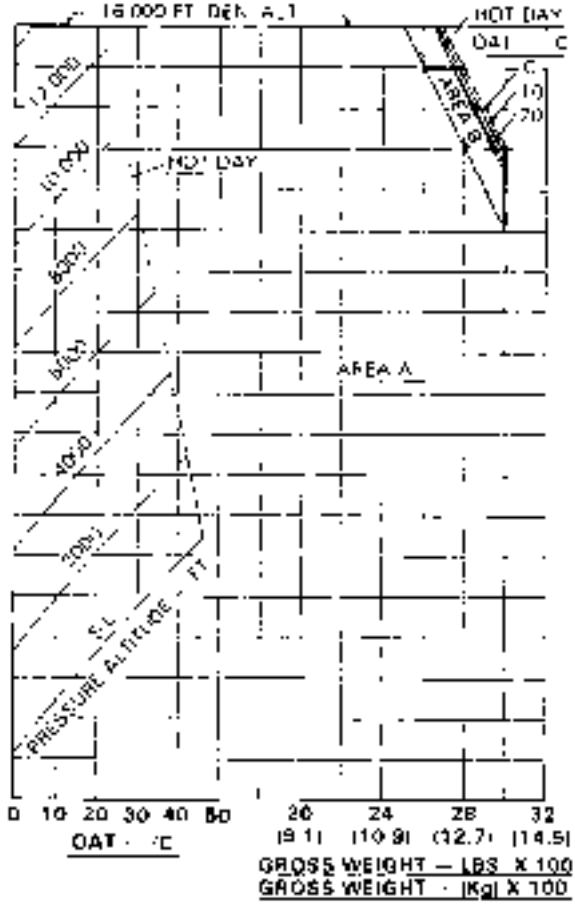


Figure 4-3. Hover ceiling (Sheet 11 of 12)

HOVER CEILING IN GROUND EFFECT
TAKEOFF POWER 0° TO −40°C

GENERATOR 22 3 AMPS
SKID HEIGHT 4 0 FT (1.2 METERS) WITH LOW SKID GEAR
SKID HEIGHT 3.0 FT (0.9 METERS) WITH HIGH SKID GEAR
WITH ANTI-ICE ON GROSS WEIGHT IS 225 LBS (102.1 Kg) LESS PARTICLE SEPARATOR WITH FIXED FLOATS

ANTI-ICE OFF
N2 ENGINE RPM 100%

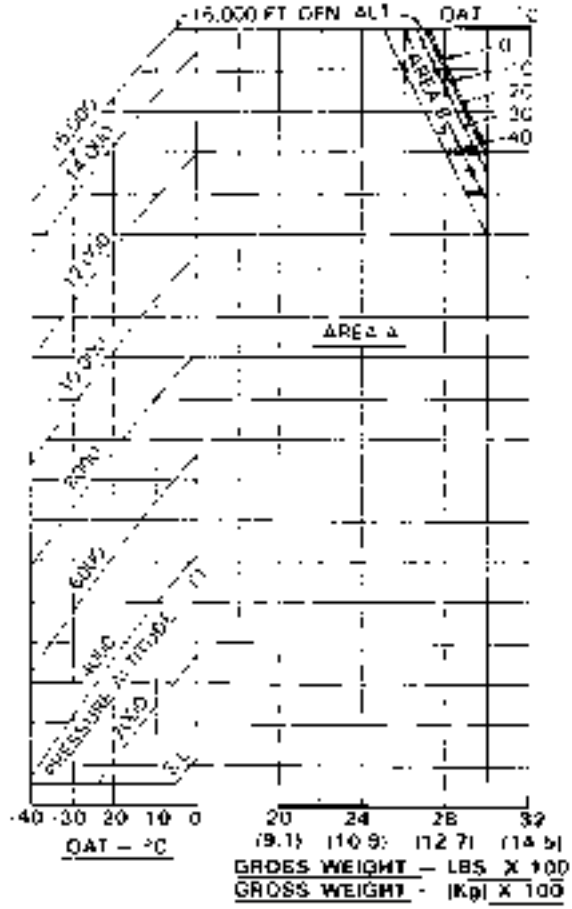


Figure 4-3. Hover ceiling (Sheet 12 of 12)

BHT-206B3-FMS-13

Bell JetRanger-III
MODEL 206B
250-C20B/C20J ENGINE

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT

HI-SKID LANDING GEAR TUBULAR TYPE

206-706-031

CERTIFIED
JULY 28, 1977

This supplement shall be attached to Model 206B3 Flight Manual when Hi-Skid Landing Gear Tubular Type kit has been installed.

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

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GENERAL INFORMATION

The Hi-Skid Gear (206-706-031) when installed will provide an approximate 13 additional inches (33 centimeters) of ground clearance which will permit landings to be accomplished in rough terrain areas. The kit consists of fore and aft cross tubes, skid tubes, four fuselage mounted cabin steps and the necessary hardware to complete the installation.

Section 1

LIMITATIONS

TYPE OF OPERATION

Flight operations are prohibited with the rear passenger steps installed when the helicopter is equipped with the combination of the External Cargo Hook Kit (206-706-101) and the Hi-Skid Landing Gear.

Flight operations are prohibited with left rear passenger step installed when helicopter is equipped with combination of External Hoist Kit (206-706-124 or 206-706-126) and Hi-Skid Landing Gear.

The four steps, installed as part of the Hi-Skid Landing Gear Kit, are not approved for use with any other type of landing gear.

CENTER OF GRAVITY LIMITS

Actual weight change shall be determined after kit is installed and ballast readjusted, if necessary, to return empty weight CG to within allowable limits.

Section 2

NORMAL PROCEDURES

No change from basic manual.

Section 3

EMERGENCY AND MALFUNCTION PROCEDURES

LANDING TOUCHDOWN

Tail low run-on landings should be avoided to prevent nose-down pitching.

WARNING

RUN-ON LANDINGS ON OTHER THAN A HARD FIRM SURFACE SHOULD BE EXERCISED WITH CAUTION.

Section 4

PERFORMANCE

Refer to Particle Separator Supplement (BHT-206B3-FMS-12) when the particle separator is installed.

OUT OF GROUND EFFECT hovering performance is the same as the basic helicopter.

IN GROUND EFFECT hovering performance is shown on the following performance charts.

NOTE

The Hover Ceiling charts presented in this manual reflect performance with the 65 inch diameter tail rotor (P/N 206-015-201) installed. For performance with the 62 inch diameter tail rotor (P/N 206-010-750), refer to BHT-206B3-FMS-22.

HOVER CEILING

Refer to Hover Ceiling in Ground Effect charts (figure 4-1.)

HOVER CEILING IN GROUND EFFECT
TAKEOFF POWER 0° TO 46°C

GENERATOR 22.3 AMPS
SKID HEIGHT 3.0 FT (0.9 METERS)
WITH ANTI-ICE ON GROSS WEIGHT IS 200 LBS (90.7 Kg) LESS

ANTI-ICE ON
N2 ENGINE RPM 100%

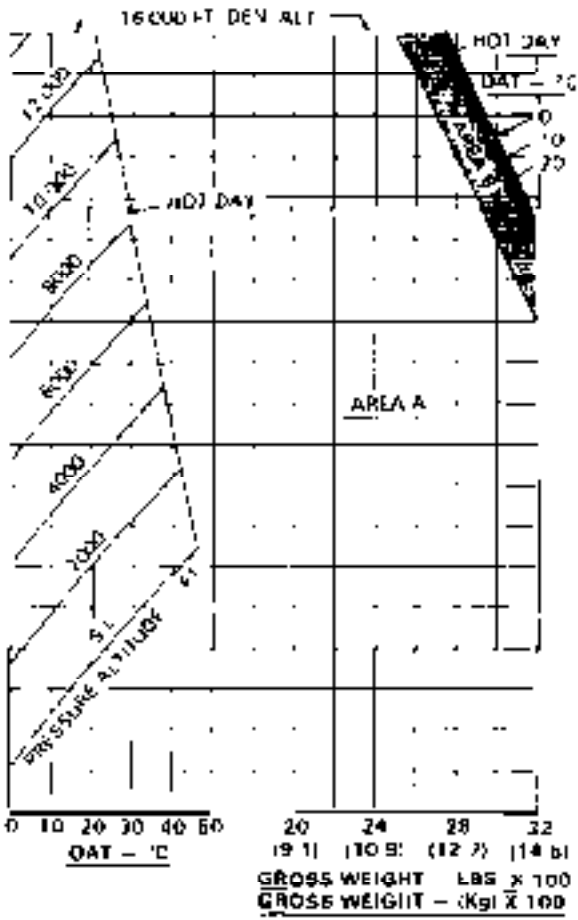

Figure 4-1. Hover ceiling in ground effect (Sheet 1 of 2)

HOVER CEILING IN GROUND EFFECT

TAKEOFF POWER 0° TO −40°C

GENERATOR 22.3 AMPS
SKID HEIGHT 3.0 FT (0.9 METERS)
WITH ANTI-ICE ON GROSS WEIGHT IS 200 LBS (90.7 Kg) LESS

ANTI-ICE OFF
N2 ENGINE RPM 100%

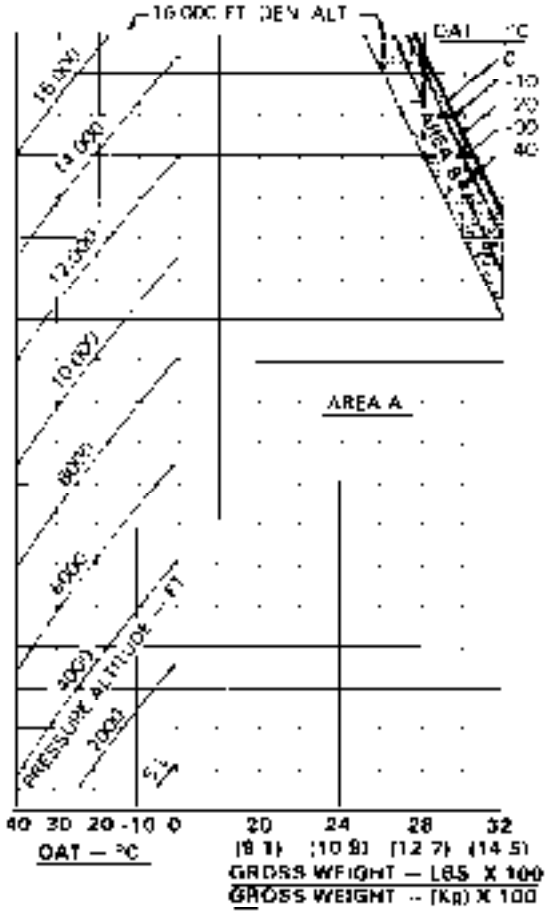

Figure 4-1. Hover ceiling in ground effect (Sheet 2 of 2)

Bell JetRanger-III
MODEL 206B
250-C20B/C20J ENGINE

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT

EMERGENCY FLOTATION ON HIGH-SKID GEAR WITH PREFLIGHT TEST FEATURE 206-706-010

CERTIFIED
JULY 28, 1977

This supplement shall be attached to Model 206B3 Flight Manual when Emergency Flotation on High-Skid Gear with Preflight Test Feature kit has been installed.

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

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MANAGER

ROTORCRAFT CERTIFICATION OFFICE
FEDERAL AVIATION ADMINISTRATION
FT. WORTH, TX 76193-0170

NOTE

Revised text is indicated by a black vertical line. Insert latest revision pages; dispose of superseded pages.

GENERAL INFORMATION

The Emergency Flotation on High-Skid Gear Kit (205-706-010) consists of a high-skid landing gear, emergency floats attached to the main skid panels, inflation system, navigation lights, and attaching hardware. Installation of this kit permits operation over land or water. Float inflation time is approximately 5 seconds.

NOTE

On serial numbers 4 through 153, Service Instruction 206-35 (Landing Gear Support Doublers) must be accomplished prior to installation of kit.

Section 1

LIMITATIONS

TYPE OF OPERATION

Operations with the emergency floats inflated is limited to flight to a servicing facility for repacking and recharging the system.

The floats and covers must be installed for all flight operations.

Flight operations over land or water are approved.

Accomplish, daily, PREFLIGHT FLOAT SYSTEM CHECK prior to performing over water operations.

AIRSPEED LIMITATIONS

Floats stowed, covers installed — Same as basic helicopter.

Maximum inflated airspeed — 100 MPH (87 knots).

Maximum inflated airspeed with one or both aft doors off — 60 MPH (52 knots).

Maximum airspeed during float inflation — 70 MPH (61 knots).

WEIGHT LIMITATIONS

Maximum approved gross weight — 3200 pounds (1451.5 kilograms).

Flight after an emergency water landing at gross weights above 3000 pounds (1360.8 kilograms) is prohibited.

CENTER OF GRAVITY LIMITS

Actual weight change shall be determined after kit is installed and ballast readjusted, if necessary, to return empty weight CG within allowable limits.

PLACARDS

AIRSPEED LIMITATIONS:
INFLATABLE FLOAT KIT,
INFLATION ABOVE 70
M.P.H. PROHIBITED,
INFLATED VNE 100 M.P.H.
REDUCE VNE 5 M.P.H. PER
1000 FT ALT ABOVE 3000 FT.

(Located on center console)

FLOAT
ARMING
ABOVE 70 MPH
PROHIBITED

(Located on instrument panel)

During the inflation cycle, undesirable pitching will occur at airspeed above 70 MPH (61 knots).

Section 2

NORMAL PROCEDURES

EXTERIOR CHECK

Floats stowed.

Nitrogen lines — Condition and security.

Float covers clean and secured.

Nitrogen bottle — pressure 2600 to 2900 PSI.

Canon plug — Check security.

INTERIOR CHECK

PREFLIGHT FLOAT SYSTEM CHECK

FLOAT MANUAL ARM switch — OFF (guard closed).

FLOAT POWER circuit breaker — Check in.

FLOAT TEST and FLOAT ARM lights — Press-to-test.

FLOAT TEST switch — FLOAT TEST position, and hold.

FLOAT INFLATION trigger switch — Pull On, FLOAT TEST light illuminated, then release.

FLOAT TEST switch — Release, FLOAT TEST light Extinguished.

FLOAT MANUAL ARM switch — POWER (guard open), FLOAT ARM light illuminated, then switch OFF (guard closed), FLOAT ARM light Extinguished.

IN-FLIGHT OPERATIONS

OVER WATER OPERATION

FLOAT MANUAL ARM switch — POWER (guard open).

FLOAT ARM light — Illuminated.

CAUTION

DURING FLIGHT AT ALTITUDES ABOVE 500 FEET AND AT AIRSPEED OF 70 MPH (61 KNOTS) IAS AND ABOVE THE SYSTEM SHOULD BE DEACTIVATED BY POSITIONING THE FLOAT MANUAL ARM SWITCH TO THE OFF POSITION (GUARD CLOSED).

Rearm system prior to landing.

OVER LAND OPERATION

FLOAT MANUAL ARM switch — OFF.

DESCENT AND LANDING

WARNING

RUN-ON LANDINGS ON OTHER THAN A HARD FIRM SURFACE SHOULD BE EXERCISED WITH CAUTION, DUE TO THE

INCREASED GROUND CONTACT AREA OF THE SKID PANELS.

NOTE

Tail-low run-on landings should be avoided to prevent nose-down pitching.

Section 3

EMERGENCY AND MALFUNCTION PROCEDURES

FLOAT INFLATION PROCEDURE

Maximum inflation airspeed — 70 MPH (61 knots).

FLOAT MANUAL ARM switch — POWER (guard open).

FLOAT ARM light — Illuminated.

CAUTION

DO NOT INFLATE FLOATS MORE THAN 8000 FEET ABOVE ANTICIPATED LANDING SURFACE.

FLOAT INFLATION trigger switch — Pull On.

AFTER EMERGENCY WATER LANDING

GROSS WEIGHT 3000 POUNDS (1360.8 KILOGRAMS) OR LESS

After landing, check the aircraft for possible damage.

If malfunction was cause of landing, correct malfunction.

If no damage has occurred to aircraft and malfunction has been corrected, the aircraft can be ferried to the nearest maintenance facility to repack floats and charge system. The ferrying airspeed is restricted to 100 MPH (87 knots) with all doors on or to 80 MPH (52 knots) with door or doors off.

GROSS WEIGHT ABOVE 3000 POUNDS (1360.8 KILOGRAMS)

After landing, aircraft must not be flown until the aircraft has been moved to nearest maintenance facility.

Check the aircraft for possible damage

If malfunction was cause of landing, correct malfunction.

Repack floats and charge system.

ENGINE FAILURE OVER WATER - NIGHT

Establish an autorotative glide at 60 MPH (52 knots), for minimum rate of descent, and turn on landing light.

At 100 feet execute a moderate cyclic flare to reduce airspeed to approximately 30 MPH (26 knots).

Adjust collective and cyclic pitch sufficiently to perform a low speed

cushioned touch down at a slight nose-up attitude.

NOTE

Night autorotative touch down landings to water have been demonstrated at airspeeds to 35 MPH, (30 knots).

Section 4

PERFORMANCE

Refer to Particle Separator Supplement (BHT-206B3-FMS-12) when the particle separator is installed.

HOVER CEILING

Out of ground effect hover performance is the same as basic helicopter. In ground effect hover performance is shown in figure 4-1.

NOTE

The Hover Ceiling charts presented in this manual reflect performance with the 65 inch diameter tail rotor (P/N 206-010-201) installed. For performance with the 62 inch diameter tail rotor (P/N 206-010-750), refer to BHT-206B3-FMS-22.

HOVER CEILING IN GROUND EFFECT
TAKEOFF POWER 0° TO 46°C

GENERATOR 22.3 AMPS
SKID HEIGHT 3.0 FT (0.9 METERS)
WITH ANTI-ICE ON GROSS WEIGHT IS 200 LBS (90.7 Kg) LESS
BASIC SHIP WITH HIGH SKID GEAR

ANTI-ICE OFF
N2 ENGINE RPM 100%

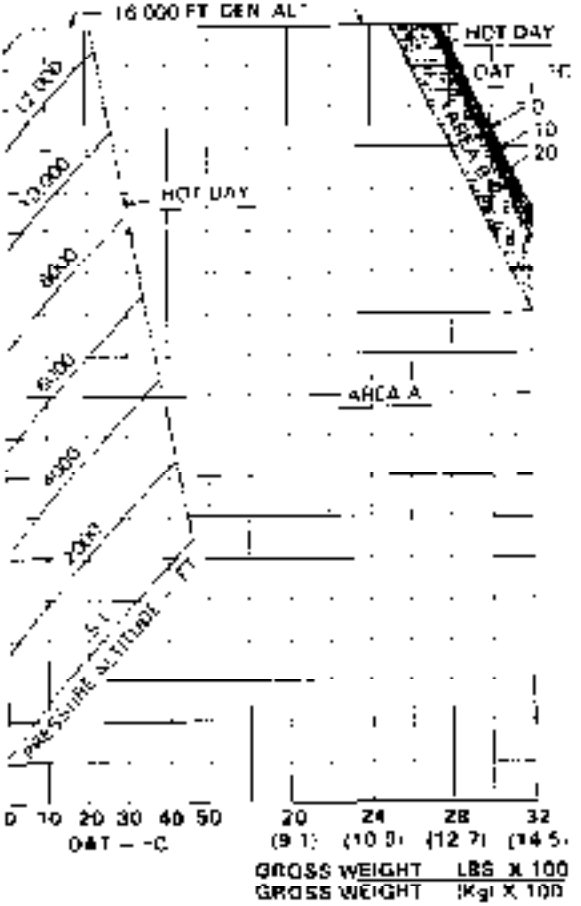

Figure 4-1. Hover ceiling in ground effect (Sheet 1 of 2)

HOVER CEILING IN GROUND EFFECT
TAKEOFF POWER 0° TO −40°C

GENERATOR 22.3 AMPS — ANTI-ICE OFF
SKID HEIGHT 3.0 FT (0.9 METERS) — N2 ENGINE RPM 100%
WITH ANTI-ICE ON GROSS WEIGHT IS 200 LBS (90.7 Kg) LESS
BASIC SHIP WITH HIGH SKID GEAR

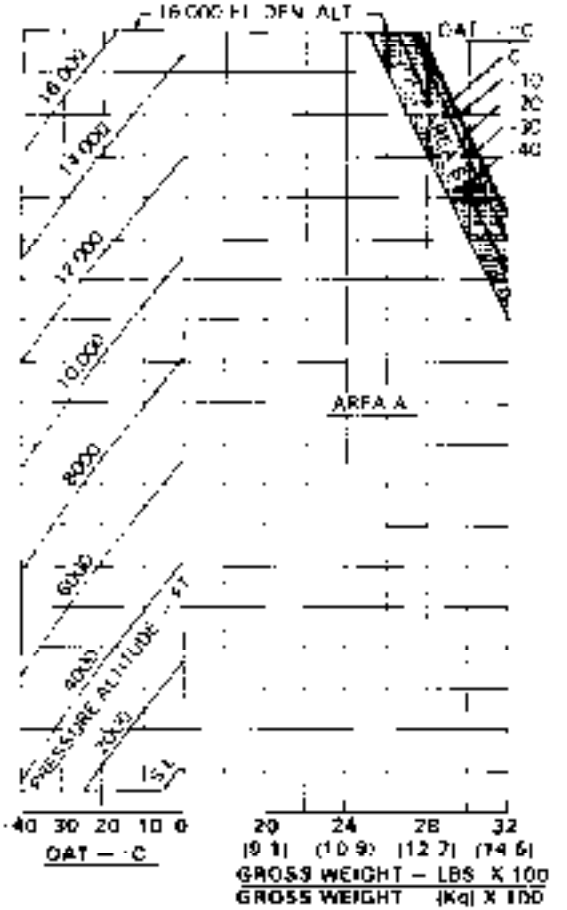

Figure 4-1. Hover ceiling in ground effect (Sheet 2 of 2)

Bell JetRanger-III
MODEL 206B
250-C20B/C20J ENGINE

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT
FIXED CARGO HOOK
206-706-104

CERTIFIED
JULY 28, 1977

This supplement shall be attached to Model 206B3 Flight Manual when cargo hook has been installed.

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

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APPROVED:

MANAGER

ROTORCRAFT CERTIFICATION OFFICE
FEDERAL AVIATION ADMINISTRATION
FT. WORTH, TX 76193-0170

GENERAL INFORMATION

Cargo Hook Kit (206-706-104) consists of two A-frames, hook assembly, electrical and manual (emergency) release system, and attaching hardware. A bungee shock cord is attached to cargo hook which provides automatic stowing when hook is not in use.

NOTE

A swivel link is not supplied with Cargo Hook Kit; however, it is recommended that a link be installed between suspension cable and cargo hook.

Section 1

LIMITATIONS

TYPE OF OPERATION

Operations of the helicopter with no load on the external cargo hook is authorized under the standard airworthiness certificate without removing the unit from the helicopter.

External cargo operations shall be conducted in accordance with appropriate operating rules for external loads under VFR conditions.

WEIGHT LIMITATIONS

Maximum approved gross weight 3350 pounds (1519.5 kilograms) including external load.

Maximum external cargo load is 1200 pounds (544.3 kilograms).

AIRSPEED LIMITATIONS

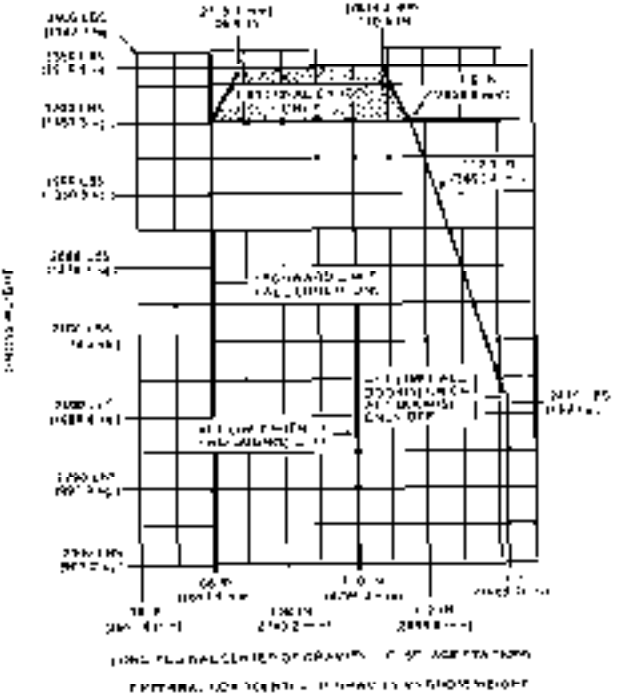
Vne 81 MPH (70 knots) for gross weights above 3000 pounds (1360.8 kilograms).

CAUTION

THE AIRSPEED WITH EXTERNAL CARGO IS LIMITED BY CONTROLLABILITY. CAUTION SHOULD BE EXERCISED WHEN CARRYING EXTERNAL CARGO, AS THE HANDLING CHARACTERISTICS MAY BE AFFECTED DUE TO THE SIZE, WEIGHT, AND SHAPE OF THE CARGO LOAD.

CENTER OF GRAVITY LIMITS

Actual weight change shall be determined after kit is installed and ballast readjusted, if necessary, to return empty weight CG within allowable limits. Refer to External Load Center of Gravity vs Gross Weight chart (figure 1-1).



206B3-FS1G-1-1

Figure 1-1. External load center of gravity vs gross weight

PLACARDS

(LOCATED ON CYCLIC STICK.)

(LOCATED ON T HANDLE OF MANUAL RELEASE CABLE.)

EXTERNAL CARGO
LOAD LIMIT 1200 LBS

(LOCATED ON UNDER SIDE OF HELICOPTER ON HOOK FRAME ASSEMBLY.)

206B3-F515-1-2

Figure 1-2. Placards

Section 2

NORMAL PROCEDURES

GROUND CREW INSTRUCTIONS

Instruct ground crewmember to discharge helicopter static electricity before attaching cargo by touching the airframe with a ground wire, or if a metal sling is used, the hook-up ring can be struck against the cargo hook. If contact has been lost after initial grounding, the helicopter should be electrically regrounded and, if possible, contact maintained until hook-up is completed.

Instruct ground personnel to check primary load ring and secondary load ring for condition and proper size (Table 2-1). Check for proper rigging.

WARNING

USE OF INAPPROPRIATELY SIZED LOAD RINGS MAY RESULT IN LOAD HANG-UP WHEN LOAD RING IS TOO SMALL OR INADVERTENT LOAD RELEASE IF LOAD RING IS TOO LARGE.

Check that only one primary ring is captured in the load beam and only one secondary ring with correct cross-section dimension is captured in the primary ring. Additional rings, slings, or shackles shall be attached to the secondary load ring. See figure 2-1.

Table 2-1. RING SIZE — CARGO HOOK P/N 14027-2

PRIMARY RING INSIDE DIAMETER	PRIMARY RING CROSS SECTION	MAXIMUM CROSS SECTION OF SECONDARY RING
2.38 to 2.50 in.	1.0 in.	0.438 in.
(60.452 to 63.50 mm.)	(25.4 mm.)	(11.12 mm.)
2.50 to 2.75 in.	1.0 in.	0.625 in.
(63.50 to 69.85 mm.)	(25.4 mm.)	(15.88 mm.)

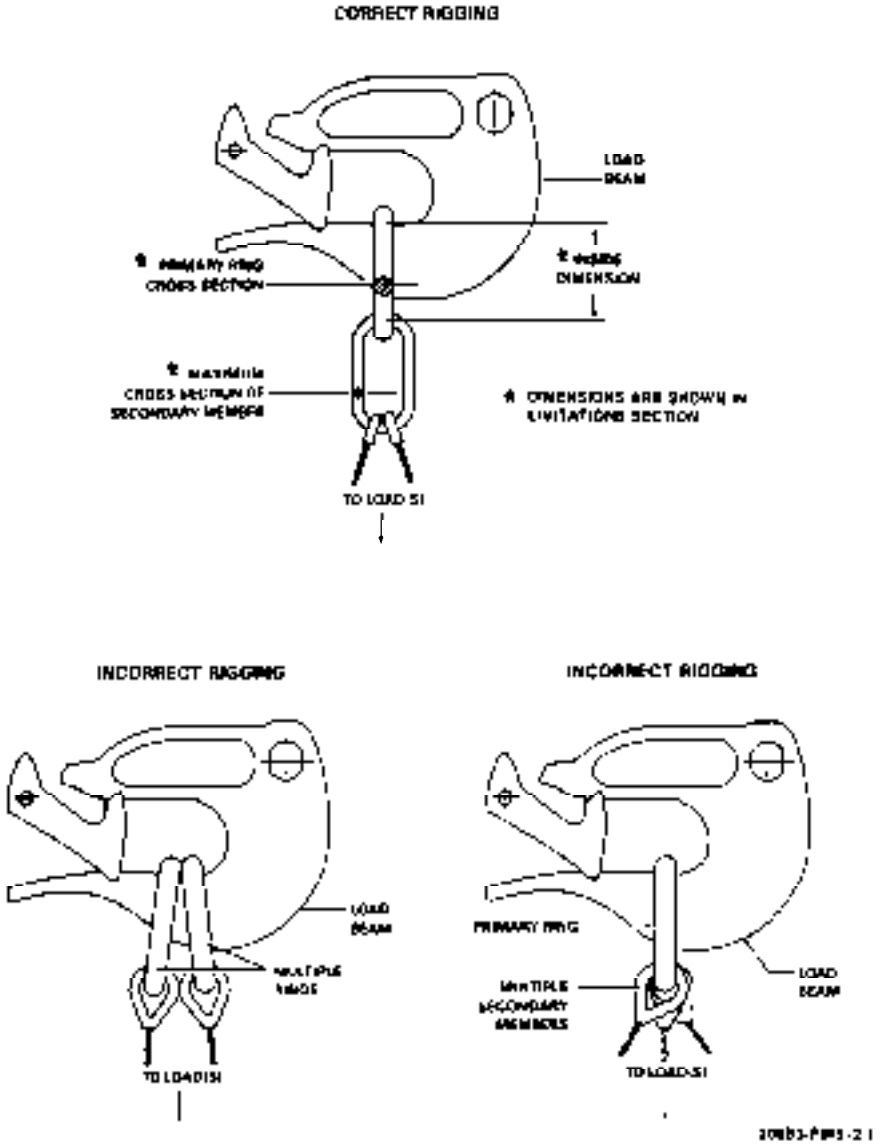


Figure 2-1. External load rigging

EXTERIOR CHECK

Cargo suspension assembly — Condition and security

Cargo sling — Condition, proper length.

ENGINE PRESTART CHECK

CARGO HOOK circuit breaker — In.

BAT switch — On.

Cyclic CARGO RELEASE switch — Press and hold; pull down on cargo hook; hook should open. Release switch and hook should close and lock.

BEFORE TAKEOFF

Cargo — Secured; sling attached to cargo.

Ground crewmember — Positioned as required

TAKEOFF

WARNING

AVOID CRITICAL RELATIVE WINDS WHILE PERFORMING EXTERNAL CARGO OPERATIONS. REFER TO BHT-206B3-FM-1.

Hover helicopter at sufficient height to allow crewmember to discharge static electricity and to attach cargo sling to cargo hook.

Ascend vertically directly over cargo, then slowly lift cargo from surface.

Pedals — Check for adequate directional control.

Hover power — Check torque required to hover with external load.

Takeoff into the wind if possible, allowing adequate sling load clearance over obstacles.

IN-FLIGHT OPERATION

NOTE

Control movements should be made smoothly and kept to a minimum to prevent oscillation of sling load.

Airspeed — Within limits for adequate controllability of rotorcraft-load combination.

Flight path — As required to avoid flight with external load over any person, vehicle or structure.

DESCENT AND LANDING

Flight path and approach angle — As required for wind direction and obstacle clearance.

Terminate approach to a high hover. When stabilized at a hover, descend slowly until cargo contacts surface. Maintain tension on sling.

Cyclic CARGO RELEASE switch — Press to release sling from hook.

Section 3

EMERGENCY AND MALFUNCTION PROCEDURES

CARGO FAILS TO RELEASE ELECTRICALLY

In the event that the cargo hook will not release the sling when the cyclic CARGO RELEASE switch is engaged, proceed as follows:

Maintain tension on sling.

Pull EMER CARGO RELEASE PULL mechanical release handle to drop cargo.

Section 4

PERFORMANCE

Refer to Particle Separator Supplement (BHT-206B3-FMS-12) when the particle separator is installed.

HOVER CEILING CHARTS

For external cargo operations, refer to the Hover Ceiling In Ground Effect (figure 4-1) and Hover Ceiling Out of Ground Effect (figure 4-2). Refer to BHT-206B3-FM-1 for use of these charts.

NOTE

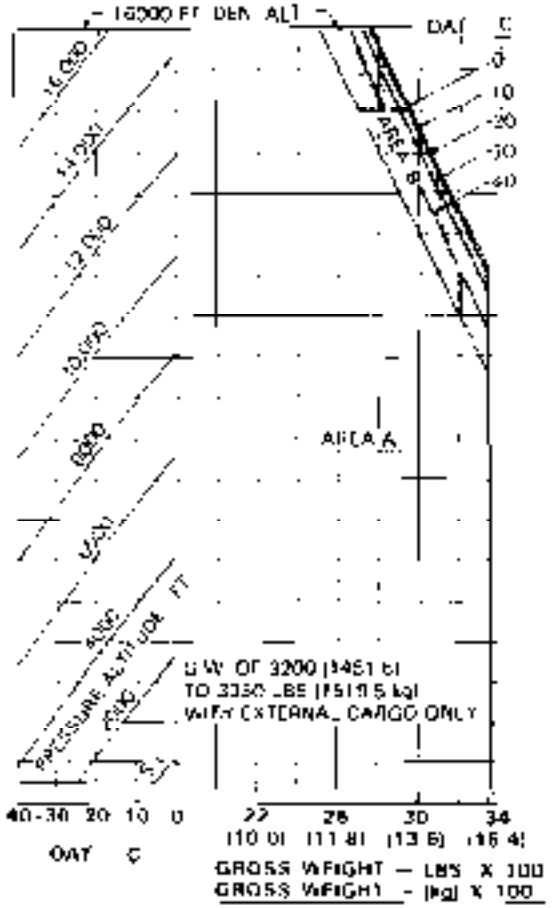
The Hover Ceiling charts presented in this manual reflect performance with the 65 inch diameter tail rotor (P/N 206-016-201) installed. For performance with the 62 inch diameter tail rotor (P/N 206-010-750), refer to BHT-206B3-FMS-22.

HOVER CEILING IN GROUND EFFECT

TAKEOFF POWER 0° TO -40°C

GENERATOR 22.3 AMPS
SKID HEIGHT LOW SKID GEAR 4.0 FT (1.2 METERS)
HIGH SKID GEAR 3.0 FT (0.9 METERS)
WITH ANTI-ICE ON GROSS WEIGHT IS 200 LBS (90.7 Kg) LESS

ANTI-ICE OFF
N2 ENGINE RPM 100%

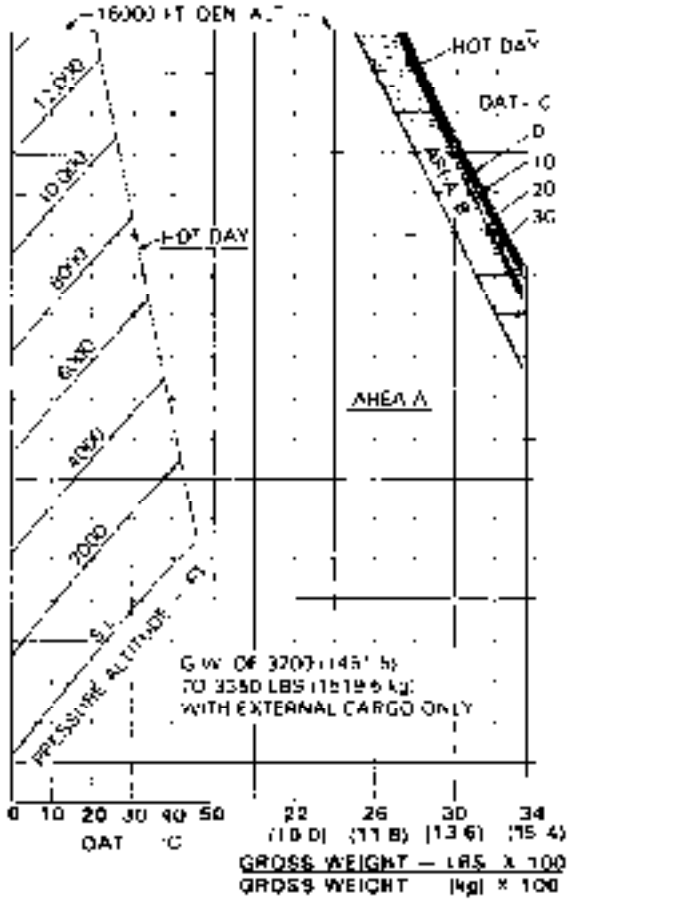


206B3-FMS-0415

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

HOVER CEILING IN GROUND EFFECT
TAKEOFF POWER 0° TO 48°C

GENERATOR 22.3 AMPS
SKID HEIGHT LOW SKID GEAR 4.0 FT (1.2 METERS)
HIGH SKID GEAR 3.0 FT (0.9 METERS)
ANTI-ICE OFF
N2 ENGINE RPM 100%
WITH ANTI-ICE ON GROSS WEIGHT IS 200 LBS (90.7 Kg) LESS

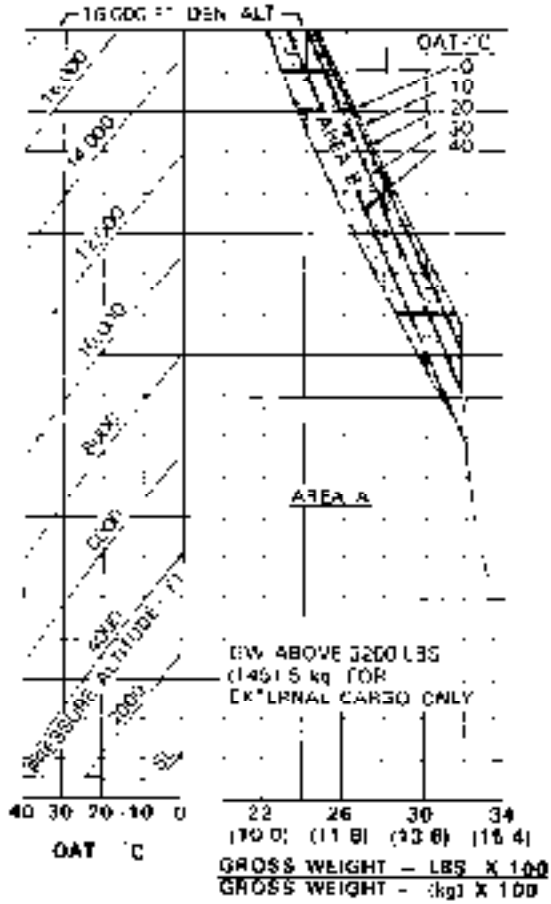


206B3-FS15-4-1-2

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

HOVER CEILING
OUT-OF-GROUND-EFFECT TAKEOFF POWER
0° TO 40°C

GENERATOR 22.3 AMPS
SKID HEIGHT 40 FT (12.2 METERS)
ANTI-ICE OFF
N2 ENGINE RPM 100%
WITH ANTI-ICE ON GROSS WEIGHT IS 295 LBS (133.8 Kg) LESS



30693-PS15-4-2-1

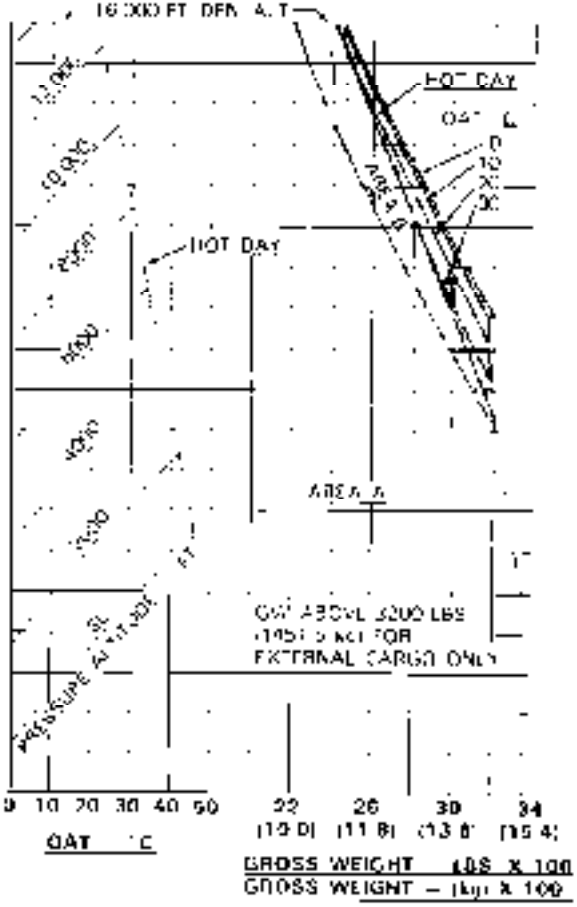
Figure 4-2 Hover ceiling out of ground effect (Sheet 1 of 2)

HOVER CEILING
OUT-OF-GROUND-EFFECT TAKEOFF POWER
0° TO 46°C

GENERATOR 22 3 AMPS
SKID HEIGHT 40 FT (12 2 METERS)

ANTI-ICE OFF
N2 ENGINE RPM 100%

WITH ANTI-ICE ON GROSS WEIGHT IS 295 LBS (133.8 Kg) LESS



206B3-FMS-4-2-2

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

BHT-206B3-FMS-16

Bell JetRanger-III
MODEL 206B
250-C20B/C20J ENGINE

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT

ENVIRONMENTAL CONTROL SYSTEM (CABIN TEMP CONTROL)

206-706-344 OR 206-706-402

CERTIFIED
JULY 28, 1977

This supplement shall be attached to Model 206B3 Flight Manual when Environmental Control System (Cabin Temp Control) kit has been installed.

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

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for MANAGER

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NOTE

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GENERAL INFORMATION

The Bell Environmental Control System (ECS) (206-706-344 or 206-706-402) will lower or raise the cabin temperature and thereby provide additional comfort to the cabin occupants. The ECS unit is powered by engine bleed air and is manually temperature controlled for the ECS output level as desired. The 206-706-402 Environmental Control System is installed in helicopter serial number 3567 and subsequent due to new changes in interior design. The ducting and air outlets are the primary differences in the 206-706-402 Environmental Control System.

Section 1

LIMITATIONS

TYPE OF LIMITATIONS

Flight with the Environmental Control System (ECS) operating is prohibited during takeoff, hover and landing.

External cargo loading limited to 3200 pounds (1451.5 kilograms) gross weight with ECS unit in operation.

CENTER OF GRAVITY LIMITS

Actual weight change shall be determined after Environmental Control System is installed and the ballast readjusted, if necessary, to return empty weight CG within allowable limits.

PLACARDS

ECS OFF FOR
TAKEOFF
LANDING
HOVER

(Located on left side of instrument panel)

WHEN ENVIR CONT SYSTEM IS INSTALLED REDUCE
ALLOWABLE WT BY 75 POUNDS (34 KILOGRAMS)
(Located on inner surface of baggage compartment door.)

Section 2

NORMAL PROCEDURES

ENGINE PRE-START CHECK

ECS (Environmental Control System) switch — OFF.

BEFORE TAKEOFF

ECS circuit breaker — Check in.

ECS switch — OFF.

WARNING

FLIGHT WITH THE ENVIRONMENTAL CONTROL SYSTEM (ECS) OPERATING IS

PROHIBITED DURING TAKEOFF, HOVER, AND LANDING.

IN-FLIGHT OPERATIONS

CAUTION

SELECTION OF MAX HEAT POSITION ON ECS SWITCH TURNS OFF UNIT COOLING FAN. DO NOT USE MAX HEAT POSITION AT AMBIENT TEMPERATURES AT OR ABOVE -12°C TO PREVENT DAMAGE TO ECS.

ECS switch — COOL/HEAT (as desired) for all maximum allowable gross weights after translational lift has been attained in forward flight. For operations below -12°C switch may be placed in MAX HEAT.

TEMPERATURE CONTROL — ROTATE to obtain desired comfort level if Environmental Control System is being operated.

DESCENT AND LANDING

ECS switch — OFF.

Section 3

EMERGENCY AND MALFUNCTION PROCEDURES

OPERATING EMERGENCIES

ECS switch — OFF if any of the following emergencies occur:
Fuel control and/or governor failure.
Engine fuel system failure.
Helicopter fuel system failure.
Engine air start is to be accomplished.

Section 4

PERFORMANCE

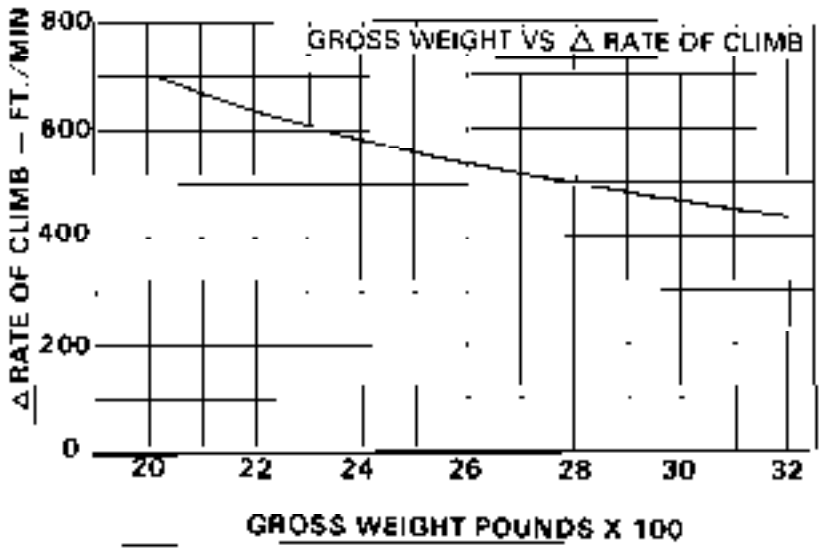
No change in performance with ECS OFF.

Refer to Rate of Climb (figure 4-1).

RATE OF CLIMB

TAKEOFF POWER & MAX. CONT POWER
ALL TEMPERATURES AND CONFIGURATIONS
100% RPM

ESC R/C – FM OR SUPPLEMENT R/C = △ R/C



EXAMPLE △ R/C CHART

Determine rate of climb for desired altitude, temperature and gross weight from Flight Manual or appropriate Supplement Chart.

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

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

Figure 4-1. Rate of climb

Bell JetRanger-III
MODEL 206B
250-C20B/C20J ENGINE

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT
EXTERNAL CARGO HOOK
206-706-101

CERTIFIED
JULY 28, 1977

This supplement shall be attached to Model 206B3 Flight Manual when cargo hook has been installed.

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

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REISSUE — 13 SEPTEMBER 1995

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MANAGER

ROTORCRAFT CERTIFICATION OFFICE
FEDERAL AVIATION ADMINISTRATION
FT. WORTH, TX 76193-0170

GENERAL INFORMATION

The Bell Cargo Hook Kit (206-706-101) consists of two A-frame mountings, a main cross beam, and an integral cargo hook, designed to carry loads of 1200 pounds (544.3 kilograms). The cargo is suspended from the helicopter center of gravity and the design is such that oscillatory moments of a free swinging cargo do not impart motion to the airframe. The system contains an electrical and manual emergency release. Provisions for stowing the kit when flight without cargo is anticipated are provided.

NOTE

Two bumper assemblies (206-070-585-1) must be installed per Bell Service Letter No. 206A-74 when external cargo hook is used with float equipped helicopters.

A swivel link is not supplied with the Cargo Hook Kit; however, it is recommended that a link be installed between suspension cable and cargo hook.

Section 1

LIMITATIONS

TYPE OF OPERATION

Operation of the helicopter with no load on the external cargo hook is authorized under the standard airworthiness certificate without removing the unit from the helicopter.

External cargo operations shall be conducted in accordance with appropriate operating rules for external loads under VFR conditions.

Refer to Particle Separator Supplement (BHT-206B3-FMS-12) when the Particle Separator is installed.

WEIGHT LIMITATIONS

Maximum approved gross weight 3350 pounds.

AIRSPEED LIMITATIONS

Vne 91 MPH (79 knots) for gross weights above 3000 pounds.

Extreme caution should be exercised when carrying cargo loads as controllability may be affected, due to the size and shape of the cargo load.

CENTER OF GRAVITY LIMITS

Actual weight change shall be determined after kit is installed and ballast readjusted, if necessary, to return empty weight CG within allowable limits. Refer to External Load Center of Gravity vs Gross Weight chart (figure 1-1)

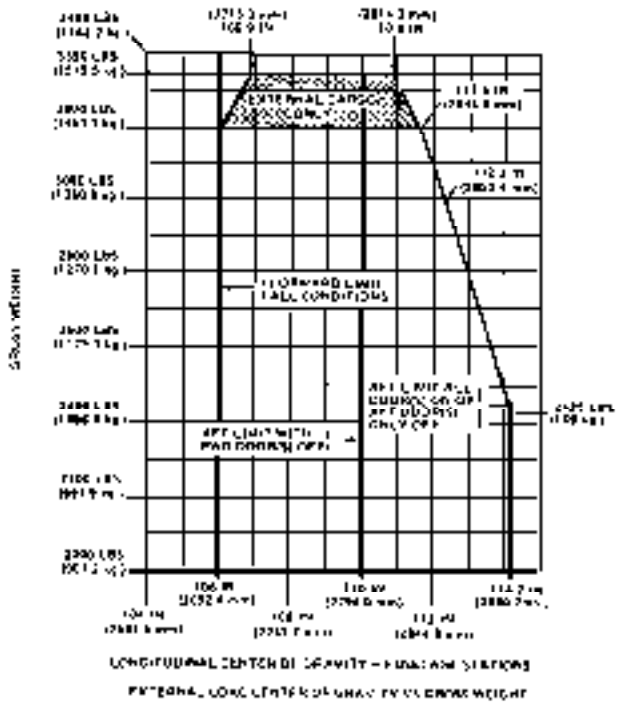


Figure 1-1. External load center of gravity vs gross weight

(LOCATED ON CYCLIC STICK.)

(LOCATED ON T HANDLE OF MANUAL RELEASE CABLE.)

LOAD LIMIT 1200 LB

(LOCATED ON UNDER SIDE OF HELICOPTER ON HOOK FRAME ASSEMBLY.)

206B3-FMS17-1-2

Figure 1-2. Placards and markings

Section 2

NORMAL PROCEDURES

GROUND CREW INSTRUCTIONS

Instruct ground crewmember to discharge helicopter static electricity before attaching cargo by touching the airframe with a ground wire, or if a metal sling is used, the hook-up ring can be struck against the cargo hook. If contact has been lost after initial grounding, the helicopter should be electrically regrounded and, if possible, contact maintained until hook-up is completed.

Instruct ground personnel to check primary load ring and secondary load ring for condition and proper size (Table 2-1) Check for proper rigging.

WARNING

USE OF INAPPROPRIATELY SIZED LOAD RINGS MAY RESULT IN LOAD HANG-UP WHEN LOAD RING IS TOO SMALL OR INADVERTENT LOAD RELEASE IF LOAD RING IS TOO LARGE.

Check that only one primary ring is captured in the load beam and only one secondary ring with correct cross-section dimension is captured in the primary ring. Additional rings, slings, or shackles shall be attached to the secondary load ring. See figure 2-1.

Table 2-1. RING SIZE — CARGO HOOK P/N 14027-2

PRIMARY RING INSIDE DIAMETER	PRIMARY RING CROSS SECTION	MAXIMUM CROSS SECTION OF SECONDARY RING
2.38 to 2.50 in. (60.452 to 63.50 mm.)	0.625 in. (15.88 mm.)	0.438 in. (11.12 mm.)
2.50 to 2.75 in. (63.50 to 69.85 mm.)	0.625 in. (15.88 mm.)	0.625 in. (15.88 mm.)

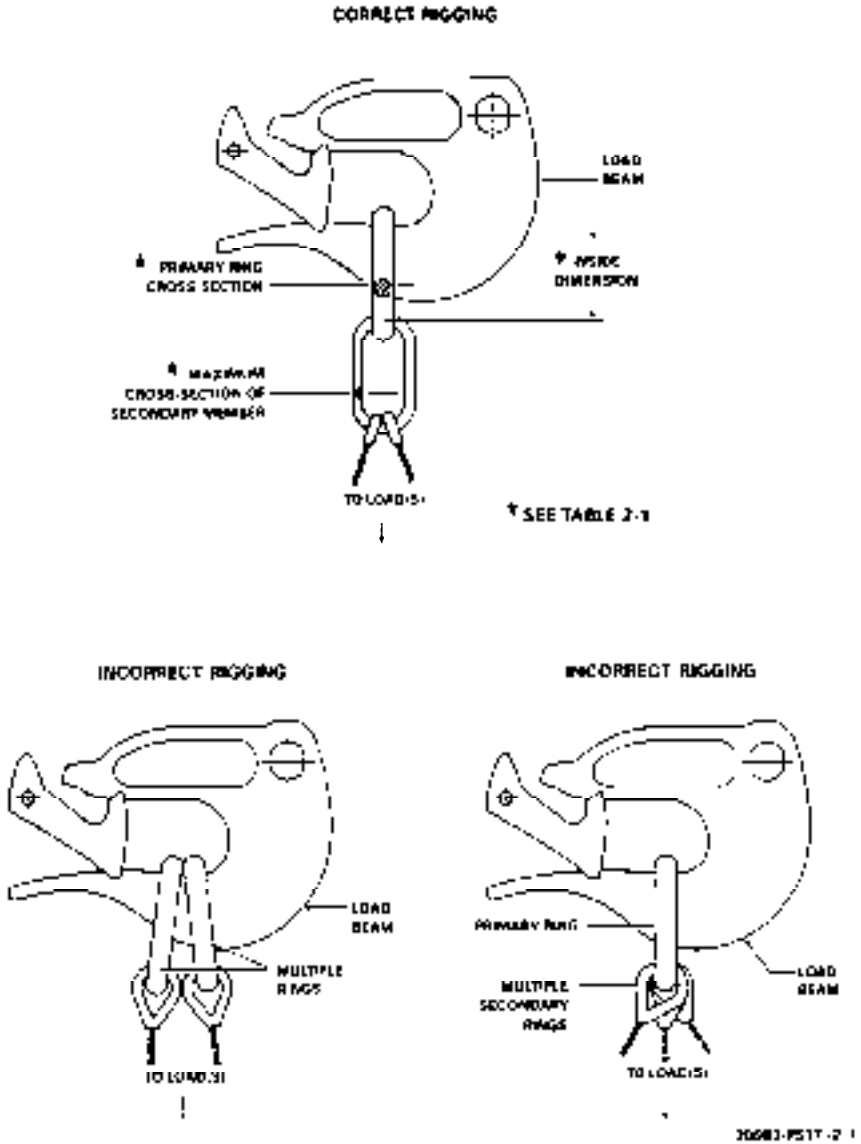


Figure 2-1. External load rigging

EXTERIOR CHECK

Cargo suspension assembly — Condition and security

Cargo sling — Condition, proper length.

ENGINE PRESTART CHECK

CARGO HOOK circuit breaker — In.

BAT switch — On.

Cyclic CARGO RELEASE switch — Press and hold; pull down on cargo hook; hook should open. Release switch and hook should close and lock.

BEFORE TAKEOFF

Cargo - Secured: sling attached to cargo.

Ground crewmember — Positioned as required.

TAKEOFF

WARNING

AVOID CRITICAL RELATIVE WINDS WHILE PERFORMING EXTERNAL CARGO OPERATIONS. REFER TO BHT-206B3-FM-1.

Hover helicopter at sufficient height to allow crewmember to discharge static electricity and to attach cargo sling to cargo hook.

Ascend vertically directly over cargo, then slowly lift cargo from surface.

Pedals — Check for adequate directional control.

Hover power — Check torque required to hover with external load.

Takeoff into the wind if possible, allowing adequate sling load clearance over obstacles.

IN-FLIGHT OPERATION

NOTE

Control movements should be made smoothly and kept to a minimum to prevent oscillation of sling load.

Airspeed — Within limits for adequate controllability of rotorcraft-load combination.

Flight path — As required to avoid flight with external load over any person, vehicle or structure

DESCENT AND LANDING

Flight path and approach angle — As required for wind direction and obstacle clearance.

Terminate approach to a high hover. When stabilized at a hover, descend slowly until cargo contacts surface. Maintain tension on sling.

Cyclic CARGO RELEASE switch — Press to release sling from hook.

Section 3

EMERGENCY AND MALFUNCTION PROCEDURES

CARGO FAILS TO RELEASE ELECTRICALLY

In the event that the cargo hook will not release the sling when the cyclic CARGO RELEASE switch is engaged, proceed as follows:

Maintain tension on sling.

Pull EMER CARGO RELEASE PULL mechanical release handle to drop cargo.

Section 4

PERFORMANCE

Refer to Particle Separator Supplement (BHT-206B3-FMS-12) when the particle separator is installed.

HOVER CEILING CHARTS

For external cargo hook operations, refer to Hover Ceiling In Ground Effect (figure 4-1) and Hover Ceiling Out of Ground Effect (figure 4-2) for hover performance. Refer to BHT-206B3-FM-1 for use of these charts.

NOTE

The Hover Ceiling charts presented in this manual reflect performance with the 65 inch diameter tail rotor (P/N 206-016-201) installed. For performance with the 62 inch diameter tail rotor (P/N 206-010-750), refer to BHT-206B3-FMS-22

HOVER CEILING IN GROUND EFFECT

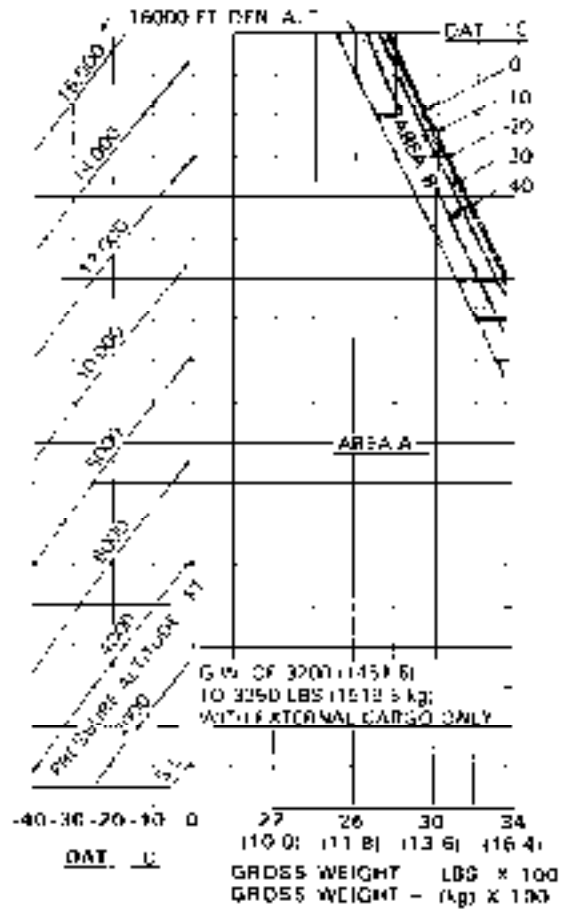
TAKEOFF POWER 0° TO −40°C

GENERATOR 22.3 AMPS ANTI-ICE OFF

SKID HEIGHT LOW SKID GEAR 4.0 FT (1.2 METERS) N2 ENGINE RPM 100%

HIGH SKID GEAR 3.0 FT (0.9 METERS)

WITH ANTI-ICE ON GROSS WEIGHT IS 200 LBS (90.7 Kg) LESS



206B3-FMS17-4-1-1

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

HOVER CEILING IN GROUND EFFECT
TAKEOFF POWER 0° TO 46°C

GENERATOR 22 3 AMPS ANTI-ICE OFF
SKID HEIGHT LOW SKID GEAR 4 0 FT (1 2 METERS) N2 ENGINE RPM 100%
HIGH SKID GEAR 3 0 FT (0.9 METERS)
WITH ANTI-ICE ON GROSS WEIGHT IS 200 LBS (90 7 Kg) LESS

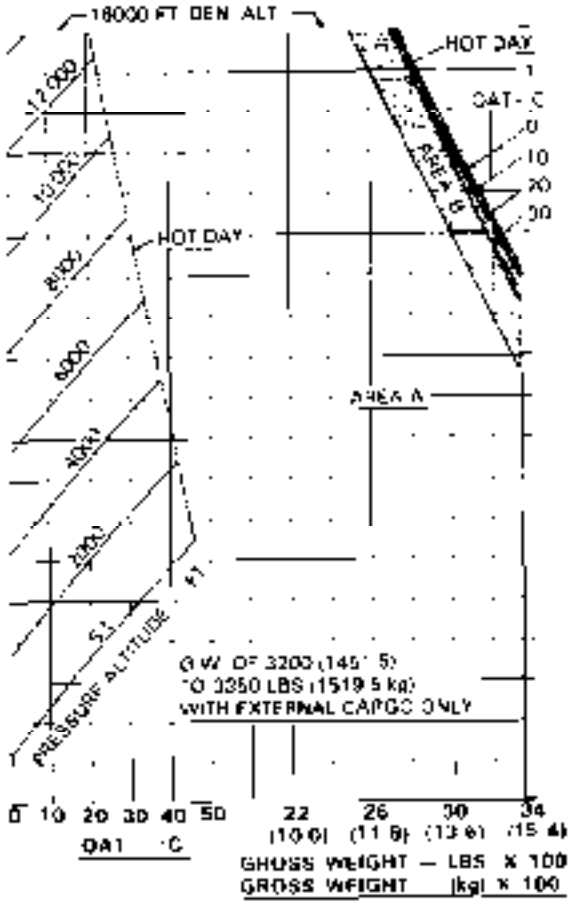


Figure 4-1. Hover ceiling in ground effect (Sheet 2 of 2)

HOVER CEILING

OUT-OF-GROUND-EFFECT TAKEOFF POWER

0° TO 40°C

GENERATOR 22.3 AMPS ANTI-ICE OFF

SKID HEIGHT 40 FT (12.2 METERS) N2 ENGINE RPM 100%

WITH ANTI-ICE ON GROSS WEIGHT 15,295 LBS (133.8 Kg) LESS

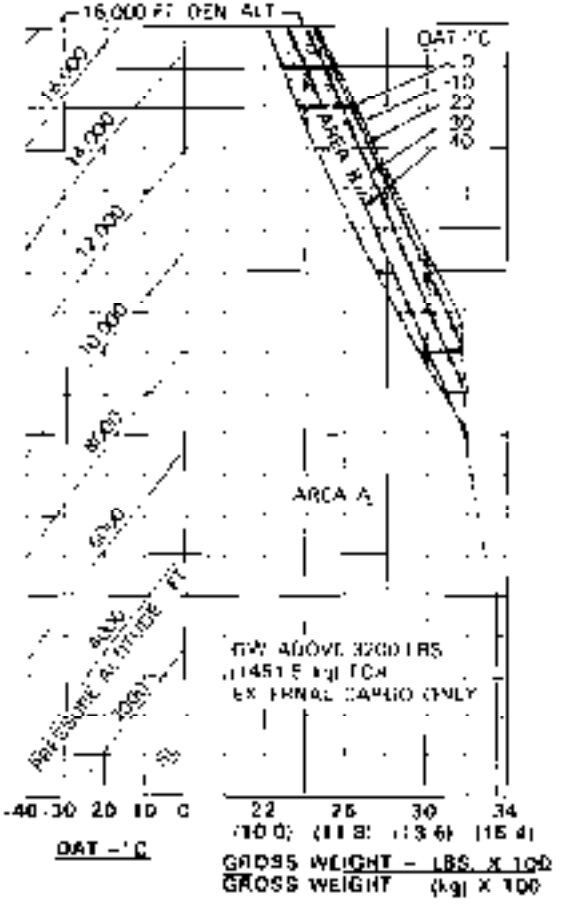
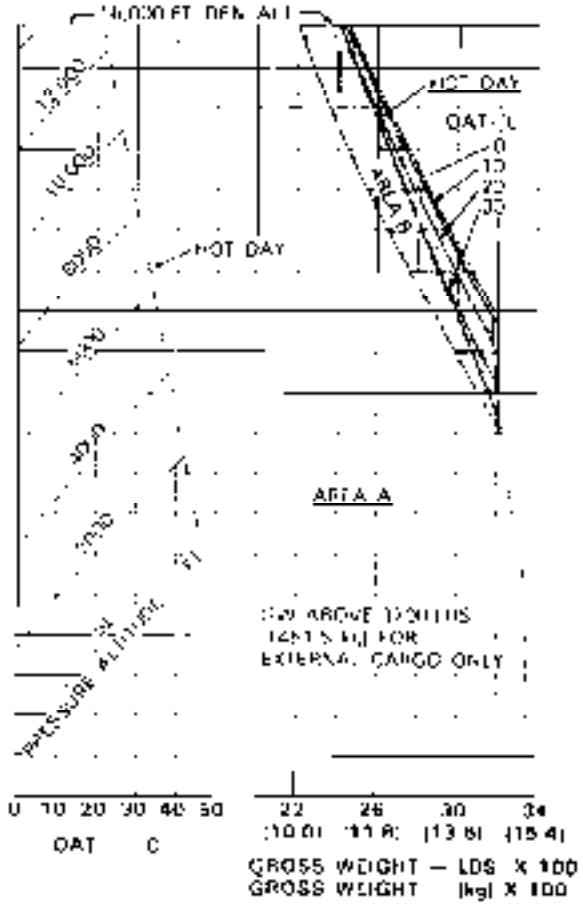


Figure 4-2. Hover ceiling out of ground effect (Sheet 1 of 2)

HOVER CEILING
OUT-OF-GROUND-EFFECT TAKEOFF POWER
0° TO 46°C

GENERATOR 22.3 AMPS — ANTI-ICE OFF
SKID HEIGHT 40 FT (12.2 METERS) — N2 ENGINE RPM 100%
WITH ANTI-ICE ON GROSS WEIGHT IS 286 LBS (133.8 Kg) LESS



206B3 PBT 4-2-2

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

Bell JetRanger-III
MODEL 206B

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT
ENGINE (AUTOMATIC) RE-IGNITION
206-706-038

CERTIFIED
AUGUST 11, 1977

This supplement shall be attached to Model 206B3 Flight Manual when Engine (Automatic) Re-Ignition Kit has been installed.

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

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FOR
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GENERAL INFORMATION

The Engine Relight Kit (206-705-038) will provide engine automatic re-ignition capability in the event of an engine flameout. Re-ignition of engine is actuated, when system is armed, by decay of engine bleed air as a result of flameout.

Section 1

LIMITATIONS

TYPE OF OPERATIONS

The Particle Separator Engine Air Induction System (BHT-206B3-FMS-12) and Engine Air Induction System Deflector Kit (BHT-206B3-FMS-10) shall be installed in conjunction with Engine (Automatic) Re-Ignition System when conducting operations in falling and/or blowing snow.

WEIGHT LIMITATIONS

Actual weight change shall be determined after kit is installed and ballast readjusted, if necessary, to return empty weight CG within allowable limits.

ALTITUDE LIMITATIONS

Do not activate automatic re-ignition system at altitude above 12,000 feet Hp.

Engine (Automatic) Re-Ignition System shall be ARMED when conducting operations in falling and/or blowing snow below 12,000 feet Hp.

Section 2

NORMAL PROCEDURES

ENGINE PRE-START CHECK

After Rotor Low RPM System Check add:

1. ENGINE RELIGHT switch — TEST.
2. Move ENGINE RELIGHT switch to TEST position, holding momentarily in ENGINE RELIGHT ARM position (center).
3. Hold in TEST position and check for ENGINE RELIGHT Indicator illumination and listen for ignition system on, approximately two seconds.

OFF/RESET

1. Move switch to OFF/RESET position.
2. ENGINE RELIGHT Indicator — Extinguished.

NOTE

The engine relight switch has three positions as follows:

3. TEST — Up position momentarily.
4. ENGINE RELIGHT Arm — Center position.
5. OFF/RESET — Lower position.

BEFORE TAKEOFF

After power turbine N2 — Set for 100% in flat pitch add:

1. ENGINE RELIGHT switch — Arm
2. Move switch to ENGINE RELIGHT Arm center position.
3. The system will provide automatic re-ignition as long as switch is in this position.

ENGINE SHUTDOWN

After Throttle — Flight Idle — etc. add:

1. ENGINE RELIGHT switch — Check Arm position. Press IDLE REL button and roll throttle to full closed position.
2. ENGINE RELIGHT indicator light — Illuminated indicates the Engine (Automatic) Re-ignition system is functional.
3. ENGINE RELIGHT switch — OFF.

Section 3

EMERGENCY AND MALFUNCTION PROCEDURES

ENGINE AUTOMATIC — RE-IGNITION

If automatic re-ignition occurs the ENGINE RELIGHT indicator light will illuminate.

The system is still armed for a new re-ignition when light is illuminated.

To extinguish the light move switch down to OFF/RESET position, then up to ENGINE RELIGHT Arm position (center)

Section 4

PERFORMANCE

No change from basic manual.

Bell JetRanger-III
MODEL 206B
250-C20B/C20J ENGINE

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT

AUXILIARY BATTERY 13 AMP HOUR
206-706-330

CERTIFIED
SEPTEMBER 16, 1977

This supplement shall be attached to Model 206B3 Flight Manual when Auxiliary Battery 13 Amp Hour kit has been installed.

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

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ROTORCRAFT CERTIFICATION OFFICE
FEDERAL AVIATION ADMINISTRATION
FT. WORTH, TX 76193-0170

NOTE

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GENERAL INFORMATION

The Auxiliary Battery Kit (206-706-330) consists of a 13 amp hour battery, battery disconnect, channel, bushing, stiffener, cables, tubes, brackets, and attaching hardware.

Section 1

LIMITATIONS

CENTER OF GRAVITY LIMITS

Actual weight change shall be determined after kit is installed and ballast readjusted, if necessary, to return empty weight CG within allowable limits.

LOADING LIMITATIONS

Maximum baggage loading is 220 pounds (99.8 kilograms) when Auxiliary Battery Kit is installed.

PLACARDS

REDUCE ALLOWABLE WEIGHT IN
BAGGAGE COMPARTMENT BY 30 LBS
WHEN AUXILIARY BATTERY IS INSTALLED

(Located on the inboard side of the baggage compartment door.)

Section 2

NORMAL PROCEDURES

EXTERIOR CHECK

FUSELAGE — AFT LEFT SIDE.

Baggage compartment — Cargo tied down; auxiliary battery secure; door secure.

ENGINE PRESTART CHECK

After LDG LTS switch — OFF, add:

Battery select switch — BOTH.

ENGINE STARTING

After GEN switch — On, add:

CAUTION

IF LOADMETER IS NOT WITHIN THE NORMAL OPERATING RANGE (BELOW 70%) WITHIN

TWO (2) MINUTES AFTER START, PROCEED AS FOLLOWS:

Battery select switch — FWD BAT.

Loadmeter — Below 70%, continue flight on FWD battery.

If not below 70% on loadmeter, then ....

Battery select switch — AFT BAT.

Loadmeter — below 70%, continue flight on AFT battery.

If not below 70% on loadmeter, abort mission and investigate cause.

Loadmeter — Below 70%, after two minutes.

Section 3

EMERGENCY AND MALFUNCTION PROCEDURES

WARNING LIGHT	FAULT AND REMEDY
AUX BATTERY HOT or BATTERY HOT	Battery case temperature has reached 140°F (60.0°C) or higher. Isolate malfunctioning battery with Battery select switch. Land as soon as practical. After landing, do not use affected battery for engine restart, as this will cause additional battery heating. Service or replace battery and check battery relay prior to re-use.

CAUTION LIGHT	FAULT AND REMEDY
AUX BATTERY TEMP or BATTERY TEMP	Battery case temperature has reached 130°F (54.4°C) or higher. Isolate malfunctioning battery with Battery select switch. Service or replace battery prior to re-use.

NOTE

Frequent and repetitive BATTERY TEMP indications may be indicative of a marginal battery condition. It is recommended that if this occurs the battery should be removed and inspected in accordance with manufacturer's recommendation at the first convenient opportunity.

Section 4

PERFORMANCE

No change from basic manual.

Section 1

MANUFACTURER'S DATA

WEIGHT AND BALANCE

BAGGAGE COMPARTMENT LOADING

Reduce the maximum allowable weight in the baggage compartment by 30 pounds (13.5 kilograms) when the Auxiliary Battery Kit is installed.

BHT-206B3-FMS-20

Bell JetRanger-III

MODEL 206B

250-C20B/C20J ENGINE

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT

BLEED AIR HEATER

206-706-149 OR 206-706-700

CERTIFIED
OCTOBER 26, 1979

This supplement shall be attached to Model 206B3 Flight Manual when Bleed Air Heater kit has been installed.

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

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FEDERAL AVIATION ADMINISTRATION
FT. WORTH, TX 76193-0170

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GENERAL INFORMATION

The Bleed Air Heater (206-706-149 or 206-706-700) is made up of the bleed air system and heater ventilation air system. The bleed air flows from the engine through bleed lines to the mixing valve and into the cabin in the form of heated ventilation air. The 206-706-700 Bleed Air Heater is installed in helicopter serial number 3567 and subsequent due to new changes in interior design. The ducting and air outlets are the primary differences in the 206-706-700 Bleed Air Heater.

Section 1

LIMITATIONS

WEIGHT/CG LIMITATIONS

Weight change shall be calculated after kit is installed and ballast readjusted, if necessary, to return empty weight CG within allowable limits.

Section 2

NORMAL PROCEDURES

ENGINE PRESTART CHECK

NOTE

HEAT/VENT switch is a (two-position switch (HEAT and OFF) Vent position is not operable.

HEAT switch — OFF.

BEFORE TAKEOFF

HEAT switch — As desired.

INFLIGHT OPERATIONS

NOTE

TOT increases with Bleed Air Heater operating. Observe Turbine Outlet Temperature Limitations.

HEAT switch · As desired.

TEMP CONT knob — Rotate to obtain desired temperature.

DEFOG levers (overhead) Adjust as required for windshield defogging. (For 206-706-149 only.)

Air outlets — Adjust for optimum comfort.

Section 3

EMERGENCY AND MALFUNCTION PROCEDURES

HEAT switch — OFF if any of the following occurs:

Engine failure (If Engine Air Start is to be attempted).

Engine Overtemperature

Fuel Control and/or Governor Failure.

Insufficient Power.

Section 4

PERFORMANCE

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

Complete hover performance is presented herein for the snow deflector, which includes losses due to the particle separator.

NOTE

The Hover Ceiling charts presented in this manual reflect performance with the 65 inch diameter tail rotor (P/N 206-016-201) installed. For performance with the 62 inch diameter tail rotor (P/N 206-010-750), refer to BHT-206B3-FMS-22.

EXAMPLE

What gross weight loss in hover performance could be expected under the following conditions:

Standard engine inlet	Standard skid gear
IGE hover	Takeoff power
Outside air temp. = -15°C	Anti-ice off
Pressure altitude = 14,000 feet	

Using the appropriate IGE chart, enter at OAT (-15°C), move vertically to intersect pressure altitude curve (or outermost curve, whichever comes first), then proceed horizontally to obtain the gross weight loss (170 pounds). Apply this weight loss to the weight obtained from appropriate hover performance chart in basic flight manual or supplement.

There is no loss in hover performance when the outside air temperature is to the left of the pressure altitude curve. It can be seen on the chart covering the above conditions that at -15°C there is no loss in IGE hover performance from sea level to 12,000 feet.

HOVER CEILING DECREASE
DUE TO BLEED AIR HEATER OPERATION
STANDARD INLET WITH STANDARD SKID GEAR

IN GROUND EFFECT TAKEOFF POWER

−40 TO 30° C

GENERATOR 22.3 AMPS ANTI-ICE OFF

SKID HEIGHT 2.0 FT (0.6 METER) N2 ENGINE RPM 100%

WITH ANTI-ICE ON APPLY ADDITIONAL DECREMENT FROM BASIC MANUAL OR APPROPRIATE SUPPLEMENT

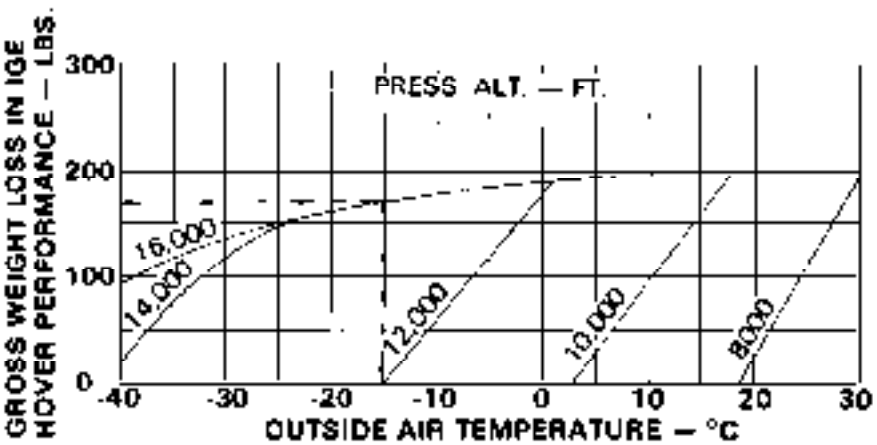

Figure 4-1. Hover ceiling decrease due to bleed air heater operation (Sheet 1 of 5)

HOVER CEILING DECREASE
DUE TO BLEED AIR HEATER OPERATION

STANDARD INLET WITH HIGH SKID OR ANY FLOAT GEAR

IN GROUND EFFECT — TAKEOFF POWER

−40 TO 30°C

GENERATOR 22.3 AMPS — ANTI-ICE OFF

SKID HEIGHT 3.0 FT (0.9 METER) — N2 ENGINE RPM 100%

WITH ANTI-ICE ON APPLY ADDITIONAL DECREMENT FROM APPROPRIATE SUPPLEMENT

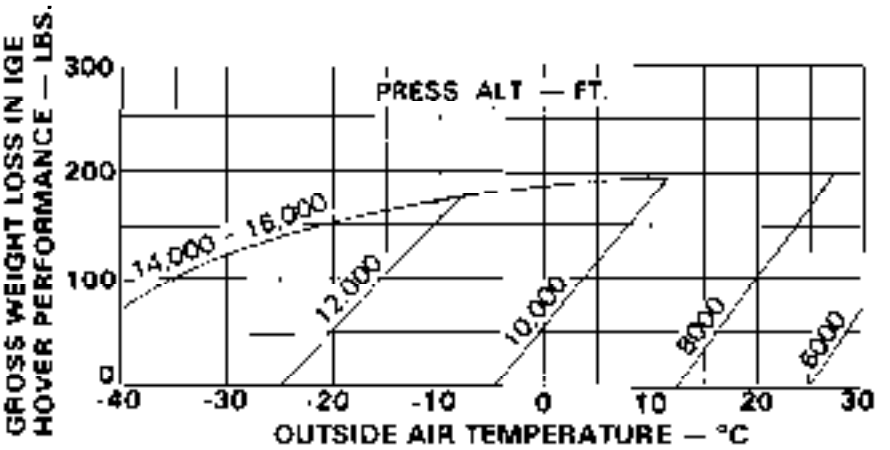

Figure 4-1. Hover ceiling decrease due to bleed air heater operation (Sheet 2 of 6)

HOVER CEILING DECREASE
DUE TO BLEED AIR HEATER OPERATION
STANDARD INLET ANY SKID OR FLOAT GEAR

OUT OF GROUND EFFECT — TAKEOFF POWER

−40 TO 30°C

GENERATOR 22.3 AMPS — ANTI-ICE OFF

SKID HEIGHT 40 FT (12.2 METERS) — N2 ENGINE RPM 100%

WITH ANTI-ICE ON APPLY ADDITIONAL DECREMENT FROM BASIC MANUAL OR APPROPRIATE SUPPLEMENT

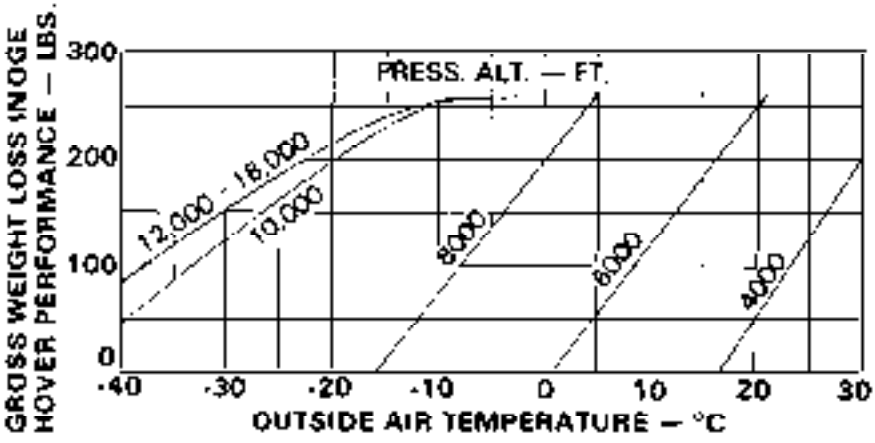

Figure 4-1. Hover ceiling decrease due to bleed air heater operation (Sheet 3 of 8)

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

IN GROUND EFFECT — TAKEOFF POWER

−40 TO 30°C

GENERATOR 22.3 AMPS — ANTI-ICE OFF

SKID HEIGHT 2.0 FT (0.6 METER) — N2 ENGINE RPM 100%

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

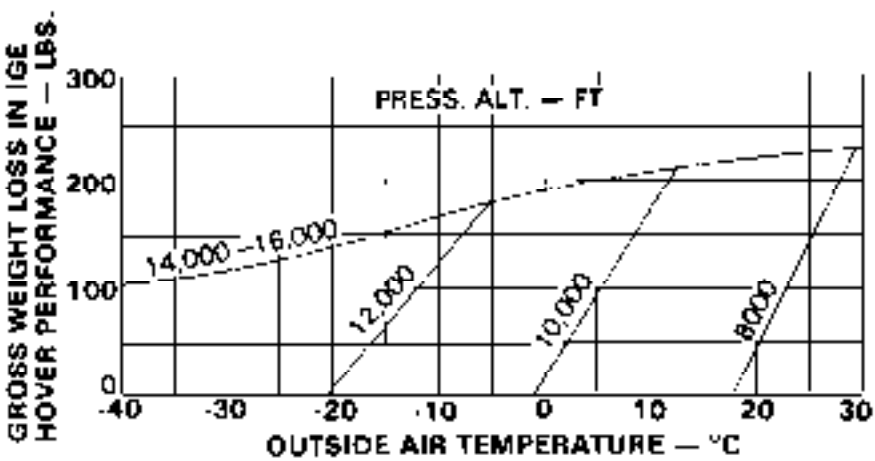

Figure 4-1. Hover ceiling decrease due to bleed air heater operation (Sheet 4 of 6)

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

IN GROUND EFFECT — TAKEOFF POWER

−40 TO 30°C

GENERATOR 22.3 AMPS — ANTI-ICE OFF

SKID HEIGHT 3.0 FT (0.9 METER) — N2 ENGINE RPM 100%

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

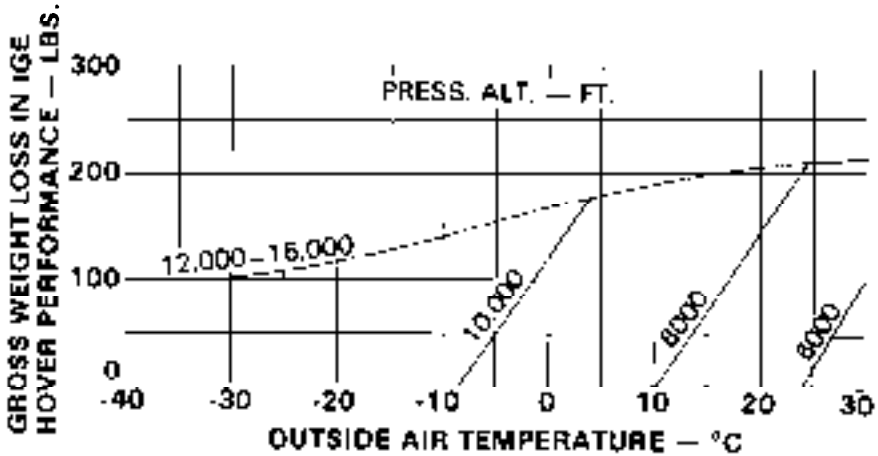

Figure 4-1. Hover ceiling decrease due to bleed air heater operation (Sheet 5 of 6)

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

OUT OF GROUND EFFECT — TAKEOFF POWER

−40 TO 30°C

GENERATOR 22.3 AMPS — ANTI-ICE OFF

SKID HEIGHT 40 FT (12.2 METERS) — N2 ENGINE RPM 100%

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

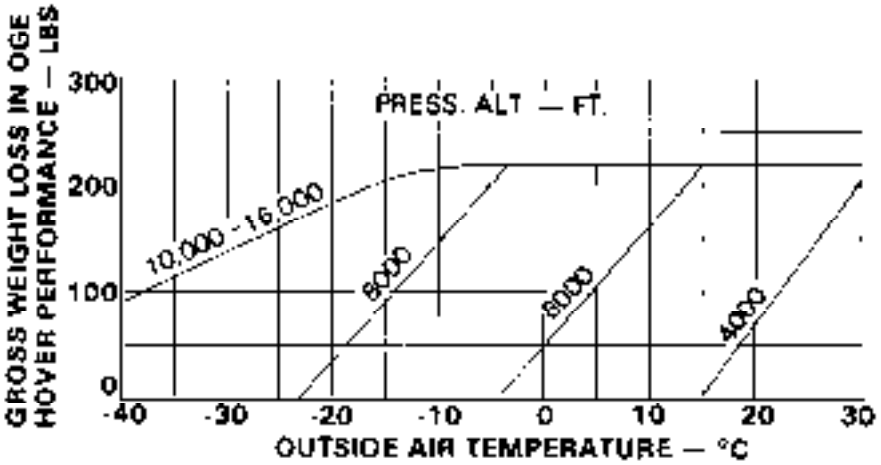

Figure 4-1. Hover ceiling decrease due to bleed air heater operation (Sheet 6 of 6)

HOVER CEILING

SNOW DEFLECTOR WITH STANDARD SKID GEAR

IN GROUND EFFECT — TAKEOFF POWER

0° TO 30°C

GENERATOR 22.3 AMPS — ANTI-ICE OFF

SKID HEIGHT 2.0 FT (0.6 METER) — N2 ENGINE RPM 100%

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

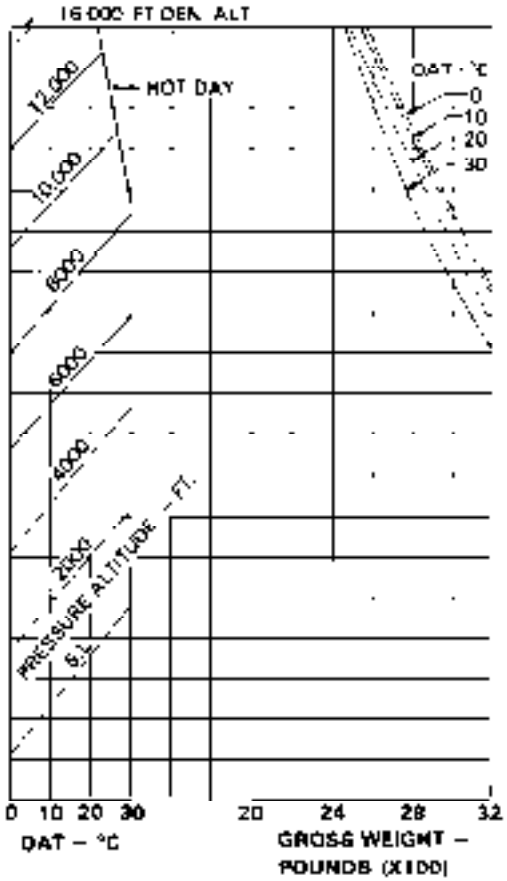

Figure 4-2. Hover ceiling (Sheet 1 of 6)

HOVER CEILING
SNOW DEFLECTOR WITH STANDARD SKID GEAR

IN GROUND EFFECT — TAKEOFF POWER

0° TO -40°C

GENERATOR 22.3 AMPS — ANTI-ICE OFF
SKID HEIGHT 2.0 FT (0.6 METER) — N2 ENGINE RPM 100%
WITH ANTI-ICE ON GROSS WEIGHT IS 245 LBS (111.1 Kg) LESS

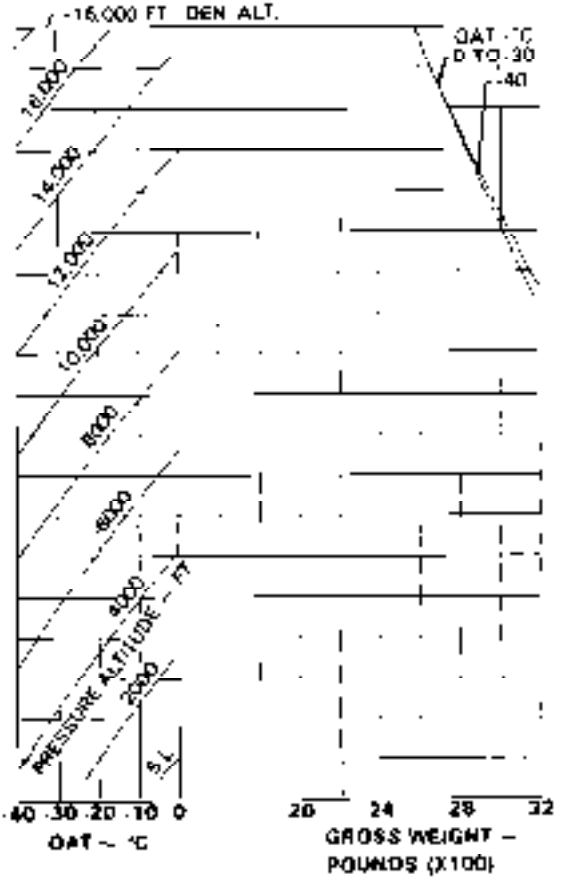

Figure 4-2. Hover ceiling (Sheet 2 of 6)

HOVER CEILING
SNOW DEFLECTOR WITH HIGH SKID OR ANY FLOAT GEAR

IN GROUND EFFECT — TAKEOFF POWER

0° TO 30°C

GENERATOR 22.3 AMPS — ANTI-ICE OFF

SKID HEIGHT 3.0 FT (0.9 METER) — N2 ENGINE RPM 100%

WITH ANTI-ICE ON GROSS WEIGHT 15 225 LBS (102.1 Kg) LESS

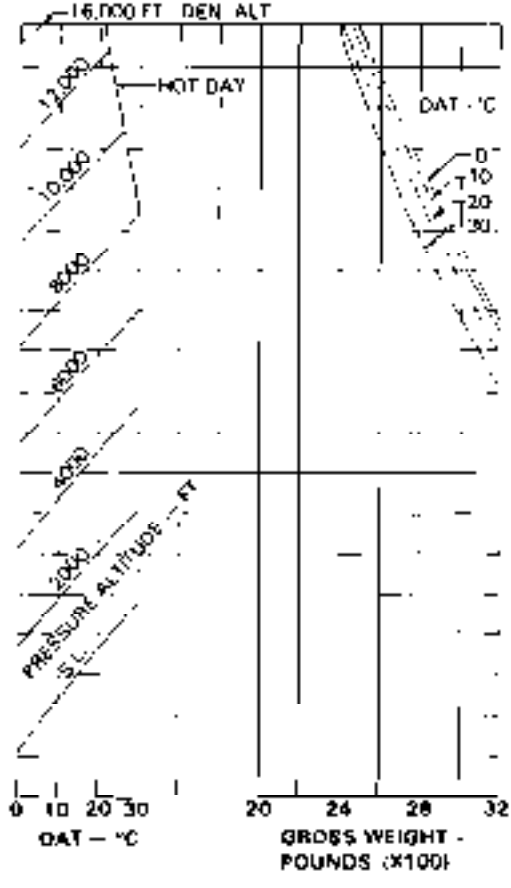

Figure 4-2. Hover ceiling (Sheet 3 of 6)

HOVER CEILING
SNOW DEFLECTOR WITH HIGH SKID OR ANY FLOAT GEAR

IN GROUND EFFECT — TAKEOFF POWER

0° TO −40°C

GENERATOR 22.3 AMPS — ANTI-ICE OFF

SKID HEIGHT 3.0 FT (0.9 METER) — N2 ENGINE RPM 100%

WITH ANTI-ICE ON GROSS WEIGHT IS 226 LBS (102.1 Kg) LESS

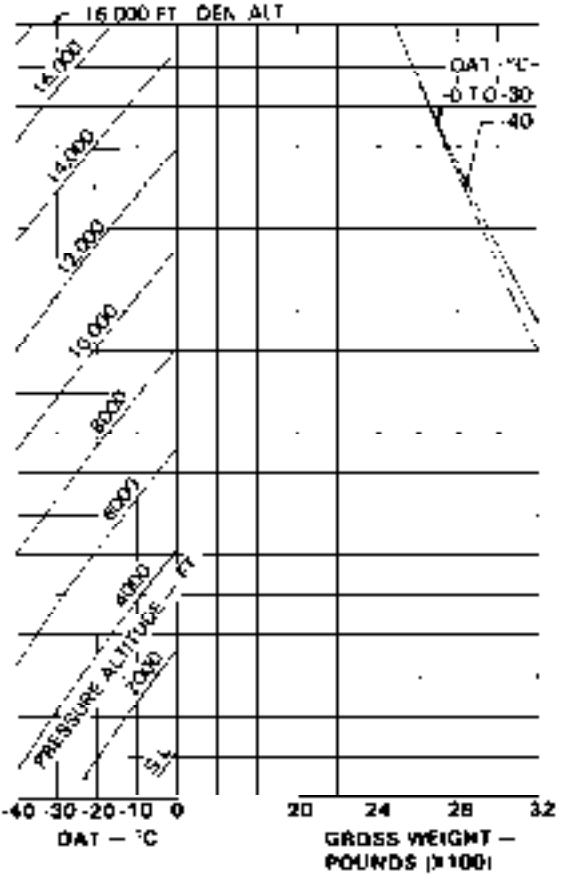

Figure 4-2. Hover ceiling (Sheet 4 of 6)

HOVER CEILING

SNOW DEFLECTOR WITH ANY SKID OR FLOAT GEAR

OUT OF GROUND EFFECT — TAKEOFF POWER

0° TO 30°C

GENERATOR 22.3 AMPS — ANTI-ICE OFF

SKID HEIGHT 40 FT (12.2 METERS) — N2 ENGINE RPM 100%

WITH ANTI-ICE ON GROSS WEIGHT IS 250 LBS (117.9 Kg) LESS

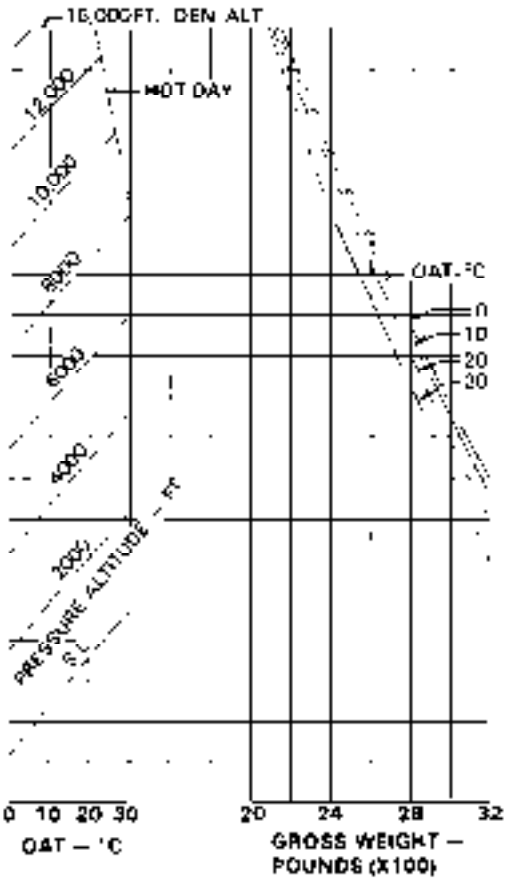

Figure 4-2. Hover ceiling (Sheet 6 of 6)

HOVER CEILING
SNOW DEFLECTOR WITH ANY SKID OR FLOAT GEAR

OUT OF GROUND EFFECT — TAKEOFF POWER

0° TO –40°C

GENERATOR 22.3 AMPS — ANTI-ICE OFF

SKID HEIGHT 40 FT (12.2 METERS) — N2 ENGINE RPM 100%

WITH ANTI-ICE ON GROSS WEIGHT IS 260 LBS (117.9 Kg) LESS

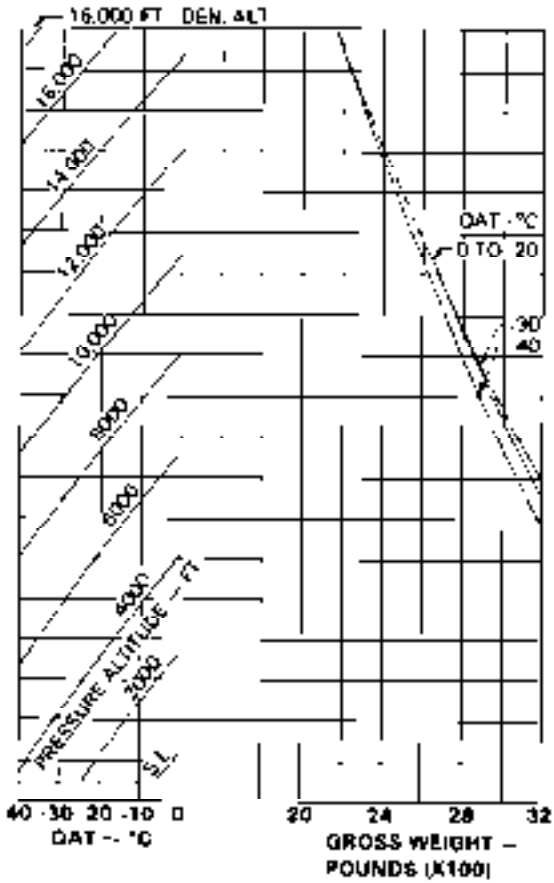

Figure 4-2. Hover ceiling (Sheet 5 of 5)

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

GENERATOR 22.3 AMPS
V IND 60 MPH (52 KNOTS)
ANTI-ICE OFF
N2 ENGINE RPM 100%
WITH ANTI-ICE ON APPLY ADDITIONAL DECREMENT FROM BASIC MANUAL OR APPROPRIATE SUPPLEMENT

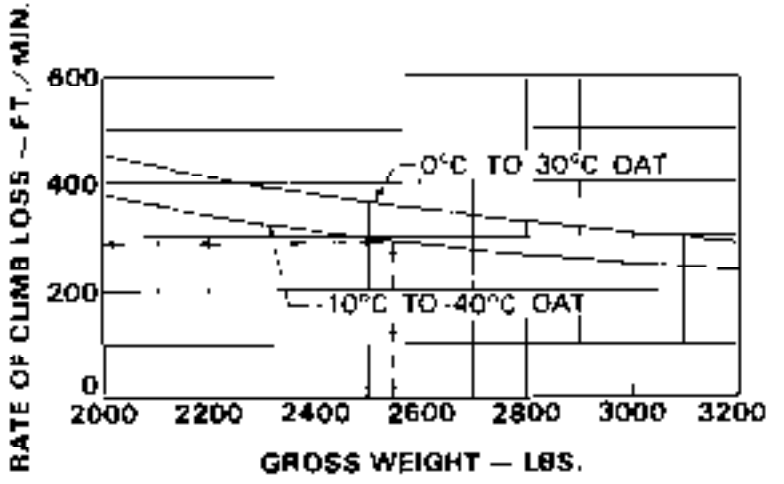

Figure 4-3. Rate of climb decrease due to bleed air heater operation (Sheet 1 of 2)

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

GENERATOR 22 3 AMPS — ANTI-ICE OFF
V IND 60 MPH (52 KNOTS) — N2 ENGINE RPM 100%
WITH ANTI-ICE ON APPLY ADDITIONAL DECREMENT FROM BASIC MANUAL OR APPROPRIATE SUPPLEMENT

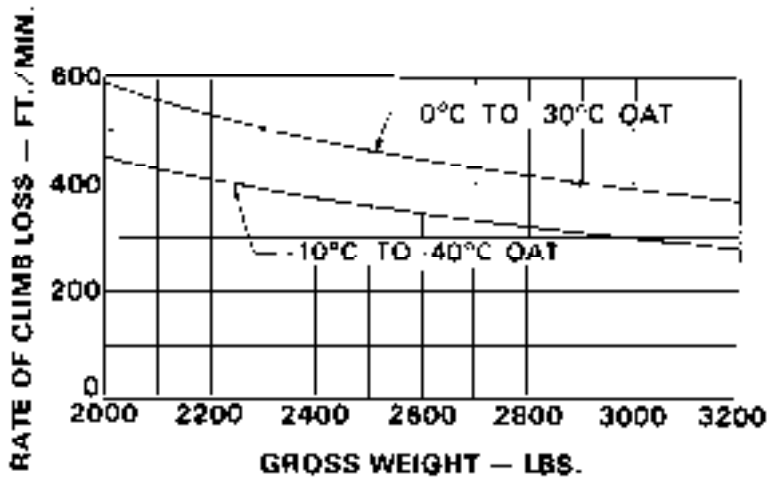

Figure 4-3. Rate of climb decrease due to bleed air heater operation (Sheet 2 of 2)

Bell JetRanger-III
MODEL 206B
250-C20B/C20J ENGINE

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT

AREA NAVIGATION SYSTEM

206-706-006

CERTIFIED
NOVEMBER 14, 1980

This supplement shall be attached to Model 206B3 Flight Manual when Area Navigation System kit has been installed.

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

Bell Helicopter TEXTRON
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APPROVED:

MANAGER

ROTORCRAFT CERTIFICATION OFFICE
FEDERAL AVIATION ADMINISTRATION
FT. WORTH, TX 76193-0170

NOTE

Revised text is indicated by a black vertical line. Insert latest revision pages; dispose of superseded pages.

GENERAL INFORMATION

The Area Navigation System, Collins ANS-351, consists of a computer and a remote annunciator adjacent to the HSI. The RNAV operates in conjunction with NAV 1 only.

Section 1

LIMITATIONS

For IFR operations, use of the Area Navigation System is limited to enroute navigation only. Terminal navigation is not authorized.

Section 2

NORMAL PROCEDURES

NOTE

For operating procedures, refer to ANS-351 Area Navigation System Pilot's Guide, printed by Collins Radio Group, Rockwell International.

For operation in RNAV mode, the RNAV button on the CME control panel must be depressed. The amber RNAV light (located in lower left corner of HSI) will illuminate when RNAV button is depressed. When RNAV light is extinguished, the HSI operates in normal VOR/LOC mode.

Section 3

EMERGENCY AND MALFUNCTION PROCEDURES

If Area Navigation System becomes inoperative, resume normal navigation using NAV 1.

Section 4

PERFORMANCE

No change from basic manual.

Bell JetRanger-III
MODEL 206B
250-C20B/C20J ENGINE

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT

62 INCH DIAMETER TAIL ROTOR BLADES
206-010-750

CERTIFIED
FEBRUARY 13, 1992

This supplement shall be attached to Model 206B3 Flight Manual when 62 Inch Diameter Tail Rotor Blades kit has been installed.

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

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13 FEBRUARY 1992

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NOTE

Revised text is indicated by a black vertical line. Insert latest revision pages; dispose of superseded pages.

GENERAL INFORMATION

This supplement provides hover performance with the 206-010-750 tail rotor blades installed.

Section 1
LIMITATIONS

No change from basic manual.

Section 2
NORMAL PROCEDURES

No change from basic manual.

Section 3
EMERGENCY PROCEDURES

No change from basic manual.

Section 4
PERFORMANCE DATA

IGE AND OGE HOVER CEILING CHARTS

The Hover Ceiling charts present hover performance (allowable gross weight) for conditions of pressure altitude and OAT. The charts are divided into two areas.

AREA A (White area) as shown on the Hover Ceiling charts presents hover performance for which controllability has been demonstrated in sideward and rearward relative wind conditions up to 20 MPH (17 knots).

CAUTION

ENGINE TOT WILL RISE NOTICEABLY WHEN HOVERING DOWN WIND. AVOID HOVERING DOWN WIND WHEN OPERATING NEAR TOT LIMITS.

AREA B (Shaded area) as shown on the Hover Ceiling charts presents hover performance that can be realized in CALM WINDS or winds outside the CRITICAL RELATIVE WIND AZIMUTH AREA

HOVER CEILING

The following example is for use with the Hover Ceiling In Ground Effect, Takeoff Power, Anti-Ice Off Chart and is typical for use of Hover Ceiling charts.

EXAMPLE

Determine gross weight hover capability at a site having the following conditions:

Pressure Altitude = 10,000 Ft.
Outside Air Temperature = 20°C
For the above example the pilot must refer to the 0°C to 45°C Hover Ceiling charts.

From the appropriate IGE Chart obtain:

A maximum of 2645 pounds (1199.7 kilograms) for all allowable wind conditions and a maximum of 3145 pounds (1426.6 kilograms) when wind conditions are calm or outside the critical wind azimuth area.

From the appropriate OGE Chart Obtain:

A maximum of 2230 pounds (1011.5 kilograms) for all allowable wind conditions and a maximum of 2710 pounds (1229.3 kilograms) when wind conditions are calm or outside the critical wind azimuth area.

EXAMPLE

Determine gross weight hover capability at a site having the following conditions:

Pressure Altitude = 12,000 Ft.
Outside Air Temperature = -15°C
For the above example the pilot must refer to the 0°C to -40°C Hover Ceiling Charts.

From the appropriate IGE Chart Obtain:

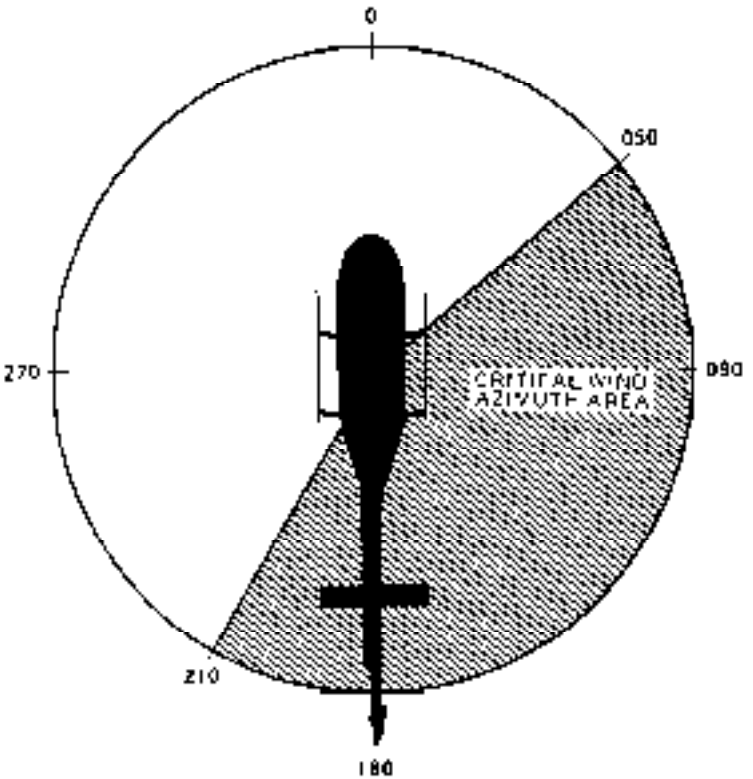
A maximum of 2825 pounds (1281.4 kilograms) for all allowable wind conditions and a maximum of 3200 pounds (1451.5 kilograms) when wind conditions are calm or outside the critical wind azimuth area.

From the appropriate OGE Chart obtain:

A maximum of 2395 pounds (1086.4 kilograms) for all allowable wind conditions and a maximum of 2920 pounds (1324.5 kilograms) when wind conditions are calm or outside the critical wind azimuth area.

NOTE

The In Ground Effect (IGE) and Out Of Ground Effect (OGE) Hover Ceiling charts are presented separately for the temperatures from 0°C to 45°C and for temperatures from 0°C to -40°C, only for clarity of presentation.



CRITICAL RELATIVE WIND AZIMUTH AREA

NOTE

Tail rotor control margin and/or control of engine parameters (TOT and torque) may preclude operation in AREA B of the Hover Ceiling Charts when the relative wind is in the Critical Wind Azimuth Area.

Figure 4-1. Critical Relative Wind Azimuth Area

BASIC HELICOPTER

HOVER CEILING IN GROUND EFFECT
TAKEOFF POWER 0° TO 46°C

GENERATOR 22.3 AMPS
SKID HEIGHT 2.0 FT (0.6 METERS)
WITH ANTI ICE ON GROSS WEIGHT IS 220 LBS. (99.8 Kg) LESS

ANTI-ICE OFF
ENGINE RPM 100%

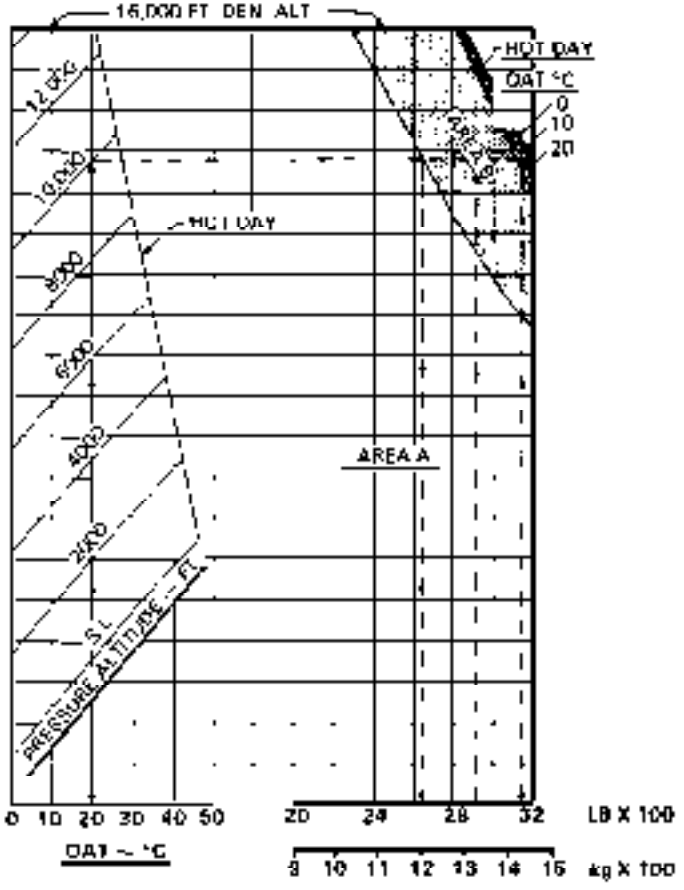


Figure 4-2. Hover ceiling (Sheet 1 of 30)

BASIC HELICOPTER

HOVER CEILING IN GROUND EFFECT

TAKEOFF POWER 0° TO −40°C

GENERATOR 22 3 AMPS
SKID HEIGHT 2 0 FT 10 6 METERS)
WITH ANTI-ICE ON GROSS WEIGHT IS 220 LBS 99.8 Kgl LESS

ANTI-ICE OFF
ENGINE RPM 100%

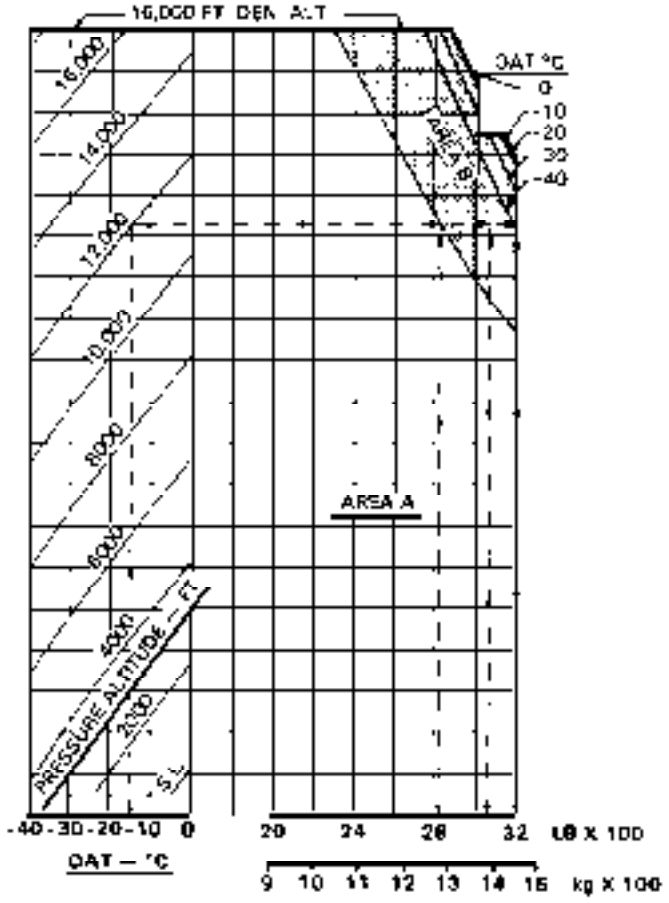


Figure 4-2. Hover ceiling (Sheet 2 of 30)

BASIC HELICOPTER

HOVER CEILING OUT OF GROUND EFFECT

TAKEOFF POWER 0° TO 46°C

GENERATOR 22.3 AMPS
SKID HEIGHT 40 FT (12.2 METERS)
WITH ANTI-ICE ON GROSS WEIGHT IS 295 LBS (133.8 Kg) LESS

ANTI-ICE OFF
ENGINE RPM 100%

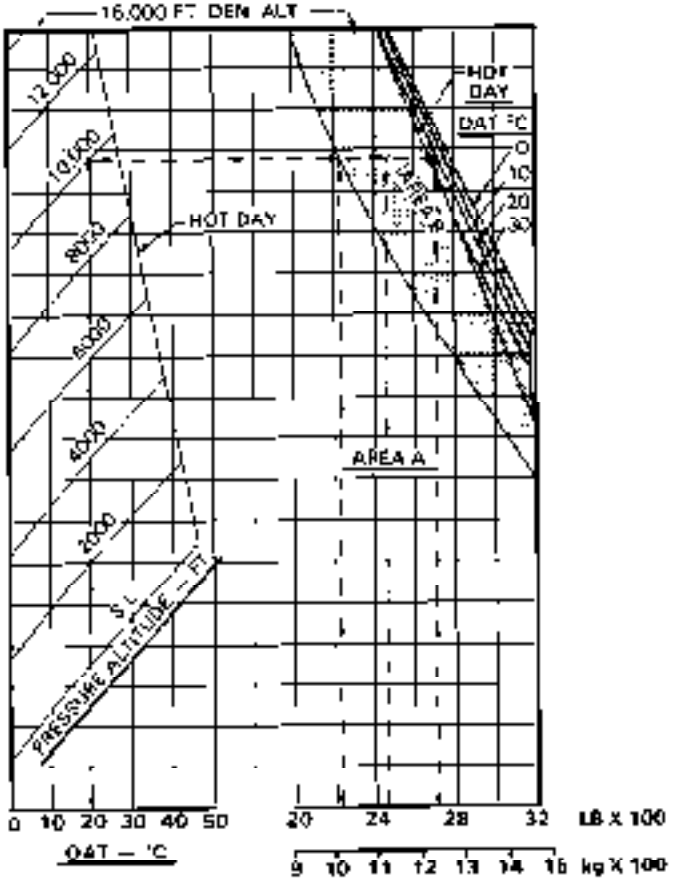


Figure 4-2. Hover ceiling (Sheet 3 of 30)

BASIC HELICOPTER

HOVER CEILING OUT OF GROUND EFFECT

TAKEOFF POWER 0° TO −40°C

GENERATOR 22.3 AMPS
SKID HEIGHT 40 FT (12.2 METERS)
WITH ANTI-ICE ON GROSS WEIGHT IS 295 LBS. (133.8 Kg) LESS

ANTI-ICE OFF
ENGINE RPM 100%

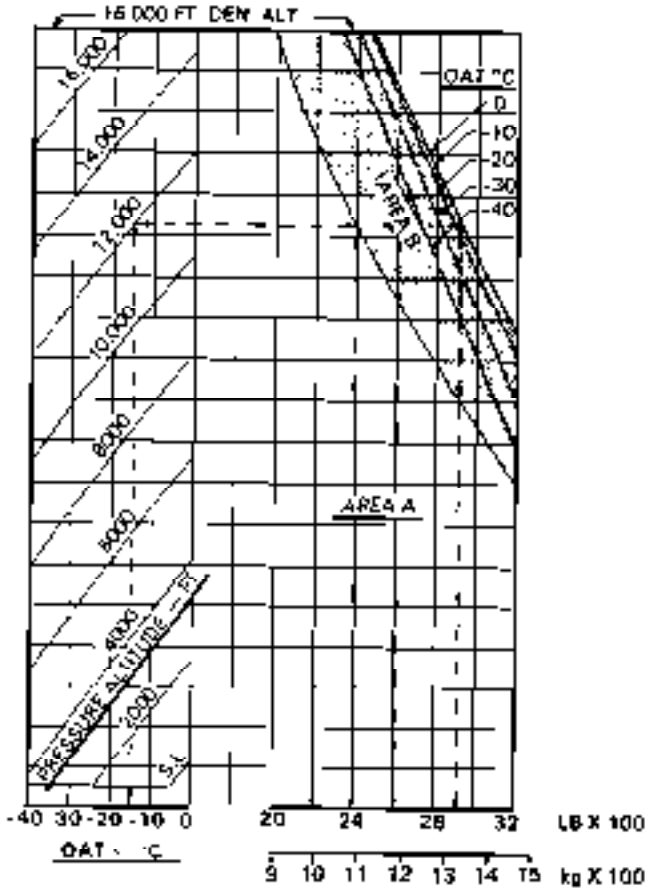


Figure 4-2. Hover ceiling (Sheet 4 of 30)

FIXED FLOATS

HOVER CEILING IN GROUND EFFECT

TAKEOFF POWER 0° TO 46°C

GENERATOR 22.3 AMPS
FLOAT HEIGHT 3.0 FT (0.9 METERS)
WITH ANTI ICE ON GROSS WEIGHT IS 200 LBS (90.7 Kg) LESS

ANTI-ICE OFF
ENGINE RPM 100%

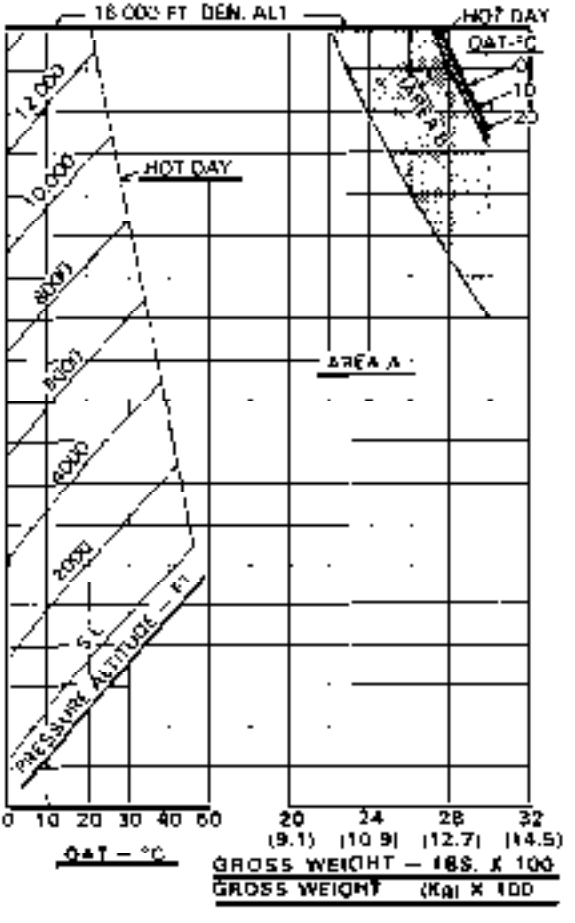


Figure 4-2. Hover ceiling (Sheet 5 of 30)

FIXED FLOATS

HOVER CEILING IN GROUND EFFECT

TAKEOFF POWER 0° TO −40°C

GENERATOR 22.3 AMPS

FLOAT HEIGHT 3.0 FT (0.9 METERS)

WITH ANTI-ICE ON GROSS WEIGHT IS 200 LBS (90.7 Kg) LESS

ANTI-ICE OFF

ENGINE RPM 100%

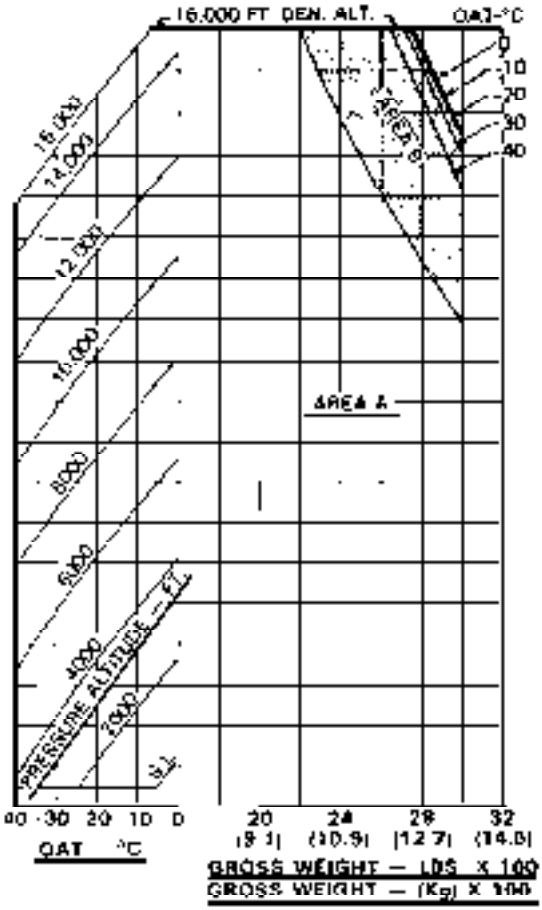


Figure 4-2. Hover ceiling (Sheet 6 of 30)

CARGO HOOK

HOVER CEILING IN GROUND EFFECT
TAKEOFF POWER 0° TO −40°C

GENERATOR 22.3 AMPS
SKID HEIGHT LOW SKID GEAR 4.0 FT (1.2 METERS)
HIGH SKID GEAR 3.0 FT (0.9 METERS)
WITH ANTI-ICE ON GROSS WEIGHT IS 200 LBS. (90.7 Kg) LESS

ANTI-ICE OFF
ENGINE RPM 100%

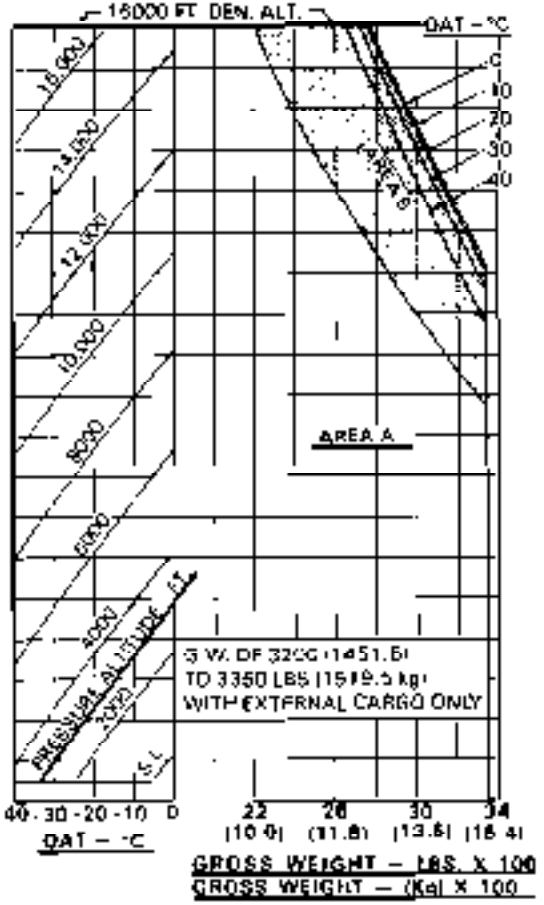


Figure 4-2. Hover ceiling (Sheet 7 of 30)

CARGO HOOK

HOVER CEILING IN GROUND EFFECT

TAKEOFF POWER 0° TO 45°C

GENERATOR 22 3 AMPS
SKID HEIGHT LOW SKID GEAR 4 0 FT (1.2 METERS)
HIGH SKID GEAR 3.0 FT (9 0 METERS)
WITH ANTI-ICE ON GROSS WEIGHT IS 200 LBS (90.7 kg) LESS

ANTI-ICE OFF
ENGINE RPM 100%

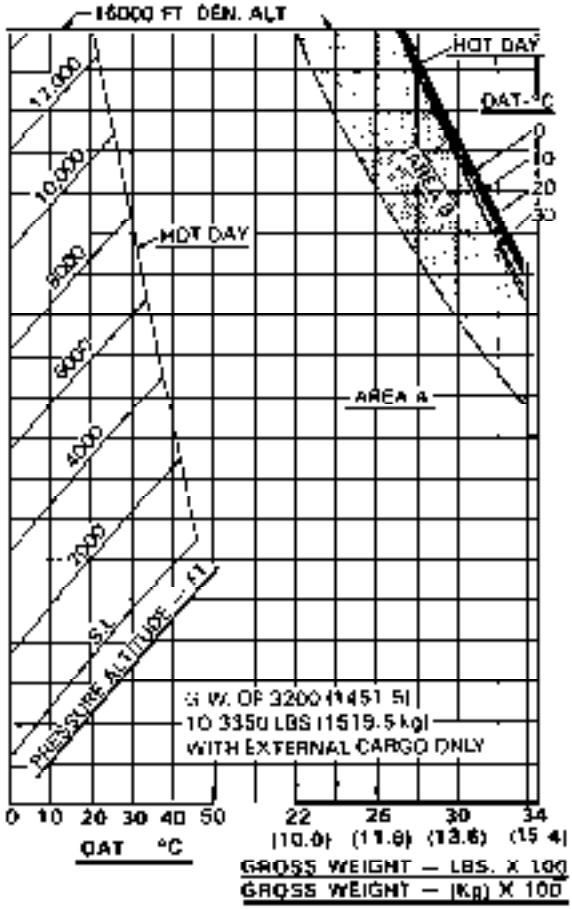


Figure 4-2. Hover ceiling (Sheet 8 of 30)

CARGO HOOK

HOVER CEILING OUT OF GROUND EFFECT

TAKEOFF POWER 0° TO −40°C

GENERATOR 22.3 AMPS
SKID HEIGHT 40 FT (12.2 METERS)
WITH ANTI-ICE ON GROSS WEIGHT IS 295 LBS. (133.8 Kg) LESS

ANTI-ICE OFF
ENGINE RPM 100%

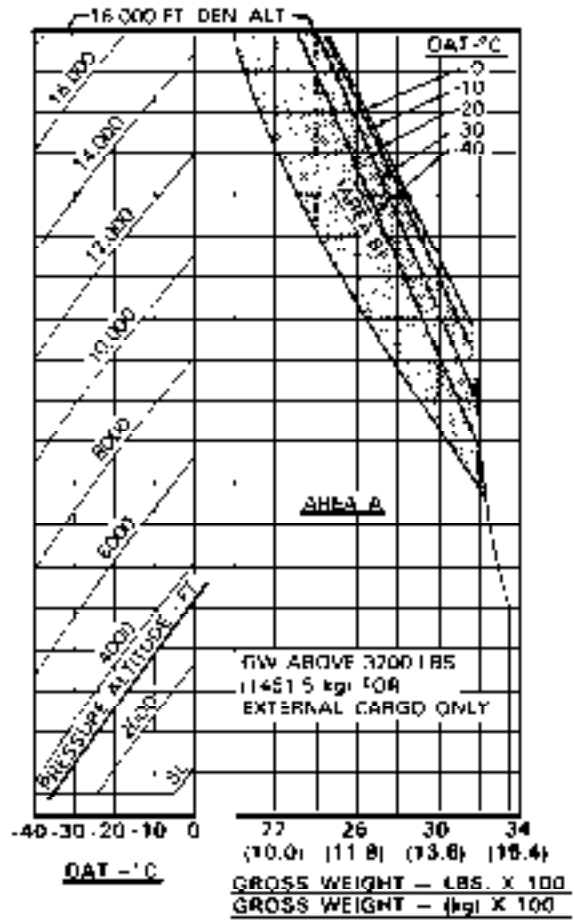


Figure 4-2. Hover ceiling (Sheet 9 of 30)

CARGO HOOK

HOVER CEILING OUT OF GROUND EFFECT
TAKEOFF POWER 0° TO 46°C

GENERATOR 22.3 AMPS
SKID HEIGHT 10 FT (12.2 METERS)
WITH ANTI-ICE ON GROSS WEIGHT IS 295 LBS. (133.8 Kg) LESS

ANTI-ICE OFF
ENGINE RPM 100%

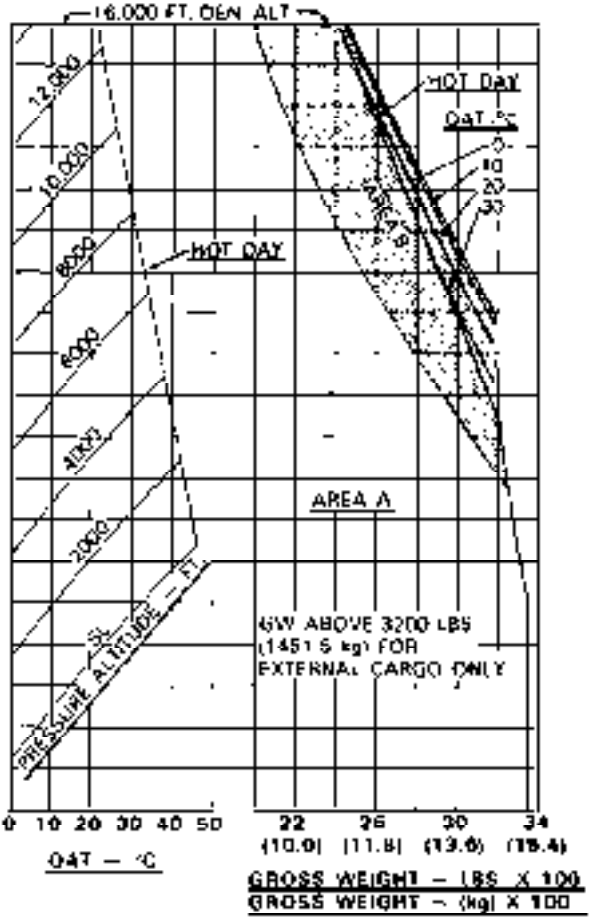


Figure 4-2. Hover ceiling (Sheet 10 of 30)

HIGH SKID OR LIGHTWEIGHT EMERGENCY FLOTATION LANDING GEAR

HOVER CEILING IN GROUND EFFECT
TAKEOFF POWER 0° TO 46°C

GENERATOR 22.3 AMPS
SKID HEIGHT 3.0 FT (0.9 METERS)
WITH ANTI-ICE ON GROSS WEIGHT IS 200 LBS. (90.7 Kg) LESS

ANTI-ICE OFF
ENGINE RPM 100%

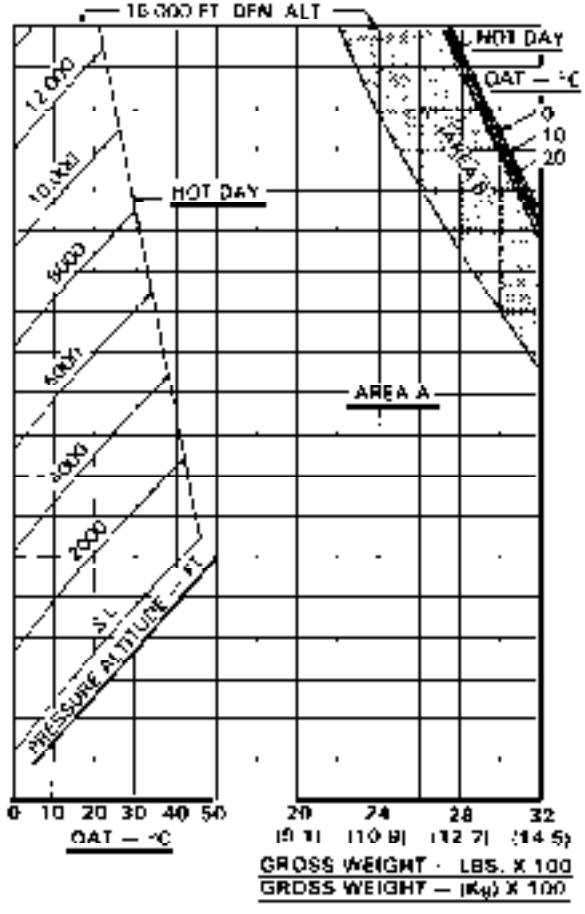


Figure 4-2. Hover ceiling (Sheet 11 of 30)

HIGH SKID OR LIGHTWEIGHT EMERGENCY FLOTATION LANDING GEAR

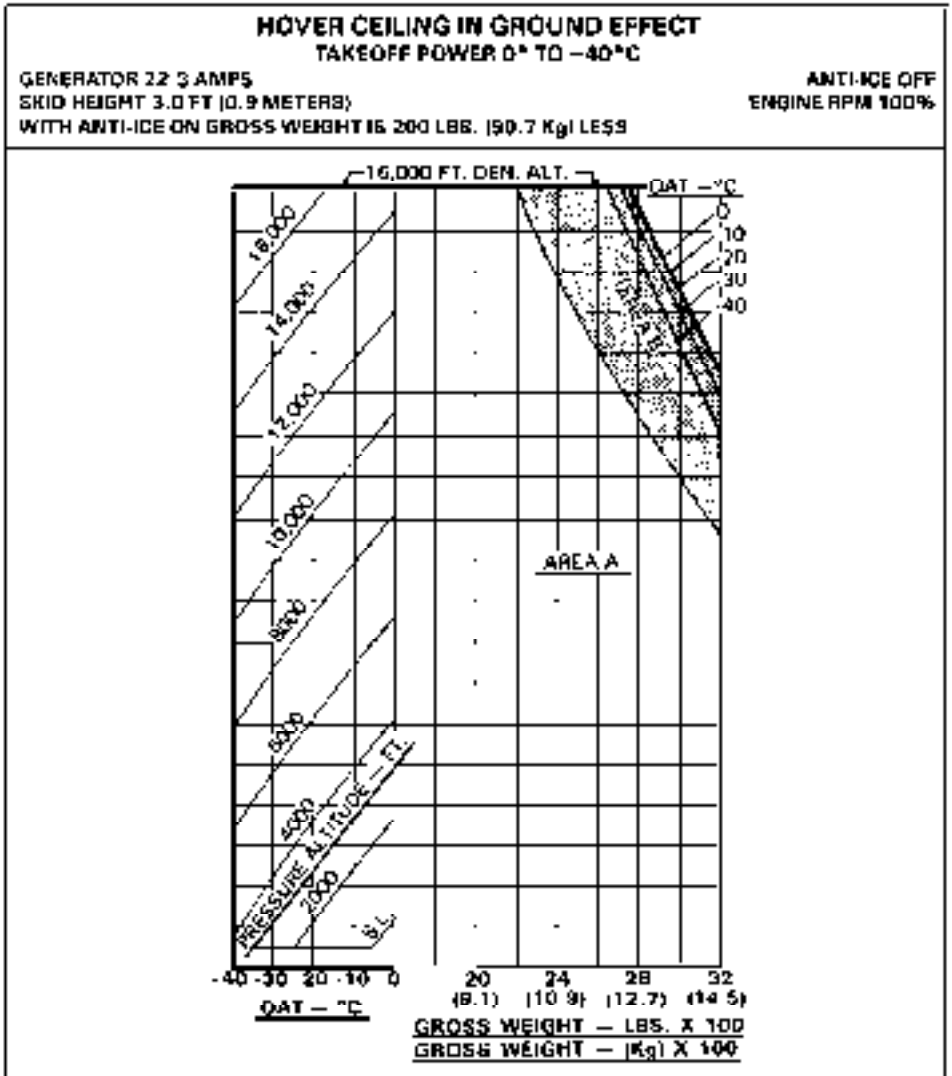


Figure 4-2. Hover ceiling (Sheet 12 of 30)

PARTICLE SEPARATOR

HOVER CEILING IN GROUND EFFECT

TAKEOFF POWER 0° TO 46°C

GENERATOR 22.3 AMPS
SKID HEIGHT 2.0 FT (0.6 METERS)
WITH ANTI-ICE ON GROSS WEIGHT IS 245 LBS (111.1 Kg) LESS

ANTI-ICE OFF
ENGINE RPM 100%

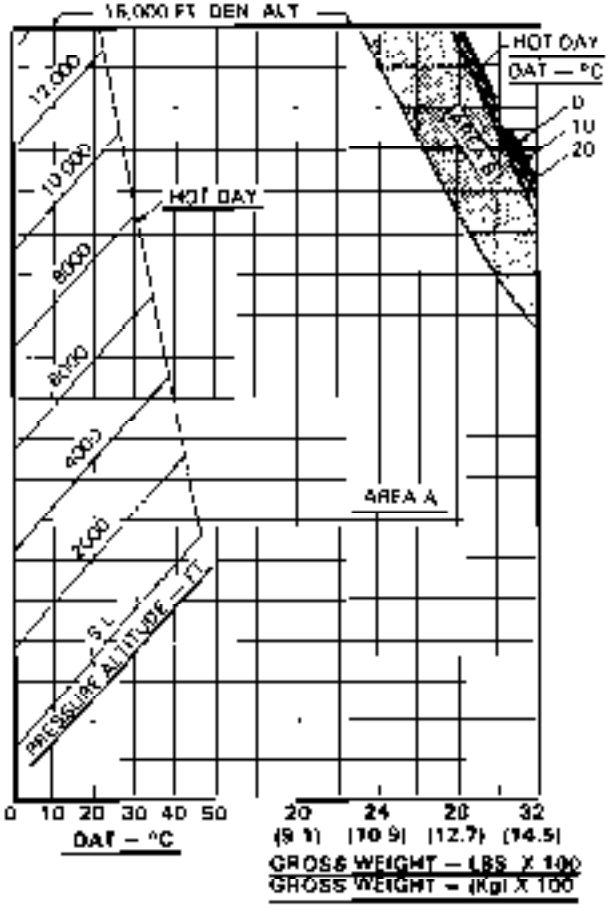


Figure 4-2. Hover ceiling (Sheet 13 of 30)

PARTICLE SEPARATOR

HOVER CEILING IN GROUND EFFECT

TAKEOFF POWER 0° TO −40°C

GENERATOR 22.3 AMPS
SKID HEIGHT 2.0 FT (0.6 METERS)
WITH ANTI ICE ON GROSS WEIGHT IS 245 LBS. (111.1 Kg) LESS

ANTI-ICE OFF
ENGINE RPM 100%

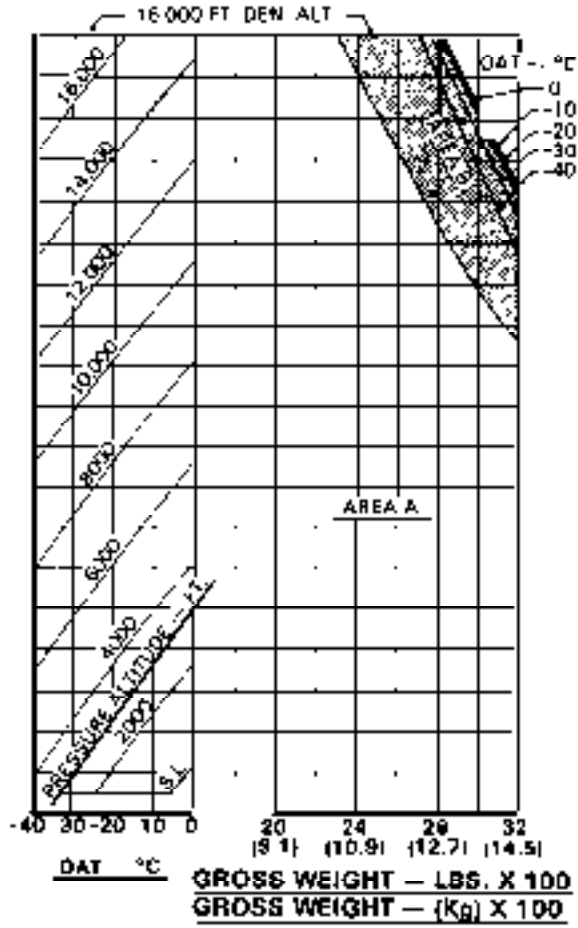


Figure 4-2. Hover ceiling (Sheet 14 of 30)

PARTICLE SEPARATOR

HOVER CEILING OUT OF GROUND EFFECT

TAKEOFF POWER 0° TO 46°C

GENERATOR 22.3 AMPS
SKID HEIGHT 40 FT (12.2 METERS)
WITH ANTI-ICE ON GROSS WEIGHT IS 250 LBS. (117.9 Kg) LESS

ANTI ICE OFF
ENGINE RPM 100%

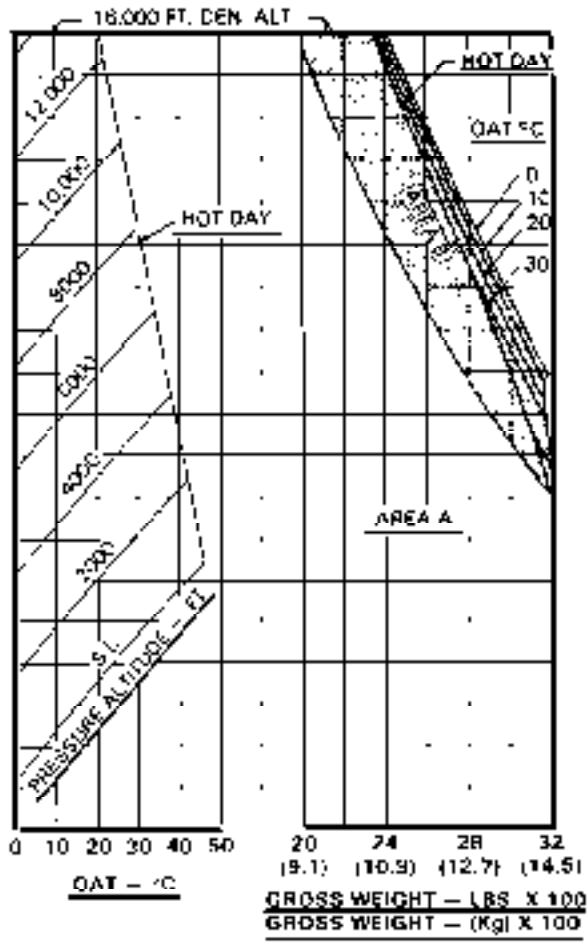


Figure 4-2. Hover ceiling (Sheet 15 of 30)

PARTICLE SEPARATOR

HOVER CEILING OUT GROUND EFFECT
TAKEOFF POWER 0° TO −40°C

GENERATOR 22.3 AMPS
SKID HEIGHT 40 FT (12.2 METERS)
WITH ANTI-ICE ON GROSS WEIGHT IS 250 LBS (117.9 Kg) LESS

ANTI-ICE OFF
ENGINE RPM 100%

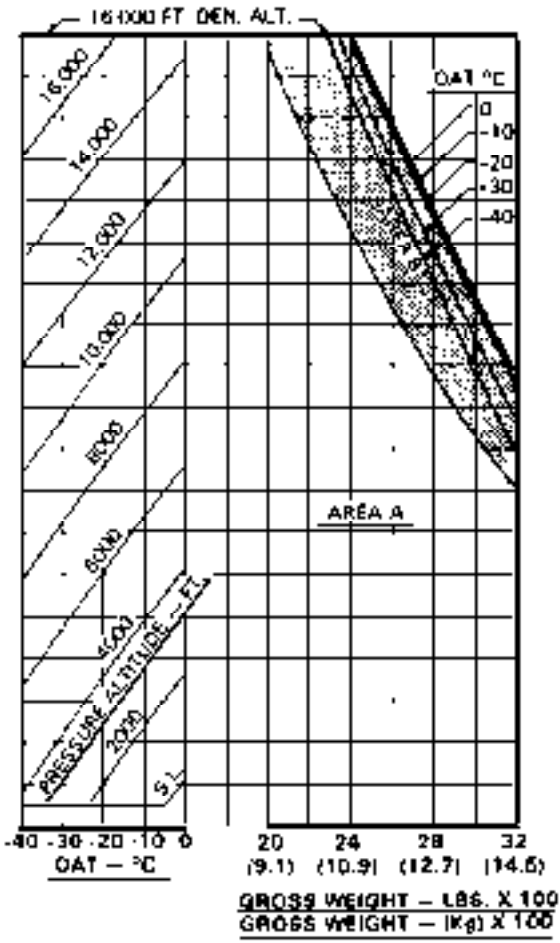


Figure 4-2. Hover ceiling (Sheet 16 of 30)

PARTICLE SEPARATOR WITH FIXED FLOATS

HOVER CEILING IN GROUND EFFECT
TAKEOFF POWER 0° TO 46°C

GENERATOR 22.3 AMPS
SKID HEIGHT 4.0 FT (1.2 METERS) WITH LOW SKID GEAR
SKID HEIGHT 3.0 FT (0.9 METERS) WITH HIGH SKID GEAR
WITH ANTI-ICE ON GROSS WEIGHT IS 225 LBS (102.1 Kg) LESS

ANTI-ICE OFF
ENGINE RPM 100%

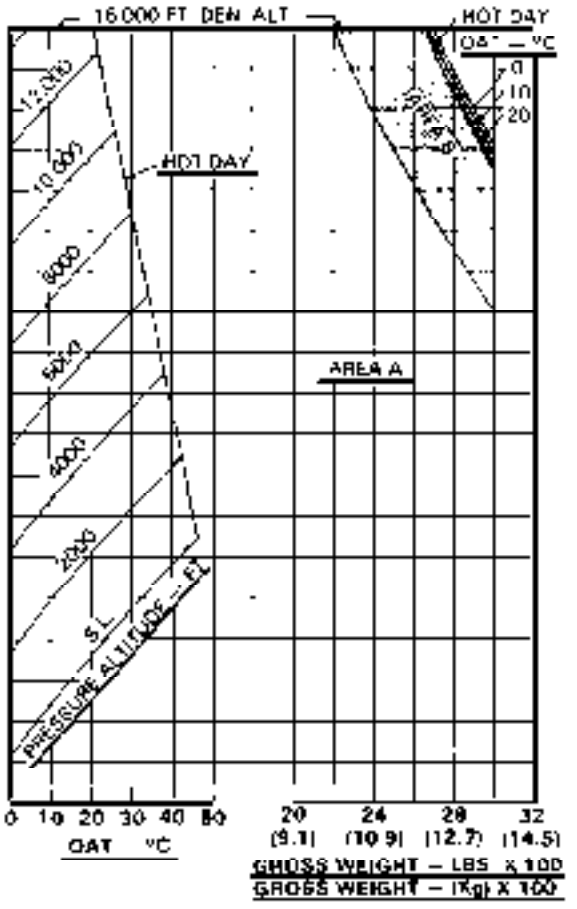


Figure 4-2. Hover ceiling (Sheet 17 of 30)

PARTICLE SEPARATOR WITH FIXED FLOATS

HOVER CEILING IN GROUND EFFECT
TAKEOFF POWER 0° TO – 40°C

GENERATOR 22 3 AMPS
SKID HEIGHT 4.0 FT (1 2 METERS) WITH LOW SKID GEAR
SKID HEIGHT 3.0 FT (0 9 METERS) WITH HIGH SKID GEAR
WITH ANTI-ICE ON GROSS WEIGHT IS 225 LBS. (102.1 Kg) LESS

ANTI-ICE OFF
ENGINE RPM 100%

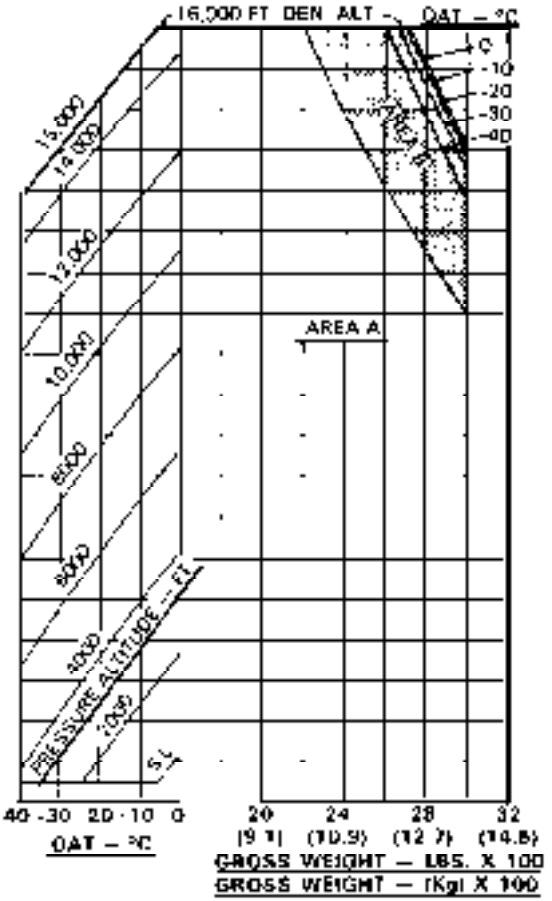


Figure 4-2. Hover ceiling (Sheet 18 of 30)

PARTICLE SEPARATOR WITH CARGO HOOK

HOVER CEILING IN GROUND EFFECT
TAKEOFF POWER 0° TO 46°C

GENERATOR 22.3 AMPS
SKID HEIGHT 4.0 FT (1.2 METERS) WITH LOW SKID GEAR
SKID HEIGHT 3.0 FT (0.9 METERS) WITH HIGH SKID GEAR
WITH ANTI-ICE ON GROSS WEIGHT IS 225 LBS. (102.1 Kg) LESS

ANTI-ICE OFF
ENGINE RPM 100%

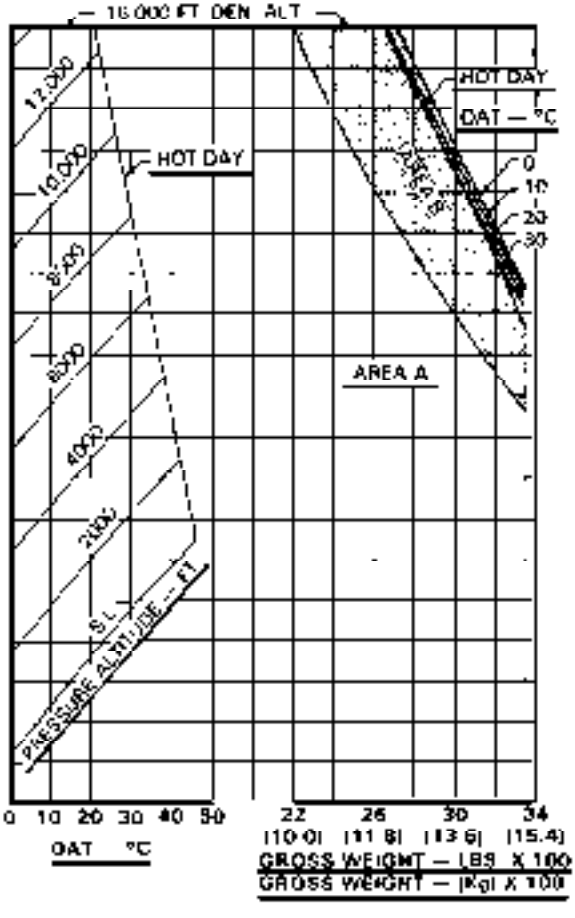


Figure 4-2. Hover ceiling (Sheet 19 of 30)

PARTICLE SEPARATOR WITH CARGO HOOK

HOVER CEILING IN GROUND EFFECT
TAKEOFF POWER 0° TO −40°C

GENERATOR 22.3 AMPS
SKID HEIGHT 4.0 FT (1.2 METERS) WITH LOW SKID GEAR
SKID HEIGHT 3.0 FT (0.9 METERS) WITH HIGH SKID GEAR
WITH ANTI ICE ON GROSS WEIGHT IS 225 LBS. (102.1 Kg) LESS

ANTI-ICE OFF
ENGINE RPM 100%

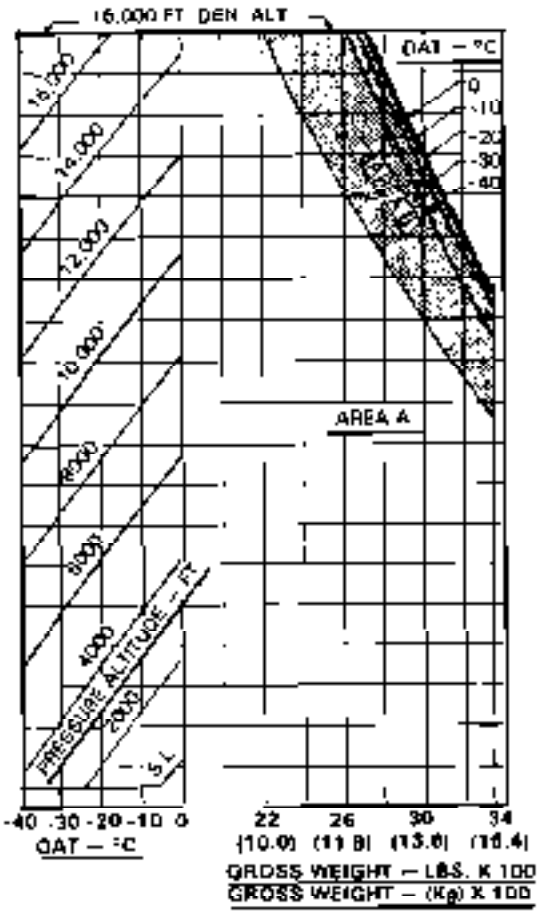


Figure 4-2. Hover ceiling (Sheet 20 of 30)

PARTICLE SEPARATOR WITH CARGO HOOK

HOVER CEILING OUT OF GROUND EFFECT

TAKEOFF POWER 0° TO 46°C

GENERATOR 22.3 AMPS — ANTI-ICE OFF
SKID HEIGHT 40 FT (12.2 METERS) WITH LOW SKID GEAR — ENGINE RPM 100%
WITH ANTI-ICE ON GROSS WEIGHT IS 250 LBS. (117.9 Kg) LESS

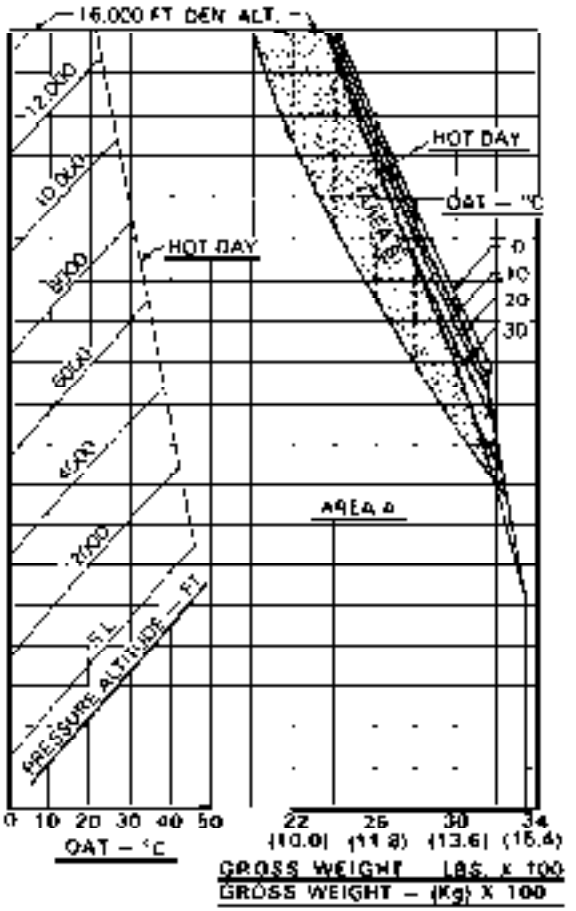


Figure 4-2. Hover ceiling (Sheet 21 of 30)

PARTICLE SEPARATOR WITH CARGO HOOK

HOVER CEILING OUT OF GROUND EFFECT

TAKEOFF POWER 0° TO −40°C

GENERATOR 22.3 AMPS
SKID HEIGHT 40 FT (12.2 METERS) WITH LOW SKID GEAR
WITH ANTI-ICE ON GROSS WEIGHT IS 280 LBS. (117 Kg) LESS

ANTI-ICE OFF
ENGINE RPM 100%

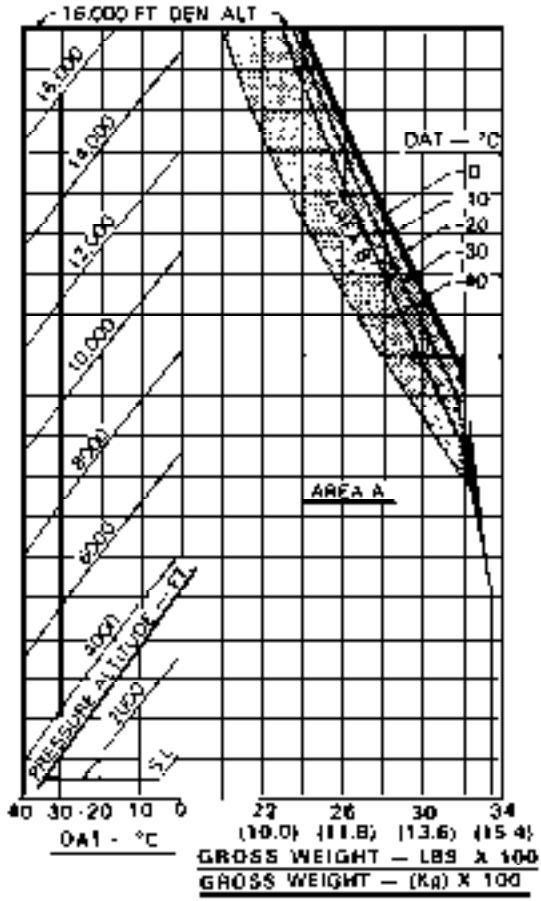


Figure 4-2. Hover ceiling (Sheet 22 of 30)

PARTICLE SEPARATOR WITH HIGH SKID OR LIGHTWEIGHT EMERGENCY FLOTATION LANDING GEAR

HOVER CEILING IN GROUND EFFECT

TAKEOFF POWER 0° TO 45°C

GENERATOR 22.3 AMPS
SKID HEIGHT 4.0 FT (1.2 METERS) WITH LOW SKID GEAR
SKID HEIGHT 3.0 FT (0.9 METERS) WITH HIGH SKID GEAR
WITH ANTI-ICE ON GROSS WEIGHT IS 225 LBS. (102.1 Kg) LESS

ANTI-ICE OFF
ENGINE RPM 100%

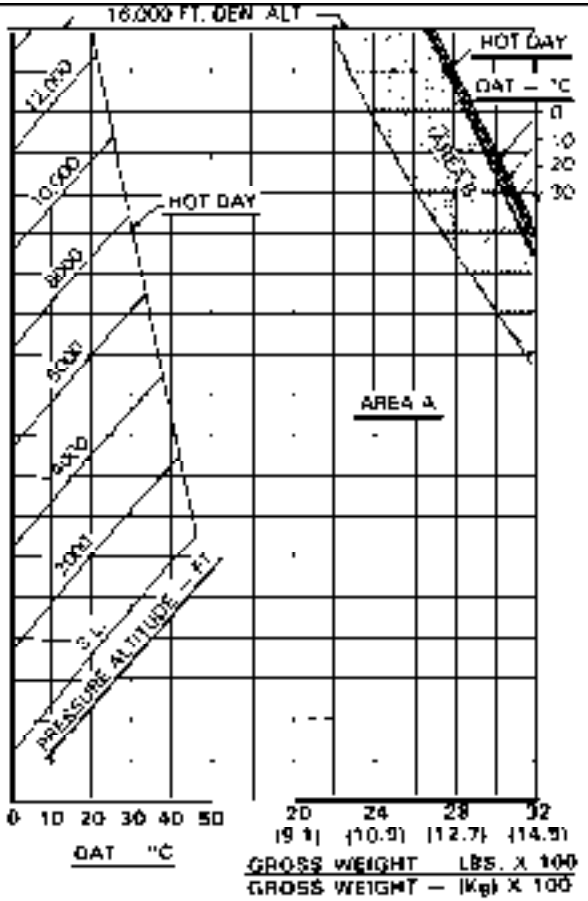


Figure 4-2. Hover ceiling (Sheet 23 of 30)

PARTICLE SEPARATOR WITH HIGH SKID OR LIGHTWEIGHT EMERGENCY FLOTATION LANDING GEAR

HOVER CEILING IN GROUND EFFECT

TAKEOFF POWER 0° TO −40°C

GENERATOR 22 3 AMPS
SKID HEIGHT 4.0 FT (1.2 METERS) WITH LOW SKID GEAR
SKID HEIGHT 3 0 FT (0.9 METERS) WITH HIGH SKID GEAR
WITH ANTI-ICE ON GROSS WEIGHT IS 225 LBS. (102.1 Kg) LESS

ANTI-ICE OFF
ENGINE RPM 100%

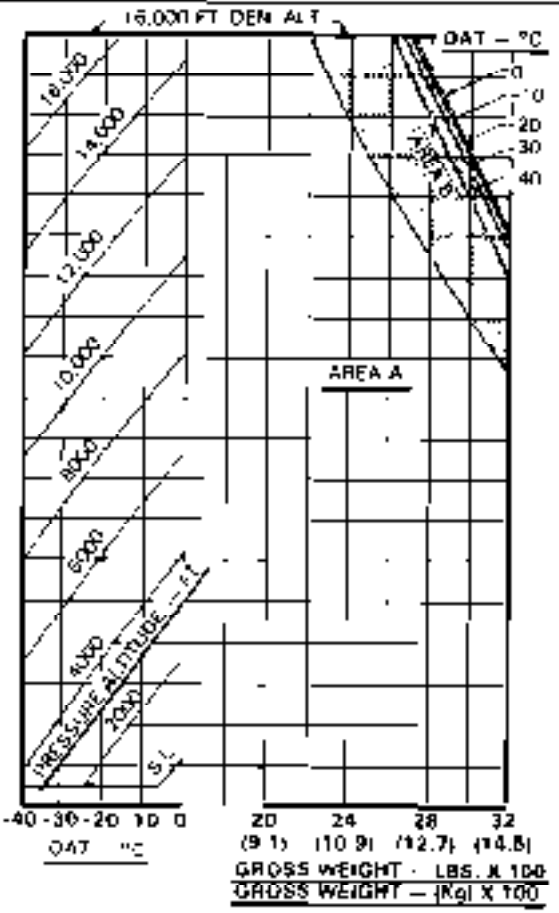


Figure 4-2. Hover ceiling (Sheet 24 of 30)

BLEED AIR HEATER AND SNOW DEFLECTOR WITH STANDARD SKID GEAR

HOVER CEILING IN GROUND EFFECT

TAKEOFF POWER 0° TO 30°C

GENERATOR 22.3 AMPS
SKID HEIGHT 2.0 FT (0.6 METERS)
WITH ANTI-ICE ON GROSS WEIGHT IS 245 LBS (111 Kg) LESS

ANTI-ICE OFF
ENGINE RPM 100%

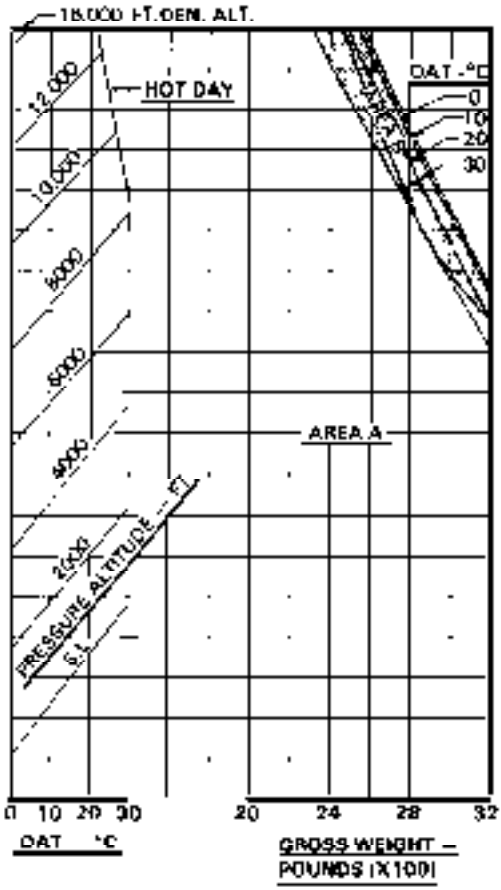


Figure 4-2. Hover ceiling (Sheet 25 of 30)

BLEED AIR HEATER AND SNOW DEFLECTOR WITH STANDARD SKID GEAR

HOVER CEILING IN GROUND EFFECT

TAKEOFF POWER 0° TO −40°C

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

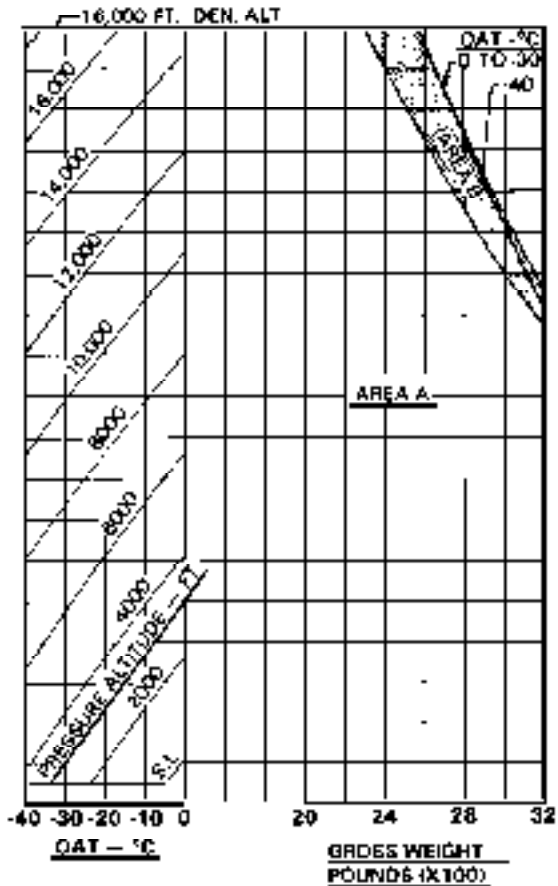


Figure 4-2. Hover ceiling (Sheet 28 of 30)

BLEED AIR HEATER AND SNOW DEFLECTOR WITH HIGH SKID OR ANY FLOAT GEAR

HOVER CEILING IN GROUND EFFECT

TAKEOFF POWER 0° TO 30°C

GENERATOR 22.3 AMPS
SKID HEIGHT 3.0 FT (0.9 METERS)
WITH ANTI ICE ON GROSS WEIGHT IS 225 LBS. (102.1 Kg) LESS

ANTI ICE OFF
ENGINE RPM 100%

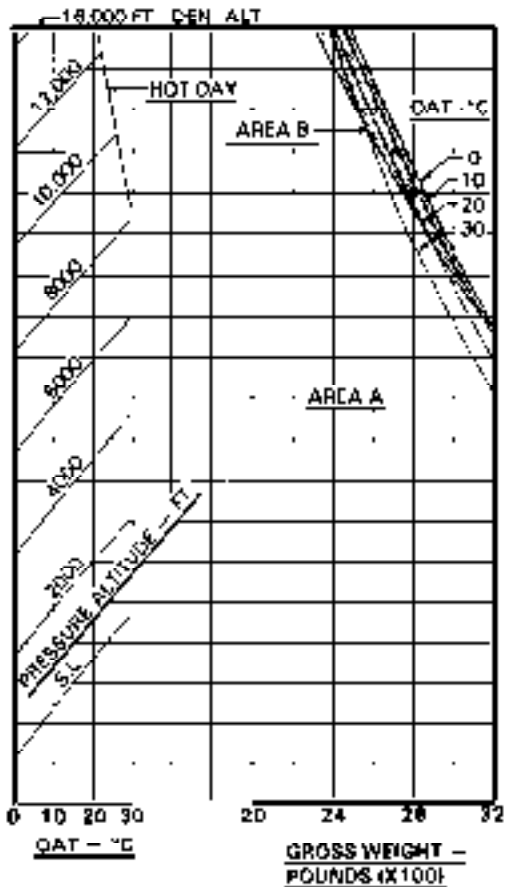


Figure 4-2 Hover ceiling (Sheet 27 of 30)

BLEED AIR HEATER AND SNOW DEFLECTOR WITH HIGH SKID OR ANY FLOAT GEAR

HOVER CEILING IN GROUND EFFECT

TAKEOFF POWER 0° TO −40°C

GENERATOR 22.3 AMPS
SKID HEIGHT 3.0 FT (0.9 METERS)
WITH ANTI-ICE ON GROSS WEIGHT IS 225 LBS (102 Kg) LESS

ANTI-ICE OFF
ENGINE RPM 100%

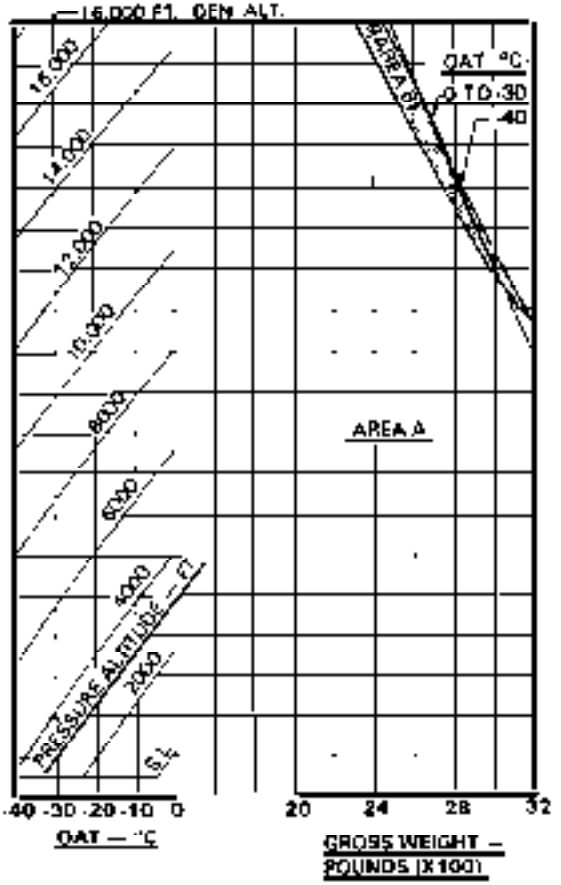


Figure 4-2. Hover ceiling (Sheet 28 of 30)

BLEED AIR HEATER AND SNOW DEFLECTOR WITH ANY SKID OR FLOAT GEAR

HOVER CEILING OUT OF GROUND EFFECT
TAKEOFF POWER 0° TO 30°C

GENERATOR 22.3 AMPS
SKID HEIGHT 40 FT (12.2 METERS)
WITH ANTI-ICE ON GROSS WEIGHT IS 250 LBS. (117.9 Kg) LESS

ANTI-ICE OFF
ENGINE RPM 100%

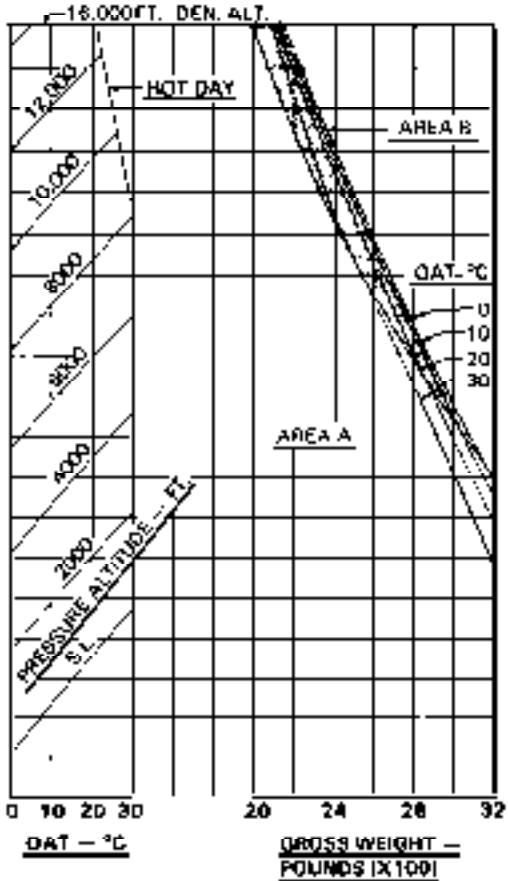


Figure 4-2. Hover ceiling (Sheet 29 of 30)

BLEED AIR HEATER AND SNOW DEFLECTOR WITH ANY SKID OR FLOAT GEAR

HOVER CEILING OUT OF GROUND EFFECT

TAKEOFF POWER 0° TO 40°C

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

ANTI ICE OFF
ENGINE RPM 100%

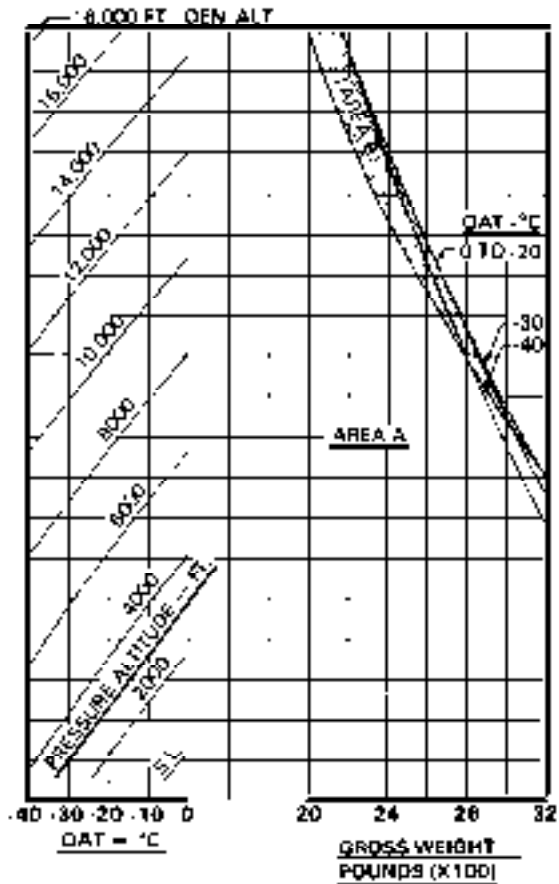


Figure 4-2. Hover ceiling (Sheet 30 of 30)

Bell JetRanger-III
MODEL 206B
250-C20B/C20J ENGINE

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT

LIGHTWEIGHT EMERGENCY FLOTATION LANDING GEAR

206-706-211

CERTIFIED
JULY 1, 1977

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

Bell Helicopter TEXTRON
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POST OFFICE BOX 482 • FORT WORTH, TEXAS 76101

13 FEBRUARY 1992
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APPROVED:

Craig Bleich

for MANAGER

ROTORCRAFT CERTIFICATION OFFICE
FEDERAL AVIATION ADMINISTRATION
FT. WORTH, TX 76193-0170

GENERAL INFORMATION

The Lightweight Emergency Flotation Kit (206-706-211) consists of high skid gear, emergency floats attached to main skid panels, inflation system, position lights, and attaching hardware. Installation of this kit permits operation over land or water. Float inflation time is approximately 5 seconds.

Section 1

LIMITATIONS

TYPE OF OPERATION

Operation with the pop-out floats inflated is limited to a flight to a servicing facility for repacking and recharging the system. Amphibious operations are not approved.

The floats and covers must be installed and ground handling wheels removed for all flight operations.

Accomplish preflight float system check daily prior to performing over water operations.

Flight operations requiring the use of the external hoist ARE PROHIBITED and the system SHALL BE DEACTIVATED when floats are installed unless Cable Guard Kit (206-706-214) is installed.

If Cable Guard Kit is installed, hoist cable and hook shall be stowed prior to float inflation.

AIRSPEED LIMITATIONS

FLOATS STOWED

Floats stowed, covers installed — Same as basic helicopter.

Doors on or off in any combination — Same as basic helicopter.

FLOATS INFLATED

Maximum inflation airspeed — 60 mph (52 knots) IAS.

CAUTION

DURING THE INFLATION CYCLE UNDESIRABLE PITCHING WILL OCCUR AT AIRSPEEDS ABOVE 60 MPH (52 KNOTS) IAS.

Maximum allowable airspeed, floats inflated — 80 mph (69 knots) IAS.

Maximum AUTOROTATION airspeed, floats inflated — 70 mph (60 knots) IAS.

RATE OF CLIMB LIMITATIONS

Maximum rate of climb with floats inflated is 1000 feet per minute.

CENTER OF GRAVITY LIMITS

Actual weight changes shall be determined after kit is installed and ballast readjusted, if necessary, to return empty weight CG to within allowable limits. Refer to Center of Gravity vs Weight Empty Chart in BHT-206B3-MM-1.

PLACARDS

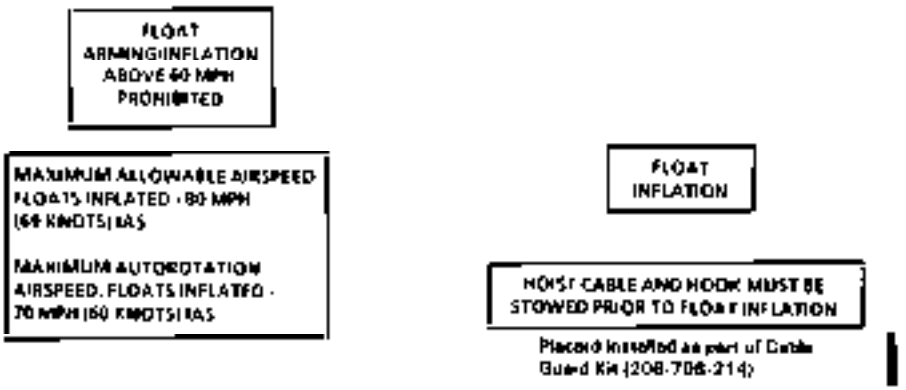

Figure 1-1. Placards

Section 2

NORMAL PROCEDURES

EXTERIOR CHECK

NOTE

Ensure that Cable Guard Kit (206-706-214) is installed if external hoist operations are to be conducted.

Floats stowed.

Nitrogen Knee — Condition and security.

Float covers clean and secured.

Float inflation cylinder — Check for proper temperature and altitude vs inflation pressure. Refer to placard on cylinder. Check cannon plug for security.

INTERIOR CHECK

PREFLIGHT FLOAT SYSTEM CHECK

FLOAT MANUAL ARM switch — OFF (guard closed).

FLOAT POWER circuit breaker — Check in.

FLOAT TEST and FLOAT ARM lights — Press to test.

FLOAT TEST switch — FLOAT TEST position, and hold.

FLOAT INFLATION trigger switch — Pull On, FLOAT TEST light illuminated, then release.

FLOAT TEST switch — Release, FLOAT TEST light Extinguished.

FLOAT MANUAL ARM switch — POWER (guard open), FLOAT ARM light illuminated, then switch OFF (guard closed), FLOAT ARM light Extinguished.

IN-FLIGHT OPERATIONS

OVER WATER OPERATION

FLOAT MANUAL ARM switch — POWER (guard open).

FLOAT ARM light — Illuminated.

CAUTION

DURING FLIGHT AT ALTITUDES ABOVE 500 FEET AND AT AIRSPEEDS OF 60 MPH (52 KNOTS) IAS AND ABOVE, THE SYSTEM SHOULD BE DEACTIVATED BY POSITIONING THE FLOAT MANUAL ARM SWITCH IN THE OFF POSITION (GUARD CLOSED).

Rearm system prior to landing.

OVER LAND OPERATION

FLOAT MANUAL ARM switch — OFF.

DESCENT AND LANDING — FLOATS STOWED

WARNING

IF THE CG IS AFT OF STATION 112.7, PRACTICE AUTOROTATIONAL TOUCHDOWNS SHOULD BE AVOIDED DUE TO NOSE DOWN PITCHING.

WARNING

RUN-ON LANDINGS ON OTHER THAN A HARD FIRM SURFACE SHOULD BE EXERCISED WITH CAUTION.

NOTE

Tail-low, run-on landings should be avoided to prevent nosedown pitching.

Section 3

EMERGENCY AND MALFUNCTION PROCEDURE

Reduce airspeed below Maximum Inflation Airspeed -- 60 mph (52 knots) IAS.

Establish autorotation or low power descent at approximately 500 feet per minute.

FLOAT MANUAL ARM switch . POWER (guard open).

FLOAT ARM light — Illuminated.

CAUTION

DO NOT INFLATE FLOATS MORE THAN 2000 FEET ABOVE ANTICIPATED LANDING SURFACE.

FLOAT INFLATION trigger switch Pull On.

NOTE

During flight with floats inflated, a random bumping of the skid gear crosstube against the landing gear saddles will occur. Reducing airspeed will reduce bumping.

AFTER EMERGENCY WATER LANDING

After landing, inspect the helicopter for possible damage. If malfunction was cause of landing, correct malfunction.

If no damage has occurred to helicopter and malfunction has been corrected, the helicopter can be ferried to the nearest maintenance facility to repack floats and charge system. The ferrying airspeed is restricted to 60 mph (59 knots) IAS. The maximum rate of climb while ferrying is 1000 feet per minute.

Section 4

PERFORMANCE

HOVER CEILING — FLOATS STOWED

Out of ground effect hover performance is the same as basic helicopter. For in ground effect hover performance, refer to Hover Ceiling In Ground Effect (figure 4-1).

NOTE

The Hover Ceiling charts presented in this manual reflect performance with the 65 inch diameter tail rotor (P/N 206-016-201) installed. For performance with the 62 inch diameter tail rotor (P/N 206-010-750), refer to BHT-206B3-FMS-22.

HOVER CEILING IN GROUND EFFECT

TAKEOFF POWER 0° TO 46°C

GENERATOR 22.3 AMPS
SKID HEIGHT 3.0 FT (0.9 METERS)
ANTI-ICE OFF
N2 ENGINE RPM 100%
WITH ANTI-ICE ON GROSS WEIGHT IS 200 LBS (90.7 Kg) LESS

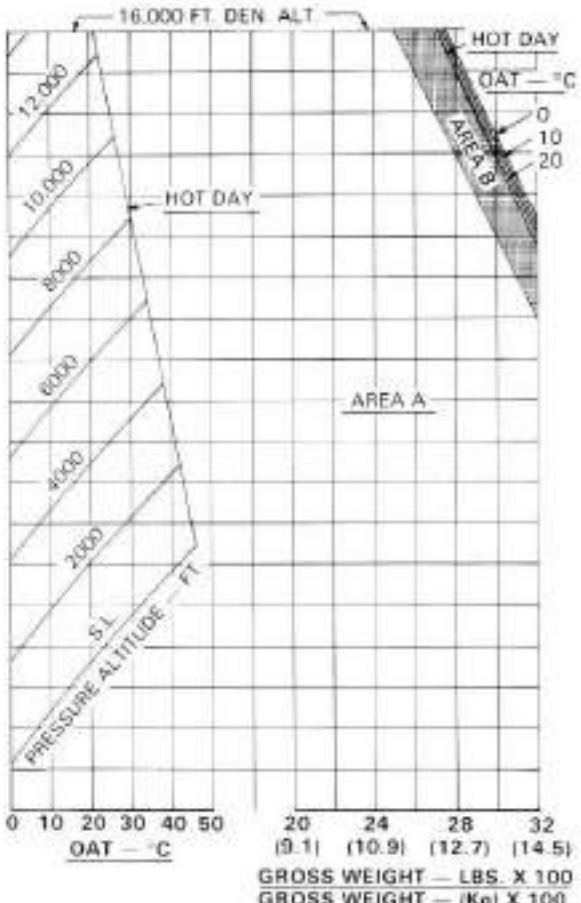

Figure 4-1. Hover ceiling in ground effect (Sheet 1 of 2)

HOVER CEILING IN GROUND EFFECT
TAKEOFF POWER 0° TO −40°C

GENERATOR 22.3 AMPS
SKID HEIGHT 3.0 FT (0.9 METERS)
ANTI-ICE OFF
N2 ENGINE RPM 100%
WITH ANTI-ICE ON GROSS WEIGHT IS 200 LBS (90.7 Kg) LESS

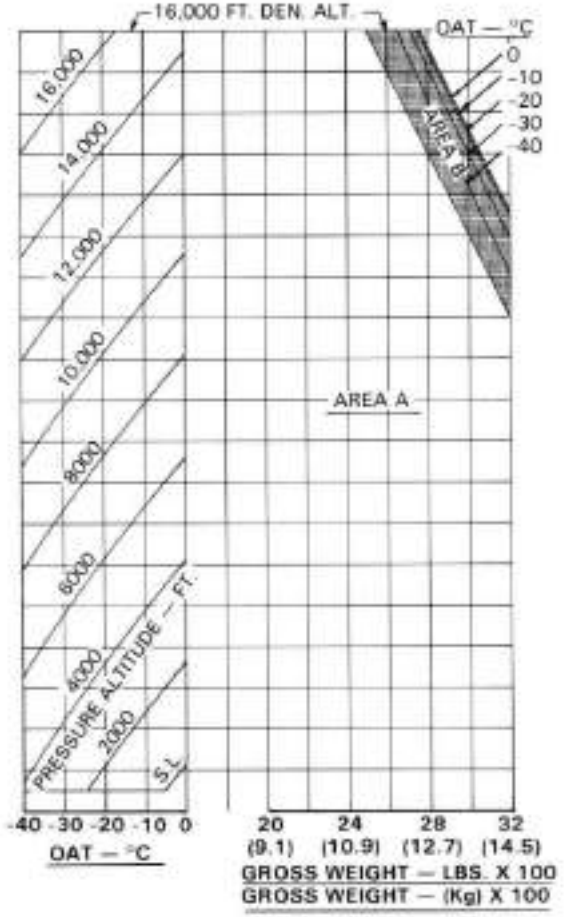

Figure 4-1. Hover ceiling in ground effect (Sheet 2 of 2)

Bell JetRanger-III
MODEL 206B
250-C20B/C20J ENGINE

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT

MAIN ROTOR BLADE FOLDING
206-899-014

CERTIFIED
APRIL 25, 1988

This supplement shall be attached to Model 206B3 Flight Manual when Main Rotor Blade Folding kit has been installed.

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

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FEDERAL AVIATION ADMINISTRATION
FT. WORTH, TX 76193-0170

NOTE

Revised text is indicated by a black vertical line. Insert latest revision pages; dispose of superseded pages.

GENERAL INFORMATION

The Main Rotor Blade Folding system permits helicopter storage in smaller pieces. The system consists of a clamp, rack assembly and the required hardware provisions to complete the installation.

Section 1

LIMITATIONS

No change from basic manual.

Section 2

NORMAL PROCEDURES

AIRCRAFT LOGBOOK ENTRIES

Ensure that helicopter logbook entries indicate that rotor blade bolts and latch nuts have been torqued as per maintenance manual.

EXTERIOR CHECK

Assure blade leading edge latch bolt nuts are aligned with index marks on latch after blades have been unfolded.

Check blade trailing edge latch bolt nuts are aligned with index marks on latch within approximately 2 points after blades have been unfolded.

Thoroughly inspect to ensure that all blade folding equipment has been removed as necessary and helicopter has been prepared for flight.

Verify that blade catch tangs are seated on blade grip plates.

Check mast below rotor hub to ensure that main rotor hub clamp assembly has not damaged mast.

NOTE

Excessive main rotor 1/rev vibrations may indicate that blade alignment has been affected.

Section 3

EMERGENCY AND MALFUNCTION PROCEDURES

No change from basic manual.

Section 4

PERFORMANCE

No change from basic manual.

Bell JetRanger-III

MODEL 206B

250-C20B/C20J ENGINE

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT

UNITED KINGDOM REGISTERED HELICOPTERS

CAA CERTIFIED
NOVEMBER 9, 1978

This supplement shall be attached to Model 206B3 Flight Manual when helicopter is registered in United Kingdom.

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

Bell Helicopter TEXTRON

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Section 1

LIMITATIONS

CATEGORY AND USE OF HELICOPTER

The Bell Model 206B Jet Ranger III helicopter is eligible for certification in the United Kingdom in the Transport Category (Passenger). This helicopter may, however, be restricted to another category and to a particular use and this will be stated in the certificate of airworthiness.

When an external freight carrier is suspended from the helicopter, the helicopter shall not be flown for the purpose of public transport.

When flown for public transport, the helicopter is classified in performance Group B and the true airspeed to be used for compliance with the Air Navigation legislation governing flight over water is 100 knots.

Air Navigation Order requires Group B helicopters to carry flares for night flight.

MAXIMUM NUMBER OF OCCUPANTS

The maximum number of occupants including crew is the lesser of five and the number of approved seats installed.

Children under the age of two years carried in the arms of passengers may be left out of this count.

EXTERNAL FREIGHT CARRIAGE

For those types of load which may cause significant changes in the flight characteristics of the helicopter/load combination from those which have been demonstrated previously as being satisfactory, the operator must conduct flight checks in order to determine the conditions within which such loads may be carried safely.

Such flight checks, which should take place in an environment free from third party hazard, are required to ensure that the following manoeuvers can be performed safely.

The picking up of external load.

Hover turns to ensure that adequate directional control is available.

Acceleration from hover.

Level flight and turns at an airspeed not less than that required during the proposed operation.

Return to hover.

NOTE

The load shall be suspended in such a manner that it will not foul the helicopter structure.

Section 2

NORMAL DRILLS

EXTERIOR INSPECTION

FUSELAGE — CENTER RIGHT SIDE

Fuel sump — With FUEL VALVE switch — OFF and BAT switch — On, drain sump then BAT switch — OFF.

ENGINE PRE-START CHECK

WARNING and CAUTION Lights — Test.

FIRE DET TEST switch (if fitted) — Test.

Section 3

EMERGENCY AND MALFUNCTION DRILLS

WARNING LIGHT (RED) SEGMENTS

WARNING LIGHT	FAULT AND REMEDY
FIRE (If fitted)	Overtemperature condition in engine compartment. Proceed as follows: Throttle — Close. Immediately enter autorotation. FUEL VALVE switch — OFF. BAT switch — OFF. GEN switch — OFF. Execute a normal autorotational descent and landing.

NOTE

Do not restart engine until cause of fire has been determined and corrected.

Section 4

PERFORMANCE

TAKEOFF DISTANCE OVER 100 FOOT OBSTACLE

This chart provides takeoff performance data. The engine power limit for takeoff is hover power required, 2.0 foot (0.6 meters) skid height, plus 20% torque or power available as limited by engine topping, whichever is less. The engine power limitations are imposed to preclude unsafe nose down attitude while in the flight path required to remain clear of critical height velocity limitations. Good pilot technique is required to achieve the published takeoff performance; wind factors are not considered. The takeoff should be initiated from a stabilized 2.0 foot (0.6 meters) skid height hover; increase power smoothly and simultaneously start nose down pitch rotation so that the helicopter accelerates along a flight path within the takeoff corridor defined by the Height-Velocity diagram.

CAUTION

WHEN OPERATING NEAR THE ENGINE TOPPING LIMIT, THE N2 RPM MUST BE CLOSELY MONITORED TO PRECLUDE DROOP BELOW THE NORMAL OPERATING LIMIT.

NOTE

Power should be applied at a rate sufficient to expedite the maneuver but not so rapid as to overshoot the torque value (approximately 6 seconds). Once power is set, it should not be further adjusted until obstacle clearance is achieved.

As the helicopter approaches the speed of 50 KIAS, start nose up rotation to achieve a 50 KIAS climb.

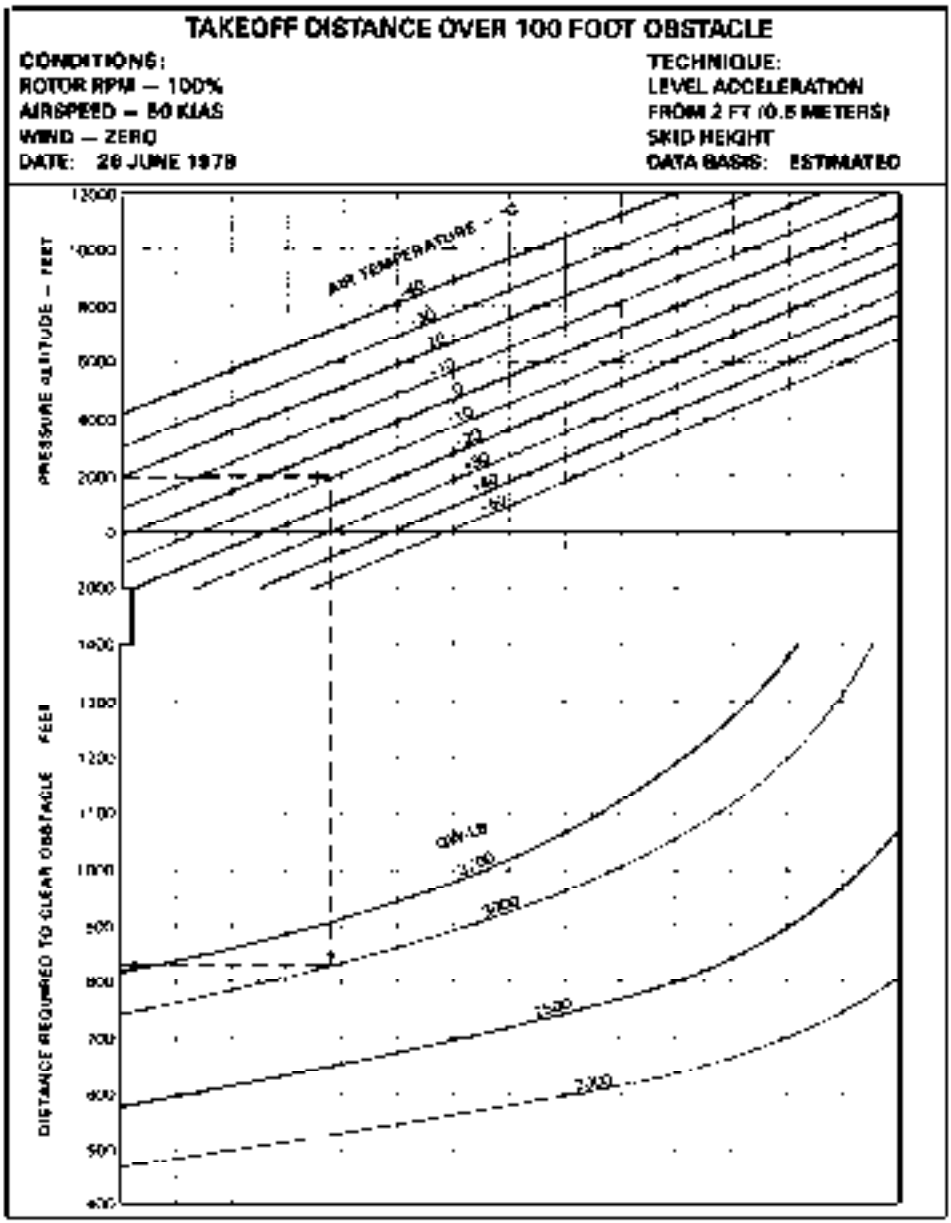

Figure 4-1. Takeoff distance over 100 foot obstacle

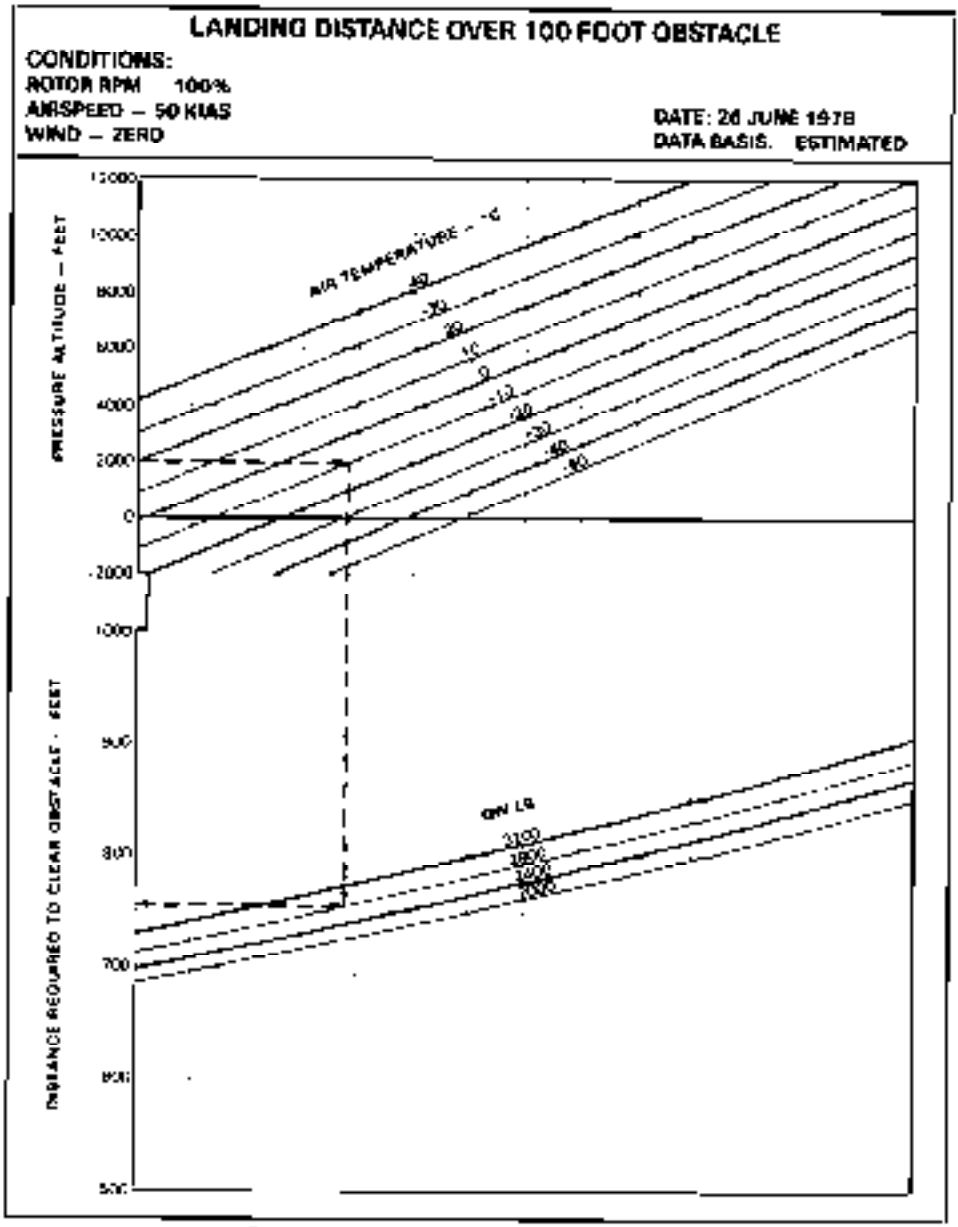

Figure 4-2. Landing distance over 100 foot obstacle

GLIDE DISTANCE ALL GROSS WEIGHTS

- 48 KCAS 100% ROTOR RPM ZERO WIND
EXAMPLE: PRESSURE ALT. = 3500 FT
OAT = –2°C STD OAT = 8°C
OAT-STD. OAT = –2-(+8) = –10
USE CURVE = STD –10°C
HEIGHT ABOVE GROUND = 2000 FT.
HORIZONTAL GLIDE DIST. = 1.26 N. MI.

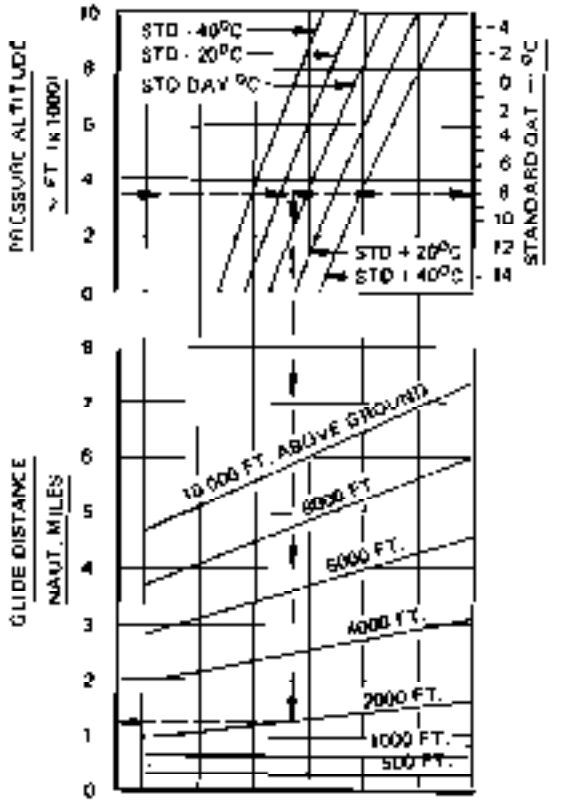

Figure 4-3. Glide distance

Bell JetRanger-III
MODEL 206B
250-C20B/C20J ENGINE

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT

ENGINE FIRE DETECTION SYSTEM

206-899-945

CERTIFIED
SEPTEMBER 19, 1988

This supplement shall be attached to Model 206B3 Flight Manual when Engine Fire Detection System kit has been installed.

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

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REISSUED 13 FEBRUARY 1992

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MANAGER

ROTORCRAFT CERTIFICATION OFFICE
FEDERAL AVIATION ADMINISTRATION
FT. WORTH, TX 76193-0170

NOTE

Revised text is indicated by a black vertical line. Insert latest revision pages; dispose of superseded pages.

GENERAL INFORMATION

The Engine Fire Detection System (206-899-945) will provide the pilot with a fire warning indicator which will illuminate in the event of an overtemperature condition in the engine compartment.

Section 1

LIMITATIONS

WEIGHT LIMITATIONS

Actual weight change shall be determined after kit is installed and ballast readjusted, if necessary, to return empty weight CG to within allowable limits.

Section 2

NORMAL PROCEDURES

ENGINE PRE-START CHECK

Warning and Caution lights — Test.

FIRE DET TEST switch — Press, FIRE light illuminated; release, FIRE light Extinguished.

Section 3

EMERGENCY AND MALFUNCTION PROCEDURES

WARNING LIGHT (RED) SEGMENTS

WARNING LIGHT	FAULT AND REMEDY
FIRE	Overtemperature condition in engine compartment. Proceed as follows:

Throttle — Close.
Immediately enter autorotation.
FUEL VALVE switch — OFF.
BAT switch — OFF.
GEN switch — OFF.
Execute a normal autorotational descent and landing.

NOTE

Do not restart engine until cause of fire has been determined and corrected.

Section 4

PERFORMANCE

No change from basic manual.

BHT-206B3-FMS-CAN-31

Bell JetRanger-III

MODEL 206B

250-C20B/C20J ENGINE

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT

EXTERNAL HOIST AND CARGO HOOK CANADIAN ADDENDUM

CERTIFIED
BY FAA FOR DOT FEBRUARY 13, 1992

This supplement shall be attached to Model 206B3 Flight Manual when External Hoist and Cargo Hook kit has been installed.

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

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NOTICE

This document provides information supplementing or superseding that in the basic document to which it applies.

This page applies to Canadian Registered helicopters only.

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Section 1

LIMITATIONS

CREW LIMITATIONS

No person shall be carried during external cargo operations unless that person is:

1. A crewmember;

2. A crewmember trainee; or

3. Performs a function essential to the operation.

HEIGHT-VELOCITY LIMITATIONS

The height-velocity diagram in the basic manual is not a limitation for external load operation.

This page applies to Canadian Registered helicopters only.

BHT-206B3-FMS-32

Bell JetRanger-III
MODEL 206B
250-C20B/C20J ENGINE

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT

POP-OUT FLOATS WITH GENERATOR FAIL CAUTION LIGHT

206-706-211

CERTIFIED
JANUARY 15, 1993

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

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JANUARY 15, 1993
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APPROVED:

Gary Blanch

for MANAGER

ROTORCRAFT CERTIFICATION OFFICE
FEDERAL AVIATION ADMINISTRATION
FT. WORTH, TX 76193-0170

GENERAL INFORMATION

Pop-out float kit (206-706-211) consists of high skid gear, floats attached to main skid panels, inflation system, position lights, and attaching hardware. This kit provides an electrically operated solenoid valve installed on the reservoir. A GEN FAIL caution light is located in caution panel to alert pilot generator has failed and battery power might be insufficient to inflate floats. Float inflation time is approximately 5 seconds.

Section 1

LIMITATIONS

TYPE OF OPERATION

Over water flight is prohibited if generator is inoperative.

Operation with pop-out floats inflated is limited to a flight to a servicing facility for repacking and recharging system.

Floats and covers shall be installed and ground handling wheels removed for all flight operations.

Accomplish float system preflight check daily prior to performing over water operations.

Flight operations requiring use of external hoist are prohibited. System shall be deactivated when floats are installed unless cable guard kit (205-706-214) is installed.

If cable guard kit is installed, hoist cable and hook shall be stowed prior to float inflation.

AIRSPEED

Doors on or off in any combination — Same as basic helicopter.

Floats stowed, covers installed — Same as basic helicopter.

Maximum inflation airspeed — 60 MPH (52 KNOTS) IAS.

NOTE

During inflation cycle, undesirable pitching will occur at airspeeds above 60 MPH (52 KNOTS) IAS.

Maximum allowable airspeed, floats inflated — 60 MPH (52 KNOTS) IAS.

Maximum autorotation airspeed, floats inflated – 70 MPH (60 KNOTS) IAS

RATE OF CLIMB

Maximum rate of climb with floats inflated — 1000 feet per minute.

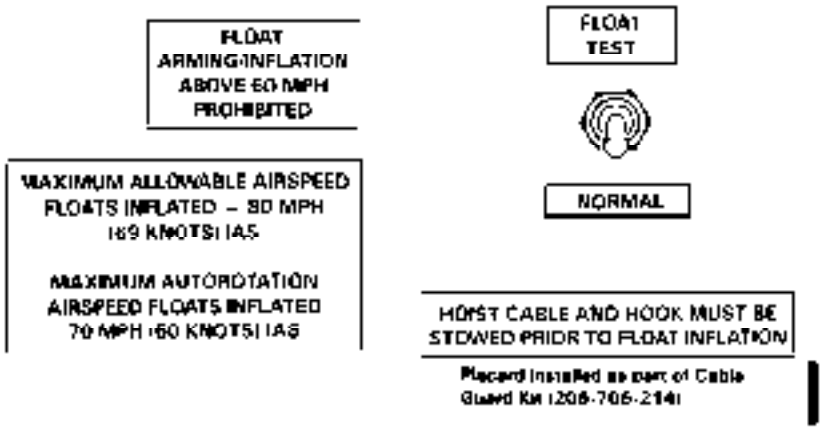
Maximum rate of climb with floats stowed — Same as basic manual.

WEIGHT/CENTER OF GRAVITY

Actual weight change shall be determined after kit is installed and ballast readjusted, if necessary, to return empty weight to within allowable limits. Refer to Center of Gravity vs Weight Empty Chart in BHT-206B3-MM-1.

PLACARDS AND DECALS

Refer to figure 1-1.



Located on instrument panel

Located on collective control head

Figure 1-1. Placards and decals

Section 2

NORMAL PROCEDURES

EXTERIOR CHECK

NOTE

Ensure cable guard kit (206-706-214) is installed if external hoist operations are to be conducted.

1. Floats — Stowed.
2. Pneumatic lines — Condition and security.
3. Float covers — Clean and secured.
4. Float inflation cylinder — Proper temperature and altitude vs inflation pressure. Refer to placard on cylinder. Electrical connector for security.

INTERIOR CHECK

1. BAT switch BAT. With GEN switch OFF, verify GEN FAIL light illuminates.

NOTE

If GEN FAIL light does not illuminate, flight over water is prohibited.

2. FLOAT ARM switch — Off, guard closed.
3. FLOAT POWER circuit breaker — In.
4. FLOAT TEST and FLOAT ARM lights - Press to test.
5. FLOAT TEST switch - FLOAT TEST position and hold.
6. FLOAT INFLATION switch — Press, FLOAT TEST light illuminates, release switch.
7. FLOAT TEST switch — NORMAL, FLOAT TEST light extinguishes.
8. FLOAT ARM switch -- On (guard open), FLOAT ARM light illuminates, then switch off (guard closed). FLOAT ARM light extinguishes.
9. BAT switch — OFF.

OVER WATER OPERATIONS

1. FLOAT ARM switch — On (guard open).
2. FLOAT ARM light — Illuminated.

NOTE

During flight at altitudes above 500 feet and at airspeeds of 60 MPH (52 KNOTS) IAS and above, system should be deactivated by positioning FLOAT ARM switch to off (guard closed).

3. Rearm system prior to landing.

OVER LAND OPERATION

FLOAT ARM switch — Off (guard closed).

DESCENT AND LANDING – FLOATS STOWED

WARNING

IF CG IS AFT OF STATION 112.7, PRACTICE AUTOROTATIONAL TOUCHDOWNS SHOULD BE AVOIDED DUE TO NOSE DOWN PITCHING.
RUN-ON LANDING ON OTHER THAN A HARD, FIRM SURFACE SHOULD BE EXERCISED WITH CAUTION.

NOTE

Tail-low, run-on landings should be avoided to prevent nosedown pitching.

Section 3

EMERGENCY AND MALFUNCTION PROCEDURES

WARNING AND CAUTION LIGHTS

Table 3-1 presents fault conditions and corrective actions for caution lights.

WARNING

IF GEN FAIL LIGHT ILLUMINATES, BATTERY POWER MAY NOT BE OF SUFFICIENT STRENGTH TO INFLATE FLOATS.

Table 3-1. Caution lights

PANEL WORDING	FAULT CONDITION	CORRECTIVE ACTION
FLOAT ARM	FLOAT ARM switch in on position (guard open).	Verify switch position
GEN FAIL	Generator has failed.	Over land: GEN switch — RESET, then GEN. If light remains illuminated, GEN switch — OFF. Land as soon as practical. Over water: GEN switch RESET, then GEN. If light remains illuminated, GEN switch — OFF. Turn off all nonessential electrical equipment to conserve battery power. Land as soon as practical.

EMERGENCY WATER LANDING

1. Airspeed — Reduce below maximum initiation airspeed (60 MPH (52 KNOTS) IAS).
2. Autorotation or low power descent — Establish at 500 feet per minute.
3. FLOAT ARM switch — On (guard open).
4. FLOAT ARM light — Illuminated.

WARNING

DO NOT INFLATE FLOATS MORE THAN 2000 FEET ABOVE ANTICIPATED LANDING SURFACE.

5. FLOAT INFLATION switch — Press.

NOTE

During flight with floats inflated, a random bumping of skid gear crosstube against landing gear saddles will occur. Reducing airspeed will reduce bumping.

AFTER EMERGENCY WATER LANDING

After landing, inspect helicopter for possible damage. If malfunction was cause of landing, correct malfunction.

If no damage has occurred to helicopter and malfunction has been corrected, helicopter can be ferried to nearest maintenance facility to repack floats and charge system. Ferrying airspeed is restricted to 80 MPH (69 KNOTS) IAS. Maximum rate of climb while ferrying is 1000 feet per minute.

Section 4

PERFORMANCE

HOVER CEILING – FLOATS STOWED

Out of ground effect hover performance is same as basic helicopter. For in ground effect hover performance, refer to figure 4-1.

NOTE

Hover ceiling charts presented in this supplement reflect performance with 65 inch diameter tail rotor (P/N 206-016-201) installed. For performance with 62 inch diameter tail rotor (P/N 206-010-750), refer to BHT-206B3-FMS-22.

HOVER CEILING IN GROUND EFFECT

TAKEOFF POWER 0° TO 46°C

GENERATOR 22 3 AMPS ANTI-ICE OFF

SKID HEIGHT 3 0 FT (0 9 METERS) N2 ENGINE RPM 100%

WITH ANTI-ICE ON GROSS WEIGHT IS 200 LBS (90.7 Kg) LESS

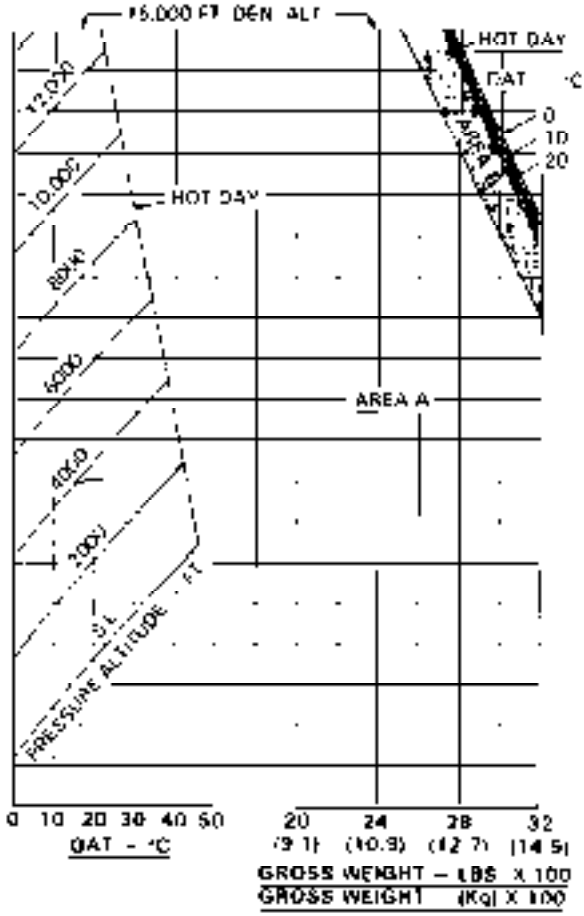


Figure 4-1 Hover ceiling – in ground effect (Sheet 1 of 2)

HOVER CEILING IN GROUND EFFECT

TAKEOFF POWER 0° TO −40°C

GENERATOR 22.3 AMPS — ANTI-ICE OFF

SKID HEIGHT 3.0 FT (0.9 METERS) — N2 ENGINE RPM 100%

WITH ANTI-ICE ON GROSS WEIGHT IS 200 LBS (90.7 Kg) LESS

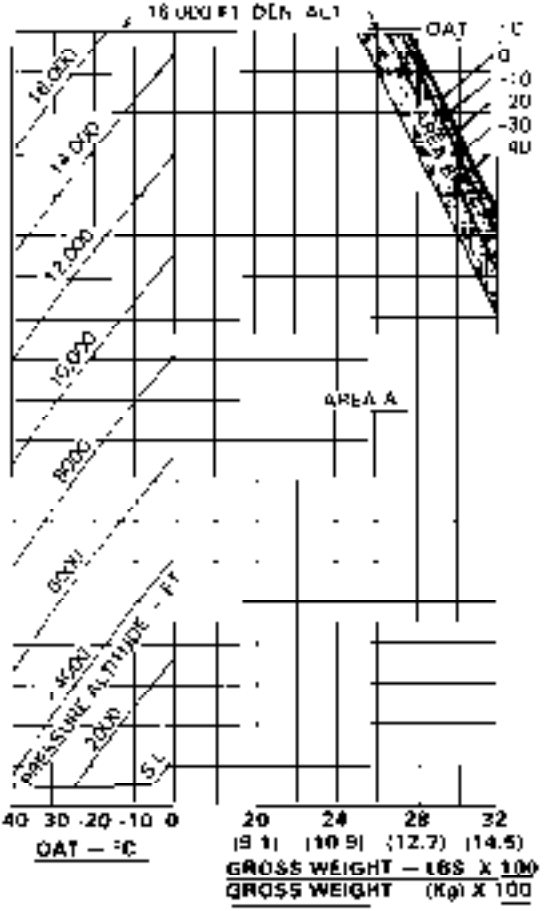


Figure 4-1. Hover ceiling – in ground effect (Sheet 2 of 2)

Bell JetRanger-III
MODEL 206B
250-C20B/C20J ENGINE

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT
TH-67 CONFIGURATION FUEL SYSTEM AND TORQUE INDICATOR

BHT SN 5101 THROUGH 5400
CERTIFIED
6 OCTOBER 1993

This supplement shall be attached to Model 206B JetRanger III Flight Manual when the following equipment has been installed:

206-350-604 Fuel Cell
206-075-740 Fuel Quantity Gage
206-076-676 Fuel Pressure Gage
206-075-739 Torque Indicator

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

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NOTICE

This publication is being reissued in its entirety for administrative reason to extend serial number effectivity to 5400

REISSUE — 3 SEPTEMBER 1997

Section 1

LIMITATIONS

1-1. INTRODUCTIONWEIGHT AND CENTER OF GRAVITY

Actual weight change shall be determined after helicopter has been properly configured and ballast adjusted, if necessary, to maintain cg within limits of the Gross Weight Center of Gravity chart.

NOTE

The Weight Empty Center of Gravity chart in Maintenance Manual BHT-206B3-MM-1 does not apply to this helicopter configuration.

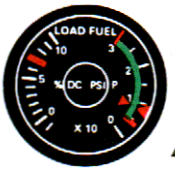
1-2. BASIS OF CERTIFICATIONTRANSMISSION AND TAIL ROTOR GEARBOX OIL

Oil conforming to MIL-L-7808 (NATO O-148) shall be used at ambient temperatures below −40°C (−40°F).

Oil conforming to DOD-L-85734 shall be used at ambient temperatures of −40°C (−40°F) and above.

1-3. TYPES OF OPERATIONINSTRUMENT MARKINGS

Refer to figure 1-1.



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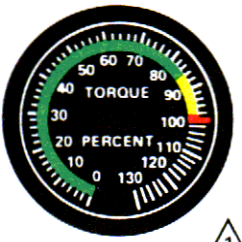

1

Refer to basic approved flight manual for limitations and explanation of markings.

1 Torque indicator has extended overtorque scale to 130%.

2 Red triangle on fuel pressure gage may be located in either position shown.

Figure 1-1. Instrument markings

Section 2

NORMAL PROCEDURES

No change from basic manual.

Section 3

EMERGENCY/MALFUNCTION PROCEDURES

3-1. INTRODUCTIONCAUTION LIGHT (AMBER) SEGMENTS

CAUTION LIGHT	FAULT AND REMEDY
FUEL LOW	Approximately 12 gallons of fuel remaining. Verify fuel quantity. Land as soon as practical.

Section 4

PERFORMANCE

No change from basic manual.

Section 1

SYSTEMS DESCRIPTION

1-1. WEIGHT EMPTY CENTER OF GRAVITY

NOTE

The Weight Empty Center of Gravity chart in Maintenance Manual BHT-206B3-MM-1 does not apply to this helicopter configuration.

1-2. GROSS WEIGHT CENTER OF GRAVITY

It shall be the responsibility of the pilot to ensure that the helicopter is properly loaded so that the entire flight is conducted within the limits of the Gross Weight Center of Gravity chart (BHT-206B3-FM-1).

1-3. FUEL LOADING

Fuel system capacities are as follows:

Total fuel: 84.1 U. S. gallons
Usable fuel: 82.6 U. S. gallons

The helicopter center of gravity will move forward as fuel is consumed.

The Fuel Loading Table (table 1-1) provides weight, moment, and center of gravity data for usable fuel aboard the helicopter. Weight and moment for fuel consumed must be computed as follows:

	WEIGHT	MOMENT
Fuel at takeoff	581.7	66842
Less fuel at landing	-88.0	-7589
Fuel consumed	493.7	59253

Table 1-1. Fuel loading table

TYPE A, A-1, JP-5, OR JP-8 (6.8 LB/GAL)					
		LONGITUDINAL		LEFT LATERAL	
U.S. GALLONS	WEIGHT (LB)	CG (IN)	MOMENT (IN*LB)	CG (IN)	MOMENT (IN*LB)
5	34.0	111.20	3781	-2.95	-100
10	68.0	111.60	7589	-2.80	-190
15	102.0	111.75	11399	-2.90	-296
20	136.0	111.85	15212	-3.00	-408
25	170.0	111.95	19032	-3.10	-527
30	204.0	112.50	22950	-3.20	-653
35	238.0	113.75	27073	-2.95	-678
40	272.0	114.75	31212	-2.50	-680
45	306.0	115.50	35374	-2.20	-673
50	340.0	116.30	39542	-2.00	-680
55	374.0	116.90	43721	-1.80	-673
60	408.0	117.35	47879	-1.65	-673
65	442.0	117.80	52086	-1.50	-663
70	476.0	118.20	56263	-1.40	-666
75	510.0	118.50	60435	-1.30	-663
80	544.0	118.80	64627	-1.25	-680
82.6	561.7	119.00	66842	-1.20	-674

TYPE B OR JP-4 (6.5 LB/GAL)					
		LONGITUDINAL		LEFT LATERAL	
U.S. GALLONS	WEIGHT (LB)	CG (IN)	MOMENT (IN*LB)	CG (IN)	MOMENT (IN*LB)
5	32.5	111.20	3614	-2.95	-96
10	65.0	111.60	7254	-2.80	-182
15	97.5	111.75	10896	-2.90	-283
20	130.0	111.85	14541	-3.00	-390
25	162.5	111.95	18192	-3.10	-504
30	195.0	112.50	21938	-3.20	-624
35	227.5	113.75	25878	-2.95	-648
40	260.0	114.75	29835	-2.50	-650
45	292.5	115.50	33813	-2.20	-644
50	325.0	116.30	37798	-2.00	-650
55	357.5	116.90	41792	-1.80	-644
60	390.0	117.35	45797	-1.65	-644
65	422.5	117.80	49771	-1.50	-634
70	455.0	118.20	53781	-1.40	-637
75	487.5	118.50	57769	-1.30	-634
80	520.0	118.80	61776	-1.25	-650
82.6	536.9	119.00	63891	-1.20	-644

NOTE: Data above represents usable fuel on board based on nominal densities at 15°C (59°F).

(TABLE I.D. 210481)

MODEL 206B **Bell JetRanger-III** 250-C20B/C20J ENGINE

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT

INCREASED INTERNAL GROSS WEIGHT

STC NO. SH8923SW

BHT SN 4300 ONLY

CERTIFIED
23 JUNE 1994

This supplement shall be attached to the Model 206B Jetranger III Flight Manual for helicopter serial number 4300 to permit operation at internal gross weights up to 3350 pounds in accordance with Supplemental Type Certificate.

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

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23 JUNE 1994

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Fort Worth, Texas 76101-0482

LOG OF REVISIONS

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APPROVED:

MANAGER

ROTORCRAFT CERTIFICATION OFFICE
FEDERAL AVIATION ADMINISTRATION
FT. WORTH, TX 76193-0170

Section 1

LIMITATIONS

AIRSPEED LIMITATIONS

V_{NE} 76 KIAS (91 MPH) for gross weights above 3200 pounds (1451.5 kilograms).

WEIGHT LIMITATIONS

Maximum internal gross weight for takeoff and landing is 3350 pounds (1519.5 kilograms).

(No external gross weight above 3350 pounds is approved.)

ALTITUDE LIMITATIONS

Above 3200 pounds gross weight, the maximum pressure altitude is 5000 feet.

LONGITUDINAL CENTER OF GRAVITY LIMITS

Refer to Center of Gravity vs Gross Weight chart (figure 1-1).

LATERAL CENTER OF GRAVITY LIMITS

Lateral CG limits are −1.0 inch left and +2.0 inches right at any approved longitudinal center of gravity for gross weights above 3200 pounds.

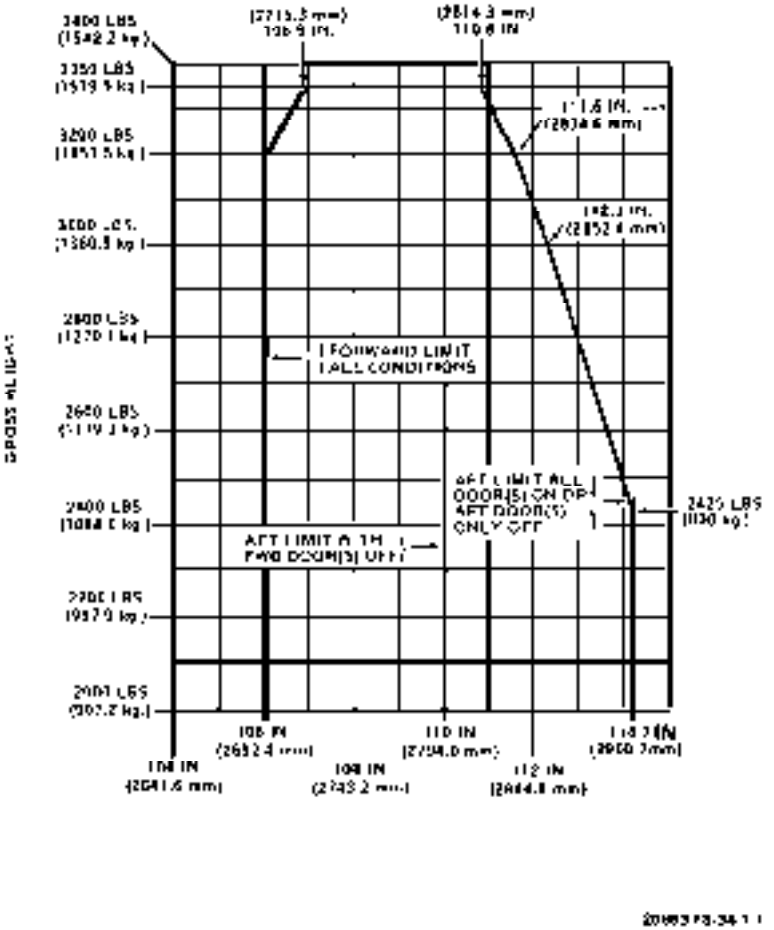


Figure 1-1. Center of gravity vs gross weight

Section 2

NORMAL PROCEDURES

No change from basic manual.

Section 3

EMERGENCY AND MALFUNCTION PROCEDURES

No change from basic manual.

Section 4

PERFORMANCE

OPERATION IN ALLOWABLE RELATIVE WIND

For hover operation at gross weights above 3200 pounds:

IGE maneuvers — Refer to basic flight manual.

OGE maneuvers — Calm wind only.

HOVER CEILING

Refer to figures 4-1 and 4-2.

HEIGHT–VELOCITY DIAGRAM

Refer to figure 4-3.

ALTITUDE VS GROSS WEIGHT LIMIT FOR HEIGHT–VELOCITY DIAGRAM

Density altitude limit for Height-Velocity Diagram is 2500 feet at gross weights of 3200 to 3350 pounds (1451.5 to 1519.5 kilograms).

HOVER CEILING IN GROUND EFFECT

TAKEOFF POWER 0° TO 46°C

GENERATOR 22.3 AMPS ANTI-ICE OFF

SKID HEIGHT: LOW SKID GEAR 4.0 FT (1.2 METERS) N2 ENGINE RPM 100%

HIGH SKID GEAR 3.0 FT (0.9 METERS)

WITH ANTI-ICE ON GROSS WEIGHT IS 200 LBS (90.7 Kg) LESS

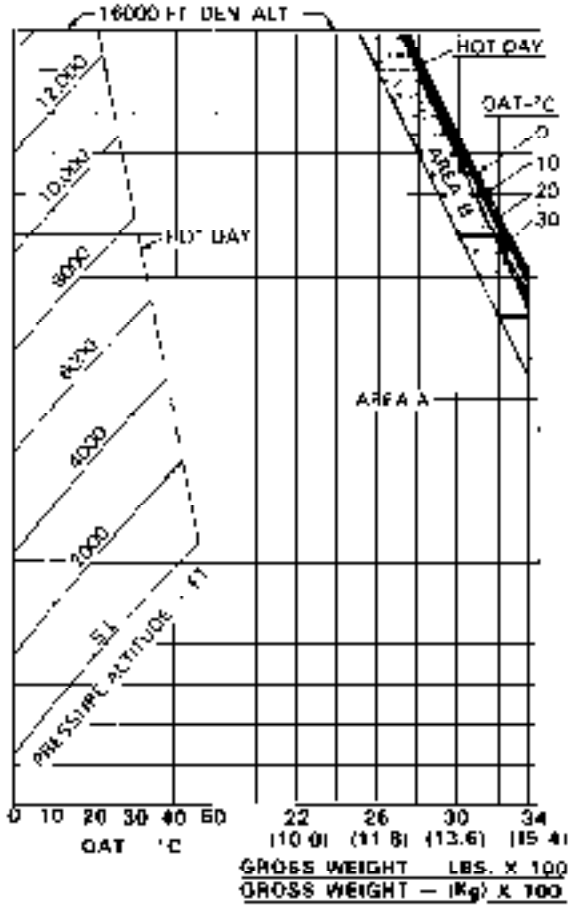


Figure 4-1. Hover ceiling in ground effect (Sheet 1 of 2)

HOVER CEILING IN GROUND EFFECT

TAKEOFF POWER 0° TO −40°C

GENERATOR 22.3 AMPS — ANTI-ICE OFF

SKID HEIGHT: LOW SKID GEAR 4.0 FT (1.2 METERS) — N2 ENGINE RPM 100%

HIGH SKID GEAR 3.0 FT (0.9 METERS)

WITH ANTI-ICE ON GROSS WEIGHT IS 200 LBS (90.7 kg) LESS

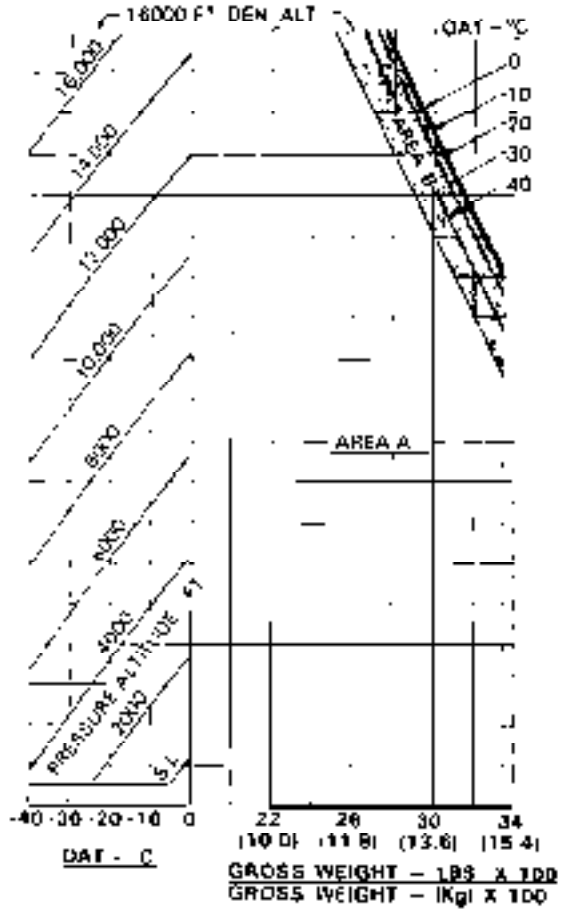
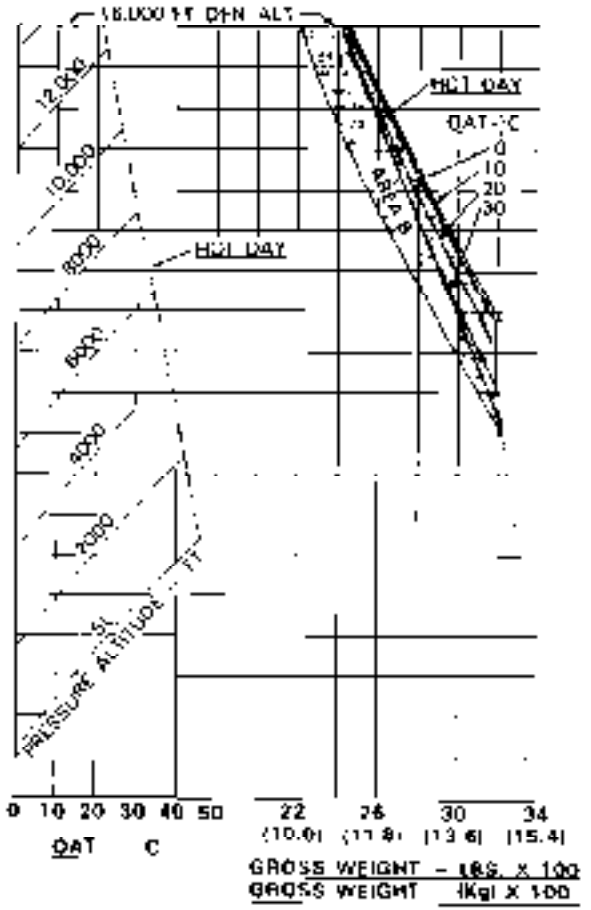


Figure 4-1. Hover ceiling in ground effect (Sheet 2 of 2)

HOVER CEILING
OUT OF GROUND EFFECT
TAKEOFF POWER 0° TO 46°C

GENERATOR 22.3 AMPS
SKID HEIGHT: 40 FT (12.2 METERS)
WITH ANTI-ICE ON GROSS WEIGHT IS 295 LBS (133.8 Kg) LESS

ANTI-ICE OFF
N2 ENGINE RPM 100%



20463 PA-34-4-2-1

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

HOVER CEILING
OUT OF GROUND EFFECT
TAKEOFF POWER 0° TO −40°C

GENERATOR 22.3 AMPS
SKID HEIGHT 40 FT (12.2 METERS)
WITH ANTI ICE ON GROSS WEIGHT IS 295 LBS (133.8 Kg) LESS

ANTI ICE OFF
N2 ENGINE RPM 100%

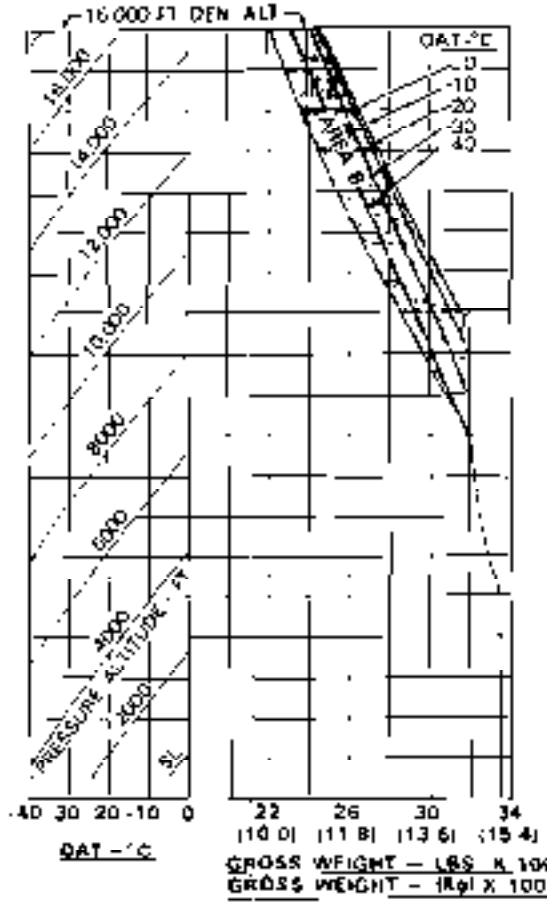


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Figure 4-2. Hover ceiling out of ground effect (Sheet 2 of 2)

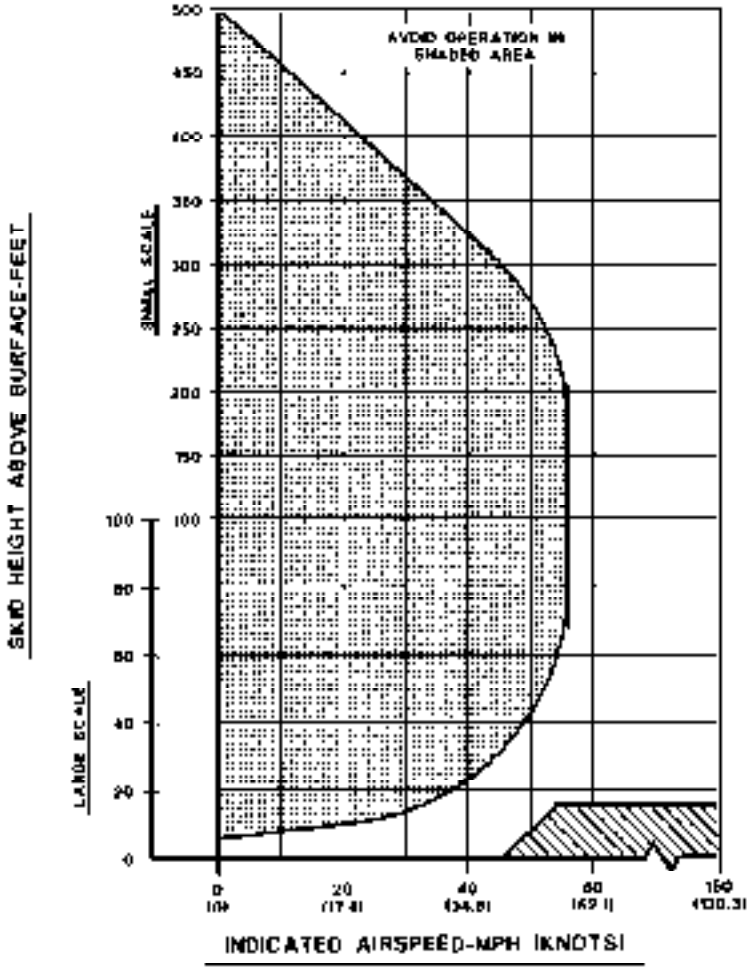

Figure 4-3. Height–velocity diagram

Bell MODEL 206B JetRanger-III

250-C20B/C20J ENGINE

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT
HOT WEATHER OPERATIONS

206-706-514

CERTIFIED
7 AUGUST 1996

This supplement shall be attached to the Model 206B3 Flight Manual when the 206-706-514 Hot Weather Operations kit has been installed.

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

Bell Helicopter TEXTRON
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7 AUGUST 1996

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APPROVED: DATE:

CHIEF, FLIGHT TEST
FOR
DIRECTOR — AIRCRAFT CERTIFICATION BRANCH
DEPARTMENT OF TRANSPORT

Section 1

LIMITATIONS

AIRSPEED

Airspeed limitation placards, Figure 1-1, provide airspeed limits for ambient temperatures from +52 °C to −40 °C and pressure altitudes from sea level to 20,000 ft.

AMBIENT TEMPERATURE

Maximum ambient air temperature for operation is 52 °C (125 °F) at sea level and decreases with altitude at standard lapse rate (2 °C per 1000 feet H_p).

PLACARDS

Refer to Figure 1-1.

[illegible] LIMIT [illegible]							
3000 LB GW AND BELOW							
H_P	OAT — °C						
1000 FT	52	44	40	30	0	-20	-40
0	145	144	150	150	150	150	150
2	[illegible]	[illegible]	141	[illegible]	150	150	150
4	[illegible]	[illegible]	131	[illegible]	[illegible]	150	150
6	[illegible]	[illegible]	122	[illegible]	140	140	150
8		[illegible]	112	121	130	140	150
10		100	[illegible]	111	120	130	140
12		91	97	101	110	120	130
14			[illegible]	[illegible]	100	110	120
16					90	100	110
18						90	100
20							[illegible]

ABOVE 3000 LB GW							
H_P	OAT — °C						
1000 FT	52	[illegible]	40	20	0	-20	-40
0	132	[illegible]	140	140	140	140	140
2	[illegible]	117	[illegible]	140	140	140	140
4	[illegible]	94	103	120	[illegible]	140	140
6	74	79	[illegible]	107	[illegible]	130	140
8		60	65	81	[illegible]	[illegible]	140
10				61	[illegible]	[illegible]	[illegible]
12					[illegible]	[illegible]	100
14						[illegible]	[illegible]
16							[illegible]

[illegible]

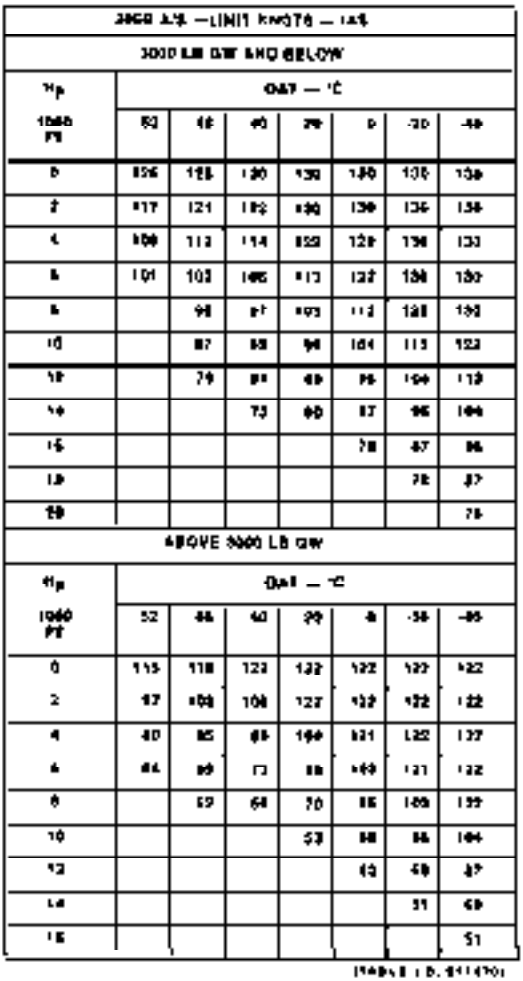
Figure 1-1. Airspeed limitation placard (Sheet 1 of 3)

240B A/S LIMIT KNOTS — IAS							
3000 LB GW AND BELOW							
H_p	OAT — °C						
x1000 FT	52	48	46	20	0	-20	-40
0	138	136	130	130	130	130	130
2	117	121	122	130	130	130	130
4	100	102	110	122	130	130	130
6	101	100	106	112	122	130	130
8		96	97	106	112	122	130
10		87	92	98	104	112	122
12		79	81	88	96	104	113
14			73	80	87	96	104
16					78	87	96
18						79	87
20							78

ABOVE 3000 LB GW							
H_p	OAT — °C						
x1000 FT	52	48	46	20	0	-20	-40
0	148	146	132	132	132	132	132
2	97	102	106	122	132	132	132
4	80	85	89	100	122	132	132
6	64	69	73	80	102	121	132
8		57	59	70	80	102	122
10				63	69	86	104
12					60	72	87
14						61	80
16							67

[illegible]

Figure 1-1. Airspeed limitation placard (Sheet 2 of 3)



3000 A/S — LIMIT KNOTS — IAS							
3000 LB GW AND BELOW							
H_p	OAT — °C						
1000 Ft	52	48	40	29	0	-20	-40
0	126	125	130	130	130	130	130
2	117	121	125	130	130	130	130
4	108	113	114	122	128	128	130
6	101	103	105	113	122	126	130
8		96	97	103	113	122	126
10		87	88	96	104	113	122
12		79	81	89	96	104	113
14			73	80	87	96	104
16					78	87	96
18						78	87
20							78
ABOVE 3000 LB GW							
H_p	OAT — °C						
1000 Ft	52	46	40	29	0	-30	-40
0	115	118	123	122	122	122	122
2	97	108	108	122	122	122	122
4	80	85	88	100	121	122	122
6	64	69	73	88	100	121	122
8		59	64	70	85	100	122
10				59	68	85	104
12					63	68	87
14						51	69
16							51

[illegible]

Figure 1-1. Airspeed limitation placard (Sheet 3 of 3)

Section 2

NORMAL PROCEDURES

No change from basic manual.

Section 3

EMERGENCY AND MALFUNCTION PROCEDURES

No change from basic manual.

Section 4

PERFORMANCE

POWER CHECK PROCEDURES

The POWER CHECK CHART (Figure 4-1) indicates the minimum percent torque that must be available from an engine meeting the minimum Allison specification with basic engine inlet. The engine must develop these values in order to meet the performance data contained in this supplement.

A POWER CHECK CHART for helicopters with particle separator installed is provided (Figure 4-2).

Both POWER CHECK CHARTS are valid in hover, climb 52 KIAS (60 MPH) or level flight with airspeeds between 50 and 100 KIAS (92 and 115 MPH).

RATE OF CLIMB

Figure 4-3 provides maximum rate of climb for gross weights from 2000 pounds to 3200 pounds using takeoff power with basic engine inlet. Data is provided for pressure altitudes from sea level to 20,000 feet and temperatures from +52 °C to –40 °C. Figure 4-4 provides similar information for helicopters with particle separator installed.

Figure 4-5 provides maximum rate of climb using maximum continuous power for gross weights from 2000 to 3200 pounds for helicopters with basic engine inlet. Data is provided for pressure altitudes from sea level to 20,000 feet and temperatures from +52 °C to –40 °C. Figure 4-6 provides similar information for helicopters with particle separator installed.

HOVER CEILING

Figure 4-7 provides hover ceiling in ground effect using takeoff power at temperatures from +52 °C to –40 °C. Data is provided for gross weights from 2200 to 3350 (external) pounds and pressure altitudes from -2000 feet to 16,000 feet for helicopters with basic engine inlet. Figure 4-8 provides similar information for helicopters with particle separator installed.

Figure 4-9 provides hover ceiling out of ground effect using takeoff power at temperatures from +52 °C to –40 °C. Data is provided for gross weights from 2200 to 3350 (external) pounds and pressure altitudes from -2000 feet to 16,000 feet for helicopters with basic engine inlet. Figure 4-10 provides similar information for helicopters with particle separator installed.

Figure 4-1. Power assurance check chart - basic engine inlet

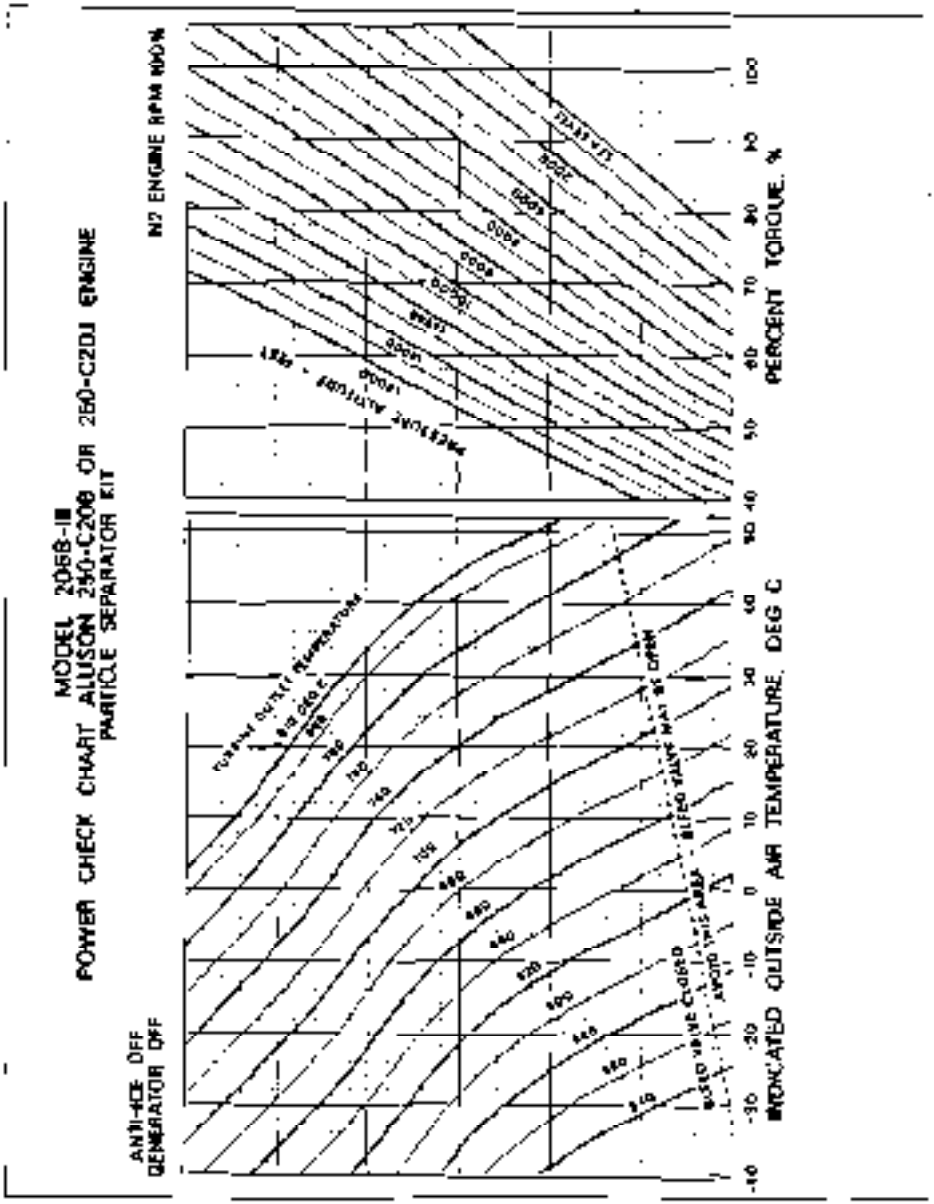


Figure 4-2. Power assurance check chart - particle separator installed.

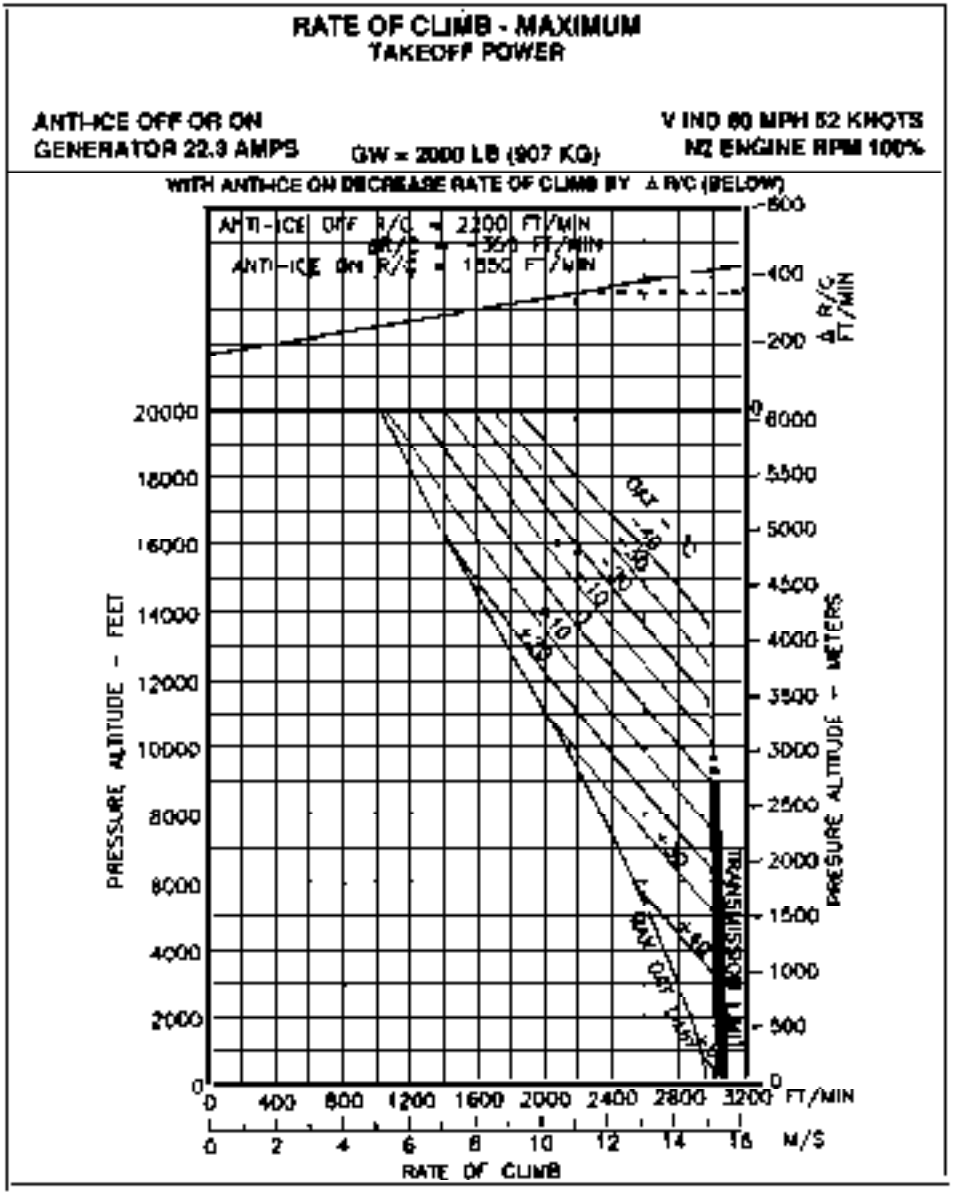


Figure 4-3. Rate of climb - Maximum - Takeoff power - basic engine inlet (Sheet 1 of 7)

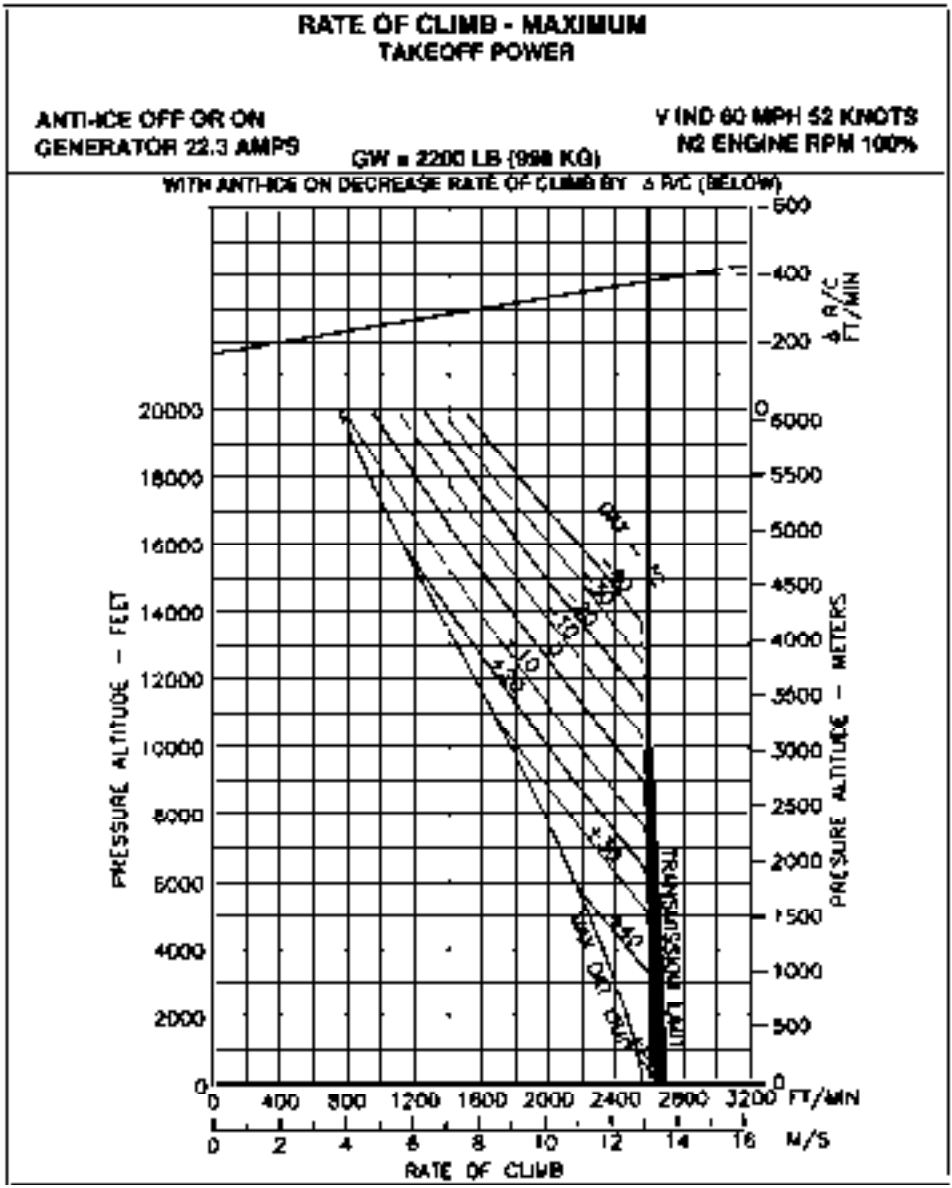


Figure 4-3. Rate of climb - Maximum - Takeoff power - brelc engine inlet (Sheet 2 of 7)

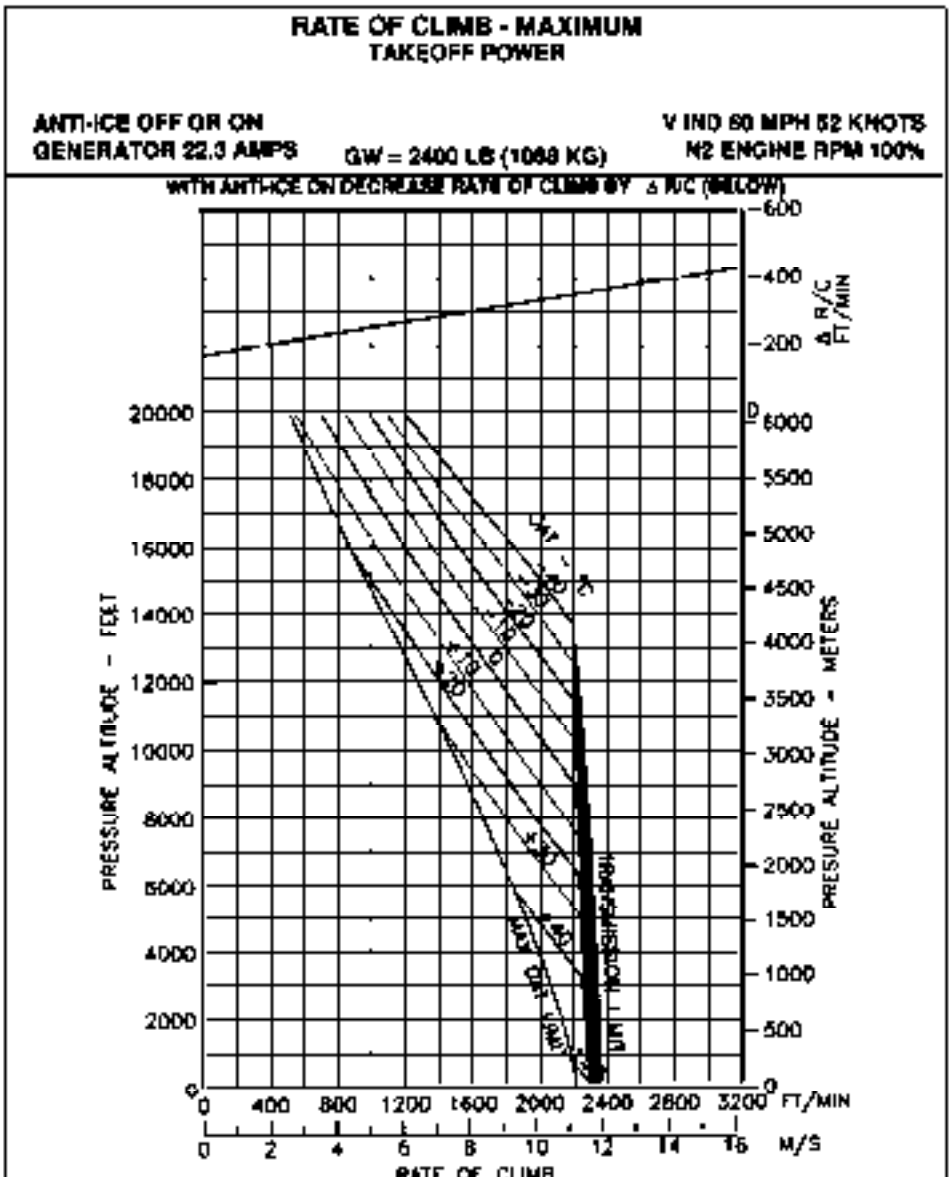


Figure 4-3. Rate of climb - Maximum - Takeoff power - basic engine inlet (Sheet 3 of 7)

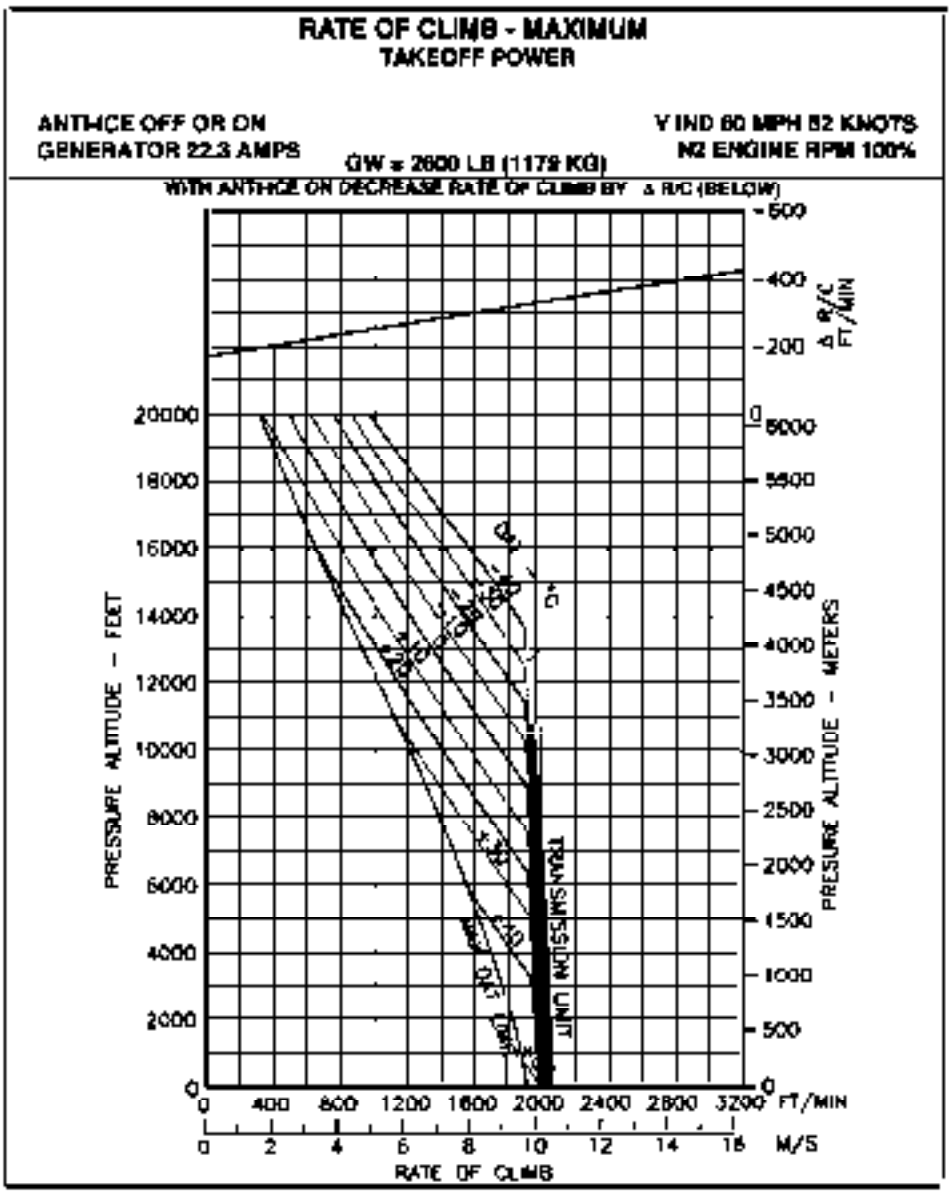


Figure 4-3. Rate of climb - Maximum - Takeoff power - basic engine inlet (Sheet 4 of 7)

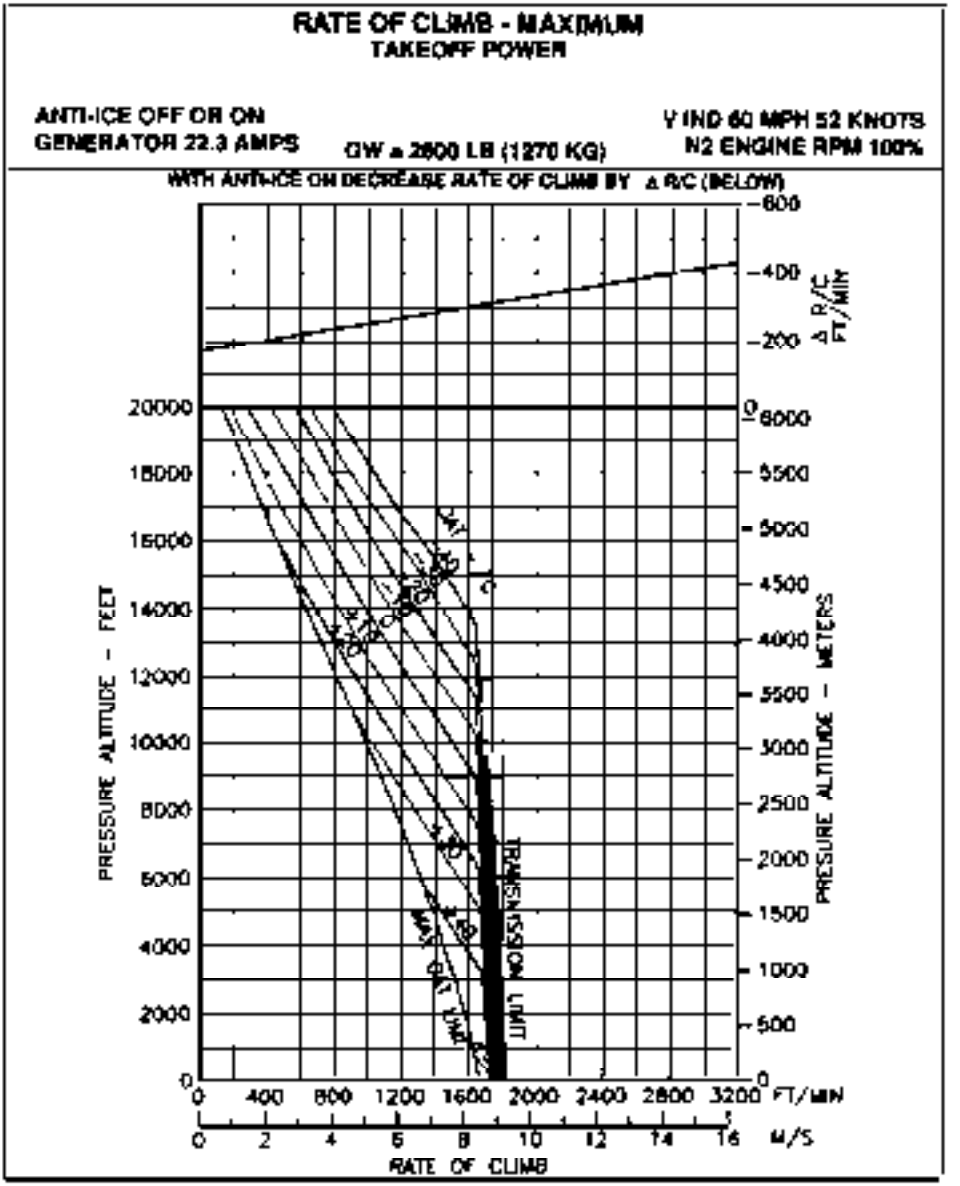


Figure 4-3. Rate of climb - Maximum - Takeoff power - basic engine inlet (Sheet 8 of 7)

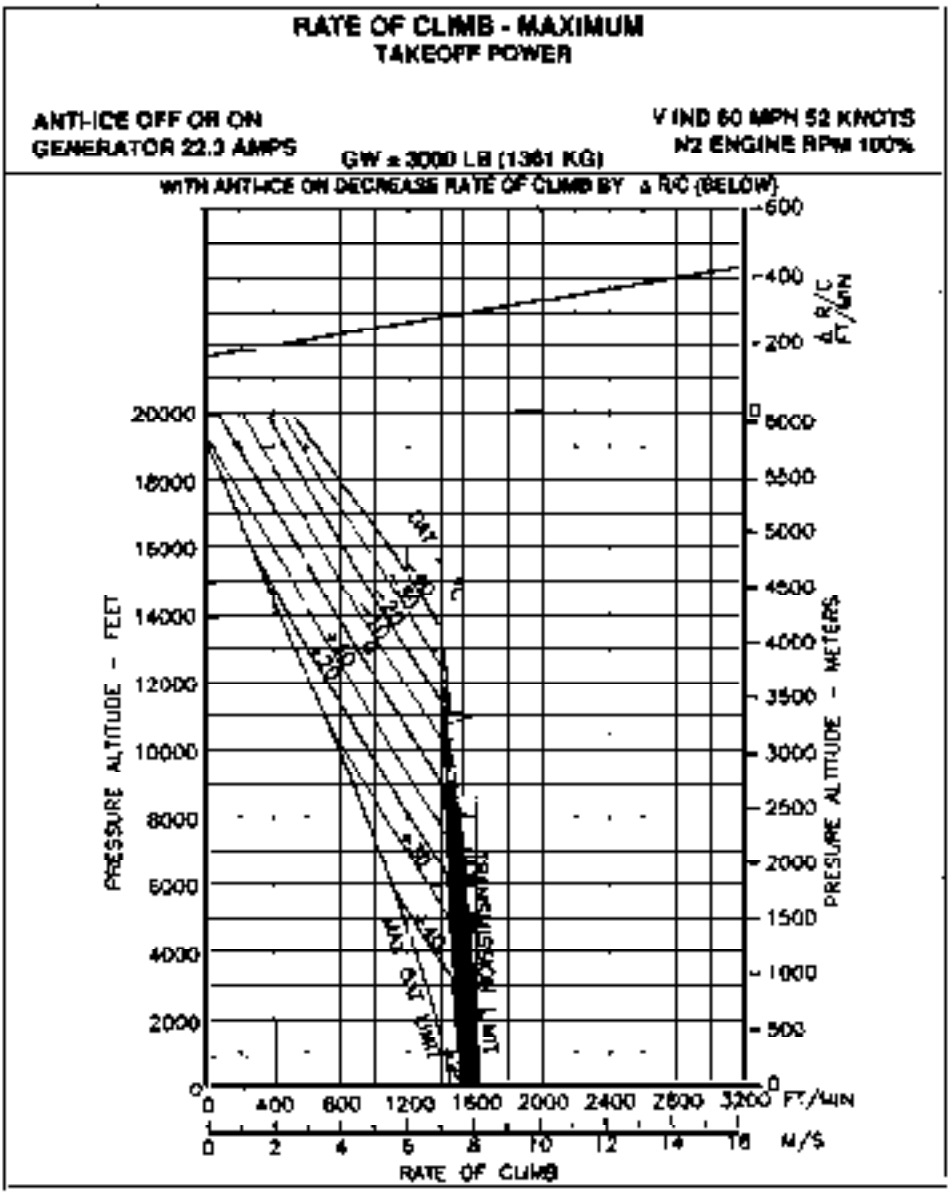


Figure 4-3. Rate of climb - Maximum - Takeoff power - basic engine inlet (Sheet 5 of 7)

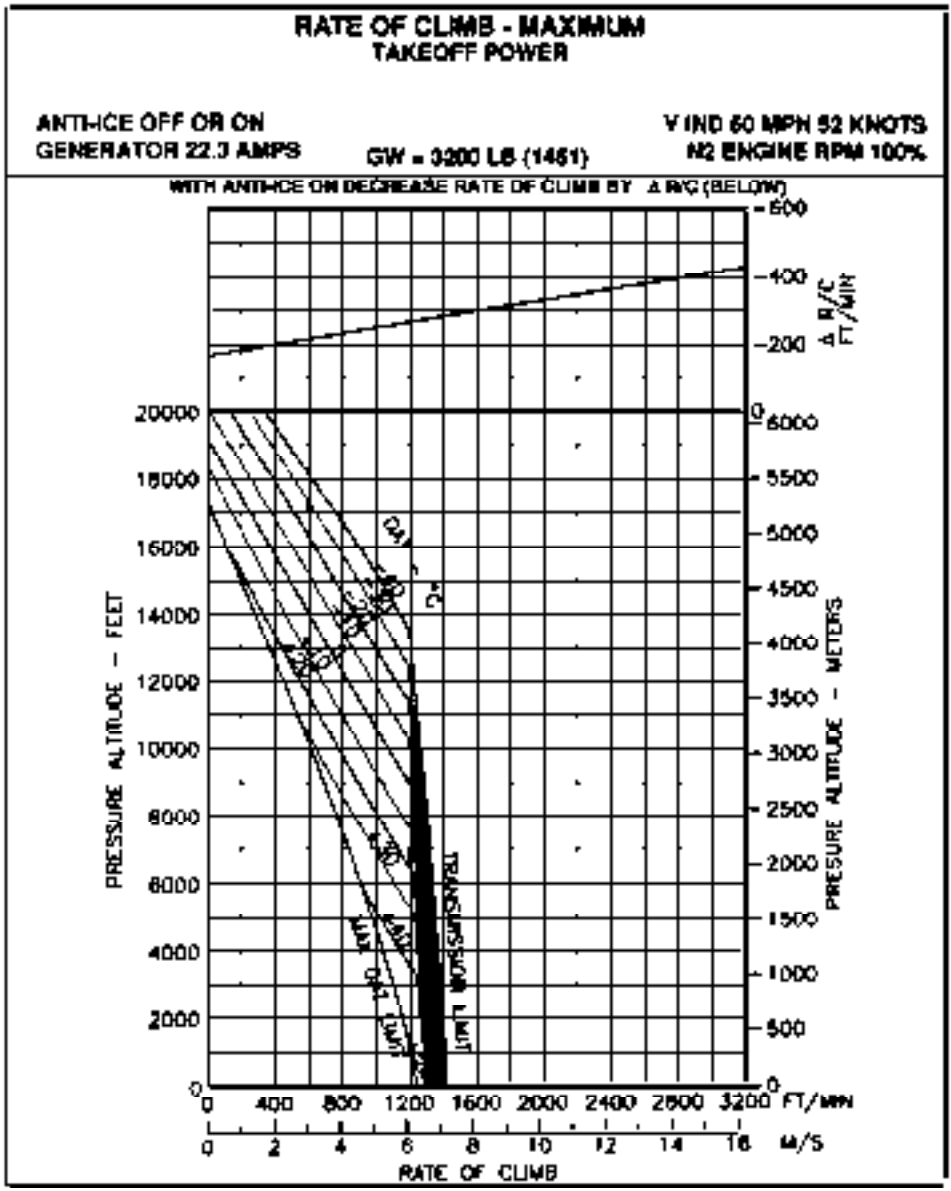


Figure 4-3. Rate of climb - Maximum - Takeoff power - basic engine inlet (Sheet 7 of 7)

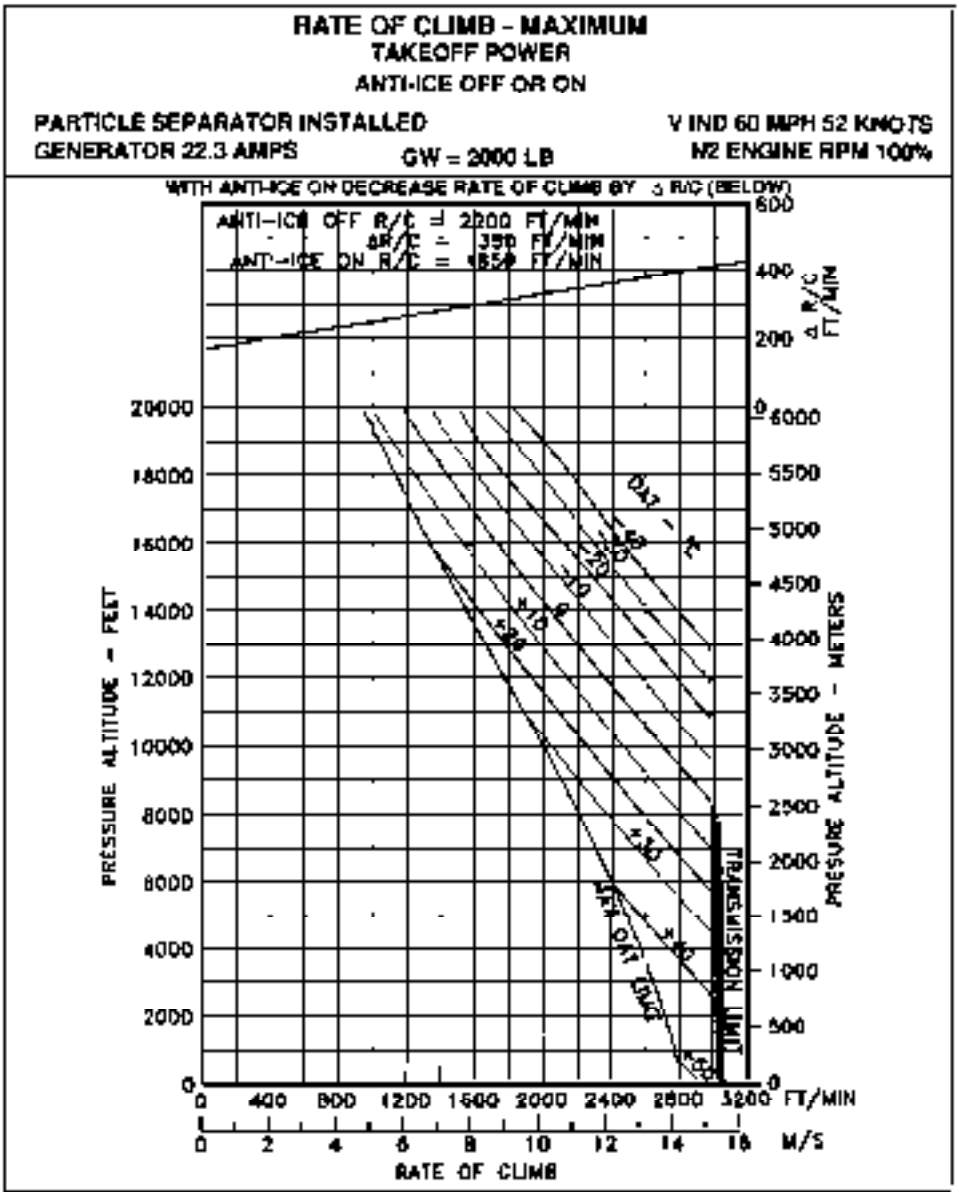


Figure 4-4. Rate of climb - Maximum - Takeoff power - particle separator installed (Sheet 1 of 7)

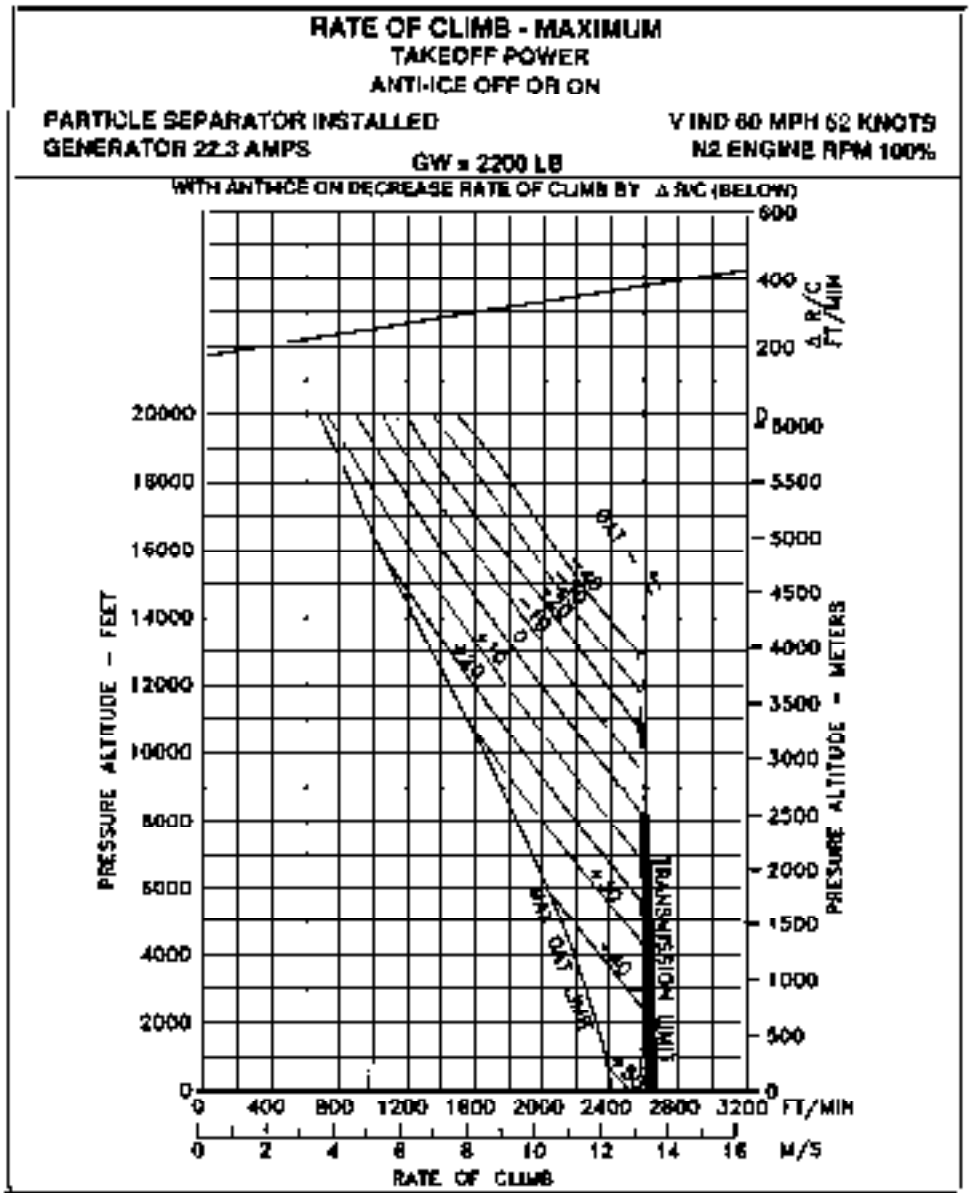


Figure 4-4. Rate of climb - Maximum - Takeoff power - particle separator installed (Sheet 2 of 7)

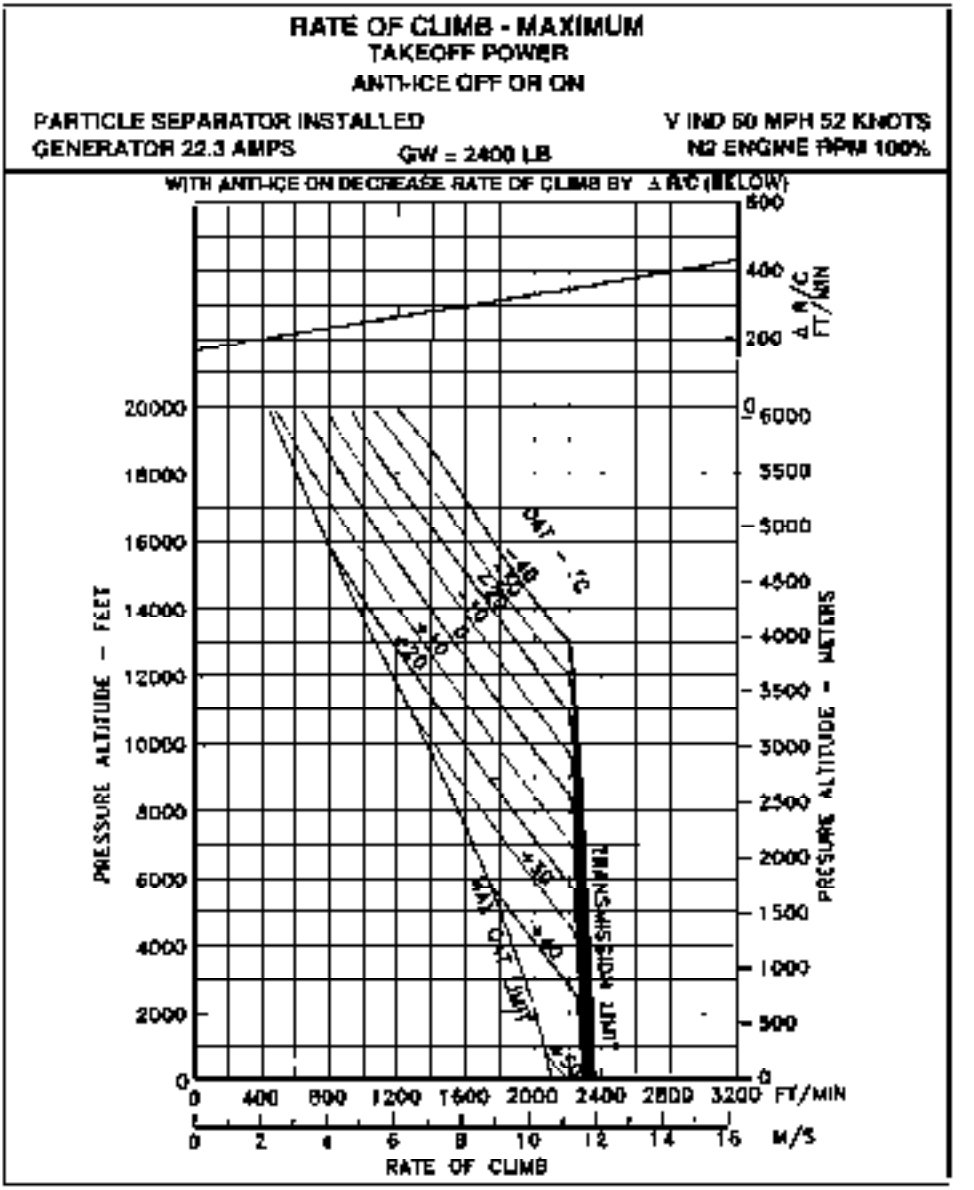


Figure 4-4. Rate of climb - Maximum - Takeoff power - particle separator installed (Sheet 3 of 7)

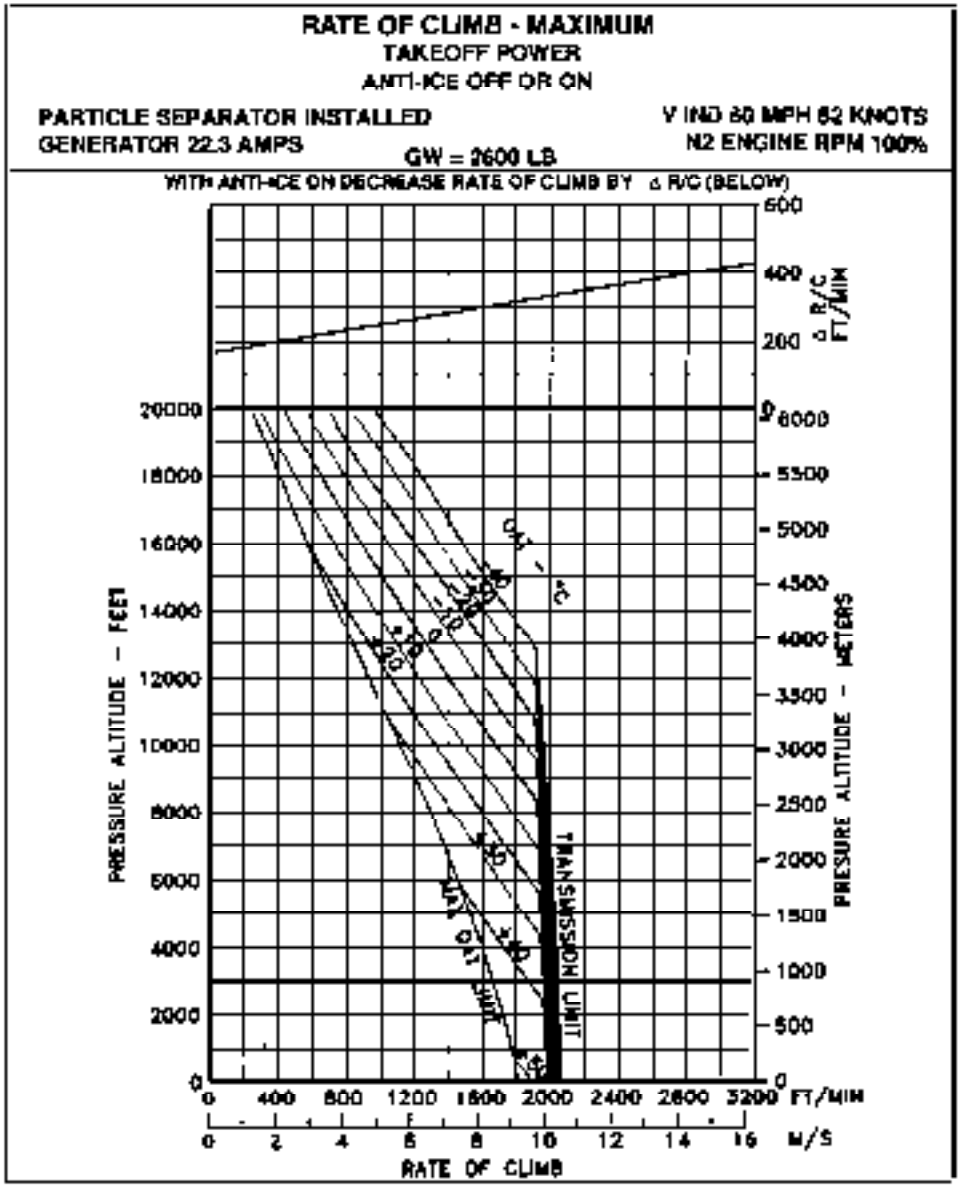


Figure 4-4. Rate of climb - Maximum - Takeoff power - particle separator installed (Sheet 4 of 7)

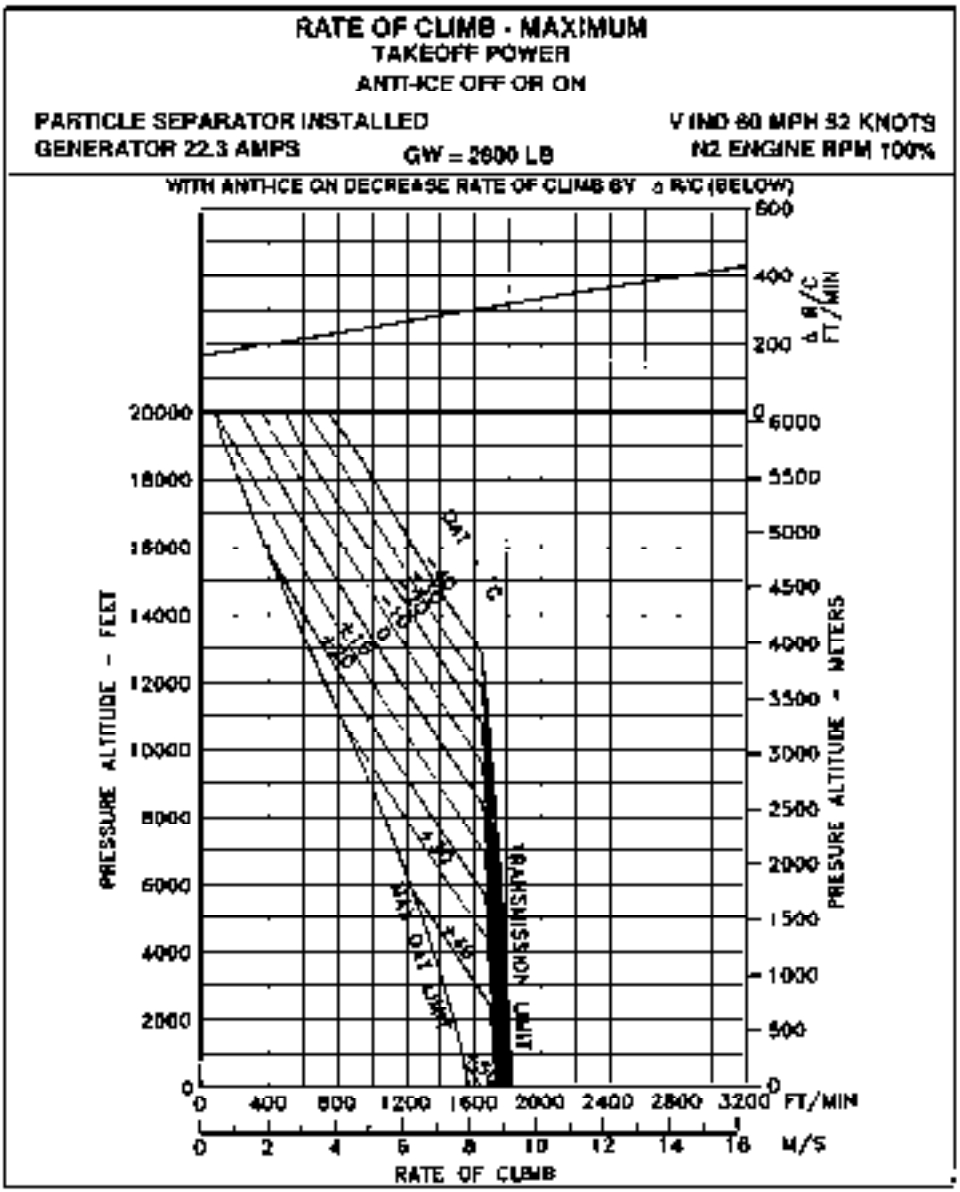


Figure 4-4. Rate of climb - Maximum - Takeoff power - particle separator installed (Sheet 5 of 7)

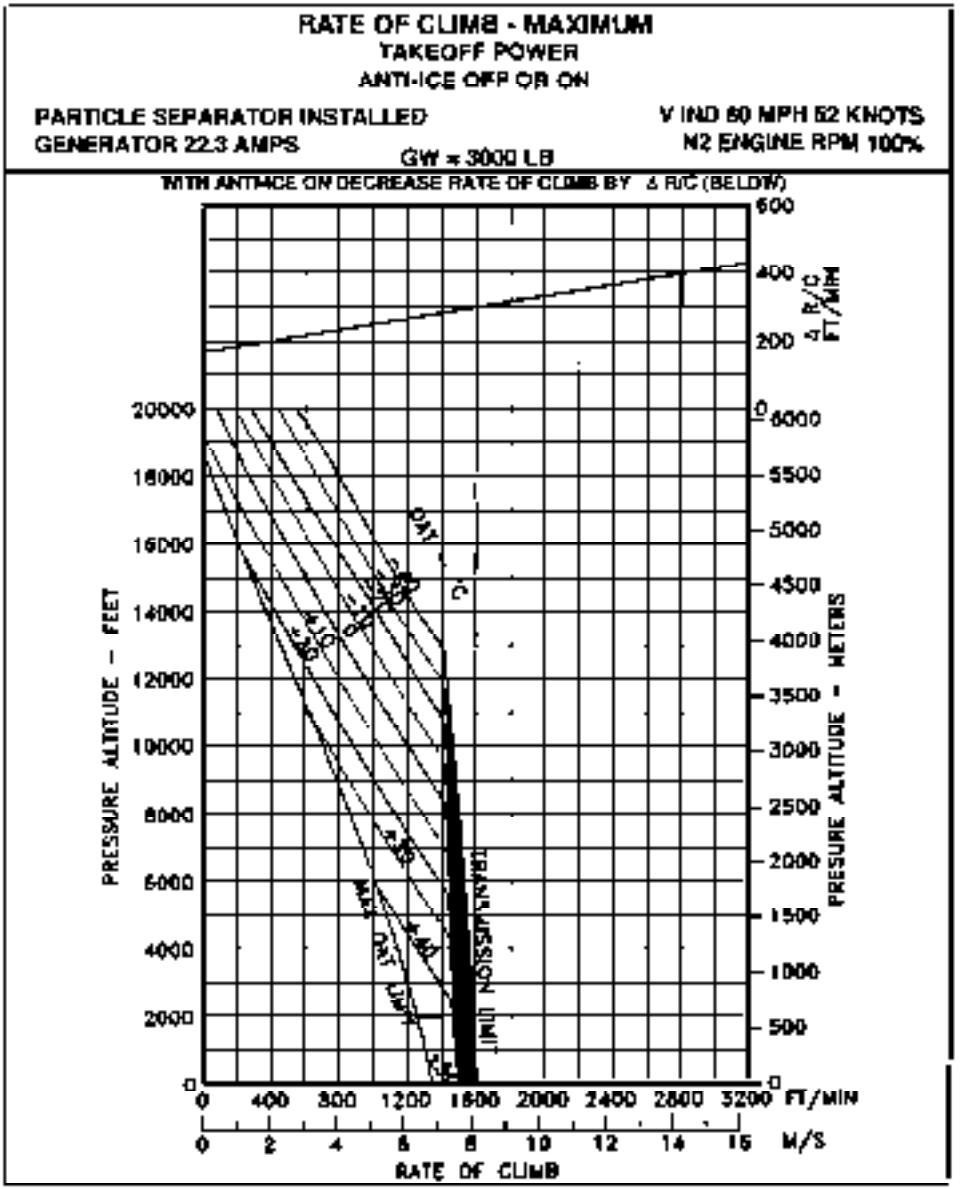


Figure 4-4. Rate of climb - Maximum - Takeoff power - particle separator installed (Sheet 6 of 7)

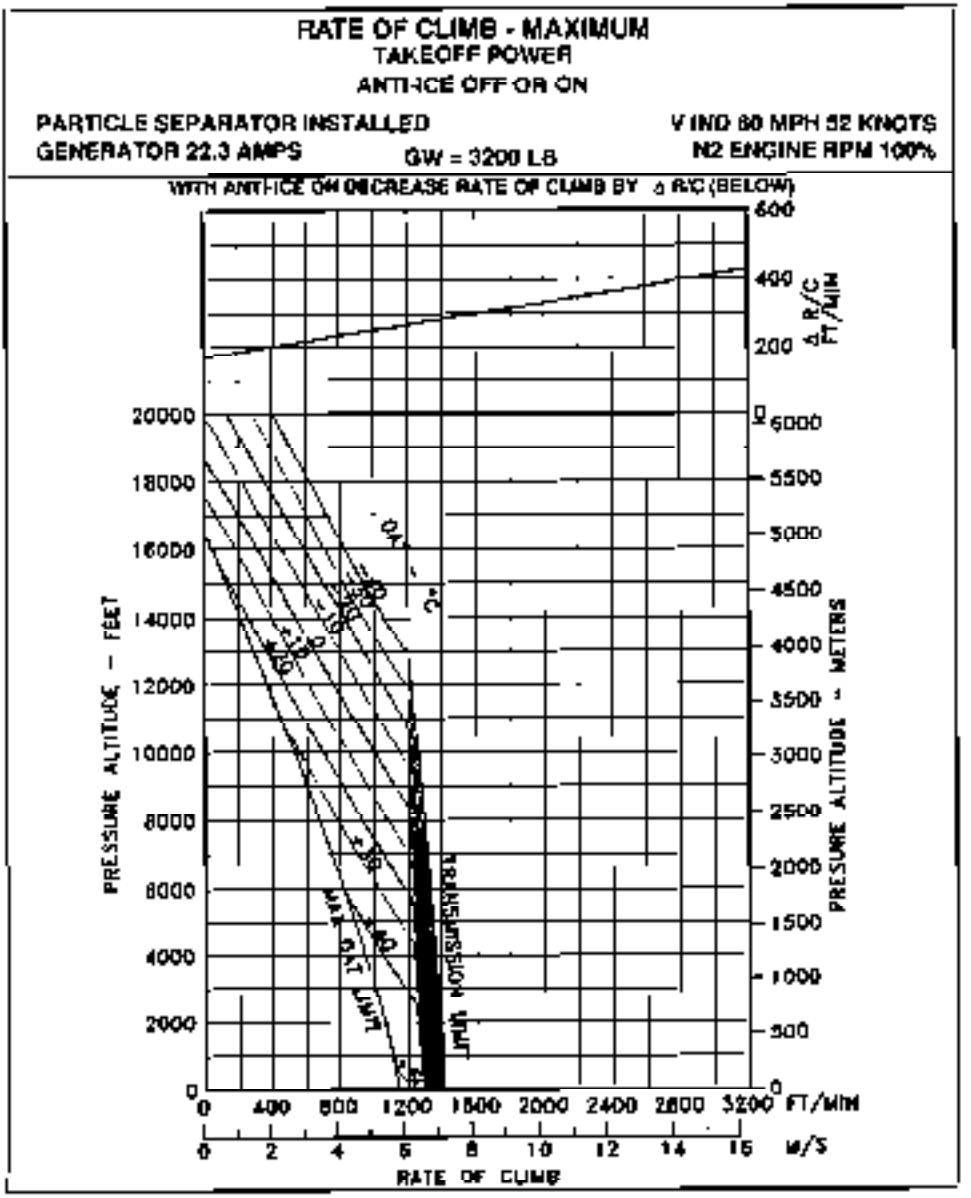


Figure 4-4. Rate of climb - Maximum - Takeoff power - particle separator installed (Sheet 7 of 7)

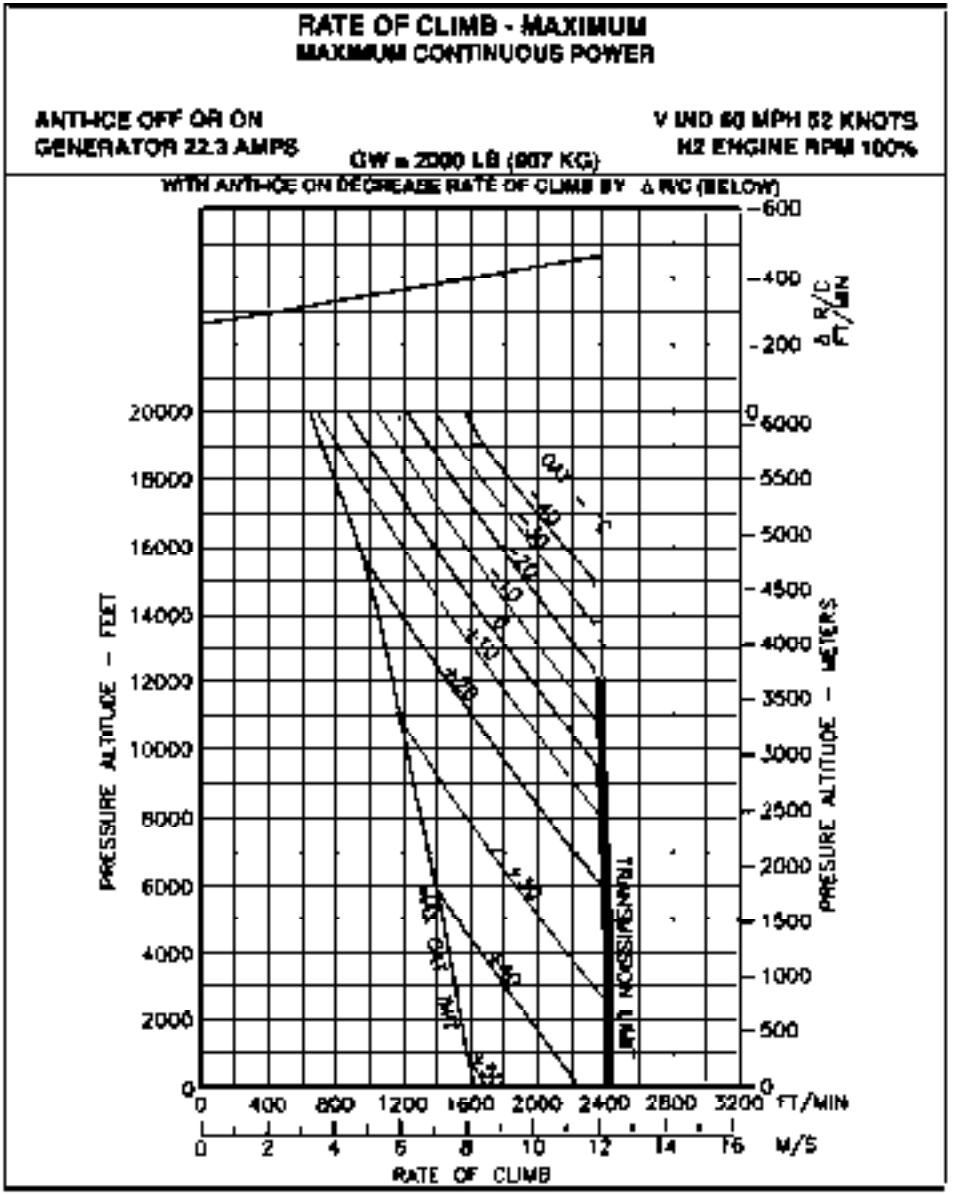


Figure 4-5, Rate of climb - Maximum - Max continuous power - basic engine inlet (Sheet 1 of 7)

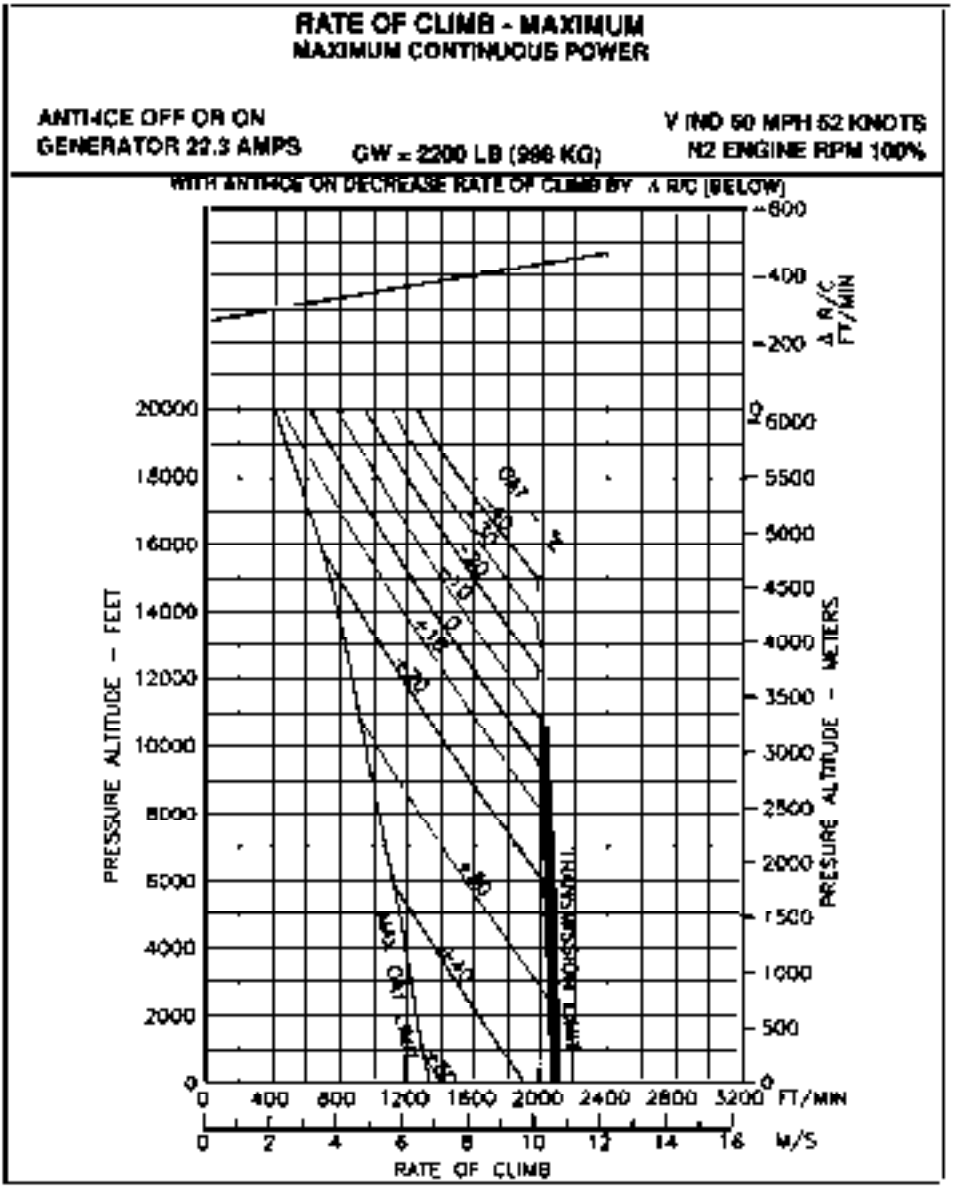


Figure 4-5. Rate of climb - Maximum - Max continuous power - basic engine inlet (Sheet 2 of 7)

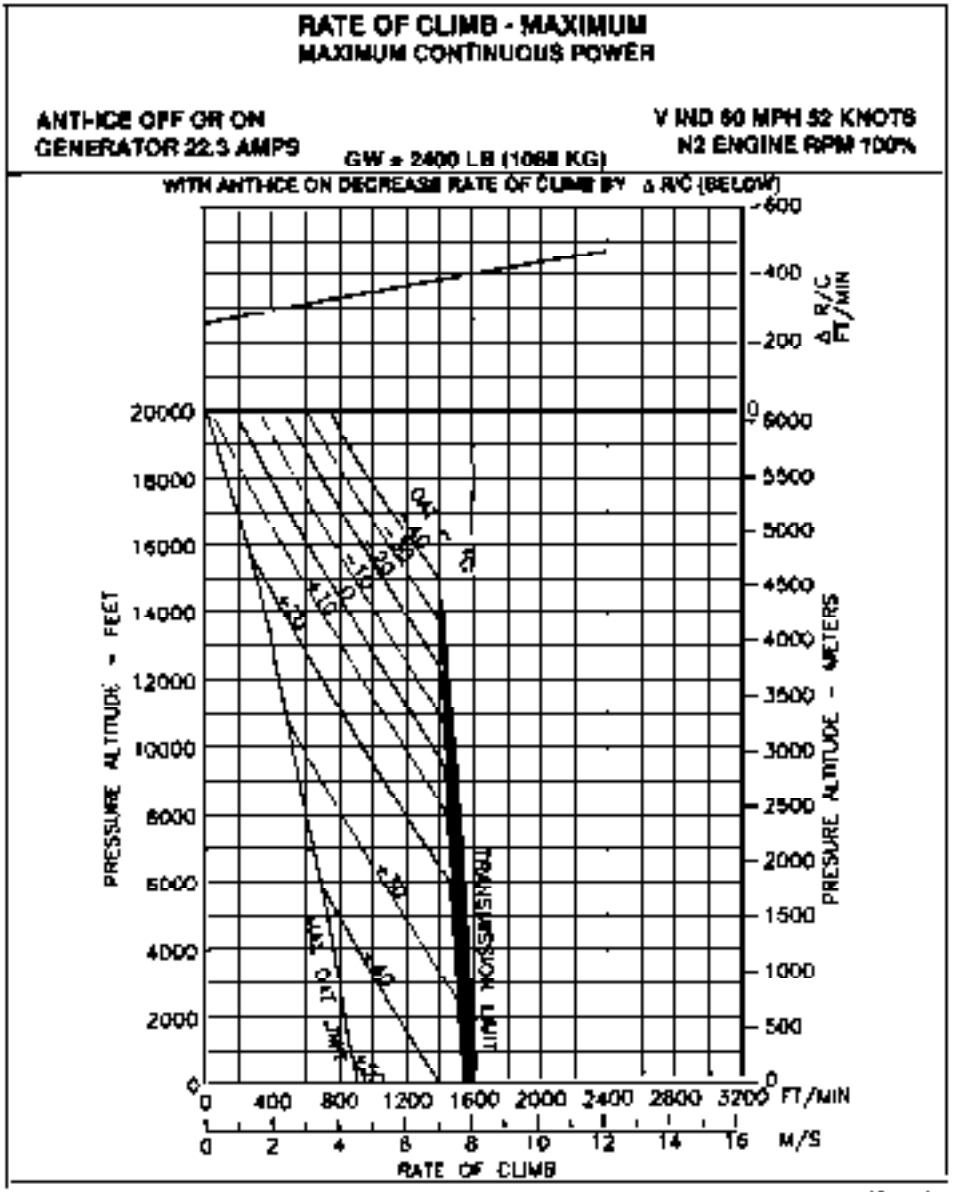


Figure 4-5 Rate of climb - Maximum - Max continuous power - basic engine inlet (Sheet 3 of 7)

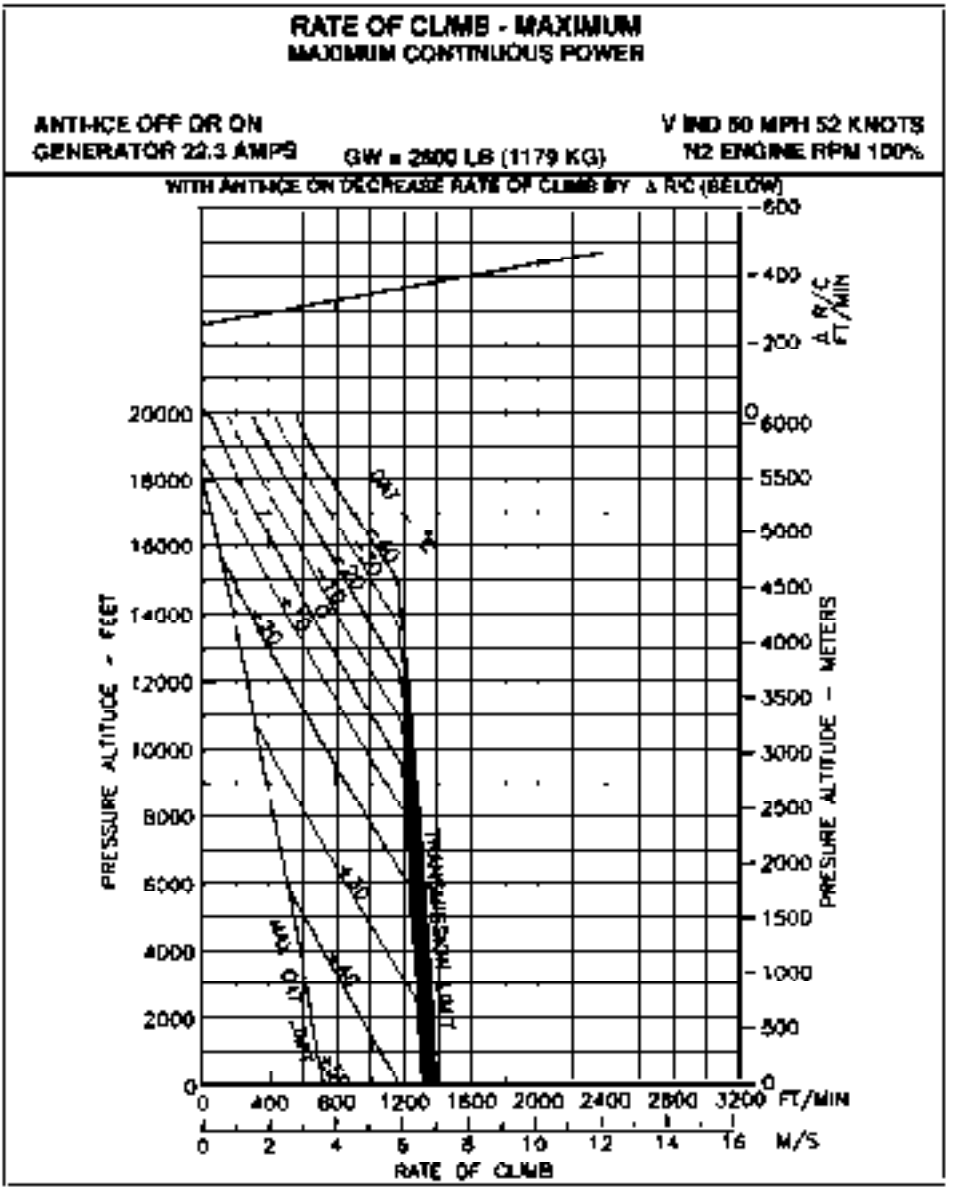


Figure 4-5. Rate of climb - Maximum - Max continuous power - basic engine inlet (Sheet 4 of 7)

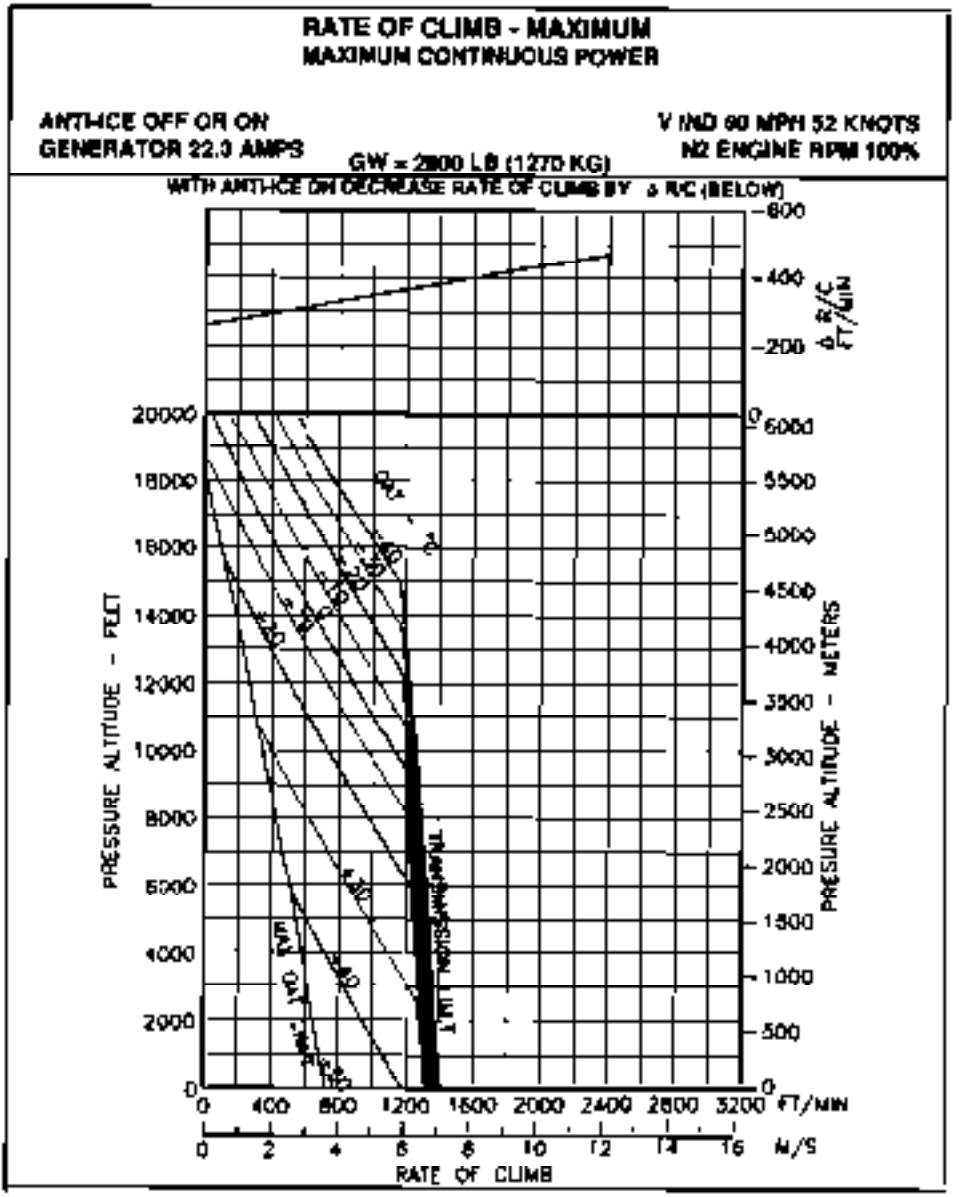


Figure 4-5. Rate of climb - Maximum - Max continuous power - basic engine inlet (Sheet 5 of 7)

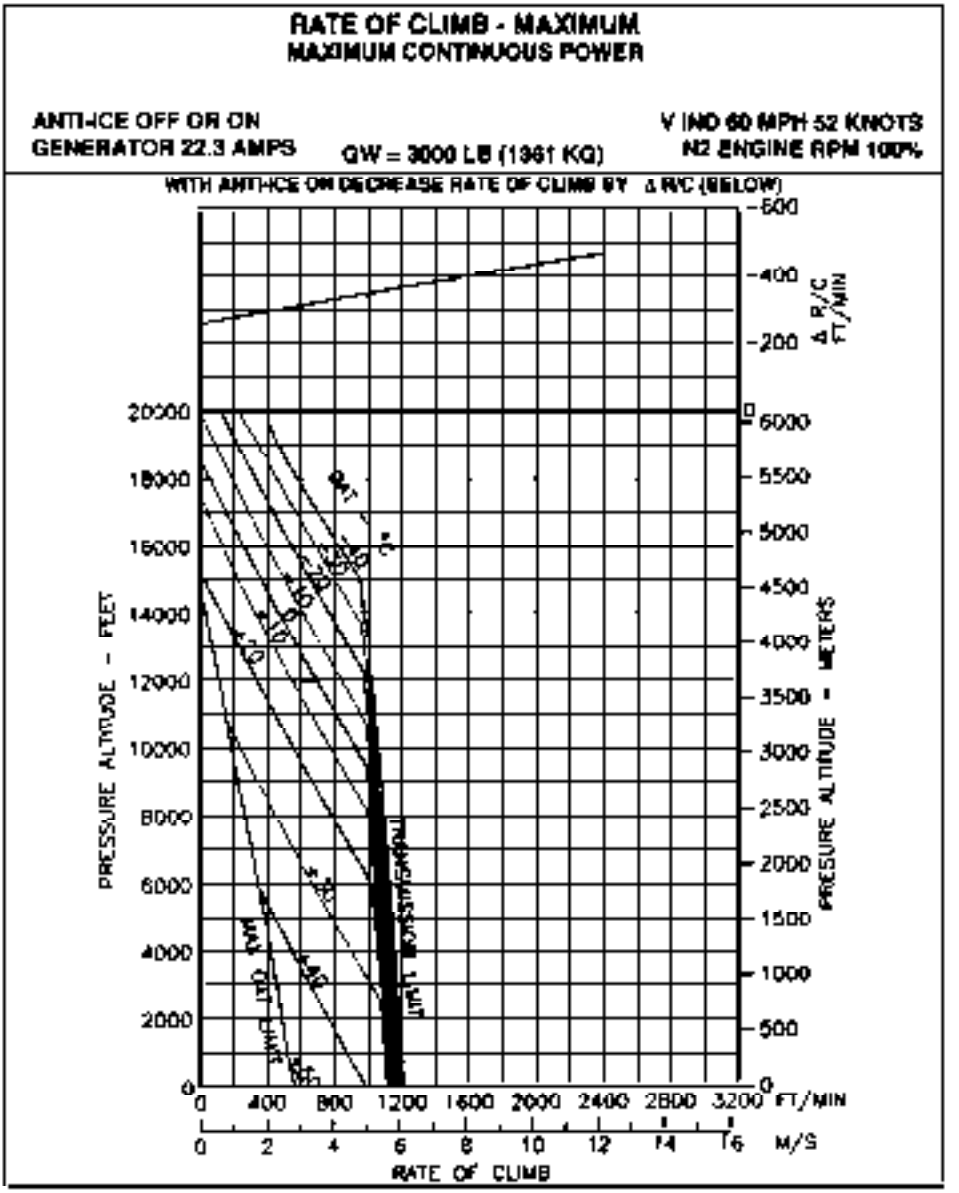


Figure 4-5. Rate of climb - Maximum - Max continuous power - basic engine inlet (Sheet 5 of 7)

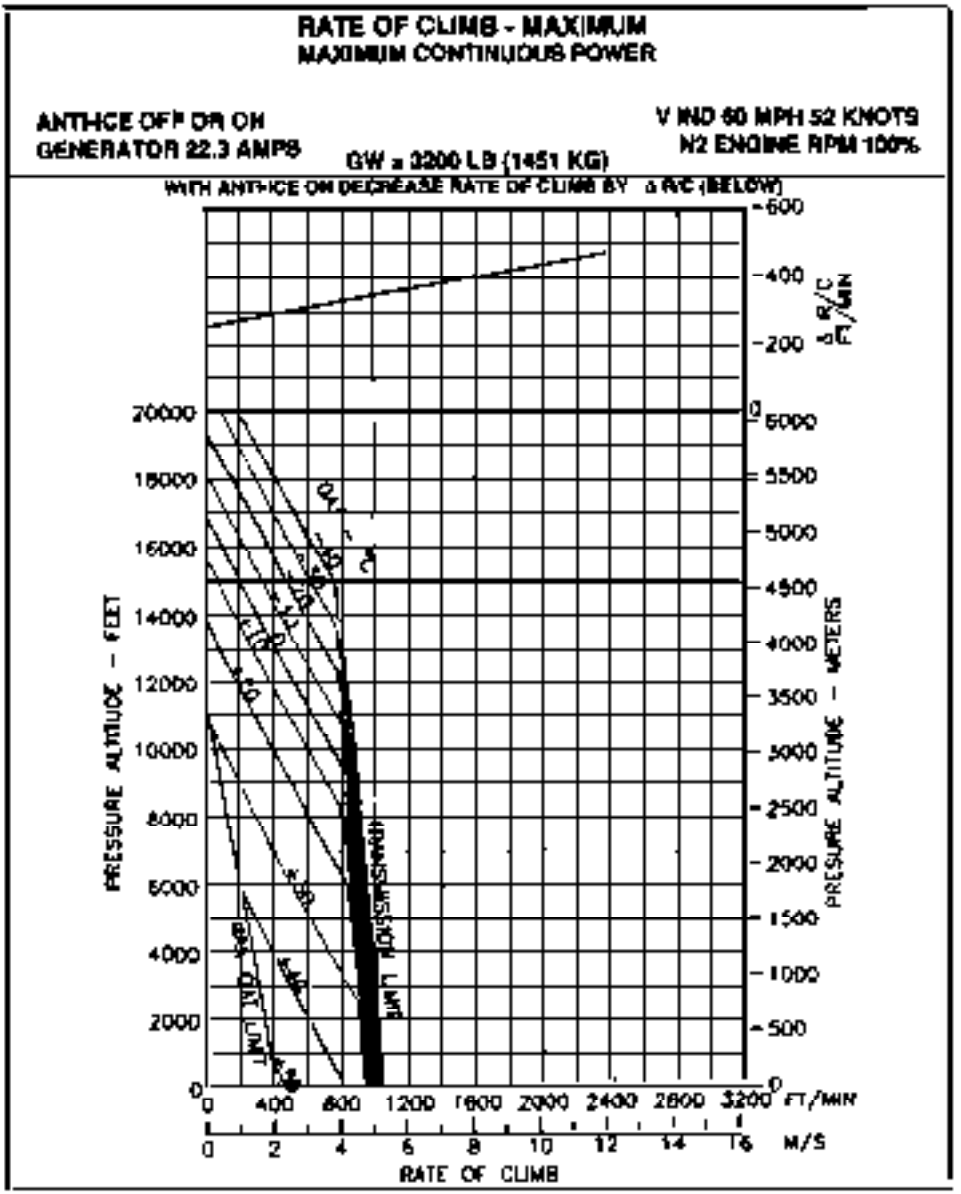


Figure 4-5. Rate of climb - Maximum - Max continuous power - basic engine inlet (Sheet 7 of 7)

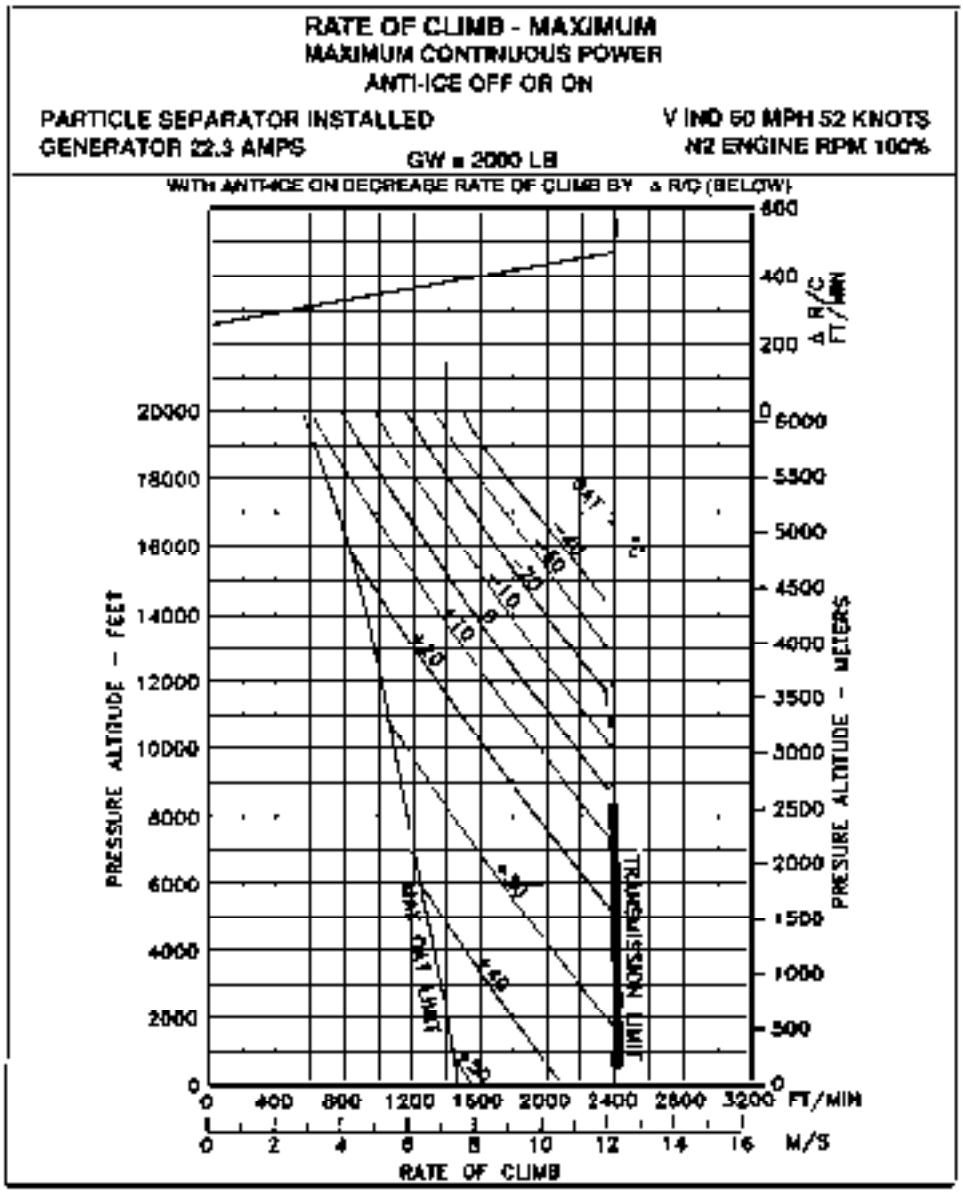


Figure 4-6. Rate of climb - Maximum - Max continuous power - particle separator installed (Sheet 1 of 7)

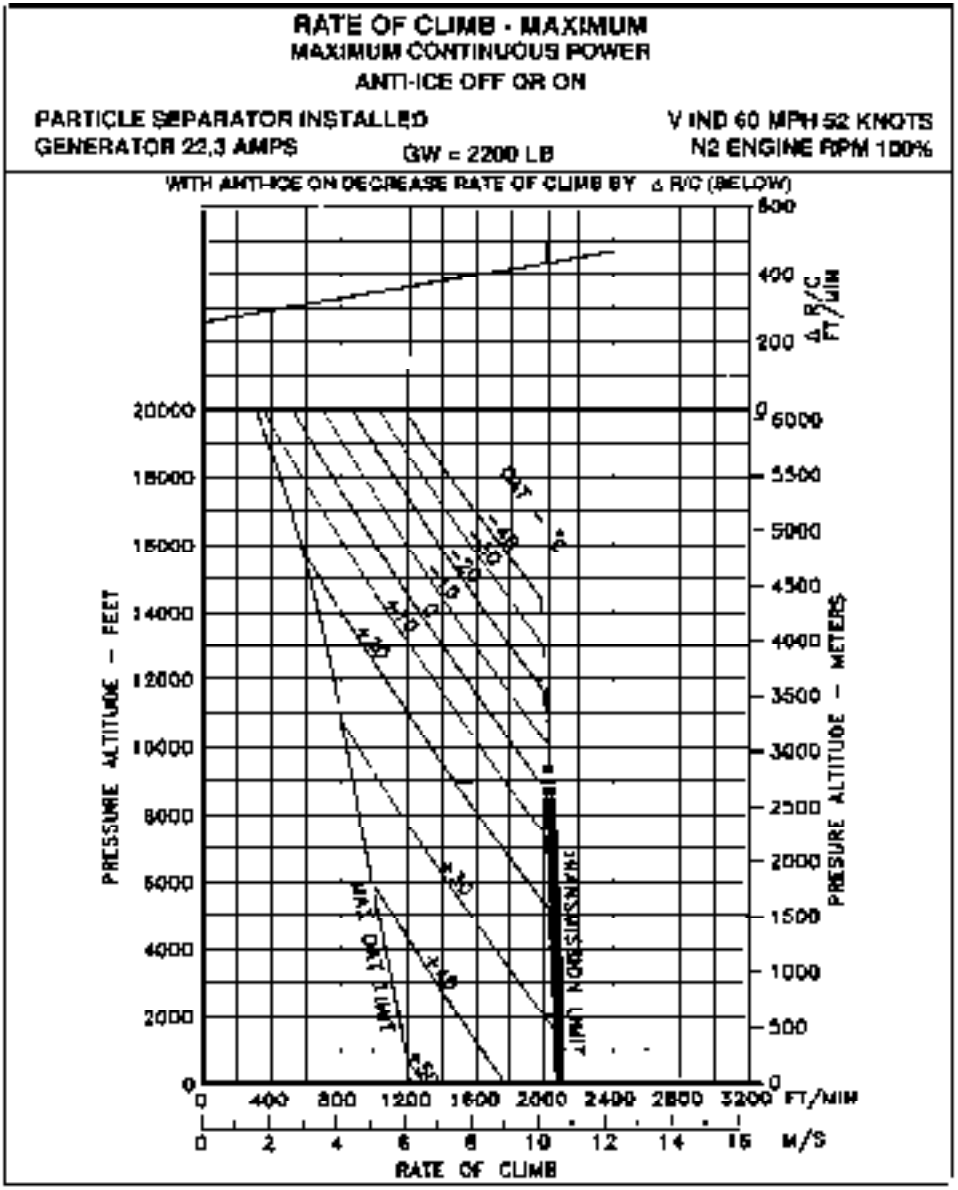


Figure 4-6. Rate of climb - Maximum - Max continuous power - particle separator installed (Sheet 2 of 7)

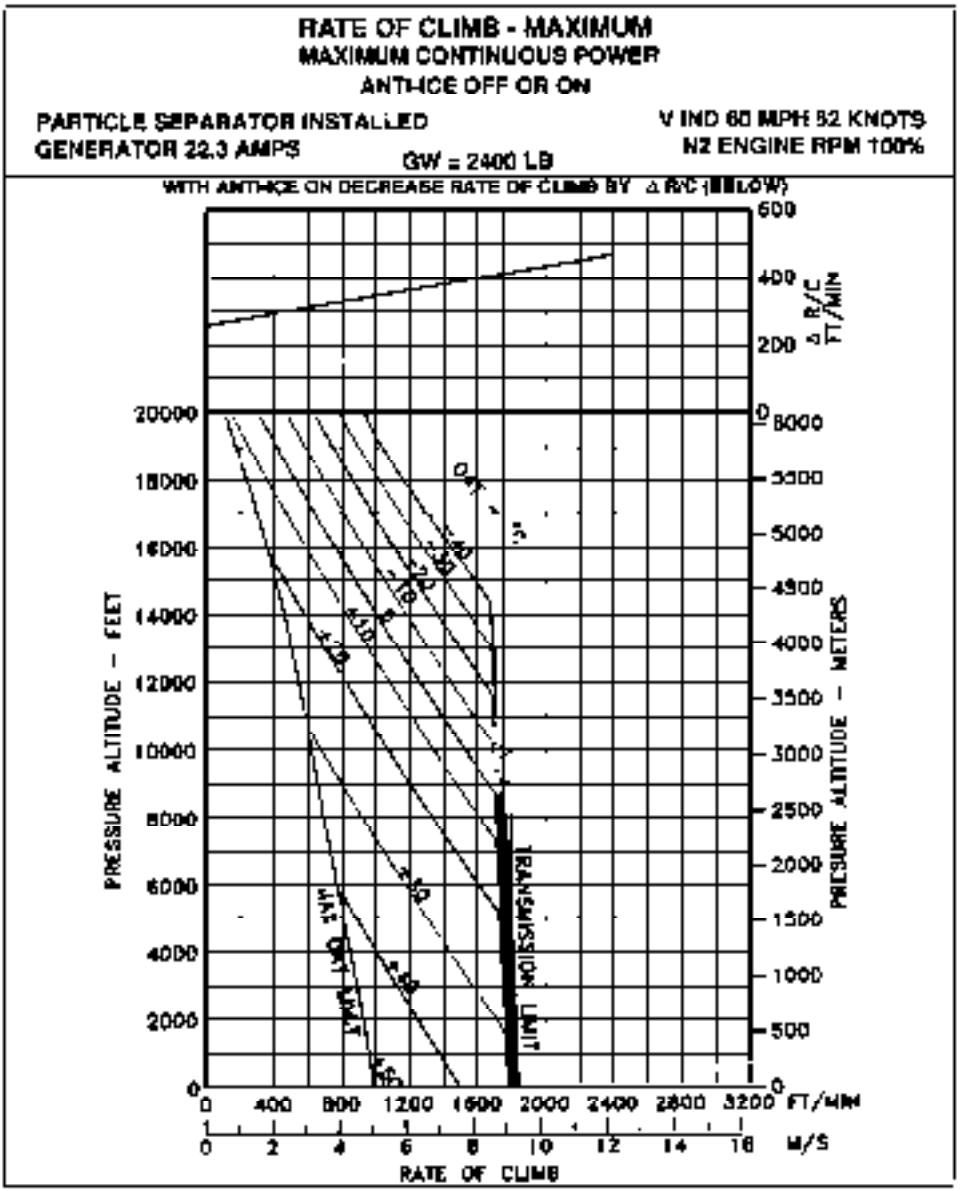


Figure 4-5. Rate of climb - Maximum - Max continuous power - particle separator installed (Sheet 3 of 7)

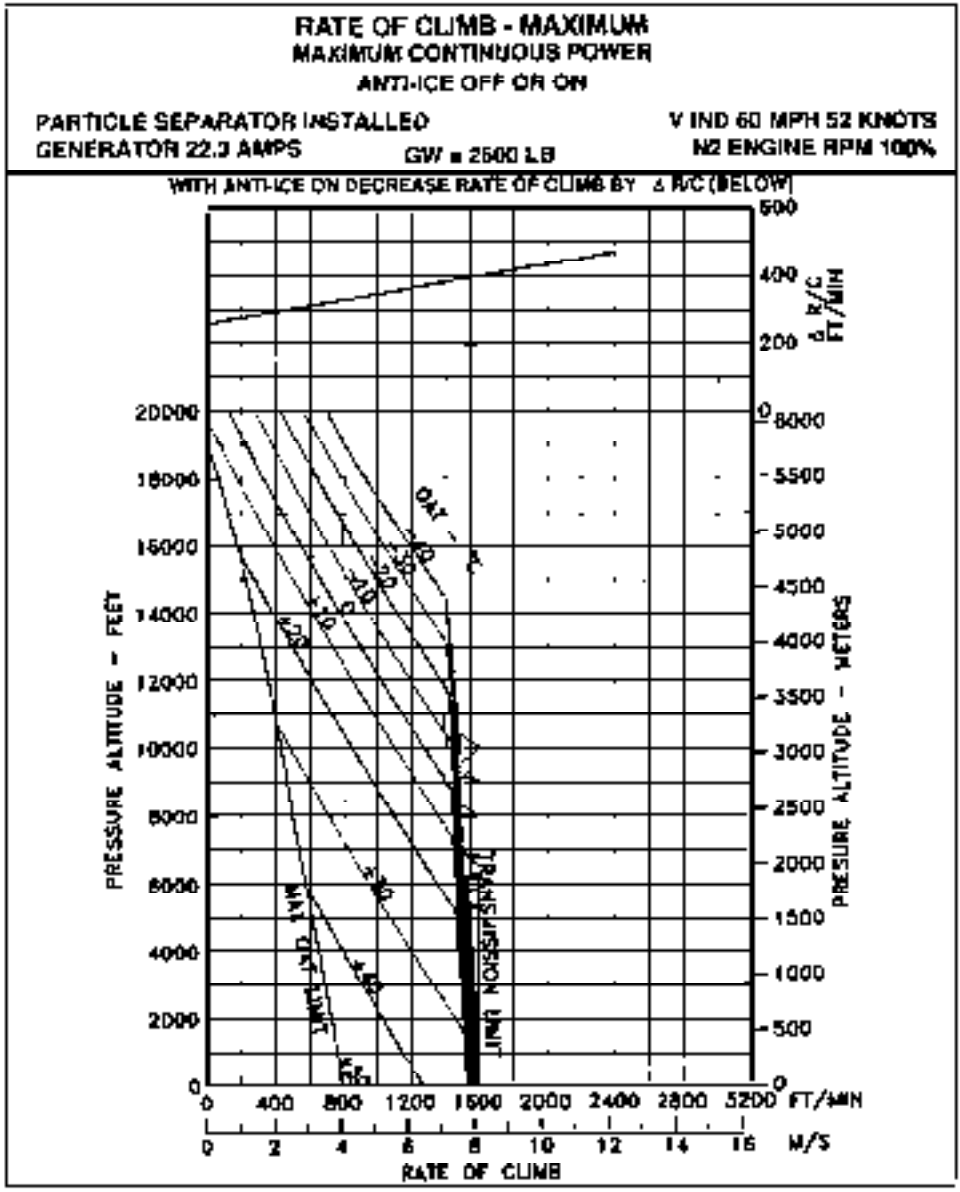


Figure 4-6. Rate of climb - Maximum - Max continuous power - particle separator installed (Sheet 4 of 7)

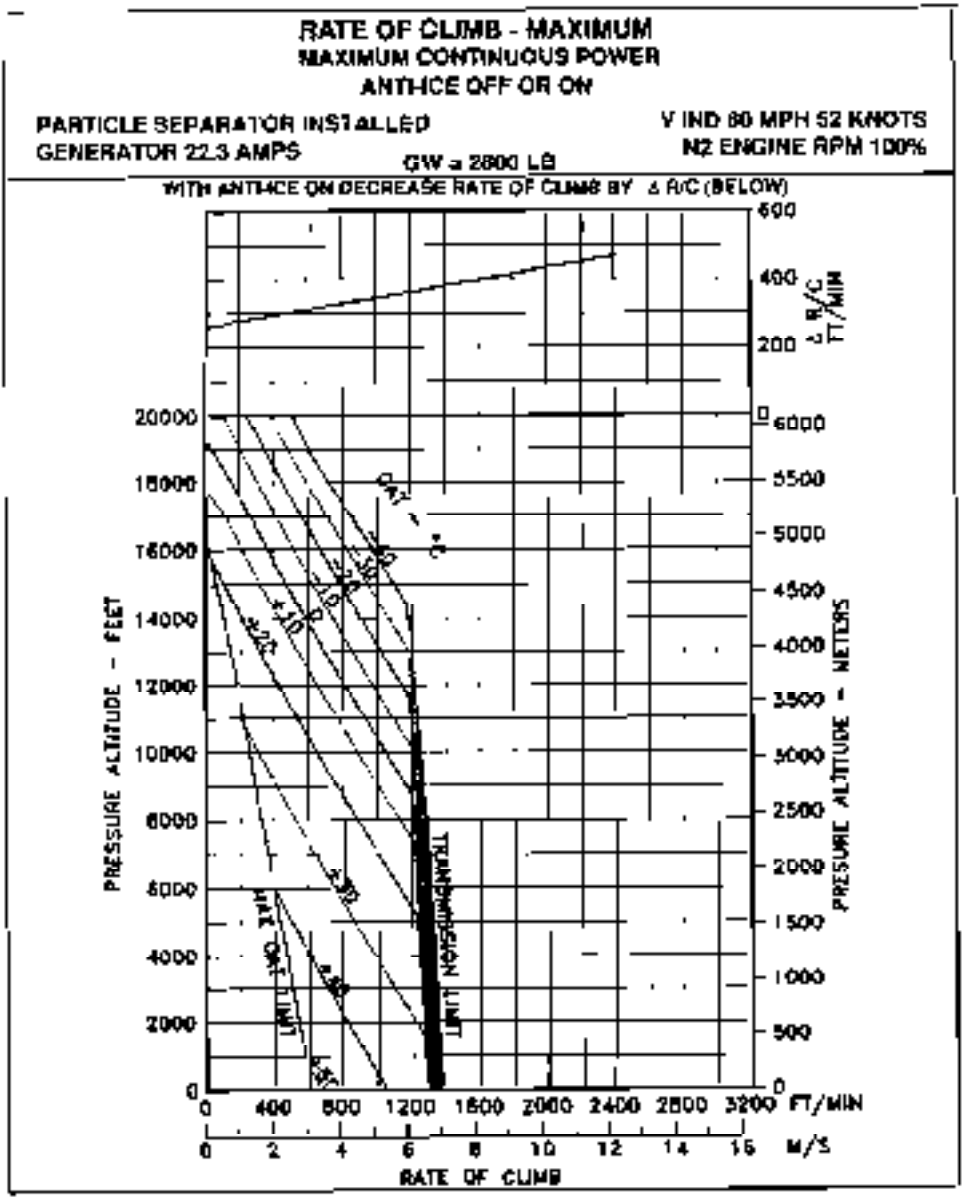


Figure 4-6. Rate of climb - Maximum - Max continuous power - particle separator installed (Sheet 5 of 7)

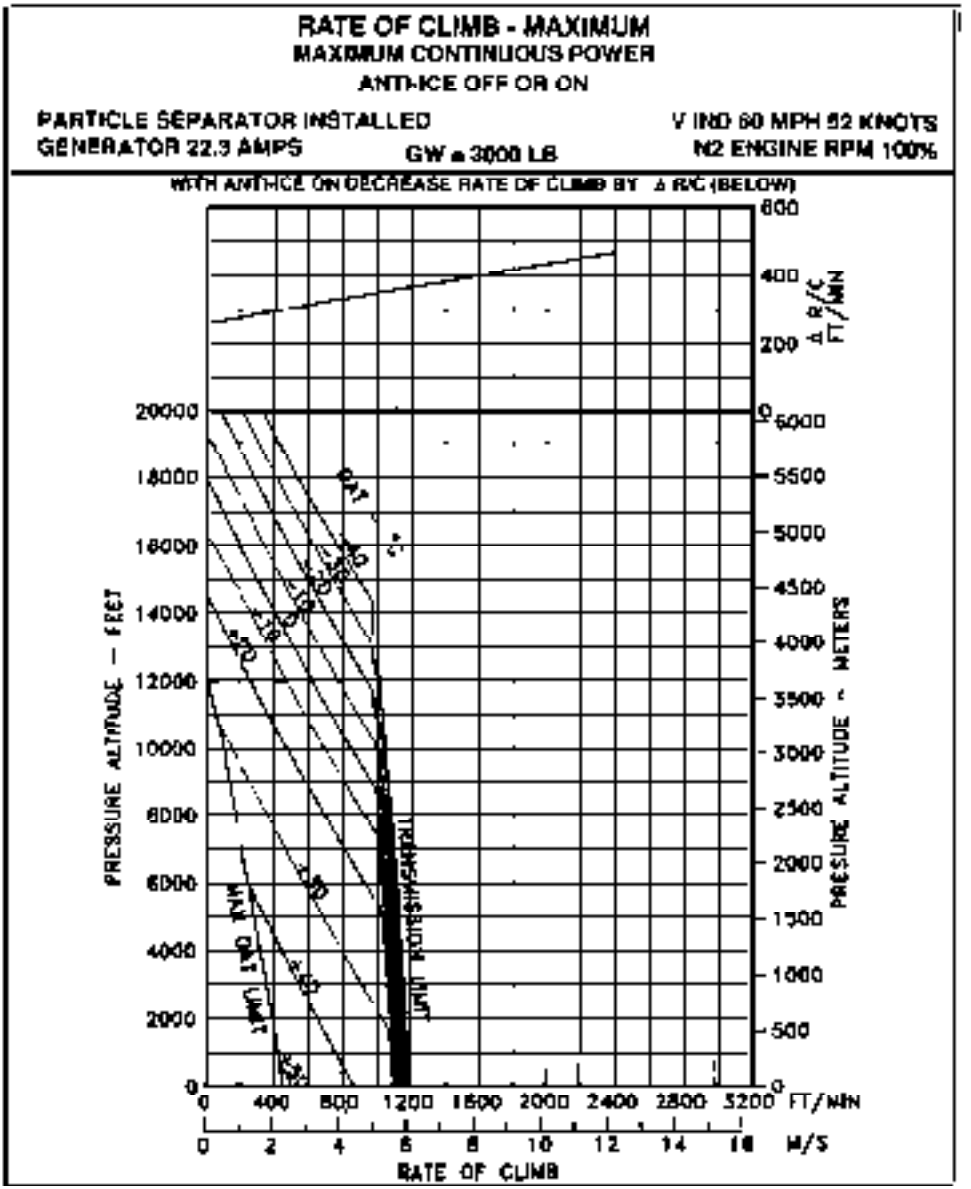


Figure 4-8. Rate of climb - Maximum - Max continuous power - particle separator installed (Sheet 6 of 7)

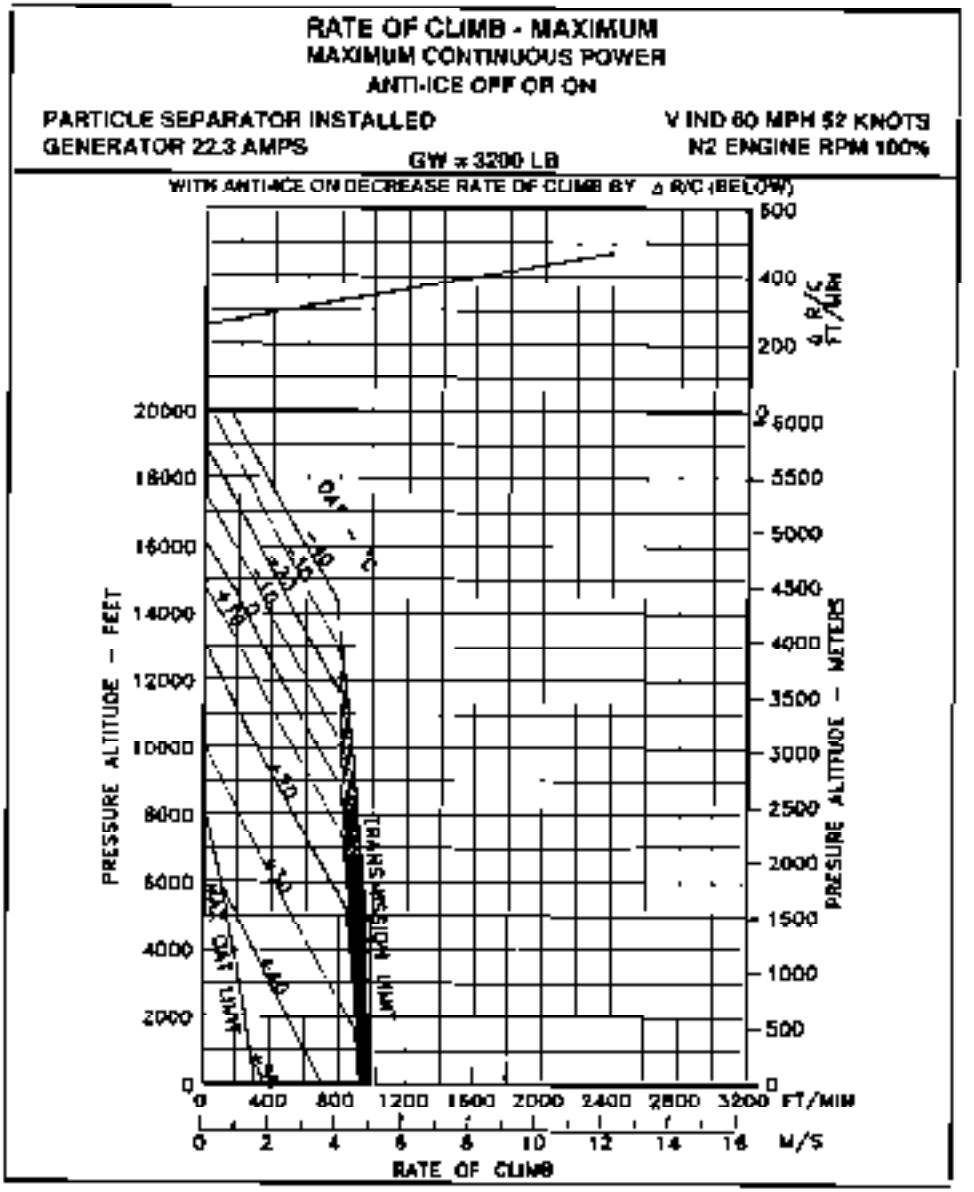


Figure 4-5. Rate of climb - Maximum - Max continuous power - particle separator installed (Sheet 7 of 7)

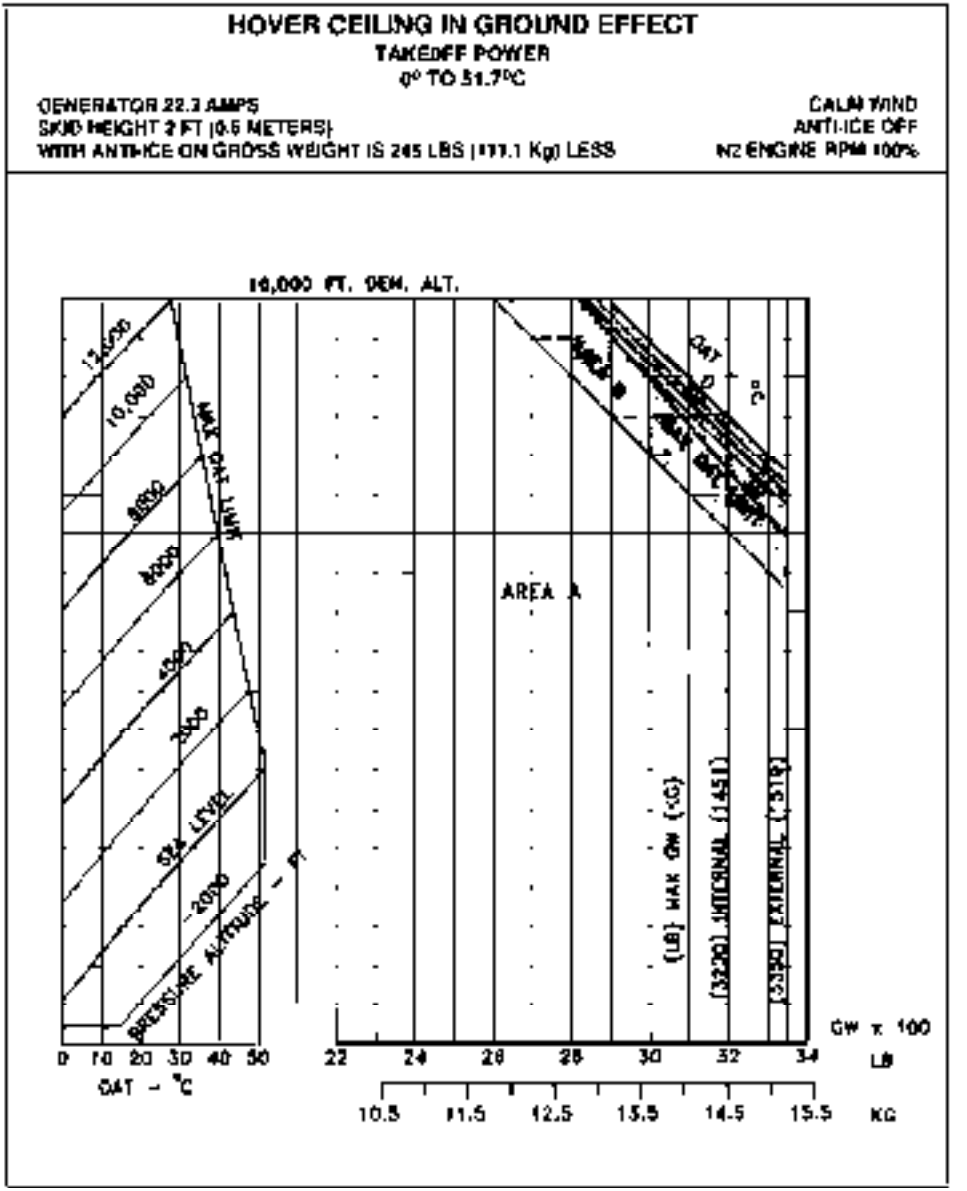


Figure 4-7. Hover ceiling - in ground effect - basic engine inlet (Sheet 1 of 4)

HOVER CEILING IN GROUND EFFECT

TAKEOFF POWER
0° TO -40°C

GENERATOR 22.3 AMPS
SKID HEIGHT 2 FT (0.6 METERS)
WITH ANTI-ICE ON GROSS WEIGHT IS 245 LBS (111.1 Kg) LESS

CALM WIND
ANTI-ICE OFF
N2 ENGINE RPM 100%

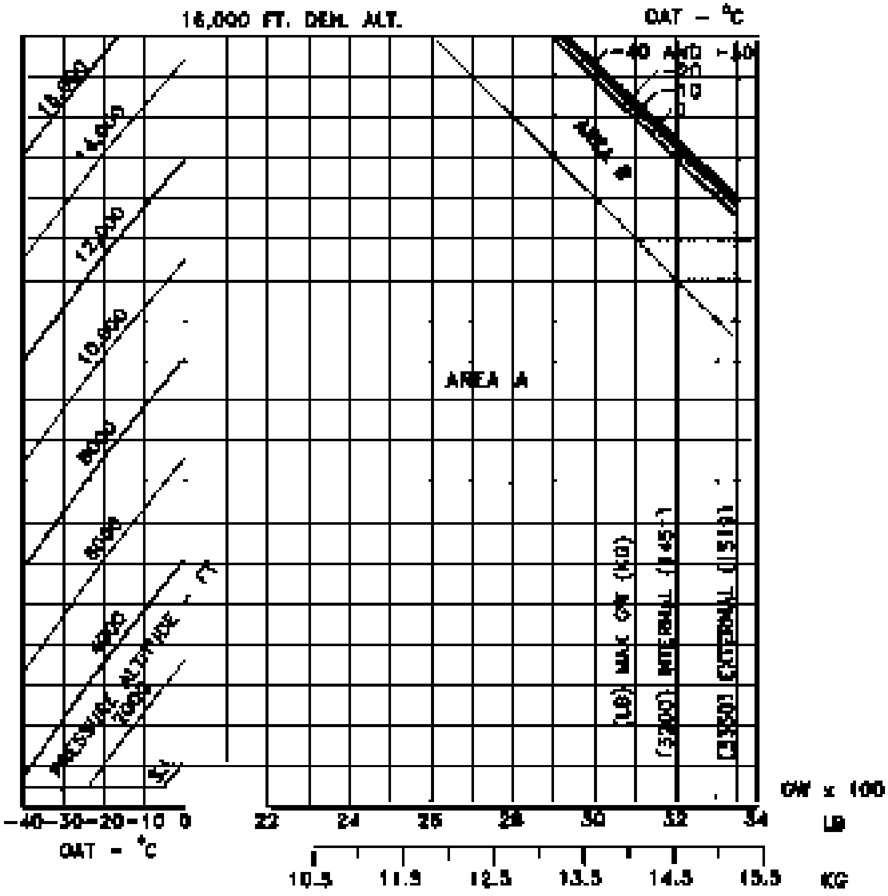


Figure 4-7. Hover ceiling - in ground effect - basic engine inlet (Sheet 2 of 4)

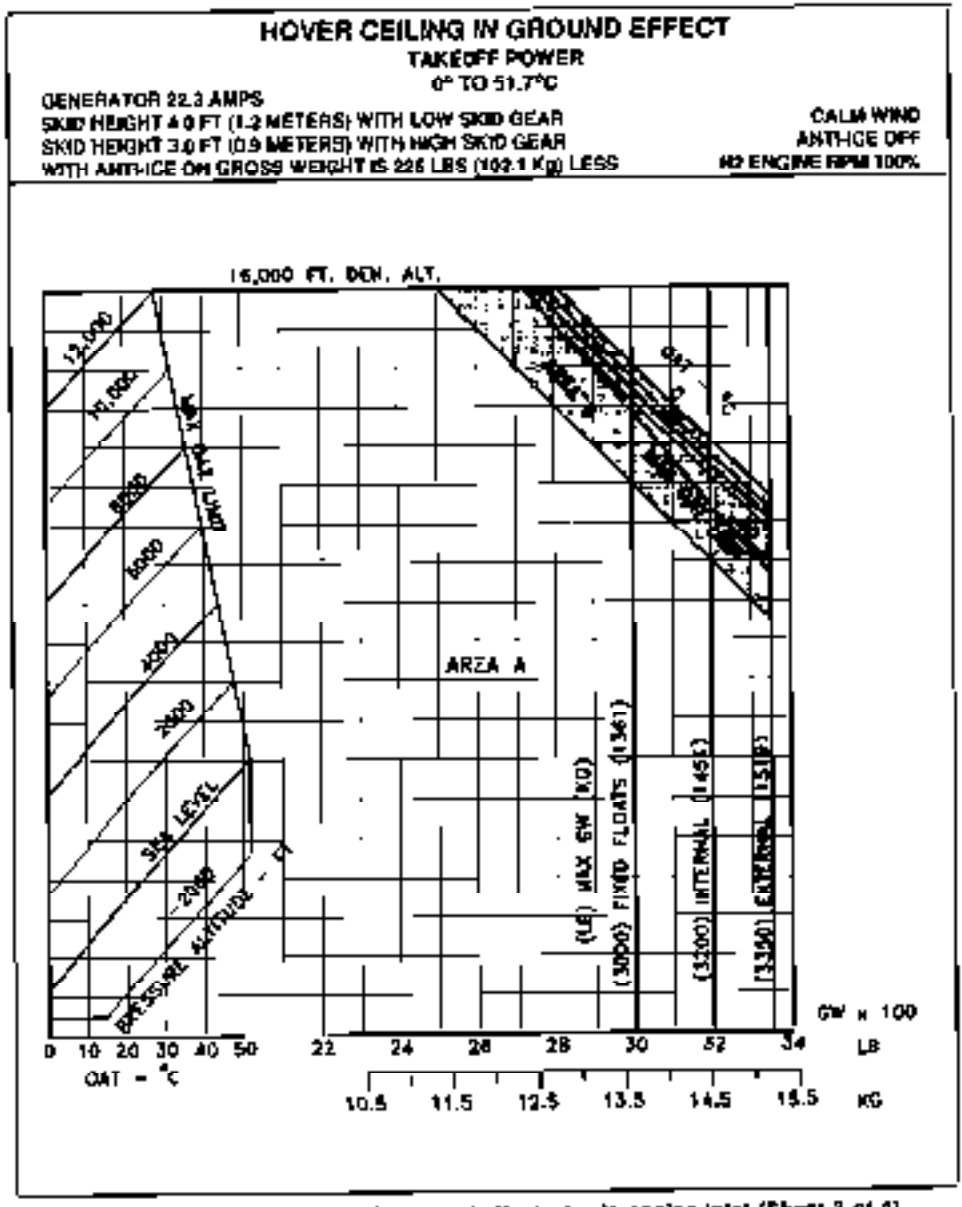


Figure 4-7. Hover ceiling - in ground effect - basic engine inlet (Sheet 3 of 4)

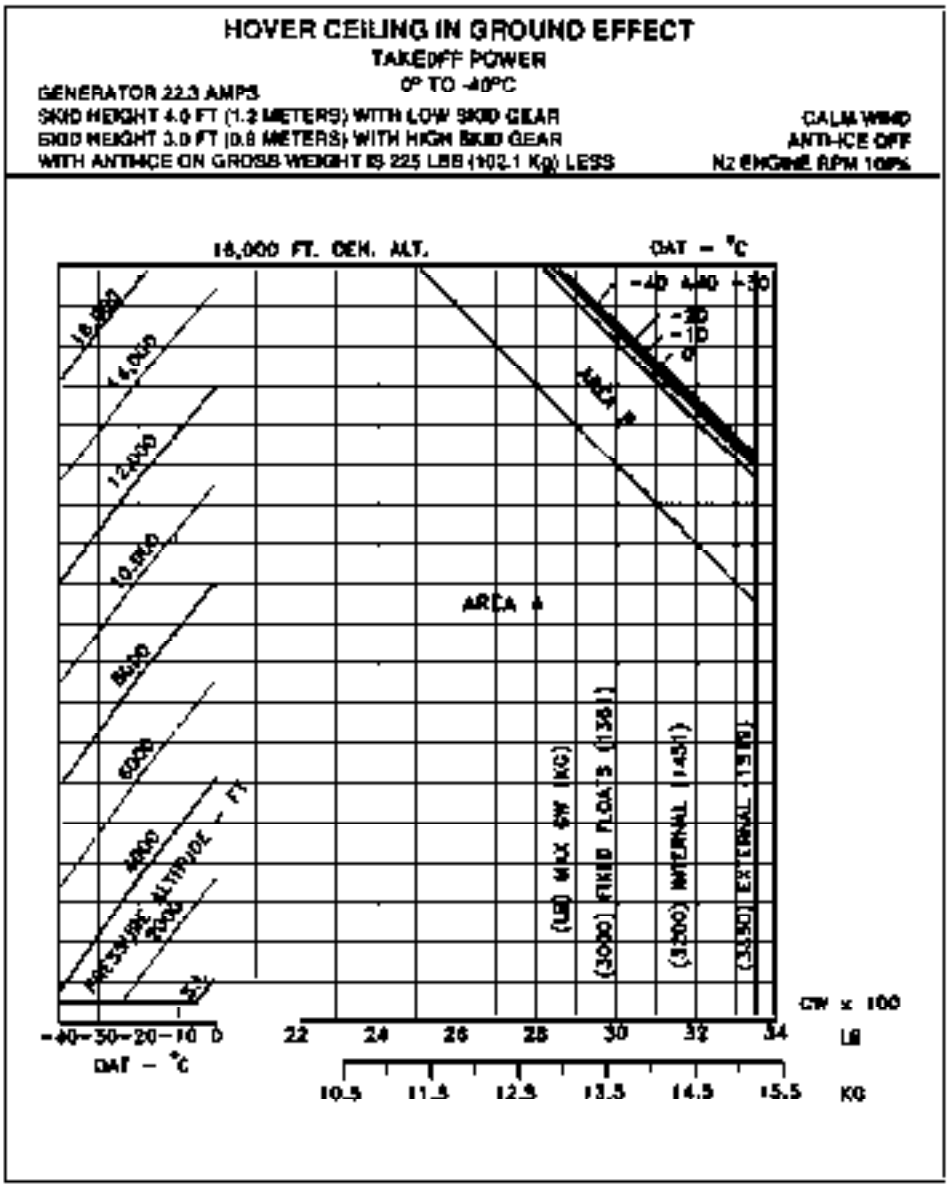


Figure 4-7. Hover ceiling - in ground effect - basic engine inlet (Sheet 4 of 4)

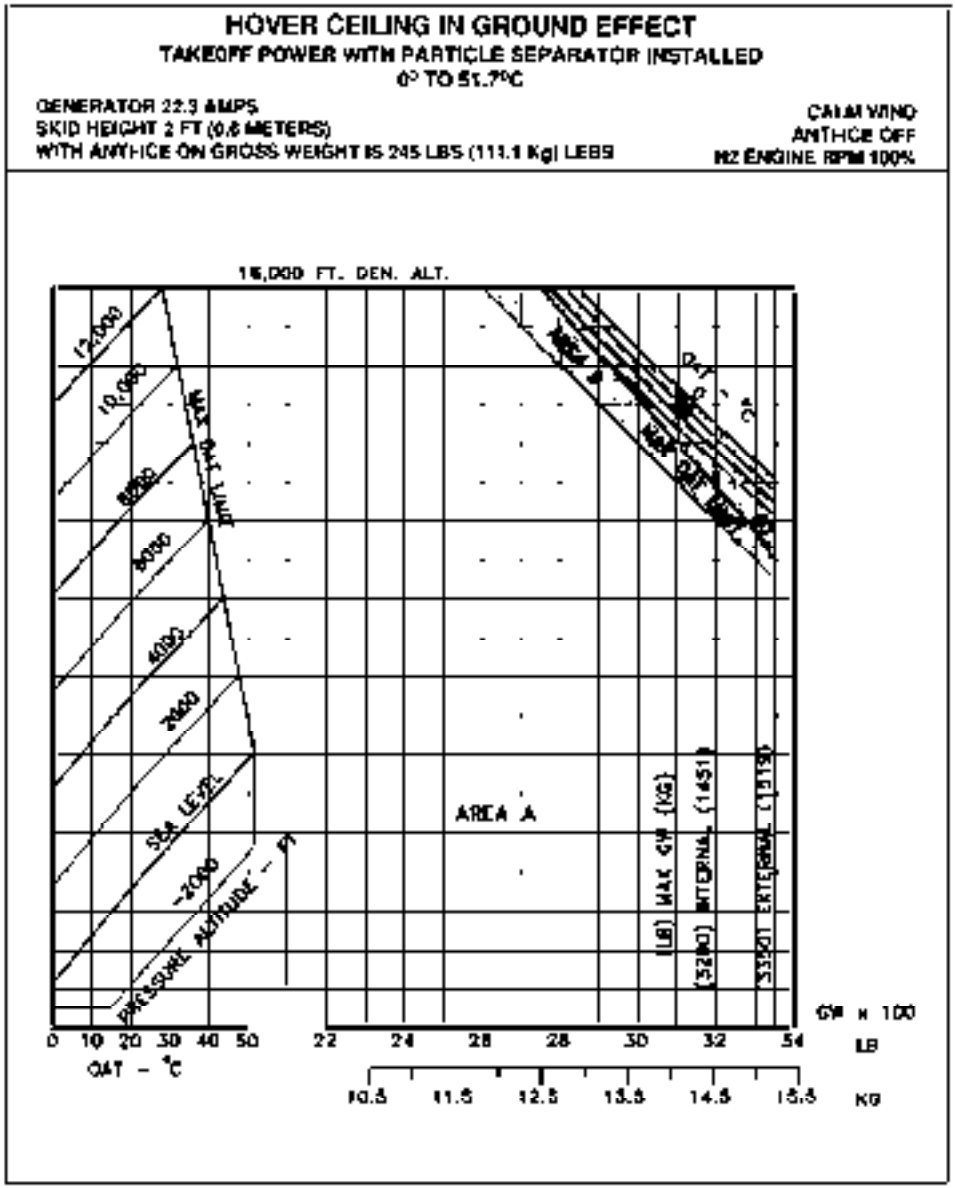


Figure 4-8. Hover ceiling - in ground effect - particle separator installed (Sheet 1 of 4)

HOVER CEILING IN GROUND EFFECT

TAKEOFF POWER WITH PARTICLE SEPARATOR INSTALLED

0° TO -40°C

GENERATOR 23.1 AMPS
SKID HEIGHT 2 FT (0.6 METERS)
WITH ANTI-ICE ON GROSS WEIGHT AS 240 LBS (111.1 Kg) LESS

CALM WIND
ANTI-ICE OFF
N2 ENGINE RPM 100%

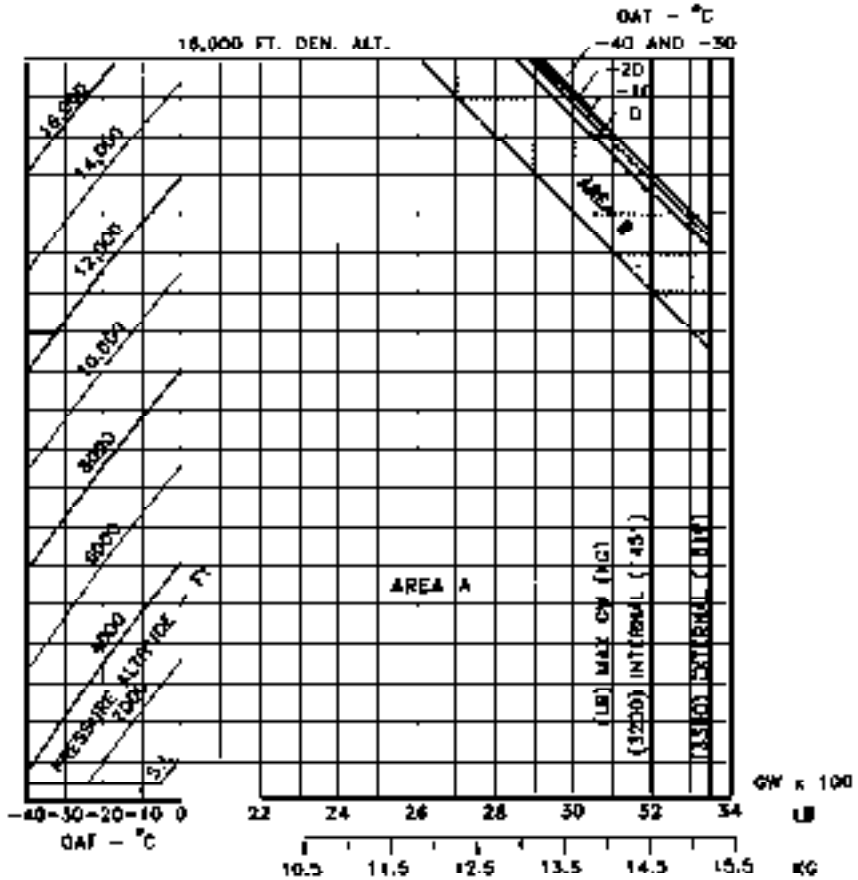


Figure 4-8. Hover ceiling - in ground effect - particle separator installed (Sheet 2 of 4)

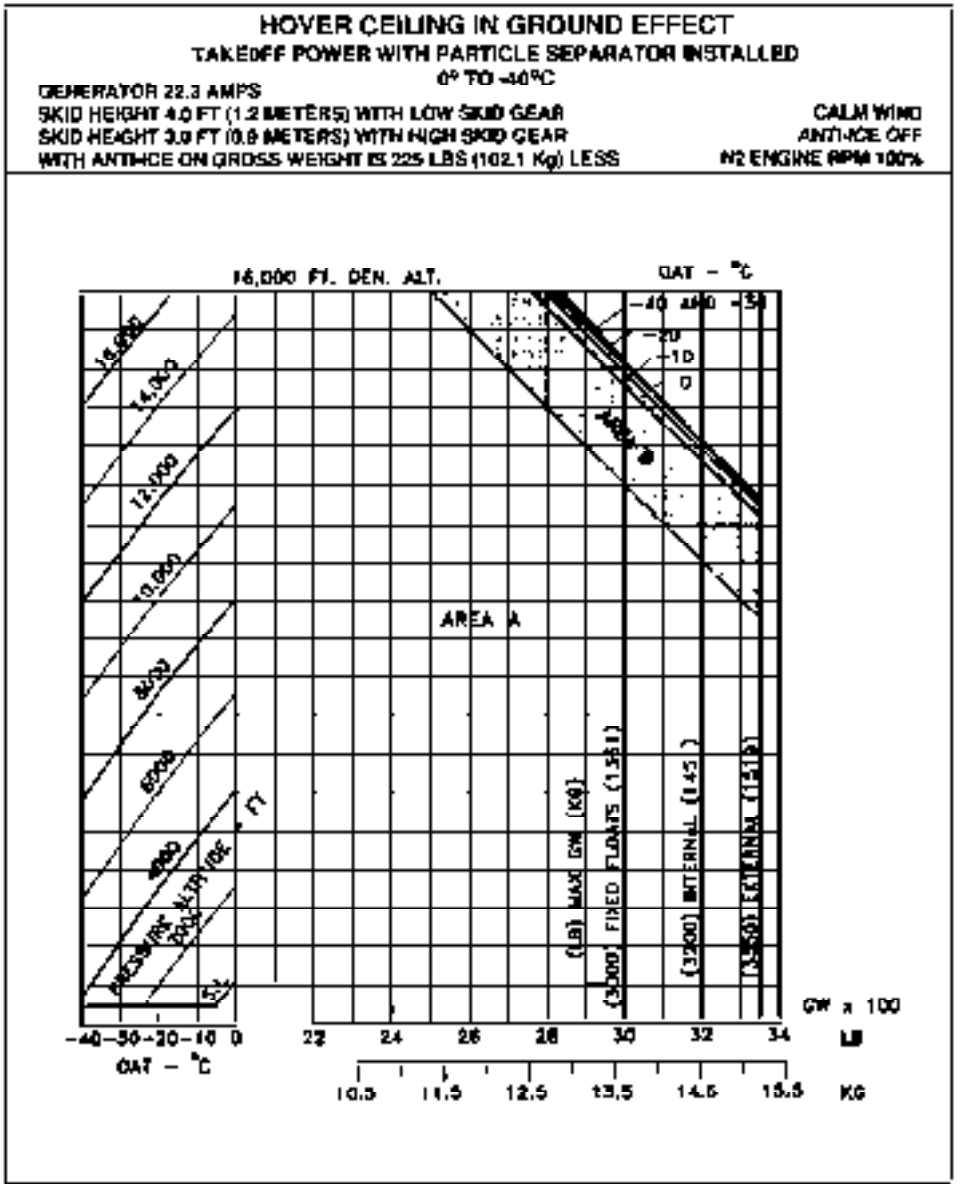


Figure 4-6. Hover ceiling - in ground effect - particle separator installed (Sheet 3 of 4)

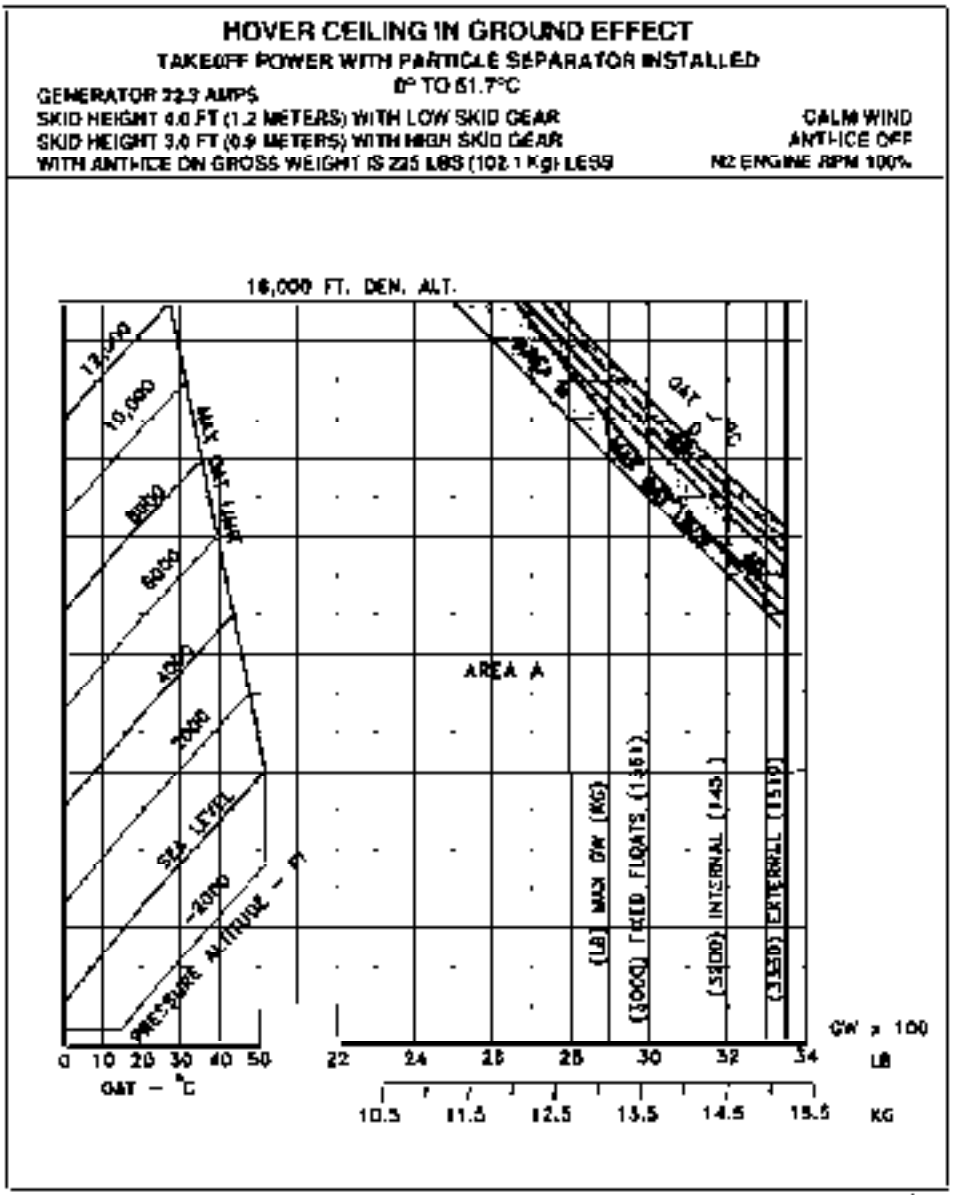


Figure 4-8. Hover ceiling - in ground effect - particle separator installed (Sheet 4 of 4)

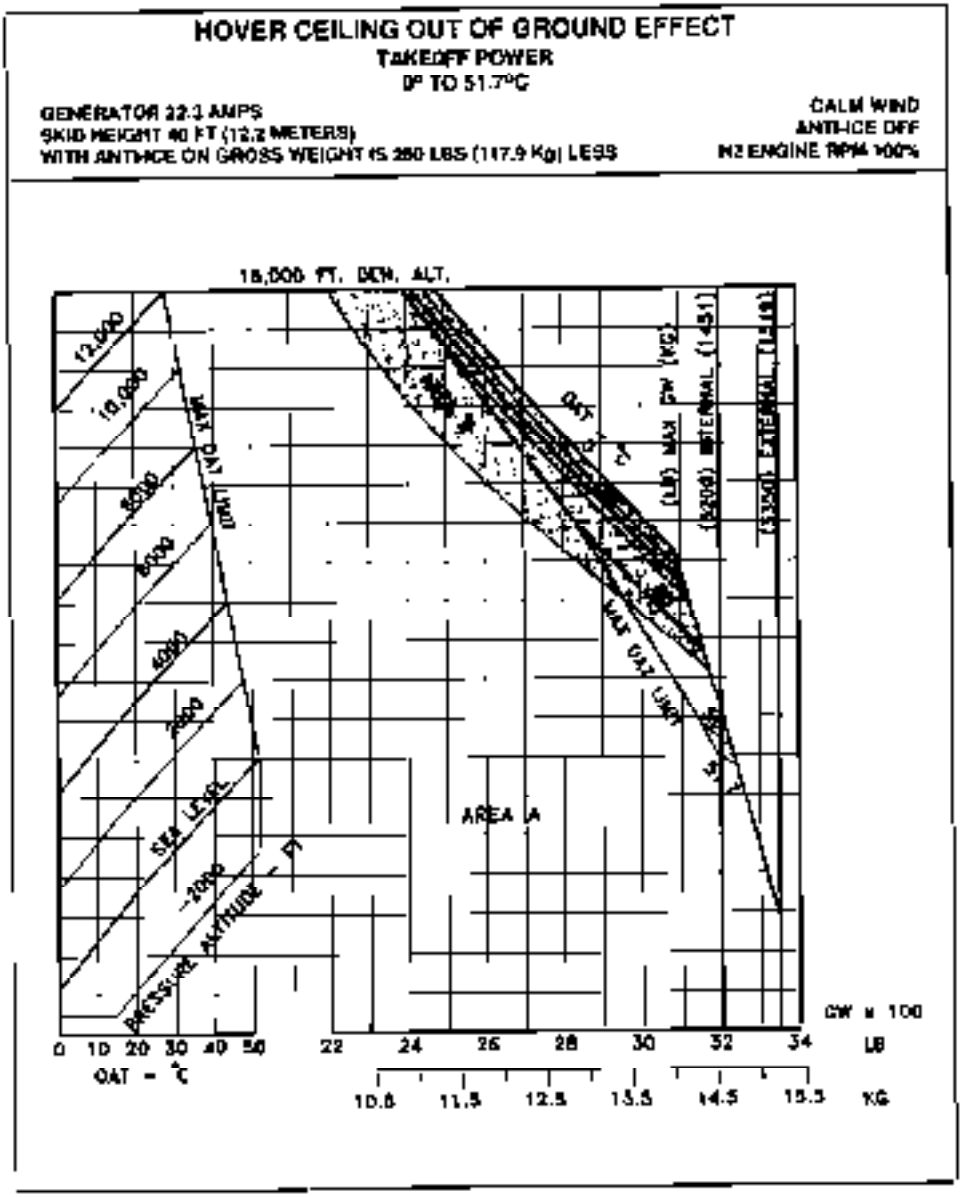


Figure 4-9. Hover ceiling - out of ground effect - basic engine inlet (Sheet 1 of 2)

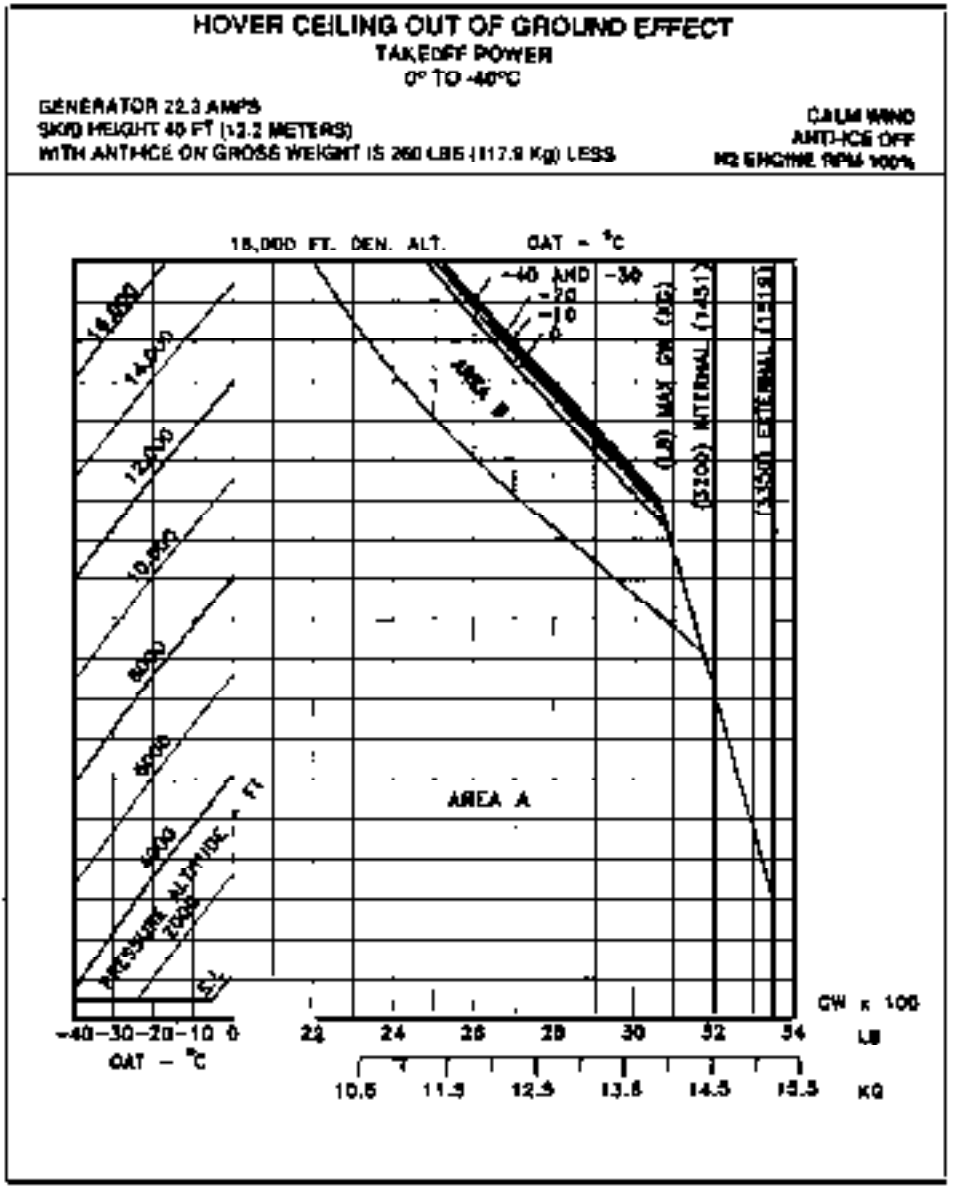


Figure 4-9. Hover ceiling - out of ground effect - basic engine inlet (Sheet 2 of 2)

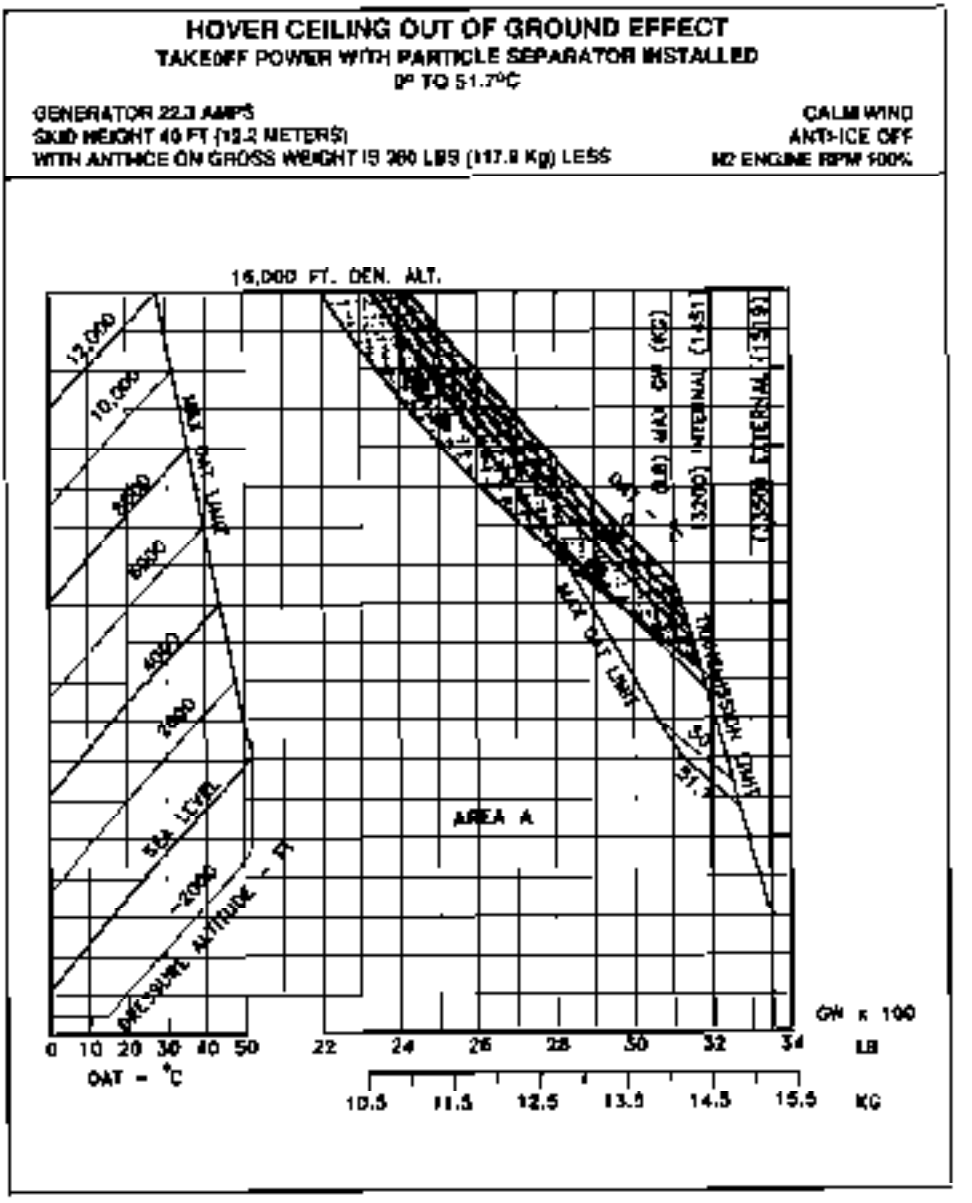


Figure 4-10. Hover ceiling - out of ground effect - particle separator installed (Sheet 1 of 2)

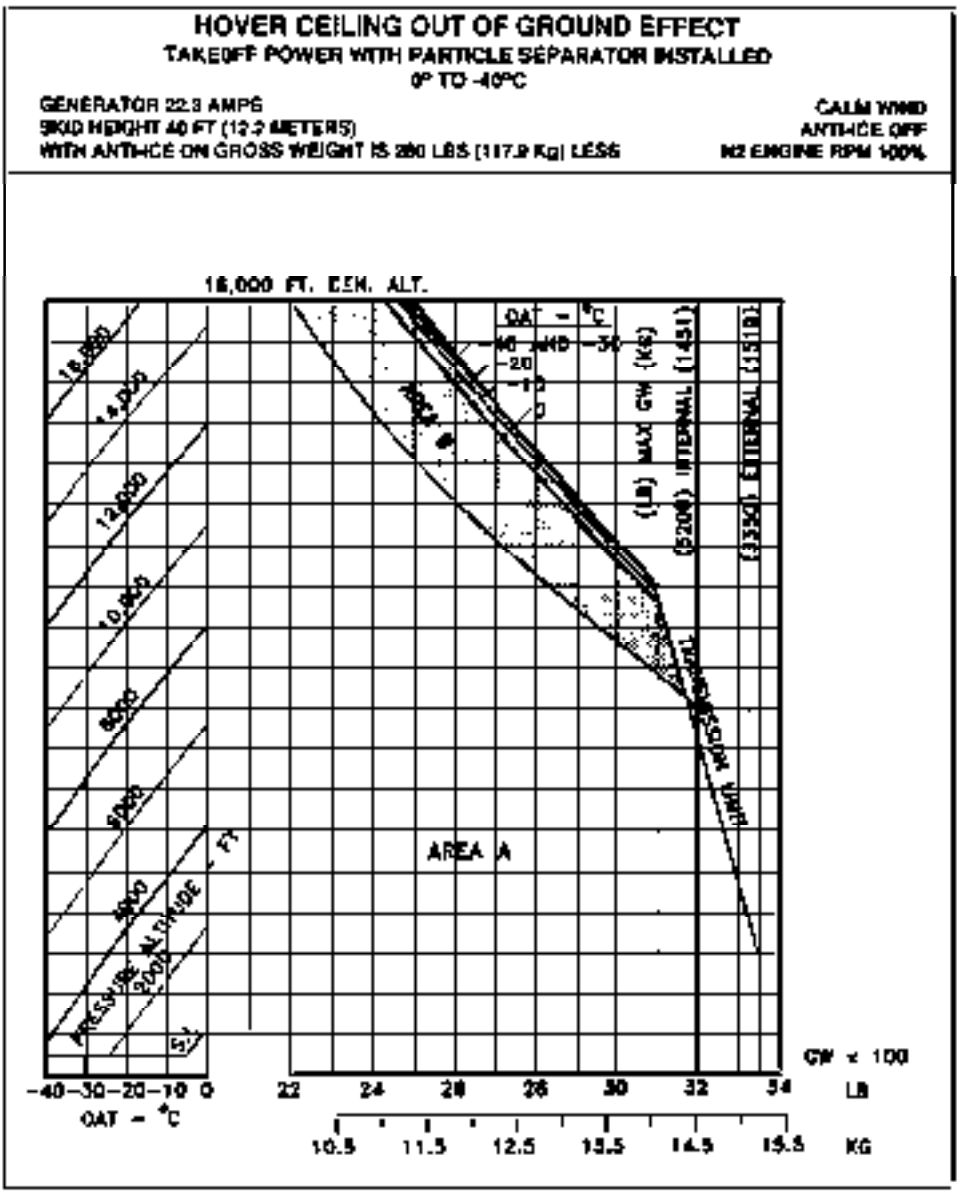


Figure 4-10. Hover ceiling - out of ground effect - particle separator installed (Sheet 2 of 2)