BHT-206L3-FM-1

Bell MODEL 206L3 LongRanger-III

ROTORCRAFT FLIGHT MANUAL

BHT 51001 THROUGH 51612

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Revision	7	09 MAY 88
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Revision	2	14 SEP 95
Revision	3	04 JUN 97
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Revision	5	18 DEC 01
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LOG OF PAGES

PAGE	REVISION NO.
Cover	0
Title	6
NP	0
A/B	6
C/D	6
E/F	6
i — ii	2
iii/iv	0
1-1 — 1-2	0
1-3	5
1-4	4
1-5	0
1-6	5
1-6A/1-6B	5
1-7 — 1-8	6
1-9	4
1-10	0
1-11 —1-12	4
1-13	0
1-14	4
2-1/2-2	0
2-3	1
2-4	0
2-5 — 2-6	3
2-7	0
2-8 —2-10	4
2-11 — 2-14	1
3-1/3-2	3
3-3	4
3-4 —3-5	3
3-6 —3-7	4
3-8	3
3-9	5
3-10 — 3-12	3
4-1/4-2	0
4-3 — 4-4	4
4-5 — 4-6	0
4-7 — 4-8	4
4-9 — 4-18	0
4-19/4-20	0
A-1	5
A-2	3
A-3/A-4	3

NOTE

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 Insert latest revision pages; dispose of superseded pages.

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Original	0	09 DEC 81
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Revision	6	24 JUL 87
Revision	7	09 MAY 88
Revision	8	14 OCT 88
Revision	9	12 SEP 89
Revision	10	04 DEC 89
Revision	11	25 MAY 90
Reissue	0	28 OCT 92
Revision	1	09 AUG 93
Revision	2	14 SEP 95
Revision	3	04 JUN 97
Revision	4	15 MAR 99
Revision	5	15 JAN 02
Revision	6	04 MAY 05

GENERAL INFORMATION

ORGANIZATION

This Rotorcraft Flight Manual is divided into four sections and an appendix 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 the DOT approved data necessary to operate the basic helicopter in a safe and efficient manner.

Appendix A contains the 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 (BHT-206L3-MD-1) manual, contains information to be used in conjunction with the Flight Manual. The manual is divided into four sections:

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.

ABBREVIATIONS AND ACRONYMS

Abbreviations and acronyms used throughout this manual are defined as follows:

AC	—	Alternating Current
A/F	—	Airframe
ANTI COLL LT	—	Anticollision Light
APU	—	Alternate Power Unit
BAT	—	Battery
C	—	Celsius
CG	—	Center of Gravity
DC	—	Direct Current
DECR	—	Decrease
ECS	—	Environmental Control System
ELT	—	Emergency Locater Transmitter
ENG	—	Engine
F	—	Fahrenheit
ft	—	Foot, Feet
GEN	—	Generator
GOV	—	Governor
H_D	—	Density Altitude
Hg	—	Mercury
H_P	—	Pressure Altitude
HYDR	—	Hydraulic
IDLE REL	—	Idle Release
IFR	—	Instrument Flight Rules
IGE	—	In Ground Effect
IN	—	Inch(es)
INCR	—	Increase
INST LT	—	Instrument Light
KCAS	—	Knots Calibrated Airspeed
kg	—	Kilograms
LBS	—	Pounds
KIAS	—	Knots Indicated Airspeed
KTAS	—	Knots True Airspeed
LDG LTS	—	Landing Lights
LT	—	Light
MCP	—	Maximum Continuous Power
mm	—	millimeter
MPH	—	Miles Per Hour (Statute)
OAT	—	Outside Air Temperature
OGE	—	Out of Ground Effect
POS LT	—	Position Light
PSI	—	Pounds per Square Inch
QTY	—	Quantity
RLY	—	Relay
RPM	—	Revolutions Per Minute

SL	—	Sea Level
TOT or TURB OUT TEMP	—	Turbine Outlet Temperature
T/R	—	Tail Rotor
TRANS	—	Transmission
VFR	—	Visual Flight Rules
V_{NE}	—	Never Exceed Velocity
WRN	—	Warning
XMSN	—	Transmission

Section 1

LIMITATIONS

TABLE OF CONTENTS

LIST OF FIGURES

Section 1

LIMITATIONS

1-1. GENERAL

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

Intentional use of transient limits is prohibited.

Torque events shall be recorded. A torque event is defined as a takeoff or a load lift (internal or external).

1-2. BASIS OF CERTIFICATION

This helicopter is certified under Civil Air Regulation, Parts 6, Rotorcraft Airworthiness, Normal Category.

1-3. TYPE OF OPERATION

Basic configured helicopter is approved for seven-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.

NOTE

All unsecured items shall be removed from cabin when any door is removed.

Flight with any combination of doors off is approved. Refer to AIRSPEED limitations.

1-4. OPTIONAL EQUIPMENT

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

> The Snow Deflector Kit or the Particle Separator Engine Air Induction System Kit and the Snow Deflector Kit. (See BHT-206L3-FMS-3 and BHT-206L3-FMS-7.)

Refer to appropriate Flight Manual Supplement(s) for additional limitations, procedures, and performance data.

1-5. 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.

1-6. WEIGHT/CG

1-7. WEIGHT

CAUTION

LOADS THAT RESULT IN GROSS WEIGHTS ABOVE 4,150 POUNDS (1882.4 KG) SHALL BE CARRIED ON AN APPROVED EXTERNAL LOAD KIT AND SHALL NOT BE IMPOSED ON LANDING GEAR.

Maximum internal approved gross weight for takeoff and landing is 4,150 pounds (1882.4 kilograms).

Minimum combined crew weight at fuselage station 65.0 is 170 pounds (77.1 kilograms) when operating in accordance with the SELECTIVE PASSENGER LOADING placard.

1-8. CENTER OF GRAVITY — LONGITUDINAL

For gross weight longitudinal center of gravity limits, refer to figure 1-1.

The standard helicopter (standard seating and fuel system) is ballasted in accordance with the Weight Empty Center of Gravity chart in the maintenance manual. The SELECTIVE PASSENGER LOADING placard shall be installed and may be used for loading passengers only within appropriate weight limitations without computing center of gravity. When passengers are seated other than in accordance with the selective loading placard or the baggage compartment is utilized, the pilot is responsible for determining weight and balance to ensure gross weight and center of gravity will remain within limits throughout each flight.

The helicopter with nonstandard fuel system or seating arrangement is not ballasted in accordance with the Weight Empty Center of Gravity chart in the maintenance manual. Selective passenger loading does not apply and the ALTERNATE placard shall be installed. The pilot is responsible for determining weight and balance to ensure gross weight and center of gravity will remain within limits throughout each flight.

Refer to BHT-206L3-MD-1 for loading tables and instructions.

1-9. CENTER OF GRAVITY — LATERAL

Lateral center of gravity limits are 4.0 inches (102 mm) left of and 3.5 inches (89 mm) right of fuselage centerline.

1-10. DOOR(S) OFF

Determine weight change after doors have been removed and adjust ballast if necessary. Refer to BHT-206L3-MD-1.

1-11. AIRSPEED

Basic V_{NE} is 130 KIAS (150 MPH) sea level to 3,000 feet density altitude. Decrease V_{NE} for ambient conditions in accordance with AIRSPEED LIMITATIONS placard (figure 1-2).

V_{NE} is 84 KIAS (96 MPH) at 85 to 100% TORQUE takeoff power.

V_{NE} is 90 KIAS (104 MPH) with any door(s) off, not to exceed placarded V_{NE}.

1-12. ALTITUDE

Maximum operating pressure altitude is 20,000 feet.

NOTE

For high altitude pressure operation, refer to appropriate rules for oxygen requirements.

1-13. AMBIENT AIR TEMPERATURE

The maximum sea level ambient air temperature for operation is +51.7°C (+125°F) and decreases with pressure altitude at the standard lapse rate of 2°C (3.6°F)/1000 feet to 20,000 feet.

1-14. MANEUVERING

Aerobatic maneuvers are prohibited.

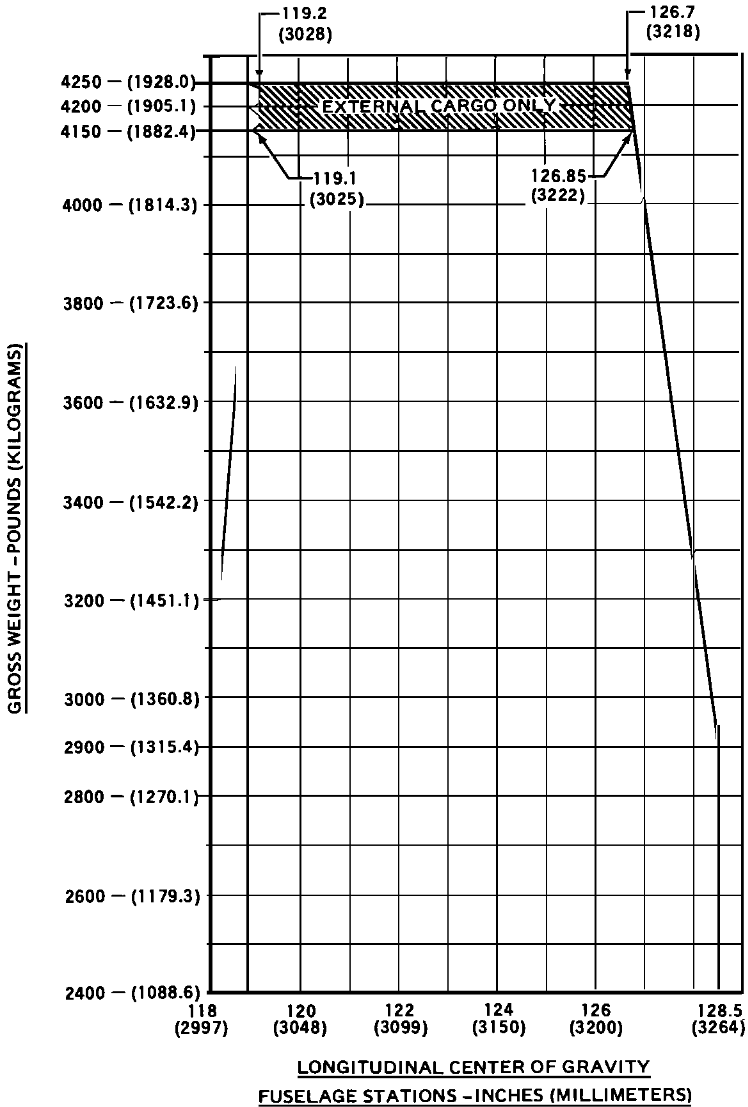

Figure 1-1. Gross weight center of gravity

P/N 206-075-770-101

AIRSPEED LIMITATIONS
INTERNAL LOADING

H_P FT/1000	0	2	4	6	8	10	12	14	16	18	20
OAT ~ °C	V_{NE} ~ IAS ~ KTS										
52	130	—	—	—	—	—	—	—	—	—	—
46	130	125	—	—	—	—	—	—	—	—	—
40	130	127	120	—	—	—	—	—	—	—	—
20	130	130	127	119	111	104	96	89	—	—	—
0	130	130	130	126	119	110	103	95	88	81	76
−20	130	130	130	130	126	118	110	103	95	88	80
−40	129	124	120	117	112	108	104	100	96	92	87
−50	118	114	110	106	102	98	95	91	88	84	82
ABOVE 4050 LB											
BELOW 4050 LB											
52	130	—	—	—	—	—	—	—	—	—	—
46	130	126	—	—	—	—	—	—	—	—	—
40	130	128	122	—	—	—	—	—	—	—	—
20	130	130	127	121	115	108	102	96	—	—	—
0	130	130	130	127	121	114	108	101	95	89	82
−20	130	130	130	130	127	121	114	108	101	95	88
−40	129	124	120	117	112	108	104	100	96	92	89
−50	118	114	110	106	102	98	95	91	88	84	82

NOTE

Airspeed limitations panel 206-075-770-101 is applicable if Technical Bulletin 206L-01-209 has not been accomplished. Airspeed limits shown are valid only for the corresponding altitudes and temperatures. Dashes indicate conditions which exceed approved temperature or density altitude limitations.

206L3FM_1_2_1

Figure 1-2. Placards and decals (Sheet 1 of 3)

P/N 206-075-770-107

AIRSPEED LIMITATIONS INTERNAL LOADING

H_P FT/1000	0	2	4	6	8	10	12	14	16	18	20
OAT °C	V_{NE} ~ IAS ~ KTS										
52	130	-	-	-	-	-	-	-	-	-	-
45	130	125	118	-	-	-	-	-	-	-	-
40	130	127	120	112	-	-	-	-	-	-	-
30	130	130	122	115	108	101	-	-	-	-	-
25	130	130	124	117	109	102	95	88	-	-	-
20	130	130	127	119	111	104	96	89	82	-	-
0	130	130	130	126	119	110	103	95	88	81	78
-25	130	130	130	129	124	120	112	104	97	90	82
-40	129	124	120	117	112	108	104	100	96	92	87
-50	118	114	110	106	102	98	95	91	88	84	82
ABOVE 4050 LB											
BELOW 4050 LB											
52	130	-	-	-	-	-	-	-	-	-	-
45	130	126	120	-	-	-	-	-	-	-	-
40	130	128	122	115	-	-	-	-	-	-	-
30	130	130	124	118	112	106	-	-	-	-	-
25	130	130	125	119	113	107	101	95	-	-	-
20	130	130	127	121	115	108	102	96	90	-	-
0	130	130	130	127	121	114	108	101	95	89	82
-25	130	130	130	129	124	120	115	109	103	97	91
-40	129	124	120	117	112	108	104	100	96	92	89
-50	118	114	110	106	102	98	95	91	88	84	82

NOTE

Airspeed limitations panel 206-075-770-107 is applicable when Technical Bulletin 206L-01-209 has been accomplished. Airspeed limits shown are valid only for the corresponding altitudes and temperatures. Dashes indicate conditions which exceed approved temperature or density altitude limitations.

206L3FM_1_2_2

Figure 1-2. Placards and decals (Sheet 2 of 3)

SELECTIVE PASSENGER LOADING PLACARD

THIS HELICOPTER MUST BE OPERATED IN COMPLIANCE WITH THE OPERATING LIMITATIONS SPECIFIED IN THE APPROVED HELICOPTER FLIGHT MANUAL.
MINIMUM COCKPIT WEIGHT 170 LBS.
SELECTIVE PASSENGER LOADING WHEN BOTH CREW SEATS ARE OCCUPIED ONLY ONE (1) MID PASSENGER IS PERMITTED UNLESS THERE ARE TWO (2) AFT PASSENGERS. 1 WHEN ONLY ONE (1) CREW SEAT IS OCCUPIED NO MORE THAN TWO (2) AFT PASSENGERS ARE PERMITTED UNLESS THERE IS ONE (1) MID PASSENGER.
REFER TO RFM WEIGHT AND BALANCE FOR ADDITIONNAL LOADING INFORMATION.

1 APPLICABLE TO HELICOPTERS EQUIPPED WITH FUEL QTY SWITCH.

Location: Instrument panel, pedestal or top of magnetic compass trim panel, in view of pilot.

ALTERNATE PLACARD

THIS HELICOPTER MUST BE OPERATED IN COMPLIANCE WITH THE OPERATING LIMITATIONS SPECIFIED IN THE APPROVED HELICOPTER FLIGHT MANUAL.
THIS HELICOPTER IS NOT BALLASTED IN ACCORDANCE WITH THE WEIGHT EMPTY CENTER OF GRAVITY CHART IN THE MAINTENANCE MANUAL OR IS A NONSTANDARD CONFIGURATION. THE PILOT IS RESPONSIBLE FOR DETERMINING WEIGHT AND BALANCE TO ENSURE GROSS WEIGHT AND CENTER OF GRAVITY WILL REMAIN WITHIN LIMITS THROUGHOUT EACH FLIGHT.
REFER TO RFM WEIGHT AND BALANCE FOR ADDITIONAL LOADING INFORMATION.

Location: In place of standard placard.

CARGO MUST BE SECURED IN ACCORDANCE WITH FLIGHT MANUAL INSTRUCTION

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

Location: Baggage compartment door.

AVOID CONT OPS 71.8% TO 91.5% N2

Location: Instrument panel.

206L3FM_1_0001

Figure 1-2. Placards and Decals (Sheet 3 of 3)

1-15. ELECTRICAL

1-16. GENERATOR

Continuous operation	0 to 90% DC LOAD
Maximum	90% DC LOAD

1-17. POWERPLANT

Allison model 250-C30P.

1-18. GAS PRODUCER RPM

Continuous operation	63 to 105%
Maximum	105%
Maximum transient (Do not exceed 10 seconds above 105%)	106%

1-19. POWER TURBINE RPM

WARNING

USE OF THE THROTTLE TO CONTROL RPM IS NOT AUTHORIZED.

(REFER TO SECTION 3, EMERGENCY PROCEDURES — ENGINE OVERSPEED FOR EXCEPTION.)

Avoid continuous operations	71.8 to 91.5%
Minimum	97%
Continuous operation	97 to 100%
Maximum continuous	100%
Transient overspeed range	100 to 103%

NOTE

Refer to Allison Operation and Maintenance Manual for transient overspeed limits.

1-20. TURBINE OUTLET TEMPERATURE (TOT)

WARNING

EXCEEDING 768°C *TURB OUT TEMP* OR 100% *TORQUE* CAN CAUSE *GAS PRODUCER* TOPPING WITH RESULTANT *ROTOR RPM* DROOP.

Continuous operation	100 to 716°C
Maximum continuous	716°C
5 minute takeoff range	716 to 768°C
Maximum for takeoff	768°C
Maximum transient (Do not exceed 10 seconds above 768°C).	871°C
Maximum for starting and shutdown (Do not exceed 10 seconds above 768°C.)	927°C

NOTE

Intentional use of power transient area (768 to 871°C) is prohibited. The TURB OUT TEMP gage is equipped with a red warning light that will illuminate when either of the following conditions occur:

770 to 927°C more than 10 seconds or above 927°C.

1-21. ENGINE TORQUE

Continuous operation	0 to 85%
Maximum continuous	85%
5 minute takeoff range	85 to 100%
Maximum for takeoff	100%
Maximum transient (Do not exceed 5 seconds above 100%. Intentional use prohibited.)	105%

1-22. FUEL PRESSURE

Minimum	4 PSI
Continuous operation	4 to 25 PSI
Maximum	25 PSI

● Gage with red triangle at 8 psi.

Minimum	4 PSI
Continuous operation	4 to 25 PSI
Maximum	25 PSI
Minimum for use of type A, A-1, or JP-5 fuel, or any mixture of these, at ambient temperature below -18°C (0°F)	8 PSI

1-23. ENGINE OIL PRESSURE

Minimum below 79% GAS PRODUCER (N_1) RPM	50 PSI
Minimum from 79 to 94% GAS PRODUCER (N_1) RPM	90 PSI
Minimum above 94% GAS PRODUCER RPM (N1) RPM	115 PSI
Maximum	130 PSI

1-24. ENGINE OIL TEMPERATURE

Continuous operation	0 to 107°C
Maximum	107°C

1-25. ANTI-ICE

The maximum ambient temperature for use of engine anti-ice is 4.4°C (40°F).

ENGINE ANTI-ICING shall be ON for flight in visible moisture in temperature below 4.4°C (40°F).

1-26. STARTER

Limit starter energize time to the following:

External Power Start	Battery Start
40 Seconds ON	60 Seconds ON
30 Seconds OFF	60 Seconds OFF
40 Seconds ON	60 Seconds ON
30 Seconds OFF	60 Seconds OFF
40 Seconds ON	60 Seconds ON
30 Minutes OFF	30 Minutes OFF

1-27. TRANSMISSION

1-28. TRANSMISSION OIL PRESSURE

Minimum	30 PSI
Continuous operation	40 to 70 PSI
Maximum	70 PSI

1-29. TRANSMISSION OIL TEMPERATURE

Continuous operation	15 to 110°C
Maximum	110°C

1-30. ROTOR

1-31. ROTOR RPM — POWER ON

Minimum transient (Do not exceed 5 seconds)	95%
Minimum	97%
Continuous operation	97 to 100%
Maximum continuous	100%
Maximum transient during low power descent. (Do not exceed 5 minutes above 100%.)	103%

1-32. ROTOR RPM — POWER OFF

Minimum	90%
Maximum	107%

1-33. FUEL AND OIL

1-34. FUEL

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

Turbine fuel ASTM-D-1655, Type A or A-1, or MIL-T-5624, Grade JP-5, (NATO F-44), or MIL-T-83133, Grade JP-8, (NATO F-34), limited to ambient temperatures above -17.8°C (0°F).

Turbine fuel ASTM-D-1655, Type A or A-1, or MIL-T-5624, Grade JP-5, (NATO F-44), or MIL-T-83133, Grade JP-8, (NATO F-34), limited to ambient temperatures -32°C (-25°F) and above when equipped with fuel pressure gage with red triangle at 8 psi.

NOTE

Anti-icing fuel additives are not required for any ambient temperature.

Refer to Allison Operation and Maintenance Manual for cold weather fuel and blending instructions.

1-35. ENGINE OIL

Turbine oil MIL-L-7808 may be used at all ambient temperatures.

DOD-L-85734(AS) or MIL-L-23699 limited to ambient temperatures above -40°C (-40°F).

NOTE

Refer to Allison Operation and Maintenance Manual and BHT-206L3-MD-1 manual for approved oils and mixing of oils of different brands, types, and manufacturers.

1-36. TRANSMISSION AND TAIL ROTOR GEARBOX OIL

Turbine oil MIL-L-7808 may be used at all ambient temperatures.

DOD-L-85734(AS) or MIL-L-23699 limited to ambient temperatures above -40°C (-40°F).

1-37. HYDRAULIC

Hydraulic fluid MIL-H-5606 may be used at all ambient temperatures.

ENGINE OIL PRESSURE

50 PSI	Minimum
50 to 90 PSI	Operation below 79% N1 RPM
90 to 115 PSI	Continuous operation below 94% N1 RPM
115 to 130 PSI	Continuous operation
130 PSI	Maximum

ENGINE OIL TEMPERATURE

0 to 107°C	Continuous operation
107°C	Maximum

TRANSMISSION OIL PRESSURE

30 PSI	Minimum
40 to 70 PSI	Continuous operation
70 PSI	Maximum

TRANSMISSION OIL TEMPERATURE

15 to 110°C	Continuous operation
110°C	Maximum

GAS PRODUCER RPM (N1)

63 to 105%	Continuous operation
105%	Maximum

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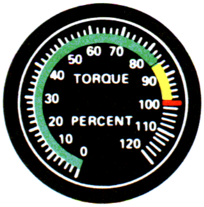
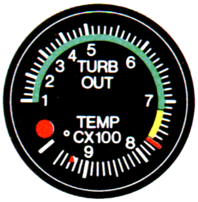
Figure 1-3. Instrument markings (Sheet 1 of 3)



TORQUE

0 to 85%	Continuous operation
85 to 100%	5 Minute takeoff range
100%	Maximum



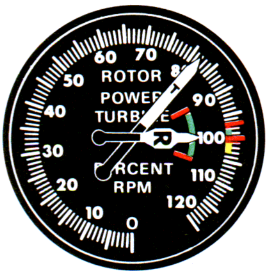
TURBINE OUTLET TEMPERATURE

100 to 716°C	Continuous operation
716 to 768°C	5 Minute takeoff range
768 C	Maximum for takeoff
927 C	Maximum for start and shutdown (1 second max.)
Warning light	TOT between 770 and 927°C longer than 10 seconds, or TOT above 927°C.

NOTE

Range Mark at 999 °C

Any one of the two turbine outlet temperature gages may be installed in helicopter.



POWER TURBINE RPM (N2)

97%	Minimum
97% to 100%	Continuous operation
100%	Maximum continuous
100 to 103%	Transient overspeed range (5 minutes max.)

ROTOR RPM (Nr)

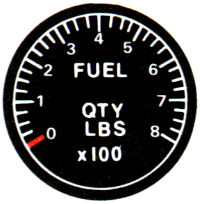
90%	Minimum (power off)
90 to 107%	Continuous operation (power off)
107%	Maximum (power off)

206075-233A

Figure 1-3. Instrument markings (Sheet 2 of 3)

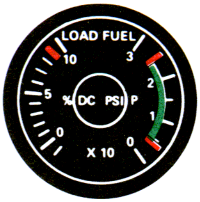
AIRSPEED

(green)	0 to 130 Knots	Continuous operation
(blue)	100 Knots	Maximum for autorotation
(red)	130 Knots	Maximum



FUEL QUANTITY

(red)	0	Empty (zero usable)



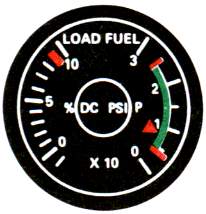
DC LOAD

(red)	90%	Maximum

FUEL PRESSURE

(red)	4 PSI	Minimum
(green)	4 to 25 PSI	Continuous operation
(red)	25 PSI	Maximum

NOTE: Either indicator may be installed.



DC LOAD

(red)	90%	Maximum

FUEL PRESSURE

(red)	4 PSI	Minimum
(green)	4 to 25 PSI	Continuous operation
(red)	25 PSI	Maximum
(red triangle)	8 PSI	Minimum - Type A, A-1, or JP-5 fuel below - 18°C (0°F)

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

Section 2

NORMAL PROCEDURES

TABLE OF CONTENTS

LIST OF FIGURES

Section 2

NORMAL PROCEDURES

2-1. 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.

2-2. 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, LIMITATIONS, for a detailed explanation of each operating limitation.

2-3. 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 mission to be performed and destination.

Select appropriate performance charts to be used from Section 4, PERFORMANCE.

2-4. TAKEOFF AND LANDING DATA

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

2-5. WEIGHT AND BALANCE

Determine proper weight and balance of the helicopter as follows:

1. Consult BHT-206L3-MD-1 for instructions.
2. Compute takeoff and anticipated landing gross weight, check helicopter center of gravity (CG) locations, and determine weight of fuel, oil, payload, etc.
3. Ensure weight/CG limits listed in Section 1 have not been exceeded.

2-6. 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 simply a guide to help the pilot check the condition of the helicopter. It may be as comprehensive as conditions warrant at the discretion of the pilot.

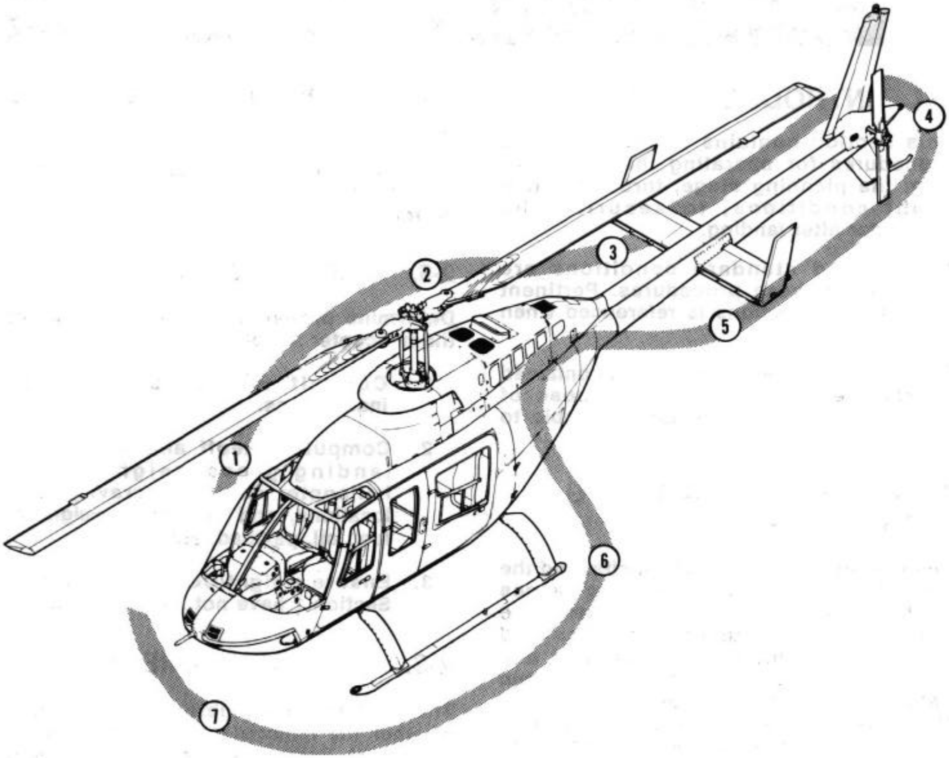


Figure 2-1. Preflight check sequence

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.

2-7. BEFORE EXTERIOR CHECK

1. Flight planning — Completed.
2. Publications — Checked.
3. Gross weight and CG — Computed.
4. Helicopter servicing — Completed.
5. Battery — Connected.

2-8. EXTERIOR CHECK

2-9. FUSELAGE — CABIN RIGHT SIDE

1. Right static port — Condition.
2. Cabin doors — Condition and security.
3. Windows — Condition and security.
4. Landing gear — Condition and ground handling wheel removed.
5. Forward and aft crosstube fairings — Secured, condition, and aligned.

2-10. FUSELAGE — CENTER RIGHT SIDE

1. Engine inlet — Condition; remove inlet covers.
2. Cabin roof, transmission cowling, and engine air inlet area — Cleaned of all debris and accumulated snow and ice; cowling secured.
3. Hydraulic system filters — Bypass indicator retracted.
4. Hydraulic actuators and lines — Condition, security, interference, leakage.
5. Forward fairing — Secured.
6. Transmission — Check oil level. Verify actual presence of oil in sight gage.
7. Transmission oil cooler lines — Condition and security.
8. Nodal beam — Check condition and security of elastomeric bearings, elastomeric straps, and fore and aft restraint damper.
9. 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.

10. Access door — Secured.
11. Rotor head — Condition.
12. Fuel filler cap — Visually check fuel level and cap secured.
13. Fuel sump — Drain fuel sample as follows:
    a. FUEL BOOST circuit breakers — Out.
    b. BAT switch — On.
    c. FUEL VALVE switch — OFF.
    d. PUSH FOR FUEL SUMP DRAIN button — Press, drain sample, then release.

NOTE

Forward fuel cells can be drained manually as desired.

14. A/F fuel filter — Drain and check before first flight of the day as follows:

    a. FUEL VALVE switch — ON.

    b. FUEL BOOST circuit breakers — In.

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

NOTE

Filter test button is located on top of fuel filter.

15. Fuel filter test button — Press and check FUEL FILTER caution light illuminated. Release switch and check light extinguished.

16. FUEL VALVE switch — OFF.

17. BAT switch — OFF.

18. Powerplant Area

    a. Main driveshaft aft 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.

    b. Engine — Condition; security of attachments. Evidence of oil leakage.

    c. Engine mounts — Condition and security.

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

    e. Fuel control and mechanical fuel pump — Security and condition; evidence of leakage, governor air lines.

    f. Hoses and tubing — Chafing, security, and condition.

19. Engine cowl — Secured.

20. Generator cooling scoop — Clear of debris.

21. Oil tank — Oil level, leaks, security, and cap secured.

22. Access door — Secured.

23. Aft fairing — Secured.

2-11. FUSELAGE — AFT RIGHT SIDE

1. Fuselage — Condition.
2. Tail rotor driveshaft cover — Condition and security.
3. Tailboom — Condition.
4. Horizontal stabilizer and position light — Condition and security.
5. Sync elevator — Check lateral freedom, bearing play, and clear of obstructions.
6. Main rotor blade — Condition.

2-12. FUSELAGE — FULL AFT

1. Vertical fin — Condition.
2. Tail rotor guard — Condition and security.
3. Anticollision light — Condition and security of lens.
4. Aft position light — Condition.
5. Tail rotor gearbox — Oil level, leaks and security.

6. Tail rotor — Tiedown removed, condition and free movement.

7. Tail rotor controls — Condition and security.

8. Tail rotor blades — Condition; tip block security, evidence of corrosion, and seal condition.

2-13. FUSELAGE — AFT LEFT SIDE

WARNING

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

1. Main rotor blade — Tiedown removed; condition.

2. Tailboom — Condition.

3. Tail rotor driveshaft cover — Condition and security.

4. Horizontal stabilizer and position light — Condition and security.

5. Sync elevator — Check lateral freedom, bearing play, and clear of obstructions.

6. Fuselage — Condition.

7. Forward tail rotor driveshaft coupling — Condition of splined adapter.

8. Oil cooler blower shaft hanger bearings — Evidence of grease leakage and overheating.

9. Oil cooler blower — Clear of obstruction and condition.

10. Oil cooler — Condition and leaks.

11. Oil cooler access door — Secured.

12. Aft fairing — Secured.

13. Baggage compartment — Cargo tied down, door secured.

14. Exhaust cover — Removed.

15. Powerplant Area

    a. Engine — Condition; security of attachments.

    b. Engine mounts — Condition and security.

    c. Exhaust stack — Condition and security.

    d. Evidence of fuel and oil leaks.

    e. Hoses and tubing for chafing and condition.

    f. Pneumatic lines — Condition and security.

    g. Linear actuator and governor control linkage — Condition and security.

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

    i. Air induction diffuser hose — Condition and security.

    j. Engine cowling — Secured.

    k. Air induction cowling — Secured.

    l. Cabin roof, transmission cowling, engine air inlet area, and plenum — Clear of all debris and accumulated snow and ice; cowling secured.

16. Transmission Area

a. Nodal beam — Condition and security of elastomeric bearings, elastomeric strap, and fore and aft restraint damper.

b. Transmission oil filter bypass button — Ensure not extended.

c. Main driveshaft forward coupling — Condition and evidence of grease leakage. Check paint strip for evidence of overheat indicated by brown color.

d. Cockpit indicator pressure lines — Condition and security.

e. Access door — Secured.

2-14. FUSELAGE — CABIN LEFT SIDE

1. Main rotor hub and yoke — Condition.

2. Main rotor blade doublers and skin — Condition.

3. Pitch horn trunnion bearing — Wear and security.

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

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

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

7. Forward fairing and access door — Secured.

8. Cabin doors and hinge pins — Condition and security.

9. Windows — Condition and security.

10. Hydraulic reservoir — Check fluid level.

11. Landing gear — Condition and ground handling wheel removed.

12. Forward and aft crosstube fairings — Secured, condition and aligned.

13. Left static port — Condition.

2-15. FUSELAGE — FRONT

1. Exterior surfaces — Condition.

2. Windshield — Condition and cleanliness.

3. Battery and vent lines — Condition and security.

4. HOUR METER circuit breaker — In.

5. FUEL BOOST LEFT circuit breaker — In.

6. Battery access door — Secured.

7. Pitot tube — Cover removed, clear of obstruction.

8. External power door — Condition and security.

NOTE

APU should be 500 amperes or less to reduce risk of starter damage from overheating.

9. Landing light glass — Condition.

10. Antennas — Condition and security.

11. Main rotor blade — Condition.

12. External power — Check BAT switch OFF and APU connected as desired.

2-16. INTERIOR AND PRESTART CHECK

1. Cabin interior — Clean; equipment secured.
2. Fire extinguisher — Condition and security.
3. Cabin loading — Refer to BHT-206L3-MD-1 to maintain CG within limits.
4. Passenger seat belts — Secured.
5. Copilot seat belt — Secured (if solo).
6. Doors — Secured.
7. Flight controls — Loosen frictions; check freedom of travel; position for start. Tighten frictions as desired.
8. Throttle — Check freedom of travel and IDLE REL operation. Return to closed position.
9. LDG LTS switch — OFF.
10. ENGINE ANTI-ICING switch — OFF.
11. HYDRAULIC SYSTEM switch — ON.
12. Radio and navigation equipment — OFF.
13. ALTIMETER — Set to field elevation.
14. Instruments — Static at zero.
15. FREE AIR temperature — Note indication.
16. Overhead switches — OFF.

NOTE

Effective helicopter S/N 51001 through 51389: 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 51390 and subsequent: With the INST LT switch (rheostat) on and CAUTION LIGHT switch positioned to DIM, the caution lights are dimmed to a fixed intensity and can not be adjusted by the INST LT switch.

17. Overhead circuit breakers — In.

WARNING

BOTH FUEL BOOST PUMPS SHALL BE ON DURING ENGINE OPERATION.

18. BAT switch — ON for battery or GPU start.
19. BAT switch — OFF for battery cart start.
20. Observe ENG OUT, TRANS OIL PRESS, ROTOR LOW RPM, and GEN FAIL caution/warning light segments illuminated and applicable audio signal(s) operative.
21. External power — Connected (if used).
22. Applicable RPM audio signals — Check.
23. WRN HORN MUTE button (if installed) — Press to mute.
24. CAUTION LT TEST button — Press to test.
25. TOT LT TEST button — Press; ensure red light on TURB OUT TEMP gage illuminates.
26. FUEL VALVE switch — ON, guard closed. Check FUEL pressure indication.
27. FUEL QTY — Check.
28. Rotor low RPM audio — Check as follows (if WARN HORN MUTE button is installed, disregard):

Collective pitch — Increase; ensure audio on. Fully down; ensure audio off.

29. Cyclic and pedals — Positioned for start.

30. POS LT switch — On for night operation.

31. ANTI COLL LT switch — On.

2-17. ENGINE STARTING

1. Collective pitch — Fully down.

2. GOV RPM switch — DECR for 3 seconds.

3. Throttle — Fully closed.

4. Rotors — Clear.

NOTE

If TOT gage has a red triangle at 826°C, refer to BHT-206L3-FMS-17 for alternate 10 second start limit.

5. STARTER button — Press to engage. (Observe engine starter limitations.)

6. TURB OUT TEMP — 150°C or below.

CAUTION

ENGINE STARTS BELOW 716°C *TURB OUT TEMP* FROM INTRODUCTION OF FUEL AND IN EXCESS OF 40 SECONDS MAY BE DETRIMENTAL TO TURBINE COMPONENTS. OPTIMUM STARTS OCCUR WHEN THE STARTING *TURB OUT TEMP* IS MAINTAINED BETWEEN 716°C AND 768°C, WITH START TIMES LESS THAN 40 SECONDS.

NOTE

At the appropriate GAS PRODUCER RPM and TURB OUT TEMP, introduce fuel with the throttle to obtain the initial TURB OUT TEMP rise. Observe the 927°C limit. After initial TURB OUT TEMP rise, modulate throttle to maintain TURB OUT TEMP between 716°C and 768°C. This sequence should provide optimum starts in less than 40 seconds from the introduction of fuel. If limits are exceeded or TURB OUT TEMP warning light illuminates, refer to Model 206L-3 Maintenance Manual.

7. Throttle — At 12% GAS PRODUCER RPM modulate to idle to maintain 716°C to 768°C TURB OUT TEMP during start cycle.

8. TURB OUT TEMP — Monitor. (Do not exceed 10 seconds above 768°C or a maximum of 927°C.)

CAUTION

IF MAIN ROTOR IS NOT ROTATING BY 25% *GAS PRODUCER* RPM, ABORT START.

NOTE

ENG OUT light extinguishes at 55 ± 3% GAS PRODUCER RPM.

9. STARTER — Release at 58% GAS PRODUCER RPM.

10. ENG OIL and XMSN OIL pressures — Check.

CAUTION

IF THE ENGINE HAS BEEN SHUT DOWN FOR MORE THAN 15

MINUTES, STABILIZE AT IDLE FOR ONE MINUTE BEFORE INCREASING POWER.

NOTE

During cold temperature operations, stabilize at idle until ENG OIL temperature reaches 0°C.

11. GAS PRODUCER — 63 to 65% RPM.
12. Auxiliary power — Disconnect. BAT switch — On.
13. Throttle — Open to 70% GAS PRODUCER RPM.
14. GEN switch — On.

2-18. PRELIMINARY HYDRAULIC SYSTEMS CHECK

NOTE

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

HYDRAULIC SYSTEM switch — OFF, then ON.

2-19. ENGINE RUNUP

1. Throttle — Increase smoothly to fully open position. Check ROTOR LOW RPM caution light extinguished at 90% ROTOR RPM.
2. GOV RPM switch — Check POWER TURBINE governor actuator range 97 to 100% RPM; set at 100% RPM.
3. Radio and navigation equipment — ON.
4. ELT (if installed) — Check for inadvertent transmission.
5. Flight controls — Check freedom with minimum friction.

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 flight control actuator.

2-20. HYDRAULIC SYSTEMS CHECK

1. Collective — Fully down.
2. ROTOR — 100% RPM.
3. HYDRAULIC SYSTEM switch — OFF.
4. Cyclic — Centered.
5. 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.
6. Collective — Check for normal operations by increasing collective control slightly (1 to 2 inches). Repeat 2 to 3 times as required. Return to fully down position.
7. HYDRAULIC SYSTEM switch — ON.
8. Cyclic and collective friction — Set as desired.
9. ENGINE ANTI-ICING switch — ON; check for TURB OUT TEMP increase.
10. ENGINE ANTI-ICING switch — OFF; check TURB OUT TEMP returns to normal; then switch ON if required.

NOTE

If temperature is below 4.4°C (40°F) and visible moisture is present, the ENGINE ANTI-ICING shall be ON.

2-21. BEFORE TAKEOFF

1. Light switches — As required.
2. INST LT switch (rheostat) — As desired.
3. Radio(s) — Check as required.
4. Flight controls — Position and adjust frictions for takeoff.
5. Throttle — Fully open. Check 100% POWER TURBINE RPM.
6. Engine, transmission, and electrical instruments — Within limits.
7. Flight and navigation instruments — Check.
8. FUEL QTY — Note indication.
9. FUEL QTY switch (if installed) — FWD. Note fuel remaining in forward cells.

2-22. TAKEOFF

1. Collective pitch — Increase to hover.
2. Directional control — As required to maintain desired heading.
3. Cyclic control — Apply as required to accelerate smoothly.
4. Collective — Apply minimum necessary to obtain desired rate of climb and airspeed. Monitor engine limits and adjust collective as necessary.

2-23. IN-FLIGHT OPERATIONS

1. AIRSPEED — As desired (not to exceed V_{NE} at flight altitude).
2. ENGINE ANTI-ICING switch — ON in visible moisture when ambient temperature is at or below 4.4°C (40°F).

NOTE

When ENGINE ANTI-ICING is ON, TURB OUT TEMP will increase. Monitor TURB OUT TEMP when selecting ENGINE ANTI-ICING at high power settings.

3. ALTIMETER — Within limits.

NOTE

Maximum pressure altitude is 20,000 feet. For high altitude operation, refer to appropriate operating rules for oxygen requirements.

4. FUEL QTY gage — For helicopters equipped with FUEL QTY switch, check fuel is transferring from forward to main cell at total fuel quantity approximately 407 LBS and below.

2-24. DESCENT AND LANDING

1. Flight controls — Adjust friction as desired.
2. Throttle — Fully open. Check 97 to 100% POWER TURBINE RPM.

NOTE

Decreasing the collective pitch to low power may result in RPM overspeed. For prolonged low power approaches, RPM can be controlled by a small amount of collective pitch increase (no significant torque increase) and/or by decreasing the GOV RPM switch to obtain 100% POWER TURBINE RPM. This will maintain POWER TURBINE RPM within limits during low power descents; however, the GOV RPM switch should be positioned to INCR as collective is increased. (Refer to POWER TURBINE RPM in LIMITATIONS, Section 1.)

3. Flight path — As required for type of approach.

4. LDG LTS switch — As desired.

2-25. ENGINE SHUTDOWN

1. LDG LTS switch OFF.

2. Throttle — Reduce to idle stop. Check ROTOR LOW RPM caution light illuminated and audio on (with WRN HORN MUTE installed) at 90% ROTOR RPM.

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

4. Flight controls — Position for shutdown, apply friction.

5. ENGINE ANTI-ICING switch — OFF.

6. TURB OUT TEMP — Stabilized at idle for two minutes.

7. ELT (if installed) — Check for inadvertant transmission.

8. Radios and navigation equipment — OFF.

9. IDLE REL button — Press and hold.

CAUTION

TO ENSURE ENGINE CUTOFF, HOLD THROTTLE IN CLOSED POSITION UNTIL *GAS PRODUCER* DECELERATES TO 0% RPM AND *TURB OUT TEMP* IS STABILIZED.

10. Throttle — Closed; check TURB OUT TEMP and GAS PRODUCER RPM decreasing, ENG OUT warning light illuminated, and audio on at 55 ± 3% GAS PRODUCER RPM.

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

NOTE

The left fuel boost pump will continue to operate until the FUEL VALVE switch is positioned to OFF. This pump operates directly from the battery and will not be deactivated when the BAT switch is OFF. Battery power will be depleted if switch remains on.

12. FUEL VALVE switch — OFF.

13. During rotor coast down, displace cyclic slightly into direction of wind to minimize static stop contact.

14. Pilot — Remain at flight controls until rotor has come to a complete stop.

15. GEN switch — OFF.

16. All overhead switches — OFF.

17. BAT switch — OFF.

2-26. AFTER EXITING HELICOPTER

If any of the following conditions exist:

1. Thunderstorms are in the local area or forecasted.

2. Winds in excess of 20 knots or a gust spread of 15 knots exists or is forecasted.

3. Helicopter is parked within 150 feet of hovering or taxiing aircraft that are in excess of basic gross weight of helicopter.

4. Helicopter to be left unattended.

Perform the following:

1. Moor aft main rotor blade with tiedown assembly by drawing blade down lightly against the static stop and tying web strap to tailboom.

2. Moor tail rotor with tiedown strap and tie loosely to tailboom to prevent excessive flapping.

3. Install exhaust cover and engine inlet covers.

NOTE

Refer to BHT-206L3-MD-1 for additional tiedown data.

Section 3

EMERGENCY AND MALFUNCTION PROCEDURES

TABLE OF CONTENTS

LIST OF TABLES

Section 3

EMERGENCY AND MALFUNCTION PROCEDURES

3-1. INTRODUCTION

The following procedures contain the indications of failures or malfunctions which affect safety of the crew, the helicopter, ground personnel or property; the use of emergency features of primary and backup systems; and appropriate warnings, cautions, and explanatory notes. Tables 3-1 and 3-2 list fault conditions and corrective actions for warning lights and caution lights respectively.

Helicopter should not be operated following any precautionary landing until cause of malfunction has been determined and corrective action taken.

3-2. DEFINITIONS

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

LAND AS SOON AS POSSIBLE	Land without delay at the 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 flight are at the discretion of the pilot. Extended flight beyond the nearest approved landing area is not recommended.

The following terms are used to describe the operating condition of a system, subsystem, assembly, or component.

Affected	Fails to operate in the intended or usual manner.
Normal	Operates in the intended or usual manner.

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

3-3. CABIN VENTILATION

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

1. VENT — Open.
2. Cabin windows — Open for maximum ventilation.

Table 3-1. Warning lights

PANEL WORDING	FAULT CONDITION	CORRECTIVE ACTION
ENG OUT (audio if functional)	GAS PRODUCER less than 55 ± 3% RPM; POWER TURBINE RPM decreasing	Verify engine condition. Accomplish engine failure procedure.
BATTERY HOT	Battery overheating. Temperature 140°F (60°C) or higher.	Turn BAT switch OFF and land as soon as practical. If BATTERY RLY caution light illuminates, land as soon as possible.

Table 3-1. Warning lights (Cont)

PANEL WORDING	FAULT CONDITION	CORRECTIVE ACTION
LITTER DOOR OPEN	Litter door not securely latched.	Close door securely before flight. If light illuminates during flight, land as soon as practical.

Table 3-2. Caution lights

PANEL WORDING	FAULT CONDITION	CORRECTIVE ACTION
ROTOR LOW RPM (audio & light)	ROTOR below 90% RPM	Reduce collective pitch and ensure throttle is fully open. Light and audio should cease when ROTOR increases above approximately 90% RPM.
TRANS OIL PRESS	XMSN OIL pressure is below minimum.	Reduce power; verify fault with gage. Land as soon as possible.
TRANS OIL TEMP	XMSN OIL temperature is at or above red line.	Reduce power; verify fault with gage. Land as soon as possible.
BATTERY RLY	Battery relay has malfunctioned to closed position with BAT switch OFF. Battery will not drop off line.	If BATTERY HOT light is illuminated, land as soon as possible.
FUEL LOW	Approximately 50-75 LBS of fuel remain.	Verify FUEL QTY. Land as soon as practical.
ENG CHIP	Metallic particles in engine oil.	Land as soon as possible.
TRANS CHIP	Metallic particles in transmission oil.	Land as soon as possible.
FUEL FILTER	A/F fuel filter clogged.	Land as soon as possible. Clean before next flight.
T/R CHIP	Metallic particles in tail rotor gearbox oil.	Land as soon as possible.
GEN FAIL	Failure of generator.	GEN switch — RESET then ON. If GEN FAIL light remains illuminated, GEN switch — OFF. Land as soon as practical.

Table 3-2. Caution lights (Cont)

PANEL WORDING	FAULT CONDITION	CORRECTIVE ACTION
R/FUEL PUMP	Right pump of the dual boost pump assembly failed.	Descend below 6,000 feet pressure altitude if flight permits. Land as soon as practical **WARNING** IF BOTH FUEL BOOST PUMPS FAIL, UNUSABLE FUEL MAY BE AS HIGH AS 160 POUNDS (73 KILOGRAMS) DUE TO INABILITY TO TRANSFER FUEL FROM FORWARD CELLS.
L/FUEL PUMP	Left pump of the dual boost pump assembly failed.	Descend below 6,000 feet pressure altitude if flight permits. Land as soon as practical.

3-4. ENGINE EMERGENCIES

3-5. ENGINE FIRE DURING START OR SHUTDOWN

•INDICATIONS:

1. Excessive TURB OUT TEMP.
2. Visible smoke or fire.

•PROCEDURE:

1. Throttle — Closed.
2. FUEL VALVE switch — OFF.
3. STARTER switch — Press to motor engine until TURB OUT TEMP stabilizes at normal temperature.
4. Shut down and exit helicopter.

3-6. ENGINE FIRE DURING FLIGHT

•INDICATIONS:

1. Smoke.
2. Fumes.
3. Fire.

•PROCEDURE:

1. Throttle — Closed.
2. Immediately enter autorotation.
3. FUEL VALVE switch — OFF.
4. BAT switch — OFF.
5. GEN switch — OFF.
6. Execute autorotative descent and landing.

NOTE

Do not restart engine until corrective maintenance has been performed.

3-7. ENGINE FAILURE — HOVERING IN GROUND EFFECT

•INDICATIONS:

1. Left yaw.
2. ENG OUT warning light illuminated.
3. Engine out audio (if functional) activated when GAS PRODUCER drops below 55% RPM.
4. ROTOR RPM decreases with ROTOR LOW caution light and audio on when ROTOR drops below 90% RPM.
5. Engine instruments indicate power loss.

•PROCEDURE:

1. Maintain heading and landing attitude.
2. Collective — Adjust to control rate of descent and cushion landing. It is recommended that level touchdown be made prior to passing through 70% ROTOR RPM.
3. Land.
4. Shut down helicopter.

3-8. ENGINE FAILURE — OUT OF GROUND EFFECT

•INDICATIONS:

1. Left yaw.
2. ENG OUT warning light illuminated.
3. Engine out audio (if functional) activated when GAS PRODUCER drops below 55% RPM.
4. ROTOR RPM decreases with ROTOR LOW caution light and audio on when ROTOR drops below 90% RPM.
5. Engine instruments indicate power loss.

•PROCEDURE:

1. Maintain heading and attitude control.

NOTE

ROTOR RPM maintained at high end of operating range will provide maximum rotor energy to accomplish landing, but will cause an increased rate of descent

2. Collective — Adjust as required to maintain 90 to 107% ROTOR RPM.

CAUTION

AVOID LARGE FORWARD CYCLIC INPUTS UNTIL COLLECTIVE IS FULLY DOWN AND ROTOR DECAY HAS CEASED.

NOTE

Maximum AIRSPEED for steady autorotation is 100 KIAS (115 MPH). Autorotation above this speed results in high rates of descent and low ROTOR RPM. A blue radial is installed on the AIRSPEED indicator as a reminder of this condition.
AIRSPEED for Minimum Rate of Descent is 52 KIAS (60 MPH). AIRSPEED for Maximum Glide Distance is 69 KIAS (80 MPH). Nominal autorotative AIRSPEED is 61 KIAS (70 MPH).

3. Cyclic — Adjust to obtain desired autorotative AIRSPEED.

4. Attempt engine restart if ample altitude remains. (Refer to ENGINE RESTART.)

5. FUEL VALVE switch — OFF.

6. At low altitude:

   a. Throttle — Closed.

   b. Flare to lose airspeed.

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

CAUTION

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

8. Complete helicopter shutdown.

3-9. ENGINE RESTART

An engine restart may be attempted in flight if time and altitude permit. Successful starts have been accomplished up to and including 20,000 feet pressure altitude.

CAUTION

IF THE CAUSE OF FAILURE IS OBVIOUSLY MECHANICAL AS EVIDENCED BY ABNORMAL METALLIC OR GRINDING SOUNDS, DO NOT ATTEMPT A RESTART.

•PROCEDURE:

1. Maintain control of helicopter.
2. Collective — Adjust to maintain 90 to 107% ROTOR RPM.
3. Throttle — Closed.
4. AIRSPEED — 52 KIAS (60 MPH).
5. FUEL VALVE switch — ON.
6. STARTER switch — Press to engage.

CAUTION

IF START IS NOT INITIATED BEFORE *GAS PRODUCER* DECREASES BELOW 30% RPM (APPROXIMATELY 10 SECONDS AFTER ENGINE FAILURE), THROTTLE SHALL BE MODULATED DURING START TO PREVENT EXCEEDING *TURB OUT TEMP* LIMIT.

7. Throttle — Idle.

NOTE

If TOT gage has a red triangle at 826°C, refer to BHT-206L3-FMS-17 for alternate TURB OUT TEMP.

8. TURB OUT TEMP — Monitor range 716 to 768°C.
9. Throttle — Advance smoothly to fully open position.

If a restart is unsuccessful, abort start and secure engine as follows:

10. Throttle — Closed.
11. FUEL VALVE switch — OFF.
12. Accomplish autorotative descent and landing.

3-10. ENGINE OVERSPEED

An engine overspeed may be due to one of the following: fuel control failure, power turbine governor failure, or mechanical drive failure to the power turbine or gas producer accessory sections.

If the GAS PRODUCER RPM can be controlled with throttle, then a power turbine governor failure or power turbine accessory drive failure is indicated.

If the GAS PRODUCER RPM and POWER TURBINE RPM are unstable and cannot be controlled with throttle, then the fuel control has malfunctioned or the gas producer accessory drive has failed. A gas producer accessory drive failure is indicated by a rapid loss of ENG OIL pressure.

•INDICATIONS:

1. Increase in ROTOR RPM.
2. Increase in POWER TURBINE RPM.
3. Increase in GAS PRODUCER RPM.
4. Increase in TORQUE.

•PROCEDURE:

1. Throttle — Retard.
2. GAS PRODUCER RPM or POWER TURBINE RPM — Stabilized with throttle control.
3. TURB OUT TEMP — Monitor for normal operation.
4. Collective — Adjust as required to maintain 90 TO 107% ROTOR RPM.
5. Cyclic — Adjust as required to maintain desired AIRSPEED.
6. Prepare for power-off landing.

CAUTION

IF RPM AND *TURB OUT TEMP* CANNOT BE MAINTAINED, THE ENGINE MUST BE SHUT DOWN.

3-11. ENGINE UNDERSPEED

•INDICATIONS:

1. Abrupt decrease in GAS PRODUCER RPM.

2. Subsequent decrease in POWER TURBINE RPM.

3. Possible decrease in ROTOR RPM.

4. Decrease in TORQUE.

•PROCEDURE:

1. Collective — Adjust as required to maintain 90 to 107% ROTOR RPM.

2. Throttle — Idle stop.

3. Establish autorotative glide.

4. Prepare for power-off landing.

3-12. ENGINE COMPRESSOR STALLS

•INDICATIONS:

1. Engine pops.

2. High or erratic TURB OUT TEMP.

3. Decreasing or erratic GAS PRODUCER RPM or POWER TURBINE RPM.

4. TORQUE oscillations.

•PROCEDURE:

1. Collective — Reduce power, maintain slow cruise flight.

2. TURB OUT TEMP and GAS PRODUCER RPM — Check for normal indications.

3. ENGINE ANTI-ICING switch — ON.

NOTE

The severity of the compressor stalls will dictate if the engine should be shut down and treated as an engine failure. Violent stalls can cause damage to the engine and drive system components, and must be handled as an emergency condition. Stalls of a less severe nature (one or two low intensity pops) may permit continued operation of the engine at a reduced power level, avoiding the condition that resulted in the compressor stall.

If pilot elects to continue flight:

4. Collective — Increase slowly to achieve desired power level.

5. TURB OUT TEMP and GAS PRODUCER RPM — Monitor for normal response.

6. Land as soon as practical.

If pilot elects to shut down engine:

7. Throttle — Closed.

8. FUEL VALVE switch — OFF.

9. Collective — Adjust as required to maintain 90 to 107% ROTOR RPM.

10. Cyclic — Adjust as required to maintain desired AIRSPEED.

11. Prepare for power-off landing.

3-13. 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.

3-14. ENGINE OIL TEMPERATURE HIGH

Land as soon as possible.

3-15. HYDRAULIC SYSTEM FAILURE

•INDICATIONS:

1. Grinding or howling noise from pump.
2. Increase in force to move flight controls.
3. Feedback forces may be evident during flight control movement.
4. Cyclic and collective movements are rate limited.

•PROCEDURE:

1. Reduce AIRSPEED to 61 to 69 KIAS (70 to 80 MPH).
2. HYDR SYSTEM circuit breaker — Out. If power not restored, push breaker in.
3. HYDRAULIC SYSTEM switch — ON; OFF if power not restored.
4. Land as soon as practical.
5. A run-on landing at approximately 9 KIAS (10 MPH) is recommended.

3-16. TAIL ROTOR FAILURES

There is no single emergency procedure for all types of antitorque malfunctions. The key to successful handling of a tail rotor emergency lies in the pilot's ability to quickly recognize the type of malfunction that has occurred.

3-17. COMPLETE LOSS OF TAIL ROTOR THRUST

This is a situation involving a break in the drive system (e.g., severed driveshaft), wherein the tail rotor stops turning and delivers no thrust.

•INDICATIONS:

1. Uncontrollable yawing to the right (left side slip).
2. Nose down tucking.
3. Possible roll of the fuselage.

NOTE

The severity of the initial reaction of the helicopter will be affected by AIRSPEED, cabin loading, center of gravity, power being used, and density altitude.

•PROCEDURE:

HOVERING

Chop throttle and perform a hovering autorotation landing. A slight rotation can be expected on touchdown.

IN-FLIGHT

Reduce throttle to idle, immediately enter autorotation, and maintain a minimum AIRSPEED of 52 KIAS (60 MPH) during descent.

NOTE

The large vertical fin may permit controlled flight at low power levels and sufficient AIRSPEED when a suitable landing site is not available. During the final stages of the approach, a mild flare should be executed, making sure that all power to the rotor is off. Maintain the helicopter in a slight flare and use the collective smoothly to execute a soft, slightly nose-high landing. Landing on the aft portion of the skids will tend to correct side drift. This technique will, in most cases, result in a run-on type landing.

3-18. FIXED PITCH FAILURES

This is a situation involving the inability to change the tail rotor thrust (blade angle) with the anti-torque pedals due to a mechanical problem with the anti-torque system.

•INDICATIONS:

1. Lack of directional response.
2. Locked pedals.

NOTE

If the pedals cannot be moved with a moderate amount of force, do not attempt to apply a maximum effort, since a more serious malfunction condition could result. If the helicopter is in a trimmed condition when the malfunction is discovered, the TORQUE and AIRSPEED should be noted and the aircraft flown to a suitable landing area. Combinations of TORQUE, ROTOR RPM, and AIRSPEED will correct or aggravate a yaw attitude, and these are what will be used to land the helicopter.

•PROCEDURE:

HOVERING

Do not chop throttle unless a severe right yaw occurs. If pedals lock in any position at a hover, landing from a hover can be accomplished with greater safety under power-controlled flight rather than by chopping throttle and entering autorotation.

IN-FLIGHT — LEFT PEDAL APPLIED

In a high power condition, the helicopter will yaw to the left when power is reduced. Power and AIRSPEED should be adjusted to a value where a comfortable yaw angle can be maintained. If AIRSPEED is increased, the vertical fin will become more effective and an increased left yaw attitude will develop. To accomplish landing, establish a power-on approach with sufficiently low AIRSPEED (zero if necessary) to attain a rate of descent with a comfortable sideslip angle. (A decrease in POWER TURBINE RPM decreases tail rotor thrust.) As collective is increased just before touchdown, left yaw will be reduced.

IN-FLIGHT — RIGHT PEDAL APPLIED

In cruise flight or reduced power situation, the helicopter will yaw to the right when power is increased. A low power run-on type landing will be necessary by gradually reducing throttle to maintain heading while adding collective to cushion the landing. If right yaw becomes excessive, roll off the throttle completely.

3-19. ELECTRICAL FAILURES

3-20. GENERATOR FAILURE

•INDICATIONS:

1. GEN FAIL caution light illuminated.
2. DC loadmeter indicates 0% LOAD.

•PROCEDURE:

1. Check GEN FIELD and GEN RESET circuit breakers in.
2. Place GEN switch to RESET position, then return to GEN position.
3. If power not restored, place GEN switch to OFF; land as soon as practical.

3-21. EXCESSIVE ELECTRICAL LOAD

•INDICATIONS:

1. DC loadmeter indicates excessive loads.

2. Smoke or fumes.

•PROCEDURE:

1. GEN switch — OFF.

2. BAT switch — OFF.

3. LEFT FUEL BOOST circuit breaker — Check in.

WARNING

ALTITUDE MUST BE REDUCED BELOW 6,000 FEET PRESSURE ALTITUDE PRIOR TO BATTERY DEPLETION. UNUSABLE FUEL MAY BE AS HIGH AS 160 LBS (73 KILOGRAMS) AFTER BATTERY IS DEPLETED DUE TO INABILITY TO TRANSFER FUEL FROM THE FORWARD CELLS.

NOTE

With all electrical equipment OFF, the battery, when 80% charged, will operate the left fuel boost pump approximately 3 hours to transfer fuel from the forward fuel cells and maintain the helicopter within CG limits.

For night operation, approximately one hour of battery power will be available.

4. Land as soon as practical.

3-22. FUEL TRANSFER FAILURE

Applicable to helicopters equipped with FUEL QTY switch.

A fuel transfer failure will result in trapped fuel in the forward cells and reduce usable fuel by the amount remaining in the forward cells.

•INDICATIONS:

At total FUEL QTY of approximately 407 pounds and below, FUEL QTY in forward cells remains constant.

•PROCEDURE:

1. Determine FUEL QTY in forward cell.

2. Subtract quantity of fuel trapped in forward cells from total to determine usable fuel remaining.

3. Plan landing accordingly.

Section 4

PERFORMANCE

TABLE OF CONTENTS

LIST OF FIGURES

Section 4

PERFORMANCE

4-1. POWER ASSURANCE CHECK

A Power Assurance Check chart is provided for the Allison Model 250-C30P engine (refer to figure 4-1). The Power Assurance 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.

Figure 4-1 may be used to monitor the engine performance periodically.

To perform power assurance check, turn off all sources of bleed air, including ENGINE ANTI-ICING. Establish level flight at an AIRSPEED of 85 to 105 KIAS or V_{NE}, whichever is lower.

NOTE

For altitudes above approximately 8000 feet, it may be desirable to check engine power during IGE hover prior to takeoff. The Power Assurance Check chart can be used to accomplish this procedure. The IGE hover installation losses require as much as 2% more power than in flight. Therefore, the hover power check may be 2% below that shown on figure 4-1, and still achieve predicted flight manual performance.

Record the following information from cockpit instruments:

H_P	(Example 10,000 ft)
OAT	(Example 25°C)
TOT	(Example 720°C)
TORQUE	(Actual reading)

Enter Power Assurance Check chart at observed OAT (Example 25°C), proceed vertically to intersect indicated TOT (Example 720°C), follow horizontally to intersect H_P (Example 6000 feet), then drop vertically to read minimum torque available (81%).

NOTE

If cruise power check cannot be accomplished below helicopter 85% torque/84 KIAS V_{NE} limitation, perform check at a higher altitude or in a stabilized 57 KIAS climb and subtract 1% from the chart percent torque reading. For the previous example, the chart percent torque would become 96%.

If actual torque indication is the same or greater than the required chart torque, engine power equals or exceeds minimum performance specification and the performance data contained in this manual can be achieved.

If actual torque indication is less than the required chart torque, engine power is less than minimum specification and all performance data contained in this manual

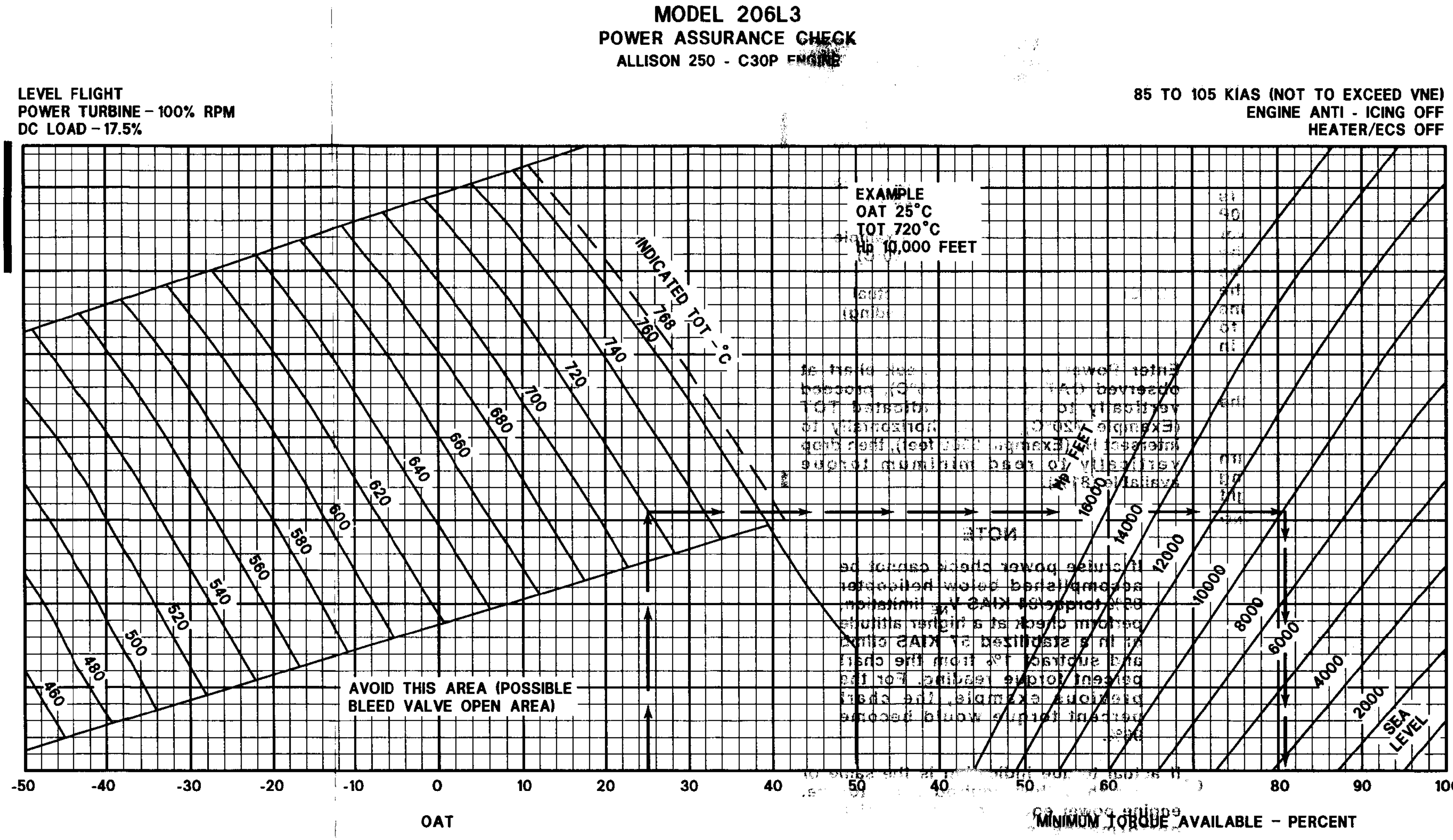


Figure 4-1. Power assurance check

206L3-FM-4-1

performance data contained in this manual can be achieved.

If actual torque indication is less than the required chart torque, engine power is less than minimum specification and all performance data contained in this manual cannot be achieved. Refer to the appropriate maintenance manual to determine cause of low power.

4-2. DENSITY ALTITUDE

A Density Altitude Chart (figure 4-2) is provided to aid in calculation of performance and limitations. Density altitude (H_D)is an expression of the density of the air in terms of height above sea level; hence, the less dense the air, the higher the density altitude. For standard conditions of temperature and pressure, density altitude is the same as pressure altitude (H_P). As temperature increases above standard for any altitude, the density altitude will also increase to values higher than pressure altitude. Figure 4-2 expresses density altitude as a function of pressure altitude and temperature.

The chart also 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 the ambient temperature is -15°C and the pressure altitude is 6000 feet, find the density altitude ($1/\sqrt{\sigma}$) and true airspeed for 100 KCAS.

Solution:

a. Enter the bottom of the chart at -15°C.

b. Move vertically upward to the 6000 foot pressure altitude line.

c. From this point, move horizontally to the left and read a density altitude of 4000 feet and move horizontally to the right and read $1/\sqrt{\sigma} = 1.06$.

d. True airspeed = KCAS $\times$ $1/\sqrt{\sigma} = 100 \times 1.06 = 106$ KTAS.

4-3. IGE AND OGE HOVER CEILINGS

NOTE

Hover performance charts are based on 100% ROTOR RPM.

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. Each chart is divided into two areas.

AREA A (unshaded area) as shown on the hover ceiling charts presents hover performance for which satisfactory stability and control has been demonstrated in relative winds of 26 knots (30 MPH) sideward and rearward at all loading conditions.

NOTE

Engine TOT will rise noticeably when hovering downwind. Avoid hovering downwind when operating near TOT limits.

Tail rotor control margin and/or control of engine temperature (TOT) may preclude operation in AREA B of the hover ceiling charts when the relative wind is in the CRITICAL WIND AZIMUTH AREA.

AREA B (shaded area) as shown on hover ceiling charts presents additional hover performance which can be achieved in CALM WINDS or winds outside the CRITICAL RELATIVE WIND AZIMUTH AREA. Refer to figure 4-5.

DENSITY ALTITUDE CHART

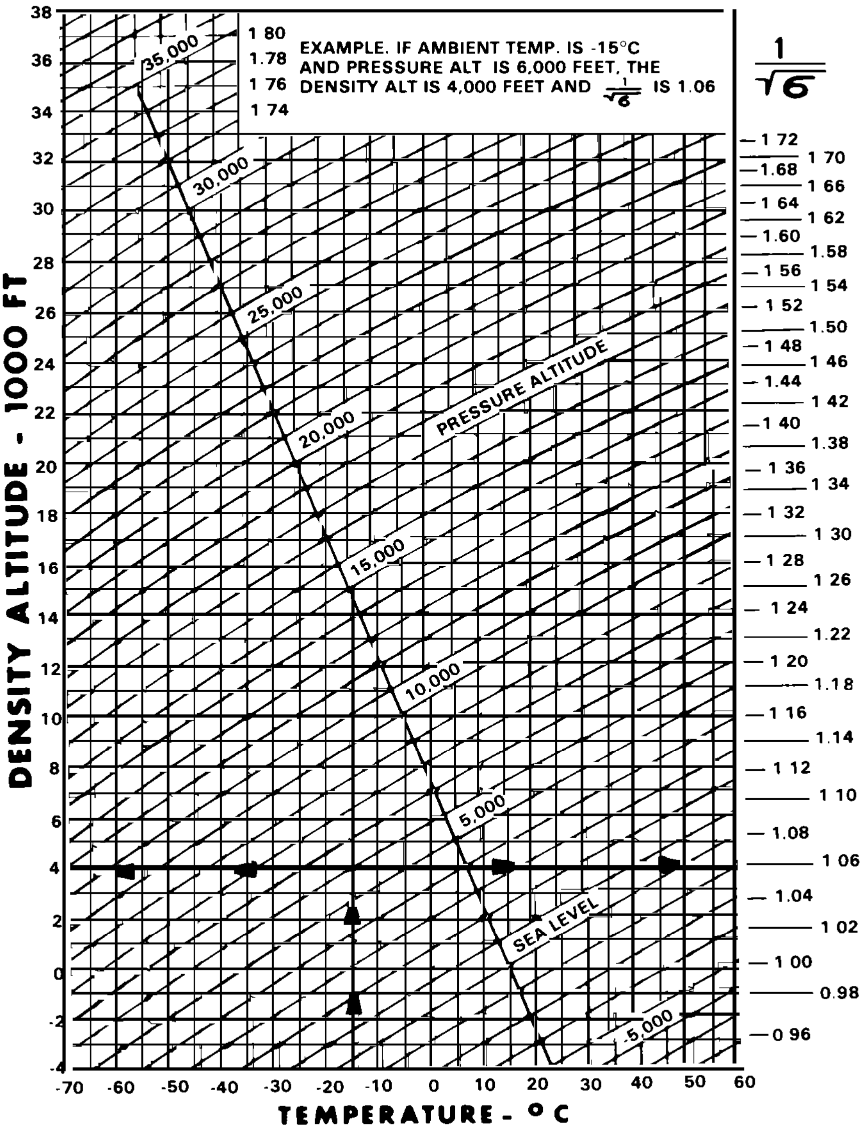


Figure 4-2. Density altitude chart

HOVER CEILING
IN GROUND EFFECT
−25°C TO 51.7°C

TAKEOFF POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

SKID HEIGHT 2.5 FT. (0.7 METER)
ENGINE ANTI-ICING OFF

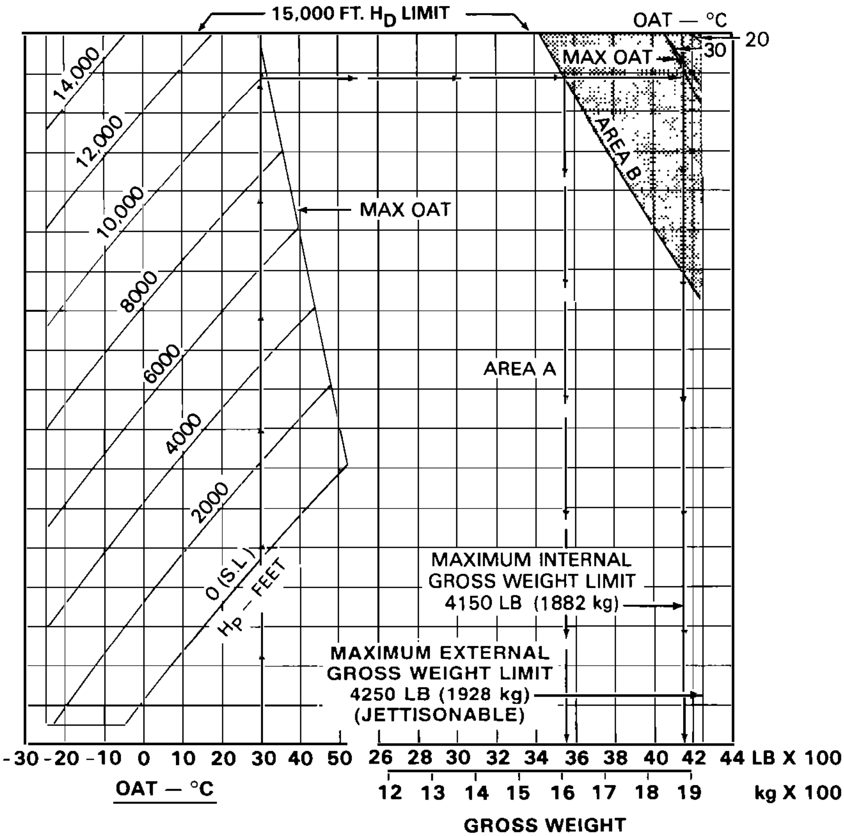


Figure 4-3. Hover ceiling — in ground effect (Sheet 1 of 2)

HOVER CEILING
IN GROUND EFFECT
−25°C TO 5°C

POWER — SEE NOTE BELOW
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

SKID HEIGHT 2.5 FT. (0.7 METER)
ENGINE ANTI-ICING ON

NOTE: THIS HELICOPTER CAN BE HOVERED IGE AT MAXIMUM GROSS WEIGHT WITH LESS THAN TAKEOFF POWER.

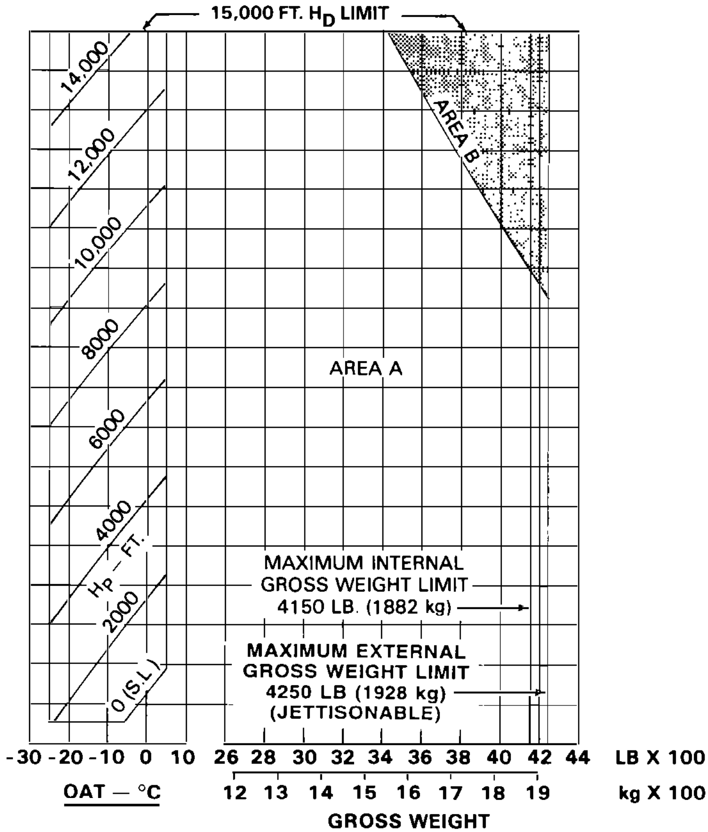


Figure 4-3. Hover ceiling — in ground effect (Sheet 2 of 2)

HOVER CEILING
OUT OF GROUND EFFECT
−25°C TO 51.7°C

TAKEOFF POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

SKID HEIGHT 40 FT. (12.2 METERS)
ENGINE ANTI-ICING OFF

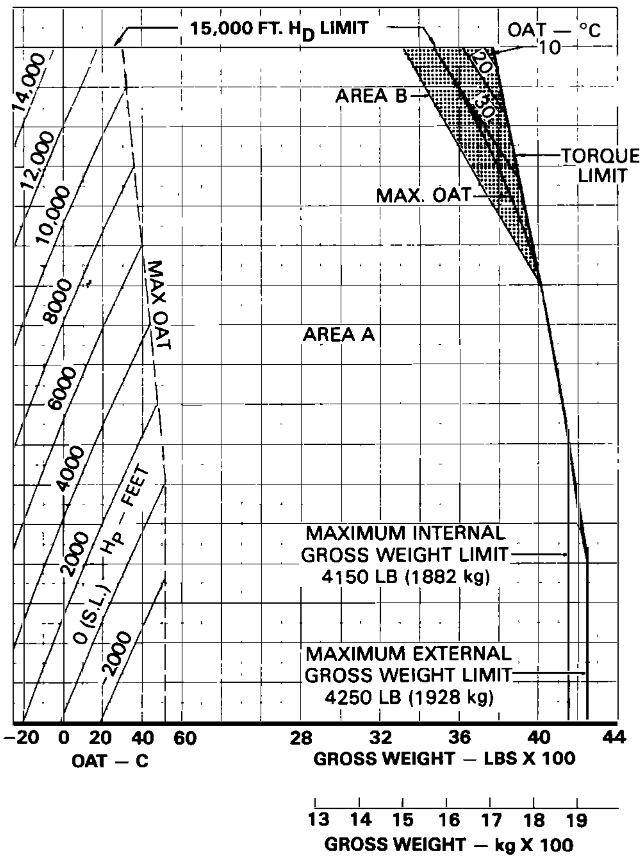


Figure 4-4. Hover ceiling — out of ground effect (Sheet 1 of 2)

HOVER CEILING
OUT OF GROUND EFFECT
−25°C TO 5°C

TAKEOFF POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

SKID HEIGHT 40 FT. (12.2 METERS)
ENGINE ANTI-ICING ON

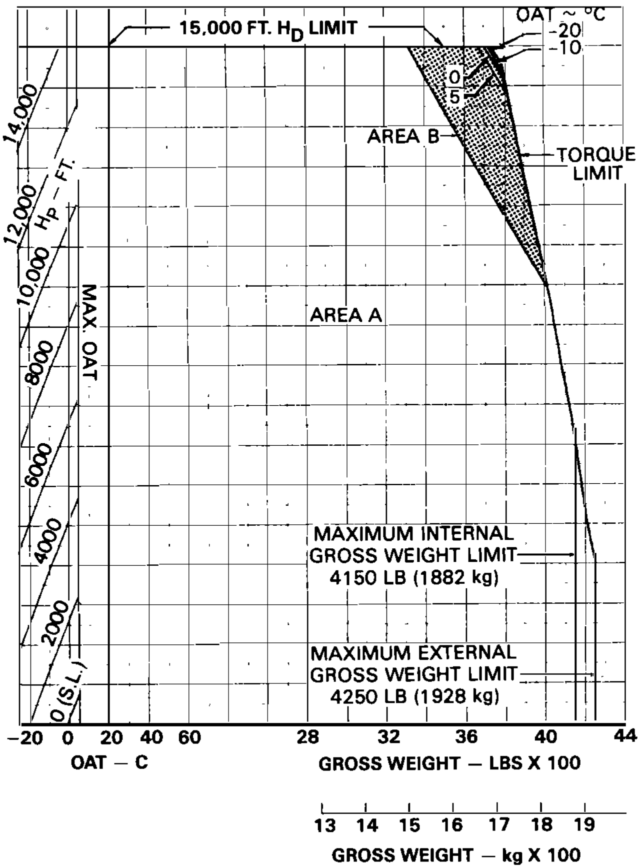


Figure 4-4. Hover ceiling — out of ground effect (Sheet 2 of 2)

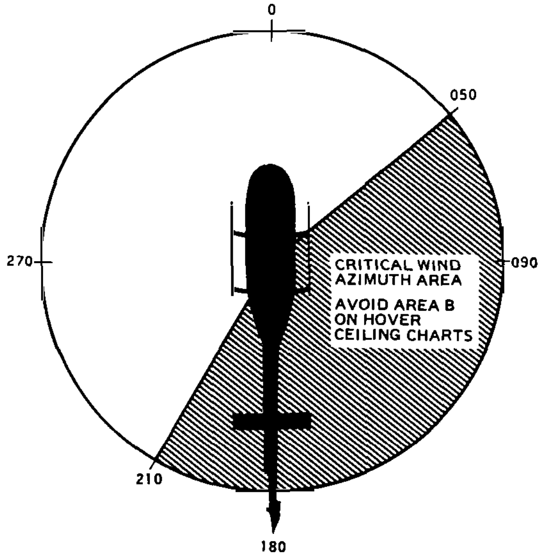


Figure 4-5. Critical relative wind azimuths

CAUTION

CAUTION SHOULD BE EXERCISED WHEN OPERATING AT LOW AIRSPEEDS ABOVE ALTITUDES PUBLISHED IN PERFORMANCE CHARTS. TAIL ROTOR EFFECTIVENESS MAY BE MARGINAL AT HIGH POWER SETTINGS UNDER THESE CONDITIONS.

The following example is for use with the Hover Ceiling — In Ground Effect chart with ENGINE ANTI-ICING — OFF, and is typical for use of all other hover ceiling charts.

- EXAMPLE:

What gross weight hover capability could be expected at a site having the following conditions:

H_P = 10,000 ft.

OAT = 30°C

From the appropriate IGE chart obtain:

A maximum of 3550 pounds (1610 kilograms) for all allowable wind conditions, and a maximum of 4150 pounds (1882 kilograms) when wind conditions are calm or outside the critical wind azimuth area.

From the appropriate OGE chart obtain:

A maximum of 3450 pounds (1565 kilograms) for all allowable wind conditions, and a maximum of 3550 pounds (1610 kilograms) when wind conditions are calm or outside the critical wind azimuth area.

4-4. RATE OF CLIMB

Rate of Climb charts are presented for various combinations of power settings and ENGINE ANTI-ICING switch positions. Refer to figure 4-6.

The rate of climb data shown in the charts are "tapeline" rates, which means actual rates of climb. The rate of climb as measured with an altimeter will equal the "tapeline" rate of climb only on a standard day with a standard temperature lapse rate.

The following example is for use with Rate of Climb chart at takeoff power. The example is typical for use with all other Rate of Climb charts.

- EXAMPLE:

Find the maximum rate of climb that can be attained using takeoff power under the following conditions:

ENGINE ANTI-ICING — OFF

OAT = 10°C

H_P = 14,000 ft.

Gross Weight = 3600 lbs.

Enter temperature scale at 10°C and proceed vertically to intersection of the 14,000 feet pressure altitude curve. From this point, move horizontally to the right to intersect the 3600 pound gross weight line. Drop vertically and read a rate of climb of 1530 feet per minute.

4-5. RATE OF CLIMB — DOOR(S) OFF

Reduce Rate of Climb chart data 100 feet per minute when operating with any combination of door(s) off.

4-6. BEST RATE OF CLIMB

Best rate of climb airspeed is:

Calibrated airspeed — 52 KCAS (60 MPH)

Indicated airspeed — 57 KIAS (66 MPH)

4-7. HEIGHT-VELOCITY DIAGRAM

The Height-Velocity Diagram (figure 4-7) 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 Limits for Height-Velocity Diagram (figure 4-8).

4-8. AIRSPEED CALIBRATION

Refer to figure 4-9 for airspeed installation correction during level flight.

RATE OF CLIMB

TAKEOFF POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

57 KIAS
ENGINE ANTI-ICING OFF

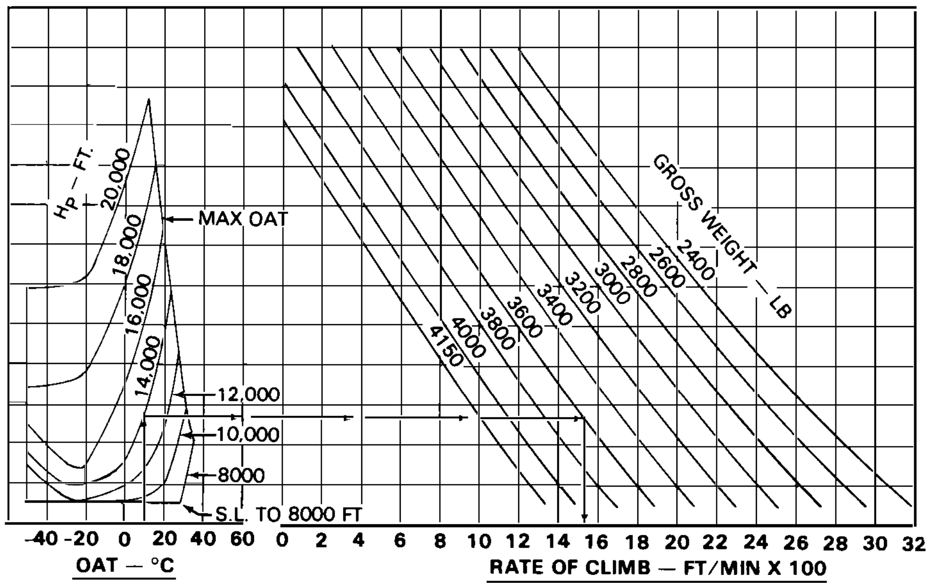


Figure 4-6. Rate of climb (Sheet 1 of 4)

RATE OF CLIMB

TAKEOFF POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

57 KIAS
ENGINE ANTI-ICING ON

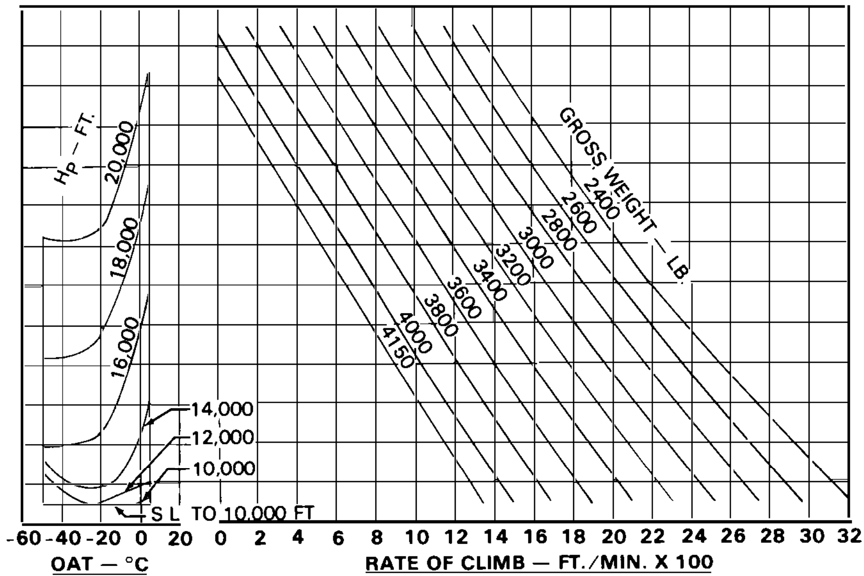


Figure 4-6. Rate of climb (Sheet 2 of 4)

RATE OF CLIMB

MAXIMUM CONTINUOUS POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

57 KIAS
ENGINE ANTI-ICING OFF

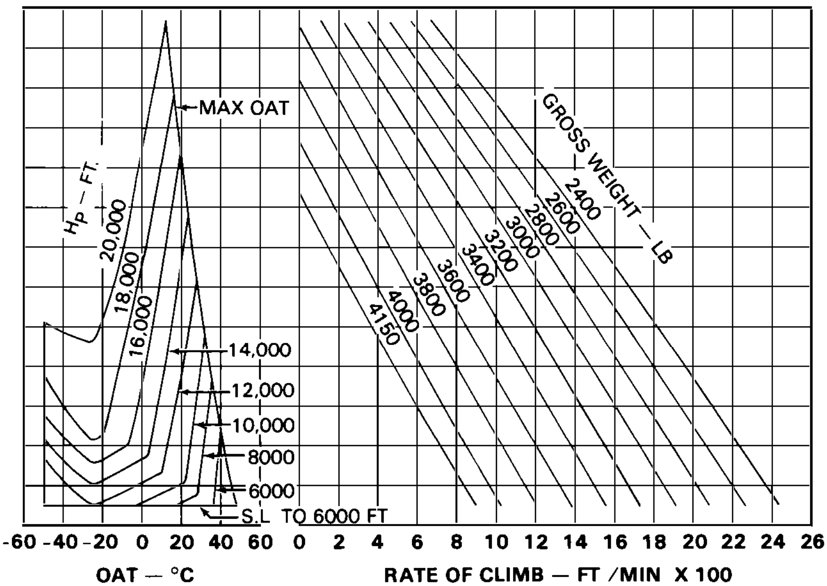


Figure 4-6. Rate of climb (Sheet 3 of 4)

RATE OF CLIMB

MAXIMUM CONTINUOUS POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

57 KIAS
ENGINE ANTI-ICING ON

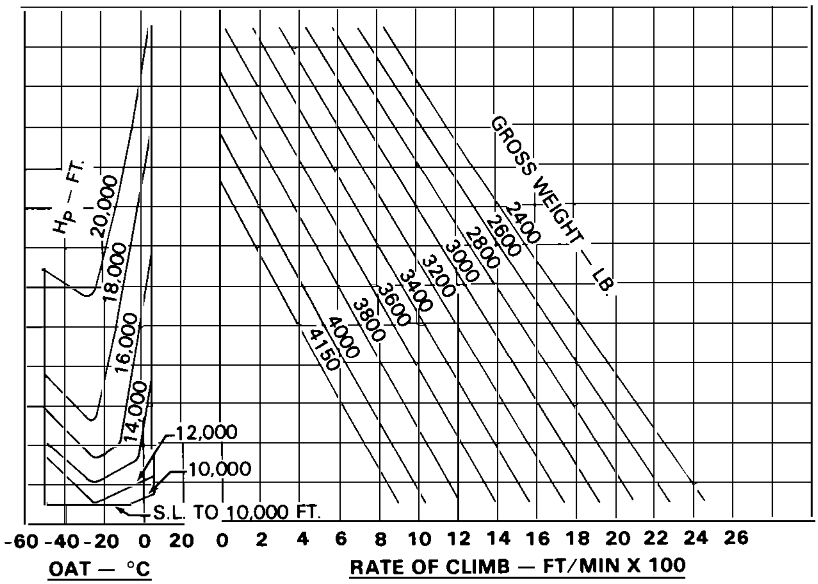


Figure 4-6. Rate of climb (Sheet 4 of 4)

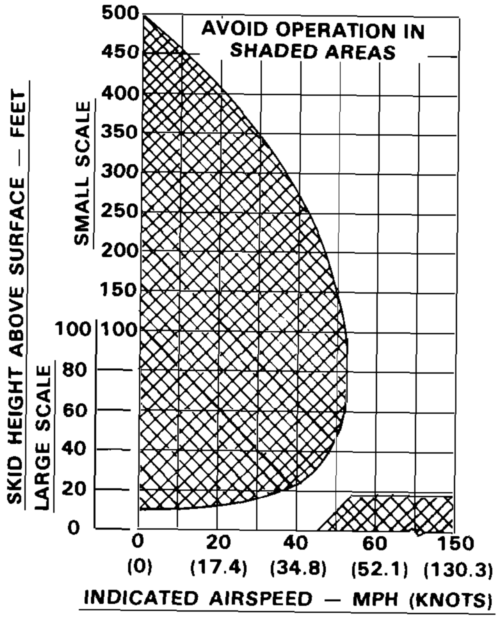


Figure 4-7. Height-velocity diagram

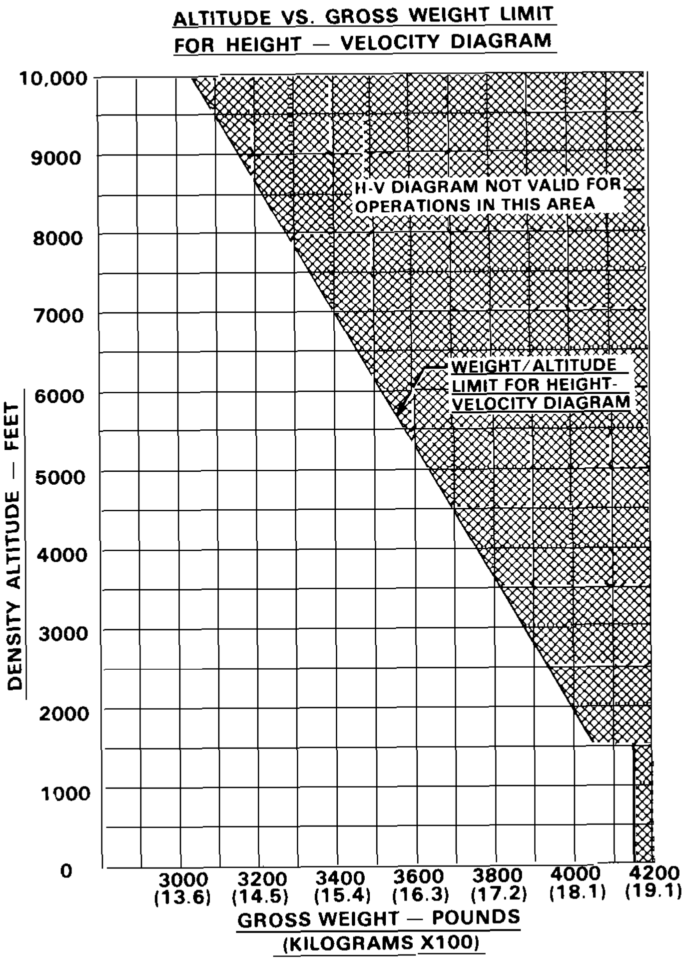


Figure 4-8. Altitude vs gross weight limits for height-velocity diagram

AIRSPEED INSTALLATION CORRECTION TABLE

LEVEL FLIGHT

KIAS — INSTRUMENT ERROR — POSITION ERROR = KCAS

NOTE: This chart assumes zero instrument error.

KNOTS INDICATED AIRSPEED (KIAS)	KNOTS CALIBRATED AIRSPEED (KCAS)
35	32.5
45	42.5
50	47
55	52
60	57
70	66.5
80	76.5
90	86.5
100	96.5
110	106.5
120	116.5
130	126.5

Figure 4-9. Airspeed installation correction

Appendix A

OPTIONAL EQUIPMENT SUPPLEMENTS

A-1. OPTIONAL EQUIPMENT

Only the optional equipment kits listed in this section require Flight Manual Supplements.

Table A-1. Flight Manual Supplements for Optional Equipment

NAME OF EQUIPMENT	KIT NUMBER	DATE CERTIFIED	CURRENT REVISION
BHT-206L3-FMS-1 Lightweight Emergency Flotation Landing Gear	206-706-210	December 16, 1981	Reissued 8 Nov 99
BHT-206L3-FMS-2 Bleed Air Heater	206-706-141	January 20, 1982	Reissued 29 Nov 99
BHT-206L3-FMS-3 Particle Separator Engine Air Induction System	206-706-212	December 21, 1981	Reissued 3 Mar 99
BHT-206L3-FMS-4 2000 Pound Capacity Cargo Hook	206-706-341	December 11, 1981	Reissued 8 Nov 99
BHT-206L3-FMS-5 IFR Configuration	206-705-001	July 21, 1982	Reissued 28 Oct 92
BHT-206L3-FMS-6 Environmental Control System	206-706-143	December 11, 1981	Reissued 28 Oct 92
BHT-206L3-FMS-7 Snow Deflector	206-706-208	December 21, 1981	Reissued 8 Nov 99
BHT-206L3-FMS-8 Float Landing Gear, Standard Type (Fixed Floats)	206-706-065	June 7, 1982	Reissued 28 Oct 92
BHT-206L3-FMS-9 High Skid Landing Gear	206-706-064	December 11, 1981	Reissued 3 Mar 99
BHT-206L3-FMS-10 Rotor Brake	206-706-042	December 11, 1981	Reissued 28 Oct 92

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

NAME OF EQUIPMENT	KIT NUMBER	DATE CERTIFIED	CURRENT REVISION
BHT-206L3-FMS-11 Area Navigation System	206-705-005	12-11-81	Reissued 28 OCT 92
BHT-206L3-FMS-12 Litters	206-706-343	12-11-81	Reissued 2 SEP 97
BHT-206L3-FMS-13 Increased Power	206-706-045	7-20-82	Reissued 28 OCT 92
BHT-206L3-FMS-14 External Hoist	206-899-861	9-15-83	Reissued 28 OCT 92
BHT-206L3-FMS-15 Fuel Pressure Gage	Incorporated in Flight Manual Section 1		
BHT-206L3-FMS-16 SX-16C Nightsun Searchlight	206-899-992	10-30-85	Reissued 28 OCT 92
BHT-206L3-FMS-17 Alternate TOT Gage (Red Triangle at 826°C)		8-9-93	Original Issue
BHT-206L3-FMS-18 Fire Detector	206-899-793	1-7-94	Original Issue
BHT-206L3-FM-CAN-0 Flight Manual Addendum for Canadian Registered Helicopters		9-23-83	Reissued 28 OCT 92
BHT-206L3-FMS-CAN-4 Canadian Addendum for 2000 Pound Capacity Cargo Hook	206-706-341	9-23-83	Reissued 28 OCT 92
BHT-206L3-FMS-CAA Supplement for United Kingdom Registered Helicopters		12-23-82	Reissued 12 JUNE 92
BHT-84-IAF-206L3-FMS-1 Engine Fire Detection System and Heated Pitot Tube		12-1-84	Reissued 28 OCT 92
BHT-84-IAF-206L3-FMS-2 Force Trim System		10-15-84	Reissued 28 OCT 92
BHT-84-IAF-206L3-FMS-3 AC Power		10-15-84	Reissued 28 OCT 92

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

NAME OF EQUIPMENT	KIT NUMBER	DATE CERTIFIED	CURRENT REVISION
BHT-84-IAF-206L3-FMS-4 Instrument Panel, Radio Console, & Circuit Breaker Panel		10-15-84	Reissued 28 OCT 92

Bell MODEL 206L3 Long Ranger-III

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT
LIGHTWEIGHT EMERGENCY FLOTATION LANDING GEAR
206-706-210

CERTIFIED
OCTOBER 28, 1992

This supplement shall be attached to the Model 206L-3 Flight Manual when Lightweight Emergency Flotation Landing Gear 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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REISSUE — 8 NOVEMBER 1999

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PAGE	REVISION NO.	PAGE	REVISION NO.
Title — NP	0	C/D	0
A — B	0	1 — 6	0

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Revision ....2 .... 15 MAY 87
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DATE: 8 Nov 99

CHIEF, FLIGHT TEST
FOR
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Section 1

LIMITATIONS

1-1. TYPE OF OPERATION

Operation with the pop-out floats inflated is limited to flight to a servicing facility for repacking and recharging the system. Amphibious operations are not approved.

The floats and covers shall be installed and ground handling wheels removed for all flight operations.

Accomplish preflight float system check daily prior to performing over water operations.

1-2. WEIGHT/CG

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 Maintenance Manual.

1-3. AIRSPEED

1-4. FLOATS STOWED

Floats stowed, covers installed — Same as basic helicopter.

Doors on or off in any combination — Same as basic helicopter.

1-5. FLOATS INFLATED

Maximum inflation airspeed — 52 KIAS (60 MPH).

CAUTION

DURING THE INFLATION CYCLE UNDESIRABLE PITCHING WILL OCCUR AT AIRSPEEDS ABOVE 52 KIAS (60 MPH).

Maximum allowable airspeed, floats inflated — 61 KIAS (70 MPH).

Maximum autorotation airspeed, floats inflated — 52 KIAS (60 MPH).

1-6. RATE OF CLIMB

Maximum rate of climb with floats inflated is 1000 feet per minute.

1-7. PLACARDS

FLOAT

ARMING/INFLATION

ABOVE 60 MPH

PROHIBITED

Section 2

NORMAL PROCEDURES

2-1. EXTERIOR CHECK

1. Passenger steps — Ensure that steps will rotate upward to clear flotation bags during inflation.
2. Floats — Stowed.
3. Nitrogen lines — Condition and security.
4. Float covers — Clean and secured.
5. Float inflation cylinder — Check for proper inflation pressure vs temperature and altitude. Refer to placard on cylinder. Check electrical connectors for security.

2-2. INTERIOR AND PRESTART CHECK

2-3. PREFLIGHT FLOAT SYSTEM CHECK

1. FLOAT MANUAL ARM switch — OFF, guard closed.
2. FLOAT POWER circuit breaker — Check in.
3. FLOAT TEST and FLOAT ARMED lights — Press to test.
4. FLOAT TEST switch — FLOAT TEST position and hold.
5. FLOAT INFLATION trigger switch — pull on; check FLOAT TEST light illuminates; then release.
6. FLOAT TEST switch — release; check FLOAT TEST light extinguishes.
7. FLOATS MANUAL ARM switch — POWER, guard open. Check FLOAT ARMED light illuminates, then switch OFF, guard closed. Check light extinguishes.

2-4. IN-FLIGHT OPERATIONS

2-5. OVER WATER OPERATIONS

1. FLOATS MANUAL ARM switch — POWER, guard open.
2. FLOAT ARMED light — Illuminated.

CAUTION

DURING FLIGHT AT ALTITUDES ABOVE 500 FEET AND AT AIRSPEEDS OF 52 KIAS (60 MPH) AND ABOVE, THE SYSTEM SHOULD BE DEACTIVATED BY POSITIONING THE *FLOAT MANUAL ARM* SWITCH TO THE *OFF* POSITION, GUARD CLOSED.

3. Rearm system prior to landing.

2-6. OVER LAND OPERATIONS

FLOATS MANUAL ARM switch — OFF.

2-7. DESCENT AND LANDING — FLOATS STOWED

WARNING

IF THE AFT CG IS AFT OF STATION 126, PRACTICE AUTOROTATIONAL TOUCHDOWNS SHOULD BE AVOIDED DUE TO NOSEDOWN PITCHING.

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 PROCEDURES

3-1. FLOAT INFLATION PROCEDURE

1. Reduce airspeed below maximum inflation airspeed — 52 KIAS (60 MPH).

2. Establish autorotation or low power descent at approximately 500 feet per minute.

NOTE

If floats are inflated in level flight, there is a possibility that floats will not align, which will allow the right or left forward bag to oscillate. If this occurs, a low power descent will align the float bags and stop the oscillation.

3. FLOATS MANUAL ARM switch — POWER, guard open.

4. FLOAT ARMED light — Illuminated.

5. FLOAT INFLATION trigger switch — Pull on.

CAUTION

DO NOT INFLATE FLOATS MORE THAN 2000 FEET ABOVE ANTICIPATED LANDING SURFACE.

3-2. AFTER EMERGENCY WATER LANDING

1. After landing, inspect the helicopter for possible damage. If malfunction was cause of landing, correct malfunction.

2. If no damage has occurred to helicopter and malfunction has been corrected, the helicopter can be ferried to nearest maintenance facility to repack floats and charge system. The ferrying airspeed is restricted to 61 KIAS (70 MPH).

Section 4

PERFORMANCE DATA

4-1. HOVER CEILING — FLOATS STOWED

Out of ground effect hover performance is the same as basic helicopter. In ground effect hover performance is shown on the following charts.

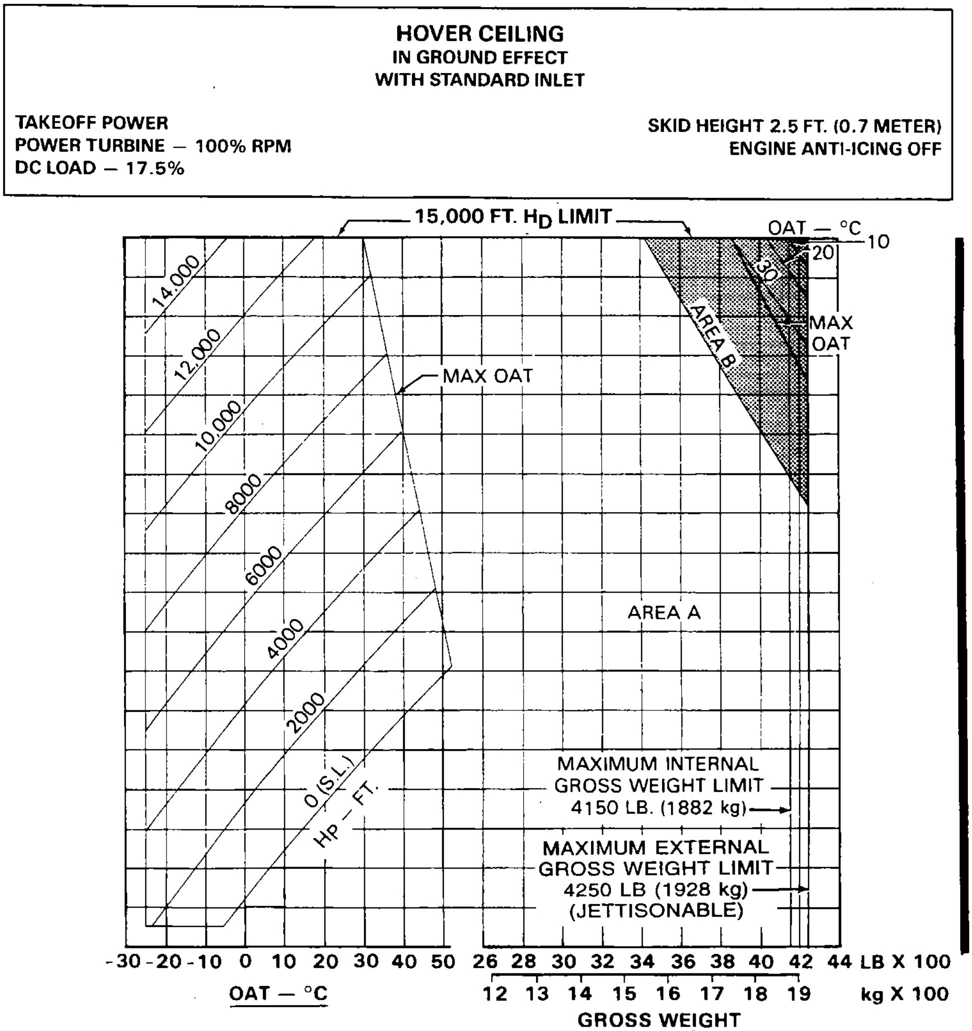

Figure 4-1. Hover ceiling in ground effect (Sheet 1 of 2)

HOVER CEILING
IN GROUND EFFECT
WITH STANDARD INLET

TAKEOFF POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

SKID HEIGHT 2.5 FT. (0.7 METER)
ENGINE ANTI-ICING ON

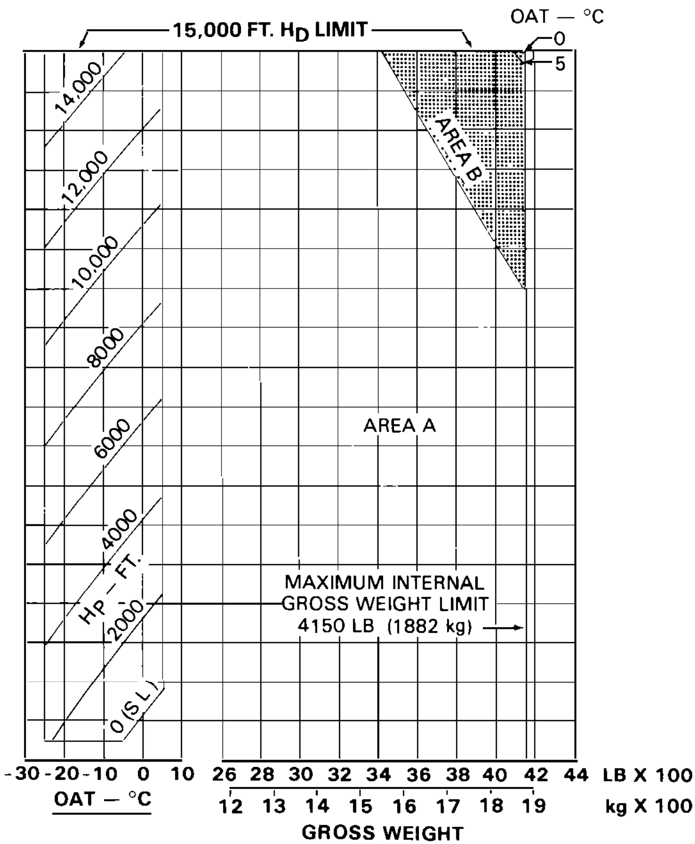

Figure 4-1. Hover ceiling in ground effect (Sheet 2 of 2)

Bell MODEL 206L3 Long Ranger-III

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT
BLEED AIR HEATER
206-706-141

CERTIFIED
JANUARY 20, 1982

This supplement shall be attached to the Model 206L-3 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, or other applicable supplements, consult basic Flight Manual.

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GENERAL INFORMATION

The bleed air heater (206-706-141) consists of two basic subsystems, bleed air and heater ventilation air. Bleed air flows from the engine through bleed lines to the mixing valve, and into the cabin in the form of heater ventilation air.

Section 1

LIMITATIONS

1-1. WEIGHT/CG

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

NOTE

HEAT/VENT switch is a two-position switch (HEAT and OFF). VENT position is not applicable.

2-1. INTERIOR AND PRESTART CHECK

HEAT switch — OFF.

2-2. BEFORE TAKEOFF

HEAT switch — As desired.

2-3. INFLIGHT OPERATIONS

NOTE

TURB OUT TEMP increases with bleed air heater operating. Observe TURB OUT TEMP limitations.

1. HEAT switch — As desired.
2. TEMP CONT knob — Rotate to obtain desired temperature.
3. DEFOG levers (overhead) — Adjust as required for windshield defogging.
4. Air outlets — Adjust for optimum comfort.

Section 3

EMERGENCY PROCEDURES

HEAT switch — OFF if any of the following occurs:

Engine failure (if engine restart is to be attempted).

Engine overtemperature.

Fuel control and/or governor failure.

Insufficient power.

Section 4

PERFORMANCE DATA

4-1. INTRODUCTION

With the Bleed Air Heater kit installed, there is no loss in helicopter performance when heater is turned OFF. With heater ON, performance will be reduced as shown in the following charts.

4-2. HOVER CEILING

Hover ceiling charts are presented for various engine inlet and landing gear combinations (figure 4-1).

4-3. HOVER CEILING — PARTICLE SEPARATOR AND SNOW DEFLECTOR INSTALLED

To determine hover ceiling performance with PARTICLE SEP PRG switch OFF, use the hover ceiling chart in this section titled WITH SNOW DEFLECTOR.

To determine hover ceiling performance with PARTICLE SEP PRG switch ON or not installed, use the performance variation chart in this section in conjunction with the hover ceiling chart titled WITH SNOW DEFLECTOR.

4-4. RATE OF CLIMB

Reduction in Rate of Climb performance is shown in the following Rate of Climb Decrease charts (figure 4-2). These charts are to be used in conjunction with Rate of Climb charts in basic Flight Manual or appropriate Flight Manual Supplement when bleed air heater is ON.

There is no loss of performance when the bleed air heater is turned OFF. With the bleed air heater turned ON, performance will be reduced as presented herein. Refer to appropriate charts in accordance with optional equipment installed.

4-5. RATE OF CLIMB — PARTICLE SEPARATOR AND SNOW DEFLECTOR INSTALLED

To determine rate of climb performance with PARTICLE SEP PRG switch OFF, use the rate of climb chart in this section and the rate of climb charts in the supplement for Snow Deflector (BHT-206L3-FMS-7).

4-6. PERFORMANCE VARIATION CHART

To use the Performance Variation Chart (figure 4-3), enter at the appropriate pressure altitude and move horizontally; then enter at the appropriate OAT and move vertically until intersecting the pressure altitude line. If the point of intersection is below the appropriate power curve (example A, 4000 feet and -30°C on chart), there is no additional performance loss from the charts used. If the point of intersection is above the

HOVER CEILING
IN GROUND EFFECT
WITH STANDARD INLET
WITH STANDARD SKID LANDING GEAR

TAKEOFF POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

SKID HEIGHT 2.5 FT. (0.7 METER)
ENGINE ANTI-ICING OFF
HEATER ON

WITH ENGINE ANTI-ICING ON ABOVE 12,000 FT. Hp., G.W. IS 150 LB (68 kg) LESS
(BELOW 12,000 FT., NO CORRECTION IS NECESSARY)

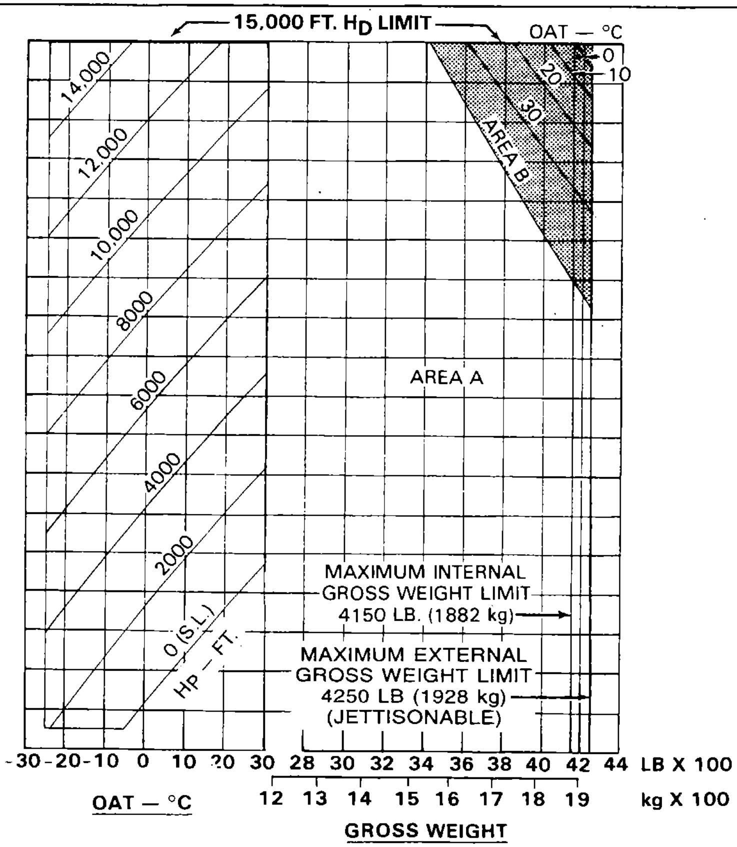

Figure 4-1. Hover ceiling (Sheet 1 of 16)

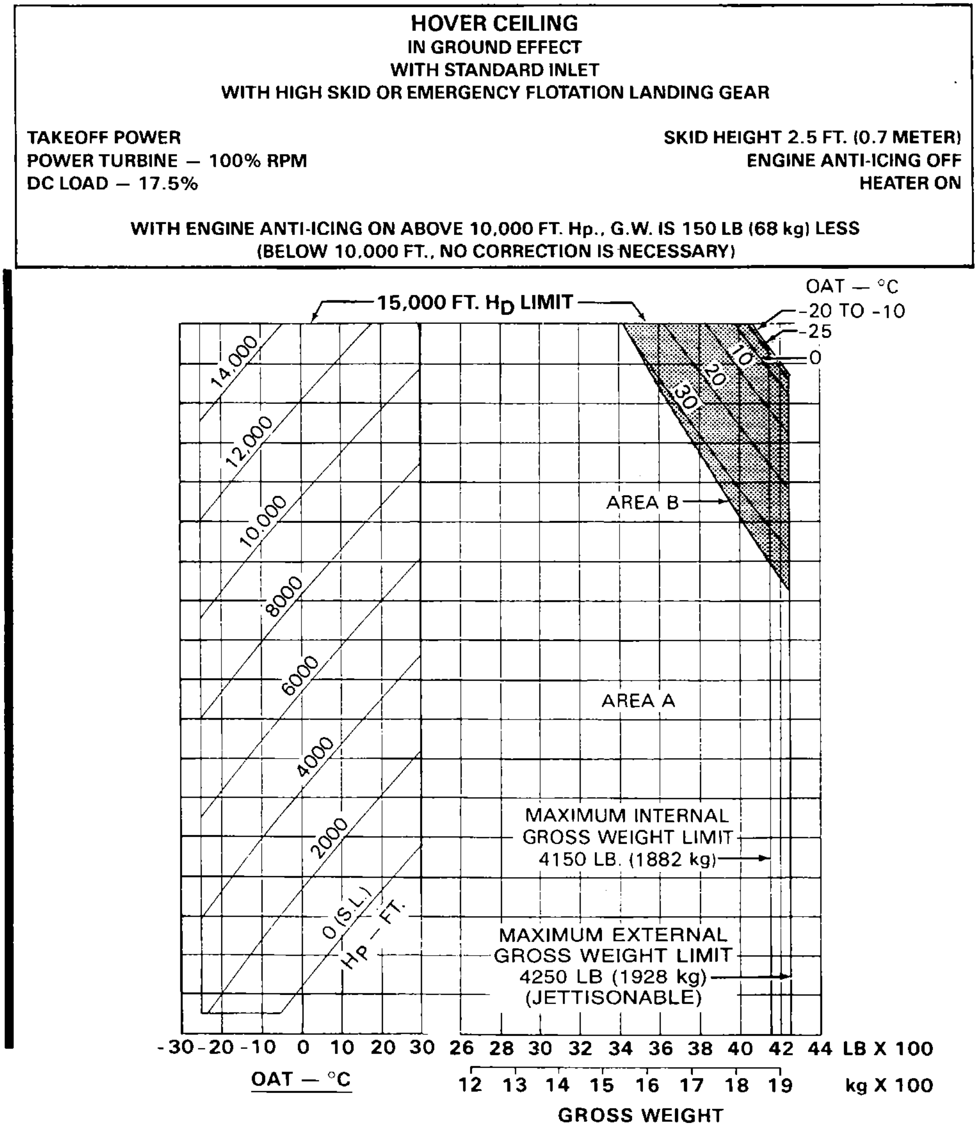

Figure 4-1. Hover ceiling (Sheet 2 of 16)

HOVER CEILING
IN GROUND EFFECT
WITH STANDARD INLET
WITH STANDARD FLOAT LANDING GEAR

TAKEOFF POWER	FLOAT HEIGHT 3.5 FT. (1.1 METERS)
POWER TURBINE — 100% RPM	ENGINE ANTI-ICING OFF
DC LOAD — 17.5%	HEATER ON

WITH ENGINE ANTI-ICING ON ABOVE 12,000 FT. Hp., G.W. IS 150 LB (68 kg) LESS (BELOW 12,000 FT., NO CORRECTION IS NECESSARY)

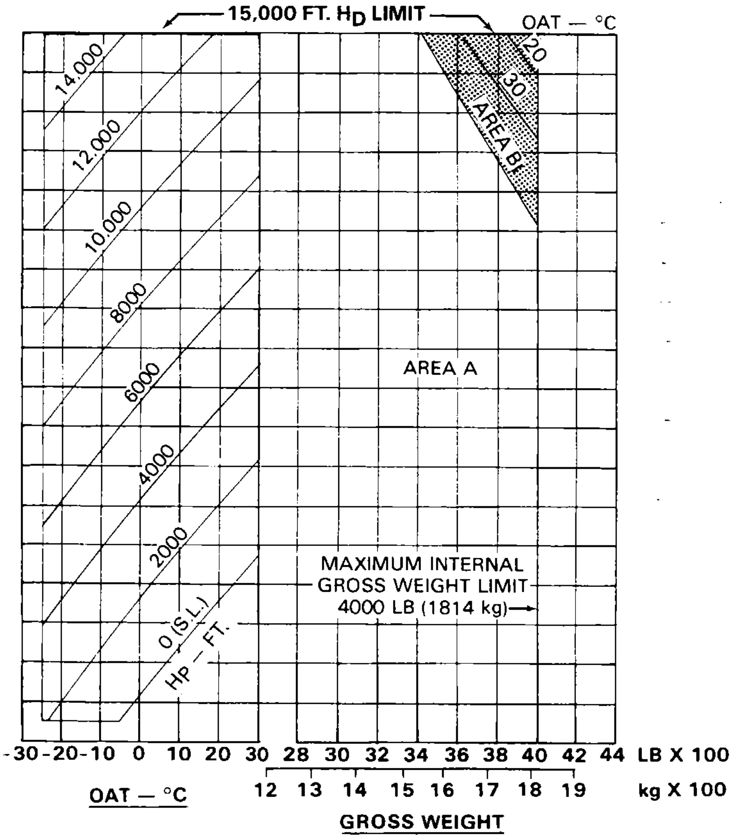

Figure 4-1. Hover ceiling (Sheet 3 of 16)

HOVER CEILING

OUT OF GROUND EFFECT
WITH STANDARD INLET
WITH ANY SKID OR EMERGENCY FLOAT LANDING GEAR

TAKEOFF POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

SKID HEIGHT 40 FT. (12.2 METERS)
ENGINE ANTI-ICING OFF
HEATER ON

WITH ENGINE ANTI-ICING ON ABOVE 10,000 FT. Hp., G.W. IS 120 LB (54 kg) LESS
(BELOW 10,000 FT., NO CORRECTION IS NECESSARY)

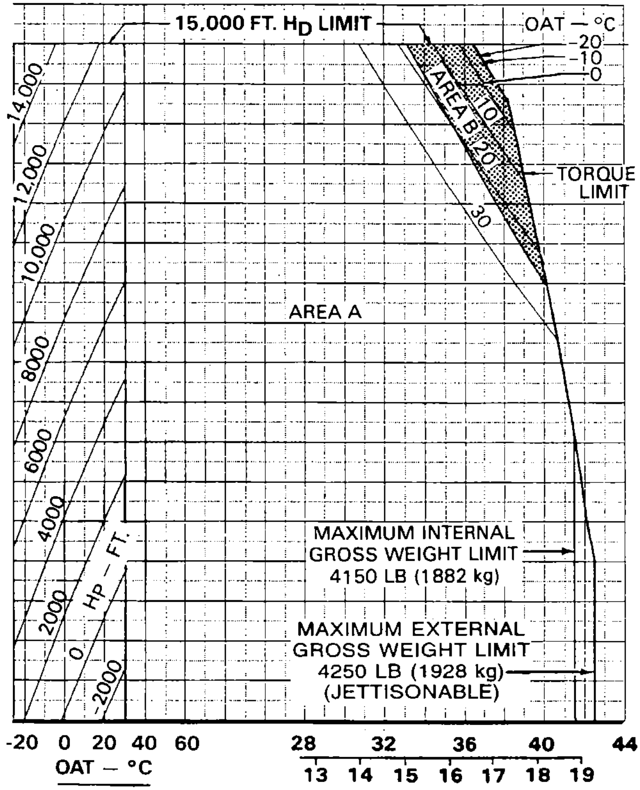

Figure 4-1. Hover ceiling (Sheet 4 of 16)

HOVER CEILING
IN GROUND EFFECT
WITH SNOW DEFLECTOR
WITH STANDARD SKID LANDING GEAR

TAKEOFF POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

SKID HEIGHT 2.5 FT. (0.7 METER)
ENGINE ANTI-ICING OFF
HEATER ON

WITH ENGINE ANTI-ICING ON ABOVE 12,000 FT. Hp., G.W. IS 150 LB (68 kg) LESS
(BELOW 12,000 FT., NO CORRECTION IS NECESSARY)

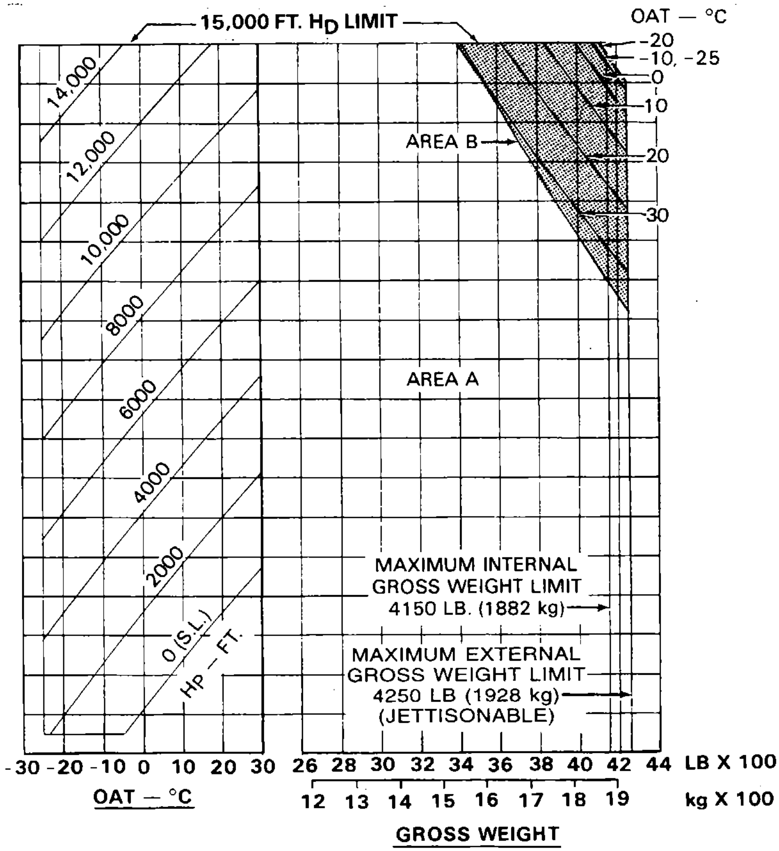

Figure 4-1. Hover ceiling (Sheet 5 of 16)

HOVER CEILING

IN GROUND EFFECT
WITH SNOW DEFLECTOR
WITH HIGH SKID OR EMERGENCY FLOTATION LANDING GEAR

TAKEOFF POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

SKID HEIGHT 2.5 FT. (0.7 METER)
ENGINE ANTI-ICING OFF
HEATER ON

WITH ENGINE ANTI-ICING ON ABOVE 10,000 FT. Hp., G.W. IS 160 LB (73 kg) LESS
(BELOW 10,000 FT., NO CORRECTION IS NECESSARY)

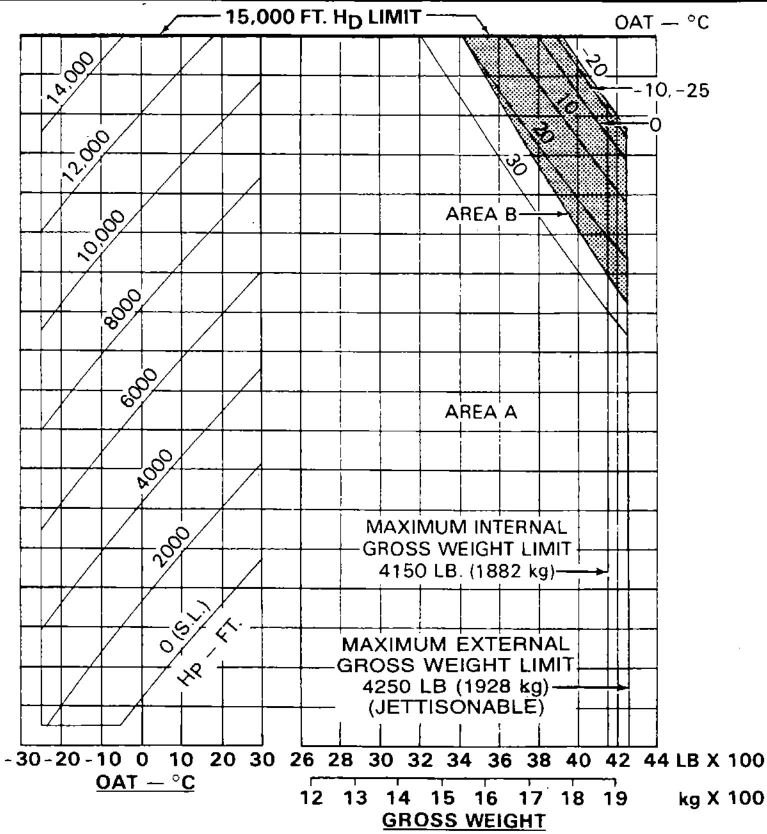

Figure 4-1. Hover ceiling (Sheet 6 of 16)

HOVER CEILING
IN GROUND EFFECT
WITH SNOW DEFLECTOR
WITH STANDARD FLOAT LANDING GEAR

TAKEOFF POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

FLOAT HEIGHT 3.5 FT. (1.1 METERS)
ENGINE ANTI-ICING OFF
HEATER ON

WITH ENGINE ANTI-ICING ON ABOVE 12,000 FT. Hp., G.W. IS 150 LB (68 kg) LESS
(BELOW 12,000 FT., NO CORRECTION IS NECESSARY)

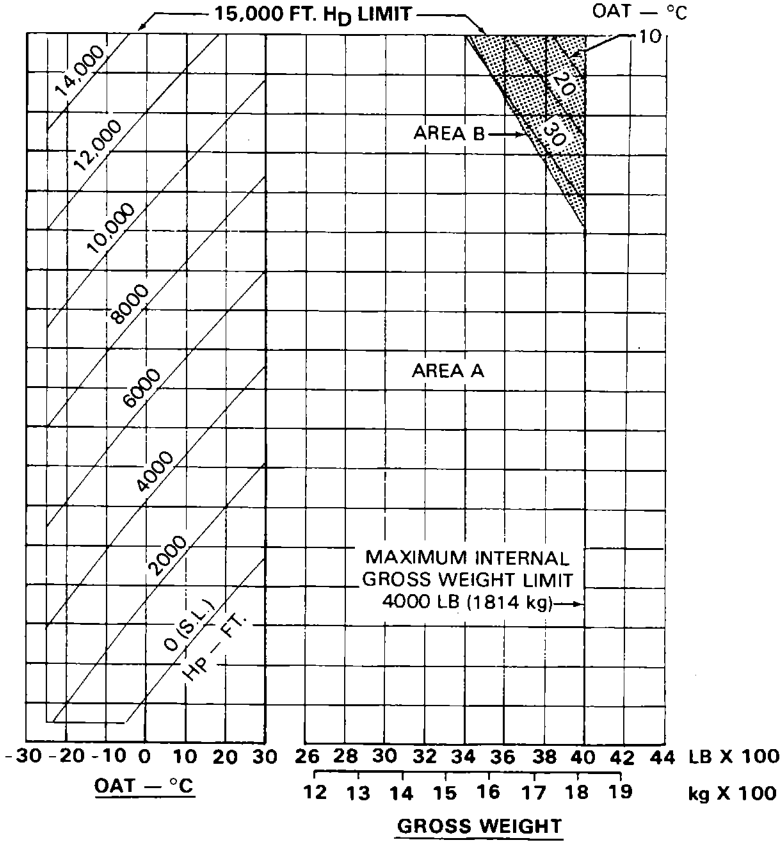

Figure 4-1. Hover ceiling (Sheet 7 of 16)

HOVER CEILING

OUT OF GROUND EFFECT
WITH SNOW DEFLECTOR
WITH ANY SKID OR EMERGENCY FLOAT LANDING GEAR

TAKEOFF POWER	SKID HEIGHT 40 FT. (12.2 METERS)
POWER TURBINE — 100% RPM	ENGINE ANTI-ICING OFF
DC LOAD — 17.5%	HEATER ON

WITH ENGINE ANTI-ICING ON ABOVE 10,000 FT. Hp., G.W. IS 130 LB (59 kg) LESS
(BELOW 10,000 FT., NO CORRECTION IS NECESSARY)

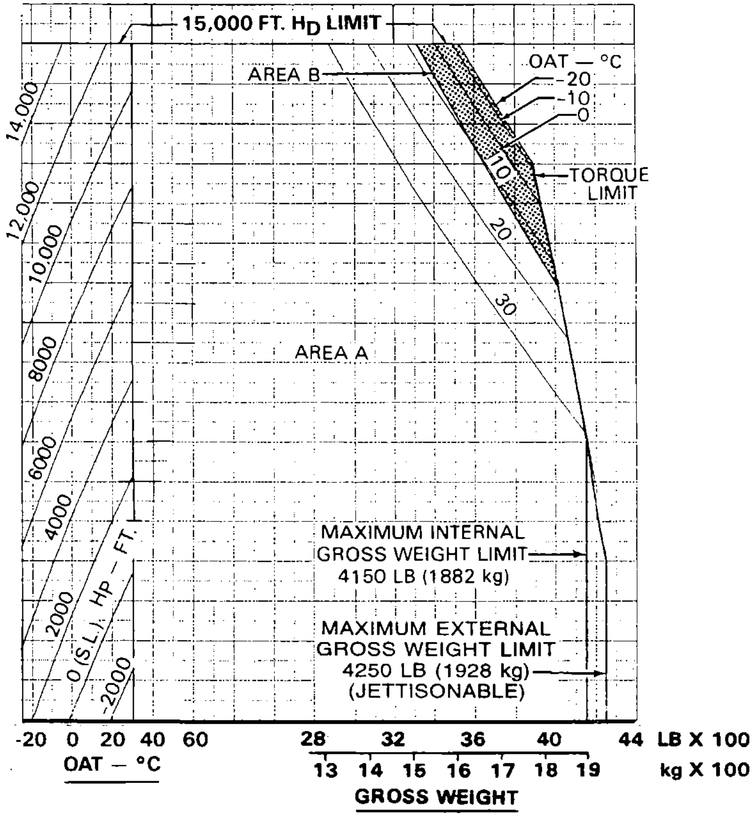

Figure 4-1. Hover ceiling (Sheet 8 of 16)

HOVER CEILING
IN GROUND EFFECT
WITH PARTICLE SEPARATOR
WITH STANDARD SKID LANDING GEAR

TAKEOFF POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

SKID HEIGHT 2.5 FT. (0.7 METER)
ENGINE ANTI-ICING OFF
HEATER ON
PARTICLE SEP. PURGE OFF

WITH ENGINE ANTI-ICING ON ABOVE 12,000 FT. Hp., G.W. IS 150 LB (68 kg) LESS
(BELOW 12,000 FT., NO CORRECTION IS NECESSARY)

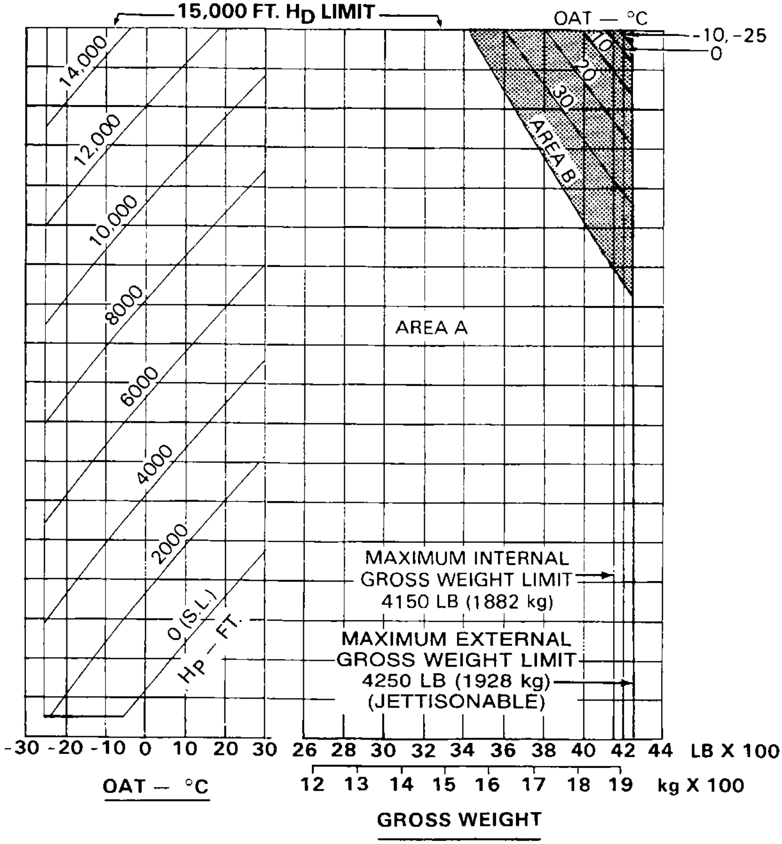

Figure 4-1. Hover ceiling (Sheet 9 of 16)

HOVER CEILING
IN GROUND EFFECT
WITH PARTICLE SEPARATOR
WITH STANDARD SKID LANDING GEAR

TAKEOFF POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

SKID HEIGHT 2.5 FT. (0.7 METER)
ENGINE ANTI-ICING OFF
HEATER ON
PARTICLE SEP. PURGE ON

WITH ENGINE ANTI-ICING ON ABOVE 12,000 FT. Hp., G.W. IS 150 LB (68 kg) LESS
(BELOW 12,000 FT., NO CORRECTION IS NECESSARY)

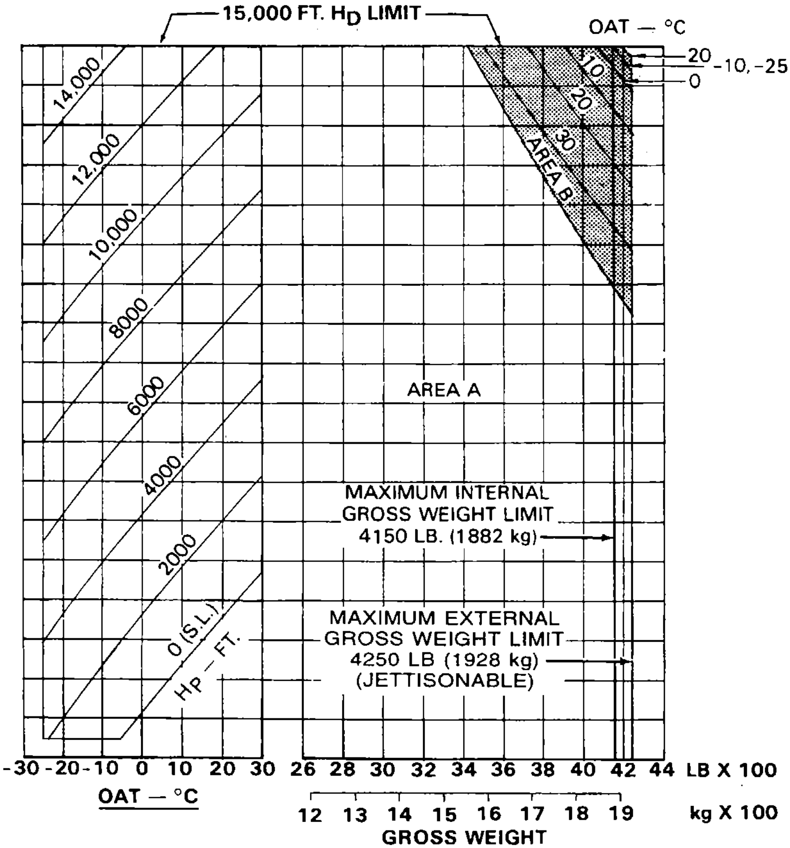

Figure 4-1. Hover ceiling (Sheet 10 of 16)

HOVER CEILING
IN GROUND EFFECT
WITH PARTICLE SEPARATOR
WITH HIGH SKID OR EMERGENCY FLOTATION LANDING GEAR

TAKEOFF POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

SKID HEIGHT 2.5 FT. (0.7 METER)
ENGINE ANTI-ICING OFF
HEATER ON
PARTICLE SEP. PURGE OFF

WITH ENGINE ANTI-ICING ON ABOVE 12,000 FT. Hp., G.W. IS 150 LB (68 kg) LESS
(BELOW 12,000 FT., NO CORRECTION IS NECESSARY)

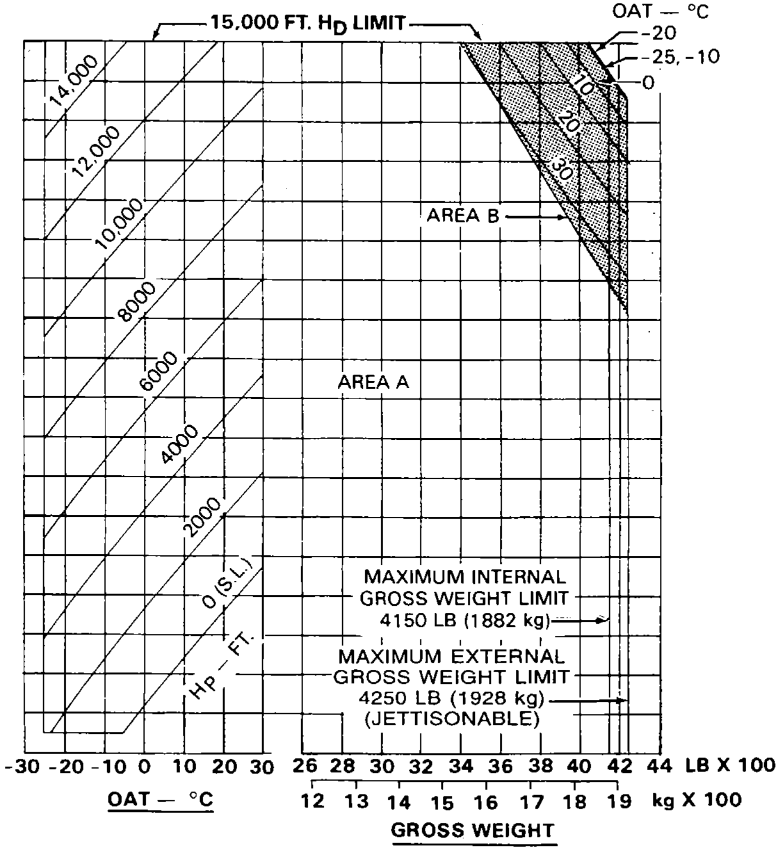

Figure 4-1. Hover ceiling (Sheet 11 of 16)

HOVER CEILING
IN GROUND EFFECT
WITH PARTICLE SEPARATOR
WITH HIGH SKID OR EMERGENCY FLOTATION LANDING GEAR

TAKEOFF POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

SKID HEIGHT 2.5 FT. (0.7 METER)
ENGINE ANTI-ICING OFF
HEATER ON
PARTICLE SEP. PURGE ON

WITH ENGINE ANTI-ICING ON ABOVE 10,000 FT. Hp., G.W. IS 160 LB (73 kg) LESS
(BELOW 10,000 FT., NO CORRECTION IS NECESSARY)

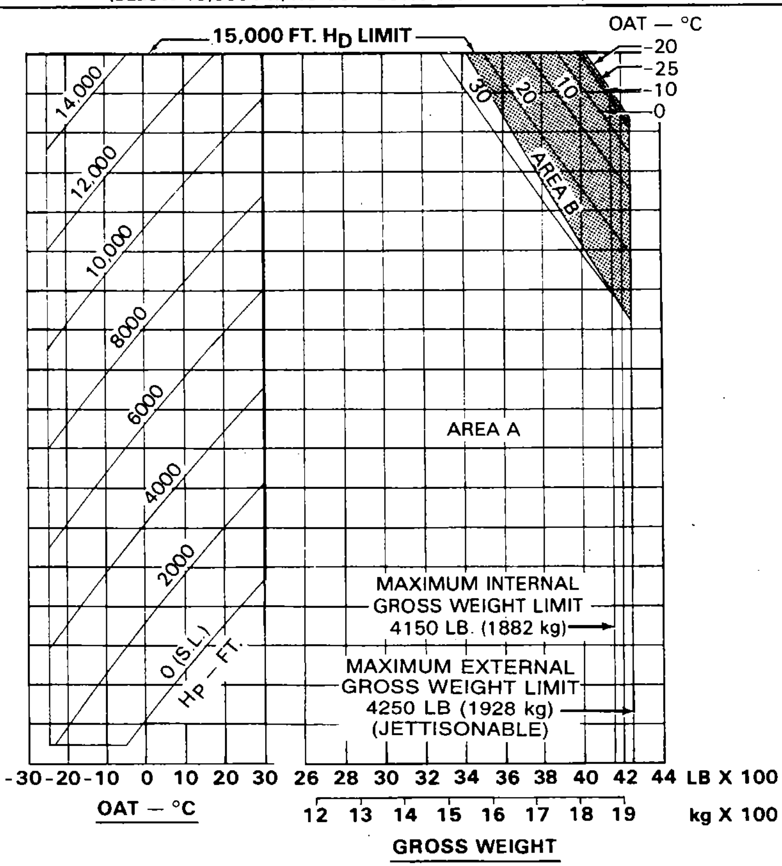

Figure 4-1. Hover ceiling (Sheet 12 of 16)

HOVER CEILING
IN GROUND EFFECT
WITH PARTICLE SEPARATOR
WITH STANDARD FLOAT LANDING GEAR

TAKEOFF POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

FLOAT HEIGHT 3.5 FT. (1.1 METERS)
ENGINE ANTI-ICING OFF
HEATER ON
PARTICLE SEP. PURGE OFF

WITH ENGINE ANTI-ICING ON ABOVE 12,000 FT. Hp., G.W. IS 150 LB (68 kg) LESS
(BELOW 12,000 FT., NO CORRECTION IS NECESSARY)

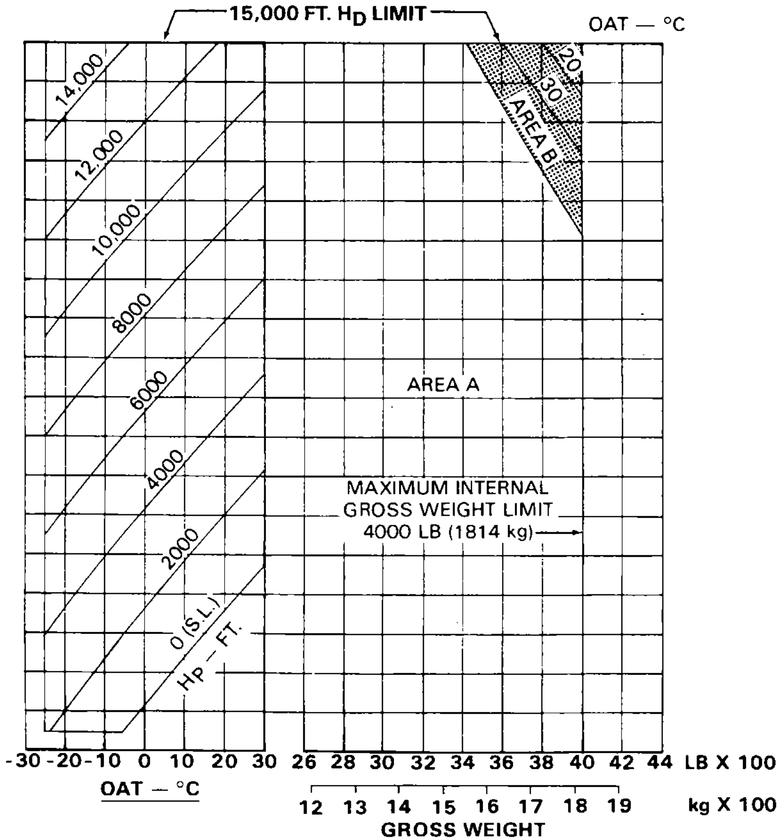

Figure 4-1. Hover ceiling (Sheet 13 of 16)

HOVER CEILING
IN GROUND EFFECT
WITH PARTICLE SEPARATOR
WITH STANDARD FLOAT LANDING GEAR

TAKEOFF POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

FLOAT HEIGHT 3.5 FT. (1.1 METERS)
ENGINE ANTI-ICING OFF
HEATER ON
PARTICLE SEP. PURGE ON

WITH ENGINE ANTI-ICING ON ABOVE 12,000 FT. H_P, G.W. IS 150 LB (68 kg) LESS
(BELOW 12,000 FT., NO CORRECTION IS NECESSARY)

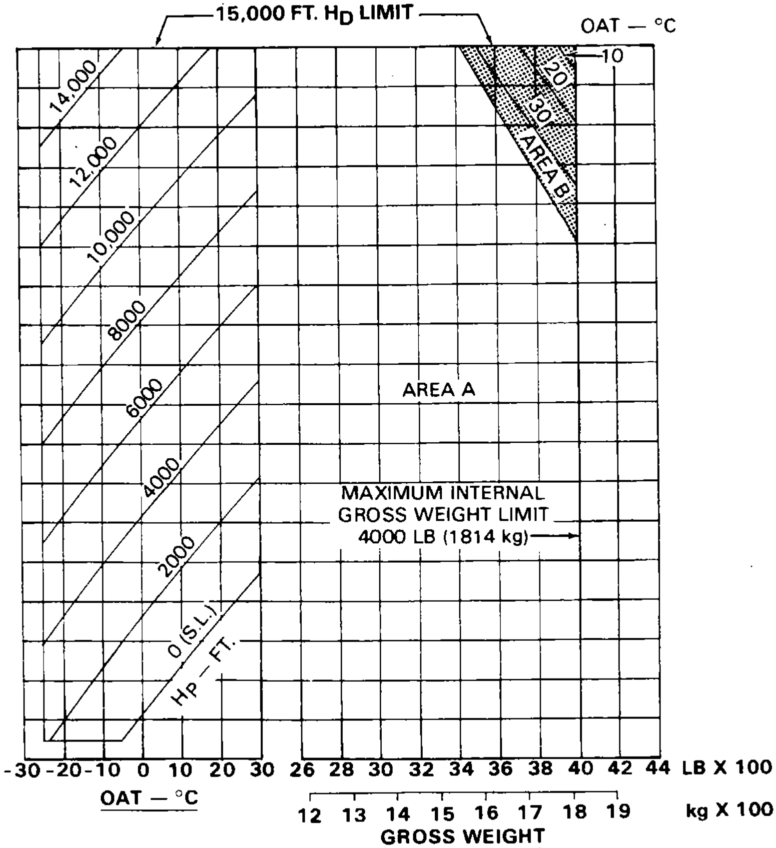

Figure 4-1. Hover ceiling (Sheet 14 of 16)

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

TAKEOFF POWER
POWER TURBINE – 100% RPM
DC LOAD – 17.5%

SKID HEIGHT 40 FT. (12.2 METERS)
ENGINE ANTI-ICING OFF
HEATER ON
PARTICLE SEP. PURGE OFF

WITH ENGINE ANTI-ICING ON ABOVE 10,000 FT. Hp., G.W. IS 130 LB (59 kg) LESS
(BELOW 10,000 FT., NO CORRECTION IS NECESSARY)

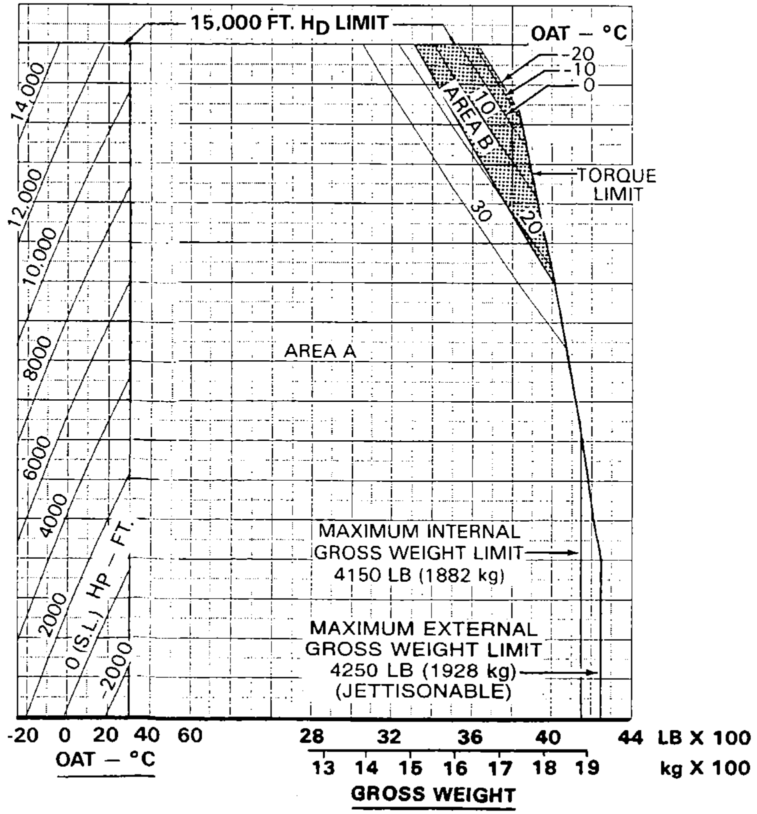

Figure 4-1. Hover ceiling (Sheet 15 of 16)

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

TAKEOFF POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

SKID HEIGHT 40 FT. (12.2 METERS)
ENGINE ANTI-ICING OFF
HEATER ON
PARTICLE SEP. PURGE ON

WITH ENGINE ANTI-ICING ON ABOVE 10,000 FT. H_P, G.W. IS 130 LB (59 kg) LESS
(BELOW 10,000 FT., NO CORRECTION IS NECESSARY)

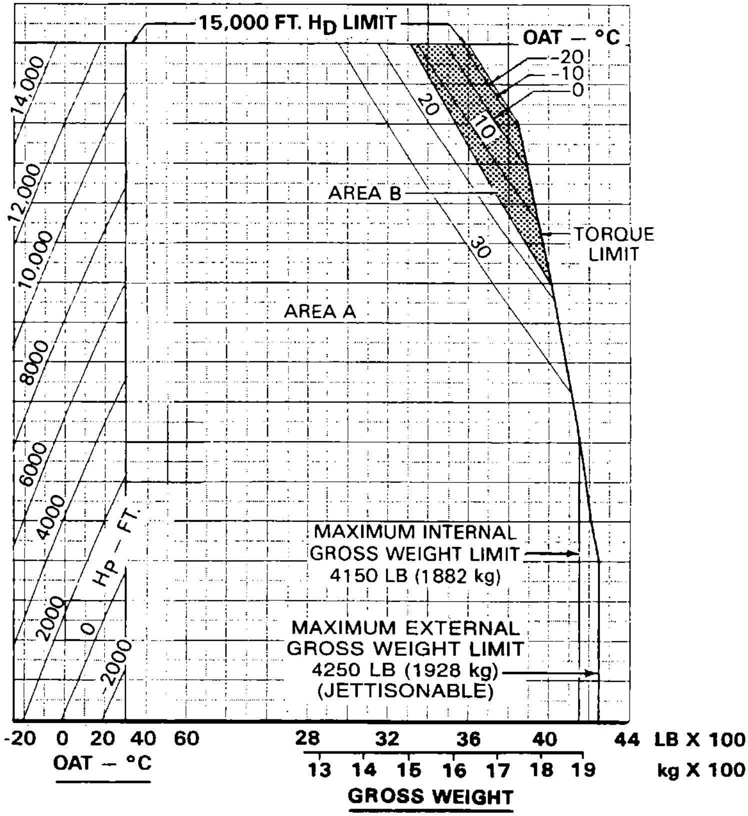

Figure 4-1. Hover ceiling (Sheet 16 of 16)

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

POWER — SEE BELOW	57 KIAS
POWER TURBINE — 100% RPM	ENGINE ANTI-ICING OFF OR ON
DC LOAD — 17.5%	HEATER ON

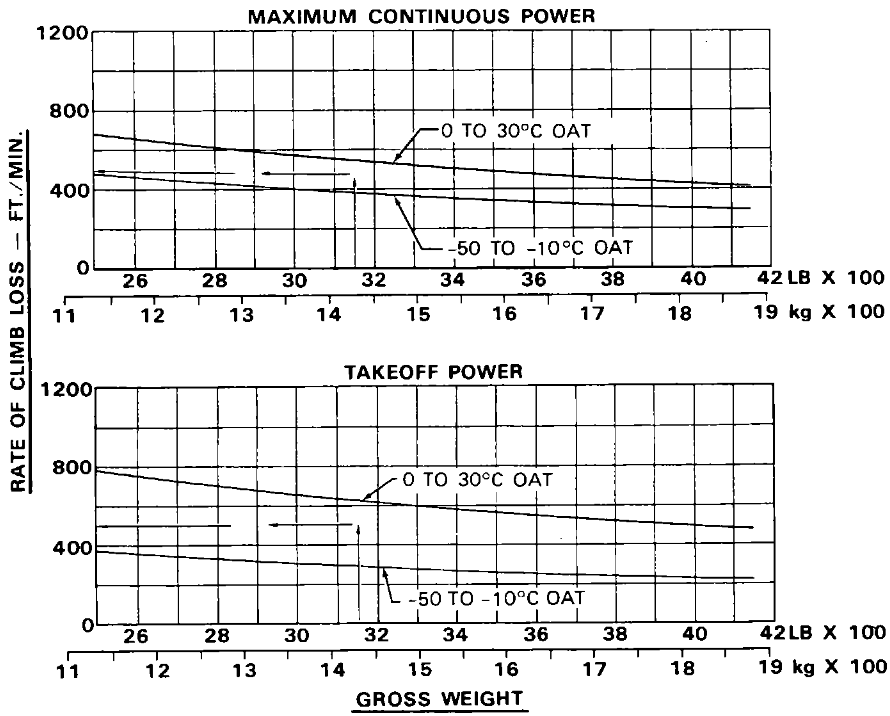

Figure 4-2. Rate of climb decrease

appropriate power curve (example B, 9000 feet and 20°C on chart), hover gross weight will be 90 pounds (40.8 kg) less than the weight determined on the Hover Ceiling chart (figure 4-1) being used and rate of climb will be 170 feet per minute less than that determined with the Rate of Climb Decrease chart (figure 4-2) and Snow Deflector Rate of Climb charts.

PERFORMANCE VARIATION WITH SNOW DEFLECTOR AND PARTICLE SEPARATOR INSTALLED

ENGINE ANTI-ICING ON OR OFF
HEATER — ON
NO PURGE SWITCH INSTALLED OR PURGE SWITCH ON

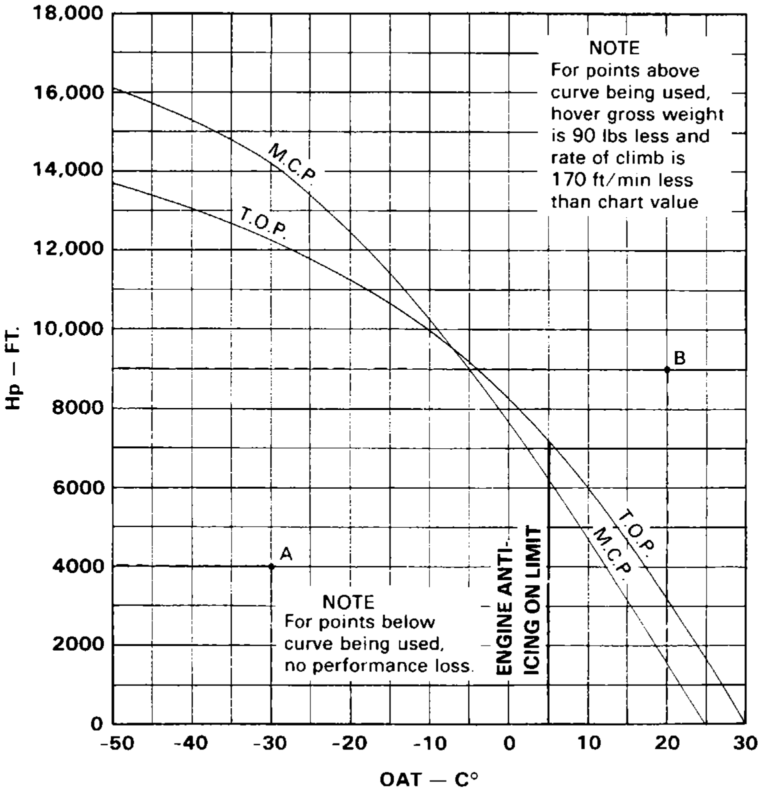

Figure 4-3. Performance variation chart

Bell MODEL 206L3 LongRanger-III

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT

PARTICLE SEPARATOR ENGINE AIR INDUCTION SYSTEM

206-706-212

CERTIFIED
DECEMBER 21, 1981

This supplement shall be attached to Model 206L-3 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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LOG OF PAGES

PAGE	REVISION NO.
Title	0
NP	0
A — B	0
C/D	0
i/ii	0
1 — 20	0
21/22	0

MANUFACTURER'S DATA

PAGE	REVISION NO.
23/24	0

NOTE

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William Jaggs

CHIEF, FLIGHT TEST
FOR
DIRECTOR — AIRCRAFT CERTIFICATION BRANCH
DEPARTMENT OF TRANSPORT

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GENERAL INFORMATION

The Bell Particle Separator Kit (206-706-212) consists of the particle separator, bleed air tubing and hose, electrical cable, and required hardware for installation. Installation of this kit adds approximately 14.5 pounds (6.6 kg) to empty weight of helicopter.

Particle Separator Kits (206-706-212-107, -109, and -111) are equipped with a PARTICLE SEP PRG (purge) switch located on the miscellaneous control panel. With this switch OFF, engine bleed air is not used to purge debris from the particle separator, however, there is some performance loss due to a restricted inlet flow. With this switch ON, engine bleed air is used to purge debris, further affecting performance. Performance charts contained in this supplement provide data for each of these conditions.

Particle Separator Kits (206-706-212-101, -103, and -105) do not contain a purge switch. With these kits, engine bleed air is used for purging at all times. For performance data on these helicopters, use charts for particle separator purge ON.

This supplement incorporates performance information for various combinations of Bell kits. It also includes limitations and operating procedures made necessary because of kit combinations. This supplement is not intended to replace approved supplements for other optional equipment, but should be used in conjunction with such supplements.

Section 1

LIMITATIONS

1-1. TYPE OF OPERATION

The Snow Deflector Kit (BHT-206L3-FMS-7) shall be installed in conjunction with Particle Separator Kit when conducting operations in falling and/or blowing snow and the following limits apply:

WARNING

FAILURE TO COMPLY WITH FOLLOWING LIMITATIONS CAN RESULT IN ENGINE FLAMEOUT

NOTE

Protective inlet covers shall be installed during any exposure to falling and/or blowing snow during non-engine operations.

1. Immediately before each flight, thoroughly inspect and clean inlet and plenum areas, to include the deflector baffles and cowlings around inlets, to ensure that these areas are free from any accumulations of ice or snow. If for any reason observed accumulations of ice or snow cannot be removed, do not commence flight until removal is accomplished.

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 is exceeded or ground and hover operations exceed 20 minutes total, helicopter shall be shut down and inspected per item 1 above.

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.

The Particle Separator can be removed and the engine air intake screen installed to attain basic helicopter performance.

1-2. OPTIONAL EQUIPMENT

For operations with the Particle Separator installed in conjunction with the 206-706-208 Snow Deflector, refer to the LIMITATIONS section and PERFORMANCE section of the Snow Deflector supplement (BHT-206L3-FMS-7).

1-3. WEIGHT/CG

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

1-4. PLACARDS

WITH PARTICLE SEPARATOR INSTALLED FLIGHT INTO FALLING OR BLOWING SNOW IS PROHIBITED EXCEPT WHEN SNOW DEFLECTOR KIT 206-706-208 IS INSTALLED

Section 2

NORMAL PROCEDURES

2-1. EXTERIOR CHECK

2-2. BEFORE FLIGHT WHEN OPERATING IN SNOW CONDITIONS

1. 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.

2. 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 and rear face of the Particle Separator. Clean thoroughly before each flight.

2-3. 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).

Section 3

EMERGENCY PROCEDURES

No change from basic manual.

Section 4

PERFORMANCE DATA

4-1. PERFORMANCE DATA

Helicopter performance is reduced with the Particle Separator installed. This reduction increases with the use of Particle Separator purge and is primarily the result of bleed air being taken from the engine. To determine the minimum torque available when the Particle Separator is installed, refer to the Power Assurance chart in BHT-206L3-FM-1. From the minimum torque derived from this chart, subtract a constant 5 PERCENT TORQUE. On helicopters with a PARTICLE SEP PRG (purge) switch installed, the value derived will be the minimum TORQUE available with purge ON.

- EXAMPLE

Minimum TORQUE available (as read from Power Assurance chart)	76%
Subtract 5 PERCENT TORQUE (due to Particle Separator)	-5%
Minimum TORQUE available with Particle Separator (purge ON)	71%

Refer to appropriate performance charts in accordance with optional equipment installed. All Rate of Climb charts apply to any skid or flotation landing gear configuration.

HOVER CEILING
IN GROUND EFFECT
WITH STANDARD SKID LANDING GEAR

TAKEOFF POWER	SKID HEIGHT 2.5 FT. (0.7 METER)
POWER TURBINE — 100% RPM	ENGINE ANTI-ICING OFF
DC LOAD — 17.5%	PARTICLE SEP. PURGE OFF

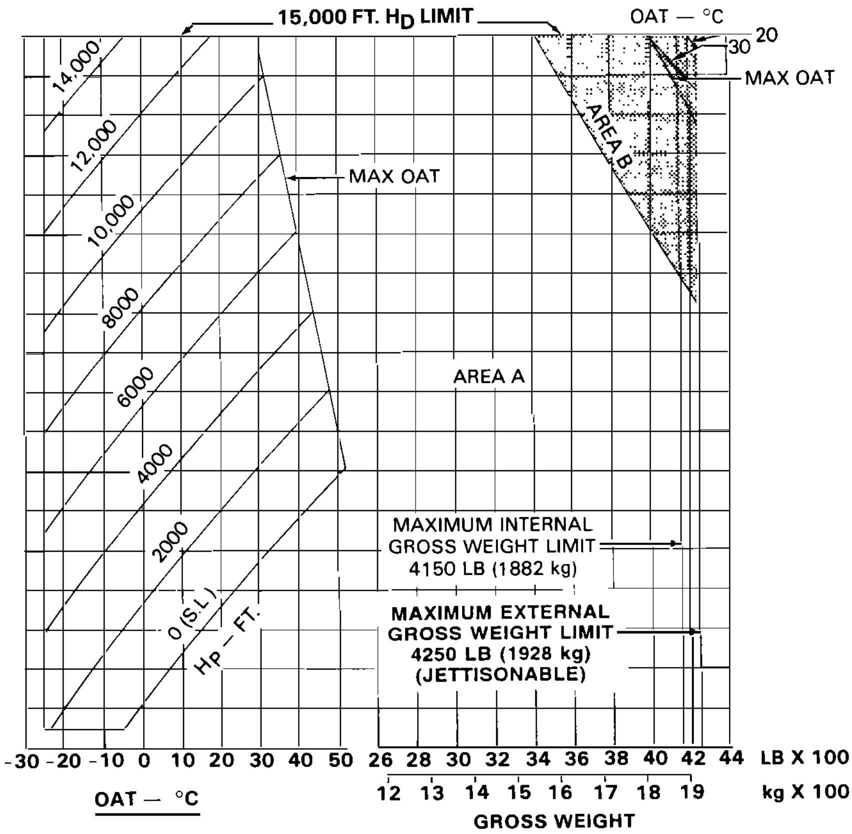

Figure 4-1. Hover ceiling in ground effect (Sheet 1 of 11)

HOVER CEILING
IN GROUND EFFECT
WITH STANDARD SKID LANDING GEAR

TAKEOFF POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

SKID HEIGHT 2.5 FT. (0.7 METER)
ENGINE ANTI-ICING OFF
PARTICLE SEP. PURGE ON

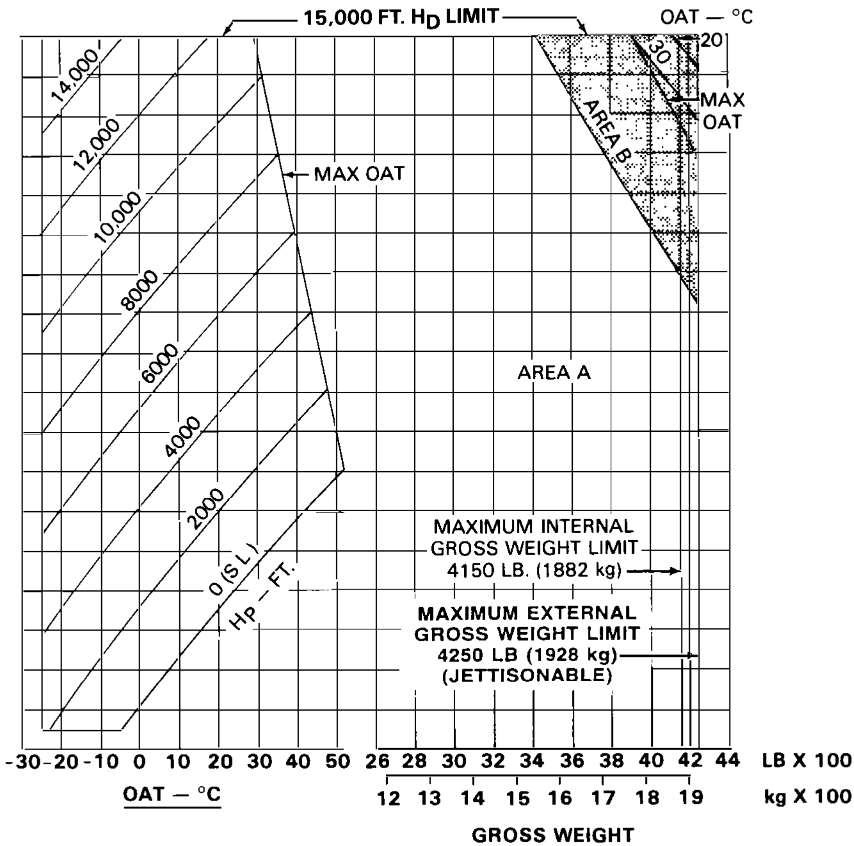

Figure 4-1. Hover ceiling in ground effect (Sheet 2 of 11)

HOVER CEILING
IN GROUND EFFECT
WITH STANDARD SKID LANDING GEAR

POWER — SEE NOTE BELOW
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

SKID HEIGHT 2.5 FT. (0.7 METER)
ENGINE ANTI-ICING ON
PARTICLE SEP. PURGE OFF

NOTE: THIS HELICOPTER CAN BE HOVERED IGE AT MAXIMUM GROSS WEIGHT WITH LESS THAN TAKEOFF POWER.

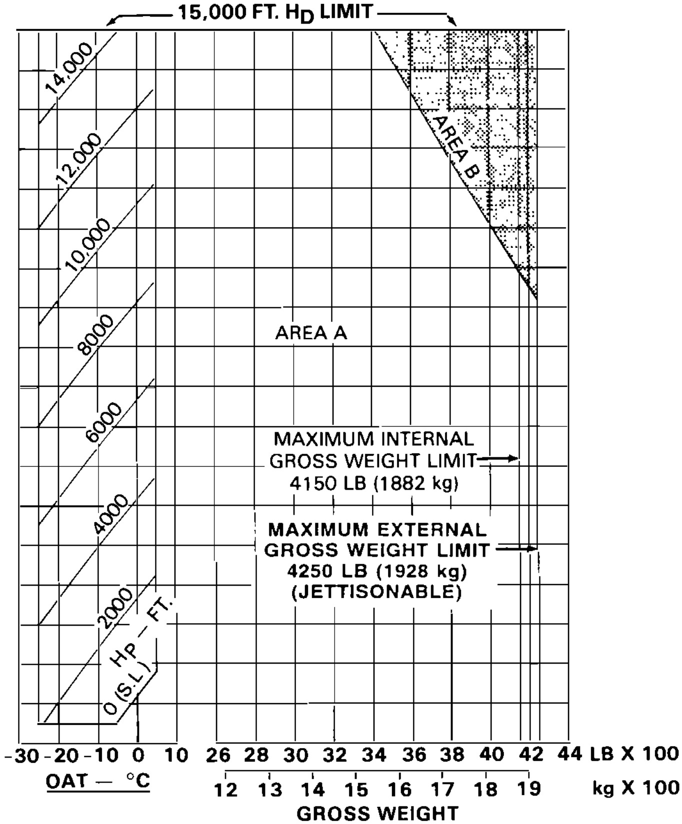

Figure 4-1. Hover ceiling in ground effect (Sheet 3 of 11)

HOVER CEILING
IN GROUND EFFECT
WITH STANDARD SKID LANDING GEAR

POWER — SEE NOTE BELOW
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

SKID HEIGHT 2.5 FT. (0.7 METER)
ENGINE ANTI-ICING ON
PARTICLE SEP. PURGE ON

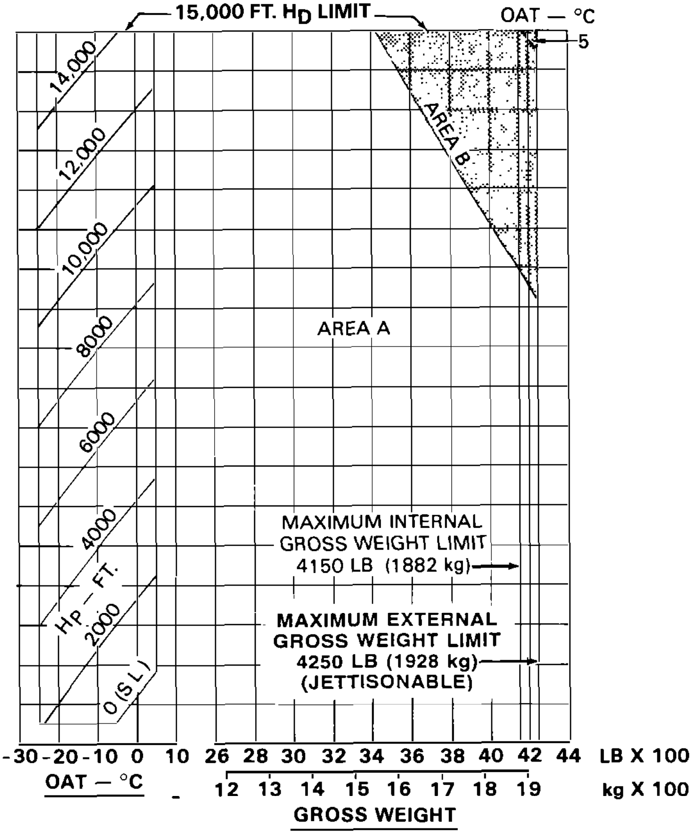

Figure 4-1. Hover ceiling in ground effect (Sheet 4 of 11)

HOVER CEILING
IN GROUND EFFECT
WITH HIGH SKID OR EMERGENCY FLOTATION LANDING GEAR

TAKEOFF POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

SKID HEIGHT 2.5 FT. (0.7 METER)
ENGINE ANTI-ICING OFF
PARTICLE SEP. PURGE OFF

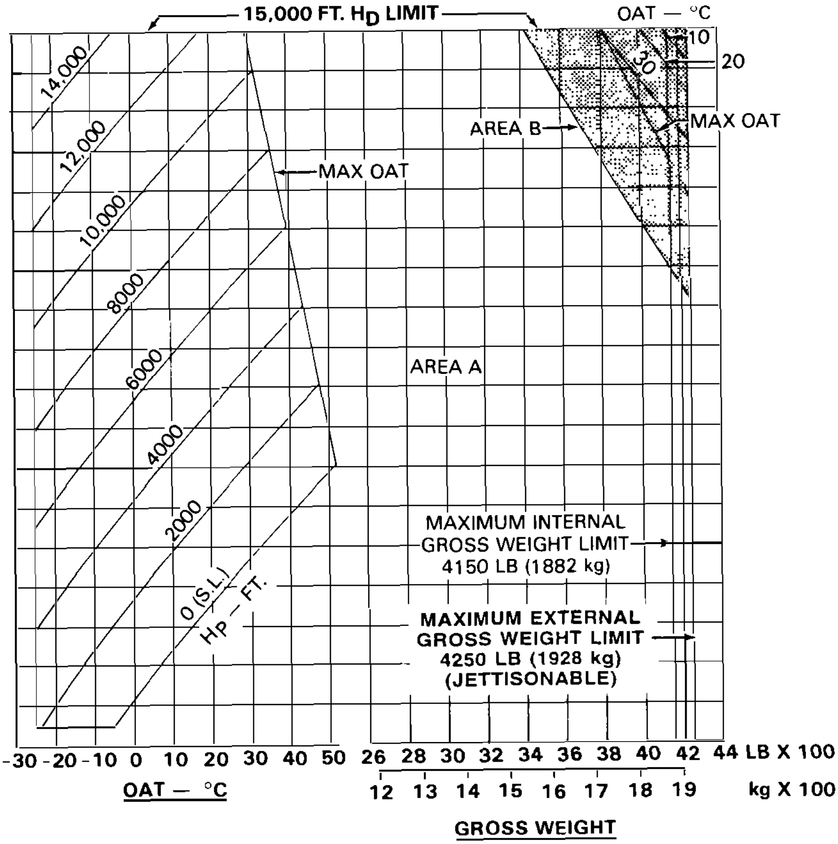

Figure 4-1. Hover ceiling in ground effect (Sheet 5 of 11)

HOVER CEILING
IN GROUND EFFECT
WITH HIGH SKID OR EMERGENCY FLOTATION LANDING GEAR

TAKEOFF POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

SKID HEIGHT 2.5 FT. (0 7 METER)
ENGINE ANTI-ICING OFF
PARTICLE SEP. PURGE ON

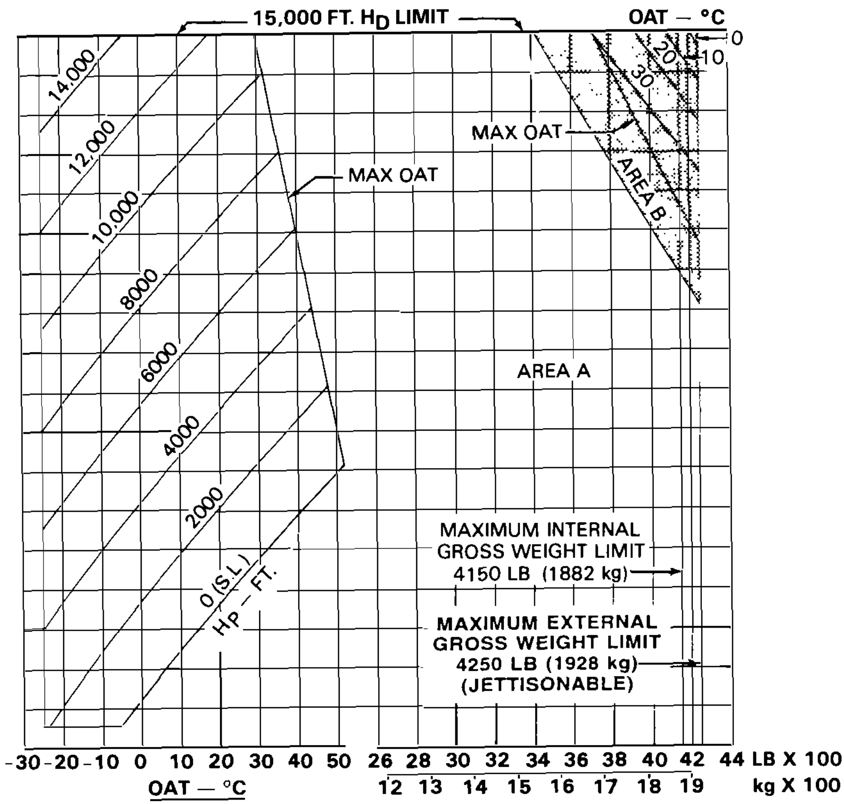

Figure 4-1. Hover ceiling in ground effect (Sheet 6 of 11)

HOVER CEILING IN GROUND EFFECT WITH HIGH SKID OR EMERGENCY FLOTATION LANDING GEAR	
TAKEOFF POWER POWER TURBINE — 100% RPM DC LOAD — 17.5%	SKID HEIGHT 2.5 FT. (0.7 METER) ENGINE ANTI-ICING ON PARTICLE SEP. PURGE OFF

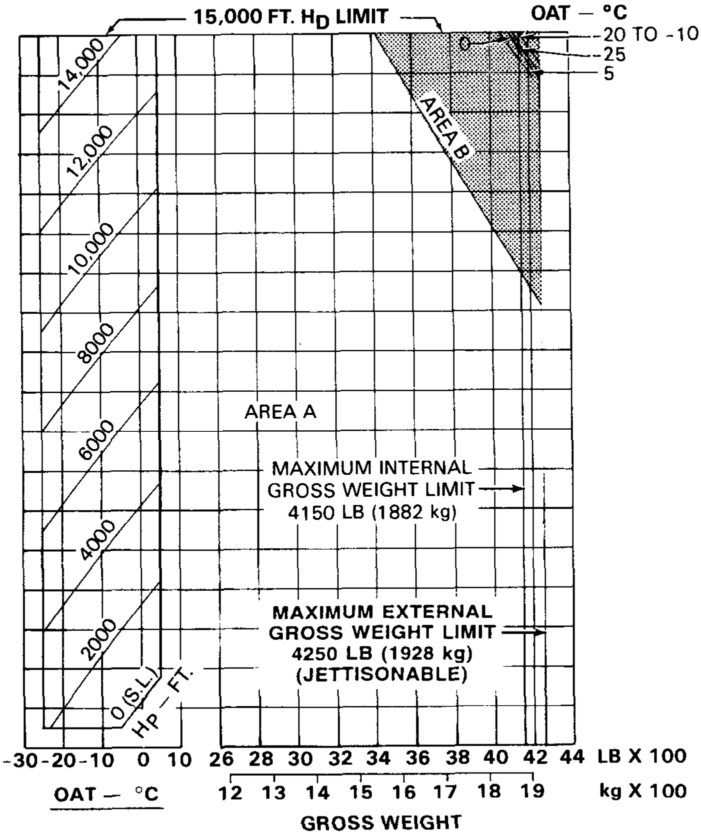

Figure 4-1. Hover ceiling in ground effect (Sheet 7 of 11)

HOVER CEILING
IN GROUND EFFECT
WITH HIGH SKID OR EMERGENCY FLOTATION LANDING GEAR

TAKEOFF POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

SKID HEIGHT 2.5 FT. (0.7 METER)
ENGINE ANTI-ICING ON
PARTICLE SEP. PURGE ON

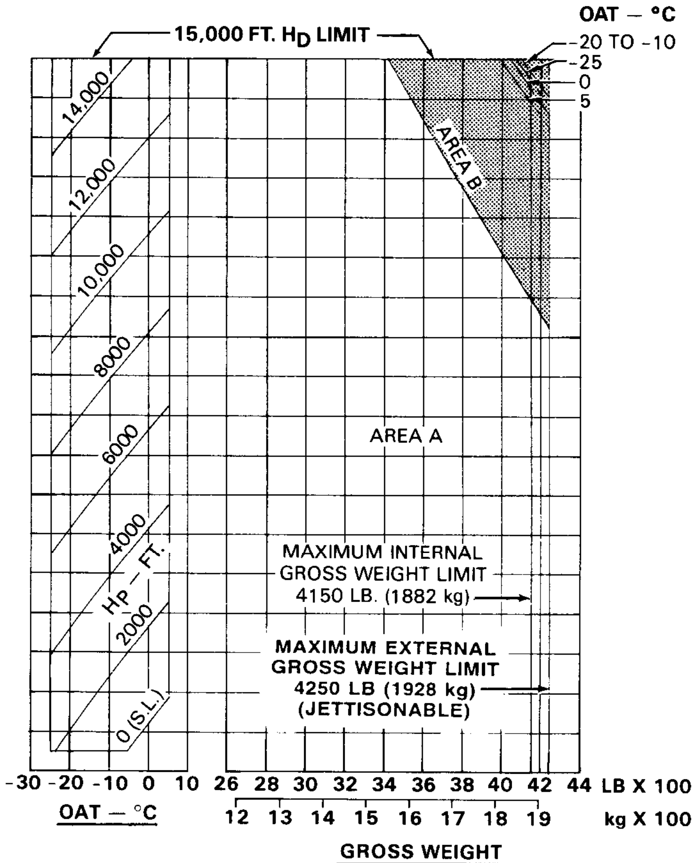

Figure 4-1. Hover ceiling in ground effect (Sheet 8 of 11)

HOVER CEILING
IN GROUND EFFECT
WITH STANDARD FLOAT LANDING GEAR

POWER — SEE NOTE BELOW
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

FLOAT HEIGHT 3.5 FT. (1.1 METERS)
ENGINE ANTI-ICING OFF
PARTICLE SEP. PURGE OFF

NOTE: THIS HELICOPTER CAN BE HOVERED IGE AT THE INDICATED GROSS WEIGHT WITH LESS THAN TAKEOFF POWER.

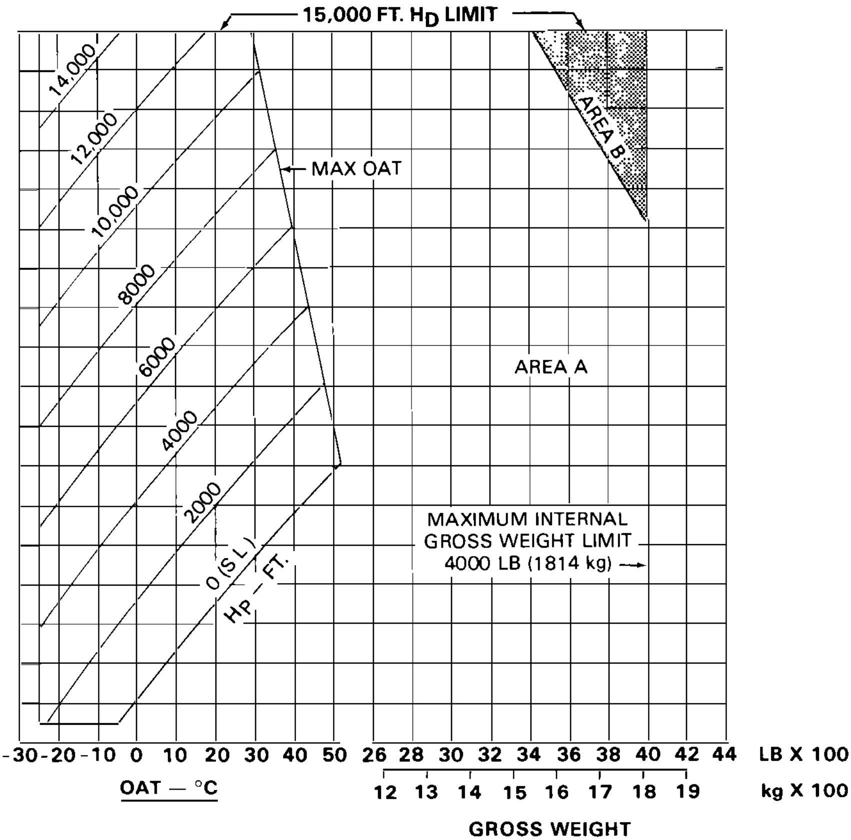

Figure 4-1. Hover ceiling in ground effect (Sheet 9 of 11)

HOVER CEILING
IN GROUND EFFECT
WITH STANDARD FLOAT LANDING GEAR

TAKEOFF POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

FLOAT HEIGHT 3.5 FT. (1.1 METERS)
ENGINE ANTI-ICING OFF
PARTICLE SEP. PURGE ON

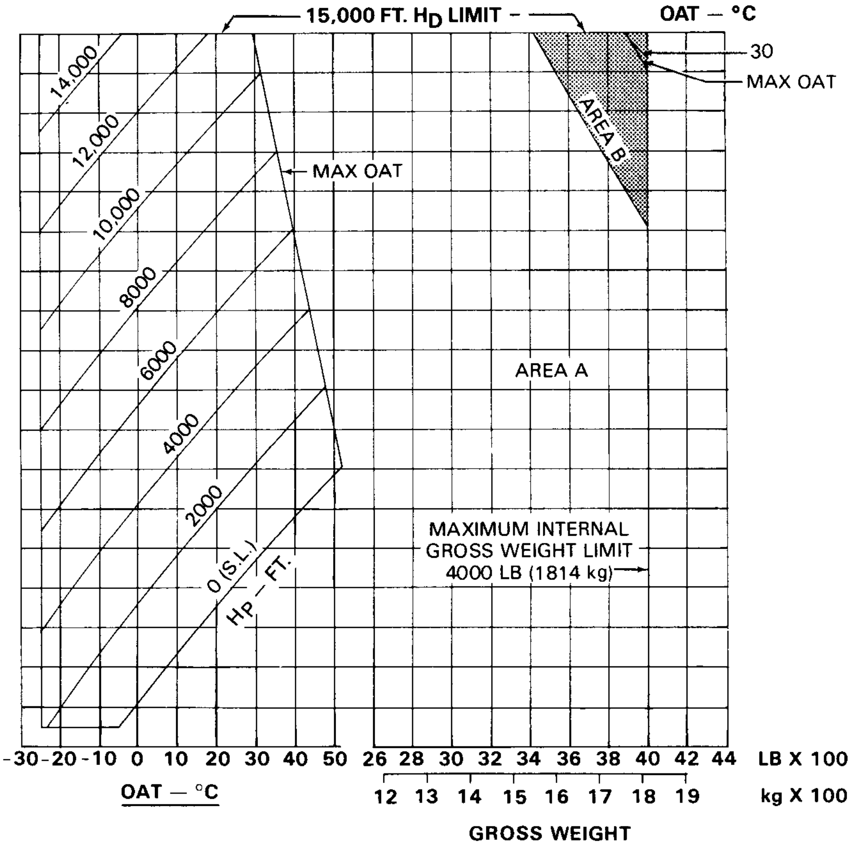

Figure 4-1. Hover ceiling in ground effect (Sheet 10 of 11)

HOVER CEILING
IN GROUND EFFECT
WITH STANDARD FLOAT LANDING GEAR

POWER — SEE NOTE BELOW	FLOAT HEIGHT 3.5 FT. (1.1 METERS)
POWER TURBINE — 100% RPM	ENGINE ANTI-ICING ON
DC LOAD — 17.5%	PARTICLE SEP. PURGE OFF OR ON

NOTE: THIS HELICOPTER CAN BE HOVERED IGE AT THE INDICATED GROSS WEIGHTS WITH LESS THAN TAKEOFF POWER.

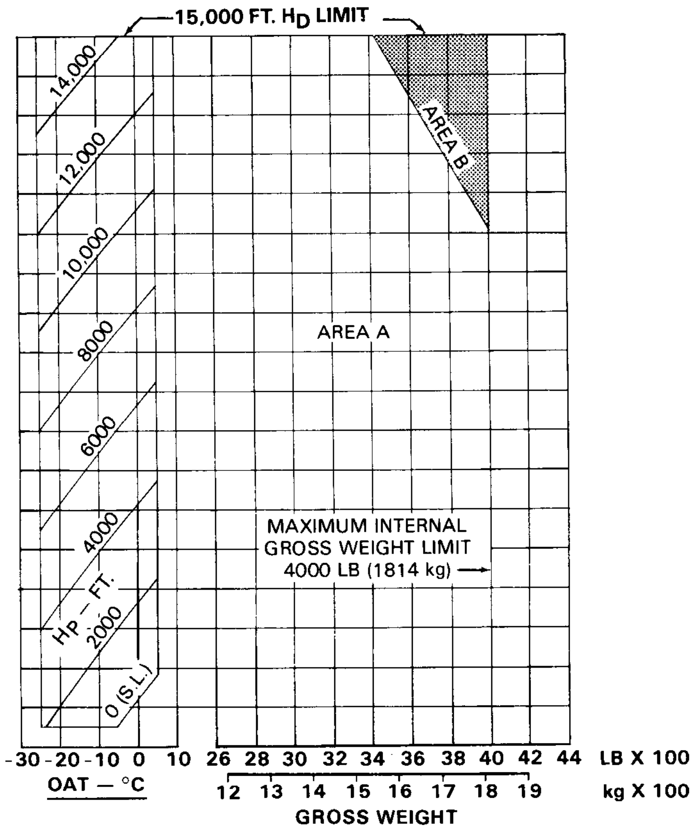

Figure 4-1. Hover ceiling in ground effect (Sheet 11 of 11)

HOVER CEILING

OUT OF GROUND EFFECT
WITH ANY SKID OR FLOAT LANDING GEAR

TAKEOFF POWER	SKID HEIGHT 40 FT. (12.2 METERS)
POWER TURBINE — 100% RPM	ENGINE ANTI-ICING OFF
DC LOAD — 17.5%	PARTICLE SEP. PURGE OFF

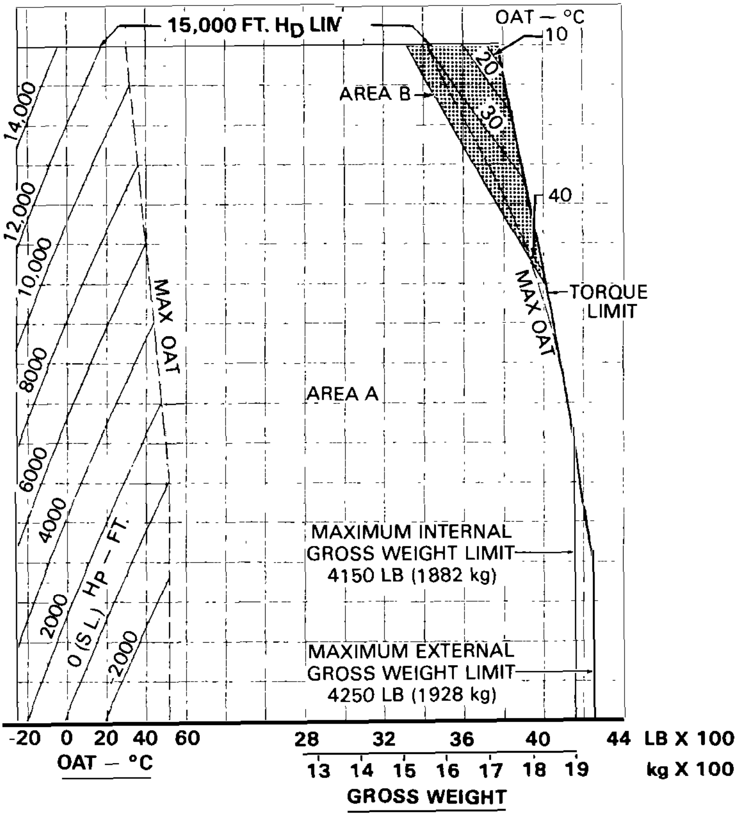

Figure 4-2. Hover ceiling out of ground effect (Sheet 1 of 4)

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

TAKEOFF POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

SKID HEIGHT 40 FT. (12.2 METERS)
ENGINE ANTI-ICING OFF
PARTICLE SEP. PURGE ON

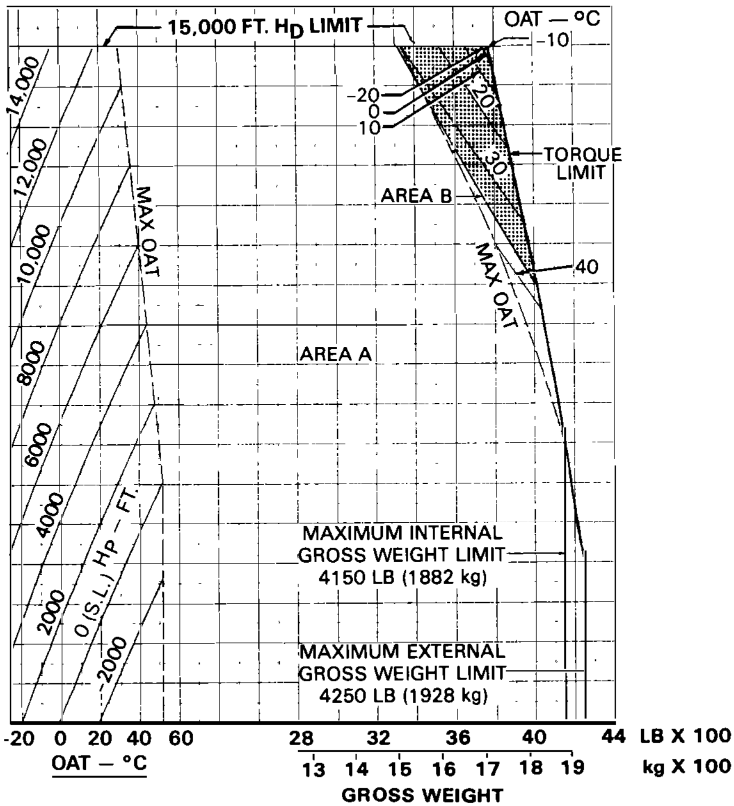

Figure 4-2. Hover ceiling out of ground effect (Sheet 2 of 4)

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

TAKEOFF POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

SKID HEIGHT 40 FT. (12.2 METERS)
ENGINE ANTI-ICING ON
PARTICLE SEP. PURGE OFF

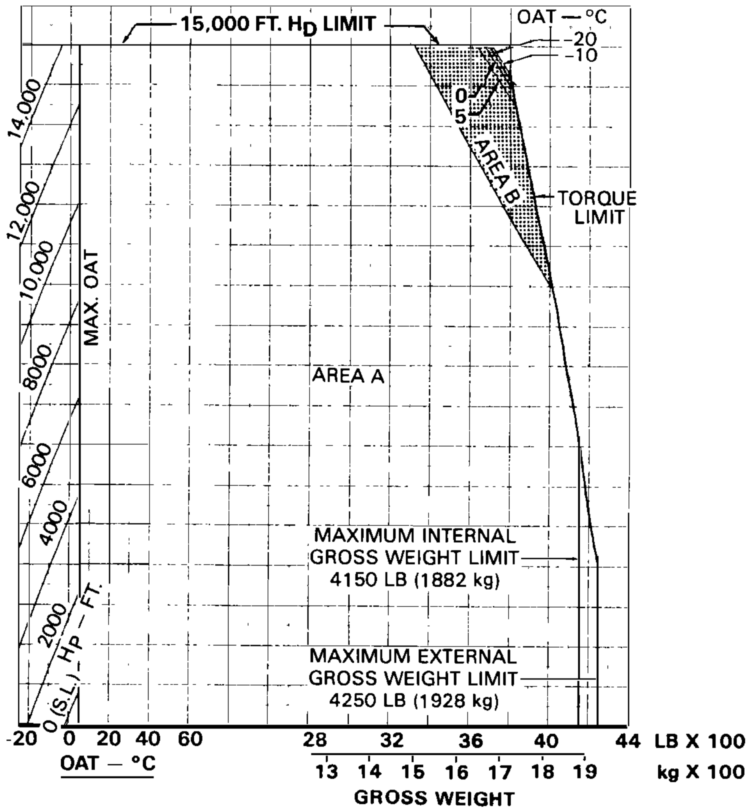

Figure 4-2. Hover ceiling out of ground effect (Sheet 3 of 4)

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

TAKEOFF POWER	SKID HEIGHT 40 FT. (12.2 METERS)
POWER TURBINE — 100% RPM	ENGINE ANTI-ICING ON
DC LOAD — 17.5%	PARTICLE SEP. PURGE ON

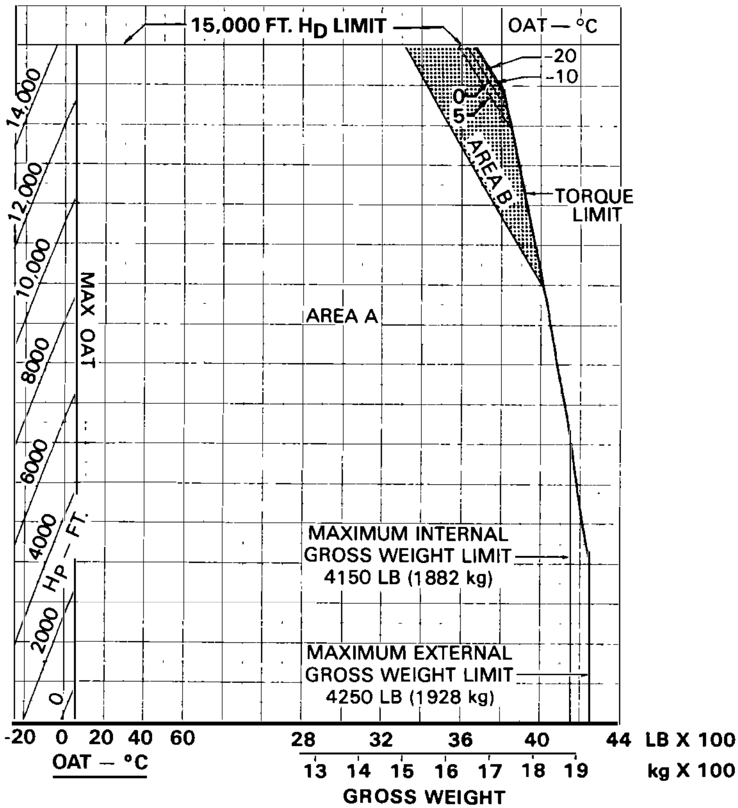

Figure 4-2. Hover ceiling out of ground effect (Sheet 4 of 4)

RATE OF CLIMB

TAKEOFF POWER	57 KIAS
POWER TURBINE — 100% RPM	ENGINE ANTI-ICING OFF
DC LOAD — 17.5%	PARTICLE SEP. PURGE OFF

WITH ENGINE ANTI-ICING ON ABOVE 12,000 FT. H_P, RATE OF CLIMB IS 220 FT./MIN. LESS (BELOW 12,000 FT., NO CORRECTION IS NECESSARY)

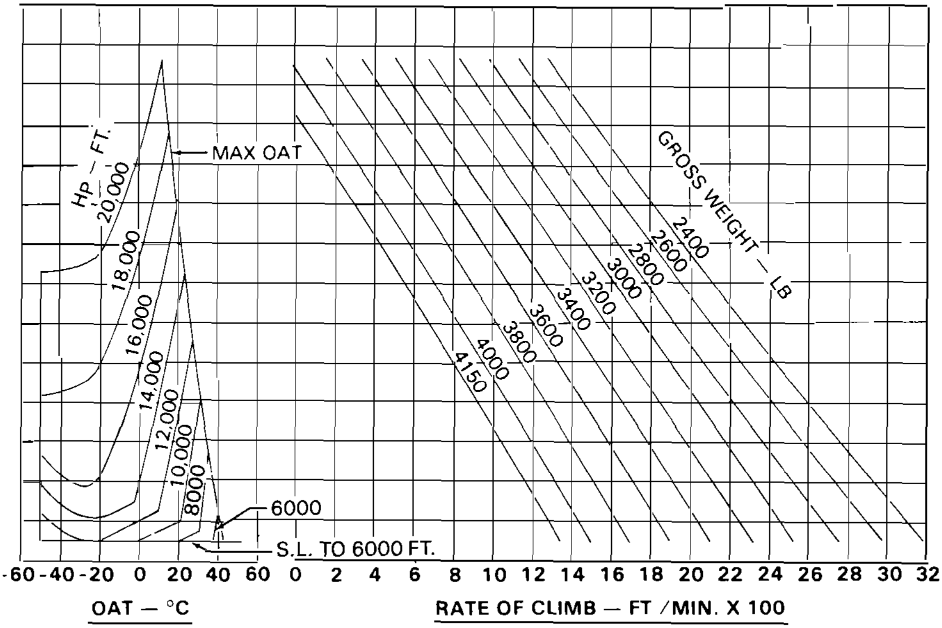

Figure 4-3. Rate of climb (Sheet 1 of 3)

RATE OF CLIMB

TAKEOFF POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

57 KIAS
ENGINE ANTI-ICING OFF
PARTICLE SEP. PURGE ON

WITH ENGINE ANTI-ICING ON ABOVE 12,000 FT. Hp, RATE OF CLIMB IS 220 FT./MIN. LESS (BELOW 12,000 FT., NO CORRECTION IS NECESSARY)

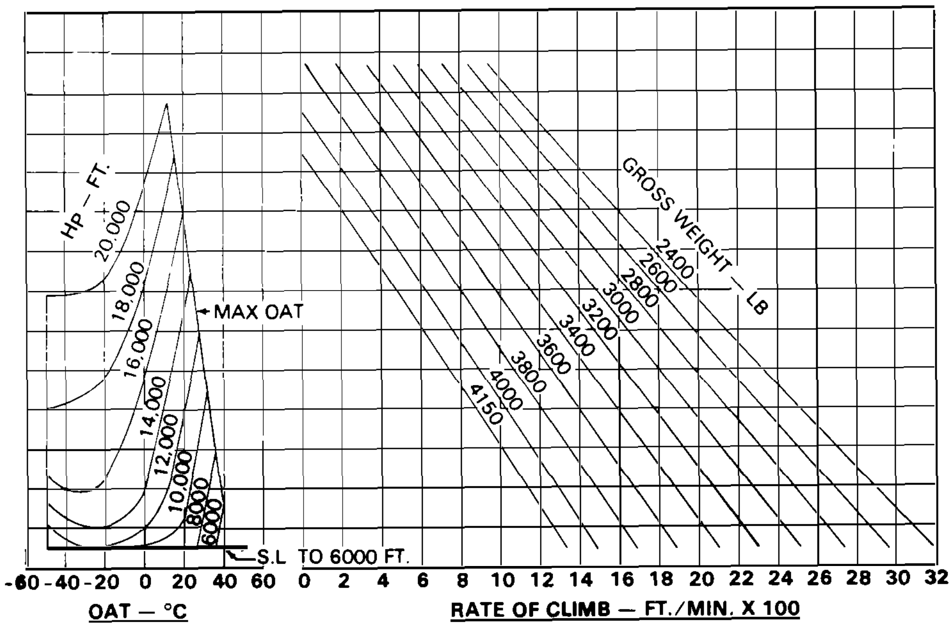

Figure 4-3. Rate of climb (Sheet 2 of 3)

RATE OF CLIMB

MAXIMUM CONTINUOUS POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

57 KIAS
ENGINE ANTI-ICING OFF
PARTICLE SEP. PURGE ON OR OFF

WITH ENGINE ANTI-ICING ON ABOVE 10,000 FT. Hp, RATE OF CLIMB IS 235 FT./MIN. LESS
(BELOW 10,000 FT., NO CORRECTION IS NECESSARY)

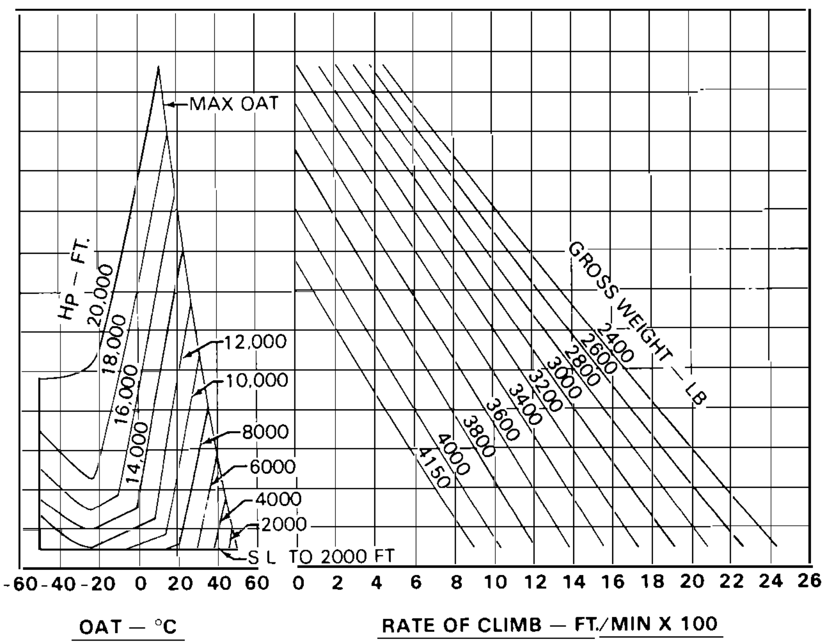

Figure 4-3. Rate of climb (Sheet 3 of 3)

Section 1

MANUFACTURER'S DATA

WEIGHT AND BALANCE

No change from basic manual.

Section 2

MANUFACTURER'S DATA

SYSTEMS DESCRIPTION

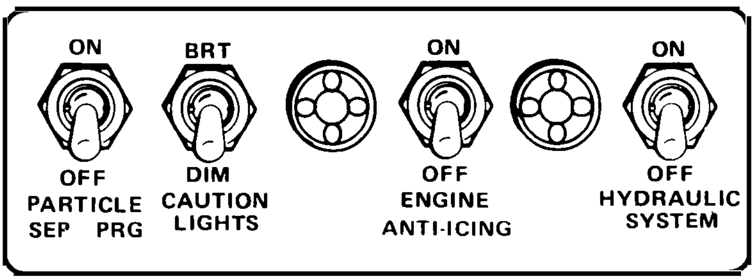

Figure 2-1. Miscellaneous control panel

MODEL 206L3 Bell Long Ranger-III

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT
2000 POUND (907.2 KILOGRAMS) CAPACITY CARGO HOOK
206-706-341

CERTIFIED
DECEMBER 11, 1981

This supplement shall be attached to Model 206L3 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, or other applicable supplements, consult basic Flight Manual.

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FOR
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Reissue	0	08 Nov 99

GENERAL INFORMATION

Installation of Cargo Hook adds to the helicopter the capability of handling external cargo. The hook has a rated capacity of 2000 pounds (907.2 kg). The kit contains electrical and manual releases both operated from the pilots seat. Cargo hook is located at FS 121.0.

The external cargo hook will permit operator to use helicopter for transportation of external cargo when operated by a qualified pilot.

Section 1

LIMITATIONS

TYPE OF OPERATION

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

With a load attached to suspension assembly, operation shall be conducted in accordance with appropriate operating rules for external loads under VFR conditions.

WEIGHT/CG

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

Maximum approved gross weight for external load operations is 4250 lbs (1927.8 kg).

CAUTION

LOADS THAT RESULT IN GROSS WEIGHTS ABOVE 4150 LBS (1882.4 KG) SHALL BE CARRIED ON CARGO HOOK AND SHALL NOT BE IMPOSED ON LANDING GEAR.

Refer to BHT-206L3-FM-1 and BHT-206L3-FMS-5 for Gross Weight Center of Gravity chart for external cargo limits.

CARGO HOOK LOAD

Maximum cargo hook structural loading is 2000 lbs (907.2 kg).

AIRSPEED

V_{NE} is 87 KIAS (100 MPH).

CAUTION

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

Light weight, high drag loads require a swivel connector between the cargo hook and the sling to prevent unstable oscillations in flight above 20 KIAS.

PLACARDS

CARGO LOAD LIMIT 2000 POUNDS

Section 2

NORMAL PROCEDURES

GROUND CREW INSTRUCTIONS

Instruct ground crewmember to discharge helicopter static electricity before attaching cargo by touching airframe with a ground wire, or if a metal sling is used, hookup 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 hookup is completed.

WARNING

USE OF MULTIPLE RINGS SLINGS OR SHACKLES ON THE LOAD BEAM OR PRIMARY LOAD RING, OR USE OF AN OVERSIZED SECONDARY MEMBER IS LIKE USING A PRIMARY LOAD RING SMALLER THAN NOMINAL SIZE. THIS CAN CAUSE THE LOAD TO HANG UP DURING RELEASE.

FAILURE TO COMPLY WITH THESE LIMITATIONS MAY IMPAIR CARGO HOOK RING INTERFACE OPERATION, RESULTING IN POTENTIAL PROBLEMS.

Only one primary ring of nominal size shall be captured in the load beam. Moreover, only one secondary member (ring or shackle) with correct cross-section dimension shall be captured in the primary ring. Additional rings, slings, or shackles shall be attached to the secondary member (Table 2-1).

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 load beam and only one secondary ring with correct cross-section dimension is captured in 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 17149-2

PRIMARY RING INSIDE DIAMETER	PRIMARY RING CROSS SECTION	MAXIMUM CROSS SECTION OF SECONDARY RING
1.50 to 1.68 in. (38.10 to 42.67 mm.)	0.75 in. (19.09 mm.)	0.438 in. (11.12 mm.)

EXTERIOR CHECK

Cargo suspension assembly — Condition and security.

INTERIOR CHECK

1. CARGO HOOK circuit breaker — In.
2. Cyclic CARGO RELEASE switch — Press and hold; pull down on cargo hook; hook should open. Release switch and cargo hook; hook should close and lock.
3. CARGO RELEASE switch — OFF.

BEFORE TAKEOFF

CARGO HOOK circuit breaker — In.

TAKEOFF

NOTE

Better directional control may be realized by avoiding relative winds from the right front quadrant while performing external cargo operations.

1. Hover helicopter at sufficient height to allow crewmember to discharge static electricity and to attach cargo sling to cargo hook.
2. Ascend vertically directly over cargo, then slowly lift cargo from surface.
3. Pedals — Check for adequate directional control.
4. Hover power — Check TORQUE required to hover with external load.
5. Take off into 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.

The EMER CARGO RELEASE PULL handle will function regardless of CARGO RELEASE switch position.

1. AIRSPEED — Within limits for adequate controllability of helicopter load combination.
2. Flight path — As required to avoid flight with external load over any person, vehicle, or structure.

DESCENT AND LANDING

1. Flight path and approach angle — As required for wind direction and obstacle clearance.
2. Execute approach to a hover with cargo clear of the surface. When stabilized at a hover, descend slowly until cargo contacts surface. Maintain tension on sling.
3. Cyclic CARGO RELEASE switch — Press to release sling from hook.

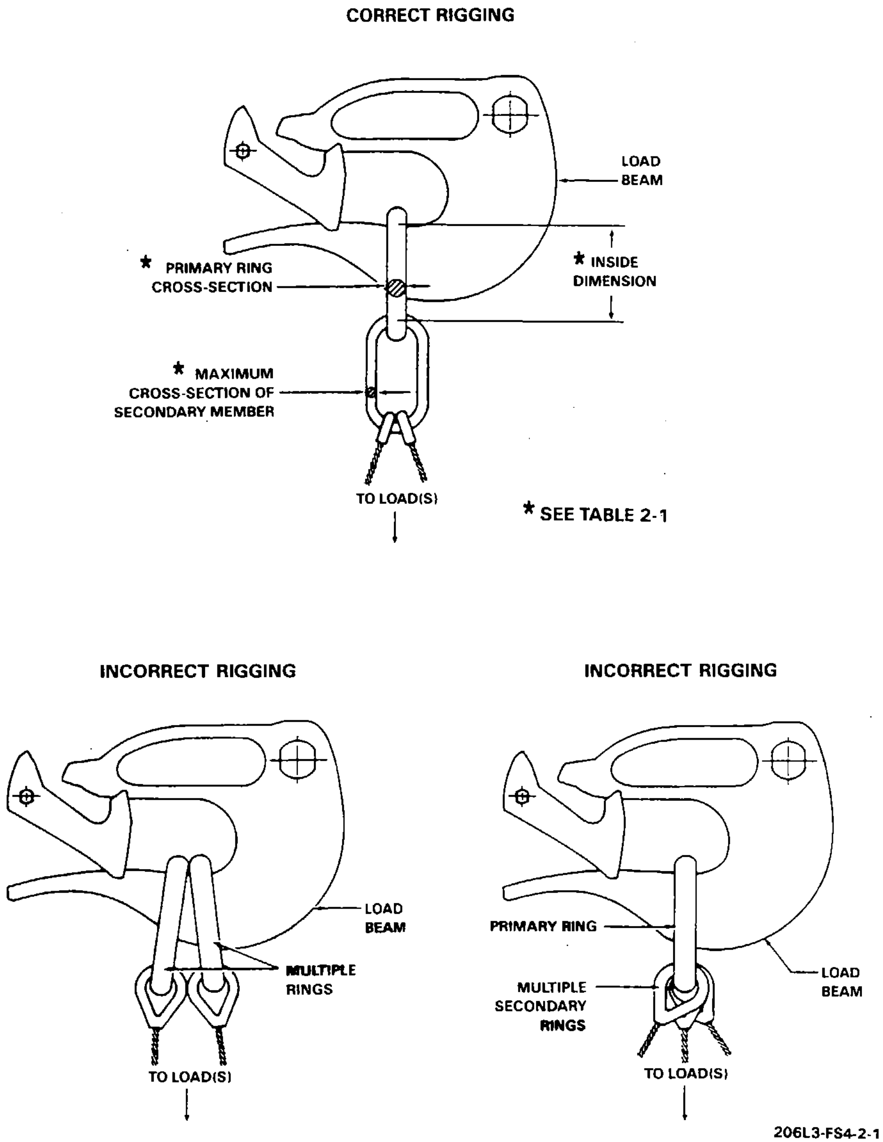

Figure 2-1. Hook ring sizing

Section 3

EMERGENCY PROCEDURES

CARGO FAILS TO RELEASE ELECTRICALLY

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

1. Maintain tension on sling.
2. Pull EMER CARGO RELEASE handle to release cargo in event of an electrical failure.

Section 4

PERFORMANCE DATA

Refer to BHT-206L3-FM-1 or the appropriate Flight Manual Supplement for hover performance.

There is no change from basic flight performance with no load attached to cargo hook.

Performance may be affected by size and shape of external load.

MODEL 206L3

Bell LongRanger-III

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT

IFR CONFIGURATION

206-705-001

SUPPLEMENTAL TYPE CERTIFICATE NO. SH4699SW
BHT 51001 AND SUBSEQUENT

CERTIFIED
JULY 21, 1982

This supplement shall be attached to Model 206L-3 Flight Manual when IFR Configuration 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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POST OFFICE BOX 482 • FORT WORTH, TEXAS 76101

JULY 21, 1982
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NOTICE PAGE

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Bell LongRanger-III
MODEL 206L3

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT

IFR CONFIGURATION
206-705-001

SUPPLEMENTAL TYPE CERTIFICATE NO. SH4699SW
BHT 51001 AND SUBSEQUENT

TEMPORARY REVISION
COUPLING OVERTEMP INDICATORS

NOTICE

This Flight Manual Supplement temporary revision addresses Temp-Plate indicators used to detect overtemperature conditions of grease-lubricated driveshaft couplings.

Insert these temporary revision pages next to like-numbered pages in Flight Manual Supplement after compliance with Bell Helicopter Textron Alert Service Bulletin 206L-93-91.

DO NOT remove existing pages from Flight Manual Supplement. DO NOT remove temporary revision pages until replacement pages containing the revised data are received.

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JULY 21, 1982

TEMPORARY REVISION 23 NOV 93

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Title	Temporary		
A — B	Temporary		
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NOTE

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MANAGER

ROTORCRAFT CERTIFICATION OFFICE
FEDERAL AVIATION ADMINISTRATION
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D D Whitlock

for MANAGER

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FEDERAL AVIATION ADMINISTRATION
FT. WORTH, TX 76193-0170

GENERAL INFORMATION

The 206L3 IFR configuration allows single pilot operation in day or night non-icing IFR conditions. The system contains Collins Microline avionics, an APS-841H autopilot, and a dual, fully redundant electrical system. In addition to allowing single pilot IFR capabilities, the system can also be used to relieve pilot workload in VFR conditions, aid in normal navigation, and assist in helicopter control in turbulent ambient conditions.

This supplement contains descriptive data as well as procedures for using the autopilot system. Refer to Collins Autopilot System Pilots Guide for additional information.

Section 1

LIMITATIONS

1-1. TYPE OF OPERATION

This helicopter is certified for VFR/IFR (Category I) single pilot land operation under day or night, non-icing conditions. The helicopter is approved for continuous single pilot instrument flight using normal flight controls as follows:

FORCE TRIM switch shall be ON.

Manual cyclic friction shall be off.

Autopilot shall be available for operation when needed.

All doors shall be on and secured.

1-2. AUTOPILOT

Autopilot shall be available to the pilot:

as a workload reliever (when needed).

to assist in the event of hydraulic failure.

as an aid in turbulent ambient conditions.

Autopilot may be operated in basic attitude retention mode or coupled in all IFR maneuvers. All coupled modes shall be disengaged below 60 KIAS, although attitude retention mode may be used in VFR conditions at all approved airspeeds.

Landing with autopilot engaged is prohibited.

1-3. REQUIRED EQUIPMENT

The following equipment shall be operational prior to IFR flight:

Autopilot

Force trim

Main generator

Standby generator

Instantaneous Vertical Speed Indicator (IVSI)

Standby attitude indicator (rate of turn indicator not required)

Two communications radios

Two navigation systems appropriate to the intended route

Distance Measuring Equipment (DME)

Equipment specified in appropriate operating regulations

1-4. OPTIONAL EQUIPMENT

IFR configuration is approved with the following:

Cargo hook installation

High skid landing gear (without crosstube fairings)

Emergency flotation landing gear (without crosstube fairings)

Reverse flow inlet fairings (snow deflector baffles)

Standard skid landing gear (with or without crosstube fairings)

NOTE

Standard skid landing gear crosstube fairings shall be removed when reverse flow inlet fairings are installed.

IFR flight is prohibited with the following:

Float landing gear, standard type (fixed floats)

High skid landing gear (with crosstube fairings)

Emergency flotation landing gear (with crosstube fairings)

External cargo (sling load)

External configurations (searchlights, etc.) not specifically approved for IFR flight.

1-5. MINIMUM CREW

Minimum crew for IFR (IMC) flight is one helicopter instrument rated pilot, operating helicopter from right seat.

1-6. WEIGHT/CG

1-7. WEIGHT

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

1-8. CENTER OF GRAVITY — LONGITUDINAL

Center of gravity limits for IFR operation are from station 118.0 (2997 mm) to 127.0 (3226 mm); however, these limits are variable depending upon gross weight. The aft CG limit is extended to station 128.5 (3264 mm) for VFR operations only, and is also variable depending upon gross weight. Refer to Center of Gravity vs Gross Weight chart (figure 1-1).

1-9. AIRSPEED

Minimum approved IFR climb AIRSPEED is 70 KIAS (80 MPH).

Minimum IFR AIRSPEED for cruise, descent, and approach is 60 KIAS (69 MPH).

1-10. ALTITUDE

Maximum pressure altitude for IFR flight is 15,000 feet.

Maximum pressure altitude for autopilot operation is 15,000 feet.

For operation above 10,000 feet pressure altitude, refer to appropriate regulations for oxygen requirements.

1-11. CLIMB/DESCENT

Climb and descent rates during IFR flight are limited to 1000 ft/min.

Maximum approved precision approach angle is 3.5 degrees.

1-12. ELECTRICAL

1-13. MAIN GENERATOR

Maximum — 90% DC LOAD

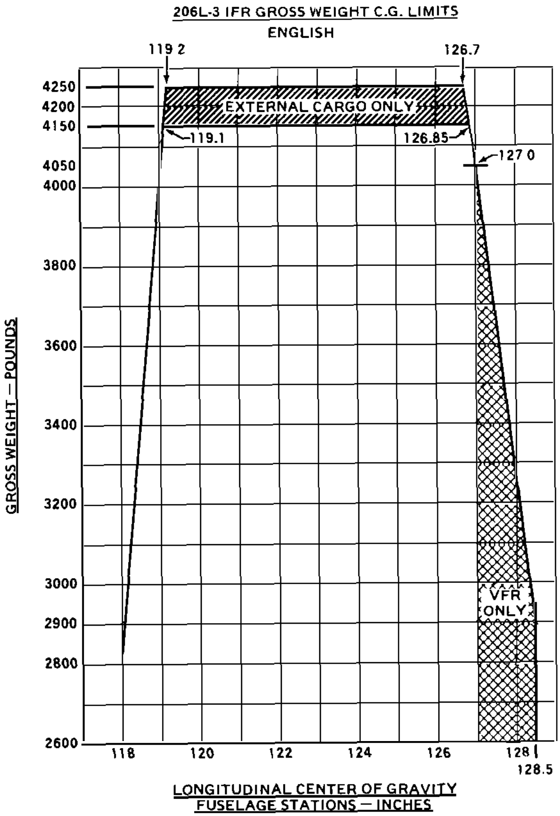


Figure 1-1. Gross weight center of gravity (Sheet 1 of 2)

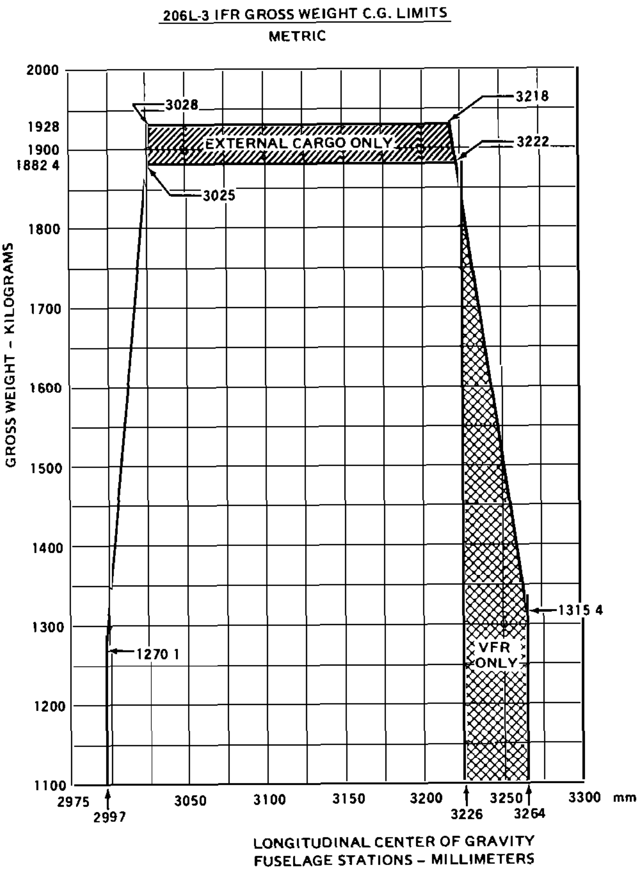


Figure 1-1. Gross weight center of gravity (Sheet 2 of 2)

1-14. STANDBY GENERATOR

Maximum — 83% DC LOAD

Section 2

NORMAL PROCEDURES

2-1. 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 simply a guide to help the pilot check the condition of the helicopter. It may be 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.

2-2. BEFORE EXTERIOR CHECK

1. Flight planning — Completed.
2. Publications — Checked.
3. Gross weight and CG — Computed.
4. Helicopter servicing — Completed.
5. Battery — Connected.

2-3. EXTERIOR CHECK

2-4. FUSELAGE — CABIN RIGHT SIDE

1. STBY ATT circuit breaker (forward of pilot pedals) — Check in.
2. Right static port — Condition.
3. Cabin doors — Condition and security.
4. Windows — Condition and security.
5. Landing gear — Condition and ground handling wheel removed.
6. Forward and aft crosstube fairings — Secured, condition, and aligned.

2-5. FUSELAGE — CENTER RIGHT SIDE

1. Engine inlet — Condition; remove inlet covers.
2. Cabin roof, transmission cowling, and engine air inlet area — Cleaned of all debris and accumulated snow and ice; cowling secured.
3. Hydraulic system filters — Bypass indicator retracted.
4. Hydraulic actuators and lines — Condition, security, interference, leakage.

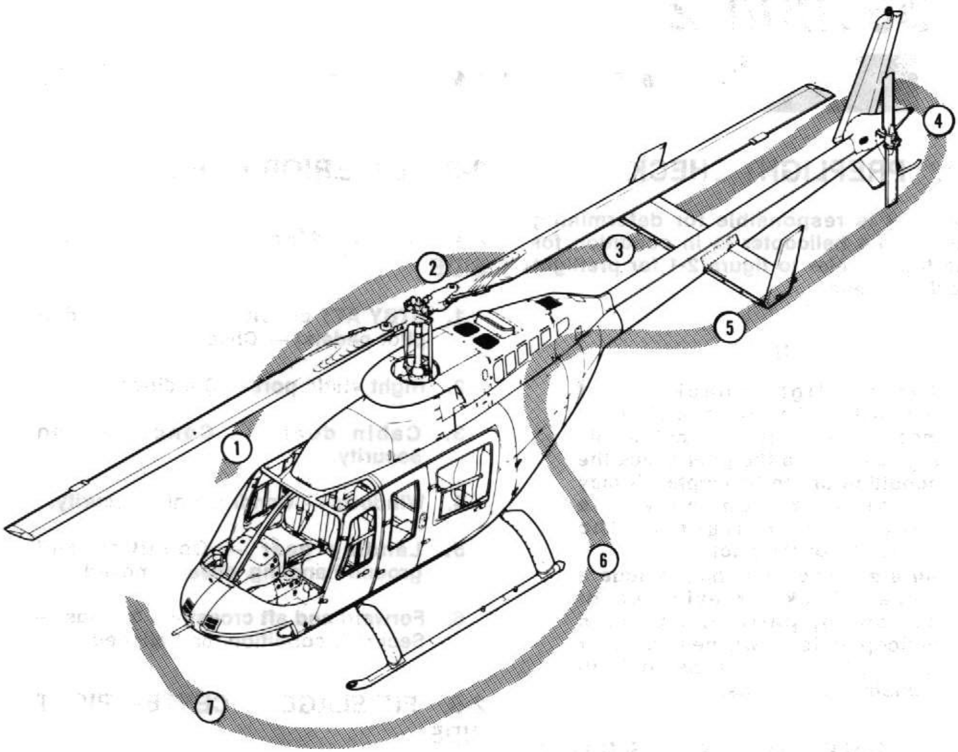


Figure 2-1. Preflight check sequence

2-3. EXTERIOR CHECK

2-5. FUSELAGE — CENTER RIGHT SIDE

9. 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 PER ALERT SERVICE BULLETIN 206L-93-91.

19. Powerplant Area

a. Main driveshaft aft 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 PER ALERT SERVICE BULLETIN 206L-93-91.

5. Forward fairing — Secured.

6. Transmission — Check oil level. Verify actual presence of oil in sight gage.

7. Transmission oil cooler lines — Condition and security.

8. Nodal beam — Check condition and security of elastomeric bearings, elastomeric straps, and fore and aft restraint damper.

9. Main driveshaft forward coupling — Condition and evidence of grease leakage. Check paint strips for evidence of overheat indicated by brown color.

10. Access door — Secured.

11. Rotor head — Condition.

12. Fuse access behind aft passenger seats — Check condition of four fuses; check four MAIN GEN and STBY GEN LOADMETER circuit breakers in.

13. Fuel filler cap — Visually check fuel level and cap secured.

14. Fuel sump — Drain fuel sample as follows:

    a. FUEL BOOST circuit breakers — Out.

    b. BAT switch — On.

    c. FUEL VALVE switch — OFF.

    d. PUSH FOR FUEL SUMP DRAIN button — Press, drain sample, then release.

NOTE

Forward fuel cells can be drained manually as desired.

15. A/F fuel filter — Drain and check before first flight of the day as follows:

    a. FUEL VALVE switch — ON.

    b. FUEL BOOST circuit breakers — In.

    c. CAUTION LIGHTS circuit breaker — In.

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

NOTE

Filter test button is located on top of fuel filter.

16. Fuel filter test button — Press and check FUEL FILTER caution light illuminated. Release switch and check light extinguished.

17. FUEL VALVE switch — OFF.

18. BAT switch — OFF.

19. Powerplant Area

    a. Main driveshaft aft coupling — Condition and evidence of grease leakage. Check paint strips for evidence of overheat indicated by brown color.

    b. Engine — Condition; security of attachments. Evidence of oil leakage.

    c. Engine mounts — Condition and security.

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

    e. Fuel control and mechanical fuel pump — Security and condition; evidence of leakage, governor air lines.

f. Hoses and tubing — Chafing, security, and condition.

20. Engine cowl — Secured.

21. Generator cooling scoop — Clear of debris.

22. Oil tank — Oil level, leaks, security, and cap secured.

23. Access door — Secured.

24. Aft fairing — Secured.

2-6. FUSELAGE — AFT RIGHT SIDE

1. Fuselage — Condition.

2. Tail rotor driveshaft cover — Condition and security.

3. Tailboom — Condition.

4. Horizontal stabilizer and position light — Condition and security.

5. Sync elevator — Check lateral freedom, bearing play, and clear of obstructions.

6. Main rotor blade — Condition.

2-7. FUSELAGE — FULL AFT

1. Vertical fin and VOR antenna — Condition and security.

2. Tail rotor guard — Condition and security.

3. Anticollision light — Condition and security of lens.

4. Aft position light — Condition.

5. Tail rotor gearbox — Oil level, leaks and security.

6. Tail rotor — Tiedown removed, condition and free movement.

7. Tail rotor controls — Condition and security.

8. Tail rotor blades — Condition; tip block security, evidence of corrosion, and seal condition.

2-8. FUSELAGE — AFT LEFT SIDE

WARNING

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

1. Main rotor blade — Tiedown removed; condition.

2. Tailboom — Condition.

3. Tail rotor driveshaft cover — Condition and security.

4. Horizontal stabilizer and position light — Condition and security.

5. Sync elevator — Check lateral freedom, bearing play, and clear of obstructions.

6. Fuselage — Condition.

7. Forward tail rotor driveshaft coupling — Condition of splined adapter.

8. Oil cooler blower shaft hanger bearings — Evidence of grease leakage and overheating.

9. Oil cooler blower — Clear of obstruction and condition.

10. Oil cooler — Condition and leaks.

11. Oil cooler access door — Secured.

12. Aft fairing — Secured.

13. Baggage compartment — Cargo tied down, door secured.

14. Exhaust cover — Removed.

15. Powerplant Area

    a. Engine — Condition; security of attachments.

    b. Engine mounts — Condition and security.

    c. Exhaust stack — Condition and security.

    d. Evidence of fuel and oil leaks.

    e. Hoses and tubing for chafing and condition.

    f. Pneumatic lines — Condition and security.

    g. Linear actuator and governor control linkage — Condition and security.

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

    i. Air induction diffuser hose — Condition and security.

    j. Engine cowling — Secured.

    k. Air induction cowling — Secured.

    l. Cabin roof, transmission cowling, engine air inlet area, and plenum — Clear of all debris and accumulated snow and ice; cowling secured.

16. Transmission Area

    a. Nodal beam — Condition and security of elastomeric bearings, elastomeric strap, and fore and aft restraint damper.

    b. Transmission oil filter bypass button — Ensure not visible.

    c. Main driveshaft forward coupling — Condition and evidence of grease leakage. Check paint strip for evidence of overheat indicated by brown color.

    d. Cockpit indicator pressure lines — Condition and security.

    e. Access door — Secured.

2-9. FUSELAGE — CABIN LEFT SIDE

1. Main rotor hub and yoke — Condition.

2. Main rotor blade doublers and skin — Condition.

3. Pitch horn trunnion bearing — Wear and security.

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

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

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

7. Forward fairing and access door — Secured.

8. Cabin doors and hinge pins — Condition and security.

9. Windows — Condition and security.

10. Hydraulic reservoir — Check fluid level.

11. Landing gear — Condition and ground handling wheel removed.

12. Forward and aft crosstube fairings (if installed) — Secured, condition and aligned.

13. Left static port — Condition.

2-10. FUSELAGE — FRONT

1. Exterior surfaces — Condition.
2. Windshield — Condition and cleanliness.
3. Battery and vent lines — Condition and security.
4. HOUR METER circuit breaker — In.
5. FUEL BOOST LEFT circuit breaker — In.
6. Battery access door — Secured.
7. Pitot tube — Cover removed, clear of obstruction.
8. External power door — Condition and security.
9. Landing light glass — Condition.
10. Antennas — Condition and security.
11. Main rotor blade — Condition.
12. External power — Check BAT switch OFF and APU connected as desired.

2-11. INTERIOR AND PRESTART CHECK

1. Fuse access above copilot seat — Check condition of fuses.
2. Cabin interior — Clean; equipment secured.
3. Fire extinguisher — Installed, fully charged, and secured.
4. Cabin loading — Refer to BHT-206L3-MD-1 to maintain CG within limits.
5. Passenger seat belts — Secured.
6. Copilot seat belt — Secured (if solo).
7. Doors — Secured.
8. Flight controls — Loosen frictions; check freedom of travel; position for start. Tighten frictions as desired.
9. Throttle — Check freedom of travel and IDLE REL operation. Return to closed position.
10. LDG LTS switch — OFF.
11. Lower circuit breakers — In.
12. Compass auto slave switch — In.
13. FORCE TRIM switch — ON.
14. TRIM REL switch — NORM.
15. NON ESS bus switch — NORM.
16. VM SELECT switch — ESS BUS 1.
17. ENG ANTI ICING switch — OFF.
18. HYDRAULIC SYSTEM switch — On.
19. STBY ATTD IND switch — ON, check operation, then OFF.
20. Clock — Wound and set.
21. Autopilot ENG switch — DIS.
22. Instruments — Static check.
23. Altimeter — Set.
24. Alternate STATIC air source switch — NORMAL and covered.
25. Radios — OFF and set.
26. Audio control panel — As desired.
27. FREE AIR temperature gage — Note indication.
28. Overhead switches — OFF.

NOTE

Effective helicopter S/N 51001 through 51389: 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 51390 and subsequent: With the INST LT switch (rheostat) on and CAUTION LIGHT switch positioned to DIM, the caution lights are dimmed to a fixed intensity and can not be adjusted by the INST LT switch.

29. Overhead circuit breakers — In.

WARNING

BOTH FUEL BOOST PUMPS SHALL BE ON DURING ENGINE OPERATION.

30. CABIN LT switch — As desired.
31. Map light — In receptacle; adjust as desired.
32. BAT switch — ON (for battery start). If external power is used for starting, BAT switch OFF. Observe ENG OUT, TRANS OIL PRESS, ROTOR LOW RPM, and GEN FAIL caution lights illuminated.
33. External power — Connected (if used).
34. Applicable RPM audio signals — Check.
35. WRN HORN MUTE button (if installed) — Press to mute.
36. DC — 24 VOLTS minimum.
37. NON ESS bus switch — MAN position if power to No. 2 essential bus and nonessential bus is desired. (External power and night starts.)
38. CAUTION LT TEST button — Press to test. Ensure HYDRAULIC PRESSURE, MAIN GENERATOR, STBY GENERATOR, TRANS OIL PRESS, ENG OUT, and ROTOR LOW RPM lights remain illuminated.
39. TOT LT TEST button — Press; ensure red light on TURB OUT TEMP gage illuminates.
40. Autopilot annunciator and mode control panel lights — Test.

NOTE

Rotate lights test knob on autopilot mode control panel counterclockwise to test lights.

41. FUEL VALVE switch — ON, guard closed. Check FUEL pressure indication.
42. FUEL QTY — Check.
43. Engine out audio — Check on.

NOTE

Engine out audio may be deactivated.

44. Rotor low RPM audio — Check as follows (if WARN HORN MUTE button is installed, disregard):

    Collective pitch — Increase; ensure audio on and ROTOR LOW RPM light illuminated. Fully down; ensure audio off, and light illuminated.

45. Cyclic and pedals — Positioned for start.
46. POS LT switch — On for night operation.
47. ANTI COLL LT switch — On.

2-12. ENGINE STARTING

1. Collective pitch — Fully down.

2. GOV RPM switch — DECR for 3 seconds.

3. Throttle — Fully closed.

4. Rotors — Clear.

5. STARTER button — Press to engage. (Observe engine starter limitations.)

6. TURB OUT TEMP — 150°C or below.

7. Throttle — Modulate to idle at 12% GAS PRODUCER RPM for all ambient temperatures.

NOTE

Starts may be modulated if conditions warrant. Modulate by slowly opening throttle at the appropriate GAS PRODUCER RPM until TURB OUT TEMP and GAS PRODUCER RPM accelerate. TURB OUT TEMP and GAS PRODUCER RPM acceleration must be regulated by the throttle and closely monitored to maintain proper TURB OUT TEMP.

Starts should be accomplished in the TURB OUT TEMP range of 716°C to 768°C. This procedure will result in shorter duration starts and is less detrimental to the engine than cooler, longer duration starts.

Consult Allison Engine Operation and Maintenance Manual if limits are exceeded or if TURB OUT TEMP warning light illuminates.

8. TURB OUT TEMP — Monitor. (Do not exceed 10 seconds above 768°C or a maximum of 927°C.)

CAUTION

IF MAIN ROTOR IS NOT ROTATING BY 25% *GAS PRODUCER* RPM, ABORT START.

NOTE

ENG OUT light extinguishes at 55 ± 3% GAS PRODUCER RPM.

9. STARTER — Release at 58% GAS PRODUCER RPM.

10. ENG OIL and XMSN OIL pressures — Check.

CAUTION

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

NOTE

During cold temperature operations, stabilize at idle until ENG OIL temperature reaches 0°C.

11. GAS PRODUCER — 63 to 65% RPM.

12. Auxiliary power — Disconnect. BAT switch — On.

13. Throttle — Open to 70% GAS PRODUCER RPM.

14. STBY GEN switch — On.

15. DC LOAD — Check for positive indication.

16. VM SELECT switch — Check all positions (except MAIN GEN and NON ESS BUS) for 28.5 VOLTS; leave in NON ESS BUS position.

17. NON ESS bus switch — MAN; check 28.5 VOLTS then NORM.

18. MAIN GEN switch — On.

19. VM SELECT switch — Check all positions for 28.5 VOLTS; leave in ESS BUS 1 position.

2-13. PRELIMINARY HYDRAULIC SYSTEMS CHECK

NOTE

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

HYDRAULIC SYSTEM switch — OFF, then ON.

2-14. ENGINE RUNUP

1. Throttle — Increase smoothly to fully open position. Check ROTOR LOW RPM caution light extinguished at 90% ROTOR RPM.
2. GOV RPM switch — Check POWER TURBINE governor actuator range 97 to 100% RPM; set at 100% RPM.
3. Radios and navigation equipment — ON.
4. ELT (if installed) — Check for inadvertent transmission.
5. STBY ATTD IND switch — ON.
6. Flight controls — Check freedom with minimum friction.
7. Force trim — Check proper operation of magnetic brakes and cyclic TRIM REL button.

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 flight control actuator.

2-15. HYDRAULIC SYSTEMS CHECK

1. Collective — Fully down.
2. ROTOR — 100% RPM.
3. HYDRAULIC SYSTEM switch — OFF.
4. Cyclic — Centered.
5. 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.
6. Collective — Check for normal operations by increasing collective control slightly (1 to 2 inches). Repeat 2 to 3 times as required. Return to fully down position.
7. HYDRAULIC SYSTEM switch — ON.
8. Cyclic and collective friction — Set as desired.

NOTE

Perform the following check only if the ambient temperature is below 10°C (50°F).

9. ENG ANTI ICING switch — On. Check for TURB OUT TEMP increase. If not required, switch OFF; check TURB OUT TEMP decrease.

NOTE

If temperature is below 4.4°C (40°F) and visible moisture is present, the ENGINE ANTI-ICING shall be ON.

2-16. BEFORE TAKEOFF

1. Attitude indicators — Set.
2. Marker beacon lights — Test.

3. HSI — Slaved; check heading corresponds with magnetic compass; course arrow set.

4. Course/glideslope deviation indicator — Set OBS knob to desired course.

5. Altimeter — Set.

6. VERTICAL SPEED indicator — Note indication.

7. Clock — Set and running.

8. Communications and navigation equipment — Functioning and set for departure.

9. ANTI COLL LT switch — As required.

10. PITOT HEAT switch — On for flight into visible moisture with temperature at or below 2°C (35.6°F).

NOTE

The red MON and AP WRN annunciator lights and the audio warning horn will activate until autopilot engages. This verifies that the autopilot monitor is functional. Release ENG switch as soon as red MON light extinguishes, or autopilot will disengage.

11. Autopilot ENG switch — ENG momentarily, then centered. Check green AP ENG annunciator light and green triangle mode control panel light on.

CAUTION

CYCLIC CONTROL MAY MOTOR TO STOPS IF AUTOPILOT IS LEFT ENGAGED WHILE HELICOPTER IS ON GROUND.

12. Cyclic stick — Move fore/aft and laterally; ensure that autopilot override is possible. Center cyclic stick.

13. Cyclic TRIM REL switch — Press; ensure amber TRM light illuminates and autopilot servo actuators disengage. Center cyclic and release switch; check autopilot engages and TRM light extinguishes.

14. Autopilot ENG switch — DIS position.

15. Flight controls — Position for takeoff. (Cyclic friction off for IFR flight.)

16. FORCE TRIM switch — ON for IFR flight.

17. Throttle — Fully open. Check 100% POWER TURBINE RPM.

18. Engine, transmission, and electrical instruments — Within limits.

2-17. IN-FLIGHT OPERATIONS

NOTE

Refer to AUTOPILOT SYSTEM for operation of this system.

1. Observe AUTOPILOT, AIRSPEED, ALTITUDE, and CLIMB/DESCENT LIMITATIONS in Section 1.

2. For IFR climb PERFORMANCE, refer to Section 4.

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

4. Autopilot — Engage and select modes as desired. Ensure green triangle and AP ENG lights illuminated.

5. AIRSPEED — 80 KIAS (92 MPH) (recommended climb speed for IFR flight).

NOTE

When ENG ANTI ICING is selected, TURB OUT TEMP will increase. Monitor TURB OUT TEMP when selecting ENG ANTI ICING at high power settings.

6. ENG ANTI ICING switch — On in visible moisture when temperature is below
4.4°C (40°F).

2-18. DESCENT AND APPROACH

CAUTION

DURING ENROUTE DESCENT, USE CAUTION NOT TO EXCEED PLACARDED V_{NE}.

1. Throttle — Fully open. Check 97 to 100% POWER TURBINE RPM.

NOTE

Decreasing the collective pitch to low power may result in RPM overspeed. For prolonged low power approaches, RPM can be controlled by a small amount of collective pitch increase (no significant torque increase) and/or by decreasing the GOV RPM switch to obtain 100% POWER TURBINE RPM. This will maintain POWER TURBINE RPM within limits during low power descents; however, the GOV RPM switch should be positioned to INCR as collective is increased. (Refer to POWER TURBINE RPM in LIMITATIONS, Section 1.)

2. AIRSPEED — 100 KIAS (115 MPH) (recommended instrument approach speed).

WARNING

THE AUTOPILOT CAN INITIATE ILS GLIDESLOPE CAPTURE FROM ABOVE, CAUSING STEEP DESCENT ANGLES AND EXCESSIVE AIRSPEEDS. WHEN INTERCEPTING LOCALIZER ABOVE GLIDESLOPE, ENGAGE *NAV* MODE AND MANUALLY FLY TO THE GLIDESLOPE; THEN REENGAGE *APPR* MODE IF DESIRED.

3. Flight path — As required for type of approach.

CAUTION

WHEN CONDUCTING A LOCALIZER BACK COURSE APPROACH ON AUTOPILOT, BE PREPARED TO SWITCH TO *HDG* MODE TO CONTROL LATERAL TRACKING DEVIATIONS FROM THE FINAL APPROACH FIX INBOUND. DUE TO PROXIMITY OF THE LOCALIZER ANTENNA ARRAY, EXCESSIVE COURSE DEVIATIONS MAY BE EXPERIENCED IN THE *B/C* COUPLED MODE UPON NEARING THE MISSED APPROACH POINT.

2-19. GO AROUND

CAUTION

MOVEMENT OF ATTITUDE TRIM SWITCH WILL NOT DISENGAGE *APPR* MODE. PRESSING *TRIM REL* SWITCH WILL MOMENTARILY

RELEASE *APPR* MODE ONLY WHILE SWITCH IS HELD DOWN.

1. GO AROUND switch — Press at missed approach point.

2. Collective — Adjust to desired climb power setting.

3. AIRSPEED — 80 KIAS (92 MPH) (recommended IFR climb speed).

2-20. LANDING

1. LDG LTS switch — OFF.

2. Throttle — Reduce to idle stop.

3. Flight controls — Position for shutdown; apply frictions.

4. ENG ANTI ICING switch — OFF.

5. TURB OUT TEMP — Stabilized at idle speed for two minutes.

6. ELT (if installed) — Check for inadvertent transmission.

7. Radio and navigation equipment — OFF.

8. IDLE REL switch — Press and hold.

CAUTION

TO ENSURE ENGINE SHUTDOWN, HOLD THROTTLE IN CLOSED POSITION UNTIL *GAS PRODUCER* DECELERATES TO 0% RPM AND *TURB OUT TEMP* IS STABILIZED.

9. Throttle — Closed; check TURB OUT TEMP and GAS PRODUCER RPM decreasing.

NOTE

It is not necessary to turn FUEL VALVE switch OFF, since neither fuel pump is connected directly to battery.

10. Cyclic — Apply as required to minimize mast bumping during rotor coast down.

11. Rotor brake — Engage between 38 and 25% ROTOR RPM as desired; return handle to stowed position.

12. Pilot — Remain at controls until rotor has come to a complete stop.

13. Light and heating switches — OFF.

14. MAIN GEN and STBY GEN switches — OFF.

15. All overhead switches — OFF.

16. BAT switch — RESET, then OFF.

NOTE

The battery will discharge if STBY ATTD IND switch remains on after BAT switch is turned OFF.

17. STBY ATTD IND switch — OFF.

2-21. AFTER EXITING HELICOPTER

If any of the following conditions exist:

1. Thunderstorms are in the local area or forecasted.

2. Winds in excess of 20 knots or a gust spread of 15 knots exists or is forecasted.

3. Helicopter is parked within 150 feet of hovering or taxiing aircraft that are in excess of basic gross weight of helicopter.

4. Helicopter to be left unattended.

Perform the following:

1. Moor aft main rotor blade with tiedown assembly by drawing blade down lightly against the static stop and tying web strap to tailboom.

2. Moor tail rotor with tiedown strap and tie loosely to tailboom to prevent excessive flapping.

3. Install exhaust cover and engine inlet covers.

NOTE

Refer to BHT-206L3-MD-1 for additional tiedown data.

2-22. AUTOPILOT SYSTEM

2-23. OPERATION

- MODE SELECTION

Attitude Retention mode is engaged by placing the ENG/DIS switch in ENG position. All other modes are selected by pushing desired push-on/push-off button on the mode control panel. Lights on the mode control and the remote annunciator panel indicate the selected mode of operation and should always be checked to verify that proper switching has occurred.

- MODE DISENGAGEMENT

All autopilot modes can be momentarily released (except ALT mode, which disengages) by pressing the cyclic TRIM REL switch. Any mode may be disengaged individually by pressing the respective illuminated mode select switch or by selecting another mode. Placing the ENG/DIS switch in DIS position disengages all functions of the autopilot.

- ATTITUDE TRIM

The cyclic mounted ATTD TRIM switch can be moved for/aft to adjust pitch attitude and laterally to adjust roll attitude during any autopilot mode of operation with the following exceptions.

Fore/aft movement of ATTD TRIM switch will disengage ALT mode. Pitch trim will be inoperative in APPR mode after computer has switched to G/S CAP status.

Lateral movement of ATTD TRIM switch will disengage HDG and NAV modes. Roll trim will be inoperative in APPR and B/C modes.

- TRIM/AUTOPILOT RELEASE

Cyclic mounted TRIM REL switch can be pressed to deactivate autopilot pitch and roll servoactuators, allowing manual control of helicopter. Upon pressing switch, ALT mode will disengage, but all other modes will be released momentarily. Upon releasing switch, servos will again be activated and autopilot will resume functioning in preselected modes (except ALT mode). In Attitude Retention mode, autopilot will maintain attitude existing when switch was released. When autopilot is not in use, pressing TRIM REL switch will release force trim magnetic brakes.

Cyclic TRIM REL switch is disabled when console mounted TRIM REL switch is in OVERRIDE position. Force trim or autopilot operation will remain normal, but cannot be interrupted with cyclic TRIM REL switch.

- ALTITUDE HOLD MODE

Altitude Hold (ALT) mode can be engaged during all modes of operation except after glideslope capture in APPR mode. Autopilot will maintain pressure altitude existing when mode is selected by changing pitch attitude of helicopter. It is recommended that ALT mode be engaged below 500 feet per minute rate of climb or descent to avoid excessive excursions in attitude and airspeed. Pilot shall adjust power as required to maintain desired airspeed. Moving ATTD TRIM switch fore/aft, or pressing cyclic TRIM REL switch will disengage the ALT mode.

- **HEADING MODE**

HDG mode maneuvers helicopter to turn to and maintain heading selected under heading index on HSI. To complete a turn of more than 135°, it is best to set heading index approximately 135° in direction of desired turn. After completing 120° of turn, select up to an additional 135°.

NOTE

Presence of a NAV or HDG flag is a warning of system or signal failure. Autopilot will hold attitude that helicopter was in at time of signal loss and will return to computed flight when flag disappears. Anytime autopilot is engaged, primary flight instruments shall be monitored by pilot.

- **NAVIGATION MODE**

NAV mode provides for automatic capture and tracking of a selected VOR radial or ILS localizer. Course arrow on HSI must be set to desired course. When NAV mode is engaged, HDG mode will be engaged automatically, provided computer has not switched to a capture status. NAV ARM will be displayed on the remote annunciator. Helicopter will follow heading set under heading index on HSI until selected VOR radial or ILS localizer is approached. HDG and NAV ARM annunciator lights will extinguish; NAV CAP light will illuminate, indicating computer has switched to capture status. Helicopter will turn to track course centerline. Crosswind correction is automatically computed after course capture. This procedure takes approximately 120 seconds to function properly. Approaches should be planned to allow ample time for crosswind correction function to stabilize.

NOTE

When flying inbound toward a VOR, do not set up a VOR capture problem within approximately 5 miles of the VOR (depending on speed of helicopter and intercept angle). The system may not have time to solve the problem and stabilize on course before reaching the station.

When tracking inbound on a VOR radial, set heading index of HSI to current heading. As VOR station is approached, select HDG mode to affect a smooth station passage. After HDG mode is selected, adjust course knob to select outbound course. Upon station passage, set heading index to outbound course. Autopilot will turn helicopter to new heading. Then select NAV mode and system will capture and track outbound on new course, while providing automatic crosswind correction.

- **APPROACH MODE**

The APPR mode is used to execute an ILS or localizer approach. When APPR mode is engaged, the HDG mode will be engaged automatically, provided computer has not switched to a capture status. Localizer capture is the same as described in NAVIGATION MODE. After localizer centerline tracking is achieved, system will automatically arm to capture glideslope. The G/S ARM light will illuminate 10 seconds after NAV capture and when glideslope is intercepted, the G/S CAP light will illuminate. ALT mode, if engaged, will automatically disengage at glideslope capture.

Autopilot will initiate glideslope capture from above or below glideslope. When capturing glideslope from above, descent angle may be too steep, causing pitch attitude and airspeed to become excessive. It is recommended that APPR mode be disengaged, NAV mode engaged, and helicopter be flown manually to intercept glideslope. APPR mode may then be engaged as desired.

Loss of localizer or glideslope signal after capture will not remove mode annunciation. Autopilot will maintain helicopter attitude existing at the time of signal loss. It is the responsibility of the pilot to monitor the validity of all navigation data being used.

- BACK COURSE MODE

B/C mode is used to execute a localizer back course approach. An ILS frequency must be selected on No. 1 Navigation receiver before the B/C mode can be engaged. Course arrow on HSI must be set to ILS front course. When B/C mode is engaged, localizer capture is the same as described in NAV mode, except that reverse sensing for approach course is provided. Glideslope circuits are disengaged during B/C mode operation, and pilot is responsible for maintaining airspeed, altitude, and rate of descent.

- GO AROUND MODE

G/A mode is engaged by pressing G/A switch located on collective control head. G/A switch commands a level roll, 2° pitch up attitude without disengaging autopilot. To minimize cockpit workload, published go around heading should be set on HSI as soon as localizer or radial capture has occurred. It is responsibility of pilot to monitor airspeed while autopilot is G/A mode. If visual runway contact is not made at DH or missed approach point, execute a missed approach as follows:

1. Press G/A switch on collective control head while increasing power to desired climb power setting. All other modes are cancelled, and trim switch deactivated. Autopilot commands are for a level roll (wings level) pitch up (climbout) attitude.
2. After go around power settings and airspeed are established, press HDG switch on mode control panel to maintain desired airspeed. Autopilot will turn to and maintain pre-selected go around heading.

NOTE

Selecting a lateral mode removes go around mode.

APPR mode may be disengaged and Attitude Retention mode engaged by pressing APPR switch (if illuminated) on mode control panel. Pressing NAV or HDG switch will also disengage APPR mode and simultaneously engage new mode selected. Go around pitch attitude may be adjusted then by moving ATTD TRIM switch fore and aft, or by pressing cyclic TRIM REL switch.

NOTE

When using autopilot for go around following ILS, localizer, or terminal VOR approach, select HDG or Attitude Retention MODE for a smooth station passage.

- LANDING

Pilot shall disengage all modes, except Attitude Retention, prior to decelerating below 60 KIAS (69 MPH). Autopilot may be used in Attitude Retention mode during approach termination to a hover, if desired. Autopilot shall be disengaged prior to touchdown.

- TURBULENCE DAMPING

Turbulence damping is a gain modifier that can be selected in conjunction with any mode to provide improved system performance during turbulent conditions. Turbulence damping is selected by pressing push-on/push-off TURB switch on mode control panel and is indicated by illumination of white triangle light adjacent to switch. For best autopilot operation in smooth air, turbulence damping should be disengaged.

NOTE

Refer to Collins Pilots Guide fo Bell Model 206L3 Helicopter for additional information.

Section 3

EMERGENCY AND MALFUNCTION PROCEDURES

Table 3-1. WARNING LIGHT (RED) SEGMENTS

PANEL WORDING	FAULT CONDITION	CORRECTIVE ACTION
ENG OUT (audio if functional)	GAS PRODUCER less than 55 ± 3% RPM; POWER TURBINE decreasing.	Reduce collective pitch immediately to autorotate. Press cyclic TRIM REL switch and reduce AIRSPEED to minimum IFR speed of 60 KIAS (69 MPH), and turn into wind. Verify failure from gages (GAS PRODUCER less than 55% RPM and POWER TURBINE decreasing). If ample altitude remains, investigate failure and attempt ENGINE RESTART (refer to BHT-206L3-FM-1). Upon encountering VFR conditions, decelerate to approximately 52 KIAS (60 MPH) and perform autorotative landing.
AP WRN (audio and light)	Component failure or monitor limits for bank or pitch exceeded. NOTE Autopilot will disengage if failure is due to loss of gyro or electrical power.	Check APDC, AP 26 VAC, and AP 115 VAC circuit breakers in, and attempt to engage autopilot. If autopilot will not engage, place autopilot ENG switch in DIS position. Other malfunctions will not disengage autopilot (LAT, F/A, exceeding pitch or bank limits), but will be indicated by the annunciator lights and audio warning. Place autopilot ENG switch in DIS position to extinguish AP WRN light and silence audio warning. Return switch to ENG position for continued operation.

Table 3-2. CAUTION LIGHT (AMBER) SEGMENTS

PANEL WORDING	FAULT CONDITION	CORRECTIVE ACTION
HYDRAULIC PRESSURE	Hydraulic pressure is below minimum.	Use autopilot to assist in helicopter control. Refer to HYDRAULIC SYSTEM FAILURE.
MAIN GENERATOR	Failure of main generator.	Check standby generator picks up load. Check MAIN GEN FIELD and MAIN GEN RESET circuit breakers in. MAIN GEN switch RESET, then on. If power is not restored, MAIN GEN switch — OFF. NON ESS bus switch — MAN position to restore power to non-essential bus.
STBY GENERATOR	Failure of standby generator.	Check main generator functioning normally. Check STBY GEN FIELD, OVLD, and RESET circuit breakers in. STBY GEN switch — RESET, then on. If power is not restored, STBY GEN switch — OFF. **WARNING** PLACE *NON ESS* BUS SWITCH IN *NORM* POSITION IF BOTH GENERATORS FAIL. REFER TO *TOTAL ELECTRICAL FAILURE (BOTH GENERATORS).*
BATTERY RLY	Battery relay open, caused by overloading; and battery emergency relay is closed, connecting battery to essential bus 1.	If both generators have failed, do not reset battery relay. To reset battery relay, place BAT switch to RESET, then on.

3-1. USE OF AUTOPILOT DURING EMERGENCIES

In the event of an inflight emergency, the autopilot may be used to assist in maintaining desired attitude during powered flight or autorotation in IFR conditions. Press cyclic TRIM REL button to gain manual control of cyclic, then disengage all modes except attitude retention mode. Use cyclic ATTD TRIM switch to adjust attitude as desired. Disengage autopilot prior to landing.

3-2. ENGINE FIRE DURING IFR FLIGHT

- INDICATIONS:

1. Smoke.

2. Fumes.

3. Fire.

- PROCEDURE:

1. Throttle — Closed.
2. Immediately enter autorotation..
3. FUEL VALVE switch — OFF.
4. MAIN GEN and STBY GEN switches — OFF.
5. Use autopilot as desired to maintain attitude during autorotative descent while in IFR conditions.
6. BAT switch — OFF when VFR conditions are encountered.
7. Execute autorotative descent and landing.

NOTE

Do not restart engine until corrective maintenance has been performed.

3-3. AUTOPILOT MALFUNCTIONS

3-4. AUTOPILOT HARDOVER

WARNING

MAXIMUM ALTITUDE LOSS DUE TO AUTOPILOT MALFUNCTION IS AS FOLLOWS:
CLIMB, CRUISE, AND DESCENT — 240 FEET.
APPROACH — 140 FEET.

- INDICATIONS:

1. Sudden disturbance in helicopter attitude.
2. Illumination of red AP WRN light when the helicopter attitude reaches the malfunction monitor trip limits.
3. Autopilot failure audio warning.

- PROCEDURE:

1. Cyclic control — Press TRIM REL switch and correct helicopter attitude.
2. Autopilot ENG switch — DIS position; AP WRN light will extinguish and audio warning will cease.

3-5. AUTOPILOT DISENGAGEMENT

- INDICATIONS:

1. Illumination of the red AP WRN light.
2. Autopilot failure audio warning.
3. A deviation in helicopter attitude may or may not occur depending upon the helicopter attitude and flight condition at the time of disengagement.

- PROCEDURE:

1. Cyclic control — Press TRIM REL switch and correct helicopter attitude.
2. Autopilot ENG switch — DIS position; AP WRN light will extinguish and audio warning will cease.

3. Autopilot AC and DC circuit breakers — Check in.

4. Autopilot ENG switch — ENG position. If autopilot will not engage, switch to DIS position.

NOTE

Autopilot will not engage if GYO annunciator light is illuminated.

3-6. AUTOPILOT TRIM RUNAWAY

● INDICATIONS:

Autopilot continues to trim after cyclic ATTD TRIM switch has been released.

● PROCEDURE

1. Cyclic control — Press TRIM REL switch and correct helicopter attitude.

2. Autopilot ENG switch — DIS position.

3. AP TRIM circuit breaker — Pull out.

4. Autopilot ENG switch — ENG position.

5. Engage modes as desired.

3-7. TRIM/AUTOPILOT RELEASE MALFUNCTION

● INDICATIONS:

TRIM annunciator remains illuminated after cyclic TRIM REL switch has been released.

● PROCEDURE:

1. Cyclic control — Correct helicopter attitude.

2. TRIM REL (console) switch — OVERRIDE.

NOTE

With TRIM REL switch in OVERRIDE position, the autopilot or force trim will be engaged and operation will be normal, except that cyclic TRIM REL switch will be inoperative. Autopilot or force trim may be released by placing the TRIM REL switch (console) in NORM position. Use of autopilot is recommended.

3-8. HYDRAULIC SYSTEM FAILURE

● INDICATIONS:

1. Illumination of the HYDRAULIC PRESSURE caution light.

2. Increase in force required for control movements.

3. Control feedback forces.

NOTE

Control motions will result in normal flight reactions in all respects, except for the increased force required for control movement.

● PROCEDURE:

NOTE

If autopilot is used during hydraulic system failure, hands-on flight is recommended to assist the autopilot.

1. Reduce AIRSPEED to 70 to 100 KIAS (80 to 115 MPH).

2. HYDR SYSTEM circuit breaker — Out. If power not restored, push breaker in.

3. HYDRAULIC SYSTEM switch — ON; OFF if power not restored.

4. A run-on landing at approximately 9 KIAS (10 MPH) is recommended.

3-9. ELECTRICAL POWER FAILURE

3-10. BOTH GENERATORS FAILED

- INDICATIONS:

1. Illumination of MAIN GENERATOR and STBY GENERATOR caution lights.

2. 0 DC VOLT indication on all positions of the VM SELECT switch except ESS BUS 1.

NOTE

The autopilot should continue to function normally.

- PROCEDURE:

WARNING

NON ESS BUS SWITCH SHALL BE PLACED IN *NORM* POSITION TO PROTECT BATTERY POWER. IN THIS CONDITION, ONLY ESSENTIAL BUS 1 WILL BE POWERED.

1. NON ESS bus switch — NORM.

2. MAIN GEN FIELD, RESET; and STBY GEN FIELD, OVLD, and RESET circuit breakers — Check in.

3. MAIN GEN and STBY GEN switches — RESET, then on.

4. Reduce electrical load to minimum required.

NOTE

Battery power will maintain minimum electrical load for approximately 30 minutes.

5. Land as soon as practical.

3-11. MAIN GENERATOR FAILURE

- INDICATIONS:

1. Illumination of MAIN GENERATOR caution light.

2. 0 DC VOLT indication with VM SELECT switch in MAIN GEN position.

NOTE

In the event of main generator failure, the standby generator will automatically come on line to power both essential buses if STBY GEN switch is on.

The autopilot should continue to function normally.

- PROCEDURE:

1. MAIN GEN FIELD and MAIN GEN RESET circuit breakers — In.

2. MAIN GEN switch — RESET, then on. If power is not restored switch to OFF.

NOTE

Items on the nonessential bus (refer to MANUFACTURER'S DATA, Section 2) will be inoperative at this time but can be recalled by switching NON ESS bus switch to MAN position.

3. NON ESS bus switch — MAN if required to restore power to nonessential bus.

3-12. ELECTRICAL BUS FAILURES

- INDICATIONS:

One or more of the following conditions:

1. MAIN GENERATOR caution light.
2. STBY GENERATOR caution light.
3. Smoke.
4. Odor.
5. Total loss of electrical power.

- PROCEDURE:

Follow procedures as outlined in ELECTRICAL POWER FAILURE. If generator failure is not indicated, follow appropriate procedure as follows.

3-13. ESSENTIAL BUS 1 FAILURE

- INDICATIONS:

1. Smoke.
2. Odor.
3. Drop in DC VOLTS to near zero.
4. Loss of autopilot, No. 1 radios, and all other equipment on the essential bus 1.

- PROCEDURE:

1. Helicopter attitude — Correct with cyclic.
2. VM SELECT switch — ESS BUS 1; confirm low voltage, then switch to ESS BUS 2; monitor DC VOLTS.
3. Radios — Use No. 2 VHF COMM and hand mike for communications.
4. Land as soon as practical.

3-14. ESSENTIAL BUS 2 FAILURE

- INDICATIONS:

1. Smoke.
2. Odor.
3. Drop in DC VOLTS to near zero.
4. Loss of force trim, No. 2 radios, and all equipment on essential bus 2.

- PROCEDURE:

1. VM SELECT switch — ESS BUS 2; confirm low voltage, then switch to ESS BUS 1; monitor DC VOLTS.
2. STBY GEN OVLD circuit breaker — Check in.
3. Radios — Use No. 1 VHF COMM and headset for communications.
4. Land as soon as practical.

3-15. NONESSENTIAL BUS FAILURE

- INDICATIONS:

1. Smoke.
2. Odor.
3. Drop in DC VOLTS to near zero.
4. Loss of all equipment on nonessential bus .

- PROCEDURE:

1. VM SELECT switch — NON ESS BUS; confirm low voltage.
2. NON ESS CONT circuit breaker — Check in.
3. NON ESS bus switch — MAN.
4. VM SELECT switch — ESS BUS 1; monitor DC VOLTS.

3-16. PITOT-STATIC SYSTEM MALFUNCTIONS

3-17. AIRSPEED SYSTEM MALFUNCTION

- PROCEDURE:

1. PITOT HEAT switch — On in visible moisture.
2. STATIC switch — ALTN.
3. Collective pitch — Adjust TORQUE as follows:
   a. 85% TORQUE — Climb at 1000 ft/min.
   b. 70% TORQUE — Cruise.
   c. 50% TORQUE — Descent at 1000 ft/min.

NOTE

These recommended TORQUE settings
should maintain AIRSPEED within approved IFR limits.

4. Land as soon as practical.

3-18. STATIC PORT ICING

- INDICATIONS:

Delayed or inactive vertical speed and altimeter indications during climb or descent.

- PROCEDURE:

STATIC switch — ALTN. Refer to Airspeed Calibration Chart in PERFORMANCE, Section 4.

NOTE

Altimeter indicates slightly high when ALTN position is selected. Increase IFR approach minimum altitudes approximately 50 feet when flying on alternate static source.

3-19. INTERCOM FAILURE

1. Audio control panel AUTO switch — As required (SP position for speaker and hand mike, or PH position for headphones).
2. Hand microphone or headphones — Plug into appropriate receptacle.

Section 4

PERFORMANCE

Refer to appropriate performance charts in accordance with optional equipment installed. All performance charts are based on use of primary (NORMAL) static air source.

RATE OF CLIMB
WITH STANDARD INLET

TAKEOFF POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

80 KIAS
ENGINE ANTI-ICING OFF

WITH ENGINE ANTI-ICING ON ABOVE 12,000 FT. H_P, RATE OF CLIMB IS 220 FT./MIN. LESS
(BELOW 12,000 FT., NO CORRECTION IS NECESSARY)

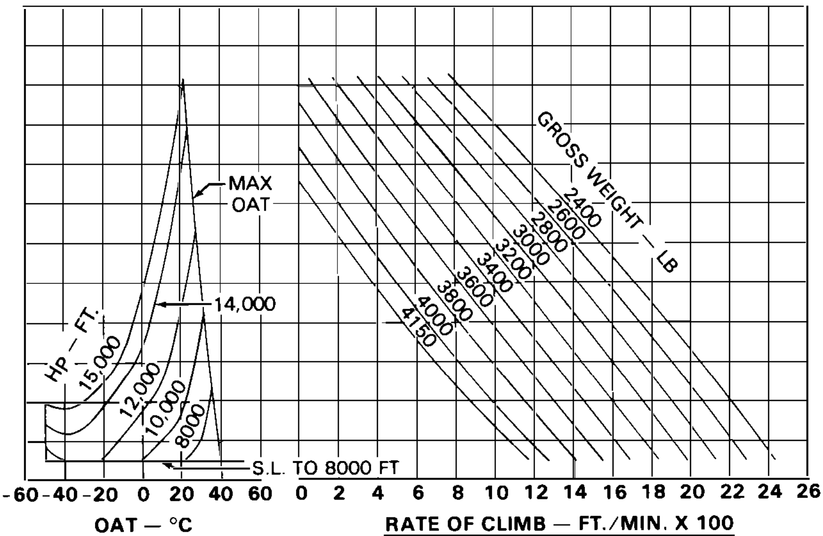


Figure 4-1. Rate of climb (Sheet 1 of 7)

RATE OF CLIMB
WITH STANDARD INLET

MAXIMUM CONTINUOUS POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

80 KIAS
ENGINE ANTI-ICING OFF

WITH ENGINE ANTI-ICING ON ABOVE 12,000 FT. Hp , RATE OF CLIMB IS 230 FT./MIN. LESS
(BELOW 12,000 FT., NO CORRECTION IS NECESSARY)

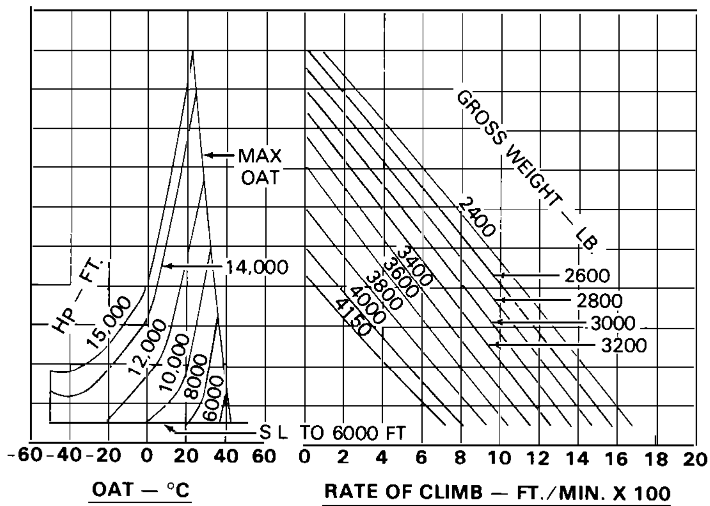


Figure 4-1. Rate of climb (Sheet 2 of 7)

RATE OF CLIMB
WITH SNOW DEFLECTOR

TAKEOFF POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

80 KIAS
ENGINE ANTI-ICING OFF

WITH ENGINE ANTI-ICING ON ABOVE 10,000 FT. H_P, RATE OF CLIMB IS 220 FT./MIN. LESS (BELOW 10,000 FT., NO CORRECTION IS NECESSARY)

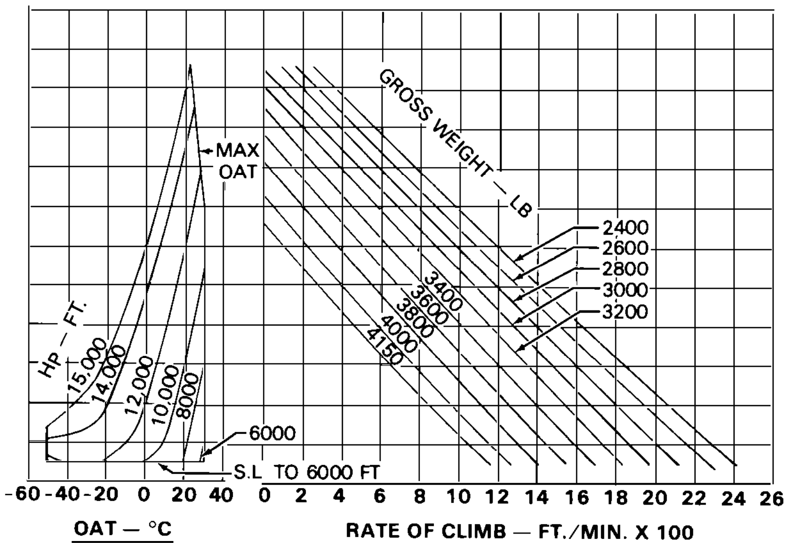


Figure 4-1. Rate of climb (Sheet 3 of 7)

RATE OF CLIMB
WITH SNOW DEFLECTOR

MAXIMUM CONTINUOUS POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

80 KIAS
ENGINE ANTI-ICING OFF

WITH ENGINE ANTI-ICING ON ABOVE 10,000 FT. Hp , RATE OF CLIMB IS 235 FT./MIN. LESS (BELOW 10,000 FT., NO CORRECTION IS NECESSARY)

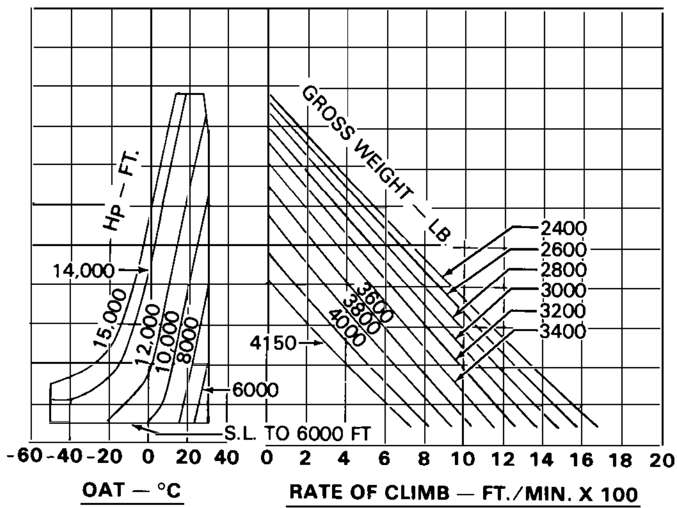


Figure 4-1. Rate of climb (Sheet 4 of 7)

RATE OF CLIMB
WITH PARTICLE SEPARATOR

TAKEOFF POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

80 KIAS
ENGINE ANTI-ICING OFF
PARTICLE SEP. PURGE ON

WITH ENGINE ANTI-ICING ON ABOVE 10,000 FT. H_P, RATE OF CLIMB IS 220 FT./MIN. LESS
(BELOW 10,000 FT., NO CORRECTION IS NECESSARY)

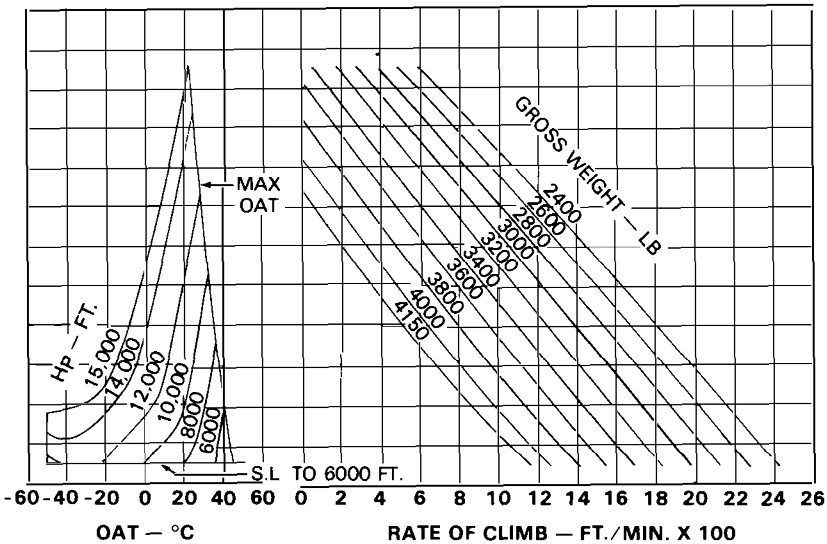


Figure 4-1. Rate of climb (Sheet 5 of 7)

RATE OF CLIMB
WITH PARTICLE SEPARATOR

MAXIMUM CONTINUOUS POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

80 KIAS
ENGINE ANTI-ICING OFF
PARTICLE SEP. PURGE ON

WITH ENGINE ANTI-ICING ON ABOVE 10,000 FT. Hp, RATE OF CLIMB IS 235 FT./MIN. LESS (BELOW 10,000 FT., NO CORRECTION IS NECESSARY)

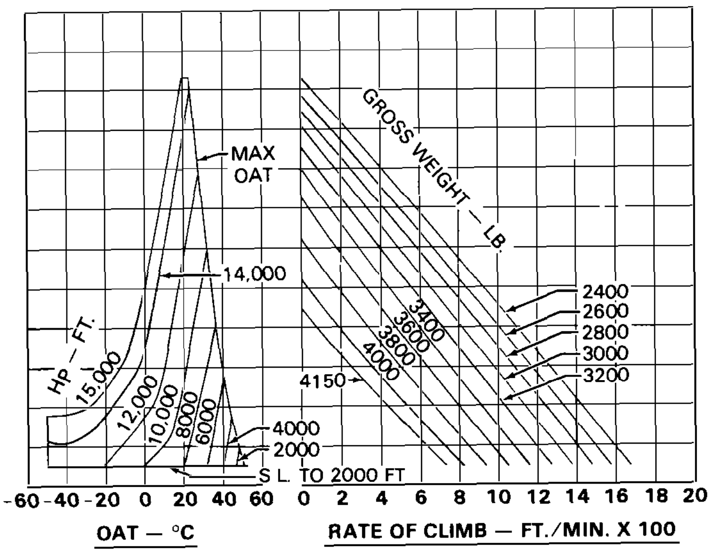


Figure 4-1. Rate of climb (Sheet 6 of 7)

RATE OF CLIMB
WITH PARTICLE SEPARATOR

TAKEOFF POWER	80 KIAS
POWER TURBINE — 100% RPM	ENGINE ANTI-ICING OFF
DC LOAD — 17.5%	PARTICLE SEP. PURGE OFF

WITH ENGINE ANTI-ICING ON ABOVE 10,000 FT. Hp, RATE OF CLIMB IS 220 FT./MIN. LESS (BELOW 10,000 FT., NO CORRECTION IS NECESSARY)

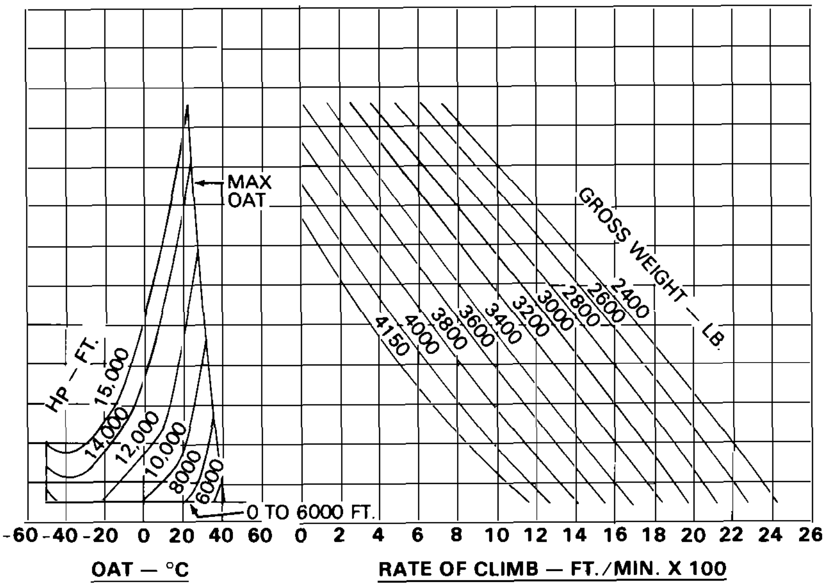


Figure 4-1. Rate of climb (Sheet 7 of 7)

AIRSPEED SYSTEM CALIBRATION
LEVEL FLIGHT
CLIMB AND DESCENT — 1000 FPM

IAS — INST. ERROR — POSITION ERROR = V_{CAL}

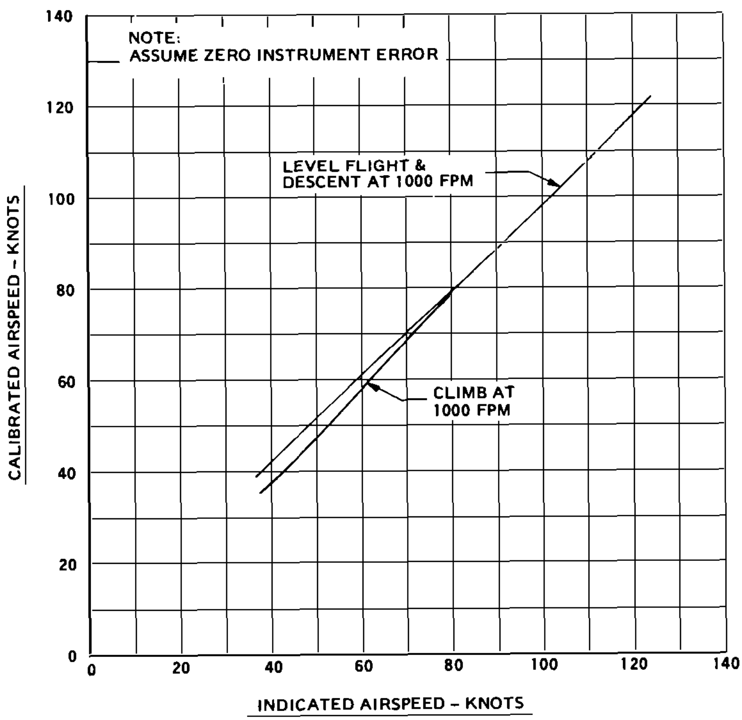


Figure 4-2. Airspeed system calibration (Sheet 1 of 2)

AIRSPEED SYSTEM CALIBRATION
ALTERNATE STATIC SOURCE
LEVEL FLIGHT
CLIMB AND DESCENT — 1000 FPM

IAS — INST. ERROR — POSITION ERROR = V_{CAL}

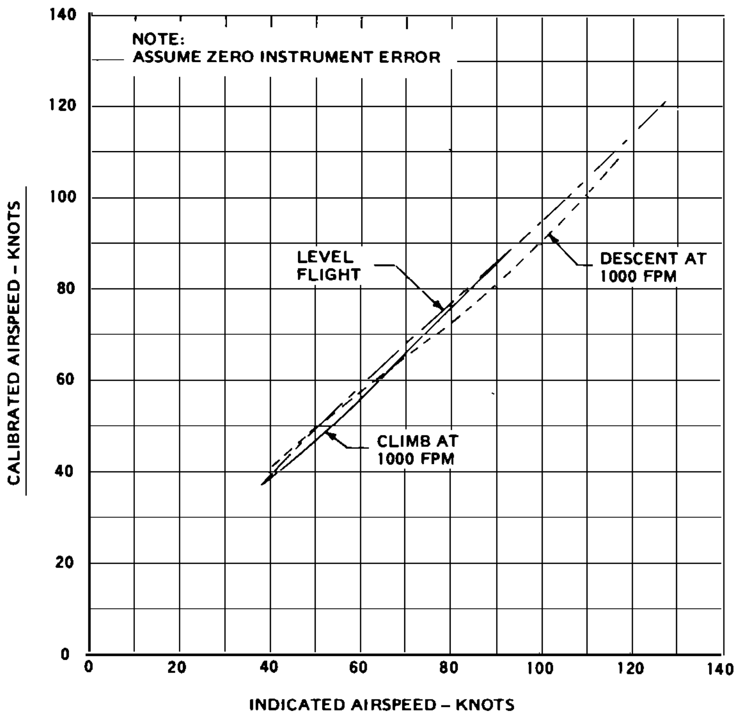


Figure 4-2. Airspeed system calibration (Sheet 2 of 2)

Section 1

MANUFACTURER'S DATA

WEIGHT AND BALANCE

No change from basic manual.

Section 2

MANUFACTURER'S DATA

SYSTEMS DESCRIPTION

2-1. AUTOPILOT SYSTEM

2-2. DESCRIPTION

The autopilot system is a two-axis (pitch and roll) autopilot with navigation coupling capability. The autopilot has six modes of operation and turbulence.

- ATTITUDE RETENTION MODE

When autopilot is engaged and no modes are selected on mode control panel, autopilot is in Attitude Retention mode and will maintain constant pitch and roll attitudes. The computer will accept pitch and roll commands from the pilot using the cyclic ATTD TRIM switch or TRIM REL switch.

- HEADING MODE

When HDG mode is selected, autopilot will maneuver helicopter to turn to and maintain a selected heading.

- ALTITUDE HOLD MODE

When ALT mode is selected, autopilot will maintain helicopter at a constant pressure altitude.

- COUPLED MODES

The coupled modes are NAV, APPR, and B/C. When appropriate modes are selected, autopilot will be coupled with elements of the Horizontal Situation Indicator, No. 1 NAV Receiver, and Glideslope Receiver, and will perform the following functions:

Capture and track a selected VOR radial.

Capture and track an ILS localizer and glideslope.

Capture and track a localizer back course.

- MALFUNCTION MONITOR

The autopilot incorporates a malfunction monitor which trips when the helicopter attitude or attitude rate exceeds the following limits:

Roll attitude	= Approximately 37°
Roll rate	= Approximately 20°/ Second
Pitch attitude	= Approximately 19°
Pitch rate	= Approximately 12°/ Second

Attitude and attitude retention rate are cumulative in that a high rate and low attitude angle or high attitude angle and low rate will cause monitor to trip. A tripped monitor is indicated to pilot by an audio warning and illumination of the red AP WRN annunciator light.

When monitor trips, actuator of affected axis (pitch or roll) will move autopilot servo toward neutral position. Other axis will continue functioning normally, provided its attitude is within limits. Affected channel will resume normal function (provided there is no additional fault) when its attitude returns to within limits.

2-3. AUTOPILOT ANNUNCIATORS

Mode control panel lights and remote annunciator give a visual display of Autopilot System status. Mode selection switches on mode control panel are push-on/push-off type, and when illuminated, indicate which mode is selected. All remote annunciators are located in upper right corner of instrument panel.

NOTE

Mode control panel lights will illuminate if mode select switches are pressed when autopilot is disengaged.

MODE CONTROL PANEL LIGHT	COLOR	INDICATION
ENG (Triangle)	Green	Autopilot is engaged.
DIS (Triangle)	Amber	Autopilot is disengaged.
TURB (Triangle)	White	Turbulence damping is engaged.
HDG	Yellow	Selection of heading mode.
NAV	Yellow	Selection of navigation mode.
APPR	Yellow	Selection of approach (front course ILS) mode.
ALT	Yellow	Selection of altitude hold mode.
B/C	Yellow	Selection of back course localizer approach mode.
LAT	Red	Failure of autopilot lateral (roll) servoactuator.
F/A	Red	Failure of autopilot fore/aft (pitch) servoactuator.
GYO	Red	Failure of autopilot vertical gyro or attitude monitor power.
MON	Red	Failure of autopilot monitor during self-test.
AP WRN	Red	Autopilot malfunction, monitor trip, or inadvertent disengagement.
AP ENG	Green	Autopilot is engaged.

TRIM	Amber	Cyclic TRIM REL switch is pressed and servos are deactivated, but computer is tracking cyclic position.
GA	Amber	Autopilot go around switch has been pressed; helicopter levels laterally and climbs 2° above horizon.
NAV ARM	Amber	Autopilot is in NAV mode armed to capture VOR radial or Autopilot is in APPR or B/C mode armed to capture ILS localizer.
NAV CAP	Green	Autopilot is in NAV mode and is capturing or tracking a VOR radial or Autopilot is in APPR or B/C mode and is capturing or tracking an ILS localizer.
ALT	Green	Autopilot is in altitude hold down.
GS ARM	Amber	Autopilot is in APPR mode armed to capture ILS glideslope.
GS CAP	Green	Autopilot is in APPR mode and is capturing or tracking an ILS glideslope.

2-4. COMPASS CONTROL PANEL

Compass control panel is used to adjust gyro compass in HSI, and to slave gyro compass to flux valve for continuous automatic corrections of compass error, caused by gyroscopic precession.

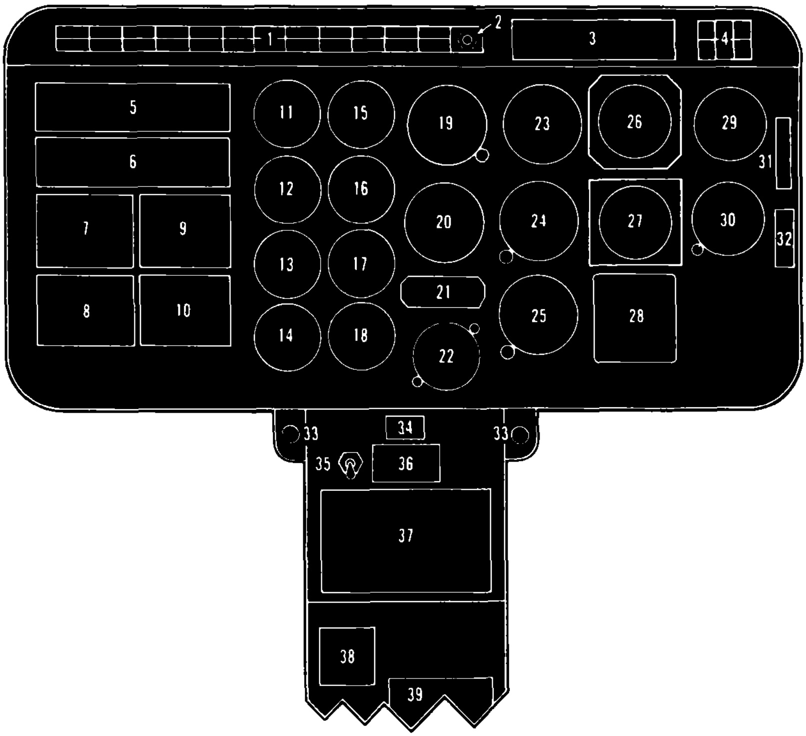
To set gyro compass quickly to correct heading, press auto slave switch to make it pop out, thereby gaining manual compass control. Then press N/S or E/W compass rotation switch, as required, until gyro compass heading corresponds to standby magnetic compass, and needle in annunciator window of compass control panel indicates zero. Compass can then be slaved to flux valve by pressing auto slave button in (SLAVE/IN). Compass will slave at the rate of 180° per minute in slave position.

2-5. ALTERNATE STATIC SYSTEM

An alternate static pressure source is located in baggage compartment for use when external static ports become obstructed. For alternate static pressure, place STATIC air switch in ALTN position. When not using alternate static pressure source, place STATIC switch in NORM position.

2-6. INTERCOM SYSTEM

The helicopter is equipped with two independent intercom systems to minimize chances of complete audio failure. One system is used in conjunction with pilot and copilot headphones, which are plugged into receptacles on center post. The other system has an integral speaker and requires a hand held microphone to be plugged into HAND MIKE receptacle on overhead console.



1. Caution/warning panel
2. Caution/warning panel test button
3. Audio control panel
4. Autopilot annunciator panel
5. Transponder
6. ADF receiver
7. No. 1 VHF navigation receiver
8. No. 2 VHF navigation receiver
9. No. 1 VHF communication transceiver
10. No. 2 VHF communication transceiver
11. Engine oil temp./press gage
12. Transmission oil temp./press. gage
13. Fuel quantity gage
14. DC loadmeter/fuel press. gage
15. Torquemeter
16. Turbine outlet temperature gage
17. Gas producer tachometer
18. DC voltmeter
19. Standby attitude indicator
20. Dual tachometer
21. DME control panel
22. Clock
23. Airspeed indicator
24. Course/glideslope deviation indicator
25. ADF bearing indicator
26. Primary attitude/slip indicator
27. Horizontal situation indicator
28. Autopilot computer/mode control panel
29. Vertical speed indicator
30. Altimeter
31. Marker beacon receiver
32. Alternate static air source switch
33. Vent control knob
34. Radio call placard
35. Standby attitude indicator switch
36. DME selector panel
37. Miscellaneous control panel
38. Compass control panel
39. Lower circuit breaker panel

Figure 2-1. Instrument panel and console

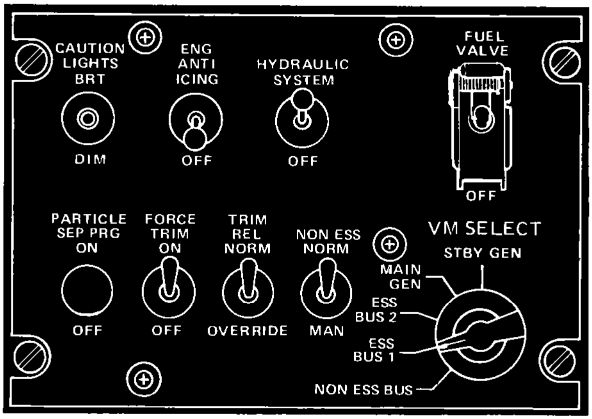


Figure 2-2. Miscellaneous control panel

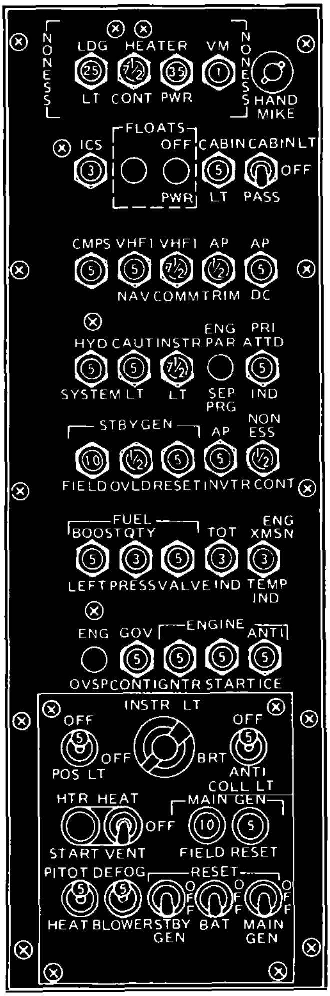


Figure 2-3. Overhead console

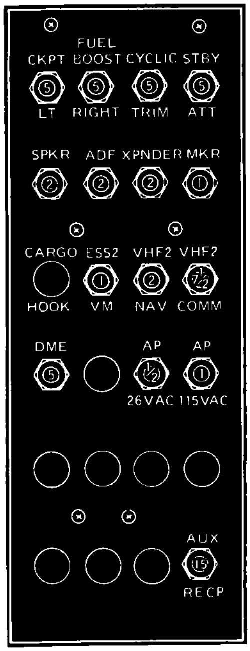


Figure 2-4. Lower circuit breaker panel

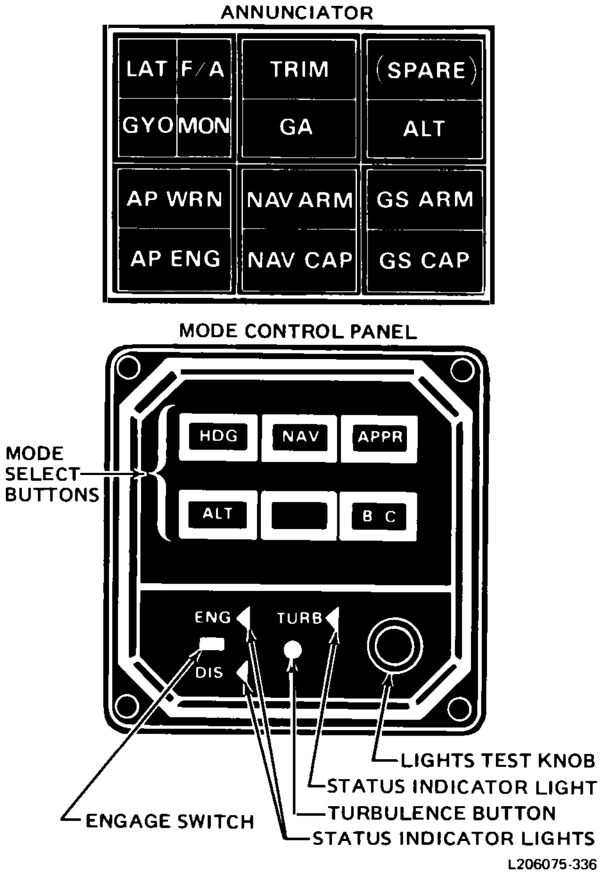


Figure 2-5. Autopilot annunciator and mode control panel

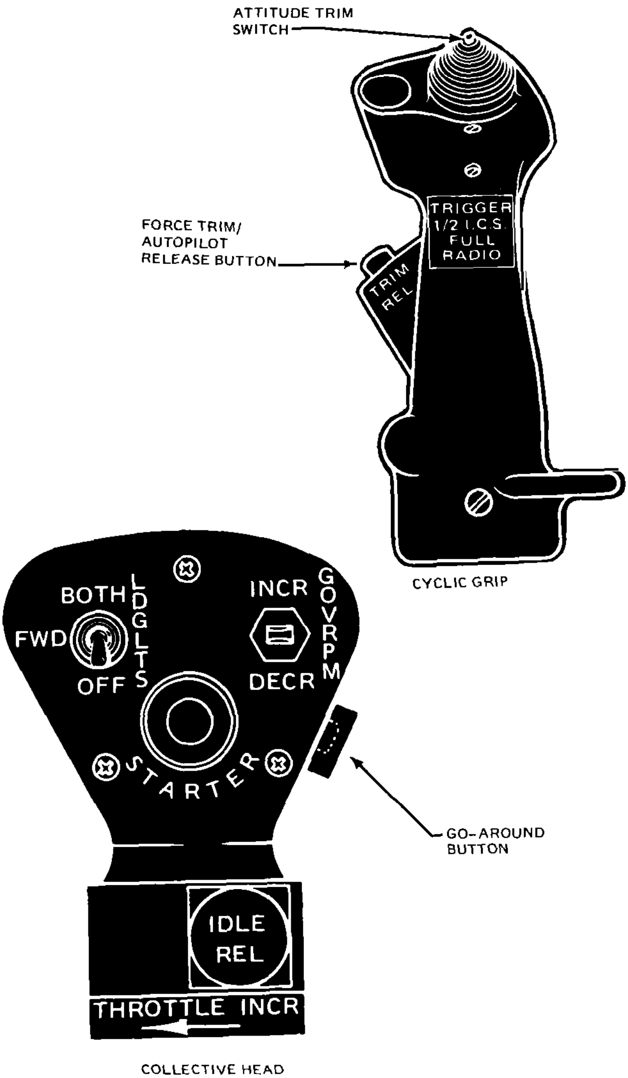


Figure 2-6. Cyclic grip and collective

2-7. ELECTRICAL SYSTEM

ESSENTIAL BUS 1	ESSENTIAL BUS 2
AP DC	ADF (Receiver and indicator)
AP INVTR	⚠1 CARGO HOOK
AP TRIM	CKPT LT
CABIN LT	CYCLIC TRIM
CAUTION LT	DME
CMPS (HSI)	ESS 2 VM
ENG/XMSN TEMP IND	FUEL BOOST RIGHT
ENGINE ANTI ICE	MKR
ENGINE IGNTR	SPKR
ENGINE START	VHF 2 COMM
⚠1 FLOATS	VHF 2 NAV (Course indicator only)
FUEL BOOST LEFT	XPNDER
FUEL QTY/PRESS	**NON-ESSENTIAL BUS**
FUEL VALVE	ANTI COLL LT
GOV CONT	DEFOG BLOWER
HYD SYSTEM	⚠1 ECS
ICS	⚠1 HEATER CONT
INSTR LT	⚠1 HEATER PWR
MAIN GEN RESET (incl. voltmeter)	LDG LT
PRI ATTD IND	NON ESS CONT
STBY GEN OVLD	PITOT HEAT
STBY GEN RESET	POS LT
TOT IND	VM
VHF 1 COMM	
VHF 1 NAV (incl. course needle and GS on HSI)	

NOTES:

1. Optional Equipment

NOTE

STBY ATTD circuit breaker is connected directly to battery. AP26 VAC and AP115 VAC circuit breakers are powered by autopilot inverter.

Section 3

MANUFACTURER'S DATA

OPERATIONAL INFORMATION

No change from basic manual.

Section 4

MANUFACTURER'S DATA

HANDLING/SERVICING/MAINTENANCE

No change from basic manual.

Bell LongRanger-III
MODEL 206L3

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT

ENVIRONMENTAL CONTROL SYSTEM (CABIN TEMPERATURE CONTROL)

206-706-143

CERTIFIED
DECEMBER 11, 1981

This supplement shall be attached to Model 206L-3 Flight Manual when Environmental Control System (Cabin Temperature 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.

Bell Helicopter TEXTRON
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DECEMBER 11, 1981
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APPROVED:

H R Whitlock

for MANAGER

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

GENERAL INFORMATION

The Environmental Control System (206-706-143) is designed for heating and cooling as well as removing moisture from the air supplied to the cabin area. The system runs off bleed air from the engine. Installation of this system and the distribution system adds approximately 98 pounds (44.4 kilograms) to the empty weight of the helicopter.

Section 1

LIMITATIONS

1-1. TYPE OF OPERATION

Flight with Environmental Control System operating is prohibited during takeoff, hover, or landing.

1-2. WEIGHT/CG

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

1-3. PLACARDS

ECS OFF FOR
TAKEOFF
LANDING
HOVER
(Located on instrument panel.)

Section 2

NORMAL PROCEDURES

2-1. INTERIOR AND PRESTART CHECK

ECS switch — OFF.

2-2. GROUND OPERATION

ECS switch — COOL/HEAT (as desired) or MAX HEAT for cold weather operation.

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.

2-3. BEFORE TAKEOFF

1. ECS circuit breaker — Check in.
2. ECS switch — OFF.

WARNING

FLIGHT WITH ENVIRONMENTAL CONTROL SYSTEM (ECS) OPERATING IS PROHIBITED DURING TAKEOFF, HOVER, LANDING.

2-4. IN-FLIGHT OPERATIONS

NOTE

TURB OUT TEMP increases when selecting ECS. Do not exceed engine limits.

1. 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 position.
2. ECS flow switch — ECS LOW - ECS HIGH (as desired),
3. ECS knob — Rotate to desired comfort level.
4. Overhead and lower outlets — Adjust for optimum comfort.

NOTE

Overhead and lower outlets should be closed during windshield defogging.

2-5. DESCENT AND LANDING

ECS switch — OFF for landing.

Section 3

EMERGENCY AND MALFUNCTION PROCEDURES

3-1. 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 restart in flight is to accomplished.

Section 4

PERFORMANCE

There is no loss of performance with ECS switch OFF. When ECS is operating, reduce rate of climb data in basic flight manual or appropriate supplement by amount derived from Rate of Climb Decrease chart (figure 4-1) to determine true rate of climb.

RATE OF CLIMB DECREASE

DUE TO ENVIRONMENTAL CONTROL SYSTEM
WITH ANY INLET
WITH ANY SKID OR FLOAT LANDING GEAR

POWER — TAKEOFF OR MAXIMUM CONTINUOUS **57 KIAS**
POWER TURBINE — 100% RPM **ENGINE ANTI-ICING OFF OR ON**
DC LOAD — 17.5%

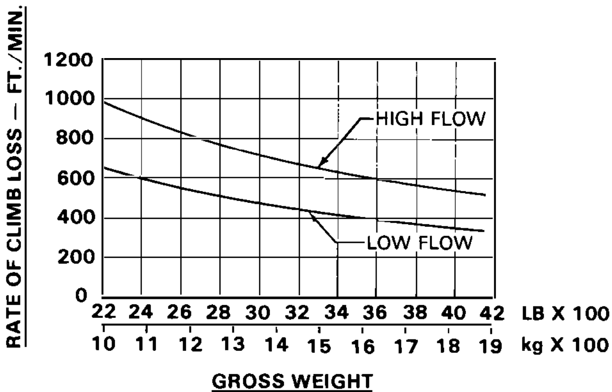

Figure 4-1. Rate of climb decrease

Bell Long Ranger-III
MODEL 206L3

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT
SNOW DEFLECTOR
206-706-208

CERTIFIED
DECEMBER 21, 1981

This supplement shall be attached to the Bell Helicopter Model 206L-3 Flight Manual when Snow Deflector 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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GENERAL INFORMATION

The Snow Deflector Kit (206-706-208) consists of two deflectors that mount on either side of transmission fairing, just forward of engine air inlets. The kit adds approximately 5 pounds (2 kilograms) to the empty weight of the helicopter.

Section 1

LIMITATIONS

1-1. OPTIONAL EQUIPMENT

For operations with Snow Deflector installed in conjunction with 206-706-212 Particle Separator, use performance charts in this supplement. Refer to PERFORMANCE section for instructions in using these charts when both kits are installed.

Standard skid landing gear crosstube fairings shall be removed for flights into IMC if Snow Deflectors are installed.

1-2. WEIGHT/CG

Actual weight change 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 Maintenance Manual.

1-3. AMBIENT AIR TEMPERATURE

Snow deflectors shall be removed for operations above 30°C (86°F).

1-4. SNOW OPERATION

With deflectors or deflectors and particle separator (BHT-206L3-FMS-3) installed, the following limits apply:

WARNING

FAILURE TO COMPLY WITH FOLLOWING LIMITATIONS CAN RESULT IN ENGINE FLAMEOUT.

NOTE

Protective inlet covers shall be installed during any exposure to falling and/or blowing snow during non-engine operation.

1. Immediately before each flight, thoroughly inspect and clean inlet and plenum areas, to include the deflector baffles and cowlings around inlets, to ensure that these areas are free from any accumulation of ice or snow. If for any reason observed accumulations of ice or snow cannot be removed, do not commence flight until removal is accomplished.

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 item 1 above.

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.

Section 2

NORMAL PROCEDURES

2-1. OPERATION IN FALLING OR BLOWING SNOW

2-2. EXTERIOR CHECK

Thoroughly check cabin roof, transmission fairing, deflector baffles, and engine air inlet areas. All areas checked shall be clean and free of accumulated snow, slush, and ice before each flight.

NOTE

Due to reduced performance at higher temperatures, it is recommended that snow deflectors be removed above 20°C (68°F).

If Particle Separator kit is installed, check engine air plenum chamber through plexiglass windows on each side of inlet cowling for snow, slush, or ice, paying particular attention to firewalls and rear face of particle separator. Clean thoroughly before each flight.

2-3. 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).

Section 3

EMERGENCY AND MALFUNCTION PROCEDURES

No change from basic manual.

Section 4

PERFORMANCE

Refer to appropriate performance charts in accordance with optional equipment installed. All Rate of Climb charts (Figure 4-1) apply to any skid or flotation landing gear configuration.

NOTE

Due to reduced performance at higher temperatures, it is recommended that snow deflectors be removed above 20°C (68°F).

4-1. DETERMINATION OF PERFORMANCE VARIATION WITH PARTICLE SEPARATOR AND SNOW DEFLECTOR INSTALLED

To determine performance when snow deflector and particle separator are installed, use performance charts titled Snow Deflector in this section. For helicopters without a particle separator purge (PARTICLE SEP PRG) switch or with the purge switch ON, use Performance Variation chart (Figure 4-2) in this section in conjunction with appropriate Hover Ceiling or Rate of Climb chart. When purge switch is OFF, use basic Hover Ceiling charts (Figures 4-3, and 4-4) and Rate of Climb charts of this section without Performance Variation chart.

To use Performance Variation chart, enter at appropriate pressure altitude and move horizontally; then enter at appropriate OAT and move vertically until intersecting pressure altitude line. If point of intersection is below appropriate power curve (example A, 4000 feet and 20°C on chart), there is no additional performance loss from Snow Deflector charts. If point or intersection is above appropriate power curve (example B, 10,000 feet and 28°C on chart), hover weight will be 90 pounds (40.8 kg) less than weight determined on Snow Deflector Hover Ceiling chart being used and rate of climb will be 170 feet/ minute less than that shown on Snow Deflector Rate of Climb chart being used.

It is permissible to use external load hover gross weight capability for applying the performance variation. Calculations can never exceed maximum gross weight.

4-2. POWER ASSURANCE CHECK

This supplement contains two Power Assurance Check charts (Figure 4-5). The first chart is to be used for helicopters equipped with snow deflectors. The second chart is to be used for helicopters equipped with snow deflectors and particle separator. Both charts are used in the same manner as the Power Assurance Check chart in the basic flight manual. Instructions for their use can be found at the beginning of the PERFORMANCE section of the basic flight manual. PARTICLE SEP PRG switch (if installed) shall be ON when performing a power assurance check.

RATE OF CLIMB

TAKEOFF POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

57 KIAS
ENGINE ANTI-ICING OFF

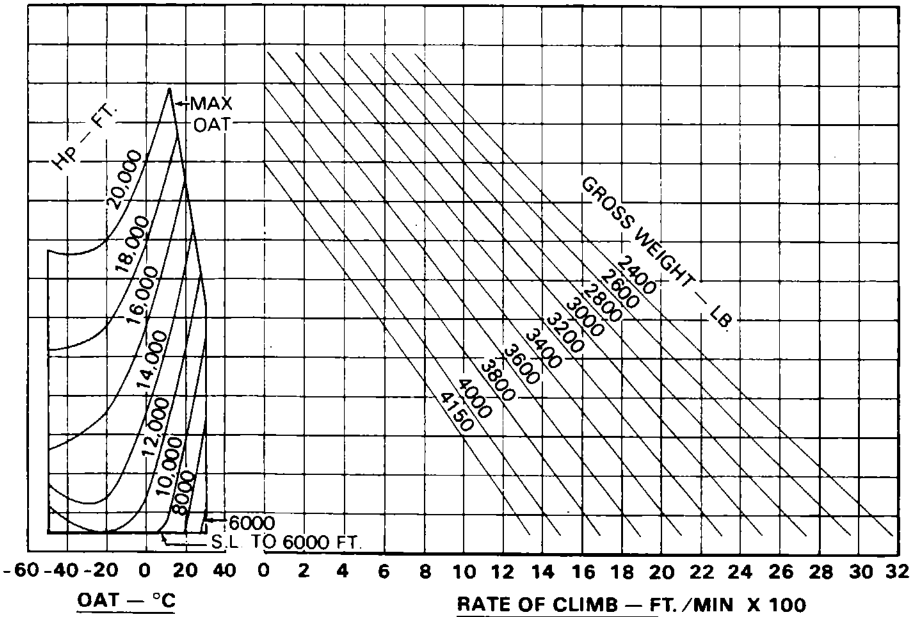

Figure 4-1. Rate of climb (Sheet 1 of 4)

RATE OF CLIMB

TAKEOFF POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

57 KIAS
ENGINE ANTI-ICING ON

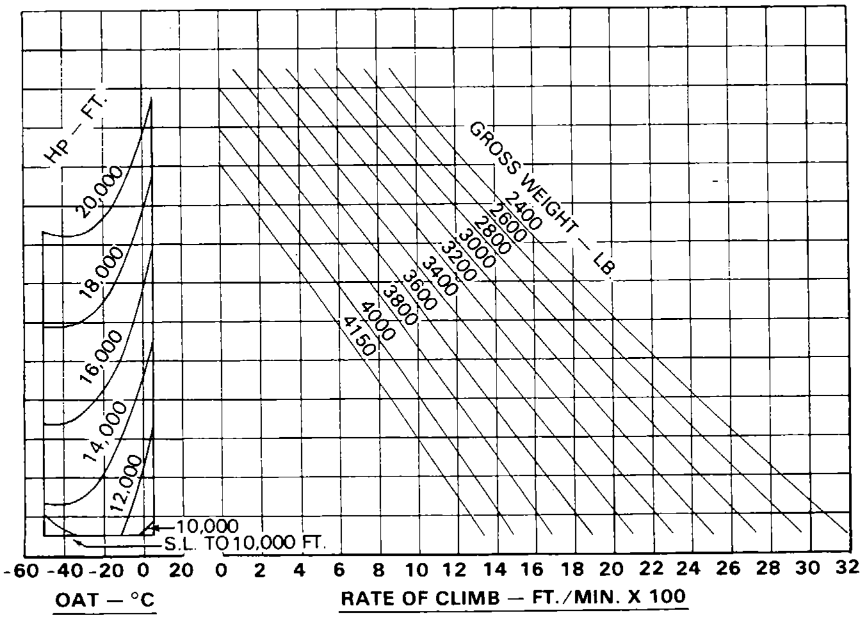

Figure 4-1. Rate of climb (Sheet 2 of 4)

RATE OF CLIMB

MAXIMUM CONTINUOUS POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

57 KIAS
ENGINE ANTI-ICING OFF

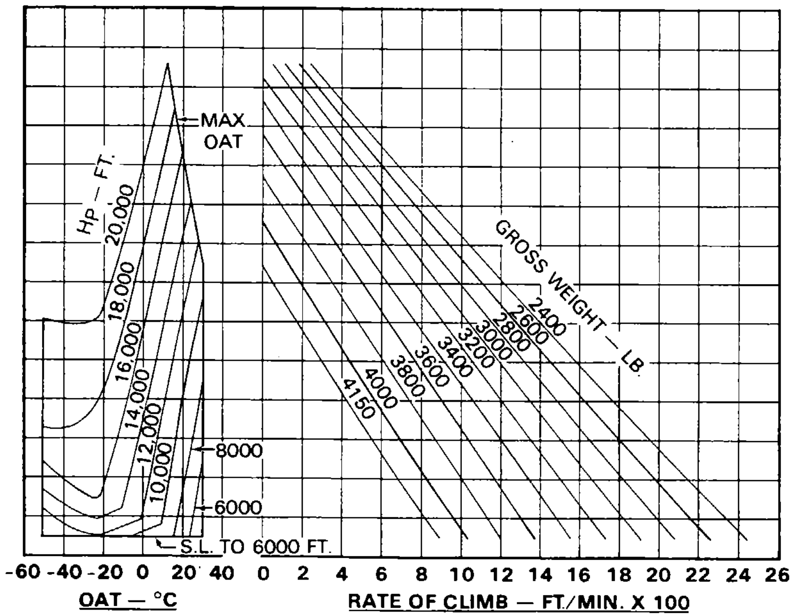

Figure 4-1. Rate of climb (Sheet 3 of 4)

RATE OF CLIMB

MAXIMUM CONTINUOUS POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

57 KIAS
ENGINE ANTI-ICING ON

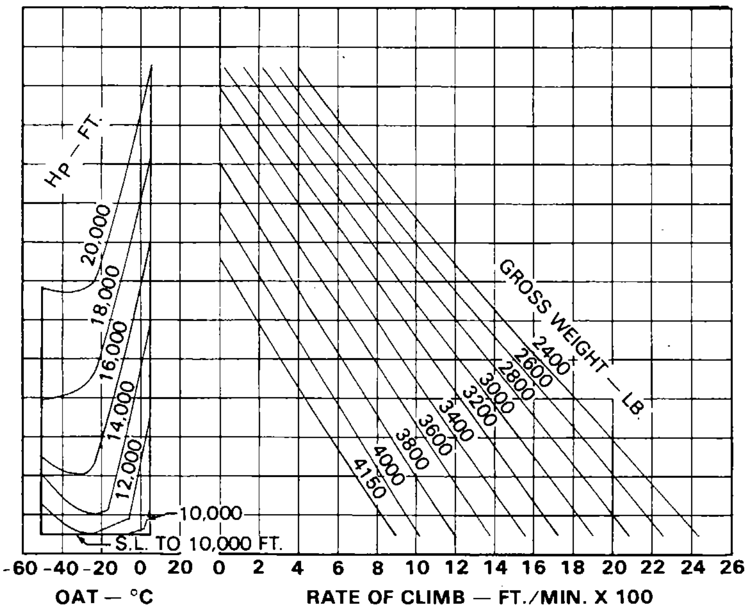

Figure 4-1. Rate of climb (Sheet 4 of 4)

PERFORMANCE VARIATION WITH SNOW DEFLECTOR AND PARTICLE SEPARATOR INSTALLED

ENGINE ANTI-ICING ON OR OFF
NO PURGE SWITCH INSTALLED OR PURGE SWITCH ON

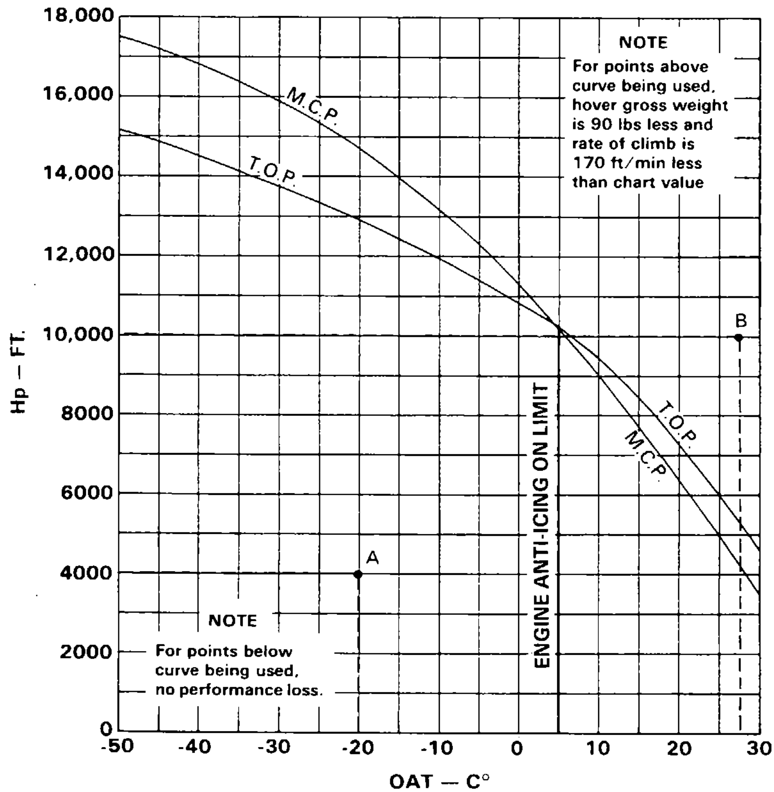

Figure 4-2. Performance variation

HOVER CEILING
IN GROUND EFFECT
WITH STANDARD SKID LANDING GEAR

TAKEOFF POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

SKID HEIGHT 2.5 FT. (0.7 METER)
ENGINE ANTI-ICING OFF

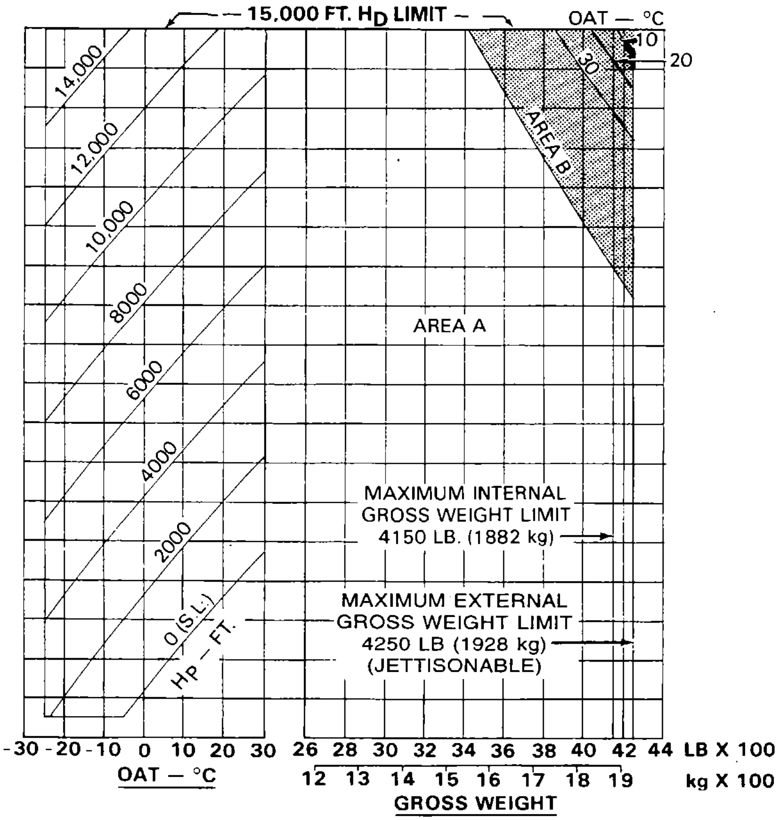

Figure 4-3. Hover ceiling — in ground effect (Sheet 1 of 6)

HOVER CEILING
IN GROUND EFFECT
WITH STANDARD SKID LANDING GEAR

TAKEOFF POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

SKID HEIGHT 2.5 FT. (0.7 METER)
ENGINE ANTI-ICING ON

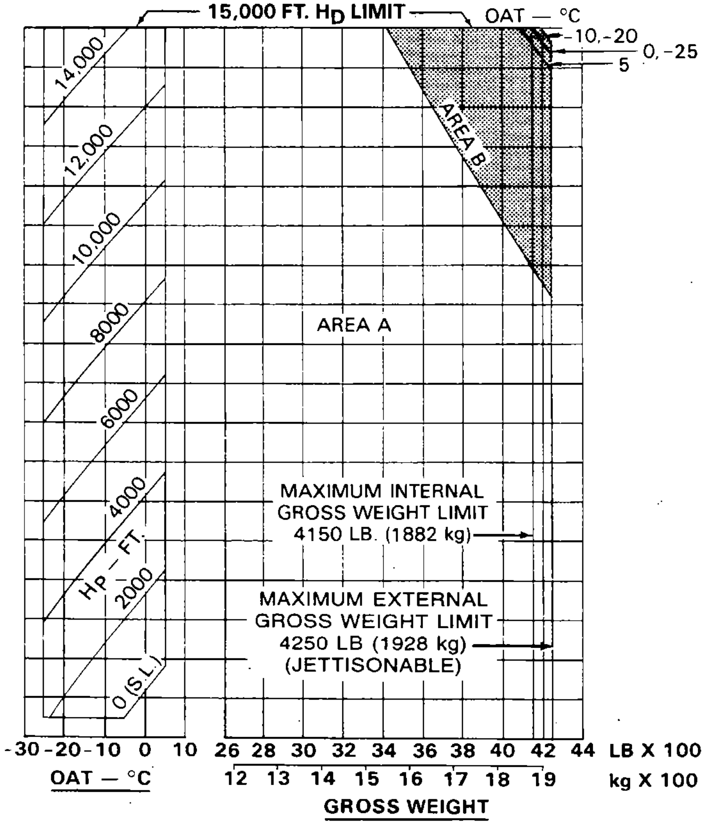

Figure 4-3. Hover ceiling — in ground effect (Sheet 2 of 6)

HOVER CEILING
IN GROUND EFFECT
WITH HIGH SKID OR EMERGENCY FLOTATION LANDING GEAR

TAKEOFF POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

SKID HEIGHT 2.5 FT. (0.7 METER)
ENGINE ANTI-ICING OFF

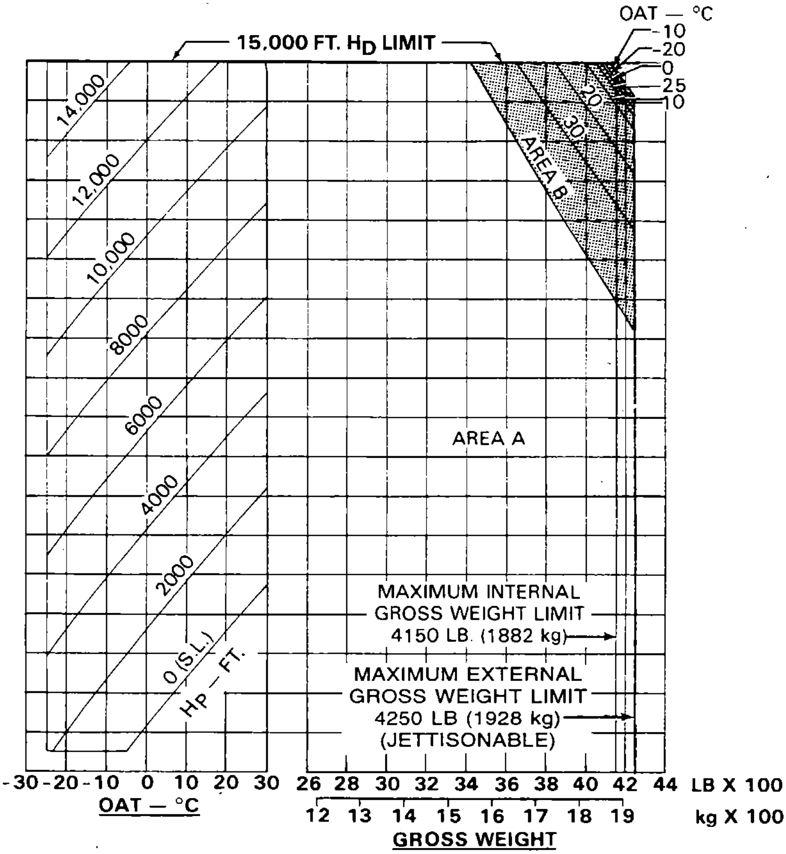

Figure 4-3. Hover ceiling — in ground effect (Sheet 3 of 6)

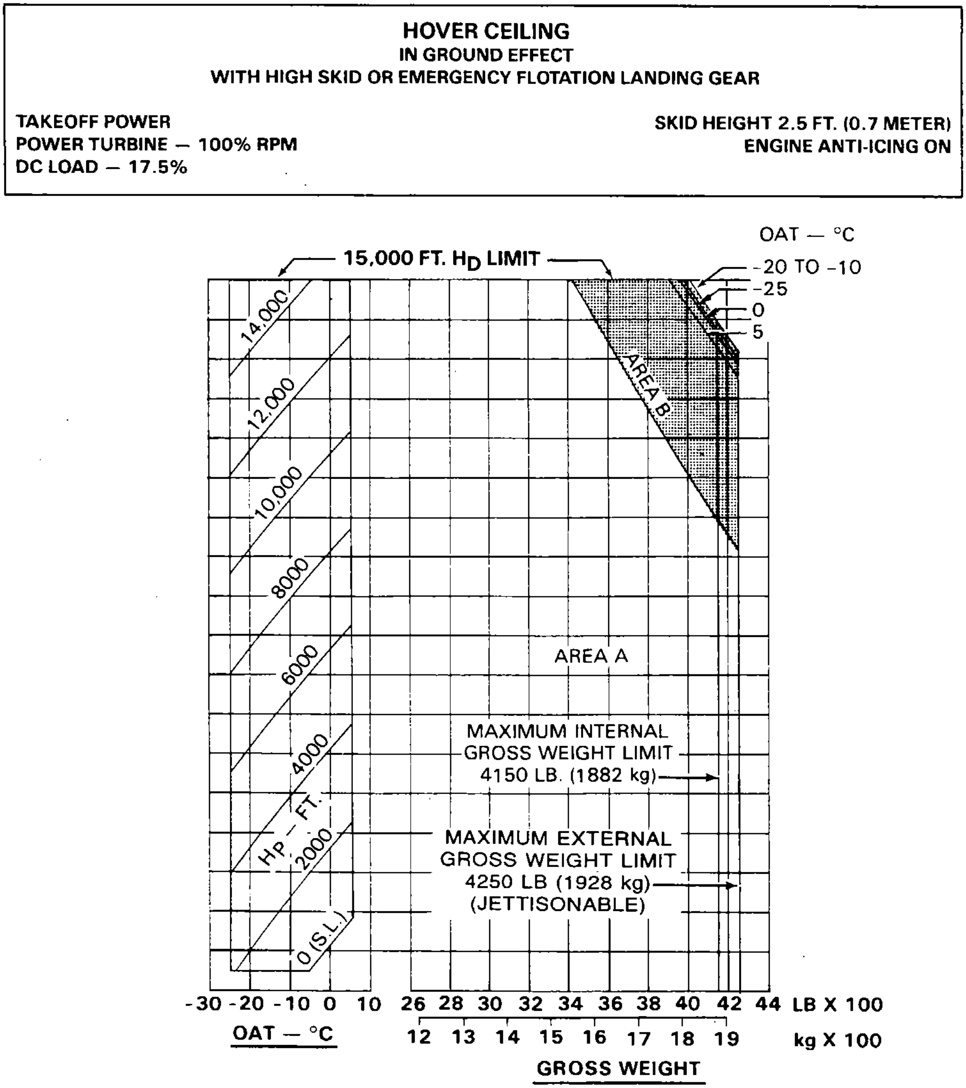

Figure 4-3. Hover ceiling — in ground effect (Sheet 4 of 6)

HOVER CEILING
IN GROUND EFFECT
WITH STANDARD FLOAT LANDING GEAR

TAKEOFF POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

FLOAT HEIGHT 3.5 FT. (1.1 METERS)
ENGINE ANTI-ICING OFF

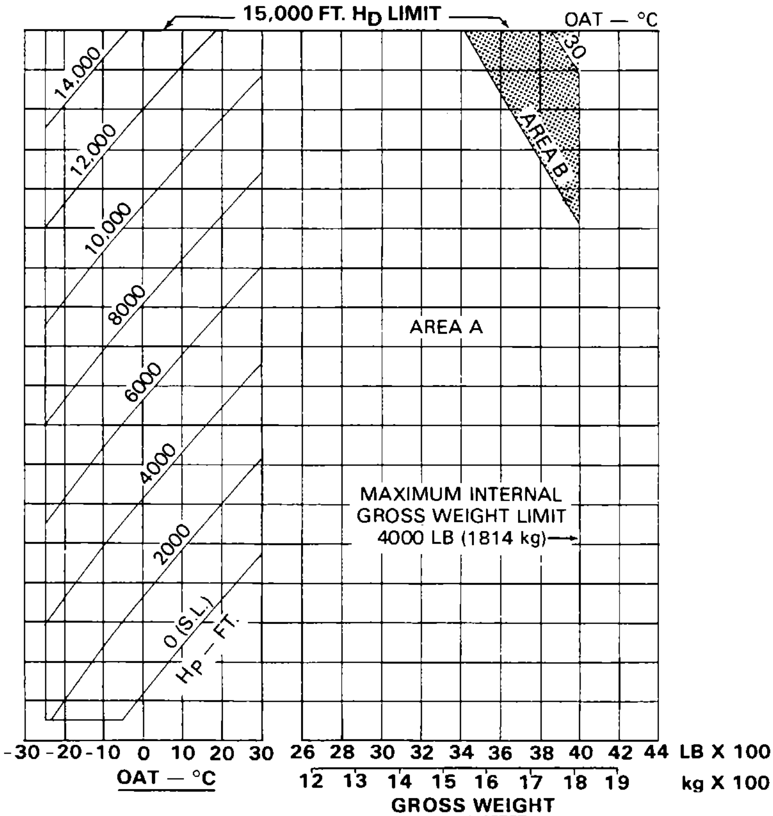

Figure 4-3. Hover ceiling — in ground effect (Sheet 5 of 6)

HOVER CEILING
IN GROUND EFFECT
WITH STANDARD FLOAT LANDING GEAR

POWER — SEE NOTE BELOW
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

FLOAT HEIGHT 3.5 FT. (1.1 METERS)
ENGINE ANTI-ICING ON

NOTE: THIS HELICOPTER CAN BE HOVERED IGE AT THE INDICATED GROSS WEIGHTS WITH LESS THAN TAKEOFF POWER.

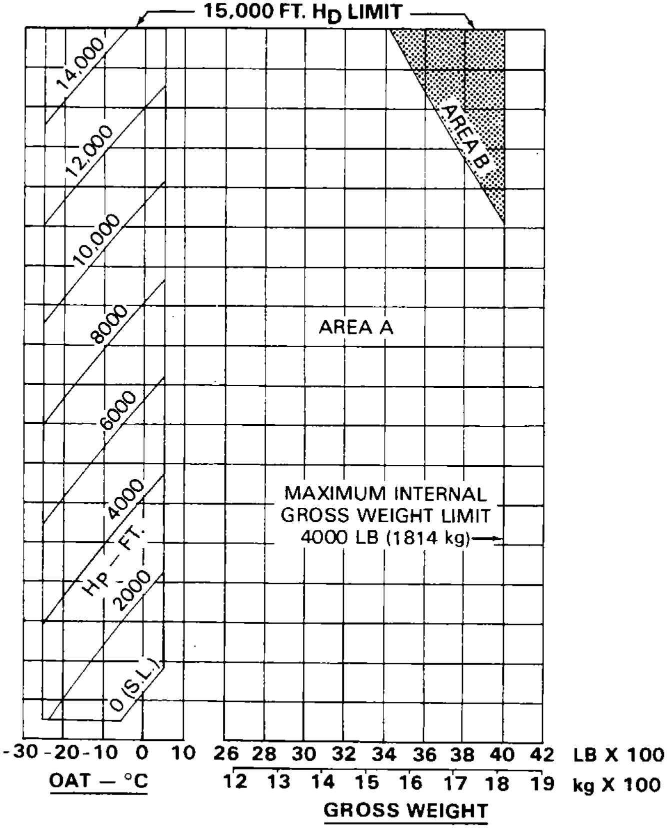

Figure 4-3. Hover ceiling — in ground effect (Sheet 6 of 6)

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

TAKEOFF POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

SKID HEIGHT 40 FT. (12.2 METERS)
ENGINE ANTI-ICING OFF

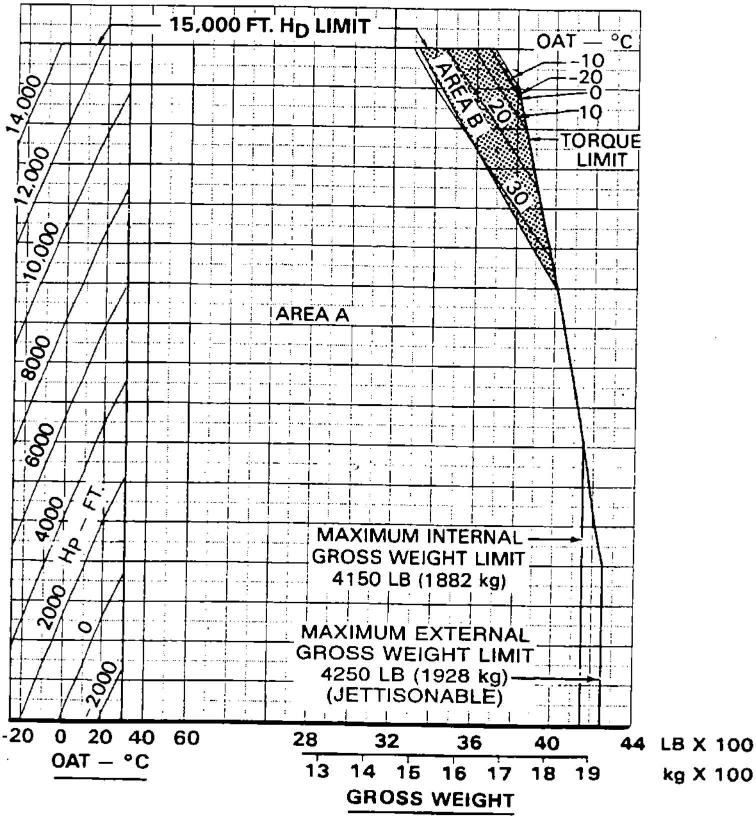

Figure 4-4. Hover ceiling — out of ground effect (Sheet 1 of 2)

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

TAKEOFF POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

SKID HEIGHT 40 FT. (12.2 METERS)
ENGINE ANTI-ICING ON

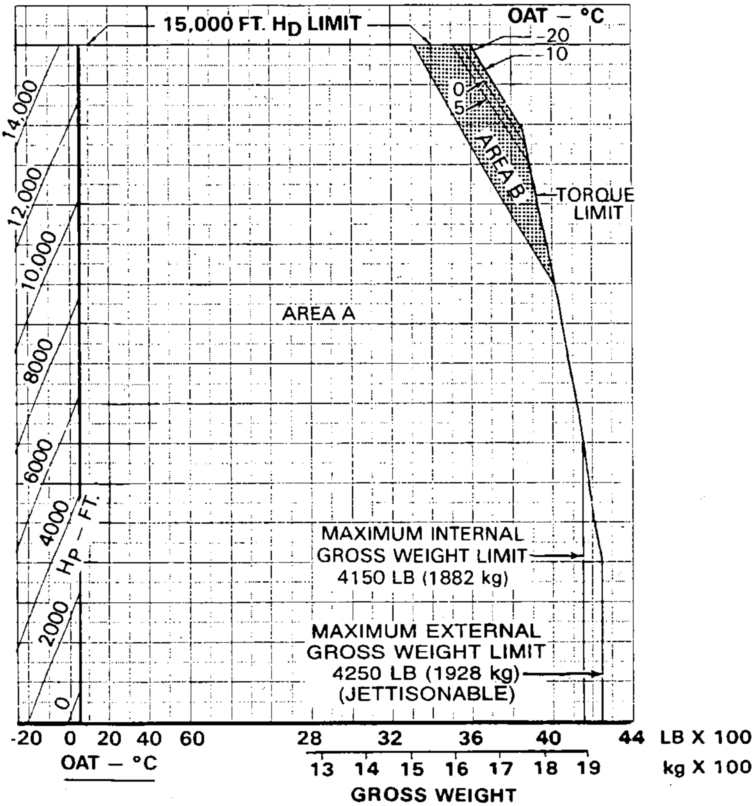

Figure 4-4. Hover ceiling — out of ground effect (Sheet 2 of 2)

MODEL 206L-3
POWER ASSURANCE CHECK
ALLISON 250-C30P ENGINE
WITH SNOW DEFLECTOR

LEVEL FLIGHT
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

90 TO 100 KIAS (NOT TO EXCEED VNE)
ENGINE ANTI-ICING OFF
HEATER/ECS OFF

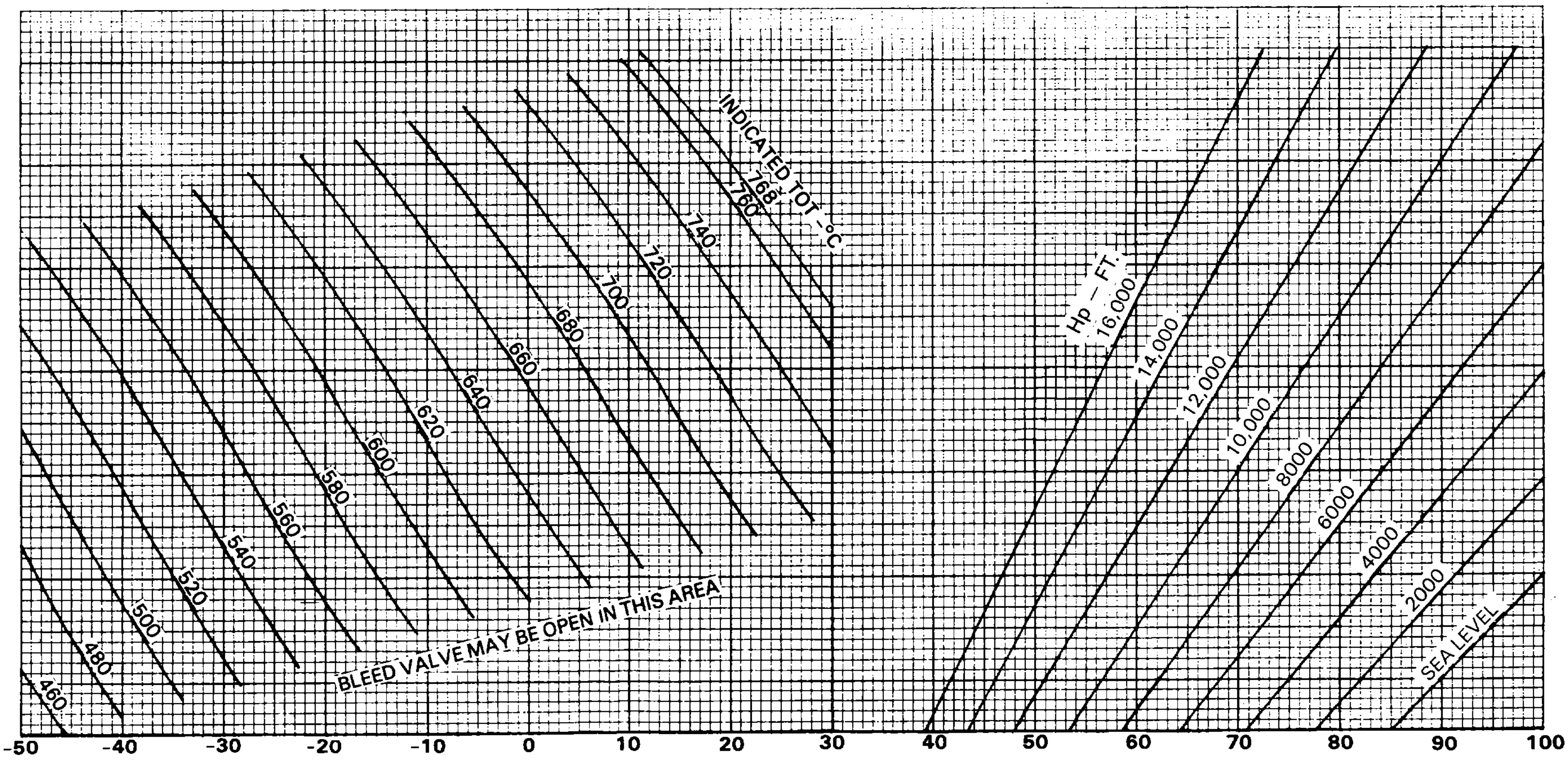

Figure 4-5. Power assurance check (Sheet 1 of 2)

MODEL 206L-3
POWER ASSURANCE CHECK
ALLISON 250-C30P ENGINE
WITH SNOW DEFLECTOR
AND PARTICLE SEPARATOR

LEVEL FLIGHT
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

90 TO 100 KIAS (NOT TO EXCEED VNE)
ENGINE ANTI-ICING OFF
HEATER/ECS OFF
PARTICLE SEPARATOR PURGE ON

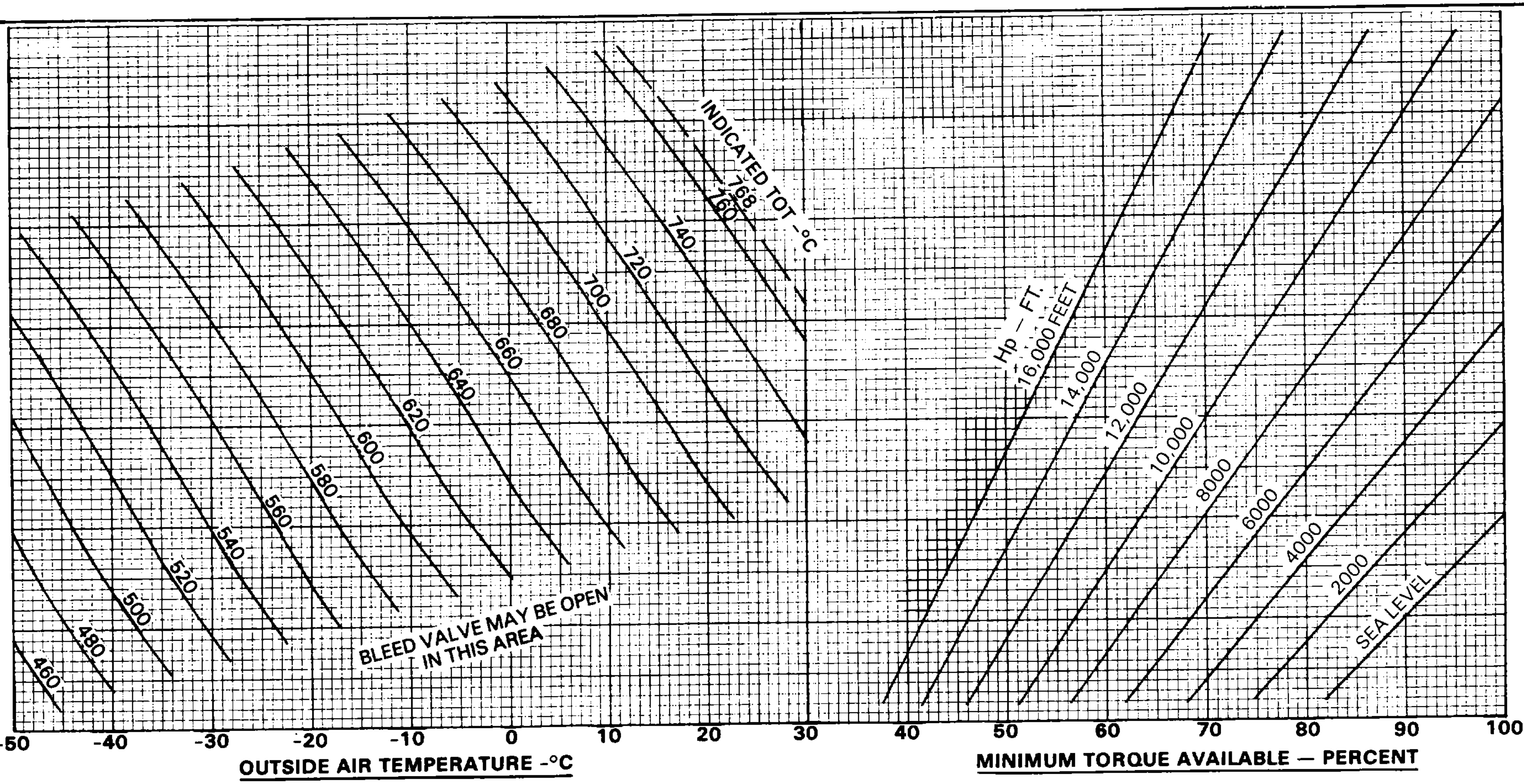

Figure 4-5. Power assurance check (Sheet 2 of 2)

BHT-206L3-FMS-8

Bell LongRanger-III

MODEL 206L3

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT

FLOAT LANDING GEAR, STANDARD TYPE (FIXED FLOATS)

206-706-065

CERTIFIED
JUNE 7, 1982

This supplement shall be attached to Model 206L-3 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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JUNE 7, 1982
REISSUED OCTOBER 28, 1992

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APPROVED:

MANAGER

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

GENERAL INFORMATION

The Float Landing Gear Kit (206-706-065) is designed for water operations and consists of two streamlined four-cell inflatable floats. It can be operated at gross weight up to 4000 pounds (1814.4 kilograms) within the limits outlined in this supplement. Installation of kit adds 132 pounds (60 kilograms) to the empty weight ot helicopter.

Section 1

LIMITATIONS

1-1. 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.

1-2. WEIGHT/CG

Maximum approved gross weight is 4000 pounds (1814.4 kilograms).

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

1-3. AIRSPEED

V_{NE} is 104 KIAS (120 MPH) sea level to 13,000 feet H_D. Above 13,000 feet H_D, decrease V_{NE} 2.6 KIAS (3 MPH) per 1000 feet.

1-4. ALTITUDE

Maximum operating H_P — 15,000 ft.

Section 2

NORMAL PROCEDURES

2-1. FLOAT PRESSURE VARIATION

Temperature changes, when moving from warm hangar to cold outside or vice versa, result in changes in inflation pressure (figure 2-1).

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

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

The maximum inflation pressure is 4.5 psig (31.03 kPa).

CAUTION

DO NOT OVERINFLATE.

- EXAMPLE

For flight to 3000 feet below departure altitude, with departure ambient

FLOAT PRESSURE VARIATION VERSUS TEMPERATURE AND/OR ALTITUDE CHANGE

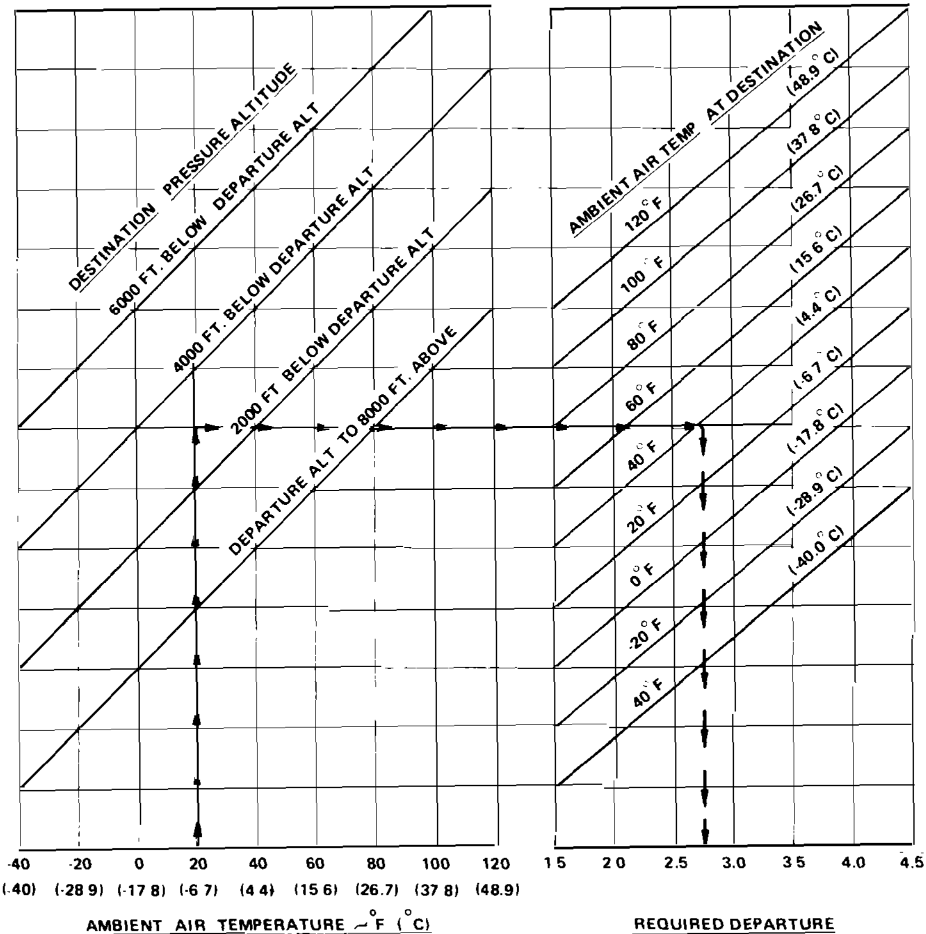

Figure 2-1. Float pressure variation

temperature of 20°F (-6.7°C) and destination ambient temperature of 38°F (3.3°C), inflate floats to 2.75 psig (18.96 kPa) at destination.

NOTE

If combination of pressure change and/or ambient temperature extremes is not shown on chart, establish a new departure pressure altitude and temperature enroute, and readjust float pressure as required.

Extremely cold weather may necessitate a cold soak outside hangar prior to adjusting float pressure.

2-2. ENGINE STARTING AND RUNUP ON WATER

CAUTION

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

2-3. TAXIING ON WATER

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

NOTE

Safe operation can be accomplished in waves up to 12 inches (30.5 centimeters) trough to crest, and 360 degree turns can be executed in winds up to 20 MPH (17 knots).

2-4. IN-FLIGHT OPERATIONS

CAUTION

OPERATION OVER LAND IS NOT RECOMMENDED.

Section 3

EMERGENCY AND MALFUNCTION PROCEDURES

3-1. ENGINE FAILURE

WARNING

OVER LAND EMERGENCY POWER-OFF LANDINGS WILL REQUIRE TOUCHDOWN AT ZERO GROUNDSPEED.

3-2. ENGINE FAILURE OVER WATER AT NIGHT

1. Establish an autorotative glide at 43 KIAS (50 MPH) for minimum rate of descent, and turn on landing light as required.

2. At 100 feet, execute a moderate cyclic flare to reduce AIRSPEED to approximately 22 KIAS (25 MPH).

3. Adjust collective and cyclic pitch sufficiently to perform a low speed cushioned touchdown at a slight noseup attitude.

Section 4

PERFORMANCE

4-1. RATE OF CLIMB

Reduce Rate of Climb chart data from basic Flight Manual or appropriate optional equipment supplement by Δ RATE OF CLIMB shown in figure 4-1.

- EXAMPLE

For flight in a helicopter with a gross weight of 2700 pounds, enter bottom of chart at 27 and move upward to the decrement line. From this point, move left to Δ RATE OF CLIMB scale at a point of 225 feet. Subtract this figure from appropriate Rate of Climb chart for standard skids.

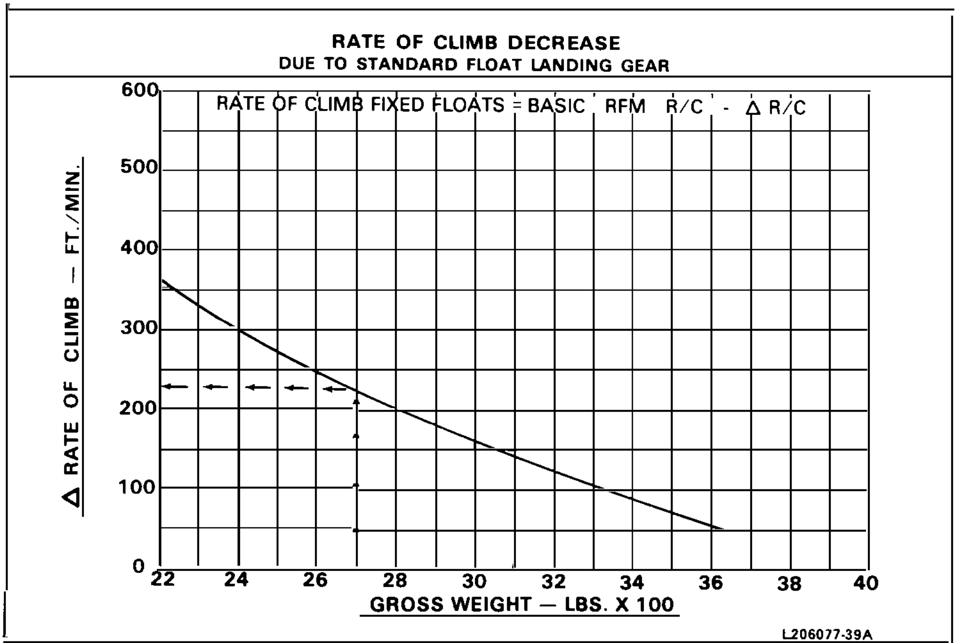

Figure 4-1. Rate of climb decrease

HOVER CEILING
IN GROUND EFFECT
-25° TO 51.7° C

POWER — SEE NOTE BELOW
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

FLOAT HEIGHT 3.5 FT. (1.1 METERS)
ENGINE ANTI-ICING OFF

NOTE: THIS HELICOPTER CAN BE HOVERED IGE AT THE INDICATED GROSS WEIGHTS WITH LESS THAN TAKEOFF POWER.

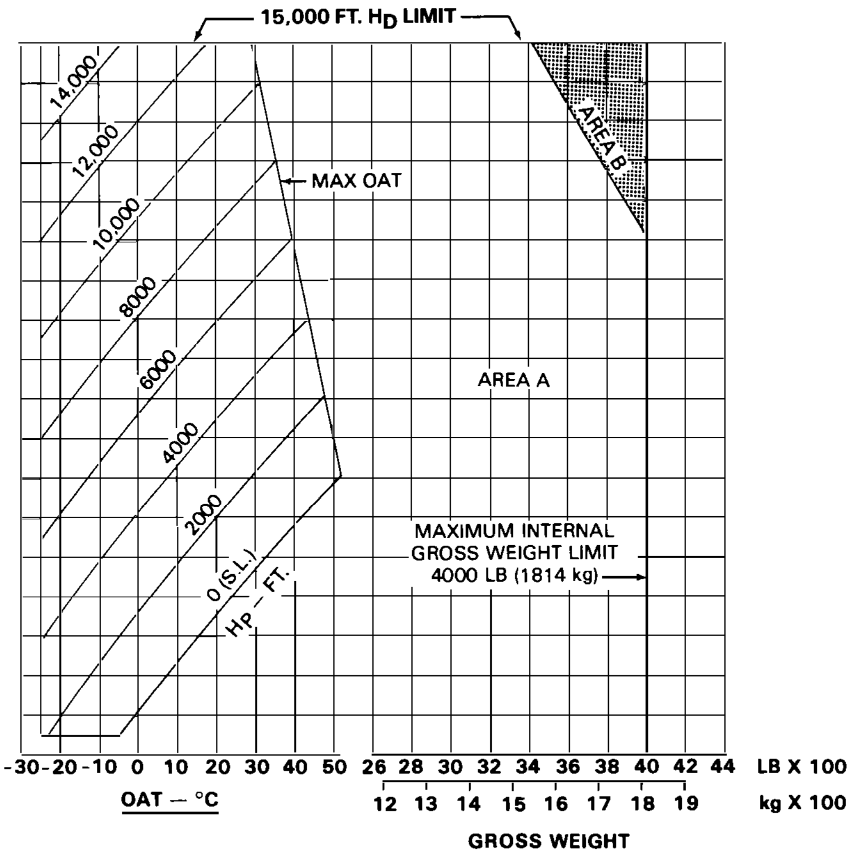

Figure 4-2. Hover ceiling in ground effect (Sheet 1 of 2)

HOVER CEILING
IN GROUND EFFECT
-25° TO 5° C

POWER — SEE NOTE BELOW
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

FLOAT HEIGHT 3.5 FT. (1.1 METERS)
ENGINE ANTI-ICING ON

NOTE: THIS HELICOPTER CAN BE HOVERED IGE AT THE INDICATED GROSS WEIGHTS WITH LESS THAN TAKEOFF POWER.

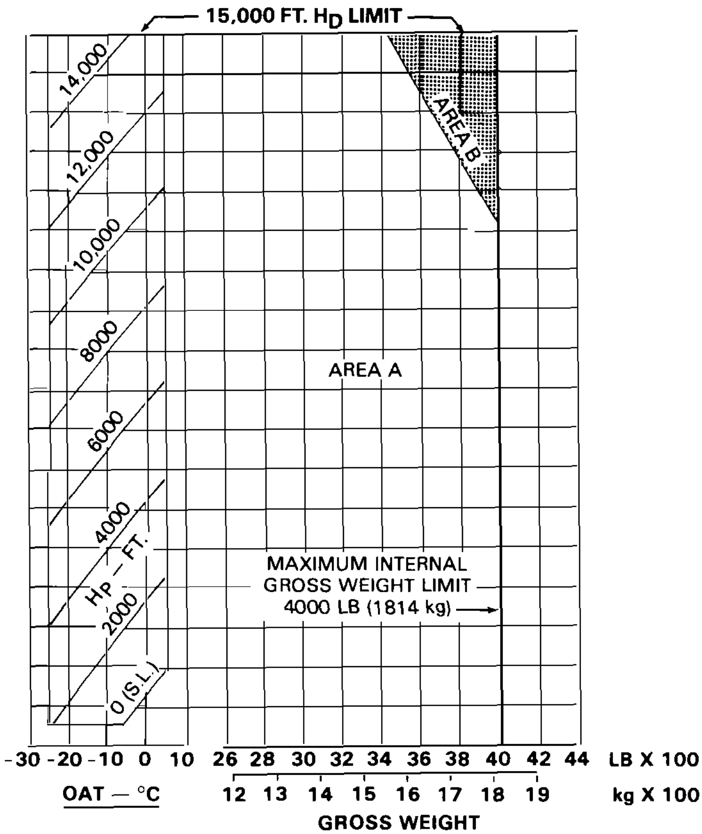

Figure 4-2. Hover ceiling in ground effect (Sheet 2 of 2)

MODEL 206L3 Bell Long Ranger-III

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT
HIGH SKID LANDING GEAR
206-706-064

CERTIFIED
11 DECEMBER 1981

This supplement shall be attached to the Model 206L-3 Flight Manual when High Skid Landing Gear 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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DEPARTMENT OF TRANSPORT

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GENERAL INFORMATION

The High Skid Gear Kit (206-706-064) provides approximately ten inches (.25 meters) of additional ground clearance over the standard skid gear. This enables operations in rough terrain, tall grass, and other adverse conditions, and allows fitting of underslung loads. Installation of this kit adds approximately 15 pounds (6.8 kilograms) to empty weight of helicopter.

Section 1

LIMITATIONS

WEIGHT/CG

Actual weight change 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 Maintenance Manual.

Section 2

NORMAL PROCEDURES

DESCENT AND LANDING

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

WARNING

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

Section 3

EMERGENCY PROCEDURES

No change from basic manual.

Section 4

PERFORMANCE

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

HOVER CEILING
IN GROUND EFFECT

WITH STANDARD INLET

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17 5%

SKID HEIGHT 2.5 FT. (0.7 METER)
ANTI-ICE OFF

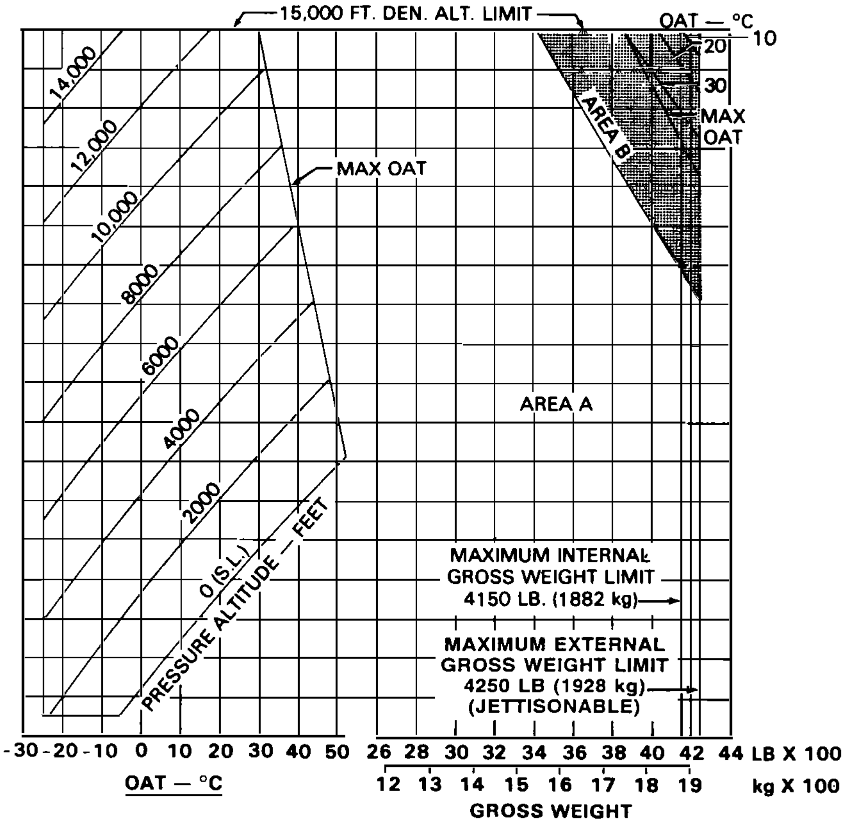

Figure 4-1. Hover ceiling in ground effect (Sheet 1 of 2)

HOVER CEILING
IN GROUND EFFECT

WITH STANDARD INLET

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17 5%

SKID HEIGHT 2 5 FT (0.7 METER)
ANTI-ICE ON

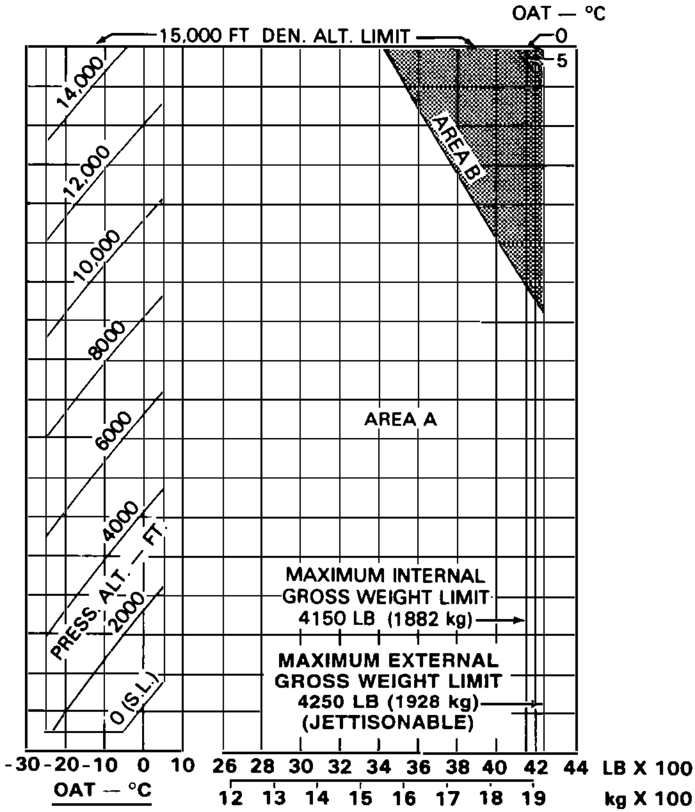

Figure 4-1. Hover ceiling in ground effect (Sheet 2 of 2)

MODEL 206L3 Bell LongRanger-III

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT

ROTOR BRAKE
206-706-042

CERTIFIED
DECEMBER 11, 1981

This supplement shall be attached to Model 206L-3 Flight Manual when Rotor Brake 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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APPROVED:

H R Whitlock

for MANAGER

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

GENERAL INFORMATION

The Rotor Brake Kit (206-706-042) provides a means of positive stopping of the main and tail rotor. The brake is a completely self-contained hydraulic system, and is operated by a handle located to the right of the overhead console. The kit adds approximately 12.5 pounds (5.7 kilograms) to the empty weight of the helicopter.

Section 1

LIMITATIONS

ROTOR BRAKE

Engine starts with rotor brake engaged are prohibited.

WEIGHT/CG

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

INTERIOR AND PRESTART CHECK

ROTOR BRAKE handle — Up and latched.

ENGINE SHUTDOWN

CAUTION

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

ROTOR BRAKE handle — As desired. Apply rotor brake between 38% and 30% ROTOR RPM. Return to stowed position after main rotor stops.

Section 3

EMERGENCY AND MALFUNCTION PROCEDURES

No change from basic manual.

Section 4

PERFORMANCE

No change from basic manual.

MODEL 206L3 Bell LongRanger-III

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT

AREA NAVIGATION SYSTEM

206-705-005

CERTIFIED
DECEMBER 11, 1981

This supplement shall be attached to Model 206L-3 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.

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FT. WORTH, TX 76193-0170

GENERAL INFORMATION

The Area Navigation System (206-705-005), Collins ANS-351 RNAV, consists of a computer and a remote annunciator adjacent to HSI. RNAV operates in conjunction with VHF NAV 1 receiver only.

Section 1

LIMITATIONS

For IFR operations, use of Area Navigation System is limited to enroute navigation only. Terminal navigation is not authorized.

1-1. WEIGHT/CG

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

NOTE

For operating procedures, refer to ANS-351 Area Navigation System Pilot Guide, printed by Collins Radio Group, Rockwell International.

For operation in RNAV mode, RNAV switch on DME control panel must be pressed. Amber RNAV light (located in lower left corner of HSI) will illuminate when RNAV switch is pressed. When RNAV light is extinguished, the HSI operates in normal VOR/LOC mode.

Section 3

EMERGENCY PROCEDURES

If Area Navigation System becomes inoperative, resume normal navigation using NAV 1.

Section 4

PERFORMANCE

No change from basic manual.

Bell MODEL 206L3 LongRanger-III

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT

LITTERS

206-706-343

CERTIFIED

11 DECEMBER 1981

This supplement shall be attached to Bell Helicopter Model 206L-3 Flight Manual when 206-706-343 Litters Kit is 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 Litter Kit (206-706-343) allows operator the capability of carrying up to two patients on litters with room and access for medical attendants. The kit contains aluminum litters with patient restraints and all necessary hardware for proper installation. The kit adds 53 pounds (24 kilograms) to the empty weight of the helicopter.

Section 1

LIMITATIONS

1-1. LITTER OPERATION

Copilot cyclic and collective controls must be removed and stowed when litters are installed.

Patients must be restrained by litter straps.

1-2. OPTIONAL EQUIPMENT

Litter Kit with removable support bars behind copilot seat is not compatible with Cargo Tiedown Provision Kit.

1-3. WEIGHT/CG

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

1-4. PLACARDS AND DECALS

These placards are applicable ONLY to litter kits having removable support bars behind copilot seat.

1 THIS SUPPORT MUST BE INSTALLED WHEN LOWER SUPPORT IS REMOVED

(Located on upper litter support.)

1 UPPER SUPPORT MUST BE INSTALLED WHEN THIS SUPPORT IS REMOVED

(Located on lower litter support.)

COVER MUST BE INSTALLED WHEN LOWER SUPPORT IS REMOVED

(Located on lower litter support end covers.)

1 ONE OR BOTH LITTER SUPPORTS MUST BE IN PLACE DURING FLIGHT FOR STRUCTURAL INTEGRITY

LOCATED ON LEFT AND RIGHT INTERIOR TRIM PANEL

NOTE

1 Warning: One or both litter support bars shall be in place during flight for structural integrity.

206L3-FS-12-1

Figure 1-1. Decals

Bell MODEL 206L3 LongRanger-III

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT

INCREASED POWER OPERATIONS

206-706-045

CERTIFIED
JULY 20, 1982

This supplement shall be attached to Model 206L-3 Flight Manual when Increased Power 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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POST OFFICE BOX 482 • FORT WORTH, TEXAS 76101

JULY 20, 1982
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APPROVED:

for MANAGER

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

GENERAL INFORMATION

The Increased Power Kit (206-706-045) allows for an increased transmission limit of 456 shp and an increased engine TORQUE of 104.8% for 5 minutes. Restrictions pertaining to this increased limit are addressed in this supplement.

Section 1

LIMITATIONS

NOTE

This increased horsepower is to be used for hover, takeoff, and climbs only.

1-1. AIRSPEED

Use of power above maximum continuous TORQUE (85%) is limited to AIRSPEED of 80 KIAS or less.

1-2. POWERPLANT

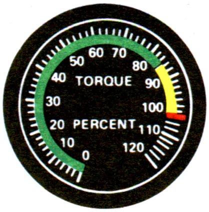
1-3. ENGINE TORQUE (KIT NO. 206-706-045 ONLY)

Continuous operation	0 to 85%
Maximum continuous	85%
5 Minute takeoff range	85 to 104.8%
Maximum for takeoff	104.8%
Maximum transient	108%

(Do not exceed 5 seconds above 104.8%.)

NOTE

Use of 5 minute takeoff range exceeding 100% is restricted to helicopters equipped with Increased Power Kit No. 206-706-045.



TORQUE

0 to 85%	Continuous operation
85 to 104.8%	5 Minute takeoff range
104.8 %	Maximum

Figure 1-1. Instrument markings

Section 2

NORMAL PROCEDURES

2-1. TAKEOFF

Recommended takeoff power is hover TORQUE plus 10% or maximum TORQUE, whichever is less.

Section 3

EMERGENCY AND MALFUNCTION PROCEDURES

No change from basic manual.

Section 4

PERFORMANCE

4-1. OGE HOVER CEILING

The Hover Ceiling Out of Ground Effect charts (figure 4-1) are to be used with Kit No. 206-706-045 only. For normal OGE performance, refer to the basic Flight Manual or the appropriate supplement.

CAUTION

CAUTION SHOULD BE EXERCISED WHEN OPERATING AT LOW AIRSPEEDS ABOVE PUBLISHED PERFORMANCE CHART ALTITUDES. TAIL ROTOR EFFECTIVENESS COULD BE MARGINAL AT HIGH POWER SETTINGS UNDER THESE CONDITIONS.

4-2. PERFORMANCE VARIATION

With both the Snow Deflector and Particle Separator installed, there is a change in OGE hover performance. This change is presented as a variation of OGE hover performance with Snow Deflector installed. Two Performance Variation charts (figure 4-2) are provided for use with Hover Ceiling Out of Ground Effect with Snow Deflector charts and Hover Ceiling Out of

Ground Effect with Snow Deflector and Bleed Air Heater chart, respectively.

To determine performance when both the Snow Deflector and Particle Separator are installed, select appropriate variation chart and enter chart at known pressure altitude (H_P). Move horizontally to known OAT. If intersection of known H_P and OAT is below the known anti-ice curve (Example A, 3000 feet H_P and -30°C), there is not any performance variation. If intersection of known H_P and OAT is above the known anti-ice curve (Example B, 9000 feet H_P and 25°C), hover gross weight is 90 pounds (40.8 kilograms) less than computed OGE hover performance with Snow Deflector installed and OGE hover performance with Snow Deflector and Bleed Air Heater installed.

HOVER CEILING
OUT OF GROUND EFFECT
WITH STANDARD INLET

TAKEOFF POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

SKID HEIGHT 40 FT. (12.2 METERS)
ENGINE ANTI-ICING OFF

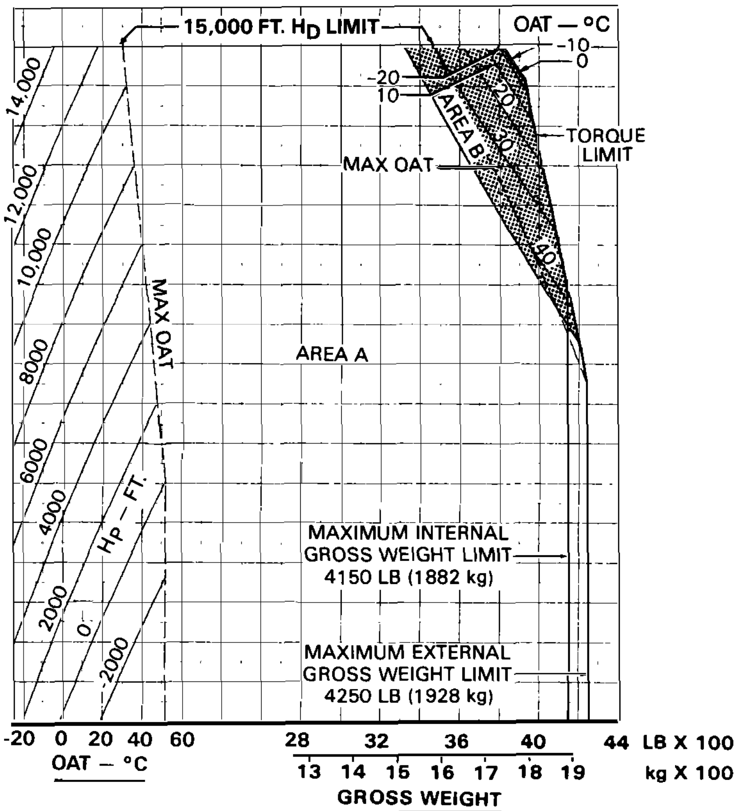


Figure 4-1. Hover ceiling out of ground effect (Sheet 1 of 12)

HOVER CEILING
OUT OF GROUND EFFECT
WITH STANDARD INLET

TAKEOFF POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

SKID HEIGHT 40 FT. (12.2 METERS)
ENGINE ANTI-ICING ON

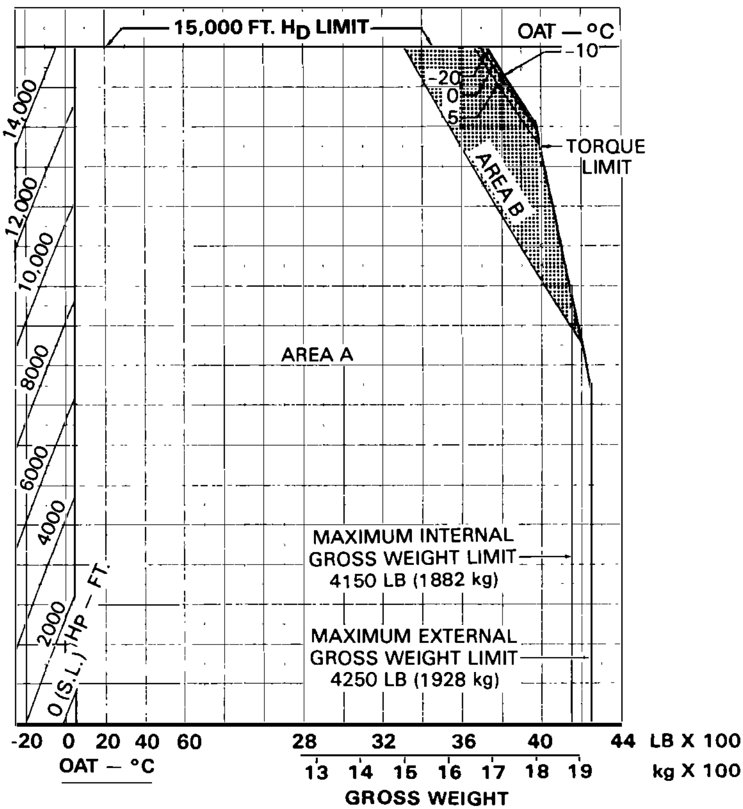


Figure 4-1. Hover ceiling out of ground effect (Sheet 2 of 12)

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

TAKEOFF POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

SKID HEIGHT 40 FT. (12.2 METERS)
ENGINE ANTI-ICING OFF

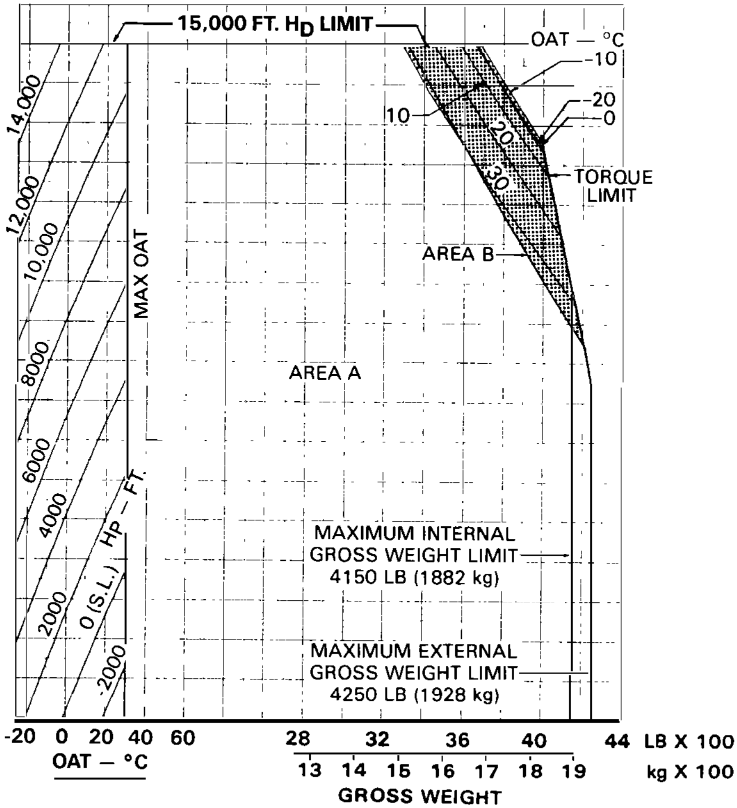


Figure 4-1. Hover ceiling out of ground effect (Sheet 3 of 12)

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

TAKEOFF POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

SKID HEIGHT 40 FT. (12.2 METERS)
ENGINE ANTI-ICING ON

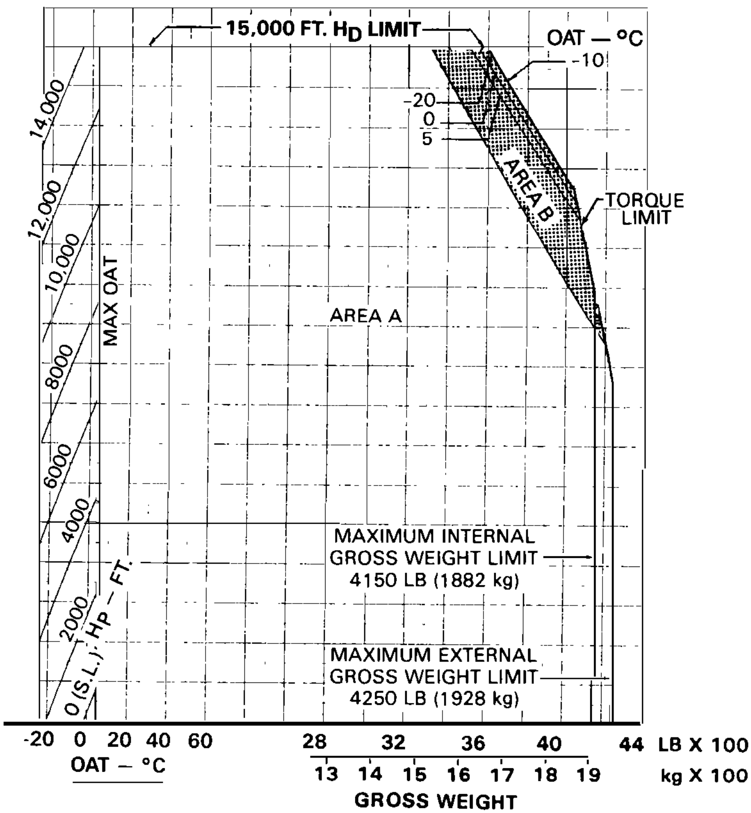


Figure 4-1. Hover ceiling out of ground effect (Sheet 4 of 12)

HOVER CEILING
OUT OF GROUND EFFECT
WITH STANDARD INLET AND BLEED AIR HEATER
WITH ANY SKID OR FLOAT LANDING GEAR

TAKEOFF POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

SKID HEIGHT 40 FT. (12.2 METERS)
ENGINE ANTI-ICING OFF
HEATER ON

WITH ENGINE ANTI-ICING ON ABOVE 10,000 FT. Hp., G.W. IS 120 LB (54 kg) LESS
(BELOW 10,000 FT., NO CORRECTION IS NECESSARY)

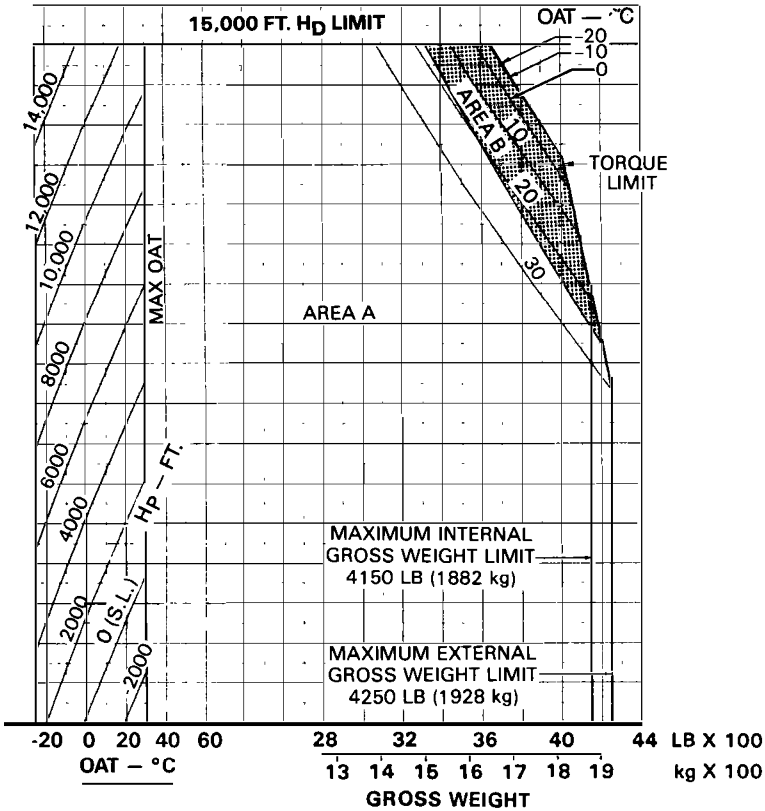


Figure 4-1. Hover ceiling out of ground effect (Sheet 5 of 12)

HOVER CEILING
OUT OF GROUND EFFECT
WITH SNOW DEFLECTOR AND BLEED AIR HEATER
WITH ANY SKID OR FLOAT LANDING GEAR

TAKEOFF POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

SKID HEIGHT 40 FT. (12.2 METERS)
ENGINE ANTI-ICING OFF
HEATER ON

WITH ENGINE ANTI-ICING ON ABOVE 10,000 FT. Hp., G.W. IS 130 LB (59 kg) LESS
(BELOW 10,000 FT., NO CORRECTION IS NECESSARY)

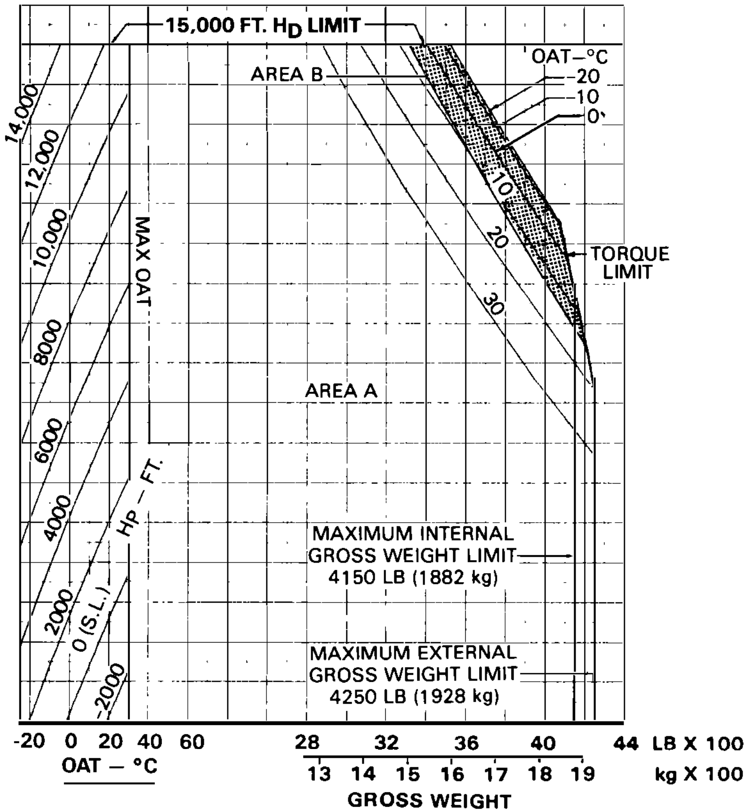


Figure 4-1. Hover ceiling out of ground effect (Sheet 6 of 12)

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

TAKEOFF POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

SKID HEIGHT 40 FT. (12.2 METERS)
ENGINE ANTI-ICING OFF
PARTICLE SEP. PURGE OFF

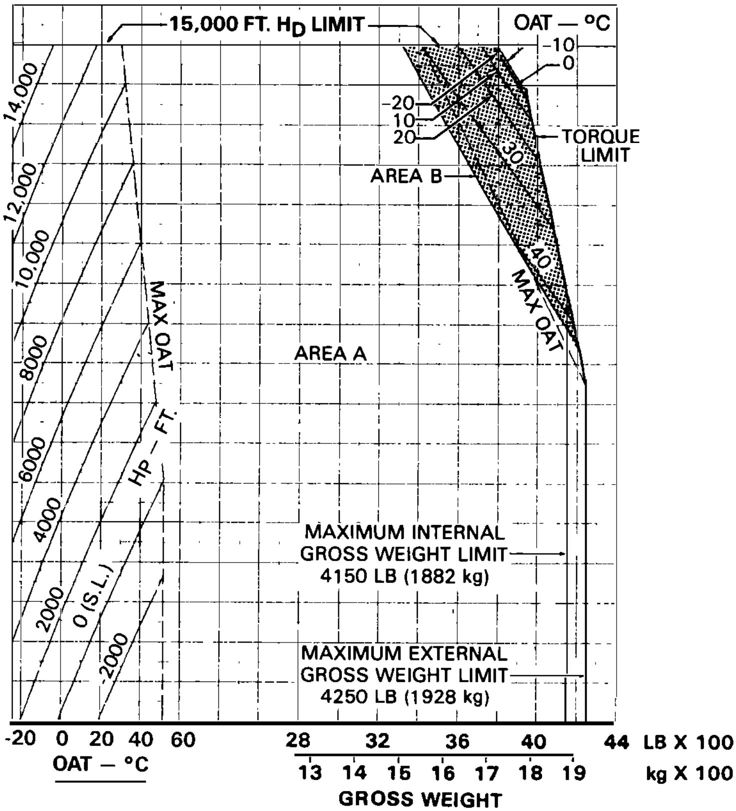


Figure 4-1. Hover ceiling out of ground effect (Sheet 7 of 12)

HOVER CEILING

OUT OF GROUND EFFECT
WITH PARTICLE SEPARATOR
WITH ANY SKID OR FLOAT LANDING GEAR

TAKEOFF POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

SKID HEIGHT 40 FT. (12.2 METERS)
ENGINE ANTI-ICING OFF
PARTICLE SEP. PURGE ON

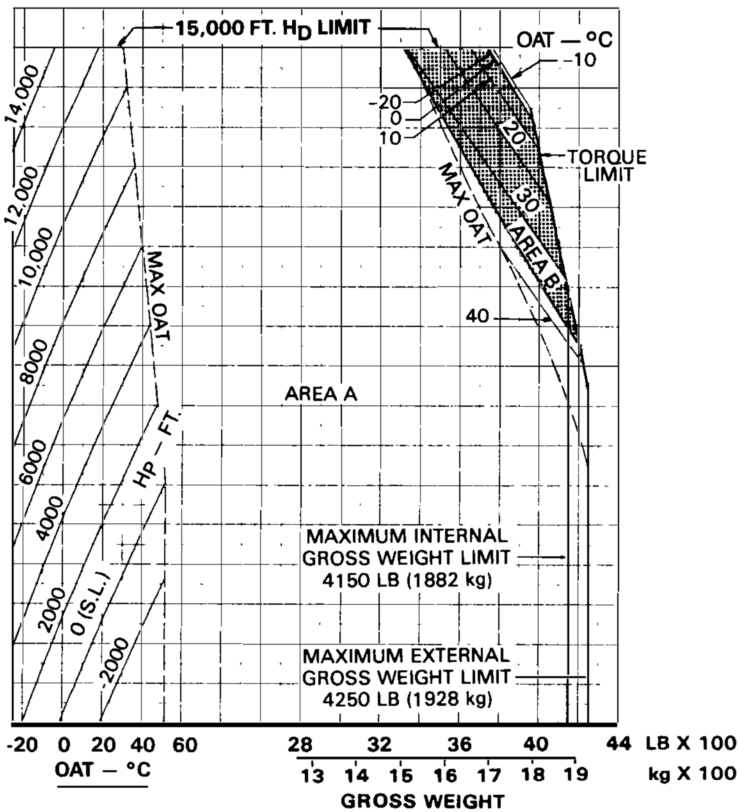


Figure 4-1. Hover ceiling out of ground effect (Sheet 8 of 12)

HOVER CEILING

OUT OF GROUND EFFECT
WITH PARTICLE SEPARATOR
WITH ANY SKID OR FLOAT LANDING GEAR

TAKEOFF POWER	SKID HEIGHT 40 FT. (12.2 METERS)
POWER TURBINE — 100% RPM	ENGINE ANTI-ICING ON
DC LOAD — 17.5%	PARTICLE SEP. PURGE OFF

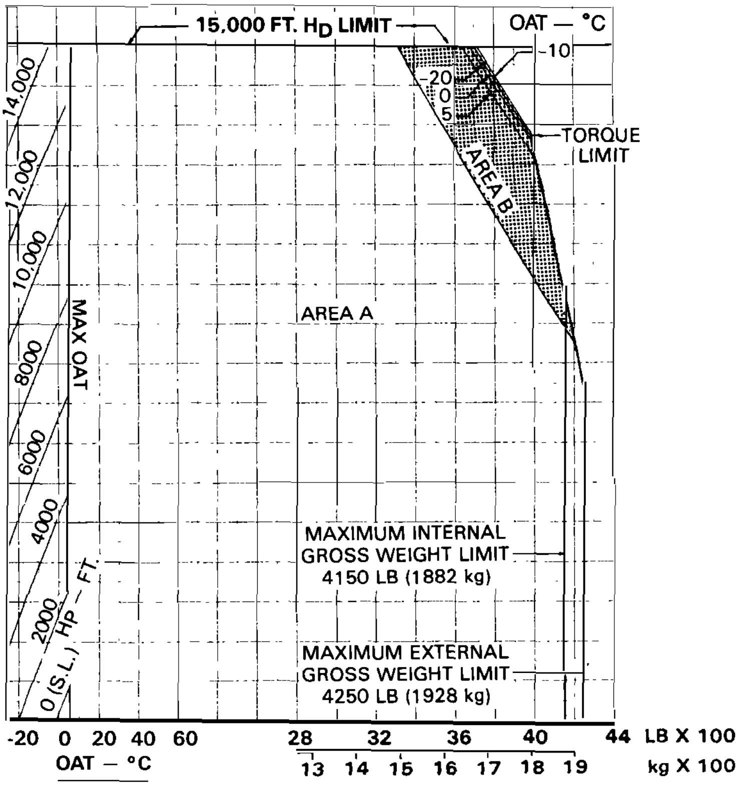


Figure 4-1. Hover ceiling out of ground effect (Sheet 9 of 12)

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

TAKEOFF POWER	SKID HEIGHT 40 FT. (12.2 METERS)
POWER TURBINE — 100% RPM	ENGINE ANTI-ICING ON
DC LOAD — 17.5%	PARTICLE SEP. PURGE OFF

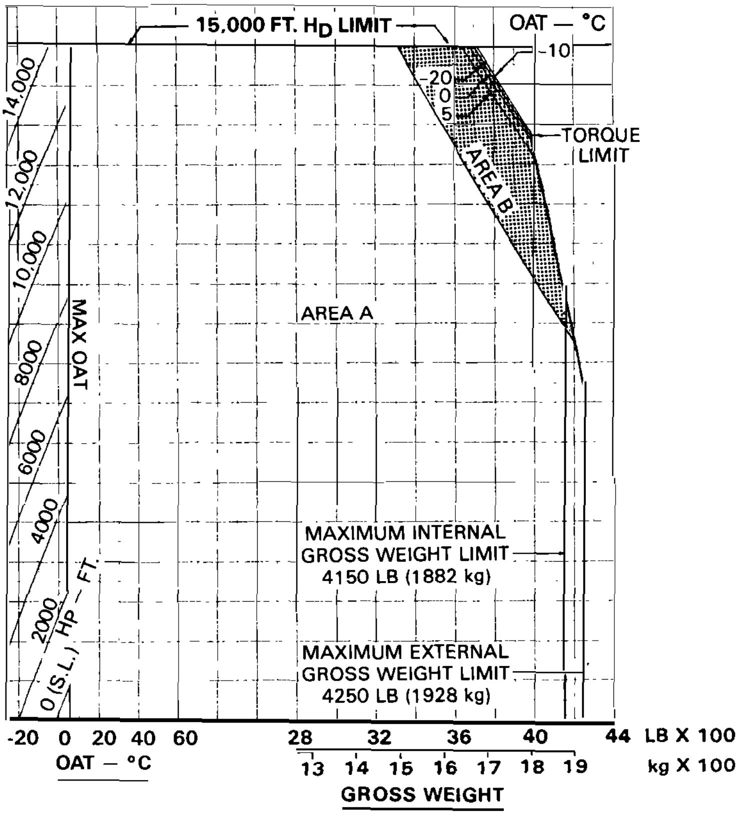


Figure 4-1. Hover ceiling out of ground effect (Sheet 9 of 12)

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

TAKEOFF POWER	SKID HEIGHT 40 FT. (12.2 METERS)
POWER TURBINE — 100% RPM	ENGINE ANTI-ICING ON
DC LOAD — 17.5%	PARTICLE SEP. PURGE ON

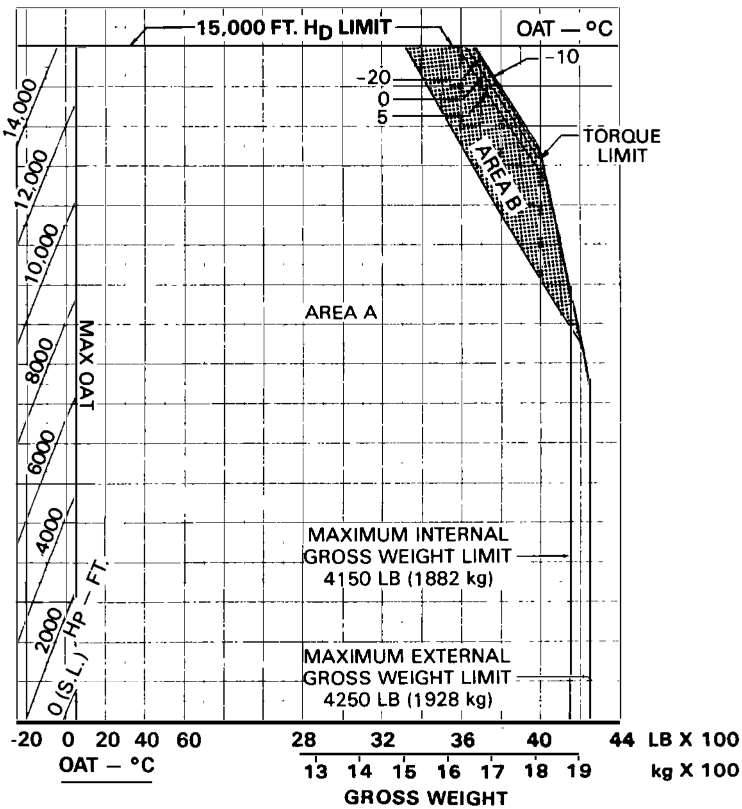


Figure 4-1. Hover ceiling out of ground effect (Sheet 10 of 12)

HOVER CEILING

OUT OF GROUND EFFECT
WITH PARTICLE SEPARATOR AND BLEED AIR HEATER
WITH ANY SKID OR FLOAT LANDING GEAR

TAKEOFF POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

SKID HEIGHT 40 FT. (12.2 METERS)
ENGINE ANTI-ICING OFF
HEATER ON
PARTICLE SEP. PURGE OFF

WITH ENGINE ANTI-ICING ON ABOVE 10,000 FT. Hp., G.W. IS 130 LB (59 kg) LESS
(BELOW 10,000 FT., NO CORRECTION IS NECESSARY)

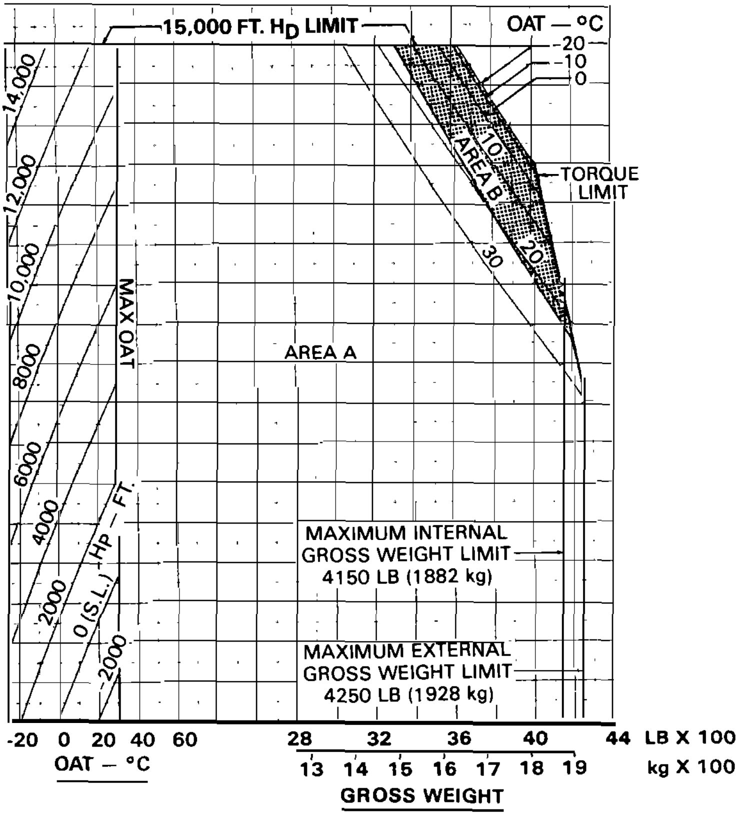


Figure 4-1. Hover ceiling out of ground effect (Sheet 11 of 12)

HOVER CEILING
OUT OF GROUND EFFECT
WITH PARTICLE SEPARATOR AND BLEED AIR HEATER
WITH ANY SKID OR FLOAT LANDING GEAR

TAKEOFF POWER
POWER TURBINE — 100% RPM
DC LOAD — 17.5%

SKID HEIGHT 40 FT. (12.2 METERS)
ENGINE ANTI-ICING OFF
HEATER ON
PARTICLE SEP. PURGE ON

WITH ENGINE ANTI-ICING ON ABOVE 10,000 FT. Hp., G.W. IS 130 LB (59 kg) LESS
(BELOW 10,000 FT., NO CORRECTION IS NECESSARY)

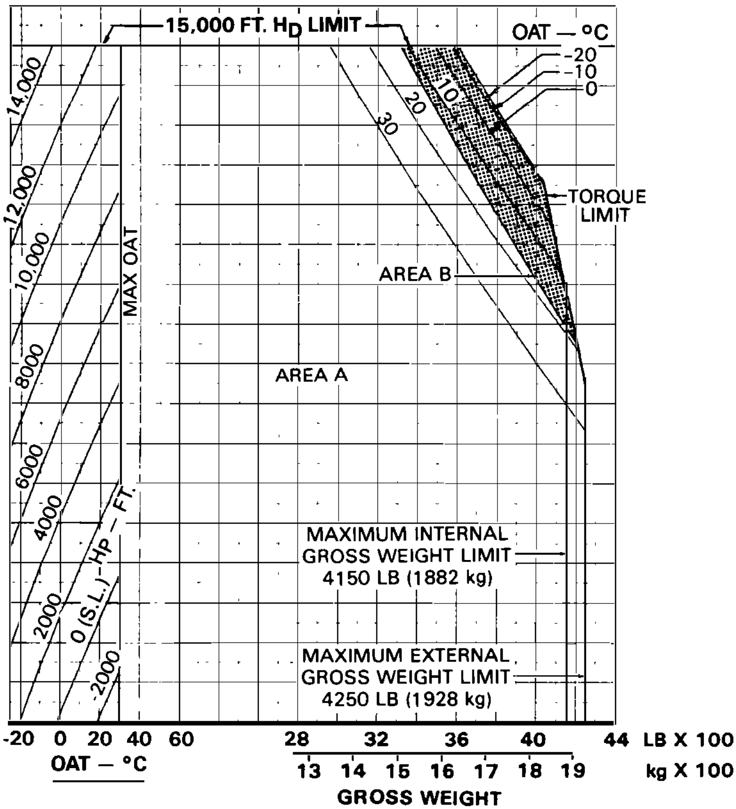


Figure 4-1. Hover ceiling out of ground effect (Sheet 12 of 12)

PERFORMANCE VARIATION WITH SNOW DEFLECTOR AND PARTICLE SEPARATOR INSTALLED

ENGINE ANTI-ICING ON OR OFF
HEATER OFF
NO PURGE SWITCH INSTALLED OR PURGE SWITCH ON

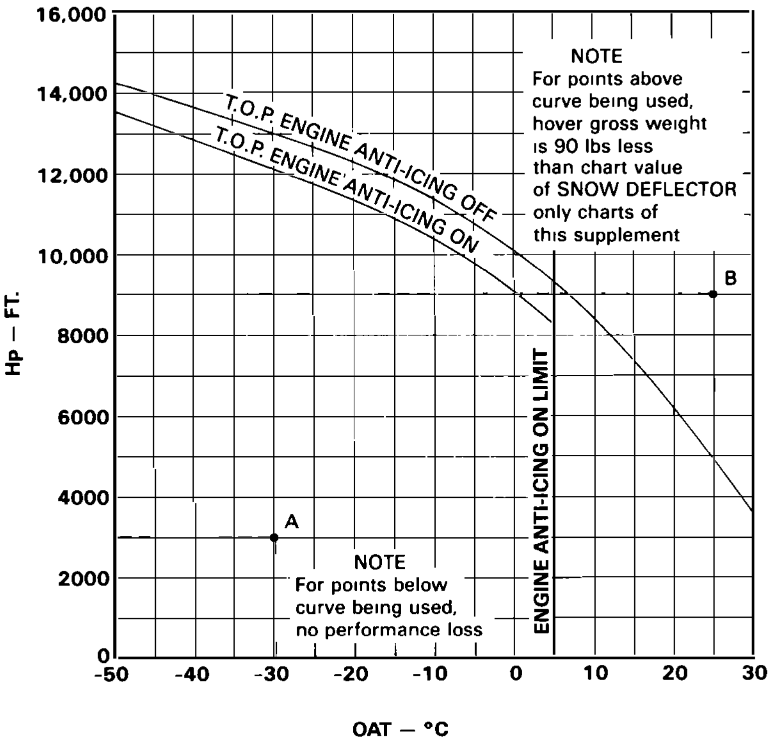


Figure 4-2. Performance variation (Sheet 1 of 2)

PERFORMANCE VARIATION WITH SNOW DEFLECTOR AND PARTICLE SEPARATOR INSTALLED

ENGINE ANTI-ICING ON OR OFF
HEATER ON
NO PURGE SWITCH INSTALLED OR PURGE SWITCH ON

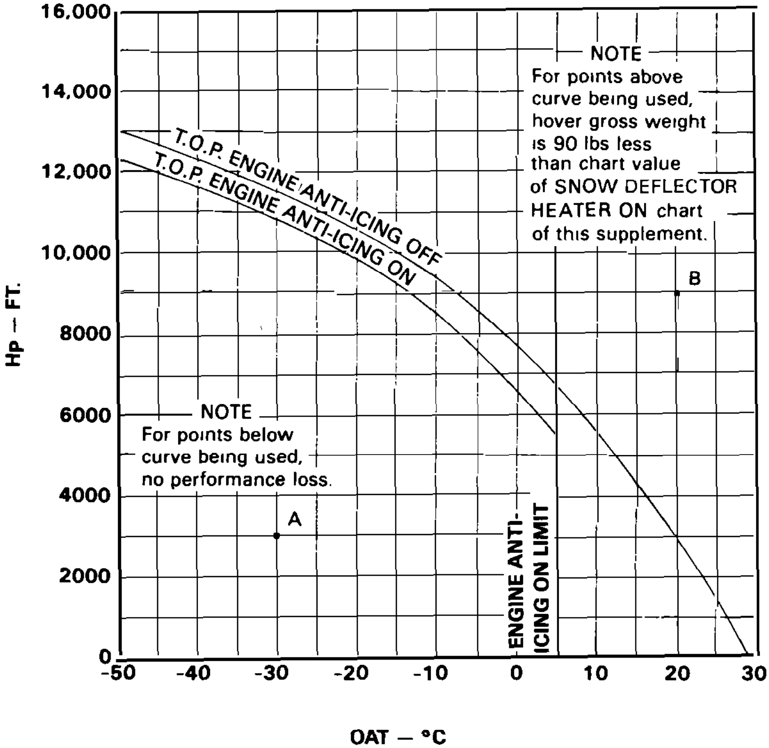


Figure 4-2. Performance variation (Sheet 2 of 2)

Bell MODEL 206L3 LongRanger-III

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT

EXTERNAL HOIST
206-899-861

CERTIFIED
SEPTEMBER 15, 1983

This supplement shall be attached to Model 206L-3 Flight Manual when External Hoist 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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MANAGER

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

GENERAL INFORMATION

External Hoist Kit (206-899-861) consists of a hoist motor and winch assembly, mounting frame, master control panel, crew member pendant control, electrical components, wiring, and all hardware necessary to complete installation. Winch unit contains 110 feet (33.5 meters) of usable cable. Winch unit, when actuated, has a rate of cable travel of 50 feet (15.2 meters) per minute. Control panel is edge lit and contains a POWER selector switch for pilot or crewmember hoist operation and a CABLE CUT switch for use in the event of an emergency. Installation of hoist will allow pilot or crewmember to deliver or pick up cargo from areas that are not suitable for landing helicopter.

Section 1

LIMITATIONS

1-1. TYPE OF OPERATION

Hoist operations must be conducted under provisions of Restricted Category Aircraft or operating rules for external loads. Left passenger doors (both sections) must be removed for hoist operations.

Operation under FAR Part 27 is approved, with hoist installed, providing hoist is not used and hoist electrical system is deactivated.

Hoist kit is not eligible for use with 206-706-065 Fixed Float Kit installed. Simultaneous use of hoist and external cargo hook is prohibited.

1-2. FLIGHT CREW

Crewmember in passenger compartment is required during hoist operations.

1-3. WEIGHT/CG

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

1-4. WEIGHT

Maximum approved gross weight for external operations is 4,250 pounds (1927.8 kilograms).

1-5. LOADING

Hoist loading — Maximum 300 pounds (136 kilograms). (Refer to WEIGHT AND BALANCE, Section 1 for Hoist Loading Nomographs.)

1-6. AIRSPEED

Hoist operations are approved only in hovering flight. Object being hoisted shall be completely in cabin before forward flight is established.

Section 2

NORMAL PROCEDURES

2-1. EXTERIOR CHECK

2-2. FUSELAGE — CABIN LEFT SIDE

1. Hoist — Condition, security, wiring connected. Ensure hook firmly seated against bumper pad.
2. Aft cabin door — Both sections removed, if hoist is to be used.

2-3. INTERIOR CHECK

Crewmember hoist control — Installed, stowed, wiring connected.

2-4. BEFORE TAKEOFF

NOTE

Perform hoist power check if hoist operations are anticipated.

2-5. HOIST POWER CHECK

Prior to takeoff, perform hoist operation functional check as follows:

1. HOIST POWER and CABLE CUT circuit breakers — In.
2. POWER switch (located on HOIST CONTROL PANEL) — PILOT position.
3. HOIST OVERHEAT WARNING light (if installed) — Press to test.
4. HOIST switch (pilot cyclic) — DN (down) to lower hook approximately 2 feet, then UP to raise hook.
5. POWER switch (located on HOIST CONTROL PANEL) — CREW position.
6. HOIST switch (crewmember) DN (down) to lower hook approximately 2 feet, then UP to raise hook.
7. POWER switch (located on HOIST CONTROL PANEL) — OFF position.
8. Pilot or crewmember — Ensure hook firmly seated against bumper pad.

2-6. IN-FLIGHT OPERATIONS

2-7. HOIST OPERATING PROCEDURE

1. POWER switch (located on HOIST CONTROL PANEL) — PILOT or CREW position.
2. Establish zero groundspeed over pickup location.
3. HOIST switch — DN (down) to lower hook.

CAUTION

TO PREVENT OVERHEATING AND DAMAGE TO HOIST MOTOR, ONLY THREE CONSECUTIVE CYCLES (FULL UP AND FULL DOWN) ARE PERMITTED. AFTER THREE FULL CYCLES OF

OPERATION, ALLOW A 40 MINUTE COOLING PERIOD.

NOTE

Allow a 30 second rest period between each 1/2 cycle (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.

4. HOIST switch — UP to raise hoist load.

5. POWER switch (located on HOIST CONTROL PANEL) — OFF after completing hoist operation.

NOTE

Use care to prevent hook to fuselage fouling during hoist operation.

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

2-8. AFTER EXITING HELICOPTER

2-9. POST FLIGHT CHECK

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

NOTE

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

Section 3

EMERGENCY PROCEDURES

In the event of an emergency, lift CABLE CUT switch guard and activate switch to cut cable and drop hoist load.

Section 4

PERFORMANCE

No change from basic manual.

Section 1

MANUFACTURER'S DATA

WEIGHT AND BALANCE

1-1. HOIST LOADING EXAMPLES: ENGLISH

- NOTES:

1. Maximum hoist load permitted is 300 pounds.
2. Gross weight must not exceed maximum allowable.
3. If desired, allowable hoist load may be computed by use of the following information:

Item	Lateral Center of Gravity (Inches)
Pilot (Right Cockpit Seat)	+14.0
Copilot (Left Cockpit Seat)	-11.0
Left, Aft Facing Passenger	-12.9
Right, Aft Facing Passenger	+12.9
Left, Aft Row; Forward Facing Passenger	-15.8
Center, Aft Row; Forward Facing Passenger	0
Right, Aft Row; Forward Facing Passenger	+15.8
Fuel (All Amounts)	0
Hoist Load	-25.0

- EXAMPLE A

Given a 180 pound pilot with a total of 400 pounds in left seats (200 pounds in left aft facing seat and 200 pounds in aft left forward facing seat), allowable hoist load is 300 pounds.

- EXAMPLE B

Given a 170 pound pilot with a total of 500 pounds in left seats (170 pound copilot, 160 pounds in left aft facing seat, and 170 pounds in aft left forward facing seat), allowable hoist load is 225 pounds.

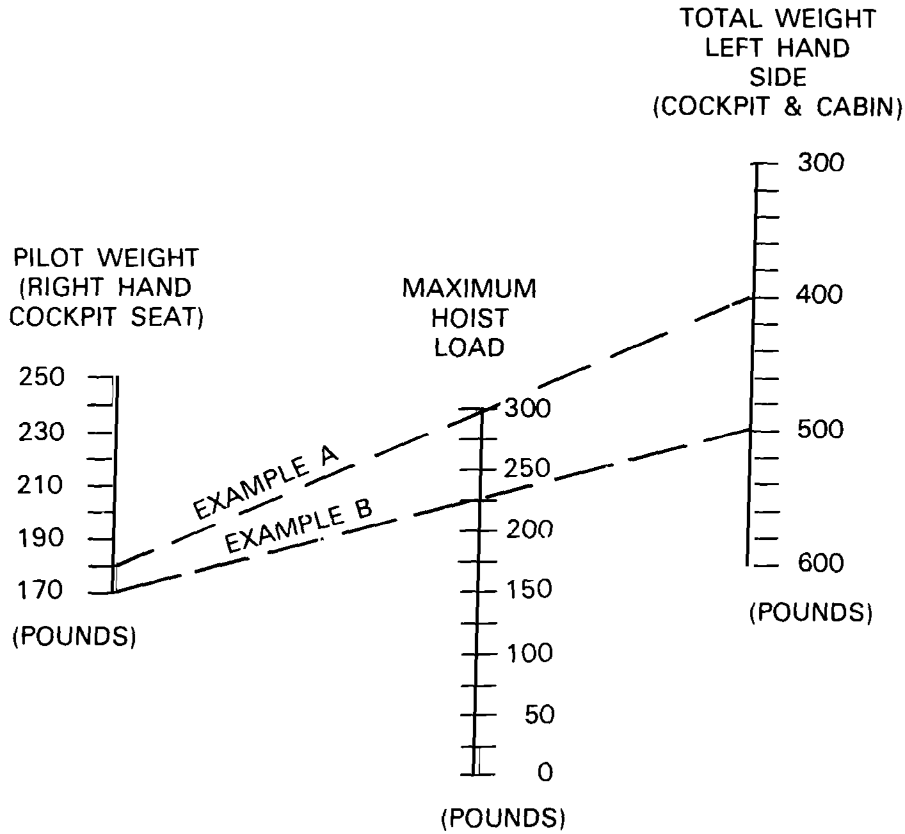

Figure 1-1. Hoist load nomograph (English)

1-2. HOIST LOADING EXAMPLES: METRIC

- NOTES:

1. Maximum hoist load permitted is 136 kilograms.

2. Gross weight must not exceed maximum allowable.

3. If desired, allowable hoist load may be computed by use of the following information:

Item	Lateral Center of Gravity (Millimeters)
Pilot (Right Cockpit Seat)	+355.6
Copilot (Left Cockpit Seat)	-279.4
Left, Aft Facing Passenger	-327.7
Right, Aft Facing Passenger	+327.7
Left, Aft Row; Forward Facing Passenger	-401.3
Center, Aft Row; Forward Facing Passenger	0
Right, Aft Row; Forward Facing Passenger	+401.3
Fuel (All Amounts)	0
Hoist Load	-635.0

- EXAMPLE A

Given a 90 kilogram pilot with a total of 220 kilograms in left seats (110 kilograms in left aft facing seat and 110 kilograms in aft left forward facing seat), allowable hoist load is 130 kilograms.

- EXAMPLE B

Given an 80 kilogram pilot with a total of 240 kilograms in left seats (70 kilogram copilot, 85 kilograms in left aft facing seat, and 85 kilograms in aft left forward facing seat), allowable hoist load is 108 kilograms.

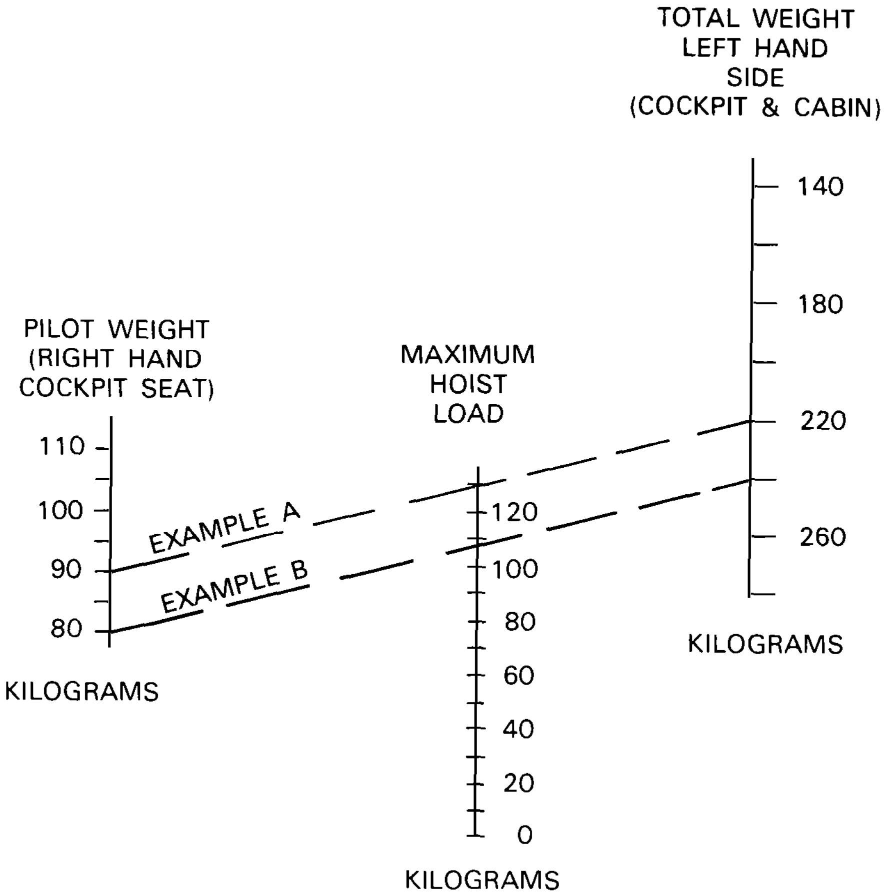

Figure 1-2. Hoist load nomograph (Metric)

Bell LongRanger-III

MODEL 206L3

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT

SX-16C NIGHTSUN SEARCHLIGHT

206-899-992

CERTIFIED
OCTOBER 30, 1985

This supplement shall be attached to Model 206L-3 Flight Manual when SX-16C Nightsun Searchlight 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

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

GENERAL INFORMATION

The searchlight is a high-intensity light source capable of producing a maximum of 30,000,000 candlepower. Remote control unit is a rectangular metal case designed for mounting in pilot compartment (on a panel or bulkhead) or can be hand held and operated by a crewmember in passenger compartment. Remote control panel contains all necessary switches for operation of searchlight. MASTER ON OFF switch ON position provides power to lamp and lamp starter, gimbal drive motors, focusing drive motor circuit, and cooling fan located in lamp housing assembly. OFF position removes power to these components. START switch is a momentary contact type and is used to control initial start circuit for xenon arc lamp. FOCUS switch is a two position, momentary contact toggle type that controls motor which drives focus mechanism to change beam of light from 4 to 20 degrees. Movement of searchlight in azimuth and elevation is controlled by a four-way toggle type switch which controls power to motors mounted in gimbal assembly. This switch is labeled LEFT RIGHT DOWN UP.

Section 1

LIMITATIONS

1-1. TYPE OF OPERATION

IFR operation is prohibited with Nightsun Searchlight installed.

1-2. OPTIONAL EQUIPMENT

The High Skid Gear Kit (206-706-064) or Emergency Float Kit (206-706-210) must be installed in conjunction with Nightsun Searchlight installation.

1-3. FLIGHT CREW

Operation of Nightsun Searchlight is restricted to copilot or operator position.

1-4. WEIGHT/CG

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

1-5. PLACARDS AND DECALS

CAUTION

DO NOT USE NIGHTSUN SEARCHLIGHT
BELOW 50 FT AGL OR IN FOG CONDITIONS.
FOR TAXI, TAKEOFF, AND LANDING,
SEARCHLIGHT MUST BE IN HORIZONTAL
OR UP STOWED POSITION.
MONITOR LOADMETER WHEN USING
NIGHTSUN SEARCHLIGHT.

(Located on Instrument Panel)

Section 2

NORMAL PROCEDURES

2-1. EXTERIOR CHECK

2-2. FUSELAGE — FRONT

Nightsun Searchlight — Security and wiring. Lens for cleanliness. Check searchlight in horizontal or stowed up position.

2-3. INTERIOR AND PRESTART CHECK

1. SCHLT PWR and SCHLT CONT circuit breakers — In.
2. Crewmember NIGHTSUN SEARCHLIGHT control — Installed, stowed, wiring connected. MASTER switch — OFF.

2-4. IN-FLIGHT OPERATIONS

1. NIGHTSUN SEARCHLIGHT MASTER switch — ON.

CAUTION

HOLDING SWITCH IN *START* POSITION AFTER IGNITION MAY DAMAGE EQUIPMENT.

2. NIGHTSUN SEARCHLIGHT START switch — START, hold in this position approximately 5 seconds, or until ignition has occurred.

CAUTION

DO NOT AIM THE BEAM TOWARD OTHER AIRCRAFT OR VEHICLES BECAUSE OF TEMPORARY BLINDING EFFECT.

3. Aim and focus as desired.

2-5. DESCENT AND LANDING

1. Nightsun searchlight — Secure in horizontal or up stowed position.
2. NIGHTSUN SEARCHLIGHT MASTER switch — OFF.

Section 3

EMERGENCY AND MALFUNCTION PROCEDURES

No change from basic manual.

Section 4

PERFORMANCE

Rate of Climb performance is reduced approximately 60 feet per minute from that shown in basic Flight Manual when operating with combination of High Skid Landing Gear with Emergency Floats, Loudhailer installed on rear crosstubes, and Nightsun Searchlight.

Bell MODEL 206L3 LongRanger-III

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT

ALTERNATE TURBINE OUTLET TEMPERATURE GAGE (RED TRIANGLE AT 826 °C)

CERTIFIED
AUGUST 9, 1993

This supplement shall be attached to Model 206L-3 Flight Manual when Alternate Turbine Outlet Temperature Gage (Red Triangle at 826 °C) 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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9 AUGUST 1993

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Gary B Roach

for MANAGER

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FEDERAL AVIATION ADMINISTRATION
FT. WORTH, TX 76193-0170

GENERAL INFORMATION

This Flight Manual Supplement is issued to introduce an alternate turbine outlet temperature gage with revised start temperature limitations. The revised start temperature limitations are in accordance with Allison Gas Turbine revised parameters.

The start temperature limitations permit unrestricted start modulation up to 826 °C. This point is identified by a red triangle on the instrument face. The initiation point for the 10 second limit is raised to 826 °C.

The warning light will illuminate when temperatures between 826 and 927 °C are maintained for 10 seconds or longer, or the turbine outlet temperature exceeds 927 °C.

Maximum continuous and 5 minute takeoff limits remain unchanged.

Section 1

LIMITATIONS

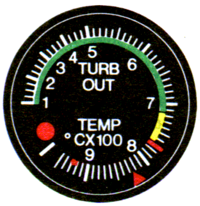
TURBINE OUTLET TEMPERATURE (TOT)

See figure 1-1 for turbine outlet temperature instrument markings.

Continuous operation	100 to 716 °C
Maximum continuous	716 °C
5 minute takeoff range	716 to 768 °C
Maximum for takeoff	768 °C
Maximum power-on transient (Do not exceed 10 seconds above 768 °C)	871 °C
Beginning of 10 second time limit range. (Do not exceed 10 seconds above 826 °C.)	826 °C
Maximum for starting and shutdown. (Do not exceed 1 second at 927 °C.)	927 °C

CAUTION

INTENTIONAL USE OF POWER TRANSIENT TOT ABOVE 768 °C IS PROHIBITED.



Range mark below warning light is at 999 °C.

TURBINE OUTLET TEMPERATURE

(green)	100 to 716 °C	Continuous operation
(yellow)	716 to 768 °C	5 minute takeoff range
(red)	768 °C	Maximum for takeoff
(red triangle)	826 °C	NOTE Beginning of time limited range for starting.
(small red dot)	927 °C	Maximum for start and shutdown (1 second maximum)
(large red dot)	Warning light	Illuminates when TOT between 826 and 927 °C more than 10 seconds or TOT above 927 °C.

Figure 1-1. Instrument markings

Section 2

NORMAL PROCEDURES

ENGINE STARTING

Same as basic Flight Manual except as indicated.

CAUTION

ENGINE STARTS BELOW 716 °C TURB OUT TEMP FROM INTRODUCTION OF FUEL AND IN EXCESS OF 40 SECONDS MAY BE DETRIMENTAL TO TURBINE COMPONENTS. OPTIMUM STARTS OCCUR WHEN THE STARTING TURB OUT TEMP IS MAINTAINED BETWEEN 716 °C AND 826 °C, WITH START TIMES LESS THAN 40 SECONDS.

NOTE

At the appropriate GAS PRODUCER RPM and TURB OUT TEMP, introduce fuel with the throttle to obtain the initial TURB OUT TEMP rise. Observe the 927 °C limit. After initial TURB OUT TEMP rise, modulate throttle to maintain TURB OUT TEMP between 716 °C and 826 °C. This sequence should provide optimum starts in less than 40 seconds from the introduction of fuel. If limits are exceeded or TURB OUT TEMP warning light illuminates, refer to Allison 250-C30P Series Operation and Maintenance Manual (14W2PM).

Step 7. Throttle — At 12% GAS PRODUCER RPM, modulate to idle to maintain 716 °C to 826 °C TURB OUT TEMP during start cycle.

Step 8. TURB OUT TEMP — Monitor. (Do not exceed 10 seconds above 826 °C or a maximum of 927 °C.)

Section 3

EMERGENCY AND MALFUNCTION PROCEDURES

ENGINE RESTART

Same as basic Flight Manual except as indicated.

Step 8. TURB OUT TEMP — Modulate throttle to maintain 716 °C to 826 °C.

Section 4

PERFORMANCE

No change from basic manual.

BHT-206L3-FMS-18

Bell LongRanger-III
MODEL 206L3

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT

FIRE DETECTION SYSTEM KIT
206-899-793

CERTIFIED
7 JANUARY 1994

This supplement shall be attached to the Bell Helicopter Model 206L-3 Flight Manual when the 206-899-793 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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7 JANUARY 1994

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FT. WORTH, TX 76193-0170

Section 1

LIMITATIONS

NOTE

The Bell Fire Detection System Kit, No. 206-899-793, when installed, will cause the FIRE warning light on the instrument panel to illuminate if a fire develops in the engine compartment.

WEIGHT/CENTER OF GRAVITY

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

INTERIOR AND PRESTART CHECK

FIRE DET. TEST — Press, ENG. FIRE light on, release, ENG. FIRE light off.

Section 3

EMERGENCY PROCEDURES

Table 3-1. Warning lights

PANEL WORDING	FAULT CONDITION	CORRECTIVE ACTION
ENG FIRE	Overtemperature condition in engine compartment.	Throttle — close. Immediately enter autorotation. FUEL VALVE switch — OFF. BATtery switch — OFF. GENerator switch — OFF.

NOTE

Do not restart engine until cause of fire has been determined and corrected.

Section 4

PERFORMANCE

No change from basic manual.

Section 1

MANUFACTURER'S DATA

WEIGHT AND BALANCE

No change from basic manual.

Section 2

MANUFACTURER'S DATA

SYSTEM DESCRIPTION

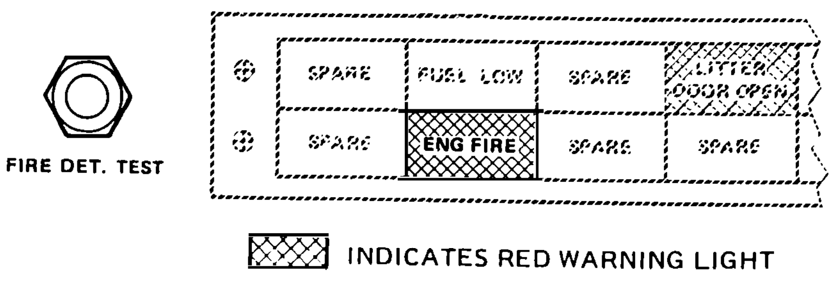

Figure 2-1. Caution and warning panel

Section 3

MANUFACTURER'S DATA

OPERATIONAL INFORMATION

No change from basic manual.

Section 4

MANUFACTURER'S DATA

HANDLING/SERVICING/MAINTENANCE

No change from basic manual.

BHT-206L3-FM-CAN-0

MODEL 206L3 Bell LongRanger-III

FLIGHT MANUAL ADDENDUM

ADDENDUM FOR CANADIAN REGISTERED HELICOPTERS

Bell Helicopter TEXTRON
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POST OFFICE BOX 482 • FORT WORTH, TEXAS 76101

SEPTEMBER 23, 1983
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AMBIENT AIR TEMPERATURE

Minimum −50°F (−45.5°C)

Maximum +125°F (51.6°C)

THIS HELICOPTER MUST BE OPERATED IN COMPLIANCE WITH THE OPERATING LIMITATIONS SPECIFIED IN THE APPROVED HELICOPTER FLIGHT MANUAL
MINIMUM COCKPIT WEIGHT 170 LBS
SELECTIVE PASSENGER LOADING WHEN BOTH CREW SEATS ARE OCCUPIED ONLY ONE (1) MID PASSENGER IS PERMITTED UNLESS THERE ARE TWO (2) AFT PASSENGERS. △1 WHEN ONLY ONE (1) CREW SEAT IS OCCUPIED NO MORE THAN TWO (2) AFT PASSENGERS ARE PERMITTED UNLESS THERE IS ONE (1) MID PASSENGER.
REFER TO RFM WEIGHT AND BALANCE FOR ADDITIONAL LOADING INFORMATION.

△1 APPLICABLE TO HELICOPTERS EQUIPPED WITH FUEL QTY SWITCH.

Bell LongRanger-III
MODEL 206L3

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT

2000 POUND (907 KILOGRAMS) CAPACITY CARGO HOOK

CANADIAN ADDENDUM
206-706-341

CERTIFIED
SEPTEMBER 23, 1983

This supplement shall be attached to Model 206L-3 Flight Manual when 2000 Pound (907 kilograms) Capacity 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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H.R. Whitlock

for MANAGER

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Section 1

LIMITATIONS

1-1. FLIGHT CREW

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 operation.

1-2. HEIGHT-VELOCITY

The height-velocity diagram in the basic Flight Manual is not a limitation for external load operation.

This page applies to Canadian Registered helicopters only.

Bell LongRanger-III
MODEL 206L3

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT

UNITED KINGDOM REGISTERED HELICOPTERS

CAA CERTIFIED
DECEMBER 23, 1982

This supplement shall be attached to the Bell Helicopter Model 206L3 Flight Manual when the helicopter is registered in the 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.

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Section 1

LIMITATIONS

1-1. CATEGORY AND USE OF HELICOPTER

The Bell Model 206L3 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 helicopter, helicopter shall not be flown for the purpose of public transport.

When flown for public transport, helicopter is classified in performance Group B and true airspeed to be used for compliance with Air Navigation legislation governing flight over water is 100 knots.

The Air Navigation Order requires Group B helicopters to carry flares for night flight.

1-2. MAXIMUM NUMBER OF OCCUPANTS

Maximum number of occupants including crew is the lesser of seven and the number of approved seats installed.

Children under age of two years carried in arms of passengers may be left out of this count.

1-3. EXTERNAL FREIGHT CARRIAGE

For those types of load which may cause significant changes in flight characteristics of helicopter/load combination from those which have been demonstrated previously as being satisfactory, operator must conduct flight checks in order to determine 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 maneuvers can be performed safely.

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 proposed operation.

Return to hover.

NOTE

Load shall be suspended in such a manner that it will not foul helicopter.

Section 2

NORMAL PROCEDURES

2-1. INTERIOR AND PRESTART CHECK

FIRE DET TEST switch — Press, FIRE light illuminates; release, light extinguishes.

Section 3

EMERGENCY AND MALFUNCTION PROCEDURES

3-1. 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, guard closed. 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

4-1. TAKEOFF DISTANCE OVER 100 FOOT OBSTACLE

Takeoff Distance over 100 Foot Obstacle chart (figure 4-1) provides takeoff performance data. Engine power limit for takeoff is hover power required, 2.5 foot (0.76 meter) skid height, plus 20% torque or power available as limited by engine topping, whichever is less. Engine power limitations are imposed to preclude unsafe nosedown attitude while in flight path required to remain clear of critical height-velocity limitations. Good pilot technique is required to achieve published takeoff performance. Wind factors are not considered. Takeoff should be initiated from a stabilized 2.5 foot (0.76 meter) skid height hover. Increase power smoothly and simultaneously start nosedown pitch rotation so that helicopter accelerates along a flight path within takeoff corridor defined by Height-Velocity diagram.

CAUTION

WHEN OPERATING NEAR ENGINE TOPPING LIMIT, *POWER TURBINE* RPM MUST BE CLOSELY MONITORED TO PRECLUDE DROOP BELOW NORMAL OPERATING LIMIT.

NOTE

Power should be applied at a rate sufficient to expedite maneuver but not so rapid as to overshoot torque value (approximately 6 seconds). Once power is set, it should not be further adjusted until obstacle clearance is achieved.

As helicopter approaches speed of 50 KIAS, start nose up rotation to achieve 50 KIAS climb.

TAKEOFF DISTANCE OVER 100 FOOT OBSTACLE

CONDITIONS:
ROTOR — 100% RPM
AIRSPEED — 50 KIAS
WIND — ZERO

TECHNIQUE:
LEVEL ACCELERATION
FROM 2.5 FT. (0.7 METER)
SKID HEIGHT

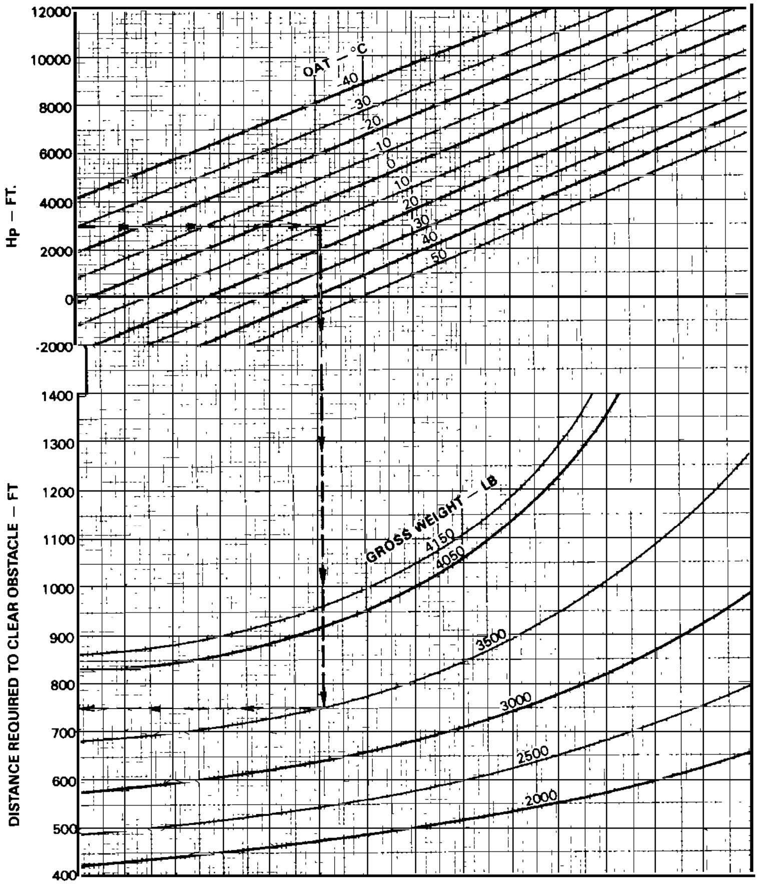

Figure 4-1. Takeoff distance over 100 foot obstacle

LANDING DISTANCE OVER 100 FOOT OBSTACLE

CONDITIONS:
ROTOR — 100% RPM

AIRSPEED — 50 KIAS
WIND — ZERO

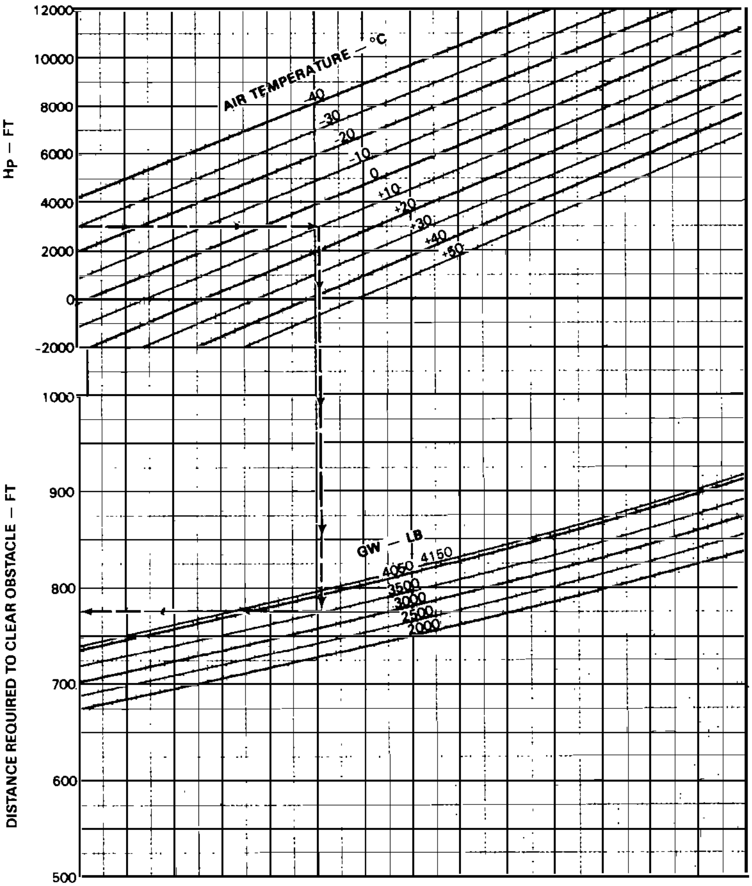

Figure 4-2. Landing distance over 100 foot obstacle

GLIDE DISTANCE
ALL GROSS WEIGHTS

48 KCAS ROTOR — 100% RPM
EXAMPLE: Hp = 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. = 1.25 N. MI.

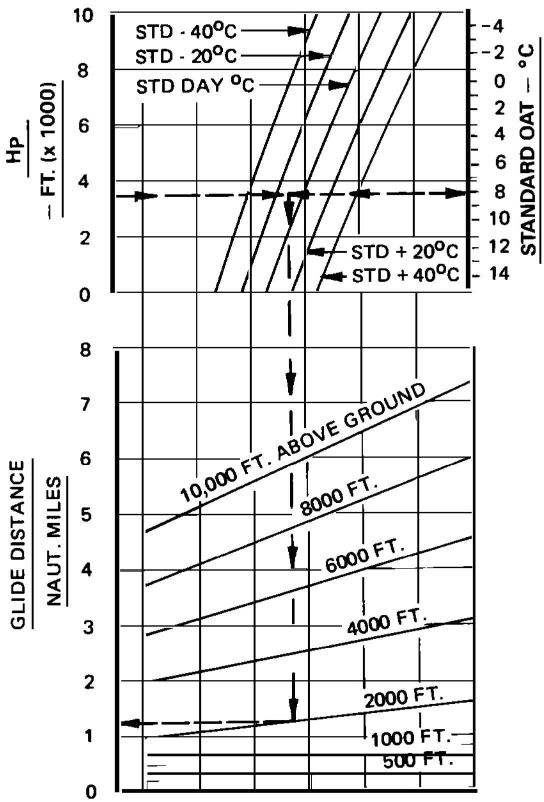

Figure 4-3. Glide distance