BHT-206L4-FM-1

MODEL 206L4

ROTORCRAFT FLIGHT MANUAL

TYPE CERTIFICATE NO. H-92

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NOTE

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 Insert latest revision pages; dispose of superseded pages.

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GENERAL INFORMATION

ORGANIZATION

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 DOT approved data necessary to operate basic helicopter in a safe and efficient manner.

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

Manufacturer's Data manual (BHT-206L4-MD-1) contains information to be used in conjunction with Flight Manual. Manufacturer's data manual is divided into four sections:

Section 1 — WEIGHT AND BALANCE

Section 2 — SYSTEMS DESCRIPTION

Section 3 — OPERATIONAL INFORMATION

Section 4 — HANDLING AND SERVICING

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

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:

A/F	—	Airframe
ANTI COLL LT	—	Anticollision light
APU	—	Auxiliary power unit
BAT	—	Battery
BL	—	Buttock line
C	—	Celsius
CG	—	Center of gravity
DC	—	Direct current
DECR	—	Decrease
ELT	—	Emergency locator transmitter
ENG	—	Engine
F	—	Fahrenheit
FS	—	Fuselage station
FT	—	Foot, feet
FWD	—	Forward
GEN	—	Generator
GOV	—	Governor
GW	—	Gross weight
H_D	—	Density altitude
Hg	—	Inches of mercury
H_P	—	Pressure altitude
HYDR	—	Hydraulic
ICS	—	Intercommunication system
IDLE REL	—	Idle release
IGE	—	In ground effect
IN	—	Inch(es)
INCR	—	Increase
INST LT	—	Instrument light
KCAS	—	Knots calibrated airspeed
KG	—	Kilogram(s)
KIAS	—	Knots indicated airspeed
KTAS	—	Knots true airspeed
L	—	Liter(s)
LB(S)	—	Pound(s)
LDG LTS	—	Landing lights
LT	—	Light
MCP	—	Maximum continuous power
MM	—	Millimeter(s)
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
SHP	—	Shaft horsepower
SL	—	Sea level
TOT or TURB OUT TEMP	—	Turbine outlet temperature
T/R	—	Tail rotor
TRANS	—	Transmission
V	—	Volt(s), voltage
VFR	—	Visual flight rules
V_{NE}	—	Never exceed velocity
WL	—	Water line
WRN	—	Warning
XMSN	—	Transmission

Section 1

LIMITATIONS

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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, duration of time, 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 Federal Air Regulations Parts 27 and 36, and Civil Air Regulation Part 6.

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.

A functional map light is required for night flights.

Flight operations are approved with 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 cabin doors off is approved, except that left passenger door shall be removed if litter door is removed. Refer to AIRSPEED limitations.

1-4. OPTIONAL EQUIPMENT

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

Snow deflector kit or Particle separator kit and Snow deflector kit. (See BHT-206L4-FMS-3 and BHT-206L4-FMS-7.)

Refer to appropriate flight manual supplement(s) (FMS) for additional limitations, procedures, and performance data.

1-5. FLIGHT CREW

Minimum flight crew consists of one pilot who shall operate helicopter from right crew seat.

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

1-6. WEIGHT AND CENTER OF GRAVITY

1-7. WEIGHT

CAUTION

LOADS THAT RESULT IN GW ABOVE 4,450 POUNDS (2018.5 KILOGRAMS) SHALL BE CARRIED ON AN APPROVED EXTERNAL LOAD KIT AND SHALL NOT BE IMPOSED ON LANDING GEAR.

Maximum internal gross weight is 4,450 pounds (2018.5 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

For gross weight longitudinal and lateral center of gravity limits, refer to figures 1-1 and 1-2.

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-206L4-MD-1 for loading tables and instructions.

1-9. (DELETED)

1-10. DOORS OFF

Determine weight change after doors have been removed and adjust ballast if necessary. Refer to BHT-206L4-MD-1

1-11. AIRSPEED

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

V_{NE} is 84 KIAS (97 MPH) at 75 to 100% TORQUE takeoff power.

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

V_{NE} is 100 KIAS (115 MPH) for autorotation.

1-12. ALTITUDE

Maximum pressure altitude (H_P) is 20,000 feet.

Maximum density altitude (H_D) is 10,000 feet when gross weight is above 4150 pounds (1882.4 kilograms)

NOTE

Refer to applicable rules for high altitude oxygen requirements.

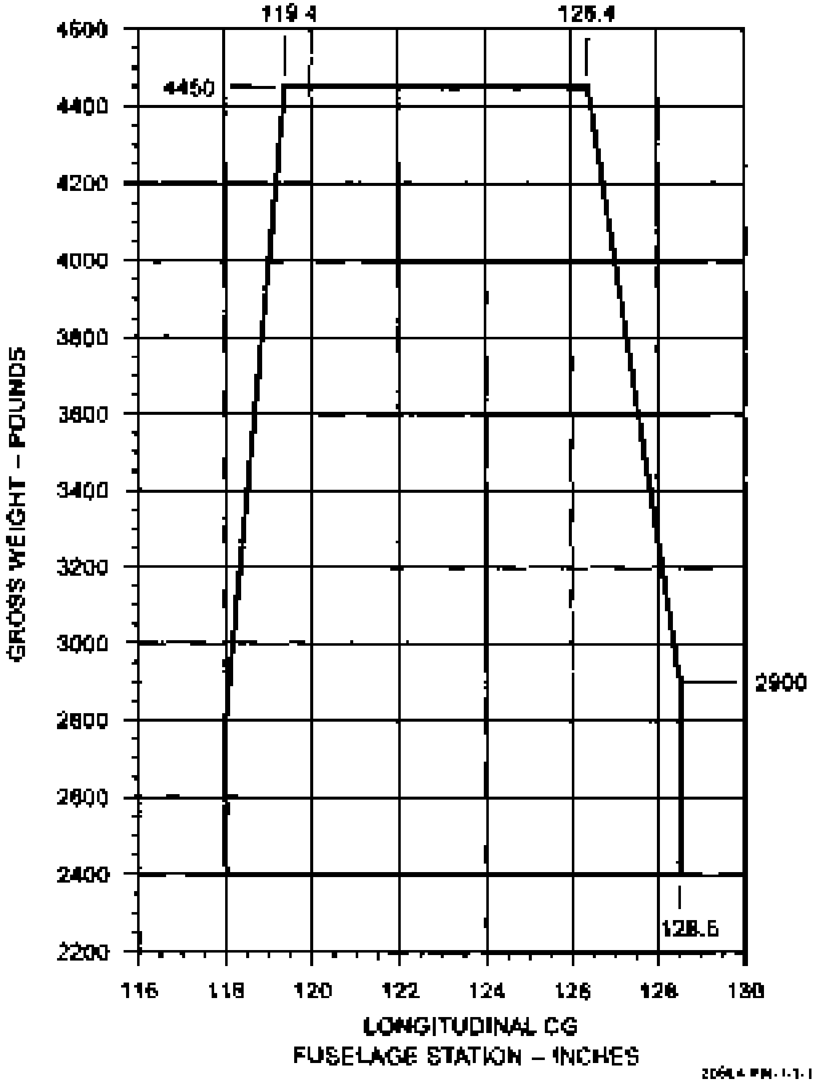


Figure 1-1. Gross weight center of gravity limits — U.S. (Sheet 1 of 2)

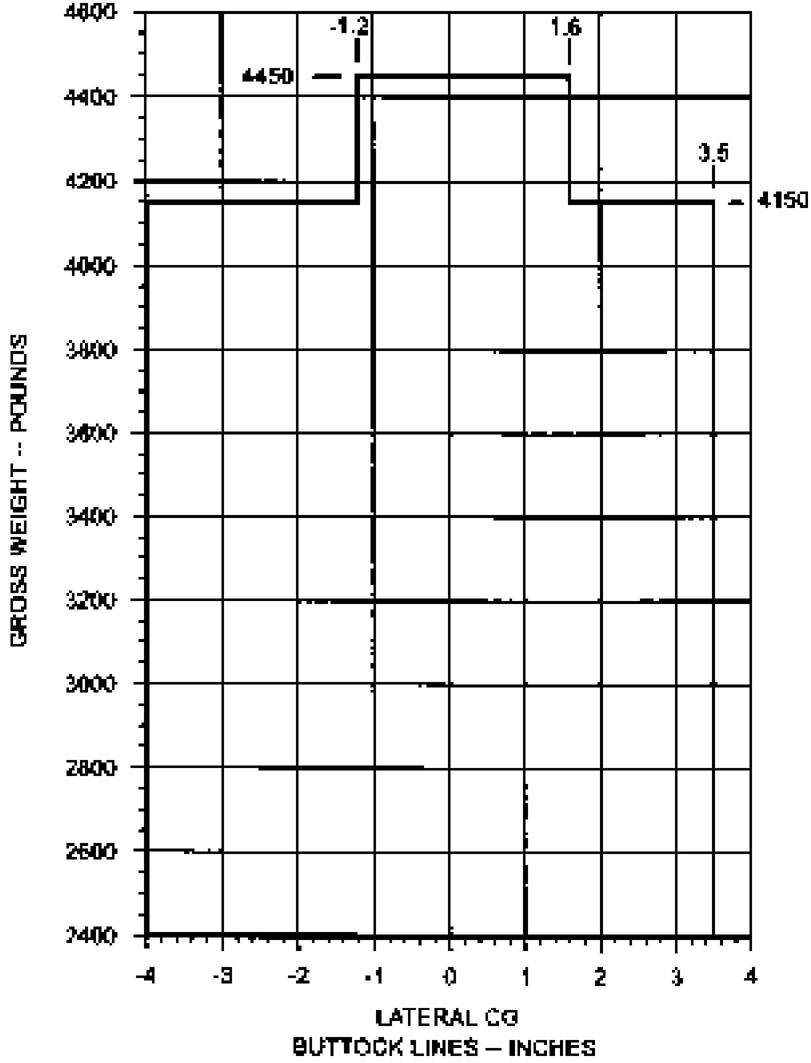


Figure 1-1. Gross weight center of gravity limits — U.S. (Sheet 2 of 2)

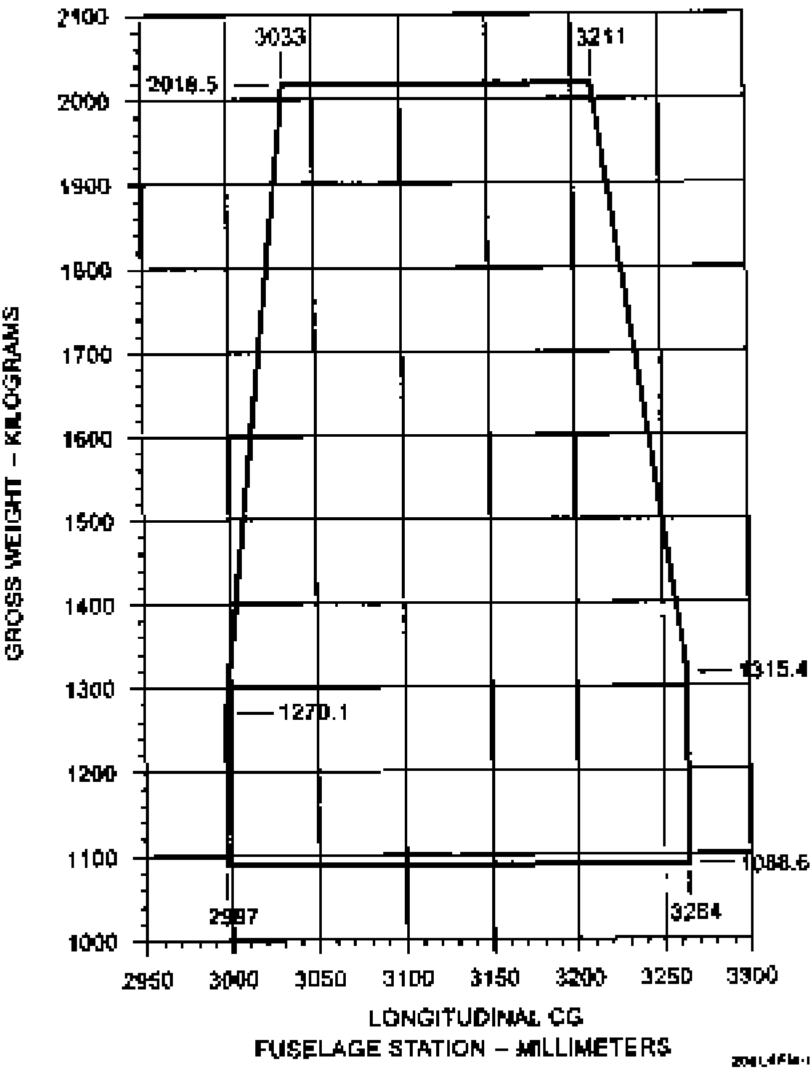


Figure 1-2. Gross weight center of gravity limits — Metric (Sheet 1 of 2)

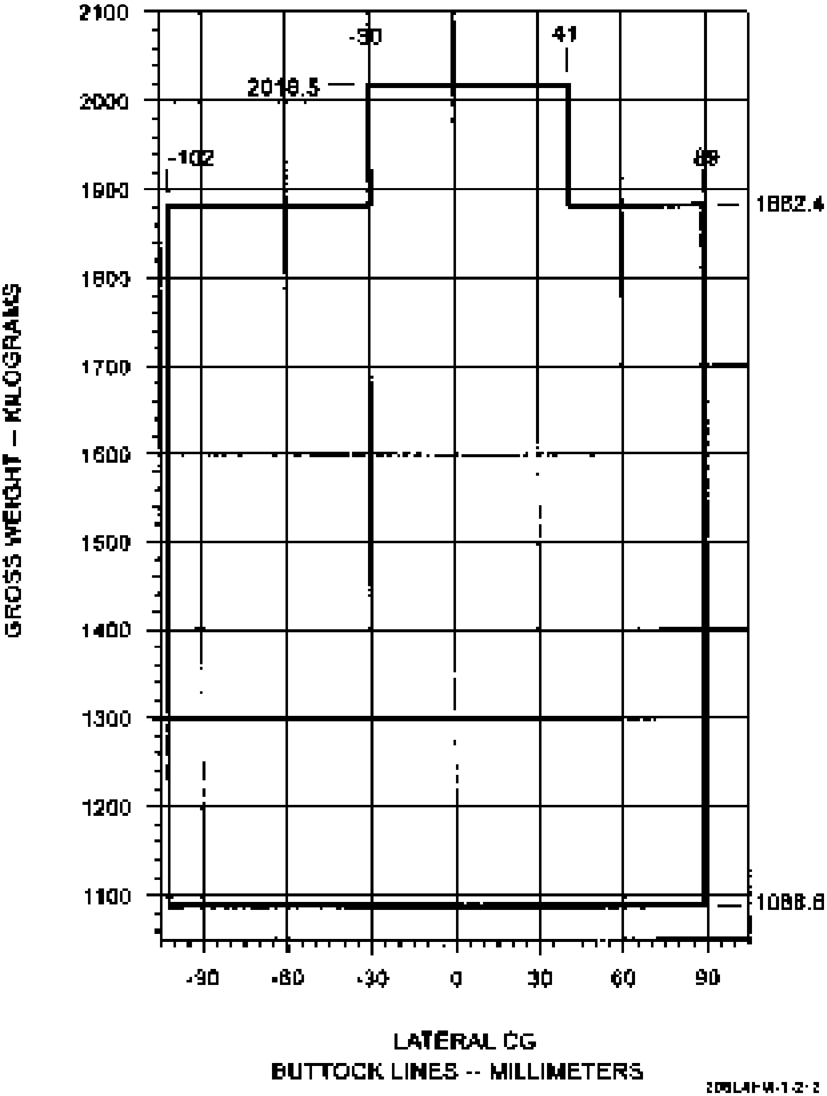


Figure 1-2 Gross weight center of gravity limits — Metric (Sheet 2 of 2)

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.

WHEN ONLY ONE (1) CREW SEAT IS OCCUPIED
NO MORE THAN TWO (2) AFT PASSENGERS
ARE PERMITTED UNLESS THERE IS ONE (1)
MID PASSENGER.

ABOVE 4,150 LB GW ALTERNATE
PASSENGER LOADING FROM SIDE TO SIDE.

REFER TO RFM WEIGHT AND BALANCE
FOR ADDITIONNAL LOADING INFORMATION.

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.

ABOVE 4,150 LB GW ALTERNATE
PASSENGER LOADING FROM SIDE TO SIDE.

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.

ENGAGE ROTOR BRAKE BETWEEN
38% & 30% ROTOR RPM

Location: Beside rotor brake handle (if installed).

Figure 1-3. Placards and decals (Sheet 1 of 4)

P/N 206-075-770-105

AIRSPEED LIMITATIONS
INTERNAL LOADING

Hp (FT/1000)	0	2	4	6	8	10	12	14	16	18	20
OAT °C	VNE ~ IAS ~ KTS										
ABOVE 4150 LB											
52	125	–	–	–	–	–			–	–	–
46	128	117	–	–	–	–				–	–
40	130	120	109			–	–	–	–	–	–
20	130	129	119	108							
0	130	130	128	118	107						
–20	130	130	130	125	118	107	–	–	–	–	–
–40	123	124	120	117	112	108	104	–	–	–	–
–50	118	114	110	106	102	98	95	91	–	–	–
FROM 4050 LB TO 4150 LB											
52	130		–	–							
46	130	125			–	–	–	–	–	–	–
40	130	127	120	–		–	–	–	–	–	–
20	130	130	127	119	[illegible]	104	96	89			
0	130	130	130	126	[illegible]	110	103	95	88	81	78
20	130	130	130	130	126	118	110	103	95	88	81
–40	129	124	120	117	112	108	104	100	96	92	87
–50	118	114	110	106	102	98	95	91	88	84	82
BELOW 4050 LB											
52	130	–	–	–	–			–			
46	130	128									
40	130	129	122								
20	130	130	127	121	115	109	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 206-075-770-105 is applicable to S/N 52001 through 52265. If Technical Bulletin 206L-01-209 has been accomplished, utilize airspeed limitations panel 206-075-770-109. Airspeed limits shown are valid only for the corresponding altitudes and temperatures. Dashes indicate conditions which exceed approved temperature or density altitude limitations.

Figure 1-3. Placards and decals (Sheet 2 of 4)

P/N 206-075-770-109

AIRSPEED LIMITATIONS
INTERNAL LOADING

Hp Ft/1000	0	2	4	6	8	10	12	14	16	18	20
OAT °C	VNE ~ IAS ~ KTS										
ABOVE 4150 LB											
52	125										
45	128	118	107	–	–	–	–	–	–	–	–
40	130	120	109	98		–	–	–	–		
30	130	125	114	103	–						
25	130	127	115	105	94	–	–	–	–	–	–
20	130	128	119	108	97						
0	130	130	129	118	107	96					
−25	130	130	130	126	121	110	99	–	–	–	–
40	129	124	120	117	112	108	104	100			
−50	118	114	110	106	102	98	95	91		–	–
FROM 4050 LB TO 4150 LB											
52	130			–	–						
45	130	125	118	–	–	–	–	–	–	–	–
40	130	127	120	115			–	–			
30	130	130	122	115	108	101	–	–	–	–	–
25	130	130	124	117	109	102	95	90	–	–	–
20	130	130	122	115	111	104	96	89	82	–	–
0	130	130	130	120	119	110	103	95	88	81	78
−25	130	130	130	125	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
BELOW 4050 LB											
52	130			–	–						–
45	130	126	120	–	–	–	–	–	–	–	–
40	130	126	122	115		–					
30	130	130	124	118	112	105	–	–	–	–	–
25	130	130	125	119	112	107	101	95	–	–	–
20	130	130	127	121	115	109	102	96	90		
0	130	130	130	127	121	114	108	101	95	88	82
−25	130	130	130	129	124	120	115	109	103	97	91
−40	129	124	120	117	112	109	104	100	96	92	87
−50	118	114	110	108	102	98	95	91	88	84	82

NOTE

Airspeed limitations panel 206-075-770-109 is applicable to S/N 52266 and subsequent or prior to S/N 52266 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.

Figure 1-3. Placards and decals (Sheet 3 of 4)

AVOID CONT OPS 71.8% TO 91.5% N2

Location: Instrument panel.

206L4FM_1_0001

Figure 1-3. Placards and decals (Sheet 4 of 4)

1-13. AMBIENT AIR TEMPERATURE

Maximum sea level ambient air temperature for operation is 51.7°C (125°F) and decreases with H_P at standard lapse rate of 2°C (3.6°F) per 1,000 feet to 20,000 feet.

1-14. MANEUVERING

Aerobatic maneuvers are prohibited.

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 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	99%
Continuous operation	99 to 101%
Maximum continuous	101%
Transient overspeed range. Do not exceed 5 minutes above 101%.	101 to 104%

NOTE

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

1-20. TURBINE OUTLET TEMPERATURE (TOT)

Continuous operation	100 to 716°C
Maximum continuous	716°C
5 minute takeoff range	716 to 768°C
Maximum for takeoff	768°C

CAUTION

INTENTIONAL USE OF POWER TRANSIENT TOT ABOVE 768°C IS PROHIBITED.

Maximum power-on transient. Do not exceed 10 seconds above 768°C.	871°C
Beginning of 10-second time limit for start. Do not exceed 10 seconds above 826°C.	826°C
Maximum for start and shutdown. Do not exceed 1 second at 927°C.	927°C

1-21. ENGINE TORQUE

Continuous operation	0 to 75%
Maximum continuous	75%
5 minute takeoff range	75 to 100%
Maximum for takeoff	100%
Maximum transient. Do not exceed 5 seconds above 100%.	105%

CAUTION

INTENTIONAL USE OF TORQUE ABOVE 100% IS PROHIBITED.

1-22. FUEL PRESSURE

Minimum	8 PSI
Continuous operation	8 to 26 PSI
Maximum	25 PSI

1-23. ENGINE OIL PRESSURE

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

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 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 6 seconds.	95%
Minimum	99%
Continuous operation	99 to 101%
Maximum continuous	101%
Maximum transient during low power descent. Do not exceed 5 minutes above 101%.	104%

1-32. ROTOR RPM — POWER OFF

Minimum	90%
Maximum	107%

1-33. ROTOR BRAKE

Rotor brake (if installed) application is limited to ground operation after engine has been shut down and ROTOR RPM has decreased to between 38% and 30%.

1-34. FUEL AND OIL

1-35. FUEL

Fuels conforming to the following specifications may be used at all ambient temperatures:

ASTM-D-1655, Type B

MIL-T-5624, Grade JP-4 (NATO F-40)

Fuels conforming to the following specifications are limited to ambient temperatures of -32 °C (-26 °F) and above:

ASTM-D-1655, Type A or A-1

MIL-T-5624, Grade JP-5 (NATO F-44)

MIL-T-83133, Grade JP-8 (NATO F-34)

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.

1-36. ENGINE OIL

Oil conforming to MIL-L-7808 (NATO O-148) may be used at all ambient temperatures.

Oil conforming to DOD-L-85734 (Turbine oil 555) or MIL-L-23699 (NATO O-156) limited to ambient temperatures above -40 °C (-40 °F).

NOTE

Refer to Allison Operation and Maintenance Manual and BHT-206L4-MD-1 manual for approved oils and mixing of oils of different brands, types, and manufacturers.

1-37. TRANSMISSION AND TAIL ROTOR GEARBOX OIL

NOTE

It is recommended that DOD-L-85734 oil be used in the transmission and tail rotor gearbox to the maximum extent allowed by temperature limitations.

Oil conforming to DOD-L-85734 is limited to ambient temperatures above −40 °C (−40 °F).

Oil conforming to MIL-L-7808 (NATO O-148) is limited to ambient temperatures below −18 °C (0 °F).

1-38. HYDRAULIC

Hydraulic fluid conforming to MIL-H-5606 (NATO H-515) may be used at all ambient temperatures.

ENGINE OIL PRESSURE

Red	**50 PSI**	**Minimum**
Yellow	**50 to 90 PSI**	**Operation below 79% GAS PRODUCER (N1) RPM**
Green	**90 to 115 PSI**	**Continuous operation below 94% GAS PRODUCER (N1) RPM**
Green	**115 to 130 PSI**	**Continuous operation**
Red	**130 PSI**	**Maximum**

ENGINE OIL TEMPERATURE

Green	0 to 107°C	Continuous operation
Red	107°C	Maximum

TRANSMISSION OIL PRESSURE

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

TRANSMISSION OIL TEMPERATURE

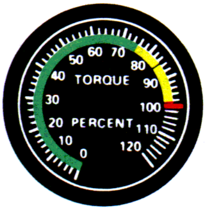
Green	15 to 110°C	Continuous operation
Red	110°C	Maximum

GAS PRODUCER RPM (N1)

Green	63 to 105%	Continuous operation
Red	105%	Maximum

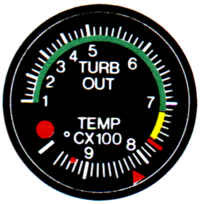
206L4-F-1-4-1

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



TORQUE

0 to 75%	Continuous operation
75 to 100%	5 minute takeoff range
100%	Maximum

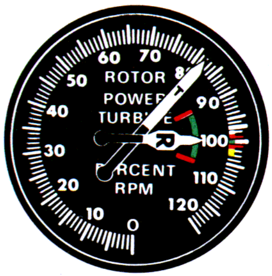


NOTE

Range mark below warning light is at 999°C.

TURBINE OUTLET TEMPERATURE

100 to 716°C	Continuous Operation
716 to 768°C	5 minute takeoff range
768°C	Maximum for takeoff
826°C	Beginning of time limited range for starting.
927°C	Maximum for start and shutdown (1 second maximum)
Warning light	Illuminates when TOT between 826 and 927°C more than 10 seconds or TOT above 927°C.



POWER TURBINE RPM (N2)

99%	Minimum
99 to 101%	Continuous operation
101%	Maximum continuous
101 to 104%	Transient overspeed range (5 minutes maximum)

ROTOR RPM (NR)

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

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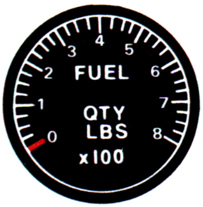
Figure 1-4. Instrument markings (Sheet 2 of 3)

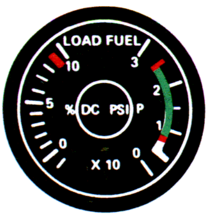
AIRSPEED

0 to 130 Knots	Continuous operation
100 Knots	Maximum for autorotation
130 Knots	Maximum



FUEL QUANTITY

0	Empty (zero usable)



DC LOAD

90%	Maximum

FUEL PRESSURE

8 PSI	Minimum
8 to 25 PSI	Continuous operation
25 PSI	Maximum

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

Section 2

NORMAL PROCEDURES

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Section 2

NORMAL PROCEDURES

2-1. INTRODUCTION

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

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

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

2-2. OPERATING LIMITATIONS

Minimum and maximum limits, and normal and cautionary operating ranges for helicopter and its subsystems are indicated by instrument markings and placards. Instrument markings and placards represent careful aerodynamic calculations that are substantiated by flight test data. Refer to Section 1, LIMITATIONS, for each operating limitation.

2-3. FLIGHT PLANNING

Each flight should be planned adequately to ensure safe operations and to provide pilot with 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 helicopter as follows:

1. Consult BHT-206L4-MD-1 for instructions.
2. Determine weight of crew, fuel, oil, and payload; compute takeoff, most forward, most aft, and anticipated landing GW; and check helicopter CG locations.
3. Ensure GW/CG limits listed in Section 1 have not been exceeded.

2-6. PREFLIGHT CHECK

Pilot is responsible for determining whether helicopter is in condition for safe flight. Refer to figure 2-1 for preflight check sequence.

NOTE

Preflight check is not intended to be a detailed mechanical inspection, but simply a guide to

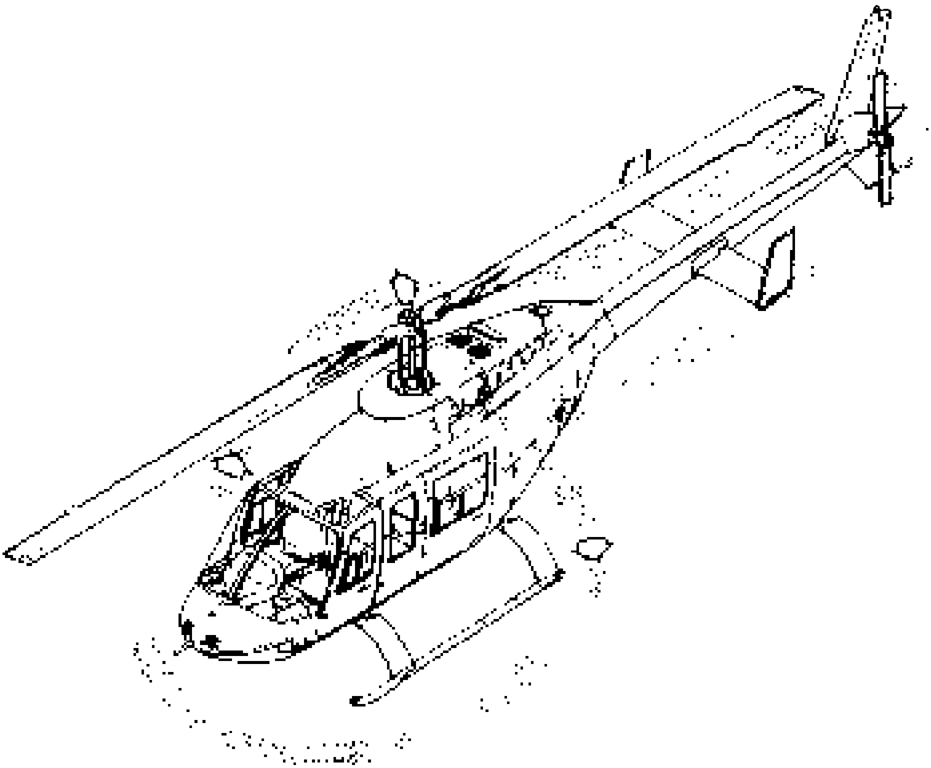

Figure 2-1. Preflight check sequence

help pilot check condition of helicopter. It may be as comprehensive as conditions warrant at discretion of 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.

2-7. BEFORE EXTERIOR CHECK

1. Flight planning — Completed.
2. Publications — Checked.
3. GW 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 (if installed) — 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, flexures, and fore and aft restraint damper.
9. Main driveshaft forward coupling — Condition.
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 — BAT (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 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.

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.

NOTE

Fuel control heater valve shall be ON in ambient temperatures below 10 °C (50 °F). When operating in ambient temperatures above 21 °C (70 °F), fuel control heater valve shall be OFF.

f. Fuel control heater valve (if installed) — As required.

g. 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. Synchronized 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 (normal oil level is ½ inch below line on sight glass), 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. Synchronized 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 obstructions 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 and couplings.

   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, flexures, and fore and aft restraint damper.

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

c. Main driveshaft forward coupling — Condition.

d. Cockpit indicator pressure lines — Condition and security.

e. Access door — Secured.

2-14. CABIN ROOF

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. Hydraulic reservoir filler cap — Closed and locked.

2-15. FUSELAGE — CABIN LEFT SIDE

1. Forward fairing and access door — Secured.

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

3. Windows — Condition and security.

4. Hydraulic reservoir — Check fluid level.

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

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

7. Left static port — Condition.

2-16. 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 obstructions.

8. External power door — Condition and security.

9. Landing light glass — Condition.

10. Antennas — Condition and security.

11. Main rotor blade — Condition.

NOTE

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

12. External power — Check BAT switch BAT (On) and APU connected as desired.

2-17. INTERIOR AND PRESTART CHECK

1. Cabin interior — Clean; equipment secured.
2. Fire extinguisher — Condition and security
3. Cabin loading — 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

With INST LT switch (rheostat) on and CAUTION LIGHT switch positioned to DIM, caution lights are dimmed to a fixed intensity and can not be adjusted by INST LT switch.

17. Overhead circuit breakers — In.

WARNING

BOTH FUEL BOOST PUMPS SHALL BE ON DURING ENGINE OPERATION.

18. BAT switch — BAT (On, for battery start). If APU is used for starting, BAT switch OFF. Observe ENG OUT, TRANS OIL PRESS, ROTOR LOW RPM, and GEN FAIL caution lights illuminated.
19. APU — Connected (if used).
20. Applicable RPM audio signals — Check.
21. WRN HORN MUTE switch — Press to mute.
22. CAUTION LT TEST switch — Press to test.
23. TOT LT TEST switch — Press; ensure red light on TURB OUT TEMP gage illuminates. Release switch and light extinguishes.
24. FUEL VALVE switch — ON, guard closed. Check FUEL pressure indication.
25. FUEL QTY — Check.
26. Cyclic and pedals — Positioned for start.
27. POS LT switch — POS LT for night operation.
28. ANTI COLL LT switch — ANTI COLL LT.
29. Rotor brake handle (if installed) — Up and latched.

2-18. ENGINE STARTING

1. Collective — Full down.
2. GOV RPM switch — DECR for 3 seconds.
3. Throttle — Full closed.
4. Rotors — Clear.
5. STARTER switch — 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 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 Operation and Maintenance Manual 14W2.

7. Throttle — At 12% GAS PRODUCER RPM, modulate to idle to maintain 716 °C to 826 °C. TURB OUT TEMP during start cycle.
8. TURB OUT TEMP — Monitor. (Do not exceed 10 seconds above 826 °C or a maximum of 927 °C.)

CAUTION

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

NOTE

ENG OUT light extinguishes at 55 ± 3% GAS PRODUCER (N1) RPM

9. STARTER — Release at 58% GAS PRODUCER (N1) RPM.
10. ENG OIL and XMSN OIL pressures - Check.

CAUTION

IF ENGINE HAS BEEN SHUT DOWN FOR MORE THAN 15 MINUTES, STABILIZE AT IDLE FOR 1 MINUTE BEFORE INCREASING POWER.

NOTE

During cold temperature operations, stabilize at idle until ENG OIL and XMSN OIL temperatures and pressures are in normal operating range.

Refer to Allison Operation and Maintenance Manual for cold weather start procedures.

11. GAS PRODUCER (N1) — 63 to 65% RPM.
12. APU — Disconnect.
13. Throttle — Open to 70% GAS PRODUCER (N1) RPM.
14. GEN switch — GEN.

2-19. 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.

2-20. ENGINE RUNUP

1. Throttle — Increase smoothly to full open position. Check ROTOR LOW RPM caution light extinguished at 90% ROTOR RPM.

2. GOV RPM switch — Check POWER TURBINE governor actuator range 99 to 101% 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.

6. ENGINE ANTI-ICING switch — ON; check for TURB OUT TEMP increase.

7. 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, ENGINE ANTI-ICING shall be ON.

2-21. HYDRAULIC SYSTEMS CHECK

NOTE

HYDRAULIC SYSTEMS CHECK is to determine proper operation of 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.

1. Collective — Full 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 slightly (1 to 2 inches). Repeat 2 to 3 times as required. Return to full down position.

7. HYDRAULIC SYSTEM switch — ON.

8. Cyclic and collective friction — Set as desired.

2-22. 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 — Full 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 — FWD. Note fuel remaining in forward cells.

2-23. TAKEOFF

1. Collective — Increase to hover.

2. Directional control — As required to maintain desired heading.

3. Cyclic — Apply as required to accelerate smoothly.

4. Apply minimum collective, up to 5% torque above hover power, to obtain desired rate of climb and airspeed. Once clear of the HV diagram shaded areas, adjust power and airspeed as desired.

2-24. 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 switch 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 H_P is 20,000 feet. Refer to applicable operating rules for high altitude oxygen requirements.

4. FUEL QTY switch — FWD, note fuel quantity in forward cells is less than previous check which indicates fuel is transferring from forward to main cell.

2-25. DESCENT AND LANDING

1. Flight controls — Adjust friction as desired.

2. Throttle — Full open. Check 99 to 101% POWER TURBINE RPM.

NOTE

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

2-26. 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 switch — 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 inadvertent transmission.
8. Radios and navigation equipment — OFF.
9. IDLE REL switch — Press and hold.

CAUTION

TO ENSURE ENGINE CUTOFF, HOLD THROTTLE IN CLOSED POSITION UNTIL *GAS PRODUCER* (N1) DECELERATES TO 0% RPM AND *TURB OUT TEMP* IS STABILIZED.

10. Throttle — Closed; check TURB OUT TEMP and GAS PRODUCER (N1) RPM decreasing, ENG OUT warning light illuminated, and audio on at 55 ± 3% GAS PRODUCER (N1) RPM
11. WRN HORN MUTE switch — Press to mute.

NOTE

Left fuel boost pump will continue to operate until FUEL VALVE switch is positioned to OFF. This pump operates directly from battery and will not be deactivated when 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.

CAUTION

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

14. Rotor brake handle (if installed) — As desired. Apply rotor brake between 38% and 30% ROTOR RPM. Return to stowed position after main rotor stops.
15. Pilot — Remain at flight controls until rotor has come to a complete stop.
16. GEN switch — OFF.
17. All overhead switches — OFF.
18. BAT switch — OFF.

2-27. AFTER EXITING HELICOPTER

If any of following conditions exist:

1. Thunderstorms are in 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 GW of helicopter.

4. Helicopter is to be left unattended.

Perform following:

1. Moor all main rotor blade with tiedown assembly by drawing blade down lightly against 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-206L4-MD-1 for additional tiedown data.

Section 3

EMERGENCY AND MALFUNCTION PROCEDURES

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Section 3

EMERGENCY AND MALFUNCTION PROCEDURES

3-1. INTRODUCTION

Following procedures contain indications of failures or malfunctions which affect safety of crew, helicopter, ground personnel or property; 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.

3-2. DEFINITIONS

Following terms indicate degree of urgency in landing helicopter.

LAND AS SOON AS POSSIBLE	Land without delay at nearest suitable area (i.e., open field) at which a safe approach and landing is reasonably assured.
LAND AS SOON AS PRACTICAL	Landing site and duration of flight are at discretion of pilot. Extended flight beyond nearest approved landing area is not recommended.

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

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

All procedures listed herein assume 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 effects 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 and ensure throttle is full 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 10 gallons 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	Generator has failed.	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 dual boost pump assembly failed.	Descend below 6,000 feet H_P if flight permits. Land as soon as practical **WARNING** IF BOTH FUEL BOOST PUMPS FAIL, UNUSABLE FUEL MAY BE AS HIGH AS *160 POUNDS* DUE TO INABILITY TO TRANSFER FUEL FROM FORWARD CELLS.
L/FUEL PUMP	Left pump of dual boost pump assembly failed.	Descend below 6,000 feet H_P 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 FULL DOWN AND ROTOR DECAY HAS CEASED.

NOTE

Maximum AIRSPEED for steady state 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 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 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 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 H_P

CAUTION

IF 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 — Adjust as desired.

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.

8. TURB OUT TEMP — Modulate throttle to maintain 716 to 826°C.

9. Throttle — Advance smoothly to full open position.

NOTE

Airspeed of 52 KIAS (60 MPH) will produce minimum rate of descent for autorotation allowing pilot more time for air restart.

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 following: fuel control failure, power turbine governor failure, or mechanical drive failure to power turbine or gas producer accessory sections.

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

If GAS PRODUCER RPM and POWER TURBINE RPM are unstable and cannot be controlled with throttle, then fuel control has malfunctioned or 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. Increased 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, 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

Severity of compressor stalls will dictate if engine should be shut down and treated as an engine failure. Violent stalls can cause damage to 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 engine at a reduced power level, avoiding condition that resulted in 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 98 to 107% ROTOR RPM.
10. Cyclic — Adjust as required to maintain desired AIRSPEED.
11. Accomplish autorotative descent and landing.

3-12. 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.

3-13. ENGINE OIL TEMPERATURE HIGH

Land as soon as possible.

3-14. HYDRAULIC SYSTEM FAILURE

- INDICATIONS:

1. Grinding or howling noise from pump.
2. Increase in force required 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 60 to 80 KIAS (69 to 92 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. Key to successful handling of a tail rotor emergency lies in pilot ability to quickly recognize type of malfunction that has occurred.

3-17. COMPLETE LOSS OF TAIL ROTOR THRUST

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

- INDICATIONS:

1. Uncontrollable yawing to right (left side slip).

2. Nose down tucking.

3. Possible roll of fuselage.

NOTE

Severity of initial reaction of helicopter will be affected by AIRSPEED, cabin loading, CG, power being used, and H_D.

- PROCEDURE:

HOVERING

Close 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

Vertical fin may permit controlled flight at low power levels and sufficient AIRSPEED when a suitable landing site is not available. During final stages of approach, a mild flare should be executed, making sure all power to rotor is off. Maintain helicopter in a slight flare and smoothly use collective to execute a soft, slightly nose-high landing. Landing on aft portion of 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 inability to change tail rotor thrust (blade angle) with anti-torque pedals due to a mechanical problem with anti-torque system.

- INDICATIONS:

1. Lack of directional response.

2. Locked pedals.

NOTE

If pedals cannot be moved with a moderate amount of force, do not attempt to apply a maximum effort, since a more serious malfunction could result. If helicopter is in a trimmed condition when malfunction is discovered, TORQUE and AIRSPEED should be noted and helicopter 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 helicopter.

- **PROCEDURE:**

HOVERING

Do not close 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 closing throttle and entering autorotation.

IN-FLIGHT - LEFT PEDAL APPLIED

In a high power condition, helicopter will yaw to 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, 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, helicopter will yaw to 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 landing. If right yaw becomes excessive, close 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. GEN FIELD and GEN RESET circuit breakers — Check in.
2. GEN switch — RESET; then GEN.
3. If power is not restored, place GEN switch to OFF; land as soon as practical.

3-21. EXCESSIVE ELECTRICAL LOAD

- **INDICATIONS:**

1. DC loadmeter indicates excessive load.
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 H_P PRIOR TO BATTERY DEPLETION. UNUSABLE FUEL MAY BE AS HIGH AS *100 POUNDS* AFTER BATTERY IS DEPLETED DUE TO INABILITY TO TRANSFER FUEL FROM FORWARD CELLS.

NOTE

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

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

- INDICATIONS:

At total FUEL QTY of approximately 407 LBS 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

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Section 4

PERFORMANCE

4-1. POWER ASSURANCE CHECK

A Power assurance check chart (figure 4-1) is provided for Allison model 250-C30P engine. This chart indicates minimum percent torque that must be available from an engine meeting minimum Allison specification. Engine must develop these values in order to meet performance data contained in this flight manual.

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

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 (98 to 121 MPH) 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. Power assurance check chart can be used to accomplish this procedure. IGE hover installation losses require as much as 2% more power than in flight. Therefore, hover power check may be 2% below that shown on figure 4-1, and still achieve predicted flight manual performance.

Record following information from cockpit instruments:

EXAMPLE:

H_P	12,000 feet
OAT	25 °C
TOT	720 °C
TORQUE	Actual reading

SOLUTION:

Enter Power assurance check chart at observed OAT (25 °C), proceed vertically to intersect indicated TOT (720 °C), follow horizontally to intersect H_P (12,000 feet), then drop vertically to read minimum torque available (85%).

NOTE

If cruise power check cannot be accomplished below helicopter 75% torque/84 KIAS (97 MPH) V_{NE} limitation, perform check at a higher altitude or in a stabilized 57 KIAS (66 MPH) climb and subtract 1% from chart percent torque reading. For previous example, chart percent torque would become 84%.

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

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

4-2. DENSITY ALTITUDE/ TEMPERATURE CONVERSION

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

Density Altitude Chart also includes the inverse of the square root of the density ratio ($1/\sqrt{\sigma}$), which is used to calculate true airspeed by the following relation:

KTAS = KCAS × $1/\sqrt{\sigma}$

EXAMPLE:

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

SOLUTION:

a. Enter bottom of chart at 0 °C.

b. Move vertically upward to 4000 feet H_P line.

c. From this point, move horizontally to left and read H_D of 3150 feet; move horizontally to right and read $1/\sqrt{\sigma}$ = 1.048.

d. True airspeed = KCAS × $1/\sqrt{\sigma}$ = 100 × 1.048 = 104.8 KTAS.

4-3. IGE AND OGE HOVER CEILINGS

NOTE

Hover performance charts are based on 100% ROTOR RPM.

Hover Ceiling - In Ground Effect charts (figure 4-3) and Hover Ceiling - Out of Ground Effect charts (figure 4-4) present hover performance as allowable gross weight for conditions of H_P and OAT. Each chart is divided into two areas.

Satisfactory stability and control have been demonstrated in each area of the Hover Ceiling charts with relative winds as follows: (Refer to figure 4-5.)

AREA A (unshaded area)

3000 FEET H_D AND BELOW

IGE — winds from any direction up to 35 knots.

OGE — for azimuths from 150 degrees clockwise to 060 degrees, winds up to 35 knots; for all other azimuths, winds up to 30 knots.

ABOVE 3000 FEET H_D

IGE and OGE — winds from any direction up to 25 knots.

AREA B (shaded area)

IGE and OGE — for azimuths from 210 degrees clockwise to 060 degrees, winds up to 25 knots; for all other azimuths, wind calm.

AREA C (shaded area)

IGE and OGE — for azimuths from 315 degrees clockwise to 045 degrees, winds up to 25 knots; for all other azimuths, wind calm.

The following example is for use with hover ceiling charts with ENGINE ANTI-ICING OFF, and is typical for use with all other hover ceiling charts.

EXAMPLE:

What gross weight hover capability could be expected under the following conditions:

ENGINE ANTI-ICING	OFF
H_P	10,000 feet
OAT	30 °C

SOLUTION:

From appropriate IGE chart obtain:

AREA A — Maximum of 3550 pounds (1610 kilograms) for winds up to 25 knots from any direction.

AREA B — Maximum of 4150 pounds (1882 kilograms) for calm winds or winds up to 26 knots from azimuth 210 to 050 degrees.

AREA C — Operation not allowed; density altitude exceeds 10,000-foot limit.

From appropriate OGE chart obtain:

AREA A — Maximum of 3450 pounds (1565 kilograms) for winds up to 25 knots from any direction.

AREA B — Maximum of 3600 pounds (1633 kilograms) for calm winds or winds up to 25 knots from azimuth 210 to 050 degrees.

AREA C — Operation not allowed; density altitude exceeds 10,000-foot limit.

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 figures 4-6 and 4-7.

Rate of climb data shown in charts are "tapeline" rates, which means actual rates of climb. Rate of climb as measured with an altimeter will equal "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 feet
GW	3600 pounds

SOLUTION:

Enter temperature scale at 10 °C and proceed vertically to intersection of 14,000 feet H_P curve. From this point, move horizontally to right to intersect 3600 pound GW line. Drop down 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 4-8) defines 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 helicopter gross weight does not exceed limits of the Altitude Versus Gross Weight for Height-Velocity Diagram (figure 4-9).

4-8. AIRSPEED CALIBRATION

Refer to figure 4-10 for airspeed installation correction during level flight.

4-9. NOISE LEVEL CERTIFICATIONS

4-10. FAR PART 36 STAGE 2 NOISE LEVELS

This aircraft is certified as a Stage 2 helicopter as prescribed in FAR Part 36, Subpart H, for gross weights up to and including the certificated maximum takeoff and landing weight of 4450 pounds (2018 kilograms). There are no operating limitations in meeting takeoff, flyover, or approach noise requirements.

The following noise levels comply with FAR Part 36, Appendix H, Stage 2 noise level requirements. They were obtained by analysis of approved data from noise tests conducted under the provisions of FAR Part 36, Amendment 36-14.

The certified noise levels for the model 206L-4, in the standard configuration, are:

FLIGHT CONDITION	EPNL (EPN dB)
Takeoff	88.4
Flyover	85.2
Approach	90.7

NOTE

No determination has been made by the Federal Aviation Administration that the noise levels of this aircraft are or should be acceptable or unacceptable for operations at, into, or out of any airport.

V_H is defined as the airspeed in level flight obtained using the minimum specification engine torque corresponding to maximum continuous power available for sea level, 25 °C (77 °F) ambient conditions at the relevant maximum certified weight. The value of V_H thus defined for this aircraft is 110 KTAS in the standard configuration.

POWER ASSURANCE CHECK

ALLISON 250-C30P ENGINE

LEVEL FLIGHT
POWER TURBINE – 100% RPM
DC LOAD — 17.5%

55 TO 105 KIAS (NOT TO EXCEED VNE)
ENGINE ANTI-ICING OFF
HEATER/ECS OFF

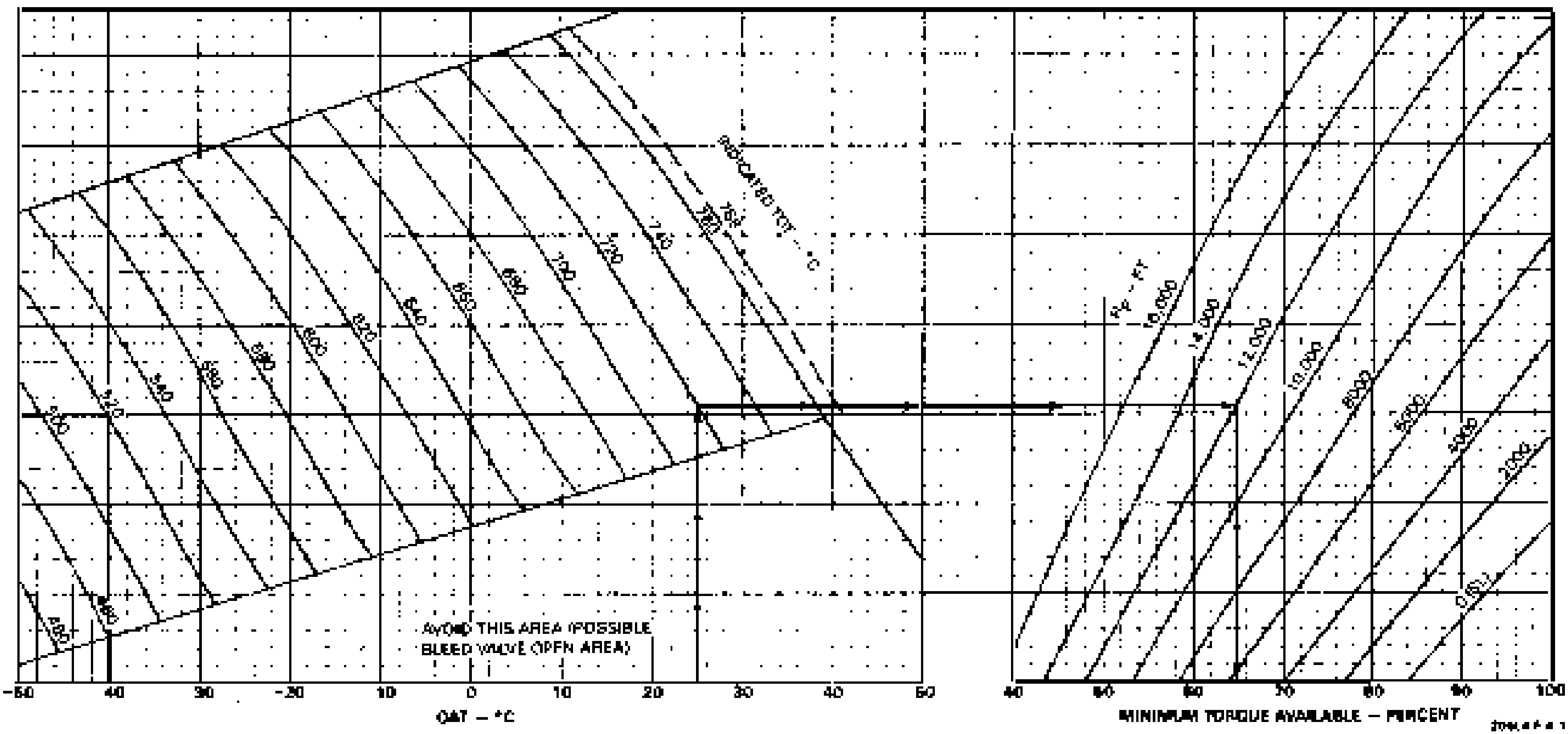


Figure 4-1. Power assurance check chart

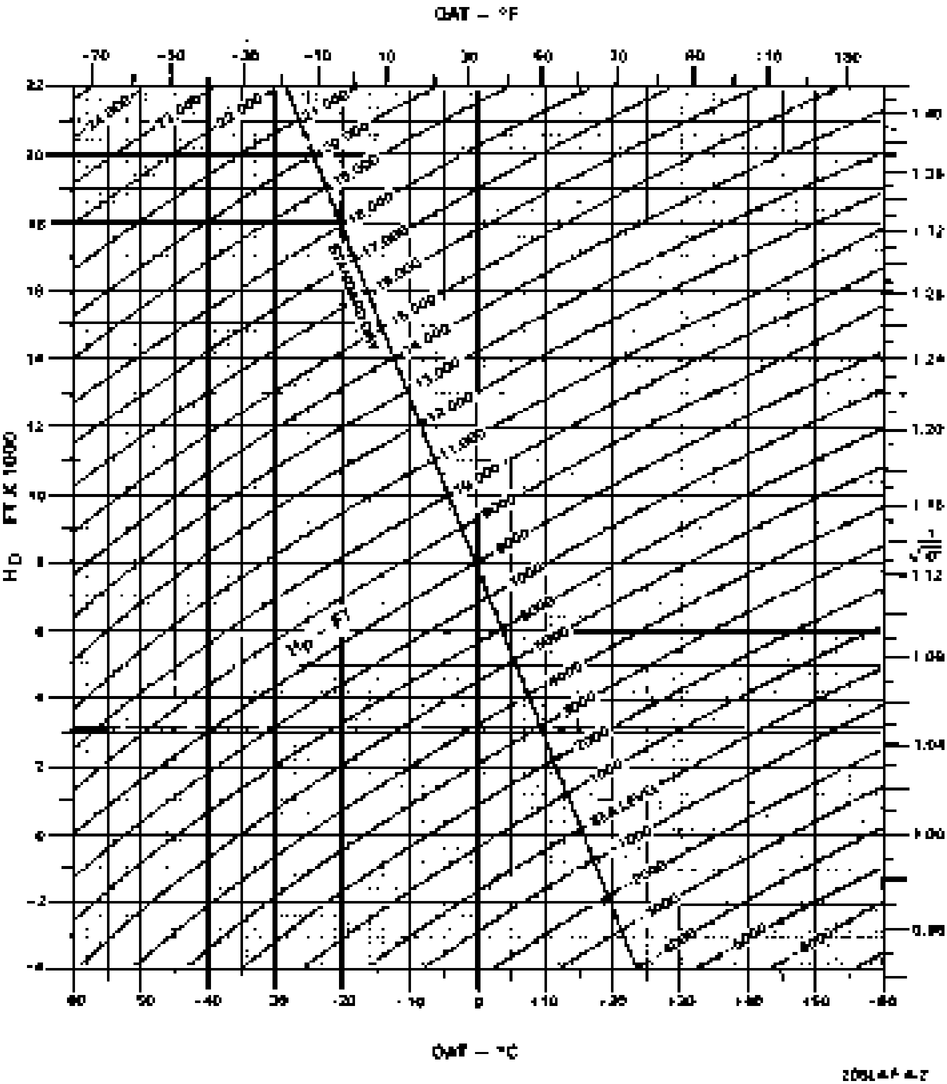


Figure 4-2. Density altitude and temperature conversion chart

HOVER CEILING
IN GROUND EFFECT

TAKEOFF POWER
ENGINE RPM 100% RPM
GENERATOR 17.5%

SKID HEIGHT 2.5 FT (0.7 METER)
ANTI-ICE OFF OR ON

4150 LB AND BELOW

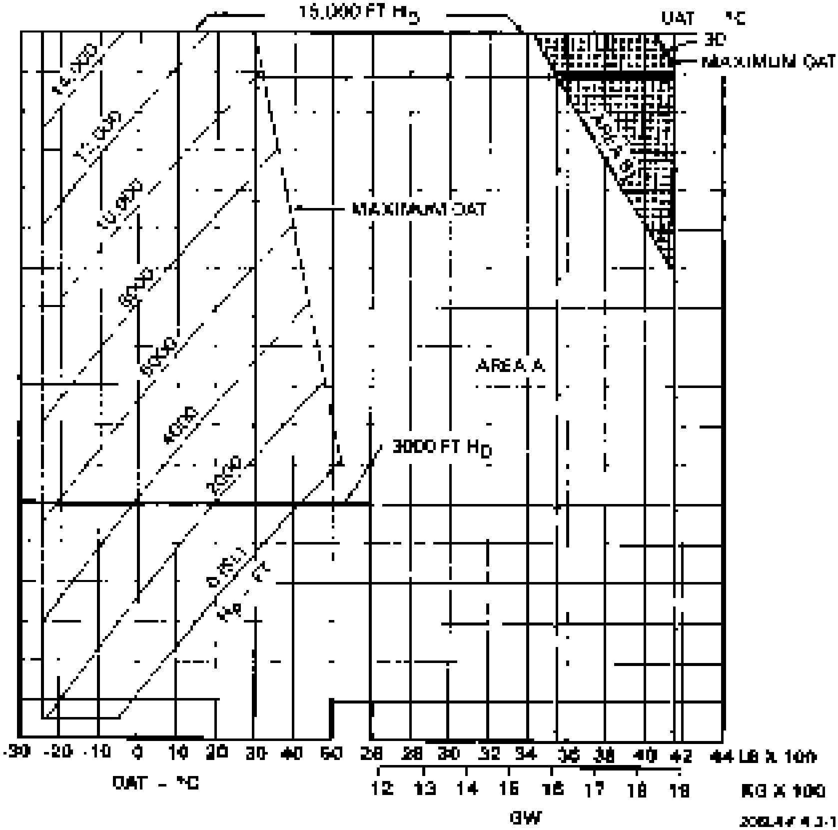


Figure 4-3. Hover ceiling - In ground effect (Sheet 1 of 2)

HOVER CEILING
IN GROUND EFFECT

TAKEOFF POWER
ENGINE RPM 100% RPM
GENERATOR 17.5%

SKID HEIGHT 2.5 FT (0.7 METER)
ANTI-ICE OFF OR ON

4151 LB TO 4450 LB

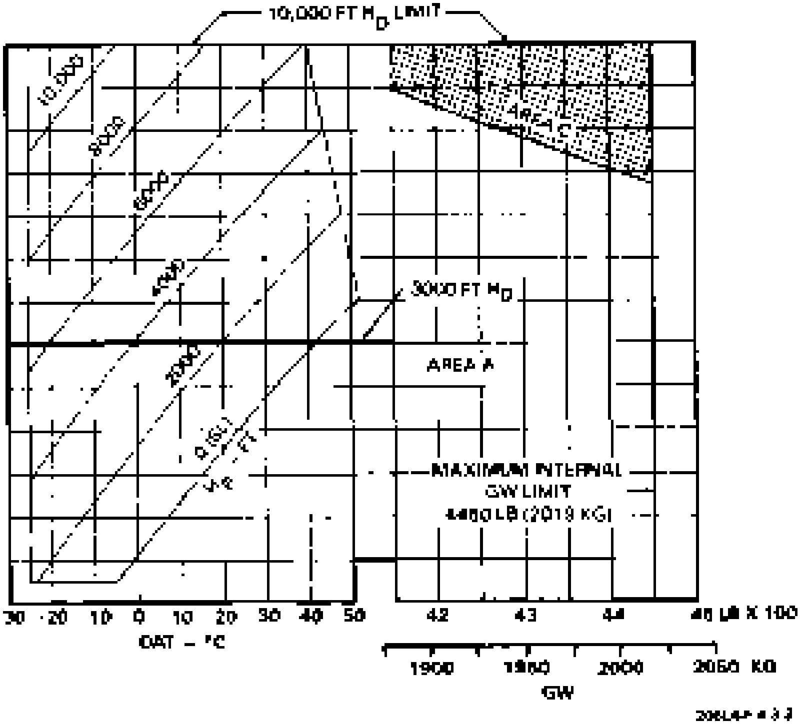


Figure 4-3. Hover ceiling - In ground effect (Sheet 2 of 2)

HOVER CEILING
OUT OF GROUND EFFECT

TAKEOFF POWER
ENGINE RPM 100% RPM
GENERATOR 17.5%

SKID HEIGHT 40 FT (12.2 METER)
ANTI-ICE OFF

4150 LB AND BELOW

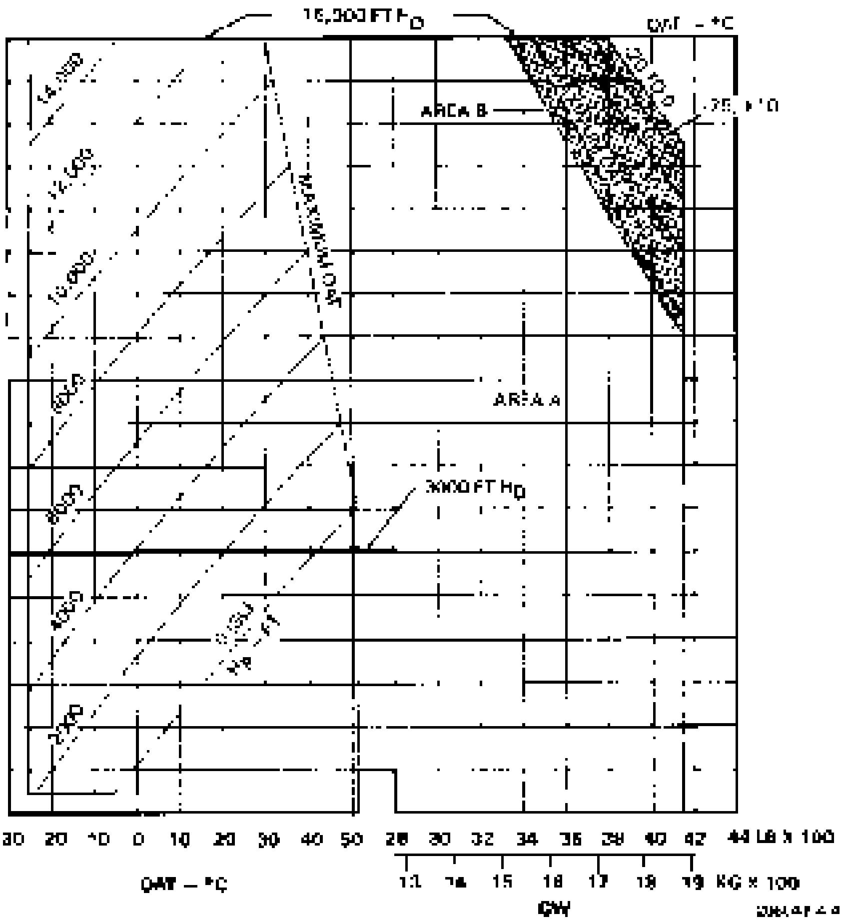


Figure 4-4. Hover ceiling - out of ground effect (Sheet 1 of 4)

HOVER CEILING
OUT OF GROUND EFFECT

TAKEOFF POWER
ENGINE RPM 100% RPM
GENERATOR 17.5%

SKID HEIGHT 40 FT (12.2 METERS)
ANTI-ICE OFF

4161 LB TO 4850 LB

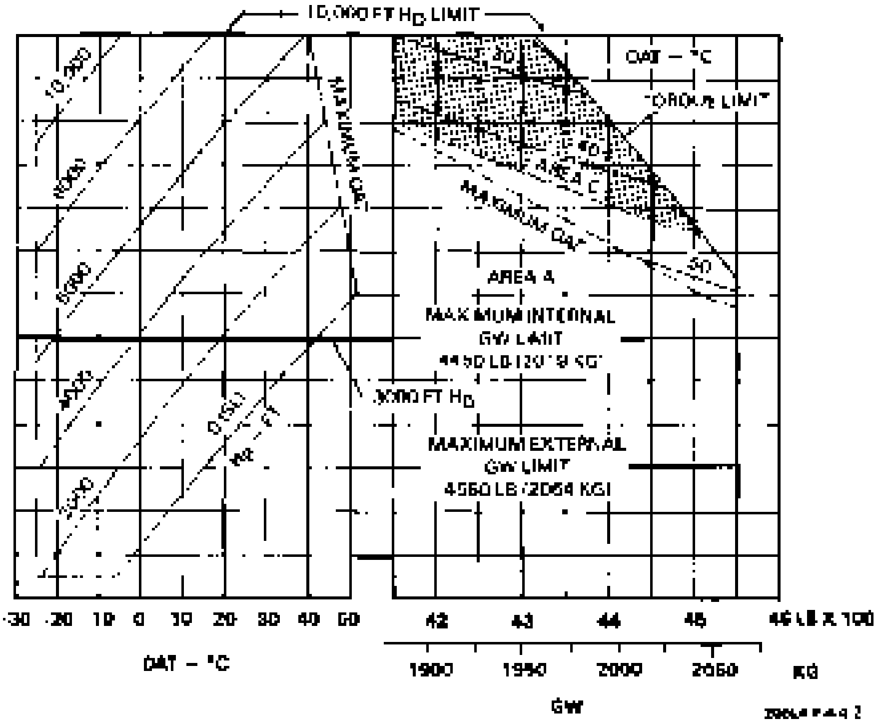


Figure 4-4. Hover ceiling - out of ground effect (Sheet 2 of 4)

HOVER CEILING
OUT OF GROUND EFFECT

TAKEOFF POWER
ENGINE RPM 100% RPM
GENERATOR 17.5%

SKID HEIGHT 40 FT (12.2 METER)
ANTI-ICE ON

4150 LB AND BELOW

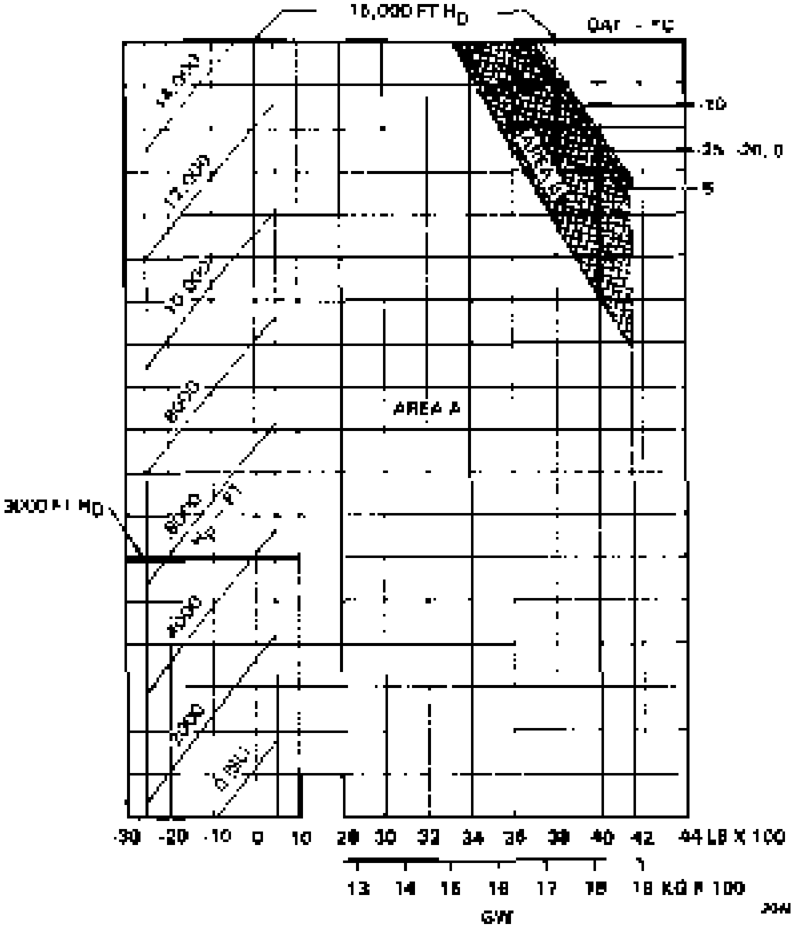


Figure 4-4. Hover ceiling - out of ground effect (Sheet 3 of 4)

HOVER CEILING
OUT OF GROUND EFFECT

TAKEOFF POWER
ENGINE RPM 100% RPM
GENERATOR 1 F 5%

SKID HEIGHT 40 FT (12.2 METER)
ANTI-ICE ON

4151 LB TO 4650 LB

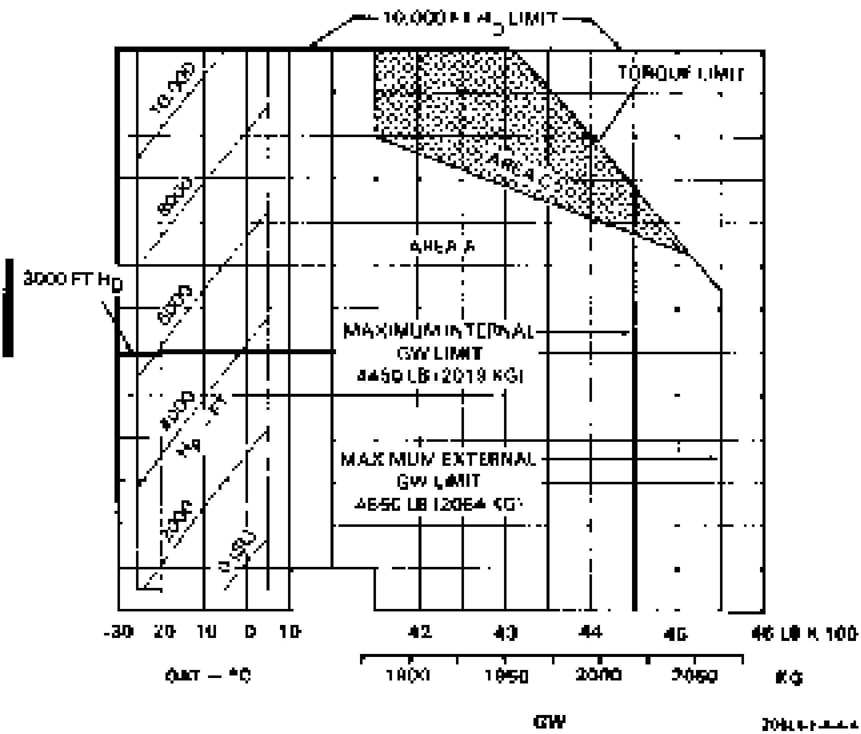
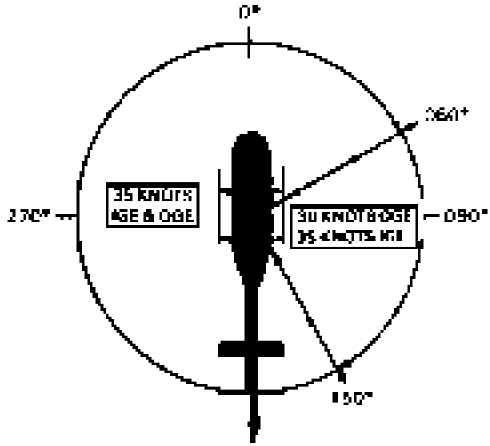
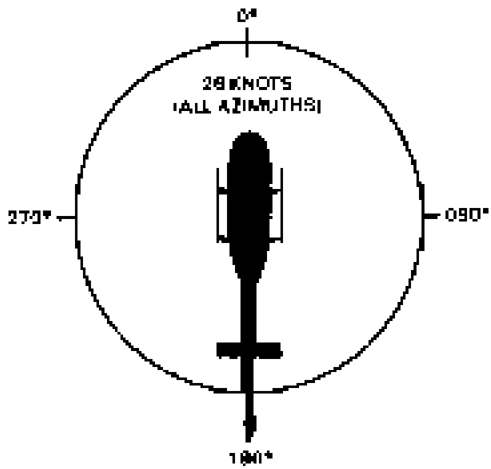


Figure 4-4 Hover ceiling - out of ground effect (Sheet 4 of 4)



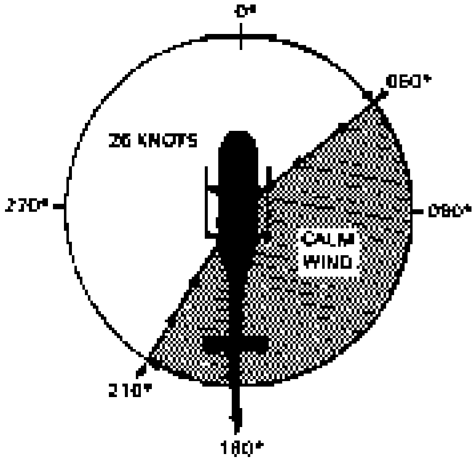
RELATIVE WINDS FOR **AREA A**
ON HOVER CEILING CHARTS
BELOW 3000 FT H_D



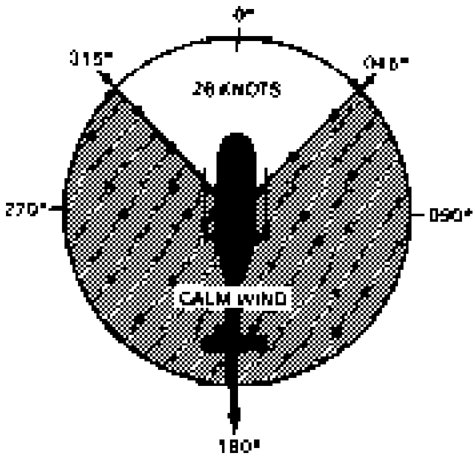
RELATIVE WINDS FOR **AREA A**
ON IGE AND OGE HOVER CEILING CHARTS
ABOVE 3000 FT H_D

206L4-F-4-5-1

Figure 4-5. Maximum safe relative winds (Sheet 1 of 2)



RELATIVE WINDS FOR AREA B
ON IGE AND OGE HOVER CEILING CHARTS



RELATIVE WINDS FOR AREA C
ON IGE AND OGE HOVER CEILING CHARTS

206L4-F-4-5-2

Figure 4-5 Maximum safe relative winds (Sheet 2 of 2)

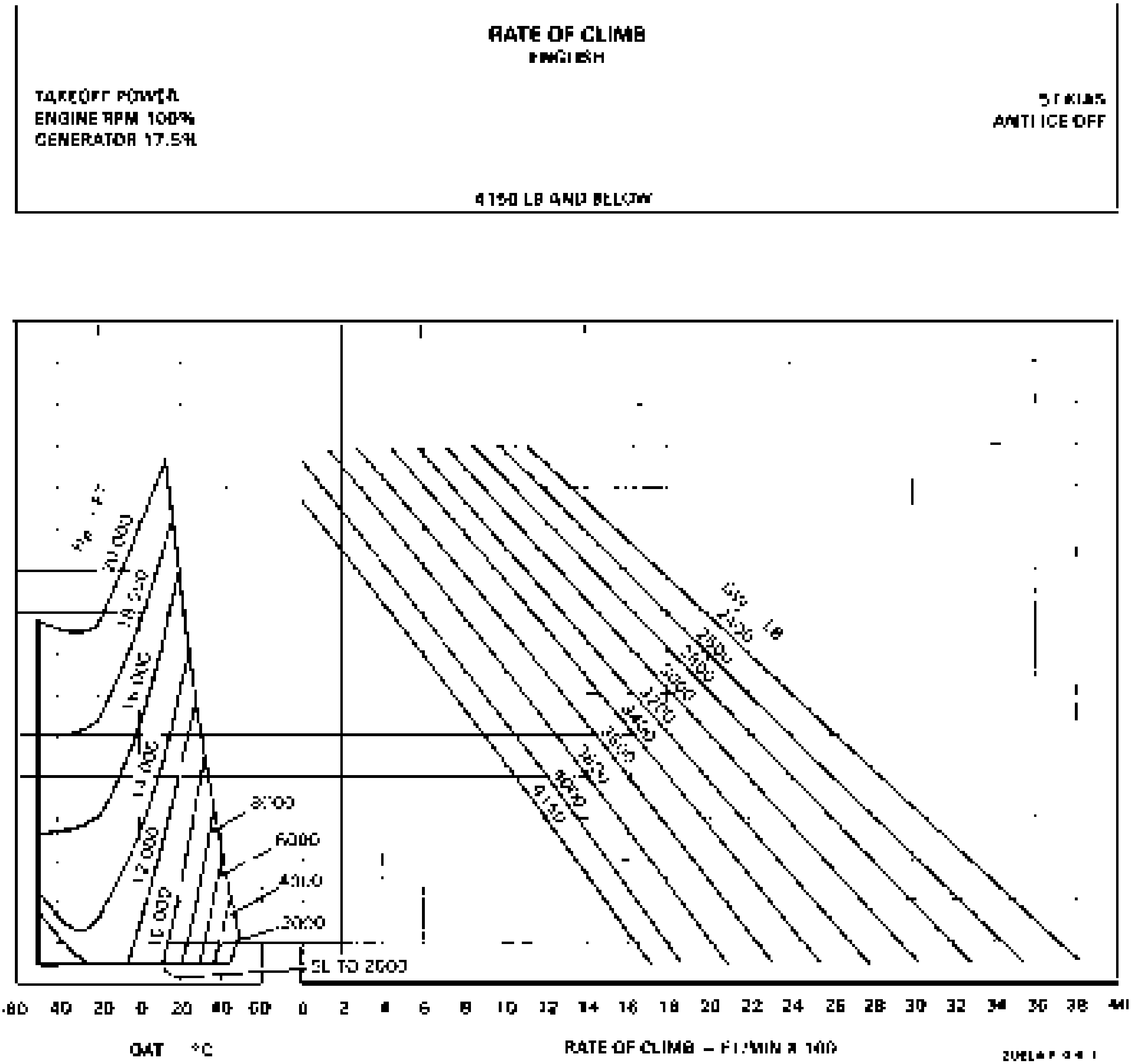


Figure 4-6. Rate of climb - takeoff power (Sheet 1 of 6)

RATE OF CLIMB
METRIC

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

57 KIAS
ANTI-ICE OFF

1882 KG AND BELOW

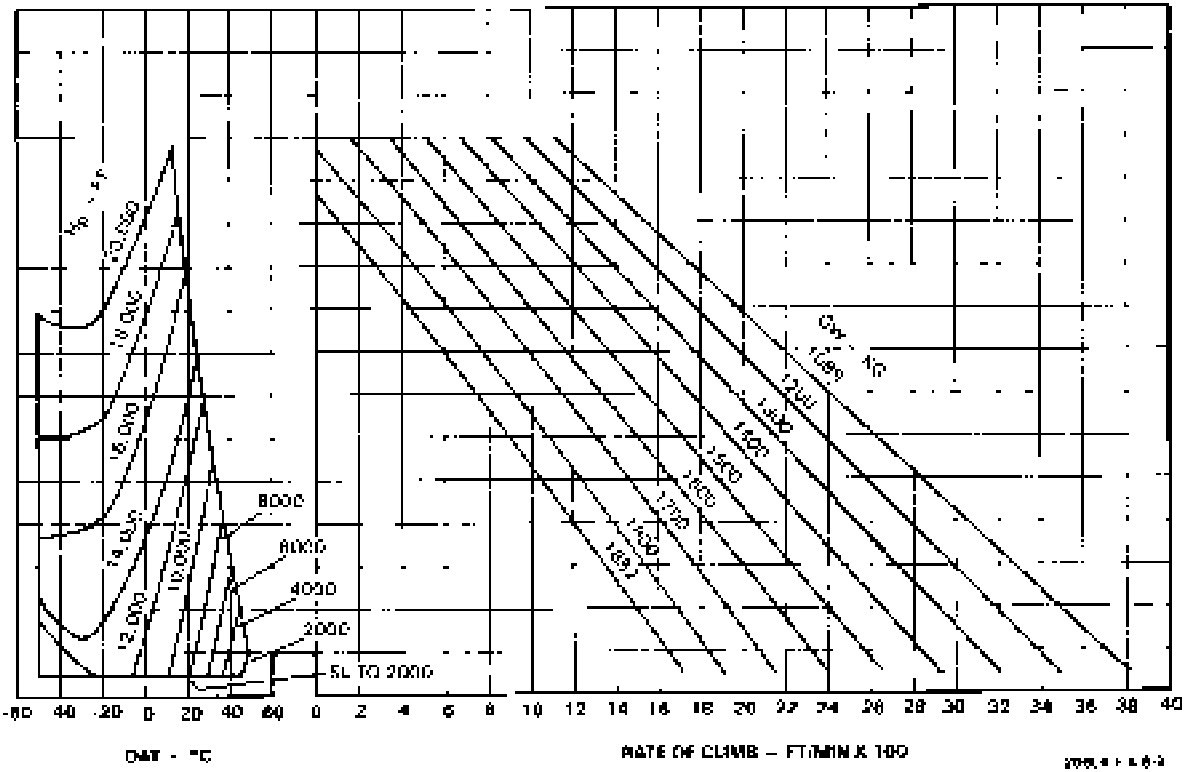


Figure 4-6. Rate of climb - takeoff power (Sheet 2 of 6)

RATE OF CLIMB
ENGLISH

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

57 KIAS
ANTI-ICE ON

4150 LB AND BELOW

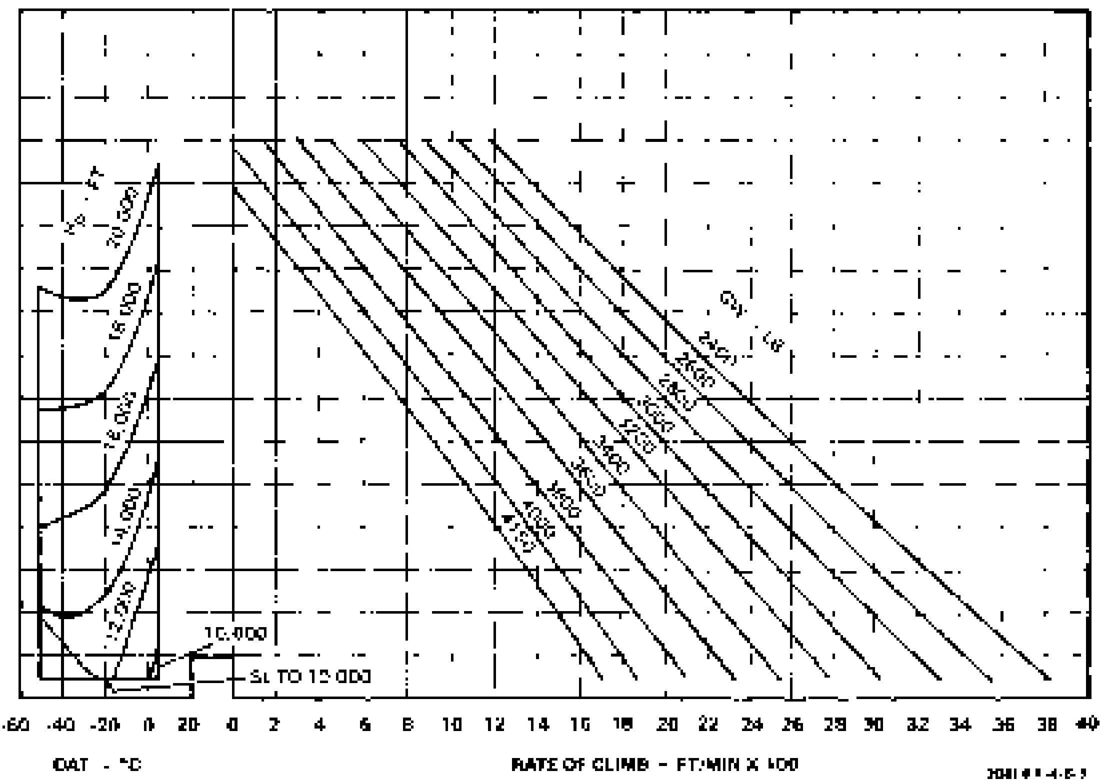


Figure 4-6. Rate of climb - takeoff power (Sheet 3 of 6)

RATE OF CLIMB
METRIC

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

57 KIAS
ANTI ICE ON

1882 KG AND BELOW

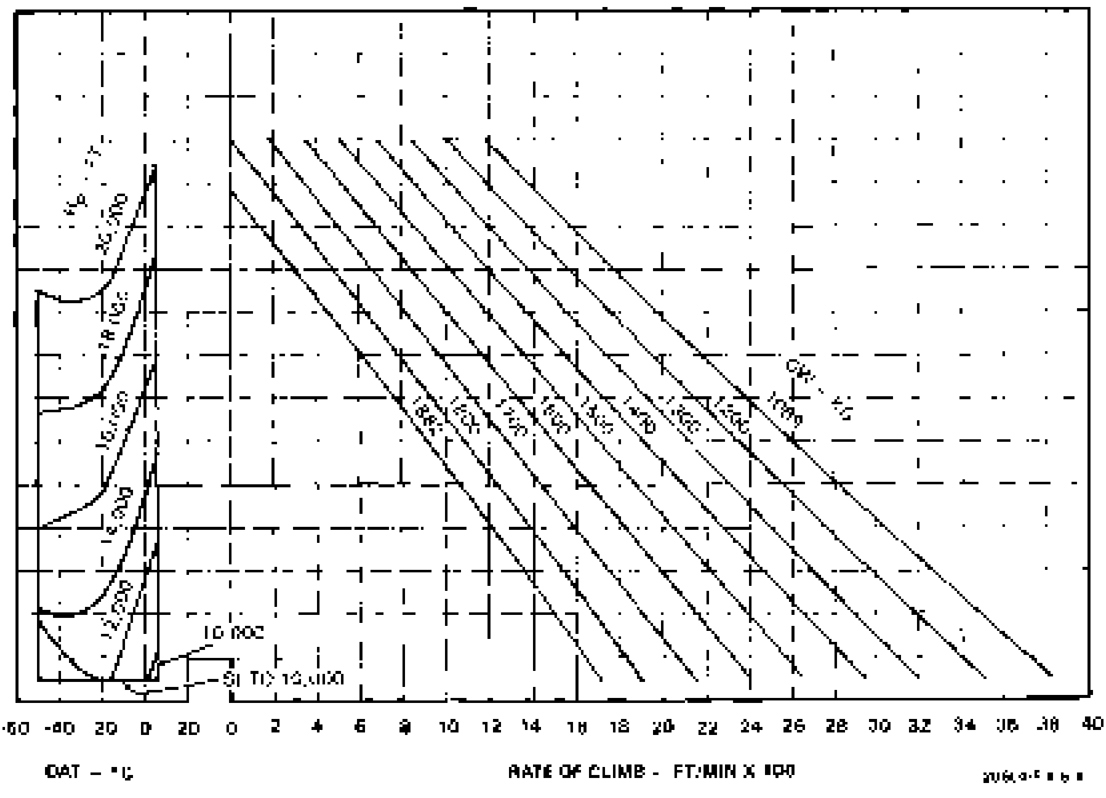


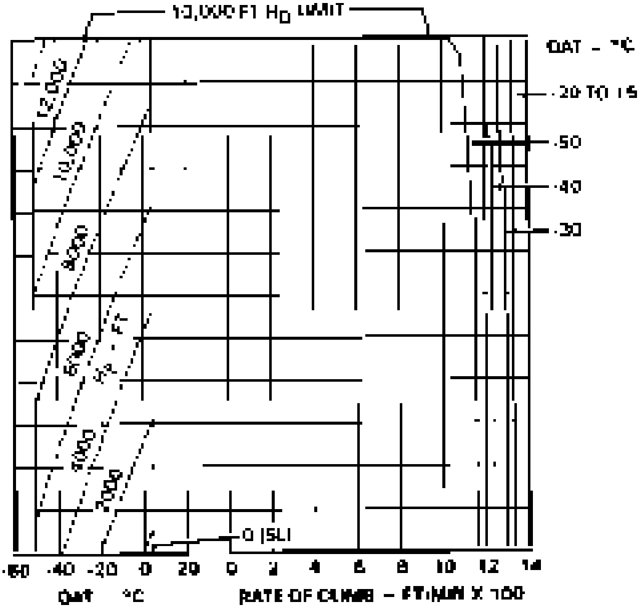
Figure 4-6. Rate of climb - takeoff power (Sheet 4 of 6)

RATE OF CLIMB

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

57 KIAS
ANTI-ICE ON

4151 LB TO 4450 LB
OR
1883 KG TO 2019 KG



206L4-F-4-8-5

Figure 4-8. Rate of climb - takeoff power (Sheet 8 of 8)

RATE OF CLIMB

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

57 KIAS
ANTI-ICE OFF

4151 LB TO 4450 LB
OR
1883 KG TO 2018 KG

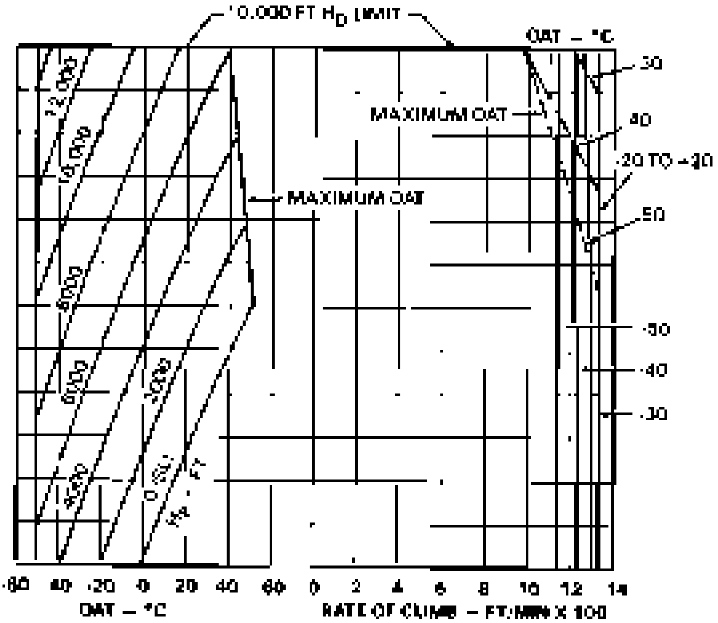


Figure 4-6. Rate of climb - takeoff power (Sheet 6 of 6)

RATE OF CLIMB
ENGLISH

MAXIMUM CONTINUOUS POWER
ENGINE RPM 100%
GENERATOR 17.5%

57 KIAS
ANTI-ICE OFF

4150 LB AND BELOW

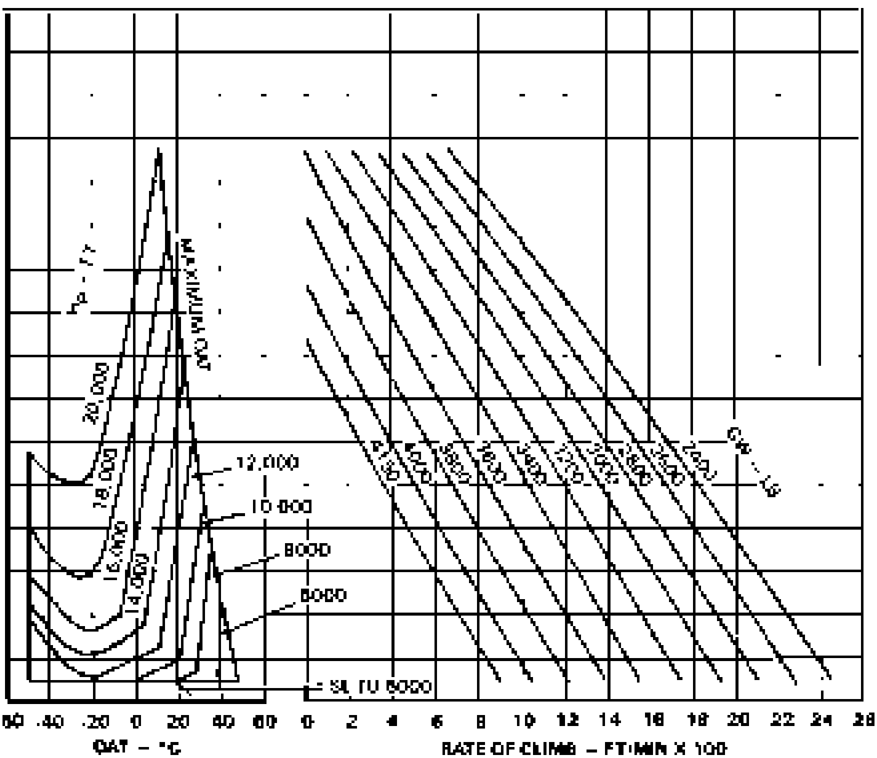


Figure 4-7 Rate of climb - maximum continuous power (Sheet 1 of 6)

RATE OF CLIMB
METRIC

MAXIMUM CONTINUOUS POWER
ENGINE RPM 100%
GENERATOR 17.5%

57 KIAS
ANTI-ICE OFF

1882 KG AND BELOW

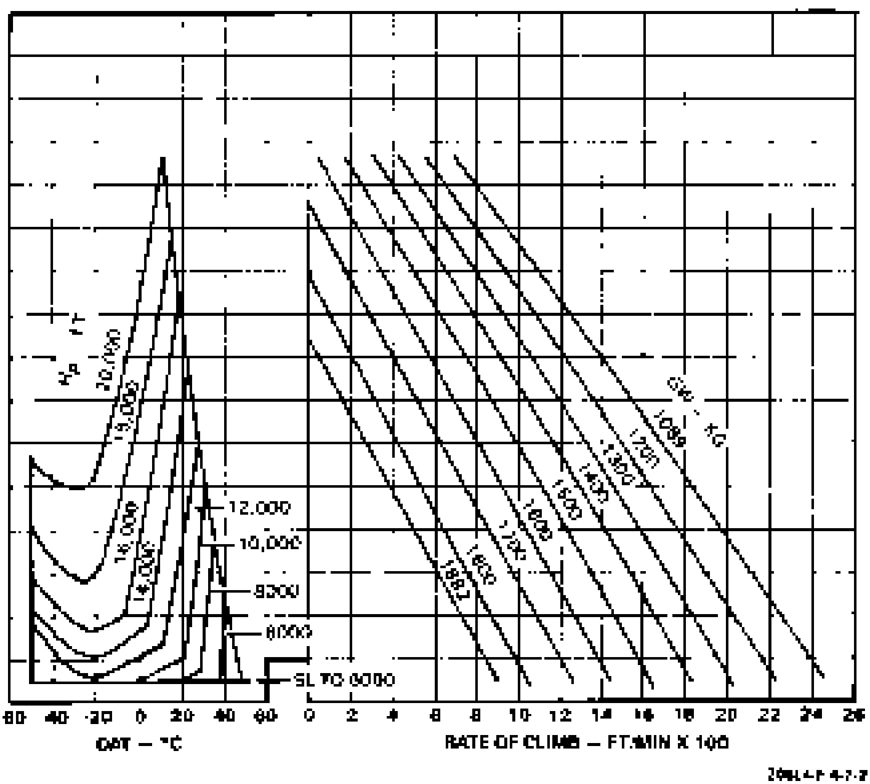


Figure 4-7 Rate of climb - maximum continuous power (Sheet 2 of 6)

RATE OF CLIMB
ENGLISH

MAXIMUM CONTINUOUS POWER
ENGINE RPM 100% RPM
GENERATOR 17.5%

67 KIAS
ANTI ICE ON

4150 LB AND BELOW

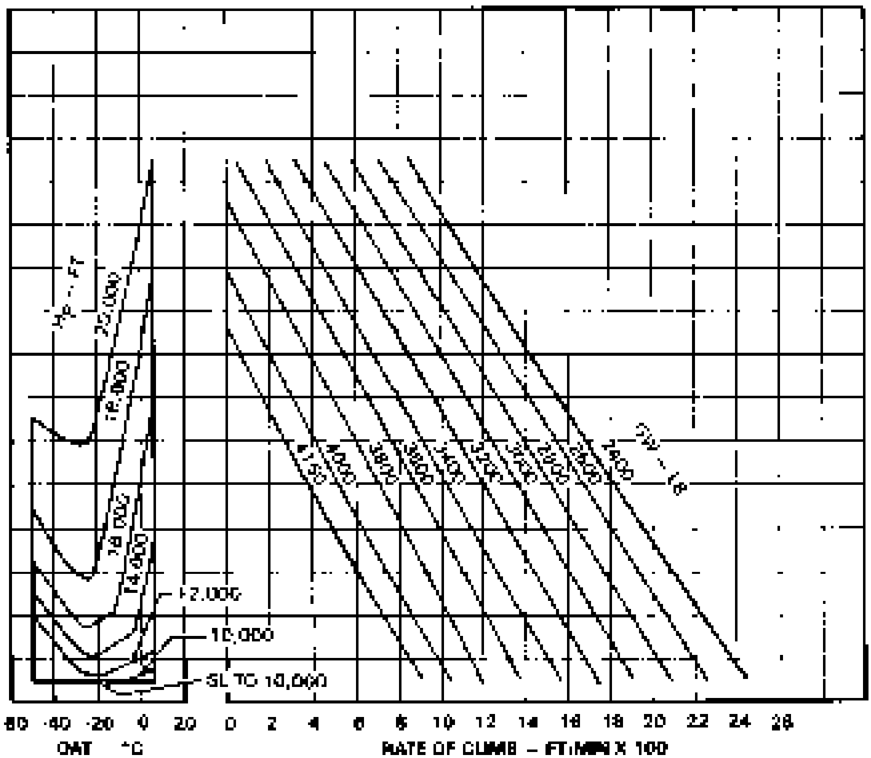


Figure 4-7. Rate of climb - maximum continuous power (Sheet 3 of 8)

RATE OF CLIMB
METRIC

MAXIMUM CONTINUOUS POWER
ENGINE RPM 100%
GENERATOR 17.5%

57 KIAS
ANTI-ICE ON

1882 KG AND BELOW

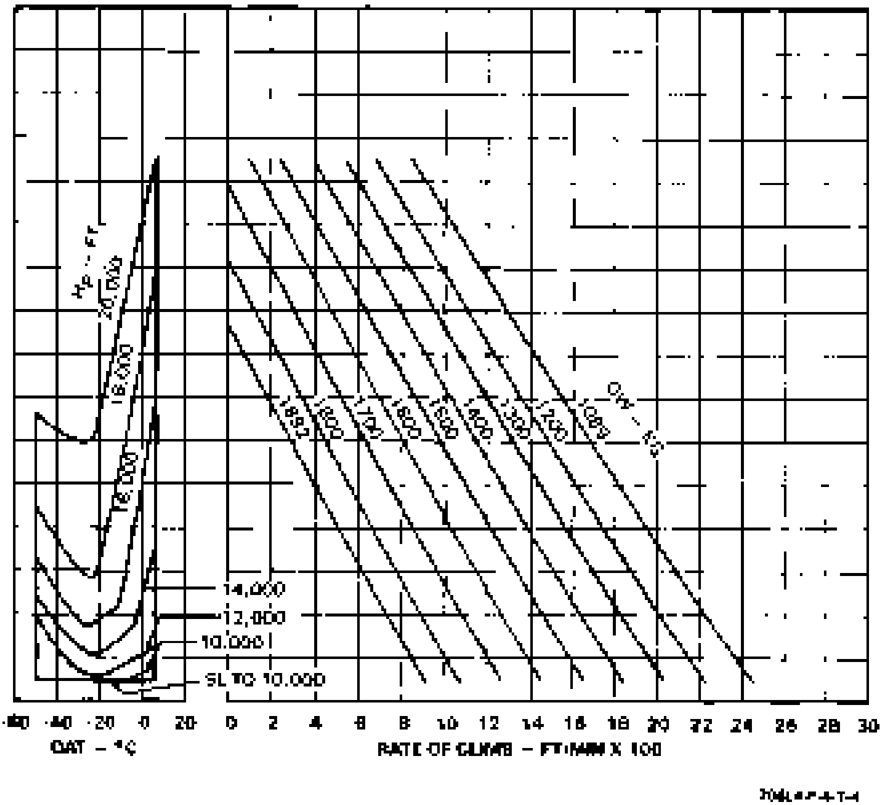


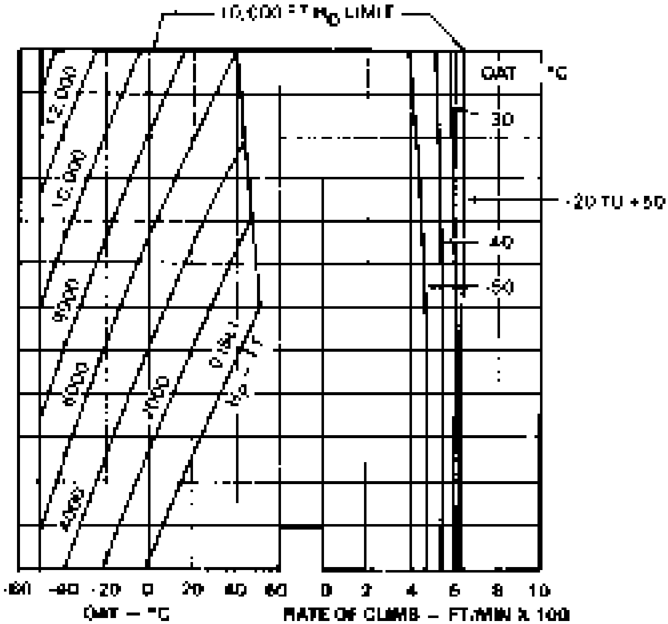
Figure 4-7. Rate of climb - maximum continuous power (Sheet 4 of 8)

RATE OF CLIMB

MAXIMUM CONTINUOUS POWER
ENGINE RPM 100%
GENERATOR 17.5%

57 KIAS
ANTI ICE OFF

4151 LB TO 4450 LB
OR
1883 KG TO 2019 KG



206L4-F-4-7-5

Figure 4-7. Rate of climb - maximum continuous power (Sheet 5 of 6)

RATE OF CLIMB

MAXIMUM CONTINUOUS POWER
ENGINE RPM 100%
GENERATOR 17.5%

57 KIAS
ANTI-ICE ON

4151 LB TO 4450 LB
OR
1883 KG TO 2019 KG

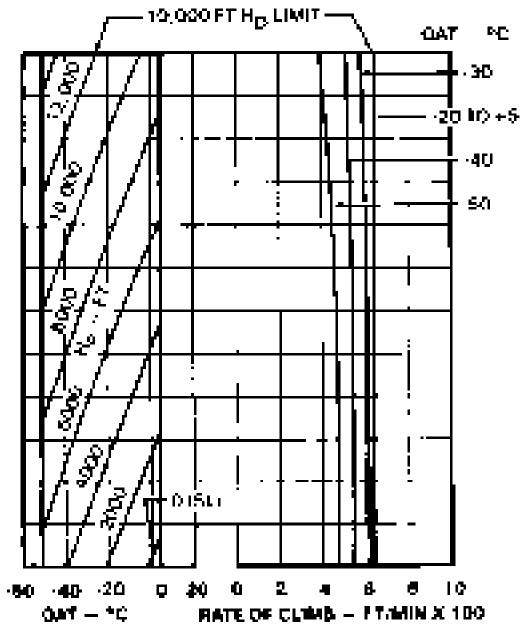
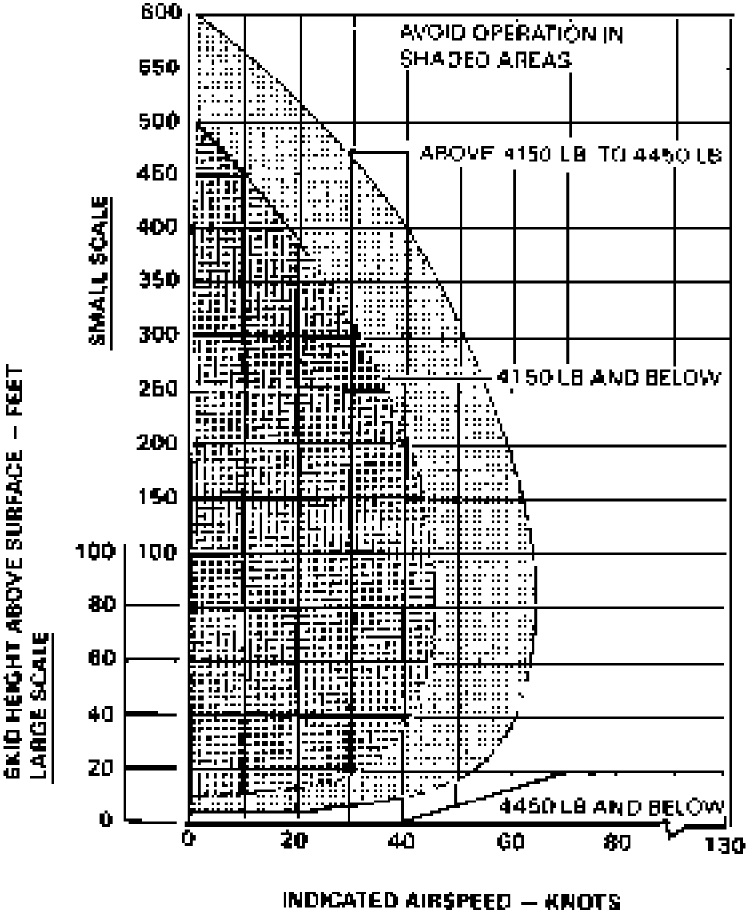


Figure 4-7. Rate of climb - maximum continuous power (Sheet 6 of 6)



NOTE

Takeoff shaded areas are based on using hover power plus 5% torque.

206L4-F-4-8

Figure 4-8. Height - velocity diagram

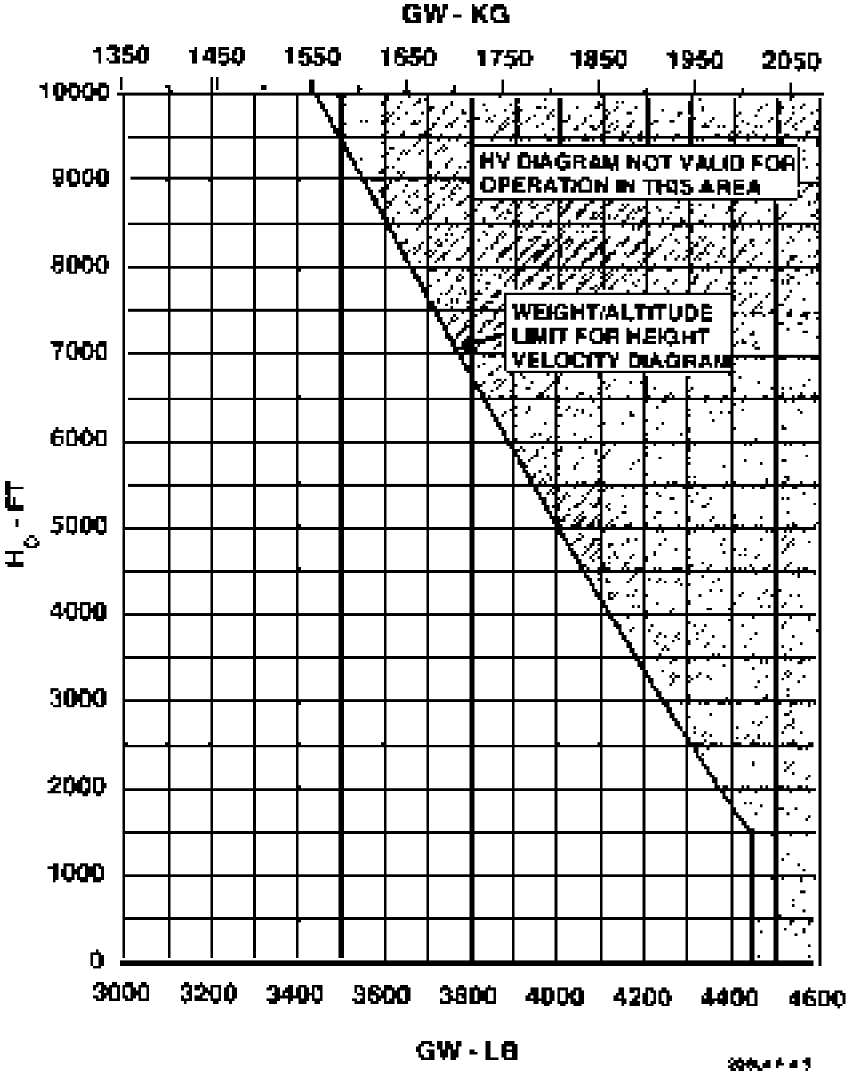


Figure 4-9. Altitude vs gross weight for height - velocity diagram

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 4-10. 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-206L4-FMS-1 Lifhtweight Emergency Flotation Landing Gear	206-706-210	December 8, 1992	Reissue 8 Aug 94
BHT-206L4-FMS-2 Bleed Air Heater	206-706-141	December 24, 1992	Original
BHT-206L4-FMS-3 Particle Separator	206-706-212	October 16, 1992	Reissue 25 Mar 94
BHT-206L4-FMS-4 Cargo Hook	206-706-341	October 16, 1992	Reissue 13 Sep 95
BHT-206L4-FMS-5 IFR Configuration	Reserved		
BHT-206L4-FMS-6 Environmental Control System	206-706-143	October 16, 1992	Original
BHT-206L4-FMS-7 Snow Deflector	206-706-208	October 16, 1992	Revision 1 13 Sep 95
BHT-206L4-FMS-8 Float Landing Gear, Standard Type (Fixed Floats) S/N 52164 Only	206-706-065	March 14, 1997	Original
BHT-206L4-FMS-9 High Skid Landing Gear	206-706-064	October 16, 1992	Reissue 25 Mar 94

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

NAME OF EQUIPMENT	KIT NUMBER	DATE CERTIFIED	CURRENT REVISION
BHT-206L4-FMS-10 TNL 2000/2000A GPS Navigator	206-898-720	December 21, 1992	Original
BHT-206L4-FMS-11 Area Navigation System	Reserved		
BHT-206L4-FMS-12 Litters	206-706-343	October 16, 1992	Reissue 2 Sep 97
BHT-206L4-FMS-13 Fire Detection System	206-899-793	November 10, 1993	Original
BHT-206L4-FMS-14 External Hoist	Reserved		
BHT-206L4-FMS-15			
BHT-206L4-FMS-16 SX-16C Nightsun Searchlight	206-899-992	December 4, 1996	Original
BHT-206L4-FMS-17 RPM Governor Control	206-898-944	July 30, 1994	Original
BHT-206L4T-FMS-18 (DME S/N 52062T Only)			
BHT-206L4-FMS-19 High Altitude Tail Rotor	206-704-722	December 7, 1994	Reissue 30 Jul 04
BHT-206L4-FMS-20 KLN 90A GPS	206-898-605	February 2, 1995	Original
BHT-206L4-FMS-21 Auxiliary Vertical Fin Strobe Lights	206-898-680	December 19, 1994	Original
BHT-206L4-FMS-22 Garmin GPS 150 Navigator	206-898-961	March 15, 1995	Original
BHT-206L4-FMS-23 KLN 89B Navigator GPS	206-898-996	February 12, 1999	Original

MODEL 206L4 Bell LongRanger-IV

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT

LIGHTWEIGHT EMERGENCY FLOTATION LANDING GEAR

206-706-210

CERTIFIED
DECEMBER 8, 1992

This supplement shall be attached to Model 206L-4 Flight Manual when Lightweight Emergency Flotation 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, consult basic Flight Manual.

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MANAGER

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

GENERAL INFORMATION

Lightweight emergency flotation landing gear kit (206-706-210) consists of pop-out floats attached to each skid tube, an inflation system, position lights, and attaching hardware. An electrically-operated solenoid valve is installed on the reservoir. A GEN FAIL indicator light is added to the caution panel to alert pilot of generator failure and of battery power possibly being insufficient to inflate floats. Float inflation time is approximately 5 seconds.

Section 1

LIMITATIONS

1-1. TYPE OF OPERATION

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

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

Accomplish preflight float system check daily prior to performing overwater operations.

1-2. WEIGHT/CENTER OF GRAVITY

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

FLOATS STOWED

Floats stowed, covers installed — Same as basic helicopter.

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

FLOATS INFLATED

Maximum inflation airspeed is 60 KIAS (69 MPH).

NOTE

DURING FLOAT INFLATION, MINOR NOSE DOWN PITCHING WILL OCCUR IN FORWARD FLIGHT OR AUTOROTATION.

Maximum allowable airspeed, floats inflated, is 60 KIAS (69 MPH).

Maximum autorotation airspeed, floats inflated, is 60 KIAS (69 MPH).

1-4. ALTITUDE

Maximum inflation altitude is 5000 feet H_p.

1-5. RATE OF CLIMB

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

1-6. PLACARDS AND DECALS

FLOAT ARMING/INFLATION ABOVE 60 KIAS PROHIBITED

Section 2

NORMAL PROCEDURES

2-1. EXTERIOR CHECK

1. Passenger steps — Ensure 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. BAT switch — BAT. With GEN switch OFF, verify GEN FAIL light illuminates.

WARNING

IF GEN FAIL LIGHT DOES NOT ILLUMINATE, FLIGHT OVER WATER IS PROHIBITED.

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

CAUTION

DURING FLIGHT AT ALTITUDES ABOVE 500 FEET AND AT AIRSPEEDS OF 60 KIAS (69 MPH) AND ABOVE, SYSTEM SHOULD BE DEACTIVATED BY PLACING FLOAT MANUAL ARM SWITCH TO OFF POSITION AND CLOSING GUARD.

Rearm system prior to landing.

2-6. OVER LAND OPERATIONS

FLOATS MANUAL ARM switch — OFF.

2-7. DESCENT AND LANDING — FLOATS STOWED

WARNING

IF CG IS AFT OF STATION 128, 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 AND MALFUNCTION PROCEDURES

3-1. WARNING AND CAUTION LIGHTS

Table 3-1 presents fault conditions and corrective actions for caution lights.

WARNING

IF GEN FAIL LIGHT ILLUMINATES, BATTERY POWER MAY NOT BE SUFFICIENT TO INFLATE FLOATS.

Table 3-1.

PANEL WORDING	FAULT CONDITION	CORRECTIVE ACTION
GEN FAIL	Generator has failed.	Over land: GEN switch — RESET, then GEN. If light remains illuminated, GEN switch — OFF. Land as soon as practical. Over water: GEN switch — RESET, then GEN. If light remains illuminated, GEN switch — OFF. Turn off all nonessential electrical equipment to conserve battery power. Land as soon as practical.

3-2. FLOAT INFLATION PROCEDURE

1. Reduce airspeed below maximum inflation airspeed — 60 KIAS (69 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 right or left forward bag to oscillate. If this occurs, a low power descent will align float bags and stop oscillation.

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

4. FLOATS ARMED light — Illuminated.

5. FLOATS INFLATION trigger switch — Pull on.

CAUTION

MAXIMUM INFLATION ALTITUDE IS 5000 FEET H_p.

3-3. AFTER EMERGENCY WATER LANDING

1. After landing, inspect 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, helicopter can be ferried to nearest maintenance facility to repack floats and charge system. Ferrying airspeed is restricted to 60 KIAS (69 MPH).

Section 4

PERFORMANCE

4-1. HOVER CEILING — FLOATS STOWED

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

4150 LB AND BELOW

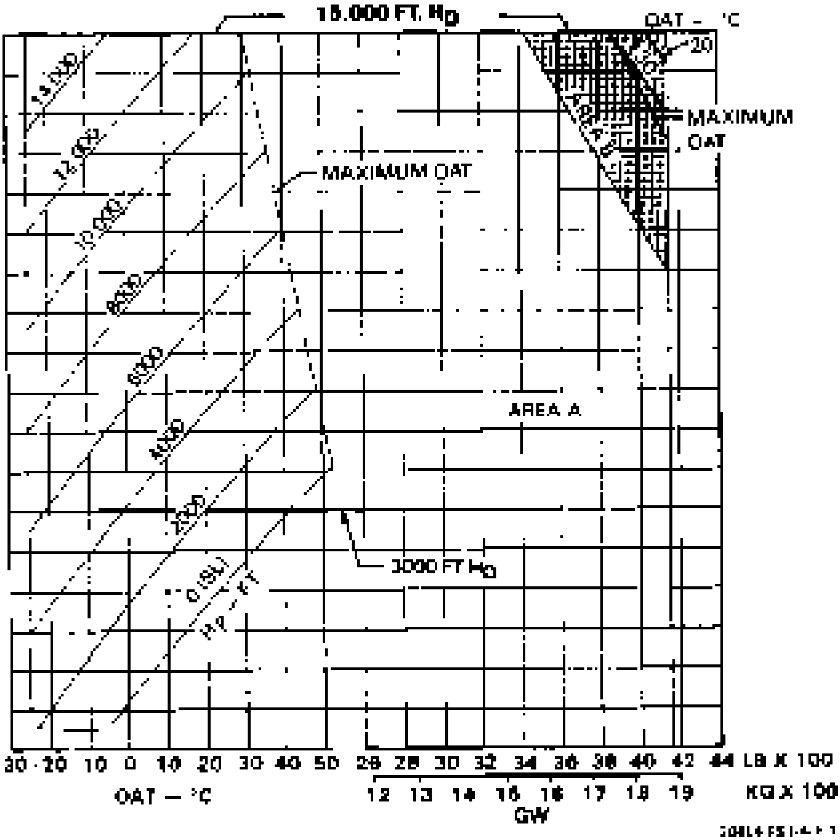

Figure 4-1. Hover ceiling - In ground effect (Sheet 1 of 4)

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

4151 LB AND ABOVE

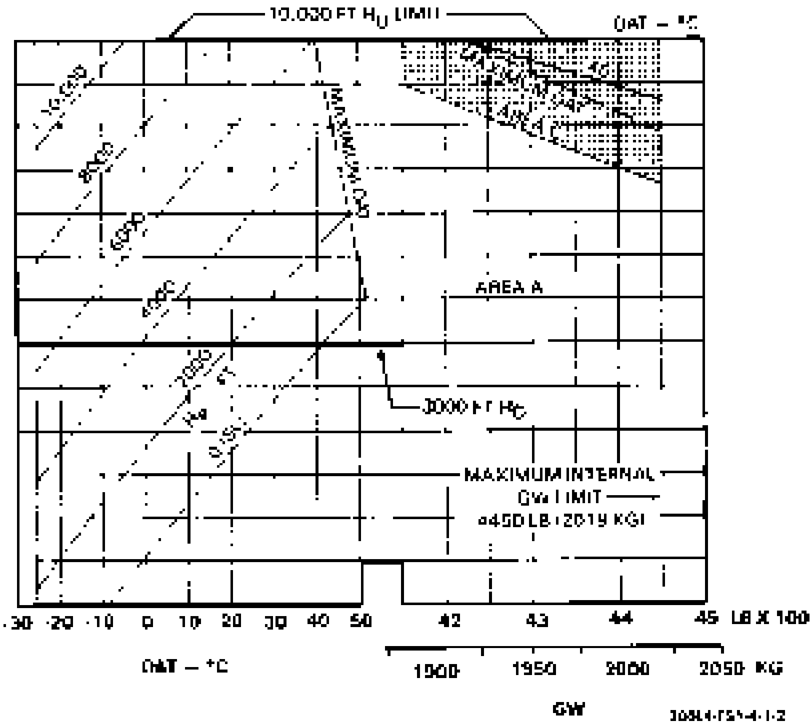

Figure 4-1. Hover ceiling - In ground effect (Sheet 2 of 4)

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

4150 LB AND BELOW

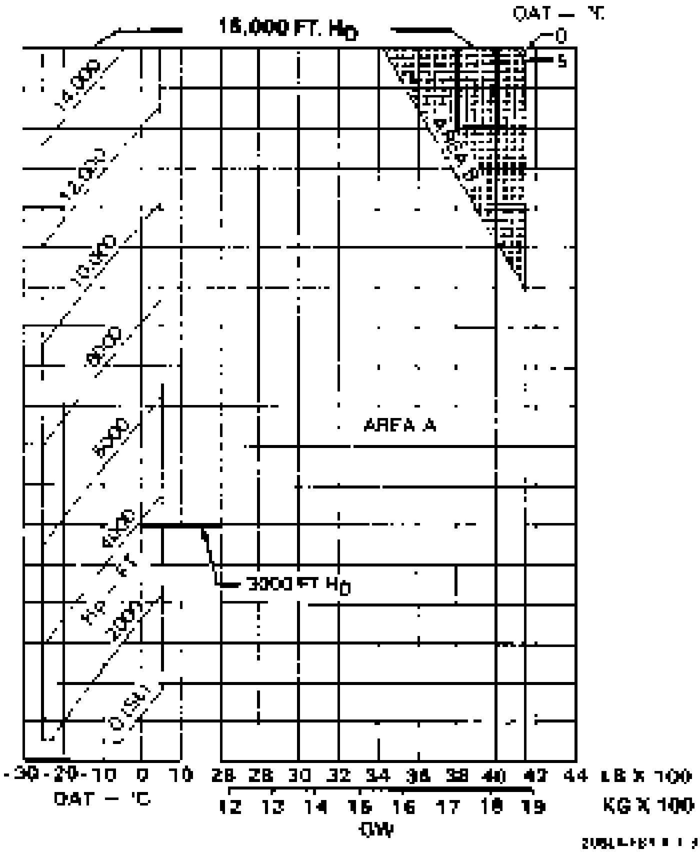

Figure 4-1. Hover ceiling - in ground effect (Sheet 3 of 4)

HOVER CEILING
IN GROUND EFFECT
WITH STANDARD INLET

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.6%

SKID HEIGHT 2.5 FT (0.7 METER)
ANTI-ICE ON

4151 LB AND ABOVE

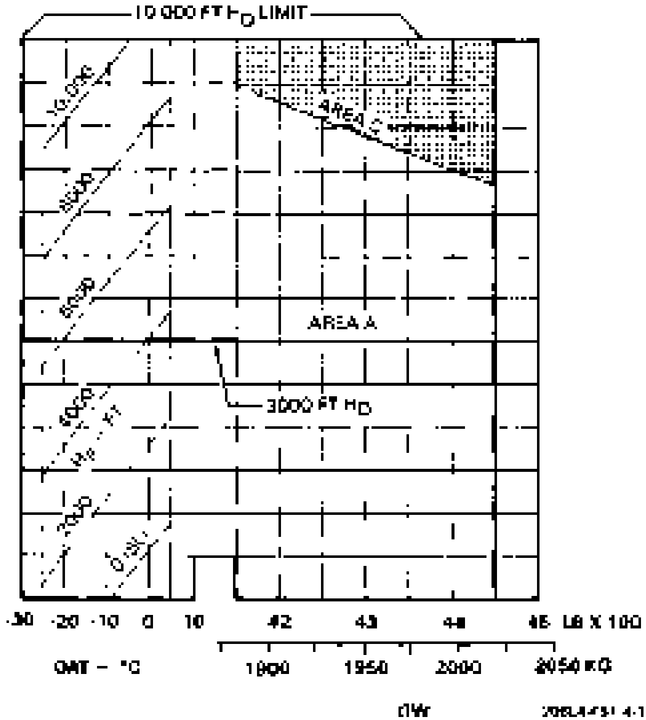

Figure 4-1. Hover ceiling - in ground effect (Sheet 4 of 4)

Bell MODEL 206L4 LongRanger-IV

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT

BLEED AIR HEATER

206-706-141

CERTIFIED
24 DECEMBER 1992

This supplement shall be attached to Model 206L-4 Flight Manual when bleed air heater kit has been installed.

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

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FT. WORTH, TX 76193-0170

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/CENTER OF GRAVITY

Weight change shall be calculated after kit is installed and ballast readjusted, if necessary, to return empty weight CG to 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 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 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 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 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 performance variation chart in this section in conjunction with hover ceiling chart titled WITH SNOW DEFLECTOR.

4-4. RATE OF CLIMB

Reduction in Rate of climb performance is shown in 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 bleed air heater is turned OFF. With 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 Rate of climb chart in this section and

Rate of climb charts in supplement for Snow Deflector (BHT-206L4-FMS-7).

4-6. PERFORMANCE VARIATION CHART

To use Performance variation chart (figure 4-3), 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 -30°C on chart), there is no additional performance loss from charts used. If point of intersection is above appropriate power curve (example B, 9000 feet and 20°C on chart), hover gross weight will be 90 pounds (40.8 kg) less than weight determined on Hover ceiling chart (figure 4-1) being used and rate of climb will be 170 feet per minute less than that determined with Rate of climb decrease chart (figure 4-2) and Snow Deflector Rate of climb charts.

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

TAKEOFF POWER
POWER TURBINE 100% RPM
GENERATOR 17.5%

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

4150 LB (1882 KG) AND BELOW
WITH ENGINE ANTI-ICING ON ABOVE 12,000 FT Hp, GW IS 150 LB (68 KG) LESS
(BELOW 12,000 FT, NO CORRECTION IS NECESSARY)

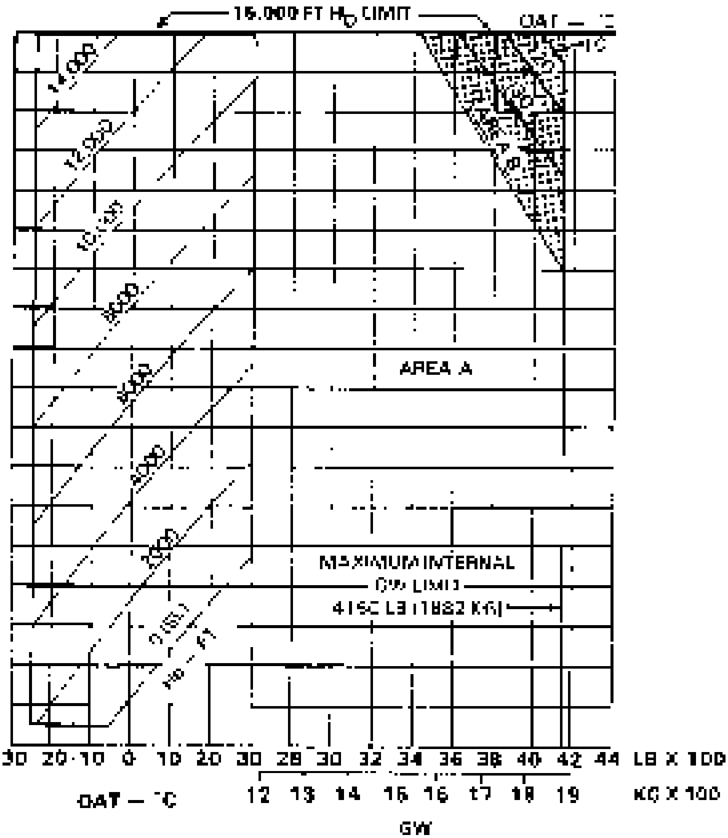


Figure 4-1. Hover ceiling (Sheet 1 of 28)

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

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 2.5 FT (0.7 METER)
ANTI-ICE OFF
HEATER ON

4151 LB (1883 KG) AND ABOVE
WITH ANTI-ICE ON ABOVE 12,000 FT Hp, GW IS 150 LB (68 KG) LESS
(BELOW 12,000 FT, NO CORRECTION IS NECESSARY)

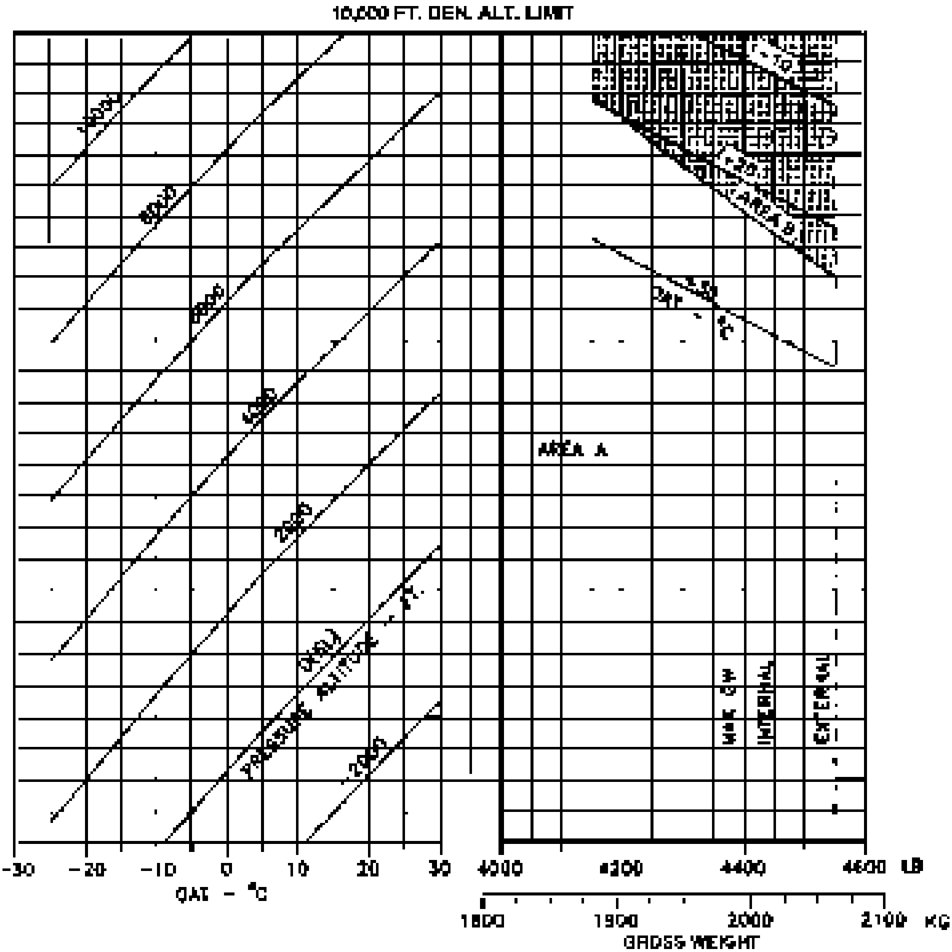


Figure 4-1. Hover ceiling (Sheet 2 of 28)

HOVER CEILING

IN GROUND EFFECT
WITH STANDARD INLET
WITH HIGH SKID OR EMERGENCY FLOTATION LANDING GEAR

TAKEOFF POWER
POWER TURBINE 100% RPM
GENERATOR 17.5%

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

4150 LB (1882 KG) AND BELOW
WITH ENGINE ANTI-ICING ON ABOVE 10,000 FT Hp, GW IS 160 LB (68 KG) LESS
(BELOW 10,000 FT, NO CORRECTION IS NECESSARY)

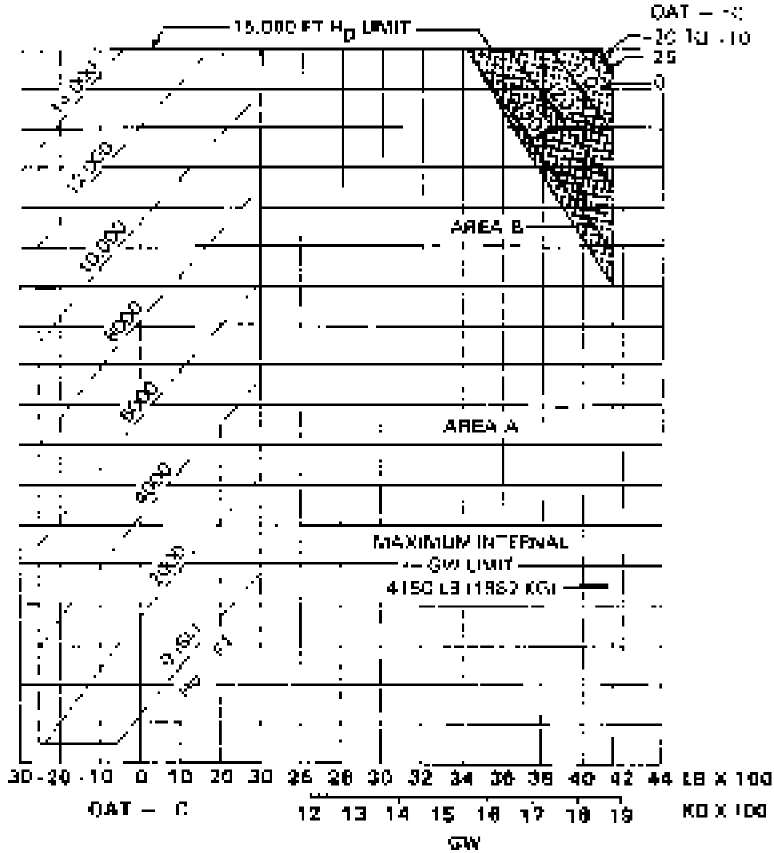


Figure 4-1. Hover ceiling (Sheet 3 of 28)

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

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 2.5 FT (0.7 METER)
ANTI-ICE OFF
HEATER ON

4151 LB (1883 KG) AND ABOVE
WITH ANTI-ICE ON ABOVE 10,000 FT H_P, GW IS 150 LB (68 KG) LESS
(BELOW 10,000 FT, NO CORRECTION IS NECESSARY)

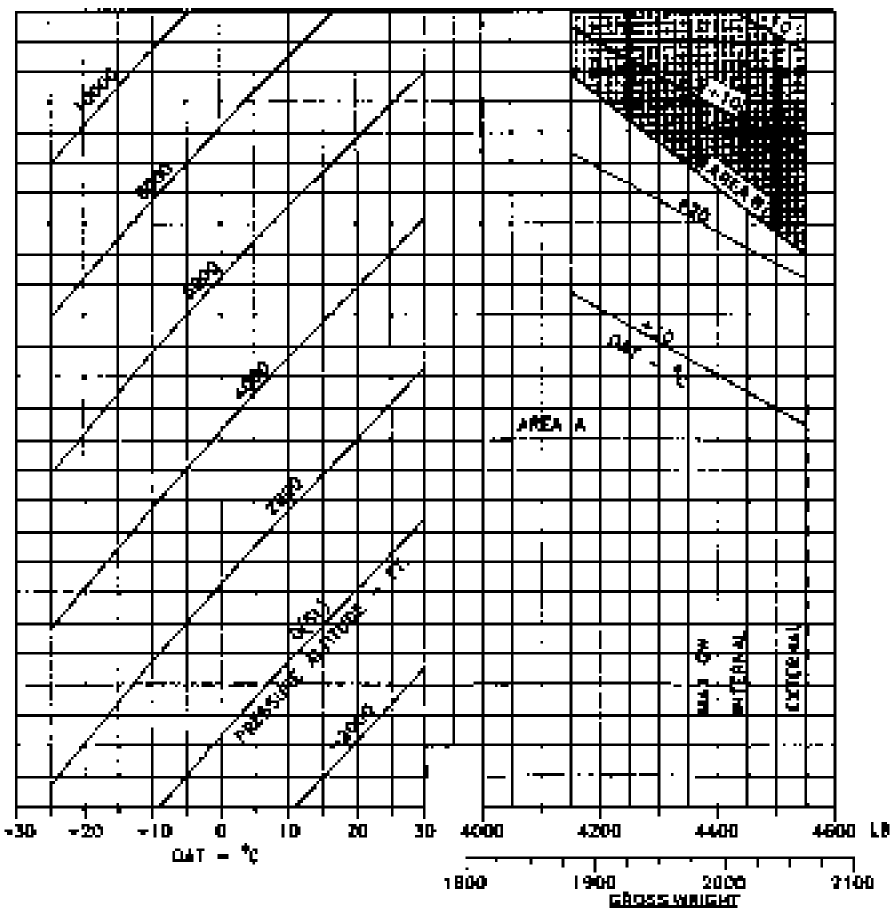


Figure 4-1. Hover ceiling (Sheet 4 of 28)

HOVER CEILING

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

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 40 FT (12.2 METERS)
ANTI-ICE OFF
HEATER ON

4150 LB (1882 KG) AND BELOW
WITH ANTI-ICE ON ABOVE 10,000 FT H_P, GW IS 120 LB (54 KG) LESS
(BELOW 10,000 FT NO CORRECTION IS NECESSARY)

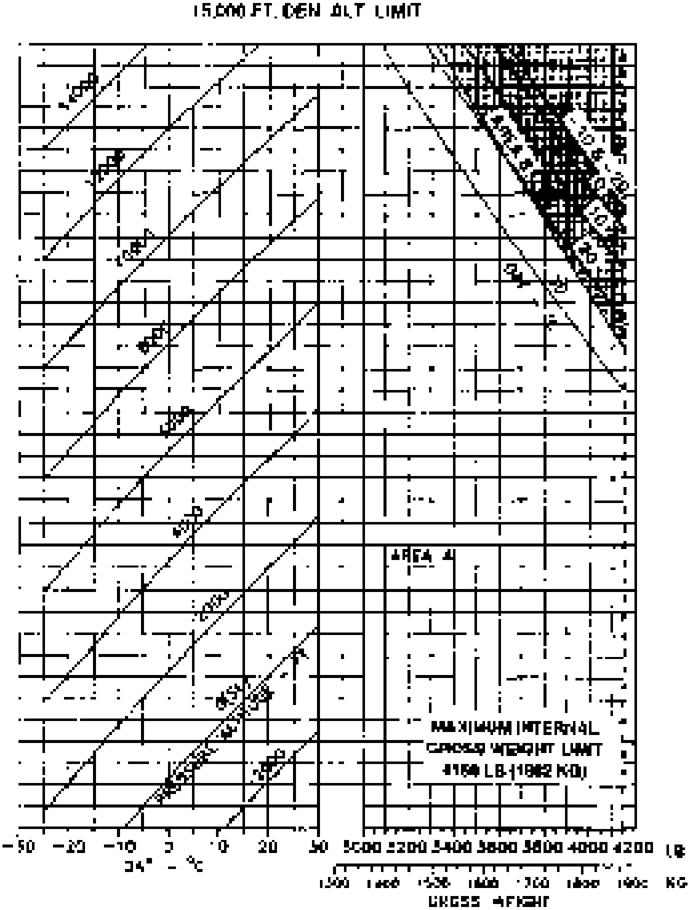


Figure 4-1. Hover ceiling (Sheet 5 of 28)

HOVER CEILING

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

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 40 FT (12.2 METERS)
ANTI-ICE OFF
HEATER ON

4151 LB (1883 KG) AND ABOVE

WITH ANTI-ICE ON ABOVE 10,000 FT Hp, GW IS 120 LB (54 KG) LESS
(BELOW 10,000 FT, NO CORRECTION IS NECESSARY)

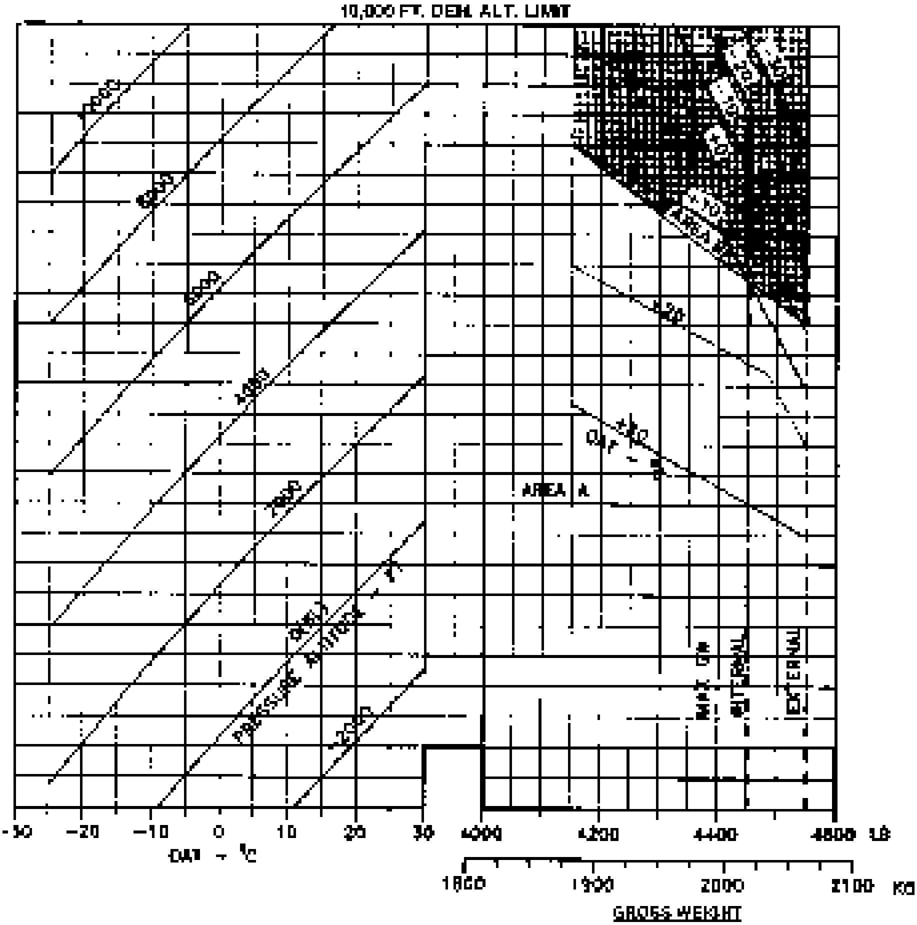


Figure 4-1. Hover ceiling (Sheet 6 of 28)

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

TAKEOFF POWER
POWER TURBINE 100% RPM
GENERATOR 17.5%

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

4150 LB (1882 KG) AND BELOW
WITH ENGINE ANTI ICING ON ABOVE 10,000 FT Hp, GW IS 150 LB (68 KG) LESS
(BELOW 10,000 FT, NO CORRECTION IS NECESSARY)

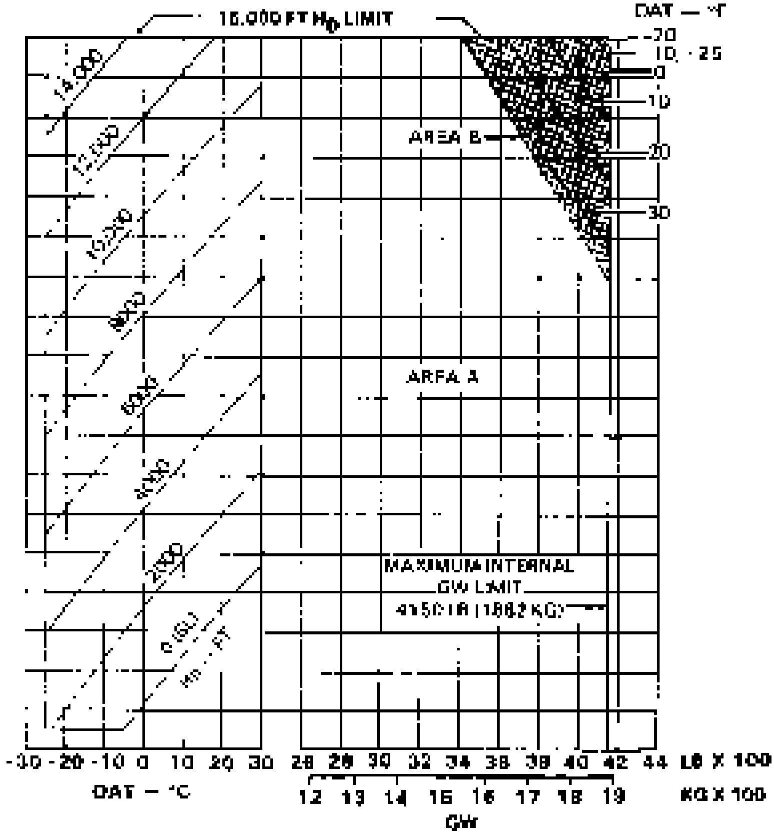


Figure 4-1. Hover ceiling (Sheet 7 of 28)

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

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 2.5 FT (0.7 METER)
ANTI-ICE OFF
HEATER ON

4161 LB (1888 KG) AND ABOVE
WITH ANTI-ICE ON ABOVE 12,000 FT Hp, GW IS 150 LB (68 KG) LESS
(BELOW 12,000 FT, NO CORRECTION IS NECESSARY)

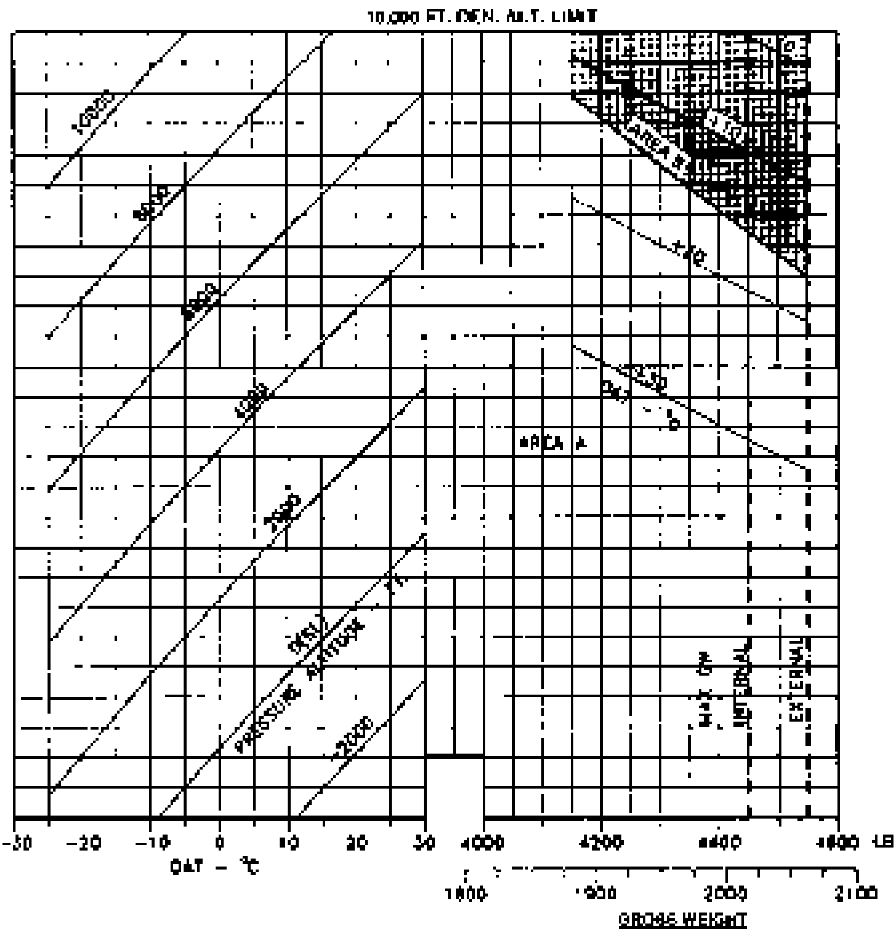


Figure 4-1. Hover ceiling (Sheet 8 of 28)

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

TAKEOFF POWER
POWER TURBINE 100% RPM
GENERATOR 17.5%

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

4150 LB (1882 KG) AND BELOW
WITH ENGINE ANTI-ICING ON ABOVE 10,000 FT Hp, GW IS 160 LB (73 KG) LESS
(BELOW 10,000 FT NO CORRECTION IS NECESSARY)

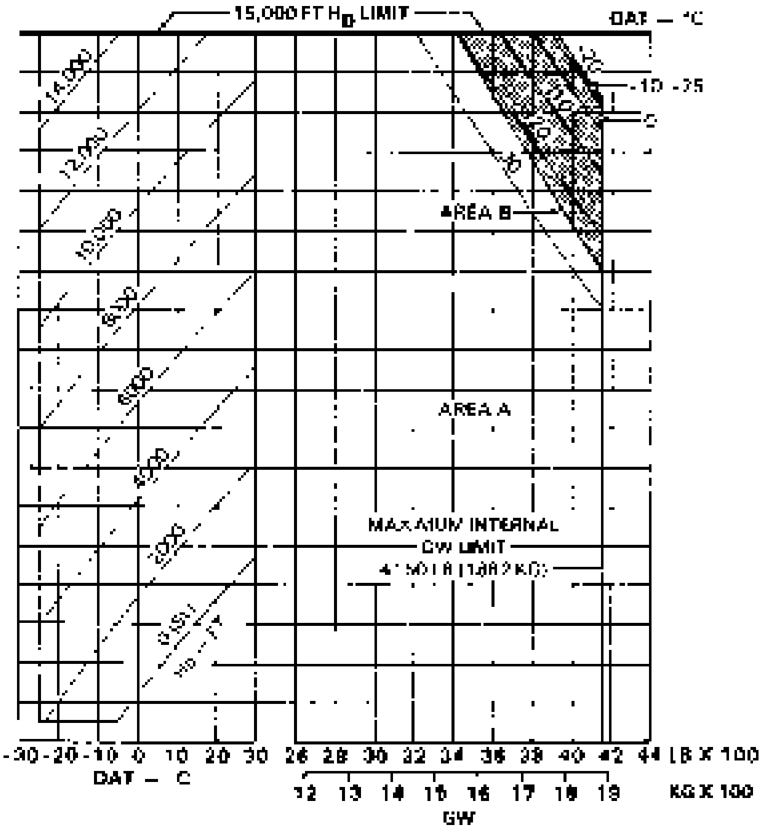


Figure 4-1. Hover ceiling (Sheet 9 of 28)

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

TAKEOFF POWER — SKID HEIGHT 2.5 FT (0.7 METER)
ENGINE RPM 100% — ANTI-ICE OFF
GENERATOR 17.5% — 4151 LB (1883 KG) AND ABOVE — HEATER ON
WITH ANTI-ICE ON ABOVE 10,000 FT Hp, GW IS 180 LB (73 KG) LESS
(BELOW 10,000 FT NO CORRECTION IS NECESSARY)

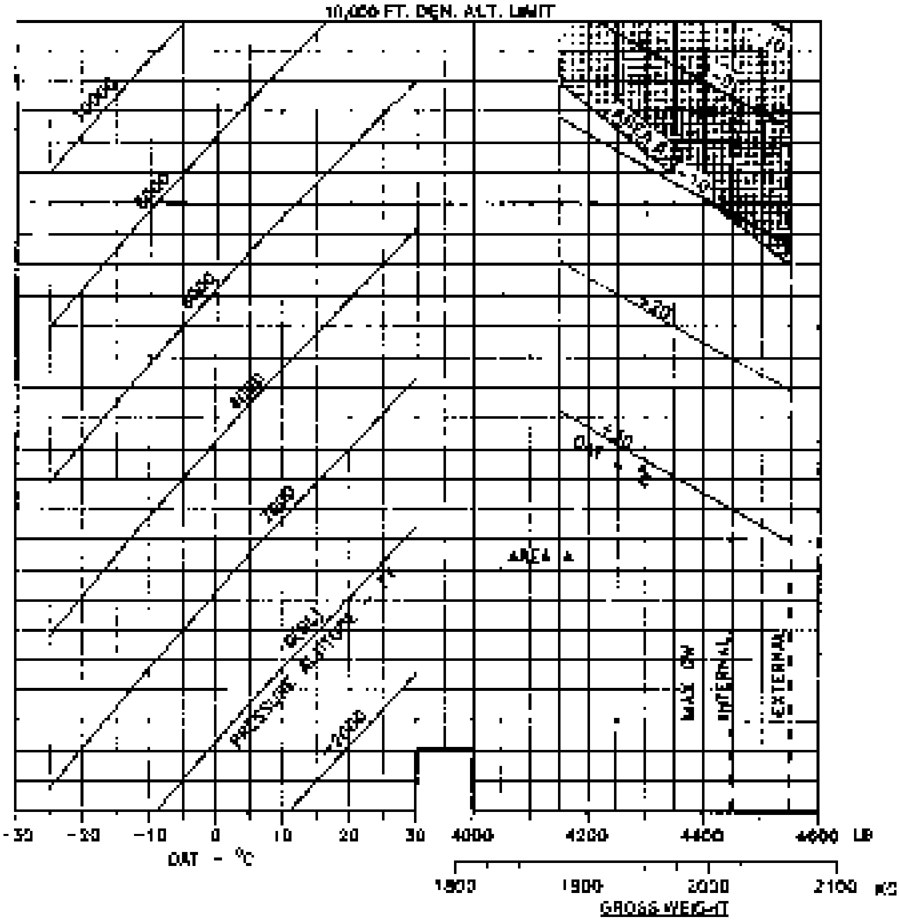


Figure 4-1. Hover ceiling (Sheet 10 of 28)

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

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 40 FT (12.2 METERS)
ANTI-ICE OFF
HEATER ON

4150 LB (1882 KG) AND BELOW
WITH ANTI-ICE ON ABOVE 10,000 FT Hp, GW IS 130 LB (59 KG) LESS
(BELOW 10,000 FT, NO CORRECTION IS NECESSARY)

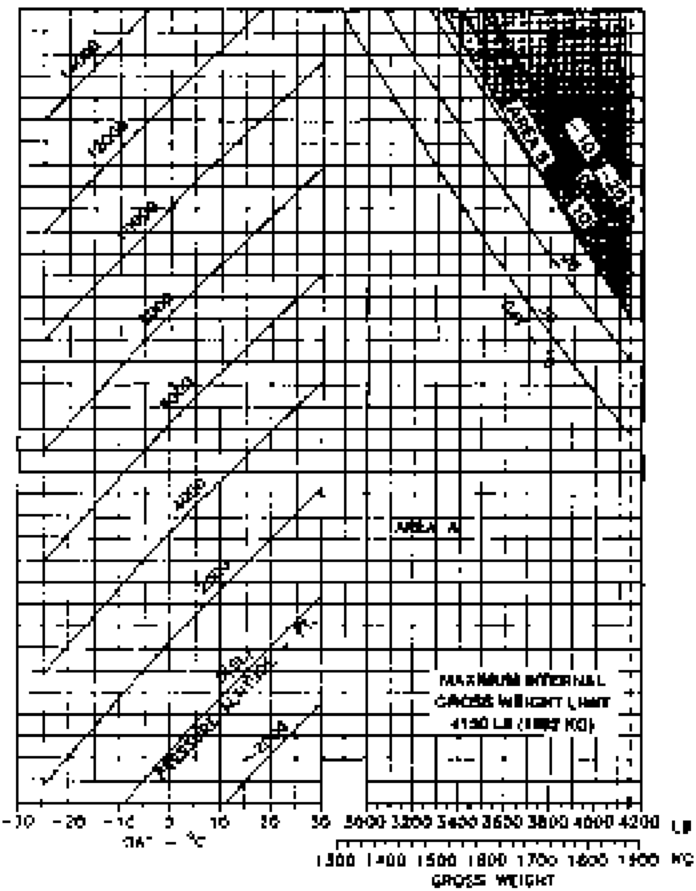


Figure 4-1. Hover ceiling (Sheet 11 of 28)

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

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 40 FT (12.2 METERS)
ANTI-ICE OFF
HEATER ON

4161 LB (1888 KG) AND ABOVE
WITH ANTI-ICE ON ABOVE 10,000 FT Hp, GW IS 130 LB (59 KG) LESS
(BELOW 10,000 FT, NO CORRECTION IS NECESSARY)

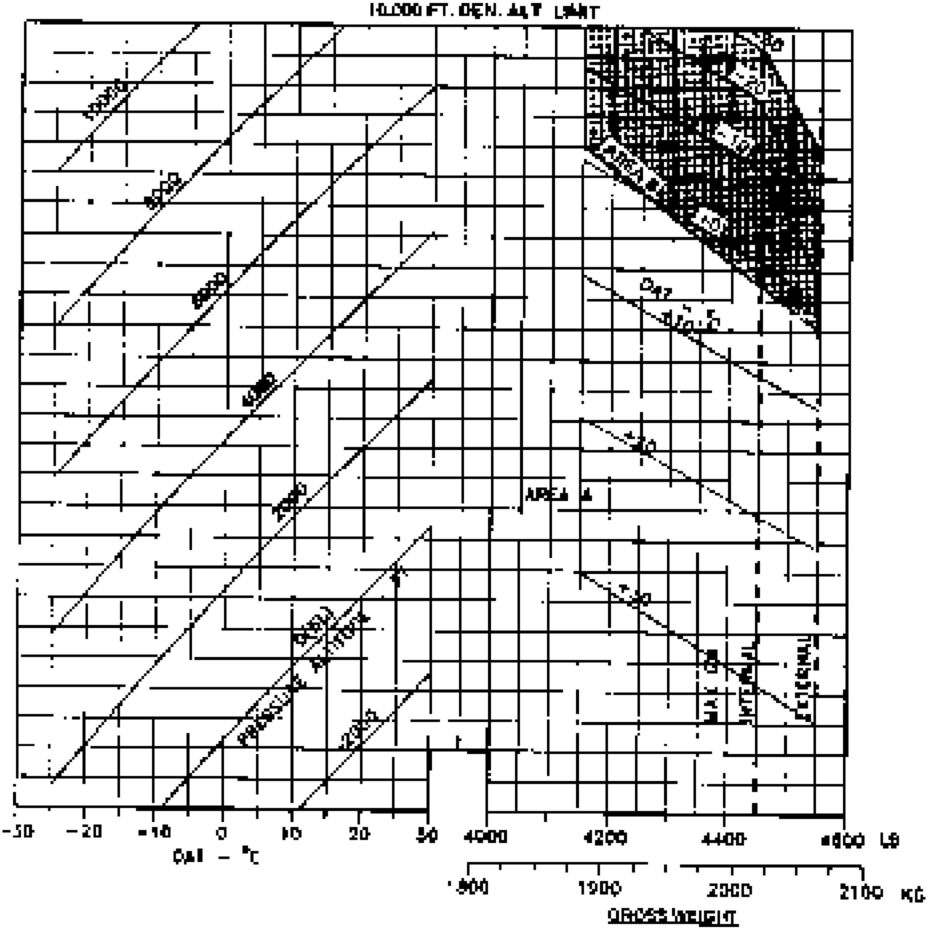


Figure 4-1. Hover ceiling (Sheet 12 of 28)

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

TAKEOFF POWER
POWER TURBINE 100% RPM
GENERATOR 17.5%

SKID HEIGHT 2.3 FT (0.7 METER)
ENGINE ANTI-ICING OFF
HEATER ON
PARTICLE SEPARATOR PURGE OFF

4150 LB (1882 KG) AND BELOW
WITH ENGINE ANTI-ICING ON ABOVE 12,000 FT Hp, GW IS 150 LB (68 KG) LESS
(BELOW 12,000 FT, NO CORRECTION IS NECESSARY)

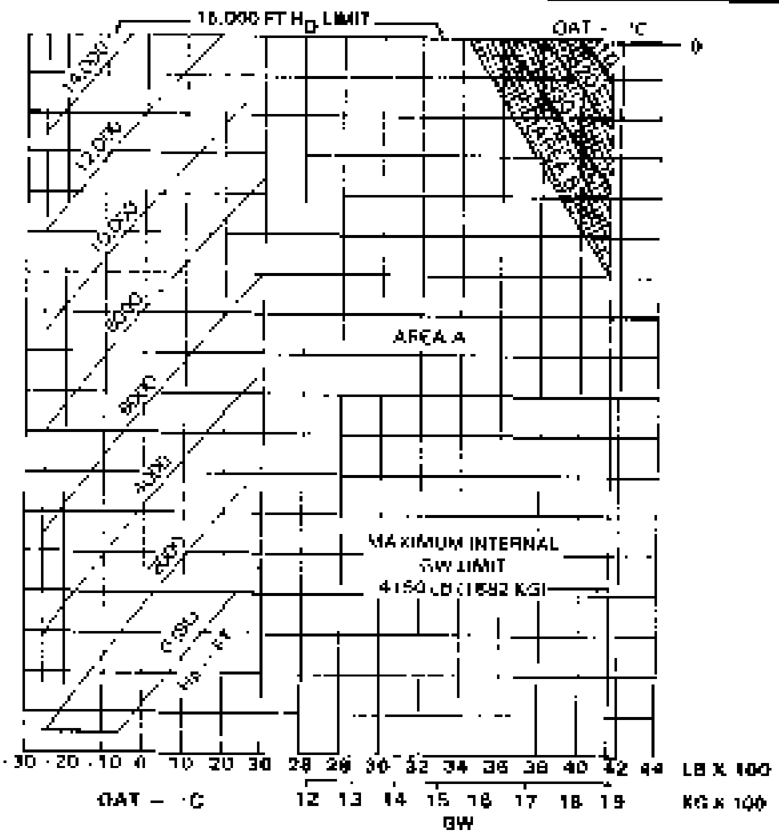


Figure 4-1. Hover ceiling (Sheet 13 of 28)

HOVER CEILING

IN GROUND EFFECT WITH PARTICLE SEPARATOR

WITH STANDARD SKID LANDING GEAR

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 2.5 FT (0.7 METER)
ANTI-ICE OFF
HEATER ON
PARTICLE SEPARATOR PURGE OFF

4151 LB (1883 KG) AND ABOVE

WITH ANTI-ICE ON ABOVE 12,000 FT Hp, GW IS 150 LB (68 KG) LESS

(BELOW 12,000 FT, NO CORRECTION IS NECESSARY)

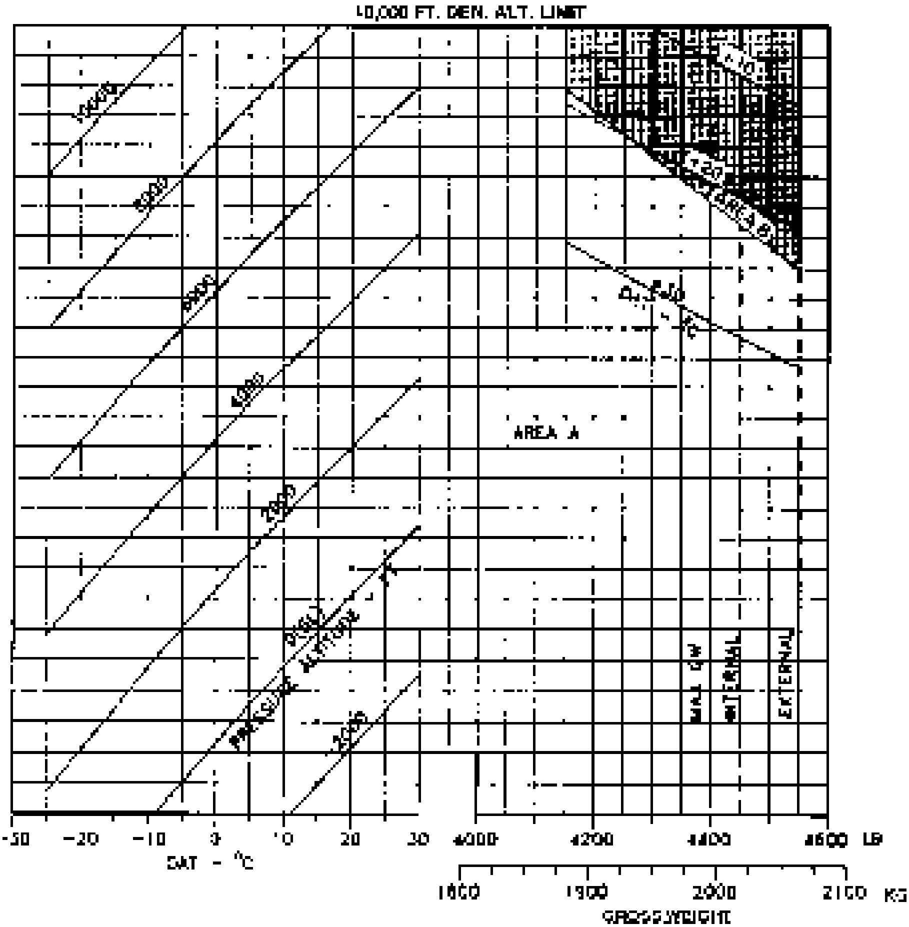


Figure 4-1. Hover ceiling (Sheet 14 of 28)

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

TAKEOFF POWER
POWER TURBINE 100% RPM
GENERATOR 17.5%

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

4150 LB (1882 KG) AND BELOW
WITH ENGINE ANTI-ICING ON ABOVE 12,000 FT Hp, GW IS 150 LB (68 KG) LESS
(BELOW 12,000 FT, NO CORRECTION IS NECESSARY)

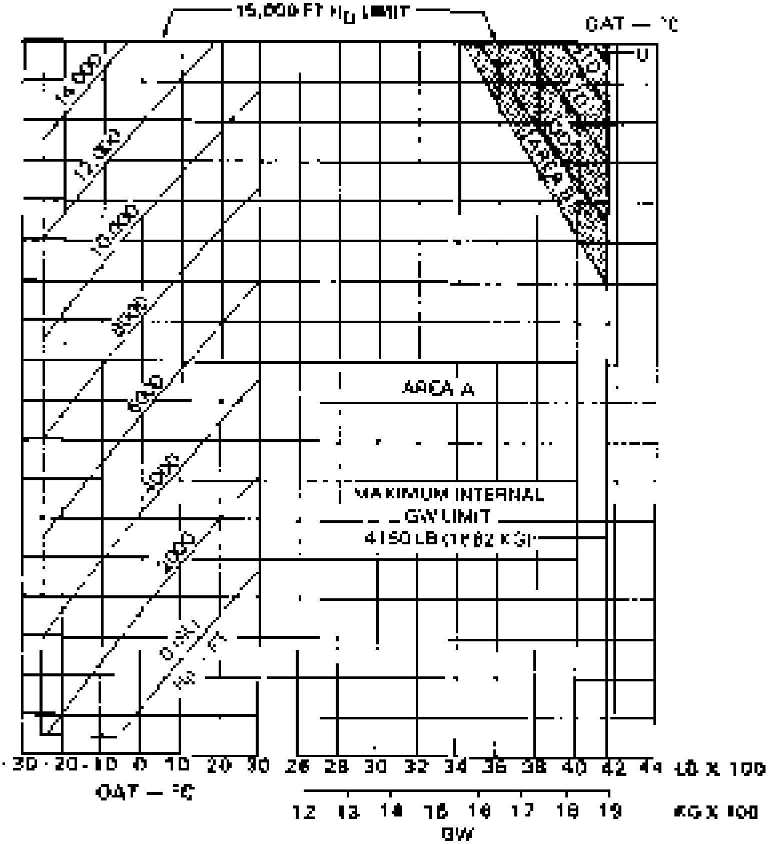


Figure 4-1. Hover ceiling (Sheet 15 of 28)

HOVER CEILING

IN GROUND EFFECT WITH PARTICLE SEPARATOR
WITH STANDARD SKID LANDING GEAR

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 2.5 FT (0.7 METER)
ANTI-ICE OFF
HEATER ON
PARTICLE SEPARATOR PURGE ON

4151 LB (1883 KG) AND ABOVE
WITH ANTI-ICE ON ABOVE 12,000 FT Hp, GW IS 150 LB (68 KG) LESS
(BELOW 12,000 FT, NO CORRECTION IS NECESSARY)

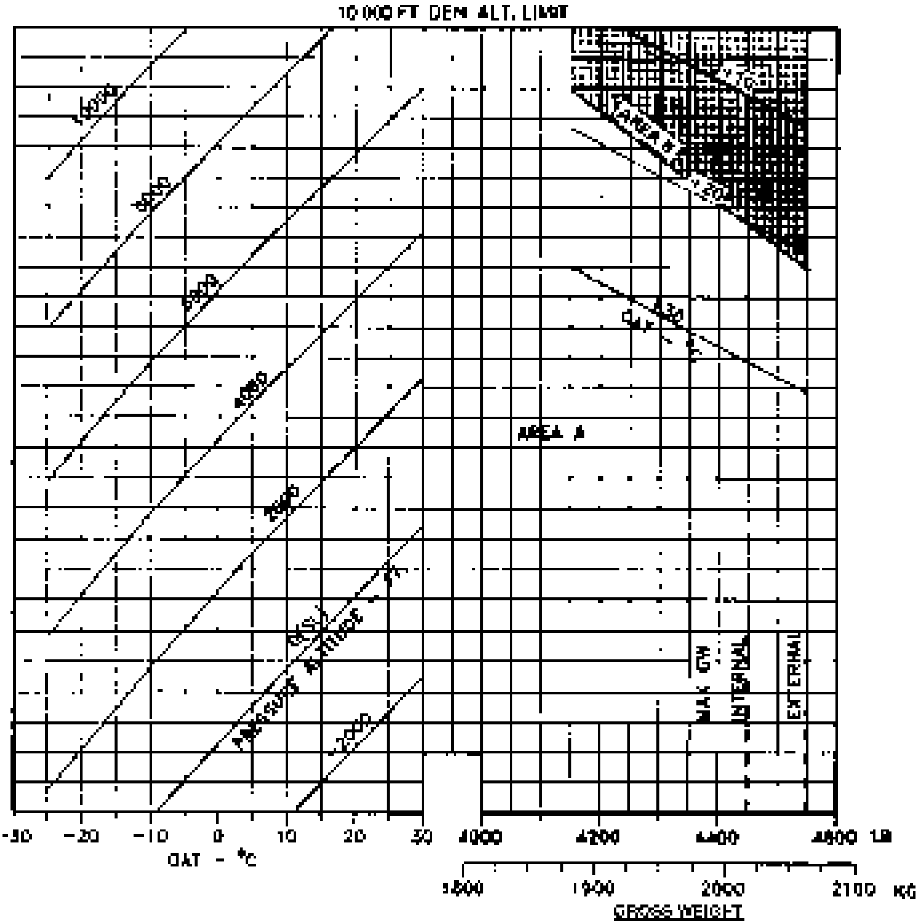


Figure 4-1. Hover ceiling (Sheet 16 of 28)

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

TAKEOFF POWER
POWER TURBINE 100% RPM
GENERATOR 17.5%

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

4150 LB (1882 KG) AND BELOW
WITH ENGINE ANTI-ICING ON ABOVE 12,000 FT Hp, GW IS 150 LB (68 KG) LESS
(BELOW 12,000 FT, NO CORRECTION IS NECESSARY)

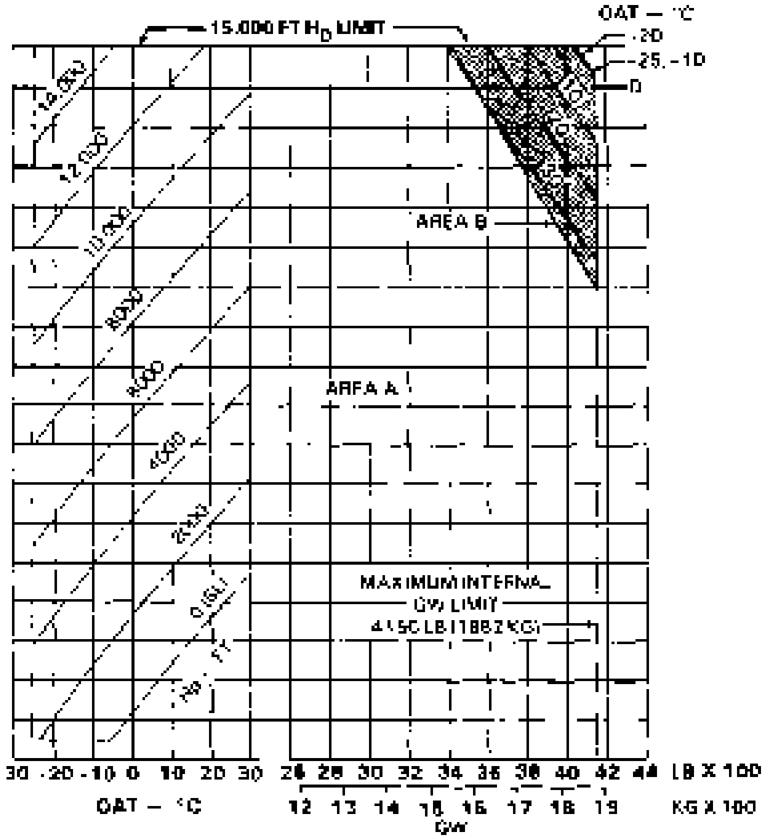


Figure 4-1. Hover ceiling (Sheet 17 of 28)

HOVER CEILING

IN GROUND EFFECT WITH PARTICLE SEPARATOR

WITH HIGH SKID OR EMERGENCY FLOTATION LANDING GEAR

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 2.5 FT (0.7 METER)
ANTI-ICE OFF
HEATER ON
PARTICLE SEPARATOR PURGE OFF

4151 LB (1883 KG) AND ABOVE
WITH ANTI-ICE ON ABOVE 12,000 FT Hp GW IS 150 LB (68 KG) LESS
(BELOW 12,000 FT NO CORRECTION IS NECESSARY)

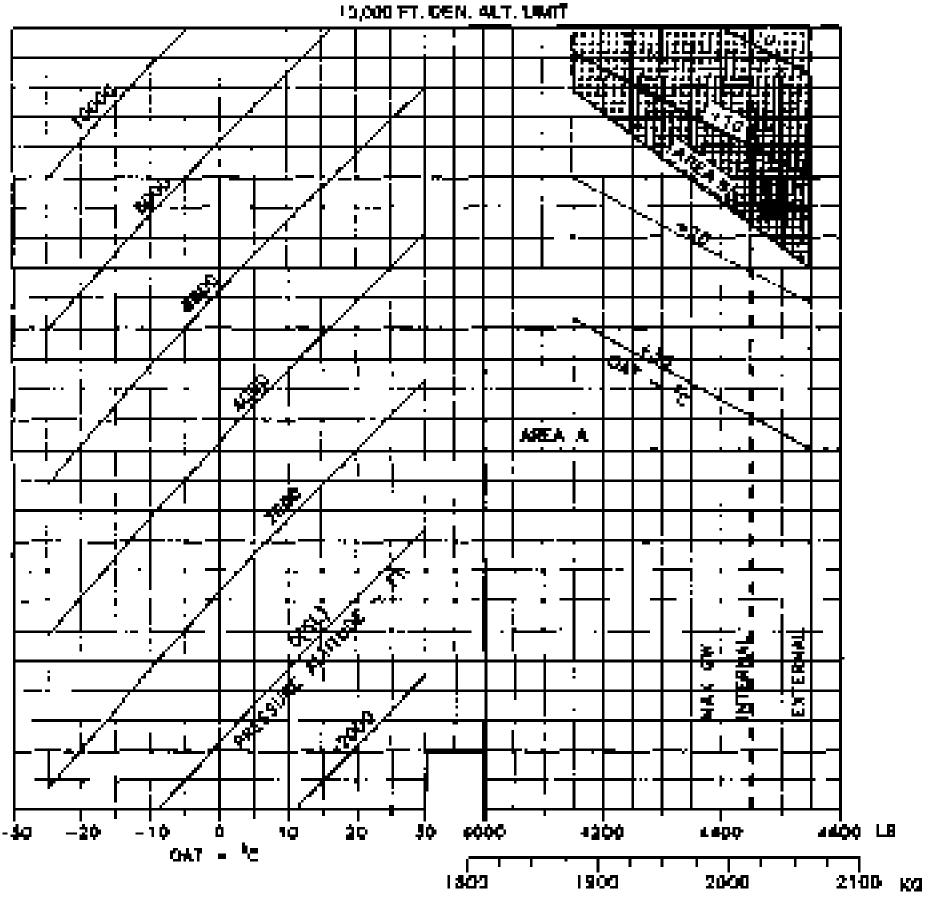


Figure 4-1. Hover ceiling (Sheet 18 of 28)

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

TAKEOFF POWER
POWER TURBINE 100% RPM
GENERATOR 17.5%

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

4150 LB (1882 KG) AND BELOW
WITH ENGINE ANTI-ICING ON ABOVE 10,000 FT Hp, GW IS 160 LB (73 KG) LESS
(BELOW 10,000 FT, NO CORRECTION IS NECESSARY)

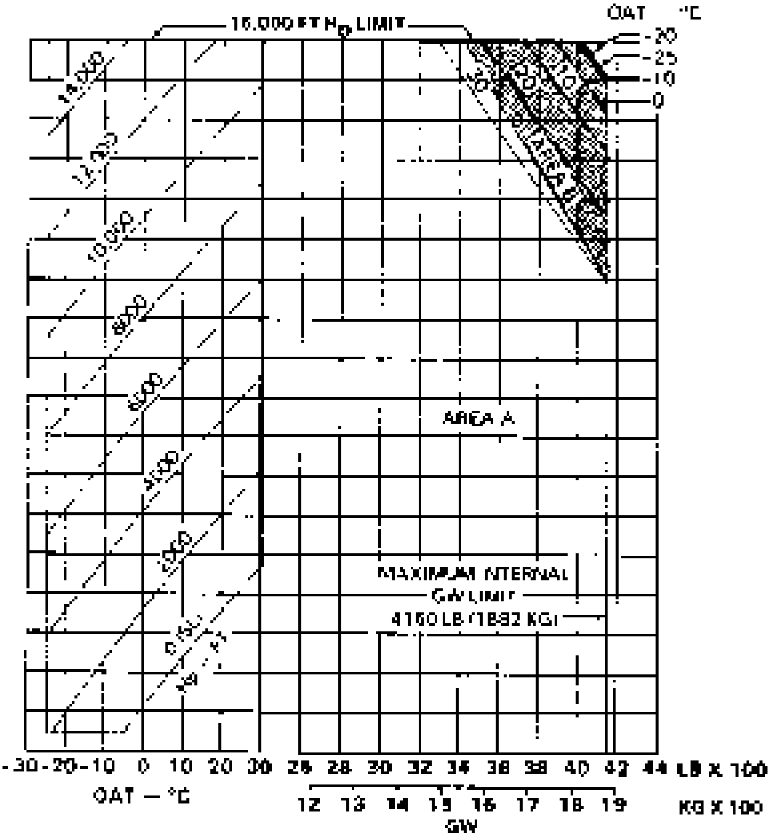


Figure 4-1. Hover ceiling (Sheet 19 of 28)

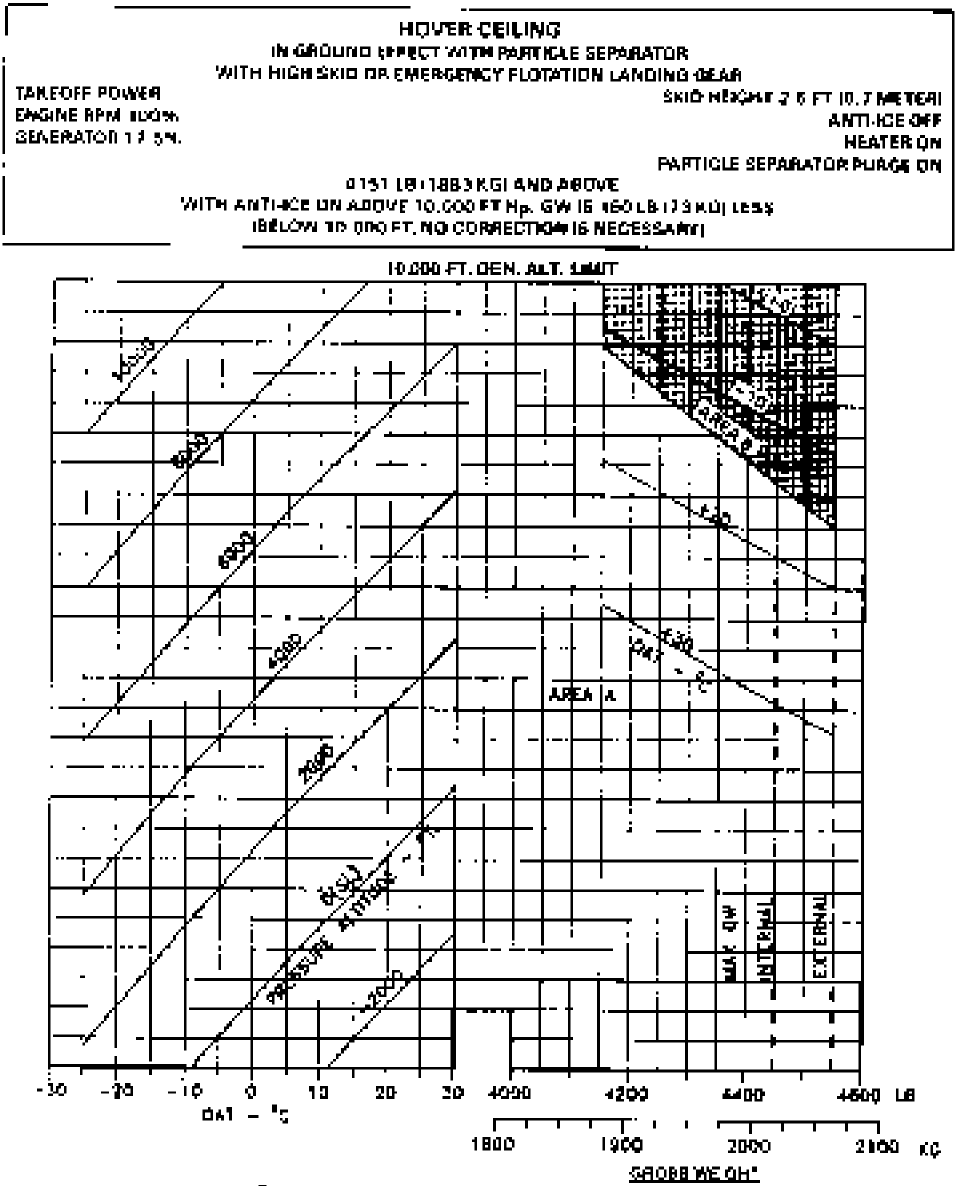


Figure 4-1. Hover ceiling (Sheet 20 of 28)

HOVER CEILING

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

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 7.5%

SKID HEIGHT 40 FT (12.2 METERS)
ANTI-ICE OFF
HEATER ON
PARTICLE SEPARATOR PURGE OFF

4150 LB (1882 KG) AND BELOW
WITH ANTI ICE ON ABOVE 10,000 FT H_P, GW IS 130 LB (59 KG) LESS
(BELOW 10,000 FT, NO CORRECTION IS NECESSARY)

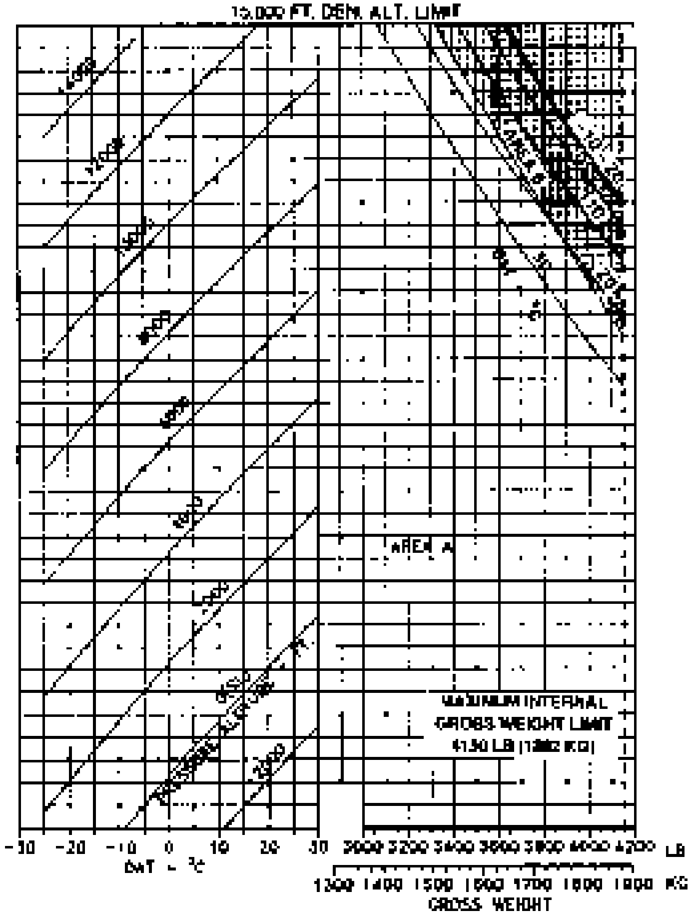


Figure 4-1. Hover ceiling (Sheet 21 of 28)

HOVER CEILING

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

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 40 FT (12.2 METERS)
ANTI-ICE OFF
HEATER ON
PARTICLE SEPARATOR PURGE OFF

4151 LB (1883 KG) AND ABOVE
WITH ANTI-ICE ON ABOVE 10,000 FT H_P, GW IS 130 LB (59 KG) LESS
(BELOW 10,000 FT, NO CORRECTION IS NECESSARY)

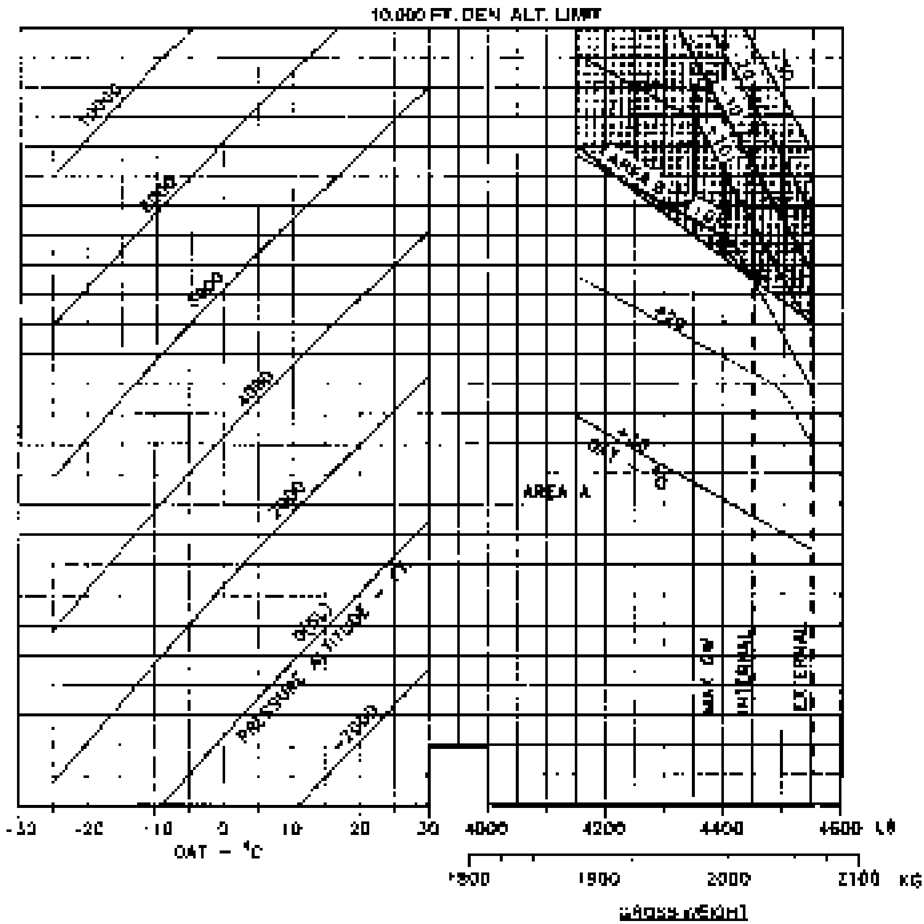


Figure 4-1. Hover ceiling (Sheet 22 of 28)

HOVER CEILING

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

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 40 FT (12.2 METERS)
ANTI-ICE OFF
HEATER ON
PARTICLE SEPARATOR PURGE ON

4150 LB (1882 KG) AND BELOW
WITH ANTI-ICE ON ABOVE 10,000 FT Hp, GW IS 130 LB (59 KG) LESS
(BELOW 10,000 FT, NO CORRECTION IS NECESSARY)

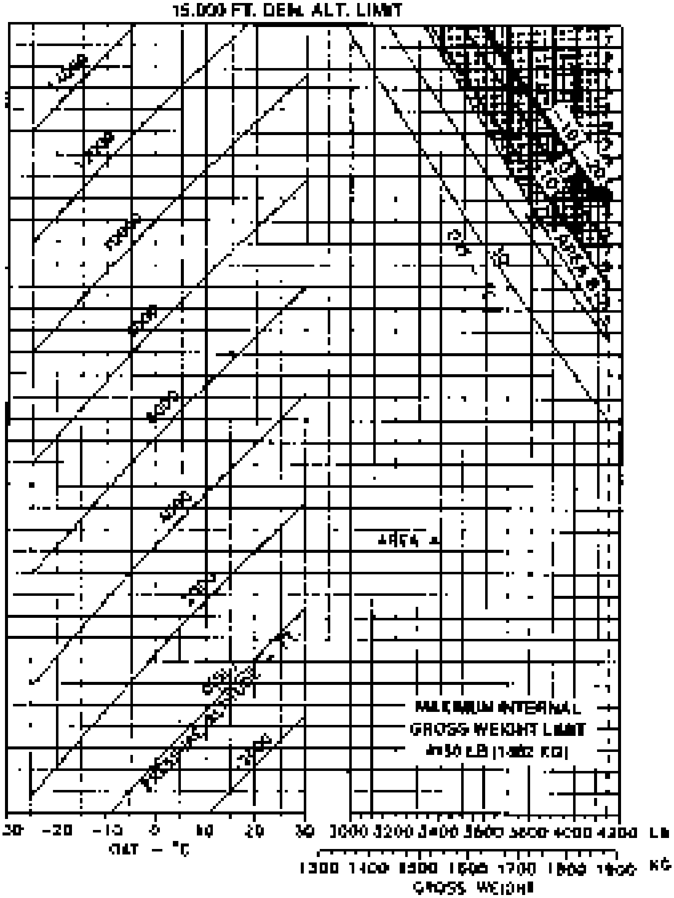


Figure 4-1. Hover ceiling (Sheet 23 of 28)

HOVER CEILING

OUT OF GROUND EFFECT WITH PARTICLE SEPARATOR

WITH ANY SKID OR FLOAT LANDING GEAR

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 40 FT (12.2 METERS)
ANTI-ICE OFF
HEATER ON
PARTICLE SEPARATOR PURGE ON

4151 LB (1883 KG) AND ABOVE
WITH ANTI-ICE ON ABOVE 10,000 FT Hp, GW IS 130 LB (59 KG) LESS
(BELOW 10,000 FT, NO CORRECTION IS NECESSARY)

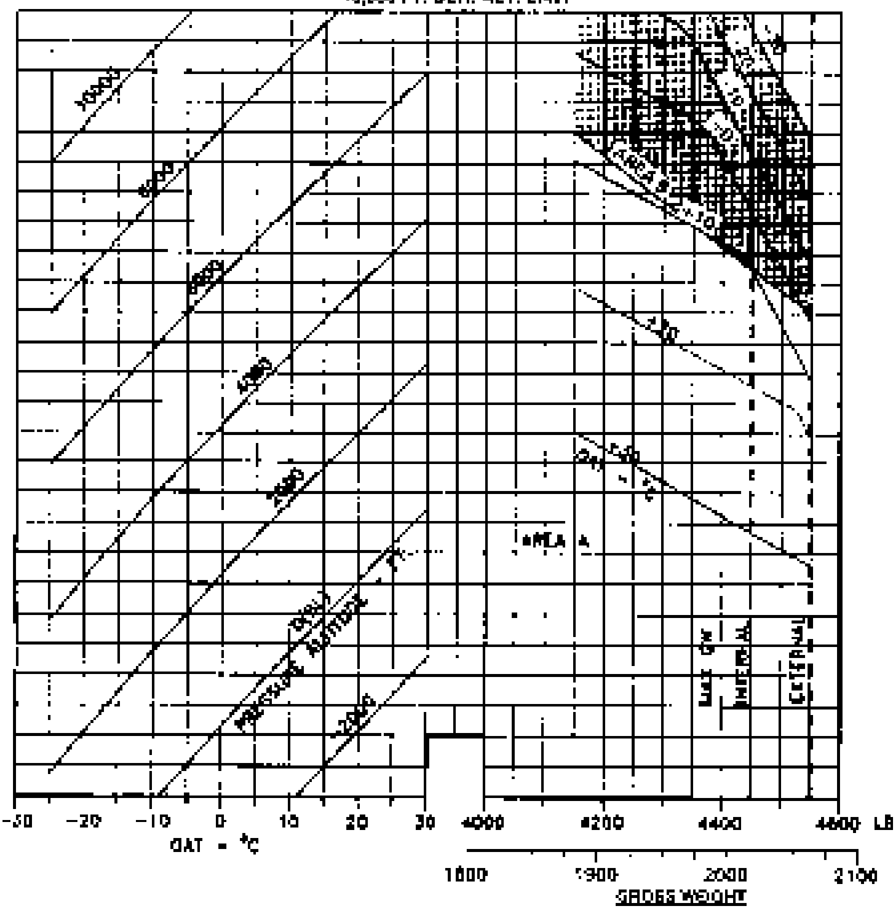


Figure 4-1. Hover ceiling (Sheet 24 of 28)

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

TAKEOFF POWER
POWER TURBINE 100% RPM
GENERATOR 17.5%

FLOAT HEIGHT 3.6 FT (1.1 METERS)
ENGINE ANTI-ICING OFF
HEATER ON

4150 LB (1882 KG) AND BELOW
WITH ENGINE ANTI-ICING ON ABOVE 12,000 FT Hp, GW IS 150 LB (68 KG) LESS
(BELOW 12,000 FT, NO CORRECTION IS NECESSARY)

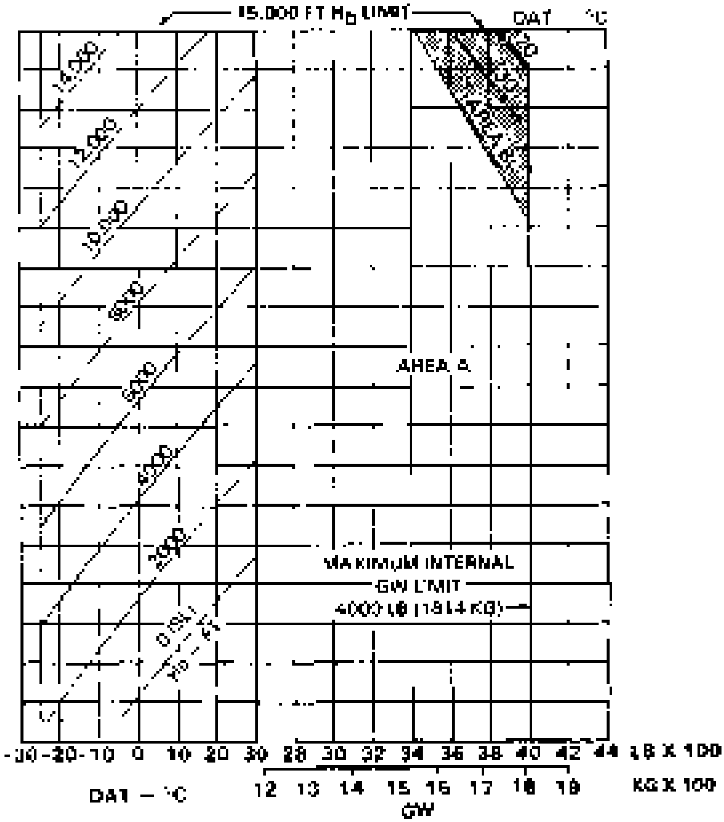


Figure 4-1. Hover ceiling (Sheet 25 of 28)

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

TAKEOFF POWER
POWER TURBINE 100% RPM
GENERATOR 17.5%

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

4150 LB (1882 KG) AND BELOW
WITH ENGINE ANTI-ICING ON ABOVE 12,000 FT Hp, GW IS 150 LB (68 KG) LESS
(BELOW 12,000 FT, NO CORRECTION IS NECESSARY)

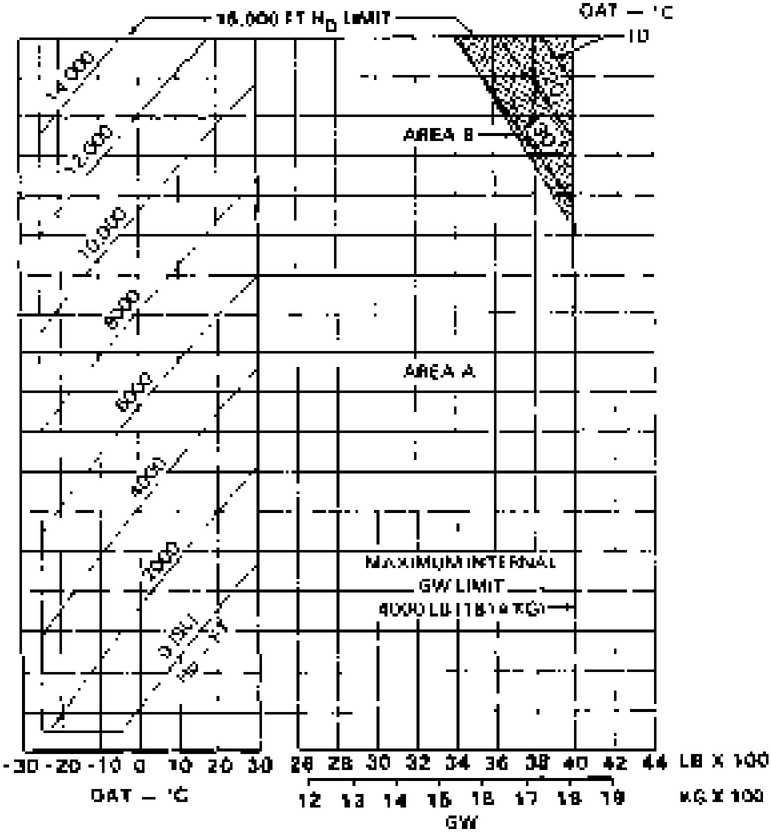


Figure 4-1. Hover ceiling (Sheet 26 of 28)

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

TAKEOFF POWER
POWER TURBINE 100% RPM
GENERATOR 17.5%

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

4150 LB (1882 KG) AND BELOW
WITH ENGINE ANTI-ICING ON ABOVE 12,000 FT Hp, GW IS 150 LB (68 KG) LESS
(BELOW 12,000 FT NO CORRECTION IS NECESSARY)

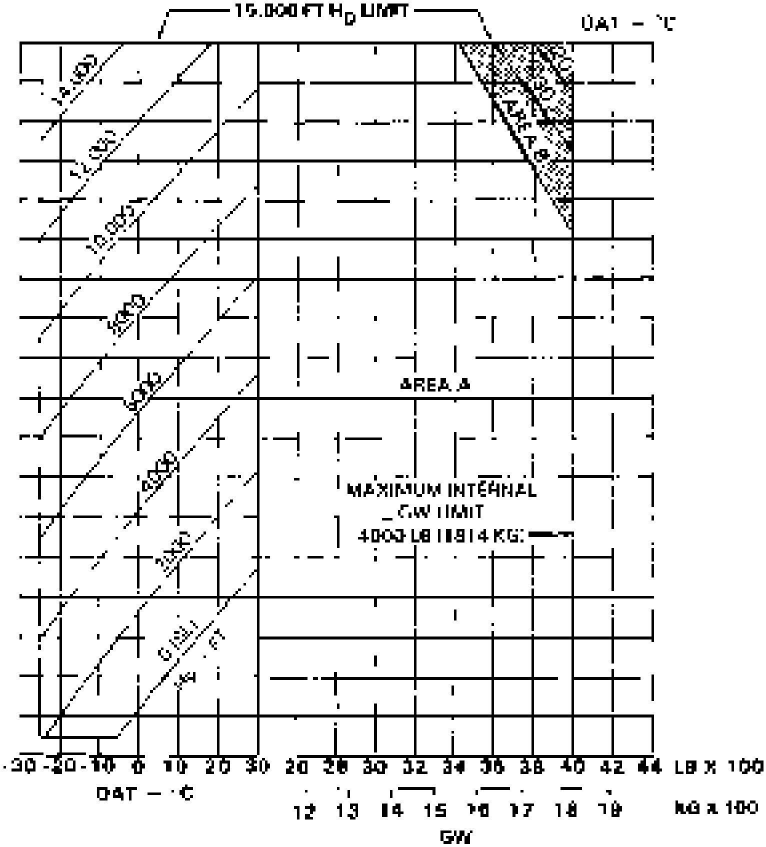


Figure 4-1. Hover ceiling (Sheet 27 of 28)

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

TAKEOFF POWER
POWER TURBINE 100% RPM
GENERATOR 17.5%

FLOAT HEIGHT 3.6 FT (1.1 METERS)
ENGINE ANTI-ICING OFF
HEATER ON
PARTICLE SEPARATOR PURGE ON

4150 LB (1882 KG) AND BELOW
WITH ENGINE ANTI-ICING ON ABOVE 12,000 FT Hp, GW IS 150 LB (68 KG) LESS
(BELOW 12,000 FT, NO CORRECTION IS NECESSARY)

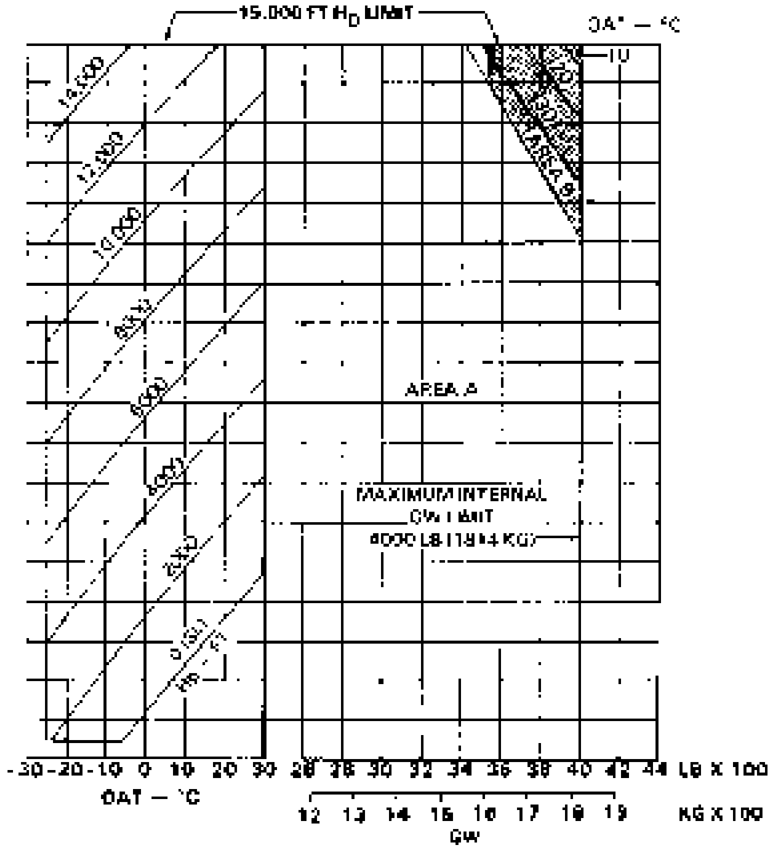


Figure 4-1. Hover ceiling (Sheet 28 of 39)

RATE OF CLIMB DECREASE

DUE TO BLEED AIR HEATER OPERATION

WITH ANY INLET
WITH ANY SKID OR FLOAT LANDING GEAR

POWER — SEE BELOW
ENGINE RPM 100%
GENERATOR 17.5%

57 KIAS
ANTI-ICE OFF OR ON
HEATER ON

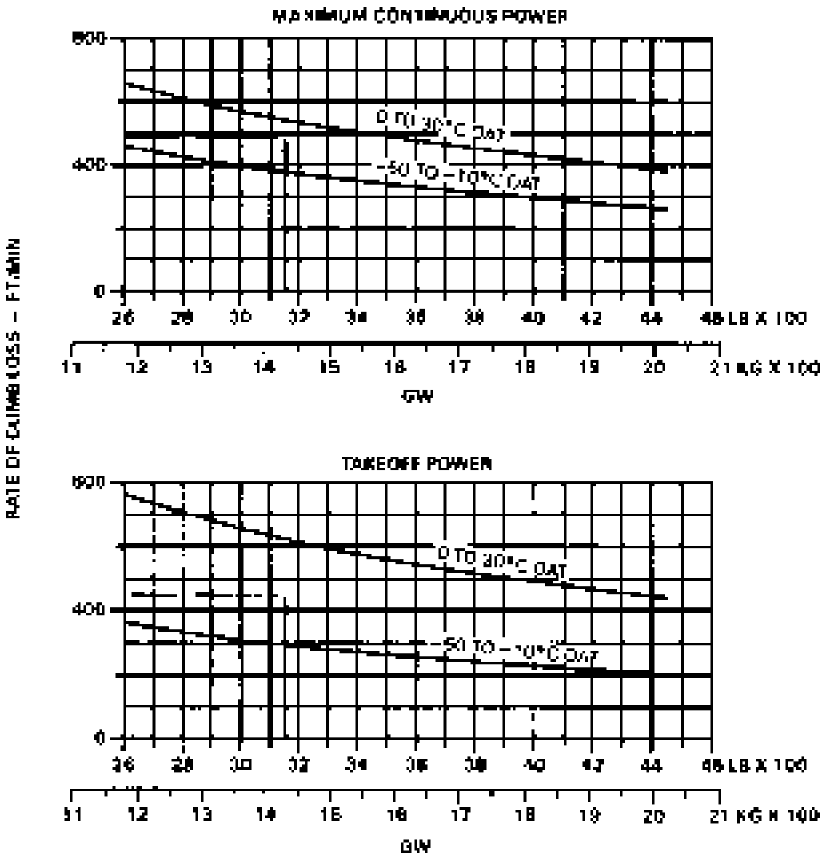
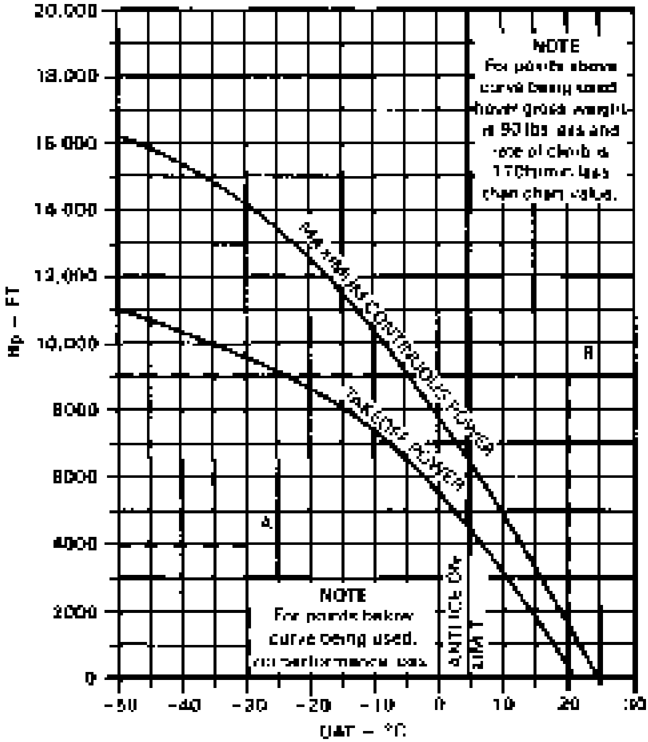


Figure 4-2. Rate of climb decrease

PERFORMANCE VARIATION WITH SNOW DEFLECTOR
AND PARTICLE SEPARATOR INSTALLED
ANTI ICE ON OR OFF
HEATER ON
NO PURGE SWITCH INSTALLED OR PURGE SWITCH ON



206L4-FMS-4-3

Figure 4-3. Performance variation chart

MODEL 206L4 Bell LongRanger-IV

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT

PARTICLE SEPARATOR

206-706-212

CERTIFIED
OCTOBER 16, 1992

This supplement shall be attached to Model 206L-4 Flight Manual when Particle Separator 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:

James E. Arnold

MANAGER

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

GENERAL INFORMATION

Particle separator kit (206-706-212) consists of particle separator, bleed air tubing and hose, electrical cable, and required hardware for installation. Installation of this kit adds approximately 13.5 pounds (6.1 kilograms) to empty weight of helicopter.

This kit is equipped with a PARTICLE SEP PRG (purge) switch located on miscellaneous control panel. With this switch OFF, engine bleed air is not used to purge debris from 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.

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

Snow deflector kit (BHT-206L4-FMS-7) shall be installed in conjunction with particle separator kit when conducting flight operations in falling and/or blowing snow and following limits apply:

Hover flight in falling and/or blowing snow is limited to 20 minute duration after which helicopter must be landed and checked for snow and/or ice accumulation.

Flight operations are prohibited when visibility in falling or blowing snow is less than ½ statute mile.

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

1-2. OPTIONAL EQUIPMENT

For operations with particle separator installed in conjunction with 206-706-206 snow deflector, refer to LIMITATIONS section and PERFORMANCE section of snow deflector supplement (BHT-206L4-FMS-7).

1-3. 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.

1-4. PLACARDS AND DECALS

See below.

WITH PARTICLE SEPARATOR INSTALLED FLIGHT

INTO FALLING OR BLOWING SNOW IS

PROHIBITED EXCEPT WHEN SNOW DEFLECTOR

KIT 206-706-206 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 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.

Section 3

EMERGENCY AND MALFUNCTION PROCEDURES

No change from basic manual.

Section 4

PERFORMANCE

4-1. PERFORMANCE DATA

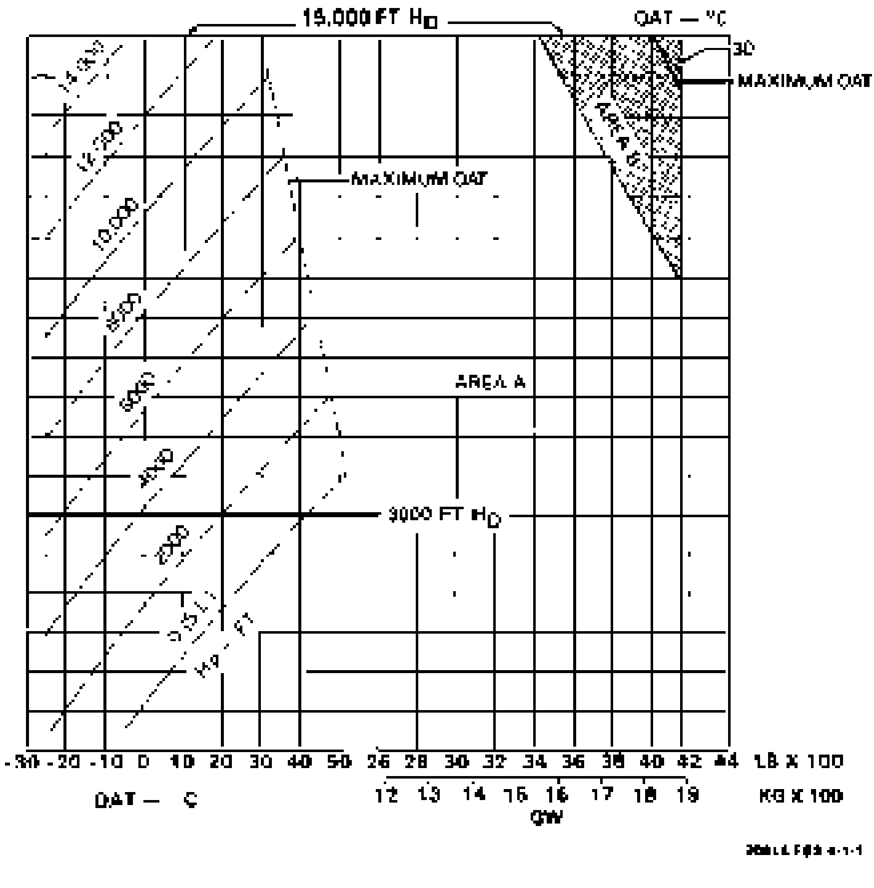
Helicopter performance is reduced with particle separator installed. This reduction increases with use of particle separator purge and is primarily result of bleed air being taken from engine. Determine minimum torque available from Power assurance check chart in BHT-206L4-FM-1. From torque derived from this chart, subtract a constant 5% TORQUE when operating with PARTICLE SEP PRG (purge) switch ON.

- EXAMPLE:

Minimum TORQUE available (as read from Power assurance check chart)	76%
Subtract 5% 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 ENGINE RPM 100% GENERATOR 17.5%	SKID HEIGHT 2.5 FT (0.7 METER) ANTI-ICE OFF OR ON PARTICLE SEPARATOR PURGE OFF
4150 LB (1882 KG) AND BELOW	



206LL FGS 4-1-1

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

HOVER CEILING
IN GROUND EFFECT
WITH STANDARD SKID LANDING GEAR

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 2.5 FT (0.7 METER)
ANTI-ICE OFF OR ON
PARTICLE SEPARATOR PURGE OFF

4151 LB (1883 KG) AND ABOVE

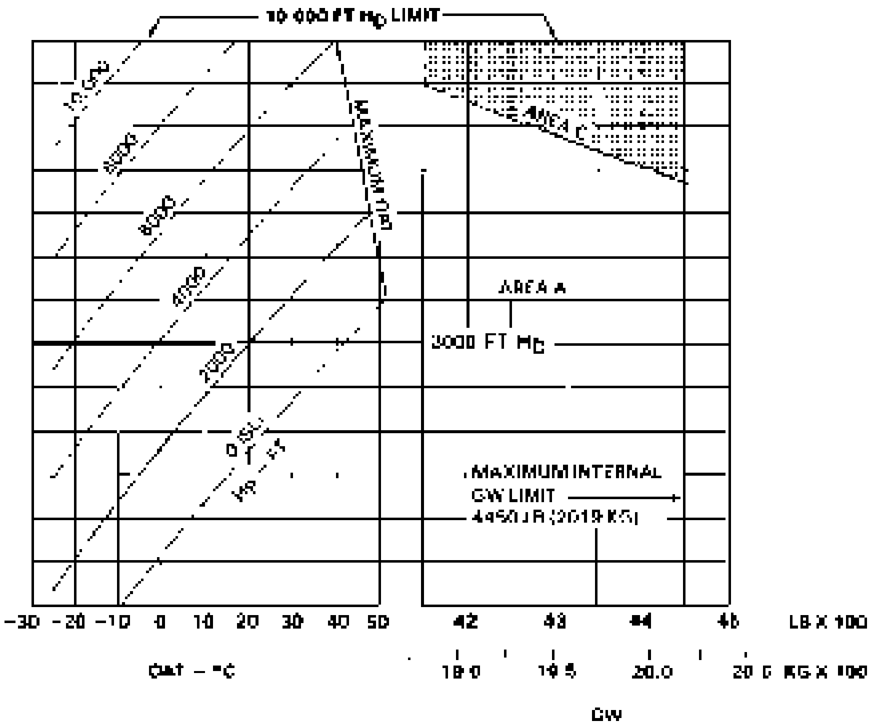


Figure 4-1. Hover ceiling - In ground effect (Sheet 2 of 8)

HOVER CEILING
IN GROUND EFFECT

WITH STANDARD SKID LANDING GEAR

TAKEOFF POWER	SKID HEIGHT 2.5 FT (0.7 METER)
ENGINE RPM 100%	ANTI-ICE OFF OR ON
GENERATOR 17.5%	PARTICLE SEPARATOR PURGE ON

4150 LB (1882 KG) AND BELOW

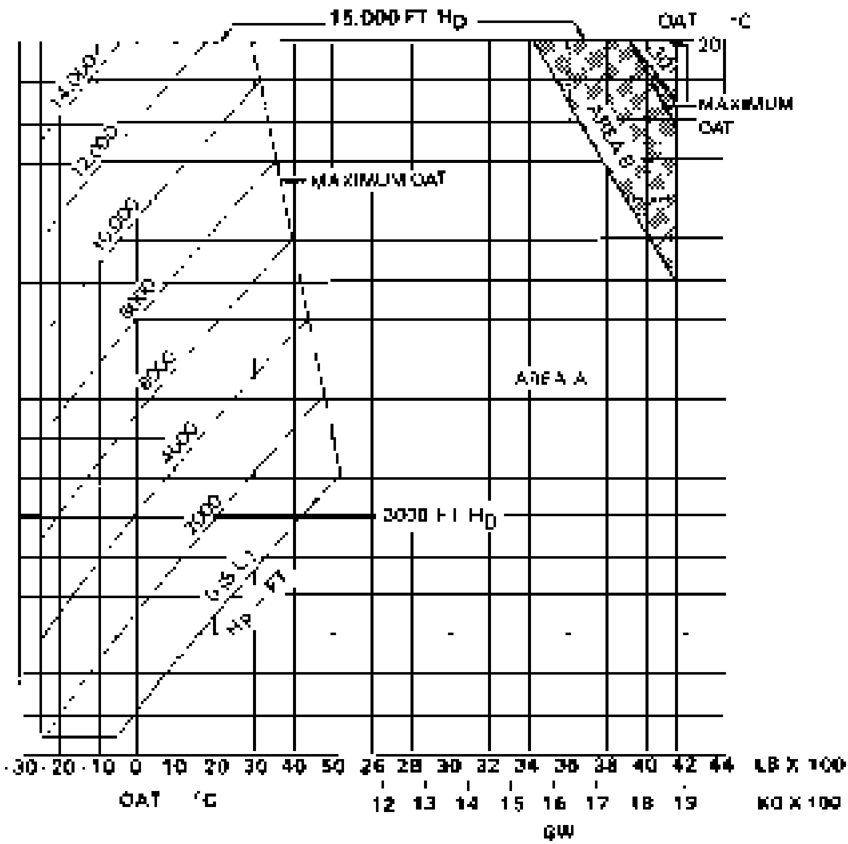


Figure 4-1. Hover ceiling - In ground effect (Sheet 3 of 8)

HOVER CEILING
IN GROUND EFFECT
WITH STANDARD SKID LANDING GEAR

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 2.5 FT (0.7 METER)
ANTI-ICE OFF OR ON
PARTICLE SEPARATOR PURGE ON

4151 LB (1883 KG) AND ABOVE

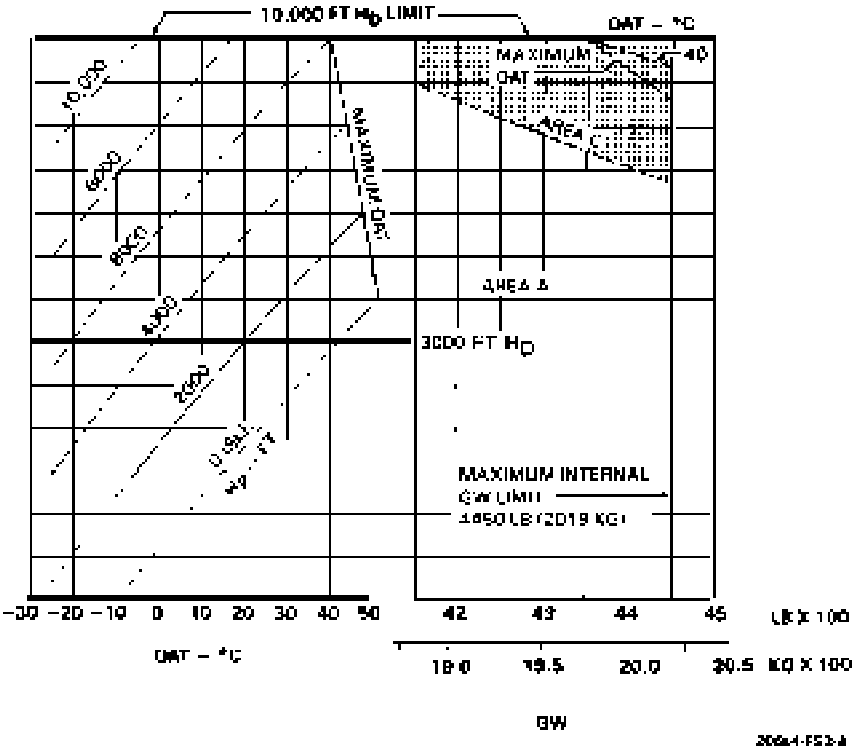


Figure 4-1. Hover ceiling - in ground effect (Sheet 4 of 8)

HOVER CEILING
IN GROUND EFFECT

WITH HIGH SKID OR EMERGENCY FLOTATION LANDING GEAR

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 2.5 FT (0.7 METER)
ANTI-ICE OFF
PARTICLE SEPARATOR PURGE OFF

4150 LB (1882 KG) AND BELOW

WITH ANTI-ICE ON ABOVE 12,000 FT Hp, GW IS 100 LB (45 KG) LESS
(BELOW 12,000 FT, NO CORRECTION IS NECESSARY)

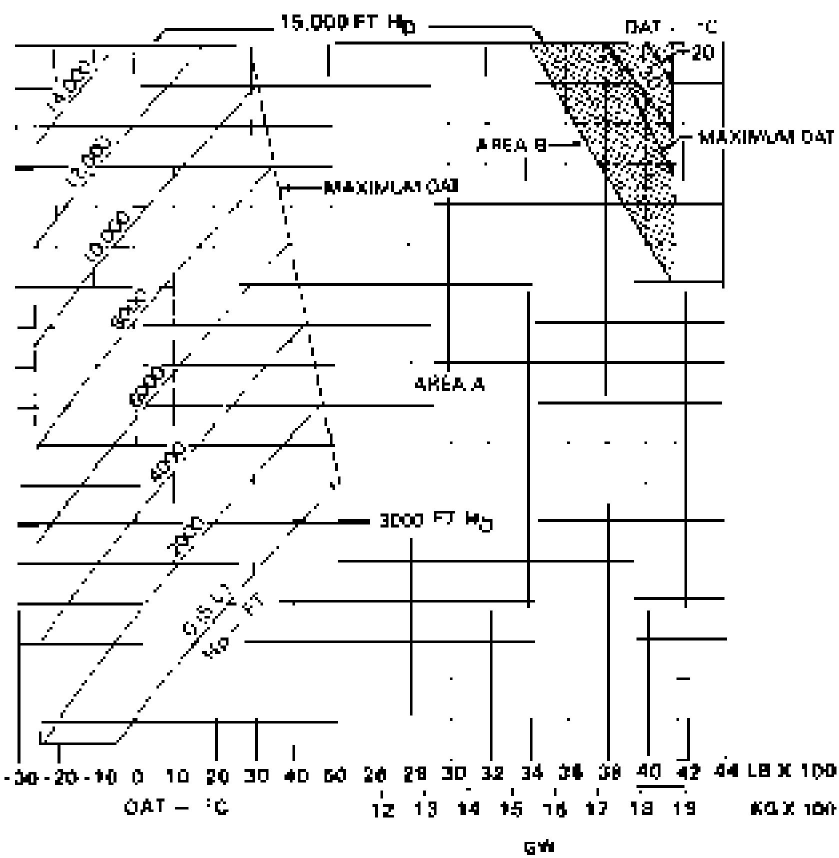


Figure 4-1. Hover ceiling - in ground effect (Sheet 5 of 8)

HOVER CEILING
IN GROUND EFFECT

WITH HIGH SKID OR EMERGENCY FLOTATION LANDING GEAR

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 2.5 FT (0.7 METER)
ANTI-ICE OFF OR ON
PARTICLE SEPARATOR PURGE OFF

4151 LB (1883 KG) AND ABOVE

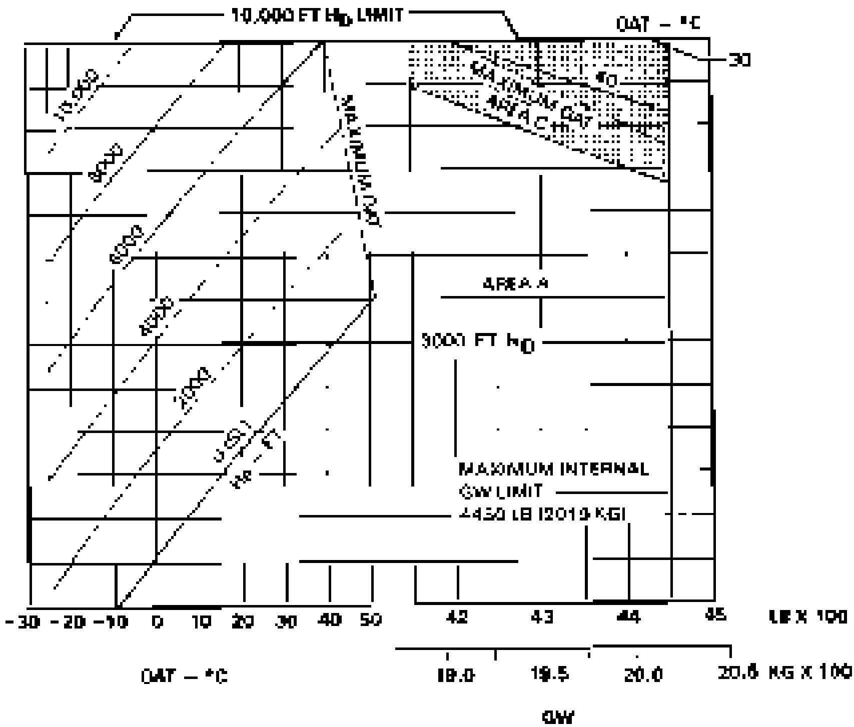


Figure 4-1. Hover ceiling - in ground effect (Sheet 5 of 8)

HOVER CEILING
IN GROUND EFFECT

WITH HIGH SKID OR EMERGENCY FLOTATION LANDING GEAR

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.6%

SKID HEIGHT 2.5 FT (0.7 METER)
ANTI-ICE OFF
PARTICLE SEPARATOR PURGE ON

4150 LB (1882 KG) AND BELOW

WITH ANTI-ICE ON ABOVE 12,000 FT H_P, GW IS 150 LB (68 KG) LESS
(BELOW 12,000 FT, NO CORRECTION IS NECESSARY)

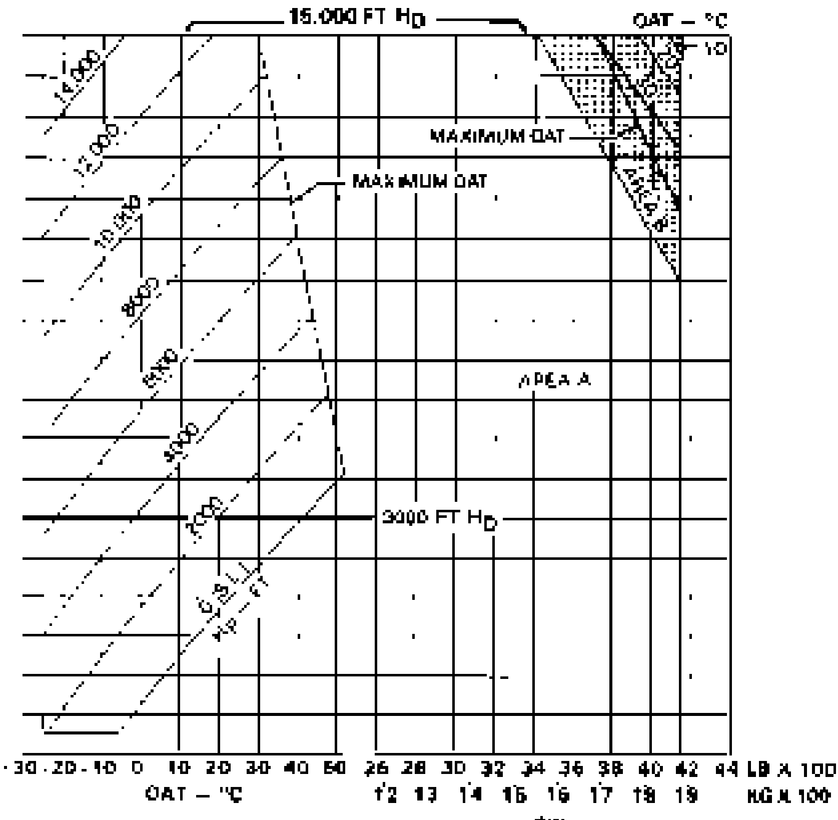


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Figure 4-1. Hover ceiling in ground effect (Sheet 7 of 8)

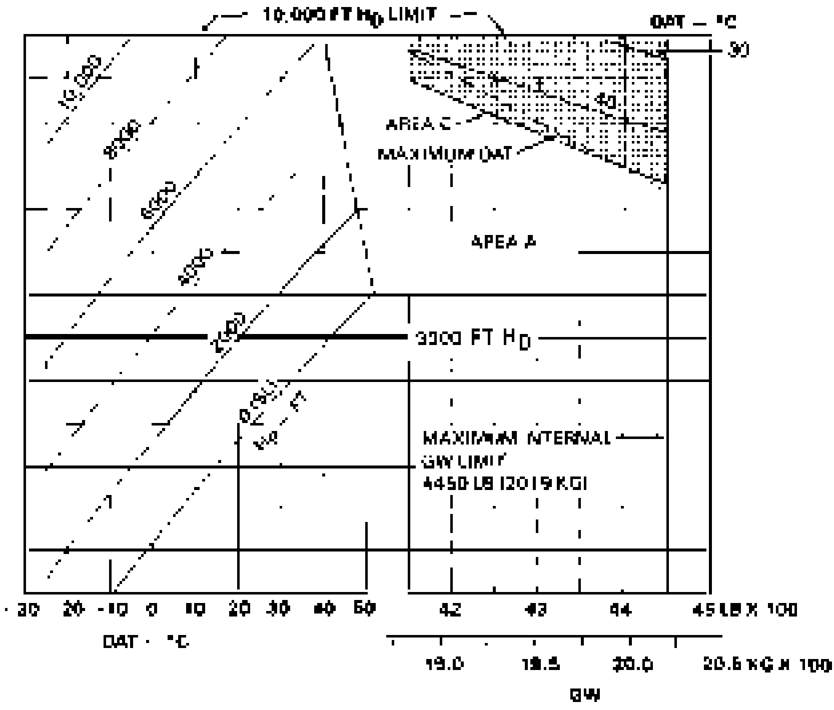
HOVER CEILING
IN GROUND EFFECT

WITH HIGH SKID OR EMERGENCY FLOTATION LANDING GEAR

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 2.6 FT (0.7 METER)
ANTI-ICE OFF OR ON
PARTICLE SEPARATOR PURGE ON

4151 LB (1883 KG) AND ABOVE



206L4-FS3-4-1-8

Figure 4-1. Hover ceiling – In ground effect (Sheet 8 of 8)

HOVER CEILING
OUT OF GROUND EFFECT

WITH ANY SKID OR FLOAT LANDING GEAR

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 40 FT (12.2 METERS)
ANTI ICE OFF
PARTICLE SEPARATOR PURGE OFF

4150 LB (1882 KG) AND BELOW

WITH ANTI ICE ON ABOVE 12,000 FT H_P GW IS 130 LB (59 KG) LESS
(BELOW 12,000 FT, NO CORRECTION IS NECESSARY)

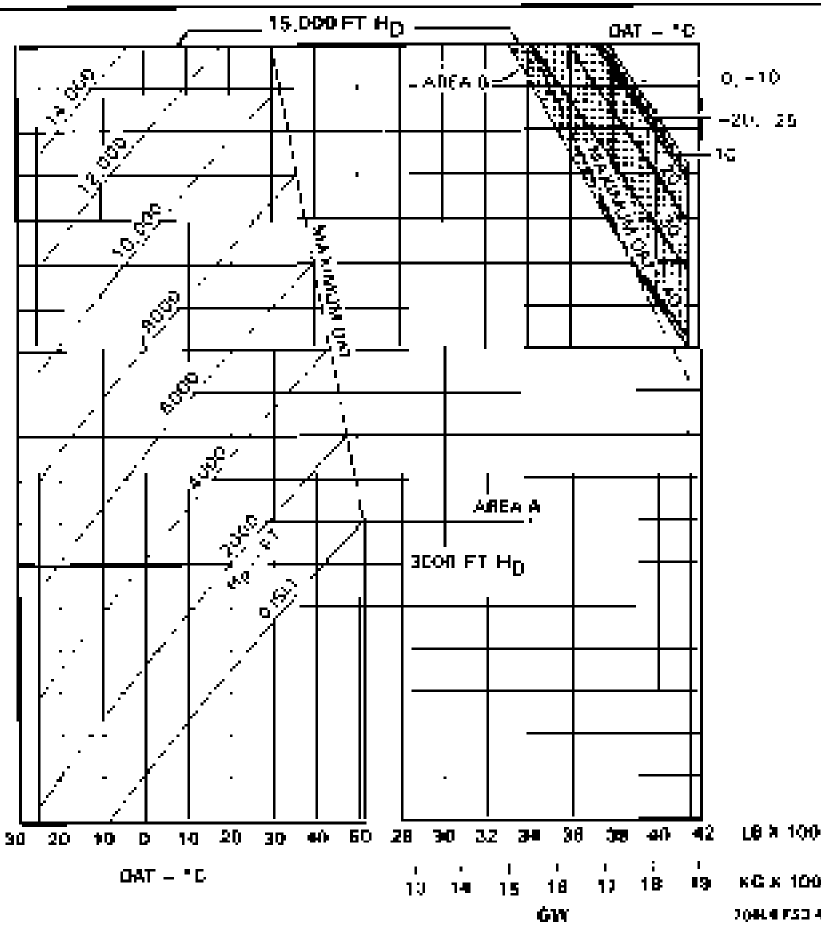


Figure 4-2. Hover ceiling – out of ground effect (Sheet 1 of 4)

HOVER CEILING
OUT OF GROUND EFFECT

WITH ANY SKID OR FLOAT LANDING GEAR

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 40 FT (12.2 METERS)
ANTI ICE OFF OR ON
PARTICLE SEPARATOR PURGE OFF

4151 LB (1883 KG) AND ABOVE

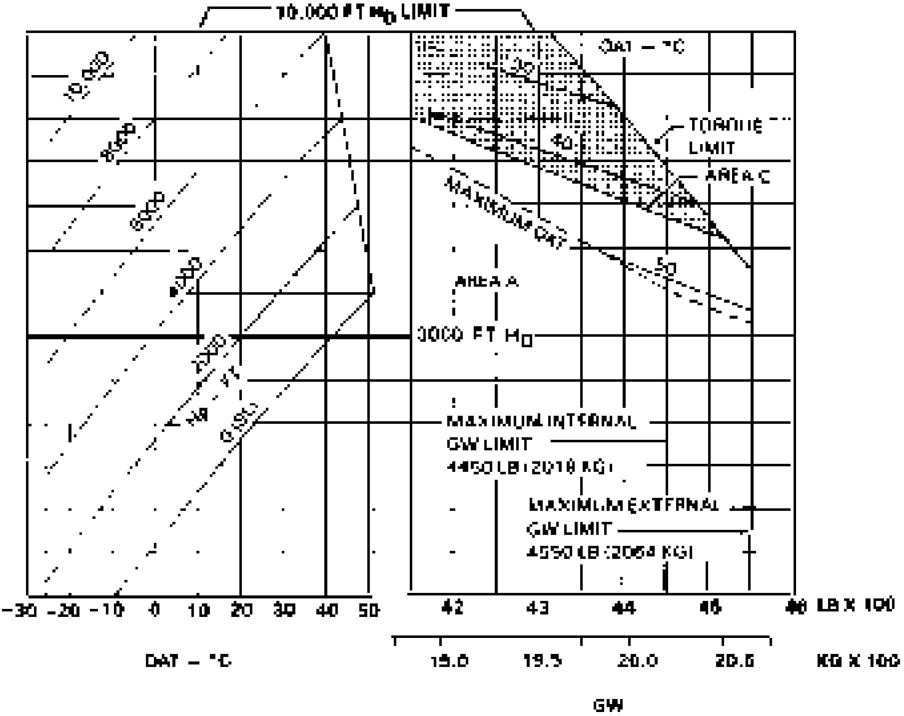


Figure 4-2. Hover ceiling – out of ground effect (Sheet 2 of 4)

HOVER CEILING
OUT OF GROUND EFFECT

WITH ANY SKID OR FLOAT LANDING GEAR

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 40 FT (12.2 METERS)
ANTI-ICE OFF
PARTICLE SEPARATOR PURGE ON

4150 LB (1882 KG) AND BELOW

WITH ANTI-ICE ON ABOVE 10,000 FT Hp, GW IS 130 LB (59 KG) LESS
(BELOW 10,000 FT, NO CORRECTION IS NECESSARY)

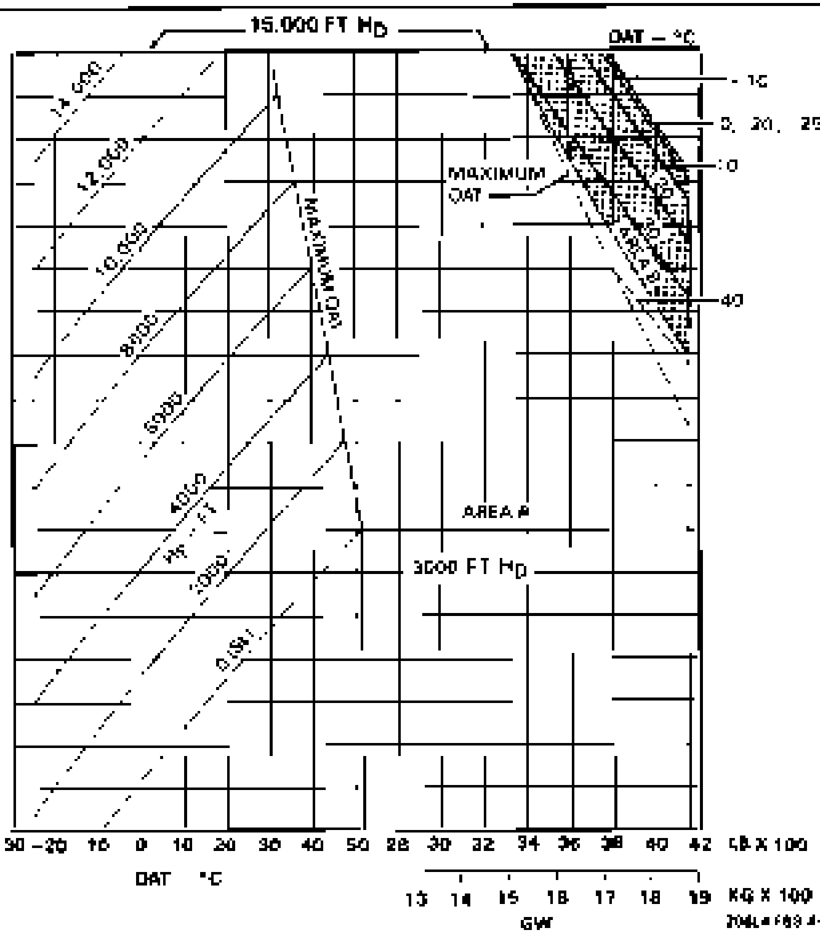


Figure 4-2. Hover ceiling – out of ground effect (Sheet 3 of 4)

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

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 40 FT (12.2 METERS)
ANTI-ICE OFF OR ON
PARTICLE SEPARATOR PURGE ON

4161 LB (1888 KG) AND ABOVE

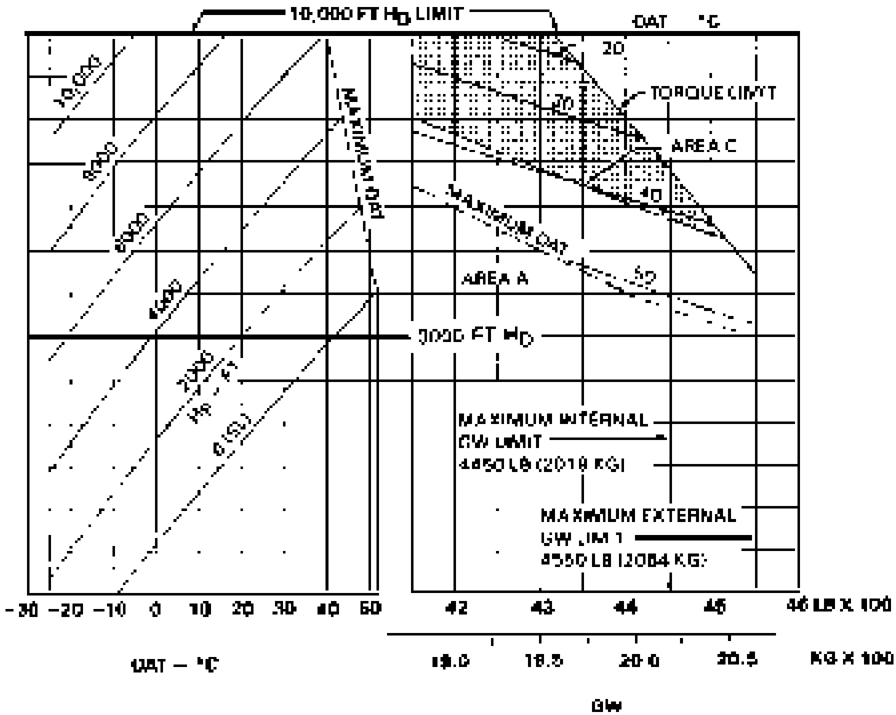


Figure 4-2. Hover ceiling – out of ground effect (Sheet 4 of 4)

RATE OF CLIMB

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

57 KIAS
ANTI-ICE OFF
PARTICLE SEPARATOR PURGE OFF

4150 LB AND BELOW

WITH ANTI-ICE ON ABOVE 8000 FT H_p, RATE OF CLIMB IS 220 FT/MIN LESS
(BELOW 8000 FT, NO CORRECTION IS NECESSARY)

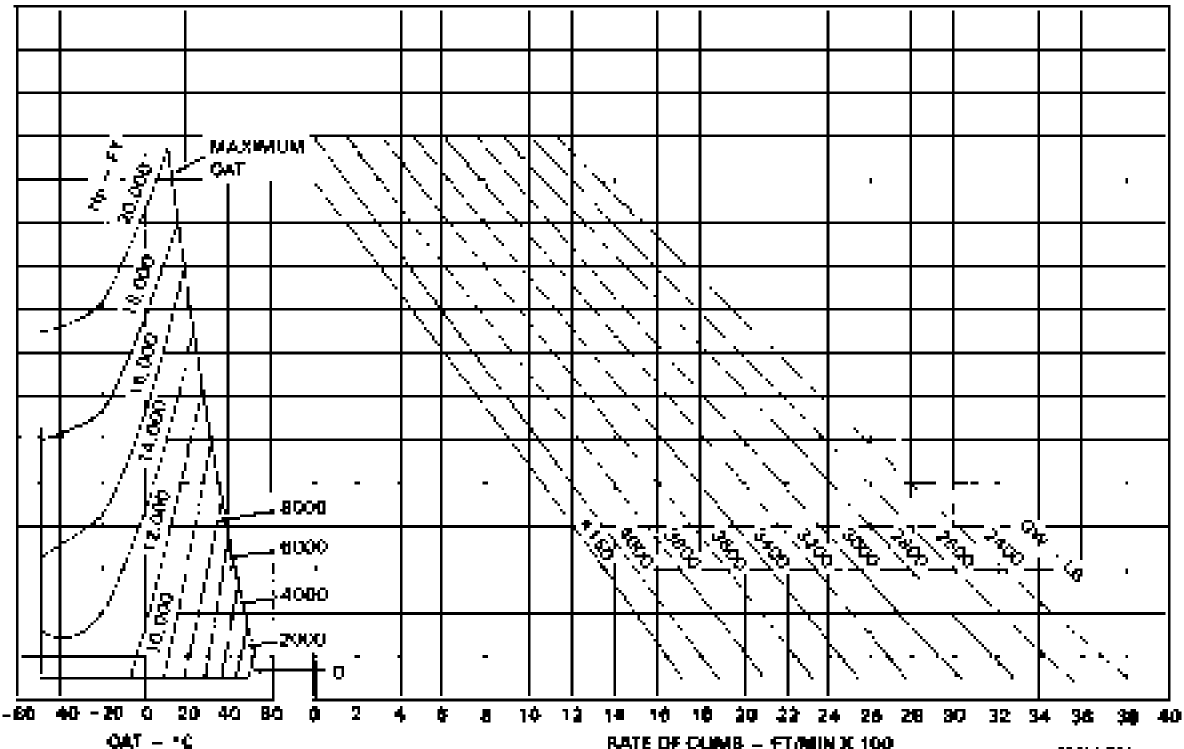


Figure 4-3. Rate of climb – takeoff power (Sheet 1 of 5)

RATE OF CLIMB

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

67 KIAS
ANTI-ICE OFF
PARTICLE SEPARATOR PURGE OFF

1882 KG AND BELOW

WITH ANTI-ICE ON ABOVE 8000 FT Hp, RATE OF CLIMB IS 220 FT/MIN LESS
(BELOW 8000 FT NO CORRECTION IS NECESSARY)

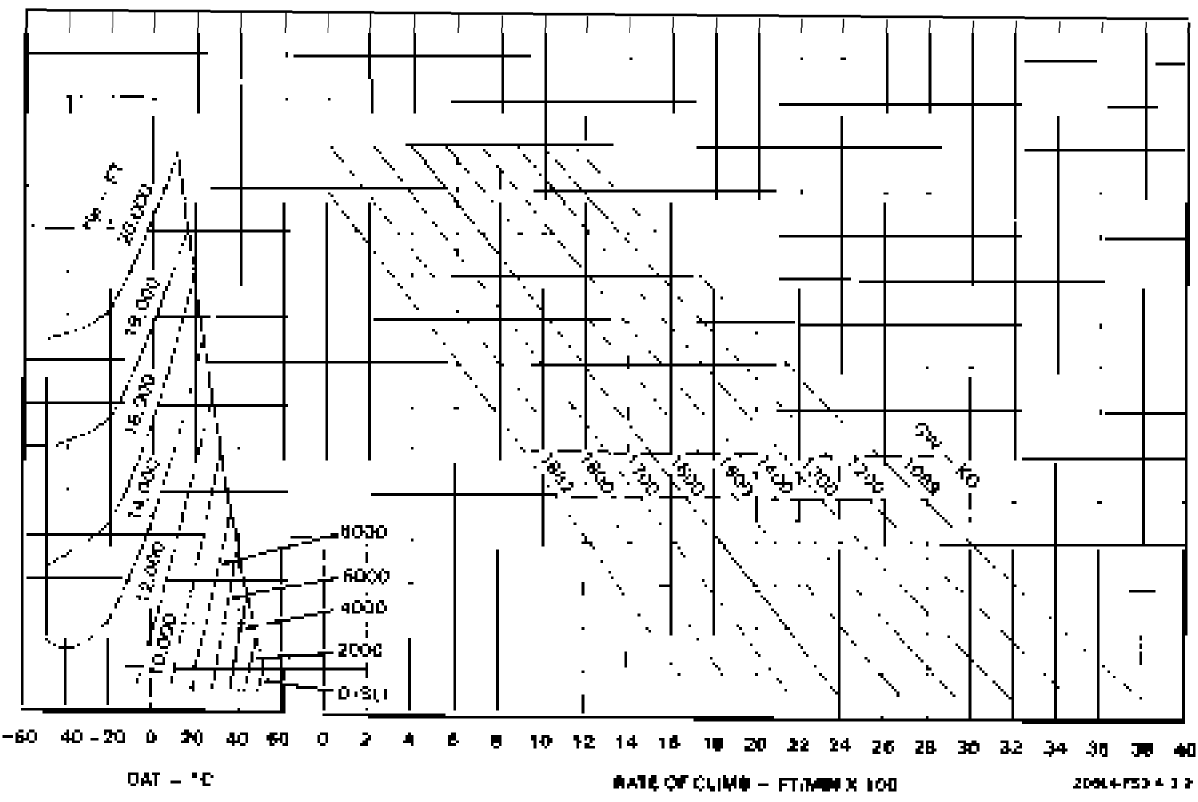


Figure 4-3. Rate of climb - takeoff power (Sheet 2 of 6)

RATE OF CLIMB

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

57 KIAS
ANTI-ICE OFF
PARTICLE SEPARATOR PURGE OFF

4161 LB TO 4450 LB
1887 KG TO 2019 KG

WITH ANTI-ICE ON ABOVE 14,000 FT H_P, RATE OF CLIMB IS 100 FT/MIN LESS.
(BELOW 14,000 FT, NO CORRECTION IS NECESSARY)

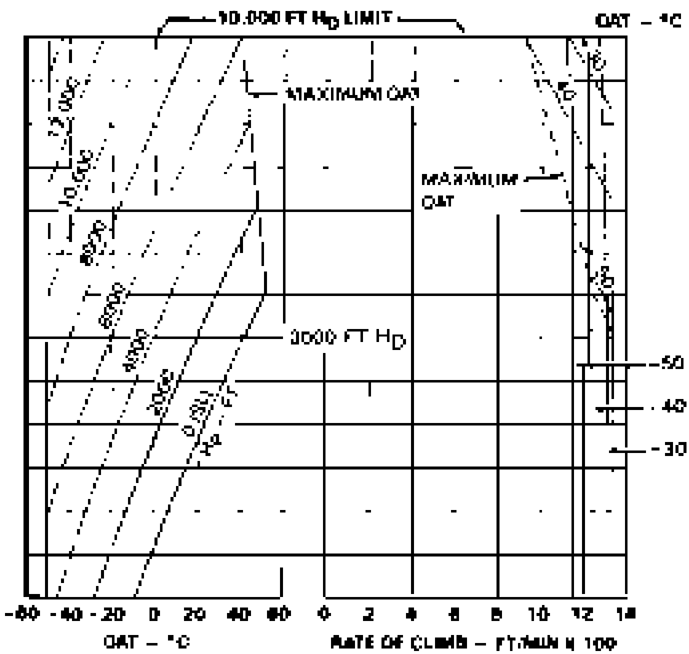


Figure 4-3. Rate of climb — takeoff power (Sheet 3 of 6)

RATE OF CLIMB

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

52 KIAS
ANTI-ICE OFF
PARTICLE SEPARATOR PURGE ON

4150 LB AND BELOW

WITH ANTI-ICE ON ABOVE 8000 FT Hp, RATE OF CLIMB IS 220 FT/MIN LESS
(BELOW 8000 FT, NO CORRECTION IS NECESSARY)

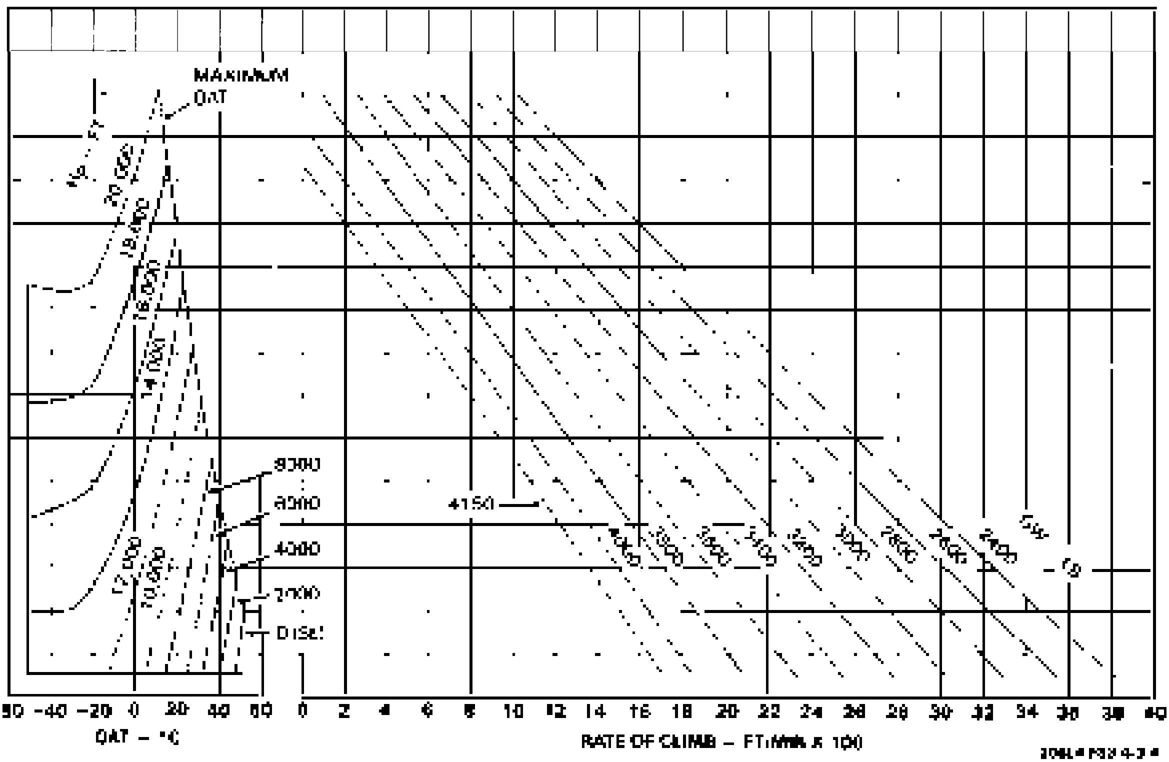


Figure 4-3. Rate of climb – takeoff power (Sheet 4 of 8)

RATE OF CLIMB

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

57 KIAS
ANTI ICE OFF
PARTICLE SEPARATOR PURGE ON

1882 KG AND BELOW

WITH ANTI-ICE ON ABOVE 8000 FT Hp, RATE OF CLIMB IS 220 FT/MIN LESS
(BELOW 8000 FT, NO CORRECTION IS NECESSARY)

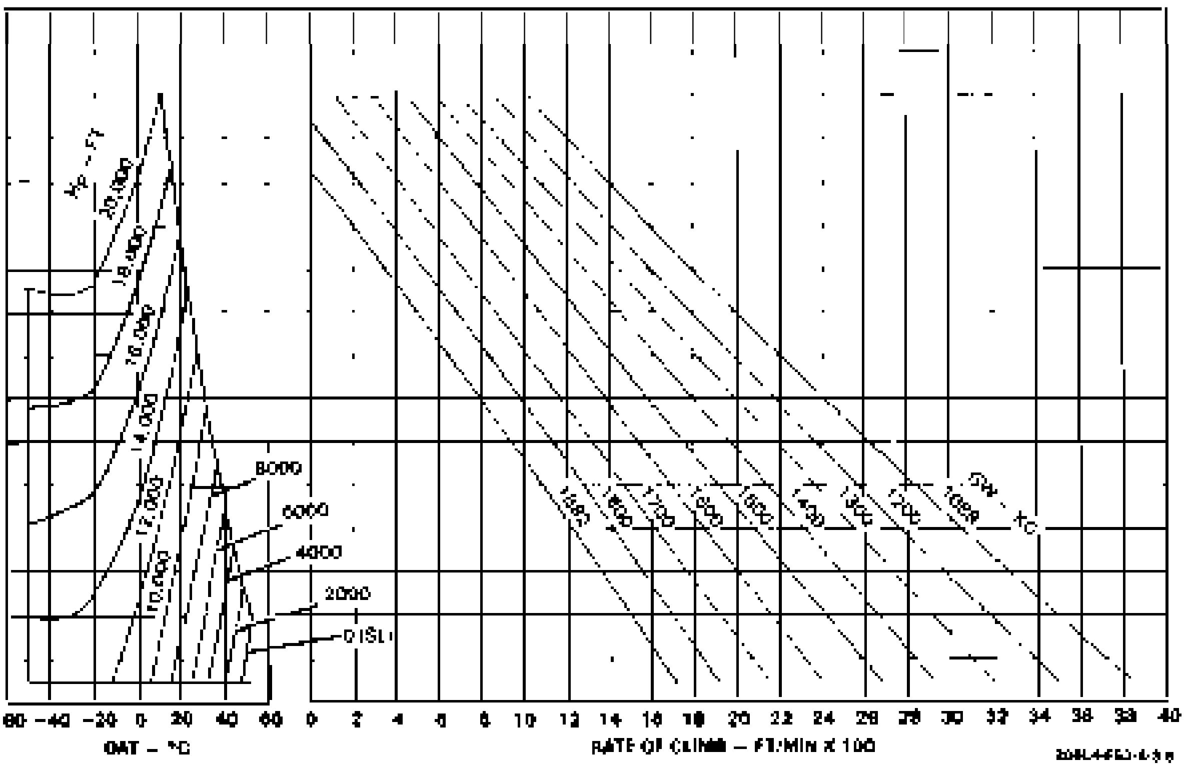


Figure 4-3. Rate of climb - takeoff power (Sheet 6 of 6)

RATE OF CLIMB		
TAKEOFF POWER ENGINE RPM 100% GENERATOR 17.5%	4151 LB TO 4450 LB 1883 KG TO 2019 KG	57 KIAS ANTI-ICE OFF PARTICLE SEPARATOR PURGE ON
WITH ANTI-ICE ON ABOVE 14,000 FT Hp, RATE OF CLIMB IS 100 FT/MIN LESS (BELOW 14,000 FT, NO CORRECTION IS NECESSARY)		

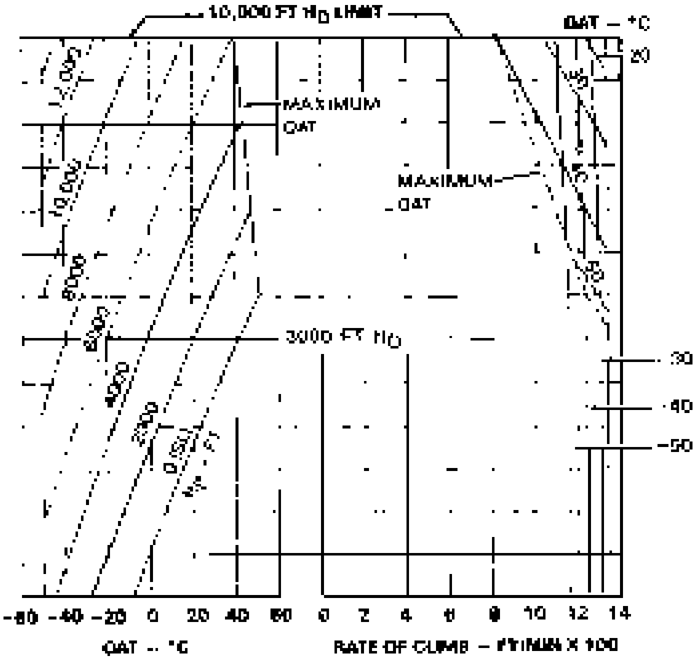


Figure 4-3. Rate of climb – takeoff power (Sheet 6 of 6)

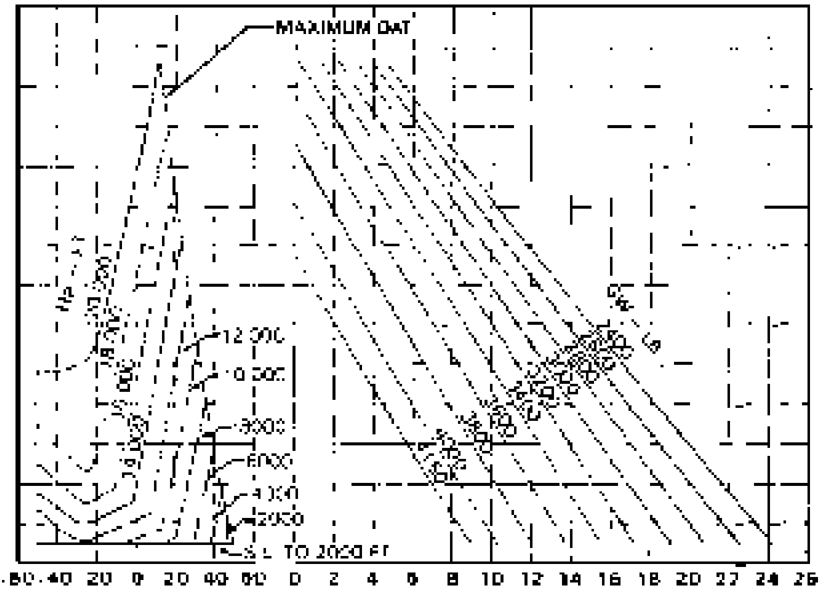
RATE OF CLIMB

MAXIMUM CONTINUOUS POWER
ENGINE RPM 100%
GENERATOR 17.5%

57 KIAS
ANTI-ICE OFF
PARTICLE SEPARATOR PURGE ON OR OFF

4150 LB AND BELOW

WITH ANTI-ICE ON ABOVE 10,000 FT Hp, RATE OF CLIMB IS 230 FT/MIN LESS
(BELOW 10,000 FT, NO CORRECTION IS NECESSARY)



206L4-FSS-4-4-1

Figure 4-4. Rate of climb — maximum continuous power (Sheet 1 of 3)

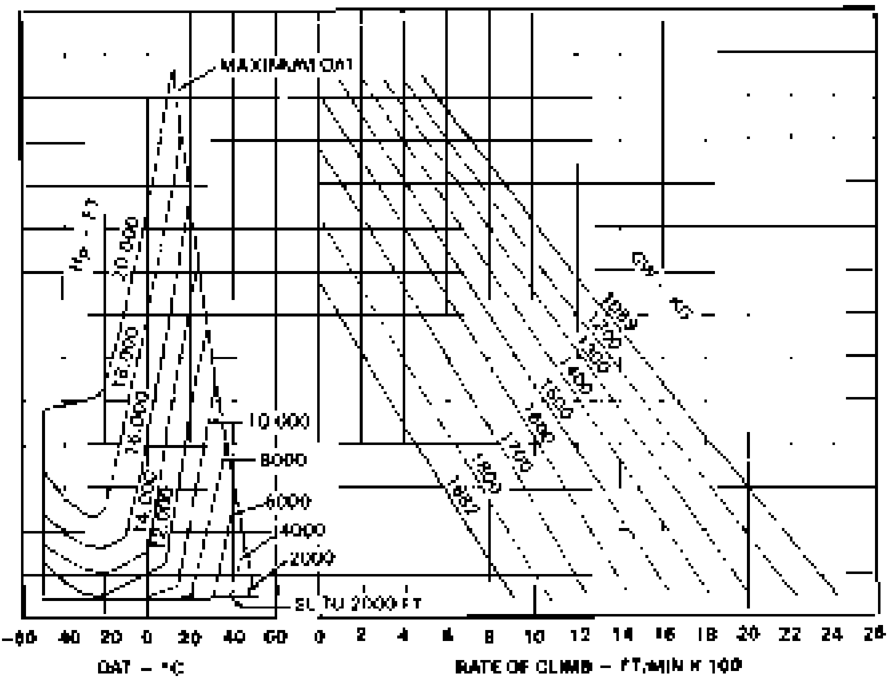
RATE OF CLIMB

MAXIMUM CONTINUOUS POWER
ENGINE RPM 100%
GENERATOR 17.5%

57 KIAS
ANTI-ICE OFF
PARTICLE SEPARATOR PURGE ON OR OFF

1882 KG AND BELOW

WITH ANTI-ICE ON ABOVE 10,000 FT Hp, RATE OF CLIMB IS 236 FT/MIN LESS
(BELOW 10,000 FT, NO CORRECTION IS NECESSARY)



206L4-FS3-4-4-2

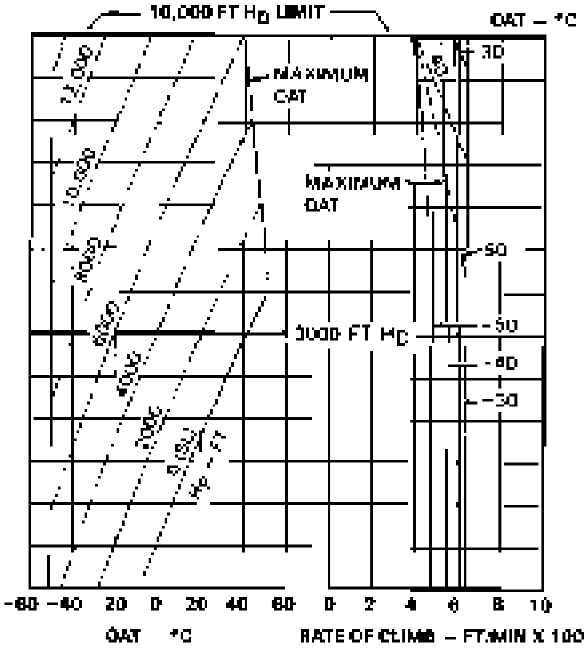
Figure 4-4. Rate of climb - maximum continuous power (Sheet 2 of 3)

RATE OF CLIMB

MAXIMUM CONTINUOUS POWER
ENGINE RPM 100%
GENERATOR 17.5%

57 KIAS
ANTI-ICE OFF OR ON
PARTICLE SEPARATOR PURGE ON OR OFF

4151 LB TO 4450 LB
1883 KG TO 2018 KG



206L4-FS3-4-4-3

Figure 4-4. Rate of climb – maximum continuous power (Sheet 3 of 3)

Section 1

MANUFACTURER'S DATA

WEIGHT AND BALANCE

No change from basic manual.

Section 2

MANUFACTURER'S DATA

SYSTEMS DESCRIPTION

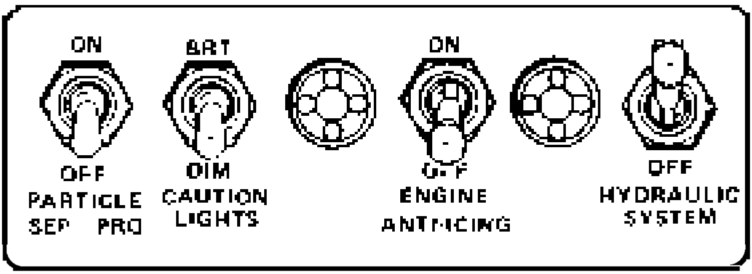


Figure 2-1. Miscellaneous control panel

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 MODEL 206L4 LongRanger-IV

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT

CARGO HOOK

206-706-341

CERTIFIED
OCTOBER 16, 1992

This supplement shall be attached to Model 206L4 Flight Manual when cargo hook has been installed.

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

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APPROVED:

MANAGER

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

GENERAL INFORMATION

Installation of cargo hook adds capability of transporting external cargo weighing up to 2000 pounds (907.2 kilograms). Kit contains electrical and manual releases, both operated from pilot seat. Cargo hook is located at FS 121.0 and BL 0.0.

Section 1

LIMITATIONS

1-1. TYPE OF OPERATION

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

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

1-2. WEIGHT AND CENTER OF GRAVITY

Weight empty and center of gravity shall be computed after kit is installed to determine if ballast adjustment is necessary.

1-3. WEIGHT

CAUTION

LOADS THAT RESULT IN GROSS WEIGHTS ABOVE 4450 POUNDS (2018.5 KILOGRAMS) SHALL BE CARRIED ON CARGO HOOK AND SHALL NOT BE IMPOSED ON LANDING GEAR.

Maximum gross weight of helicopter and external load combination is 4550 pounds (2063.8 kilograms).

Maximum cargo hook load is 2000 pounds (907.2 kilograms).

1-4. CENTER OF GRAVITY — LONGITUDINAL

Refer to figure 1-1.

1-5. CENTER OF GRAVITY — LATERAL

Refer to figure 1-2.

1-6. 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 HANDLING CHARACTERISTICS MAY BE AFFECTED BY SIZE, WEIGHT, AND SHAPE OF CARGO LOAD.

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

1-7. PLACARDS AND DECALS

CARGO LOAD LIMIT 2000 POUNDS

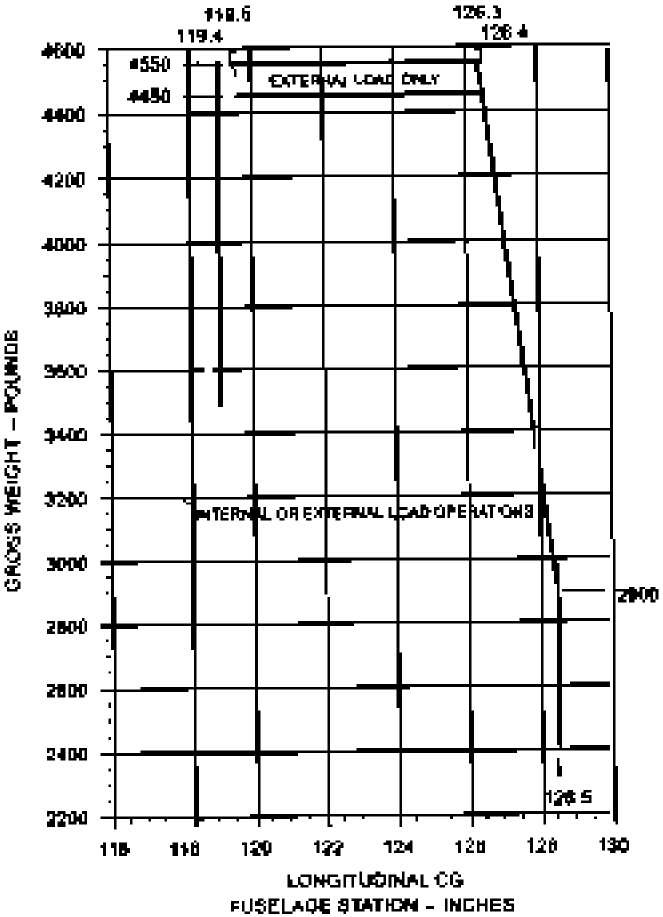

Figure 1-1. Gross weight longitudinal center of gravity limits (Sheet 1 of 2)

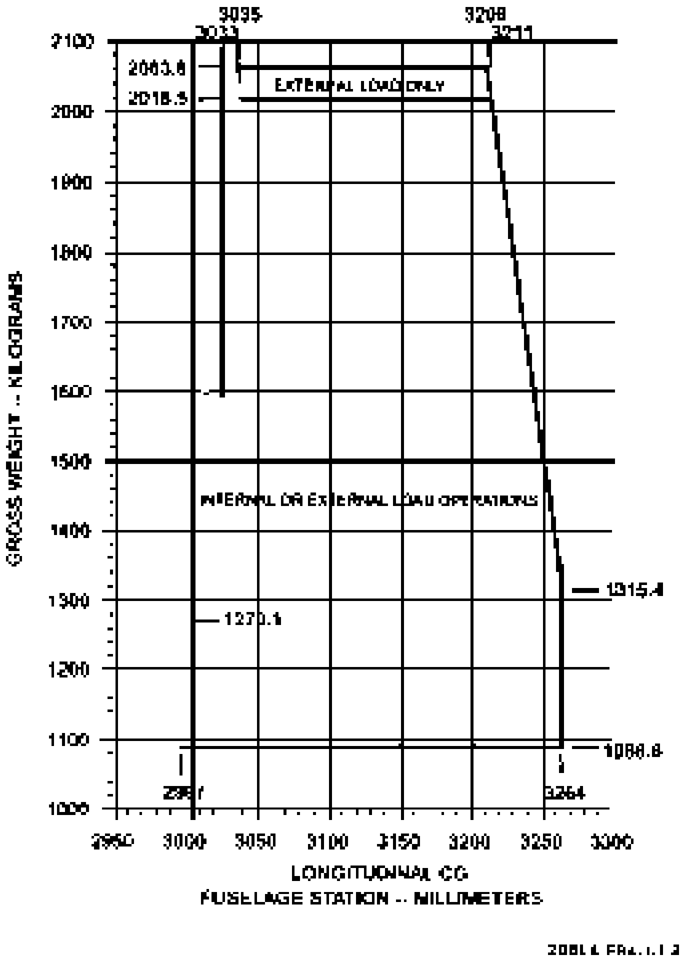

Figure 1-1. Gross weight longitudinal center of gravity limits (Sheet 2 of 2)

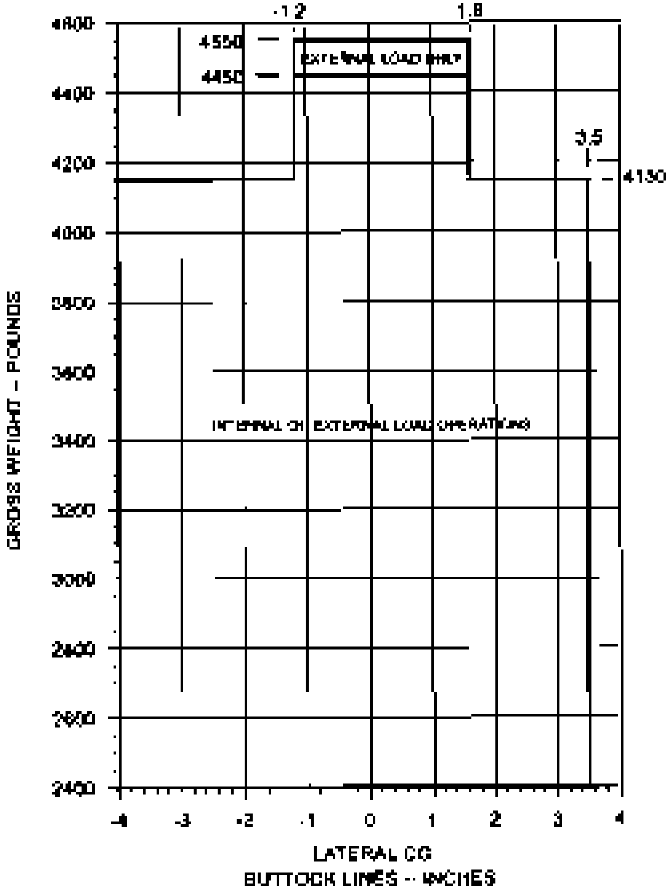

Figure 1-2. Gross weight lateral center of gravity limits (Sheet 1 of 2)

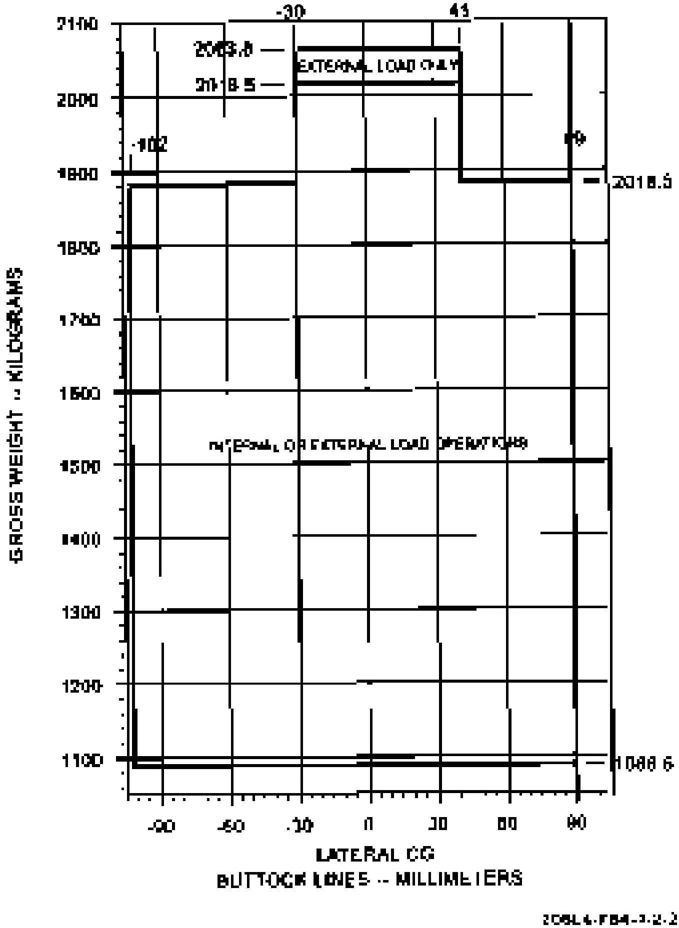

Figure 1-2. Gross weight lateral center of gravity limits (Sheet 2 of 2)

Section 2

NORMAL PROCEDURES

2-1. 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 cargo hook. If contact has been lost after initial grounding, helicopter should be electrically regrounded and, if possible, contact maintained until hookup is completed.

1. Cargo hook — Condition and security. Instruct ground personnel to check primary load ring and secondary load ring for condition and proper size (Table 2-1). Check for correct rigging (figure 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.

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

Table 2-1. RING SIZES — CARGO HOOK P/N 17140-2

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. (19.05 mm.)	0.438 in. (11.12 mm.)

2-2. EXTERIOR CHECK

Cargo suspension assembly — Condition and security.

2-3. INTERIOR CHECK

1. CARGO HOOK circuit breaker — In.

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

2-4. BEFORE TAKEOFF

CARGO HOOK circuit breaker — In.

2-5. TAKEOFF

NOTE

Better directional control may be realized by avoiding relative winds from 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.

2-6. IN-FLIGHT OPERATION

NOTE

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

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.

2-7. 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 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.

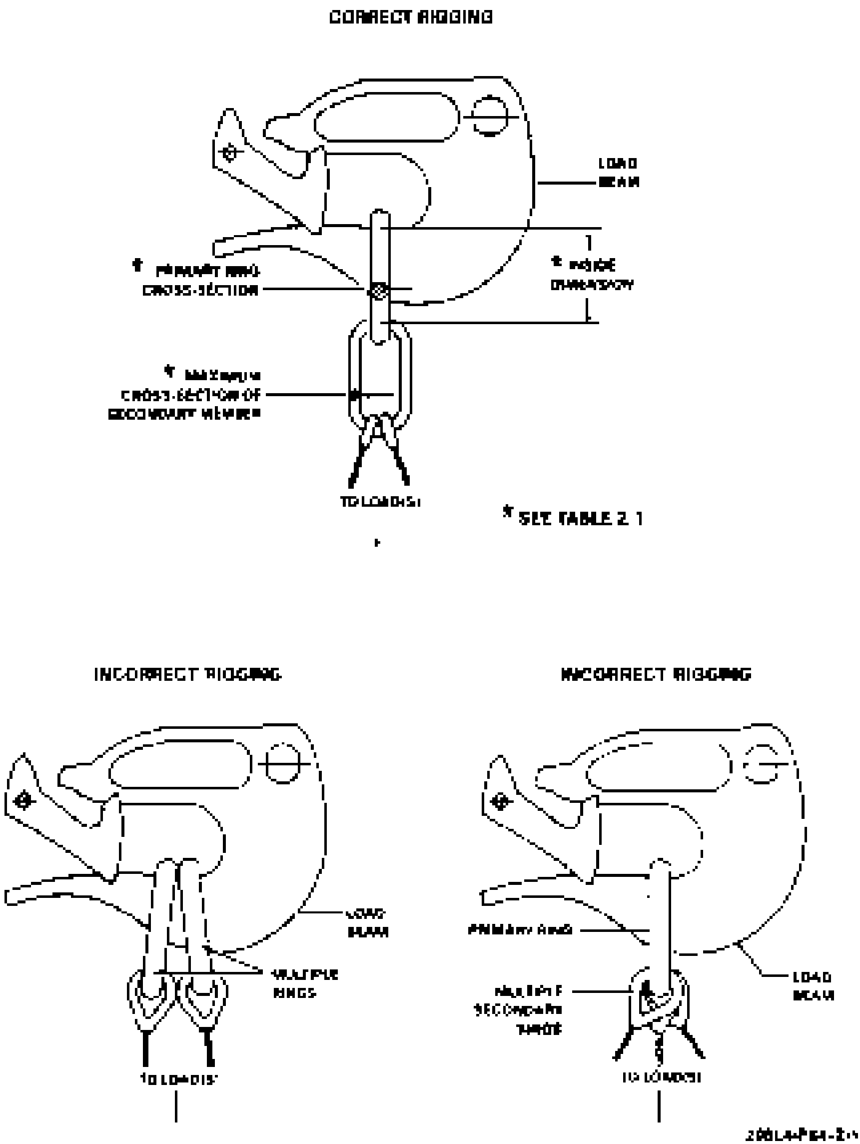

Figure 2-1. External load rigging

Section 3

EMERGENCY AND MALFUNCTION PROCEDURES

3-1. CARGO FAILS TO RELEASE ELECTRICALLY

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

1. Maintain tension on sling.
2. Pull EMER CARGO RELEASE PULL handle to release cargo.

Section 4

PERFORMANCE

Refer to BHT-206L4-FM-1 for out-of-ground-effect 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 206L-4

Bell LongRanger-IV

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT

ENVIRONMENTAL CONTROL SYSTEM (CABIN TEMPERATURE CONTROL)

206-706-143

CERTIFIED
OCTOBER 16, 1992

This supplement shall be attached to Model 206L-4 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.

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OCTOBER 16, 1992

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APPROVED:

Gary Black

for MANAGER

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

GENERAL INFORMATION

Environmental control system (206-706-143) is designed for heating and cooling as well as removing moisture from air supplied to cabin area. The system requires engine bleed air to operate. Installation of this system and distribution system adds approximately 98 pounds (44.4 kilograms) to empty weight of 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/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.

1-3. PLACARDS AND DECALS

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:

Engine compressor stall.

Fuel control and/or governor failure.

Engine restart in flight is to be 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
ENGINE RPM 100%
GENERATOR 17.6%

57 KIAS
ANTI-ICE OFF OR ON

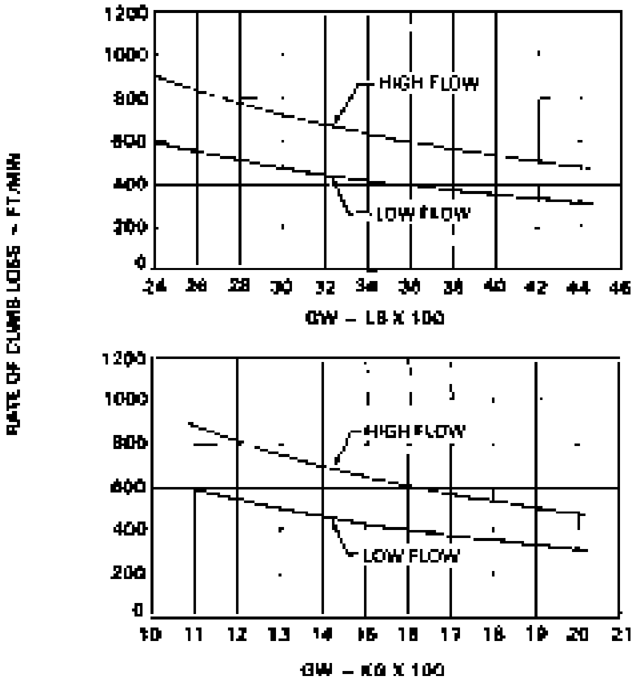

Figure 4-1. Rate of climb decrease

MODEL 206L4 Bell LongRanger-IV

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT
SNOW DEFLECTOR

206-706-208

CERTIFIED
OCTOBER 16, 1992

This supplement shall be attached to the Bell Helicopter Model 206L-4 Flight Manual when the 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, consult basic Flight Manual.

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APPROVED:

MANAGER

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

GENERAL INFORMATION

Snow deflector kit (206-706-208) consists of two deflectors that mount on either side of transmission fairing, just forward of engine air inlets. Kit adds approximately 5 pounds (2 kilograms) to empty weight of 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 (if installed) shall be removed for flights into IMC if snow deflectors are installed.

1-2. 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. Refer to Center of gravity vs weight empty chart in BHT-206L4-MM-2.

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-206L4-FMS-3) installed, following limits apply:

Hover flight in falling and/or blowing snow is limited to 20 minute duration after which helicopter must be landed and checked for snow and/or ice accumulation.

Flight operations are prohibited when visibility in falling 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.

Hover ceiling charts are shown in figures 4-1 and 4-2.

All Rate of climb charts (figures 4-3 and 4-4) 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 in this section. For helicopters without a particle separator purge (PARTICLE SEP PRG) switch or with purge switch ON, use Performance variation chart (figure 4-6) 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 4-1 and 4-2) and Rate of climb charts of this section without Performance variation chart.

To use Performance variation chart, enter at appropriate H_P and move horizontally; then enter at appropriate OAT and move vertically until intersecting H_P 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 of intersection is above appropriate power curve (example B, 10,000 feet and 25 °C on chart), hover weight will be 90 pounds (40.8 kilograms) 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.

4-2. POWER ASSURANCE CHECK

This supplement contains two Power assurance check charts (figure 4-5). First chart is to be used for helicopters equipped with snow deflectors. Second chart is to be used for helicopters equipped with snow deflectors and particle separator. Both charts are used in same manner as Power assurance check chart in BHT-206L4-FM-1. Instructions for their use can be found at beginning of PERFORMANCE section of BHT-206L4-FM-1. PARTICLE SEP PRG switch (if installed) shall be ON when performing a power assurance check.

HOVER CEILING
IN GROUND EFFECT
WITH STANDARD SKID LANDING GEAR

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 2.5 FT (0.7 METER)
ANTI-ICE OFF

4150 LB (1882 KG) AND BELOW

WITH ANTI-ICE ON ABOVE 12,000 FT Hp, GW IS 60 LB (27 KG) LESS
(BELOW 12,000 FT, NO CORRECTION IS NECESSARY)

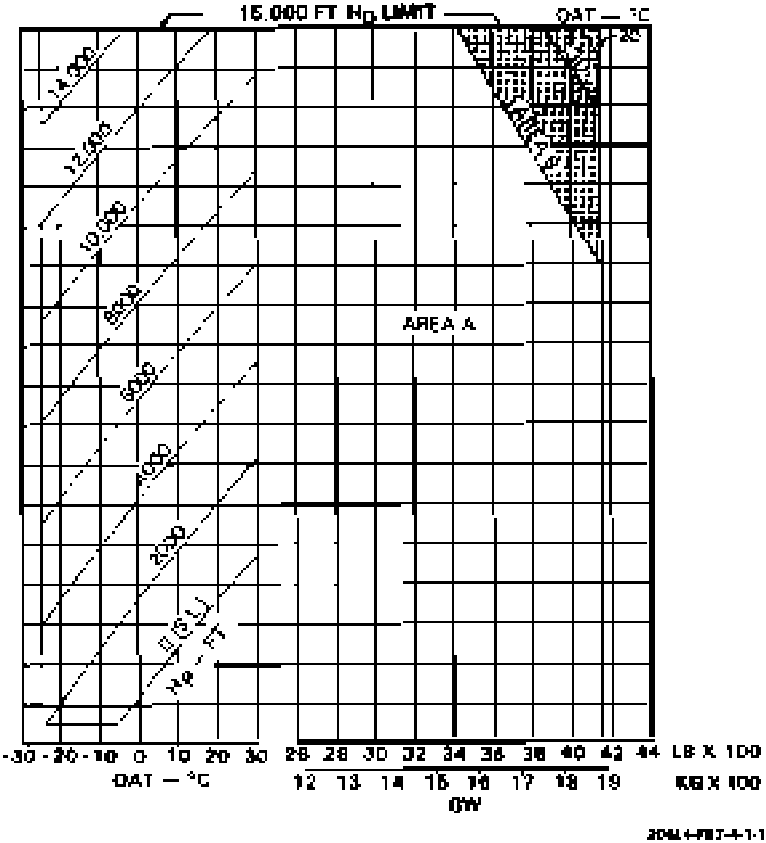


Figure 4-1. Hover ceiling – In ground effect (Sheet 1 of 4)

HOVER CEILING
IN GROUND EFFECT

WITH STANDARD SKID LANDING GEAR

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.6%

SKID HEIGHT 2.3 FT (0.7 METER)
ANTI-ICE OFF OR ON

4151 LB (1883 KG) AND ABOVE

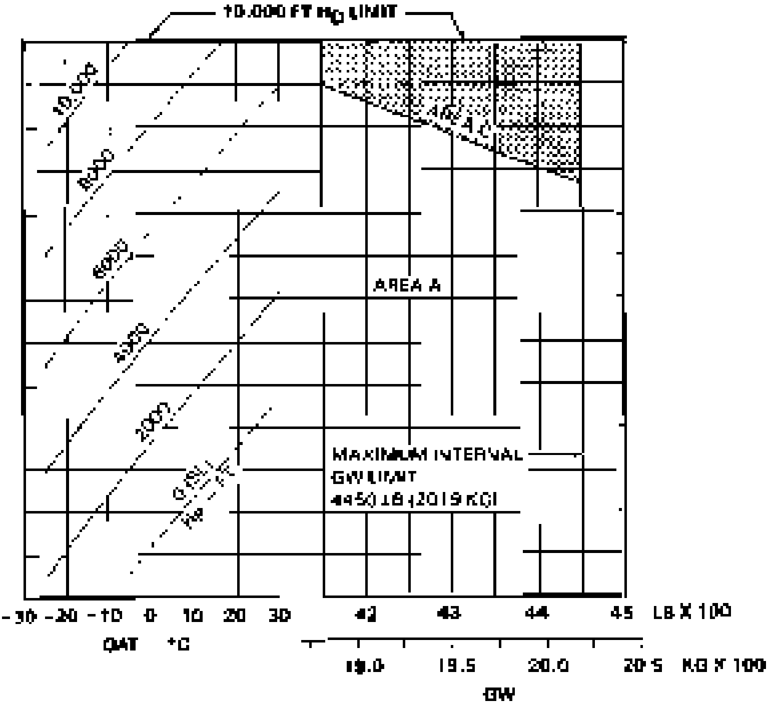


Figure 4-1. Hover ceiling – in ground effect (Sheet 2 of 4)

HOVER CEILING
IN GROUND EFFECT

WITH HIGH SKID OR EMERGENCY FLOTATION LANDING GEAR

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 2.5 FT (0.7 METER)
ANTI-ICE OFF

4150 LB (1882 KG) AND BELOW

WITH ANTI-ICE ON ABOVE 12,000 FT Hp, GW IS 130 LB (58 KG) LESS
(BELOW 12,000 FT, NO CORRECTION IS NECESSARY)

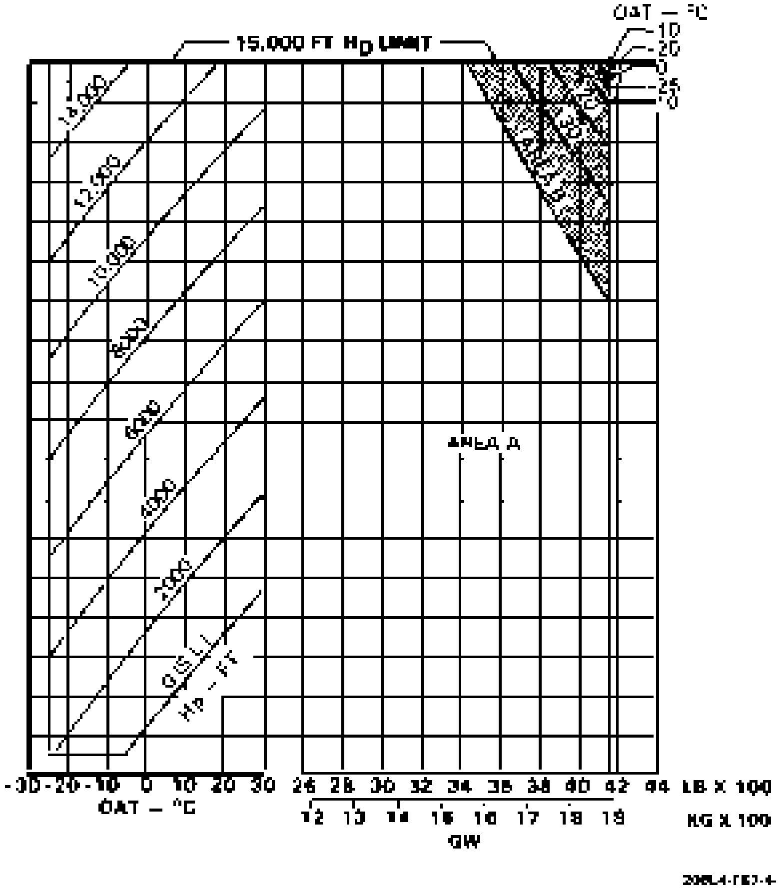


Figure 4-1. Hover ceiling – in ground effect (Sheet 3 of 4)

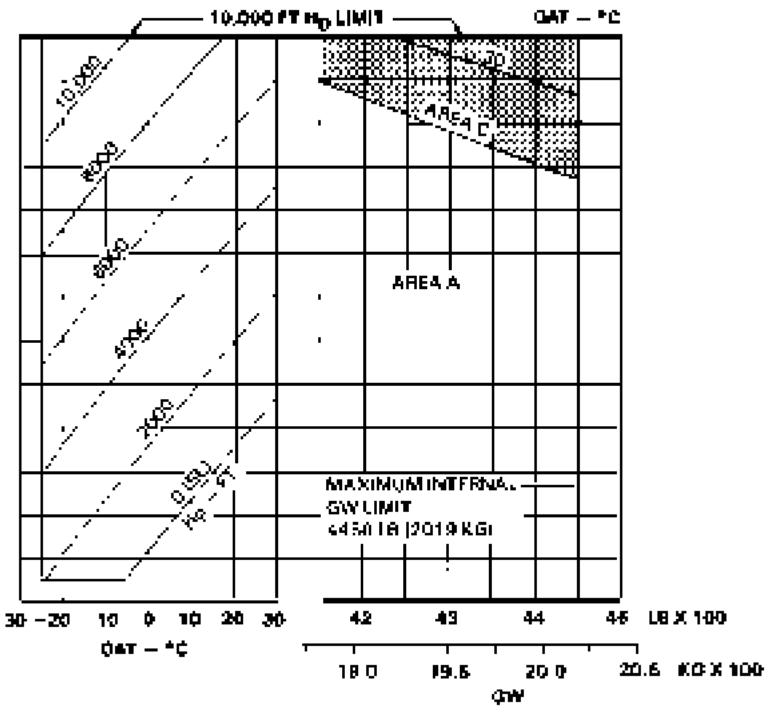
HOVER CEILING
IN GROUND EFFECT

WITH SKID OR EMERGENCY FLOTATION LANDING GEAR

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 2.5 FT (0.7 METER)
ANTI ICE OFF OR ON

4151 LB (1883 KG) AND ABOVE



206L4-FST-4-1-4

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

HOVER CEILING
OUT OF GROUND EFFECT

WITH ANY SKID OR FLOAT LANDING GEAR

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 40 FT (12.2 METERS)
ANTI-ICE OFF

4150 LB (1882 KG) AND BELOW

(WITH ANTI-ICE ON ABOVE 10,000 FT Hp, GW IS 130 LB (59 KG) LESS.
BELOW 10,000 FT, NO CORRECTION IS NECESSARY)

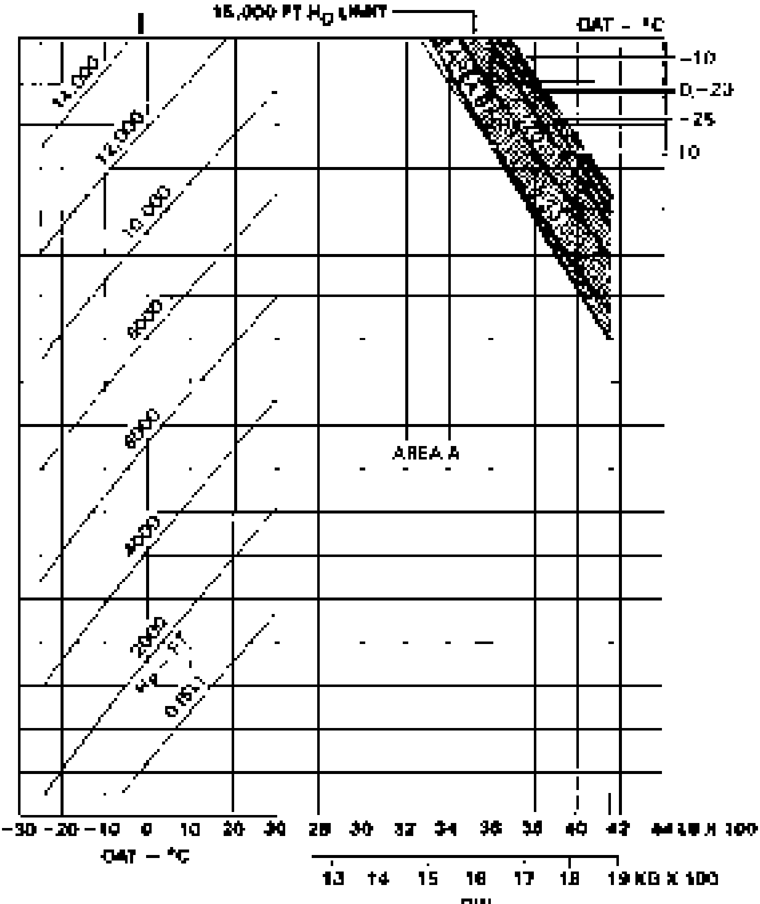


Figure 4-2. Hover ceiling – out of ground effect (Sheet 1 of 2)

HOVER CEILING
OUT OF GROUND EFFECT

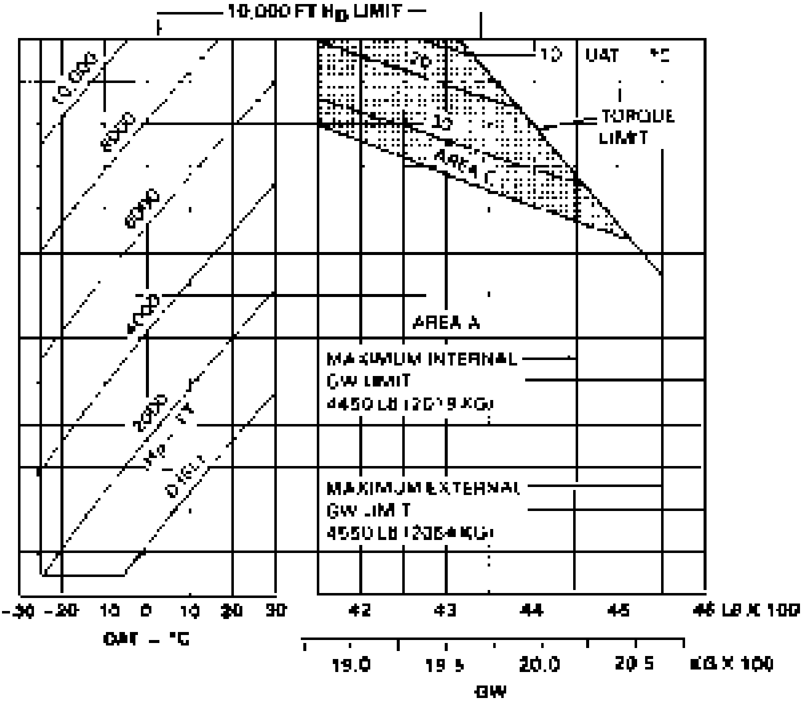
WITH ANY SKID OR FLOAT LANDING GEAR

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 97.5%

SKID HEIGHT 40 FT (12.2 METERS)
ANTI-ICE OFF

4151 LB (1883 KG) AND ABOVE

WITH ANTI-ICE ON ABOVE 8000 FT H_P GW IS 130 LB (59 KG) LESS
(BELOW 8000 FT, NO CORRECTION IS NECESSARY)



206L4-FMS-7-4-2-2

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

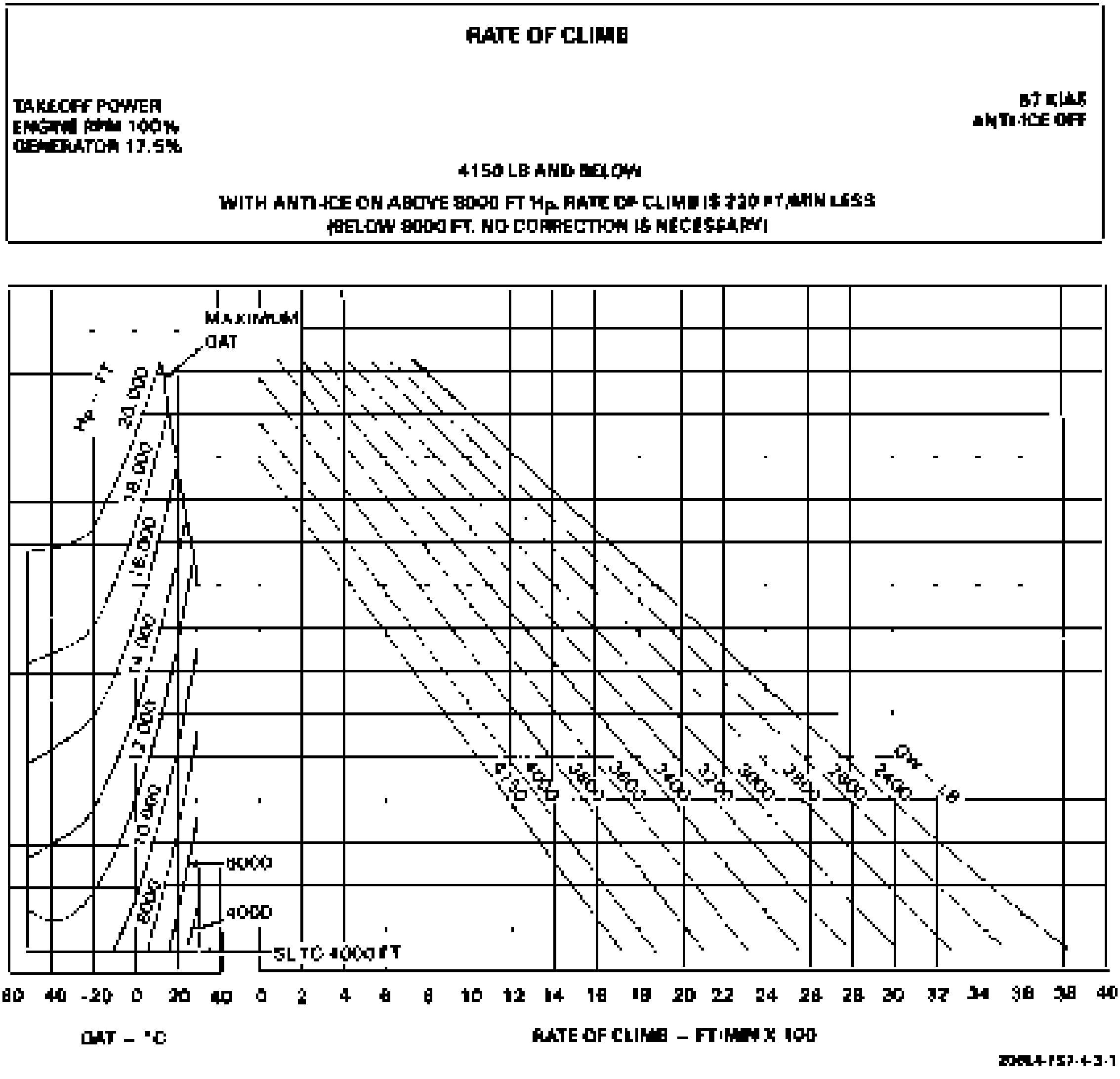


Figure 4-3. Rate of climb – takeoff power (Sheet 1 of 3)

RATE OF CLIMB

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

57 KIAS
ANTI ICE OFF

1882 KG AND BELOW

WITH ANTI ICE ON ABOVE 8000 FT Hp, RATE OF CLIMB IS 220 FT/MIN LESS
(BELOW 8000 FT, NO CORRECTION IS NECESSARY)

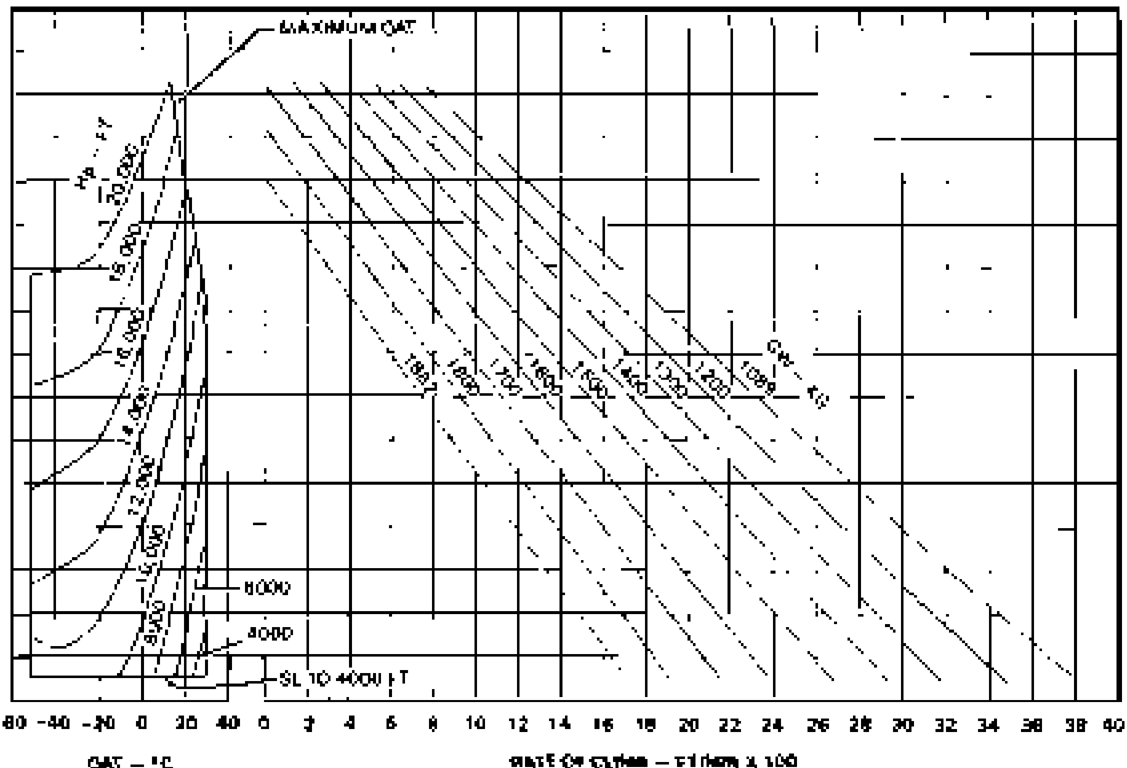


Figure 4-3. Rate of climb – takeoff power (Sheet 2 of 3)

RATE OF CLIMB

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

57 KIAS
ANTI-ICE OFF

4151 LB TO 4450 LB
1883 KG TO 2019 KG

WITH ANTI-ICE ON ABOVE 6000 FT H_P, RATE OF CLIMB IS 160 FT/MIN LESS
(BELOW 6000 FT, NO CORRECTION IS NECESSARY)

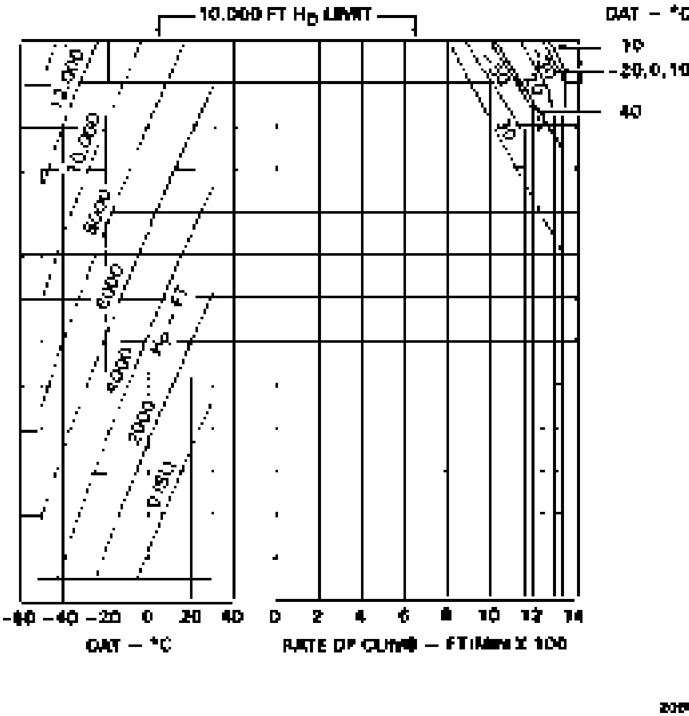


Figure 4-3. Rate of climb – takeoff power (Sheet 3 of 3)

RATE OF CLIMB

MAXIMUM CONTINUOUS POWER
ENGINE RPM 100%
GENERATOR 17.5%

67 KIAS
ANTI-ICE OFF

4150 LB AND BELOW

WITH ANTI-ICE ON ABOVE 6000 FT Hp, RATE OF CLIMB IS 235 FT/MIN LESS
(BELOW 6000 FT, NO CORRECTION IS NECESSARY)

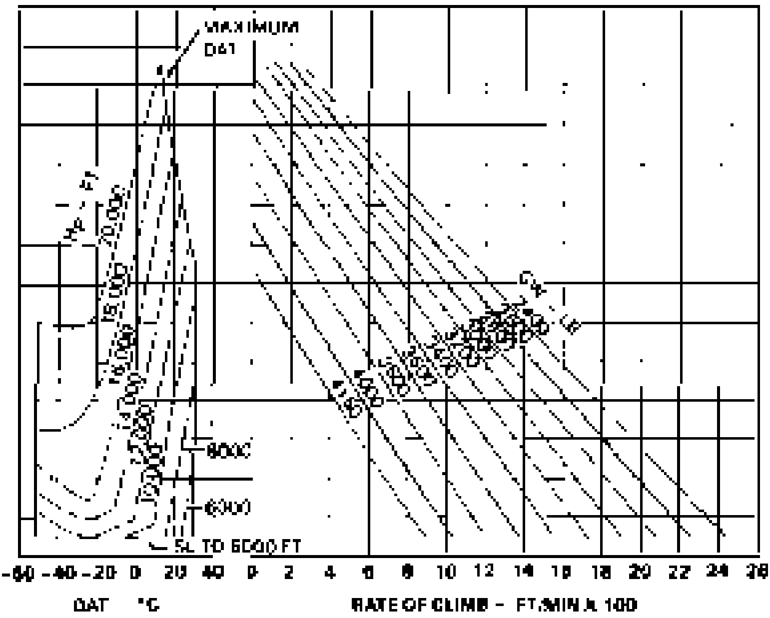


Figure 4-4. Rate of climb – maximum continuous power (Sheet 1 of 3)

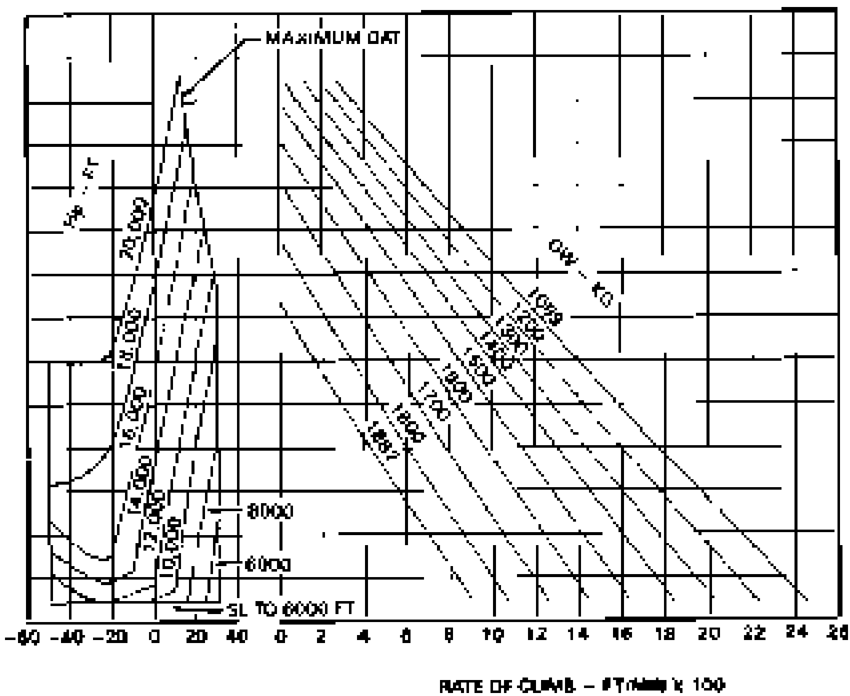
RATE OF CLIMB

MAXIMUM CONTINUOUS POWER
ENGINE RPM 100%
GENERATOR 17.5%

57 KIAS
ANTI-ICE OFF

1882 KG AND BELOW

WITH ANTI-ICE ON ABOVE 8000 FT Hp, RATE OF CLIMB IS 235 FT/MIN LESS
(BELOW 8000 FT, NO CORRECTION IS NECESSARY)



206L4-FM-4-7

Figure 4-4. Rate of climb — maximum continuous power (Sheet 2 of 3)

RATE OF CLIMB

MAXIMUM CONTINUOUS POWER
ENGINE RPM 100%
GENERATOR 17.5%

57 KIAS
ANTI-ICE OFF OR ON

4151 LB TO 4450 LB
1883 KG TO 2019 KG

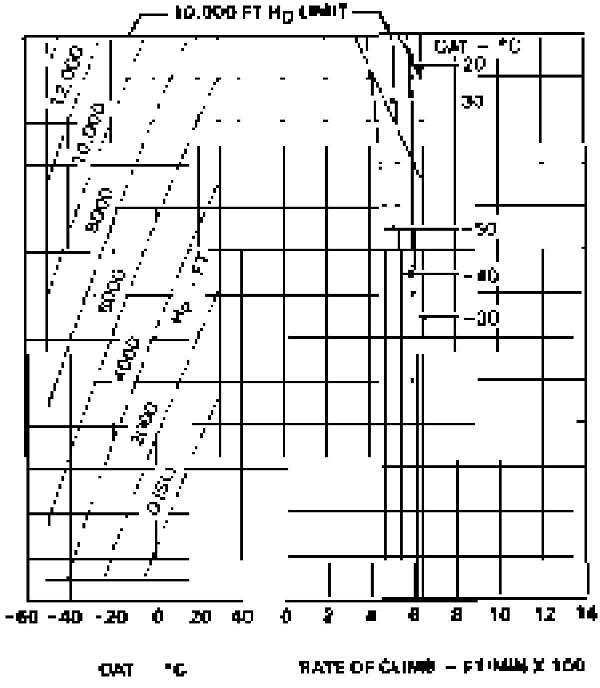


Figure 4-4. Rate of climb – maximum continuous power (Sheet 3 of 3)

PERFORMANCE VARIATION WITH SNOW DEFLECTOR AND PARTICLE SEPARATOR INSTALLED

ANTI-ICE ON OR OFF

NO PURGE SWITCH INSTALLED OR PURGE SWITCH ON

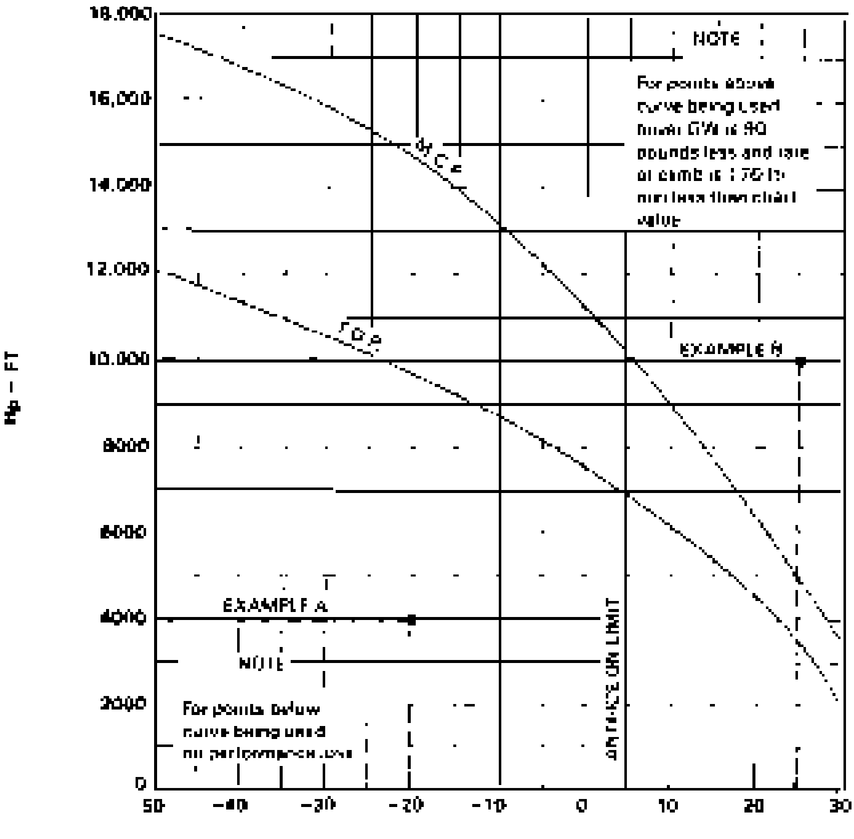


Figure 4-5. Performance variation

POWER ASSURANCE CHECK

ALLISON 250-C30P ENGINE
WITH SNOW DEFLECTOR
AND PARTICLE SEPARATOR

LEVEL FLIGHT
ENGINE RPM 100%
GENERATOR 17.5%

80 TO 100 KIAS (NOT TO EXCEED VNE)
ANTI-ICE OFF
HEATER/ECS OFF
PARTICLE SEPARATOR PURGE ON

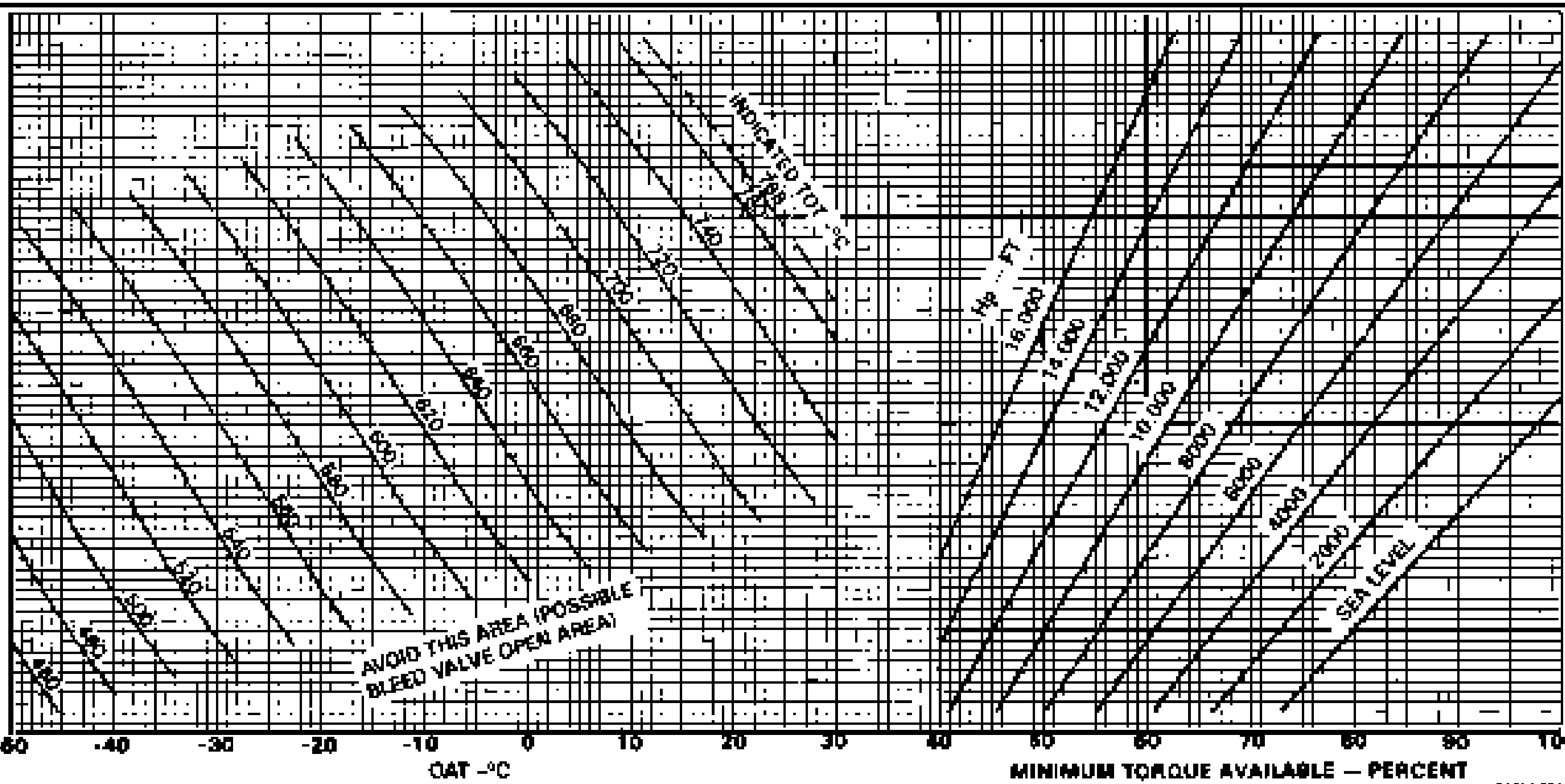


Figure 4-5. Power assurance check (Sheet 1 of 2)

POWER ASSURANCE CHECK

ALLISON 250-C30P ENGINE
WITH SNOW DEFLECTOR

LEVEL FLIGHT
ENGINE RPM 100%
GENERATOR 17.5%

90 TO 100 KIAS (NOT TO EXCEED VNE)
ANTI-ICE OFF
HEATER/ECS OFF

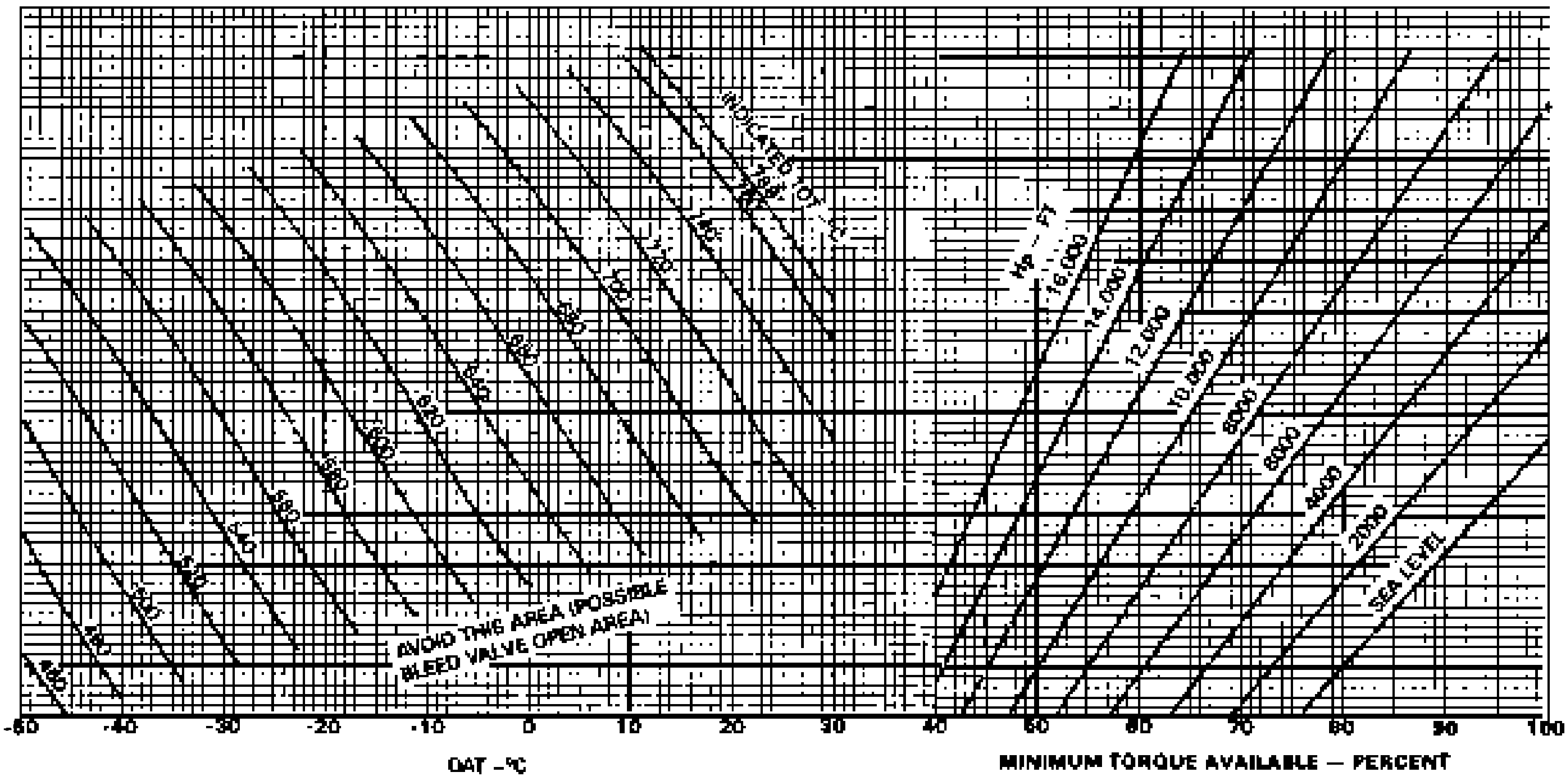


Figure 4-6. Power assurance check (Sheet 2 of 2)

MODEL 206L4 Bell LongRanger-IV

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT

FLOAT LANDING GEAR, STANDARD TYPE (FIXED FLOATS), SERIAL NUMBER 52164 ONLY.

206-706-065

CERTIFIED
14 MARCH 1997

This supplement shall be attached to Model 206L-4 Flight Manual when Float Landing Gear, Standard Type (Fixed Floats) 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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APPROVED: Ken Hanson DATE: 14 MAR 97

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

GENERAL INFORMATION

Float Landing Gear Kit (206-706-065) is designed for water operations and consists of two streamlined ten-cell inflatable floats and triangle plate mounted to tail skid. 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 empty weight of 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 5000 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.

CAUTION

DO NOT OVERINFLATE FLOATS.

The maximum inflation pressure is 4.5 psig (31.03 kPa).

FLOAT PRESSURE VARIATION VERSUS TEMPERATURE AND/OR ALTITUDE CHANGE

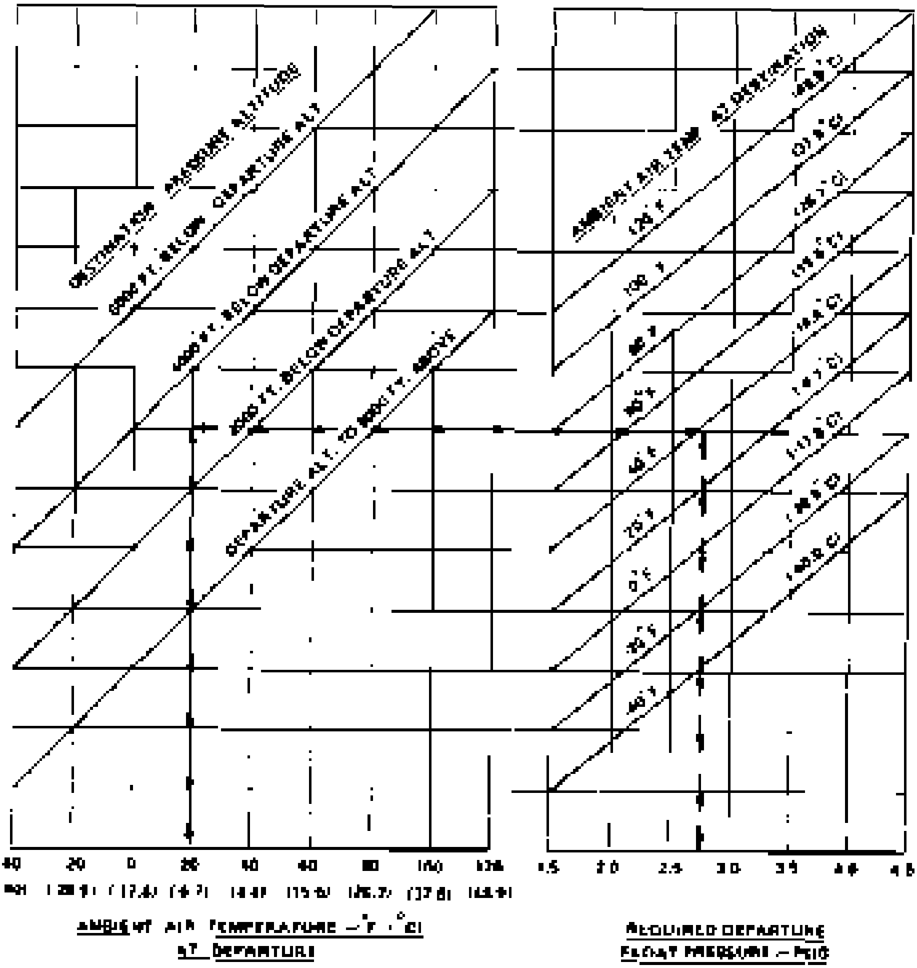

Figure 2-1. Float pressure variation

- EXAMPLE

For flight to 3000 feet below departure altitude, with departure ambient 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 with a gross weight of 2700 pounds, enter bottom of chart at 27 and move upward to decrement line. From this point, move left to Δ RATE OF CLIMB scale at 225 feet. Subtract this figure from appropriate Rate of Climb chart for standard skids.

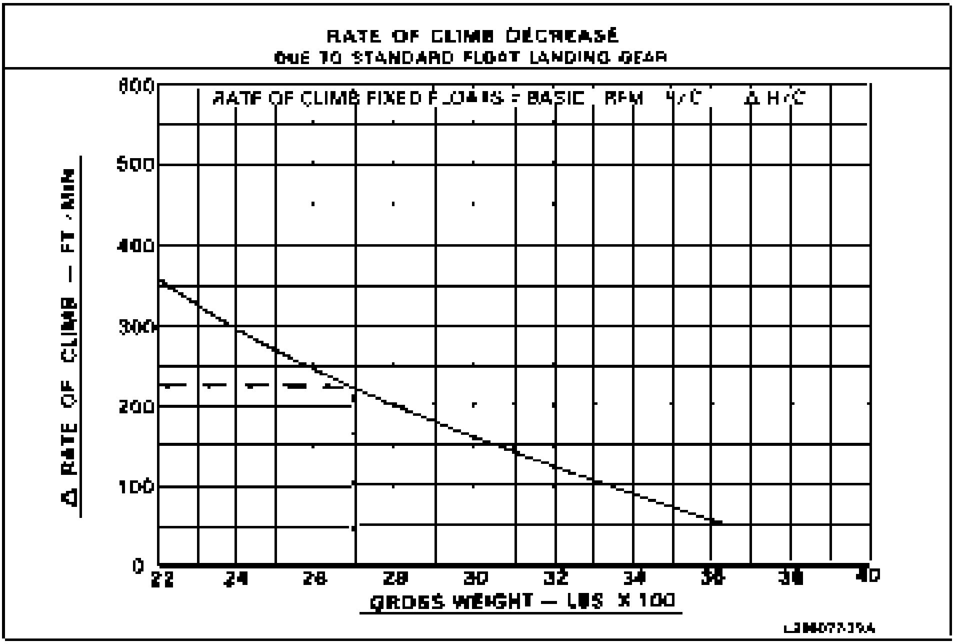

Figure 4-1. Rate of climb decrease

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.

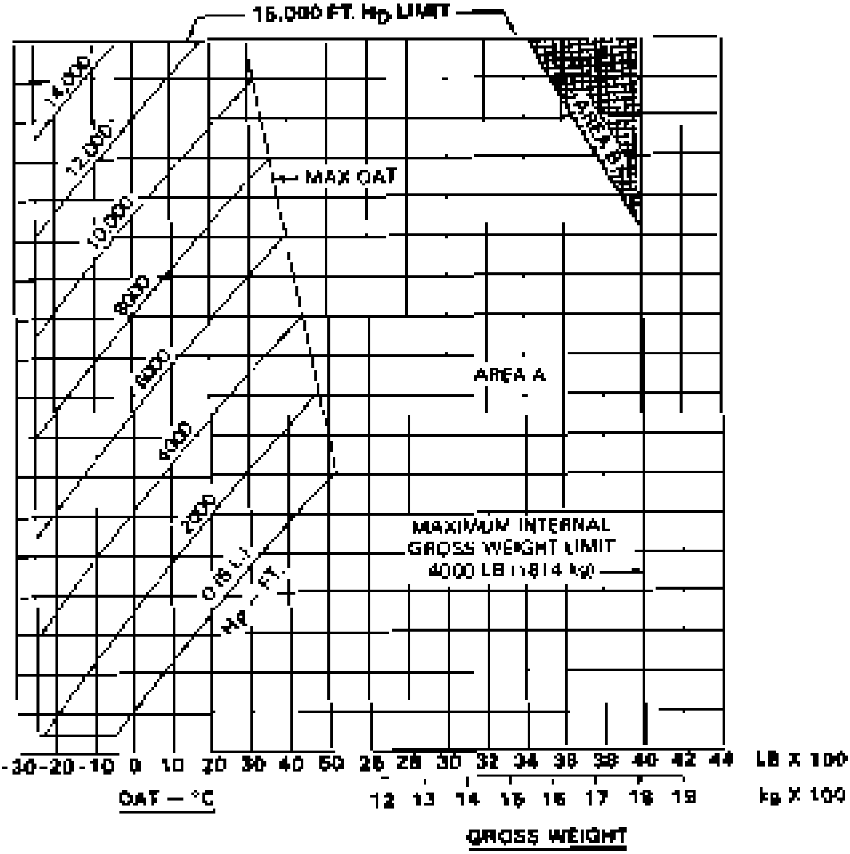

Figure 4-2. Hover ceiling in ground effect (Sheet 1 of 2)

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.

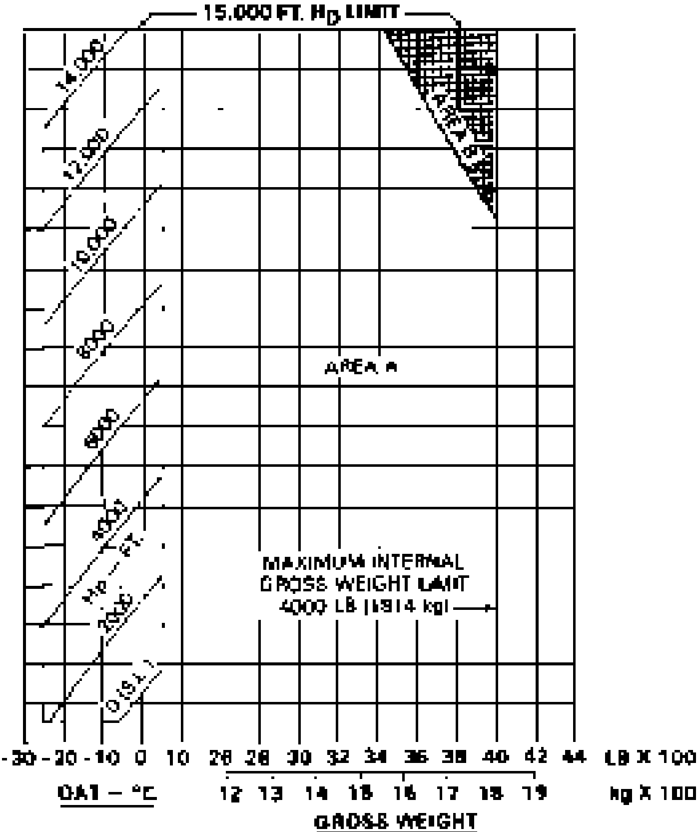

Figure 4-2. Hover ceiling in ground effect (Sheet 2 of 2)

Bell MODEL 206L4 LongRanger-IV

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT

HIGH SKID LANDING GEAR

206-706-064

CERTIFIED
OCTOBER 16, 1992

This supplement shall be attached to Flight Manual for Model 206L-4 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, consult basic Flight Manual.

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FT. WORTH, TX 76193-0170

GENERAL INFORMATION

High skid landing gear kit (206-706-064) provides approximately 10 inches (0.25 meter) of additional ground clearance over 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 AND CENTER OF GRAVITY

Weight empty and center of gravity shall be computed after kit is installed to determine if ballast adjustment is necessary.

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 AND MALFUNCTION PROCEDURES

No change from basic manual.

Section 4

PERFORMANCE

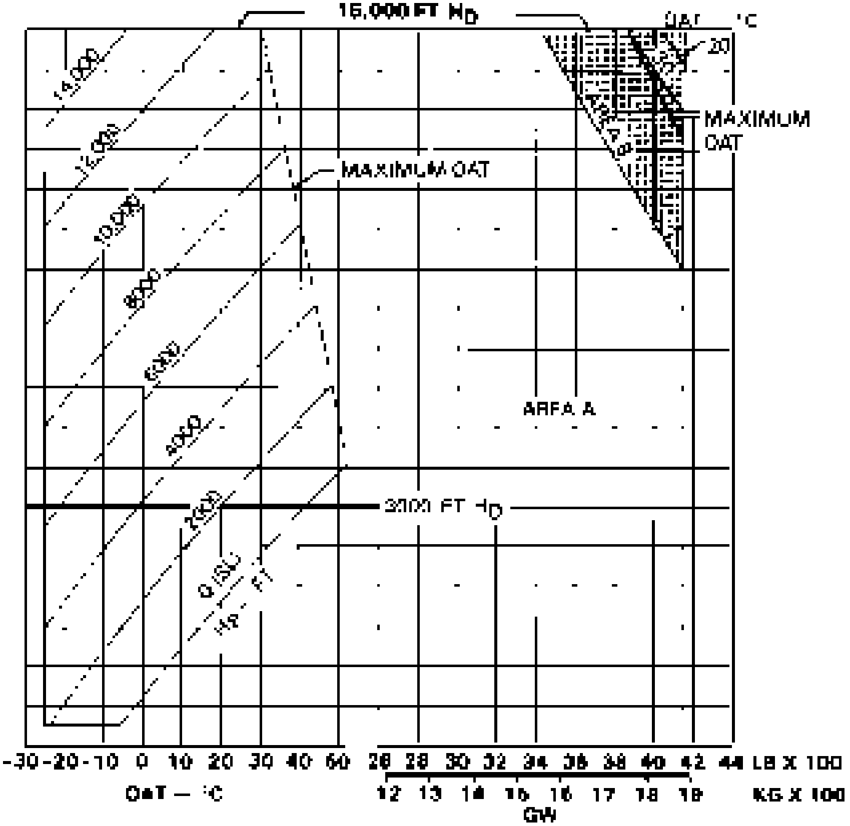
Out-of-ground-effect hover performance is same as basic helicopter. In-ground-effect hover performance is shown in figure 4-1.

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

4150 LB AND BELOW



206L4-FMS9-4-1-1

Figure 4-1. Hover ceiling – In ground effect (Sheet 1 of 4)

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

4151 LB AND ABOVE

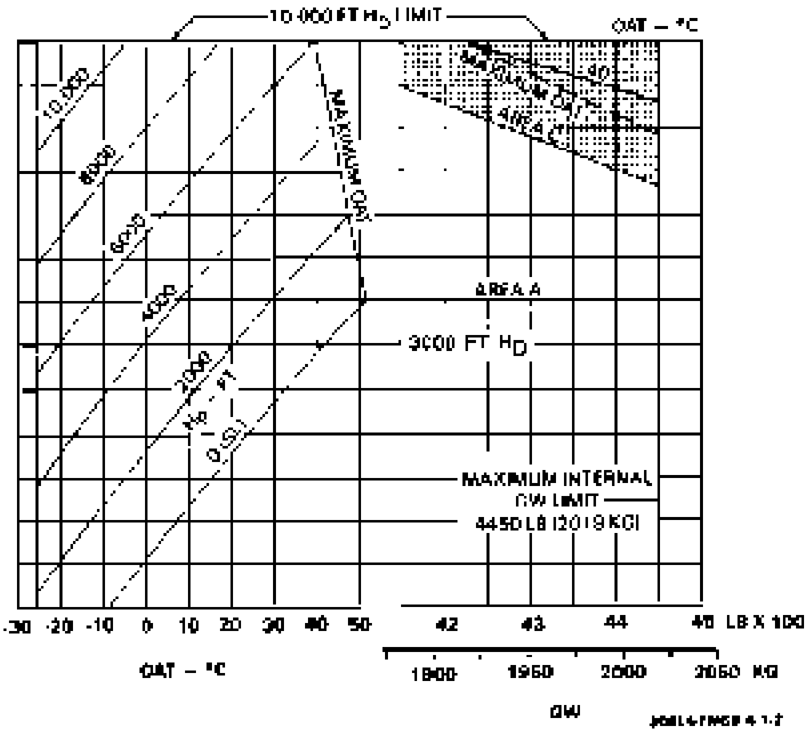


Figure 4-1. Hover ceiling – in ground effect (Sheet 2 of 4)

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

4150 LB AND BELOW

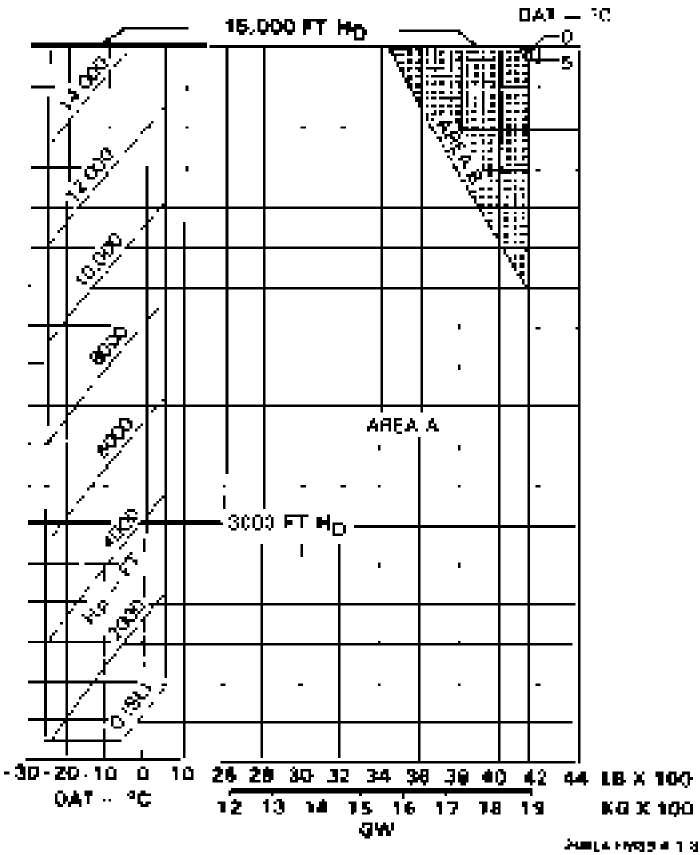


Figure 4-1. Hover ceiling – in ground effect (Sheet 3 of 4)

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

4151 LB AND ABOVE

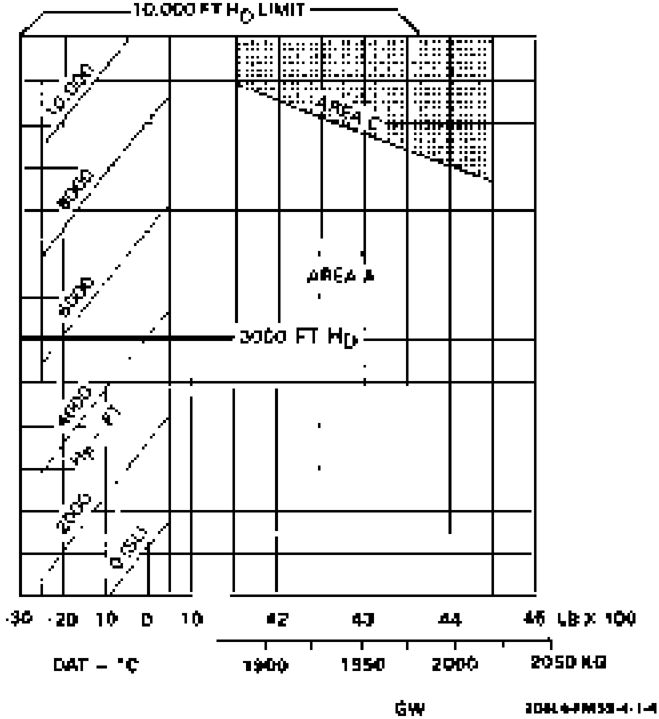


Figure 4-1. Hover ceiling – in ground effect (Sheet 4 of 4)

Bell LongRanger-IV
MODEL 206L4

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT

TNL 2000/2000A GPS NAVIGATOR

206-898-720

CERTIFIED
DECEMBER 21, 1992

This supplement shall be attached to Model 206L-4 Flight Manual when TNL 2000/2000A GPS NAVIGATOR kit has been installed.

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

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GENERAL INFORMATION

Global positioning system (GPS) navigation system (206-899-720) (TNL 2000/2000A GPS Navigator) consists of the GPS unit that is connected to the KI-202 course deviation indicator (CDI). VOR/LOC signal is not displayed.

Section 1

LIMITATIONS

1-1. OPERATING LIMITATIONS

The Global Positioning System is not approved for navigation.

1-2. PLACARDS AND DECALS

GPS IS NOT APPROVED FOR NAVIGATION

Section 2

NORMAL PROCEDURES

NOTE

For operating procedures, refer to Trimble Navigation TNL 2000/2000A GPS Navigator Pilot Guide.

Section 3

EMERGENCY AND MALFUNCTION PROCEDURES

NOTE

If GPS navigation system becomes inoperative, resume basic VFR navigation procedures.

Section 4

PERFORMANCE

No change from basic manual.

Bell Model 206L4 LongRanger-IV

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT

LITTERS

206-706-343

CERTIFIED

16 OCTOBER 1992

This supplement shall be attached to Bell Helicopter Model 206L4 Flight Manual when the 206-706-343 Litter 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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FOR
DIRECTOR — AIRCRAFT CERTIFICATION BRANCH
DEPARTMENT OF TRANSPORT

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GENERAL INFORMATION

Litter kit (206-706-343) provides helicopter with capability to carry up to two patients on litters with room and access for medical attendants. Kit contains aluminum litters with patient restraints and all necessary hardware for proper installation. Kit adds 53 pounds (24 kilograms) to empty weight of helicopter.

Section 1

LIMITATIONS

1-1. LITTER OPERATION

Copilot cyclic and collective controls must be removed and stowed when litters are installed.

Patient(s) must be restrained by litter straps.

1-2. OPTIONAL EQUIPMENT

Litter Kit with removable support bars behind copilot seat is not compatible with Cargo Tie-down Provision Kit.

1-3. 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.

1-4. PLACARDS AND DECALS

These placards are applicable ONLY to litter kits having removable support bars behind copilot seat.

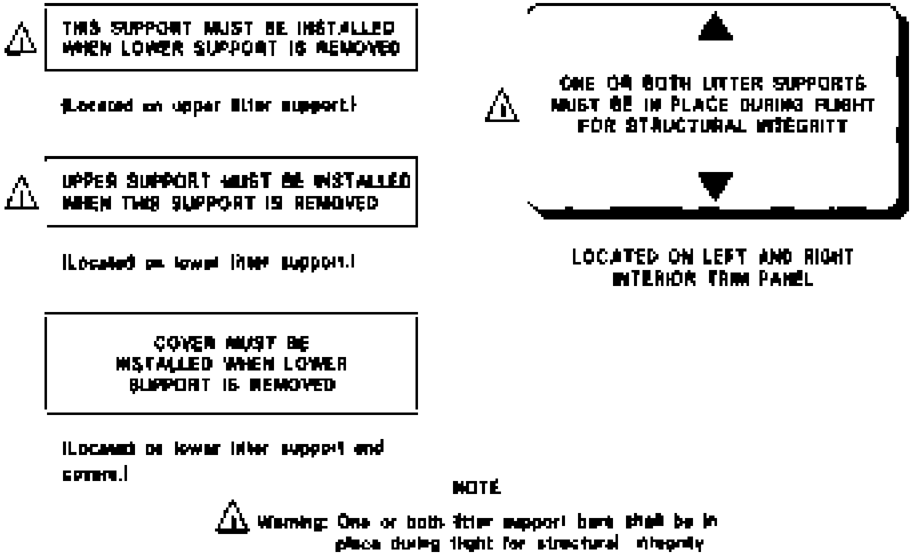

Figure 1-1. Decals

Bell MODEL 206L4 LongRanger-IV

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT

FIRE DETECTION SYSTEM KIT

206-899-793

CERTIFIED
10 NOVEMBER 1993

This supplement shall be attached to the Bell Helicopter Model 206L-4 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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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

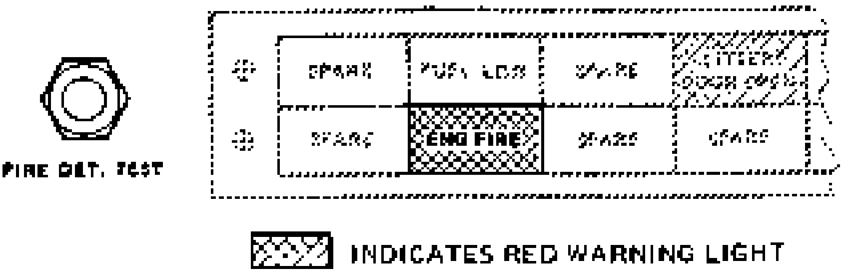
WEIGHT AND BALANCE

No change from basic manual.

Section 2

MANUFACTURER'S DATA

SYSTEM DESCRIPTION



206L4-FS-13-1

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.

MODEL 206L4 Bell LongRanger-IV

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT

SX-16C NIGHTSUN SEARCHLIGHT

206-899-992

CERTIFIED
04 DECEMBER 1996

This supplement shall be attached to the Bell Helicopter Model 206L-4 Flight Manual when SX-16C Nightsun Searchlight 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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CHIEF, FLIGHT TEST
FOR
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DEPARTMENT OF TRANSPORT

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 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, and 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 (206-706-210) 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 50FT 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.

206L4FMS19-1-1

Figure 1-1. Placard

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 AT 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

The climb performance with the Nightsun installed was determined with High Skid Gear, Emergency Floats, and Loudhailer (on the rear crosstube) also installed. In this configuration the rate of climb was reduced approximately 60 feet per minute from that shown in basic Flight Manual. Effects on climb performance will vary with number of external optional installations.

MODEL 206L4 **Bell LongRanger-IV**

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT

GOVERNOR MANUAL OVERRIDE KIT

206-898-944

CERTIFIED
30 JULY 1994

This supplement shall be attached to Model 206L-4 Flight Manual when Governor Manual Override 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

Governor Manual Override kit (206-898-944) consists of manual governor kit (Allison), circuit breaker, switch, indicator light, interconnecting wiring, and decals.

Main components of Governor Manual Override kit are as follows:

- Allison manual governor kit on engine.
- GOV circuit breaker on circuit breaker panel.
- GOV MAN switch and GOV MANUAL (amber) segmented light.

With GOV MAN switch in AUTO position, governor functions in normal manner. To override governor at low rpm, place GOV MAN switch in ON position and GOV MANUAL light illuminates.

Section 1

LIMITATIONS

1-1. WEIGHT AND 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.

1-2. GOVERNOR

The use of manual governor operating range (95 to 104% RPM) is approved for governor malfunctions and emergency governor training only.

With engine operating, throttle shall be at idle prior to moving GOV MAN switch to either position.

Takeoff in manual governor mode is prohibited.

1-3. POWER TURBINE AND ROTOR RPM — MANUAL GOVERNOR

Minimum continuous	95%
Maximum continuous	104%

Section 2

NORMAL PROCEDURES

NOTE

Accomplish following check on first flight of day

2-1. INTERIOR AND PRESTART CHECK

GOV MAN switch — ON, check GOV MANUAL light illuminates.

GOV MAN switch — AUTO, check GOV MANUAL light extinguished.

Section 3

EMERGENCY AND MALFUNCTION PROCEDURES

Table 3-1. CAUTION LIGHT

PANEL WORDING	FAULT CONDITION	CORRECTIVE ACTION
GOV MANUAL	Governor is in manual mode	Verify GOV MAN switch in ON position. Maintain RPM with throttle

3-1. ENGINE UNDERSPEED

● PROCEDURE:

NOTE

If GOV circuit breaker is pulled governor will revert to automatic mode.

1. Collective — adjust to maintain 90 to 107% rotor RPM.
2. Throttle — idle stop.
3. Establish autorotative glide.

WARNING

RETARD THROTTLE TO IDLE BEFORE SWITCHING TO MANUAL GOVERNOR MODE. FAILURE TO DO SO COULD RESULT IN ENGINE POWER SURGE, OVERSPEED, AND DAMAGE TO DRIVE TRAIN BEFORE MANUAL THROTTLE CONTROL OF RPM IS ATTAINED.

4. GOV MAN switch — ON.
5. Increase throttle to establish a power turbine RPM (N2) of 100%.
6. Recover with power — maintain N2 RPM within 95 to 104%.

CAUTION

IN MANUAL GOVERNOR MODE DO NOT REMOVE HAND FROM THROTTLE. THROTTLE SPRING WILL INCREASE THROTTLE TOWARD FULL OPEN, RESULTING IN OVERSPEED OR OVERTORQUE.

7. Land as soon as practical.

Section 4

PERFORMANCE

No change from basic manual.

Bell MODEL 206L4

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT

HIGH ALTITUDE TAIL ROTOR SYSTEM FOR SINGLE ENGINE 206L4 HELICOPTER

206-704-722

CERTIFIED
30 JULY 2004

This supplement shall be attached to Flight Manual when 206-704-722 High Altitude Tail Rotor System has been installed.

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

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GENERAL INFORMATION

INTRODUCTION

The 206-704-722 High Altitude Tail Rotor System provides improved directional controllability during hover. The system includes an improved tail rotor design and Tail Rotor Authority Control System (TRACS), which allows maximum available blade pitch angle to increase as altitude increases. The system enables takeoff, landing and hover operations at combinations of gross weights, density altitudes and relative wind velocities greater than the basic helicopter is capable of.

The Encoding Altimeter (206-706-007), Blind Encoder (206-706-051) or similar approved altitude encoder must be installed concurrently to provide the altitude signal necessary for TRACS operation.

Section 1

LIMITATIONS

1-4. REQUIRED EQUIPMENT

The Encoding Altimeter (206-706-007), Blind Encoder (206-706-051) or similar approved altitude encoder shall be installed.

The tail rotor authority control system (TRACS) shall be operational for use of the takeoff and landing limitations and hover performance data in this supplement.

Takeoff and landing with inoperative tail rotor authority control system is approved within the altitude limitations and hover performance values presented in the basic Flight Manual or appropriate optional equipment supplement.

1-6. WEIGHT AND 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.

1-11. AIRSPEED

Basic V_{NE} is 130 KIAS (150 MPH) sea level to 3,000 feet H_D. V_{NE} decreases as H_D increases, refer to Airspeed limitations placard, Figure 1-1.

1-12. ALTITUDE

Maximum density altitude (H_D) for takeoff, enroute and landing above 4,150 pounds (1,882 kilograms) gross weight is as shown in Figure 1-2.

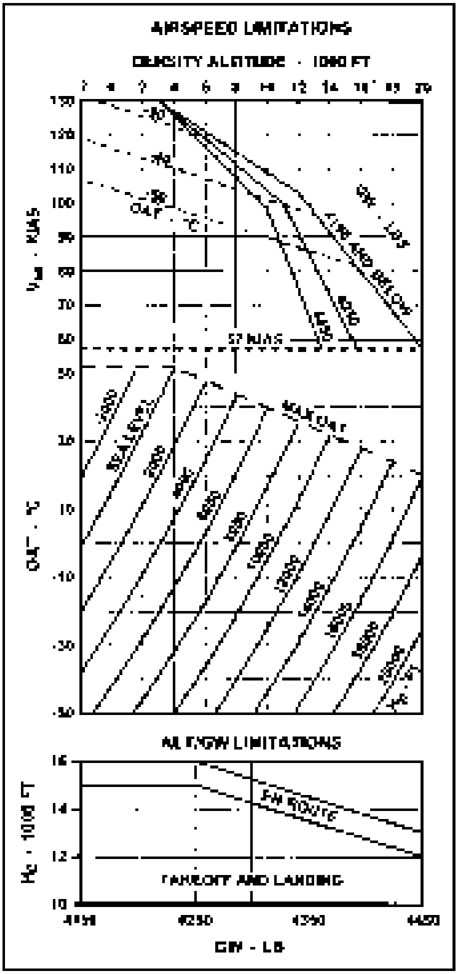

Figure 1-1. Airspeed Limitations Placard

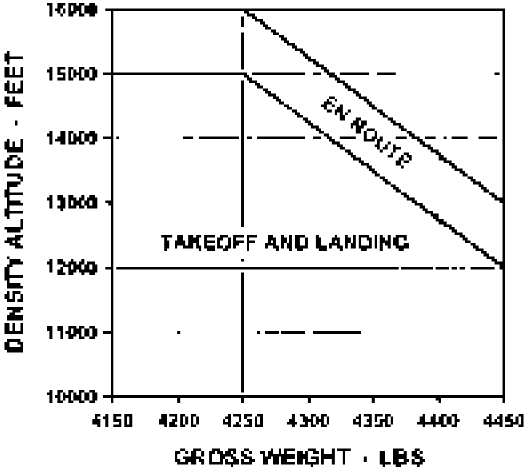

Figure 1-2 Altitude Limits for Takeoff, Enroute and Landing

Section 2

NORMAL PROCEDURES

2-6. EXTERIOR CHECK

2-12. FUSELAGE – FULL AFT

1. Tail rotor yoke — Condition, evidence of static stop contact damage (deformed static stop yield indicator). Refer to Figure 2-2 of Manufacturer's Data portion of this supplement.

2-18. ENGINE STARTING

2-18-A. TAIL ROTOR AUTHORITY CONTROL SYSTEM CHECK

Perform the following check after engine start on the first flight of the day.

1. MODE switch — Press and hold for two to three seconds until all dots in display illuminate; release and observe SELF TEST appears momentarily, then pointer (V) appears (normal mode).

2. Indicators — Compare pointers on display and actuator position indicator (API) to verify density altitude values agree.

NOTE

If density altitude is at or below 3,000 feet, pointers on display and API should read 3,000 (3); if at or above 7,000 feet, both should read 7,000 (7).

3. MODE switch — Press momentarily. Display should indicate density altitude (H_D) to the nearest 100 feet and TRACS actuator position in percent of travel.

NOTE

0% TRACS actuator travel is represented by 3,000 feet H_D. 50% TRACS actuator travel is represented by 5,000 feet H_D. 100% TRACS actuator travel is the high altitude position for 7,000 feet H_D and above.

4. MODE switch — Press momentarily. Display should indicate pressure altitude (H_P) and OAT being used by TRACS to calculate density altitude. Verify these values using altimeter (set to 29.92) and OAT gauge.

NOTE

Temperature indications of TRACS and OAT gauge should agree normally within 4 degrees but may vary significantly due to different locations of temperature probes and differences in radiated heat from the sun and ground. If this occurs, recheck OAT values in flight.

5. Altimeter — Reset as necessary.

6. MODE switch — Press to display desired mode.

2-22. BEFORE TAKEOFF

1. T/R AUTHORITY control panel — Check display and API indications agree and correct for takeoff altitude.

2-24. IN-FLIGHT OPERATIONS

1. T/R AUTHORITY control panel — Check pointers on display and API respond properly when climbing through 3,000 feet H_D and when descending through 7,000 feet H_D.

2-25. DESCENT AND LANDING

Before any low speed maneuvering or landing approach:

1. T/R AUTHORITY control panel — Check display and API indications agree and correct for landing altitude.

Section 3

EMERGENCY/MALFUNCTION PROCEDURES

Table 3-2. Caution Lights

PANEL WORDING	FAULT CONDITION	CORRECTIVE ACTION
T/R AUTH	Tail rotor authority control system failed.	Refer to TRACS Failure procedure.

3-23. TRACS FAILURE

Failure of the tail rotor authority control system (TRACS) will cause the TRACS actuator to remain fixed in the position it was in upon failure. Tail rotor authority (pitch angle range available to the pilot) cannot vary with changes in altitude. If failure occurred below 7,000 feet H_D, published hover performance may not be valid for all weights and relative winds depicted.

INDICATIONS

1. T/R AUTH caution light illuminates.
2. FAIL message appears on TRACS display (Table 3-3); or,
3. TRACS display goes blank.

Table 3-3. TRACS Fail Messages

CONDITION	MESSAGE	MEANING
Powerup	FAIL ENC 1	Altitude encoder data error, type 1 (maintenance code).
Powerup	FAIL ENC 2	Altitude encoder data error, type 2 (maintenance code).
Powerup	FAIL ENC 3	Altitude encoder data error, type 3 (maintenance code).
Powerup	FAIL RVDT	Invalid signal from rotary variable displaced transducer (actuator position sensor).
Powerup	FAIL TEMP PR	Invalid signal from temperature probe.
Powerup	FAILED ACTR	TRACS actuator failed to respond.
Inflight	FAILED @XXX%	TRACS actuator failed at indicated percent of travel.
Inflight	FAIL – UNKNOWN	Failure which is not identifiable

PROCEDURE:

1. Note FAIL message, actuator position, and density altitude at time of failure.
2. ENC ALT circuit breaker — Check in.
3. T/R AUTH circuit breaker — Reset
4. If TRACS passes self test, continue normal operations. If failure remains, proceed to next step.
5. If TRACS failed self test, refer to Figure 3-1 for continued operation

HOVER/LAND ALTITUDE OPERATING	ALTITUDE AT WHICH TRACS FAILED		
	BELOW 3000 FEET	3000-7000 FEET	ABOVE 7000 FEET
BELOW 3000 FEET	CONTINUE NORMAL OPERATION	AVOID LARGE-RAPID PEDAL REVERSALS	
3000-7000 FEET	HOVER/ LAND INTO THE WIND	CONTINUE NORMAL OPERATION	
ABOVE 7000 FEET			

Figure 3-1. Altitude TRACS Failed

Section 4

PERFORMANCE

4-3. IGE AND OGE HOVER CEILINGS

The Hover Performance charts present hover performance at the maximum gross weight for a given pressure altitude and temperature combination. Satisfactory stability and control have been demonstrated for hover at all altitudes and relative winds as shown.

Hover performance charts IGE, Figure 4-2 and OGE, Figure 4-3 are presented for three wind conditions: calm winds or any winds within 30 degrees of the nose, winds up to 26 knots and 0 to 35 knots.

Charts for calm winds or any winds within 30 degrees of the nose provide the maximum hover performance for any combination of density altitude and gross weight.

The 26 knot charts present hover performance with winds up to 26 knots from any azimuth.

The 35 knot charts can be used for winds from 0 to 35 knots. Hover with a tailwind from 135° to 225° is prohibited above 3,000 feet H_D. Hover at 35 knots is authorized for all azimuths below 3,000 feet.

For all wind conditions, the OAT lines on the hover charts are based on engine TOT limits.

4-5. AIRSPEED

Refer to Airspeed limitations placard (examples) (Figure 4-1). This chart may be entered from either of two ways. Enter with density altitude (as displayed on the TRACS readout) or from OAT and pressure altitude. Follow vertical guide lines to the appropriate weight (or OAT) line then left to the V_{NE}.

NOTE

If H_D readout on the TRACS is unavailable, base V_{NE} on takeoff gross weight.

EXAMPLE A

For an OAT of 0°C, H_P of 12,000 feet, and gross weight of 4,250 pounds (1,928 kilograms), the V_{NE} is 82 knots. The same results can be obtained by entering the chart from the top at density altitude of 13,000 feet and following the guide line down to 4,250 pounds. This example is shown on Figure 4-1.

EXAMPLE B

For an OAT of -40°C, H_P of 12,000 feet and gross weight of 4,250 pounds (1,928 kilograms) the V_{NE} is 104 knots. The same results can be obtained by entering the chart from the top at density altitude of 8,000 feet and following the guide line down to -40°C. This example is shown on Figure 4-1.

CAUTION

IF A MORE RESTRICTIVE V_{NE} CAN BE OBTAINED BY EXTENDING THE DENSITY ALTITUDE TO INTERSECT AN AMBIENT OAT LINE (-30°, -40° OR -50°C), THEN THE MORE RESTRICTIVE V_{NE} SHALL BE USED.

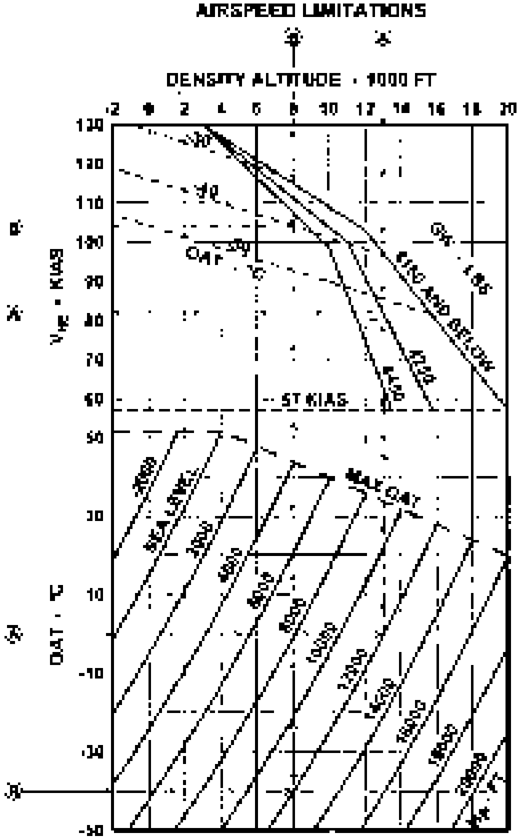

Figure 4-1. Airspeed Limitations Placard (Examples)

IN GROUND EFFECT HOVER

IN CALM WINDS OR ANY WINDS
WITHIN 30 DEGREES OF THE NOSE

(WITH STANDARD SKID LANDING GEAR)

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 2.5 FT (0.7 METER)
HEATER OFF / ANTI-ICE OFF OR ON
BASIC INLET

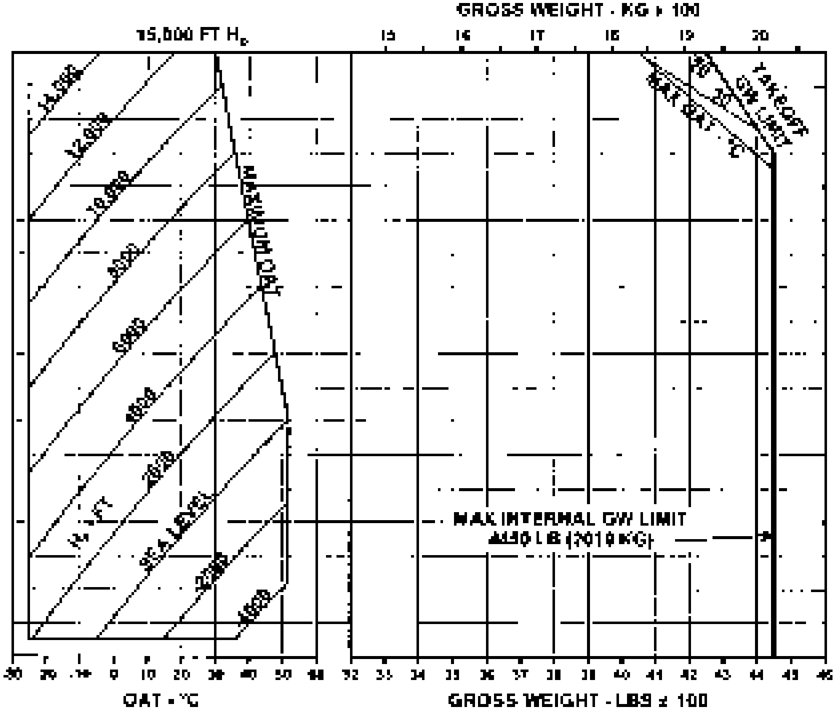

Figure 4-2 Hover Ceiling — IGE (Sheet 1 of 24)

IN GROUND EFFECT HOVER

IN CALM WINDS OR ANY WINDS
WITHIN 30 DEGREES OF THE NOSE

(WITH STANDARD SKID LANDING GEAR)

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 2.5 FT (0.7 METER)
HEATER OFF / ANTI-ICE OFF OR ON
PARTICLE SEPARATOR - PURGE OFF

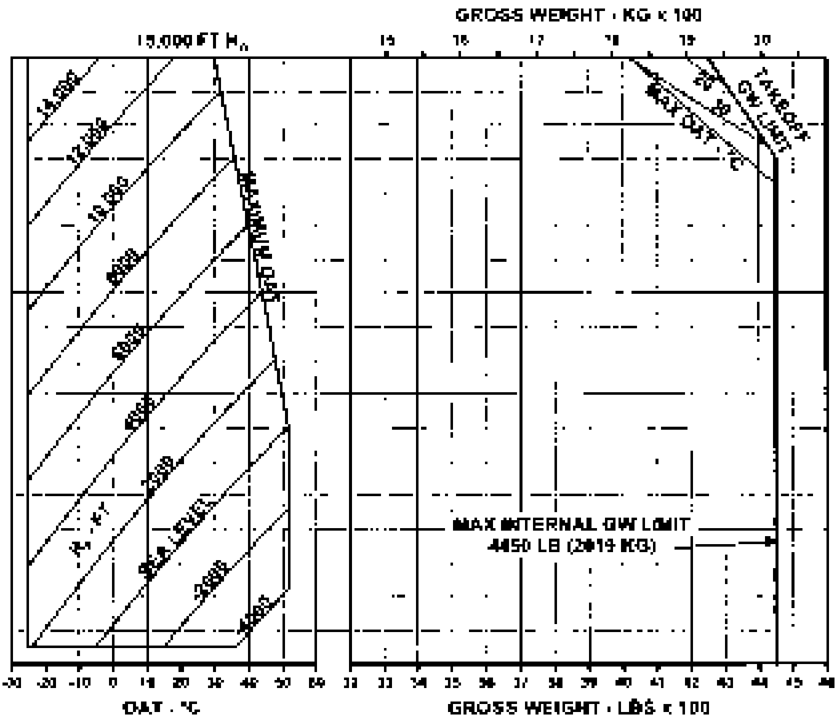

Figure 4-2. Hover Ceiling — IGE (Sheet 2 of 24)

IN GROUND EFFECT HOVER
IN CALM WINDS OR ANY WINDS
WITHIN 30 DEGREES OF THE NOSE
(WITH STANDARD SKID LANDING GEAR)

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 2.5 FT (0.7 METER)
HEATER OFF / ANTIICE OFF OR ON
PARTICLE SEPARATOR - PURGE ON

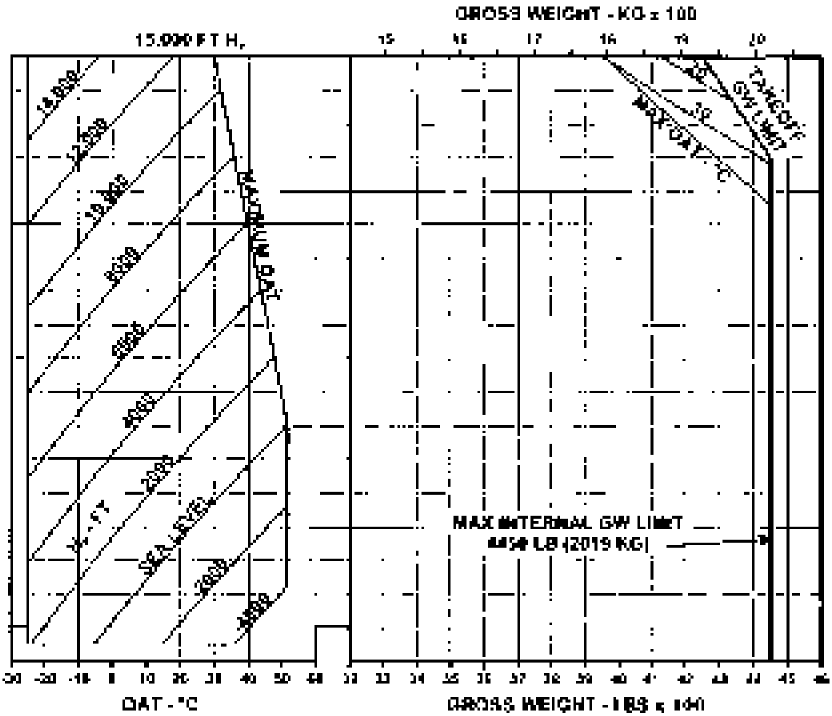

Figure 4-2. Hover Ceiling — IGE (Sheet 3 of 24)

IN GROUND EFFECT HOVER
IN CALM WINDS OR ANY WINDS WITHIN 30 DEGREES OF THE NOSE

(WITH STANDARD SKID LANDING GEAR)

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 2.5 FT (0.7 METER)
HEATER OFF / ANTI-ICE OFF
BASIC INLET OR PART. SEP. - PURGE OFF
SNOW DEFLECTOR

WITH ANTI-ICE ON, REDUCE GW 120 LB (54 KG) ABOVE 12,500 FT H_P (5°C AND COLDER)

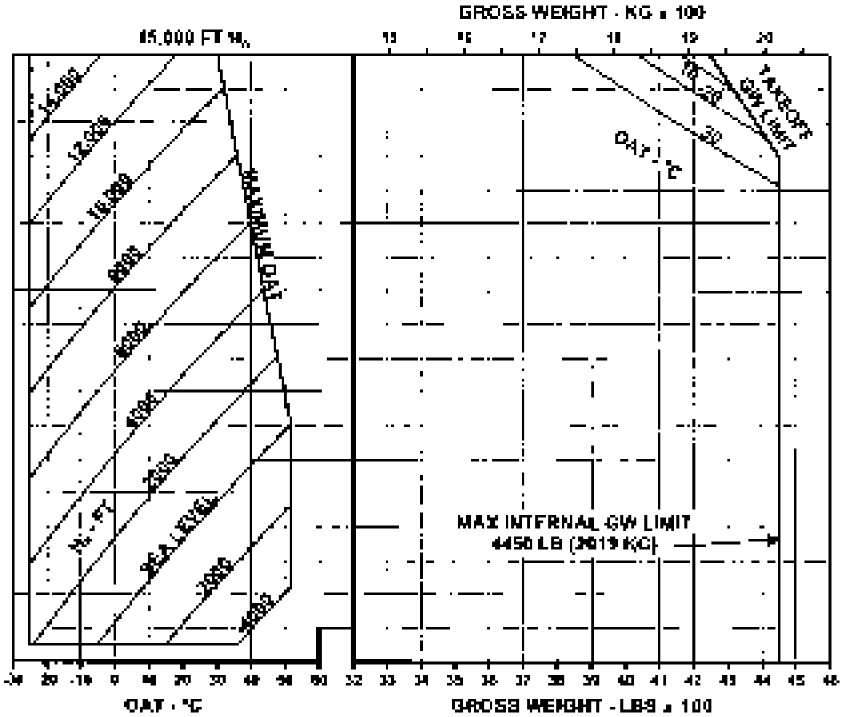

Figure 4-2. Hover Ceiling — IGE (Sheet 4 of 24)

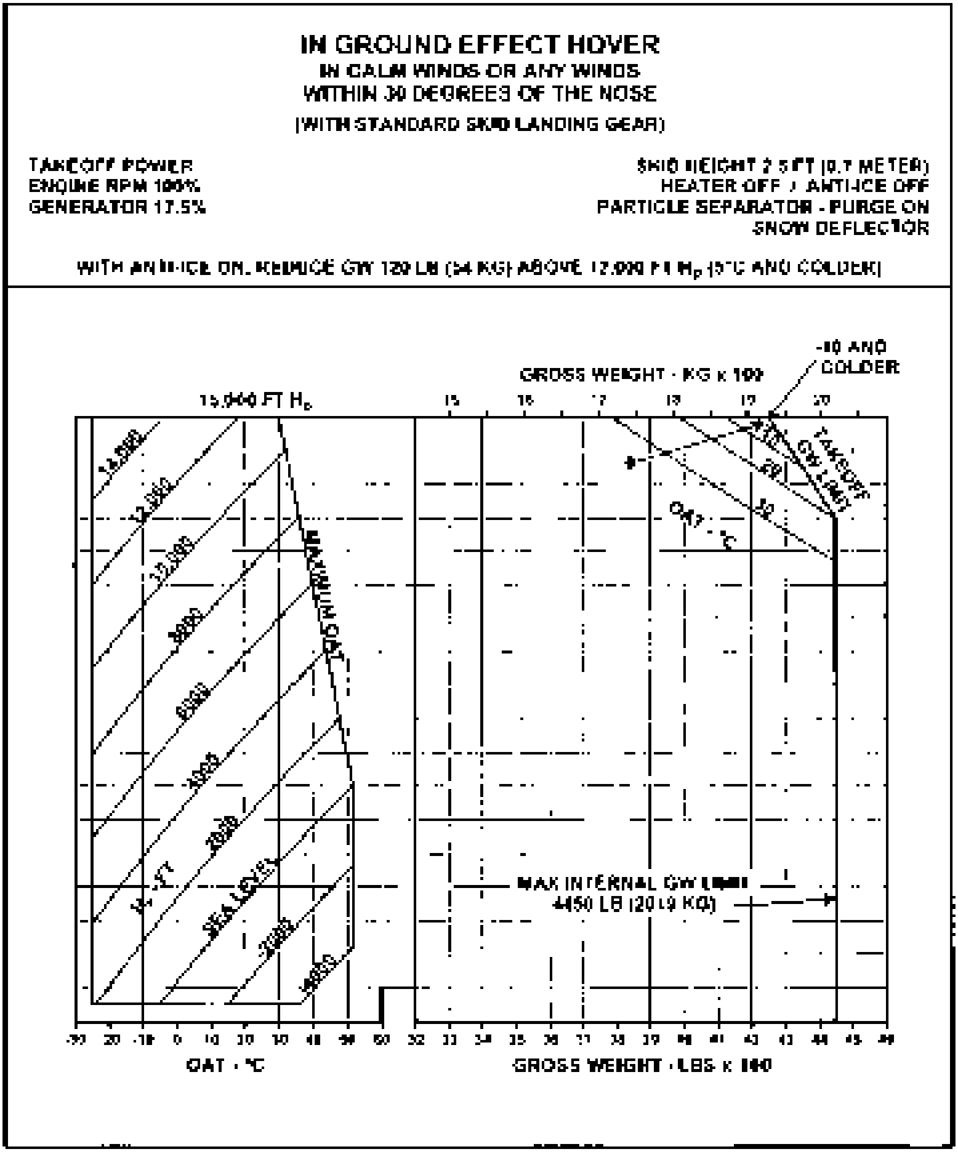

Figure 4-2. Hover Ceiling — IGE (Sheet 5 of 24)

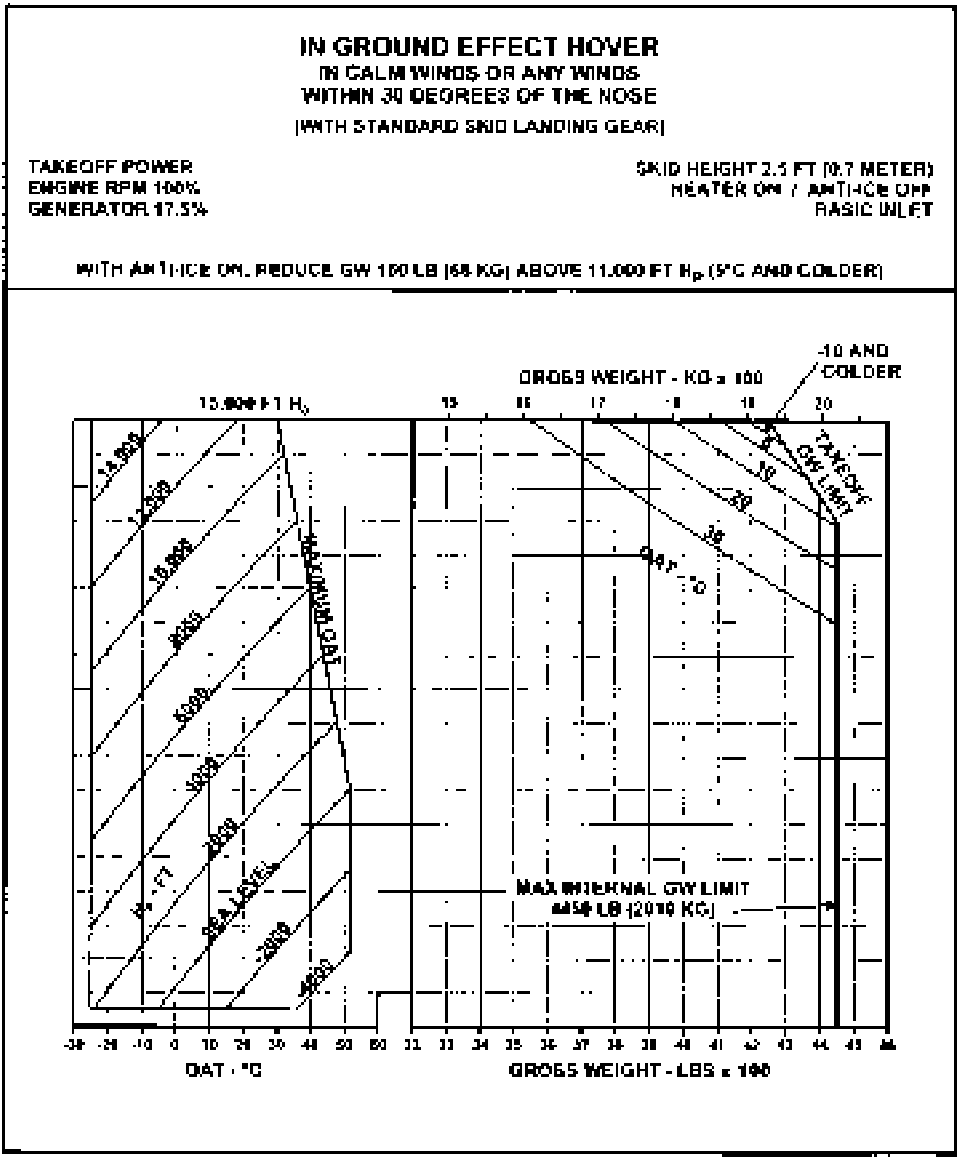

Figure 4-2. Hover Ceiling — IGE (Sheet 8 of 24)

IN GROUND EFFECT HOVER

IN CALM WINDS OR ANY WINDS
WITHIN 30 DEGREES OF THE NOSE
(WITH STANDARD SKID LANDING GEAR)

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 2.5 FT (0.7 METER)
HEATER ON / ANTI-ICE OFF
PARTICLE SEPARATOR - PURGE OFF

WITH ANTI-ICE ON, REDUCE GW 150 LB (68 KG) ABOVE 14,000 FT H_P (5°C AND COLDER)

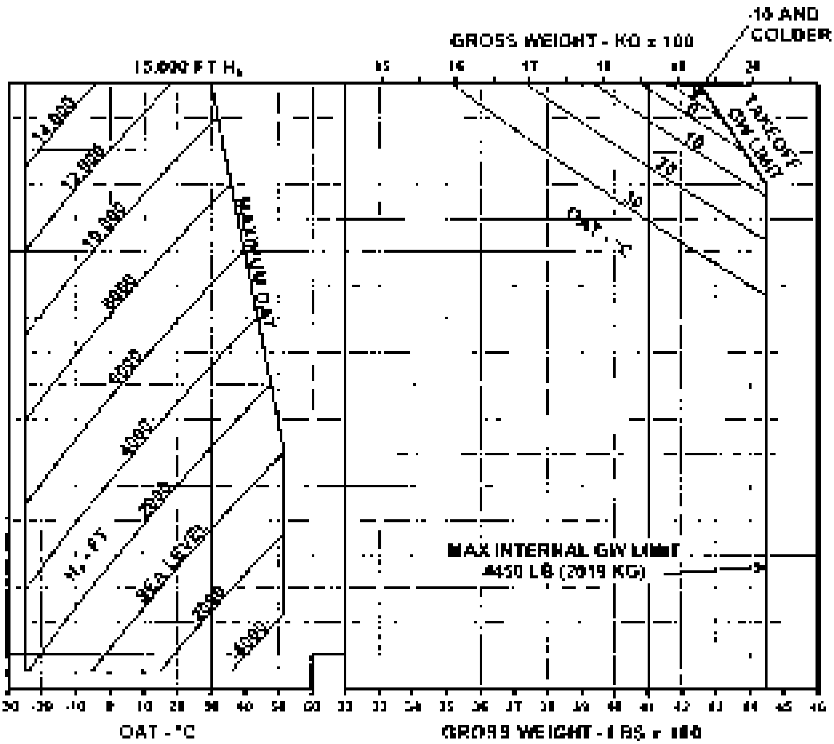

Figure 4-2. Hover Ceiling — IGE (Sheet 7 of 24)

IN GROUND EFFECT HOVER

IN CALM WINDS OR ANY WINDS
WITHIN 30 DEGREES OF THE NOSE

(WITH STANDARD SKID LANDING GEAR)

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 2.5 FT (0.7 METER)
HEATER ON / ANTI-ICE OFF
PARTICLE SEPARATOR - PURGE ON

WITH ANTI-ICE ON, REDUCE GW 160 LB (73 KG) ABOVE 10,500 FT H_P (5°C AND COLDER)

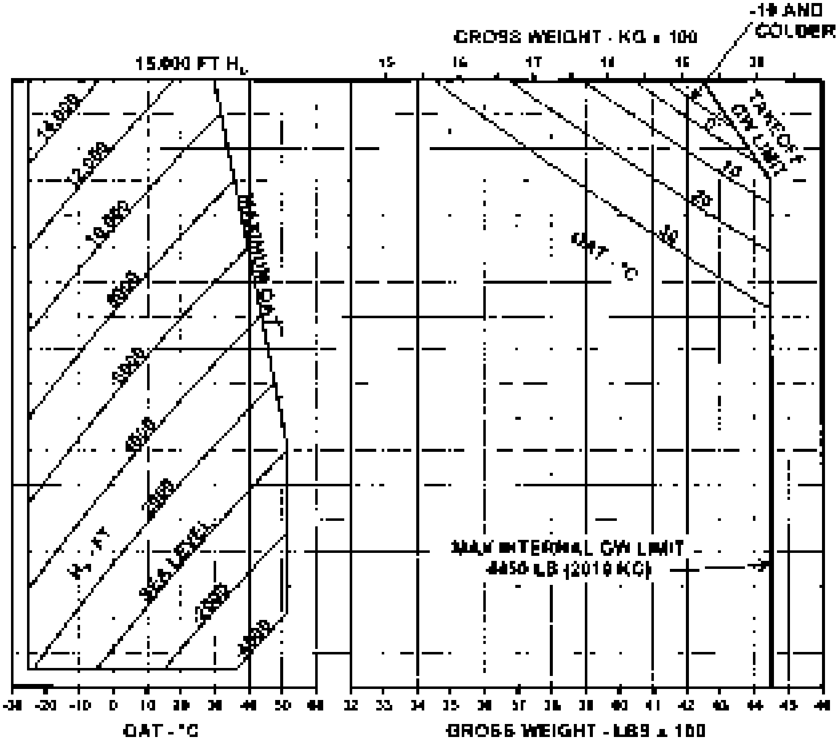

Figure 4-2. Hover Ceiling — IGE (Sheet 6 of 24)

IN GROUND EFFECT HOVER

IN CALM WINDS OR ANY WINDS WITHIN 30 DEGREES OF THE NOSE

(WITH STANDARD SKID LANDING GEAR)

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 2.5 FT (0.7 METER)
HEATER ON / ANTI-ICE OFF
BASIC INLET OR PART. SEP. - PURGE OFF
SNOW DEFLECTOR

WITH ANTI-ICE ON, REDUCE GW 170 LB (77 KG) ABOVE 9500 FT H_P (5°C AND COLDER)

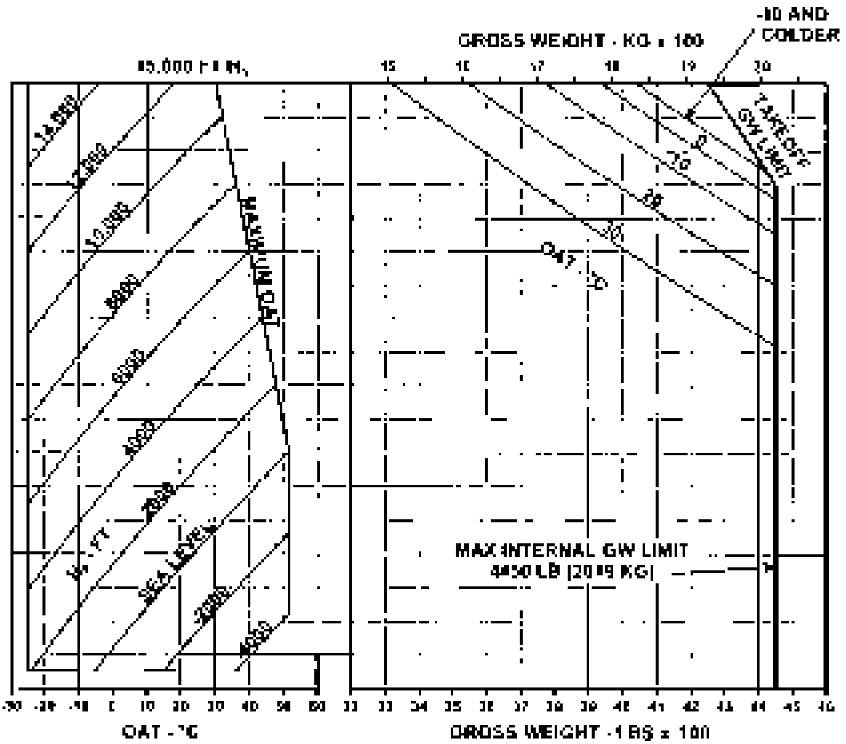

Figure 4-2. Hover Ceiling — IGE (Sheet 9 of 24)

IN GROUND EFFECT HOVER

IN CALM WINDS OR ANY WINDS
WITHIN 30 DEGREES OF THE NOSE

(WITH STANDARD SKID LANDING GEAR)

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 2.5 FT (0.7 METER)
HEATER ON / ANTI-ICE OFF
PARTICLE SEPARATOR - PURGE ON
SNOW DEFLECTOR

WITH ANTI-ICE ON, REDUCE GW 170 LB (77 KG) ABOVE 1000 FT H_P (5°C AND COLDER)

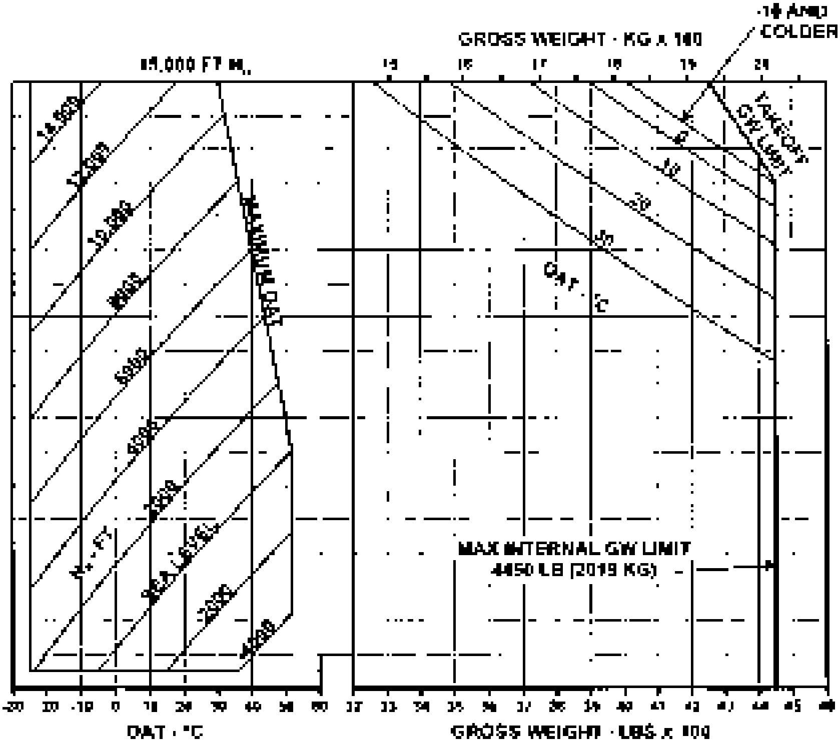

Figure 4-2. Hover Ceiling — IGE (Sheet 10 of 24)

IN GROUND EFFECT HOVER

IN CALM WINDS OR ANY WINDS
WITHIN 30 DEGREES OF THE NOSE

(WITH HIGH SKID OR EMERGENCY FLOTATION LANDING GEAR)

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 2.5 FT (0.7 METER)
HEATER OFF / ANTI-ICE OFF
BASIC INLET

WITH ANTI-ICE ON, REDUCE GW 120 LB (54 KG) ABOVE 12,000 FT H_P (5°C AND COLDER)

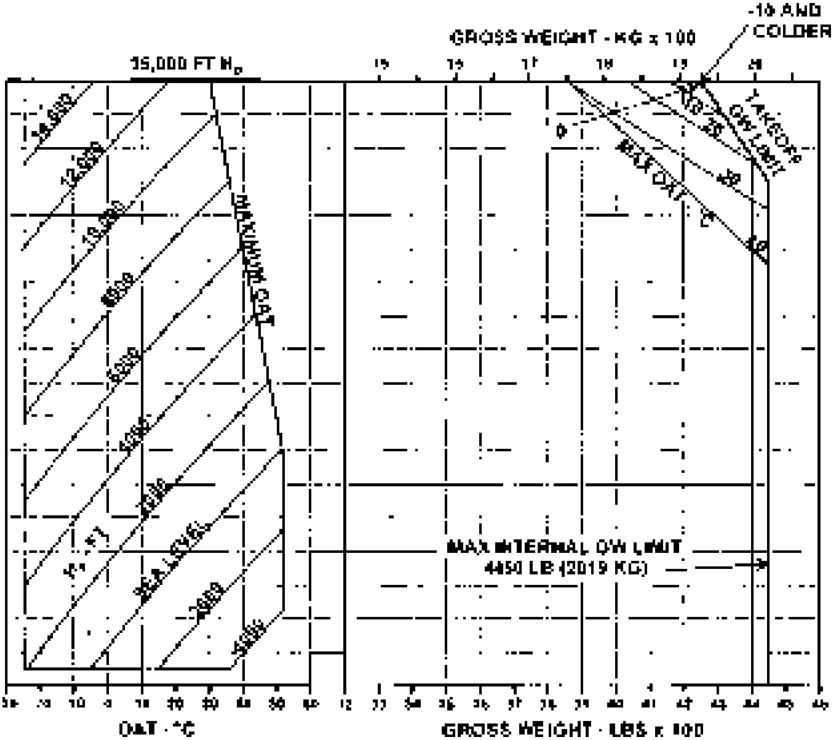

Figure 4-2. Hover Ceiling — IGE (Sheet 11 of 24)

IN GROUND EFFECT HOVER

IN CALM WINDS OR ANY WINDS
WITHIN 30 DEGREES OF THE NOSE

(WITH HIGH SKID OR EMERGENCY FLOTATION LANDING GEAR)

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 2.5 FT (0.7 METER)
HEATER OFF / ANTI-ICE OFF
PARTICLE SEPARATOR - PURGE OFF

WITH ANTI-ICE ON, REDUCE GW 120 LB (54 KG) ABOVE 12,000 FT H_P (5°C AND COLDER)

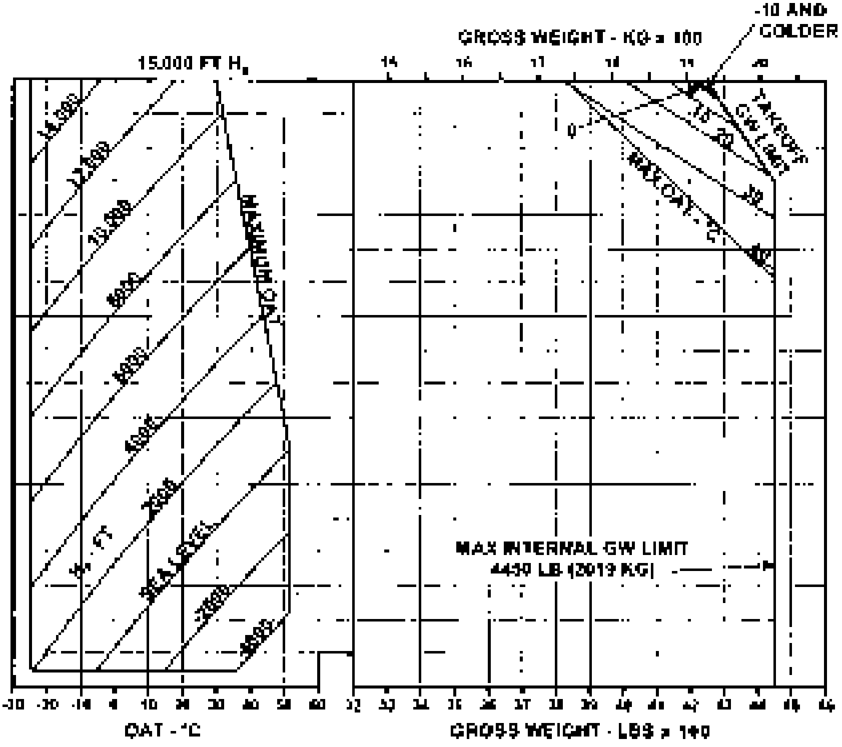

Figure 4-2. Hover Ceiling — IGE (Sheet 12 of 24)

IN GROUND EFFECT HOVER

IN CALM WINDS OR ANY WINDS
WITHIN 30 DEGREES OF THE NOSE

(WITH HIGH SKID OR EMERGENCY FLOTATION LANDING GEAR)

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 2.5 FT (0.7 METER)
HEATER OFF / ANTI-ICE OFF
PARTICLE SEPARATOR - PURGE ON

WITH ANTI-ICE ON, REDUCE GW 130 LB (59 KG) ABOVE 11 500 FT H_P (5°C AND COLDER)

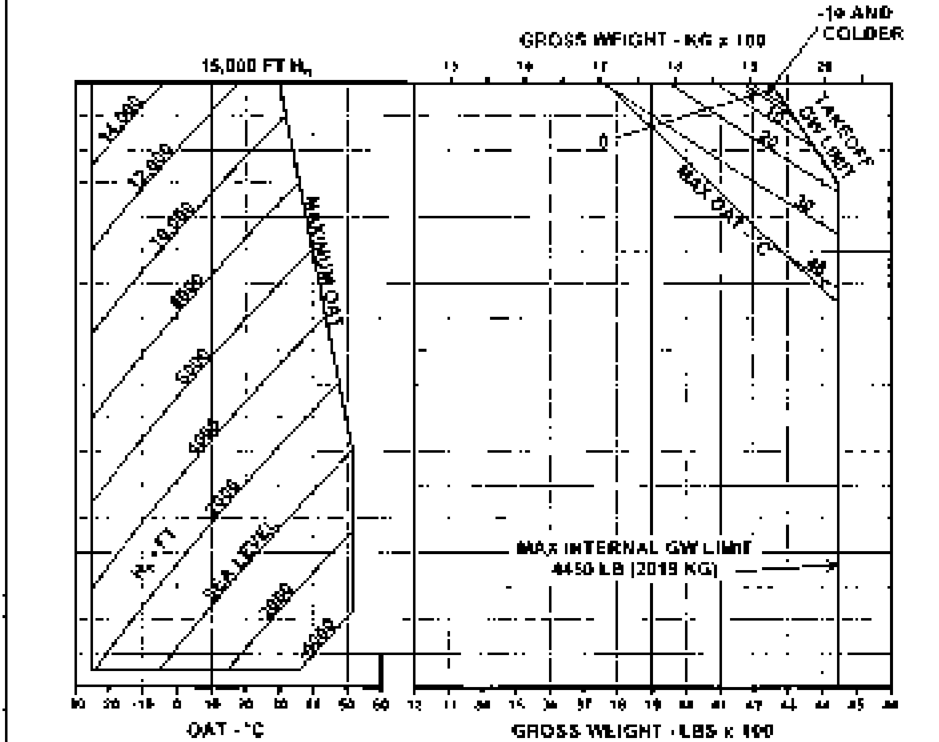

Figure 4-2. Hover Ceiling — IGE (Sheet 13 of 24)

IN GROUND EFFECT HOVER

IN CALM WINDS OR ANY WINDS WITHIN 30 DEGREES OF THE NOSE

(WITH HIGH SKID OR EMERGENCY FLOTATION LANDING GEAR)

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 2.5 FT (0.7 METER)
HEATER OFF / ANTI-ICE OFF
BASIC INLET OR PART. SEP. - PURGE OFF
SNOW DEFLECTOR

WITH ANTI-ICE ON, REDUCE GW 150 LB (59 KG) ABOVE 10,500 FT H_P (5°C AND COLDER)

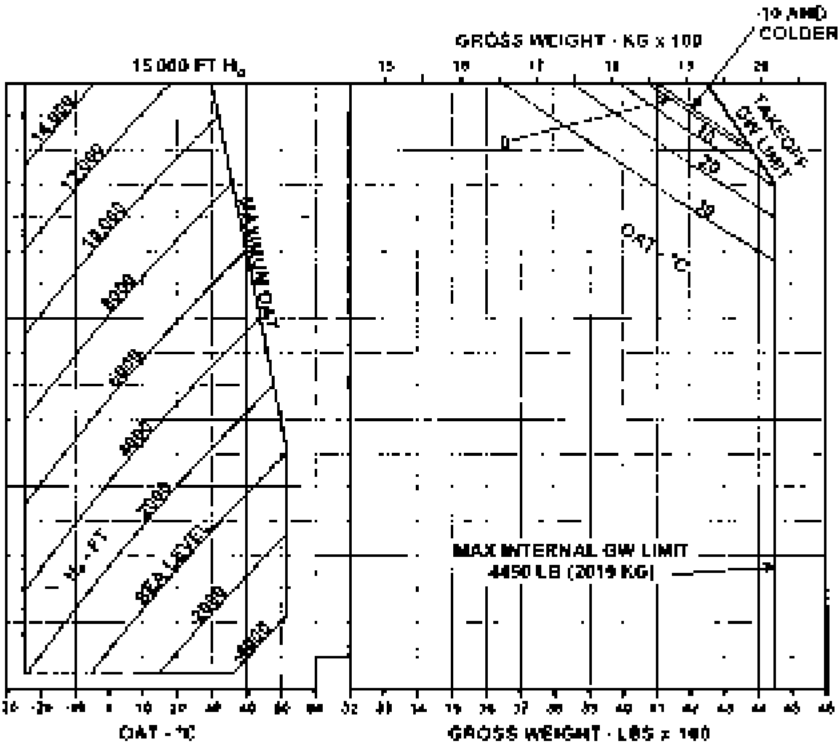

Figure 4-2. Hover Ceiling — IGE (Sheet 14 of 24)

IN GROUND EFFECT HOVER

IN CALM WINDS OR ANY WINDS WITHIN 30 DEGREES OF THE NOSE

(WITH HIGH SKID OR EMERGENCY FLOTATION LANDING GEAR)

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 2.3 FT (0.7 METER)
HEATER OFF / ANTI-ICE OFF
PARTICLE SEPARATOR - PURGE ON
SNOW DEFLECTOR

WITH ANTI-ICE ON, REDUCE GW 140 LB (64 KG) ABOVE 10,500 FT H_P (5°C AND COLDER)

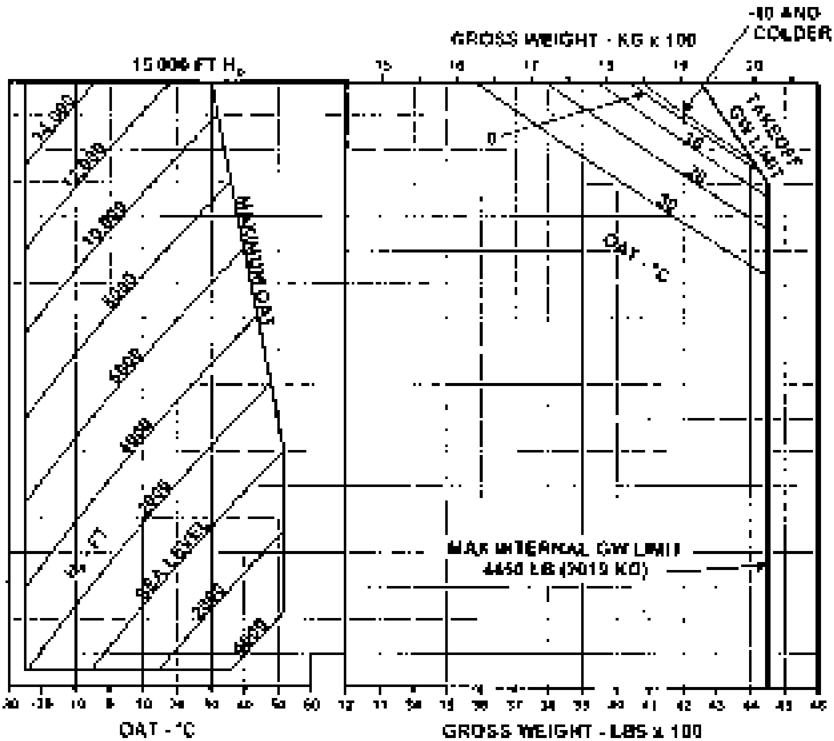

Figure 4-2. Hover Ceiling — IGE (Sheet 15 of 24)

IN GROUND EFFECT HOVER

IN CALM WINDS OR ANY WINDS
WITHIN 30 DEGREES OF THE NOSE

(WITH HIGH SKID OR EMERGENCY FLOTATION LANDING GEAR)

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 2.5 FT (0.7 METER)
HEATER ON / ANTI-ICE OFF
BASIC INLET

WITH ANTI-ICE ON, REDUCE GW 170 LB (77 KG) ABOVE 9500 FT H_P (5°C AND COLDER)

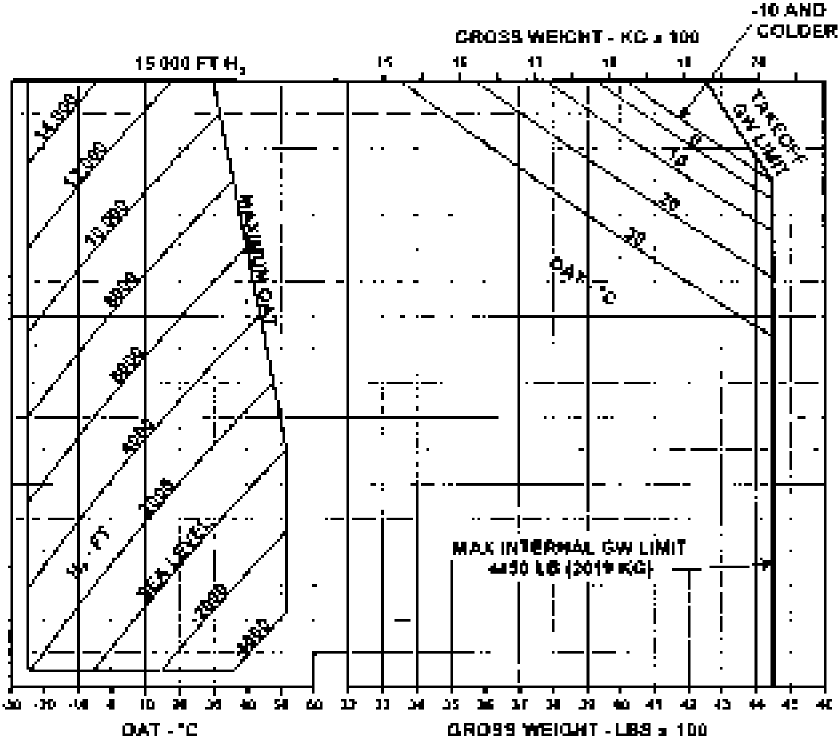

Figure 4-2. Hover Ceiling — IGE (Sheet 16 of 24)

IN GROUND EFFECT HOVER

IN CALM WINDS OR ANY WINDS WITHIN 30 DEGREES OF THE NOSE

(WITH HIGH SKID OR EMERGENCY FLOTATION LANDING GEAR)

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 2.5 FT (0.7 METER)
HEATER ON / ANTI-ICE OFF
PARTICLE SEPARATOR - PURGE OFF

WITH ANTI-ICE ON, REDUCE GW 170 LB (77 KG) ABOVE 9000 FT H_P (5°C AND COLDER)

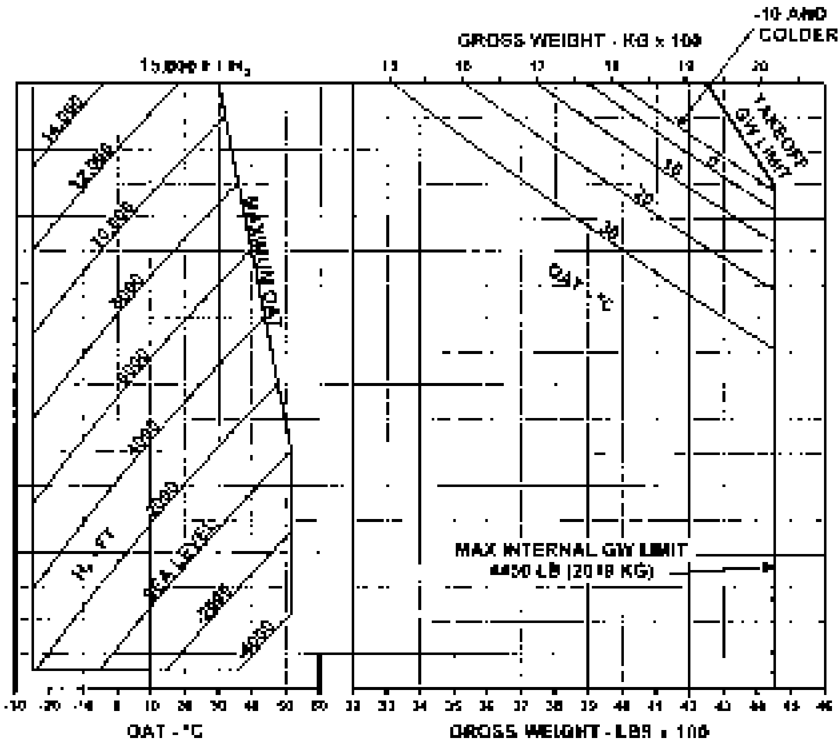

Figure 4-2. Hover Ceiling — IGE (Sheet 17 of 24)

IN GROUND EFFECT HOVER

IN CALM WINDS OR ANY WINDS
WITHIN 30 DEGREES OF THE NOSE

(WITH HIGH SKID OR EMERGENCY FLOTATION LANDING GEAR)

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 2.5 FT (0.7 METER)
HEATER ON / ANTI-ICE OFF
PARTICLE SEPARATOR - PURGE ON

WITH ANTI-ICE ON, REDUCE GW 170 LB (77 KG) ABOVE 6500 FT H_P (5°C AND COLDER)

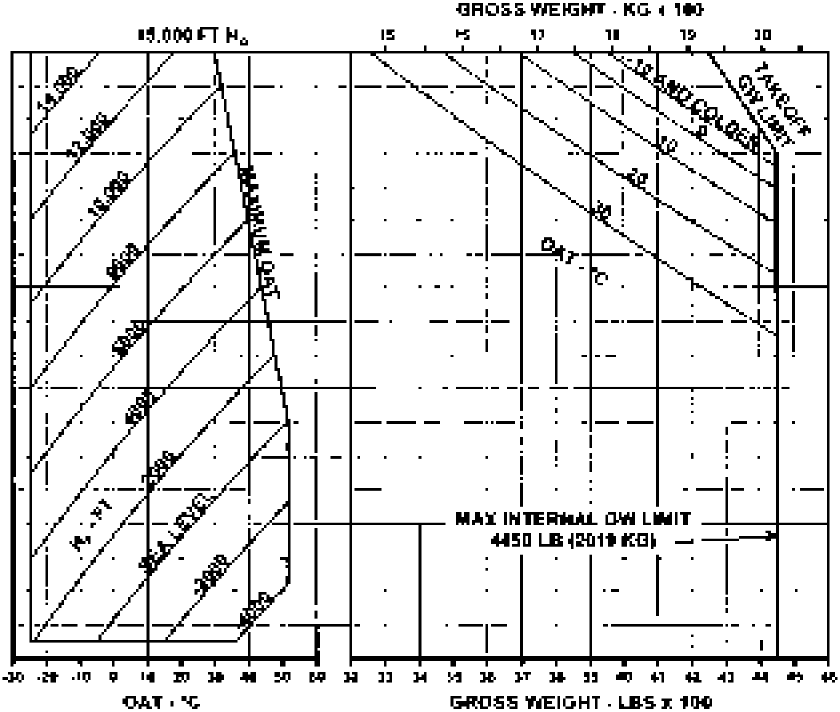

Figure 4-2. Hover Ceiling — IGE (Sheet 16 of 24)

IN GROUND EFFECT HOVER

IN CALM WINDS OR ANY WINDS
WITHIN 30 DEGREES OF THE NOSE

(WITH HIGH SKID OR EMERGENCY FLOTATION LANDING GEAR)

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 2.5 FT (0.7 METER)
HEATER ON / ANTI-ICE OFF
BASIC INLET OR PART. SEP. - PURGE OFF
SNOW DEFLECTOR

WITH ANTI-ICE ON, REDUCE GW 180 LB (82 KG) ABOVE 6000 FT H_P (5°C AND COLDER)

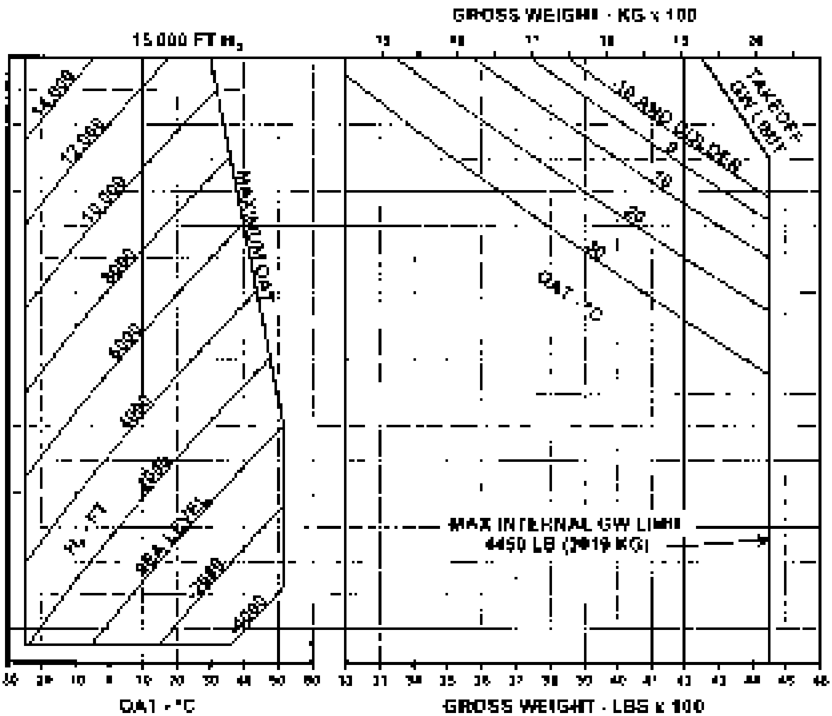

Figure 4-2. Hover Ceiling — IGE (Sheet 19 of 24)

IN GROUND EFFECT HOVER

IN CALM WINDS OR ANY WINDS WITHIN 30 DEGREES OF THE NOSE

(WITH HIGH SKID OR EMERGENCY FLOTATION LANDING GEAR)

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 2.5 FT (0.7 METER)
HEATER ON / ANTI-ICE OFF
PARTICLE SEPARATOR - PURGE ON
SNOW DEFLECTOR

WITH ANTI-ICE ON REDUCE GW 180 LB (82 KG) ABOVE 7500 FT H_P (5°C AND COLDER)

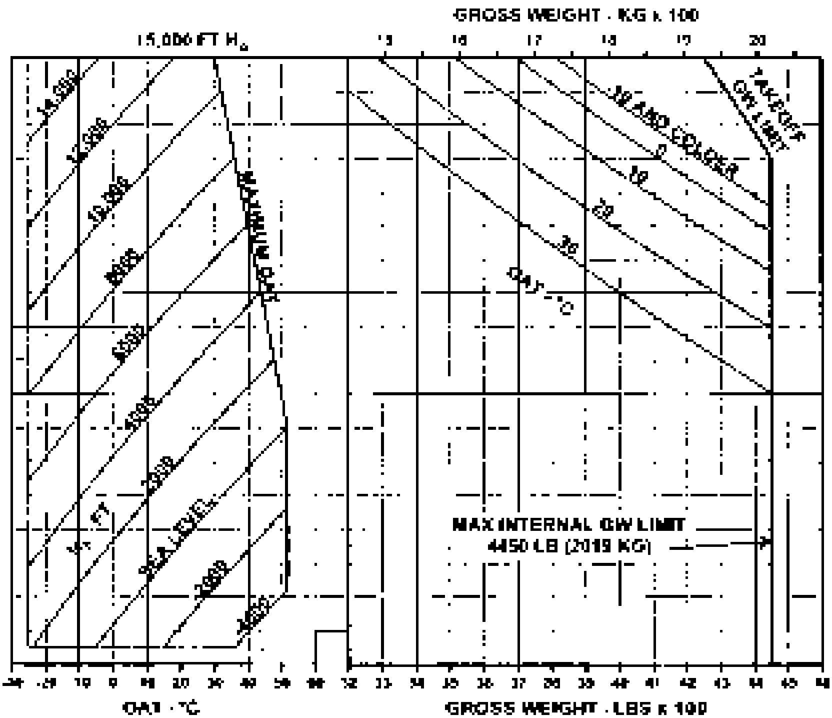

Figure 4-2. Hover Ceiling — IGE (Sheet 20 of 24)

IN GROUND EFFECT HOVER

IN WINDS UP TO 26 KNOTS

(WITH STANDARD SKID LANDING GEAR)

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 2.5 FT (0.7 METER)
ANTI-ICE OFF
BASIC INLET

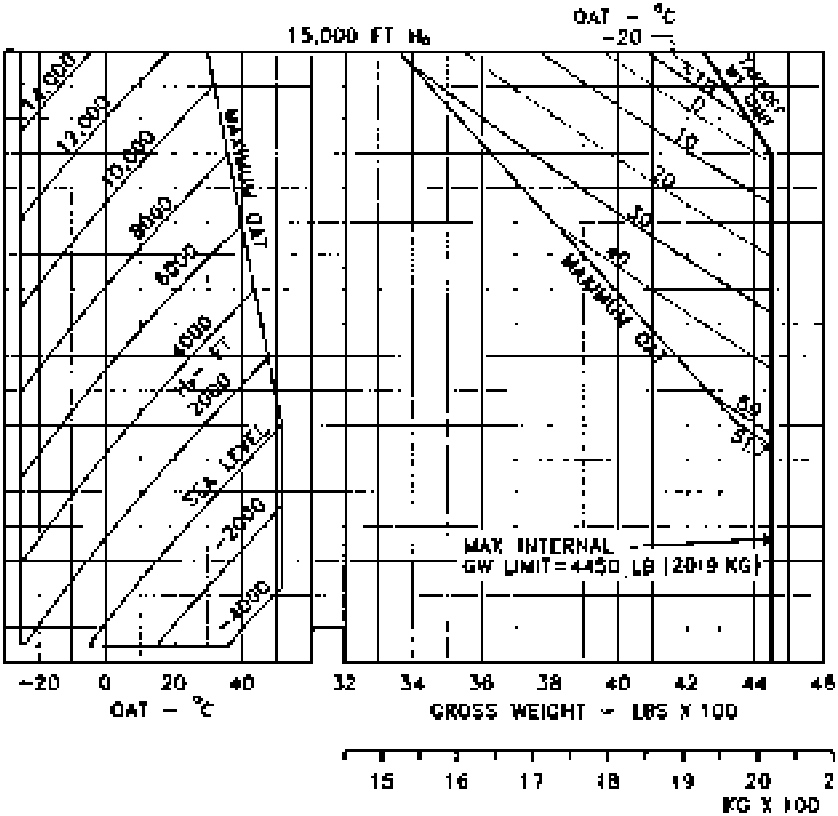

Figure 4-2. Hover Ceiling — IGE (Sheet 21 of 24)

IN GROUND EFFECT HOVER
IN WINDS UP TO 25 KNOTS
(WITH STANDARD SKID LANDING GEAR)

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 2.5 FT (0.7 METER)
ANTI-ICE ON
BASIC INLET

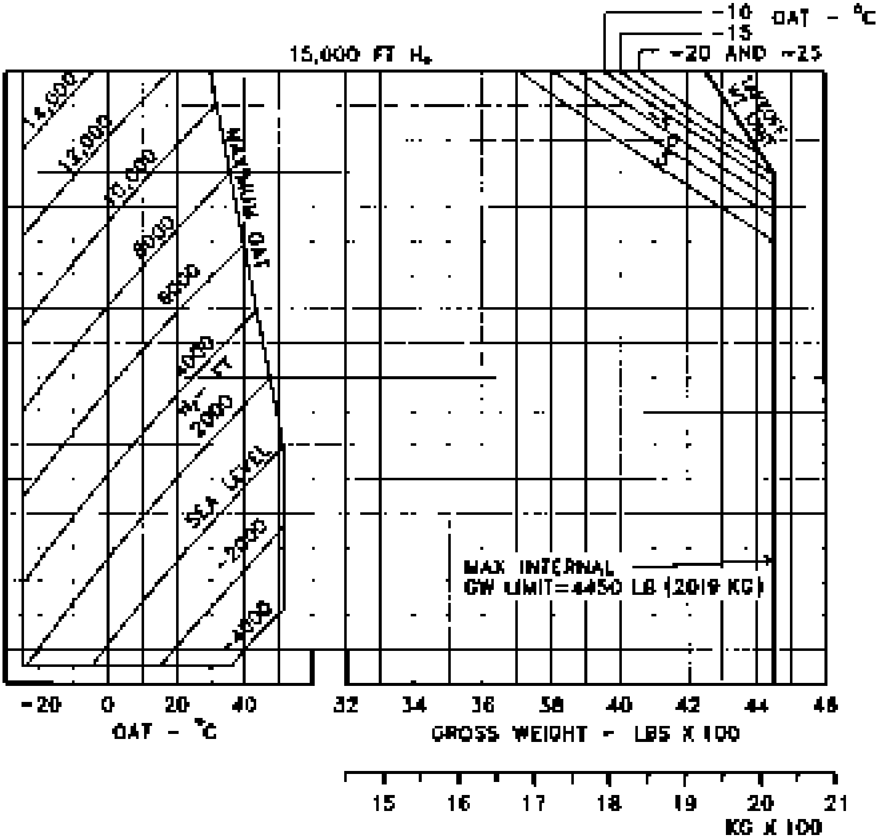

Figure 4-2. Hover Ceiling — IGE (Sheet 22 of 24)

IN GROUND EFFECT HOVER
IN 35 KNOT WINDS
(WITH STANDARD SKID LANDING GEAR)

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 2.5 FT (0.7 METER)
ANTI-ICE OFF
BASIC INLET

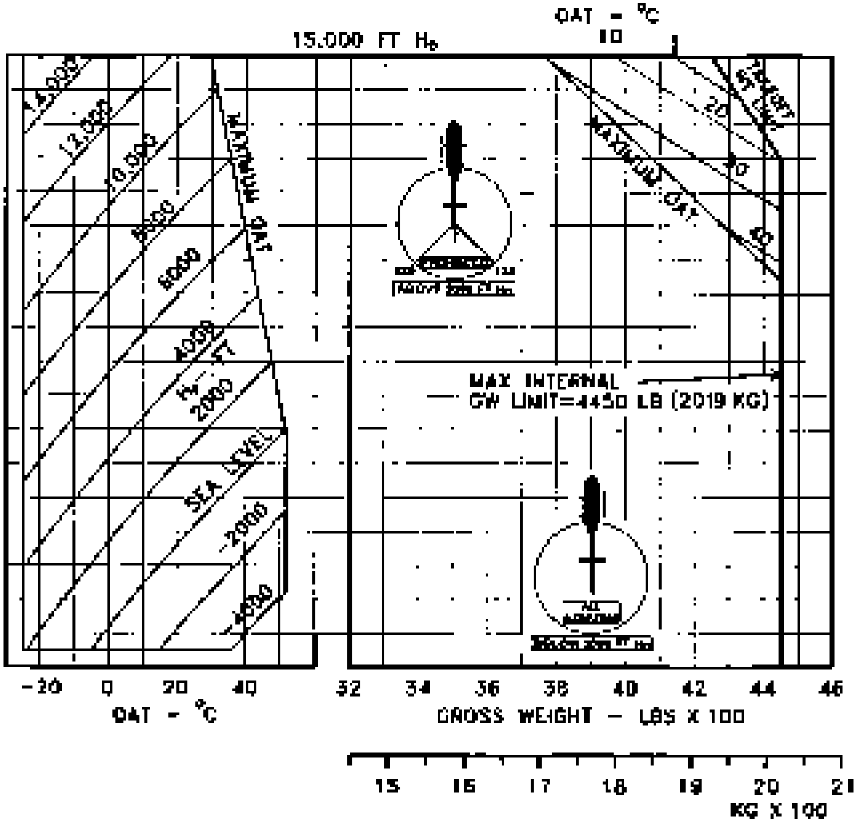

Figure 4-2 Hover Ceiling — IGE (Sheet 23 of 24)

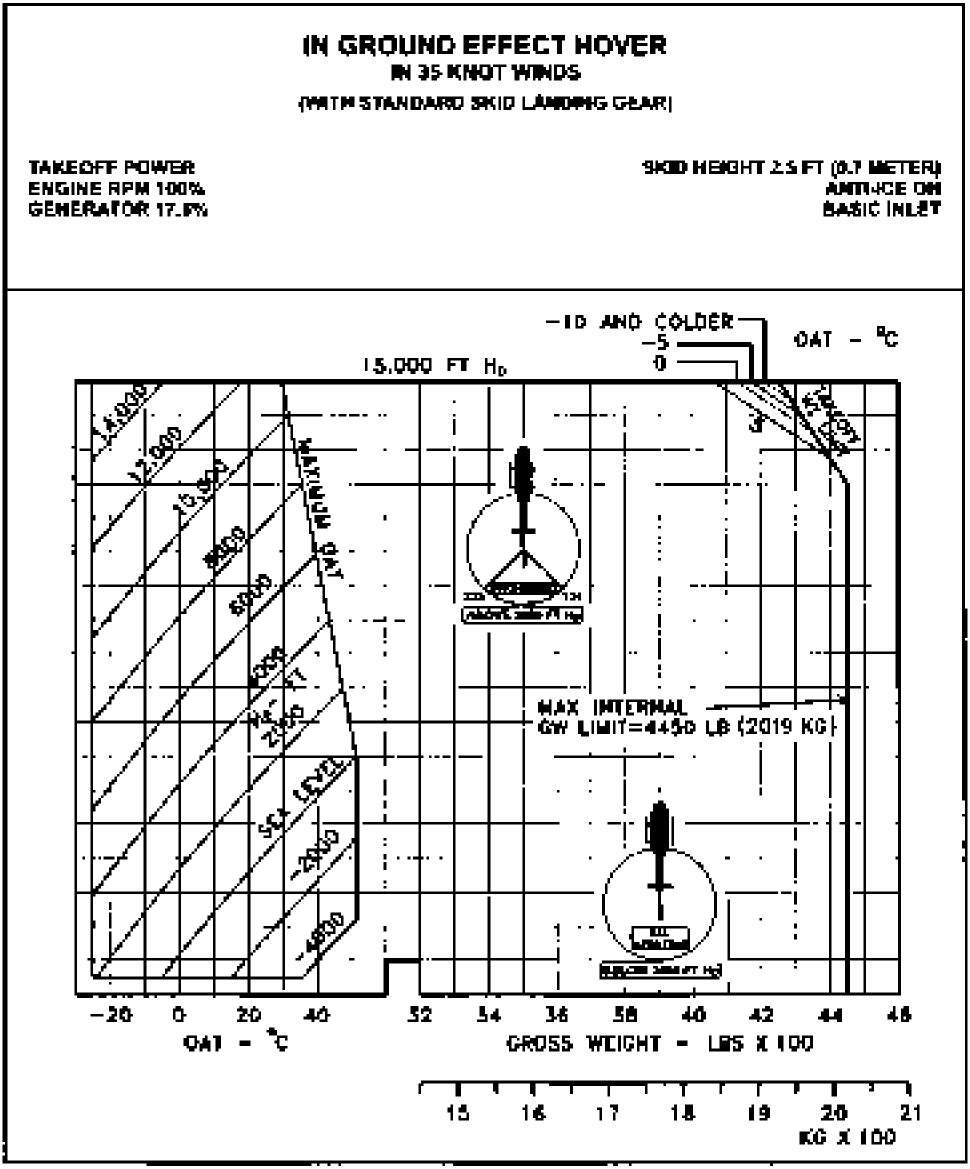

Figure 4-2. Hover Ceiling — IGE (Sheet 24 of 24)

OUT OF GROUND EFFECT HOVER

IN CALM WINDS OR ANY WINDS
WITHIN 30 DEGREES OF THE NOSE

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 40 FT (12.2 METERS)
HEATER OFF / ANTI-ICE OFF
BASIC INLET

WITH ANTI-ICE ON, REDUCE GW 120 LB (54 KG) ABOVE 9500 FT H_P (5°C AND COLDER)

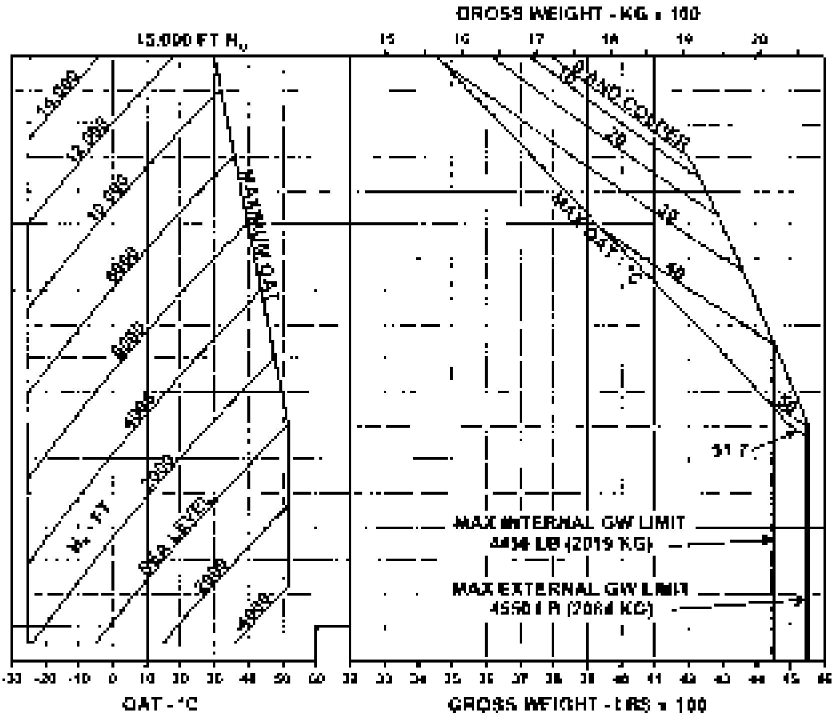

Figure 4-3. Hover Ceiling — OGE (Sheet 1 of 14)

OUT OF GROUND EFFECT HOVER
IN CALM WINDS OR ANY WINDS
WITHIN 30 DEGREES OF THE NOSE

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 40 FT (12.2 METERS)
HEATER OFF / ANTI-ICE OFF
PARTICLE SEPARATOR - PURGE OFF

WITH ANTI-ICE ON, REDUCE GW 120 LB (54 KG) ABOVE 9500 FT H_P (5°C AND COLDER)

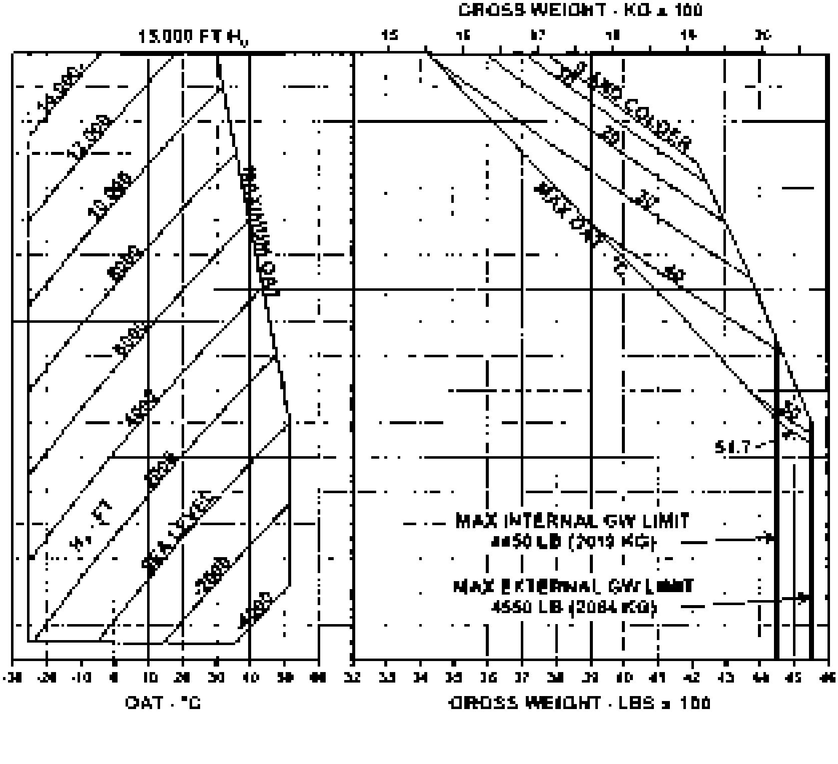

Figure 4-3. Hover Ceiling — OGE (Sheet 2 of 14)

OUT OF GROUND EFFECT HOVER

IN CALM WINDS OR ANY WINDS
WITHIN 30 DEGREES OF THE NOSE

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 40 FT (12.2 METERS)
HEATER OFF / ANTI-ICE OFF
PARTICLE SEPARATOR - PURGE ON

WITH ANTI-ICE ON, REDUCE GW 130 LB (59 KG) ABOVE 9000 FT H_P (5°C AND COLDER)

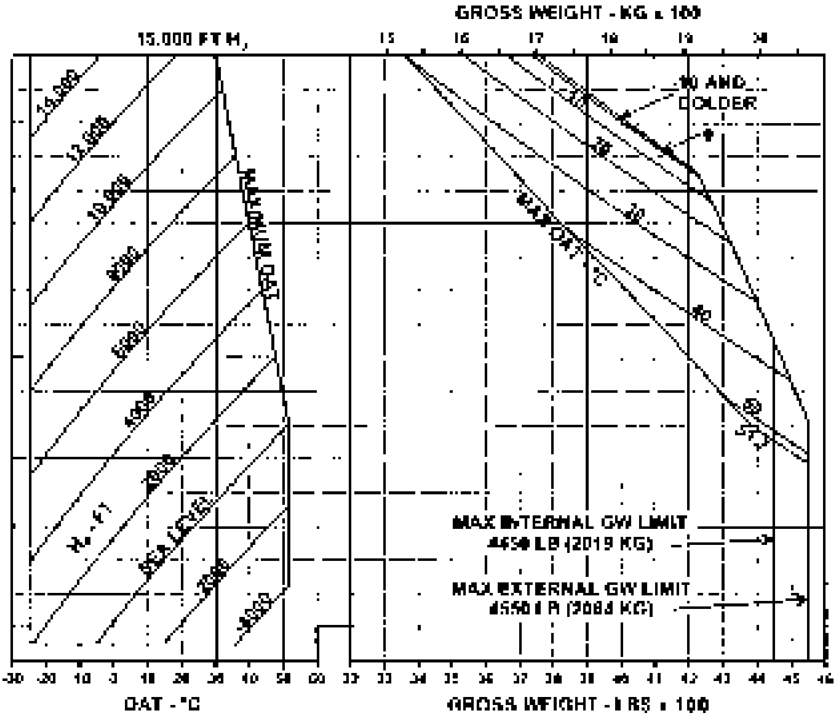

Figure 4-3. Hover Ceiling — OGE (Sheet 3 of 14)

OUT OF GROUND EFFECT HOVER

IN CALM WINDS OR ANY WINDS
WITHIN 30 DEGREES OF THE NOSE

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 40 FT (12.2 METERS)
HEATER OFF / ANTI-ICE OFF
BASIC INLET OR PART. SEP. - PURGE OFF
SNOW DEFLECTOR

WITH ANTI-ICE ON, REDUCE GW 130 LB (59 KG) ABOVE 8500 FT H_P (5°C AND COLDER)

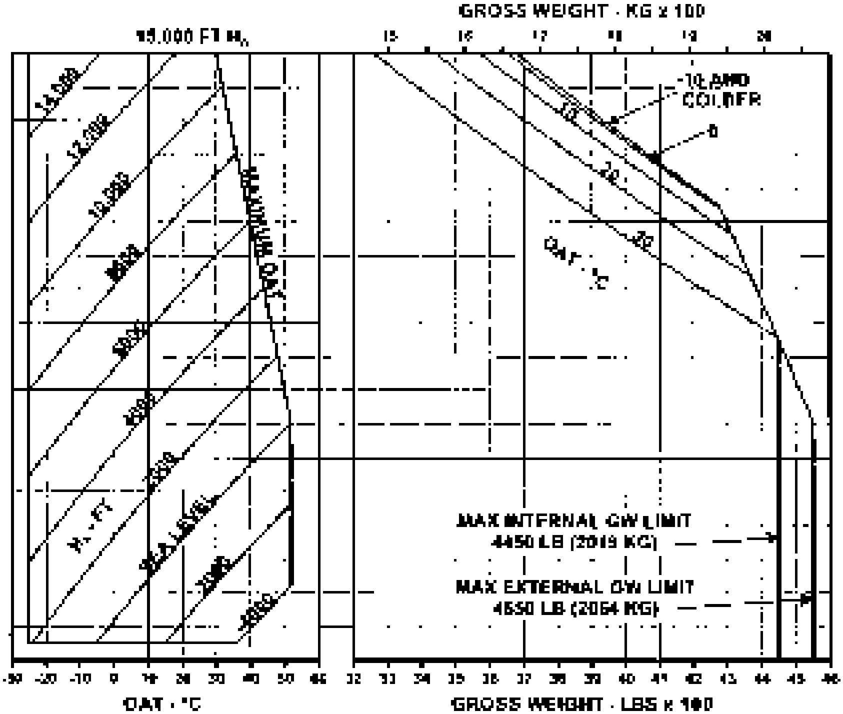

Figure 4-3. Hover Ceiling — OGE (Sheet 4 of 14)

OUT OF GROUND EFFECT HOVER

IN CALM WINDS OR ANY WINDS
WITHIN 30 DEGREES OF THE NOSE

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 40 FT (12.2 METERS)
HEATER OFF / ANTI-ICE OFF
PARTICLE SEPARATOR - PURGE ON
SNOW DEFLECTOR

WITH ANTI-ICE ON, REDUCE GW 130 LB (59 KG) ABOVE 8000 FT H_P (5°C AND COLDER)

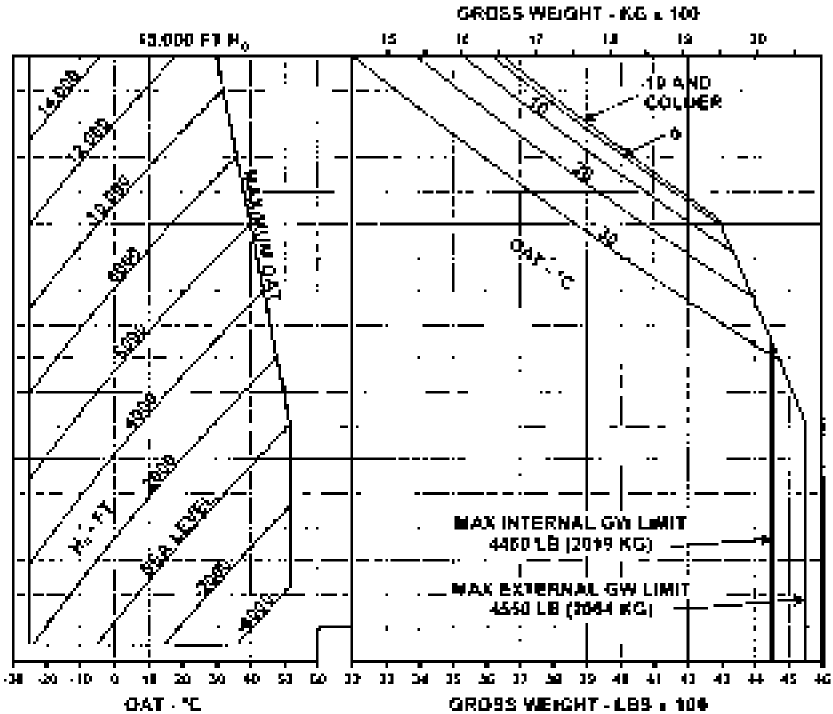

Figure 4-3. Hover Ceiling — OGE (Sheet 5 of 14)

OUT OF GROUND EFFECT HOVER

IN CALM WINDS OR ANY WINDS
WITHIN 30 DEGREES OF THE NOSE

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 40 FT (12.2 METERS)
HEATER ON / ANTI-ICE OFF
BASIC INLET

WITH ANTI-ICE ON, REDUCE GW 160 LB (73 KG) ABOVE 7000 FT H_P (5°C AND COLDER)

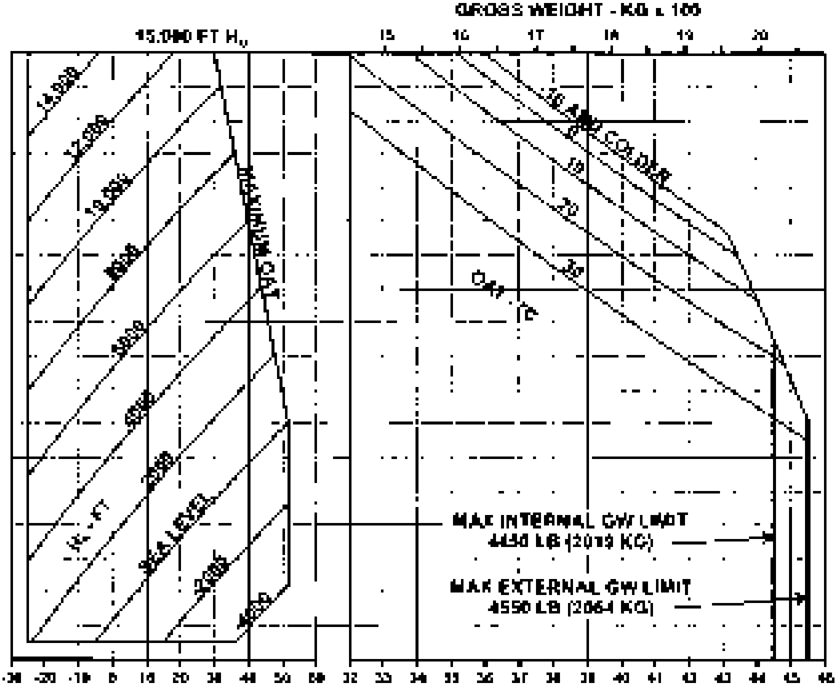

Figure 4-3. Hover Ceiling — OGE (Sheet 6 of 14)

OUT OF GROUND EFFECT HOVER

IN CALM WINDS OR ANY WINDS
WITHIN 30 DEGREES OF THE NOSE

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 40 FT (12.2 METERS)
HEATER ON / ANTI-ICE OFF
PARTICLE SEPARATOR - PURGE OFF

WITH ANTI-ICE ON, REDUCE GW 160 LB (73 KG) ABOVE 7000 FT H_p (5°C AND COLDER)

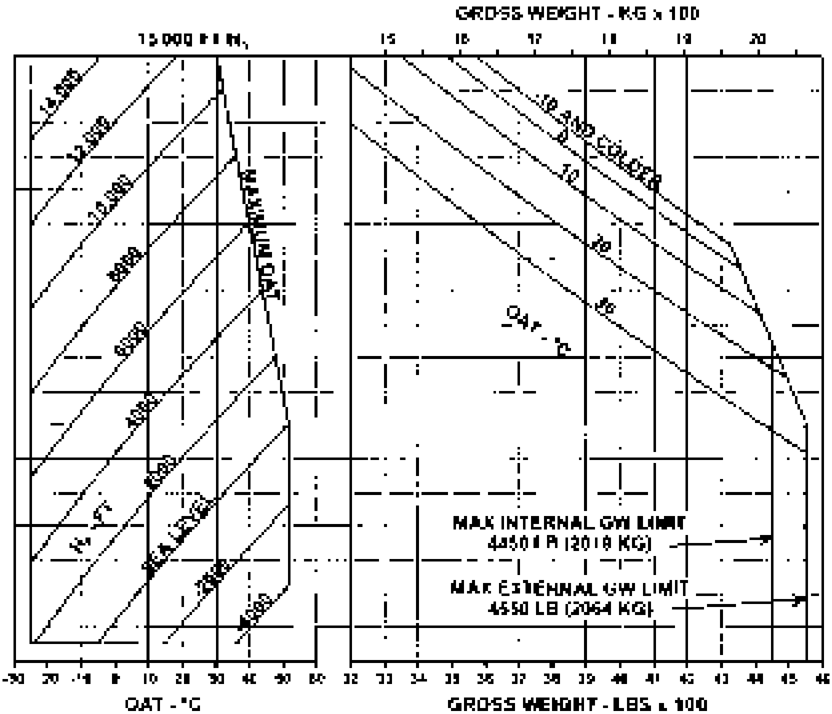

Figure 4-3. Hover Ceiling — OGE (Sheet 7 of 14)

OUT OF GROUND EFFECT HOVER
IN CALM WINDS OR ANY WINDS
WITHIN 30 DEGREES OF THE NOSE

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 40 FT (12.2 METERS)
HEATER ON / ANTI-ICE OFF
PARTICLE SEPARATOR - PURGE ON

WITH ANTI-ICE ON, REDUCE GW 170 LB (77 KG) ABOVE 6000 FT H_P (5°C AND COLDER)

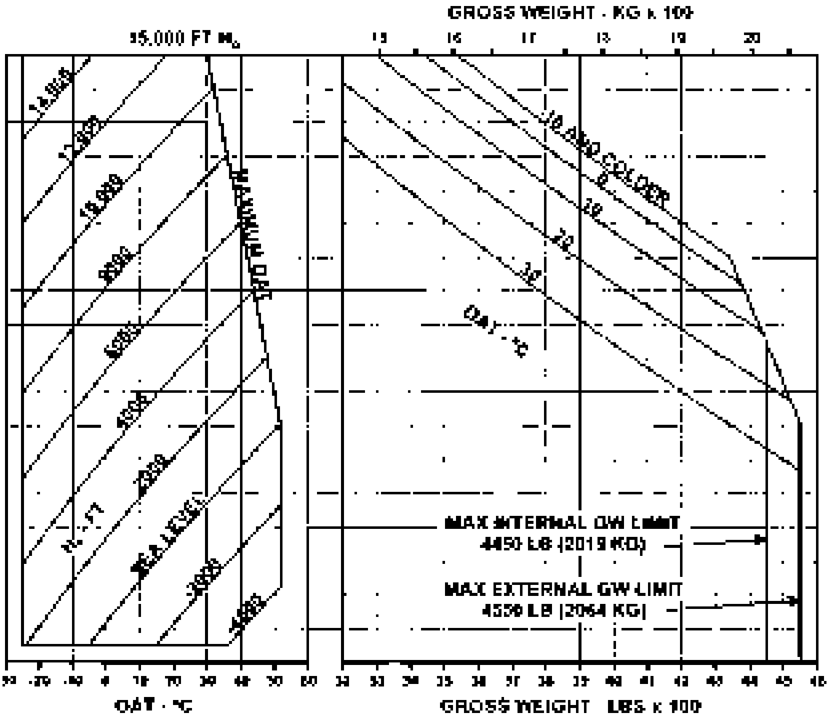

Figure 4-3 Hover Ceiling — OGE (Sheet 8 of 14)

OUT OF GROUND EFFECT HOVER

IN CALM WINDS OR ANY WINDS
WITHIN 30 DEGREES OF THE NOSE

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 40 FT (12.2 METERS)
HEATER ON / ANTI-ICE OFF
BASIC INLET OR PART. SEP - PURGE OFF
SNOW DEFLECTOR

WITH ANTI-ICE ON, REDUCE GW 170 LB (77 KG) ABOVE 5900 FT H_p (5°C AND COLDER)

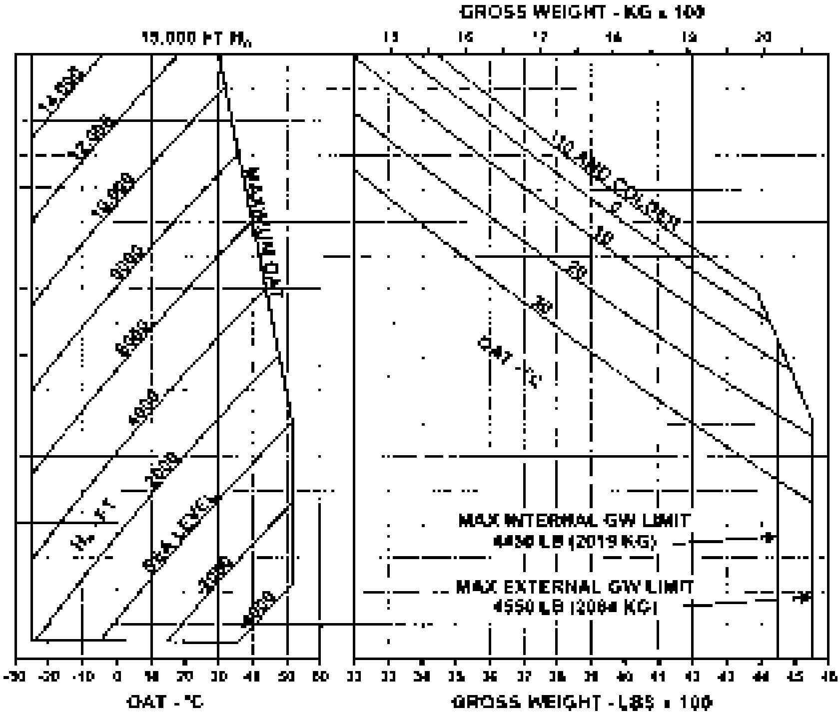

Figure 4-3. Hover Ceiling — OGE (Sheet 9 of 14)

OUT OF GROUND EFFECT HOVER

IN CALM WINDS OR ANY WINDS
WITHIN 30 DEGREES OF THE NOSE

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 40 FT (12.2 METERS)
HEATER ON / ANTI-ICE OFF
PARTICLE SEPARATOR - PURGE ON
SNOW DEFLECTOR

WITH ANTI-ICE ON, REDUCE GW 180 LB (82 KG) ABOVE 5000 FT H_P (5°C AND COLDER)

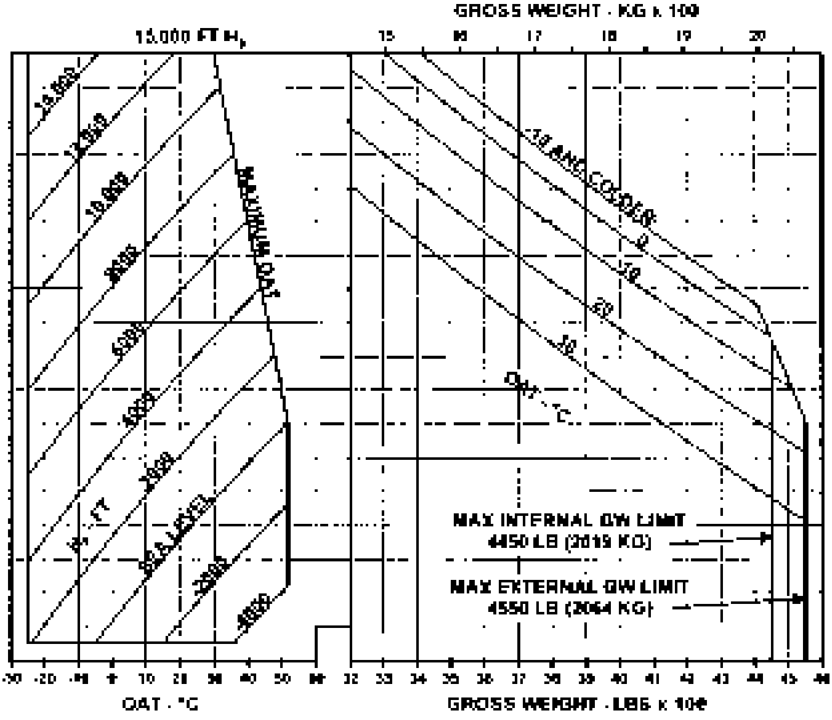

Figure 4-3. Hover Ceiling — OGE (Sheet 10 of 14)

OUT OF GROUND EFFECT HOVER
IN WINDS UP TO 25 KNOTS

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 40 FT (12.2 METER)
ANTI-ICE OFF
BASIC INLET

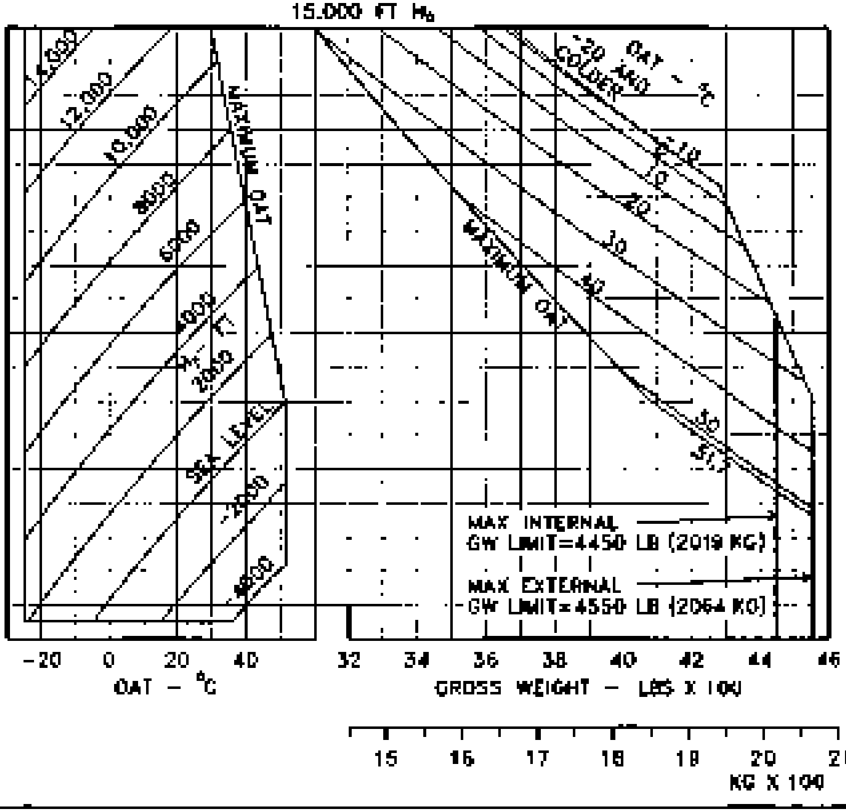

Figure 4-3. Hover Ceiling — OGE (Sheet 11 of 14)

OUT OF GROUND EFFECT HOVER
IN WINDS UP TO 25 KNOTS

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 40 FT (12.2 METER)
ANTI-ICE ON
BASIC INLET

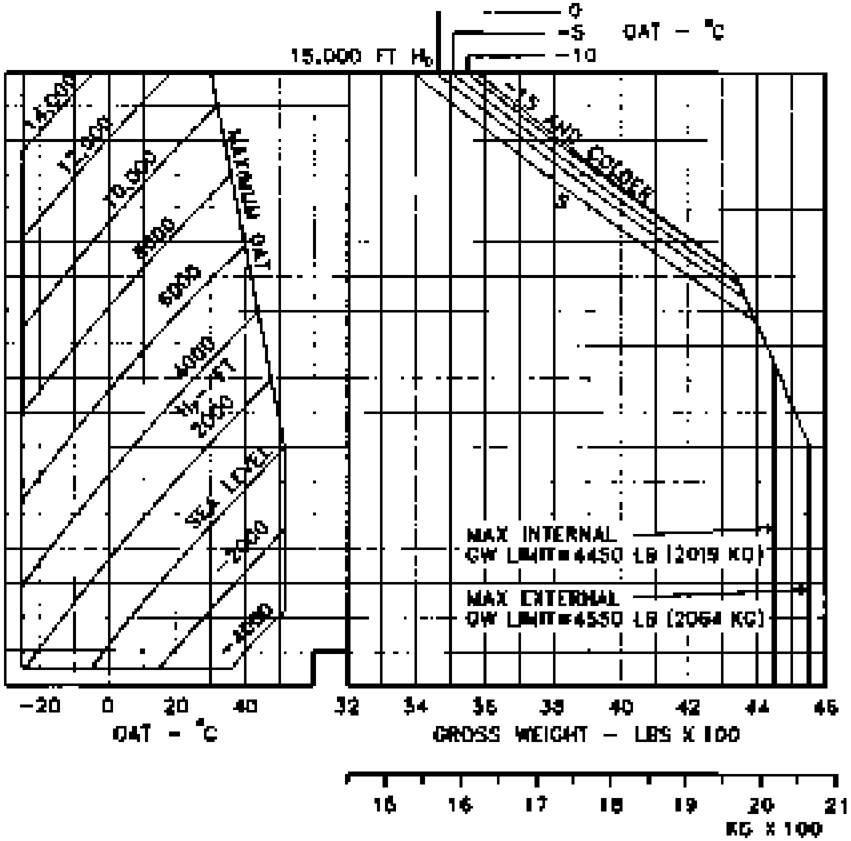

Figure 4-3. Hover Ceiling — OGE (Sheet 12 of 14)

OUT OF GROUND EFFECT HOVER

IN 35 KNOT WINDS

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 17.5%

SKID HEIGHT 40 FT (12.2 METER)
ANTI ICE OFF
BASIC INLET

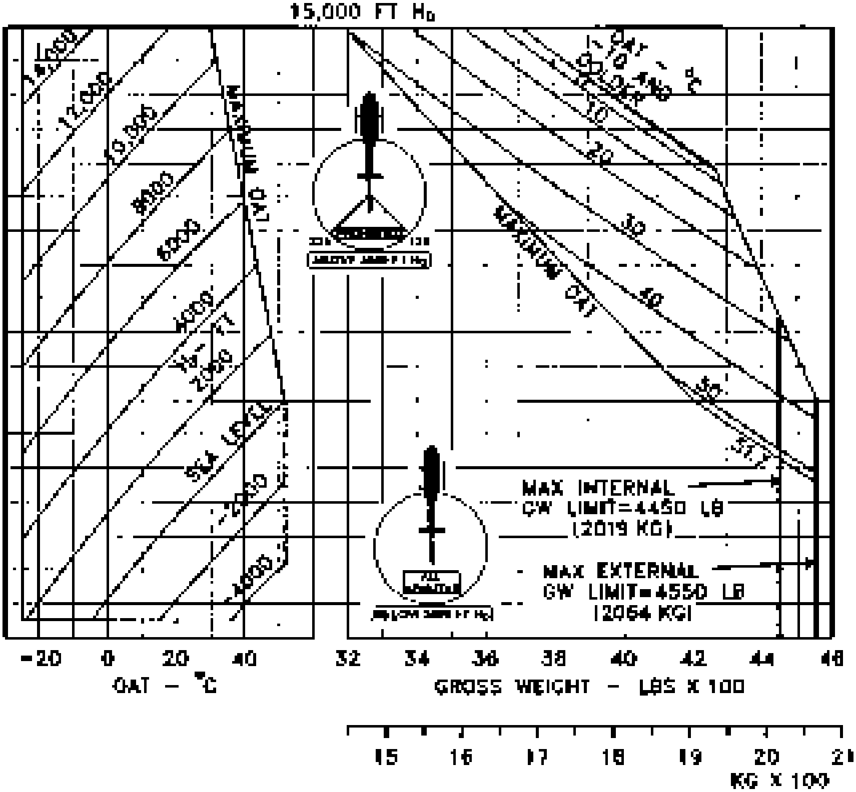

Figure 4-3. Hover Ceiling OGE (Sheet 13 of 14)

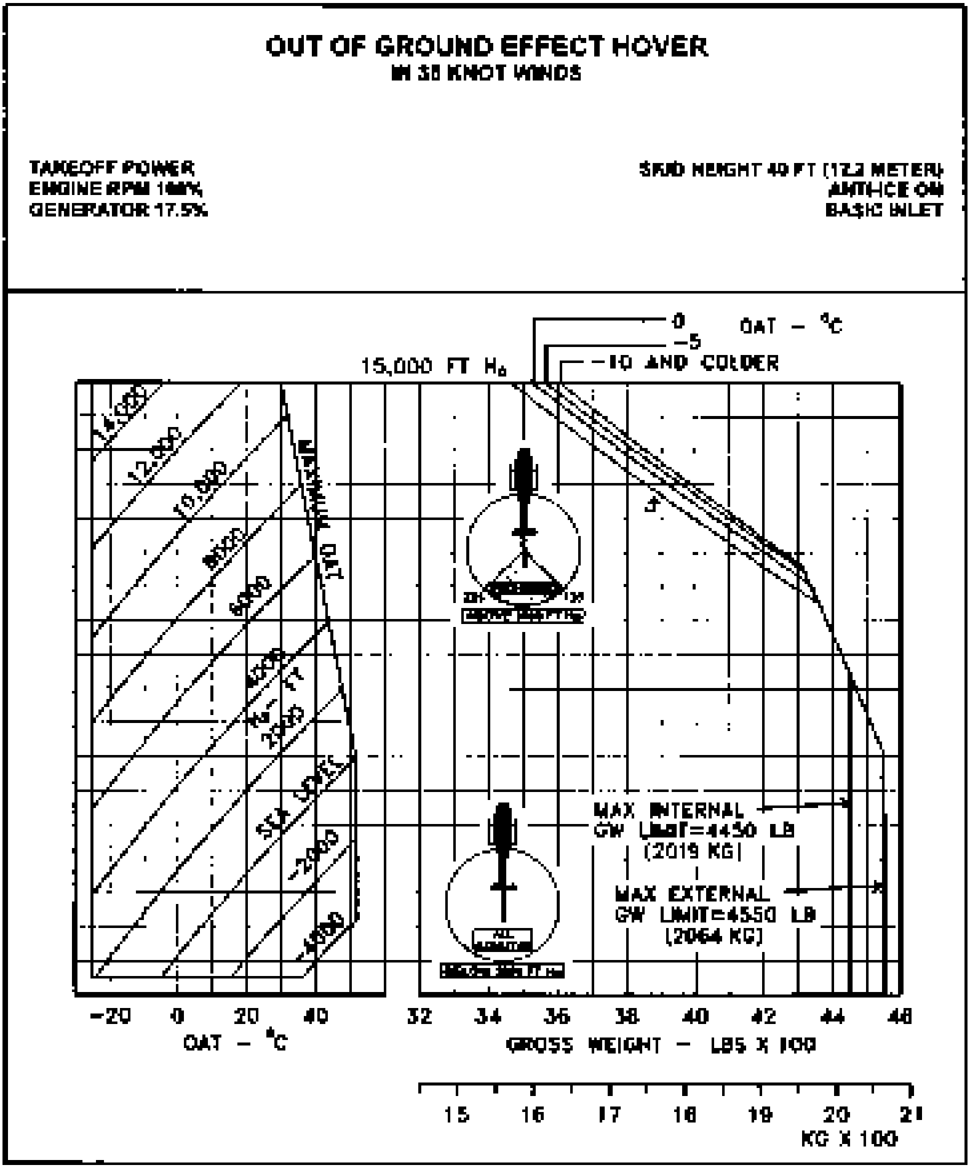

Figure 4-3. Hover Ceiling — OGE (Sheet 14 of 14)

Section 2

HANDLING AND SERVICING

2-24 HIGH ALTITUDE TAIL ROTOR KIT

2-24-A. INTRODUCTION

High altitude tail rotor kit, also referred to as tail rotor authority control system (TRACS), provides increased angle of attack capability for increased density altitude (H_D) (3,000 to 7,000 feet and above by changing a bellcrank ratio). As helicopter flies above 3,000 feet H_D, available tail rotor pitch increases to maximum available at 7,000 feet H_D and above.

2-24-B. COMPONENTS

High altitude tail rotor kit consists of following items:

1. Tail rotor authority control unit (TRACU).
2. Caution panel segment.
3. 28 VDC circuit breaker.
4. Outside air temperature probe.
5. Encoding altimeter or blind altitude encoder.
6. Variable geometry bellcrank (VGB) actuator.
7. Airspeed limitations placard

Items 1, 2, and 3 are shown in Figure 2-1.

2-24-B-1. TAIL ROTOR AUTHORITY CONTROL UNIT (TRACU)

TRACU has a push button MODE switch, actuator position indicator, digital display and ambient light sensor. Heart of TRACU is a digital microcontroller with a software program to provide all TRACS functions. This microcontroller provides sensor interfaces, actuator control, altitude calculations, display drive and failure monitoring. Actuator is controlled by TRACU which positions bellcrank based on H_D calculated from pressure altitude (H_P) and outside air temperature measurements.

H_P provided by encoding altimeter and temperature provided by outside air temperature probe combine to provide H_D which is displayed on digital display.

MODE Switch

MODE Switch will change digital display each time switch is pressed. Selectable modes are:

1. Moving pointer H_D display (default).
2. H_D and actuator position display (alternate).
3. H_P and air temperature display (momentary, 5 seconds).

Moving pointer H_D display mode appears on digital display as a moving pointer (V) and indicates current H_D on a scale below digital display. Position of pointer is current actuator position provided by an actuator mounted transducer. This is default (power up) display mode.

Pressing MODE switch will toggle display to H_D and actuator position display mode, appearing on digital display as xxxxxHd yyy% where xxxxx is H_D in feet and yyy is percent increase in left pedal tail rotor authority.

Pressing MODE switch a second time toggles to H_P and air temperature display mode appearing on digital display as xxxxxHp yy°C where xxxxx is H_P in feet and yy is outside air temperature in degrees Celsius. This display mode is momentary for 5 seconds and reverts to moving pointer display mode.

Pressing and holding MODE switch for more than 2 seconds activates manual test mode. Manual test mode consists of same tests as power up built in test. As sensor inputs are continuously monitored, this test consists of display test and actuator test. Any failure activates in-flight failure mode. If no failures are detected, TRACS returns to previously selected mode.

Pressing and holding MODE switch during power up activates rigging mode. This mode is provided to allow mechanical rigging of tail rotor controls. Once power up test has passed, TRACS will drive actuator to maximum position, with display alternating between showing RIG MAX and a display of approximate actuator position with arrow > showing direction of motion. Pressing MODE switch again causes TRACS to drive actuator to minimum position, with display alternating between RIG MIN and arrow < showing approximate actuator position. Power must be cycled to exit rigging mode.

Actuator Position Indicator

Actuator position indicator is a pointer that displays actuator position from 3,000 to 7,000 feet H_D and can be used to verify actuator position as displayed when in H_D and actuator position display mode. Pointer is driven by completely independent analog circuitry to provide an alternate means of monitoring system operation.

Digital Display

Digital display is twelve digit, sunlight readable, dot matrix, alpha numeric display that displays H_P, outside air temperature, calculated H_D, actuator position, and failure messages as required.

Ambient Light Sensor

Ambient light sensor provides an input to microcontroller to dim/brighten digital display based on detected ambient light.

2-24-B-2. CAUTION PANEL SEGMENT

A caution panel segment, labeled T/R AUTH, is mounted in caution and warning panel. This segment illuminates when a TRACS failure is detected. This alerts pilot to cross check digital display for failure message.

2-24-B-3. 28 VDC CIRCUIT BREAKER

Power for TRACS is provided by 28 VDC bus. Circuit protection is provided by a 7.5 amp circuit breaker labeled T/R AUTH. This circuit breaker is located in overhead console.

2-24-B-4. OUTSIDE AIR TEMPERATURE PROBE

Outside air temperature probe is mounted on underside of fuselage and provides temperature input to microcontroller to calculate H_D. Failure of temperature probe will be indicated by FAIL TEMP PR being displayed on digital display.

2-24-B-5. ENCODING ALTIMETER

Encoding altimeter or blind encoder, located in instrument panel, provides barometric altitude (H_P) input to microcontroller to calculate H_D.

Encoding altimeter failures will be displayed on digital display as FAIL ENCx where x is a number indicating type of failure (refer to Section 3 of Flight Manual portion of this supplement).

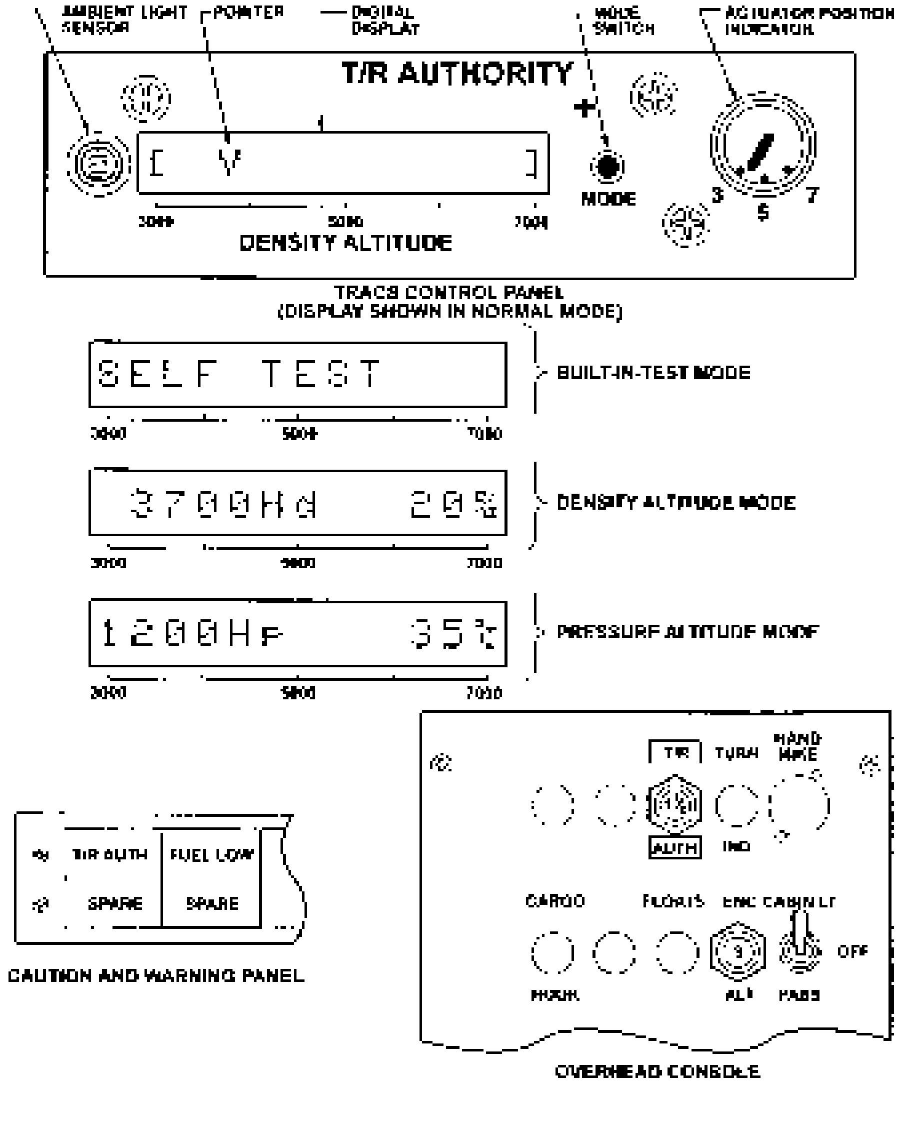

Figure 2-1. TRACS Controls and Indicators

2-24-B-6. VARIABLE GEOMETRY BELLCRANK (VGB) ACTUATOR

VGB actuator is installed in directional control system of helicopter and allows bellcrank to have a variable mechanical advantage ratio of input inches to output inches of motion. Range of motion of controls, actuator and bellcrank is designed to allow an increase in maximum left pedal blade angle, while not affecting limits for right pedal inputs.

2-24-C. OPERATION

When power is applied to helicopter, TRACS performs a built in test. This test consists of memory (ROM and RAM) tests, display/lamp and annunciator tests, actuator test, and sensor tests. Any system failure will stop actuator movement and illuminate T/R AUTH caution light. Any failure, with exception of memory failure, will display a diagnostic failure message. This message will remain displayed until MODE switch is pressed. Diagnostic message needs to be logged prior to pressing MODE switch. Once MODE switch is pressed after each power up, any failures occurring in flight will cause display of FAIL @ XXX% where XXX is current actuator position, if known, or FAIL – UNKNOWN if not. If no failure is detected, TRACS commences normal operations beginning with a momentary display of current H_P and outside air temperature. Verifying temperature and altitude inputs requires pilot to cross check displayed values to helicopter primary flight instruments. This display is followed by moving pointer H_D display, which pilot shall verify against analog H_D/actuator position indicator.

If a system failure is detected in flight, TRACS will cease all actuator movement, illuminate T/R AUTH caution light, and display either a failure message or current actuator position, if known.

2-25. TAIL ROTOR STATIC STOP YIELD INDICATOR

Tail rotor static stop yield indicator is shown in Figure 2-2. Any deformation of static stop yield indicator requires maintenance action prior to flight.

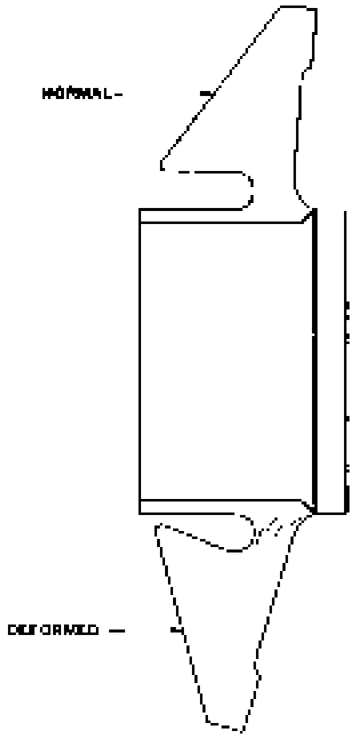

Figure 2-2 Static Stop Yield Indicator

Bell MODEL 206L-4 LongRanger-IV

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT
KLN 90A GPS NAVIGATOR

206-898-605

CERTIFIED
2 FEBRUARY 1995

This supplement shall be attached to Model 206L-4 Flight Manual when KLN 90A GPS NAVIGATOR 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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2 FEBRUARY 1995

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APPROVED:

MANAGER

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FT. WORTH, TX 76193–0170

GENERAL INFORMATION

The KLN 90A GPS Navigator is a navigator's aid for use in ICAO-defined worldwide geographic regions as defined in the King KLN 90A Pilots Guide.

Visual navigation data, when selected, is presented on the pilot HSI in the form of L/R steering, bearing-to-waypoint, and "To"/"From" indications.

The system consists of a combined GPS receiver and navigational computer, an antenna, a NAV/GPS switch/annunciator and associated wiring.

Section 1

LIMITATIONS

1-1. OPERATING LIMITATIONS

A KLN 90A Pilots Guide (King p/n 006-08743-0000, Operational Revision Status 10 or later) shall be accessible by the flight crew at all times during flight.

The GPS navigator shall be operated in accordance with the manufacturers instructions with the following exceptions:

> There is no air data or fuel management data available in this installation.
>
> It is the responsibility of the pilot to verify that any navigation data used is correct
>
> For units with software version prior to 1104, it is prohibited to change from ENROUTE LEG mode to OBS mode during turn anticipation.

1-2. PLACARDS AND DECALS

GPS LIMITED TO VFR USE ONLY

Section 2

NORMAL PROCEDURES

2-1. EXTERIOR CHECK

2-2. CABIN TOP

GPS antenna — Condition and security.

2-3. PRESTART CHECK

GPS and CAUTION LIGHTS circuit breakers — In.

GPS unit — Verify off.

2-4. BEFORE TAKEOFF

GPS unit — Turn on. Verify operational revision status on initial page is identical to that of available KLN 90A Pilot's Guide.

Pilots HSI course pointer — Align to desired course shown on GPS display.

NAV/GPS switch-annunciator — Press, verify GPS segment illuminated and NAV segment extinguished.

Pilot HSI deviation bar — Verify centered and 'TO' indication displayed.

NOTE

For additional normal procedures, except air data and fuel management data, refer to KLN 90A Pilot's Guide.

Section 3

EMERGENCY AND MALFUNCTION PROCEDURES

3-1. INTRODUCTION

NOTE

If GPS navigation system becomes inoperative, continue basic VFR navigation procedures.

Section 4

PERFORMANCE

No change from basic manual.

MODEL 206L4
Bell LongRanger-IV

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT
AUXILIARY VERTICAL FIN STROBE LIGHTS

206-898-680

CERTIFIED
19 DECEMBER 1994

This supplement shall be attached to Model 206L-4 Flight Manual when AUXILIARY VERTICAL FIN STROBE LIGHTS kit has been installed.

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

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MANAGER

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FT. WORTH, TX 76193-0170

GENERAL INFORMATION

Auxiliary vertical fin strobe lights installation (206-899-680) consist of the power supply unit and two strobe lights installed at the left and right auxiliary vertical fins.

Section 1

LIMITATIONS

1-1. OPERATING LIMITATIONS

The Auxiliary Vertical Fin Strobe Lights are not approved for night operations.

NOTE

High intensity strobe lights should not be used inflight when there is an adverse reflection from clouds or other weather phenomena

1-2. PLACARDS AND DECALS

NIGHT OPERATION OF AUXILIARY VERTICAL FIN STROBE LIGHTS IS PROHIBITED

Section 2

NORMAL PROCEDURES

2-1. INTRODUCTION

NOTE

Both auxiliary vertical fin strobe lights are controlled by the AUX VERT FIN LT on/off CCT BKR/ switch located on the overhead console.

Section 3

EMERGENCY AND MALFUNCTION PROCEDURES

3-1. ELECTRICAL SYSTEM

NOTE

For emergency or malfunction conditions, the auxiliary vertical fin strobe lights may be disabled by selecting OFF at the AUX VERT FIN LT CCT BKR/switch. If auxiliary vertical fin strobe lights become inoperative, continue basic flight procedures.

Section 4

PERFORMANCE

No change from basic manual.

Bell MODEL 206L4 LongRanger-IV

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT

GARMIN GPS 150 NAVIGATOR

206-898-961

CERTIFIED
15 MARCH 1995

This supplement shall be attached to Model 206L-4 Flight Manual when Garmin GPS 150 NAVIGATOR 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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15 MARCH 1995

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APPROVED:

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for MANAGER

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GENERAL INFORMATION

The Garmin GPS 150 Navigator is a navigator's aid for use in ICAO defined worldwide geographic regions as defined in Garmin GPS 150 Pilots Guide.

The System consists of a combined GPS receiver and navigational computer, an antenna, and associated wiring.

Section 1

LIMITATIONS

1-1. OPERATING LIMITATIONS

Garmin-GPS 150 Pilots Guide (Garmin P/N 190-00046-00) shall be accessible by the flight crew at all times during flight.

The Global positioning system is not approved for navigation.

The GPS navigator shall be operated in accordance with the manufacturers instructions with the following exceptions:

1. There is no air data or fuel management data available in this installation.
2. It is the responsibility of the pilot to verify that any navigation data used is correct.

1-2. PLACARDS AND DECALS

GPS NOT APPROVED FOR NAVIGATION.

(Located on instrument panel.)

Section 2

NORMAL PROCEDURES

2-1. EXTERIOR CHECK

2-2. CABIN TOP

GPS antenna — Condition and security.

2-3. PRESTART CHECK

1. GPS circuit breaker in.
2. GPS unit — Verify off.

2-4. BEFORE TAKEOFF

1. GPS unit — Turn On.
2. Verify approximate latitude and longitude coordinates are displayed.

NOTE

For additional normal procedures, except air data and fuel management data, refer to Garmin GPS 150 Pilots Guide.

Section 3

EMERGENCY AND MALFUNCTION PROCEDURES

3-1. INTRODUCTION

NOTE

If GPS navigation system becomes inoperative, continue basic VFR navigation procedures.

Bell Model 206L-4 LongRanger-IV

ROTORCRAFT FLIGHT MANUAL

SUPPLEMENT

KLN 89B NAVIGATOR - GPS

206-898-996

CERTIFIED
12 FEBRUARY 1999

This supplement shall be attached to Model 206L-4 Flight Manual when KLN 89B NAVIGATOR GPS 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 KLN 89B GPS Navigator is a navigators aid for use in ICAO defined worldwide geographic regions as defined in the King KLN Pilots guide.

The system consists of a combined GPS reciever and navigational computer, an antenna, and associated wiring. Visual Navigation data is presented on the GPS unit. GPS is coupled to a KI-206 Course Deviation Indicator (CDI) and includes a NAV/GPS Switch/Annunciator.

Visual navigation data, when selected, is presented on CDI in the form of L/R steering, bearing-to-waypoint and TO/FROM indicators.

Section 1

LIMITATIONS

GENERAL

A KLN 89B Pilots Guide (King P/N 006-08786-0000, Operational Revision Status 01) shall be accessible by flight crew at all times during flight.

GPS navigator shall be operated in accordance with manufacturers instructions with following exceptions:

1. There is no air data or fuel management data available in this installation.
2. It is responsibility of pilot to verify that any navigation data used is correct.

INSTRUMENT MARKINGS AND PLACARDS

GPS LIMITED TO VFR USE ONLY

LOCATION: Instrument panel.

Section 2

NORMAL PROCEDURES

PREFLIGHT CHECK

CABIN ROOF

GPS antenna — Condition and security.

INTERIOR AND PRESTART CHECK

GPS and CAUTION LIGHTS circuit breakers — In.

BEFORE TAKEOFF

GPS unit — Turn on, verify operational revision status on initial page is identical to that of available KLN 89B Pilot's Guide.

Pilot CDI course pointer — Align to desired course on GPS display.

NAV/GPS switch-annunciator — Press, verify GPS segment illuminated and NAV segment extinguished.

Pilot CDI deviation bar — Verify centered and TO indication displayed.

NOTE

For additional normal procedures, except air data and fuel management data, refer to KLN 89B Pilot's Guide.

IN-FLIGHT OPERATION

NOTE

Selection of ILS frequency on NAV receiver will automatically remove GPS as NAV source.

Section 3

EMERGENCY/MALFUNCTION PROCEDURES

INTRODUCTION

NOTE

If GPS navigation system becomes inoperative, continue basic VFR navigation procedures.