SECTION 1

GENERAL

CONTENTS

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SECTION 1

GENERAL

INTRODUCTION

This Pilot's Operating Handbook is designed as an operating guide for the pilot. It includes the material required to be furnished to the pilot by 14 CFR parts 21, 27, and 36. It also contains supplemental data supplied by the helicopter manufacturer.

This handbook is not designed as a substitute for adequate and competent flight instruction or for knowledge of current airworthiness directives, applicable federal aviation regulations, and advisory circulars. Nor is it intended to be a guide for basic flight instruction or a training manual. It should not be used for operational purposes unless kept in a current status.

Assuring that the helicopter is in airworthy condition is the responsibility of the owner. The pilot in command is responsible for determining that the helicopter is safe for flight. The pilot is also responsible for remaining within the operating limitations as outlined by instrument markings, placards, and this handbook.

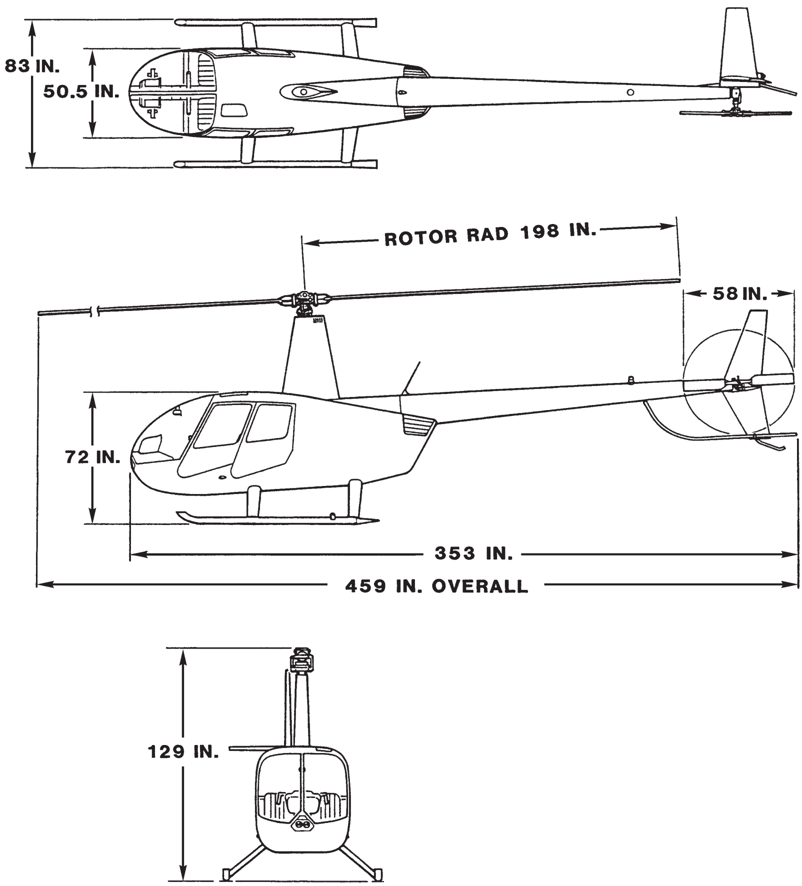
Since it is very difficult to refer to a handbook while flying a helicopter, the pilot should study the entire handbook and become very familiar with the limitations, performance, procedures, and operational handling characteristics of the helicopter before flight.

This handbook has been divided into ten numbered sections. Limitations and emergency procedures have been placed ahead of normal procedures, performance, and other sections to provide easier access to that information. Provisions for expansion of the handbook have been made by deliberate omission of certain paragraph numbers, figure numbers, item numbers, and pages noted as being intentionally blank.

CAUTIONS AND NOTES

Cautions and Notes emphasize important information and are used as follows:

CAUTION	Equipment damage, injury, or death can result if procedure or instruction is not followed.
NOTE	Provides emphasis or supplementary information.



THREE-VIEW OF R44 HELICOPTER

DESCRIPTIVE DATA

MAIN ROTOR

Articulation	Free to teeter and cone, rigid inplane
Number of Blades	2
Diameter	33 feet
Blade Chord	10.0 inches inboard, 10.6 inches outboard
Blade Twist	-6 Degrees
Tip Speed at 102% RPM	705 feet per second

TAIL ROTOR

Articulation	Free to teeter, rigid inplane
Number of Blades	2
Diameter	58 inches
Blade Chord	5.1 inches (constant)
Blade Twist	0
Precone Angle	1 Degree
Tip Speed at 102% RPM	614 feet per second

DRIVE SYSTEM

Engine to Upper Sheave:	Four double Vee-belts with 0.778:1 speed reducing ratio
Upper Sheave to Drive Line:	Sprag-type overrunning clutch
Drive Line to Main Rotor:	Spiral-bevel gears with 11:57 speed reducing ratio
Drive Line to Tail Rotor:	Spiral-bevel gears with 31:27 speed increasing ratio

DESCRIPTIVE DATA (cont'd)

POWERPLANT

Model: Lycoming 0-540-F1B5

Type: Six cylinder, horizontally opposed, direct drive, air cooled, carbureted, normally aspirated

Displacement: 541.5 cubic inches

Normal rating: 260 BHP @ 2800 RPM

Maximum continuous rating in R44: 205 BHP at 2718 RPM (102% on tachometer)

5 Minute takeoff rating in R44: 225 BHP at 2718 RPM

Cooling system: Direct drive squirrel-cage blower

FUEL

Approved fuel grades and capacity: See Section 2.

OIL

Approved oil grades and capacity: See Section 8.

PERFORMANCE DEFINITIONS

KIAS	Knots Indicated Airspeed is speed shown on the airspeed indicator.
KCAS	Knots Calibrated Airspeed is speed shown on the airspeed indicator corrected for instrument and position error. (See Section 5 for position error correction.)
KTAS	Knots True Airspeed is airspeed relative to undisturbed air. It is KCAS corrected for pressure altitude and temperature.
V_{ne}	Never-Exceed Airspeed.
V_y	Speed for best rate of climb.
V_h	Stabilized level-flight speed at maximum continuous power.
MSL Altitude	Altitude above mean sea level, indicated by the altimeter (corrected for instrument error) when the barometric subscale is set to the atmospheric pressure existing at sea level.
Pressure Altitude	Altitude indicated by the altimeter (corrected for instrument error) when the barometric subscale is set to 29.92 inches of mercury (1013.2 mb).
Density Altitude	Altitude in ISA conditions at which the air would have the same density (it is pressure altitude corrected for OAT).
ISA	International Standard Atmosphere exists when pressure is 29.92 inches of mercury at sea level, temperature is 15°C at sea level, and temperature decreases 1.98°C per 1000 feet of altitude.
BHP	Brake Horsepower is actual power output of the engine.
MAP	Manifold Absolute Pressure is the absolute pressure in the engine intake manifold.
RPM	Revolutions Per Minute or speed of engine or rotor. (Shown by tachometer as percentage of 2665 engine RPM and 400 main rotor RPM).
MCP	Maximum Continuous Power.
TOP	Takeoff Power (limited to 5 minutes in the R44).
Critical Altitude	Altitude at which full throttle produces maximum allowable power (MCP or TOP).
TOGW	Takeoff Gross Weight.

PERFORMANCE DEFINITIONS (cont'd)

OAT	Outside Air Temperature
CAT	Carburetor Air Temperature
CHT	Cylinder Head Temperature
GPH	Gallons Per Hour
AGL	Above Ground Level
IGE	In Ground Effect
OGE	Out of Ground Effect
ALT	Alternator

WEIGHT AND BALANCE DEFINITIONS

Reference Datum	A vertical plane from which horizontal distances are measured for balance purposes. The longitudinal reference datum is 100 inches forward of the main rotor shaft centerline for the R44.
Station	Fore-and-aft location along the helicopter fuselage given in terms of distance in inches from the longitudinal reference datum.
Arm	Horizontal distance from a reference datum to the center of gravity (CG) of an item.
Moment	The weight of an item multiplied by its arm.
Center of Gravity (CG)	Location on the fuselage (usually expressed in inches from the reference datum) at which the helicopter would balance. CG is calculated by dividing the total helicopter moment by total helicopter weight.
CG Limits	Extreme CG locations within which the helicopter must be operated at a given weight.
Usable Fuel	Fuel available for flight planning.
Unusable Fuel	Fuel remaining in the tank that cannot reliably provide uninterrupted fuel flow in the critical flight attitude.
Standard Empty Weight	Weight of a standard helicopter including unusable fuel, full operating fluids, and full engine oil.
Basic Empty Weight	Standard empty weight plus weight of installed optional equipment.
Payload	Weight of occupants, cargo, and baggage.
Useful Load	Difference between maximum gross weight and basic empty weight.

CONVERSION TABLES

METRIC TO ENGLISH

Multiply	By	To Obtain
centimeters (cm)	0.3937	inches (in)
kilograms (kg)	2.2046	pounds (lb)
kilometers	0.5400	nautical miles
kilometers	0.6214	statute miles (mi)
liters	0.2642	gallons, U.S. (gal)
liters	1.0567	quarts (qt)
meters	3.2808	feet (ft)
millibars (mb)	0.0295	inches of mercury (in. Hg)

ENGLISH TO METRIC

Multiply	By	To Obtain
feet (ft)	0.3048	meters
gallons, U.S. (gal)	3.7854	liters
inches (in)	2.5400	centimeters (cm)
inches (in)	25.4000	millimeters (mm)
inches of mercury (in. Hg)	33.8639	millibars (mb)
nautical miles	1.8520	kilometers
pounds (lb)	0.4536	kilograms (kg)
quarts (qt)	0.9464	liters
statute miles (mi)	1.6093	kilometers

1 nautical mile = 1.1508 statute miles

1 statute mile = 0.8690 nautical mile

TEMPERATURE

$°F = 9/5\ (°C) + 32$

$°C = 5/9\ (°F - 32)$