CHAPTER 3

LIFE-LIMITED COMPONENTS

Intentionally Blank

CHAPTER 3

LIFE-LIMITED COMPONENTS

3.100 Life-Limited Components

3.110 Time-In-Service Records

It is the operator's responsibility to maintain a record of time in service for the airframe, engine, and life-limited components. An hourmeter activated by engine oil pressure is standard equipment on earlier R44 helicopters. Later helicopters are equipped with an hourmeter activated by a combination of oil pressure and up collective; the hourmeter will record time only when engine oil pressure exists and the collective is raised. Either hourmeter is an acceptable means of recording time in service (refer to § 1.007).

Calendar time in service for the airframe and engine begins on the date of the original RHC-issued Export (or Standard) Certificate of Airworthiness for the helicopter. For spares without a storage limit specified in § 1.160, calendar time in service begins on the date of the RHC-issued Airworthiness Approval Tag (Authorized Release Certificate) issued with the invoice.

If a component or an inspection is scheduled for hourly and calendar intervals, comply with whichever requirement comes first, then reset interval unless otherwise specified.

When installing a life-limited part or a part with an overhaul requirement, record in the helicopter maintenance record the installation date, part number, part name, serial number, helicopter total time, and time in service accumulated by part since new or since last overhaul, as applicable.

WARNING

Components with mandatory overhaul times or life limits whose time in service is not reliably documented cannot be considered airworthy and must be removed from service.

3.120 Fatigue Life-Limited Parts

The Airworthiness Limitations section lists the mandatory replacement schedule for fatigue life-limited parts.

If a part is fatigue life-limited or has a mandatory overhaul requirement and is interchanged between an R44 and an R66 helicopter, and if the part life-limit or overhaul requirement is different between an R44 and an R66 helicopter, the shorter life-limit or overhaul requirement must be used. If a part is fatigue life-limited or has a mandatory overhaul requirement, and the accumulated cycles and/or time-in-service are known but the helicopter type is unknown, the shorter life-limit or overhaul requirement must be used.

Listed items must be removed from the helicopter at the specified intervals and permanently retired from service by destroying or damaging each part so it cannot inadvertently be returned to service.

3.200 Type Certificate Data Sheet (TCDS)

The Robinson R44-series Type Certificate Data Sheet (TCDS) reprinted on the following pages is subject to revision.

| Visit the FAA Aircraft Certification Regulatory and Guidance Library to determine TCDS revision status at: http://rgl.faa.gov.

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

H11NM
Revision 9
Robinson
R44
R44 II
June 26, 2018

TYPE CERTIFICATE DATA SHEET NO. H11NM

This data sheet, which is a part of Type Certificate No. H11NM, prescribes conditions and limitations under which the product for which the type certificate was issued meets the airworthiness requirements of the Federal Aviation Regulations.

Type Certificate Holder: Robinson Helicopter Company
2901 Airport Drive
Torrance, California 90505

I. Model R44 (Normal Category Rotorcraft), Approved December 10, 1992

Model R44 helicopters with serial numbers below 10000 are configured with four seats. Model R44 helicopters with serial number 30001 and subsequent are configured with two seats. Some limitations are configuration-specific as indicated below. The Rotorcraft Flight Manual is also configuration-specific and has manufacturer's document number RTR 461 for the four seat configuration and RTR 463 for the two seat configuration.

Engine: One Lycoming O-540-F1B5, Type Certificate number E-295

Fuel: See Rotorcraft Flight Manual (RFM)

Engine Limits:

S/Ns below 10000:

Maximum continuous: 205 hp at 2718 rpm (102%)
Takeoff (5 minute): 225 hp at 2718 rpm (102%)

S/N 30001 and subsequent:

Maximum continuous: 185 hp at 2718 rpm (102%)
Takeoff (5 minute): 210 hp at 2718 rpm (102%)

For all S/Ns:

See appropriate Rotorcraft Flight Manual for manifold pressure settings corresponding to horsepower limits.

Rotor Speed Limits (all S/Ns)

Power Off (Rotor Tach)	Power On (Rotor Tach)
Maximum: 432 rpm (108%)	Maximum: 408 rpm (102%)
Minimum: 360 rpm (90%)	Minimum: 404 rpm (101%) *

* Earlier R44s with tachometers showing an engine green arc range of 99% to 102% have a minimum power-on rotor speed of 396 rpm.

Page No.	1	2	3	4	5	6	7
Rev. No.	9	8	9	8	9	8	9

I. Model R44 (Normal Category Rotorcraft), Approved December 10, 1992, (cont'd)

Airspeed Limits

S/Ns below 10000:

V_{NE} (never exceed speed) at sea level is 130 KIAS (120 KIAS with fixed floats) for takeoff gross weights of 2200 lbs. or less. V_{NE} at sea level is 120 KIAS (110 KIAS with fixed floats) for takeoff gross weights over 2200 lbs.

S/N 30001 and subsequent:

V_{NE} (never exceed speed) at sea level is 120 KIAS for all takeoff weights with or without fixed floats.

For all S/Ns:

Power Off (Autorotation) V_{NE} at sea level is 100 KIAS.

For reduction of V_{NE} with altitude and temperature, see appropriate Rotorcraft Flight Manual.

Airspeed limit at power settings above Maximum Continuous Power is 100 KIAS.

Airspeed limit with inflated pop-out floats is 80 KIAS.

Airspeed limit for any combination of Doors Off is 100 KIAS.

Center of Gravity (C.G.) Range

S/Ns below 10000:

Longitudinal C.G. Range			Lateral C.G. Range		
Gross Weight (lbs.)	Forward (in.)	Aft (in.)	Long. C. G. (in.)	Left (in.)	Right (in.)
1550	92.0	102.5	92.0	-3.0	+3.0
2000	92.0	102.5	100.0	-3.0	+3.0
2200	92.0	100.25	102.5	-1.5	+1.5
2400	93.0	98.0			

Note: Straight line variation between points shown

S/N 30001 and subsequent:

Longitudinal C.G. Range			Lateral C.G. Range		
Gross Weight (lbs.)	Forward (in.)	Aft (in.)	Long. C. G. (in.)	Left (in.)	Right (in.)
1550	92.0	102.5	92.0	-3.0	+3.0
2000	92.0	102.5	100.0	-3.0	+3.0
2200	93.0	100.25	102.5	-1.5	+1.5

Note: Straight line variation between points shown

Empty Weight C.G. Limit

For all S/Ns, Empty weight C.G. must be such that calculated C.G. with 150 lb. pilot and full fuel is at STA 102.5 or forward.

Maximum Weight

S/Ns below 10000:
2400 lb.

S/N 30001 and subsequent:
2200 lb.

I. Model R44 (Normal Category Rotorcraft), Approved December 10, 1992, (cont'd)

Minimum Crew

1 pilot at right side control station

Number of Seats

S/Ns below 10000:
4 (3 for Police and ENG Version)

Seat Locations: Pilot and Forward Passenger at STA 49.5
Aft Passengers at STA 79.5

S/N 30001 and subsequent:
2

Seat Locations: STA 49.5

Maximum Baggage

50 pounds of baggage and installed equipment in any baggage compartment. For any seat location, the maximum combined weight of the seat load, baggage, and installed equipment is 300 lbs.

For S/N 30001 and subsequent, maximum load on aft deck is 50 lbs each side, and maximum load in each compartment under aft deck is 50 lb.

Fuel Capacity

Tank	Tanks Without Bladders		Tanks With Bladders		Location (STA)
	Capacity (gal.)	Usable (gal.)	Capacity (gal.)	Usable (gal.)	
Main	31.6	30.6	30.5	29.5	106.0
Auxiliary	18.5	18.3	17.2	17.0	102.0

Oil Capacity

Component	Capacity (qt.)	Location (STA)
Engine	9	110.0
Main Rotor Transmission	2	100.0
Tail Rotor Transmission	0.11	327.0
Hydraulic Reservoir (if installed)	0.65	117.0

Maximum Operating Altitude

Density Altitude Limit 14,000 ft.
Maximum altitude above ground level is 9000 ft. to allow landing within 5 minutes in case of fire.

Manufacturer's Serial Numbers

0002, 0004 thru 9999 except 1140, 30001 and subsequent.

Certification Basis

14 CFR Part 27, dated February 1, 1965, including Amendments 27-1 through 27-24, Exemption No. 5473 dated July 2, 1992, to §27.955(a)(7) and 27.1305(q).

14 CFR Part 36 Amendment 36-20.

Equivalent Safety Finding:
Number TD10352LA-R/S-1
14CFR Part 27.1401(d), Anticollision Light System

Number AT16516LA-R-S-1
14 CFR part 27.695(a)(1), Power boost and power-operated control system.
(see Note 10)

Special Condition:
No. 27-033-SC Robinson Model R44 and R44 II Helicopters, Installation of HeliSAS Autopilot and Stabilization Augmentation System (AP/SAS).

I. Model R44 (Normal Category Rotorcraft), Approved December 10, 1992, (cont'd)

Equipment

The basic required equipment as prescribed in the applicable airworthiness regulations (see Certification Basis) must be installed in the aircraft for certification. In addition, the following FAA-approved Rotorcraft Flight Manual is required:

S/Ns below 10000:
R44 Rotorcraft Flight Manual (RTR 461) dated December 10, 1992, or later revision (See NOTES 4, 5, & 6).

S/N 30001 and above:
R44 Cadet Rotorcraft Flight Manual (RTR 463) dated April 29, 2016, or later revision.

II. Model R44 II (Normal Category Rotorcraft), Approved October 3, 2002

The R44 II helicopter includes a fuel injected engine with a 245 hp takeoff rating and a maxium weight of 2500 lb. The Rotorcraft Flight Manual has manufacturer's document number RTR 462.

Engine

One Lycoming IO-540-AE1A5, Type Certificate number 1E4

Fuel

See Rotorcraft Flight Manual (RFM)

Engine Limits

Maximum continuous: 205 hp at 2718 rpm (102%)
Takeoff (5 minute): 245 hp at 2718 rpm (102%)

See Rotorcraft Flight Manual for manifold pressure settings corresponding to horsepower limits.

Rotor Speed Limits

Power Off (Rotor Tach)	Power On (Rotor Tach)
Maximum: 432 rpm (108%)	Maximum: 408 rpm (102%)
Minimum: 360 rpm (90%)	Minimum: 404 rpm (101%)

Airspeed Limits

V_{NE} (never exceed speed) at sea level is 130 KIAS (120 KIAS with fixed floats) for takeoff gross weights of 2200 lbs. or less. V_{NE} at sea level is 120 KIAS (110 KIAS with fixed floats) for takeoff gross weights over 2200 lbs.

Power Off (Autorotation) V_{NE} at sea level is 100 KIAS.

For reduction of V_{NE} with altitude and temperature, see Rotorcraft Flight Manual.

Airspeed limit at power settings above Maximum Continuous Power is 100 KIAS.

Airspeed limit with inflated pop-out floats is 80 KIAS.

Airspeed limit for any combination of Doors Off is 100 KIAS.

II. Model R44 II (Normal Category Rotorcraft), Approved October 3, 2002, (cont'd)

Center of Gravity (C.G.) Range

Longitudinal C.G. Range			Lateral C.G. Range		
Gross Weight (lbs.)	Forward (in.)	Aft (in.)	Long. C. G. (in.)	Left (in.)	Right (in.)
1600	92.0	102.5	92.0	-3.0	+3.0
2100	92.0	102.5	100.0	-3.0	+3.0
2300	92.0	100.25	102.5	-1.5	+1.5
2500	93.0	98.0			

Note: Straight line variation between points shown

Empty Weight C.G. Limit

Empty weight C.G. must be such that calculated C.G. with 150 lb. pilot and full fuel is at STA 102.5 or forward.

Maximum Weight

2500 lb.
2400 lb. for intentional water landings with fixed or pop-out floats.

Minimum Crew

1 pilot in forward right seat.

Number of Seats

4 (3 for Police and ENG Versions)
Seat Locations: Pilot and Forward Passenger at STA 49.5
Aft Passengers at STA 79.5

Maximum Baggage

50 pounds of baggage and installed equipment in any baggage compartment. For any seat location, the maximum combined weight of the seat load, baggage, and installed equipment is 300 lbs.

Fuel Capacity

Tank	Tanks Without Bladders		Tanks With Bladders		Location (STA)
	Capacity (gal.)	Usable (gal.)	Capacity (gal.)	Usable (gal.)	
Main	31.6	30.6	30.5	29.5	106.0
Auxiliary	18.5	18.3	17.2	17.0	102.0

Oil Capacity

Component	Capacity (qt.)	Location (STA)
Engine	9	110.0
Main Rotor Transmission	2	100.0
Tail Rotor Transmission	0.11	327.0
Hydraulic Reservoir	0.65	117.0

Maximum Operating Altitude

Density Altitude Limit - 14,000 ft.
Maximum altitude above ground level is 9000 ft. to allow landing within 5 minutes in case of fire.

Manufacturer's Serial Numbers

1140, 10001 thru 29999

Certification Basis

14 CFR Part 27, dated February 1, 1965, including Amendments 27-1 through 27-24.

14 CFR Part 36 Amendment 36-24.

Equivalent Safety Finding:
Number TD10352LA-R/S-1
14CFR Part 27.1401(d), Anticollision Light System

Number AT16516LA-R-S-1
14 CFR part 27.695(a)(1), Power boost and power-operated control system (see Note 10)

Special Condition:
No. 27-033-SC Robinson Model R44 and R44 II Helicopters, Installation of HeliSAS Autopilot and Stabilization Augmentation System (AP/SAS).

II. Model R44 II (Normal Category Rotorcraft), Approved October 3, 2002, (cont'd)

Equipment

The basic required equipment as prescribed in the applicable airworthiness regulations (see Certification Basis) must be installed in the aircraft for certification. In addition, the following FAA-approved Rotorcraft Flight Manual is required:

R44 II Rotorcraft Flight Manual (RTR 462) dated October 3, 2002, or later revision (See NOTES 7 & 8).

DATA PERTINENT TO BOTH MODELS

Datum

100 in. forward of main rotor centerline.

Leveling Means

Refer to the R44 Maintenance Manual and Instructions for Continued Airworthiness (RTR 460).

Rotor Blade and Control Movements

Main Rotor blade angles at 75% radius:

Collective Pitch: 12.5° ±1.0° total travel

Note: Collective low pitch to be established in accordance with the Maintenance Manual and Instructions for Continued Airworthiness (RTR 460) procedures to obtain proper autorotation RPM.

Cyclic Pitch:	Forward	13.50° to 14.25°
	Aft	13.50° to 14.25°
	Left	7.5° to 8.5°
	Right	6.0° to 7.0°

Tail Rotor blade angles at 75% radius:

Collective Pitch:	Full right pedal	15.5° to 16.5°
	Full left pedal	18.5° to 19.0°

Production Basis

Production Certificate No. 424WE dated February 11, 1993.

GENERAL NOTES

NOTE 1. A current weight and balance report, including a list of equipment included in the certificated empty weight, and loading instructions when necessary, must be provided for each aircraft at the time of original airworthiness certification and at all times thereafter, except in the case of operators having an approved weight control system.

NOTE 2. The following placard must be installed in clear view of the pilot:
"THIS ROTORCRAFT APPROVED FOR DAY AND NIGHT VFR OPERATIONS"

For additional placards, see the Rotorcraft Flight Manual. All placards required in the Rotorcraft Flight Manual must be installed in the appropriate locations.

NOTE 3. Information essential to the proper maintenance of the helicopter, including retirement time of critical components, is contained in the Robinson R44 Maintenance Manual and Instructions For Continued Airworthiness (RTR 460). Retirement times are listed in the "AIRWORTHINESS LIMITATIONS" section.

NOTE 4. R44 Rotorcraft Flight Manual Supplement 5 dated July 17, 1996, or later revision is required when float landing gear is installed.

NOTE 5. R44 Rotorcraft Flight Manual Supplement 10 dated June 10, 1999, or later revision is required when emergency (pop-out) floats are installed.

NOTE 6. R44 Rotorcraft Flight Manual with revisions through November 5, 1999, or later revision is required when hydraulically-boosted main rotor flight controls are installed.

NOTE 7. Deleted as of April 29 2016.

NOTE 8. Deleted as of April 29, 2016.

NOTE 9. Deleted as of February 13, 2015.

NOTE 10. Robinson Helicopter Company was granted AT16516LA-R-S-1 Equivalent Level of Safety (ELOS) finding to CFR §27.695(a)(1), dated July 17, 2017. The FAA concluded that the control valve design provided equivalent level of safety to the requirement intended by the regulation. Exemption No. 6692, dated October 17, 1997, has been removed. This exemption allowed RHC to obtain certification of the design change without considering the jamming or a control valve in the powered flight control system as a possible single failure. There is no impact to R44 helicopters that have been delivered are in service.

END

Intentionally Blank

3.300 Airworthiness Limitations

The Airworthiness Limitations Section is FAA approved and specifies inspections and other maintenance required under 14 CFR §§ 43.16 and 91.403, unless an alternative program has been FAA approved.

There are two lists for fatigue life-limited parts. The first list (this page) is applicable to all R44 and R44 II helicopters. The second list (following page) provides increased service lives which may be used for the two-seat R44 Cadet configuration (R44 serial numbers 30001 through 39999).

R44 and R44 II Fatigue Life-Limited Parts

Part Number	Description	Maximum Service Life
C023-1	Tailcone Assembly, Rev M & Prior	2000 Hours
C016-2, -5, & -7	Main Rotor Blade	2200 Hours or 12 years[1]
C020-1 & -2	Upper Frame	2200 Hours
C029-1, -2, & -3	Tail Rotor Blade	2200 Hours or 12 years[1]
C030-1	Tail Rotor Hub	2200 Hours
C044-1	Horizontal Stabilizer, Rev L & Prior	2200 Hours[2]
C146-1 & -5	Gear Set, Main Gearbox	2200 Hours
C146-2	Pinion, Main Gearbox	2200 Hours
C154-1	Main Rotor Hub	2200 Hours[2]
C158-1	Main Rotor Spindle	2200 Hours[2]
C196-1	Tail Rotor Drive Shaft	2200 Hours
C263-1 & -2	Sump, Main Gearbox	2200 Hours
C264-1 & -2	Housing, Main Gearbox	2200 Hours
C545-1	Gear Set, Tail Gearbox	2200 Hours[2]
C545-2	Pinion, Tail Gearbox	2200 Hours[2]
C647-12	Bearing Set, C017-6 Swashplate	2200 Hours[2]
D062-2	Tail Rotor Hub	2200 Hours
D079-1	Tail Rotor Guard	2200 Hours[2]
G062-2	Tail Rotor Hub	2200 Hours[2]
A756-6	Cyclic Grip	4400 Hours
C023-1	Tailcone Assembly, Rev N & Subsequent	4400 Hours
C023-2, -3, -4, -14, & -15	Tailcone Assembly	4400 Hours
C044-1	Horizontal Stabilizer, Rev M & Subsequent	4400 Hours[2]
C198-1 & -2	Lower Swashplate	4400 Hours
C251-1	Main Rotor Shaft	4400 Hours
C319-3	Cyclic Torque Tube	4400 Hours
C320-1	Cyclic Stick	4400 Hours
C337-1	Jackshaft	4400 Hours
D196-1	Tail Rotor Drive Shaft	4400 Hours[2]

[1] Whichever limit occurs first. Calendar time starts on date of original RHC-issued Airworthiness Approval.
[2] Maximum service life is 2000 hours if part is, or ever has been, installed on an R66 helicopter.

3.300 Airworthiness Limitations (continued)

R44 Cadet Fatigue Life-Limited Parts

The following service lives may be used for parts installed on R44 helicopter serial numbers 30001 through 39999. The service lives from the first list (previous page) must be used if the part is, or ever has been, installed on any R44 helicopter other than serial numbers 30001 through 39999.

Part Number	Description	Maximum Service Life
C016-7	Main Rotor Blade, Rev AF & Subsequent	2400 Hours or 12 years[1]
C020-1 & -2	Upper Frame	2400 Hours
C029-3	Tail Rotor Blade	2400 Hours or 12 years[1]
C146-2	Pinion, Main Gearbox	2400 Hours
C146-5	Gear Set, Main Gearbox	2400 Hours
C154-1	Main Rotor Hub	2400 Hours
C158-1	Main Rotor Spindle	2400 Hours
C263-2	Sump, Main Gearbox	2400 Hours
C264-2	Housing, Main Gearbox	2400 Hours
C545-1	Gear Set, Tail Gearbox	2400 Hours
C545-2	Pinion, Tail Gearbox	2400 Hours
C647-12	Bearing Set, C017-6 Swashplate	2400 Hours
D079-1	Tail Rotor Guard	2400 Hours
G062-2	Tail Rotor Hub	2400 Hours
C023-1, -14, & -15	Tailcone Assembly, Rev AQ & Subsequent	4800 Hours
C044-1	Horizontal Stabilizer, Rev P & Subsequent	4800 Hours
D196-1	Tail Rotor Drive Shaft	4800 Hours

[1] Whichever limit occurs first. Calendar time starts on date of original RHC-issued Airworthiness Approval.

Approved By: Ronald Atmore Date: 3/16/18
for Manager, Federal Aviation Administration
Los Angeles ACO Branch, AIR-790

FAA Approved: This and the previous page constitute the Airworthiness Limitations Section in its entirety, are considered segregated from the rest of the document, and set forth the FAA-approved mandatory replacement times for fatigue life-limited parts.