

CHAPTER 3

LIFE-LIMITED COMPONENTS

<u>Section</u>	<u>Title</u>	<u>Page</u>
3.100	Life-Limited Components	3.1
3.110	Time-in-Service Records	3.1
3.120	Fatigue Life-Limited Parts	3.1
3.200	Type Certificate Data Sheet (TCDS)	3.2
3.300	Airworthiness Limitations	3.9

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CHAPTER 3

LIFE-LIMITED COMPONENTS

3.100 Life-Limited Components3.110 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. R22s are equipped with either an oil-pressure-activated hourmeter which records engine run time or a collective-activated hourmeter which records flight (collective up) time. Either method may be used to track time in service, however numerical values for service lives depend on the tracking method used (refer to § 3.300).

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 § 23-85, 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.

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. Fatigue lives are based upon normal flight service, including 6 rotor stop-starts and 10 autorotation entries per hour.

3.200 Type Certificate Data Sheet (TCDS)

The Robinson R22-series Type Certificate Data Sheet (TCDS) reprinted on the following pages is subject to revision.

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

**DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION**

H10WE REVISION 16 ROBINSON
R22 R22 ALPHA R22 BETA R22 MARINER
June 28, 2018

TYPE CERTIFICATE DATA SHEET NO. H10WE

This data sheet, which is a part of Type Certificate No. H10WE, prescribes conditions and limitations under which the product for which the type certificate was issued meets the airworthiness requirements of Title 14 of the Code of Federal Regulations.

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

I. Model R22 Helicopter (Normal Category), Approved March 16, 1979

Engine	Lycoming O-320-A2B or O-320-A2C or O-320-B2C (See NOTES 5 & 6)						
Fuel	See Rotorcraft Flight Manual (RFM)						
Engine Limits for all operations	124 hp at 2652 rpm (104%) See RFM for manifold pressure limit corresponding to 124 hp and ambient conditions.						
Rotor Limits	<table border="1"> <thead> <tr> <th>Power Off (Rotor Tach)</th> <th>Power On (Rotor Tach)</th> </tr> </thead> <tbody> <tr> <td>Maximum (110%) 561 rpm</td> <td>(104%) 530 rpm</td> </tr> <tr> <td>Minimum (90%) 459 rpm</td> <td>(97%) 495 rpm</td> </tr> </tbody> </table>	Power Off (Rotor Tach)	Power On (Rotor Tach)	Maximum (110%) 561 rpm	(104%) 530 rpm	Minimum (90%) 459 rpm	(97%) 495 rpm
Power Off (Rotor Tach)	Power On (Rotor Tach)						
Maximum (110%) 561 rpm	(104%) 530 rpm						
Minimum (90%) 459 rpm	(97%) 495 rpm						
Airspeed Limits (CAS)	98 KCAS Power On and Off V_{NE} (never exceed) at sea level. See RFM for reduction of V_{NE} with altitude and temperature.						
Altitude Limits	Density Altitude Limit - 14,000 feet						
CG Range	See RFM						
Maximum Gross Weight	1300 lbs.						
No. Seats	2 (See NOTE 1)						
Minimum Weight	920 lbs.						
Maximum Baggage	50 pounds of baggage and installed equipment in either baggage compartment, except combined seat load plus baggage and equipment not to exceed 240 pounds.						

Page No.	1	2	3	4	5	6
Rev. No.	16	16	16	16	16	16

I. Model R22 Helicopter (Normal Category), Approved March 16, 1979, (cont'd)

Fuel Capacity	Tank	Tanks Without Bladders		Tanks With Bladders		Location (STA)
		Capacity (gal.)	Usable (gal.)	Capacity (gal.)	Usable (gal.)	
	Main	19.8	19.2	18.3	16.9	108.6
Auxiliary	N/A	N/A	9.7	9.4	103.8	

Oil Capacity Engine Oil, 6 qt. at STA 104.8;
Transmission oil, 1.2 qt. at STA 100.

Rotor Blade and Control Movements For rigging information refer to R22 Maintenance Manual

Serial Nos. Eligible 0002 thru 0300
0302 thru 0349
0352 thru 0356

II. Model R22 ALPHA Helicopter (Normal Category), Approved October 12, 1983

Engine Lycoming O-320-B2C

Fuel See RFM

Engine Limits for all operations 124 hp at 2652 rpm (104%)
See RFM for manifold pressure limit corresponding to 124 hp and ambient conditions.

Rotor Limits	Power Off (Rotor Tach)	Power On (Rotor Tach)
	Maximum (110%) 561 rpm	(104%) 530 rpm
	Minimum (90%) 459 rpm	(97%) 495 rpm

Airspeed Limits 98 KCAS Power On and Off V_{NE} (never exceed) at sea level.
See RFM for reduction of V_{NE} with altitude and temperature.

Altitude Limits Density Altitude Limit - 14,000 feet

CG Range See RFM

Maximum Gross Weight 1370 lbs.

No. Seats 2 (Pilot Location STA 78.0)

Minimum Weight 920 lbs.

Maximum Baggage 50 pounds of baggage and installed equipment in either baggage compartment, except combined seat load plus baggage and equipment not to exceed 240 pounds.

Fuel Capacity	Tank	Tanks Without Bladders		Tanks With Bladders		Location (STA)
		Capacity (gal.)	Usable (gal.)	Capacity (gal.)	Usable (gal.)	
	Main	19.8	19.2	18.3	16.9	108.6
Auxiliary	10.9	10.5	9.7	9.4	103.8	

Oil Capacity Engine oil, 6 qt. at STA 104.8;
Transmission oil, 1.2 qt. at STA 100.

Rotor Blade and Control Movements For rigging information refer to R22 Maintenance Manual.

Serial Nos. Eligible 0301, 0350, 0351, 0357 thru 0500, excluding 0364

III. Model R22 BETA Helicopter (Normal Category), Approved August 12, 1985

The R22 BETA Helicopter includes a 131 hp. takeoff rating. A larger oil cooler and associated installation changes were made to permit the 131 hp. takeoff rating with the O-320 engine.

Engine Lycoming O-320-B2C or O-360-J2A (See NOTE 11)

Fuel See RFM

Engine Limits for all operations Maximum continuous: 124 hp at 2652 rpm (104%)
 Takeoff (5 minutes): 131 hp at 2652 rpm (104%)
 See RFM for manifold pressure limit corresponding to hp. rating and ambient conditions.

Rotor Limits	Power Off (Rotor Tach) for O-320-B2C and O-360-J2A	Power On (Rotor Tach) for O-320-B2C	Power On (Rotor Tach) for O-360-J2A
	Maximum (110%) 561 rpm	(104%) 530 rpm	(104%) 530 rpm
	Minimum (90%) 459 rpm	(97%) 495 rpm	(101%) 515 rpm

Airspeed Limits (CAS) 98 KCAS Power On and Off V_{NE} (never exceed) at sea level.
 See RFM for reduction of V_{NE} with altitude and temperature.

Altitude Limits Density Altitude Limit - 14,000 feet

CG Range See RFM

Maximum Gross Weight 1370 lbs.

No. Seats 2 (Pilot Location STA 78.0)

Minimum Weight 920 lbs.

Maximum Baggage 50 pounds of baggage and installed equipment in either baggage compartment, except combined seat load plus baggage and equipment not to exceed 240 pounds.

Fuel Capacity	Tanks Without Bladders		Tanks With Bladders		Location (STA)
	Capacity (gal.)	Usable (gal.)	Capacity (gal.)	Usable (gal.)	
Main	19.8	19.2	18.3	16.9	108.6
Auxiliary	10.9	10.5	9.7	9.4	103.8

Oil Capacity Engine oil, 6 qt. at STA 104.8;
 Transmission oil, 1.2 qt. at STA 100.

Rotor Blade and Control Movements For rigging information refer to R22 Maintenance Manual.

Serial Nos. Eligible 0501 and subsequent

IV. Model R22 MARINER Helicopter (Normal Category), Approved September 12, 1985

The R22 MARINER helicopter includes two inflatable floats, additional corrosion protection, 131 hp. takeoff rating, tailcone with nose-up horizontal stabilizer mounting angle and float stabilizer in place of the tail skid. The helicopter can be used with or without floats. (See NOTE 9)

Engine Lycoming O-320-B2C or O-360-J2A (See NOTE 11)

Fuel See RFM

Engine Limits for all operations Maximum continuous: 124 hp at 2652 rpm (104%)
 Takeoff (5 minutes): 131 hp at 2652 rpm (104%)
 See RFM for manifold pressure limit corresponding to hp. rating and ambient conditions.

Rotor Limits	Power Off (Rotor Tach) for O-320-B2C and O-360-J2A	Power On (Rotor Tach) for O-320-B2C	Power On (Rotor Tach) for O-360-J2A
	Maximum (110%) 561 rpm	(104%) 530 rpm	(104%) 530 rpm
	Minimum (90%) 459 rpm	(97%) 495 rpm	(101%) 515 rpm

Airspeed Limits (CAS) With Floats Installed
 91 KCAS Power On V_{NE} (never exceed) at sea level.
 77 KCAS Power Off V_{NE} (never exceed) at sea level.
 See RFM for reduction of V_{NE} with altitude and temperature.

Without Floats Installed
 98 KCAS Power On and Off V_{NE} (never exceed) at sea level.
 See RFM for reduction of V_{NE} with altitude and temperature.

Altitude Limits Density Altitude Limit - 14,000 feet

CG Range See RFM
 Maximum Gross Weight 1370 pounds

No. Seats 2 (Pilot Location STA 78.0)

Minimum Weight 920 pounds

Maximum Baggage 50 pounds of baggage and installed equipment in either baggage compartment, except combined seat load, plus baggage and equipment not to exceed 240 pounds.

Fuel Capacity	Tank	Tanks Without Bladders		Tanks With Bladders		Location (STA)
		Capacity (gal.)	Usable (gal.)	Capacity (gal.)	Usable (gal.)	
	Main	19.8	19.2	18.3	16.9	108.6
	Auxiliary	10.9	10.5	9.7	9.4	103.8

Oil Capacity Engine oil, 6 qt. at STA 104.8;
 Transmission oil, 1.2 qt. at STA 100.

Rotor Blade and Control Movements For rigging information refer to R22 Maintenance Manual.

Serial No. Eligible 0364, 0501 and subsequent (Suffix "M" added to all MARINERs.)

DATA PERTINENT TO ALL MODELS

Datum	100 inches forward of main rotor centerline.
Leveling Means	Refer to the Weight and Balance Section of the R22 Rotorcraft Flight Manual.
Certification Basis	14 CFR Part 27 dated February 1, 1965, including Amendments 27-1 through 27-10. § 27.1559 of Amendment 27-21 is an option for all S/Ns. National Environmental Act of 1969 Noise Control Act of 1972 <u>Equivalent Safety Finding:</u> Number TD10352LA-R/S-1 14 CFR Part 27.1401(d), Anticollision Light System
Production Basis	Production Certificate No. 424WE, dated March 6, 1981
Equipment	The basic required equipment as prescribed in the applicable airworthiness regulations (See Certification Basis) must be installed in the helicopter for certification. In addition, the following FAA-approved Rotorcraft Flight Manual is required: <u>R22</u> R22 Rotorcraft Flight Manual dated March 16, 1979, or later revision. <u>R22 ALPHA</u> R22 Rotorcraft Flight Manual dated March 16, 1979, with revisions through October 12, 1983 or later (see NOTE 8). <u>R22 BETA with O-320-B2C</u> R22 Rotorcraft Flight Manual dated March 16, 1979, with revisions through August 7, 1985 or later (see NOTE 8). <u>R22 BETA with O-360-J2A</u> R22 Rotorcraft Flight Manual dated March 16, 1979, with revisions through August 7, 1985 or later. For R22 Rotorcraft Flight Manual with revisions prior to October 13, 2000, Flight Manual Supplement 7 dated January 31, 1996, or later revision, is required (see NOTE 8). <u>R22 MARINER with O-320-B2C</u> R22 Rotorcraft Flight Manual dated March 16, 1979, with revisions through August 7, 1985 or later, and Flight Manual Supplement 4 dated September 9, 1985, or later revision. <u>R22 MARINER with O-360-J2A</u> R22 Rotorcraft Flight Manual dated March 16, 1979, with revisions through August 7, 1985 or later, and Flight Manual Supplement 4 dated September 9, 1985, with revisions through October 13, 2000 or later. For R22 Rotorcraft Flight Manual with revisions prior to October 13, 2000, Flight Manual Supplement 8 dated January 31, 1996, or later revision, is required in place of Flight Manual Supplement 4. <u>ALL MODELS</u> If fuel tanks with bladders are installed: R22 Rotorcraft Flight Manual dated March 16, 1979, with revisions through February 15, 2013 or later. R22 Mariners also require Flight Manual Supplement 4 as noted above. Also see Note 8.

H10WE

Page 6 of 6

GENERAL NOTES

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

Pilot Location STA 79.0 for helicopter S/Ns 0002 thru 0255 and STA 78.0 for helicopter S/Ns 0256 and subsequent and helicopters in which Robinson P/N seats A466-1 and A467-1 have been replaced by Robinson P/N seats A932-1 and A928-1.

NOTE 2. One of the following placards must be installed in clear view of the pilot:
"THE MARKINGS AND PLACARDS INSTALLED ON THIS HELICOPTER CONTAIN OPERATING LIMITATIONS WHICH MUST BE COMPLIED WITH WHEN OPERATING THIS ROTORCRAFT. OTHER OPERATING LIMITATIONS WHICH MUST BE COMPLIED WITH WHEN OPERATING THIS ROTORCRAFT ARE CONTAINED IN THE ROTORCRAFT FLIGHT MANUAL."

Or: "THIS ROTORCRAFT APPROVED FOR DAY AND NIGHT VFR OPERATIONS"

For the R22 MARINER:

"THIS ROTORCRAFT APPROVED FOR DAY AND NIGHT VFR OPERATIONS WITHOUT FLOATS INSTALLED OR DAY VFR OPERATIONS ONLY WITH FLOATS INSTALLED."

For additional placards, see R22 Rotorcraft Flight Manual.

NOTE 3. Information essential to the proper maintenance of the helicopter, including retirement time of critical components, is contained in the Robinson R22 Maintenance Manual and Instructions For Continued Airworthiness (RTR 060). Retirement times are listed in the "AIRWORTHINESS LIMITATIONS" section.

NOTE 4. Deleted as of April 11, 1988.

NOTE 5. Lycoming O-320-A2C, with Retard Magneto Starting System, eligible on S/Ns 0002 thru 0300, 0302 thru 0349, and 0352 thru 0356 helicopters.

NOTE 6. Lycoming O-320-B2C installed on S/Ns 0175 and 0200 thru 2570 in production. It may be installed in prior S/N helicopters if the following parts are changed; Robinson P/Ns B193-2 (Window Plate - Instrument Cluster), A145-3 (Engine), A600-2 (Manifold Pressure Gauge), and A654-40 & -41 (Decals).

NOTE 7. Deleted as of April 25, 2001.

NOTE 8. The R22 "Police Helicopter" configuration requires Flight Manual Supplement 3, dated March 27, 1984 or later.

NOTE 9. The R22 MARINER with floats installed is limited to daylight VFR operation only.

NOTE 10. R22 ALPHA S/N 0364 was converted to an R22 MARINER by the manufacturer. The original R22 ALPHA dataplate was removed and replaced with an R22 MARINER data plate S/N 0364M.

NOTE 11. Lycoming O-360-J2A installed on S/N 2571 and subsequent in production. Retrofit installation of the O-360-J2A engines may only be accomplished at the Robinson Helicopter Company.

NOTE 12. Deleted as of May 24, 2018.

.....END.....

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.

Time in service may be tracked based on engine run time or based on flight (collective up) time. Either method may be used, however numerical values for service lives depend on the tracking method used.

R22 Fatigue Life-Limited Parts

Use the following lives if time is tracked based on engine run time as recorded by an oil-pressure-activated hourmeter:

<u>Part Number</u>	<u>Description</u>	<u>Maximum Service Life</u>
A016-2 (Retired by AD 2004-19-09) ..	Main Rotor Blade	2200 Hours or 10 years ¹
A016-4 and -6	Main Rotor Blade	2200 Hours or 12 years ¹
A029-1 and -2	Tail Rotor Blade	2200 Hours or 12 years ¹
A146-1	Pinion, Main Gearbox (O-360 Engine)	2200 Hours
A158-3	Main Rotor Spindle	2200 Hours
B545-1	Gear Set, Tail Gearbox	2200 Hours
B545-2	Pinion, Tail Gearbox	2200 Hours
NAS630-80 (or MS21250-10080) . . .	Coning Hinge Bolt	2200 Hours
NAS1351-4-20 (or A722-1 or -2)	Pitch Horn Screws	2200 Hours
NAS6604 (or NAS1304)	Tail Rotor Blade-to-Hub Attach Bolt . . .	2200 Hours
A158-1	Main Rotor Spindle	2415 Hours ²
A020-2	Upper Frame, Rev R & Prior	4200 Hours
A020-2 and -90	Upper Frame, Rev S & Subsequent	4400 Hours
A023-1, -20, -22, and -23	Tailcone Assembly	4400 Hours
A047-1 and -6	Upper Frame	4400 Hours
A154-1	Main Rotor Hub	4400 Hours
B370-1	Main Rotor Hub	4400 Hours
A020-84	Lower R.H. Frame	5110 Hours
A046-2	Lower R.H. Frame	5110 Hours
A062-2	Tail Rotor Hub	6000 Hours
A030-1	Tail Rotor Hub Assembly	6260 Hours

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

² Subject to AD 88-26-01 R2 compliance.

3.300 Airworthiness Limitations (continued)

R22 Fatigue Life-Limited Parts (continued)

Use the following lives if time is tracked based on flight (collective up) time as recorded by a collective-activated hourmeter:

<u>Part Number</u>	<u>Description</u>	<u>Maximum Service Life</u>
A016-2 (Retired by AD 2004-19-09) . .	Main Rotor Blade	1964 Hours or 10 years ¹
A016-4	Main Rotor Blade	1964 Hours or 12 years ¹
NAS630-80 (or MS21250-10080) . . .	Coning Hinge Bolt	1964 Hours
NAS1351-4-20 (or A722-1 or -2)	Pitch Horn Screws	1964 Hours
A158-1	Main Rotor Spindle	2156 Hours ²
A016-6	Main Rotor Blade	2200 Hours or 12 years ¹
A029-1 and -2	Tail Rotor Blade	2200 Hours or 12 years ¹
A146-1	Pinion, Main Gearbox	2200 Hours
A158-3	Main Rotor Spindle	2200 Hours
A188-2	Sprag Clutch Assembly	2200 Hours
A647-1	Bearing, Main Rotor Shaft	2200 Hours or 12 years ¹
A647-6	Bearing, Tail Rotor Pitch Control	2200 Hours or 12 years ¹
A647-8	Bearing, Damper Assembly	2200 Hours or 12 years ¹
B545-1	Gear Set, Tail Gearbox	2200 Hours
B545-2	Pinion, Tail Gearbox	2200 Hours
NAS6604 (or NAS1304)	Tail Rotor Blade-to-Hub Attach Bolt	2200 Hours
A020-2	Upper Frame, Rev R & Prior	3750 Hours
A154-1	Main Rotor Hub	3928 Hours
A020-2 and -90	Upper Frame, Rev S & Subsequent	4400 Hours
A020-84	Lower R.H. Frame	4400 Hours
A023-1, -20, -22, and -23	Tailcone Assembly	4400 Hours
A046-2	Lower R.H. Frame	4400 Hours
A047-1 and -6	Upper Frame	4400 Hours
A062-2	Tail Rotor Hub	4400 Hours
B370-1	Main Rotor Hub	4400 Hours
A030-1	Tail Rotor Hub Assembly	5589 Hours

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

² Subject to AD 88-26-01 R2 compliance.

Approved By: *Ronald Atmc* 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.