CHAPTER 4

AIRWORTHINESS LIMITATIONS

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4-10 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.

A. Fatigue Life-Limited Parts

Part Number	*Description*	*Maximum Service Life*
C023-21, -34, & -35	Tailcone Assembly	2000 Hours
C044-1	Horizontal Stabilizer	2000 Hours
C154-1	Main Rotor Hub	2000 Hours
C158-1	Main Rotor Spindle	2000 Hours
C251-3	Main Rotor Shaft	2000 Hours
C545-1	Gear Set, Tail Gearbox	2000 Hours
C647-12	Bearing Set, Swashplate	2000 Hours
D079-1	Tail Rotor Guard	2000 Hours
D196-1	Tail Rotor Drive Shaft	2000 Hours
F016-2	Main Rotor Blade	2000 Hours or 12 years*
F020-1	Upper Frame	2000 Hours
F029-1	Tail Rotor Blade	2000 Hours or 12 years*
F143-1	Pinion, Main Gearbox	2000 Hours
F146-1	Pinion, Main Gearbox	2000 Hours
F195-1	Yoke, Tail Rotor Drive Shaft	2000 Hours
F235-13	Strut, Upper Frame	2000 Hours
F252-1	Strut, Upper Frame	2000 Hours
F263-1	Housing, Main Gearbox	2000 Hours
F270-1	Cartridge, Main Gearbox	2000 Hours
G062-2	Tail Rotor Hub	2000 Hours
G201-1	Frame, Servo Support	2000 Hours

* Whichever limit occurs first.

Approved By: _____ Date: 7/11/11

for Manager, Federal Aviation Administration
Los Angeles Aircraft Certification Office

FAA Approved: This page constitutes the Airworthiness Limitations Section in its entirety, is considered segregated from the rest of the document, and sets forth the FAA approved mandatory replacement times for the fatigue life-limited parts listed above.

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4-20 Type Certificate Data Sheet (TCDS)

The Robinson R66 Turbine Type Certificate Data Sheet (TCDS) reprinted on the following pages is subject to revision.

Visit the Aircraft Certification Regulatory and Guidance Library online database for TCDS revision status at: http://rgl.faa.gov.

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DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

R00015LA
New
Robinson
R66
October 25, 2010

TYPE CERTIFICATE DATA SHEET NO. R00015LA

This data sheet, which is a part of Type Certificate No. R00015LA, prescribes conditions and limitations under which the product for which the type certificate was issued meets the airworthiness requirements of Title 14, Code of Federal Regulations.

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

I. Model R66 (Normal Category Rotorcraft), Approved October 25, 2010

Engine: One Rolls-Royce 250-C300/A1, Type Certificate number E4CE

Fuel:
Jet A or Jet A-1 conforming to ASTM D 1655
Jet B conforming to ASTM D 6615
JP-4 or JP-5 conforming to MIL-DTL-5624
JP-8 conforming to MIL-DTL-83133

Engine Limits:

Power Ratings at N_2 speed of 6016 rpm (100% rpm):
Maximum continuous: 224 hp (83% Torque)
Takeoff (5 minute): 270 hp (100% Torque)

Maximum speeds:
Output shaft (N_2): 101% (6076 rpm)
Gas producer shaft (N_1): 105% (53519 rpm)

Maximum Measured gas temperature:
During start: 927° C (10 second limit above 810°C)
5 minute during operation: 782° C
Continuous during operation: 706° C

Rotor Speed Limits:

Condition	Minimum		Maximum	
	(rpm*)	(%)	(rpm*)	(%)
Power On	404	99	412	101
Power Off	359	88	432	106

* Main Rotor

Transmission Torque Limits:

Rating	Max Torque at 100% N_2	
	(ft-lb)	(%)
Takeoff (5 min)	236	100
Max Continuous	196	83

Page No.	1	2	3	4	5
Rev. No.	-	-	-	-	-

Airspeed Limits

Takeoff Gross Weight	Power On V_{NE} (KIAS)	Power Off V_{NE} (KIAS)
Less than 2200 lb	140	100
2200 lb to 2700 lb	130	100

Sea level V_{NE} values shown above. For reduction of V_{NE} with altitude and temperature, see R66 Pilot's Operating Handbook and FAA Approved Rotorcraft Flight Manual (RTR 661).

Airspeed limit is 65 KIAS for power settings above 83% torque.

Airspeed limit is 100 KIAS for any combination of doors off.

Center of Gravity (C.G.) Range

Gross Weight (lb)	Longitudinal C.G.	
	Forward Limit (in)	Aft Limit (in)
1400	91.0	102.5
2300		102.5
2500	91.0	
2700	92.0	98.0

Longitudinal C.G. (in)	Lateral C.G.	
	Left Limit (in)	Right Limit (in)
91.0	-3.5	+3.5
100.0	-3.5	+3.5
102.5	-1.5	+1.5

Notes:

1. Straight line variation between points shown
2. Lateral C.G. limits valid for all gross weights

Empty Weight C.G. Range

None. The aircraft's empty weight and empty weight C.G. must be determined by the procedures in Section 8 of the R66 Maintenance Manual, RTR 660.

Datum

100 inches forward of main rotor centerline.

Leveling Means

For weight and balance: Level placed laterally and longitudinally on aft tunnel cover immediately forward of aft middle seat. If cover is not straight, use keel panel upper flanges, accessed by removing aft tunnel cover.

For rigging: Level placed on top of main rotor hub parallel with teeter bolt. Main rotor blades are aligned fore-aft for lateral levelling, and teeter bolt is aligned fore-aft for longitudinal levelling.

Maximum Weight

2700 lb

Minimum Crew

1 pilot in forward right seat.

Number of Seats

5

Seat Locations

Pilot and forward occupant at STA 49.0 in
Aft outboard occupants at STA 80.0 in
Aft center occupant at STA 78.0 in

Maximum Compartment Weights

Main baggage compartment
Maximum weight is 300 lb at STA 107.0 in
Maximum loading density is 50 lb/ft^2

Underseat baggage compartments
Forward seats – Maximum weight is 50 lb at STA 42.0 in
Rear seats – Maximum weight is 50 lb at STA 82.0 in

Note: For any seat location, the maximum combined weight of the load on the seat (e.g., occupant) plus the weight of stowed items and any installed equipment in the underseat baggage compartment is 300 lb.

Fuel Capacity

Fuel tank capacity is 74.6 U.S. gallons
Usable fuel quantity is 73.6 U.S. gallons at STA 102.5 in
Note: Aircraft empty weight includes 1.0 U.S. gallon of unusable fuel.

Oil Capacities

Component	Capacity (qt)	STA (in)
Engine	6	126.0
Main Rotor Transmission	2	100.0
Tail Rotor Transmission	0.11	327.0
Hydraulic Reservoir	0.65	110.8

Maximum Operating Altitude

14,000 feet Density Altitude.
Maximum altitude above ground level is 9,000 ft.

Rotor Blade and Control Movements

Main Rotor Blades

Collective Pitch	13.0° ±0.5° total travel	
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°

Note: Collective low pitch to be established in accordance with the Maintenance Manual and Instructions for Continued Airworthiness (RTR 660) procedures to obtain proper autorotation RPM.

Tail Rotor Blades

Collective Pitch	Left pedal	15.5° to 16.5°
	Right pedal	18.5° to 19.0°

All blade angles measured at 75% radius

Manufacturer's Serial Numbers

0002 and subsequent.

Certification Basis

14 CFR Part 27, dated February 1, 1965, as amended by Amendment 27-1 through Amendment 27-44.

Exemption No. 9589, dated January 28, 2008, to § 27.695. This exemption was granted to permit a powered flight control system without considering the jamming of a control valve as a possible single failure.

14 CFR Part 36, dated December 1, 1969, as amended by Amendment 36-1 through Amendment 36-28.

Compliance with the ditching requirements of § 27.801 was not demonstrated.

Compliance with the ice protection requirements of § 27.1419 was not demonstrated.

The R66 is approved for day and night VFR operations only.

TC Application Date: September 06, 2006.

TC Issue Date: October 25, 2010.

Production Basis — Production Certificate No. 424WE dated October 25, 2010.

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:

R66 Pilot's Operating Handbook and FAA Approved Rotorcraft Flight Manual (RTR 661), dated October 25, 2010, or later approved revision.

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 FAA-approved 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 R66 Maintenance Manual and Instructions for Continued Airworthiness (RTR 660). Retirement times are listed in the FAA approved "AIRWORTHINESS LIMITATIONS" section. The values of retirement or service lives and inspection intervals cannot be changed without FAA Engineering approval.

NOTE 4. Any changes to the type design of this helicopter by means of an amended type certificate (TC), supplemental type certificate (STC), or amended STC, requiring instructions for continued airworthiness (ICA's) must have the ICA's submitted thru the project certification office for review and acceptance by the Fort Worth -Aircraft Evaluation Group (FTW-AEG) Flight Standards District Office (FSDO) prior to the aircraft delivery, or upon issuance of the first standard airworthiness certificate for the affected aircraft, whichever occurs later as prescribed by Title 14 CFR 21.50. Type design changes by means of a Form 337 "field approval" that require ICA's must have those ICA's reviewed by the field approving FSDO.

NOTE 5. Any cockpit instruments installed by a 3rd party must be marked with limit markings and range markings in accordance with Robinson's marking scheme.

NOTE 6. Determination for compliance with 27.562(c)(5), Head Impact Criteria (HIC) must be performed for any equipment installed in the cockpit or passenger cabin.

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