
TYPE-CERTIFICATE DATA SHEET

UK.TC.R.00078

for
R66

Type Certificate Holder
Robinson Helicopter Company

2901 Airport Drive
Torrance, CA 90505
U.S.A.

Model(s): R66
Issue: 1
Date of issue: 23 August 2023

TABLE OF CONTENTS

Section 1	R66.....	3
I.	General	3
1.	Type / Variant / Model.....	3
2.	Type Certificate Holder	3
II.	Certification Basis	3
III.	Technical Characteristic and Operating Limitations	3
IV.	Operating and Service Instructions.....	7
V.	Operational Suitability Data	8
VI.	Notes.....	8
Section 2	Administration	10
I.	Acronyms and Abbreviations	10
II.	Type Certificate Holder Record	11
III.	Amendment Record	11

Section 1 R66**I. General**

This Type-Certificate Data Sheet (TCDS) is the concise definition of the type-certificated product accepted and or approved by the CAA in the UK for the affected types and models.

This TCDS includes:

1. Details of the type design that affect the TCDS that have been approved or accepted by the CAA in the UK since 01 January 2021.
2. Details of the type design that affected the TCDS and were approved or accepted by EASA before 01 January 2021, and were incorporated into EASA TCDS EASA.IM.R.507 at Issue 2 dated 11 December 2015 and are therefore accepted by the UK under Article 15 of Annex 30 of the UK-EU Trade and Cooperation Agreement.

1. Type / Variant / Model

- a) Type: R66
- b) Variant or Model: R66

2. Type Certificate Holder

Robinson Helicopter Company
2901 Airport Drive
Torrance, California 90505, USA

II. Certification Basis

1. Reference Date for determining the applicable requirements 8 May 2009
2. Airworthiness Requirements CS 27, Amdt. 2, dated 17 November 2008
3. Special Conditions CS 27.1309 Installation of HeliSAS AP - EASA Type Certification Basis requirements applicable to Equipment, systems, and installations. (F-01)
4. Exemptions None
5. Deviations None
6. Equivalent Safety Findings CS 27.695(a)(1) Power boost and power-operated control system (D-01)
7. Requirements elected to comply None
8. Environmental Protection Requirements see TCDSN UK.TC.R.00078
9. Operational Suitability Data (OSD) See SECTION V below

III. Technical Characteristic and Operating Limitations

1. Type Design Definition RHC Drawing F001
2. Description
 - Main rotor: 2-blade, free to teeter and cone, rigid in-plane
 - Tail rotor: 2-blade, free to teeter, rigid in-plane
 - Fuselage: Riveted aluminium sheet and welded steel tube for primary structure, fiberglass &

thermoplastic for secondary structure. Seats integral to cabin structure.

Landing gear: Aluminium skids

Powerplant: Single turbine

Avionics: Analogue or EFIS

3. Equipment

Basic equipment must be installed and operational prior to registration of the helicopter.

Optional equipment per RHC drawing F025.

4. Dimensions

4.1 Fuselage Length: 11.66 m
 Width hull: 1.47 m
 Height: 3.48 m

4.2 Main Rotor Diameter: 10.06 m

4.3 Tail Rotor Diameter: 1.52 m

5. Engine

5.1 Model Rolls-Royce
 1 x 250-C300/A1

5.2 Type Certificate FAA TC/TCDS n°: E4CE
 EASA TC/TCDS n°: EASA.IM.E.052

5.3 Limitations

5.3.1 Installed Engine Limitations and Transmission Torque Limits

	TQ limits [%(hp)]	Gas generator N ₁ [rpm(%)]	PWR turbine N ₂ [rpm(%)]	Temperature MGT [°C]
TOP (5 min)	100 (270)	53 519 (105)	6 076 (101)	782
MCP	83 (224)	53 519 (105)	6 076 (101)	706
Transient during operation	---	---	---	843*
Max. starting	---	---	---	927*

Note: *10 second limit above 782°C during start and 6 second transient limit above 782°C during operation

5.3.2 Transmission Torque Limits

	Max. TQ [Nm]	PWR turbine N ₂ [%]
TOP (5 min)	320	101*
MCP	266	101

Note: *100% = 6 016 rpm

6. Fluids (Fuel/ Oil/ Additives)

6.1 Fuel See R66 Pilot's Operating Handbook and FAA-approved Rotorcraft Flight Manual (RTR 661), Section 2.

6.2 Oil Engine: AS 5780 HPC
MRGB/TRGB: Robinson P/N A257-22

6.3 Additives See R66 Pilot's Operating Handbook and FAA-approved Rotorcraft Flight Manual (RTR 661), Section 2.

7. Fluid capacities

7.1 Fuel Fuel tank capacity: 282 litres (74.6 US gal)
Usable fuel: 279 litres (73.6 US gal)

7.2 Oil Engine: 5.7 litres (1.5 US gal)
MRGB: 1.9 litres (2 qt)
TRGB: 0.10 litres (0.11 qt)
Hydraulic reservoir: 0.62 litres (0.65 qt)

7.3 Coolant System Capacity n/a

8. Air Speed Limitations

Take-off Gross Weight	PWR on V_{NE} [KIAS]	PWR off V_{NE} [KIAS]
Less than 998 kg	140	100
998 to 1 225 kg, or Airborne Observation Helicopter version (any gross weight), or Pop-out Floats version (floats stowed, any gross weight)	130	100

Notes:

- MSL 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.
- See R66 Pilot's Operating Handbook and FAA-approved Rotorcraft Flight Manual (RTR 661) for additional airspeed limitations associated with optional equipment installations.

9. Rotor Speed Limitations

Condition	Minimum		Maximum	
	[rpm*]	[%]	[rpm*]	[%]
Power on	404	99	412	101
Power off	359	88	432	106

Note: *Main Rotor

10. Maximum Operating Altitude and Temperature

10.1 Altitude 14 000 ft (4 270 m) DA

10.2 Temperature From -40°C to ISA+35°C, limited to +50°C

11. Operating Limitations

VFR day and night
Non-icing conditions

12. Maximum Mass

1 225 kg (2 700 lb) internal loading

1 315 kg (2 900 lb) external loading (see Note V.5)

13. Centre of Gravity Range

Gross mass [kg]	Longitudinal C.G.	
	FWD limit [mm]	AFT limit [mm]
635	2 311	2 604
1 043	---	2 604
1 134	2 311	---
1 225	2 337	2 489
Longitudinal C.G. [mm]	Lateral C.G.	
	Left limit [mm]	Right limit [mm]
2 311	-89	+89
2 540	-89	+89
2 604	-64	+64

See R66 Pilot's Operating Handbook and FAA-approved Rotorcraft Flight Manual (RTR 661) for expanded limits with external load.

14. Datum

Longitudinal:

the datum plane (STA 0) is located at 2 540 mm (100 in) forward of main rotor centreline.

Lateral:

fuselage median plane

15. Levelling Means

Refer to R66 Maintenance Manual, and, Instructions for Continued Airworthiness (RTR 660), Chapter 8

16. Minimum Flight Crew

1 pilot in forward right seat.

See R66 Pilot's Operating Handbook and FAA-approved Rotorcraft Flight Manual (RTR 661) for configurations that allow 1 pilot in forward left seat.

17. Maximum Passenger Seating Capacity

4

18. Passenger Emergency Exit 4, two on each side of the passenger cabin (intended for normal use)
19. Maximum Baggage/Cargo Loads
- Maximum mass: 136 kg (300 lb)
113 kg (250 lb) for Airborne Observation Helicopter version
90 kg (200 lb) with small auxiliary fuel tank installed
45 kg (100 lb) with large auxiliary fuel tank installed
- Maximum loading: 244 kg/m² (50 lb/ft²)
- Underseat baggage compartments:
Maximum mass: 23 kg (50 lb)
- 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 136 kg (300 lb).

20. Rotor Blade Control Movement

Main Rotor:

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°

Tail Rotor:

Collective pitch	left pedal	15.5° to 16.5°
	right pedal	18.5° to 19.0°

21. Auxiliary Power Unit (APU)

None

22. Life-limited Parts

See Robinson Maintenance Manual and Instructions for Continued Airworthiness (RTR 660).

Retirement times are listed in the FAA-approved "Airworthiness Limitations" section of Chapter 4, dated 17 May 2021, or later revisions.

IV. Operating and Service Instructions

1. Flight Manual

R66 Pilot's Operating Handbook and FAA-approved Rotorcraft Flight Manual, RTR 661, dated 25 October 2010, with revisions through 26 November 2013, or later, and UK CAA Supplement, dated 30 June 2023 or later approved or accepted revisions.

2. Maintenance Manual

R66 Maintenance Manual and Instructions for Continued Airworthiness (RTR 660 Volume I).

- | | |
|---|--|
| 3. Structural Repair Manual | None |
| 4. Weight and Balance Manual | None |
| 5. Illustrated Parts Catalogue | R66 Illustrated Parts Catalog (RTR 660 Volume II) |
| 6. Service Letter and Service Bulletins | R66 Service Letters and Service Bulletins as published by Robinson Helicopter Company. |
| 7. Required Equipment | |

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

V. Operational Suitability Data

The Operational Suitability Data elements listed below are approved by CAA as per Commission Regulation (EU) 748/2012 as amended by Commission Regulation No 69/2014, as retained (and amended in UK domestic law) under European (Withdrawal) Act 2018 and amended by the Aviation Safety (Amendment etc.) (EU Exit) Regulations 2019.

OSD Certification Basis

1. Reference Date for determining the applicable OSD requirements
12 August 2014
2. MMEL – Certification Basis
Special Condition SC-CS-GEN-MMEL-H, Initial Issue
3. Flight Crew Data – Certification Basis
CS-FCD, Initial Issue

OSD Elements

1. MMEL
UK CAA MMEL for R22, R44, and R66, Appendix 1 to RTR 668, dated 30 June 2023, or subsequent approved revisions
2. Flight Crew Data
RTR 667, UK CAA Operation Suitability Data, Flight Crew Data, Initial OSD Issue, or subsequent approved revisions

VI. Notes

1. Manufacturer's eligible serial numbers:
s/n 0560 and subsequent, or s/n 0004 thru 0559 with R66 Service Letter SL-08 completed.
2. Instrument markings:
Any cockpit instruments installed by a third party must be marked with limit markings and range markings in accordance with Robinson's marking scheme.
3. Noise configuration:

The “Clean” and “Dirty” configurations for noise characteristics are defined in the FAA-approved Rotorcraft Flight Manual, Section 5.

4. Designation:

R66 Turbine is used as marketing designation for the basic R66 helicopter. R66 Turbine Marine is used as a marketing designation for the R66 with optional pop-out floats.

5. R66 helicopters equipped with the G132 Cargo Hook installation may be operated at up to 1 315 kg gross mass when the portion above 1 225 kg is jettisonable load on the cargo hook and the helicopter is operating at or below 7,000 feet density altitude.

See Cargo Hook Supplement to R66 Pilot's Operating Handbook and FAA-approved Rotorcraft Flight Manual (RTR 661) for additional operating limitations.

Section 2 Administration

I. Acronyms and Abbreviations

Acronym / Abbreviation	Definition	Acronym / Abbreviation	Definition
AFT	Aft	n/a	Not applicable
C.G.	Centre of Gravity	OSD	Operational Suitability Data
CRI	Certification Review Item	PA	Pressure Altitude
CS	Certification Specification	PWR	Power
DA	Density Altitude	RHC	Robinson Helicopter Company
DP	Datum Point	RFM	Rotorcraft Flight Manual
EFIS	Electronic Flight Information System	RTR	Robinson Technical Report
ESF	Equivalent Safety Finding	s/n	Serial Number
FAA	Federal Aviation Administration	SC	Special Condition
FCD	Flight Crew Data	STA	Station
FWD	Forward	TC	Type Certificate
ISA	International Standard Atmosphere	TCDS	Type Certificate Data Sheet
KIAS	Knots Indicated Air Speed	TCH	Type Certificate Holder
max	Maximum	TOP	Take-Off Power
MC	Maximum Continuous	TRGB	Tail Rotor Gearbox
MCP	Maximum Continuous Power	TQ	Torque
MGT	Measured Gas Temperature	UK CAA	United Kingdom Civil Aviation Authority
MMEL	Master Minimum Equipment List	VFR	Visual Flight Rules
MRGB	Main Rotor Gearbox	V _{NE}	Never Exceed Speed
MSL	Mean Sea Level		

II. Type Certificate Holder Record

TCH Record	Period
Robinson Helicopter Company 2901 Airport Drive Torrance, California 90505, USA	Since 25 October 2010

III. Amendment Record

TCDS Issue No.	TCDS Issue Date	Changes	TC Issue and Date
1	23 Aug 2023	Initial issue, replacing EASA.IM.R.507 Issue 2. Note 5 added to reference CAA approval of the Cargo Hook installation and weight limitations thereto. Updated AFM, and OSD references added to reflect UK-CAA approved documents.	Initial Issue, 23 Aug 2023

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