

**COMANDO DA AERONÁUTICA
DEPARTAMENTO DE PESQUISAS E DESENVOLVIMENTO
CENTRO TÉCNICO AEROESPACIAL**

TYPE CERTIFICATE DATA SHEET Nº ER-9402

Type Certificate Holder:

ROBINSON HELICOPTER COMPANY
2901 Airport Drive
Torrance, CA - 90505
USA

ER-9402
Sheet 01

ROBINSON
R44
R44 II
June 2003

This data sheet, which is part of Type Certificate No. 9402, prescribes conditions and limitations under which the product, for which the Type Certificate was issued, meets the airworthiness requirements of the Brazilian Aeronautical Regulations.

I - Model R44 (Normal Category Rotorcraft), approved 21 August 1994.

ENGINE	Lycoming O-540-F1B5		
FUEL	100 Minimum grade aviation gasoline 100/130 Minimum grade aviation gasoline		
ENGINE LIMITS	Takeoff power (5 min.): 205 hp at 2 718 rpm (102%) Maximum continuous power: 225 hp at 2 718 rpm (102%) Power on operating limits: - Maximum rpm 2 718 (102%) - Minimum rpm 2 638 (99%) See Rotorcraft Flight Manual (RTR 461) for maximum manifold pressure corresponding to horsepower rating.		
ROTOR LIMITS	Power Off (Rotor Tach)	Power On (Rotor Tach)	Power On Engine Tach
	Maximum	432 (108%)	408 (102%) 2 718 (102%)
	Minimum	360 (90%)	396 (99%) 2 638 (99%)
AIRSPEED LIMITS	Never exceed (V_{NE}) – sea level*: - Power on, takeoff weights of 998 kg (2 200 lb) or less 130 kias - Power on, takeoff weights over 998 kg (2 200 lb) 120 kias - Power off 100 kias Airspeed limit at power settings above max. cont. power: 100 kias Airspeed limit for any combination of doors off: 100 kias * See Rotorcraft Flight Manual (RTR 461) for reduction of V_{NE} with altitude and temperature.		

C. G. RANGE

Longitudinal C.G. Limits:

Gross Weight	Forward	Aft
703.5 kg (1 550 lb)	233.7 cm (92 in)	260.3 cm (102.5 in)
907.2 kg (2 000 lb)	233.7 cm (92 in)	260.3 cm (102.5 in)
997.9 kg (2 200 lb)	233.7 cm (92 in)	254.6 cm (100.25 in)
1 088 kg (2 400 lb)	236.2 cm (93 in)	248.9 cm (98.0 in)

Lateral C.G. Limits:

Gross Weight	Long. CG	Right/ Left
703.5 kg (1 550 lb)	233.7 cm (92 in)	± 7.6 cm(± 3.0 in)
907.2 kg (2 000 lb.)	254.0 cm (100 in)	± 7.6 cm(± 3.0 in)
997.9 kg (2 200 lb.)	260.3 cm(102.5 in)	± 3.8 cm(± 1.5 in)

Note: Straight line variation between points.

EMPTY WEIGHT C.G. RANGE.

Calculated C.G. with 68 kg (150 lb) pilot and full fuel must be Sta. 260.4 cm (102.5 in) or forward.

MAXIMUM WEIGHT

1 088 kg (2 400 lb)

MAXIMUM OPERATING ALTITUDE

4 267 m (14 000 ft) density altitude
Maximum altitude above ground level is 2 743 m (9 000 ft) to allow landing within 5 minutes in case of fire.

NUMBER OF SEATS

4 seat locations: Pilot and forward passenger at Sta. 125.7 cm (49.5 in);
Aft passengers at Sta. 201.9 cm (79.5 in).

MINIMUM CREW

1 pilot in forward right seat.

MAXIMUM BAGGAGE

22.7 kg (50 lb) 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 136 kg (300 lb).

FUEL CAPACITY

Tank	Capacity (Liters (US gal))	Usable (Liters (US gal))	Location (Sta., cm (in))
Main:	119.6 (31.6)	115.8 (30.6)	269.2 (106.0)
Auxiliary:	70.0 (18.5)	69.3 (18.3)	259.1 (102.0)

OIL CAPACITY

Component	Capacity (Liters (qt))	Location (Sta., cm (in))
Engine:	8.5 (9)	279.4 (110.0)
Main Rotor Transmission:	1.9 (2)	254.0 (100.0)
Tail Rotor transmission	0.10 (0.11)	830.6 (327.0)
Hydraulic Reservoir (if installed)	0.62 (0.65)	297.2 (117.0)

S/N'S ELIGIBLE

0002, 0004 through 9999

IMPORT ELIGIBILITY

A Brazilian Certificate of Airworthiness may be issued on the basis of a FAA Export Certificate of Airworthiness (or a third country Export Certificate of Airworthiness, in case of used rotorcraft imported from such country), including the following statement:

“The rotorcraft covered by this certificate have been examined and found to be in conformity with the Brazilian approved type design as defined by the Brazilian Type Certificate No. 9402 and is in condition of safe operation”.

The CTA Report H.10-1450-0 dated 01 August 2002, or further revision contains the Brazilian requirements for the acceptance of this rotorcraft.

CERTIFICATION BASIS

RBHA 27, corresponding to FAR Part 27, dated 01 February 1965, including Amdts. 27-1 through 27-24 and Exemption No. 5473, dated 02 July 1992, to RBHA/FAR 27.955(a)(7) and 27.1305(q), and Exemption No. 6692 dated 17 October 1997 to RBHA/FAR Part 27.695.

REQUIRED EQUIPMENT

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

R44 Rotorcraft Flight Manual (RTR 461), dated 10 December 92, or later FAA-approved revision (See NOTES 5, 6 & 7).

II - Model R44 II (Normal Category Rotorcraft), approved 16 May 2003.

The R44 II helicopter changes to a fuel injected engine with a 245 hp takeoff rating and a maximum weight of 1 134 kg (2 500 lb). Main and tail rotor blades are redesigned.

ENGINE

Lycoming IO-540-AE1A5

FUEL

100 Minimum grade aviation gasoline
100/130 Minimum grade aviation gasoline

ENGINE LIMITS

Takeoff power (5 min.): 205 hp at 2 718 rpm (102%)

Maximum continuous power: 245 hp at 2 718 rpm (102%)

Power on operating limits:

- Maximum rpm 2 718 (102%)

- Minimum rpm 2 691 (101%)

See R44 II Rotorcraft Flight Manual (RTR 462) for maximum manifold pressure corresponding to horsepower rating.

ROTOR LIMITS

	Power Off (Rotor Tach)	Power On (Rotor Tach)	Power On Engine Tach
Maximum	432 (108%)	408 (102%)	2 718 (102%)
Minimum	360 (90%)	404 (101%)	2 691 (101%)

AIRSPEED LIMITS

Never exceed (V_{NE}) – sea level*:

- Power on, takeoff weights of 998 kg (2 200 lb) or less 130 kias

- Power on, takeoff weights over 998 kg (2 200 lb) 120 kias

- Power off 100 kias
 Airspeed limit at power settings above max. cont. power: 100 kias
 Airspeed limit for any combination of doors off: 100 kias
 * See R44 II Rotorcraft Flight Manual (RTR 462) for reduction of V_{NE} with altitude and temperature.

C. G. RANGE

Longitudinal C.G. Limits:

Gross Weight	Forward	Aft
725.7 kg (1 600 lb)	233.7 cm (92 in)	260.3 cm (102.5 in)
952.5 kg (2 100 lb)	233.7 cm (92 in)	260.3 cm (102.5 in)
1 043.3 kg (2 300 lb)	233.7 cm (92 in)	254.6 cm (100.25 in)
1 134 kg (2 500 lb)	236.2 cm (93 in)	248.9 cm (98.0 in)

Lateral C.G. Limits:

Gross Weight	Long. CG	Right/ Left
725.7 kg (1 600 lb)	233.7 cm (92 in)	± 7.6 cm(± 3.0 in)
952.5 kg (2 100 lb)	254.0 cm (100 in)	± 7.6 cm(± 3.0 in)
1 043.3 kg (2 300 lb)	260.3 cm(102.5 in)	± 3.8 cm(± 1.5 in)

Note: Straight line variation between points.

EMPTY WEIGHT C.G. RANGE.

Calculated C.G. with 68 kg (150 lb) pilot and full fuel must be Sta. 102.5 or forward.

MAXIMUM WEIGHT

1 134 kg (2 500 lb)
 1 088 kg (2 400 lb) for intentional water landings with fixed or pop-out floats.

MAXIMUM OPERATING ALTITUDE

4 267 m (14 000 ft) density altitude
 Maximum altitude above ground level is 2 743 m (9 000 ft) to allow landing within 5 minutes in case of fire.

NUMBER OF SEATS

4 seat locations: Pilot and forward passenger at Sta. 125.7 cm (49.5 in);
 Aft passengers at Sta. 201.9 cm (79.5 in).

MINIMUM CREW

1 pilot in forward right seat.

MAXIMUM BAGGAGE

22.7 kg (50 lb) 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 136 kg (300 lb).

FUEL CAPACITY

Tank	Capacity (Liters (US gal))	Usable (Liters (US gal))	Location (Sta., cm (in))
Main:	119.6 (31.6)	115.8 (30.6)	269.2 (106.0)
Auxiliary:	70.0 (18.5)	69.3 (18.3)	259.1 (102.0)

OIL CAPACITY	Component	Capacity		Location (Sta., cm (in))
		(Liters)	(qt)	
	Engine:	8.5	(9)	279.4 (110.0)
	Main Rotor Transmission:	1.9	(2)	254.0 (100.0)
	Tail Rotor transmission	0.10	(0.11)	830.6 (327.0)
	Hydraulic Reservoir	0.62	(0.65)	297.2 (117.0)

S/N'S ELIGIBLE 1140, 10001 and subsequent

IMPORT ELIGIBILITY A Brazilian Certificate of Airworthiness may be issued on the basis of a FAA Export Certificate of Airworthiness (or a third country Export Certificate of Airworthiness, in case of used rotorcraft imported from such country), including the following statement:

“The rotorcraft covered by this certificate have been examined and found to be in conformity with the Brazilian approved type design as defined by the Brazilian Type Certificate No. 9402 and is in condition of safe operation”.

The CTA Report H.10-1450-0 dated 01 August 2002, or further revision contains the Brazilian requirements for the acceptance of this rotorcraft.

CERTIFICATION BASIS RBHA 27, corresponding to FAR Part 27, dated 01 February 1965, including Amdts. 27-1 through 27-24 and Exemption No. 6692 dated 17 October 1997 to RBHA/FAR Part 27.695.

REQUIRED EQUIPMENT The basic required equipment, as described in the applicable airworthiness regulations (see Certification Basis) must be installed in the rotorcraft for certification. In addition, the following FAA-approved Rotorcraft Flight Manual is required:
R44 II Rotorcraft Flight Manual (RTR 462), dated 3 October 02, or later FAA-approved revision (See NOTES 8 & 9).

DATA PERTINENT TO ALL MODELS

DATUM 254 cm (100 in) forward of main rotor centerline.

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

ROTOR BLADE CONTROL MOVEMENTS Main Rotor blade angles at 75% radius:
- Collective Pitch: $12.5^{\circ} \pm 1.0^{\circ}$ 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	7.50° to 8.50°
Right	6.00° to 6.50°

Tail Rotor blade angles at 75% Radius:

- Collective Pitch:

Thrust to left 15.50° to 16.50°

Thrust to right 18.50° to 19.00°

PRODUCTION BASIS

FAA production certificate No. 424WE, dated 11 February 1993.

NOTES:

NOTE 1: Weight and balance: 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: Markings and placards: The following placard must be displayed 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.

In addition, all markings and placards for passenger information under normal or emergency conditions must be in Portuguese (or English and Portuguese). External markings for emergency operation of doors, normal ground operation of cargo doors and servicing operations must be in Portuguese (or bilingual). Marking and placards indicating maximum loads in cargo and baggage compartments must be also presented in Portuguese (or bilingual). A list of these placards for the rotorcraft and the respective translations acceptable to CTA is provided in the Annex II to the report H.10-1450-0, dated 01 August 2001 or further revision.

NOTE 3: Continuing Airworthiness: 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 FAA Approved "AIRWORTHINESS LIMITATIONS" section. The values of retirement or service life and inspection intervals cannot be changed without FAA Engineering approval.

Service Information, service bulletins, repair manuals, vendor manuals, rotorcraft flight manuals and maintenance manuals, which contain a statement that the document is FAA approved, are accepted by the CTA and are considered CTA approved. These approvals pertain to the type design only.

Any alteration to the type design of this rotorcraft may require instructions for Continued Airworthiness. These instructions must be submitted and accepted by the CTA prior to approval for return to service.

NOTE 4: The differences of the Brazilian aircraft in relation to the basic FAA type design are summarized below:

1. The Brazilian Airplane Flight Manuals.
2. Markings and placards.

NOTE 5: Flight Manual Supplement 5, dated 17 July 1996, or later FAA-approved revision is

required when fixed-float landing gear is installed.

NOTE 6: R44 Rotorcraft Flight Manual Supplement 10 dated 10 June 1999, or later FAA-approved revision is required when pop-out floats are installed.

NOTE 7: R44 Rotorcraft Flight Manual with FAA-approved revisions through 05 November 1999, or later FAA-approved revision is required when hydraulically-boosted main rotor flight controls are installed.

NOTE 8: R44 II Rotorcraft Flight Manual Fixed Floats Supplement dated 03 October 2002, or later FAA-approved revision is required when float landing gear is installed.

NOTE 9: R44 II Rotorcraft Flight Manual Pop-Out Floats Supplement dated 03 October 2002, or later FAA-approved revision is required when pop-out floats are installed.

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