



AGÊNCIA NACIONAL DE AVIAÇÃO CIVIL - BRASIL

**TYPE CERTIFICATE DATA SHEET Nº ER-8714**

Type Certificate Holder:

**ROBINSON HELICOPTER COMPANY**  
24747 Crenshaw Boulevard  
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**USA**

ER-8714-01  
Page 01

ROBINSON

R22  
R22 ALPHA  
R22 BETA  
R22 MARINER

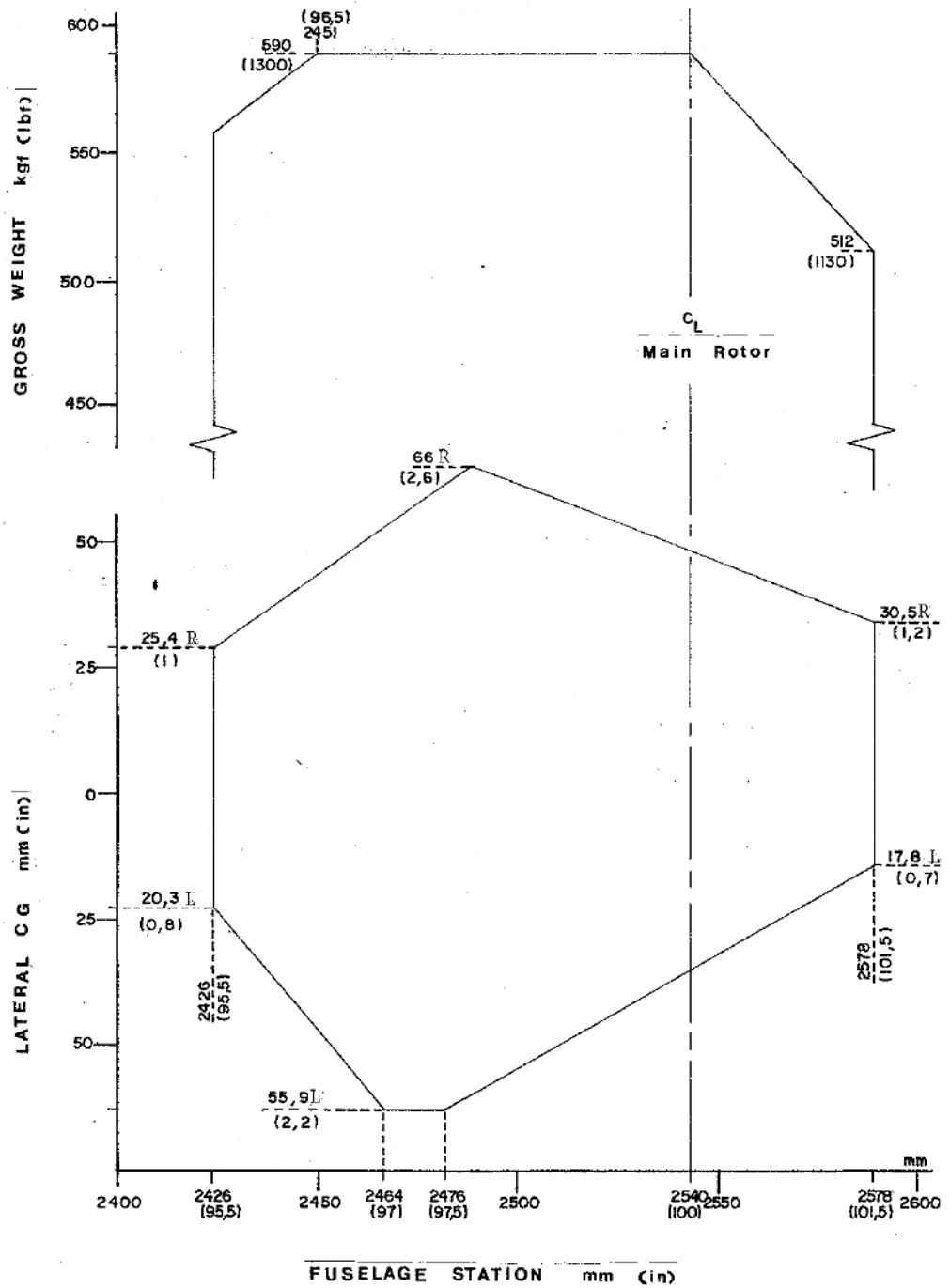
March 2007

This data sheet, which is part of Type Certificate No. 8714, 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 R22 (Normal Category), approved 21 September 1987.**

<b>ENGINE</b>	Lycoming O-320-A2B or O-320-A2C or O-320-B2C.		
<b>FUEL</b>	80/87 minimum grade aviation gasoline (for O-320-A2B and -A2C) 100LL minimum grade aviation gasoline (for all engines) 100/130 minimum grade aviation gasoline (for O-320-B2C)		
<b>ENGINE LIMITS</b>	Maximum rpm <b>2 652</b> (124 hp) (104%) See RFM for maximum manifold pressure corresponding to 124 hp, and altitude limitations.		
<b>ROTOR LIMITS</b>	<u>Power off (Rotor Tach.)</u> Maximum (110%) 561 rpm Minimum ( 90%) 459 rpm	<u>Power on (Rotor Tach.)</u> Maximum (104%) 530 rpm Minimum ( 97%) 495 rpm	
<b>AIRSPPEED LIMITS (CAS)</b>	VNE (never exceed) Power on and Power off: 182 km/h (98 knots) sea level to 914m (3 000 ft) density altitude, decreasing to 154 km/h (83 knots) at 2 438m (8 000 ft) density altitude, decreasing to 104 km/h (56 knots) at 4 267m (14 000 ft) density altitude. Straight line variation between points.		
<b>CG RANGE</b>	Longitudinal CG mm (in)	Gross Weight kgf (lb)	Lateral CG mm (in)
	2 426 (95.5)	556 (1 225)	25.4 (1)R / 20.3 (0.8)L
	2 451 (96.5)	590 (1 300)	
	2 464(97)		55.9 (2.2)L
	2 476 (97.5)		55.9 (2.2)L / 66 (2.6)R
	2 489 (98)		
	2 540 (100)	590 (1 300)	
	2 518 (101.5)	513 (1 130)	30.5 (1.2)R / 17.8 (0.7)L
	Straight Line Variation Between Points shown. See Figure 1		

*Pawor*



R22  
Figure 1

**MAXIMUM GROSS WEIGHT** 590 kgf (1 300 lb).

**No. SEATS** 2 (See Note 1).

**FUEL CAPACITY** 75.0 liters (19.8 US Gals)  
72.7 liters (19.2 US Gals) usable, at STA 2758mm (108.6 in)

*Power*

**OIL CAPACITY** Engine oil, 5.7 liters (1.5 US Gals) at STA 2662mm (104.8 in)  
Transmission oil, 1.13 liters (0.3 US Gal) at STA 2540mm (100 in)

**SERIAL No. ELIGIBLE** 002 thru 0300; 0302 thru 0349; 0352 thru 0356.

**II - Model R22 ALPHA (Normal Category), approved 21 September 1987.**

**ENGINE** Lycoming O-320-B2C (See Notes 5 and 6).

**FUEL** 100LL or 100/130 minimum grade aviation gasoline.

**ENGINE LIMITS** Maximum rpm 2652 (124 hp) (104%)  
See RFM for maximum manifold pressure corresponding to 124 hp, and altitude limitations.

**ROTOR LIMITS**

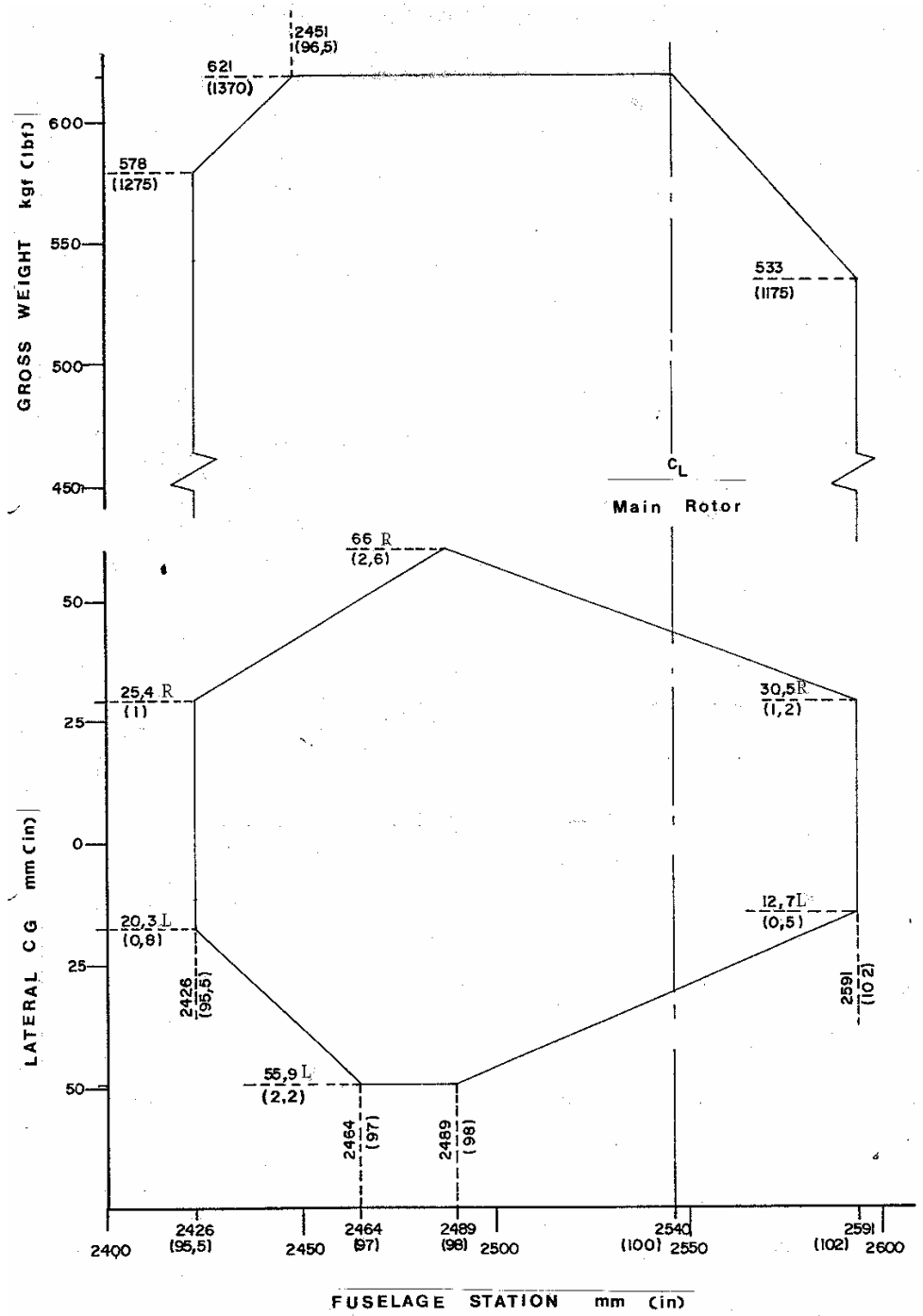
<u>Power off (Rotor Tach.)</u>	<u>Power on (Rotor Tach.)</u>
Maximum (110%) 561 rpm	Maximum (104%) 530 rpm
Minimum ( 90%) 459 rpm	Minimum ( 97%) 495 rpm

**AIRSPPEED LIMITS(CAS)** VNE (never exceed) Power on and Power off:  
182 km/h (98 knots) sea level to 914m (3 000 ft) density altitude, decreasing to 154 km/h (83 knots) at 2 438m (8 000 ft) density altitude, decreasing to 104 km/h (56 knots) at 4 267m (1 4000 ft) density altitude. Straight line variation between points given.

**CG RANGE**

Longitudinal CG mm (in)	Gross Weight kgf (lb)	Lateral CG mm (in)
2 426 (95.5)	578 (1 275)	25.4 (1)R / 20.3 (0.8)L
2 451 (96.5)	621 (1 370)	
2 464 (97)		55.9 (2.2)L
2 489 (98)		66 (2.6)R
		55.9 (2.2)L
2 540 (100)	621 (1 370)	
2 591 (102)	533 (1 175)	30.5 (1.2)R / 12.7 (0.5)L

If empty weight CG arm (moment/empty weight) is greater than 2662mm (104.8 in), fixed ballast must be installed in the helicopter's nose at F.S. 965mm (38 in) to allow a minimum solo pilot weight of 59 kgf (130 lb).  
The minimum pilot weight with the auxiliary tank installed is 61 kgf (135 lb). Straight line variation between points given. (See Figure 2).



FUSELAGE STATION mm (in)

R22 ALPHA and BETA

Figure 2

*Power*

<b>MAXIMUM GROSS WEIGHT</b>	621 kgf (1 370 lb).
<b>No. SEATS</b>	2 at STA 1 981mm (78 in).
<b>FUEL CAPACITY</b>	Main tank: 75.0 liters (19.8 US Gals) at STA 2 758mm (108.6 in) 72.7 liters (19.2 US Gals) usable.  Auxiliary tank (optional): 41.2 liters (10.9 US Gals) at STA 2 636mm (103.8 in). 39.7l (10.5 US Gals) usable
<b>OIL CAPACITY</b>	Engine oil: 5.7l (1.5 US Gals) at STA 2 662mm (104.8 in).  Transmission oil: 1.13l (0.3 US Gal) at STA 2540mm (100 in).
<b>SERIAL Nos. ELIGIBLE</b>	0301, 0350, 0351, 0357 thru 0500, excluding 0364.

### III - Model R22 BETA (Normal Category), approved 21 September 1987.

The model R22 BETA is operated with a new takeoff power rating of 131 hp and includes the installation of a console for 7 instruments. Several modifications were introduced to permit the increased power rating of 131 hp like the installation of a larger oil cooler (ROBINSON P/N A649-2, NIAGARA DEVELOPMENT P/N 20008A).

<b>ENGINE</b>	Lycoming O-320-B2C <b>OU O-360-J2A</b>
<b>FUEL</b>	100LL or 100/130 minimum grade aviation gasoline.
<b>ENGINE LIMITS</b>	Maximum rpm 2 652 (124 hp) (104%) Takeoff (5 min) 2 652 rpm (131 hp) (104%) See RFM for maximum manifold pressure corresponding to power ratings and environmental conditions, and for altitude limitations.
<b>ROTOR LIMITS</b>	<u>Power off (Rotor Tach.)</u> Maximum (110%) 561 rpm Minimum ( 90%) 459 rpm  <u>Power on (Rotor Tach.) for O-320-B2C</u> Maximum (104%) 530 rpm Minimum ( 97%) 495 rpm  <u>Power on (Rotor Tach.) for O-360-J2A</u> Maximum (104%) 530 rpm Minimum (101%) 515 rpm
<b>AIRSPEED LIMITS (CAS)</b>	VNE (never exceed) Power on and Power off: VNE (never exceed) Power on and Power off: 182 km/h (98 knots) sea level to 914m (3 000 ft) density altitude, decreasing to 154 km/h (83 knots) at 2 438m (8 000 ft) density altitude, decreasing to 104 km/h (56 knots) at 4 267m (1 4000 ft) density altitude. Straight line variation between points given.

<b>CG RANGE</b>	Longitudinal CG	Gross Weight	Lateral CG
	mm (in)	kgf (lb)	mm (in)
	2 426 (95.5)	578 (1 275)	25.4 (1)R / 20.3 (0.8)L
	2 451 (96.5)	621 (1 370)	
	2 464 (97)		55.9 (2.2)L
	2 489 (98)		66 (2.6)R / 55.9 (2.2)L
	2 540 (100)	621 (1 370)	
	2 591 (102)	533 (1 175)	30.5 (1.2)P / 12.7 (0.5)L
If empty weight CG arm (moment/empty weight) is greater than 2662mm (104.8 in), fixed ballast must be installed in the helicopter's nose at F.S. 965mm (38 in) to allow a minimum solo pilot weight of 59 kgf (130 lb). The minimum pilot weight with the auxiliary tank installed is 61 kgf (135 lb). Straight line variation between points given. (See Fig. 2).			
<b>MAXIMUM GROSS WEIGHT</b>	621 kgf (1 370 lb).		
<b>No. SEATS</b>	2 at STA 1 981mm (78 in).		
<b>FUEL CAPACITY</b>	Main tank: 75.0 liters (19.8 US Gals) at STA 2 758mm (108.6 in) 72.7 liters (19.2 US Gals) usable. Auxiliary tank (optional): 41.2 liters (10.9 US Gals) at STA 2 636mm (103.8 in). 39.7 liters (10.5 US Gals) usable		
<b>OIL CAPACITY</b>	Engine oil: 5.7 liters (1.5 US Gals) at STA 2662mm (104.8 in) Transmission oil: 1.13 liters (0.3 US Gal) at STA 2540mm (100 in)		
<b>SERIAL No. ELIGIBLE</b>	0501 and up.		

#### IV - MODEL R22 MARINER (Normal category), approved 21 September 1987.

The model R22 MARINER is equipped with 2 inflatable floats (Air Cruisers P/N D34077-101 and -102, Rev "E"), additional corrosion protection, takeoff power rating of 131 hp, horizontal stabilizer with +1.8° incidence (ROBINSON P/N A020-1) and a stabilizer mounted at the base of the vertical stabilizer (ROBINSON P/N A050-1). The helicopter may be operated without the floats (See Note 9).

<b>ENGINE</b>	Lycoming O-320-B2C and O-360-J2A
<b>FUEL</b>	100LL or 100/130 minimum grade aviation gasoline.
<b>ENGINE LIMITS</b>	Maximum rpm 2 652 (124 hp) (104%) Takeoff (5 min) 2 652 rpm (131 hp) (104%) See RFM for maximum manifold pressure corresponding to power ratings and environmental conditions, and for altitude limitations.
<b>ROTOR LIMITS</b>	<u>Power off (Rotor Tach.)</u> Maximum (110%) 561 rpm Minimum ( 90%) 459 rpm  <u>Power on (Rotor Tach.) for O-320-B2C</u> Maximum (104%) 530 rpm Minimum ( 97%) 495 rpm

**ROTOR LIMITS (Cont.)**

Power on (Rotor Tach.) for O-360-J2A  
 Maximum (104%) 530 rpm  
 Minimum ( 101%) 515 rpm

**AIRSPEED LIMITS (CAS)**With Floats Installed:

VNE (never exceed) Power on:  
 169 km/h (91 knots) sea level to 914m (3 000 ft) density altitude,  
 decreasing to 143 km/h (77 knots) at 2 286m (7 500 ft) density altitude,  
 decreasing to 93 km/h (50 knots) at 4 267m (14 000 ft) density altitude.  
 Straight line variation between points.

**AIRSPEED LIMITS (CAS)  
(Cont.)**

## VNE (never exceed) Power off:

143 km/h (77 knots) sea level to 2 286m (7 500 ft) density altitude,  
 decreasing to 93 km/h (50 knots) at 4 267m (14 000 ft) density altitude.  
 Straight line variation between points.

Without Floats Installed:

## VNE (never exceed) Power on and Power off:

182 km/h (98 knots) sea level to 914m (3 000 ft) density altitude,  
 decreasing to 154 km/h (83 knots) at 2 438m (8 000 ft) density altitude,  
 decreasing to 104 km/h (56 knots) at 4 267m (14 000 ft) density altitude.  
 Straight line variation between points given.

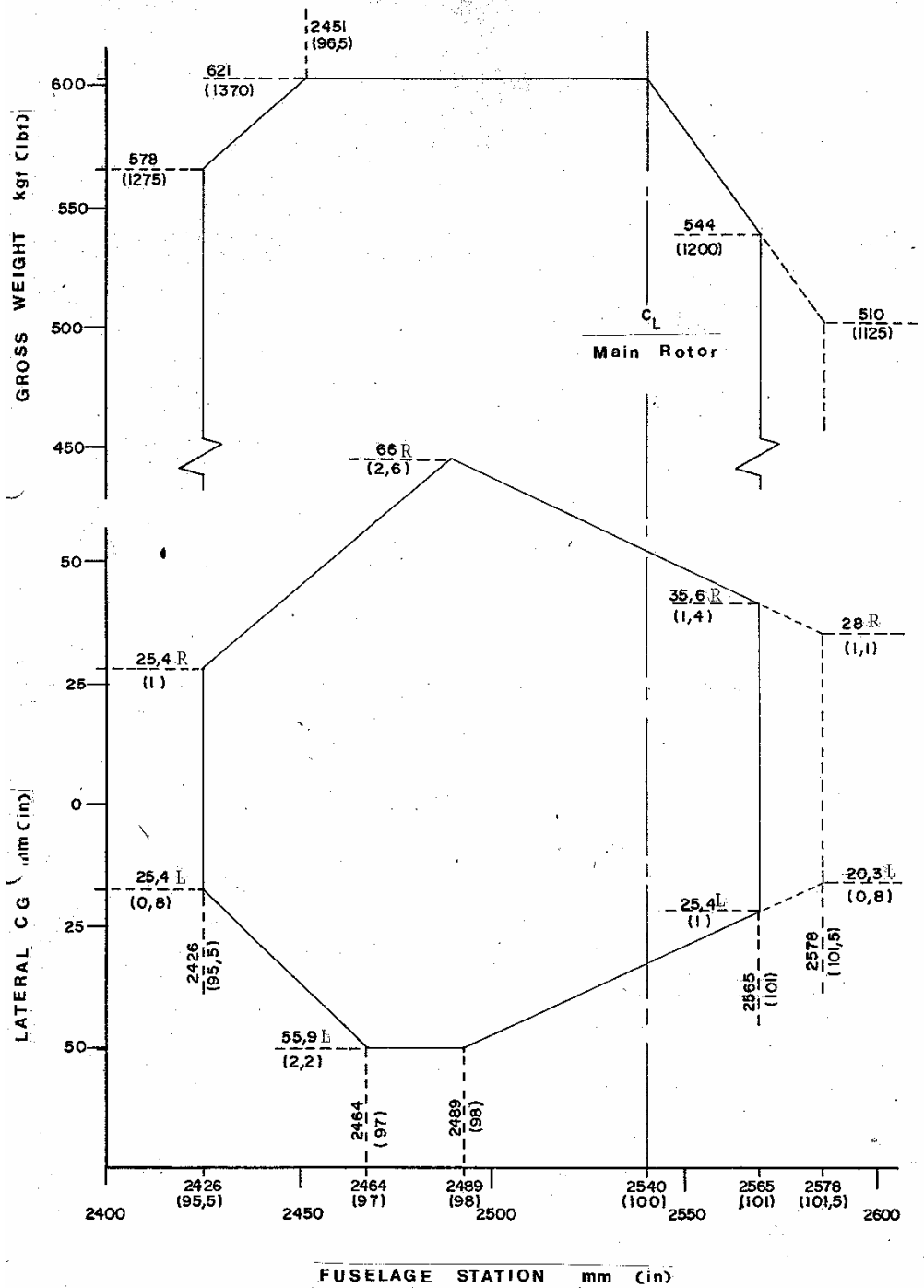
**CG RANGE**Without Floats:

Longitudinal CG mm (in)	Gross Weight kgf (lb)	Lateral CG mm (in)
2 426 (95.5)	578 (1 275)	25.4 (1)R / 20.3 (0.8)L
2 451 (96.5)	621 (1 370)	
2 464 (97)		55.9 (2.2)L
2 489 (98)		66 (2.6)R / 55.9 (2.2)L
2 540 (100)	621 (1 370)	
2 565 (101)	544 (1 200)	35.6 (1.4)P / 25.4 (1) L

With Floats:

2 426 (95.5)	578 (1 275)	25.4 (1)R / 20.3 (0.8)L
2 451 (96.5)	621 (1 370)	
2 464 (97)		55.9 (2.2)L
2 489 (98)		66 (2.6)R / 55.9 (2.2)L
2 540 (100)	621 (1 370)	
2 578 (101.5)	510 (1 125)	28 (1.1)P / 20.3 (0.8)L

Straight line variation between points given. (See Fig. 3).



FUSELAGE STATION mm (in)

R22 MARINER

Figure 3

**MAXIMUM GROSS WEIGHT**

621 kgf (1 370 lb).

**No. SEATS**

2 at STA 1 981mm (78 in).

**FUEL CAPACITY**

Main tank: 75.0 liters (19.8 US Gals) at STA 2 758mm (108.6 in)  
72.7 liters (19.2 US Gals) usable

*Power*



**FUEL CAPACITY (Cont.)** Auxiliary tank (optional):  
41.2 liters (10.9 US Gals) at STA 2636mm (103.8 in)  
39.7 liters (10.5 US Gals) usable

**OIL CAPACITY** Engine oil: 5.7 liters (1.5 US Gals) at STA 2 662mm (104.8 in).  
Transmission oil: 1.13 liters (0.3 US Gal) at STA 2 540mm (100 in).

**SERIAL Nos. ELIGIBLE** 0501 and up (for the MARINER models the suffix "M" is added).

**DATA FOR ALL MODELS:**

**DATUM** Vertical plane perpendicular to the helicopter longitudinal axis at STA 0 ,  
located 2 540mm (100 in) ahead of main rotor centerline.

**LEVELING MEANS** For leveling information, refer to Weight and Balance Section of the R22  
RFM.

**CREW** 1 pilot in the right seat.

**MAXIMUM BAGGAGE** 22.7 kgf (50 lb) in either baggage compartment, except combined seat  
load, plus baggage not to exceed 109 kgf (240 lb).

**ALTITUDE LIMITS** 4 267m (14 000 ft) density altitude.

**ROTOR BLADE AND CONTROL MOVEMENTS** For rigging information refer to Maintenance Manual.

**CERTIFICATION BASIS** CHT 8714 issued 21 September 1987, in the basis of the following  
requirements:  
- RBHA 27 (Brazilian Requirements for Airworthiness Certification)  
equivalent to FAR Part 27, Amdts 27-1 through 27-10.  
- Additional Brazilian Requirements for Acceptance of ROBINSON model  
R22 as defined in the ANAC Report H.10-090-02, revision 2, dated  
12 March 2007 or further revision.

**IMPORT REQUIREMENTS** A Brazilian Certificate of Airworthiness will be issued on the basis of a  
FAA Certificate of Airworthiness for Export signed by a FAA  
representative, indicating compliance with the type design approved by  
the ANAC (CHT No. 8714).

**PRODUCTION BASIS** Production Certificate n<sup>o</sup> 424 (FAA), dated 06 March 1981.

**EQUIPMENT** The basic required equipment as described in the applicable  
airworthiness regulations (see Certification Basis) must be installed in the  
helicopter for certification.

**NOTES:**

**NOTE 1** Current Weight and Balance report, including list of equipment included in certificated  
empty weight, and loading instructions, must be provided for each helicopter at the time  
of original certification. See RFM loading instructions for variations of fuel weight and  
arm with variations of fuel and fuel quantity.

- NOTE 1 (Cont.)** Pilot station 2007mm (79 in) for serial numbers 0002 through 0255 and station 1981mm (78 in) for serial numbers 0256 and up, unless seats ROBINSON P/N A466-1 and A467-1 have been replaced by ROBINSON P/N A932-1 and A928-1, respectively.
- 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".  
or 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 required placards see RFM and paragraph 08 of the ANAC Report nº H.10-090-02.
- NOTE 3** Retirement times and inspections intervals listed in the Airworthiness Limitations Section of the R22 Maintenance Manual, are mandatory.
- NOTE 4** Overhaul of the R22 helicopter must be done in accordance with the instructions available in the document "Model R22 Helicopter 2000 Hour Overhaul Requirements & Instructions", dated 29 Sep. 1986.
- NOTE 5** Retard Magneto Starting System, eligible in helicopters S/N 0002 through 0300, 0302 through 0349, and 0352 through 0356.
- NOTE 6** Lycoming engine O-320-A2C installed on helicopter S/N 0175 , 0200 and up. This engine model may be also installed on former helicopters serial numbers if following components are installed:  
ROBINSON P/N A0002-2, Rev T (Instrument Cluster Assy), A-145-39 Rev J (Engine Source Control), A600-2 (Manifold Pressure Gauge ) and A654-41, Rev 0 (placards).
- NOTE 7** The model R22 ALPHA in the Instrument Trainer configuration is approved for VFR operations only. The Supplement nº 2 of the RFM dated 03 August 1983, is required for this configuration.
- NOTE 8** The Supplement nº 3 of the RFM dated 27 March 1984, is required for the Model R22 ALPHA in the Police Helicopter configuration.
- NOTE 9** The Model R22 MARINER with floats installed is limited for day VFR operations only.

  
**CLÁUDIO PASSOS SIMÃO**  
Gerente Geral, Certificação de Produtos Aeronáuticos  
(Manager, Aeronautical Products Certification)

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