TYPE CERTIFICATE
DATA SHEET

No. EASA.IM.R.120

for
R22

Type Certificate Holder
Robinson Helicopter Company

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

For Models:  R22, R22 Alpha, R22 Beta, R22 Mariner
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</tbody>
</table>
SECTION 1: R22

I. General

1. Type/ Model/ Variant
   1.1 Type          R22
   1.2 Model        R22
   1.3 Variant      - - -

2. Airworthiness Category  Small Rotorcraft, Category B

3. Manufacturer
   Robinson Helicopter Company
   2901 Airport Drive
   Torrance, California 90505, USA

4. Type Certification Application Date
   to FAA:  6 January 1975
   to ENAC: 23 March 1981

5. State of Design Authority
   FAA

6. Type Certificate Date by FAA
   by FAA:  16 March 1979
   by ENAC: not recorded

7. Type Certificate n° by FAA
   by FAA:  H10WE
   by ENAC: A-214

8. Type Certificate Data Sheet n°
   by FAA: H10WE
   by ENAC: A-214

9. EASA Type Certification Date
   28 September 2003, in accordance with CR (EU) 1702/2003, Article 2, 3., (a), (i), 2nd bullet, 2nd indented bullet

II. Certification Basis

1. Reference Date for determining the applicable requirements
   19 December 1976

2. Airworthiness Requirements
   14 CFR Part 27, dated 1 February 1965, including Amdts. 27-1 through 27-10.
   §27.1559 of Amdt. 27-21 is an option for all s/n.

3. Special Conditions
   none

4. Exemptions
   none

5. Deviations
   none

6. Equivalent Safety Findings
   FAA ELOS No. TD10352LA-R/S-1 to 14 CFR Part 27.1401 (d), Anticollision Light System

7. Requirements elected to comply
   none

8. Environmental Protection Requirements
   8.1 Noise Requirements
      ICAO Annex 16, Chapter 11, see TCDSN EASA.IM.R.120
   8.2 Emission Requirements
      n/a

9. Operational Suitability Data (OSD)
   see SECTION 5 below
III. Technical Characteristics and Operational Limitations

1. Type Design Definition
   Robinson Helicopter Company Drawing A001

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 normally-aspirated reciprocating engine
   Avionics: Analogue or EFIS

3. Equipment
   Basic equipment must be installed and operational prior to registration of the helicopter.
   Optional equipment per RHC drawing A025.

4. Dimensions
   4.1 Fuselage
      Length: 6.24 m
      Width hull: 1.02 m
      Height: 2.37 m
   4.2 Main Rotor
      Diameter: 7.67 m
   4.3 Tail Rotor
      Diameter: 1.07 m

5. Engine
   5.1 Model
      Lycoming Engines
      1 x Model O-320-A2B, or O-320-A2C, or O-320-B2C
   5.2 Type Certificate
      FAA TC/TCDS n°: E-274
   5.3 Limitations
      5.3.1 Installed Engine Limitations and Transmission Torque Limits
         
         | PWR limit [BHP] | RPM [%] |
         |----------------|---------|
         | MCP            | 124     | 104     |
         
         Note: See RFM for maximum manifold pressure corresponding to 124 BHP
      5.3.2 Transmission Torque Limits
         
         | Max. TQ [Nm] | Engine RPM [%] |
         |--------------|----------------|
         | MCP          | 328            | 104     |

6. Fluids (Fuel/ Oil/ Additives)
   6.1 Fuel
      80/87 aviation gasoline (for O-320-A2B and A2C)
      91/96 UL aviation gasoline (for all engines)
      100 LL aviation gasoline (for all engines)
      100/130 aviation gasoline (for O-320-B2C)
   6.2 Oil
      See R22 RFM (RTR 061), Section 8
   6.3 Additives
      none
7. Fluid capacities

7.1 Fuel

<table>
<thead>
<tr>
<th>Tank Type</th>
<th>Capacity [litres]</th>
<th>Usable [litres]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main</td>
<td>75</td>
<td>73</td>
</tr>
<tr>
<td>Auxiliary</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Main</td>
<td>69</td>
<td>64</td>
</tr>
<tr>
<td>Auxiliary</td>
<td>37</td>
<td>36</td>
</tr>
</tbody>
</table>

7.2 Oil

- Engine: 5.7 litres (1.5 US gal)
- MRGB: 1.13 litres (0.3 US gal)

7.3 Coolant System Capacity

n/a

8. Air Speed Limitations

- $V_{NE}$ (never exceed) Power-on and Power-off 98 KCAS sea level to 3 000 ft DA, decreasing to 83 KCAS at 8 000 ft DA, decreasing to 56 KCAS at 14 000 ft DA. Straight line variation between points.

9. Rotor Speed Limitations

- Power on:
  - Maximum: 104 % (530 rpm)
  - Minimum: 97 % (495 rpm)
- Power off:
  - Maximum: 110 % (561 rpm)
  - Minimum: 90 % (459 rpm)

10. Maximum Operating Altitude and Temperature

10.1 Altitude

- 14 000 ft (4 270 m) DA

10.2 Temperature

- Maximum ambient temperature limited only by engine operating temperature limits.

11. Operating Limitations

- VFR day and night
- Non-icing conditions

12. Maximum Mass

- 590 kg (1 300 lb)

13. Centre of Gravity Range

![Diagram](image-url)
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 R22 Maintenance Manual and Instructions for Continued Airworthiness (RTR 060)

16. Minimum Flight Crew

1 pilot (right seat)

17. Maximum Passenger Seating Capacity

1

18. Passenger Emergency Exit

2, 1 on each side of the passenger cabin

19. Maximum Baggage/ Cargo Loads

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 109 kg (240 lb).

20. Rotor Blade Control Movement

<table>
<thead>
<tr>
<th>Rotor Type</th>
<th>Collective pitch</th>
<th>Cyclic pitch</th>
<th>Tail Rotor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Rotor</td>
<td>11.5° ±0.5° total travel</td>
<td>forward 8.3° to 8.8°</td>
<td>right pedal 9.6° to 10.6°</td>
</tr>
<tr>
<td></td>
<td></td>
<td>aft 8.5° to 9.0°</td>
<td>left pedal 19.0° to 19.5°</td>
</tr>
<tr>
<td></td>
<td></td>
<td>left 9.0° to 9.5°</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>right 5.5° to 6.0°</td>
<td></td>
</tr>
<tr>
<td>Tail Rotor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collective pitch</td>
<td>right pedal 9.6° to 10.6°</td>
<td></td>
<td></td>
</tr>
<tr>
<td>left pedal 19.0° to 19.5°</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

21. Auxiliary Power Unit (APU)

none

22. Life-limited Parts

See Robinson Maintenance Manual and Instructions for Continued Airworthiness (RTR 060). Retirement times are listed in the EASA-approved “Airworthiness Limitations” section of Chapter 3.

IV. Operating and Service Instructions

1. Flight Manual

R22 Pilot’s Operating Handbook and EASA-approved Rotorcraft Flight Manual, RTR 061, dated 16 March 1979, with revisions through 20 April 2007, or later.


R22 Maintenance Manual and Instructions for Continued Airworthiness (RTR 060 Volume I)


none


none

5. Illustrated Parts Catalogue

R22 Illustrated Parts Catalogue (RTR 060 Volume II)

6. Service Letters and Service Bulletins

R22 Service Letters and Service Bulletins as published by Robinson Helicopter Company

8. 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 EASA-approved Rotorcraft Flight Manual is required (see Flight Manual)
V. Notes

1. Manufacturer’s eligible serial numbers:
   0002 through 0300, 0302 through 0349, and 0352 through 0356.

2. 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.
   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 additional placards, see R22 Rotorcraft Flight Manual (RTR 061).

3. Lycoming O-320-A2C, with Retard Magneto Starting System, eligible on s/n 0002 through 0300, 0302 through 0349, and 0352 through 0356 helicopters.

4. Lycoming O-320-B2C installed on s/n 0175 and 0200 through 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).

5. Designation:
   R22 HP is used as marketing designation for the R22 with O-320-B2C engine installed.

* * *
SECTION 2: R22 ALPHA

I. General

1. Type/ Model/ Variant
   1.1 Type R22
   1.2 Model R22 Alpha
   1.3 Variant - - -

2. Airworthiness Category Small Rotorcraft, Category B

3. Manufacturer Robinson Helicopter Company
   2901 Airport Drive
   Torrance, California 90505, USA

4. Type Certification Application Date
   to FAA: 29 June 1982
   to ENAC: 29 November 1983

5. State of Design Authority FAA

6. Type Certificate Date by FAA
   by FAA: 12 October 1983
   by ENAC: not recorded

7. Type Certificate n° by FAA
   by FAA: H10WE
   by ENAC: A-214

8. Type Certificate Data Sheet n°
   by FAA: H10WE
   by ENAC: A-214

9. EASA Type Certification Date
   28 September 2003, in accordance with CR (EU) 1702/2003, Article 2, 3., (a), (i), 2nd bullet, 2nd indented bullet

II. Certification Basis

1. Reference Date for determining the applicable requirements 19 December 1976

   §27.1559 of Amdt. 27-21 is an option for all s/n.

3. Special Conditions none

4. Exemptions none

5. Deviations none

6. Equivalent Safety Findings FAA ELOS No. TD10352LA-R/S-1 to 14 CFR Part 27.1401 (d), Anticollision Light System

7. Requirements elected to comply none

8. Environmental Protection Requirements
   8.1 Noise Requirements ICAO Annex 16, Chapter 11, see TCDSN EASA.IM.R.120
   8.2 Emission Requirements n/a

9. Operational Suitability Data (OSD) see SECTION 5 below
III. Technical Characteristics and Operational Limitations

1. **Type Design Definition**
   Robinson Helicopter Company Drawing A001

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 normally-aspirated reciprocating engine
   - **Avionics:** Analogue or EFIS

3. **Equipment**
   Basic equipment must be installed and operational prior to registration of the helicopter.
   Optional equipment per RHC drawing A025.

4. **Dimensions**
   - **4.1 Fuselage**
     - Length: 6.24 m
     - Width hull: 1.02 m
     - Height: 2.37 m
   - **4.2 Main Rotor**
     - Diameter: 7.67 m
   - **4.3 Tail Rotor**
     - Diameter: 1.07 m

5. **Engine**
   - **5.1 Model**
     Lycoming Engines
     1 x Model O-320-A2B, or O-320-A2C, or O-320-B2C
   - **5.2 Type Certificate**
     FAA TC/TCDS n°: E-274
   - **5.3 Limitations**
     - **5.3.1 Installed Engine Limitations and Transmission Torque Limits**
       | PWR limit [BHP] | RPM [%] |
       |----------------|---------|
       | MCP            | 124     | 104     |
       Note: See RFM for maximum manifold pressure corresponding to 124 BHP
     - **5.3.2 Transmission Torque Limits**
       | Max. TQ [Nm] | Engine RPM [%] |
       | MCP          | 328       | 104     |

6. **Fluids (Fuel/ Oil/ Additives)**
   - **6.1 Fuel**
     - 80/87 aviation gasoline (for O-320-A2B and A2C)
     - 91/96 UL aviation gasoline (for all engines)
     - 100 LL aviation gasoline (for all engines)
     - 100/130 aviation gasoline (for O-320-B2C)
   - **6.2 Oil**
     See R22 RFM (RTR 061), Section 8
   - **6.3 Additives**
     none
7. Fluid capacities

7.1 Fuel

<table>
<thead>
<tr>
<th>Tank</th>
<th>Capacity [litres]</th>
<th>Usable [litres]</th>
</tr>
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<tbody>
<tr>
<td>Main</td>
<td>75</td>
<td>73</td>
</tr>
<tr>
<td>Auxiliary</td>
<td>41</td>
<td>40</td>
</tr>
</tbody>
</table>

Tanks without bladders

<table>
<thead>
<tr>
<th>Tank</th>
<th>Capacity [litres]</th>
<th>Usable [litres]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main</td>
<td>69</td>
<td>64</td>
</tr>
<tr>
<td>Auxiliary</td>
<td>37</td>
<td>36</td>
</tr>
</tbody>
</table>

Tanks with bladders

7.2 Oil

Engine: 5.7 litres (1.5 US gal)

MRGB: 1.13 litres (0.3 US gal)

7.3 Coolant System Capacity

n/a

8. Air Speed Limitations

$V_{NE}$ (never exceed) Power-on and Power-off 98 KCAS sea level to 3 000 ft DA, decreasing to 83 KCAS at 8 000 ft DA, decreasing to 56 KCAS at 14 000 ft DA. Straight line variation between points.

9. Rotor Speed Limitations

Power on:
- Maximum: 104 % (530 rpm)
- Minimum: 97 % (495 rpm)

Power off:
- Maximum: 110 % (561 rpm)
- Minimum: 90 % (459 rpm)

10. Maximum Operating Altitude and Temperature

10.1 Altitude

14 000 ft (4 270 m) DA

10.2 Temperature

Maximum ambient temperature limited only by engine operating temperature limits.

11. Operating Limitations

VFR day and night

Non-icing conditions

12. Maximum Mass

621 kg (1 370 lb)

13. Centre of Gravity Range
14. Datum

Longitudinal:
the datum plane (STA 0) is located at 2540 mm (100 in)
forward of main rotor centreline.
Lateral:
fuselage median plane.

15. Levelling Means

Refer to R22 Maintenance Manual and Instructions for
Continued Airworthiness (RTR 060)

16. Minimum Flight Crew

1 pilot (right seat)

17. Maximum Passenger Seating Capacity

1

18. Passenger Emergency Exit

2, 1 on each side of the passenger cabin

19. Maximum Baggage/ Cargo Loads

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 109 kg (240 lb).

20. Rotor Blade Control Movement

Main Rotor:

<table>
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<th>Collective pitch</th>
<th>Cyclic pitch</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>11.5° ±0.5° total travel</td>
<td></td>
</tr>
<tr>
<td></td>
<td>forward 10.5° to 11.0°</td>
<td></td>
</tr>
<tr>
<td></td>
<td>aft 8.5° to 9.0°</td>
<td></td>
</tr>
<tr>
<td></td>
<td>left 9.0° to 9.5°</td>
<td></td>
</tr>
<tr>
<td></td>
<td>right 5.5° to 6.0°</td>
<td></td>
</tr>
</tbody>
</table>

Tail Rotor:

<table>
<thead>
<tr>
<th></th>
<th>Collective pitch</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>right pedal 9.6° to 10.6°</td>
<td></td>
</tr>
<tr>
<td></td>
<td>left pedal 19.0° to 19.5°</td>
<td></td>
</tr>
</tbody>
</table>

21. Auxiliary Power Unit (APU)

none

22. Life-limited Parts

See Robinson Maintenance Manual and Instructions for
Continued Airworthiness (RTR 060).
Retirement times are listed in the EASA-approved
“Airworthiness Limitations” section of Chapter 3.

IV. Operating and Service Instructions

1. Flight Manual

R22 Pilot’s Operating Handbook and EASA-approved
Rotorcraft Flight Manual, RTR 061, dated 16 March 1979,
with revisions through 20 April 2007, or later.


R22 Maintenance Manual and Instructions for Continued
Airworthiness (RTR 060 Volume I)


none


none

5. Illustrated Parts Catalogue

R22 Illustrated Parts Catalogue (RTR 060 Volume II)

6. Service Letters and Service Bulletins

R22 Service Letters and Service Bulletins as published by
Robinson Helicopter Company.

8. 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 EASA-approved Rotorcraft Flight Manual is required (see Flight Manual)
V. Notes

1. Manufacturer’s eligible serial numbers:
   0301, 0350, 0351, 0357 through 0500, excluding 0364.

2. 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.
   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 additional placards, see R22 Rotorcraft Flight Manual (RTR 061).

* * *
SECTION 3: R22 BETA

I. General

1. Type/ Model/ Variant

   1.1 Type R22
   1.2 Model R22 Beta
   1.3 Variant - - -

2. Airworthiness Category

   Small Rotorcraft, Category B

3. Manufacturer

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

4. Type Certification Application Date

   to FAA: 12 June 1985
   to ENAC: 17 March 1986

5. State of Design Authority

   FAA

6. Type Certificate Date by FAA

   by FAA: 12 August 1985
   by ENAC: not recorded

7. Type Certificate n° by FAA

   by FAA: H10WE
   by ENAC: A-214

8. Type Certificate Data Sheet n°

   by FAA: H10WE
   by ENAC: A-214

9. EASA Type Certification Date

   28 September 2003, in accordance with CR (EU) 1702/2003, Article 2, 3., (a), (i), 2nd bullet, 2nd indented bullet

II. Certification Basis

1. Reference Date for determining the applicable requirements

   19 December 1976

2. Airworthiness Requirements

   14 CFR Part 27, dated 1 February 1965,
   including Amdts. 27-1 through 27-10.
   §27.1559 of Amdt. 27-21 is an option for all s/n.

3. Special Conditions

   none

4. Exemptions

   none

5. Deviations

   none

6. Equivalent Safety Findings

   FAA ELOS No. TD10352LA-R/S-1 to 14 CFR Part
   27.1401 (d), Anticollision Light System

7. Requirements elected to comply

   none

8. Environmental Protection Requirements

   8.1 Noise Requirements
       ICAO Annex 16, Chapter 11, see TCDSN EASA.IM.R.120

   8.2 Emission Requirements
       n/a

9. Operational Suitability Data (OSD)

   see SECTION 5 below
III. Technical Characteristics and Operational Limitations

1. Type Design Definition
   Robinson Helicopter Company Drawing A001

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 normally-aspirated reciprocating engine
   Avionics: Analogue or EFIS

3. Equipment
   Basic equipment must be installed and operational prior to registration of the helicopter.
   Optional equipment per RHC drawing A025.

4. Dimensions
   4.1 Fuselage
      Length: 6.24 m
      Width hull: 1.02 m
      Height: 2.37 m
   4.2 Main Rotor
      Diameter: 7.67 m
   4.3 Tail Rotor
      Diameter: 1.07 m

5. Engine
   5.1 Model
      Lycoming Engines
      1 x Model O-320-B2C, or O-360-J2A
   5.2 Type Certificate
      FAA TC/TCDS n°: E-274 for O-320-B2C
      E-286 for O-360-J2A
   5.3 Limitations
      5.3.1 Installed Engine Limitations and Transmission Torque Limits

      | PWR limit [BHP] | RPM [%] |
      |-----------------|---------|
      | TOP (5 min)     | 131     | 104    |
      | MCP             | 124     | 104    |

      Note: See RFM for maximum manifold pressure corresponding to 124 BHP

      5.3.2 Transmission Torque Limits

      | Max. TQ [Nm] | Engine RPM [%] |
      |-------------|----------------|
      | TOP (5 min) | 347            | 104          |
      | MCP         | 328            | 104          |

6. Fluids (Fuel/ Oil/ Additives)
   6.1 Fuel
      91/96 UL aviation gasoline
      100 LL aviation gasoline
      100/130 aviation gasoline
   6.2 Oil
      See R22 RFM (RTR 061), Section 8
   6.3 Additives
      none
7. Fluid capacities

7.1 Fuel

<table>
<thead>
<tr>
<th>Tank</th>
<th>Capacity [litres]</th>
<th>Usable [litres]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main</td>
<td>75</td>
<td>73</td>
</tr>
<tr>
<td>Auxiliary</td>
<td>41</td>
<td>40</td>
</tr>
<tr>
<td>Tank</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Main</td>
<td>69</td>
<td>64</td>
</tr>
<tr>
<td>Auxiliary</td>
<td>37</td>
<td>36</td>
</tr>
</tbody>
</table>

7.2 Oil

<table>
<thead>
<tr>
<th>Engine</th>
<th>Capacity [litres]</th>
<th>Usable [litres]</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.7 litres</td>
<td>1.5 US gal</td>
<td></td>
</tr>
<tr>
<td>MRGB: 1.13 litres</td>
<td>0.3 US gal</td>
<td></td>
</tr>
</tbody>
</table>

7.3 Coolant System Capacity

n/a

8. Air Speed Limitations

V_{NE} (never exceed) Power-on and Power-off 98 KCAS sea level to 3 000 ft DA, decreasing to 83 KCAS at 8 000 ft DA, decreasing to 56 KCAS at 14 000 ft DA. Straight line variation between points.

9. Rotor Speed Limitations

Power-on (O-320-B2C Engine):
- Maximum 104% (530 rpm)
- Minimum 97% (495 rpm)

Power-on (O-360-J2A Engine):
- Maximum 104% (530 rpm)
- Minimum 101% (515 rpm)

Power-off:
- Maximum 110% (561 rpm)
- Minimum 90% (459 rpm)

10. Maximum Operating Altitude and Temperature

10.1 Altitude

14 000 ft (4 270 m) DA

10.2 Temperature

Maximum ambient temperature limited only by engine operating temperature limits.

11. Operating Limitations

VFR day and night
Non-icing conditions

12. Maximum Mass

621 kg (1 370 lb)

13. Centre of Gravity Range

![Graph showing centre of gravity range](image-url)
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 R22 Maintenance Manual and Instructions for Continued Airworthiness (RTR 060)

16. Minimum Flight Crew

1 pilot (right seat)

17. Maximum Passenger Seating Capacity

1

18. Passenger Emergency Exit

2, 1 on each side of the passenger cabin

19. Maximum Baggage/Cargo Loads

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 109 kg (240 lb).

20. Rotor Blade Control Movement

<table>
<thead>
<tr>
<th>Rotor Type</th>
<th>Pitch Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Rotor</td>
<td>Collective pitch 11.5° ±0.5° total travel</td>
</tr>
<tr>
<td></td>
<td>Cyclic pitch</td>
</tr>
<tr>
<td></td>
<td>forward 10.5° to 11.0°</td>
</tr>
<tr>
<td></td>
<td>aft 8.5° to 9.0°</td>
</tr>
<tr>
<td></td>
<td>left 9.0° to 9.5°</td>
</tr>
<tr>
<td></td>
<td>right 5.5° to 6.0°</td>
</tr>
<tr>
<td>Tail Rotor</td>
<td>Collective pitch</td>
</tr>
<tr>
<td></td>
<td>right pedal 9.6° to 10.6°</td>
</tr>
<tr>
<td></td>
<td>left pedal 19.0° to 19.5°</td>
</tr>
</tbody>
</table>

21. Auxiliary Power Unit (APU)

none

22. Life-limited Parts

See Robinson Maintenance Manual and Instructions for Continued Airworthiness (RTR 060).
Retirement times are listed in the EASA-approved “Airworthiness Limitations” section of Chapter 3.

IV. Operating and Service Instructions

1. Flight Manual

R22 Pilot’s Operating Handbook and EASA-approved Rotorcraft Flight Manual, RTR 061, dated 16 March 1979, with revisions through 20 April 2007, or later.


R22 Maintenance Manual and Instructions for Continued Airworthiness (RTR 060 Volume I)


none


none

5. Illustrated Parts Catalogue

R22 Illustrated Parts Catalogue (RTR 060 Volume II)

6. Service Letters and Service Bulletins

R22 Service Letters and Service Bulletins as published by Robinson Helicopter Company.

8. 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 EASA-approved Rotorcraft Flight Manual is required (see Flight Manual)
V. Notes

1. Manufacturer’s eligible serial numbers:
   0501, and subsequent.

2. 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.
   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 additional placards, see R22 Rotorcraft Flight Manual (RTR 061).

3. Designation:
   R22 Beta II is used as marketing designation for the R22 Beta with O-360-J2A engine installed.

* * *
SECTION 4: R22 MARINER

I. General

1. Type/ Model/ Variant
   1.1 Type
      R22
   1.2 Model
      R22 Mariner
   1.3 Variant
      - - -

2. Airworthiness Category
   Small Rotorcraft, Category B

3. Manufacturer
   Robinson Helicopter Company
   2901 Airport Drive
   Torrance, California 90505, USA

4. Type Certification Application Date
   to FAA: 12 August 1985
   to ENAC: 30 September 1987

5. State of Design Authority
   FAA

6. Type Certificate Date by FAA
   by FAA: 12 September 1985
   by ENAC: not recorded

7. Type Certificate n° by FAA
   by FAA: H10WE
   by ENAC: A-214

8. Type Certificate Data Sheet n°
   by FAA: H10WE
   by ENAC: A-214

9. EASA Type Certification Date
   28 September 2003, in accordance with CR (EU)
   1702/2003, Article 2, 3., (a), (i), 2\textsuperscript{nd} bullet, 2\textsuperscript{nd} indented bullet

II. Certification Basis

1. Reference Date for determining the applicable requirements
   19 December 1976

2. Airworthiness Requirements
   14 CFR Part 27, dated 1 February 1965,
   including Amdts. 27-1 through 27-10.
   §27.1559 of Amdt. 27-21 is an option for all s/n.

3. Special Conditions
   none

4. Exemptions
   none

5. Deviations
   none

6. Equivalent Safety Findings
   FAA ELOS No. TD10352LA-R/S-1 to 14 CFR Part
   27.1401 (d), Anticollision Light System

7. Requirements elected to comply
   none

8. Environmental Protection Requirements
   8.1 Noise Requirements
      ICAO Annex 16, Chapter 11, see TCDSN EASA.IM.R.120
   8.2 Emission Requirements
      n/a

9. Operational Suitability Data (OSD)
   see SECTION 5 below
III. Technical Characteristics and Operational Limitations

1. Type Design Definition
   Robinson Helicopter Company Drawing A001

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 normally-aspirated reciprocating engine
   - Avionics: Analogue or EFIS

3. Equipment
   Basic equipment must be installed and operational prior to registration of the helicopter.
   Optional equipment per RHC drawing A025.

4. Dimensions
   4.1 Fuselage
   - Length: 6.24 m
   - Width hull: 1.02 m
   - Height: 2.37 m
   4.2 Main Rotor
   - Diameter: 7.67 m
   4.3 Tail Rotor
   - Diameter: 1.07 m

5. Engine
   5.1 Model
   Lycoming Engines
   - 1 x Model O-320-B2C, or O-360-J2A
   5.2 Type Certificate
   FAA TC/TCDS n°: E-274 for O-320-B2C
   - E-286 for O-360-J2A

5.3 Limitations
   5.3.1 Installed Engine Limitations and Transmission Torque Limits
<table>
<thead>
<tr>
<th>PWR limit [BHP]</th>
<th>RPM [%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOP (5 min)</td>
<td>131</td>
</tr>
<tr>
<td>MCP</td>
<td>124</td>
</tr>
</tbody>
</table>
   Note: See RFM for maximum manifold pressure corresponding to 124 BHP

   5.3.2 Transmission Torque Limits
<table>
<thead>
<tr>
<th>Max. TQ [Nm]</th>
<th>Engine RPM [%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOP (5 min)</td>
<td>347</td>
</tr>
<tr>
<td>MCP</td>
<td>328</td>
</tr>
</tbody>
</table>

6. Fluids (Fuel/ Oil/ Additives)
   6.1 Fuel
   - 91/96 UL aviation gasoline
   - 100 LL aviation gasoline
   - 100/130 aviation gasoline
   6.2 Oil
   - See R22 RFM (RTR 061), Section 8
   6.3 Additives
   - none
7. Fluid capacities

7.1 Fuel

<table>
<thead>
<tr>
<th>Tank</th>
<th>Capacity [litres]</th>
<th>Usable [litres]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tanks without bladders</td>
<td></td>
</tr>
<tr>
<td>Main</td>
<td>75</td>
<td>73</td>
</tr>
<tr>
<td>Auxiliary</td>
<td>41</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>Tanks with bladders</td>
<td></td>
</tr>
<tr>
<td>Main</td>
<td>69</td>
<td>64</td>
</tr>
<tr>
<td>Auxiliary</td>
<td>37</td>
<td>36</td>
</tr>
</tbody>
</table>

7.2 Oil

Engine: 5.7 litres (1.5 US gal)
MRGB: 1.13 litres (0.3 US gal)

7.3 Coolant System Capacity

n/a

8. Air Speed Limitations

$V_{NE}$ (never exceed) Power-on 91 KCAS sea level to 3 000 ft DA, decreasing to 77 KCAS at 7 500 ft DA, decreasing to 50 KCAS at 14 000 ft DA.

Straight line variation between points.

$V_{NE}$ (never exceed) Power-off 77 KCAS sea level to 7 500 ft DA, decreasing to 50 KCAS at 14 000 ft DA.

Without Floats Installed:

$V_{NE}$ (never exceed) Power-on and Power-off 98 KCAS sea level to 3 000 ft DA, decreasing to 83 KCAS at 8 000 ft DA, decreasing to 56 KCAS at 14 000 ft DA.

Straight line variation between points.

9. Rotor Speed Limitations

Power-on (O-320-B2C Engine):

- Maximum 104% (530 rpm)
- Minimum 97% (495 rpm)

Power-on (O-360-J2A Engine):

- Maximum 104% (530 rpm)
- Minimum 101% (515 rpm)

Power-off:

- Maximum 110% (561 rpm)
- Minimum 90% (459 rpm)

10. Maximum Operating Altitude and Temperature

10.1 Altitude

14 000 ft (4 270 m) DA

10.2 Temperature

Maximum ambient temperature limited only by engine operating temperature limits.

11. Operating Limitations

VFR day and night
Non-icing conditions

12. Maximum Mass

621 kg (1 370 lb)
13. Centre of Gravity Range

With floats

Without floats

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 R22 Maintenance Manual and Instructions for
Continued Airworthiness (RTR 060)

16. Minimum Flight Crew

1 pilot (right seat)

17. Maximum Passenger Seating Capacity

1

18. Passenger Emergency Exit

2, 1 on each side of the passenger cabin

19. Maximum Baggage/ Cargo Loads

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 109 kg (240 lb).

20. Rotor Blade Control Movement

Main Rotor:

Collective pitch

11.5° ±0.5° total travel

forward 10.5° to 11.0°

aft 8.5° to 9.0°

Cyclic pitch

left 9.0° to 9.5°

right 5.5° to 6.0°

Tail Rotor:

Collective pitch

right pedal 9.6° to 10.6°

left pedal 19.0° to 19.5°
21. Auxiliary Power Unit (APU) none
22. Life-limited Parts See Robinson Maintenance Manual and Instructions for Continued Airworthiness (RTR 060). Retirement times are listed in the EASA-approved "Airworthiness Limitations" section of Chapter 3.

IV. Operating and Service Instructions

3. Structural Repair Manual none
4. Weight and Balance Manual none
5. Illustrated Parts Catalogue R22 Illustrated Parts Catalogue (RTR 060 Volume II)
6. Service Letters and Service Bulletins R22 Service Letters and Service Bulletins as published by Robinson Helicopter Company
7. Historical Records of Modifications and Repairs
8. 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 EASA-approved Rotorcraft Flight Manual is required (see Flight Manual)

V. Notes

1. Manufacturer's eligible serial numbers: 0364, 0501, and subsequent (Suffix "M" added to all MARINERs).
2. 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. 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 additional placards, see R22 Rotorcraft Flight Manual (RTR 061).
3. Designation: R22 Mariner II is used as marketing designation for the R22 Mariner with O-360-J2A engine installed.

* * *
SECTION 5: OPERATIONAL SUITABILITY DATA (OSD)

The OSD elements listed below are approved by the European Aviation Safety Agency as per Commission Regulation (EU) 748/2012, as amended by Commission Regulation (EU) No 69/2014.

I. OSD Certification Basis

I.1 Reference Date for determining the applicable OSD requirements
   For all models: 12 August 2014

I.2 MMEL - Certification Basis
   For all models: Special Condition SC-CS-GEN-MMEL-H, Initial Issue

I.3 Flight Crew Data - Certification Basis
   For all models: CS-FCD, Initial Issue

II. OSD Elements

II.1 MMEL
   For all models:
   EASA MMEL for R22, R44, and R66, Appendix 1 to RTR 666, dated 17 November 2015,
   or subsequent approved revisions.

II.2 Flight Crew Data
   RTR 165, EASA Operation Suitability Data, Flight Crew Data, Initial OSD Issue,
   or subsequent approved revisions.
SECTION: ADMINISTRATIVE

I. Acronyms and Abbreviations

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFT</td>
<td>Aft</td>
<td></td>
</tr>
<tr>
<td>BHP</td>
<td>Brake Horsepower</td>
<td></td>
</tr>
<tr>
<td>CFR</td>
<td>Code of Federal Regulations</td>
<td></td>
</tr>
<tr>
<td>C.G.</td>
<td>Centre of Gravity</td>
<td></td>
</tr>
<tr>
<td>CRI</td>
<td>Certification Review Item</td>
<td></td>
</tr>
<tr>
<td>CS</td>
<td>Certification Specification</td>
<td></td>
</tr>
<tr>
<td>DA</td>
<td>Density Altitude</td>
<td></td>
</tr>
<tr>
<td>DP</td>
<td>Datum Point</td>
<td></td>
</tr>
<tr>
<td>EFIS</td>
<td>Electronic Flight Information System</td>
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<tr>
<td>ELOS</td>
<td>Equivalent Level of Safety</td>
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<tr>
<td>ENAC</td>
<td>Ente Nazionale per l'Aviazione Civile</td>
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</tr>
<tr>
<td>FAA</td>
<td>Federal Aviation Administration</td>
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<td>FCD</td>
<td>Flight Crew Data</td>
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<tr>
<td>FWD</td>
<td>Forward</td>
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</tr>
<tr>
<td>ICAO</td>
<td>International Civil Aviation Organization</td>
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</tr>
<tr>
<td>ISA</td>
<td>International Standard Atmosphere</td>
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<tr>
<td>KCAS</td>
<td>Knots Calibrated Air Speed</td>
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<td>KIAS</td>
<td>Knots Indicated Air Speed</td>
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<td>max</td>
<td>Maximum</td>
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<tr>
<td>MC</td>
<td>Maximum Continuous</td>
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</tr>
<tr>
<td>MCP</td>
<td>Maximum Continuous Power</td>
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</tr>
<tr>
<td>MMEL</td>
<td>Master Minimum Equipment List</td>
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<tr>
<td>MRGB</td>
<td>Main Rotor Gearbox</td>
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</tr>
<tr>
<td>MSL</td>
<td>Mean Sea Level</td>
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<td>n/a</td>
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<td>OSD</td>
<td>Operational Suitability Data</td>
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<td>PA</td>
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<td>STA</td>
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<tr>
<td>TOP</td>
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<td>TRGB</td>
<td>Tail Rotor Gearbox</td>
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<tr>
<td>TQ</td>
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<td>VFR</td>
<td>Visual Flight Rules</td>
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<tr>
<td>VNE</td>
<td>Never Exceed Speed</td>
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II. Type Certificate Holder Record

II.1 Type Certificate Holder

<table>
<thead>
<tr>
<th>Type Certificate Holder</th>
<th>Period</th>
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<tbody>
<tr>
<td>Robinson Helicopter Company</td>
<td>since 16 March 1979</td>
</tr>
<tr>
<td>2901 Airport Drive</td>
<td></td>
</tr>
<tr>
<td>Torrance, California 90505, USA</td>
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III. Change Record

<table>
<thead>
<tr>
<th>Issue</th>
<th>Date</th>
<th>Changes</th>
<th>TC issue</th>
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<tr>
<td>Issue 1</td>
<td>12 Dec 2007</td>
<td>Initial issue of EASA TCDS</td>
<td>Initial Issue, 12 December 2007</td>
</tr>
<tr>
<td>Issue 2</td>
<td>21 Apr 2010</td>
<td>Corrected description of main rotor</td>
<td>- - -</td>
</tr>
<tr>
<td>Issue 3</td>
<td>15 Jun 2010</td>
<td>Corrected O-320 TCDS number</td>
<td>- - -</td>
</tr>
<tr>
<td>Issue 4</td>
<td>15 Dec 2015</td>
<td>Bladder fuel tank data added; OSD section added; and updated format and content</td>
<td>- - -</td>
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<tr>
<td>Issue 5</td>
<td>29 May 2019</td>
<td>Engine oil quantity in III.7.2, typo corrected</td>
<td>- - -</td>
</tr>
</tbody>
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- end of file -