GTS V3 0703 23000KV

RCINPOWER

Brushless motor for small 1S FPV drones



Read this manual carefully before installation and first use, and keep it for future reference.

Rotorama, s.r.o. · www.rotorama.com

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1. Product description

1.1 Intended use

The **RCINPOWER GTS V3 0703 23000KV** is a small brushless motor designed to be powered from a **single cell (1S)**. The manufacturer intends it for small FPV drones for indoor racing; Rotorama recommends it for 65–75 mm 1S Tiny Whoops and toothpicks. The manufacturer recommends propellers with a diameter of approximately 1.2 inches.

The motor has a one-piece bell (Unibell) and two ball bearings. The wires are soldered to a small PCB on the underside of the motor and terminated with a 1.25 mm pitch connector, which the manufacturer states is compatible with most commercially available AIO flight controllers. If a wire is torn out, the risk of damaging the windings is therefore lower, and a new wire can easily be soldered back onto the PCB.



GTS V3 0703 series motor with a propeller fitted (illustrative photo by the manufacturer; colour may differ)

1.2 Specifications and package contents

Parameter	Value
Manufacturer / model	RCINPOWER GTS V3 0703
KV	23000
Configuration	9N12P
Stator (diameter × length)	7 mm × 3 mm
Shaft diameter	1 mm (1.5 mm inside the motor)
Motor dimensions (diameter × length)	Φ 9.6 × 9.6 mm

Parameter	Value
Weight	1.85 g (with connector)
Power supply	1S Li-Po
No-load current	0.2 A (at 5 V)
Internal resistance	206 mΩ
Max. current	5.9 A
Max. continuous power	24.8 W
Peak efficiency range	1–2 A (> 83%)
Mounting	M1.4 screws, hole spacing Φ 6.6 mm
Wires	approx. 3 cm, 1.25 mm pitch connector
Bearings	2 ball bearings

Data provided by the manufacturer RCINPOWER; wire length provided by Rotorama. Max. current and power correspond to the manufacturer's measurement at 4.2 V with a GF1635×3 propeller (see chapter 1.4).

▶ **Package contents**

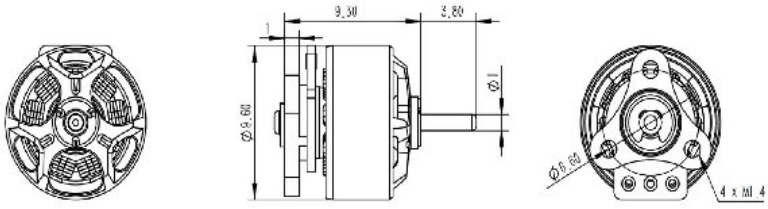
- 1× RCINPOWER GTS V3 0703 23000KV motor
- 1× screw set

▶ **Not included**

- propellers, flight controller (FC) with electronic speed controllers (ESC), frame, battery or tools.

Product identification: the motor housing is marked **0703 23000 KV1S** together with the RCINPOWER brand.

1.3 Dimensions



Manufacturer's dimensional drawing (dimensions in mm): diameter 9.6 mm, motor length 9.3 mm, shaft protrusion 3.8 mm, shaft Φ 1 mm, mounting hole spacing Φ 6.6 mm, thread M1.4

1.4 Manufacturer's performance data

The manufacturer measured the motor at 4.2 V with various Gemfan (GF) propellers. The temperature was measured after 3 s at full throttle. The values are for guidance only; actual values depend on the battery, propeller, flight controller and settings.

Prop.	Thr. (%)	Curr. (A)	Thrust (g)	Power (W)	Eff. (g/W)	Temp. (°C)
GF1219×3	50	3.1	22	13.0	1.690	67 °C
	100	4.7	37	19.7	1.874	
GF1220×4	50	3.2	23	13.4	1.711	68 °C
	100	4.8	39	20.2	1.935	
GF35mm×3	50	3.6	29	15.1	1.918	70 °C
	100	5.0	42	21.0	2.000	
GF35mm×4	50	3.6	32	15.1	2.116	72 °C
	100	5.2	43	21.8	1.969	
GF1635×3	50	4.3	31	18.1	1.717	76 °C
	100	5.9	42	24.8	1.695	

All values measured at 4.2 V. Prop. = propeller, Thr. = throttle, Curr. = current, Eff. = efficiency; temperature after 3 s at full throttle.

2. Use

2.1 Safety

- A motor with a propeller fitted is dangerous. **Always remove the propellers** and disconnect the battery during installation, connection and configuration.
- Connect the battery only just before flight, and only when both the drone and the radio transmitter are ready and nobody is near the propellers.
- The motor heats up during operation – according to the manufacturer's measurements up to 67–76 °C after 3 s at full throttle. Do not touch the motor after flight until it has cooled down.
- The motor is designed for single-cell (1S) power only. A higher voltage will overload and damage the motor.
- Handle Li-Po batteries according to their manufacturer's instructions: charge under supervision and do not use a damaged or swollen cell.
- The product contains small parts (screws). Keep it out of the reach of children.

2.2 Mounting on the frame

① Place the motor on the motor mount of the frame so that the holes in the motor base line up with the holes in the frame (spacing Φ 6.6 mm).

② Fasten the motor with the M1.4 screws from the set. Tighten the screws gently – the thread is very small and strips easily.

③ A screw must not be longer than the depth of the thread in the motor base. A screw that is too long can touch and damage the windings. Use the screws supplied with the motor or screws of the same length.

④ Route the wire so that it cannot get into the propeller and is neither under tension nor pinched between the frame and the board.

2.3 Connecting to the flight controller (FC)

The motor is terminated with a 1.25 mm pitch connector. Plug it into the corresponding motor connector on the AIO flight controller (with integrated ESCs). Before plugging it in, check that the flight controller has motor connectors of the same type, and insert the connector without force and in the correct orientation.

If the flight controller has solder pads instead of connectors, the connector can be cut off and the wires soldered directly to the motor pads. This modification is not a product defect, but only do it if you are experienced with soldering.

2.4 Direction of rotation and motor check

The direction of rotation of the motor must match the motor layout in the flight controller settings (e.g. *Betaflight* → *Motors*) and the propeller type (CW / CCW).

① Remove the propellers and connect the drone to a computer.

② Enable motor testing in the configurator and briefly spin each motor at low speed. Check that the correct motor spins and in the correct direction.

③ If a motor spins in the wrong direction, change the direction in the ESC settings (ESC configurator or the *Motor direction* function in Betaflight). On a motor with soldered wires, the direction can also be changed by swapping any two of the three wires.

④ The motor must run smoothly, without rubbing, vibration or unusual noise.

2.5 Propeller mounting and operation

- Use propellers designed for a 1 mm shaft. The manufacturer recommends propellers of approximately 1.2 inches; the propellers used for the manufacturer's measurements are listed in the table in chapter 1.4.
- Push the propeller straight onto the shaft all the way. Support the motor from below while fitting it, not by the bell, so as not to damage the bearings.
- Observe the propeller direction (CW / CCW) according to the motor layout.
- Before flight, insert a fully charged battery into the drone: 1S Li-Po 4.20 V. End the flight at 3.5 V at the latest; for storage, leave the battery charged to 3.8 V.
- Check the motor temperature after the first flights. A very hot motor indicates a propeller that is too large or damaged, unsuitable settings or a mechanical fault.

3. Maintenance and troubleshooting

3.1 Maintenance and cable repair

- After every flight, and especially after a crash, check that the shaft is not bent, that the bell turns freely and smoothly and that the motor is firmly attached to the frame.
- Hair, dust or metal particles attracted by the magnets can get between the bell and the stator. Remove them carefully; do not rinse the motor with water.
- Do not lubricate the bearings with oil or spray – dirt sticks to the lubricant and the bearing wears faster.
- Solder a torn-out or damaged wire back onto the PCB on the underside of the motor. Solder briefly so as not to overheat the windings, and after the repair check that adjacent pads have not been bridged.

3.2 Troubleshooting

Problem	Possible cause and solution
Motor does not spin, only beeps or twitches	The connector is not fully inserted or a wire is broken. Check the connector and the solder joints on the motor PCB.
Motor spins in the wrong direction	Change the direction in the ESC settings or in Betaflight (chapter 2.4).
Motor rubs, vibrates or is noisy	Bent shaft, dirt between the bell and the stator or a worn bearing. Clean the motor; have a bent shaft or faulty bearing repaired.
Motor is very hot after flight	Propeller too large or damaged, unsuitable filter settings or a mechanical fault. Check the propeller and settings, and let the motor cool down.
Drone flips over on take-off	Wrong motor order or direction of rotation, or incorrectly fitted propellers. Check the procedure in chapter 2.4.

4. Information for the EU and Czech Market

4.1 Importer and responsible person in the EU

The product is placed on the European Union market by the importer stated below, who is at the same time the responsible person within the meaning of Article 16 of Regulation (EU) 2023/988 of the European Parliament and of the Council on general product safety (GPSR).

Importer / responsible person in the EU	Rotorama, s.r.o.
Company ID (IČO)	051 57 692
VAT ID (DIČ)	CZ05157692
Registered office	Okrajová 1351, 674 01 Třebíč, Czech Republic
E-mail	info@rotorama.cz
Phone	+420 252 252 098
Website	www.rotorama.com

4.2 Disposal of electrical equipment



- The crossed-out wheeled bin symbol on the product, its packaging or in the documentation means that at the end of its service life the product **must not be disposed of together with mixed municipal waste**.
- Hand it over at a take-back point for electrical equipment – at a collection yard, at a take-back point of a collective system, or at the retailer when purchasing a new equivalent product. Take-back is free of charge for the end user.
- The obligations under Act No. 542/2020 Coll., on end-of-life products, are fulfilled by the importer through a collective take-back system.
- Proper disposal helps prevent negative impacts on the environment and human health and contributes to the reuse of secondary raw materials.

Through its contractual partner **ASEKOL a.s.**, the company ensures the take-back of waste electrical equipment from households and the separate collection of waste electrical equipment, batteries and accumulators in accordance with the applicable legislation. The customer is entitled to hand over old electrical equipment or a battery or accumulator at any collection point of the above contractual partner. The addresses of these take-back points are listed at www.asekol.cz, www.ecobat.cz and also https://visoh2.mzp.cz/RegistrMistZO/RegistrMistZOPublic/MapaMistZpetOdberu.

5. Warranty and rights arising from defective performance

The rights and obligations of the contracting parties are governed by Czech law, in particular by Act No. 89/2012 Coll., the Civil Code, and Act No. 634/1992 Coll., on consumer protection.

- The seller is liable to the buyer for the product being free of defects on receipt. If the buyer is a consumer, a defect may be notified **within two years of receipt** of the product (Section 2165 of the Civil Code).
- If a defect appears within **one year** of receipt, the product is deemed to have been defective already at the time of receipt (Section 2161(5) of the Civil Code).
- When purchasing online, a consumer has the right to **withdraw from the contract within 14 days** of receiving the goods without giving a reason (Section 1829 of the Civil Code).
- Claims should be made with the retailer from whom you purchased the product. The importer's contact details are given in Chapter 4.1.
- The competent body for out-of-court settlement of consumer disputes is the **Czech Trade Inspection Authority**, Štěpánská 796/44, 110 00 Prague 1, www.coi.cz.