GTS V3 1003 10000Kv

RCinPower – brushless motor for micro drones
User manual



Read this manual, especially the safety instructions, before installation and first start-up. Keep the manual for future reference.

Rotorama, s.r.o. · www.rotorama.com · info@rotorama.cz

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1. Product description

1.1 Intended use

The **RCinPower GTS V3 1003 10000Kv** is a small brushless motor designed for **Tinywhoop** and **Toothpick** micro drones. The designation 1003 expresses the stator size (10 mm diameter, 3 mm height); the 10000Kv value indicates the motor speed per 1 V of supply voltage without load. The motor has a unibell design for higher durability and a pair of full-size bearings for a longer service life.

The motor base allows two mounting methods: with three M1.4 screws on a 6.6 mm hole circle, as is common on smaller Tinywhoops, or with M2 screws on a 9 mm hole spacing, as used on 2" drones. We recommend combining the motor with 1.6" (40 mm) to 2" propellers and a 2S battery. The motor is connected to the flight controller (FC) or electronic speed controller (ESC) with a connector.



RCinPower GTS V3 1003 10000Kv

1.2 Technical data and package contents

Parameter	Value
Product designation	RCinPower GTS V3 1003 10000Kv
Size (stator)	1003
Kv	10000
Configuration	9N12P
Shaft diameter	1.5 mm
Weight	3.45 g
Mounting holes	6.6 mm spacing for M1.4 / 9 mm spacing for M2
Recommended battery	2S
Recommended propellers	1.6" (40 mm) – 2"
Connection	connector for plugging into the flight controller
Package contents	1× motor, 1× screw set (a quadcopter requires 4 pieces)
Not included	propellers, flight controller (FC) / speed controller (ESC), battery, tools

2. Safety instructions

- The motor is a component for building or repairing an FPV drone. Installation and wiring should be carried out by a user with basic knowledge of electronics and soldering.
- **Rotating propellers can cause injury.** Always keep the propellers removed when wiring, configuring on a computer and testing the motors.
- Connect the battery only after installation is complete and the wiring has been checked. Disconnect the battery before any handling of the motor or propeller.
- Do not exceed the recommended configuration (2S battery, 1.6"–2" propellers). Larger propellers or a higher voltage can overload and overheat the motor and also damage the electronic speed controller (ESC).
- The motor heats up during operation. After a flight, do not touch the windings or the bell until they have cooled down.
- The motor contains strong permanent magnets. Protect it from metal filings and small metal objects that may get caught between the bell and the stator.
- Do not use the motor with a bent shaft, damaged windings, a cracked bell or damaged wire insulation.
- Keep out of reach of children. Small parts (screws) may be swallowed.

3. Installation and wiring

3.1 Mounting the motor to the frame

Depending on the frame type, choose one of the two mounting methods:

- **Tinywhoop** – three M1.4 screws on a 6.6 mm hole circle,
- **2" drone (Toothpick)** – M2 screws on a 9 mm hole spacing.

① Place the motor on the frame arm so that the wire outlet points towards the centre of the frame, towards the flight controller.

② Tighten the screws from the set gradually, crosswise and with care. Only little force is needed for the small threads in the motor base – the thread strips easily.

③ Before tightening, check the screw length: **the screw must not reach into the stator windings**. A screw that is too long damages the winding insulation and causes a short circuit.

④ After tightening, turn the bell by hand. It must rotate freely and without rubbing.

3.2 Connecting to the flight controller

The motor is fitted with a connector for easy connection to a flight controller (FC) with an integrated electronic speed controller (ESC), or to a separate ESC.

- Before connecting, make sure that the motor connector matches the connector on your flight controller.
- If the flight controller has no motor connector, the connector can be cut off and the wires soldered directly to the solder pads of the motor output. Solder quickly without overheating the pads, and shorten the wires only to the required length.
- Route the wires so that they cannot get into the propeller or chafe on the edges of the frame.

3.3 Mounting the propeller

Use a 1.6" (40 mm) to 2" propeller designed for a 1.5 mm diameter shaft.

- Fit the propeller only after checking the direction of rotation (chapter 4.2).
- Observe the correct propeller direction – propellers for counter-clockwise and clockwise motors differ and must match the direction of rotation of the respective motor.
- Push the propeller on straight, all the way to the stop. Support the shaft while doing so to prevent it from bending.

4. Check and first start-up

4.1 Check without propellers

Carry out all motor tests without propellers fitted.

① Check that the motor is firmly screwed on and that the bell rotates freely.

② Connect the flight controller to a computer and open the *Motors* tab in the configurator (e.g. Betaflight).

③ Connect the battery and, after confirming the safety warning, spin up the individual motors at low speed.

④ Verify that each motor spins up smoothly, without jerking or unusual noise, and that the motor position matches the diagram in the configurator.

4.2 Direction of rotation

The direction of rotation of each motor must match the flight controller settings. Check it during the motor test – ideally by holding a strip of paper against the bell.

- If a motor turns in the opposite direction, change it in the electronic speed controller (ESC) configuration or in the flight controller settings.
- For motors soldered directly to the pads, the direction can also be changed by swapping any two motor wires.
- After the change, repeat the test and only then fit the propellers.

5. Maintenance and troubleshooting

5.1 Maintenance

- After every flight, especially after a crash, check that the bell rotates freely and that the shaft is not bent.
- Remove grass, hair, dust and dirt from the motor. Fibres wound around the shaft under the propeller increase the load on the motor.
- Check the tightness of the motor screws and the condition of the wire insulation.
- Do not lubricate the motor with oil or spray – dirt would stick to it more.
- Protect the motor from moisture. After flying in damp conditions, let it dry thoroughly.

5.2 Troubleshooting

Problem	Possible cause and solution
Motor does not spin	Check the connector or soldered joints, the battery connection and the motor assignment in the configurator.
Motor jerks or makes an unusual noise	Loose or broken wire, damaged winding or dirt between the bell and the stator. Check the wires and clean the motor.
Motor spins in the wrong direction	Change the direction in the ESC settings or swap two motor wires (chapter 4.2).
Bell rubs or turns stiffly	Bent shaft, worn bearings or a screw in the base that is too long. Check the screw length; do not use a damaged motor.
Motor gets very hot after a flight	Propeller too large, voltage higher than recommended or mechanical resistance. Keep to the 2S configuration and 1.6"–2" propellers.
Drone vibrates	Damaged or incorrectly fitted propeller, bent shaft or loose motor.

6. Information for the EU and Czech Market

6.1 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

6.2 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.

7. 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 6.1.
- 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.