EX0802 19000Kv

Happymodel – brushless motor for 1S whoops
User manual



Disconnect the battery before any work on the motor. Always remove the propellers when testing on the bench.

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1. Product description

1.1 Intended use

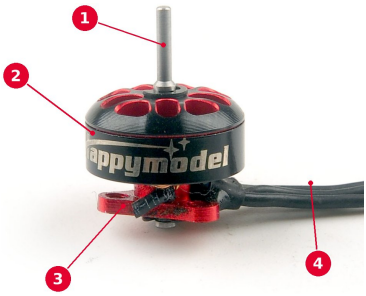
The Happymodel EX0802 19000Kv is a small brushless motor designed to drive propellers with a diameter of 31–40 mm in combination with a single-cell (1S) Li-Po battery. It is best suited to small whoop-type drones with a 65 mm or 75 mm frame. The manufacturer lists the motor among the spare parts for the Mobula6 series of whoops.

The motor has a bell made from a single piece (Unibell design), secured on the shaft by a pair of retaining clips (Double E-clip) that prevent it from coming loose in flight. The motor cable is terminated with a JST 1.25 mm connector for easy connection to the flight controller. The motor is sold in two versions, **CW** and **CCW**, which differ only in the order of the wires in the connector.



EX0802 motors with cables terminated with a JST 1.25 mm connector

1.2 Parts overview



EX0802 motor – parts overview

① **Shaft** with a diameter of 1.0 mm – the propeller is fitted onto it.

② **Bell (rotor)** made from a single piece, secured on the shaft by two retaining clips.

③ **Mounting base** – used to screw the motor to the frame.

④ **Motor cable** with three wires, terminated with a JST 1.25 mm connector.

1.3 Specifications and package contents

Product designation	Happymodel EX0802 19000Kv (CW or CCW)
Size	0802
KV	19000
Stator diameter / stator height	8 mm / 2 mm
Configuration	9N12P
Shaft diameter	1.0 mm
Motor dimensions (diameter × length)	Φ10.5 mm × 14.9 mm
Power supply	1S Li-Po only
Recommended propellers	31–40 mm
Connector	JST 1.25 mm
Cable length (including connector)	27 mm
Weight	1.7 g

▶ Package contents

- 1× EX0802 19000Kv motor (CW or CCW version as ordered)
- 1× set of screws

Not included: propeller, flight controller (FC) with electronic speed controllers (ESC), frame and battery.

2. Safety instructions

- The motor is a component intended for installation in a drone. Installation and setup should be carried out by a user with basic knowledge of building and configuring FPV drones.
- Rotating propellers can cause injury. **Disconnect the battery** during any work on the drone, soldering, propeller replacement or motor inspection.
- Always carry out bench tests and the direction-of-rotation check **without propellers fitted**.
- Operate the motor only with a single-cell (1S) Li-Po battery and with propellers of 31–40 mm in diameter. A higher voltage or larger propellers may overload and destroy the motor and the electronic speed controllers (ESC).
- A Li-Po battery is fully charged at 4.20 V per cell (1S = 4.20 V); end the flight at 3.5 V per cell at the latest. Charge batteries under supervision and on a non-flammable surface.
- The motor may be hot after intensive flying. Let it cool down before handling.
- The motor contains strong magnets. Protect it from metal filings and small metal objects that could get between the bell and the stator.
- Keep the motor out of the reach of children – it contains small parts that could be swallowed.
- When operating a drone with this motor, observe aviation and other regulations. The law of the country in which the drone is operated always prevails.

3. Installation and connection

3.1 Mounting on the frame

- Place the mounting base ③ of the motor against the frame and fasten it with the screws from the included set.
- Tighten the screws with care. A screw that is too long or excessive force may damage the stator windings and cause a short circuit.
- Route the motor cable so that it cannot get into the propeller and is neither under tension nor pinched between frame parts.
- After mounting, check by hand that the bell turns freely and without rubbing.

3.2 Connecting to the flight controller

The motor cable is terminated with a JST 1.25 mm connector. Plug it into the corresponding motor connector of the given position on the flight controller (FC) or on the electronic speed controller (ESC) board. Insert the connector straight and do not use force; when disconnecting, pull on the connector, not on the wires.

❊ Always connect and disconnect the connector with the battery disconnected.

3.3 Direction of rotation CW and CCW

The **CW** (clockwise) and **CCW** (counter-clockwise) versions differ only in the order of the wires in the connector. Which positions on the frame require a CW motor and which a CCW motor is determined by the propeller rotation configuration selected in the flight controller (*props in* or *props out*).

- After connecting all motors, check the direction of rotation of each motor (Chapter 3.5).
- If a motor spins in the wrong direction, its direction can be reversed in the electronic speed controller (ESC) configuration using the appropriate configuration software. Re-wiring the connector is not necessary.

3.4 Propellers

- Use propellers with a diameter of 31–40 mm and a hole for a 1.0 mm shaft.
- Push the propeller straight onto the shaft ① while supporting the bell from below, so that the shaft does not bend and the bearings are not stressed.
- The pitch direction of the propeller must match the direction of rotation of the motor at the given position.
- Replace a damaged or cracked propeller immediately.

3.5 Function check

① Remove all propellers.

② Connect the drone to a computer and open the flight controller configuration software (e.g. Betaflight Configurator), tab *Motors*.

③ Confirm that the propellers are removed, connect the battery and briefly spin up each motor at low speed.

④ Check that the correct motor spins up at the correct position and that it rotates in the correct direction.

⑤ The motor must run smoothly, without rubbing, vibration or unusual noise.

4. Manufacturer's performance data

The manufacturer states the following measured values for the EX0802 19000Kv motor. These are the manufacturer's laboratory measurements; actual values in a drone depend on the battery, propeller, electronic speed controller settings and other conditions.

No-load current	0.45 A
No-load speed	38,320 rpm at 2 V (19,160 KV)

Propeller	Voltage (V)	Current (A)	Thrust (g)	Power (W)	Efficiency (g/W)
Gemfan 1219 31 mm	3.7	0.97	8.8	3.59	2.45
	3.7	2.01	17.3	7.44	2.33
	3.7	2.62	21.5	9.69	2.22
Happymodel 40 mm, 4-blade	3.7	0.98	9.8	3.63	2.70
	3.7	2.06	18.4	7.62	2.41
	3.7	2.96	23.4	10.95	2.14
	3.7	4.09	29.3	15.13	1.94

Source: manufacturer Happymodel; power and efficiency rounded to two decimal places.

5. Maintenance and troubleshooting

5.1 Maintenance

- After every flight, and especially after a crash, check that the bell turns freely and that the shaft is not bent.
- Keep the gap between the bell and the stator clean – remove dust, grass, hair and carpet fibres. Do not use liquids or lubricants.
- Check that both retaining clips are in place on the shaft and that the bell has no play.
- Check the wire insulation and the condition of the connector; a damaged cable can cause a short circuit and destroy the speed controller.
- Store the motor in a dry place away from metal filings.

5.2 Troubleshooting

Problem	Possible cause and solution
Motor does not spin	The connector is not fully inserted or a wire is damaged. Check the connection and the cable. Make sure the motor is connected to the correct position.
Motor spins in the wrong direction	Reverse the direction of rotation in the electronic speed controller (ESC) configuration, see Chapter 3.3.
Motor stutters, vibrates or is noisy	Bent shaft, dirt between the bell and the stator, damaged propeller or worn bearings. Clean the motor and replace the propeller; replace the motor if the shaft is bent.
Motor gets very hot after flight	Propeller too large, motor jammed or dirt in the motor. Use 31–40 mm propellers and clean the motor.
Bell has play or has come loose	A retaining clip is missing or damaged. Do not fly with the motor any further.

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.