Wasp Major V2 22.6-6.6 1980Kv

RCinpower – brushless motor for FPV drones
User manual



Read the entire manual and the safety instructions carefully before installation and first use. Keep this manual.

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1. Safety instructions

The motor is a high-performance component of an FPV drone. Combined with a propeller and a Li-Po battery, it can cause serious injury or property damage if handled incorrectly. This product is not a toy and is not intended for children.

- **Whenever you work on the drone (assembly, soldering, configuration), keep the propellers removed** and the battery disconnected, unless connecting it is necessary for the step in question.
- A spinning propeller carries a lot of energy. Never approach a drone with a connected battery and never hold it in your hand when you Arm (start the motors).
- Do not connect the motor directly to a battery or power supply. It may only be operated via a suitable electronic speed controller (ESC).
- The motor is designed to be powered from a **5S to 6S** Li-Po battery (manufacturer's specification). A higher voltage may damage the motor irreversibly.
- The motor may be very hot after a flight. Do not touch it until it has cooled down.
- The motor bell contains strong neodymium magnets. Metal objects and small debris (filings, small screws) are attracted to them – keep the motor clean.
- Use only undamaged propellers and always tighten the propeller nut. A loose or cracked propeller may fly off during flight.
- Follow the instructions of the manufacturers of the battery, the ESC and the other drone components.

2. Product description

2.1 What the motor is for

The RCinpower Wasp Major V2 22.6-6.6 1980Kv is a brushless outrunner motor designed to power FPV drones, typically racing and freestyle drones. The motor has a stator 22.6 mm in diameter and 6.6 mm in height, a 12N14P configuration and a rating of 1980 KV. The manufacturer specifies it for 5S to 6S Li-Po power.

Four motors are mounted on a drone (on a quadcopter), two with counter-clockwise and two with clockwise propellers. The motor is connected by three wires to the electronic speed controller (ESC), which drives it according to the commands of the flight controller (FC).



RCinpower Wasp Major V2 22.6-6.6 1980Kv

2.2 Package contents

- 1× RCinpower Wasp Major V2 22.6-6.6 1980Kv motor with propeller nut

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

2.3 Motor design

- bell made of 7075-T6 aluminium alloy with N52H arc magnets,
- 22.6 × 6.6 mm stator with oxygen-free copper windings, insulation thermal class 260 °C,
- hollow titanium shaft Ø 4 mm with a threaded end for the propeller nut,
- 684ZZ bearings (4 × 9 × 4 mm), made by Japan ISC,
- reinforced base with four M3 threaded holes in a 16 × 16 mm pattern,
- three 20 AWG wires, 15 cm long.



Bell with magnets and stator with windings; the KV rating is marked on the base (manufacturer's photo)

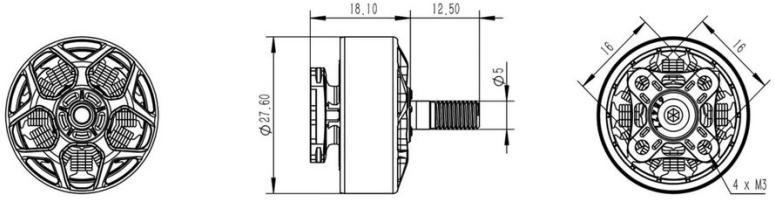
3. Technical data

3.1 Basic parameters

Data provided by the manufacturer RCinpower.

Parameter	Value
KV	1980
Configuration	12N14P
Stator diameter	22.6 mm
Stator height	6.6 mm
Shaft diameter	4 mm (hollow)
Motor dimensions (diameter × length)	Ø 27.6 × 18.1 mm
Weight	29.5 g (with 3 cm wires) 33 g (with 15 cm wires)
Idle current (at 10 V)	1.2 A
Number of Li-Po cells	5S–6S
Max. continuous power (5S)	1337 W
Internal resistance	56 mΩ
Max. current (5S)	55.7 A
Max. efficiency current	4–8 A (efficiency > 87 %)
Magnets	N52H, arc
Bearings	684ZZ (4 × 9 × 4 mm), Japan ISC
Bell material	7075-T6
Wires	3× 20 AWG, 15 cm
Mounting holes	4× M3, 16 × 16 mm pattern

3.2 Dimensions and mounting holes



Manufacturer's dimensional drawing (dimensions in mm): diameter 27.6 mm, height 18.1 mm, threaded shaft end Ø 5 mm, mounting holes 4× M3 in a 16 × 16 mm pattern

3.3 Manufacturer's performance data

The measured values are provided by the manufacturer for the 1980Kv motor with Gemfan (GF) and HQProp (HQ) propellers. The temperature was measured after 5 s at full throttle. The values are a guide for choosing a propeller; actual values depend on the battery, the ESC and the conditions.

Propeller	Volt. (V)	Thr.	Current (A)	Thrust (g)	Power (W)	Eff. (g/W)	Temp.
GF 4934R	21	50 %	9.5	624	199.5	3.128	59 °C
		100 %	42.3	1539	888.3	1.733	
	24	50 %	10.9	712	261.6	2.722	72 °C
		100 %	48.4	1759	1161.6	1.514	
GF F4R	21	50 %	9.8	617	205.8	2.998	65 °C
		100 %	47.0	1717	987.0	1.740	
	24	50 %	11.2	705	268.8	2.623	79 °C
		100 %	53.7	1963	1288.8	1.523	
GF 51466V2	21	50 %	9.7	667	203.7	3.274	66 °C
		100 %	47.5	1645	997.5	1.649	
	24	50 %	11.1	760	266.4	2.853	80 °C
		100 %	54.3	1879	1303.2	1.442	
GF 6032	21	50 %	11.2	810	235.2	3.444	67 °C
		100 %	48.7	1968	1022.7	1.924	
	24	50 %	13.3	925	319.2	2.898	84 °C
		100 %	55.7	2250	1336.8	1.683	
HQ MCK	21	50 %	9.0	630	189.0	3.333	58 °C
		100 %	41.7	1679	875.7	1.917	
	24	50 %	10.2	720	244.8	2.941	72 °C
		100 %	47.7	1919	1144.8	1.676	

4. Installation

4.1 What else you need

- a drone frame with 16 × 16 mm motor mounts for M3 screws,
- an ESC rated for 5S–6S and for the current the motor draws with your propeller (see chapter 3),
- propellers for the Ø 5 mm threaded shaft (tested propellers: chapter 3.3),
- M3 screws of suitable length, soldering equipment, a screwdriver and a prop nut wrench.

4.2 Mounting the motor on the frame

① Place the motor on the frame arm so that the wires point towards the centre of the drone.

② Fasten it with four M3 screws. Tighten the screws gradually in a crosswise pattern.

③ **The screws must not reach the stator windings** – a screw that is too long damages the insulation and causes a short circuit. Then turn the bell by hand – it must rotate freely, without rubbing.

④ You may use medium-strength threadlocker; do not let it run into the motor or bearings.

4.3 Connecting to the electronic speed controller (ESC)

Solder the three motor wires to the output pads of the ESC channel. The wire order determines the direction of rotation (see chapter 5.2).

- Cut the wires to the required length and tin the ends before soldering.
- Solder quickly with a hot enough iron to avoid cold joints; joints must not touch neighbouring pads.
- Route the wires so they cannot reach the propeller or rub on sharp frame edges.
- After soldering, check that the motor wires have no conductive contact with the carbon frame.

4.4 Mounting the propeller

① Mount the propeller **only after checking the direction of rotation** (chapter 5), with the battery disconnected.

② Fit the propeller labelled side up and check that it matches the motor's direction of rotation.

③ Tighten the propeller nut firmly. Do not hold the shaft with pliers – you would damage it.

④ Check before every flight that the nut has not loosened.

5. Commissioning

5.1 Checking the direction of rotation

Always perform this check WITHOUT propellers.

① Connect the flight controller (FC) to a computer and open the configurator (e.g. Betaflight Configurator), tab *Motors*.

② Connect the battery and confirm that the propellers are removed.

③ Spin up the individual motors one by one at low speed and check that the correct motor turns, in the correct direction according to the diagram in the configurator.

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

5.2 Changing the direction of rotation

If the motor turns in the opposite direction, change the direction in one of these ways:

- set the reversed direction for that motor in the ESC configuration software (depending on the ESC firmware), or
- with the battery disconnected, swap any two of the three motor wires at the ESC.

After the change, check the direction again as described in chapter 5.1.

6. Operation

- Operate the motor only within the 5S–6S Li-Po voltage range. Always insert a **fully charged** battery before flight (Li-Po 4.20 V/cell: 5S = 21.0 V, 6S = 25.2 V).
- End the flight no later than when the voltage drops to 3.5 V/cell (5S = 17.5 V, 6S = 21.0 V).
- Choose the propeller so that the current of the motor and the ESC does not exceed their permissible values. With larger and more aggressive propellers the motor draws more current and heats up more (see chapter 3.3).
- Check the motor temperature after the first flights. If the motors are too hot to touch after a normal flight, choose a smaller propeller or adjust the settings.
- After an impact or crash, check the motor as described in chapter 7.1 before flying the drone again.
- Do not use the motor in water, in the rain or on wet grass, and protect it from sand and dust.

The motor is a component of a drone. Drone operation is governed by the regulations of the country in which it is operated – in the EU in particular by Regulation (EU) 2019/947 and the national regulations of the state concerned. **The law of the country in which you operate the drone always prevails.**

7. Maintenance and troubleshooting

7.1 After every flight

- Disconnect the battery and let the motor cool down.
- Turn the bell by hand – it must rotate freely and quietly. Rubbing or a “gritty” feel indicates debris, a damaged bearing or a bent shaft.
- Check the bell for debris, grass or metal particles; remove them carefully.
- Check that the motor screws and the propeller nut are tight and that the wire insulation is intact.
- Do not use a motor with a bent shaft or damaged bell – it would vibrate.

7.2 Storage

Store the motor in a dry place at room temperature, out of the reach of children and away from metal dust and filings, which the magnets would attract.

7.3 Troubleshooting

Problem	Possible cause and solution
Motor turns the wrong way	Change the direction in the ESC settings or swap two wires (chapter 5.2).
Motor stutters or does not start	Cold or broken solder joint, damaged wire, short circuit in the windings. Check the soldering and the wires.
Motor rubs or is noisy	Debris in the bell, damaged bearing, bent shaft. Clean the motor; do not use a damaged motor.
Motor gets very hot after flight	Propeller too large or aggressive, high current, unsuitable settings. Choose a smaller propeller, check for vibration.
Drone vibrates	Damaged propeller, loose screw or nut, bent shaft. Replace the propeller and check that everything is tight.
Burning smell, smoke	Disconnect the battery immediately. Do not use the motor any more – the windings are damaged.

8. Information for the EU and Czech Market

8.1 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

8.2 Product conformity

CE

- The product bears the **CE** marking and complies with the requirements of the applicable European Union harmonisation legislation.
- A copy of the **EU Declaration of Conformity** is available from the importer at the address stated above or at the e-mail address info@rotorama.cz.
- **Product identification:** the type designation (RCinpower Wasp Major V2 22.6-6.6 1980Kv) is given on the product packaging; the KV rating (1980kv) is marked on the motor base.

8.3 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.

9. 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 8.1.
- 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.