

RATTMMOTOR GDZ-2.2-220V

RATTMMOTOR 2.2KW 220V Water-Cooled Spindle Motor ER20 Instruction Manual

Model: GDZ-2.2-220V

1. PRODUCT OVERVIEW

This document provides essential instructions for the safe and efficient operation, installation, and maintenance of your RATTMMOTOR 2.2KW 220V Water-Cooled Spindle Motor.

Key Features:

- 2.2KW, 220V water-cooled spindle motor with ER20 nut and collet.
- Operating frequency: 400HZ.
- High accuracy: 0.003-0.005mm, with runout less than 0.01mm.
- Primarily suitable for non-metallic engraving applications, such as wood carving, advertising engraving, and CNC machining.
- Features a dust-proof cover on the front and a durable stainless steel body to effectively prevent dust, water, and rust.
- Adjustable speed range: 0-24000 RPM.
- Manufactured with ISO9001 quality certifications, ensuring high standards.

Important Operating Note:

During operation, the spindle speed must not be lower than 9000 RPM to prevent potential damage. The spindle is designed to rotate clockwise only; reverse rotation is not supported.

2. SETUP AND INSTALLATION

2.1 Unpacking and Inspection

Carefully remove the spindle motor from its packaging. Inspect the unit for any signs of shipping damage. Confirm that all components, including the ER20 nut and collet, are present before proceeding with installation.

Water- Cooled Spindle 220V



Material	Stainless Steel	Frequency	0-400Hz	Runout off	Less than 0.01mm
Size	80x213mm	Speed	0-24000rpm	Bearing Lubrication	Grease
Voltage	220VAC	Cooling	Water-cooled	Collet size	ER20
Current	8A	Accuracy	0.003--0.005mm	Net Weight	5.2kg

Image: The RATMMOTOR 2.2KW Water-Cooled Spindle Motor, showcasing its ER20 collet and aviation plug connection.

2.2 Mounting the Spindle

Mount the spindle motor securely onto your CNC machine or engraving equipment using an appropriate mounting bracket. Ensure the mounting is rigid and stable to minimize vibration during operation, which can affect machining accuracy and spindle lifespan.

2.3 Electrical Connection

Connect the spindle motor to a compatible Variable Frequency Drive (VFD) or inverter. This spindle requires a 220V, 2.2KW, 8A, 400HZ power supply. Refer to your VFD's instruction manual for detailed wiring diagrams and parameter settings. It is critical to ensure the aviation plug is connected with the correct orientation; incorrect connection can lead to malfunction or damage.



Image: Close-up view of the aviation plug connection on the spindle motor, illustrating the electrical interface.

While general-purpose inverters may have default settings, it is highly recommended to configure the VFD parameters specifically for this spindle motor's specifications to achieve optimal performance and protection.

Your browser does not support the video tag.

Video: An overview of the 2.2KW water-cooled spindle motor, demonstrating its components and general appearance. This video is provided by Kuku Tech (Seller).

Your browser does not support the video tag.

Video: A demonstration of the 2.2KW 220V water-cooled spindle motor operating with a VFD. This video is provided by Kuku Tech (Seller).

2.4 Water Cooling System Connection

Connect the water inlet and outlet ports of the spindle to a dedicated water cooling system. Ensure a consistent and adequate flow of coolant to maintain the spindle's operating temperature below 40°C. Proper water cooling is absolutely essential for the long-term performance and lifespan of the spindle motor.

Ultra low noise & water cooling

Work Peacefully & Better Cooling Effect



Image: A visual representation of the water cooling process for the spindle motor, illustrating its effectiveness in heat dissipation.

2.5 Collet and Tool Installation

Install the ER20 collet into the spindle nose, followed by the desired cutting tool. Ensure the ER20 nut is securely tightened to firmly hold the tool. The spindle is designed for high-precision operations, and proper tool installation is crucial for maintaining accuracy.

High quality bearings

ER20 Nut



Dyanamic Balance Design



Dust-proof



Low noise



Water proof



High speed



Processing



Quality assurance

Image: A close-up of the ER20 nut and collet, which are essential components for securely holding cutting tools in the spindle motor.

3. OPERATING INSTRUCTIONS

3.1 Pre-Operation Checks

- Verify that all electrical connections and water cooling system connections are secure and free from leaks.
- Ensure the cutting tool is correctly installed and the ER20 nut is tightened to the specified torque.
- Confirm that the VFD settings accurately match the spindle's specifications (2.2KW, 220V, 8A, 400HZ).

3.2 Starting the Spindle

Initiate the VFD to start the spindle motor. Gradually increase the speed to the desired operating RPM. Remember, the spindle must operate at a minimum speed of 9000 RPM during use to prevent damage and ensure proper cooling. The maximum operating speed is 24000 RPM.



Image: The spindle motor in operation, demonstrating its capability for 24000 RPM high-speed engraving.

3.3 Direction of Rotation

The spindle is engineered to rotate exclusively in a clockwise direction. Attempting to operate it in reverse may cause damage to the spindle or the workpiece.

3.4 Monitoring During Operation

Continuously monitor the spindle's temperature, noise levels, and vibration throughout operation. The water cooling system should effectively maintain a stable temperature. Any excessive noise or vibration may indicate an underlying issue that requires immediate attention.

4. MAINTENANCE

4.1 Regular Cleaning

Keep the spindle motor clean, paying particular attention to the dust-proof cover and any cooling fins. This ensures

efficient heat dissipation and prevents the ingress of dust and debris, which can affect performance and lifespan. The stainless steel body is designed for enhanced resistance to rust and scratches.

Reasonably designed for long-term use

Rust-proof

Scratch-proof

Dust-proof

HIGH QUALITY STAINLESS STEEL BODY



Image: The stainless steel body of the spindle motor, highlighting its rust-proof, scratch-proof, and dust-proof design for long-term durability.

4.2 Water Cooling System Maintenance

Periodically inspect the water cooling system for any signs of leaks, blockages, or reduced coolant flow. Ensure the coolant is clean and maintained at an appropriate level. Replace the coolant as recommended by your cooling system manufacturer to prevent corrosion and maintain optimal cooling efficiency.

4.3 Bearing Lubrication

The spindle bearings are pre-lubricated with grease. For specific bearing maintenance and re-lubrication schedules, consult the manufacturer's guidelines if provided. High-quality bearings are utilized to support high-speed operation and ensure precision.

High quality bearings

ER20 Nut



Dyanamic Balance Design



Dust-proof



Low noise



Water proof



High speed



Processing



Quality assurance

Image: Internal components of the spindle motor, showcasing high-quality bearings and the dust-proof design.

5. TROUBLESHOOTING

This section addresses common issues you might encounter with your RATMMOTOR water-cooled spindle motor and provides potential solutions.

5.1 Spindle Not Starting or Running Erratically

- **Check Power Supply:** Ensure the 220V power supply is stable and correctly connected to the VFD.
- **VFD Settings:** Verify that the VFD parameters (frequency, voltage, current, motor stages) are correctly configured according to the spindle's specifications. Incorrect settings are a common cause of operational issues.
- **Aviation Plug Connection:** Confirm the aviation plug is securely and correctly oriented. An improperly connected plug can prevent the spindle from operating or cause erratic behavior.

5.2 Overheating

- **Water Flow:** Check the water cooling system for adequate coolant flow. Ensure there are no blockages in the hoses or the spindle's internal cooling channels.
- **Coolant Level and Quality:** Verify the coolant level is sufficient and the coolant is clean. Dirty or insufficient coolant can lead to poor heat exchange.
- **Operating Speed:** Ensure the spindle is not operated below the recommended minimum speed of 9000 RPM for extended periods, as this can cause inefficient cooling and overheating.
- **Ambient Temperature:** Operate the spindle in an environment with appropriate ambient temperature.

5.3 Excessive Noise or Vibration

- **Mounting:** Check if the spindle is securely mounted to the machine. Loose mounting can cause significant vibration.
- **Tool Balance:** Ensure the cutting tool is balanced and properly installed in the ER20 collet. An unbalanced or improperly installed tool can cause vibration and noise.
- **Bearings:** If excessive noise or vibration persists after checking mounting and tool, it might indicate worn or damaged bearings. Contact support for further assistance.

5.4 Reduced Performance or Accuracy

- **Collet and Nut:** Ensure the ER20 collet and nut are clean and free from debris, and the tool is securely tightened.
- **Tool Condition:** Inspect the cutting tool for wear or damage. A dull or damaged tool will significantly reduce cutting performance and accuracy.
- **Runout:** While the spindle has a low runout specification (less than 0.01mm), excessive runout could indicate a problem with the collet, tool, or the spindle itself.

6. TECHNICAL SPECIFICATIONS

Feature	Specification
Brand	RATMMOTOR
Model	GDZ-2.2-220V
Power	2.2 KW
Voltage	220V
Current	8A
Frequency	400HZ
Speed	0-24000 RPM
Cooling Method	Water-cooled
Collet Type	ER20
Diameter	80mm
Length	213mm
Accuracy	0.003-0.005mm
Runout Off	Less than 0.01mm
Bearing Lubrication	Grease

Item Weight	5.6 kg
Manufacturer	Changsheng
UPC	709046759773



Image: A diagram illustrating key dimensions and technical parameters of the water-cooled spindle motor.

7. WARRANTY AND SUPPORT

For specific warranty information and technical support inquiries regarding your RATTMMOTOR 2.2KW 220V Water-Cooled Spindle Motor, please contact RATTMMOTOR customer service directly or the authorized retailer from whom you purchased the product. It is advisable to refer to your original purchase documentation for detailed warranty terms and conditions.

Manufacturer: Changsheng

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