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› FYSETC NEMA17 Extruder Stepper Motor Instruction Manual for Prusa i3 MK3S+

FYSETC NEMA17 Extruder Motor

FYSETC NEMA17 Extruder Stepper Motor Instruction Manual

For Prusa i3 MK2, MK3, MK3S, and MK3S+ 3D Printers

1. PRODUCT OVERVIEW

This manual provides detailed instructions for the FYSETC NEMA17 Bipolar 2 Phase 1.8 Degree 20mm Shaft Extruder Stepper Motor. This motor is designed as a direct replacement for the E-axis extruder motor in Prusa i3 MK2, MK3, MK3S, and MK3S+ 3D printers, as well as compatible CNC machines. It features high torque, low self-inductance reactance, and integrated wiring for ease of installation.



Image 1.1: The FYSETC NEMA17 Extruder Stepper Motor with integrated cable.

2. SPECIFICATIONS

The following table outlines the key technical specifications of the FYSETC NEMA17 Extruder Stepper Motor:

Feature	Specification
Model	NEMA17
Step Angle	1.8° ±5%
Number of Phases	2
Phase Voltage	6.5 VDC
Phase Current	1 Amp

Feature	Specification
Phase Resistance	6.5Ω (1±10%)
Phase Inductance	13mH (1±20%) at 20°C
Static Moment	0.49 N.m (400mN.m / 57.1 oz.in)
Insulation Class	Class B
Insulation Resistance	100MΩ min. (500V DC)
Motor Dimensions	42mm x 40mm x 20mm (1.65" x 1.57" x 0.78")
Shaft Length	20mm (0.78")
Cable Length	Approximately 700mm (27.5 inches)
Wiring Configuration	4-wire: Black (A+), Green (A-), Red (B+), Blue (B-)

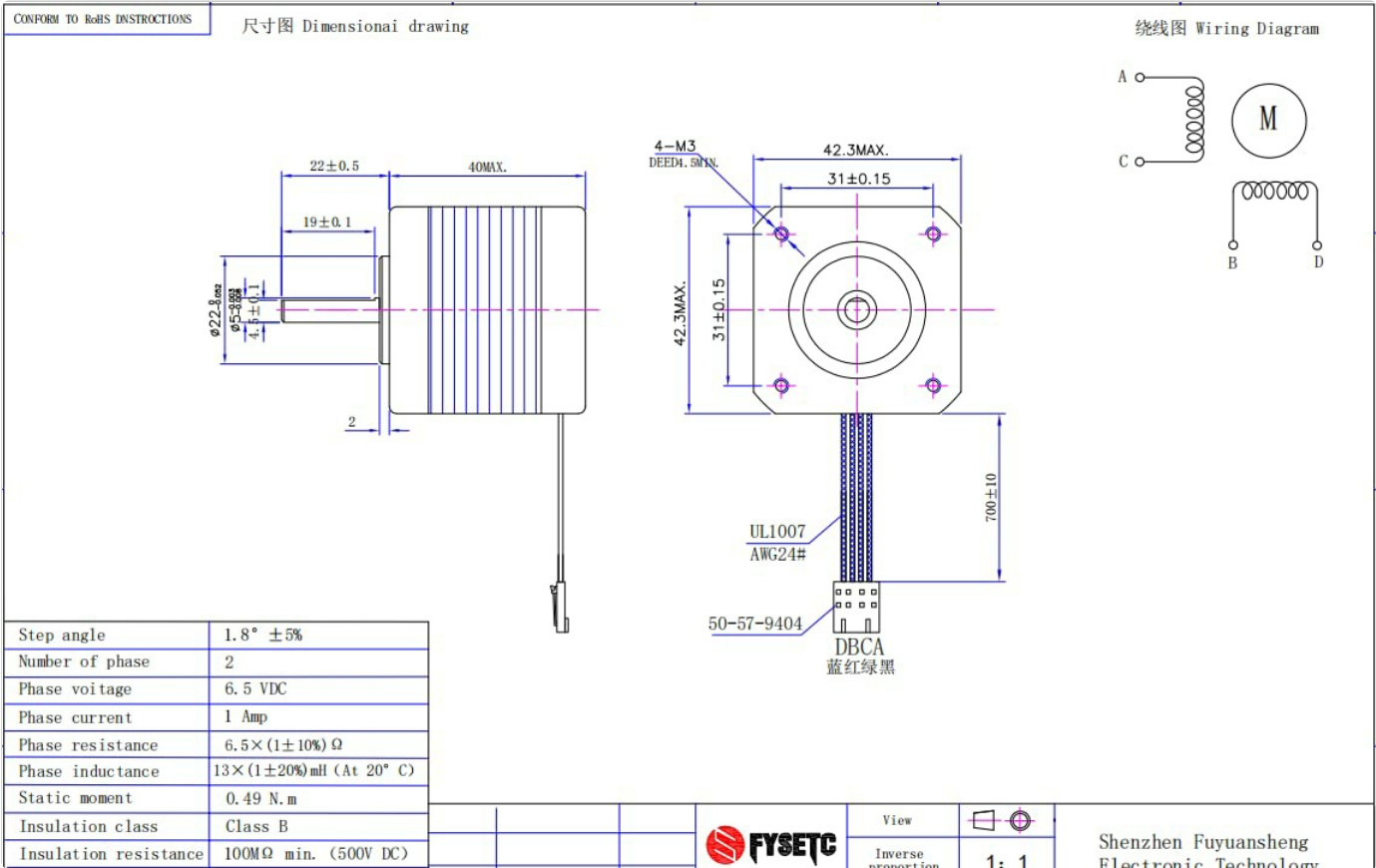
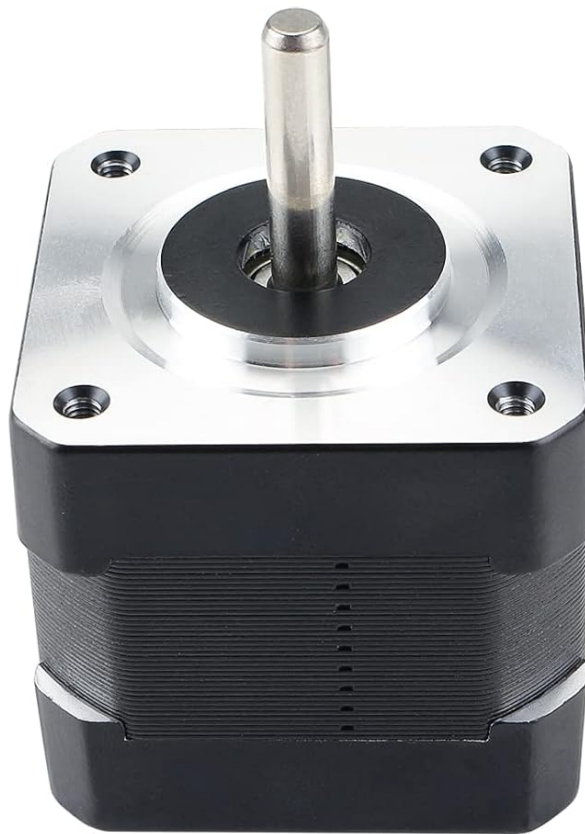


Image 2.1: Dimensional drawing of the NEMA17 Extruder Stepper Motor.

3. PACKAGE CONTENTS

Upon opening the package, you should find the following item:

- 1x NEMA17 Extruder Stepper Motor with integrated 4-pin connecting wire.



Stable Property



Good Craftwork



Powerful Torque



High Accuracy



Low Noise

Image 3.1: Extruder Motor with integrated cable.

4. SETUP AND INSTALLATION

This section guides you through the installation of the extruder stepper motor. Ensure your 3D printer is powered off and unplugged before beginning any installation or maintenance.

4.1 Pre-installation Checks

- **Compatibility:** Verify that this NEMA17 motor is compatible with your specific 3D printer model (Prusa i3 MK2, MK3, MK3S, MK3S+).
- **Tools:** Gather necessary tools such as screwdrivers, hex keys, and possibly pliers.
- **Safety:** Always disconnect power to the 3D printer before handling electronic components.

4.2 Installation Steps (General Guide)

1. **Access the Extruder:** Carefully disassemble the extruder assembly on your 3D printer to gain access to the

existing extruder motor. Refer to your printer's specific service manual for detailed disassembly instructions.

2. **Disconnect Old Motor:** Unplug the wiring harness from the old extruder motor and unmount it from the extruder assembly.
3. **Mount New Motor:** Position the new FYSETC NEMA17 motor into the extruder assembly. Secure it using the appropriate screws. Ensure it is firmly seated.
4. **Connect Wiring:** Connect the integrated 4-pin wiring harness of the new motor to the corresponding port on your printer's mainboard or extruder board. The wire colors are Black (A+), Green (A-), Red (B+), Blue (B-).
5. **Reassemble Extruder:** Carefully reassemble the extruder components, ensuring all parts are correctly aligned and secured.
6. **Test Functionality:** Reconnect power to your 3D printer. Perform a motor test or attempt to extrude filament to verify proper operation.

Extruder Motor fits Prusai3 MK2 MK3 MK3S MK3S+ 3D Printer

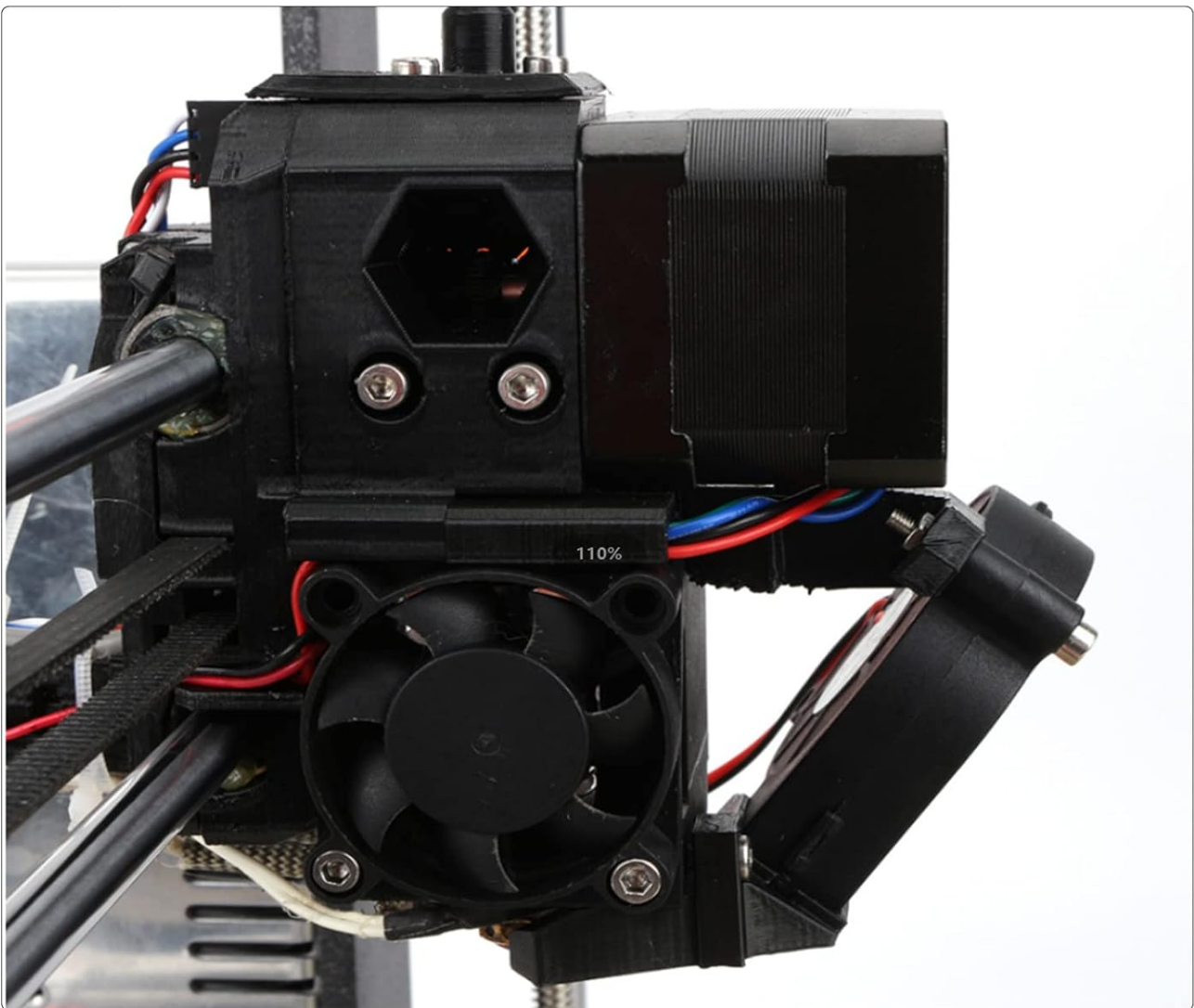


Image 4.1: Extruder Motor installed on a Prusa i3 MK3S+ 3D Printer.

5. OPERATING INSTRUCTIONS

The FYSETC NEMA17 Extruder Stepper Motor operates as an integral part of your 3D printer's extrusion system. Once installed, its function is controlled by the printer's firmware and slicing software.

5.1 Motor Function

- The motor precisely rotates to push and pull filament through the extruder, controlling the flow of material during 3D printing.
- Its bipolar 2-phase design ensures accurate stepping and consistent filament delivery.
- The low self-inductance reactance allows for responsive operation and helps prevent system errors.

5.2 Wiring Diagram

The motor comes with an integrated 4-pin connector. The standard wiring color code is as follows:

- **Black:** A+
- **Green:** A-
- **Red:** B+
- **Blue:** B-

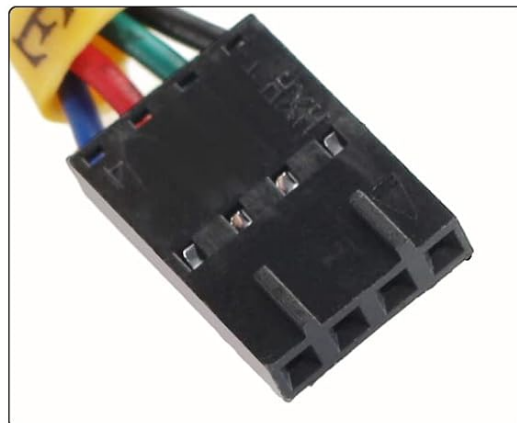
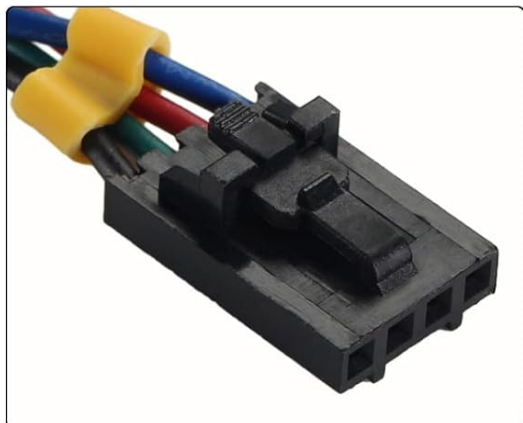


Image 5.1: Integrated 4-pin connector and wiring details.

6. MAINTENANCE

Proper maintenance ensures the longevity and optimal performance of your extruder stepper motor.

- **Keep Clean:** Periodically inspect the motor for dust or filament debris. Use a soft brush or compressed air to gently clean the exterior.
- **Check Connections:** Ensure the wiring harness remains securely connected to both the motor and the printer's control board. Loose connections can lead to intermittent operation.
- **Monitor Temperature:** While designed for low heat generation, ensure adequate airflow around the motor. Excessive heat can indicate an issue with the motor driver or current settings.
- **Listen for Unusual Noises:** The motor is designed for low noise operation. Any new or unusual sounds during printing may indicate a mechanical issue or wear.

Low noise motor

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Image 6.1: The FYSETC NEMA17 motor is engineered for low noise operation.

7. TROUBLESHOOTING

This section addresses common issues you might encounter with the extruder stepper motor.

- **Filament Slipping or Skipping:**

Possible Causes: Incorrect motor current, worn extruder gears, partial nozzle clog, excessive back pressure, or a failing motor.

Solutions: Check and adjust motor current in firmware, inspect and clean/replace extruder gears, clear any nozzle clogs, reduce print speed or temperature, or replace the motor if it's confirmed to be faulty.

- **Motor Overheating:**

Possible Causes: Motor current set too high, insufficient cooling, or a mechanical binding in the extruder.

Solutions: Reduce motor current (if adjustable), ensure proper ventilation around the motor, check for any obstructions preventing smooth filament movement.

- **No Motor Movement:**

- Possible Causes:** Disconnected wiring, faulty wiring, incorrect firmware settings, or a defective motor/driver.
- Solutions:** Verify all wiring connections are secure and correct (refer to Section 5.2), check firmware for correct extruder motor configuration, test the motor with a known good driver or replace the motor if other components are ruled out.
- **Unusual Noise from Motor:**
Possible Causes: Loose mounting screws, worn bearings, or resonance issues.
Solutions: Tighten mounting screws, inspect for any physical damage or wear, ensure the motor is properly aligned.

8. WARRANTY AND SUPPORT

8.1 Warranty Information

For specific warranty details regarding your FYSETC NEMA17 Extruder Stepper Motor, please refer to the purchase documentation or contact the seller directly. Warranty terms typically cover manufacturing defects for a specified period from the date of purchase.

8.2 Customer Support

If you encounter any issues not covered in this manual or require further assistance, please contact FYSETC customer support through their official website or the platform where the product was purchased. Provide your product model number and a detailed description of the issue for efficient support.

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