Installation Guide: NexBot Safety STP113-012 Stepper Motor 1.2 Nm

SKU: NXB-SRV-STP113-012 | Revision: 1.0 | Category: Drive Systems > Servo Motors > Stepper Motors

DANGER: Disconnect all power sources before beginning installation. Follow lockout/tagout (LOTO) procedures per OSHA 1910.147.

1. Required Tools & Materials

- Hex key set (metric)
- Torque wrench with metric sockets
- Wire stripper and crimping tool
- Digital multimeter
- M5 mounting screws (4x, length dependent on mounting plate thickness)
- Digital caliper
- Precision screwdriver set
- Flexible shaft coupling

2. Pre-Installation Checks

1. Verify the motor SKU NXB-SRV-STP113-012 matches the project specification sheet.
2. Inspect the motor housing and shaft for any signs of shipping damage.
3. Ensure the mounting surface is clean, flat, and rigid enough to support the motor's operational torque.
4. Confirm the stepper motor driver's voltage and current ratings are compatible with the motor's 24VDC specification.
5. De-energize and lock out all related machine power sources before beginning installation.
6. Check that the motor shaft rotates freely by hand without grinding or binding.

3. Installation Procedure

Step 1: Step 1: Position and Mount the Motor

Align the motor shaft with the driven component. Secure the motor to the mounting bracket using four M5 screws through the 57 x 57 mm faceplate holes. Do not fully tighten yet.

Step 2: Step 2: Align the Shaft

Attach a flexible coupling to the motor shaft. Use a dial indicator or precision straightedge to ensure the motor shaft and the load shaft are concentric and parallel to within manufacturer specifications for the coupling.

> **Warning:** Misalignment is a primary cause of premature bearing failure and vibration. Ensure proper alignment before proceeding.

Step 3: Step 3: Torque Mounting Screws

Once alignment is confirmed, tighten the four M5 mounting screws in a star pattern. Use a torque wrench to apply the recommended torque for your screw grade and mounting material to prevent distortion of the motor frame.

Step 4: Step 4: Prepare Motor Wires

Carefully strip approximately 5-7 mm of insulation from the ends of the four motor lead wires. If using ferrules, crimp them onto the stripped ends to ensure a secure connection at the driver terminals.

> **Warning:** Ensure wire strippers do not nick or cut the copper strands, as this can lead to overheating and connection failure.

Step 5: Step 5: Connect Motor to Driver

Connect the motor phase wires to the corresponding terminals on the stepper motor driver (e.g., A+, A-, B+, B-). Refer to the driver's documentation for the correct pinout and wire color scheme.

> **Warning:** Incorrect phase wiring will cause erratic motor behavior or failure to rotate. Double-check all connections before applying power.

Step 6: Step 6: Connect Power Supply

Connect the 24VDC power supply to the main power input terminals of the stepper driver. Pay close attention to polarity (+ and -); reversing polarity can permanently damage the driver.

Step 7: Step 7: Secure and Route Cables

Route all motor and power cables away from sources of electrical noise and moving parts. Use cable ties and conduit to secure wiring and provide strain relief, preventing stress on the terminal connections.

4. Post-Installation Verification

1. With power off, use a multimeter in continuity mode to verify there are no shorts between motor phases or from any phase to the motor chassis.
2. Double-check that all terminal screws on the driver are secure.
3. Temporarily disconnect the motor from the load to perform a no-load test.
4. Apply power and command a slow rotation, verifying the motor spins smoothly in the correct direction.
5. Listen for any abnormal noises like grinding or excessive humming during operation.
6. After a brief test run, check the motor temperature to ensure it is not overheating.

> **Note:** For technical support, contact your authorized service provider or visit *https://robotics.barca.group/support*.