Installation Guide: NexBot Drives STP113-002 Stepper Motor

SKU: NXB-SRV-STP113-002 | 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 appropriate sockets
- Digital multimeter
- Wire stripper and crimping tool
- Precision screwdriver set
- Mounting bolts (size appropriate for 86mm frame)
- Shaft coupling alignment tool
- Safety glasses

2. Pre-Installation Checks

1. Verify the motor SKU NXB-SRV-STP113-002 matches the order specifications.
2. Inspect the motor for any physical damage sustained during shipping.
3. Manually rotate the motor shaft to ensure it moves freely without binding.
4. Confirm the mounting surface is clean, flat, and rigid enough to handle the motor's weight (2.5 kg) and torque (4.5 Nm).
5. Verify that the drive controller's output voltage is within the motor's specified range of 24-48VDC.
6. Review the motor's wiring diagram and compare it with the drive controller's connection manual.

3. Installation Procedure

Step 1: Prepare Mounting Surface

Ensure the mounting surface is machined flat to prevent stress on the motor frame. Clean the surface of all debris, oil, and moisture before proceeding.

Step 2: Mount the Motor

Align the motor's 86 x 86 mm mounting flange with the holes on the machine frame. Insert and hand-tighten all mounting bolts before torquing them to the recommended specification in a star pattern to ensure even pressure.

> **Warning:** Do not overtighten mounting bolts, as this can distort the motor frame and cause bearing misalignment.

Step 3: Couple the Motor Shaft

Attach the load to the motor shaft using a suitable high-torque coupling. Use a precision alignment tool to ensure minimal angular and parallel misalignment, which can cause premature bearing wear and vibration.

> **Warning:** Never hammer a coupling or pulley onto the motor shaft. Use a press fit or a coupling with a clamp or keyway.

Step 4: Connect Motor Phase Windings

Connect the motor's phase wires (typically A+, A-, B+, B-) to the corresponding terminals on the stepper drive. Ensure all connections are secure and properly crimped to prevent electrical arcing and poor performance.

> **Warning:** Incorrectly wiring the motor phases can cause erratic movement, vibration, or no movement at all. Always double-check connections against the wiring diagram.

Step 5: Connect Control Signals

If applicable, connect any feedback or control signal wires, such as those for an encoder. Route these signal cables separately from the high-power motor phase wires to prevent electromagnetic interference (EMI).

Step 6: Ground the Motor

Connect the motor's ground wire to the system's chassis or earth ground. A proper ground connection is critical for safety and for minimizing electrical noise.

> **Warning:** Failure to properly ground the motor can create a serious electrical shock hazard and may lead to unreliable operation.

Step 7: Connect Power Supply

Connect the 24-48VDC power supply to the stepper drive input terminals. Verify the polarity is correct before applying power.

> **Warning:** Applying voltage outside the 24-48VDC range or with reversed polarity can permanently damage the motor driver and potentially the motor.

4. Post-Installation Verification

1. Verify all mounting bolts are torqued to the correct specification.
2. Double-check all electrical connections for security and correct polarity.
3. Ensure all wiring is properly routed and secured, away from moving parts.
4. Perform a low-speed, no-load test to confirm the motor spins in the correct direction.
5. Listen for any unusual noises or vibrations during the initial test run.
6. Check the motor casing temperature after a few minutes of operation to ensure it is not overheating.

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