Installation Guide: NexBot Robotics 711-004 Tapered Roller Bearing

SKU: NXB-GEN-711-004 | Revision: 1.0 | Category: Wear Parts & Consumables > Bearings & Seals > Joint Bearings

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

1. Required Tools & Materials

- Bearing puller set (jaw or hydraulic)
- Arbor or hydraulic press with appropriate fittings
- Induction bearing heater
- Calibrated torque wrench
- Precision feeler gauges
- Lint-free industrial wipes
- NexBot approved lithium complex grease
- Personal Protective Equipment (safety glasses, heat-resistant gloves)

2. Pre-Installation Checks

1. Verify the part number on the new bearing's packaging and etching matches NXB-GEN-711-004.
2. Inspect the new bearing for any signs of shipping damage, corrosion, or contamination. Keep it in its protective wrapping until the moment of installation.
3. Confirm that the robot arm is fully de-energized and that Lockout/Tagout (LOTO) procedures are in effect.
4. Measure the shaft and housing bore to ensure they are within the specified tolerances for a 70 mm bore and 110 mm OD bearing.
5. Thoroughly clean the shaft and housing, ensuring they are free of burrs, old lubricant, and debris.
6. Review the specific robot arm's service manual for joint disassembly and fastener torque specifications.

3. Installation Procedure

Step 1: Joint Disassembly

Following the robot's service manual, carefully disassemble the joint assembly to gain access to the bearing housing. Systematically label and organize all removed components and fasteners.

> **Warning:** Ensure any stored energy (e.g., in springs or pneumatic systems) is safely released before disassembly.

Step 2: Old Bearing Removal

Using a correctly sized bearing puller, apply steady force to remove the old bearing from the shaft or housing. Avoid using hammers or pry bars, which can damage the mounting surfaces.

Step 3: Surface Inspection and Cleaning

Once the old bearing is removed, meticulously clean and inspect the shaft seat and housing bore. Remove any scoring or burrs with a fine abrasive cloth and ensure the surfaces are perfectly clean and dry.

> **Warning:** Failure to properly prepare mounting surfaces can lead to misalignment and premature failure of the new bearing.

Step 4: Bearing Heating

If a press-fit is required, use an induction heater to warm the NXB-GEN-711-004 bearing to a uniform temperature, typically not exceeding 120°C (250°F). This expands the bearing's inner ring for easier installation onto the 70 mm shaft.

> **Warning:** Never use an open flame to heat a bearing. Overheating can alter the steel's temper and compromise its structural integrity.

Step 5: Mounting the Bearing

Wearing heat-resistant gloves, swiftly slide the heated bearing onto the shaft until it rests securely against the shoulder. If using a press, apply slow, steady pressure only to the face of the inner ring to avoid damaging the internal components.

Step 6: Cooling and Seating Verification

Allow the bearing to cool naturally to ambient temperature, which will cause it to contract and form a tight interference fit. Once cooled, verify that it is fully seated against the shoulder and there is no gap.

Step 7: Lubrication

Apply the specified industrial grease to the bearing's rollers and cage as detailed in the robot's service manual. Do not over-pack the bearing, as this can cause excessive heat during operation.

> **Warning:** Using an incorrect or incompatible grease can lead to lubrication failure and drastically reduce bearing life.

Step 8: Joint Reassembly

Carefully reassemble the joint components in the reverse order of disassembly. Ensure all seals, spacers, and O-rings are correctly positioned and in good condition.

Step 9: Fastener Torquing

Using a calibrated torque wrench, tighten all housing and joint fasteners to the precise values specified in the robot's service manual. Follow the recommended tightening pattern (e.g., star pattern) to ensure even clamping force.

> **Warning:** Improper torque values can lead to joint misalignment or component failure.

4. Post-Installation Verification

1. With the robot still powered off, manually move the joint through its range of motion to check for smoothness, binding, or excessive resistance.
2. Check for any perceptible axial or radial play in the joint; there should be none.
3. Verify all tools and materials have been removed from the work area.
4. Remove LOTO devices and restore power to the robot according to established safety protocols.
5. Perform a low-speed operational test of the affected axis, listening for any abnormal noises.
6. Execute the robot's joint calibration routine to ensure positional accuracy has been restored.

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