Installation Guide: NexBot Drives CYC123-006 Cycloidal Gearbox

SKU: NXB-GBX-CYC123-006 | Revision: 1.0 | Category: Drive Systems > Gearboxes > Cycloidal Gearboxes

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

1. Required Tools & Materials

- Calibrated torque wrench (up to 600 Nm)
- Metric Allen key set (hexagonal)
- Metric socket wrench set
- Certified lifting straps or hoist for 12.5 kg load
- Dial indicator or laser alignment tool
- High-pressure grease gun with NLGI Grade 2 grease
- Lint-free industrial cloths
- Medium-strength thread-locking compound

2. Pre-Installation Checks

1. Verify the SKU on the gearbox nameplate is NXB-GBX-CYC123-006 and matches the purchase order.
2. Inspect the gearbox housing, flanges, and shafts for any signs of damage that may have occurred during shipping.
3. Ensure the mounting surfaces on both the robot structure and the drive motor are perfectly clean, flat, and free of burrs or old gasket material.
4. Confirm the motor shaft diameter and keyway match the gearbox input bore specifications.
5. Rotate the input shaft by hand to confirm it moves smoothly without binding, grinding, or excessive resistance.
6. Verify that all required mounting hardware (bolts, washers) are of the correct grade (e.g., Class 10.9 or higher) and length.

3. Installation Procedure

Step 1: Position and Lift Gearbox

Using appropriate lifting straps, safely maneuver the 12.5 kg gearbox into position against the robot mounting flange. Ensure the lifting equipment does not interfere with the alignment process.

> **Warning:** Never place hands or fingers between the gearbox and mounting surface during positioning. Use guide pins to prevent crushing hazards.

Step 2: Initial Gearbox Mounting

Loosely thread all gearbox mounting bolts by hand to secure the unit to the mounting flange. Do not tighten at this stage; the unit should still be able to shift slightly for alignment.

Step 3: Prepare and Install Motor

Apply a thin, even coat of anti-seize compound or light grease to the motor shaft. Carefully align the motor shaft with the gearbox input coupling and slide the motor into place until its flange is flush against the gearbox adapter.

> **Warning:** Do not use a hammer or apply excessive axial force to seat the motor. This can damage sensitive internal components like bearings and cycloidal discs.

Step 4: Fasten Motor to Gearbox

Install the motor mounting bolts and tighten them in a star or crisscross pattern to ensure even clamping pressure. Torque the bolts to the motor manufacturer's specification.

Step 5: Final Gearbox Alignment and Torqueing

Perform a final alignment check if required by the robot manufacturer. Tighten the main gearbox mounting bolts in a star pattern to the specified torque value using a calibrated torque wrench. This ensures proper load distribution.

> **Warning:** Under-torquing can lead to fretting and failure, while over-torquing can damage threads or the gearbox housing. Adherence to torque specs is critical.

Step 6: Attach Output Load

Mount the robot arm linkage or other load to the output flange of the CYC123-006. Ensure the mating surface is clean and use the correct grade of fasteners, torqued to specification.

Step 7: Verify Lubrication

The CYC123-006 is shipped pre-filled with lubricant. Locate the oil level plug and verify that the lubricant is at the correct level according to the mounting orientation diagram.

> **Warning:** Operating the gearbox with insufficient or incorrect lubrication will cause rapid, catastrophic failure and will void the warranty.

4. Post-Installation Verification

1. Re-verify that all mounting fasteners for the gearbox, motor, and output load are torqued to their final specified values.
2. Manually articulate the robot axis through its full range of motion to check for any binding or interference.
3. Conduct an initial low-speed, no-load operational test. Listen carefully for any abnormal noises such as clicking, grinding, or high-pitched whining.
4. After the initial 30 minutes of operation, check the gearbox housing temperature to ensure it is within the expected range and not overheating.
5. Inspect all seals and gasketed surfaces for any signs of lubricant leakage.
6. Run the robot's positional calibration routine to ensure the new gearbox meets the required accuracy and repeatability specifications.

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