

# Installation Guide: NexBot Harmonic Gearbox HR-30

SKU: NXB-GBX-HRM-030 | Revision: 1.0 | Category: Drive Systems > Gearboxes > Harmonic Gearboxes

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

## 1. Required Tools & Materials

- Overhead crane or forklift with certified lifting straps (rated for >1000 kg)
- Calibrated high-torque wrench (up to 1000 Nm) and industrial metric socket set (M24-M36)
- Laser shaft alignment tool or precision dial indicator kit
- Digital multimeter and insulation tester
- PROFINET cable termination and testing kit
- High-tensile strength thread-locking compound
- Precision machinist level
- Non-corrosive, high-viscosity lubricating grease specified for harmonic drives

## 2. Pre-Installation Checks

1. Verify the shipment label matches the SKU NXB-GBX-HRM-030 and visually inspect the Cast Aluminum Alloy housing for cracks or damage sustained during transit.
2. Confirm the mounting surface on the machine frame is clean, flat, and free of burrs or gouges that could impede a flush fit.
3. Ensure the mating motor shaft and the load-side flange are clean and meet dimensional tolerances as specified in the integration drawings.
4. Verify the main power source is de-energized and locked out, and that the available voltage is within the 400-480VAC 3-Phase range.
5. Confirm the designated PROFINET device name and IP address for the gearbox are configured in the network controller and are not in conflict.

6. Check that all required mounting hardware (bolts, washers) are on hand and are of the correct grade and size.

## 3. Installation Procedure

### Step 1: Safe Lifting and Positioning

Using a certified lifting apparatus, carefully lift the 820.0 kg gearbox. Slowly lower the unit onto the prepared mounting surface, aligning the primary mounting holes with the machine frame.

**Warning:** Crush Hazard. The unit's weight can cause severe injury or death. Maintain a safe distance, never place body parts under a suspended load, and use a tag line to control movement.

### Step 2: Initial Mounting and Fastening

Insert high-tensile mounting bolts through the gearbox housing into the machine frame. Snug the bolts but do not fully torque them at this stage to allow for minor alignment adjustments.

### Step 3: Motor Installation and Alignment

Mount the drive motor to the gearbox input flange. Use a laser alignment tool or dial indicator to ensure the motor shaft is precisely aligned with the gearbox input before tightening motor mounting bolts.

**Warning:** Misalignment is a primary cause of premature failure. Do not proceed without verifying alignment is within the specified tolerance.

### Step 4: Final Mounting Torque Sequence

Following the alignment, torque the main gearbox mounting bolts in a star pattern to the value specified in the service manual. This ensures even clamping force and maintains alignment.

### Step 5: Output Load Connection

Attach the driven component (e.g., robot link, actuator) to the output flange of the HR-30. Apply thread-locking compound to the bolts and tighten them in a cross pattern to the specified torque.

### Step 6: Main Power Connection

With the power source confirmed to be locked out, connect the 400-480VAC 3-Phase power lines and the chassis ground to the appropriate terminals in the main connection box. Ensure the cover is properly sealed to maintain the IP67 rating.

**Warning:** High Voltage Hazard. All electrical work must be performed by a qualified electrician. Failure to de-energize the power source can result in electrocution.

### Step 7: PROFINET Network Connection

Connect the PROFINET communication cable to the designated M12 port on the gearbox. Secure the locking ring to ensure a tight, moisture-proof seal consistent with the IP67 rating.

## 4. Post-Installation Verification

1. Remove all tools from the installation area and verify all safety guards have been reinstalled.
2. Apply power and check the gearbox status indicator for a solid green light, indicating successful power-up and PROFINET communication.
3. Using the control software, query the device to confirm it is online and not reporting any initial faults.
4. Perform a 'jog' or low-speed, no-load movement test to listen for any abnormal noises like grinding, clicking, or excessive whining.
5. Run the system through its full range of motion at a reduced speed to ensure there is no binding or interference.
6. After a 15-minute break-in run, check the gearbox housing temperature to ensure it is within the normal operating range.

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