

Installation Guide: NexBot Drives MAG414-014 Magnetic Gripper

SKU: NXB-GEN-MAG414-014 | Revision: 1.0 | Category: End-of-Arm Tooling > Grippers > Magnetic Grippers

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

1. Required Tools & Materials

- Metric hex key set (M3-M8)
- Calibrated torque wrench with hex bit sockets
- Digital multimeter
- Wire stripper and crimping tool for M12 connectors
- Safety glasses
- ESD wrist strap
- Lint-free cloths
- IO-Link master configuration software

2. Pre-Installation Checks

1. Verify that the received product SKU is NXB-GEN-MAG414-014 and inspect for any shipping damage.
2. Confirm the robot's end-of-arm mounting flange is compatible with the gripper's bolt pattern.
3. Ensure the robot's payload capacity can support the gripper's weight of 1.8 kg plus the maximum workpiece weight.
4. Verify a stable, de-energized 24VDC power source is available at the installation point.
5. Confirm an available port on a compatible IO-Link master device is within cable reach.
6. Download the correct IODD (IO Device Description) file for the MAG414-014 from the NexBot Robotics support website.

3. Installation Procedure

Step 1: Step 1: De-energize and Lockout Robot Cell

Before beginning installation, completely power down the robot and its controller. Follow all site-specific lockout/tagout (LOTO) procedures to prevent accidental activation.

Warning: Failure to de-energize the system can result in severe injury or death from electric shock or unexpected robot motion.

Step 2: Step 2: Prepare Mounting Flange

Clean the robot's end-of-arm mounting flange and the mounting surface of the MAG414-014 gripper. Ensure both surfaces are free of oil, debris, and corrosion to guarantee a flush and secure fit.

Step 3: Step 3: Mechanically Mount the Gripper

Carefully align the gripper's mounting holes with the robot flange. Insert the appropriate mounting bolts and hand-tighten them in a star pattern to ensure even seating.

Warning: The gripper weighs 1.8 kg. Use proper lifting techniques or a support stand to avoid dropping the unit during mounting.

Step 4: Step 4: Torque Mounting Bolts

Using a calibrated torque wrench, tighten the mounting bolts to the specified torque of 14 Nm. Follow a star or cross pattern to ensure uniform pressure across the mounting surface.

Warning: Overtightening can damage the gripper housing, while undertightening can lead to detachment during operation.

Step 5: Step 5: Connect Electrical and Communication Cables

Connect the 4-pin M12 power connector to the 24VDC supply. Connect the IO-Link M12 communication cable from the gripper to the designated port on the IO-Link master. Ensure both connectors are fully seated and the locking rings are tightened to maintain the IP67 rating.

Step 6: Step 6: Cable Management

Route the power and IO-Link cables along the robot arm using the provided cable management system. Leave sufficient slack to allow for full articulation of all robot axes without straining the cables or connectors.

Warning: Improper cable routing can lead to cable damage, intermittent connections, and premature failure.

Step 7: Step 7: Power On and System Integration

Remove all LOTO devices and power on the robot controller and IO-Link master. Using the configuration software, load the IODD file for the MAG414-014 to establish communication and configure basic parameters.

Step 8: Step 8: Configure Tool Center Point (TCP)

In the robot controller software, define a new Tool Center Point (TCP). Use the provided dimensions (115 x 115 x 75 mm) and weight (1.8 kg) to accurately configure the tool's properties for precise robot motion.

4. Post-Installation Verification

1. Verify that the status LED on the MAG414-014 gripper is illuminated, indicating power is present.
2. Confirm that the IO-Link master successfully recognizes the gripper and reports an 'Operational' status.
3. Check the robot controller for any new fault codes related to the tool or IO-Link communication.
4. In a manual or test mode, send commands to activate and deactivate the magnet, confirming correct physical response.

5. Execute a slow-speed robot motion program to verify the TCP is configured correctly and that cables do not bind or snag.
6. Test the integrated part detection sensor by presenting a ferromagnetic workpiece and verifying the feedback signal in the IO-Link process data.

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