

Installation Guide: NexBot Vision 643-003 Linear Rail Track 3m

SKU: NXB-GEN-643-003 | Revision: 1.0 | Category: Safety Systems > Robot Mounts & Bases > Linear Rails & Tracks

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

1. Required Tools & Materials

- Certified lifting equipment (overhead crane or forklift) rated for at least 1000 kg
- Precision laser level or machinist's level
- Industrial torque wrench with sockets for M20 anchor bolts
- Concrete drill and M20 epoxy anchor bolt kit
- Digital multimeter with high voltage probes
- EtherCAT network cable tester
- Standard industrial mechanic's tool set (wrenches, hex keys)
- Lockout/Tagout (LOTO) kit for 480VAC circuits

2. Pre-Installation Checks

1. Verify the concrete foundation is cured, level, and engineered to support a dynamic load exceeding the 450 kg static weight of the track.
2. Ensure the installation area has clear, unobstructed space matching the product dimensions (3250 x 550 mm), plus required service access clearance.
3. Confirm a dedicated, LOTO-capable 480VAC, 3-phase power source is available within 5 meters of the planned motor location.
4. Check that the robot base mounting pattern is compatible with the carriage plate on the NexBot Vision 643-003.
5. Inspect the received crate and product for any signs of shipping damage before unpacking.
6. Verify the EtherCAT master controller is powered and accessible for network configuration.

3. Installation Procedure

Step 1: Site Preparation and Layout

Mark the final position of the NexBot Vision 643-003 Linear Rail Track on the floor using engineering drawings. Drill holes for the M20 concrete anchor bolts according to the specified mounting pattern. Clean all debris from the holes and the mounting surface.

Step 2: Lifting and Positioning

Carefully unpack the 450 kg rail assembly. Using certified lifting equipment and the designated lift points on the structural steel frame, move the track into its final position, aligning it over the pre-drilled anchor holes.

Warning: CRUSH HAZARD: The track weighs 450 kg. Use only certified lifting equipment and trained personnel. Keep all personnel clear from under the suspended load.

Step 3: Leveling and Anchoring

Use a precision level to adjust the leveling feet until the entire 3-meter V-rail is level to within 0.1 mm per meter. Once level, install and tighten the M20 anchor bolts to the specified torque value using a calibrated torque wrench. Do not fully torque until all bolts are seated.

Warning: Improper leveling can cause premature wear, binding, and positioning errors. Do not operate the track until it is properly leveled and securely anchored.

Step 4: Electrical Power Connection

Ensure the 480VAC power source is locked out and tagged out. Route power conduit to the track's main junction box and connect the phase, neutral, and ground wires according to the provided wiring diagram. Verify all connections are secure before closing the junction box.

Warning: HIGH VOLTAGE: Risk of electric shock or arc flash. All electrical work must be performed by a qualified electrician in compliance with local codes.

Step 5: EtherCAT Network Connection

Connect the EtherCAT IN port on the track's controller to the main robot controller or the previous node in the network chain. If this is the last device, leave the EtherCAT OUT port empty. Ensure cables are properly seated and secured.

Step 6: Robot Mounting

Lift the compatible robot and carefully place it onto the track's moving carriage. Align the mounting holes and fasten the robot using the correct grade and size of bolts, torqued to the robot manufacturer's specifications. Do not exceed the track's maximum payload of 300 kg.

Warning: An improperly secured robot can detach during operation, causing catastrophic failure and risk of injury. Double-check all mounting hardware.

Step 7: Cable Management Installation

Route the robot's power and data cables through the track's integrated cable carrier system. Ensure there is sufficient slack to allow for the full 3000 mm of travel without straining or pinching any cables. Secure cables within the carrier using the provided clips.

4. Post-Installation Verification

1. Re-verify the track is perfectly level after anchoring and robot installation.
2. Remove all tools and debris from the track and surrounding work area.
3. With the robot controller, verify that the EtherCAT node for the track is detected and communicating properly.
4. Perform a power-up sequence and check for any fault indicators on the track's drive controller.
5. Manually jog the track at a very low speed (less than 5%) over its entire 3000 mm travel distance, listening for any unusual noises or signs of binding.
6. Verify the functionality of the physical end-of-travel limit switches and software travel limits.

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