

# Installation Guide: NexBot Encoder Cable for R-20 J3

SKU: NXB-CBL-ENC-R20-J3 | Revision: 1.0 | Category: Cables & Connectors > Signal Cables > Encoder Cables

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

## 1. Required Tools & Materials

- Torque driver with M-series circular connector bits
- Insulated flat-head screwdriver
- Digital Multimeter (DMM)
- Cable tie cutter or snips
- Lint-free wipes and isopropyl alcohol
- Anti-static wrist strap
- Personal Protective Equipment (Safety glasses, gloves)
- Cable routing tool/fish tape

## 2. Pre-Installation Checks

1. Verify the robot controller and all associated machinery are powered down and locked-out/tagged-out (LOTO).
2. Confirm the received part number NXB-CBL-ENC-R20-J3 matches the work order and is intended for the R-20 robot's J3 axis.
3. Visually inspect the new cable for any shipping damage, such as crushed jackets, bent pins, or cracked connector housings.
4. Ensure the connection points on the J3 axis motor and the robot controller are clean, dry, and free of debris.
5. Wear an anti-static wrist strap connected to a proper grounding point before handling the cable.
6. Review the robot's specific maintenance manual for procedures related to accessing the J3 axis and controller cabinet connections.

## 3. Installation Procedure

### Step 1: Power Down and Lockout

Ensure the robot system is completely de-energized using approved Lockout/Tagout (LOTO) procedures. Verify zero energy state at the controller cabinet before proceeding.

**Warning:** Failure to de-energize the system can result in severe electrical shock, equipment damage, or unexpected robot motion.

### Step 2: Disconnect Old Cable from J3 Motor

Carefully unscrew the circular connector from the J3 axis motor encoder port. Do not pull on the cable itself; grip the anodized aluminum connector housing firmly.

**Warning:** Pulling on the cable can damage internal wiring and the connector seal, compromising the IP67 rating.

### Step 3: Disconnect Old Cable from Controller

Open the robot controller cabinet and locate the corresponding J3 axis encoder connection. Disconnect the cable, noting the port designation for the new installation.

### Step 4: Remove Old Cable

Carefully remove the old cable from its routing path along the robot arm and back to the controller. Cut any cable ties and free it from conduits or cable carriers, being careful not to damage other system cables.

### Step 5: Route New NXB-CBL-ENC-R20-J3 Cable

Route the new encoder cable along the same path as the old one, starting from the controller cabinet towards the J3 motor. Ensure the cable is not twisted, kinked, or pulled tightly around sharp corners.

**Warning:** Exceeding the minimum bend radius can cause internal conductor damage and lead to signal degradation or failure.

### Step 6: Connect to Controller

Connect the appropriate end of the NXB-CBL-ENC-R20-J3 to the correct port inside the robot controller cabinet. Ensure the connector is fully seated and its locking mechanism is engaged.

### Step 7: Connect to J3 Motor

Align the keyway on the cable's circular connector with the J3 motor's encoder port. Push to seat the connector and then hand-tighten the anodized aluminum locking ring until snug. Use a torque driver to tighten to the robot manufacturer's specification.

**Warning:** Over-tightening can damage the connector threads, while under-tightening can compromise the IP67 seal and lead to intermittent connections.

### Step 8: Secure Cable Routing

Secure the cable along the robot arm using new, appropriate cable ties or clamps. Leave sufficient slack at moving joints to prevent strain during full robot articulation.

## 4. Post-Installation Verification

1. Double-check that both connectors are fully seated and secured.
2. Verify the cable is properly routed and secured, with no risk of pinching, abrasion, or excessive flexing.
3. Remove all tools and materials from the work area.
4. Follow all safety procedures to remove LOTO devices and re-energize the robot system.
5. In the robot controller's teach pendant, check for any new encoder-related alarms for the J3 axis.

6. Perform a slow, manual jog of the J3 axis through its full range of motion to confirm smooth operation and no new faults.

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