Installation Guide: NexBot Robotics 441-004 Rotary Deburring Tool 15,000 RPM

SKU: NXB-GEN-441-004 | Revision: 1.0 | Category: End-of-Arm Tooling > Deburring & Finishing Tools > Rotary Deburring

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

1. Required Tools & Materials

- Torque wrench with metric sockets
- Set of metric hex keys (2mm - 10mm)
- Spanner wrenches (included with tool)
- Pneumatic line cutter
- Thread sealant for pneumatic fittings
- Calibrated air pressure gauge
- M12 4-pin A-coded sensor cable
- Robot-specific mounting bolts and adapter plate (if required)

2. Pre-Installation Checks

1. Verify the robot's payload capacity exceeds the tool's weight of 4.2 kg plus any bracketing.
2. Inspect the NexBot 441-004 tool for any signs of damage that may have occurred during shipping.
3. Confirm the compressed air supply is clean, dry (pressure dew point < 3°C), and regulated.
4. Ensure a 24VDC power source and a compatible IO-Link master port are available on the robot arm.
5. Check that the robot's end-of-arm flange mounting pattern (e.g., ISO 9409-1) is compatible with the tool.
6. Confirm possession of the correct IODD file for the NXB-GEN-441-004 for IO-Link configuration.

3. Installation Procedure

Step 1: Power Down and Lockout Robot

Ensure the robot controller and all related equipment are fully powered down. Follow standard lockout/tagout (LOTO) procedures to de-energize all electrical and pneumatic sources before proceeding.

> **Warning:** Failure to de-energize the robot can result in unexpected motion, leading to serious injury or death.

Step 2: Mechanical Mounting

Securely fasten the 441-004 rotary tool to the robot's end-of-arm flange using the appropriate high-grade bolts. Ensure the tool is correctly oriented for the intended application path.

> **Warning:** Use a torque wrench to tighten mounting bolts to the robot manufacturer's specified torque values to prevent loosening during operation.

Step 3: Pneumatic Connection

Connect a regulated, filtered air supply line to the tool's main air inlet port. Use appropriate thread sealant on fittings to prevent leaks. Route the air line to allow for full robot articulation without binding or kinking.

Step 4: Electrical and Control Connection

Connect the tool's M12 connector to the robot's IO-Link master port using a shielded M12 cable. The tool receives its 24VDC power and communicates control signals over this single connection.

> **Warning:** Ensure the cable connector is fully seated and tightened to maintain the IP54 rating.

Step 5: Install Deburring Bit

Insert the shank of the desired deburring bit into the tool's collet. Use the provided spanner wrenches to tighten the collet nut until the bit is secure. Do not use power tools to tighten the collet.

> **Warning:** Over-tightening the collet can damage it, while under-tightening can cause the bit to slip or be ejected during high-speed operation.

Step 6: Configure IO-Link Communication

Power on the robot controller. Using your control software, upload the IODD file for the NXB-GEN-441-004 to your IO-Link master. Configure the port to establish communication with the tool.

Step 7: Set Initial Parameters

Through the IO-Link interface, set the initial operating parameters, such as the target RPM and the active compliance force settings. Start with conservative values for the initial test run.

Step 8: System Power-Up and Test

Clear all personnel from the robot's work envelope. Slowly apply air pressure to the tool and command it to spin at a low RPM via the controller. Verify smooth rotation without excessive vibration or noise.

> **Warning:** Keep personnel clear of the robot cell during the initial power-up test.

4. Post-Installation Verification

1. Verify all mounting bolts are torqued to the correct specification.
2. Perform an air leak check on all pneumatic fittings using a leak detection solution.
3. Confirm a stable IO-Link connection is established and diagnostic data is being received by the controller.

4. Run the tool unloaded through its full RPM range to check for any unusual vibrations or sounds.
5. Calibrate the Tool Center Point (TCP) in the robot software to reflect the tip of the installed deburring bit.
6. Execute the robot's deburring path at a slow speed without contacting a workpiece to verify clearances and motion.

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