Installation Guide: NexBot Drives MIG431-006 Mig/Mag Welding Torch

SKU: NXB-GEN-MIG431-006 | Revision: 1.0 | Category: End-of-Arm Tooling > Welding Torches > MIG/MAG Torches

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

1. Required Tools & Materials

- Torque wrench (for robot flange bolts)
- Metric hex key set (4mm - 10mm)
- Metric socket set with extension
- Adjustable wrench for gas fittings
- Wire cutters and strippers
- Digital multimeter
- Compressed air source for cleaning
- Personal Protective Equipment (Safety glasses, gloves)

2. Pre-Installation Checks

1. Verify the robot's end-of-arm-tooling (EOAT) flange pattern matches the MIG431-006 mounting bracket.
2. Confirm the robot's payload capacity exceeds the torch's weight of 5.5 kg, including the cable assembly.
3. Inspect the NexBot Drives MIG431-006 torch and all components for any signs of damage sustained during shipping.
4. Ensure the welding power source, wire feeder, and robot controller are powered down and locked-out/tagged-out.
5. Confirm the work area is clean, dry, and free of flammable materials before beginning installation.
6. Lay out all parts and verify against the packing list: torch body, cable assembly, mounting hardware, and consumables starter kit.

3. Installation Procedure

Step 1: Attach Mounting Bracket to Robot Flange

Securely fasten the provided mounting bracket to the robot's EOAT flange. Use the specified bolts and tighten them in a star pattern to the torque values recommended by the robot manufacturer.

> **Warning:** Uneven or incorrect torque can lead to vibration and inaccurate welds. Always use a calibrated torque wrench.

Step 2: Mount the MIG431-006 Torch

Carefully lift the 5.5 kg torch assembly and attach it to the mounting bracket. Ensure the torch, with its 450 mm length, is oriented correctly for the programmed weld paths and has clearance throughout the robot's range of motion.

Step 3: Route and Secure the Cable Assembly

Route the main power and control cable along the robot arm, utilizing the robot's integrated cable management system if available. Secure the cable with non-abrasive clips, leaving enough slack for full articulation without pinching or stretching the cable.

> **Warning:** Improper cable routing is a primary cause of premature failure. Avoid sharp bends and contact with abrasive surfaces.

Step 4: Connect Control and Power Cables

Connect the multi-pin control connector to the robot's tooling interface port. Connect the main power cable lug to the corresponding terminal on the wire feeder or power source, ensuring a tight and clean connection.

Step 5: Connect Shielding Gas Hose

Attach the shielding gas hose from the gas supply line to the brass fitting at the base of the torch cable assembly. Tighten securely with an adjustable wrench to prevent leaks.

> **Warning:** Gas leaks will lead to poor weld quality (porosity) and wasted shielding gas.

Step 6: Install Wire Liner and Consumables

Insert the correct size wire liner through the cable assembly from the wire feeder end until it is fully seated in the torch. Install the appropriate gas diffuser, contact tip, and nozzle for the welding wire and application.

Step 7: Final System Power-Up

Once all physical connections are verified, remove all lock-out/tag-out devices. Power on the robot controller and the welding power source in the sequence specified by the system integrator.

> **Warning:** Stand clear of the robot during the initial power-up sequence.

4. Post-Installation Verification

1. Perform a leak check on the gas fitting using a soap and water solution.
2. Jog the robot slowly through its entire intended range of motion to verify the cable assembly does not bind, stretch, or snag.
3. Calibrate the Tool Center Point (TCP) of the MIG431-006 to ensure weld placement accuracy.
4. Initiate a wire feed test (inch wire) to confirm smooth delivery through the new liner and contact tip.
5. Execute a test weld on scrap material to confirm proper operation and fine-tune weld parameters.
6. Verify that the robot controller can successfully start and stop the welding arc and control all parameters.

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