Wicocc Wic3-AL166-MT5-137

Wicocc CNC THC Cutting Torch Height Controller User Manual

Model: Wic3-AL166-MT5-137

1. Introduction

This manual provides essential information for the safe and efficient operation of your Wicocc CNC Torch Height Controller (THC), model Wic3-AL166-MT5-137. This device is designed to automatically adjust the height of a plasma cutting torch during CNC operations, ensuring consistent cut quality and extending consumable life. Please read this manual thoroughly before installation and use.

2. Safety Information

WARNING: Failure to follow these safety instructions may result in electric shock, fire, serious injury, or death.

- Always disconnect power to the CNC machine and plasma cutter before installing, servicing, or cleaning the THC unit.
- Ensure all electrical connections are secure and properly insulated to prevent short circuits.
- This device should only be installed and operated by qualified personnel familiar with CNC machinery and plasma cutting systems.
- Do not operate the THC in wet or damp conditions.
- Keep hands and tools clear of moving parts during operation.
- Wear appropriate personal protective equipment (PPE) when working with plasma cutting equipment.

3. Product Overview

The Wicocc THC is a robust unit designed for precise torch height control. It typically consists of a motorized lifter mechanism, control electronics, and a torch holder.

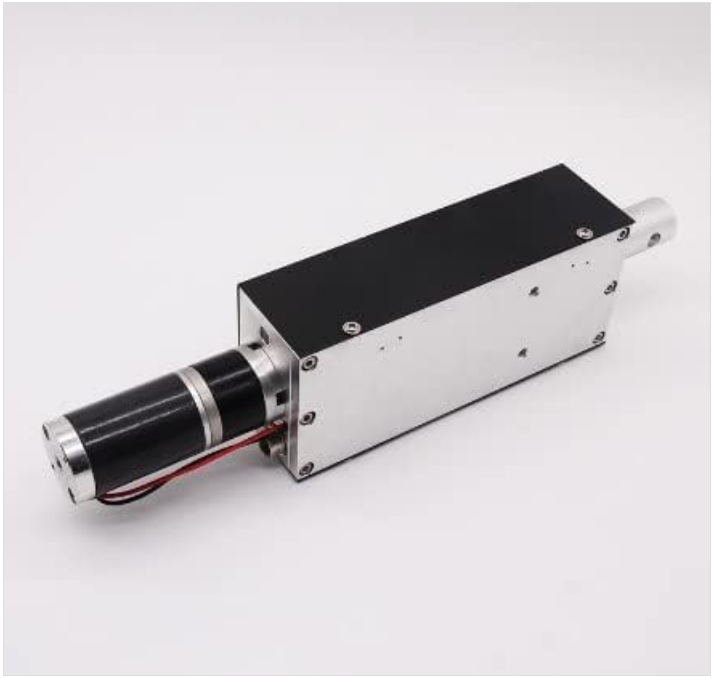

Figure 3.1: Side view of the Wicocc CNC THC Cutting Torch Height Controller. This image displays the main body of the controller, including the motor and the linear actuator mechanism, providing a general perspective of the unit's compact design.

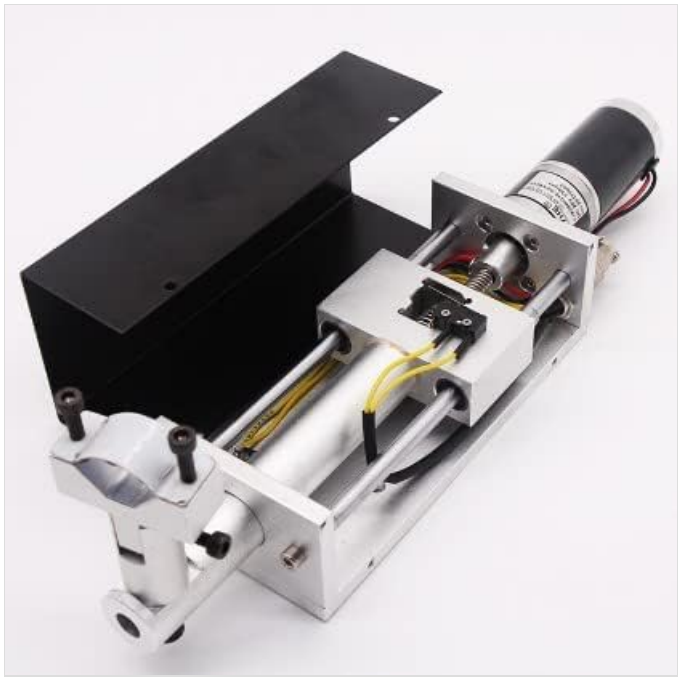

Figure 3.2: Wicocc CNC THC Cutting Torch Height Controller with mounting bracket. This view highlights the internal components and the included torch holder, demonstrating how the unit integrates with a plasma torch and attaches to a CNC gantry.

4. Setup

Proper installation is crucial for optimal performance. Follow these general steps for setting up your THC unit:

1. **Mounting the Lifter:** Securely attach the THC lifter mechanism to your CNC gantry. Ensure it is rigid and aligned vertically. Use the provided mounting bracket if applicable.
2. **Installing the Torch:** Insert your plasma torch into the THC's torch holder. Ensure the torch is firmly clamped and its tip is centered.
3. **Electrical Connections:**

- Connect the THC power input to a suitable DC power supply (e.g., 24V DC, as indicated by similar models).
- Connect the THC control signals (UP, DOWN, ARC OK, etc.) to your CNC controller's input/output ports. Refer to your CNC controller's manual for specific wiring diagrams.
- Connect the plasma voltage divider output from your plasma cutter to the THC's voltage input. This provides the feedback signal for height adjustment.

4. **Software Configuration:** Configure your CNC control software (e.g., Mach3, LinuxCNC, etc.) to enable THC functionality. This typically involves setting up input pins for ARC OK, UP, and DOWN signals, and configuring THC parameters like delay times and sensitivity.
5. **Initial Testing:** Before cutting, perform dry runs to verify that the THC responds correctly to arc voltage changes and moves the torch up and down as expected.

5. Operating Instructions

Once installed and configured, the THC operates largely automatically during a plasma cutting job. Here are the general steps for operation:

1. **Power On:** Ensure all components (CNC machine, plasma cutter, THC) are powered on.
2. **Load G-Code:** Load your cutting G-code program into the CNC control software.
3. **Set Initial Height:** Manually set the initial pierce height and cutting height in your G-code or CNC software. The THC will take over after the arc is established.
4. **Start Cutting:** Initiate the cutting program. The CNC controller will send a signal to the plasma cutter to fire the arc.
5. **THC Engagement:** Once the plasma arc is stable and the "ARC OK" signal is received by the THC, it will begin monitoring the arc voltage.
6. **Automatic Height Adjustment:** The THC will continuously adjust the torch height to maintain a constant arc voltage, thereby keeping a consistent distance between the torch and the material.
7. **Monitoring:** Monitor the cutting process. If any issues arise, stop the machine immediately.

Note: Always refer to your plasma cutter and CNC controller manuals for specific operating parameters and safety procedures.

6. Maintenance

Regular maintenance ensures the longevity and reliable performance of your THC unit.

- **Cleaning:** Periodically clean the exterior of the THC unit to remove dust, metal particles, and debris. Use a soft, dry cloth. Avoid using solvents that may damage the housing.
- **Inspection:** Regularly inspect all cables and connections for signs of wear, damage, or loose contacts. Ensure the torch holder is secure.
- **Moving Parts:** Check the linear guides and lead screw for smooth operation. Apply a small amount of appropriate lubricant if necessary, following manufacturer recommendations for linear motion components.
- **Torch Holder:** Ensure the torch holder mechanism moves freely and without binding.
- **Power Off:** Always disconnect power before performing any maintenance or inspection.

7. Troubleshooting

This section addresses common issues you might encounter with your THC unit.

Problem	Possible Cause	Solution
THC not responding / Torch not moving.	No power to THC; Incorrect wiring; ARC OK signal not detected; Software configuration error.	Check power supply and connections. Verify all wiring according to your CNC controller manual. Ensure ARC OK signal is active during cutting. Review CNC software THC settings.
Torch moves erratically or too slowly/quickly.	Incorrect THC sensitivity/speed settings in software; Mechanical binding; Voltage divider ratio incorrect.	Adjust THC parameters in your CNC software. Inspect linear guides and lead screw for obstructions or damage. Verify the voltage divider ratio matches your plasma cutter's output.
Inconsistent cut height.	Poor ground connection; Worn plasma consumables; Incorrect cutting parameters; THC not calibrated.	Ensure a good ground connection to the workpiece. Replace worn plasma torch consumables. Verify plasma cutting parameters (amperage, air pressure, speed). Calibrate THC if your system allows.
THC motor overheating.	Excessive load; Continuous operation without rest; Mechanical friction.	Reduce load if possible. Allow the unit to cool down. Inspect for mechanical binding and lubricate if needed.

8. Specifications

Key specifications for the Wicocc CNC THC Cutting Torch Height Controller, Model Wic3-AL166-MT5-137:

Feature	Detail
Manufacturer	Wicocc
Model Number	Wic3-AL166-MT5-137
Part Number	Wic3-AL166-MT5-137
Material	Other (typically aluminum alloy and steel for mechanical components)
ASIN	B0B49T528G
First Available Date	June 16, 2022
Typical Input Voltage	DC24V (based on product title reference to JYKB-100-DC24V-T3)

9. Warranty and Support

Specific warranty details for the Wicocc CNC THC Cutting Torch Height Controller are not provided in this manual. For warranty information, technical support, or service inquiries, please contact the manufacturer, Wicocc, or your authorized dealer directly. Keep your purchase receipt as proof of purchase.