

# **CATH-TECH™ Equipment Division of Cathodic Technology Limited**

10 McEwan Drive, Bolton, Ontario, Canada L7E 1H1  
Phone 1 800 368-9907 or (905) 857-1050 Fax (905) 857-3499  
Web Site [www.corrosion-rust.com](http://www.corrosion-rust.com) Email [ctl@corrosion-rust.com](mailto:ctl@corrosion-rust.com)

## **OPERATING AND MAINTENANCE INSTRUCTIONS ELECTRONIC CONTROL RECTIFIERS**



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## **INTRODUCTION:**

Your CATH-TECH rectifier was fully inspected and tested and in top condition when it left the factory. Damage during shipping, handling or installation are rare, report all shipping damage to the carrier immediately.

## **INSPECTION AND CHECKS:**

- Visually inspect the rectifier upon receipt; report all damage to the carrier immediately. Do not operate the rectifier if there is evidence of shipping damage until repairs have been undertaken.
- Check the AC supply to the rectifier; the supplied AC must match the AC supply specified on the manufacturer's label.
- If the unit is equipped with analogue meters, zero the meters before activating the rectifier.
- Make sure all connections in the rectifier are tight.
- Oil immersed units should be filled to the level indicated with clean transformer oil prior to operating the unit.
- Verify all field wiring to the unit; ensure that the DC positive output is connected to the anode system.

## **SITE SELECTION CONSIDERATIONS:**

The following should be considered for site selection:

- The proximity of the structure to be protected.
- The proximity of the cathodic protection system ground bed.
- The proximity of AC power.
- Avoid congested areas and areas of high ambient temperature.
- Avoid areas of direct sunlight or use sun shields in tropical areas.
- Avoid areas where the general public will have access to the rectifier.
- Allow for access to the rectifier and room for the door to open fully.

## **MOUNTING:**

- The rectifier must be mounted securely with a minimum of two 5/16ths “ lag bolts, anchor bolts, or machine bolts to a pole, wall or rack.
- The rectifier should be mounted level and straight to provide proper door opening.
- When mounting to a wall or structure, check for concealed wiring or pipes.
- If supplied with legs, the legs should be securely bolted to a concrete pad or plinth.
- If oil immersed mount on a concrete pad or steel pipe frame.

## **WIRING:**

- All wiring must comply with national and local electrical codes.
- Provide a fused disconnect means within 2 metres of the rectifier, which disconnects the AC power to the rectifier to allow servicing.
- Wire sizes must comply with national and local electrical codes.
- Wires should enter the rectifier through the knockouts provided in the bottom of the rectifier cabinet.
- The rectifier cabinet must be grounded for lightning and surge protection. Connect a bare copper ground wire to the ground lug provided on the outside of the rectifier and a minimum of two driven ground rods 3 metres long and spaced a minimum of 6 metres apart. Failure to provide adequate grounding could void the warranty.
- The AC power must be connect to the terminal block provided and marked AC power. The rectifier must be supplied with the correct voltage and number of phases as indicated on the manufacturer's label.
- On 3 phase units the rectifier must be wired for clockwise rotation. If misfiring or sudden surge in output occurs reverse any two AC supply wires.
- The structure, to be protected, must be connected to the terminal marked Negative.
- The positive terminal must be connected to the anode system.

**WARNING:**

- The inside of the rectifier cabinet contains live parts with hazardous voltages; only authorised-trained personnel should access the interior of the rectifier cabinet.
- Do not attempt to service the rectifier unless the AC power is disconnected and locked out.
- Before activating the rectifier for the first time, check the tightness of all bolts and nuts.
- Verify the connection of all wiring and cabinet ground.
- Set the ELECTRONIC control to 0 before applying the AC power for the first time; slowly adjust the output by turning the ELECTRONIC control knob clockwise until the desired output is reached.
- Do not exceed the rated voltage or current operation at voltage or currents above the rated value as it will void the warranty.
- If the overload protection trips or the fuses blow, check for evidence of short circuits, component failure and verify output settings.
- The DC positive terminal of the rectifier must be connected to the anode system.
- Oil immersed rectifiers must have the oil level maintained at the specified level to provide proper cooling of the components, and to meet the requirements of Class 1, Group D hazardous areas.
- Keep the operating Manual or a copy in the rectifier at all times.
- Keep the rectifier cabinet locked at all times.

**ACTIVATING YOUR CATH-TECH ELECTRONIC CONTROL RECTIFIER:**

- Check all wiring and ensure that the correct AC voltage is supplied to your CATH-TECH rectifier.
- Set ELECTRONIC control to “0” lowest setting.
- Turn AC power ON.

- Observe output voltage and current.
- Rotate the ELECTRONIC control knob clockwise until desired output is reached. If the output suddenly surges to maximum output check the AC supply for clockwise rotation. If counter clockwise reverse any two wires on the AC supply.

## **MAINTENANCE OF THE RECTIFIER:**

- The voltage, current and ambient temperature rating of the rectifier should never be exceeded.
- Clean the rectifier on a regular basis. Dust and dirt build-up on the heat sinks and transformer can lead to overheating and failure. Ensure that the ventilation screens are not obstructed.
- Check tightness of all electrical connections.
- Replace any damaged lightning arrestors.
- For oil immersed units, ensure that the oil level is correct and that the oil is clean and not contaminated.
- Touch up any damaged paint. Colour matching touch up paint is available from Cathodic Technology Limited.

## **CURRENT AND VOLTAGE OUTPUT:**

- The output voltage and current of ELECTRONIC controlled rectifiers will vary with changes in the resistance of the soil; variance is to be expected with seasonal changes in the moisture content of the soil.
- Ensure that the voltage and current output are less than the maximum rated output of the rectifier.

## **TROUBLESHOOTING:**

A schematic diagram is enclosed with this operating manual. Only trained personnel should attempt to troubleshoot a rectifier; hazardous voltages may be encountered in the rectifier.

**SYMPTOM:****POSSIBLE FAULT:**

OUTPUT SUDDENLY SURGES  
WHEN OUTPUT ADJUSTMENT  
IS INCREASED FROM "0"

AC supply is wired for counter  
Clockwise supply. Reverse any  
Two AC supply wires at terminal  
block

NO DC OUTPUT VOLTAGE OR  
CURRENT

Check the AC supply.  
Check the AC breaker.  
Check DC fuse or breaker.  
Lightning damage to unit.

DC VOLTAGE BUT NO DC CURRENT  
OUTPUT

Check output fuse or circuit breaker.  
Broken anode or structure wire.  
Loose connection  
Broken or damaged ammeter.

NO DC OUTPUT VOLTAGE

AC power OFF  
Broken or damaged voltmeter.

Output fuse or circuit breaker

MAXIMUM DC VOLTAGE CANNOT  
BE ACHIEVED

Check AC voltage. Does it correspond to  
name plate rating?

MAXIMUM DC CURRENT CANNOT  
BE ACHIEVED

Check circuit resistance.

**LIMITED WARRANTY**

This rectifier designed and manufactured by CATH-TECH™ is warranted against defects in design, workmanship or materials for one year from date of installation or 18 months from date of purchase, whichever comes first. The obligation of CATH-TECH™ is limited to the adjustment, repair, or replacement at its factory of the equipment, or part thereof, which is found to be defective upon examination after being returned transportation charges prepaid. CATH-TECH™ warrants this product and its operation only. There is no warranty or liability implied or expressed for the use or miss-use of this equipment. This warranty expressly excludes damage due to acts of God, civil insurrection, war or damage due to lightning.