



OPERATION & MAINTENANCE MANUAL

Cathodic Protection Rectifier

OPERATING INSTRUCTIONS

MATCOR Rectifier

NOTICE: You have purchased the finest rectifier available. In order to have this unit function as designed — **READ THIS MANUAL BEFORE ENERGIZING THE RECTIFIER!** Keep the manual with the rectifier and order only MATCOR replacement parts.

I. SAFETY PRECAUTIONS - Observe at all times!

- A. Beware of the AC Line Voltage within the rectifier cabinet! Turn the AC power "OFF" outside before working inside.
- B. Never exceed the AC or DC ratings.
- C. Correct any overload that activates a circuit breaker or fuse. Do not bypass these protective devices.
- D. To prevent severe corrosion, ensure that the rectifier's positive terminal is connected to the anode and the negative terminal is connected to the structure to be protected (i.e. cathode). This can be confirmed by checking the structure's potential after energizing the rectifier. Be sure that it shifts toward the NEGATIVE when the rectifier is turned ON.

II. PRE-OPERATING PRECAUTIONS

- A. Look for and repair shipping or installation damages: after uncrating unit, check all terminals for loose connections due to handling from shipping. Carefully inspect unit for any possible damage resulting from shipping.
- B. Be certain the rectifier is connected to the properly rated AC line voltage, phase and frequency. If the rectifier will accept more than one AC line voltage, verify the correct setting. **Connect the AC line supply through the AC circuit breaker.**
- C. Set the DC meters to zero. Digital meters are pre-set at the factory.
- D. Connect the POSITIVE rectifier output terminal to the anode bed or anodes. Connect the NEGATIVE rectifier output terminal to the metallic structure receiving cathodic protection.
- E. Make certain that all electrical connections are **tight**.
- F. For oil-immersed rectifiers only:
 1. Make certain the enclosure is clean inside.
 2. Fill it to the recommended level with electrical insulating oils complying to ANSI/ASTM D-3487 and NEMA TR-PB-1975.

III. INITIAL TURN-ON PROCEDURES

- A. For three-phase rectifiers only, set the adjustment taps for all three phases identically BEFORE energizing the rectifier.
- B. Turn off the unit's circuit breaker prior to making any adjustments to the tap settings.
- C. Never exceed the rectifier input or output ratings.
- D. PROCEED AS FOLLOWS:
 1. Place the adjusting taps at their lowest setting (Coarse tap A, Fine tap 1).
 2. With the rectifier's circuit breaker "OFF" switch the external AC power to "ON".
 3. Energize the rectifier by switching the rectifier circuit breaker to "ON" and observe the DC output volts and amperes.
 4. Increase the tap settings in small increments until the desired DC output is achieved.

IV. MAINTENANCE

- A. Keep the rectifier free of excessive dust, insect and bird nests, spider webs, etc.
- B. Keep ventilation openings clear.
- C. Periodically check the electrical connections.
- D. Visually inspect the oil in oil-immersed rectifiers. Replace dirty looking oil. (A pale amber tint is normal.) Check for water build-up in the bottom of oil-immersed rectifiers; drain out accumulated water. Dispose of contaminated oil in accordance with applicable environmental safeguards.
- E. Maintain a permanent record of DC volts, DC amperes, AC line volts and tap settings.

V. TROUBLE SHOOTING

Refer to the rectifier circuit diagram.

SYMPTOM	REMEDY
No DC current and no DC voltage output.	Check AC overload protection for blown fuses or tripped circuit breakers. Check AC power supply.
No DC current but DC voltage is present.	Check DC ammeter. Check DC connections and external DC circuit for continuity.
DC current reading but no DC voltage.	Check DC voltmeter.
Maximum DC current cannot be obtained at maximum DC voltage.	Check load resistance of external DC circuit. Check shunt and ammeter.
Maximum DC voltage cannot be obtained.	Check AC line voltage. Check voltage adjustment taps for maximum setting. Check accuracy of DC voltmeter.

TWO-YEAR GUARANTEE

Each and every cathodic protection rectifier of MATCOR, Inc. design is guaranteed against defects in design, workmanship or material for a period of two full years from the date of shipment from the factory.

The obligation of MATCOR, Inc. is limited to the adjustment, repair or replacement, at its factory, of any rectifier or part thereof which shall be found by MATCOR, Inc. to be defective.

This guarantee does not cover costs or loss for engineering, storage, handling, shipping, installation and removal associated with the damaged rectifier or part, or any other costs, loss or damage of any kind.

UNDER NO CIRCUMSTANCES SHALL MATCOR, INC. BE LIABLE FOR ANY CONSEQUENTIAL DAMAGES.

FIVE-YEAR TRANSFORMER GUARANTEE

Each and every transformer installed as original equipment in a cathodic protection rectifier of MATCOR, Inc. design is guaranteed against defects in design, workmanship or material for a period of five full years from the date of shipment from the factory. The obligation of MATCOR, Inc. is limited to the adjustment, repair or replacement, at its factory, of any transformer which shall be found by MATCOR, Inc. to be defective.

This guarantee does not cover costs or loss for engineering, storage, handling, shipping, installation and removal associated with the damaged transformer or any other costs, loss, or damage of any kind.

UNDER NO CIRCUMSTANCES SHALL MATCOR, INC. BE LIABLE FOR ANY CONSEQUENTIAL DAMAGES.

When contacting MATCOR regarding this rectifier, be sure to have both the model number and serial number on hand.

CONTACT A CORROSION EXPERT

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