# SERVICE PROCEDURE NO. JD00059

## PRODUCT: SCR/SCRF BATTERY CHARGERS
## SUBJECT: FIELD INSTALLATION OF END OF DISCHARGE ALARM (EOD)

REF: (1) Schematic Diagram EJ0143

**Materials required**

EOD Alarm Kit (see Table 1)
Terminal Block (TB3), 3 terminals

**Tools required**

Standard hand tools
Wire crimpers, cutters & stripper
DC voltmeter (DVM preferred)

### SAFETY PRECAUTIONS

**BEFORE ATTEMPTING TO REMOVE OR REPLACE ANY COMPONENT, DISCONNECT ALL AC AND DC POWER SOURCES TO THE BATTERY CHARGER.**

All external power must be disconnected; turning off front panel circuit breakers is not sufficient to remove power from every point inside the charger. Use a voltmeter to verify that no AC or DC voltage is present on any circuit breaker or fuse terminal. Disconnect the negative (-) lead of the battery at the battery terminal.

**DO NOT PROCEED UNTIL YOU ARE CERTAIN THAT ALL DANGEROUS VOLTAGES HAVE BEEN REMOVED FROM THE BATTERY CHARGER.**

## Procedure

1. Check the EOD kit part number against the nameplate rating of your charger, according to Table 1 below. Check the circuit board assembly, GK0045-01, and make sure that R26 is the proper value as shown in Table 1. (The circuit board should be stamped with the correct voltage rating for your charger.)
2. Install the circuit board assembly as follows:
   - Find a suitable location on the charger mounting base or panel to install the circuit board brackets and guides. Most battery chargers already have suitable mounting holes or slots for installing the circuit board brackets.
   - Install the brackets using the 6-32 hardware supplied. Slide the circuit board into the guides; adjust the spacing of the guides as required to ensure a secure fit.

   > Note: Install the board so that there is sufficient clearance for the connector and harness wires.

3. Install the terminal block, TB3. The normal mounting locations are as follows:
   - Style 1A and 1B enclosures: On the mounting base, near the bottom
   - Style 2 enclosures: On the mounting base, right-hand side, near the center
   - Style 3 enclosures: On the pull-out shelf, near the right front
   - Style 4 and 5 enclosures: On the options panel on the right wall
4. Install the power resistor R58 in a clear location near the circuit board. Locate the resistor so that it does not heat any of the board components. Install the two-position solder terminal strip near the circuit board. If R76 is included in your parts kit (48, 130 and 260 Vdc chargers), solder it to the terminal strip.
5. If the optional indicator lamp was ordered, punch or drill a 1/2 inch hole in the instrument panel (most panels have existing holes that you can use). Do not allow metal chips to get inside the charger. Install the indicator lamp from the front of the panel, and label the indicator on the panel "END OF DISCHARGE."
6. Refer to the schematic diagram, ref. 1. Wire the connector, SO8, and the terminal block, TB3, according to the schematic. Label the TB3 positions 31,32 and 33 as shown in the schematic diagram.
7. Route the wires from SO8 to their appropriate destinations Use the appropriate crimp terminal at each location (ring terminals for TB3, etc.; quick-connect terminals for the indicator).

8. If you are going to use an external annunciator or alarm panel, wire it now to TB3. The alarm contacts are shown in the schematic diagram in the ***non-alarm*** state.

   Recheck all wiring against the schematic diagram to be sure it is correct. Check all solder and crimp terminals. Close the front panel of the battery charger, restore the ac and dc power connections, and restart the charger.

   The circuit boardwas adjusted at the factory to operate at 87.5 % of the nominal battery voltage. See Attachment 1 for field calibration instructions.

TABLE I: END OF DISCHARGE ALARM

| Charger Voltage | EOD Part No.[1] | R58[2] | R26[2] |
|---|---|---|---|
| 12 | EJ0143-01 | N/R | N/R[3] |
| 24 | EJ0143-02 | 3W, 150 OHM | 1/2W, 3.3K |
| 30 | EJ0143-03 | 5W, 250 OHM | 1/2W, 5.1K |
| 36 | EJ0143-04 | 5W, 300 OHM | 1/2W, 6.8K |
| 48 | EJ0143-05 | 5W, 500 OHM | 1/2W, 12K |
| 130 | EJ0143-06 | 25W, 1.5K | 2W, 33K |
| 260 | EJ0143-07 | 25W, 3.0K | 2W, 75K |

(1) For EOD w/indicator, change -01 thru -07 to -11 thru -17
(2) Resistor values of +/- 10% are acceptable
(3) Replace with short circuit jumper

ORDERING INFORMATION

| Item | Factory Part No. |
|---|---|
| EOD Assembly | EJ0143-XX[1] |
| Circuit Board Assy | GK0045-01 (specify voltage) |
| Terminal Bd., 3-pos. | RC0004-01 |
| Terminal Bd., 6-pos. | RC0004-04 |

(1) See Table 1 above for complete part number

## ATTACHMENT 1: FIELD CALIBRATION OF EOD OPTION

**Equipment Required**

DC Voltmeter (Preferably a 3-1/2 digit DVM)

**Procedure**

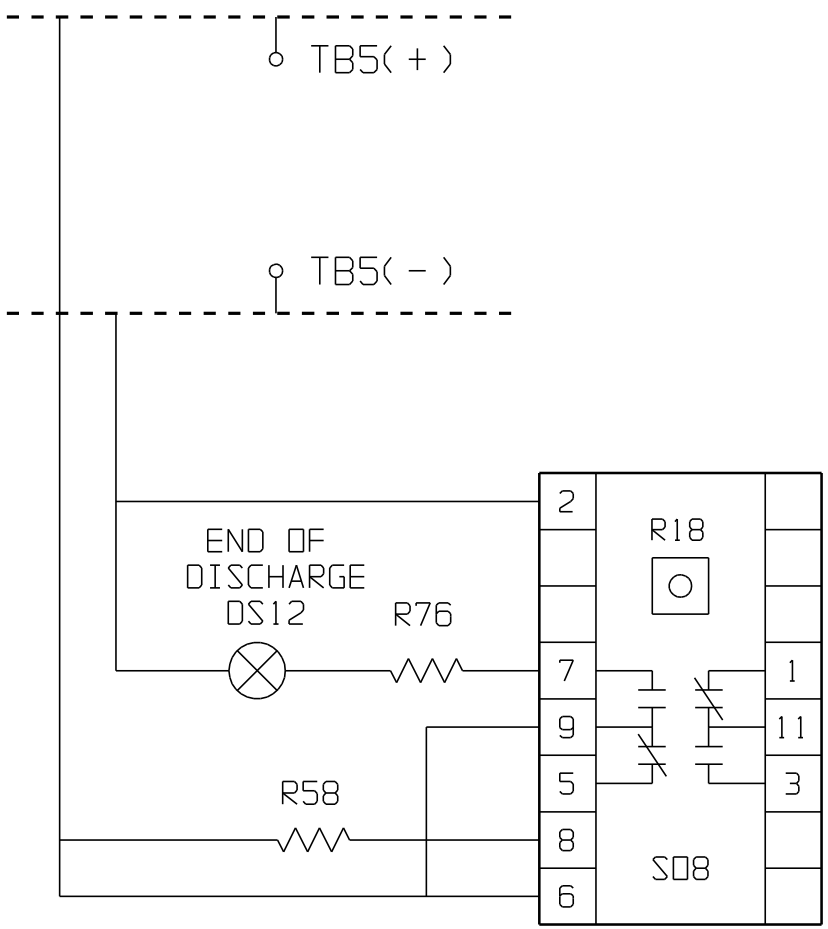
1. Adjust the End of Discharge alarm voltage using potentiometer R18 on the GK0045-01 circuit board assembly, A8. See the hints on making the adjustment at the end of this sheet.

   If you have an adjustable power supply (rated at 0.5 ampere minimum), you can turn the charger off to adjust the board. Disconnect the battery and the load, and connect the power supply to the charger output terminals.

   If you make the adjustment with the charger on, disconnect the battery and substitute a small resistive load. Adjust the output voltage using the Float potentiometer on the front panel.
2. Connect the DC voltmeter to the charger front panel voltmeter (M2). Adjust the power supply (or charger output voltage) to the desired operating voltage for the End of Discharge alarm.
3. Adjust the "LO" potentiometer, R18, on the circuit board CW (clockwise) until the low voltage alarm relay trips. You may have to adjust it CCW initially if the relay is already in the alarm state.
4. Test the alarm operation by increasing the power supply voltage until the alarm resets, and then decrease the voltage slowly to confirm that the alarm sets at the desired voltage.When you are satisfied with the setting, remove the power supply, restart the charger and return the output voltage to the desired float voltage.

## HINTS FOR EASY CALIBRATION:

- Adjust the potentiometer on the EOD PC Board 1/2 turn at a time and wait several seconds for the relay to trip - there is a time delay built into the detection circuit. If the relay doesn't trip after several seconds, make another 1/2 turn adjustment.
- After the relay trips, turn the potentiometer back 1/2 turn at a time, and wait for the relay to reset. By using this repetitive technique, it is possible to obtain very fine control of the alarm threshold.




END OF DISCHARGE
PC BOARD ASSY. A8

NOTES:

1) OPTIONS EJ0143-01 TO EJ0143-07 DO NOT FEATURE THE OPTIONAL INDICATOR LIGHT (DS12). IN THESE OPTIONS, ITEMS DS12, R76 & CONNECTIONS TO S08-7 AND S08-9 ARE NOT UTILIZED.

2) R76 USED ONLY ON 48, 130 & 260V CHGRs.

3) R58 NOT USED ON 12V CHGRs.

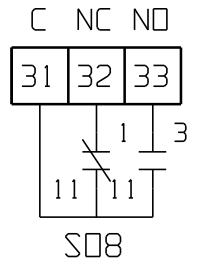
4) DO NOT USE END OF DISCHARGE ALARM IN ANY COMMON ALARM CHAIN. ALARM CONTACTS CONNECT SEPARATELY TO TB3 AS STANDARD.

5) ADJUST R18 SO THAT ALARM RELAY IS ACTIVATED AT THE BATTERY END OF DISCHARGE VOLTAGE.

6) ALL ALARM CONTACTS SHOWN IN NON-ALARM CONDITION. CONTACT RATING: 0.5A 125VAC/DC RESISTIVE.

7) TB5 (PART OF CHARGER MAINFRAME) IS AN INTERNAL CONNECTION POINT FOR DC POSITIVE AND NEGATIVE SIGNAL WIRING.

TB3
REMOTE ALARM
TERMINAL BLOCK
(NOTE 5)




| REV | ECN No | DATE | APP |
|---|---|---|---|
| 4 | E1486 | 112503 | |
| 3B | 9448 | 011793 | MCT |
| 3B | 6237 | 071489 | WAH |
| 3A | 5911 | 040489 | WAH |
| 2 | 4920 | 010588 | WAH |

THIRD ANGLE PROJECTION

DRAWN BY MCR 112503

APPROVED

UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES. TOLERANCES ARE:

TITLE SCHEMATIC: END OF DISCHARGE ALARM W/OPTIONAL INDICATOR LIGHTS

DRAWING No EJ0143-XX REV 4 A

SCALE NTS PART No EJ0143-XX SHEET 1 OF 2

FILENAME [EJ0143-XX.PRT]