

# BATTERY TEMPERATURE SENSOR KIT KT1109 (SBX) / KT1150 (EBC)

## Installation and Operation Instructions



One Technology Place  
Caledonia, NY 14423  
(585) 538-4421

## **SECTION 1      INTRODUCTION**

The battery temperature sensor kit (KT1109 or KT1150) is designed for use with Applied Energy Solutions QuarterHorse Chargers. It senses the battery electrolyte temperature and provides the temperature information to the charger control module. The temperature sensor kit consists of:

- Temperature sensor
- Battery Auxiliary wire harness and auxiliary terminal/housing
- Cable ties
- Strain relief
- Charger Auxiliary cable assembly

## **SECTION 2A      INSTALLATION FOR SBX STYLE CONNECTOR**

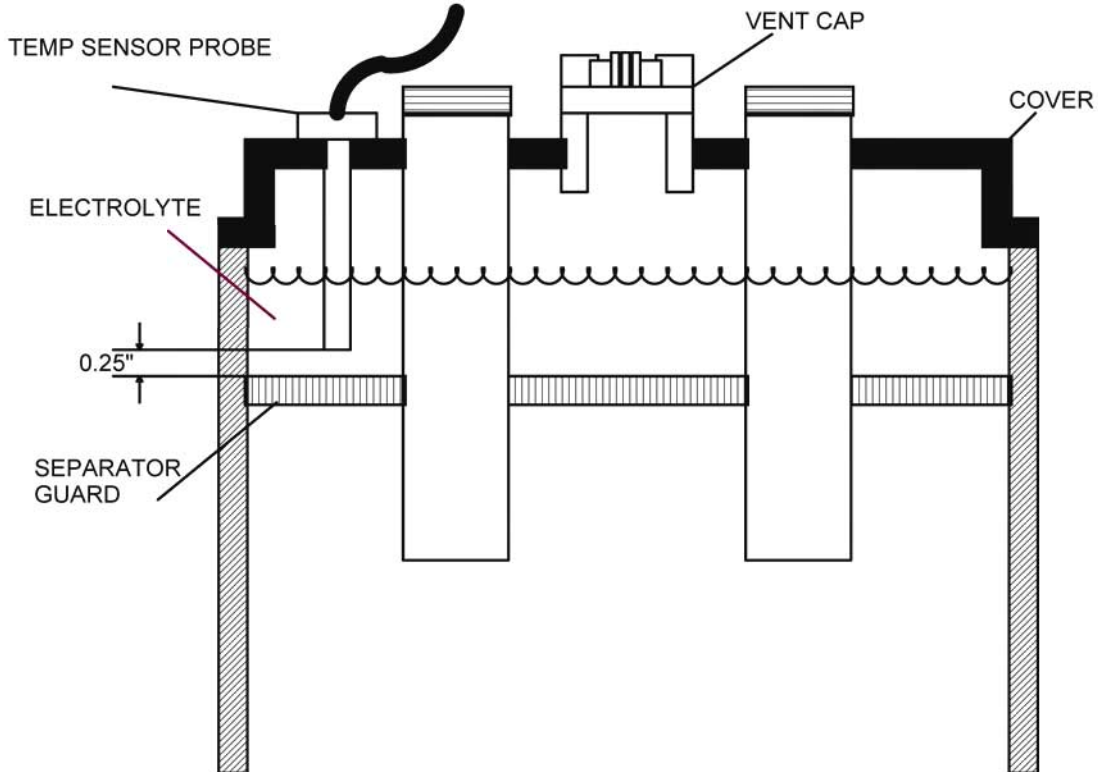
1. Select a battery cell to install the sensor probe. A cell located in the center of the battery tray is recommended.
2. Drill a 7/16 " diameter hole through top of the jar.
3. Screw the sensor probe into the drilled hole. Make sure the probe tip is in contact with the electrolyte and has a minimum clearance of 0.25" from the tip of the sensor to the separator guard (See Fig. 1). The mounting depth can be adjusted from 1.5" to 2.4".
4. Insert the Battery Auxiliary leads with bare contacts completely through SBX connector, from cable end of connector. Slide red and black auxiliary terminal/housings together, with black on top, per Figs. 3-5A. Assemble leads with contacts into housings.
5. Pull Battery Auxiliary lead back through SBX connector, ensuring black housing is toward top of connector (See Fig. 5A.)
6. Insert retaining pins into SBX connector, from the bottom, as shown in Fig. 4. Ensure pins are flush with surface of connector.
7. Select a proper location on the battery to secure cable harness to the battery using supplied cable ties.
8. Refer to Fig. 2 for connecting the Charger Auxiliary cable. Insert the non-terminated end of the cable into the SBX connector and draw through until red and black terminal/housings can be assembled into connector. Ensure that the red and black terminal/housings are oriented as shown in Figs. 6A & 6B.
9. Repeat step 6, above, for inserting retaining pins into connector.
10. Begin cabling Charger Auxiliary cable to Charger Output cables, loosely tying with cable ties provided. Before tying cables close to the charger cabinet, attach the strain relief to the Charger Auxiliary cable in the proximity of where the cable will pass through the hole in the front of the charger chassis. Guide the cable and strain relief through the hole, seating the strain relief well.
11. Inside the charger, continue loosely cabling the Charger Auxiliary cable to the yellow wires running upward to the Control PCB. Remove the 10k resistor connected to positions 2 & 3 of the screw-type terminal block on the Control PCB. Strip the insulation on the Charger Auxiliary cable conductors and connect to the terminal block per Fig. 2, ensuring that the appropriate colored conductor is connected to each terminal.
12. Tighten cable ties.

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4. Insert the Battery Auxiliary leads with bare socket type contacts into the female Euro EBC320 connector as shown in Fig. 5B.
5. Select a proper location on the battery to secure cable harness to the battery using supplied cable ties.
6. Refer to Fig. 2 for connecting the Charger Auxiliary cable. Insert the pin type contacts from the Charger Auxiliary cable into the Euro EBC320 connector as shown in Fig. 6C. Begin cabling Charger Auxiliary cable to Charger Output cables, loosely tying with cable ties provided. Before tying cables close to the charger cabinet, attach the strain relief to the Charger Auxiliary cable in the proximity of where the cable will pass through the hole in the front of the charger chassis. Guide the cable and strain relief through the hole, seating the strain relief well.
7. Inside the charger, continue loosely cabling the Charger Auxiliary cable to the yellow wires running upward to the Control PCB. Remove the 10k resistor connected to positions 2 & 3 of the screw-type terminal block on the Control PCB. Strip the insulation on the Charger Auxiliary cable conductors and connect to the terminal block per Fig. 2, ensuring that the appropriate colored conductor is connected to each terminal.
8. Tighten cable ties.

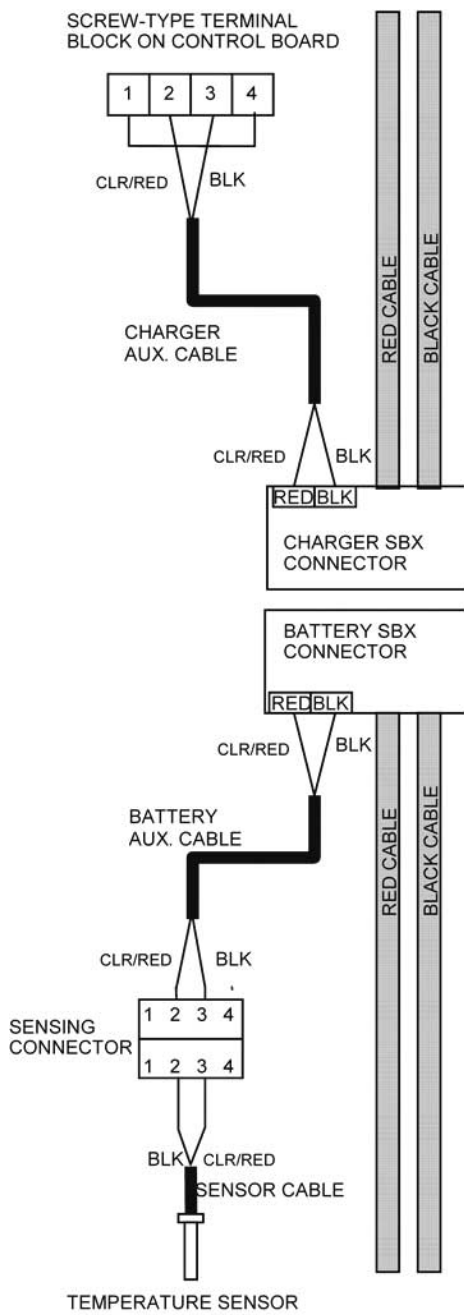
### SECTION 3 OPERATION

The sensor provides the temperature information to the control module.

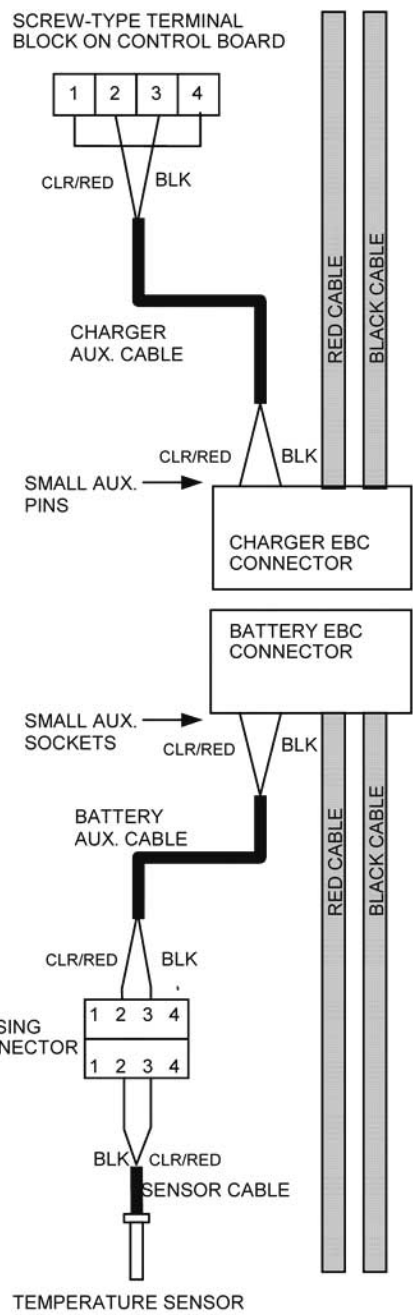
- When the electrolyte temperature reaches the factory preset temperature threshold (55°C), the temperature control is activated. The High Rate current (25A/100AH) will be reduced to 18A/100AH. A character "H" will appear on the left most digit of the display and will remain for the rest of the charge cycle.
- When the electrolyte temperature reaches the factory preset temperature threshold (60°C):
  - If the charger is charging the battery, it will shut down. A character "H" will appear in the right most digit of the display and the red Fault LED will illuminate.
  - If it the charger is in idle mode, it will not turn on when the battery is connected to the charger. A character "H" will appear in the right most digit of the display and the red Fault LED will illuminate.
- If the sensor fails or has a bad wiring connection, a character "F" will appear in the left most digit of the display. The charger will still function properly but the temperature control will not be active until the sensor assembly is replaced or repaired.



**Fig. 1 Temperature Sensor Installation**

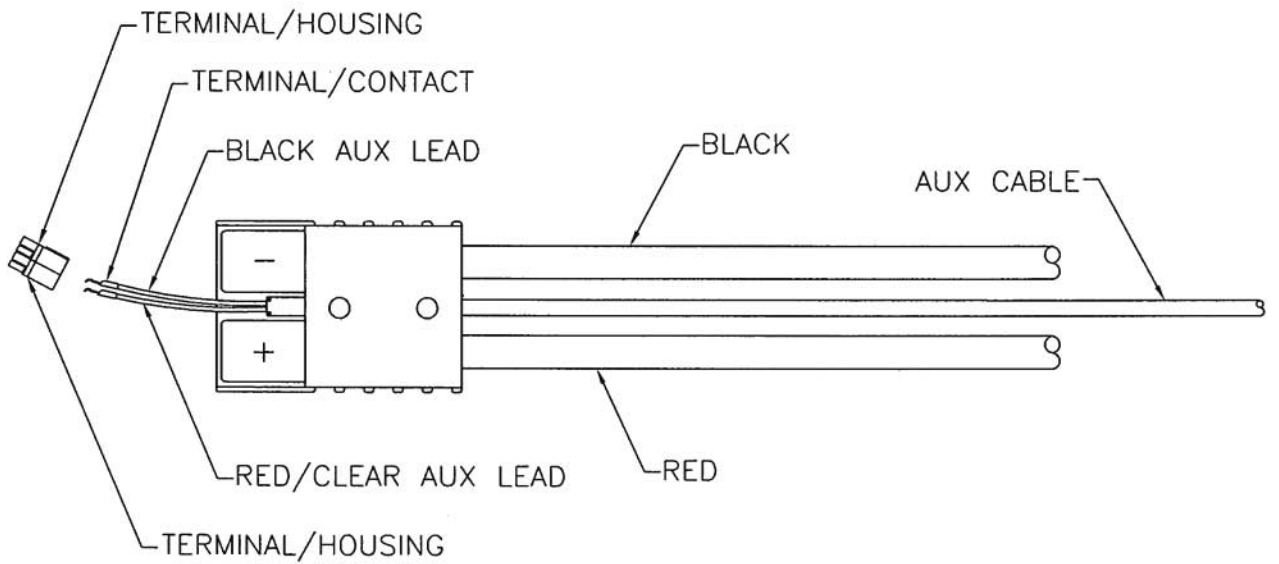


**SBX-TYPE  
(KT1109)**

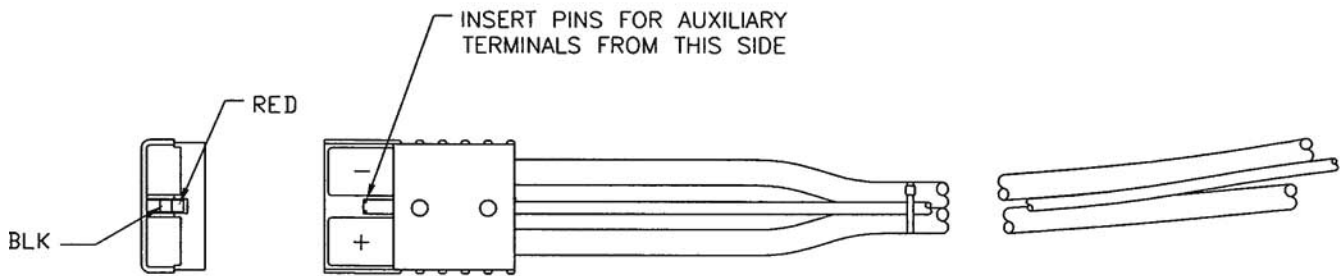


**EBC-TYPE  
(KT1150)**

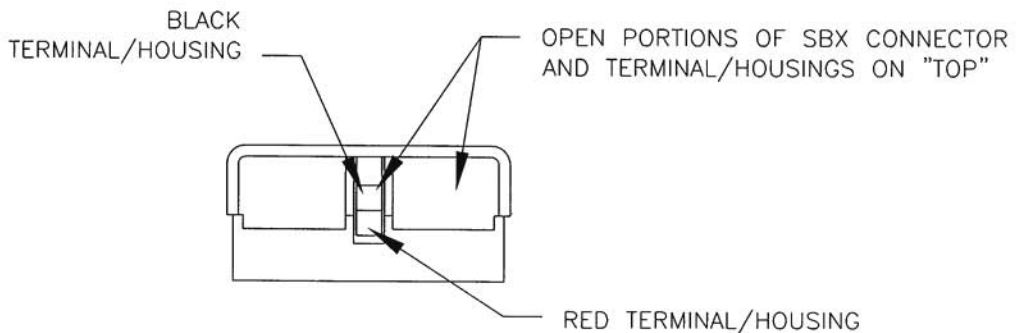
**Fig. 2 QuarterHorse Temperature Sensor Kit Diagram**



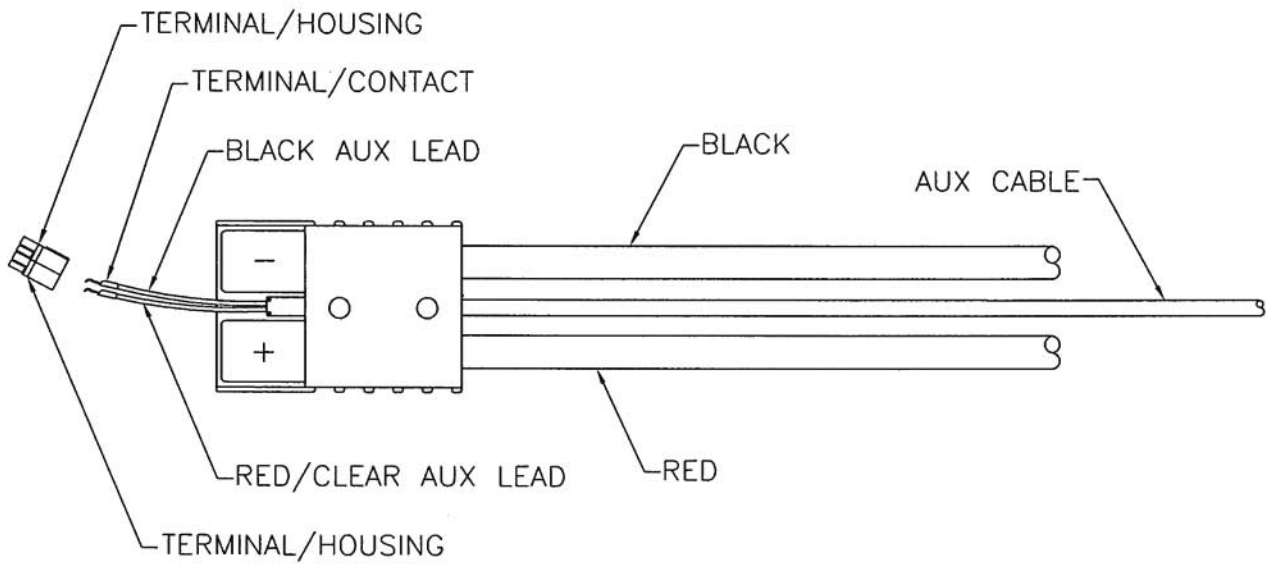
**Fig. 3 Auxiliary Leads Drawn through SBX Connector for Insertion in Terminal/Housings**



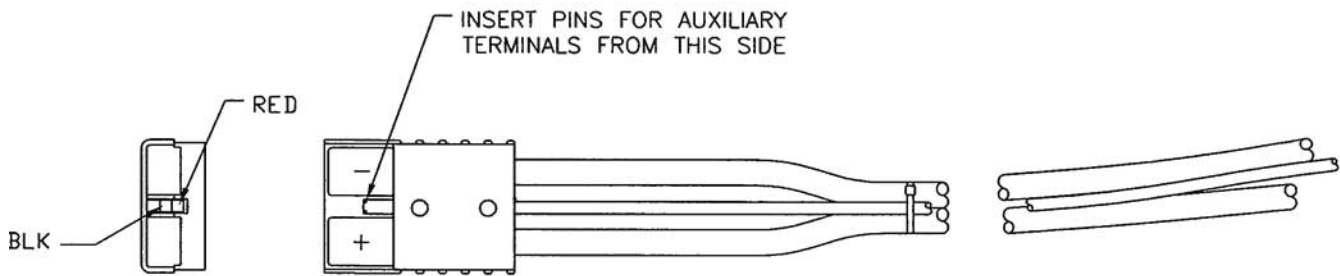
**Fig. 4 Battery Cable with SBX Auxiliary Contact Cable Harness**



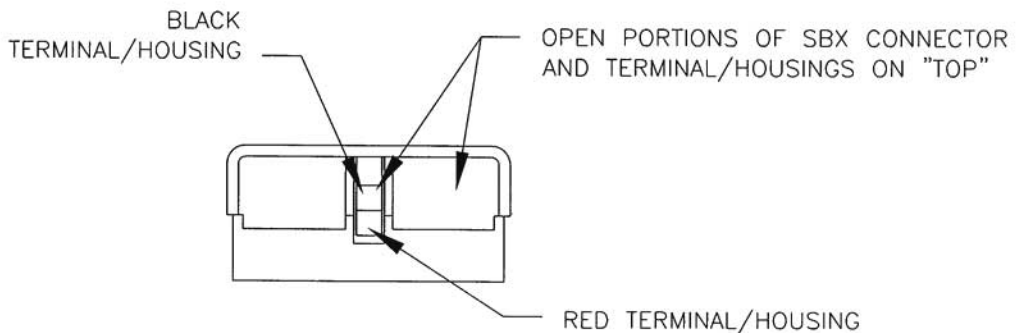
**Fig. 5A Battery Terminal/Housing Orientation (SBX)**



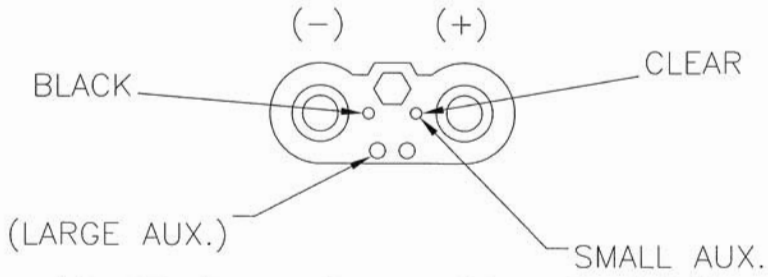
**Fig. 3 Auxiliary Leads Drawn through SBX Connector for Insertion in Terminal/Housings**



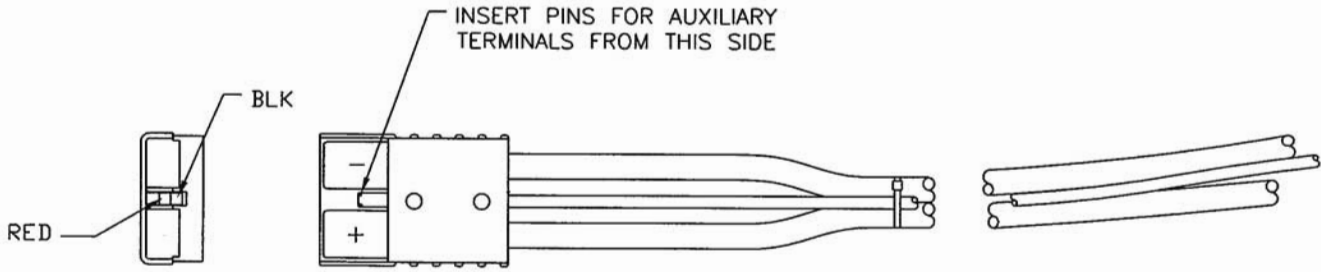
**Fig. 4 Battery Cable with SBX Auxiliary Contact Cable Harness**



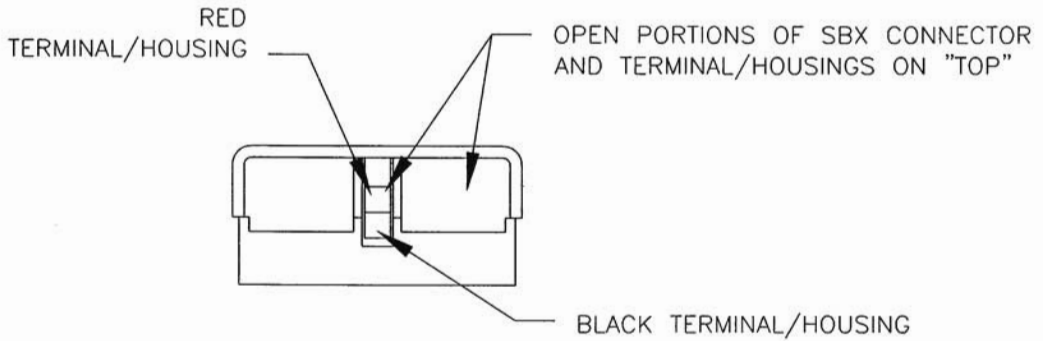
**Fig. 5A Battery Terminal/Housing Orientation (SBX)**



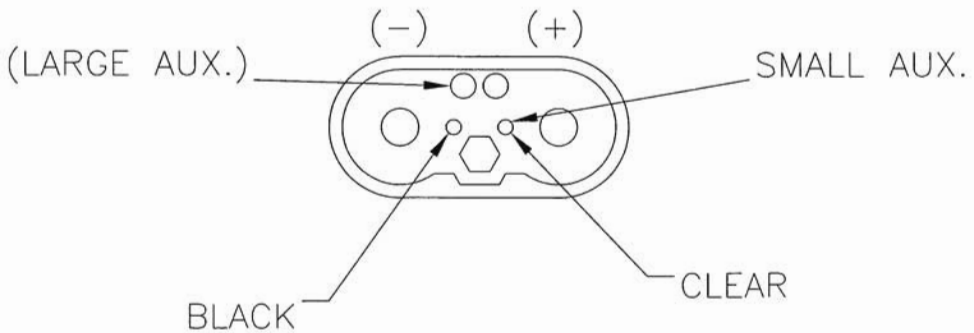
**Fig. 5B Battery Contact Orientation (EBC)**



**Fig. 6A Charger Terminal/Housing Orientation (SBX)**



**Fig. 6B Charger Terminal/Housing Orientation (SBX)**



**Fig. 6C Charger Contact Orientation (EBC)**