

## INSTRUCTION MANUAL

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# **AUTO CHARGE<sup>®</sup>** **3 STEP** **AUTOMATIC BATTERY CHARGER**

**MODEL #091-120-12E-20**  
**for ODYSSEY AGM BATTERIES**

### **CAUTION**

**This charger is calibrated to the ODYSSEY requirement of 14.7 volts in the bulk/absorption range and 13.6 volts in the float mode  
DO NOT USE TO CHARGE A NORMAL LEAD ACID BATTERY**

**3 YEAR WARRANTY**

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## **INTRODUCTION**

The Auto Charge-3 STEP CHARGER, Model 091-120-12E-20 is a compact, completely automatic single channel battery charger designed specifically for periodic charging of ODYSSEY AGM Batteries. Of rugged construction, the charger is made to withstand the shock and vibration encountered in vehicle mounted equipment. Utilizing components, which meet international safety standards, makes this charger ideal for worldwide applications.

## **BATTERY CHARGER FEATURES**

Completely automatic operation, charges battery on demand  
Output Voltage regulated, eliminates overcharging battery  
Output, current limited to protect charger from overloading  
A 5-LED display indicating charge state and faults  
Reverse polarity protection

## **INSTALLATION**

The 3 STEP CHARGER should be installed in an area with adequate ventilation.  
Mount the charger using the four holes provided.  
Connect wiring from the battery to the output terminal strip.  
Double check battery wiring. Verify that the battery voltage appears at the charger output terminals (See Figure 2).

# **PRINCIPLES OF OPERATION**

The Odyssey three-step charger operates in the three stages described below:

- 1) A discharged battery is recharged at a constant current (**bulk charge**) until its voltage reaches an overcharge level of 2.45 volts per cell. At this time the charger will switch to Finish Charge. The battery accepts 75-85% of its capacity during bulk charge.
- 2) This overcharge voltage is now maintained constant at 2.45 volts per cell (**absorption or finish charge**) for eight (8) hours.
- 3) After an eight (8) hour Finish Charge Stage has completed, the charger will "Time Out" to a Float Charge Stage where in the battery under charge will receive a 13.6VDC Float Charge or 2.26VDC per cell. The battery is maintained at full charge during Float Charge, and the green indicator labeled "Battery Charged" AND red indicator labeled "Time Out" will be illuminated.

Figure 1 depicts the above described operation. Note that the term "absorption charge" is used interchangeably with "finish charge". Upon application of AC power, the charger is placed into bulk charge if necessary. When the charger switches to finish charge, a timer starts. This timer has a duration of eight (8) hours after which the charger will automatically go to float charge (Battery Charged green indicator) and a timeout will be indicated.

A battery fault indicator is provided to indicate the absence of a battery, a battery connected with reverse polarity, or a battery with an open circuit terminal voltage of less than 1.35 volts per cell.

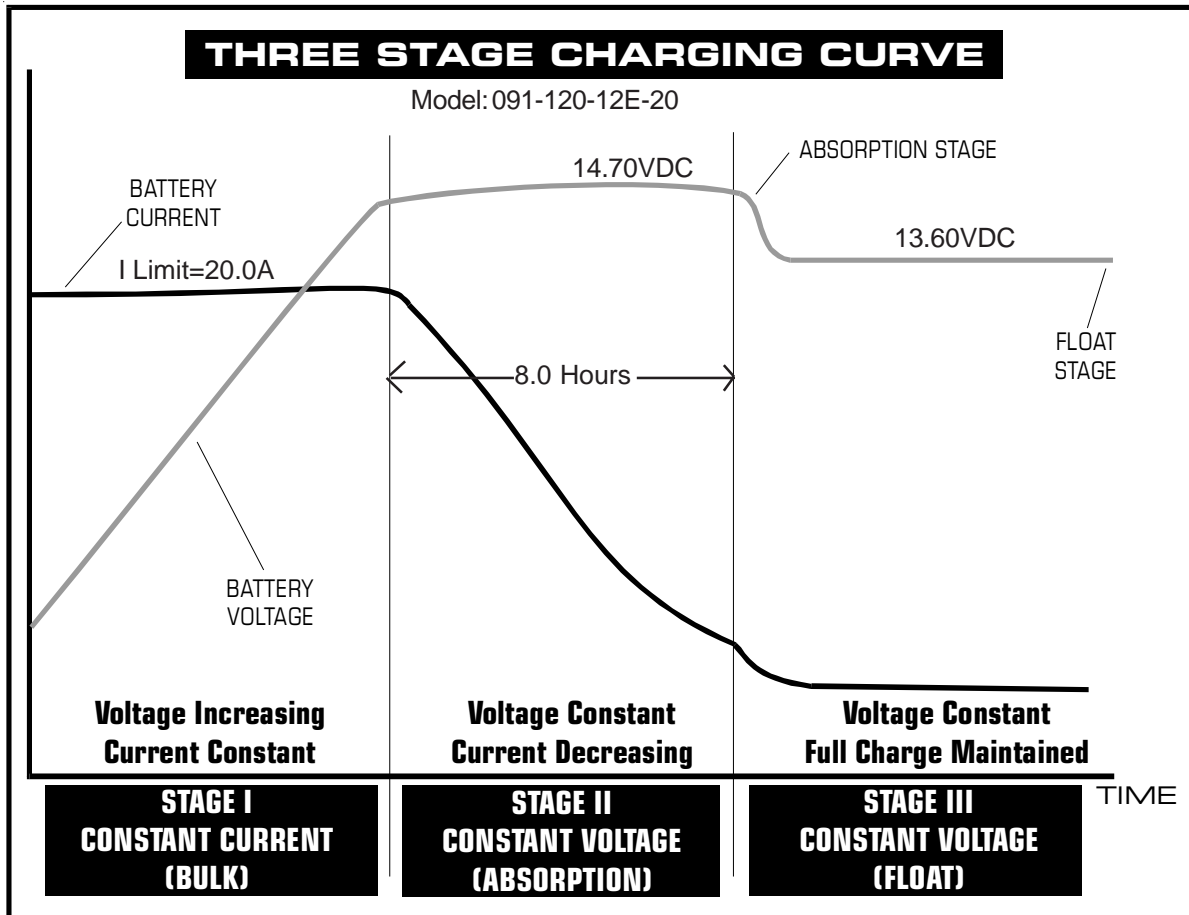


Figure 1

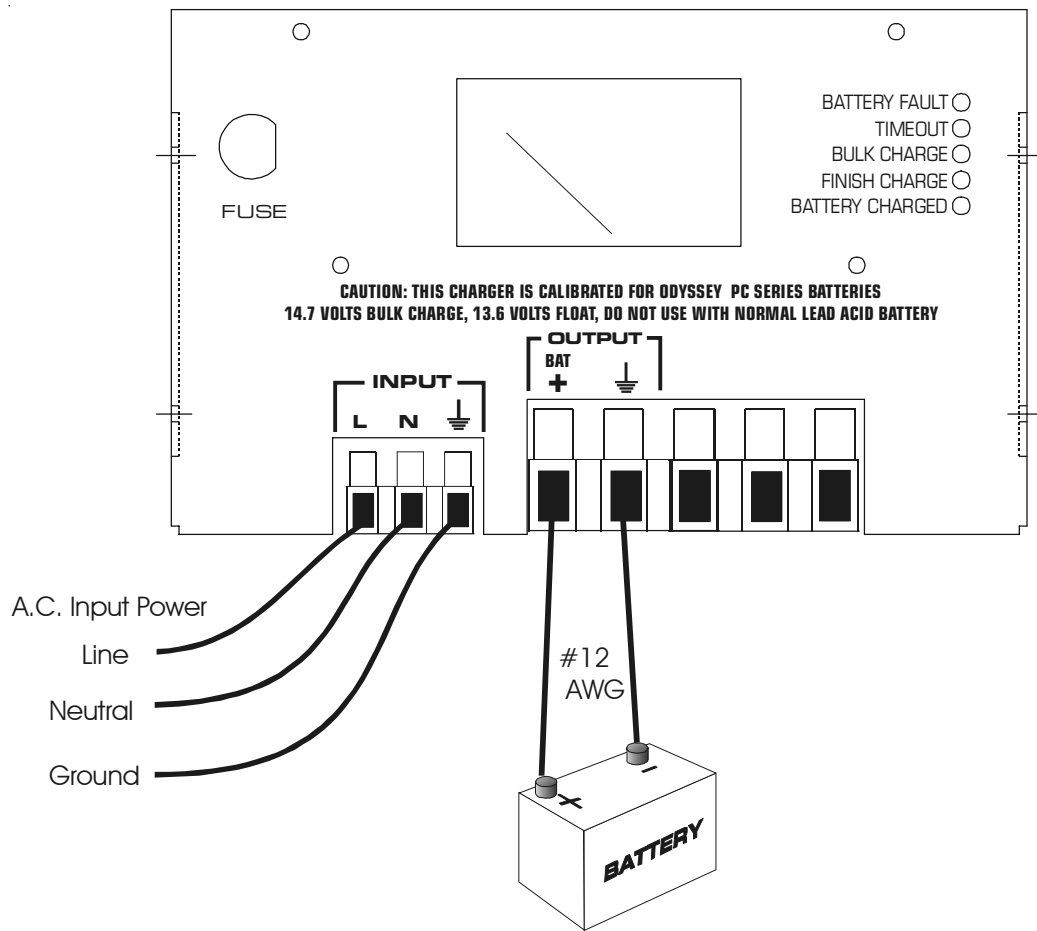


Figure 2

# **Specifications**

Model: 091-120-12E-20

Input Power: 115VAC, 60Hz, 4.7Amps

Input Over Current Protection: Fuse; 8Amp, Slow-Blow

Output Power: 12 to 14.7VDC, 20Amperes Current Limited

Charge Indicator: 25Amperes

Mode Indicators:

Battery Fault: Red

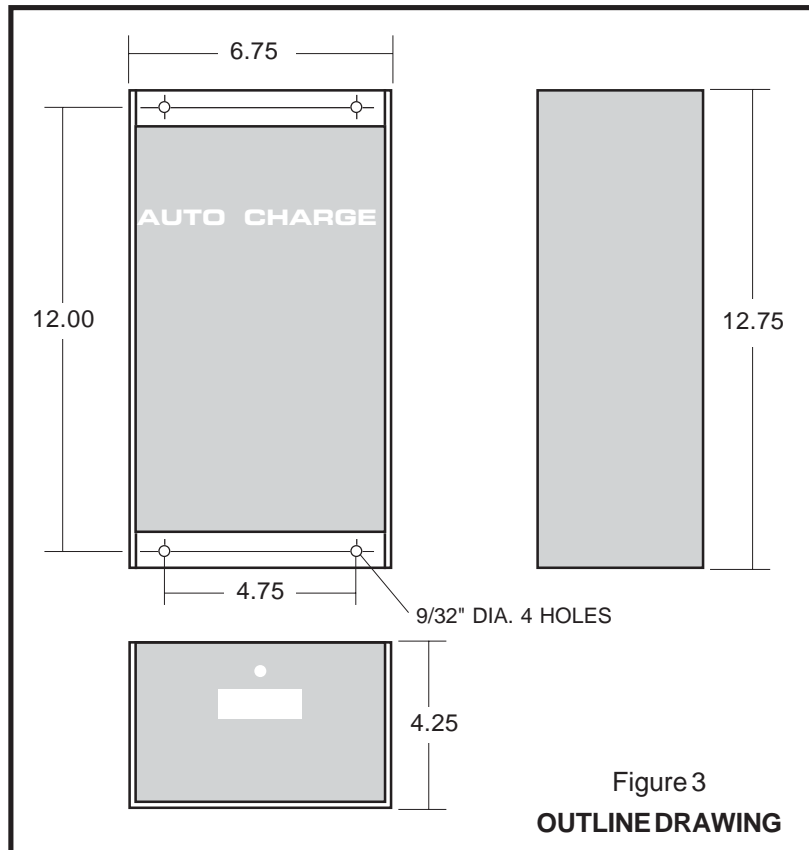
Time Out: Red

Bulk Charge: Yellow

Finish Charge: Yellow

Battery Charged: Green

Weight: 22 Pounds



# INSTALLATION RECORD & WARRANTY

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**Date Installed** \_\_\_\_\_

**Installed By** \_\_\_\_\_

**Vehicle Identification** \_\_\_\_\_

**Vehicle Owner** \_\_\_\_\_

## **WARRANTY**

All products of Kussmaul Electronics Company Inc. are warranted to be free of defects of material or workmanship. Liability is limited to repairing or replacing at our factory, without charge, any material or defects which become apparent in normal use within 3 years from the date the equipment was shipped. Equipment is to be returned, shipping charges prepaid and will be returned, after repair, shipping charges paid.

Kussmaul Electronics Company, Inc. shall have no liability for damages of any kind to associated equipment arising from the installation and /or use of the Kussmaul Electronics Company, Inc. products. The purchaser, by the acceptance of the equipment, assumes all liability for any damages which may result from its installation, use or misuse, by the purchaser, his or its employees, or others.