

## INSTRUCTION MANUAL

# AUTO CHARGE 1000 PUMP-PLUS AIR COMPRESSOR / BATTERY CHARGER



STANDARD DISPLAY

OPTIONAL DELUXE DISPLAY (NOT INCLUDED)  
091-194A-IND

**MODEL # 091-9-1000D**

**NOTE :**

**This charger is designed for  
vehicles with single battery system  
and negative ground.**

**INPUT : 120 volt, 50/60 Hz, 3.5 amps**

**OUTPUT: 18 AMPERES**

**1 YEAR WARRANTY ON AIR COMPRESSOR  
3 YEAR WARRANTY ON CHARGER**

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New York 11796

**KE KUSSMAUL<sup>TM</sup>  
ELECTRONICS**

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## **Introduction**

The AUTO CHARGE 1000 Pump Plus is a compact, completely automatic, single channel battery charger designed for vehicles with a single battery system. The charger is ruggedized to withstand the shock and vibration encountered by vehicle mounted equipment. The Auto Charge 1000 Pump Plus operates an 091-9 air compressor. With the selector switch in the AC position the compressor runs only when the AC power is applied. With the selector switch in the DC position the compressor will operate when the AC power is on or off. In either position the compressor operates from the vehicle's batteries, the Pump Plus automatically recharging the batteries as required.

### **The battery charger features:**

- Electronic remote sensing of true battery voltages, eliminates the need for sensing wires
- Automatic current limiting
- Built-in BATTERY SAVER
- Remote battery charge/condition indicator
- Power "ON" LED indicator
- BATTERY SAVER overload indicator

### **Charge Controls & Electronic Remote Sensing**

The Auto Charge 1000 Pump Plus contains a precision voltage controller to maintain the battery's charge. Automatic electronic remote sensing measures the true battery voltage, eliminating the need for the additional sense wires. The output current of any charger is inherently a series of pulses whose frequency is determined by the power line frequency. Therefore there are brief intervals during which no charging current flows. During this brief interval the Auto Charge 1000 Pump Plus measures and stores the battery voltage. This battery voltage is compared to a standard and any error is detected and used to control the charger output at the desired level. There is no "trickle charge" and therefore no danger of overcharging and water boil-off.

### **Automatic Current Limiting**

When batteries are severely discharged, some battery chargers can be overloaded due to the high charging current required. The Auto Charge 1000 Pump Plus contains an automatic current limit. This circuit limits the output current to the rated 15 amperes when charging a deeply discharged battery or if the starter cranks the engine while charging. The current limiter thus eliminates the need for an ignition interlock circuit.

## **Battery Saver & Indicator**

A 3 ampere BATTERY SAVER is built into the charger. When connected as shown in the installation wiring diagram, loads on the battery such as radios and rechargeable hand lights are automatically switched to the BATTERY SAVER when power is applied to the charger. The BATTERY SAVER allows more efficient charging by removing these loads. A BATTERY SAVER overload indicator alerts the operator that the BATTERY SAVER load has exceeded 3 amperes.

### **WHEN A BATTERY SAVER OVERLOAD OCCURS:**

- a. Remove the loads for approximately two minutes
- b. Reduce the load to 3 amperes or less
- c. Reapply the load to the BATTERY SAVER

No fuses are required or provided as the BATTERY SAVER contains an electronic overload interrupter.

## **Remote Battery Charge Condition Indicator**

This remote indicator shows the charge condition of the battery in 10 levels from “LOW CHARGE” to “FULLY CHARGED”. This device indicates a defective battery when a bar graph does not rise to the “FULLY CHARGED” level after an extended period of charging.

**NOTE:** If a battery is being charged with an external load of 1.5 to 4 amperes across it's terminals, the bar graph may move down 1 or 2 levels. This does not indicate a defective battery.

To avoid this, connect all external loads to the BATTERY SAVER terminals.

Loads connected to the BATTERY SAVER will be powered either from the BATTERY SAVER power supply when the A.C. power is “ON”, or they will be connected to the battery when the A.C. power is “OFF”.

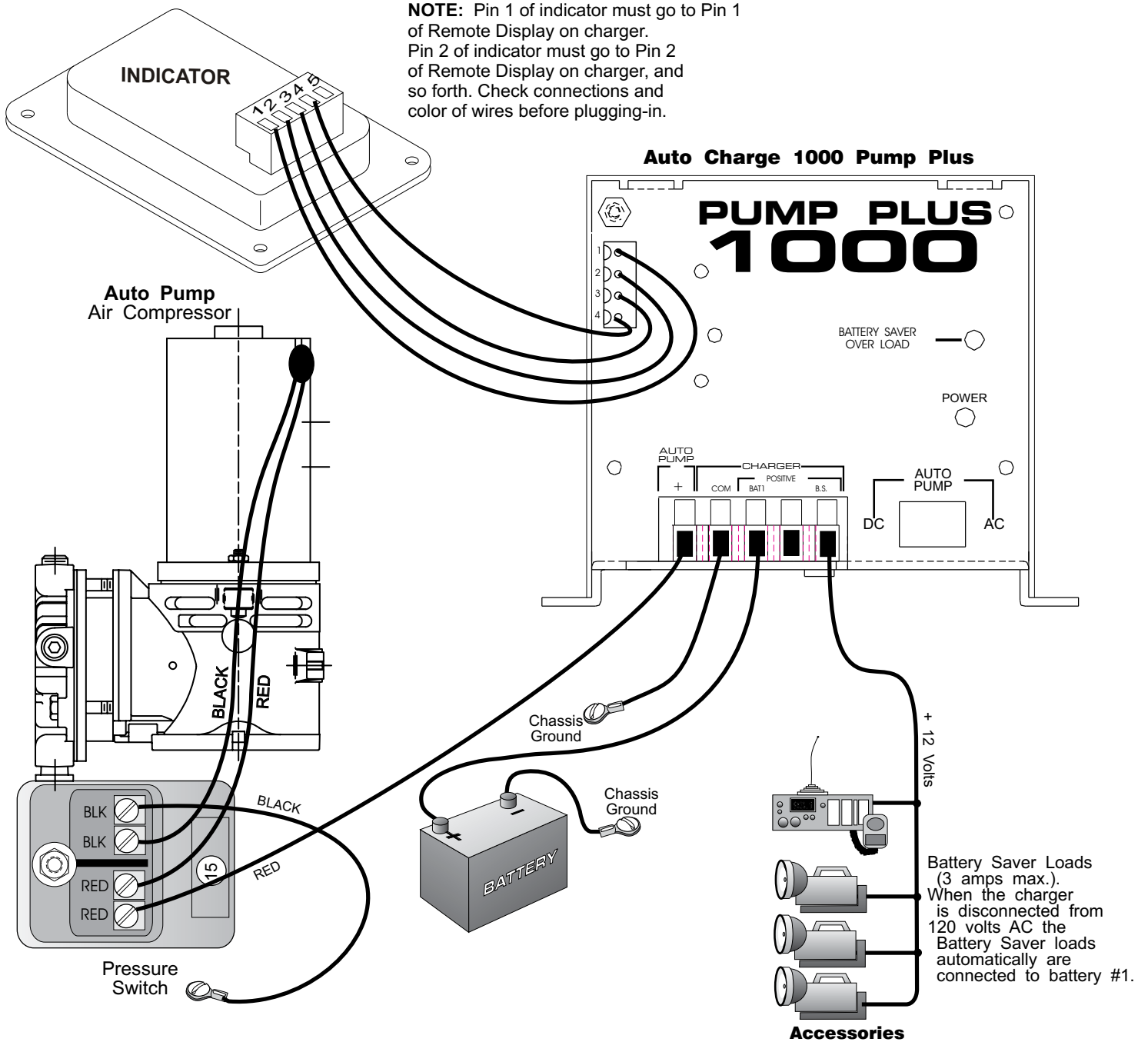
# CAUTION

This battery saver output is a full wave rectified sine wave. The 12.5 volts D.C. has a peak value of approximately 17.5 volts.

It is recommended that the loads are not highly capacitive. A large capacitor on the load terminal will "peak detect" the output and create a voltage of approximately 17 volts. This voltage may be too high for the component connected.

It is suggested that the installed check the output of the battery saver (when operating with A.C. input) and determine as each load is connected that the voltage does not rise. Any load that creates an increase in voltage should not be connected to the battery saver but rather be connected directly to the battery.

# Installation Wiring Diagram

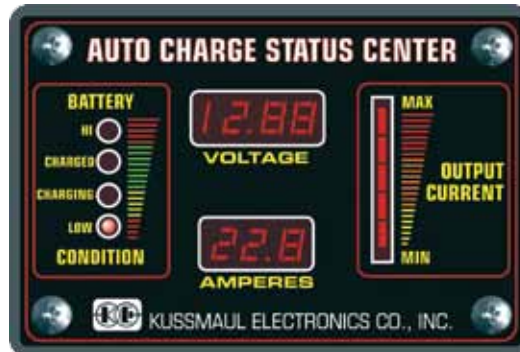


## WIRE SIZE CHART

CONNECTION	ITEM	DEFINITION	WIRE SIZE
COM	BATTERY COMMON	NEGATIVE CHARGING LEAD FOR CHARGING BATTERIES AND BATTERY SAVER LOAD	12 AWG
BAT 1	BATTERY #1	POSITIVE CHARGING LEAD FOR BATTERY # 1	12 AWG
B.S.	BATTERY SAVER	POSITIVE LEAD FOR BATTERY SAVER LOADS.	16 AWG
AUTO PUMP+	AUTO PUMP	AUTO PUMP, POSITIVE	14 AWG
AUTO PUMP-	AUTO PUMP	AUTO PUMP, NEGATIVE	14 AWG
IMPORTANT: Wire size is for a maximum lenght of 10 feet. If longer, larger wiring is required.			

## OPTIONAL ACCESSORIES

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**DELUXE STATUS CENTER**  
**MODEL #: 091-194A-IND**  
(shipped with 16-foot 4-wire cable, connectors, and mounting screws)



**DELUXE STATUS CENTER WATERTIGHT**  
**MODEL #: 091-194A-IND-WT-XX**  
(Bezel available in various colors: red, yellow, white, gray, blue, and black)  
(shipped with cable assembly: 091-194-006)

### Specifications:

**Input:** 120 volt, 50/60 Hz, 3.5 amperes

**Output:** 12 volts D.C. 15 amperes Max.

### Remote Sensing: Electronic, sense wires not required

**Number of Charger Outputs: 1**

**Number of Battery Saver Outputs: 1**

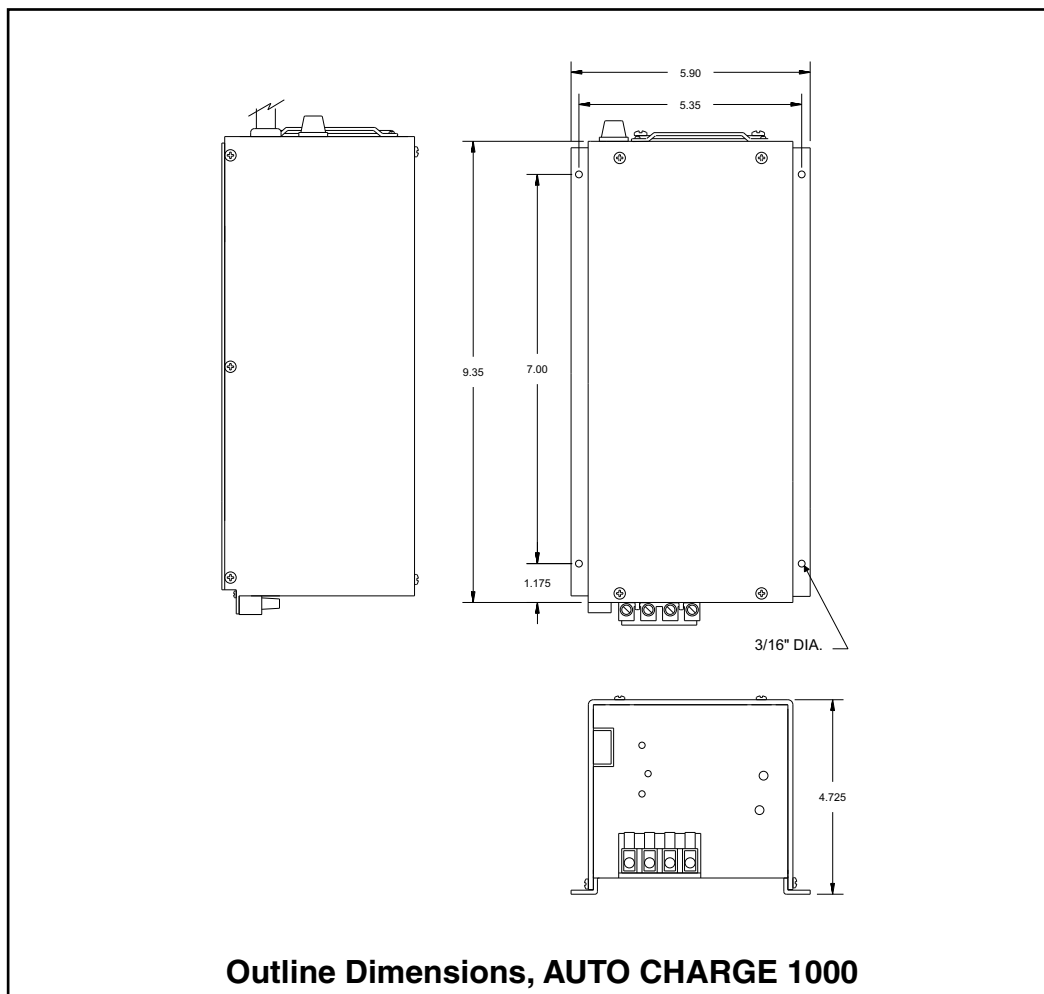
**Battery Saver Output:** 12 volts D.C., 3 amperes Max.

**Indicators:** **Power:** Red LED, indicates 120 volts power applied

**Battery Saver Overload:** Yellow LED, indicates Battery Saver load greater than 3 amperes

**Bar Graph:** indicates charger output and state of charge of battery

**Weight:** 16 lbs



# **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.

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