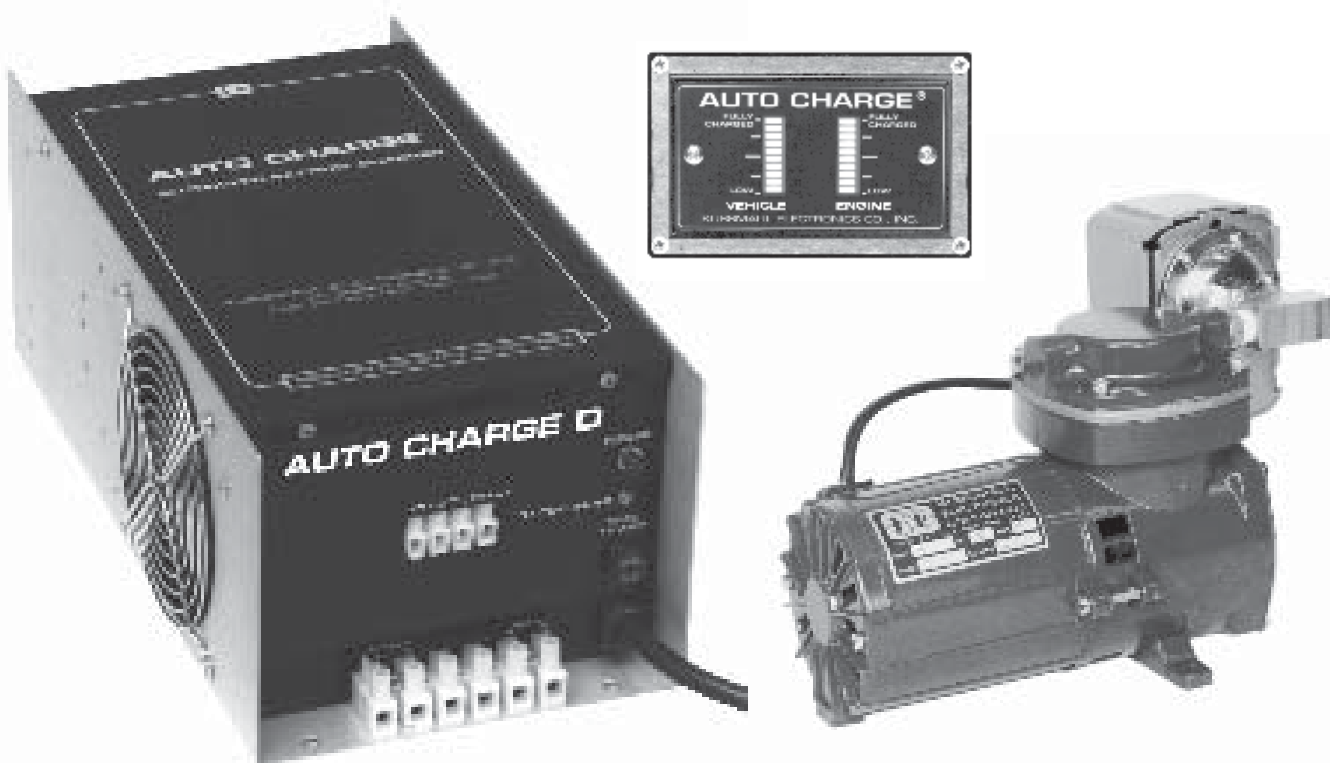


INSTRUCTION MANUAL

AUTO CHARGE D PUMP PLUS

AUTOMATIC DUAL OUTPUT BATTERY CHARGER WITH AIR BRAKE LEAKAGE COMPENSATOR

Designed expressly for vehicles with DDEC ENGINES



MODEL #091-9-DPP

INPUT :120 volt, 50/60 Hz, 8 amps

OUTPUT VEHICLE BATTERY: 25 AMPERES

OUTPUT ENGINE BATTERY: 3 AMPERES

OUTPUT BATTERY SAVER : 5 AMPERES

1 YEAR WARRANTY ON AIR COMPRESSOR

3 YEAR WARRANTY ON CHARGER



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INTRODUCTION

The Auto Charge D-PUMP PLUS is a dual battery system automatic battery charger designed specifically for vehicles with a DDEC control and a separate engine battery.

The engine battery on DDEC equipped vehicles presents a unique problem. While it is desirable to have a charger to maintain this battery in a fully charged condition, this battery is relatively lightly loaded. It is never required to operate any of the vehicle mounted accessories and is rarely discharged. The vehicle, however, may have multiple batteries which may be heavily loaded and require considerable charging. The unequal loading may cause either overcharging the engine battery or poor charger capacity utilization. The Auto Charge 2000D specifically addresses this problem and automatically recharges and maintains both vehicle and engine batteries.

The AUTO CHARGE D-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 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 charger automatically recharging the batteries as required.

THE BATTERY CHARGER FEATURES ARE:

- Independent charge controls for each battery
- Electronic remote sensing of true battery voltages, eliminates the need for sensing wires
- Automatic current limiting for both engine and vehicle batteries
- Built-in 5 ampere BATTERY SAVER
- Remote dual battery charge/condition indicator
- Power "ON" LED indicator
- BATTERY SAVER overload indicator

DESCRIPTION

Independent Charge Controls & Electronic Remote Sensing.
The charger contains two independent charge controls, one for each battery. This allows each battery to be independently charged while maintaining battery isolation. Each battery voltage is remotely sensed, electronically, eliminating the need for four sense wires. Each of the charge controls is completely automatic and stops charging the battery when it is fully charged. There is no trickle charge and therefore no danger of overcharging and water boil-off.

AUTOMATIC CURRENT LIMITING

The charger contains automatic current limiting for each output. The vehicle output is limited at 25 amperes while the engine output is limited at 3 amperes. This provides the higher current to the larger batteries where it is needed.

BATTERY SAVER & INDICATOR

A 5 ampere BATTERY SAVER is built into the charger. When connected as shown in the installation wiring diagram, loads on the vehicle 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 5 amperes.

WHEN A BATTERY SAVER OVERLOAD OCCURS THE BATTERY SAVER OUTPUT IS INTERRUPTED BY AN AUTOMATIC THERMAL CIRCUIT BREAKER. THIS CIRCUIT BREAKER WILL CONTINUALLY CYCLE THE OUTPUT "ON" AND "OFF" UNTIL THE OVERLOAD IS REMOVED. WHENEVER THE BATTERY SAVER OUTPUT IS "OFF" THE OVERLOAD INDICATOR IS LIT.

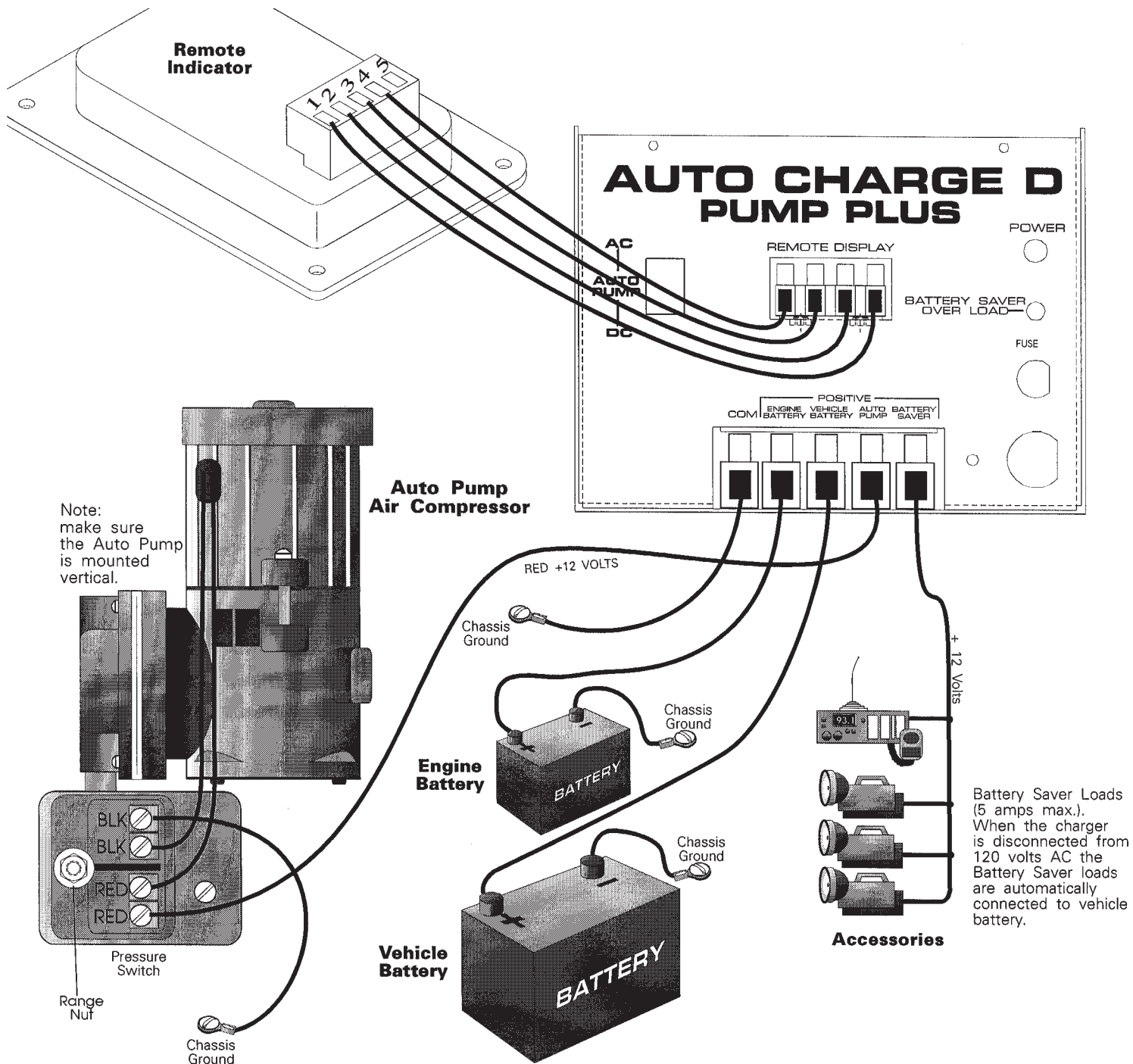
Remote Dual Battery Charge Condition Indicator

This remote indicator shows the charge condition of each battery in 10 levels for "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 5 amperes across its 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 vehicle battery when the A.C. power is "OFF".

INSTALLATION WIRING DIAGRAM



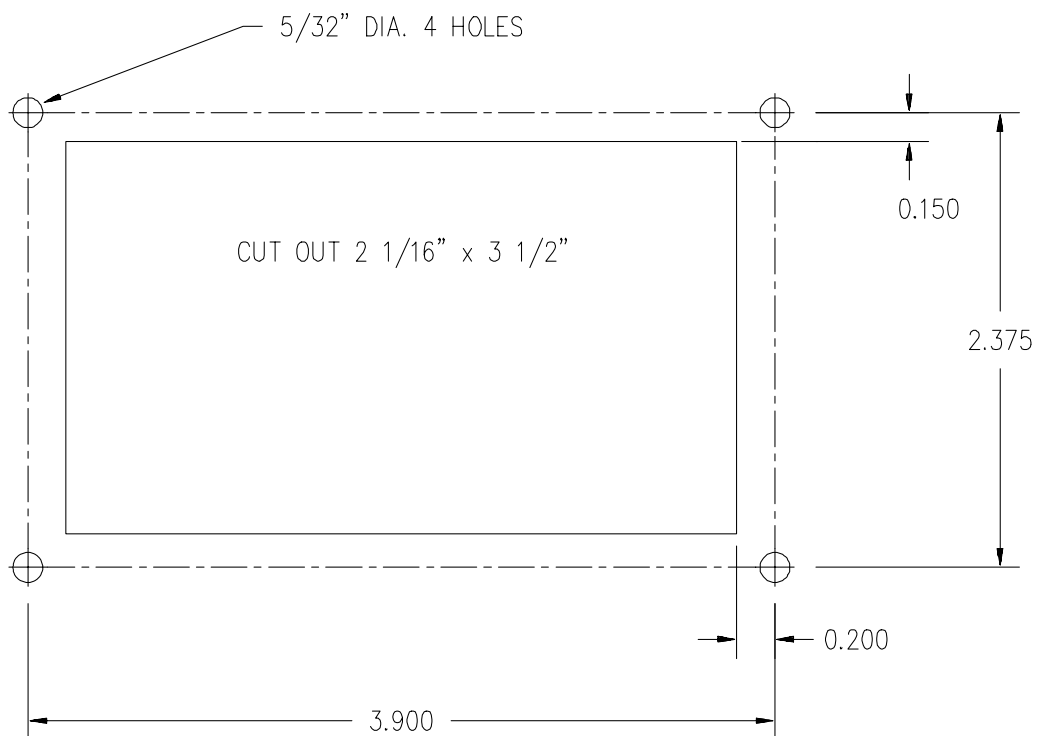
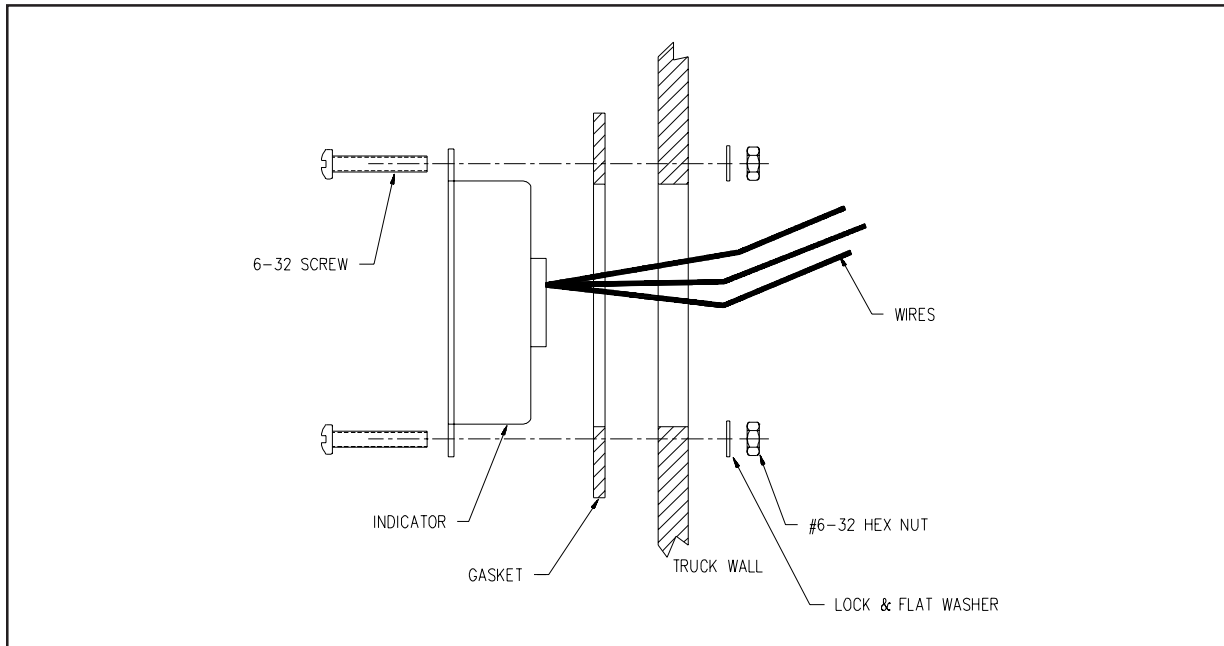
WIRE SIZE CHART

CONNECTION	DEFINITION	WIRE SIZE
COM	NEGATIVE CHARGING LEAD	8 AWG
ENGINE BATTERY	POSITIVE CHARGING LEAD ENGINE BATTERY	14 AWG
VEHICLE BATTERY	POSITIVE CHARGING LEAD VEHICLE BATTERY	10 AWG
AUTO PUMP	POSITIVE OUTPUT FOR AUTO PUMP	14 AWG
BATTERY SAVER	POSITIVE OUTPUT FOR BATTERY SAVER	14 AWG

IMPORTANT : Wire size is for a maximum length of 10 feet. If wiring is to be longer, larger wiring is required. Additional information is available on request.

INDICATOR INSTALLATION

1. Locate Indicator in a convenient place on the vehicle.
2. Place the template in position and center punch in 4 places.
3. Drill holes as shown.
5. Cut out square hole.
6. Connect wiring to charger using butt connector supplied.
7. Install as shown.
8. Insert 4 #6-32 screws and tighten, (**CAUTION Do not over tighten because you will bend the plastic bezel and brake the watertight seal**).



HOLE TEMPLATE

SPECIFICATIONS:

Input: 120 volt, 50/60 Hz, 8 amperes

Input Fuse: 12 amperes, Fast Blow

Output - Vehicle: 25 amperes Max.

Output - Engine: 3 amperes Max.

Output - Battery Saver: 5 amperes Max.

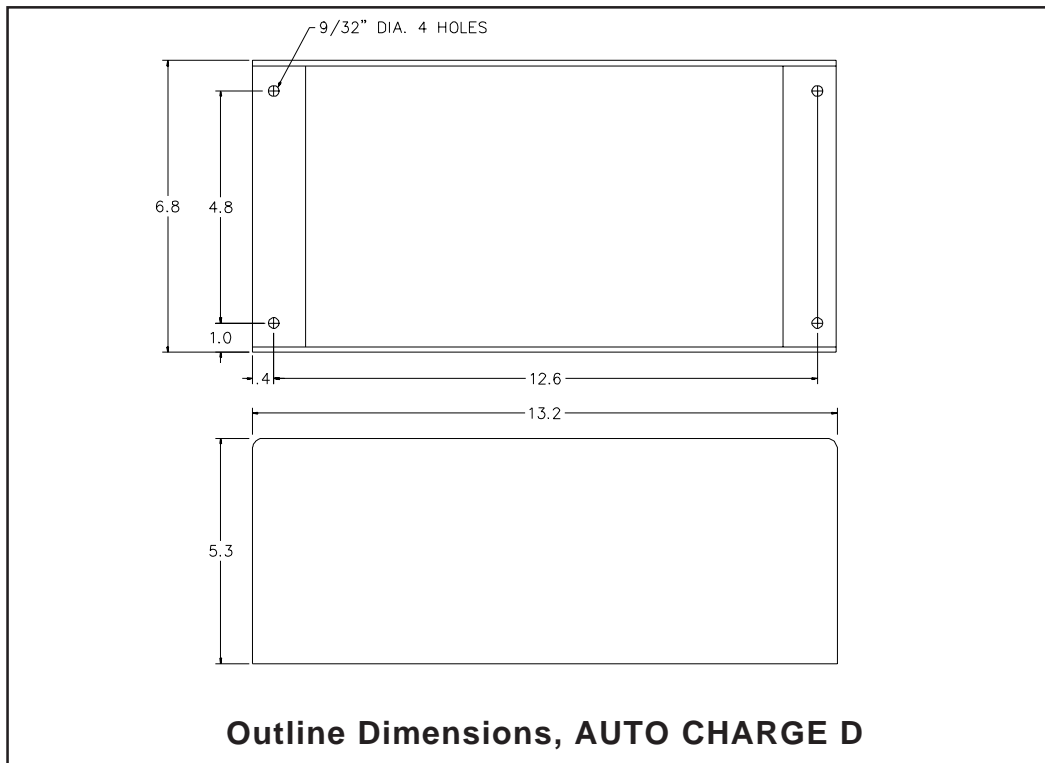
Indicators:

Power: Red LED, indicates 120 volt power applied

Battery Saver Overload: Yellow LED, flashing, indicates BATTERY SAVER load greater than 5 amperes

Dual Bar Graph: indicates charger output to two batteries and state of charge of batteries

Weight: 21 pounds



INSTALLATION RECORD & WARRANTY

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.