

INSTRUCTION MANUAL

AUTO CHARGE 12 AUTOMATIC BATTERY CHARGER FOR 24VDC SYSTEMS



MODEL #091-165-24

NOTE :

**This charger is designed for vehicles with a single
24VDC Battery Bank and Negative Ground.**

CAUTION

This unit should not be exposed to water spray or rain

3 YEAR WARRANTY



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IMPORTANT SAFETY INSTRUCTIONS

1. SAVE THESE INSTRUCTIONS – This manual contains important safety and operating instructions for battery charger Model 091-165-24.
2. Do not expose charger to rain or snow.
3. Use of an attachment not recommended or sold by the battery charger manufacturer may result in a risk of fire, electric shock, or injury to persons.
4. Wire Battery Charger; 115VAC, 60Hz Input Power per Figure 1 of this manual in accordance with ALL; National, Local and/or Underwriter requirements for a NEMA, 115VAC, 15 Ampere appliance.
5. Portable extension cords on 115VAC Input or 24VDC Output should not be used unless absolutely necessary. Use of improper extension cord could result in a risk of fire and electric shock. If extension cord must be used;
 - a) 115VAC input power cord shall comply with UL 1236 Edition 7, Table 11.1 "Acceptable Flexible Cords for Battery Chargers".
 - b) That extension cord is properly wired and in good electrical condition.
 - c) That wire size is large enough for ampere rating of charger as specified in Table 52.1 of UL 1236 Edition 7, "Recommended Minimum AWG Size for Extension Cords for Battery Chargers".
6. Do not operate charger with damaged cord or plug – replace the cord or plug immediately.
7. Do not operate charger if it has received a sharp blow, been dropped, or otherwise damaged in any way; take it to a qualified serviceman.
8. Do not disassemble charger; take it to a qualified serviceman when service or repair is required. Incorrect reassembly may result in a risk of electric shock or fire.
9. To reduce risk of electric shock, unplug charger from outlet before attempting any maintenance or cleaning.

10. WARNING – RISK OF EXPLOSIVE GASES

- a) WORKING IN VICINITY OF A LEAD-ACID BATTERY IS DANGEROUS. BATTERIES GENERATE EXPLOSIVE GASES DURING NORMAL BATTERY OPERATION. FOR THIS REASON, IT IS OF UTMOST IMPORTANCE THAT EACH TIME BEFORE USING THE CHARGER, YOU READ THIS MANUAL AND FOLLOW THE INSTRUCTIONS EXACTLY.
- b) To reduce risk of battery explosion, follow these instructions and those published by battery manufacturer and manufacturer of any equipment you intend to use in vicinity of battery. Review cautionary markings on these products and on engine.

11. PERSONAL PRECAUTIONS

- a) Someone should be within range of your voice or close enough to come to your aid when you work near a lead-acid battery.
- b) Have plenty of fresh water and soap nearby in case battery acid contacts skin, clothing, or eyes.
- c) Wear complete eye protection and clothing protection. Avoid touching eyes while working near battery.
- d) If battery acid contacts skin or clothing, wash immediately with soap and water. If acid enters eye, immediately flood eye with running cold water for at least 10 minutes and get medical attention immediately.
- e) NEVER smoke or allow a spark or flame in vicinity of battery or engine.
- f) Be extra cautious to reduce risk of dropping a metal tool onto battery. It might spark or short-circuit battery or other electrical part that may cause explosion.
- g) Remove personal metal items such as rings, bracelets, necklaces, and watches when working with a lead-acid battery. A lead-acid battery can produce a short-circuit current high enough to weld a ring or the like to metal, causing a severe burn.
- h) Use charger for charging a LEAD-ACID battery only. It is not intended to supply power to a low voltage electrical system other than in a starter-motor application. Do not use battery charger for charging dry-cell batteries that are commonly used with home appliances. These batteries may burst and cause injury to persons and damage to property.
- i) NEVER charge a frozen battery.

12. PREPARING TO CHARGE

- a) If necessary to remove battery from vehicle to charge, always remove grounded terminal from battery first. Make sure all accessories in the vehicle are off, so as not to cause an arc.
- b) Be sure area around battery is well ventilated while battery is being charged. Gas can be forcefully blown away by using a piece of cardboard or other nonmetallic material as a fan.
- c) Clean battery terminals. Be careful to keep corrosion from coming in contact with eyes.
- d) Add distilled water in each cell until battery acid reaches level specified by battery manufacturer. This helps purge excessive gas from cell. Do not overfill. For a battery without cell caps, carefully follow manufacturer's recharging instructions.
- e) Study all battery manufacturer's specific precautions such as removing or not removing cell caps while charging and recommended rates of charge.
- f) Determine voltage of battery by referring to vehicle owner's manual and make sure that it matches the output rating of the charger.

13. CHARGER LOCATION

- a) Locate charger as far away from battery as VDC charge cables permit.
- b) Never place charger directly above battery being charged; gases from battery will corrode and damage charger.
- c) Never allow battery acid to drip on charger when reading gravity or filling battery.
- d) Do not operate charger in a closed-in area or restrict ventilation in any way.
- e) Do not set a battery on top of charger.

14. DC CONNECTION PRECAUTIONS

- a) Connect and disconnect DC output wires only after interrupting 115VAC Input Power. Never allow wires to touch each other.
- b) Attach wires to battery per Figure 1 of this manual. For optimal Battery Charger operation the DC charging connections require direct connection to battery under charge.

15. FOLLOW THESE STEPS WHEN BATTERY IS INSTALLED IN VEHICLE.

A SPARK NEAR BATTERY MAY CAUSE BATTERY EXPLOSION. TO REDUCE RISK OF A SPARK NEAR BATTERY:

- a) Position VAC and VDC cords to reduce risk of damage by hood, door, or moving engine part.
- b) Stay clear of fan blades, belts, pulleys, and other parts that can cause injury to persons.
- c) Check polarity of battery posts. POSITIVE (POS, P, +) battery post usually has larger diameter than NEGATIVE (NEG, N, -) post.
- d) For negative-grounded vehicle, connect POSITIVE (RED) wire from battery charger to POSITIVE (POS, P, +) ungrounded post of battery. Connect NEGATIVE (BLACK) wire to vehicle chassis or engine block away from battery. Do not connect wire to carburetor, fuel lines, or sheet-metal body parts. Connect to a heavy gauge metal part of the frame or engine block.
- e) When disconnecting charger, turn any switches to off, disconnect AC cord, remove wire from vehicle chassis, and then remove wire from battery terminal.

16. FOLLOW THESE STEPS WHEN BATTERY IS OUTSIDE VEHICLE. A SPARK NEAR THE BATTERY MAY CAUSE BATTERY EXPLOSION. TO REDUCE RISK OF A SPARK NEAR BATTERY:

- a) Check polarity of battery posts. POSITIVE (POS, P, +) battery post usually has a larger diameter than NEGATIVE (NEG, N, -) post.
- b) Attach at least a 24-inch-long 6-gauge (AWG) insulated battery cable to NEGATIVE (NEG, N, -) battery post.
- c) Connect POSITIVE (RED) charger wire to POSITIVE (POS, P, +) post of battery.
- d) Position yourself and free end of cable as far away from battery as possible – then connect NEGATIVE (BLACK) charger wire to free end of cable.
- e) Do not face battery when making final connection.
- f) When disconnecting charger, always do so in reverse sequence of connecting procedure and break first connection while as far away from battery as practical.
- g) A marine (boat) battery must be removed and charged on shore. To charge it on board requires equipment specially designed for marine use.

17. The instructions for a battery charger shall include 16. (a) – (g) as applicable to the particular charger.

- a) For all grounded cord-connected battery chargers:
GROUNDING AND AC POWER CORD CONNECTION INSTRUCTIONS -
Charger should be grounded to reduce risk of electric shock.
- b) For grounded, cord-connected battery chargers with an input rating less than 15 amperes and intended for use on a nominal 115VAC circuit only:

INTRODUCTION

The Auto Charge 12 Battery Charger is a compact completely automatic charger designed for installation on vehicles with one (1) 24VDC Battery Bank. The Auto Charge 12 provides complete battery charging for a single 24VDC battery or single 24VDC battery bank. The voltage of the battery connected to the Auto Charge 12 is sensed via the charging cables so that the battery is charged according to its requirements. The maximum output of the charger is 6 Amperes DC. An ammeter provides continuous indication of the charger output.

Construction of the Auto Charge 12 is extremely rugged to withstand the shock and vibration normally encountered by vehicle mounted equipment. The unit operates completely automatically and stops charging the batteries when they are fully charged. There is no trickle charge and therefore no danger of overcharging and water boil-off. Any parasitic loads on the battery such as radio, lights, etc., will be supplied by current from the charger.

The Auto Charge 12 incorporates an internal thermal safety device. Should the internal temperature of the Auto Charge 12 elevate beyond specification the charger will automatically shut down. The Auto Charge 12 will resume battery charging once the internal temperature has decreased to specification level.

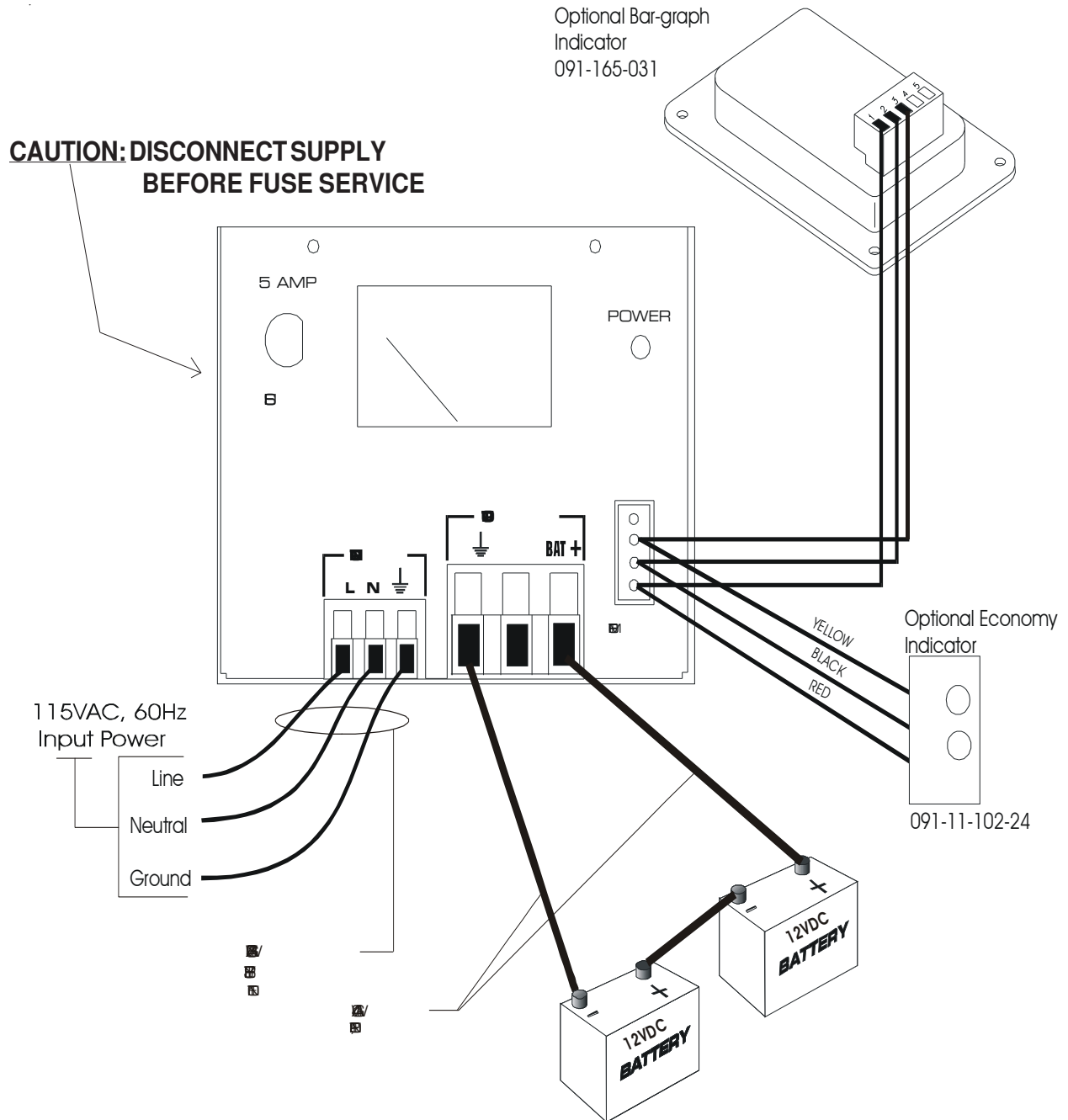
INSTALLATION

The Auto Charge 12 Automatic Battery Charger should be installed in an area with adequate ventilation. Refer to Installation Wiring Diagram, FIGURE 1.

1. Mount the charger using the four holes provided for this.
2. Connect the wiring from the battery bank to the Output Terminal Strip.
3. Connect the wiring to the battery. Ring lugs that have been securely crimped, or soldered, should be used.
4. Double check all wiring before proceeding.
5. Wire the 115VAC, 60Hz power to INPUT terminal strip.
6. POWER pilot light will light to show that the charger has power.

INSTALLATION WIRING DIAGRAM

FIGURE 1



Notes:

1. 115VAC Input Power and Charger Output Power strain relief cover not shown for clarity. Refer to "Important Safety Instructions" section of this manual.
2. Charger output power connections, AWG 14, for 20 feet Maximum. Consult factory if longer length is required.

SPECIFICATION & OUTLINE

SPECIFICATIONS:

Input: 115/120VAC, 60 Hz, 5.0 Amps

Input Fuse: 5 Amps, **CAUTION: DISCONNECT SUPPLY BEFORE CHANGING FUSE**

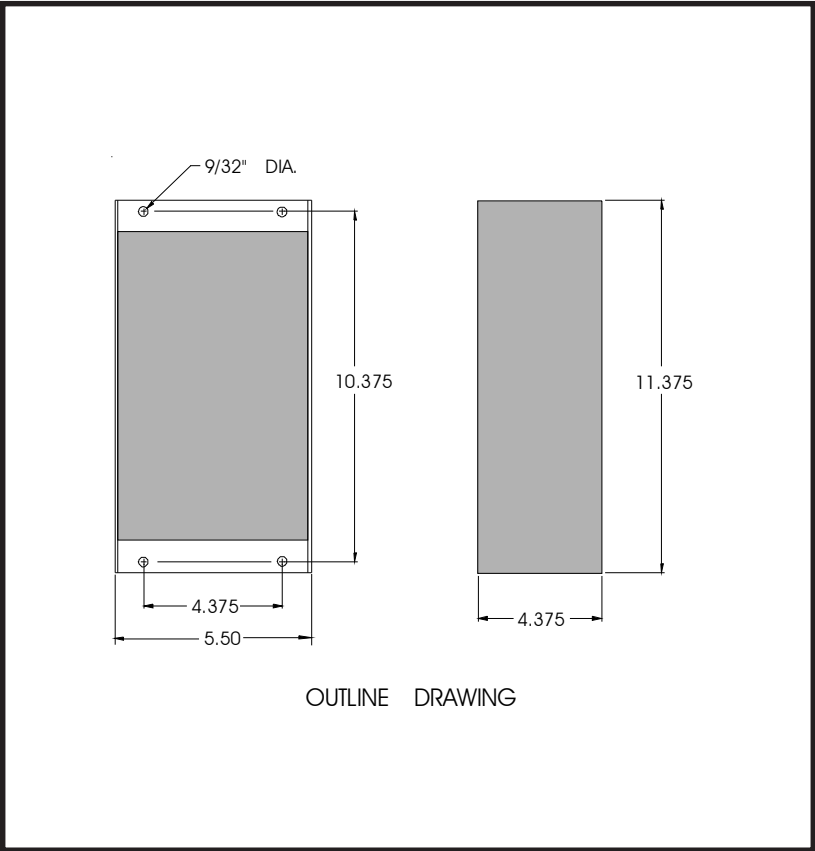
Output: 26.50 VDC

Output Fuse (Optional): 12 Amps

Output Current: 6 Amps

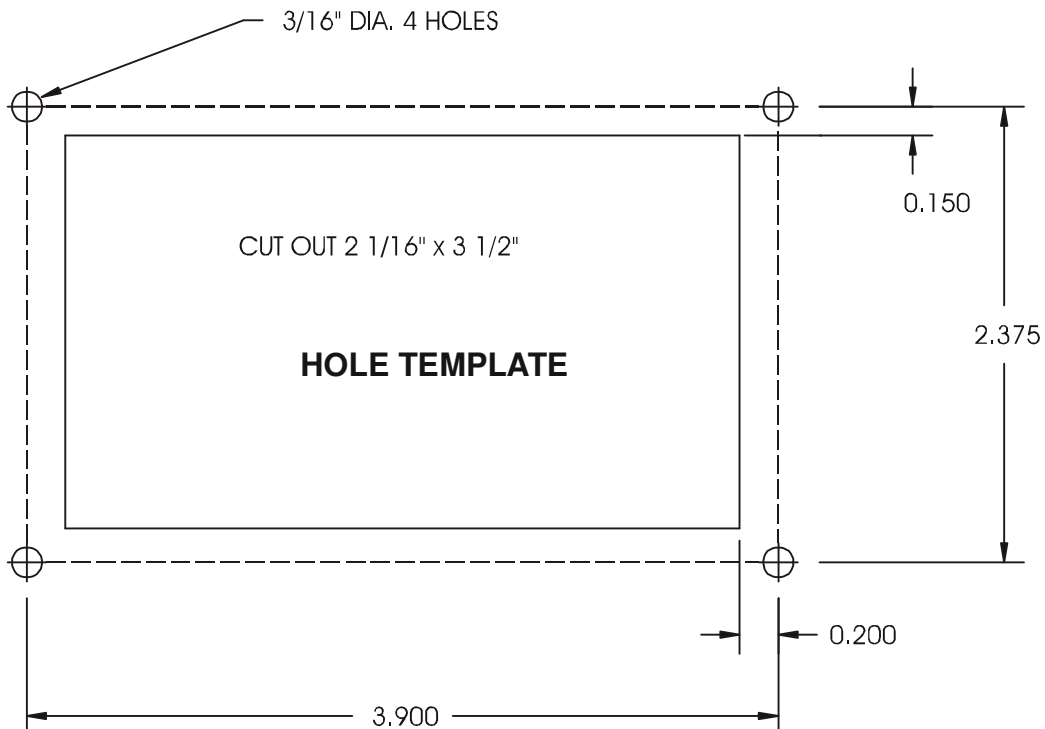
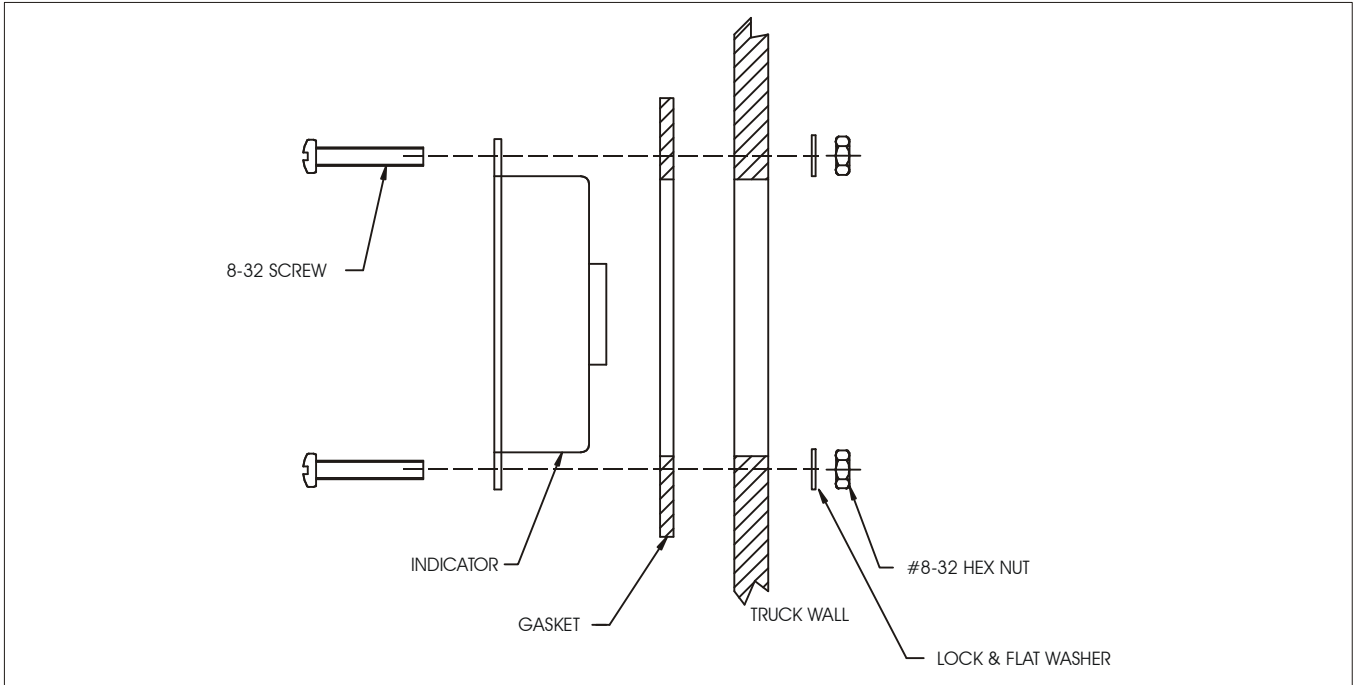
Charge Indicator: 0-8 amps 5%

Weight: 10 lbs



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.
4. Cut out square hole.
5. Connect wiring to charger in accordance with the instructions in the charger installation instructions.
6. Install as shown.
7. Insert (4) #8-32 screws supplied and tighten. (**CAUTION: Do not over tighten because you will bend the plastic bezel and break the watertight seal.**)



Hole Template may not be to Scale, please check dimensions before using.

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.