

# U.S. GENERAL®

## Battery Charger/Tester 12 Volt

### Model 94088

### ASSEMBLY AND OPERATING INSTRUCTIONS



3491 MISSION OAKS BLVD., CAMARILLO, CA 93011

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**TO HELP PREVENT SERIOUS INJURY,  
READ AND UNDERSTAND ALL WARNINGS  
AND INSTRUCTIONS BEFORE USE.**

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**For technical questions and replacement parts, please call 1-800-444-3353.**

## Specifications

| Item                     | Description                       |
|--------------------------|-----------------------------------|
| Power Consumption        | 110 VAC, 60 Hz                    |
| Power Cord               | Six feet with 2-prong plug        |
| Output                   | 2 or 5.5 amps at 12 Volts DC      |
| Battery Charge Indicator | 12.3-12.6 Volts                   |
| Charger Capacity         | 15-90 Ah (4 Volt Min. Charge)     |
| Overall Dimensions       | 4-3/8" (L) x 6-7/8" (W) x 11" (H) |
| Weight                   | 6.1 lbs.                          |

### IMPORTANT SAFEGUARDS

## IMPORTANT SAFETY INSTRUCTIONS

1. **"SAVE THESE INSTRUCTIONS"** - This manual contains important safety and operating instructions for battery charger Model: 94088.
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. To reduce risk of damage to electric plug and cord, pull by plug rather than cord when disconnecting charger. An extension cord should not be used unless absolutely necessary.
5. Use of improper extension cord could result in a risk of fire and electric shock. If extension cord must be used, make sure:
  - (a) That pins on plug of extension cord are the same number, size, and shape as those of plug on charger.
  - (b) That extension cord is properly wired and in good electrical condition.
  - (c) That wire size is large enough for AC ampere rating of charger.
6. Do not operate this charger with a 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.

### MINIMUM AWG WIRE SIZE FOR EXTENSION CORDS FOR THIS BATTERY CHARGER

| AC input      | Length of cord, m |    |     |     |
|---------------|-------------------|----|-----|-----|
| Current I, A  | AWG size of cord  |    |     |     |
|               | 25                | 50 | 100 | 150 |
| $0 < I < 2$   | 18                | 18 | 18  | 16  |
| $2 < I < 3$   | 18                | 18 | 16  | 14  |
| $3 < I < 4$   | 18                | 18 | 16  | 14  |
| $4 < I < 5$   | 18                | 18 | 14  | 12  |
| $5 < I < 6$   | 18                | 16 | 14  | 12  |
| $6 < I < 8$   | 18                | 16 | 12  | 10  |
| $8 < I < 10$  | 18                | 14 | 12  | 10  |
| $10 < I < 12$ | 16                | 14 | 10  | 8   |
| $12 < I < 14$ | 16                | 12 | 10  | 8   |
| $14 < I < 16$ | 16                | 12 | 10  | 8   |

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 the 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 your charger, you read this and follow the instructions exactly.
  - (b) To reduce the risk of the 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 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 an explosion.
  - (g) Remove personal metal items such as rings, bracelets, necklaces, and watches when working near 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 this charger for charging LEAD-ACID batteries only. It is not intended to supply power to a low voltage electrical system other than in an automotive 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 BATTERY**
  - (a) If it becomes necessary to remove the battery from the 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. Gases can be forcefully blown away, by using a piece of cardboard or other non-metallic material such as a paper/wood 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 cells. 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 car owner's manual and make sure that output voltage selector switch is set at correct voltage. If charger has adjustable charge rate, charge battery initially at lowest rate.

**13. CHARGER LOCATION**

- (a) Locate charger as far away from battery as the DC cable permits.
- (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 specific 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 clips only after setting any charger switches to off position and removing AC cord from electric outlet. Avoid allowing clips to touch each other.
- (b) Attach clips to battery and chassis as indicated in 15 (e), 15 (f), 16 (b), and 16 (d) below.

**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) With engine off, position AC and DC cords to reduce the risk of damage by hood, door, or moving engine parts.
- (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) Determine which battery post is grounded (connected) to the chassis. If negative post is grounded to chassis (as in most vehicles), see (e). If the positive post is grounded to the chassis, see (f).
- (e) For negative-grounded vehicle, connect POSITIVE (RED) clip from battery charger to POSITIVE (POS, P, +) ungrounded post of battery. Connect NEGATIVE (BLACK) clip to vehicle chassis or engine block away from battery. Do not connect clip to the carburetor, fuel lines, or sheet-metal body parts. Connect to a heavy gauge metal part of the frame or engine block.
- (f) For positive-grounded vehicle, connect NEGATIVE (BLACK) clip from battery charger to NEGATIVE (NEG, N, -) ungrounded post of battery. Connect POSITIVE (RED) clip to vehicle chassis or engine block away from battery. Do not connect clip to the

carburetor, fuel lines, or sheet-metal body parts. Connect to a heavy gauge metal part of the frame or engine block.

- (g) When disconnecting charger, turn switches to off, disconnect AC cord, remove clip from vehicle chassis, and then remove clip from battery terminal.
  - (h) See operating instructions for length of charge information.
16. Follow these steps when battery is outside vehicle. A spark near 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 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. Place the other end of this cable on a dry insulating surface, such as a piece of dry wood.
  - (c) Connect POSITIVE (RED) charger clip 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 clip to free end of the cable.
  - (e) Do not face battery when making final connection.
  - (f) When disconnecting charger, always do so in the reverse sequence of connecting procedure and break first connection while as far away from the 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.

## **SAVE THESE INSTRUCTIONS**

## Specific Safety Rules for the Battery Charger

1. Maintain labels and nameplates on the Battery Charger. These carry important information. If unreadable or missing, contact Harbor Freight Tools for a replacement.
2.  Always wear safety impact eye goggles and heavy work gloves when using the Battery Charger. Using personal safety devices reduce the risk for injury. Safety impact eye goggles and heavy work gloves are available from Harbor Freight Tools.
3. Maintain a safe working environment. Keep the work area well lit. Make sure there is adequate surrounding workspace. Always keep the work area free of obstructions, grease, oil, trash, and other debris. Do not use a power tool in areas near flammable chemicals, dusts, and vapors. Do not use this product in a damp or wet location.
4. Avoid unintentional starting. Make sure you are prepared to begin work before plugging the Battery Charger.
5.  Always unplug the Battery Charger from its electrical outlet before connecting its cables to a battery, or performing any inspection, maintenance, or cleaning procedures.
6. Keep extension cord off wet ground and away from water.
7. Use this Battery Charger with lead/acid batteries only. When charging a maintenance-free battery, always monitor the progress of the charge. Do not over charge a maintenance-free battery.
8. Do not attempt to charge non-rechargeable or defective batteries.
9. Keep connections and cable clamps clean and free from corrosion.
10. Never simultaneously charge several batteries.
11. Do not discard used batteries in the trash. Properly recycle according to local environmental codes.
12. Do not attempt to charge a 6 volt battery.
13. People with pacemakers should consult their physician(s) before using this product. Operation of electrical equipment in close proximity to a heart pacemaker could cause interference to or failure of the pacemaker.
14. This product contains or, when used, produces a chemical known to the State of California to cause cancer and birth defects or other reproductive harm. (California Health & Safety Code § 25249.5, *et seq.*)

### 15. Risk of Explosion!



- **If you detect gas, do not switch off the unit. Do not disconnect the charging clamps. Immediately ventilate the room by opening windows and doors. Do not switch on an electrical fan. When the air has cleared of gas, unplug the unit from the electrical outlet.**
- Charge the battery in a well-ventilated area.
- To prevent sparking due to electrostatic discharge, never wear clothes made of synthetic materials when charging the battery.
- Avoid creating or working around any flames or sparks; flames or sparks can ignite the gasses caused by charging and cause an explosion.

## ASSEMBLY INSTRUCTIONS

1. When unpacking, check to make sure that the product is intact and undamaged. If any parts are missing or broken, please call Harbor Freight Tools at the number on the cover of this manual as soon as possible.
2. This product comes preassembled. No additional assembly is necessary.

## OPERATING INSTRUCTIONS

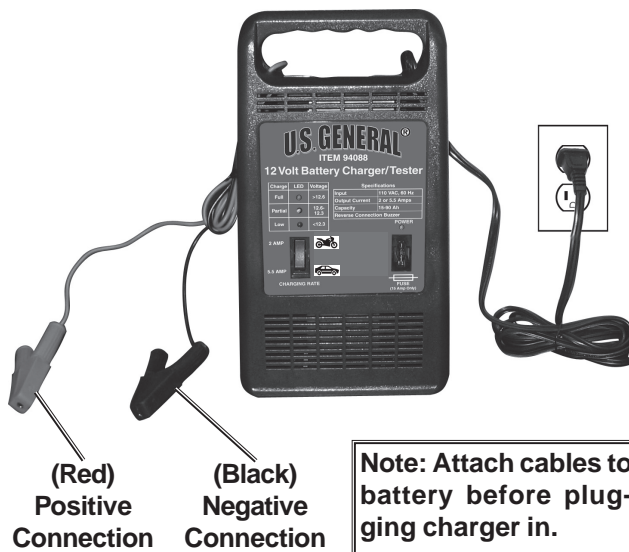
**Warning: Do not overcharge maintenance-free batteries. Do not try to start the engine with the Battery Charger connected to the battery.**

1. **FOLLOW ALL CONNECTION PRECAUTIONS AS OUTLINED ON PAGES 4 & 5 OF THIS MANUAL.** Place the Battery Charger and battery in a well-ventilated area.
2. Determine the voltage of the battery from the battery labels. This device is intended for use on 12 Volt batteries only
3. Push the Charge Rate Switch to the desired amperage.
4. If charging a battery while in a vehicle, leave the hood open and do not leave the charger unattended. Separate the charger and battery as much as possible.
5. If the battery is not a maintenance-free type battery, unscrew the cell caps and fill each cell to the full indicator with distilled water. Replace caps.
6. With the Battery Charger unplugged, connect the positive (red) Cable Clamp to the positive terminal of the battery.

If charging a battery mounted in a vehicle, first remove the vehicle's red cable from the battery; otherwise damage may occur to the vehicle's electrical system. If in doubt, refer to the vehicle's service manual.



### Cable Connections



7. Connect the negative (black) Cable Clamp to the negative terminal of the battery.
8. Plug the Power Cord into the electrical outlet.
9. The LEDs on the charging table on the left side of the front panel will indicate the voltage and charge status of the battery.

**Note:** If the unit emits a buzzing sound, the cables are connected to the wrong terminals of the battery. If this happens, immediately switch off the charger, unplug it, and switch the connections.

10. When the battery is fully charged, the Battery Charger will automatically shut down, and the green LED will remain lit.

Optionally, **only with the battery removed from the vehicle**, the Battery Charger can be left on while connected to the battery. When the battery becomes weak, the Battery Charger will automatically turn on. When the battery is once again charged, the Battery Charger will automatically shut off. It will, however, keep sensing the charge of the battery.

**Note:** Do not leave Battery Charger on for long duration without checking the distilled water level of the battery; do not allow distilled water to boil off. **Note:** Do not leave a charging battery unattended.

11. When finished charging the battery, unplug the Power Cord from the electrical outlet.
12. Disconnect the Cable Clamps from the battery.

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## MAINTENANCE INSTRUCTIONS

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**⚠ WARNING** Make sure the Power Switch of the Battery Charger is in its “OFF” position and that the unit is unplugged from its electrical outlet before performing any inspection, maintenance, or cleaning procedures.

1. Before each use, inspect the general condition of the Battery Charger. Check for loose screws, misalignment or binding of moving parts, cracked or broken parts, damaged electrical wiring, and any other condition that may affect its safe operation. If abnormal noise or vibration occurs, have the problem corrected before further use. Do not use damaged equipment.
2. Periodically recheck all nuts, bolts, and screws for tightness.
3. After each use wipe down the Cable Clamps and apply a light grease.
4. Store in a clean and dry location.
5. **FUSE REPLACEMENT:** If, for no apparent reason, the charger power LED does not illuminate, the fuse should be checked. Use needle nose pliers to gently remove the fuse. Check the fuse and, if needed, replace it only with another 15 amp fuse of the same type.
6. **REPLACEMENT PARTS ARE NOT AVAILABLE FOR THIS ITEM.**



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