



OPERATOR'S MANUAL

MODEL NO. 1002 1.5 AMP 12 VOLT AUTOMATIC BATTERY CHARGER

Your new battery charger has been designed and manufactured to provide years of reliable service. This charger cannot be used on positive ground systems without conversion (see MOUNTING CHARGER FOR CONTINUOUS USE). Proper use and care can prolong the life of the charger. This Operator's Manual contains information regarding safety, operation, maintenance and storage of your new battery charger. Make sure that you, and anyone else who will be using this charger, are familiar with this information.

 WARNING	
	Read, understand and follow instructions found in the operator's manual before using your battery charger. Failure to follow operating instructions may result in property damage or serious injury.

IMPORTANT SAFETY INSTRUCTIONS SAVE THESE INSTRUCTIONS



This manual contains important safety and operating instructions.

- Use of an attachment not recommended or sold by the manufacturer may result in a risk of fire, electric shock or injury to persons.
- To reduce the risk of damage to electric plug and cord, pull by plug rather than cord when disconnecting charger.
- Use of an improper extension cord could result in a risk of fire and electric shock. If an extension cord must be used, make sure:
 1. that pins on plug of extension cord are the same number, size, and shape as those of plug on charger;
 2. that extension cord is properly wired and in good electrical condition;
 3. that wire size is large enough for ac ampere rating of this charger as indicated in the following table.

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


Length of Cord, Feet	25	50	100	150
AWG Size of Cord	18	18	18	16


- Do not operate charger with damaged ac line cord or plug – replace them immediately.
- Do not operate charger if it has received a sharp blow, been dropped or otherwise damaged in any way; take it to a qualified service person.
- Do not disassemble charger; take it to a qualified service person when service or repair is required. Incorrect reassembly may result in a risk of electric shock or fire.
- To reduce risk of electric shock, unplug charger from outlet before attempting any maintenance or cleaning.

 WARNING	
	RISK OF EXPLOSIVE GASES: Working in the vicinity of a lead acid battery is dangerous. Batteries generate explosive gases during normal battery operation. Always work in a well ventilated area.

For this reason, it is critical that each time before using your charger, you read this manual and follow the instructions exactly.


To reduce the 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.

 **CAUTION** – Connect or disconnect the battery clamps only when the ac line cord is disconnected or arcing or burning may result.

 **CAUTION** – Do not expose to rain; replace defective cords or wires immediately.

PERSONAL PRECAUTIONS

1. Someone should be within range of your voice, or close enough to come to your aid, when you work near a lead-acid battery.
2. Have plenty of fresh water and soap nearby in case battery acid contacts skin, clothing or eyes.


 WARNING	
	FLYING DEBRIS RISK: Always wear safety equipment when working with batteries or chargers to protect yourself from flying debris, acid spills or other objects in and around an engine compartment.

3. Wear complete eye protection and clothing protection. Avoid touching eyes while working near battery.
4. 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.

 WARNING	
	RISK OF FIRE: Never smoke or allow a spark or flame in the vicinity of the battery or the engine.

5. Be extra cautious to reduce risk of dropping a metal tool onto battery. It might spark or short-circuit the battery or other electrical part that may cause an explosion.
6. 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.
7. 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.
8. NEVER charge a frozen battery.
9. 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.
10. 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 fan.
11. 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.
12. Study all battery manufacturer's specific precautions such as removing or not removing cell caps while charging and recommended rates of charge.

MOUNTING CHARGER FOR CONTINUOUS USE

 **WARNING** – Never alter ac line cord or plug provided. If it will not fit in the outlet, have the proper outlet installed by a qualified electrician. Improper connection can result in the risk of electric shock.

1. Fasten the supplied mounting bracket to the charger with the provided hardware as illustrated in Figure 1.
2. Slide the bottom flange of the mounting bracket under the battery. The battery weight will hold the charger in place.

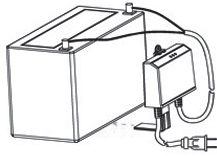


Figure 1. **Charger Mounting**

3. Check polarity of battery posts. Positive (POS, P, +) battery post usually has larger diameter than Negative (NEG, N, -) post. Determine which battery post is grounded (connected) to the chassis. If Negative post is grounded to chassis (as in most vehicles), see step a. If Positive post is grounded to the chassis, see step b.
 - a) For negative-grounded vehicle, connect Positive (RED) lug from charger to Positive (POS, P, +) ungrounded battery post. Connect Negative (BLACK) lug to vehicle chassis or engine block, away from battery. Do not connect lug to carburetor, fuel lines, or sheet metal body parts. Make the connection to a heavy gauge metal part of the frame or engine block.

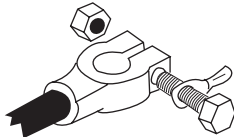


Figure 2. **Terminal Connections**

- b) If you have a positive ground system in your vehicle, you must mark the two dc output cable conductors with the color currently on each lug and remove the attached battery lugs. Switch the lugs with new lugs of the same size but on opposite conductors. Put the new, larger lug on the conductor that is black (must remain identified as black or negative) and the new smaller lug on the conductor that is red (must remain identified as red or positive). The larger lug always connects to the battery and the smaller lug connects to the engine block or chassis, away from the battery.

For positive-grounded vehicle, connect Negative (BLACK) clip from charger to Negative (NEG, N, -) ungrounded post of battery (see MOUNTING CHARGER FOR CONTINUOUS USE). Connect Positive (RED) clip to vehicle chassis or engine block away from battery. Do not connect lug to carburetor, fuel lines or sheet metal body parts. Make the connection to a heavy gauge metal part of the frame or engine block.

If problems arise while trying to connect the output leads, solicit the aid of your local auto supply store to find a suitable connection device for your application.

OPERATING INSTRUCTIONS

This charger uses a voltage regulating control circuit that continually monitors the battery voltage and automatically turns the output on and off, safeguarding against overcharge. This battery charger is designed to remain connected to the battery. However, if it becomes necessary to disconnect the charger, disconnect ac line cord first, remove lug from vehicle chassis (ground) and then remove the lug from battery terminal.

⚠ WARNING	
	A spark near the battery may cause the battery to explode.

- To reduce risk of a spark near battery, position ac and dc line cords to reduce the risk of damage by hood, door or moving engine part.
 - Stay clear of fan blades, belts, pulleys and other parts that can cause personal injury.
1. Connect the battery charger ac line cord (through a UL approved

extension cord) to a 120 Volt ac power outlet. Make sure the extension cord is in good condition and the wire size is large enough for the ac ampere rating of the charger (see RECOMMENDED MINIMUM AWG WIRE SIZE FOR EXTENSION CORDS FOR THIS BATTERY CHARGER).

2. Once the battery charger has been properly connected to the battery and the ac outlet, the amber CHARGING LED will light solid, indicating the battery is being charged. Once the battery approaches full charge, the green LED will light solid. Subsequently, the charger will perform a timed float charge for approximately 5 hours and then enter maintenance mode. The charger will resume charging if the battery's state of charge declines.
3. The charger has reverse polarity and output short circuit protection. If a reverse polarity condition exists, the Red LED will light solid. If you encountered this situation, disconnect from AC power and make a proper battery connection. If the charger identifies a short condition in the battery, the Red LED will flash. Disconnect the charger from AC power and then disconnect the battery connections, disconnecting the negative lead first.

CHARGER MAINTENANCE AND CARE

A minimum amount of care can keep your battery charger working properly for years. Just as with any appliance or tool, keep your battery charger clean and dry. Occasionally cleaning the case and cables with a dry or slightly damp cloth will prolong the life of your charger.

⚠ WARNING: This product can expose you to chemicals, including Vinyl-Chloride, Styrene and Acrylonitrile, which are known to the State of California to cause cancer.