

Automatic Battery Charger

OWNERS MANUAL



LISTED

91-1

PLEASE SAVE THIS OWNERS MANUAL AND READ BEFORE EACH USE.

This manual will explain how to use the charger safely and effectively.

Please read and follow these instructions and precautions carefully.

1. IMPORTANT SAFETY INSTRUCTIONS – SAVE THESE INSTRUCTIONS

- 1.1 SAVE THESE INSTRUCTIONS** – This manual contains important safety and operating instructions.
- 1.2** Keep out of reach of children.
- 1.3** Do not expose the charger to rain or snow.
- 1.4** 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.
- 1.5** To reduce the risk of damage to electric plug and cord, pull by the plug rather than the cord when disconnecting charger.
- 1.6** An extension cord should not be used unless absolutely necessary. Use of improper extension cord could result in a risk of fire and electric shock. If an extension cord must be used, make sure:
 - The pins on plug of extension cord are the same number, size and shape as those of plug on charger.
 - The extension cord is properly wired and in good electrical condition.
 - The wire size is large enough for AC ampere rating of charger, as specified in section 8.
- 1.7** Do not operate charger with damaged cord or plug – replace the cord or plug immediately.
- 1.8** 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.

*For the manual with Spanish and French,
visit www.batterychargers.com or call 1-800-621-5485.*

*Para obtener el manual en español y francés,
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- 1.9** 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.
- 1.10** To reduce risk of electric shock, unplug charger from outlet before attempting any maintenance or cleaning. Turning off controls will not reduce this risk.
- 1.11 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 YOU FOLLOW THE INSTRUCTIONS EACH TIME YOU USE THE CHARGER.
 - 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 the engine.

2. PERSONAL SAFETY PRECAUTIONS

- 2.1** Consider having someone close enough by to come to your aid when you work near a lead-acid battery.
- 2.2** Have plenty of fresh water and soap nearby in case battery acid contacts skin, clothing, or eyes.
- 2.3** Wear complete eye protection and clothing protection. Avoid touching eyes while working near battery.
- 2.4** 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.
- 2.5** NEVER smoke or allow a spark or flame in vicinity of battery or engine.
- 2.6** 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.
- 2.7** 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.
- 2.8** Use the charger for charging only 6V and 12V LEAD-ACID (STD, AGM or GEL) rechargeable batteries. 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.
- 2.9** NEVER charge a frozen battery.

3. PREPARING TO CHARGE

- 3.1 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.
- 3.2 Be sure area around battery is well ventilated while battery is being charged.
- 3.3 Clean battery terminals. Be careful to keep corrosion from coming in contact with eyes.
- 3.4 Add distilled water in each cell until battery acid reaches level specified by battery manufacturer. Do not overfill. For a battery without removable cell caps, such as valve regulated lead acid batteries, carefully follow manufacturer's recharging instructions.
- 3.5 Study all battery manufacturer's specific precautions while charging and recommended rates of charge.
- 3.6 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 applicable). If charger has adjustable charge rate, charge battery initially at lowest rate.

4. CHARGER LOCATION

- 4.1 Locate charger as far away from battery as DC cables permit.
- 4.2 Never place charger directly above battery being charged; gases from battery will corrode and damage charger.
- 4.3 Never allow battery acid to drip on charger when reading electrolyte specific gravity or filling battery.
- 4.4 Do not operate charger in a closed-in area or restrict ventilation in any way.
- 4.5 Do not set a battery on top of charger.

5. DC CONNECTION PRECAUTIONS

- 5.1 Connect and disconnect DC output terminals only after setting any charger switches to "off" position and removing AC cord from electric outlet. Never allow terminals to touch each other.
- 5.2 Attach terminals to battery and chassis, as indicated in sections 6 and 7.

6. FOLLOW THESE STEPS WHEN BATTERY IS INSTALLED IN VEHICLE

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

- 6.1 Position AC and DC cords to reduce risk of damage by hood, door, or moving engine part.
- 6.2 Stay clear of fan blades, belts, pulleys, and other parts that can cause injury to persons.

- 6.3 Check polarity of battery posts. POSITIVE (POS, P, +) battery post usually has larger diameter than NEGATIVE (NEG, N, -) post.
- 6.4 Determine which post of battery is grounded (connected) to the chassis. If negative post is grounded to chassis (as in most vehicles), see (6.5). If positive post is grounded to the chassis, see (6.6).
- 6.5 For negative-grounded vehicle, connect POSITIVE (RED) terminal from battery charger to POSITIVE (POS, P, +) ungrounded post of battery. Connect NEGATIVE (BLACK) terminal to vehicle chassis or engine block away from battery. Do not connect terminal to carburetor, fuel lines, or sheet-metal body parts. Connect to a heavy gauge metal part of the frame or engine block.
- 6.6 For positive-grounded vehicle, connect NEGATIVE (BLACK) terminal from battery charger to NEGATIVE (NEG, N, -) ungrounded post of battery. Connect POSITIVE (RED) terminal to vehicle chassis or engine block away from battery. Do not connect terminal to carburetor, fuel lines, or sheet-metal body parts. Connect to a heavy gauge metal part of the frame or engine block.
- 6.7 When disconnecting charger, turn switches to off, disconnect AC cord, remove terminal from vehicle chassis, and then remove terminal from battery post.
- 6.8 See *Operating Instructions* for length of charge information.

7. FOLLOW THESE STEPS WHEN BATTERY IS OUTSIDE VEHICLE

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

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

8. GROUNDING AND AC POWER CORD CONNECTIONS

- 8.1** This battery charger is for use on a nominal 120 volt circuit. The plug must be plugged into an outlet that is properly installed and grounded in accordance with all local codes and ordinances. The plug pins must fit the receptacle (outlet). Do not use with an ungrounded system.
- 8.2 DANGER:** Never alter the AC cord or plug provided – if it does not fit the outlet, have a proper grounded outlet installed by a qualified electrician. An improper connection can result in a risk of an electric shock or electrocution.

8.3 USING AN EXTENSION CORD

The use of an extension cord is not recommended. If you must use an extension cord, follow these guidelines:

- Pins on plug of extension cord must be the same number, size, and shape as those of plug on charger.
- Ensure that the extension cord is properly wired and in good electrical condition.
- Wire size must be large enough for the AC ampere rating of charger, as specified below:

Length of cord (feet)	25	50	100	150
AWG* size of cord	18	18	18	16

*AWG-American Wire Gauge

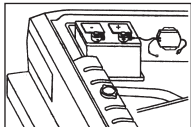
9. ASSEMBLY INSTRUCTIONS

- 9.1** Remove all cord wraps and uncoil the cables prior to using the battery charger.

10. MOUNTING INSTRUCTIONS

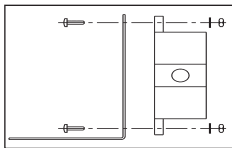
Mounting the charger to the fender well:

The charger can be mounted directly to the fender well of your vehicle, as shown, using the double-sided adhesive and cable tie (included).



Mounting the charger alongside the battery:

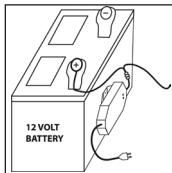
The charger can also be mounted alongside your vehicle's battery, using the bracket (sold separately). If possible, mount the charger to the side of the battery away from the engine and fan blades. Mount the bracket to the charger as shown using the nuts and bolts provided with the bracket. Loosen the battery retaining hardware enough that you can insert the bracket between the bottom of the battery and the battery mounting tray as shown. Position the charger so that it will not rub against the battery or any other part of the vehicle, and then tighten the battery retaining hardware.



NOTE: Do not drill or puncture the battery.

Electrical Installation:

The output leads of the charger are terminated with 3/8" dia. ring lugs. Route and secure the AC cord and the output wiring away from the gas line, carburetor or other hot, sharp, moving or pinch parts to avoid damage to the insulation. Secure the AC cord using a cable tie or equivalent. If you have difficulty connecting the output leads, consult your local auto supply store, they may assist you in finding a connecting device for your application.



11. LED INDICATORS

RED LED (solid): The charger is charging the battery.

RED LED (flashing): The connections are reversed or the battery is bad.

GREEN LED (solid): The battery is fully charged and the charger is in maintain mode.

NOTE: See *Operating Instructions* for a complete description of the charger modes.

12. OPERATING INSTRUCTIONS

IMPORTANT: Do not start the vehicle with the charger connected to the AC outlet, or it may damage the charger and your vehicle.

NOTE: This charger is equipped with an auto-start feature. Current will not be supplied to the ring terminals until a battery is properly connected. The ring terminals will not spark if touched together.

CHARGING A BATTERY IN THE VEHICLE

1. Turn off all the vehicle's accessories.
2. Keep the hood open.
3. Clean the battery terminals.
4. Place the charger on a dry, non-flammable surface.
5. Lay the AC/DC cables away from any fan blades, belts, pulleys and other moving parts.
6. For a negative-ground vehicle (as in most vehicles), connect the charger's POSITIVE (RED) ring terminal to the POSITIVE (POS, P, +) battery post. Next, connect the charger's NEGATIVE (BLACK) ring terminal to the vehicle chassis or engine block, away from the battery.
7. For a positive-ground vehicle, connect the charger's NEGATIVE (BLACK) ring terminal to the NEGATIVE (NEG, N, -) battery post. Next, connect the charger's POSITIVE (RED) ring terminal to the vehicle chassis or engine block away from the battery. NEVER connect any ring terminals to the carburetor, fuel lines or sheet-metal body parts.
8. Connect the charger to a live grounded 120V AC outlet.
9. When charging is complete, disconnect the charger from the AC power, remove the ring terminal from the vehicle's chassis, and then remove the ring terminal from the battery terminal.

CHARGING A BATTERY OUTSIDE OF THE VEHICLE

1. Place battery in a well-ventilated area.
2. Clean the battery terminals.
3. Connect a 24-inch long, 6-gauge (AWG) insulated battery cable to the NEGATIVE (NEG, N, -) battery post (i.e., jumper cable) (not provided).
4. Connect the POSITIVE (RED) ring terminal to the POSITIVE (POS, P, +) battery post.
5. Position yourself and the "negative post extension" cable as far away from the battery as possible, and connect the NEGATIVE (BLACK) ring terminal to the cable's free end.
6. Connect the charger to a live grounded 120V AC outlet.
7. When charging is complete, disconnect the charger from the AC power, disconnect the negative ring terminal, and finally the positive ring terminal.
8. A marine (boat) battery must be removed and charged on shore.

BATTERY CHARGING TIMES

BATTERY SIZE/RATING			CHARGE TIME (1.5A)
SMALL BATTERIES Motorcycle, garden tractor, etc.		6-12 Ah	2½-5 h
		12-32 Ah	5-13¼ h
CARS AND TRUCKS	200-315 CCA	40-60 RC	MAINTAIN ONLY
	315-550 CCA	60-85 RC	MAINTAIN ONLY
	550-1000 CCA	85-190 RC	MAINTAIN ONLY
MARINE/DEEP-CYCLE		80 RC	MAINTAIN ONLY
		140 RC	MAINTAIN ONLY
		160 RC	MAINTAIN ONLY
		180 RC	MAINTAIN ONLY

Times are based on a 50% discharged battery and may change, depending on age and condition of battery.

AUTOMATIC CHARGING MODE

When an automatic charge is performed, the charger switches to the maintain mode automatically after the battery is charged. For a battery with a starting voltage under 1 volt, use a manual charger to pre-charge the battery for five minutes, to get additional voltage into the battery.

BAD BATTERY

If charging cannot be completed normally, the charger's output is shut off and the red LED will flash. Have the battery checked and replace, if necessary.

DESULFATION MODE

If the battery is left discharged for an extended period of time, it could become sulfated and not accept a normal charge. If the charger detects a sulfated battery, the charger will switch to a special mode of operation designed for such batteries. If successful, normal charging will resume after the battery is desulfated. Desulfation could take 8-10 hours. If desulfation fails, the red LED will flash.

COMPLETION OF CHARGE

Charge completion is indicated by the green LED. When solid, the charger has switched to the maintain mode of operation.

MAINTAIN MODE (FLOAT MODE MONITORING)

When the green LED is solid, the charger has completed charging and started maintain mode. In this mode, the charger keeps the battery fully charged by delivering a small current when necessary. If the charger has to provide its maximum maintain current for a continuous 12 hour period, it will go into abort mode (see *Aborted Charge* section). This is usually caused by a drain on the battery or the battery could be bad. Make sure there are no loads on the battery. If there are, remove them. If there are none, have the battery checked or replaced.

MAINTAINING A BATTERY

This unit maintains both 6 and 12 volt batteries, keeping them at full charge.

It is not recommended for industrial applications.

NOTE: The maintain mode technology allows you to safely charge and maintain a healthy battery for extended periods of time. However, problems with the battery, electrical problems in the vehicle, improper connections or other unanticipated conditions could cause excessive current draws. As such, occasionally monitoring your battery and the charging process is required.

13. MAINTENANCE AND CARE

A minimal amount of care can keep your battery charger working properly for years.

- Clean the clamps each time you are finished charging. Wipe off any battery fluid that may have come in contact with the clamps to prevent corrosion.
- Occasionally cleaning the case of the charger with a soft cloth will keep the finish shiny and help prevent corrosion.
- Coil the input and output cords neatly when storing the charger. This will help prevent accidental damage to the cords and charger.
- Store the charger unplugged from the AC power outlet in an upright position.
- Store inside, in a cool, dry place. Do not store the ring terminals clipped together, on or around metal.

14. TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
Battery ring terminals do not spark when touched together.	The charger is equipped with an auto-start feature. It will not supply current to the battery ring terminals until a battery is properly connected. The ring terminals will not spark if touched together.	No problem; this is a normal condition.
Both LEDs come on for 2 seconds, then turn off.	The charger is plugged into an AC outlet.	No problem; this is normal.
The charger will not turn on when properly connected.	AC outlet is dead.	Check for open fuse or circuit breaker supplying AC outlet.
	Poor electrical connection.	Check power cord and extension cord for loose fitting plug.
	Bad battery.	Have battery checked.
I cannot select a 6V or 12V setting.	The charger is equipped with Auto Voltage Detection, which automatically detects the voltage and charges the battery.	No problem; this is normal.

15. ACCESSORIES

Mounting bracket (with nuts and bolts)..... 2299000544Z

16. BEFORE RETURNING FOR REPAIRS

For REPAIRS OR RETURNS, visit 365rma.com

Visit batterychargers.com for Replacement Parts.

17. LIMITED WARRANTY

For information on our one year limited warranty, please visit batterychargers.com or call 1-800-621-5485 to request a copy.

Go to batterychargers.com to register your product online.