PLEASE SAVE THIS OWNERS MANUAL AND READ BEFORE EACH USE.
This manual will explain how to use the battery charger safely and effectively. Please read and follow these instructions and precautions carefully.
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1. IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS.

1.1 SAVE THESE INSTRUCTIONS – This manual contains important safety and operating instructions.

1.2 Do not expose the charger to rain or snow.

1.3 Use of an attachment not recommended or sold by Schumacher® Electric Corporation may result in a risk of fire, electric shock or injury to persons.

1.4 To reduce the risk of damage to electric plug and cord, pull by the plug rather than the cord when disconnecting charger.

1.5 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:
   • That the pins on plug of extension cord are the same number, size and shape as those of plug on charger.
   • That extension cord is properly wired and in good electrical condition; and
   • That wire size is large enough for AC ampere rating of charger, as specified in section 8.

1.6 Do not operate charger with damaged cord or plug – replace the cord or plug immediately.

1.7 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.

1.8 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.

1.9 To reduce risk of electric shock, unplug charger from outlet before attempting any maintenance or cleaning. Turning off controls will not reduce this risk.

1.10 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 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.

1.11 Pursuant to California Proposition 65, this product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. Wash hands after handling.
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 6 and 12V LEAD-ACID-type 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 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 clips only after setting any charger switches to “off” position and removing AC cord from electric outlet. Never allow clips to touch each other.

5.2 Attach clips to battery and chassis, as indicated in the sections 6 and 7.

6. **FOLLOW THESE STEPS WHEN BATTERY IS INSTALLED IN VEHICLE**

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

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

6.7 When disconnecting charger, turn switches to off, disconnect AC cord, remove clip from vehicle chassis, and then remove clip from battery terminal.

6.8 See *Calculating Charge Time* for length of charge information.
7. FOLLOW THESE STEPS WHEN BATTERY IS OUTSIDE VEHICLE

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 clip 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 clip 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

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.

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.

NOTE: Pursuant to Canadian Regulations, use of an adapter plug is not allowed in Canada. Use of an adapter plug in the United States is not recommended and should not be used.

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:

<table>
<thead>
<tr>
<th>Length of cord (feet)</th>
<th>25</th>
<th>50</th>
<th>100</th>
<th>150</th>
</tr>
</thead>
<tbody>
<tr>
<td>AWG* size of cord</td>
<td>18</td>
<td>18</td>
<td>16</td>
<td>16</td>
</tr>
</tbody>
</table>

*AWG-American Wire Gauge
9. ASSEMBLY INSTRUCTIONS

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

10. FEATURES

1. Ring connectors (quick-connect)
2. Battery clamps (quick-connect)
3. Voltage selector switch

VOLTAGE SELECTOR SWITCH
Use this switch to select the correct voltage of the battery you are charging (6 or 12V).

CIRCUIT BREAKER
This charger is equipped with an internal self-resetting circuit breaker. The breaker protects the charger from temporary overloads. In the event of an overload, the breaker will trip open and after a short cooling off period, will reset automatically. This process is known as cycling and can be recognized by an audible clicking sound. If the circuit breaker is cycling, see the TROUBLESHOOTING section.

11. 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.

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. Connect the battery, following the precautions listed in sections 6 and 7.
7. Connect the charger to an electrical outlet.
8. When charging is complete, disconnect the charger from the AC power, remove the clamps from the vehicle’s chassis, and then remove the clamp 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 the battery, following the precautions listed in sections 6 and 7.
4. Connect the charger to the electrical outlet.
5. When charging is complete, disconnect the charger from the AC power, disconnect the negative clamp, and finally the positive clamp.
6. A marine (boat) battery must be removed and charged on shore.

USING THE QUICK-CONNECT CABLE CONNECTORS
Connect either of the two (2) output cable leads to the charger in a matter of seconds.

WARNING: Never connect the clamp and ring terminal connectors together for use in other applications, such as external battery or other power source charging, or to extend the output cable length, as reverse polarity and/or overcharge conditions will occur.

BATTERY CLAMP QUICK-CONNECT
1. Connect the end of the charger output cable to the end of the battery cable, quick-connect and clamps.
2. Follow the steps in sections CHARGING A BATTERY IN THE VEHICLE and CHARGING A BATTERY OUTSIDE OF THE VEHICLE to connect the output clamps to the battery.
3. Connect the charger to an electrical power outlet.

RING CONNECTOR QUICK-CONNECT
1. To permanently attach to a battery, loosen and remove each nut from the bolt at the battery terminal.
2. Connect the red POSITIVE connector ring to the POSITIVE battery terminal.
3. Connect the black NEGATIVE connector ring to the NEGATIVE battery terminal.
4. Replace and tighten the nuts to secure.
5. Connect the cable to the end of the charger output cord.
   Take care to keep the wires and plug away from metal and moving parts.
6. Connect the charger to an electrical power outlet.

MANUAL CHARGING MODE
When a manual charge is performed, the charger will continue to charge and will not shut off. Be sure to monitor the charging process and stop it when the battery is charged. Not doing so may damage your battery or result in other property damage or personal injury.
12. **CALCULATING CHARGE TIME**

This charger has a rated output of 1 amp, with an expected finish rate of 0.3 amps. These outputs will vary with the age and condition of the battery being charged.

**WARNING:** This is a manual battery charger. Charging must be monitored to prevent overcharging. Overcharging a battery could cause personal injury and/or property damage.

Use the following table to more accurately determine the time it will take to bring a battery to full charge.

\[ \text{Ah} = \text{Ampere Hours} \quad \text{CCA} = \text{Cold Cranking Amps} \quad \text{RC} = \text{Reserve Capacity} \]

The times given are for batteries with a 50% charge prior to recharging. Add more time for severely discharged batteries.

<table>
<thead>
<tr>
<th>BATTERY SIZE/RATING</th>
<th>CHARGING TIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMALL BATTERIES</td>
<td></td>
</tr>
<tr>
<td>Motorcycle, garden tractor, etc.</td>
<td>6-12 Ah</td>
</tr>
<tr>
<td></td>
<td>12-32 Ah</td>
</tr>
<tr>
<td>CARS/TRUCKS</td>
<td></td>
</tr>
<tr>
<td>200-315 CCA</td>
<td>40-60 RC</td>
</tr>
<tr>
<td>315-550 CCA</td>
<td>60-85 RC</td>
</tr>
<tr>
<td>550-1000 CCA</td>
<td>85-190 RC</td>
</tr>
<tr>
<td>MARINE/DEEP CYCLE</td>
<td></td>
</tr>
<tr>
<td>80 RC</td>
<td>35 hrs</td>
</tr>
<tr>
<td>140 RC</td>
<td>53¾ hrs</td>
</tr>
<tr>
<td>160 RC</td>
<td>60 hrs</td>
</tr>
<tr>
<td>180 RC</td>
<td>66¼ hrs</td>
</tr>
</tbody>
</table>

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 clamps clipped together, on or around metal, or clipped to the cables.
## 14. TROUBLESHOOTING

<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>POSSIBLE CAUSE</th>
<th>REASON/SOLUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>The charger will not turn on when properly connected.</td>
<td>AC outlet is dead.</td>
<td>Check for open fuse or circuit breaker supplying AC outlet.</td>
</tr>
<tr>
<td></td>
<td>Poor electrical connection.</td>
<td>Check power cord and extension cord for loose fitting plug.</td>
</tr>
<tr>
<td></td>
<td>Severely discharged battery, but otherwise a good battery.</td>
<td>The battery may not want to accept a charge due to a run-down state. Allow charging to continue until battery has a chance to recover sufficiently to take a charge. If more than 20 minutes, stop charging and have the battery checked.</td>
</tr>
<tr>
<td></td>
<td>Battery is defective.</td>
<td>Have battery checked.</td>
</tr>
<tr>
<td></td>
<td>Charger connections are reversed.</td>
<td>Unplug the charger and reverse charger lead connections at battery.</td>
</tr>
<tr>
<td>Charger makes a loud buzz or hum.</td>
<td>Transformer laminations vibrate.</td>
<td>No problem; this is a normal condition.</td>
</tr>
<tr>
<td>The charger is making an audible clicking sound.</td>
<td>Circuit breaker is cycling</td>
<td>The settings may be wrong. Check the charger settings.</td>
</tr>
<tr>
<td></td>
<td>Battery is defective.</td>
<td>Check the battery.</td>
</tr>
<tr>
<td></td>
<td>Shorted battery cables or clamps.</td>
<td>Circuit breaker cycles when the current draw is too high. Check for shorted cables or ring terminals and replace if necessary.</td>
</tr>
<tr>
<td>The battery is connected and the charger is on, but is not charging.</td>
<td>Charger clamps are not making a good electrical connection.</td>
<td>Check for poor electrical connections at battery and car frame. Make sure the connecting points are clean. Rock the clamps back and forth to ensure a better connection.</td>
</tr>
</tbody>
</table>
### SPECIFICATIONS

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
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</thead>
<tbody>
<tr>
<td>Input Voltage</td>
<td>120V AC @ 60Hz, 0.2A</td>
</tr>
<tr>
<td>Output Voltage</td>
<td>6V DC or 12V DC</td>
</tr>
<tr>
<td>Output Current Rating</td>
<td>1A</td>
</tr>
</tbody>
</table>

### REPLACEMENT PARTS

<table>
<thead>
<tr>
<th>Part Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ring connectors (quick-connect)</td>
<td>2299001950</td>
</tr>
<tr>
<td>Battery clamps (quick-connect)</td>
<td>3899001235</td>
</tr>
</tbody>
</table>