



MODEL / MODELO / MODÈLE :

SC1393

Automatic Battery Charger
Cargador de baterías automático
Chargeur de batterie automatique

OWNERS MANUAL
MANUAL DEL USUARIO
MANUEL D'UTILISATION



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.

POR FAVOR CONSERVE ESTE MANUAL DEL USUARIO Y LEALO ANTES DE CADA USO. En este manual le explica cómo utilizar el cargador de batería de manera segura y confiable. Por favor, lea y siga las siguientes instrucciones y precauciones.

GARDER LE MANUEL D'INSTRUCTION ET LISEZ LE AVANT CHAQUE UTILISATION. Ce manuel explique comment utiliser le chargeur de batterie d'une façon sécuritaire et efficace. S'il vous plaît lisez et suivez ces instructions et precautions.

1. IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS.

- 1.1 **SAVE THESE INSTRUCTIONS –**
This manual contains important safety and operating instructions.
- 1.2 This charger is not intended for use by children.
- 1.3 Do not expose the charger to rain or snow.
- 1.4 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.
- 1.5 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.
- 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 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 charger for charging only 6V and 12V LEAD-ACID (STD or AGM) 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 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) 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 gauge 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 gauge 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 *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 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

- 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.

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.

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:

| Length of cord (feet) | 25 | 50 | 100 | 150 |
|-----------------------|----|----|-----|-----|
| AWG* size of cord | 18 | 18 | 16 | 14 |

*AWG-American Wire Gauge


9. ASSEMBLY INSTRUCTIONS


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

10. CONTROL PANEL

LED INDICATORS



 **CLAMPS REVERSED (red) LED flashing:** The connections are reversed.

 **(Yellow/orange) LED lit:** The charger is charging the battery.


 **CHARGED/MAINTAINING (green) LED lit:** The battery is fully charged and the charger is in maintain mode.


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

DIGITAL DISPLAY

The display will show the battery VOLTAGE when the charger is not charging a battery. When it goes into charging mode, the display will automatically change to  (to show charging has started) and then show the percent-of-charge of the battery being charged and either 6 or 12 (the voltage of the battery, determined by the charger). If you manually stop the charging process (by pressing the  Rate Selection button) before the battery is fully charged, the display will show OFF.


NOTE: During charging, the display will go into sleep mode and will not show the percentage of charge or voltage of the battery. To turn the display back on, press any button.


 **Battery %** – The digital display shows an estimated charge percentage of the battery connected to the charger’s battery clamps.

 **Voltage** – The digital display shows the voltage at the charger battery clamps, in DC volts.

 **RATE SELECTION BUTTON**


Use this button to select one of the following:


 – For charging small batteries, such as those commonly used in garden tractors, snowmobiles and motorcycles. Also used to maintain fully charged large batteries.

 – For charging automotive, marine and light truck batteries. Not intended for industrial applications.

 **BATTERY TYPE BUTTON**

Use this button to select the battery type.

 **STD** – Used in cars, trucks and motorcycles, these batteries have vent caps and are often marked “low maintenance” or “maintenance-free”. This type of battery is designed to deliver quick bursts of energy (such as starting engines) and has a greater plate count. The plates are thinner and have somewhat different material composition. Regular batteries should not be used for deep-cycle applications.

 **AGM** – The Absorbed Glass Mat construction allows the electrolyte to be suspended in close proximity with the plate’s active material. In theory, this enhances both the discharge and recharge efficiency. The AGM batteries are a variant of Sealed VRLA (valve regulated lead-acid) batteries. Popular uses include high-performance engine starting, power sports, deep-cycle, solar and storage batteries.

11. OPERATING INSTRUCTIONS

WARNING: A spark near the battery may cause an explosion.

IMPORTANT: Do not start the vehicle with the charger connected to the AC outlet, or it could result in damage to the charger.

NOTE: This charger is equipped with an auto-start feature. Current will not be supplied to the battery clamps until a battery is properly connected. The clamps 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. Connect the battery, following the precautions listed in sections 6 and 7.
7. Connect the charger to an electrical outlet.
8. Select the battery type and charge rate.
9. 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. Select the battery type and charge rate.
6. When charging is complete, disconnect the charger from the AC power, disconnect the negative clamp, and finally the positive clamp.
7. A marine (boat) battery must be removed and charged on shore.

CHARGE RATE

The charger will automatically adjust the charging current, based on battery size, in order to charge the battery completely, efficiently and safely.

BATTERY CHARGING TIMES

| APPLICATION | BATTERY SIZE | CHARGING TIME (Hours) | | | |
|------------------|---------------|-----------------------|-----|-----|-----|
| | | 5A | 10A | 12A | 15A |
| POWERSPORTS ↓ | 8Ah ▲ | 2 | 1.5 | 1 | .5 |
| | 32Ah ▲ | 5 | 4 | 3 | 2 |
| AUTOMOTIVE ↓ | 300 CCA ▲ | 4 | 3 | 2 | 1.5 |
| | 1000 CCA ▲ | 10 | 7 | 5.5 | 4 |
| MARINE ↓ | 50Ah ▲ | 5 | 3.5 | 2.5 | 2 |
| | 105Ah ▲ | 11 | 8 | 6 | 5 |

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

AUTOMATIC CHARGING

When the Automatic Charge is performed, the charger switches to the maintain mode automatically after the battery is charged.


ABORTED CHARGE

If charging cannot be completed normally, charging will abort. When charging aborts, the charger's output is shut off and the display will show "bAd / bRt" and an error code. Do not continue attempting to charge this battery. Have it checked or replaced.

DESULFATION MODE


The display will show "5UL" when a sulfated battery is detected, and the charger will go into desulfation mode. If the desulfation is not successful after 10 hours, the charger will go into abort mode. The display will show "bAd / bRt / F02".

COMPLETION OF CHARGE

Charge completion is indicated by the green  Charged/Maintaining LED. When lit, the charger has switched to the maintain mode of operation.

MAINTAIN MODE

(FLOAT MODE MONITORING)

When the green  Charged/Maintaining LED is lit, the charger has 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

The SC1393 maintains both 6 and 12 volt batteries, keeping them at full charge.

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.

USING THE BATTERY VOLTAGE TESTER


1. With the charger unplugged from the AC outlet, connect the charger to the battery following the instructions given in previous sections.
2. Plug the charger AC power cord into the AC outlet.
3. If necessary, press the  Battery Type button until the correct type is indicated.
4. Read the voltage on the digital display. Keep in mind that this reading is only a battery voltage reading; a false surface charge may mislead you. Compare the reading to the chart below.

| 6 V Battery Voltage Reading | 12 V Battery Voltage Reading | Battery Condition |
|-----------------------------|------------------------------|-------------------|
| 6.4 or more | 12.8 or more | Charged |
| 6.1 to 6.3 | 12.2 to 12.7 | Needs charging |
| Less than 6.1 | Less than 12.2 | Discharged |

POWER-UP IDLE TIME LIMIT

If no button is pressed within 10 minutes after the battery charger is first powered up, the charger will automatically switch from tester to charger if a battery is connected. In that case, the charger will be set to charge at the  rate and AGM battery type.

TESTING AFTER CHARGING

After the unit has been changed from tester to charger (by selecting a charge rate), it remains a charger. To change the battery charger back to a tester, press the  Rate Selection button until all charge rate LEDs are off.

12. 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, clipped to the handle, on or around metal, or clipped to the cables.

13. TROUBLESHOOTING/ERROR CODES

Error Codes

| CODE | DESCRIPTION | REASON/SOLUTION |
|--|--|---|
| <i>bAd</i> <i>bAt</i> <i>F01</i> | The battery voltage is still under 10V (for a 12V battery) or 5V (for a 6V battery) after 2 hours of charging. | The battery could be bad. Have it checked or replaced. |
| <i>SUL</i> | The charger has detected a sulfated battery. | The charger will go into desulfation mode. If the desulfation is not successful after 10 hours, the charger will go into abort mode. |
| <i>bAd</i> <i>bAt</i> <i>F02</i> | The charger cannot desulfate the battery. | The battery could not be desulfated; have it checked or replaced. |
| <i>bAd</i> <i>bAt</i> <i>F03</i> | The battery was unable to reach the "full charge" voltage. | May be caused by trying to charge a large battery or bank of batteries on too low of a current setting. Try again with a higher current setting or have the battery checked or replaced. |
| <i>F04</i> | The connections to the battery are reversed. | The battery is connected backwards. Unplug the charger and reverse the connections to the battery. |
| <i>bAd</i> <i>bAt</i> <i>F05</i> | The charger was unable to keep the battery fully charged in maintain mode. | The battery won't hold a charge. May be 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. |
| <i>bAd</i> <i>bAt</i> <i>F06</i> | The charger detected that the battery may be getting too hot (thermal runaway). | The charger automatically shuts the current off if it detects the battery may be getting too hot. Have the battery checked or replaced. |

If you get an error code, check the connections and settings and/or replace the battery.

Troubleshooting

| PROBLEM | POSSIBLE CAUSE | SOLUTION |
|---|--|---|
| Battery clamps do not spark when touched together. | The charger is equipped with an auto-start feature. It will not supply current to the battery clamps until a battery is properly connected. The clamps will not spark if touched together. | No problem; this is a normal condition. |
| Three 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. Poor electrical connection. Battery is defective. | Check for open fuse or circuit breaker supplying AC outlet. Check power cord and extension cord for loose fitting plug. Have the 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. |

| PROBLEM | POSSIBLE CAUSE | SOLUTION |
|--|--|---|
| I press the display button, but do not see the percentage of charge. | When first connected to a battery, the display shows voltage only. | This is normal. The percentage of charge is only displayed during charging. |
| The display shows "bAd / bAt / F01". | The battery voltage is still below 10V (for a 12V battery) or 5V (for a 6V battery) after 2 hours of charging. | The battery may be defective. Make sure there are no loads on the battery. If there are, remove them. If there are none, have the battery checked or replaced. |
| The display shows "bAd / bAt / F02". | Desulfation was unsuccessful, after 10 hours. | The battery may be defective. Have battery checked or replaced. |
| The display shows "bAd / bAt / F05". | Lack of progress is detected after 12 hours in Maintain mode. | The battery won't hold a charge. May be 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. |

14. SPECIFICATIONS

Input Voltage 120V AC @ 60Hz, 2.9A
Output Voltage 6V or 12V, with Auto Voltage Detection
Output Current Rating 2A DC @ 6V DC; 12A DC @ 12V DC

15. BEFORE RETURNING FOR REPAIRS

**If these solutions do not eliminate the problem,
or for more information about troubleshooting,
contact customer service for assistance:**

**services@schumacherelectric.com
www.batterychargers.com
or call 1-800-621-5485**

For **REPAIR OR RETURN**, contact Customer Service at 1-800-621-5485. **DO NOT SHIP UNIT** until you receive a **RETURN MERCHANDISE AUTHORIZATION (RMA)** number from Customer Service at Schumacher Electric Corporation.

16. LIMITED WARRANTY

WARRANTY NOT VALID IN MEXICO.

SCHUMACHER ELECTRIC CORPORATION, 801 BUSINESS CENTER DRIVE, MOUNT PROSPECT, IL 60056-2179, MAKES THIS LIMITED WARRANTY TO THE ORIGINAL RETAIL PURCHASER OF THIS PRODUCT. THIS LIMITED WARRANTY IS NOT TRANSFERABLE OR ASSIGNABLE.

Schumacher Electric Corporation (the "Manufacturer") warrants this battery charger for two (2) years from the date of purchase at retail against defective material or workmanship that may occur under normal use and care. If your unit is not free from defective material or workmanship, Manufacturer's obligation under this warranty is solely to repair or replace your product with a new or reconditioned unit at the option of the Manufacturer. It is the obligation of the purchaser to forward the unit, along with proof of purchase and mailing charges prepaid to the Manufacturer or its authorized representatives in order for repair or replacement to occur.

Manufacturer does not provide any warranty for any accessories used with this product that are not manufactured by Schumacher Electric Corporation and approved for use with this product. This Limited Warranty is void if the product is misused, subjected to careless handling, repaired, or modified by anyone other than Manufacturer or if this unit is resold through an unauthorized retailer.

Manufacturer makes no other warranties, including, but not limited to, express, implied or statutory warranties, including without limitation, any implied warranty of merchantability or implied warranty of fitness for a particular purpose. Further, Manufacturer shall not be liable for any incidental, special or consequential damage claims incurred by purchasers, users or others associated with this product, including, but not limited to, lost profits, revenues, anticipated sales, business opportunities, goodwill, business interruption and any other injury or damage. Any and all such warranties, other than the limited warranty included herein, are hereby expressly disclaimed and excluded. Some states do not allow the exclusion or limitation of incidental or consequential damages or length of implied warranty, so the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights and it is possible you may have other rights which vary from this warranty.

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