



OWNER'S MANUAL
MANUAL DEL USUARIO

Model / Modelo: SP2

Automatic Battery Charger/
Maintainer
Cargador de Baterías
Automático/Mantenedor



Voltage / Tensión: 6, 12
Amperage / Amperaje: 1



DO NOT RETURN THIS PRODUCT TO THE STORE!

Call Customer Service for assistance: 800-621-5485

¡NO LO DEVUELVA ESTE PRODUCTO A LA TIENDA!

Llame a Servicios al Cliente para asistencia: 800-621-5485



**READ THE ENTIRE MANUAL BEFORE USING THIS PRODUCT.
FAILURE TO DO SO COULD RESULT IN SERIOUS INJURY
OR DEATH.**



**LEA EL MANUAL COMPLETO ANTES DE UTILIZAR ESTE
PRODUCTO. CUALQUIER FALLA PODRÍA RESULTAR EN
SERIAS LESIONES O PODRÍA SER MORTAL.**

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**IMPORTANT: READ AND SAVE THIS SAFETY
AND INSTRUCTION MANUAL.**

SAVE THESE INSTRUCTIONS – This manual will show you how to use your charger/maintainer safely and effectively. Please read, understand and follow these instructions and precautions carefully, as this manual contains important safety and operating instructions. The safety messages used throughout this manual contain a signal word, a message and an icon.

The signal word indicates the level of the hazard in a situation.



Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury to the operator or bystanders.



Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury to the operator or bystanders.



Indicates a potentially hazardous situation which, if not avoided, could result in moderate or minor injury to the operator or bystanders.



Indicates a potentially hazardous situation which, if not avoided, could result in damage to the equipment or vehicle or property damage.



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.

**1. IMPORTANT SAFETY INSTRUCTIONS –
SAVE THESE INSTRUCTIONS.**

This manual contains important safety and operating instructions.



RISK OF ELECTRIC SHOCK OR FIRE.

1.1 Keep out of reach of children.

1.2 Do not expose the charger to rain or snow.

1.3 Use only recommended attachments. 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 or damage to property.

- 1.4** To reduce the risk of damage to the electric plug or cord, pull by the plug rather than the cord when disconnecting the charger.
- 1.5** An extension cord should not be used unless absolutely necessary. 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:
- That the pins on the plug of the extension cord are the same number, size and shape as those of the plug on the charger.
 - That the extension cord is properly wired and in good electrical condition.
 - That the wire size is large enough for the AC ampere rating of the charger as specified in section 8.
- 1.6** To reduce the risk of electric shock, unplug the charger from the outlet before attempting any maintenance or cleaning. Simply turning off the controls will not reduce this risk.
- 1.7** Do not operate the charger with a damaged cord or plug; have the cord or plug replaced immediately by a qualified service person.
- 1.8** Do not operate the charger if it has received a sharp blow, been dropped or otherwise damaged in any way; take it to a qualified service person.
- 1.9** Do not disassemble the charger; take it to a qualified service person when service or repair is required. Incorrect reassembly may result in a risk of fire or electric shock.



WARNING RISK OF EXPLOSIVE GASES.

1.10 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 YOU FOLLOW THE INSTRUCTIONS EACH TIME YOU USE THE CHARGER.

- 1.11 To reduce the risk of a battery explosion, follow these instructions and those published by the battery manufacturer and the manufacturer of any equipment you intend to use in the vicinity of the battery. Review the cautionary markings on these products and on the engine.
- 1.12 This charger employs parts, such as circuit breakers, that tend to produce arcs and sparks. If used in a garage, locate this charger 18 inches (46 cm) or more above floor level.

2. PERSONAL PRECAUTIONS



WARNING RISK OF EXPLOSIVE GASES.

2.1 NEVER smoke or allow a spark or flame in the vicinity of a battery or engine.

2.2 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.

- 2.3 Be extra cautious, to reduce the risk of dropping a metal tool onto the battery. It might spark or short-circuit the battery or other electrical part that may cause an explosion.
- 2.4 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 a starter-motor application. Do not use this 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.
- 2.5 NEVER charge a frozen battery.
- 2.6 Consider having someone nearby to come to your aid when you work near a lead-acid battery.
- 2.7 Have plenty of fresh water and soap nearby in case battery acid contacts your skin, clothing or eyes.

- 2.8 Wear complete eye and body protection, including safety goggles and protective clothing. Avoid touching your eyes while working near the battery.
- 2.9 If battery acid contacts your skin or clothing, immediately wash the area with soap and water. If acid enters your eye, immediately flood the eye with cold running water for at least 10 minutes and get medical attention right away.
- 2.10 If battery acid is accidentally swallowed, drink milk, the whites of eggs or water. DO NOT induce vomiting. Seek medical attention immediately.

3. PREPARING TO CHARGE



RISK OF CONTACT WITH BATTERY ACID. BATTERY ACID IS A HIGHLY CORROSIVE SULFURIC ACID.

3.1 If it is necessary to remove the battery from the vehicle to charge it, always remove the grounded terminal first. Make

sure all of the accessories in the vehicle are off, to prevent arcing.

- 3.2 Be sure the area around the battery is well ventilated while the battery is being charged.
- 3.3 Clean the battery terminals before charging the battery. During cleaning, keep airborne corrosion from coming into contact with your eyes, nose and mouth. Use baking soda and water to neutralize the battery acid and help eliminate airborne corrosion. Do not touch your eyes, nose or mouth.
- 3.4 Add distilled water to each cell until the battery acid reaches the level specified by the battery manufacturer. Do not overfill. For a battery without removable cell caps, such as valve regulated lead acid batteries (VRLA), carefully follow the manufacturer's recharging instructions.
- 3.5 Read, understand and follow all instructions for the charger, battery, vehicle and any equipment used near the battery and charger. Before charging, study all of the battery manufacturer's specific precautions and recommended rates of charge.
- 3.6 Determine the voltage of the battery by referring to the vehicle owner's manual and make sure that the output voltage is correct.
- 3.7 Make sure that the charger cable clips make tight connections.

4. CHARGER LOCATION

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

5. DC CONNECTION PRECAUTIONS

- 5.1 Connect and disconnect the DC output clips only after removing the AC plug from the electrical outlet.
- 5.2 Attach the clips to the battery and chassis, as indicated in sections 6 and 7.

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

 ▲WARNING	 ▲WARNING	 ▲WARNING	A SPARK NEAR THE BATTERY MAY CAUSE A BATTERY EXPLOSION. TO REDUCE THE RISK OF A SPARK NEAR THE BATTERY:
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- 6.1 Position the AC and DC cables to reduce the risk of damage by the hood, door and moving or hot engine parts. **NOTE:** If it is necessary to close the hood during the charging process, ensure that the hood does not touch the metal part of the battery clips or cut the insulation of the cables.
- 6.2 Stay clear of fan blades, belts, pulleys and other parts that can cause injury.

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

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:
▲WARNING	▲WARNING	▲WARNING	

- 7.1 Check the polarity of the battery posts. The POSITIVE (POS, P, +) battery post usually has a larger diameter than the NEGATIVE (NEG, N, -) post.
- 7.2 Attach at least a 24-inch (61 cm) long 6-gauge (AWG) insulated battery cable to the NEGATIVE (NEG, N, -) battery post.

- 7.3 Connect the POSITIVE (RED) charger clip to the POSITIVE (POS, P, +) post of the battery.
- 7.4 Position yourself and the free end of the cable you previously attached to the NEGATIVE (NEG, N, -) battery post as far away from the battery as possible – then connect the NEGATIVE (BLACK) charger clip to the free end of the cable.
- 7.5 Do not face the battery when making the final connection.
- 7.6 Connect charger AC supply cord to electrical outlet.
- 7.7 When disconnecting the charger, always do so in the reverse order of the connecting procedure and break the first connection while as far away from the battery as practical.
- 7.8 A marine (boat) battery must be removed and charged on shore. To charge it onboard requires equipment specially designed for marine use.

8. GROUNDING AND AC POWER CORD CONNECTIONS



RISK OF ELECTRIC SHOCK OR FIRE.




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 Recommended minimum AWG size for extension cord:
 - 100 feet (30.5 meters) long or less – use an 18 gauge (0.82 mm²) extension cord.
 - Over 100 feet (30.5 meters) long – use a 16 gauge (1.31 mm²) extension cord.

9. FEATURES




1. AC POWER  (red) LED
2. CHARGING  (yellow) LED
3. CHARGED  (green) LED
4. Battery Clip Cable Assembly
5. Ring Terminal Cable Assembly
6. Quick-Connect Connector


10. ASSEMBLY INSTRUCTIONS

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

11. CONTROL PANEL


LED Indicators

AC POWER  (red) LED lit: Indicates that there is AC power supplied to the battery charger.

CHARGING  (yellow) LED lit: Indicates the charger is charging the battery.

CHARGING  (yellow) LED flashing: Indicates the charger is in abort mode.

CHARGED  (green) LED lit: Indicates the battery is fully charged and the charger is in maintain mode.



CHARGED  (green) LED blinking: Indicates the battery is at 80% of charge or higher.

12. OPERATING INSTRUCTIONS



This battery charger/maintainer must be properly assembled in accordance with the assembly instructions before it is used.

Charging

1. Ensure that all of the charger components are in place and in good working condition, for example, the plastic boots on the battery clips.
2. Connect the battery, following the connection instructions described in the Using the Quick-Connect Cable Connectors section.
3. Connect the AC power, following the precautions listed in section 8. Make sure to place the charger on a dry, non-flammable surface, such as metal or concrete.
4. If you've connected everything correctly, the CHARGING  (yellow) LED should be lit, indicating that the charger is charging. If the CHARGING  (yellow) LED does not light, check the connections or have the battery checked/replaced.
5. To disconnect, reverse the procedure.



The clips will spark if touched together.

USING THE QUICK-CONNECT CABLE CONNECTORS

There is a 2 amp, inline fuse in the cable assemblies to prevent damage to the charger, if it is connected to a battery incorrectly. If the charger does not charge the battery, check the fuse. If the fuse needs replacing, replace it with a fuse of the same size and rating.

NOTE: 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.

50 Amp Battery Clips

1. Connect the end of the charger output cable to the end of the 50-amp battery clips cable.
2. Follow the steps in sections 6 and 7 to connect the output clips to the battery.
3. After a good electrical connection is made to the battery, plug the power cord into a grounded 120V AC electrical wall outlet.

Make sure to place the charger on a dry, non-flammable surface, such as metal or concrete.


Permanent Ring Connectors

1. To permanently attach to a battery, loosen and remove each nut from the bolt at the battery terminals.
2. Connect the red POSITIVE connector ring to the POSITIVE (POS, P, +) battery terminal.
3. Connect the black NEGATIVE connector ring to the NEGATIVE (NEG, N, -) battery terminal.
4. Replace and tighten the nuts to secure.
5. Connect the ring connector cable assembly to the charger. Take care to keep both wires and plug away from hot and moving parts.
6. Plug the charger power cord into a grounded 120V AC electrical wall outlet. Make sure to place the charger on a dry, non-flammable surface, such as metal or concrete.


Automatic Charging Mode

When an Automatic Charge is performed, the charger switches to the Maintain Mode (see below) 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 CHARGING  (yellow) LED will blink. To reset after an aborted charge, unplug the charger from the AC outlet, wait a few moments, then plug it back in.


Desulfation Mode

Desulfation could take 10 hours. If desulfation fails, charging will abort and the CHARGING  (yellow) LED will blink.

Completion of Charge

Charge completion is indicated by the CHARGED  (green) LED. When lit, the charger has stopped charging and switched to the Maintain Mode of operation.

Maintain Mode (Float-Mode Monitoring)

When the CHARGED  (green) 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 Schumacher SP2 is a battery charger/maintainer that maintains both 6 and 12 volt batteries, keeping them at full charge. It can charge small batteries and maintain both small and large batteries. If you are maintaining a fully charged large battery, you are properly utilizing the battery charger. However, if you use the battery charger to charge a large battery, such as a marine deep-cycle battery, that was not fully charged, you may lose some of the battery's capacity. This would cause the large battery to be unable to hold a charge and become useless. Therefore, we do not recommend charging a large battery with this unit.

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



13. MAINTENANCE INSTRUCTIONS

- 13.1** Before performing maintenance, unplug and disconnect the battery charger (see Sections 6, 7 and 8).
- 13.2** After use, unplug the charger and use a dry cloth to wipe all battery corrosion and other dirt or oil from the terminals, cords and the charger case.
- 13.3** Ensure that all of the charger components are in place, securely attached and in good working condition, for example, the plastic boots on the battery clips.
- 13.4** Servicing does not require opening the unit, as there are no user-serviceable parts.
- 13.5** All other servicing should be performed by qualified service personnel.

14. MOVING AND STORAGE INSTRUCTIONS

- 14.1 Store the charger unplugged, in an upright position. The cord will still conduct electricity until it is unplugged from the outlet.
- 14.2 Store inside, in a cool, dry place.
- 14.3 Do not store the clips clipped together, on or around metal, or clipped to cables.
- 14.4 If the charger is moved around the shop or transported to another location, take care to avoid/prevent damage to the cords, clips and charger. Failure to do so could result in personal injury or property damage.

15. TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	REASON/SOLUTION
Charger will not turn on when properly connected.	AC outlet is dead. Poor electrical connection. Battery is sulfated. The cable assembly inline fuse may be blown. Reversing the connections at the battery will cause this. Battery is defective.	Check for open fuse or circuit breaker supplying AC outlet. Check power cord and extension cord for a loose fitting plug. Have battery checked. Check the fuse. If it is blown, replace it with one of the same size and rating. Check the battery.
CHARGING  (yellow) LED is flashing.	Indicates the charger is in abort mode.	See "Aborted Charge" in the OPERATING INSTRUCTIONS section.
CHARGED  (green) LED is blinking.	Battery has 80% of charge or more.	No problem; this is a normal condition.

16. BEFORE RETURNING FOR REPAIRS

- 16.1** When a charging problem arises, make certain that the battery is capable of accepting a normal charge. Double check all connections, the AC outlet for a full 120-volts, the charger clips for correct polarity and the quality of the connections from the cables to the clips and from the clips to the battery system. The clips must be clean.
- 16.2** When a battery is very cold, partially charged or sulfated, it will not draw the full rated amperes from the charger. It is both dangerous and damaging to a battery to force higher amperage into it than it can effectively use in recharging.
- 16.3** When an UNKNOWN OPERATING PROBLEM arises, please read the complete manual and call the customer service number for information. This will usually eliminate the need for return.

If the above solutions do not eliminate the problem, or for information about troubleshooting, call toll-free from anywhere in the U.S.A.
1-800-621-5485
7:00 a.m. to 5:00 p.m. Central Time, Monday through Friday

For **REPAIR OR RETURN**,
contact Customer Service at 1-800-621-5485.

DO NOT SHIP UNIT until you receive **RETURN AUTHORIZATION** from Customer Service at Schumacher Electric Corporation.

17. SPECIFICATIONS

Input Voltage	120V AC
Output Current Rating	1A
Maximum Charge Voltage	12V-14.6V 6V-7.3V
Maintain Voltage	12V-13.3V 6V-6.6V
Dimensions (L x W x H).....	7.48" x 2.60" x 1.97" (190 mm x 66 mm x 50 mm)
Weight	2.5 lbs. (1.13 kg)

18. REPLACEMENT PARTS

Battery Clip Cable Assembly	3899002668
Ring Terminal Cable Assembly.....	2299002276