AUTOMATIC BATTERY CHARGER
OWNER'S MANUAL
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.

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.

1.12 Changes or modifications not expressly approved by Schumacher Electric Corporation could void the user's authority to operate this device.

1.13 **NOTE:** This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

a. Reorient or relocate the receiving antenna.

b. Increase the separation between the equipment and receiver.

c. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

d. Consult the dealer or an experienced radio/TV technician for help.

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 6V and 12V LEAD-ACID (STD, AGM, gel, or deep-cycle) and lithium ion $LiFePO_4$ 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 If applicable, 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 or plug 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 or plug, 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.

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. CONTROL PANEL

CHARGING STATUS LED INDICATOR

YELLOW/ORANGE (CHARGING) LED solid: The charger is charging the battery.

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

RED (BAD BATTERY) LED solid: The charger has detected a problem with the battery.

10. OPERATING INSTRUCTIONS

IMPORTANT: Remove all cord wraps and uncoil the cables prior to using the battery charger. 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. Access the battery; keep the area 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. If you've connected everything correctly, the yellow/orange (charging) LED should be lit, indicating that the charger is charging. If the yellow/orange LED does not light, check the connections or have the battery checked/replaced.
9. When the battery is fully charged, the green (charged) LED will be solid.
10. When charging is complete, disconnect the charger from the AC power, remove the clamp 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. If you've connected everything correctly, the yellow/orange (charging) LED should be lit, indicating that the charger is charging. If the yellow/orange LED does not light, check the connections or have the battery checked/replaced.
6. When the battery is fully charged, the green (charged) LED will be solid.
7. When charging is complete, disconnect the charger from the AC power, disconnect the negative clamp, and finally the positive clamp.
8. A marine (boat) battery must be removed and charged on shore.

USING THE QUICK-CONNECT CABLE CONNECTORS

Connect either of the two output cable assemblies to the charger in a matter of seconds. Make sure to place the charger on a dry, non-flammable surface.

IMPORTANT: 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 clamp quick-connect.
2. Follow the steps in previous sections to connect the output clamps to the battery.
3. After a good electrical connection is made to the battery, plug the power cord or AC plug into a grounded 120V AC electrical wall outlet.

RING TERMINAL QUICK-CONNECT

The ring connectors permanently attach to the battery, providing easy access to quickly connect the charger to your battery. This application is appropriate for motorcycles, lawn tractors, ATVs and snowmobiles.

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. Plug the charger power cord or AC plug into a grounded 120V AC electrical wall outlet.

BATTERY CHARGING TIMES

CCA = Cold Cranking Amps RC = Reserve Capacity Ah = Amp Hour

BATTERY SIZE/RATING			CHARGE TIME (1A)
SMALL BATTERIES Motorcycle, garden tractor, etc.		6-12 Ah	4-7½ h
		12-32 Ah	7½-20 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.

CHARGE COMPLETION AND MAINTAIN MODE (FLOAT MODE MONITORING)

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

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 up to 10 hours. If desulfation fails, charging will abort and the red (bad battery) LED will light.

ABORTED CHARGE

If charging cannot be completed normally, charging will abort. When charging aborts, the charger's output is shut off and the red (bad battery) LED will light.
Do not continue to attempt to charge this battery. Check the battery and replace, if necessary.

11. 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.

12. MOVING AND STORAGE

- Coil the input and output cords neatly when moving or 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.

13. TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
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 or AC plug and extension cord for loose fitting plug.
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.
Red (bad battery) LED is lit.	The charger is in abort mode.	See “Aborted Charge” in *Operating Instructions*.

14. REPLACEMENT PARTS

Battery clamp cable assembly.....3899002636Z
Ring terminal cable assembly.....2299001950Z

15. BEFORE RETURNING FOR REPAIRS

For REPAIRS OR RETURNS, visit 365rma.com

Visit schumacherelectric.com for Replacement Parts.

16. LIMITED WARRANTY

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

Go to schumacherelectric.com to register your product online.

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