

User Manual



Battery Charger / Maintainer For 6 / 12 Volt lead-acid batteries 1 Amp

Model: CM1A (0757-13CEC / SD161010C)



SAVE THESE INSTRUCTIONS – THIS MANUAL CONTAINS
IMPORTANT SAFETY AND OPERATING INSTRUCTIONS FOR
BATTERY CHARGER 612-1
READ ENTIRE USER MANUAL BEFORE USE



1. WARNING

EXPLOSIVE GAS RISK. WORKING IN THE VICINITY OF A LEAD-ACID BATTERY IS DANGEROUS. EXPLOSIVE GASES DEVELOP DURING NORMAL BATTERY OPERATION. IT IS IMPORTANT THAT YOU READ THIS MANUAL BEFORE USING YOUR CHARGER AND FOLLOW THE INSTRUCTIONS EXACTLY EACH TIME YOU USE IT.

- 1.1 This appliance is not intended for use by people (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they are supervised or have been given instruction concerning the use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.
- 1.2 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 marking on these products and on the engine.
- 1.3 Do not expose the charger to rain, snow, or liquids.
- 1.4 Use of an attachment not recommended or sold by the battery charger manufacturer may result in fire, electric shock or personal injury.
- 1.5 To reduce the risk of electric shock, unplug the charger from the AC outlet before attempting any maintenance or cleaning.
- 1.6 To reduce the risk of damage to the electric plug and cord, pull at the plug rather than the cord when disconnecting the charger.
- 1.7 An extension cord should not be used unless absolutely necessary. Use of an improper extension cord could result in 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. Also ensure that the extension cord is properly wired and in good electrical condition and that the wire size is large enough for the AC ampere rating of the charger as specified in the following table:

RECOMMENDED MINIMUM AWG SIZE FOR
EXTENSION CORDS FOR BATTERY CHARGERS

Length of cord (feet):	25	50	100	150
AWG cord size:	16	16	16	14

- 1.8 If the charger is equipped with an input power cord, do not operate the charger with a damaged cord or plug. Replace the cord or plug immediately.
- 1.9 Do not operate the charger if it has been sharply hit, dropped or otherwise damaged in any way. Take it to a qualified serviceman.
- 1.10 Do not disassemble the charger. Take it to a qualified service center when service or repair is required. Incorrect reassembly may result in electric shock or fire.
- 1.11 Batteries contain lead and diluted sulfuric acid. Dispose of the battery in accordance with federal, state and local regulations. Do not dispose of the battery in a landfill, lake or any other unregulated location.
- 1.12 Throw out and replace the VRLA battery at or before the time indicated on the battery or in the user manual. Usage beyond the required time of service can cause a fluid leakage due to damage to the container or cause a fire due to power leakage.

2. PERSONAL PRECAUTIONS

- 2.1 Someone should be within earshot or close enough to come to your aid when you are working near a lead-acid battery. Have plenty of fresh water and soap nearby in case battery acid comes in contact with your skin, clothing or eyes. Wear complete eye and clothing protection. Avoid touching your eyes while working near the battery.
- 2.2 If battery acid comes in contact with your skin or clothing, wash immediately with soap and water. If acid enters your eye, immediately flush your eye with cold running water for at least 10 minutes and seek medical attention immediately.
- 2.3 NEVER smoke or allow a spark or flame near the battery or engine.
- 2.4 Be extra cautious to avoid dropping a metal tool onto the battery.
It might produce a spark or short-circuit the battery or other electrical parts and cause an explosion.
- 2.5 When working with a lead-acid battery, remove personal metal items such as rings, bracelets, necklaces, watches, etc. A lead-acid battery can produce a short circuit strong enough to weld these items to metal, causing a severe burn.
- 2.6 Use the charger to charge lead-acid batteries only.
- 2.7 The charger is not intended to supply power to a low-voltage electrical system other than that of a starter-motor application.
Do not use the battery charger to charge dry-cell batteries, which are commonly used with home appliances.

These batteries may burst and cause personal injury and damage to property.

- 2.8 NEVER charge a frozen battery.
- 2.9 NEVER charge a battery of the improper type.
- 2.10 NEVER charge a battery with the improper voltage.
- 2.11 NEVER block the charger's ventilation louver.

3. PREPARING TO CHARGE

- 4.1 If necessary to remove the battery from the vehicle to charge, always remove the grounded terminal from the battery first. Make sure all accessories in the vehicle are off so as not to cause an arc. Be sure the area around the battery is well ventilated while the battery is charging. Gas can be forcefully blown away by using a piece of cardboard or other non-metallic material as a fan.
- 4.2 Clean the battery terminals. Be careful to keep corrosive substances from coming into contact with your eyes. Add distilled water in each cell until the battery acid reaches the level specified by the battery manufacturer. This helps purge excess gas from the cells. Do not overfill. For a battery without caps, carefully follow the manufacturer's recharging instructions.
- 4.3 Study all the battery manufacturer's specific precautions, including whether or not to remove the cell caps while charging and recommended charge rates.
- 4.4 Determine the voltage of the battery by contacting the battery manufacturer and make sure it matches the output rating of the battery charger.

4. CHARGER LOCATION

- 4.1 Place the charger as far away from the battery as the DC cables permit.
- 4.2 Never place the charger directly above the battery being charged. Gases from the battery will corrode and damage the charger.
- 4.3 Never allow battery acid to drip on the charger when reading specific gravity or filling the battery.
- 4.4 Do not operate the charger in a confined area or an area with restricted ventilation in any way.
- 4.5 Do not place the battery on top of the charger.

5. DC CONNECTION PRECAUTIONS

- 6.1 Connect and disconnect the DC output terminals only after removing the charger from the AC outlet.
- 6.2 Never allow DC output terminals to touch each other.
- 6.3 If problems arise while connecting the output leads, enlist the help of the dealer from whom you purchased this product or the charger manufacturer for finding a suitable connection device for your application.

6. FOLLOW THESE STEPS WHEN THE BATTERY IS INSTALLED IN THE VEHICLE. A SPARK NEAR THE BATTERY MAY CAUSE A BATTERY EXPLOSION. TO REDUCE THE RISK OF A SPARK NEAR THE BATTERY:

- 6.1 Position the AC and DC cords to reduce the risk of damage by the hood, a door or a moving engine part.
- 6.2 Stay clear of fan blades, belts, pulleys and any other parts that can cause personal injury.
- 6.3 Check the polarity of the battery posts. The POSITIVE (POS., P, +) post usually has a larger diameter than the NEGATIVE - (NEG., N, -) post.
- 6.4 Determine which battery post is grounded (connected) to the chassis.
- 6.5 For negative-grounded vehicles, first connect the POSITIVE (RED) clip from the charger to the POSITIVE (POS., P, +) ungrounded battery post. Then connect the NEGATIVE (BLACK) terminal to the vehicle chassis or engine block away from the battery.
- 6.6 For positive-grounded vehicles, connect the NEGATIVE (BLACK) clip from the charger to the NEGATIVE (NEG., N, -) ungrounded battery post. Connect the POSITIVE (RED) clip to the vehicle chassis or engine block away from the battery, keeping the battery terminal at a good distance.
- 6.7 Do not connect any charger clamps to the carburetor, fuel lines, or sheet-metal body parts. Connect them to a heavy-gauge metal part of the frame or the engine block.
- 6.8 Connect the charger AC supply cord to an electric outlet.
- 6.9 When disconnecting the charger, turn the switches (if supplied) off, disconnect the charger from the AC power, remove the clip from the vehicle chassis, and then remove the clip from the battery terminal. See the operating instructions for charge length information.

7. FOLLOW THESE STEPS WHEN THE BATTERY IS OUTSIDE THE VEHICLE. A SPARK NEAR THE BATTERY MAY CAUSE A BATTERY EXPLOSION. TO REDUCE THE RISK OF A SPARK NEAR THE BATTERY:

- 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. Some batteries are equipped with "Wing-Nut" terminals that allow for easy

placement of the terminals to these posts.

- 7.2 Attach at least a 24-inch 18-gauge (AWG) insulated battery cable to the NEGATIVE (NEG., N, -) battery post.
- 7.3 Connect the POSITIVE (RED) charger terminal to the POSITIVE (POS., P, +) battery post.
- 7.4 Position yourself and the free end of the cable as far away from the battery as possible, then connect the NEGATIVE (BLACK) terminal to the free end of cable.
- 7.5 Do not face the battery when making the final connection.
- 7.6 Connect the charger AC supply cord to an electrical outlet.
- 7.7 When disconnecting the charger, always do so in reverse sequence of the connecting procedure and break the first connection while as far away from the battery as possible.
- 7.8 A marine (boat) battery must be removed and charged on shore. Charging it on board requires equipment specially designed for marine use.

8. MAIN FEATURES:

Automatic Switching Mode Battery Charger and Maintainer

- 8.1 Easy to use: The Battery Charger is easy to operate and requires no technical experience.
- 8.2 Charge and maintain – automatic charge: On power-up, the charger will automatically go to the charging system. It can then be left unattended and will never overcharge your batteries.
- 8.3 Charge and maintain – automatic maintenance: When the battery is fully charged, the charger automatically switches to maintain the battery. It will monitor the battery voltage and continue to peak performance to the battery.
- 8.4 Short circuit protection: The charger will automatically turn off when the output short-circuits to prevent damage.
- 8.5 Reverse polarity protection: The charger can automatically shut off without damage when the output polarity is reversed.

9. SAFETY & TEMPERATURE FEATURES:

- 9.1 Will never overcharge your battery.
- 9.2 Output short circuit protection.
- 9.3 Output overload protection: The charger uses a “solid state circuit interrupter” that opens under severe overload. This condition may occur if attempting to charge a severely discharged or heavily sulfated battery. Once the interrupter opens, the charger will stop charging for a short period and then resume charging automatically. The yellow LED will be OFF until charging resumes. Overloading could be due to an external load.
Remove the load condition prior to attempting to recharge the battery.
- 9.4 Reverse battery/overload condition: The charger has reverse battery and short circuit protection. If a reverse battery condition exists (the white LED will turn RED only when output leads are connected backwards), simply unplug the charger from the AC power and properly remake the connections as described in this manual.
- 9.5 Internal overheat protection: Chargers have an internal overheat protection. The power will be reduced if the ambient temperature increases.
- 9.6 Corrosion-resistant output connectors.
- 9.7 Output clamps and ring terminals provided: The charger comes with a quick-connect fly lead and two different kinds of connectors, battery clamps and ring terminals. The ring terminals are perfect for permanent connection to your battery. You can connect the lead to the battery and tuck the lead away while you are using your vehicle. When you get back to your garage, simply plug the lead back into the charger.

10. BATTERY TYPES AND CAPACITY:

- 10.1 Suits all lead-acid type batteries (conventional, AGM and gel).
- 10.2 Battery capacity:
- 10.3 The following maximum AH capacities are to be used as a general guide only. Some batteries may be able to handle a higher charge current. Check with the battery manufacturer when charging batteries with small capacities.

Charge current:	1000 mA
Battery capacity while charging:	2–20 AH
Battery capacity while maintaining:	2–60 AH

ELECTRICAL PARTS:

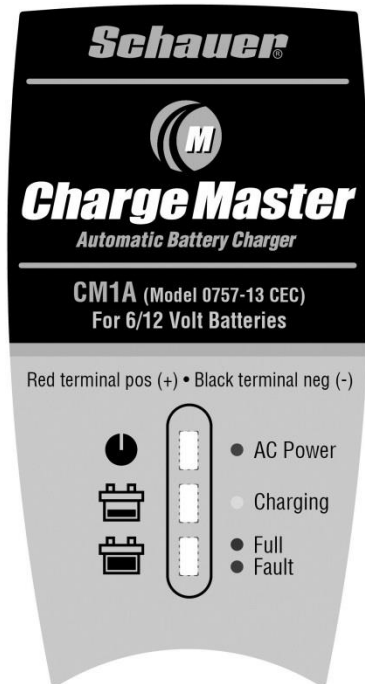
- 10.4 Delivered with:

Input connector:	With 2-pin plug
Output lead:	10 ft. with trailer connector
Extension lead:	2 ft. with trailer connector + battery clamp
Extension lead:	2 ft. inline 3A fused with ring terminals

11. ENVIRONMENTAL CHARACTERISTICS:

- 11.1 Operating temperature: -10 to 45 °C
- 11.2 Storage temperature: -25 to 85 °C
- 11.3 Operating humidity range: 0% to 90% RH
- 11.4 Cooling: passive/natural

12. TECHNICAL SPECIFICATIONS:



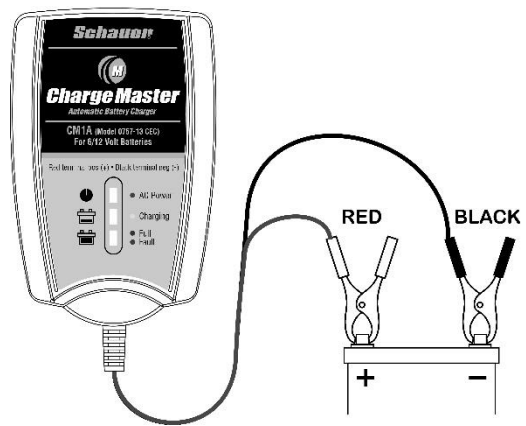
Part Number	CM1A
Type	Automatic
Input Voltage	100~120Vac
Input Frequency	50/60Hz
Output	1000mA @ 6V/12V
Size (L*W*H)	105 x 65 x 35 mm
Weight	0.5Kg
Approvals	UL/cUL, FCC, CEC, DOE

13. OPERATING INSTRUCTIONS:

- 13.1 STEP 1 – Pre-charge check and electrolyte level check
 - a) Check the battery electrolyte level (not required on sealed and maintenance-free batteries).
 - b) If necessary remove the vent caps and add distilled water so the levels are halfway between the upper and lower fill lines.

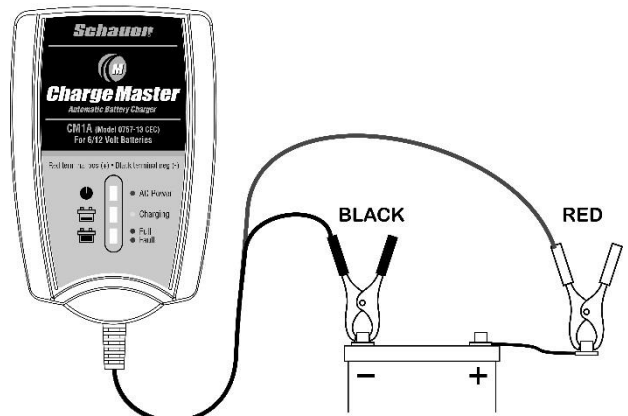
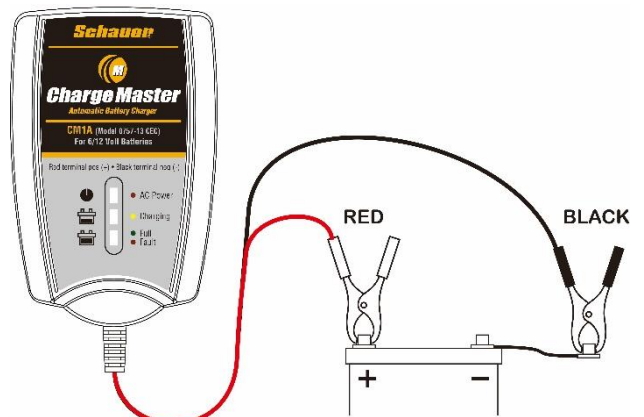
13.2 STEP 2 – Connecting the battery charger to your battery
If the battery is outside the vehicle:

- a) Connect the red lead from the charger to the positive (+) battery terminal.
- b) Connect the black lead from the charger to the negative(1) battery terminal



If the battery is still in the vehicle, determine if the vehicle is positively (+) or negatively (-) earthed.

- a) If negatively earthed (most common), FIRST connect the red (+) battery charger lead to the positive (+) battery post and then connect the black (-) battery charger lead to the vehicle's chassis and away from the fuel line.
- b) If Positively Earthed – FIRST Connect the Black (-) battery charger lead to the Negative (-) battery post and then connect the Red (+) battery charger lead to the Vehicle's chassis and far away from the fuel line.



STEP 3 - Connect the battery charger to Mains Power (120Vac)

- Connect the battery charger to a 120VAC Mains Powered socket.
 - Turn on the 120VAC Mains Power.
 - The Charger will automatically start when AC power is connected and switched on.
- (Note: If the Fault Indicator LED illuminates Red, please check your connections as it's likely that the Positive and Negative Leads are reversed. Refer to Trouble Shooting Page for further information)

14. THE CHARGING PROCESS:

- 14.1 Qualification – Battery condition check – orange charging LED flashing rapidly
When the charger is first switched on, it checks the battery condition to determine whether the battery needs reconditioning. During this qualification process, it checks the internal impedance and initial voltage of the battery and it will determine how much charge current, if any, the battery will accept.
- 14.2 ENHANCED BATTERY REJUVENATION – ORANGE CHARGING LED FLASHING RAPIDLY
If the initial qualification detected that the battery is in poor condition, the patented rejuvenation process will begin automatically. During the rejuvenation process, a high voltage equalizing and peak pulse reconditioning charge is used to repair the sulfated battery. This unique patented feature will break down and dissolve the lead-sulfate crystal build-up on the battery plates, extending the life of your battery. It can also balance out high concentrations of acid. The equalization voltage will be 8 V maximum for 6 V battery selection and 16 V maximum for 12 V battery selection.
- 14.3 Soft start charging – orange charging LED flashing slowly
Gently charges the battery using a reduced charge output until the battery voltage reaches 5.5 V for 6 V battery selection or 11 V for 12 V battery selection. If the battery voltage doesn't reach these levels within six hours, the safety timer protection will stop the unit from charging, the red fault LED will illuminate and the orange charging LED will start flashing.
- 14.4 Bulk charging – orange charging LED ON
Uses the maximum charge output until the battery voltage reaches 7.2 V for 6 V battery selection or 14.4 V for 12 V battery selection. If the battery voltage doesn't reach these levels within 24 hours, the safety timer protection will stop the unit from charging and the red fault and orange charging LEDs will illuminate.
- 14.5 Absorption charging – orange charging LED ON
Uses a constant voltage while reducing the charging output current to ensure the battery receives a full charge without overcharging the battery.
- 14.6 Battery analysis – full/float green LED ON
The battery analysis stage checks the condition of the battery after the charge cycle is completed. If the battery voltage drops too quickly during the analysis mode, battery is probably faulty. If the battery analysis failed, the green full LED will flash.
- 14.7 Float mode – full/float green LED ON
This stage allows you to keep the charger connected 24/7 to ensure your battery is well maintained and kept fully charged. Float mode will maintain the battery at a constant 6.6 V for 6 V battery selection or 13.2 V for 12 V battery selection.
- 14.8 Long-term maintenance – full/float green LED ON
During long-term maintenance/float mode, the unit will apply a special pulse charge to ensure the battery is kept in optimal condition.

15. STEP 4 – Disconnecting the battery charger from the battery

- 15.1 If the battery is outside the vehicle:
a) 1. Switch the charger OFF and remove it from the outlet.
b) 2. Remove the black lead and then the red lead.
- 15.2 If the battery is still in the vehicle:
a) 1. Switch the charger OFF and remove it from the outlet.
b) 2. Remove the lead from the vehicle chassis.
- 15.3 Remove the lead from the battery.
- 15.4 Note: Check electrolyte levels if possible after charging as they may need topping up with distilled water (This does not apply to sealed maintenance-free batteries).

16. LED STATUS INDICATOR TABLE

LED	STATUS	DESCRIPTION
<i>Power LED</i>		
Red	ON	Indicates AC power is ON
Red	Flashing	Indicates AS power is ON and no Battery has been detected. ECO Mode.
LED	STATUS	DESCRIPTION
<i>Charge LED</i>		
Orange	Flashing Fast	Qualification and battery condition check
Orange	Flashing Fast	Battery rejuvenation
Orange	Flashing Fast	Soft start charging
Orange	ON	Bulk charging or absorption charging
LED	STATUS	DESCRIPTION
<i>Charged / Error LED</i>		
Green	ON	Battery is fully charged and is in Float/Maintenance mode
Green	Flashing	Battery analysis has failed
Red	ON	Short circuit or reverse polarity
Red	ON	Soft start charging timed out if Orange Charging LED is also flashing fast
Red	ON	Bulk charging timed out if Orange Charging LED is also flashing slow



**Power
Tension**



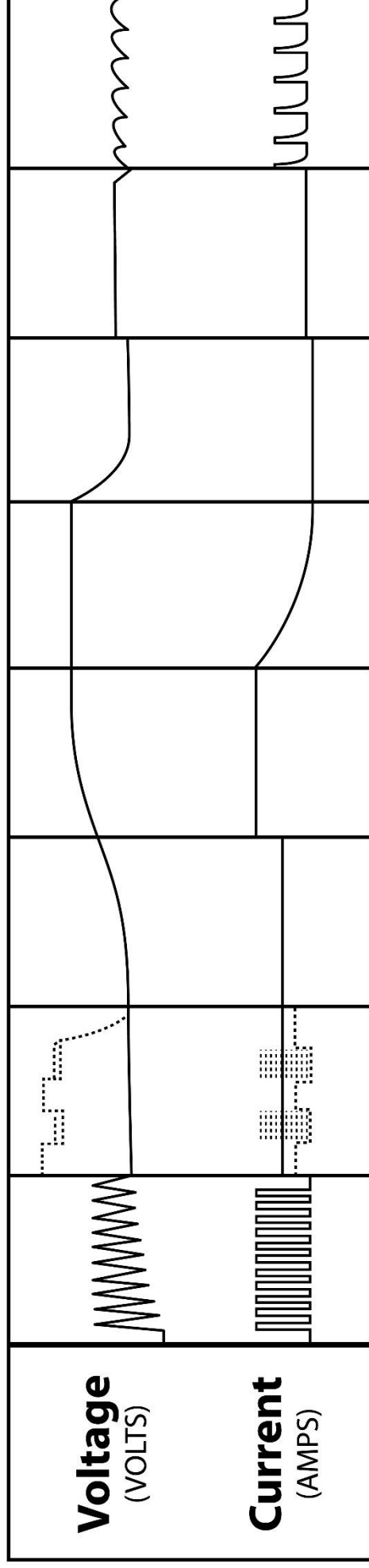
**Charge
Charging**



**Chargée/Charged
Erreur/Error**

Note: When the unit is in ultra-low power consumption mode (ECO Mode), this will be indicated by the Power LED flashing RED. The unit will automatically go into this mode if no battery is detected or connected.

17. CHARGING CURVE



CHARING/ MAINTAINING PROCESS

QUALIFICATION	REJUVENATION	SOFT START	BULK CHARGE	ABSORPTION	ANALYSIS	MAINTENANCE
Checks battery condition to determine whether the rejuvenation stage or charge cycle is required.	Automatic stage for batteries in poor condition. Breaks down sulphation using new patented technologie.	Increases your battery life by gently starting to charge the battery until the battery reaches a set voltage.	Reduces charging time by delivering maximum charge until the battery reaches a set voltage.	Uses constant voltage and ensures the battery receives a full charge without overcharging the battery.	Check the battery condition to ensure it's fully charge. Float Maintains the battery at 100% charge.	Special pulse charge for long-term maintenance to ensure the battery is in optimal condition.

18. TROUBLESHOOTING

PROBLEM	INDICATION	POSSIBLE CAUSES	SUGGESTED SOLUTION
Charger does not work ?	No Indicator lights on	No AC power	<ul style="list-style-type: none"> • Check AC connections and make sure the AC Power Point is switched ON. • Try a different AC Power Point which you know is working.
Charger has no DC output ?	Red Power LED is ON but the Charging LED is OFF Fault RED LED is ON	<ul style="list-style-type: none"> • Incorrect battery voltage selection • Battery is deeply discharge • Output is short circuited • Reverse polarity protection • Lose / bad connection to the battery 	<ul style="list-style-type: none"> • Check the battery voltage selection switch is set to the correct voltage. For 6V batteries, the battery voltage must be over 3V and for 12V batteries the battery voltage must be over 8V for the charger to start. • Check DC connection between charger and battery and make sure they are not short circuited. (Touching each other) • Check that the crocodile clips/ring terminals are connected to the correct polarity. <p>Note: The charger output is only present when connected to a battery.</p>
No charging current ?	Fault Red LED is ON and Orange Charging LED is Flashing	<ul style="list-style-type: none"> • Battery is severely sulphated • Battery has a damages cell • Overheat protection mode 	<ul style="list-style-type: none"> • Check the battery condition, age, etc. • Battery may need replacement. • Move battery & charger to a cooler environment.
The full / float light won't come on.	Fault Red LED is ON and Orange Charging LED is Flashing or Full Green LED is Flashing	<ul style="list-style-type: none"> • Battery Ah capacity too large for the battery charger and it has time out • Battery is defective • Battery is severely sulphated 	<ul style="list-style-type: none"> • Check the charger specifications match the battery capacity. eg. make sure battery capacity is not too big for the charger. • Battery may need replacement.

19. MAINTENANCE

The charger is maintenance-free. If the power cord is damaged, the charger must be returned to the reseller for maintenance. The case should be cleaned occasionally. The charger should be disconnected from the power while cleaning.