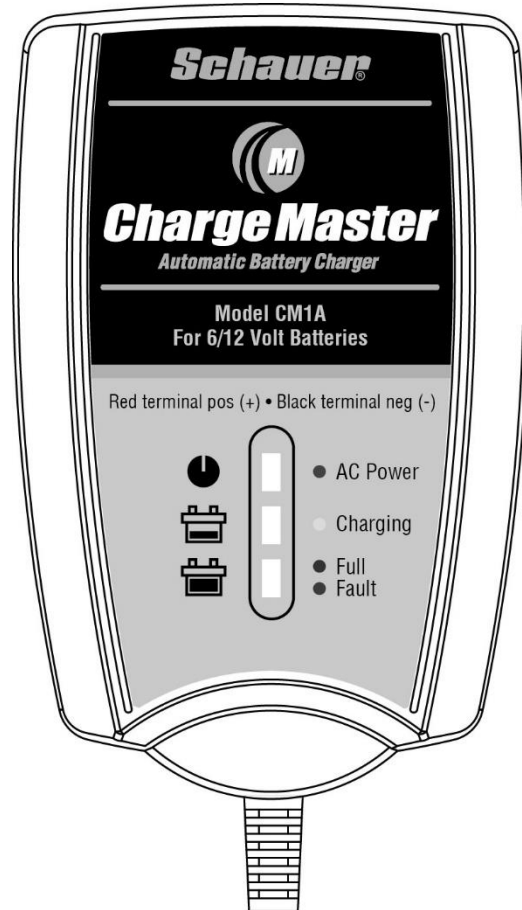


User Manual



Battery Charger / Maintainer
For 6 / 12 Volt lead-acid batteries
1 Amp
Model No. CM1A (0757-13CEC)

- **WARNING** - RISK OF EXPLOSIVE GASES WORKING IN VICINITY OF A LEAD-ACID BATTERY IS DANGEROUS. EXPLOSIVE GASES DEVELOP DURING NORMAL BATTERY OPERATION. IT IS IMPORTANT THAT EACH TIME BEFORE USING YOUR CHARGER, YOU READ THIS MANUAL AND FOLLOW THE INSTRUCTIONS EXACTLY.
- 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 engine.
- Do not expose charger to rain, snow, or liquids.
- 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.
- To reduce risk of electric shock, unplug charger from AC outlet before attempting any maintenance or cleaning.
- To reduce risk of damage to electric plug and cord, pull by plug rather than cord when disconnecting charge
- 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 extension cord must be used, make sure that pins on plug of extension cord are the same number, size and shape as those of plug on charger and that the extension cord is properly wired and in good electrical condition and that the wire size is large enough for A.C. ampere rating of 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 size of cord:	16	16	16	14

- If charger is equipped with an input power cord, do not operate charger with damaged cord or plug - replace the cord or plug immediately.
- 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.
- Do not disassemble charger; take it to a qualified service center when service or repair is required. Incorrect reassembly may result in a risk of electric shock or fire.
- Appliances incorporating batteries which contain materials hazardous to the environment.
- Batteries contain lead and dilute 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 other
- Scrap and replace the VRLA battery at or before the time indicated on the battery or in the user's manual. Usage beyond the required time of service can cause fluid leakage due to damages to the container, or cause fire due to power leakage.

- **PERSONAL PRECAUTIONS**

- The appliance is not intended for use by young children or infirm persons without supervision; young children should be supervised to ensure that they do not play with the appliance.
- **When the battery charger is charging for automobile batteries, the following steps should be done:**
- The battery terminal is not connected to the chassis has to be connected first. The other connection is to be made to the chassis, remote from the battery and fuel line. The battery charger is then to be connected to the supply mains.
- After charging, disconnect the battery charger from supply mains, and then remove the chassis connection and the battery connection, in this order.

- For

	<p>THIS MANUAL CONTAINS IMPORTANT SAFETY AND OPERATING INSTRUCTIONS</p> <p>READ ENTIRE INSTRUCTION BEFORE USE</p>
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appliance with type Y attachment:

- If the supply cord is damaged, it must be replaced by the manufacturer or its service agent or similarly qualified person in order to avoid a hazard.
- Someone should be within range of your voice or close enough to come to your aid when you work near a lead-acid battery. Have plenty of fresh water and soap nearby in case battery acid

contacts skin, clothing or eyes. Wear complete eye and clothing protection. Avoid touching eyes while working near battery.

- If battery acid contacts skin or clothing, wash immediately with soap and water. If acid enters eye, immediately flush eye with running cold water for at least 10 minutes and get medical attention immediately.
- NEVER smoke or allow a spark or flame in vicinity of battery or engine.
- 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.
- 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 current high enough to weld a ring or the like to metal, causing a severe burn.
- It is not intended to supply power to a low voltage electrical system other than in a power supply application. **Do not use battery charger for recharging dry-cell or non-rechargeable batteries** that are commonly used with home appliances. These batteries may burst and cause injury to persons and damage to property. **While charge the impropriety type of battery will cause battery serious damage.**
- **NEVER charge a frozen battery.**
- **NEVER charge the impropriety type of battery.**
- **NEVER charge the impropriety Voltage of battery.**
- **NEVER block off the ventilation louver of the charger.**
- **PREPARING TO CHARGE**
- 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. **Be sure area around battery is well ventilated while battery is being charged.** Gas can be forcefully blown away by using a piece of cardboard or other non-metallic material as a fan.
- Clean battery terminals. Be careful to keep corrosion from coming into contact with eyes. Add distilled water in each cell until battery acid reaches level specified by battery manufacturer. This helps purge excessive gas from cells. Do not overfill. For a battery without caps, carefully follow manufacturer's recharging instructions.
- Study all battery manufacturers' specific precautions such as removing or not removing cell caps while charging and recommended rates of charge.
- Determine voltage of battery by contacting battery manufacturer and make sure it matches output rating of battery charger.
- **CHARGER LOCATION**
- Locate charger as far away from battery as dc cables permit.
- Never place charger directly above battery being charged; gases from battery will corrode and damage charger.
- Never allow battery acid to drip on charger when reading gravity or filling battery.
- Do not operate charger in a closed-in area or restrict ventilation in any way.
- Do not set a battery on top of charger.
- **DC CONNECTION PRECAUTIONS**
- Connect and disconnect DC output terminals only after removing charger from AC outlet.
- Never allow DC output terminals to touch each other.
- If problems arise connecting the output leads, solicit the aid of your Dealer from whom you purchased this product or the charger manufacturer for finding a suitable connection device for your application.
- **FOLLOW THESE STEPS WHEN BATTERY IS INSTALLED IN VEHICLE. A SPARK NEAR BATTERY MAY CAUSE BATTERY EXPLOSION. TO REDUCE RISK OF A SPARK NEAR BATTERY:**
- Position AC and DC cords to reduce risk of damage by hood, door or moving engine part.
- Stay clear of fan blades, belts, pulleys, and any other parts that can cause injury to persons.
- Check polarity of battery posts POSITIVE (POS., P, +) post usually has larger diameter than NEGATIVE - (NEG., N, -).
- Determine which post of battery is grounded (connected) to chassis.
- For negative-grounded vehicle, first connect POSITIVE (RED) clip from charger to POSITIVE

(POS., P, +) ungrounded post of battery. Then connect NEGATIVE (BLACK) terminal to vehicle chassis or engine block away from battery.

- For positive-grounded vehicle, connect NEGATIVE (BLACK) clip from charger to NEGATIVE (NEG., N, -) ungrounded post of battery. Connect POSITIVE (RED) clip to vehicle chassis or engine block away from battery keeping the battery terminal well removed there from.
 - Do not connect any charger clips to carburetor, fuel lines, or sheet-metal body parts. Connect to a heavy gauge metal part of the frame or engine block.
 - Connect charger AC supply cord to electric outlet.
 - When disconnecting charger, turn switches (if supplied) to off, disconnect charger from AC power, remove clip from vehicle chassis, and then remove clip from battery terminal. See operating instructions for length of charge information.
 - **FOLLOW THESE STEPS WHEN BATTERY IS OUTSIDE VEHICLE. A SPARK NEAR THE BATTERY MAY CAUSE BATTERY EXPLOSION. TO REDUCE RISK OF A SPARK NEAR BATTERY:**
 - Check polarity of battery posts. POSITIVE (POS., P, +) battery post usually has a larger diameter than NEGATIVE (NEG., N, -) post. Some batteries are equipped with 'Wing-Nut' terminals allowing for easy placement of the terminals to these posts.
 - Attach at least a 24-inch long 18-gauge (AWG) insulated battery cable to NEGATIVE (NEG., N, -) battery post.
 - Connect POSITIVE (RED) charger terminal to POSITIVE (POS., P, +) post of battery.
 - Position yourself and free end of cable as far away from battery as possible - then connect NEGATIVE (BLACK) terminal to free end of cable.
 - Do not face battery when making final connection.
 - Connect charger AC supply cord to electrical outlet
 - When disconnecting charger, always do so in reverse sequence of connecting procedure and break first connection while as far away from battery as practical
- A marine (boat) battery must be removed and charged on shore. To charge it on board requires equipment specially designed for marine use

MAIN FEATURES: Automatic Switching Mode Battery Charger & Maintainer

- **Easy to Use:** The Battery Charger is easy to operate and requires no technical experience.
- **Charge & Maintain - Automatic Charge:** On power up, the charger will automatically go to charging system, then could be left unattended and never overcharge your batteries.
- **Charge & Maintain - Automatic Maintenance:** When the battery is charged to "full" state, the charger automatically switches to maintain the battery. It will monitor the battery voltage and continue to peak performance to the battery.
- **Short circuit protection:** The charger will automatically turn off when the output short circuit occurred and prevent any damage
- **Reverse polarity protection :** The charger can automatically shut off when the output polarity is reversed and without damage

SAFETY & TEMPERATURE FEATURES:

- **Never overcharge your battery**
- **Output short circuit protection**
- **Output overload protection:** The charger employs the use of a 'Solid State Circuit Interrupter' that opens under severe overload. This condition may occur if attempting to charge any severely discharged or heavily sulfated battery. Once the Interrupter opens, the charger will stop charging for a short period and then resume charging automatically and the yellow. L.E.D. will be OFF, until resume charging. Overloading could be due to an external load, remove the load condition prior to attempting to recharge the battery.
- **Reserve Battery / Overload Condition:** The charger has reverse battery and short circuit

protection. If a reverse battery condition exists (White L.E.D. will turn RED, only, while output leads are connected backwards), simply unplug charger from AC power and properly remake the connections as described in this manual

- **Internal over heat protection:** Chargers have an internal overheat protection. The power will be reduced if the ambient temperature is raised.
- **Corrosion-resistant output connectors**
- **Output clips and ring terminals provided:** It comes with a quick connect fly lead and 2 different kinds of connectors, crocodile clips and a 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 and when you get back to your garage simply plug the lead back into the charger

BATTERY TYPES & CAPACITY:

- Suits all Lead Acid Type Batteries. (Conventional, AGM & Gel)
- Battery Capacity:
 - The following maximum AH capacities are to be used as a general guide only: some batteries maybe able to handle a higher Charge Current. Check with the battery Manufacturer when charging batteries with small capacity.

Charge Current:	1A
Battery Capacity: Charging:	3 - 20AH
Battery Capacity: Maintaining:	3 - 60 AH

ELECTRICAL PARTS:

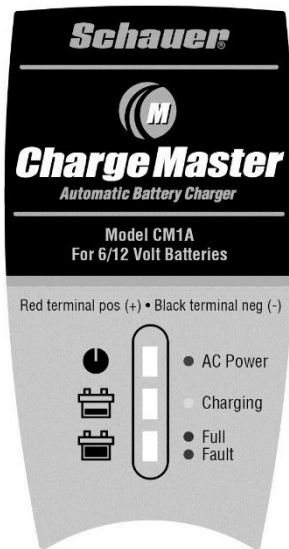
Delivered with:

Input Connector:	UL 2pin plug
Output Cord:	10 feet with Quick Connector
Extend Cord:	2 feet with Trailer Connector + Battery Clamp
Extend Cord:	2 feet inline 3A fused with ring terminals

ENVIRONMENTAL CHARACTERISTICS:

- Operating Temperature: -10 to 45° C
- Storage Temperature: -25 to 85°C
- Operating Humidity Range: 0 to 90% RH
- Cooling: Passive / Natural

TECHNICAL SPECIFICATIONS:



Part Number	CM1A
Type	Automatic
Input Voltage Range	100~120Vac
Input Frequency	50/60Hz
Output	1A @ 6V/12V
Size (L*W*H)	100 x 65 x 36 mm
Weight	0.4Kg
Approvals	UL/cUL, FCC, CEC

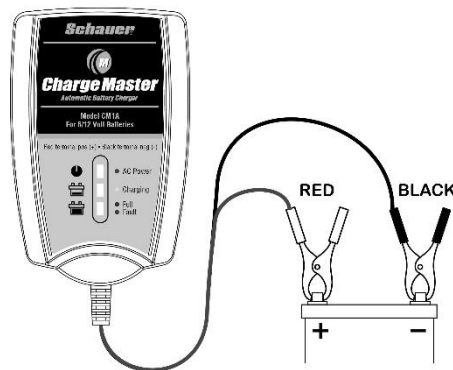
CHARGING INSTRUCTIONS:

STEP 1 - Pre Charge Check & Electrolyte Level Check

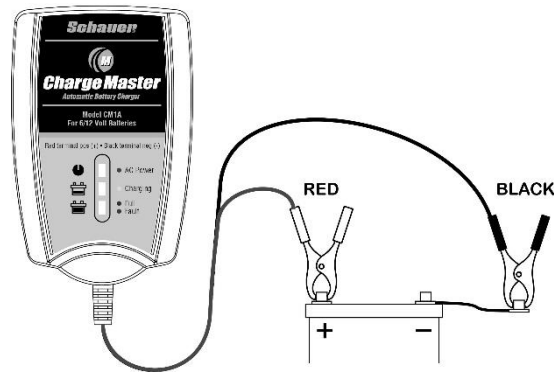
- Check the Battery Electrolyte level (Not required on sealed & Maintenance Free Batteries). If necessary, remove the vent caps and add distilled water so the levels are halfway between the upper and lower fill lines.

STEP 2 - Connecting the Battery charger to your Battery

- If the Battery is **out of the vehicle**:
 - Connect the Red lead from the charger to the positive (+) battery terminal.
 - Connect the Black lead from the charger to the negative (-) battery terminal.

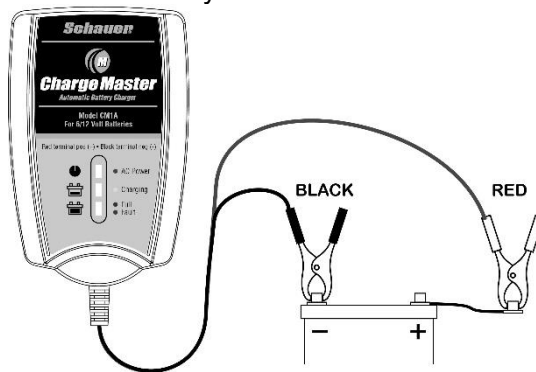


- If the Battery is still **in the vehicle**, determine if the vehicle is positively (+) or negatively (-) earthed.
 - If Negatively Earthed (Most Common) – **FIRST** Connect the Red (+) battery charger lead to the positive (+) Battery post and then connect the Black (-) battery charger lead to the vehicle's chassis and away from the fuel line.



Connection in Vehicle (Negatively Earthed)

- 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.



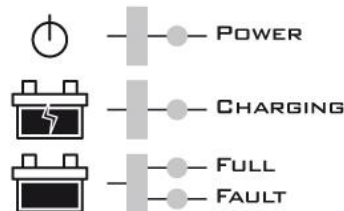
Connection in Vehicle (Positively Earthed)

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)

THE CHARGING PROCESS:

The charging stages are as follows:



- **Bulk Charge:**

Charges using a constant maximum current (1A) until the battery reaches 7.2V(6 Volt Batteries) / 14.4V (12 Volt Batteries) - (LED Color - Yellow)

- **Fully / Float:**

Battery is fully charged and is being maintained. (LED Color - GREEN)

STEP 4 - Disconnecting the Battery charger from Battery

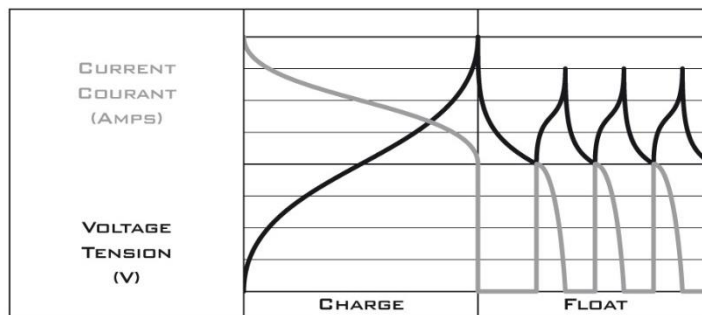
- If the Battery is out of the vehicle.
 - Switch OFF and Remove the AC Power Socket from the outlet.
 - Remove the Black lead and then the Red lead.
 - Check electrolyte levels if possible.

(As they may need topping up with distilled water after charging)

LED STATUS INDICATOR TABLE:

	Power (Red)	Charging (Yellow)	Full (Green)	Fault (Red)
A.C. Power connected, battery disconnected	ON	OFF	OFF	OFF
Bulk Charging	ON	ON	OFF	OFF
Level 1 Charging	ON	ON	OFF	OFF
Level 2,3 Charging	ON	OFF	ON	OFF
Battery Reverse polarity connection	ON	OFF	OFF	ON
A.C. Power OFF	OFF	OFF	OFF	OFF

CHARGING CURVE (VOLTAGE):



TROUBLE SHOOTING

Types of Problems	Indication	Possible Causes	Suggested Solution
<u>Charger does not work?</u>	No Indicator lights on	- No AC power	- Check AC connections and make sure Power Point is switched ON
<u>Charger has no DC output?</u>	Fault LED is On.	- Reverse polarity connection to Battery	- Check that the crocodile clips haven't fallen off the battery. - Check that the crocodile clips / ring terminals are connected to the correct polarity.

MAINTENANCE

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