

# ***CHARGE IT!***

by **SOLAR**

## ***Wheel Charger Owner's Manual***



Model No. 4735

### **⚠ WARNING**



Failure to follow instructions may cause damage or explosion, always shield eyes.  
**Read entire instruction manual before use.**








### **⚠ WARNING**

This product can expose you to chemicals, including Vinyl-Chloride, Styrene and Acrylonitrile, which are known to the State of California to cause cancer.

# SAFETY SUMMARY

## IMPORTANT SAFETY INSTRUCTIONS

This manual contains important safety information. DO NOT OPERATE this equipment UNTIL YOU HAVE READ this safety summary!

 <b>WARNING</b>	
	Read these instructions completely before using the Battery Charger and save them for future reference. Before using the Battery Charger to charge a battery, read these instructions and the instruction manual/safety information provided by the car, truck, boat or equipment manufacturer. Following all manufacturers' instructions and safety procedures will reduce the risk of accident.
	Working around lead-acid batteries may be dangerous. Lead-acid batteries release explosive gases during normal operation, charging and jump starting. Carefully read and follow these instructions for safe use. Always follow the specific instructions in this manual and on the Battery Charger each time you use the Battery Charger. All lead-acid batteries (car, truck and boat) produce hydrogen gas which may violently explode in the presence of fire or sparks. <b>Do not smoke, use matches or a cigarette lighter while near batteries.</b> Do not handle the battery while wearing vinyl clothing because static electricity sparks are generated when vinyl clothing is rubbed. Review all cautionary material on the Battery Charger and in the engine compartment.
	Always wear eye protection, appropriate protective clothing and other safety equipment when working near lead-acid batteries. Do not touch eyes while working on or around lead-acid batteries.
	Always store clamps away from each other or common conductors. Improper storage of clamps may cause the clamps to come in contact with each other, or a common conductor, which would be hazardous if the charger was plugged into an AC outlet.
	Use extreme care while working within the engine compartment, because moving parts may cause severe injury. Read and follow all safety instructions published in the vehicle's Owner's Manual.
	Batteries being charged with the Battery Charger unit likely contain liquid acids which are hazardous if spilled.

**WARNING:** To reduce risk of fire or burns, do not disassemble, crush, puncture, short external contacts, or dispose of in fire or water.

**WARNING:** Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

**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:

- Reorient or relocate the receiver antenna
- Increase the separation between remote and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio TV technician for help.

This Class B digital apparatus complies with Canadian ICES-003.

# SAVE THESE INSTRUCTIONS

## WARNING – Shock Hazards

1. This battery charger is intended for indoor use only. Do not expose the charger to rain or snow.
2. **NEVER** attempt to charge a marine (boat) battery while the boat is on or near the water. A boat must be on a trailer and located indoors before attempting to charge its battery(s). The boat manufacturer's battery charging instructions must be followed exactly.
3. **NEVER** set the charger, output cable or clamps, or ac power cord plug in water or on wet surfaces.
4. **NEVER** use this charger on a pier or dock. Charger could fall in water, creating an electric shock hazard.
5. **NEVER** attempt to plug in or operate the battery charger with defective or damaged wires, power cord, or power cord plug. Have any of these parts that are defective or damaged replaced by qualified personnel IMMEDIATELY.
6. **NEVER** attempt to plug in the charger or operate its controls with wet hands or while standing in water.
7. **NEVER** alter the ac power cord or power cord plug provided with the battery charger.
8. **NEVER** use an attachment not recommended or sold by Clore Automotive for use with this specific model battery charger. Use of such attachment may result in risk of fire, electric shock or injury to persons.
9. **NEVER** operate this battery charger if it has received a sharp blow, been dropped, or similarly damaged, until after being inspected and/or repaired by qualified service personnel.
10. **NEVER** disassemble this battery charger. Take the battery charger to qualified service personnel when service or repair is needed.
11. **ALWAYS** plug in and unplug the AC power cord by grasping the power cord plug, NOT THE POWER CORD, to reduce risk of damaging power cord.
12. **ALWAYS** unplug the battery charger from the ac outlet before attempting any cleaning or maintenance. Turning the charger's control(s) OFF, alone, will not remove all electricity from the charger.
13. An extension cord should not be used unless absolutely necessary. Use of an improper extension cord could result in a fire or electric shock. If an extension cord must be used, make sure that:
  - a. That pins on plug of extension cord are the same number, size, and shape as those of plug on charger,
  - b. That extension cord is properly wired and in good electrical condition; and
  - c. That the wire size is large enough for the length of cord as specified below:

<i>Length of cord in feet:</i>	<i>25</i>	<i>50</i>	<i>100</i>	<i>150</i>
<i>AWG size of cord:</i>	<i>16</i>	<i>12</i>	<i>10</i>	<i>8</i>

## WARNING – Risk of Explosive Gases

1. Working in the vicinity of a lead-acid battery is dangerous. Batteries generate explosive gasses during normal operations and, at an even higher level, during charging. If anything is allowed to ignite these gasses, the battery may explode, sending pieces of the battery and extremely caustic battery acid out in all directions and with extreme force. Since just the slightest spark is sufficient to ignite these gasses, it is of **UTMOST IMPORTANCE** that you read this manual and follow the instructions exactly, before using your battery charger.
2. **NEVER** operate this battery charger near any fuel tanks or gas cylinders. This charger can produce sparks that could ignite gasses and cause an explosion.
3. **NEVER** attempt to permanently mount this battery charger on a marine or recreational vehicle.
4. **NEVER** attempt to connect this charger's output cables directly to the battery(s) in the bilge or engine compartment of a boat. Follow the boat manufacturer's battery charging instructions exactly.

## **WARNING – Battery Explosion Hazards**

1. **NEVER** connect both battery charger clamps directly to the two posts of the same battery. See *Operation Instructions* for connection procedures.
2. **NEVER** allow the dc output clamps to touch each other.
3. **ALWAYS** be extra cautious to reduce the risk of dropping a metal object, such as a tool, onto or near the battery. Doing so could produce a spark or short circuit the battery or other electrical part that could cause an explosion.
4. **NEVER** operate the battery charger in a closed-in area or restrict ventilation in any way.
5. **ALWAYS** make sure the area around a battery is well ventilated while it is being charged. Gas can be forcefully blown away by using a piece of cardboard or other non-metallic material as a fan.
6. **ALWAYS** make sure that the AC power cord is unplugged from the ac outlet or extension cord BEFORE connecting or disconnecting the battery charger clamps, to prevent arcing or burning.
7. **ALWAYS** locate the battery charger as far away from the battery as the DC output cables will permit.
8. **ALWAYS** twist or rock charger clamps back and forth several times on the battery post and the other point of connection at the time of initial connection. This helps keep the clamps from slipping off their points of connection which helps reduce the risk of sparking. DO NOT rock the clamp connected to the battery post AFTER the second connection (at a point away from the battery) is made or sparking may occur at the battery post.
9. **ALWAYS** check the cable and wire connections at the battery(s) for tightness BEFORE starting to charge. A loose connection can cause sparks or excessive heating which could cause a battery explosion.
10. **ALWAYS** make sure the battery compartment is open and well ventilated before charging.

## **WARNING – Moving Parts Hazards**

1. **NEVER** connect the battery charger clamps to a vehicle when the engine is running.
2. **ALWAYS** stay clear of fan blades, fan belts, pulleys and other moving engine parts when working near an engine. Moving engine parts can cause severe personal injury, including dismemberment.
3. **ALWAYS** make sure that the battery charger cables and clamps are positioned so they will not come in contact with any moving engine parts.
4. **NEVER** wear loose clothing or long hair around moving parts because they may get caught and cause severe injury or death.

## **WARNING – Burn Hazards**

1. **NEVER** lean on or rest against the engine or cooling system parts when the vehicle is running.
2. **ALWAYS** stay clear of the cooling system, engine, and engine manifold. These engine components get very hot and retain heat for a long time. Touching any of these components can cause severe burns.

## PERSONAL PRECAUTIONS

1. Someone should be within range of your voice or close enough to come to your aid when you work near a lead-acid battery.
2. Have plenty of fresh water and soap nearby in case battery acid contacts skin, clothing, or eyes.
3. Wear complete eye protection and clothing protection. Avoid touching eyes while working near battery.
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.
5. **NEVER** smoke or allow a spark or flame in vicinity of battery or engine.
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.
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 other jewelry to metal, causing a severe burn.
8. Use 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 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.
9. **NEVER** charge a frozen battery, as battery explosion can result.

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# INTRODUCTION

## Description

This battery charger is designed to handle the majority of your charging and starting needs.

- Fully automatic operation
- Multiple Charge Rates for various battery sizes.
- High-Amperage Engine Start to help start vehicles when the battery is too weak to do the job alone.
- Large Saw-Tooth Clamps assure good connection to top or side-mount battery terminals.
- Wheel and Handle Kit for easy mobility around your shop.

## Spark Prevention

Make sure no sparks or flames occur near the battery, especially during charging. It takes very little to ignite the explosive gasses produced by a lead-acid battery during the charging process. Read, understand and follow the safety information provided in the **Safety Summary** section of this manual before attempting to work with or near a lead-acid battery.

# ASSEMBLY

## Assembly Instructions

1. Carefully remove the charger from the carton.
2. Unscrew the two screws in the handle bracket holding the handle in its downward position.
3. Remove the handle from the handle bracket.
4. Position handle in handle bracket, facing upward with bend facing forward, aligning holes with holes in charger bracket.
5. Insert the two screws to secure the handle in position.

# PREPARATION

## Charger Placement

Place the charger in a clean, dry, stable, well-ventilated spot as far from the battery as the DC output cables permit.

**NEVER** place the charger directly above the battery being charged; gasses from the battery will corrode and damage the charger.

**NEVER** allow battery acid to drip on the charger when reading specific gravity or filling the battery.

**NEVER** place a battery on top of the charger.

**NEVER** attempt to permanently mount this battery charger on a marine or recreational vehicle.

**ALWAYS** position the charger on the outside of a boat or recreational vehicle.

## Provide Required Power

This battery charger requires a nominal 120V 60Hz alternating current (AC) power source. The power source must be fused at an amperage greater than or equal to the input amp rating of this charger.

Do not plug the charger into the AC power source until told to do so in the operating instructions.



**WARNING: ELECTRIC SHOCK CAN KILL!**  
See complete warning on page 3.

To reduce risk of electric shock, never alter AC power cord or power cord plug provided on the charger. If it will not fit the outlet, have a proper outlet installed by a qualified electrician. Never use an adapter.

The charger must be grounded to reduce risk of electric shock. The charger is equipped with an electric cord that has an equipment grounding plug. The plug must be plugged into an AC outlet that is properly installed and grounded in accordance with all local codes and ordinances.

## Extension Cords

*Note: Engine starting performance may be reduced when extension cords are used.*

An extension cord should not be used unless absolutely necessary. If necessary, care must be taken to select an extension cord suitable for use with your specific battery charger (see Shock Hazards in Safety Summary).



**WARNING: Fire can kill, injure and cause property damage!**  
See Safety Summary, pages 2-4.

To reduce risk of electric shock and fire, never alter the AC power cord or power cord plug provided on the charger. Never alter extension cords or extension cord plugs. Make sure the extension cord is properly wired and in good electrical condition. Make sure the wire size (American Wire Gauge or AWG) of the extension cord is large enough to handle your specific charger's amperage requirements.

## Battery Preparation



**WARNING: Battery explosion can injure and cause property damage! Never smoke or allow a spark or flame in the vicinity of the battery or engine.**  
See Safety Summary, pages 2-4.

If it is necessary to remove the battery from the vehicle to charge it, make sure all accessories in the vehicle are off and always remove the grounded cable from the battery first.

If needed, add distilled water to each cell of the battery until battery acid reaches the manufacturer's specified level. **DO NOT OVERFILL!** This helps remove excessive explosive gasses from the battery. For maintenance free batteries without caps, carefully follow the battery manufacturer's recharging instructions.



**WARNING: Battery acid can cause serious injury and property damage!**  
See Safety Summary, pages 2-4.

Always wear complete eye and clothing protection and avoid touching eyes while working near battery.

Clean battery terminals. Be careful to keep corrosion from coming in contact with eyes.

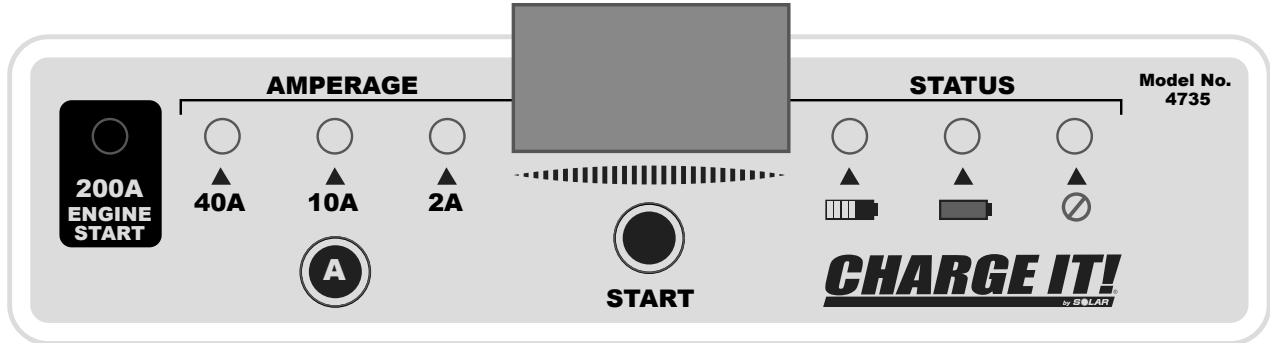
Study all of the battery manufacturer's precautions, such as whether cell caps should be left in place or removed during charging, and the recommended rates of charge for the specific battery. If you are unable to determine the battery manufacturer's requirements for charging, always charge the battery with cell caps in place.

If the battery voltage cannot be determined from the information on the battery itself, refer to the owner's manual for the product in which the battery was installed.



# CONTROLS AND INDICATORS

The charger is equipped with a digital control panel, which allows the operator to select the functional mode: using the Mode Selector Switch (A), the operator can choose among several charging rates (40A/10A/2A) or select engine start mode. The control panel features a 7-segment display to provide details related to the service battery and LED status lights to indicate charging progress.



## Control Setting Instructions

### Charge Rate Selection

Set the Mode Selector Switch (A) to the charge rate that is appropriate for the size and type of battery being charged. Use the battery manufacturer's specific instructions or see the guidelines below. The charger is designed for use with 12 Volt batteries only. Do not begin charging if the battery voltage cannot be determined.

Small Motorcycle type	2 Amps or less
Lawn mower/tractor	2 Amps or less
Deep-cycle	10 Amps or less
Maintenance-free Automotive or Marine Cranking	40 Amps or less

Unless alternate information is supplied for the particular battery, always charge small 12 Volt batteries at no more than 2 Amps.

# OPERATION

## Operating Instructions

**ATTENTION:** Do not attempt to operate this battery charger until you have read and understood the entire *Safety Summary* provided in this manual.

*Note: Go to Assembly in this manual before proceeding with the operation of your battery charger. Do not attempt to operate the charger until all required user-assembly is completed.*

### Connecting to Batteries Installed in Vehicles

**ATTENTION:** Do not plug the charger power cord into the AC power source or set any of the charger's controls until told to do so in the following instructions.

1. Make sure that the AC power cord is unplugged from the AC outlet and make sure the vehicle's engine is turned off.
2. Position the AC power cord and DC output cables in such a manner that they cannot be damaged by moving engine parts or the vehicle's hood or doors.
3. Check the polarity of the battery terminals. The POSITIVE terminal should be marked POSITIVE, POS, + or P. The NEGATIVE terminal should be marked NEGATIVE, NEG, - or N.
4. Determine whether the vehicle has a positive or negative grounded battery (positive or negative cable is connected to the vehicle's chassis).

**WARNING: Moving engine parts can cause serious injury! Stay clear of fan blades, belts, pulleys and other moving engine parts to reduce risk of serious personal injury.**

- a. Negative Ground Vehicles (most common, see Figure 5)
  - 1) Connect the POS (red, +) clamp from the battery charger to the POS, ungrounded terminal of the battery.
  - 2) Connect the NEG (black, -) clamp from the battery charger to a heavy gauge metal part of the vehicle chassis or engine block away from the battery. DO NOT connect the NEG charger clamp to the NEG battery terminal, carburetor, fuel lines or sheet metal body parts.
- b. Positive Ground Vehicles
  - 1) Connect the NEG (black) charger clamp to the NEG, ungrounded terminal of the battery.
  - 2) Connect the POS (red) charger clamp to a heavy gauge metal part of the vehicle chassis or engine block away from the battery. DO NOT connect the POS (red) charger clamp to the POS battery terminal, carburetor, fuel lines or sheet metal body parts.

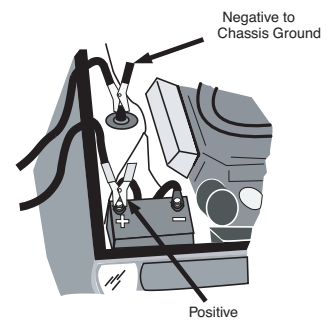


Figure 5. Negative Ground Vehicle

### Connecting to Batteries Outside a Vehicle

1. Make sure that the AC power cord is unplugged from the AC power source.
2. Check the polarity of the battery terminals (see Figure 6). The POSITIVE terminal should be marked POSITIVE, POS, + or P. The NEGATIVE terminal should be marked NEGATIVE, NEG, - or N.
3. Attach a battery or booster cable, AT LEAST 24 inches long, that is the same (or larger) wire gauge as the charger cable, to the NEGATIVE terminal of the battery.

**WARNING: Battery explosion can injure, and cause property damage! To reduce the risk of battery explosion, NEVER connect both battery charger clamps directly to the two posts of a battery.**

4. Connect the POS (red) charger clamp to the POS battery terminal.

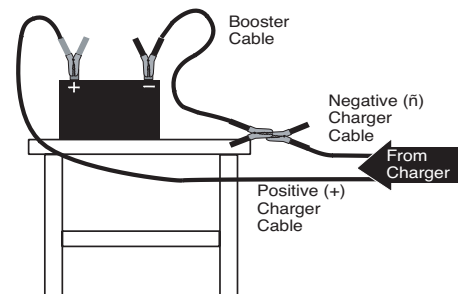


Figure 6. Connecting Outside a Vehicle

5. Position yourself and the free end of the cable (attached to the NEG battery terminal) as far away from the battery as the cable will allow. Then, WHILE FACING AWAY FROM THE BATTERY, connect the NEGATIVE charger clamp to the free end of the cable.

## Charging Instructions

*Note: To save energy, the charger is designed to enter idle mode if no buttons are pressed for three minutes. In idle mode, the charger's display will turn off. When the charger is in this mode, any button press will wake the display and subsequent button presses will function as normal.*

1. With AC cord unplugged, connect to the battery/vehicle to be charged as per the instructions in the previous section, "Connecting to Batteries..."
2. Plug the unit's AC power cord into the AC power source.
3. Toggle the Mode Selector Switch until the desired charge rate is indicated.
4. Press the START button to begin charging. The Charging LED will light to indicate charging is in progress. Once the battery has reached full charge, the Charge Complete LED will light and the charger will turn off.

**NOTE:** If unsafe charging conditions are present, the charger will enter a warning mode, light the red fault LED and will not commence charging until the error is resolved. The possible warning codes are as follows:

- **er1** – This error occurs immediately upon pressing the start button. This error indicates that the charger does not detect proper battery polarity. Check all connections to ensure that you are properly connected to the battery and that, therefore, the fault is due to the battery's state of charge being below the threshold (~1.5V) to sense polarity. Once a proper connection is confirmed, hold the START button down for 3 seconds (release within 6 seconds) to override er1 and commence charging.

**NOTE:** Overriding er1 disables numerous safety features of the charger. It is the operator's responsibility to ensure that they are properly connected to the battery/vehicle, that the battery to be charged is a 12 Volt battery and that the only hindrance to commencing a normal charge cycle is that the battery's state of charge is too low for its polarity to be recognized by the charger. All adverse consequences resulting from overriding er1 are the responsibility of the operator.

- **er2** – This error usually occurs after the charger has charged the battery for a period of time. This error indicates that the battery is not accepting charging current in a manner typical of a healthy battery. Usually, this error is caused when either the battery's voltage does not rise in a reasonable amount of time or the battery cannot hold its charge after a short period of rest. Both of these conditions are indicative of a compromised battery. er2 cannot be overridden.

- **er3** - This error occurs immediately upon pressing the start button. This error indicates that the battery under charge has an open circuit voltage above the normal range for a 12 Volt battery (>15.5V). This is usually caused by a compromised/shorted battery or a battery with a nominal voltage above 12 Volts. In either case, the battery should not be charged by this charger. er3 cannot be overridden.

5. When charging is complete, unplug the charger's AC power cord from the AC power source.
6. Disconnect the charger clamp NOT attached directly to the battery first and DO NOT allow the clamp to touch anything. Then, disconnect the charger clamp attached to the battery terminal.

## Engine Starting

This battery charger can provide a high-current output to help start a vehicle with a weak battery. However, the onboard computer in some vehicles can be damaged when attempting to jump start. ALWAYS READ THE VEHICLE OPERATOR'S MANUAL BEFORE AUXILIARY STARTING to determine if jump starting can do damage to the vehicle. If not, read and follow these instructions.

**CAUTION:** Do not try to boost start a vehicle that does not contain a battery or you may damage electrical systems in the vehicle.

1. Connect the battery charger to the vehicle according to Operating Instructions.
2. Charge the battery for 5 to 10 minutes at the appropriate charge rate for the size of battery.
3. Set the Mode Selector Switch to 200A Engine START and press start.

**Note:** The charger will enter Engine Start mode and stay in that mode for 30 seconds. If a start attempt is not made within 30 seconds, the charger will return to standby mode.

4. Try to start the vehicle. If the vehicle doesn't start after 3 to 4 seconds, stop and wait 3 to 4 minutes. Repeat until engine starts.

**CAUTION:** Excessive continuous engine cranking can damage vehicle starter motors.

*Note: If the engine spins but fails to start after several starting attempts, there is an engine problem not related to the starting system. Discontinue cranking the engine until the other problem is found and corrected.*

*This battery charger has an internal thermal protector to prevent overheating and damage to the battery charger. After starting attempt, wait 3 to 4 minutes for the charger to cool. The thermal protector will automatically reset and allow you to continue.*

## MAINTENANCE

**CAUTION:** Make sure charger is unplugged from AC outlet before performing any cleaning or maintenance. A minimum amount of care can keep your battery charger working and looking good for years.

1. Clean the clamps after each use. Wipe off any battery fluid that may have come in contact with the clamps to prevent corrosion. Battery fluid may be neutralized with a solution of water and baking soda.
2. Coil the input and output cables neatly after each use. This will help prevent damage to the cables and the charger.
3. If needed, the case may be wiped clean with a soft cloth.
4. Tighten cable-clamp screw.

## TROUBLESHOOTING

**Battery doesn't seem to be accepting a charge.**

1. Make sure charger is plugged into live AC outlet.
2. After unplugging unit, check connection at battery. Make sure the clamps are making good contact with the battery terminal (or vehicle chassis).
3. Check to see that the battery is capable of being charged – it may be damaged or sulfated.
4. Make sure you are allowing enough time for charging the battery.

**Vehicle will not start in engine start mode.**

1. Unplug charger and check connections as described above.
2. Determine if charger is charging; if display indicates increasing voltage at the battery, charger is working; if no charging progress is indicated, wait several minutes and recheck.
3. If engine turns over but does not start, problem is with vehicle, not charger. Service vehicle.

Looking for dependable batteries and chargers? Rely on Solar for quality and long-lasting products.