

### PREPARING TO CHARGE

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.
2. Be sure area around battery is well ventilated while battery is being charged.
3. Clean battery terminals. Be careful to keep corrosion from coming in contact with eyes.
4. 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.
5. Study all battery manufacturer's specific precautions while charging and recommended rates of charge.
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.

### CHARGER LOCATION

1. Locate charger as far away from battery as DC cables permit.
2. Never place charger directly above battery being charged; gases from battery will corrode and damage charger.
3. Never allow battery acid to drip on charger when reading electrolyte specific gravity or filling battery.
4. Do not operate charger in a closed-in area or restrict ventilation in any way.
5. Do not set a battery on top of charger.

### DC CONNECTION PRECAUTIONS

1. Connect and disconnect DC output clips only after setting any charger switches to off" position and removing AC cord from electric outlet. Never allow clips to touch each other.
2. Attach clips to battery and chassis, as indicated in sections 6 and 7.

## 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:

1. Position AC and DC cords to reduce risk of damage by hood, door, or moving engine part.
2. Stay clear of fan blades, belts, pulleys, and other parts that can cause injury to persons.
3. Check polarity of battery posts. POSITIVE (POS, P, +) battery post usually has larger diameter than NEGATIVE (NEG, N, -) post.
4. Determine which post of battery is grounded (connected) to the chassis. If negative post is grounded to chassis (as in most vehicles). If positive post is grounded to the chassis.
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. 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.
7. When disconnecting charger, turn switches to off, disconnect AC cord, remove clip from vehicle chassis, and then remove clip from battery terminal.
8. See *Operating Instructions* for length of charge information.

## 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:

1. Check polarity of battery posts. POSITIVE (POS, P, +) battery post usually has a larger diameter than NEGATIVE (NEG, N, -) post.
2. Attach at least a 24-inch-long 6-gauge (AWG) insulated battery cable to NEGATIVE (NEG, N, -) battery post.
3. Connect POSITIVE (RED) charger clip to POSITIVE (POS, P, +) post of battery.
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.

5. Do not face battery when making final connection.
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. A marine (boat) battery must be removed and charged on shore. To charge it on board requires equipment specially designed for marine use.

## **GROUNDING AND AC POWER CORD CONNECTIONS**

1. This battery charger is for use on a nominal volt circuit and has a grounded plug. The charger must be grounded, to reduce the risk of electric shock. 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.
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.
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:





Length of cord (feet)	25	50	100	150
AWG* size of cord	18	16	12	10

\*AWG-American Wire Gauge



# CONTROL PANEL

## LED INDICATORS

	<b>CLAMPS REVERSED/BAD BATTERY (red) LED flashing:</b> The connections are reversed.
	<b>CLAMPS REVERSED/BAD BATTERY (red) LED lit:</b> The charger has detected a problem with the battery. See Troubleshooting for more information.
	<b>ON (yellow/orange) LED lit:</b> The charger is properly connected and the battery is receiving power.
	<b>CHARGED/MAINTAINING (green)</b> <b>LED pulsing:</b> The battery is fully charged and the charger is in maintain mode.

**NOTE:** See Operating Instructions for a complete description of the charger modes.

## RATE SELECTION

Use this button to select one of the following:

- **A 6<>2 CHARGE/MAINTAIN –**

For charging small and large batteries. Not recommended for industrial applications.

The charger will automatically adjust the charging current, based on battery size, in order to charge the battery completely, efficiently and safely.

- **10A BOOST –** For quickly adding energy to a severely discharged or large capacity battery prior to Engine Start.
- **50A ENGINE START –** Provides additional amps for cranking an engine with a weak or run-down battery. Always use in combination with a battery.

## OPERATING INSTRUCTIONS

**WARNING:** A spark near the battery may cause an explosion.

**IMPORTANT:** Do not start the vehicle with the charger connected to the AC outlet, or it could result in damage to the charger.

## **CHARGING A BATTERY IN THE VEHICLE**




1. Turn off all the vehicle's accessories.
2. Keep the hood open.
3. Clean the battery terminals.
4. Place the charger on a dry, nonflammable 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. Select the desired rate.
9. When charging is complete, disconnect the charger from the AC power, remove the clamps 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. Select the desired rate.
6. When charging is complete, disconnect the charger from the AC power, disconnect the negative clamp, and finally the positive clamp.
7. A marine (boat) battery must be removed and charged on shore.

**NOTE:** This charger is equipped with an auto-start feature. Current will not be supplied to the battery clamps until a battery is properly connected. The clamps will not spark if touched together (except in Engine Start mode).

## BATTERY CHARGING TIMES


APPLICATION	BATTERY SIZE	CHARGING TIME (Hours)			
		6A	10A	20A	30A
POWERSPORTS ↓	6Ah 	2 ↓	1.5 ↓	.5 ↓	.5 ↓
	32Ah	5	4	1.5	1
AUTOMOTIVE ↓	300 CCA 	4 ↓	3 ↓	1.5 ↓	1.5 ↓
	1000 CCA	10	7	3.5	3
MARINE	50Ah 	5 ↓	3.5 ↓	1.5 ↓	1 ↓
	105Ah	11	8	4	3

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.


### ABORTED CHARGE

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

### DESULFATION MODE


Desulfation could take 8 to 10 hours. If desulfation fails, charging will abort and the CLAMPS REVERSED/BAD BATTERY  (red) LED will light.

### COMPLETION OF CHARGE

Charge completion is indicated by the CHARGED/MAINTAINING  (green) LED. When pulsing, the charger has switched to the maintain mode of operation.

### MAINTAIN MODE

(FLOAT MODE MONITORING)

When the CHARGED/MAINTAINING  (green) LED is pulsing, 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 SC1305 charges and maintains 12 volt batteries, keeping them at full charge.

**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.

## USING THE ENGINE START SETTING

Your battery charger can be used to jump start your car if the battery is low. Follow all safety instructions and precautions for charging your battery. Wear complete eye protection and clothing protection.

**WARNING:** Using the ENGINE START setting WITHOUT a battery installed in the vehicle could cause damage to the vehicle's electrical system.

**NOTE:** If you have charged the battery and it still will not start your car, do not use the Engine Start setting, or it could damage the vehicle's electrical system. Have the battery checked.

1. With the charger unplugged from the AC outlet, connect the charger to the battery, following the instructions given in Charging a Battery in the Vehicle.
2. With the charger plugged in and connected to the battery of the vehicle, set the rate selection to the Engine Start position.
3. Crank the engine until it starts or 5 seconds pass. If the engine does not start, wait a few minutes before cranking again. **NOTE:** During extremely cold weather, or if the battery is under 2 volts, use the 10A Boost setting for 5 minutes before cranking the engine.
4. If the engine fails to start, boost the battery for 5 more minutes before attempting to crank the engine again.
5. After the engine starts, unplug the AC power cord before disconnecting the battery clamps from the vehicle.

**NOTE:** If the engine does turn over but never starts, there is not a problem with the starting system; there is a problem somewhere else with the vehicle. STOP cranking the engine until the other problem has been diagnosed and corrected.

## 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.
- Coil the input and output cords neatly when 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 the handle, on or around metal, or clipped to the cables.

# TROUBLESHOOTING



PROBLEM	POSSIBLE CAUSE	SOLUTION
Battery clamps do not spark when touched together.	The charger is equipped with an auto-start feature. It will not supply current to the battery clamps until a battery is properly connected. The clamps will not spark if touched together.	No problem; this is a normal condition.
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 and extension cord for loose fitting plug.
Short or no start cycle when cranking engine.	No power at receptacle.	Check for open fuse or circuit breaker supplying AC outlet.
	AC cord and/or extension cord is loose.	Check power cord and extension cord for loose fitting plug.
	The clamps are not making a good connection.	Check for poor connection at battery and frame.
	Failure to wait 3 minutes (180 seconds) between cranks.	Wait 3 minutes of rest time before the next crank, to allow the battery and charger to cool down.
	The battery may be severely discharged.	On a severely discharged battery, use the 10A Boost setting for few minutes, to help assist in cranking.
	The battery is drawing more than the Engine Start Rate.	Crank time varies with the amount of current drawn. If cranking draws more than the Engine Start Rate, crank time may be less than 3 seconds.



PROBLEM	POSSIBLE CAUSE	SOLUTION
	The charger may be overheated.	The thermal protector may have tripped and needs a little longer to close. Make sure the charger vents are not blocked. Wait and try again.
 <p>The red LED is lit.</p>	<p>The battery voltage is still below 10V after 2 hours of charging.</p> <p>(or)</p> <p>In maintain mode, the output current is more than 1.5A for 12 hours.</p>	<p>The battery may be defective. Make sure there are no loads on the battery. If there are, remove them.</p> <p>If there are none, have the battery checked or replaced.</p>
	Desulfation was unsuccessful.	The battery may be defective. Have battery checked or replaced.
	Lack of progress is detected and battery voltage is below 14.2V.	The battery may be overheated. If so, allow the battery to cool. The battery may be too large or have a short circuit. Have battery checked or replaced.
	The battery's initial voltage is below 12.2V and the total input is less than 1.5 Ah.	The battery capacity is too low, or the battery is too old. Have it checked or replaced.
	The battery voltage drops to below 12.2V in Maintain Mode.	<p>The battery won't hold a charge.</p> <p>May be 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.</p> <p>If there are none, have the battery checked or replaced.</p>

## IMPORTANT SAFETY INSTRUCTIONS

1. **SAVE THESE INSTRUCTIONS** –This manual contains important safety and operating instructions.
2. Keep out of reach of children.
3. Do not expose the charger to rain or snow.
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.
5. To reduce the risk of damage to electric plug and cord, pull by the plug rather than the cord when disconnecting charger.
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.
7. Do not operate charger with damaged cord or plug – replace the cord or plug immediately.
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.
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.
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.
11. **WARNING: RISK OF EXPLOSIVE GASES.**
  - WORKING IN VICINITY OF A LEADACID 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.
  - 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 engine.

## PERSONAL SAFETY PRECAUTIONS

1. Consider having someone close enough by 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 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 shortcircuit current high enough to weld a ring or the like to metal, causing a severe burn.
8. Use charger for charging only LEAD-ACID (STD or AGM) rechargeable batteries with recommended rated capacities of Ah (12V). 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.
10. **WARNING:** This product contains one or more chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

### Warning

This content is compiled from multiple sources and is provided for reference purposes only. It may not be complete or fully applicable to all situations. If you are unable to resolve your issue, please contact the product manufacturer or an authorized service provider for official support.