

Installation Instructions for 81993

Performance Battery Charger & Engine Starter

6 Volt / 12 Volt 125 Amp

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 engine.

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 charger for charging 6V and 12V LEAD-ACID (STD or AGM) 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.



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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** 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 from electric outlet. Never allow the clips of charger to touch each other. Clips may be energized and they may spark.
- 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, 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.



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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 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.

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.

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.

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:

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

* AWG – American Wire Gauge

9. ASSEMBLY INSTRUCTIONS

9.1 Remove all cord wraps and uncoil the cables prior to using the battery charger.

10. CONTROL PANEL

DIGITAL DISPLAY

The Digital Display gives digital indication of voltage, % of charge or alternator status. It also gives Cool Down time remaining during Engine Start. When chosen by the Display Button, the display will show the battery voltage, % of charge or alternator status under certain conditions. First, when connected to a battery but not charging, all three options are available. When charging begins, the display will automatically change to the Voltage option, show On to indicate charging has started, and then either 6 or 12, the voltage type of the battery determined by the charger. If the battery voltage is low, the display will continue to show On until the voltage type is determined. % of charge is an option only after the voltage type, 6 or 12 is determined, and also only for the Charge rate. Alternator status is an option only when not charging and for 12V battery types. When the battery is fully charged, indicated by the Charged/Maintaining (green) LED lit, the display and all other LEDs will turn off to conserve energy during Maintain mode.

DISPLAY BUTTON

Use this button to set the function of the digital display to one of the following:

Battery % – The digital display shows an estimated charge percentage of the battery connected to the charger's battery clamps.

Alternator % (12V only, when not charging) – The digital display shows an estimated output percentage of the vehicle's charging system connected to the charger's battery clamps, compared to a properly functioning system. The alternator percent range is from 0% to 100%. Readings below 0% (13.2 volts) will read LO and readings above 100% (14.6 volts) will read HI. If you get a HI or LO reading, have the electrical system checked by a qualified technician.

Voltage – The Digital Display shows the voltage at the charger battery clamps, in DC volts.

RATE SELECTION BUTTON

Use this button to select one of the following:

CHARGE/MAINTAIN – For charging small and large batteries. Not recommended for industrial applications.

BOOST – Increases the voltage and sends a quick burst of energy into the battery, to quickly bring deeply discharged batteries back to life. NOTE: Boost mode, once begun, will stay energized until the Start/Stop button is pressed.

ENGINE START – Provides additional amps for cranking an engine with a weak or run-down battery. Always use in combination with a battery.



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START/STOP BUTTON

Press to immediately begin charging your properly connected battery. If the button is not pressed, charging should begin automatically in 30 seconds.

LED INDICATORS

CHARGING (yellow/orange) LED lit: The charger is charging the battery.

CHARGED/MAINTAINING (green) LED lit: The battery is fully charged and the charger is in maintain mode.

NOTE: The display and all other LEDs will be off when this LED is lit, to conserve energy.

CLAMPS REVERSED/BAD BATTERY (red) LED flashing: The connections are reversed.

CLAMPS REVERSED/BAD BATTERY (red) LED lit: The charger has detected a problem with the battery.

See *Troubleshooting* for more information.

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

BATTERY TYPE BUTTON

Use this button to select the type of battery.

STANDARD – Used in cars, trucks and motorcycles, these batteries have vent caps and are often marked “low maintenance” or “maintenance-free”. This type of battery is designed to deliver quick bursts of energy (such as starting engines) and has a greater plate count. The plates are thinner and have somewhat different material composition. Standard batteries should not be used for deep-cycle applications.

AGM – The Absorbed Glass Mat construction allows the electrolyte to be suspended in close proximity with the plate’s active material. In theory, this enhances both the discharge and recharge efficiency. The AGM batteries are a variant of Sealed VRLA (valve regulated lead-acid) batteries. Popular uses include high-performance engine starting, power sports, deep-cycle, solar and storage batteries.

RECOVERY – This rate uses a unique recovery algorithm to recover a sulfated battery. The display will show “REC” for the entire recovery/charge/maintain cycle until this option is deselected by the user. The battery %, amperage and voltage will not be shown.

11. OPERATING INSTRUCTIONS

WARNING: A SPARK NEAR THE BATTERY MAY CAUSE AN EXPLOSION.

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, 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 a live, grounded 120V AC outlet.
8. Select the battery type and charge rate.
9. Press the START button to begin charging immediately. If not pressed within 30 seconds, charging will begin immediately. With the Charge rate selected, charging of the battery will automatically complete. Even with Charge rate selected, the charger will automatically use the Boost rate, during first 10 minutes, if needed, and then switch to the Charge rate to charge the battery efficiently.
10. When charging is complete, indicated by Charged/Maintaining LED lit, or if you are done, press STOP button, disconnect the charger from the AC power, disconnect the clamp attached to vehicle’s chassis, and finally remove the clamp from 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 a live grounded 120V AC outlet.
5. Select the battery type and charge rate.
6. Press the START button to begin charging immediately. If not pressed within 30 seconds, charging will begin immediately. With the Charge rate selected, charging of the battery will automatically complete. Even with Charge rate selected, the charger will automatically use the Boost rate, during first 10 minutes, if needed, and then switch to the Charge rate to charge the battery efficiently.



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- When charging is complete, indicated by Charged/Maintaining LED lit, or if you are done, press STOP button, disconnect the charger from the AC power, disconnect the negative clamp, and finally the positive clamp.
- A marine (boat) battery must be removed and charged on shore.

CHARGE TIME

Charge time will depend on battery size, as depicted in the chart below.

APPLICATION	BATTERY SIZE	CHARGING TIME (Hours)			
		2A	6A	8A	10A
POWERSPORTS	6Ah 32Ah	6 ↓ 15	2 ↓ 5	1.75 ↓ 4.5	1.5 ↓ 4
AUTOMOTIVE	300 CCA 1000 CCA	12 ↓ 30	4 ↓ 10	3.5 ↓ 8.5	3 ↓ 7
MARINE	50Ah 105Ah	15 ↓ 33	5 ↓ 11	4.25 ↓ 9.5	3.5 ↓ 8

Times are based on a 50% discharged battery and may change, depending on age and condition of battery.

AUTOMATIC CHARGING MODE

When the 6A Charge rate is selected, the charger switches to the maintain mode automatically after the battery is charged.

RECOVERY MODE

If a battery is left discharged for an extended period of time, it could become sulfated and not accept a normal charge. The charger will detect this and automatically enter Recovery mode. When this mode is activated, the display will read "REC". The display will revert to normal operation when normal charging begins after the battery is recovered. Recovery Mode could take up to 10 hours. If it fails, charging will abort and the display will read "F02". For more information, see section 13, Troubleshooting and Error Codes.

NOTE: This mode can also be chosen by the user, if the battery has been discharged for a long period of time. See Section 10, Control Panel, Battery Type Button.

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 LED will light solid. The digital display will show FNN where nn is an error code (see Troubleshooting for a description of the error codes). Do not continue attempting to charge this battery. Have it checked or replaced.

COMPLETION OF CHARGE

Charge completion is indicated by the Charged/Maintaining (green) LED. When lit, the charger has switched to the maintain mode of operation.

MAINTAIN MODE (FLOAT MODE MONITORING)

When the Charged/Maintaining (green) LED is lit, 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 an excessive 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.



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MAINTAINING A BATTERY

The unit charges and maintains 6V and 12V batteries.

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 FEATURE

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 protective clothing.

WARNING: Using the Engine Start feature 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 feature, 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 Follow These Steps When Battery is Installed in Vehicle.
2. Connect the charger to a live grounded 120V AC outlet.
3. With the charger plugged in and connected to the battery and chassis, press the Rate Selection button until the Engine Start LED is lit, and then press the START button.
4. Crank the engine until it starts or 7 seconds pass. If the engine does not start, repeat. Do not crank during the cool down period (see below). This allows the charger and battery to cool down. NOTE: During extremely cold weather, or if the battery is under 2 volts, charge the battery for 5 minutes before cranking the engine.
5. If the engine fails to start, charge the battery for 5 more minutes before attempting to crank the engine again.
6. After the engine starts, unplug the AC power cord before disconnecting the battery clamps from the vehicle.
7. Clean and store the charger in a dry location.

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.

ENGINE STARTING NOTES

During the starting sequence listed above, the charger is set to one of four states:

- **Wait for ready** – The charger charges the battery for 2 minutes before the Wait for Cranking state. While waiting for ready, the digital display shows On and the engine can be cranked. For severely discharged batteries, it is not recommended to crank during this time.
- **Wait for cranking** – The charger waits until the engine is actually being cranked before delivering the amps for engine start. While waiting for cranking, the digital display shows rdy.
- **Cranking** – When cranking is detected, the charger will automatically deliver up to its maximum output as required by the starting system for up to 7 seconds.
- **Cool Down** – After repeated cranking during a 3-minute ready period, the charger enters a mandatory 3 minute (180 second) cool down state. Cranking will not be detected during this time, and therefore no high output amps for engine start. The digital display indicates the remaining cool down time in seconds. It starts at 180 and counts down to 0. After 3 minutes, the digital display will change from displaying the countdown to displaying rdy, and the charger will be back in the Wait for Cranking state described above. After 2 hours of Engine Starting, the unit will automatically exit from the charging mode, just as if the STOP button had been pressed; the Charging LED will not be lit.

FAN OPERATION

The fan will operate as needed and it is normal for the fan to sometimes operate continuously. Keep the area near the charger clear of obstructions to allow the fan to operate efficiently.

USING THE BATTERY VOLTAGE TESTER

1. With the charger unplugged from the AC outlet, connect the charger to the battery, following the instructions given in previous sections.
2. Plug the charger AC power cord into the AC outlet.
3. Press the Battery Type button until the correct type is indicated.
4. Read the voltage on the digital display. Keep in mind that this reading is only a battery voltage reading; a false surface charge may mislead you. Compare the reading to the following chart.

6V Battery Voltage Reading	12V Battery Voltage Reading	Battery Condition
6.4 or more	12.8 or more	Charged
6.4 or more	12.2 to 12.7	Needs charging
Less than 6.1	Less than 12.2	Discharged



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TESTER AND CHARGER

When first turned on, the unit operates only as a tester, not as a charger. Pressing the Start/Stop button or waiting 30 seconds (see Power-Up Idle Time Limit below) activates the battery charger and deactivates the tester. Pressing the Start/Stop button when charging (indicated by the Charging LED lit) will stop charging and activate the tester.

POWER-UP IDLE TIME LIMIT

If Start/Stop button is not pressed within 30 seconds after the battery charger is first powered up, the charger will automatically switch from tester to charger if a battery is connected. In that case, the charger will be set to the Boost rate and AGM battery type.

TESTING AFTER CHARGING

After the unit has been changed from tester to charger, it remains a charger. To change the battery charger back to a tester, press the Start/Stop button.

USING THE ALTERNATOR PERFORMANCE TESTER

1. With the charger unplugged from the AC outlet, connect the charger to the battery, following the instructions given in previous sections (for "in vehicle").
2. Plug the charger AC power cord into the AC outlet.
3. Press the display button for the alternator selection.
4. DO NOT press the START/STOP button (this is tester mode, not charge mode).
5. Start the vehicle, rev the engine at 2000 rpm for 30 seconds and turn on the vehicle's headlights or other accessories.
6. Read the voltage on the digital display. The alternator percent range is from 0% to 100%. Readings below 0% (13.2 volts) will read LO and readings above 100% (14.6 volts) will read HI. If you get a HI or LO reading, have the electrical system checked by a qualified technician.

12. 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 on the handle, clipped together, on or around metal, or clipped to the cables.

13. TROUBLESHOOTING AND ERROR CODES

Error Codes

CODE	DESCRIPTION	REASON/SOLUTION
F01	The battery voltage is still under 10V (for a 12V battery) or 5V (for a 6V battery) after 2 hours of charging.	The battery could be bad. Have it checked or replaced.
REC	The charger has detected a sulfated battery.	The charger will go into recovery mode. If the recovery is not successful after 10 hours, the charger will go into abort mode.
F02	The charger cannot desulfate the battery.	The battery could not be desulfated; have it checked or replaced.
F03	The battery was unable to reach the "full charge" voltage.	May be caused by trying to charge a large battery or bank of batteries on too low of a current setting. Try again with a higher current setting or have the battery checked or replaced.
F04	The connections to the battery are reversed.	The battery is connected backwards. Unplug the charger and reverse the connections to the battery.
F05	The charger was unable to keep the battery fully charged in maintain mode.	The battery won't hold a charge. 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. If there are none, have the battery checked or replaced.



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CODE	DESCRIPTION	REASON/SOLUTION
F06	The charger detected that the battery may be getting too hot (thermal runaway).	The charger automatically shuts the current off if it detects the battery may be getting too hot. Have the battery checked or replaced.
F07	The charger shut off because its internal temperature exceeds limit.	Make sure the charger does not have the side ventilation holes blocked. Move the charger out of the sun and into the shade.
F08	The battery voltage dropped too low during the maintain mode.	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. If there are none, have the battery checked or replaced.

If you get an error code, check the connections and settings and/or replace the battery.

Troubleshooting

PROBLEM	POSSIBLE CAUSE	SOLUTION
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.
	Battery is defective.	Have the battery checked.
Engine start does not work.	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 5 seconds.
	Failure to wait 3 minutes (180 seconds) between cranks.	When the cool-down countdown from 180 to 1 is displayed, wait until the display shows "rdy" for the next crank.
	The charger may be overheated.	The thermal protector may have tripped and needs a little longer to reset. Make sure the charger vents are not blocked. Wait and try again.
	Battery may be severely discharged.	On a severely discharged battery, use the Boost rate for 10 to 15 minutes, to help assist in cranking.

14. BEFORE RETURNING

For information about troubleshooting, contact customer service for assistance:

JEGS.com or call 1-800-345-4545

For **RETURN** contact Customer Service at 1-800-345-4545.



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15. LIMITED WARRANTY

Go to www.batterychargers.com to register your product online.

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Schumacher Electric Corporation (the "Manufacturer") warrants this charger for two (2) years from the date of purchase at retail against defective material or workmanship that may occur under normal use and care. If your unit is not free from defective material or workmanship, Manufacturer's obligation under this warranty is solely to repair or replace your product with a new or reconditioned unit at the option of the Manufacturer. It is the obligation of the purchaser to forward the unit, along with proof of purchase and mailing charges prepaid to the Manufacturer or its authorized representatives in order for repair or replacement to occur.

Manufacturer does not provide any warranty for any accessories used with this product that are not manufactured by Schumacher Electric Corporation and approved for use with this product. This Limited Warranty is void if the product is misused, subjected to careless handling, repaired, or modified by anyone other than Manufacturer or if this unit is resold through an unauthorized retailer.

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