



Models:

**SE-125A, SE-1275A, SE-1510MA, SE-2151MA,  
SE-40MAP, SE-520MA, SE-5212A, SE-70MA**  
**Automatic Battery Charger**



SE-5212A

**PLEASE SAVE THIS OWNERS MANUAL AND READ BEFORE EACH USE.** This manual will explain how to use the battery charger safely and effectively. Please read and follow these instructions and precautions carefully.

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## 1. IMPORTANT SAFETY INSTRUCTIONS

### SAVE THESE INSTRUCTIONS.

- 1.1 SAVE THESE INSTRUCTIONS –**  
This manual contains important safety and operating instructions.
- 1.2** Do not expose the charger to rain or snow.
- 1.3** 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.
- 1.4** To reduce the risk of damage to electric plug and cord, pull by the plug rather than the cord when disconnecting charger.
- 1.5** 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:
  - That the pins on plug of extension cord are the same number, size and shape as those of plug on charger.
  - That extension cord is properly wired and in good electrical condition; and
  - That wire size is large enough for AC ampere rating of charger as specified in the section 8.
- 1.6** Do not operate charger with damaged cord or plug – replace the cord or plug immediately.
- 1.7** 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.
- 1.8** 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.
- 1.9** To reduce risk of electric shock, unplug charger from outlet before attempting any maintenance or cleaning. Turning off controls will not reduce this risk.
- 1.10 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 marking on these products and on engine.
- 1.11** Pursuant to California Proposition 65, this product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. Wash hands after handling.

## 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 only LEAD-ACID and AGM-type 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.

### 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 clips to touch each other.
- 5.2 Attach clips to battery and chassis, as indicated in the sections 6 and 7.

### 6. FOLLOW THESE STEPS WHEN BATTERY IS INSTALLED IN VEHICLE

#### **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 gage 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 gage 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

**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.
- 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

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.

**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.

### 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	16	14

\*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

*Some features are not available on all models.*

### LED INDICATORS

- **FULL CHARGE** – When lit, this LED indicates that the battery is fully charged and the charger has stopped charging and switched to the Maintain Mode of operation.
- **POWER ON** – When lit, this LED indicates that there is AC power supplied to the battery charger.
- **CHECK BATTERY** – When lit, this LED indicates a problem with the battery. Check for an improper DC connection; otherwise, the battery may be bad.

### AMMETER

The Ammeter indicates the amount of current drawn by the battery. As it takes a charge, a battery draws less current from the charger. The percent of charge scale is intended as a visual aid, to help simplify reading the state of charge of the battery. The START area of the meter indicates that a high rate of current is being drawn from the charger. It is normal for the meter to be on START while using the Engine Start setting.

When using the 2 amp charge rate, the meter may indicate some activity, but does not have the resolution to accurately

display the battery's state of charge. For this reason, you should depend on the FULL CHARGE LED indicator.

### BATTERY TYPE SWITCH

Use this switch to select the type of battery.

- **STD or SLI** – Used to start and run engines for cars, trucks and motorcycles, these batteries have vent caps and are marked "low maintenance" or "maintenance-free". These batteries are designed to deliver a high cranking amp and have a greater plate count.
- **DEEP-CYCLE** – Deep-cycle batteries are usually marked as "Deep-Cycle" or "Marine". Deep-cycle batteries are usually larger than the other types. This type of battery has less instant energy but somewhat greater long-term energy delivery than regular batteries. Deep cycle batteries have thicker plates and can survive a number of discharge cycles.

**WARNING:** The manual setting must be monitored and stopped when the battery is charged. Overcharging will damage the battery.

### CHARGE RATE SELECTOR SWITCH

Use this switch to set the maximum charge rate to one of the following:

- **2A SLOW CHARGE** – For small batteries, such as those commonly used in garden tractors, snowmobiles and motorcycles. The 2A rate can be used to warm or trickle charge larger batteries.
- **10A, 12A OR 15A FAST CHARGE** – For automotive, marine and deep-cycle batteries. Not intended for industrial applications.
- **ENGINE START** – Provides additional amps for cranking an engine with a weak or run-down battery. Always use in combination with a battery.

### VOLTAGE SELECTOR SWITCH

Use this switch to set the charger for a 6V, 12V or 24V battery.

**NOTE:** These chargers are not recommended for 8 or 16 volt systems.

## 11. 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, 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 an electrical outlet.
8. Select the battery type and charge 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 battery type and charge 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.

### MANUAL CHARGING MODE

A manual charger will continue to charge and will not shut off. You must keep a visual check on the ammeter to determine when the battery is charged. Be sure to monitor the charging process and stop it when the battery is charged. Not doing so may cause damage to your battery or result in other property damage or personal injury. See the CALCULATING CHARGE TIME section to help determine charging time.

### AUTOMATIC CHARGING MODE

When an Automatic Charge is performed, the charger switches to the maintain mode automatically after the battery is charged.

### COMPLETION OF CHARGE

When the FULL CHARGE (green) LED is lit, the charger has stopped charging and switched to the Maintain Mode of operation.

## MAINTAIN MODE (FLOAT-MODE MONITORING)

When the FULL CHARGE (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 battery voltage drops below a preset level, the charger will go back into charge mode until the battery voltage returns to the full charge level, at which point the charger will return to maintain mode. The voltage is maintained at a level determined by the battery type selected.

### MAINTAINING A BATTERY

An automatic charger charges and maintains 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 the CHARGING A BATTERY IN THE VEHICLE section.
2. With the charger plugged in and connected to the battery of the vehicle, set the charge rate to the Engine Start position.
3. Crank the engine until it starts or 5 seconds pass. If the engine does not start, wait 3 minutes before cranking again. **NOTE:** During extremely cold weather, or if the battery is under 2 volts, charge the battery for 5 minutes before cranking the engine.
4. If the engine fails to start, charge 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.

## 12. CALCULATING CHARGE TIME

Use the following table to more accurately determine the time it will take to bring a battery to full charge. First, identify where your battery fits into the chart.

**CCA** = Cold Cranking Amps

**RC** = Reserve Capacity

**Ah** = Amp Hour

**NR** = Not Recommended

Find your battery's rating on the chart below, and note the charge time given for each charger setting. The times given are for batteries with a 50% charge prior to recharging. Add more time for severely discharged batteries.

BATTERY SIZE/RATING			CHARGE RATE/CHARGING TIME			
			2 AMP	10 AMP	12 AMP	15 AMP
SMALL BATTERIES	Motorcycle, garden tractor, etc.	6-12 Ah	2-3¼ h	NR	NR	NR
		12-32 Ah	3¼-10 h	NR	NR	NR
CARS/ TRUCKS	200-315 CCA	40-60 RC	11¼-14½ h	2¼-3 h	1¾-2½ h	1½-2 h
	315-550 CCA	60-85 RC	14½-18¼ h	3-3¾ h	2½-3 h	2-2½ h
	550-1000 CCA	85-190 RC	18¼-34¾ h	3¾-7 h	3-5¾ h	2½-4½ h
MARINE/DEEP-CYCLE		80 RC	17½ h	3½ h	3 h	2¼ h
		140 RC	27 h	5½ h	4½ h	3½ h
		160 RC	30 h	6 h	5 h	4 h
		180 RC	33 h	6½ h	5½ h	4½ h

## 13. 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.

## 14. TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	REASON/SOLUTION
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.
	Battery is defective.	Have the battery checked.
The battery is connected and the charger is on, but is not charging.	The clamps are not making a good connection.	Check for poor connection at battery and frame. Make sure connecting points are clean. Rock clamps back and forth for a better connection.
The charger is making an audible clicking sound.	The circuit breaker is cycling.	The settings may be wrong. Check the charger settings.
	The battery is defective.	Have the battery checked.
	Shorted battery cables or clamps.	Circuit breaker cycles when current draw is too high. Check for shorted cables or clamps and replace, if necessary.
	The battery is good, but severely discharged.	The battery may not want to accept a charge due to a run-down state. Allow charging to continue until battery has a chance to recover sufficiently to take a charge. If more than 20 minutes, stop charging and have the battery checked.
Charger makes a loud buzz or hum.	Reversed connections at battery.	Shut the charger off and correct the lead connections.
	Transformer laminations vibrate (buzz).	No problem; this is a normal condition.
The green LED blinks and the needle bounces.	Shorted diode assembly or output rectifier assembly (hum).	Have charger checked by a qualified technician.
	The battery may be sulfated or unable to hold the charge.	Continue charging. If the battery does not take a charge after 8 hours, have the battery checked.



PROBLEM	POSSIBLE CAUSE	REASON/SOLUTION
Short or no start cycle when cranking engine.	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.
	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.
	Clamps are not making a good connection.	Check for poor connection at battery and frame.
	AC cord and/or extension cord is loose.	Check power cord and extension cord for loose fitting plug.
	No power at receptacle.	Check for open fuse or circuit breaker supplying AC outlet.
	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.
	Battery may be severely discharged.	On a severely discharged battery, charge for 10-15 minutes at the 2 amp rate, to assist in cranking.

## 15. SPECIFICATIONS

	SE-125A	SE-1275A	SE-1510MA	SE-2151MA	SE-40MAP	SE-520MA	SE-5212A	SE-70MA
INPUT VOLTAGE	120V AC @ 60Hz, 2.8A	120V AC @ 60Hz, 2.4A	120V AC @ 60Hz, 3A	120V AC @ 60Hz, 3A	120V AC @ 60Hz, 2A	120V AC @ 60Hz, 2A	120V AC @ 60Hz, 2.2A	120V AC @ 60Hz, 3.3A
OUTPUT VOLTAGE	6V/12V	12V	6V/12V	6V/12V	6V/12V	12V	12V	12V/24V
OUTPUT CURRENT RATING	2/15/100A	2/12/75A	2/15/100A	2/15/100A	10A	2/10A	2/10/100A	10A