OWNERS MANUAL

Models:
SE-82-6, SE-1010-2, SE-1052, SE-1250 Manual Battery Charger

SE-82-6

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.

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 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.

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	14	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

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.

6A or 10A Fast Charge – For automotive, marine and deep-cycle batteries. Not intended for industrial applications.

30A Boost – This setting may be used for a quick charge, prior to using the engine start setting. Do not use this setting to fully charge your battery.

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

AMMETER

The ammeter gives a reading of the Amp draw by the battery from the charger. When a fully discharged battery is connected to the charger, the ammeter will read the maximum output rating of the charger, either 2, 6 or 10 Amps, depending on the Amp selection. The charge current will gradually taper down

as the battery approaches full charge. As the charge current tapers down, the ammeter needle will also move down.

For the 2 Amp charge rate, a triangle has been provided. Its accuracy has been calibrated for use with small batteries.

PERCENT OF CHARGE

The percent of charge scale helps to read the state of charge. It is scaled for use only with the 6 and 10 Amp charge rates. For the 2 Amp charge rate, use the triangle. The percent of charge is based on current drawn by the battery. For this reason, accuracy will vary with the size and battery type.

11. OPERATING INSTRUCTIONS

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

WARNING: This is a manual (non-automatic) battery charger. You must keep a visual check on the ammeter to determine when the battery is charged. Overcharging will damage your battery.

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. Set the charge rate.
6. Lay the AC/DC cables away from any fan blades, belts, pulleys and other moving parts.
7. Connect the battery, following the precautions listed in sections 6 and 7.
8. Connect the charger to an electrical outlet.
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. Set the charge rate.
3. Clean the battery terminals.
4. Connect the battery, following the precautions listed in sections 6 and 7.
5. Connect the charger to the electrical outlet.
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.

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

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 protective clothing.

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.

CIRCUIT BREAKER

This battery charger is equipped with a self-resetting circuit breaker. This device protects the charger from temporary overloads. In the event of an overload, the circuit breaker will trip open, and after a short cooling off period, will reset automatically. This process is known as cycling and can be recognized by an audible clicking sound.

NOTE: The clicking sound is normal. Wait until the charger automatically resets itself.

CAUTION: Persistent clicking (more than 30 minutes) may indicate a reversed connection or shorted battery cells.

MANUAL CHARGING

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.

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	6 AMP	10 AMP
SMALL BATTERIES	Motorcycle, garden tractor, etc.	6-12 Ah	2-3¾ hrs	45 min-1¼ hrs	NR
		12-32 Ah	3¾-10 hrs	1¼-3½ hrs	NR
CARS/ TRUCKS	200-315 CCA	40-60 RC	11¼-14½ hrs	3¾-4¾ hrs	2¼-3 hrs
	315-550 CCA	60-85 RC	14½-18¼ hrs	4¾-6 hrs	3-3¾ hrs
	550-1000 CCA	85-190 RC	18¼-34¾ hrs	6-11½ hrs	3¾-7 hrs
MARINE/DEEP CYCLE		80 RC	17½ hrs	6 hrs	3½ hrs
		140 RC	27 hrs	9 hrs	5½ hrs
		160 RC	30 hrs	10 hrs	6 hrs
		180 RC	33 hrs	11 hrs	6½ hrs

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
No meter reading.	Charger is not plugged in.	Plug the charger into an AC outlet.
	Connections are reversed.	With the charger unplugged, reverse the clips and reconnect (rock back and forth for a better connection).
	Poor electrical connection.	Clean clips and battery poles and reconnect (rock back and forth for a better connection).
	AC outlet is dead.	Plug in a lamp or other appliance to check for voltage
	Battery is defective (will not accept a charge).	Have the battery checked.
The charger will not taper down.	The battery has problem and will not take full charge.	Have the battery checked.
Charging current is less than the full output rating of the charger.	The battery is partially charged.	Continue charging.
	The battery is defective (battery plates are sulfated) and will not accept a full charge.	Check battery; replace if necessary.
	AC power supply is low.	Plug charger into a different grounded AC outlet.
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 5 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.