

MODELS

MC-1, SE-60, SE-1010-2

SE-1012D, SE-1052, SE-1250

OWNER'S MANUAL

Read Rules for
Safe Operation
and Instruction
Carefully

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 EACH TIME BEFORE USING YOUR CHARGER, YOU READ THIS MANUAL AND FOLLOW THE INSTRUCTIONS EXACTLY.

A GENERAL BATTERY SAFETY

1. Before you use your battery charger, be sure to read all instructions and cautions printed on:

- Battery Charger
- Battery
- Vehicle or unit using battery

2. Use battery charger on LEAD ACID type rechargeable batteries only, such as used in autos, trucks, tractors, airplanes, vans, RV's, trolling, motors, etc. Charger is not intended to supply power to low-voltage electrical system other than in an automotive application.

WARNING: 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.

3. Use only attachments recommended or sold by manufacturer. Use of non-recommended attachments may result in fire, electric shock, or injury.

4. When disconnecting the battery charger, pull by the plug, not by the cord. Pulling on the cord may cause damage to cord or plug.

5. Locate battery power cord so it cannot be stepped on, tripped over, or subjected to damage or stress.

6. Do not operate charger with damaged cord or plug. Have cord replaced immediately.

7. Do not operate charger if it has received a sharp blow, a qualified professional for inspection and repair.

8. Do not disassemble charger. Take it to a qualified professional when service or repair is required. Incorrect reassembly may result in electric shock or fire.

9. To reduce risk of electric shock, unplug charger from outlet before attempting any maintenance or cleaning.

10. Do not use an extension cord unless absolutely necessary. Use of an improper extension cord could result in fire.

or electric shock. If an extension cord must be used, make sure that:

- Pins on plug of extension cord are the same number, size, and shape as those of plug on charger.
- Extension cord is properly wired and in good electrical condition.
- Wire size is large enough for AC ampere rating of charger, as specified below:

| Length of cord (feet): | 25 | 50 | 100 | 150 |
|------------------------|----|----|-----|-----|
| Avg size of cord: | 16 | 14 | 10 | 8 |

11. Always charge battery in a well ventilated area. **NEVER** operate in a closed-in or restricted area without adequate ventilation.

WARNING: Risk of explosive gas.

12. Locate charger as far away from battery as DC charger cables permit.

13. Do not expose charger to rain or snow.

14. **NEVER** charge a frozen battery. If battery fluid (electrolyte) is frozen, bring into a warm area to thaw before charging.

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

16. **NEVER** set a battery on top of charger.

17. **NEVER** place charger directly above battery being charged. Gases from battery will corrode and damage charger.

18. **NEVER** touch the battery clips together when the charger is energized.

WARNING: Battery chargers get hot during operation and must have proper ventilation. Air needs to flow around entire charger. Do not set on flammable items like carpeting, upholstery, paper, cardboard, etc. Charger will damage leather and melt plastic and rubber.

• IMPORTANT SAFETY INSTRUCTIONS • • SAVE THESE INSTRUCTIONS •



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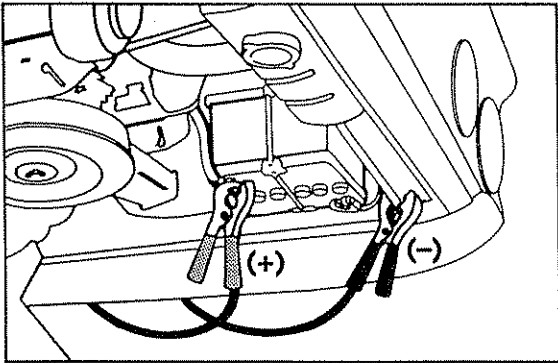
Send Warranty Product Repairs to: 1025 E. Thompson, Hoopston, IL 60942-0280
Call Customer Service if you have questions: 1-800-621-5485

E. OPERATING INSTRUCTIONS: CHARGING BATTERY IN VEHICLE

When charging battery in the vehicle, take care to determine the battery type and which post is grounded. To reduce risk of a spark near battery, follow these steps when battery is installed in vehicle. **WARNING: A spark near battery may cause battery explosion.**

WARNING: Do not connect clip to carburetor, fuel lines, or sheet metal body parts. **NOTE:** Attach clips to battery post and twist or rock back and forth several times to make a good connection. This tends to keep clips from slipping off terminals and helps to reduce risk of sparking.

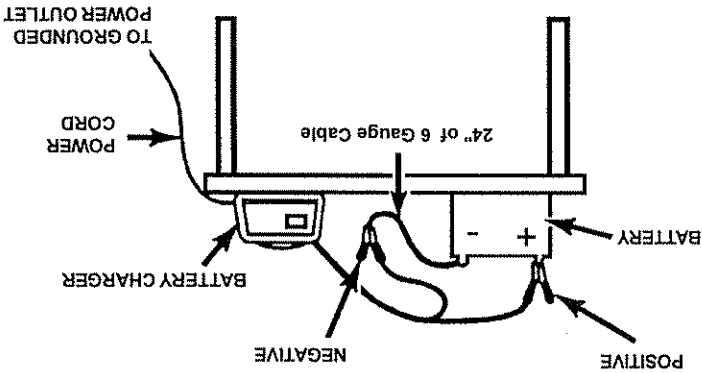
6. Select amperage.
7. Follow steps 1-4 in Battery Charger Section K.
8. When the battery is fully charged, unplug the charger from the AC power source.
9. Remove charger clips from (1) chassis and (2) battery pole in that order.
10. Clean and store battery charger.



F. OPERATING INSTRUCTIONS: CHARGING BATTERY OUT OF VEHICLE

When charging battery out of vehicle, take care to determine the battery type. To reduce risk of a spark near battery, follow these steps when battery is outside vehicle. **WARNING:** A spark near the battery may cause battery explosion. **WARNING:** When removing battery from vehicle or boat, disconnect grounded pole first. When disconnecting, make sure all accessories are off, so as not to cause an arc. **(NOTE:** A marine (boat) battery must be removed and charged on shore. To charge on board requires special equipment designed for marine use.) **WARNING:** When reinstalling battery, attach the ground post first.

8. When battery is fully charged and the charger is unplugged:
 - (1) Remove clip from end of the Negative end of cable, then
 - (2) Remove clip from Positive battery post, in that order.
9. Clean and store battery charger.



WARNING: Be sure area around the battery is well ventilated while battery is being charged. Gas can be forcefully blown away by using a piece of cardboard or other non-metallic material as a fan.

1. Position AC power cord and DC charging cords to reduce risk of damage by hood, door, or moving engine parts.
2. Stay clear of fan blades, belts, pulleys, and other parts that can cause injury.

3. Check polarity of battery posts. Battery case will be marked by each post: **POSITIVE (POS, P, +) and NEGATIVE (NEG, N, -).** **NOTE:** The positive battery post usually has a larger diameter than the negative post.
4. Determine which post of battery is ground (connected) to chassis.

NOTE: The negative post is normally grounded.

NEGATIVE GROUNDED POST

5A. 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. Connect to a heavy gauge metal part of the frame or engine block.

POSITIVE GROUNDED POST

5B. For positive-grounded vehicle, connect **NEGATIVE (BLACK)** clip from battery charger to **NEGATIVE (NEG, N, -)** ungrounded post of battery. Connect **POSITIVE (RED)** clip to a vehicle chassis or engine block away from battery. Connect to a heavy gauge unpainted metal part of the frame or engine block.

1. Check polarity of battery posts. Battery case will be marked by each post: **POSITIVE (POS, P, +) and NEGATIVE (NEG, N, -).** **NOTE:** The positive battery post usually has a larger diameter than the negative post.
2. Attach a 24-inch long (or longer) 6-gauge (AWG) insulated battery cable to **NEGATIVE (NEG, N, -)** battery post. (The 24" lead is not supplied. You may purchase at most automotive stores.)

The 24" lead provides a safer connection condition. Sparking or arcing could occur when connecting the charger clip to the lead.

3. Connect **POSITIVE (RED)** charger clip to **POSITIVE (POS, P, +)** post of battery. Rock clip back and forth to make good connection.
4. Position yourself and free end of 24 inch cable as far away from battery as possible. Then connect **NEGATIVE (BLACK)** charger clip to free end of cable.

WARNING: Do not face battery when making final connection. Rock clip back and forth to make a good connection.

5. Select amperage.
6. Follow steps 1-4 in Battery Charger Section.
7. When battery is fully charged, unplug charger from AC power source.

SWITCHES

The MC1 and the SE 1012D have one charge rate only. The switch on these units is for selecting the charging voltage, either 6 volt or 12 volt. Match the charging voltage to the battery being charged.

The SE 60, SE 1052, SE 1010-2 and the SE 1250 models are 12 volt only designs and must not be used on 6 volt batteries. The switches on these chargers are for selecting the charging rates (amps) desired for your application. Use the 2 ampere rate feature offered on some models to charge smaller batteries such as those on motorcycles, snowmobiles, etc. Use the 10 ampere rate to charge larger automotive batteries. On the SE 60, the switch on the right must be in the CHARGE position when selecting the 2, 10 or 50 amp start on the switch located to the left. The SE 60 also features a .3 ampere Maintain rate. This maintain rate position may be used to maintain the charge level on your battery when the vehicle is not being used for extended periods of time. The Timer should be in the HOLD position when using the .300 amp maintain rate. On the SE 1250 the 30 amp boost and the 50 amp Start position is in the same location. Make sure you follow the duty cycle shown on the front of the charger when using these positions. To obtain the 50 amps start simply turn the ignition key on the vehicle. DO NOT use any other chargers or charge positions for engine starting. Models SE 60, SE 1052 and SE 1250 have Engine Start.

TIMER

The 12 hour timer on Models SE 60 and SE 1012D is useful for preventing overcharging of the battery. Set the pointer knob to the number of hours you want the charger to be on. The knob will automatically rotate counter clockwise indicating the remaining charge time. When the knob reaches the OFF position, the charger will shut off. When the HOLD position is selected, the charger will remain on indefinitely. Familiarize yourself with the action of these settings by rotating the knob through each position several times.

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: Clicking sound is normal. Wait until charger automatically resets itself.

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

J

BATTERY TYPES

Three basic types of lead-acid batteries can be given a charge with this charger: (1) Conventional and Low Maintenance, (2) Maintenance Free, (3) Deep Cycle.

water additions, the battery is probably a Low Maintenance/Conventional type.

Maintenance Free Batteries. These are calcium/lead batteries and normally do not require water additions. Therefore, filler caps have been removed from the battery surface. These batteries will have a smooth or sealed appearance.

Deep Cycle Batteries. These heavy duty batteries are used in boats, construction equipment, sump pumps, etc. They are normally marked **DEEP CYCLE** on the outside of the case.

CAUTION: Some Low Maintenance batteries have a relatively smooth top without any apparent battery filler caps. If, however, the battery manufacturer/distributor recommends periodic checking of electrolyte level and provides access to the battery for

IMPORTANT: When antimony is known to be one of the materials used in the battery's construction, that battery is a Low Maintenance/Conventional type.

Conventional and Low Maintenance Batteries. These are the antimony/lead batteries. Conventional/Low Maintenance batteries require periodic addition of water to the acid solution (electrolyte). Additional water may be added by removing the filler caps located on the top of the battery.

Schumacher Electric Corporation warrants this battery charger for 2 years from date of purchase at retail against defective material or workmanship. If such should occur, the unit will be repaired or replaced at the option of the manufacturer. It is the obligation of the purchaser to forward the unit together with proof of purchase, transportation and / or mailing charges prepaid to the manufacturer or its authorized representative. This limited warranty is void if the product is misused, subjected to care-less handling, or repaired by anyone other than the factory or other authorized factory representative.

PECT, IL 60056-2179, MAKES THIS LIMITED WARRANTY TO THE ORIGINAL PURCHASER AT RETAIL OF THIS PRODUCT. THIS LIMITED WARRANTY IS NOT TRANSFERABLE.

This is the only express limited warranty and the manufacturer neither assumes nor authorizes anyone to assume or make any other obligation towards the product other than this express limited warranty. The manufacturer makes no warranty of merchantability or fitness for purpose of this product and expressly excludes such from this limited warranty. Some states do not allow the exclusion or limitation of incidental or consequential damages or length of implied warranty so the above limitations or exclusions may not apply to you. "This warranty gives you specific legal rights, and you may have other rights which vary from state to state."

The manufacturer makes no warranty other than this limited warranty and expressly excludes any implied warranty including any warranty for consequential damages.

LIMITED WARRANTY

- 1. Before charging any battery, make sure the electrolyte (battery fluid) in each cell is at correct level. This is not required on maintenance free batteries. Read instructions on battery.
- 2. Set switches and or timers to Off, if the position is available. If no Off position is on your charger set in the lowest charge rate featured (1 amp MC-1, 2 amp on others).
- 3. If the battery is being charged inside the vehicle, use connection procedures outlined in Section E. Should the battery be removed from the vehicle, follow the instructions in Section D (step 6) and Section F. Plug the power cord into the AC outlet.
- 4. Set the power switch from Off (or the lowest charge rate) to the desired charge position. NOTE: This charger is a MANUAL type charger and the charging must be monitored closely to prevent overcharging of the battery.

BATTERY CHARGING

K.

- 1. The approximate time required to bring a battery to a full charge state depends upon the number of ampere hours (AH's) depleted from the battery. AH's are determined by multiplying the number of hours time the number of amps supplied by the battery to the load. For example- if a load was connected to battery which drew 7 amperes for a period of five hours, the battery will have supplied 35 AH. The approximate recharge time would be calculated by dividing 35 AH depleted from the battery, by the amperage charge rate of the charger. To allow for tapering of the charge rate add 25% to the charge time.

INDICATIONS OF A FULLY CHARGED BATTERY

M.

A hydrometer reading of the specific gravity of the electrolyte (fluid) of a battery in good condition should be between 1.25 and 1.285. When a battery reaches 80-85% of full charge, bubbles will appear on the surface of the fluid as the battery nears full charge, bubbling will become more vigorous.

When the Meter reaches about 1/2 the charge rate. (See Meter Functions) The MC-1 does not have a meter.

ENGINE START

N.

1. Connect the charger to the battery following instructions given in Section K.
2. Set charger to Off position, (on SE 1052 set at the 2 amp position).
3. Plug power cord into AC outlet, then move switch from Off to Engine Start. On SE 1052 move from 2 amp to Engine Start.
4. During extremely cold weather, or if the battery is fairly exhausted, charge the battery for a few minutes before you attempt the Engine Start.
5. Crank the engine by turning the ignition key.
6. If the engine fails to start, let the battery charge for another/few minutes then, try the engine start again.

CHARGER LOCATION PRECAUTIONS

O.

- 1. Never place the charger directly above battery being charged, gases from battery could damage the charger.
- 2. Never allow the battery acid to drip on charger when reading specific gravity or filling battery.
- 3. Do Not operate the charger in a closed in area or restrict ventilation in any way. Keep off from carpets, seats, etc.
- 4. Do Not set the battery on top of the charger.

G. METER FUNCTIONS

PERCENT OF CHARGE

The percent of charge scale is intended as a visual aid to help simplify determining the state of charge. It is scaled for use with the 6 or 10 amp charge rates only. For the 2 amp charge rate, use the red triangle. The percent of charge is based on current draw by the battery. For this reason accuracy will vary with the size and battery type. Typically a 28 ampere hour battery will draw less current at end charge than a 140 ampere hour wet cell battery. This means that the indication for a fully charged large battery may be slightly less than 100%.

For the 2 amp charge rate a red triangle has been provided within the green area of the meter scale. Its accuracy has been calibrated for use with small battery. As a battery takes on a charge, correspondingly less of the red area will fall under the meter needle.

The Ammeter

The ammeter indicates the amp draw on the charger when a fully discharged battery is connected to the charger. The meter will read the maximum output rating of the charger 2 amps, 10 amps, or 30 amps depending on the charger and switch position you have chosen.

The charge on the 2 amp or the 10 amp, will gradually taper down as the battery nears full charge. As the charge current tapers, the ammeter needle will also move down. The 2 amp charge produces such a small current that it will not show up very well on the meter.

The 30 amp boost charge (on the SE 1250 only) may be used for a quick charge prior to using the engine start feature. The meter will indicate around the 30 amps line if the battery is fully discharged and less if the battery is partially charged. Follow duty cycle instructions for this boost position.

See Meter Views

The charger meter needle will indicate somewhere between the solid line and the dotted line when the charging is first started. The variation is due to the difference in battery conditions and construction of the battery. A battery that is not fully charged will not require the charger to begin the charge at the highest rating, such as the 10 amp on the 10 amp charge position. The battery is charged when the meter indicates near the dotted line shown in the view at the right. This is about 1/2 of the selected charge rate. (about 4-5 amps on the 10 amp setting).

USING THE METER AS A BATTERY TESTER (Model SE 60 only)

1. Since this test is based on terminal voltage of the battery, always begin with fully charged battery. The Battery must be in the vehicle, with the engine and accessories turned off.

2. There is no need for the charger to be connected to the AC power. Unplug charger or rotate timer to the OFF position prior to testing.

3. Connect charger to battery as described in Paragraph G.

4. The meter pointer should be within the green zone of the scale designated BATTERY. If the battery has just been charged, the pointer may be past the green zone and into the yellow zone of ALTERNATOR scale. This is normal. If the pointer rests in the red or yellow zone of the BATTERY scale, the battery may need to be charged.

5. While connected to the battery, turn on the vehicle headlights. Leave on for approximately 10 minutes, then observe the meter reading. For a good battery, the pointer will initially move towards the yellow side of the green zone, then remain fairly constant throughout remainder of the test. If the pointer continues to move and falls into the yellow or red zone, the battery is either weak or poor. For heavy duty batteries, more accurate results may be obtained by extending the discharge time a few minutes.

CHECKING THE VEHICLE CHARGING SYSTEM

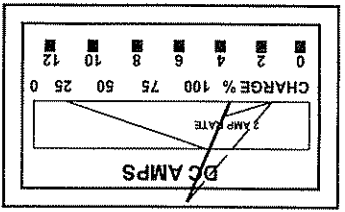
1. Follow instructions 1 through 4 of battery test section (K).

2. Start engine. If the vehicle charging system is working properly, the meter pointer should be within the green zone of the scale designated ALTERNATOR. If the pointer is in the yellow zone, it's likely that the alternator is not charging the battery. If the pointer rises to the extreme right hand side of the red zone it's likely that the battery is being overcharged.

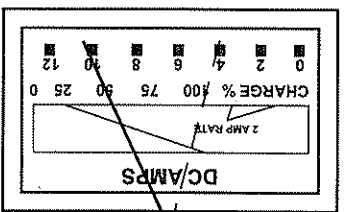
NOTE - In order to compensate for the battery's characteristics with temperature, the vehicle's charging system will increase its output voltage with a decrease in ambient temperature. The test meter is calibrated for batteries at 25 C, as a result the meter indication will be slightly higher at lower outside temperatures.

Before replacing the battery or components of your charging system, obtain a second opinion from a professional.

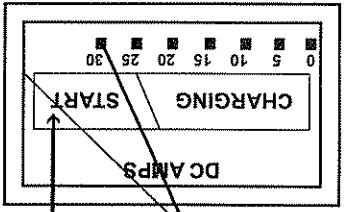
CAUTION - For maximum charger life and least annoyance by breaker cycling, use start position for engine cranking only.



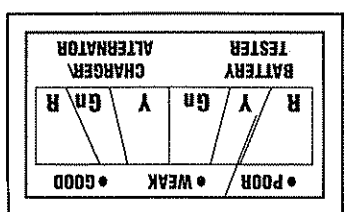
2 amp



10 amp



30 amp
Engine Start



Voltmeter

B. PERSONAL PRECAUTIONS AND SAFETY

- WARNING:** Wear complete eye protection and clothing protection, when working with lead-acid batteries.
 - Make sure someone is within range of your voice or close enough to come to your aid when you work with or near a lead-acid battery.
 - Have plenty of fresh water and soap nearby for use if battery acid contacts skin, clothing, or eyes. If battery acid contacts skin or clothing, wash immediately with soap and water.
 - Avoid touching your eyes while working with a battery. Acid particles (corrosion) may get into your eyes! If acid enters your eye, immediately flood eye with running cold water for at least 10 minutes. Get medical attention immediately.
 - Remove all personal metal items such as rings, bracelets,
6. Take care not to drop a metal tool or other metal onto the battery. Metal may cause sparking or short circuit the battery causing a severe burn.
 7. Always operate battery charger in an open well ventilated area. **NEVER** smoke or allow a spark or flame in the vicinity of the battery or engine. Batteries generate explosive gases!
 8. **NEVER** operate battery charger in an open well ventilated area.

C. GROUND AND AC POWER CORD CONNECTIONS

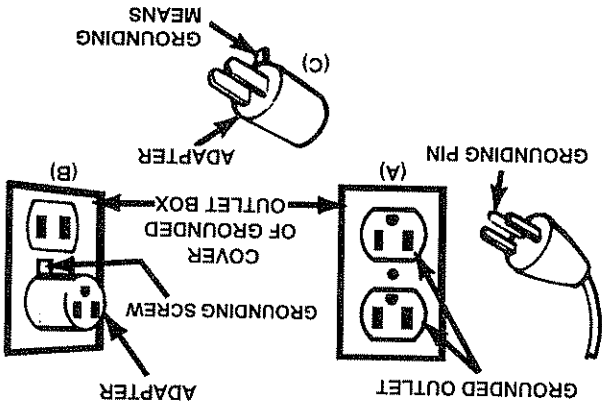


FIGURE 1 GROUNDING METHODS

Use of adapter plug not allowed in Canada.

Charger should be grounded to reduce the risk of electric shock. Charger is equipped with an electric cord having an equipment grounding conductor and a grounding plug. The plug must be plugged into an outlet that is properly installed and grounded in accordance with all local codes and ordinances.

This battery charger is designed for use on a nominal 120 volt circuit and has a grounded plug that looks like the plug illustrated in FIGURE 1 (A). This plug should be used in a grounded outlet. The plug pins must fit the receptacle (outlet).

ADAPTER: A temporary adapter, as shown in FIGURE 1 (B) and (C), may be used to connect the charger plug to a two pole receptacle outlet as shown in FIGURE 1 (B).

NOTE: The temporary adapter should be used only until a properly grounded outlet can be installed by a qualified electrician.

DANGER: NEVER alter the AC cord or plug provided. If it will not fit outlet, have a proper outlet installed by a qualified electrician. Improper connection can result in a risk of an electrical shock. **DANGER:** Before using an adapter, as illustrated, be certain that the center screw of the outlet plate is grounded. The green-colored rigid ear or lug extending from the adapter must be connected to a properly grounded outlet. Make certain it is grounded. If necessary, replace original outlet cover plate screw with a longer screw that will secure adapter ear or lug to outlet cover plate and make ground connection to grounded outlet.

D. PREPARING TO CHARGE

- Make sure that the voltage of the battery and the charger match. Select battery charger switch, if this model has one, accordingly.
- Clean battery terminals. Take care to keep corrosion from coming in contact with your eyes.
- If required, add distilled water in each cell until battery acid reaches levels specified by battery manufacturer. This helps purge excessive gas from cells. Do not overfill. For a battery without cell caps, carefully follow manufacturer's re-charging instructions.
- Study all battery manufacturer's specific precautions, such as removing or not removing cell caps while charging, and recommended rates of charge.
- Be sure area around battery is well ventilated while battery is being charged. Gas can be forcefully blown away by using a piece of cardboard or other non-metallic material as a fan.
- 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.

| Ampere Rating | Charging Hours | Recommended Battery Uses |
|---------------|---------------------------------|---|
| 3 amp | --- | Maintain charge on battery. |
| 1 amp | 2 - 10 Hrs. | Charge motorcycle, snowmobile, lawnmower, truck, marine. |
| 2 amp | 3 - 6 Hrs. | Charge car, truck, RV, trolling motor, tractor. |
| 10 amp | 3 - 5 Hrs. | Charge car, truck, RV, trolling motor, tractor. |
| 30 amp | 5 seconds on 240 seconds off | Cranking assists helps turn engine when battery power is low. |
| 50 amp | 2 minutes on 5 minutes off | Boost battery for 2 minutes before Cranking Engine. |

Charger Selection Guide (see section H)

7. A marine (boat) battery must be removed and charged on shore. To charge it on board requires equipment specially designed for marine use.