

# OPERATOR'S MANUAL

# PLUS START

## MANUAL BATTERY CHARGER

2 Amp, 12 Volt

6 Amp, 6, 12 Volt

Model No.  
89023



### CAUTION:

Read and follow all Safety  
Rules and Operating Instructions  
Before Every Use of this Product.

SAVE THESE INSTRUCTIONS.

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Sears, Roebuck and Co., Hoffman Estates, IL 60179 U.S.A.

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**PLUS START 2-YEAR FULL WARRANTY**

When operated and maintained according to all supplied instructions, if this Plus Start product fails due to a defect in material or workmanship within 2 years from the date of purchase, return it to any Kmart store in the United States for free replacement.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Sears, Roebuck and Co., Hoffman Estates, IL 60179

**FOR CUSTOMER ASSISTANCE OR REPLACEMENT PARTS,  
CALL TOLL-FREE FROM 7 AM TO 5:00 PM CT  
MONDAY THROUGH FRIDAY: 1-800-SEARS-64 (1-800-732-7764)**

**IMPORTANT: READ AND SAVE THIS SAFETY AND INSTRUCTION MANUAL.**



**SAVE THESE INSTRUCTIONS** – This manual will show you how to use your charger safely and effectively. Please read, understand and follow these instructions and precautions carefully, as this manual contains important safety and operating instructions. The safety messages used throughout this manual contain a signal word, a message and an icon.

- ⚠ DANGER** Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury to the operator or bystanders.
- ⚠ WARNING** Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury to the operator or bystanders.
- ⚠ CAUTION** Indicates a potentially hazardous situation which, if not avoided, could result in moderate or minor injury to the operator or bystanders.
- IMPORTANT** Indicates a potentially hazardous situation which, if not avoided, could result in damage to the equipment or vehicle or property damage.
- ⚠ WARNING**



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.

**1. IMPORTANT SAFETY INSTRUCTIONS – SAVE THESE INSTRUCTIONS.**  
This manual contains important safety and operating instructions.

- |   |   |  |
|---|---|--|
| <b>⚠ WARNING</b>  | <b>⚠ WARNING</b>  | <b>RISK OF ELECTRIC SHOCK OR FIRE.</b>   |
|  |  | <b>1.1</b> Keep out of reach of children.<br><b>1.2</b> Do not expose the charger to rain or snow.<br><b>1.3</b> Use only recommended attachments. 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 or damage to property. |
- 1.4** To reduce the risk of damage to the electric plug or cord, pull by the plug rather than the cord when disconnecting the charger.
  - 1.5** An extension cord should not be used unless absolutely necessary. Use of an 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 the plug of the extension cord are the same number, size and shape as those of the plug on the charger.
    - That the extension cord is properly wired and in good electrical condition.
    - That the wire size is large enough for the AC ampere rating of the charger as specified in Section 8.
  - 1.6** To reduce the risk of electric shock, unplug the charger from the outlet before attempting any maintenance or cleaning. Simply turning off the controls will not reduce this risk.
  - 1.7** Do not operate the charger with a damaged cord or plug; take it to a qualified service person. (Call customer service at 1-800-732-7764.)
  - 1.8** Do not operate the charger if it has received a sharp blow, been dropped or otherwise damaged in any way; take it to a qualified service person. (Call customer service at 1-800-732-7764.)
  - 1.9** Do not disassemble the charger; take it to a qualified service person when service or repair is required. Incorrect reassembly may result in a risk of fire or electric shock. (Call customer service at 1-800-732-7764.)



## **RISK OF EXPLOSIVE GASES.**

**1.10** WORKING IN THE 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.

- 1.11** To reduce the risk of a battery explosion, follow these instructions and those published by the battery manufacturer and the manufacturer of any equipment you intend to use in the vicinity of the battery. Review the cautionary markings on these products and on the engine.
- 1.12** This charger employs parts, such as switches and circuit breakers, that tend to produce arcs and sparks. If used in a garage, locate this charger 18 inches (46 cm) or more above floor level.

## **2. PERSONAL PRECAUTIONS**



### **RISK OF EXPLOSIVE GASES.**

**2.1** NEVER smoke or allow a spark or flame in the vicinity of a battery or engine.

**2.2** 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.

- 2.3** Be extra cautious to reduce the risk of dropping a metal tool onto the battery. It might spark or short-circuit the battery or other electrical part that may cause an explosion.
- 2.4** Use this 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 this 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.
- 2.5** NEVER charge a frozen battery.
- 2.6** NEVER overcharge a battery.
- 2.7** Consider having someone nearby to come to your aid when you work near a lead-acid battery.
- 2.8** Have plenty of fresh water and soap nearby in case battery acid contacts your skin, clothing or eyes.
- 2.9** Wear complete eye and body protection, including safety goggles and protective clothing. Avoid touching your eyes while working near the battery.
- 2.10** If battery acid contacts your skin or clothing, immediately wash the area with soap and water. If acid enters your eye, immediately flood the eye with cold running water for at least 10 minutes and get medical attention right away.
- 2.11** If battery acid is accidentally swallowed, drink milk, the whites of eggs or water. DO NOT induce vomiting. Seek medical attention immediately.

### 3. PREPARING TO CHARGE



#### **RISK OF CONTACT WITH BATTERY ACID. BATTERY ACID IS A HIGHLY CORROSIVE SULFURIC ACID.**

**3.1** If it is necessary to remove the battery from the vehicle to charge it, always remove the grounded terminal first. Make sure all of the accessories in the vehicle are off, to prevent arcing.

**3.2** Be sure the area around the battery is well ventilated while the battery is being charged.

- 3.3** Clean the battery terminals before charging the battery. During cleaning, keep airborne corrosion from coming into contact with your eyes, nose and mouth. Use baking soda and water to neutralize the battery acid and help eliminate airborne corrosion. Do not touch your eyes, nose or mouth.
- 3.4** Add distilled water to each cell until the battery acid reaches the level specified by the battery manufacturer. Do not overfill. For a battery without removable cell caps, such as valve regulated lead acid batteries (VRLA), carefully follow the manufacturer's recharging instructions.
- 3.5** Read, understand and follow all instructions for the charger, battery, vehicle and any equipment used near the battery and charger. Study all of the battery manufacturer's specific precautions while charging and recommended rates of charge.
- 3.6** Determine the voltage of the battery by referring to the vehicle owner's manual and make sure that the output voltage selector switch is set to the correct voltage. If the charger has an adjustable charge rate, charge the battery in the lowest rate first.
- 3.7** Make sure that the charger cable clips make tight connections.

### 4. CHARGER LOCATION



#### **RISK OF EXPLOSION AND CONTACT WITH BATTERY ACID.**

**4.1** Locate the charger as far away from the battery as the DC cables permit.

**4.2** Never place the charger directly above the battery being charged; gases from the battery will corrode and damage the charger.

- 4.3** Do not set the battery on top of the charger.
- 4.4** Never allow battery acid to drip onto the charger when reading the electrolyte specific gravity or filling the battery.
- 4.5** Do not operate the charger in a closed-in area or restrict the ventilation in any way.

### 5. DC CONNECTION PRECAUTIONS

- 5.1** Connect and disconnect the DC output clips only after setting all of the charger switches to the "off" position and removing the AC plug from the electrical outlet. Never allow the clips to touch each other.
- 5.2** Attach the clips to the battery and chassis, as indicated in steps 6.5, 6.6 and 7.2 through 7.4.

## 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:**

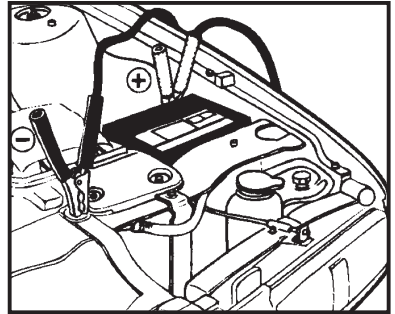
**6.1** Position the AC and DC cables to reduce the risk of damage by the hood, door and moving or hot engine parts. **NOTE:** If it is

necessary to close the hood during the charging process, ensure that the hood does not touch the metal part of the battery clips or cut the insulation of the cables.

- 6.2** Stay clear of fan blades, belts, pulleys and other parts that can cause injury.
- 6.3** Check the polarity of the battery posts. The POSITIVE (POS, P, +) battery post usually has a larger diameter than the NEGATIVE (NEG, N, -) post.
- 6.4** Determine which post of the battery is grounded (connected) to the chassis. If the negative post is grounded to the chassis (as in most vehicles), see step 6.5. If the positive post is grounded to the chassis, see step 6.6.

- 6.5** For a negative-grounded vehicle, connect the POSITIVE (RED) clip from the battery charger to the POSITIVE (POS, P, +) ungrounded post of the battery. Connect the NEGATIVE (BLACK) clip to the vehicle chassis or engine block away from the battery. Do not connect the clip to the carburetor, fuel lines or sheet-metal body parts. Connect to a heavy gauge metal part of the frame or engine block.

- 6.6** For a positive-grounded vehicle, connect the NEGATIVE (BLACK) clip from the battery charger to the NEGATIVE (NEG, N, -) ungrounded post of the battery. Connect the POSITIVE (RED) clip to the vehicle chassis or engine block away from the battery. Do not connect the clip to the carburetor, fuel lines or sheet-metal body parts. Connect to a heavy gauge metal part of the frame or engine block.



**NEGATIVE GROUNDING SYSTEM**

- 6.7** Connect charger AC supply cord to electrical outlet.
- 6.8** When disconnecting the charger, turn all switches to off, disconnect the AC cord, remove the clip from the vehicle chassis and then remove the clip from the battery terminal.
- 6.9** See **CALCULATING CHARGE TIME** for length of charge information.

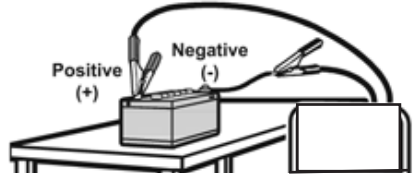
## 7. FOLLOW THESE STEPS WHEN BATTERY IS OUTSIDE VEHICLE.



**A SPARK NEAR THE BATTERY MAY CAUSE A BATTERY EXPLOSION. TO REDUCE THE RISK OF A SPARK NEAR THE BATTERY:**

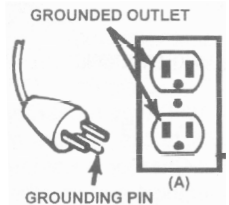
**7.1** Check the polarity of the battery posts. The POSITIVE (POS, P, +) battery post usually has a larger diameter than the NEGATIVE (NEG, N, -) post.

- 7.2** Attach at least a 24-inch (61 cm) long 6-gauge (AWG) insulated battery cable to the NEGATIVE (NEG, N, -) battery post.
- 7.3** Connect the POSITIVE (RED) charger clip to the POSITIVE (POS, P, +) post of the battery.
- 7.4** Position yourself and the free end of the cable you previously attached to the NEGATIVE (NEG, N, -) battery post as far away from the battery as possible, then connect the NEGATIVE (BLACK) charger clip to the free end of the cable.
- 7.5** Do not face the battery when making the final connection. As stated in 7.4, face away from the battery when connecting the negative clip to the cable.
- 7.6** Connect charger AC supply cord to electrical outlet.
- 7.7** When disconnecting the charger, always do so in the reverse order of the connecting procedure and break the first connection while as far away from the battery as practical.
- 7.8** A marine (boat) battery must be removed and charged on shore. To charge it onboard 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 that looks like the plug illustrated. 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** Recommended minimum AWG size for extension cord:
- 100 feet long (30.5 m) or less – use an 16 gauge (1.5 mm<sup>2</sup>) extension cord.
  - Over 100 feet long (30.5 m) – use a 14 gauge (2.5 mm<sup>2</sup>) extension cord.

## 9. ASSEMBLY INSTRUCTIONS

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

## 10. CONTROL PANEL

### Ammeter

The Ammeter indicates the amount of current, measured in amps, that is being drawn by the battery. As a battery takes on a charge, it draws less current from the charger. Correspondingly, the meter will show less current being drawn by the battery. When the current stops decreasing, the battery is charged.

The 2 amp charge rate may indicate some activity on the meter, although the meter does not have the resolution to display this low rate. 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 is intended as a visual aid to help simplify reading the state of charge. The percent of charge is based on the current drawn by the battery. For this reason, accuracy will vary with the size and battery type. This means that the indication for a fully charged large battery may be slightly less than 100%.

### Charge Rate Selector Switch (Voltage/Amp Selector)

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

- **2A Slow Charge Rate** – Intended for charging small batteries such as those commonly used in garden tractors, snow mobiles and motorcycles. The 2A rate can be used to warm or trickle charge larger batteries.
- **6A Fast Charge Rate** – Use for charging automotive, marine and deep-cycle batteries.

**NOTE:** This charger is not recommended for 8 or 16 volt systems.

## 11. OPERATING INSTRUCTIONS

**⚠WARNING** This battery charger must be properly assembled in accordance with the assembly instructions before it is used.

**⚠WARNING** This is a manual charger. 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.

The charger does not have an ON/OFF switch. The On and Off commands are controlled by plugging the 89023 into a 120V AC electrical wall outlet only after the battery connections have been made and the CHARGE RATE SELECTOR switch has been set.

### Charging

1. Ensure that all of the charger components are in place and in good working condition, for example, the plastic boots on the battery clips.
  2. Connect the battery, following the precautions listed in Sections 6 and 7.
  3. Select the appropriate settings for your battery.
  4. Connect the AC power, following the precautions listed in Section 8. Make sure to place the charger on a dry, non-flammable surface, like metal or concrete.
  5. To disconnect, reverse the above procedure.
- **Indication of a Fully Charged Battery:**  
A hydrometer reading of the specific gravity of the electrolyte (fluid) of a battery in good condition should be between 1.250 and 1.285. When a battery reaches 80 to 85% of a full charge, bubbles will appear on the surface of the fluid. As the battery nears full charge, the bubbling will become more active. At no time during the charge cycle should there be any sign of vigorous bubbling of the battery fluid.

### Manual Charging Mode

When a manual charge is performed, the 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 accurately determine the time it will take to bring a battery to full charge. First, identify where your battery fits into the chart.

CCA is the Cold Cranking Amp rating of the battery.

RC is the Reserve Capacity rating of the battery.

AH is the Amp Hour capacity of the battery.

NR means that the charger setting is 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
SMALL BATTERIES	Motorcycle, garden, tractor, etc.	6 - 12 AH	2 - 4 hrs	45 min - 1¼ hrs
		12 - 32 AH	4 - 10 hrs	1¼ - 3½ hrs
CARS/ TRUCKS	200 - 315 CCA	40 - 60 RC	11¼ - 14½ hrs	3¾ - 4¾ hrs
	315 - 550 CCA	60 - 85 RC	NR	4¾ - 6 hrs
	550 - 1000 CCA	80 - 190 RC	NR	6 - 11½ hrs
MARINE/DEEP CYCLE		80 RC	NR	6 hrs
		140 RC	NR	9 hrs
		160 RC	NR	10 hrs
		180 RC	NR	11 hrs

## 13. MAINTENANCE INSTRUCTIONS

- 13.1 Before performing maintenance, unplug and disconnect the battery charger (see Sections 6, 7 and 8).
- 13.2 Use a dry cloth to wipe all battery corrosion and other dirt or oil from the battery clips, cords and the charger case.
- 13.3 Ensure that all of the charger components are in place and in good working condition, for example, the plastic boots on the battery clips.
- 13.4 Servicing does not require opening the unit, as there are no user-serviceable parts.
- 13.5 All other servicing should be performed by qualified service personnel.

## 14. STORAGE INSTRUCTIONS

- 14.1 Store charger unplugged, in an upright position. The cord will still conduct electricity until it is unplugged from the outlet.
- 14.2 Store inside, in a cool, dry place (unless you're using an on-board Marine Charger).
- 14.3 Do not store the clips on the handle, clipped together, on or around metal, or clipped to cables.
- 14.4 If the charger is moved around the shop or transported to another location, take care to avoid/prevent damage to the cords, clips and charger. Failure to do so could result in personal injury or property damage.

## 15. TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	REASON/SOLUTION
No reading on the ammeter.	<p>Charger is not plugged in.</p> <p>No power at the receptacle.</p> <p>Clips are not making a good connection to the battery.</p> <p>Connections are reversed.</p> <p>Battery is defective (will not accept a charge).</p> <p>2 amp charge rate is being used.</p>	<p>Plug the charger into an AC outlet.</p> <p>Check for open fuse or circuit breaker supplying AC outlet.</p> <p>Check for poor connection to battery and frame. Make sure connection points are clean. Rock clips back and forth for a better connection.</p> <p>Unplug the charger and reverse the clips.</p> <p>Have battery checked.</p> <p>Ammeter may show no activity at the 2A charge rate.</p>
Ammeter reading stays high.	<p>Battery is severely discharged.</p> <p>Wrong battery voltage.</p>	<p>Continue charging battery for two more hours. If problem continues, have the battery checked.</p> <p>Verify the voltage settings on the charger are correct.</p>
Charger will not turn on when properly connected.	<p>AC outlet is dead.</p> <p>Poor electrical connection.</p>	<p>Check for open fuse or circuit breaker supplying AC outlet.</p> <p>Check power cord and extension cord for loose fitting plug.</p>
The battery is connected and the charger is on, but is not charging.	<p>Clips are not making a good connection.</p>	<p>Check for poor connection at battery and frame. Make sure connecting points are clean. Rock clips back and forth for a better connection.</p>
Ammeter reads less than selected charge rate when charging a discharged battery	<p>Extension cord is too long or wire gauge is too small.</p> <p>Weak cell or sulfated plate in battery.</p>	<p>Use a shorter or heavier gauge extension cord.</p> <p>A sulfated battery will eventually take a normal charge if left connected. If the battery will not take a charge, have it checked.</p>

PROBLEM	POSSIBLE CAUSE	REASON/SOLUTION
The charger is making an audible clicking sound.	Circuit breaker is cycling.  Battery is defective.  Shorted battery cables or clips.  Severely discharged battery, but otherwise it is a good battery.  Reverse connections at battery.	The settings may be wrong. Check the charger settings.  Have the battery checked.  Circuit breaker cycles when current draw is too high. Check for shorted cables or clips and replace if necessary.  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.  Shut the charger off and correct the lead connections.
Charger makes a loud buzz or hum.	Transformer laminations vibrate (buzz).  Shorted Diode Assembly or Output Rectifier Assembly (hum).	No problem; this is a normal condition.  Have charger checked by a qualified technician.

## 16. BEFORE RETURNING FOR REPAIR OR REPLACEMENT

- 16.1** When a charging problem arises, make certain that the battery is capable of accepting a normal charge. Use a good battery to double check all connections, AC outlet for a full 120-volts, charger clips for correct polarity and the quality of the connections from the cables to the clips and from the clips to the battery system. The clips must be clean.
- 16.2** When a battery is very cold, partially charged or sulfated, it will not draw the full rated amperes from the charger. It is both dangerous and damaging to a battery to force higher amperage into it than it can effectively use in recharging.
- 16.3** When an UNKNOWN OPERATING PROBLEM arises, please read the complete manual and call the customer service number for information that will usually eliminate the need for return.

If the above solutions do not eliminate the problem, or for information about troubleshooting or replacement parts, call toll-free from anywhere in the U.S.A.

1-800-732-7764

7:00 a.m. to 5:00 p.m. Central Time, Monday thru Friday