



OPERATOR'S MANUAL

IMPORTANT SAFETY INSTRUCTIONS

1. **SAVE THESE INSTRUCTIONS:** This manual contains important safety and operating instructions for the battery charger you have purchased. You may need to refer to these instructions at a later date.
2. **CAUTION.** To reduce risk of injury, charge only wet cell, lead-acid, automotive type rechargeable batteries. Other types of batteries may burst causing personal injury and property damage.
3. Do not expose the charger to rain or snow if specifically warned on the unit not to do so.
4. Use of an attachment not recommended or sold by the battery charger manufacturer may result in a risk of fire, electric shock, or injury to persons.
5. To reduce the risk of damage to the electric plug and cord, pull the plug out of the receptacle by the plug rather than the cord when disconnecting the charger.
6. Make sure the cord is located so that it will not be stepped on, tripped over, or otherwise subjected to damage or stress.
7. 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:
 - a. The pins on the plug of extension cord are the same number, size, and shape as those of the plug on the charger.
 - b. That the extension cord is properly wired and in good electrical condition.
 - c. For an extension cord: 25 feet or less, use 14AWG; 25 to 50 feet, use 12AWG; 50 to 100 feet, use 10AWG; 100 to 150 feet, use 8AWG.
8. Do not operate the charger with a damaged cord or plug - Replace them immediately.
9. 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 technician.
10. Do not disassemble the charger unless you are qualified to work on electrical products. Take the charger to a qualified service technician when service or repair is required. Incorrect reassembly may result in risk of electric shock or fire.
11. To reduce the risk of electric shock, unplug the charger from the outlet before attempting any maintenance or cleaning. Turning off the controls will NOT reduce this risk.

1. WARNING-RISK OF EXPLOSIVE GASES

- a. WORKING IN THE VICINITY OF A LEAD-ACID OR OTHER AUTOMOTIVE 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.
- b. To reduce the risk of battery explosion: follow these instructions, those published by the battery manufacturer and those published by the manufacturer of any equipment you intend to use in the vicinity of the battery. Review cautionary markings on these products and on the engine.

2. PERSONAL PRECAUTIONS

- a. Someone should be within range of your voice or close enough to come to your aid when you work near an automotive battery.
- b. Have plenty of fresh water and soap nearby in case battery acid contacts skin, clothing, or eyes.
- c. Wear complete eye protection such as goggles or a face shield, and clothing protection. Avoid touching eyes while working near a battery.
- d. If battery acid contacts skin or clothing, wash immediately with soap and water. If acid enters the eyes, immediately flood eyes with running cold water for at least 10 minutes and get medical attention immediately.
- e. NEVER smoke or allow a spark or flame in vicinity of the battery or engine.
- f. Be extra cautious to reduce risk of dropping a metal tool onto the battery. It may cause a spark, short circuit the battery, or damage other electrical parts that may cause an explosion.
- g. Remove personal metal items such as rings, bracelets, necklaces, and watches when working with an automotive battery. An automotive battery can produce a short circuit current high enough to weld a ring or the like to metal, causing a severe burn.
- h. Use the charger for charging an automotive battery only. It is not intended to supply power to a low-voltage electrical system other than in an automotive application. Do NOT use the battery charger for charging Dry-Cell, Alkaline, or Ni-Cad batteries that are commonly used with home appliances. These batteries may burst and cause injury to persons and damage to property.
- i. NEVER charge a frozen battery.

3. PREPARING TO CHARGE:

- a. If it is necessary to remove the battery from the vehicle to charge it, always remove the grounded terminal from the battery first. Make sure all the accessories in the vehicle are off, so as not to cause an arc.
- b. Be sure the area around the battery is well ventilated while the battery is being charged. Gas can be forcefully blown away by using a piece of cardboard or other nonmetallic material as a fan.
- c. Clean the battery terminals. Be careful to keep corrosion from coming into contact with eyes or other parts of the body.
- d. Add distilled water to each cell until the battery acid reaches the level specified by the battery manufacturer. This helps purge excessive gas from the cells. Do not overfill the battery. For a battery without cell caps, carefully follow the manufacturer's recharging instructions.
- e. Follow the battery manufacturer's specific precautions such as removing or not removing cell caps while charging and recommended rates of charge.

- f. Determine the voltage of the battery by referring to the vehicle owner's manual and make sure the output voltage selector switch is set at the correct voltage. If the charger has an adjustable charge rate, charge the battery initially at the charger's lowest rate for the battery.

4. **CHARGER LOCATION**

- a. Locate the charger as far away from the battery as the DC cables permit.
- b. Never place the charger directly above the battery being charged; gases from the battery could reach arcing devices within the charger and result in an explosion.
- c. Never allow battery acid to drop on the charger when reading the specific gravity or filling battery.
- d. Do not operate the charger in a closed-in area, or restrict ventilation to the charger in any way.
- e. Do not set a battery on top of the charger.

5. **DC CONNECTION PRECAUTIONS**

- a. Connect and disconnect the DC output clamps only after setting the charger switches to the OFF position and removing the AC cord from the electric outlet. Never allow the clamps to touch each other.
- b. When attaching a clamp to a battery post, twist or rock the clamp back and forth several times to make a good connection. This tends to keep the clamp from slipping off the terminals and helps to reduce the risk of sparking.

6. **STOP/GO LITE INSTRUCTIONS**

When used properly, the **STOP/GO LITE** will indicate whether the clamp connections will be correct. Connect the Positive (RED) clamp to the Positive (POS,+) battery post. Touch the contact button of the Negative (Black) clamp to the other battery post. Observe the LED lights in the STOP/GO LITE.

GREEN LIGHT:

The first connection is correct. Make the second clamp connection per the instructions in Section 7 or Section 8.

RED LIGHT:

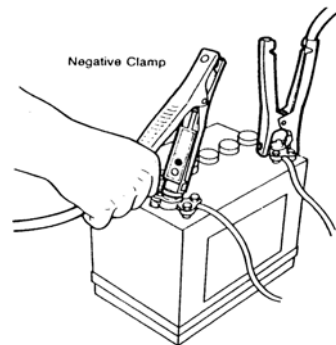
The first connection made with the Positive (RED) clamp to the battery is incorrect. Attach the Positive (RED) clamp to the other battery post and retest.

RED AND GREEN LIGHT:

The battery charger is turned on. Turn the charger "OFF" and retest.

NO LIGHT:

Check for a shorted or open battery. Clean corrosion from the clamp jaws and battery posts. Retest. If still no light, use a voltmeter or other means to make certain you have properly identified the polarity of the battery posts. Then attach the clamps per the instructions, disregarding the STOP/GO LITE.

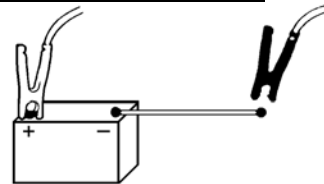


7. **FOLLOW THESE STEPS WHEN THE BATTERY IS OUTSIDE THE VEHICLE. A SPARK NEAR THE BATTERY MAY CAUSE THE BATTERY TO EXPLODE. TO REDUCE THE RISK OF A SPARK NEAR THE BATTERY:**

- a. Read Section 6, **STOP/GO LITE INSTRUCTIONS**, before proceeding.
- b. Position the AC and DC cords to reduce any risk of damage by the hood, doors, or moving engine parts.
- c. Stay clear of fan blades, belts, pulleys, and other parts that can cause injury to persons.
- d. Check the polarity of the battery posts. The Positive (POS,P,+) battery post usually has a larger diameter than the Negative (NEG,N,-) battery post.
- e. 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 item f. If the positive post is grounded to the chassis, see item g.
- f. For a Negative ground vehicle, double check the polarity of the battery terminals, refer to the STOP/GO LITE instructions. Connect the Positive (RED) clamp from the battery charger to the Positive (POS,P,+) ungrounded post of the battery. Connect the Negative (BLACK) clamp to the vehicle chassis, a heavy gauge metal part of the frame or the engine block, away from the battery. Do not connect the clamp to the carburetor, fuel lines or sheet metal part of the frame.
- g. For a Positive ground vehicle, double check the polarity of the battery terminals, refer to the STOP/GO LITE instructions. Attach the Negative (BLACK) clamp to the Negative (NEG,N,-) ungrounded post of the battery. Attach the Positive (RED) clamp to the vehicle chassis, a heavy gauge metal part of the frame or the engine block, away from the battery. Do not connect the clamp to the carburetor, fuel lines or sheet metal part of the frame.
- h. When disconnecting the charger, turn the switches to OFF, disconnect the AC cord, remove the clamp from the vehicle chassis, and then remove the clamp from the battery terminal.
- i. See section 10, **LENGTH OF CHARGE**, for information on length and rate of charge.

8. **FOLLOW THESE STEPS WHEN THE BATTERY IS OUTSIDE THE VEHICLE. A SPARK NEAR THE BATTERY MAY CAUSE THE BATTERY TO EXPLODE. TO REDUCE THE RISK OF A SPARK NEAR THE BATTERY:**

- a. Read Section 6, **STOP/GO LITE INSTRUCTIONS**, before proceeding.
- b. Check the polarity of the battery posts. The POSITIVE (POS, P, +) usually has a larger diameter than the NEGATIVE (NEG, N, -) post.
- c. Double check the polarity of the battery posts, refer to the STOP/GO LITE instructions. Attach at least a 24 inch long 6-gauge (AWG) insulated battery cable to the NEGATIVE (NEG, N, -) battery post to allow the final connection to be made away from the battery.
- d. Connect the POSITIVE (RED) charger clamp to the POSITIVE (POS, P, +) post of the battery.
- e. Position yourself and the free end of the cable as far away from the battery as possible while connecting the NEGATIVE (BLACK) charger clamp to the free end of cable. Refer to the illustration.
- f. Do not face the battery when making the final connection.
- g. When disconnecting the charger, always do so in reverse sequence of connecting procedure, and break the first connection while standing as far away from the battery as practical.
- h. A marine (boat) battery must be removed and charged on shore. To charge it on-board requires equipment specially designed for marine use.



9. **EARTHING AND AC POWER CORD CONNECTION INSTRUCTIONS**

WARNING - THIS APPLIANCE MUST BE EARTHED.

The AC cord of this unit was supplied without a plug so that you may install the correct plug as required by your local electrical codes. Your electrical outlet must also be properly installed and earthed per local codes.

The wires in the main lead are colored in accordance with the following code:

- Green/Yellow: Earth
- Blue: Neutral
- Brown: Live

As the colors of the wires in the main lead of this unit may not correspond with the colored markings identifying the terminals in your plug, proceed as follows:

- a. The wire which is colored green/yellow must be connected to the terminal in the plug which is marked with the letter E, colored green, green/yellow, or marked with the earth symbol.
- b. The wire which is colored blue must be connected to the terminal which is marked with the letter N or colored black.
- c. The wire which is colored brown must be connected to the terminal which is marked with the letter L or colored red.

10. LENGTH OF CHARGE

- a. Use a temperature compensating hydrometer or a voltmeter to determine the State of Charge of the battery. Do not charge a battery that is over 75% charged or if the battery is determined to be defective. Refer to the STATE OF CHARGE table.
- b. Determine the Battery Size, (SMALL, MEDIUM or LARGE). Refer to the BATTERY SIZE table.
- c. Refer to the CHARGE RATE VS MINUTES CHARGE table to determine the recommended length of charge for the battery based on its SIZE, STATE OF CHARGE and the CHARGING AMPERES.
- d. Discontinue charging when the specific gravity of the electrolyte reaches 1,260 or above. A temperature compensating hydrometer should be used for this reading. Discontinue charging if the battery begins to gas excessively or when the temperature of the electrolyte reaches approximately 50° C. Do not overcharge the battery. Overcharging results in excessive water loss and eventual damage to the battery and will create explosive gasses which can ignite and cause severe personal injury.

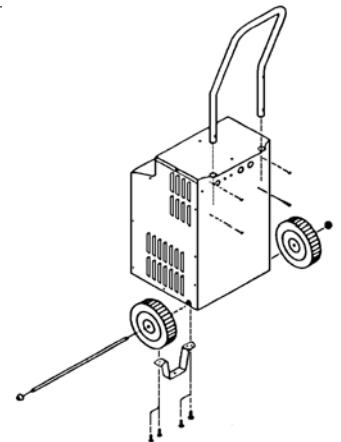
| BATTERY SIZE TABLE | | | |
|--------------------|-------|--------|-------|
| BATTERY SIZE | SMALL | MEDIUM | LARGE |
| Ampere Hours | 40 | 60 | 80+ |
| Reserve Capacity | 60 | 90 | 100+ |
| Cold Cranking Amps | 275 | 350 | 400+ |

| STATE OF CHARGE TABLE | | | | |
|----------------------------|-------|-------|-------|-------|
| STATE OF CHARGE | 75% | 50% | 25% | DEAD |
| Specific Gravity | 1.225 | 1.185 | 1.140 | 1.110 |
| Open Circuit Voltage-6 V. | 6.2 | 6.05 | 5.95 | 5.9 |
| Open Circuit Voltage-12 V. | 12.4 | 12.1 | 11.9 | 11.8 |
| Open Circuit Voltage-24 V. | 24.8 | 24.2 | 23.8 | 23.6 |

| CHARGE RATE Vs. MINUTES CHARGE | | | | | | | | |
|--------------------------------|---------|---------------------------------|---------|----|----|----|----|----|
| BATTERY SIZE | /CHARGE | | MINUTES | | | | | |
| | | | 15 | 30 | 45 | 60 | 75 | 90 |
| SMALL | 0-25 | A M P E R E S | 45 | 30 | 30 | 25 | 25 | 20 |
| | 25-50 | | 30 | 20 | 20 | 15 | 15 | 10 |
| | 50-75 | | 15 | 10 | 10 | 10 | 5 | 5 |
| MEDIUM | 0-25 | | 70 | 50 | 45 | 40 | 35 | 30 |
| | 25-50 | | 45 | 30 | 25 | 20 | 20 | 20 |
| | 50-75 | | 25 | 15 | 15 | 10 | 10 | 10 |
| LARGE | 0-25 | | 90 | 55 | 55 | 50 | 45 | 45 |
| | 25-50 | | 60 | 40 | 35 | 30 | 30 | 30 |
| | 50-75 | | 30 | 20 | 20 | 15 | 15 | 15 |

ASSEMBLY INSTRUCTIONS

Remove the four handle mounting screws from the back panel. Insert the handle through the two holes in the top panel and attach the handle to the rear of the charger using the four screws previously removed. Attach the front leg to the base with the four hex head screws provided. Attach the wheels and axle to the base, tap one axle nut onto the axle with a hammer, slide one wheel onto the axle with the whitewall facing out, push the axle through the base, place the second wheel onto the axle, tap the remaining axle nut onto the axle.



OPERATING INSTRUCTIONS

CAUTION - The battery charger must be fully assembled before operating. Failure to do so may result in the risk of personal injury.

USE OF THE INSTRUMENT PANEL

The LENGTH OF CHARGE timer has an OFF position, a 0 to 90 minute TIMED CHARGE range and a CONTINUOUS CHARGE position.

- a. OFF - Always make sure the timer is in the OFF position before connecting or disconnecting the clamps from the battery. The charger will not operate with the timer in this position.
- b. 0 to 90 TIMED CHARGE range - The timer will automatically turn the charger off at the end of the pre-set charging time. Turn the timer past 20 before setting the desired time.
- c. CONTINUOUS CHARGE - The timer will not shut the charger OFF while in this position. Extended charging can be done if the operator is knowledgeable in determining the proper rate and length of charge and monitors the charging process to prevent overcharging.

TO CHARGE BATTERIES

- a. Make the connections to the battery per the instructions in the previous sections.
- b. Determine if the battery is 6 or 12 volts and then set the CHARGE RATE switch to either the 6 or 12 LO position.

- c. Turn the timer on and read the AMPERES meter.
- d. If a higher rate of charge is desired for charging a 12 volt battery, set the CHARGE RATE switch to either 12 MED or 12 HI positions.
- e. Set the timer to the desired minutes charge.

DO NOT ATTEMPT TO CHARGE A BATTERY AT A VOLTAGE DIFFERENT THAN THAT OF THE BATTERY.

BOOST STARTING/ENGINE CRANKING ASSIST

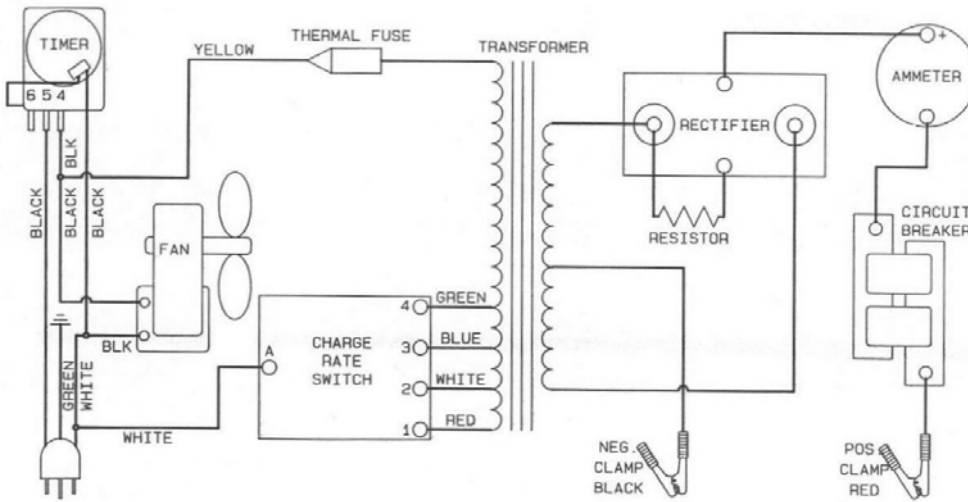
- Turn off all the lights and accessories in the stalled vehicle.
- Connect the charger to the battery per the previous instructions.
- Set the CHARGE RATE switch to the correct HI position matching the vehicle's battery voltage.
- Charge the battery on HI for at least five minutes before attempting to start the vehicle.
- Start the vehicle with the charger connected to the battery.

NOTE: Do not crank the engine more than 20 seconds in any five minute period; excessive cranking may overheat and damage the starter. If the vehicle fails to start, while waiting for the starter to cool, allow the charger to continue to charge the battery. Turn the timer to OFF before disconnecting the clamps.

MAINTENANCE INSTRUCTIONS

Worn clamps and jaws should be replaced. Worn parts can lead to poor connections and present a safety hazard. See parts list for part number of jaw and clamp kits. Any maintenance or repair of this unit that involves disassembly of the cabinet should be done only by a qualified service technician. Incorrect reassembly may result in the risk of electrical shock when the unit is subsequently used.

WIRING DIAGRAM



YA167B PARTS LIST

| <u>Item</u> | <u>Description</u> | <u>Part No.</u> | <u>Item</u> | <u>Description</u> | <u>Part No.</u> |
|-------------|---------------------|-----------------|-------------|---------------------------|-----------------|
| 1 | Front Leg | 605671 | 13 | DC Cable Set w/clamps | 605677 |
| 2 | Axle w/nuts | 610052 | 14 | Stop/Go Lite | 604579 |
| 3 | Wheel w/Nuts (2) | 605672 | 15 | Handle | 610153 |
| 4 | Rectifier Assy | 610122 | 16 | Clamps (1 pair w/jaws) | 6202 |
| 5 | Transformer | 610201 | 17 | Jaw Kit (repairs 1 clamp) | 6204 |
| 6 | Fan Blade | 610189 | 18 | Thermal Fuse | 610242 |
| 7 | Fan Motor | 610190 | | | |
| 8 | DC Circuit Breaker | 610069 | | | |
| 9 | Amps Charge Meter | 610268 | | | |
| 10 | Switch w/knob (1ea) | 605675 | | | |
| 11 | Timer w/knob | 610389 | | | |
| 12 | AC Cord | 605206 | | | |

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