



POWERED BY SCHUMACHER

PROSERIES™

MODEL

DSR117

Battery Charger

OWNERS MANUAL



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** Keep out of reach of children.
- 1.3** Do not expose the charger to rain or snow.
- 1.4** Use of an attachment not recommended or sold by Schumacher® Electric Corporation may result in a risk of fire, electric shock or injury to persons.
- 1.5** To reduce the risk of damage to electric plug and cord, pull by the plug rather than the cord when disconnecting charger.
- 1.6** 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:
 - The pins on plug of extension cord are the same number, size and shape as those of plug on charger.
 - The extension cord is properly wired and in good electrical condition
 - The wire size is large enough for AC ampere rating of charger as specified in Section 8.
- 1.7** Do not operate charger with damaged cord or plug – replace the cord or plug immediately.
- 1.8** 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.
- 1.9** 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.
- 1.10** To reduce risk of electric shock, unplug charger from outlet before attempting any maintenance or cleaning. Turning off controls will not reduce this risk.
- 1.11 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 markings on these products and on engine.

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 (STD, AGM or GEL) rechargeable batteries with recommended rated capacities of 22-59Ah (12V). 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.
- 2.10 WARNING:** This product contains one or more chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

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.
- 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 Sections 6 and 7.

6. FOLLOW THESE STEPS WHEN BATTERY IS INSTALLED IN VEHICLE

WARNING: 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 gauge 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 gauge 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

WARNING: 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

- 8.1 This battery charger is for use on a nominal 120 volt circuit. 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 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 | 18 | 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

START/STOP BUTTON

Press to immediately begin charging your properly connected battery. **If the button is not pressed, charging should begin in ten minutes.**

LED INDICATORS

POWER (green) LED:


The charger is connected to an AC outlet.


BAD BATTERY (red) LED:

The charger has detected a problem with the battery. See *Troubleshooting* for more information.

CLAMPS REVERSED (red) LED flashing: The connections are reversed.

 **CHARGING (yellow/orange) LED lit:** The charger is charging the battery. Remains lit during Service mode.

 **CHARGED/MAINTAINING (green) LED solid:** The battery is fully charged and the charger is in maintain mode.

 **SERVICE MODE (green) LED lit:** The charger is in Service mode. *Always use in combination with a battery.*


NOTE: See *Operating Instructions* for a complete description of the charger modes.

11. OPERATING INSTRUCTIONS


WARNING: A spark near a lead-acid 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 a live grounded 120V AC outlet.
8. The green  POWER LED will light.
9. Press the START/STOP button.
10. 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 a live grounded 120V AC outlet.
5. The green  POWER LED will light.
6. Press the START/STOP button.
7. When charging is complete, disconnect the charger from the AC power, disconnect the negative clamp, and finally the positive clamp.
8. A marine (boat) battery must be removed and charged on shore.

CHARGE RATE

The charge rate is measured in amps. The charger will automatically adjust the charging current, based on battery size, in order to charge the battery completely, efficiently and safely. Do not use for industrial applications.

POWER-UP IDLE TIME LIMIT

If the Start/Stop button is not pressed within 10 minutes after the battery charger is first powered up, charging will automatically begin, when properly connected to a battery.

AUTOMATIC CHARGING MODE



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

BATTERY CHARGING TIMES


| APPLICATION | BATTERY SIZE | CHARGING TIME (Hours) | | | |
|------------------|--------------|-----------------------|----|------|-----|
| | | 2A | 6A | 8A | 10A |
| POWERSPORTS ↓ | 6Ah | 6 | 2 | 1.75 | 1.5 |
| | 32Ah | 15 | 5 | 4.5 | 4 |
| AUTOMOTIVE ↓ | 300 CCA | 12 | 4 | 3.5 | 3 |
| | 1000 CCA | 30 | 10 | 8.5 | 7 |
| MARINE ↓ | 50Ah | 15 | 5 | 4.25 | 3.5 |
| | 105Ah | 33 | 11 | 9.5 | 8 |

Times are based on a 50% discharged battery and may change, depending on age and condition of battery.



SERVICE MODE

Use this mode to maintain stable voltage at 13.6V and prevent batteries from discharging during service or when sitting idle in a showroom. Always use in combination with a battery. Press and hold the START-STOP button until the green SERVICE MODE  LED lights. The CHARGING  (yellow/orange) LED will remain lit during Service Mode.


ABORTED CHARGE

If charging cannot be completed normally, charging will abort. When charging aborts, the charger's output is shut off and the BAD BATTERY  (red) LED will light. Do not continue attempting to charge this battery. Check the battery and replace, if necessary.


DESULFATION MODE

If a sulfated battery is detected, the BAD BATTERY  (red) LED will light immediately. Desulfation could take 8 to 10 hours. If desulfation fails, charging will abort. If desulfation is successful, the unit will automatically begin charging, and the CHARGING  (yellow/orange) LED will light.

COMPLETION OF CHARGE

Charge completion is indicated by the CHARGED/MAINTAINING  (green) LED. When solid, the charger has switched to Maintain Mode.

MAINTAIN MODE (FLOAT MODE MONITORING)

When the CHARGED/MAINTAINING  (green) LED is solid, 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 charger has to provide its maximum maintain current for a continuous 12 hour period, it will go into Abort Mode (see *Aborted Charge* section). This is usually caused by a drain on the battery or the battery could be bad. Make sure there are no loads on the battery. If there are, remove them. If there are none, have the battery checked or replaced.

MAINTAINING A BATTERY

The DSR117 maintains 12 volt batteries, keeping them at full charge. It can charge and maintain both small and large batteries.

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 recommended.




12. 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 clipped together, on or around metal, or clipped to the cables.

13. TROUBLESHOOTING

| PROBLEM | POSSIBLE CAUSE | SOLUTION |
|---|--|--|
| The POWER  LED does not light when charger is properly connected. | AC outlet is dead. Poor electrical connection. | Check for open fuse or circuit breaker supplying AC outlet. Check power cord and extension cord for a loose fitting plug. |
| The battery is correctly connected, but the CHARGING  LED did not light immediately. | If the START/STOP button is not pressed, charging should begin in ten minutes. | No problem; this is normal. |
| The battery is properly connected, but the CHARGING  LED never lit. | The battery voltage is low. | Press the START/STOP button to start charging. |

| PROBLEM | POSSIBLE CAUSE | SOLUTION |
|--|---|---|
| <p>The red BAD BATTERY  LED is lit.</p> | <p>The battery voltage is still below 10V after 2 hours of charging. (or) In maintain mode, the output current is more than 1.5A for 12 hours.</p> <p>The battery is sulfated.</p> <p>Lack of progress is detected and battery voltage is below 14.2V.</p> <p>The battery's initial voltage is below 12.2V and the total input is less than 1.5 Ah.</p> <p>The battery voltage drops to below 12.2V in Maintain Mode.</p> | <p>The battery may be defective. Make sure there are no loads on the battery. If there are, remove them. If there are none, have the battery checked or replaced.</p> <p>The charger is in desulfation mode. Continue charging for several hours. If not successful, have the battery checked.</p> <p>The battery may be overheated. If so, allow the battery to cool. The battery may be too large or have a short circuit. Have battery checked or replaced.</p> <p>The battery capacity is too low, or the battery is too old. Have it checked or replaced.</p> <p>The battery won't hold a charge. May be caused by a drain on the battery or the battery could be bad. Make sure there are no loads on the battery. If there are remove them. If there are none, have the battery checked or replaced.</p> |

14. SPECIFICATIONS

| | |
|-----------------------------|----------------------|
| Input Voltage | 120V AC @ 60Hz, 2.5A |
| Output Voltage | 12V |
| Output Current Rating | 10A DC @ 12V DC |