



POWERED BY SCHUMACHER

PRO SERIES™

MODEL

DSR116

12 Volt Jump Starter with Power Converter

OWNERS MANUAL



PLEASE SAVE THIS OWNER'S MANUAL AND READ BEFORE EACH USE. This manual will explain how to use your jump starter safely and effectively. Please read and follow these instructions and precautions carefully.



CONTAINS SEALED, NON-SPILLABLE LEAD-ACID BATTERY. MUST BE DISPOSED OF PROPERLY.

WARNING: Possible explosion hazard. Contact with battery acid may cause severe burns and blindness. Keep out of reach of children.

1. IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS. WARNING – RISK OF EXPLOSIVE GASES

WORKING IN THE VICINITY OF A LEAD-ACID BATTERY IS DANGEROUS. BATTERIES GENERATE EXPLOSIVE GASES DURING NORMAL OPERATION. IT IS IMPORTANT THAT YOU FOLLOW THESE INSTRUCTIONS EACH TIME YOU USE THE UNIT.

To reduce the risk of 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 a battery. Review cautionary markings on these products and on the engine.

WARNING!

RISK OF ELECTRIC SHOCK OR FIRE.

- 1.1 Read the entire manual before using this product. Failure to do so could result in serious injury or death.
- 1.2 Keep out of reach of children.
- 1.3 Do not put fingers or hands into any of the jump starter's outlets.
- 1.4 Do not expose the jump starter to rain or snow.
- 1.5 Use only recommended attachments. Use of an attachment not recommended or sold by the jump starter manufacturer may result in a risk of fire, electric shock or injury to persons or damage to property.
- 1.6 To reduce the risk of damage to the electric plug or cord, pull by the plug rather than the cord when disconnecting the jump starter.
- 1.7 To reduce the risk of electric shock, unplug the jump starter charger from the outlet before attempting any maintenance or cleaning. Simply turning off the controls will not reduce this risk.

- 1.8 Do not operate the jump starter with damaged cables or clips; replace the damaged cable or clip immediately.
- 1.9 Do not operate the jump starter if it has received a sharp blow, been dropped or otherwise damaged in any way; take it to a qualified service person.
- 1.10 Do not disassemble the jump starter; 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.

WARNING! RISK OF EXPLOSIVE GASES.

- 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 jump starter employs parts, such as switches and circuit breakers, that tend to produce arcs and sparks. If used in a garage, locate this jump starter 18 inches (46 cm) or more above floor level.

2. PERSONAL PRECAUTIONS

WARNING! RISK OF EXPLOSIVE GASES. A SPARK NEAR THE BATTERY MAY CAUSE A BATTERY EXPLOSION. TO REDUCE THE RISK OF A SPARK NEAR THE BATTERY:

- 2.1 NEVER smoke or allow a spark or flame in the vicinity of a battery or engine.
- 2.2 Do not permit the internal battery of the jump starter to freeze. Never charge a frozen battery.
- 2.3 To prevent sparking, NEVER allow clips to touch together or contact the same piece of metal.
- 2.4 When charging the internal battery, work in a well ventilated area and do not restrict the ventilation in any way.
- 2.5 Be sure the area around the battery is well ventilated while the jump starter is being used.
- 2.6 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.
- 2.7 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.
- 2.8 Consider having someone nearby to come to your aid when you work near a lead-acid battery.
- 2.9 Have plenty of fresh water and soap nearby in case battery acid contacts your skin, clothing or eyes.
- 2.10 Wear complete eye and body protection, including safety goggles, face shield and protective clothing. Avoid touching your eyes while working near the battery.
- 2.11 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.

- 2.12 If battery acid is accidentally swallowed, drink milk, the whites of eggs or water. DO NOT induce vomiting. Seek medical attention immediately.
WARNING! RISK OF CONTACT WITH BATTERY ACID. BATTERY ACID IS A HIGHLY CORROSIVE SULFURIC ACID.
- 2.13 Clean the battery terminals before using the jump starter. 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.
- 2.14 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 instructions.
- 2.15 Read, understand and follow all instructions for the jump starter, battery, vehicle and any equipment used near the battery and jump starter.
- 2.16 Determine the voltage of the battery by referring to the vehicle owner's manual and make sure that the output voltage of the jump starter is correct.
- 2.17 Make sure that the jump starter cable clips make tight connections.
- 2.18 **WARNING:** This product contains one or more chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.
- 2.19 **Restrictions on Use:**

The converter may not be used with life support devices or systems. Failure of this converter can reasonably be expected to cause failure of that life support device or system, or to affect the safety or effectiveness of that device or system.

3. CONNECTING THE JUMP STARTER

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

- 3.1 Attach the output cables to the battery and chassis as indicated below. Never allow the output clips to touch each other.
- 3.2 Position the 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 jump starting

process, ensure that the hood does not touch the metal part of the battery clips or cut the insulation of the cables.

- 3.3 Stay clear of fan blades, belts, pulleys and other parts that can cause injury.
- 3.4 Check the polarity of the battery posts. The POSITIVE (POS, P, +) battery post usually has a larger diameter than the NEGATIVE (NEG, N, -) post.
- 3.5 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 3.6. If the positive post is grounded to the chassis, see step 3.7.

- 3.6** For a negative-grounded vehicle, connect the POSITIVE (RED) clip from the jump starter 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.

- 3.7** For a positive-grounded vehicle, connect the NEGATIVE (BLACK) clip from the jump starter 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.

- 3.8** When disconnecting the jump starter, turn all switches to off (if applicable), remove the clip from the vehicle chassis, then remove the clip from the battery terminal.

4. FEATURES



Jump Starter

1. 12 Volt DC power outlet
2. Jump starter ON/OFF switch
3. Multi-function digital display
4. Display button
5. Heavy-duty battery clamps
6. (2) AC outlets
7. Converter status LEDs
8. Converter/USB ON/OFF switch
9. USB port



Charger

1. Charging status LED
2. Bad Battery LED
3. Power LED



4.1 Digital Display

When connected to a battery, the digital display can be used to indicate the battery's voltage. When not connected to a battery, the digital display can be used to indicate the percent of charge or the voltage of the jump starter's internal battery.

To check the internal battery's charge status, make sure the rotary switch is in the OFF position, then press the display

button on the front of the jump starter. The digital display will show the battery's percent of charge. A fully charged battery will read 100%. Charge the internal battery if the display shows it is under 100%.

NOTE: The internal battery's percent of charge is most accurate when the jump starter has been disconnected from all devices and charging sources for a few hours.

To check the voltage level of the jump starter's internal battery, make sure the clips are attached to their plastic storage holders and not touching each other, and then turn the rotary switch to the 12V position. The display will indicate the battery's voltage.

To check the voltage level of the vehicle's battery, make sure the switch in the OFF position, then connect the clips to the vehicle's battery. The display will indicate the battery's voltage.

4.2 Charger LED Indicators



POWER (green) LED lit: The charger is connected to AC power.



CHARGING STATUS LED (green) pulsing slowly: The charger is charging the jump starter's internal battery, or the battery is fully charged and the charger is in Maintain mode.

CHARGING STATUS LED (yellow/orange) flashing rapidly: The charger has detected a problem with the battery. See *Troubleshooting* for more information.



BAD BATTERY (red) LED lit: The charger has detected a problem with the battery. See *Troubleshooting* for more information.

5. CHARGING THE INTERNAL BATTERY OF THE JUMP STARTER

IMPORTANT!

CHARGE IMMEDIATELY AFTER PURCHASE, AFTER EACH USE AND EVERY 30 DAYS, TO KEEP THE UNIT'S INTERNAL BATTERY FULLY CHARGED AND PROLONG BATTERY LIFE.

To check the internal battery's charge status, make sure the rotary switch is in the OFF position, then press the display button on the front of the jump starter. The digital display will show the battery's percent of charge. A fully charged battery will read 100%. Charge the internal battery if the display shows it is under 100%. Complete charging may take up to 48 hours.

5.1 Grounding and AC Power Cord Connections

IMPORTANT: Only use the charger that was included with the jump starter to charge the internal battery of the jump starter. Using a different charger could result in personal injury or property damage.

WARNING!

RISK OF ELECTRIC SHOCK OR FIRE.

This battery charger is for use on a nominal 120V circuit. The plug must be plugged into an outlet that is properly installed 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 outlet installed by a qualified electrician. An improper connection can result in a risk of an electric shock or electrocution.



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:

Length of cord (feet)	25	50	100	150
AWG* size of cord	18	18	18	16

*AWG-American Wire Gauge

5.2 Charging the Jump Starter with included Charger

1. Make sure the charger and jump starter are placed on a dry, nonflammable surface. To charge the jump starter, plug the charger into the charging port on the front of the jump starter.
2. Confirm the AC outlet voltage matches the input voltage of the charger.
3. Connect the charger to the AC wall outlet and confirm that the green  POWER LED on the charger turns on.
4. Check that the green  CHARGING STATUS LED on the charger is pulsing slowly, to indicate that charge process has started. To see the status of the charge, check the percentage shown on the jump starter display.
5. When the jump starter display shows 100 (%), the internal battery is fully charged and the jump starter is ready to use. Complete charging may take up to 24 hours.

NOTE: The green  CHARGING

STATUS LED will remain pulsing after the display shows 100%, as the charger automatically goes into Maintain mode and maintains the battery at full charge without damaging it.


6. After the charge is complete, disconnect the charger from the AC outlet, then disconnect the charger from jump starter.

5.3 Charger Modes



Automatic charging mode

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

Aborted Charge

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

Desulfation Mode

Desulfation could take 8 to 10 hours. If desulfation fails, charging will abort. The red BAD BATTERY  LED will light and the yellow/orange CHARGING STATUS  LED will flash.

Completion of Charge

When the internal battery is fully charged, the jump starter's display will show "100".

Maintain Mode (Float Mode Monitoring)

When the internal battery is fully charged and the jump starter display shows "100", 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*). This is usually an indication of a bad battery; have the jump starter checked.

5.4 Charging the Internal Battery While Driving

You may also charge the internal battery while driving, using a male-to-male charger cable (part number 94500109 – sold separately).

IMPORTANT: DO NOT CHARGE THE INTERNAL BATTERY FOR MORE THAN 30 MINUTES OR LEAVE THE BATTERY UNATTENDED. IT COULD EXPLODE, CAUSING PROPERTY DAMAGE OR PERSONAL INJURY.

1. Make sure the car is running.
2. Insert one end of the accessory cable into the 12V DC power outlet.
3. Insert the other end of the accessory cable into the vehicle's accessory outlet (lighter socket).

NOTE: Using this method to charge the battery overrides the maintain mode and the battery can be overcharged.

4. Monitor the progress of the charge by pressing the Percentage of Charge button on the front of the unit. Do not leave the battery unattended or it could explode, causing property damage and personal injury. When the battery is fully charged, disconnect the accessory cable from the jump starter, and then from the lighter socket of the vehicle.

NOTE: Completely disconnect the charger cable when the engine is not running.

6. OPERATING INSTRUCTIONS

6.1 Jump Starting a Vehicle Engine

IMPORTANT: Using the jump starter without a battery installed in the vehicle will damage the vehicle's electrical system.

IMPORTANT: Do not use the jump starter while charging its internal battery.

1. Turn the vehicle's ignition OFF before making cable connections.
2. Make sure the rotary switch on the front of the jump starter is in the OFF position. Connect the jump starter to the battery, following the precautions listed in section 3.

WARNING! RISK OF EXPLOSION.

If you have connected the clips backward, an audio alarm will sound. **DO NOT turn the rotary switch to the 12V position.** This could cause serious damage to the jump starter or the vehicle. Reverse the connections and the audio alarm will stop.

3. If no audio alarm sounds, turn the rotary switch to the 12V position. The clips are now powered.
4. Crank the engine. If the engine does not start within 3-8 seconds, stop cranking and wait at least 1 minute before attempting to start the vehicle again. (This permits the battery to cool down.)
5. After the engine starts, turn the rotary switch to the OFF position. Disconnect the black clip (-), then the red clip (+) in that order, and clip them back onto the jump starter storage holders.
6. Recharge the jump starter as soon as possible after use.

NOTE: If the cables are connected to a 24 volt system when the switch is in the 12 volt position, the audio alarm will sound continuously. TURN OFF the jump starter immediately or internal battery damage could occur.

WARNING! RISK OF EXPLOSION.

To prevent sparking, NEVER allow the clips to touch together or to contact the same piece of metal. Never attempt to jump start a frozen battery.

6.2 Powering A 12V DC Device:

The jump starter is a power source for all 12V DC accessories that are equipped with a 12V accessory plug. Use it for power outages and fishing or camping trips. Estimated usage time is listed in the following chart.

1. Make sure the device to be powered is OFF before inserting a 12V DC accessory plug into the 12V DC socket.
2. Ensure the battery clips are securely clipped on the storage holders.
3. Open the protective cover of the 12V DC power outlet on the front of the jump starter.
4. Plug the 12V DC device into the 12V DC power outlet, and turn the 12V DC device on (if required).
5. If the 12V DC device draws more than 15A or has a short circuit, the internal circuit breaker of the jump starter will trip and disconnect the power to the device. Disconnect the 12V DC device. The breaker will automatically reset a short time after an overload is disconnected.
6. Recharge immediately after unplugging the 12V DC device.

NOTE: The DC power outlet is wired directly to the internal battery. Extended operation of a 12V DC device may result in excessive battery drain.

12V DC ESTIMATED RUN-TIMES

APPLIANCE TYPE	ESTIMATED WATTAGE	ESTIMATED RUN TIME
Cell phone, fluorescent light	4 watts	66 hrs
Radio, fan, depth finder	9 watts	23.9 hrs
Camcorder	15 watts	17.6 hrs
Electrical tool	24 watts	11 hrs
Electric cooler	48 watts	5.5 hrs
Car vacuum, air compressor	80 watts	3.3 hrs

NOTE: Actual time may vary. Times are based on a fully charged internal battery.

6.3 Using the USB Port

The USB port provides up to 2.1A at 5V DC.

1. Ensure the battery clips are securely clipped on the storage holders.
2. Turn the Rear Console USB/Converter switch to the "USB" position.
3. Plug the device into the USB port on the rear console.

4. Turn the USB device on.
5. Reverse these steps when finished using the USB port.
6. Charge the jump starter as soon as possible after using the USB port.

6.4 Before Using the Converter Important Safety Instructions:

1. Keep the jump starter well ventilated in order to properly disperse heat generated while it is in use. Make sure there are several inches of clearance around the top and sides and do not block the vents on the sides of the jump starter.
2. Make sure the jump starter is not close to any potential source of flammable fumes or clothing.
3. Keep the jump starter dry.
4. DO NOT allow the jump starter to come into contact with rain or moisture.
5. DO NOT operate the jump starter if you, the jump starter, the device being operated or any other surfaces that may come in contact with any power source are wet. Water and many other liquids can conduct electricity, which may lead to serious injury or death.
6. Do not place the jump starter on or near heating vents, radiators or other sources of heat.
7. Do not place the jump starter in direct sunlight. The ideal air temperature for operation is between 50° and 80°F.
8. Do not use the converter near an open engine compartment where fumes may accumulate.
9. Do not modify the AC receptacles in any way.

6.5 Using the Converter

It is important to know the continuous wattage of the device you plan to use with the converter. The jump starter must be used with devices drawing 400 watts or less. If the wattage is not marked on the device, use only devices that draw less than 4.0 Amps of AC current.

Devices like TVs, fans or electric motors require additional power to start (commonly known as the "starting" or "peak" power). The jump starter can supply a momentary surge in wattage; however, even devices rated less than the maximum 400 watts can exceed the converter's surge capability and cause an automatic overload shutdown.

Do not use the converter with a product that draws a higher wattage than the converter can provide, as this may cause damage to the converter and the product. Make sure the device you are using is compatible with a modified sine wave converter.

CAUTION: Always run a test to establish whether the converter will operate a particular piece of equipment or device. In the event of a power overload, the converter is designed to automatically shut down. This safety feature prevents damaging the converter while testing devices and equipment with the 400-watt range.

If powering more than one device, start one device at a time to avoid a power surge and/or converter overload. The surge load of each device should not exceed the converter's continuous operation wattage rate.

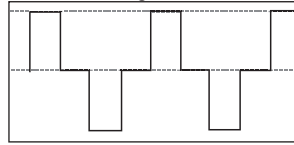
IMPORTANT: If you are using the power converter to operate a battery charger, monitor the temperature of the battery charger for about 10 minutes. If the battery charger becomes abnormally warm, disconnect it from the converter immediately.

NOTE: You can use an extension cord from the converter to the device without significantly decreasing the power being generated by the converter. For best operating results, the extension cord should be no longer than 50 feet (15.24 meters).

IMPORTANT: This converter uses a modified sine waveform (diagram A) which is not quite the same as power company electricity (diagram B). For the following devices, we strongly recommend that you use caution and check the device's manual to make sure it is compatible with modified sine waveform.

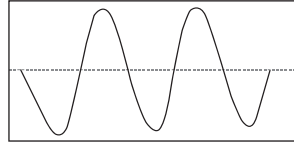
1. Switch mode power supplies
 2. Linear power supplies
 3. Class 2 transformers
 4. Line filter capacitors
 5. Shaded pole motors
 6. Fan motors
 7. Microwave ovens
 8. Fluorescent and high intensity lamps (with a ballast)
 9. Transformerless battery chargers
- Using the converter with any of these devices may cause the device to run warmer or overheat.

Diagram A



Modified sine waveform produced by converter

Diagram B



Pure sine waveform typical of home AC outlet

6.6 Powering a 110V AC Device

1. Ensure the battery clips are securely on the storage holders.
2. Make sure the 110V AC device to be operated is turned OFF.
3. Plug the 110V AC device into the AC power outlet on the back of the jump starter and place the converter switch in the "120V" position. The GREEN LED will light, indicating the converter is on.
4. Turn the device on.
5. If the device does not operate properly when first connected to the converter, push the converter rocker switch ON, OFF, and ON again in quick succession. If this procedure is not successful, it is likely that the converter does not have the required capacity to operate the device intended.
6. To disconnect: Turn off the device, place the converter switch in the "O" (OFF) position, then unplug the device from the 110V AC power outlet.
7. Charge the jump starter as soon as possible after each use.

WARNING: RISK OF ELECTRIC SHOCK. Incorrect operation of your converter may result in damage and personal injury. The converter output is 110V AC and can shock or electrocute the same as any ordinary household AC wall outlet.

110V AC ELECTRICAL DEVICE RUN-TIMES

APPLIANCE TYPE	ESTIMATED WATTAGE	ESTIMATED RUN TIME
Spotlights, sump pumps, DVD players	100 watts	1.5 hrs
Faxes, TVs, small power tools	150 watts	1.25 hrs
Computer printer, medium power tools, blenders	200 watts	55 min.

NOTE: These are estimated run-times, actual time may vary. Times are based on the internal battery being new, fully charged and operated at room temperature.

NOTE: The maximum continuous load is 400 watts. Do not use the inverter with a product that draws more than 400 watts, as this may cause damage to the inverter and the product.

6.7 Converter Shutdown Protection

The GREEN LED lights automatically when the converter is turned on. The RED LED will light and the inverter will shut down under the following conditions:

1. When the power input from the jump starter's battery drops to approximately 10.5 volts, low battery shutdown occurs and the inverter shuts off.

NOTE: At approximately 10.5 volts, the inverter alarm will sound, indicating the battery voltage is getting low. Solution: Recharge the jump starter.

2. When the power input from the jump starter's battery exceeds 15 volts, high voltage overload protection occurs. Solution: Reduce the voltage range of the battery to between 12 volts and 14 volts.
3. The continuous load demand from the equipment or device being operated exceeds the inverter's 400 watt capacity. Solution: Use a lower rated device.
4. The case temperature becomes hot (exceeds 145°F). Solution: Allow the inverter to cool. Do not block the cooling slots or air flow over and through the jump starter. Reduce the load on the converter to the continuous rated output.

RESET: To reset after shutdown occurs, turn the converter OFF. Check the source of the problem and correct. Turn the converter back ON.

7. MAINTENANCE INSTRUCTIONS

- 7.1 After use and before performing maintenance, unplug and disconnect the jump starter.
- 7.2 Use a dry cloth to wipe all battery corrosion and other dirt or oil from the battery clips, cords and the jump starter case.
- 7.3 Ensure that all of the jump starter components are in place and in good working condition.
- 7.4 All servicing should be performed by qualified service personnel.

8. MOVING AND STORAGE INSTRUCTIONS

- 8.1 Store inside, in a cool, dry place.
- 8.2 Do not store the clips on the handle, clipped together, on or around metal, or clipped to cables. The clips on the jump starter are live when the switch is in the ON position and will produce arcing or sparking if they come in contact with each other. To prevent accidental arcing, always place the switch in the OFF position and keep the clips on the storage holders when not using it to jump start a vehicle.
- 8.3 If the jump starter is moved around the shop or transported to another location, take care to avoid/prevent damage to the cords, clips and jump starter. Failure to do so could result in personal injury or property damage.

IMPORTANT: Do not use and/or store the jump starter in or on any area or surface where damage could occur if the internal battery should unexpectedly leak acid.
- 8.4 **IMPORTANT:**
 - **CHARGE IMMEDIATELY AFTER PURCHASE**
 - **KEEP FULLY CHARGED**Charge the jump starter's internal battery immediately after purchase, after every use and every 30 days.


All batteries are affected by temperature. The ideal storage temperature is at 70° F. The internal battery will gradually self-discharge (lose power) over time, especially in warm environments. Leaving the battery in a discharged state may result in permanent battery damage. To ensure satisfactory performance and avoid permanent damage, charge the internal battery every month.




9. TROUBLESHOOTING

Jump Starter

PROBLEM	POSSIBLE CAUSE	SOLUTION
The jump starter won't jump start my car.	Clamps are not making a good connection to the battery.	Check for poor connection to battery and frame. Make sure connection points are clean.
	The jump starter's battery is not charged.	Check the battery charge status by pressing the Display button on the front of the unit. The display will show the percentage of charge.
	The vehicle's battery is defective.	Have the battery checked.
The jump starter won't power my 12V device.	The 12V device is not turned on.	Turn on the 12V device.
	The battery inside the jump starter is not properly charged (is under 10.5V).	Check the battery charge status by pressing the Display button on the front of the unit. The display will show the percentage of charge.
	The 12V device draws more than 15A or has a short circuit.	Disconnect the 12V device. The internal breaker will automatically reset after a minute or two. Try using the 12V device again.
The battery in the jump starter won't hold a charge.	The battery is bad (will not accept a charge).	Replace the battery.
The jump starter's alarm is on.	Connections are reversed.	Disconnect the jump starter and reverse the clamps.
The jump starter won't power my 110V AC device.	The converter is not turned on.	Turn on the converter.
	The 110V AC device is not turned on.	Turn on the 110V AC device.
	The battery inside the jump starter is not properly charged (is under 10.5V).	Check the battery charge status by pressing the button on the front of the jump starter. See the <i>Digital Display</i> section of this manual.
	The 110V AC device draws more than 400 watts or has a short circuit.	Disconnect the 110V AC device. The converter will reset after a second or two. Try the 110V AC device again. If it happens again, use a smaller device.
	The RED LED near the converter ON/OFF switch is on and the converter will not function.	Converter has gone into shutdown mode.

Charger

PROBLEM	REASON	SOLUTION
The green  POWER LED does not light when charger is properly connected.	AC outlet is dead.	Check for open fuse or circuit breaker supplying AC outlet.
	Poor electrical connection.	Check power cord and extension cord for a loose fitting plug.

PROBLEM	REASON	SOLUTION
<p>The red  BAD BATTERY LED is lit.</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 below 12.2V during Maintain Mode.</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>
<p>The red  BAD BATTERY LED is lit and the yellow/orange  CHARGING STATUS LED is flashing rapidly.</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>Desulfation was unsuccessful.</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 battery may be defective. Have battery checked or replaced.</p>

10. SPECIFICATIONS

Jump Starter

Internal Battery Type.....	Sealed, Maintenance Free, AGM, Lead-Acid
Nominal Voltage.....	12V DC
Capacity.....	22Ah
DC Power Output (Maximum Continuous Load).....	15A
Peak Amps.....	2250
Cranking Amps.....	525
Cold Cranking Amps.....	350
Battery Hookup Cables.....	4 AWG, 60" (152.4 cm)
Dimensions (H x W x D).....	16.3" x 12.9" x 7.9" (41.4 x 32.7 x 20 cm)
Weight.....	25.5 lbs (11.56 kg)

AC Power Specifications

Maximum continuous power.....	400 Watts
Surge capability (peak power).....	800 Watts
No load current draw.....	<0.3 Amps
Output waveform.....	Modified sine wave
Input voltage range.....	10.5V-15.5V DC
AC outlet.....	Two, 110V AC NEMA 5-15 USA

Charger

Input voltage.....	120V AC @ 60Hz, 0.5A
Output voltage.....	12V DC
Output current rating.....	2A

12. REPLACEMENT PARTS/ACCESSORIES

Male-to-male accessory cable.....	94500109
DSR2 Charger.....	2299003063Z
Replacement battery.....	5799000010Z