



SP tools SP61009 Battery Load Tester Digital Display User Manual

[Home](#) » [SP tools](#) » SP tools SP61009 Battery Load Tester Digital Display User Manual 

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RETAIN THESE INSTRUCTIONS AND ATTACH RECEIPT TO MANUAL FOR FUTURE REFERENCE

NOTE: Proof of purchase must be retained by the customer as it will be required in the event of a claim under warranty.

AFTER SALES SUPPORT:

<http://www.sptools.com/>

AUSTRALIA: Visit the website's contact page to get in touch with your local service department.

INTERNATIONAL: Use the county selector to get in touch with your service department in your country or region.

IMPORTANT

ALL PERSONS WHO ARE TO USE THIS EQUIPMENT MUST THOROUGHLY READ AND UNDERSTAND THIS INSTRUCTION MANUAL PRIOR TO OPERATION.

Contents

1 INTRODUCTIONS

- 1.1 Product Function**
- 2 Technical Parameters**
- 3 Technical Specifications**
- 4 Intended Use**
- 5 Scope of Delivery**
- 6 Safety Precautions & Warnings**
- 7 Tool Description**
- 8 Operating Instructions**
- 9 Battery Voltage Explanation**
- 10 Before Testing**
- 11 Product Setup**
- 12 Battery Load Test**
- 13 Cranking Voltage Test**
- 14 Charging Voltage Test**
- 15 Cleaning and Maintenance**
- 16 Disposal & Recycling Information**
- 17 LIMITED WARRANTY**
- 18 Documents / Resources**
- 19 Related Posts**

INTRODUCTIONS

Product Function

The SP61009 Load Tester / System Analyser

Battery Load Test

Uses a fixed resistive load (125 Amps) to quickly and accurately evaluate the battery's ability to crank an engine. The tester draws current from the battery while measuring its voltage drop. The voltage level of a good battery will remain relatively steady under load, but a defective battery will show a rapid decline in voltage.

Charging Voltage Test

This test measures the output voltage of the alternator/regulator. Checks diode function and indicates under or overcharging – which in turn can lead to poor battery performance and or reduced service life of battery.

Starter Motor Test

This test is used to motor analyse the starter motor. By testing the actual cranking current and cranking voltage of the starter motor, it is possible to determine starter motor condition. Excessive current draw makes starting difficult and shortens battery life.

Technical Parameters

- Measurement Range:
- Voltage Range: 9-15V DC

Measure Standard	Measure Range
CCA	300 – 999 (1000)

If you try to test a battery with less than 12 volts, there will appear “- L-” in digital display. This means you should charge the battery before testing.

Technical Specifications

1. Display: LED 3 digit display
2. Power provided when connected to battery
3. Dimensions: Length 300mm, Width 165mm, Height 67mm
4. Weight: 1.3Kg
5. Voltage Tolerance: 9 -15V DC (for 12v batteries only)
6. Working Environment Temp.: -20°C-60°C

LED Indicator meaning after load test:

Load Test	Battery Condition
Good (Green LED)	Battery capacity is OK. Battery may or not be fully charged. Check Specific Gravity of charge. If SG is less than full charge, check for electrical drain or possible system trouble. Recharge battery to full level.
Weak or Bad, But Display Remains Steady (Yellow or Red LED)	Battery capacity is not satisfactory. Battery may be either defective or not fully charged. Check SG to determine which condition exists. If charging does not bring SG to full charge level, battery should be replaced.
Weak or Bad, But Display Remains Failing (Yellow or Red LED)	Battery may be defective or very run down. Release load switch and note display reaction. Voltage recovery to 12 volt or above within seconds indicates defective battery. Slow voltage recovery indicates run down condition. For best results, check SG.

Intended Use

This device is intended for use on automotive or marine 12volt batteries i.e. Lead Acid, AGM Flat Plate or AGM spiral, Gel and EFB. It has been constructed for trade or commercial use, in dry, non-explosive environments.

Scope of Delivery

- User Manual: Instructions on tool operations.
- SP61009 12v Battery Load Tester / Analyser

Safety Precautions & Warnings

To prevent personal injury or damage to vehicles and/or the Battery Analyser, read this instruction manual first

and observe the following safety precautions at a minimum whenever working on a vehicle:

1. Always perform automotive testing in a safe environment.
2. Wear safety eye protection that meets the AS/NZS 1337.1 standards.
3. Keep clothing, hair, hands, tools, test equipment, etc., away from all moving or hot engine parts.
4. Operate in a well-ventilated work area; charging batteries can create explosive gases.
5. Chock drive wheels and never leave vehicle unattended while running tests.
6. Use extreme caution when working around the ignition coil, distributor cap, ignition wires and spark plugs.
These components create hazardous voltages when the engine is running.
7. Put transmission in PARK (for automatic transmission) or NEUTRAL (for manual transmission) and make sure the parking break is engaged.
8. Keep a fire extinguisher suitable for petrol / chemical / electrical fires nearby.
9. Don't connect or disconnect any test equipment with ignition on or engine running.
10. Do not place the tester on battery
11. Undercharged lead-acid batteries will freeze during cold weather. Never test or charge a frozen battery.
12. To insure a good connection, clean battery terminals with a solution of water and baking soda.

IN CASE OF ACCIDENTAL CONTACT, RINSE EYES WITH CLEAN WATER FOR AT LEAST 5 MINUTES AND SEE A DOCTOR IMMEDIATELY.

Tool Description

1. **TEST BUTTON** – Starts 10 second load test
2. **LED DISPLAY** – Indicates test results
3. **INDICATOR LED's** – Shows battery condition after test.
4. **TERMINAL CLAMPS** – Connects unit to the vehicle's battery
5. **SET CCA BUTTON** – Use to set CCA rating of battery under test



Operating Instructions

If testing batteries of low-frequency use, it is necessary to cycle (charge and discharge) the battery several times before testing, normally 3-5 times will achieve a reliable test result. Only after cycling the battery can the chemical properties of the battery be restored. This is particularly important after long periods of no use. If after 3-5 times of battery charge and discharge, the battery health state is still lower than 60%, battery replacement should be considered.

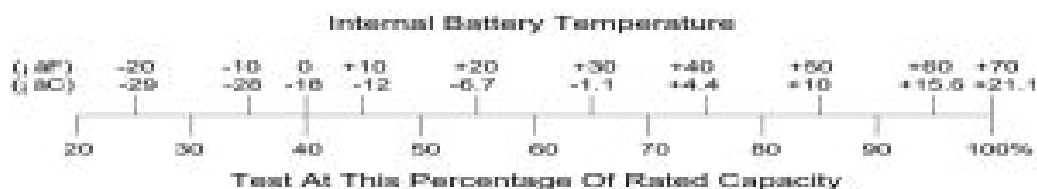
1. To extend battery life, Low use batteries, should be recharged every 2 months.
2. Please turn off the engine before testing.
3. When charging is finished, do not test immediately. Wait at least 10 minutes to allow the battery charge to stabilise, then test. Even when testing an in-vehicle battery, after the engine is turned off (for the most accurate results) wait 10 minutes before testing.
4. In general, if the battery voltage is below 12.40V, recharge it.

Battery Voltage Explanation

- **Fully charged** = Battery voltage above 12.59V
- **75% charged** = Battery voltage 12.45V
- **50% charged** = Battery voltage 12.15V
- **Discharged condition** = Battery voltage less than 12.00V

Cold Temperature Effects

Because of the battery's chemical nature, it will test lower when cold than when warm. For most accurate results, this effect should be compensated for when the battery's internal temperature is below 5°C. Assume internal battery temperature to be the day's high-low average.



Before Testing

Before testing, use a wire brush (not included) and alkaline cleaner (not included) to clean the battery terminals, as any surface resistance on the terminal could adversely affect the test result.

Before testing an in-vehicle battery, ensure the ignition key is turned off. Make sure there is no power drain from any other vehicle electronics and keep the car doors closed so interior lights do not illuminate.

Attach the red test clip to the battery positive terminal, the black test clip to battery negative terminal. Note: Tester has an automatic reverse polarity protection, if accidentally misconnected it will not cause any adverse effects.

In order to ensure a good electrical connection with no resistance, please wiggle the test clips on the terminal posts a few times when connecting.

The tester draws its operating power from the battery being tested; it will only operate when connected to a battery with more than 12 volts available. The battery analyser will not operate if connected to a flat battery.

Product Setup

The tool allows you to make the following adjustments and settings:

- Select the Cold Cranking Amps (CCA) rating of the connected battery

Note:

If there is “Er1” message displayed during the load test, the load cannot be applied, and the battery tester cannot function.

If there is “Er2” message display during load test, the load cannot be removed, and you will need to manually remove the clamps from the battery immediately.

Battery Tests

The SP61009 battery tester activates once the clamps have been correctly connected, it will automatically display the battery voltage.

Tests available with Battery in-Vehicle

1. Battery Condition Test
2. Cranking (starter motor) Test
3. Charging (Alternator / Regulator) Test

Test available with Battery Out of-Vehicle

1. Battery Condition Test

Battery Load Test

1. This test evaluates the battery's ability to crank an engine. The tester draws current from the battery while measuring its voltage level. The voltage level of a good battery will remain relatively steady under load, but a defective battery will show a rapid loss in voltage. Battery size (CCA rating) and temperature will affect test result – follow instruction carefully.
2. Turn off engine, accessories and battery test equipment.
3. Connect negative (Black) clamp to the negative (NEG. N. -) battery post. Connect positive (Red) clamp to positive (POS. P. +) battery post. "Rock" clamps back and forth to insure a good electrical connection.
4. Please set CCA rating of tested battery by using "SET CCA" switch. The default is 500 CCA, but you can adjust to 600, 700, 800, 900, 999(1000), 300, 400 CCA by clicking this switch. At each change of CCA rating, there is a short beep sound.
5. With clamps connected, tester's digital will indicate battery's STATE OF CHARGE. If state of charge is less than 12.0 volts, the battery should be recharged before load testing. If recharging does not bring voltage more than 12.0 volts, battery is defective. If state of charge is more than 15.0 volts, do not continue to test because the Battery Tester is ONLY for 12V battery. If digital display does show no digit, check for loose or reversed clamps; otherwise battery is defective.
6. Note battery's rating in Cold Cranking Amps (CCA). If the rating is not printed on the battery, use the following guideline to estimate battery size. Small (4 cyl) 300CCA; Medium (6 cyl) 400 CCA; Large (8 cyl) 500 CCA.
7. For load test, just depress "LOAD" switch with red button instantly. (In this case, there will be long beep sound. This Battery Tester itself automatically does load test for 10 seconds. Therefore, it is not necessary to push load switch manually for 10 seconds.) If you do load test for battery with less than 12volt, there will appear "-L-" in digital display. This means you should recharge the battery and refer to No. 4. If you do load test for battery with more than 15volt, there will appear "-H-" in digital display. This means you must stop the test and refer to No. 4.
8. After load test of 10 seconds, there will beep sound to signal "load test is done." At this moment, you can refer load volt at digital display or LED for status of load test. For example, good, weak or bad. If the load volt becomes below 7volt, under "load volt" test procedure, there will be also "-L-" in digital display same as No. 6.

Cranking Voltage Test

This test identifies excessive starter current draw, which makes starting difficult and shortens battery life. Perform battery load test and proceed if battery is good. ENGINE MUST BE AT NORMAL OPERATING TEMPERATURE.

1. Connect tester clamps to battery as described in Steps 1-2 under Battery Load Test.
2. Disable the ignition so the car will not start.
3. Crank the engine and note the voltage reading during cranking.
4. A display reading of 9 volts or less indicates excessive current draw. This may be due to bad connection of a failing starter motor; or the battery is too small for the vehicle's requirements.

Charging Voltage Test

This test measures the output voltage of the alternator/regulator. Check for under or overcharging:

The ENGINE SHOULD BE AT NORMAL OPERATING TEMPERATURE.

1. Connect tester clamps to battery as described in Steps 1-2 under Battery Load Test.
2. Turn off all lights and accessories. Operate engine at fast idle (approximately 1500 RPM).
3. Do not operate tester's load switch.
4. Read the displayed voltage and you can acquire one of following results:
 - Measured voltage < 13.5 volt → No good. Check alternator.
 - Measured voltage > 13.5 volt, but < 15 volt → Okay
 - Measured voltage > 15 volt → No good. Please check regulator.
5. Turn headlights on – high beam and repeat same test No. 4 as above.

Cleaning and Maintenance

Clean the grips after each use and wipe off any battery acid that may have come in contact with the clamps to prevent corrosion.

- Keep your Load Tester / Analyser dry, clean and free from oil, water and grease.
- Use a mild detergent on a clean cloth to clean the outside of the tool, when necessary.
- Store the unit in a dry dust free environment.

Disposal & Recycling Information

When the tool reaches its end of life, take it to a collection point designated by local authorities for E-waste.

The separate collection and recycling of your product at the time of disposal will help conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment.

LIMITED WARRANTY

This Limited Warranty applies only to new products* distributed by SP Tools Pty Ltd ("SP Tools"). It is a condition of this Limited Warranty Policy that the purchaser read the owner's manual for the product and only use the product to the extent or for the purposes stated therein. The purchaser must also ensure that all servicing requirements are completed as listed in the owner's manual (said servicing is at the owner's expense). We recommend that all servicing is completed by an authorised service agent and that records of said servicing are retained by the purchaser as proof in the event of a warranty claim.

Whilst the owner's manual, packaging, and/or other documentation supplied with SP Tools' products may provide details in respect of a Limited Warranty, the terms set out herein supersede these matters, and this Limited Warranty applies in their place. This warranty is no less advantageous than otherwise described in such other documentation.

SP Tools agrees, subject to the terms and conditions specified below, to repair or replace at SP Tools' cost, the product purchased by you when the product does not perform in accordance with its specifications during the limited warranty period, due to any fault in manufacturing, materials and/or workmanship. SP Tools is not liable to repair or replace products that the purchaser uses in a manner that is inconsistent with the owner's manual or in the circumstances set out in paragraphs 1.1 – 1.7 below.

The benefits to the purchaser under this warranty are in addition to other rights and remedies under the Competition and Consumer Act 2010 (Cth). The limited warranty period, within which a defect in the product must

appear, commences from the date of purchase and ceases on expiration of the specified term below.

THE LIMITED WARRANTY PERIOD

- SP Speciality Tools – 12 Months

THE PURCHASERS ATTENTION IS DRAWN TO THE FOLLOWING

To the extent permitted by law and subject to this Limited Warranty, and as part of the terms of the sale of the equipment or part thereof: SP Tools shall not be liable for any form of loss, damage, cost, injury or harm of any kind (whether direct, indirect, special or consequential) howsoever arising from the use or supply of the equipment to the purchaser.

EXCLUSIONS TO LIMITED WARRANTY POLICY

This Limited Warranty will not apply where the equipment or any part thereof:

1. Fails due to an accident (including liquid spillage), abuse, misuse, neglect or normal wear and tear;
2. Has been used in a manner other than for which it was originally designed;
3. Has been tampered with or is otherwise than as supplied by SP Tools;
4. Where any damage, malfunction or other failure of the equipment or any part thereof resulted directly or indirectly from unauthorized persons, adjusting or failing to adjust any part requiring normal maintenance and service (examples include adjustment of tappets, air filter maintenance, lubrication and tightening of screws nuts and bolts);
5. Malfunctions due to the use of defective or incompatible accessories;
6. Is damaged by lightning or thunderstorm activity; or
7. Has been transported to a country where no authorised Service Agents exist.

CLAIMING WARRANTY


This Limited Warranty may be claimed on in the following manner:

1. In order to make a claim under this Limited Warranty, the purchaser must deliver the equipment or any part thereof to an SP Tools authorised repair agent and pay all costs of transportation and all costs incidental to making a claim under this Limited Warranty. The purchaser must first contact SP Tools (contact details described above) and request the delivery address of an SP Tools authorised repair agent.
2. The purchaser must deliver to the repair agent written reasons why the purchaser considers that the purchaser has a claim under this Limited Warranty and must provide all necessary details, including:
 - The place, date and from whom the unit or part was purchased.
 - The unit or part involved, Model and Serial Number.
 - The defect, malfunction or failure in respect of which the claim is being made.
 - Proof of service of the unit or part (if applicable)
 - Proof of purchase in respect of the unit or part.
3. If the Limited Warranty claim is valid, the repair agent will carry out repairs and return the product at no charge to the purchaser. These repairs are limited to the Limited Warranty fault identified and as such will not include any other faults due to misuse, abuse, failure to maintain, fair wear and tear or the replacement of serviceable items such as oil, spark plugs, air filters, fuel etc.

Our goods come with guarantees that cannot be excluded under Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

Note: Units which are failing to perform in accordance with specifications due to non-warrantable causes will be subject to freight, repair and or quote charge

Documents / Resources

	<p>SP tools SP61009 Battery Load Tester Digital Display [pdf] User Manual SP61009, Battery Load Tester Digital Display</p>
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