



USER MANUAL



SP61065

**BATTERY
ANALYSER w/
BUILT-IN PRINTER**

**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:

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

Introduction	3
Technical Parameters	4
Technical Specifications	4
Intended Use	4
Scope of Delivery	4
Safety Precautions & Warnings	5
Tool Description	6
Internal Resist Explanation	6
Voltage Explanation.	7
Operating Instructions	7
Before Testing	7
Product Set up	8
Operation & Test	9
Battery Test	9
Cranking Test	12
Charging System Test	13
Review Data	14
Print Data	15
Cleaning & Maintenance	18
Disposal & Recycling	18
Warranty Details	19

INTRODUCTION

Product Profile

The SP61065 Battery Tester adopts what is currently the world's most advanced conductance testing technology to easily, quickly and accurately measure the actual cold cranking amps (CCA) capability of the vehicle starting battery, and its state of health. This tool assists maintenance personnel to find the problem quickly and accurately. It will test all automotive cranking lead acid batteries, including ordinary lead acid battery, AGM flat plate battery, AGM spiral battery, Gel battery and EFB battery

- Tests a battery with low charge, no need to full charge the battery before testing.
- Detects a bad battery cells.
- Indicates health status (or condition) of connected battery.
- Includes reverse polarity protection; incorrect battery connection will not damage the tester or affect the vehicle or its battery.
- Testing standards include currently the world's majority of battery standards, CCA, BCI, CA, MCA, JIS, DIN, IEC, EN, SAE, GB.
- Supports multi-languages, customer can select different language package, which includes: English, German, French, Spanish, Italian and Dutch.

Product Function

Battery test analyses a battery's healthy status by calculating the actual cold cranking capability of the battery and comparing this against its rated (new) capacity. This provides a reliable analysis of the battery's condition and what maintenance may be required for the battery. It can thereby notify the user when to replace a battery in advance of its ultimate failure.

The Battery test is targeted to analyse the battery condition and calculate the actual cold cranking capability of the battery including its aging extent. This provides reliable analysis evidence for the test and maintenance of the battery. It notifies the user when to replace the battery prior to in service failure.

The Cranking test (12V and 24V systems) is used to test and analyse the starter motor. By measuring the actual cranking current and cranking voltage of the starter motor, it is possible to determine starter motor condition.

The Charging test (12V and 24V systems) is to check the charging system. Including alternator output and rectifier diode function. This will confirm if the output voltage of the alternator is correct, the rectifier is working and the charge current is normal.

Technical Parameters

- Cold Cranking Amps Measure range:

Measure Standard	Measure Range
CCA	100-2000
BCI	100-2000
CA	100-2000
MCA	100-2000
JIS	26A17--245H52
DIN	100-1400
IEC	100-1400
EN	100-2000
SAE	100-2000
GB	30Ah-220Ah

- Input Voltage Range: 8 -30V DC

Technical Specifications

1. Display: Backlit LCD, 128mm x 64mm
2. Working Environment Temp.: 0 to 50°C (32 to 122 F°)
3. Storage Temperature: -20 to 70°C (-4 to 158 F°)
4. Power provided via vehicle
5. Dimensions: Length 210mm, Width 90mm, Height 40mm
6. Weight: 470g
7. Voltage Tolerance: 8 -30V DC (for 12v batteries only)
8. Measurement range 100 – 2000 CCA

Intended Use

This device is intended for automotive and or marine, trade or commercial applications, in dry, non-explosive environments 0 to 50°C (32 to 122 F°)

Scope of Delivery

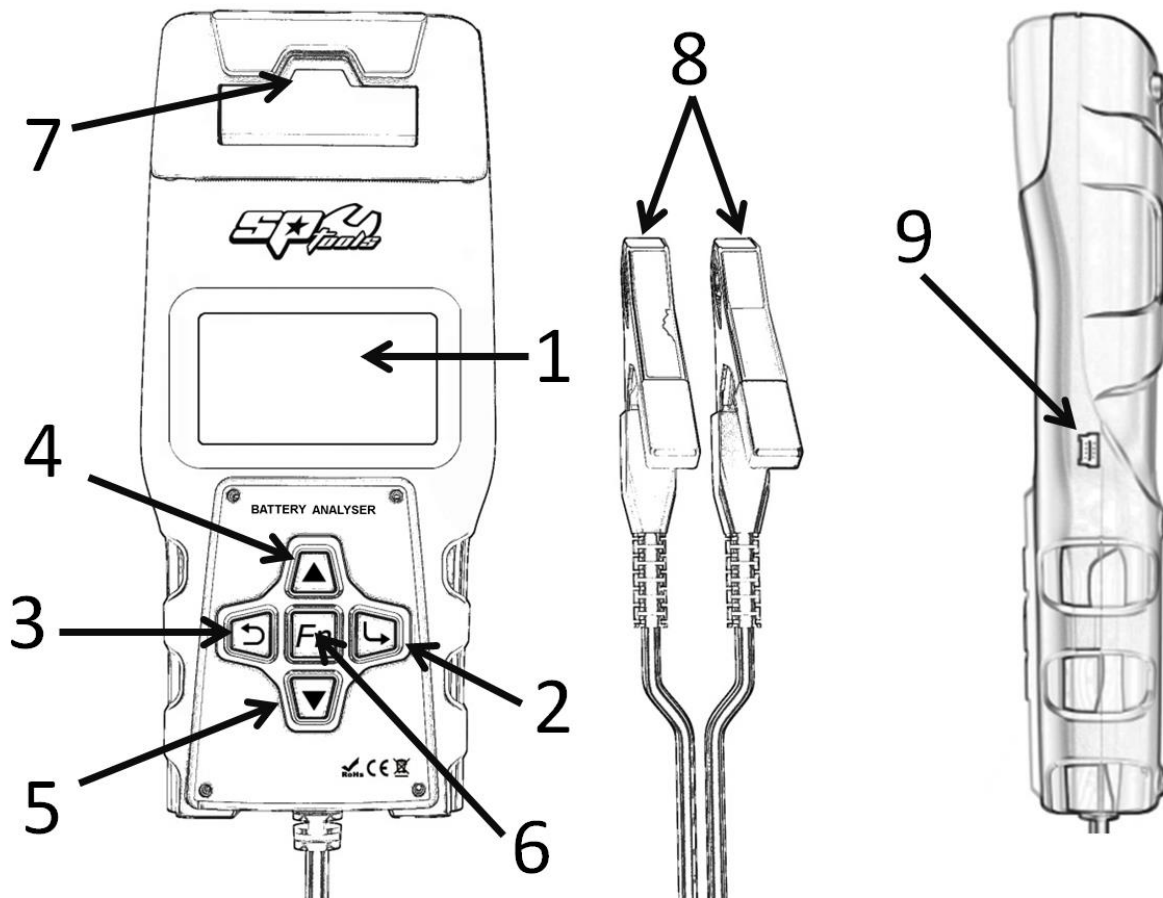
- User Manual: Instructions on tool operations.
- SP61065 Tester / Printer with cable and terminal clamps.
- Thermal print paper
- USB cable
- CD
- Storage Bag

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.

Tool Description



1. LCD DISPLAY -- Backlit display Indicates test results
2. ENTER BUTTON -- Confirms a selection (or action) from a menu
3. EXIT BUTTON -- Cancels a selection or returns to menu
4. Up Key -- Moves up through menu and sub menu items
5. Down Key -- Moved down through menu and sub menu items
6. Fn Key -- Press to enter the function for quick test customised
7. Printer -- Print test result
8. CLIPS -- Connects unit to battery terminals + (red) and – (black)
9. Mini-USB Socket -- Connect to computer for print vis USB cable

Internal Resistance Explanation

Internal Resistance (IR) is an important factor for accessing a battery's capability. When a battery's internal resistance exceeds a specific value, the engine can't be started. The normal IR value of cars should be less than 10mΩ, but there will be differences between different battery types and those with greater or lesser CCA.

Normally, for the same kind of batteries, the lower the IR, the healthier the battery is, (short circuit excepted).

Voltage Explanation

Normally, it is 100% charged when the battery voltage is 12.60V or above.

- 100% Charged = Battery voltage 12.60V or above
- 75% Charged = Battery voltage 12.45V
- 50% Charged = Battery voltage 12.15V
- Discharged condition = Battery voltage less than 12.00V

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.

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 will negatively affect the test result.

Before testing on 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 6 volts available. For this reason, the battery analyser will not operate if connected to a dead flat battery.

Product Setup

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


- Language – Select the desired language
- Function setup – Set the one-click-key function
- Contrast adjustment – Adjusts the contrast of the LCD display
- Time Settings: – Set the time & Date (will print on report)
- Tool information – The tool shows the software and hardware version

To enter the system setup menu

From main menu, select the System Setup and press OK.

System Setup
1. Language 2. Fn Setup 3. Contrast 4. Time Setting 5. Tool Information

Language:

- 1) From System Setup menu, use Enter button  to select Language

Language
1. English 2. German 3. Spanish 4. French 5. Italian 6. Dutch

- 2) Use UP and DOWN button to select the desired language and press OK button to save your selection and return to previous menu.

Fn Setup:

- 1) From System Setup menu, use Enter button to select

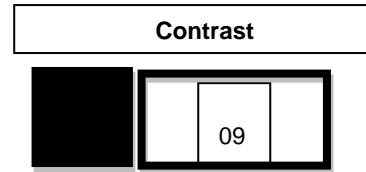
Fn Setup
1. Voltmeter 2. Quick Test Mode

- 2) Use UP and DOWN button to select the desired one-click quick function. Quick Test Mode is suitable for same parameters batteries test.

That means, after inputting the battery parameters during first test, user can press the Fn button to quickly get the test result of continuous same parameters batteries test, so long as the Quick Test Mode is selected.

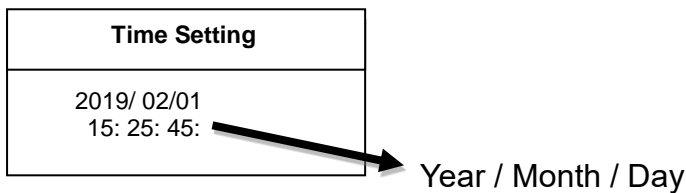
Contrast

- 1) From System Setup menu, use Enter button ↵ to select contrast.
- 2) Use UP and DOWN button to select the contrast value and press Enter button to save your selection and return to previous menu.



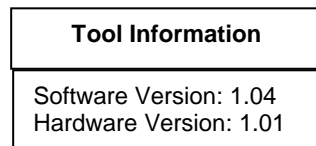
Time Setting

- 1) From System Setup menu, use Enter button ↵ to select time setting.
- 2) Use UP and DOWN and Enter button to set the time & date, press Exit button ↶ to return to previous menu.



Tool Information

- 1) From System Setup menu, use Enter button ↵ to select Tool Information
- 2) Press exit to return the previous menu.



Operation and Test

After connecting the tool to vehicle battery, tester displays the battery real-time voltage.



Press the Enter key, the tester will display the following contents in a sequence, select accordingly.

Battery test

Select Battery Type

After entering Battery Test, tester will prompt to select battery type, i.e. Regular Flooded, AGM Flat Plate or AGM Spiral, Gel and EFB battery. Press UP/DOWN key to select battery type, then press OK key to confirm

Main Menu	Battery Type
1. Battery Test 2. Cranking Test 3. Charging Test 4. Review Data 5. Print 6. System Setup	1. Regular Flooded. 2. AGM Flat Plate. 3. AGM spiral 4. GEL 5. EFB

Battery System Standard and Rating

The SP61065 battery tester will test each battery according to the selected system and rating. Use UP/DOWN key to select according to the actual system standard and rating marked on the battery. See in the below picture, the arrow indicated location.



CCA: Cold Cranking Amps, specified by SAE&BCI, most frequently used value for starting battery at 0°F (-18°C).

BCI: Battery Council International standard

CA: Cranking Amps standard, effective starting current value at 0°C

MCA: Marine Cranking Amps standard, effective starting current value at 0°C.

JIS: Japan Industrial Standard, displayed on the battery as combination of the numbers and letters, e.g. 55D23,80D26.

DIN: German Auto Industry Committee Standard

IEC: Internal Electro Technical Commission Standard

EN: European Automobile Industry Association Standard

SAE: Society of Automotive Engineers Standard

GB: China National Standard

Select Input	
CCA	1/10

Rating range as following:

Input correct test standard and rating, press Enter key, tester starts to test, and dynamic interface "TESTING" prompted.

Setting Rate	
500A	CCA

It takes around 5 seconds to display the battery test result.

Battery Test Result

Battery test result includes 5 types as follows

1) Good Battery

The battery is without any problem,
Please be relaxed to use!

Health:96%	490A
Charge:100%	12.64V
Internal R=6.1mΩ	
Rated: 500A	CCA
GOOD BATTERY	

2) Good, Recharge

Good battery but low power, recharge before using.

Health:78%	440CCA
Charge:30%	12.20V
Internal R=7.2mΩ	
Rated: 500A	
GOOD, RECHARGE	

3) Replace

The battery is near to or already reached the end of the using life, replace battery, otherwise, bigger danger will be followed.

Health:46%	490A
Charge:80%	12.68V
Internal R=18.1mΩ	
Rated: 500A	CCA
REPLACE	

4) Bad Cell, Replace

Battery interior damaged, bad cell or short circuit, replace battery.

Health:0%	0A
Charge:20%	10.64V
Internal R=45.2mΩ	
Rated: 500A	CCA
BAD CELL, REPLACE	

5) Charge, then Retest

Unstable battery shall be recharged and retested to avoid error. If same test result appears after recharge and retest, the battery is regarded as damaged, replace the battery.

Health:39%	310A
Charge:20%	12.08V
Internal R=30.1mΩ	
Rated: 500A	CCA
CHARGE-RETEST	

Note: If press Enter key ↵ once the testing result comes up, it will remind the user want to print the test result or not.


PRINT TEST RESULTS?

If print, press Enter key, if not, press Exit button ↶ to return the previous menu.

Cranking Test

Tester prompts as following:

Voltage type
1. 12V
2. 24V

Use the Up/Down button to select 12V or 24V cranking system, press the  key to select. Tester will go to next screen.

Cranking Test
START ENGINE

Starting the engine as prompted, tester will automatically complete the cranking test and display the result.

Cranking Test
RPM Detected

Normally, in a 12V system cranking voltage value lower than 9.6V is regarded as abnormal and it is OK if it is higher than 9.6V.


Test result of the tester includes actual cranking voltage and actual cranking time.

Cranking Test
Time 780ms
Cranking Normal
Voltage 10.13V

When cranking test is abnormal, battery test result will also be displayed at the same time.

Cranking Test
Time 1020ms
Cranking Low
Voltage 9.2V

This is for the convenience of the maintenance personnel to quickly know the whole state of the starting system according to the data. After testing finished, do not shut down the engine, select Charging Test to do Charging test.

Note: If press Enter key  once the testing result comes up, then it will remind the user want to print the test result or not.

PRINT TEST RESULTS?

If print, press Enter key, if not, press Exit button  to return the previous menu.

Charging Test

Please choose "Charging Test" and press Enter key, select 12V or 24V from next screen to choose correct charging system test.

NOTE: Do not shut down the engine during the test. Do the steps according to the following instructions.

Unloaded Test	Loaded Test	Ripple Test
Turn off all devices, increase RPM to 2500-3000r/min and keep 10 seconds. Press ENTER continue	Turn on headlights and air conditioner to the maximum, keep RPM idle for 10 seconds. Press ENTER continue	Turn off headlights and air conditioner, keep 10 seconds. Press ENTER continue

After the test finished, tester displays the effective charging voltages, ripple voltage and charging test result.

12V	Charging Test	24V	Charging Test
	Loaded 14.16V		Loaded 27.41V
	Unloaded 14.39V		Unloaded 27.61V
	Ripple 15mV		Ripple 1mV
	Voltage Normal		Voltage Normal

NOTE: If no increase rev detected, it shall be the fault of generator regulator or connection with battery failed. Tester will try 3 times to further detect, if still failed, it will skip the increase rev detect and the test result displays "No Output". See below:

Check the connection between generator and battery, then retest.

Charging Test Result:

1) Charging Volt: Normal - Charging system shows the generator output normal, no problem detected.

2) Charging Volt: Low - Charging volt of the charging system is low. Check drive belt of the generator whether slip or running off. Check the connection between generator and battery is normal or not. If both of the drive belt and the connection are in good condition, follow the manufacturer's suggestion to eliminate generator fault.

3) Charging Volt: High - Generator output volt is high. Since most of the vehicle generators are using internal regulator, the generator assembly has to be replaced (Some old style cars are using external regulator, then directly replace the regulator.)

The normal high volt of the voltage regulator is maximum $14.7 \pm 0.5V$. If charging volt is too high, it will overcharge the battery. Therefore the battery life will be shortened and troubles will be caused. 4) No Volt Output:- No generator output detected. Check generator connection cable and the belt condition.

5) Diode Test: - Through the test of charging current ripple, tester will find out whether the diode is normal or not. When ripple volt is too high, it proves at least one diode is damaged. Check and replace the diode.

Till now, all tests have been done.

Note: If press Enter key ↵ once the testing result comes up, then it will remind the user want to print the test result or not.

PRINT TEST
RESULTS?

If print, press Enter key, if not, press Exit button ↶ to return the previous menu.

Review Data

Choose the function of Review Data

Main Menu
1. Battery Test
2. Cranking Test
3. Charging Test
4. Review Data
5. Print
6. System Setup

Check the history of battery testing result

Health: 96%	490A
Charge: 100%	12.64V
Internal R=6.1mΩ	
Rated: 500A	CCA
GOOD BATTERY	

Print time: Year/Month/Day

Print Data

1. Choose the function of Print and press Enter.

Main Menu
1. Battery Test
2. Cranking Test
3. Charging Test
4. Review Data
5. Print
6. System Setup

2. The Printer will print the test result as below:

Print Data
1. Print Battery
2. Print Cranking
3. Print Charging
4. Print All

2019/02/01 16:14:20

Battery Test: GOOD BATTERY Charge: 100% Voltage:12.64V Health: 96% Measured: 490CCA Select Input: CCA Rated: 500A Internal R: 6.1m Ω
Cranking Test: Time: 780ms Cranking: NORMAL Cranking Volt: 10.13V
Charging Test Loaded: 14.16 V Unloaded: 14.39V Ripple: 15mV Charging volt: NORMAL

3. Press exit button to return the previous menu.

Print Data by PC Printer

If desired you can print the test result data by PC Printer.

Before choosing the print function, it is necessary to connect the tool to the computer via USB cable.

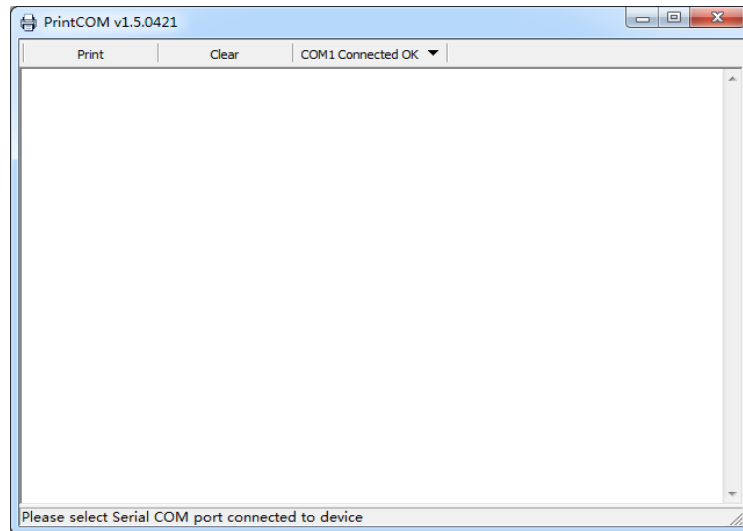
Once all are available, please kindly insert the CD to the computer

1. Install the USB driver firstly.

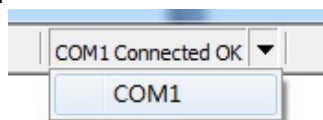
Manual	2015/5/14 16:35
Print Software	2015/5/14 16:35
USB Driver	2015/5/14 16:43
Read me.txt	2015/5/14 16:44



2. Then open the Print software



3. Choose the COM Port NO.



If there are some data history in print software, please kindly clear them.

4. Choose the function of Print in the tool

Main Menu
1. Battery Test
2. Cranking Test
3. Charging Test
4. Review Data
5. Print
6. System Setup

5. Then it will enter the sub-menu as below

Print Data	
1.	Print Battery
2.	Print Cranking
3.	Print Charging
4.	Print All

6. Choose the information you want to print.

Once the data is transferred to the computer, the print software will show the information below.

2019/02/01 16:14:20

Battery Test:
GOOD BATTERY
Charge: 100%
Voltage:12.64V
Health: 96%
Measured: 490CCA
Select Input: CCA
Rated: 500A
Internal R: 6.1m Ω

Cranking Test:
Time: 780ms
Cranking: NORMAL
Cranking Volt: 10.13V

Charging Test
Loaded: 14.16 V
Unloaded: 14.39V
Ripple: 15mV
Charging volt: NORMAL

Print time: Year/Month/Day

Cleaning and Maintenance

Keep your Battery Analyser Electrical System Tester & Report Printer:

- 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:

- 1.1 Fails due to an accident (including liquid spillage), abuse, misuse, neglect or normal wear and tear;
- 1.2 Has been used in a manner other than for which it was originally designed;
- 1.3 Has been tampered with or is otherwise than as supplied by SP Tools;
- 1.4 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);
- 1.5 Malfunctions due to the use of defective or incompatible accessories;
- 1.6 Is damaged by lightning or thunderstorm activity; or
- 1.7 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:

- 2.1 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.
- 2.2 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.
- 2.3 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