

Auto Service Line MODEL No: PP7

Thank you for purchasing a Sealey product. Manufactured to a high standard this product will, if used according to these instructions and properly maintained, give you years of trouble free performance.



IMPORTANT: PLEASE READ THESE INSTRUCTIONS CAREFULLY. NOTE THE SAFE OPERATIONAL REQUIREMENTS, WARNINGS, AND CAUTIONS. USE THIS PRODUCT CORRECTLY, AND WITH CARE FOR THE PURPOSE FOR WHICH IT IS INTENDED. FAILURE TO DO SO MAY CAUSE DAMAGE AND/OR PERSONAL INJURY AND WILL INVALIDATE THE WARRANTY.

1. SAFETY INSTRUCTIONS

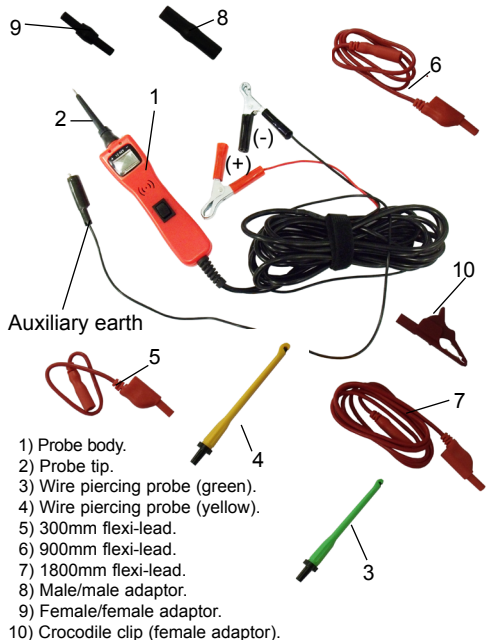
SAFETY INSTRUCTIONS

- ✓ IF YOU ARE IN ANY DOUBT ABOUT ELECTRICAL SAFETY CONSULT A QUALIFIED ELECTRICIAN.
- ✓ Only for use with 12 - 42 volt DC systems.
- ✗ **DO NOT** apply voltage or current to the probe that exceeds the specified maximum of 42V DC.
- ✗ **DO NOT** use with industrial 110V systems.
- ✗ **DO NOT** use on any circuit directly or indirectly connected to AC lines or any other AC power source.
- ✗ **DO NOT** use with any component or circuits of the ignition system.
- ✓ Before using this device, check the vehicle's electrical wiring and disconnect any part or system sensitive to voltage and current pulses such as air bags, electronic control modules, etc.
- ✓ Always check the instructions and procedures indicated in the vehicle service manual before attempting to disconnect any part or subsystem of the electrical circuit.
- ✓ When not in use, store the probe carefully in a safe, dry, childproof location. Avoid extremes of temperature.
- ✓ **DO NOT** use the unit around explosive gases, vapour or dust. When the power switch is operated (forwards or backwards), battery current is conducted to the tip of the probe which may cause sparks when contacting earth or other certain circuits.
- ✗ **DO NOT** use leads if damaged or if the wire is bared in any way.
- ✗ **DO NOT** use this tester for any purpose other than that for which it has been designed.

2. INTRODUCTION/CONTENTS/MODES

A range of functions allows automotive electricians and mechanics the ability to effectively diagnose short circuits, bad earths, electrical circuits, quickly and easily. The 4600mm lead connects to the battery supply and reaches to all areas of the vehicle. Flying leads allow continuity and polarity testing with a high-contrast LCD display with 9mm high (12V to 42V) read-out. Activate components for fast diagnoses in situ or prior to installation. Feature audible and Positive/Negative voltage indicator and two integral work lights. Kit includes three probe extension leads, two wire piercing probes, two adaptors and a crocodile clip. Supplied in a carry-case.

fig.1



- 1) Probe body.
- 2) Probe tip.
- 3) Wire piercing probe (green).
- 4) Wire piercing probe (yellow).
- 5) 300mm flexi-lead.
- 6) 900mm flexi-lead.
- 7) 1800mm flexi-lead.
- 8) Male/male adaptor.
- 9) Female/female adaptor.
- 10) Crocodile clip (female adaptor).

Modes. This Probe has 5 modes to help diagnose more complex auto electrical problems. Below are the 5 modes and possible applications.

The 5 Modes can be accessed by pressing the Mode button and cycling through each one.

2.1 Mode 1 - Power Mode.

- 2.1.1 When the PP7 is in "Power Mode" and the probe tip is not contacting a circuit, the LCD backlight will illuminate but be blank. If the audio tone is turned on you will see a speaker symbol in the lower right corner of the display.
- 2.1.2 Once you contact the probe tip to a circuit the LCD display will indicate the average voltage level of the circuit. The red/green polarity indicators will illuminate, showing whether the circuit is positive (red) or negative (green).
- 2.1.3 A secondary feature in this mode is the peak to peak threshold detection and signal monitoring. When contacting a signal generating circuit such as a speaker wire with audio signals on it, the Probe detects the peak to peak signals and displays the peak to peak voltage on the display, the sound of the signals will be monitored and heard through the Probe speaker.
- 2.1.4 The peak to peak threshold levels are pre-selected by the operator in "Mode 5". See **Mode 5** for more information on setting threshold levels.

2.2 Mode 2 - Negative Peak Mode.

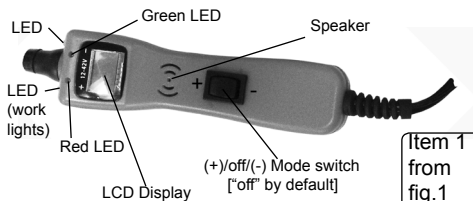
- 2.2.1 The Negative Peak Mode monitors a positive circuit and captures the lowest voltage that it has dropped to.
- 2.2.2 The display should also indicate a reading of "0.0" with the probe floating. (This is because no voltage is present). Probe the positive circuit you want to test and tap the mode switch once. The LCD display will show the lowest detected voltage of the circuit. If the circuit drops in voltage at anytime, a new lowest reading will be captured and displayed.
- 2.2.3 You can then do a quick tap of the mode switch once again to reset the LCD display and indicate the new voltage level on the circuit. Reset the LCD display by doing a quick tap of the mode button as often as necessary.
- 2.2.4 **APPLICATION:** for the use of the "Negative Peak Mode": If a circuit is suspected of losing a connection and the voltage drops, causing something to turn off or malfunction. Probing the circuit and monitoring it in "Negative Peak Mode" will instantly indicate as the circuit drops in voltage. You can monitor the circuit while manipulating wires and pulling on connectors to see if the voltage drops. Since the minimum voltage reading is captured and held on the display, you can inspect it at a later time. You could also perform a battery crank test.

2.3 Mode 3 - Positive Peak Mode.

- 2.3.1 The "Positive Peak Mode", monitors the probed circuit and captures the highest detected voltage.
- 2.3.2 Probe the circuit and it instantly displays and holds the highest voltage reading. This means you can remove the probe from the circuit and the voltage reading remains displayed for your reference.
- 2.3.3 Reset the LCD display by doing a quick tap of the mode switch.
- 2.3.4 **APPLICATION:** for the use of the "Positive Peak Mode": If a circuit that is switched off and is suspected of turning on inappropriately or getting a signal for some reason, probing the circuit and monitoring it in the "positive peak mode" will instantly indicate as the circuit increases in voltage. You can monitor the circuit while manipulating wires and pulling on connectors to see if the voltage increases. Since the maximum voltage reading is captured and held on the display, you can inspect the reading at a later time. If you have to probe a circuit deep under a dashboard and the display is obstructed from view. In "Positive Peak Mode" just probe the wire then remove the probe and look at your voltage reading. Connect to starter terminal to capture maximum voltage to the starter while cranking.
- 2.3.5 Quickly finds voltage drops in the wiring & start connection (Solenoid).

2.4 Mode 4 - Peak to Peak Mode.

- 2.4.1 The Peak to Peak Mode measures the difference between the positive and negative peak voltage levels over a 1 second period. With this feature you can measure and monitor for example, the diode rectifier in a charging system while the engine is running.
- 2.4.2 The peak to peak readings will give the technician the data necessary to determine if a diode rectifier is defective or not. A normal peak to peak reading while testing a charging circuit is usually under 1 volt.
- 2.4.3 If a defective rectifier is present the peak to peak reading will be over 1 volt and possibly over 3 volts.
- 2.4.4 When probing in "Peak to Peak Mode" the display shows activity of circuits such as fuel injectors, distributor pick-ups, cam and crank sensors, oxygen sensors, wheel speed sensors and "Hall" effect sensors.
- 2.4.5 Measures fly back voltage of injectors to quickly find a problem.



3. OPERATION







2.5 Mode 5 - Peak to Peak Threshold Setting Mode.

- 2.5.1 Threshold Level Setting for the Peak to Peak Detection in "Power Mode" (**Mode 1**).
- 2.5.2 To set the threshold level for the peak to peak detection in "Power Mode", press and hold the mode switch for one second until you hear a beep.
- 2.5.3 You can now toggle the threshold level by a quick tap of the mode switch and observing the voltage level settings.
- 2.5.4 The peak to peak threshold voltage settings loop incrementally from 0.2, to 0.5, to 1.0, to 2.0, to 5.0, to 10.0, to 50.0 and return back to 0.2 again.
- 2.5.5 Once you select the desired threshold voltage, press and hold the mode switch again until it beeps. This returns you to the "Power Mode" (**Mode 1**). You will know that you are in the "Power Mode" when the LCD display is blank and/or with the "Speaker Symbol" shown in the bottom right corner.

2.6 Polarity Indicator and Audio Tone.

- 2.6.1 The "RED/GREEN Polarity Indicator" lights up when the probe tip voltage matches the battery voltage within ± 0.5 volts. This means that if you contact a circuit that is not a good earth or a good positive, you will not see the "RED/GREEN Polarity Indicator" lighting.
- 2.6.2 The Audio Tone runs parallel to the "RED/GREEN Polarity Indicator, and will also NOT react when contacting a circuit that does not match the battery voltage within ± 0.5 volts.

2.7 Mode Chart.

Mode	Navigation	Display	Output
1	Automatically selected when connected to power source.	<ul style="list-style-type: none"> • Blank • W/audio  • C B  • C B w/audio 	Displays the average D.C voltage. Displays the peak to peak A.C voltage when voltage is greater than Mode 5 threshold setting. Limited to 65V.
2	Press and hold Mode switch until a low pitched beep is heard.		Captures the most negative voltage recorded.
3	Press and hold Mode switch until a high to high pitched beep is heard.		Captures the most positive voltage recorded.
4	Press and hold Mode switch until a low to high pitched beep is heard.		Displays the difference between peak to peak voltage.
5	Press and hold Mode switch until a mid pitched beep is heard.	 <small>⚡ Actively alternating + to - to +, etc.</small>	Sets the peak to peak threshold level for Mode 1 display to transition from D.C. to A.C.

3.1 Basic Connections.

- 3.1.1 Unroll the Probe cable. Connect the RED battery clip to the POSITIVE terminal of the vehicle's battery. Connect the BLACK battery clip to the NEGATIVE terminal of the vehicle's battery.
- 3.1.2 When the probe is first connected to the battery, it will sound a quick high beep, then a low beep and then go into "Power Mode" (See **Mode 1**).
- 3.1.3 The two LED work lights will be on to illuminate the test area of the probe.

3.2 Quick Self Test.

- 3.2.1 Press switch toward (+) to activate the probe with a POSITIVE (+) voltage. The POSITIVE sign (+) LED should light red and the LCD display will read the battery (supply) voltage. If the tone feature is turned on, a high pitched tone will sound.
- 3.2.2 Press the switch toward (-) to activate the probe with a NEGATIVE (-) voltage. The NEGATIVE sign (-) LED should light green and the LCD display will read "0.0". If the tone feature is turned on, a low-pitched tone will sound.
- 3.2.3 The probe is now ready to use.

3.3 Audio Tone On/Off.

- 3.3.1 Quickly press the mode switch and release immediately.
- 3.3.2 If a short high beep is heard, the audio tone is turned on; if a short low beep is heard, the audio tone is turned off.

3.4 Circuit Breaker.

- 3.4.1 In "Power Mode" (**Mode 1**) with the circuit breaker tripped, the LCD will display the symbol "C B". All other functions of the probe are still active, so the circuit can still be probed and the voltage reading observed.
- 3.4.2 When the circuit breaker is tripped, the probe will **NOT** be able to conduct battery current to the tip even when the power switch is pressed.
- 3.4.3 Intentionally tripping the breaker and using the auto probe to probe is an added precaution against accidentally pressing the power switch.

3.5 Voltage and Polarity Testing. See fig.2.

- 3.5.1 While the PP7 is in "Power Mode", contact the probe tip to a POSITIVE circuit. The red positive sign, (+) LED will light and the voltmeter will display the voltage.
- 3.5.2 If the audio feature is turned on, a high-pitched tone will sound.
- 3.5.3 While the PP7 is in "Power Mode", contact the probe tip to a NEGATIVE circuit. The green negative sign, (-) LED will light and the voltmeter will display the voltage.
- 3.5.4 If the audio feature is turned on, a low pitched tone will sound. If neither of the LED indicators light, the power Probe tip has made contact to an OPEN circuit. If the audio feature is turned on, there will be no sound.

3.6 Continuity Testing. See fig.3.

3.6.1 While the probe is in "Power Mode", continuity can be tested on wires and components attached or disconnected from the vehicle's electrical system and by utilizing the Probe

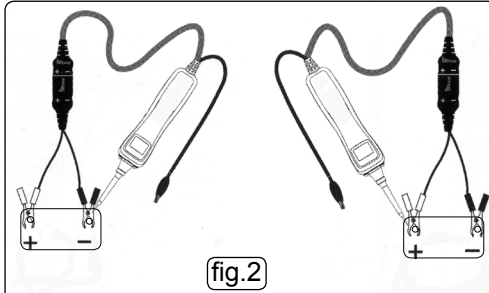


fig.2

While the PP7 is in "Power Mode", contact the probe tip to a NEGATIVE circuit. The green negative sign (-) LED will light. If the audio feature is turned on, a low pitched tone will sound.

While the PP7 is in "Power Mode", contact the probe tip to a POSITIVE circuit. The red positive sign (+) LED will light and the voltage reading of the circuit will be indicated on the LCD display. If the audio feature is turned on, a high pitched tone will sound.

tip when connected with a chassis earth or the auxiliary earth lead.

- 3.6.2 The Probe indicates continuity using two resistance levels. When the Probe tip has a resistance to earth of less than 20K Ohms but greater than 2K Ohms the LCD will indicate "0.0" volts but no green (-) LED.
- 3.6.3 When the resistance to earth is less than 2K Ohms the LCD will indicate "0.0" volts and the green (-) LED will illuminate.
- 3.6.4 The higher resistance continuity function is useful for checking spark plug wires, disconnected from ignition, solenoids and magnetic pickup coils
- 3.6.5 The lower resistance continuity for testing relay coils and wiring.
- 3.6.6 Another way to check for continuity of connections to earth or the battery is to use the power switch. If the circuit breaker trips (LCD display "C B") it is clear that there is a good, solid, low-resistance connection.
- 3.7 Activating Components in Your Hand. See fig.4**
- 3.7.1 While the Probe is in "Power Mode" components can be activated in your hand. Connect the negative auxiliary clip to the negative terminal or earth side of the component being tested.
- 3.7.2 Contact the probe to the positive terminal of the component, the green negative sign (-) LED

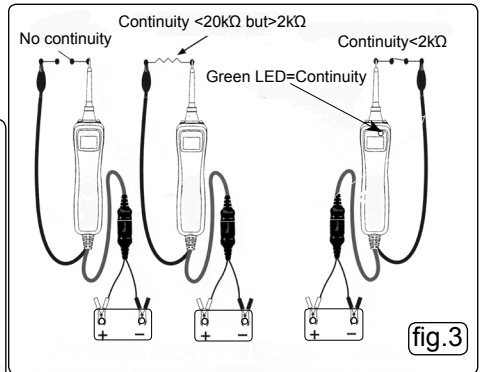


fig.3

indicator should light GREEN indicating continuity through the component.

- 3.7.3 Observe the green LED indicator and quickly depress and release the switch forward (+). If the green LED indicator went out and the red positive sign (+) came on, you may proceed with further activation.
- 3.7.4 If the green LED indicator went off at that instant or if the circuit breaker tripped (LCD display "C B"), the probe has been overloaded. This could happen for the following reasons:
- The contact you are probing is a direct earth or negative voltage.
 - The component you are testing is short-circuited.
 - The component is a very high current component (i.e., starter motor).

3.8 Testing Trailer Lights and Connections. See fig.5.

- 3.8.1 Connect the Probe to a good battery.
- 3.8.2 Clip the auxiliary earth clip to the trailer earth.
- 3.8.3 Probe the contacts at the jack and then apply voltage to them. This lets you check the function.

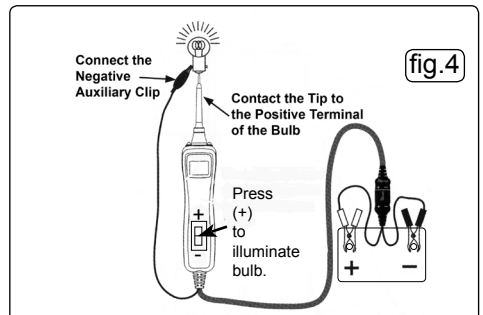


fig.4

3.9 Activating Components in the Vehicle. See fig.6.

- 3.9.1 To activate components with positive (+) voltage, contact the probe tip to the positive terminal of the component. The green negative sign “-” LED should light, indicating continuity to earth.
- 3.9.2 While observing the green “-” LED, quickly depress and release the power switch forward (+). If the green indicator has gone out and the red positive sign (+) LED has come on, you may proceed with further activation.

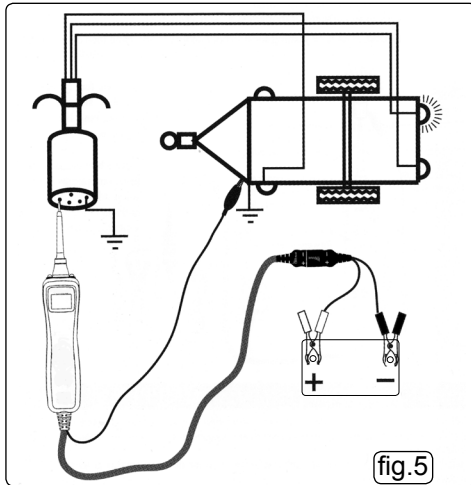


fig.5

- 3.9.3 If the green indicator went off at that instant or if the circuit breaker tripped (LCD display “C B”), the Probe has been overloaded. This could happen for the following reasons:

- The contact is a direct earth.
- The component is short-circuited.
- The component is a high-current component (i.e., starter motor).

WARNING: Haphazardly applying voltage to certain circuits can cause damage to a vehicle’s electronic components. Therefore, it is strongly advised to use the vehicle manufacturers schematic and diagnosing procedure while testing.

3.10 Activating Electrical Components with Earth. See fig.7.

- 3.10.1 Contact the probe tip to the negative terminal of the component, the LED indicator should light RED.
- 3.10.2 While observing the red (+) LED, quickly depress and release the power switch rearward (-). If the red indicator went out and the green negative LED (-) came on you may proceed with further activation.
- 3.10.3 If the green indicator went off at that instant or if the circuit breaker tripped (LCD display “C B”), the Probe has been overloaded. This could have happened for the following reasons:

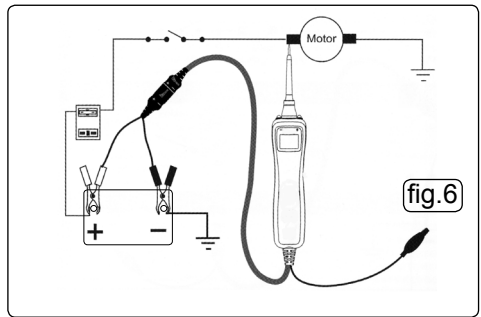


fig.6

- The contact is a direct, positive voltage.
- The component is short-circuited.
- The component is a very high current component (i.e., starter motor).

WARNING: With this function, if you are contacting a protected circuit, a vehicle’s fuse can be blown or tripped if you apply earth to it.

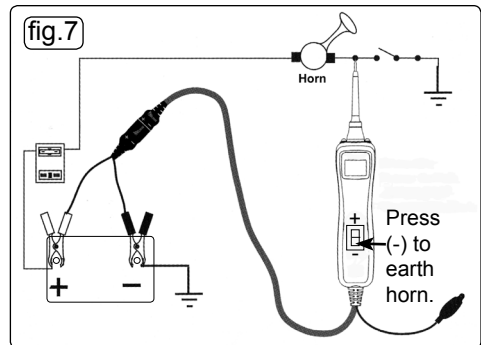


fig.7

3.11 JUMPER LEAD FEATURE (See Fig.6).

- 3.11.1 The black clamp and the auxiliary earth lead are connected through the unit. By leaving the red clip disconnected from the vehicles battery, the unit can be used as a long jumper lead.
- 3.11.2 Be careful to avoid short circuits and overloading when using this jumper function. In this configuration the leads are not protected by a circuit breaker.

NOTES

3.12 Checking for Bad Earth.

- 3.12.1 Probe the suspected earth wire or contact with the probe.
- 3.12.2 Observe the green negative (-) LED. Depress the power switch forward then release.
- 3.12.3 If the green negative sign (-) LED went out and the red positive sign (+) came on, this is not a true earth.

3.13 Following and Locating Short-Circuits.

- 3.13.1 In most cases a short circuit will appear by a fuse or a fusible link blowing or an electrical protection device tripping (i.e. a circuit breaker).
This is the best place to begin the search.
- 3.13.2 Remove the blown fuse from the fuse box. Use the Probe to activate and energize each of the fuse contacts. The contact which trips the Probe circuit breaker is the shorted circuit (see "Circuit Breaker" paragraph 3.4.1). Take note of this wire's identification code or colour.
- 3.13.3 Follow the wire as far as you can along the wiring harness. For instance if you are following a short in the brake light circuit you may know that the wire must pass through the wiring harness at the door sill. Locate the colour-coded wire in the harness and expose it.
- 3.13.4 Probe through the insulation with the Probe tip depress the power switch forward to activate and energize the wire. If the Probe circuit breaker tripped (LCD display "C B") you have verified the shorted wire.
- 3.13.5 Cut the wire and energize each end with the Probe the wire end which trips the Probe circuit breaker again is the shorted circuit and it will lead you to the shorted area. Follow the wire in the shorted direction and repeat this process until the short is located.

Environmental Protection.



Recycle unwanted materials instead of disposing of them as waste. All tools, accessories and packaging should be sorted, taken to a recycle centre and disposed of in a manner which is compatible with the environment.



When the product is no longer required, it must be disposed of in an environmentally protective way.

NOTE: It is our policy to continually improve products and as such we reserve the right to alter data, specifications and component parts without prior notice.

IMPORTANT: No liability is accepted for incorrect use of this product.

WARRANTY: Guarantee is 12 months from purchase date, proof of which will be required for any claim.

INFORMATION: For a copy of our latest catalogue and promotions call us on 01284 757525 and leave your full name and address, including postcode.



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