DIGITAL START/STOP BATTERY & ALTERNATOR TESTER WITH PRINTER 6/12/24V

MODEL NO: **BT2015.V2**

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 & CAUTIONS. USE THE 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. KEEP THESE INSTRUCTIONS SAFE FOR FUTURE USE.

Refer to instructions | Wear eye protection | Wear protective clothing | Wear protective gloves | **WARNING!** Explosive material | **WARNING!** Corrosive substance

1. SAFETY

▲ ***DANGER! BE AWARE, LEAD-ACID BATTERIES GENERATE EXPLOSIVE GASES DURING NORMAL BATTERY OPERATION. FOR THIS REASON, IT IS VERY IMPORTANT TO READ AND FOLLOW THESE INSTRUCTIONS CAREFULLY, EACH TIME YOU USE THE BATTERY TESTER.***

Follow these instructions and those published by the battery and vehicle manufacturers, and the maker of any equipment you intend to use in the vicinity of the battery. Remember to review warning marks on all products and on engines.

1.1. PERSONAL PRECAUTIONS

✓ Ensure that there is another person within hearing range and close enough to come to your aid, should a problem arise when working near a lead-acid battery.

✓ Wear safety eye protection and protective clothing. Avoid touching eyes while working near battery.

✓ Have fresh water and soap nearby in case battery acid contacts skin, clothing, or eyes.

✓ Wash immediately with soap and water if battery acid contacts skin or clothing. If acid enters eye, flush eye immediately with cool, clean running water for at least 15 minutes and seek immediate medical attention.

✓ Remove personal metallic items such as rings, bracelets, necklaces and watches. A lead-acid battery can produce a short-circuit current which is high enough to weld such items to the vehicle and cause severe burns.

✓ Ensure that hands, clothing (especially belts) are clear of fan blades and other moving or hot parts of engine. Remove ties and contain long hair.

× **DO NOT** smoke or allow a spark or flame in the vicinity of the battery or engine.

1.2. GENERAL SAFETY

✓ Familiarise yourself with the application, limitations and potential hazards of the tester. Also refer to the vehicle manufacturer's hand book. *IF IN ANY DOUBT CONSULT A QUALIFIED VEHICLE ELECTRICIAN.*

✓ Ensure that the tester is in good condition before use. If in any doubt **DO NOT** use the unit and contact a qualified vehicle electrician.

✓ Only use recommended attachments and parts. To use unapproved items may be dangerous and will invalidate your warranty.

✓ Keep tools and other items away from the engine and ensure that you can see the battery and working parts of engine clearly.

✓ Determine the system voltage before using the tester.

✓ If the tester receives a sharp knock or blow the unit must be checked by a qualified service agent before using.

✓ If the battery terminals are corroded or dirty, clean them before using the tester.

✓ Keep children and unauthorised persons away from the work area.

× **DO NOT** disassemble the tester for any reason. The tester must only be checked by qualified service personnel.

❑ **WARNING!** To prevent the risk of sparking, short circuit and possible explosion **DO NOT** drop metal tools in the battery area, or allow them to touch the battery terminals.

× **DO NOT** cross-connect tester to battery. Ensure positive (RED) clamp is to positive terminal and negative (BLACK) clamp is to negative terminal. If battery symbols cannot be distinguished, remember that the negative terminal is the one directly connected to the vehicle bodywork.

× **DO NOT** use the tester outdoors, or in damp, or wet locations and **DO NOT** use in the vicinity of flammable liquids or gases.

✓ Ensure there is effective ventilation to prevent a build-up of explosive gases.

× **DO NOT** use the tester for a task for which it is not designed.

✓ When not in use, store the tester carefully in a safe, dry, childproof location.

2. INTRODUCTION

Identifies battery and alternator faults with printable results. Handles batteries with a 3000 CCA SAE rating and a 1V residual charge. No heat, sparks, or risk of misdiagnosis during testing. Evaluates alternator condition without complex connections or interpretation. Tests performance at rest and under load for accurate assessment. Relative compression ratio test, for engine diagnostics. Suitable for cars, including start/stop, motorcycles, and commercial vehicles. 71mm TFT-LCD screen with 6-key keypad and virtual keyboard. Clamp cable length of 1.8m. Operates on six AA batteries or two 18650 rechargeable batteries (not supplied). Supplied in a storage case with one roll of printing paper and an instruction manual.

3. SPECIFICATION

Model No:..... BT2015.V2
Battery: ..... 6 x AA batteries
..... or 2 x 18650 rechargeable batteries (not supplied)
Charging System Capability:..... 6/12/24V**
Compatibility: ..... Windows XP, 7, 8, 10, 11
Consumable Parts:..... BT2012.V2-01

Minimum Power Requirement: 1V
Nett Weight: 1.4kg
Rated Battery Voltage: 6/12V
Rating Systems: ..... CCA/SAE, CA/MCA, EN, EN2,
.....IEC, DIN, JIS
Test Ranges: .....25 to 3000 CCA/SAE
..... 25 to 2830 EN
..... 25 to 2710 EN2
..... 25 to 1985 IEC
.....25 to 1685 DIN
..... 25 to 3600 CA/MCA,
.....By Battery Type JIS

Note: *CCA - Cold Cranking Amps, **24V Alternator Test only

4. CONTENTS

#	DESCRIPTION
1	Tester
2	Clamps
3	Printing Paper
4	Rechargeable Battery Holder (not pictured)

5. PREPARATION

NOTE: each time you connect the tester to a battery, the tester will run a quick cable verification to ensure a proper connection through the output cables to sensors in the clamp jaws. If the connection checks out OK, the tester will proceed to the Home Screen. If the connection is poor, the display will show “CHECK CABLE”. In this case, check cable connections for visible signs of damage, as you may need to re-connect the clamps to the battery or replace the cable end.


FIG.1


FIG.2

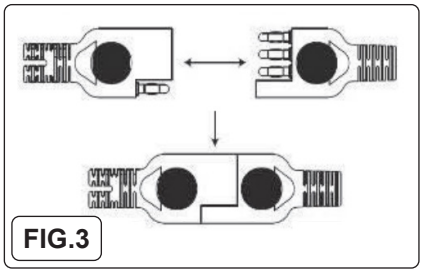
FIG.3

5.1. PAPER REPLACEMENT (FIG.1 & 2)

Open the paper roll cover. Place a new paper roll in the compartment. Make sure the thermal side is upside placed as above. Pull a short length of paper from the compartment and press down the cover to close.

5.2. PRECAUTIONS FOR USING THE INTEGRATED PRINTER

To prevent overheating the integrated printer, it is not recommended to operate the printer continuously without short breaks. The printer should be rested for at least 1 minute for every 2 minutes of continuous use. There is no need to be worried under normal operation, where one test only requires one printout and continuous printing is highly unlikely. However, if the integrated printer does start to get warm, please allow it to cool down by temporarily halting any printing actions.

5.3. HOW TO REPLACE CLAMP SET (FIG.3)

Detach the clamp set when in need of replacement. Make sure the new clamp set is properly connected. **DO NOT** detach the cables unless necessary to ensure the pins are not exposed to the moisture and acidic liquids which could cause rusting and corrosion.

5.4. INSTALL / REPLACE THE INTERNAL BATTERIES

The tester offers two different options for its internal batteries:

(a). 6pcs AA batteries.
(b). 2pcs 18650 rechargeable lithium batteries. **Note:** batteries not included.

IMPORTANT: It is recommended that the user to apply protected type 18650 batteries instead of unprotected type batteries. This is because the circuit of the protected type 18650 battery is embedded in the cell packaging (battery casing) which protects the cell from “over charge”, heat or “over discharge”, over current and short circuit and less likely to overheat, burst or start a fire.

FIG.4

5.5. REPLACE / INSTALL THE AA BATTERIES (FIG.4)

Unscrew the battery cover to access the battery compartment. Pull the strap up to remove the AA batteries and install new ones. Always keep the strap under the batteries. Close the battery cover and tighten the screw.

5.6. REPLACE / INSTALL THE RECHARGEABLE 18650 LITHIUM BATTERIES (FIG.5, 6 & 7).

Unscrew the battery cover to access the battery compartment. Install/replace the rechargeable batteries from the battery holder. Plug in the connector of the rechargeable battery holder. Place the rechargeable battery holder in position. Always keep the strap under the battery holder. Close the battery cover and tighten the screw. Make sure the battery cover doesn't clip on the cables of the battery holder when closing. Tighten the screw of the battery cover. **Note:** rechargeable batteries are not included in the package.

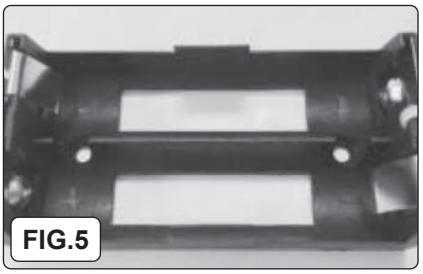
FIG.5

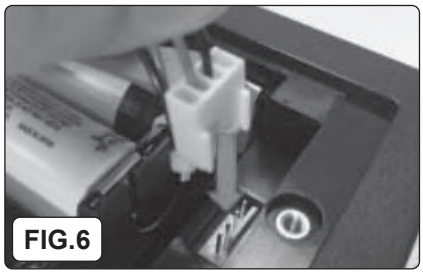
FIG.6

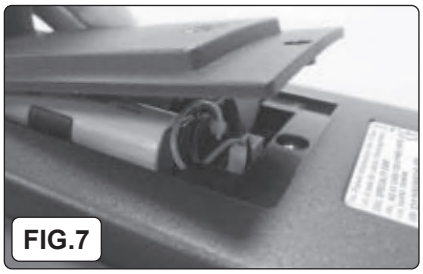
FIG.7

6. OPERATION

6.1. PREPARING TO TEST

- ✓ Be sure area around battery is well ventilated while battery is being tested.
- ✓ Clean battery terminals. Be careful to keep corrosion from contacting with eyes.
- ✓ Inspect the battery for cracked or broken case or cover. If battery is damaged, **DO NOT** use tester.
- ✓ If the battery is not sealed maintenance free, add distilled water in each cell until battery acid reaches level specified by the manufacturer. This helps purge excessive gas from cells. **DO NOT** overfill.
- ✓ If it is necessary to remove battery from vehicle to test, always remove ground terminal from battery first. Make sure all accessories in the vehicle are off to ensure you do not cause any arcing.

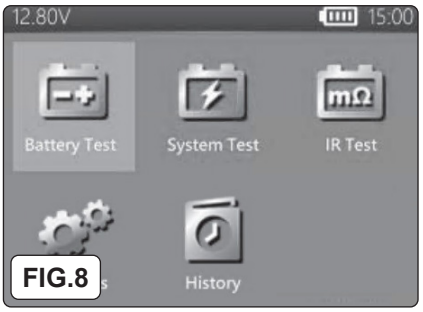

FIG.8

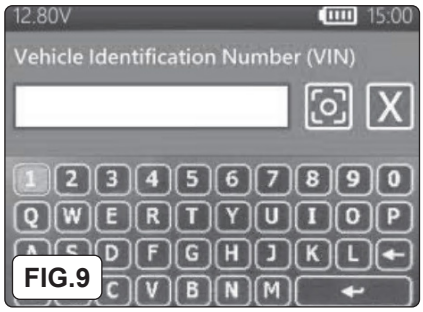

FIG.9

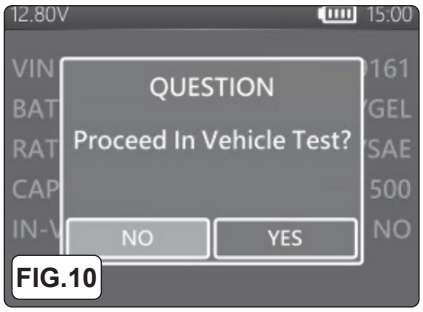

FIG.10

6.2. 6V AND 12V BATTERY TEST (FIG.8, 9 & 10)

6.2.1. Select "Battery Test" from the main menu.

6.2.2. Enter VIN manually:

1. Press ENTER when the input area is highlighted to initiate the virtual keyboard.
2. Type in the VIN and select "↵" to close the virtual keyboard.
3. Select "NEXT" to proceed.

Note:
1. Highlight the "X" icon and press ENTER to clear the input area.
2. Skip the process by directly selecting "NEXT".
3. Invalid VIN warning will pop up if the VIN does not meet requirements in terms of length or character. Select "Yes" to continue without modifying the VIN. Select "No" to return and re-enter the VIN.

6.2.3. Select "SETUP" to edit the battery testing criteria. Testing criteria will be stored after each test. Select "START" to reuse previous settings.

6.2.4. Select battery type. Available types: FLOODED, AGM FLAT, AGM SPIRAL, VRLA/GEL, EFB.

6.2.5. Select rating. Available ratings: CCA/SAE, DIN, EN, EN2, IEC, JIS, CA/MCA.

6.2.6. Select capacity. Available capacity range:

- 25 to 3000 CCA/SAE
- 25 to 2830 EN
- 25 to 2710 EN2
- 25 to 1985 IEC
- JIS (by battery type)
- 25 to 1685 DIN
- 25 to 3600 CA/MCA

6.2.7. Confirm battery position by selecting the YES/NO option of "TEST IN VEHICLE?".

6.2.8. The tester will then check if the user would like to proceed to an In-Vehicle Test.

If YES, the tester will automatically proceed to the system test after the battery test is completed.

If NO, the tester will perform only the battery test.

6.2.9. Temperature compensation. Select if battery temperature is above or below 0ºC/32ºF.

6.2.10. Test result will be presented after test is completed, use directional keys to review the test result. Select “PRINT” to print test result. Select “DONE” to return to the main menu.

6.3. SURFACE CHARGE

If the tester detects a surface charge, a pop-up notification will ask the user to turn on loads/headlights for 15 seconds to eliminate the surface charge. Please note that vehicles with LED headlights and modern vehicle control modules might not be able to eliminate surface charge within 15 seconds and the pop-up may continue. Turn on more loads and repeat the process if this problem persists.

6.4. BATTERY TEST RESULTS

- **GOOD & PASS**

The battery is good and capable of holding a charge.

- **GOOD & RECHARGE**

The battery is good but needs to be recharged.

- **CAUTION**

The battery may be serviced but performance will decline gradually. The battery may fail under extreme weather conditions and should be closely monitored, replacement might be necessary. Check battery connection and charging system to ensure the battery is properly charged.

- **RECHARGE & RETEST**

Battery is discharged, the battery condition cannot be determined until it is fully charged. Recharge and retest the battery.

- **BAD & REPLACE**

The battery will not hold a charge. It should be replaced immediately.

- **BAD CELL & REPLACE**

The battery has at least one cell short circuit. It should be replaced immediately.

- **LOAD ERROR**

Failed to measure battery condition, please make sure the battery is not over 3000CCA/SAE, clamps are properly connected to the battery, and clamps/cables are in a good state. Clamp/cable condition can be determined with the “Cable Diagnosis” tool. If the problem persists or clamp/cable need replacing, ask your dealer for replacement parts or further diagnostics.

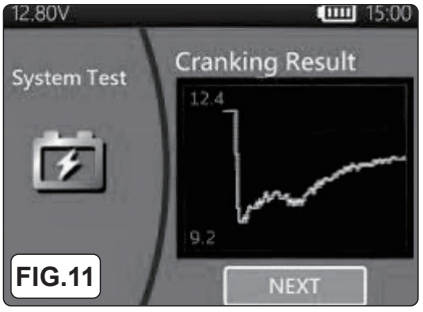

FIG.11

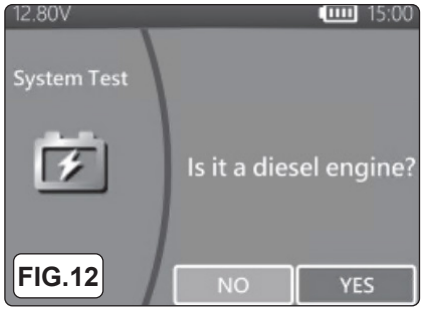

FIG.12

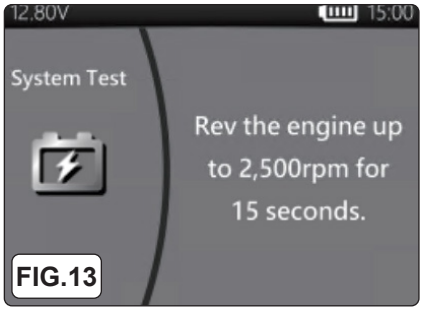

FIG.13

6.5. 12V AND 24V SYSTEM TEST (FIG.11, 12, 13 & 14)

6.5.1. Select “SYSTEM TEST” from the main menu.

6.5.2. Enter the VIN of the vehicle (same input method as Battery Test).

6.5.3. Turn off loads and start engine.

6.5.4. Use directional keys to review cranking test result.

6.5.5. Select “NEXT” to proceed to charging test.

6.5.6. “Is it a diesel engine?”

If YES, the tester will ask the user to rev the engine for 40 seconds before proceeding to idle & load on test.

If NO, the tester will proceed with the idle and load on test directly.

6.5.7. Select “NEXT” when idle test is completed and move on to the ripple & load on test.

6.5.8. Turn on loads and rev engine for 15 seconds. The tester will countdown 15 seconds.

6.5.9. Once completed, the ripple & load test results are displayed.

6.5.10. Select NEXT to review the complete system test results including the cranking, idle, ripple, and load on test results.

6.5.11. Use directional keys to switch between 4 different pages of the system test results.

6.5.12. Select PRINT if you would like to print out the system test result.

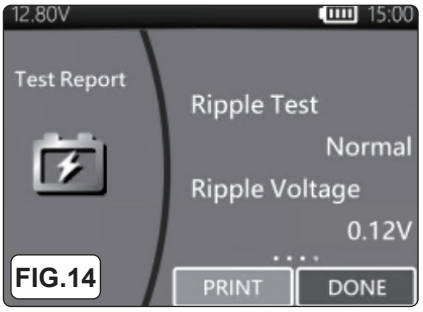

FIG.14

6.6. CRANKING TEST RESULTS

- **CRANKING VOLTS NORMAL**

The system is showing normal draw.

- **CRANKING VOLTS LOW**

The cranking voltage is below normal limits, troubleshoot the starter with manufacturers recommended procedure.

- **CRANKING VOLTS NOT DETECTED**

The cranking voltage is not detected.

6.7. IDLE TEST RESULTS

- **CHARGING SYSTEM NORMAL WHEN TESTING AT IDLE**

The system is showing normal output from the alternator. No problem is detected.

- **HIGH CHARGING VOLTS WHEN TESTING AT IDLE**

The voltage output from the alternator to the battery exceeds the normal limits of a functioning regulator. Check to ensure there is no loose connection and the ground connection is normal. If there is no connection issue, replace the regulator. Since most alternators have the regulator built-in, this will require you to replace the alternator. The normal high limit of a typical automotive regulator is 14.7 volts +/- 0.05. Check manufacturer specifications for the correct limit, as it will vary by vehicle type and manufacturer.

- **LOW CHARGING VOLTS WHEN TESTING AT IDLE**

The alternator is not providing sufficient current to the battery. Check the belts to ensure the alternator is rotating with engine running. If the belts are slipping or broken, replace the belts and retest. Check the connections from the alternator to the battery. If the connection is loose or heavily corroded, clean or replace the cable and retest. If the belts and connections are in good condition, replace the alternator.

6.8. RIPPLE TEST RESULTS

- **NORMAL RIPPLE DETECTED**

Diodes function well in the alternator / starter.

- **NO RIPPLE DETECTED**

Ripple is not detected.

- **EXCESS RIPPLE DETECTED**

One or more diodes in the alternator are not functioning or there is stator damage. Check to ensure the alternator mounting is sturdy and that the belts are in good shape and functioning properly. If the mounting and belts are good, replace the alternator.

6.9. LOAD ON TEST RESULTS

- **CHARGING SYSTEM NORMAL WHEN LOAD ON TESTING**

The system is showing normal output from the alternator. No problem detected.

- **CHARGING SYSTEM HIGH WHEN LOAD ON TESTING**

The voltage output from the alternator to the battery exceeds the normal limits of a functioning regulator. Check to ensure there are no loose connections and that the ground connection is normal. If there are no connection issues, replace the regulator. Since most alternators have the regulator built-in, this will require you to replace the alternator.

- **CHARGING SYSTEM LOW WHEN LOAD ON TESTING**

The alternator is not providing sufficient current for the system's electrical loads and the charging current for the battery. Check the belts to ensure the alternator is rotating with the engine running. If the belts are slipping or broken, replace the belts and retest. Check the connections from the alternator to the battery. If the connection is loose or heavily corroded, clean or replace the cable and retest. If the belts and connections are in good working condition, replace the alternator.

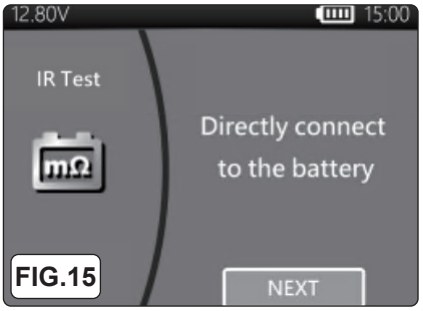

FIG.15

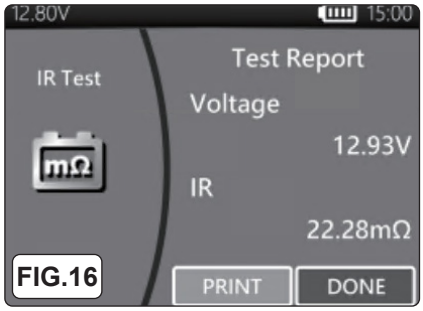

FIG.16

6.10. IR TEST (INTERNAL RESISTANCE TEST) (FIG.15 & 16)

6.10.1. Select IR TEST from the main menu.
6.10.2. Use the clamps to connect with the battery directly.
6.10.3. Temperature compensation. Select if battery temperature is above or below 0°C/32°F.
6.10.4. Once the IR test is completed, the tester will display the voltage & internal resistance value on the result page.
6.10.5. Select DONE to return to main menu or select PRINT to print out the IR test result.

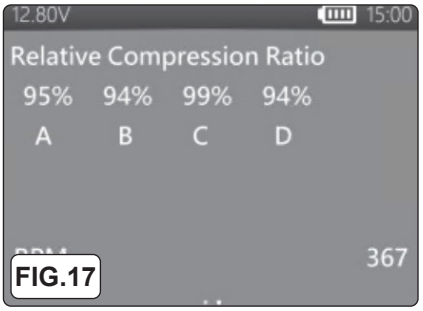

FIG.17

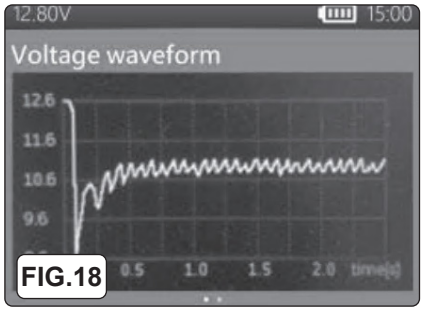

FIG.18

6.11. RELATIVE COMPRESSION RATIO TEST (FIG.17 & 18)

6.11.1. Select “Relative Compression Ratio” from the main menu.
6.11.2. Turn off engine & all loads of the vehicle.
6.11.3. Disable the injection or fuel pump fuse according to the service manual of the vehicle.
6.11.4. Directly connect the clamps to the battery instead of the jump post.
6.11.5. Choose number of the cylinders & make sure the battery’s OCV is above 12.6V.
6.11.6. Floor the throttle & crank the engine for at least 3 seconds after pressing start button.
6.11.7. Once the test is completed, the test result will be displayed as below.
6.11.8. User left / right button to switch between the relative compression ratio result page and voltage waveform page.
6.11.9. Press “enter” to exit.

7. SETTINGS

Enter SETTING from the main menu and then select the item you would like to adjust or proceed. Such as backlight, language, date & time, customized information, and cable diagnosis. Or simply check the version of tester.

7.1. BRIGHTNESS

7.1.1. Select “BRIGHTNESS” and use directional keys to adjust the brightness of the display.
7.1.2. Press ENTER to confirm the setting and return to settings menu. Or press BACK key to discard the change and return to the settings menu.

7.2. LANGUAGE

7.2.1. Select “LANGUAGE” to choose the language wanted.
7.2.2. Press ENTER to confirm the setting and return to setting menu. Or press BACK key to discard the change and return to the setting menu.

7.3. DATE & TIME

7.3.1. Use directional keys to adjust and press ENTER to proceed to the next item.
7.3.2. Once completed, press BACK to return to the setting menu.

7.4. INFORMATION

7.4.1. Select “INFORMATION” to enable / disable, edit or erase the customized print out info.
7.4.2. Press BACK to return to the setting menu.

7.5. VERSION

7.5.1. Select “VERSION” to check the current firmware version and serial number of the tester.

7.6. CABLE DIAGNOSIS

7.6.1. Select “CABLE DIAGNOSIS” to perform self diagnosis of the cable set.
7.6.2. Follow on screen instructions.
7.6.3. Clamp on a battery that the voltage is above 12.4V. And make sure its posts are clean.
7.6.4. Press ENTER to start.
7.6.5. Select START to start the cable diagnosis.
7.6.6. Result will be shown on the Test Report, use left and right key to switch between positive/negative cable test result explanation.

7.7. HISTORY

7.7.1. TEST RESULT

7.7.2. Select “HISTORY” and then enter “TEST RESULT” to review the test results within the last 7 days.
7.7.3. Select between test types & days for reviewing.
7.7.4. Select “ERASE” will clear all the test records that saved in the tester.

7.7.5. TEST COUNTER

If the “TEST COUNTER” is selected. The user may review the number of the tests that have been performed.
Or print out the counter if needed.

8. PC SOFTWARE

NOTE: Sealey PC Software can be found and installed at the following sources:
1. On the disc included in the box (selected models only). 2. At our website, www.sealey.co.uk

8.1. CONNECTING THE TESTER TO YOUR PC

8.1.1. Launch Sealey PC Software on your PC.
8.1.2. Connect the tester to PC with a USB cable.

8.2. VIEW TEST RESULT

8.2.1. Click on the View Test Result icon.
8.2.2. Select the type of test result you would like to review.
8.2.3. Test results will then be presented with function buttons on the top left and search box on the top right.

8.3. DOWNLOAD TEST RESULT

8.3.1. Click on the Download Test Result icon.
8.3.2. Click START to initiate the download.
After the download is finished, a pop-up window will appear, click “Yes” if you wish to clear all test result data on the tester, click “No” if otherwise.

8.4. DELETE TEST RESULT

8.4.1. Click on the Delete Test Result icon.
8.4.2. Click “Yes” if you wish to clear all test result data on the tester.
8.4.3. Click “No” if you wish to keep all existing test result data on the tester.

8.5. UPDATE FIRMWARE

8.5.1. Click on the Update Firmware icon.
8.5.2. Select the update file provided by Sealey.
❑ **WARNING!** Using firmware files from unknown sources may cause permanent damage to the tester. **DO NOT** decompress the file. **DO NOT** disconnect the tester while update is in progress.

8.6. TEST CODE

8.6.1. Click on the Test Code icon.
8.6.2. Click ADD to add a new field.
8.6.3. Enter the Test Code you would like to decode.
8.6.4. Results will be displayed after a valid code is entered.

9. GLOSSARY

9.1. WHAT IS A GEL BATTERY?

A gel battery is a lead-acid electric storage battery that:
• is sealed using special pressure valves and should never be opened.
• is completely maintenance-free.
• uses thixotropic gelled electrolyte.
• uses a recombination reaction to prevent the escape of hydrogen and oxygen gases normally lost in a flooded lead-acid battery (particularly in deep cycle applications).
• is non-spillable, and therefore can be operated in virtually any position. However, upside-down installation is not recommended.
• connections must be re-torqued and the batteries should be cleaned periodically.

9.2. WHAT IS AN AGM BATTERY?

An AGM battery is a lead-acid electric storage battery that:
• is sealed using special pressure valves and should never be opened.
• is completely maintenance-free.*
• has all of its electrolyte absorbed in separators consisting of a sponge-like mass of matted glass fibres.
• uses a recombination reaction to prevent the escape of hydrogen and oxygen gases normally lost in a flooded lead-acid battery (particularly in deep cycle applications).
• is non-spillable, and therefore can be operated in virtually any position. However, upside-down installation is not recommended.
• connections must be re-torqued and the batteries should be cleaned periodically.

9.3. WHAT IS A VRLA BATTERY?

Valve Regulated Lead Acid Battery – This type of battery is sealed Maintenance Free with a bounce valve or valves in the top of them that opens when a preset pressure is realized inside the battery and let’s the excess gas pressure out. Then the valve resets itself.

9.4. WHAT IS A SLI BATTERY?

These initials stand for Starting, Lighting and Ignition, which are the three basic functions which a battery has to perform on all normal vehicles. Batteries given this description will have been specifically designed for service on cars and trucks within a voltage controlled electrical system. Those SLI batteries which are intended for heavy haulage vehicles fitted with large diesel motors may often be called COMMERCIAL batteries. They have to be much more powerful and more robust than batteries intended for cars.

9.5. WHAT IS STATE OF HEALTH?

It means how much battery capacity is left (%) comparing with the marked original battery capacity.

9.6. WHAT IS STATE OF CHARGE?

It means how many percent of the battery is actually charged.

9.7. WHAT IS CCA (COLD CRANKING AMPS)?

The current in amperes which a new fully charged battery can deliver for 30 seconds continuously without the terminal voltage falling below 1.2 volts per cell, after it has been cooled to 0°F and held at that temperature. This rating reflects the ability of the battery to deliver engine starting currents under winter conditions.

9.8. WHAT IS AMPERE-HOUR?

The unit of measurement of electrical capacity. A current of one ampere for one hour implies the delivery or receipt of one ampere-hour of electricity. Current multiplied by time in hours equals ampere-hours.

9.9. WHAT IS CYLINDER COMPRESSION RATIO?

Correct functioning of the engine depends on many factors like correct sensor readings and proper functioning actuators. The Engine itself also needs to be in good condition.

It is essential to the running of the engine that it has sufficient compression. The compression provided by the rising piston is determined by the ratio of two volumes: the volume swept by the cylinder as it compresses, and the volume remaining in the combustion chamber at top-dead-center. This ratio is called the compression ratio.

The compression is also determined by the effectiveness of the seal between the cylinder's wall and the piston, and this seal is maintained by the piston rings. The same applies to the seating of both the inlet and exhaust valves. Piston rings are made of centrifugally spun cast iron, which produces a radial pressure forming the seal. Cast iron is also used for its excellent self-lubricating properties. Compression Ratio = Cylinder Volume divided by Chamber Volume. A typical compression is between 120 and 200 psi.

9.10. WHAT COULD CAUSE A LOW CYLINDER COMPRESSION?

1. An ineffective seal between the cylinder and the piston.
2. Poor seating of the inlet and exhaust valves.
3. Broken or seized piston rings.
4. Incorrect camshaft timing.
5. An obstructed induction tract.

9.11. WHAT COULD CAUSE A HIGH CYLINDER COMPRESSION?

1. Carbon build-up within the combustion chamber (reducing its volume)
2. Excessive 'skimming' of the cylinder head.
3. Incorrect thickness of the head gasket.

9.12. WHAT IS THE TRADITIONAL WAY OF TESTING CYLINDER COMPRESSION RATIO?

Checking the actual cylinder compression on the vehicle in a traditional way is not an easy task. The technician needs to disable the fuel system, remove the plastic cover above the engine, remove the coils and then unplug the sparks, before the cylinder compression gauge could access the cylinder. Plus, a common cylinder compression gauge could only measure one cylinder at a time. In other words, it takes four individual compression test on a four-cylinder engine by cranking and measuring 4 times to get the measurement for all 4 cylinders.

9.13. WHAT IS RELATIVE COMPRESSION RATIO?

The alternative way for testing the cylinders on a vehicle is called, "Relative compression ratio test".

The principle of the relative compression test is based on tracking the battery current/voltage changes during cranking to determine the compression values of all cylinders. Analysis of the current/voltage changes gives the comparative compression values of all cylinders.

An engine with poor compression in one or more cylinders can be quickly identified using the relative compression test, and with the relative compression test you can easily determine whether all cylinders have about the same compression. The relative compression analysis does not measure the actual pressure, but just compares one cylinder to the next. Hence the term "relative".

*Sealey is using the voltage analysis method as it's the most user-friendly way of conducting a test. The better the compression, the lower the voltage, and vice versa.

ENVIRONMENT PROTECTION

Recycle unwanted materials instead of disposing of them as waste. All tools, accessories and packaging should be sorted, taken to a recycling centre and disposed of in a manner which is compatible with the environment. When the product becomes completely unserviceable and requires disposal, drain any fluids (if applicable) into approved containers and dispose of the product and fluids according to local regulations.

REGISTER YOUR PURCHASE HERE

WEEE REGULATIONS

Dispose of this product at the end of its working life in compliance with the EU Directive on Waste Electrical and Electronic Equipment (WEEE). When the product is no longer required, it must be disposed of in an environmentally protective way. Contact your local solid waste authority for recycling information.

BATTERY REMOVAL

Under the Waste Batteries and Accumulators Regulations 2009, Jack Sealey Ltd are required to inform potential purchasers of products containing batteries (as defined within these regulations), that they are registered with Valpak's registered compliance scheme. Jack Sealey Ltd Batteries Producer Registration Number (BPRN) is BPRN00705.

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. Please note that other versions of this product are available. If you require documentation for alternative versions, please email or call our technical team on technical@sealey.co.uk or 01284 757505.
Important: No Liability is accepted for incorrect use of this product.
Warranty: Guarantee is 12 months from purchase date, proof of which is required for any claim.

Jack Sealey Ltd t/a Sealey Group, Kempson Way, Suffolk Business Park, Bury St Edmunds, Suffolk, IP32 7AR UK
Jack Sealey (EU) Ltd t/a Sealey Group, Farney Street, Carrickmacross, Co. Monaghan, A81 PK68 Ireland
Tel: 01284 757500 ▪ **Email:** sales@sealey.co.uk ▪ **Web:** www.sealey.co.uk