DIGITAL BATTERY & ALTERNATOR TESTER WITH PRINTER

MODEL NO: **BT2003.V5**

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.*

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.

Read instructions before use | Warning | Wear eye protection | Corrosive substance | No open flames | Indoor use only

1.1. PERSONAL PRECAUTIONS

▲ **IMPORTANT!** Observe all Warning Symbols.
❑ **WARNING!** Wear approved eye protection. Wear appropriate Personal Protective Equipment. A full range of Personal Protective Equipment is available from your Sealey dealer.
✓ Remove personal metallic items such as rings, bracelets, necklaces and watches. A lead-acid battery can produce a short-circuit current high enough to melt or weld a ring, which would cause severe burns.
✓ Ensure that hands and clothing are clear of fan blades and other moving or hot engine parts. Remove ties and ensure that belts cannot become entangled.
✓ Ensure that there is another person within hearing distance and is able to come to your aid should a problem arise when working near a lead-acid battery.
✓ Have fresh water nearby in case battery acid contacts skin or clothing; flush affected area immediately. If acid enters eyes, flush immediately with clean running water for a minimum of 15 minutes, seek medical attention.
× **DO NOT** smoke or allow a spark or flame in the vicinity of the battery or engine.

1.2. GENERAL SAFETY INSTRUCTIONS

✓ 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 ELECTRICIAN.*
✓ Ensure that the tester is in good condition before use. If in any doubt do not use the unit and contact a qualified 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.
✓ Clean battery terminals 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

Professional diagnosis of battery and alternator faults with the added facility to print the results. Test battery condition with as little as 1Volt of residual charge. No heat, no sparks and no misdiagnosis. Checks condition of alternator - no complicated connections or interpretation required. Analyse the charging system at rest and under load to determine condition of the alternator. Connect and follow the prompts on the 2-line/16 character LCD screen for straightforward answers. Incorporates simple voltmeter for voltage tests and additional system diagnostics. Rugged construction. Supplied in sturdy carry-case with batteries, two rolls of printing paper and instruction manual.

3. SPECIFICATION

MODEL No:.....BT2003.V5
Rated Battery Voltage:.....6-12V
Charging System Capability:.....12, 24V
Min. Power Requirement:.....1V
Printer rolls (Pack of 2):.....BT2003.01
Note: CCA = Cold Cranking Amps

Rated Systems:.....DIN, EN, IEC, JIS, SAE
Test Range:.....25-1300CCA DIN
.....40-2100CCA EN
.....30-1500CCA IEC
.....By battery type JIS
.....40-2000CCA SAE

Battery Type:
Regular liquid.
AGM Flat Plate.
AGM Spiral.
Gel.

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4. CONTENTS

Item	Description	Qty
1	Analyser/Lead/Crocodile Clips	1-set
2	Rubber Jacket	1
3	Printer Rolls	2
4	"AA" 1.5v Batteries	4
5	Blow Mould Carry Case	1

5. OPERATION

❑ **WARNING!** Ensure that you read, understand and apply the safety and operational instructions before connecting the tester clamps to the battery. Only when you are sure that you understand the procedures is it safe to proceed with the testing process.

5.1. PREPARATION

❑ **WARNING!** *Ensure that the vehicle, or battery, is in a well ventilated area before starting to test.*
5.1.1. Check battery casing for cracks or leakage. If damage is found **DO NOT** test, replace battery.
5.1.2. Clean battery terminals.
5.1.3. If possible, check electrolyte levels and top-up with distilled water as necessary.
5.1.4. Unless otherwise specified tests are carried out with **all** electrical items switched off. **Leaving any items switched on (boot light, interior light, etc.) can result in misdiagnosis.**
5.1.5. Confirm that the 4 x AA Batteries (supplied) are correctly fitted (fig.2) in the compartment in the base of the tester. Batteries are best fitted with the rubber jacket removed (fig.3). **Note that nothing will be seen on the display until the tester is connected to a vehicle battery.**
5.1.6. Connect the red clamp to the positive (+) battery terminal and the black clamp to the negative (-) terminal. When the internal battery becomes discharged the display will read **INTERNAL BATTERY LOW.**
5.1.7. If there is a poor connection the display will read **CHECK CLAMPS**, otherwise the display will read either **BATTERY TEST** or **SYSTEM TEST** or **LANGUAGE**.
5.1.8. Paper Load: Open the clear cover. Insert the paper in the feeder, with the paper feeding from underneath the roll. It will automatically feed into the printer.

5.2. DISPLAY GENERAL

By pressing the **< (forward) and > (back)** buttons the display will cycle through the options. Press **ENTER** button when the option you require is displayed.
5.2.1. **System Analyser** will display initially and then automatically switch to **Battery Test**. (fig.1)
5.2.2. Use the **<** (forward) and **>** (back) buttons to cycle between **System Test**, **Language Select**, and **Battery Test**. (fig.1)

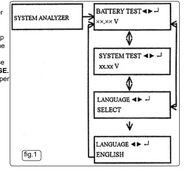

fig.1

5.3. BATTERY TEST

5.3.1. With battery test screen displayed press ENTER.
5.3.2. Use the **<** (forward) and **>** (back) buttons to select the battery type: Regular Liquid, AGM Flat Plate, AGM Spiral, Gel.

Press ENTER to confirm choice.

BATTERY TYPE
Regular liquid.
AGM Flat Plate.
AGM Spiral or Gel.

5.3.3. Use the **<** (forward) and **>** (back) buttons to select the battery rating: SAE, EN, IEC, DIN or JIS.)

Press ENTER to confirm.

SELECT RATING
SAE

5.3.4. Use the **<** (forward) and **>** (back) buttons to input the battery capacity.
CCA:
DIN: 25 - 1300
EN: 40-2100
IEC: 30 - 1500
JIS: By battery type
SAE: 40 - 2000
Press ENTER to begin test.

SET CAPACITY
xxxx SAE

5.3.5. Test Battery for 1 second.

TESTING

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5.3.6. Press **<** (forward) or **>** (back) buttons to select battery fully charged: **Yes** or **No.** Press ENTER to confirm choice.

IS BATTERY CHARGED? YES

5.3.7. When the test is complete, the LCD shows the actual volts and CCA. **One of the following results will be displayed.**

5.3.8 **GOOD & PASS:** Battery is capable of holding a charge.

GOOD & PASS
xx.xxV xxxx SAE

5.3.9 **GOOD & RECHARGE:** The battery is good but needs to be recharged.

GOOD & RECHARGE
xx.xxV xxxx SAE

5.3.10 **RECHARGE & RETEST:** Battery is discharged, the battery condition cannot be determined until it is fully charged. Recharge and retest.

RECHARGE & RETEST
xx.xxV xxxx SAE

5.3.11 **BAD & REPLACE:** The battery will not hold its charge. Replace.

BAD & REPLACE
xx.xxV xxxx SAE

5.3.12. **LOAD ERROR:** The tested battery is larger than 2000CCA or 200Ah. Or the clamps are not connected properly. *Please fully charge the battery and retest after excluding both previous reasons. If reading is the same, the battery should be replaced immediately.*
NOTE! The operator is asked if any accessories are left on as a possible cause. If accessories are left on, the operator is instructed to charge and retest the battery. If accessories are not left on, the operator is instructed to replace the battery since the charging system is working and a good battery should have accepted a charge.
5.3.13. Press **<** (forward) or **>** (back) buttons to select result printing: Yes or No. Press ENTER to confirm choice.
5.3.14. Remove the clamps from the battery after completion of testing.

LOAD ERROR
PRINT RESULT? NO

5.4 SYSTEM TEST

5.4.1. Press "ENTER" button, you will view the following screen.

SYSTEM TEST
xx.xxV

5.4.2. Turn off all vehicle accessory loads such as light, air conditioning, radio, etc. before starting the engine.

TURN OFF LOADS
START ENGINE

5.4.3. When the engine is started, one of the three results will be displayed along with the actual reading measured.

5.4.4. **CRANKING VOLTS NORMAL:** The system is showing normal draw. Press ENTER to perform the charging system test

CRANKING VOLTS
xx.xxV NORMAL

5.4.5. **CRANKING VOLTS LOW:** The cranking voltage is below normal limits, troubleshoot the starter with manufacturer's recommended procedure.

CRANKING VOLTS
xx.xxV LOW

5.4.6. **CRANKING VOLTS NO DETECTED:** The cranking voltage is not detected.

CRANKING VOLTS
NO DETECTED

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5.4.7. If the cranking voltage is normal, press ENTER to begin charging system test.

PRESS ENTER FOR CHARGING TEST

5.4.8. Press the ENTER key, you will view the following screen.

MAKE SURE ALL LOADS ARE OFF

5.4.9. Press the ENTER key, one of the three following results will be displayed along with the actual reading measured.
LOW CHARGING VOLTS WHEN TESTED AT IDLE: The alternator is not providing sufficient current to the battery. Check the belt to ensure the alternator is rotating with engine running. If the belt is slipping or broken, replace 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 belt and connections are in good condition, replace the alternator.
CHARGING SYSTEM NORMAL WHEN TESTED AT IDLE: The system is showing normal output from the alternator. No problem is detected.
HIGH CHARGING VOLTS WHEN TESTED AT IDLE: 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 the ground connection is good. If there are no connection problems, replace the regulator. Since most alternators have the regulator built-in, this will require you to replace the alternator. The normal limit of a typical automotive regulator is 14.6 volts. Check manufacturer's specifications for the correct limit, as it will vary by vehicle type and manufacturer.

ALT. IDLE VOLTS
xx.xxV LOW
ALT. IDLE VOLTS
xx.xxV NORMAL
ALT. IDLE VOLTS
xx.xxV HIGH

5.4.10. Following the charging system at idle, press ENTER for the charging system with accessory loads. Turn on the blower to high (heat), high beam headlights, and rear defogger. **DO NOT** use cyclical loads such as air conditioning or windshield wipers.
5.4.11. When testing older model diesel engines, run the engine to 2500 rpm for 15 seconds.
5.4.12. Press ENTER to look for the amount of ripple from the charging system to the battery. One of two testing results will be displayed along with the actual testing measured.
5.4.13. **RIPPLE DETECTED NORMAL:** Diodes function well in the alternator/stator.

TURN ON LOADS AND PRESS ENTER
RIPPLE DETECTED
xx.xxV NORMAL

5.4.14. **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 belt is in good shape and functioning properly. If the mounting and belt are good, replace the alternator.
5.4.15. Press the "ENTER" key to continue the charging system test with accessory loads. One of the following three results will be displayed along with the actual test measured.
CHARGING SYSTEM HIGH WHEN TESTED WITH ACCESSORY LOADS: 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.

NO RIPPLE DETECT
RIPPLE DETECTED
xx.xxV HIGH
ALT. LOAD VOLTS
xx.xxV HIGH

CHARGING SYSTEM LOW WHEN TESTED WITH ACCESSORY LOADS: The alternator is not providing sufficient current for the system's electrical loads and the charging current for the battery. Check the belt to ensure the alternator is rotating with the engine running. If the belt is slipping or broken, replace 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.
CHARGING SYSTEM NORMAL WHEN TESTED WITH ACCESSORY LOADS: The system is showing normal output from the alternator. No problem detected.
5.4.16. Press ENTER when charging system test is completed. Turn all accessory loads and engine off. Press ENTER to return to step 1 or remove the test clamps from the battery posts after completion of testing to end test.

ALT. LOAD VOLTS
xx.xxV LOW
ALT. LOAD VOLTS
xx.xxV NORMAL
TEST OVER. TURN OFF LOADS & ENGINE

❑ **NOTE! A 24V SYSTEM TEST result can be printed when connected to a 12V battery. Refer to the following:-**
24V SYSTEM TEST PRINTING: The printer will not function on a 24 Volt battery system. The test results on a 24V system will be recorded until you connect to a 12 Volt battery and correct screen displays. Select "YES" and press the 'ENTER' key to print the result; then disconnect the crocodile clips. The screen will appear again after you reconnect the crocodile clips.
Select "NO" and press the 'ENTER' key to go back to the main menu.

PRINT 24V SYSTEM RESULT? YES

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6. MAINTENANCE

6.1. After each use clean the tester clips.
6.2. Clean the tester casing, jacket and lead with a soft cloth and mild detergent solution.
6.3. Keep the tester leads loosely coiled during storage without snagging or crushing.
6.4. **DO NOT** attempt to repair damaged leads, these must be replaced by your Sealey service agent or a qualified person.
6.5. **DO NOT** attempt to repair tester electronics, this must be done by your Sealey service agent or a qualified person.
6.6. Replace "low" batteries as described in 5.1.5.. Observe polarity from fig.2 and read the note on **Battery Removal** below.

fig.2

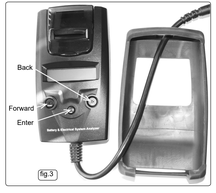

fig.3

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.

BATTERY REMOVAL SEE SECTION 6
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.

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.

Parts support is available for this product. To obtain parts, please log on to www.sealey.co.uk, email sales@sealey.co.uk or telephone 01284 757500

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 is required for any claim.

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