

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. PLEASE KEEP INSTRUCTIONS SAFE FOR FUTURE USE.**

**1. SAFETY INSTRUCTIONS**



**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 there is another person within hearing range of your voice 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 a ring or the like to metal, which would cause severe burns.
- ✓ Ensure 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 battery or engine.

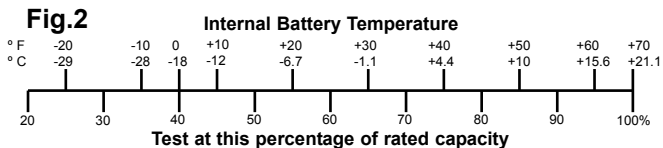


**1.2. GENERAL SAFETY INSTRUCTIONS**

- ✓ Familiarise yourself with the application and limitations of the tester as well as the potential hazards. Also refer to the vehicle manufacturer's hand book. *IF IN ANY DOUBT CONSULT AN ELECTRICIAN.*
- ✓ Ensure the tester is in good order and condition before use. If in any doubt do not use the unit and contact an electrician.
- ✓ Only use recommended attachments and parts. To use non-recommended items may be dangerous and will invalidate your warranty.
- ✓ Keep tools and other items away from the engine and ensure you can see the battery and working parts of engine clearly.
- ✓ Confirm that the battery to be tested is 12 volt before attaching clamps to battery terminals.
- ✓ Should the unit suffer excessive shock, it must be checked by a qualified service agent before further use.
- ✓ If the battery terminals are corroded or dirty clean them with a solution of water and baking soda before attaching the clamps.
- ✓ Keep children and unauthorised persons away from the working area.
- ✗ **DO NOT** dis-assemble 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 leads from tester to battery. Ensure positive (+/RED) is to positive and negative (-/BLACK) is to negative. If symbols cannot be distinguished, remember that the negative terminal is the one directly connected to the vehicle bodywork.
- ✗ **DO NOT** pull the cables or clamps from the battery terminals.
- ✗ **DO NOT** use the tester outdoors, or in damp, or wet locations and **DO NOT** use within the vicinity of flammable liquids or gases.
- ✓ Ensure there is effective ventilation to prevent a build-up of explosive gases, and do not cover or obstruct tester ventilation louvres.
- ✗ **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**

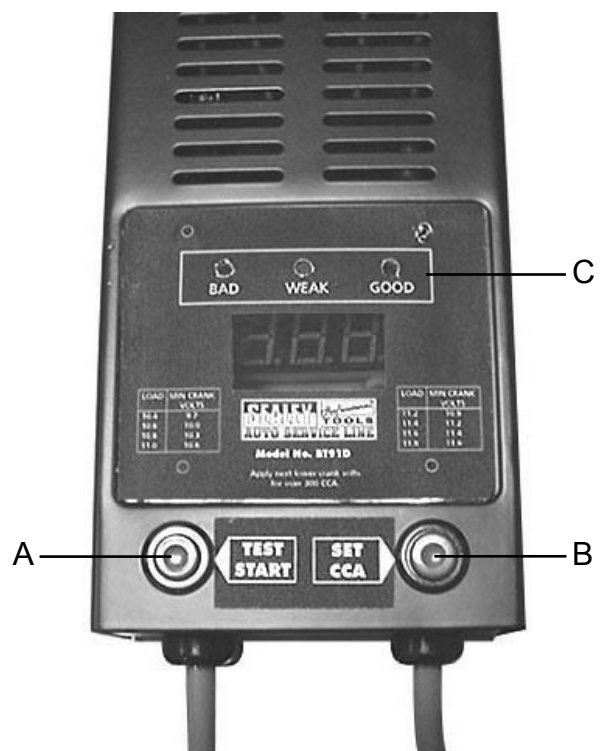
12Volt Battery tester with large, easy-to-read LCD digital display and battery condition LEDs. Can be set to specific battery CCA rating. Applies appropriate load across terminals and reads voltage performance. Will also check charging voltage and starter motor circuit.



**3. OPERATION**

- 3.1 Battery Load Test** (Performed in order to evaluate a battery's ability to crank an engine).
- 3.1.1 Disconnect the battery from the vehicle and ensure the battery tester is off.
  - 3.1.2 Connect the negative "-" (black) clamp to the negative battery terminal and likewise, connect the positive "+" (red) clamp to the positive battery terminal. Ensure a good electrical connection.
  - 3.1.3 Set the CCA (Cold Cranking Amps) rating of the battery on the meter, by way of the **SET CCA** switch (fig.1.B). The default setting for the BT91D is 500 CCA. With each change of CCA level, a short beep will sound. The appropriate rating should be shown on the battery, if not, consult the supplier/manufacturer for information.
  - 3.1.4 With the clamps connected to the battery terminal, the digital display will indicate the battery's **STATE OF CHARGE**. Should this be less than 12V, the battery will need to be recharged before load testing can take place. If, after charging for a sufficient period of time the battery still produces a state of charge test result of less than 12V, the battery is defective and should be replaced immediately. Should the display remain blank, check for loose connections and ensure the correct polarity has been observed. If all is as it should be and yet the display remains blank, the battery is defective and should be replaced.
  - 3.1.5 To perform the load test, simply depress the **LOAD TEST** switch (fig.1.A), a single beep should sound. The load test will last for 10 seconds after which a continuous beeping will sound. To stop the beeping, remove one of the testing clamps but NOT before noting the readings/results given by the meter (see 3.1.6)
  - 3.1.6 When the test is complete, the digital display will show the load voltage of the battery, unless the battery's STATE OF CHARGE was below 12V in which case the display will read "-L-" (see Section 3.1.4). The status of the battery i.e. Good, Weak or Bad, is indicated by the LEDs present on the meter (fig.1.C).  
 Note: If "ERR" is displayed, the tester itself or it's relay are defective.

**Fig.1**



Load Test Result	Battery Condition
Good (green LED)	Battery capacity is OK (battery may or may NOT be fully charged). Check specific gravity of battery fluid to determine the charge state. If not fully charged, check for charging system fault (section 3.2) or electrical drain.
Weak or Bad but display remains steady (yellow or red LED)	Battery capacity is not satisfactory. Battery may be defective or only partially charged. Check specific gravity of battery fluid to determine whether or not the battery is defective or merely requires charging. Should the battery prove defective, it must be replaced immediately.
Weak or Bad but displayed voltage is falling (yellow or red LED)	Battery may be defective or extremely run down. Observe the digital readout - output recovery to 12V or above within seconds of load test completion indicates a defective battery. Slow output recovery suggests that the battery is run down.

### 3.2 Charging Voltage Test

3.2.1 This test enables the user to measure the output voltage of the alternator/regulator.

**NOTE: ENGINE MUST BE AT NORMAL OPERATING TEMPERATURE.**

3.2.2 Connect the testing clamps to the battery, as for the Battery Load Test (see section 3.1.2).

3.2.3 Turn off all lights and accessories. Operate the engine at a fast idle (approx. 1500rpm). DO NOT operate the tester's load switch.

3.2.4 Read the digital display and compare results against expected results given in manufacturer's handbook.

As a guide:

Displayed voltage less than 13.5V                      Insufficient voltage - check alternator.

Displayed voltage between 13.5V and 15V              OK

Displayed voltage greater than 15V                      Excessive voltage - check regulator.

### 3.3 Starter Motor Test

3.3.1 This test enables the user to identify excessive starter current draw.

Note: It is essential that the user performs the battery load test (see section 3.1) and proceeds to this test only if the battery is good.

**ENGINE MUST BE AT NORMAL OPERATING TEMPERATURE.**

3.3.2 Connect the testing clamps to the battery (see section 3.1.2).

3.3.3 Disable the ignition system so that the car will not start.

3.3.4 Crank the engine and note the voltage reading during this operation.

3.3.5 A displayed voltage of less than 9 volts indicates excessive current draw, which may damage the battery.

Excessive current draw in this situation could be caused by the following:

Bad connection,

Failing starter motor,


Battery is insufficient for the vehicle's requirements.

Please refer to vehicle manufacturer's manual for further information/guidelines.

## 4. MAINTENANCE

4.1 The BT91D requires very little maintenance. Keep the case and display clean by wiping occasionally with a damp cloth - DO NOT allow water to enter the case and DO NOT attempt to clean the unit with any form of solvent/abrasive.

4.2 Remove any corrosion from the test clamps using a wire brush. Rinse and dry thoroughly after such cleaning.




<p><b>DIGITAL BATTERY TESTER WITH CCA</b></p> <p><b>MODEL No: BT91D</b></p> <p>89/336/EEC EMC Directive</p> <p>98/37/EC Machinery Directive</p> <p>93/68/EEC CE Marking Directive</p>	<p><b>Declaration of Conformity</b> We, the sole importer into the UK, declare that the product listed here is in conformity with the following standards and directives.</p> <p> Signed by Tim Thompson  23rd March 2007</p> <p>The construction file for this product is held by the Manufacturer and may be inspected by a national authority upon request to Jack Sealey Ltd.</p> <p><i>For Jack Sealey Ltd. Sole importer into the UK of Sealey Professional Tools.</i></p>
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**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:** Call 01284 757525 for our catalogue & promotions. Leave your full name, address & postcode.

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