



INSTRUCTIONS FOR

DIGITAL BATTERY TESTER 12V

MODEL NO: **BT103**

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 instruction manual



Explosive material



Wear eye protection



Corrosive substance



No open flames



Indoor use only

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

▲ **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.

X **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.

X **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.

X **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.

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

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

X **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

Compact, fast and accurate assessment of battery condition, even with the battery partially discharged. No heat, no sparks and no misdiagnosis. Just key in the battery rating from the top of the battery and the tester displays its results on an LCD screen.

3. SPECIFICATION

Model no: **BT103**
Rated battery voltage: 12V
Rating systems: DIN, EN, GB, IEC, SAE
Test ranges: 100-1400 CCA* DIN
..... 100-2000 CCA* EN
..... 100-1400 CCA* GB
..... 100-1400 CCA* IEC
..... 100-2000 CCA* SAE
..... By battery type JIS
Voltage range: 9-15V
Minimum power requirement: 9V
*CCA=cold cranking amps
Languages: English, German, Dutch, French, Italian, Polish, Finnish

4. FEATURES



- 4.1. **LCD DISPLAY fig.1.1**
 - 4.1.1. Indicates test results. It is a two line backlit display with 8 characters on each line.
- 4.2. **ENTER BUTTON fig.1.2**
 - 4.2.1. Confirms a selection (or action) from a menu list or returns to the main menu.
- 4.3. **SCROLL BUTTON fig.1.3**
 - 4.3.1. Scrolls through the menu items or cancels an operation.
- 4.4. **CLIPS fig.1.4**
 - 4.4.1. Connects the tester to the battery.
- 4.5. **BATTERY INTERNAL RESISTANCE**
 - 4.5.1. Internal Resistance (IR) is an important indicator of battery capability. When Internal Resistance exceeds a certain value, the engine can not be started. The normal IR value for 12V should be under 10mΩ.
- 4.6. **BATTERY VOLTAGE**
 - 4.6.1. Normally it is impossible for the voltage of a battery, after it has been charged, to be 100%. The maximum value is 98%.
Charged:
98% Above 12.59V
75% 12.45V
50% 12.15V
Discharged:
Below 12.00V

5. OPERATION

5.1. BEFORE TESTING

- 5.1.1. For 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 the cycling of the battery, can the chemical properties of the battery be restored after a long period of no use.
- 5.1.2. If after 3-5 battery charges and discharges, the battery state of health is still lower than 60%, then battery replacement should be considered.
- 5.1.3. Low use batteries should be charged once every 1-2 months to extend the battery's life.
- 5.1.4. When testing a battery fitted to a vehicle, wait for ten minutes after the engine has been turned off, for the most accurate battery test result.
- 5.1.5. If the battery voltage is below 12.4V recharge it.
- 5.1.6. When charging is finished, do not test immediately, wait for at least ten minutes to allow the battery to stabilise, then test.

5.2. CONNECTING THE TESTER

- 5.2.1. Before testing make sure the battery terminals are really clean as grease and dust could lead to errors in the test results.
- 5.2.2. If the battery is still fitted to a vehicle, make sure that all the car electronics are off, the doors are closed and that the ignition is turned off.
- 5.2.3. The red clip is connected to the positive electrode and the black clip is connected to the negative electrode. The tester has an automatic protection function. If the clips are accidentally reversed the screen will be dim, but it will not have any adverse effects on the tester.
- 5.2.4. Ensure that the clips have a firm, secure grip on the battery terminals.
- 5.2.5. If the tester has a poor connection it will not be able to boot up. If this happens clean the battery terminals.

5.3. TESTER START UP

The tester automatically starts up after the clamps are correctly connected and displays the BATTERY TOOL start up interface, see fig.2. After 2 seconds it automatically enters the battery test programme.



fig.2

5.4. BATTERY TEST

- 5.4.1. **Enter the main menu.** There are two sub menus: ANALYZER and LANGUAGE see figs. 3 and 4 to scroll between. Set the desired language by scrolling through and pressing enter to set the desired language.

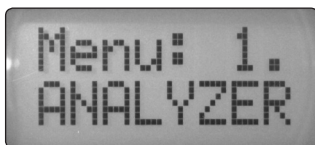


fig.3



fig.4

- 5.4.2. **Use scroll to choose the battery's actual position.** Choose between OUT OF VEHICLE or IN VEHICLE, press enter to confirm, see figs.5 and 6. (OUT OF VEHICLE is with the battery disconnected, IN VEHICLE is with the battery connected to the vehicle).



fig.5



fig.6

5.4.3. Battery System Standard and Rating

- 5.4.3.1. Use scroll to choose the type of battery: CCA, DIN, JIS, EN, IEC, GB, SAE, MCA, BCI, CA, then press enter, see fig.7. The tester will test each battery according to the selected system and rating.
- 5.4.3.2. Use the scroll key to select according to the actual system standard and the rating marked on the battery.



fig.7

- 5.4.3.3. CCA: Cold start current value is the most common specification developed by the SAE and the BCI.
 BCI: International Battery Standards Committee.
 CA: Effective starting current rating at 0°C.
 MCA: Marine Battery Standard, effective starting current rating at 0°C.
 JIS: Japanese Industrial Standard displays a combination of numbers and letters on the battery e.g. 55D23, 80D26.
 DIN: German automotive industry stands committee.
 EN: The European Automotive Manufacturer’s Association standards.
 SAE: American Society of Engineers Standards.
 GB: China National Standard.

5.4.3.4. Range rating is as follows:

Battery Standard	Rating Range
CCA	100-2000
BCI	100-2000
CA	100-2000
MCA	100-2000
JS	26A17-245H52
DIN	100-1400
IEC	100-1400
EN	100-2000
SAE	100-2000
GB	100-1400

5.4.3.5. Choose the correct battery standard; press ‘enter’ then the menu shown in fig.8 appears.



fig.8

5.4.3.6. Press scroll to increase or decrease in increments 5 units. Continue scrolling to the required battery rating. To change from increase to decrease hold scroll for three seconds and the menu shown in fig. 9 will appear. Press scroll again and arrow will point upwards to increase.

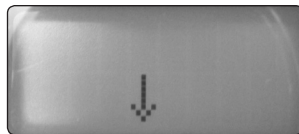


fig.9

5.4.3.7. If the battery does not show the standard on its label select CCA. If the battery does not display the rating value then take 7 times quantity of electric charge as reference value. For example:
 12V, 60Ah then input $60 \times 7 = 420\text{CCA}$.

5.4.3.8. After choosing the correct test standard and rated capacity press enter and the tester will begin testing, see fig.10.

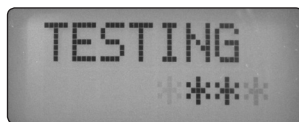


fig.10

Test Result

5.4.3.9. In less than 3 seconds the results of the test will be displayed on screen, see fig.11. Press the enter button to exit.

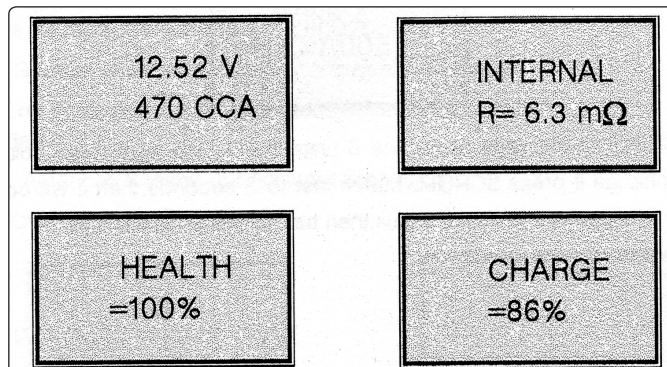


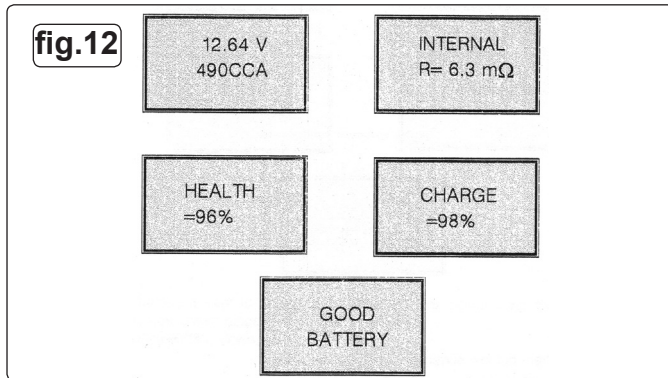
fig.11

5.4.3.10. The tester will determine the battery's condition and produce the following condition descriptions:

1. Health>60%, Voltage>12.4V-- Good battery
2. Health>60%, Voltage<12.4V-- Good, Recharge
3. Health<60%, Voltage>12.4V-- Replace
4. Health=0, Voltage<12.4V, Electric current=0A or 0CCA
5. Health<60%, Voltage<12.4V-- Charge, Retest

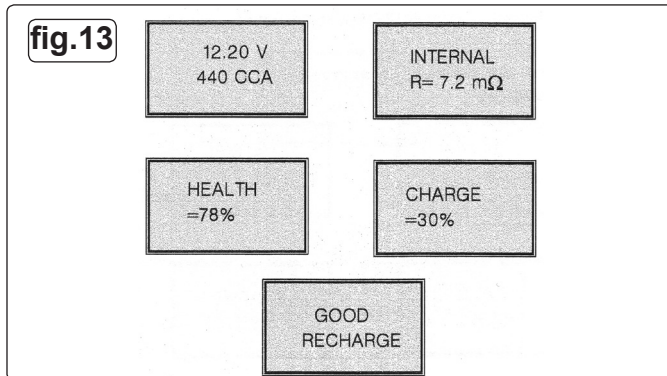
5.4.4. **The 5 Battery Test Results:**

5.4.4.1. **Good Battery see fig.12**



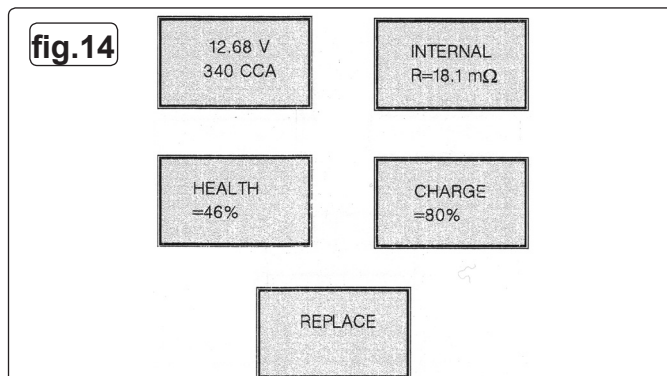
The battery is in good condition and ready to use, (**Health>60%, Voltage>12.4V**).

5.4.4.2. **Good, Recharge see fig.13**



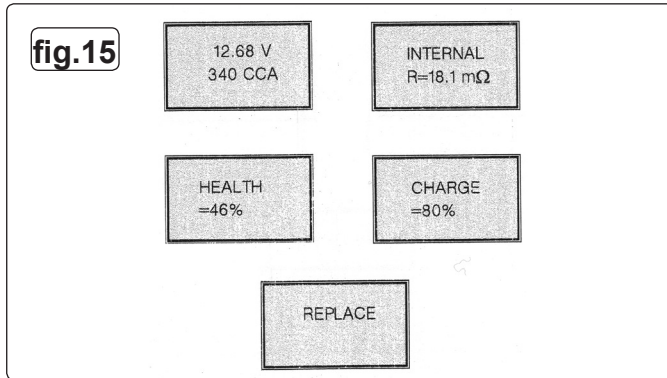
Good battery but low current, recharge before using, (**Health>60%, Voltage<12.4V**).

5.4.4.3. **Replace see fig.14**



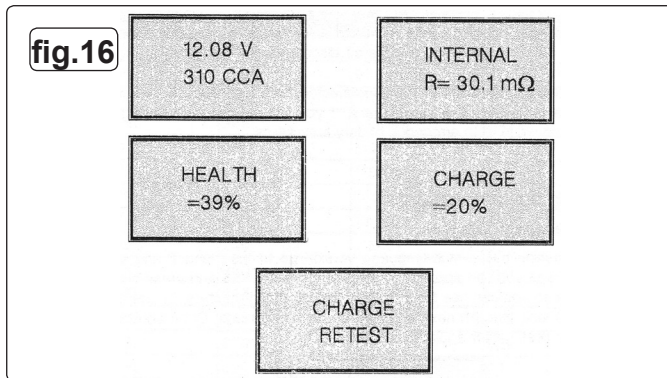
The battery is near to, or has already reached the end of its usable life. Replace the battery, (**Health<60%, Voltage>12.4V**).

5.4.4.4. **Bad Cell, Replace see fig.15**



The battery has a damaged cell or a short circuit, replace the battery, (**Health=0, Voltage<12.4V, Electric Current=0A or 0CCA**).


5.4.4.5. **Charge, Retest see fig.16**




The battery is unstable and needs to be recharged and retested to avoid error. If the same test result appears after recharging and retesting the battery is regarded as damaged and should be replaced, (**Health<60%, Voltage<12.40V**).

Note: If 'REPLACE' resulted from IN VEHICLE mode, it could be the case that the battery cables are not well connected. Retest the battery in OUT OF VEHICLE mode before making a decision about replacing the battery.

Note: After testing press scroll to return directly to the startup interface.





Environmental 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 off any fluids (if applicable) into approved containers and dispose of the product and the fluids according to local regulations.

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.

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.



Sole UK Distributor, Sealey Group.
Kempson Way, Suffolk Business Park,
Bury St. Edmunds, Suffolk.
IP32 7AR

☎ 01284 757500

☎ 01284 703534

🌐 www.sealey.co.uk

✉ sales@sealey.co.uk

Appendix: JIS/CCA EQUIVALENT

JIS	CCA	JIS	CCA
26A17L	185	115D31L	740
26A19L	185	95E41L	475
30A19L	210	100E41L	505
34A19L	245	105E41L	540
26B17L	185	110E41L	575
28B17L	195	115E41L	610
28B19L	190	120E41L	635
34B17L	240	130E41L	680
34B19L	240	115F51	575
36B20L	260	130F51	680
38B19L	265	145F51	735
38B20L	265	150F51	765
40B19L	270	170F51	925
42B19L	290	145G51	685
44B19L	310	155G51	720
44B20L	300	165G51	820
46B24L	295	180G51	860
50B24L	325	195G51	930
55B24L	370	190H52	765
60B24L	390	210H52	910
65B24L	425	225H52	995
32C24L	195	245H52	1170
48D26L	250	NS40Z	280
50D20L	310	NS50Z	300
55D23L	320	NS60Z	325
55D26L	290	NS70Z	450
65D23L	370	N100Z	560
65D26L	370	N120Z	640
65D31L	340	54801	360
70D23L	420	55415	440
75D23L	465	55530	370
75D26L	450	55566	450
75D31L	380	54801	360
80D23L	500	56093	480
80D26L	490	56318	500
85D23L	530	56618	550
85D26L	525	56620	550
90D26L	560	57069	640
95D31L	565	58500	500
105D31L	655	58815	660
110D26L	670	78550	550