



EN

Original Instructions
Version 1 - January 2026

100A

BATTERY LOAD TESTER

31290



1. Preface

These are the original product instructions.
Read the instruction manual in full and retain
for future reference.

Please visit drapertools.com/manuals for the latest
version of this manual and the associated parts list,
if applicable.

1.1 Product Reference

User Manual for: 100A Battery Load Tester

Stock No: 31290

Part No: BT103A

1.2 Revisions

Version 1: January 2026

First release

As our manuals are continually updated, always ensure
that the latest version is used.

Please visit drapertools.com/manuals for the latest
version of this manual and the associated parts list,
if applicable.

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3.1 Intended Use

This product is designed to test the voltage of 6V and 12V lead-acid batteries of up to 100Ah and to test the charging and starting circuits found on most vehicles.

Any other application beyond the conditions established for use will be considered misuse. Draper Tools accepts no responsibility for improper use of this product.

This product is suitable for use by enthusiasts and tradespersons alike.

Read this manual in full before attempting to assemble, operate or maintain the product, and retain it for later use.

3.2 Specification

Stock No.	31290
Part No.	BT103A
Applicable batteries	
Type	Lead-acid
Max. capacity	100Ah
Voltage	6V / 12V
CCA* range	200–1,000
Load simulation	100A
Max duty cycle	Max. 10secs on/10secs off (No more than 3 tests per 5min period)
Temperature	
Operating	0°C to 55°C
Storage	-20°C to 70°C
Relative humidity	Max 80%
Dimensions (approx.)	295 X 160 X 80mm

* CCA = Cold cranking amps

4. Health and Safety Information

Important: Read all the Health and Safety instructions before attempting to operate, maintain or repair this product. Failure to follow these instructions may result in injury or damage to the user or the product.

4.1 General Health and Safety Precautions

- Observe all standard safety precautions and good practices when working with electrical equipment and lead-acid batteries.
- Ensure that your working environment is well lit, with any bystanders a safe distance away.
- Use the product only as instructed in this manual; **DO NOT** disassemble, open or modify it in any way.
- **ONLY** use spare parts supplied by Draper Tools.
- **DO NOT** use this product if you are tired or under the influence of alcohol, drugs or other medication.
- **DO NOT** use this device in wet environments or expose it to water, other liquids or frost.
- **DO NOT** obstruct or insert foreign objects into the air vents.
- Before every use, inspect the product for broken, cracked, loose or corroded parts and damaged cables. **Important:** **DO NOT** use this product if it is damaged in any way. **DO NOT** attempt to disassemble a damaged product; contact Draper Tools to discuss repair and replacement options.
- **ALWAYS** wear protective gloves and eye protection while using this product.
- Damaged external cords must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.
- **NEVER** carry the product by its external cords.
- Keep this product out of reach of children.

4.2 Additional Safety Instructions for this Battery Load Tester



WARNING! ONLY use this product to test batteries and circuits for which it is rated. NEVER use this product to test lithium-ion batteries.

- **DO NOT** place the product on flammable surfaces when in use.
- **DO NOT** use this product near devices that may cause sparks.
- **ALWAYS** ensure that the load test switch is in the off (○) position before connecting the clamps to the terminals.
 - **DO NOT** press the load test switch until both clamps are correctly connected.
- **NEVER** allow the clamps to touch one another or contact the same battery terminal as this may result in current arcing.
- **NEVER** touch both the positive and negative terminals of the connection leads.
- If the terminals are connected incorrectly, rectify the error **IMMEDIATELY**.
- Keep the clamp cables away from hot or sharp engine parts that may cause damage.
- Chock the vehicle wheels and ensure that the vehicle is in neutral (manual transmission) or park (automatic transmission) with the handbrake or parking brake applied if you intend to perform any test that requires the engine to be running.
- Keep clear of parts within the vehicle that move, heat up or emit fumes and may cause harm when the engine is switched on.
 - Allow time for heated parts to cool after the engine is switched off.
- **NEVER** leave the engine running unattended.



WARNING! The metal frame of the product becomes very hot during use.

- **NEVER** hold the load test switch in the on (I) position for more than **10** seconds as the product will heat up excessively and damage its internal parts.
- **NEVER** leave the engine running for more than **five** seconds when performing a charging test as the product will heat up excessively and damage its internal parts.
- **DO NOT** touch the metal body of the tester during or immediately after use.
- **ALWAYS** wear protective gloves when using this product.
- Place this product on a heat-resistant surface during and immediately after use.

4.3 Working With Lead-Acid and Other Vehicle Batteries

**WARNING!**

Risk of explosive gases.

Working in close proximity to lead-acid batteries is dangerous as they produce potentially explosive gases during normal operation. **ALWAYS** read this manual in full before **EVERY** use and keep your work area well-ventilated. Contact Draper Tools for assistance if you are not confident in the use of this product.

Important: Use this manual in conjunction with the battery manufacturer manual and that of any other equipment to be used in the vicinity. Review all safety markings and rating plates present on the battery, tester and any other nearby equipment before using this product.

- **DO NOT** work with vehicle batteries on your own; **ALWAYS** ensure that someone is nearby to come to your aid if necessary.
- Wear complete eye and hand protection and wear suitable clothing that covers your skin appropriately.
- Avoid touching your eyes while working with lead-acid batteries.
- Keep plenty of fresh water and soap nearby in case battery acid comes into contact with your skin, eyes or clothing.
 - If battery acid comes into contact with your skin or clothing, wash the affected area immediately with soap and water.
 - If battery acid enters your eyes, flush the eye immediately with plenty of cool and clean running water for at least 15 minutes and seek medical attention immediately.
- Work with lead-acid batteries should **ONLY** be carried out in well-ventilated areas to prevent the build-up of toxic and explosive gases released from the battery.
- Inspect the battery for leakage and damage or cracks in the casing before using this product.



WARNING! DO NOT test a battery that shows signs of damage or leakage and have it inspected by a qualified technician.

- **NEVER** smoke or allow sparks or flames in the vicinity of the battery or engine.

- Take extra care to prevent metal objects or tools from falling onto the battery as this may cause a spark, short-circuit the battery or cause an explosion.
- **ALWAYS** remove personal metallic objects before use.
 - Lead-acid batteries can produce a short-circuit current high enough to weld metal and cause severe burns.



WARNING! Battery acid is highly corrosive; if the battery begins to leak, stop all operations immediately. If battery acid comes into contact with your eyes or skin, flush with plenty of water and seek immediate medical attention.



WARNING! DO NOT top up the electrolyte beyond the manufacturer's recommended level. Overfilling the battery may cause the acid content to leak.

4.4 Residual Risk

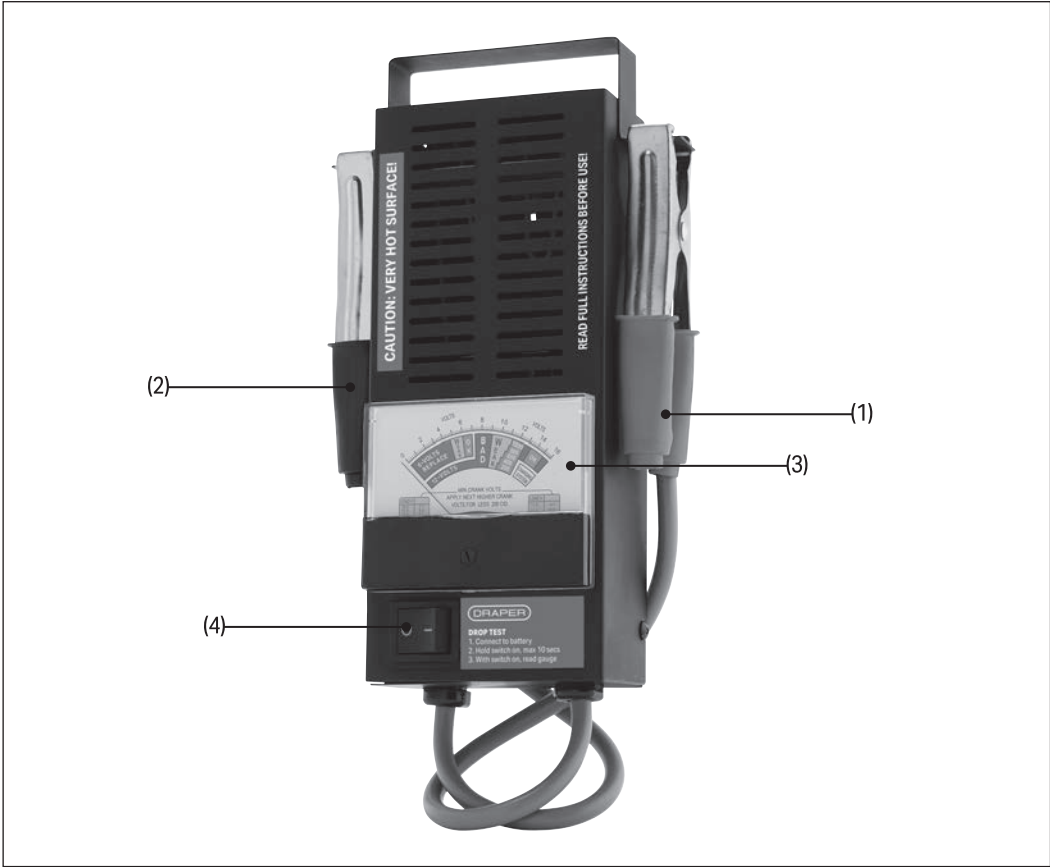
The safety instructions in this manual cannot account for all possible conditions and situations that may occur. Exercise common sense and caution when using this product and protect against any additional conceivable risks.

5. Identification and Unpacking

5.1 Product Overview

Carefully remove the product from the packaging and examine it for any signs of damage that may have occurred during shipment.

If any part is damaged or missing, do not attempt to use the product. Please contact the Draper Helpline; contact details can be found at the back of this manual.



- (1) Positive (red) terminal clamp
- (2) Negative (black) terminal clamp
- (3) Gauge
- (4) Load test switch

5.2 Packaging

Keep the product packaging for the duration of the warranty period for reference should the product need to be returned for repair.

WARNING! Keep packaging materials out of reach of children. Dispose of packaging correctly and responsibly and in accordance with local regulations.

Please visit [drapertools.com](https://www.drapertools.com) for our full range of accessories and consumables.

Important: Before every use, read and understand all the safety instructions listed in this manual and the manufacturer’s information for the battery to be tested. **ALWAYS** ensure that the ignition and engine are switched off and the keys are removed **BEFORE** connecting the clamps to the battery terminals.

Important: Due to the presence of protective oils on the electrical coil, this product may emit smoke during first use. This is normal.

6.1 Connecting the Battery Load Tester

This connection procedure applies to all test types using this product. Familiarise yourself with the connection, relevant test procedure and gauge readings before use.

Important: If the battery must be removed from the vehicle, ensure that all electrical loads in the vehicle are switched off or disabled before disconnecting it. **ALWAYS** disconnect the earth terminal from the battery first.

Loss of audio and security codes can be prevented by connecting a memory saver before disconnecting the battery.

Important: Ensure that the vehicle or battery is level before checking and topping up the electrolyte.

- 1. Clean any corrosion from the battery terminals



WARNING! Take care to prevent corrosion materials from coming into contact with your eyes and skin.

- 2. Remove the cell filler caps and check the level of the electrolyte in each cell.
Top up the cell with distilled water as necessary until the manufacturer’s recommended level is reached.



CAUTION! Top up with distilled water ONLY. NEVER top up lead-acid batteries with tap water.



WARNING! Battery fluid is corrosive. DO NOT touch the battery fluid or overfill the cells.

- 3. Replace the cell filler caps and identify the terminals.
- 4. Connect the positive (red) terminal clamp (1) to the positive terminal and the negative (black) terminal clamp (2) to the negative terminal.
Rock the clamps back and forward on the terminals to ensure a good connection.
- 5. Once connected, the gauge (3) needle should move to the right; this indicates the current voltage of the battery (see table below).

Important: Take note of the value displayed so it can be compared with the results of the appropriate test.

6.2 Battery Load Test

Use this test to determine if the battery has sufficient capacity to start the engine reliably.

- 1. Attach the clamps as specified in **section 6.1**.
- 2. Turn off **all** power loads Attach the clamps as specified in **section 6.1**.
- 3. Turn off **all** power loads, start the engine and remove the ignition key.
- 4. Place the tester on a heat resistant surface and ensure the leads are not trapped underneath the metal casing.
- 5. Move the load test switch (4) to the ON (I) position for maximum of 10 seconds to start the test.



WARNING! The metal casing of the tester becomes very hot while the load test switch is held down. DO NOT hold down for more than 10seconds.

- 6. Take note of the reading on the gauge and compare with the table below;

Gauge area		Battery Status	Action
Green (6 or 12V)	OK	Sufficient charge 12V- approx. 12.4 6V – approx. 6.2V	None
Yellow	Weak	Partly discharge or defective	Fully charge battery and retest. Maintenance type battery- Check the specific gravity with a hydrometer (1.25 – 1.28g/cm³ if fully charged). Recheck and replace battery if not charged.
Red	Bad	Discharged or defective	Replace battery.

6. Operating Instructions

Note:

- If the battery voltage remains constant during the 10second test period it is functioning correctly.
- If the voltage falls during the test period it is either discharged or defective.
- The temperature of the battery will impact the result of this test. For optimal results the battery should be tested above 10°C. Deduct the appropriate number of amps from the CCA rating and read the gauge accordingly.

Ambient Temperature	Reduce CCA rating by
-7 to 17°C	50A
-18 to 28°C	100A
<-29°C	150A

6.3 Charging System Voltage Test

Note: The battery load test should be performed before carrying out this motor vehicle charging system test. If the test does not deliver a result in the appropriate 'GREEN' area **DO NOT** carry out the charging system test.

 **CAUTION!** The engine should be at operating temperature when carrying out this test.

1. Attach the clamps as specified in **section 6.1**.
2. Turn off all power loads, start the engine and run at approx. 1,200 -1,500rpm.
- **DO NOT press the load test switch (4) during this test.**
3. Read the voltage values in the '**CHARGING SYSTEM**' area on the gauge.
4. Then turn on the headlights and set heater fan to the highest level.
- The voltage displayed should not change more than 0.1 to 0.3volts.
- If the reading remains stable in the '**GREEN**' area the charging system is Ok.
- If the voltage changes by more than 0.3V (up or down) or in the '**RED**' area then there is an issue with the charging system and should be inspected by a qualified mechanic.



Fig. 1

6.4 Starter System Test

Note: The battery charge test should be performed before carrying out this test. If the test does not deliver a result in the appropriate 'GREEN' area **DO NOT** carry out the starter system test.

For starter system tests, read the '**MIN CRANK VOLTS**' chart at the bottom of the gauge display.



Fig. 2

1. Attach the clamps as specified in **section 6.1**.
2. Then start the engine to start the starter motor.
- **DO NOT press the load test switch (4) during this test.**
3. Then read the voltage values during the starting/ cranking process – see table below.

Load Volts	10.2	10.4	10.6	10.8	11	11.2	11.4
Min. Crank Volts	7.7	8.2	8.7	9.2	9.7	10.2	10.6

- If the reading taken during the starter test is below the '**Minimum Crank Volts**', this may indicate an issue with the starter system – such as a faulty start motor, poor connections or battery undersized for the vehicle. Seek advice from a qualified technician/mechanic.
- For vehicles with 200 CID or smaller engines, use the next higher '**Minimum Crank Volts**' value when comparing the readings.

7. Product Care and Storage

Important: No parts of this product are serviceable by the user, but basic care is required to keep it in good working order.

- Keep the terminal clamps (1) & (2) free from corrosion.
 - Use a wire brush to clean the clamps if corrosion materials begin to accumulate.
- Clean the product casing with a soft, damp cloth **ONLY**.
- **DO NOT** use solvents or other aggressive chemicals to clean any part of the product as they may damage plastic or insulated parts.
- Keep the ventilation openings on the product casing free from dust and debris.
 - Use compressed air to remove debris from the ventilation openings.
- Store the product in a clean and dry environment, out of direct sunlight and out of reach of children.
 - **DO NOT** expose this product to water or frost.
- Store the product led flat on its rear face or in an upright position.
- Store the terminal cables tidily so that they are not kinked, pinched or crushed by other objects.

8. Spares, Returns and Disposal

For spare parts, servicing, and repair and replacement options, please contact the Draper Tools Product Helpline for details of your nearest authorised agent.

Draper Tools will endeavour to hold any spare parts, if applicable, for seven years from the date that it sells the final matching stock item.

Any servicing or repairs carried out by unauthorised personnel or installation of spare parts not supplied by Draper Tools will invalidate your warranty.

At the end of its working life, dispose of the product responsibly and in line with local regulations. Recycle where possible.

- **DO NOT** dispose of this product with domestic waste; most local authorities provide appropriate recycling facilities.
- **DO NOT** burn or mutilate this product.

Important: Dispose of old or faulty batteries separately, responsibly and in accordance with local regulation.



9. Warranty

12 months from date of purchase -

Visit [drapertools.com/warranty](https://www.drapertools.com/warranty) for full details.



Read the instruction manual



Warning!



Wear protective gloves



Voltage



Load simulation



CCA range



Do not incinerate or throw onto fire



WEEE –
Waste Electrical & Electronic Equipment
Do not dispose of Waste Electrical & Electronic Equipment
in with domestic rubbish



European conformity



UK Conformity Assessed

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Please contact the Draper Tools Product Helpline for repair and servicing enquiries.