BAT 135 Battery Tester Operating Instructions

EN

Contents

1 Introduction

The BAT 135 Battery Tester is used to test 6 and 12 volt batteries, and to test 12 and 24 volt charging systems. The suggested operation range is from 0 degrees Centigrade (32 degrees Fahrenheit) to 50 degrees Centigrade (122 degrees Fahrenheit) in ambient temperature.

2 Safety Warnings and Instructions

WARNING
This product can expose you to chemicals including arsenic, which is known to the State of California to cause cancer. For more information, go to www.P65Warnings.ca.gov.

CAUTION
Do not expose the tester to rain or snow.

- Working in the vicinity of a lead acid battery is dangerous. Batteries generate explosive gases during normal operation. For this reason it is important that you refer back to these instructions if you have any questions on tool operation.
- To reduce risk of battery explosion, follow these instructions, those published by the battery manufacturer, and the manufacturer of any equipment you intend to use in the vicinity of the battery. Observe cautionary markings on these items.
- Another person should be within range of your voice or close enough to come to your aid when you work near a lead acid battery.
- Have plenty of fresh water and soap nearby in case battery acid contacts skin, clothing, or eyes.
- Wear safety glasses and protective clothing.
- If battery acid contacts your skin or clothing, wash immediately with soap and water. If acid enters your eye, immediately flood the eye with running cold water for at least ten minutes and seek immediate medical attention.
- NEVER smoke or allow a spark or flame in vicinity of the battery or engine.
- Be extra cautious to reduce the risk of dropping a metal tool onto the battery. It could spark or short-circuit the battery or other electrical parts and could cause an explosion.
- Remove personal metal items such as rings, bracelets, necklaces, and watches when working with a lead acid battery. These items can produce a short-circuit current high enough to weld a ring or like to metal causing a severe burns.

3 Paper Loading/Replacement

Do the following to load paper:

1. Connect BAT 135 to battery. (See Pg. 5 for connection instructions.)
2. Open the clear cover. Insert a new paper roll into the clear portion of the cover with the leading edge coming out from under the paper roll. Insert the end of the paper into the auto-feed slot of the printer. The paper should automatically load. (See Fig. 1)
3. Slowly pull approximately 1 in. of paper straight up from the top of the tester. Feed the 1 in. strip of paper through the serrated slot in the clear cover as it is being closed. (See Fig. 2)

Note: The battery clamp replacement part number is PN 1699501731. Replacement thermal paper rolls are available at most office supply retailers. The paper is 2 1/4 in. wide, with a maximum roll length of 98 ft.

(Figure 1)

(Figure 2)

4 Test Preparation

1. Ensure that the area around the battery is well ventilated while the battery is being tested.
2. Clean battery terminals. Be careful to keep corrosion from coming in contact with your eyes.
3. Inspect the battery for cracked or broken case or cover. If the battery is damaged, do not use the tester.
4. If the battery is not a sealed maintenance free type, add distilled water in each cell until the battery acid reaches the level specified by the manufacturer. This helps purge excessive gas from cells. Do not overfill.
5. If necessary to remove battery from vehicle to test, always remove the ground terminal from the battery first. Make sure all accessories in the vehicle are off to prevent arcing.

5 Battery Testing

CAUTION

Before you test a battery in a vehicle, turn off the ignition and all accessories and loads. Close all vehicle doors and the trunk lid.

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 display will momentarily flash and proceed to the Home Screen. In operation the tester will only show three results: CHECK CLAMPS / VOLTAGE HIGH / VOLTAGE LOW.

1. Make sure you have put 6 AA alkaline 1.5V batteries into the battery chamber. Li-Ion or lithium batteries are not recommended because of the initial 1.7 Volt output. When the batteries are weak, the screen will display “POWER LOW.” Replace all 6 batteries at one time.

   Note: Nothing will be seen on the display until the tester is connected to a vehicle battery.

2. Make sure the battery terminals are clean. Wire brush them if necessary. Clamp the black load lead to the vehicle negative battery terminal. Clamp the red load lead to the vehicle positive battery terminal.

3. View the *System Analyzer Screens* diagram (*Appendix A*) for selection options.

4. Press ◀ ▶ to select Battery Test, then press **ENTER**.

5. Press ◀ ▶ to select one of the following battery types:
   - FLOODED
   - AGM FLAT
   - AGM SPIRAL
   - VRLA/GEL

   Example

   BATTERY TYPE◀▶↵
   AGM FLAT PLATE

   Press **ENTER** to confirm choice.

6. Press ◀ ▶ to select one of the following battery ratings.
   - CCA/SAE
   - EN
   - JIS
   - DIN
   - IEC
   - CA/MCA

   Example

   SELECT RATING◀▶↵
   CCA/SAE

   Press **ENTER** to confirm choice.

7. Press ◀ ▶ to select the battery capacity of SAE from one of the following:

   - CCA/SAE: 40~2000
   - EN: 40~1885
   - DIN: 25~1120
   - IEC: 30~1320
   - JIS: By battery type number
   - CA/MCA: 50~2400

   Example

   SET CAPACITY ◀ ▶ ↵
   xxxx CCA/SAE

   Press **ENTER** to begin the test.

8. Press ◀ ▶ to confirm the temperature.

   Example

   Above 32°F/0°C ◀ ▶ ↵
   Yes / No

   Press **ENTER** to begin the test.

   Note: Before the test is started, you can always return to the previous page by pressing and holding **ENTER** for two seconds.

   Important: If prompted by the tester to remove a surface charge, refer to *Appendix B, Surface Charge Notice*.

6 Start/Stop Test

1. Press ◀ ▶ to select Start/Stop Test, then press **ENTER**.
2. Press ◀ ▶ to select one of the following the battery types:

   - EFB
   - AGM FLAT

   Example

   BATTERY TYPE ◀ ▶ ↵
   EFB

   Press **ENTER** to confirm choice.

3. Press ◀ ▶ to select one of the following battery ratings:

   - CCA/SAE
   - EN
   - JIS
   - DIN
   - IEC
   - CA/MCA

   Example

   SELECT RATING ◀ ▶ ↵
   CCA/SAE

   Press **ENTER** to confirm choice.

4. Press ◀ ▶to input one of the following battery capacities of SAE:

   - CCA/SAE: 40~2000
   - EN: 40~1885
   - DIN: 25~1120
   - IEC: 30~1320
   - JIS: By battery type number
   - CA/MCA: 50~2400

   Example

   SET CAPACITY ◀ ▶ ↵
   xxxx CCA/SAE

   Press **ENTER** to begin test.

5. Press ◀ ▶ to confirm temperature.

   Example

   Above 32°F/0°C ◀ ▶ ↵
   Yes / No

   Press **ENTER** to begin test.

   Note: Before the test is started, you can always return to the previous page by pressing and holding **ENTER** for two seconds.

   Important: If prompted by the tester to remove a surface charge, refer to *Appendix B, Surface Charge Notice*.

7 System Test

1. Press **ENTER** to view the System Test screen.

   Example

   SYSTEM TEST
   xx.xxV

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

   Example

   TURN OFF LOADS
   START ENGINE

3. When the engine is started, one of three results will be displayed, along with the reading taken:

   - **Cranking Volts Pass**
     The system is showing normal draw. Press **ENTER** to start the charging system test.

     Example

     ```
     CRANKING VOLTS
     xx.xxV   PASS
     ```

   - **Cranking Volts Fail**
     The cranking voltage is below normal limits. Troubleshoot the starter with the manufacturer's recommended procedure.

     Example

     ```
     CRANKING VOLTS
     xx.xxV   FAIL
     ```

   - **Cranking Volts Not Detected**
     The cranking voltage is not detected.

     Example

     ```
     CRANKING VOLTS
     NOT DETECTED
     ```

4. If the cranking voltage is normal, press **ENTER** to begin the charging system test.
5. Press **ENTER**. The following screen appears.

   Example

   ```
   MAKE SURE ALL
   LOADS ARE OFF
   ```

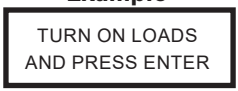
6. Press **ENTER**. One of the following two results for the **Charging Volts Test at Idle** will be displayed.

   - **PASS**
   - **FAIL**

7. Monitoring 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

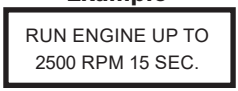
conditioning or windshield wipers.

Example



8. When testing older model diesel engines, run up the engine to 2500 rpm for 15 seconds. You will view the following screen:

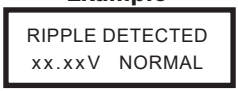
Example



9. Press **ENTER** to determine the amount of ripple from the charging system to the battery. One of two testing results will be displayed, along with the reading taken.

   - **Ripple Detected**
     Diodes function well in the alternator / stator.

Example



   - **No Ripple Detected**
     One or more diodes in the alternator are not functioning or there is stator damage. Ensure that 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.

Example

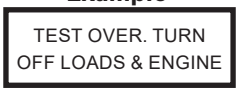
10. Press **ENTER** to continue testing the charging system with accessory loads. One of two results will be displayed.

    - **PASS**

    - **FAIL**

11. Press **ENTER** when the 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.

Example



8 Glossary

Gelled Electrolyte (GEL) Battery

A lead-acid electric storage battery that:

- Is sealed using special pressure valves and should never be opened.
- Is completely maintenance-free. (However, connections must be retorqued and the battery cleaned periodically.)
- 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.)

Absorbent Glass Mat (AGM) Battery

A lead-acid electric storage battery that:

- Is sealed using special pressure valves and should never be opened.
- Is completely maintenance-free. (However, connections must be retorqued and the battery cleaned periodically.)
- Has all of its electrolyte absorbed in separators consisting of a sponge-like mass of matted glass fibers.
- 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.)

Valve Regulated Lead Acid (VRLA) Battery

A battery that is sealed Maintenance Free with a “Bunce” Valve or Valves in the top that opens when a preset pressure is realized inside the battery and lets the excess gas pressure out. Then the valve resets itself.

Starting, Lighting, Ignition (SLI) Battery

A battery that performs three basic functions 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.

State of Health (SOH)

Percent of battery capacity remaining compared with the marked original battery capacity.

State of Charge (SOC)

Percent of battery actually charged.

Cold Cranking Amps (CCA)

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 degrees F and held at that temperature. This rating reflects the ability of the battery to deliver engine starting currents under winter conditions.

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 Warranty Terms and Conditions

Any battery tester found defective in material or workmanship within one year from the date of purchase by a retail customer will be repaired or replaced according to published defective return test repair procedures. The existence of a defect shall be determined by the manufacturer in accordance with published warranty repair procedures. The warranty repair procedures are available upon request.

This warranty does not cover any unit that has been damaged due to accident, abuse, alternation, use for a purpose other than that for which it was intended, or failure to follow operating instructions. This warranty is expressly limited to original retail buyers. This warranty is not assignable or transferable. Proof of purchase is required for all alleged claims. Warranty cannot be authorized without proof of purchase. Warranty claims must be sent pre-paid with dated proof of purchase. Damage incurred during shipment is the responsibility of the shipper (customer returning unit) If the returned unit qualifies for warranty, the shipper will only incur shipping cost. The manufacturer reserves the right to substitute or offer alternative warranty options at its discretion.

The sole and exclusive remedy for any unit found to be defective is repair or replacement, at the option of the manufacturer. In no event shall the manufacturer be liable for any direct, indirect, special, incidental, or consequential damages (including lost profit) whether based on warranty, contract, tort, or any other legal theory.

Return Goods

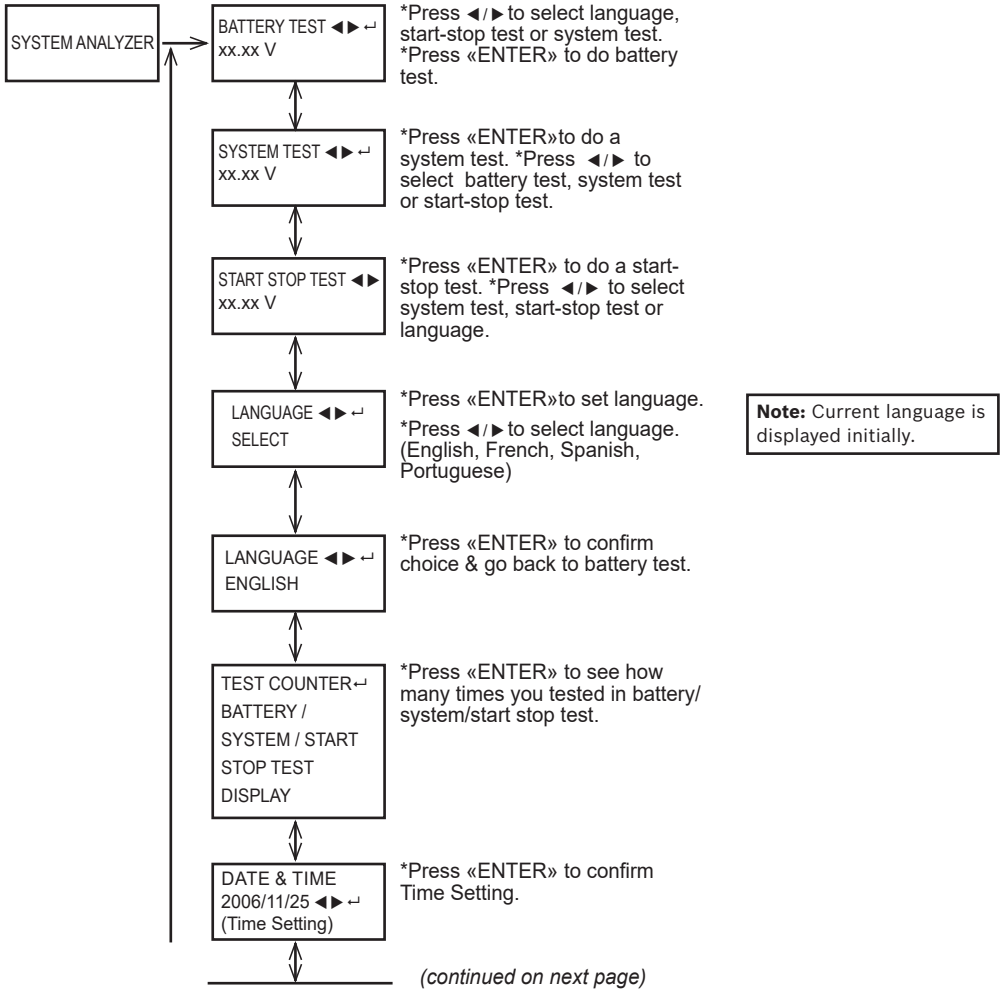
Pack with sufficient over-pack to prevent damage during shipment. Damage

incurred during return shipment is not covered under this warranty. Repair costs for such damages will be charged back to shipper.

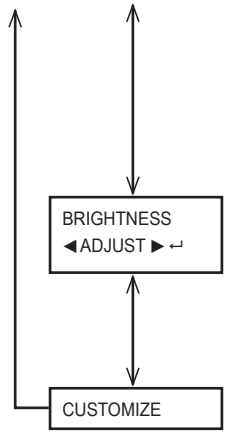
WHEN RETURNING GOODS, INDICATE “RETURN GOODS”
ON ALL INVOICES AND RELATED SHIPPING DOCUMENTS
TO PREVENT ANY EXTRA CHARGE.

Appendix A System Analyzer Screens

The following screens are available for system analysis, testing, and customization.



(continued on next page)



*Press ◄/► to adjust “Year.”

*Press «ENTER» to finish “Year.” Repeat previous step to finish “Month,” “Day,” “Hour” and “Minute.”

*Press «ENTER» to confirm the bright-ness setting.

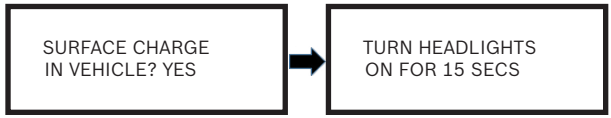
*Press ◄/► to adjust the brightness of the display.

*Press «ENTER» to edit customized info.

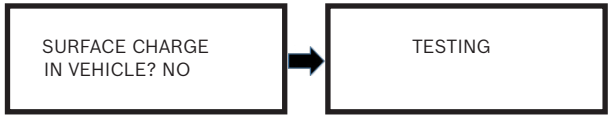
Appendix B Surface Charge Notice

The battery will hold a surface charge if the engine has been running or after the battery has been charged. The tester may prompt you to remove the surface charge. Follow the instructions indicating when to turn the headlights on and off or apply a load into the battery.

In Vehicle



Out of Vehicle



The tester will resume testing after it detects that the surface charge is removed.

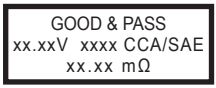
1. Test the battery for a few seconds.

2. Press ◀ ▶ to select battery fully charged or not if tester asks, then press **ENTER** to confirm choice.

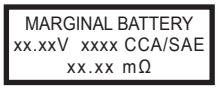
3. When the test is completed, the display shows the actual volts and the actual SAE or %. Press ◀ ▶ to select:
   - **SOH (STATE OF HEALTH)**
     or
   - **SOC (STATE OF CHARGE)**

   One of 6 results will be displayed.

Good & Pass
The battery is good and capable of holding a charge.



Marginal Battery
A Marginal battery indicates that your battery is functioning properly, but its life expectancy is compromised. The battery should be closely monitored with more frequent battery checkups.



Recharge & Retest
The 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
The tested battery is bigger than 2000SAE or 200AH. Or the clamps are not connected properly. Fully charge the battery and retest after excluding both previous reasons. If reading is the same, the battery should be replaced immediately.

4. Press **ENTER** to get a test code for record.

   CODE
   xxxxxxxxxxx

   Note: A BARCODE will appear after printing. Pay attention to the BARCODE Scanner, which only supports CODE39 format. See *Appendix C, Generating Test Codes*.

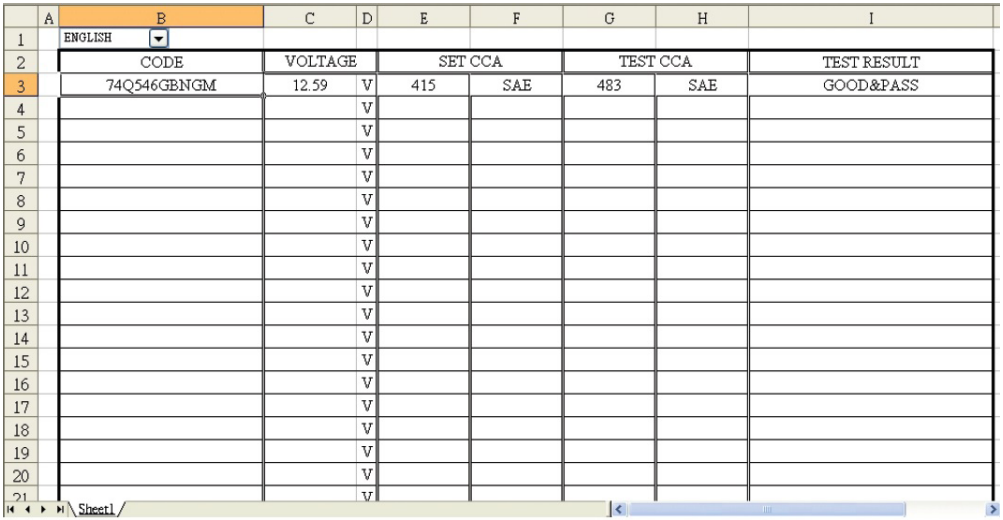
5. Press ◀ ▶ to select result printing: YES or NO. Press **ENTER** to confirm your choice.

6. Press **ENTER** to return to Step 5, or remove the test clamps from the battery posts after completion of testing batteries to end test.

Appendix C Decoding Test Codes

Do the following to decode test codes:

1. Download the decoding software via: **https://www.boschdiagnostics.com/pro/products/bat135**
2. Click the icon labeled “BT/RTxxx” and the sheet below will appear.



	A	B	C	D	E	F	G	H	I
1		ENGLISH							
2		CODE	VOLTAGE		SET CCA		TEST CCA		TEST RESULT
3		74Q546GBNGM	12.59	V	415	SAE	483	SAE	GOOD&PASS
4				V					
5				V					
6				V					
7				V					
8				V					
9				V					
10				V					
11				V					
12				V					
13				V					
14				V					
15				V					
16				V					
17				V					
18				V					
19				V					
20				V					
21				V					

Sheet1

3. Input the test code into the chart manually or by barcode scanner.
4. Test results will appear in the chart after decoding, as shown above.

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