

BT111 BATTERY TESTER

BT222 BATTERY/CHARGING/STARTING SYSTEM ANALYZER

TEST PROCEDURES / OPERATING INSTRUCTIONS

IMPORTANT :

1. For testing 12 volts batteries with capacity range:
SAE : 200~1200 CCA
DIN : 110~670 CCA
IEC : 130~790 CCA
EN : 185~1125 CCA
CA(MCA) : 240~1440 CA(MCA)
2. Suggested operation range 32 (0) to 122 (50) in ambient temperature.

WARNING :

1. Working in the vicinity of a lead acid battery is dangerous. Batteries generate explosive gases during normal battery operation. For this reason, it is of utmost importance, if you have any doubt, that each time before using your tester, you read these instructions very carefully.
2. To reduce risk of battery explosion, follow these instructions and those published by the battery manufacturer and manufacturer of any equipment you intend to use in the vicinity of the battery. Observe cautionary markings on these items.
3. Do not expose the tester to rain or snow.

PERSONAL SAFETY PRECAUTIONS :

1. Someone should be within range of your voice or close enough to come to your aid when you work near a lead acid battery.
2. Have plenty of fresh water and soap nearby in case battery acid contacts skin, clothing or eyes.

3. Wear safety glasses and protective clothing.
4. If battery acid contacts skin or clothing, wash immediately with soap and water. If acid enters eye, immediately flood eye with running cold water for at least ten minutes and get medical attention immediately.
5. NEVER smoke or allow a spark or flame in vicinity of battery or engine.
6. Be extra cautious to reduce 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.
7. Remove personal metal items such as rings, bracelets, necklaces and watches when working with a lead acid battery. It can produce a short circuit current high enough to weld a ring or the like to metal causing a severe burn.

PREPARING TO TEST :

1. Be sure area around battery is well ventilated while battery is being tested.
2. Clean battery terminals. Be careful to keep corrosion from coming in contact with eyes.
3. Inspect the battery for cracked or broken case or cover. If the battery is damaged, do not use tester.
4. If the battery is not sealed maintenance free, add distilled water in each cell until battery acid reaches 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 ground terminal from battery first. Make sure all accessories in the vehicle are off to ensure you do not cause any arcing.

OPERATION & USE :

BATTERY TEST- BT111/BT222 (test for 12V batteries)

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

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. LED display will light on and show the voltage of the battery **XX.XX** on the screen. Press "ENTER" to the next step.

NOTE: If you see **HI** / **Lo** / **----** /Blank appeared on the screen, please refer to **TROUBLESHOOTING**.

#BT222- Please press \ key to select the battery test : **bAtt. Press "ENTER" to the next step.**

4. Please press \ key to select the battery type of **SLI** or **SEAL** :
 SLI : Standard SLI flooded batteries.
 SEAL : VRLA/GEL/AGM etc sealed /MF batteries.
5. Press "ENTER" to the next step.
6. Please press \ key to select the battery rating of **SAE** , **din** , **IEC** , **En** or **CA** (MCA).
7. Press "ENTER" to the next step.
8. Please press \ key to input the battery capacity of CCA or CA(MCA):

SAE: 200~1200 CCA

DIN: 110~670 CCA

IEC: 130~790 CCA








EN: 185~1125 CCA

CA (MCA): 240~1440 CA (MCA)

Press "ENTER" to begin the test.

9. Test the battery within 1 seconds.
10. If the display shows **CHA-** (Is tested battery charged?). Please press "ENTER" & select \ key to choose **yES** or **no** , then Press "ENTER" to the next step. (BT111/BT222 tester will judge the tested battery status & decide to show out Step10 or not.)

11. When the test is complete, the LED display shows the actual CCA. One of following five results will be displayed on LED lamps:

	<p>Green LED light</p> <p>The battery is good & capable of holding a charge.</p> <p><u>XX.XX</u> (CCA value) ⇌ <u>SAE</u></p>
 	<p>Green & Yellow LED lights</p> <p>The battery is good but needs to be charged.</p> <p><u>XX.XX</u> (CCA value) ⇌ <u>SAE</u></p>
 	<p>Yellow & Red LED lights</p> <p>Battery is discharged. The battery condition cannot be determined until it is fully charged. Recharge & retest the battery. If reading is the same, the battery should be replaced immediately.</p> <p><u>XX.XX</u> (CCA value) ⇌ <u>SAE</u></p>
	<p>Red LED light</p> <ul style="list-style-type: none"> - The battery cannot hold a charge. It should be replaced immediately. Or - The battery has at least one cell short circuit .It should be replaced immediately. <p><u>XX.XX</u> (CCA value) ⇌ <u>SAE</u></p>
<p>ERROR</p> 	<p>Err on the screen & Second Red light</p> <ul style="list-style-type: none"> - The clamps are not connected properly. Please check if the clamps are connected properly. Or - The tested battery is bigger than maximum testing CCA capacity.

12. Press "ENTER" return to step 3 or remove the test clamps from the battery posts after completion of testing.
13. All selected data will be memorized after test, including battery

type, battery CCA standard, capacity of CCA, etc.

OPERATION & USE :

SYSTEM TEST - BT222 (test for 12V systems)

FOR STARTER SYSTEM TEST

1. LED display will light on and show the voltage of the battery **XX.XX** on the screen. Press "ENTER" to the next step.

NOTE : If you see **Hi** / **Lo** / **Blank** / **----** appeared on the screen, please refer to **TROUBLESHOOTING**.

2. Please press \ key to select the system test: **SySt**. Press "ENTER" to the next step.
3. Turn off all vehicle accessory loads such as light, air conditioning, radio, etc. before starting the engine.
4. The screen shows **CrAn**. Press "ENTER" bottom to read the minimum voltage of the battery.
5. Start the engine. Read the voltage after cranking the starter.
 - A. If the volts reading is greater than 9.6 volts, green LED light = Starting system ok.
 - B. If the volts reading is between 9.6~7.2 volts, yellow LED light = Starting system weak. Check connections, wiring, and starter.
 - C. If the volts reading is lower than 7.2 volts, red LED light = Starting system problem. Check connections, wiring, and starter immediately.

FOR CHARGING SYSTEM TEST

1. After starter test, press "ENTER" bottom to go to charging system test, the screen shows **CHAR**. Press "ENTER" bottom to read live voltage.


2. Run up the engine to 1200 ~ 1500 rpm. Read the voltage while the car is running.
 - A. If the volts reading is between 13.4 volts and 14.6 volts
= Charging system ok. Green LED light.
 - B. If the volts reading is greater than 14.6 volts
= Charging voltage high. Red LED light. Check regulator.
 - C. If the volts reading is less than 13.4 volts.
= Charging voltage low. Yellow LED light. Check connections, wiring and alternator.
3. Following the charging system at idle, continue the charging system test 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.
 - A. If the volts reading is between 13.4 volts and 14.6 volts
= Charging system ok. Green LED light.
 - B. If the volts reading is greater than 14.6 volts
= Charging voltage high. Red LED light. Check regulator.
 - C. If the volts reading is less than 13.4 volts.
= Charging voltage low. Yellow LED light. Check connections, wiring and alternator.
4. Turn engine off and remove the test clamps from the battery posts after completion of testing to end test.


TROUBLESHOOTING

- If the screen shows **Hi** :
Voltage of the tested battery is over 15.00V & too high for 12V battery. BT111/BT222 won't work under this situation. Please re-check if the tested battery is 12Volts.
- If the screen shows **Lo** :
Voltage of the tested battery is under 7 Volts. BT111/BT222 won't work under this situation. Please recharge the battery & retest. If reading is the same, the battery should be replaced immediately.

- If the screen shows **blank** :

The voltage of the tested battery is too low to serve the BT111/BT222. Please recharge the battery retest. If reading is the same, the battery should be replaced immediately. Or the clamps are connected reversely. Please check & re-connect it.

- The screen shows  :

The voltage is unstable. For a just completely the charged battery or other factors cause the battery's voltage unstable, the LED display shows . Please wait 15~30 minutes to let the battery voltage stable and test the battery or eliminate the factors to test the battery.

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.