INTRODUCTION

The WBT1 is a wireless battery monitoring analyzer. In order to let WBT1 work properly, user must have at least one WBT1 Wireless Tester (WT) and one WBT1 TSP (Transponder) together. They transmit and receive data by radio frequency, RF, signal. It gives a thorough analysis for 12-volt automotive and commercial batteries. One Wireless Tester can connect up to 6 TSPs on 6 different batteries.

PERSONAL SAFETY PRECAUTIONS

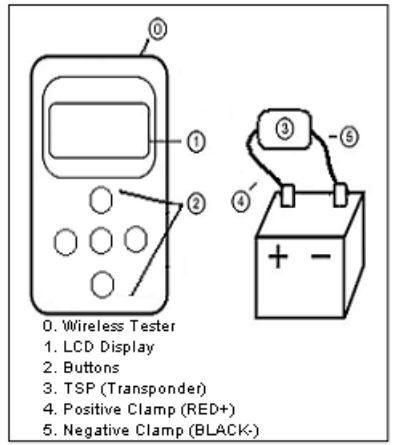
1. Someone should be within range of your voice or close enough to come to your aid when you work near a lead acid battery.
2. Have plenty of fresh water and soap nearby in case battery acid contacts skin, clothing or eyes.
3. Wear safety glasses and protective clothing.
4. If battery acid contacts skin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

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.

IMPORTANT

1. For testing 12 volt lead acid batteries, sealed-lead batteries, automotive, and commercial batteries.
2. Suggested operation range 14℉(-10℃) to 185℉(85℃) in ambient temperature.



0. Wireless Tester
1. LCD Display
2. Buttons
3. TSP (Transponder)
4. Positive Clamp (RED+)
5. Negative Clamp (BLACK-)

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 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.
6. Make sure you have put 6 1.5V batteries into the battery chamber. If batteries run out of power, screen will show “INTERNAL BATTERY POWER LOW”. Replace batteries before starting the test.

RADIO FREQUENCY RANGE

The distance allowed for WBT1 Wireless Tester and TSPs to transmit and receive is up to 49 feet (15 meters) in a wide-open area.

In CLEAR STP state, the RF signal transmits up to 9.8 feet (3 meters).

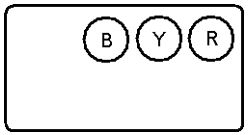
START AND SHUT DOWN WBT1

To start a WBT1, pressing «ENTER» for 1 sec.

To shut down WBT1, there are two ways to do so. One is

auto-power-saving mode. WBT1 will shot down itself automatically after 40 seconds if no button is pressed. The other is to select “SHUT DOWN WBT1” and press «ENTER». Then press ► still for 1 second in “SETTING” mode.

TSP LEDS



RED ON: When the voltage of the tested battery is beyond 15V or below 7V. At this time, TSP is unable to work.

RED BLINKING: TSP is receiving unstable signal.

YELLOW ON: When the TSP is powered on and ready to work.

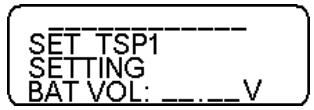
YELLOW BLINKING: TSP is receiving or transmitting signal.

BLUE ON: TSP is in Sleep Mode.

SET UP TSPs

A new TSP needs to be set by a Wireless Tester for active-communication. Users can see the first main screen when starting a new Wireless Tester. User should set up one TSP at a time.

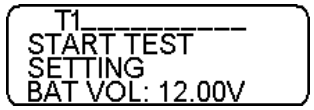
1. Connect a TSP to a battery. User will see the yellow LED on. If the RED LED on, check the battery voltage is within the operating range 7V~15V.
2. Start a Wireless Tester by pressing «ENTER» for 1 second. User should see “SET TSP1”.



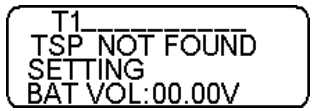
3. Press ►\◄ to choose the TSP from TSP1 to TSP6.

4. Press ▲\▼ to select “SET TSP1” and press «ENTER» to set up the powered TSP.

5. After setting up a TSP, user should see “START TEST”.



6. When Wireless Tester shows “TSP NOT FOUND” and “BAT VOL: 00.00V”, that means the TSP is not within the RF communication range or the RF signal is too weak.



★ A new or blank TSP must be set one by one. Power on one new or blank TSP at a time when SET TSP.

★ Once a TSP has been set up by a Wireless tester, the TSP only communicate with the Wireless tester.

★ Each time, it takes about 3~10 seconds for a Wireless Tester to find a TSP and show the measured battery voltage.

CLEAR TSP

In some situations, user may need to clear a TSP and re-set the TSP, or clear the set TSP inside the Wireless Tester.

Those situations are :

1. Replacing an old Wireless Tester by a new one.
2. Changing the number of the TSP.
3. Replacing an old TSP by a new one.
4. …

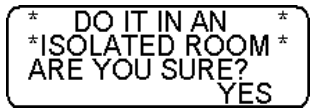
“CLEAR TSP” will only shows up when there is no TSP detected and no battery voltage is received.

To clear a TSP, please make sure there is no other TSPs

within the RF range (9.8 feet / 3 meters) besides the TSP that user intend to clear.

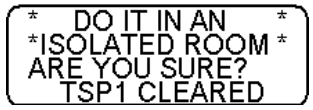
1. Press ▲\▼ to select “CLEAR TSP” and press «ENTER».

2. Press «ENTER» if there is no other TSPs within the RF range.



3. Wireless Tester will clear the set TSP inside it first.

4. Then Wireless Tester will transmit clear signal out, and TSP(s) whichever received the signal will be cleared and become a blank TSP and can be re-set by a Wireless Tester.



5. If there is no any TSP has been cleared, which means Wireless Tester has not received any responding signal. LCM will show “NO TSP CLEARED”. Then repeat the clear TSP steps again.

CONFIGURATION

Select “SETTING” to enter Wireless Tester configuration screen.

User can change display language, clear a set

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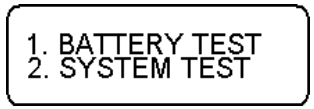
TSP, and shut down WBT1. “CLEAR TSP” is only showing up when the selected TSP is not found or not set.

Press ►\◄ to choose language type. Press ▲\▼ to select from vertical choices. Press «ENTER» to confirm.

START TEST

1. Turn off the ignition, all accessories and loads before you test a battery in a vehicle. 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. Clamp on the lead part of the terminal only. Clamping on the iron part of the terminal will lead to wrong test results.

WBT1 can perform Battery Test and System Test. Press ▲\▼ to select and press «ENTER» to confirm.



BATTERY TEST

1. Press ▲\▼ key to select battery test. Press «ENTER» button. **Example** :
2. Press ▲\▼to select “BATTERY TYPE”, Press the ►\◄ key to select the battery type：VRL/AGM or

STANDARD SLI.

3. Press ▲\▼to select “SELECT RATING”. Press the ►\◄ key to select the battery rating : SAE, IEC, DIN, CA, EN

4. Press ▲\▼to select ”SET CAPACITY”. Press the ►\◄ key to input the CCA of the battery capacity :
   - SAE : 200~1200
   - IEC : 130~790
   - DIN : 110~670
   - CA : 240~1440
   - EN : 185~1125

   Press «ENTER» to begin the test.

5. Test the battery for a few seconds.

6. If the “IS BATTERY CHARGED?” shows up, Press the ►\◄ key to select battery fully charged or not. Press «ENTER» to confirm.

7. When the test is completed, the display shows the actual volts and the actual CCA and %. {Press the▲\▼ key to switch the screen: SOH (STATE OF HEALTH) or SOC (STATE OF CHARGE)}.

   One of six results will be displayed**:**

   GOOD & PASS :

   The battery is good & capable of holding a charge.

   GOOD & RECHARGE :

   The battery is good but needs to be recharged.

   RECHARGE & RETEST :

   Battery is discharged, the battery condition cannot be determined until it is fully charged. Recharge & 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 2000CCA or 200AH. Or the clamps are not connected properly. Please fully charge the battery and retest after excluding both previous reasons. If reading is the same, the battery should be replaced immediately.

8. Press «ENTER» return to the main screen to retest or to end test.

SYSTEM TEST

1. Press ▲\▼ key to select “SYSTEM TEST”. Press «ENTER» button. **Example** :

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

If the engine is running while entering SYSTEM TEST, it will tell user to turn off engine and start the car again.

3. After the engine is started, one of the three results will be displayed along with the actual reading measured.

CRANKING VOLTS NORMAL

The system is showing normal draw. Press «ENTER» to perform the charging system test.

CRANKING VOLTS LOW

The cranking voltage is below normal limits, troubleshoot the starter with manufacturers recommended procedure.

CRANKING VOLTS NO DETECTED

The cranking voltage is not detected.

4. Make sure all loads are off before pressing «ENTER» to begin charging system test.

5. Press the «ENTER» key, one of the three results will be displayed along with the actual reading measured.

CHARGING SYSTEM NORMAL WHEN TEST AT IDLE

The system is showing normal output from the alternator. No problem is detected.

LOW CHARGING VOLTS WHEN TEST AT IDLE

The alternator is not

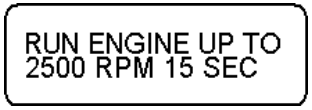
providing sufficient current to the battery. Check the belts to ensure the alternator is rotating with engine running. If the belts are slipping or broken, replace the belts and retest. Check the connections from the alternator to the battery. If the connection is loose or heavily corroded, clean or replace the cable and retest. If the belts and connections are in good condition, replace the alternator.

HIGH CHARGING VOLTS WHEN TEST AT IDLE

The voltage output from the alternator to the battery exceeds the normal limits of a functioning regulator. Check to ensure there is no loose connection and the ground connection is normal. If there is no connection issue, replace the regulator. Since most alternators have the regulator built-in, this will require you to replace the alternator. The normal high limit of a typical automotive regulator is 14.8 volts +/- 0.05. Check manufacturer specifications for the correct limit, as it will vary by vehicle type and manufacturer.

Then press «ENTER» for the charging system with accessory loads. Turn on the blower to high (heat), highbeam headlights, and rear defogger. Do not use cyclical loads such as air conditioning or windshield wipers.

6. When testing older model diesel engines, the users need to run up the engine to 2500 rpm for 15 seconds.



7. Press «ENTER» to look for the amount of ripple from the charging system to the battery. One of two testing results will be displayed along with the actual testing

measured.

RIPPLE DETECTED NORMAL

Diodes function well in the alternator / stator.

Or

EXCESS RIPPLE DETECTED

One or more diodes in the alternator are not functioning or there is stator damage. Check to ensure 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.

8. Press the «ENTER» key to continue the charging system with accessory loads. One of the three results will be displayed along with the actual testing measured.

CHARGING SYSTEM NORMAL WHEN TEST WITH ACCESSORY LOADS

The system is showing normal output from the alternator. No problem detected.

CHARGING SYSTEM HIGH WHEN TEST WITH ACCESSORY LOADS

The voltage output from the alternator to the battery

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exceeds the normal limits of a functioning regulator. Check to ensure there are no loose connections and that the ground connection is normal. If there are no connection issues, replace the regulator. Since most alternators have the regulator built-in, this will require you to replace the alternator.

CHARGING SYSTEM LOW WHEN TEST WITH ACCESSORY LOADS

The alternator is not providing sufficient current for the system's electrical loads and the charging current for the battery. Check the belts to ensure the alternator is rotating with the engine running. If the belts are slipping or broken, replace the belts and retest. Check the connections from the alternator to the battery. If the connection is loose or heavily corroded, clean or replace the cable and retest. If the belts and connections are in good working condition, replace the alternator.

9. Press «ENTER» when charging system test is completed finish.

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.

POWER SAVING MODE

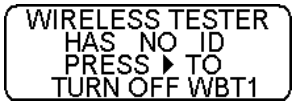
Wireless Tester is entering power saving mode after about 40 seconds when there is no any button been pressed.

When TSP is powered on and has not yet received any

signal, TSP will enter power saving mode after 10 seconds, and will wake up after 3 seconds. When TSP has received any signal, it will enter power saving mode after 50 secnds, and wakes up after 3 seconds.

TROUBLESHOOT

1. "WIRELESS TESTER HAS NO ID" means a blank Wireless Tester. Please return the Wireless Tester devise to store.



2. "LOSING TSP" means TSP is not within the RF communication range, or the RF signal is too weak. Please press «ENTER» to retry the test.

3. "CANT FOUND TSP AT HIS TIME" means Wireless Tester is not able to communicate with TSP at this moment. Press «ENTER» to go back to the main screen.

LOSSARY

What is a GEL battery?

A gel battery is a lead-acid electric storage battery that:

- is sealed using special pressure valves and should never be opened.
- is completely maintenance-free.*
- 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 recommend.

✧ Connections must be retorqued and the batteries should be cleaned periodically.

What is an AGM battery?

An AGM battery is a lead-acid electric storage battery that:

- is sealed using special pressure valves and should never be opened.
- is completely maintenance-free.*
- 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.

✧ Connections must be retorqued and the batteries should be cleaned periodically.

What is a VRLA battery?

Valve Regulated Lead Acid Battery – This type of battery is sealed Maintenance Free with a “Bunce” Valve or Valves in the top of them that opens when a preset pressure is realized inside the battery and let the excess gas pressure out. Then the valve resets itself.

What is a SLI battery?

These initials stand for Starting, Lighting and Ignition, which are the three basic functions which a battery has to perform 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.

What is STATE OF HEALTH?

It means how much battery capacity is left (%) comparing with the marked original battery capacity.

What is STATE OF CHARGE?

It means how many percent of the battery is actually charged.

What is CCA (COLD CRANKING AMPS)?

The current in amperes which a new fully charged battery can deliver for 30 seconds continuously without the terminal voltage falling below 1.2volts per cell, after it has been cooled to $0^{O}F$ and held at that temperature. This rating reflects the ability of the battery to deliver engine starting currents under winter conditions.

What is 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.

TERMS AND CONDITIONS OF WARRANTY

Any battery tester defective in material or workmanship will be repaired or replaced according to published defective return test repair procedures. The existence of a defect shall be determined by the seller in accordance with published procedures. The published test 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 seller 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 seller. In no event shall the seller 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.

REMARK:

WHEN RETURNING GOODS, PLEASE SHOW “RETURN GOODS” ON ALL INVOICES & RELATED SHIPPING DOCUMENTS TO PREVENT ANY EXTRA CHARGE.”

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions

(1) This device may not cause harmful interference and

(2) This device must accept any interference received, including interference that may cause undesired operation