CenturyYuasa

DIGITAL BATTERY TESTER MANUAL

SUITABLE FOR

- FLOODED
- AGM
- GEL
- STOP / START
- BATTERY SYSTEM ANALYSIS
- ELECTRICAL SYSTEM ANALYSIS

BT900

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BUTTON BATTERY WARNING

- Please read the below WARNING carefully before using the product.
- This product contains button battery CR2032.
- The battery is hazardous and is to be kept away from children (whether the battery is new or used);
- The battery can cause severe or fatal injuries in 2 hours or less if it is swallowed or placed inside any part of the body.
- Keep products with button batteries out of sight and out of reach of small children.
- Examine devices and make sure a child cannot gain access to the button batteries inside.
- Dispose of old or spent button batteries you have removed from a product immediately. Flat batteries can still be dangerous
- Medical attention should be sought immediately if it is suspected the battery has been swallowed or placed inside any part of the body.
- If you suspect a child has swallowed a button battery, contact the Poisons Information Centre (Phone 131 126 in Australia) / (Phone 0800 764 766 in New Zealand) and you will be directed to the nearest hospital or emergency service that can manage the injury.

WARNING: Keep out of reach of children

Swallowing can lead to chemical burns, perforation of soft tissue, and death. Severe burns can occur within 2 hours of ingestion. Seek medical attention immediately.

TEST PROCEDURES / OPERATING INSTRUCTIONS

IMPORTANT

1. For testing 12 volt batteries, as well as 12 and 24 volt charging systems.
2. Suggested operation range 0°C (32°F) to 50°C (122°F) ambient temperature.

WARNING

1. Batteries generate explosive gases during normal battery operation. Keep sparks and lighted cigarettes away from battery. When testing or using battery in an enclosed space, provide ventilation. Before using the tester, please read the user manual carefully.
2. To reduce risk of battery explosion, follow the instructions published by the battery manufacturer and manufacturer of any equipment you intend to use in the vicinity of the battery.
3. **DO NOT** expose the tester to rain or snow.

PERSONAL SAFETY PRECAUTIONS

1. Make sure someone is within reach and able to come to aid when working 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 contacts eye, immediately flood eye with running cold water for at least ten minutes and seek medical attention.
5. **Do not** smoke or allow a spark or flame in vicinity of battery or engine.
6. Be extra cautious to reduce the risk of dropping any metal tools onto the battery. It could spark or short-circuit the battery or other electrical parts and may cause an explosion.
7. Remove personal metal items such as rings, bracelets, necklaces and watches when working with a lead acid batteries. A short circuited lead acid battery can produce a current high enough to melt metal or jewelery which may cause severe burns.

PREPARING TO TEST

1. Ensure the area is well ventilated while the battery is being tested.
2. Clean battery terminals ensuring no corroded material comes into contact with eyes.
3. Inspect the battery for cracked or broken case or cover. If the battery appears damaged, do not test the battery.
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 it is necessary to remove battery from the vehicle to test, always remove negative terminal from battery first. Make sure all accessories in the vehicle are off to avoid arcing.

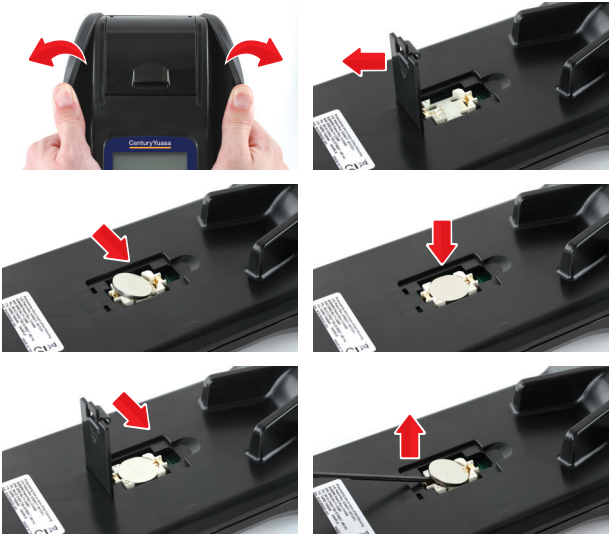
OPERATION & USE

NOTE: Every time the tester is connected 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. If the connection check is OK, the tester will proceed to the Home Screen. If the connection is poor, the display will show "CHECK CABLE". In this case, check the cable connections for visible signs of damage, as you may need to re-connect the clamps to the battery or replace the cable end.

Note that nothing will be displayed on the screen until the tester is connected to the vehicle battery.

BEFORE TESTING

1. Make sure 1x CR2032 battery is placed into the battery chamber and set the date & time.



PAPER REPLACEMENT

A. Open the clear cover.

B. Place a new paper roll (57mm thermal) in the compartment.

C. Pull a short length of paper from the compartment and press down the clear cover to close.

2. Before testing a battery in a vehicle, turn off the ignition, all the accessories and any other electrical loads. Close all the vehicle doors and the boot.
3. Make sure the battery terminals are clean. Wire brush them if necessary. Clamp the black lead to the negative battery terminal and the red lead to the positive battery terminal. Make sure to clamp on the lead part of the terminal only. For multi-terminals do not connect to the threaded terminal when testing.

MAIN MENU

SYSTEM ANALYZER	To view the following screens pressing ◄/► to switch between all functions and settings.
BATTERY TEST XX.XX V	Press «ENTER» to do battery test.
SYSTEM TEST XX.XX V	Press «ENTER» to do system test.
IN-VEHICLE TEST XX.XX V	Press «ENTER» to do In-vehicle test.
PRINT LAST RESULT	Press «ENTER» to print last result.
LANGUAGE SELECT	Press «ENTER» to change language.
TEST COUNTER	Press «ENTER» to see how many times you tested in battery / system / in-vehicle test.
2018/02/05 13:25:00	Press «ENTER» to start Date & Time Setting. Then press ◄/► to adjust “Year”. Press «ENTER» to finish Year. Please follow previous step to finish Month, Day, Hour & Minute.
BRIGHTNESS	Press «ENTER» to start adjusting brightness of the screen.
CUSTOMIZE	Press «ENTER» to edit customised info.

BATTERY TEST

1. Select BATTERY TEST. Press «ENTER».

2. Press the ◄/► to select REGULAR/STD or START/STOP battery.

REGULAR/STD BATTERY:
FLOODED, AGM FLAT PLATE, AGM SPIRAL, VRLA/GEL

START/STOP BATTERY:
AGM FLAT PLATE, EFB

3. Press the ◄/► key to select the battery type:

4. Press «ENTER» to confirm choice.

5. Press the ◄/► key to select the battery rating: CCA/SAE, EN, JIS, DIN, IEC, & CA/MCA. Century Yuasa Batteries uses “CCA/SAE” rating as labeled on the products.

BATTERY TEST

6. Press «ENTER» to confirm choice.

7. Press the ◄/► key to input the battery capacity and select CCA as the rating.

CCA/SAE: 40~2000
EN: 40~1885
DIN: 25~1120
IEC: 30~1320
JIS: By Battery Type No.
CA/MCA: 50~2400

8. Press the ◄/► key to confirm temperature.

9. Press <<Enter>> to begin the test.

*Return Feature: Before the test is started, the user can always return to the previous setting page by pressing <<ENTER>> for 2 seconds.

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.

BATTERY TEST

A. Follow the instructions indicating when to turn the headlights on and off or apply a load into the battery.

In Vehicle:

SURFACE CHARGE IN VEHICLE? YES	TURN HEADLIGHTS ON FOR 15 SECS

Out Of Vehicle:

SURFACE CHARGE IN VEHICLE? NO	TESTING

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

TESTING

10. Test the battery for a few seconds.

11. Press the ◄/► key to select battery fully charged or not if tester asks. Press «ENTER» to confirm choice.

IS BATTERY CHARGED? YES/NO

12. When the test is completed, the display shows the actual volts, the CCA and internal resistance. {Press the ◄/► key to read: SOH (STATE OF HEALTH) and SOC (STATE OF CHARGE)}.

BATTERY TEST

13. One of the six test results will be displayed:

GOOD & PASS	
VOL:	xx.xx V
CCA:	xxxx CCA/SAE
IR:	xx.xx mΩ

GOOD & PASS

The battery is good and capable of holding a charge.

GOOD & RECHARGE	
VOL:	xx.xx V
CCA:	xxxx CCA/SAE
IR:	xx.xx mΩ

GOOD & RECHARGE

The battery is good but needs to be recharged.

CAUTION	
VOL:	xx.xx V
CCA:	xxxx CCA/SAE
IR:	xx.xx mΩ

CAUTION

The battery may be serviced but will gradually decrease in starting capacity over time. The battery may fail under extreme climate conditions. There may be a poor connection between the vehicle and the battery affecting the charging system. Please consider replacing the battery and checking the vehicle's charging system.

RECHARGE & RETEST	
VOL:	xx.xx V
CCA:	xxxx CCA/SAE
IR:	xx.xx mΩ

RECHARGE & RETEST

Battery is discharged, the battery condition cannot be determined until it is fully charged. Recharge & retest the battery.

BAD & REPLACE	
VOL:	xx.xx V
CCA:	xxxx CCA/SAE
IR:	xx.xx mΩ

BAD & REPLACE

The battery will not hold a charge and should be replaced immediately.

BAD CELL & REPLACE	
VOL:	xx.xx V
CCA:	xxxx CCA/SAE
IR:	xx.xx mΩ

BAD CELL & REPLACE

The battery has a short circuit in at least one cell and should be replaced immediately.

BATTERY TEST

LOAD ERROR

The tested battery is greater than 2000 CCA/SAE or 200 AH, 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.

14. SOC & SOH Display: Press directional keys to see SOC & SOH:

15. Press the ◄/► key to select result printing: YES or NO. Press «ENTER» to confirm your choice.

24V System Test Printing: The printer will not function for 24V batteries system test printing. The 24V system test result will be recorded. To print the test result connect the tester to a 12V battery and select the "Print Last Result" screen. Select "YES" and press enter key to print the result and then disconnect the clamps. The screen will appear again after you reconnect the clamps. Please select "NO" and press the enter key to go back to the main menu.

16. Press «ENTER» return to MAIN MENU or remove the test clamps from the battery posts after you have finished testing the battery.

SYSTEM TEST

1. Select “SYSTEM TEST” from the main menu.

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

3. When 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 vehicle manufacturers recommended procedure.

CRANKING VOLTS NOT DETECTED
The cranking voltage is not detected.

4. Press «ENTER» to begin charging system test.

SYSTEM TEST

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

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 negative connection is normal. If there is no connection issue, refer to a qualified technician for advice.

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, refer to a qualified technician for advice. 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, refer to a qualified technician for advice.

SYSTEM TEST

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

7. When testing older model diesel engines, rev the engine to 2500 rpm for 15 secs.

8. Press «ENTER» to read the ripple from the charging system to the battery. One of the three testing results will be displayed along with the actual testing measured.

RIPPLE DETECTED NORMAL
Diodes function well in the alternator / starter.

NO RIPPLE DETECT
Ripple is not detected.

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, refer to a qualified technician for advice.

SYSTEM TEST

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

CHARGING SYSTEM HIGH WHEN TEST WITH ACCESSORY LOADS

ALT. LOAD VOLTS	
xx.xx V	HIGH

The voltage output from the alternator to the battery exceeds the normal limits of a functioning regulator.

Check to ensure there are no loose connections and that the negative connection is normal. If there are no connection issues, refer to a qualified technician for advice.

CHARGING SYSTEM LOW WHEN TEST WITH ACCESSORY LOADS

ALT. LOAD VOLTS	
xx.xx V	LOW

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, refer to a qualified technician for advice.

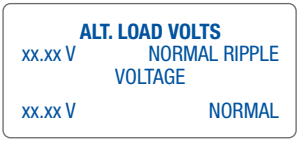
CHARGING SYSTEM NORMAL WHEN TEST WITH ACCESSORY LOADS

ALT. LOAD VOLTS	
xx.xx V	NORMAL

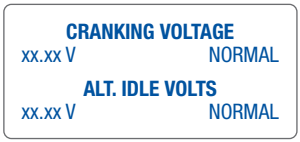
The system is showing normal output from the alternator.
No problem detected.

SYSTEM TEST

10. Press «ENTER» when charging system test is completed. Turn all accessory loads and engine off. Press «ENTER» to read the system test results.



11. Press “ENTER” to press result or not.



IN-VEHICLE TEST

This is a combination test of both battery test & system test. Please refer to above testing procedures or follow the instructions on the display of the tester.

NOTES

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