MODEL 6033

HEAVY LOAD ELECTRONIC BATTERY TESTER

OPERATOR'S MANUAL

WARNING
Batteries produce explosive gases and can explode.

Wear safety goggles. (User and bystanders)

Keep flames and sparks away from batteries.

Read and follow instructions.
Battery explosion and ignited gases can cause injury.

WARNING
Battery acid can cause chemical burns.

Wear protective clothing. (User and bystanders)
Chemical burns can cause injury.

SAFETY INFORMATION

Working in the vicinity of lead-acid battery is DANGEROUS due to EXPLOSIVE GASES generated by the battery, these gases can be ignited by a spark, cigarette or flame and are powerful enough to blow a battery apart, forcefully showering the area with battery pieces and acid.

To reduce the chance of exploding batteries follow instructions by manufacturers of batteries as well as these instructions.
IN CASE OF ACCIDENT RINSE EYES WITH CLEAN WATER AT LEAST 5 MINUTES AND SEEK MEDICAL ATTENTION IMMEDIATELY. NEVER USE EYE DROPS OR OTHER MEDICATION UNLESS DIRECTED BY A DOCTOR.
When working around lead-acid batteries wear eye protection. NEVER smoke, have an open flame or sparks near battery. Have plenty of ventilation and keep your face as far as possible from the battery. Undercharged lead-acid batteries will freeze during cold weather. Never test or charge a frozen battery. Do not allow tools to drop onto a battery. Do not lay tester on battery.

BATTERY LOAD TEST

This test evaluates the battery's ability to crank an engine. The tester draws current from the battery while measuring its voltage level. The voltage level of a good battery will remain relatively steady under load, but a defective battery will show a rapid loss in voltage. Battery size (CCA rating) and temperature will affect test results - follow instructions carefully.

1. Turn off engine, accessories and battery test equipment.

2. Connect positive (red) clamp to positive (POS, P, +) battery post. Connect negative (black) clamp to the negative (NEG, N,-) battery post. "Rock" clamps back and forth to insure a good electrical connection. For batteries with side terminals, use the side terminal adapters in the clamps.

3. As soon as the tester is connected to the battery, the tester will take a reading of the battery Open Circuit Voltage (**OCV**) before any load is placed on the battery. The tester display will flash then show the battery voltage (**Vb**) at that moment. While the voltage is displayed, the tester will be recording the Maximum voltage (**Vmax**) and Minimum voltage (**Vmin**) measured. Batteries load tested in a discharged state (**Vb** < 12.2 volts), may result in an inaccurate **CCA**. Attempt to recharge these batteries and then retest.

NOTE: The 6033 tester uses the battery under test for power. If the battery voltage is less than 7.5 volts, the display will not come on. If when connecting the tester, the display does not light up, check for correct polarity hookup. If correct, charge the battery and try again.

4. Press and hold the load switch to place a load on the battery. The tester monitors the voltage, after determining the load is no longer needed (5 to 10 seconds) the display will flash, indicating to release the load switch. The tester will calculate the battery capacity and begin to cycle through the sequence of four displays (**Vb**, **Vmax**, **Vmin** and **CCA**).

5. If the battery state of charge is too low to calculate the CCA or the battery is to small (<100CCA) then the test will display “LO” for the **CCA**.

6. If the load switch is not pressed within 10 seconds after tester connection to battery, the tester will begin to cycle through the display showing the **Vb**, **Vmax** and **Vmin**. The LED’s under the display indicate which value is being displayed.

WARNING: THE TOP AND REAR OF TESTER WILL HEAT UP DUE TO LOAD CURRENT. WITH 12-VOLT BATTERIES ALLOW TESTER TO COOL ONE MINUTE BETWEEN LOAD TESTS - MAXIMUM OF 3 LOAD TESTS IN 15 MINUTE PERIOD. EXCEEDING DUTY CYCLE MAY CAUSE INCORRECT READING AND DAMAGE TO THE UNIT.

TEMPERATURE COMPENSATION FOR BATTERY LOAD TEST

Low temperature has a degrading effect on batteries and will affect test results. The CCA reading will drop approximately 1% for each 2°F the battery temperature is below 80°F. for instance a battery at 40°F will read 80% of the actual CCA value. An example: on a battery at 40°F the tester shows the battery CCA value at 400 so the actual value is 400/.80 = 500CCA.

CHARGING SYSTEM TEST

This test measures the output voltage of the alternator/regulator. Check for under or overcharging - which leads to poor battery performance and short life.

ENGINE SHOULD BE AT NORMAL OPERATING TEMPERATURE

1. Turn off all lights and accessories. Operate engine at fast idle (approximately 1500 RPM).

2. Connect tester clamps to battery as described in Step 2 under Battery Load Test.
   NOTE: If the tester is still connected to the battery from a previous test, it is necessary to disconnect one of the clamps to reset the tester before performing another test.

3. Do not press the tester's load switch, turn on the lights, turn on the high beams, and put the blower on high, after about 3 sec turn off the lights and blower. Check the tester display will show **Vb**, **Vmax** and **Vmin**. The user can then verify that these readings are within the recommended values of the vehicle manufacturer (for instance normal voltages would be in the range of 13.5 to 14.4V). Voltage readings out of the range would indicate a bad alternator, regulator or circuit issue (belts, cable connections).

4. For larger alternators the tester load may also be used for loading the battery and alternator. Compare the tester readings with the vehicle's recommended values as in step 3.
   If the tester display starts to flash (like under battery load test) leave the loads (lights and blower) on and disconnect and reconnect the tester and then turn off the loads.

STARTER MOTOR TEST

This test identifies excessive starter current draw, which makes starting difficult and shortens battery life.

ENGINE MUST BE AT NORMAL OPERATING TEMPERATURE

1. Perform Battery Load Test. Proceed if battery is good.

2. Disconnect one tester clamp to reset tester's circuit board.

3. Reconnect the tester clamp.

4. Start engine with tester connected to the battery.
   Note: If engine does not start in 5 seconds, release start switch.

5. The (**Vmin**) reading will be and indication of how good the starter is. (For instance a voltage below 7.2V indicates excessive current draw. This may be due to bad connections or a failing starter motor, or the battery may be too small for the vehicle's requirements.
   If the voltage to the tester drops below 6V the unit will reset. This can be evident if no voltage drop is seen. For example after the vehicle is started the **Vmin** reading is similar to **Vb**.