Important Battery Health Information

The vehicle must have a good, fully charged battery for the electrical system to operate properly!

Battery health is critical for proper engine operation.

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- Using a digital voltmeter, the voltage reading ***MUST*** be **12.43** Volts or higher.
- If your battery is over 3 years old, it should be replaced.
- If you battery has been discharged 3 times or more, it is sulfated and MUST be replaced!

A Sulfate damaged battery will;

- NOT accept a charge and may damage your electrical system.
- NOT provide sufficient voltage and / or current to turn the starter motor.

Make sure the positive and negative cables are free of corrosion, and have clean tight fit.

Battery Voltage	State of Charge / Battery Condition	Recommended Action
12.7 V	100 %	Battery Good
12.6 V	90%	Battery Good
12.4 V	75 %	Charge Battery
12.2 V	50 %	Replace Battery
12.0 V	25 %	Replace Battery
11.9 V or less	Discharged	Replace Battery

Lithium Iron (LI IR) Batteries and Dry Cell (Odyssey) Batteries have a higher internal plate resistance which can overheat charging components as well as interfere with other electrical components such as ignition modules.

ALL vehicle systems are designed to work with wet lead acid chemistry design batteries.

EME will not warranty any claims with usage of LI IR or Dry Cell batteries.

MORE ON BATTERY TESTING

Battery Testing can be done in more than one way. The most popular is measurement of specific gravity and battery voltage. To measure specific gravity buy a temperature compensating hydrometer . To measure battery voltage use a digital D.C. Voltmeter. A good digital load tester may be a good purchase if you need to continually test batteries, especially sealed batteries.

You must first have the battery fully charged. The surface charge must be removed before testing. If the battery has been sitting at least several hours (preferably at least 12 hours) you may begin testing. To remove surface charge the battery must experience a load of 20 amps for 3 plus minutes. Turning on the headlights (high beam) will do the trick. After turning off the lights you are ready to test the battery.

**Sulfation of Batteries starts when specific gravity falls below 1.225 or voltage measures less than 12.4 (12v Battery). Sulfation hardens the battery plates reducing and eventually destroying the ability of the battery to generate Volts and Amps.*

Load testing is yet another way of testing a battery. Load test removes amps from a battery much like starting an engine would. A load tester can be purchased at most auto parts stores. Some battery companies label their battery with the amp load for testing. This number is usually 1/2 of the CCA rating. For instance, a 500CCA battery would load test at 250 amps for 15 seconds. A load test can only be performed if the battery is near or at full charge.

The results of your testing should be as follows:

Hydrometer readings should not vary more than .05 differences between cells.

Digital Voltmeters should read as the voltage shown on the reverse side of this document. The sealed AGM and Gel-Cell battery voltage (full charged) will be slightly higher in the 12.8 to 12.9 ranges. If you have voltage readings in the 10.5 volts range on a charged battery, then this indicates a shorted cell.

If you have a maintenance free wet cell, the only ways to test is using a voltmeter and load test. Some of the maintenance free batteries have a built in hydrometer that tells you the condition of 1 cell of 6. You may get a good reading from 1 cell but have a problem with other cells in the battery.

Due to older battery high internal battery resistance the charging system has to work harder. While good batteries absorb voltage spikes, older and/or defective batteries may produce voltage spikes that can cause damage to the voltage regulator and / or rectifier, etc. This would create a high voltage and or low voltage output and may cause the charging system to ultimately fail.