

Battery Testing - 3 Steps

The battery is the heart of a vehicle's electrical system and is often overlooked in troubleshooting a charging or starting system problem. Many starting and charging system problems can be traced to a weak, undercharged, incorrect, or failed battery. An undercharged or defective battery can also cause premature starter or alternator failure as these components are forced to work harder under the strain of a weak or end-of-service life battery. Additionally, an incorrect battery that has been installed may not meet the vehicle manufacturer's specifications for cold cranking amps, amp hour rating, or reserve capacity and may not be the correct type of battery for the vehicle, which can also lead to starting and charging system problems.

It is important to note that replacing the starter or alternator without properly inspecting and testing the battery may cause a misdiagnosis of a starting or charging system problem. This can lead to frustration because the underlying problem is missed, and the vehicle is not completely repaired.

Proper testing of the battery will include these 3 steps:

- 1. Visual inspection:** Look for any physical damage to the battery, such as a cracked housing or evidence of leaking electrolyte. These conditions would require immediate replacement of the battery. It is also important to verify the battery is securely mounted, and the fastening hardware is in good condition. Check and confirm that all Battery connections are clean and tight. Part of the visual inspection also verifies that the battery is the correct battery for the vehicle. It must be the correct type of battery for the vehicle - a conventional flooded lead acid battery, an AGM battery, or an EFB, depending on the vehicle manufacturer's specifications. It must have the correct capacity or rating for the vehicle.
- 2. Measure the Battery State of Charge:** With most automobiles and light duty trucks having sealed maintenance-free batteries now, a digital multimeter can quickly determine the battery state of charge. The battery state of charge should measure 75% or greater. If the battery state of charge is less than 75%, the battery must be charged first to at least 75% before moving on to the final battery test.

- 3. Final Battery Test:** A final determination of the battery's overall health needs to be made. This is critical because it is possible and not uncommon for a battery to be fully charged but fail testing due to a weak or dead cell or because the battery has deteriorated. Final testing of the battery can be accomplished by using a dedicated battery tester to perform a load or conductance test of the battery.



Measure the Battery State of Charge with the Ignition and all accessories off.

Battery State of Charge

Battery Voltage	Approx. State of Charge
12.60 Volts or above	100%
12.45 Volts	75%
12.30 Volts	50%
12.15 Volts	25%

Note: These voltages are for a Battery at 70 degrees F. or above. AGM Batteries will measure slightly higher when fully charged.