

DIAGNOSIS AND TESTING (Continued)

2. Check for secure connections at the generator output, regulator, and engine ground connections. Also check the connection at the load distribution point.
3. Check the generator belt to ensure proper tension and no slip between the generator pulley and the belt.
4. Check the fuses / fuse links to the generator to ensure that they are not burned or damaged. This condition, resulting in an open circuit or high resistance, can cause erratic or intermittent charging system concerns.

Isolating the Concern

Battery, starting system and lamp system problems can be caused by poor charging system performance. It is also reasonable to suspect the charging system if an overload condition has occurred in another area of the electrical system.

To avoid guesswork, it is necessary to isolate battery, charging system, and electrical circuits to correctly identify the area where the difficulty lies. Check the battery first before beginning any electrical system diagnosis. The battery must be in proper state of charge and operation before the other areas of the electrical system can perform normally.

Battery Check

Check battery to see if it has the capacity and ability to accept and hold a charge. Refer to Section 14-01. If battery is OK, the charging system should then be checked to see that it performs its function of keeping the battery charged.

The battery capacity, specific gravity and cell comparison test (non-maintenance free batteries only) will determine the ability of a battery to accept and hold a charge. If the battery does not meet specification, replace it with a new, fully charged battery before further diagnosis of other areas of the electrical system.

If the battery meets required specifications, it should be fully charged before proceeding with the diagnosis of other electrical system components.

Charging System Check

The charging system test should be performed before testing any individual charging system components. The component tests will determine the type of component service required.

Test instruments used in the charging system test are a voltmeter (0-20- or 0-30-volt scale) and an ohmmeter.

WARNING: SPECIAL CARE SHOULD BE TAKEN WHEN USING THE OHMMETER NEAR "HOT" CIRCUITS. DISCONNECT THE COMPONENT TO BE CHECKED ON THE BATTERY CABLES TO PREVENT DAMAGE TO THE OHMMETER.

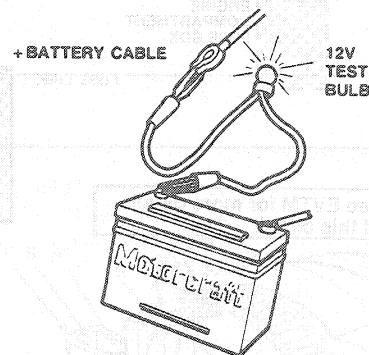
Battery Drain Test

Tools Required:

- Rotunda Digital Volt-Ohmmeter 007-00001

Check for current drains on the battery in excess of 100 milliamps with all the electrical accessories off and the vehicle at rest. Current drains can be tested one of three ways:

1. Connect a 12-volt test lamp in series with battery positive terminal. If lamp glows, then a drain exists.
2. Use an in-line ammeter between the battery positive or negative post and its respective cable.
3. Use a clamp-on current probe to the battery positive or negative cable. Make sure that the probe is properly calibrated to prevent false readings.



Typically, a drain of approximately one amp can be attributed to an underhood lamp, glove compartment lamp, or rear deck lid lamp staying on continually. Other component failures or wiring shorts may be located by selectively pulling fuses or disconnecting fuse links to pinpoint the location of the current drain. When the current drain is found, the test lamp will go out or the meter reading will fall to an allowable level. If the short is still not located, after checking all the fuses and fuse links, the drain may be due to the generator / regulator. Disconnect the generator output wire from the output stud and the regulator connector. If this eliminates the drain, check the charging system to locate the concern.

NOTE: A voltmeter is sometimes used for this test but it will react to a very small normal drain caused by "always-on" electronic systems such as starter interlock, anti-theft alarm, illuminated entry, etc, which cause no concern. The test lamp shows only drains which are large enough to cause a concern.

NOTE: For vehicles with electronic instrument cluster or message center, when the Message Center is initially powered up (after a battery disconnect), the Message Center "computer" may be energized for as long as one minute causing a 0.25 amp current draw before returning to the normal 0.010-0.012 amp current draw. Therefore, it is important to allow at least one minute to pass (after ammeter hookup) before observing any current measurements.