

DIAGNOSIS AND TESTING (Continued)

(Continued)

Troubleshooting or diagnosis is required before actual service can be made in the electrical system. Even where an obvious condition makes replacement of a unit necessary, find out why the unit failed. When a condition is diagnosed correctly, unnecessary service is prevented, the time the vehicle is out of service will be decreased, and the condition will be properly corrected the first time.

Visual Inspection

Preliminary checks to the charging system should be made regardless of the fault condition. These checks include:

- Check battery posts and cable terminals for clean and tight connections. Clean the posts and the cables to ensure good electrical contact.
- Check for secure connections at the generator output, regulator and engine ground. Also check the connection at the load distribution point (starter relay).
- Check the generator belt to ensure proper tension and no slip between the generator pulley and the belt.
- 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.

Before performing charging system tests on the vehicle, note conditions such as: slow cranking, discharged battery, top of battery wet, generator / battery charge indicator stays on with engine running, generator / battery charge indicator does not illuminate with ignition switch in RUN and engine not running. This information will aid in isolating the part of the system causing the symptom.

Isolating the Concern

Battery, starting system, and lamp system concerns 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.

Constant Current Drain Test

Tools Required:

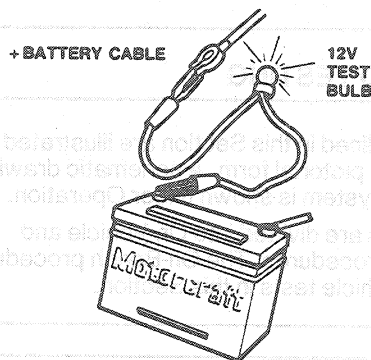
- Rotunda Dwell-Tach-Volts Ohm Tester 059-000 10

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 are so small they cause no concern. The test lamp shows only drains which are large enough to cause a concern.

NOTE: When the electronic instrument cluster is initially powered-up (after a battery disconnect), the "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.

Check for current drains on the battery in excess of 50 milliamps with all the electrical accessories off and the vehicle in PARK. This test can be performed one of three ways:

- Use a clamp-on current probe to the battery positive or negative cable.
- Use an in-line ammeter between the battery positive or negative post and its respective cable.
- Use a 12-volt test lamp between the battery positive post and the positive cable. If the lamp illuminates, then there is a drain somewhere in the electrical system.



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