

SECTION 414-01 Battery, Mounting and Cables

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DIAGNOSIS AND TESTING

Component Test

Battery — Drain Tests



WARNING:

Batteries contain sulfuric acid and produce explosive gases. Work in a well-ventilated area. Do not allow the battery to come in contact with flames, sparks or burning substances. Avoid contact with skin, eyes or clothing. Shield eyes when working near the battery to protect against possible splashing of acid solution. In case of acid contact with skin or eyes, flush immediately with water for a minimum of 15 minutes, then get prompt medical attention. If acid is swallowed, call a physician immediately. Failure to follow these instructions may result in serious personal injury.

NOTICE:

To prevent damage to the meter, do not crank the engine or operate accessories that draw more than 10A.

NOTE:

No factory-equipped vehicle should have more than a 50 mA (0.050 amp) draw.

Check for current drains on the battery in excess of 50 mA (0.050 amp) with all the electrical accessories off and the vehicle at rest for at least 40 minutes. Current drains can be tested with the following procedure.

NOTE:

Many electronic modules draw 10 mA (0.010 amp) or more continuously.

NOTE:

Typically, a drain of approximately 1 amp is attributed to an engine compartment lamp, glove compartment lamp or interior lamp staying on continually. Other component failures or wiring shorts are located by selectively pulling fuses to pinpoint the location of the current drain. When the current drain is found, the meter reading falls to an acceptable level. If the drain is still not located after checking all the fuses, it may be due to the generator. Disconnect the generator and retest.

NOTE:

To accurately test the drain on a battery, an in-line ammeter must be used between the negative battery post and its respective cable. Use of a test lamp or voltmeter is not an accurate method.

1. Make sure the junction box(es)/fuse panel(s) is accessible without turning on the interior lights or the underhood lights.
2. Drive the vehicle at least 5 minutes and over 48 km/h (30 mph) to turn on and activate the vehicle systems.
3. Allow the vehicle to sit with the key off for at least 40 minutes to allow the modules to time out/power down.
4. Connect a fused jumper wire (30A) between the negative battery cable and the negative battery post to prevent modules from resetting.
5. Disconnect the negative battery cable from the negative battery post without breaking the connection of the jumper wire.

NOTE:

It is very important that continuity is not broken between the battery and the negative battery cable when connecting the meter. If this happens, the entire 40-minute procedure must be repeated.

Connect the battery tester between the negative battery cable and the post. The meter must be capable of reading milliamps and should have a 10-amp capability.

NOTE:

If the meter settings need to be switched or the test leads need to be moved to another jack, the jumper wire must be reinstalled to avoid breaking continuity.

Remove the jumper wire.

8. Note the amperage draw. Draw varies from vehicle to vehicle depending on the equipment package. Compare to a similar vehicle for reference.

NOTE:

If the vehicle sits for an extended period of time and the battery drains, there is the possibility of a control module staying alive and not going into sleep mode. If a module does stay alive, it can also result in battery drain. If a module is suspect, isolate individual modules by disconnecting each module one at a time and note if the excessive draw goes away.

NOTE:

For vehicles equipped with aftermarket bodies or boxes which contain electrical connections, disconnect the aftermarket to factory connections to isolate the body from the chassis.

9. If the current draw is excessive, remove the fuses from the Battery Junction Box (BJB) one at a time and note the current drop. When the current level drops to an acceptable level after removing a fuse, the circuit containing the excessive draw has been located. The excessive draw can be isolated by

DIAGNOSIS AND TESTING (Continued)

continuing to pull sub system fuses. Do not reinstall the fuses until testing is finished. To correctly isolate each of the circuits, all of the fuses may need to be removed, then install one fuse and note the amperage draw, remove the fuse and install the next fuse. Continue this process with each fuse.

- Once the main circuit is identified, continue to remove the fuses from the Smart Junction Box (SJB) one at a time and note the current reading. Do not reinstall the fuses until testing is finished. To correctly isolate each of the circuits, all of the fuses may need to be removed, then install one fuse and note the amperage draw, remove the fuse and install the next fuse. Continue this process with each fuse.
10. Check the wiring diagrams for any circuits that run from the battery without passing through the BJB or the SJB. If the current draw is still excessive, disconnect these circuits until the draw is found. Also, disconnect the generator electrical connections and retest if the draw cannot be located. The generator may be internally shorted, causing the current drain.