

Fuel System Troubleshooting and Electrical Checks

The Problem

Fuel system repairs are often performed without proper diagnosis, leading to unneeded parts and the inconvenience of doing a complex repair that does not fix the vehicle problem.

The Solution

Basic fuel system troubleshooting and diagnosis can be accomplished with a digital voltmeter and some knowledge of vehicle electrical systems. This bulletin provides some guidelines for system electrical tests.

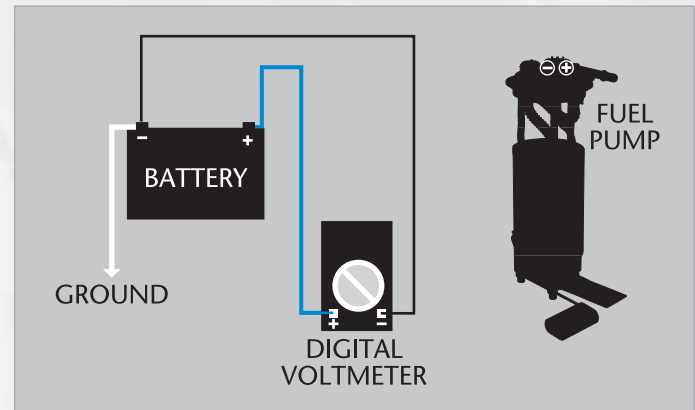
System Components to Check First

If the vehicle will not start, check the following:

- Fuel level in tank
- Power at the fuel pump fuse/relay

Vehicle System Voltage Test

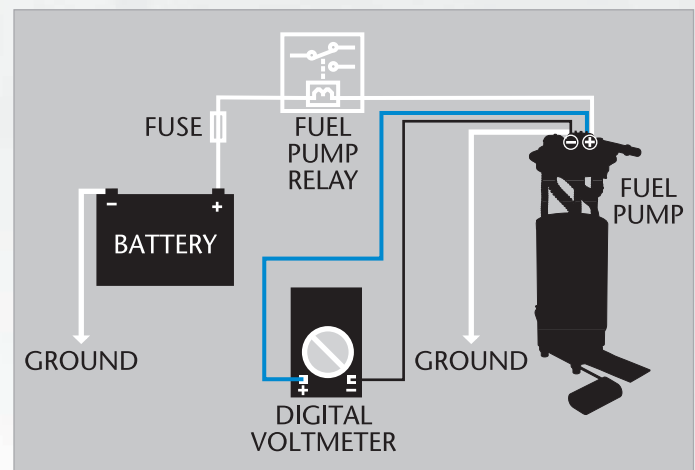
1. Connect digital voltmeter positive lead to positive battery terminal.
2. Connect digital voltmeter negative lead to negative battery terminal.
3. System voltage should read 12.4v DC or higher with no electrical loads on the system. If voltage reads less, starting and charging system should be investigated before performing fuel system electrical testing.



System Voltage Test

Fuel Pump Voltage Test

1. Connect digital voltmeter to fuel pump wiring at fuel pump connector.
2. Turn key on (pump will only have voltage for a few seconds).
3. Measure voltage at pump. Reading should be within 0.5v DC of system voltage.



Fuel Pump Voltage Test

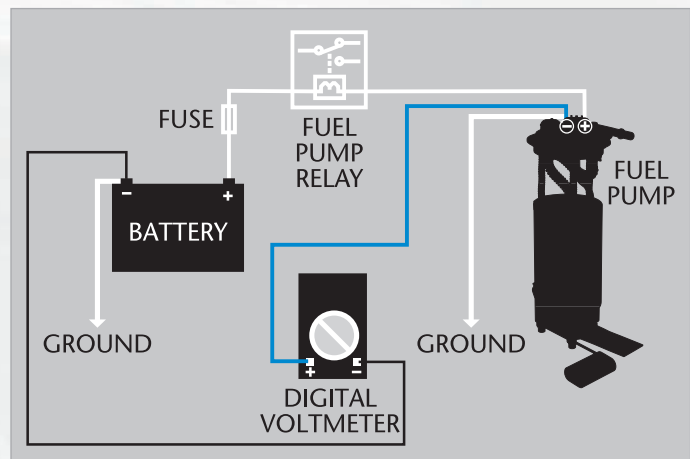
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Fuel System Voltage Drop Test

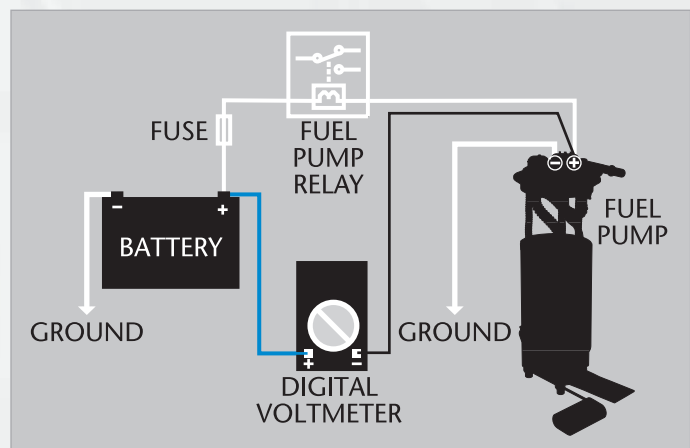
1. Address the negative side of the circuit first, then the positive side.
2. Connect one digital voltmeter test lead to the negative battery terminal and the other to the negative terminal at the fuel pump.
3. The fuel pump circuit must be energized to properly test. Energize the fuel pump relay and power the fuel pump circuit (see NOTE below).
4. If the negative circuit is in good condition, the voltage drop measured should be 0.5v DC or less. Larger voltage drop readings indicate a problem. Damaged or corroded vehicle wiring or harness connectors are likely sources of the problem.
5. Repeat the voltage drop test on the positive side of the circuit. Connect one digital voltmeter probe to the positive terminal on the battery and the other to the positive fuel pump terminal.
6. Energize the fuel pump relay and power the fuel pump circuit (see NOTE below).
7. As with the ground circuit, voltage drop readings larger than 0.5v DC indicate system wiring or connector issues.

NOTE: The majority of fuel pumps run for only a few seconds once the relay is energized (only long enough to prime the system) until an RPM signal is generated.

Some vehicles may require a scan tool to trigger the fuel pump. Refer to the service information for your specific vehicle.



Voltage Drop Test - Negative Circuit (-)



Voltage Drop Test - Positive Circuit (+)