wire harness terminal-4 to the sensor connector terminal. Repair the wire harness if an open circuit is indicated.

IGNITION SECONDARY CIRCUIT DIAGNOSIS

CHECKING FOR SPARK

CAUTION: When disconnecting a high voltage cable from a spark plug or from the distributor cap, twist the rubber boot slightly (1/2 turn) to break it loose. Grasp the boot (not the cable) and pull it off with a steady, even force.

CAUTION: Do not pull spark plug cables from distributor cap of a 2.5L engine. The cables must be released from inside the distributor cap (Fig. 10).

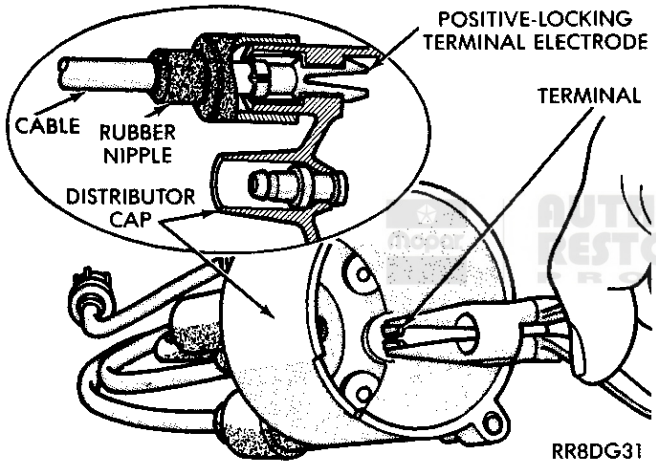

Fig. 10 Spark Plug Cable Removal/Installation—2.5L Engine

(1) Disconnect the ignition coil secondary cable from center tower of the distributor cap. Hold the cable terminal approximately 12 mm (1/2 in.) from a good engine ground (Fig. 11).

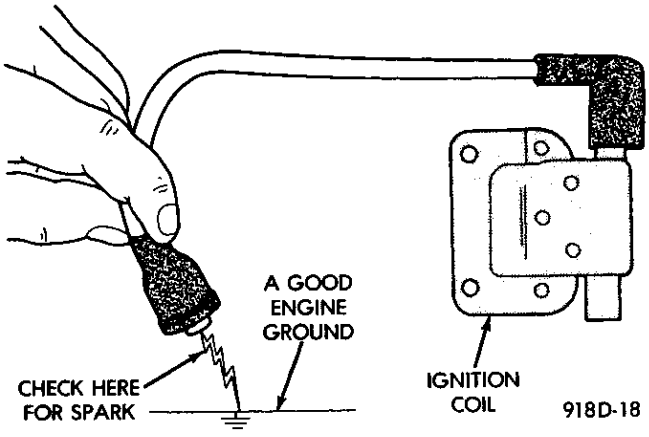

Fig. 11 Checking for Spark—Typical

WARNING: BE VERY CAREFUL WHEN THE ENGINE IS CRANKING. DO NOT PUT YOUR HANDS NEAR THE PULLEYS, BELTS OR THE FAN. DO NOT WEAR LOOSE FITTING CLOTHING.

(2) Rotate (crank) the engine with the starter motor and observe the cable terminal for a steady arc. If steady arcing does not occur, inspect the secondary coil cable. Refer to Spark Plug Cables in this group. Also inspect the distributor cap and rotor for cracks or burn marks. Repair as necessary. If steady arcing occurs, connect ignition coil cable to the distributor cap.

(3) Remove a cable from one spark plug.

(4) Using insulated pliers, hold the cable terminal approximately 12 mm (1/2 in.) from the engine cylinder head or block while rotating the engine with the starter motor. Observe the spark plug cable terminal for an arc. If steady arcing occurs, it can be expected that the ignition secondary system is operating correctly. If steady arcing occurs at the spark plug cables, but the engine will not start, connect the DRB II diagnostic scan tool. Refer to the Powertrain Diagnostic Procedures service manual.

FAILURE TO START TEST

To prevent unnecessary diagnostic time and wrong test results, the previous Checking For Spark test should be performed prior to this test.

WARNING: SET PARKING BRAKE OR BLOCK THE DRIVE WHEELS BEFORE PROCEEDING WITH THIS TEST.

(1) Unplug the ignition coil harness connector at the coil (Figs. 12 or 13).

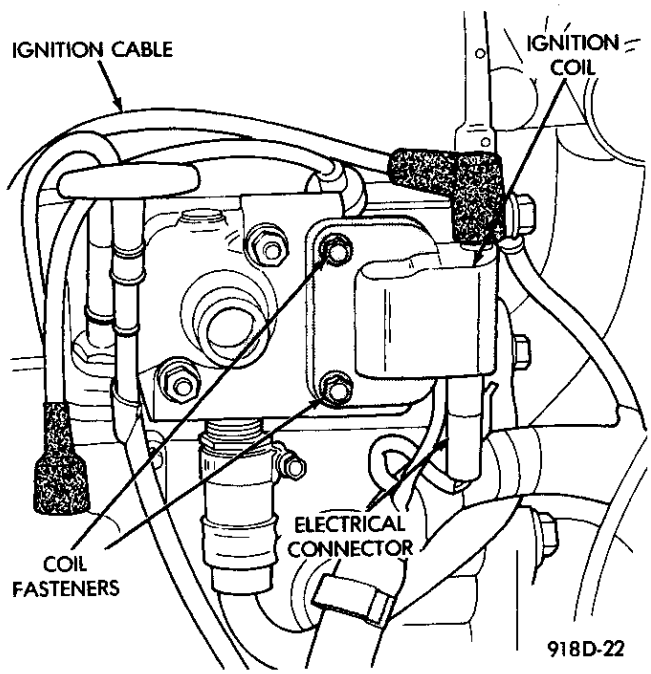

Fig. 12 Coil Harness Connector—2.5L Engine—Typical

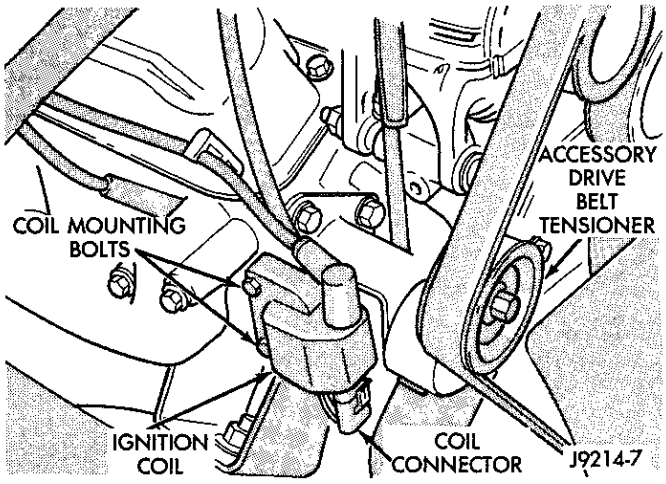

Fig. 13 Coil Harness Connector—3.9/5.2L Engine—Typical

(2) Connect a set of small jumper wires (18 gauge or smaller) between the ignition coil and coil electrical connector (Fig. 14).

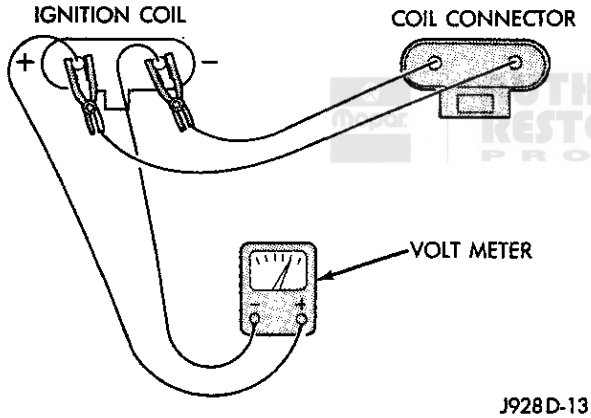

Fig. 14 Coil Terminals—Typical

(3) Determine that sufficient battery voltage (12.4 volts) is present for the starting and ignition systems.

(4) Crank the engine for 5 seconds while monitoring the voltage at the coil positive terminal (Fig. 14):

- If the voltage remains near zero during the entire period of cranking, refer to On-Board Diagnostics in Group 14, Fuel Systems. Check the powertrain control module and auto shut down relay.
- If voltage is at near battery voltage and drops to zero after 1-2 seconds of cranking, check the powertrain control module circuit. Refer to On-Board Diagnostics in Group 14, Fuel Systems.
- If voltage remains at near battery voltage during the entire 5 seconds, turn the key off. Remove the 60-way connector (Fig. 15) from the powertrain control module (PCM). Check 60-way connector for any spread terminals.

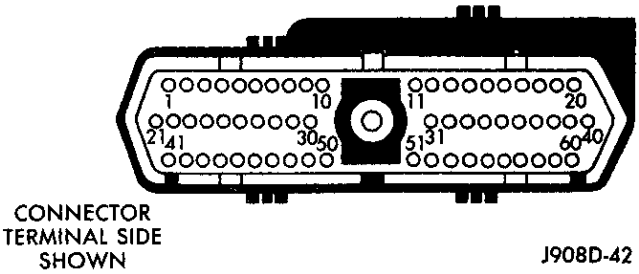

Fig. 15 PCM 60-Way Connector

(5) Remove test lead from the coil positive terminal. Connect an 18 gauge jumper wire between the battery positive terminal and the coil positive terminal.

(6) Make the special jumper shown in Figure 16. Using the jumper, **momentarily** ground terminal-19 of the 60-way connector. A spark should be generated at the coil cable when the ground is removed.

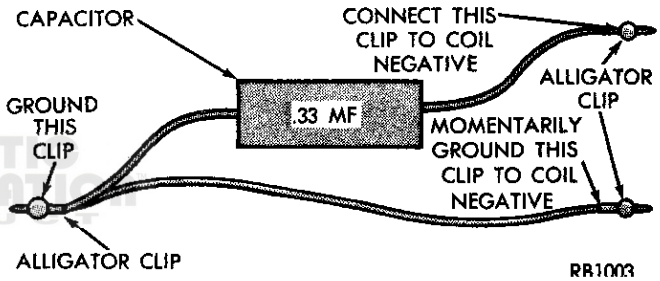

Fig. 16 Special Jumper Ground-to-Coil Negative Terminal

(7) If spark is generated, replace the powertrain control module (PCM).

(8) If spark is not seen, use the special jumper to ground the coil negative terminal directly.

(9) If spark is produced, repair wiring harness for an open condition.

(10) If spark is not produced, replace the ignition coil.

IGNITION TIMING

2.5L ENGINE

WARNING: APPLY PARKING BRAKE AND/OR BLOCK WHEELS BEFORE PERFORMING IGNITION TIMING ADJUSTMENT, OR ANY TESTS WITH A RUNNING ENGINE.

Proper ignition timing is required to obtain optimum engine performance. The distributor must be correctly indexed to provide correct initial ignition timing.

(1) Set the gearshift selector in park or neutral and apply the parking brake. All lights and accessories must be off.