

2014 GENERAL INFORMATION

Circuit Testing Procedures - Non-DTC-Based Diagnostics - Ram Pickup

WARNING

GENERAL WARNINGS

WARNINGS provide information to prevent personal injury and vehicle damage. Below is a list of general warnings that should be followed any time a vehicle is being serviced.

WARNING: Always wear safety glasses for eye protection.

WARNING: Use safety stands anytime a procedure requires being under a vehicle.

WARNING: Be sure that the ignition switch is always in the off position, unless the procedure requires it to be on.

WARNING: Set the parking brake when working on any vehicle. An automatic transmission should be in park. A manual transmission should be in neutral.

WARNING: Operate the engine only in a well-ventilated area.

WARNING: Keep away from moving parts when the engine is running, especially the fan and belts.

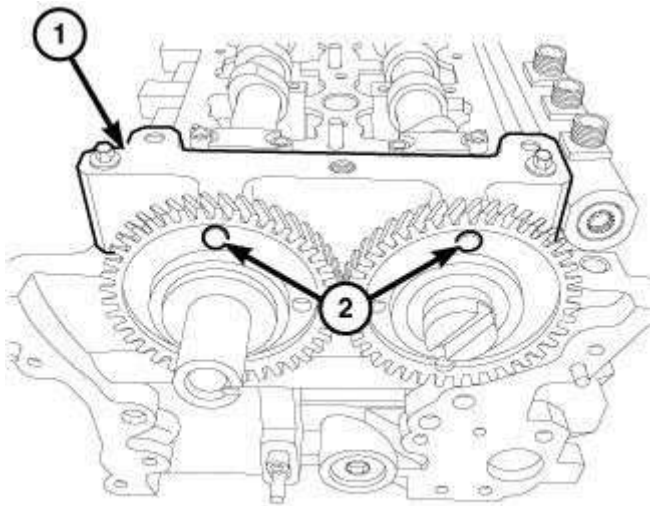
WARNING: To prevent serious burns, avoid contact with hot parts such as the radiator, exhaust manifold(s), tail pipe, catalytic converter and muffler.

WARNING: Do not allow flame or sparks near the battery. Gases are always present in and around the battery.



Fig. 465: Removing/Installing Engine Cover
 Courtesy of CHRYSLER GROUP, LLC

1. Disconnect negative battery cable.
2. Remove the engine cover (1).
3. Remove the lower timing cover. Refer to **COVER(S), ENGINE TIMING, REMOVAL**.
4. Lock the engine to 30 degrees ATDC. Refer to **LOCKING ENGINE 30 DEGREES AFTER TDC** .



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Fig. 466: Camshaft Timing Tool & Sprockets Holes - Right
 Courtesy of CHRYSLER GROUP, LLC

5. Install the (special tool #VM.10338-1, Timing Tool, Camshaft (Right)) (1)

NOTE: Be sure to zero the meter before taking the measurement. A good Fuel Injector has approximately 0.5 Ohm of resistance when measured through it.

Is the resistance below 1.0 Ohm?

Yes

- Go To 9

No

- Replace the Fuel Injector that did not measure below 1.0 Ohm.
- Perform the PCM VERIFICATION TEST. Refer to **PCM VERIFICATION TEST** .

9. MULTIPLE FUEL INJECTOR DTCS

Were there multiple Fuel Injector DTCS set in the PCM?

Yes

- Go To 10

No

- Replace Fuel Injector 6 in accordance with the service information. Refer to **INJECTOR(S), FUEL, REMOVAL** .
- Perform the PCM VERIFICATION TEST. Refer to **PCM VERIFICATION TEST** .

10. FUEL INJECTOR

1. Reconnect all harness connectors.
2. Turn the ignition on.
3. With the scan tool, erase all PCM DTCS.
4. Disconnect the Fuel Injector 6 harness connector.
5. With the scan tool, read the PCM DTCS.

NOTE: The continuing setting of multiple DTCS indicates

the oil control valve (4).

5. The **SCRIBE LINES** (5) on the cam phasers should face away from each other and the **ARROWS** (6) should point toward each other and be parallel to the cylinder head cover mounting surface. There should be twelve chain pins (2) **BETWEEN** the exhaust cam phaser triangle marking (3) and the intake cam phaser circle marking (1).

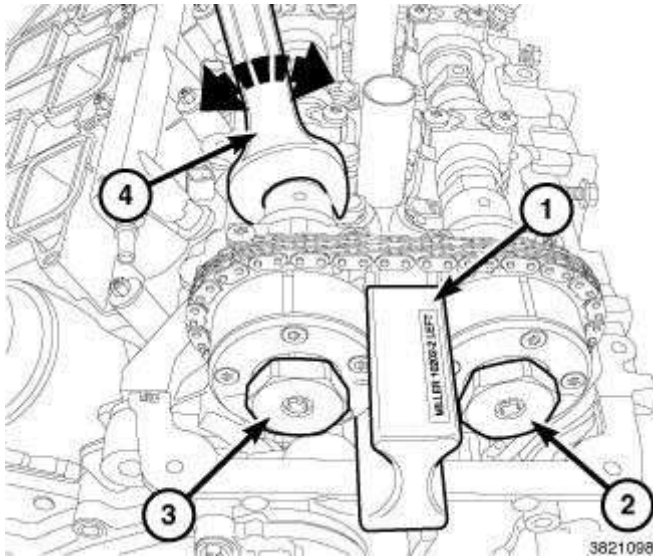


Fig. 261: Wrench, Oil Control Valves & Special Tool
Courtesy of CHRYSLER GROUP, LLC

NOTE: It may be necessary to rock the camshaft slightly (a few degrees) with a wrench (4) when installing the camshaft phaser lock.

6. Install the (special tool #10202-2, Lock, Camshaft/Phaser, Left Side) (1) against the cylinder head cover mounting surface with the tool number facing up.
7. Tighten the oil control valves (2) and (3) to 150 N.m (110 ft. lbs.).
8. Remove the Camshaft Phaser Lock (1) and the Timing Chain Holder.

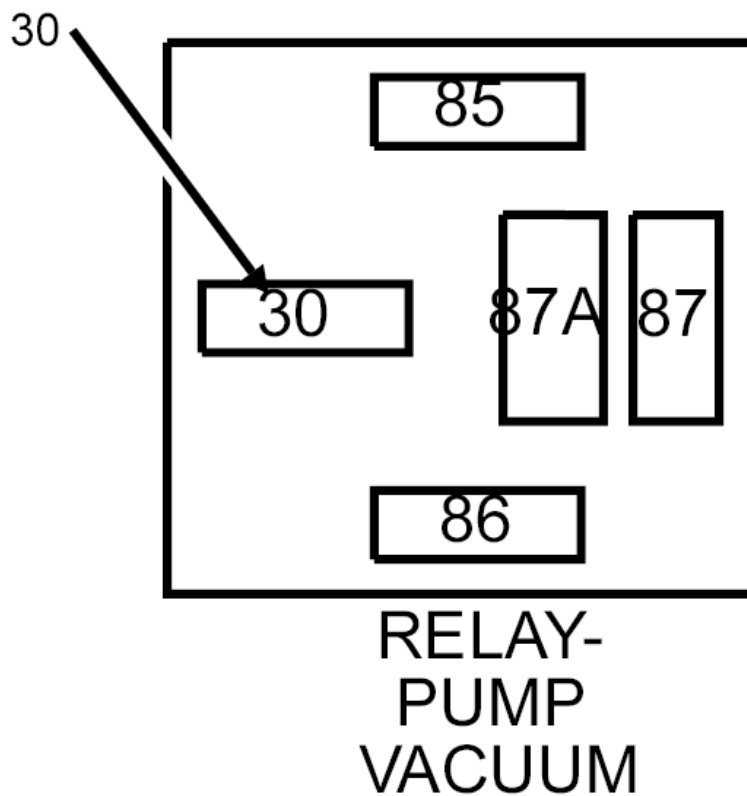
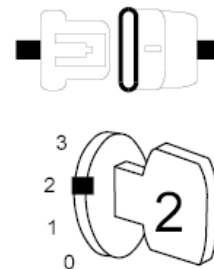
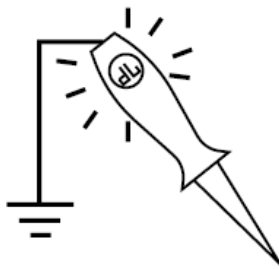


Fig. 22: Checking Fused B+ Circuit
 Courtesy of CHRYSLER GROUP, LLC

1. Turn the ignition off.
2. Remove the EVP Relay from the relay connector in the PDC.
3. Ignition on, engine not running.
4. Using a 12-Volt test light connected to ground, probe the Fused B+ circuit in the EVP Relay harness connector.

Does the test light illuminate brightly?

- Perform the INTERMITTENT CONDITION diagnostic procedure. Refer to **STANDARD PROCEDURE** . .

P2314-IGNITION COIL 5 SECONDARY CIRCUIT - INSUFFICIENT IONIZATION

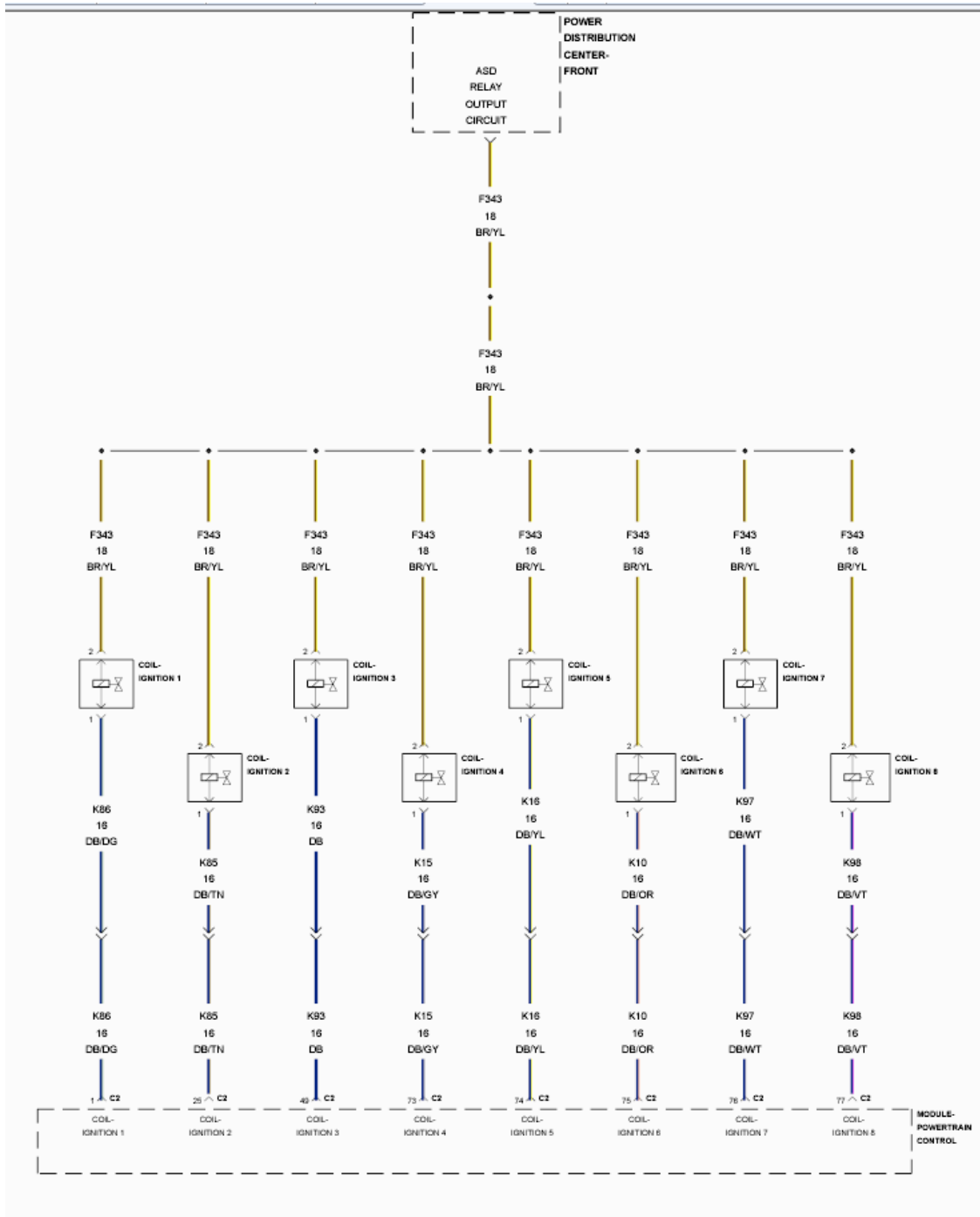


Fig. 83: Ignition Coil Circuit Wiring Diagram
 Courtesy of CHRYSLER GROUP, LLC

For a complete wiring diagram, refer to appropriate **SYSTEM WIRING**

	2. Starter motor or solenoid inoperative	solenoid. Refer to STARTER, DIAGNOSIS AND TESTING . Replace starter motor, if required.
	3. Starter relay inoperative	3. See appropriate Wiring Information. Test and replace the starter relay, if required
	4. Clutch pedal position switch inoperative (if equipped with manual transmission)	4. See appropriate Electrical Diagnostics article. Test and adjust or replace switch, if required.
	5. Park/Neutral position switch inoperative (if equipped with automatic transmission)	5. See appropriate Electrical Diagnostics article. Test and adjust or replace switch, if required.
	6. Ignition switch inoperative	6. Test the Ignition Switch and Key Lock Cylinder. Replace ignition switch if required.
	7. Starting circuit wiring inoperative	7. See appropriate Wiring Information. Test and repair starter feed and/or control circuits, if required.
STARTER ENGAGES, BUT FAILS TO TURN ENGINE	1. Battery discharged or inoperative	1. Charge and test battery. Refer to DIAGNOSIS AND TESTING . Replace battery if required.
	2. Starter motor or solenoid inoperative	2. Test the starter motor and solenoid. Refer to STARTER, DIAGNOSIS AND TESTING . Replace starter motor if required.
	3. Starting circuit wiring inoperative	3. See appropriate Wiring Information. Test and repair starter feed and/or control circuits, if required.

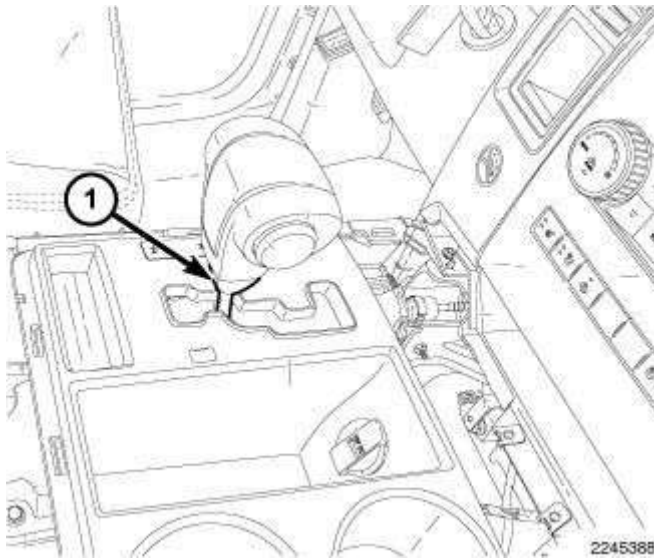


Fig. 213: Shifter Knob Lower Trim Piece
Courtesy of CHRYSLER GROUP, LLC

3. Install the lower trim piece (1) onto the shifter lever.
4. Install shifter knob.
5. Pull the lower trim piece (1) upward to engage it on the shifter knob.

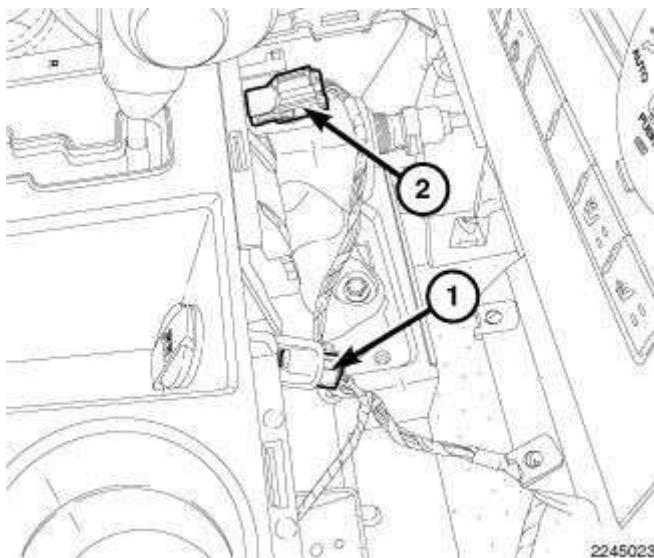


Fig. 214: Power Outlet & Shifter Harness Connectors
Courtesy of CHRYSLER GROUP, LLC

6. Connect the power outlet harness connector (1) and the shifter harness connector (2).

reset and the CPU will store a failure.

In order to check the correct behavior of the watchdog ASIC, the CPU purposely does not always answer the questions of the watchdog correctly. The watchdog monitoring software in the TCM occasionally sends wrong answers or sends correct answers too early or too late (failure in timing) to the watchdog ASIC. The CPU then compares the error counter of the watchdog ASIC, which is transmitted in a SPI message, with the expected value calculated in the CPU. If the received watchdog error counter value is unequal to the expected value, the CPU increments its own error counter. A failure is detected if the CPU error counter is greater than a threshold.

Program Flow Control: To ensure that all safety relevant software modules are processed in the correct sequence, the questions transmitted by the watchdog ASIC to the CPU are answered by an algorithm that uses the checksums of all safety relevant software modules. This algorithm responds back to the watchdog ASIC with a correct answer only if all software module checksums are processed in the right order.

WHEN MONITORED

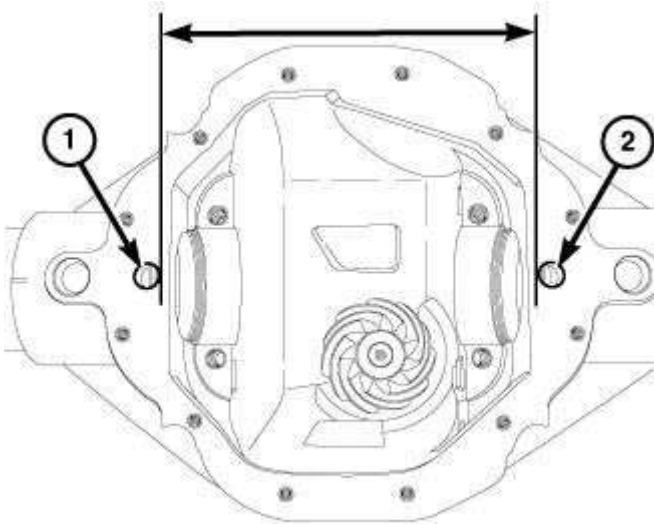
Continuously with the ignition switch in the run position.

The Inhibit Path Test that is done during initialization has successfully completed.

SET CONDITION

A failure is detected if one of the following conditions occurs:

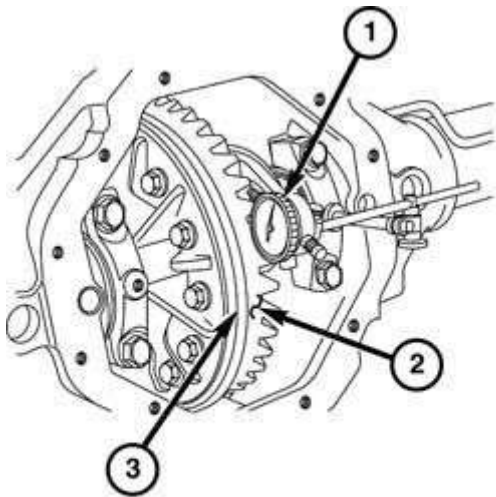
- A failure in the SPI communication between the CPU and the watchdog ASIC (e.g. timeout of SPI message) is detected.
- The status value of the watchdog ASIC, which includes the watchdog error counter, is unequal to the expected value in the CPU software.
- The watchdog error counter is above the threshold to switch off the output stages.
- The number of safety relevant software modules monitored by the Program Flow Control is not as expected.
- A safety relevant software module monitored by the Program Flow Control has calculated an invalid checksum.



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Fig. 10: Identifying Differential Holes (1 And 2)
 Courtesy of CHRYSLER GROUP, LLC

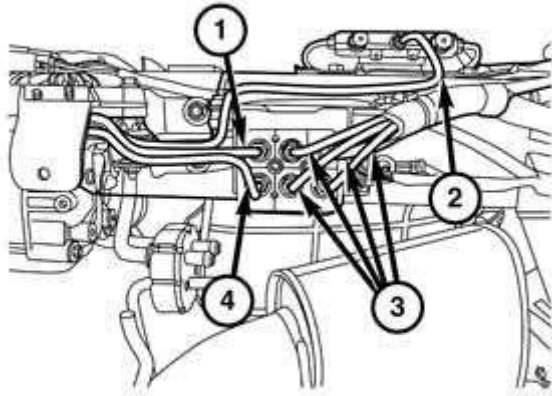
1. Before installing differential, use a 12 inch caliper to measure between the inner most part of the holes (1 and 2) and record reading for later use.
2. Install the differential and bearing caps and tighten to 14 N.m (10 ft. lbs.) to retain cups while adjusting.



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Fig. 11: Measuring Ring Gear Backlash
 Courtesy of CHRYSLER GROUP, LLC

3. Turn both thread adjusters inward with (special tool #C-4164, Wrench, Differential Preload) until differential bearing end-play is eliminated and ring gear backlash is approximately 0.025 mm (0.001 in.). Seat bearing cups



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Fig. 17: Adapter Air Line/Fitting At Adapter Block
Courtesy of CHRYSLER GROUP, LLC

6. Remove the pressure air line/fitting (1) from the face of the valve block and remove the pressure air line from the vehicle.

REAR AIR LINES

WARNING: All pressurized air suspension components contain high pressure air (up to 220 psig). Use extreme caution when inspecting for leaks. Wear safety goggles and adequate protective clothing when inspecting or servicing the air suspension system. A sudden release of air under this amount of pressure can cause possible serious or fatal injury.

WARNING: Support the vehicle by supplemental means before performing any work on the air suspension system to prevent the vehicle from changing height. Before any given component is to be serviced it must be deflated. Servicing the air suspension system without supplemental support, or with pressure in the specific

- Repair the (C807) Common Door Driver circuit for a short to ground.
- Perform the HVAC VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

No

- Go To 5

5. CHECK THE MODE DOOR 2 (DEFROST) ACTUATOR

1. Replace the Mode Door Actuator in accordance with the Service Information. Refer to **ACTUATOR, MODE DOOR, REMOVAL** .
2. With the scan tool, erase HVAC DTCs and perform the HVAC Actuator Calibration Test.

Did this DTC reset?

Yes

- Replace and program the A/C Heater Module in accordance with the Service Information. Refer to **MODULE, A/C AND HEATER, INSTALLATION** .
- Perform the HVAC VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

No

- Test complete.
- Perform the HVAC VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

6. CHECK THE WIRING AND CONNECTORS

1. The conditions necessary to set the DTC are not present at this time.
2. With the scan tool, check the Environmental Data to help identify the conditions in which the DTC was set.
3. Using the wiring diagrams as a guide, check all related splices and connectors for signs of water intrusion, corrosion, pushed out or bent terminals, and correct pin tension.
4. Wiggle the wiring and connectors while checking for shorted and open

disengage the release clip (3) as shown in illustration and remove the sun visor support (1) from the headliner (2)

INSTALLATION

INSTALLATION

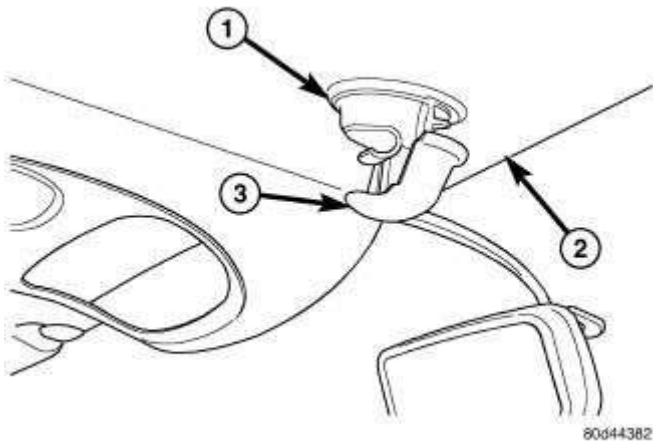


Fig. 538: Removing/Installing Visor Support
Courtesy of CHRYSLER GROUP, LLC

1. Position the sun visor support (1) through the headliner (2) and fully seat the base of the support to the roof panel.
2. Engage the release clip (3).

VISOR

REMOVAL

REMOVAL

Information.

- Perform the BODY VERIFICATION TEST. Refer to **STANDARD PROCEDURE** .

6. CHECK THE (D402) BCM LIN 2 BUS CIRCUIT FOR A SHORT TO BATTERY

1. Turn the ignition off.
2. Disconnect the BCM G harness connector.
3. Turn the ignition on.
4. Measure the voltage between the (D402) BCM LIN 2 Bus circuit and ground.

Is there any voltage present?

Yes

- Repair the (D402) LIN 2 Bus wire for a short to voltage.
- Perform the BODY VERIFICATION TEST. Refer to **STANDARD PROCEDURE** .

No

- Replace the Body Control Module in accordance with the Service Information. Refer to **MODULE, BODY CONTROL, REMOVAL** .
- Perform the BODY VERIFICATION TEST. Refer to **STANDARD PROCEDURE** .

B2216-00-CENTRAL GATEWAY INTERNAL

For a complete wiring diagram, refer to appropriate **SYSTEM WIRING DIAGRAMS** article .

THEORY OF OPERATION

The Body Control Module (BCM) will attempt to reset certain faulty outputs during each ignition cycle. If after a significant number of ignition cycles the output is still not functioning, the BCM will disable the output forever.

WHEN MONITORED

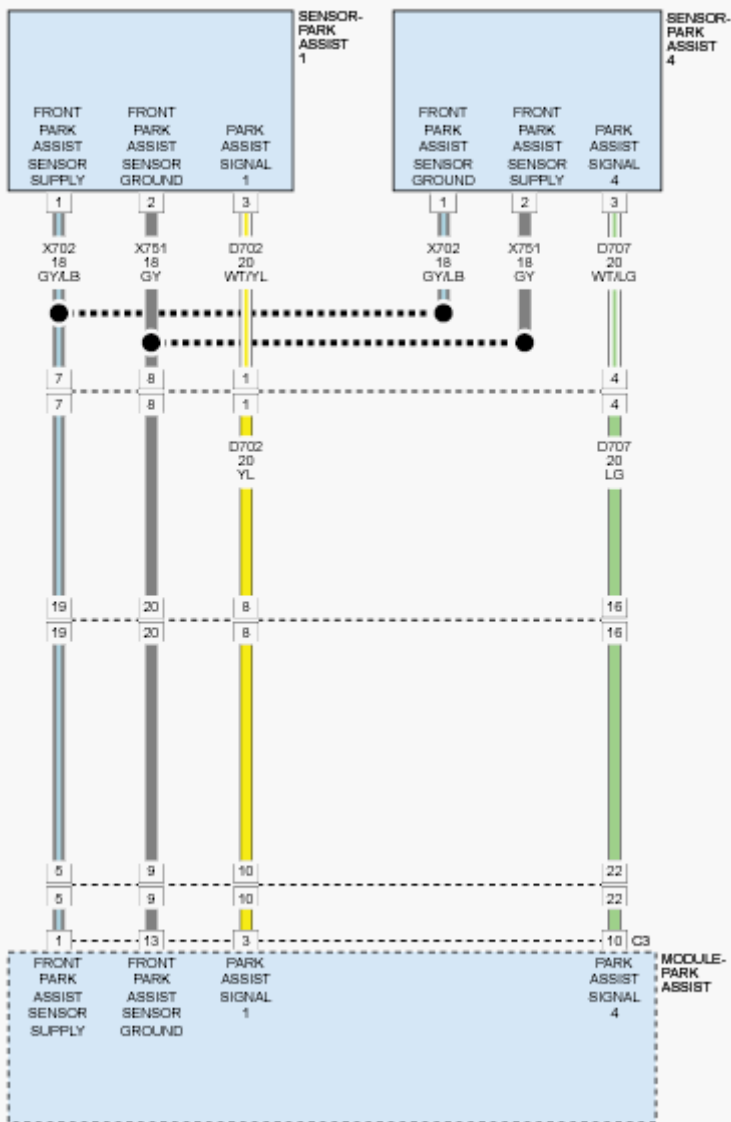


Fig. 15: Park Assist Sensors Circuit Diagram
 Courtesy of CHRYSLER GROUP, LLC

THEORY OF OPERATION

The Park Assist Sensors are ultrasonic transceivers that are completely controlled by the Park Assist Module. The sensors transmit and receive ultrasonic signals. Each sensor has a voltage, signal, and return circuit to the module. The sensors communicate with the Park Assist Module using a dedicated serial bus communication circuit.

WHEN MONITORED

Vehicle in reverse.