

Pinpoint Tests

A : DTC P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208; FUEL INJECTOR CIRCUIT MALFUNCTION

NOTE:

The DTC set will indicate which cylinder injector or circuit is faulty. Only in the event of multiple cylinder misfires will it be necessary to check more than one injector or circuit, in which case, multiple DTCs will be set.

A1 : CHECK THE INJECTOR COIL RESISTANCE

1. Turn the ignition switch to the **OFF** position.
2. Disconnect the relevant injector electrical connector, (IJ03 to IJ10, vehicles with AJ26 engine, PI07 to PI14, vehicles with AJ27 engine).
3. Measure the resistance between the injector pins.

•Is the resistance between 12 and 16 ohms?

-> **Yes**

Goto <<A2>>

-> **No**

INSTALL a new injector. CLEAR the DTC. TEST the system for normal operation.

A2 : CHECK THE INJECTOR COIL INSULATION

1. Measure the resistance between the injector pin 01 and the injector body.
2. Measure the resistance between the injector pin 02 and the injector body.

•Are both resistances greater than 10 Mohms?

-> **Yes**

Goto <<A3>>

-> **No**

INSTALL a new injector. CLEAR the DTC. TEST the system for normal operation.

A3 : CHECK THE INJECTOR SUPPLY VOLTAGE

1. Turn the ignition switch to the **ON** position.
2. Disconnect the relevant injector electrical connector, (IJ03 to IJ10, vehicles with AJ26 engine, PI07 to PI14, vehicles with AJ27 engine).
3. Measure the voltage between the relevant injector harness electrical connector (IJ03 to IJ10, vehicles with AJ26 engine, PI07 to PI14, vehicles with AJ27 engine), pin 02 (BR) and GROUND.

•Is the voltage greater than 12 volts?

-> **Yes**

Goto <<A4>>

-> **No**

REPAIR the circuit between the relevant injector harness electrical connector, pin 02 and battery. This circuit includes the EMS fuse box, fuse 05, and the fuel injection relay. For additional information, refer to

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the wiring diagrams. CLEAR DTC. TEST the system for normal operation.

A4 : CHECK THE INJECTOR GROUND CIRCUIT FOR HIGH RESISTANCE

1. Turn the ignition switch to the **OFF** position.
2. Disconnect the battery negative terminal.
3. Disconnect the ECM electrical connector, (EM15, vehicles with AJ26 engine, EM84, vehicles with AJ27 engine).
4. Measure the resistance between the relevant injector harness electrical connector (IJ03 to IJ10, vehicles with AJ26 engine, PI07 to PI14, vehicles with AJ27 engine), pin 01 and the ECM electrical connector, pins as follows -

Vehicles with AJ26 engine:

- Cyl 1 IJ03, pin 01 (BU) and EM15, pin 07
- Cyl 2 IJ07, pin 01 (BU) and EM15, pin 18
- Cyl 3 IJ04, pin 01 (BN) and EM15, pin 17
- Cyl 4 IJ08, pin 01 (BN) and EM15, pin 05
- Cyl 5 IJ05, pin 01 (BG) and EM15, pin 16
- Cyl 6 IJ09, pin 01 (BG) and EM15, pin 04
- Cyl 7 IJ06, pin 01 (BW) and EM15, pin 06
- Cyl 8 IJ10, pin 01 (BW) and EM15, pin 15

Vehicles with AJ27 engine:

- Cyl 1 PI07, pin 01 (BG) and EM84, pin 02
- Cyl 2 PI11, pin 01 (BW) and EM84, pin 06
- Cyl 3 PI08, pin 01 (BO) and EM84, pin 21
- Cyl 4 PI12, pin 01 (BW) and EM84, pin 04
- Cyl 5 PI09, pin 01 (BG) and EM84, pin 14
- Cyl 6 PI13, pin 01 (BO) and EM84, pin 03
- Cyl 7 PI10, pin 01 (BW) and EM84, pin 05
- Cyl 8 PI14, pin 01 (BR) and EM84, pin 13

•Is the resistance greater than 5 ohms?

-> Yes

REPAIR the circuit between the relevant injector harness electrical connector pin 01 and the engine control module electrical connector. For additional information, refer to the wiring diagrams. CLEAR the DTC. TEST the system for normal operation.

-> No

Goto <<A5>>

A5 : CHECK THE INJECTOR GROUND CIRCUIT FOR SHORT CIRCUIT TO BATTERY

1. Reconnect the battery negative terminal.

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2. Measure the voltage between the relevant injector harness electrical connector (IJ03 to IJ10, vehicles with AJ26 engine, PI07 to PI14, vehicles with AJ27 engine), pin 01 and GROUND.

•Is the voltage greater than 3 volts?

-> Yes

REPAIR the short circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC. TEST the system for normal operation.

-> No

Goto <<A6>>

A6 : CHECK THE INJECTOR GROUND CIRCUIT FOR SHORT CIRCUIT TO GROUND

1. Measure the resistance between the relevant injector harness electrical connector (IJ03 to IJ10, vehicles with AJ26 engine, PI07 to PI14, vehicles with AJ27 engine), pin 01 and GROUND.

•Is the resistance less than 10,000 ohms?

-> Yes

REPAIR the short circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC. TEST the system for normal operation.

-> No

Contact dealer technical support for advice on possible ECM failure.

B : DTC P0460; FUEL LEVEL SENSE SIGNAL PERFORMANCE

B1 : CHECK THE FUEL LEVEL SENSOR REFERENCE GROUND

1. Disconnect the fuel level sensor electrical connector, BT15.

2. Measure the resistance between BT15 and GROUND.

•Is the resistance greater than 5 ohms?

-> Yes

Goto <<B2>>

-> No

Goto <<B3>>

B2 : CHECK THE FUEL LEVEL SENSOR REFERENCE GROUND CIRCUIT FOR HIGH RESISTANCE

1. Disconnect the instrument cluster electrical connector, FC25.

2. Measure the resistance between FC25, pin 14 (RW) and BT15 (RW).

•Is the resistance greater than 5 ohms?

-> Yes

REPAIR the high resistance circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC. TEST the system for normal operation.

-> No

Goto <<B3>>

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B3 : CHECK THE FUEL LEVEL SENSOR (EMPTY)

1. Disconnect the fuel level sensor electrical connectors, BT14 and BT15.
2. Empty the fuel tank.
3. Measure the resistance between the fuel level sensor connections.

•Is the resistance 900 ohms?

-> **Yes**

Goto <<B4>>

-> **No**

INSTALL a new fuel level sensor. CLEAR the DTC. TEST the system for normal operation.

B4 : CHECK THE FUEL LEVEL SENSOR (FULL)

1. Fill the fuel tank.
2. Measure the resistance between the fuel level sensor connections.

•Is the resistance 80 ohms?

-> **Yes**

Goto <<B5>>

-> **No**

INSTALL a new fuel level sensor. CLEAR the DTC. TEST the system for normal operation.

B5 : CHECK THE FUEL LEVEL SENSOR SIGNAL WIRE FOR HIGH RESISTANCE

1. Disconnect the instrument cluster electrical connector, FC25.
2. Measure the resistance between FC25, pin 13 (BW) and BT14 (BW).

•Is the resistance greater than 5 ohms?

-> **Yes**

REPAIR the high resistance circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC. TEST the system for normal operation.

-> **No**

INSTALL a new instrument cluster. <<413-01>> CLEAR the DTC. TEST the system for normal operation.

C : DTC P1646; FUEL PUMP 2 (SC) RELAY MALFUNCTION

NOTE:

This DTC applies only to the supercharged system fuel pump 2.

C1 : CHECK THE FUEL PUMP 2 RELAY POWER SUPPLY

1. Remove the fuel pump 2 relay.
2. Turn the ignition switch to the **ON** position.

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3. Measure the voltage between the relay base, pin 01 and GROUND.

•Is the voltage less than 10 volts?

-> Yes

REPAIR the circuit between the relay base, pin 01 and battery. This circuit includes the trunk fuse box, the ignition positive relay, and the high power protection module. For additional information, refer to the wiring diagrams. CLEAR the DTC. TEST the system for normal operation.

-> No

Goto <<C2>>

C2 : CHECK THE FUEL PUMP 2 RELAY TO ECM CIRCUIT

1. Disconnect the battery negative terminal.

2. Disconnect the ECM electrical connector, EM13.

3. Measure the resistance between the relay base, pin 02 and EM13, pin 09 (KB).

•Is the resistance greater than 5 ohms?

-> Yes

REPAIR the high resistance circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC. TEST the system for normal operation.

-> No

INSTALL a new fuel pump 2 relay. CLEAR the DTC. TEST the system for normal operation.

D : CHECK THE FUEL PRESSURE REGULATOR FUNCTION



CAUTION:

Do not run the engine for more than 30 seconds with the vacuum hose disconnected.

D1 : CHECK FOR FUEL PRESSURE CHANGE WHEN THE REGULATOR IS DISCONNECTED

1. Connect a fuel pressure gauge set, <<310-00>>

2. Start the engine.

3. Note the fuel pressure reading with the fuel pressure regulator vacuum hose connected.

4. Disconnect the fuel pressure regulator vacuum hose.

5. Note the new reading.

•Does the fuel pressure increase when the hose is disconnected?

-> Yes

Check for DTCs. Carry out the pinpoint tests indicated.

-> No

INSTALL a new fuel pressure regulator. TEST the system for normal operation.

E : DTC P1230; FUEL PUMP RELAY MALFUNCTION

NOTE:

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This DTC applies only to the N/A system single fuel pump, and the S/C system fuel pump 1

E1 : CHECK THE FUEL PUMP RELAY BATTERY SUPPLY

1. Remove the fuel pump relay.
2. Measure the voltage between the relay base, pin 03 and GROUND.

•Is the voltage less than 10 volts?

-> **Yes**

REPAIR the circuit between the relay base, pin 03 and the battery power bus. This circuit includes the trunk fuse box and the high power protection module. For additional information, refer to the wiring diagrams. CLEAR the DTC. TEST the system for normal operation.

-> **No**

Goto <<E2>>

E2 : CHECK THE FUEL PUMP RELAY IGNITION SWITCHED SUPPLY

1. Turn the ignition switch to the **ON** position.
2. Measure the voltage between the relay base, pin 01 and GROUND.

•Is the voltage less than 10 volts?

-> **Yes**

REPAIR the circuit between the relay base, pin 01 and battery. This circuit includes the trunk fuse box, fuse 16 of the left-hand fuse box, the ignition positive relay and the high power protection module. For additional information, refer to the wiring diagrams. CLEAR the DTC. TEST the system for normal operation.

-> **No**

Goto <<E3>>

E3 : CHECK THE FUEL PUMP RELAY TO ECM CIRCUIT FOR HIGH RESISTANCE

1. Disconnect the battery negative terminal.
2. Disconnect the ECM electrical connector, EM83.
3. Measure the resistance between EM83, pin 04 (WR) and the relay base, pin 02.

•Is the resistance greater than 5 ohms?

-> **Yes**

REPAIR the high resistance circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC. TEST the system for normal operation.

-> **No**

INSTALL a new fuel pump relay. CLEAR the DTC. TEST the system for normal operation. If the DTC is repeated, contact dealer technical support for advice on possible ECM failure.