P0262, P0265, P0268, P0271, P0274, or P0277 Injector 1 Control Circuit High Voltage

Circuit Description

The control module enables the appropriate fuel injector on the intake stroke for each cylinder. Ignition voltage is supplied directly to the fuel injectors. The control module controls each fuel injector by grounding the control circuit with a solid state device called a driver. The control module monitors the status of each driver. Each driver has a feedback voltage circuit which the engine control module (ECM) monitors. The injector control circuits are pulled-up to a voltagewithin the ECM. The ECM can determine if a control circuit is open, shorted to ground, or shorted to a voltage by monitoring the feedback voltage. If the ECM detects the control circuit voltage is too high when the circuit is commanded ON, this DTC sets.

DTC Descriptors

This diagnostic procedure supports the following DTCs.

- DTC P0262 Injector 1 Control Circuit High Voltage
- DTC P0265 Injector 2 Control Circuit High Voltage
- DTC P0268 Injector 3 Control Circuit High Voltage
- DTC P0271 Injector 4 Control Circuit High Voltage
- DTC P0274 Injector 5 Control Circuit High Voltage
- DTC P0277 Injector 6 Control Circuit High Voltage

Conditions for Running the DTC

- The engine speed is more than 80 RPM.
- The ignition 1 voltage is between 10–18 volts.
- DTC P0262, P0265, P0268, P0271, P0274, and P0277 run continuously once the above conditions are met.

Conditions for Setting the DTC

- The ECM detects a short to voltage on the fuel injector circuits.

- The condition exists for more than 1 second.

Action Taken When the DTC Sets

- The control module illuminates the malfunction indicator lamp (MIL) on the second consecutive ignition cycle that the diagnostic runs and fails.
- The control module records the operating conditions at the time the diagnostic fails. The first time the diagnostic fails, the control module stores this information in the Failure Records. If the diagnostic reports a failure on the second consecutive ignition cycle, the control module records the operating conditions at the time of the failure. The control module writes the operating conditions to the Freeze Frame and updates the Failure Records.

Conditions for Clearing the MIL/DTC

- The control module turns OFF the malfunction indicator lamp (MIL) after 4 consecutive ignition cycles that the diagnostic runs and does not fail.
- A current DTC, Last Test Failed, clears when the diagnostic runs and passes.
- A history DTC clears after 40 consecutive warm-up cycles, if no failures are reported by this or any other emission related diagnostic.
- Clear the MIL and the DTC with a scan tool.

Diagnostic Aids

- Use the J 35616-C Connector Test Adapter Kit for any test that requires probing the ECM harness connector or a component harness connector.
- The lower connector of the ECM is connector C1 and the upper connector of the ECM is connector C2. Refer to Engine Controls Component Views.
- Performing the fuel injector coil test may help isolate an intermittent condition. Refer to Fuel Injector Coil Test on page 6-1621.
- If the condition is intermittent, move the related harnesses and connectors, with the engine operating, while monitoring the circuit status for the component with a scan tool. The circuit status parameter changes from OK or Indeterminate to Fault if there is a condition with the circuit or a connection. The ODM information is in the output driver module (ODM) data list.
- If the condition is intermittent, refer to Intermittent Conditions.

Test Description

The numbers below refer to the step numbers on the diagnostic table.

2. This step determines if the condition is current.
4. This step tests for a short to voltage on the fuel injector control circuit. If the voltage is more than the specified value, the circuit is shorted to a voltage or there is an internal ECM condition.
6. This step tests if the ignition 1 voltage supply circuit is shorted to the fuel injector control circuit.

P0262, P0265, P0268, P0271, P0274, or P0277

Step	Action	Values	Yes	No
Schematic Reference: Engine Controls Schematics Connector End View Reference: Engine Control Module (ECM) Connector End Views or Engine Controls Connector End Views				
1	Did you perform the Diagnostic System Check–Engine Controls?	—	Go to Step 2	Go to Diagnostic System Check -Engine Controls
2	1. Turn ON the ignition, with the engine OFF. 2. Clear the DTCs with a scan tool. 3. Start the engine. 4. Observe the DTC Info with a scan tool. Is DTC P0262, P0265, P0268, P0271, P0274, or P0277 set?	—	Go to Step 4	Go to Step 3
3	1. Observe the Freeze Frame/Failure Records for this DTC. 2. Turn OFF the ignition for 30 seconds. 3. Start the engine. 4. Operate the vehicle within the Conditions for Running the DTC. You may also operate the vehicle within the conditions that you observed from the Freeze Frame/Failure Records. Did the DTC fail this ignition?	—	Go to Step 4	Go to Diagnostic Aids

Step	Action	Values	Yes	No
4	1. Turn OFF the ignition. 2. Disconnect the fuel injector multi-way harness connector. 3. Turn ON the ignition, with the engine OFF. 4. Measure the voltage between the appropriate control circuit of the fuel injector, engine control module (ECM) side of harness, to the ECM housing with a DMM. Is the voltage more than the specified value?	4.6 V	Go to Step 5	Go to Step 6
5	Test the control circuit of the fuel injector for a short to voltage between the multi-way harness connector and the ECM. Refer to Circuit Testing on page 8-1184 and Wiring Repairs on page 8-1189 in Wiring Systems. Did you find and correct the condition?	—	Go to Step 10	Go to Step 9
6	1. Turn OFF the ignition. 2. Remove the upper intake. Refer to Intake Manifold Replacement -Upper on page 6-108 in Engine Mechanical – 3.6L (LY7). 3. Disconnect the appropriate fuel injector. 4. Measure the resistance between the control circuit of the fuel injector and the ignition 1 voltage supply circuit of the fuel injector with a DMM. Does the DMM display OL?	—	Go to Step 8	Go to Step 7

Step	Action	Values	Yes	No
7	Repair the short between the ignition 1 voltage supply circuit to the control circuit of the fuel injector. Refer to Wiring Repairs on page 8-1189 in Wiring Systems. Did you complete the repair?	—	Go to Step 10	—
8	Replace the appropriate fuel injector. Refer to Fuel Injectors and Fuel Rail Replacement on page 6-1698. Did you complete the replacement?	—	Go to Step 10	—
9	Replace the ECM. Refer to Engine Control Module (ECM) Replacement on page 6-1648. Did you complete the replacement?	—	Go to Step 10	—
10	1. Clear the DTCs with a scan tool. 2. Turn OFF the ignition for 30 seconds. 3. Start the engine. 4. Operate the vehicle within the Conditions for Running the DTC. You may also operate the vehicle within the conditions that you observed from the Freeze Frame/Failure Records. Did the DTC fail this ignition? Observe the Capture Info with a scan tool.	—	Go to Step 2 Go to Diagnostic	Go to Step 11
11	Are there any DTCs that have not been diagnosed?	—	Trouble Code (DTC) List	System OK