

1. ENGINE/PROPULSION
2. ENGINE CONTROLS AND FUEL - 6.2L (LT2)
3. DIAGNOSTIC INFORMATION AND PROCEDURES
- 4.

DTC P0300-P0308

Symptoms

P0301
P0302
P0303
P0304
P0305
P0306
P0307

Diagnostic Instructions

- Perform the Diagnostic System Check prior to using this diagnostic procedure: [Diagnostic System Check - Vehicle](#)
- Review the description of Strategy Based Diagnosis: [Strategy Based Diagnosis](#)
- An overview of each diagnostic category can be found here: [Diagnostic Procedure Instructions](#)

DTC Descriptor

Engine Misfire Detected
Cylinder 1 Misfire Detected
Cylinder 2 Misfire Detected
Cylinder 3 Misfire Detected
Cylinder 4 Misfire Detected
Cylinder 5 Misfire Detected
Cylinder 6 Misfire Detected
Cylinder 7 Misfire Detected
Cylinder 8 Misfire Detected

Circuit/System Description

For an overview of the component/system, refer to:

- [Electronic Ignition System Description](#)
- [Fuel System Description](#)

A misfiring cylinder causes slight variations in the rotational speed of the crankshaft. The engine control module (ECM) is able to detect these variations by closely monitoring the crankshaft position sensor signal. The signals of the camshaft position sensors are used to determine which cylinder is misfiring. If the ECM detects a misfire rate sufficient to cause emission levels to exceed mandated standards, DTC P0300ts. Under certain driving conditions, a misfire rate can be high enough to cause the catalytic converter to overheat, possibly damaging the converter. The malfunction indicator lamp (MIL) flashes when catalyst damaging misfire conditions are present and DTC P0300 set.

Conditions for Running the DTC

- DTC P0010, P0011, P0013, P0014, P0016, P0017, P0068, P00C8, P00C9, P0101, P0102, P0103, P0106, P0107, P0108, P0111, P0112, P0113, P0114, P0117, P0118, P0119, P0122, P0123, P0191, P0192, P0193, P0222, P0223, P0335, P0336, P0340, P0341,

P0365, P0366, P0601, P0604, P0606, P0651, P16A0, P16A1, P16A2, P16F3, P2101, P2135, P2771, P3401, P3403, P3404, P3425, P3427, P3428, P3441, P3443, P3449, P3451, P3452

- Crankshaft/Camshaft Sensors = Synchronized
- Engine Coolant Temperature = ≈ 70 to 127°C (19.4 to 261°F)
- Engine Load = 0-%
- Engine Speed = Greater than 1,400insp;RPM
- Engine Speed = Less than 1,000insp;RPM - DTC P0315 set.
- Fuel Cut-Off System = Inactive
- Fuel level = Greater than 11%
- Rough Road Signal = Not Detected
- System Voltage = 9> to 32 V

Frequency the DTC runs = Continuously - After the running conditions are met

Conditions for Setting the DTC

P0300

The control module K20 detects a crankshaft rotation speed variation indicating a misfire rate sufficient to cause emissions levels to exceed a predetermined value or a misfire rate high enough to cause catalyst damage.

P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308

The control module K20 detects a crankshaft rotation speed variation indicating a single cylinder misfire rate sufficient to cause emissions levels to exceed mandated standards.

Actions Taken When the DTC Sets

DTCs listed in the DTC Descriptor Category = Type B> DTC

Malfunction Indicator Lamp (MIL) = Flashing - During catalyst damaging misfire.

Conditions for Clearing the DTC

DTCs listed in the DTC Descriptor Category = Type B> DTC

Diagnostic Aids

Verify the following conditions do not exist:

- { If equipped } Command the Cylinder Deactivation system On with a scan tool, then observe the misfire counters when commanding the system Off. If the misfire counters are incrementing, inspect for a sticking valve lifter.
- DTC P0300y set when there is a condition with the component circuits: B52 Heated Oxygen Sensor
- High resistance in the circuits of the component may set DTC P0300&P0308ting the DTC for the component: Q17 Fuel Injector
- If the condition is intermittent, wiggle the related wiring harnesses and connectors, with the ignition/vehicle on or engine running, while monitoring the scan tool circuit status parameters for the component. The parameters will display if there is a condition with the circuit or a connection.
- Verify the following conditions do not exist:
 -
 - Accessory drive bracket - Defective / Loose / Visible Damage
 - Belt Driven Device - Defective / Loose / Visible Damage
 - Brake Rotor - Excessive runout

- Drive Belt - Defective / Loose / Visible Damage
- Drive Shaft - Excessive runout
- During certain road conditions: Rough
- Tire and wheel assemblies which exhibit excessive runout can produce vibrations even if the assemblies are balanced.
- Transmission - Incorrect Operation

Reference Information

DTC Type Reference

[Powertrain Diagnostic Trouble Code \(DTC\) Type Definitions](#)

Scan Tool Reference

[Control Module References](#)

Special Tools

- [Oscilloscope Diagnostic Kit](#)
- [Oscilloscope Basic Lead Kit](#)
- [Ignition Spark Tester](#)

Equivalent regional tools: [Special Tools](#)

Circuit/System Verification

1. Engine >> Running
2. Verify there is no abnormal noise from the component: Engine
3.
 - **If an abnormal noise is present**
 - Refer to: [Symptoms - Engine Mechanical](#)
4.
 - **If no abnormal noise is present**
5. Perform the scan tool learn/reset function: [Crankshaft Position Variation Learn](#)
6. Verify there are no DTCs set related to the following component/system:
7.
 - B23 Camshaft Position Sensor
 - B26 Crankshaft Position Sensor
 - B52 Heated Oxygen Sensor
 - Q17 Fuel Injector
 - T8 Ignition Coil
 - Fuel System
 - Ignition System
 - Mechanical Condition
8.
 - **If a related DTC is set**

- Refer to: [Diagnostic Trouble Code \(DTC\) List - Vehicle](#)
- 9.
- **If a related DTC is not set**
10. Verify the scan tool parameter: Cylinder 1â8rrent Misfire Counter = Does not Increment
- 11.
- **If the parameter value increments**
 - Refer to: Circuit/System Testing
- 12.
- **If the parameter value does not increment**
13. Perform the scan tool control function: Cylinder Power Balance >> Enable
14. Verify the sound of the engine changes the same way when turning off each individual injector.
- 15.
- **If the engine sound does not change the same way for one or more cylinders**
 - Refer to: Circuit/System Testing
- 16.
- **If the engine sound changes the same way for all cylinders**
17. Verify the scan tool parameter: Cylinder 1â8rrent Misfire Counter = Does not Increment
18. Perform the action while monitoring the parameter:
- 19.
- Wiggle the harness and connector: K20 Engine Control Module
 - Wiggle the harness and connector: Q17 Fuel Injector
 - Wiggle the harness and connector: T8 Ignition Coil
 - Wiggle the component: Vacuum Hoses
- 20.
- **If the parameter value increments**
 - Repair or replace as necessary.
- 21.
- **If the parameter value does not increment**
22. 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 data.
23. Verify the DTC does not set.
- 24.
- **If the DTC sets**
 - Refer to: Circuit/System Testing
- 25.
- **If the DTC does not set**
26. All OK.

Circuit/System Testing

1. Ignition/Vehicle >> Off
2. Verify the tool is available: <sptool-no>CH-51450-A</sptool-no><sptool-desc> Oscilloscope Diagnostic Kit</sptool-desc> & <sptool-no>CH-51450-LEAD-A</sptool-no><sptool-desc> Oscilloscope Basic Lead Kit</sptool-desc>
3.
 - **If the tool is not available**
 - Refer to step 4>
4.
 - **If the tool is available**
5. Perform the following procedure/test: [Relative Engine Compression Test](#)
6. Verify the procedure/test passes.
7.
 - **If the procedure/test does not pass**
 - Refer to: [Symptoms - Engine Mechanical](#)
8.
 - **If the procedure/test passes**
9. Verify the following conditions do not exist:
10.
 - Engine - Vacuum leak
 - Exhaust System - Leaking / Missing components / Restricted >> Refer to: [Symptoms - Engine Exhaust](#)
 - Fuel - Contaminated / Dirty / Fill Level = Low >> Refer to: [Alcohol/Contaminants-in-Fuel Diagnosis](#)
 - Fuel Pressure - High / Low >> Refer to: [Fuel System Diagnosis](#)
 - Positive Crankcase Ventilation System - Leaking / Incorrect connection / Restricted
 - Vacuum Hoses - Kinked / Leaking / Incorrect connection / Restricted
11.
 - **If a condition exists**
 - Repair or replace as necessary.
12.
 - **If no conditions exist**
13. Ignition/Vehicle >> Off
14. Disconnect the appropriate component: Spark Plug Wire @ Spark Plug
15. Verify a condition does not exist with the component: Spark Plug Boot - Carbon Tracking / Fluid intrusion / Visible Damage
16.
 - **If a condition exists**
 - Repair or replace as necessary.
- 17.

- **If no condition exists**
18. Install <sptool-no>J-26792</sptool-no><sptool-desc>Ignition Spark Tester</sptool-desc></sptool> @ Spark Plug Wire & Ground
19. Engine >> Running
20. Note :
- An erratic or weak spark is considered a no spark condition.
21. Verify there is spark at the tool
- 22.
- **If there is no spark**
- 23.
1. Swap the two components: Spark Plug Wire - The original component that set the DTC & Another known good component from the vehicle
 2. Engine >> Running
 3. Verify the scan tool parameter: Cylinder 1â€™srent Misfire Counter = Increments - At the original component location the DTC set.
 4.
 - If the parameter value does not increment >> Replace the component: Spark Plug Wire - The original component that set the DTC
 5.
 - If the parameter value increments
 6. Refer to: [Electronic Ignition System Diagnosis](#)
- 24.
- **If there is spark**
25. Ignition/Vehicle >> Off
26. Remove the appropriate component: Spark Plug
27. Verify the component specifications are correct: Spark Plug - Gap / Heat Range / Torque
- 28.
- **If not correct**
 - Repair or replace as necessary.
- 29.
- **If correct**
30. Verify a condition does not exist with the component: Spark Plug - Carbon Tracking / Fouled / Visible Damage
- 31.
- **If a condition exists**
 - Repair or replace as necessary.
- 32.
- **If no condition exists**
33. Swap the two components: Spark Plug - The original component that set the DTC & Another known good component from the vehicle

34. Engine >> Running
35. Verify the scan tool parameter: Cylinder 1â€™srent Misfire Counter = Increments - At the original component location the DTC set.
36.
 - o **If the parameter value does not increment**
 - o Replace the component: Spark Plug - The original component that set the DTC
37.
 - o **If the parameter value increments**
38. Perform the following procedure/test: Fuel Injector Balance >> Refer to: [Fuel Injector Diagnosis](#)
39. Verify the procedure/test passes.
40.
 - o **If the procedure/test does not pass**
 - o Replace the component that failed the test: Q17 Fuel Injector
41.
 - o **If the procedure/test passes**
42. Verify the condition does not exist: An engine mechanical condition >> Refer to: [Symptoms - Engine Mechanical](#)
43.
 - o **If a condition exists**
 - o Repair or replace as necessary.
44.
 - o **If no condition exists**
45. All OK.

Repair Instructions

Perform the Diagnostic Repair Verification after completing the repair: [Diagnostic Repair Verification](#)

After any repair, perform DTC P0420rcuit/System Verification, to verify the performance of the component: Catalytic Converter >> Refer to: [DTC P0420 or P0430](#)

- [Gas Engine Ignition Spark Plug Replacement - Left Side](#)
- [Gas Engine Ignition Spark Plug Replacement - Right Side](#)
- [Spark Plug Wire Replacement - Left Side](#)
- [Spark Plug Wire Replacement - Right Side](#)

Related Part Information

Part Name	Catalog Name	Part Code
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