

GEN III V8 PCM - DTC P0327 KNOCK SENSOR CIRCUIT FRONT SENSOR

CIRCUIT DESCRIPTION

The Knock Sensor (KS) system detects engine detonation. The PCM retards the spark timing based on the signals from the knock sensors. The Knock Sensors produce an AC voltage. The Knock Sensor voltages are an input to the PCM. The amount of AC voltage produced is proportional to the amount of knock.

An operating engine produces a normal amount of engine mechanical vibration (noise). The Knock Sensors produce an AC voltage signal from this noise. When an engine operates, the PCM learns the minimum and maximum frequency of the noise the engine produces. When the PCM determines that this frequency is less than or greater than the expected amount, a Knock Sensor DTC will set.

CONDITIONS FOR RUNNING THE DTC

- The engine run time is greater than 20 seconds.
- The engine speed is between 1650 and 3000 RPM.
- The MAP is at or about 48 kPa.
- The engine coolant temperature is greater than 70°C.
- The throttle angle is greater than 0.5%.
- Battery voltage is between 10 and 16 volts.

CONDITIONS FOR SETTING THE DTC

- The PCM determines that the frequency is less than or greater than the expected amount for at least three seconds.

ACTION TAKEN WHEN THE DTC SETS

- The PCM illuminates the Check Powertrain Lamp when the diagnostic runs and fails.
- The PCM records the operating conditions at the time the diagnostic fails. The PCM stores this information in the Freeze Frame/Failure Records.

CONDITIONS FOR CLEARING THE CPL/DTC

- The PCM turns the Check Powertrain Lamp OFF after one ignition cycle that the diagnostic runs and does not fail.
- A last test failed (current DTC) clears when the diagnostic runs and does not fail.
- Use a Tech 2 scan tool to clear the CPL/DTC.

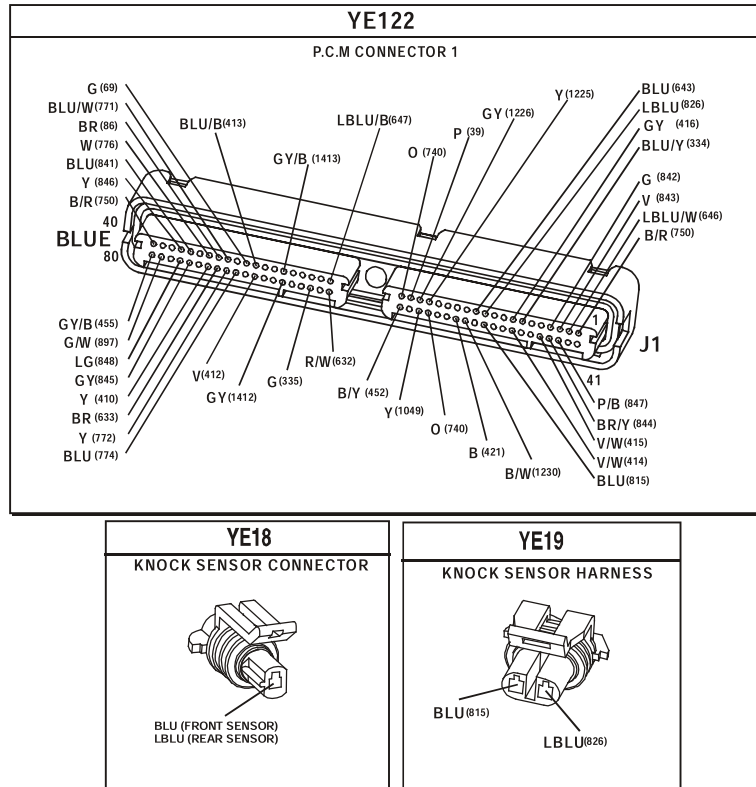
DIAGNOSTIC AIDS

- Check the Knock Sensor for correct installation. A Knock Sensor that is loose or over torqued may cause the DTC P0327 to set.
- For an intermittent, refer to [Section 6C3-2B Symptoms](#) of the VX Series Service Information.

TEST DESCRIPTION

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

- This verifies the malfunction is present. The Tech 2 scan tool will display DTC Ran=Yes and Pass=Int if the failure is intermittent. This indicates the diagnostic passed this ignition cycle and failed this ignition cycle. At this point, the resistance of the Knock Sensors should be verified to be in the correct range. If the Knock Sensor resistance's are correct, check the KS system wiring connections.
- When checking the KS system connections, start at the KS system jumper harness connector located behind the intake manifold. Then, check the connections at the appropriate Knock Sensor. Freeze Frame/Failure Records data does not include the parameter KS activity, however, other parameters may aid in locating the conditions under which an intermittent occurred.
- This test will isolate the Knock Sensor from the rest of the circuit. Tap on the engine block just below the intake manifold between the timing chain cover and the valley cover.



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Step	Action	Value(s)	Yes	No
1	Did you perform the Powertrain On-Board Diagnostic (OBD) System Check ?		Go to Step 2	Go to Powertrain OBD System Check Table
2	<p>IMPORTANT: If an engine knock can be heard, repair the engine mechanical problem before proceeding with this diagnostic.</p> <ol style="list-style-type: none"> Turn On the ignition leaving the engine OFF. Review the Freeze Frame/Failure Records data for this DTC and observe the parameters. Turn OFF the ignition for 15 seconds. Start the engine. Operate the vehicle, within the conditions required for this diagnostic to run, and as close to the conditions recorded in Freeze Frame/Failure Records as possible. Special operating conditions that you need to meet before the PCM will run this diagnostic, where applicable, are listed in Conditions for Running the DTC. Select the Diagnostic Trouble Code (DTC) option, the DTC Information option and The Failed This Ignition option using the Tech 2 scan tool. <p>Does the Tech 2 scan tool indicate that this diagnostic failed this ignition?</p>		Go to Step 3	Refer to Diagnostic Aids

GEN III V8 PCM - DTC P0327 KNOCK SENSOR CIRCUIT FRONT SENSOR (CONTINUED)

Step	Action	Value(s)	Yes	No
3	<ol style="list-style-type: none"> 1. Disconnect the Knock Sensor electrical connector YE19 located behind the intake manifold. 2. Measure the resistance of the front Knock Sensor by connecting the DMM between the front Knock Sensor signal circuit, on the sensor side, and the engine block using the DMM J 39200. 3. Set the DMM to the 400K ohm scale. <p>Is the resistance of the Knock Sensor within the specified range?</p>	93-107K Ω	Go to Step 4	Go to Step 6
4	<ol style="list-style-type: none"> 1. Connect the DMM between the front Knock Sensor signal circuit, on the sensor side, and the engine block. 2. Set the DMM to the AC voltage scale. 3. Tap on the front of the engine while observing the signal indicated on the DMM. <p>Is any signal indicated on the DMM while tapping on the engine near the Knock Sensor?</p>		Go to Step 5	Go to Step 7
5	<ol style="list-style-type: none"> 1. Disconnect the PCM BLUE connector. 2. Check the KS signal circuit between the PCM and the Knock Sensor connector for the following: <ul style="list-style-type: none"> - An open - A short to voltage - A short to earth <p>Was a problem found and corrected?</p>		Go to Step 10	Go to Step 8
6	<ol style="list-style-type: none"> 1. Remove the intake manifold. Refer to Section 6A3 Engine Mechanical in Section 14A in VX Service Information. 2. Check for an open or a short to earth in the signal circuit between the Knock Sensor jumper harness connector, located at the back of the intake manifold, and the Knock Sensor connector. <p>Was a problem found and corrected?</p>		Go to Step 10	Go to Step 7
7	<p>Replace the Knock Sensor. Refer to Section 6C3-3 Knock Sensor Replacement of the VX Series Service Information.</p> <p>Is the action complete?</p>		Go to Step 10	
8	<p>Check the KS signal circuit for a poor terminal connection at the PCM.</p> <p>Was a problem found and corrected?</p>		Go to Step 10	Go to Step 9
9	<ol style="list-style-type: none"> 1. Replace PCM. 2. Refer to Section 6C3-3 of the VX Series Service Information for PCM Programming and PCM/PIM/BCM Security Link Procedure. <p>Is action complete?</p>		Go to Step 10	
10	<ol style="list-style-type: none"> 1. Select the Diagnostic Trouble Code (DTC) option and the Clear DTC Information option using the Tech 2 scan tool. 2. Idle the engine at the normal operating temperature. 3. Select the Diagnostic Trouble Code (DTC) option, the DTC Information option and The Failed This Ignition option using the Tech 2 scan tool. 4. Operate the vehicle, within the Conditions for Running the DTC, as specified in the supporting text, if applicable. <p>Does the Tech 2 scan tool indicate that this DTC reset?</p>		Go to Step 2	Go to Step 11
11	<p>Using the Tech 2 scan tool, check for any other DTCs.</p> <p>Does the Tech 2 scan tool display any DTCs that you have not diagnosed?</p>		Go to the applicable <i>DTC</i> table	System OK