DTC P1351

Circuit Description

The ignition control module (ICM) has independent power and ground circuits. The circuits between the ICM and the powertrain control module (PCM) consists of the following circuits:

- The ignition control (IC) timing signal
- The IC timing control
- The low resolution engine speed signal
- The medium resolution engine signal
- The camshaft position signal
- The low reference

The ICM sends 3X signals to the PCM, and controls the timing advance during engine cranking. The timing advance changes to PCM control after the following actions occur:

- The PCM receives the second 3X signal
- The PCM applies 5 volts to the ignition control (IC) timing signal circuit.

The ICM monitors the CKP sync signal when the engine is cranking. The CKP sync signal is passed from the CKP sensor to the ICM on the CKP sensor 2 signal circuit. The CKP sync signal is used to determine the correct cylinder pair and initiate the ignition coil firing sequence. The 18X reference pulses are passed from the CKP sensor to the ICM on the CKP sensor 1 circuit. The 18X reference pulses are used for fuel injection and ignition control. After the ICM receives both signals, the ICM passes the 18X and 3X reference signals to the PCM. The CMP and the CKP sensors share a 12 volt reference and low reference circuit. The CKP sensor consists of the following circuits:

- A 12 volt reference
- A low reference
- A CKP sensor 1 signal
- A CKP sensor 2 signal

Conditions for Running the DTC

The engine speed is more than 600 RPM.

Conditions for Setting the DTC

- The PCM detects an open in the IC control circuit.
- The condition is present for 300 3X reference periods, or 100 crankshaft revolutions.

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 3 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

The engine will start and may run with the ICM controlling the spark timing.

If the condition is intermittent, refer to Intermittent Conditions .

Step	Action	Values	Yes	No
Schematic Reference: Engine Controls Schematics				
1	Did you perform the Diagnostic System Check-Engine Controls?	--	Go to Step 2	Go to Diagnostic System Check - Engine Controls
2	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, or within the parameters observed in the Freeze Frame/Failure Records. Does the DTC fail this ignition?	--	Go to Step 3	Go to Intermittent Conditions
3	1. Turn OFF the ignition. 2. Disconnect the PCM. 3. Turn ON the ignition. 4. Probe the low reference circuit with a test lamp connected to battery voltage. Does the test lamp illuminate?	--	Go to Step 6	Go to Step 4
4	Check low reference circuit for open. Did you find and correct the condition?	--	Go to Step 6	Go to Step 5

5	Check for poor terminal connections at ICM. Refer to Testing for Intermittent and Poor Connections in Wiring Systems. Did you find and correct the condition?	--	Go to Step 6	Go to Step 7
6	1. Disconnect the PCM. 2. Connect the DMM between the IC and low reference circuits. 3. Turn ON the ignition. 4. Observe the voltage value on the DMM. Does the voltage measure within the specified range?	20-40 mV	Go to Step 8	Go to Step 7
7	1. Turn OFF the ignition. 2. Leave the PCM disconnected. 3. Disconnect the ICM connector. 4. Test for an open in the IC control circuit. Refer to Testing for Continuity in Wiring Systems. Did you find and correct the condition?	--	Go to Step 12	Go to Step 9
8	Test for poor terminal connections at the PCM. Refer to Testing for Intermittent and Poor Connections in Wiring Systems. Did you find and correct the condition?	--	Go to Step 12	Go to Step 11
9	Test for poor terminal connections at the Ignition Control (IC) Module. Refer to Testing for Intermittent and Poor Connections in Wiring Systems. Did you find and correct the condition?	--	Go to Step 12	Go to Step 10
10	Replace the ICM. Refer to Ignition Control Module Replacement . Did you complete the replacement?	--	Go to Step 12	--
11	Replace the PCM. Refer to Powertrain Control Module (PCM) Replacement . Did you complete the replacement?	--	Go to Step 12	--
12	1. Use the scan tool in order to clear the DTCs. 2. Turn OFF ignition for 30 seconds. 3. Start the engine. 4. Operate the vehicle within the Conditions for Running the DTC as specified in the supported text.	--		

	Does the DTC run and pass?		Go to Step 13	Go to Step 2
13	With a scan tool, observe the stored information, Capture Info. Does the scan tool display any DTCs that you have not diagnosed?	--	Go to Diagnostic Trouble Code (DTC) List	System OK

<- Back Forward ->

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