

DTC P0351

Circuit Description

The enhanced ignition system uses the crankshaft position (CKP) sensor in order to provide a timing input to the control module. Ignition control (IC) spark timing for each cylinder is based on this input. The control module provides the ignition timing signal to the ignition control module (ICM) to control the ignition coil. Each timing pulse detected by the ICM allows the ICM to energize the ignition coil. A large secondary ignition voltage is induced in the secondary coil by the primary coil. This high voltage is switched to the correct spark plug by the distributor. This diagnostic trouble code (DTC) will set if the powertrain control module (PCM) detects an unusually high or low voltage on the ignition timing signal circuit.

- 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 Running the DTC

- The ignition control is enabled.
- The engine speed is less than 250 RPM.

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.

Conditions for Setting the DTC

The ignition control voltage is not within the specified range of 0.04–4.9 volts.

Test Description

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

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.

2. This step determines if the DTC is an intermittent.
3. This step checks if the IC timing signal from the PCM is available at the ignition control module.

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Step	Action	Values	Yes	No
Schematic Reference: Engine Controls Schematics on page 6-1059				
1	Did you perform the Diagnostic System Check—Engine Controls?	—	Go to Step 2	Go to Diagnostic System Check - Engine Controls on page 6-1089
2	1. Clear the DTCs. 2. Disconnect the injector harness connector. 3. Crank the engine for 15 seconds. Does DTC P0351 set?	—	Go to Step 3	Go to Intermittent Conditions on page 6-1268
3	1. Turn the ignition OFF. 2. Reconnect the injector harness connector. 3. Disconnect the ICM harness connector. 4. Probe the IC timing control circuit with a DMM set to the AC scale. 5. Crank the engine. 6. Observe the voltage. Does the voltage measure within the specified value?	1-4 V	Go to Step 4	Go to Step 6
4	1. Turn OFF the ignition. 2. Probe the IC ground circuit at the ICM connector with a test lamp connected to B+. Does the test lamp illuminate?	—	Go to Step 5	Go to Step 10
5	1. Turn ON the ignition, with the engine OFF. 2. Probe the ignition 1 circuit at the ICM harness connector with a test lamp connected to ground. Does the test lamp illuminate?	—	Go to Step 14	Go to Step 13

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Step	Action	Values	Yes	No
6	1. Turn OFF the ignition. 2. Disconnect the PCM connector. 3. Probe the IC timing control circuit at the PCM connector with a test lamp connected to B+. Does the test lamp illuminate?	—	Go to Step 11	Go to Step 7
7	1. Turn OFF the ignition. 2. Test for an open in the IC timing control circuit between the PCM and the ICM harness connector. Did you find and correct the condition?	—	Go to Step 16	Go to Step 8
8	1. Reconnect the PCM connector. 2. Turn ON the ignition, with the engine OFF. 3. Probe the IC timing control circuit at the ICM harness connector with a DMM set to the DC scale and connected to ground. Does the voltage measure more than the specified value?	1.0 V	Go to Step 12	Go to Step 9
9	Inspect for poor connections at the harness connector of the PCM. Refer to <i>Testing for Intermittent and Poor Connections on page 8-26</i> , or <i>Connector Repairs on page 8-36</i> in <i>Wiring Systems</i> . Does you find and correct the condition?	—	Go to Step 16	Go to Step 15
10	Repair the open in the IC ground circuit. Refer to <i>Wiring Repairs on page 8-28</i> in <i>Wiring Systems</i> . Did you complete the repair?	—	Go to Step 16	—
11	Repair the short to ground in the IC timing control circuit. Refer to <i>Wiring Repairs on page 8-28</i> in <i>Wiring Systems</i> . Did you complete the repair?	—	Go to Step 16	—
12	Repair the short to voltage in the IC timing control circuit. Refer to <i>Wiring Repairs on page 8-28</i> in <i>Wiring Systems</i> . Did you complete the repair?	—	Go to Step 16	—
13	Repair the open in the ignition 1 circuit. Refer to <i>Wiring Repairs on page 8-28</i> in <i>Wiring Systems</i> . Did you complete the repair?	—	Go to Step 16	—
14	Replace the ICM. Refer to <i>Ignition Control Module Replacement on page 6-1446</i> . Did you complete the replacement?	—	Go to Step 16	—
15	Replace the PCM. Refer to <i>Powertrain Control Module (PCM) Replacement on page 6-1328</i> . Did you complete the replacement?	—	Go to Step 16	—
16	1. Use the scan tool in order to clear the DTCs. 2. Turn OFF the ignition for 30 seconds. 3. Start the engine. 4. Operate the vehicle within the Conditions for Running the DTC as specified in the supporting text. Does the DTC run and pass?	—	Go to Step 17	Go to Step 2
17	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 on page 6-1099	System OK