

DTC P1361 V6 PCM - IGNITION BYPASS CIRCUIT FAULT

CIRCUIT DESCRIPTION;

There are two modes of ignition system operation: BYPASS mode, and ELECTRONIC SPARK TIMING mode. The Bypass mode is normally used while starting the engine, while the Electronic Spark Timing mode is used to allow the PCM to control the ignition system after the engine is running. The PCM controls a "Bypass control circuit", used to control the ignition module between the two different ignition system modes.

The PCM's Electronic Spark Timing (EST) output circuitry generates EST output pulses anytime crankshaft reference input pulses are received. The PCM also monitors it's EST output terminal, to monitor if and when EST pulses are present.

When the ignition system is operating in the Bypass mode (such as when the engine is cranking), the ignition module earths the EST pulses coming from the PCM. Because the EST pulses should be earthed through the ignition module during Bypass mode operation., the PCM should not detect EST pulses on it's EST output terminal.

When the engine is started, the PCM applies 5 volts to the Bypass control circuit. When received by the ignition module, this 5 volts control causes the ignition module to release the earth from the EST pulses coming from the PCM. The ignition module will then use the EST pulses to operate the ignition system. When this occurs, the PCM will correctly detect EST pulses at it's EST output terminal.

If the Bypass control circuit has as open fault or short to earth, or if the EST circuit has a short to earth or short to voltage, the PCM cannot control the ignition module to release the EST pulses from being earthed. Because the PCM also monitors it's EST output terminal for EST pulses, if it detects no EST pulses after it has "turned on" the 5 volts to the Bypass control circuit, and the engine speed goes above 1600 RPM, a DTC P1361 will be set.

CONDITIONS FOR RUNNING THE DTC

- The engine is running.

CONDITIONS FOR SETTING THE DTC

- The PCM has commanded EST.
- The PCM has detected no EST output pulses for 1000 ms with the engine RPM below 200, or no EST pulses received for 200 ms with engine RPM greater than 200..

ACTION TAKEN WHEN THE DTC SETS

- The PCM illuminates the Malfunction Indicator Lamp (MIL) 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 History Data.
- When DTC P1361 is set and current, the PCM will operate in the Bypass spark mode.

CONDITIONS FOR CLEARING THE MIL/DTC

- The PCM turns the MIL OFF after the first ignition cycle that the diagnostic runs and does not fail.
- A History DTC clears after forty consecutive warm-up cycles, if this or any other emission related diagnostic does not report any failure.
- Use a Tech 2 scan tool in order to clear the MIL/DTC.

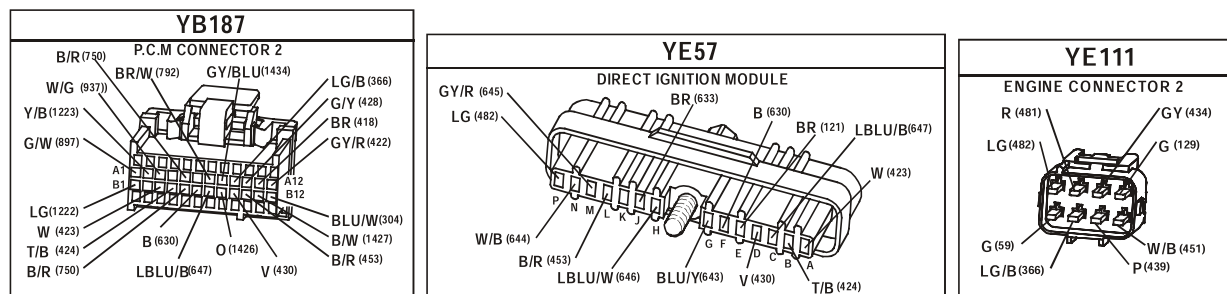
DIAGNOSTIC AIDS

- Poor connection at PCM. Inspect harness connectors for backed out terminals, improper mating, broken locks, improperly formed or damaged terminals, and poor terminal to wire connection.
- Damaged Harness. Inspect the wiring harness for damage. If the harness appears to be OK, disconnect the ignition module, turn the ignition "ON". Connect and observe a voltmeter connected between the Bypass control circuit and B+, while moving connectors and wiring harness related to the ignition module. A change in voltage will indicate the location of the fault.

TEST DESCRIPTION

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

4. This step checks to see if circuit 423 is shorted to voltage.
7. This step checks to see if circuit 423 is shorted to earth.
10. This step checks to see if circuit 424 is shorted to earth.
12. This step checks to see if circuit 424 is open.
13. This step checks to see if the ignition module is capable of switching from Bypass to EST mode.



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STEP	ACTION	VALUE	YES	NO
1.	Was the "On-Board Diagnostic" (OBD) System Check performed?		Go to Step 2.	Go to OBD System Check .
2.	1. Clear DTC P1361. 2. Start engine, and run above 1600 RPM. 3. Observe DTC(s). Did DTC P1361 set ?		Go to Step 3	DTC P1361 is intermittent. Refer to "Diagnostic Aids" above
3.	1. Ignition "OFF". 2. Disconnect ignition module 14 pin connector. 3. Probe ignition module harness connector terminal "A" with a voltmeter to earth. 4. Ignition "ON". Is voltage greater then the specified value?	0.5 V	Go to Step 4	Go to Step 6
4.	1. Ignition "OFF". 2. Disconnect PCM connectors. 3. Ignition "ON". Is voltage still present at ignition module harness Connector terminal "A" ?		Go to Step 5	Go to Step 15
5.	Repair short to voltage on circuit 423. Is action complete ?		Verify Repair	

DTC P1361 V6 PCM - IGNITION BYPASS CIRCUIT FAULT (CONTINUED)

STEP	ACTION	VALUE	YES	NO
6.	1. Ignition "ON". 2. Probe ignition module harness connector circuit 423 with a test light connected to battery voltage. Is test light "ON" ?		Go to Step 7	Go to Step 9
7.	1. Ignition "OFF" 2. Disconnect PCM connectors. 3. Probe ignition module connector circuit 423 with a test light connected to battery voltage. Is test light "ON" ?		Go to Step 8	Go to Step 14
8.	Repair short to earth in circuit 423. Is action complete		Verify Repair	
9.	1. Ignition "ON". 2. Disconnect ignition module 14 pin connector. 3. With test light connected to battery voltage, probe ignition module harness connector circuit 424. Is test light "ON" ?		Go to Step 10	Go to Step 12
10.	1. Ignition "OFF". 2. Disconnect PCM connectors. 3. Ignition "ON". 4. Disconnect ignition module 14 pin connector. 5. With test light connected to battery voltage, probe ignition module harness connector circuit 424. Is test light "ON" ?		Go to Step 11	Go to Step 14
11.	Repair short to earth on circuit 424. Is action complete ?		Verify Repair	
12.	1. Ignition "OFF". 2. Disconnect PCM connectors. 3. Check for faulty connection or open circuit 424. Is fault found ?		Verify Repair	Go to Step 13
13.	1. Ignition "OFF". 2. Reconnect ignition module 14 pin connector. 3. Disconnect PCM connectors. 3. Ignition "ON". 4. Probe PCM harness connector circuit 423 with an ohmmeter connected to earth. 5. Probe PCM harness connector circuit 424 with a test light connected to battery voltage. As the test light contacts circuit 424, does resistance switch from under the specified value to over the specified value ?	300 ohms to 6000 ohms	Go to Step 14	Go to Step 15
14.	Replace PCM. Refer to Section 6C1-3 SERVICE OPERATIONS of the VX Series Service Information, for PCM Programming and Security Link procedure. Is action complete?		Verify Repair	
15.	Replace ignition module. Is action complete ?		Verify Repair	