DTC	P050B	Cold Start Ignition Timing Performance

DESCRIPTION

This monitor will run when the engine is started at -10 to 50°C (14 to 122°F) of the engine coolant temperature. The DTC will set after the engine idling for 13 seconds (2 trip detection logic).
The DTC is designed to monitor the idle air control at cold start. When the engine is started at lower than 50°C (122°F) of the engine coolant temperature, the ECM measures the accumulated mass air flow at the engine idling. If it does not reach the criteria within 10 seconds, the ECM interprets this as a malfunction. The MIL is illuminated and a DTC is set when the malfunction is detected in consecutive driving cycles (2 trip detection logic).
The ETCS (Electrical Throttle Control System) controls the idle speed. The ETCS operates the throttle actuator to open and close the throttle valve, and adjusts the intake air amount to achieve the target idle speed.

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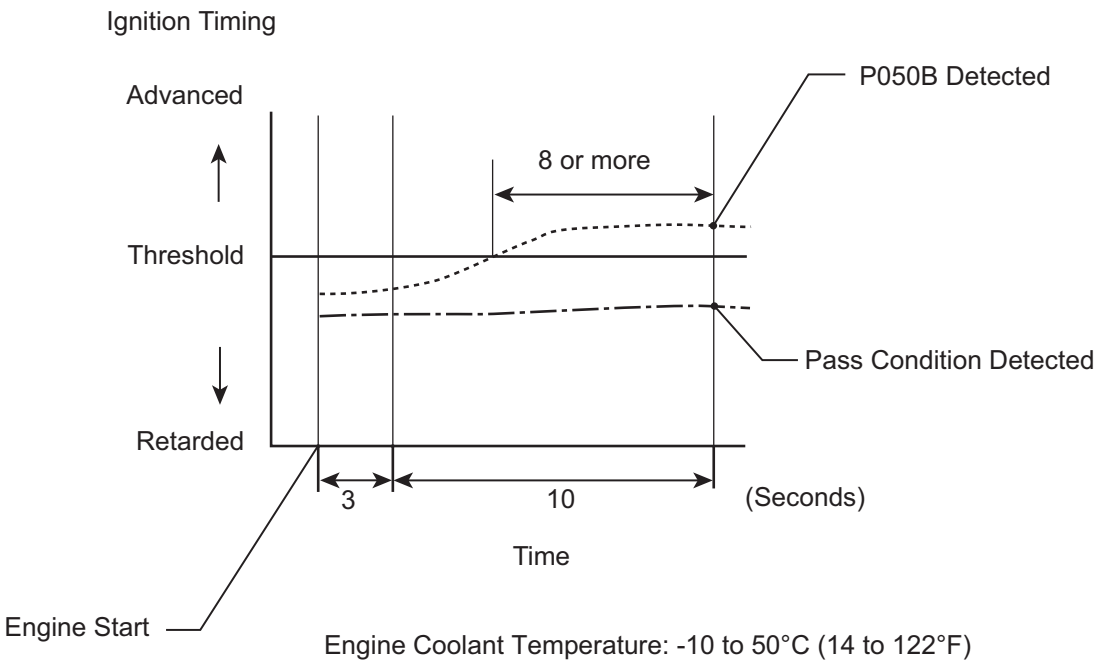
NOTICE:

When the negative battery terminal is disconnected during inspection or repairs, the ISC (Idle Speed Control) learned values are cleared. ISC learning is performed when the engine has been warmed up and idled for 5 minutes because this DTC cannot be set after the ISC learned values cleared.

DTC No.	DTC Detection Condition	Trouble Area
P050B	Ignition timing retard value insufficient for 5 seconds or more for 10 seconds of P050A monitoring duration at cold start (2 trip detection logic)	• Throttle body assembly • Mass air flow meter • Intake system • PCV hose connections • VVT system • Air cleaner filter element • ECM

MONITOR DESCRIPTION

P050B Detection Logic:



A153342E01

MONITOR STRATEGY

Related DTCs	P050B: Idle ignition timing problem at cold
Required Sensors / Components (Main)	Mass air flow meter
Required Sensors / Components (Related)	Engine Coolant Temperature (ECT) sensor, Throttle position sensor, Vehicle speed sensor
Frequency of Operation	Once per driving cycle
Duration	10 seconds
MIL Operation	2 driving cycles
Sequence of Operation	None

TYPICAL ENABLING CONDITIONS

Battery voltage	8 V or more
Time after engine start	3 seconds or more
Starter	OFF
ECT at engine start	-10°C (14°F) or more
ECT	-10 to 50°C (14 to 122°F)
Engine idling time	3 seconds or more
Fuel-cut	OFF
Vehicle speed	Less than 1.875 mph (3 km/h)
Atmospheric pressure	76 kPa (570 mmHg) or more

TYPICAL MALFUNCTION THRESHOLDS

Accumulated time when ignition timing retard value is insufficient	5 seconds or more

INSPECTION PROCEDURE

HINT:

- DTC P050B may be set when the engine shows the symptom as listed below. If necessary, check the trouble area as listed below.

Symptoms	Factor	Trouble Area
Low idle speed at engine cold.	Excessive engine friction	• Engine oil deterioration • Drive belt tension • A/C compressor • Generator • P/S pump
Rough idle at engine cold.	Abnormal combustion	Fuel quality

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- Read freeze frame data using the intelligent tester. The ECM records vehicle and driving condition information as freeze frame data the moment a DTC is stored. When troubleshooting, freeze frame data can be helpful in determining whether the vehicle was running or stopped, whether the engine was warmed up or not, whether the air-fuel ratio was lean or rich, as well as other data recorded at the time of a malfunction.

1	CHECK ANY OTHER DTCS OUTPUT (IN ADDITION TO DTC P050B)

(a) Connect the intelligent tester to the DLC3.
(b) Turn the ignition switch to the ON position.
(c) Turn the tester on.
(d) Select the following the menu items: DIAGNOSIS / ENHANCED OBD II / DTC INFO / CURRENT CODES.
(e) Read the DTCs.

Result

Display (DTC Output)	Proceed to
P050B	A
P050B and other DTCs	B

HINT:
If any DTCs other than P050B are output, troubleshoot those DTCs first.

B → GO TO DTC CHART

A

2	READ VALUE USING INTELLIGENT TESTER (FUEL TRIM)

HINT:
Calculate the total fuel trim values to check the characteristic deviation of the mass air flow meter.
(a) Connect the intelligent tester to the DLC3.
(b) Start the engine.
(c) Turn the tester on.
(d) Select the following menu items: DIAGNOSIS / ENHANCED OBD II / DATA LIST / PRIMARY / SHORT FT #1 and LONG FT #1.

(e) Read the values displayed on the tester at engine idles.
(f) Add together the SHORT FT #1 and LONG FT #1 values to obtain the total FUEL TRIM.
OK:
Total of SHORT FT #1 and LONG FT #1 values is between -20 % and 20 %.

OK → **Go to step 12**

NG

3	PERFORM ACTIVE TEST USING INTELLIGENT TESTER (OPERATE OCV)

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(a) Connect the intelligent tester to the DLC3.
(b) Start the engine and turn the tester on.
(c) Warm up the engine.
(d) Select the following menu items: DIAGNOSIS / ENHANCED OBD II / ACTIVE TEST / VVT CTRL B1.
(e) Check the engine speed while operating the Oil Control Valve (OCV) using the tester.

OK

Tester Operation	Specified Condition
OCV OFF	Normal engine speed
OCV ON	Engine idles roughly or stalls (soon after OCV switched from OFF to ON)

NG → **Go to step 8**

OK

4	CHECK PCV HOSE CONNECTIONS

OK:
PCV hose is connected correctly and is not damaged.

NG → **Go to step 9**

OK

5	CHECK INTAKE SYSTEM

(a) Check the intake system for vacuum leakage.
OK:
No leakage from intake system.

NG → **Go to step 10**

OK

6	CHECK AIR CLEANER FILTER ELEMENT SUB-ASSEMBLY

(a) Visually check that the air cleaner filter element is not excessively contaminated with dirt or oil.

OK:
Air cleaner filter element is not excessively contaminated with dirt or oil.

NG → **Go to step 11**

OK

7	**REPLACE MASS AIR FLOW METER**

NEXT → **Go to step 15**

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8	**CHECK AND REPAIR VVT SENSOR**

NEXT → **Go to step 15**

9	**REPAIR OR REPLACE PCV HOSE**

NEXT → **Go to step 15**

10	**REPAIR OR REPLACE INTAKE SYSTEM**

NEXT → **Go to step 15**

11	**REPLACE AIR CLEANER FILTER ELEMENT SUB-ASSEMBLY**

NEXT → **Go to step 15**

12	**CHECK THROTTLE VALVE**

(a) Check for deposits around the throttle valve and throttle valve condition.
OK:
No deposits around throttle valve and throttle valve moves smoothly.

NG → **Go to step 14**

OK

13	**REPLACE ECM**

NEXT → **Go to step 15**

14	REPAIR OR REPLACE THROTTLE BODY ASSEMBLY

NEXT → Go to step 15

15	CHECK WHETHER DTC OUTPUT RECURS (DTC P050B)

NOTICE:
In this operation, the engine must be cold (the same level as the engine coolant temperature recorded in the freeze frame data).

(a) Connect the intelligent tester to the DLC3.
(b) Turn the ignition switch to the ON position.
(c) Turn the tester on.
(d) Clear the DTCs.
(e) Switch the ECM from normal mode to check mode using the tester.
(f) Start the engine to idle for a minute.
OK:
Stable fast idling.
(g) Read the DTCs.
OK:
No DTC output.

NEXT

END

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