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|------------|--------------|---|
| <b>DTC</b> | <b>P050A</b> | <b>Cold Start Idle Air Control System Performance</b> |
|------------|--------------|---|

|            |              |   |
|------------|--------------|---|
| <b>DTC</b> | <b>P050B</b> | <b>Cold Start Ignition Timing Performance</b> |
|------------|--------------|---|

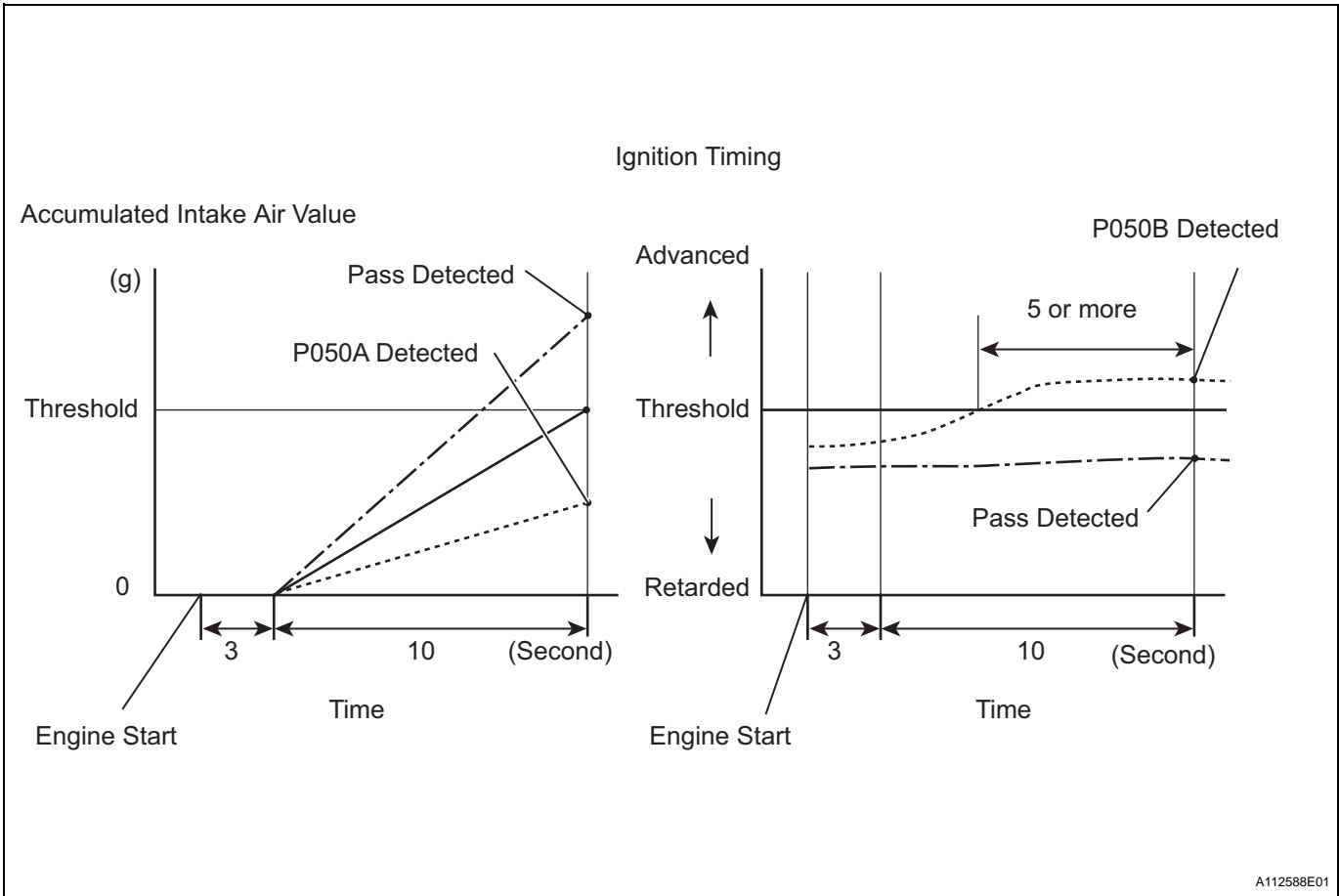
**DESCRIPTION**

The Electronic Throttle Control System (ETCS) controls the engine idling speed. The ETCS operates the throttle actuator to open and close the throttle valve, and adjusts the intake air amount to achieve the target idling speed. In addition, the ECM retards the ignition timing and the ETCS increases the intake air amount to quickly increase the catalyst temperature at cold start to reduce emissions.

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| DTC No. | DTC Detection Condition   | Trouble Area   |
|---------|---|--|
| P050A   | Accumulated intake air amount during 10 seconds of idling after cold start is less than threshold (2 trip detection logic)                            | <ul style="list-style-type: none"> <li>• Throttle body assembly</li> <li>• Mass air flow meter</li> <li>• Air induction system</li> <li>• PCV hose connections</li> <li>• VVT system</li> <li>• Air cleaner filter element</li> <li>• ECM</li> </ul> |
| P050B   | Ignition timing retard value insufficient for 5 seconds or more during 10 seconds of P050A monitoring duration at cold start (2 trip detection logic) | <ul style="list-style-type: none"> <li>• Throttle body assembly</li> <li>• Mass air flow meter</li> <li>• Air induction system</li> <li>• PCV hose connections</li> <li>• VVT system</li> <li>• Air cleaner filter element</li> <li>• ECM</li> </ul> |

**MONITOR DESCRIPTION**



The ECM monitors the intake air amount during idling and the ignition timing.

When the Engine Coolant Temperature (ECT) is between -10°C and 50 °C (14°F and 122°F), the ECM calculates the idling intake air amount for 10 seconds, beginning 3 seconds after the engine starts.

When the accumulated value is below the threshold, the ECM interprets this as a malfunction in the Idle Speed Control (ISC) system at cold start.

The ECM also monitors the ignition timing at cold start, and judges it to be incorrect when it is advanced to the same value for a warm engine for 5 seconds or more of the 10 second monitoring period.

Example:

P050A is detected when all conditions below are met (2 trip detection logic).

1. The ECT is between -10°C and 50 °C (14°F and 122°F) when the engine starts.
2. The engine idles for 13 seconds after engine start.
3. The accumulated intake air amount is below the threshold.

The ECM sets the DTC and illuminates the MIL 13 seconds after the engine is next started.

**NOTICE:**

**When the negative battery terminal is disconnected during inspection or repairs, the ISC learning values are cleared. The ISC learning must be performed by warming up the engine and idling for 5 minutes with the ECT at 75°C (167°F) or more because DTCs cannot be detected with the ISC learning values cleared.**

**ES**

## MONITOR STRATEGY

|                                       |  |
|---------------------------------------|--|
| Related DTCs                          | P050A: Idle speed control problem at cold<br>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

### P050A:

|   |                              |
|---|------------------------------|
| 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 3 km/h (1.875 mph) |
| Time after shift position changed (A/T) | 1 second or more             |
| Atmospheric pressure                    | 76 kPa (570 mmHg) or more    |

### P050B:

|                         |                              |
|-------------------------|------------------------------|
| 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 3 km/h (1.875 mph) |

## TYPICAL MALFUNCTION THRESHOLDS

### P050A:

|                                   |   |
|-----------------------------------|---|
| Accumulated air flow amount (A/T) | Varies with ECT (Example: Less than 20 g) |
|-----------------------------------|---|

### P050B:

|   |                   |
|---|-------------------|
| Accumulated time when ignition timing retard is cut off | 5 seconds or more |
|---|-------------------|

## INSPECTION PROCEDURE

### HINT:

Read freeze frame data using the intelligent tester. Freeze frame data records the engine condition when malfunctions are detected. When troubleshooting, freeze frame data can help determine if the vehicle was moving or stationary, if the engine was warmed up or not, if the air-fuel ratio was lean or rich, and other data from the time the malfunction occurred.

**ES**

|          |  |
|----------|--|
| <b>1</b> | <b>CHECK ANY OTHER DTCS OUTPUT (IN ADDITION TO DTC P050A AND/OR P050B)</b> |
|----------|--|

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

### Result

| Display (DTC Output)              | Proceed to |
|-----------------------------------|------------|
| P050A and/or P050B                | A          |
| P050A and/or P050B and other DTCs | B          |

### HINT:

If any DTCs other than P050A and P050B are output, troubleshoot those DTCs first.

**B** **GO TO DTC CHART**

**A**

|          |  |
|----------|--|
| <b>2</b> | <b>READ VALUE USING INTELLIGENT TESTER (FUEL TRIM)</b> |
|----------|--|

### 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) Turn the ignition switch ON.
- (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.
- (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)**

- (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

ES

| 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 AIR INDUCTION SYSTEM**

- (a) Check the air induction system for vacuum leakage.

OK:  
No leakage from air induction 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

8 CHECK AND REPAIR VVT SYSTEM

NEXT Go to step 15

ES

9 REPAIR OR REPLACE PCV HOSE

NEXT Go to step 15

10 REPAIR OR REPLACE AIR INDUCTION 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 P050A AND/OR 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 ON.
- (c) Turn the tester ON.
- (d) Clear DTCs (see page [ES-39](#)).
- (e) Switch the ECM from normal mode to check mode using the tester (see page [ES-42](#)).
- (f) Start the engine and idle it for a minute.

**OK:**

**Stable, fast idling.**

- (g) Read DTCs.

**OK:**

**No DTC output.**

**NEXT****END****ES**