

DTC

P0505

Idle Control System Malfunction

DESCRIPTION

The idle speed is controlled by the electronic throttle control system. The electronic throttle control system is comprised of: 1) the one valve type throttle body; 2) a throttle actuator, which operates the throttle valve; 3) a throttle position sensor, which detects the opening angle of the throttle valve; 4) an accelerator pedal position sensor, which detects the accelerator pedal position; and 5) the ECM, which controls the electronic throttle control system. Based on the target idle speed, the ECM controls the throttle actuator to provide the proper throttle valve opening angle.

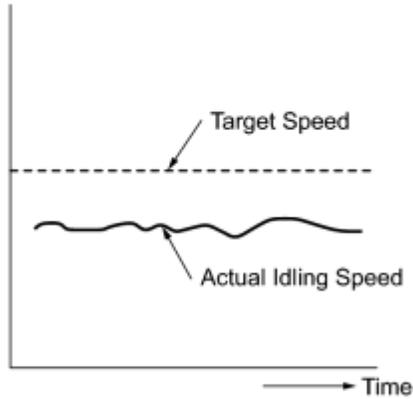
DTC No.	DTC Detection Condition	Trouble Area
P0505	Idling speed continues to vary greatly from target idling speed (2 trip detection logic)	<ul style="list-style-type: none"> • Electronic throttle control system • Intake system • PCV hose connections • EGR valve assembly • ECM

MONITOR DESCRIPTION

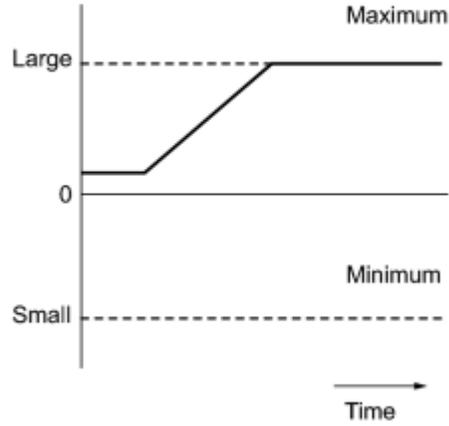
The ECM monitors the idle speed and idle air flow volume to conduct Idle Speed Control (ISC). The ECM determines that the idle speed control system is malfunctioning if the following conditions apply:

- The learned idle air flow volume remains at the maximum or minimum volume for 5 seconds or more during a drive cycle.
- After driving at a vehicle speed of 34.175 mph (55 km/h) or more, the actual engine idle speed varies from the target idle speed by less than -100 rpm or 150 rpm or more, 5 times or more during a driving cycle, the ECM illuminates the MIL and sets the DTC.

Idling Speed



Learned Idling Air Volume



Y

MONITOR STRATEGY

Related DTCs	P0505: Idle speed control function
Required Sensors/Components (Main)	Electronic throttle control system
Required Sensors/Components (Related)	Crankshaft position sensor Engine coolant temperature sensor Vehicle speed sensor
Frequency of Operation	Once per driving cycle
Duration	10 minutes (Idling after warming up)
MIL Operation	2 driving cycles
Sequence of Operation	None

TYPICAL ENABLING CONDITIONS

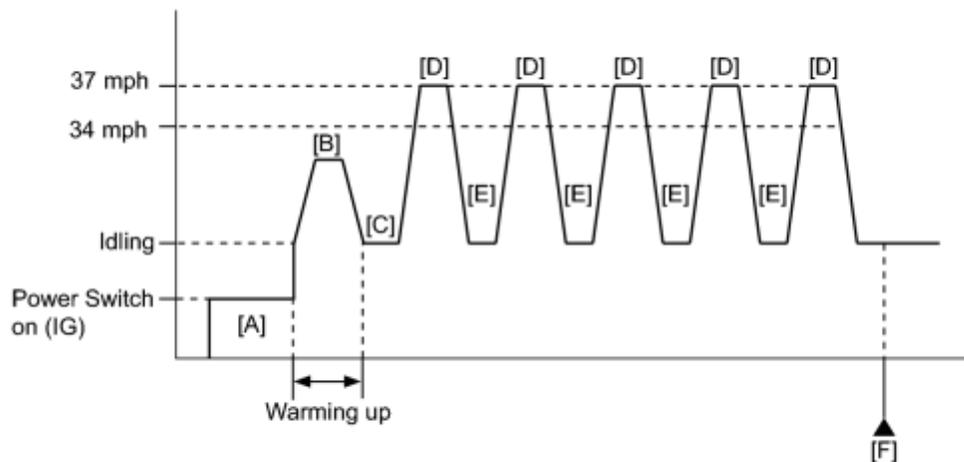
Monitor runs whenever following DTCs are not present	P0010 (VVT Oil Control Valve Bank 1) P0011 (VVT System Bank 1 - Advance) P0012 (VVT System Bank 1 - Retard)
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	<p>P0016 (VVT System Bank 1 - Misalignment)</p> <p>P0031, P0032, P101D (Air Fuel Ratio Sensor Heater - Sensor 1)</p> <p>P0102, P0103 (Mass Air Flow Meter)</p> <p>P0107, P0108 (Manifold Absolute Pressure)</p> <p>P0115, P0117, P0118 (Engine Coolant Temperature Sensor)</p> <p>P0120, P0121, P0122, P0123, P0220, P0222, P0223, P2135 (Throttle Position Sensor)</p> <p>P0125 (Insufficient Engine Coolant Temperature for Closed Loop Fuel Control)</p> <p>P0171, P0172 (Fuel System)</p> <p>P0301, P0302, P0303, P0304 (Misfire)</p> <p>P0335 (Crankshaft Position Sensor)</p> <p>P0340, P0342, P0343 (Camshaft Position Sensor)</p> <p>P0351, P0352, P0353, P0354 (Igniter)</p> <p>P0401 (EGR System (Closed))</p> <p>P0451, P0452, P0453 (EVAP System)</p> <p>P2195, P2196, P2237, P2238, P2239, P2252, P2253, P2A00 (Air Fuel Ratio Sensor - Sensor 1)</p>
Engine	Running

TYPICAL MALFUNCTION THRESHOLDS

Either of the following conditions is met	Condition 1 or 2
1. Frequency that both of the following conditions (a) and (b) are met	5 times or more
(a) Engine rpm - Target engine rpm	Less than -100 rpm, or 150 rpm or more
(b) Vehicle condition	Stop after vehicle was driven at 34.375 mph (56 km/h) or more
2. Frequency that both of the following conditions (a) and (b) are met	Once
(a). Engine rpm - Target engine rpm	Less than -100 rpm, or 150 rpm or more
(b) Idle air control flow rate learning valve	0.5 L/sec or less, or 6.1 L/sec or more

CONFIRMATION DRIVING PATTERN



1. Connect the Techstream to the DLC3.
2. Turn the power switch on (IG) and turn the Techstream on.
3. Enter the following menus: Powertrain / Engine and ECT / Data List / Coolant Temp.
4. Make sure that the coolant temperature is 60°C (140°F) or less [A].

HINT:

If the coolant temperature is 60°C (140°F) or more, the engine may stop when idling. Make sure to keep the coolant temperature at 60°C (140°F) or less during the driving pattern.

5. Clear the DTCs (even if no DTCs are stored, perform the clear DTC procedure) INFO.
6. Put the engine in inspection mode INFO.
7. Start the engine and drive the vehicle until the coolant temperature reaches 70°C (158°F) [B].
8. Stop the vehicle (0 mph (0 km/h)) [C].
9. Accelerate the vehicle to 34 to 37 mph (55 to 60 km/h) or more, and then idle the engine [D].

HINT:

If the vehicle speed reaches more than 37 mph (60 km/h), the engine may stop while decelerating.

10. Stop the vehicle (0 mph (0 km/h)) [E].
11. Repeat steps [D] and [E] for 5 times or more.
12. Enter the following menus: Powertrain / Engine and ECT / Trouble Codes / Pending.
13. Read the pending DTC [F].
14. If a pending DTC is output, the system is malfunctioning.

HINT:

If a pending DTC is not output, perform the following procedure.

15. Enter the following menus: Powertrain / Engine and ECT / Utility / All Readiness.

16. Input the DTC: P0505.

17. Check the DTC judgment result.

Techstream Display	Description
NORMAL	<ul style="list-style-type: none">○ DTC judgment completed○ System normal
ABNORMAL	<ul style="list-style-type: none">○ DTC judgment completed○ System abnormal
INCOMPLETE	<ul style="list-style-type: none">○ DTC judgment not completed○ Perform driving pattern after confirming DTC enabling conditions
UNKNOWN	<ul style="list-style-type: none">○ Unable to perform DTC judgment○ Number of DTCs which do not fulfill DTC preconditions has reached ECU's memory limit

HINT:

- If the judgment result shows ABNORMAL, the system has a malfunction.
- If the judgment result shows NORMAL, the system is normal.
- If the judgment result shows INCOMPLETE or UNKNOWN, repeat steps [D] and [E] for 5 times or more.

18. Enter the following menus: Powertrain / Engine and ECT / Utility / All Readiness.

19. Check the judgment result.

HINT:

- If the judgment result shows ABNORMAL, the system has a malfunction.
- If the judgment result shows NORMAL, the system is normal.

20. If the test result is INCOMPLETE or UNKNOWN, perform a universal trip and check for permanent DTCs .

HINT:

- If a permanent DTC is output, the system is malfunctioning.
- If a permanent DTC is not output, the system is normal.

INSPECTION PROCEDURE

HINT:

- The following conditions may also cause DTC P0505 to be set:
 - a. The floor carpet overlapping slightly onto the accelerator pedal, causing the accelerator pedal to be slightly depressed and therefore the throttle valve position to be slightly open.
 - b. The accelerator pedal being not fully released.

- Read freeze frame data using the Techstream. 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.

PROCEDURE

1.	CHECK ANY OTHER DTCS OUTPUT (IN ADDITION TO DTC P0505)
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- (a) Connect the Techstream to the DLC3.
- (b) Turn the power switch on (IG).
- (c) Turn the Techstream on.
- (d) Enter the following menus: Powertrain / Engine and ECT / Trouble Codes.
- (e) Read the DTCs.

Result:

Result	Proceed to
DTC P0505 is output	A
DTC P0505 and other DTCs are output	B

HINT:

If any DTCs other than P0505 are output, troubleshoot those DTCs first.

B ▶ GO TO DTC CHART

A
▼

2.	CHECK PCV HOSE CONNECTIONS
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- (a) Check the PCV hose connections.

OK:

PCV hose is connected correctly and is not damaged.

NG ▶ REPAIR OR REPLACE PCV HOSE

OK
▼

3.	CHECK INTAKE SYSTEM
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- (a) Check the intake system for vacuum leaks INFO.

OK:

No leaks from the intake system.

NG ► REPAIR OR REPLACE INTAKE SYSTEM

OK



4. INSPECT THROTTLE BODY ASSEMBLY (VISUALLY CHECK THROTTLE VALVE)

(a) Check for contamination between the throttle valve and the housing and then check that the throttle valve moves smoothly.

OK:

Throttle valve is not contaminated with foreign objects and moves smoothly.

NG ► REPLACE THROTTLE BODY ASSEMBLY

OK



5. PERFORM ACTIVE TEST USING TECHSTREAM (CONTROL THE EGR STEP POSITION)

(a) Connect the Techstream to the DLC3.

(b) Turn the power switch on (IG).

(c) Turn the Techstream on.

(d) Put the engine in inspection mode .

(e) Start the engine and warm it up until the engine coolant temperature reaches 75°C (167°F) or more.

HINT:

The A/C switch and all accessory switches should be off.

(f) Enter the following menus: Powertrain / Engine and ECT / Active Test / Control the EGR Step Position.

(g) Confirm the Throttle Idle Position is ON and check the engine idling condition and MAP values in the Data List while performing the Active Test.

HINT:

- Do not leave the EGR valve open for 10 seconds or more during the Active Test.
- Be sure to return the EGR valve to step 0 when the Active Test is completed.
- Do not open the EGR valve 30 steps or more during the Active Test.

OK:

MAP and idling condition change in response to EGR step position when Throttle Idle Position is ON in Data List.

Standard:

-	EGR Step Position (Active Test)	
	0 Steps	0 to 30 Steps
Idling condition	Steady idling	Idling changes from steady to rough idling
MAP (Data List)	MAP value is 20 to 40 kPa (150 to 300 mmHg) (EGR valve is fully closed)	MAP value is at least +10 kPa (75 mmHg) higher than when EGR valve is fully closed

HINT:

During Active Test, if the idling condition does not change in response to EGR step position, then there is probably a malfunction in the EGR valve.

Result:

Result	Proceed to
Outside of standard range	A
Within standard range	B

B ► [REPLACE ECM](#)

A
▼

6.	INSPECT EGR VALVE ASSEMBLY
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(a) Remove the EGR valve assembly INFO.

(b) Check if the EGR valve is stuck open.

OK:

EGR valve is tightly closed.

(c) Reinstall the EGR valve assembly INFO.

NG ► [REPLACE EGR VALVE ASSEMBLY](#)

OK
▼

7.	REPLACE ECM
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(a) Replace the ECM INFO.

NEXT
▼

8.	CONFIRM WHETHER MALFUNCTION HAS BEEN SUCCESSFULLY REPAIRED
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- (a) Connect the Techstream to the DLC3.
- (b) Turn the power switch on (IG).
- (c) Turn the Techstream on.
- (d) Clear the DTC **INFO**.
- (e) Turn the power switch off and wait for 30 seconds.
- (f) Turn the power switch on (IG) and turn the Techstream on.
- (g) Put the engine in inspection mode **INFO**.
- (h) Start the engine and warm it up.
- (i) Drive the vehicle in accordance with the driving pattern described in the Confirmation Driving Pattern.
- (j) Enter the following menus: Powertrain / Engine and ECT / Utility / All Readiness.
- (k) Input the DTC: P0505.
- (l) Check the DTC judgment result.

NEXT  **END**