

|            |              |                                |
|------------|--------------|--------------------------------|
| <b>DTC</b> | <b>P0505</b> | <b>Idle Air Control System</b> |
|------------|--------------|--------------------------------|

## MONITOR DESCRIPTION

The idle speed is controlled by the ETCs (Electronic Throttle Control System).

The ETCs is composed of the throttle motor which operates the throttle valve, and the throttle position sensor, which detects the opening angle of the throttle valve.

The ECM controls the throttle motor to provide the proper throttle valve opening angle to obtain the target idle speed.

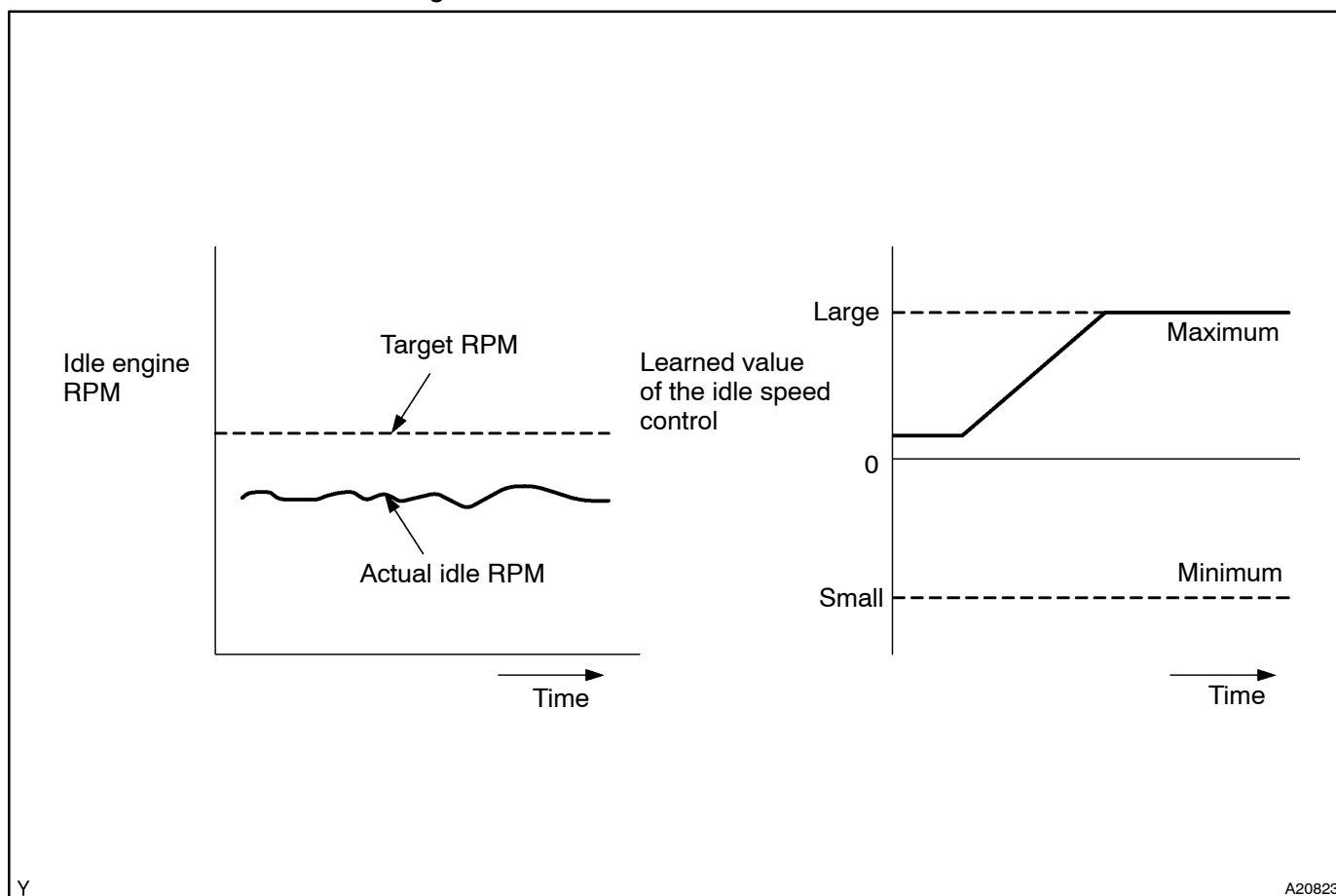
The ECM regulates the idle speed by opening and closing the throttle valve using the ETCs. The ECM concludes that the idle speed control ECM function is malfunctioning if: 1) the actual idle RPM varies more than the specified amount, or 2) a learned value of the idle speed control remains at the maximum or minimum five times or more during a drive cycle. The ECM will turn on the MIL and set a DTC.

Example:

If the actual idle RPM varies from the target idle RPM by more than 100 (\*1) rpm five times during a drive cycle, the ECM will turn on the MIL and a DTC is set.

HINT:

\*1: RPM threshold varies with engine load.



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A20823

| DTC No. | DTC Detecting Condition                                                         | Trouble Area                                                                                                                                        |
|---------|---------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| P0505   | Idle speed continues to vary greatly from target speed (1 trip detection logic) | <ul style="list-style-type: none"> <li>• Electric throttle control system</li> <li>• Air induction system</li> <li>• PCV hose connection</li> </ul> |

## MONITOR STRATEGY

|                             |                                                              |                                                         |
|-----------------------------|--------------------------------------------------------------|---------------------------------------------------------|
| Related DTCs                | P0505                                                        | Idle air control malfunction                            |
| Required sensors/components | Main sensors/components                                      | Crankshaft position sensor                              |
|                             | Related sensors/components                                   | Vehicle speed sensor, Engine coolant temperature sensor |
| Frequency of operation      | Functional check: Once per trip<br>Range check: Continuous   |                                                         |
| Duration                    | Functional check: 10 min.<br>Range check: 10 sec.            |                                                         |
| MIL operation               | Functional check: 2 driving cycles<br>Range check: Immediate |                                                         |
| Sequence of operation       | None                                                         |                                                         |

## TYPICAL ENABLING CONDITIONS

| Item                                                             | Specification                                                   |         |
|------------------------------------------------------------------|-----------------------------------------------------------------|---------|
|                                                                  | Minimum                                                         | Maximum |
| The monitor will run whenever the following DTCs are not present | See "List of disable a monitor" (on page <a href="#">DI-3</a> ) |         |
| Functional check:                                                |                                                                 |         |
| Precondition is met when both of the following are met           | A and B                                                         |         |
| A. Intake air flow rate learnings is enabled                     | 3 sec.                                                          | —       |
| B. Engine                                                        | Running                                                         |         |
| Range check:                                                     |                                                                 |         |
| Output signal duty                                               | 10%                                                             | 90%     |
| Battery voltage                                                  | 10 V                                                            | —       |

## TYPICAL MALFUNCTION THRESHOLDS

| Detection Criteria                                                                             | Threshold                                                                                                                                                                                 |
|------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Functional check:</b>                                                                       |                                                                                                                                                                                           |
| <b>Case 1:</b>                                                                                 |                                                                                                                                                                                           |
| All of the following conditions are met:                                                       | A, B and C                                                                                                                                                                                |
| A. Engine RPM – target engine RPM (History that vehicle had run for 10 km/h (6.2 mph) or more) | Less than –100 rpm or more than 200 rpm<br>(A/C ON or park/neutral position switch ON)<br>or<br>Less than –100 rpm or more than 150 rpm<br>(A/C OFF and park/neutral position switch OFF) |
| B. Number of fail judgment                                                                     | 5 times or more                                                                                                                                                                           |
| C. Intake air control flow rate learning value                                                 | Value when fail is judged first + 3.31 L/sec. or more<br>or<br>Value when fail is judged first – 3.31 L/sec. or less                                                                      |
| <b>Case 2:</b>                                                                                 |                                                                                                                                                                                           |
| Both or the following condition are met:                                                       | A and B                                                                                                                                                                                   |
| A. Engine RPM – target engine RPM (History that vehicle had run for 10 km/h (6.2 mph) or more) | Less than –100 rpm or more than 200 rpm<br>(A/C ON or park/neutral position switch ON)<br>or<br>Less than –100 rpm or more than 150 rpm<br>(A/C OFF and park/neutral position switch OFF) |
| B. Intake air control flow rate learning value is for 5 sec.                                   | 2.48 L/sec. or less or 11 L/sec. or more                                                                                                                                                  |

**Range check:**

Missing output duty change

**INSPECTION PROCEDURE****HINT:**

- When the throttle position is slightly opened (the accelerator pedal is slightly depressed) because a floor carpet is overlapped on the accelerator pedal, or if not fully releasing the accelerator pedal, etc., DTC P0505 will possibly be detected.
- Read freeze frame data using the hand-held tester or the OBD II scan tool. Freeze frame data records the engine conditions when a malfunction is detected. When troubleshooting, freeze frame data can help determine if the vehicle was running or stopped, if the engine was warmed up or not, if the air-fuel ratio was lean or rich, as well as other data from the time when a malfunction occurred.

|          |                                                                |
|----------|----------------------------------------------------------------|
| <b>1</b> | <b>Are there any other codes (besides P0505) being output?</b> |
|----------|----------------------------------------------------------------|

**PREPARATION:**

- Connect the hand-held tester or the OBD II scan tool to the DLC3.
- Turn the ignition switch ON and push the hand-held tester or OBD II scan tool main switch ON.
- When using hand-held tester, enter the following menus: DIAGNOSIS / ENHANCED OBD II / DTC INFO / CURRENT CODES.

**CHECK:**

Read the DTC using the hand-held tester or the OBD II scan tool.

**RESULT:**

| Display (DTC Output)   | Proceed to |
|------------------------|------------|
| P0505                  | A          |
| "P0505" and other DTCs | B          |

**HINT:**

If any other codes besides P0505 are output, perform the troubleshooting for those DTCs first.

**B****Go to relevant DTC chart (See page [DI-43](#)).****A**

|          |                                        |
|----------|----------------------------------------|
| <b>2</b> | <b>Check connection of PCV piping.</b> |
|----------|----------------------------------------|

**NG****Repair or replace PCV piping.****OK**

|   |                                                              |
|---|--------------------------------------------------------------|
| 3 | Check air induction system (See page <a href="#">SF-1</a> ). |
|---|--------------------------------------------------------------|

**CHECK:**

Check for vacuum leaks in air induction system.

NG

Repair or replace air induction system.

OK

Check electric throttle control system  
(See page [SF-33](#)).