

Computers and Control Systems: Diagnostic Trouble Code Tests and Associated Procedures

P1516

CIRCUIT DESCRIPTION

The predicted throttle position (TP), based on accelerator pedal position (APP) and other limiting factors, is compared to the actual throttle position. The two values should be within a calibrated range of each other. Both the powertrain control module (PCM) and the throttle actuator control (TAC) module redundantly monitor the predicted and actual throttle position. This DTC sets if the PCM detects an out of range condition between the predicted and actual throttle position.

CONDITIONS FOR RUNNING THE DTC

- DTC P1518 is not set.
- The ignition switch is in the crank or run position.
- The ignition voltage is more than **5.23 volts**.
- The TAC system is not in the battery saver mode.

CONDITIONS FOR SETTING THE DTC

- The TAC module detects that the predicted and the actual throttle positions are not within a calibrated range of each other.
- The PCM and the TAC cannot determine the throttle position.
- Both of the TP sensors are invalid.
- All of the above conditions are met for more than **1 second**.

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 Freeze Frame and/or the Failure Records.
- The PCM commands the TAC system to operate in the Reduced Engine Power mode.

OR

- Under certain conditions the PCM commands the engine OFF.
- The message center displays Reduced Engine Power.

CONDITIONS FOR CLEARING THE MIL/DTC

- The PCM turns OFF the malfunction indicator lamp (MIL) after 3 consecutive ignition cycles that the diagnostic runs and does not fail.
- A current DTC, Last Test Failed, clears when the diagnostic runs and passes.
- A history DTC clears after 40 consecutive warm-up cycles, if no failures are reported by this or any other emission related diagnostic.
- Clear the MIL and the DTC with a scan tool.

DIAGNOSTIC AIDS

- Inspect the TAC module connectors for signs of water intrusion. If water intrusion occurs, multiple DTCs may set without any circuit or component conditions found during diagnostic testing.
- Verify that the starting and charging systems are operating properly. Low system voltage can cause this DTC to set.
- When the TAC module detects a condition within the TAC system, more than 1 TAC system related DTC may set. This is due to the many redundant tests run continuously on this system. Locating and repairing an individual condition may correct more than 1 DTC. Disconnecting components during testing may set additional DTCs. Remember this if you review the stored information in Capture Info.
- For an intermittent, refer to Intermittent Conditions. See: Initial Inspection and Diagnostic Overview/Intermittent Conditions

TEST DESCRIPTION

Step	Action	Yes	No
Schematic Reference: Engine Controls Schematics Connector End View Reference: Engine Controls Connector End Views or Powertrain Control Module (PCM) Connector End Views			
1	Did you perform the Diagnostic System Check—Computers and Control Systems?	Go to Step 2	Go to Diagnostic System Check - Computers and Control Systems
2	Is DTC P1518 set?	Go to DTC P1518	Go to Step 3
3	Is DTC P2135 set?	Go to DTC P2135	Go to Step 4
4	<ol style="list-style-type: none"> 1. Turn OFF the ignition for 15 seconds. 2. Turn ON the ignition, with the engine OFF. 3. Observe the throttle position (TP) sensor 1 and TP sensor 2 angle parameters with a scan tool. 4. Slowly depress the accelerator pedal to wide open throttle (WOT) and slowly return it to the released position. <p>Does the scan tool indicate both angle parameters increasing as the pedal is depressed to WOT and decreasing as the pedal is released?</p>	Go to Diagnostic Aids	Go to Step 5
5	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Disconnect the throttle actuator motor harness connector. 3. Remove the air inlet duct from the throttle body. 4. Inspect the throttle body and throttle plate for the following conditions which may cause the throttle plate to bind: <ul style="list-style-type: none"> • Debris—If debris is found, clean the throttle body and repair the source of contamination. • Damage or evidence of tampering—If the throttle body and/or throttle plate is damaged, replace the throttle body. <p>Did you find and correct the condition?</p>	Go to Step 17	Go to Step 6

Steps 1-5

Step	Action	Yes	No
6	With your hand, slowly open the throttle plate to WOT and back to the closed position several times. Does the throttle plate move smoothly without binding in both directions?	Go to Step 7	Go to Step 14
7	<ol style="list-style-type: none"> 1. Turn Off the ignition. 2. Disconnect the throttle body harness connector. 3. Connect the jumper wires between the TP sensor terminals of the throttle body harness connector and the corresponding TP sensor terminals of the throttle body. 4. Turn ON the ignition, with the engine OFF. 5. Open the throttle blade to WOT, then to the closed position by hand. 6. Observe the TP sensor 1 and TP sensor 2 angle parameters with a scan tool. <p>Does the scan tool indicate both angle parameters increasing as the throttle plate is moved to WOT, and decreasing as the plate is moved to the closed position?</p>	Go to Step 8	Go to Step 15
8	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Disconnect the throttle actuator control (TAC) module harness connector containing the throttle actuator control motor circuits. 3. Turn ON the ignition, with the engine OFF. 4. Test the TAC motor circuits for a short to voltage with a DMM. Refer to Diagnostic Aids for Circuit Testing and Wiring Repair procedures. <p>Did you find and correct the condition?</p>	Go to Step 17	Go to Step 9

Steps 6-8

Step	Action	Yes	No
9	Test each TAC motor circuit for an open or high resistance with a DMM. Refer to Diagnostic Aids for Circuit Testing and Wiring Repair procedures. Did you find and correct the condition?	Go to Step 17	Go to Step 10
10	Test each TAC motor circuit for a short to ground with a DMM. Did you find and correct the condition?	Go to Step 17	Go to Step 11
11	<ol style="list-style-type: none"> 1. Disconnect the other TAC module harness connector. 2. Test for a short between each TAC motor circuit and all other TAC module circuits with a DMM. <p>Did you find and correct the condition?</p>	Go to Step 17	Go to Step 12
12	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Connect the TAC module. 3. Connect a test lamp between the two TAC motor circuits at the TAC motor harness connector. 4. Turn ON the ignition, with the engine OFF, and observe the test lamp. <p>Did the test lamp illuminate briefly when the ignition was turned ON?</p>	Go to Step 13	Go to Step 15
13	Inspect for poor connections at the TAC motor harness connector. Did you find and correct the condition?	Go to Step 17	Go to Step 14

Steps 9-13

Step	Action	Yes	No
14	Replace the throttle body assembly. Did you complete the replacement?	Go to Step 15	—
15	Inspect for poor connections at the TAC module harness connectors. Refer to Diagnostic Aids for Circuit Testing and Wiring Repair procedures. Did you find and correct the condition?	Go to Step 17	Go to Step 16
16	Replace the TAC module. Did you complete the replacement?	Go to Step 17	—
17	<ol style="list-style-type: none"> 1. Clear the DTCs with a scan tool. 2. Turn OFF the ignition for 30 seconds. 3. Start the engine. 4. Operate the vehicle within the Conditions for Running the DTC. You may also operate the vehicle within the conditions that you observed from the Freeze Frame/Failure Records. <p>Did the DTC fail this ignition?</p>	Go to Step 2	Go to Step 18
18	Observe the Capture Info with a scan tool. Are there any DTCs that have not been diagnosed?	Go to Diagnostic Trouble Code (DTC) List	System OK

Steps 14-18

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

7. If the TP indicated angle does not follow the movement of the throttle blade and no TP sensor DTCs are set, there is a mechanical condition with the throttle shaft or the TP sensor.

18. Locating and repairing an individual condition may correct more than 1 DTC.