Engine Controls Diagnostic (DTC P2131 To DTC U0107) - 5.7L - Corvette

DIAGNOSIS

DTC P2131

Circuit Description

The accelerator pedal position (APP) sensor is mounted on the accelerator pedal assembly. The sensor is actually 3 individual APP sensors within 1 housing. Three separate signal, low reference and 5-volt reference circuits connect the APP sensor assembly and the throttle actuator control (TAC) module. Each sensor has a unique functionality. The APP sensor 1 signal increases as the accelerator pedal is depressed, from below 1 volt at 0 percent pedal travel, with the pedal at rest, to above 2 volts at 100 percent pedal travel, with the pedal fully depressed. The APP sensor 2 signal decreases from above 4 volts at 0 percent pedal travel to below 2.9 volts at 100 percent pedal travel. The APP sensor 3 signal decreases from around 3.8 volts at 0 percent pedal travel to below 3.1 volts at 100 percent pedal travel. Notice that the signal circuits for APP sensor 2 and APP sensor 3 pull up to 5 volts and the APP sensor 1 signal circuit is referenced to low reference within the TAC module.

Conditions for Running the DTC

- DTCs P0606, P2108, or U0107 are not set.
- The ignition switch is in the crank or run position.
- The ignition voltage is greater than 5.23 volts.

Conditions for Setting the DTC

- APP sensor 3 disagrees with APP sensor 1 by more than 13 percent and APP sensor 3 disagrees with APP sensor 2 by more than 13 percent.
- All of the above conditions are present for less than 1 second.

Action Taken When the DTC Sets

- The control module stores the DTC information into memory when the diagnostic runs and fails.
- The malfunction indicator lamp (MIL) will not illuminate.
- The control module records the operating conditions at the time the diagnostic fails. The control module stores this information in the Failure Records.
- If one or more APP sensor DTCs are set for a single APP sensor, the following occurs:
    - The control module will not command Reduced Engine Power mode.
    - The control module will use the remaining two APP sensors to calculate throttle response.
- If certain multiple APP sensor DTCs are set for more than one APP sensor, the following occurs:
    - The control module commands Reduced Engine Power mode.
    - The APP indicated angle is limited to a predetermined value to limit the amount of throttle control.

- The message center displays Reduced Engine Power.

- If all three APP sensors are out of range, the following occurs:
  - The control module commands Reduced Engine Power mode.
  - The APP indicated angle is limited to 0 percent. The control module only allows the engine to idle.
  - The message center displays Reduced Engine Power.

Conditions for Clearing the DTC

- 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 non-emission related diagnostic.
- Clear the DTC with a scan tool.

Diagnostic Aids

- Inspect the TAC module connectors for signs of water intrusion. When water intrusion occurs, multiple DTCs could be set with no DTC circuit or component conditions found during diagnostic testing.
- When the TAC module detects throttle movement with a DTC P2130 set, a DTC P2131 also sets.
- 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 that run continuously on this system. Locating and repairing 1 individual condition may correct more than 1 DTC. Disconnecting components during testing may set additional DTCs. Keep this in mind when reviewing the Capture Info.
- For an intermittent, refer to **Intermittent Conditions** .

Test Description

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

2: This step determines if a communication condition exists.

5: This step isolates an internal APP sensor failure. The condition may only occur at a certain accelerator pedal position. Monitoring the APP angles for sensor 1 and sensor 2 is an accurate way of verifying the actual position of the pedal. The APP angles for all 3 sensors should be within a few percent of each other. When the pedal is at rest, the APP angle for all 3 sensors should be 0 percent. When the pedal is fully depressed, all APP angles should be 100 percent.

6: The APP sensor 3 has a dedicated 5-volt reference circuit. Monitoring the APP sensor 1 voltage aids in diagnosing the APP sensor 3 5-volt reference circuit. If the scan tool displays 5 volts then the circuits are OK.

25: 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 that run continuously on this system. Locating and repairing 1 individual condition may correct more than 1 DTC. Disconnecting components during testing may set additional DTCs. Keep this in mind when reviewing the Capture Info.

DTC P2131

Step	Action	Values	Yes	No
Schematic Reference: Engine Controls Schematics Connector End View Reference: Powertrain Control Module (PCM) Connector End Views ,, or Engine Controls Connector End Views				
1	Did you perform the Diagnostic System Check-Engine Controls?	-	Go to **Step 2**	Go to **Diagnostic System Check - Engine Controls**
2	Is DTC U0107 also set?	-	Go to **DTC U0107**	Go to **Step 3**
3	**IMPORTANT:** **Do not depress the accelerator pedal.** 1. Turn OFF the ignition for 15 seconds. 2. Start the engine. 3. Observe the DTC Info with a scan tool. Did any other throttle actuator control (TAC) module or accelerator pedal position (APP) sensor DTCs set except DTC P1125?	-	Go to **Diagnostic Trouble Code (DTC) List**	Go to **Step 4**
4	Observe the APP sensor Agree/Disagree parameters, with a scan tool. Does the scan tool indicate Disagree for any of the APP sensor Agree/Disagree parameters?	-	Go to **Step 6**	Go to **Step 5**
5	1. Turn ON the ignition, with the engine OFF. 2. Observe the APP sensor angles for all 3 APP sensors. 3. Slowly depress the accelerator pedal, stopping at 25, 50, 75, and 99 percent. 4. Slowly release the accelerator pedal, stopping at 75, 50, 25, and 0 percent. Does the scan tool indicate that the APP sensor 3 angle is within 13 percent of both APP sensor 1 and sensor 2 angles?	-	Go to Diagnostic Aids	Go to **Step 6**
6	1. Turn OFF the ignition. 2. Disconnect the APP sensor harness connector. 3. Test the APP sensor 3 5-volt reference circuit for voltage, with a DMM. Does the DMM indicate voltage within the specified values?	3.94-6.06 V	Go to **Step 7**	Go to **Step 14**
	Test the APP sensor 3 signal circuit for voltage, with a DMM.	3.94-		

7	Does the DMM indicate voltage within the specified values?	6.06 V	Go to **Step 8**	Go to **Step 16**
8	Measure the resistance between the APP sensor 3 low reference circuit and the APP sensor 1 low reference circuit, with a DMM. Does the DMM indicate resistance within the specified values?	0-5 ohm	Go to **Step 9**	Go to **Step 19**
9	1. Disconnect the TAC module harness connector containing the APP sensor circuits. 2. Test the APP sensor 3 5-volt reference circuit for resistance. Refer to **Circuit Testing** and **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	-	Go to **Step 24**	Go to **Step 10**
10	Test for a short between the APP sensor 3 5-volt reference circuit and all other APP circuits at the APP sensor harness connector. Refer to **Circuit Testing** and **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	-	Go to **Step 24**	Go to **Step 11**
11	Test the APP sensor 3 signal circuit for an open or high resistance. Refer to **Circuit Testing** and **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	-	Go to **Step 24**	Go to **Step 12**
12	Test for a short between the APP sensor 3 signal circuit and all other APP circuits at the APP sensor harness connector. Refer to **Circuit Testing** and **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	-	Go to **Step 24**	Go to **Step 13**
13	Test the APP sensor 3 low reference circuit for resistance. Refer to **Circuit Testing** and **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	-	Go to **Step 24**	Go to **Step 20**
14	1. Turn OFF the ignition. 2. Disconnect the TAC module harness connector containing the APP sensor circuits. 3. Test the APP sensor 3 5-volt reference circuit for an open or for high resistance. Refer to **Circuit Testing** and **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	-	Go to **Step 24**	Go to **Step 15**
15	Test the APP sensor 3 5-volt reference circuit for a short to voltage. Refer to **Circuit Testing** and **Wiring Repairs** in Wiring Systems.	-		

	Did you find and correct the condition?		Go to **Step 24**	Go to **Step 21**
16	1. Turn OFF the ignition. 2. Disconnect the TAC module harness connector containing the APP sensor circuits. 3. Test the APP sensor 3 signal circuit for an open or for high resistance. Refer to **Circuit Testing** and **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	-	Go to **Step 24**	Go to **Step 17**
17	Test the APP sensor 3 signal circuit for a short to voltage. Refer to **Circuit Testing** and **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	-	Go to **Step 24**	Go to **Step 18**
18	Test for a short between the APP sensor 3 signal circuit and all other APP circuits at the APP sensor harness connector. Refer to **Circuit Testing** and **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	-	Go to **Step 24**	Go to **Step 19**
19	1. Turn OFF the ignition. 2. Disconnect the TAC module harness connector containing the APP sensor circuits. 3. Test the APP sensor 3 low reference circuit for an open or for high resistance. Refer to **Circuit Testing** and **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	-	Go to **Step 24**	Go to **Step 21**
20	Inspect for poor connections at the harness connector of the APP sensor. Refer to **Testing for Intermittent Conditions and Poor Connections** and **Repairing Connector Terminals** in Wiring Systems. Did you find and correct the condition?	-	Go to **Step 24**	Go to **Step 22**
21	Inspect for poor connections at the harness connectors of the TAC module. Refer to **Testing for Intermittent Conditions and Poor Connections** and **Repairing Connector Terminals** in Wiring Systems. Did you find and correct the condition?	-	Go to **Step 24**	Go to **Step 23**
22	Replace the APP sensor assembly. Refer to **Accelerator Pedal Position (APP) Sensor Replacement** . Did you complete the replacement?	-	Go to **Step 24**	-

23	Replace the TAC module. Refer to **Throttle Actuator Control (TAC) Module Replacement** . Did you complete the replacement?	-	Go to **Step 24**	-
24	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. Did the DTC fail this ignition?	-	Go to **Step 2**	Go to **Step 25**
25	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

DTC P2135

Circuit Description

The throttle position (TP) sensor is mounted on the throttle body assembly. The sensor is actually 2 individual TP sensors within 1 housing. Two separate signal, low reference and 5-volt reference circuits are used in order to connect the TP sensor assembly to the throttle actuator control (TAC) module. The 2 sensors have opposite functionality. The TP sensor 1 signal voltage is pulled up to the reference voltage as the throttle opens, from below 1 volt at closed throttle to above 3.5 volts at wide open throttle (WOT). The TP sensor 2 signal voltage is pulled down to the low reference from around 3.8 volts at closed throttle to below 1 volt at WOT. TP sensor 1 and accelerator pedal position (APP) sensor 1 share a 5-volt reference circuit that is connected within the TAC module. TP sensor 2 and APP sensor 2 share a 5-volt reference circuit that is connected within the TAC module. If an out of range condition is detected with the TP sensors, this DTC will set and the Reduced Engine Power message will be displayed.

Conditions for Running the DTC

- DTCs P2108, or P1518 are not set.
- The ignition switch is in the crank or run position.
- The ignition voltage is greater than 5.23 volts.

Conditions for Setting the DTC

- TP sensor 2 disagrees with TP sensor 1 by more than 7.5 percent.
- All above conditions are present for less than 1 second.

Action Taken When the DTC Sets

- The control module illuminates the malfunction indicator lamp (MIL) when the diagnostic runs and fails.
- The control module records the operating conditions at the time the diagnostic fails. The control module stores this information in the Freeze Frame and/or the Failure Records.
- The control module commands the TAC system to operate in the Reduced Engine Power mode.
- A message center or an indicator displays Reduced Engine Power.
- Under certain conditions the control module commands the engine OFF.

Conditions for Clearing the MIL/DTC

- The control module 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. When water intrusion occurs, multiple DTCs could be set with no DTC circuit or component conditions found during diagnostic testing.
- 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 that run continuously on this system. Locating and repairing 1 individual condition may correct more than 1 DTC. Disconnecting components during testing may set additional DTCs. Keep this in mind when reviewing the Capture Info.
- If this DTC is determined to be intermittent, refer to **Intermittent Conditions** .

Test Description

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

21: 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 that run continuously on this system. Locating and repairing 1 individual condition may correct more than 1 DTC. Disconnecting components during testing may set additional DTCs. Keep this in mind when reviewing the Capture Info.

DTC P2135

Step	Action	Yes	No
Schematic Reference: Engine Controls Schematics **Connector End View References: Powertrain Control Module (PCM) Connector End Views , or Engine Controls Connector End Views**			
1	Did you perform the Diagnostic System Check-Engine Controls?	Go to **Step 2**	Go to **Diagnostic System Check - Engine Controls**
	Is DTC P1518 also set?	Go to **Diagnostic**	

2		**Trouble Code (DTC) List**	Go to **Step 3**
3	1. Turn ON the ignition, with the engine OFF. 2. Observe the throttle position (TP) sensor 1 and sensor 2 Agree/Disagree parameter, with a scan tool. Does the scan tool TP sensor 1 and sensor 2 Agree/Disagree parameter indicate Disagree?	Go to **Step 5**	Go to **Step 4**
4	1. Remove the air inlet duct from the throttle body. 2. Disconnect the throttle actuator motor harness connector. 3. Slowly, manually open the throttle blade to wide open throttle (WOT) and back to the closed throttle position several times while observing the scan tool TP sensor Agree/Disagree parameter. Does the TP sensor Agree/Disagree parameter change from Agree to Disagree during the above test?	Go to **Step 18**	Go to **Step 5**
5	1. Disconnect the throttle position (TP) sensor harness connector. 2. Disconnect the throttle actuator control (TAC) module harness connectors. 3. Test the TP sensor 1 5-volt reference circuit for resistance. Refer to **Circuit Testing** and **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	Go to **Step 20**	Go to **Step 6**
6	Test for a short between the TP sensor 1 5-volt reference circuit and all other TAC module circuits, with a DMM. Refer to **Circuit Testing** and **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	Go to **Step 20**	Go to **Step 7**
7	Test the TP sensor 1 signal circuit for resistance, with a DMM. Refer to **Circuit Testing** and **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	Go to **Step 20**	Go to **Step 8**
8	Test for a short between the TP sensor 1 signal circuit and all other TAC module circuits, with a DMM. Refer to **Circuit Testing** and **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	Go to **Step 20**	Go to **Step 9**
9	Test the TP sensor 1 low reference circuit for resistance, with a DMM. Refer to **Circuit Testing** and **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	Go to **Step 20**	Go to **Step 10**

10	Test for a short between the TP sensor 1 low reference circuit and all other TAC module circuits, with a DMM. Refer to **Circuit Testing** and **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	Go to **Step 20**	Go to **Step 11**
11	Test the TP sensor 2 5-volt reference circuit for resistance, with a DMM. Refer to **Circuit Testing** and **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	Go to **Step 20**	Go to **Step 12**
12	Test for a short between the TP sensor 2 5-volt reference circuit and all other TAC module circuits, with a DMM. Refer to **Circuit Testing** and **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	Go to **Step 20**	Go to **Step 13**
13	Test the TP sensor 2 signal circuit for resistance, with a DMM. Refer to **Circuit Testing** and **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	Go to **Step 20**	Go to **Step 14**
14	Test for a short between the TP sensor 2 signal circuit and all other TAC module circuits, with a DMM. Refer to **Circuit Testing** and **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	Go to **Step 20**	Go to **Step 15**
15	Test the TP sensor 2 low reference circuit for resistance, with a DMM. Refer to **Circuit Testing** and **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	Go to **Step 20**	Go to **Step 16**
16	Test for a short between the TP sensor 2 low reference circuit and all other TAC module circuits, with a DMM. Refer to **Circuit Testing** and **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	Go to **Step 20**	Go to **Step 17**
17	Inspect for poor connections at the harness connector of the TAC module. Refer to **Testing for Intermittent Conditions and Poor Connections** and **Repairing Connector Terminals** in Wiring Systems. Did you find and correct the condition?	Go to **Step 20**	Go to **Step 18**
18	Inspect for poor connections at the harness connector of the TP sensor. Refer to **Testing for Intermittent Conditions and Poor Connections** and **Repairing Connector Terminals** in Wiring Systems. Did you find and correct the condition?	Go to **Step 20**	Go to **Step 19**
19	**IMPORTANT:** **The TP sensor is not a serviceable part and should only be replaced with the throttle body assembly.** Replace the throttle body assembly. Refer to **Throttle**		

	Body Assembly Replacement .Did you complete the replacement?	Go to **Step 20**	-
20	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. Does the DTC run and pass?	Go to **Step 21**	Go to **Step 2**
21	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

DTC U0107

Circuit Description

The throttle actuator control (TAC) module and the powertrain control module (PCM) communicate via a dedicated serial data circuit. This serial data circuit is separate from any other serial data circuit on the vehicle. Accurate transmitting and receiving of serial data requires not only good circuit integrity, but also adequate system voltage. This diagnostic monitors the accuracy of the serial data transmitted between the TAC module and the PCM. If the PCM detects a loss of data or invalid data, DTC U0107 sets.

Conditions for Running the DTC

- The ignition switch is in the crank or the run position.
- The ignition voltage is more than 5.23 volts.

Conditions for Setting the DTC

- Invalid or missing serial data messages are detected for a predetermined amount of time.
- All of the above conditions met for less than 1 second.

Action Taken When the DTC Sets

- The control module illuminates the malfunction indicator lamp (MIL) when the diagnostic runs and fails.
- The control module records the operating conditions at the time the diagnostic fails. The control module stores this information in the Freeze Frame and/or the Failure Records.
- The control module commands the TAC system to operate in the Reduced Engine Power mode.
- A message center or an indicator displays Reduced Engine Power.
- Under certain conditions the control module commands the engine OFF.

Conditions for Clearing the MIL/DTC

- The control module 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

- DTC U0107 sets if the battery voltage is low. If the customer's concern is slow cranking or no crank because battery voltage is low, ignore DTC U0107. Clear any DTCs that may have set from the low battery voltage condition from the memory.
- DTC U0107 sets when there is a short to B+ on the TAC module ground circuit. Inspect the fuses for the circuits that are in the TAC module harness, such as the cruise, or the brake. An inspection of the fuses may lead you to the circuit that is shorted to the TAC module ground circuit.
- DTC U0107 sets if the TAC module ignition feed circuit is shorted to a B+ supply circuit. The TAC module stays powered-up when the ignition switch is turned off. When the ignition switch is turned on, the TAC module is powered-up before the PCM. DTC U0107 sets because no communication is detected by the TAC module from the PCM. Inspect related circuits for being shorted to a B+ supply circuit.
- Inspect the TAC module power and ground circuits and the TAC module/PCM serial data circuits for intermittent connections.
- Inspect the TAC module connectors for signs of water intrusion. When water intrusion occurs, multiple DTCs could be set with no DTC circuit or component conditions found during diagnostic testing.
- When the TAC module detects a problem within the TAC system, more than 1 TAC system related DTC may set. This is due to the many redundant tests that run continuously on this system. Locating and repairing 1 individual problem may correct more than 1 DTC. Keep this in mind when reviewing captured DTC info.
- For an intermittent condition, refer to **Intermittent Conditions** .

Test Description

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

2: This step determines if the IGN relay is suppling a voltage to the THROT CONT fuse.

5: Increasing the engine speed to 3,000 RPM aids in locating a shorted throttle actuator motor control circuit. Depending on the polarity of the throttle actuator motor transistors, this DTC may not set with a fault in the control circuits. The throttle actuator motor is a bi-directional DC motor. Raising the engine speed changes the polarity of the transistors in the throttle actuator motor. This occurs because 1 set of the transistors is near 0 volts, and the other set is at high B+. Therefore, if 1 set of transistors is at a low voltage and the corresponding circuit is shorted low, DTC U0107 will not set. When the polarity of the transistors change this DTC sets. If this DTC does not Fail This Ignition, continue to monitor this DTC status while moving related harnesses and connectors.

29: When the TAC module detects a condition within the TAC system, more than TAC system related

DTC may set. This is due to the many redundant tests that run continuously on this system. Locating and repairing 1 individual condition may correct more than 1 DTC. Disconnecting the components during testing may set additional DTCs. Keep this in mind when reviewing the stored information, Capture info.

DTC U0107

Step	Action	Values	Yes	No
Schematic Reference: Engine Controls Schematics Connector End View References: Powertrain Control Module (PCM) Connector End Views , or Engine Controls Connector End Views				
1	Did you perform the Diagnostic System Check-Engine Controls?	-	Go to **Step 2**	Go to **Diagnostic System Check - Engine Controls**
2	1. Turn ON the ignition, with the engine OFF. 2. Remove the cover from the underhood electrical center. 3. With a test lamp connected to ground, test both sides of the THROT CONT fuse. Does the test lamp illuminate on at least 1 side of the fuse?	-	Go to **Step 3**	Go to **Ignition Relay Diagnosis**
3	1. Turn OFF the ignition. 2. With a test lamp connected to ground, test for voltage at the THROT CONT fuse. Does the test lamp illuminate?	-	Go to **Step 22**	Go to **Step 4**
4	Install a scan tool. Is DTC P0606 also set?	-	Go to **DTC P0601-P0607, P1600, P1621, P1627, P1680, P1681, P1683, or P2610**	Go to **Step 5**
5	**IMPORTANT:** **If the Driver Information Center is displaying Reduced Engine Power, go to Step 6.** 1. Start the engine. 2. Increase the engine speed to 3,000 RPM, if possible. 3. Observe the diagnostic trouble code (DTC) Info option using the scan tool. Does the scan tool indicate this DTC failed this ignition?	-	Go to **Step 6**	Go to Diagnostic Aids
	1. Turn OFF the ignition.			

6	2. Disconnect the throttle actuator motor harness connector. 3. Turn ON the ignition, with the engine OFF. 4. Test for voltage at both throttle actuator motor control circuits. Refer to **Circuit Testing** in Wiring Systems. Does the DMM indicate voltage on both circuits above the specified value?	8 V	Go to **Step 12**	Go to **Step 7**
7	1. Turn OFF the ignition. 2. Test both throttle actuator motor control circuits for continuity to ground. Refer to **Circuit Testing** in Wiring Systems. Does the DMM indicate continuity to ground?	-	Go to **Step 10**	Go to **Step 8**
8	1. Turn OFF the ignition. 2. Remove the THROT CONT fuse. 3. Test the throttle actuator control (TAC) side of the fuse terminal for continuity to ground. Refer to Diagnostic Aids for terminal identification table. Does the DMM indicate continuity to ground?	-	Go to **Step 9**	Go to **Step 11**
9	1. Disconnect the TAC module 16-way harness connector. 2. Test the TAC side of the fuse terminal for a short to ground. Refer to **Circuit Testing** and **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	-	Go to **Step 28**	Go to **Step 24**
10	1. Disconnect the TAC module 16-way harness connector. 2. Test the throttle actuator motor control circuits for a short to ground at the TAC module 16-way harness connector. Refer to **Circuit Testing** and **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	-	Go to **Step 28**	Go to **Step 24**
	1. Turn OFF the ignition. 2. Disconnect the TAC module 16-way harness connector.			

11	3. Test the TAC module ignition feed circuit for an open or high resistance. Refer to **Circuit Testing** and **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	-	Go to **Step 28**	Go to **Step 24**
12	1. Turn OFF the ignition. 2. Disconnect the TAC module 16-way connector. 3. Turn ON the ignition, with the engine OFF 4. Test for a short to voltage at both Throttle Actuator Motor control circuits. Refer to **Circuit Testing** and **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	-	Go to **Step 28**	Go to **Step 13**
13	1. Turn OFF the ignition. 2. Disconnect the TAC module 10-way harness connector. 3. Test for a short between each throttle actuator motor control circuit and all other TAC module circuits. Refer to **Circuit Testing** and **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	-	Go to **Step 28**	Go to **Step 14**
14	Test for an open or for high resistance in the TAC module ground circuit. Refer to **Circuit Testing** and **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	-	Go to **Step 28**	Go to **Step 15**
15	Test for voltage on the serial data circuits at the TAC module 16-way harness connector. Does the DMM indicate voltage within the specified values for both circuits?	0-4.5 V	Go to **Step 16**	Go to **Step 18**
16	1. Turn OFF the ignition. 2. Test both serial data circuits at the TAC module 16-way harness connector for continuity to ground. Does the DMM indicate OL for both circuits?	-	Go to **Step 20**	Go to **Step 17**
	1. Disconnect the posertrain control module (PCM) connector containing the TAC module serial data circuits.			

17	2. Test both serial data circuits at the TAC module 16-way connector for a short to ground. Refer to **Circuit Testing** and **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	-	Go to **Step 28**	Go to **Step 18**
18	Test for a short between both serial data circuits and all other circuits at the PCM and TAC module harness connectors. Refer to **Circuit Testing** and **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	-	Go to **Step 28**	Go to **Step 19**
19	Test for a short to voltage on both serial data circuits at the TAC module 16-way connector. Refer to **Circuit Testing** and **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	-	Go to **Step 28**	Go to **Step 25**
20	1. Disconnect the PCM connector that contains the TAC module serial data circuits. 2. Test each serial data circuit between the TAC module 16-way harness connector and the PCM harness connector for an open or high resistance. Refer to **Circuit Testing** and **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	-	Go to **Step 28**	Go to **Step 21**
21	1. Connect the PCM. 2. Turn ON the ignition. 3. Test for voltage on the serial data circuit at the TAC module 16-way harness connector. Does the DMM indicate voltage at the specified value?	0 V	Go to **Step 25**	Go to **Step 24**
22	1. Turn OFF the ignition. 2. Disconnect the 16-way TAC module harness connector. 3. Test the TAC module ignition feed circuit for a short to battery voltage. Refer to **Circuit Testing** and **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	-	Go to **Step 28**	Go to **Step 23**
	1. Turn ON the ignition.			

23	2. Test both throttle actuator control motor circuits for a short to voltage. Refer to **Circuit Testing** and **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	-	Go to **Step 28**	Go to **Step 24**
24	Test for poor connections at the TAC module harness connector. Refer to **Testing for Intermittent Conditions and Poor Connections** and **Repairing Connector Terminals** in Wiring Systems. Did you find and correct the condition?	-	Go to **Step 28**	Go to **Step 26**
25	Test for poor connections at the PCM harness connector. Refer to **Testing for Intermittent Conditions and Poor Connections** and **Repairing Connector Terminals** in Wiring Systems. Did you find and correct the condition?	-	Go to **Step 28**	Go to **Step 27**
26	Replace the TAC module. Refer to **Throttle Actuator Control (TAC) Module Replacement** . Did you complete the replacement?	-	Go to **Step 28**	-
27	Replace the PCM. Refer to **Powertrain Control Module (PCM) Replacement** . Did you complete the replacement?	-	Go to **Step 28**	-
28	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. Did the DTC fail this ignition?	-	Go to **Step 2**	Go to **Step 29**
29	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