

2006 ACCESSORIES & EQUIPMENT**Cruise Control - Equinox & Torrent****SCHEMATIC AND ROUTING DIAGRAMS****CRUISE CONTROL SCHEMATIC ICONS****Cruise Control Schematic Icons**

Icon	Icon Definition
	CAUTION: When performing service on or near the SIR components or the SIR wiring, the SIR system must be disabled. Refer to SIR Disabling and Enabling Zones. Failure to observe the correct procedure could cause deployment of the SIR components, personal injury, or unnecessary SIR system repairs.

CRUISE CONTROL SCHEMATICS (CHEVROLET)

2006 Chevrolet Equinox LS

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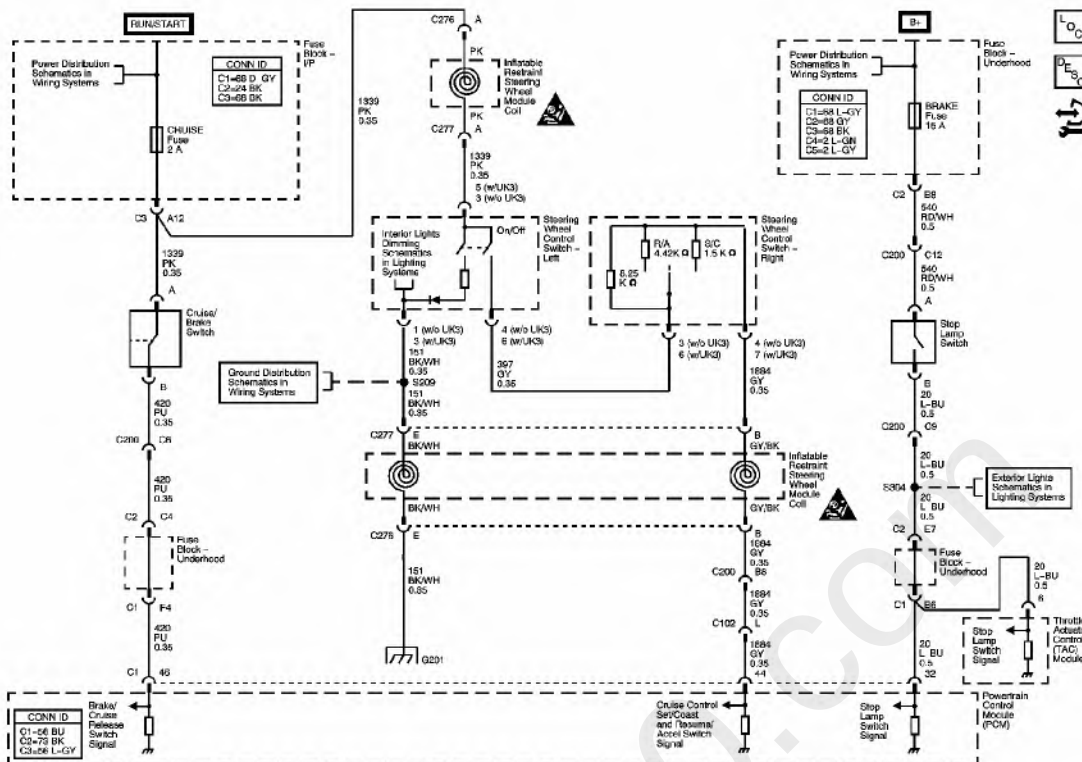


Fig. 1: Cruise Control Schematics (Chevrolet)
Courtesy of GENERAL MOTORS CORP.

CRUISE CONTROL SCHEMATICS (PONTIAC)

2006 Chevrolet Equinox LS

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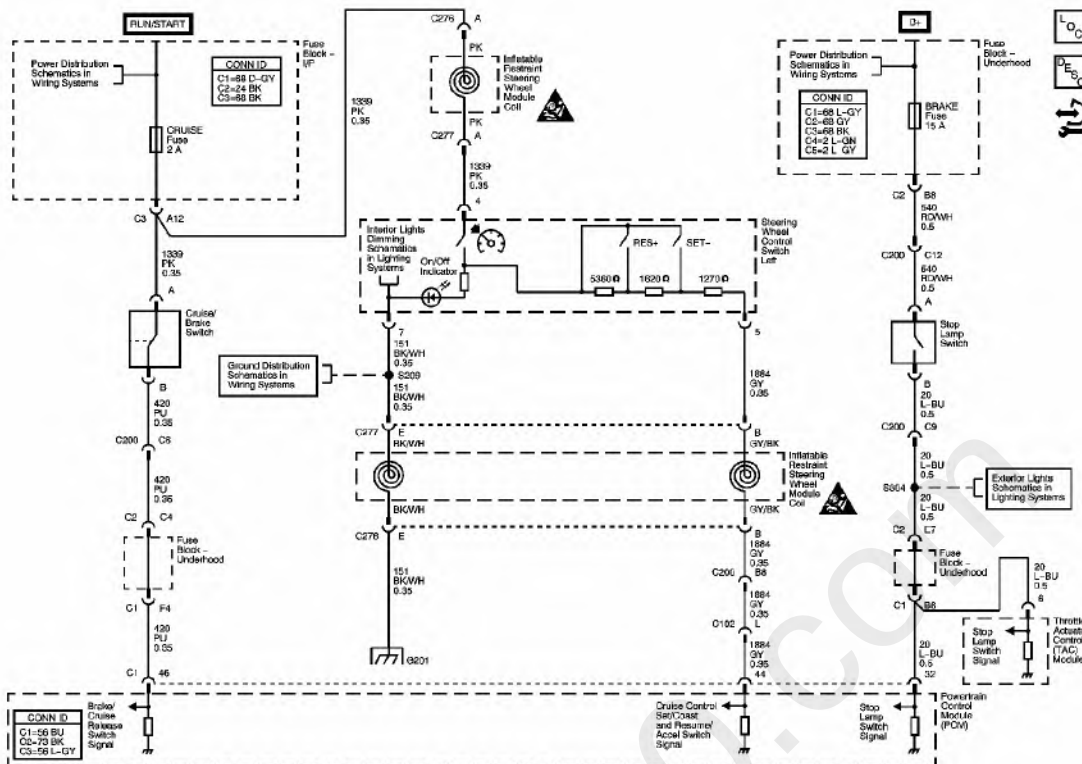


Fig. 2: Cruise Control Schematics (Pontiac)
Courtesy of GENERAL MOTORS CORP.

COMPONENT LOCATOR

CRUISE CONTROL COMPONENT VIEWS

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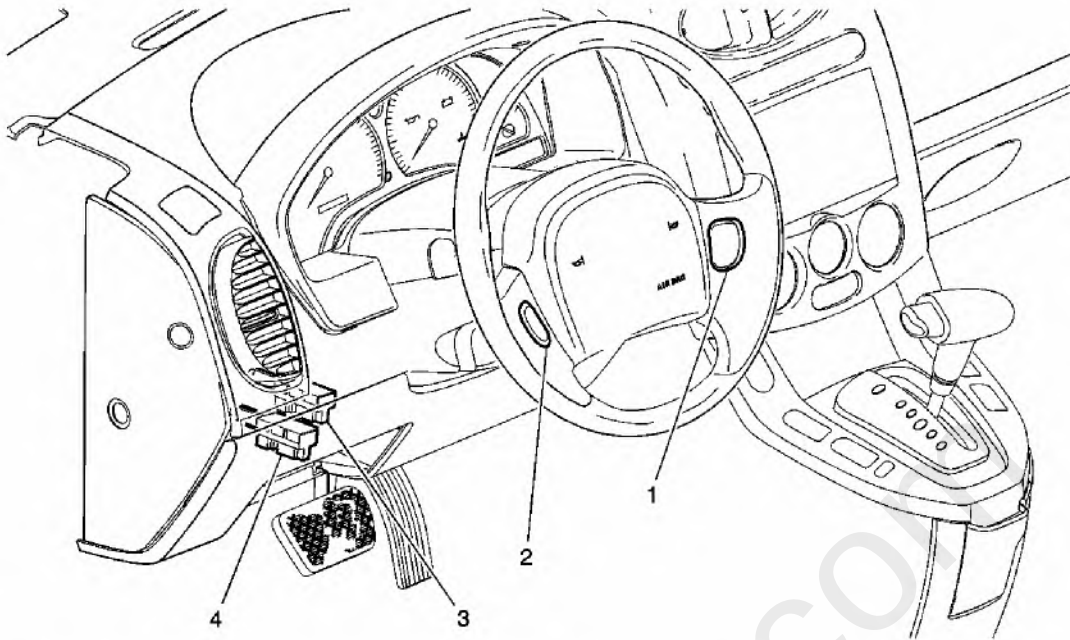


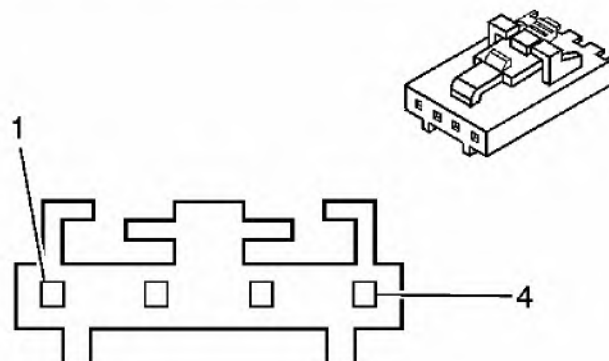
Fig. 3: Cruise Control Components - Chevrolet Shown, Pontiac Similar
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 3

Callout	Component Name
1	Steering Wheel Control Switch - Right
2	Steering Wheel Control Switch - Left
3	Cruise/Brake Switch
4	Stop Lamp Switch

CRUISE CONTROL CONNECTOR END VIEWS

Steering Wheel Control Switch - Left (Chevrolet w/ K34 w/o UK3)



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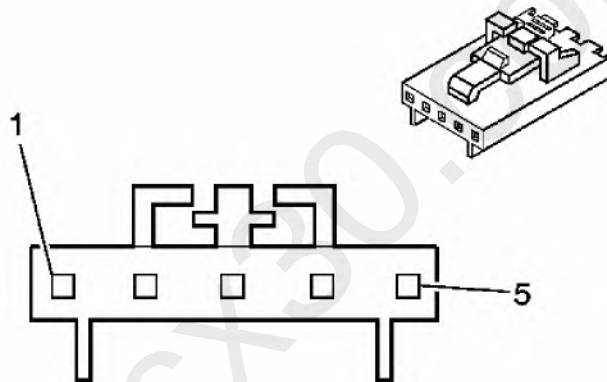
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Connector Part Information

- **OEM: 50-57-9404**
- **Service: 12103499**
- **4-Way F (BK)**

Pin	Wire Color	Circuit No.	Function
1	BK/WH	151	Ground
2	GY	8	Instrument Panel Lamp Supply Voltage
3	PK	1339	Ignition 1 Voltage
4	GY	397	Cruise Control On Switch Signal

Steering Wheel Control Switch - Right (Chevrolet w/ K34 w/o UK3)



Connector Part Information

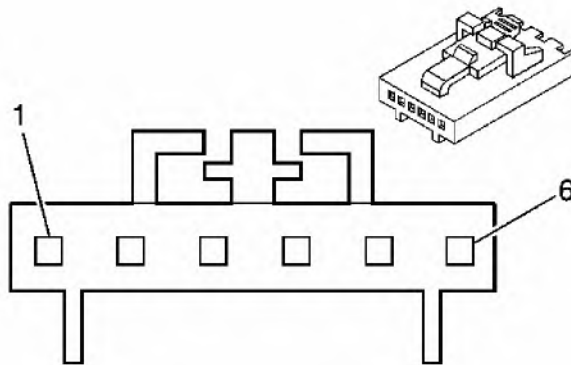
- **OEM: 50-57-9405**
- **Service: 12103020**
- **5-Way F (BK)**

Pin	Wire Color	Circuit No.	Function
1	BK/WH	151	Ground
2	GY	8	Instrument Panel Lamp Supply Voltage
3	GY	397	Cruise Control On Switch Signal
4	GY	1884	Cruise Control Set/Coast/Resume/Accelerate Switch Signal
5	-	-	Not Used

Steering Wheel Control Switch - Left (Chevrolet w/ K34 and UK3)

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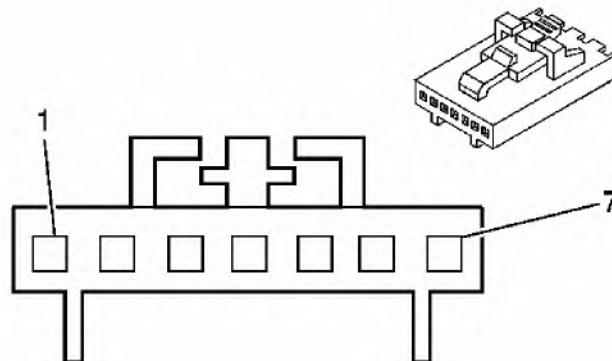


Connector Part Information

- OEM: 50-57-9406
- Service: 12103087
- 6-Way F (BK)

Pin	Wire Color	Circuit No.	Function
1	L-GN	1011	Remote Radio Control Signal
2	GY	8	Instrument Panel Lamp Supply Voltage
3	BK/WH	151	Ground
4	D-BU	1796	Steering Wheel Controls Signal
5	PK	1339	Ignition 1 Voltage
6	GY	397	Cruise Control On Switch Signal

Steering Wheel Control Switch - Right (Chevrolet w/ K34 and UK3)



Connector Part Information

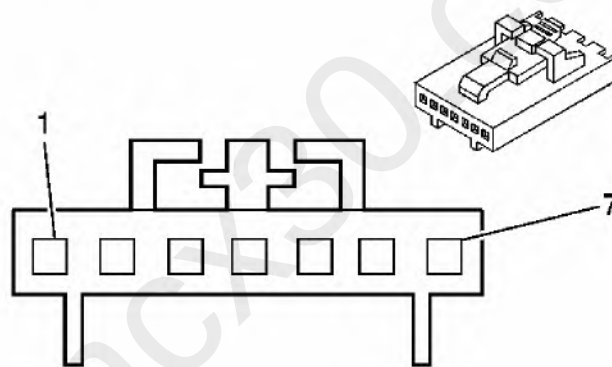
- OEM: 50-57-9407
- Service: 15383018

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• 7-Way F (BK)			
Pin	Wire Color	Circuit No.	Function
1	WH/BK	644	10-Volt Reference
2	GY	8	Instrument Panel Lamp Supply Voltage
3	BK/WH	151	Ground
4	D-BU	1796	Steering Wheel Controls Signal
5	L-GN	1011	Remote Radio Control Signal
6	GY	397	Cruise Control On Switch Signal
7	GY	1884	Cruise Control Set/Coast/Resume/Accelerate Switch Signal

Steering Wheel Control Switch - Left (Pontiac w/ K34/UK3)

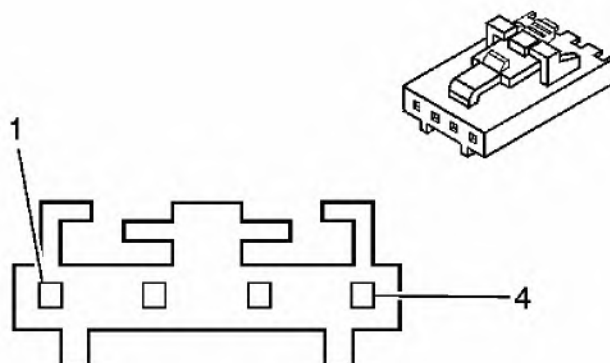


Connector Part Information		• OEM: 50-57-9407 • Service: 15383018 • 7-Way F (BK)	
Pin	Wire Color	Circuit No.	Function
1-2	-	-	Not Used
3	GY	8	Instrument Panel Lamp Supply Voltage
4	PK	1339	Ignition 1 Voltage
5	GY	1884	Cruise Control Set/Coast/Resume/Accelerate Switch Signal
6	-	-	Not Used
7	BK/WH	151	Ground

Steering Wheel Control Switch - Right (Pontiac w/ K34/UK3)

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Connector Part Information

- OEM: 50-57-9404
- Service: 12103499
- 4-Way F (BK)

Pin	Wire Color	Circuit No.	Function
1	BK/WH	151	Ground
2	WH/BK	644	10-Volt Reference
3	GY	8	Instrument Panel Lamp Supply Voltage
4	D-BU	1796	Steering Wheel Controls Signal

DIAGNOSTIC INFORMATION AND PROCEDURES

DIAGNOSTIC CODE INDEX

DIAGNOSTIC CODE INDEX

DTC	Description
DTC P0564	Cruise Control Multi-Function Switch Circuit
DTC P0571	Cruise Control Brake Switch Circuit
DTC P0608	Vehicle Speed Output Circuit
DTC P1574	Stoplamp Switch Circuit
DTC P2162	Vehicle Speed Sensor (VSS) Circuit 1-2 Correlation

DIAGNOSTIC STARTING POINT - CRUISE CONTROL

Begin the system diagnosis with the **Diagnostic System Check - Vehicle** in Vehicle DTC Information. The Diagnostic System Check will provide the following information:

- The identification of the control modules which command the system
- The ability of the control modules to communicate through the serial data circuit

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- The identification of any stored diagnostic trouble codes (DTCs) and their status

The use of the Diagnostic System Check will identify the correct procedure for diagnosing the system and where the procedure is located.

SCAN TOOL DATA LIST**Powertrain Control Module (PCM)**

Scan Tool Parameter	Data List	Units Displayed	Typical Data Value
Ignition On/Engine Idling at Normal Operating Temperature/Transmission in Park or Neutral/Cruise Control On/Off switch Off.			
Cruise Control Active	Cruise Control Data	Yes/No	No
Cruise Disengage 1-6 History	Cruise Control Data	The last reason for cruise control disengagement	Varies
Cruise Mode Signal	Cruise Control Data	Volts	0.0 Volts
Cruise On/Off Switch	Cruise Control Data	On/Off	Off
Cruise Resume/Accel. Switch	Cruise Control Data	On/Off	Off
Cruise Set/Coast Switch	Cruise Control Data	On/Off	Off
Engine Speed	Cruise Control Data	RPM	Varies
Ignition 1 Signal	Cruise Control Data	Volts	Varies
Reduced Engine Power	TAC Data	Active/Inactive	Inactive
Stoplamp Pedal Switch	Cruise Control Data	Applied/Released	Released
Stoplamp Pedal Switch Signal	Cruise Control Data	Volts	0.0 Volts
TAC/PCM Communication Signal	TAC Data	Ok/Fault	Ok
TAC Stoplamp Pedal Switch	Cruise Control Data	Applied/Released	Released
TAC Vehicle Speed Signal	TAC Data	Ok/Fault	Ok
Traction Control Status (if equipped)	Cruise Control Data	Active/Inactive	Inactive

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Vehicle Speed Circuit History	Output Driver Data	Ok/Open/Short/Invalid State	Ok
Vehicle Speed Circuit Status	Output Driver Data	Ok/Fault/Invalid State	Ok
Vehicle Speed Sensor	Cruise Control Data	km/h (mph)	0 km/h (0 mph)

SCAN TOOL DATA DEFINITIONS (CRUISE CONTROL)

The Scan Tool Data Definitions contains a brief description of all cruise control related parameters available on the scan tool.

Cruise Control Active

The scan tool displays Yes or No. The powertrain control module (PCM) determines the current status of cruise control operation. An active cruise control system is displayed as On.

Cruise Control Mode Signal

The scan tool displays 0-5 volts. The PCM monitors the voltage of the cruise control set/coast and resume/accel switch signal circuit. In order to determine the status of the cruise control switch. The list values are voltage from a known good cruise control switch. Off = 0.0 volts/On = 0.5 volts/Resume = 1.3 volts/Set = 2.6 volts.

Cruise Disengage (1-6) History

The scan tool displays the last 6 reasons why the Cruise Control System was disengaged. Refer to the Scan Tool Data Definitions (Disengage History) for descriptions.

Cruise On/Off Switch

The scan tool displays On or Off. The PCM monitors the cruise control set/coast and resume/accelerate switch signal circuit. A closed switch is displayed as Yes.

Cruise Resume/Accel

The scan tool displays On or Off. The PCM monitors the cruise control set/coast and resume/accelerate switch signal circuit. A closed switch is displayed as On. The cruise control On/Off switch must be switched ON in order to correctly view the Cruise Resume/Accel parameter.

Cruise Set/Coast

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The scan tool displays On or Off. The PCM monitors the cruise control set/coast and resume/accelerate switch signal circuit. A closed switch is displayed as On. The cruise control On/Off switch must be switched ON in order to correctly view the Cruise Set/Coast parameter.

Engine Speed

The scan tool displays 0 to 9,999 RPM. The PCM monitors the CKP signal circuit in order to determine the engine RPM.

Ignition 1 Signal

The scan tool displays 6 Volts to 18 Volts. The PCM monitors the Ignition 1 signal circuit in order to determine the system voltage.

Reduced Engine Power

The scan tool displays Active or Inactive. When the PCM detects that a malfunctioning throttle actuator control (TAC) condition exists, the scan tool displays Active.

Stoplamp Pedal Switch

The scan tool displays Applied or Released. The PCM monitors the brake/cruise release switch signal circuit. An open switch is displayed as Applied.

Stoplamp Pedal Switch Signal

The scan tool displays Volts. The PCM monitors the voltage of the stop lamp pedal switch signal circuit.

TAC/PCM Communication Signal

The scan tool displays Ok or Fault. The PCM uses the universal asynchronous receiver transmitter (UART) serial data circuit in order to communicate with the throttle actuator control (TAC) module. A malfunction in the UART serial data circuit is displayed as Fault.

TAC Stoplamp Pedal Switch

The scan tool displays Applied or Released. The TAC module monitors the stoplamp pedal switch signal circuit. A closed switch is displayed as Applied.

TAC Vehicle Speed Signal

The scan tool displays Ok or Fault. The TAC module monitors the vehicle speed signal

circuit. A malfunction in the vehicle speed signal circuit is displayed as Fault.

Traction Control Status

The scan tool displays Active or Inactive. When the PCM detects that a traction control condition exists, the scan tool displays Active.

Vehicle Speed Circuit History

The scan tool displays Ok/Open/Short/Invalid State. The PCM detects and determines the history of the vehicle speed circuit.

Vehicle Speed Circuit Status

The scan tool displays Ok/Open/Short. When the PCM detects that a malfunction in the vehicle speed signal circuit exists, the scan tool will display Fault or Invalid State.

Vehicle Speed Sensor

The scan tool displays 0 to 150 km/h (0 to 93.2 mph). The PCM monitors the vehicle speed sensor signal circuit in order to calculate the vehicle speed for display.

SCAN TOOL DATA DEFINITIONS (DISENGAGE HISTORY)

The Cruise Control Scan Tool Definitions - Disengage History is a common list for all of the available cruise control disengagement definitions available on the scan tool. The cruise control system equipped on the vehicle determines which cruise control disengagement parameters are available on the scan tool.

One of the following conditions must be present in order for a disengagement parameter to appear:

- The cruise control system is active and disengagement is requested.
- The engagement of the cruise control system is requested while a fault is present.

Accel Rate

The powertrain control module (PCM)/engine control module (ECM) detects that the vehicle acceleration is greater than the calibrated cruise control threshold.

Bad Sequence

The PCM/ECM detects that a cruise control software execution error is present.

Brake

The PCM/ECM detects that the stop lamps have been activated or the PCM/ECM detects that a stop lamp pedal activation had not occurred before the cruise control system was requested.

Cancel

The PCM/ECM detects that the cruise control cancel switch has been activated.

CC Sw. Position

The PCM/ECM detects that the acceleration mode is active without the activation of the Accel. switch.

Clutch

The PCM/ECM detects that the clutch pedal switch has been activated.

Clutch Switch

The PCM/ECM detects that the clutch pedal switch has been activated.

Cruise Off

The PCM/ECM detects that the cruise On/Off switch was turned to OFF when the cruise control system was enabled.

Coast Low Speed

The PCM/ECM detects that the Set/Coast switch is activated until the vehicle speed is below 37 km/h (23 mph).

Coast Disengage

When the PCM/ECM detects that the cruise set/coast signal is active and the throttle blade fully closes the cruise control system will disengage until the PCM/ECM detects that the set/coast signal is inactive. The cruise control system will then engage and set with the new vehicle speed.

Decel Rate

The PCM/ECM detects that the vehicle deceleration is greater than the calibrated cruise control threshold.

DTC Set

The PCM/ECM detects that a DTC has been set which affects the cruise control

operation.

Engine Run Time

The PCM/ECM detects that the cruise control system has been requested and the engine run time counter is not active.

Engine Speed

The PCM/ECM detects that the engine speed is less than or greater than a calibrated RPM.

ETC

The PCM/ECM detects a fault within the throttle actuator control (TAC) system.

First Gear

While the cruise control system is active, the PCM/ECM detects that the transmission is in Drive 1.

High Accel.

The PCM/ECM detects that the vehicle acceleration is greater than the calibrated cruise control threshold.

High Decel.

The PCM/ECM detects that the vehicle deceleration is greater than the calibrated cruise control threshold.

High Speed

The PCM/ECM detects that the vehicle speed is greater than the calibrated amount.

Illegal Mode

The PCM/ECM detects that the acceleration mode is active without the activation of the Accel. switch.

Injector Disable

The PCM/ECM detects that the engine is overspeed and that the fuel shutoff has been activated.

Low Speed

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The PCM/ECM detects that the vehicle speed is less than 37 km/h (23 mph) while the cruise control system was enabled.

Low Voltage

The PCM/ECM detects that the ignition voltage is below 9 volts.

Manual/Neutral

The PCM/ECM detects that transmission is in Neutral, Reverse or Park.

Memory Corrupt

An internal PCM/ECM memory fault is detected.

MPH Limit

The PCM/ECM detects a that the vehicle is overspeed and that the fuel shutoff has been activated.

No History

This parameter is displayed when a new PCM/ECM has been installed.

None

This parameter is displayed when a new PCM/ECM has been installed.

Off

The PCM/ECM detects that the cruise On/Off switch was turned to OFF when the cruise control system was enabled.

Over Set Speed

This parameter is displayed when the current vehicle speed is greater than the set vehicle speed by more than a calibrated amount.

Over Speed

This parameter is displayed when the current vehicle speed is greater than the set vehicle speed by more than a calibrated amount.

Over Speed Tap

This parameter is displayed when the Set/Coast switch is briefly applied while the

current vehicle speed is greater than the set vehicle speed by more than a calibrated amount.

Pedal Initialize

The PCM/ECM detects that a stop lamp pedal activation had not occurred before the cruise control system was requested.

PCM Error

The PCM/ECM detects that a cruise control software execution error is present.

PCM Inhibit

The PCM/ECM detects a RAM corruption associated to the cruise control system.

Pedal > Cruise

The PCM/ECM detects that the accelerator pedal overrides the set vehicle speed for approximately 60 seconds.

Serial Data

A fault in the serial data circuit from the cruise control switch to the platform module is detected.

S/C On, CC Off

When the PCM/ECM detects that the cruise set/coast signal is active and the throttle blade fully closes the cruise control system will disengage until the PCM/ECM detects that the set/coast signal is inactive. The cruise control system will then engage and set with the new vehicle speed.

S/C On - Speed High

This parameter is displayed when the Set/Coast switch is briefly applied while the current vehicle speed is greater than the set vehicle speed by more than a calibrated amount.

Stop Lamp Switch

The PCM/ECM detects that the stop lamps have been activated.

TAC Inhibit

The PCM/ECM detects a fault within the TAC system

Traction

The PCM/ECM detects that the traction control system had been activated. It is also possible that a tire with low air pressure can also set this disengagement reason.

Traction Loss

The PCM/ECM detects that the traction control system had been activated. It is also possible that a tire with low air pressure can also set this disengagement reason.

Two Commands

The PCM/ECM detects that the Set/Coast switch and the Resume/Accel switch are active at the same time.

Two CC Commands

The PCM/ECM detects that the Set/Coast switch and the Resume/Accel switch are active at the same time.

Under Speed

The PCM/ECM detects that the vehicle speed is less than the cruise memory speed by more than a calibrated amount.

Under Set Speed

The PCM/ECM detects that the vehicle speed is less than the cruise memory speed by more than a calibrated amount.

DTC P0564**Circuit Description**

CAUTION: Refer to SIR Caution in Cautions and Notices.

Disable the inflatable restraint steering wheel module when performing this diagnostic table. Refer to SIR Disabling and Enabling Zone 3 in SIR.

The cruise control switch is an input to the powertrain control module (PCM). The PCM monitors the cruise control set/coast and resume/accelerate switch signal circuit in order to detect when a cruise control function has been requested. The PCM detects a specific voltage signal on the cruise control set/coast and resume/accelerate switch signal circuit when a cruise control function switch is activated, with each switch having a different predetermined

voltage value.

DTC Descriptor

This diagnostic procedure supports the following DTC:

DTC P0564 Cruise Control Multi-Function Switch Circuit

Conditions for Running the DTC

- The ignition is ON.
- The cruise control On/Off switch is ON.

Conditions for Setting the DTC

This DTC sets when the PCM detects an invalid voltage signal on the cruise control set/coast and resume/accelerate switch signal circuit for greater than 1.5 seconds.

The PCM runs this diagnostic every 0.05 seconds.

Action Taken When the DTC Sets

- The PCM stores the DTC information into memory when the diagnostic runs and fails.
- The malfunction indicator lamp (MIL) will not illuminate.
- The PCM records the operating conditions at the time the diagnostic fails. The PCM stores this information in the Failure Records.
- The Cruise Control System is disabled.

Conditions for Clearing the DTC

- A last test failed, or the current DTC, clears when the diagnostic runs and does not fail.
- A history DTC clears after 40 consecutive warm-up cycles, if failures are not reported by this or any other emission related diagnostic.
- Use a scan tool in order to clear the DTC.

Diagnostic Aids

- With a scan tool, observe the cruise control function switch parameters, in the PCM Cruise Control data list, while rotating the steering wheel to both steering stops and individually activating each cruise control function switch separately. This will help eliminate the possibility of an internally shorted inflatable restraint steering wheel module coil.
- For an intermittent condition, refer to **Testing for Intermittent Conditions and Poor Connections** in Wiring Systems.

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DTC P0564

Step	Action	Values	Yes	No
Schematic Reference: <u>Cruise Control Schematics (Chevrolet)</u> or <u>Cruise Control Schematics (Pontiac)</u> Connector End View Reference: <u>Master Electrical Component List</u> in Wiring Systems				
1	Did you perform the Diagnostic System Check - Vehicle?	-	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u> in Vehicle DTC Information
2	1. Turn OFF the ignition. 2. Remove the inflatable restraint steering wheel module. Refer to <u>Inflatable Restraint Steering Wheel Module Replacement</u> in SIR. 3. Disconnect C277. 4. Turn ON the ignition, with the engine OFF. 5. With a DMM, measure the voltage of the ignition 1 voltage circuit. Does the voltage measure at the specified value?	B+	Go to Step 3	Go to Step 9
3	IMPORTANT: The cruise control On/Off switch must be turned ON in order to correctly view the set/coast switch and the resume/accel switch resistance values with the DMM. 1. Turn OFF the ignition. 2. With a DMM, measure the resistance of the cruise control switch between the ignition 1 voltage circuit and the cruise control set/coast and resume/accelerate switch signal circuit at C277.	Off = O.L. On = 7.8 K ohm-8.6 K ohm Resume = 2.7 K ohm-3.0 K ohm Set = 1.2 K		

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	3. Individually activate and hold the cruise control function switches while measuring the resistance of the cruise control function switches. Do the cruise control function switch resistance values measure between the specified values?	ohm-1.3 K ohm	Go to Step 4	Go to Step 5
4	Test the cruise control set/coast and resume/accelerate switch signal circuit for a high resistance, or for a short to voltage between C277 and the powertrain control module (PCM). Refer to Circuit Testing and to Wiring Repairs in Wiring Systems. Did you find and correct the condition?	-	Go to Step 12	Go to Step 8
5	Test the cruise control set/coast and resume/accelerate switch signal circuit for a high resistance, or for a short to voltage between C277 and the cruise control switch. Refer to Circuit Testing and to Wiring Repairs in Wiring Systems. Did you find and correct the condition?	-	Go to Step 12	Go to Step 6
6	Test the cruise control ON switch signal circuit for a high resistance. Refer to Circuit Testing and Wiring Repairs in Wiring Systems. Did you find and correct the condition?	-	Go to Step 12	Go to Step 7
7	Inspect for poor connections at the harness connector of the cruise control switch. Refer to Testing for Intermittent Conditions and Poor Connections and to Connector Repairs in Wiring Systems. Did you find and correct the condition?	-	Go to Step 12	Go to Step 10
8	Inspect for poor connections at the harness connector of the PCM. Refer to Testing for Intermittent Conditions and Poor Connections and to Connector Repairs in Wiring Systems. Did you find and correct the condition?	-	Go to Step 12	Go to Step 11

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9	Repair the high resistance in the ignition 1 voltage circuit. Refer to Circuit Testing and to Wiring Repairs in Wiring Systems. Did you complete the repair?	-	Go to Step 12	-
10	Replace the cruise control switch. Refer to Cruise Control Switch Replacement . Did you complete the replacement?	-	Go to Step 12	-
11	Replace the PCM. Refer to Control Module References in Computer/Integrating Systems for replacement, setup, and programming. Did you complete the replacement?	-	Go to Step 12	-
12	1. Install the inflatable restraint steering wheel module. Refer to Inflatable Restraint Steering Wheel Module Replacement in SIR. 2. Enable the inflatable restraint steering wheel module. Refer to SIR Disabling and Enabling Zone 3 in SIR. 3. Use the scan tool in order to clear the DTCs. 4. Operate the vehicle within the Conditions for Running the DTC. Does the DTC reset?	-	Go to Step 2	System OK

DTC P0571

Circuit Description

The cruise/brake switch is a normally closed switch and the stop lamp switch is a normally open switch. When the brake pedal is released, the powertrain control module (PCM) detects a high voltage signal on the cruise/brake switch signal circuit and a low signal voltage signal on the stop lamp switch signal circuit. When the brake pedal is applied, the cruise /brake switch opens and the stop lamp switch closes. The PCM detects a low voltage signal on the cruise brake switch signal circuit and a high voltage signal on the stop lamp switch signal circuit.

DTC Descriptor

This diagnostic procedure supports the following DTC:

DTC P0571 Cruise Control Brake Switch Circuit

Conditions for Running the DTC

- DTCs P0717, P0722, and C0161 are not set.
- The engine speed is greater than 700 RPM.
- The Traction Control System (TCS) or the Antilock Brake System (ABS) are no active or have not failed.

Conditions for Setting the DTC

- The PCM detects a transition of the stop lamp switch without detecting a transition of the cruise/brake switch during a deceleration event.
- This diagnostic run continuously with the ignition ON.

Action Taken When the DTC Sets

- The PCM stores the DTC information into memory when the diagnostic runs and fails.
- The malfunction indicator lamp (MIL) will not illuminate.
- The PCM records the operating conditions at the time the diagnostic fails. The PCM stores this information in the Failure Records.

Conditions for Clearing the DTC

- A last test failed, or current DTC, clears when the diagnostic runs and does not fail.
- A history DTC will clear after 40 consecutive warm-up cycles, if no failures are reported by this or any other non-emission related diagnostic.
- Use a scan tool in order to clear the DTC.

Diagnostic Aids

In order to avoid a misdiagnosis, perform the following:

- Inspect for proper operation of the stop lamps. Refer to **Exterior Lighting Systems Description and Operation** in Lighting Systems.
- Inspect for proper adjustment of the stop lamps. Refer to **Stop Lamp Switch Adjustment** in Lighting Systems.
- For an intermittent condition, refer to **Testing for Intermittent Conditions and Poor Connections** in Wiring Systems.
- Inspect for proper adjustment of the cruise control release switch. Refer to **Cruise Release Switch Adjustment**.

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DTC P0571

Step	Action	Yes	No
Schematic Reference: <u>Cruise Control Schematics (Chevrolet)</u> or <u>Cruise Control Schematics (Pontiac)</u> Connector End View Reference: <u>Lighting Systems Connector End Views in Lighting Systems</u>			
1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to Diagnostic System Check - Vehicle in Vehicle DTC Information
2	1. Turn OFF the ignition. 2. Install a scan tool. 3. Turn ON the ignition, with the engine OFF. 4. With the scan tool, observe the Stoplamp Pedal Switch parameter in the Cruise Control Data list. Does the Stoplamp Switch parameter display Released?	Go to Step 3	Go to Step 4
3	1. Press and hold the brake pedal. 2. With the scan tool, observe the Stoplamp Pedal Switch parameter. Does the Stoplamp Pedal Switch parameter display Applied?	Go To Diagnostic Aids	Go to Step 6
4	1. Turn OFF the ignition. 2. Disconnect the cruise/brake switch. 3. Turn ON the ignition, with the engine OFF. 4. Connect a test lamp between the ignition 1 voltage circuit and a good ground. Does the test lamp illuminate?	Go to Step 5	Go to Step 11
	1. Turn OFF the ignition. 2. Connect a 3 ampere fused jumper between the ignition 1 voltage circuit and the cruise/brake switch signal		

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5	circuit. - Turn ON the ignition, with the engine OFF. - With the scan tool, observe the Stoplamp Pedal Switch parameter. Does the Stoplamp Pedal Switch parameter display Released?	Go to Step 9	Go to Step 8
6	- Turn OFF the ignition. - Disconnect the cruise/brake switch. - Turn ON the ignition, with the engine OFF. - With the scan tool, observe the Stoplamp Pedal Switch parameter. Does the Stoplamp Pedal Switch parameter display Applied?	Go to Step 9	Go to Step 7
7	Test the cruise/brake switch signal circuit for a short to voltage. Refer Circuit Testing and to Wiring Repairs in Wiring Systems. Did you find and correct the condition?	Go to Step 14	Go to Step 10
8	Test the cruise/brake switch signal circuit for the following: - Open - High resistance - Short to ground Refer Circuit Testing and to Wiring Repairs in Wiring Systems. Did you find and correct the condition?	Go to Step 14	Go to Step 10
9	Inspect for poor connections at the harness connector of the cruise/brake switch. Refer to Testing for Intermittent Conditions and Poor Connections and to Connector Repairs in Wiring Systems. Did you find and correct the condition?	Go to Step 14	Go to Step 12
10	Inspect for poor connections at the harness connector of the powertrain control module (PCM). Refer to Testing for Intermittent		

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	Conditions and Poor Connections and to Connector Repairs in Wiring Systems. Did you find and correct the condition?	Go to Step 14	Go to Step 13
11	Repair the open, the high resistance, or the short to ground in the ignition 1 voltage circuit. Refer Circuit Testing and to Wiring Repairs in Wiring Systems. Did you complete the repair?	Go to Step 14	-
12	Replace the cruise/brake switch. Refer to Cruise Release Switch Replacement in Lighting Systems. Did you complete the replacement?	Go to Step 14	-
13	Replace the PCM. Refer to Control Module References in Computer/Integrating Systems for replacement, setup, and programming Did you complete the replacement?	Go to Step 14	-
14	1. Use a scan tool in order to clear the DTCs. 2. Operate the vehicle within the Conditions for Running the DTC. Does the DTC reset?	Go to Step 2	System OK

DTC P0608**Circuit Description**

The vehicle speed signal circuit is an input to the throttle actuator control (TAC) module from the powertrain control module (PCM). The PCM provides a constant voltage signal on the vehicle speed signal circuit. The PCM creates the vehicle speed signal by internally pulsing the vehicle speed signal to ground. The TAC module uses the vehicle speed signal from the PCM, in order to determine the vehicle speed. The TAC module then sends a universal asynchronous receiver transmitter (UART) serial data message to the PCM indicating the vehicle speed that the TAC module has detected.

DTC Descriptor

This diagnostic procedure supports the following DTC:

DTC P0608 Vehicle Speed Output Circuit

Conditions for Running the DTC

- The vehicle speed is greater than 8 km/h (5 mph).

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- There are no VSS DTCs present in the PCM.
- The ignition voltage is between 9-16 volts.

Conditions for Setting the DTC

- The PCM sends a 8 km/h (5 mph) signal on the vehicle speed signal circuit to the TAC module. The TAC module sends a UART serial data message to the PCM indicating that the vehicle speed is 0 km/h (0 mph).
- The condition must be present for greater than 4 seconds.

Action Taken When the DTC Sets

- The Cruise Control System is disabled.
- The PCM stores the DTC information into memory when the diagnostic runs and fails.
- The PCM records the operating conditions at the time the diagnostic fails. The PCM displays this failure information in the Failure Records.
- The malfunction indicator lamp (MIL) will not illuminate.

Conditions for Clearing the DTC

- A history DTC will clear after 40 consecutive warm-up cycles, if no failures are reported by this or any other non-emission related diagnostic.
- A last test failed, or current DTC, clears when the diagnostic runs and does not fail.
- use a scan tool in order to clear the DTC.

Diagnostic Aids

For intermittent diagnosis, refer to **Testing for Intermittent Conditions and Poor Connections** in Wiring Systems.

DTC P0608

Step	Action	Values	Yes	No
Schematic Reference: <u>Engine Controls Schematics</u> in Engine Controls - 3.4L Connector End View Reference: <u>Engine Controls Connector End Views</u> or <u>Powertrain Control Module (PCM) Connector End Views</u> in Engine Controls - 3.4L				
1	Did you perform the Diagnostic System Check - Vehicle?	-	Go to Step 2	Go to Diagnostic System Check - Vehicle in Vehicle DTC Information

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2	1. Turn OFF the ignition. 2. Install a scan tool. 3. Raise the vehicle drive wheels. Refer to <u>Lifting and Jacking the Vehicle</u> in General Information. 4. Start the engine. 5. Place the transmission into DRIVE. 6. With a scan tool, observe the Vehicle Speed Sensor parameter in the Body and Accessories, Cruise Control data list. Does the Vehicle Speed Sensor parameter indicate any vehicle speed?	-	Go to Step 4	Go to Step 3
3	Is DTC P0717 or P0722 current in the transmission control module (TCM)?	-	Go to <u>DTC P0717</u> or <u>DTC P0722</u> in Automatic Transaxle - AF33-5	Go to Step 7
4	1. Turn OFF the ignition. 2. Disconnect the throttle actuator control (TAC) module. 3. Turn ON the ignition, with the engine OFF. 4. Measure the voltage from the vehicle speed signal circuit to a good ground. Does the voltage measure greater than the specified value?	8.5 V	Go to Step 5	Go to Step 6
5	Test the vehicle speed signal circuit for a short to voltage. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. Did you find and correct the condition?	-	Go to Step 11	Go to Step 8
	Test the vehicle speed signal circuit for an open or for a short to ground.			

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6	Refer to Circuit Testing and Wiring Repairs in Wiring Systems. Did you find and correct the condition?	-	Go to Step 11	Go to Step 7
7	Inspect for poor connections at the harness connector of the PCM. Refer to Testing for Intermittent Conditions and Poor Connections and Connector Repairs in Wiring Systems. Did you find and correct the condition?	-	Go to Step 11	Go to Step 9
8	Inspect for poor connections at the harness connector of the TAC module. Refer to Testing for Intermittent Conditions and Poor Connections and Connector Repairs in Wiring Systems. Did you find and correct the condition?	-	Go to Step 11	Go to Step 10
9	Replace the PCM. Refer to Control Module References in Computer/Integrating Systems for replacement, setup, and programming. Did you complete the replacement?	-	Go to Step 11	-
10	Replace the TAC module. Refer to Control Module References in Computer/Integrating Systems for replacement, setup, and programming. Did you complete the replacement?	-	Go to Step 11	-
11	1. Use the scan tool in order to clear the DTCs. 2. Operate the vehicle within the Conditions for Running the DTC. Does the DTC reset?	-	Go to Step 2	System OK

DTC P1574

Circuit Description

This diagnostic test functions on the assumption that a sudden decrease in vehicle speed is caused by a brake pedal application. When the powertrain control module (PCM) detects that

there is a 4.2 km/h (2.6 mph) or greater decrease in vehicle speed within 0.25 seconds and a transition of the cruise/brake switch without a transition of the stop lamp switch, the PCM sets DTC P1574.

DTC Descriptor

This diagnostic procedure supports the following DTC:

DTC P1574 Stoplamp Switch Circuit**Conditions for Running the DTC**

- DTCs P0717, P0722, and P0161 are not set.
- The engine speed is greater than 700 RPM.
- The traction control system (TCS) or the antilock brake system (ABS) are not active and have not failed.
- The vehicle speed is greater than 48 km/h (30 mph) in order to enable the diagnostic.

The diagnostic will disable when the wheel speed is less than 16 km/h (10 mph).

Conditions for Setting the DTC

- The vehicle speed decreases by at least 4.2 km/h (2.6 mph) within 0.25 seconds.
- The PCM detects a torque converter clutch (TCC) brake switch/cruise release signal transition.
- The PCM does not detect a stop lamp switch transition.

Action Taken When the DTC Sets

- The cruise control system is disabled.
- The PCM stores the DTC information into memory when the diagnostic runs and fails.
- The PCM records the operating conditions at the time the diagnostic fails. The PCM displays this failure information in the Failure Records.
- The malfunction indicator lamp (MIL) will not illuminate.

Conditions for Clearing the DTC

- A history DTC will clear after 40 consecutive warm-up cycles, if no failures are reported by this or any other non-emission related diagnostic.
- A last test failed, or current DTC, clears when the diagnostic runs and does not fail.
- use a scan tool in order to clear the DTC.

Diagnostic Aids

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In order to avoid a misdiagnosis, perform the following:

- Inspect for proper adjustment of the cruise release switch. Refer to **Cruise Release Switch Adjustment**.
- Inspect for proper operation of the stop lamps. Refer to **Exterior Lighting Systems Description and Operation** in Lighting Systems.
- Inspect for proper adjustment of the stop lamps. Refer to **Stop Lamp Switch Adjustment** in Lighting Systems.
- For an intermittent condition, refer to **Testing for Intermittent Conditions and Poor Connections** in Wiring Systems.

Test Description

The number below refers to the step number on the diagnostic table.

10: DTCs will set in the transmission control module (TCM) and the powertrain control module (PCM) when you perform this diagnostic table.

DTC P1574

Step	Action	Yes	No
Schematic Reference : <u>Cruise Control Schematics (Chevrolet)</u> or <u>Cruise Control Schematics (Pontiac)</u> Connector End View Reference: <u>Master Electrical Component List</u> in Wiring Systems			
1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u> in Vehicle DTC Information
2	1. Install a scan tool. 2. Turn ON the ignition, with the engine OFF. 3. Press the brake pedal. 4. With the scan tool, observe the Stop Lamp Pedal Switch parameter in the powertrain control module (PCM) Cruise Control data list. Does the Stop Lamp Pedal Switch parameter display Released?	Go to Step 3	Go to Diagnostic Aids
	Do the stop lamps operate properly?		Go to Stop

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3		Go to Step 5	Lamps Inoperative in Lighting Systems
4	1. Turn OFF the ignition. 2. Disconnect the throttle actuator control (TAC) module. 3. Turn ON the ignition, with the ignition OFF. 4. Connect a test lamp between the stop lamp switch signal circuit, at the female terminal side, and a good ground. Does the test lamp illuminate?	Go to Step 7	Go to Step 5
5	Test the stop lamp switch signal circuit for an open or for a high resistance. Refer to Circuit Testing and Wiring Repairs in Wiring Systems. Did you find and correct the condition?	Go to Step 10	Go to Step 6
6	Inspect for poor connections at the harness connector of the PCM. Refer to Testing for Intermittent Conditions and Poor Connections and Connector Repairs in Wiring Systems. Did you find and correct the condition?	Go to Step 10	Go to Step 9
7	Inspect for poor connections at the harness connector of the TAC module. Refer to Testing for Intermittent Conditions and Poor Connections and Connector Repairs in Wiring Systems. Did you find and correct the condition?	Go to Step 10	Go to Step 8
8	Replace the TAC module. Refer to Control Module References in Computer/Integrating Systems for replacement, setup, and programming. Did you complete the replacement?	Go to Step 10	-
9	Replace the PCM. Refer to Control Module References in Computer/Integrating Systems for replacement, setup, and programming. Did you complete the replacement?	Go to Step 10	-
	1. Use the scan tool in order to clear the DTCs in the PCM and the TCM.		

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10	2. Operate the vehicle within the Conditions for Running the DTC.		
	Does the DTC reset?	Go to Step 2	System OK

DTC P2162

Circuit Description

The vehicle speed signal circuit is an input to the throttle actuator control (TAC) module from the powertrain control module (PCM). The PCM provides a constant voltage signal on the vehicle speed signal circuit. The PCM creates the vehicle speed signal by internally pulsing the vehicle speed signal to ground. The TAC module uses the vehicle speed signal from the PCM, in order to determine the vehicle speed. The TAC module then sends a universal asynchronous receiver transmitter (UART) serial data message to the PCM indicating the vehicle speed that the TAC module has detected.

DTC Descriptor

This diagnostic procedure supports the following DTC:

DTC P2162 Vehicle Speed Sensor (VSS) Circuit 1-2 Correlation

Conditions for Running the DTC

- The vehicle is in Drive or Reverse.
- The vehicle speed is greater than 8 km/h (5 mph).
- There are no VSS DTCs present in the PCM.
- The ignition voltage is between 9-16 volts.

Conditions for Setting the DTC

- The PCM sends a 8 km/h (5 mph) signal on the vehicle speed signal circuit to the TAC module. The TAC module sends a UART serial data message to the PCM indicating that the vehicle speed is 0 km/h (0 mph).
- The condition must be present for greater than 4 seconds.

Action Taken When the DTC Sets

- The Cruise Control System is disabled.
- The PCM stores a DTC P2162 in memory.
- The PCM records the operating conditions at the time the DTC sets. The PCM displays the failure information in the Failure Records on the scan tool.

Conditions for Clearing the DTC

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- The history DTC clears after 40 malfunction free warm-up cycles.
- The DTC becomes history when the conditions for setting the DTC are no longer present.
- The PCM receives the clear code command from the scan tool.

Diagnostic Aids

For intermittent diagnosis, refer to **Testing for Intermittent Conditions and Poor Connections** in Wiring Systems.

DTC P2162

Step	Action	Yes	No
Schematic Reference: <u>Cruise Control Schematics (Chevrolet)</u> or <u>Cruise Control Schematics (Pontiac)</u> Connector End View Reference: <u>Master Electrical Component List</u> in Wiring Systems			
1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to Diagnostic System Check - Vehicle in Vehicle DTC Information
2	1. Turn OFF the ignition. 2. Install a scan tool. 3. Raise the vehicle drive wheels. Refer to Lifting and Jacking the Vehicle in General Information. 4. Start the engine. 5. Place the transmission into drive. 6. With a scan tool, observe the Vehicle Speed Sensor parameter in the powertrain control module (PCM) Cruise Control Data, data list. Does the Vehicle Speed Sensor parameter indicate any vehicle speed?	Go to Step 3	Go to Step 4
	Test the vehicle speed signal circuit for the following: • A short to ground • An Open		

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3	• A high resistance Refer to Circuit Testing and to Wiring Repairs in Wiring Systems. Did you find and correct the condition?	Go to Step 8	Go to Step 5
4	Inspect for poor connections at the harness connector of the PCM. Refer to Testing for Intermittent Conditions and Poor Connections and Connector Repairs in Wiring Systems. Did you find and correct the condition?	Go to Step 8	Go to Step 6
5	Inspect for poor connections at the harness connector of the throttle actuator control (TAC) module. Refer to Testing for Intermittent Conditions and Poor Connections and Connector Repairs in Wiring Systems. Did you find and correct the condition?	Go to Step 8	Go to Step 7
6	Replace the PCM. Refer to Control Module References in Computer/Integrating Systems for replacement, setup, and programming. Did you complete the replacement?	Go to Step 8	-
7	Replace the TAC module. Refer to Control Module References in Computer/Integrating Systems for replacement, setup, and programming. Did you complete the replacement?	Go to Step 8	-
8	1. Use the scan tool in order to clear the DTCs. 2. Operate the vehicle within the Conditions for Running the DTC. Does the DTC reset?	Go to Step 2	System OK

SYMPTOMS - CRUISE CONTROL

IMPORTANT: The following steps must be completed before using the symptom tables.

1. Before using the symptom diagnostic table, perform the **Diagnostic System Check - Vehicle** in Vehicle DTC Information in order to verify the following conditions:

- There are no DTCs set.
 - The module can communicate via the serial data link.
2. Review the system operation in order to understand the system functions. Refer to **Cruise Control Description and Operation**.

Visual/Physical Inspection

- Inspect for aftermarket devices which can affect the operation of the cruise control system. Refer to **Checking Aftermarket Accessories** in Wiring Systems.
- Inspect the accessible system components or the visible system components for obvious damage or for obvious conditions which can cause the symptom.

Intermittent

Faulty electrical connections or wiring may be the cause of intermittent conditions. Refer to **Testing for Intermittent Conditions and Poor Connections** in Wiring Systems.

Symptom List

Refer to **Cruise Control Inoperative/Malfunctioning** in order to diagnose the system.

CRUISE CONTROL INOPERATIVE/MALFUNCTIONING**Diagnostic Aids**

CAUTION: Refer to SIR Caution in Cautions and Notices.

Disable the inflatable restraint steering wheel module when performing this diagnostic table. Refer to **SIR Disabling and Enabling Zone 3** in SIR.

Perform the following in order to avoid misdiagnosis:

- Ensure that the following cruise control switches are not stuck in the engaged position:
 - On/off switch
 - Set/coast switch
 - Resume/accel switch
- Inspect for proper operation of the stop lamps. Refer to **Exterior Lighting Systems Description and Operation** in Wiring Systems.
- With a scan tool, observe the cruise control function switch parameters, in the powertrain control module (PCM) Cruise Control Data list, while rotating the steering wheel to both steering stops and individually activating each cruise control function switch separately. This will help eliminate the possibility of an internally shorted inflatable restraint steering wheel module coil.

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- For an intermittent condition, refer to **Testing for Intermittent Conditions and Poor Connections** in Wiring Systems.

Test Description

The number below refers to the step number on the diagnostic path.

6: This step tests the vehicle speed signal circuit for a short to ground, for a short to voltage, for an open, or for a high resistance between the PCM and the TAC module.

8: This step tests the ignition 1 voltage circuit for a short to ground, for an open, or for a high resistance.

9: This step tests the cruise control set/coast and resume/accelerate switch signal circuit for a short to voltage.

10: This step tests the cruise control set/coast and resume/accelerate switch signal circuit for a short to ground, for a short to voltage, for an open, or for a high resistance.

26: DTCs will set in the powertrain control module (PCM) when you perform this diagnostic table.

Cruise Control Inoperative/Malfunctioning

Step	Action	Values	Yes	No
Schematic Reference: <u>Cruise Control Schematics (Chevrolet)</u> or <u>Cruise Control Schematics (Pontiac)</u> or <u>Engine Controls Schematics</u> Connector End View Reference: <u>Master Electrical Component List</u> in Wiring Systems				
1	Did you perform the Diagnostic System Check - Vehicle?	-	Go to Step 2	Go to Diagnostic System Check - Vehicle in Vehicle DTC Information
2	1. Install a scan tool. 2. Turn ON the ignition, with the engine OFF. 3. Turn the cruise control On/Off switch OFF. 4. With the scan tool, observe the following Cruise Control parameters in the Cruise Control data list: • Cruise On/Off Switch	-		

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	• Cruise Resume/Accel. Switch • Cruise Set/Coast Switch Do any of the parameters listed above display On?		Go to Step 9	Go to Step 3
3	1. With the scan tool, observe the Cruise On/Off Switch parameter. 2. Turn the cruise control On/Off switch ON. Does the Cruise On/Off Switch parameter display On?	-	Go to Step 4	Go to Step 8
4	1. With the scan tool, observe the Cruise Set/Coast Switch parameter. 2. Press and hold the set/coast switch. Does the Cruise Set/Coast Switch parameter display On?	-	Go to Step 5	Go to Step 10
5	1. With the scan tool, observe the Cruise Resume/Accel. Switch parameter. 2. Press and hold the resume/accel switch. Does the Cruise Resume/Accel. Switch parameter display On?	-	Go to Step 6	Go to Step 10
6	1. Turn OFF the ignition. 2. Disconnect the throttle actuator control (TAC) module. 3. Turn ON the ignition, with the engine OFF. 4. With a DMM, measure the voltage of the vehicle speed signal circuit. Does the voltage measure greater than the specified value?	8.5 V	Go to Step 7	Go to Step 11
	Test the vehicle speed signal circuit for			

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7	a short to voltage. Refer to Circuit Testing and to Wiring Repairs in Wiring Systems. Did you find and correct the condition?	-	Go to Step 26	Go to Step 21
8	1. Turn OFF the ignition. 2. Remove the inflatable restraint steering wheel module. Refer to Inflatable Restraint Steering Wheel Module Replacement in SIR. 3. Disconnect C277. 4. Turn ON the ignition, with the engine OFF. 5. Connect a test lamp between the ignition 1 voltage circuit and a good ground. Does the test lamp illuminate?	-	Go to Step 10	Go to Step 22
9	IMPORTANT: The cruise control On/Off switch must be turned ON in order to correctly view the set/coast switch and the resume/accel switch resistance values with the DMM. 1. Turn OFF the ignition. 2. Remove the inflatable restraint steering wheel module. Refer to Inflatable Restraint Steering Wheel Module Replacement in SIR. 3. Disconnect C277. 4. With a DMM, measure the resistance of the cruise control switch between the ignition 1 voltage circuit and the cruise control set/coast and resume/accelerate switch signal circuit. 5. Individually activate and hold the cruise control function switches while measuring the resistance of the cruise control function	Off = O.L. On = 7.8 K-8.6 K ohm Resume = 2.7 K-3.0 K ohm Set = 1.2 K- 1.3 K ohm		

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	switches.			
	Do the cruise control function switch resistance values measure between the specified values?		Go to Step 12	Go to Step 17
10	IMPORTANT: The cruise control On/Off switch must be turned ON in order to correctly view the set/coast switch and the resume/accel switch resistance values with the DMM. 1. Turn OFF the ignition. 2. Remove the inflatable restraint steering wheel module. Refer to <u>Inflatable Restraint Steering Wheel Module Replacement</u> in SIR. 3. Disconnect C277. 4. With a DMM, measure the resistance of the cruise control switch between the ignition 1 voltage circuit and the cruise control set/coast and resume/accelerate switch signal circuit. 5. Individually activate and hold the cruise control function switches while measuring the resistance of the cruise control function switches. Do the cruise control function switch resistance values measure between the specified values?	Off = O.L. On = 7.8 K-8.6 K ohm Resume = 2.7 K-3.0 K ohm Set = 1.2 K- 1.3 K ohm		
			Go to Step 13	Go to Step 14
11	Test the vehicle speed signal circuit for an open or for a high resistance. Refer to <u>Circuit Testing</u> and to <u>Wiring Repairs</u> in Wiring Systems. Did you find and correct the condition?	-	Go to Step 26	Go to Step 20
12	Test the cruise control set/coast and resume/accel switch signal circuit for a short to voltage between C277 and the powertrain control module (PCM).	-		

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	Refer to Circuit Testing and to Wiring Repairs in Wiring Systems. Did you find and correct the condition?		Go to Step 26	Go to Step 20
13	Test the cruise control set/coast and resume/accel switch signal circuit for the following: • Open • Short to ground • Short to voltage • High resistance Refer to Circuit Testing and to Wiring Repairs in Wiring Systems. Did you find and correct the condition?	-	Go to Step 26	Go to Step 20
14	Test the ignition 1 voltage circuit between C277 and the cruise control switch for the following: • Open • Short to ground • High resistance Refer to Circuit Testing and to Wiring Repairs in Wiring Systems. Did you find and correct the condition?	-	Go to Step 26	Go to Step 15
15	Test the cruise control on switch signal circuit for the following: • Open • Short to ground • Short to voltage • High resistance Refer to Circuit Testing and to Wiring Repairs in Wiring Systems. Did you find and correct the condition?	-	Go to Step 26	Go to Step 16
	Test the cruise control set/coast and resume/accelerate switch signal circuit			

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16	between C277 and the cruise control switch for the following: • Open • Short to ground • Short to voltage • High resistance Refer to Circuit Testing and to Wiring Repairs in Wiring Systems. Did you find and correct the condition?	-	Go to Step 26	Go to Step 19
17	Test the cruise control on switch signal circuit for a short to voltage. Refer to Circuit Testing and to Wiring Repairs in Wiring Systems. Did you find and correct the condition?	-	Go to Step 26	Go to Step 18
18	Test the cruise control set/coast and resume/accelerate switch signal circuit between C277 and the cruise control switch for a short to voltage. Refer to Circuit Testing and to Wiring Repairs in Wiring Systems. Did you find and correct the condition?	-	Go to Step 26	Go to Step 19
19	Inspect for poor connections at the harness connector of the cruise control switch. Refer to Testing for Intermittent Conditions and Poor Connections and to Connector Repairs in Wiring Systems. Did you find and correct the condition?	-	Go to Step 26	Go to Step 23
20	Inspect for poor connections at the harness connector of the PCM. Refer to Testing for Intermittent Conditions and Poor Connections and to Connector Repairs in Wiring Systems. Did you find and correct the condition?	-	Go to Step 26	Go to Step 25
21	Inspect for poor connections at the harness connector of the TAC module. Refer to Testing for Intermittent Conditions and Poor Connections and to Connector Repairs in Wiring	-		

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	Systems. Did you find and correct the condition?		Go to Step 26	Go to Step 24
22	Repair the following in the ignition 1 voltage circuit: • Open • Short to ground • High resistance Refer to Wiring Repairs in Wiring Systems. Did you complete the repair?	-	Go to Step 26	-
23	Replace the cruise control switch. Refer to Cruise Control Switch Replacement . Did you complete the replacement?	-	Go to Step 26	-
24	Replace the TAC module. Refer to Control Module References in Computer/Integrating Systems for replacement, setup, and programming. Did you complete the replacement?	-	Go to Step 26	-
25	Replace the PCM. Refer to Control Module References in Computer/Integrating Systems for replacement, setup, and programming. Did you complete the replacement?	-	Go to Step 26	-
26	1. Install the inflatable restraint steering wheel module. Refer to Inflatable Restraint Steering Wheel Module Replacement in SIR. 2. Enable the inflatable restraint steering wheel module. Refer to SIR Disabling and Enabling Zone 3 in SIR. 3. Use the scan tool in order to clear the PCM DTCs. 4. Operate the Cruise Control System in order to verify the repair.	-		

Does the Cruise Control System
operate properly?

System OK

Go to **Step 2**

REPAIR INSTRUCTIONS

CRUISE CONTROL SWITCH REPLACEMENT

Removal Procedure

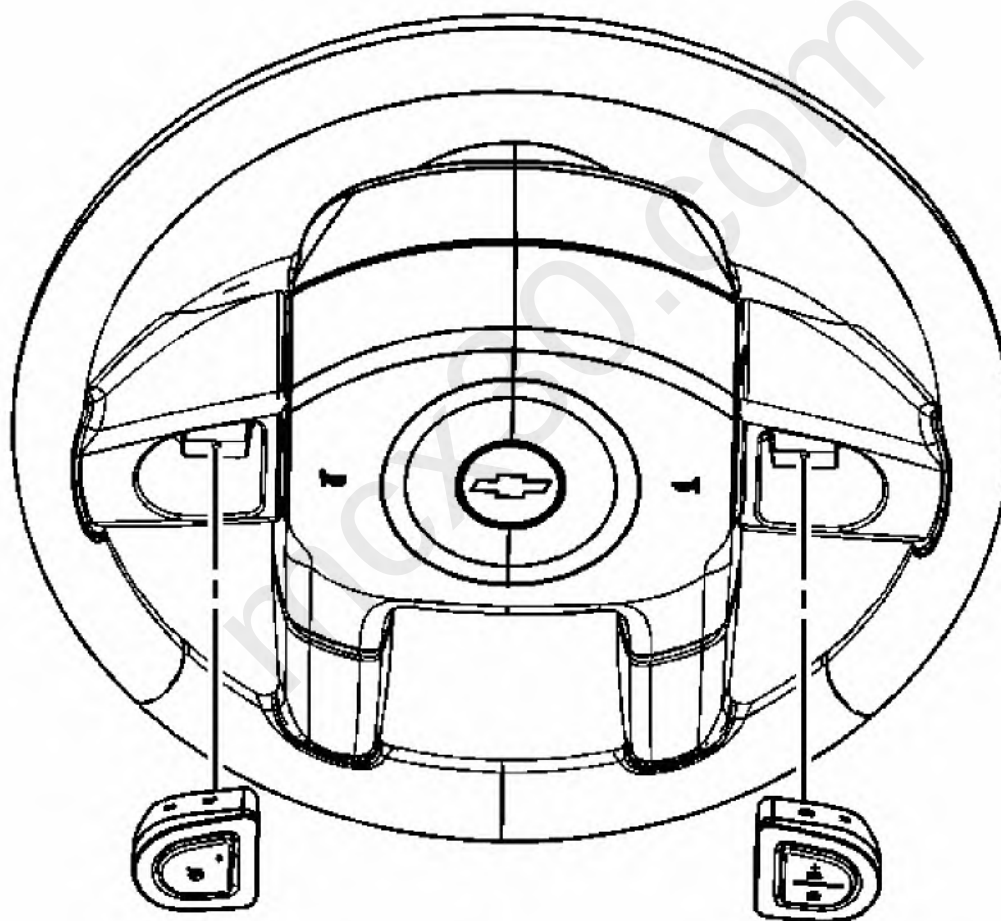


Fig. 4: View Of Cruise Control Switch Assembly
Courtesy of GENERAL MOTORS CORP.

1. Use a small flat-bladed tool to release the switch assembly from the steering wheel.
2. Disconnect the cruise switch electrical harness connector from the switch.

Installation Procedure

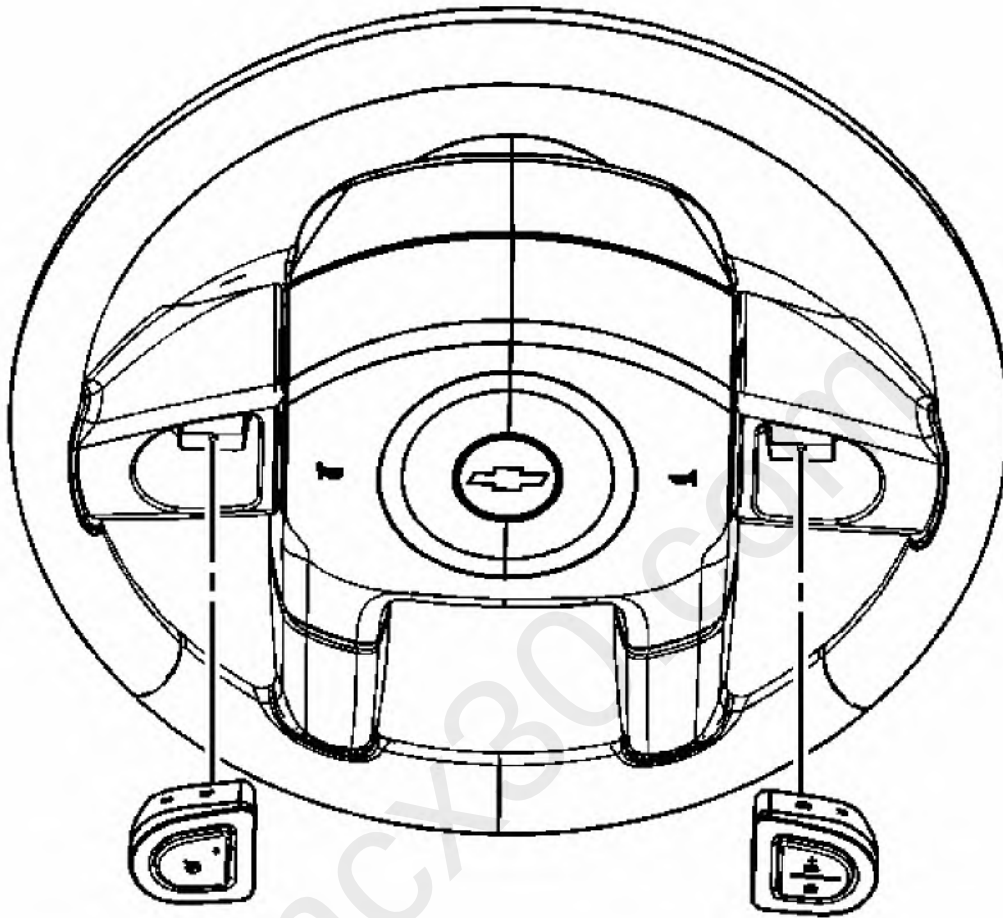


Fig. 5: View Of Cruise Control Switch Assembly
Courtesy of GENERAL MOTORS CORP.

1. Connect the switch electrical harness connector to the switch. Push in the connector until a click is heard and pull back to confirm a positive engagement.
2. Insert the cruise switch into the steering wheel and gently apply pressure to fasten the switch in the opening.

CRUISE RELEASE SWITCH ADJUSTMENT

1. Remove the instrument panel left lower closeout panel. Refer to **Closeout/Insulator Panel Replacement - Left** in Instrument Panel, Gages, and Console.

NOTE: Improper cruise control release switch adjustment may cause brake damage such as brake drag, heat buildup and excessive brake lining wear.

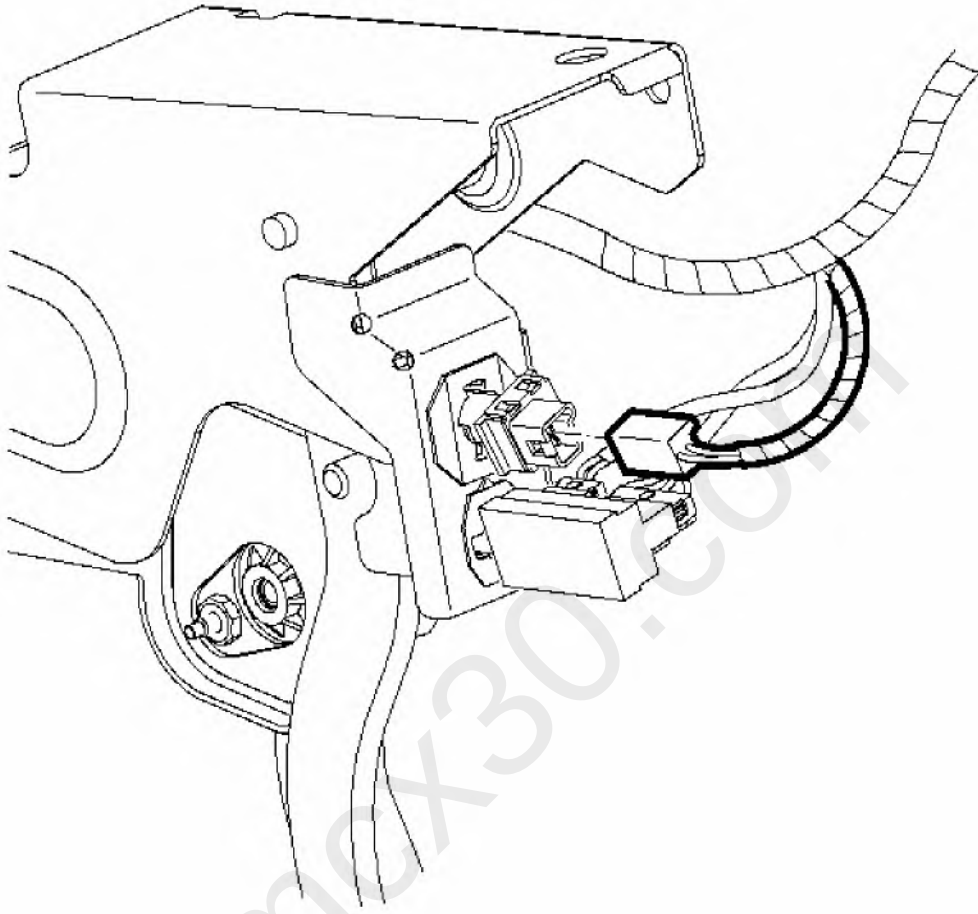


Fig. 6: View Of Cruise Brake Switch Harness Connector
Courtesy of GENERAL MOTORS CORP.

2. Disconnect the cruise brake switch harness connector.
3. Rotate the cruise brake switch counterclockwise and remove the cruise brake switch from the switch retainer.

IMPORTANT: Do not depress the brake pedal assembly during the brake switch installation. Depressing the brake pedal will cause a brake drag condition.

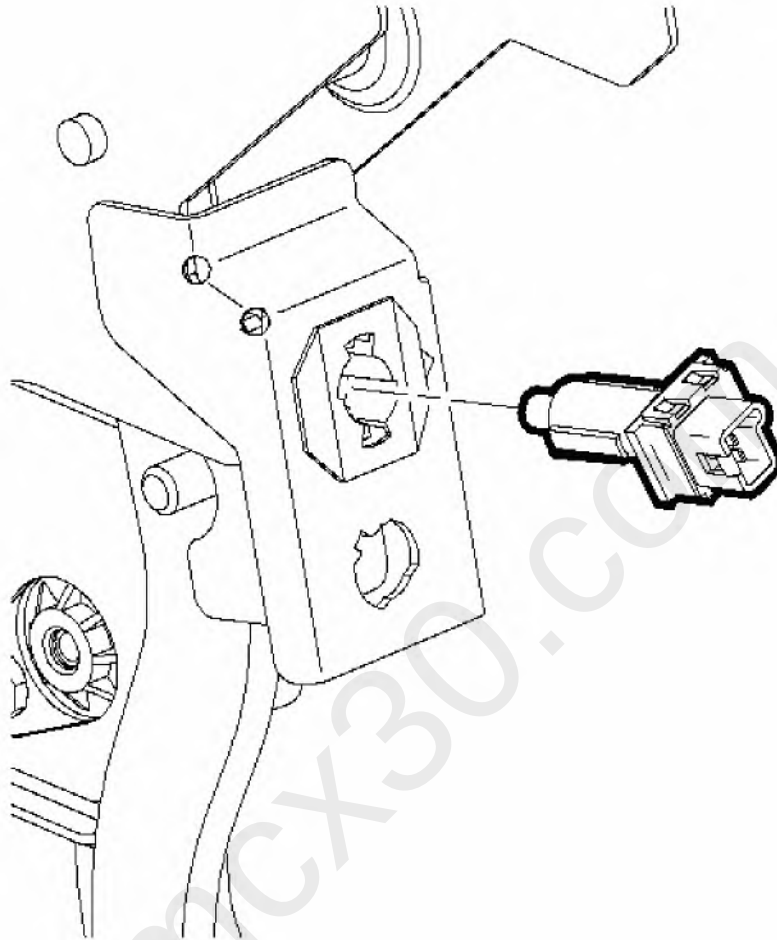


Fig. 7: View Of Cruise Brake Switch
Courtesy of GENERAL MOTORS CORP.

4. Install the cruise brake switch.
 - Position the switch into the retainer with the electrical connector index notch pointing to the 1 o'clock position.
 - Slide the switch in the retainer until the plunger is fully depressed into the barrel.
 - Rotate the switch clockwise until the travel stop has been reached, approximately 60 degrees.
 - Inspect the cruise brake switch to ensure the switch is properly locked into the switch retainer with the cruise brake switch electrical connector index notch pointing to the 3 o'clock position.

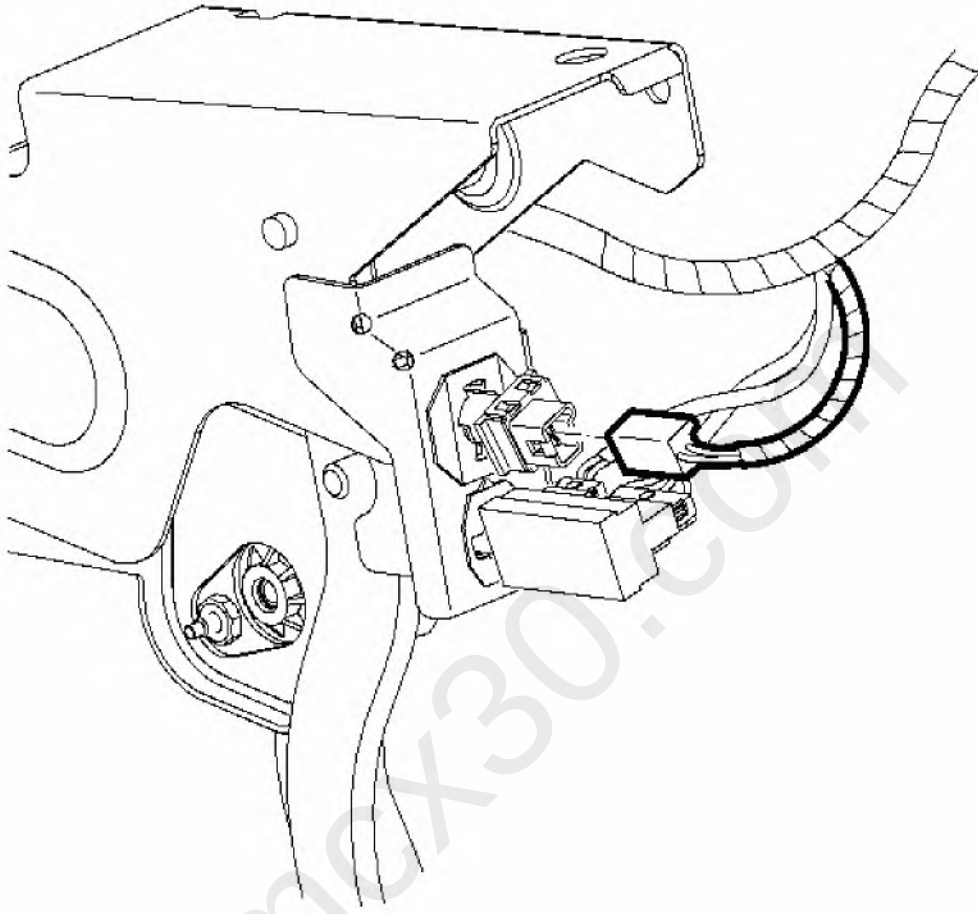


Fig. 8: View Of Cruise Brake Switch Harness Connector
Courtesy of GENERAL MOTORS CORP.

5. Connect the cruise brake switch harness connector.
6. Install the instrument panel left lower closeout panel. Refer to **Closeout/Insulator Panel Replacement - Left** in Instrument Panel, Gages, and Console.
7. Use the scan tool to monitor CRUISE BRAKE SWITCH in the engine control module (ECM) General Information data table, while depressing and releasing the brake pedal. Verify the APPLIED and RELEASED states read correctly.

CRUISE RELEASE SWITCH REPLACEMENT

Removal Procedure

1. Remove the instrument panel left lower closeout panel. Refer to **Closeout/Insulator**

Panel Replacement - Left in Instrument Panel, Gages, and Console.

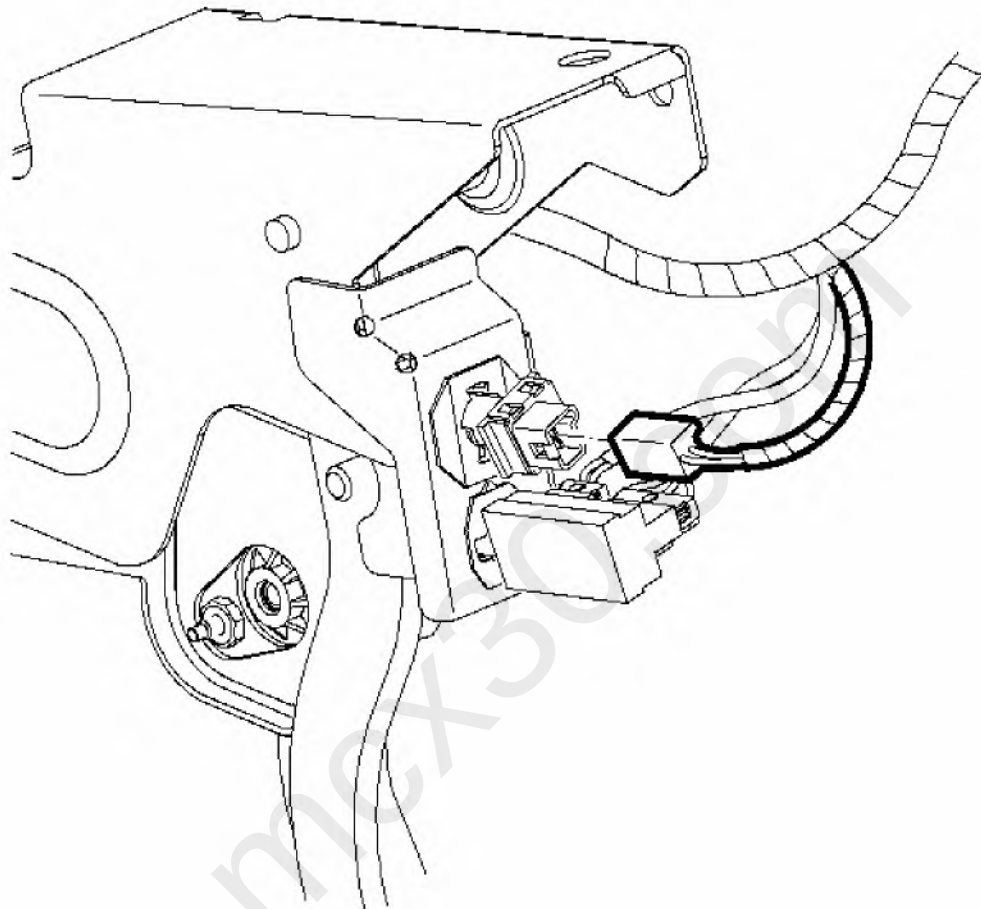


Fig. 9: View Of Cruise Brake Switch Harness Connector
Courtesy of GENERAL MOTORS CORP.

2. Disconnect the cruise brake switch connector.

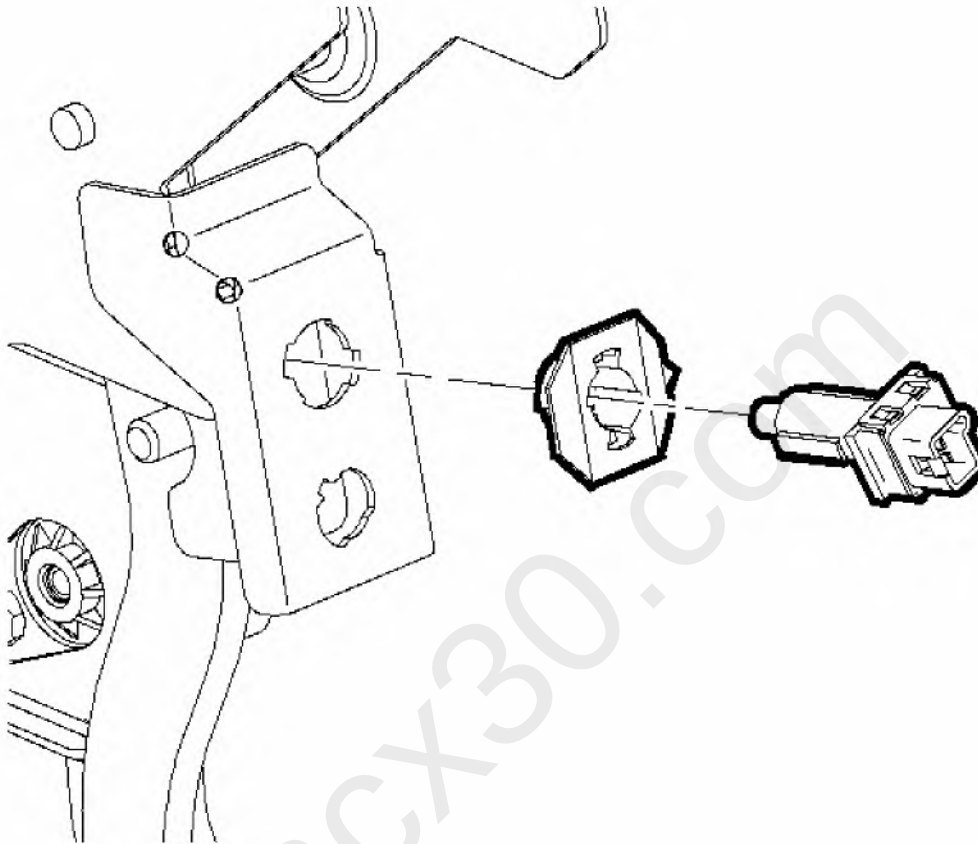


Fig. 10: View Of Cruise Brake Switch & Retainer
Courtesy of GENERAL MOTORS CORP.

3. Rotate the cruise brake switch counterclockwise and remove the cruise brake switch from the switch retainer.

IMPORTANT: Depressing the brake pedal will allow easier access of the retainer locking tabs.

4. Gently compress the locking tabs on the cruise brake retainer and remove the switch retainer from the brake pedal assembly.

Installation Procedure

IMPORTANT: Ensure that the indexing arrow is facing to the right and

the ears on the retainer are fully extended on the back side of the bracket to prevent the retainer from being pushed out.

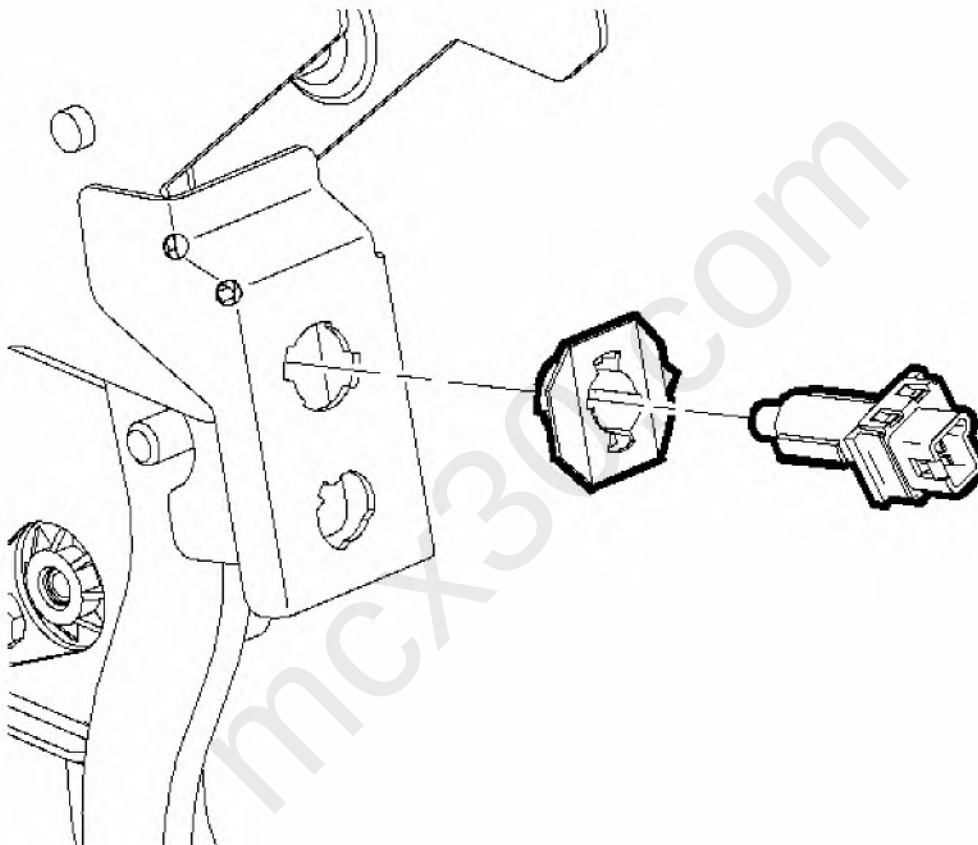


Fig. 11: View Of Cruise Brake Switch & Retainer
Courtesy of GENERAL MOTORS CORP.

1. Install the cruise brake switch retainer into the upper hole of the brake pedal assembly with the retainer arrow pointing in the 3 o'clock position.

IMPORTANT: Do not depress the brake pedal assembly during the cruise brake switch installation. Depressing the brake pedal during the cruise brake switch installation will cause a brake drag condition.

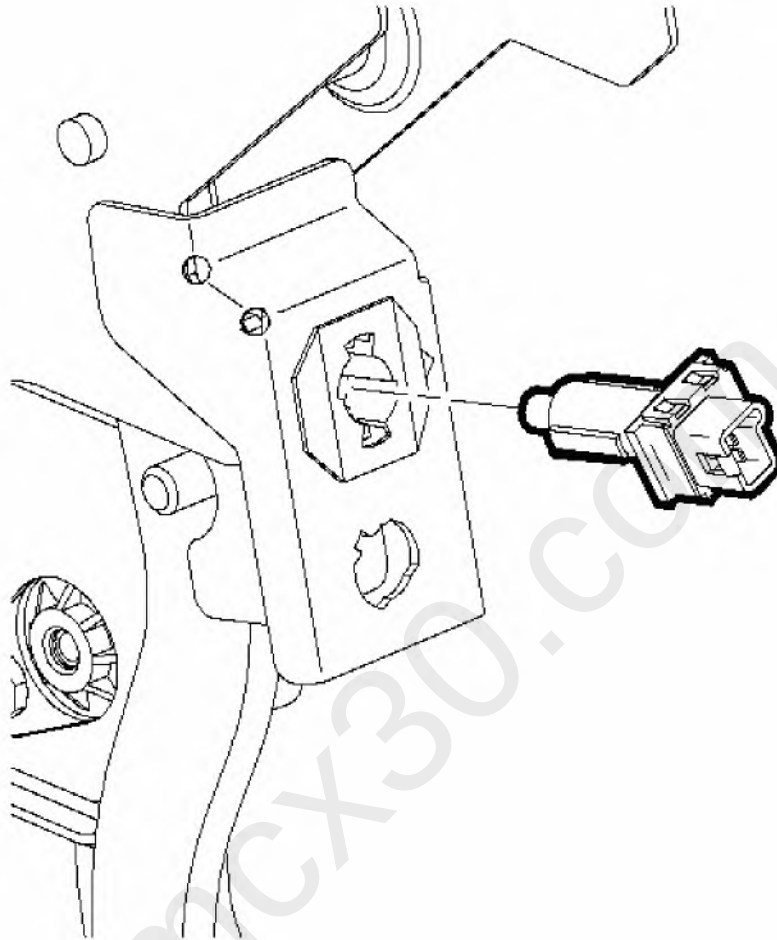


Fig. 12: View Of Cruise Brake Switch
Courtesy of GENERAL MOTORS CORP.

2. Install the cruise brake switch.
 - Position the switch into the retainer with the electrical connector index notch pointing to the 1 o'clock position.
 - Slide the switch in the retainer until the plunger is fully depressed into the barrel.
 - Rotate the switch clockwise until the travel stop has been reached, approximately 60 degrees.
 - Inspect the cruise brake switch to ensure the switch is properly locked into the switch retainer with the cruise brake switch electrical connector index notch pointing to the 3 o'clock position.

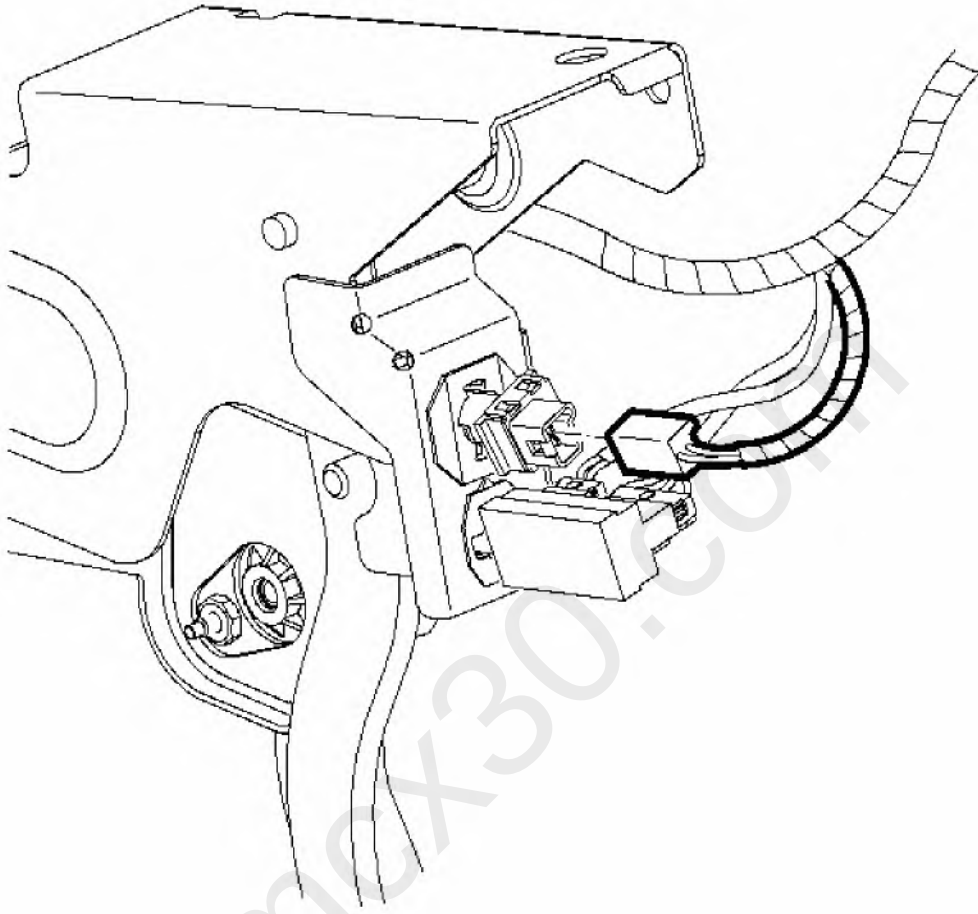


Fig. 13: View Of Cruise Brake Switch Harness Connector
Courtesy of GENERAL MOTORS CORP.

3. Connect the cruise brake switch harness connector.
4. Install the instrument panel left lower closeout panel. Refer to **Closeout/Insulator Panel Replacement - Left** in Instrument Panel, Gages, and Console.
5. Use the scan tool to monitor CRUISE BRAKE SWITCH in the engine control module (ECM) General Information data table, while depressing and releasing the brake pedal. Verify the APPLIED and RELEASED states read correctly.

DESCRIPTION AND OPERATION

CRUISE CONTROL DESCRIPTION AND OPERATION

Cruise control is a speed control system that maintains a desired vehicle speed under normal

driving conditions at vehicle speeds above 40 km/h (25 mph). Steep grades may cause variations in the selected vehicle speeds.

The following are the main components of the Cruise Control System:

- The accelerator pedal
- The On/Off switch
- The powertrain control module (PCM)
- The + RES switch
- The - SET switch
- The stop lamp switch
- The cruise/brake switch
- The throttle actuator control (TAC) module
- The TAC motor
- The vehicle speed sensor (VSS)

Cruise Control Engaged

The Cruise Control System will engage and adjust vehicle speeds, based on the activation of the following cruise control switches:

- On/off
- + RES
- - SET

The powertrain control module (PCM) monitors the cruise control set/coast and resume/accelerate switch signal circuit in order to determine when to capture and maintain the vehicle speed. The PCM monitors the vehicle speed sensor (VSS) signal circuit in order to determine the vehicle speed. The PCM uses the throttle actuator control (TAC) module and the TAC motor in order to maintain the vehicle speed. For further review of the TAC System, refer to **Throttle Actuator Control (TAC) System Description** in Engine Controls - 3.4L.

The cruise control switches are located on the steering wheel.

Ignition voltage is supplied to the cruise control switch from the 2 ampere CRUISE fuse, located in the instrument panel (I/P) fuse block. The cruise control function switches are arranged in a resistive ladder design, with each cruise control function switch having a different resistance value. The PCM detects a specific voltage value that is associated with the cruise control function switch being activated. When the normally open cruise control On/Off switch is turned ON, the switch closes and the PCM detects a predetermined voltage signal on the cruise control cruise control set/coast and resume/accel switch signal circuit

indicating that the On/Off switch is active. Similarly, when the resume/accel switch or the set/coast switch are activated, the PCM detects the predetermined voltage signal on the cruise control set/coast and resume/accel switch signal circuit. To engage the Cruise Control System, turn the Cruise Control System ON by momentarily activating the cruise On/Off button On and momentarily activating the set/coast switch. The PCM will engage the Cruise Control System and the TAC module will record the vehicle speed. The set/coast switch or the resume/accel switch will remain inactive when the PCM has not received the predetermined voltage signal from the On/Off switch. Pressing the accelerator pedal, while the Cruise Control System is engaged, will allow the driver to override the Cruise Control System in order to accelerate the vehicle beyond the current set vehicle speed. When the accelerator pedal is released, the vehicle will decelerate and resume the current set vehicle speed. The driver can also override the current set vehicle speed via the set/coast switch and the resume/accel switch. When the Cruise Control System is engaged, activating and holding the set/coast switch will allow the vehicle to decelerate from the current set vehicle speed without deactivating the Cruise Control System. When the set/coast switch is released, the vehicle will maintain the current vehicle speed. When the Cruise Control System is engaged, momentarily activating the set/coast switch will allow the vehicle to decelerate at 1.6 km/h (1 mph) increments for each time that the set/coast switch is activated, with the minimum vehicle speed being 37 km/h (23 mph). Activating and holding the resume/accel switch, when the Cruise Control System is engaged, will allow the vehicle to accelerate to a greater vehicle speed than the current set vehicle speed. When the resume/accel switch is released, the vehicle will maintain the current vehicle speed. When the Cruise Control System is engaged, momentarily activating the resume/accel switch will allow the vehicle to accelerate at 1.6 km/h (1 mph) increments for each time that the resume/accel switch is pressed, with the maximum vehicle speed total of 16 km/h (10 mph) over the current set vehicle speed. Momentarily activating the resume/accel switch will recall the previous vehicle speed, after the Cruise Control System is disengaged by pressing the brake pedal.

Cruise Control Disengaged

The powertrain control module (PCM) disengages the cruise control operation based on the information received from the throttle actuator control (TAC) module. The TAC module and the PCM monitors the signal circuits of the following switches:

- The On/Off switch
- The cruise/brake switch
- The stop lamp switch

The cruise/brake switch and the stop lamp switch are incorporated into an assembly and are mounted to the brake pedal bracket. Pressing the brake pedal while the cruise control is engaged will disengage the Cruise Control System. The PCM monitors the stop lamp switch signal circuit and the TAC module monitors the TCC brake switch/cruise control release signal circuit. When the brake pedal is pressed, the normally closed cruise/brake switch opens and the normally open stoplamp switch closes. The PCM detects a high signal

voltage on the stop lamp switch signal circuit and the TAC module detects a low signal voltage on the TCC brake switch/cruise control release signal circuit. The PCM sends a UART serial data message to the TAC module indicating the status of the stop lamp switch. The Cruise Control System will also disengage when the cruise control On/Off switch is turned off. The vehicle speed stored in the memory of the TAC module will be erased when the cruise control On/Off switch is turned to off, or the ignition switch is turned off.

The Cruise Control System will disengage when the PCM detects that the driver has the accelerator pedal override active for approximately 60 seconds.

Cruise Control Inhibited

The powertrain control module (PCM) inhibits the cruise control operation when any of the following conditions exist:

- A Cruise Control System related DTC has been set.
- The vehicle speed is less than 40 km/h (25 mph).
- The vehicle is in PARK, REVERSE, NEUTRAL, or 1st gear.
- The engine RPM too low.
- The engine RPM is too high.
- The vehicle speed is too high.
- The system voltage is not between 6-16 volts.
- The Antilock Brake System (ABS)/Traction Control System (TCS) is active for more than 2 seconds.