

2006 Chevrolet HHR LT

2006 ACCESSORIES & EQUIPMENT Cruise Control - HHR

2006 ACCESSORIES & EQUIPMENT

Cruise Control - HHR

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

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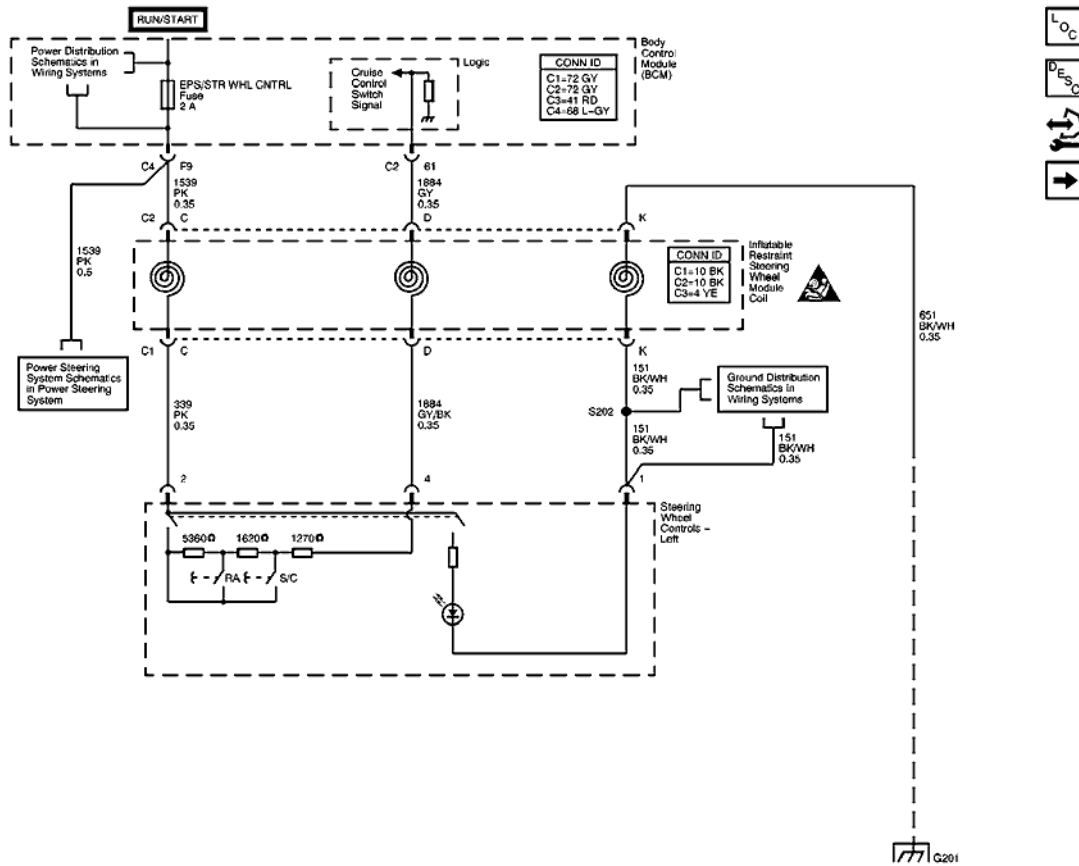


Fig. 1: Power, Ground, and Switches
Courtesy of GENERAL MOTORS CORP.

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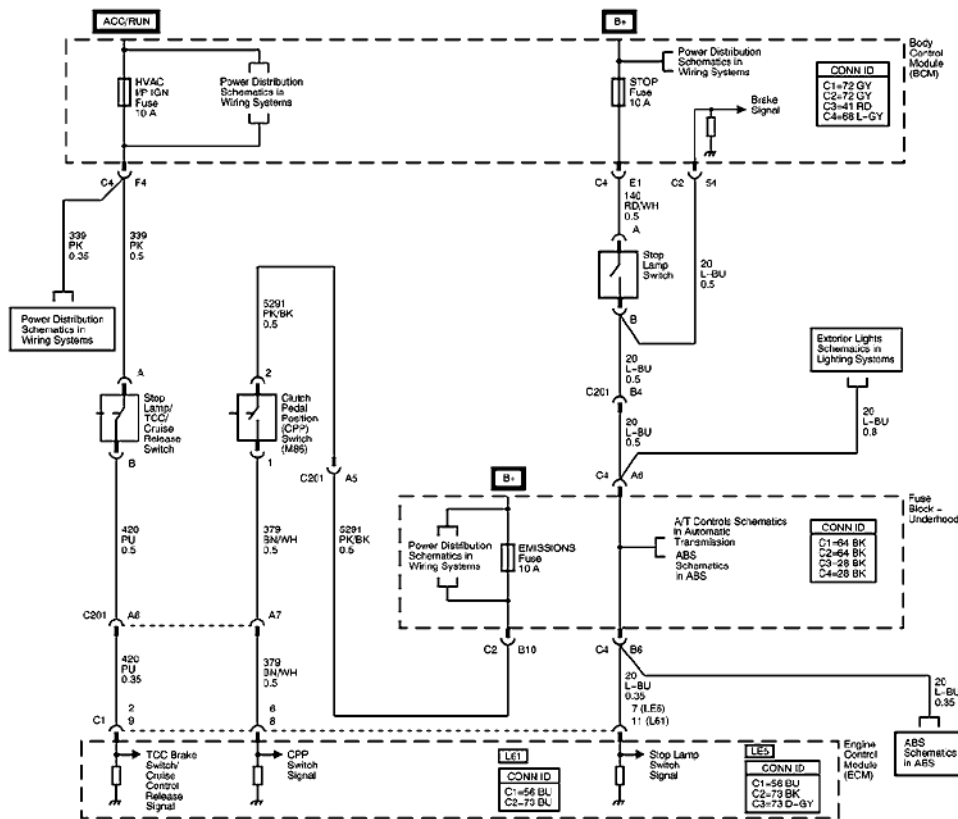
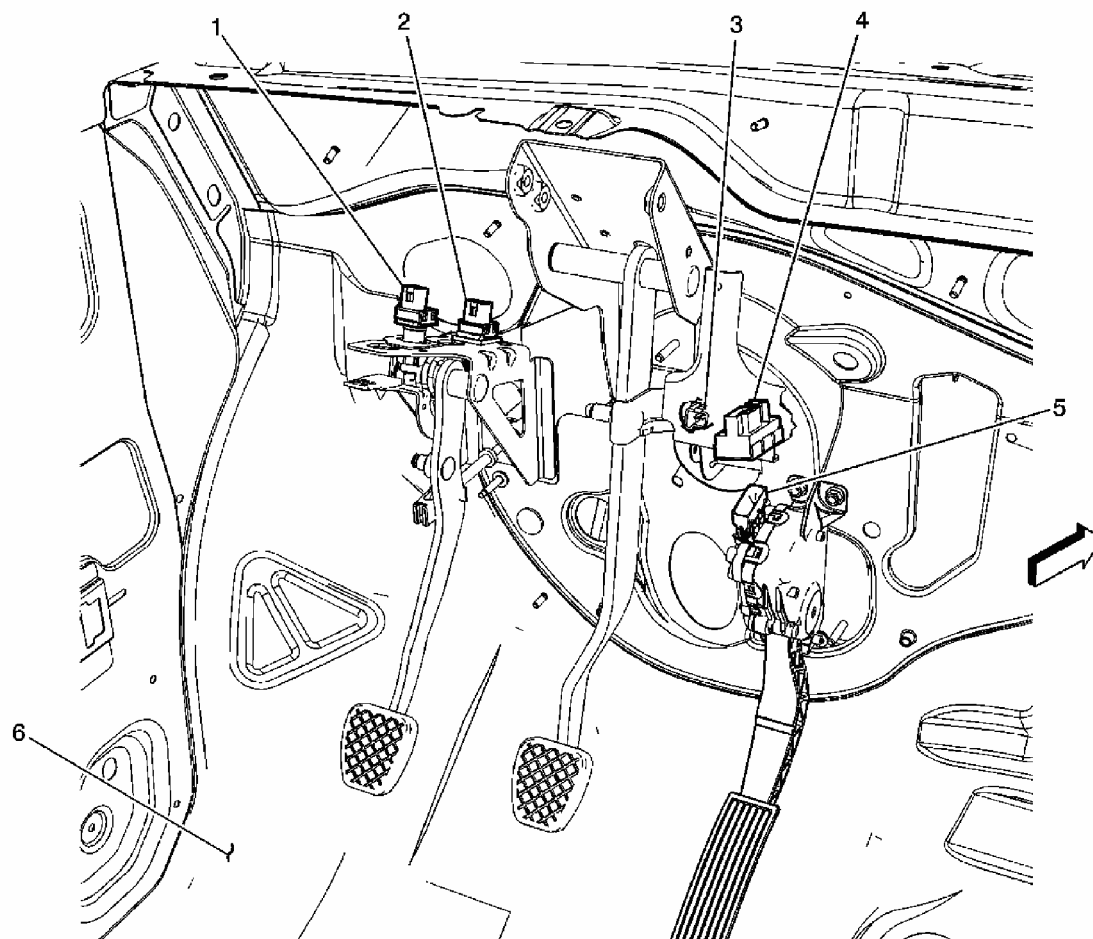


Fig. 2: Clutch Pedal Position Switch and Stop Lamp Switch
 Courtesy of GENERAL MOTORS CORP.

COMPONENT LOCATOR

CRUISE CONTROL COMPONENT VIEWS

**Fig. 3: Pedal Assemblies**

Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 3

Callout	Component Name
1	Clutch Pedal Position (CPP) Switch (M86)
2	Clutch Start Switch (M86)
3	Stop Lamp Switch
4	Stop Lamp/Torque Converter Clutch (TCC) Switch/Cruise Release Switch
5	Accelerator Pedal Position (APP) Sensor
6	Floor Panel

CRUISE CONTROL CONNECTOR END VIEWS

Clutch Pedal Position (CPP) Switch (M86)

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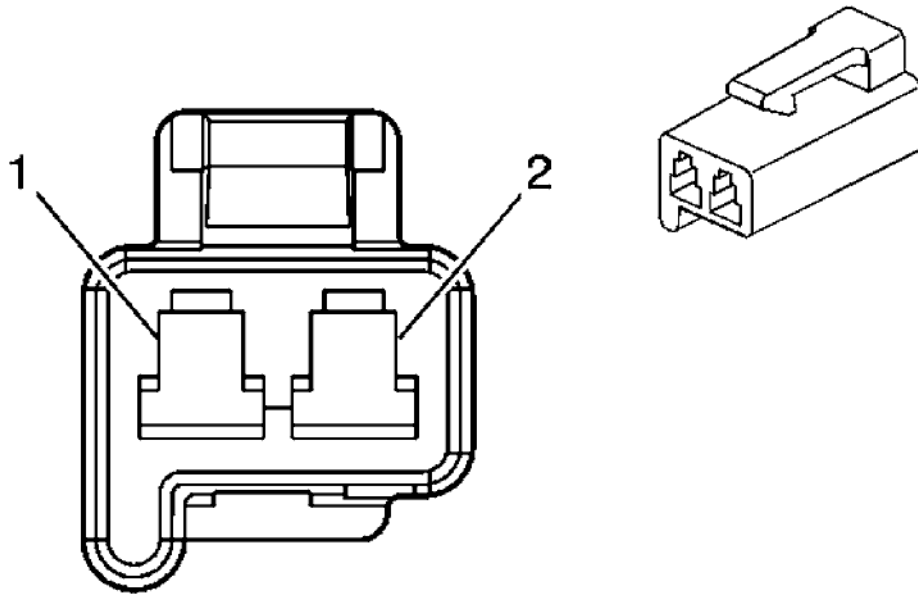


Fig. 4: Clutch Pedal Position (CPP) Switch (M86) Connector
Courtesy of GENERAL MOTORS CORP.

Cruise Control Connector End Views

Connector Part Information

- OEM: 15479480
- Service: 88988317
- Description: 2-Way F Micro-Pack 280 (L-GY)

Terminal Part Information

- Pins:
- Terminal:
- Core/Insulation Crimp:
- Release Tool/Test Probe:

Clutch Pedal Position (CPP) Switch (M86)

Pin	Wire Color	Circuit No.	Function
1	BN/WH	379	Cruise Control Clutch Pedal Position Switch Signal
2	PK/BK	5291	Engine Main Relay Fused Control (2)

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Stop Lamp/TCC/Cruise Release Switch

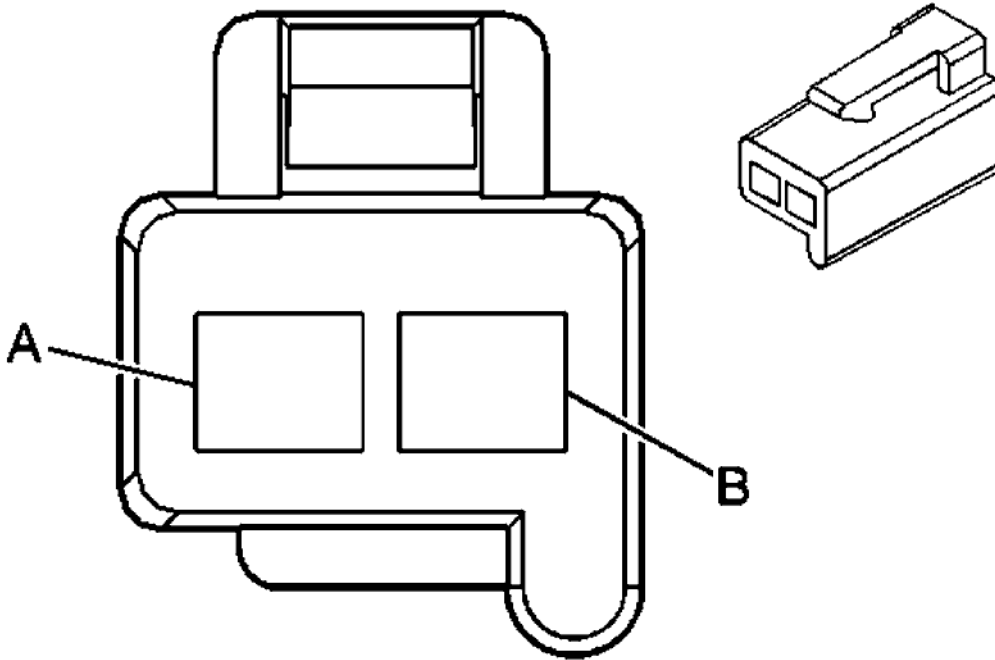


Fig. 5: Stop Lamp/TCC/Cruise Release Switch Connector
Courtesy of GENERAL MOTORS CORP.

Cruise Control Connector End Views

Connector Part Information

- OEM: 12041433
- Service: 12126463
- Description: 2-Way F Metri-Pack 280 Series (BK)

Terminal Part Information

- Pins:
- Terminal:
- Core/Insulation Crimp:
- Release Tool/Test Probe:

Stop Lamp/TCC/Cruise Release Switch

Pin	Wire Color	Circuit No.	Function

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A	PK	339	Ignition 1 Voltage
B	PU	420	TCC Brake Switch/Cruise Control Release Signal

Stop Lamp Switch

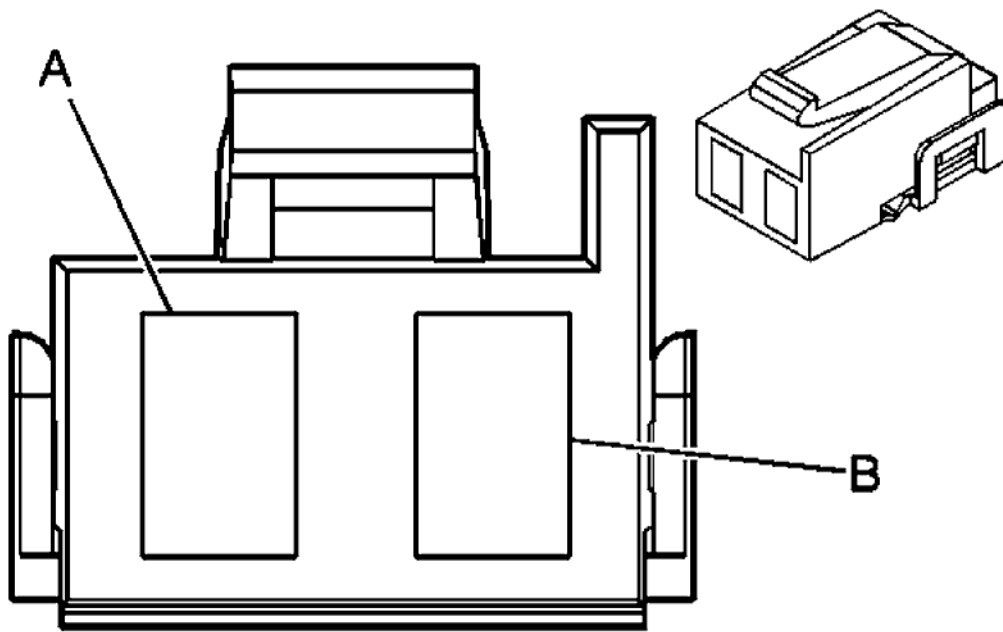


Fig. 6: Stop Lamp Switch Connector
Courtesy of GENERAL MOTORS CORP.

Cruise Control Connector End Views

Connector Part Information

- OEM: 12033701
- Service: 12117346
- Description: 2-Way F Metri-Pack 480 Series (GY)

Terminal Part Information

- Pins:
- Terminal:
- Core/Insulation Crimp:
- Release Tool/Test Probe:

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Stop Lamp Switch

Pin	Wire Color	Circuit No.	Function
A	RD/WH	140	Battery Positive Voltage
B	L-BU	20	Stop Lamp Supply Voltage
	L-BU	20	Stop Lamp Supply Voltage

Inflatable Restraint Steering Wheel Module Coil C1

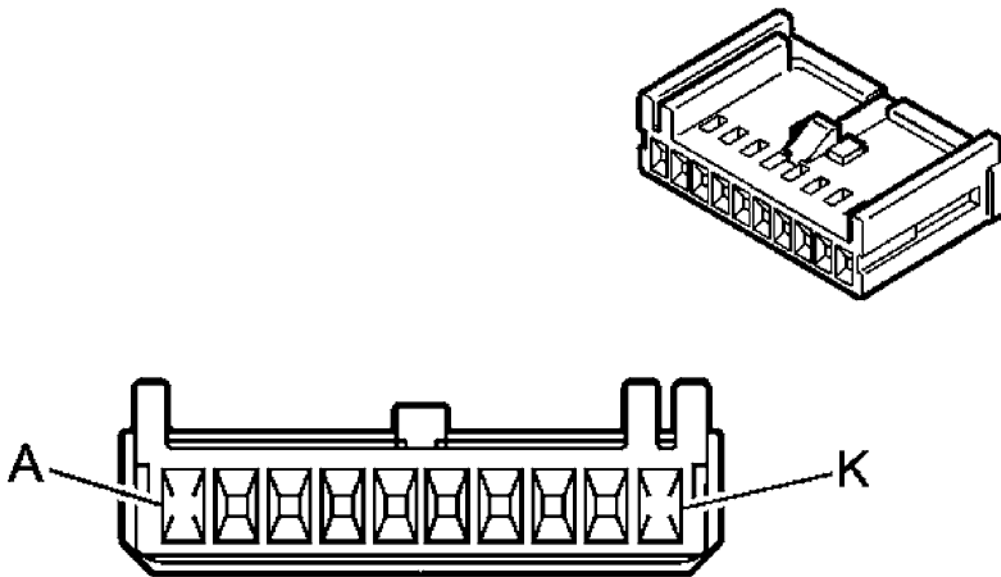


Fig. 7: Inflatable Restraint Steering Wheel Module Coil C1 Connector
Courtesy of GENERAL MOTORS CORP.

Cruise Control Connector End Views

Connector Part Information

- OEM: 1539433
- Service: 22710638
- Description: 10-Way F Micro-Pack 64 Series (BK)

Terminal Part Information

- Pins:
- Terminal:
- Core/Insulation Crimp:

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- Release Tool/Test Probe:

Inflatable Restraint Steering Wheel Module Coil C1

Pin	Wire Color	Circuit No.	Function
A-B	-	-	Not Used
C	PK	339	Run/Crank Ignition 1 Voltage
D	GY/BK	1884	Cruise Control Set/Coast/Resume/Accelerate Switch Signal
E	D-BU	1796	Steering Column Radio Control Signal (UK3)
F	WH/BK	644	10-Volt Reference (UK3)
G	GY	8	Instrument Panel Lamp Supply Voltage (1)
H	D-GN/WH	1358	Driver Information Center Switch Signal
J	TN	28	Horn Relay Control
K	BK/WH	151	Signal Ground

Inflatable Restraint Steering Wheel Module Coil C2

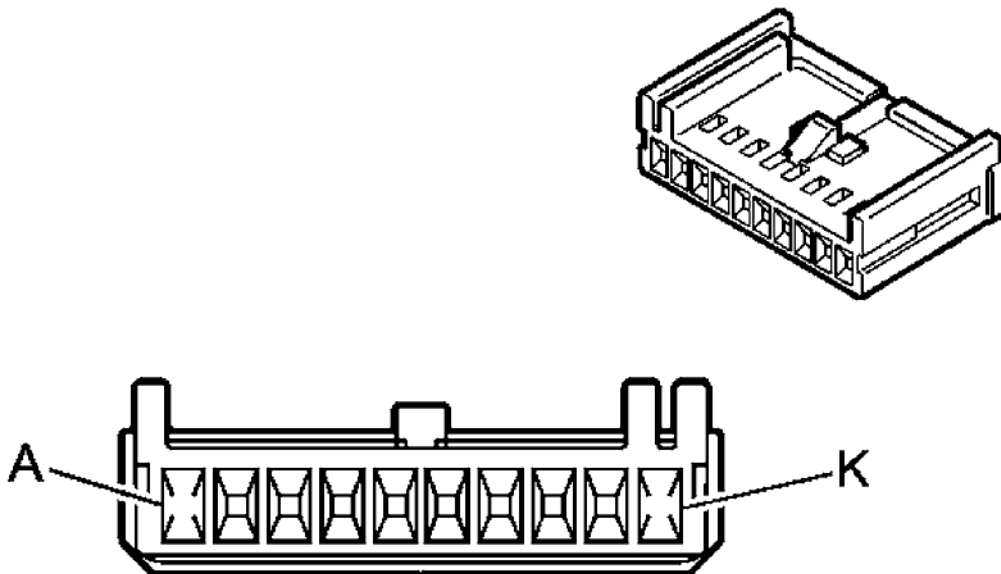


Fig. 8: Inflatable Restraint Steering Wheel Module Coil C2 Connector
Courtesy of GENERAL MOTORS CORP.

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Cruise Control Connector End Views

Connector Part Information

- OEM: 1539433
- Service: 22710638
- Description: 10-Way F Micro-Pack 64 Series (BK)

Terminal Part Information

- Pins:
- Terminal:
- Core/Insulation Crimp:
- Release Tool/Test Probe:

Inflatable Restraint Steering Wheel Module Coil C2

Pin	Wire Color	Circuit No.	Function
A-B	-	-	Not Used
C	PK	1539	Run/Crank Ignition 1 Voltage
D	GY	1884	Cruise Control Set/Coast/Resume/Accelerate Switch Signal
E	D-BU	1796	Steering Column Radio Control Signal (UK3)
F	WH/BK	644	10-Volt Reference (UK3)
G	GY	8	Instrument Panel Lamp Supply Voltage (1)
H	D-GN/WH	1358	Driver Information Center Switch Signal
J	TN	28	Horn Relay Control
K	BK/WH	651	Signal Ground

DIAGNOSTIC INFORMATION AND PROCEDURES

DIAGNOSTIC CODE INDEX

DIAGNOSTIC CODE INDEX

DTC	Description
DTC B3794	Cruise Control Function Request Circuit
DTC P0575	Cruise Control Switch Signal Circuit
DTC P0719	Brake Switch Circuit Low Voltage
DTC P0724	Brake Switch Circuit High Voltage
DTC P1574	Stoplamp Switch Circuit

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.
- 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

The scan tool data lists contain all of the cruise control related parameters that are available on the scan tool. The parameters in the list are arranged in alphabetical order. The data list column indicates the location of the parameter within the scan tool menu selections.

Use the scan tool data lists as directed by a diagnostic table or in order to supplement the diagnostic procedures. Begin all of the diagnostic procedures with **Diagnostic System Check - Vehicle** in Vehicle DTC Information.

Use the scan tool data lists only after the following is determined:

- There is no published DTC procedure nor published symptom procedure for the customer concern.
- The DTC or symptom procedure indicated by the diagnostic system check does not resolve the customer concern.

The typical data values are obtained from a properly operating vehicle under the conditions specified in the first row of the scan tool data list table. Comparison of the parameter values from the suspect vehicle with the typical data values may reveal the source of the customer concern.

Body and Accessories

Scan Tool Parameter	Data List	Units Displayed	Typical Data Value
Operating Conditions: Ignition ON/Engine Idling at Normal Operating Temperature/Vehicle is in Park or Neutral/Cruise On/Off Switch is Turned Off			
Battery Voltage Signal	BCM Data	Volts	Varies
Cruise Cancel Switch	BCM Data	On/Off	Off
Cruise Control Active	ECM Data	No/Yes	No
Cruise Control Switch	BCM Data	Off/On/Error/Resume/Set	Off
Cruise Control Switch	BCM Data	Volts	0 Volts
Cruise Disengage 1-8 History	ECM Data	The last reason for cruise	Varies

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		control disengagement	
Cruise On/Off Switch	ECM Data	On/Off	Off
Cruise Resume/Accel. Switch	ECM Data	On/Off	Off
Cruise Set Switch	ECM Data	Active/Inactive/Invalid	Inactive
Engine Speed	ECM Data	RPM	Varies
Ignition 1 Signal	ECM Data	Volts	Varies
Stoplamp Pedal Switch	ECM Data	Applied/Released	Released
TCC/Cruise Brake Pedal	ECM Data	Applied/Released	Released
Vehicle Speed Sensor	ECM Data	km/h (mph)	0 km/h (0 mph)

Engine - 2.2L (L61)

Scan Tool Parameter	Data List	Units Displayed	Typical Data Value
Operating Conditions: Ignition ON/Engine Idling at Normal Operating Temperature/Vehicle is in Park or Neutral/Cruise On/Off Switch is Turned Off			
Cruise Control Active	Cruise Control Data TAC Data	Yes/No	No
Cruise Disengage (1-8) History	Cruise Control Data	Last reason for cruise control disengagement	Varies
Cruise On/Off Switch	Cruise Control Data	On/Off	Off
Cruise Resume/Accel. Switch	Cruise Control Data	On/Off	Off
Cruise Set Switch	Cruise Control Data	Active/Inactive/Invalid	Inactive
Engine Speed	Cruise Control Data TAC Data	RPM	Varies
Ignition 1 Signal	Cruise Control Data TAC Data	Volts	Varies
Reduced Engine Power	TAC Data	Active/Inactive	Inactive
Stoplamp Pedal Switch	Cruise Control Data TAC Data	Applied/Released	Released
TCC/Cruise Brake Pedal	Cruise Control Data	Applied/Released	Released
Traction Control Status	TAC Data	Active/Inactive	Inactive
	Cruise Control		

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Vehicle Speed Sensor	Data TAC Data	km/h (mph)	0
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Engine - 2.4L

Scan Tool Parameter	Data List	Units Displayed	Typical Data Value
Operating Conditions: Ignition ON/Engine Idling at Normal Operating Temperature/Vehicle is in Park or Neutral/Cruise On/Off Switch is Turned Off			
CPP Switch (If Equipped)	TAC Data	Applied/Released	Released
Cruise Control Active	TAC Data	Yes/No	No
Engine Speed	Cruise Control Data	RPM	Varies
Ignition 1 Signal	Cruise Control Data	Volts	Varies
Reduced Engine Power	TAC Data	Active/Inactive	Inactive
TCC/Cruise Brake Pedal	TAC Data	Applied/Released	Released
Vehicle Speed Sensor	Cruise Control Data	km/h (mph)	0

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. On vehicles equipped with a 2.0L engine, a powertrain control module (PCM) is used. On vehicles equipped with a 2.2L engine, an engine control module (ECM) is used.

Battery Voltage Signal

The scan tool displays 6-18 Volts. The body control module (BCM) monitors the ignition voltage.

Clutch Pedal Switch

The scan tool displays Applied or Released. The PCM monitors the clutch pedal position (CPP) switch signal circuit. An open switch is displayed as Applied.

CPP Switch

The scan tool displays Applied or Released. The ECM monitors the clutch pedal position (CPP) switch signal circuit. An open switch is displayed as Applied.

Cruise Control Active

The scan tool displays Yes or No. The ECM/PCM determines the current status of the

cruise control operation. An operating cruise control system is displayed as Yes.

Cruise Control Switch

The scan tool displays Off/On/Error/Resume/Set. The body control module (BCM) monitors the cruise control set/coast and resume/accel switch signal circuit in order to determine the status of the cruise control switch.

Cruise Control Switch

The scan tool displays 0-5 Volts. The BCM 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 listed values are voltage values from a known good cruise control switch. Off = 0.0 Volts/On = 0.6 Volts/Resume = 1.5 Volts/Set = 3.0 Volts.

Cruise Disengage (1-8) History

The scan tool displays the last 8 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/Off. This is the state of the cruise control On/Off switch as detected by the ECM/PCM. An active switch is displayed as On.

Cruise Resume/Accel Switch

The scan tool displays On or Off. This is the state of the resume/accel switch as detected by the ECM/PCM. An active cruise resume and accel switch is displayed as On. The cruise control On/Off switch must be On to view the parameter correctly.

Cruise Set/Coast Switch

The scan tool displays On or Off. This is the state of the cruise set switch as detected by the ECM/PCM. An active cruise set switch is displayed as On. The cruise control On/Off switch must be On to view the parameter correctly.

Engine Speed

The scan tool displays 0 to 9999 RPM. This is the engine RPM as monitored by the ECM/PCM. The ECM/PCM monitors the crankshaft position (CKP) signal circuit in order to determine the engine RPM.

Ignition 1 Signal

The scan tool displays 0 to 25.5 Volts. The ECM/PCM monitors the voltage of the

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ignition 1 voltage circuit.

Initial Brake Apply Signal

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

Reduced Engine Power

The scan tool displays Active or Inactive. When the ECM/PCM detects that a reduced engine power condition exists, the scan tool displays Active.

Stop Lamp Pedal Switch

The scan tool displays Applied or Released. The ECM/PCM monitors the stop lamp pedal switch signal circuit. An activated brake pedal is displayed as Applied.

TCC/Cruise Brake Pedal Switch

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

Traction Control Status

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

Vehicle Speed Sensor

The scan tool displays 0-255 km/h (0-155 mph). The ECM/PCM monitors the vehicle speed sensor signal 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

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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.

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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

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the Accel. switch.

Injector Disable

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

Low Speed

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.

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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.

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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 B3794

Circuit Description

CAUTION: Refer to SIR Caution in Cautions and Notices.

Disable the inflatable restraint steering wheel module when performing this diagnostic table.

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Refer to **SIR Disabling and Enabling Zone 3** in SIR.

The cruise control switch is an input to the body control module (BCM). The BCM monitors the cruise control set/coast and resume/accelerate switch signal circuit in order to detect when the driver has requested to perform a cruise control function. The BCM detects a specific voltage signal on the cruise control set/coast and resume/accelerate switch signal circuit when a switch is applied.

DTC Descriptor

This diagnostic procedure supports the following DTC:

DTC B3794 Cruise Control Function Request Circuit

This vehicle has DTCs which include DTC Symptoms.

DTC B3794

DTC Symptom	DTC Symptom Descriptor
08	Signal Invalid

Conditions for Running the DTC

- The cruise switch is ON.
- The ignition is ON.

Conditions for Setting the DTC

- The BCM detects an invalid voltage signal on the cruise control switch signal circuit.
- The above condition is present for greater than 1 second.

Action Taken When the DTC Sets

- The BCM stores the DTC information into memory when the diagnostic runs and fails.
- The malfunction indicator lamp (MIL) will not illuminate.
- The Cruise Control System is disabled.

Conditions for Clearing the DTC

- The DTC becomes history when the fault is no longer present.
- A History DTC clears after 100 malfunction free ignition cycles.
- The BCM receives a clear code command from the scan tool.

Diagnostic Aids

- Rotate the steering wheel to both steering stops and activate each cruise control switch

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separately. With a scan tool, observe the Cruise Control Switch parameter in the Body and Accessories, BCM Data list. This will help eliminate the possibility of a internally open or shorted inflatable restraint steering wheel module coil.

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

DTC B3794

Step	Action	Values	Yes	No
Schematic Reference: Cruise Control Schematics Connector End View Reference: Master Electrical Component List 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. With the scan tool, observe the Cruise Control Switch parameter in the Body and Accessories, body control module (BCM) Data list. Does the Cruise Control Switch parameter display Error?	-	Go to Step 3	Go to Step 4
3	1. Turn OFF the ignition. 2. Remove the inflatable steering wheel module. Refer to Inflatable Restraint Steering Wheel Module Replacement in SIR. 3. Disconnect C1. 4. Turn ON the ignition, with the engine OFF. 5. With the scan tool, observe the Cruise Control Switch parameter in the BCM Data list. Does the Cruise Control Switch	-	Go to Step	

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	parameter display Error?		10	Go to Step 14
4	1. Turn the cruise control On/Off control switch ON. 2. With the scan tool, observe the Cruise Control Switch parameter in the BCM Data list. Does the Cruise Control Switch parameter display Error?	-	Go to Step 7	Go to Step 5
5	1. Activate the cruise control set/coast switch. 2. With the scan tool, observe the Cruise Control Switch parameter in the BCM Data list. Does the Cruise Control Switch parameter display Error?	-	Go to Step 16	Go to Step 6
6	1. Activate the cruise control resume/accel switch. 2. With the scan tool, observe the Cruise Control Switch parameter in the BCM Data list. Does the Cruise Control Switch parameter display Error?	-	Go to Step 16	Go to Diagnostic Aids
7	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 steering wheel module. Refer to <u>Inflatable Restraint Steering Wheel Module Replacement</u> in SIR. 3. Disconnect C1. 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	Off = O.L. On = 7.8 K-8.6 K Resume = 2.7 K-3.0 K Set = 1.2		

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	resume/accelerate switch signal circuit. 5. Individually activate and hold the cruise control function switches while measuring the resistance value of each cruise control function switch. Do the cruise control function switch resistance values measure between the specified values?	K-1.3 K		
			Go to Step 9	Go to Step 8
8	Test the ignition 1 voltage circuit for a high resistance between C1 and the cruise control switch. 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
9	Test the ignition 1 voltage circuit for a high resistance between C1 and the BCM. 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
10	Test the cruise control set/coast and resume/accel switch signal circuit for a short to voltage between C1 and the BCM. 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
11	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 20	Go to Step 12
12	Test the cruise control set/coast and resume/accel switch signal circuit for a high resistance between C1 and the cruise control switch. 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
	Test the cruise control set/coast and resume/accel switch signal circuit for a high resistance between C1 and the			

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13	BCM. 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
14	Test the cruise control set/coast and resume/accel switch signal circuit for a short to voltage between C1 and the cruise control switch. 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 cruise control on switch 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 20	Go to Step 16
16	Inspect for poor connections at the cruise control switch. 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 20	Go to Step 18
17	Inspect for poor connections at the harness connector of the BCM. 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 20	Go to Step 19
18	Replace the cruise control switch. Refer to Steering Wheel Control Switch Assembly Replacement in Steering Wheel and Column. Did you complete the replacement?	-	Go to Step 20	-
19	Replace the BCM. Refer to Control Module References in Computer/Integrating Systems for replacement, setup, and programming. Did you complete the replacement?	-	Go to Step 20	-
	1. Install the inflatable steering wheel module. Refer to Inflatable Restraint Steering Wheel Module Replacement in SIR. 2. Enable the inflatable restraint			

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20	steering wheel module. Refer to SIR Disabling and Enabling Zone 3 in SIR.	-	Go to Step 2	System OK
	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?			

DTC P0575

Circuit Description

When a cruise control function switch is activated, the body control module (BCM) detects a predetermined voltage signal. The BCM sends a GMLAN serial data message to the engine control module (ECM) indicating the function that has been requested.

DTC Descriptor

This diagnostic procedure supports the following DTC:

DTC P0575 Cruise Control Switch Signal Circuit

Conditions for Running the DTC

The engine is ON.

Conditions for Setting the DTC

- The ECM receives an invalid cruise control switch status GMLAN serial data message from the BCM.
- This diagnostic runs continuously.

Action Taken When the DTC Sets

- The Cruise Control System is disabled.
- The ECM stores the DTC information into memory when the diagnostic runs and fails.
- The malfunction indicator lamp (MIL) will not illuminate.
- The ECM records the operating conditions at the time the diagnostic fails. The ECM stores this information in the Failure Records.
- All cruise control function switches are set to OFF.

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 the scan tool in order to clear the DTC.

Diagnostic Aids

- This DTC may be stored as a history DTC without affecting the operation of the BCM. If stored only as a history DTC and not retrieved as a current DTC, do not replace the BCM.
- If this DTC is retrieved as both a current and history DTC, replace the BCM.

DTC P0575

Step	Action	Yes	No
Schematic Reference: Cruise Control Schematics Connector End View Reference: Computer/Integrating Systems Connector End Views in Computer/Integrating Systems			
1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to Diagnostic System Check - Vehicle
2	Is DTC P0575 current in the engine control module (ECM)?	Go to Step 3	Go to Diagnostic Aids
3	Replace the body control module (BCM). Refer to Control Module References for replacement, setup, and programming. Did you complete the replacement?	Go to Step 4	-
4	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 P0719

Circuit Description

The cruise release switch is a normally closed switch. The stop lamp switch signal circuit is a normally open switch. When the brake pedal is released, the engine control module (ECM) detects a high voltage signal on the torque converter clutch (TCC) brake switch/cruise control release signal circuit and a low signal voltage signal on the stop lamp switch signal circuit.

DTC Descriptor

This diagnostic procedure supports the following DTC:

DTC P0719 Brake Switch Circuit Low Voltage**Conditions for Running the DTC**

- The engine is ON.
- The traction control system or the antilock brake system are not active and have not failed.
- The vehicle has accelerated from 0 km/h (0 mph) to 60 km/h (37 mph) 3 times in one ignition cycle.
- This diagnostic runs continuously once the conditions for running the DTC has been achieved.

Conditions for Setting the DTC

When the brake pedal is released, the ECM detects a low voltage signal on the stop lamp switch signal circuit and a low voltage signal on the TCC brake switch/cruise control release signal circuit.

Action Taken When the DTC Sets

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

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, inspect for proper adjustment of the cruise control release switch. Refer to **Cruise Release Switch Adjustment**.

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

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DTC P0719

Step	Action	Values	Yes	No
Schematic Reference: Cruise Control Schematics Connector End View Reference: Lighting Systems Connector End Views in Lighting 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 the ignition OFF. 2. Disconnect the cruise release switch. 3. Turn the ignition ON, 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 3	Go to Step 7
3	1. Turn the ignition OFF. 2. With a DMM, measure the resistance of the cruise release switch between the ignition 1 voltage circuit and the torque converter clutch (TCC) brake switch/cruise control release signal circuit at the male terminals. Does the resistance of the cruise release switch measure at the specified value?	O.L.	Go to Step 5	Go to Step 4
4	Test the TCC brake switch/cruise control release signal circuit for the following: • An open • A high resistance • A short to ground	-		

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	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
5	Inspect for poor connections at the harness connector of the cruise release switch. 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
6	Inspect for poor connections at the harness connector of the engine control module (ECM). 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	Repair the following in the ignition 1 voltage circuit. • An open • A high resistance • A short to ground Refer to Circuit Testing and Wiring Repairs in Wiring Systems. Did you complete the repair?	-	Go to Step 10	-
8	Replace the cruise release switch. Refer to Cruise Release Switch Replacement . Did you complete the repair?	-	Go to Step 10	-
9	Replace the ECM. Refer to Control Module References in Computer/Integrating Systems for replacement, setup, and programming. Did you complete the replacement?	-	Go to Step 10	-
10	1. Use a scan tool in order to clear the DTCs. 2. Operate the vehicle within the Conditions for Running the DTC.	-		

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Does the DTC reset?	Go to Step 2	System OK
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DTC P0724

Circuit Description

The cruise release switch is a normally closed switch. The stop lamp switch signal circuit is a normally open switch. When the brake pedal is released, the engine control module (ECM) detects a high voltage signal on the torque converter clutch (TCC) brake switch/cruise control release signal circuit and a low signal voltage signal on the stop lamp switch signal circuit.

DTC Descriptor

This diagnostic procedure supports the following DTC:

DTC P0724 Brake Switch Circuit High Voltage

Conditions for Running the DTC

- The engine is ON.
- The traction control system or the antilock brake system are not active and have not failed.
- The vehicle has accelerated from 0 km/h (0 mph) to 60 km/h (37 mph) 3 times in one ignition cycle.
- This diagnostic runs continuously once the conditions for running the DTC has been achieved.

Conditions for Setting the DTC

When the brake pedal is pressed, the PCM detects a high voltage signal on the stop lamp switch signal circuit and a high voltage signal on the TCC brake switch/cruise control release signal circuit.

Action Taken When the DTC Sets

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

Conditions for Clearing the DTC

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- 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, inspect for proper adjustment of the cruise control release switch. Refer to **Cruise Release Switch Adjustment**.

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

DTC P0724

Step	Action	Yes	No
Schematic Reference: Cruise Control Schematics Connector End View Reference: Lighting Systems Connector End Views in Lighting 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 the ignition OFF. 2. Disconnect the cruise release switch. 3. Turn the ignition ON, with the engine OFF. 4. Connect a test lamp between the torque converter clutch (TCC) brake switch/cruise control release signal circuit and a good ground. Does the test lamp illuminate?	Go to Step 3	Go to Step 4
3	Test the TCC brake switch/cruise control release 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 8	Go to Step 5
4	Inspect for poor connections at the harness connector of the cruise release switch. Refer to <u>Testing for Intermittent Conditions and</u>		

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	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 engine control module (ECM). 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 cruise release switch. Refer to Cruise Release Switch Replacement . Did you complete the repair?	Go to Step 8	-
7	Replace the ECM. 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 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 P1574**Circuit Description**

The cruise release switch is a normally closed switch. The stop lamp switch signal circuit is a normally open switch. When the brake pedal is released, the engine control module (ECM) detects a high voltage signal on the torque converter clutch (TCC) brake switch/cruise control release signal circuit and a low signal voltage signal on the stop lamp switch signal circuit.

DTC Descriptor

This diagnostic procedure supports the following DTC:

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

- The engine is ON.
- The traction control system or the antilock brake system are not active and have not failed.

- The vehicle has accelerated from 0 km/h (0 mph) to 60 km/h (37 mph) 3 times in one ignition cycle.
- This diagnostic runs continuously once the conditions for running the DTC has been achieved.

Conditions for Setting the DTC

When the brake pedal is pressed, the ECM detects a low voltage signal on the stop lamp switch signal circuit and a low voltage signal on the TCC brake switch/cruise control release signal circuit.

Action Taken When the DTC Sets

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

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.

DTC P1574

Step	Action	Yes	No
Schematic Reference: Cruise Control Schematics Connector End View Reference: <u>Lighting Systems Connector End Views</u> in Lighting Systems			
	Did you perform the Diagnostic System		Go to

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1	Check - Vehicle?	Go to Step 2	<u>Diagnostic System Check - Vehicle</u> in Vehicle DTC Information
2	Do the stop lamps work properly?	Go to Step 3	Go to <u>Stop Lamps Inoperative</u> in Lighting Systems
3	Test the stop lamp switch signal circuit for an open or for a high resistance between the body control module (BCM) and the engine control module (ECM). Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 6	Go to Step 4
4	Inspect for poor connections at the harness connector of the ECM. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 6	Go to Step 5
5	Replace the ECM. Refer to <u>Control Module References</u> in Computer/Integrating Systems for replacement, setup, and programming. Did you complete the replacement?	Go to Step 6	-
6	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

SYMPTOMS - CRUISE CONTROL

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

1. Perform the **Diagnostic System Check - Vehicle** in Vehicle DTC Information before using the Symptom Tables in order to verify that all of the following are true:
 - There are not any DTCs set.

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- The control modules 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 could affect the operation of the Cruise Control System. Refer to **Checking Aftermarket Accessories**.
- Inspect the easily accessible or visible system components for obvious damage or conditions which could 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**.

Symptom List

Refer to **Cruise Control Inoperative/Malfunctioning**.

CRUISE CONTROL INOPERATIVE/MALFUNCTIONING

Diagnostic Aids

CAUTION: Refer to SIR Caution.

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

- Ensure that the following cruise control switches are not stuck in the engaged position:
 - On/off switch
 - - SET switch
 - + RES switch
- With a scan tool, observe the associated cruise control switch parameter in the Body and Accessories, Cruise Control, BCM data list, while rotating the steering wheel to both steering stops and separately activating each cruise control switch. 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**.

Cruise Control Inoperative/Malfunctioning

Step	Action	Values	Yes	No
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Schematic Reference: Cruise Control Schematics

Connector End View Reference: Cruise Control Connector End Views or Engine Control Module (ECM) Connector End Views for the 2.2L engine.

1	Did you perform the Diagnostic System Check - Vehicle?	-	Go to Step 2	Go to Diagnostic System Check - Vehicle
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 Cruise Control Switch parameter in the Body and Accessories, Cruise Control, BCM data list. Does the Cruise Control Switch parameter display Off?	-	Go to Step 3	Go to Step 6
3	1. With the scan tool, observe the Cruise Control Switch parameter. 2. Turn the cruise control on/off switch ON. Does the Cruise Control Switch parameter display On?	-	Go to Step 4	Go to Step 7
4	1. With the scan tool, observe the Cruise Control Switch parameter. 2. Press and hold the - SET switch. Does the Cruise Control Switch parameter display Set?	-	Go to Step 5	Go to Step 9
5	1. With the scan tool, observe the Cruise Control Switch parameter. 2. Press and hold the + RES switch. Does the Cruise Control Switch parameter display Resume?	-	Go to Diagnostic Aids	Go to Step 9
	1. Turn OFF the ignition.			

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6	- Remove the inflatable steering wheel module. Refer to <u>Inflatable Restraint Steering Wheel Module Replacement</u>. - Disconnect C1. - Turn ON the ignition, with the engine OFF. - Observe the Cruise Control Switch parameter in the Cruise Control Data list. Does the Cruise Control Switch parameter display Off?	-	Go to Step 10	Go to Step 15
7	- Turn OFF the ignition. - Remove the inflatable steering wheel module. Refer to <u>Inflatable Restraint Steering Wheel Module Replacement</u>. - Disconnect C1. - Turn ON the ignition, with the engine OFF. - Connect a test lamp between the ignition 1 voltage circuit and a good ground. Does the test lamp illuminate?	-	Go to Step 8	Go to Step 19
8	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. - Turn OFF the ignition. - 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. - Individually activate and hold the cruise control function switches	Off = O.L. On = 7.8-8.6 K ohm Resume = 2.7-3.0 K ohm Set = 1.2-1.3 K ohm		

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	while measuring the resistance of the cruise control function switches. Do the cruise control function switch resistance values measure between the specified values?		Go to Step 16	Go to Step 12
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 steering wheel module. Refer to <u>Inflatable Restraint Steering Wheel Module Replacement</u>. 3. Disconnect C1. 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 = 7.8-8.6 K ohm Resume = 2.7-3.0 K ohm Set = 1.2-1.3 K ohm	Go to Step 18	Go to Step 17
10	Test the cruise control on switch signal circuit for a short to voltage. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u>. Did you find and correct the condition?	-	Go to Step 22	Go to Step 11
	Test the cruise control set/coast and resume/accelerate switch signal circuit for a short to voltage between C1 and			

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11	the cruise control switch. Refer to Circuit Testing and Wiring Repairs . Did you find and correct the condition?	-	Go to Step 22	Go to Step 17
12	Test the ignition 1 voltage circuit for an open or for a high resistance between C1 and the cruise control switch. Refer to Circuit Testing and Wiring Repairs . Did you find and correct the condition?	-	Go to Step 22	Go to Step 13
13	Test the cruise control set/coast and resume/accelerate switch signal circuit between C1 and the cruise control switch for the following: • Open • Short to ground • High resistance Refer to Circuit Testing and Wiring Repairs . Did you find and correct the condition?	-	Go to Step 22	Go to Step 14
14	Test the cruise control on switch signal circuit for the following: • Open • Short to ground • High resistance Refer to Circuit Testing and Wiring Repairs . Did you find and correct the condition?	-	Go to Step 22	Go to Step 17
15	Test the cruise control set/coast and resume/accelerate switch signal circuit for a short to voltage between C1 and the engine control module (ECM). Refer to Circuit Testing and Wiring Repairs .			

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	Did you find and correct the condition?	-	Go to Step 22	Go to Step 18
16	Test the cruise control set/coast and resume/accelerate switch signal circuit for the following: • Open • Short to ground • High resistance Refer to Circuit Testing and Wiring Repairs . Did you find and correct the condition?	-	Go to Step 22	Go to Step 18
17	Inspect for poor connections at the harness connector of the cruise control switch. Refer to Testing for Intermittent Conditions and Poor Connections and Connector Repairs . Did you find and correct the condition?	-	Go to Step 22	Go to Step 20
18	Inspect for poor connections at the harness connector of the ECM. Refer to Testing for Intermittent Conditions and Poor Connections and Connector Repairs . Did you find and correct the condition?	-	Go to Step 22	Go to Step 21
19	Repair the following in the ignition 1 voltage circuit: • Open • Short to ground • High resistance Refer to Circuit Testing and Wiring Repairs . Did you complete the repair?	-	Go to Step 22	-
	Replace the cruise control switch.			

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20	Refer to <u>Steering Wheel Control Switch Assembly Replacement</u> . Did you complete the replacement?	-	Go to Step 22	-
21	Replace the ECM. Refer to <u>Control Module References</u> for replacement, setup, and programming. Did you complete the replacement?	-	Go to Step 22	-
22	1. Install the inflatable steering wheel module. Refer to <u>Inflatable Restraint Steering Wheel Module Replacement</u> . 2. Enable the inflatable restraint steering wheel module. Refer to <u>SIR Disabling and Enabling Zone 3</u> . 3. Operate the vehicle with in the conditions for cruise control operation. Does the cruise control system operate properly?	-	System OK	Go to Step 2

REPAIR INSTRUCTIONS**CRUISE RELEASE SWITCH ADJUSTMENT**

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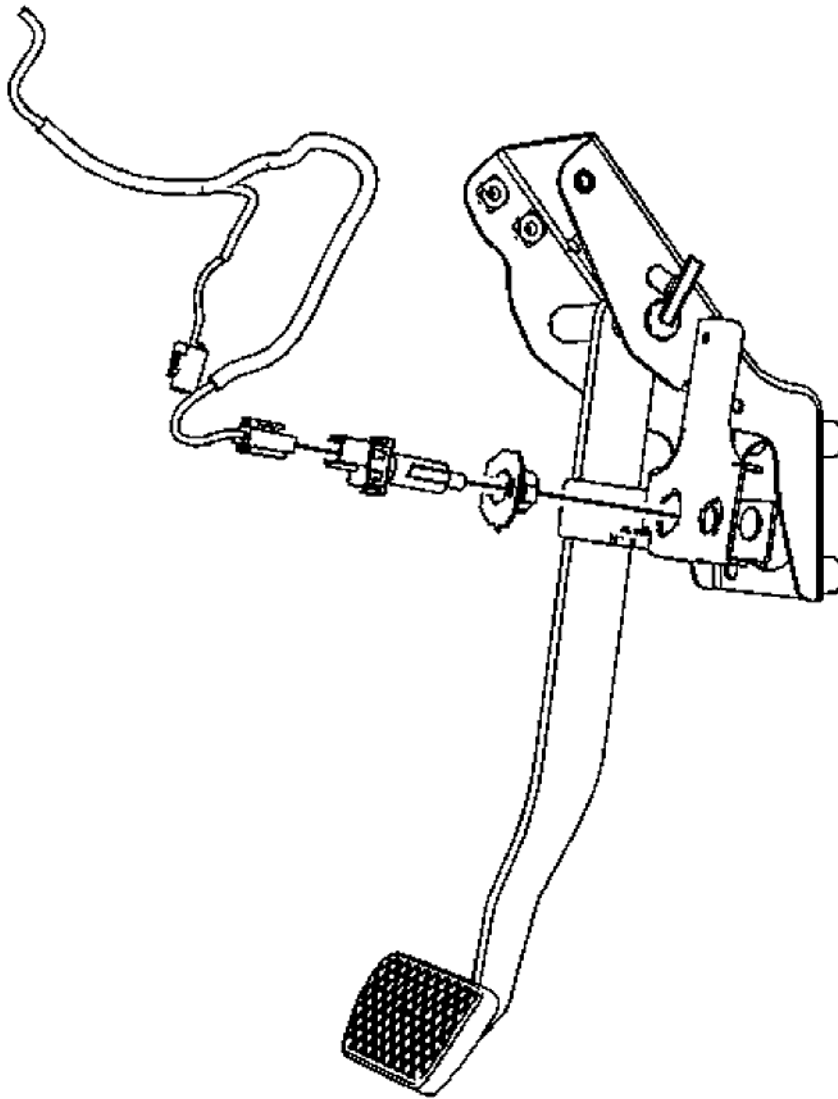


Fig. 9: Cruise Release Switch

Courtesy of GENERAL MOTORS CORP.

1. Ensure that the cruise control release switch is fully seated in the bracket.
2. Slowly pull the brake pedal rearward until the audible clicking is no longer heard.

The switch will be moved in the retainer providing adjustment.

3. Release the brake pedal.

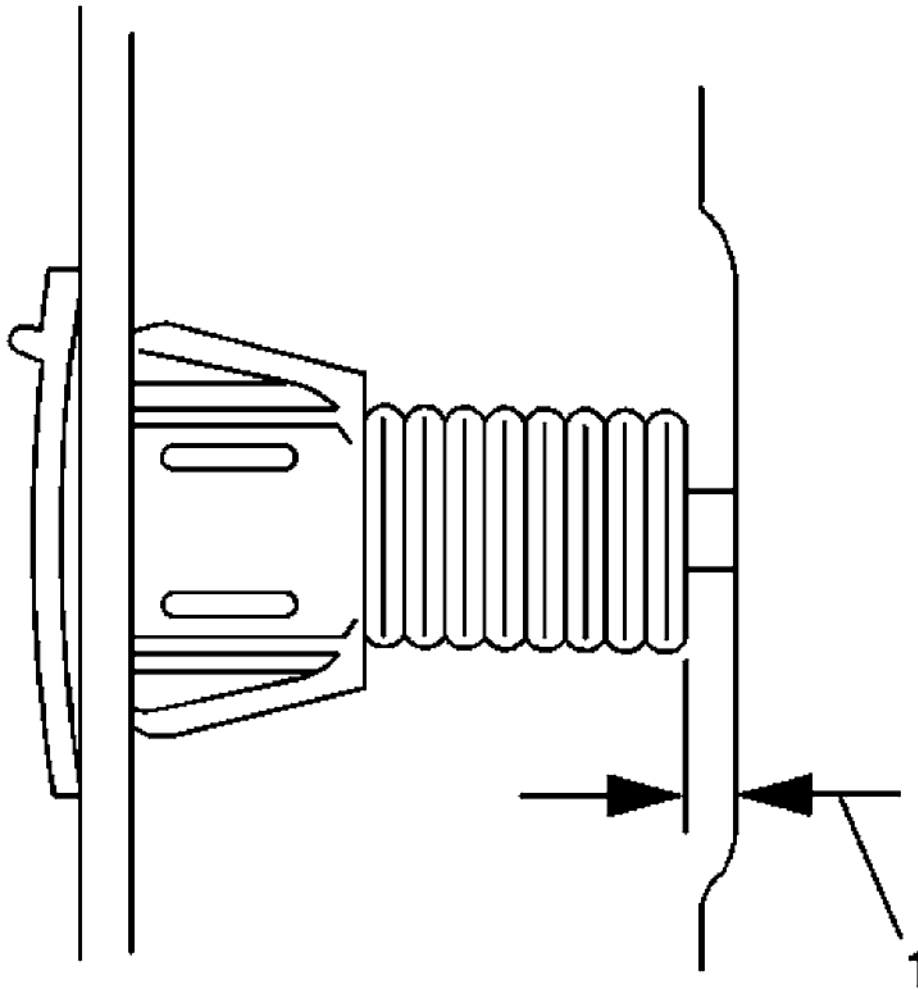


Fig. 10: Locating Release Switch Contact
Courtesy of GENERAL MOTORS CORP.

4. Ensure that the following contacts open at 25.4 mm (1 in) or less of pedal travel:
 1. The release switch (1)
 2. The stop lamp and torque converter clutch (TCC) switch.
5. Ensure the switches open simultaneously or before the onset of braking.
6. The brake pedal may travel up to 25.4 mm (1 in) before the cruise control system disengages.

CRUISE RELEASE SWITCH REPLACEMENT

Removal Procedure

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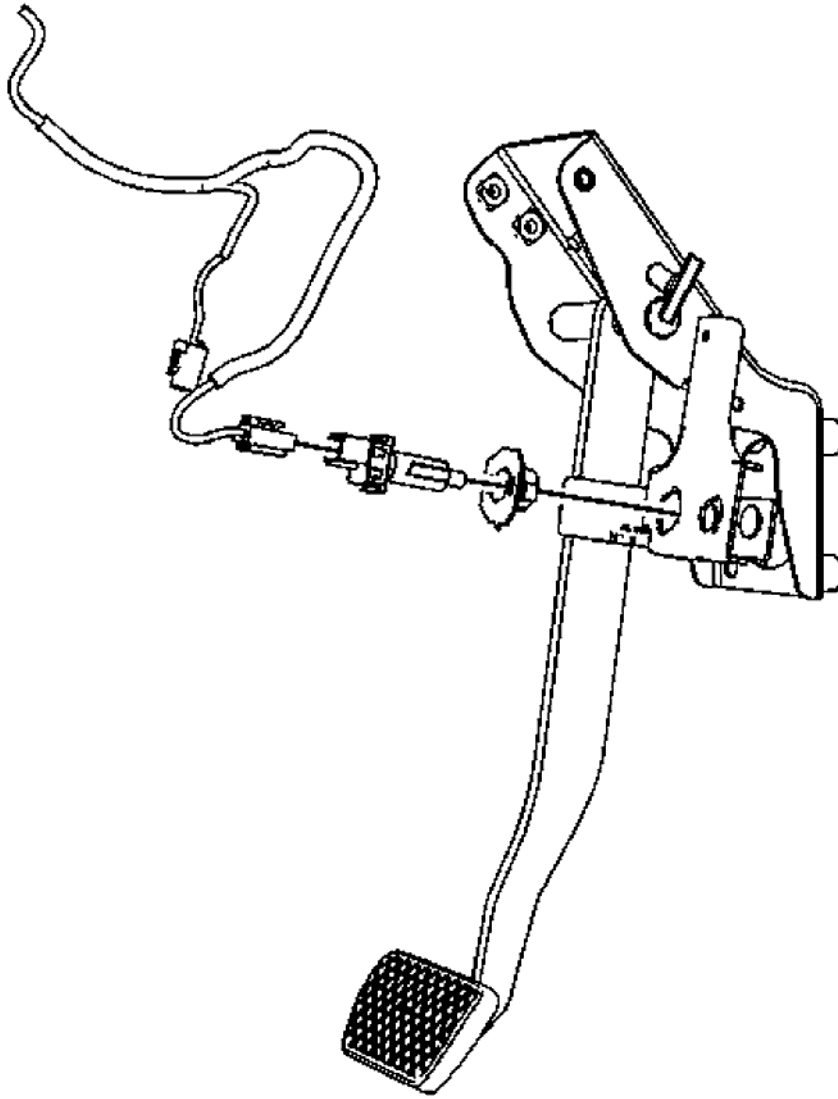


Fig. 11: Cruise Release Switch
Courtesy of GENERAL MOTORS CORP.

1. Disconnect the cruise control release switch electrical connector.
2. Remove the cruise control release switch from the bracket.

Installation Procedure

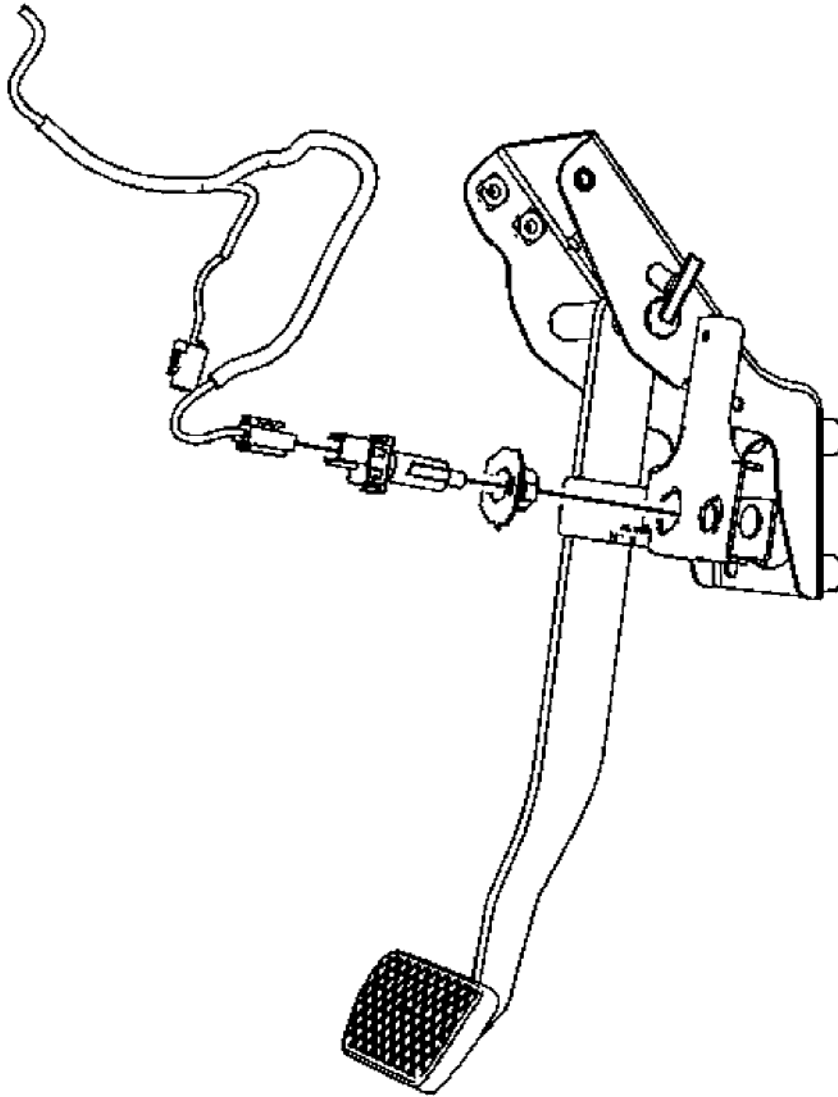


Fig. 12: Cruise Release Switch
Courtesy of GENERAL MOTORS CORP.

1. Depress the brake pedal and insert the cruise control release switch into the bracket until the retainer is fully seated.
2. Connect the cruise control release switch electrical connector.
3. Adjust the cruise control release switch as needed. Refer to **Cruise Release Switch Adjustment**.

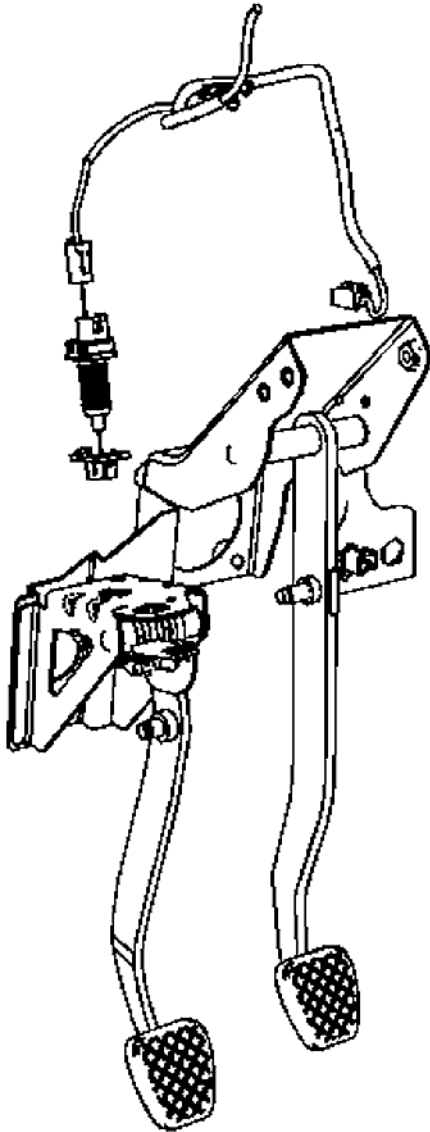


Fig. 13: Clutch Pedal Cruise Control Release Switch
Courtesy of GENERAL MOTORS CORP.

1. Ensure that the cruise control release switch is fully seated in the bracket.
2. Slowly pull the brake pedal rearward until the audible clicking is no longer heard.

The switch will be moved in the retainer providing adjustment.

3. Release the brake pedal.

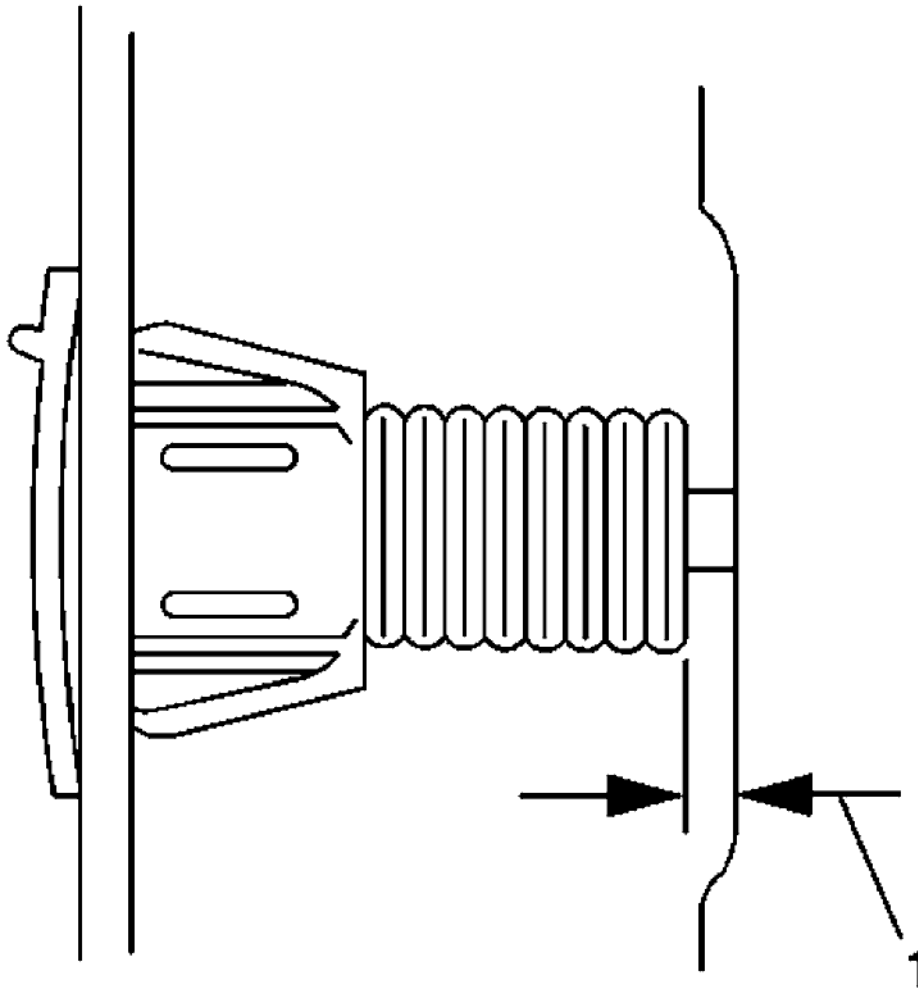


Fig. 14: Locating Release Switch Contact
Courtesy of GENERAL MOTORS CORP.

4. Ensure that the following contacts open at 25.4 mm (1 in) or less of pedal travel:
 1. The release switch (1)
 2. The stoplamp and torque converter clutch (TCC) switch.
5. Ensure the switches open simultaneously or before the onset of braking.
6. The brake pedal may travel up to 25.4 mm (1 in) before the cruise control system disengages.

CLUTCH PEDAL CRUISE CONTROL RELEASE SWITCH REPLACEMENT

Removal Procedure

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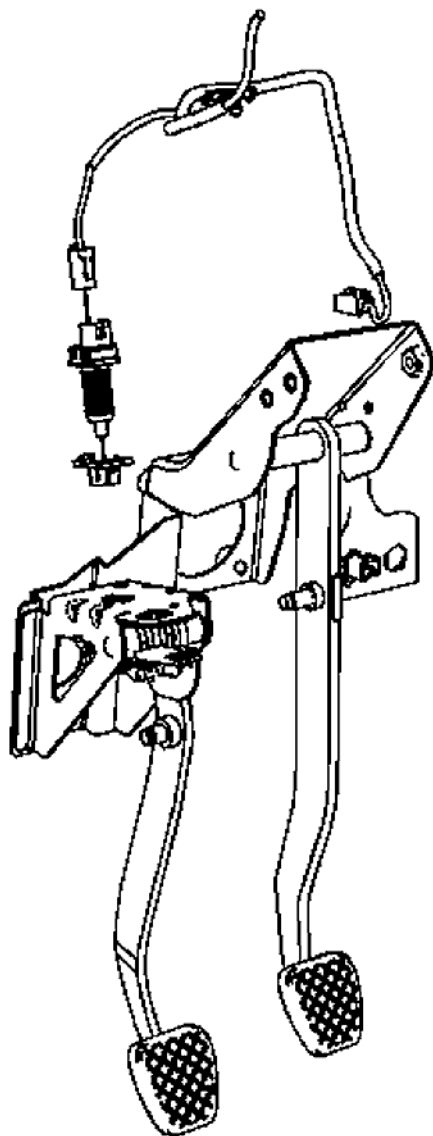


Fig. 15: Clutch Pedal Cruise Control Release Switch
Courtesy of GENERAL MOTORS CORP.

1. Remove the left instrument panel insulator.
2. Disconnect the clutch pedal cruise control release switch electrical connector.
3. Remove the clutch pedal cruise control release switch from the bracket.

Installation Procedure

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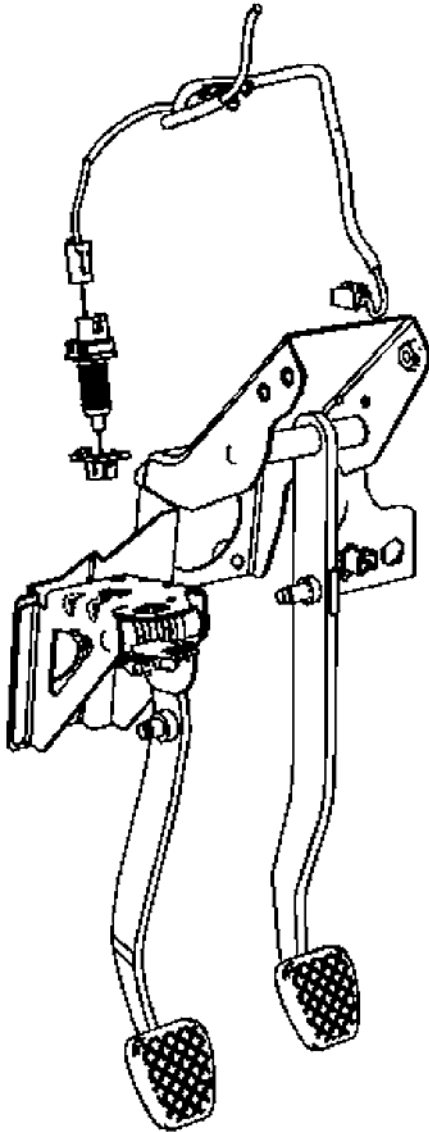


Fig. 16: Clutch Pedal Cruise Control Release Switch
Courtesy of GENERAL MOTORS CORP.

1. Depress the brake pedal and insert the clutch pedal cruise control release switch into the bracket until the retainer is fully seated.
2. Connect the clutch pedal cruise control release switch electrical connector.
3. Adjust the cruise control release switch as needed. Refer to **Clutch Pedal Cruise Control Release Switch Adjustment**.
4. Install the left instrument panel insulator.

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 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 cruise control switches
- The engine control module ECM
- The clutch pedal position (CPP) switch, if equipped with manual transmission
- The stop lamp switch
- The cruise control release switch
- The throttle actuator control (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 (resume/accel)
- - SET (set/coast)

The BCM monitors the signal circuit of the cruise control switches. The BCM relays the cruise control switch status to the ECM via the GMLAN serial data circuit. The ECM uses the status of the cruise control switch to determine when to capture and maintain the vehicle speed. The ECM monitors the vehicle speed signal circuit in order to determine and the desired vehicle speed. The ECM uses the TAC motor in order to maintain the vehicle speed. For further information on the TAC system, refer to **Throttle Actuator Control (TAC) System Description** in Engine Controls - 2.2L (L61) or to **Throttle Actuator Control (TAC) System Description** in Engine Controls - 2.4L. Ignition voltage is supplied to the cruise control switch from the 2-ampere EPS fuse located in the integrated BCM 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 BCM detects a specific voltage value that is associated with any cruise control function switch being activated. When the normally open cruise control on/off switch is turned ON, the switch closes and the BCM detects a predetermined voltage signal on the cruise control set/coast and resume/accel switch signal circuit. The BCM sends a GMLAN serial data message to the

ECM indicating that the on/off switch is active. Similarly, when the + RES switch or the - SET switch are pressed, the BCM detects the predetermined voltage signal on the cruise control set/coast and resume/accel switch signal circuit. To engage the cruise control system, ensure that the vehicle speed is above 40.2 km/h (25 mph), turn the cruise on/off switch ON and momentarily press the - SET switch. The ECM will engage the cruise control system and record the vehicle speed. The ECM sends a GMLAN serial data message via the BCM to the driver information center (DIC) in order to display the CRUISE ENGAGED message. The - SET switch or the + RES switch will remain inactive when the BCM 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 switch and the + RES switch. When the cruise control system is engaged, pressing and holding the - SET switch will allow the vehicle to decelerate from the current set vehicle speed without deactivating the cruise control system. When the - SET switch is released, the ECM will record the vehicle speed and maintain the vehicle speed as the new set vehicle speed. When the cruise control system is engaged, momentarily pressing the - SET switch will allow the vehicle to decelerate at 1.6 km/h (1 mph) increments for each time that the - SET is momentarily pressed, with a minimum vehicle speed of 37 km/h (23 mph). Pressing and holding the + RES 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 + RES switch is released, the ECM will record the vehicle speed and maintain the vehicle speed as the new set vehicle speed. When the cruise control system is engaged, momentarily pressing the + RES switch will allow the vehicle to accelerate at 1.6 km/h (1 mph) increments for each time that the + RES switch is momentarily pressed, with the maximum acceleration total of 16 km/h (10 mph) over the current set vehicle speed. Momentarily pressing the + RES switch after the cruise control system has been disengaged by pressing the brake pedal, will recall the previous set vehicle speed that is recorded in the ECM.

Cruise Control Disengaged

The ECM disengages the cruise control operation based on the signals from the following switches:

- The stop lamp switch
- The cruise control release switch
- The clutch pedal position (CPP) switch (if equipped)
- The cruise control on/off switch

The cruise control release switch, the clutch pedal position (CPP) switch, and the stop lamp switch are used to disengage the cruise control system. The cruise control release switch and the stop lamp switch are mounted on the brake pedal bracket. When the brake pedal is applied, the normally closed cruise control release switch opens and the normally open stop

lamp switch closes. The ECM detects a low signal voltage on the cruise control release switch signal circuit and a high signal voltage on the stop lamp switch signal circuit. When the clutch pedal is applied, the normally closed clutch pedal position (CPP) switch opens and the ECM detects a low signal voltage on the clutch pedal position (CPP) switch signal circuit. The vehicle speed stored in the memory of the ECM will be erased when the cruise control On/Off button is pressed, or the ignition switch is turned OFF.

The cruise control system will disengage when either the cruise control on/off switch is switched OFF, or the ECM detects that a driver override function has been active for approximately 60 seconds.

When the cruise control system is disengaged, the ECM sends a GMLAN serial data message via the BCM to the driver information center (DIC) in order to turn off the CRUISE ENGAGED message.

Cruise Control Inhibited

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

- A cruise control related DTC has been set.
- The vehicle speed is less than 40.2 km/h (25 mph).
- The vehicle is in PARK, REVERSE, NEUTRAL, or 1st gear.
- The engine RPM is too low.
- The engine RPM is too high, with fuel cut off.
- The vehicle speed is too high, with fuel cut off.
- The system voltage is not between 9-16 volts.
- The Antilock Brake System/Traction Control System is active for more than 2 seconds.