

2007 Cadillac Escalade

2007 ENGINE Cruise Control - Avalanche, Escalade, Suburban, Tahoe & Yukon

2007 ENGINE

Cruise Control - Avalanche, Escalade, Suburban, Tahoe & Yukon

SCHEMATIC AND ROUTING DIAGRAMS

CRUISE CONTROL SCHEMATICS

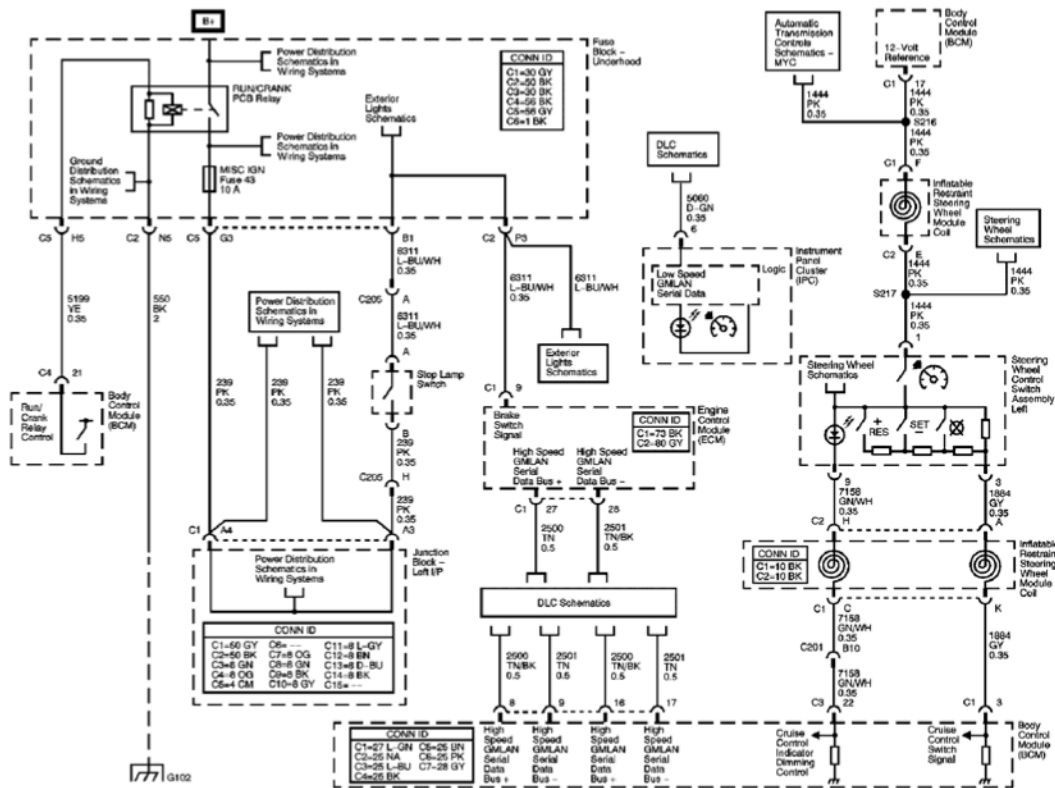


Fig. 1: Cruise Control Schematic

Courtesy of GENERAL MOTORS CORP.

DIAGNOSTIC INFORMATION AND PROCEDURES

DIAGNOSTIC CODE INDEX

DIAGNOSTIC CODE INDEX

DTC	Description
DTC B3794	Cruise Control Function Request Circuit
DTC B0835	Cruise Control System Active Indicator Circuit
DTC P0572	Brake Switch Circuit 1 Low Voltage
DTC P0573	Brake Switch Circuit 1 High Voltage

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DTC P0575

Cruise Control Switch Signal Circuit

DTC P0703

Brake Switch Circuit

DIAGNOSTIC STARTING POINT - CRUISE CONTROL

Begin the system diagnosis with the **Diagnostic System Check - Vehicle** . 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** .

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 Control Module (BCM)

Scan Tool Parameter	Data List	Units Displayed	Typical Data Value
Ignition ON/Engine Idling at Normal Operating Temperature/Vehicle is in Park or Neutral/Cruise On/Off Switch is Turned Off			
Cruise Control Switch	Cruise Control Data	On / Off / Resume / Set / Cancel / Error	Off

Engine Control Module (ECM)

Scan Tool Parameter	Data List	Units Displayed	Typical Data Value
Ignition ON/Engine Idling at Normal Operating Temperature/Vehicle is in Park or Neutral/Cruise On/Off Switch is Turned Off			

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BPP Circuit Signal	Cruise Control Data	Applied / Released	Released
BPP Signal	Cruise Control Data	Applied / Released / Invalid	Released
Cruise Cancel Switch	Cruise Control Data	Active / Inactive / Invalid	Inactive
Cruise Control Active	Cruise Control Data	Active / Inactive / Invalid	Inactive
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	Active / Inactive / Invalid	Inactive
Cruise Set/Coast Switch	Cruise Control Data	Active / Inactive / Invalid	Inactive
Engine Speed	Cruise Control Data	RPM	Varies
Ext. Travel BPP Signal	Cruise Control Data	Applied / Released / Invalid	Released
Ignition 1 Signal	Cruise Control Data	Volts	12 to 16 Volts
Reduced Engine Power	TAC Data	Active / Inactive	Inactive
Vehicle Speed Circuit 2 Status	Cruise Control Data	OK / Short Gnd/Open / Incomplete/ Short to B+	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.

BPP Circuit Signal

The scan tool displays Applied or Released. This is the state of the BPP circuit as detected by the ECM.

Cruise Cancel Switch

The scan tool displays Active, Inactive, or Invalid. This is the state of the cruise cancel switch as detected by the ECM.

Cruise Control Active

The scan tool displays Active, Inactive, or Invalid. The ECM determines the current status of the cruise control operation. An operating cruise control system is displayed as Active.

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Cruise Control Switch

The scan tool displays On, Off, Resume, Set, Cancel, or Error. 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 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 or Off. This is the state of the cruise control On/Off switch as detected by the ECM. An active switch is displayed as On.

Cruise Resume/Accel. Switch

The scan tool displays Active, Inactive or Invalid. This is the state of the resume/accel switch as detected by the ECM. An active cruise resume/accel switch is displayed as Active.

Cruise Set/Coast Switch

The scan tool displays Active, Inactive or Invalid. This is the state of the cruise set switch as detected by the ECM. An active cruise set switch is displayed as Active. The cruise control On/Off switch must be On in order 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. The ECM monitors the crankshaft position (CKP) signal circuit in order to determine the engine RPM.

Ext. Travel BPP Signal

The scan tool displays Applied, Released or Invalid. The state of the BPP signal as determined by the ECM.

Ignition 1 Signal

The scan tool displays 0 to 25.5 Volts. The ECM monitors the voltage of the ignition 1 voltage circuit.

Reduced Engine Power

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

Vehicle Speed Circuit 2 Status

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The scan tool displays OK, Short Gnd, Open, Incomplete, or Short to B+. When the ECM detects that a malfunction in the vehicle speed signal circuit exists, the scan tool will display the listed fault.

Vehicle Speed Sensor

The scan tool displays 0-255 km/h (0-155 mph). The ECM monitors the vehicle speed sensor signal in order to calculate the vehicle speed for display.

SCAN TOOL DATA DEFINITIONS (DISENGAGE HISTORY)

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

APP Override

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

Brake

The ECM detects that the stop lamps have been activated according to the brake pedal position (BPP) sensor / stop lamp switch input from the platform module. Also, the brake pedal being applied according to the brake fluid pressure sensor input can also set this disengagement reason with vehicles equipped with the vehicle stability enhancement system (VSES).

BPP Data

The ECM detects an invalid brake pedal apply serial data message from the platform module.

BPP DTC

The ECM detects that DTC P0703 is active.

Cancel

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

Clutch

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

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Coast Disengage

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

Coast Speed Low

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

Cruise S/W

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

Cruise Sw Data

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

Cruise Sw. Off

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

D Whl Spd Low

The ECM detects the driven wheels are at a slower speed than the non-driven wheels.

D Whl Spd Hi

The ECM detects the driven wheels are at a faster speed than the non-driven wheels.

Decel Rate

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

DLC Override

The ECM detects that a DLC override has occurred.

DTC Set

The ECM detects that a DTC has been set which affects the cruise control operation.

ECM Inhibit

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

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ECT Overtemp

The ECM detects the engine temperature is above the calibrated threshold.

Engine Run Time

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

Engine Speed

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

First Gear

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

High Speed

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

High Voltage

The ECM detects that the ignition voltage is above 16 volts.

Illegal Mode

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

Lost Fwd Gear

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

Low Speed

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

Low Voltage

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

Memory DTC

The ECM detects an internal memory fault.

MPH Limit

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The ECM detects the vehicle is over speed and that the fuel shutoff has been activated.

None

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

Over Set Speed

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

Park Brake

ECM detects the park brake switch is active.

Pedal Initialize

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

PTO Active

The ECM detects power take off is active.

RPM Limit

The ECM detects the engine is over speed and that the fuel shutoff has been activated.

S/C On - Speed High

The ECM detects 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.

Simul SC/RA Sw

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

Sw Invalid

The ECM detects the analog cruise control switch input is out of the normal voltage range.

TAC Inhibit

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

TCS

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The 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.

Trans. DTC

The ECM detects a transmission gear fault.

Under Set Speed

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

VSES

The ECM detects that the vehicle stability enhancement system had been activated.

DTC B3794

DTC Descriptor

DTC B3794 08

Cruise Control Function Request Circuit Signal Invalid

DTC B3794 61

Cruise Control Function Request Circuit Actuator Stuck

Diagnostic Fault Information

Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.

DTC B3794

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Cruise Control Switch Supply Voltage	1	B3794	1	B3794
Cruise Control Switch Signal	B3794	B3794	B0835	B3794
1. Cruise Control Inoperative/Malfunctioning				

Circuit/System Description

The cruise control switch is an input to the body control module (BCM). The BCM monitors the cruise control on/off, set/coast, resume/accelerate, and cancel 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 switch signal circuit when a switch is applied.

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Conditions for Running the DTC

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

Conditions for Setting the DTC

- The BCM detects an invalid voltage signal on the cruise control + RES switch, - SET switch and the cancel signal circuit.
- The above condition is present for 0.5 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 conditions for setting the DTC are no longer present.
- The history DTC clears after 40 malfunction-free warm-up cycles.
- The BCM receives a clear code command from the scan tool.

Reference Information

Schematic Reference

- Cruise Control Schematics
- Body Control System Schematics
- Steering Wheel Schematics

Connector End View Reference

- Secondary/Configurable Connector End Views
- Data Communication Connector End Views

Electrical Information Reference

- Circuit Testing
- Connector Repairs
- Testing for Intermittent Conditions and Poor Connections
- Wiring Repairs

Circuit/System Verification

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1. Ignition ON, observe the scan tool Cruise Control Switch parameter in the BCM while pressing the various cruise control switches. The reading should be Error.
 - o If the Cruise Control Switch parameter toggles between On, Off, Resume, Set and Cancel accordingly with the depressed switches, then go to **Testing for Intermittent Conditions and Poor Connections** .
2. Go to **Circuit/System Testing**.

Circuit/System Testing

CAUTION: Refer to SIR Caution .

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

1. Ignition OFF, remove the inflatable restraint steering wheel module. Refer to **Inflatable Restraint Steering Wheel Module Replacement** .
2. Disconnect the harness connector of the cruise control switch.
3. Ignition ON, measure for 10 volts or greater at the cruise control supply voltage circuit.
 - o If less than 10 volts, check for an open/high resistance or for a short to ground on the cruise control supply voltage circuit.
4. Ignition OFF, test for an open, for a high resistance, for a short to ground, or for a short to voltage in the cruise control switch signal circuit.
5. Test the component. If the circuits and the component tests are normal, replace the BCM.

Component Testing

CAUTION: Refer to SIR Caution .

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

IMPORTANT: The cruise control ON/OFF switch must be ON in order to properly measure the resistance of the - SET, the + RES, and the Cancel switches.

1. With the ignition OFF, remove the inflatable restraint steering wheel module. Refer to **Inflatable Restraint Steering Wheel Module Replacement** .
2. With the ignition OFF, disconnect C277 at the inflatable restraint steering wheel module coil.
3. Measure the resistance between terminals 1 and 3 at the cruise control switch side of the connector. Individually activate and hold each cruise control function switch and compare the resistance reading to the values on the schematic for the ON/OFF, - SET, the + RES, and the Cancel switches.
 - o If any of the resistance measurements for the OFF ON - SET + RES and Cancel switches are not

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within the listed resistance values, replace the cruise control switch assembly.

DTC B3794

Function Switch	Minimum Resistance Value	Maximum Resistance Value
OFF	O.L.	O.L.
ON	6.5k Ohms	7.0k Ohms
- SET	2.2k Ohms	2.4k Ohms
+ RES	3.7k Ohms	3.8k Ohms
Cancel	1.4k Ohms	1.6k Ohms

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Steering Wheel Control Switch Assembly Replacement**
- **Control Module References** for BCM replacement, setup, and programming

DTC B0835

DTC Descriptor

DTC B0835 00

Cruise Control System Active Indicator Circuit

Diagnostic Fault Information

Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.

DTC B0835

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Cruise Control Indicator Low Reference	-	-	B0835 00	-

Circuit/System Description

The body control module (BCM) monitors the cruise control indicator switch. When the cruise on/off switch is pressed ON, the cruise control switch is closed and the signal circuit is low. When the cruise on/off switch is pressed OFF, the cruise control switch is open and the signal circuit is high.

Conditions for Running the DTC

The ignition is ON.

Conditions for Setting the DTC

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- The BCM detects excessive current in the cruise control/heated wheel indicator signal circuit.
- The above condition is present for greater than 5 seconds.

Action Taken When the DTC Sets

- The BCM stores DTC B0835 in memory.
- The cruise control system becomes inoperative.

Conditions for Clearing the DTC

- The DTC becomes history when the conditions for setting the DTC are no longer present.
- The history DTC clears after 50 malfunction-free warm-up cycles.
- The BCM receives a clear code command from the scan tool.

Diagnostic Aids

Using the Failure Records data may help locate an intermittent condition. If you cannot duplicate the DTC, the information in the Failure Records can help determine how many miles since the DTC set. The Fail Counter and Pass Counter can help determine how many ignition cycles that the diagnostic test reported a pass and/or a fail.

Reference Information

Schematic Reference

- [Cruise Control Schematics](#)
- [Body Control System Schematics](#)
- [Steering Wheel Schematics](#)

Connector End View Reference

- [Secondary/Configurable Connector End Views](#)
- [Data Communication Connector End Views](#)

Electrical Information Reference

- [Circuit Testing](#)
- [Connector Repairs](#)
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- [Wiring Repairs](#)

Scan Tool Reference

[Scan Tool Data List](#)

Circuit/System Verification

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Ignition ON, observe the scan tool Cruise Control Switch parameter while pressing the cruise control switch ON and OFF. The reading should change between ON and OFF.

Circuit/System Testing

1. Ignition OFF, disconnect the cruise control switch assembly.
2. Ignition ON, verify that a test lamp illuminates between the cruise control/heated wheel indicator signal circuit and ground.
 - o If the test lamp does not illuminate, replace the cruise control switch assembly.
3. Repair the short to voltage in the cruise control/heated wheel indicator signal circuit.
 - o If the circuit tests normal, replace the BCM.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Steering Wheel Control Switch Assembly Replacement**
- **Control Module References** for BCM replacement, setup, and programming

DTC P0572

DTC Descriptor

DTC P0572 00

Brake Switch Circuit 1 Low Voltage

Diagnostic Fault Information

Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.

DTC P0572

Circuit	Short to Ground	Open or High Resistance	Short to Voltage	Signal Performance
Stop Lamp Switch Signal	P0572 00	P0573 00	P0573 00	-

Circuit/System Description

The torque converter clutch (TCC) signal circuit is a direct hardwire input to the engine control module (ECM) and transmission control module (TCM) from the body control module (BCM). The ECM monitors the stop lamp switch circuit to detect when the brake pedal has been applied. The BCM monitors the stop lamp switch to determine when the brake pedal is applied. When the brake pedal is applied, The BCM sends a GMLAN serial data message to the ECM indicating that the brake pedal has been applied. The BCM also sends a voltage signal on the stop lamp switch circuit to the ECM.

Conditions for Running the DTC

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- The ignition is ON.
- The engine is running.
- Battery voltage is greater than 11.5 volts.

Conditions for Setting the DTC

The ECM detects a short to ground on the TCC brake signal circuit when the serial data message from the BCM indicates the brakes are applied.

Action Taken When the DTC Sets

- The ECM stores the DTC to memory.
- The ECM will record the operating conditions at the time the diagnostic failed. The ECM stores this information in Failure Records.

Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists.
- The ECM receives a CLEAR DTCs command from the scan tool.
- A history DTC will clear once 40 malfunction-free ignition cycles have occurred.

Reference Information

Schematic Reference

Exterior Lights Schematics

Connector End View Reference

Lighting Systems Connector End Views

Electrical Information Reference

- Circuit Testing
- Testing for Intermittent Conditions and Poor Connections
- Wiring Repairs
- Connector Repairs

Scan Tool Reference

- Scan Tool Output Controls
- Scan Tool Data List
- Scan Tool Data Definitions

Circuit/System Testing

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Test the TCC brake signal circuit for a short to ground.

- If the circuit tests OK, replace the ECM.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

Control Module References for ECM replacement, setup, and programming

DTC P0573

DTC Descriptor

DTC P0573 00

Brake Switch Circuit 1 High Voltage

Diagnostic Fault Information

Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.

DTC P0573

Circuit	Short to Ground	Open or High Resistance	Short to Voltage	Signal Performance
Stop Lamp Switch Signal	P0572 00	P0573 00	P0573 00	-

Circuit/System Description

The torque converter clutch (TCC) signal circuit is a direct hardwire input to the engine control module (ECM) and transmission control module (TCM) from the body control module (BCM). The ECM monitors the stop lamp switch circuit to detect when the brake pedal has been applied. The BCM monitors the stop lamp switch to determine when the brake pedal is applied. When the brake pedal is applied, The BCM sends a GMLAN serial data message to the ECM indicating that the brake pedal has been applied. The BCM also sends a voltage signal on the stop lamp switch circuit to the ECM.

Conditions for Running the DTC

- The ignition is ON.
- The engine is running.
- Battery voltage is greater than 11.5 volts.

Conditions for Setting the DTC

The ECM detects an open, high resistance, or a short to voltage on the TCC brake signal circuit when the serial data message from the BCM indicates the brakes are applied.

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Action Taken When the DTC Sets

- The ECM stores the DTC to memory.
- The ECM will record the operating conditions at the time the diagnostic failed. The ECM stores this information in Failure Records.

Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists.
- The ECM receives a CLEAR DTCs command from the scan tool.
- A history DTC will clear once 40 malfunction-free ignition cycles have occurred.

Reference Information

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Exterior Lights Schematics

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Lighting Systems Connector End Views

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- Circuit Testing
- Testing for Intermittent Conditions and Poor Connections
- Wiring Repairs
- Connector Repairs

Scan Tool Reference

- Scan Tool Output Controls
- Scan Tool Data List
- Scan Tool Data Definitions

Circuit/System Testing

Test the TCC brake signal circuit for an open, a high resistance, or a short to voltage.

- If the circuit tests OK, replace the ECM.

Repair Procedures

Perform the Diagnostic Repair Verification after completing the diagnostic procedure.

Control Module References for ECM replacement, setup, and programming

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DTC P0575

DTC Descriptor

DTC P0575

Cruise Control Switch Signal Circuit

Circuit/System 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.

Conditions for Running the DTC

The ignition 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

- The DTC becomes history when the conditions for setting the DTC are no longer present.
- The history DTC clears after 50 consecutive warm-up cycles.
- The ECM receives a clear code command from the scan tool

Diagnostic Aids

Using the Failure Records data may help locate an intermittent condition. If you cannot duplicate the DTC, the information in the Failure Records can help determine how many miles since the DTC set. The Fail Counter and Pass Counter can help determine how many ignition cycles that the diagnostic test reported a pass and/or a fail.

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- Wiring Repairs

Scan Tool Reference

Scan Tool Data List

Circuit/System Verification

Ignition ON, observe the scan tool Cruise Control Switch parameter while pressing the cruise control switch ON and OFF. The reading should change between ON and OFF.

Circuit/System Testing

Ignition ON, verify that DTC P0575 is current in the ECM.

- If the DTC is stored as a current DTC, replace the BCM.
- If the DTC is stored only as a history DTC, refer to Diagnostic Aids. Do not replace the BCM.

Repair Procedures

Perform the Diagnostic Repair Verification after completing the diagnostic procedure.

Control Module References for BCM replacement, setup, and programming

DTC P0703

DTC Descriptor

DTC P0703

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Brake Switch Circuit

Diagnostic Fault Information

Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.

Circuit/System Description

The body control module (BCM) monitors the stop lamp switch, mounted on the brake pedal. The BCM sends a GMLAN serial data message to the engine control module (ECM) indicating the status of the stop lamp switch.

Conditions for Running the DTC

The engine is ON.

Conditions for Setting the DTC

- The ECM receives an invalid brake pedal 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 this diagnostic runs and fails.
- The malfunction indicator lamp (MIL) will not illuminate.
- All of the scan tool cruise control function switch parameters 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

Using the Failure Records data may help locate an intermittent condition. If you cannot duplicate the DTC, the information in the Failure Records can help determine how many miles since the DTC set. The Fail Counter and Pass Counter can help determine how many ignition cycles that the diagnostic test reported a pass and/or a fail.

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Cruise Control Schematics

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Connector End View Reference

Data Communication Connector End Views

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- Wiring Repairs

Circuit/System Testing

IMPORTANT: Fix any Brake System related DTCs before using this diagnostic.

Note: This DTC may be stored as a history DTC without affecting the operation of the BCM. Do not replace the BCM if this DTC is stored only as a history DTC and is not retrieved as a current DTC.

Using a scan tool, is DTC P0703 current in the ECM?

- If DTC P0703 is current in the ECM, replace the BCM.
- If DTC P0703 is not current in the ECM, the system is OK.

Repair Procedures

Perform the Diagnostic Repair Verification after completing the diagnostic procedure.

Control Module References for BCM replacement, setup, and programming

SYMPTOMS - CRUISE CONTROL

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

1. Perform the Diagnostic System Check - Vehicle , before using the Symptom Tables in order to verify that all of the following are true:
 - There are no DTCs set.
 - The control modules can communicate via the serial data link.
2. Review the system operation in order to familiarize yourself with 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 .

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- 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 SWITCH INDICATOR INOPERATIVE

Diagnostic Fault Information

Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.

Circuit/System Description

The body control module (BCM) monitors the cruise control indicator switch. When the cruise on/off switch is pressed ON, the cruise control switch is closed and the signal circuit is low. When the cruise on/off switch is pressed OFF, the cruise control switch is open and the signal circuit is high.

Reference Information

Schematic Reference

- **Cruise Control Schematics**
- **Body Control System Schematics**
- **Steering Wheel Schematics**

Connector End View Reference

- **Secondary/Configurable Connector End Views**
- **Data Communication Connector End Views**

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

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Scan Tool Data List

Circuit/System Testing

1. Ignition OFF, disconnect the cruise control switch assembly.
2. Connect a fused jumper between the voltage signal circuit and the low reference circuit.
3. Ignition ON, observe the Cruise On/Off Switch parameter.
 - If the Cruise On/Off Switch parameter displays ON, replace the cruise control switch assembly.
 - If the Cruise On/Off Switch parameter displays Off, test the voltage signal circuit and the low reference circuit for an open, or for a high resistance.
 - If all circuits test normal, replace the BCM.

Repair Procedures

Perform the Diagnostic Repair Verification after completing the diagnostic procedure.

- Steering Wheel Control Switch Assembly Replacement
- Control Module References for BCM replacement, setup, and programming.

CRUISE CONTROL INOPERATIVE/MALFUNCTIONING

Diagnostic Fault Information

Perform the Diagnostic System Check - Vehicle prior to using this diagnostic procedure.

Circuit/System Description

The cruise control switch is an input to the body control module (BCM). The BCM monitors the cruise control on/off, set/coast, resume/accelerate, and cancel switch signal circuits in order to detect when a cruise control function switch has been activated. The BCM detects a predetermined voltage signal when a cruise control function switch is applied, with each switch having a different voltage value.

Conditions for Enabling Cruise Control

- The vehicle speed is greater than 40 km/h (25 mph).
- The vehicle is not in PARK, REVERSE, NEUTRAL, or 1st gear.
- The system voltage is within 9-16 volts.
- The park brake or brakes is not applied.

Reference Information

Schematic Reference

- Cruise Control Schematics
- Body Control System Schematics

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- **Steering Wheel Schematics**

Connector End View Reference

- **Secondary/Configurable Connector End Views**
- **Data Communication Connector End Views**

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Circuit/System Verification

- Ensure that the following cruise control switches are not stuck in the engaged position:
 - ON/OFF switch
 - - Set switch
 - + RES switch
 - Cancel switch
- Inspect for proper operation of the stop lamps. Refer to **Exterior Lighting Systems Description and Operation** .
- Rotate the steering wheel to both steering stops while activating each cruise control switch separately. With a scan tool, observe the Cruise Control Switch parameters in the BCM. Ensure that each cruise control switch activated and that each displayed switch position in the Cruise Control Switch parameter match as the steering wheel is turned. This will help eliminate the possibility of an internally open or shorted inflatable restraint steering wheel module coil.

Circuit/System Testing

CAUTION: Refer to SIR Caution .

Disable the inflatable restraint steering wheel module when performing this diagnostic. Refer to **Sir Disabling And Enabling** .

1. Ignition OFF, remove the inflatable restraint steering wheel module. Refer to **Inflatable Restraint Steering Wheel Module Replacement** .
2. Disconnect the harness connector of the cruise control switch.
3. Ignition ON, measure for 10 volts or greater at the cruise control supply voltage circuit.
 - If less than 10 volts, check for an open/high resistance or for a short to ground on the cruise control supply voltage circuit.

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4. Ignition OFF, test for an open, for a high resistance, for a short to ground, or for a short to voltage in the cruise control switch signal circuit.
5. Test the component. If the circuits and the component tests are normal, replace the BCM.

Component Testing

CAUTION: Refer to SIR Caution .

Disable the inflatable restraint steering wheel module when performing this diagnostic. Refer to Sir Disabling And Enabling .

IMPORTANT: The cruise control ON/OFF switch must be ON in order to properly measure the resistance of the - SET, the + RES, and the Cancel switches.

1. With the ignition OFF, remove the inflatable restraint steering wheel module. Refer to Inflatable Restraint Steering Wheel Module Replacement .
2. With the ignition OFF, disconnect C277 at the inflatable restraint steering wheel module coil.
3. Measure the resistance between terminals 1 and 3 at the cruise control switch side of the connector. Individually activate and hold each cruise control function switch and compare the resistance reading to the values on the schematic for the ON/OFF, - SET, the + RES, and the Cancel switches.
 - o If any of the resistance measurements for the OFF, ON, - SET, + RES, and Cancel switches are not within the listed resistance values, replace the cruise control switch assembly.

Cruise Control Inoperative/Malfunctioning

Function Switch	Minimum Resistance Value	Maximum Resistance Value
OFF	O.L.	O.L.
ON	6.5k Ohms	7.0k Ohms
- SET	2.2k Ohms	2.4k Ohms
+ RES	3.7k Ohms	3.8k Ohms
Cancel	1.4k Ohms	1.6k Ohms

Repair Procedures

Perform the Diagnostic Repair Verification after completing the diagnostic procedure.

- Steering Wheel Control Switch Assembly Replacement
- Control Module References for BCM replacement, setup, and programming

DESCRIPTION AND OPERATION

CRUISE CONTROL DESCRIPTION AND OPERATION

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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 stop lamp switch
- The body control module (BCM)
- The cruise control switches
- The engine control module (ECM)
- 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, which are located on the steering wheel:

- The on/off switch
- The + RES switch
- The - SET switch

The body control module (BCM) monitors the signal circuit of the cruise control switches. The BCM relays the cruise control switch status to the engine control module (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 the desired vehicle speed. The ECM uses the throttle actuator control (TAC) motor in order to maintain the vehicle speed. For further information on the TAC System, refer to **Throttle Actuator Control (TAC) System Description**.

Voltage is supplied to the cruise control switch via the steering wheel control switch reference voltage circuit supplied by the BCM. 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 the cruise control function switch being activated. When the normally open cruise control on/off switch is turned ON, the switch closes and the BCM supplies a ground to the cruise control switch ON indicator circuit as it becomes illuminated. The BCM sends a GMLAN serial data message to the ECM indicating that the on/off switch is active. Similarly, when the normally open + RES switch or the normally open - SET switch are pressed, the switch closes and the BCM detects the 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 + RES switch or the - SET switch is active. 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 to the driver information center (DIC) in order to illuminate the CRUISE SET TO ### message. The ECM sends a GMLAN serial data message to the instrument panel cluster (IPC) in order to illuminate the Cruise Engaged indicator in the IPC. The - SET switch and the + RES switch will remain inactive when the BCM has not received the predetermined voltage signal from the

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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 activating the + RES switch will recall the previous vehicle speed, after the cruise control system is disengaged by pressing the brake pedal or by activating the CANCEL switch.

Cruise Control Disengaged

The engine control module (ECM) disengages the cruise control operation based on the signals from the following switches:

- The stop lamp switch
- The cruise control On/Off switch
- The cruise control cancel switch

The body control module (BCM) determines when the cruise control cancel switch is activated. When the normally open cancel switch is closed, the BCM detects the predetermined voltage signal on the cruise control function switch circuit. The BCM sends a GMLAN serial data message to the ECM in order to disengage the cruise control system.

The stop lamp switch is mounted on the brake pedal bracket. When the brake pedal is applied, the normally open stop lamp switch closes. The ECM monitors the stop lamp signal circuit through a discrete input and a GMLAN serial data message signal from the BCM indicating the brake status. When both signals indicate the brake pedal is applied, the ECM will disengage the cruise control system.

The Cruise Control System will disengage when the cruise control on/off switch is switched OFF. The vehicle speed stored in the memory of the engine control module will be erased when the cruise control On/Off switch is turned OFF, or the ignition switch is turned OFF.

The Cruise Control System will disengage when the ECM detects that a driver override function has been active for approximately 60 seconds. When the Cruise Control System has been disengaged, the ECM sends a GMLAN serial message to the instrument panel cluster (IPC) in order to turn OFF the Cruise Engaged indicator, and to the driver information center (DIC) in order to turn OFF the CRUISE SET TO ### message.

Cruise Control Inhibited

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

- The ECM has not detected a brake pedal activation from the body control module (BCM).
- A Cruise Control System DTC has been set.
- The vehicle speed is less than 40.2 km/h (25 mph).
- The vehicle speed is too high.
- The vehicle is in PARK, REVERSE, NEUTRAL, or 1st gear.
- The engine RPM is too low.
- The engine RPM is too high.
- The system voltage is not between 9-16 volts.
- The Antilock Brake System (ABS)/Traction Control System (TCS) is active for more than 2 seconds.