

2008 ACCESSORIES & EQUIPMENT

Cruise Control - LaCrosse

SCHEMATIC AND ROUTING DIAGRAMS

CRUISE CONTROL SCHEMATICS

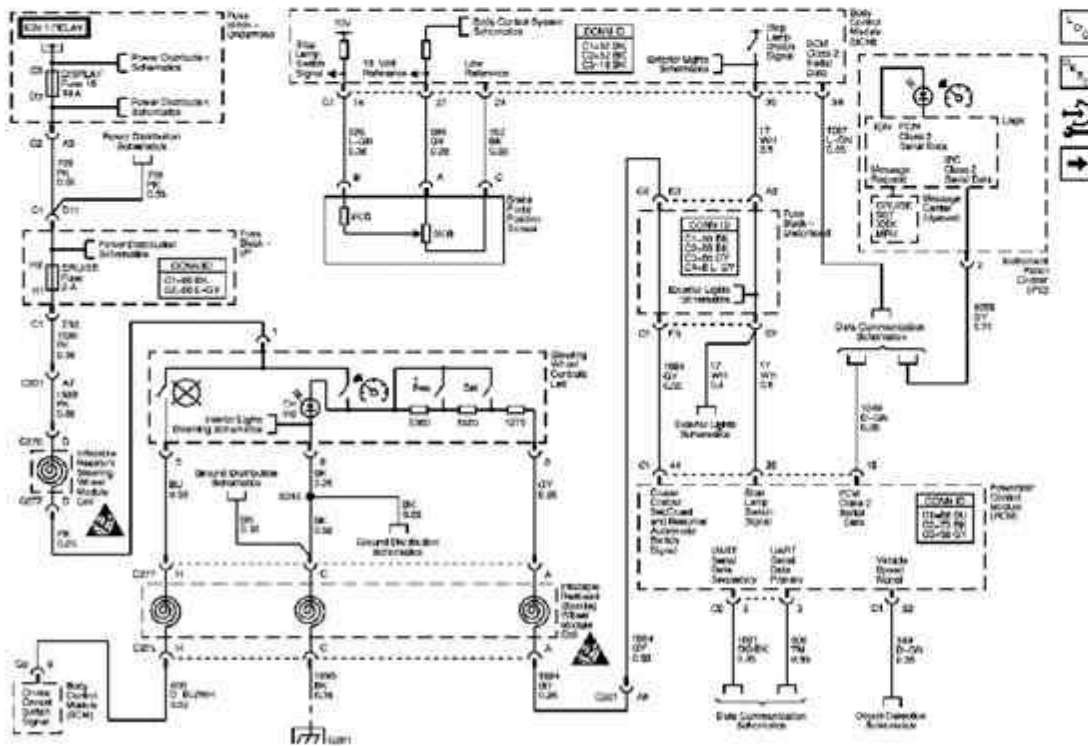


Fig. 1: Cruise Control Schematic - L26
 Courtesy of GENERAL MOTORS CORP.

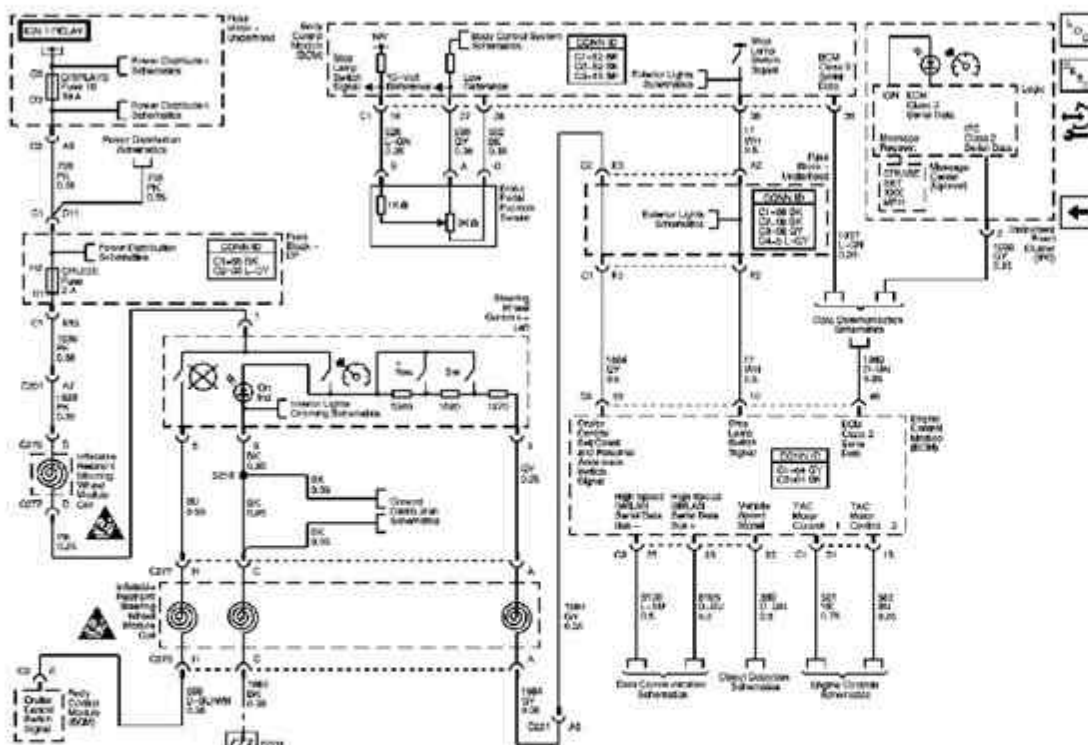


Fig. 2: Cruise Control Schematic - LY7
 Courtesy of GENERAL MOTORS CORP.

DIAGNOSTIC INFORMATION AND PROCEDURES

DIAGNOSTIC CODE INDEX

DIAGNOSTIC CODE INDEX

DTC	Description
DTC P0564	P0564 00: Cruise Control Multifunction Switch Circuit
DTC P0567	P0567 00: Cruise Control Resume Switch Circuit
DTC P0568	P0568 00: Cruise Control Set Switch Circuit
DTC P0581	P0581 00: Cruise Control Multifunction Switch High Voltage
DTC P0608	P0608 00: Vehicle Speed Output Circuit
DTC P0703	P0703 00: Brake Switch Circuit 2
DTC P1574	P1574 00: Stop Lamp Switch Circuit
DTC P2162	P2162 00: Vehicle Speed Sensor (VSS) Circuit 1-2 Correlation

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 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.

DTC P0564

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptor

DTC P0564 00

Cruise Control Multifunction Switch Circuit

Diagnostic Fault Information

Circuit	Short to Ground	High Resistance	Open	Short to Voltage	Signal Performance
Cruise Control Switch Signal	1	P0564	1	P0567, P0568	P0564
Cruise Control Switch Supply Voltage	1	P0564	1	-	P0564

1. Cruise Control Inoperative

Circuit/System Description

The cruise control switch is an input to the engine control module (ECM)/powertrain control module (PCM). The ECM/PCM monitors the cruise control switch signal circuit in order to detect when a cruise control function switch has been requested. The ECM/PCM detects a predetermined voltage signal when a cruise control function

switch is applied, with each switch having a different voltage value.

Conditions for Running the DTC

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

Conditions for Setting the DTC

- The ECM/PCM detects an invalid voltage signal on the cruise control switch signal circuit.
- The above condition is present for greater than 2 seconds.
- The ECM/PCM runs this diagnostic every 0.05 second.

Action Taken When the DTC Sets

- The ECM/PCM 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

- The DTC becomes history when the fault is no longer present.
- A History DTC clears after 100 malfunction-free ignition cycles.

Reference Information**Schematic Reference****Cruise Control Schematics****Connector End View Reference****Component Connector End Views****Description and Operation****Cruise Control Description and Operation****Electrical Information Reference**

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

Scan Tool Reference**Control Module References** for scan tool information**Circuit/System Verification**

Ignition ON, Cruise Control Switch ON, verify that the Cruise Set/Coast Switch and Resume/Accel switch parameters read Inactive (OFF). The switch parameter should change to Active (ON) and back to Inactive (OFF)

as the appropriate switch is pressed and released.

Circuit/System Testing

1. Ignition OFF, remove the inflatable restraint steering wheel module. Refer to **Inflatable Restraint Steering Wheel Module Replacement**.
2. Disconnect the cruise control switch.
3. Ignition ON, measure for 10 volts or greater at the cruise control supply voltage circuit terminal 1.
 - o If less than the specified value, test the cruise control supply voltage circuit for an open/high resistance or a short to ground.
4. Ignition ON, verify that a test lamp illuminates between the cruise control supply voltage circuit terminal 1 and the cruise control switch signal circuit terminal 5.
 - o If the test lamp does not illuminate, test the cruise control switch signal circuit for an open/high resistance or a short to voltage. If the circuit tests normal, replace the ECM/PCM.
5. Ignition OFF, disconnect the harness connector X1 at the ECM/PCM.
6. Ignition ON, verify that a test lamp does not illuminate between the cruise control supply voltage circuit terminal 1 and the cruise control switch signal circuit terminal 5 of the cruise control switch harness.
 - o If the test lamp illuminates, test the cruise control switch signal circuit for a short to ground.
7. If the circuits test normal, test the cruise control switch. If the circuits and the component tests are normal, replace the ECM/PCM.

Component Testing

IMPORTANT: The cruise control switch must be ON in order to properly measure the resistance of the set/cruise and the resume/accel switches.

1. Ignition OFF, remove the inflatable restraint steering wheel module. Refer to **Inflatable Restraint Steering Wheel Module Replacement**.
2. Disconnect the cruise control switch.
3. Cruise control switch ON, measure the resistance between terminals 1 and 3 of the cruise control switch. Individually activate and hold each cruise control function switch and compare the resistance reading to the values in the table for the appropriate switch.
4. For the cancel switch, measure the resistance between terminals 1 and 5 of the cruise control switch. The meter reading should indicate O.L. with the switch released, and less than 1 ohm with the switch pressed.
 - o If any resistance measurements for any of the switches are not within the listed resistance values, replace the cruise control switch assembly.

Function Switch	Minimum Resistance Value	Maximum Resistance Value
OFF	O.L.	O.L.
ON	8.0k Ohms	8.5k Ohms
SET/CRUISE	1.0k Ohms	1.5k Ohms
RESUME/ACCEL	2.7k Ohms	3.1k Ohms

Repair Procedures

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

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

DTC P0567**Diagnostic Instructions**

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptor**DTC P0567 00**

Cruise Control Resume Switch Circuit

Diagnostic Fault Information

Circuit	Short to Ground	High Resistance	Open	Short to Voltage	Signal Performance
Cruise Control Switch Signal	1	P0564	1	P0567, P0568	P0564
Cruise Control Switch Supply Voltage	1	P0564	1	-	P0564
1. Cruise Control Inoperative					

Circuit/System Description

The cruise control switch is an input to the engine control module (ECM)/powertrain control module (PCM). The ECM/PCM monitors the cruise control switch signal circuit in order to detect when a cruise control function switch has been requested. The ECM/PCM detects a predetermined voltage signal when a cruise control function switch is applied, with each switch having a different voltage value.

Conditions for Running the DTC

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

Conditions for Setting the DTC

The ECM/PCM detects that the resume/accel switch is applied for longer than 90 seconds.

Action Taken When the DTC Sets

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

Conditions for Clearing the DTC

- A last test failed, or the current DTC, clears when the diagnostic runs and does fail.
- A history DTC clears after 40 consecutive warm-up cycles.

Diagnostic Aids

Ensure that the resume/accel switch is not stuck or sticking in the applied position.

Reference Information**Schematic Reference****Cruise Control Schematics****Connector End View Reference****Component Connector End Views****Description and Operation****Cruise Control Description and Operation****Electrical Information Reference**

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

Scan Tool Reference**Control Module References** for scan tool information**Circuit/System Verification**

Ignition ON, Cruise Control Switch ON, verify that the Cruise Resume/Accel. Switch parameter reads Inactive (OFF). The switch parameter should change to Active (ON) and back to Inactive (OFF) as the switch is pressed and released.

Circuit/System Testing

1. Ignition OFF, remove the inflatable restraint steering wheel module. Refer to **Inflatable Restraint Steering Wheel Module Replacement**.
2. Disconnect the cruise control switch.
3. Ignition ON, verify that the scan tool Cruise Resume/Accel. Switch parameter displays Off or Inactive.
 - o If the scan tool parameter reads On, Active or Invalid, test the cruise control switch signal circuit for a short to voltage. If the circuit tests normal, replace the ECM/PCM.
4. If all circuits test normal, replace the cruise control switch assembly.

Repair Procedures

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

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

DTC P0568**Diagnostic Instructions**

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.

- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptor**DTC P0568 00**

Cruise Control Set Switch Circuit

Diagnostic Fault Information

Circuit	Short to Ground	High Resistance	Open	Short to Voltage	Signal Performance
Cruise Control Switch Signal	1	P0564	1	P0567, P0568	P0564
Cruise Control Switch Supply Voltage	1	P0564	1	-	P0564
1. Cruise Control Inoperative					

Circuit/System Description

The cruise control switch is an input to the engine control module (ECM)/powertrain control module (PCM). The ECM/PCM monitors the cruise control switch signal circuit in order to detect when a cruise control function switch has been requested. The ECM/PCM detects a predetermined voltage signal when a cruise control function switch is applied, with each switch having a different voltage value.

Conditions for Running the DTC

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

Conditions for Setting the DTC

The ECM detects that the set/coast switch is applied for longer than 90 seconds.

Action Taken When the DTC Sets

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

Diagnostic Aids

Ensure that the set/coast switch is not stuck or sticking in the applied position.

Reference Information**Schematic Reference****Cruise Control Schematics**

Connector End View Reference

Component Connector End Views

Description and Operation

Cruise Control Description and Operation

Electrical Information Reference

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

Ignition ON, Cruise Control Switch ON, verify that the Cruise Set/Coast Switch parameter reads Inactive (OFF). The switch parameter should change to Active (ON) and back to Inactive (OFF) as the switch is pressed and released.

Circuit/System Testing

1. Ignition OFF, remove the inflatable restraint steering wheel module. Refer to **Inflatable Restraint Steering Wheel Module Replacement**.
2. Disconnect the cruise control switch.
3. Ignition ON, cruise control switch ON, verify that the scan tool Cruise Set/Coast Switch parameter displays Off or Inactive.
 - o If the scan tool parameter reads On, Active or Invalid, test the cruise control switch signal circuit for a short to voltage. If the circuit tests normal, replace the ECM/PCM.
4. If all circuits test normal, replace the cruise control switch assembly.

Repair Procedures

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

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

DTC P0581

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptor

DTC P0581 00

Cruise Control Multifunction Switch High Voltage

Diagnostic Fault Information

Circuit	Short to Ground	High Resistance	Open	Short to Voltage	Signal Performance
Cruise Control Switch Signal	1	P0564	1	P0581	P0564
Cruise Control Switch Supply Voltage	1	P0564	1	-	P0564
1. Cruise Control Inoperative					

Circuit/System Description

The cruise control switch is an input to the engine control module (ECM). The ECM monitors the cruise control switch signal circuit in order to detect when a cruise control function switch has been requested. The ECM detects a predetermined voltage signal when a cruise control function switch is applied, with each switch having a different voltage value.

Conditions for Running the DTC

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

Conditions for Setting the DTC

- The ECM detects that the voltage on the cruise control switch signal circuit is greater than 3.5 volts.
- The above condition is present for greater than 1.5 seconds.
- The ECM/PCM runs this diagnostic every 0.05 second.

Action Taken When the DTC Sets

- The ECM/PCM 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

- The DTC becomes history when the fault is no longer present.
- A History DTC clears after 40 malfunction-free ignition cycles.

Diagnostic Aids

Ensure that the cruise control switches are not stuck or sticking in the applied position.

Reference Information

Schematic Reference

Cruise Control Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Cruise Control Description and Operation

Electrical Information Reference

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

Ignition ON, Cruise Control Switch ON, verify that the Cruise Set/Coast Switch and Resume/Accel switch parameters read Inactive (OFF). The switch parameter should change to Active (ON) and back to Inactive (OFF) as the appropriate switch is pressed and released.

Circuit/System Testing

1. Ignition OFF, remove the inflatable restraint steering wheel module. Refer to Inflatable Restraint Steering Wheel Module Replacement.
2. Disconnect the cruise control switch.
3. Ignition ON, verify that the scan tool Cruise Resume/Accel. Switch and Set/Coast switch parameters display Off or Inactive.
 - o If either of the scan tool parameters reads On, Active or Invalid, test the cruise control switch signal circuit for a short to voltage. If the circuit tests normal, replace the ECM.
4. If all circuits test normal, replace the cruise control switch assembly.

Repair Procedures

Perform the Diagnostic Repair Verification after completing the diagnostic procedure.

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

DTC P0608

Diagnostic Instructions

- Perform the Diagnostic System Check - Vehicle prior to using this diagnostic procedure.
- Review Strategy Based Diagnosis for an overview of the diagnostic approach.
- Diagnostic Procedure Instructions provides an overview of each diagnostic category.

DTC Descriptor

DTC P0608 00

Vehicle Speed Output Circuit

Diagnostic Fault Information

2008 Buick LaCrosse CXL

2008 ACCESSORIES & EQUIPMENT Cruise Control - LaCrosse

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Vehicle Speed Signal	P0608	P0608	P0608	-

Circuit/System Description

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

Conditions for Running the DTC

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

Conditions for Setting the DTC

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

Action Taken When the DTC Sets

- The cruise control system is disabled.
- The PCM stores a DTC P0608 in memory.
- The PCM records the operating conditions at the time the DTC sets.

Conditions for Clearing the DTC

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

Reference Information**Schematic Reference**

- Cruise Control Schematics
- Engine Controls Schematics

Connector End View Reference**Component Connector End Views****Description and Operation****Cruise Control Description and Operation****Electrical Information Reference**

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

1. Ignition OFF, install a scan tool and raise the vehicle drive wheels. Refer to **Lifting and Jacking the Vehicle**.
2. Engine ON, transmission in Drive, verify that DTC P0502 or P0503 are not set as current.
 - o If any of the specified codes are set as current, refer to **Diagnostic Trouble Code (DTC) List - Vehicle**.
3. Engine ON, transmission in Drive, verify the scan tool Vehicle Speed Sensor parameter reads any vehicle speed.
 - o If the scan tool parameter does not read any vehicle speed, replace the PCM.

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the throttle actuator control (TAC) module.
2. Ignition ON, test for 8.5V between the vehicle speed signal terminal 4 and ground.
 - o If less than the specified value, test the vehicle speed signal circuit for an open or short to ground. If the circuit tests normal, replace the PCM.
 - o If greater than the specified value, test the vehicle speed signal circuit for a short to voltage. If the circuit tests normal, replace the PCM.
3. If all circuits test normal, replace the TAC module.

Repair Procedures

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

Control Module References for PCM or TAC module replacement, setup, and programming

DTC P0703

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptor

DTC P0703 00

Brake Switch Circuit 2

Circuit/System Description

The body control module (BCM) monitors the brake pedal position sensor. When the brake pedal is applied, the

BCM detects a predetermined voltage signal. The BCM sends a serial data message to the engine control module (ECM)/powertrain control module (PCM) indicating the status of the stop lamps.

Conditions for Running the DTC

The engine is ON.

Conditions for Setting the DTC

- The ECM/PCM receives an invalid brake pedal status serial data message from the BCM.
- This diagnostic runs continuously.

Action Taken When the DTC Sets

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

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.
- A clear code command is received from a scan tool.

Reference Information**Schematic Reference****Cruise Control Schematics****Connector End View Reference****Component Connector End Views****Description and Operation**

- **Cruise Control Description and Operation**
- **Exterior Lighting Systems Description and Operation**

Electrical Information Reference

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

Scan Tool Reference**Control Module References** for scan tool information**Circuit/System Verification**

IMPORTANT:

- If a BCM has been replaced, the brake pedal position (BPP) sensor must be calibrated. Refer to Brake Pedal Position Sensor Calibration .
- This DTC may be stored as a history DTC without affecting the operation of the ECM/PCM. If stored only as a history DTC, do not replace the BCM or ECM/PCM.

1. Repair any brake system related DTCs before performing this diagnostic.
2. Road test the vehicle. Verify that DTC P0572 or P0573 are not set as current.
 - If either DTC is set as current, refer to Diagnostic Trouble Code (DTC) List - Vehicle .
3. Verify that DTC P0703 is not set.
 - If DTC P0703 is set as current, replace the BCM. Clear the DTC and road test the vehicle. If DTC P0703 resets as current, replace the ECM/PCM.

Repair Procedures

Perform the Diagnostic Repair Verification after completing the diagnostic procedure.

- Brake Pedal Position Sensor Replacement
- Control Module References for BCM, ECM, or PCM replacement, setup and programming

DTC P1574**Diagnostic Instructions**

- Perform the Diagnostic System Check - Vehicle prior to using this diagnostic procedure.
- Review Strategy Based Diagnosis for an overview of the diagnostic approach.
- Diagnostic Procedure Instructions provides an overview of each diagnostic category.

DTC Descriptor**DTC P1574 00**

Stop Lamp Switch Circuit

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Stop Lamp Switch Signal	P0572* P1574** C0297***	P0572* P1574**	P0573*	-
*ECM/PCM **PCM ***BCM				

Circuit/System Description

The stop lamp switch signal circuit is a direct input to the throttle actuator control (TAC) module from the body control module (BCM). The TAC module monitors the stop lamp switch signal circuit in order to detect when the brake pedal has been applied. When the brake pedal is pressed, the BCM sends a serial data message to the powertrain control module (PCM) indicating that the brake pedal has been applied. The BCM also sends a high voltage signal on the stop lamp switch signal circuit to the TAC module and the PCM. The TAC module sends a serial data message to the PCM indicating that a brake pedal application has occurred. The PCM compares the

serial data messages from the BCM and TAC modules in order to confirm that both serial data messages match.

This diagnostic test functions on the assumption that a sudden decrease in vehicle speed is caused by a brake pedal application. When the PCM detects that there is a 4.2 km/h (2.6 mph) or greater decrease in vehicle speed within 0.25 seconds and a transition of the torque converter clutch (TCC) brake/cruise release switch without a transition of the stop lamp switch, the PCM sets DTC P1574.

Conditions for Running the DTC

- DTC P0573 is not set.
- The engine speed is greater than 700 RPM.
- The traction control system or the antilock brake system are not active and have not failed.
- The vehicle speed is greater than 48 km/h (30 mph) in order to enable the diagnostic.

Conditions for Setting the DTC

- The vehicle speed decreases by at least 4.2 km/h (2.6 mph) within 0.25 second.
- The TAC module does not detect a voltage signal on the stop lamp switch signal circuit.
- The PCM does not detect a stop lamp switch transition.

Action Taken When the DTC Sets

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

Conditions for Clearing the DTC

- A last test failed, or the current DTC, clears when the diagnostic runs and does not fail.
- A history DTC clears after 40 consecutive warm-up cycles without a repeated failure.

Reference Information

Schematic Reference

- [Cruise Control Schematics](#)
- [Exterior Lights Schematics](#)

Connector End View Reference

Component Connector End Views

Description and Operation

- [Cruise Control Description and Operation](#)
- [Exterior Lighting Systems Description and Operation](#)

Electrical Information Reference

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

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

IMPORTANT: In order to avoid a misdiagnosis, perform the following:

- If a BCM has been replaced, the brake pedal position (BPP) sensor must be calibrated. Refer to **Brake Pedal Position Sensor Calibration** .
- Inspect for proper operation of the stop lamps. Refer to **Exterior Lighting Systems Description and Operation** .

Repair any brake system related DTCs before performing this diagnostic.

Ignition ON, observe the Stop Lamp Pedal Switch parameter in the PCM while applying and releasing the brake pedal. The reading should change between Applied/Released, and all brake lights should turn on and off accordingly.

Circuit/System Testing

1. Ignition OFF, disconnect the X1 harness connector at the PCM and the TAC module.
2. Connect a test lamp between the TAC module harness connector terminal 6 and ground.
3. Ignition ON, press and release the brake pedal. Verify the test lamp turns ON and OFF when pressing and releasing the brake pedal.
 - If the test lamp is always ON, test the stoplamp switch signal circuit for a short to voltage. If the circuit tests normal, replace the BCM.
 - If the test lamp is always OFF, test the signal circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the BCM.
4. Ignition OFF, connect the harness connector at the TAC module.
5. Connect a test lamp between the PCM connector X1 terminal 32 and ground.
6. Ignition ON, press and release the brake pedal. Verify the test lamp turns ON and OFF when pressing and releasing the brake pedal.
 - If the test lamp is always OFF, test the stoplamp switch signal circuit for an open/high resistance. If the circuit tests normal, replace the TAC module.
7. If all circuit tests normal, replace the TAC module. Clear the DTC and road test the vehicle. If DTC P1574 resets as current, replace the PCM.

Repair Procedures

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

- **Brake Pedal Position Sensor Replacement**
- **Control Module References** for PCM or TAC module replacement, setup, and programming

DTC P2162

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptor**DTC P2162 00**

Vehicle Speed Sensor (VSS) Circuit 1-2 Correlation

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Vehicle Signal	P2162	P2162	P2162	-

Circuit/System Description

The vehicle speed signal circuit is an input to the throttle actuator control (TAC) module from the powertrain control module (PCM). The TAC module uses the vehicle speed signal from the PCM in order to determine the vehicle speed. The TAC module then sends a serial data message to the PCM indicating the vehicle speed that the TAC module has detected.

Conditions for Running the DTC

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

Conditions for Setting the DTC

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

Action Taken When the DTC Sets

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

Conditions for Clearing the DTC

- The history DTC clears after 40 malfunction free warm-up cycles.
- The DTC becomes history when the conditions for setting the DTC are no longer present.

Reference Information**Schematic Reference**

- **Cruise Control Schematics**
- **Engine Controls Schematics**

Connector End View Reference

Component Connector End Views

Description and Operation

Cruise Control Description and Operation

Electrical Information Reference

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

1. Ignition OFF, install a scan tool and raise the vehicle drive wheels. Refer to Lifting and Jacking the Vehicle.
2. Engine ON, transmission in Drive, verify that DTC P0502 or P0503 are not set as current in the PCM.
 - If any of the specified codes are set as current, refer to Diagnostic Trouble Code (DTC) List - Vehicle.
3. Engine ON, transmission in Drive, verify the scan tool Vehicle Speed Sensor parameter reads any vehicle speed.
 - If the scan tool parameter does not read any vehicle speed, replace the PCM.

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the throttle actuator control (TAC) module.
2. Ignition ON, test for 8.5V between the vehicle speed signal terminal 4 and ground.
 - If less than the specified value, test the vehicle speed signal circuit for an open or short to ground. If the circuit tests normal, replace the PCM.
 - If greater than the specified value, test the vehicle speed signal circuit for a short to voltage. If the circuit tests normal, replace the PCM.
3. If all circuits test normal, replace the TAC module.

Repair Procedures

Perform the Diagnostic Repair Verification after completing the diagnostic procedure.

Control Module References for PCM or TAC module replacement, setup, and programming

SYMPTOMS - CRUISE CONTROL

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

1. Before using the symptom diagnostic table, perform the Diagnostic System Check - Vehicle, in order to verify the following conditions:
 - There are no DTCs set.

- The module can communicate via the serial data link.
2. Review the system operation in order to understand the system functions. Refer to **Cruise Control Description and Operation**.

Visual/Physical Inspection

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

Intermittent

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

Symptom List

Refer to a symptom diagnostic procedure from the following list in order to diagnose the symptom:

- **Cruise Control Malfunction**
- **Cruise Control Indicator Malfunction (IPC Indicator Malfunction)** or **Cruise Control Indicator Malfunction (Switch Indicator Malfunction)**

CRUISE CONTROL INDICATOR MALFUNCTION (IPC INDICATOR MALFUNCTION)**Diagnostic Instructions**

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

Circuit/System Description

The instrument panel cluster (IPC) illuminates the cruise control engaged indicator based on serial data messages received from the engine control module (ECM) or the powertrain control module (PCM). The indicator is commanded ON when the cruise control system is controlling vehicle speed, and turned OFF with the system disengaged.

Diagnostic Aids

- This diagnostic assumes the cruise control system is functioning normally and there are no DTCs set. If the cruise control system is malfunctioning, refer to **Cruise Control Malfunction**.
- If any DTCs are set, refer to **Diagnostic Trouble Code (DTC) List - Vehicle**.

Reference Information**Schematic Reference**

- **Cruise Control Schematics**
- **Instrument Cluster Schematics**

Connector End View Reference**Component Connector End Views**

Description and Operation

- Cruise Control Description and Operation
- Indicator/Warning Message Description and Operation

Electrical Information Reference

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

Ignition ON, perform the IPC display test using a scan tool. Verify the indicator illuminates and turns OFF.

- If the indicator does not operate as expected during this test, replace the IPC.
- If the indicator functions normally during this test, replace the ECM/PCM.

Repair Procedures

Perform the Diagnostic Repair Verification after completing the diagnostic procedure.

Control Module References for ECM, PCM or IPC replacement, setup and programming

CRUISE CONTROL INDICATOR MALFUNCTION (SWITCH INDICATOR MALFUNCTION)

Diagnostic Instructions

- Perform the Diagnostic System Check - Vehicle prior to using this diagnostic procedure.
- Review Strategy Based Diagnosis for an overview of the diagnostic approach.
- Diagnostic Procedure Instructions provides an overview of each diagnostic category.

Diagnostic Fault Information

Circuit	Short to Ground	High Resistance	Open	Short to Voltage	Signal Performance
Cruise Control Switch Supply Voltage	1	1	1	-	-
Cruise Control Indicator Ground	-	2	2	2	-
1. Cruise Control Inoperative 2. Indicator Lamp Inoperative					

Circuit/System Description

The cruise control switch contains an LED that illuminates to indicate the cruise control system has been switched ON. Voltage is applied through the ON/OFF switch to the LED when the switch is pressed. Pressing the switch again opens the switch and the lamp turns OFF.

Diagnostic Aids

This diagnostic assumes the cruise control system is operating properly and no DTCs are set. If the cruise control system is malfunctioning, refer to **Cruise Control Malfunction**.

If any DTCs are set, refer to **Diagnostic Trouble Code (DTC) List - Vehicle** .

Reference Information

Schematic Reference

Cruise Control Schematics

Connector End View Reference

Component Connector End Views

Electrical Information Reference

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

Engine ON, press and release the cruise control ON/OFF switch while observing the Cruise On/Off Switch parameter in the ECM data list with a scan tool. The parameter should change and the indicator lamp should turn ON or OFF accordingly each time the switch is actuated.

Circuit/System Testing

1. Ignition ON, with a scan tool observe the Cruise On/Off Switch parameter. Verify the parameter changes each time the switch is actuated
 - o If the parameter reads ON at all times replace the cruise control switch.
2. Ignition OFF, remove the inflatable restraint steering wheel module. Refer to **Inflatable Restraint Steering Wheel Module Replacement** .
3. Disconnect the harness connector at the cruise control switch assembly.
4. Ignition ON, verify a test lamp illuminates between the cruise control harness connector terminals 1 and 8.
 - o If the test lamp does not illuminate, test the ground circuit terminal 8 for an open or high resistance.
5. If all circuits test normal replace the cruise control switch.

Repair Procedures

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

Steering Wheel Control Switch Assembly Replacement

CRUISE CONTROL MALFUNCTION

Diagnostic Instructions

2008 Buick LaCrosse CXL

2008 ACCESSORIES & EQUIPMENT Cruise Control - LaCrosse

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

Diagnostic Fault Information

Circuit	Short to Ground	High Resistance	Open	Short to Voltage	Signal Performance
Cruise Control Switch Signal	1	P0564	1	P0567, P0568, P0581	P0564
Cruise Control Switch Supply Voltage	1	P0564	1	-	P0564
1. Cruise Control Inoperative					

Circuit/System Description

The cruise control switch is an input to the engine control module (ECM)/powertrain control module (PCM). The ECM/PCM monitors the cruise control switch signal circuit in order to detect when a cruise control function switch has been requested. The ECM/PCM detects a predetermined voltage signal when a cruise control function switch is applied, with each switch having a different voltage value.

Diagnostic Aids

This diagnostic assumes the cruise control system is operating properly and no DTCs are set. If the cruise control system is malfunctioning, refer to **Cruise Control Malfunction**.

If any DTCs are set, refer to **Diagnostic Trouble Code (DTC) List - Vehicle**.

Reference Information

Schematic Reference

Cruise Control Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Cruise Control Description and Operation

Electrical Information Reference

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

Ignition ON, Cruise Control Switch ON, verify that the Cruise Set/Coast Switch and Resume/Accel switch parameters read Inactive (OFF). The switch parameter should change to Active (ON) and back to Inactive (OFF) as the appropriate switch is pressed and released. Road test the vehicle to ensure the cruise control system functions as described in **Cruise Control Description and Operation**.

Circuit/System Testing

IMPORTANT:

- Verify there are no DTCs set as current. If any DTCs are set as current, refer to **Diagnostic Trouble Code (DTC) List - Vehicle** and perform the appropriate diagnostics/repairs before proceeding with symptom based diagnostics.
- Inspect the cruise control switches for any sticking or binding conditions.
- Inspect for proper operation of the stop lamps. Refer to **Exterior Lighting Systems Description and Operation**.
- With the ignition ON, cruise control On/Off switch ON, rotate the steering wheel to both steering stops while activating each cruise control switch separately. With a scan tool, observe all cruise control switch parameters in the ECM/PCM. Ensure that each cruise control switch activates and that each of the displayed switch position parameters match the currently activated switch, and do not read Invalid. This will aid in locating an intermittent fault within the inflatable restraint steering wheel module coil.

1. Ignition OFF, remove the inflatable restraint steering wheel module. Refer to **Inflatable Restraint Steering Wheel Module Replacement**.
2. Disconnect the cruise control switch.
3. Ignition ON, measure for 10 volts or greater at the cruise control supply voltage circuit terminal 1.
 - o If less than the specified value, test the cruise control switch supply voltage circuit for an open/high resistance or a short to ground.
4. Ignition ON, verify that a test lamp illuminates between the cruise control supply voltage circuit terminal 1 and the cruise control switch signal circuit terminal 3.
 - o If the test lamp does not illuminate, test the cruise control switch signal circuit for an open or high resistance.
5. Ignition OFF, disconnect the harness connector X1 at the ECM/PCM.
6. Ignition ON, verify that a test lamp does not illuminate between the cruise control supply voltage circuit terminal 1 and the cruise control switch signal circuit terminal 3 of the cruise control switch harness.
 - o If the test lamp illuminates, test the cruise control switch signal circuit for a short to ground.
7. If the circuits test normal, test the cruise control switch. If the circuits and the component tests are normal, replace the ECM/PCM.

Component Testing

IMPORTANT: The cruise control switch must be ON in order to properly measure the resistance of the set/cruise and the resume/accel switches.

1. Ignition OFF, remove the inflatable restraint steering wheel module. Refer to **Inflatable Restraint Steering Wheel Module Replacement**.
2. Disconnect the cruise control switch.
3. Cruise control switch ON, measure the resistance between terminals 1 and 3 of the cruise control switch. Individually activate and hold each cruise control function switch and compare the resistance reading to the values in the table for the appropriate switch.

4. For the cancel switch, measure the resistance between terminals 1 and 5 of the cruise control switch. The meter reading should indicate O.L. with the switch released, and less than 1 ohm with the switch pressed.
- o If any resistance measurements for any of the switches are not within the listed resistance values, replace the cruise control switch assembly.

Function Switch	Minimum Resistance Value	Maximum Resistance Value
OFF	O.L.	O.L.
ON	8.0k Ohms	8.5k Ohms
SET/CRUISE	1.0k Ohms	1.5k Ohms
RESUME/ACCEL	2.7k Ohms	3.1k Ohms

Repair Procedures

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

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

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 brake pedal position (BPP) sensor
- The on/off switch
- The CANCEL switch
- The RES + switch
- The SET - switch
- The body control module (BCM)
- The engine control module (ECM) (with 3.6 or 5.3L engines)
- The powertrain control module (PCM) (with 3.8L engine)
- The throttle actuator control (TAC) module (with 3.8L engine)
- 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 +
- SET -

The engine control module (ECM)/powertrain control module (PCM) monitors the signal circuit of the cruise

control switches. The ECM/PCM uses the cruise control set/coast and resume/accelerate switch signal circuit in order to determine when to capture and maintain the vehicle speed. The ECM/PCM monitors the vehicle speed signal circuit in order to determine the vehicle speed. The ECM (3.6L and 5.3L) uses the throttle actuator control (TAC) motor in order to maintain the vehicle speed. The PCM (3.8L) uses the throttle actuator control (TAC) module and the TAC motor in order to maintain the vehicle speed. For further review of the TAC System, refer to one of the following:

- **Throttle Actuator Control (TAC) System Description** for the 3.6L engine
- **Throttle Actuator Control (TAC) System Description** for the 3.8L engine
- **Throttle Actuator Control (TAC) System Description** for the 5.3L engine

Ignition voltage is supplied to the cruise control switch from the 2-amp CRUISE SW fuse located in the instrument panel (I/P) fuse block. The cruise control function switches are arranged in a resistive ladder design, with each cruise control function switch having a different resistance value. The ECM/PCM detects a specific voltage value that is associated with the cruise control function switch being activated. When the normally open cruise control on/off switch is turned ON, the switch closes and the amber cruise control on/off switch illuminates. The ECM/PCM also detects a predetermined voltage signal on the cruise control set/coast and resume/accel switch signal circuit indicating that the on/off switch is active. Similarly, when the normally open RES + switch or the normally open SET - switch are activated, the ECM/PCM detects the predetermined voltage signal on the cruise control set/coast and resume/accel switch signal circuit. To engage the Cruise Control System, press the cruise on/off button On and momentarily activate the SET - switch. The ECM/PCM will engage the Cruise Control System and the ECM (3.6L and 5.3L) or the throttle actuator control (TAC) module (3.8L) will record the vehicle speed. The ECM/PCM sends a serial data message to the instrument panel cluster (IPC) in order to activate the Cruise Engaged indicator. The SET - switch or the RES + switch will remain inactive when the ECM/PCM has not received the predetermined voltage signal from the on/off switch. Pressing the accelerator pedal, while the Cruise Control System is engaged, will allow the driver to override the Cruise Control System in order to accelerate the vehicle beyond the current set vehicle speed. When the accelerator pedal is released, the vehicle will decelerate and resume the current set vehicle speed.

The driver can also override the current set vehicle speed via the SET - switch and the RES + switch. When the Cruise Control System is engaged, activating 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 vehicle will maintain the current vehicle speed as the new vehicle set speed. Momentarily activating the SET - switch will allow the vehicle to decelerate at 1.6 km/h (1 mph) increments for each time that the SET - switch is activated. The minimum vehicle speed for the tap down function is 37 km/h (23 mph). Activating 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 vehicle will maintain the current vehicle speed as the new vehicle set speed. Momentarily activating 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 pressed. The tap up function will only accelerate the vehicle a 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 activating the CANCEL switch.

Cruise Control Disengaged

The ECM/PCM disengages the cruise control operation based on the signals from one of the following:

- The brake pedal position (BPP) sensor
- The on/off switch
- The CANCEL switch

The BPP sensor is mounted on the brake pedal bracket. Pressing the brake pedal while the cruise control is engaged will disengage the Cruise Control System. The body control module (BCM) monitors the BPP sensor via

the brake pedal position sensor signal circuit. The ECM detects a high voltage signal on stop lamp switch signal circuit from the BCM indicating that the brake pedal has been pressed. For further information on the BPP, refer to **Exterior Lighting Systems Description and Operation** .

The Cruise Control System will also disengage when the cruise control cancel switch is activated. 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 a high signal voltage on the cruise control cancel switch signal circuit and sends a serial data message to the ECM/PCM to disengage the cruise control system.

When the cruise control on/off switch is turned OFF, the Cruise Control System will disengage.

The Cruise Control System will also disengage when the ECM/PCM detects that a driver override function has been active for approximately 60 seconds.

When Cruise Control System has been disengaged, the ECM/PCM sends a serial data message to the instrument panel cluster (IPC) in order to turn off the Cruise indicator.

The vehicle speed stored in memory will be erased when the cruise control On/Off switch is turned OFF, or the ignition switch is turned OFF.

Cruise Control Inhibited

The ECM/PCM inhibits the cruise control operation when any of the following conditions exist:

- 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 within 9-16 volts.
- The Traction Control System (TCS) is active for more than 2 seconds.

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