

Conditions for Setting the DTC

The BCM detects a low/high voltage on the control circuit.

Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists.
- A history DTC will clear once 100 consecutive malfunction free ignition cycles have occurred.

Reference Information

Schematic Reference

Steering Wheel Secondary/Configurable Control Wiring Schematics

Connector End View Reference

Master Electrical Component List , or Inline Harness Connector End Views - Index or Component Connector End Views - Index

Description and Operation

Steering Wheel Controls Description and Operation (with UDC), or Steering Wheel Controls Description and Operation (with UDD)

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. Engine running, accessories OFF, measure and record the battery voltage at the battery terminals.
2. Verify the voltage measured at the battery terminals is between 12.6 - 15.0 V.
 - **If not between 12.6 - 15.0 V**

Refer to Charging System Test .

- **Go to next step: If between 12.6 - 15.0 V**

3. Refer to Circuit/System Testing.

Circuit/System Testing

1. Ensure a battery charger is not connected to the battery.
2. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the S70R Steering Wheel Controls Switch - Right, ignition ON.
3. Test for 11 - 12.2 V between the reference voltage circuit terminal 2 and ground.
 - **If less than 11 V**
 1. Ignition OFF, disconnect the harness connector at the K9 Body Control Module.
 2. Test for infinite resistance between the reference voltage circuit and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 - Go to next step: If infinite resistance

3. Test for less than 2 Ω in the reference voltage circuit end to end.

- If 2 Ω or greater, repair the open/high resistance in the circuit.
- If less than 2 Ω , replace the K9 Body Control Module.

• **If greater than 12.2 V**

1. Ignition OFF, disconnect the harness connector at the K9 Body Control Module, ignition ON.

2. Test for less than 1 V between the reference voltage circuit and ground.

- If 1 V or greater, repair the short to voltage on the circuit.
- If less than 1 V, replace the K9 Body Control Module.

• **Go to next step: If between 11 - 12.2 V**

4. Test for 11 - 12.2 V between the reference voltage circuit terminal 2 and signal circuit terminal 4.

• **If not between 11 - 12.2 V**

1. Ignition OFF, disconnect the harness connector at the K9 Body Control Module.

2. Test for less than 1 V between the signal circuit and ground.

- If 1 V or greater, repair the short to voltage on the circuit.
- Go to next step: If less than 1 V

3. Test for less than 2 Ω in the signal circuit end to end.

- If 2 Ω or greater, repair the open/high resistance in the circuit.
- If less than 2 Ω replace the K9 Body Control Module.

• **Go to next step: If between 11 - 12.2 V**

1. Ignition OFF, disconnect the harness connector at the K9 Body Control Module.

2. Test for infinite resistance between the signal circuit and ground.

- If less than infinite resistance, repair the short to ground on the circuit.
- If infinite resistance, replace the S70R Steering Wheel Controls Switch - Right.

Component Testing

1. Ignition OFF, disconnect the harness connector at the S70R Steering Wheel Controls Switch - Right.

2. Test the resistance between the signal terminal 2 and the reference voltage terminal 1 while pressing the appropriate steering wheel controls switch button listed below:

• **If not the specified value**

Replace the S70R Steering Wheel Controls Switch - Right.

• **Go to next step: If the specified value**

3. All OK

Function Switch	Minimum Resistance Value	Maximum Resistance Value
Hang Up-Mute	5.0 k Ω	5.5 k Ω
Telephone Switch	3.6 k Ω	4 k Ω
Source Switch	2.8 k Ω	3.1 k Ω
Preset Down	2.2 k Ω	2.6 k Ω
Preset Up	1.7 k Ω	2 k Ω
Volume Down	1.4 k Ω	1.6 k Ω
Volume Up	1.1 k Ω	1.3 k Ω
No Switch Pressed	Infinite	Infinite

Repair Instructions

Perform the [Diagnostic Repair Verification](#) after completing the repair.

[Control Module References](#) for BCM replacement, programming and setup.

DTC B1529

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 Descriptors

DTC B1529 03

Control Module Voltage Reference Output 5 Circuit Low Voltage

DTC B1529 07

Control Module Voltage Reference Output 5 Circuit High Voltage

Diagnostic Fault Information

Electrical DTCs

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
12 V Reference	B1529 03, B1405 03	1	B1529 07	B1529 07
Signal	1	1	B3622 07	-
1. Steering Wheel Controls Inoperative				

Circuit/System Description

The body control module (BCM) supplies voltage to the steering wheel control switches and monitors the return signal. Each switch state is associated to a set resistance value and when pressed a specific voltage drop occurs across the resistor unique to the switch. The BCM identifies the switch selection and activates the feature.

Conditions for Running the DTC

- The system voltage is between 9 - 16 V.
- The ignition is ON.

Conditions for Setting the DTC

B1529 03

- The BCM detects a short to ground in the 12 V reference circuit.
- The above condition is present for greater than 30 seconds.

B1529 07

- The BCM detects a short to voltage in the 12 V reference circuit.
- The above condition is present for greater than 30 seconds.

Action Taken When the DTC Sets

The BCM will ignore switch inputs.

Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists.
- A history DTC will clear once 100 consecutive malfunction free ignition cycles have occurred.

Reference Information

Schematic Reference

Steering Wheel Secondary/Configurable Control Wiring Schematics

Connector End View Reference

Master Electrical Component List , or Inline Harness Connector End Views - Index or Component Connector End Views - Index

Description and Operation

Steering Wheel Controls Description and Operation (with UDC), or Steering Wheel Controls Description and Operation (with UDD)

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 Testing

1. Ensure a battery charger is not connected to the battery.
2. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the S70R Steering Wheel Controls Switch - Right, ignition ON.
3. Test for 11 - 12.2 V between the reference voltage circuit terminal 1 and ground.
 - **If less than 11 V**
 1. Ignition OFF, disconnect the harness connector at the K9 Body Control Module.
 2. Test for infinite resistance between the reference voltage circuit and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 - Go to next step: If infinite resistance
 3. Test for less than 2 Ω in the reference voltage circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , replace the K9 Body Control Module.
 - **If greater than 12.2 V**
 1. Ignition OFF, disconnect the harness connector at the K9 Body Control Module, ignition ON.
 2. Test for less than 1 V between the reference voltage circuit and ground.
 - If 1 V or greater, repair the short to voltage on the circuit.
 - If less than 1 V, replace the K9 Body Control Module.
 - **Go to next step: If between 11 - 12.2 V**
4. Test for 11 - 12.2 V between the reference voltage circuit terminal 1 and signal circuit terminal 2.
 - **If not between 11 - 12.2 V**

1. Ignition OFF, disconnect the harness connector at the K9 Body Control Module.
2. Test for less than 1 V between the signal circuit and ground.
 - If 1 V or greater, repair the short to voltage on the circuit.
 - Go to next step: If less than 1 V
3. Test for less than 2 Ω in the signal circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω replace the K9 Body Control Module.

• **Go to next step: If between 11 - 12.2 V**

5. Ignition OFF, disconnect the harness connector at the K9 Body Control Module.

6. Test for infinite resistance between the signal circuit and ground.

• **If less than infinite resistance**

Repair the short to ground on the circuit.

• **Go to next step: If infinite resistance**

7. Replace the S70R Steering Wheel Controls Switch - Right.

Component Testing

1. Ignition OFF, disconnect the harness connector at the S70R Steering Wheel Controls Switch - Right.
2. Test the resistance between the signal terminal 2 and the reference voltage terminal 1 while pressing the appropriate steering wheel controls switch button listed below:

• **If not the specified value**

Replace the S70R Steering Wheel Controls Switch - Right.

• **Go to next step: If the specified value**

3. All OK

Function Switch	Minimum Resistance Value	Maximum Resistance Value
Hang Up-Mute	5.0 k Ω	5.5 k Ω
Telephone Switch	3.6 k Ω	4 k Ω
Source Switch	2.8 k Ω	3.1 k Ω
Arrow Down	2.2 k Ω	2.6 k Ω
Arrow Up	1.7 k Ω	2 k Ω
Volume Down	1.4 k Ω	1.6 k Ω
Volume Up	1.1 k Ω	1.3 k Ω
No Switch Pressed	Infinite	Infinite

Repair Instructions

Perform the [Diagnostic Repair Verification](#) after completing the repair.

[Control Module References](#) for BCM replacement, programming and setup.

DTC B3622

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 B3622

Steering Wheel Controls Signal Circuit

For symptom byte information refer to [Symptom Byte List](#).

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
B+	U1510 00	U1510 00	-	-
Volume Up Signal-Terminal 8	B3622 39, B3622 59	1	-	-
Volume Down Signal-Terminal 7	B3622 39, B3622 59	1	-	-
Next Preset Signal-Terminal 9	B3622 39, B3622 59	1	-	-
Previous Preset Signal-Terminal 10	B3622 39, B3622 59	1	-	-
Serial Data	U1510 00, B3622 59	U1510 00	U1510 00, B3622 59	-
Low Reference	-	U1510 00	-	-
1. Steering Wheel Controls Inoperative				

Circuit/System Description

The steering wheel controls are divided into a right-hand set and left-hand set. The right - hand switch communicates with the instrument cluster through serial data and provides input from the rear left - hand switch and rear right - hand switch. The instrument cluster identifies the switch selection and activates the feature.

Conditions for Running the DTC

Ignition ON.

Conditions for Setting the DTC

B3622 39

An internal electrical malfunction has been detected in the steering wheel controls switch.

B3622 59

A stuck switch has been detected in the steering wheel controls switch.

Action Taken When the DTC Sets

No action is taken.

Conditions for Clearing the DTC

The DTC will clear when the conditions for setting the DTC are no longer present.

Reference Information

Schematic Reference

[Steering Wheel Secondary/Configurable Control Wiring Schematics](#)

Connector End View Reference

[Master Electrical Component List](#) , or [Inline Harness Connector End Views - Index](#) or [Component Connector End Views - Index](#)

Description and Operation

[Instrument Cluster Description and Operation \(Base\)](#) , or [Instrument Cluster Description and Operation \(Uplevel\)](#)

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 ON. Verify the driver information center (DIC) illuminates.
 - **If the DIC does not illuminate**
Test or replace the instrument cluster.
 - **Go to next step: If the DIC does illuminate**
2. Verify all the associated primary controls on the radio (Volume, Mute, Seek, etc.) operate properly.
 - **If any of the primary controls do not function properly**
Refer to [Symptoms - Entertainment](#) .
 - **Go to next step: If all of the primary controls function properly**
3. Refer to Circuit/System Testing.

Circuit/System Testing

1. Ignition OFF and all vehicle systems OFF, disconnect the harness connectors at the S70F Steering Wheel Controls Switch - Radio Volume and S70E Steering Wheel Controls Switch - Radio Presets. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 10 Ω between the ground circuit terminals listed below and ground.
 - S70F Steering Wheel Controls Switch - Radio Volume - ground circuit terminal 3
 - S70E Steering Wheel Controls Switch - Radio Presets - ground circuit terminal 3
 - **If 10 Ω or greater**
 1. Ignition OFF.
 2. Test for less than 2 Ω in the ground circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , repair the open/high resistance in the ground connection.
 - **Go to next step: If less than 10 Ω**
3. Ignition ON.
4. Test for greater than 4.5 V between the signal circuit terminals listed below and ground:
 - S70F Steering Wheel Controls Switch - Radio Volume - signal circuit terminal 1

- S70F Steering Wheel Controls Switch - Radio Volume - signal circuit terminal 2
 - S70E Steering Wheel Controls Switch - Radio Presets - signal circuit terminal 1
 - S70E Steering Wheel Controls Switch - Radio Presets - signal circuit terminal 2
 - **If 4.5 V or less**
1. Ignition OFF, disconnect the harness connector at the S70R Steering Wheel Controls Switch - Right.
 2. Test for infinite resistance between the signal circuit and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 - Go to next step: If infinite resistance
 3. Test for less than 2 Ω in the signal circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , test or replace the S70R Steering Wheel Controls Switch - Right.

• **Go to next step: If greater than 4.5 V**

5. Install a 3 A fused jumper wire between the signal circuit terminals listed below and ground.
 - S70F Steering Wheel Controls Switch - Radio Volume - signal circuit terminal 1
 - S70F Steering Wheel Controls Switch - Radio Volume - signal circuit terminal 2
 - S70E Steering Wheel Controls Switch - Radio Presets - signal circuit terminal 1
 - S70E Steering Wheel Controls Switch - Radio Presets - signal circuit terminal 2
6. Verify the scan tool Steering Wheel Control Switches parameter changes.
 - **If the Steering Wheel Control Switches parameter does not change**
 Test or replace the S70R Steering Wheel Controls Switch - Right.
 - **Go to next step: If the Steering Wheel Control Switches parameter changes**
7. Test or replace the appropriate S70F Steering Wheel Controls Switch - Radio Volume or S70E Steering Wheel Controls Switch - Radio Presets switch.

Component Testing

1. Ignition OFF, disconnect the harness connector at the S70F Steering Wheel Controls Switch - Radio Volume.
2. Test for infinite resistance between the following signal terminals and the ground terminal 3 with the switch in the open position.
 - Terminal 1
 - Terminal 2
 - **If less than infinite resistance on either circuit**
 Replace the S70F Steering Wheel Controls Switch - Radio Volume.
 - **Go to next step: If infinite resistance**
3. Test for less than 10 Ω between the following signal terminals and the ground terminal 3 with the S70F Steering Wheel Controls Switch - Radio Volume in the Up position or Down position.
 - Terminal 1
 - Terminal 2
 - **If 10 Ω or greater**
 Replace the S70F Steering Wheel Controls Switch - Radio Volume.
 - **Go to next step: If less than 10 Ω**
4. Ignition OFF, disconnect the harness connector at the S70E Steering Wheel Controls Switch - Radio Presets.

5. Test for infinite resistance between the following signal terminals and the ground terminal 3 with the switch in the open position.

- Terminal 1
- Terminal 2
- **If less than infinite resistance on either circuit**

Replace the S70E Steering Wheel Controls Switch - Radio Presets.

- **Go to next step: If infinite resistance**

6. Test for less than 10 Ω between the following signal terminals and the ground terminal 3 with the S70E Steering Wheel Controls Switch - Radio Presets in the Up position or Down position.

- Terminal 1
- Terminal 2
- **If 10 Ω or greater**

Replace the S70E Steering Wheel Controls Switch - Radio Presets.

- **Go to next step: If less than 10 Ω**

7. All OK

Repair Instructions

Perform the [Diagnostic Repair Verification](#) after completing the repair.

[Steering Wheel Spoke Cover Replacement \(GMC, With Radio Controls\)](#) , or [Steering Wheel Spoke Cover Replacement \(Chevrolet, With Radio Controls\)](#) , or [Steering Wheel Spoke Cover Replacement \(Chevrolet or GMC, Without Radio Controls\)](#)

SYMPTOMS - SECONDARY AND CONFIGURABLE CUSTOMER CONTROLS

NOTE: 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 description and operation in order to familiarize yourself with the system functions. Refer to [Steering Wheel Controls Description and Operation \(with UDC\)](#), or [Steering Wheel Controls Description and Operation \(with UDD\)](#).

Visual/Physical Inspection

- Inspect for aftermarket devices which could affect the operation of the steering wheel controls.
- 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 a symptom diagnostic procedure from the following list in order to diagnose the symptom:

Refer to [Steering Wheel Controls Malfunction \(with UDC\)](#), or [Steering Wheel Controls Malfunction \(with UDD\)](#) in order to diagnose the symptom.

STEERING WHEEL CONTROLS MALFUNCTION (WITH UDC)

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 Descriptors

DTC B1405 03

Control Module Voltage Reference Output 2 Circuit Low Voltage

DTC B1405 07

Control Module Voltage Reference Output 2 Circuit High Voltage

Diagnostic Fault Information

Electrical DTCs

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
12 V Reference	B1405 03 B1529 03	1	B1529 07	-
Signal	B1405 03	1	B1405 07	-
1. Steering Wheel Controls Inoperative				

Circuit/System Description

The body control module (BCM) monitors the system voltage to make sure that the voltage stays within the proper range. Damage to components and/or incorrect operation can occur when the voltage is out of range.

Conditions for Running the DTC

- Battery voltage is between 9 - 16 V.
- The ignition is ON.

Conditions for Setting the DTC

The BCM detects a low/high voltage on the control circuit.

Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists.
- A history DTC will clear once 100 consecutive malfunction free ignition cycles have occurred.

Reference Information

Schematic Reference

[Steering Wheel Secondary/Configurable Control Wiring Schematics](#)

Connector End View Reference

[Master Electrical Component List](#) , or [Inline Harness Connector End Views - Index](#) or [Component Connector End Views - Index](#)

Description and Operation

[Steering Wheel Controls Description and Operation \(with UDC\)](#)

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. Engine running, accessories OFF, measure and record the battery voltage at the battery terminals.
2. Verify the voltage measured at the battery terminals is between 12.6 - 15.0 V.
 - **If not between 12.6 - 15.0 V**

Refer to [Charging System Test](#) .

- **Go to next step: If between 12.6 - 15.0 V**
3. Refer to Circuit/System Testing.

Circuit/System Testing

1. Ensure a battery charger is not connected to the battery.
2. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the S70R Steering Wheel Controls Switch - Right, ignition ON.
3. Test for 11 - 12.2 V between the reference voltage circuit terminal 2 and ground.
 - **If less than 11 V**
 1. Ignition OFF, disconnect the harness connector at the K9 Body Control Module.
 2. Test for infinite resistance between the reference voltage circuit and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 - Go to next step: If infinite resistance
 3. Test for less than 2 Ω in the reference voltage circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , replace the K9 Body Control Module.
 - **If greater than 12.2 V**
 1. Ignition OFF, disconnect the harness connector at the K9 Body Control Module, ignition ON.
 2. Test for less than 1 V between the reference voltage circuit and ground.
 - If 1 V or greater, repair the short to voltage on the circuit.
 - If less than 1 V, replace the K9 Body Control Module.
 - **Go to next step: If between 11 - 12.2 V**
4. Test for 11 - 12.2 V between the reference voltage circuit terminal 2 and signal circuit terminal 4.
 - **If not between 11 - 12.2 V**
 1. Ignition OFF, disconnect the harness connector at the K9 Body Control Module.

2. Test for less than 1 V between the signal circuit and ground.
 - If 1 V or greater, repair the short to voltage on the circuit.
 - Go to next step: If less than 1 V
3. Test for less than 2 Ω in the signal circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω replace the K9 Body Control Module.
- **Go to next step: If between 11 - 12.2 V**
 1. Ignition OFF, disconnect the harness connector at the K9 Body Control Module.
 2. Test for infinite resistance between the signal circuit and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 - If infinite resistance, replace the S70R Steering Wheel Controls Switch - Right.

Component Testing

1. Ignition OFF, disconnect the harness connector at the S70R Steering Wheel Controls Switch - Right.
2. Test the resistance between the signal terminal 2 and the reference voltage terminal 1 while pressing the appropriate steering wheel controls switch button listed below:

- **If not the specified value**

Replace the S70R Steering Wheel Controls Switch - Right.

- **Go to next step: If the specified value**

3. All OK

Function Switch	Minimum Resistance Value	Maximum Resistance Value
Hang Up-Mute	5.0 k Ω	5.5 k Ω
Telephone Switch	3.6 k Ω	4 k Ω
Source Switch	2.8 k Ω	3.1 k Ω
Preset Down	2.2 k Ω	2.6 k Ω
Preset Up	1.7 k Ω	2 k Ω
Volume Down	1.4 k Ω	1.6 k Ω
Volume Up	1.1 k Ω	1.3 k Ω
No Switch Pressed	Infinite	Infinite

Repair Instructions

Perform the [Diagnostic Repair Verification](#) after completing the repair.

[Control Module References](#) for BCM replacement, programming and setup.

STEERING WHEEL CONTROLS MALFUNCTION (WITH UDD)

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 B3622

Steering Wheel Controls Signal Circuit

For symptom byte information refer to [Symptom Byte List](#) .

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
B+	U1510 00	U1510 00	-	-
Volume Up Signal-Terminal 8	B3622 39, B3622 59	1	-	-
Volume Down Signal-Terminal 7	B3622 39, B3622 59	1	-	-
Next Preset Signal-Terminal 9	B3622 39, B3622 59	1	-	-
Previous Preset Signal-Terminal 10	B3622 39, B3622 59	1	-	-
Serial Data	U1510 00, B3622 59	U1510 00	U1510 00, B3622 59	-
Low Reference	-	U1510 00	-	-
1. Steering Wheel Controls Inoperative				

Circuit/System Description

The steering wheel controls are divided into a right-hand set and left-hand set. The right - hand switch communicates with the instrument cluster through serial data and provides input from the rear left - hand switch and rear right - hand switch. The instrument cluster identifies the switch selection and activates the feature.

Conditions for Running the DTC

Ignition ON.

Conditions for Setting the DTC

B3622 39

An internal electrical malfunction has been detected in the steering wheel controls switch.

B3622 59

A stuck switch has been detected in the steering wheel controls switch.

Action Taken When the DTC Sets

No action is taken.

Conditions for Clearing the DTC

The DTC will clear when the conditions for setting the DTC are no longer present.

Reference Information

Schematic Reference

Steering Wheel Secondary/Configurable Control Wiring Schematics

Connector End View Reference

[Master Electrical Component List](#) , or [Inline Harness Connector End Views - Index](#) or [Component Connector End Views - Index](#)

Description and Operation

Instrument Cluster Description and Operation (Base) , or Instrument Cluster Description and Operation (Uplevel)

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 ON. Verify the driver information center (DIC) illuminates.
 - **If the DIC does not illuminate**
Test or replace the instrument cluster.
 - **Go to next step: If the DIC does illuminate**
2. Verify all the associated primary controls on the radio (Volume, Mute, Seek, etc.) operate properly.
 - **If any of the primary controls do not function properly**
Refer to Symptoms - Entertainment .
 - **Go to next step: If all of the primary controls function properly**
3. Refer to Circuit/System Testing.

Circuit/System Testing

1. Ignition OFF and all vehicle systems OFF, disconnect the harness connectors at the S70F Steering Wheel Controls Switch - Radio Volume and S70E Steering Wheel Controls Switch - Radio Presets. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 10 Ω between the ground circuit terminals listed below and ground.
 - S70F Steering Wheel Controls Switch - Radio Volume - ground circuit terminal 3
 - S70E Steering Wheel Controls Switch - Radio Presets - ground circuit terminal 3
 - **If 10 Ω or greater**
 1. Ignition OFF.
 2. Test for less than 2 Ω in the ground circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , repair the open/high resistance in the ground connection.
 - **Go to next step: If less than 10 Ω**
3. Ignition ON.
4. Test for greater than 4.5 V between the signal circuit terminals listed below and ground:
 - S70F Steering Wheel Controls Switch - Radio Volume - signal circuit terminal 1
 - S70F Steering Wheel Controls Switch - Radio Volume - signal circuit terminal 2
 - S70E Steering Wheel Controls Switch - Radio Presets - signal circuit terminal 1
 - S70E Steering Wheel Controls Switch - Radio Presets - signal circuit terminal 2
 - **If 4.5 V or less**

1. Ignition OFF, disconnect the harness connector at the S70R Steering Wheel Controls Switch - Right.
2. Test for infinite resistance between the signal circuit and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 - Go to next step: If infinite resistance
3. Test for less than 2 Ω in the signal circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , test or replace the S70R Steering Wheel Controls Switch - Right.
- **Go to next step: If greater than 4.5 V**
5. Install a 3 A fused jumper wire between the signal circuit terminals listed below and ground.
 - S70F Steering Wheel Controls Switch - Radio Volume - signal circuit terminal 1
 - S70F Steering Wheel Controls Switch - Radio Volume - signal circuit terminal 2
 - S70E Steering Wheel Controls Switch - Radio Presets - signal circuit terminal 1
 - S70E Steering Wheel Controls Switch - Radio Presets - signal circuit terminal 2
6. Verify the scan tool Steering Wheel Control Switches parameter changes.
 - **If the Steering Wheel Control Switches parameter does not change**
Test or replace the S70R Steering Wheel Controls Switch - Right.
 - **Go to next step: If the Steering Wheel Control Switches parameter changes**
7. Test or replace the appropriate S70F Steering Wheel Controls Switch - Radio Volume or S70E Steering Wheel Controls Switch - Radio Presets switch.

Component Testing

1. Ignition OFF, disconnect the harness connector at the S70F Steering Wheel Controls Switch - Radio Volume.
2. Test for infinite resistance between the following signal terminals and the ground terminal 3 with the switch in the open position.
 - Terminal 1
 - Terminal 2
 - **If less than infinite resistance on either circuit**
Replace the S70F Steering Wheel Controls Switch - Radio Volume.
 - **Go to next step: If infinite resistance**
3. Test for less than 10 Ω between the following signal terminals and the ground terminal 3 with the S70F Steering Wheel Controls Switch - Radio Volume in the Up position or Down position.
 - Terminal 1
 - Terminal 2
 - **If 10 Ω or greater**
Replace the S70F Steering Wheel Controls Switch - Radio Volume.
 - **Go to next step: If less than 10 Ω**
4. Ignition OFF, disconnect the harness connector at the S70E Steering Wheel Controls Switch - Radio Presets.
5. Test for infinite resistance between the following signal terminals and the ground terminal 3 with the switch in the open position.
 - Terminal 1
 - Terminal 2

- **If less than infinite resistance on either circuit**

Replace the S70E Steering Wheel Controls Switch - Radio Presets.

- **Go to next step: If infinite resistance**

6. Test for less than 10 Ω between the following signal terminals and the ground terminal 3 with the S70E Steering Wheel Controls Switch - Radio Presets in the Up position or Down position.

- Terminal 1
- Terminal 2
- **If 10 Ω or greater**

Replace the S70E Steering Wheel Controls Switch - Radio Presets.

- **Go to next step: If less than 10 Ω**

7. All OK

Repair Instructions

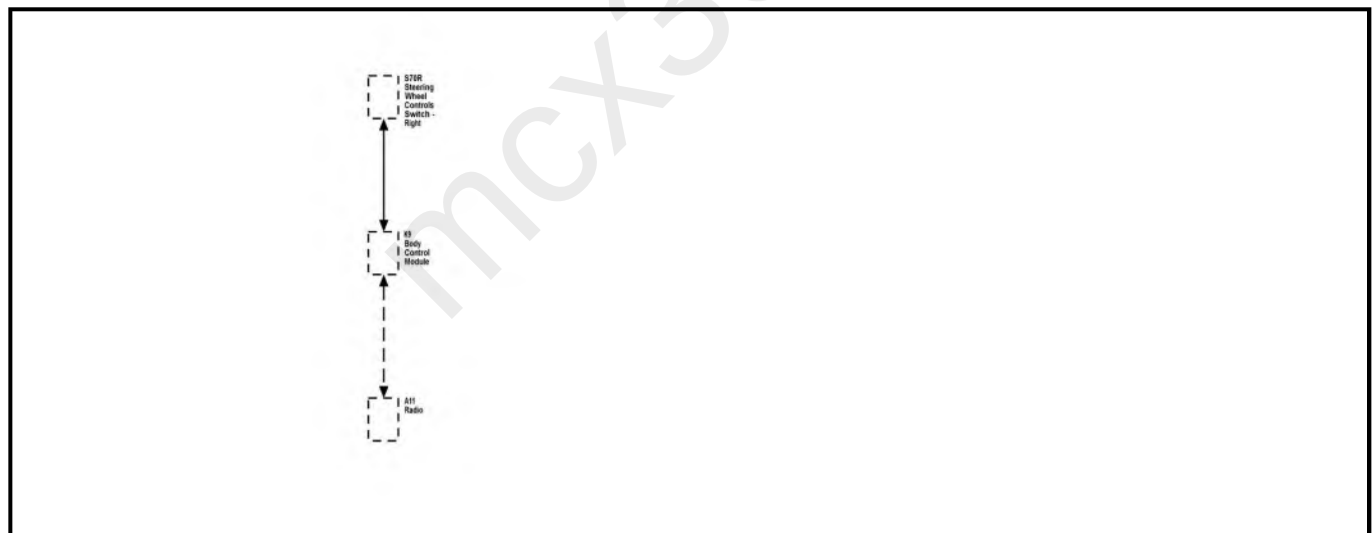
Perform the [Diagnostic Repair Verification](#) after completing the repair.

[Steering Wheel Spoke Cover Replacement \(GMC, With Radio Controls\)](#), or [Steering Wheel Spoke Cover Replacement \(Chevrolet, With Radio Controls\)](#), or [Steering Wheel Spoke Cover Replacement \(Chevrolet or GMC, Without Radio Controls\)](#).

DESCRIPTION AND OPERATION

STEERING WHEEL CONTROLS DESCRIPTION AND OPERATION (WITH UDC)

Steering Wheel Controls Block Diagram (with UDC)



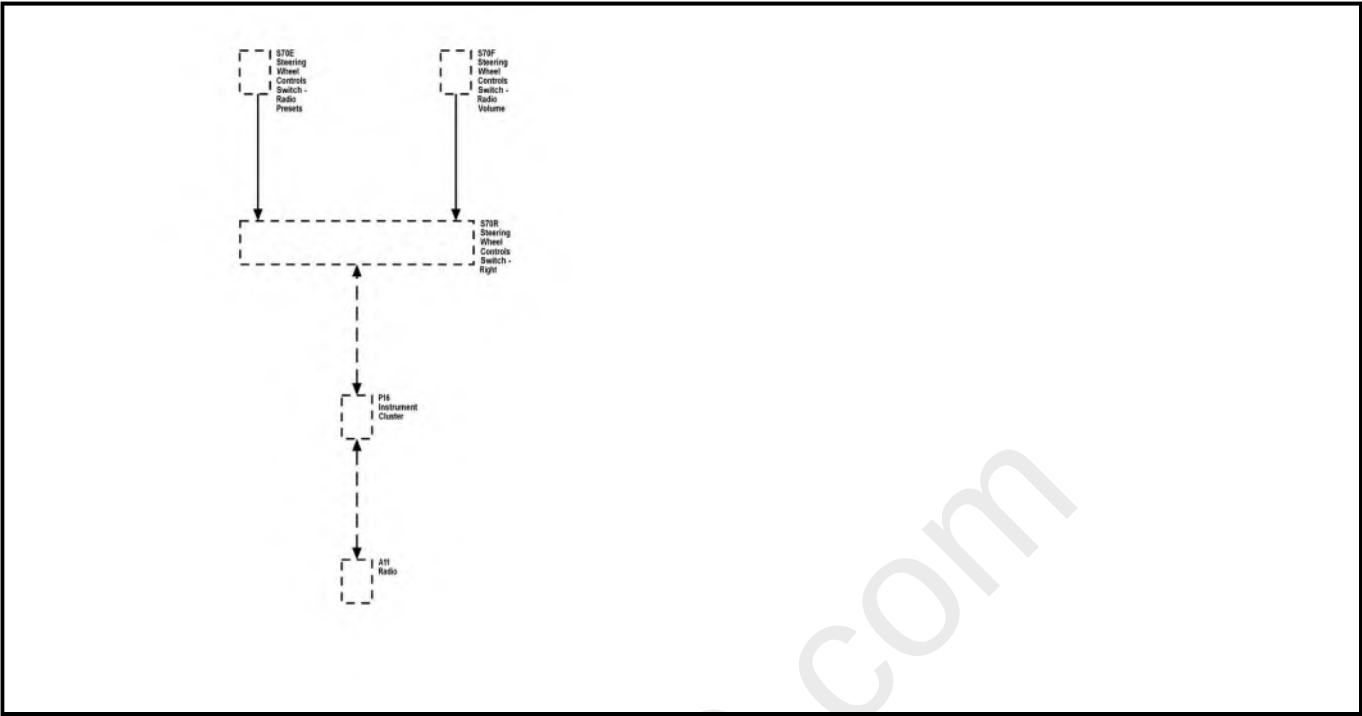
Callout	Component Name
S70R	S70R Steering Wheel Controls Switch - Right
K9	K9 Body Control Module
A11	A11 Radio

The steering wheel control switches duplicate the function of the primary controls of the associated component, through a network of momentary contact switches and a series of resistors. The body control module (BCM) supplies voltage to the switches and monitors the return signal. When a switch is pressed, a specific voltage drops across the resistor unique to that switch. The BCM identifies the switch selected and sends a serial data message to the component controlled by the switch, activating the feature.

This section is intended to diagnose the circuits between the BCM and the steering wheel control switches. If the primary control for the device is inoperative, refer to the appropriate section for the component the steering wheel control switch is used for.

STEERING WHEEL CONTROLS DESCRIPTION AND OPERATION (WITH UDD)

Steering Wheel Controls Block Diagram (with UDD)



Callout	Component Name
S70E	Steering Wheel Controls Switch - Radio Presets
S70F	Steering Wheel Controls Switch - Radio Volume
S70R	S70R Steering Wheel Controls Switch - Right
P16	P16 Instrument Cluster
A11	A11 Radio

The steering wheel control switches duplicate the function of the primary controls of the associated component, through a network of momentary contact switches.

The Steering Wheel Controls are divided into a right-hand set and left-hand set. The right-hand switch is connected to the IPC LIN serial data and provides input from the left-hand, left-hand rear, and right-hand rear switches

The right-hand switch controller consists of UP/DOWN/LEFT/RIGHT directional, center "select", Push-to-Talk, and Mute buttons. The LEFT/RIGHT buttons navigate the display regions of the cluster. The UP/DOWN buttons navigate the menus. The right-hand rear switch consists of volume up and volume down buttons. The left-hand rear switch consists of favorite up and favorite down buttons.