

2010 ACCESSORIES & EQUIPMENT

Horns - Equinox & Terrain

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

Application	Specification	
	Metric	English
Horn Bolt	9 N.m	80 lb in
Steering Wheel Horn Contact Bolt/Screw	8 N.m	71 lb in

SCHEMATIC AND ROUTING DIAGRAMS

HORN SCHEMATICS

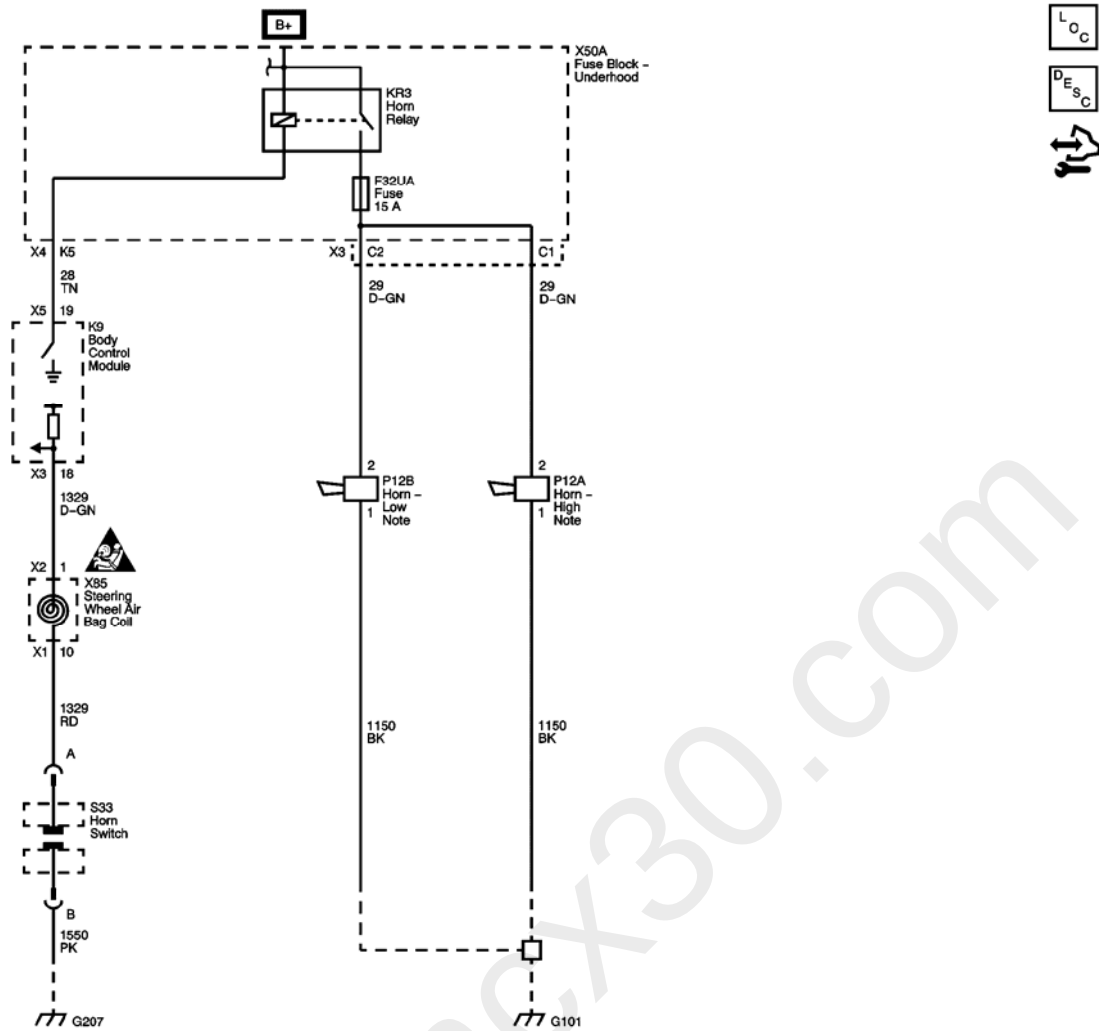


Fig. 1: View Of Horn Schematic
 Courtesy of GENERAL MOTORS CORP.

DIAGNOSTIC INFORMATION AND PROCEDURES

DIAGNOSTIC CODE INDEX

DIAGNOSTIC CODE INDEX

DTC	Description
DTC B2750	B2750 01: Horn Relay Secondary Circuit Short to Battery B2750 02: Horn Relay Secondary Circuit Short to Ground B2750 04: Horn Relay Secondary Circuit Open

DTC B2750

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 B2750 01

Horn Relay Secondary Circuit Short to Battery

DTC B2750 02

Horn Relay Secondary Circuit Short to Ground

DTC B2750 04

Horn Relay Secondary Circuit Open

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Horn Switch Signal	1	2	2	-
Horn Relay Control	B2750 02	B2750 04	B2750 01	-
Horn Control	2	2	1	-
Horn Ground	-	2	2	-
1. Horn Always On 2. Horn Inoperative				

Circuit/System Description

The body control module (BCM) provides a ground for the Horn PCB relay within the underhood fuse block. The underhood fuse block will then provide B+ voltage to the horn control circuit, sounding the horn.

Conditions for Running the DTC

When the horn output is actively being requested by the BCM.

Conditions for Setting the DTC

B2750 01

The BCM detects a short to voltage in the horn relay control circuit.

B2750 02

The BCM detects a short to ground in the horn relay control circuit.

B2750 04

The BCM detects an open/high resistance in the horn relay control circuit.

Action Taken When the DTC Sets

B2750 01, B2750 04

The horn will be inoperative.

B2750 02

The horn will sound continuously until the horn is disconnected or when the horn overheats and becomes inoperative.

Conditions for Clearing the DTC

- The DTC clears when the fault is no longer detected.
- The current DTC will become history when the request for the output is removed.
- The history DTC will clear after 50 consecutive fault-free ignition cycles have occurred.

Reference Information

Schematic Reference

Horn Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Horns System 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, command the Horn Relay ON and OFF with the scan tool. The horn should turn ON and OFF when changing between the commanded states.

Circuit/System Testing

1. Ignition OFF, disconnect the X4 harness connector at the X50A underhood fuse block.
2. Connect a test lamp between the control circuit terminal K5 and B+.
3. Ignition ON, command the Horn Relay ON and OFF with the scan tool. The test lamp should turn ON and OFF when changing between the commanded states.
 - If the test lamp is always OFF, test the control circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the K9 BCM.
 - If the test lamp is always ON, test the control circuit for a short to ground. If the circuit tests normal, replace the K9 BCM.
4. If all circuits test normal, replace the X50A underhood fuse block.

Repair Procedures

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

- **Accessory Wiring Junction Block Replacement**
- **Control Module References** for BCM replacement, setup and programming.

SYMPTOMS - HORNS

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

1. Perform **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 **Horns System Description and Operation**.

Visual/Physical Inspection

- Inspect for aftermarket devices which could affect the operation of the horn system. Refer to **Checking Aftermarket Accessories** .
- Inspect the easily accessible or visible system components for obvious damage or conditions which could cause the symptom.
- Perform the following if a horn buzzes or has a harsh tone.
 - Inspect for debris in the joint where the horn fastens to the vehicle.
 - Test the torque of the horn mounting hardware. The horn mounting hardware should be tightened to

a torque of 10 N.m (7 lb ft).

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 **Horns Malfunction** in order to diagnose the symptom.

HORNS 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	Open/High Resistance	Short to Voltage	Signal Performance
Horn Switch Signal	1	2	2	-
Horn Relay Control	B2750 02	B2750 04	B2750 01	-
Horn Control	2	2	1	-
Horn Ground	-	2	2	-
Horn Switch Ground	-	2	2	-
1. Horn Always On 2. Horn Inoperative				

Circuit/System Description

The body control module (BCM) monitors the horn switch signal circuit, when the horn pad is pressed, the BCM detects the drop in the horn switch signal circuit and provides a ground for the Horn PCB relay within the underhood fuse block. The underhood fuse block will then provide B+ voltage to the horn control circuit, sounding the horns

Diagnostic Aids

A short to ground in the horn relay control circuit or a short to voltage in the horn control circuit will cause the horns to sound continuously until the horns overheat and become inoperative.

Rotate the steering wheel while pressing the horn pad to identify intermittent and poor connections within the steering column.

If diagnosing a Horn- Poor Tone condition, inspect the following:

- Debris or water in the horn assembly
- Proper horn mounting hardware torque-Refer to **Fastener Tightening Specifications**.
- Debris in the joint where the horns attach to the vehicle
- Debris in direct contact with the horn
- Vehicle components vibrating while the horn is sounding

Reference Information

Schematic Reference

Horn Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Horns System 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 ON, observe the scan tool Horn Switch parameter while pressing and releasing the horn pad. The parameter should change from Inactive to Active.
 - If the value does not change, refer to Horn Switch Malfunction.
2. Command the Horn Relay ON and OFF with the scan tool, the P12 horn should turn ON and OFF when changing between the commanded states.
 - If the P12 horn is always ON or always OFF, refer to Horn Malfunction.
 - If the sound emitted from the P12 horn is not clear and even, refer to Horn - Poor Tone.

Circuit/System Testing

Horn Switch Malfunction

1. Ignition OFF, disconnect the harness connector at the S33 horn switch.
2. Test for less than 30 ohms between the ground circuit terminal B and ground.
 - If greater than the specified range, test the ground circuit for an open/high resistance.
3. Ignition ON, verify the scan tool Horn Switch parameter is Inactive.
 - If not the specified value, test the signal circuit terminal A for a short to ground. If the circuit tests normal, replace the K9 BCM.
4. Install a 3 A fused jumper wire between the signal circuit terminal A and ground, verify the scan tool Horn Switch parameter is Active.
 - If not the specified value, test the signal circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the K9 BCM.
5. If all circuits test normal, test or replace the S33 horn switch.

Horn Malfunction

1. Ignition OFF, disconnect the X4 harness connector at the X50A fuse block-underhood.
2. Connect a test lamp between the control circuit terminal K5 and B+.
3. Ignition ON, command the Horn Relay ON and OFF with a scan tool. The test lamp should turn ON and OFF when changing between the commanded states.
 - If the test lamp is always ON, test the control circuit for a short to ground. If the circuit tests normal, replace the K9 BCM.
 - If the test lamp is always OFF, test the control circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the K9 BCM.
4. Ignition OFF, connect the X4 harness connector at the X50A fuse block-underhood. Disconnect the harness connector at the appropriate P12 horn.
5. Test for less than 5 ohms between the ground circuit terminal 1 and ground.
 - If greater than the specified range, test the ground circuit for an open/high resistance.
6. Connect a test lamp between the control circuit terminal 2 and ground.
7. Ignition ON, command the Horn Relay ON and OFF with a scan tool. The test lamp should turn ON and OFF when changing between the commanded states.
 - If the test lamp is always ON, test the control circuit for a short to voltage. If the circuit tests normal, replace the X50A fuse block-underhood.
 - If the test lamp is always OFF and the circuit fuse is good, test the control circuit for an open/high resistance. If the circuit tests normal, test or replace the X50A fuse block-underhood.
 - If the test lamp is always OFF and the circuit fuse is open, test the control circuit for a short to ground. If the circuit tests normal, test or replace the X50A fuse block-underhood.
8. If all circuits test normal, test or replace the P12 horn.

Horn - Poor Tone

1. Ignition OFF, disconnect the harness connector at the appropriate P12 horn.

2. Test for less than 1 ohms between the ground circuit terminal 1 and ground.
 - If greater than the specified range, test the ground circuit for high resistance.
3. Disconnect the X3 harness connector at the X50A fuse block-underhood.
4. Test for less than 1 ohms between the control circuit terminals listed below:
 - Terminal C2 at the X50A fuse block-underhood and terminal 2 at the P12B horn-low note.
 - Terminal C1 at the X50A fuse block-underhood and terminal 2 at the P12A horn-high note.
 - If greater than the specified range, test the control circuit for high resistance.
5. If all circuits test normal, test or replace the P12 horn.

Component Testing

Horn Test

1. Ignition OFF, disconnect the harness connector at the appropriate P12 horn.
2. Install a 15 A fused jumper wire between the control terminal 2 and 12 V. Install a jumper wire between the ground terminal 1 and ground. Verify the P12 horn emits a clear and even tone.
 - If the sound emitted is not clear and even, replace the P12 horn.

Repair Procedures

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

- **Steering Wheel Horn Contact Replacement**
- **Horn Replacement**
- **Accessory Wiring Junction Block Replacement**
- **Control Module References** for BCM replacement, setup and programming

REPAIR INSTRUCTIONS

HORN REPLACEMENT

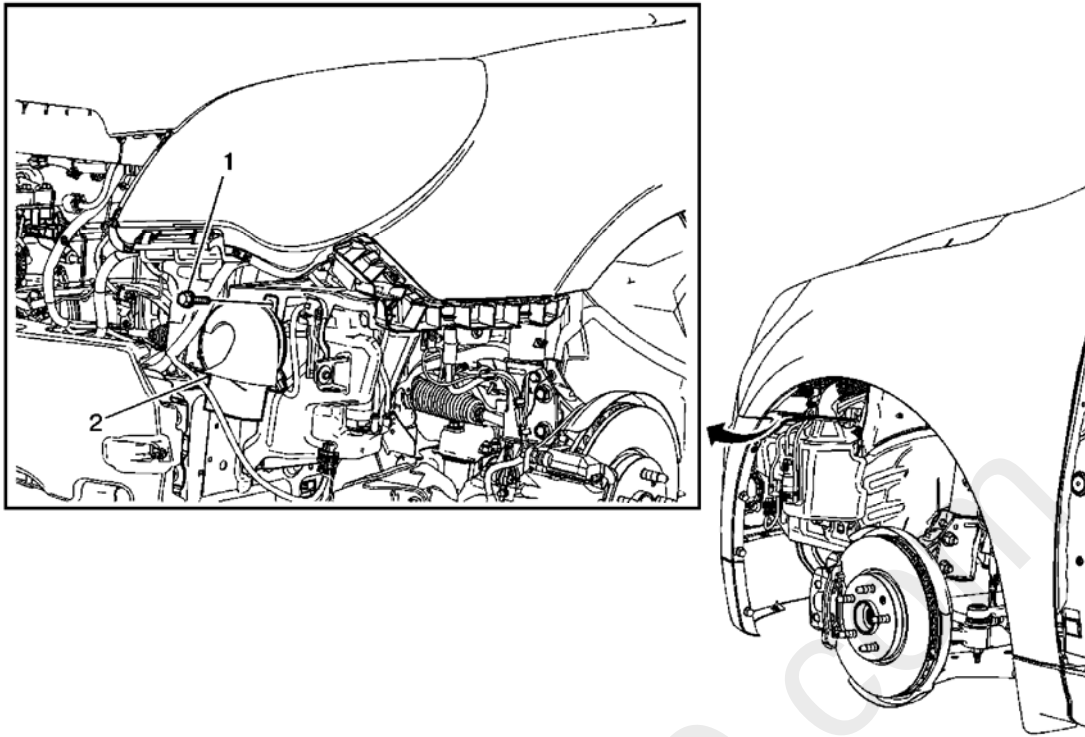


Fig. 2: Identifying Horn Components
 Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedure: Remove the front wheelhouse liner. Refer to Front Wheelhouse Liner Replacement (Equinox) or Front Wheelhouse Liner Replacement (Terrain) .	
1	Horn Bolt CAUTION: Refer to Fastener Caution . Tighten: 9 N.m (80 lb in)
2	Horn Procedure: Disconnect the electrical connector.

STEERING WHEEL HORN CONTACT REPLACEMENT

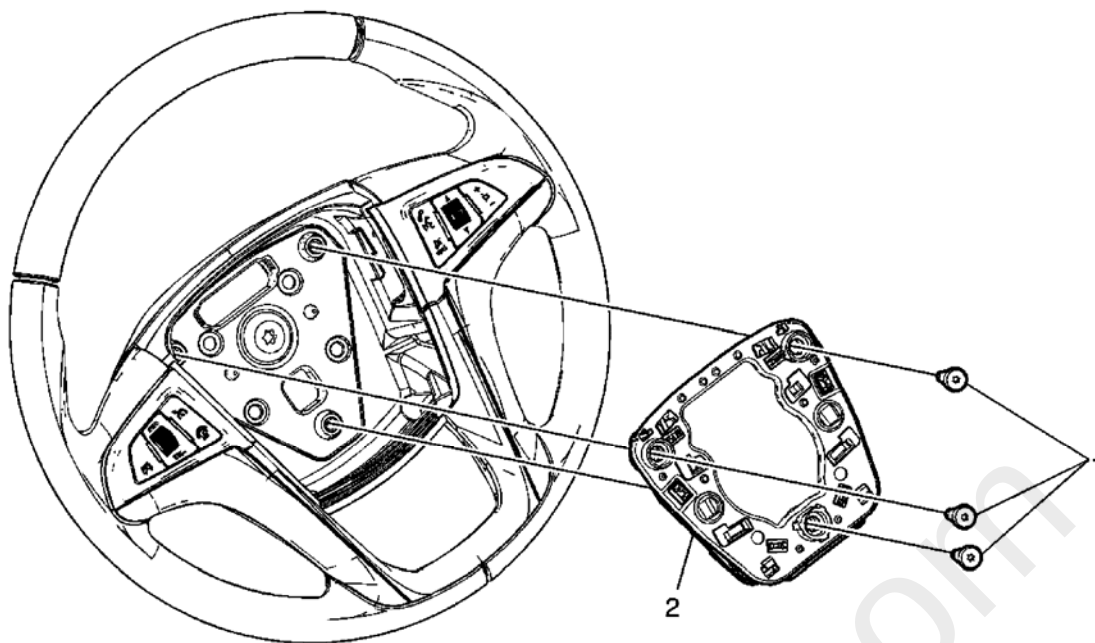


Fig. 3: Identifying Steering Wheel Horn Contact Components
 Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedure: Remove the inflatable restraint steering wheel module. Refer to <u>Steering Wheel Inflatable Restraint Module Replacement</u> .	
1	Steering Wheel Horn Contact Bolt/Screw (Qty: 3) CAUTION: Refer to <u>Fastener Caution</u> . Tighten: 8 N.m (71 lb in)
2	Steering Wheel Horn Contact Procedure: Disconnect electrical connectors as needed.

DESCRIPTION AND OPERATION

HORNS SYSTEM DESCRIPTION AND OPERATION

System Description

The horn system consists of the following components:

- F51UA 15A fuse

- Underhood fuse block (contains a non-serviceable PCB Horn relay)
- Horn switch
- Horn
- Body control module (BCM)

System Operation

- The vehicle horn is activated whenever the horn switch is depressed.
- The BCM commands the horns ON under any of the following conditions:
 - When the content theft deterrent system detects a vehicle intrusion-For further information refer to **Content Theft Deterrent (CTD) Description and Operation** .
 - When the keyless entry system is used to lock the vehicle, a horn chirp may sound to notify the driver that the vehicle has been locked. The notification feature may be enabled or disabled through personalization. For further information refer to **Keyless Entry System Description and Operation** .

Circuit Operation

The BCM controls the horn operation, when the horn switch is pressed, it closes a switch pulling the horn signal circuit low. When the BCM detects the drop in voltage in the horn switch signal circuit, it energizes the PCB Horn relay which provides B+ voltage to the horn control circuit, sounding the horn.

When the vehicle is in the Off Power Mode the BCM will attempt to detect a stuck or continuously activated horn switch. When enabled, activation of the horn will be limited to 10 seconds to protect the horn from excessive use.