

2006 ACCESSORIES & EQUIPMENT

Horns - Equinox & Torrent

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

Fastener Tightening Specifications

Application	Specification	
	Metric	English
Horn Bracket Bolt	10 N.m	89 lb in

SCHEMATIC AND ROUTING DIAGRAMS

HORNS SCHEMATIC ICONS

Horns Schematic Icons

Icon	Icon Definition
	CAUTION: When performing service on or near the SIR components or the SIR wiring, the SIR system must be disabled. Refer to SIR Disabling and Enabling Zones. Failure to observe the correct procedure could cause deployment of the SIR components, personal injury, or unnecessary SIR system repairs.

HORNS SCHEMATICS

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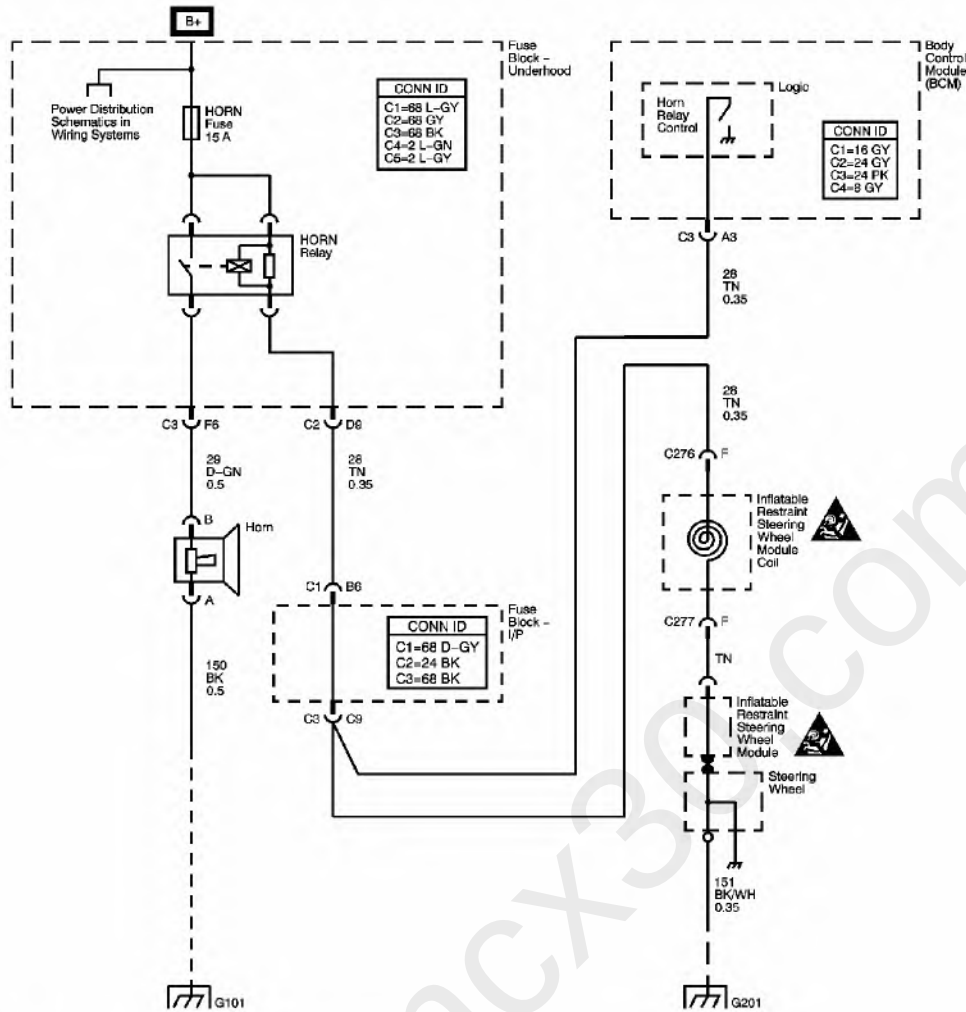
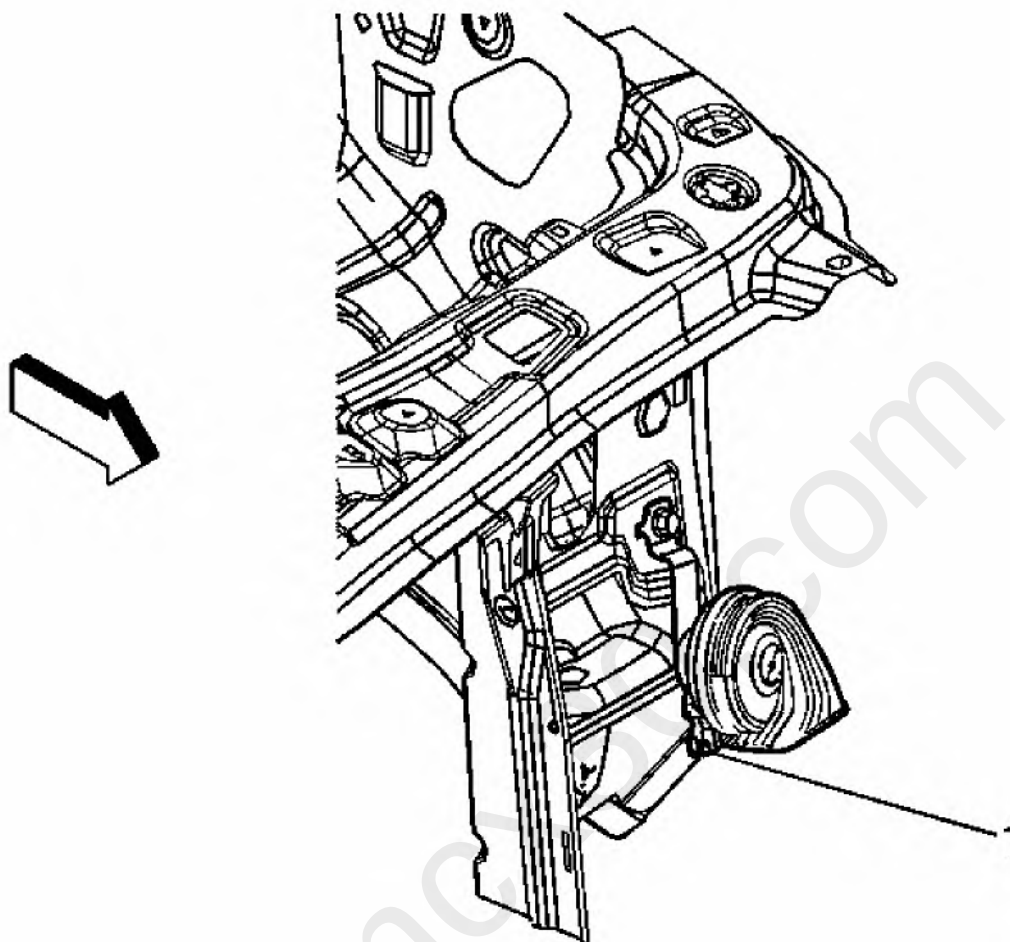


Fig. 1: Horns Schematics
Courtesy of GENERAL MOTORS CORP.

COMPONENT LOCATOR

HORNS COMPONENT VIEWS

**Fig. 2: Horn Location**

Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 2

Callout	Component Name
1	Horn

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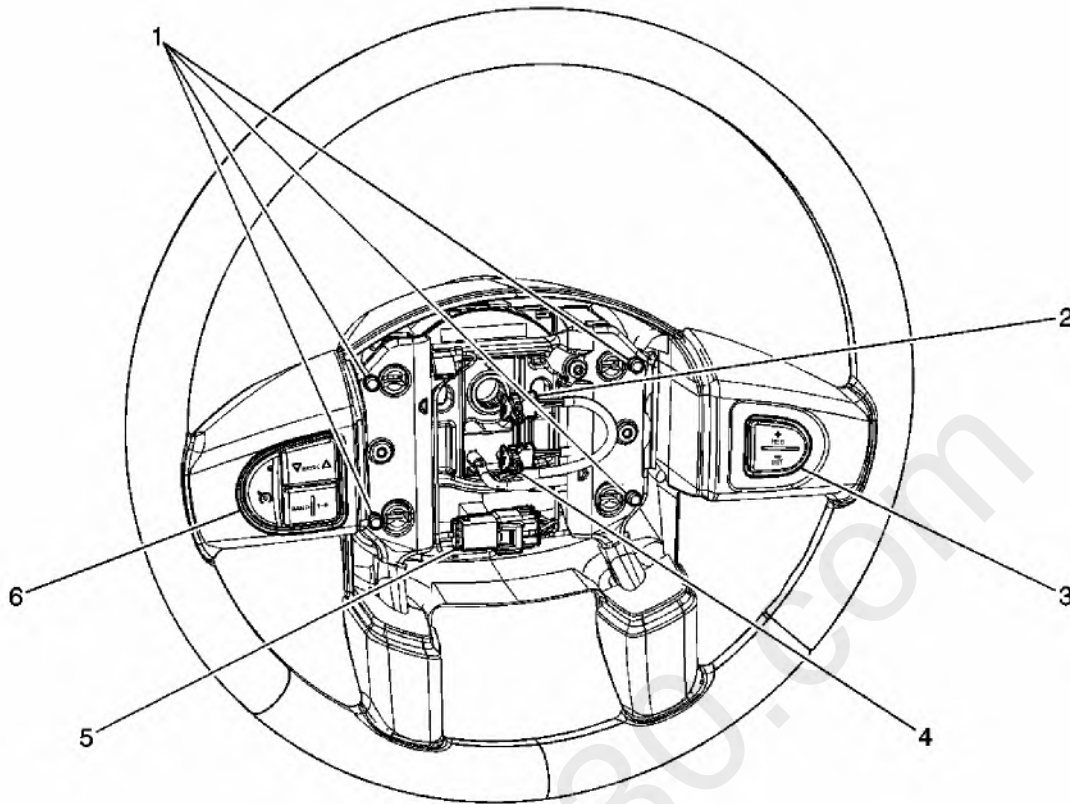


Fig. 3: Steering Wheel Components View
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 3

Callout	Component Name
1	Horn Switch Contacts
2	Inflatable Restraint Steering Wheel Module C1
3	Steering Wheel Control Switch - Right (w/ UK3/K34 shown, w/K34 Only Similar)
4	Inflatable Restraint Steering Wheel Module C2
5	C277
6	Steering Wheel Control Switch - Left (w/ UK3/K34 shown, w/K34 Only Similar)

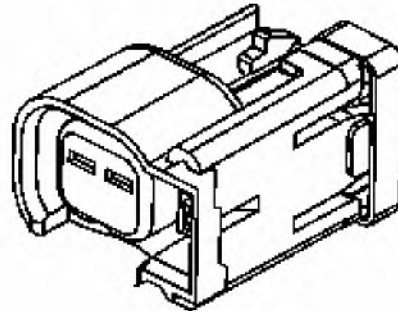
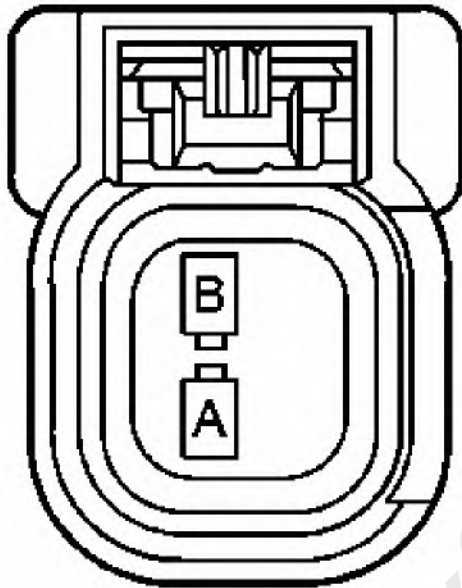
HORNS CONNECTOR END VIEWS

Horn



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Connector Part Information

- OEM: 15305086
- Service: 15306318
- 2-Way F Metri-Pack 150 Series (BK)

Pin	Wire Color	Circuit No.	Function
A	BK	150	Ground
B	D-GN	29	Horn Control

DIAGNOSTIC INFORMATION AND PROCEDURES

DIAGNOSTIC CODE INDEX

DIAGNOSTIC CODE INDEX

DTC	Description
DTC B2752	** DESCRIPTION NOT COLLECTED **
DTC B2753	**DESCRIPTION NOT COLLECTED **

DIAGNOSTIC STARTING POINT - HORNS

2006 Chevrolet Equinox LS

2006 ACCESSORIES & EQUIPMENT Horns - Equinox & Torrent

Begin the system diagnosis with **Diagnostic System Check - Vehicle** in Vehicle DTC Information. The Diagnostic System Check will provide the following information:

- The identification of the control modules which command the system.
- The ability of the control modules to communicate through the serial data circuit.
- The identification of any stored diagnostic trouble codes (DTCs) and their status.

The use of the Diagnostic System Check will identify the correct procedure for diagnosing the system and where the procedure is located.

SCAN TOOL OUTPUT CONTROLS

Scan Tool Output Controls

Scan Tool Output Control	Additional Menu Selection (s)	Description
Horn Relay	Misc. Test	When commanded, the Body Control Module supplies ground to energize the Horn Relay. The Horn should sound if equipped with keyless entry.

SCAN TOOL DATA LIST

The Horns Scan Tool Data List contains all of the horn related parameters that are available on the scan tool. The parameters in the list are arranged in alphabetical order. The column, "Data List," indicates the location of the parameter within the scan tool menu selections. Use the Horns Scan Tool Data List as directed by a diagnostic table or in order to supplement the diagnostic procedures. Begin all of the diagnostic procedures with **Diagnostic System Check - Vehicle** in Vehicle DTC Information.

Use the Scan Tool Data List only after the following is determined:

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

The Typical Data Values are obtained from a properly operating vehicle under the conditions specified in the first row of the Scan Tool Data List table. Comparison of the parameter values from the suspect vehicle with the Typical Data Values may reveal the source of the customer concern.

Scan Tool Data List

			Typical Data
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2006 Chevrolet Equinox LS

2006 ACCESSORIES & EQUIPMENT Horns - Equinox & Torrent

Scan Tool Parameter	Data List	Units Displayed	Value
Ignition ON/Engine OFF			
Battery Voltage	Data	Volts	Varies
Horn Output	Outputs	On/Off	Off

SCAN TOOL DATA DEFINITIONS

Battery Voltage

The scan tool displays the current state of the battery in volts.

Horn Output

The horn output indicates the state that the control module has commanded for the relay.

DTC B2752

Circuit Description

The vehicle horns are activated whenever ground is applied to the horn relay coil through the horn relay control circuit. Ground may be applied by either of the following:

- Body control module (BCM), if equipped with keyless entry (AU0)
- Horn switch

Conditions for Running the DTC

- The BCM system voltage must be between 9-16 volts.
- The BCM is commanding the horn relay to energize or the horn switch is pressed.

Conditions for Setting the DTC

The BCM detects a short to ground or an open in the horn relay control circuit for approximately 3 minutes.

Action Taken When the DTC Sets

- If the horn relay control circuit is shorted to ground the horns will remain ON at all times.
- If the horn relay control circuit is open, the horn will only work with the horn button on the steering wheel.
- The BCM stores DTC B2752 in memory.

Conditions for Clearing the DTC

2006 Chevrolet Equinox LS

2006 ACCESSORIES & EQUIPMENT Horns - Equinox & Torrent

- A current DTC will clear when the fault is no longer present and the ignition switch is cycled.
- A history DTC will clear after 100 consecutive ignition cycles without a fault present.
- A scan tool may be used to clear history and current DTCs.

Diagnostic Aids

- Ensure that the vehicle is equipped with keyless entry (AU0).
- Always begin diagnosis with the first DTC listed on the scan tool.
- The scan tool must display DTC B2752 as a current code before performing these diagnostics.
- Inspect for a sticking horn pad and or switch.
- Perform a visual inspection for loose or poor connections at all related components.

Refer to **Testing for Intermittent Conditions and Poor Connections** in Wiring Systems.

Test Description

The numbers below refer to the step numbers on the diagnostic table.

2: Listen for an audible click when the horn relay operates. Command both the ON and OFF states. Repeat the commands as necessary.

3: This step tests for voltage at the coil side of the horn relay. The HORN fuse supplies power to the coil side of the horn relay.

4: This step verifies that the BCM is providing ground to the horn relay.

5: This step tests if ground is constantly being applied to the horn relay.

DTC B2752

Step	Action	Yes	No
Schematic Reference: Horns Schematics			
1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to Diagnostic System Check - Vehicle in Vehicle DTC Information
2	1. Install a scan tool. 2. Turn ON the ignition, with the engine OFF. 3. With a scan tool, command the horn relay ON and OFF.		

2006 Chevrolet Equinox LS

2006 ACCESSORIES & EQUIPMENT Horns - Equinox & Torrent

	Does the horn relay turn ON and OFF with each command?	Go to Diagnostic Aids	Go to Step 3
3	1. Turn OFF the ignition. 2. Disconnect the horn relay. 3. Turn ON the ignition, with the engine OFF. 4. Connect a test lamp between the battery positive voltage circuit of the horn relay coil and a good ground. Does the test lamp illuminate?	Go to Step 4	Go to Step 10
4	1. Connect a test lamp between the control circuit of the horn relay and the battery positive voltage circuit of the horn relay coil. 2. With a scan tool, command the horn relay ON and OFF. Does the test lamp turn ON and OFF with each command?	Go to Step 8	Go to Step 5
5	Does the test lamp remain illuminated with each command?	Go to Step 7	Go to Step 6
6	Test the control circuit of the horn relay for an open. Refer to Circuit Testing and Wiring Repairs in Wiring Systems. Did you find and correct the condition?	Go to Step 13	Go to Step 9
7	Test the control circuit of the horn relay for a short to ground. Refer to Circuit Testing and Wiring Repairs in Wiring Systems. Did you find and correct the condition?	Go to Step 13	Go to Step 9
8	Inspect for poor connections at the horn relay. Refer to Testing for Intermittent Conditions and Poor Connections and Connector Repairs in Wiring Systems. Did you find and correct the condition?	Go to Step 13	Go to Step 11
9	Inspect for poor connections at the harness connector of the body control module (BCM). Refer to Testing for Intermittent Conditions and Poor Connections and Connector Repairs in Wiring Systems. Did you find and correct the condition?	Go to Step 13	Go to Step 12

2006 Chevrolet Equinox LS**2006 ACCESSORIES & EQUIPMENT Horns - Equinox & Torrent**

10	Repair the battery positive voltage circuit of the horn relay coil. Refer to Wiring Repairs in Wiring Systems. Did you complete the repair?	Go to Step 13	-
11	Replace the horn relay. Did you complete the replacement?	Go to Step 13	-
12	IMPORTANT: Perform the BCM programming procedure when replacing the BCM. Replace the BCM. Refer to Body Control Module Replacement in Computer/Integrating Systems. Did you complete the replacement?	Go to Step 13	-
13	1. Use the scan tool in order to clear the DTCs. 2. Operate the vehicle within the Conditions for Running the DTC as specified in the supporting text. Does the DTC reset?	Go to Step 2	System OK

DTC B2753**Circuit Description**

The vehicle horns are activated whenever ground is applied to the horn relay coil through the horn relay control circuit. Ground may be applied by either of the following:

- Body control module (BCM) if equipped with keyless entry (AU0)
- Horn switch

Conditions for Running the DTC

- The BCM system voltage must be between 9-16 volts.
- The BCM is commanding the horn relay to energize or the horn switch is pressed.

Conditions for Setting the DTC

The BCM detects a short to voltage in the horn relay control circuit for approximately 250 milliseconds.

Action Taken When the DTC Sets

- The horns are inoperative from the BCM and the horn switch.

2006 Chevrolet Equinox LS

2006 ACCESSORIES & EQUIPMENT Horns - Equinox & Torrent

- The BCM stores DTC B2753 in memory.

Conditions for Clearing the DTC

- A current DTC will clear when the fault is no longer present and the ignition switch is cycled.
- A history DTC will clear after 100 consecutive ignition cycles without a fault present.
- A scan tool may be used to clear history and current DTCs.

Diagnostic Aids

- Ensure that the vehicle is equipped with keyless entry (AU0).
- Always begin diagnosis with the first DTC listed on the scan tool.
- The scan tool must display DTC B2753 as a current code before performing these diagnostics.

Test Description

The numbers below refer to the step numbers on the diagnostic table.

2: Listen for an audible click when the horn relay operates. Command both the ON and OFF states. Repeat the commands as necessary.

3: This step tests for voltage at the coil side of the horn relay. The HORN fuse supplies power to the coil side of the horn relay.

4: This step verifies that the BCM is providing ground to the horn relay.

5: This step tests if ground is constantly being applied to the horn relay.

DTC B2753

Step	Action	Yes	No
Schematic Reference: <u>Horns Schematics</u>			
1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to Diagnostic System Check - Vehicle in Vehicle DTC Information
2	1. Install a scan tool. 2. Turn ON the ignition, with the engine OFF. 3. With a scan tool, command the horn relay ON and OFF.		

2006 Chevrolet Equinox LS

2006 ACCESSORIES & EQUIPMENT Horns - Equinox & Torrent

	Does the horn relay turn ON and OFF with each command?	Go to Diagnostic Aids	Go to Step 3
3	1. Turn OFF the ignition. 2. Disconnect the horn relay. 3. Turn ON the ignition, with the engine OFF. 4. Connect a test lamp between the battery positive voltage circuit of the horn relay coil and a good ground. Does the test lamp illuminate?	Go to Step 4	Go to Step 10
4	1. Connect a test lamp between the control circuit of the horn relay and the battery positive voltage circuit of the horn relay coil. 2. With a scan tool, command the horn relay ON and OFF. Does the test lamp turn ON and OFF with each command?	Go to Step 8	Go to Step 5
5	Does the test lamp remain illuminated with each command?	Go to Step 7	Go to Step 6
6	Test the control circuit of the horn relay for short to voltage. Refer to Circuit Testing and Wiring Repairs in Wiring Systems. Did you find and correct the condition?	Go to Step 13	Go to Step 9
7	Test the control circuit of the horn relay for a short to ground. Refer to Circuit Testing and Wiring Repairs in Wiring Systems. Did you find and correct the condition?	Go to Step 13	Go to Step 9
8	Inspect for poor connections at the horn relay. Refer to Testing for Intermittent Conditions and Poor Connections and Connector Repairs in Wiring Systems. Did you find and correct the condition?	Go to Step 13	Go to Step 11
9	Inspect for poor connections at the harness connector of the body control module (BCM). Refer to Testing for Intermittent Conditions and Poor Connections and Connector Repairs in Wiring Systems. Did you find and correct the condition?	Go to Step 13	Go to Step 12

2006 Chevrolet Equinox LS**2006 ACCESSORIES & EQUIPMENT Horns - Equinox & Torrent**

10	Repair the battery positive voltage circuit of the horn relay coil. Refer to Wiring Repairs in Wiring Systems. Did you complete the repair?	Go to Step 13	-
11	Replace the horn relay. Did you complete the replacement?	Go to Step 13	-
12	IMPORTANT: Perform the BCM programming procedure when replacing the BCM. Replace the BCM. Refer to Body Control Module Replacement in Computer/Integrating Systems. Did you complete the replacement?	Go to Step 13	-
13	1. Use the scan tool in order to clear the DTCs. 2. Operate the vehicle within the Conditions for Running the DTC as specified in the supporting text. Does the DTC reset?	Go to Step 2	System OK

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 **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.

2006 Chevrolet Equinox LS

2006 ACCESSORIES & EQUIPMENT Horns - Equinox & Torrent

- 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 Nm (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

Diagnostic Fault Information

Circuit	Short To Ground	Open/High Resistance	Short To Voltage	Signal Performance
Horn Relay	2	2	-	-
Horn Relay	B2752	B2753	B2753	-
Horn Control	2	2	1	-
Horn Switch Ground	-	2	2	-
Horn Ground	-	2	2	-
1. Horn Always On 2. Horn Inoperative				

Circuit/System Description

Battery positive voltage is applied at all times to the horn relay coil and the horn relay switch. Pressing the horn switch applies ground through the switch contacts and the horn relay control circuit to the coil side of the relay, energizing the relay. Battery voltage is then

applied through the switch side of the relay, the horn fuse, and the horn control circuit to the horn. The body control module (BCM) may also apply ground to the horn relay control circuit as described above. The horn will sound as long as ground is applied to the horn relay control circuit.

Diagnostic Aids

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.

Reference Information

Schematic Reference

Horns Schematics

Connector End View Reference

Horns Connector End Views

Electrical Information Reference

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

Scan Tool Reference

- **SCAN TOOL DATA LIST**
- **SCAN TOOL DATA DEFINITIONS**
- **Scan Tool Output Controls**

Circuit/System Verification

1. Ignition ON, press and release the steering wheel horn pad. The horns should sound and emit a clear and even tone only when the horn pad is pressed.
 - If the horns do not sound when the horn pad is pressed or continues sounding after the horn pad is released, refer to **Horn Switch Circuit Test**.
 - If the sound emitted from the horns are not clear and even, refer to **Horn - Poor Tone**.
2. Command the horns ON and OFF with the scan tool. The horns should turn ON and

OFF when changing between the commanded states.

- If the horns do not turn ON and OFF when changing between the commanded states, refer to **Horn Circuit Test**.

Circuit/System Testing

Horn Switch Circuit Test

1. Disconnect the HORN relay.
2. Ignition ON, verify that a test lamp does not illuminate between the relay controlled output circuit and ground.
 - If the test lamp illuminates, test the relay controlled output circuit for a short to voltage.
3. Verify that a test lamp illuminates between the relay coil B+ circuit and ground.
 - If the test lamp does not illuminate, test the relay coil B+ circuit for a short to ground or an open/high resistance. If the circuit tests normal and the HORN fuse is open, test the relay controlled output circuit for a short to ground. If the circuit tests normal, test or replace the HORN relay.
4. Verify that a test lamp illuminates between the relay switch B+ circuit and ground.
 - If the test lamp does not illuminate, test the relay switch B+ circuit for an open/high resistance.
5. Disconnect the harness connector at the horn.
6. Test for less than 1.0 ohm of resistance between the horn ground circuit terminal A and ground.
 - If greater than the specified range, test the ground circuit for an open/high resistance.
7. Connect the harness connector at the horn.
8. Connect a 15A fused jumper wire between the relay switch B+ circuit and the relay controlled output circuit. Verify the horn is activated.
 - If the horn does not activate, test the relay controlled output circuit for an open/high resistance. If the circuit tests normal, test or replace the horn.
9. Connect a test lamp between the relay coil B+ circuit and the relay coil control circuit.
10. Press and release the steering wheel horn pad. The test lamp should turn ON and OFF when changing between the commanded states.
 - If the test lamp is always ON, test the relay coil control circuit for a short to ground. If the circuit tests normal, inspect for a sticking horn switch.
 - If the test lamp is always OFF, test the relay coil control circuit for a short to voltage or an open/high resistance. If the circuit tests normal, inspect for an open horn switch.
11. If all circuits test normal, test or replace the HORN relay.

Horn Circuit Test

1. Ignition OFF, disconnect the Horn relay.
2. Connect a test lamp between the relay coil B+ circuit and the relay coil control circuit.
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 relay coil control circuit for a short to ground. If the circuit tests normal, replace the BCM.
 - If the test lamp is always OFF, test the relay coil control circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the BCM.

Horn - Poor Tone

1. Ignition OFF, disconnect the harness connector at the horn.
2. Test for less than 1.0 ohm of resistance between the horn ground circuit terminal A and ground.
 - If greater than the specified range, test the ground circuit for a high resistance.
3. Disconnect the harness connector C3 at the underhood fuse block.
4. Test for less than 1.0 ohm of resistance between the control circuit terminal F6 at the underhood fuse block and the control circuit terminal B at the horn.
 - If greater than the specified range, test the control circuit for a high resistance.
5. If all circuits test normal, test or replace the horn.

Component Testing**Horn**

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

Relay Test

1. Ignition OFF, disconnect the HORN relay.
2. Test for 60-180 ohms of resistance between terminals 85 and 86.
 - If the resistance is not within the specified range, replace the relay.
3. Test for infinite resistance between the following terminals:
 - 30 and 86
 - 30 and 87
 - 30 and 85

- 85 and 87.
 - If less than infinite resistance, replace the relay.
- 4. Install a 30-amp fused jumper wire between relay terminal 85 and 12 volts. Install a jumper wire between relay terminal 86 and ground. Measure for less than 2 ohms of resistance between terminals 30 and 87.
 - If greater than 2 ohms, replace the relay.

REPAIR INSTRUCTIONS

HORN REPLACEMENT

Removal Procedure

1. Remove the left headlamp. Refer to **Headlamp Assembly or Headlamp Bulb and/or Cornering, Sidemarker, Park, Turn Signal Bulb Replacement (Equinox)** or **Headlamp Assembly or Headlamp Bulb and/or Cornering, Sidemarker, Park, Turn Signal Bulb Replacement (Torrent)** in Lighting Systems.

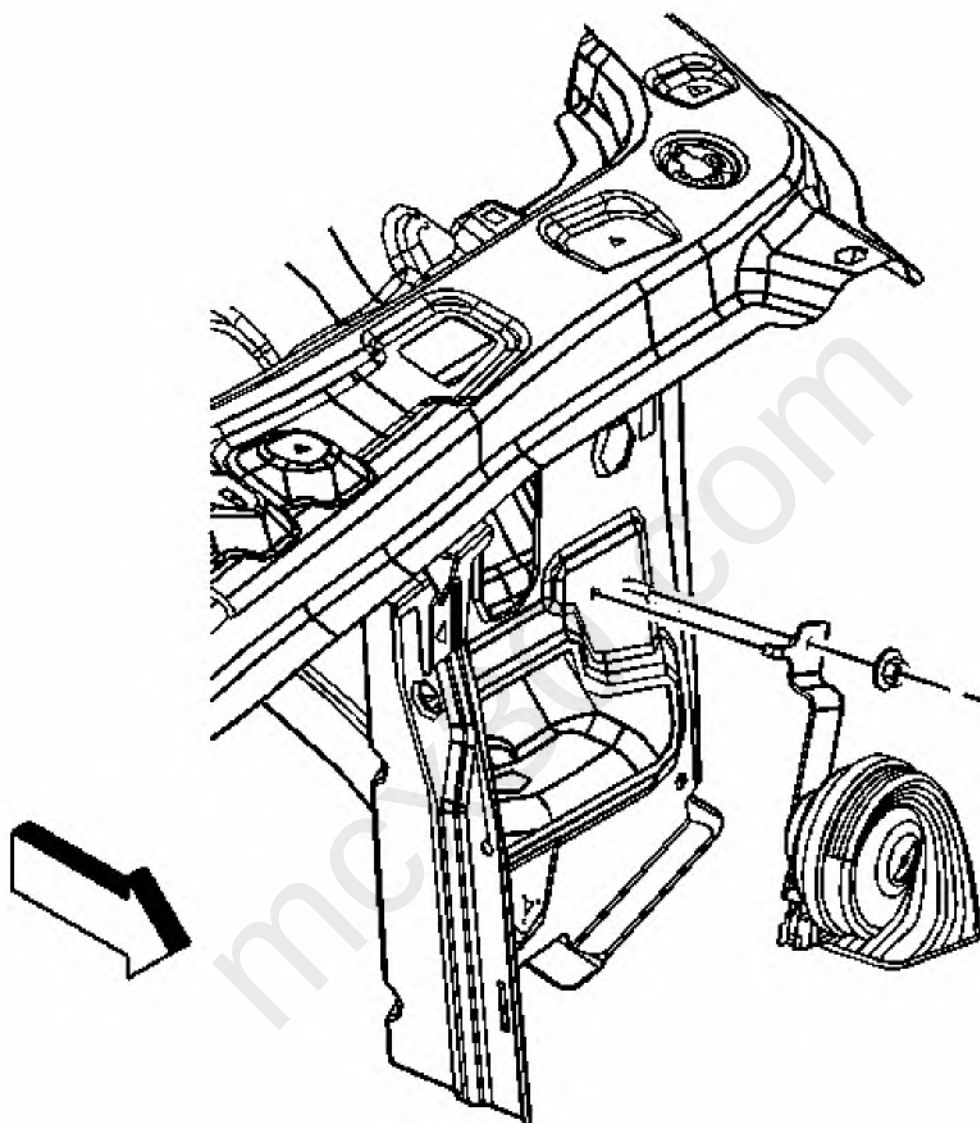


Fig. 4: Removing/Installing Horn
Courtesy of GENERAL MOTORS CORP.

2. Disconnect the electrical connector.
3. Remove the nut that secures the horn bracket to the vehicle.
4. Remove the horn assembly from the vehicle.

Installation Procedure

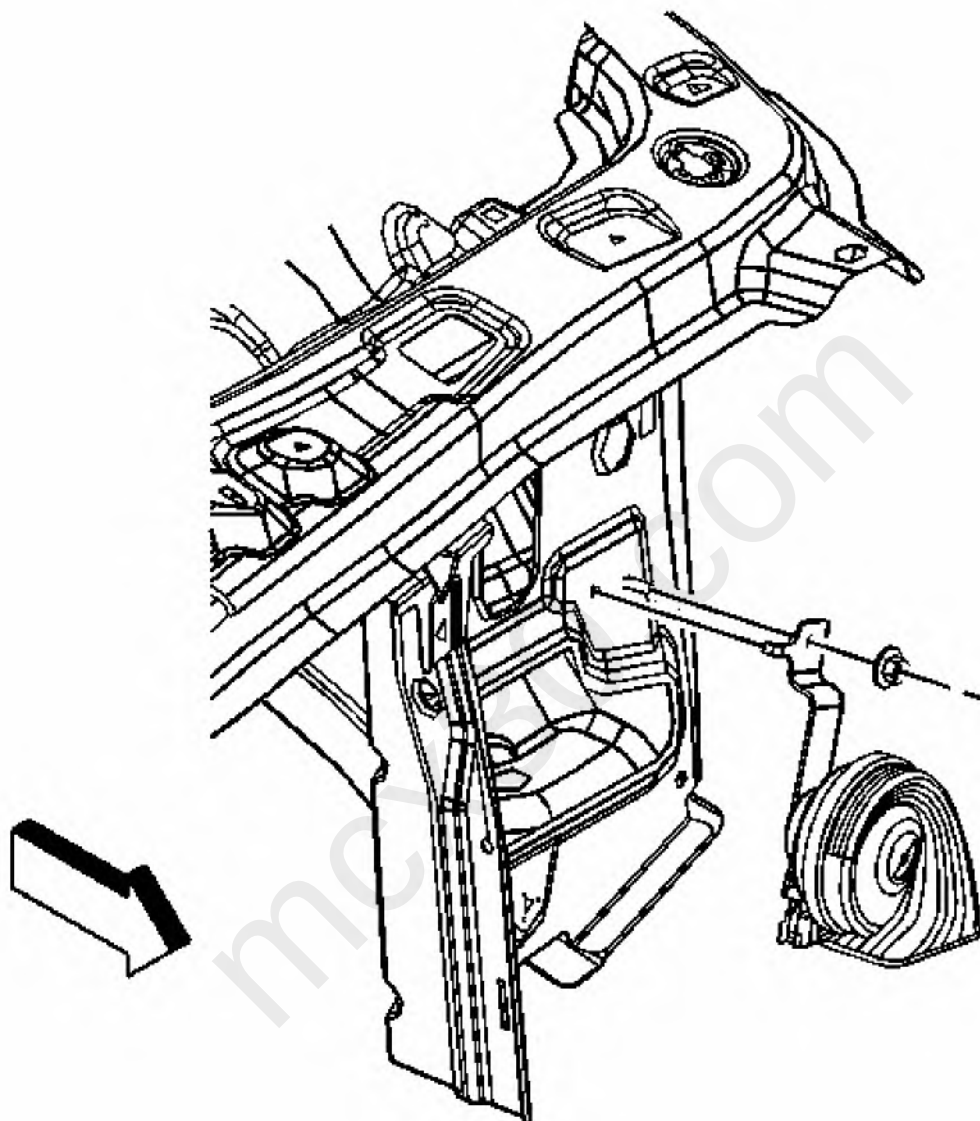


Fig. 5: Removing/Installing Horn
Courtesy of GENERAL MOTORS CORP.

1. Position the horn assembly to the vehicle.
2. Connect the electrical connector.

NOTE: Refer to Fastener Notice in Cautions and Notices.

3. Install the nut that secures the horn bracket to the vehicle.

Tighten: Tighten the nut to 10 N.m (89 lb ft).

4. Install the left headlamp. Refer to **Headlamp Assembly or Headlamp Bulb and/or Cornering, Sidemarker, Park, Turn Signal Bulb Replacement (Equinox)** or **Headlamp Assembly or Headlamp Bulb and/or Cornering, Sidemarker, Park, Turn Signal Bulb Replacement (Torrent)** in Lighting Systems.

DESCRIPTION AND OPERATION

HORNS SYSTEM DESCRIPTION AND OPERATION

System Description

The horn system consists of the following components:

- HORN fuse
- Horn relay
- Horn slip ring
- Horn switch
- Horn assembly
- Body Control Module (BCM)

System Operation

The vehicle horn system is activated under the following conditions:

- The horn switch is depressed.
- The body control module (BCM) commands the horns on. The BCM commands the horns on under any of the following conditions:
 - When the panic button is depressed on the remote control door lock transmitter. For further information refer to **Keyless Entry System Description and Operation** in Keyless Entry.
 - 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** in Keyless Entry.

Circuit Operation

Battery positive voltage is applied at all times to the horn relay coil and the horn relay switch. Pressing the horn switch applies ground to the horn relay control circuit. The BCM may also apply ground to the horn relay control circuit as described above. When the horn relay control circuit is grounded, the horn relay is energized and battery positive voltage is applied to the horns through the horn control circuit. The horns sound as long as ground is

2006 Chevrolet Equinox LS

2006 ACCESSORIES & EQUIPMENT Horns - Equinox & Torrent

applied to the horn relay control circuit.

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