

2006 Chevrolet HHR LT

2006 ACCESSORIES & EQUIPMENT Horns - HHR

2006 ACCESSORIES & EQUIPMENT

Horns - HHR

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

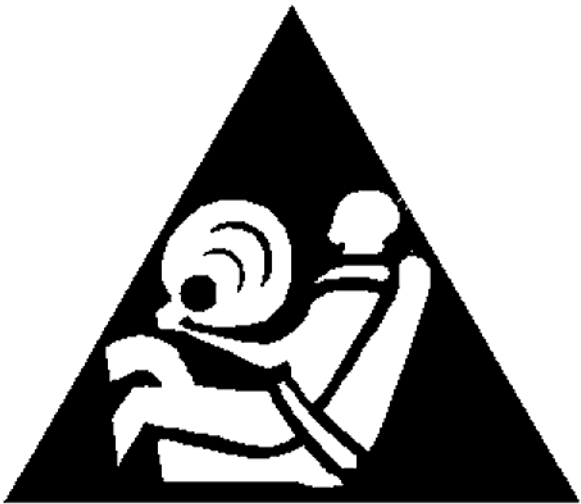
Fastener Tightening Specifications

Application	Specification	
	Metric	English
Horn and Bracket Assembly to the Body	15 N.m	11 lb ft

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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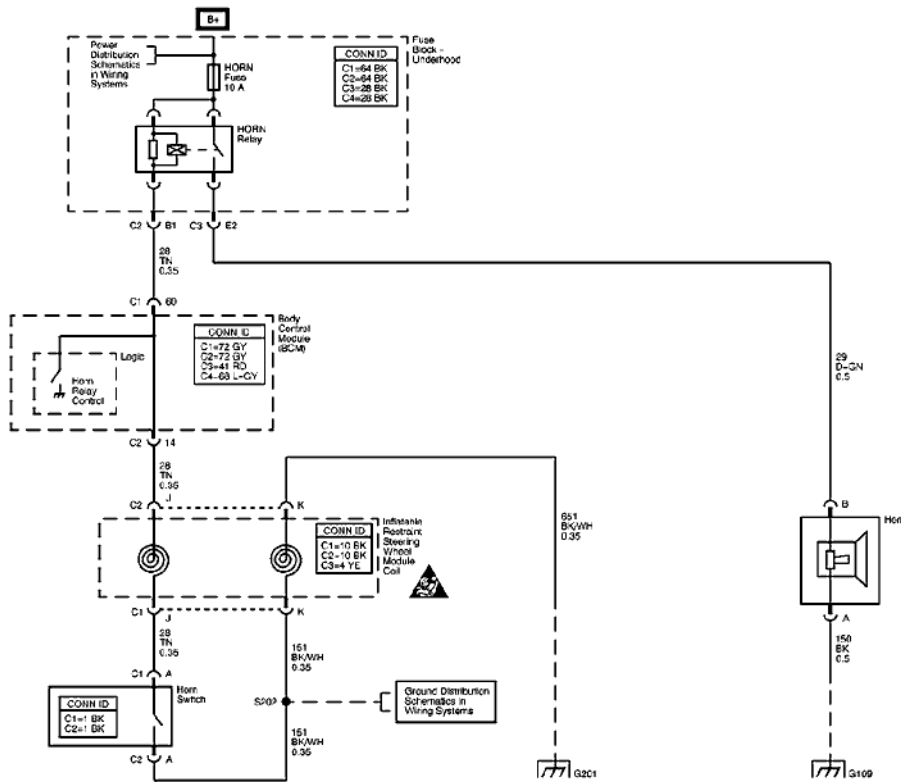


Fig. 1: Horns Schematic
Courtesy of GENERAL MOTORS CORP.

COMPONENT LOCATOR

HORNS COMPONENT VIEWS

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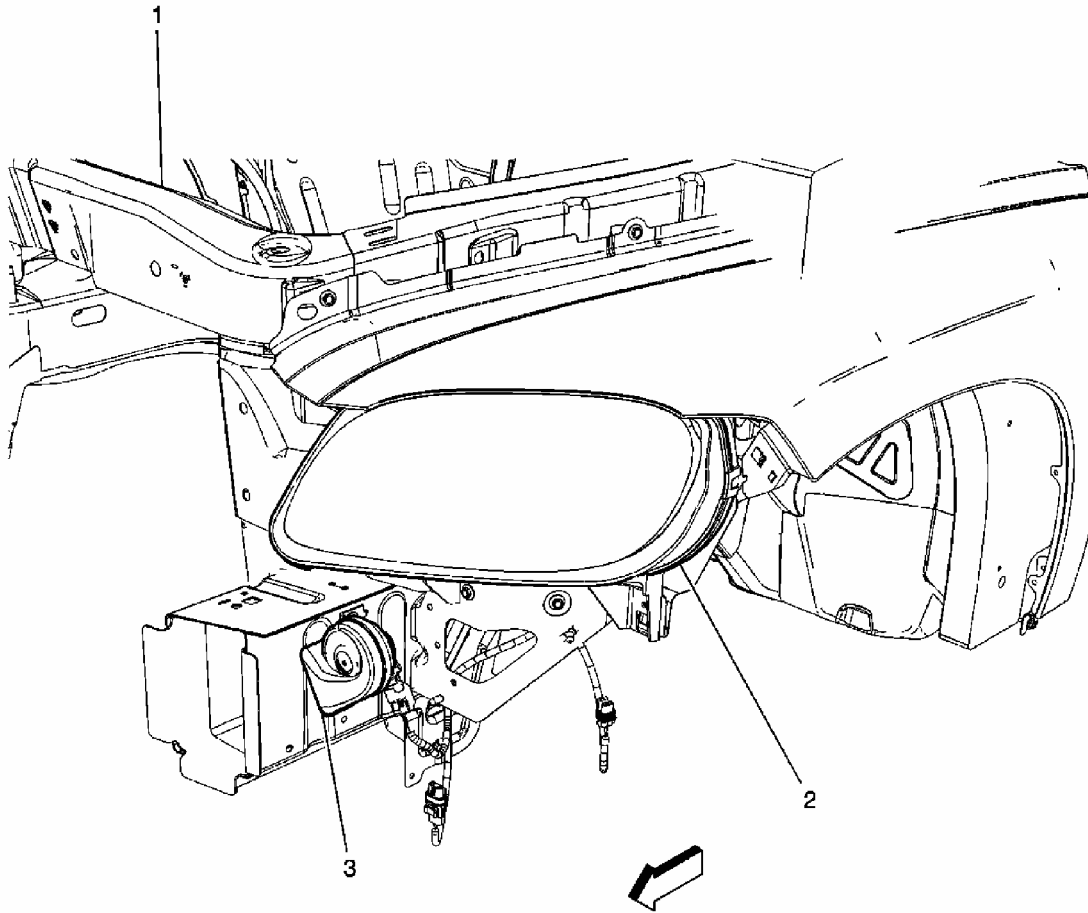


Fig. 2: LF of the Vehicle
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 2

Callout	Component Name
1	Upper Radio Support
2	LF Headlamp Assembly
3	Horn

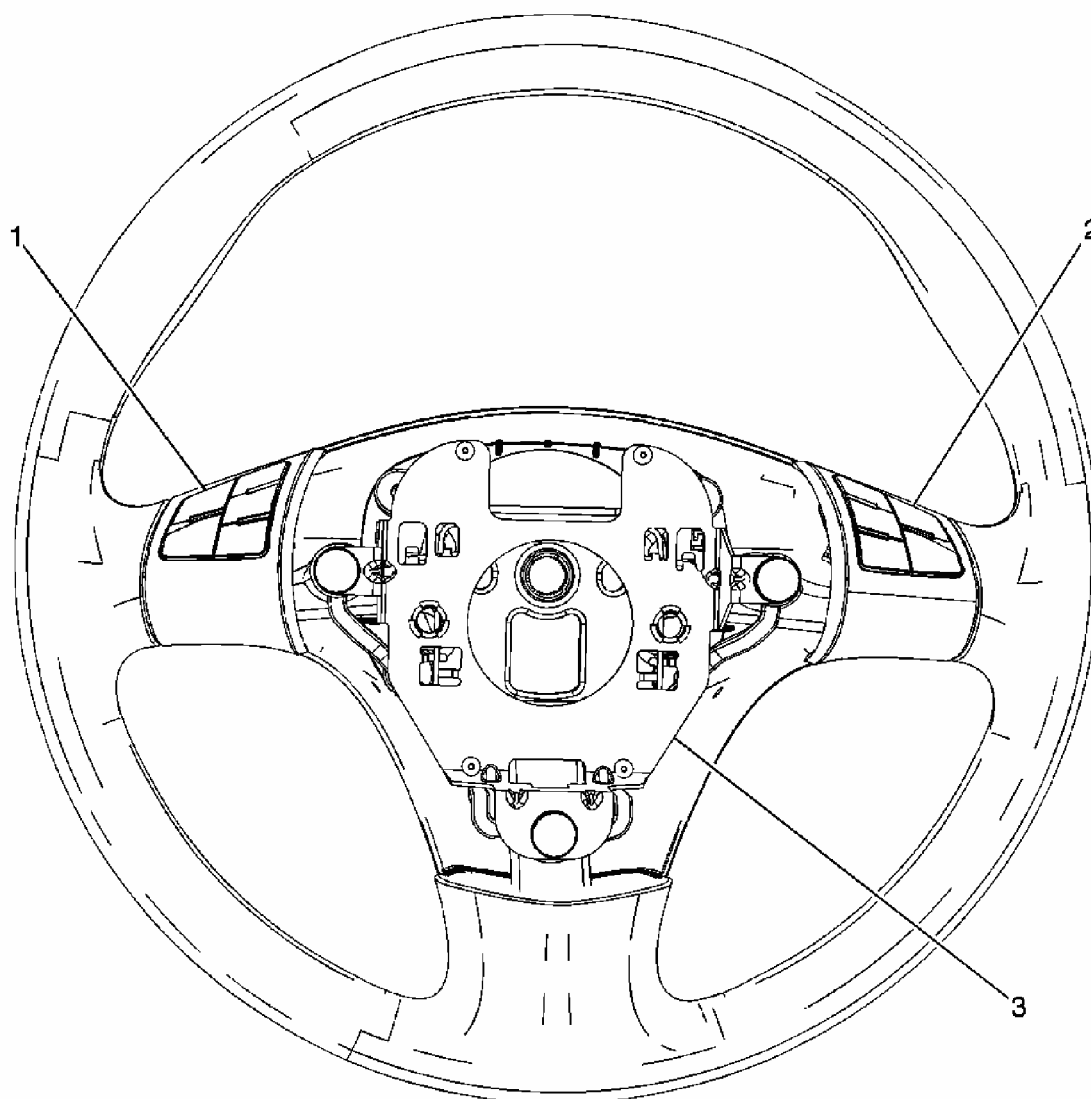


Fig. 3: Steering Wheel Components
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 3

Callout	Component Name
1	Steering Wheel Controls - Left
2	Steering Wheel Controls - Right
3	Horn Switch

HORNS CONNECTOR END VIEWS

Horn

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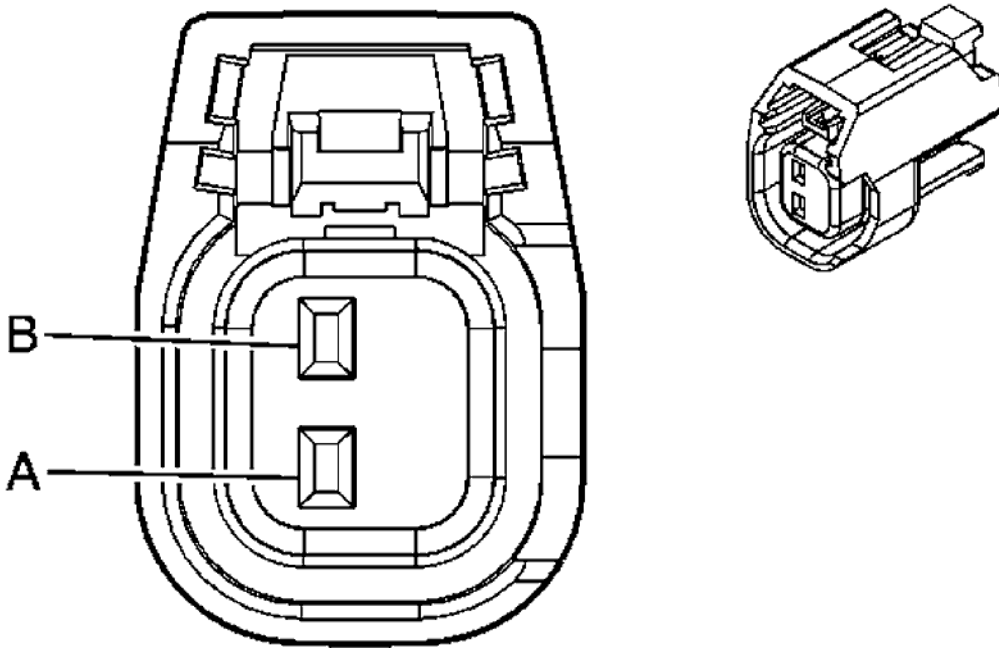


Fig. 4: Horns Connector
Courtesy of GENERAL MOTORS CORP.

Horns Connector End Views

Connector Part Information

- OEM: 15419715
- Service: 88988313
- Description: 2-Way F GT 150 Series Sealed (GY)

Terminal Part Information

- Pins:
- Terminal:
- Core/Insulation Crimp:
- Release Tool/Test Probe:

Horn

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

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Horn Switch C1

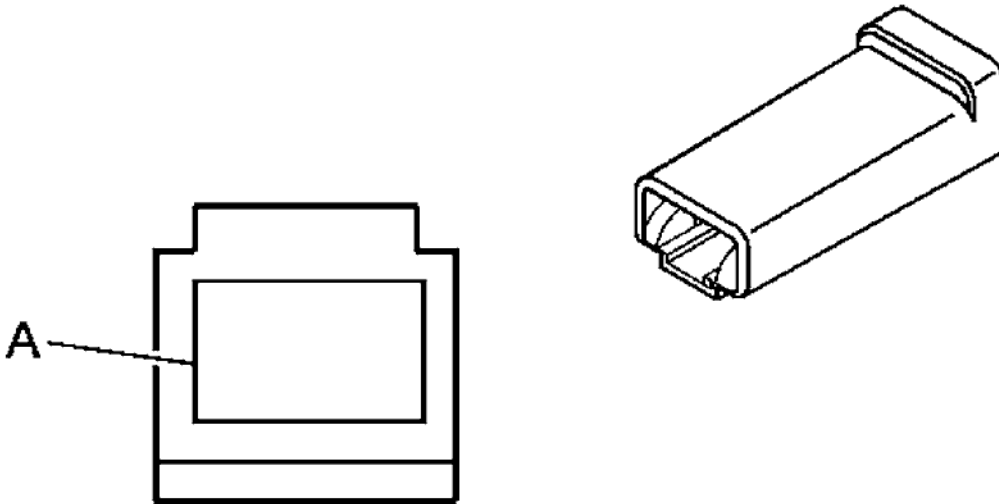


Fig. 5: Horn Switch C1 Connector
Courtesy of GENERAL MOTORS CORP.

Horns Connector End Views

Connector Part Information

- OEM: AMP -C-173531-1
- Service: Serviced as Part of Complete Steering Column Harness
- Description: 1-Way F

Terminal Part Information

- Pins:
- Terminal:
- Core/Insulation Crimp:
- Release Tool/Test Probe:

Horn Switch C1

Pin	Wire Color	Circuit No.	Function
A	TN	28	Horn Relay Control

Horn Switch C2

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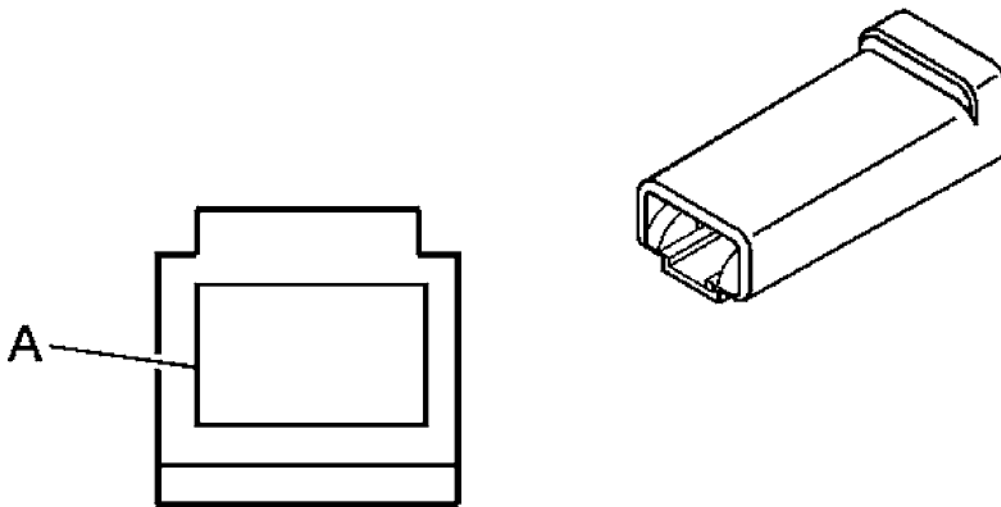


Fig. 6: Horn Switch C2 Connector
Courtesy of GENERAL MOTORS CORP.

Horns Connector End Views

Connector Part Information

- OEM: AMP -C-173531-1
- Service: Serviced as Part of Complete Steering Column Harness
- Description: 1-Way F

Terminal Part Information

- Pins:
- Terminal:
- Core/Insulation Crimp:
- Release Tool/Test Probe:

Horn Switch C2

Pin	Wire Color	Circuit No.	Function
A	BK/WH	151	Signal Ground

DIAGNOSTIC INFORMATION AND PROCEDURES

DIAGNOSTIC STARTING POINT - HORNS

Begin the system diagnosis with the **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

Scan Tool Parameter	Data List	Units Displayed	Typical Data Value
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Ignition ON/Engine OFF

Horn Relay Command	Theft Deterrent/BCM	On/Off	Off
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SCAN TOOL DATA DEFINITIONS

Horn Relay Command

The scan tool displays On/Off. The state that the body control module (BCM) has commanded for the horn relay is displayed.

DTC B2750

Circuit Description

The body control module (BCM) controls the horn relay by grounding the control circuit of the horn relay coil. When the horn relay coil is grounded, the horn relay contacts close, applying voltage to the horn via the horn supply voltage circuit.

DTC Descriptor

This diagnostic procedure supports the following DTC:

DTC B2750 Horn Relay Output

This vehicle has DTCs which include DTC Symptoms. For more information on DTC Symptoms, refer to **DTC Symptom Description** in Vehicle DTC Information.

DTC B2750

DTC Symptom	DTC Symptom Descriptor
01	Short to battery

Conditions for Running the DTC

The only requirements are valid operating voltage and ground.

Conditions for Setting the DTC

The following condition exists for more than 125 milliseconds:

B2750 01

The BCM detects a short to the battery in the horn relay control when output is active.

Action Taken When the DTC Sets

B2750 01

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The BCM disables the horn relay control until the next ignition cycle.

Conditions for Clearing the DTC

- A current DTC clears when the malfunction is no longer present.
- A history DTC clears when the module ignition cycle counter reaches the reset threshold, without a repeat of the malfunction.

Test Description

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

2: During the horn relay operation, listen for an audible click. Command the ON and the 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 tests for a short to voltage in the horn relay signal circuit.

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

DTC B2750

Step	Action	Yes	No
Schematic Reference: <u>Horns Schematics</u>			
Connector End View Reference: <u>Horns Connector End Views</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. Turn ON the ignition, with the engine OFF. 2. With a scan tool, command the horn relay ON and OFF. Does the horn relay turn ON and OFF with each command?	Go to Testing for Intermittent Conditions and Poor Connections in Wiring Systems	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. Probe the battery positive circuit of the horn with a test lamp connected to a		

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	good ground.		
	Does the test lamp illuminate?	Go to Step 4	Go to Step 12
4	1. Turn ON the ignition, with the engine OFF. 2. Probe the horn relay control circuit of the horn relay with a test lamp connected to a good ground.		
	Does the test lamp illuminate?	Go to Step 8	Go to Step 5
5	1. Connect a test lamp between the control circuit of the horn relay and the battery positive voltage circuit of the horn relay. 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 10	Go to Step 6
6	Does the test lamp remain illuminated with each command?	Go to Step 7	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 15	Go to Step 11
8	1. Turn ON the ignition, with the engine OFF. 2. Test the control circuit of the horn relay for a short to voltage. Refer to Circuit Testing and Wiring Repairs in Wiring Systems.		
	Did you find and correct the condition?	Go to Step 15	Go to Step 11
9	Test the horn relay control circuit for an open. Refer to Circuit Testing and to Wiring Repairs in Wiring Systems. Did you find and correct the condition?	Go to Step 15	Go to Step 11
10	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 15	Go to Step 11

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11	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 15	Go to Step 11
12	Repair the open in the horn relay battery positive voltage circuit. Refer to Wiring Repairs in Wiring Systems. Did you complete the repair?	Go to Step 15	-
13	Replace the horn relay. Did you complete the replacement?	Go to Step 15	-
14	Replace the BCM. Refer to Control Module References in Computer/Integrating Systems for replacement, setup, and programming. Did you complete the replacement?	Go to Step 15	-
15	1. Use the scan tool in order to clear the DTCs. 2. Operate the vehicle within the Conditions for Running the DTC. Does the DTC reset?	Go to Step 2	System OK

SYMPTOMS - HORNS

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

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** in Wiring Systems.
- 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).

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Intermittent

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

Symptom List

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

- **Horns Always On**
- **Horns Inoperative**
- **Horns - Poor Tone**

HORNS ALWAYS ON

Test Description

The number below refers to the step number on the diagnostic table.

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

Horns Always On

Step	Action	Yes	No
1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u> in Vehicle DTC Information
2	Depress and release the horn switch. Are the horns on at all times?	Go to Step 3	Go to <u>Testing for Intermittent Conditions and Poor Connections</u> in Wiring Systems
3	Disconnect the body control module (BCM). Are the horns on at all times?	Go to Step 4	Go to Step 8
4	Disconnect the horn relay. Are the horns on at all times?	Go to Step 10	Go to Step 5
5	Connect a test lamp between the battery positive voltage circuit of the horn relay coil and the horn relay control circuit. Does the test lamp illuminate?	Go to Step 7	Go to Step 6
	Inspect for poor connections at the horn		

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6	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 12
7	Repair the short to ground in the horn relay control circuit. Refer to Circuit Testing and Wiring Repairs in Wiring Systems. Did you complete the repair?	Go to Step 13	-
8	Test the horn switch signal circuit 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
9	Inspect for poor connections at the harness connector of the 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 11
10	Repair the short to voltage in the horn control circuit. Refer to Circuit Testing and Wiring Repairs in Wiring Systems. Did you complete the repair?	Go to Step 13	-
11	Replace the BCM. Refer to Control Module References in Computer/Integrating Systems for replacement, setup, and programming. Did you complete the replacement?	Go to Step 13	-
12	Replace the horn relay. Did you complete the replacement?	Go to Step 13	-
13	Operate the horns. Do the horns operate properly?	System OK	Go to Step 1

HORNS INOPERATIVE**Test Description**

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

4: This step tests for voltage at the battery positive voltage terminal of the horn relay coil.

6: This step tests for voltage at the battery positive voltage terminal of the horn relay switch. The HORN fuse supplies power to the battery positive voltage terminal of the horn relay switch.

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14: The horns need maximum current flow to operate properly. A high resistance, greater than 0.5 ohm, in the horn control circuit or the horn ground circuit could cause operating problems with the horns. Inspect the circuits for faults that would restrict current flow.

Horns Inoperative

Step	Action	Yes	No
1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to Diagnostic System Check - Vehicle in Vehicle DTC Information
2	Depress the horn switch. Do the horns operate?	Go to Testing for Intermittent Conditions and Poor Connections in Wiring Systems	Go to Step 3
3	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. Does the horn relay turn ON and OFF with each command?	Go to Step 11	Go to Step 4
4	1. Disconnect the horn relay. 2. 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 5	Go to Step 15
5	1. Connect a test lamp between the battery positive voltage circuit of the horn relay coil and the horn relay control circuit. 2. Depress and hold the horn switch. Does the test lamp illuminate?	Go to Step 6	Go to Step 12
	Connect a test lamp between the battery		

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6	positive voltage circuit of the horn relay switch and a good ground. Does the test lamp illuminate?	Go to Step 7	Go to Step 16
7	Momentarily connect a 15-amp fused jumper wire between the battery positive voltage circuit of the horn relay switch and the horn control circuit. Do the horns operate?	Go to Step 10	Go to Step 8
8	1. Reconnect the horn relay. 2. Disconnect the horn connector. 3. Connect a test lamp between the horn control circuit and a good ground. 4. Depress and hold the horn switch. Does the test lamp illuminate?	Go to Step 9	Go to Step 17
9	1. Connect a test lamp between the horn control circuit and the horn ground circuit. 2. Depress and hold the horn switch. Does the test lamp illuminate?	Go to Step 13	Go to Step 18
10	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 22	Go to Step 19
11	Test the horn switch signal for a short to voltage or open. Refer to Circuit Testing and Wiring Repairs in Wiring Systems. Did you find and correct the condition?	Go to Step 22	Go to Step 21
12	Test the control circuit of the horn relay for a short to voltage or an open. Refer to Circuit Testing and Wiring Repairs in Wiring Systems. Did you find and correct the condition?	Go to Step 22	Go to Step 21
13	1. Connect a 15-amp fused jumper wire between the positive battery terminal and the control terminal of the horn. 2. Momentarily connect another jumper wire between the negative battery terminal and the ground terminal of		

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	the horn.		
	Does the horn sound?	Go to Step 14	Go to Step 20
14	Repair the high resistance in the horn control circuit or the horn ground. A resistance as low as 0.5 ohm could cause operating problems with the horns. Refer to Circuit Testing and Wiring Repairs in Wiring Systems. Did you complete the repair?	Go to Step 22	-
15	Repair the open or high resistance in the battery positive voltage circuit of the horn relay coil. Refer to Circuit Testing and Wiring Repairs in Wiring Systems. Did you complete the repair?	Go to Step 22	-
16	Repair the open or high resistance in the battery positive voltage circuit of the horn relay switch. Refer to Circuit Testing and Wiring Repairs in Wiring Systems. Did you complete the repair?	Go to Step 22	-
17	Repair the open or high resistance in the horn control circuit. Refer to Circuit Testing and Wiring Repairs in Wiring Systems. Did you complete the repair?	Go to Step 22	-
18	Repair the open or high resistance in the horn ground circuit. Refer to Circuit Testing and Wiring Repairs in Wiring Systems. Did you complete the repair?	Go to Step 22	-
19	Replace the horn relay. Refer to Relay Replacement (Within an Electrical Center) or Relay Replacement (Attached to Wire Harness) in Wiring Systems. Did you complete the replacement?	Go to Step 22	-
20	Replace the horn assembly. Refer to Horn Replacement . Did you complete the replacement?	Go to Step 22	-
21	Replace the body control module (BCM). Refer to Control Module References in Computer/Integrating Systems for replacement, setup, and programming. Did you complete the replacement?	Go to Step 22	-

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22	Operate the horns. Do the horns operate properly?	System OK	Go to Step 1
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HORNS - POOR TONE**Horns - Poor Tone**

Step	Action	Yes	No
1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to Diagnostic System Check - Vehicle in Vehicle DTC Information
2	Depress the horn switch. Do the horns have a harsh tone or buzzing?	Go to Step 3	Go to Testing for Intermittent Conditions and Poor Connections in Wiring Systems
3	Perform the following for each of the horns: • Test the horn mounting hardware for adequate torque. Refer to Fastener Tightening Specifications. • Inspect the horns for debris in the joint where the horns attach to the vehicle. Did you find and correct the condition?	Go to Step 7	Go to Step 4
4	Perform the following for each of the horns: 1. Disconnect the horn connector. 2. Connect a 15-amp fuse jumper wire between the positive battery terminal and the control terminal of the horn. 3. Connect another jumper wire between the negative battery terminal and the ground terminal of the horn. Does the horn have a harsh tone or buzzing?	Go to Step 6	Go to Step 5
5	Repair the high resistance in the horn control circuit or the horn ground circuit. Refer to Circuit Testing and Wiring Repairs in		-

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	Wiring Systems. Did you complete the repair?	Go to Step 7	
6	Replace the horn. Refer to Horn Replacement . Did you complete the replacement?	Go to Step 7	-
7	Operate the horns. Do the horns operate properly?	System OK	Go to Step 1

REPAIR INSTRUCTIONS

HORN REPLACEMENT

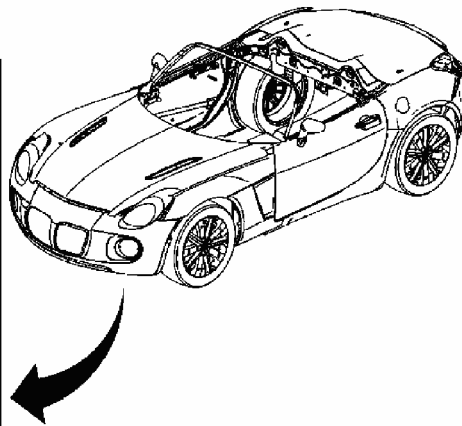
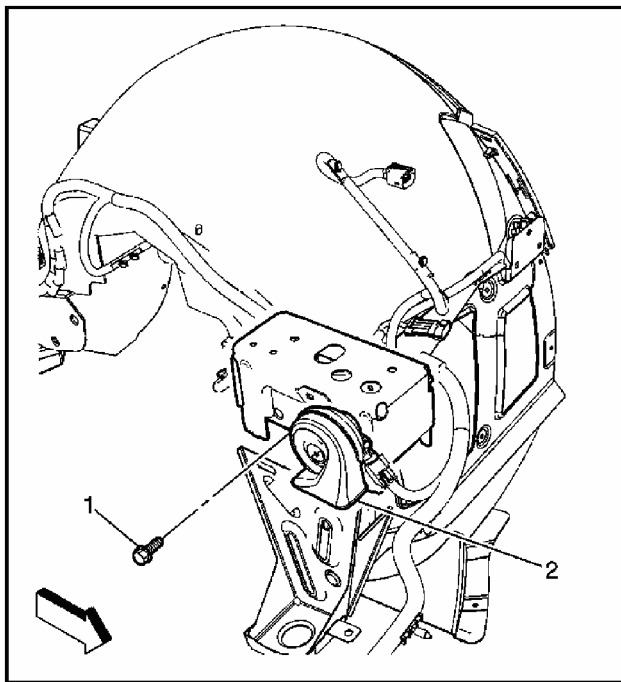


Fig. 7: Removing/Installing Horn
Courtesy of GENERAL MOTORS CORP.

Horn Replacement

Callout	Component Name
NOTE: Refer to Fastener Notice in Cautions and Notices.	
Fastener Tightening Specifications: Refer to Fastener Tightening Specifications .	
1	Bolt, Horn

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	Tighten: 10 N.m (89 lb in)
2	Horn Tip: Disconnect electrical connector.

DESCRIPTION AND OPERATION

HORNS SYSTEM DESCRIPTION AND OPERATION

System Description

The horn system consists of the following components:

- HORN fuse
- Horn relay
- Horn button
- Horn assembly
- Body control module (BCM)

System Operation

The body control module (BCM) commands the horns ON. The BCM commands the horns ON under any of the following conditions:

- When the horn button is depressed
- 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.

Circuit Operation

Battery positive voltage is applied at all times to the horn relay coil and the horn relay switch. Pressing the horn button applies ground to the horn switch signal circuit. The body control module (BCM) applies 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 applied to the horn relay control circuit.