Component Procedures: Horn

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Parts and Labor (itype_189)

Parts

Qualifier	Part #	Name	Price	Note
Horn > High Note	92228137	Horn	0.00	
Horn > Low Note	92228138	Horn	0.00	

Labor

Operation	Qualifier Path	Skill	Std Hrs	Wty Hrs
Remove & Replace	Horn > Horn, R&R > One Or Both	B	0.8	0.4

Horns System (Article 10290)

System Description

The horn system consists of the following components:

- HORN fuse
- Underhood fuse block (contains PCB horn relay)
- Horn switch
- Horn-low note
- Horn-high note
- Body control module (BCM)

Figure 1: Horn Block Diagram

System Operation

The vehicle horn system is activated under the following conditions:

- When 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 Theft Systems Description and Operation .
- When the panic button is depressed on the remote control door lock transmitter—For further information refer to Keyless Entry System 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 .
- When the OnStar® system is used to sound the horns if equipped—For further information, refer to OnStar Description and Operation .

Circuit Operation

Battery positive voltage is applied at all times to the horn relay coil and the horn relay switch. Pressing either of the horn switches 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 applied to the horn relay control circuit.

Horn Schematics (Article 10296)

Figure 1: Horns

Horns (Article 10910)

Horns

Horn Replacement (Article 10294)

Callout Component Name

Preliminary Procedure Remove the front left or right wheelhouse liner (front). Refer to Front Wheelhouse Liner Replacement .

Preliminary Procedure

Remove the front left or right wheelhouse liner (front). Refer to Front Wheelhouse Liner Replacement .

1 Horn Bolt Caution: Refer to Fastener Caution . Tighten 9 Nm (80 lb in)

9 Nm (80 lb in)

2 Horn Procedure Disconnect the electrical connector.
Procedure
Disconnect the electrical connector.

Horns - Fastener Specifications (Article 10297)

Application Specification
Metric English
Horn Bolt 17 Nm 12 lb ft
Steering Wheel Horn Contact Bolt Screws 8 Nm 71 lb in

Symptoms - Horns (Article 10293)

- 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
- 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.
- 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 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 (Article 10292)

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 3 3 —
Horn Switch Ground — 3 — —
Horn Relay Control B2750 02 B2750 04 B2750 01 —
High Note Horn Control 3 2 1 —
High Note Horn Ground — 2 — —
Low Note Horn Control 3 2 1 —
High Low Horn Ground — 2 — —
1. Horn Always On 2. Single Horn Inoperative 3. Both Horns 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 printed circuit board 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

OnStar® RemoteLink™ applications or "apps" downloads are available to owners of certain mobile devices. Unwanted or inadvertent horn activations have been associated with these applications to which the customer may be unaware. Contact the GM Technical Assistance Center regarding information on a remedy for this situation.
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 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
- Ignition ON.
- Verify the scan tool Horn Switch parameter changes between Active and Inactive when pressing and releasing the horn pad.
- If the parameter does not change Refer to Circuit/System Testing — Horn Switch Malfunction.
- If the parameter changes
- Verify the P12A Horn-High Note and the P12B Horn-Low Note turns ON and OFF and emit a clear and even tone when commanding the Horn Relay On and OFF with a scan tool.
- If the P12A Horn-High Note and the P12B Horn-Low Note do not turn ON and OFF Refer to Circuit/System Testing – Horns or Horn Command Malfunction.
- If a single P12 Horn does not turn ON and OFF Refer to Circuit/System Testing – Horn - Poor Tone.
- If the sound emitted is not clear and even Refer to Circuit/System Testing – Horn - Poor Tone.
- If the P12A Horn-High Note and the P12B Horn-Low Note turn ON and OFF and emit a even and clear tone
- All OK.
Circuit/System Testing
Horn Switch Malfunction
- Ignition OFF and all vehicle systems OFF, disconnect the X1 and X2 harness connectors at the S33 Horn Switch. It may take up to 2 minutes for all vehicle systems to power down.
- Test for less than 10 Ω between the ground circuit terminal 1 X2 and ground.
- If 10 Ω or greater
- Ignition OFF.
- 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.
- If less than 10 Ω
- Verify the scan tool Horn Switch parameter is Inactive.
- If not Inactive
- Ignition OFF, disconnect the harness connector at the K9 Body Control Module.
- Test for infinite resistance between the signal circuit terminal 1 X1 and ground.
- If less than infinite resistance, repair the short to ground on the circuit.
- If infinite resistance, replace the K9 Body Control Module.
- If Inactive
- Install a 3 A fused jumper wire between the signal circuit terminal 1 X1 and the ground circuit terminal 1 X2.
- Verify the scan tool Horn Switch parameter is Active.
- If not Active
- Ignition OFF, removed the 3 A fused jumper wire, disconnect the harness connector at the K9 Body Control Module, ignition ON.
- 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.
- If less than 1 V
- Test for less than 2 Ω in the signal circuit end to end.
- If less than 2 Ω, replace the K9 Body Control Module.
- If Active
- Test or replace the S33 Horn Switch.

Horns or Horn Command Malfunction

- Ignition OFF, disconnect the harness connector at the appropriate P12 Horn. Ignition ON
- Connect a test lamp between the control circuit terminal A and ground, ignition ON.
- Verify the test lamp does not turn ON and OFF when commanding the Horn Relay On and Off with a scan tool.
- If the test lamp turns ON and OFF Test or replace the P12 Horn.
- If the test lamp does not turn ON and OFF
- Ignition OFF, connect the harness connector at the P12 Horn. Disconnect the X1 harness connector at the X50A Fuse Block-Underhood, ignition ON.
- Verify the P12A Horn-High Note and P12B Horn-Low Note are not activated.
- If the P12A Horn-High Note and P12B Horn-Low Note is activated
- Ignition OFF, disconnect the harness connector at the P12A Horn-High Note and P12B Horn-Low Note, ignition ON.
- Test for less than 1 V between the control circuit terminal A and ground.
- If less than 1 V, test or replace the P12A Horn-High Note and P12B Horn-Low Note.
- If the P12A Horn-High Note and P12B Horn-Low Note is not activated
- Connect a 15 A fused jumper wire between the control circuit terminal 32 and B+.
- Verify the P12A Horn-High Note or P12B Horn-Low Note activates.
- If the P12A Horn-High Note and P12B Horn-Low Note does not activate
- Ignition OFF, remove the jumper wire, disconnect the harness connector at the P12 Horn, ignition ON.
- Test for infinite resistance between the control circuit and ground.
- If less than Infinite resistance, repair the short to ground on the circuit.
- If infinite resistance
- Test for less than 2 Ω in the control circuit end to end.
- If less than 2 Ω, test or replace the P12 Horn.
- If the P12A Horn-High Note and P12B Horn-Low Note activates
- Ignition OFF, connect the X1 harness connector at the X50A Fuse Block-Underhood. Disconnect the X5 harness connector at the K9 Body Control Module, ignition ON.
- Ignition OFF, disconnect the X2 harness connector at the X50A Fuse Block-Underhood.
- Test for infinite resistance between the control circuit terminal 19 X5 at the K9 Body Control Module and ground.
- If infinite resistance, replace the X50A Fuse Block-Underhood.
- If the P12A Horn-High Note and P12B Horn-Low Note are not activated
- Connect a 3 A fused jumper wire between the control circuit terminal 19 and ground.
- Verify the P12A Horn-High Note and P12B Horn-Low Note activates.
- If the P12 Horn does not activate
- Ignition OFF, remove the jumper wire, disconnect the X2 harness connector at the X50A Fuse Block-Underhood, ignition ON.
- Test for less than 1 V between the control circuit terminal 19 X5 at the K9 Body Control Module and ground.
- If less than 2 Ω, replace the X50A Fuse Block-Underhood.
- Replace the K9 Body Control Module.

Horn - Poor Tone

- Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the appropriate P12 Horn. It may take up to 2 minutes for all vehicle systems to power down.
- Test for less than 1 Ω between the ground circuit terminal B and ground.
- If 1 Ω or greater
- If 2 Ω or greater, repair the high resistance in the circuit.
- If less than 2 Ω, repair high resistance in the ground connection.
- If less than 1 Ω
- Ignition OFF, disconnect the X1 harness connector at the X50A Fuse Block-Underhood.
- Test for less than 2 Ω between the P12 Horn control circuit terminal A and the X50A Fuse Block-Underhood control circuit terminal 32 X1.
- If 2 Ω or greater Repair the high resistance in the control circuit.
- If less than 2 Ω
- Test or replace the P12 Horn.

Component Testing

Horn Test

- Ignition OFF, disconnect the harness connector at the appropriate P12 Horn.
- Install a 15 A fused jumper wire between the control terminal A and 12 V. Install a jumper wire between the ground terminal B and ground.
- Verify the P12 horn. turns ON and OFF
- If the P12 Horn. does not turn ON and OFF Replace the P12 Horn.
- If the P12 Horn. turns ON and OFF
- All OK

Horn Switch

- Ignition OFF, disconnect the X1 and X2 harness connectors at the S33 Horn Switch.
- Test for infinite resistance between the signal terminal 1 X1 and the ground terminal 1 X2 with the switch in the open position.
- If less than infinite resistance Replace the S33 Horn Switch.
- Test for less than 3 Ω between the signal terminal 1 X1 and the ground terminal 1 X2 with the switch in the closed position.
- If 3 Ω or greater Replace the S33 Horn Switch.
- If less than 3 Ω

Repair Instructions

Perform the Diagnostic Repair Verification after completing the repair.

- Steering Wheel Horn Contact Replacement
- Horn Replacement
- Accessory Wiring Junction Block Replacement
- Control Module References for body control module replacement, programming and setup