

2017 ACCESSORIES AND EQUIPMENT

Horns and Pedestrian Alerts - Bolt EV

SPECIFICATIONS

FASTENER SPECIFICATIONS

Reusable Threaded Fastener Tightening Specifications

Application	Specification
	Metric (English)
NOTE: <i>All fasteners listed in this table can be reused after removal.</i>	
Horn Nut	22 N.m (16 lb ft)
Pedestrian Sound Alert Module Bracket Nut	9 N.m (80 lb in)
Pedestrian Sound Alert Speaker Bracket Nut	9 N.m (80 lb in)

SCHEMATIC WIRING DIAGRAMS

HORN WIRING SCHEMATICS

Horn

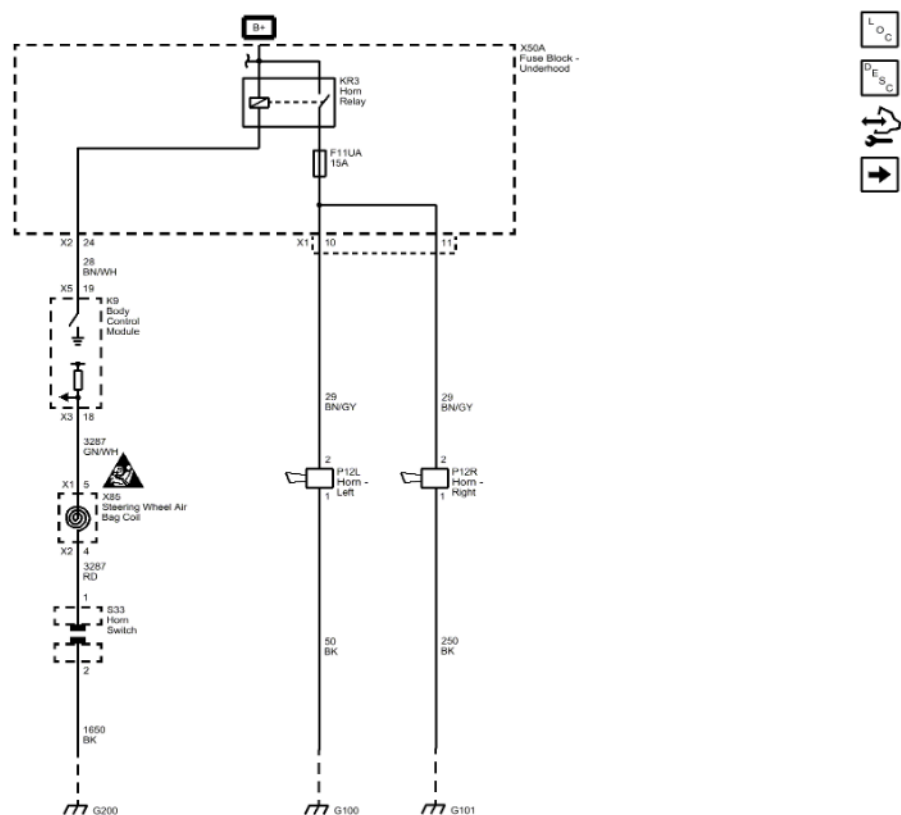


Fig. 1: Horn

Courtesy of GENERAL MOTORS COMPANY

Pedestrian Alert

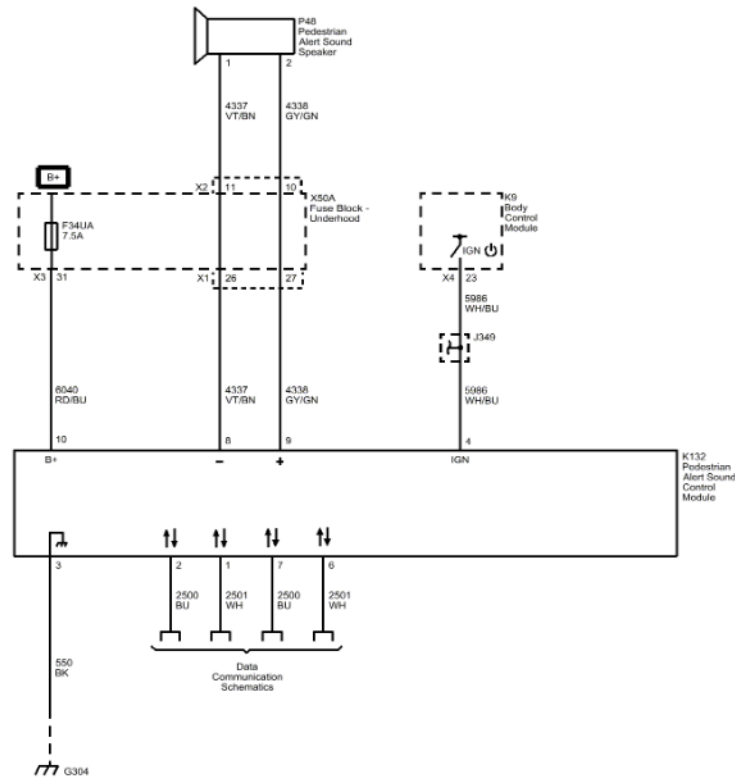


Fig. 2: Pedestrian Alert

Courtesy of GENERAL MOTORS COMPANY

DIAGNOSTIC INFORMATION AND PROCEDURES

DTC B010E: PEDESTRIAN FRIENDLY ALERT AUDIO OUTPUT CIRCUIT

Diagnostic Instructions

- Perform the Diagnostic System Check prior to using this diagnostic procedure: [Diagnostic System Check - Vehicle](#)
- Review the description of Strategy Based Diagnosis: [Strategy Based Diagnosis](#)
- An overview of each diagnostic category can be found here: [Diagnostic Procedure Instructions](#)

DTC Descriptor

DTC B010E

Pedestrian Friendly Alert Audio Output Circuit

Symptom Byte Information: [Symptom Byte List](#)

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Pedestrian Friendly Alert Speaker Control (-)	1	B010E 04	1	B010E 1B
Pedestrian Friendly Alert Speaker Control (+)	1	B010E 04	1	B010E 1B
1. P48 Pedestrian Alert Sound Speaker = Inoperative				

Circuit	Description
Pedestrian Friendly Alert Speaker Control (-)	The output circuit is switched to 6 V to activate the component.
Pedestrian Friendly Alert Speaker Control (+)	The output circuit is switched to 6 V to activate the component.

Component	Description
P48 Pedestrian Alert Sound Speaker	Each of the speaker output [+] and [-] circuits has a DC bias voltage that is approximately one half of the battery voltage. When using a DMM, each of the circuits will measure approximately 6 V DC to ground. The audio being played is produced by a varying AC voltage that is centered around the DC bias voltage. The AC voltage causes the speaker cone to move and produce sound.
K132 Pedestrian Alert Sound Control Module	The control module K132 controls a speaker to emit an audible tone at low vehicle speeds to notify pedestrians of an approaching vehicle.

Conditions for Running the DTC

Ignition - On / Vehicle - In Service Mode & Transmission in Drive

Conditions for Setting the DTC

- B010E 1B - Control Circuit = Signal Cross Coupled
- B010E 04 - Control Circuit = Open/High Resistance

Actions Taken When the DTC Sets

Pedestrian Alert Sound System = Inoperative

Conditions for Clearing the DTC

- A current DTC will clear when the diagnostic runs and passes.
- A history DTC will clear after 50 consecutive malfunction-free ignition cycles.

Reference Information

Schematic Reference

Horn Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Component View Reference

Front of Vehicle/Engine Compartment Component Views

Electrical Information Reference

- [Circuit Testing](#)
- [Connector Repairs](#)
- [Testing for Intermittent Conditions and Poor Connections](#)
- [Wiring Repairs](#)

Scan Tool Reference

Control Module References

Circuit/System Verification

1. Ignition - On / Vehicle - In Service Mode & Transmission in Drive
2. Verify the component is activated: P48 Pedestrian Alert Sound Speaker
 - **If the component does not produce a sound**

Refer to: Circuit/System Testing
 - **If the component produces a sound**
3. All OK.

Circuit/System Testing

1. Ignition/Vehicle - Off
2. Disconnect the electrical connector: P48 Pedestrian Alert Sound Speaker
3. Test for less than 10 Ω between the test points: Low Reference terminal 1 & Ground
 - **If 10 Ω or greater**
 1. Disconnect the electrical connector: K132 Pedestrian Alert Sound Control Module
 2. Test for less than 2 Ω between the test points: Low Reference terminal 1 at Component harness & Terminal 8 at Control module harness
 - If 2 Ω or greater - Repair the open/high resistance in the circuit.
 - If less than 2 Ω - Replace the component: K132 Pedestrian Alert Sound Control Module
 - **If less than 10 Ω**
4. Ignition - On / Vehicle - In Service Mode & Transmission in Drive
5. Test for 5 to 7 V between the test points: Control circuit terminal 2 & Ground
 - **If less than 5 V**
 1. Ignition/Vehicle - Off
 2. Disconnect the electrical connector: K132 Pedestrian Alert Sound Control Module
 3. Test for infinite resistance between the test points: Control circuit terminal 2 at Component harness & Ground
 - If less than infinite resistance - Repair the short to ground on the circuit.
 - If infinite resistance
 4. Test for less than 2 Ω between the test points: Control circuit terminal 2 at Component harness & Terminal 9 at Control module harness
 - If 2 Ω or greater - Repair the open/high resistance in the circuit.
 - If less than 2 Ω - Replace the component: K132 Pedestrian Alert Sound Control Module
 - **If greater than 7 V**
 1. Ignition/Vehicle - Off
 2. Disconnect the electrical connector: K132 Pedestrian Alert Sound Control Module
 3. Ignition - On / Vehicle - In Service Mode
 4. Test for less than 1 V between the test points: Control circuit terminal 2 at Component harness & Ground
 - If 1 V or greater - Repair the short to voltage on the circuit.
 - If less than 1 V - Replace the component: K132 Pedestrian Alert Sound Control Module
 - **If between 5 and 7 V**
6. Test or replace the component: P48 Pedestrian Alert Sound Speaker

Repair Instructions

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

- [Pedestrian Sound Alert Speaker Replacement](#)
- For control module replacement, programming, and setup refer to: [Control Module References](#)

DTC B274E OR B274F: LOW HORN OUTPUT SHORT TO BATTERY

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 B274E 01

Low Horn Output Short to Battery

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Control	2	1	B274E 01	-
1. Horns Inoperative 2. Horns Always ON				

Circuit/System Description

The body control module controls the horn relay by providing a ground to the control circuit of the horn relay coil energizing the relay. When the horn relay is energized, the horn relay contacts close applying voltage through the horn fuse and the horn control circuit to the horns.

Conditions for Running the DTC

The DTC can only set only when the output is actively being requested by the body control module.

Conditions for Setting the DTC

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

Action Taken When the DTC Sets

The horns will be 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 - INDEX

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. Vehicle in Service Mode.
2. Verify the P12 Horn turns ON and OFF when commanding the Horn Relay On and Off with a scan tool.
 - **If the P12 Horn is always ON or always OFF**
Refer to Circuit/System Testing.
 - **If the P12 Horn turns ON and OFF**
3. All OK.

Circuit/System Testing

1. Vehicle OFF.
2. Disconnect the X5 harness connector at the K9 Body Control Module, Vehicle in Service Mode.
3. Verify the P12 Horn is not activated.
 - **If the P12 Horn is activated**
 1. Vehicle OFF, disconnect the X2 harness connector at the X50A Fuse Block-Underhood.
 2. Test for infinite resistance between the K9 Body Control Module control circuit terminal 19 X5 and ground.
 - If less than Infinite resistance, repair the short to ground on the circuit.
 - If infinite resistance, test or replace the X50A Fuse Block-Underhood.
 - **If the P12 Horn is not activated**
4. Connect a 3 A fused jumper wire between the control circuit terminal 19 and ground.
5. Verify the P12 Horn activates.
 - **If the P12 Horn does not activate**
 1. Vehicle OFF, remove the jumper wire, disconnect the X2 harness connector at the X50A Fuse Block-Underhood, Vehicle in Service Mode.
 2. Test for less than 1 V between the K9 Body Control Module control circuit terminal 19 X5 and ground.
 - If 1 V or greater, repair the short to voltage on the circuit.
 - If less than 1 V
 3. Test for less than 2 Ω in the control 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 X50A Fuse Block-Underhood.
 - **If the P12 Horn activates**
6. Replace the K9 Body Control Module.

Repair Instructions

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

[Control Module References](#) for body control module replacement, programming and setup

Important Preliminary Checks Before Starting:

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 horn operation or pedestrian alert sound system operation in order to familiarize yourself with the system functions. Refer to the following:
 - [Horns System Description and Operation](#)
 - [Pedestrian Alert Description and Operation](#)

Visual/Physical Inspection

- Inspect for aftermarket devices which could affect the operation of the rear window defogger. Refer to [Checking Aftermarket Accessories](#) .
- Inspect the easily accessible or visible system components for obvious damage or conditions which could cause the symptom.

Intermittent

NOTE:

- **Inspect for proper installation of electrical components if an intermittent condition exists. Inspect for aftermarket theft deterrent devices, lights, and cellular phones. Ensure that no aftermarket equipment is connected to the class 2 circuit. If you can not locate an intermittent condition, a cellular phone signal may cause the condition. Faulty electrical connections or wiring may be the cause of intermittent conditions. Refer to [Testing for Intermittent Conditions and Poor Connections](#) .**
- **The problem may or may not turn ON the SERVICE VEHICLE SOON indicator or store a DTC. Do not use the symptom tables to diagnose intermittent conditions. The malfunction must be present in order to locate the problem.**

Poor electrical connections or wiring cause most intermittent conditions. Perform a careful visual/physical check for the following conditions:

- Poor mating of the connector halves or a terminal not fully seated in the connector body
- An improperly formed or damaged terminal
- Reform or replace connector terminals in the problem circuit in order to ensure proper contact tension.
- Poor terminal to wire connection requires removing the terminal from the connector body in order to perform the check.

Use a scan tool in order to help detect intermittent conditions. The scan tool has several features that can be used to locate an intermittent condition. The snapshot feature can capture and store data parameters within the scan tool when the malfunction occurs. This information can then be reviewed in order to see what caused the malfunction.

Symptom List

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

- [Horns Malfunction](#)
- [Pedestrian Alert System Malfunction](#)

HORNS MALFUNCTION

Diagnostic Instructions

- Perform the Diagnostic System Check prior to using this diagnostic procedure: [Diagnostic System Check - Vehicle](#)
- Review the description of Strategy Based Diagnosis: [Strategy Based Diagnosis](#)
- An overview of each diagnostic category can be found here: [Diagnostic Procedure Instructions](#)

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
B+ - Relay Coil	2, 4	2, 4	-	-
B+ - Relay Switch	2, 4	2, 4	-	-
Signal - S33 Horn Switch	2, 4	5	-	-
Control - P12 Horn	2, 4	2, 4	1, 3	-
Control - Relay Coil	2, 4	2, 4	B274E 01	-
Ground - S33 Horn Switch	-	5	-	-
Ground - P12L Horn - Left	-	2	-	-
Ground - P12R Horn - Right	-	4	-	-
1. P12L Horn - Left = Always On 2. P12L Horn - Left = Inoperative 3. P12R Horn - Right = Always On 4. P12R Horn - Right = Inoperative 5. S33 Horn Switch = Inoperative				

Circuit/System Description

For an overview of the component/system, refer to: [Horns System Description and Operation](#)

Circuit	Description
B+ - Relay Coil	Supplied from a fuse.
B+ - Relay Switch	Supplied from a fuse.
Signal - S33 Horn Switch	The control module input circuit has an internal resistance connected to 12 V.
Control - P12 Horn	The output circuit is switched to 12 V to activate the component.
Control - Relay Coil	The output circuit is switched to ground to activate the component.
Ground - S33 Horn Switch	Chassis Ground
Ground - P12 Horn	Chassis Ground

Component	Description
P12 Horn	The horn has an electromagnet which pulls a diaphragm inwards and simultaneously opens a contact which interrupts the current through the magnet. When the diaphragm springs back, the contact is closed and the cycle starts over. The vibration of the diaphragm produces the sound.
S33 Horn Switch	The switch has a normally open contact. When the switch is activated, the signal circuit to the control module is grounded.
K9 Body Control Module	The module controls various vehicle functions like lighting, central door locking, power windows, etc.
X50A Fuse Block - Underhood	The fuse block houses various fuses and relays.

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

If the horn produces only a weak noise, inspect the following:

- Debris or water in the horn.
- Incorrect MountingRefer to: [**Fastener Specifications**](#).
- Debris on the component.
- Vehicle components that vibrate while the horn is sounding.

Reference Information

Schematic Reference

Horn Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Component View Reference

Front of Vehicle/Engine Compartment Component Views

Electrical Information Reference

- [**Circuit Testing**](#)
- [**Connector Repairs**](#)
- [**Testing for Intermittent Conditions and Poor Connections**](#)
- [**Wiring Repairs**](#)

Scan Tool Reference

Control Module References

Circuit/System Verification

1. Verify the scan tool parameter: Horn Switch = Inactive

- **If not the specified state**

Refer to: Circuit/System Testing - Test 1

- **If the specified state**

2. Operate the component: S33 Horn Switch - Pressed

Verify the scan tool parameter: Horn Switch = Active

- **If not the specified state**

Refer to: Circuit/System Testing - Test 1

- **If the specified state**

3. Perform the scan tool control function: Horn Relay Command - On and Off

Verify the component turns On and Off: P12L Horn - Left & P12R Horn - Right & The horn should emit a clear and even tone.

- **If none of the components operate**

Refer to: Circuit/System Testing - Test 2

- **P12 Horn - InoperativeorIf an abnormal noise is present**

- Refer to: Circuit/System Testing - Test 3
- **If the component turns On and Off & If no abnormal noise is present**

4. All OK.

Circuit/System Testing

Test 1

NOTE: It may take up to 2 min for all vehicle systems to power down before an accurate ground or low reference circuit continuity test can be performed.

1. Ignition/Vehicle Off and all vehicle systems Off.
2. Disconnect the electrical connector: S33 Horn Switch
3. Test for less than 10 Ω between the test points: Ground circuit terminal 2 & Ground
 - **If 10 Ω or greater**
 1. Disconnect the ground connection: G200
 2. Test for less than 2 Ω between the test points: Ground circuit terminal 2 at Component harness & Terminal G200
 - 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**
4. Ignition On/Vehicle in Service Mode.
5. Verify the scan tool parameter: Horn Switch = Inactive
 - **If not the specified state**
 1. Ignition/Vehicle Off.
 2. Disconnect the electrical connector: X3 at K9 Body Control Module
 3. Test for infinite resistance between the test points: Signal circuit terminal 1 at Component harness & Ground
 - If less than infinite resistance - Repair the short to ground on the circuit.
 - If infinite resistance - Replace the component: K9 Body Control Module
 - **If the specified state**
6. Connect a 3 A fused jumper wire between the test points: Signal circuit terminal 1 & Ground circuit terminal 2
7. Verify the scan tool parameter: Horn Switch = Active
 - **If not the specified state**
 1. Ignition/Vehicle Off.Remove - Jumper Wire
 2. Disconnect the electrical connector: X3 at K9 Body Control Module
 3. Ignition On/Vehicle in Service Mode.
 4. Test for less than 1 V between the test points: Signal circuit terminal 1 at Component harness & Ground
 - If 1 V or greater - Repair the short to voltage on the circuit.
 - If less than 1 V
 5. Ignition/Vehicle Off.
 6. Test for less than 2 Ω between the test points: Signal circuit terminal 1 at Component harness & Terminal 18 X3 at Control module harness
 - If 2 Ω or greater - Repair the open/high resistance in the circuit.
 - If less than 2 Ω - Replace the component: K9 Body Control Module
 - **If the specified state**
8. Test or replace the component: S33 Horn Switch

Test 2

1. Ignition/Vehicle Off.
2. Disconnect the electrical connector: X1X50A Fuse Block - Underhood
3. Ignition - On / Vehicle - In Service Mode
4. Momentarily connect a 20 A fused jumper wire between the test points:
 - Control circuit terminal 10 X1 & B+
 - Control circuit terminal 11 X1 & B+
5. Verify the component turns On and Off when connecting and disconnecting the jumper wire:
P12L Horn - Left & P12R Horn - Right
 - **If the component does not turn On and Off**
 1. Ignition/Vehicle - Off & Remove - Jumper wire(s)
 2. Disconnect the electrical connector: P12L Horn - Left & P12R Horn - Right
 3. Ignition - On / Vehicle - In Service Mode
 4. Test for less than 1 V between the test points:
 - Control circuit terminal 10 X1 at Component harness & Ground
 - Control circuit terminal 11 X1 at Component harness & Ground
 - If 1 V or greater - Repair the short to voltage on the circuit.
 - If less than 1 V
 5. Ignition/Vehicle - Off
 6. Test for infinite resistance between the test points:
 - Control circuit terminal 10 X1 at Component harness & Ground
 - Control circuit terminal 11 X1 at Component harness & Ground
 - If less than infinite resistance - Repair the short to ground on the circuit.
 - If infinite resistance
 7. Test for less than 2 Ω between the test points:
 - Control circuit terminal 2 at Component harness & Control circuit terminal 10 X1 at Fuse Block Harness
 - Control circuit terminal 2 at Component harness & Control circuit terminal 11 X1 at Fuse Block Harness
 - If 2 Ω or greater - Repair the open/high resistance in the circuit.
 - If less than 2 Ω - Test or replace the component: P12L Horn - Left & P12R Horn - Right
6. Connect the electrical connector: X1 at X50A Fuse Block - Underhood
7. Disconnect the electrical connector: X5 at K9 Body Control Module
8. Ignition - On / Vehicle - In Service Mode
9. Momentarily connect a 3 A fused jumper wire between the test points: Control circuit terminal 19 X5 & B+

Verify the component turns On and Off when connecting and disconnecting the jumper wire:
P12L Horn - Left & P12R Horn - Right

- **If the component does not turn On and Off**
 1. Ignition/Vehicle - Off & Remove - Jumper wire(s)
 2. Disconnect the electrical connector: X2 at X50A Fuse Block - Underhood
 3. Ignition - On / Vehicle - In Service Mode
 4. Test for less than 1 V between the test points: Control circuit terminal 19 X5 at Control module harness & Ground
 - If 1 V or greater - Repair the short to voltage on the circuit.
 - If less than 1 V
 5. Ignition/Vehicle - Off

6. Test for infinite resistance between the test points: Control circuit terminal 19 X5 at Control module harness & Ground
 - If less than infinite resistance - Repair the short to ground on the circuit.
 - If infinite resistance
7. Test for less than 2 Ω between the test points: Control circuit terminal 19 X5 at Control module harness & Terminal 24 X2 at Fuse Block Harness
 - If 2 Ω or greater - Repair the open/high resistance in the circuit.
 - If less than 2 Ω - Test or replace the component: X50A Fuse Block - Underhood
- **If the component turns On and Off**
10. Replace the component: K9 Body Control Module

Test 3

NOTE: It may take up to 2 min for all vehicle systems to power down before an accurate ground or low reference circuit continuity test can be performed.

1. Ignition/Vehicle & All vehicle systems - Off
2. Disconnect the appropriate electrical connector: P12L Horn - LeftorP12R Horn - Right
3. Test for less than 1 Ω between the test points: Ground circuit terminal 1 & Ground
 - **If 1 Ω or greater**
 1. Disconnect the ground connection: G100/G101
 2. Test for less than 1 Ω between the test points:
 - Ground circuit terminal 1 & Terminal G100
 - Ground circuit terminal 1 & Terminal G101
 - If 1 Ω or greater - Repair the open/high resistance in the circuit.
 - **If less than 1 Ω**
4. Disconnect the electrical connector: X1 at X50A Fuse Block - Underhood
5. Test for less than 1 Ω between the test points:
 - Control circuit terminal 2 at Component harness & Control circuit terminal 10 X1 at Fuse Block Harness
 - Control circuit terminal 2 at Component harness & Control circuit terminal 11 X1 at Fuse Block Harness
 - If 1 Ω or greater - Repair the open/high resistance in the circuit.
 - **If less than 1 Ω**
6. Test or replace the component: P12 Horn

Component Testing

P12 Horn

1. Ignition/Vehicle - Off
2. Disconnect the appropriate electrical connector: P12L Horn - LeftorP12R Horn - Right
3. Connect a jumper wire between the test points: Ground terminal 1 & Ground
4. Momentarily connect a 15 A fused jumper wire between the test points: Control terminal 2 & 12 V

Verify the component turns On and Off when connecting and disconnecting the jumper wire: P12 Horn

- **If the component does not turn On and Off**

Replace the component: P12 Horn

- **If the component turns On and Off**

5. All OK.

S33 Horn Switch

1. Ignition/Vehicle - Off
2. Disconnect the electrical connector: at S33 Horn Switch
3. Test for infinite resistance between the test points: Signal circuit terminal 1 & Ground circuit terminal 2 - Switch Not Pressed
 - **If less than infinite resistance**

Replace the component: S33 Horn Switch
 - **If infinite resistance**
4. Test for less than 3 Ω between the test points: Signal circuit terminal 1 & Ground circuit terminal 2 - Switch - Pressed
 - **If 3 Ω or greater**

Replace the component: S33 Horn Switch
 - **If less than 3 Ω**
5. All OK.

Repair Instructions

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

- [Horn Replacement \(High Note\)](#)[Horn Replacement \(Low Note\)](#)
- [Steering Wheel Airbag Replacement](#)
- [Engine Wiring Harness Junction Block Replacement](#)
- For control module replacement, programming, and setup refer to: [Control Module References](#)

PEDESTRIAN ALERT SYSTEM MALFUNCTION

Diagnostic Instructions

- Perform the Diagnostic System Check prior to using this diagnostic procedure: [Diagnostic System Check - Vehicle](#)
- Review the description of Strategy Based Diagnosis: [Strategy Based Diagnosis](#)
- An overview of each diagnostic category can be found here: [Diagnostic Procedure Instructions](#)

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
B+ - K132 Pedestrian Alert Sound Control Module	1	1	-	-
High Speed GMLAN Serial Data (-) 8 - Terminal 1	P0AC4 00, P25A2 00, P25C9 00, U179A 00, U0293 00	P0AC4 00, P25A2 00, P25C9 00, U179A 00, U0293 00	P0AC4 00, P25A2 00, P25C9 00, U179A 00, U0293 00	P0AC4 00, P25A2 00, P25C9 00, U179A 00, U0293 00
High Speed GMLAN Serial Data (+) 8 - Terminal 2	U216A 00, U026A 00, U0131 00, U0151 00, C114C 08, U023A 00, U0422 00	U216A 00, U026A 00, U0131 00, U0151 00, C114C 08, U023A 00, U0422 00	U216A 00, U026A 00, U0131 00, U0151 00, C114C 08, U023A 00, U0422 00	U216A 00, U026A 00, U0131 00, U0151 00, C114C 08, U023A 00, U0422 00

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Serial Data Communication Enable - Terminal 4	U216A 00, U026A 00, U0131 00, U0151 00, C114C 08, U023A 00, U0422 00	U216A 00, U026A 00, U0131 00, U0151 00, C114C 08, U023A 00, U0422 00	U216A 00, U026A 00, U0131 00, U0151 00, C114C 08, U023A 00, U0422 00	U216A 00, U026A 00, U0131 00, U0151 00, C114C 08, U023A 00, U0422 00
High Speed GMLAN Serial Data (-) 8 - Terminal 6	U216A 00, U026A 00, U0131 00, U0151 00, C114C 08, U023A 00, U0422 00	U216A 00, U026A 00, U0131 00, U0151 00, C114C 08, U023A 00, U0422 00	U216A 00, U026A 00, U0131 00, U0151 00, C114C 08, U023A 00, U0422 00	U216A 00, U026A 00, U0131 00, U0151 00, C114C 08, U023A 00, U0422 00
High Speed GMLAN Serial Data (+) 8 - Terminal 7	U216A 00, U026A 00, U0131 00, U0151 00, C114C 08, U023A 00, U0422 00	U216A 00, U026A 00, U0131 00, U0151 00, C114C 08, U023A 00, U0422 00	U216A 00, U026A 00, U0131 00, U0151 00, C114C 08, U023A 00, U0422 00	U216A 00, U026A 00, U0131 00, U0151 00, C114C 08, U023A 00, U0422 00
Pedestrian Friendly Alert Speaker Control (-)	1	B010E 04	1	B010E 1B
Pedestrian Friendly Alert Speaker Control (+)	1	B010E 04	1	B010E 1B
Ground - K132 Pedestrian Alert Sound Control Module	-	1	-	-
1. P48 Pedestrian Alert Sound Speaker = Inoperative				

Circuit/System Description

For an overview of the component/system, refer to: [Pedestrian Alert Description and Operation](#)

Circuit	Description
B+ - K132 Pedestrian Alert Sound Control Module	Supplied from a fuse.
Ground - K132 Pedestrian Alert Sound Control Module	Chassis Ground
Pedestrian Friendly Alert Speaker Control (-)	The output circuit is switched to 6 V to activate the component.
Pedestrian Friendly Alert Speaker Control (+)	The output circuit is switched to 6 V to activate the component.

Component	Description
P48 Pedestrian Alert Sound Speaker	Each of the speaker output [+] and [-] circuits has a DC bias voltage that is approximately one half of the battery voltage. When using a DMM, each of the circuits will measure approximately 6 V DC to ground. The audio being played is produced by a varying AC voltage that is centered around the DC bias voltage. The AC voltage causes the speaker cone to move and produce sound.
K132 Pedestrian Alert Sound Control Module	The control module K132 controls a speaker to emit an audible tone at low vehicle speeds to notify pedestrians of an approaching vehicle.

Reference Information

Horn Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Component View Reference

Front of Vehicle/Engine Compartment Component Views

Electrical Information Reference

- [Circuit Testing](#)
- [Connector Repairs](#)
- [Testing for Intermittent Conditions and Poor Connections](#)
- [Wiring Repairs](#)

Scan Tool Reference

Control Module References

Circuit/System Verification

1. Ignition - On / Vehicle - In Service Mode & Transmission in Drive
2. Verify the component is activated: P48 Pedestrian Alert Sound Speaker
 - **If the component does not produce a sound**

Refer to: Circuit/System Testing
 - **If the component produces a sound**
3. All OK.

Circuit/System Testing

NOTE: It may take up to 2 min for all vehicle systems to power down before an accurate ground or low reference circuit continuity test can be performed.

1. Ignition/Vehicle & All vehicle systems - Off
2. Disconnect the electrical connector: K132 Pedestrian Alert Sound Control Module
3. Test for less than 10 Ω between the test points: Ground circuit terminal 3 & Ground
 - **If 10 Ω or greater**
 1. Disconnect the ground connection: G302
 2. Test for less than 2 Ω between the test points: Ground circuit terminal 3 & Terminal G302
 - 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**
4. Ignition - On / Vehicle - In Service Mode
5. Verify a test lamp turns On between the test points: B+ circuit terminal 10 & Ground
 - **If the test lamp does not turn On and the circuit fuse is OK**
 1. Ignition/Vehicle - Off & Remove - Test lamp
 2. Test for less than 2 Ω between the test points: B+ circuit terminal 10 & Output terminal at F9UA Fuse
 - If 2 Ω or greater - Repair the open/high resistance in the circuit.
 - If less than 2 Ω - Verify the fuse is OK and there is voltage at the fuse.

- **If the test lamp does not turn On and the circuit fuse is open**

1. Ignition/Vehicle - Off & Remove - Test lamp
2. Test for infinite resistance between the test points: B+ circuit terminal 10 & Ground
 - If less than infinite resistance - Repair the short to ground on the circuit.
 - If infinite resistance - Replace the component: K132 Pedestrian Alert Sound Control Module

- **If the test lamp turns On**

6. Ignition/Vehicle - Off
7. Connect the electrical connector: K132 Pedestrian Alert Sound Control Module
8. Disconnect the electrical connector: P48 Pedestrian Alert Sound Speaker
9. Test for less than 10 Ω between the test points: Low Reference terminal 2 & Ground
 - **If 10 Ω or greater**
 1. Disconnect the electrical connector: K132 Pedestrian Alert Sound Control Module
 2. Test for less than 2 Ω between the test points: Low Reference terminal 2 at Component harness & Terminal 8 at Control module harness
 - If 2 Ω or greater - Repair the open/high resistance in the circuit.
 - If less than 2 Ω - Replace the component: K132 Pedestrian Alert Sound Control Module

- **If less than 10 Ω**

10. Ignition - On / Vehicle - In Service Mode & Transmission in Drive
11. Test for 5 to 7 V between the test points: Control circuit terminal 1 & Ground
 - **If less than 5 V**
 1. Ignition/Vehicle - Off
 2. Disconnect the electrical connector: K132 Pedestrian Alert Sound Control Module
 3. Test for infinite resistance between the test points: Control circuit terminal 1 at Component harness & Ground
 - If less than infinite resistance - Repair the short to ground on the circuit.
 - If infinite resistance
 4. Test for less than 2 Ω between the test points: Control circuit terminal 1 at Component harness & Terminal 9 at Control module harness
 - If 2 Ω or greater - Repair the open/high resistance in the circuit.
 - If less than 2 Ω - Replace the component: K132 Pedestrian Alert Sound Control Module

- **If greater than 7 V**

1. Ignition/Vehicle - Off
2. Disconnect the electrical connector: K132 Pedestrian Alert Sound Control Module
3. Ignition - On / Vehicle - In Service Mode
4. Test for less than 1 V between the test points: Control circuit terminal 1 at Component harness & Ground
 - If 1 V or greater - Repair the short to voltage on the circuit.
 - If less than 1 V - Replace the component: K132 Pedestrian Alert Sound Control Module

- **If between 5 and 7 V**

12. Test or replace the component: P48 Pedestrian Alert Sound Speaker

Repair Instructions

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

- [Pedestrian Sound Alert Speaker Replacement](#)
- For control module replacement, programming, and setup refer to: [Control Module References](#)

REPAIR INSTRUCTIONS

HORN REPLACEMENT (HIGH NOTE)

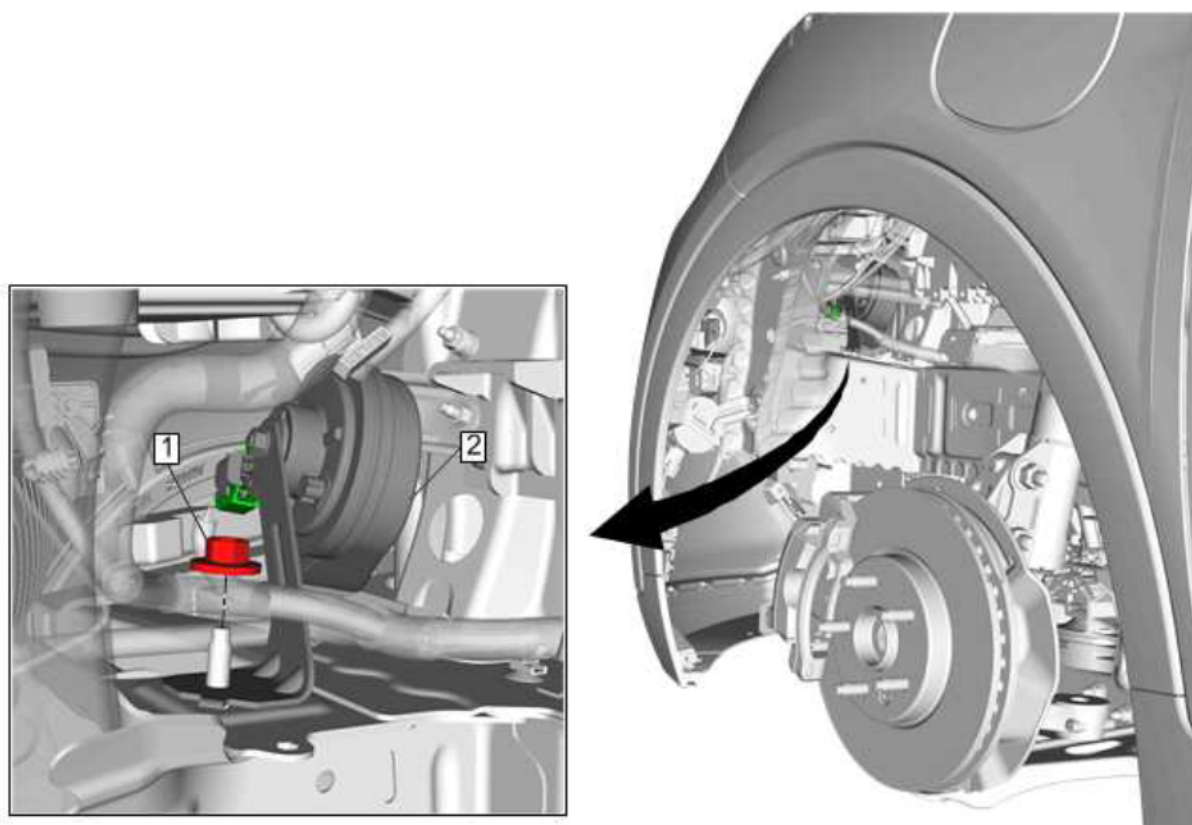


Fig. 3: Horn (High Note)

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Front Wheelhouse Liner-Left Side - Remove - Front Wheelhouse Liner Replacement	
1	Horn Nut CAUTION: Fastener Caution Tighten 22 N.m (16 lb ft)
2	Horn - High Note Procedure Disconnect the electrical connector.

HORN REPLACEMENT (LOW NOTE)

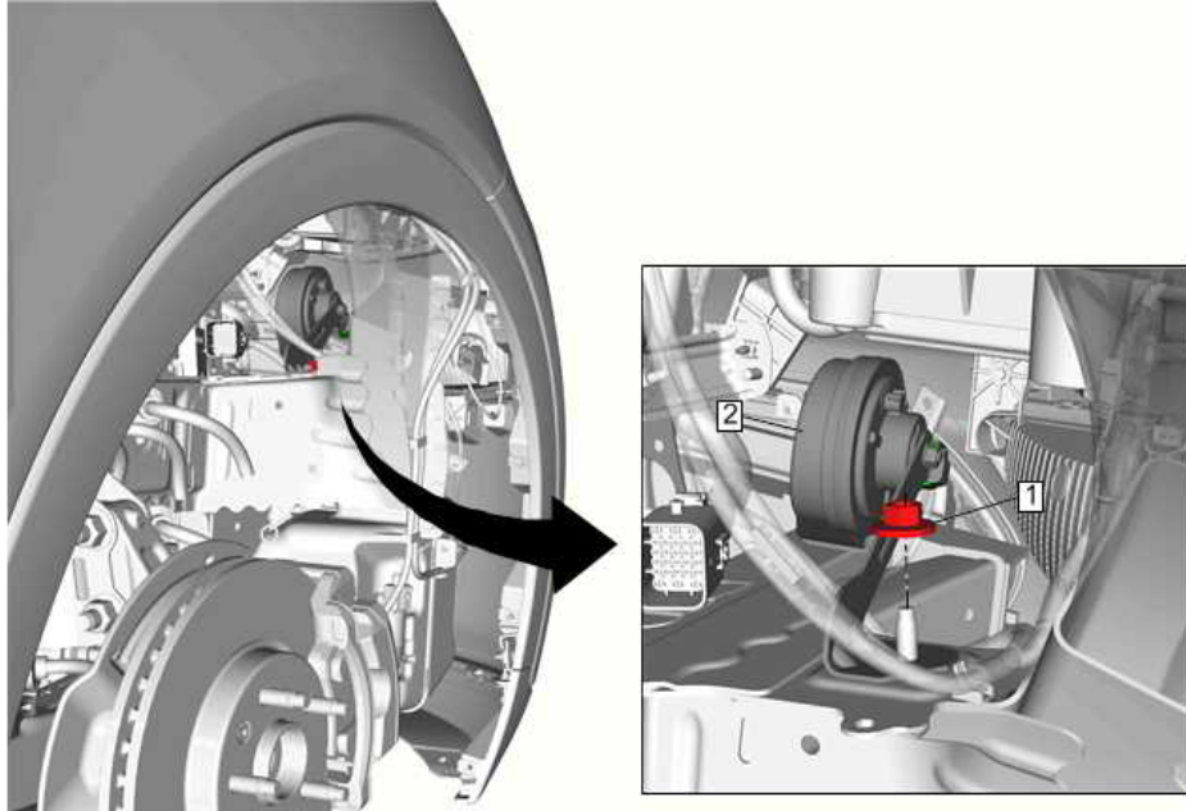


Fig. 4: Horn (Low Note)

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Front Wheelhouse Liner-Right Side - Remove - Front Wheelhouse Liner Replacement	
1	Horn Nut CAUTION: Fastener Caution Tighten 22 N.m (16 lb ft)
2	Horn - Low Note Procedure Disconnect the electrical connector.

PEDESTRIAN SOUND ALERT MODULE REPLACEMENT

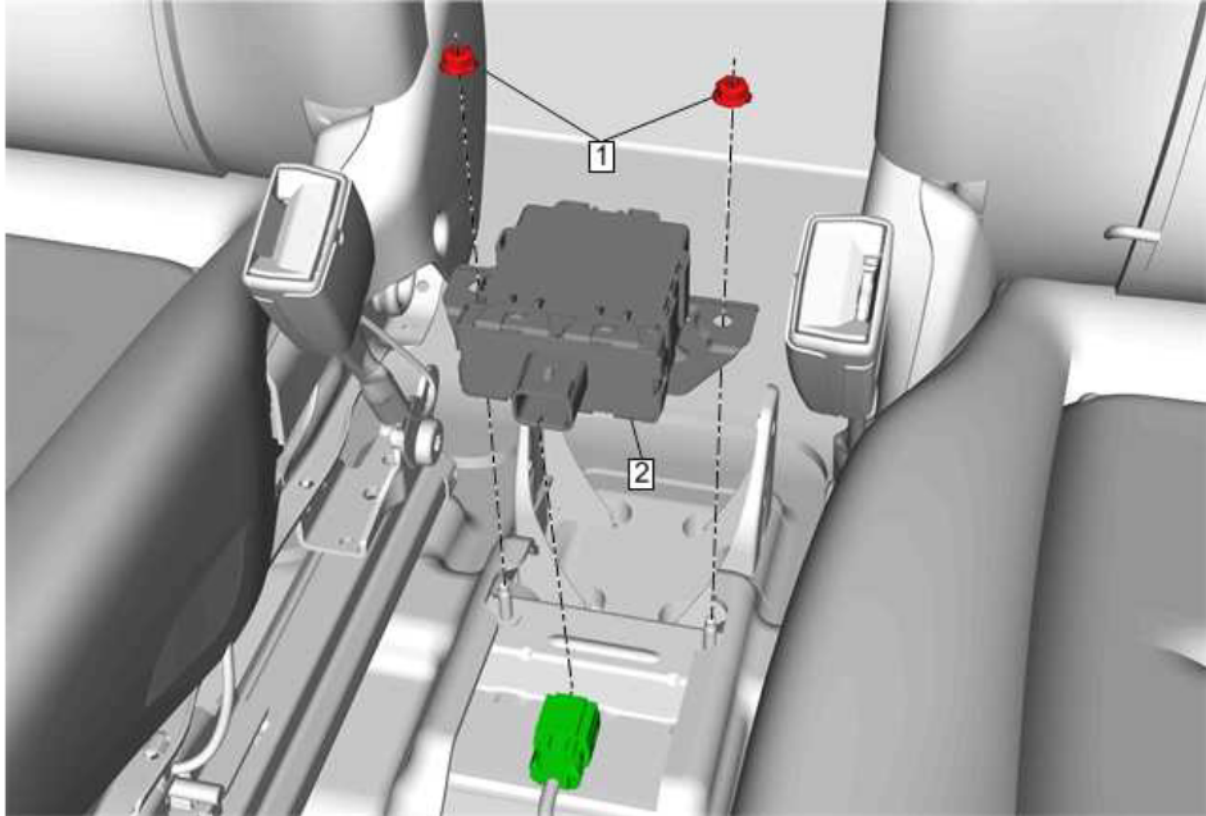


Fig. 5: Pedestrian Sound Alert Module

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure <u>Rear Floor Console Replacement</u>	
1	Pedestrian Sound Alert Module Bracket Nut (Qty: 2) CAUTION: <u>Fastener Caution</u> Tighten 9 N.m (80 lb in)
2	Pedestrian Sound Alert Module Procedure 1. Disconnect the electrical connector. 2. Perform all necessary programming and setup procedures for the control module: <u>Control Module References</u>

PEDESTRIAN SOUND ALERT SPEAKER REPLACEMENT

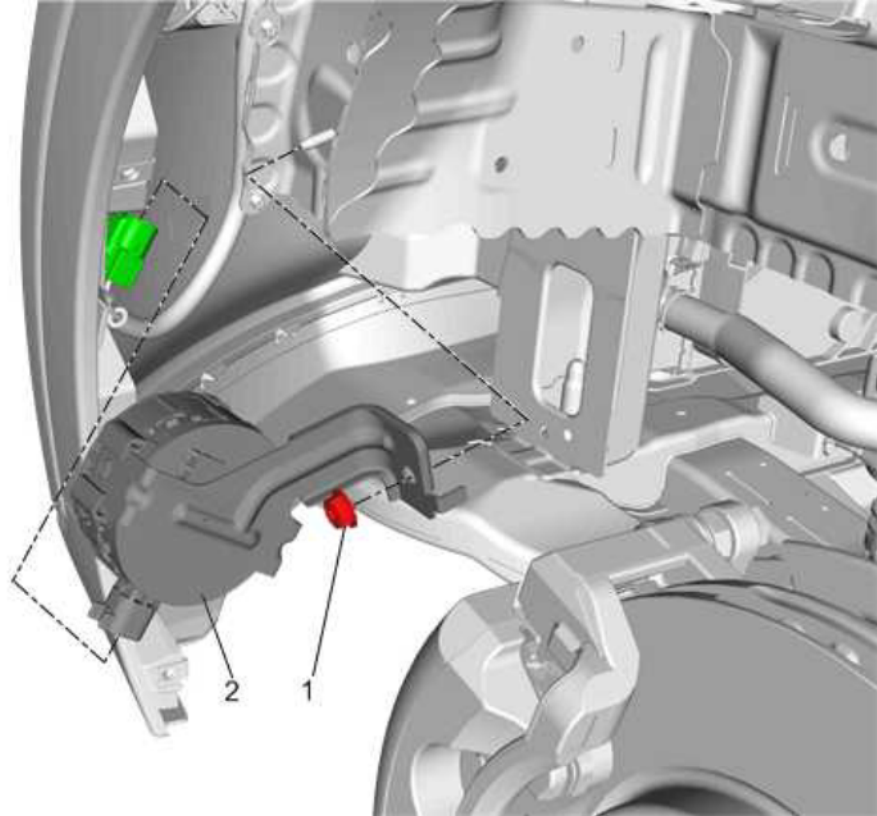


Fig. 6: Pedestrian Sound Alert Speaker
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure	
<u>Front Wheelhouse Liner Replacement</u>	
1	Pedestrian Sound Alert Speaker Bracket nut CAUTION: <u>Fastener Caution</u> Tighten 9 N.m (80 lb in)
2	Pedestrian Sound Alert Speaker Procedure Disconnect the electrical connector.

DESCRIPTION AND OPERATION

HORNS SYSTEM DESCRIPTION AND OPERATION

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)

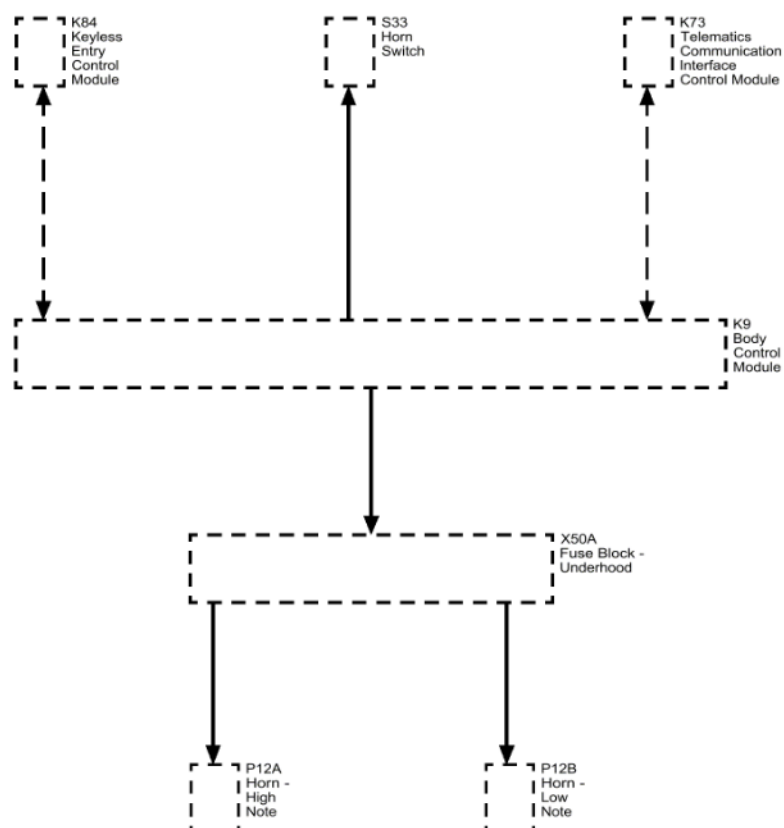


Fig. 7: Horns System Block Diagram
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
K84	K84 Keyless Entry Control Module
S33	S33 Horn Switch
K73	K73 Telematics Communication Interface Control Module
K9	K9 Body Control Module
X50A	X50A Fuse Block - Underhood
P12A	P12A Horn - High Note
P12B	P12B Horn - Low Note

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 \(UE3\)](#) [OnStar Description and](#)

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.

PEDESTRIAN ALERT DESCRIPTION AND OPERATION

Electric vehicles present a situation for visually impaired pedestrians who cannot hear an approaching electric vehicle, the pedestrian alert module creates sounds from a dedicated speaker to alert a visually impaired pedestrian, in a non-startling manner.

Operation of the Pedestrian Alert

- Emit sound from 0 to 12 MPH (20 KM/H)
 - Fade in and out control for the sound ON and OFF
 - Change the pitch of the sound dependent of vehicle speed
-