

2006 ACCESSORIES & EQUIPMENT

Entertainment - Equinox & Torrent

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

Fastener Tightening Specifications

Application	Specification	
	Metric	English
Antenna Bracket Fastener	10 N.m	89 lb in
Antenna Mast	10 N.m	89 lb in
Front Speaker Screw	2.5 N.m	22 lb in
Radio Screw	2.5 N.m	22 lb in
Rear Speaker Screw	2.5 N.m	22 lb in

SCHEMATIC AND ROUTING DIAGRAMS

ENTERTAINMENT SCHEMATIC ICONS

Entertainment Schematic Icons

Icon	Icon Definition
	CAUTION: This vehicle is equipped with a Supplemental Inflatable Restraint (SIR) System. Failure to follow the correct procedure could cause the following conditions: • Air bag deployment • Personal injury • Unnecessary SIR system repairs In order to avoid the above conditions, observe the following guidelines: • Refer to SIR Component Views in order to determine if you are performing service on or near the SIR components or the SIR wiring. • If you are performing service on or near the SIR components or the SIR wiring, disable the SIR system. Refer to Disabling the SIR System in SIR.
	IMPORTANT: Twisted-pair wires provide an effective "shield"

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that helps protect sensitive electronic components from electrical interference. If the wires were covered with shielding, install new shielding.

In order to prevent electrical interference from degrading the performance of the connected components, you must maintain the proper specification when making any repairs to the twisted-pair wires shown :

- The wires must be twisted a minimum of 9 turns per 31 cm (12 in) as measured anywhere along the length of the wires.
- The outside diameter of the twisted wires must not exceed 6.0 mm (0.2 in).

RADIO/AUDIO SYSTEM SCHEMATICS (U1C)

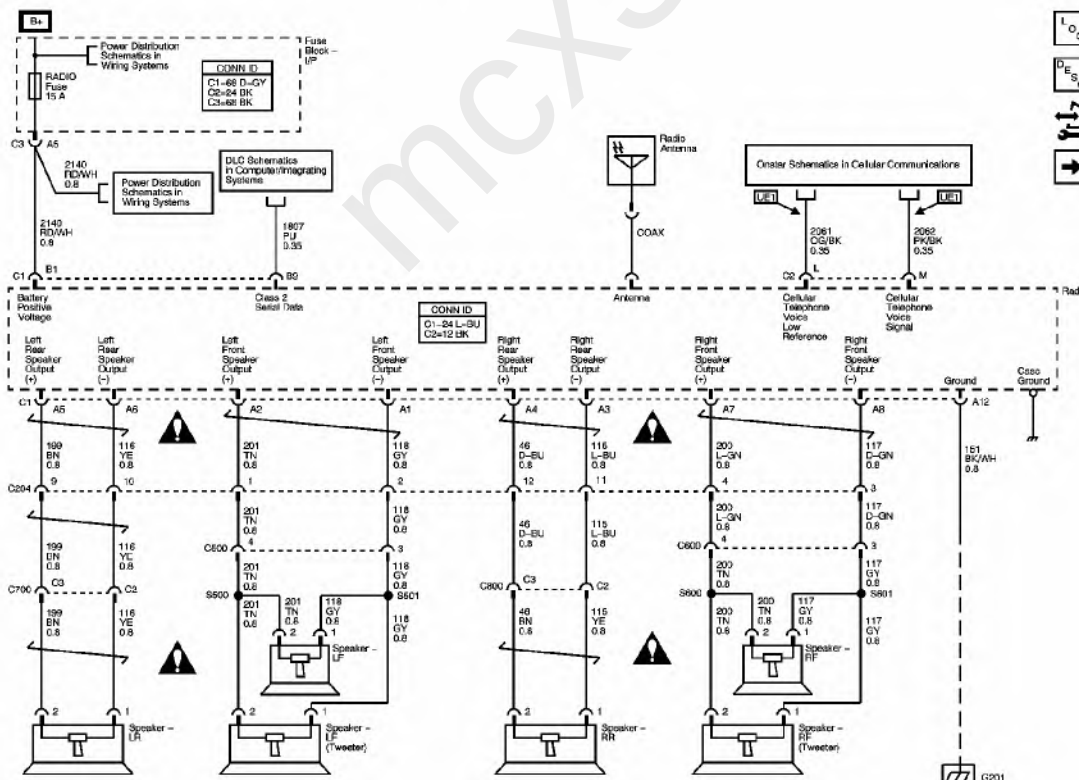


Fig. 1: Power, Ground, Speakers
Courtesy of GENERAL MOTORS CORP.

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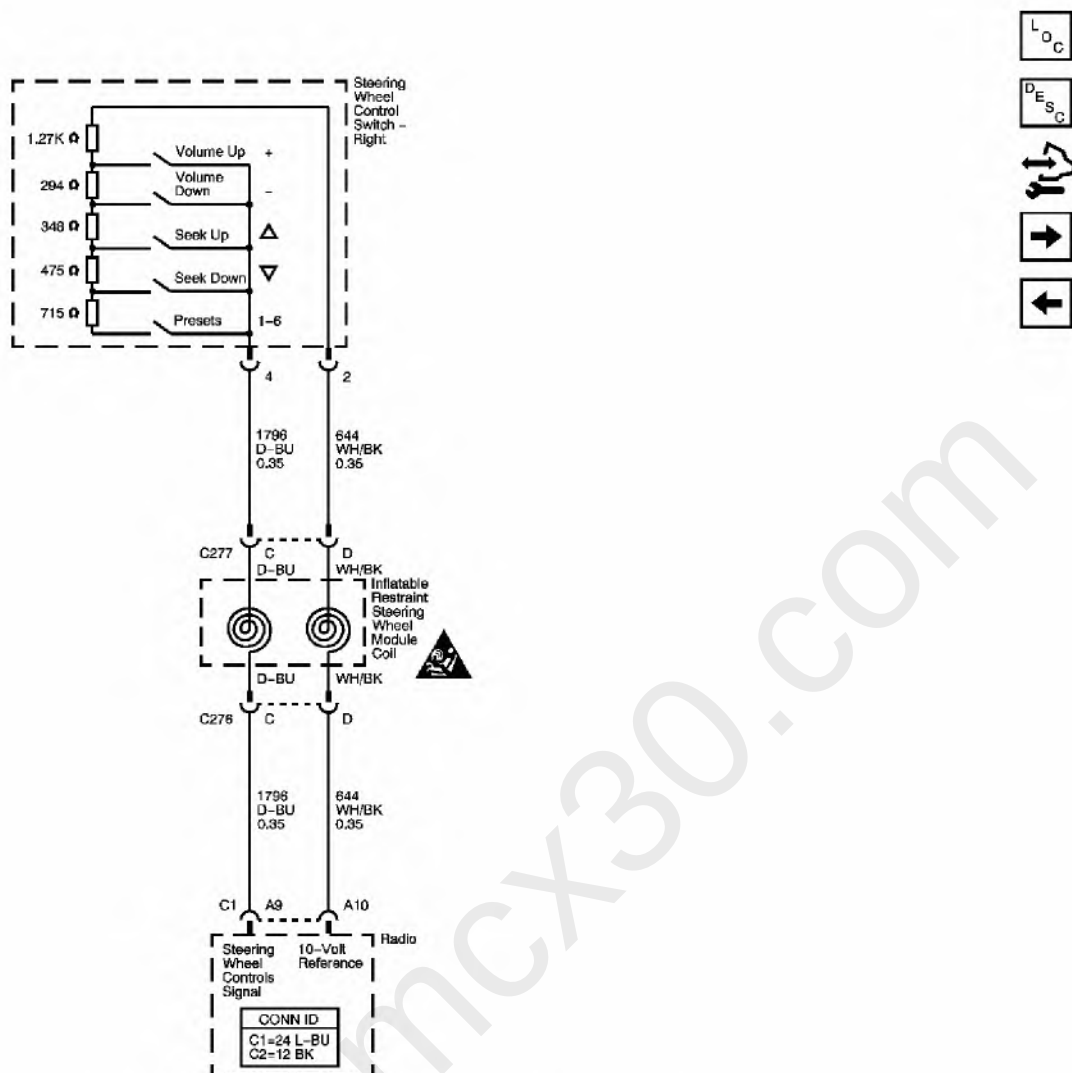


Fig. 2: Redundant Steering Wheel Controls - Pontiac
Courtesy of GENERAL MOTORS CORP.

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RADIO/AUDIO SYSTEM SCHEMATICS (U65)

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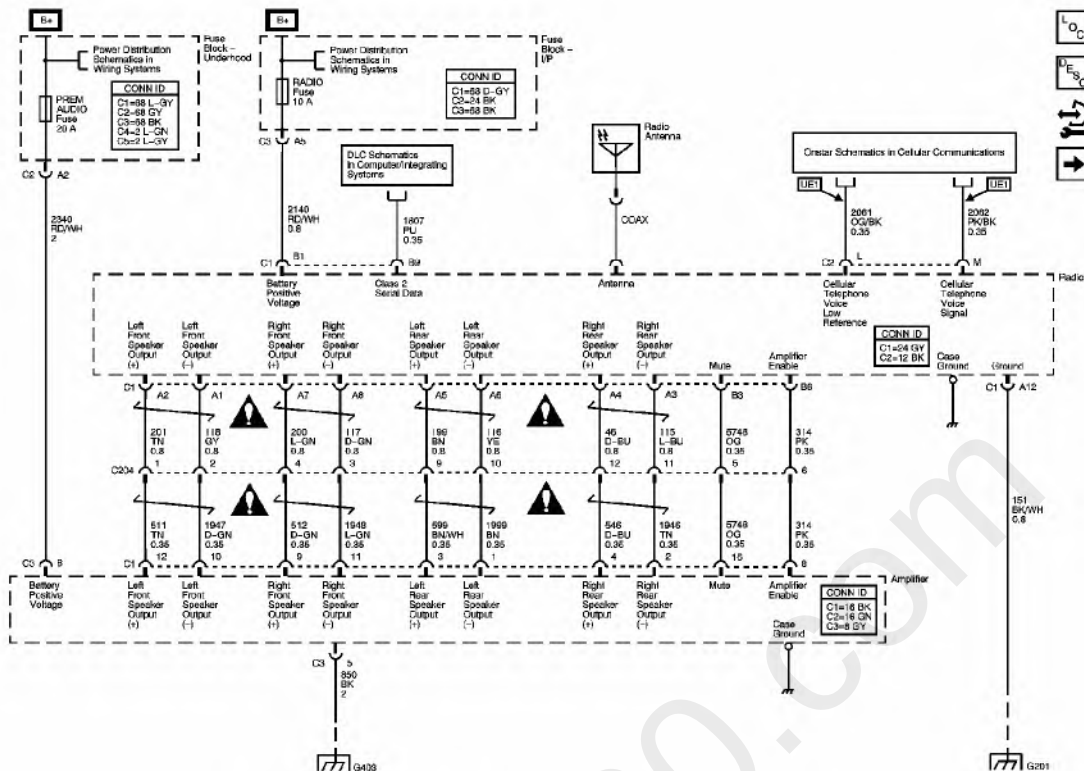
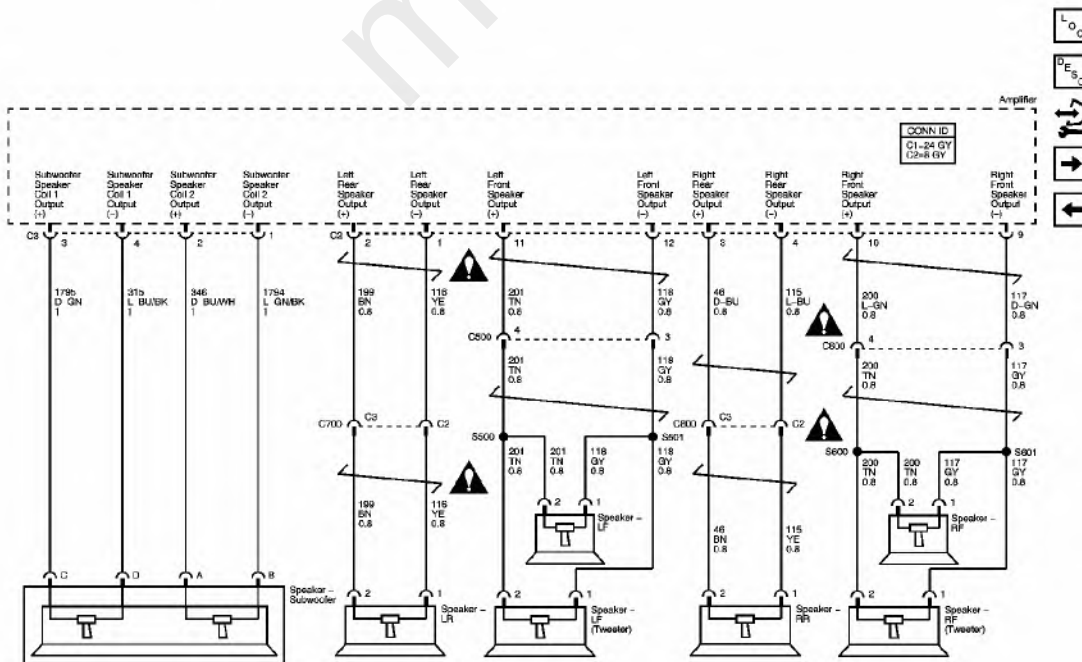
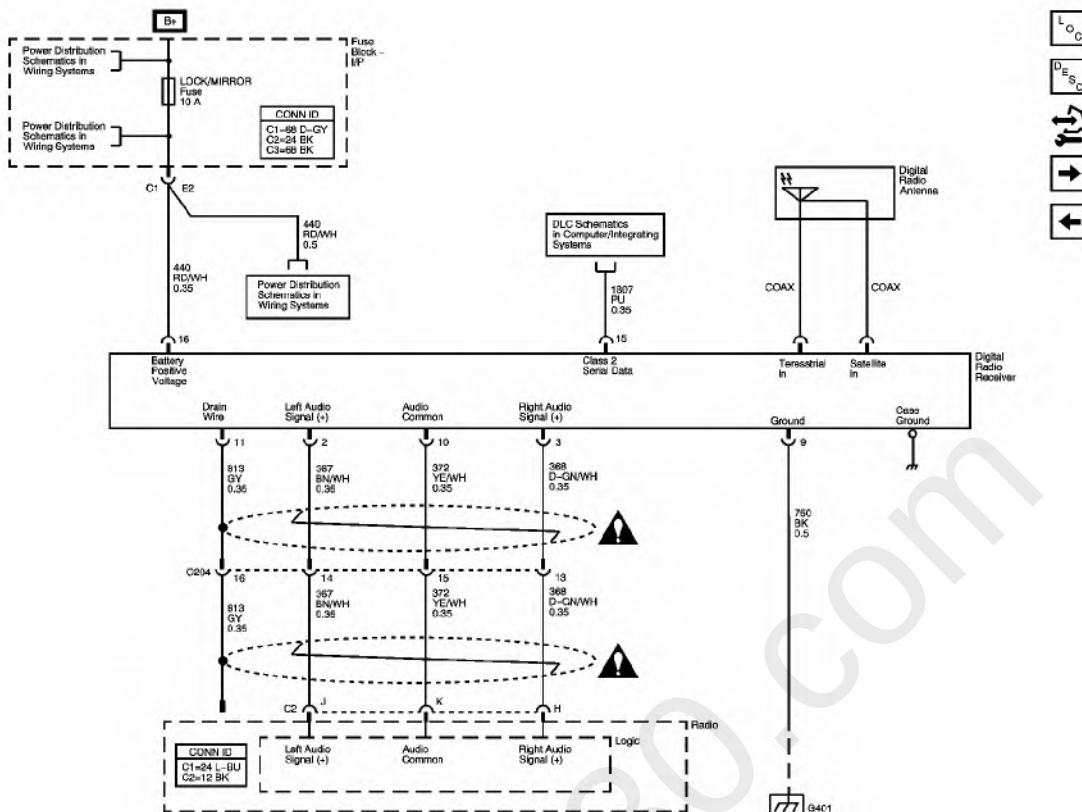


Fig. 4: Power, Ground, Amplifier Inputs
Courtesy of GENERAL MOTORS CORP.

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LOC
DESC
↕
→
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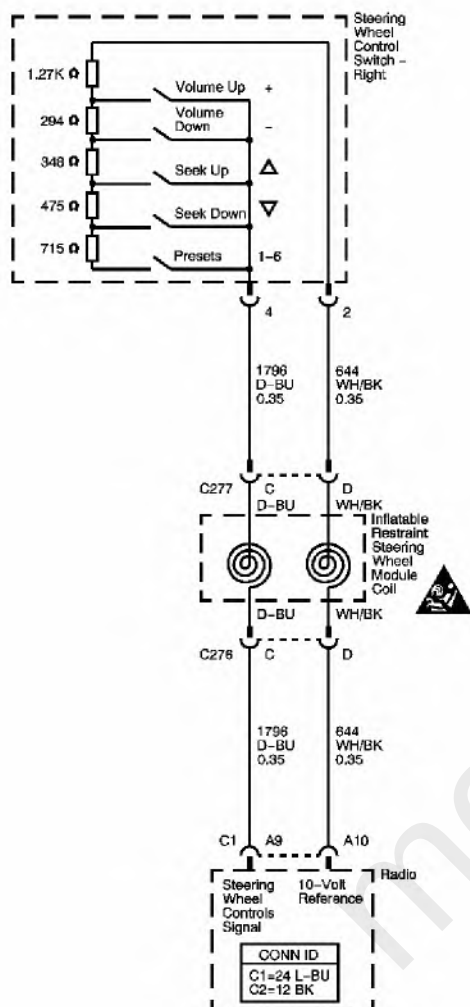


Fig. 7: Redundant Steering Wheel Controls - Pontiac
Courtesy of GENERAL MOTORS CORP.

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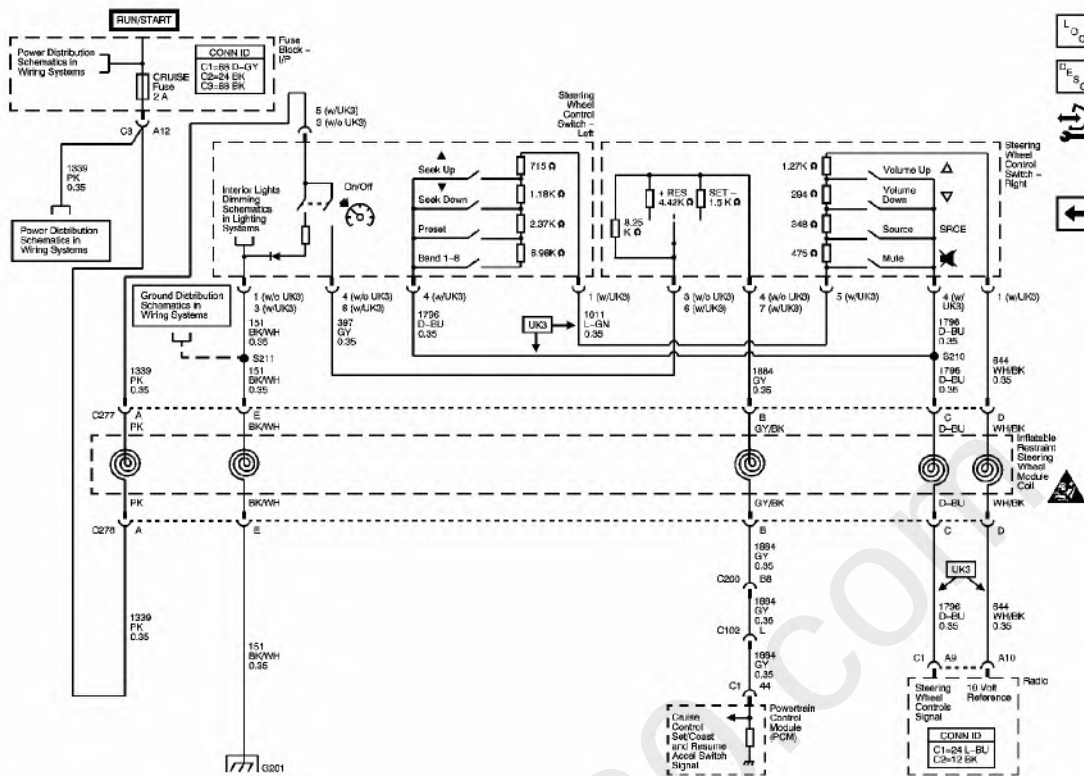


Fig. 8: Redundant Steering Wheel Controls - Chevrolet
 Courtesy of GENERAL MOTORS CORP.

COMPONENT LOCATOR

ENTERTAINMENT COMPONENT VIEWS

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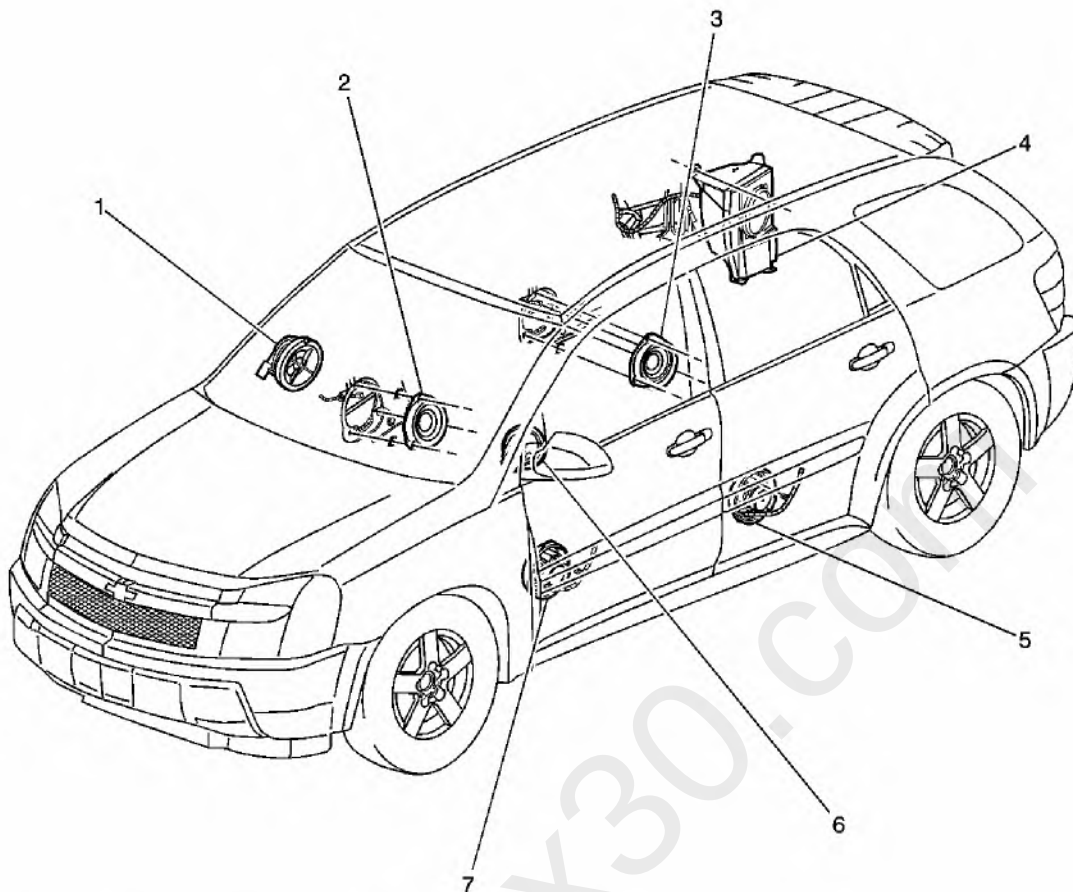


Fig. 9: Entertainment Components - 1 of 2
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 9

Callout	Component Name
1	Speaker - RF (Tweeter)
2	Speaker - RF
3	Speaker - RR
4	Speaker - Subwoofer (U65)
5	Speaker - LR
6	Speaker - LF (Tweeter)
7	Speaker - LF

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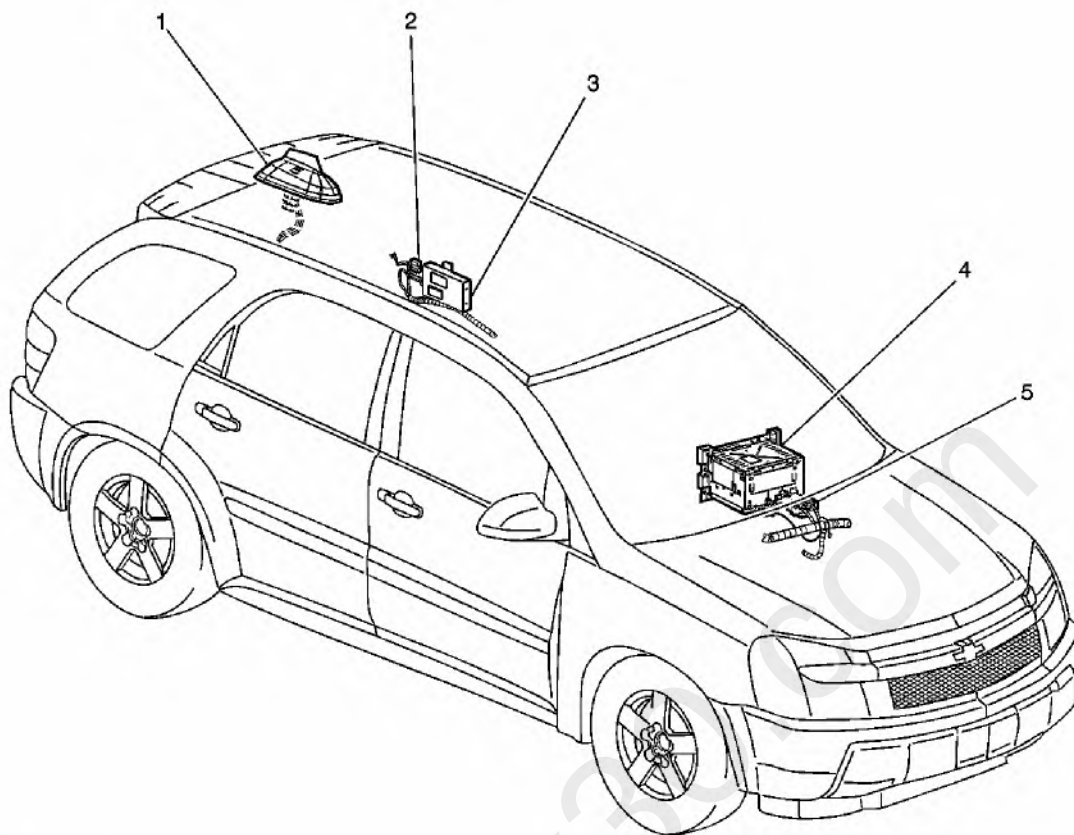


Fig. 10: Entertainment Components - 2 of 2
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 10

Callout	Component Name
1	Digital Radio Antenna (U2K)
2	Digital Radio Antenna Lead (U2K)
3	Digital Radio Receiver (U2K)
4	Radio
5	Radio C2

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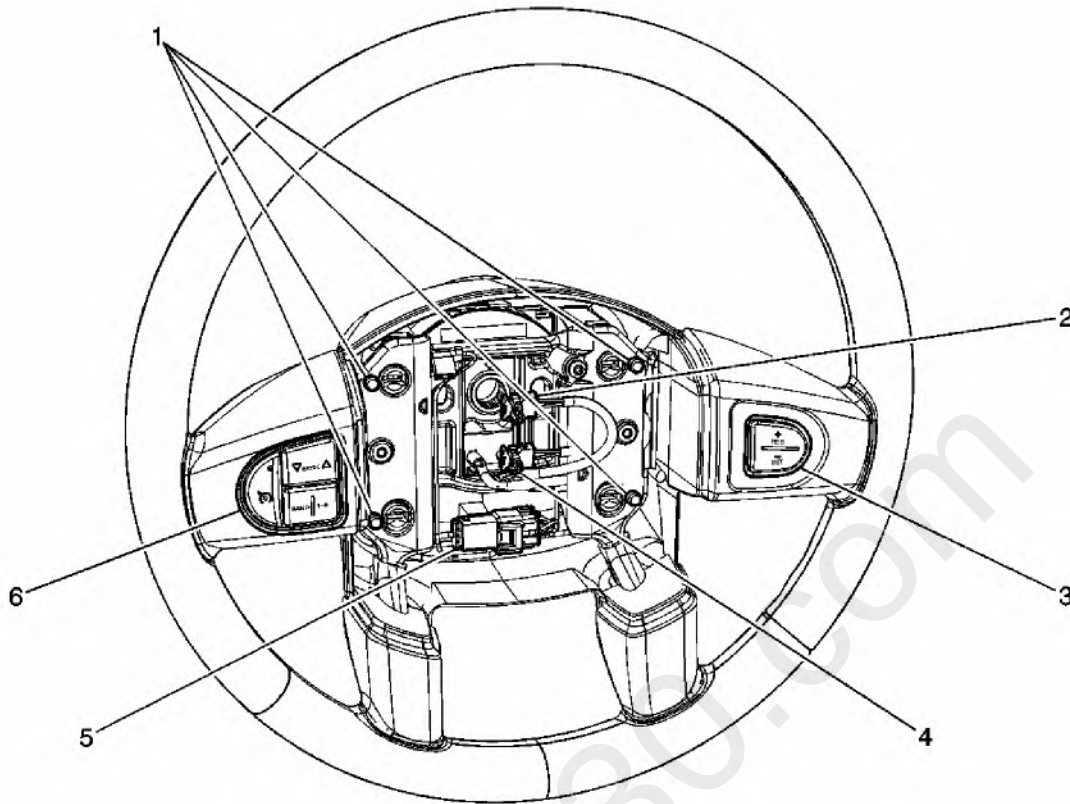


Fig. 11: Steering Wheel Components View
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 11

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

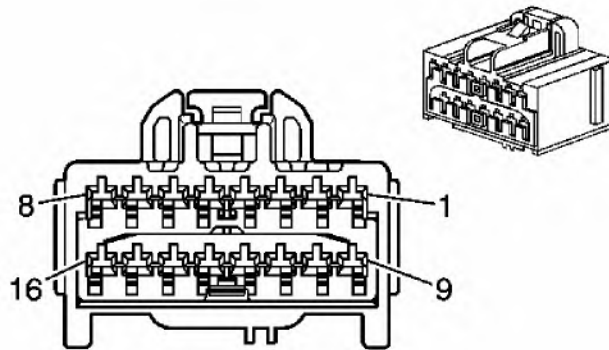
ENTERTAINMENT CONNECTOR END VIEWS

Amplifier C1 (U65)



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Connector Part Information

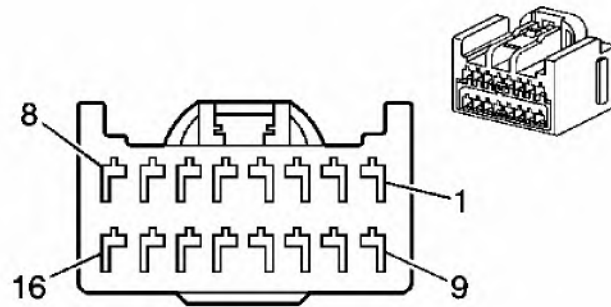
- OEM: 7283-9076-30
- Service: 15136073
- 16-Way F (BK)

Pin	Wire Color	Circuit No.	Function
1	BN	1999	Left Rear Speaker Output (-)
2	TN	1946	Right Rear Speaker Output (-)
3	BN/WH	599	Left Rear Speaker Output (+)
4	D-BU	546	Right Rear Speaker Output (+)
5-7	-	-	Not Used
8	PK	314	Amplifier Enable
9	D-GN	512	Right Front Speaker Output (+)
10	D-GN	1947	Left Front Speaker Output (-)
11	L-GN	1948	Right Front Speaker Output (-)
12	TN	511	Left Front Speaker Output (+)
13-15	-	-	Not Used
16	OG	5748	Amplifier Sense Signal

Amplifier C2 (U65)

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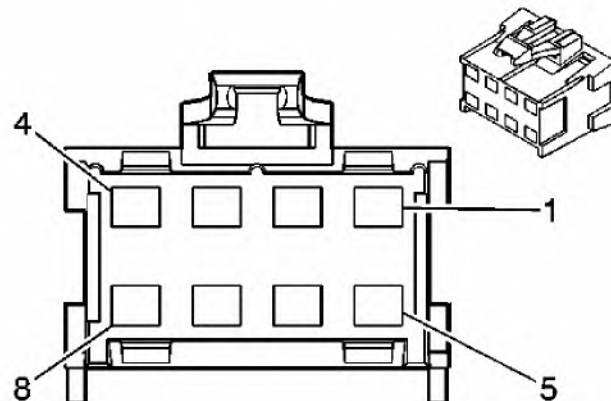


Connector Part Information

- OEM: 7283-5534-60
- Service: See Catalog
- 16-Way F 1.5 Series Sealed (GN)

Pin	Wire Color	Circuit No.	Function
1	YE	116	Left Rear Speaker Output (-)
2	BN	199	Left Rear Speaker Output (+)
3	D-BU	46	Right Rear Speaker Output (+)
4	TN	115	Right Rear Speaker Output (-)
5-8	-	-	Not Used
9	D-GN	117	Right Front Speaker Output (-)
10	D-GN	200	Right Front Speaker Output (+)
11	TN	201	Left Front Speaker Output (+)
12	GY	118	Left Front Speaker Output (-)
13-16	-	-	Not Used

Amplifier C3 (U65)



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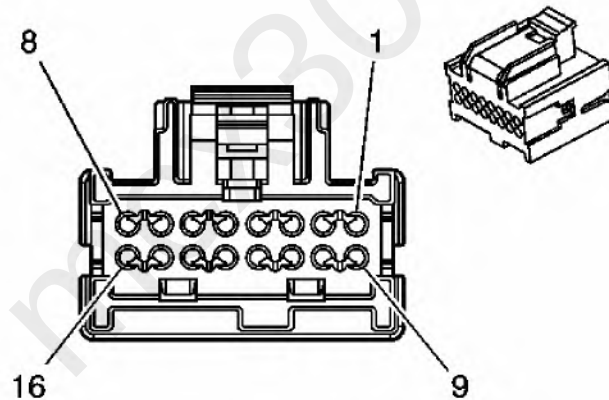
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Connector Part Information

- **OEM: 6098-4787**
- **Service: 15134093**
- **8-Way F (GY)**

Pin	Wire Color	Circuit No.	Function
1	L-GN/BK	1794	Subwoofer Speaker Coil 2 Output (-)
2	D-BU/WH	346	Subwoofer Speaker Coil 2 Output (+)
3	D-GN	1795	Subwoofer Speaker Coil 1 Output (+)
4	L-BU/BK	315	Subwoofer Speaker Coil 1 Output (-)
5	BK	850	Ground
6-7	-	-	Not Used
8	RD/WH	2340	Battery Positive Voltage

Digital Radio Receiver (U2K)



Connector Part Information

- **OEM Assembly: 15394150**
- **OEM Connector Body: 15411434**
- **Service: See Catalog**
- **16-Way F Micro-Pack 64 Series (BK)**

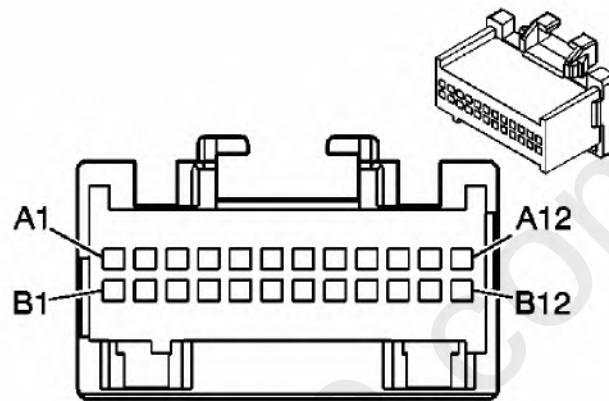
Pin	Wire Color	Circuit No.	Function
1	-	-	Not Used
2	BN/WH	367	Radio Left Audio Signal (+)
3	D-GN/WH	368	Radio Right Audio Signal (+)
5-8	-	-	Not Used
9	BK	750	Ground
10	YE/WH	372	Audio Common

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11	GY	813	Drain Wire
12-14	-	-	Not Used
15	PU	1807	Class 2 Serial Data
16	RD/WH	440	Battery Positive Voltage

Radio C1



Connector Part Information

- **OEM: 12110206**
- **Service: 12110206**
- **24-Way F Micro-Pack 100 Series (L-BU)**

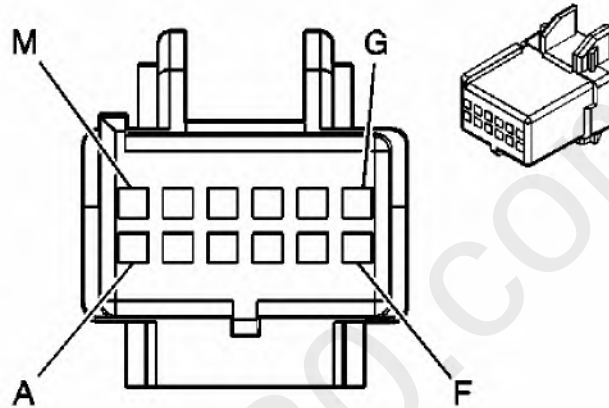
Pin	Wire Color	Circuit No.	Function
A1	GY	118	Left Front Speaker Output (-)
A2	TN	201	Left Front Speaker Output (+)
A3	L-BU	115	Right Rear Speaker Output (-)
A4	D-BU	46	Right Rear Speaker Output (+)
A5	BN	199	Left Rear Speaker Output (+)
A6	YE	116	Left Rear Speaker Output (-)
A7	L-GN	200	Right Front Speaker Output (+)
A8	D-GN	117	Right Front Speaker Output (-)
A9	D-BU	1796	Steering Wheel Controls Signal (UK3)
A10	WH/BK	644	10-Volt Reference (UK3)
A11	-	-	Not Used
A12	BK/WH	151	Ground
B1	RD/WH	2140	Battery Positive Voltage
B2	-	-	Not Used
B3	OG	5748	Mute (U65)

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B4-B5	-	-	Not Used
B6	PK	314	Amplifier Enable (U65)
B7-B8	-	-	Not Used
B9	PU	1807	Class 2 Serial Data
B10-B12	-	-	Not Used

Radio C2



Connector Part Information

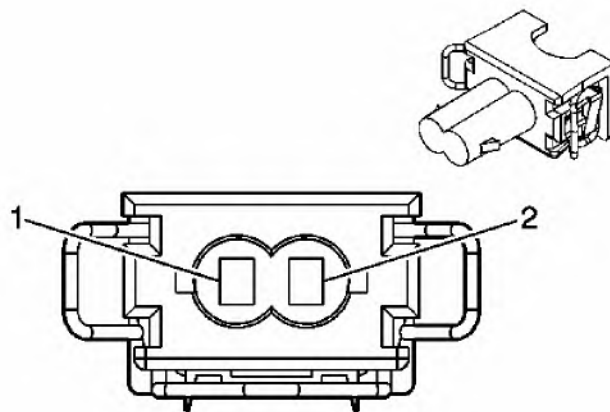
- OEM: 12064799
- Service: 15305996
- 12-Way F Micro-Pack 100 Series (BK)

Pin	Wire Color	Circuit No.	Function
A-G	-	-	Not Used
H	D-GN/WH	368	Right Audio Signal (+)
J	BN/WH	367	Left Audio Signal (+)
K	YE/WH	372	Audio Common
L	OG/BK	2061	Navigation Audio Mono Signal (-) (UE1)
M	PK/BK	2062	Navigation Audio Mono Signal (+) (UE1)

Speaker - LF

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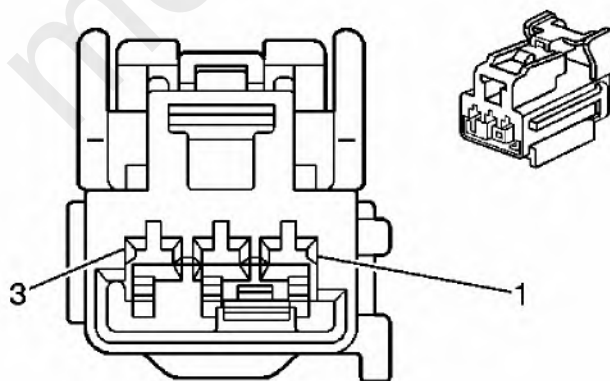


Connector Part Information

- OEM: 12186719
- Service: See Catalog
- 2-Way F (BK)

Pin	Wire Color	Circuit No.	Function
1	GY	118	Left Front Speaker Output (-)
2	TN	201	Left Front Speaker Output (+)

Speaker - LF (Tweeter)



Connector Part Information

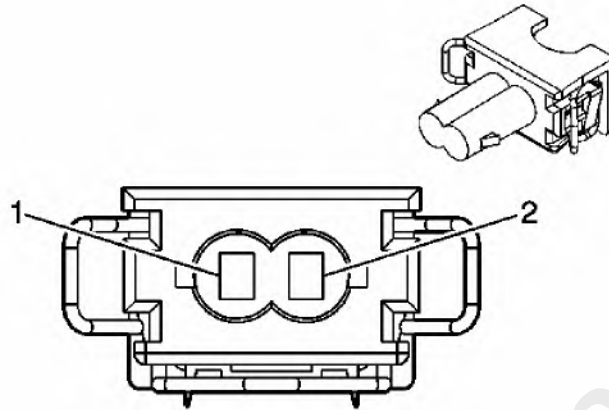
- OEM: 15305566
- Service: See Catalog
- 2-Way F (NA)

Pin	Wire Color	Circuit No.	Function
1	GY	118	Left Front Speaker Output (-)
2	TN	201	Left Front Speaker Output (-)

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Speaker - LR

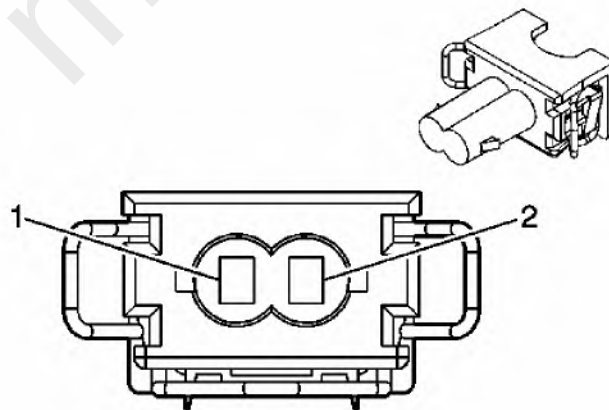


Connector Part Information

- OEM: 12186719
- Service: See Catalog
- 2-Way F (BK)

Pin	Wire Color	Circuit No.	Function
1	YE	116	Left Rear Speaker Output (-)
2	BN	199	Left Rear Speaker Output (+)

Speaker - RF



Connector Part Information

- OEM: 12186719
- Service: See Catalog
- 2-Way F (BK)

Pin	Wire Color	Circuit No.	Function
1	GY	117	Right Front Speaker Output (-)

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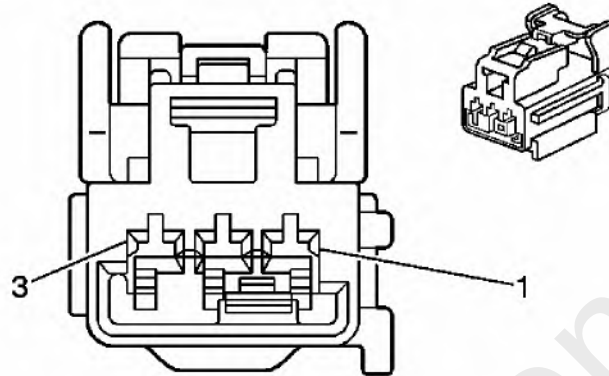
2

TN

200

Right Front Speaker Output (+)

Speaker - RF (Tweeter)

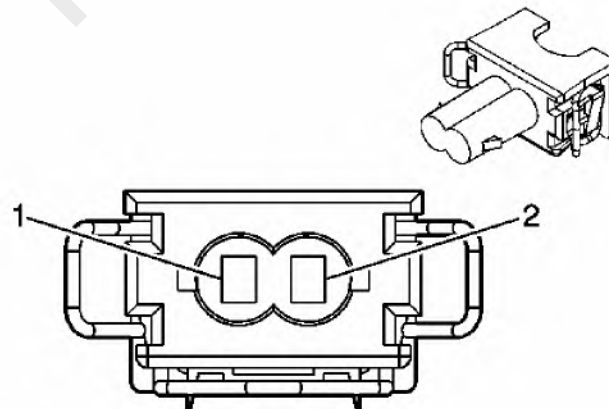


Connector Part Information

- OEM: 15305566
- Service: See Catalog
- 2-Way F (NA)

Pin	Wire Color	Circuit No.	Function
1	GY	117	Right Front Speaker Output (-)
2	TN	200	Right Front Speaker Output (+)

Speaker - RR



Connector Part Information

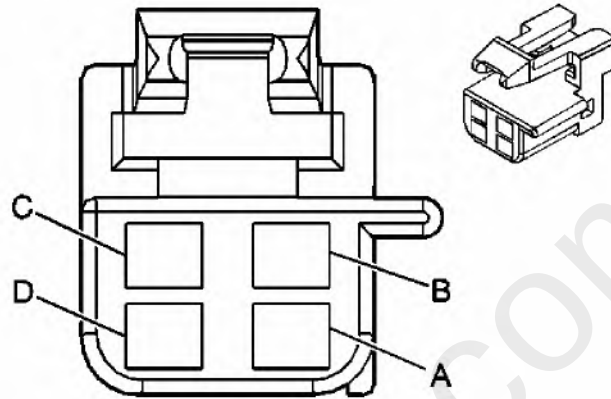
- OEM: 12186719
- Service: See Catalog
- 2-Way F (BK)

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Pin	Wire Color	Circuit No.	Function
1	YE	115	Right Rear Speaker Output (-)
2	BN	46	Right Rear Speaker Output (+)

Speaker - Subwoofer (U65)



Connector Part Information

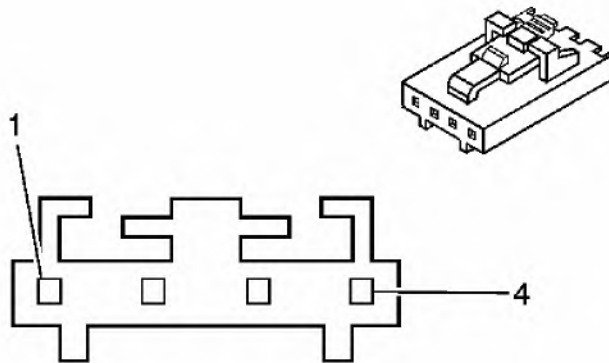
- OEM: 12064760
- Service: 12085208
- 4-Way F Metri-Pack 150 Series (BK)

Pin	Wire Color	Circuit No.	Function
A	D-BU/WH	346	Subwoofer Speaker Coil 2 Output (+)
B	L-GN/BK	1794	Subwoofer Speaker Coil 2 Output (-)
C	D-GN	1795	Subwoofer Speaker Coil 1 Output (+)
D	L-BU/BK	315	Subwoofer Speaker Coil 1 Output (-)

Steering Wheel Control Switch - Left (Chevrolet w/ K34 w/o UK3)

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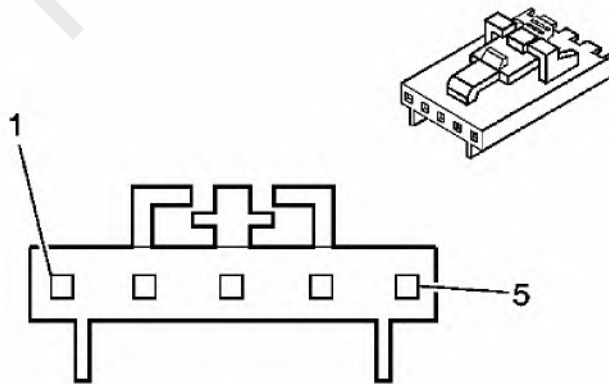


Connector Part Information

- OEM: 50-57-9404
- Service: 12103499
- 4-Way F (BK)

Pin	Wire Color	Circuit No.	Function
1	BK/WH	151	Ground
2	GY	8	Instrument Panel Lamp Supply Voltage
3	PK	1339	Ignition 1 Voltage
4	GY	397	Cruise Control On Switch Signal

Steering Wheel Control Switch - Right (Chevrolet w/ K34 w/o UK3)



Connector Part Information

- OEM: 50-57-9405
- Service: 12103020
- 5-Way F (BK)

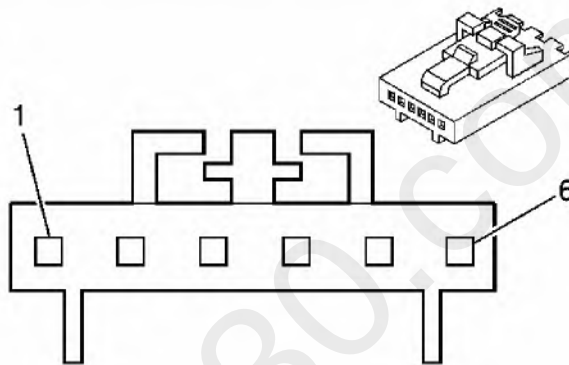
Circuit	
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Pin	Wire Color	No.	Function
1	BK/WH	151	Ground
2	GY	8	Instrument Panel Lamp Supply Voltage
3	GY	397	Cruise Control On Switch Signal
4	GY	1884	Cruise Control Set/Coast/Resume/Accelerate Switch Signal
5	-	-	Not Used

Steering Wheel Control Switch - Left (Chevrolet w/ K34 and UK3)



Connector Part Information

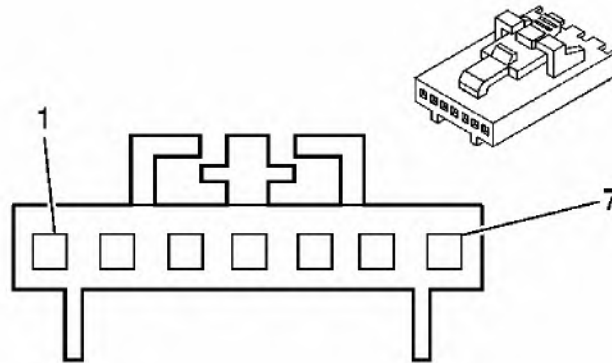
- OEM: 50-57-9406
- Service: 12103087
- 6-Way F (BK)

Pin	Wire Color	Circuit No.	Function
1	L-GN	1011	Remote Radio Control Signal
2	GY	8	Instrument Panel Lamp Supply Voltage
3	BK/WH	151	Ground
4	D-BU	1796	Steering Wheel Controls Signal
5	PK	1339	Ignition 1 Voltage
6	GY	397	Cruise Control On Switch Signal

Steering Wheel Control Switch - Right (Chevrolet w/ K34 and UK3)

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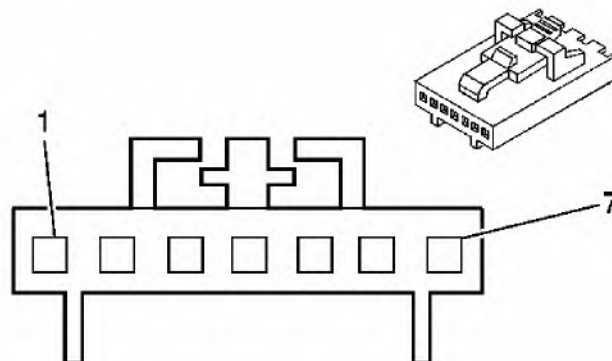


Connector Part Information

- OEM: 50-57-9407
- Service: 15383018
- 7-Way F (BK)

Pin	Wire Color	Circuit No.	Function
1	WH/BK	644	10-Volt Reference
2	GY	8	Instrument Panel Lamp Supply Voltage
3	BK/WH	151	Ground
4	D-BU	1796	Steering Wheel Controls Signal
5	L-GN	1011	Remote Radio Control Signal
6	GY	397	Cruise Control On Switch Signal
7	GY	1884	Cruise Control Set/Coast/Resume/Accelerate Switch Signal

Steering Wheel Control Switch - Left (Pontiac w/ K34/UK3)



Connector Part

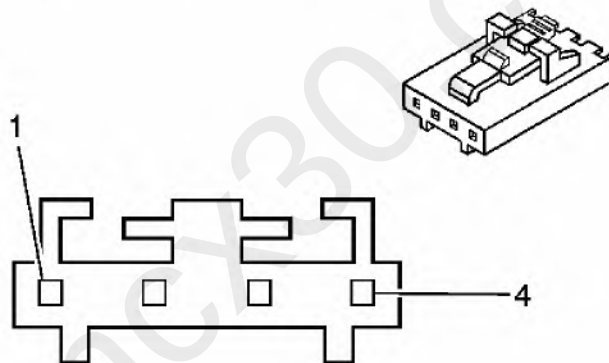
- OEM: 50-57-9407

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Information		• Service: 15383018 • 7-Way F (BK)	
Pin	Wire Color	Circuit No.	Function
1-2	-	-	Not Used
3	GY	8	Instrument Panel Lamp Supply Voltage
4	PK	1339	Ignition 1 Voltage
5	GY	1884	Cruise Control Set/Coast/Resume/Accelerate Switch Signal
6	-	-	Not Used
7	BK/WH	151	Ground

Steering Wheel Control Switch - Right (Pontiac w/ K34/UK3)



Connector Part Information		• OEM: 50-57-9404 • Service: 12103499 • 4-Way F (BK)	
Pin	Wire Color	Circuit No.	Function
1	BK/WH	151	Ground
2	WH/BK	644	10-Volt Reference
3	GY	8	Instrument Panel Lamp Supply Voltage
4	D-BU	1796	Steering Wheel Controls Signal

DIAGNOSTIC INFORMATION AND PROCEDURES

DIAGNOSTIC CODE INDEX

DIAGNOSTIC CODE INDEX

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DTC	Description
DTC B1001	Options Configuration Error (Recalibrate)
DTC B1025, B1035, B1045, or B1055	** MULTIPLE VALUES **
DTC B1259	Antenna Ground Circuit
DTC B1780	Theft Lock Enabled

DIAGNOSTIC STARTING POINT - ENTERTAINMENT

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

Radio Scan Tool Output Control

Scan Tool Output Control	Additional Menu Selections	Description
Left Front Speaker	Front Speakers	Commanding the speaker ON will turn off all speakers except this speaker. Commanding one speaker OFF will turn off all speakers.
Left Rear Speaker	Rear Speakers	Commanding the speaker ON will turn off all speakers except this speaker. Commanding one speaker OFF will turn off all speakers.
Right Front Speaker	Front Speakers	Commanding the speaker ON will turn off all speakers except this speaker. Commanding one speaker OFF will turn off all speakers.
Right Rear Speaker	Rear Speakers	Commanding the speaker ON will turn off all speakers except this speaker. Commanding one speaker OFF will turn off all speakers.

SCAN TOOL DATA LIST

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Radio

Scan Tool Parameter	Data List	Units Displayed	Typical Data Value
Ignition ON/Engine OFF/Radio ON			
8-Digit GM Part Number	Module Information	Numeric	10317990
Amplifier	System Configuration	Present/Not Present	Not Present
Antenna Signal	System Configuration	dBuV	48dBuV
Band Number	System Configuration	FM/FM2/AM	FM1
Calibration ID	Module Information	Numeric	0005
CD Changer	System Configuration	Connected/Not Connected	Not Connected
CD Focus Errors	CD Information	Numeric	0
CD Load/Unload Errors	CD Information	Numeric	0
CD Tracking Errors	CD Information	Numeric	0
CD Inserted	CD Information	Yes/No	Yes
Driver Number	System Configuration	Driver 1/ Driver 2	Driver 1
Julian Date of Build	Module Information	Numeric	031
New VIN Counter	System Configuration	Numeric	1
Phone	System Configuration	Present/Not Present	Not Present
Preset Control	System Configuration	Preset 1-6/Not A Preset	Preset 1-6, if active radio station is a preset
PROM ID	Module Information	Numeric	3090
Sequence Number	Module Information	Numeric	4292
Single CD Track Number	CD Information	Numeric	12
Source	System Configuration	Off/Tuner/CD/Cassette	Tuner
Theft Armed	System Configuration	Yes/No/Learned VIN	Learned VIN
Theft Lock	System Configuration	Locked/Unlocked	Unlocked

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Total CD Hours	CD Information	Hrs.	1
Total Radio Hours	Module Information	Hrs.	4
Year Module Built	Module Information	Numeric	2002

Digital Radio Receiver

Scan Tool Parameter	Data List	Units Displayed	Typical Data Value
Operating Conditions: Ignition ON/Engine OFF/Radio ON			
8-Digit GM Part Number	ID Information/Module Information	Numeric	Varies
Battery Voltage	Data	Volts	Varies
Component Serial Number	ID Information/Module Information	Numeric	Varies
Day	ID Information/DSP Software Version ID	Numeric	Varies
Day	ID Information/XM Software Version ID	Numeric	Varies
Digital Radio Antenna	Data	Millivolts or Milliamps	Varies
Ignition Counter	Data	Numeric	Varies
Month	ID Information/DSP Software Version ID	Numeric	Varies
Month	ID Information/XM Software Version ID	Numeric	Varies
Power Mode	Data	Alphanumeric	Run
Radio ID	ID Information/Module Information	Numeric	Varies
Software Version	ID Information/DSP Software Version ID	Numeric	Varies
Software Version	ID Information/XM Software Version ID	Numeric	Varies
Year	ID Information/DSP Software Version ID	Numeric	Varies
Year	ID Information/XM Software Version ID	Numeric	Varies

SCAN TOOL DATA DEFINITIONS**8-Digit GM Part Number**

The scan tool displays an 8-digit alphanumeric number. This is part number of the

module.

Antenna Signal

The scan tool displays 0-300. The signal from the antenna is measured in dBuV.

Amplifier

The scan tool displays Present/Not Present. The module displays present when a remote amplifier is connected.

Band Number

The scan tool displays AM/FM/FM1. This is the current band setting.

Battery Voltage

The scan tool displays 0-25.5 volts. This is the voltage measured from the modules battery positive voltage circuit to the modules ground circuit.

Calibration ID

The scan tool displays 0-9999. This number designates what calibrations the radio contains.

CD Focus Errors

The scan tool displays 0-999. This is the number of CD focus errors the radio has recorded.

CD Load/Unload Errors

The scan tool displays 0-999. This is the number of CD loading and unloading errors the radio has recorded.

CD Tracking Errors

The scan tool displays 0-999. This is the number of CD tracking errors the radio has recorded.

Component Serial Number

The scan tool displays the serial number.

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This parameter indicates the amount of current being used by the digital radio antenna by measuring the voltage drop across an internal resistor. Early modules support the mV reading, while later modules support the mA reading

Driver Number

The scan tool displays Driver 1/Driver 2. This is the memory position the driver has selected as received by Class 2 lines.

Electronic Serial Number

The scan tool displays the electronic serial number of the digital radio receiver.

Ignition Counter

The scan tool displays the number of ignition cycles.

Month

The scan tool displays the month the software was created.

Power Mode

The scan tool displays the current power mode the module is operating in.

New VIN Counter

The scan tool displays 0-99. This is the number of times a new VIN has been received.

Phone

The scan tool displays Present/Not Present. The module displays present when a phone is connected.

Preset Control

The scan tool displays a preset number 1-6. This is the preset number when the radio is on a preset station.

PROM ID

The scan tool displays 0-9999. This is the identification number of the radios internal PROM.

Sequence Number

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The scan tool displays 0-9999. This is the sequence number in which the module was built.

Single CD Track Number

The scan tool displays 0-99. This is the current track being played.

Software Version

The scan tool displays the version of software.

Source

The scan tool displays Off/Tuner/CD. This indicates the current source of audio. Off will be displayed when digital radio audio is the current source.

Theft Armed

The scan tool displays Yes/No/Learned VIN. The scan tool displays Yes when the theft mode has been turned ON by recognizing a valid VIN.

Theft Lock

The scan tool displays Yes/No. The scan tool displays Yes when the radio receives the incorrect VIN from the PCM across Class 2 lines.

Total CD Hours

The scan tool displays 0-999 hrs. This is the total number of hours the CD player has been used.

Total Radio Hours

The scan tool displays 0-999 hrs. This is the total number of hours the radio has been used.

DTC B1001

Circuit Description

Each time the ignition cycles from OFF to ON, the radio receives VIN data over the class 2 communication circuit. If the VIN data in the radio memory matches the VIN data it receives over the class 2 communication circuit, the radio will operate normally.

DTC Descriptor

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This diagnostic procedure supports the following DTC:

DTC B1001 Options Configuration Error (Recalibrate)

Conditions for Running the DTC

- The DTC is run when the radio is turned from OFF to ON.
- Battery voltage is between 9 and 16 volts.

Conditions for Setting the DTC

Installing a radio from a different vehicle platform or installing a new body control module (BCM) and not entering the correct setup information with the scan tool.

Action Taken When the DTC Sets

The radio does not function properly. The radio displays "CAL".

Conditions for Clearing the DTC

- Installing a radio from another vehicle of the same platform or a new radio of the same platform.
- Installing a new BCM setup properly with the correct VIN for that vehicle.

The DTC status will turn to history when the above criteria is met. The scan tool can now clear the history DTC, or the DTC will automatically clear after 100 consecutive fault free ignition cycles.

Test Description

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

2: Clear all DTCs and cycle the ignition to verify that the DTC did not falsely set.

3: Clear all DTCs after the repair procedure is complete.

DTC B1001

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
	1. Install a scan tool. 2. Turn ON the ignition, with the engine		

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2	OFF. 3. With the scan tool, perform the radio setup procedure. Refer to Radio Setup . 4. Turn OFF the ignition. 5. Turn ON the ignition, with the engine OFF.		
	Does the DTC reset?	Go to Step 3	System OK
3	Replace the radio. Refer to Control Module References in Computer/Integrating Systems for replacement, setup, and programming.		
	Did you complete the replacement?	System OK	-

DTC B1025, B1035, B1045, OR B1055**Circuit Description**

When the radio is powered up, the radio supplies low level audio signals to the speakers. If the vehicle is equipped with an audio amplifier, the amplifier will boost the signal sent to the speakers.

DTC Descriptor

This diagnostic procedure supports the following DTCs:

- DTC B1025 Audio Output 1 Circuit
- DTC B1035 Audio Output 2 Circuit
- DTC B1045 Audio Output 3 Circuit
- DTC B1055 Audio Output 4 Circuit

Conditions for Running the DTC

The test is performed when the radio switches from OFF to ON. The radio will continue to test for the fault once every 0.5 seconds.

Conditions for Setting the DTC

The radio sets a current status for this DTC when a short to ground or voltage is detected on any of the speaker channels for 1.5 seconds.

Action Taken When the DTC Sets

No sound is present from one or more of the speakers.

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Conditions for Clearing the DTC

The fault condition is not present for 5 seconds.

Test Description

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

2: This step verifies that the DTC is still present.

3: This step isolates the fault condition.

DTC B1025, B1035, B1045, or B1055

Step	Action	Yes	No
Schematic Reference: <u>Radio/Audio System Schematics (U1C)</u> or <u>Radio/Audio System Schematics (U65)</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 the scan tool, monitor the DTC Information for DTC B1025. Does the scan tool indicate that DTC B1025 is current?	Go to Step 3	Go to Testing for Intermittent Conditions and Poor Connections in Wiring Systems
3	Test the speaker outputs from the radio for a short to ground or voltage. Refer to Circuit Testing and Wiring Repairs in Wiring Systems. Did you find and correct the condition?	Go to Step 6	Go to Step 4
4	Inspect for poor connections at the harness connector of the radio. 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 6	Go to Step 5
5	Replace the radio. Refer to Control Module References in Computer/Integrating Systems for replacement, setup, and programming.		

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	Did you complete the replacement?	Go to Step 6	-
6	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 2

DTC B1259

DTC Descriptor

This diagnostic procedure supports the following DTC:

DTC B1259 Antenna Ground Circuit

Diagnostic Fault Information

Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.

B1259 Antenna Ground Circuit

Circuit	Short To Ground	Open/High Resistance	Short To Voltage	Signal Performance
Antenna Signal	1	1	1	
1. Sets Code B1259				

Circuit/System Description

The digital radio antenna is connected to the digital radio receiver by 2 coax cables. One coax carries the satellite signal, the other coax carries the terrestrial signal. The antenna cable for the satellite antenna also provides a path for DC current for powering the antenna.

Conditions for Running the DTC

This test is run every 300 milliseconds.

Conditions for Setting the DTC

The digital radio receiver detects an antenna fault.

Action Taken When the DTC Sets

The radio displays "No XM Signal" or "Check Antenna".

Conditions for Clearing the DTC

- The condition must be corrected.
- The DTC clears after 100 malfunction free ignition cycles.

Reference Information

Schematic Reference

Radio/Audio System Schematics (U1C) or Radio/Audio System Schematics (U65)

Connector End View Reference

Entertainment Connector End Views

Description and Operation

Radio/Audio System Description and Operation

Electrical Information Reference

- **CIRCUIT TESTING**
- **CONNECTOR REPAIRS**
- **TESTING FOR INTERMITTENT CONDITIONS AND POOR CONNECTIONS**
- **WIRING REPAIRS**

Special Tools Required

EL-48028 Digital Radio Test Antenna

Circuit/System Testing

1. Ignition OFF, disconnect the antenna coax from the DRR. Connect the test antenna to the DRR.
2. Turn the ignition ON, radio ON tuned to XM. Verify that DTC B1259 is not current.
 - If the DTC B1259 is still current, replace the DRR.
3. Ignition is OFF. Disconnect the DRR antenna from the coaxial cable. Test the resistance of the antenna coaxial cable center conductor from end to end. Verify the resistance is less than 5 ohms.
 - If the resistance is greater than 5 ohms, replace the antenna coaxial cable.
4. Test the resistance of the antenna coaxial cable outer shield from end to end. Verify the resistance is less than 5 ohms.
 - If the resistance is greater than 5 ohms , replace the antenna coaxial cable.
5. Test the resistance of the antenna coaxial cable between the center conductor and the outer conductor. Verify there is infinite resistance between both conductors.
 - If there is less than infinite resistance between the inner conductor and the outer conductor of the coaxial cable, replace the antenna coaxial cable. If the coaxial cable tests normal, replace the digital radio antenna.

Repair Instructions

Perform the **DIAGNOSTIC REPAIR VERIFICATION** after completing the diagnostic procedure.

- **Antenna Cable Replacement**
- **Coaxial Cable Replacement - Digital Radio**
- **Receiver Replacement - Digital Radio**

DTC B1780

Circuit Description

Each time the ignition cycles from OFF to ON, the radio receives VIN data over the class 2 communication circuit. If the VIN data in the radio memory matches the VIN data the radio receives over the class 2 communication circuit, the radio will operate normally.

DTC Descriptor

This diagnostic procedure supports the following DTC:

DTC B1780 Theft Lock Enabled

Conditions for Running the DTC

- The DTC is run when the radio is turned from OFF to ON.
- Battery voltage is between 9 and 16 volts.

Conditions for Setting the DTC

Installing a radio from another vehicle or installing a new body control module (BCM) and not entering the correct VIN information with the scan tool.

Action Taken When the DTC Sets

The radio does not function. The radio displays "LOC" or "LOCKED".

Conditions for Clearing the DTC

- When installing a radio from another vehicle of the same platform, clear the VIN data using the scan tool.
- Installing a new BCM setup properly with the correct VIN for that vehicle.

The DTC status will turn to history when the above criteria is met. The scan tool can now clear the history DTC, or the DTC will clear automatically after 100 consecutive fault free ignition cycles.

Test Description

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

2: After clearing the DTCs and theft information, the radio relearns the VIN upon cycling the ignition switch.

3: After completing the repair procedure, clear all DTCs.

DTC B1780

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	1. Install a scan tool. 2. Use the scan tool to clear the DTCs. 3. Perform radio setup procedure. Refer to Radio Setup . Does the DTC Reset?	Go to Step 3	System OK
3	Replace the radio. Refer to Control Module References in Computer/Integrating Systems for replacement, setup, and programming. Did you complete the replacement?	System OK	-

SYMPTOMS - ENTERTAINMENT

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 conditions 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 **Radio/Audio System Description and Operation**.

- Inspect for aftermarket devices which may affect the operation of the Radio/Audio System. Refer to **Checking Aftermarket Accessories** .
- Inspect for easily accessible or visible system components for obvious damage or conditions which may cause the symptom.

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 from the following list in order to diagnose the symptom:

- **Radio Poor Reception**
- **Digital Radio Poor or No Reception**
- **Audio Distortion - One or More Speakers**
- **Reduced Volume - One or More Speakers**
- **Speakers Inoperative - One or More**
- **Speakers Inoperative - All**
- **Speakers Inoperative - Subwoofer**

AUDIO SYSTEM TROUBLESHOOTING HINTS

Many conditions that affect radio operation may be corrected without removing the radio from the car. Verify the condition, and follow the diagnostic procedures in order to isolate and correct the condition. In order to properly diagnose any audio system problems, ensure that you have a fully charged battery.

Preliminary Inspections**Tools Required**

J 39916-A CD and Cassette Diagnostic Audio Kit.

IMPORTANT: When testing the audio system for poor reception or noise, the vehicle should be outside away from metal buildings and utility lines, with the hood and rear compartment closed.

- Inspect for any aftermarket equipment that may have been installed on the vehicle. If aftermarket equipment is found, disconnect the equipment and verify that the audio noise is still present.

Verify that the antenna connector and the antenna coaxial cable are clean and tight.

- For reception concerns, first determine if the customer is within the listening area of the stations they are attempting to receive.
- Stations at the lower end of the FM band are more susceptible to audio noises than stations at the higher end.
- If the noise is only from one speaker, inspect for the following items before speaker replacement:
 - Isolate the noise using the **J 39916-A**.
 - Inspect the speaker connections in order to ensure they are clean and tight. Refer to **Testing for Intermittent Conditions and Poor Connections** in Wiring Systems.
 - Inspect for a loose or incorrectly installed speaker or surrounding trim. Loose trim may cause a buzz or flutter which sounds like a malfunctioning speaker.
- Ignition noise on the FM band may be an indication of an ignition system problem.
- Verify that all vehicle grounds are clean, tight, and free of corrosion.
- Inspect the rear defogger grid lines for large breaks or dark spots.
- Inspect the connections at the radio antenna module, if equipped, in order to ensure that they are clean and tight.
- Compare the customers vehicle to another of similar model and audio system in order to determine if the condition is abnormal.

Identifying Concerns

1. In order to isolate the source of the noise/poor reception, identify the ignition switch position that the concern is most noticeable:
 1. Turn the ignition switch to the accessory position.
 2. Turn ON the radio.
 3. Seek up 88 to 108 FM then 550 to 1600 AM.
 4. Record the number of valid radio stations where the tuner stops.
 5. Repeat these steps with the ignition ON, and the engine OFF, then repeat the steps again with the engine running.
2. Return the ignition switch to the position that the concern was most noticeable.
3. Remove the fuses or circuit breakers, one at a time, until the noise has been eliminated.
4. Identify what systems or components are powered by the fuse.
5. Reinstall all fuses and circuit breakers.
6. Disconnect the components powered by the fuse, one at a time, until the concern has been eliminated.

Corrective Action

- Inspect the ground integrity of the component or system causing the noise.
- Malfunctioning and marginal components such as relays and solenoids may cause noise and/or poor reception.
- Always use a braided ground strap when applying additional grounds and keep the ground strap as short as possible.
- If the noise source is found to be coming from the vehicle harness:
 - Route the antenna cable separately from the wire harness that is emitting the noise.
 - Use aluminum or nickel tape in order to shield the antenna cable. Try variations of the following repairs:
 - Try adding only aluminum or nickel tape before adding a ground strap to the tape.
 - Wrap a ground strap 360 degrees around the tape, securing the other end of the strap to chassis ground.

IMPORTANT: When installing suppression devices, signal wires such as sensor and communication circuits should not be suppressed. Battery and ignition voltage circuits are the best choices for suppressing.

- Capacitors work best on switch pops and low frequency noise.
- Filters work best on high frequency whines and static.
- After adding any suppression device, inspect all of the vehicle systems, including those not related to the audio system, for proper operation and function.
- Whenever possible, make a test harness that includes filters or capacitors. Always inspect the effectiveness and operation before permanent installation.
- If an audible pop is caused due to operating a switch, perform the following repairs as necessary:
 - Add a capacitor across the contacts of the switch.
 - Add a capacitor from the battery positive voltage (B+) side of the switch to chassis ground.
 - Add a capacitor from the ground side of the switch to chassis ground.
- Use the following available noise suppression devices:
 - 220 micro farad (50V) capacitor GM P/N 1227895

This works well for ignition system related noise.

- 0.47 micro farad capacitor GM P/N 1227894

This works well for switches and relays.

- Feed through capacitor GM P/N 477371

This works well for high current situations.

- Filter package GM P/N 1224205

This works well for low current situations.

- Fuel pump suppressor GM P/N 25027405
- 21 inch braided ground strap GM P/N 8910791
- 19 inch braided ground strap GM P/N 6286800
- 10.5 inch braided ground strap GM P/N 6287160
- 8.5 inch braided ground strap GM P/N 12091511

Generator Whine Concerns

1. Inspect the ground terminal and cable for high resistance.
2. Inspect the generator and brackets for loose or coated mounting bolts.
3. Verify that the ground straps between the engine and the frame are clean and tight.
4. If the noise is still present, inspect the charging system for proper operation. Refer to **Diagnostic Starting Point - Engine Electrical** in Engine Electrical.
5. Install a filter GM P/N 1224205 in the battery voltage feed circuit to the radio.
6. If the noise is not eliminated, install the filter in each following variation:
 - Install the filter with the single wire side toward the radio and the ground wire attached to chassis ground.
 - Remove the ground to the filter.
 - Reverse the filter so that the two-wire side is toward the radio with the ground wire attached to chassis ground.
 - Remove the ground from the filter.
7. If the filter GM P/N 1224205 causes a delay when turning the radio ON or OFF, or other problems, remove the filter and install a 0.47 micro farad capacitor to chassis ground.
8. Before reassembling the vehicle, remove any unneeded filters.
9. Test the functionality of all the vehicle systems, including those not related to the audio system, for proper operation and function.

RADIO POOR RECEPTION

Diagnostic System Check - Vehicle

Always perform the Diagnostic System Check - Vehicle before proceeding with these

diagnostic procedures. Refer to **Diagnostic System Check - Vehicle** .

Using a Test Antenna

Use a test mast antenna to quickly check for poor vehicle antenna operation. Unplug antenna lead-in connector from radio receiver and plug a test antenna into radio. Make sure the test antenna base is grounded to the vehicle chassis and keep hands off the mast. Check radio reception in an area away from electrical interferences. Tune to several weak and strong AM and FM stations. If the radio reception improved, the problem exists with the vehicle antenna and/or lead-in cable. If the reception is still poor, refer to **Audio System Troubleshooting Hints**.

Antenna Ground Test

IMPORTANT: Always zero out the DMM before taking a resistance measurement in order to ensure an accurate reading.

1. Disconnect the negative battery cable.
2. Disconnect the antenna lead-in connector from the radio receiver.
3. Measure the resistance from the negative battery cable to the coaxial cable, outer conductor, connector.
4. The resistance measured should be 0.20 ohms or less.
5. Test the following when the resistance is greater than 0.20 ohms.
 - Base of the antenna for a poor connection to body ground.
 - The coaxial cable interconnects for a poor connection or corrosion.
 - Test for an open or high resistance from the battery negative cable to the body.Refer to **Circuit Testing** and **Wiring Repairs** in Wiring Systems.
6. After finding and correcting the condition, operate the system in order to verify the repair.

Antenna Coaxial Cable Testing

Use the appropriate chart and diagram to test the antenna coaxial cable resistances for the antenna system on the vehicle. Refer to the table when testing the antenna and/or lead-in cable.

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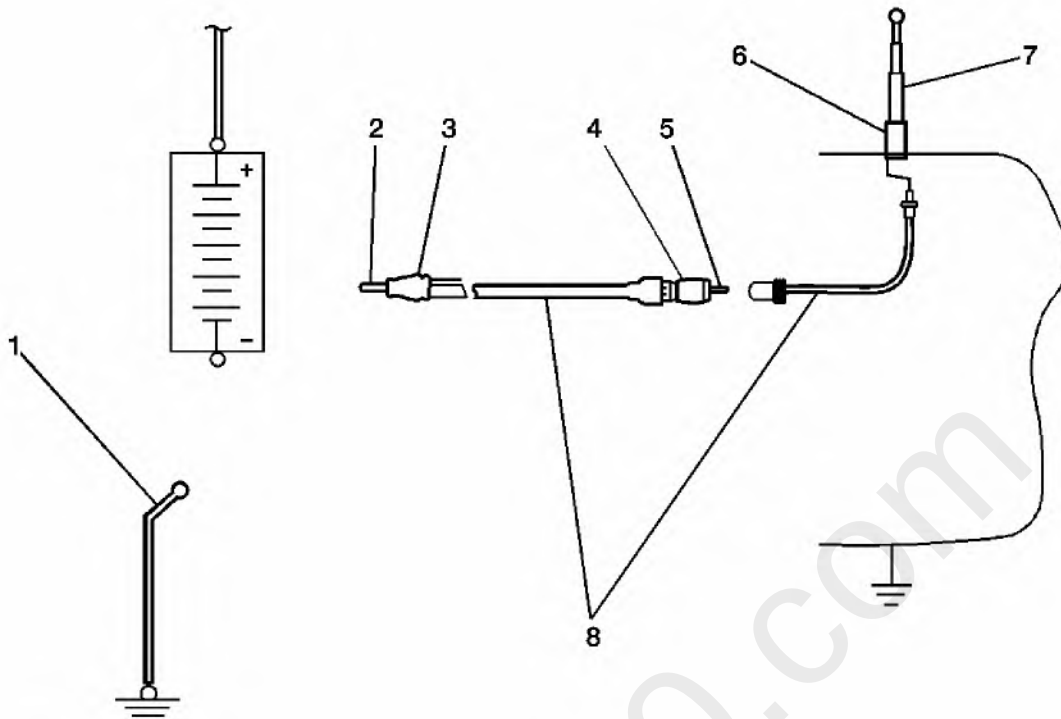


Fig. 12: Identifying Mast Antenna System Components
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 12

Callout	Component Name
1	Negative Battery Cable
2	Coaxial Cable Conductor - Radio End
3	Coaxial Cable Metal Outer Shield - Radio End
4	Coaxial Cable Metal Outer Shield - Antenna End
5	Coaxial Cable Conductor - Antenna End
6	Antenna Base
7	Antenna Mast
8	Antenna Coaxial Cable

Radio Poor Reception

Ohmmeter Probes At Points	Resistance Measured In Ohms
1 and 3	Less than 0.2
1 and 4	Less than 0.2
1 and 6	Less than 0.2
1 and 2	Infinite
1 and 5	Infinite

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1 and 7	Infinite
2 and 3	Infinite
2 and 4	Infinite
2 and 6	Infinite
3 and 4	Less than 0.2
3 and 6	Less than 0.2
3 and 5	Infinite
3 and 7	Infinite

IMPORTANT: Always zero out the DMM before taking a resistance measurement in order to ensure an accurate reading.

1. Measure the resistance from the coax center conductor to antenna mast, ohmmeter probes at points 2 and 7.
2. Total resistance from end to end of center conductor-ohmmeter probes at points 2 and 5:
 - RG-58/RG-59 type cable - less than 0.20 ohms per foot
 - RG-62/RG-62M type cable - less than 3.5 ohms per foot
3. When checking the resistance, cautiously wiggle the lead-in tip and cable. Refer to **Testing for Intermittent Conditions and Poor Connections** in Wiring Systems.
4. Replace the antenna and/or lead-in cable when the above readings are not obtained. Refer to **Fixed Antenna Replacement** or **Antenna Cable Replacement** for service procedure.

Power Type Antennas

The following chart and diagram show ohmmeter readings which should be obtained.

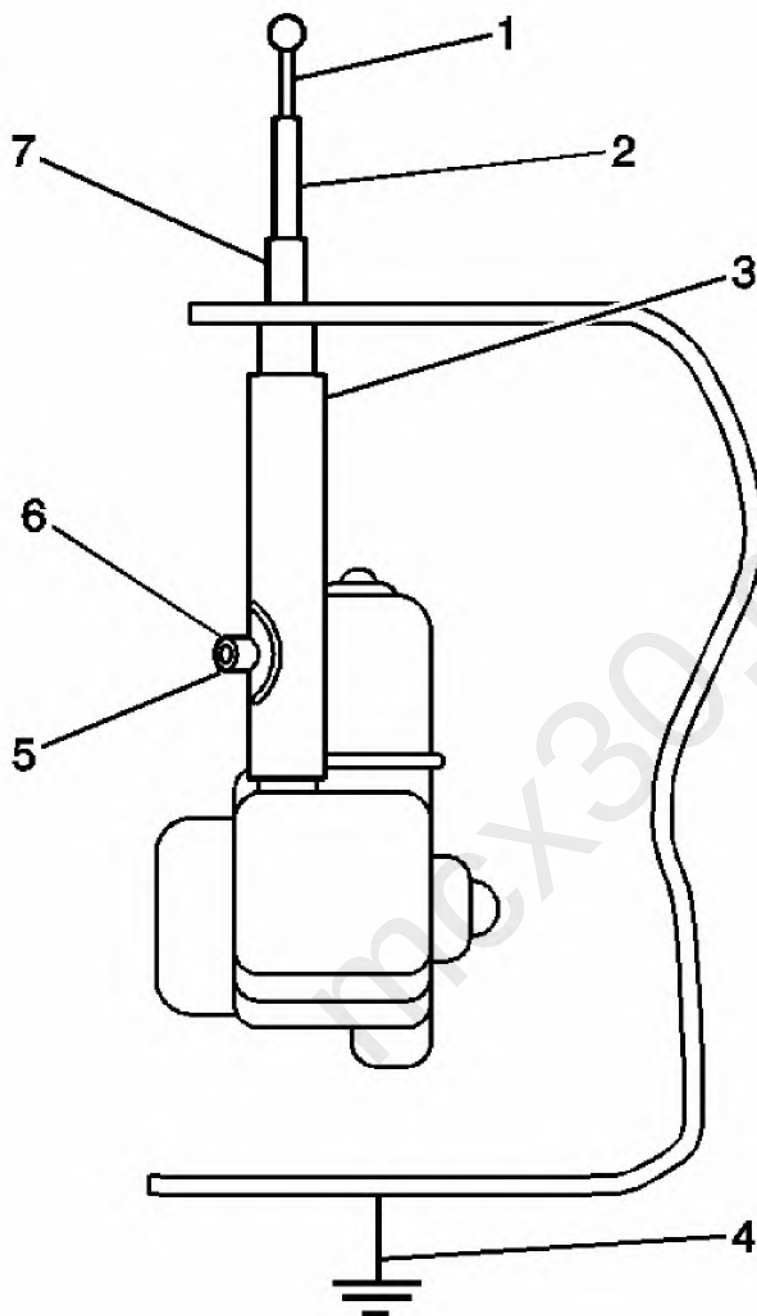


Fig. 13: Power Antenna System
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 13

Callout	Component Name
1	Top Antenna Mast Section

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2	Middle Antenna Mast Section
3	Antenna Metal Housing Case
4	Body Ground
5	Antenna Lead-in Connector, Outer
6	Antenna Lead-in Connector, Inner
7	Lower Antenna Mast Section

Radio Poor Reception

Ohmmeter Probes At Points	Resistance Measured In Ohms
1 and 6	Less than 0.2
2 and 6	Less than 0.2
7 and 6	Less than 0.2
5 and 4	Less than 0.2
1 and 4	Infinite
2 and 4	Infinite
7 and 4	Infinite

Refer to the table when testing the power antenna.

IMPORTANT: Always zero out the DMM before taking a resistance measurement in order to ensure an accurate reading.

1. Disconnect the negative battery cable.
2. Measure the resistance at the points specified in the table.
3. With the ohmmeter probes fastened to each point, wiggle the separate mast section and antenna housing case.
4. The resistance readings specified in the table should always be obtained. Test and/or replace the following when the resistance readings are out of specification.
 - Replace antenna mast section.
 - Test the ground for an open or high resistance. Refer to **Circuit Testing** and **Wiring Repairs** in Wiring Systems.
5. After finding and correcting the antenna condition, make sure the antenna lead-in connector is corrosion free and properly fastened.
6. Operate the system in order to verify the repair.

Windshield Type Antennas

Inspect the antenna connector wire at base of windshield. Make sure the wire is not pinched or broken and is fully seated into the lead-in receptacle.

Inspect dipole wires within the windshield for breaks. Use the figure and table for the mast

antenna as a guide to test for continuity within the antenna coaxial cable. Repair or replace any portion of the coaxial cable that does not meet the resistance measurements. If test antenna indicates radio is OK and lead-in checks fine, the windshield may need to be replaced. A defective windshield antenna results in loss of sensitivity, particularly on AM.

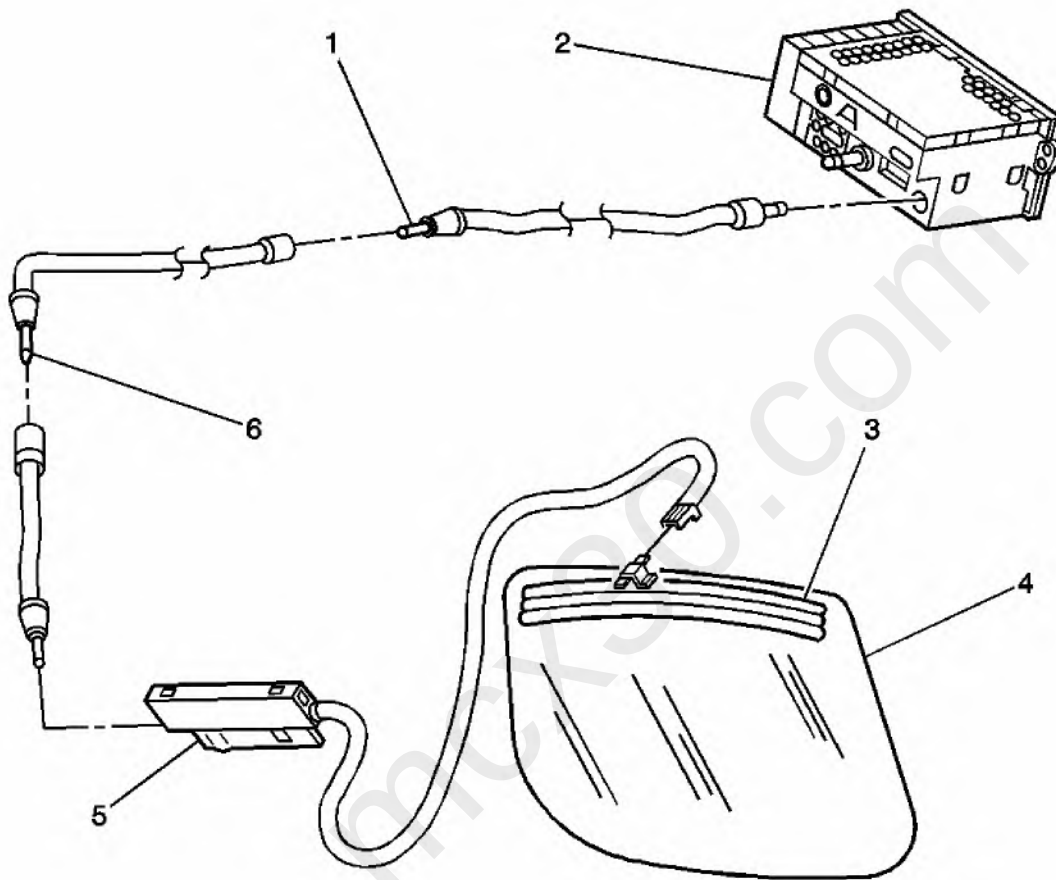


Fig. 14: Windshield Antenna System
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 14

Callout	Component Name
1	Antenna Coaxial Lead-in Connector
2	Radio Chassis
3	Window Antenna Grid, Front or Rear
4	Window Glass, Front or Rear
5	Antenna Module
6	Antenna Coaxial Lead-in Connector

IMPORTANT: The following information lists the most probable cause of the concern to the least probable cause followed by the appropriate test for that condition. If the test leads to the replacement of a component, always inspect for a poor connection before proceeding with the replacement. Refer to Testing for Intermittent Conditions and Poor Connections and Connector Repairs in Wiring Systems.

This antenna system uses the existing rear defogger grid as an antenna. Using the defogger as an antenna requires the circuitry in the radio antenna module to decouple the RF from the DC heater current.

Perform the Antenna System Test and test the antenna coax cable prior to performing the following tests.

1. The radio antenna module is not grounded properly. The module grounding screws should be clean and tight. Measure the resistance from the antenna module base plate to a good ground. Resistance should be 0.20 ohms or less. Find and correct the condition if the resistance is out of specification.
2. The antenna relay coil supply voltage circuit to the radio antenna module is open or shorted to ground. Test the antenna relay coil supply voltage circuit for an open or short to ground. Refer to Circuit Testing and Wiring Repairs in Wiring Systems.
3. Defective radio antenna module. Replace the radio antenna module.
4. No antenna relay coil supply voltage output from the radio. Disconnect the radio antenna module connector. Turn ON the radio and measure the voltage from the antenna relay coil supply voltage circuit of the radio to a good ground. Voltage measured should be near 12 volts. If no voltage is measured, replace the radio. Refer to Radio Replacement for service procedure.
5. If noise is present when the rear defogger is on, inspect the rear defogger grid for breaks. Repair as necessary.
6. After finding and correcting the condition, operate the system in order to verify the repair.

Diversity Antenna System

IMPORTANT: The following information lists the most probable cause of the concern to the least probable cause followed by the appropriate test for that condition. If the test leads to the replacement of a component, always inspect for a poor connection before proceeding with the replacement. Refer to Testing for Intermittent Conditions and Poor Connections and Connector Repairs in Wiring Systems.

This antenna system uses two antennas to form a diversity system. The primary antenna is part of the rear window. The primary antenna receives both AM and FM signals. The secondary antenna is located on the passenger side of the windshield. The secondary antenna receives only FM signals. The radio antenna module processes the antenna reception signals and phase aligns them to create one strong signal.

Perform the Antenna System Test and test the antenna coax cable prior to performing the following tests.

1. The radio antenna module is not grounded properly. The module grounding screws should be clean and tight. Measure the resistance from the antenna module base plate to a good ground. Resistance should be 0.20 ohms or less. Find and correct the condition if the resistance is out of specification.
2. The antenna enable signal circuit to the radio antenna module is open or shorted to ground. Test the antenna enable signal circuit for an open or short to ground. Refer to **Circuit Testing** and **Wiring Repairs** in Wiring Systems.
3. The FM composite signal circuit to the radio antenna module is open or shorted to ground. Test the FM composite signal circuit for an open or short to ground. Refer to **Circuit Testing** and **Wiring Repairs** in Wiring Systems.
4. Improper retention of the antenna cable in the floating retainer. Poor or no connection with the radio will result when the radio is installed if the antenna cable is not properly attached in the floating retainer. Inspect the antenna cable for movement in the floating retainer. Replace the antenna cable if movement is found. Refer to **Antenna Cable Replacement** for service procedure.
5. Defective radio antenna module. Replace radio antenna module.
6. No FM composite signal voltage output from the radio. Disconnect the radio antenna module connector. Turn ON the radio and tune the radio to the FM band. Measure the voltage from the FM composite signal circuit of the radio antenna module to a good ground. Voltage measured should be near 8 volts. If no voltage is measured, replace the radio. Refer to **Radio Replacement** for service procedure.
7. After finding and correcting the condition, operate the system in order to verify the repair.

DIGITAL RADIO POOR OR NO RECEPTION

Diagnostic Fault Information

Perform the Diagnostic System Check - Vehicle prior to using this diagnostic procedure.

Circuit/System Description

The antenna signal circuit is a coaxial cable that carries the radio signal information received by the antenna. The antenna cable also provides a path for DC current for powering the antenna.

Reference Information**Schematic Reference****Radio/Audio System Schematics (U1C) or Radio/Audio System Schematics (U65)****Connector End View Reference****Entertainment Connector End Views****Description and Operation****Radio/Audio System Description and Operation****Electrical Information Reference**

- **CIRCUIT TESTING**
- **CONNECTOR REPAIRS**
- **TESTING FOR INTERMITTENT CONDITIONS AND POOR CONNECTIONS**
- **WIRING REPAIRS**

Special Tools Required

EL-48028 Digital Radio Test Antenna

Circuit/System Verification

Make sure the vehicle is outside in an area with an unobstructed view of the southern sky. Turn ON XM radio. Tune the radio to satellite channel 1. If the reception is not clear, contact XM at 1-800-852-9696 to verify customer account status or possible network problems.

Circuit/System Testing

1. Ignition OFF, disconnect the antenna coax from the digital radio receiver (DRR). Connect the test antenna to the DRR.
2. Turn the ignition ON, radio ON tuned to XM. Is the reception improved?
 - If the reception is not improved, replace the DRR.
3. Ignition OFF. Disconnect the DRR antenna from the coaxial cable. Test the resistance of the antenna coaxial cable center conductor from end to end. Verify the resistance is less than 5 ohms.
 - If the resistance is greater than 5 ohms, replace the antenna coaxial cable.
4. Test the resistance of the antenna coaxial cable outer shield from end to end. Verify the resistance is less than 5 ohms.
 - If the resistance is greater than 5 ohms, replace the antenna coaxial cable.

5. Test the resistance of the antenna coaxial cable between the center conductor and the outer conductor. Verify there is infinite resistance between both conductors.
 - If there is less than infinite resistance between the inner conductor and the outer conductor of the coaxial cable, replace the antenna coaxial cable. If the coaxial cable tests normal, replace the digital radio antenna.

Repair Instructions

Perform the **DIAGNOSTIC REPAIR VERIFICATION** after completing the diagnostic procedure.

- **Coaxial Cable Replacement - Digital Radio**
- **Antenna Cable Replacement**
- **Control Module References** for DRR replacement, setup and programming

AUDIO DISTORTION - ONE OR MORE SPEAKERS

Schematic Reference: **Radio/Audio System Schematics (U1C)** or **Radio/Audio System Schematics (U65)**

Connector End Views Reference: **Entertainment Connector End Views**

Diagnostic System Check - Vehicle

Always perform the Radio/Audio System Diagnostic System Check before proceeding with these diagnostic procedures. Refer to **Diagnostic System Check - Vehicle** in Vehicle DTC Information.

Speakers - Distortion

IMPORTANT: The following information lists the most probable cause of the concern to the least probable cause. If the list leads to the replacement of a component, always inspect for a poor connection before proceeding with replacement. Refer to **Testing for Intermittent Conditions and Poor Connections and Connector Repairs in Wiring Systems**.

With RPO U65

1. Low level audio circuit open. Test the appropriate low level audio circuit for an open. Refer to **Circuit Testing** and **Wiring Repairs** in Wiring Systems.
2. Defective speaker - Replace the appropriate speaker. Refer to **Speaker Replacement Reference**.

With RPO U2K

2006 Chevrolet Equinox LS

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Audio output signal circuit from digital radio receiver open. Test left, right, and audio common signal circuits for opens. Refer to **Circuit Testing** and **Wiring Repairs** in Wiring Systems.

AUDIO TOO LOUD AT LOW SETTINGS**Audio Too Loud at Low Settings**

Step	Action	Yes	No
Schematic Reference: Radio/Audio System Schematics (U1C) or Radio/Audio System Schematics (U65)			
Connector End Views Reference: Entertainment Connector End Views			
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 radio. 2. Adjust the volume to the lowest setting that can be heard. Is the lowest audible setting too loud?	Go to Step 3	Go to Diagnostic System Check - Vehicle in Vehicle DTC Information
3	Using a scan tool, observe the audio amplifier parameter in the system configuration data list. Does the scan tool indicate that the audio amplifier is present?	Go to Step 4	Go to Step 5
4	Compare the volume to a similar vehicle with the same audio system. Are both vehicles the same?	System OK	Go to Step 7
5	Test the amplifier sense signal circuit for an open or high resistance. Refer to Circuit Testing and Wiring Repairs in Wiring Systems. Did you find and correct the condition?	Go to Step 11	Go to Step 6
6	1. Turn OFF the ignition. 2. Disconnect the audio amplifier 3. Connect a 3-amp fused jumper between the amplifier sensor signal circuit and ground. 4. Turn ON the ignition, with the engine		

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	OFF. Does the scan tool indicate that the audio amplifier is present?	Go to Step 8	Go to Step 7
7	Inspect for poor connections at the harness connector of the radio. 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 11	Go to Step 9
8	Inspect for poor connections at the harness connector of the audio amplifier. 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 11	Go to Step 10
9	Replace the radio. Refer to Control Module References in Computer/Integrating Systems for replacement, setup, and programming. Did you complete the replacement?	Go to Step 11	-
10	Replace the audio amplifier. Refer to Amplifier Replacement . Did you complete the replacement?	Go to Step 11	-
11	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 2

REDUCED VOLUME - ONE OR MORE SPEAKERS

Schematic Reference: Radio/Audio System Schematics (U1C) or Radio/Audio System Schematics (U65)

Connector End Views Reference: Entertainment Connector End Views

Diagnostic System Check - Vehicle

Always perform the Radio/Audio System Diagnostic System Check before proceeding with these diagnostic procedures. Refer to **Diagnostic System Check - Vehicle** in Vehicle DTC Information.

IMPORTANT: The following information lists the most probable cause of the concern to the least probable cause followed by the appropriate test for that condition. If the list leads to the

replacement of a component, always inspect for a poor connection before proceeding with the replacement. Refer to Testing for Intermittent Conditions and Poor Connections and Connector Repairs in Wiring Systems.

Without RPO U65

- Speaker output circuit resistance high - Test the appropriate speaker output circuits for high resistance. Refer to Circuit Testing and Wiring Repairs in Wiring Systems.
- Defective Speaker - Replace the appropriate speaker. Refer to Speaker Replacement Reference.

With RPO U65

- Speaker output circuit resistance high - Test the appropriate speaker output circuits from the amplifier for high resistance. Refer to Circuit Testing and Wiring Repairs in Wiring Systems.
- Low level audio circuit open - Test the appropriate low level audio output circuits from the radio to the amplifier for an open. Refer to Circuit Testing and Wiring Repairs in Wiring Systems.
- Defective speaker - Replace the appropriate speaker. Refer to Speaker Replacement Reference.

SPEAKERS INOPERATIVE - ONE OR MORE

Schematic Reference: Radio/Audio System Schematics (U1C) or Radio/Audio System Schematics (U65)

Connector End Views Reference: Entertainment Connector End Views

Diagnostic System Check - Vehicle

Always perform the Radio/Audio System Diagnostic System Check before proceeding with these diagnostic procedures. Refer to Diagnostic System Check - Vehicle in Vehicle DTC Information.

Speaker Inoperative - One or More

Without RPO U65

1. No audio output from the radio.

Test for any AC voltage between the audio signal circuits at the affected speaker connector with the radio volume adjusted to 50 percent. If no AC voltage is present, check for shorts to battery positive voltage or shorts to ground on all affected speaker

output circuits from the radio. If no shorts are located, replace the radio. Refer to **Control Module References** in Computer/Integrating Systems for replacement, setup, and programming.

2. Speaker output open.

Test the appropriate speaker outputs for an open. Refer to **Circuit Testing** and **Wiring Repairs** in Wiring Systems.

3. Defective speaker.

Replace the appropriate speaker. Refer to **Speaker Replacement Reference**.

With RPO U65

1. Speaker output from amplifier open.

Test the appropriate speaker outputs for an open. Refer to **Circuit Testing** and **Wiring Repairs** in Wiring Systems.

2. Defective speaker.

Replace the appropriate speaker. Refer to **Speaker Replacement Reference**.

3. No audio output from the radio

Test for any AC voltage between the audio signal circuits at the affected speaker connector with the radio volume adjusted to 50 percent. If no AC voltage is present, check for shorts to battery positive voltage or shorts to ground on all affected speaker output circuits from the radio. If no shorts are located, replace the radio. Refer to **Control Module References** in Computer/Integrating Systems for replacement, setup, and programming.

4. No audio output from the amplifier.

Test for any AC voltage between the audio signal circuits at the affected speaker connector with the radio volume adjusted to 50 percent. If no AC voltage is present, check for shorts to battery positive voltage or shorts to ground on the affected speaker outputs. Refer to **Circuit Testing** and **Wiring Repairs** in Wiring Systems. If no shorts are located, replace the amplifier. Refer to **Amplifier Replacement**.

SPEAKERS INOPERATIVE - ALL

Schematic Reference: **Radio/Audio System Schematics (U1C)** or **Radio/Audio System Schematics (U65)**

Connector End Views Reference: Entertainment Connector End Views**Diagnostic System Check - Vehicle**

Always perform the Radio/Audio System Diagnostic System Check before proceeding with these diagnostic procedures. Refer to **Diagnostic System Check - Vehicle** in Vehicle DTC Information.

IMPORTANT: The following information lists the most probable cause of the concern to the least probable cause, followed by the appropriate test for that condition. If the list leads to the replacement of a component, always inspect for a poor connection before proceeding with the replacement. Refer to **Testing for Intermittent Conditions and Poor Connections** and **Connector Repairs in Wiring Systems**.

Without RPO U65

No audio output from the radio.

Test for any AC voltage between the left front audio signal circuits at the left front speaker connector with the radio volume adjusted to 50 percent. If no AC voltage is present, check for shorts to battery positive or shorts to ground on any speaker output circuit from the radio. Refer to **Circuit Testing** and **Wiring Repairs** in Wiring Systems. If no shorts are located, replace the radio. Refer to **Control Module References** in Computer/Integrating Systems for replacement, setup, and programming.

With RPO U65

1. Battery positive voltage to the amplifier open.

Test the battery positive circuit to the amplifier for an open. Refer to **Circuit Testing** and **Wiring Repairs** in Wiring Systems.

2. Ground to the amplifier open.

Test the ground circuit to the amplifier for an open. Refer to **Circuit Testing** and **Wiring Repairs** in Wiring Systems.

3. No low level audio output from the radio.

Test for any AC voltage between the left front low level audio signal circuits at the amplifier connector with the radio volume adjusted to 50 percent. If no AC voltage is present, check for shorts to battery positive or shorts to ground on any speaker output circuit from the radio. Refer to **Circuit Testing** and **Wiring Repairs** in Wiring

Systems. If no shorts are located, replace the radio. Refer to **Control Module References** in Computer/Integrating Systems for replacement, setup, and programming.

4. No radio on signal to the amplifier

Test the radio on signal circuit to the amplifier for an open. Refer to **Circuit Testing** and **Wiring Repairs** in Wiring Systems.

5. Defective amplifier

Replace the amplifier. Refer to **Amplifier Replacement**.

SPEAKERS INOPERATIVE - SUBWOOFER

Schematic Reference: **Radio/Audio System Schematics (U1C)** or **Radio/Audio System Schematics (U65)**

Connector End Views Reference: **Entertainment Connector End Views**

Diagnostic System Check - Vehicle

Always perform the Radio/Audio System Diagnostic System Check before proceeding with these diagnostic procedures. Refer to **Diagnostic System Check - Vehicle** in Vehicle DTC Information.

IMPORTANT: If the list leads to the replacement of a component, always inspect for a poor connection before proceeding with the replacement. Refer to **Testing for Intermittent Conditions and Poor Connections** and **Connector Repairs** in Wiring Systems.

1. Defective subwoofer - Replace the subwoofer. Refer to **Speaker Replacement Reference**.
2. No audio output from amplifier - Test for any AC voltage between the 2 pairs of audio signal circuits at the subwoofer speaker connector with the radio volume adjusted to 50 percent. If no AC voltage is present, check for shorts to battery positive or shorts to ground on the affected speaker output circuits from the amplifier. Refer to **Circuit Testing** and **Wiring Repairs** in Wiring Systems. If no shorts are located, replace the amplifier. Refer to **Amplifier Replacement**.

RADIO SETUP

The following service procedure requires programming or setup procedures to be performed on the radio.

Radio Replacement

IMPORTANT: The radio theft will learn the VIN. Without learning the VIN, the radio will display a locked message (LOC or LOCKED).

If the radio is replaced, perform a VIN Relearn, located in the Special Functions section on the scan tool. Cycle the ignition when complete.

DIGITAL RADIO RECEIVER SETUP

XM Activation

IMPORTANT: After replacement of an XM receiver, call XM radio to deactivate the receiver that has been removed from the vehicle and activate the new XM radio receiver. The vehicle must be parked in view of a satellite within 24 hours after an activation call.

1. Turn the radio ON, tune to the XM channel 0, and record the radio ID. The radio ID will be needed for activation of the new receiver.
2. Call XM radio at 1-800-556-3600 to deactivate the faulty receiver and activate the new receiver.
3. Park the vehicle outside in an area with an unobstructed view of the southern sky.
4. Leave the vehicle outside with the ignition switch in the ACC position and the radio on for 30 minutes to activate XM service.
5. Once activated, the radio will receive the remaining XM channels.

SPEAKER REPLACEMENT REFERENCE

Speaker Replacement Reference

Component	Repair Instruction
Front Door Speaker	Refer to Speaker Replacement - Front Door
Front Side Door Upper Speaker	Refer to Speaker Replacement - Front Side Door Upper
Rear Door Speaker	Refer to Speaker Replacement - Rear Door
Subwoofer Speaker	Refer to Speaker Replacement - Rear

REPAIR INSTRUCTIONS

RADIO REPLACEMENT

Removal Procedure

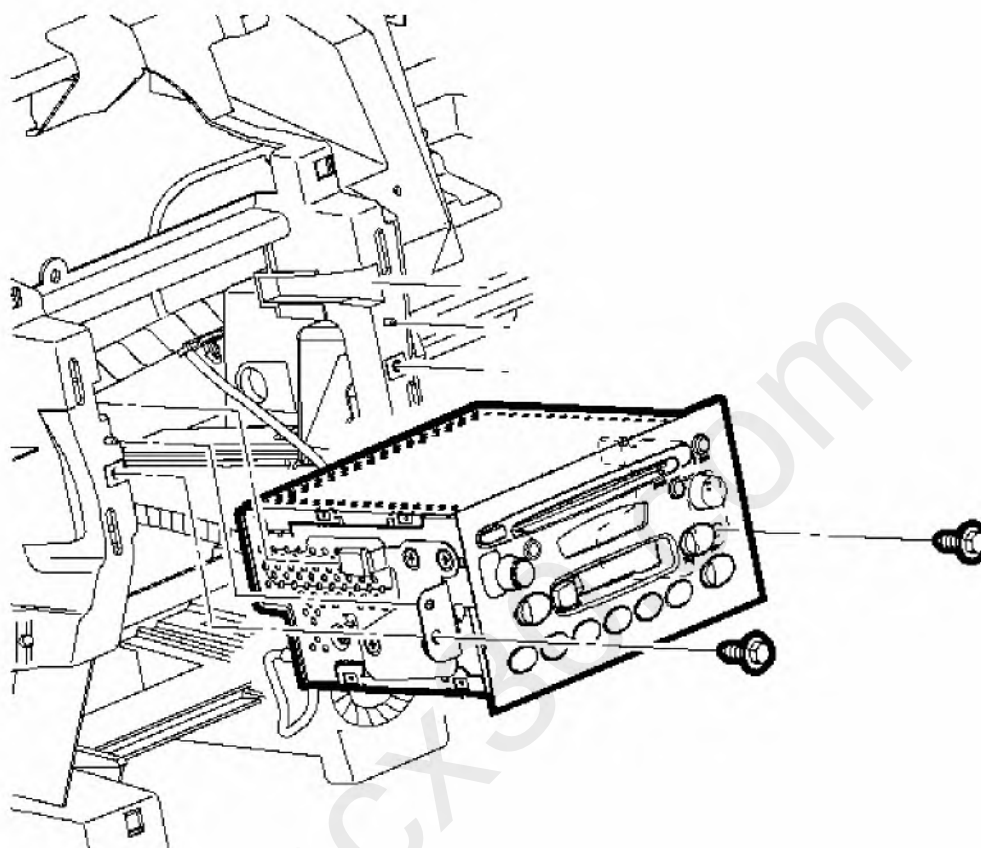


Fig. 15: View of Radio & Screws
Courtesy of GENERAL MOTORS CORP.

1. Remove the I/P center trim bezel. Refer to **Trim Bezel Replacement - Center** in Instrument Panel, Gages, and Console.
2. Remove the radio screws.

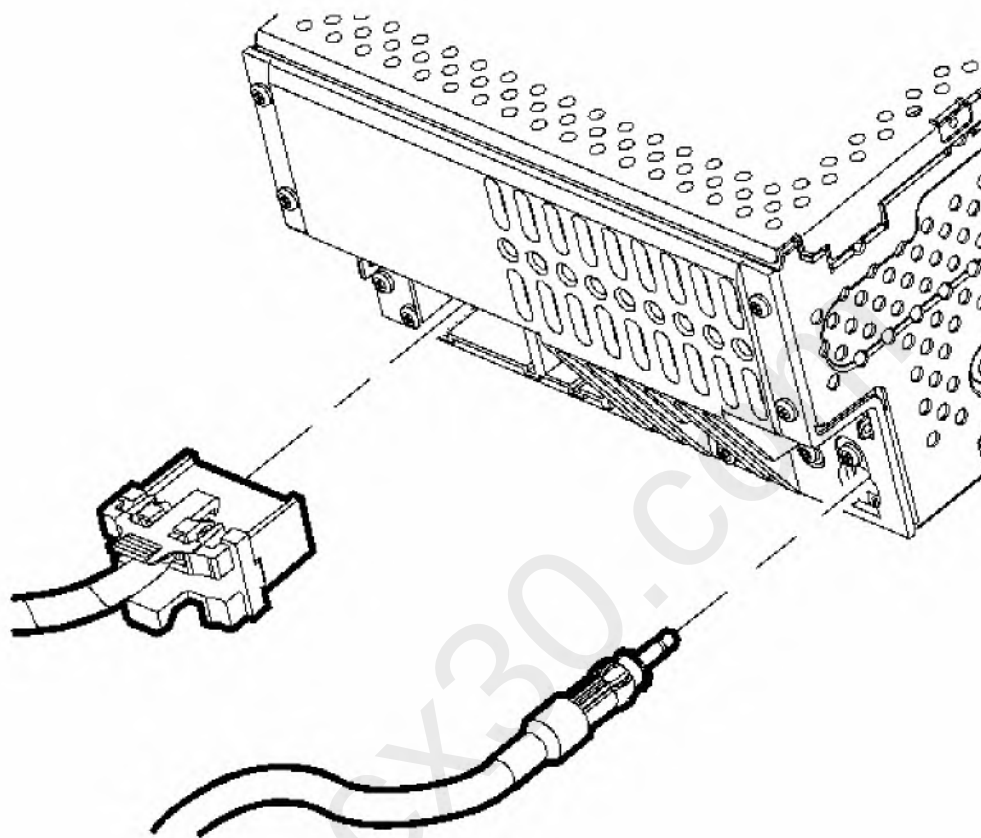


Fig. 16: View of Radio Electrical Connectors & Antenna
Courtesy of GENERAL MOTORS CORP.

3. Disconnect the radio electrical connectors and the antenna.

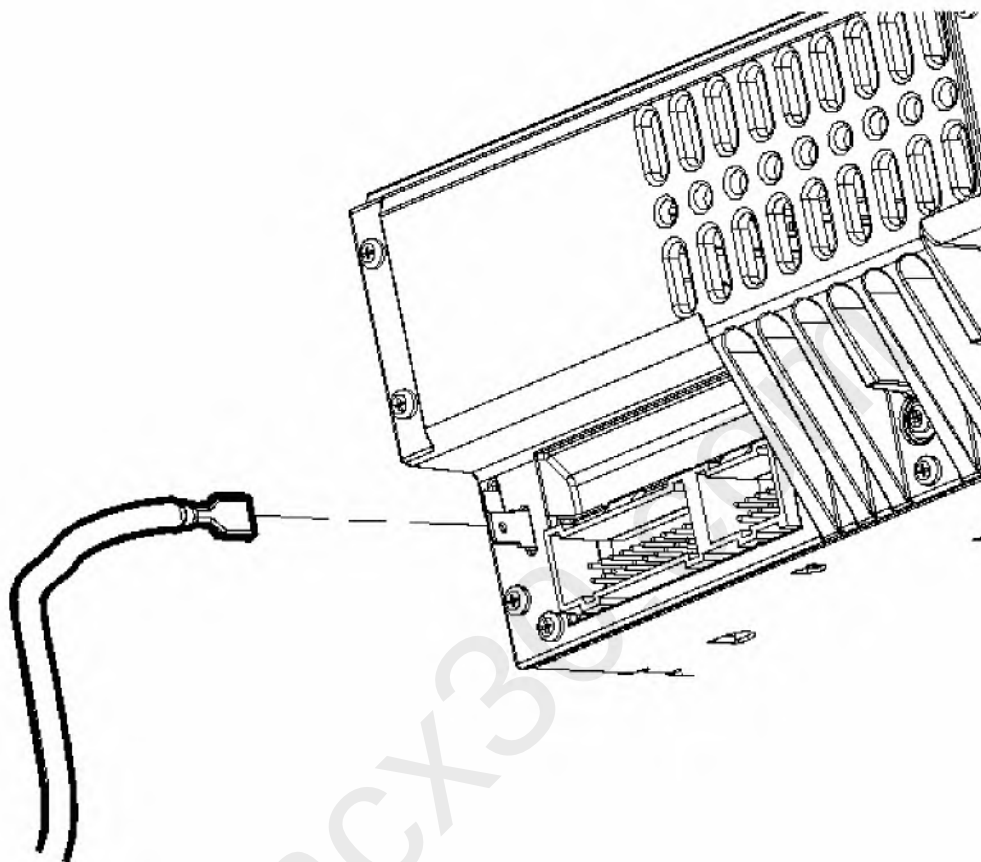


Fig. 17: View of Ground Strap
Courtesy of GENERAL MOTORS CORP.

4. Disconnect the ground strap.
5. Remove the radio.

Installation Procedure

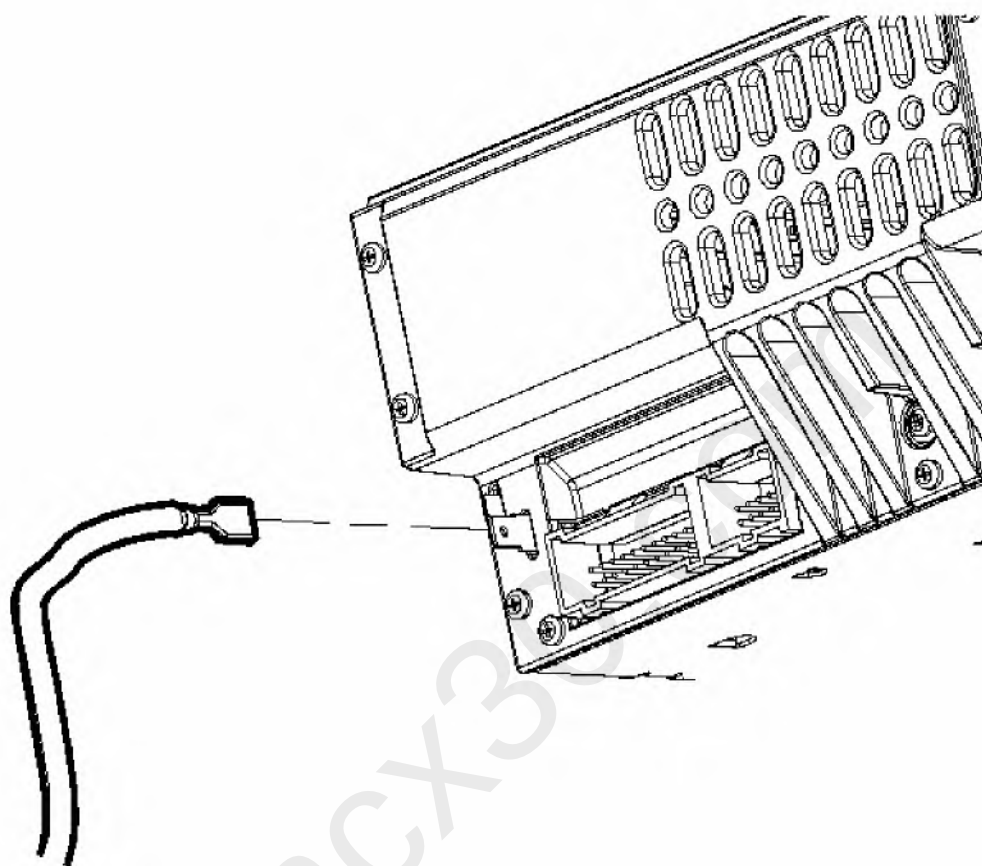


Fig. 18: View of Ground Strap
Courtesy of GENERAL MOTORS CORP.

1. Position the radio in the vehicle.
2. Connect the ground strap.

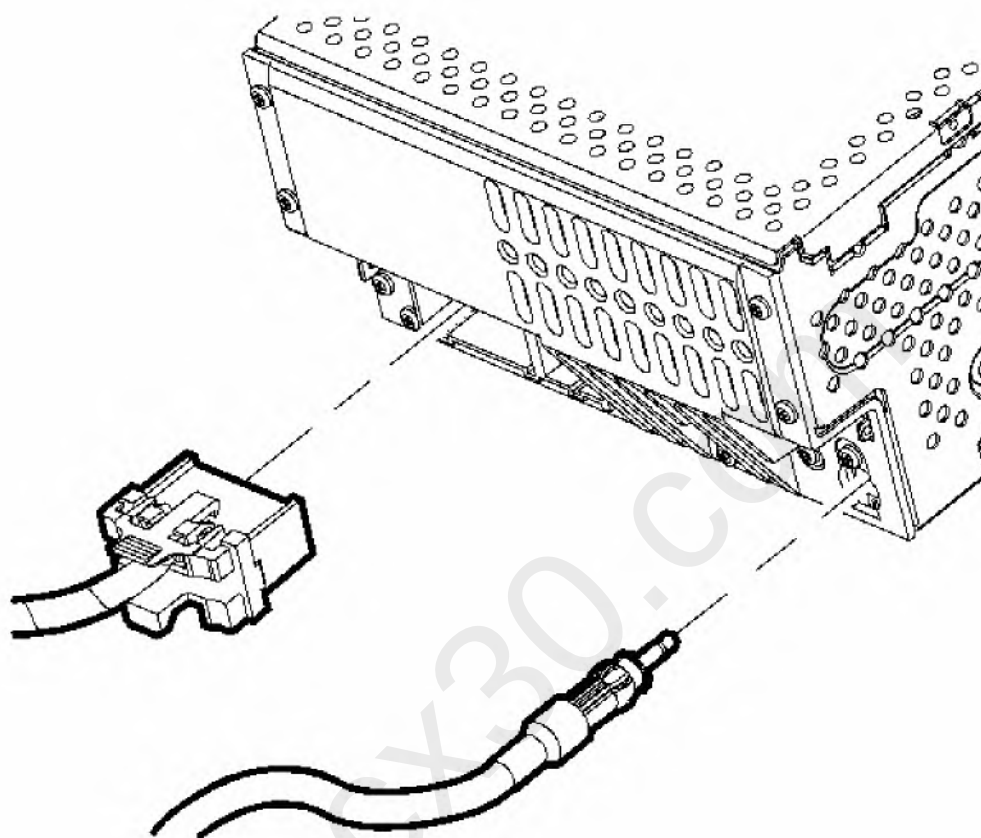


Fig. 19: View of Radio Electrical Connectors & Antenna
Courtesy of GENERAL MOTORS CORP.

3. Connect the electrical connectors and the antenna.

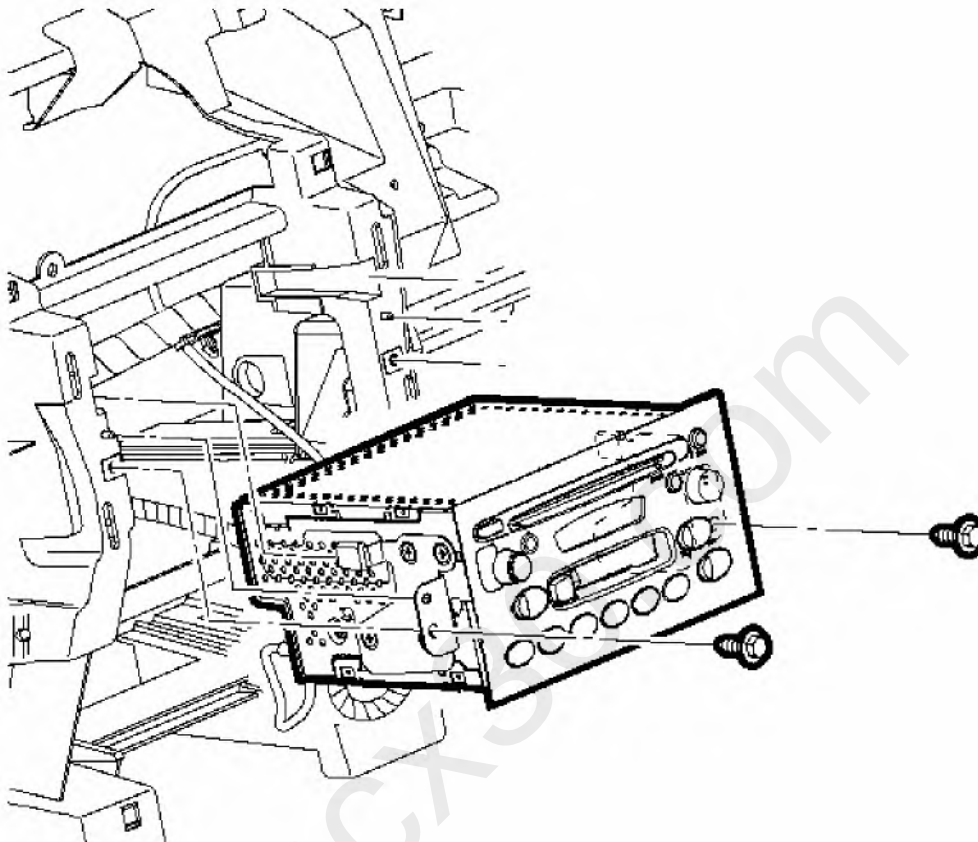


Fig. 20: View of Radio & Screws
Courtesy of GENERAL MOTORS CORP.

NOTE: Refer to Fastener Notice in Cautions and Notices.

4. Install the radio screws.

Tighten: Tighten the screws to 2.5 N.m (22 lb in).

5. Install the I/P center trim bezel. Refer to Trim Bezel Replacement - Center in Instrument Panel, Gages, and Console.
6. Set up the radio. Refer to Radio Setup.

Removal Procedure

IMPORTANT: Do not exchange digital radio receivers between vehicles. Exchanging digital receivers between vehicles will activate the digital radio theftlock. "XM theftlock" will be displayed.

1. Remove the left rear trim panel. Refer to Trim Panel Replacement - Rear Quarter Lower in Interior Trim.

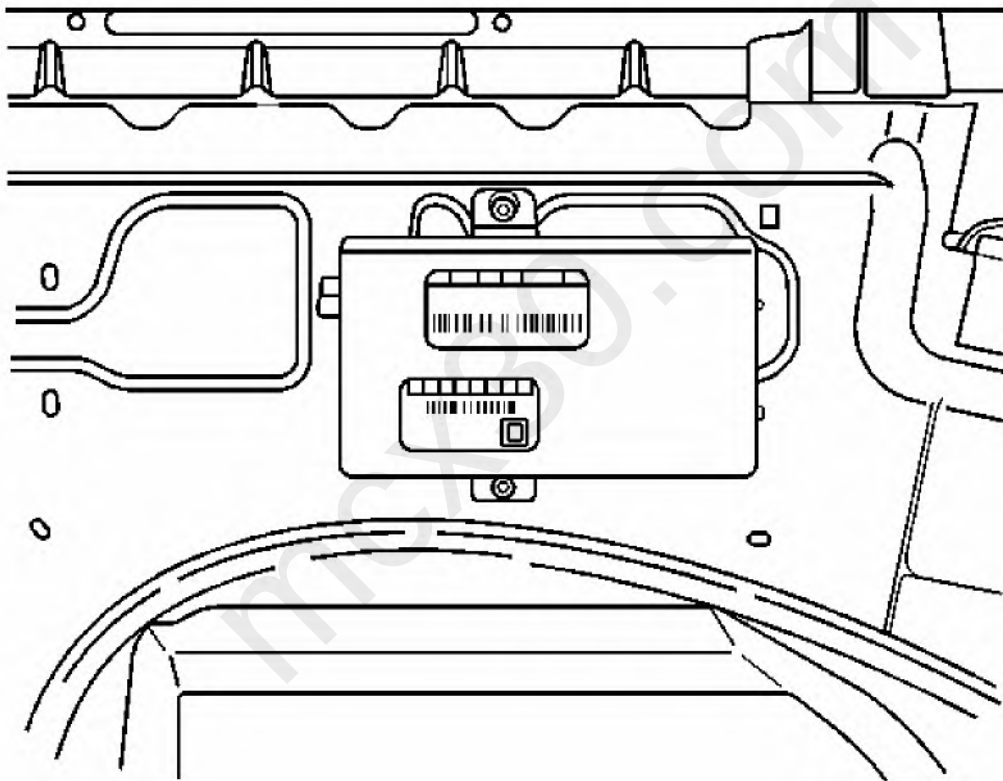


Fig. 21: View Of XM Radio Receiver, Bracket & Bracket Nuts
Courtesy of GENERAL MOTORS CORP.

2. Remove the receiver bracket nuts.
3. Remove the receiver from the bracket.
4. Disengage the electrical connector and the antenna connectors from the XM radio receiver.

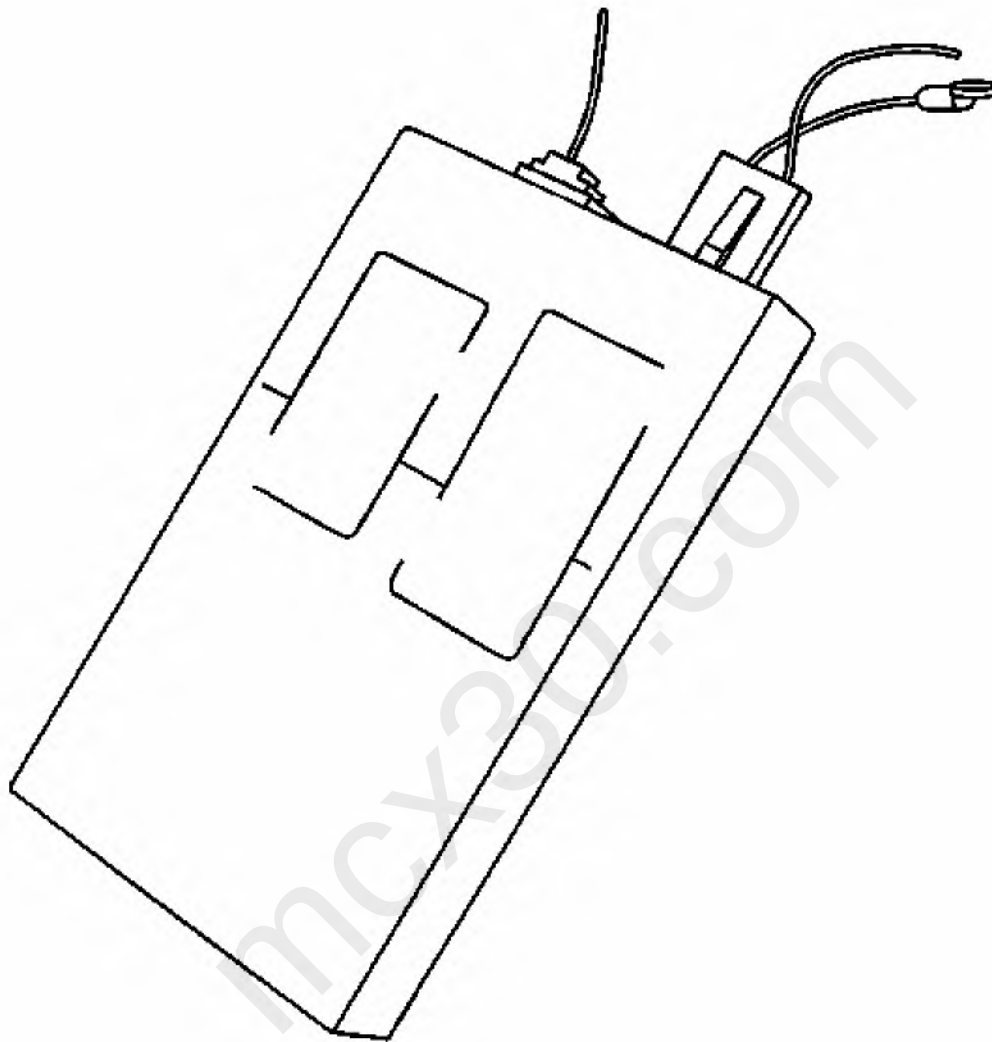


Fig. 22: Identifying XM Digital Radio Receiver
Courtesy of GENERAL MOTORS CORP.

5. Remove the XM digital radio receiver from the vehicle.

Installation Procedure

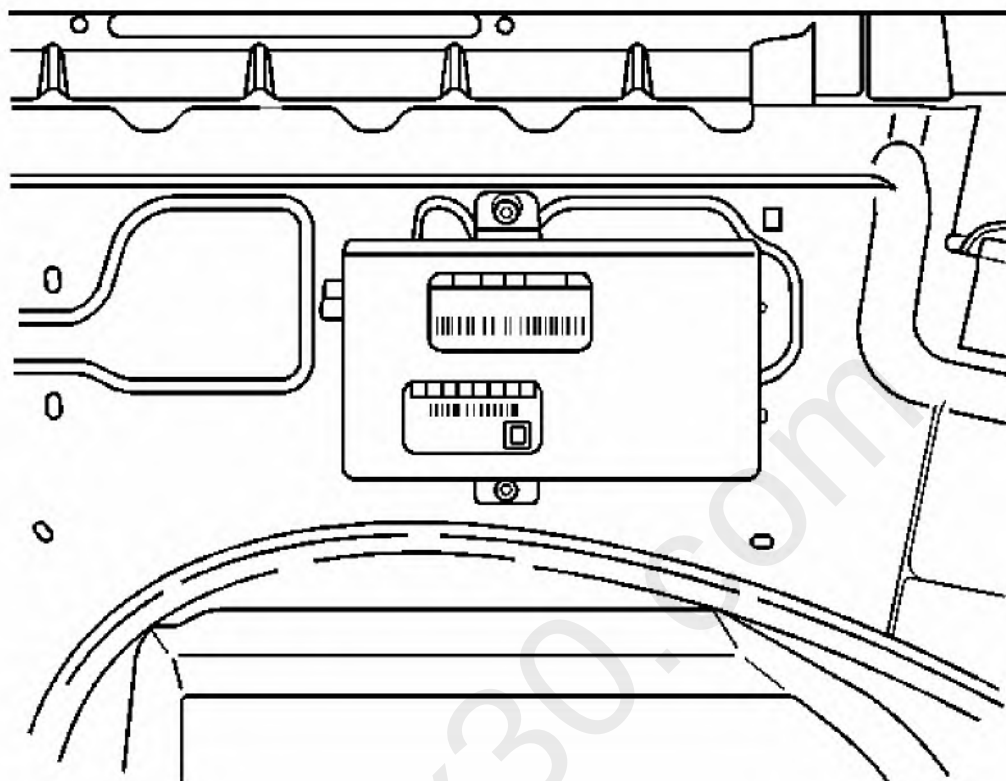


Fig. 23: View Of XM Radio Receiver, Bracket & Bracket Nuts
Courtesy of GENERAL MOTORS CORP.

1. Install the XM digital radio receiver to the receiver bracket.

NOTE: Refer to Fastener Notice in Cautions and Notices.

2. Install the radio receiver nuts.

Tighten: Tighten the nuts to 4 N.m (35 lb in).

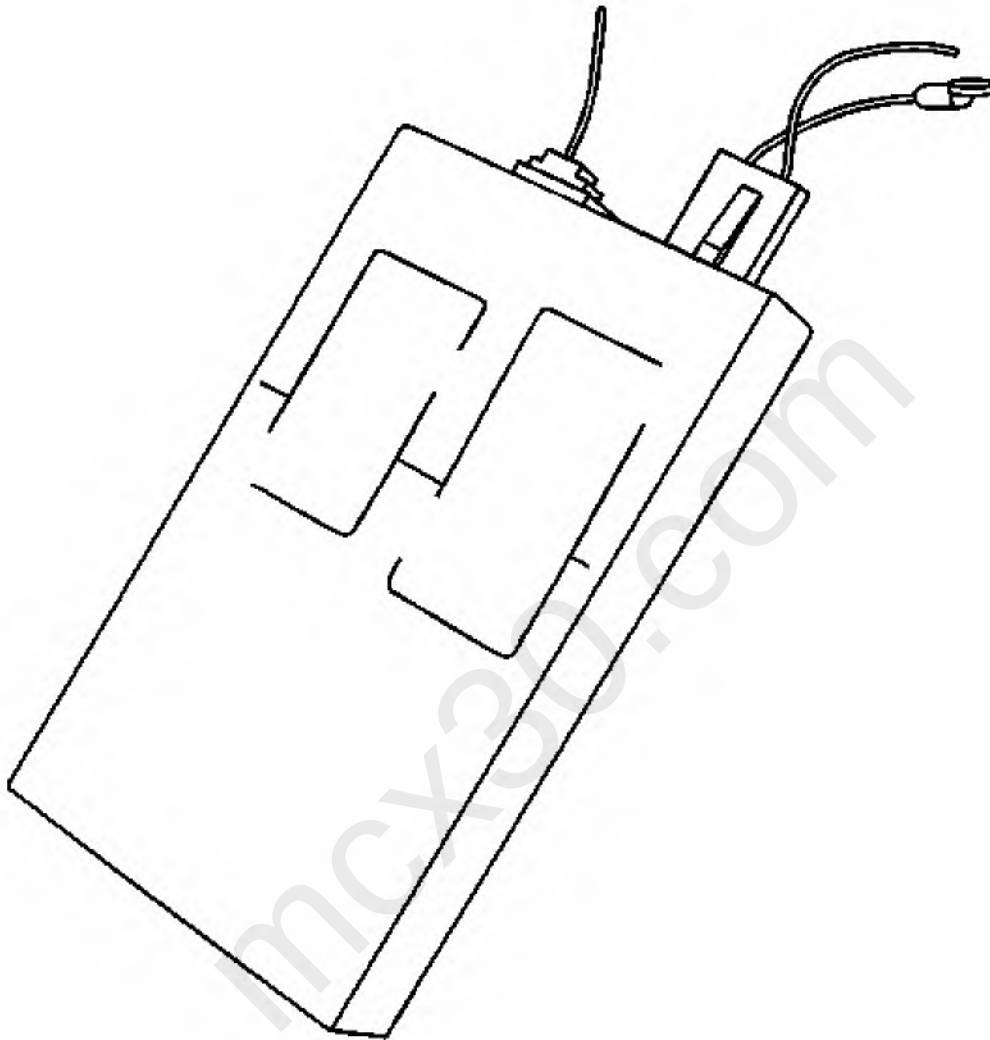


Fig. 24: Identifying XM Digital Radio Receiver
Courtesy of GENERAL MOTORS CORP.

3. Connect the electrical connector and the antenna connectors to the XM radio receiver.
4. Install the left rear trim panel. Refer to **Trim Panel Replacement - Rear Quarter Lower** in Interior Trim.
5. Perform the setup procedure for the digital radio receiver. Refer to **Digital Radio Receiver Setup**.

AMPLIFIER REPLACEMENT

Removal Procedure

1. Remove the rear seat. Refer to **Seat Replacement - Rear** in Seats.

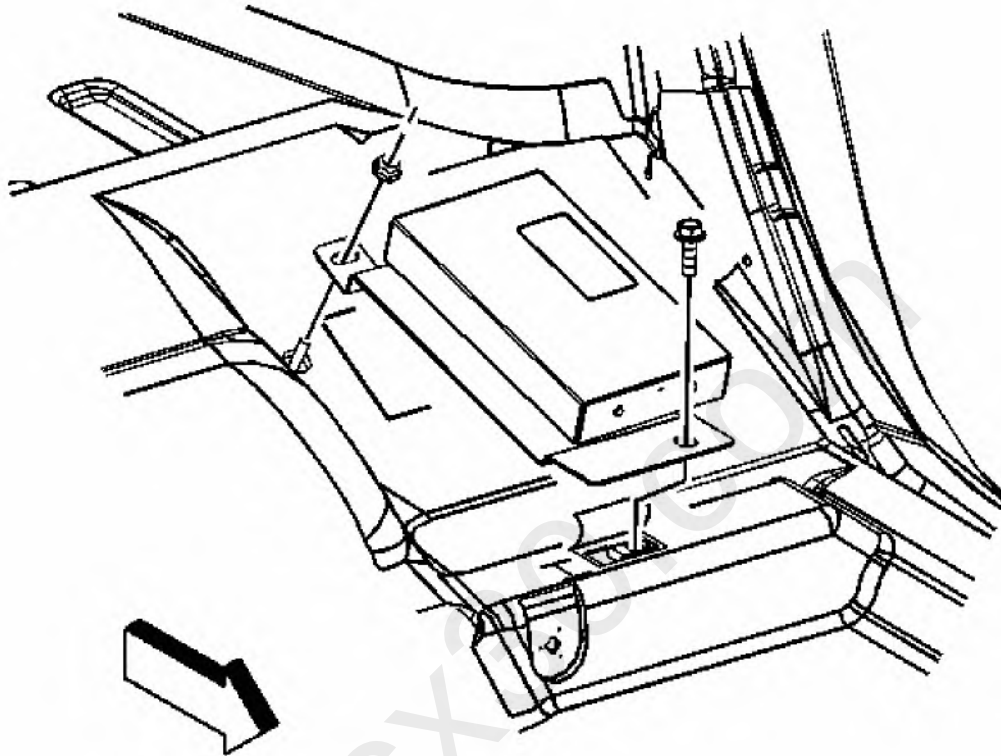


Fig. 25: View of Amplifier & Fasteners
Courtesy of GENERAL MOTORS CORP.

2. Remove the fasteners that hold the amplifier.
3. Disconnect the electrical connectors from the amplifier.
4. Remove the amplifier from the vehicle.

Installation Procedure

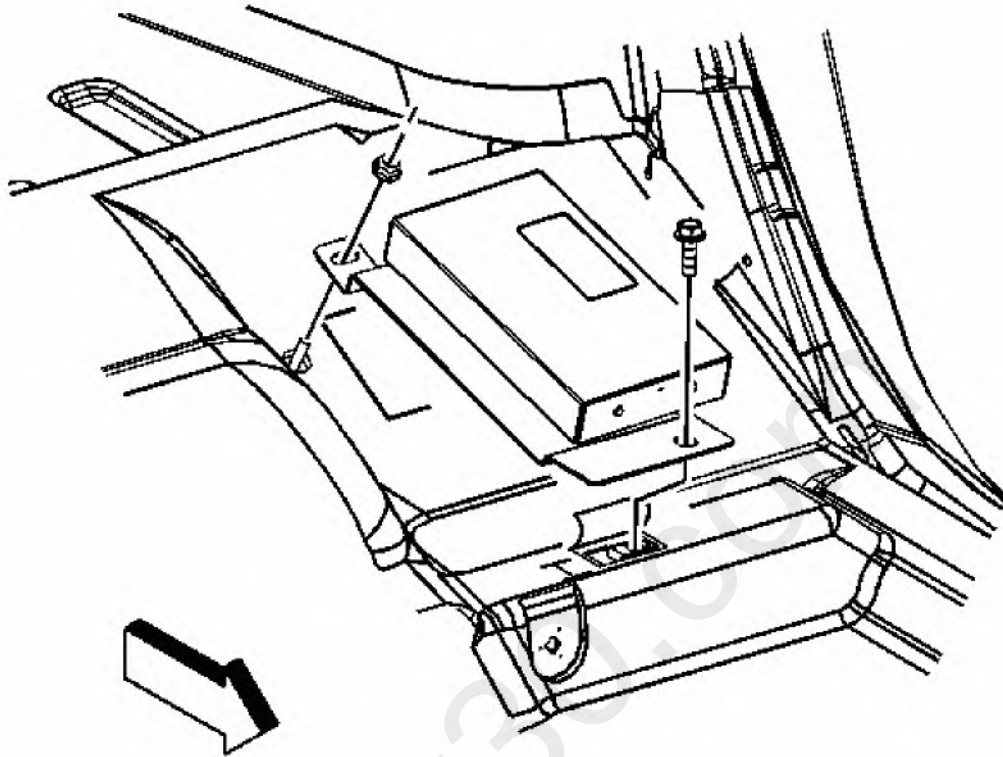


Fig. 26: View of Amplifier & Fasteners
Courtesy of GENERAL MOTORS CORP.

1. Install the amplifier in the vehicle
2. Install the electrical connectors to the amplifier.

NOTE: Refer to Fastener Notice in Cautions and Notices.

3. Install the fasteners to the amplifier.

Tighten: Tighten the fasteners to 3 N.m (26 lb in).

4. Install the rear seat. Refer to Seat Replacement - Rear in Seats.

COMPACT DISC CARE AND CLEANING

Care of CDs

Handle CDs carefully. Store them in their original cases or other protective cases and away from direct sunlight and dust. The CD player scans the bottom surface of the disc. If the

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surface of a CD is damaged, such as cracked, broken, scratched, or wrinkled labeling, the CD will not play properly or not at all. If the surface of a CD is soiled, take a soft, lint free cloth or dampen a clean, soft cloth in a mild, neutral detergent solution mixed with water, and clean it. Make sure the wiping process starts from the center to the edge. Do not touch the bottom side of a CD while handling it. This could damage the surface. Pick up CDs by grasping the outer edges or the edge of the hole and the outer edge.

Care of the CD Player

The use of CD lens cleaners for CD players is not advised, due to the risk of contaminating the internal lens of the CD optics with lubricants.

Stuck CDs

Interrupting the battery power by pulling the fuse will sometimes release a stuck CD. If a CD is stuck, and removed, inspect it for warps, cracks, etc. If the CD is damaged, do not replace the radio.

Labeling CDs

Paper labels can eventually warp and wrinkle, and this will cause the disc to jam inside the CD player. Try labeling the top of the discs with a soft magic marker instead.

FIXED ANTENNA MAST REPLACEMENT

Removal Procedure

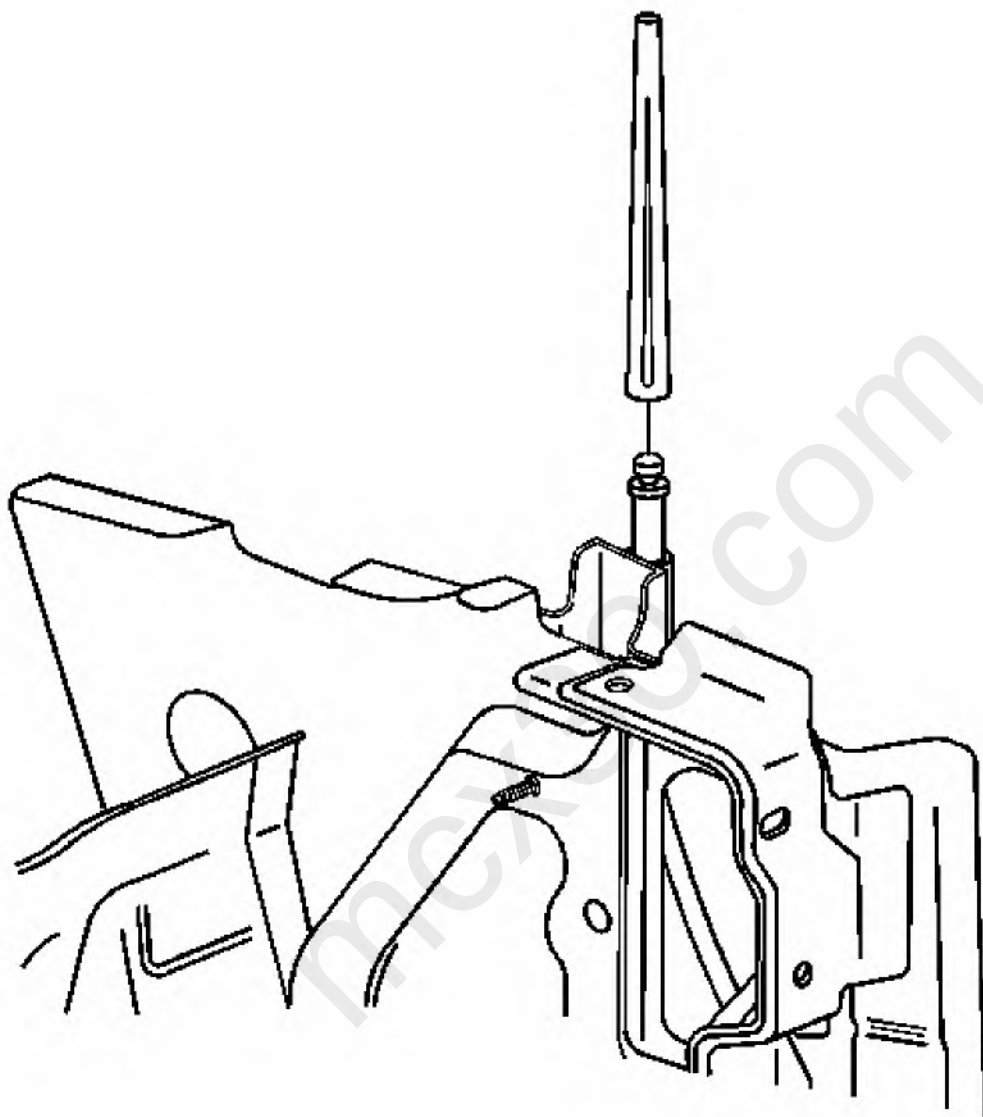


Fig. 27: View of Fixed Antenna Mast
Courtesy of GENERAL MOTORS CORP.

Turn the antenna mast counterclockwise to remove the mast.

Installation Procedure

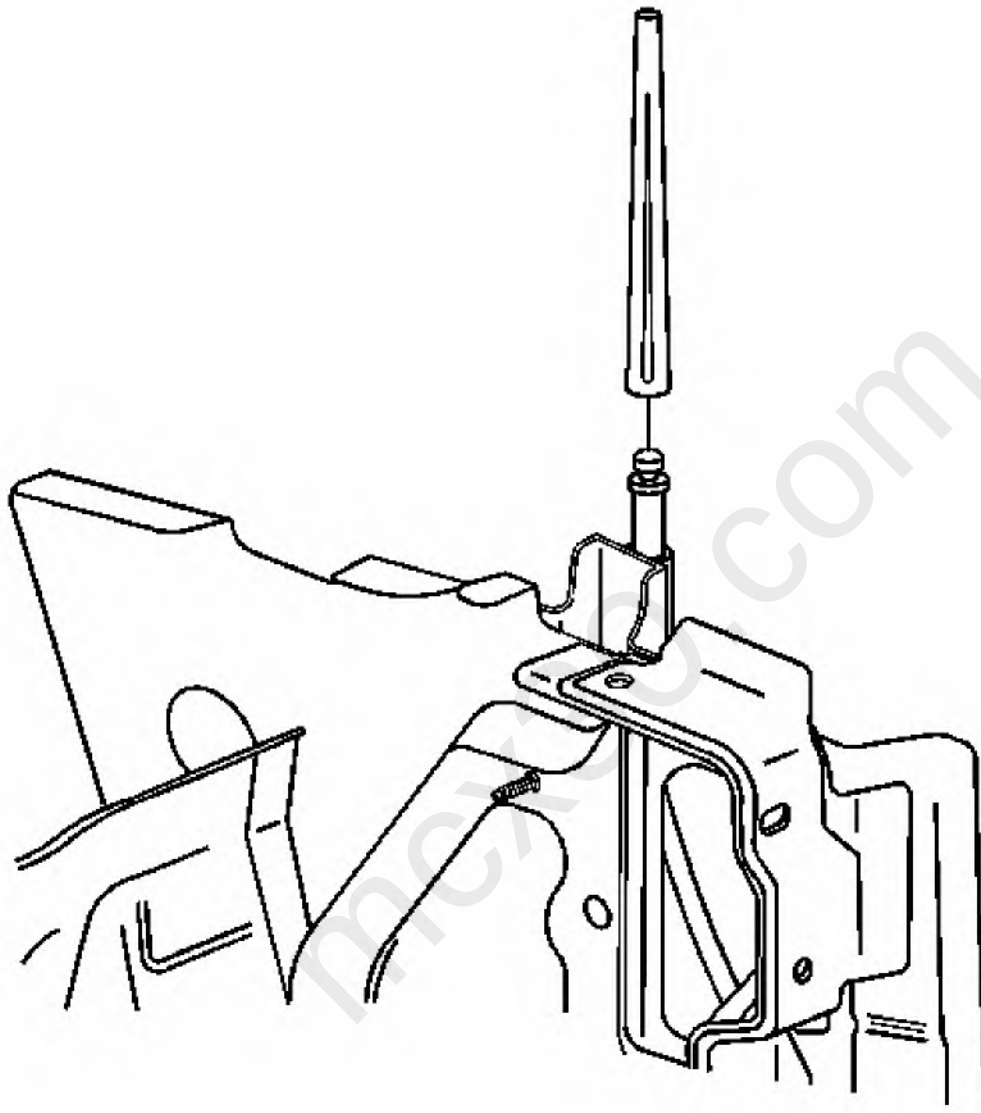


Fig. 28: View of Fixed Antenna Mast
Courtesy of GENERAL MOTORS CORP.

NOTE: Refer to Fastener Notice in Cautions and Notices.

Install the antenna mast. Turn the mast clockwise to tighten.

Tighten: Tighten the mast to 10 N.m (89 lb in).

FIXED ANTENNA REPLACEMENT

Removal Procedure

1. Remove the front fender. Refer to **Fender Replacement - Front** in Body Front End.

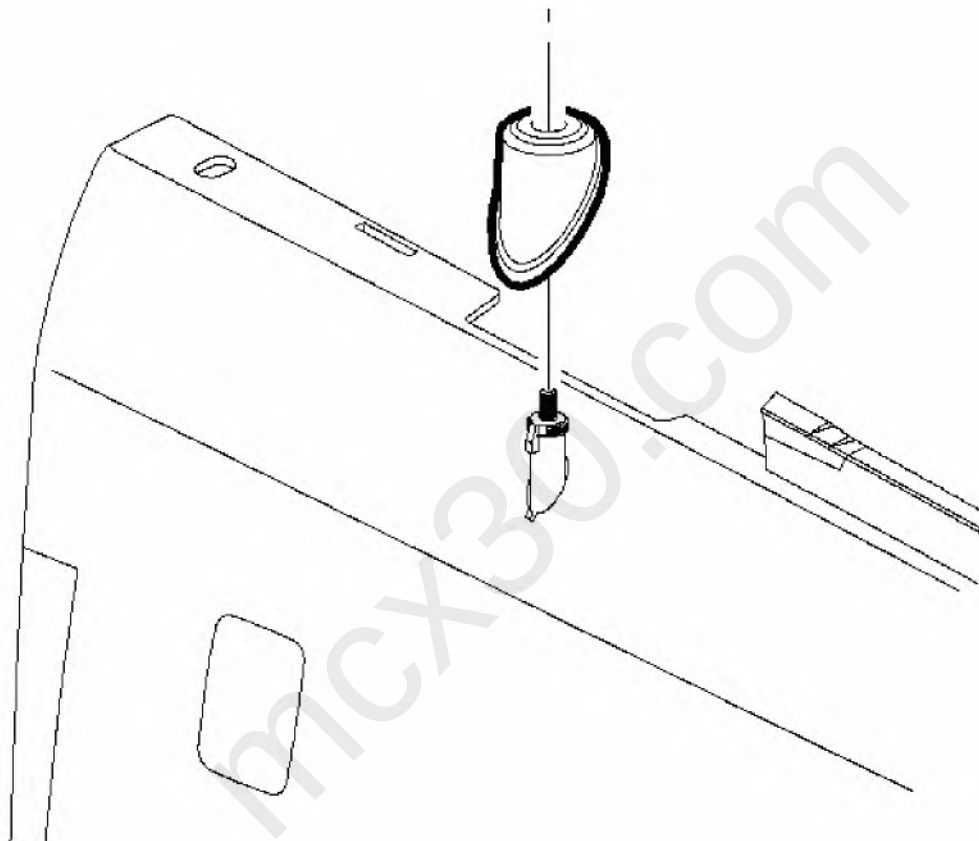


Fig. 29: View of Antenna Mast Bezel
Courtesy of GENERAL MOTORS CORP.

2. Pull to remove the antenna mast bezel.

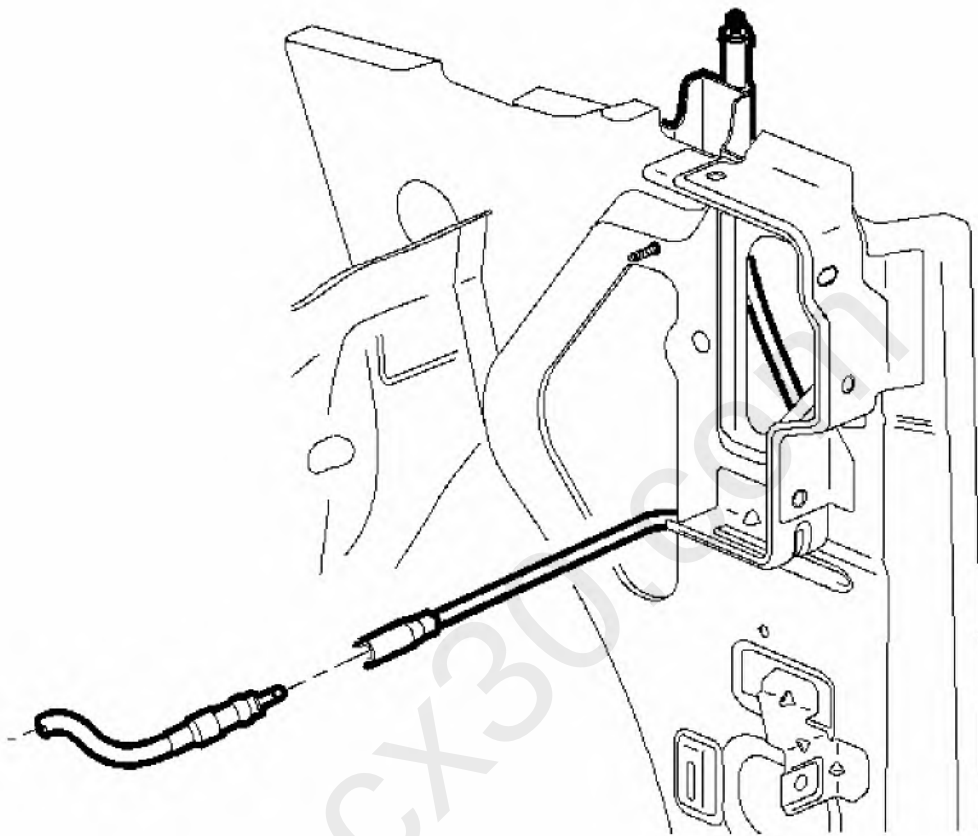


Fig. 30: View of Antenna Lead-in To Antenna Base
Courtesy of GENERAL MOTORS CORP.

3. Remove the antenna mast from the antenna base by turning counterclockwise.
4. Disconnect the antenna lead-in from the antenna base.

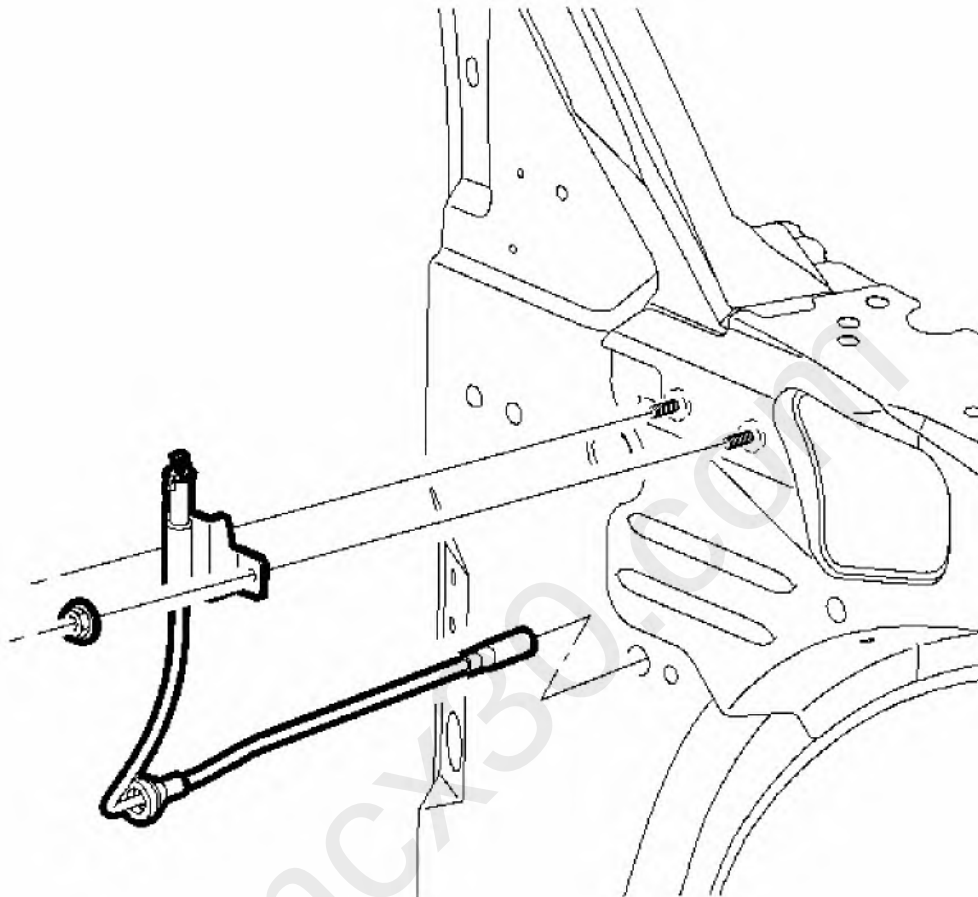


Fig. 31: View of Antenna Base & Fasteners
Courtesy of GENERAL MOTORS CORP.

5. Remove the antenna base fasteners from the bracket on the antenna base.
6. Remove the antenna base.

Installation Procedure

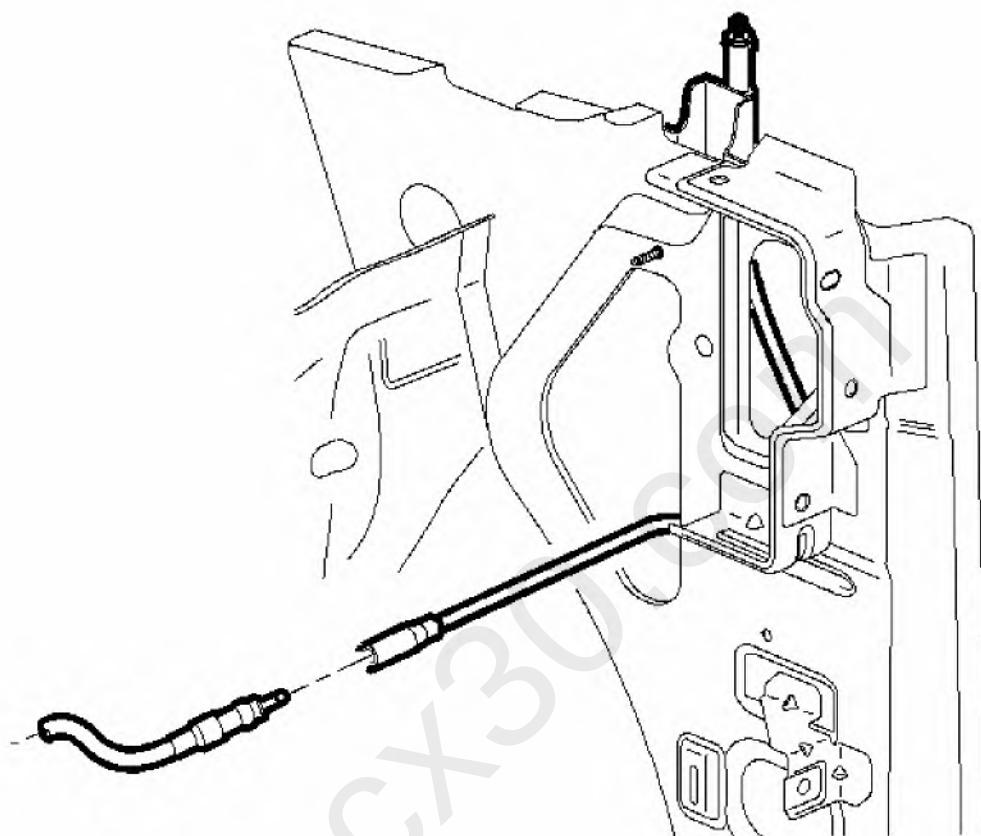


Fig. 32: View of Antenna Lead-in To Antenna Base
Courtesy of GENERAL MOTORS CORP.

1. Connect the antenna lead-in to the antenna base.

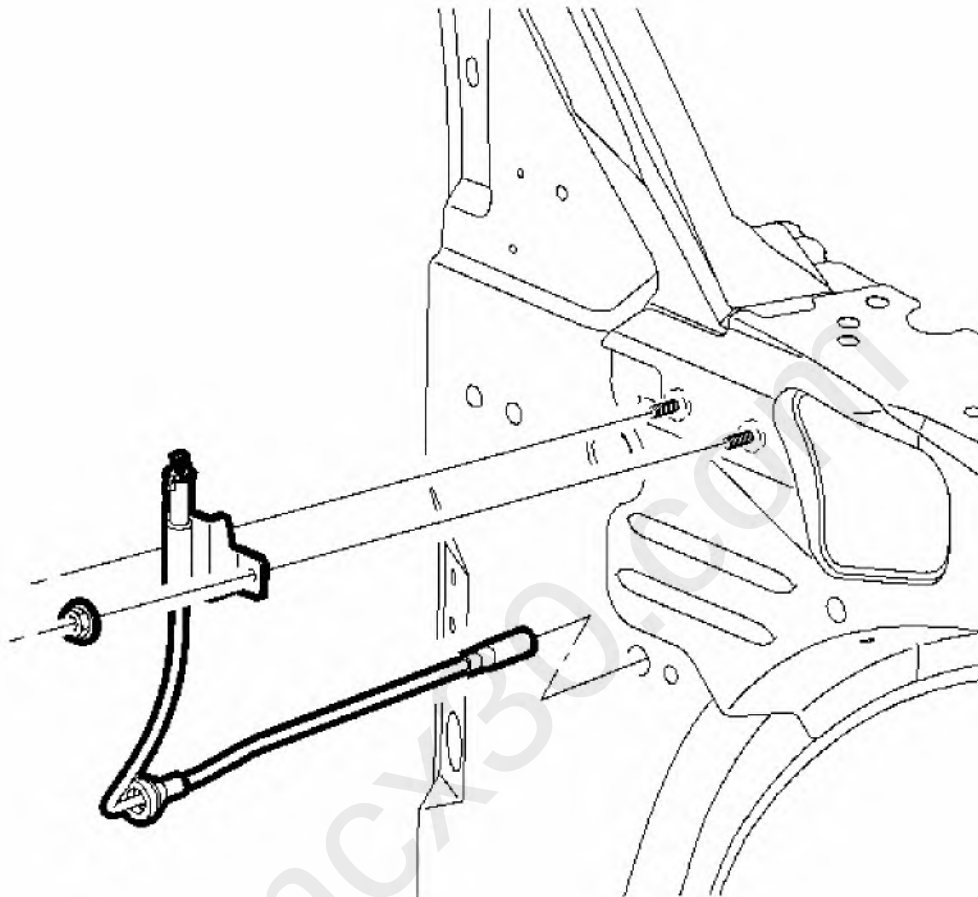


Fig. 33: View of Antenna Base & Fasteners
Courtesy of GENERAL MOTORS CORP.

2. Install the antenna base.

NOTE: Refer to Fastener Notice in **Cautions and Notices**.

3. Install the screws to the bracket on the antenna base.

Tighten: Tighten the screws to 10 N.m (89 lb in).

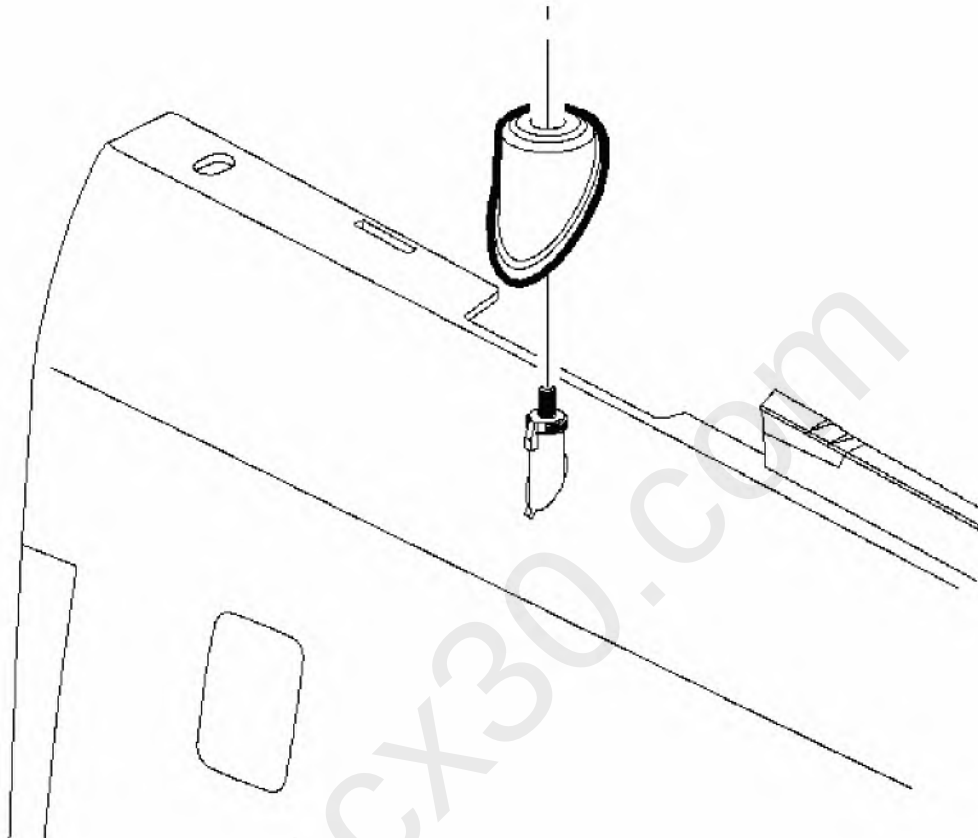


Fig. 34: View of Antenna Mast Bezel
Courtesy of GENERAL MOTORS CORP.

4. Install the antenna bezel.
5. Install the antenna mast to the antenna base by turning clockwise.

Tighten: Tighten the mast to 10 N.m (89 lb in).

6. Install the front fender. Refer to **Fender Replacement - Front** in Body Front End.

ANTENNA REPLACEMENT - DIGITAL RADIO

Removal Procedure

1. Remove the headliner. Refer to **Headliner Replacement** in Interior Trim.

2. Remove the attachment nut from the antenna.
3. Disconnect the cable from the antenna.

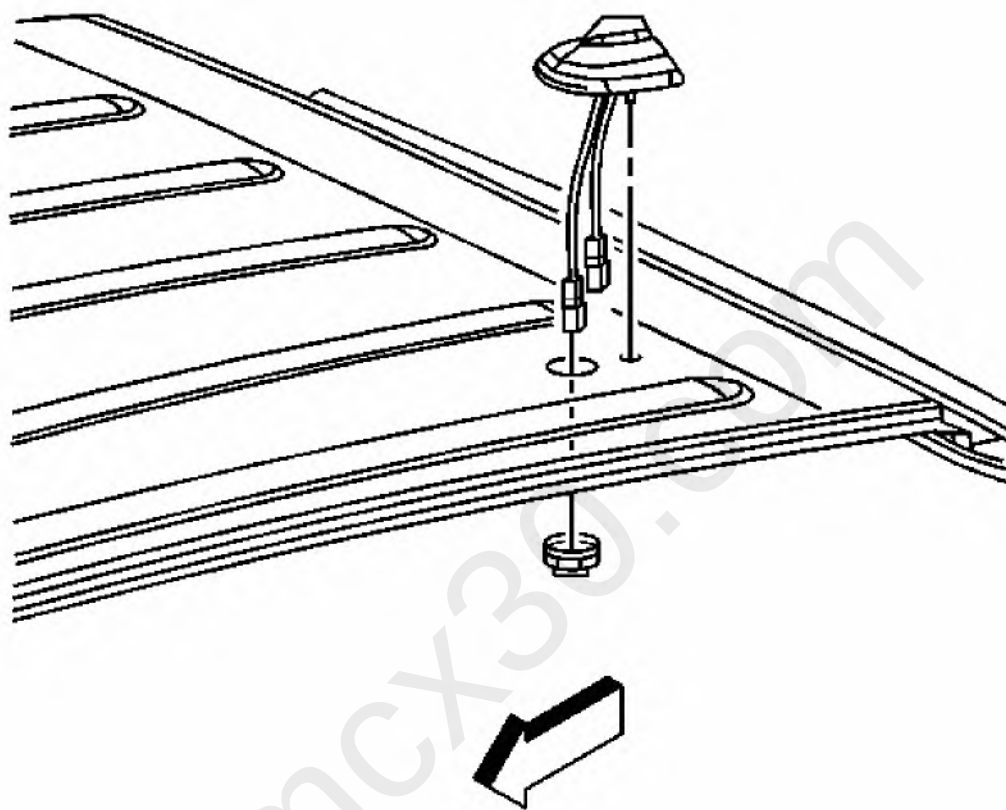


Fig. 35: View Of Antenna Base Assembly
Courtesy of GENERAL MOTORS CORP.

4. Remove the antenna from the vehicle.

Installation Procedure

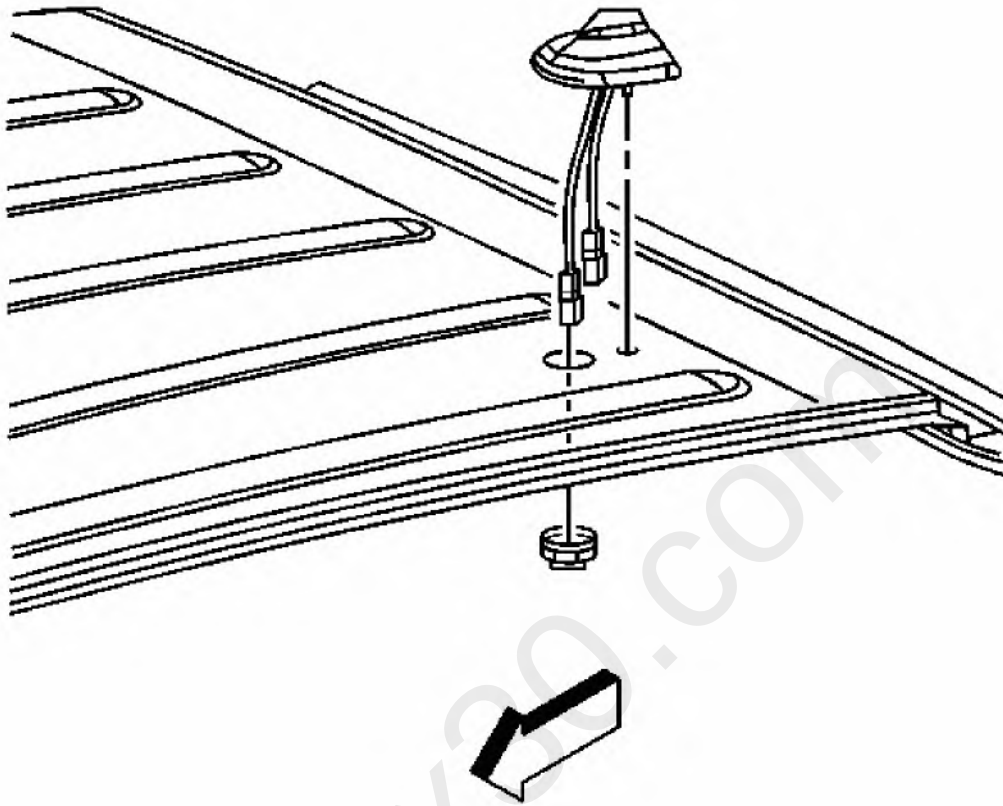


Fig. 36: View Of Antenna Base Assembly
Courtesy of GENERAL MOTORS CORP.

1. Install the antenna to the vehicle.

NOTE: Refer to Fastener Notice in Cautions and Notices.

2. Install the attachment nut to the antenna.

Tighten: Tighten the nut to 5 N.m (44 lb in).

3. Connect the cable to the antenna.
4. Install the headliner. Refer to Headliner Replacement in Interior Trim.

ANTENNA CABLE REPLACEMENT

Removal Procedure

1. Remove the instrument panel center trim plate. Refer to Trim Bezel Replacement -

Center in Instrument Panel, Gages, and Console.

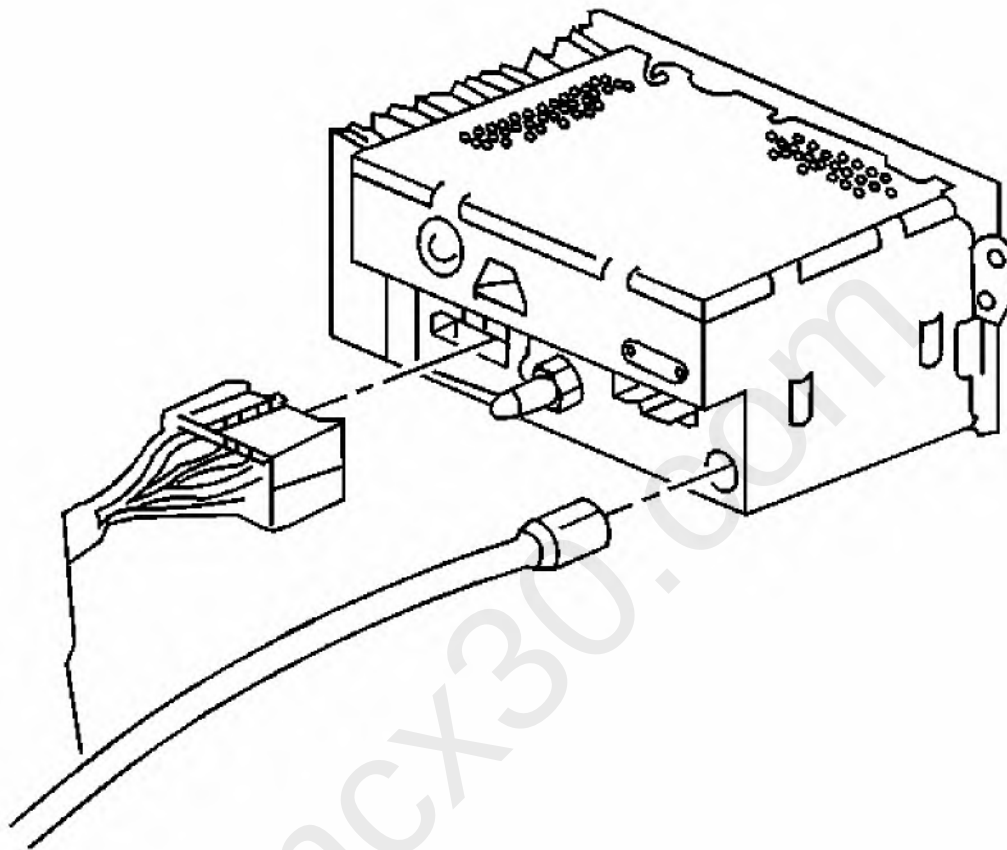


Fig. 37: Locating Electrical/Audio And Antenna Cable Connectors
Courtesy of GENERAL MOTORS CORP.

2. Disconnect the extension cable from the radio.

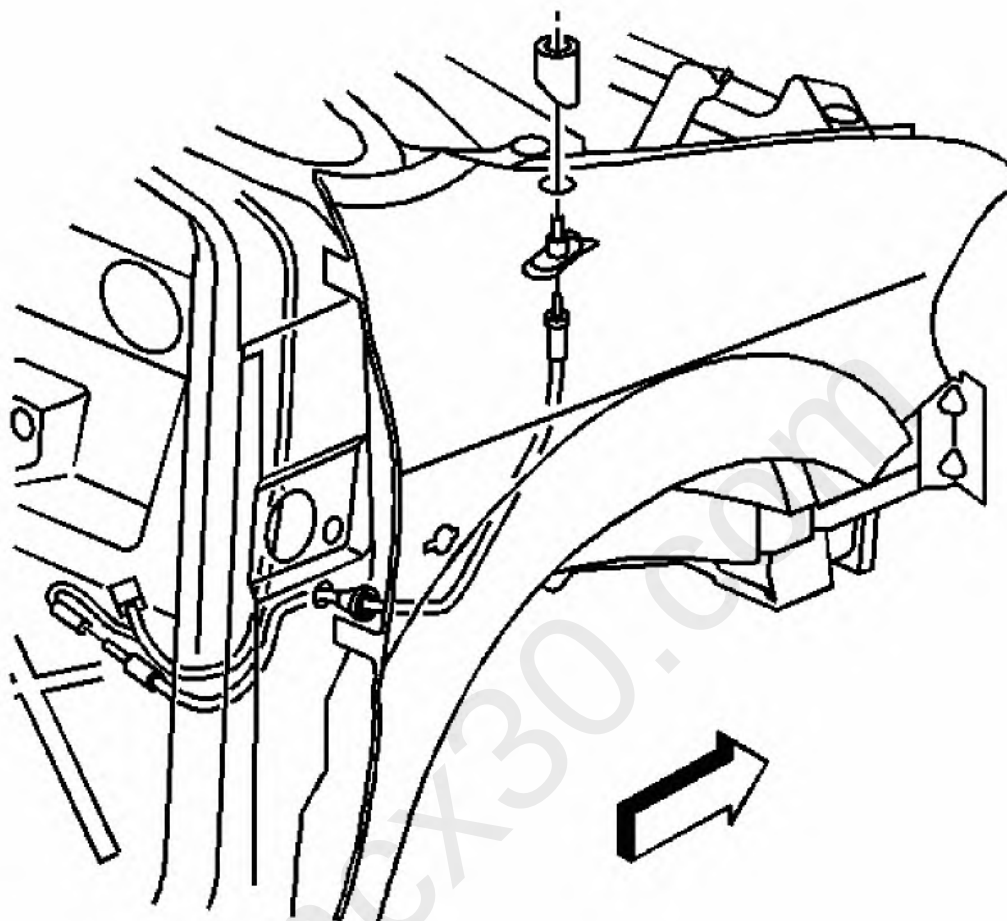


Fig. 38: Locating Antenna Extension Lead
Courtesy of GENERAL MOTORS CORP.

3. Disconnect the extension cable from the antenna. Refer to **Fixed Antenna Replacement**.

Installation Procedure

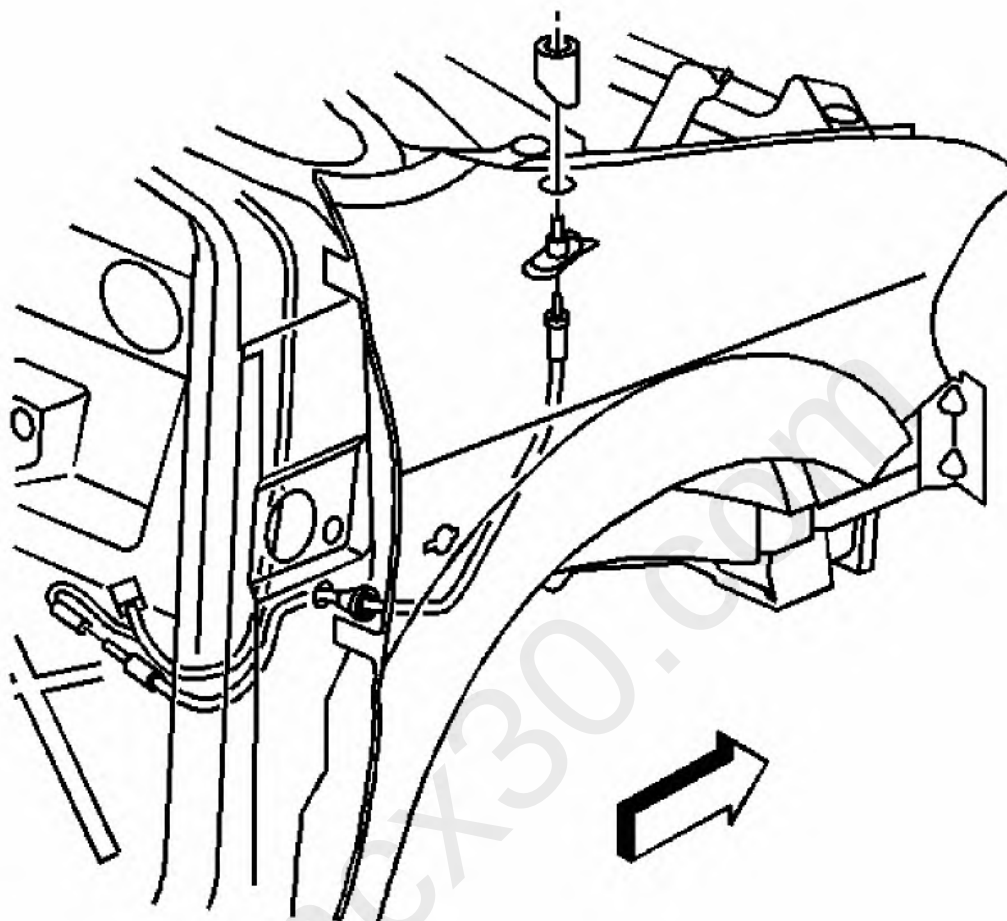


Fig. 39: Locating Antenna Extension Lead
Courtesy of GENERAL MOTORS CORP.

1. Connect the extension cable to the antenna. Refer to **Fixed Antenna Replacement**.

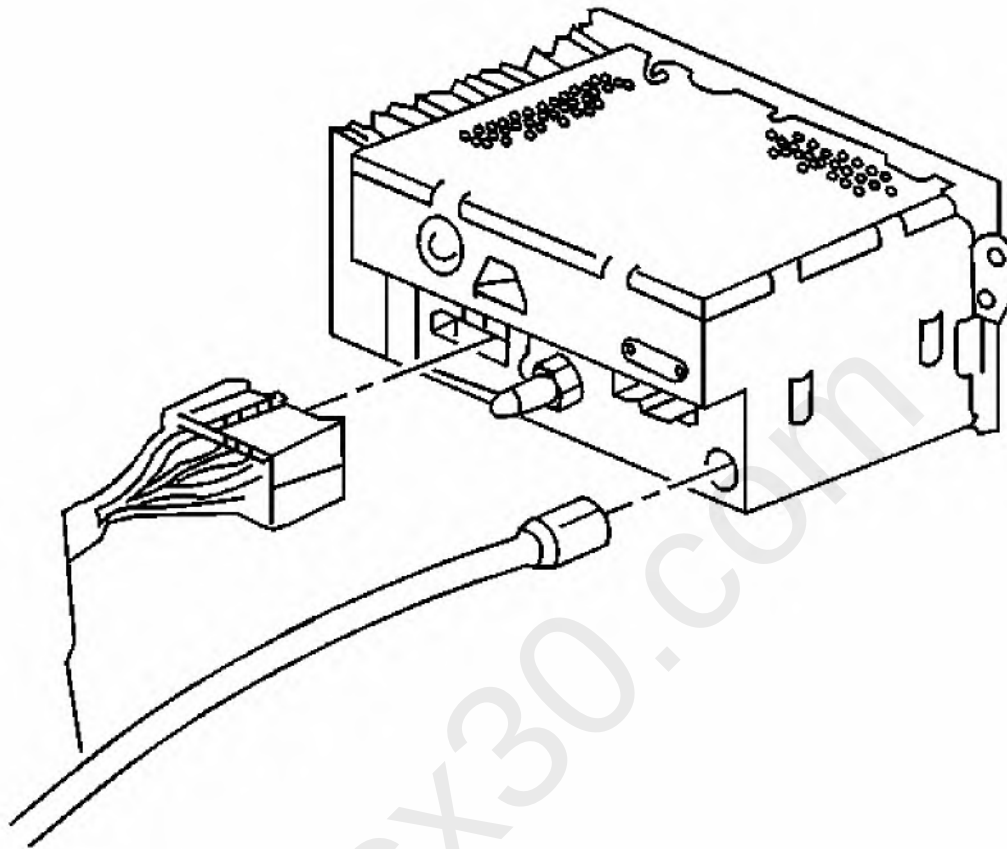


Fig. 40: Locating Electrical/Audio And Antenna Cable Connectors
Courtesy of GENERAL MOTORS CORP.

2. Connect the extension cable to the radio.
3. Install the instrument panel center trim plate. Refer to **Trim Bezel Replacement - Center** in Instrument Panel, Gages, and Console.

COAXIAL CABLE REPLACEMENT - DIGITAL RADIO

Removal Procedure

1. Remove the instrument panel center trim plate. Refer to **Trim Bezel Replacement - Center** in Instrument Panel, Gages, and Console.

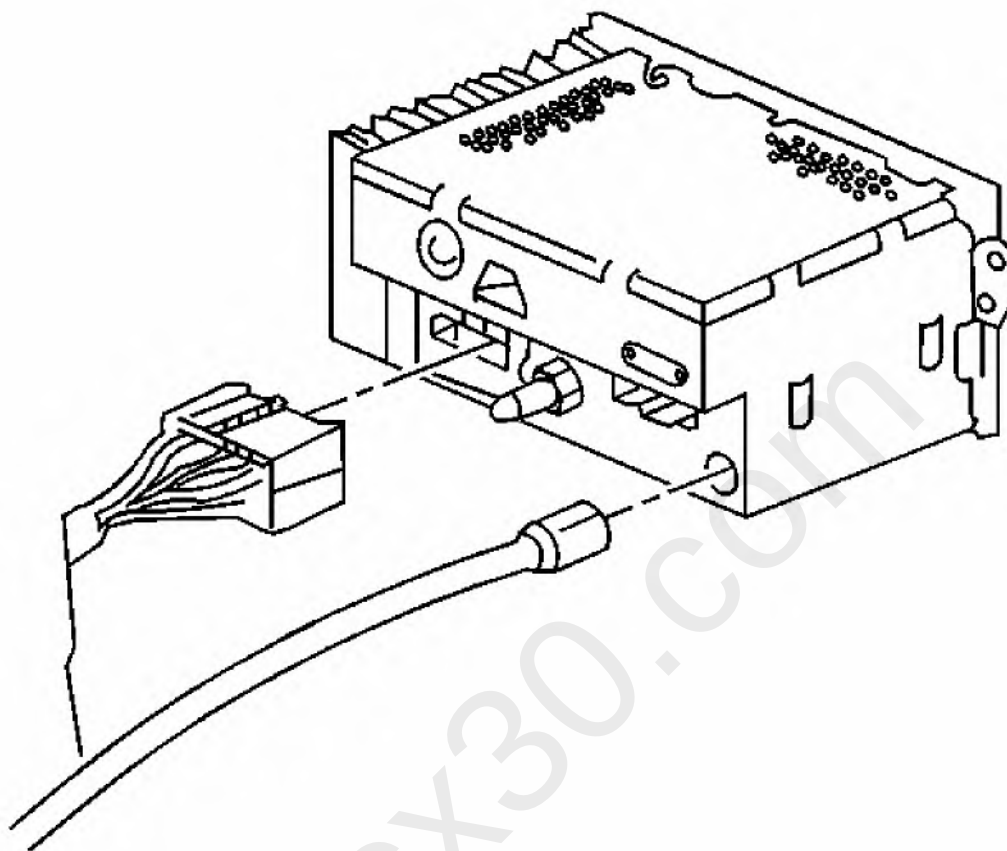


Fig. 41: Locating Electrical/Audio And Antenna Cable Connectors
Courtesy of GENERAL MOTORS CORP.

2. Disconnect the cable from the radio.

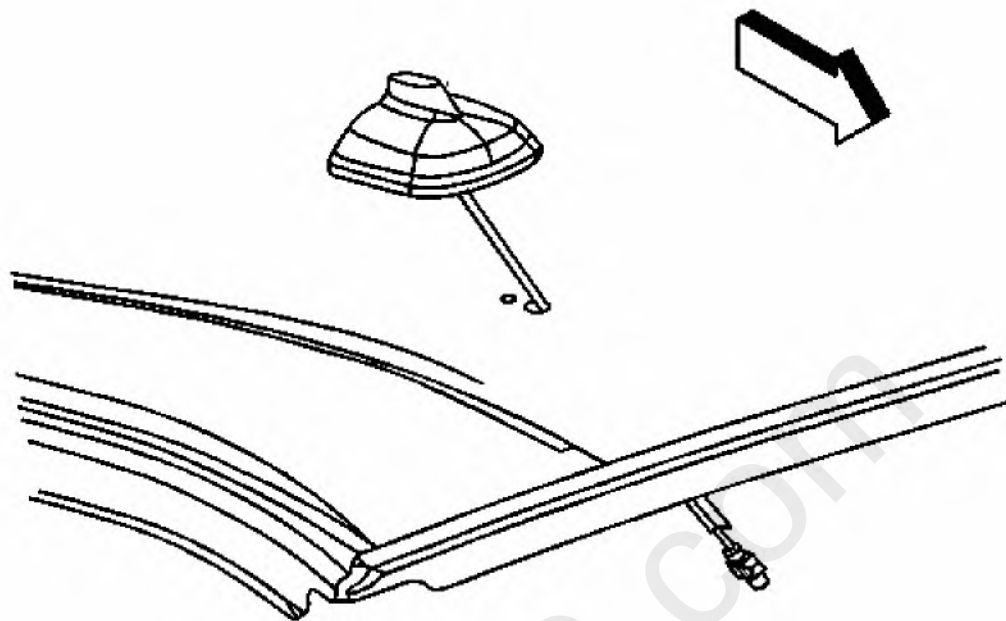


Fig. 42: View Of Digital Radio Antenna Assembly
Courtesy of GENERAL MOTORS CORP.

3. Disconnect the digital radio cable from the antenna. Refer to **Antenna Replacement - Digital Radio**.

Installation Procedure

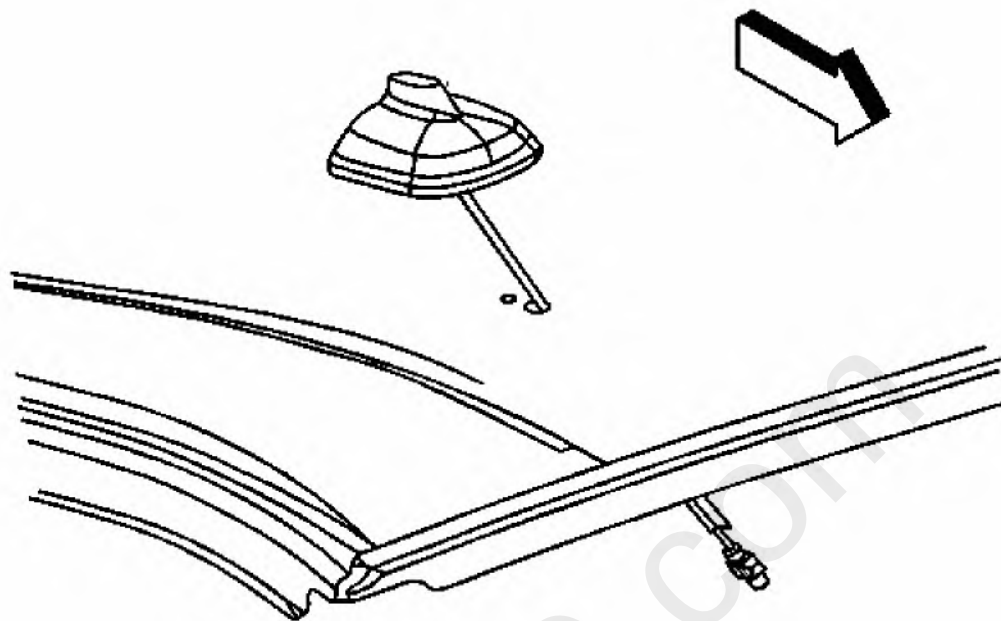


Fig. 43: View Of Digital Radio Antenna Assembly
Courtesy of GENERAL MOTORS CORP.

1. Connect the digital radio cable to the antenna. Refer to **Antenna Replacement - Digital Radio**.

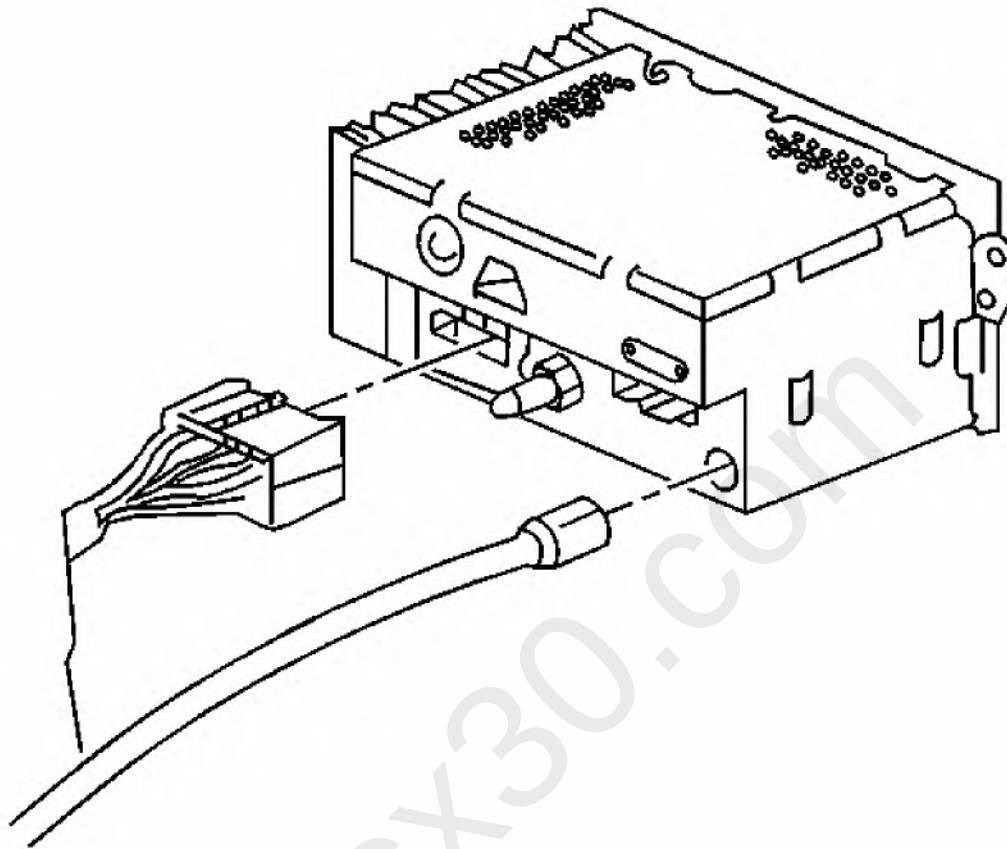


Fig. 44: Locating Electrical/Audio And Antenna Cable Connectors
Courtesy of GENERAL MOTORS CORP.

2. Connect the cable to the radio.
3. Install the instrument panel center trim plate. Refer to **Trim Bezel Replacement - Center** in Instrument Panel, Gages, and Console.

SPEAKER REPLACEMENT - FRONT DOOR

Removal Procedure

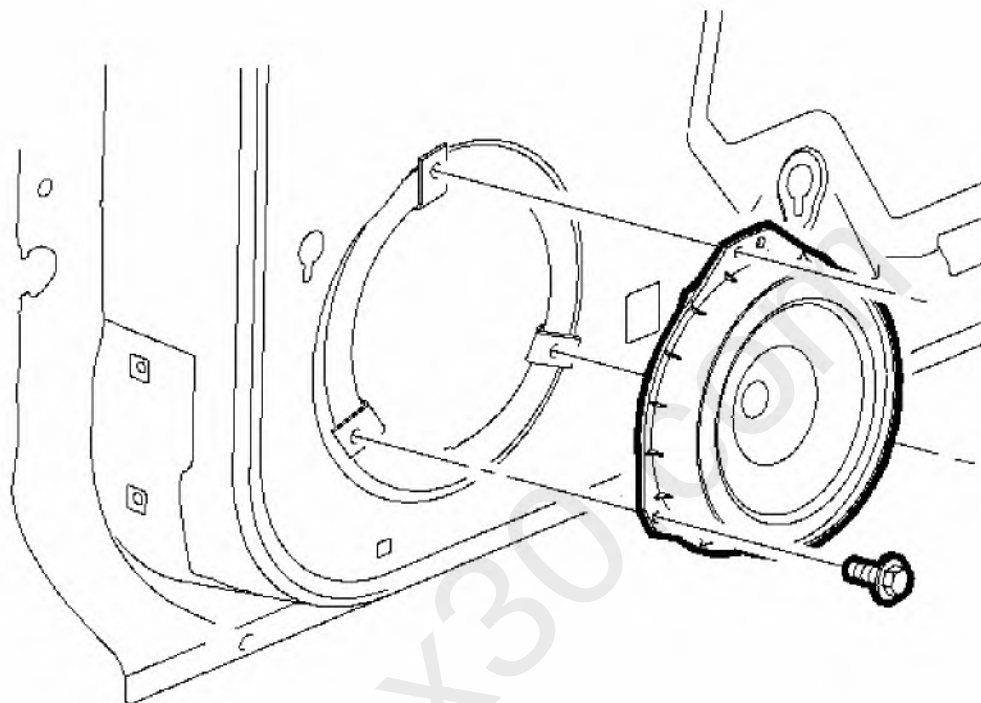


Fig. 45: View of Front Door Speaker & Screws
Courtesy of GENERAL MOTORS CORP.

1. Remove the front door trim panel. Refer to **Trim Panel Replacement - Side Front Door** in Doors.
2. Remove the front door speaker screws.
3. Disconnect the electrical connector from the speaker.
4. Remove the speaker from the front door.

Installation Procedure

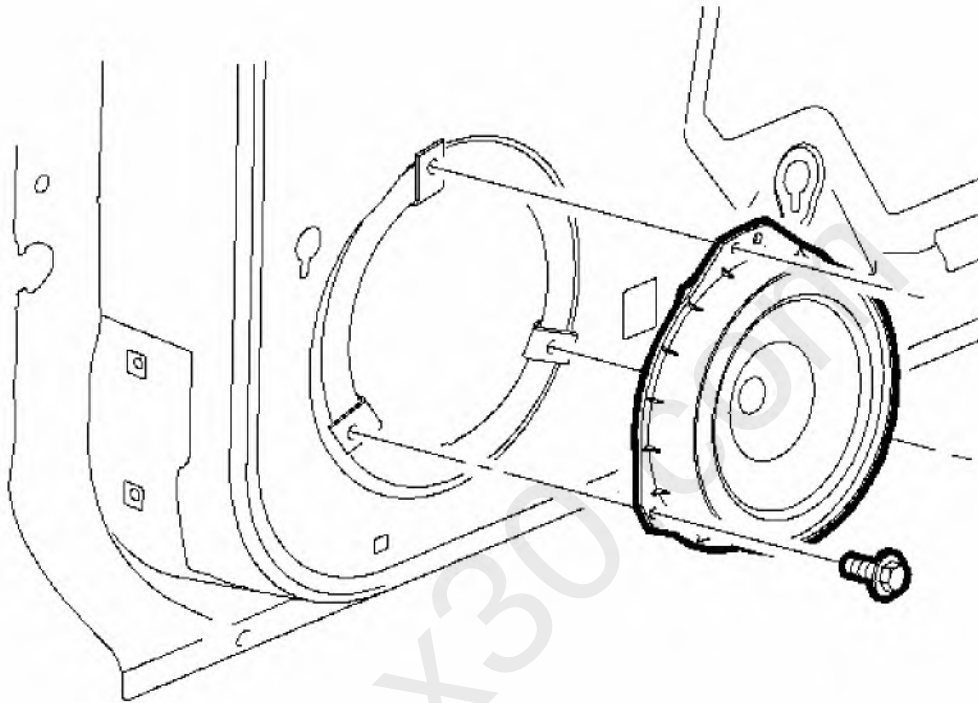


Fig. 46: View of Front Door Speaker & Screws
Courtesy of GENERAL MOTORS CORP.

1. Connect the electrical connector to the speaker.
2. Install the speaker to the front door.

NOTE: Refer to Fastener Notice in Cautions and Notices.

3. Install the screws to the speaker.

Tighten: Tighten the screws to 2.5 N.m (22 lb in).

4. Install the front door trim panel. Refer to Trim Panel Replacement - Side Front Door in Doors.

SPEAKER REPLACEMENT - FRONT SIDE DOOR UPPER

Removal Procedure

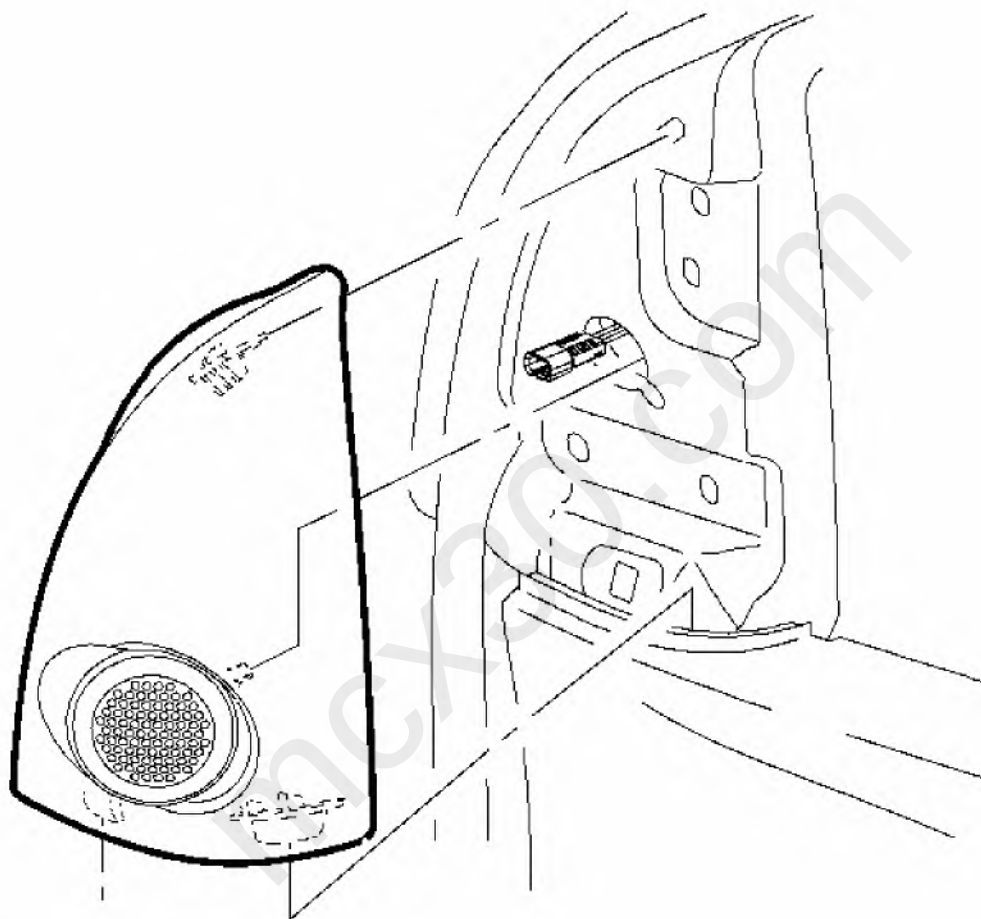


Fig. 47: View of Upper Extension of Door Trim Panel
Courtesy of GENERAL MOTORS CORP.

1. Remove the upper extension of the door trim panel.
 1. Pull at the top of the trim panel to disengage the trim clip.
 2. Lift up to remove the lower tabs from behind the door trim.
 3. Disconnect the speaker wiring harness.

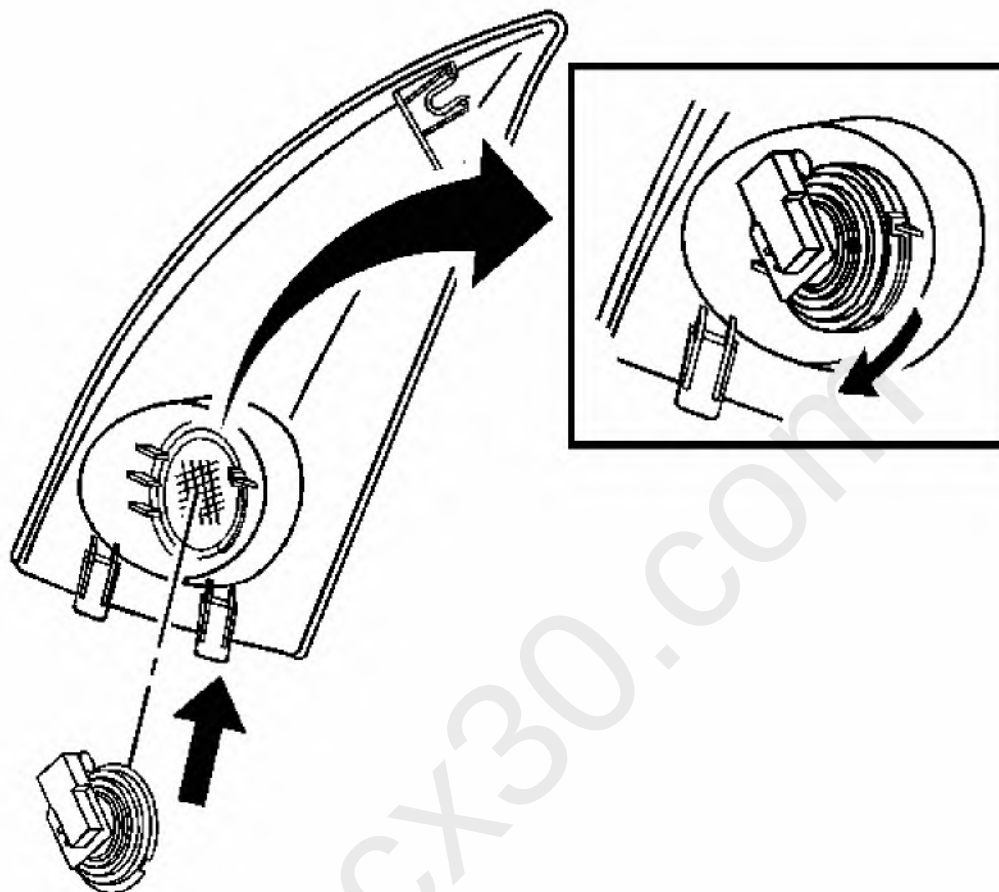


Fig. 48: Removing Upper Speaker
Courtesy of GENERAL MOTORS CORP.

2. Rotate and remove the tweeter from the trim panel.
3. Remove the speaker.

Installation Procedure

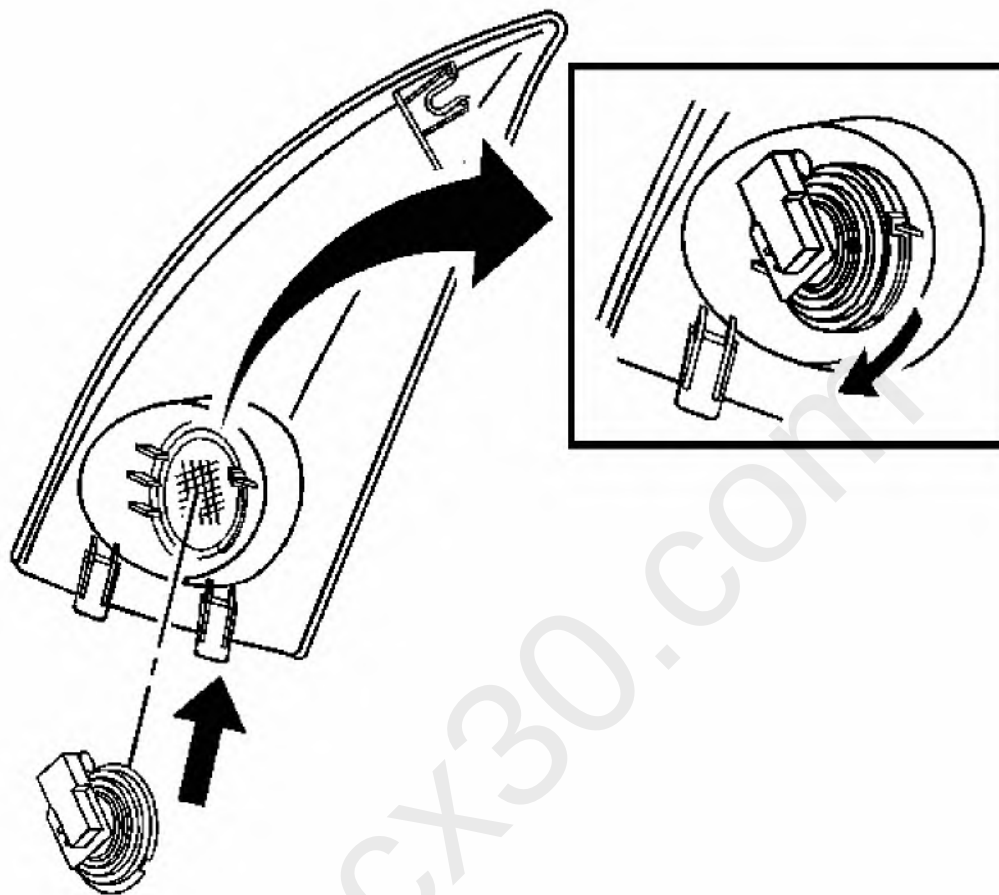


Fig. 49: Removing Upper Speaker
Courtesy of GENERAL MOTORS CORP.

1. Position the speaker on the trim panel and twist to install the speaker.
2. Connect the speaker wiring harness.

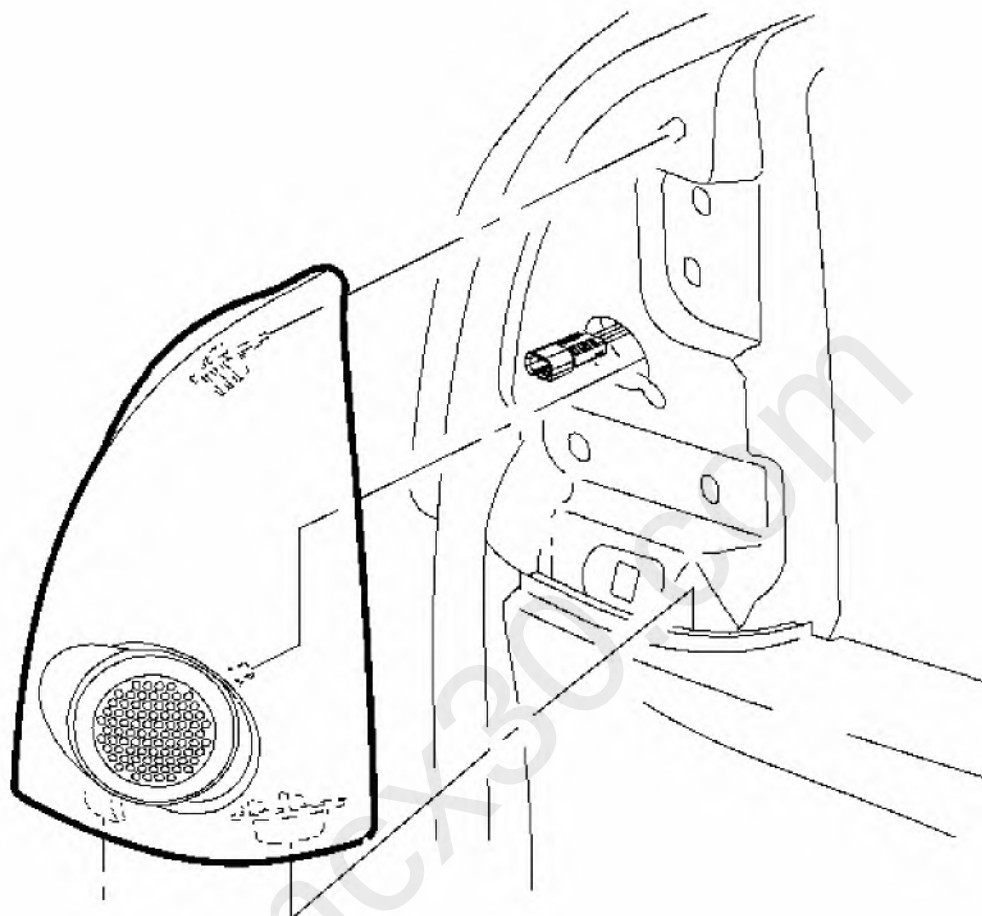


Fig. 50: View of Upper Extension of Door Trim Panel
Courtesy of GENERAL MOTORS CORP.

3. Install the upper extension of the door trim panel.
 1. Insert the tabs behind the door trim.
 2. Push to engage the clip.

SPEAKER REPLACEMENT - REAR DOOR

Removal Procedure

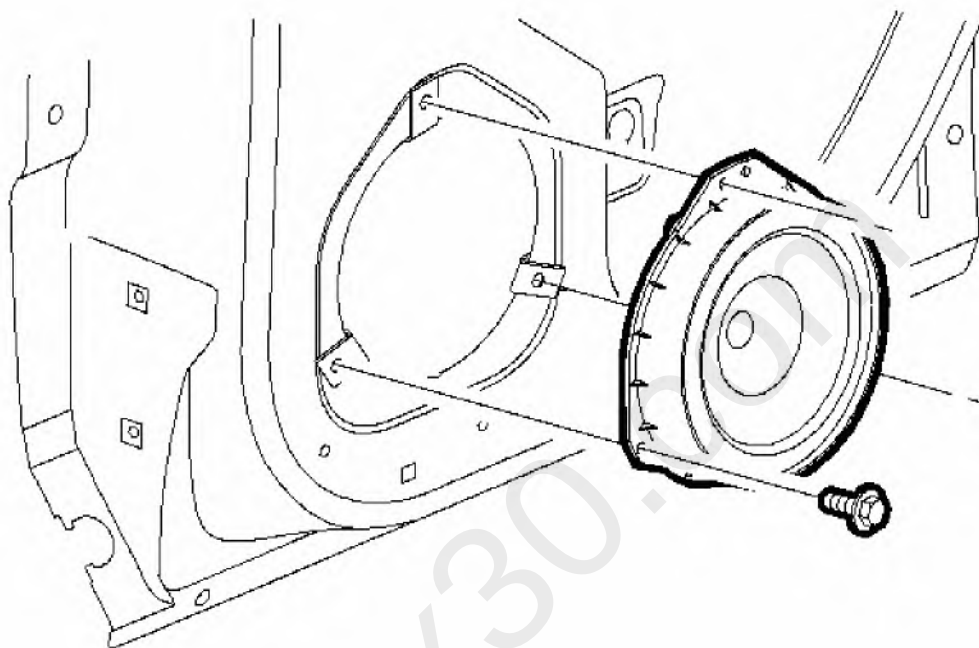


Fig. 51: View of Rear Door Speaker & Screws
Courtesy of GENERAL MOTORS CORP.

1. Remove the rear door trim panel. Refer to **Trim Panel Replacement - Side Rear Door** in Doors.
2. Remove the speaker screws.
3. Disconnect the electrical connector from the speaker.
4. Remove the speaker from the rear door.

Installation Procedure

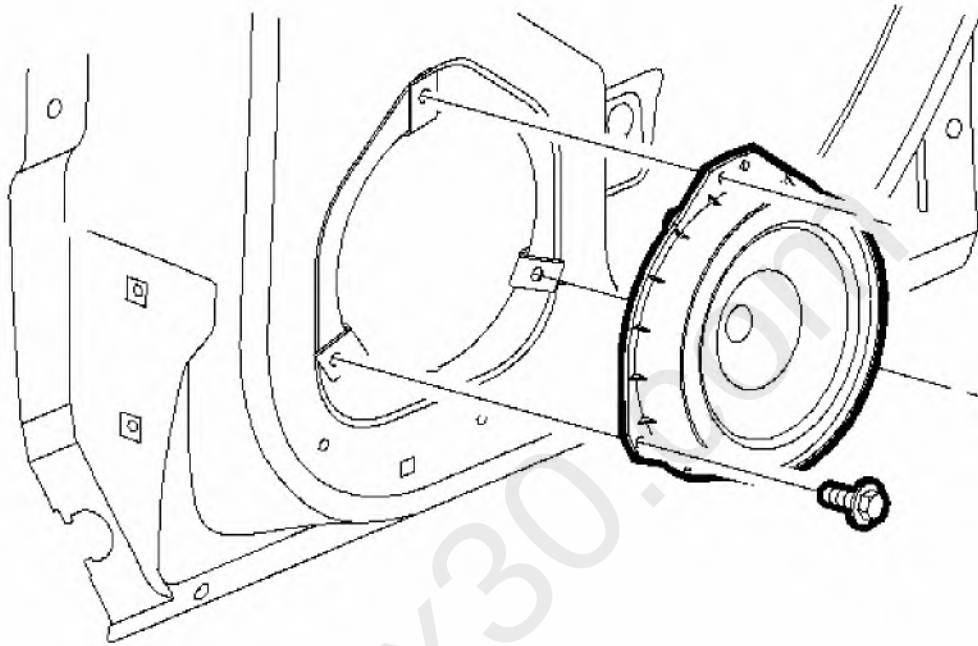


Fig. 52: View of Rear Door Speaker & Screws
Courtesy of GENERAL MOTORS CORP.

1. Connect the electrical connector to the speaker.
2. Install the speaker to the rear door.

NOTE: Refer to Fastener Notice in Cautions and Notices.

3. Install the screws to the speaker.

Tighten: Tighten the screws to 2.5 N.m (22 lb in).

4. Install the rear door trim panel. Refer to Trim Panel Replacement - Side Rear Door in Doors.

SPEAKER REPLACEMENT - REAR

Removal Procedure

1. Remove the rear quarter trim panel. Refer to Trim Panel Replacement - Rear Quarter Lower.

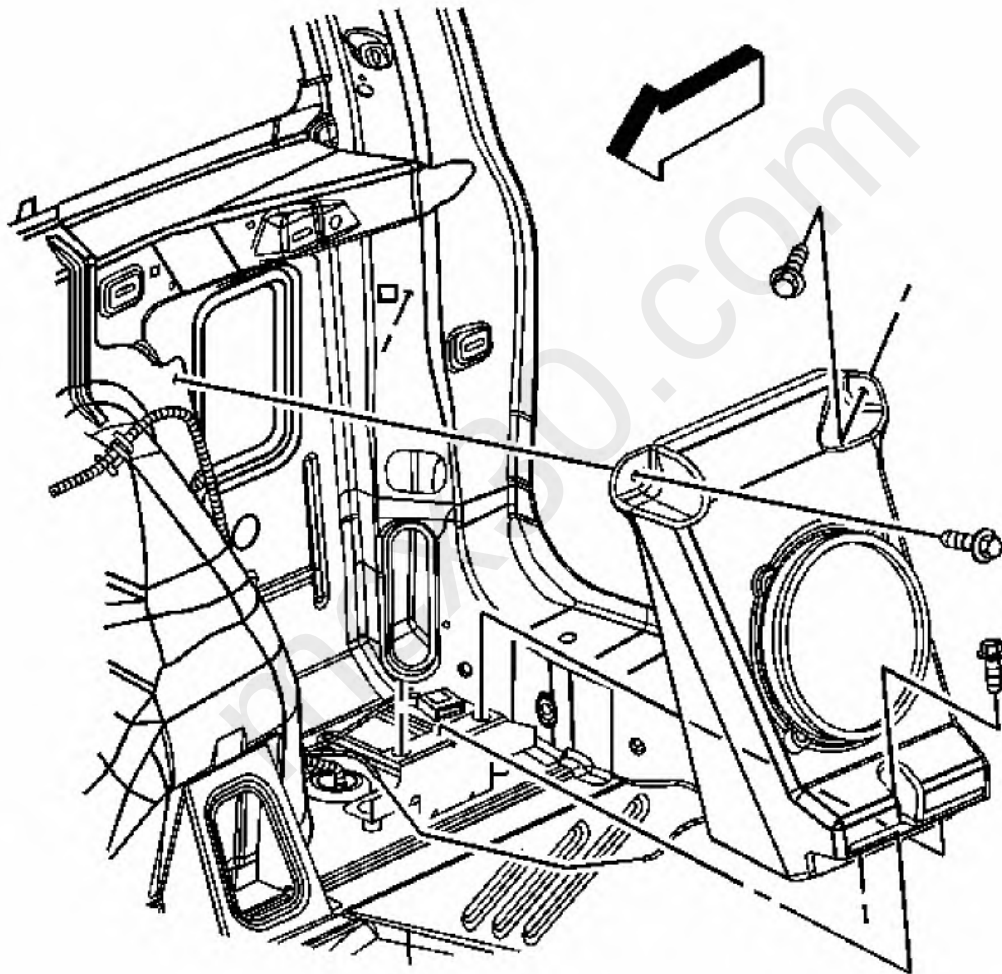


Fig. 53: View of Rear Speaker & Fasteners
Courtesy of GENERAL MOTORS CORP.

2. Remove the rear speaker fasteners.
3. Disconnect the electrical connectors from the speaker.
4. Remove the speaker from the vehicle.

Installation Procedure

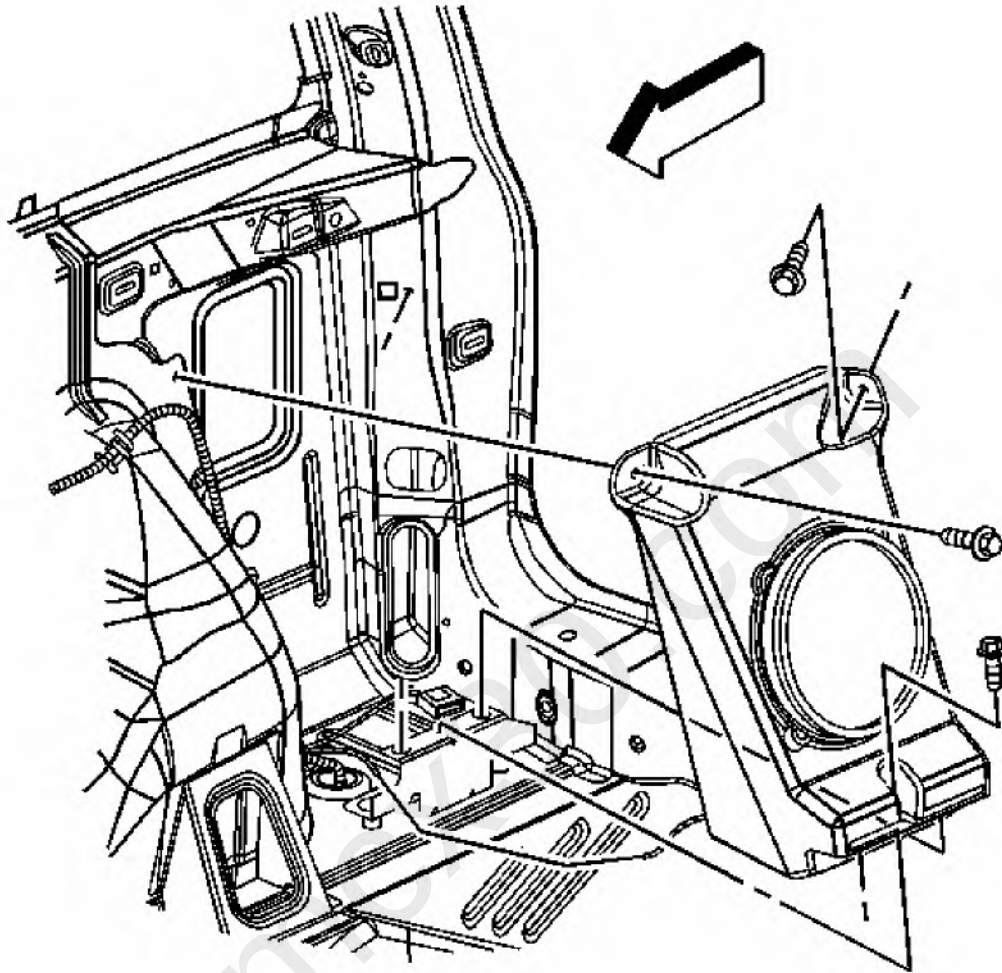


Fig. 54: View of Rear Speaker & Fasteners
Courtesy of GENERAL MOTORS CORP.

1. Install the speaker into the vehicle.
2. Connect the electrical connectors to the speaker.

NOTE: Refer to Fastener Notice in Cautions and Notices.

3. Install the fasteners to the speaker.

Tighten: Tighten the fasteners to 2.5 N.m (22 lb in).

4. Install the rear quarter trim panel. Refer to Trim Panel Replacement - Rear Quarter Lower.

DESCRIPTION AND OPERATION

RADIO/AUDIO SYSTEM DESCRIPTION AND OPERATION

Battery positive voltage is provided to the radio from the Radio (15A) fuse in the fuse block. The radio is grounded through a braided cable case ground. The radio is enabled/disabled by class 2 messages from the body control module (BCM). The entertainment system on this vehicle is configured with a base and uplevel system. The base and uplevel systems contain a radio, antenna, speakers, and on some vehicles an audio amplifier.

The uplevel system differs from the base system by providing the customer with enhanced audio system features. Some of those features may include the radio data system (RDS), an audio amplifier, and programmable equalizer (EQ). Satellite digital radio (U2K) is available with the uplevel systems.

The following list shows the audio system RPOs available with this vehicle:

- Base Radio (U1C) - AM/FM Stereo, CD
- Uplevel Radio (UC6) - AM/FM Stereo, RDS, Multiple CD, EQ
- Uplevel Radio (US8) - AM/FM Stereo, RDS, EQ, CD, MP3
- Satellite Digital Radio (U2K)
- Speaker system custom - 6 (UW6)
- Speaker System premium - 7 (U65) - Includes subwoofer

Each item in the following list represents topics covered in detail below:

- AM/FM Reception
- XM Reception
- Antenna
- Audio Amplifier
- Theft Deterrent
- Radio Data System
- XM Satellite Radio

AM/FM Reception

Radio Signal

The radio signal is sent from a broadcast station and is then received by an antenna. The strength of the signal received depends on the following:

- The power output, or wattage, of the broadcasting station
- The location of the vehicle, or receiver, relative to the broadcast tower.

- Obstacles between the tower and the receiver
- Atmospheric conditions
- Which band, AM or FM, the station is broadcasting
- Type of antenna and the ground plane

AM Reception

The AM band has a lower frequency range than the FM band. These longer wavelengths:

- Bend around obstacles
- Follow the curvature of the earth
- May reflect, or skip, off of the ionosphere

The AM frequencies have longer range due to the ground wave. The ground wave follows the curvature of the earth and is affected by its conductivity. Greater conductivity equates to less signal loss, thus transmission over water is better than over land. The AM band has a range of 80-320 km (50-200 mi).

FM Reception

The shorter wavelengths of the higher frequency FM band:

- Reflect off obstacles
- Are absorbed by the ground
- Penetrate the ionosphere

Broadcasts in the FM band are limited to "line of sight" reception which is typically 40 km (25 mi). Even when out of a direct line of sight, the signal may be reflected into areas that would be in a "shadow" otherwise. Factors which affect the line of sight include:

- Height of the broadcast antenna
- Height of the receiving antenna
- Terrain and buildings in the broadcast path

XM Reception

XM satellite radio provides digital radio reception. The XM signal is broadcast from two satellites and, where necessary, terrestrial repeaters. The high power satellites allow the antenna to receive the XM signal even when foliage and other partial obstructions block the antennas view of the satellite. Terrestrial repeaters are used in dense urban areas. These repeaters will receive the satellite signal and re-broadcast them at much higher power levels in order to ensure reception in areas with densely packed tall buildings.

Antenna

The antenna is comprised of a fixed mast which is mounted on the body of the vehicle. Mast antennas are typically located on the fender or rear quarter panel of the vehicle.

Audio Amplifier

The purpose of the amplifier is to increase the power of a voltage or current signal. The output signal of an amplifier may consist of the same frequencies as the input signal or it may consist of only a portion of the frequencies of the input signal as in the case of a subwoofer or midrange amplifier.

When the radio is turned ON, it sends a voltage signal to the audio amplifier via the radio on signal circuit. The gain control signal circuit allows the radio to recognize that the amplifier is present. Once the radio detects the amplifier, the radio will output low-level signals to the amplifier. With the amplifier enabled, the signal that drives the speaker is now amplified.

Theft Deterrent

The "Theftlock" theft deterrent system is a feature on all base and uplevel radios. There is no need to program a security code into the radio as in past model years. The theft deterrent system now utilizes class 2 serial data to determine if the radio is in the appropriate vehicle. Each time the radio receives the "run" power mode message, it compares the VIN information it has stored to the VIN information received from a module on the class 2 serial data circuit responsible for transmitting that information. If a mis-match occurs, the radio display will indicate to the user the radio is locked. Once this takes place, a DTC will set, the radio will not respond to any button presses and become inoperative. The two scenarios able to cause this condition are:

- A radio is installed from another vehicle.
- A module which communicates on the class 2 serial data circuit which supplies VIN information to the radio is replaced and not properly setup with the correct VIN information for that vehicle.

The only way to unlock the radio is by using a scan tool. Always refer to the table in this article to diagnose the "Theftlock" DTC for further information.

Radio Data System (RDS)

All uplevel audio systems are equipped with technology known as the Radio Data System (RDS). RDS is a system that sends data along with the audio of the FM station you are currently tuned to. RDS is a standard that defines how a FM broadcast station may send digital data along with the audio program. Think of it as a one way wireless modem, allowing the broadcaster to send information about the program to your receiver.

RDS data is carried in what is known as a "subcarrier". A subcarrier is a frequency that the FM broadcaster is authorized to use to send data or other audio programs that are not audible

in the main audio program. RDS information can be used to display program information and to control the radio.

To receive the RDS signal, all that is needed is an FM receiver with an RDS circuit. A special integrated circuit capable of dealing with the RDS signal is in the RDS circuit and passes it along to the receiver's microprocessor where it is decoded and acted upon.

RDS Basic Information

- RDS functions are provided in the FM broadcast band only.
- RDS functions will only work with FM broadcast stations that are broadcasting RDS data.
- Not all FM Broadcast stations broadcast RDS data or offer all of the RDS services.
- RDS functions may not work properly when reception is weak, reception is of poor quality, or RDS is not implemented properly by the FM Broadcaster.

In some cases, a radio station broadcasting incorrect information may cause the RDS features of the radio to appear to work improperly.

XM Satellite Radio

XM is a national satellite radio service that offers up to 100 coast to coast channels including music, news, sports, talk and children's programming. XM provides digital quality audio and text information, including song title and artist name. A service fee is required in order to receive the XM service. For more information, contact XM at www.xmradio.com or call 1-800-852-9696.

Digital Radio Receiver

The radio controls communicate with the digital radio receiver via the class 2 communication circuit. The digital radio receiver sends remote radio audio signals to the radio.