

2006 RESTRAINTS

SIR - Ascender, Envoy, Rainier & TrailBlazer

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

Fastener Tightening Specifications

Application	Specification	
	Metric	English
Passenger Supplemental Inflatable Restraint (PSIR) Bolts	Fully Driven, seated and not stripped	71 lb in
Supplemental Inflatable Restraint (SIR) Front End Discriminating Sensor Bolts	8 N.m	
SIR Instrument Panel Module Nuts	8 N.m	71 lb in
Supplemental Inflatable Restraint (SIR) IP Module Screws	8 N.m	71 lb in
SIR Sensing and Diagnostic Module (SDM) Nuts	12 N.m	106 lb in
SIR Side Impact Module Screws	9 N.m	80 lb in
SIR Side Impact Sensor Screws	8 N.m	71 lb in

SCHEMATIC AND ROUTING DIAGRAMS

SIR SCHEMATIC ICONS

SIR Schematic Icons

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

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IMPORTANT:

- In order to prevent accidental deployment, the shorting bars close in order to short the connectors when the connectors are separated.
- Twisted-pair wires provide an effective shield 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

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mm (0.25 in)

SIR SCHEMATICS

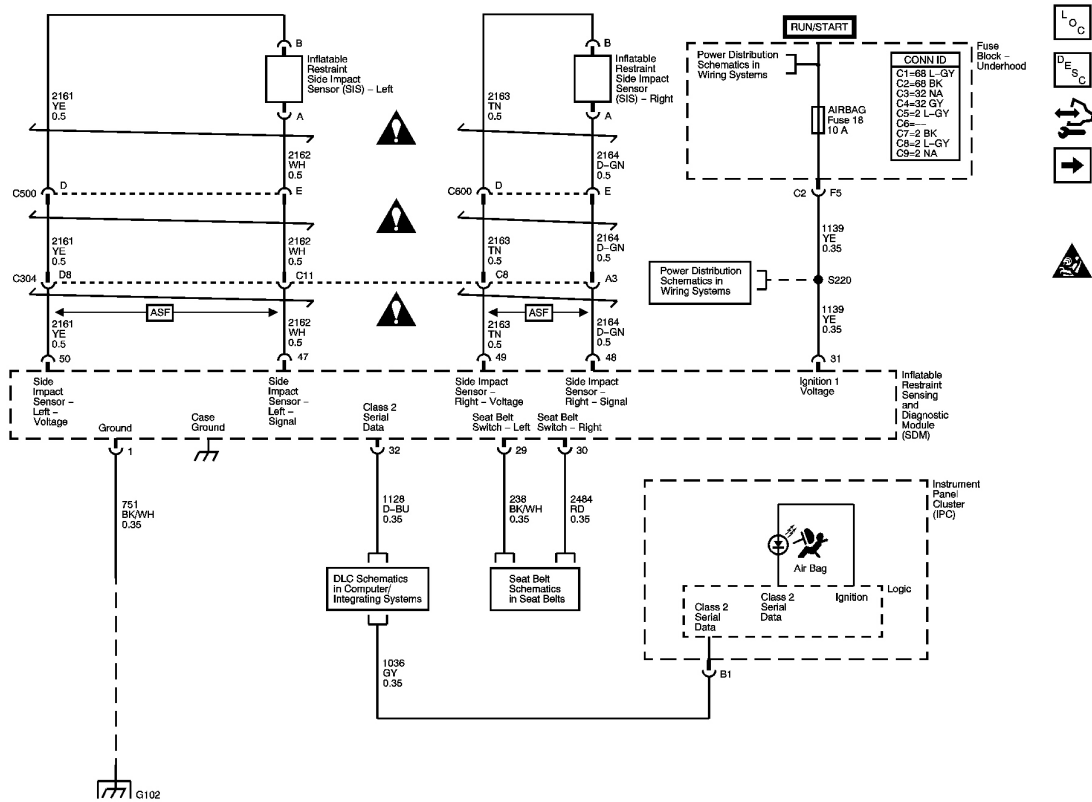


Fig. 1: Module, Power, Ground, Serial Data, Indicator, and Side Impact Sensors
Courtesy of GENERAL MOTORS CORP.

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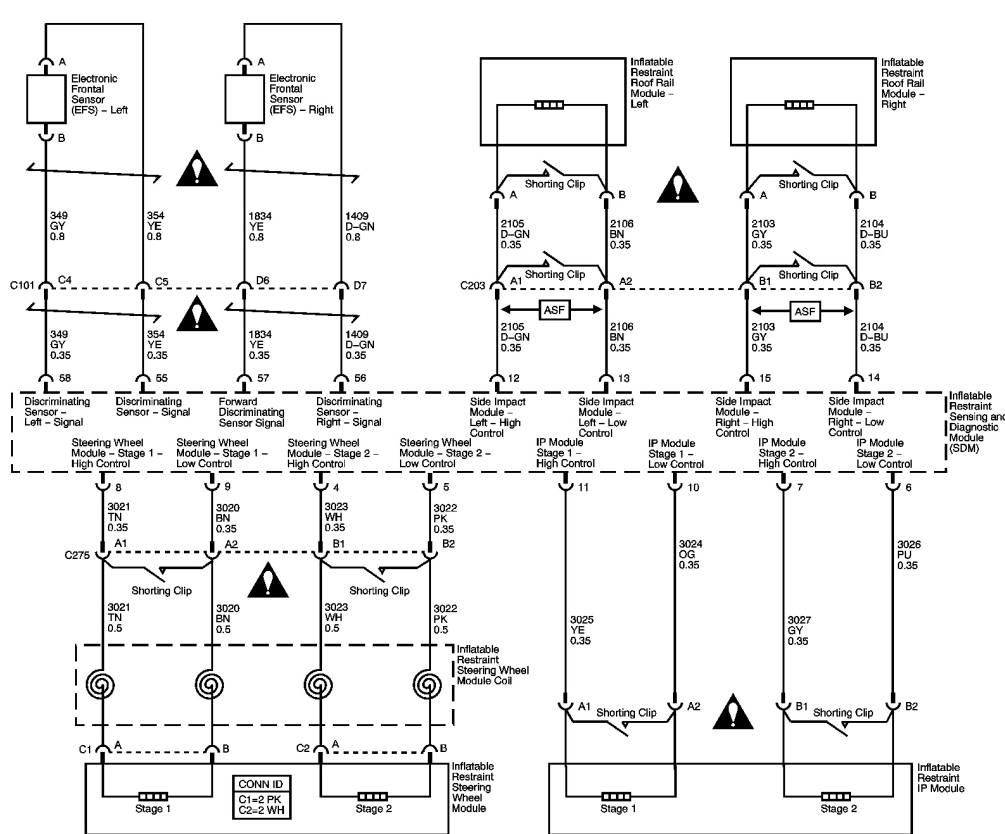


Fig. 2: Front Sensors and Modules

Courtesy of GENERAL MOTORS CORP.

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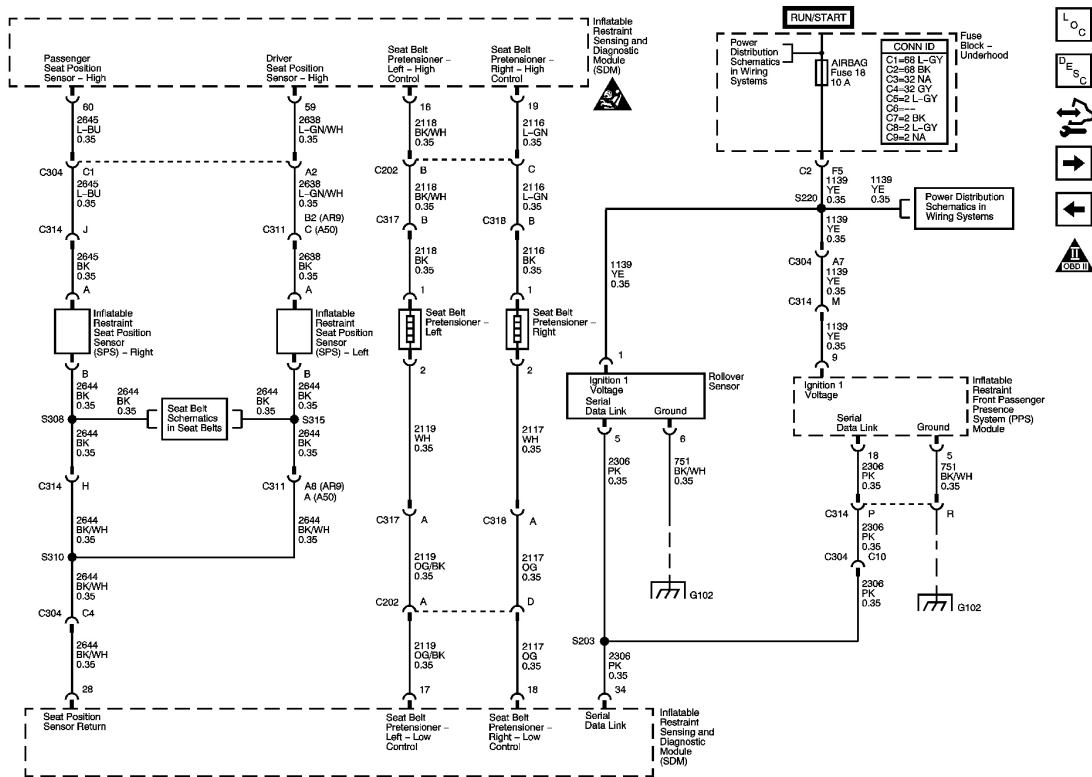


Fig. 3: Seat Position Sensors, Rollover Sensor, and PPS Module
Courtesy of GENERAL MOTORS CORP.

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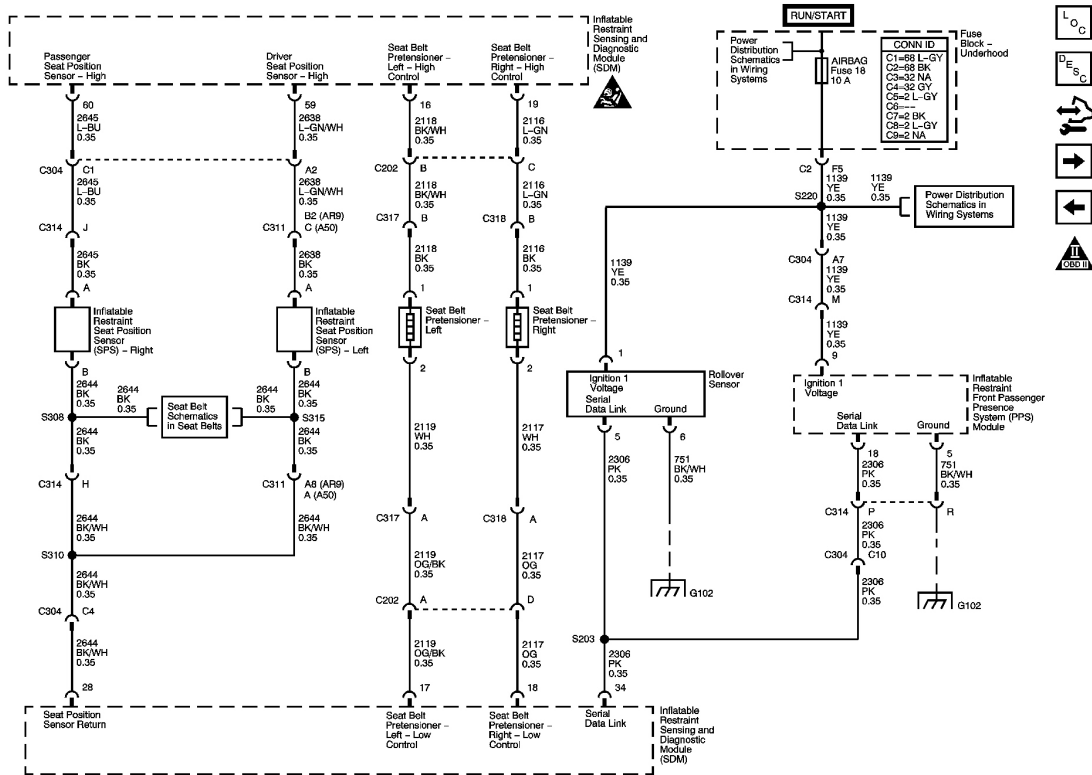


Fig. 4: PPS Sensors and Indicators
Courtesy of GENERAL MOTORS CORP.

COMPONENT LOCATOR

SIR COMPONENT VIEWS

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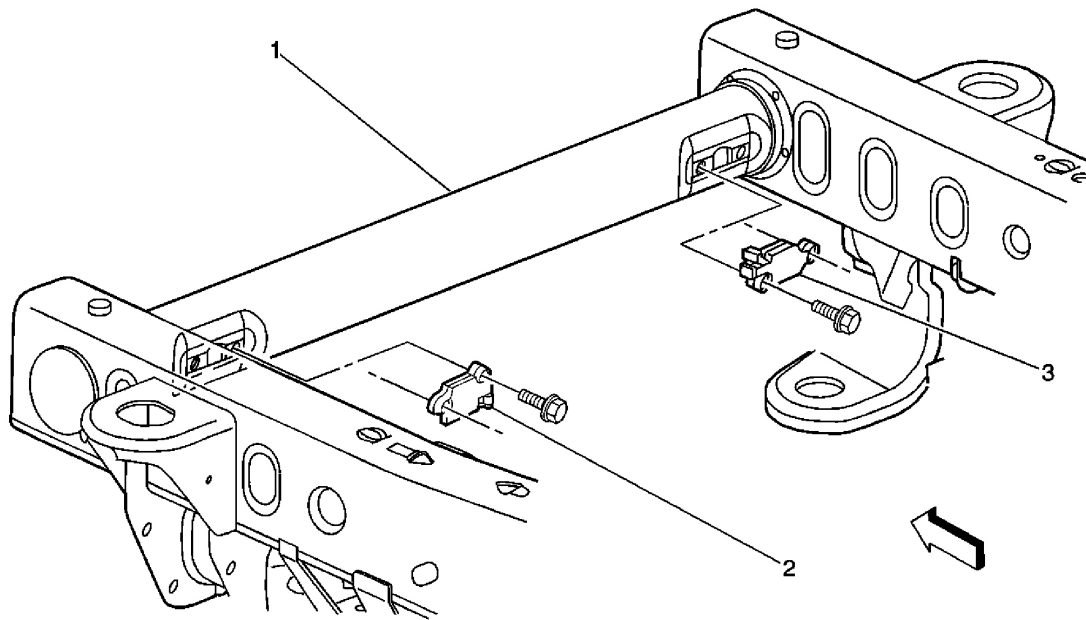


Fig. 5: Electronic Frontal Sensors
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 5

Callout	Component Name
1	Frame - Front
2	Electronic Frontal Sensor (EFS) - Left
3	Electronic Frontal Sensor (EFS) - Right

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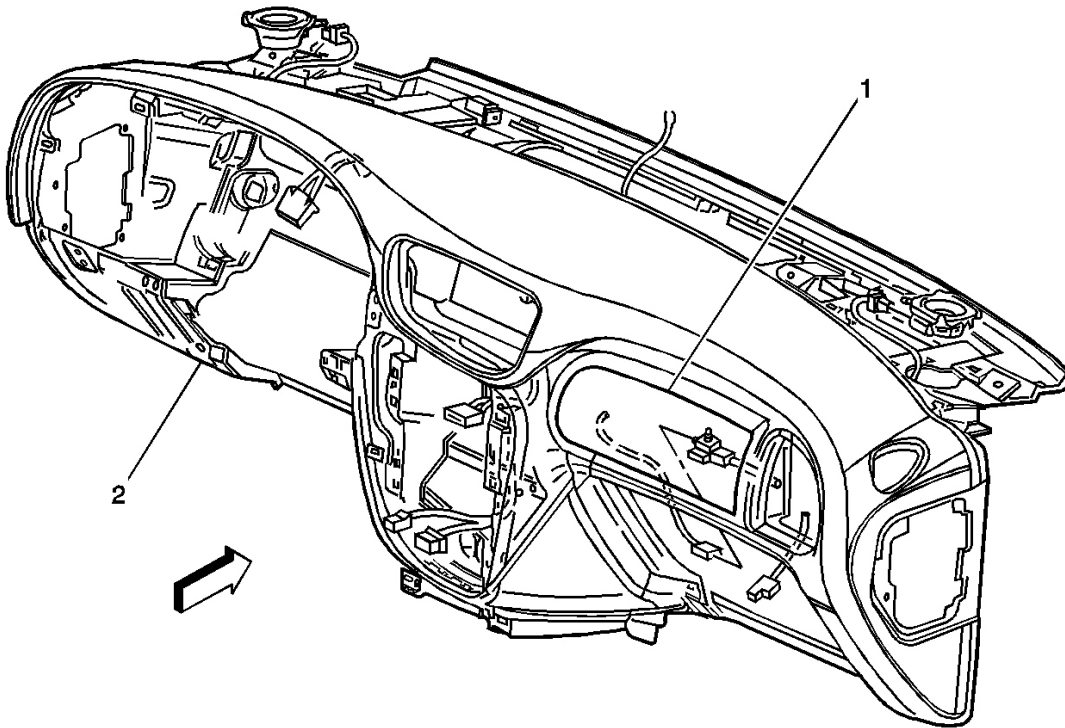


Fig. 6: Identifying Inflatable Restraint I/P Module
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 6

Callout	Component Name
1	Inflatable Restraint I/P Module
2	Instrument Panel

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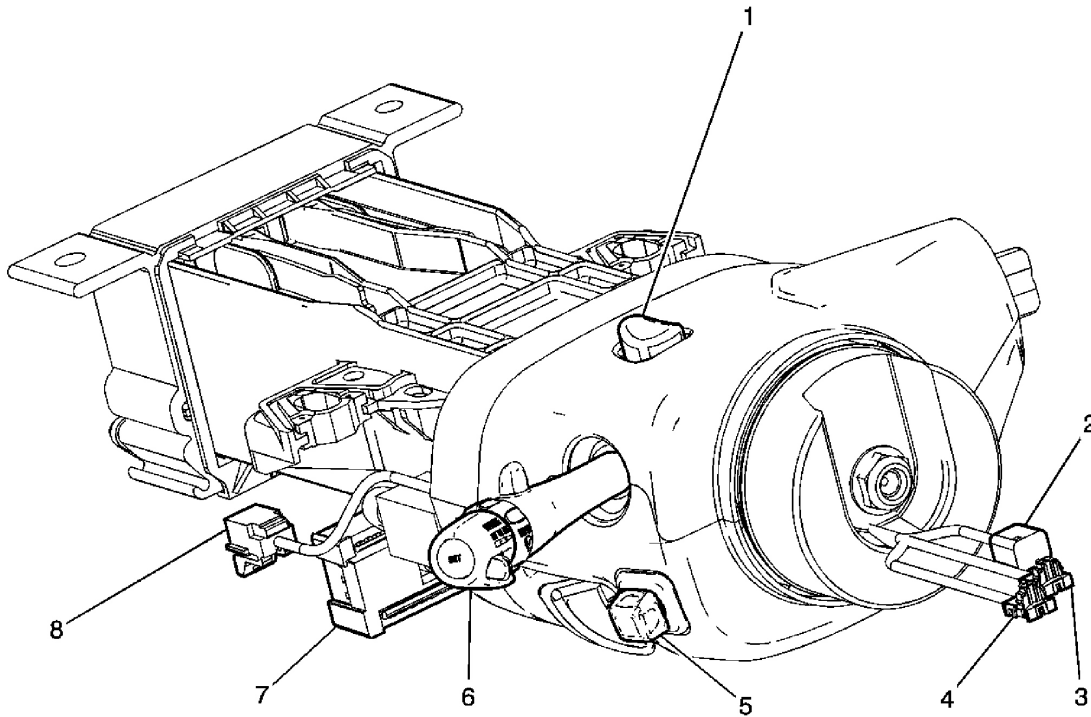


Fig. 7: Left Side of the I/P - Steering Column Component View
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 7

Callout	Component Name
1	Hazard Switch
2	C277
3	Inflatable Restraint Steering Wheel Module Connector C1
4	Inflatable Restraint Steering Wheel Module Connector C2
5	Electronic Adjustable Pedals (EAP) Switch
6	Turn Signal/Multifunction Switch
7	C201
8	C275

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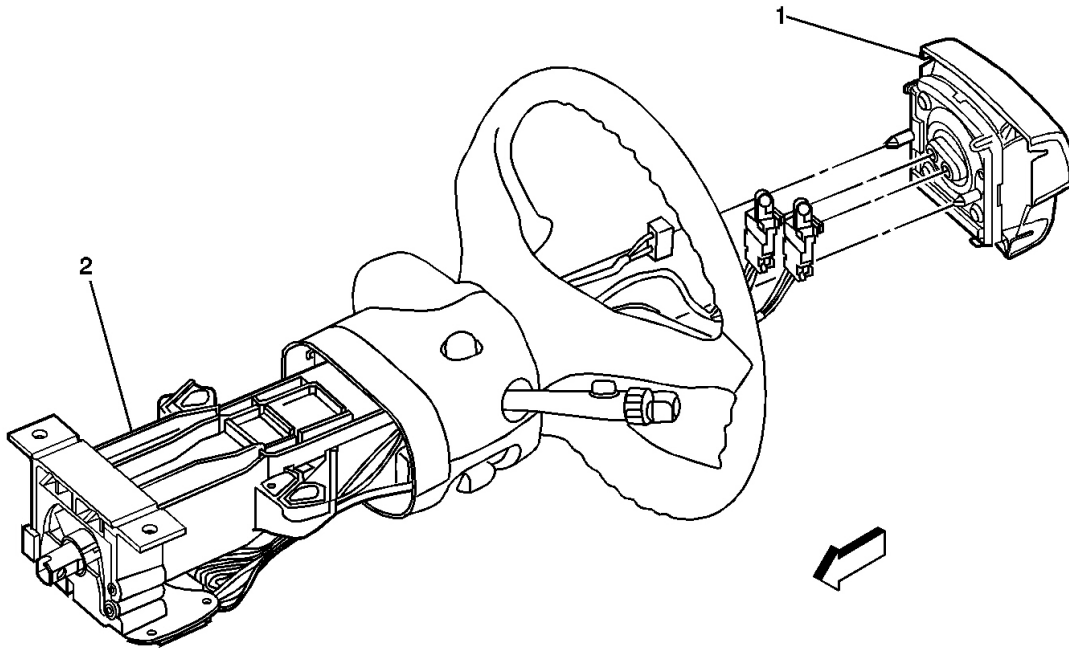


Fig. 8: Identifying Inflatable Restraint Steering Wheel Module
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 8

Callout	Component Name
1	Inflatable Restraint Steering Wheel Module
2	Steering Column

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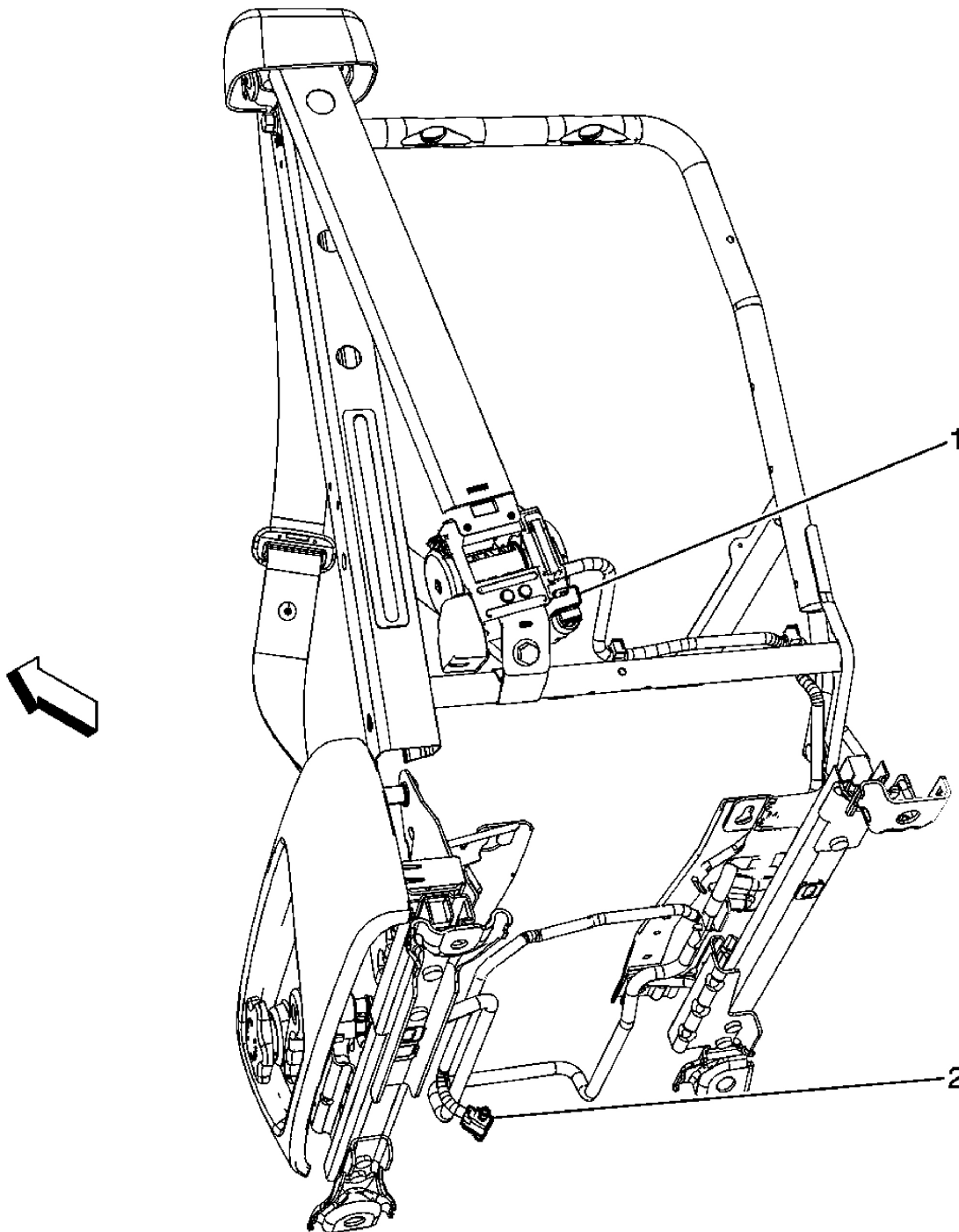


Fig. 9: Seat Belt Pretensioner Harness Routing - Left
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 9

Callout	Component Name
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1	Seat Belt Pretensioner - Left
2	C317

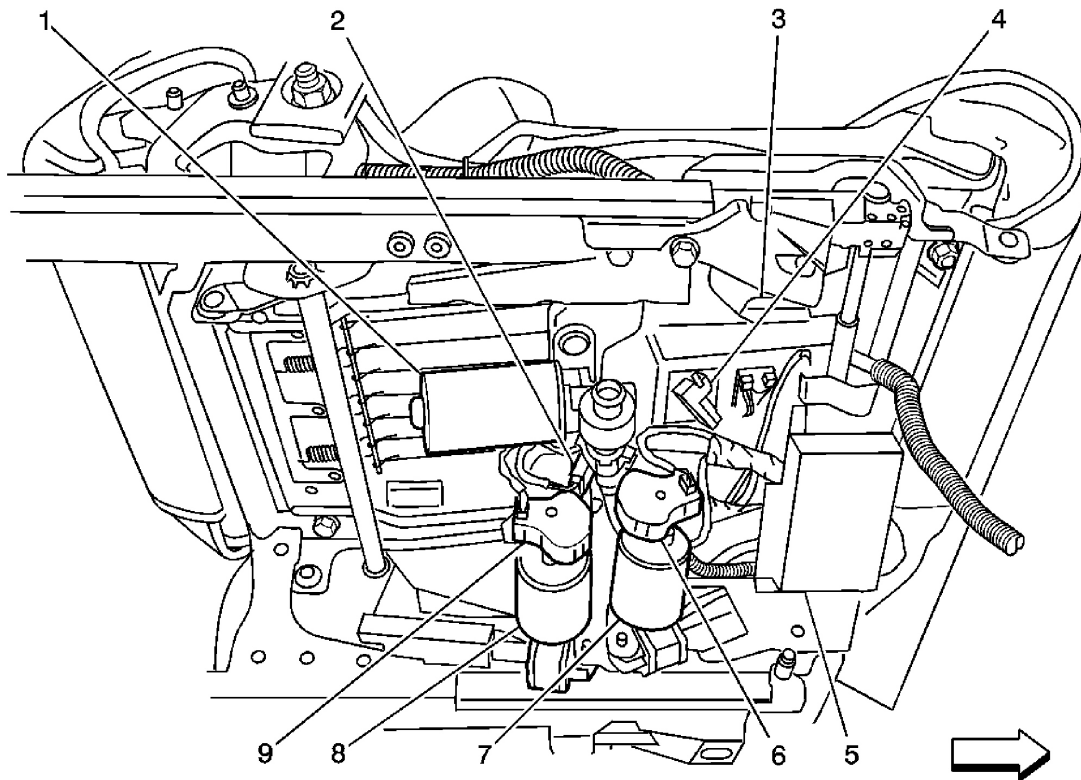


Fig. 10: Under Driver Seat
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 10

Callout	Component Name
1	Seat Recline Motor - Driver (AR9)
2	Seat Position Sensor - Recline (AAB)
3	Inflatable Restraint Seat Position Sensor (SPS) - Left
4	Seat Position Sensor - Horizontal (AAB)
5	Seat Horizontal Motor - Driver (AR9)
6	Seat Position Sensor - Front (AAB)
7	Seat Front Vertical Motor - Driver (AR9)
8	Seat Rear Vertical Motor - Driver (AR9)
9	Seat Position Sensor - Rear (AAB)

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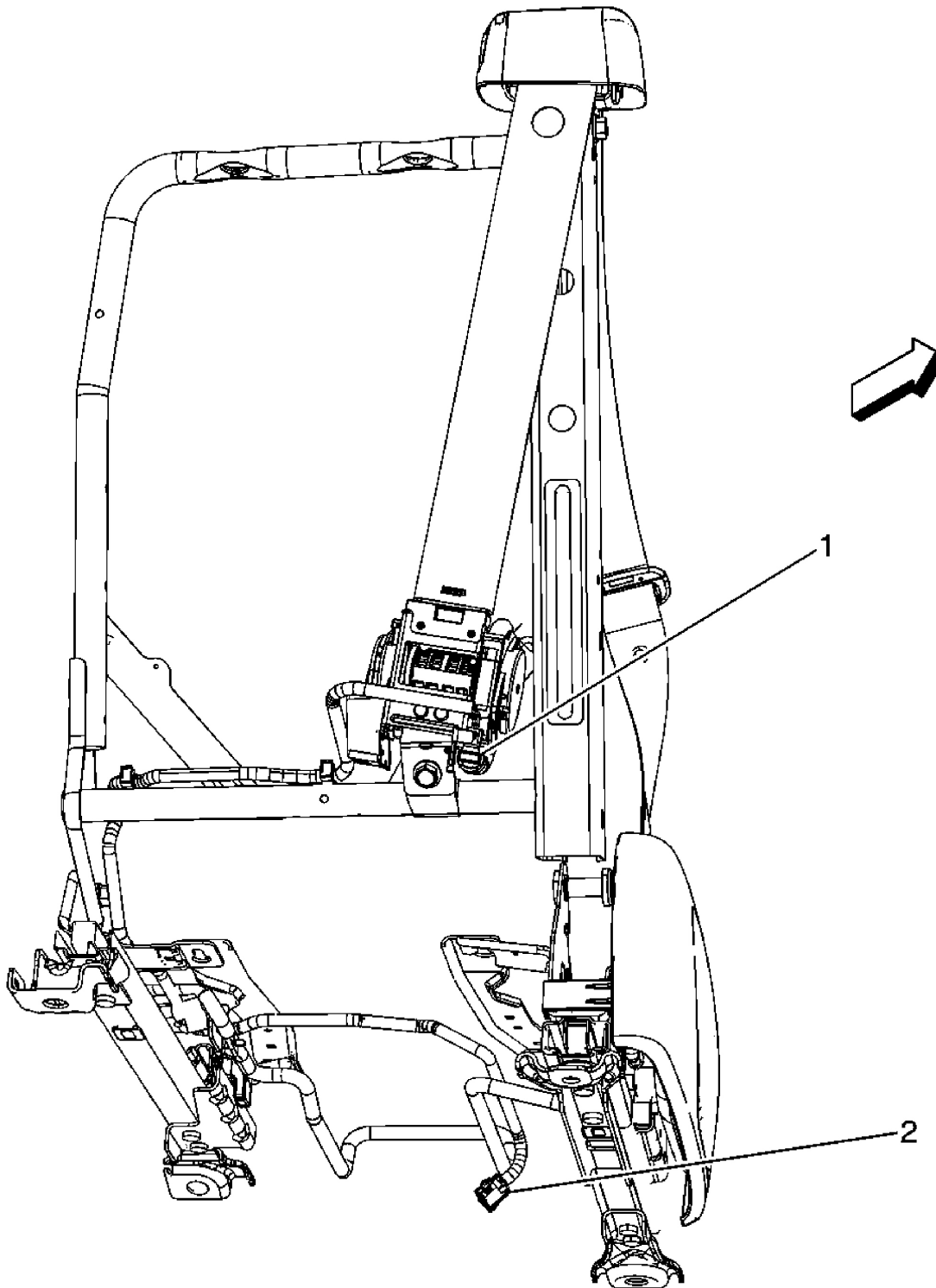


Fig. 11: Seat Belt Pretensioner Harness Routing - Right
Courtesy of GENERAL MOTORS CORP.

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Callouts For Fig. 11

Callout	Component Name
1	Seat Belt Pretensioner - Right
2	C318

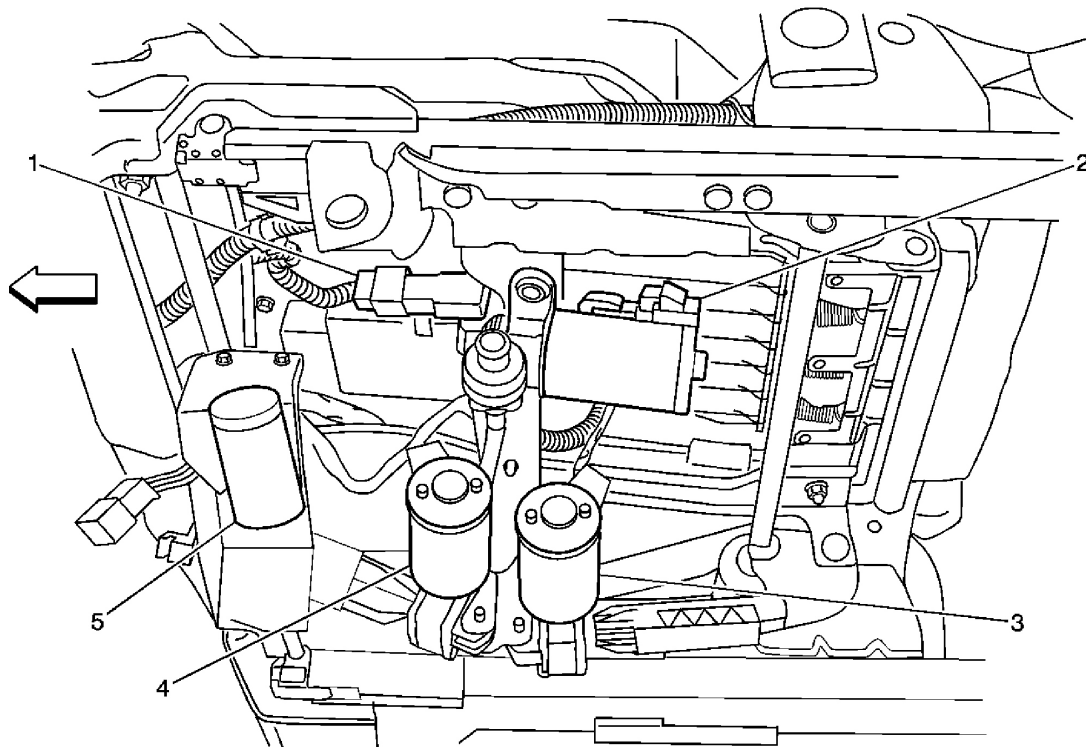


Fig. 12: Under Passenger Seat
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 12

Callout	Component Name
1	Inflatable Restraint Seat Position Sensor (SPS) - Right
2	Seat Recline Motor - Passenger (V40)
3	Seat Front Vertical Motor - Passenger (V40)
4	Seat Rear Vertical Motor - Passenger (V40)
5	Seat Horizontal Motor - Passenger (V40)

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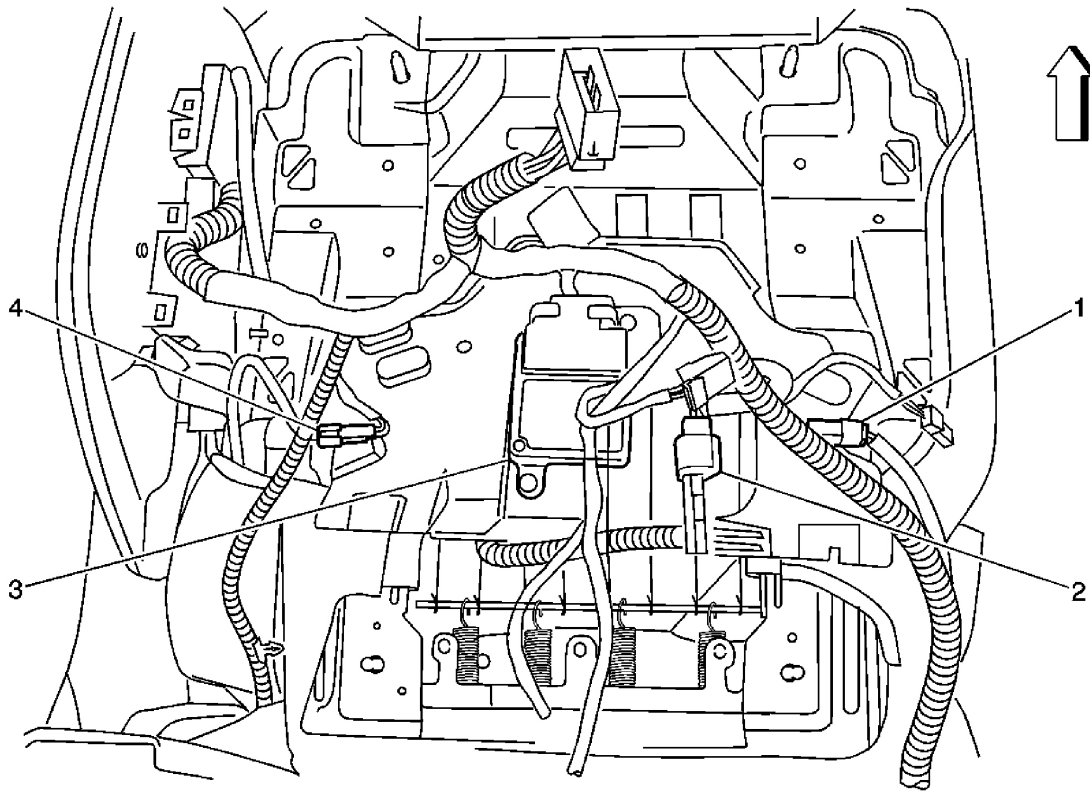


Fig. 13: Beneath Passenger Seat Cushion
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 13

Callout	Component Name
1	Seat Belt Switch Connector - Passenger
2	Inflatable Restraint Front Passenger Presence System (PPS) Sensor
3	Inflatable Restraint Front Passenger Presence System (PPS) Module
4	Heated Seat Element Connector - Passenger Cushion (KA1)

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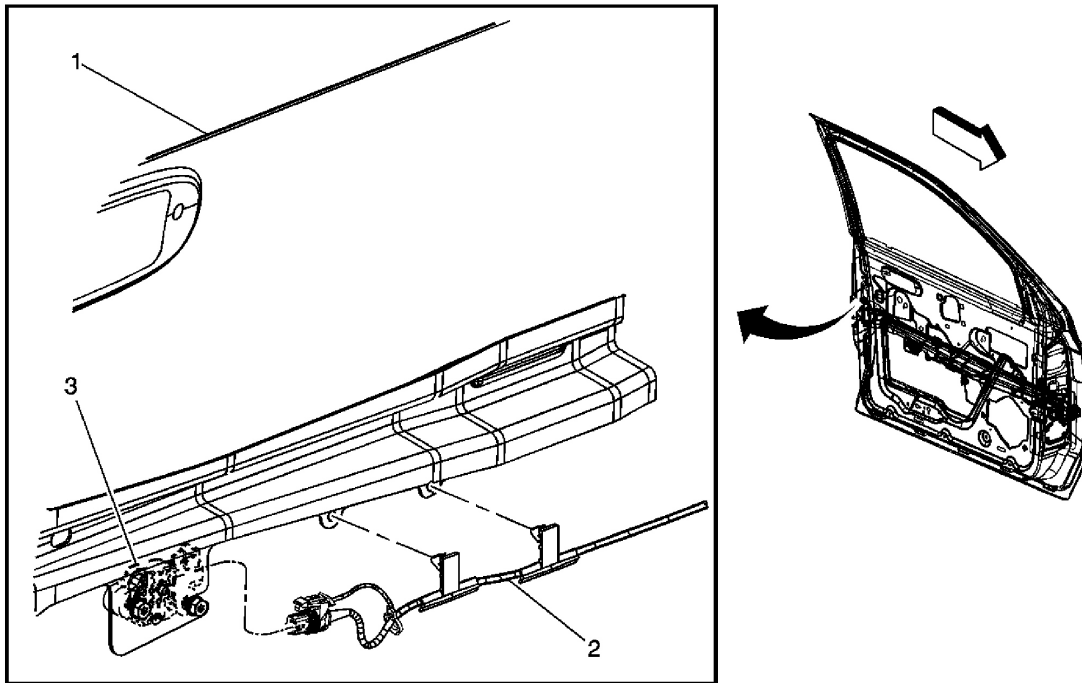


Fig. 14: Inflatable Restraint Side Impact Sensor (SIS) - Left
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 14

Callout	Component Name
1	Driver Door
2	Left Front Door Harness
3	Inflatable Retraint Side Impact Sensor (SIS) - Left

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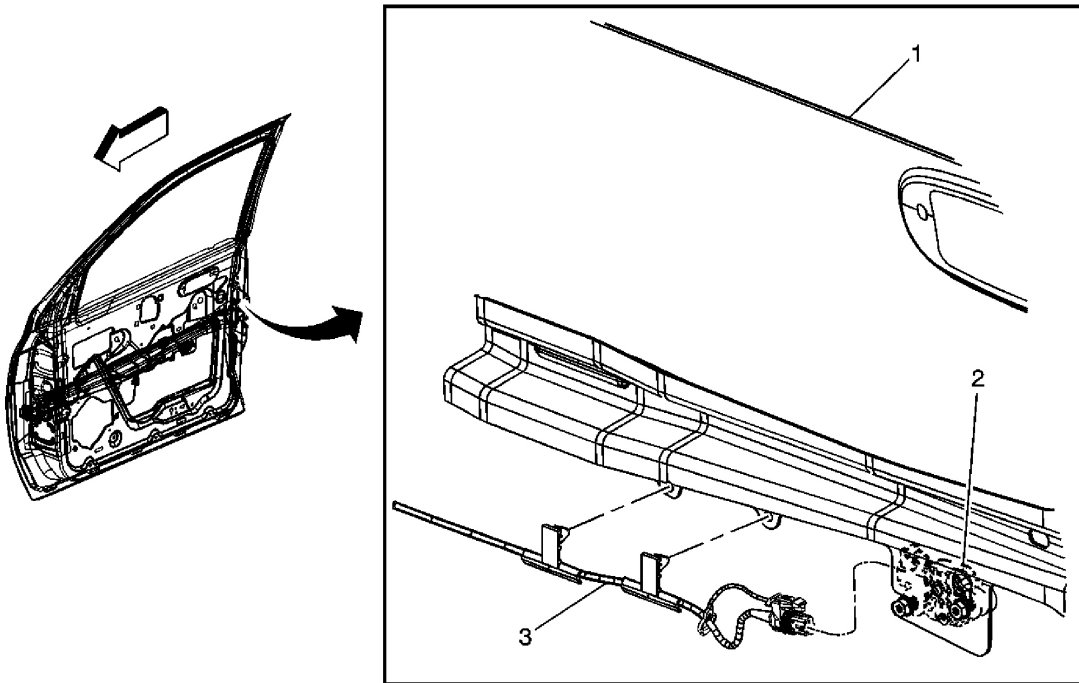


Fig. 15: Inflatable Restraint Side Impact Sensor (SIS) - Right
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 15

Callout	Component Name
1	Front Passenger Door
2	Inflatable Restaint Side Impact Sensor (SIS) - Right
3	Right Front Door Harness

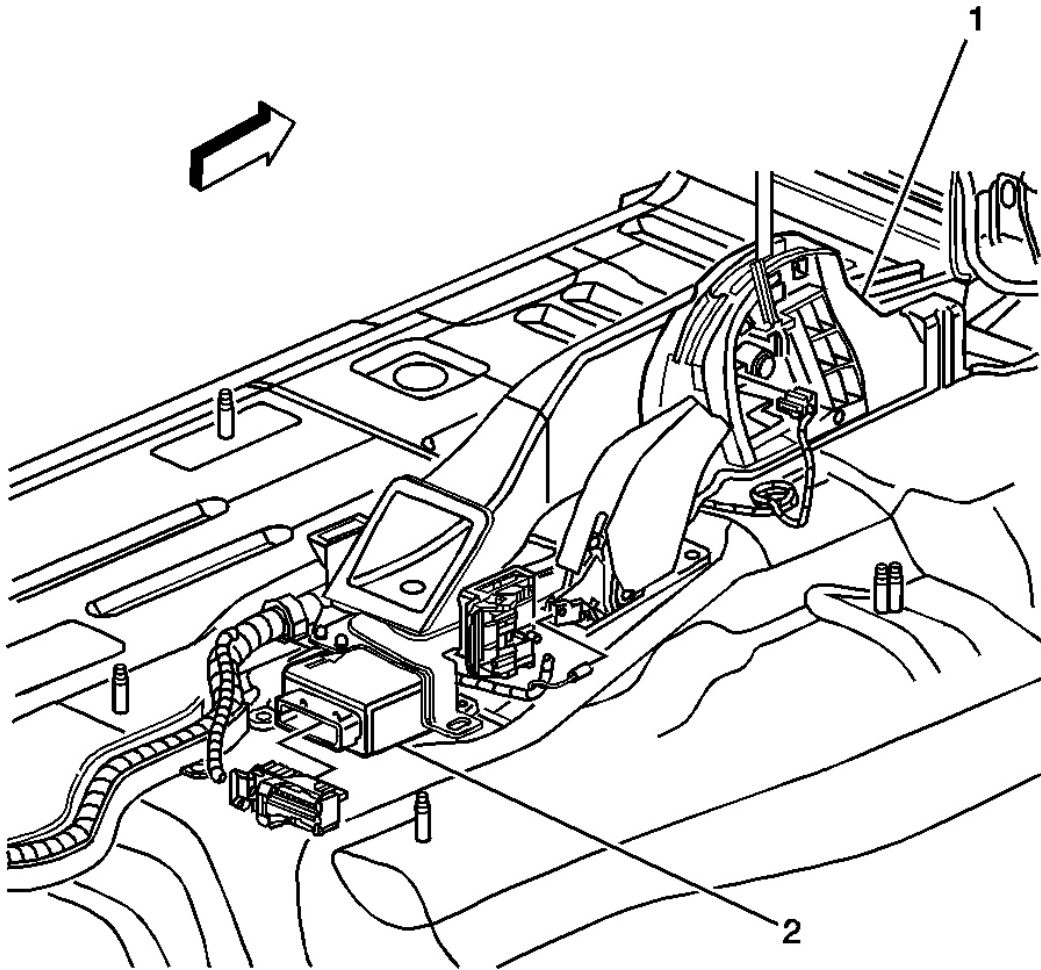


Fig. 16: Identifying Inflatable Restraint Sensing and Diagnostic Module (SDM)
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 16

Callout	Component Name
1	Lower Console
2	Inflatable Restraint Sensing and Diagnostic Module (SDM)

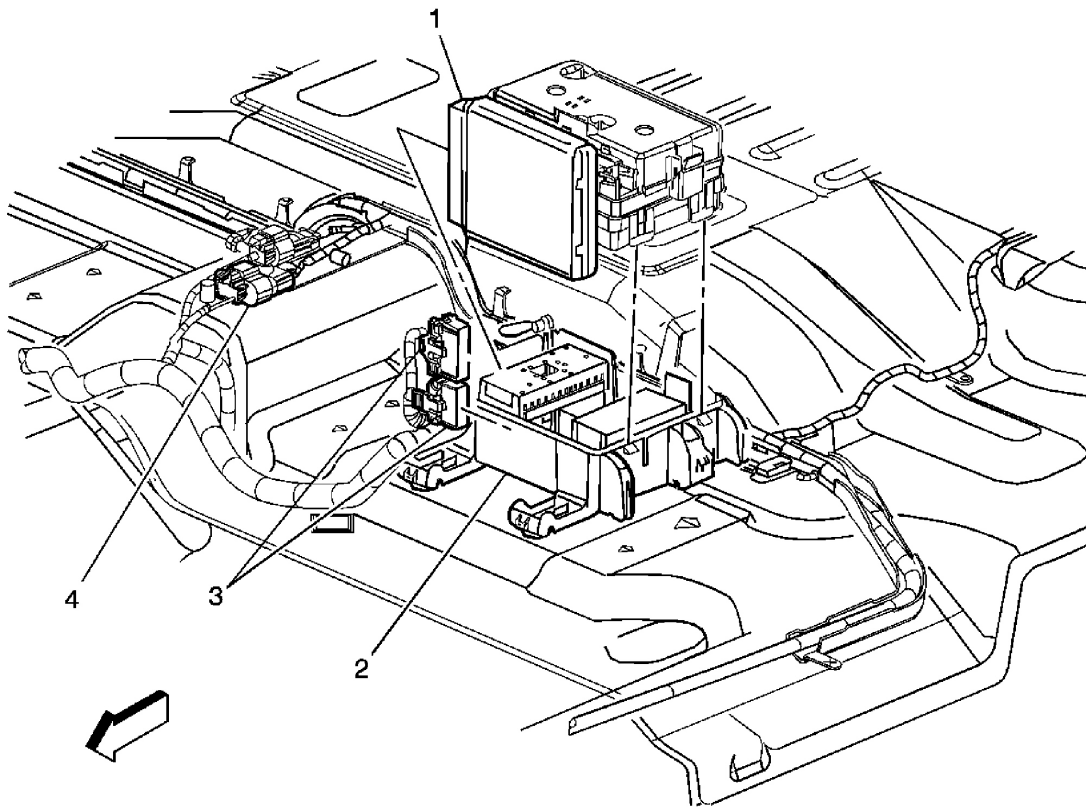


Fig. 17: Rollover Sensor
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 17

Callout	Component Name
1	Body Control Module
2	Fuse Block - Rear
3	Body Control Module Connectors C1 and C2
4	Rollover Sensor

SIR ZONE IDENTIFICATION VIEWS

The SIR Zone Identification Views shown below illustrate the approximate location of all SIR components available for the vehicle. This will assist in determining the appropriate SIR Disabling and Enabling Zones for a given service procedure, refer to **SIR Disabling and Enabling Zones**.

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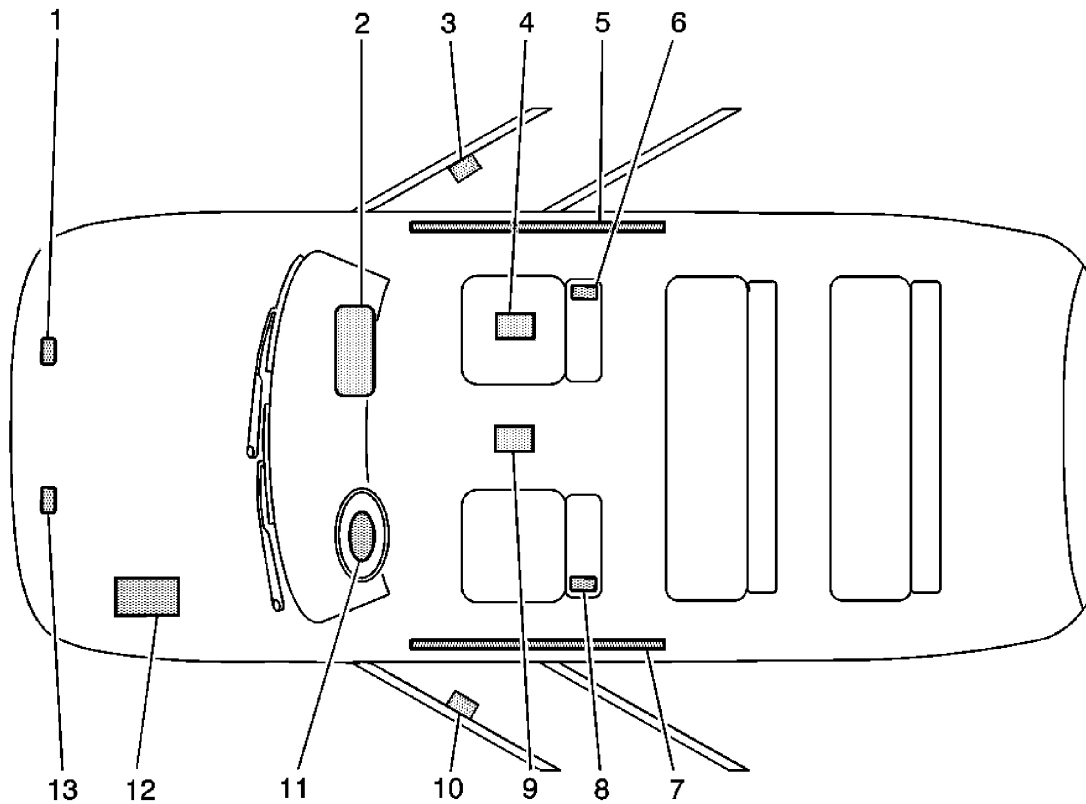


Fig. 18: S/T Utility

Courtesy of **GENERAL MOTORS CORP.**

Callouts For Fig. 18

Callout	Component Name
1	Inflatable Restraint Front End Sensor - Right-Located on the front of the vehicle in the engine compartment
2	Inflatable Restraint I/P Module-Located at the top right under the instrument panel
3	Inflatable Restraint Side Impact Sensor (SIS) - Right-Located under right front door trim near the lower rear of door frame
4	Inflatable Restraint Passenger Presence System (PPS)-Located under the right front seat
5	Inflatable Restraint Roof Rail Module - Right-Located on the roof rail along the right front seat
6	Inflatable Restraint Seat Belt Pretensioner - Right-Located inside the right front seat
	Inflatable Restraint Roof Rail Module - Left-Located on the roof rail

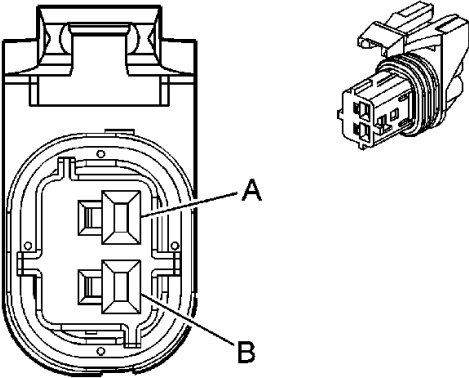
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7	along the left front seat
8	Inflatable Restraint Seat Belt Pretensioner - Left-Located inside the left front seat
9	Inflatable Restraint Sensing and Diagnostic Module (SDM)-Located under center floor console
10	Inflatable Restraint Side Impact Sensor (SIS) - Left-Located under left front door trim near the lower rear of door frame
11	Inflatable Restraint Steering Wheel Module-Located on the steering wheel
12	Battery-Located under hood on the left side
13	Inflatable Restraint Front End Sensor - Left-Located on the front of the vehicle in the engine compartment

SIR CONNECTOR END VIEWS

Electronic Frontal Sensor (EFS) - Left

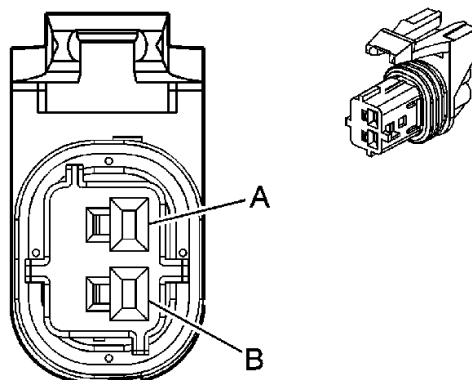
			
Connector Part Information		<ul style="list-style-type: none">• 15356727• 2-Way F GT 150 Series Sealed (YE)	
Pin	Wire Color	Circuit No.	Function
A	YE	354	Discriminating Sensor - Signal
B	GY	349	Discriminating Sensor - Left - Signal

Electronic Frontal Sensor (EFS) - Right

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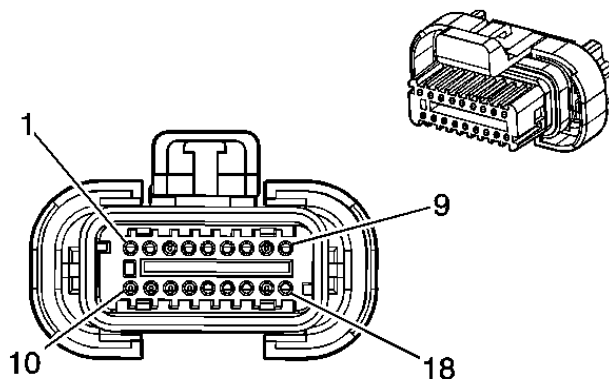


Connector Part Information

- 15356727
- 2-Way F GT 150 Series Sealed (YE)

Pin	Wire Color	Circuit No.	Function
A	D-GN	1409	Discriminating Sensor - Right - Signal
B	YE	1834	Forward Discriminating Sensor Signal

Inflatable Restraint Front Passenger Presence System (PPS) Module



Connector Part Information

- 15431682
- 18-Way F Micro-Pack 100W Series Sealed (BK)

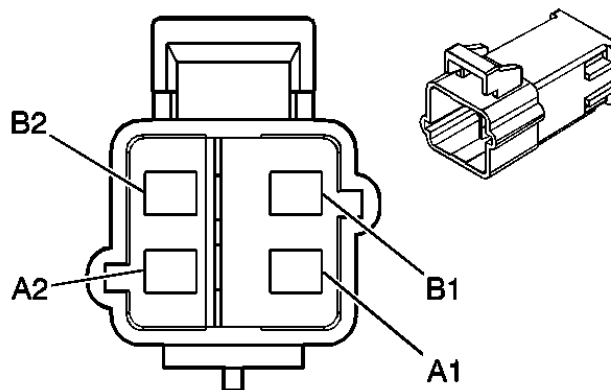
Pin	Wire Color	Circuit No.	Function
1	D-BU	2307	Passenger Air Bag On Indicator Control (AL0)
2	D-GN	2308	Passenger Air Bag Off Indicator Control (AL0)

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3	-	-	Not Used
4	PU	5611	Passenger Seat Belt Tension Sensor Signal
5	BK/WH	751	Ground
6	YE	5608	Occupant Pressure Sensor Signal
7	D-GN	5609	Occupant Pressure Sensor Voltage Reference
8	-	-	Not Used
9	YE	1139	Ignition 1 Voltage
10-13	-	-	Not Used
14	TN	5613	Passenger Seat Belt Tension Sensor Low Reference
15	GY	5610	Occupant Pressure Sensor Low Reference
16	L-BU	5612	Passenger Seat Belt Tension Sensor Voltage Reference
17	-	-	Not Used
18	PK	2306	Occupant Sensor - Serial Data Link

Inflatable Restraint I/P Module



Connector Part Information

- 15336476
- 4-Way M Metri-Pack 280 Series Unsealed (YE)

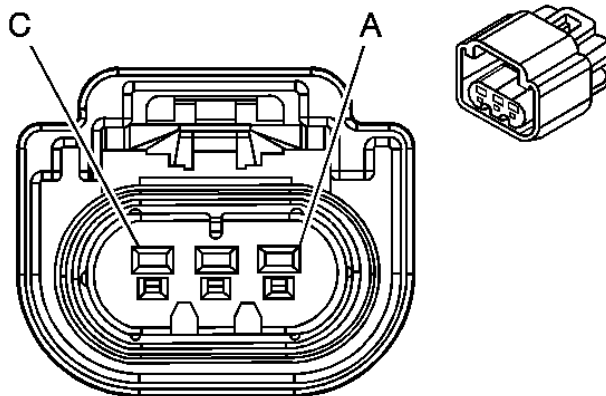
Pin	Wire Color	Circuit No.	Function

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A1	YE	3025	I/P Module - Stage 1 - High Control
A2	OG	3024	I/P Module - Stage 1 - Low Control
B1	GY	3027	I/P Module - Stage 2 - High Control
B2	PU	3026	I/P Module - Stage 2 - Low Control

Inflatable Restraint Passenger Presence System (PPS) Sensor



Connector Part Information

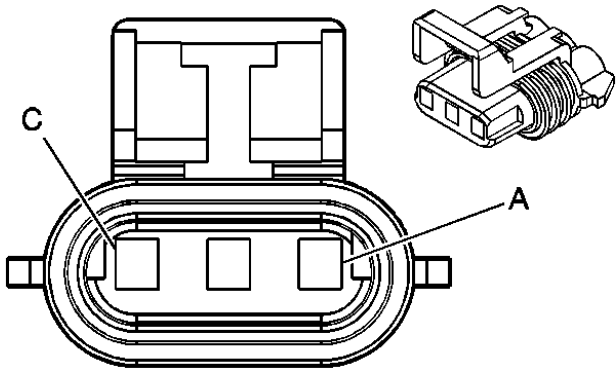
- 15422250
- 3-Way F GT 150 Series Sealed (D-GY)

Pin	Wire Color	Circuit No.	Function
A	D-GN	5609	Occupant Pressure Sensor Voltage Reference
B	YE	5608	Occupant Pressure Sensor Signal
C	GY	5610	Occupant Pressure Sensor Low Reference

Inflatable Restraint Passenger Seat Belt Tension Retractor Sensor

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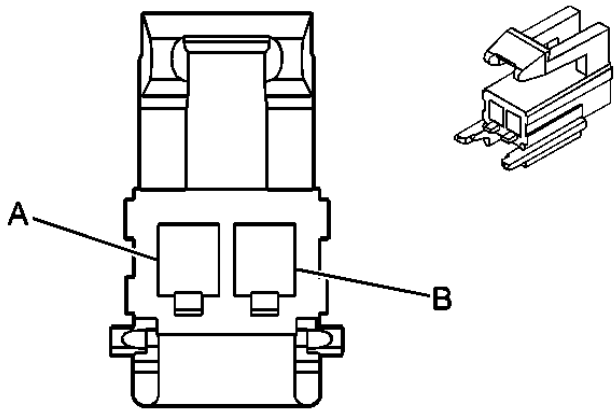


Connector Part Information

- **12110293**
- **3-Way F Metri-Pack 150 Series Sealed (BK)**

Pin	Wire Color	Circuit No.	Function
A	L-BU	5612	Passenger Seat Belt Tension Sensor Voltage Reference
B	TN	5613	Passenger Seat Belt Tension Sensor Low Reference
C	PU	5611	Passenger Seat Belt Tension Sensor Signal

Inflatable Restraint Roof Rail Module - Left (ASF)



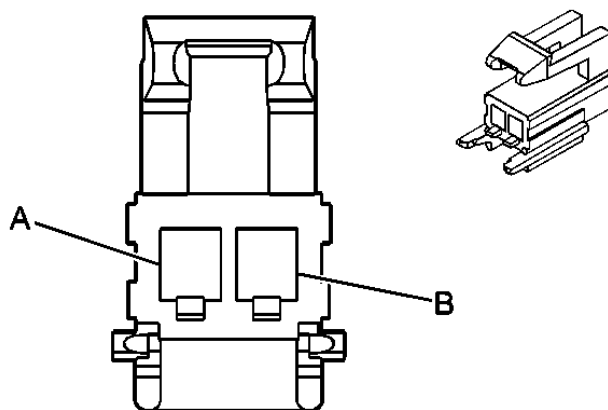
- **12110505**

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Connector Part Information		• 2-Way F Metri-Pack 150 Series Unsealed (YE)	
Pin	Wire Color	Circuit No.	Function
A	D-GN	2105	Side Impact Module - Left - High Control
B	BN	2106	Side Impact Module - Left - Low Control

Inflatable Restraint Roof Rail Module - Right (ASF)

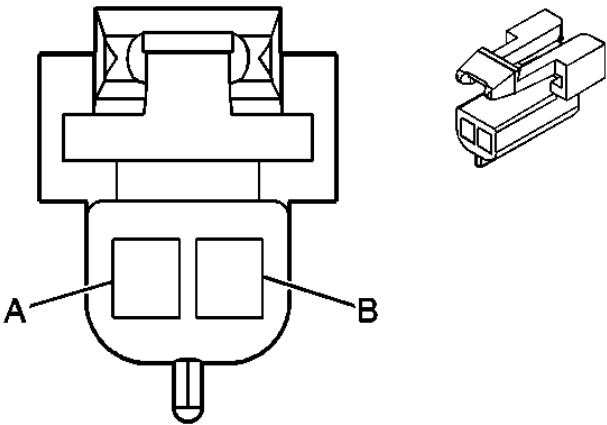


Connector Part Information		• 12110505 • 2-Way F Metri-Pack 150 Series Unsealed (YE)	
Pin	Wire Color	Circuit No.	Function
A	GY	2103	Side Impact Module - Right - High Control
B	D-BU	2104	Side Impact Module - Right - Low Control

Inflatable Restraint Seat Position Sensor (SPS) - Left

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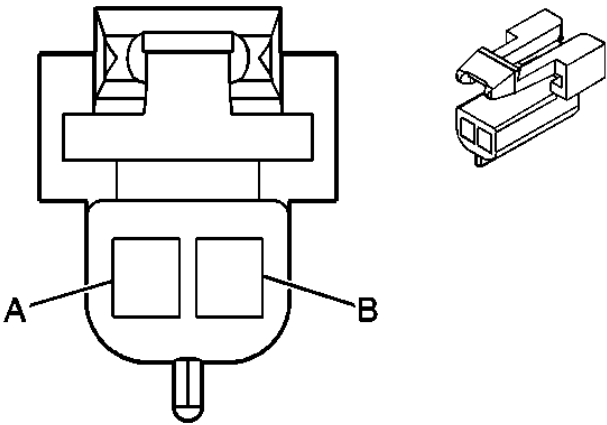


Connector Part Information

- 12052832
- 2-Way F Metri-Pack 150 Series Unsealed (BK)

Pin	Wire Color	Circuit No.	Function
A	BK	2638	Driver Seat Position Sensor - High
B	BK	2644	Seat Position Sensor Return

Inflatable Restraint Seat Position Sensor (SPS) - Right



Connector Part Information

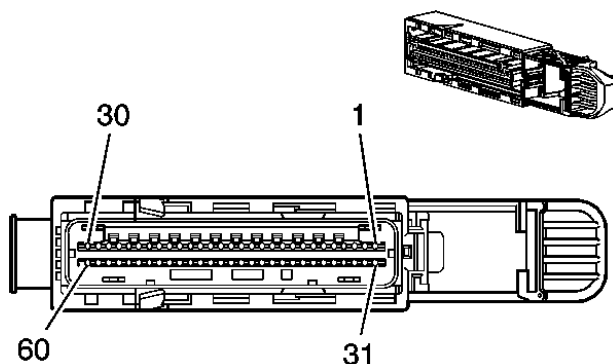
- 12052832
- 2-Way F Metri-Pack 150 Series Unsealed

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		(BK)	
Pin	Wire Color	Circuit No.	Function
A	BK	2645	Passenger Seat Position - High
B	BK	2644	Seat Position Sensor Return

Inflatable Restraint Sensing and Diagnostic Module (SDM)



Connector Part Information		<ul style="list-style-type: none">• 15460259• 60-Way F 0.64 Series Unsealed (YE)	
Pin	Wire Color	Circuit No.	Function
1	BK/WH	751	Ground
2-3	-	-	Not Used
4	WH	3023	Steering Wheel Module - Stage 2 - High Control
5	PK	3022	Steering Wheel Module - Stage 2 - Low Control
6	PU	3026	I/P Module - Stage 2 - Low Control
7	GY	3027	I/P Module - Stage 2 - High Control
8	TN	3021	Steering Wheel Module - Stage 1 - High Control
9	BN	3020	Steering Wheel Module - Stage 1 - Low Control
10	OG	3024	I/P Module - Stage 1 - Low Control
11	YE	3025	I/P Module - Stage 1 - High Control
12	D-GN	2105	Side Impact Module - Left - High Control (ASF)

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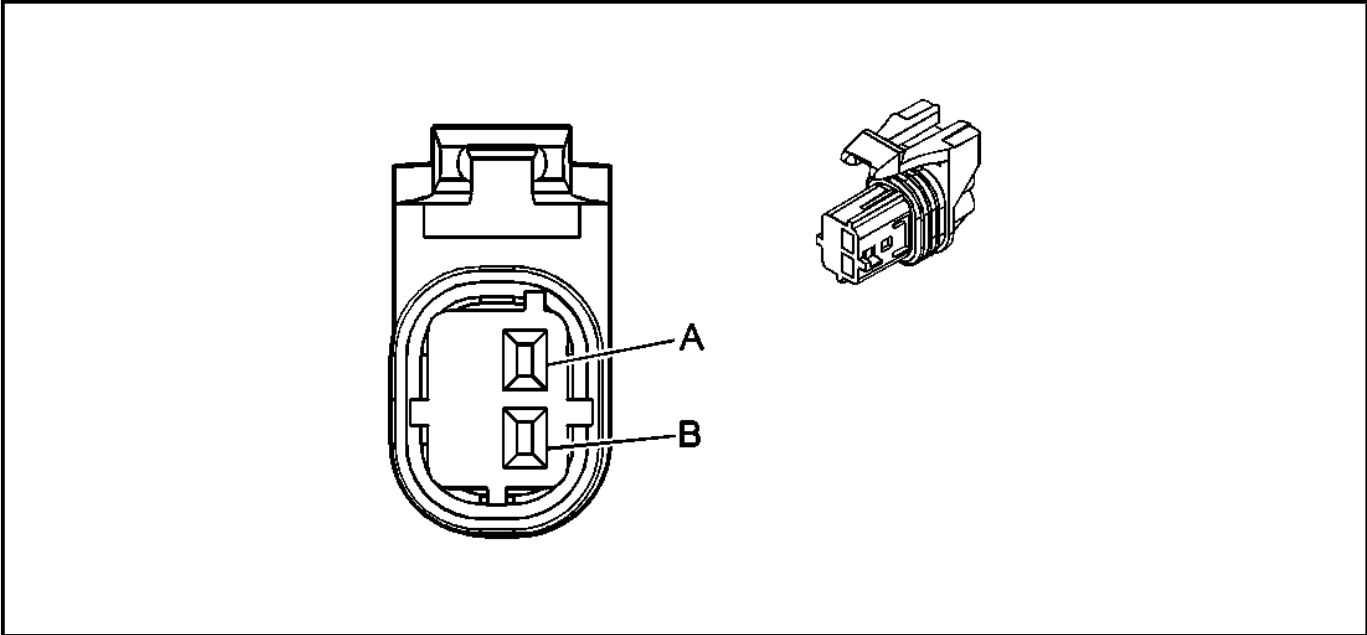
13	BN	2106	Side Impact Module - Left - Low Control (ASF)
14	D-BU	2104	Side Impact Module - Right - Low Control (ASF)
15	GY	2103	Side Impact Module - Right - High Control (ASF)
16	BK/WH	2118	Seat Belt Pretensioner - Left - High Control
17	OG/BK	2119	Seat Belt Pretensioner - Left - High Control
18	OG	2117	Seat Belt Pretensioner - Right - Low Control
19	L-GN	2116	Seat Belt Pretensioner - Right - High Control
20-27	-	-	Not Used
28	BK/WH	2644	Seat Position Sensor Return
29	BK/WH	238	Seat Belt Switch - Left
30	RD	2484	Seat Belt Switch Signal - Passenger - Solenoid Reset
31	YE	1139	Ignition 1 Voltage
32	D-BU	1128	Class 2 Serial Data
33	-	-	Not Used
34	PK	2306	Occupant Sensor - Serial Data Link
35-46	-	-	Not Used
47	WH	2162	Side Impact Sensor - Left - Signal (ASF)
48	D-GN	2164	Side Impact Sensor - Right - Signal (ASF)
49	TN	2163	Side Impact Sensor - Right - Voltage (ASF)
50	YE	2161	Side Impact Sensor - Left - Voltage (ASF)
51-54	-	-	Not Used
55	YE	354	Discriminating Sensor - Signal
56	D-GN	1409	Discriminating Sensor - Right - Signal
57	YE	1834	Forward Discriminating Sensor Signal

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58	GY	349	Discriminating Sensor - Left - Signal
59	L-GN/WH	2638	Driver Seat Position Sensor - High
60	L-BU	2645	Passenger Seat Position - High

Inflatable Restraint Side Impact Sensor (SIS) - Left (ASF)



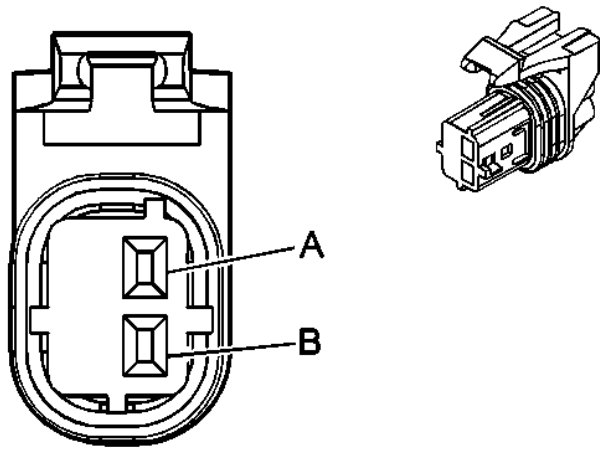
Connector Part Information		<ul style="list-style-type: none">• 15356726• 2-Way F GT 150 Series Sealed (YE)	
Pin	Wire Color	Circuit No.	Function
A	WH	2162	Side Impact Sensor - Left - Signal
B	YE	2161	Side Impact Sensor - Left - Voltage

Inflatable Restraint Side Impact Sensor (SIS) - Right (ASF)



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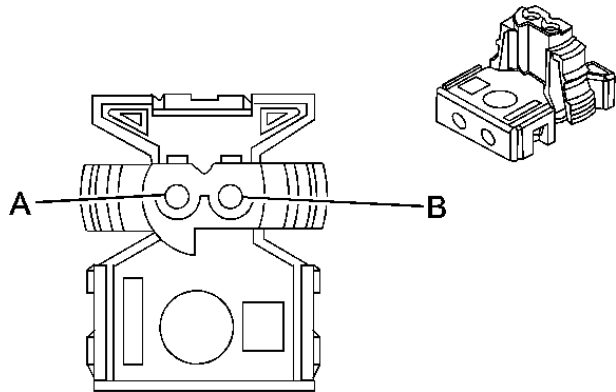


Connector Part Information

- **15356726**
- **2-Way F GT 150 Series Sealed (YE)**

Pin	Wire Color	Circuit No.	Function
A	D-GN	2164	Side Impact Sensor - Right Signal
B	TN	2163	Side Impact Sensor - Right - Voltage

Inflatable Restraint Steering Wheel Module C1



Connector Part Information

- **54550271**
- **2-Way F ABX-3 Code B (WH)**

Pin	Wire Color	Circuit No.	Function

A	TN	3021	Steering Wheel Module - Stage 1 - High Control
B	BN	3020	Steering Wheel Module - Stage 1 - Low Control

Inflatable Restraint Steering Wheel Module C2

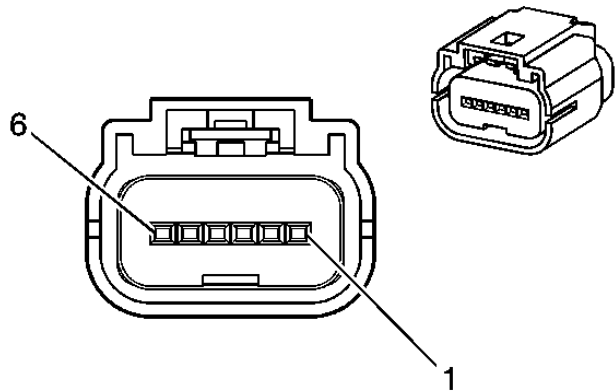
Connector Part Information		<ul style="list-style-type: none"> • 54550271 • 2-Way F ABX-3 Code G (PK) 	
Pin	Wire Color	Circuit No.	Function
A	WH	3023	Steering Wheel Module - Stage 2 - High Control
B	PK	3022	Steering Wheel Module - Stage 2 - Low Control

Rollover Sensor

Empty space for Rollover Sensor wiring information
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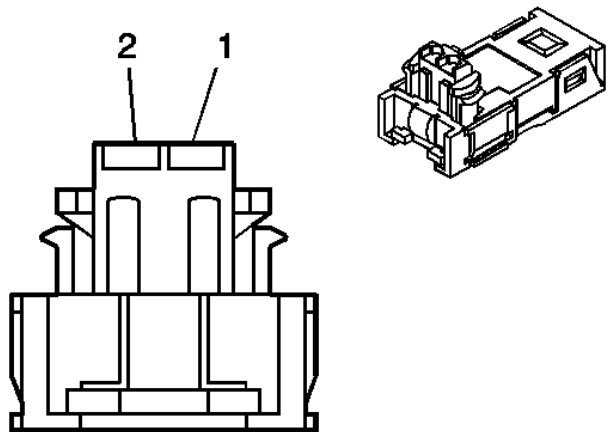


Connector Part Information

- **15418083**
- **6-Way F 0.64 Series Sealed (YE)**

Pin	Wire Color	Circuit No.	Function
1	YE	1139	Ignition 1 Voltage
2-4	-	-	Not Used
5	PK	2306	Occupant Sensor - Serial Data
6	BK/WH	751	Ground

Seat Belt Pretensioner - Left



Connector Part Information

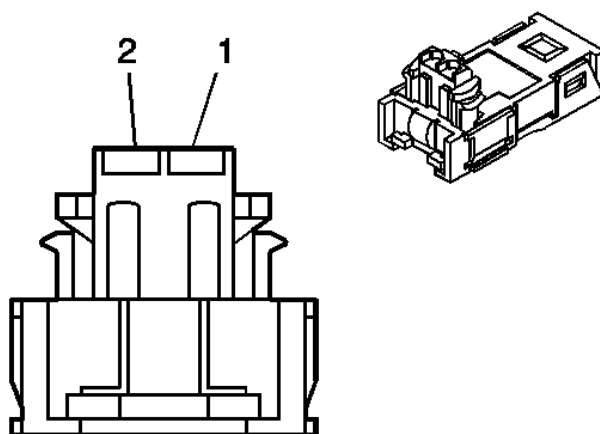
- **9098012138**

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		• 2-Way F (YE)	
Pin	Wire Color	Circuit No.	Function
1	BK	2118	Seat Belt Pretensioner - Left - High Control
2	WH	2119	Seat Belt Pretensioner - Left - Low Control

Seat Belt Pretensioner - Right



Connector Part Information		• 9098012138 • 2-Way F (YE)	
Pin	Wire Color	Circuit No.	Function
1	BK	2116	Seat Belt Pretensioner - Right - High Control
2	WH	2117	Seat Belt Pretensioner - Right - Low Control

DIAGNOSTIC INFORMATION AND PROCEDURES

DIAGNOSTIC CODE INDEX

DIAGNOSTIC CODE INDEX

DTC	Description
DTC B0012, B0013,	** MULTIPLE VALUES **

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<u>B0014, B0016, B0017, or B0018</u>	
<u>DTC B0022, B0024, B0026, B0042, B0043, or B0044</u>	** MULTIPLE VALUES **
<u>DTC B0051</u>	Deployment Commanded
<u>DTC B0053</u>	Deployment Commanded with Loop DTCs Present
<u>DTC B0057, B0058, or B0059</u>	** MULTIPLE VALUES **
<u>DTC B0061, B0062, or B0068</u>	** MULTIPLE VALUES **
<u>DTC B0064, B0065, or B0066</u>	** MULTIPLE VALUES **
<u>DTC B0069, B0070, or B0071</u>	** MULTIPLE VALUES **
<u>DTC B0077, B0078, B0079, B0080, B0081, or B0082</u>	** MULTIPLE VALUES **
<u>DTC B0083 or B0084</u>	** MULTIPLE VALUES **
<u>DTC B0092</u>	Passenger Presence System Performance
<u>DTC B0098</u>	Passenger Presence System Configuration Error
<u>DTC B0100, B0101, B0102, B0103, B0104, or B0105</u>	** MULTIPLE VALUES **
<u>DTC B1001</u>	Option Configuration Error
<u>DTC B1530</u>	Discard Passenger Presence System 1
<u>DTC B3855, B3856, or B3857</u>	** MULTIPLE VALUES **
<u>DTC U1241</u>	Lost Communication With Scan Tool

DIAGNOSTIC STARTING POINT - SIR

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

- The identification of the control modules which commands the system
- The ability of the control modules to communicate through the serial data circuit

- The identification of any stored diagnostic trouble codes (DTC) and their status

The use of **Diagnostic System Check - Vehicle** in Vehicle DTC Information will identify the correct procedure for diagnosing the system and where the procedure is located.

PASSENGER PRESENCE SYSTEM FLASH CODE PROCEDURES

Introduction

When the ignition is turned ON, the inflatable restraint sensing and diagnostic module (SDM) performs tests to diagnose critical malfunctions within itself. When the SDM has completed the power-up mode the SDM will establish communication with the passenger presence system (PPS). The PPS will respond by performing diagnostic tests to check for proper circuit continuity and for shorts to ground and voltage within the PPS. If the PPS detects a malfunction, the PPS will set a DTC, communicate with the SDM that a malfunction has occurred, and request the SDM to disable the instrument panel (I/P) module deployment loop. The SDM will respond by disabling the I/P module deployment loop, setting either DTC B0092 or B0098 and commanding the AIR BAG indicator ON. The SDM sets either DTC B0092 or B0098 to notify the driver of a PPS malfunction. The DTCs that the PPS set are non-Class 2 and have to be flashed through the PASSENGER AIR BAG ON/OFF indicators located on the inside rear view mirror. The procedures below are designed to assist in the flashing of these codes. Before you start, read these procedures carefully and completely. For further information regarding the PPS refer to **SIR System Description and Operation**.

Passenger Presence System (PPS) Flash Code Procedure

IMPORTANT: When flashing PPS codes, the instrument panel cluster (IPC) and dash lights will begin dimming on and off. This is normal operation during the flashing procedure and does not indicate additional system faults.

1. Empty the front outboard passenger seat.
2. Install a scan tool.
3. Turn ON the ignition, with the engine OFF.
4. With a scan tool, request the passenger presence system (PPS) to flash DTCs.
5. When the PPS receives a valid request to flash DTCs, the PPS will perform the following:
 1. Illuminate both PASSENGER AIR BAG ON and OFF indicators located on the inside rearview mirror for 1 second.
 2. Turn OFF both PASSENGER AIR BAG ON and OFF indicators for 1 second.

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- Flash the first number of the DTC using the OFF indicator. Count the number of times the OFF indicator flashes to obtain the first number of the DTC.
- Flash the second number of the DTC using the ON indicator. Count the number of times the ON indicator flashes to obtain the second number of the DTC.
- When the flashing procedure is initiated, the PPS will flash all current and history DTCs that are stored. After all DTCs have been flashed, to determine if the DTCs are current or history, the PPS will reflash the DTCs that are stored as current only. Any DTC that is not reflashed is stored as a history DTC.
- If the flashing procedure was unsuccessful repeat this procedure. Due to the communication status between the SDM and the PPS module, this procedure may have to be repeated until a successful flashing attempt has been achieved.
- Refer to the **Diagnostic Trouble Code (DTC) List - Vehicle** in Vehicle DTC Information, to diagnose the DTCs you have obtained.

SCAN TOOL DATA LIST

The SIR Scan Tool Data List contains all the restraint system related parameters that are available on the scan tool. The parameters in the list are arranged in alphabetical order. The column, "Data List," indicates the location of the parameter within the scan tool menu selections.

Use the SIR Scan Tool Data List as directed by a diagnostic table or to supplement the diagnostic procedures. Begin all of the diagnostic procedures with the Diagnostic System Check - Vehicle. Refer to the **Diagnostic System Check - Vehicle** in Vehicle DTC Information. Use the SIR Scan Tool Data List after determining the following:

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

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

SIR Scan Tool Data List

Scan Tool Parameter	Data List	Units Displayed	Typical Data Value
Ignition ON/Engine OFF/Driver Seat Belt BUCKLED			

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8-Digit GM Part Number	Module Information 2	8-digit number	XXXXXXXXXX
Calibration ID	Module Information 1	4-digit number	Varies
Component Serial Number	Module Information 2	4-digit number	XXXX
Driver Side Belt Status	Inputs	Buckled/Unbuckled	Buckled
Driver Side Impact Sensor ID	Module Information 1	2-digit number	43
Electronic Front End Sensor 1 ID	Module Information 1	2-digit number	51
Electronic Front End Sensor 2 ID	Module Information 1	2-digit number	51
Ignition Voltage	Data	Volts	12 volts
Julian Date of Build	Module Information 1	3-digit number	Varies
Passenger Side Belt Status	Inputs	Buckled/Unbuckled	Unbuckled
Passenger Side Impact Sensor ID	Module Information 1	2-digit number	43
ROM ID	Module Information 1	4-digit number	Varies
Year Module Built	Module Information 1	4-digit number	Varies

SCAN TOOL DATA DEFINITIONS

The SIR scan tool data definitions contain a brief description of all SIR related parameters available on the scan tool. The parameters that are available on the scan tool are listed below in alphabetical order.

8-Digit GM Part Number

The scan tool displays an 8-digit part number. This number is the GM part number that is stored within the SDM memory.

Calibration ID

The scan tool displays a 4-digit number. This calibration ID is the check sum of the SDM read only memory contents.

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Component Serial Number

The scan tool displays the SDM serial number.

Driver Side Belt Status

The scan tool displays Buckled or Unbuckled. The signal from the driver seat belt switch indicates whether the driver seat is buckled or unbuckled.

Driver Side Impact Sensor ID

The scan tool displays a 2-digit ID number. The ID signal is sent to the SDM from the Driver SIS.

Electronic Front End Sensor 1 ID

The scan tool displays a 2-digit ID number. The ID signal is sent to the SDM from the left hand front end sensor.

Electronic Front End Sensor 2 ID

The scan tool displays a 2-digit ID number. The ID signal is sent to the SDM from the right hand front end sensor.

Ignition Voltage

The scan tool displays 0-20 volts. The Ignition represents the system voltage measured by the SDM at its ignition feed.

Julian Date of Build

The scan tool displays a 3 digit number. Which represents the day of the year the module was built.

Passenger Side Belt Status

The scan tool displays Buckled or Unbuckled. The signal from the passenger seat belt switch indicates whether the passenger seat is buckled or unbuckled.

Passenger Side Impact Sensor ID

The scan tool displays a 2-digit ID number. The ID signal is sent to the SDM from the

Passenger SIS.

ROM ID

The scan tool displays a 4-digit number. This number is the read-only memory (ROM) ID.

Year Module Built

The scan tool displays what year the module was built.

DTC 023

Circuit Description

The inflatable restraint seat belt tension sensor is used to enhance the Passenger Presence System (PPS) when an infant car seat is properly restrained on the front outboard passenger seat. The seat belt tension sensor is a 3-wire potentiometer mounted on the lower seat belt anchor and provides an input to the PPS module. When an infant car seat is properly restrained on the front passenger seat, the seat belt is tightly secured through the infant car seat. The seat belt pulls on the tension sensor and changes the voltage signal to the PPS module. The PPS module uses the voltage signal to help determine if a tightly belted infant car seat is installed. The PPS uses the inputs from the seat belt tension sensor and the PPS pressure sensor to determine if the instrument panel module (IPM) should be suppressed or enabled. The PPS monitors the seat belt tension sensor circuits and sets DTC 023 if a fault is detected.

DTC Descriptor

This diagnostic procedure supports the following DTC:

DTC 023 Seat Belt Tension Sensor Circuit Out of Range

Conditions for Running the DTC

Ignition 1 voltage is within the normal operating voltage range.

Conditions for Setting the DTC

- The PPS detects the voltage at the passenger seat belt tension sensor signal is less than 0.05 volt or greater than 4.5 volts for 500 milliseconds.
- The PPS detects the voltage at the passenger seat belt tension sensor 5-volt reference is less than 4.5 volts or greater than 9.1 volts for 500 milliseconds.
- The PPS detects the amperage at the passenger seat belt tension sensor low reference is 25

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mA or greater for 500 milliseconds.

Action Taken When the DTC Sets

- The sensing and diagnostic module (SDM) disables the IPM deployment loop.
- The SDM commands the AIR BAG indicator ON via class 2 serial data.

Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists.
- You issue a scan tool CLEAR DTCs command.
- A history DTC will clear once 255 malfunction-free ignition cycles have occurred.

Diagnostic Aids

The following can cause an intermittent condition:

- A short between the passenger seat belt tension sensor signal, 5-volt reference, and low reference circuits
- An open or high resistance between the passenger seat belt tension sensor signal, 5-volt reference, and low reference circuits
- Inspect the passenger seat belt tension sensor signal, 5-volt reference, and low reference circuits carefully for cutting and/or chafing.

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

Test Description

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

5: This step tests for a short to ground, a high resistance, or an open in the seat belt tension sensor signal circuit.

6: This step tests for a short to ground, a high resistance, or an open in the seat belt tension sensor 5-volt reference circuit.

7: This step tests for a short to ground, a high resistance, or an open in the seat belt tension sensor low reference circuit.

8: This step tests for a short to voltage in the seat belt tension sensor signal circuit.

9: This step tests the seat belt tension sensor signal circuit input voltage range.

10: This step tests for a short to voltage in the seat belt tension sensor 5-volt reference circuit.

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11: This step tests for a short to voltage in the seat belt tension sensor low reference circuit.

DTC 023

Step	Action	Value(s)	Yes	No
Schematic Reference: <u>SIR Schematics</u> Connector End View Reference: <u>SIR Connector End Views</u>				
1	Did you perform the Diagnostic System Check - Vehicle?	-	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u> in Vehicle DTC Information
2	1. Turn OFF the ignition. 2. Disconnect the seat belt tension sensor connector. 3. Inspect the seat belt tension sensor terminals and harness connector for damage or corrosion. Does the seat belt tension sensor terminals or harness connector exhibit any signs of damage or corrosion?	-	Go to Step 3	Go to Step 4
3	1. If the seat belt tension sensor terminals are damaged, replace the seat belt tension sensor. Refer to <u>Seat Belt Buckle Replacement - Front</u> in Seat Belts. 2. If the seat belt tension retractor sensor harness connector is damaged, replace the connector. Refer to <u>Connector Repairs</u> in Wiring Systems. Did you complete the replacement?	-	Go to Step 15	-
	1. Disconnect the Passenger Presence System (PPS) module connector.			

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4	<p>2. Inspect the PPS module connector for corrosion or damage. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	-	Go to Step 15	Go to Step 5
5	<p>Test the seat belt tension sensor signal circuit for the following:</p> <ul style="list-style-type: none"> • An open • A high resistance • A short to ground <p>Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	-	Go to Step 15	Go to Step 6
6	<p>Test the seat belt tension sensor 5-volt reference circuit for the following:</p> <ul style="list-style-type: none"> • An open • A high resistance • A short to ground <p>Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	-	Go to Step 15	Go to Step 7
7	<p>Test the seat belt tension sensor low reference circuit for the following:</p> <ul style="list-style-type: none"> • An open • A high resistance • A short to ground 	-		

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	Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. Did you find and correct the condition?		Go to Step 15	Go to Step 8
8	1. Turn ON the ignition, with the engine OFF. 2. Test the seat belt tension sensor signal circuit for a short to voltage. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. Did you find and correct the condition?	-	Go to Step 15	Go to Step 9
9	Test the seat belt tension sensor signal circuit input voltage. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. Does the voltage measure within the specified range ?	0.05-4.5 V	Go to Step 10	Go to Step 12
10	Test the seat belt tension sensor 5-volt reference circuit for a short to voltage. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. Did you find and correct the condition?	-	Go to Step 15	Go to Step 11
11	Test the seat belt tension sensor low reference circuit for a short to voltage. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. Did you find and correct the condition?	-	Go to Step 15	Go to Step 12
12	Replace the seat belt tension sensor. Refer to <u>Seat Belt Buckle Replacement - Front</u> in Seat Belts. Did you complete the replacement?	-	Go to Step 13	-
13	1. Reconnect all SIR and PPS components. 2. Verify that all components, connectors, and connector position assurances (CPAs) are properly mounted.	-		

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	<ol style="list-style-type: none">3. Use the scan tool in order to clear the SIR and PPS DTCs.4. Operate the vehicle within the Conditions for Running the DTC as specified in the supporting text. <p>Does the DTC reset?</p>		Go to Step 14	System OK
14	Replace the PPS. Refer to <u>Control Module References</u> in Computer/Integrating Systems for replacement, setup, and programming. Did you complete the replacement?	-	Go to Step 15	-
15	<ol style="list-style-type: none">1. Reconnect all SIR and PPS system components.2. Verify that all components, connectors, and CPAs are properly mounted.3. Use the scan tool in order to clear the SIR and PPS DTCs.4. Rezero the PPS. Refer to <u>Passenger Presence System Programming and Setup</u> in Programming and Setup.5. Operate the vehicle within the Conditions for Running the DTC as specified in the supporting text. <p>Does the DTC reset?</p>	-	Go to Step 2	System OK

DTC 024**Circuit Description**

The inflatable restraint passenger presence system (PPS) is used to monitor the weight of an occupant on the front outboard passenger seat and communicate the status to the sensing and diagnostic module (SDM) whether to enable or suppress the deployment of the instrument panel (I/P) module. The PPS consist of an electronic control module, silicone filled sensor pad, pressure sensor, seat belt tension retractor sensor, wiring harness, and PASSENGER AIR BAG ON/OFF indicators. The silicone filled sensor pad is located under the passenger seat foam

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cushion and is connected by a hose clamped to the pressure sensor. The weight of the occupant sitting in the front passenger seat is measured as a pressure change within the bladder by the pressure sensor. The pressure sensor sends a voltage signal to the PPS module. If the pressure from the occupant's weight is less than a specified value, the PPS module will send a suppress signal to the SDM to disable the I/P module. If the pressure from the occupant's weight is higher than a specified value, the PPS module will send an enable signal to the SDM to enable the I/P module. The PPS module will notify the customer of the enable/disable status by turning on one of the PASSENGER AIR BAG ON/OFF indicators located on the rearview mirror. The PPS monitors itself for faults and will set flash DTCs if a fault is detected. The PPS will also notify the SDM of a fault. The SDM will respond by setting either DTC B0092 or B0098 and requesting the instrument panel cluster (IPC) to turn the AIR BAG indicator ON.

DTC Descriptor

This diagnostic procedure supports the following DTC:

DTC 024 PPS Ignition 1 Voltage Performance

Conditions for Running the DTC

Ignition 1 voltage is within the normal operating voltage range.

Conditions for Setting the DTC

The PPS detects ignition 1 voltage is less than 8 volts for 500 milliseconds.

Action Taken When the DTC Sets

- The SDM disables the I/P module deployment loop.
- The SDM commands the AIR BAG indicator ON via class 2 serial data.

Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists.
- You issue a scan tool CLEAR DTCs command.
- A history DTC will clear once 255 malfunction-free ignition cycles have occurred.

Diagnostic Aids

The following can cause an intermittent condition:

- A short in the ignition 1 voltage circuit between the PPS module and the body relay block

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- An open or high resistance in the ignition 1 voltage circuit between the PPS module and the body relay block

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

The PPS will set DTC 024 when the ignition voltage has fallen below 8 volts. The PPS will set DTC 024 as a history code only. This is a normal condition for DTC 024 and it should be diagnosed as a current DTC.

Test Description

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

2: This step inspects the PPS module connector.

3: This step inspects the main seat harness connector.

4: This step tests the PPS ground circuit for an open or high resistance.

5: This step tests the PPS ignition 1 voltage circuit for a short to ground, an open, or high resistance.

DTC 024

Step	Action	Yes	No
Schematic Reference: <u>SIR Schematics</u> Connector End View Reference: <u>SIR Connector End Views</u>			
1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u> in Vehicle DTC Information
2	1. Turn OFF the ignition. 2. Disconnect the passenger presence system (PPS) module connector. 3. Inspect the PPS module connector for corrosion or damage. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> in Wiring Systems.		
	Did you find and correct the condition?	Go to Step 7	Go to Step 3

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3	<ol style="list-style-type: none">1. Disconnect the main seat harness connector located under the RF seat. Refer to <u>Power Seat Systems Connector End Views</u> in Seats.2. Inspect both halves of the connector for corrosion or damage. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> in Wiring Systems. <p>Did you find and correct the condition?</p>	Go to Step 7	Go to Step 4
4	<p>Test the PPS ground circuit for an open or high resistance. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	Go to Step 7	Go to Step 5
5	<p>Test the PPS ignition 1 voltage circuit for a short to ground, an open, or high resistance. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	Go to Step 7	Go to Step 6
6	<p>Replace the PPS. Refer to <u>Control Module References</u> in Computer/Integrating Systems for replacement, setup, and programming.</p> <p>Did you complete the replacement?</p>	Go to Step 7	-
7	<ol style="list-style-type: none">1. Reconnect all SIR and PPS system components.2. Verify that all components, connectors, and connector position assurances (CPAs) are properly mounted.3. Use the scan tool in order to clear the SIR and PPS DTCs.4. Rezero the PPS. Refer to <u>Passenger Presence System Programming and Setup</u> in Programming and Setup.5. Operate the vehicle within the Conditions for Running the DTC as specified in the supporting text.		

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Does the DTC reset?

Go to **Step 2**

System OK

DTC 063

Circuit Description

The inflatable restraint passenger presence system (PPS) is used to monitor the weight of an occupant on the front outboard passenger seat and communicate the status to the sensing and diagnostic module (SDM) whether to enable or suppress the deployment of the instrument panel (I/P) module. The PPS consist of an electronic control module, silicone filled sensor pad, pressure sensor, seat belt tension retractor sensor, wiring harness, and PASSENGER AIR BAG ON/OFF indicators. The silicone filled sensor pad is located under the passenger seat foam cushion and is connected by a hose clamped to the pressure sensor. The weight of the occupant sitting in the front passenger seat is measured as a pressure change within the bladder by the pressure sensor. The pressure sensor sends a voltage signal to the PPS module. If the pressure from the occupant's weight is less than a specified value, the PPS module will send a suppress signal to the SDM to disable the I/P module. If the pressure from the occupant's weight is higher than a specified value, the PPS module will send an enable signal to the SDM to enable the I/P module. The PPS module will notify the customer of the enable/disable status by turning on one of the PASSENGER AIR BAG ON/OFF indicators located on the rearview mirror. The PPS monitors itself for faults and will set flash DTCs if a fault is detected. The PPS will also notify the SDM of a fault. The SDM will respond by setting DTC B0092 and requesting the instrument panel cluster (IPC) to turn the AIR BAG indicator ON. The PPS will set DTC 063 as an indication that the PPS is out of calibration. The PPS is not capable of being calibrated at the service level, the PPS must be replaced.

DTC Descriptor

This diagnostic procedure supports the following DTC:

DTC 063 PPS Out of Calibration

Conditions for Running the DTC

Ignition 1 voltage is within the normal operating voltage range.

Action Taken When the DTC Sets

- The SDM disables the I/P module deployment loop.
- The SDM commands the AIR BAG indicator ON via class 2 serial data.

Conditions for Clearing the DTC

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DTC 063 is an indication that the PPS is out of calibration. You cannot recalibrate the PPS. Replace the PPS after following the instructions in the diagnostic table below.

Diagnostic Aids

The presence of current or history DTCs while attempting to rezero the PPS will cause the PPS module to set DTC 063. Verify that all SIR and PPS DTCs have been cleared before rezeroing the PPS.

DTC 063

Step	Action	Yes	No
1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u> in Vehicle DTC Information
2	<ol style="list-style-type: none">1. Install a scan tool.2. Turn ON the ignition, with the engine OFF.3. Use the scan tool in order to clear the SIR and PPS DTCs.4. Rezero the passenger presence system (PPS). Refer to <u>Passenger Presence System Programming and Setup</u> in Programming and Setup.5. Operate the vehicle within the Conditions for Running the DTC as specified in the supporting text. Does the DTC reset?	Go to Step 3	Go to <u>Diagnostic System Check - Vehicle</u> in Vehicle DTC Information
3	Replace the PPS. Refer to <u>Control Module References</u> in Computer/Integrating Systems for replacement, setup, and programming. Did you complete the replacement?	Go to Step 4	-
	<ol style="list-style-type: none">1. Reconnect all SIR and PPS system components.2. Verify that all components, connectors, and connector position assurances (CPAs)		

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4	are properly mounted.		
	3. Use the scan tool in order to clear the SIR and PPS DTCs.		
	4. Rezero the PPS. Refer to <u>Passenger Presence System Programming and Setup</u> in Programming and Setup.		
	5. Operate the vehicle within the Conditions for Running the DTC as specified in the supporting text.	Go to <u>Diagnostic System Check - Vehicle</u> in Vehicle DTC Information	
	Did you complete the repair?		-

DTC 064

Circuit Description

The inflatable restraint passenger presence system (PPS) is used to monitor the weight of an occupant on the front outboard passenger seat and communicate the status to the sensing and diagnostic module (SDM) whether to enable or suppress the deployment of the instrument panel (I/P) module. The PPS consist of an electronic control module, silicone filled sensor pad, pressure sensor, seat belt tension retractor sensor, wiring harness, and PASSENGER AIR BAG ON/OFF indicators. The silicone filled sensor pad is located under the passenger seat foam cushion and is connected by a hose clamped to the pressure sensor. The weight of the occupant sitting in the front passenger seat is measured as a pressure change within the bladder by the pressure sensor. The pressure sensor sends a voltage signal to the PPS module. If the pressure from the occupant's weight is less than a specified value, the PPS module will send a suppress signal to the SDM to disable the I/P module. If the pressure from the occupant's weight is higher than a specified value, the PPS module will send an enable signal to the SDM to enable the I/P module. The PPS module will notify the customer of the enable/disable status by turning on one of the PASSENGER AIR BAG ON/OFF indicators located on the rearview mirror. The PPS monitors itself for faults and will set flash DTCs if a fault is detected. The PPS will also notify the SDM of a fault. The SDM will respond by setting either DTC B0092 or B0098 and requesting the instrument panel cluster (IPC) to turn the AIR BAG indicator ON.

DTC Descriptor

This diagnostic procedure supports the following DTC:

DTC 064 PPS Communication/ID Performance

Conditions for Running the DTC

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Ignition 1 voltage is within the normal operating voltage range.

Conditions for Setting the DTC

- The PPS has lost communications with the SDM.
- The PPS verification ID does not match the ID that is stored in the SDM.

Action Taken When the DTC Sets

- The SDM disables the I/P module deployment loop.
- The SDM commands the AIR BAG indicator ON via class 2 serial data.

Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists.
- You issue a scan tool CLEAR DTCs command.
- A history DTC will clear once 255 malfunction free ignition cycles have occurred.

Diagnostic Aids

IMPORTANT: DTC B0098 is an indication that the SDM has received an incorrect PPS verification ID. The SDM will continue to request the verification ID from the PPS for 5 seconds. If the SDM does not receive the correct verification ID from the PPS within 5 seconds, the SDM will set DTC B0098 as current, illuminate the AIR BAG indicator, and disable the I/P module deployment loop. If either the SDM or PPS were replaced make sure the correct part numbers were used for the vehicle application.

DTC B0092 or B0098 will set if the PPS has a current malfunction and has set DTC 064. The SDM will set DTC B0092 or B0098 as current and command the AIR BAG indicator ON. This is done to notify the driver of any PPS malfunctions. When DTC B0092 or B0098 are present it is important to check the PPS for any current DTCs. Refer to **Passenger Presence System Flash Code Procedures**.

Test Description

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

2: This step tests for current PPS DTCs.

8: This step tests for a short to ground, a high resistance, or an open in the PPS class 2 serial

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data circuit.

9: This step tests for a short to voltage in the PPS class 2 serial data circuit.

DTC 064

Step	Action	Yes	No
Schematic Reference: <u>SIR Schematics</u>			
Connector End View Reference: <u>SIR Connector End Views</u>			
1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u> in Vehicle DTC Information
2	<ol style="list-style-type: none">1. Install a scan tool.2. Turn ON the ignition, with the engine OFF.3. With a scan tool, request the passenger presence system (PPS) to flash DTCs. Refer to <u>Passenger Presence System Flash Code Procedures</u>. Does the PPS indicate that DTC 064 is current?		Go to Step 13
3	Does the scan tool indicate that DTC B0098 is current?	Go to <u>DTC B0098</u>	Go to Step 4
4	<ol style="list-style-type: none">1. Turn OFF the ignition.2. Disconnect the PPS module connector. Refer to <u>Inflatable Restraint Passenger Presence System Replacement - Front</u>.3. Inspect the PPS module terminals and harness connector for damage or corrosion. Does the PPS module terminals or harness connector exhibit any signs of damage or corrosion?	Go to Step 5	Go to Step 6
	<ol style="list-style-type: none">1. If the PPS module terminals are damaged, replace the PPS. Refer to <u>Inflatable Restraint Passenger Presence System Replacement - Front</u>.		

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5	<p>2. If the PPS harness connector is damaged, replace the connector. Refer to <u>Connector Repairs</u> in Wiring Systems.</p> <p>Did you complete the replacement?</p>	Go to Step 13	-
6	<p>1. Disconnect the main seat harness connector located under the RF seat. Refer to <u>Power Seat Systems Connector End Views</u> in Seats.</p> <p>2. Inspect both halves of the connector for corrosion or damage. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	Go to Step 13	Go to Step 7
7	<p>1. Disconnect the sensing and diagnostic module (SDM) connector. Refer to <u>Inflatable Restraint Sensing and Diagnostic Module Replacement</u>.</p> <p>2. Inspect the SDM connector for corrosion or damage. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	Go to Step 13	Go to Step 8
8	<p>Test the PPS class 2 serial data circuit for a short to ground, a high resistance, or an open. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	Go to Step 13	Go to Step 9
9	<p>1. Turn ON the ignition, with the engine OFF.</p> <p>2. Test the PPS class 2 serial data circuit for a short to voltage. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	Go to Step 13	Go to Step 10

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10	<p>Replace the PPS. Refer to <u>Control Module References</u> in Computer/Integrating Systems for replacement, setup, and programming.</p> <p>Did you complete the replacement?</p>	Go to Step 11	-
11	<ol style="list-style-type: none"> 1. Reconnect all SIR and PPS system components. 2. Verify that all components, connectors, and connector position assurances (CPAs) are properly mounted. 3. Use the scan tool in order to clear the SIR and PPS DTCs. 4. Rezero the PPS. Refer to <u>Passenger Presence System Programming and Setup</u> in Programming and Setup. 5. Operate the vehicle within the Conditions for Running the DTC as specified in the supporting text. <p>Does the DTC reset?</p>	Go to Step 12	System OK
12	<p>Replace the SDM. Refer to <u>Control Module References</u> in Computer/Integrating Systems for replacement, setup, and programming.</p> <p>Did you complete the replacement?</p>	Go to Step 13	-
13	<ol style="list-style-type: none"> 1. Reconnect all SIR and PPS system components. 2. Verify that all components, connectors, and CPAs are properly mounted. 3. Use the scan tool in order to clear the SIR and PPS DTCs. 4. Rezero the PPS. Refer to <u>Passenger Presence System Programming and Setup</u> in Programming and Setup. 5. Operate the vehicle within the Conditions for Running the DTC as specified in the supporting text. <p>Does the DTC reset?</p>	Go to Step 2	System OK

DTC 065**Circuit Description**

The inflatable restraint passenger presence system (PPS) is used to monitor the weight of an occupant on the front outboard passenger seat and communicate the status to the sensing and diagnostic module (SDM) whether to enable or suppress the deployment of the instrument panel (I/P) module. The PPS consist of an electronic control module, silicone filled sensor pad, pressure sensor, seat belt tension retractor sensor, wiring harness, and PASSENGER AIR BAG ON/OFF indicators. The silicone filled sensor pad is located under the passenger seat foam cushion and is connected by a hose clamped to the pressure sensor. The weight of the occupant sitting in the front passenger seat is measured as a pressure change within the bladder by the pressure sensor. The pressure sensor sends a voltage signal to the PPS module. If the pressure from the occupant's weight is less than a specified value, the PPS module will send a suppress signal to the SDM to disable the I/P module. If the pressure from the occupant's weight is higher than a specified value, the PPS module will send an enable signal to the SDM to enable the I/P module. The PPS module will notify the customer of the enable/disable status by turning on one of the PASSENGER AIR BAG ON/OFF indicators located on the rearview mirror. The PPS monitors itself for faults and will set flash DTCs if a fault is detected. The PPS will also notify the SDM of a fault. The SDM will respond by setting DTC B0092 and requesting the instrument panel cluster (IPC) to turn the AIR BAG indicator ON.

DTC Descriptor

This diagnostic procedure supports the following DTC:

DTC 065 PPS Sensor Circuit Out of Range**Conditions for Running the DTC**

Ignition 1 voltage is within the normal operating voltage range.

Conditions for Setting the DTC

- The PPS detects the voltage at PPS sensor signal is less than 0.05 volts or greater than 4.5 volts for 500 milliseconds.
- The PPS detects the voltage at PPS sensor 5-volt reference is less than 4.5 volts or greater than 9.1 volts for 500 milliseconds.
- The PPS detects the amperage at PPS sensor low reference is 25 mA or greater for 500 milliseconds.

Action Taken When the DTC Sets

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- The SDM disables the I/P module deployment loop.
- The SDM commands the AIR BAG indicator ON via class 2 serial data.

Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists.
- You issue a scan tool CLEAR DTCs command.
- A history DTC will clear once 255 malfunction-free ignition cycles have occurred.

Diagnostic Aids

The following can cause an intermittent condition:

- A short between the PPS sensor signal, 5-volt reference, and low reference circuits
- An open or high resistance between the PPS sensor signal, 5-volt reference, and low reference circuits
- Inspect the PPS sensor signal, 5-volt reference, and low reference circuits carefully for cutting and/or chafing

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

Test Description

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

- 2:** This step inspects the PPS pressure sensor connector.
- 5:** This step tests for a short to ground, a high resistance, or an open in the PPS sensor signal circuit.
- 6:** This step tests for a short to ground, a high resistance, or an open in the PPS sensor 5-volt reference circuit.
- 7:** This step tests for a short to ground, a high resistance, or an open in the PPS sensor low reference circuit.
- 8:** This step tests for a short to voltage in the PPS sensor signal circuit.
- 9:** This step tests the PPS sensor signal circuit input voltage range.
- 10:** This step tests for a short to voltage in the PPS sensor 5-volt reference circuit.
- 11:** This step tests for a short to voltage in the PPS sensor low reference circuit.

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Step	Action	Value(s)	Yes	No
Schematic Reference: <u>SIR Schematics</u> Connector End View Reference: <u>SIR Connector End Views</u>				
1	Did you perform the Diagnostic System Check - Vehicle?	-	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u> in Vehicle DTC Information
2	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Disconnect the passenger presence system (PPS) pressure sensor connector. Refer to <u>Inflatable Restraint Passenger Presence System Replacement - Front.</u> 3. Inspect the pressure sensor terminals and harness connector for damage or corrosion. <p>Do the PPS pressure sensor terminals or the harness connector exhibit any signs of damage or corrosion?</p>	-	Go to Step 3	Go to Step 4
3	<ol style="list-style-type: none"> 1. If the PPS pressure sensor terminals are damaged, replace the PPS. Refer to <u>Inflatable Restraint Passenger Presence System Replacement - Front.</u> 2. If the PPS pressure sensor harness connector is damaged, replace the connector. Refer to <u>Connector Repairs</u> in Wiring Systems. <p>Did you complete the replacement?</p>	-	Go to Step 13	-
	<ol style="list-style-type: none"> 1. Disconnect the PPS module connector. Refer to <u>Inflatable Restraint Passenger Presence System Replacement - Front.</u> 			

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4	<p>2. Inspect the PPS module connector for corrosion or damage. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	-	Go to Step 13	Go to Step 5
5	<p>Test the PPS sensor signal circuit for a short to ground, a high resistance, or an open. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	-	Go to Step 13	Go to Step 6
6	<p>Test the PPS sensor 5-volt reference circuit for a short to ground, a high resistance, or an open. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	-	Go to Step 13	Go to Step 7
7	<p>Test the PPS sensor low reference circuit for a short to ground, a high resistance, or an open. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	-	Go to Step 13	Go to Step 8
8	<p>1. Turn ON the ignition, with the engine OFF.</p> <p>2. Test the PPS sensor signal circuit for a short to voltage. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	-	Go to Step 13	Go to Step 9
9	<p>Test the PPS sensor signal circuit input voltage. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems.</p> <p>Does the voltage measure within the specified range?</p>	0.05-4.5 V	Go to Step 10	Go to Step 12
	<p>Test the PPS sensor 5-volt reference circuit for a short to voltage. Refer to <u>Circuit</u></p>			

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10	Testing and Wiring Repairs in Wiring Systems. Did you find and correct the condition?	-	Go to Step 13	Go to Step 11
11	Test the PPS sensor low reference circuit for a short to voltage. Refer to Circuit Testing and Wiring Repairs in Wiring Systems. Did you find and correct the condition?	-	Go to Step 13	Go to Step 12
12	Replace the PPS. Refer to Control Module References in Computer/Integrating Systems for replacement, setup, and programming. Did you complete the replacement?	-	Go to Step 13	-
13	<ol style="list-style-type: none">1. Reconnect all SIR and PPS system components.2. Verify that all components, connectors, and connector position assurances (CPAs) are properly mounted.3. Use the scan tool in order to clear the SIR and PPS DTCs.4. Rezero the PPS. Refer to Passenger Presence System Programming and Setup in Programming and Setup.5. Operate the vehicle within the Conditions for Running the DTC as specified in the supporting text. Does the DTC reset?	-	Go to Step 2	System OK

DTC B0012, B0013, B0014, B0016, B0017, OR B0018**Circuit Description**

The passenger deployment loop consists of a dual stage inflatable restraint instrument panel (I/P) module. The I/P module high circuits, and the I/P module low circuits exist for both stages 1 and 2. There are 2 shorting bars used within the I/P module connector. These shorting bars short together the I/P module stage 1 high circuits, and low circuits, and the I/P module stage 2 high

circuits and low circuits when the connector is disconnected. This prevents unwanted deployment of the inflator module during servicing. During a frontal crash of sufficient force the inflatable restraint sensing and diagnostic module (SDM) will allow current to flow through the deployment loop. This flow of current will deploy the I/P module. The SDM performs continuous diagnostic tests on the deployment loops to check for proper circuit continuity, and for shorts-to-ground or voltage. If a malfunction is detected, a DTC will be stored in memory.

DTC Descriptors

This diagnostic procedure supports the following DTCs:

- DTC B0012 Right Front/Passenger Frontal Deployment Loop (stage 2) Resistance Low
- DTC B0013 Right Front/Passenger Frontal Deployment Loop (stage 2) Open
- DTC B0014 Right Front/Passenger Frontal Deployment Loop (stage 2) Voltage Out of Range
- DTC B0016 Right Front/Passenger Frontal Deployment Loop (single stage or stage 1) Resistance Low
- DTC B0017 Right Front/Passenger Frontal Deployment Loop (single stage or stage 1) Open
- DTC B0018 Right Front/Passenger Frontal Deployment Loop (single stage or stage 1) Voltage Out of Range

Conditions for Running the DTC

Ignition 1 voltage is within the normal operating voltage range.

Conditions for Setting the DTC

- DTC B0012 (stage 2) or B0016 (stage 1) will set when the I/P module deployment loop resistance is less than 1.3 ohms for 500 milliseconds.
- DTC B0013 (stage 2) or B0017 (stage 1) will set when one of the following conditions occurs:
 - The I/P module high circuit is less than 2.4 volts and the I/P module deployment loop is more than 6 ohms for 500 milliseconds.
 - The I/P module deployment loop resistance is more than 4.8 ohms for 500 milliseconds.
- DTC B0014 (stage 2) or B0018 (stage 1) will set when one of the following conditions occur:
 - The I/P module high circuits and/or low circuits is short-to-ground, or short-to-voltage for 500 milliseconds.

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- The I/P module high circuit is less than 2.4 volts and I/P module deployment loop resistance is less than 6 ohms for 500 milliseconds.

Action Taken When the DTC Sets

The SDM commands the AIR BAG indicator ON via class 2 serial data.

Conditions for Clearing the DTC

- The condition responsible for setting the DTC is not currently present, and the scan tool Clear DTCs function is used.
- A history DTC will clear once 255 malfunction-free ignition cycles have occurred.

Diagnostic Aids

The following are possible causes of the malfunction:

- A short between the I/P module stage 1 or stage 2, high and low circuits
- An open or a high resistance in the I/P module stage 1 or stage 2, high or low circuits
- A short to ground or a short to voltage in the I/P module stage 1 or stage 2, high or low circuits
- A malfunctioning I/P module connector
- A malfunctioning SDM connector
- A malfunctioning I/P module
- A malfunctioning SDM

Thoroughly inspect the wiring and the connectors. An incomplete inspection of the wiring and the connectors may result in a misdiagnosis, causing a part replacement with the reappearance of the malfunction. If an intermittent malfunction exists, refer to **Testing for Intermittent Conditions and Poor Connections** in Wiring Systems.

Test Description

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

4: This step tests if the malfunction is caused by the I/P module.

6: Determines which DTCs are present. If DTC B0012 or B0016 is present, test the I/P module for a short between high circuits and low circuits in stage 1 or stage 2. If DTC B0013 or B0017 is present, test the I/P module high circuits and low circuits for an open and for high resistance in stage 1 or stage 2. If DTC B0014 or B0018 is present, test the I/P

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module high and low circuits for a short-to-ground, and for a short-to-voltage in stage 1 or stage 2.

DTC B0012, B0013, B0014, B0016, B0017, or B0018

Step	Action	Yes	No
Schematic Reference: <u>SIR Schematics</u> Connector End View Reference: <u>SIR Connector End Views</u>			
1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u> in Vehicle DTC Information
2	<ol style="list-style-type: none">1. Turn OFF the ignition.2. Disconnect the instrument panel (I/P) module in-line connector. Refer to <u>Inflatable Restraint Instrument Panel Module Replacement</u>.3. Inspect the component and harness sides of the in-line connector for the I/P module for damage or corrosion that may cause the malfunction. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> in Wiring Systems. <p>Does connector exhibit any signs of damage or corrosion?</p>	Go to Step 3	Go to Step 4
3	<ol style="list-style-type: none">1. If the in-line connector for the I/P module is damaged, the I/P module must be replaced. Refer to <u>Inflatable Restraint Instrument Panel Module Replacement</u>.2. If the wiring harness side of the I/P module connector is damaged, replace the harness side of the connector. Refer to <u>Connector Repairs</u> in Wiring Systems. <p>Did you complete the repair?</p>	Go to Step 9	-
	IMPORTANT:		

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4	<p>When installing J 38715-A SIR Driver/Passenger Load Tool for testing the dual stage I/P module, the correct 4-way load tool adapter connector must be used. See Special Tools. Failure to use the correct 4-way load tool connector will set additional codes when testing.</p> <ol style="list-style-type: none"> 1. Use J 38715-80 Adapter to connect the J 38715-A to the harness side of the I/P module connector. See Special Tools. Use BASE OF COLUMN and PASSENGER INFLATOR connectors. 2. Turn ON the ignition, with the engine OFF. 3. With the scan tool, request the SIR DTC display. <p>Does the scan tool indicate that DTC B0012, B0013, B0014, B0016, B0017, or B0018 are current?</p>	Go to Step 5	Go to Step 7
5	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Disconnect and remove both the J 38715-A and adapter. See Special Tools. 3. Disconnect the inflatable restraint sensing and diagnostic module (SDM) connector. Refer to Inflatable Restraint Sensing and Diagnostic Module Replacement. 4. Inspect the SDM connector for damage or corrosion that may cause a malfunction in the I/P module stage 1 or stage 2 high circuits and/or low circuits. Refer to Testing for Intermittent Conditions and Poor Connections and Connector Repairs in Wiring Systems. <p>Did you find and correct the condition?</p>	Go to Step 9	Go to Step 6
	<ol style="list-style-type: none"> 1. If DTC B0012 or B0016 is present, test the I/P module for a short between the high 		

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6	<p>and low circuits in stage 1 or stage 2.</p> <ol style="list-style-type: none">2. If DTC B0013 or B0017 is present, test the I/P module high and low circuits for an open and for high resistance in stage 1 or stage 2.3. If DTC B0014 or B0018 is present, test the I/P module high and low circuits for a short to ground and for a short to voltage in stage 1 or stage 2.4. If any of the conditions exist, refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems.		
	Did you find and correct the condition?	Go to Step 9	Go to Step 8
7	<ol style="list-style-type: none">1. Turn OFF the ignition.2. Replace the I/P module. Refer to <u>Control Module References</u> in Computer/Integrating Systems for replacement, setup, and programming.		
	Did you complete the replacement?	Go to Step 9	-
8	<ol style="list-style-type: none">1. Turn OFF the ignition.2. Replace the SDM. Refer to <u>Control Module References</u> in Computer/Integrating Systems for replacement, setup, and programming.		
	Did you complete the replacement?	Go to Step 9	-
9	<ol style="list-style-type: none">1. Connect all SIR components.2. Turn ON the ignition, with the engine OFF.3. Use the scan tool in order to clear the DTCs.4. Operate the vehicle within the Conditions for Running the DTC as specified in the supporting text.		

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Does the DTC reset?

Go to **Step 2**

System OK

DTC B0022, B0024, B0026, B0042, B0043, OR B0044

Circuit Description

The driver deployment loop consists of the following components:

- A dual-stage inflatable restraint steering wheel module
- The inflatable restraint steering wheel module coil
- The steering wheel module high circuits for both stages 1 and 2
- The steering wheel module low circuits for both stages 1 and 2

There are 2 shorting bars used within the steering wheel module coil connector. These shorting bars short together both stages of the steering wheel module high circuit, and the steering wheel module low circuit when the connector is disconnected. This helps prevent unwanted deployment of the inflator module during servicing. During a frontal crash of sufficient force the inflatable restraint sensing and diagnostic module (SDM) will allow current to flow through the deployment loop. This flow of current will deploy the steering wheel module. The SDM performs continuous diagnostic tests on the deployment loops to check for proper circuit continuity and for shorts to ground or voltage. If a malfunction is detected, a DTC will be stored in memory.

DTC Descriptors

This diagnostic procedure supports the following DTCs:

- DTC B0022 Left Front/Driver Frontal Deployment Loop (single stage or stage 1) Resistance Low
- DTC B0024 Left Front/Driver Frontal Deployment Loop (single stage or stage 1) Voltage Out of Range
- DTC B0026 Left Front/Driver Frontal Deployment Loop (single stage or stage 1) Open
- DTC B0042 Left Front/Driver Frontal Deployment Loop (stage 2) Resistance Low
- DTC B0043 Left Front/Driver Frontal Deployment Loop (stage 2) Voltage Out of Range
- DTC B0044 Left Front/Driver Frontal Deployment Loop (stage 2) Open

Conditions for Running the DTC

Ignition 1 voltage is within the normal operating voltage range.

Conditions for Setting the DTC

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- DTC B0022 (stage 1) or B0042 (stage 2) will set when the steering wheel module deployment loop resistance is less than 1.3 ohms for 500 milliseconds.
- DTC B0024 (stage 1) or B0043 (stage 2) will set when one of the following conditions occur:
 - The steering wheel module high circuits and/or low circuits is short-to-ground, or short-to-voltage for 500 milliseconds.
 - The steering wheel module high circuit is less than 2.4 volts and steering wheel module deployment loop resistance is less than 6 ohms for 500 milliseconds.
- DTC B0026 (stage 1) or B0044 (stage 2) will set when one of the following conditions occurs:
 - The steering wheel module high circuit is less than 2.4 volts and the steering wheel module deployment loop is more than 6 ohms for 500 milliseconds.
 - The steering wheel module deployment loop resistance is more than 4.8 ohms for 500 milliseconds.

Action Taken When the DTC Sets

The SDM commands the AIR BAG indicator ON via Class 2 serial data.

Conditions for Clearing the DTC

- The condition responsible for setting the DTC is not currently present and the scan tool Clear DTCs function is used.
- A history DTC will clear once 255 malfunction-free ignition cycles have occurred.

Diagnostic Aids

The following conditions are possible causes of the malfunction:

- A short between the steering wheel module stage 1 or stage 2, high and low circuits.
- An open or a high resistance in the steering wheel module stage 1 or stage 2, high or low circuits.
- A short-to-ground, or a short-to-voltage in the steering wheel module stage 1 or stage 2, high circuits or low circuits.
- A malfunctioning steering wheel module coil connector
- A malfunctioning SDM connector
- A malfunctioning steering wheel module
- A malfunctioning steering wheel module coil

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- A malfunctioning SDM

Thoroughly inspect the wiring and the connectors. An incomplete inspection of the wiring and the connectors may result in a misdiagnosis, causing a part replacement with the reappearance of the malfunction. If an intermittent malfunction exists, refer to **Testing for Intermittent Conditions and Poor Connections** in Wiring Systems.

Test Description

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

5: Tests if the malfunction is caused by the steering wheel module or by the steering wheel module coil.

7: Determines which DTCs are present. If DTC B0022 or B0042 is present, test the steering wheel module for a short between high and low circuits in stage 1 or stage 2. If DTC B0024 or B0043 is present, test the steering wheel module high and low circuits for an open and for high resistance in stage 1 or stage 2. If DTC B0026 or B0044 is present, test the steering wheel module high and low circuits for an open and for high resistance in stage 1 or stage 2.

DTC B0022, B0024, B0026, B0042, B0043, or B0044

Step	Action	Yes	No
Schematic Reference: <u>SIR Schematics</u> Connector End View Reference: <u>SIR Connector End Views</u>			
1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u> in Vehicle DTC Information
2	<ol style="list-style-type: none">1. Turn OFF the ignition.2. Disconnect the steering wheel module coil in-line connector. Refer to <u>Inflatable Restraint Steering Wheel Module Coil Replacement</u>.3. Inspect the component and harness sides of the in-line connector for the steering wheel module coil for damage or corrosion that may cause the malfunction. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector</u>		

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	<u>Repairs</u> in Wiring Systems.		
	Does connector exhibit any signs of damage or corrosion?	Go to Step 3	Go to Step 4
3	<ol style="list-style-type: none"> 1. If the in-line connector for the steering wheel module coil is damaged, the steering wheel module coil must be replaced. Refer to <u>Inflatable Restraint Steering Wheel Module Coil Replacement</u>. 2. If the wiring harness side of steering wheel module coil in-line connector is damaged, replace the harness side of the connector. Refer to <u>Connector Repairs</u> in Wiring Systems. 		
	Did you complete the repair?	Go to Step 11	-
4	<p>IMPORTANT: When installing J 38715-A SIR Driver/Passenger Load Tool for testing the dual stage steering wheel module, the correct 4-way load tool adapter connector must be used. See <u>Special Tools</u>. Failure to use the correct 4-way load tool connector will set additional codes when testing.</p> <ol style="list-style-type: none"> 1. Use J 38715-80 Adapter to connect the J 38715-A to the harness side of the steering wheel module coil connector. See <u>Special Tools</u>. Use BASE OF COLUMN and PASSENGER INFLATOR connectors. 2. Turn ON the ignition, with the engine OFF. 3. Use the scan tool to request SIR DTCs displayed. <p>Does the scan tool indicate that DTC B0022, B0024, B0026, B0042, B0043, or B0044 are current?</p>		
	1. Turn OFF the ignition.	Go to Step 6	Go to Step 5

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5	<ol style="list-style-type: none"> 2. Disconnect and remove both the J 38715-A and adapter. See <u>Special Tools</u>. 3. Connect the steering wheel module coil in-line connector. 4. Remove the steering wheel module. Refer to <u>Inflatable Restraint Steering Wheel Module Replacement</u>. 5. Use the J 38715-120 adapter to connect the J 38715-A to the upper steering wheel module coil connector on top of the steering column. See <u>Special Tools</u>. Use STEERING COLUMN and PASSENGER INFLATOR connectors. 6. Turn ON the ignition, with the engine OFF. 7. Use the scan tool to request SIR DTCs displayed. <p>Does the scan tool indicate that DTC B0022, B0024, B0026, B0042, B0043, or B0044 are current?</p>	Go to Step 9	Go to Step 8
6	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Disconnect and remove both the J 38715-A and adapter. See <u>Special Tools</u>. 3. Disconnect the inflatable restraint sensing and diagnostic module (SDM) connector. Refer to <u>Inflatable Restraint Sensing and Diagnostic Module Replacement</u>. 4. Inspect the SDM connector for damage or corrosion that may cause a malfunction in the steering wheel module stage 1 or stage 2 high and/or low circuits. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> in Wiring Systems. <p>Did you find and correct the condition?</p>	Go to Step 11	Go to Step 7

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7	<ol style="list-style-type: none"> 1. If DTC B0022 or B0042 is present, test the steering wheel module for a short between the high and low circuits in stage 1 or stage 2. 2. If DTC B0024 or B0043 is present, test the steering wheel module high and low circuits for a short to ground and for a short to voltage in stage 1 or stage 2. 3. If DTC B0026 or B0044 is present, test the steering wheel module high and low circuits for an open and for high resistance in stage 1 or stage 2. 4. If any of the above conditions exist, refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. 		
	Did you find and correct the condition?	Go to Step 11	Go to Step 10
8	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Replace the steering wheel module. Refer to <u>Control Module References</u> in Computer/Integrating Systems for replacement, setup, and programming. 		
	Did you complete the replacement?	Go to Step 11	-
9	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Replace the steering wheel module coil. Refer to <u>Inflatable Restraint Steering Wheel Module Coil Replacement</u>. 		
	Did you complete the replacement?	Go to Step 11	-
10	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Replace the SDM. Refer to <u>Control Module References</u> in Computer/Integrating Systems for replacement, setup, and programming. 		
	Did you complete the replacement?	Go to Step 11	-

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11	<ol style="list-style-type: none">1. Connect all SIR components.2. Turn ON the ignition, with the engine OFF.3. Use the scan tool in order to clear the DTCs.4. Operate the vehicle within the Conditions for Running the DTC as specified in the supporting text.		
	Does the DTC reset?	Go to Step 2	System OK

DTC B0051

Circuit Description

The inflatable restraint sensing and diagnostic module (SDM) contains a sensing device that converts changes in vehicle velocity to an electrical signal. The SDM compares this signal to a value stored in memory. When the generated signal exceeds the stored value, the SDM performs additional signal processing and compares the generated signals to values stored in memory. When 2 of the generated signals exceed the stored values, the SDM will cause current to flow through the inflator modules, deploying the air bags and causing DTC B0051 to set.

This DTC is set when the SDM has commanded an air bag deployment with no faults present.

DTC Descriptor

This diagnostic procedure supports the following DTC:

DTC B0051 Deployment Commanded

Conditions for Running the DTC

The SDM must be powered up.

Conditions for Setting the DTC

Ignition voltage must be present and the SDM must have commanded an air bag deployment.

Action Taken When the DTC Sets

- The SDM commands ON the AIR BAG warning lamp via class 2 serial data.

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- The SDM records crash data.

Conditions for Clearing the DTC

DTC B0051 is a latched code. You cannot clear a latched code. Replace the SDM after following the instructions in the following diagnostic table.

DTC B0051

Step	Action	Yes	No
Schematic Reference: <u>SIR Schematics</u>			
Connector End View Reference: <u>SIR Connector End Views</u>			
1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u> in Vehicle DTC Information
2	1. Turn OFF the ignition. 2. Inspect the vehicle for any signs of air bag deployment. Does the vehicle exhibit any signs of air bag deployment?	Go to Step 5	Go to Step 3
3	Inspect the vehicle and undercarriage for any signs of impact or collision. Does the vehicle exhibit any signs of impact or collision?	Go to Step 5	Go to Step 4
4	Replace the sensing and diagnostic module (SDM). Refer to <u>Control Module References</u> in Computer/Integrating Systems for replacement, setup, and programming. Did you complete the replacement?	Go to Step 6	-
5	Replace all components and perform inspections, as required following an accident. Refer to <u>Repairs and Inspections Required After a Collision</u> . Did you complete the appropriate inspections and necessary repairs?	Go to Step 6	-
	1. Reconnect all SIR system components.		

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6	2. Verify that all components, connectors, and connector position assurances (CPAs) are properly mounted.	Go to <u>Diagnostic System Check - Vehicle in Vehicle DTC Information</u>	
	Did you complete the repair?		-

DTC B0053

Circuit Description

The inflatable restraint sensing and diagnostic module (SDM) contains a sensing device that converts changes in vehicle velocity to an electrical signal. The SDM compares this signal to a value stored in memory. When the generated signal exceeds the stored value, the SDM performs additional signal processing and compares the generated signals to values stored in memory. When 2 of the generated signals exceed the stored values, the SDM will cause current to flow through the inflator modules, deploying the air bags. DTC B0053 will set instead of DTC B0051 when a deployment occurs while an inflator circuit fault is present that may result in a non-deployment situation in one or more of the inflator modules.

DTC Descriptor

This diagnostic procedure supports the following DTC:

DTC B0053 Deployment Commanded with Loop DTCs Present

Conditions for Running the DTC

The SDM must be powered up.

Conditions for Setting the DTC

Ignition voltage must be present and the SDM must have commanded an air bag deployment with loop faults.

Action Taken When the DTC Sets

- The SDM commands ON the AIR BAG warning lamp via class 2 serial data.
- The SDM records crash data.

Conditions for Clearing the DTC

DTC B0053 is a latched code. You cannot clear a latched code. Replace the SDM after following the instructions in the following diagnostic table.

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Diagnostic Aids

When DTC B0053 is accompanied by additional DTCs (other than B0051), repair the malfunction causing the other DTCs before replacing the SDM.

DTC B0053

Step	Action	Yes	No
Schematic Reference: <u>SIR Schematics</u> Connector End View Reference: <u>SIR Connector End Views</u>			
1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u> in Vehicle DTC Information
2	1. Turn OFF the ignition. 2. Inspect the vehicle for any signs of air bag deployment. Does the vehicle exhibit any signs of air bag deployment?	Go to Step 5	Go to Step 3
3	Inspect the vehicle and undercarriage for signs of impact or collision. Does the vehicle exhibit any signs of impact or collision?	Go to Step 5	Go to Step 4
4	Replace the sensing and diagnostic module (SDM). Refer to <u>Control Module References</u> in Computer/Integrating Systems for replacement, setup, and programming. Did you complete the replacement?	Go to Step 6	-
5	Replace all components and perform inspections, as required following an accident. Refer to <u>Repairs and Inspections Required After a Collision</u> . Did you complete the appropriate inspections and necessary repairs?	Go to Step 6	-
6	1. Reconnect all SIR system components. 2. Verify that all components, connectors, and connector position assurances (CPAs)	Go to <u>Diagnostic System Check -</u>	

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	are properly mounted.	<u>Vehicle</u> in	
Did you complete the repair?		Vehicle DTC Information	-

DTC B0057, B0058, OR B0059

Circuit Description

The passenger seat belt pretensioner deployment loop consists of a seat belt pretensioner-RF and the seat belt pretensioner-RF high and low circuits. A shorting bar used within the seat belt pretensioner connector shorts together both the seat belt pretensioner high and low circuits when the connector is disconnected. This will help to prevent unwanted deployment of the pretensioner during servicing. During a frontal crash of sufficient force the inflatable restraint sensing and diagnostic module (SDM) will allow current to flow through the deployment loop in order to deploy the seat belt pretensioner. The SDM performs continuous diagnostic tests on the deployment loops to check for proper circuit continuity and for shorts to ground or voltage. If a malfunction is detected, a diagnostic trouble code (DTC) will be stored in memory.

DTC Descriptors

This diagnostic procedure supports the following DTCs:

- DTC B0057 Right Front/Passenger Pretensioner Deployment Loop Resistance Low
- DTC B0058 Right Front/Passenger Pretensioner Deployment Loop Open
- DTC B0059 Right Front/Passenger Pretensioner Deployment Loop Voltage Out of Range

Conditions for Running the DTC

Ignition 1 voltage is within the normal operating voltage range.

Conditions for Setting the DTC

- DTC B0057 will set when the seat belt pretensioner-RF deployment loop resistance is less than 1.3 ohms for 500 milliseconds.
- DTC B0058 will set when one of the following conditions occurs:
 - Seat belt pretensioner-RF high circuit is less than 2.4 volts and the seat belt pretensioner-RF deployment loop is more than 6 ohms for 500 milliseconds.
 - Seat belt pretensioner-RF deployment loop resistance is more than 4.8 ohms for 500 milliseconds.
- DTC B0059 when one of the following conditions occur:

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- Seat belt pretensioner-RF high or low circuits is short to ground or short to voltage for 500 milliseconds.
- Seat belt pretensioner-RF high circuit is less than 2.4 volts and seat belt pretensioner-RF deployment loop resistance is less than 6 ohms for 500 milliseconds.

Action Taken When the DTC Sets

The SDM commands the AIR BAG indicator ON via class 2 serial data.

Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists and the scan tool Clear DTCs function is used.
- A history DTC will clear once 255 malfunction-free ignition cycles have occurred.

Diagnostic Aids

The following are possible causes of the malfunction:

- A short between the seat belt pretensioner-RF high and low circuits
- An open or a high resistance in the seat belt pretensioner-RF high or low circuits
- A short to ground or a short to voltage in the seat belt pretensioner-RF high or low circuits
- The seat belt pretensioner-RF connector
- The SDM connector
- A malfunctioning seat belt pretensioner
- A malfunctioning SDM

Thoroughly inspect the wiring and the connectors. An incomplete inspection of the wiring and the connectors may result in a misdiagnosis, causing a part replacement with the reappearance of the malfunction. If an intermittent malfunction exists, refer to **Testing for Intermittent Conditions and Poor Connections** in Wiring Systems.

Test Description

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

- 4:** Tests to see if the malfunction is caused by the seat belt pretensioner-RF.
- 6:** Tests to see what DTCs are present.

DTC B0057, B0058, or B0059

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Step	Action	Yes	No
Schematic Reference: <u>SIR Schematics</u> Connector End View Reference: <u>SIR Connector End Views</u>			
1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u> in Vehicle DTC Information
2	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Disconnect the seat belt pretensioner-RF connector. Refer to <u>Seat Belt Retractor Pretensioner Replacement - Front.</u> 3. Inspect the component and harness sides of the connector for the seat belt pretensioner for damage or corrosion that may cause the malfunction. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> in Wiring Systems. <p>Does the connector exhibit any signs of damage or corrosion?</p>	Go to Step 3	Go to Step 4
3	<ol style="list-style-type: none"> 1. If the component side of the seat belt pretensioner-RF connector is damaged, the seat belt pretensioner must be replaced. Refer to <u>Seat Belt Retractor Pretensioner Replacement - Front.</u> 2. If the wiring harness side of the seat belt pretensioner connector is damaged, replace the harness side of the connector. Refer to <u>Connector Repairs</u> in Wiring Systems. <p>Did you complete the repair?</p>	Go to Step 9	-
	<ol style="list-style-type: none"> 1. Use J 38715-30A adapter to connect the J 38715-A SIR Driver/Passenger Load Tool to the harness side of the seat belt pretensioner-RF connector. See <u>Special</u> 		

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4	<p>Tools. Use the PASSENGER INFLATOR connector.</p> <ol style="list-style-type: none"> 2. Turn ON the ignition, with the engine OFF. 3. With the scan tool, request the SIR DTC display. <p>Does the scan tool indicate that DTC B0057, B0058, or B0059 are current?</p>	Go to Step 5	Go to Step 7
5	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Disconnect and remove both the J 38715-A and adapter. See Special Tools. 3. Disconnect the inflatable restraint sensing and diagnostic module (SDM) connector. Refer to Inflatable Restraint Sensing and Diagnostic Module Replacement. 4. Inspect the SDM connector for damage or corrosion that may cause a malfunction in the seat belt pretensioner-RF high and/or low circuits. Refer to Testing for Intermittent Conditions and Poor Connections and Connector Repairs in Wiring Systems. <p>Did you find and correct the condition?</p>	Go to Step 9	Go to Step 6
6	<p>IMPORTANT: If the scan tool displays multiple codes, diagnose the open code first.</p> <ol style="list-style-type: none"> 1. If DTC B0057 is present, test for a short between the seat belt pretensioner-RF high and low circuits. 2. If DTC B0058 is present, test the seat belt pretensioner-RF high and low circuits for an open and for high resistance. 3. If DTC B0059 is present, test the seat belt pretensioner-RF high and low circuits for a short to ground and for a short to voltage. 		

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	4. For all the above conditions refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems.		
	Did you find and correct the condition?	Go to Step 9	Go to Step 8
7	1. Turn OFF the ignition. 2. Replace the seat belt pretensioner-RF. Refer to <u>Seat Belt Retractor Pretensioner Replacement - Front</u> .		
	Did you complete the replacement?	Go to Step 9	-
8	1. Turn OFF the ignition. 2. Replace the SDM. Refer to <u>Control Module References</u> in Computer/Integrating Systems for replacement, setup, and programming.		
	Did you complete the replacement?	Go to Step 9	-
9	1. Connect all SIR components. 2. Turn ON the ignition, with the engine OFF. 3. Use the scan tool in order to clear the DTCs. 4. Operate the vehicle within the Conditions for Running the DTC as specified in the supporting text.		
	Does the DTC reset?	Go to Step 2	System OK

DTC B0061, B0062, OR B0068**Circuit Description**

The driver roof rail deployment loop consists of a an inflatable restraint roof rail module - left and the roof rail module high and low circuits. A shorting bar used within the roof rail module connector shorts together both the roof rail module high and low circuits when the connector is disconnected. This will help to prevent unwanted deployment of the inflator module during servicing. During a side or frontal crash of sufficient force the inflatable restraint sensing and

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diagnostic module (SDM) will allow current to flow through the deployment loop in order to deploy the roof rail module. The SDM performs continuous diagnostic tests on the deployment loops to check for proper circuit continuity and for shorts to ground or voltage. If a malfunction is detected, a diagnostic trouble code (DTC) will be stored in memory.

DTC Descriptors

This diagnostic procedure supports the following DTCs:

- DTC B0061 Left Front/Driver Roof Rail/Head Curtain Bag Deployment Loop Resistance Low
- DTC B0062 Left Front/Driver Roof Rail/Head Curtain Bag Deployment Loop Open
- DTC B0068 Left Front/Driver Roof Rail/Head Curtain Bag Deployment Loop Voltage Out of Range

Conditions for Running the DTC

Ignition 1 voltage is within the normal operating voltage range.

Conditions for Setting the DTC

- DTC B0061 will set when the roof rail module - left deployment loop resistance is less than 1.3 ohms for 500 milliseconds.
- DTC B0062 will set when one of the following conditions occurs:
 - Roof rail module - left high circuit is less than 2.4 volts and the roof rail module - left deployment loop is more than 6 ohms for 500 milliseconds.
 - Roof rail module - left deployment loop resistance is more than 4.8 ohms for 500 milliseconds.
- DTC B0068 will set when one of the following conditions occur:
 - Roof rail module - left high or low circuits is short to ground or short to voltage for 500 milliseconds.
 - Roof rail module - left high circuit is less than 2.4 volts and roof rail module - left deployment loop resistance is less than 6 ohms for 500 milliseconds.

Action Taken When the DTC Sets

The SDM commands the AIR BAG indicator ON via class 2 serial data.

Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists and the scan tool Clear DTCs

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function is used.

- A history DTC will clear once 255 malfunction-free ignition cycles have occurred.

Diagnostic Aids

The following are possible causes of the malfunction:

- A short between the roof rail module - left high and low circuits
- An open or a high resistance in the roof rail module - left high or low circuits
- A short to ground or a short to voltage in the roof rail module - left high or low circuits
- The roof rail module - left connector
- The SDM connector
- A malfunctioning roof rail module
- A malfunctioning SDM

Thoroughly inspect the wiring and the connectors. An incomplete inspection of the wiring and the connectors may result in a misdiagnosis, causing a part replacement with the reappearance of the malfunction. If an intermittent malfunction exists, refer to **Testing for Intermittent Conditions and Poor Connections** in Wiring Systems.

Test Description

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

4: This step tests to see if the malfunction is caused by the roof rail module - left.

6: This step tests to see what DTCs are present. If DTC B0061 is present, test for a short between the roof rail module - left high and low circuits. If DTC B0062 is present, test the roof rail module - left high and low circuits for an open and for high resistance. If DTC B0068 is present, test the roof rail module - left high and low circuits for a short to ground and for a short to voltage.

DTC B0061, B0062, or B0068

Step	Action	Yes	No
Schematic Reference: <u>SIR Schematics</u> Connector End View Reference: <u>SIR Connector End Views</u>			
1	Did you perform the Diagnostic System Check - Vehicle?		Go to <u>Diagnostic System Check - Vehicle</u> in Vehicle DTC

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		Go to Step 2	Information
2	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Disconnect the roof rail module - left connector. Refer to <u>Inflatable Restraint Roof Rail Module Replacement - Front.</u> 3. Inspect the component and harness sides of the connector for the roof rail module for damage or corrosion that may cause the malfunction. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> in Wiring Systems. <p>Does the connector exhibit any signs of damage or corrosion?</p>	Go to Step 3	Go to Step 4
3	<ol style="list-style-type: none"> 1. If the component side of the roof rail module - left connector is damaged, the roof rail module must be replaced. Refer to <u>Inflatable Restraint Roof Rail Module Replacement - Front.</u> 2. If the wiring harness side of the roof rail module connector is damaged, replace the harness side of the connector. Refer to <u>Connector Repairs</u> in Wiring Systems. <p>Did you complete the repair?</p>	Go to Step 9	-
4	<p>IMPORTANT: If scan tool display multiple codes diagnose the open code first.</p> <ol style="list-style-type: none"> 1. Use J 38715-30A adapter to connect the J 38715-A SIR Driver/Passenger Load Tool to the harness side of the roof rail module - left connector. See <u>Special Tools</u>. Use the PASSENGER INFLATOR connector. 2. Turn ON the ignition, with the engine OFF. 3. With the scan tool, request the SIR DTC 		

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	display.		
	Does the scan tool indicate that DTC B0061, B0062, or B0068 are current?	Go to Step 5	Go to Step 7
5	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Disconnect and remove both the J 38715-A and adapter. See <u>Special Tools</u>. 3. Disconnect the inflatable restraint sensing and diagnostic module (SDM) connector. Refer to <u>Inflatable Restraint Sensing and Diagnostic Module Replacement</u>. 4. Inspect the SDM connector for damage or corrosion that may cause a malfunction in the roof rail module - left high and/or low circuits. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> in Wiring Systems. 		
	Did you find and correct the condition?	Go to Step 9	Go to Step 6
6	<ol style="list-style-type: none"> 1. If DTC B0061 is present, test for a short between the roof rail module - left high and low circuits. 2. If DTC B0062 is present, test the roof rail module - left high and low circuits for an open and for high resistance. 3. If DTC B0068 is present, test the roof rail module - left high and low circuits for a short to ground and for a short to voltage. 4. All the above conditions refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. 		
	Did you find and correct the condition?	Go to Step 9	Go to Step 8
7	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Replace the roof rail module - left. Refer to <u>Inflatable Restraint Roof Rail Module Replacement - Front</u>. 		

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	Did you complete the replacement?	Go to Step 9	-
8	<ol style="list-style-type: none">1. Turn OFF the ignition.2. Replace the SDM. Refer to <u>Control Module References</u> in Computer/Integrating Systems for replacement, setup, and programming.		
	Did you complete the replacement?	Go to Step 9	-
9	<ol style="list-style-type: none">1. Connect all SIR components.2. Turn ON the ignition, with the engine OFF.3. Use the scan tool in order to clear the DTCs.4. Operate the vehicle within the Conditions for Running the DTC as specified in the supporting text.		
	Does the DTC reset?	Go to Step 2	System OK

DTC B0064, B0065, OR B0066

Circuit Description

The driver seat belt pretensioner deployment loop consists of a seat belt pretensioner - LF and the seat belt pretensioner - LF high and low circuits. A shorting bar used within the seat belt pretensioner connector shorts together both the seat belt pretensioner high and low circuits when the connector is disconnected. This will help to prevent unwanted deployment of the pretensioner during servicing. During a frontal crash of sufficient force the inflatable restraint sensing and diagnostic module (SDM) will allow current to flow through the deployment loop in order to deploy the seat belt pretensioner. The SDM performs continuous diagnostic tests on the deployment loops to check for proper circuit continuity and for shorts to ground or voltage. If a malfunction is detected, a diagnostic trouble code (DTC) will be stored in memory.

DTC Descriptors

This diagnostic procedure supports the following DTCs:

- DTC B0064 Left Front/Driver Pretensioner Deployment Loop Resistance Low
- DTC B0065 Left Front/Driver Pretensioner Deployment Loop Open

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- DTC B0066 Left Front/Driver Pretensioner Deployment Loop Voltage Out of Range

Conditions for Running the DTC

Ignition 1 voltage is within the normal operating voltage range.

Conditions for Setting the DTC

- DTC B0064 will set when the seat belt pretensioner - LF deployment loop resistance is less than 1.3 ohms for 500 milliseconds.
- DTC B0065 will set when one of the following conditions occurs:
 - Seat belt pretensioner - LF high circuit is less than 2.4 volts and the seat belt pretensioner - LF deployment loop is more than 6 ohms for 500 milliseconds.
 - Seat belt pretensioner - LF deployment loop resistance is more than 4.8 ohms for 500 milliseconds.
- DTC B0066 will set when one of the following conditions occur:
 - Seat belt pretensioner - LF high or low circuits is short to ground or short to voltage for 500 milliseconds.
 - Seat belt pretensioner - LF high circuit is less than 2.4 volts and seat belt pretensioner - LF deployment loop resistance is less than 6 ohms for 500 milliseconds.

Action Taken When the DTC Sets

The SDM commands the AIR BAG indicator ON via class 2 serial data.

Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists and the scan tool Clear DTCs function is used.
- A history DTC will clear once 255 malfunction-free ignition cycles have occurred.

Diagnostic Aids

The following are possible causes of the malfunction:

- A short between the seat belt pretensioner - LF high and low circuits
- An open or a high resistance in the seat belt pretensioner - LF high or low circuits
- A short to ground or a short to voltage in the seat belt pretensioner - LF high or low circuits
- The seat belt pretensioner - LF connector
- The SDM connector

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- A malfunctioning seat belt pretensioner
- A malfunctioning SDM

Thoroughly inspect the wiring and the connectors. An incomplete inspection of the wiring and the connectors may result in a misdiagnosis, causing a part replacement with the reappearance of the malfunction. If an intermittent malfunction exists, refer to **Testing for Intermittent Conditions and Poor Connections** in Wiring Systems.

Test Description

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

4: This step tests to see if the malfunction is caused by the seat belt pretensioner - LF.

6: This step tests to see what DTCs are present.

DTC B0064, B0065, or B0066

Step	Action	Yes	No
Schematic Reference: <u>SIR Schematics</u> Connector End View Reference: <u>SIR Connector End Views</u>			
1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u> in Vehicle DTC Information
2	1. Turn OFF the ignition. 2. Disconnect the seat belt pretensioner - LF connector. Refer to <u>Seat Belt Retractor Pretensioner Replacement - Front</u> . 3. Inspect the component and harness sides of the connector for the seat belt pretensioner for damage or corrosion that may cause the malfunction. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> in Wiring Systems. Does the connector exhibit any signs of damage or corrosion?	Go to Step 3	Go to Step 4

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3	<ol style="list-style-type: none"> 1. If the component side of the seat belt pretensioner - LF connector is damaged, the seat belt pretensioner must be replaced. Refer to <u>Seat Belt Retractor Pretensioner Replacement - Front.</u> 2. If the wiring harness side of the seat belt pretensioner connector is damaged, replace the harness side of the connector. Refer to <u>Connector Repairs</u> in Wiring Systems. <p>Did you complete the repair?</p>	Go to Step 9	-
4	<p>IMPORTANT: If scan tool display multiple codes diagnose the open code first.</p> <ol style="list-style-type: none"> 1. Use J 38715-30A adapter to connect the J 38715-A SIR Driver/Passenger Load Tool to the harness side of the seat belt pretensioner - LF connector. See <u>Special Tools</u>. Use the PASSENGER INFLATOR connector. 2. Turn ON the ignition, with the engine OFF. 3. With the scan tool, request the SIR DTC display. <p>Does the scan tool indicate that DTC B0064, B0065, or B0066 are current?</p>	Go to Step 5	Go to Step 7
5	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Disconnect and remove both the J 38715-A and adapter. See <u>Special Tools</u>. 3. Disconnect the inflatable restraint sensing and diagnostic module (SDM) connector. Refer to <u>Inflatable Restraint Sensing and Diagnostic Module Replacement</u>. 4. Inspect the SDM connector for damage or corrosion that may cause a malfunction in the seat belt pretensioner - LF high and/or 		

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	low circuits. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> in Wiring Systems.		
	Did you find and correct the condition?	Go to Step 9	Go to Step 6
6	<ol style="list-style-type: none"> 1. If DTC B0064 is present, test for a short between the seat belt pretensioner - LF high and low circuits. 2. If DTC B0065 is present, test the seat belt pretensioner - LF high and low circuits for an open and for high resistance. 3. If DTC B0066 is present, test the seat belt pretensioner - LF high and low circuits for a short to ground and for a short to voltage. 4. All the above conditions refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. 		
	Did you find and correct the condition?	Go to Step 9	Go to Step 8
7	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Replace the seat belt pretensioner - LF. Refer to <u>Seat Belt Retractor Pretensioner Replacement - Front.</u> 		
	Did you complete the replacement?	Go to Step 9	-
8	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Replace the SDM. Refer to <u>Control Module References</u> in Computer/Integrating Systems for replacement, setup, and programming. 		
	Did you complete the replacement?	Go to Step 9	-
	<ol style="list-style-type: none"> 1. Connect all SIR components. 2. Turn ON the ignition, with the engine OFF. 3. Use the scan tool in order to clear the 		

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9	DTCs.		
	4. Operate the vehicle within the Conditions for Running the DTC as specified in the supporting text.		
	Does the DTC reset?	Go to Step 2	System OK

DTC B0069, B0070, OR B0071

Circuit Description

The passenger roof rail deployment loop consists of a an inflatable restraint roof rail module - right and the roof rail module high and low circuits. A shorting bar used within the roof rail module connector shorts together both the roof rail module high and low circuits when the connector is disconnected. This will help to prevent unwanted deployment of the inflator module during servicing. During a side or frontal crash of sufficient force the inflatable restraint sensing and diagnostic module (SDM) will allow current to flow through the deployment loop in order to deploy the roof rail module. The SDM performs continuous diagnostic tests on the deployment loops to check for proper circuit continuity and for shorts to ground or voltage. If a malfunction is detected, a diagnostic trouble code (DTC) will be stored in memory.

DTC Descriptors

This diagnostic procedure supports the following DTCs:

- DTC B0069 Right Front/Passenger Roof Rail/Head Curtain Bag Deployment Loop Resistance Low
- DTC B0070 Right Front/Passenger Roof Rail/Head Curtain Bag Deployment Loop Open
- DTC B0071 Right Front/Passenger Roof Rail/Head Curtain Bag Deployment Loop Voltage Out of Range

Conditions for Running the DTC

Ignition 1 voltage is within the normal operating voltage range.

Conditions for Setting the DTC

- DTC B0069 will set when the roof rail module - right deployment loop resistance is less than 1.3 ohms for 500 milliseconds.
- DTC B0070 will set when one of the following conditions occurs:
 - Roof rail module - right high circuit is less than 2.4 volts and the roof rail module -

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right deployment loop is more than 6 ohms for 500 milliseconds.

- Roof rail module - right deployment loop resistance is more than 4.8 ohms for 500 milliseconds.
- DTC B0071 will set when one of the following conditions occur:
 - Roof rail module - right high or low circuits is short to ground or short to voltage for 500 milliseconds.
 - Roof rail module - right high circuit is less than 2.4 volts and roof rail module - right deployment loop resistance is less than 6 ohms for 500 milliseconds.

Action Taken When the DTC Sets

The SDM commands the AIR BAG indicator ON via class 2 serial data.

Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists and the scan tool Clear DTCs function is used.
- A history DTC will clear once 255 malfunction-free ignition cycles have occurred.

Diagnostic Aids

The following are possible causes of the malfunction:

- A short between the roof rail module - right high and low circuits
- An open or a high resistance in the roof rail module - right high or low circuits
- A short to ground or a short to voltage in the roof rail module - right high or low circuits
- The roof rail module - right connector
- The SDM connector
- A malfunctioning roof rail module
- A malfunctioning SDM

Thoroughly inspect the wiring and the connectors. An incomplete inspection of the wiring and the connectors may result in a misdiagnosis, causing a part replacement with the reappearance of the malfunction. If an intermittent malfunction exists, refer to **Testing for Intermittent Conditions and Poor Connections** in Wiring Systems.

Test Description

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

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4: This step tests to see if the malfunction is caused by the roof rail module - right.

6: This step tests to see what DTCs are present. If DTC B0069 is present, test for a short between the roof rail module - right high and low circuits. If DTC B0070 is present, test the roof rail module - right high and low circuits for an open and for high resistance. If DTC B0071 is present, test the roof rail module - right high and low circuits for a short to ground and for a short to voltage.

DTC B0069, B0070, or B0071

Step	Action	Yes	No
Schematic Reference: <u>SIR Schematics</u> Connector End View Reference: <u>SIR Connector End Views</u>			
1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to Diagnostic System Check - Vehicle in Vehicle DTC Information
2	<ol style="list-style-type: none">1. Turn OFF the ignition.2. Disconnect the roof rail module - right connector. Refer to <u>Inflatable Restraint Roof Rail Module Replacement - Front.</u>3. Inspect the component and harness sides of the connector for the roof rail module for damage or corrosion that may cause the malfunction. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> in Wiring Systems. <p>Does the connector exhibit any signs of damage or corrosion?</p>	Go to Step 3	Go to Step 4
3	<ol style="list-style-type: none">1. If the component side of the roof rail module - right connector is damaged, the roof rail module must be replaced. Refer to <u>Inflatable Restraint Roof Rail Module Replacement - Front.</u>2. If the wiring harness side of the roof rail module connector is damaged, replace the		

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	harness side of the connector. Refer to <u>Connector Repairs</u> in Wiring Systems.		
	Did you complete the repair?	Go to Step 9	-
4	<p>IMPORTANT: If scan tool display multiple codes diagnose the open code first.</p> <ol style="list-style-type: none"> 1. Use J 38715-30A Adapter to connect the J 38715-A SIR Driver/Passenger Load Tool to the harness side of the roof rail module - right connector. See <u>Special Tools</u>. Use the PASSENGER INFLATOR connector. 2. Turn ON the ignition, with the engine OFF. 3. With the scan tool, request the SIR DTC display. <p>Does the scan tool indicate that DTC B0069, B0070, or B0071 are current?</p>		
		Go to Step 5	Go to Step 7
5	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Disconnect and remove both the J 38715-A and adapter. See <u>Special Tools</u>. 3. Disconnect the inflatable restraint sensing and diagnostic module (SDM) connector. Refer to <u>Inflatable Restraint Sensing and Diagnostic Module Replacement</u>. 4. Inspect the SDM connector for damage or corrosion that may cause a malfunction in the roof rail module - right high and/or low circuits. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> in Wiring Systems. <p>Did you find and correct the condition?</p>		
		Go to Step 9	Go to Step 6
	<ol style="list-style-type: none"> 1. If DTC B0069 is present, test for a short between the roof rail module - right high and low circuits. 		

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6	<ol style="list-style-type: none"> 2. If DTC B0070 is present, test the roof rail module - right high and low circuits for an open and for high resistance. 3. If DTC B0071 is present, test the roof rail module - right high and low circuits for a short to ground and for a short to voltage. 4. All the above conditions refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. <p>Did you find and correct the condition?</p>	Go to Step 9	Go to Step 8
7	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Replace the roof rail module - right. Refer to <u>Inflatable Restraint Roof Rail Module Replacement - Front</u>. <p>Did you complete the replacement?</p>	Go to Step 9	-
8	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Replace the SDM. Refer to <u>Control Module References</u> in Computer/Integrating Systems for replacement, setup, and programming. <p>Did you complete the replacement?</p>	Go to Step 9	-
9	<ol style="list-style-type: none"> 1. Connect all SIR components. 2. Turn ON the ignition, with the engine OFF. 3. Use the scan tool in order to clear the DTCs. 4. Operate the vehicle within the Conditions for Running the DTC as specified in the supporting text. <p>Does the DTC reset?</p>	Go to Step 2	System OK

DTC B0077, B0078, B0079, B0080, B0081, OR B0082

Circuit Description

The inflatable restraint side impact sensor (SIS) utilizes a unidirectional 2-wire circuit. The SIS modulates current on the interface to send ID, State of Health, and deployment commands to the inflatable restraint sensing and diagnostic module (SDM). The SDM serves as a power source and a ground for the SIS. When the ignition is turned on and input power from the SDM is first detected, the SIS responds by performing internal diagnostics and sending an ID to the SDM. The SDM considers the ID to be valid if the response time is less than 5 seconds. The SIS continually communicates status messages to the SDM, which determines if a fault is present in the SIS circuit. When a fault is detected, the SDM resets the SIS twice by removing and reapplying power. If the fault is still present, the SDM will set a diagnostic trouble code (DTC).

DTC Descriptors

This diagnostic procedure supports the following DTCs:

- DTC B0077 Left Front/Driver Side Impact Sensor (SIS) Performance
- DTC B0078 Right Front/Passenger Side Impact Sensor (SIS) Performance
- DTC B0079 Incorrect Left Front/Driver Side Impact Sensor (SIS) Installed
- DTC B0080 Discard Left Front/Driver Side Impact Sensor (SIS)
- DTC B0081 Incorrect Right Front/Passenger Side Impact Sensor (SIS) Installed
- DTC B0082 Discard Right Front/Passenger Side Impact Sensor (SIS)

Conditions for Running the DTC

Ignition 1 voltage is within the normal operating voltage range.

Conditions for Setting the DTC

- DTCs B0077 and B0078 will set when one of the following conditions occur:
 - A valid ID message is not received within 5 seconds of the SIS being powered up.
 - Status message is not received.
 - The SDM has failed twice to reset the SIS.
- DTCs B0079 and B0081 will set when one of the following conditions occur:
 - The SDM has received an ID message from the SIS which does not match the ID stored in the SDM memory.
 - When two SIS resets are attempted without the correct identification being detected by the SDM.
- DTCs B0080 and B0082 will set when the SDM has received a NOK (Not OK) message from the SIS.

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Action Taken When the DTC Sets

- The SDM commands the AIR BAG indicator ON via Class 2 serial data.
- The SDM attempts to reset the SIS.

Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists.
- You issue a scan tool CLEAR DTCs command.
- A history DTC will clear once 255 malfunction-free ignition cycles have occurred.

Diagnostic Aids

The following can cause an intermittent condition:

- A short between the SIS signal and voltage circuits
- High or low resistance in the SIS signal and voltage circuits
- Inspect the SIS signal and voltage circuits carefully for cutting and/or chafing
- Verify that the correct SIS is installed in the vehicle

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

Test Description

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

- 2:** This step tests the communication status of the SIS.
- 6:** This step tests for a short to ground, a high resistance, or an open in the SIS signal circuit.
- 7:** This step tests for a short to ground, a high resistance, or an open in the SIS voltage circuit.
- 8:** This step tests for a short to voltage in the SIS signal and voltage circuits.

DTC B0077, B0078, B0079, B0080, B0081, or B0082

Step	Action	Yes	No
Schematic Reference: <u>SIR Schematics</u>			
Connector End View Reference: <u>SIR Connector End Views</u>			
1	Did you perform the Diagnostic System Check - Vehicle?		Go to <u>Diagnostic System Check - Vehicle</u> in

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		Go to Step 2	Vehicle DTC Information
2	<ol style="list-style-type: none"> 1. Install a scan tool. 2. Turn ON the ignition, with the engine OFF. 3. With a scan tool, request the SIR DTC display. <p>Does the scan tool indicate that either DTC B0079, B0080, B0081, or B0082 is current?</p>	Go to Step 12	Go to Step 3
3	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. If DTC B0077 is current, disconnect the left inflatable restraint side impact sensor (SIS) connector. If DTC B0078 is current, disconnect the right SIS connector. Refer to <u>Inflatable Restraint Side Impact Sensor Replacement</u>. 3. Inspect both the SIS and harness connector terminals for damage or corrosion. <p>Does the SIS terminals or harness connector exhibit any signs of damage or corrosion?</p>	Go to Step 4	Go to Step 5
4	<ol style="list-style-type: none"> 1. If the SIS terminals are damaged, replace the SIS. Refer to <u>Inflatable Restraint Side Impact Sensor Replacement</u>. 2. If the SIS harness connector is damaged, replace the connector. Refer to <u>Connector Repairs</u> in Wiring Systems. <p>Did you complete the replacement?</p>	Go to Step 13	-
5	<ol style="list-style-type: none"> 1. Disconnect the inflatable restraint sensing and diagnostic module (SDM) connector. Refer to <u>Inflatable Restraint Sensing and Diagnostic Module Replacement</u>. 2. Inspect the SDM connector for corrosion or damage. Refer to <u>Testing for Intermittent Conditions and Poor</u> 		

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	<u>Connections</u> and <u>Connector Repairs</u> in Wiring Systems.		
	Did you find and correct the condition?	Go to Step 13	Go to Step 6
6	<ol style="list-style-type: none"> 1. If DTC B0077 is current, test the left SIS signal circuit for a short to ground, a high resistance, or an open. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. 2. If DTC B0078 is current, test the right SIS signal circuit for a short to ground, a high resistance, or an open. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. 		
	Did you find and correct the condition?	Go to Step 13	Go to Step 7
7	<ol style="list-style-type: none"> 1. If DTC B0077 is current, test the left SIS voltage circuit for a short to ground, a high resistance, or an open. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. 2. If DTC B0078 is current, test the right SIS voltage circuit for a short to ground, a high resistance, or an open. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. 		
	Did you find and correct the condition?	Go to Step 13	Go to Step 8
8	<ol style="list-style-type: none"> 1. Turn ON the ignition, with the engine OFF. 2. If DTC B0077 is current, test the left SIS signal and voltage circuits for a short to voltage. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. 3. If DTC B0078 is current, test the right SIS signal and voltage circuits for a short to voltage. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. 		

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	Did you find and correct the condition?	Go to Step 13	Go to Step 9
9	For DTC B0077 replace the left SIS. For DTC B0078 replace the right SIS. Refer to <u>Inflatable Restraint Side Impact Sensor Replacement</u> . Did you complete the replacement?	Go to Step 10	-
10	<ol style="list-style-type: none"> 1. Reconnect all SIR system components. 2. Use the scan tool in order to Clear the DTCs. 3. Operate the vehicle within the Conditions for Running the DTC as specified in the supporting text. Does the DTC reset?	Go to Step 11	System OK
11	Replace the SDM. Refer to <u>Control Module References</u> in Computer/Integrating Systems for replacement, setup, and programming. Did you complete the replacement?	Go to Step 13	-
12	For DTCs B0079 and B0080 replace the left SIS. For DTCs B0081 and B0082 replace the right SIS. Refer to <u>Inflatable Restraint Side Impact Sensor Replacement</u> . Did you complete the replacement?	Go to Step 13	-
13	<ol style="list-style-type: none"> 1. Reconnect all SIR system components. 2. Verify that all components, connectors, and connector position assurances (CPAs) are properly mounted. 3. Use the scan tool in order to clear the DTCs. 4. Operate the vehicle within the Conditions for Running the DTC as specified in the supporting text. Does the DTC reset?	Go to Step 2	System OK

DTC B0083 OR B0084

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Circuit Description

The inflatable restraint seat position sensor (SPS) is used to determine the proximity of a front driver or passenger seat position with respect to the frontal air bag. The SPS interfaces with the sensing and diagnostic module (SDM). The state of the SPS allows the SDM to disable stage 2 of the frontal air bag for a front seat that is forward of a forward/rearward point in seat track travel. The SPS is a hall effect sensor that is mounted on the outboard seat track of both the driver and passenger seats. The seat track includes a metal bracket that shunts the SPS magnetic circuit creating 2 states of seat position. The shunted state represents a rearward seat position. The non-shunted state represents a forward position. The SPS provides 2 current ranges, one range for the shunted state and a second range for a non-shunted state. These 2 states are inputs to the SDM. State 1 (shunted) being the rearward threshold and state 2 (non-shunted) being the forward threshold. When the SDM receives input from a SPS that state 1 threshold is reached (seat is rearward) the SDM will not disable stage 2 deployment, if required by the deployment sensors. When state 2 threshold is reached (seat is forward) the SDM will disable stage 2 deployment on the side the seat is forward. The SDM monitors the SPS circuit and if a fault is detected the SDM will set codes B0083 or B0084 and defaults to disabling stage 2 frontal deployment. This will only default on the side of the vehicle the sensor has a fault. Its important to understand that the SPS is secondary to the passenger presence system (PPS) and the manual instrument panel (I/P) module disable switch. If either one of these devices are in the disable mode the passenger air bag will not deploy regardless of the SPS status.

DTC Descriptors

This diagnostic procedure supports the following DTCs:

- DTC B0083 Right Front/Passenger Seat Position Sensor Circuit
- DTC B0084 Left Front/Driver Seat Position Sensor Circuit

Conditions for Running the DTC

Ignition 1 voltage is within the normal operating voltage range.

Conditions for Setting the DTC

DTC B0083 and B0084 will set when one of the following conditions occur:

- The SDM detects the SPS circuit amperage is 4 mA or less for 500 milliseconds.
- The SDM detects the SPS circuit amperage is between 8 mA-11 mA for 500 milliseconds.
- The SDM detects the SPS circuit amperage is 18 mA or greater for 500 milliseconds.

Action Taken When the DTC Sets

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- The SDM commands the AIR BAG indicator ON via class 2 serial data.
- The SDM defaults the SPS to seat forward threshold.

Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists.
- You issue a scan tool CLEAR DTCs command.
- A history DTC will clear once 255 malfunction-free ignition cycles have occurred.

Diagnostic Aids

The following can cause an intermittent condition:

- A short between the SPS signal and low reference circuits
- High or low resistance in the SPS signal and low reference circuits
- Inspect the SPS signal and return circuits carefully for cutting and/or chafing

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

Test Description

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

- 2:** This step inspects the SPS connector and terminals.
- 6:** This step tests for a short to ground, a high resistance, or an open in the SPS signal circuit.
- 7:** This step tests for a short to ground, a high resistance, or an open in the SPS low reference circuit.
- 8:** This step tests for a short to voltage in the SPS signal and low reference circuits.

DTC B0083 or B0084

Step	Action	Yes	No
Schematic Reference: <u>SIR Schematics</u> Connector End View Reference: <u>SIR Connector End Views</u>			
1	Did you perform the Diagnostic System Check - Vehicle?		Go to <u>Diagnostic System Check - Vehicle</u> in Vehicle DTC

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		Go to Step 2	Information
2	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. If DTC B0083 is present, disconnect the right seat position sensor (SPS) located on the RF outboard seat track. If DTC B0084 is present, disconnect the left SPS located on the LF outboard seat track. 3. Inspect both the SPS and harness connector terminals for the following conditions: <ul style="list-style-type: none"> • Corrosion • Terminal damage • Poor connections/terminal tension <p>Do the SPS terminals or harness connector exhibit any signs of corrosion, terminal damage, or poor connections?</p>	Go to Step 3	Go to Step 4
3	<ol style="list-style-type: none"> 1. If the SPS terminals are damaged, replace the SPS. Refer to <u>Inflatable Restraint Seat Position Sensor Replacement</u>. 2. If the SPS harness connector is damaged, replace the connector. Refer to <u>Connector Repairs</u> in Wiring Systems. <p>Did you complete the replacement?</p>	Go to Step 12	-
4	<ol style="list-style-type: none"> 1. If DTC B0083 is present, disconnect the right main seat harness connector located under the RF seat. If DTC B0084 is present, disconnect the left main seat harness connector located under the LF seat. Refer to <u>Power Seat Systems Connector End Views</u> in Seats. 2. Inspect both halves of the connector for corrosion or damage. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> in Wiring Systems. <p>Did you find and correct the condition?</p>	Go to Step 12	Go to Step 5

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5	<ol style="list-style-type: none"> 1. Disconnect the sensing and diagnostic module (SDM) connector. Refer to <u>Inflatable Restraint Sensing and Diagnostic Module Replacement</u>. 2. Inspect the SDM connector for corrosion or damage. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> in Wiring Systems. 		
	Did you find and correct the condition?	Go to Step 12	Go to Step 6
6	<ol style="list-style-type: none"> 1. If DTC B0083 is current, test the right SPS signal circuit for a short to ground, a high resistance, or an open. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. 2. If DTC B0084 is current, test the left SPS signal circuit for a short to ground, a high resistance, or an open. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. 		
	Did you find and correct the condition?	Go to Step 12	Go to Step 7
7	<ol style="list-style-type: none"> 1. If DTC B0083 is current, test the right SPS low reference circuit for a short to ground, a high resistance, or an open. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. 2. If DTC B0084 is current, test the left SPS low reference circuit for a short to ground, a high resistance, or an open. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. 		
	Did you find and correct the condition?	Go to Step 12	Go to Step 8
	<ol style="list-style-type: none"> 1. Turn ON the ignition, with the engine OFF. 2. If DTC B0083 is current, test the right SPS signal and low reference circuits for a short to 		

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8	<p>voltage. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems.</p> <p>3. If DTC B0084 is current, test the left SPS signal and low reference circuits for a short to voltage. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems.</p>		
	<p>Did you find and correct the condition?</p>	Go to Step 12	Go to Step 9
9	<p>For DTC B0083 replace the right SPS. For DTC B0084 replace the left SPS. Refer to <u>Inflatable Restraint Seat Position Sensor Replacement</u>.</p> <p>Did you complete the replacement?</p>	Go to Step 10	-
10	<p>1. Reconnect all SIR system components.</p> <p>2. Use the scan tool in order to Clear the DTCs.</p> <p>3. Operate the vehicle within the Conditions for Running the DTC as specified in the supporting text.</p>		
	<p>Does the DTC reset?</p>	Go to Step 11	System OK
11	<p>Replace the SDM. Refer to <u>Control Module References</u> in Computer/Integrating Systems for replacement, setup, and programming.</p> <p>Did you complete the replacement?</p>	Go to Step 12	-
12	<p>1. Reconnect all SIR system components.</p> <p>2. Verify that all components, connectors, and connector position assurances (CPAs) are properly mounted.</p> <p>3. Use the scan tool in order to clear the DTCs.</p> <p>4. Operate the vehicle within the Conditions for Running the DTC as specified in the supporting text.</p>		
	<p>Does the DTC reset?</p>	Go to Step 2	System OK

DTC B0092

Circuit Description

When the ignition is turned ON, the inflatable restraint sensing and diagnostic module (SDM) performs tests to diagnose critical malfunctions within itself. When the SDM has completed the power-up mode, the SDM will establish communication with the passenger presence system (PPS). The PPS will respond by commanding both the PASSENGER AIR BAG ON/OFF indicators located in the rearview mirror ON for 5 seconds. The SDM will transmit a request message to the PPS to receive the PPS verification ID. The PPS will transmit the verification ID to the SDM and the SDM will compare the ID received to data stored in memory. The SDM will also set DTC B0092 to notify the driver that the PPS has a current malfunction present. When the SDM detects that the PPS has set any one of the following DTCs, 023, 024, 063, 064, or 065, the SDM will disable the instrument panel (I/P) module deployment loop, set DTC B0092, and command the AIR BAG indicator ON. For more detailed information concerning class 2 serial data lines, refer to **Data Link Communications Description and Operation** .

DTC Descriptor

This diagnostic procedure supports the following DTC:

DTC B0092 Passenger Presence System Performance

Conditions for Running the DTC

Ignition 1 voltage is within the normal operating voltage range.

Action Taken When the DTC Sets

- The SDM disables the I/P module deployment loop.
- The SDM commands the AIR BAG indicator ON via class 2 serial data.

Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists.
- You issue a scan tool CLEAR DTCs command.
- A history DTC will clear once 255 malfunction-free ignition cycles have occurred.

Diagnostic Aids

IMPORTANT: DTC B0092 will also set, if the PPS has a current malfunction, and has set any one of the following DTCs: 023, 024, 064, or 065. The SDM will set DTC B0092 as current and command the AIR BAG indicator ON. This is done to notify the driver of any PPS malfunctions. When DTC B0092 is present, it is important to

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check the PPS for any current DTCs. Refer to Passenger Presence System Flash Code Procedures. If the PPS has any current DTCs address these before performing this DTC chart.

DTC B0092 is an indication that the SDM has received an incorrect PPS verification ID or has lost communication with the PPS. The SDM will continue to request the verification ID from the PPS for 5 seconds. If the SDM does not receive the correct verification ID from the PPS within 5 seconds, the SDM will set the DTC as current, illuminate the AIR BAG indicator, and disable the I/P module deployment loop.

Test Description

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

- 2:** This step checks the PPS for any current or history DTCs.
- 3:** This step inspects the PPS module connector.
- 4:** This step inspects the main seat harness connector.
- 5:** This step tests the PPS ground circuit for an open or high resistance.
- 6:** This step tests the PPS ignition 1 voltage circuit for a short to ground, an open, or high resistance.
- 7:** This step tests the PPS ground circuit for a short to voltage.

DTC B0092

Step	Action	Yes	No
Schematic Reference: <u>SIR Schematics</u> Connector End View Reference: <u>SIR Connector End Views</u>			
1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u>
2	<div>1. Install a scan tool.</div> <div>2. Turn ON the ignition, with the engine OFF.</div> IMPORTANT: If the passenger presence system (PPS) has any current or history DTCs stored, you must address the PPS DTCs before continuing with this diagnostic table.		

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	<p>3. With a scan tool, request the PPS to flash DTCs. Refer to <u>Passenger Presence System Flash Code Procedures</u>.</p> <p>Does the PPS flash any current or history DTCs?</p>	<p>Go to <u>Diagnostic Trouble Code (DTC) List - Vehicle</u></p>	<p>Go to Step 3</p>
3	<p>1. Turn OFF the ignition.</p> <p>2. Disconnect the PPS module connector.</p> <p>3. Inspect the PPS module connector for corrosion or damage. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> .</p> <p>Did you find and correct the condition?</p>	<p>Go to Step 9</p>	<p>Go to Step 4</p>
4	<p>1. Disconnect the main seat harness connector located under the RF seat. Refer to <u>Power Seat Systems Connector End Views</u> in Seats.</p> <p>2. Inspect both halves of the connector for corrosion or damage. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> .</p> <p>Did you find and correct the condition?</p>	<p>Go to Step 9</p>	<p>Go to Step 5</p>
5	<p>Test the PPS ground circuit for an open or high resistance. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> .</p> <p>Did you find and correct the condition?</p>	<p>Go to Step 9</p>	<p>Go to Step 6</p>
6	<p>Test the PPS ignition 1 voltage circuit for the following:</p> <ul style="list-style-type: none"> • A short to ground • A high resistance • An open <p>Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> .</p> <p>Did you find and correct the condition?</p>	<p>Go to Step 9</p>	<p>Go to Step 7</p>

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7	<ol style="list-style-type: none">1. Reconnect the main seat harness connector.2. Turn ON the ignition, with the engine OFF.3. Test the PPS ground circuit for a short to voltage. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> .		
	Did you find and correct the condition?	Go to Step 9	Go to Step 8
8	Replace the PPS. Refer to <u>Control Module References</u> for replacement, setup, and programming.		
	Did you complete the replacement?	Go to Step 9	-
9	<ol style="list-style-type: none">1. Reconnect all SIR and PPS system components.2. Verify that all components, connectors, and connector position assurances (CPAs) are properly mounted.3. Use the scan tool in order to clear the SIR and PPS DTCs.4. Rezero the PPS. Refer to <u>Passenger Presence System Programming and Setup</u> in Programming and Setup.5. Operate the vehicle within the Conditions for Running the DTC as specified in the supporting text.		
	Does the DTC reset?	Go to Step 2	System OK

DTC B0098**Circuit Description**

When the ignition is turned ON, the inflatable restraint sensing and diagnostic module (SDM) performs tests to diagnose critical malfunctions within itself. When the SDM has completed the power-up mode, the SDM will establish communication with the passenger presence system (PPS). The PPS will respond by commanding both the PASSENGER AIR BAG ON/OFF indicators located in the rearview mirror ON for 5 seconds. The SDM will transmit a request

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message to the PPS to receive the PPS verification ID. The PPS will transmit the verification ID to the SDM and the SDM will compare the ID received to data stored in memory. If the data stored in memory does not match the information transmitted by the PPS, the SDM will set DTC B0098 and command the AIR BAG indicator ON. The PPS will set DTC 064 and request the SDM to disable the instrument panel (I/P) module deployment loop. For more detailed information concerning class 2 serial data lines, refer to **Data Link Communications Description and Operation** in Computer/Integrating Systems.

DTC Descriptor

This diagnostic procedure supports the following DTC:

DTC B0098 Passenger Presence System Configuration Error

Conditions for Running the DTC

Ignition 1 voltage is within the normal operating voltage range.

Action Taken When the DTC Sets

- The SDM disables the I/P module deployment loop.
- The SDM commands the AIR BAG indicator ON via class 2 serial data.

Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists.
- You issue a scan tool CLEAR DTCs command.
- A history DTC will clear once 255 malfunction-free ignition cycles have occurred.

Diagnostic Aids

IMPORTANT: DTC B0098 will also set if the PPS has a current malfunction and has set DTC 064. The SDM will set DTC B0098 as current and command the AIR BAG indicator ON. This is done to notify the driver of any PPS malfunctions. When DTC B0098 is present it is important to check the PPS for any current DTCs. Refer to **Passenger Presence System Flash Code Procedures**. If the PPS has any current DTCs, address these before performing this DTC chart.

DTC B0098 is an indication that the SDM has received an incorrect PPS verification ID. The

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SDM will continue to request the verification ID from the PPS for 5 seconds. If the SDM does not receive the correct verification ID from the PPS within 5 seconds, the SDM will set DTC B0098 as current, illuminate the AIR BAG indicator, and disable the I/P module deployment loop. If either the SDM or PPS were replaced, make sure the correct part numbers were used for the vehicle application.

Test Description

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

3: Inspects the PPS to make sure the correct part number was installed in the vehicle.

5: Inspects the SDM to make sure the correct part number was installed in the vehicle.

DTC B0098

Step	Action	Yes	No
Schematic Reference: <u>SIR Schematics</u>			
Connector End View Reference: <u>SIR Connector End Views</u>			
1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to Diagnostic System Check - Vehicle in Vehicle DTC Information
2	Was the passenger presence system (PPS) replaced?	Go to Step 3	Go to Step 4
3	Inspect the PPS to make sure that the correct part number was installed in the vehicle. Was the correct PPS part number installed in the vehicle?	Go to Step 4	Go to Step 6
4	Was the inflatable restraint sensing and diagnostic module (SDM) replaced?	Go to Step 5	Go to Step 6
5	Inspect the SDM to make sure that the correct part number was installed in the vehicle. Was the correct SDM part number installed in the vehicle?	Go to Step 6	Go to Step 8
6	Replace the PPS. Refer to Control Module References in Computer/Integrating Systems for replacement, setup, and programming. Did you complete the replacement?	Go to Step 7	-
	1. Reconnect all SIR and PPS system		

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7	components. 2. Verify that all components, connectors, and connector position assurances (CPAs) are properly mounted. 3. Use the scan tool in order to clear the SIR and PPS DTCs. 4. Rezero the PPS. Refer to <u>Passenger Presence System Programming and Setup</u> in Programming and Setup. 5. Operate the vehicle within the Conditions for Running the DTC as specified in the supporting text.		
	Does the DTC reset?	Go to Step 8	System OK
8	Replace the SDM. Refer to <u>Control Module References</u> in Computer/Integrating Systems for replacement, setup, and programming. Did you complete the replacement?		
		Go to Step 9	-
9	1. Reconnect all SIR and PPS system components. 2. Verify that all components, connectors, and CPAs are properly mounted. 3. Use the scan tool in order to clear the SIR and PPS DTCs. 4. Rezero the PPS. Refer to <u>Passenger Presence System Programming and Setup</u> in Programming and Setup. 5. Operate the vehicle within the Conditions for Running the DTC as specified in the supporting text.		
	Does the DTC reset?	Go to Step 2	System OK

DTC B0100, B0101, B0102, B0103, B0104, OR B0105**Circuit Description**

The inflatable restraint electronic frontal sensor (EFS) utilizes a unidirectional 2-wire circuit.

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The EFS modulates current on the interface to send ID, State of Health, and deployment commands to the inflatable restraint sensing and diagnostic module (SDM). The SDM serves as a power source and a ground for the EFS. When the ignition is turned on and input power from the SDM is first detected, the EFS responds by performing internal diagnostics and sending an ID to the SDM. The SDM considers the ID to be valid if the response time is less than 5 seconds. The EFS continually communicates status messages to the SDM, which determines if a fault is present in the EFS circuit. When a fault is detected, the SDM resets the EFS twice by removing and reapplying power. If the fault is still present, the SDM will set a diagnostic trouble code (DTC).

DTC Descriptors

This diagnostic procedure supports the following DTCs:

- DTC B0100 Electronic Front End Sensor 1 Performance
- DTC B0101 Discard Electronic Front End Sensor 1
- DTC B0102 Incorrect Electronic Front End Sensor 1 Installed
- DTC B0103 Electronic Front End Sensor 2 Performance
- DTC B0104 Discard Electronic Front End Sensor 2
- DTC B0105 Incorrect Electronic Front End Sensor 2 Installed

Conditions for Running the DTC

Ignition 1 voltage is within the normal operating voltage range.

Conditions for Setting the DTC

- DTC B0100 and B0103 will set when one of the following conditions occur:
 - A valid ID message is not received within 5 seconds of the EFS being powered up.
 - Status message is not received.
 - The SDM has failed twice to reset the EFS.
- DTC B0102 and B0105 will set when one of the following conditions occur:
 - The SDM has received an ID message from the EFS which does not match the ID stored in the SDM memory.
 - When 2 EFS resets are attempted without the correct identification being detected by the SDM.
- DTC B0101 and B0104 will set when the SDM has received 4 consecutive NOK (Not OK) messages from the EFS.

Action Taken When the DTC Sets

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- The SDM commands the AIR BAG indicator ON via Class 2 serial data.
- The SDM attempts to reset the EFS.

Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists.
- You issue a scan tool CLEAR DTCs command.
- A history DTC will clear once 255 malfunction-free ignition cycles have occurred.

Diagnostic Aids

The following can cause an intermittent condition:

- A short between the EFS signal and voltage circuits
- High or low resistance in the EFS signal and voltage circuits
- Inspect the EFS signal and voltage circuits carefully for cutting and/or chafing
- Verify that the correct EFS is installed in the vehicle

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

Test Description

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

- 2:** This step tests the communication status of the EFS.
- 6:** This step tests for a short to ground, a high resistance, or an open in the EFS signal circuit.
- 7:** This step tests for a short to ground, a high resistance, or an open in the EFS voltage circuit.
- 8:** This step tests for a short to voltage in the EFS signal and voltage circuits.

DTC B0100, B0101, B0102, B0103, B0104, or B0105

Step	Action	Yes	No
Schematic Reference: <u>SIR Schematics</u> Connector End View Reference: <u>SIR Connector End Views</u>			
1	Did you perform the Diagnostic System Check - Vehicle?		Go to <u>Diagnostic System Check - Vehicle</u> in

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		Go to Step 2	Vehicle DTC Information
2	<ol style="list-style-type: none"> 1. Install a scan tool. 2. Turn ON the ignition, with the engine OFF. 3. With a scan tool, request the SIR DTC display. <p>Does the scan tool indicate that either DTC B0101, B0102, B0104, or B0105 is current?</p>	Go to Step 12	Go to Step 3
3	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. If DTC B0100 is current, disconnect the left electronic frontal sensor (EFS) connector. If DTC B0103 is current, disconnect the right EFS connector. Refer to <u>Inflatable Restraint Front End Sensor Replacement</u>. 3. Inspect both EFS and harness connector terminals for damage or corrosion. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> in Wiring Systems. <p>Do the EFS terminals or harness connector exhibit any signs of damage or corrosion?</p>	Go to Step 4	Go to Step 5
4	<ol style="list-style-type: none"> 1. If the EFS terminals are damaged, replace the EFS. Refer to <u>Inflatable Restraint Front End Sensor Replacement</u>. 2. If the EFS harness connector is damaged, replace the connector. Refer to <u>Connector Repairs</u> in Wiring Systems. <p>Did you complete the replacement?</p>	Go to Step 13	-
5	<ol style="list-style-type: none"> 1. Disconnect the inflatable restraint sensing and diagnostic module (SDM) connector. Refer to <u>Inflatable Restraint Sensing and Diagnostic Module Replacement</u>. 2. Inspect the SDM connector for corrosion or damage. Refer to <u>Testing for Intermittent</u> 		

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	<u>Conditions and Poor Connections</u> and <u>Connector Repairs</u> in Wiring Systems.		
	Did you find and correct the condition?	Go to Step 13	Go to Step 6
6	<ol style="list-style-type: none"> 1. If DTC B0100 is current, test the left EFS signal circuit for a short to ground, a high resistance, or an open. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. 2. If DTC B0103 is current, test the right EFS signal circuit for a short to ground, a high resistance, or an open. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. 		
	Did you find and correct the condition?	Go to Step 13	Go to Step 7
7	<ol style="list-style-type: none"> 1. If DTC B0100 is current, test the left EFS voltage circuit for a short to ground, a high resistance, or an open. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. 2. If DTC B0103 is current, test the right EFS voltage circuit for a short to ground, a high resistance, or an open. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. 		
	Did you find and correct the condition?	Go to Step 13	Go to Step 8
8	<ol style="list-style-type: none"> 1. Turn ON the ignition, with the engine OFF. 2. If DTC B0100 is current, test the left EFS signal and voltage circuits for a short to voltage. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. 3. If DTC B0103 is current, test the right EFS signal and voltage circuits for a short to voltage. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. 		

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	Did you find and correct the condition?	Go to Step 13	Go to Step 9
9	For DTC B0100 replace the left EFS. For DTC B0103 replace the right EFS. Refer to <u>Inflatable Restraint Front End Sensor Replacement</u> . Did you complete the replacement?	Go to Step 10	-
10	<ol style="list-style-type: none"> 1. Reconnect all SIR system components. 2. Use the scan tool in order to Clear the DTCs. 3. Operate the vehicle within the Conditions for Running the DTC, as specified in the supporting text. Does the DTC reset?	Go to Step 11	System OK
11	Replace the SDM. Refer to <u>Control Module References</u> in Computer/Integrating Systems for replacement, setup, and programming. Did you complete the replacement?	Go to Step 13	-
12	For DTC B0101 and B0102 replace the left EFS. For DTC B0104 and B0105 replace the right EFS. Refer to <u>Inflatable Restraint Front End Sensor Replacement</u> . Did you complete the replacement?	Go to Step 13	-
13	<ol style="list-style-type: none"> 1. Reconnect all SIR system components. 2. Verify that all components, connectors and connector position assurances (CPAs) are properly mounted. 3. Use the scan tool in order to clear the DTCs. 4. Operate the vehicle within the Conditions for Running the DTC, as specified in the supporting text. Does the DTC reset?	Go to Step 2	System OK

DTC B1001

Circuit Description

When the ignition is first turned ON, the inflatable restraint sensing and diagnostic module (SDM) compares the restraints ID stored in the SDM to the restraints ID stored in the body

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control module (BCM). The restraints ID being compared contains the last four digits of the SDM part number. The SDM then compares the vehicle identification number (VIN) stored in the SDM to the VIN stored in the BCM. For more detailed information concerning the class 2 data lines, refer to **Data Link Communications Description and Operation** in Computer/Integrating Systems.

DTC Descriptor

This diagnostic procedure supports the following DTC:

DTC B1001 Option Configuration Error

Conditions for Setting the DTC

- Ignition 1 voltage is within the normal operating voltage range.
- The restraints ID stored in the SDM does not match the restraints ID stored in the BCM, or the VIN information stored in the SDM does not match the VIN information stored in the BCM.

This test is only run once during power up initialization.

Action Taken When the DTC Sets

- The SDM commands ON the AIR BAG indicator via class 2 serial data.
- The SDM disables all AIR BAG deployments.

Conditions for Clearing the DTC

- You issue a scan tool CLEAR DTCs command.
- A history DTC will clear once 255 malfunction-free ignition cycles have occurred.

When the SDM detects that no DTCs are present, the SDM commands the AIR BAG indicator OFF.

Diagnostic Aids

DTC B1001 is an indication that the restraint IDs stored in both the BCM and SDM do not match or that the VINs stored in both the BCM and SDM do not match. If either the BCM or powertrain control module (PCM) were replaced, the replacement modules need to be reprogrammed for proper operation.

Test Description

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

2: This step checks to see if the correct VIN is programmed in the PCM.

4: This step checks to see if the BCM has been replaced.

5: This step explains the proper steps to perform after a BCM has been replaced in order for the BCM to operate properly.

6: This step checks to see if the correct VIN is programmed in the BCM.

7: This step explains how to properly program the VIN into the BCM.

8: This step checks to see if the SDM has been replaced.

10: This step explains how to properly setup the SDM and BCM.

DTC B1001

Step	Action	Yes	No
Schematic Reference: <u>SIR Schematics</u>			
Connector End View Reference: <u>SIR Connector End Views</u>			
1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u> in Vehicle DTC Information
2	1. Install a scan tool. 2. Turn ON the ignition, with the engine OFF. 3. Use the scan tool to verify that the powertrain control module (PCM) is programmed with the correct VIN by comparing the VIN that is stored in the PCM to the VIN plate of the vehicle. Is the PCM programmed with the correct VIN?	Go to Step 4	Go to Step 3
3	Use the scan tool and/or the techline machine to program the correct VIN into the PCM. Did you complete the programming procedure?	Go to Step 11	-
4	Was the body control module (BCM) replaced?	Go to Step 5	Go to Step 6
	Program the BCM in order for the BCM to learn the restraints ID from the sensing and diagnostic module (SDM). Refer to <u>Body</u>		

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5	<u>Control Module (BCM) Programming/RPO Configuration</u> in Computer/Integrating Systems. Did you complete the programming procedures?	Go to Step 10	-
6	Use the scan tool to verify that the BCM is programmed with the correct VIN by comparing the VIN that is stored in the BCM to the VIN that is stored in the PCM. Is the BCM programmed with the correct VIN?	Go to Step 8	Go to Step 7
7	Program the correct VIN into the BCM. Refer to <u>Body Control Module (BCM) Programming/RPO Configuration</u> in Computer/Integrating Systems. Did you complete the reprogramming procedure?	Go to Step 10	-
8	Was the SDM replaced?	Go to Step 10	Go to Step 9
9	Replace the inflatable restraint SDM. Refer to <u>Control Module References</u> in Computer/Integrating Systems for replacement, setup, and programming. Did you complete the replacement?	Go to Step 10	-
10	Perform the Setup SDM Serial Number in BCM procedure. Refer to <u>Control Module References</u> in Computer/Integrating Systems. Did you complete the setup procedure?	Go to Step 11	-
11	<ol style="list-style-type: none"> 1. Verify that all components, connectors, and connector position assurances (CPAs) are properly mounted. 2. Use the scan tool in order to clear the DTCs. 3. Turn the ignition switch OFF for 10 seconds. Are all SIR components properly mounted and connected?	Go to <u>Diagnostic System Check - Vehicle</u> in Vehicle DTC Information	-

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Circuit Description

When the ignition is turned ON, the inflatable restraint sensing and diagnostic module (SDM) performs tests to diagnose critical malfunctions within the passenger presence system (PPS). When the SDM has completed the power-up mode, the SDM will establish communication with the PPS. The SDM will increase a fault counter with each ignition cycle that a fault exists with the PPS. The SDM will lock out the PPS after a predetermined ignition cycle count maximum has been reached. For more detailed information concerning class 2 serial data lines, refer to **Data Link Communications Description and Operation** .

DTC Descriptor

This diagnostic procedure supports the following DTC:

DTC B1530 Discard Passenger Presence System 1

Conditions for Running the DTC

Ignition 1 voltage is within the normal operating voltage range.

Conditions for Setting the DTC

- The PPS has a current fault.
- The PPS fault counter in the SDM has reached 127 counts.

Action Taken When the DTC Sets

- The SDM disables the instrument panel (I/P) module deployment loop.
- The SDM commands the AIR BAG indicator ON via class 2 serial data.
- The SDM will lock out the malfunctioning PPS.

Conditions for Clearing the DTC

- The PPS has been replaced.
- The SDM has been replaced.

Diagnostic Aids

IMPORTANT: DTC B0092 or DTC B0098 will set if the PPS has a malfunction, and has set any one of the following DTCs: 023, 024, 063, 064, or 065. When DTC B0092 or DTC B0098 is present, it is important to check the PPS for any current DTC. Refer to **Passenger Presence**

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System Flash Code Procedures. If the PPS has any current DTCs, address those DTCs before performing this DTC chart.

Any repair performed on the original PPS will not clear DTC B1530.

Test Description

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

- 2: This step checks for any current PPS DTCs.
- 3: This step checks for the presence of DTC B1530.
- 4: This step replaces the SDM.
- 5: This step performs the SDM setup procedure.

DTC B1530

Step	Action	Yes	No
Schematic Reference: <u>SIR Schematics</u>			
Connector End View Reference: <u>SIR Connector End Views</u>			
1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u>
2	<div>1. Install a scan tool.</div> <div>2. Turn ON the ignition, with the engine OFF.</div> <div>IMPORTANT: If the sensing and diagnostic module (SDM) has DTC B0092 or DTC B0098 stored as current, you must address those DTCs before continuing with this diagnostic table.</div> <div>3. With a scan tool, check for DTC B0092 or DTC B0098 is a current DTC.</div> <div>Is DTC B0092 or DTC B0098 stored as current DTC?</div>	Go to <u>Diagnostic Trouble Code (DTC) List - Vehicle</u>	Go to Step 3
3	If the passenger presence system (PPS) has been replaced then DTC B1530 will automatically be cleared. If the PPS was repaired and DTC		

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	B1530 is current, the SDM will have to be replaced. Is DTC B1530 a current DTC?	Go to Step 4	System OK
4	Replace the SDM. Refer to <u>Control Module References</u> for replacement, setup, and programming. Did you complete the replacement?	Go to Step 5	-
5	Perform the Setup SDM Serial Number in body control module (BCM) procedure. Refer to <u>Control Module References</u> for replacement, setup, and programming. Did you complete the setup procedure?	System OK	-

DTC B3855, B3856, OR B3857

Circuit Description

The inflatable restraint vehicle rollover sensor (ROS) utilizes battery power supply and a bidirectional interface circuit. The ROS modulates current on the interface to send ID, State of Health, and deployment commands to the inflatable restraint sensing and diagnostic module (SDM). When the ignition is turned on the ROS responds by performing internal diagnostics and sending an ID to the SDM. The ROS continually communicates status messages to the SDM, which determines if a fault is present in the ROS circuit. If the fault is present, the SDM will set a diagnostic trouble code (DTC).

DTC Descriptors

This diagnostic procedure supports the following DTCs:

- DTC B3855 Rollover Sensor Performance
- DTC B3856 Discard Rollover Sensor
- DTC B3857 Incorrect Rollover Sensor Installed

Conditions for Running the DTC

Ignition 1 voltage is within the normal operating voltage range of 9-16 volts.

Conditions for Setting the DTC

- DTC B3855 will set when one of the following conditions occur:
 - A valid ID message is not received within 5 seconds of the ROS being powered up.

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- A status message is not received.
- DTC B3856 will set when one of the following conditions occur:
 - The SDM has received a NOK message from the ROS.
 - A ROS internal fault exists for a 127 ignition cycles.
- DTC B3857 will set when the SDM has received an ID message from the ROS that does not match the ID stored in the SDM memory.

Action Taken When the DTC Sets

The SDM commands ON the AIR BAG warning lamp via class 2 serial data.

Conditions for Clearing the DTC

- The DTC will clear when the condition responsible for setting the DTC no longer exists and the scan tool Clear DTCs function is used.
- A history DTC will clear once 250 malfunction-free ignition cycles have occurred.

Diagnostic Aids

The following are conditions that may cause the malfunction:

- A short to ground or voltage in the ROS circuit
- High or low resistance in the ROS circuit
- Improper ROS installed on vehicle

Thoroughly inspect the wiring and the connectors. An incomplete inspection of the wiring and connectors may result in misdiagnosis, causing a part replacement with the reappearance of the malfunction. If an intermittent malfunction exists, refer to **Testing for Intermittent Conditions and Poor Connections** in Wiring Systems.

Test Description

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

- 7:** This step tests the ROS signal and ROS voltage circuits for an open or high resistance
- 8:** This step tests between the ROS signal and ROS voltage circuits for continuity
- 9:** This step tests the ROS signal circuit for a short to voltage

DTC B3855, B3856, or B3857

Step	Action	Yes	No
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Schematic Reference: **SIR Schematics**

Connector End View Reference: **SIR Connector End Views**

1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u> in Vehicle DTC Information
2	<ol style="list-style-type: none">1. Install a scan tool.2. Turn ON the ignition, with the engine OFF.3. Use the scan tool to request SIR DTCs displayed. <p>Does the scan tool indicate that DTC B3856, or B3857 is current?</p>	Go to Step 10	Go to Step 3
3	<ol style="list-style-type: none">1. Turn OFF the ignition.2. If DTC B3855 is current, disconnect the inflatable restraint rollover sensor (ROS) connector. Refer to <u>Inflatable Restraint Vehicle Rollover Sensor Replacement</u>.3. Inspect both the component and harness sides of the connector for damage or corrosion. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> in Wiring Systems. <p>Does the connector exhibit any signs of damage or corrosion?</p>	Go to Step 4	Go to Step 5
4	<ol style="list-style-type: none">1. If the component side of the ROS connector is damaged, the ROS must be replaced. Refer to <u>Inflatable Restraint Vehicle Rollover Sensor Replacement</u>.2. If the harness side of the ROS connector is damaged, replace the harness side of the connector. Refer to <u>Connector Repairs</u> in Wiring Systems.		

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	Did you complete the repair?	Go to Step 11	-
5	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Disconnect the inflatable restraint sensing and diagnostic module (SDM) connector. Refer to <u>Inflatable Restraint Sensing and Diagnostic Module Replacement</u>. 3. Inspect both the component and harness sides of the SDM connector for damage or corrosion. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> in Wiring Systems. <p>Does the connector exhibit any signs of damage or corrosion?</p>	Go to Step 6	Go to Step 7
6	<ol style="list-style-type: none"> 1. If the component side of the SDM connector is damaged, the SDM must be replaced. Refer to <u>Inflatable Restraint Sensing and Diagnostic Module Replacement</u>. 2. If the harness side of the SDM connector is damaged, replace the harness side of the connector. Refer to <u>Connector Repairs</u> in Wiring Systems. <p>Did you complete the repair?</p>	Go to Step 11	-
7	<p>If DTC B3855 is current, test both the ROS signal and ROS voltage circuits for an open or high resistance. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	Go to Step 11	Go to Step 8
8	<p>Test for continuity between the ROS signal circuit and the ROS voltage circuit on the ROS connector. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	Go to Step 11	Go to Step 9
	<ol style="list-style-type: none"> 1. Turn ON the ignition, with the engine OFF. 		

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9	<p>2. Test the ROS signal for a short to voltage. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	Go to Step 11	Go to Step 10
10	<p>1. Turn OFF the ignition.</p> <p>2. If DTC B3855, B3856, or B3857 was current replace the ROS. Refer to <u>Inflatable Restraint Vehicle Rollover Sensor Replacement</u>.</p> <p>Did you complete the replacement?</p>	Go to Step 11	-
11	<p>1. Reconnect all SIR components.</p> <p>2. Use the scan tool in order to Clear the DTCs.</p> <p>3. Operate the vehicle within the Conditions for Running the DTC as specified in the text.</p> <p>Does the DTC reset?</p>	Go to Step 12	System OK
12	<p>1. Turn OFF the ignition.</p> <p>2. Replace the SDM. Refer to <u>Control Module References</u> in Computer/Integrating Systems for replacement, setup, and programming.</p> <p>Did you complete the replacement?</p>	Go to Step 13	-
13	<p>1. Turn ON the ignition, with the engine OFF</p> <p>2. Use the scan tool in order to Clear the DTCs.</p> <p>3. Operate the vehicle within the Conditions for Running the DTC as specified in the text.</p> <p>Does the DTC reset?</p>	Go to Step 2	System OK

Circuit Description

The passenger presence system (PPS) monitors itself for faults and will set/flash DTCs if a fault is detected. The PPS communicates with the inflatable restraint sensing and diagnostic module (SDM) via non class 2 communications. When the SDM receives input from the PPS that a PPS fault has occurred, the SDM will request the instrument panel cluster (IPC) to turn the AIR BAG indicator located on the IPC ON. To determine what DTCs have been set by the PPS, the Tech 2 is used to command the SDM to request the PPS to flash the DTCs using the PASSENGER AIR BAG ON/OFF indicators located on the rearview mirror. The Tech 2 sends a string of commands to the SDM that allows the SDM to communicate with the PPS module and initiate the flashing of the DTCs. When the Tech 2 has completed sending the commands, the PPS will begin flashing any current or history DTCs that the system has stored. When the SDM no longer receives commands from the Tech 2, the SDM mistakes this as a communication fault and sets DTC U1241. DTC U1241 will set when the Tech 2 is used to flash DTCs from the PPS or after the PPS has been rezeroed. DTC U1241 does not indicate a system malfunction and will not cause any warning indicators to illuminate. When DTC U1241 sets, cycle the ignition and use the scan tool to clear the code, no further diagnosis is necessary. For more detailed information concerning the PPS, refer to **SIR System Description and Operation**. For more detailed information concerning PPS flash code and rezeroing procedures, refer to **Passenger Presence System Flash Code Procedures** and **Passenger Presence System Programming and Setup** in Programming and Setup.

DTC Descriptor

This diagnostic procedure supports the following DTC:

DTC U1241 Lost Communication With Scan Tool

Conditions for Running the DTC

Ignition 1 voltage is within the normal operating voltage range.

Conditions for Setting the DTC

DTC U1241 will set when the Tech 2 is used to flash DTCs from the PPS or after the PPS has been rezeroed.

Conditions for Clearing the DTC

You issue a scan tool CLEAR DTCs command.

Diagnostic Aids

DTC U1241 does not indicate a system malfunction and will not cause any warning indicators to illuminate. When DTC U1241 sets, cycle the ignition and use the scan tool to clear the code, no further diagnosis is necessary.

SYMPTOMS - SIR

IMPORTANT: The following steps must be completed before using the Symptom Tables.

1. Perform the Diagnostic System Check - Vehicle in Vehicle DTC Information, before using the Symptom Tables in order to verify that all of the following are true:
 - There are no DTCs set.
 - The control module(s) can communicate via the serial data link.
2. Review the system operation in order to familiarize yourself with the system functions. Refer to SIR System Description and Operation.

Visual/Physical Inspection

- Inspect for aftermarket devices which could affect the operation of the SIR system. Refer to Checking Aftermarket Accessories in Wiring Systems.
- Inspect the easily accessible or visible system components for obvious damage or conditions which could cause the symptom.

Intermittent

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

Symptom List

Refer to Air Bag Indicator Circuit Malfunction in order to diagnose the symptom.

Refer to Passenger Presence System Indicator Circuit Malfunction in order to diagnose the symptom.

AIR BAG INDICATOR CIRCUIT MALFUNCTION

Circuit Description

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When the ignition is turned ON, the instrument panel cluster (IPC) flashes the AIR BAG indicator seven times. The inflatable restraint sensing and diagnostic module (SDM) performs tests to diagnose critical malfunctions within the SIR system. If no SIR system malfunctions exists, the SDM will request the IPC to turn the AIR BAG indicator OFF after it has flashed 7 times. The AIR BAG indicator is controlled by the SDM via class 2 serial data.

Diagnostic Aids

- If ignition 1 voltage is outside of the normal operating voltage range (9-16 volts), the AIR BAG indicator will come ON solid with no DTCs set.
- The loss of serial data communication between the SDM and the instrument panel cluster (IPC) will cause the AIR BAG indicator to come ON solid. Refer to **DTC U1001-U1254** in Computer/Integrating Systems.

Test Description

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

3: This step determines if ignition 1 voltage to the SDM is more than 9 volts.

4: This step determines if ignition 1 voltage to the SDM is more than 16 volts.

5: This step tests for an open or high resistance in the ignition 1 voltage circuit between the SDM and the SIR fuse.

6: This step tests for an open or high resistance in the ignition 1 voltage circuit that feeds the SIR fuse.

7: This step tests for an open or high resistance in the SDM ground circuit.

Air Bag Indicator Circuit Malfunction

Step	Action	Value(s)	Yes	No
Schematic Reference: <u>SIR Schematics</u>				
Connector End View Reference: <u>SIR Connector End Views</u>				
1	Did you perform the Diagnostic System Check - Vehicle?	-	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u> in Vehicle DTC Information
	1. Turn OFF the ignition. 2. Observe the AIR BAG indicator			

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2	while turning the ignition ON. Does the AIR BAG indicator flash 7 times?	-	Go to Step 3	Go to Step 9
3	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Install a scan tool. 3. Turn ON the ignition, with the engine OFF. 4. With a scan tool, request the ignition voltage parameter in the SIR data list. Does the ignition voltage displayed measure more than the specified value?	9 V	Go to Step 4	Go to Step 5
4	Does the ignition voltage displayed measure more than the specified value?	16 V	Go to <u>Diagnostic System Check - Vehicle</u> in Vehicle DTC Information	Go to Step 8
5	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Test the ignition 1 voltage circuit between the sensing and diagnostic module (SDM) and the fuse block for an open or high resistance. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. Did you find and correct the condition?	-	Go to Step 12	Go to Step 6
6	Test the ignition 1 voltage circuit that feeds the SIR fuse for an open or high resistance. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. Did you find and correct the condition?	-	Go to Step 12	Go to Step 7
7	Test the sensing and SDM ground circuit for an open or high resistance. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in	-		

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	Wiring Systems. Did you find and correct the condition?		Go to Step 12	Go to Step 8
8	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Disconnect the SDM connector. Refer to <u>Inflatable Restraint Sensing and Diagnostic Module Replacement</u>. 3. Inspect the SDM connector for corrosion or damage. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> in Wiring Systems. <p>Did you find and correct the condition?</p>	-	Go to Step 12	Go to Step 10
9	<ol style="list-style-type: none"> 1. Disconnect the instrument panel cluster (IPC) connector. Refer to <u>Instrument Panel Cluster (IPC) Replacement</u> in Instrument Panel, Gages, and Console. 2. Inspect the IPC connector for corrosion or damage. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> in Wiring Systems. <p>Did you find and correct the condition?</p>	-	Go to Step 12	Go to Step 11
10	<p>Replace the SDM. Refer to <u>Control Module References</u> in Computer/Integrating Systems for replacement, setup, and programming.</p> <p>Did you complete the replacement?</p>	-	Go to Step 12	-
11	<p>Replace the IPC. Refer to <u>Control Module References</u> in Computer/Integrating Systems for replacement, setup, and programming.</p> <p>Did you complete the replacement?</p>	-	Go to Step 12	-

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12	<ol style="list-style-type: none">1. Reconnect all SIR and IPC system components.2. Verify that all components, connectors, and connector position assurances (CPAs) are properly mounted. <p>Have all SIR and IPC components been properly connected and mounted?</p>	-	<p>Go to <u>Diagnostic System Check - Vehicle</u> in Vehicle DTC Information</p>	-
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PASSENGER PRESENCE SYSTEM INDICATOR CIRCUIT MALFUNCTION

Circuit Description

The PASSENGER AIR BAG ON/OFF indicators located on the rearview mirror are used to notify the driver when the passenger presence system (PPS) has enabled or disabled the instrument panel (I/P) inflator module. The PPS air bag indicators will also inform the driver of any PPS malfunctions. When the ignition is turned on, the PPS module is supplied with ignition 1 voltage and commands both PASSENGER AIR BAG ON/OFF indicators ON for 5 seconds. The PPS module conducts tests on the PPS components and circuits while both PASSENGER AIR BAG ON/OFF indicators are ON. If no malfunctions are detected the PPS module will turn the PASSENGER AIR BAG indicator ON or OFF depending on the status of the PPS. If a malfunction is detected, the PPS module will store a DTC, default the PPS to the OFF state and communicate with the SDM that a DTC has been set. The SDM will request the instrument panel cluster (IPC) to turn the AIR BAG indicator ON to notify the driver of a PPS malfunction.

Diagnostic Aids

The following can cause an intermittent condition:

- A short in the passenger air bag OFF indicator control circuit
- A short in the passenger air bag ON indicator control circuit
- An open or high resistance in the passenger air bag OFF indicator control circuit
- An open or high resistance in the passenger air bag ON indicator control circuit

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

Test Description

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

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4: This step tests the ignition 1 voltage circuit between the inside rearview mirror and the underhood fuse block for a short to ground, a high resistance, or an open.

5: This step tests the passenger air bag OFF indicator control circuit for a short to ground, a high resistance, or an open.

6: This step test the passenger air bag ON indicator control circuit for a short to ground, a high resistance, or an open.

7: This step tests the PPS module for proper operation.

Passenger Presence System Indicator Circuit Malfunction

Step	Action	Yes	No
Schematic Reference: <u>SIR Schematics</u> Connector End View Reference: <u>SIR Connector End Views</u> or <u>Stationary Windows Connector End Views</u> in Stationary Windows			
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 OFF the ignition. 2. Disconnect the passenger presence system (PPS) module connector. 3. Inspect the PPS module connector for corrosion or damage. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 10	Go to Step 3
3	1. Disconnect the inside rearview mirror connector located at the back of the mirror. 2. Inspect the inside rearview mirror connector for corrosion or damage. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> in Wiring Systems.		

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	Did you find and correct the condition?	Go to Step 10	Go to Step 4
4	1. Turn OFF the ignition. 2. Test the ignition 1 voltage circuit between the inside rearview mirror and the underhood fuse block for a short to ground, a high resistance, or an open. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 10	Go to Step 5
5	Test the passenger air bag OFF indicator control circuit for a short to ground, a high resistance, or an open. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 10	Go to Step 6
6	Test the passenger air bag ON indicator control circuit for a short to ground, a high resistance, or an open. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 10	Go to Step 7
7	1. Turn OFF the ignition. 2. Connect a test lamp between the ignition 1 voltage circuit and the passenger air bag OFF indicator control circuit at the inside rearview mirror connector terminals. 3. Empty the front passenger seat. 4. Turn On the ignition, with the engine OFF. Does the test lamp illuminate?	Go to Step 8	Go to Step 9
8	IMPORTANT: When replacing the inside rearview mirror, perform the <u>Compass Calibration and Variance Procedure</u> when the repair is complete. Replace the rearview mirror. Refer to <u>Rearview Mirror Replacement</u> in Stationary Windows. Did you complete the replacement?	Go to Step 10	-
	Replace the PPS. Refer to <u>Control Module</u>		

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9	References in Computer/Integrating Systems for replacement, setup, and programming. Did you complete the replacement?	Go to Step 10	-
10	<ol style="list-style-type: none">1. Reconnect all PPS and rearview mirror system components.2. Verify that all components, connectors, and connector position assurances (CPAs) are properly mounted.3. Use the scan tool in order to clear the SIR and PPS DTCs.4. Rezero the PPS. Refer to <u>Passenger Presence System Programming and Setup</u> in Programming and Setup.5. Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 2

SIR DISABLING AND ENABLING ZONES

IMPORTANT: Refer to **SIR Service Precautions** before disabling the SIR system.

The SIR system has been divided into Disabling and Enabling Zones. When performing service on or near SIR components or SIR wiring, it may be necessary to disable the SIR components in that zone. It may be necessary to disable more than one zone depending on the location of other SIR components and the area being serviced, refer to **SIR Zone Identification Views**. Refer to the illustration below, to identify the specific zone or zones in which service will be performed. After identifying the zone or zones, proceed to the disabling and enabling procedures for that particular zone or zones.

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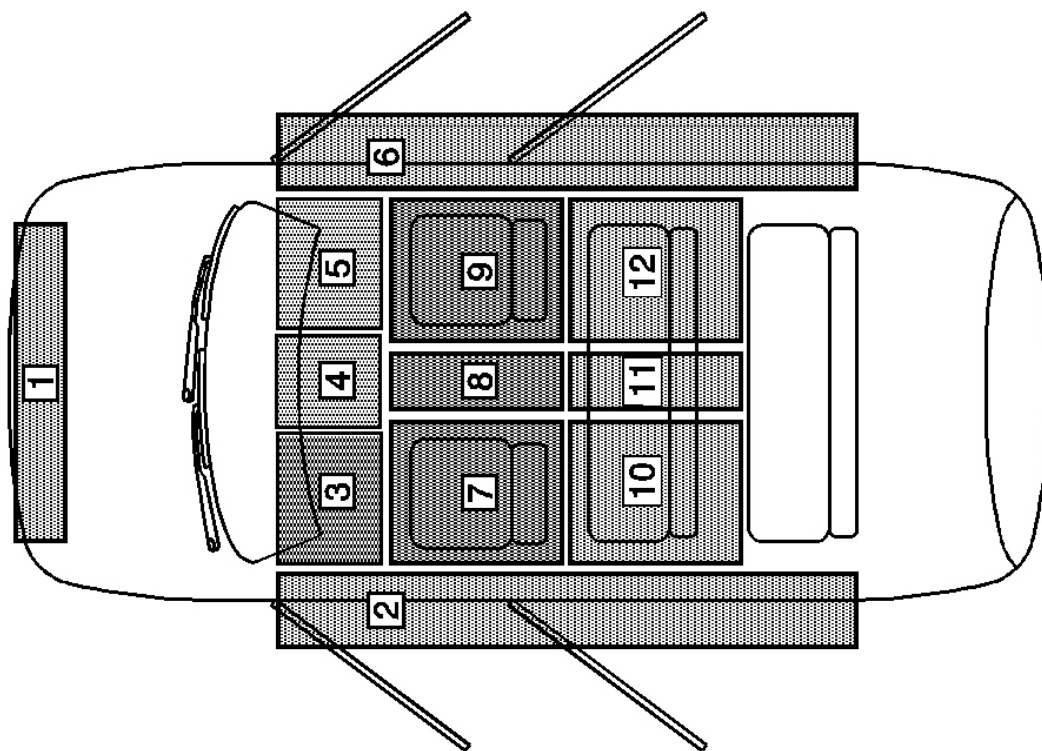


Fig. 19: SIR Disabling & Enabling Zones
Courtesy of GENERAL MOTORS CORP.

SIR Disabling and Enabling Zones

Zone	Description
1	Inflatable Restraint Electronic Frontal Sensors (EFS)-Refer to <u>SIR Disabling and Enabling Zone 1.</u>
2	Inflatable Restraint Side Impact Sensor (SIS) and Inflatable Restraint Roof Rail Module-Refer to <u>SIR Disabling and Enabling Zone 2.</u>
3	Inflatable Restraint Steering Wheel Module and Coil-Refer to <u>SIR Disabling and Enabling Zone 3.</u>
4	Not Used
5	Inflatable Restraint Instrument Panel (I/P) Module-Refer to <u>SIR Disabling and Enabling</u>

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	<u>Zone 5.</u>
6	Inflatable Restraint Side Impact Sensor (SIS) and Inflatable Restraint Roof Rail Module-Refer to <u>SIR Disabling and Enabling Zone 6.</u>
7	Seat Belt Pretensioner-Refer to <u>SIR Disabling and Enabling Zone 7.</u>
8	Inflatable Restraint Sensing and Diagnostic Module (SDM)-Refer to <u>SIR Disabling and Enabling Zone 8.</u>
9	Seat Belt Pretensioner-Refer to <u>SIR Disabling and Enabling Zone 9.</u>
10-12	Not Used

REPAIR INSTRUCTIONS

SIR SERVICE PRECAUTIONS

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

The inflatable restraint sensing and diagnostic module (SDM) maintains a reserved energy supply. The reserved energy supply provides deployment power for the air bags. Deployment power is available for as much as 1 minute after disconnecting the vehicle power. Disabling the SIR system prevents deployment of the air bags from the reserved energy supply.

General Service Instructions

The following are general service instructions which must be followed in order to properly repair the vehicle and return it to its original integrity:

- Do not handle the inflatable restraint vehicle rollover sensor when connected to vehicle power.
- Do not expose inflator modules to temperatures above 65°C (150°F).
- Verify the correct replacement part number. Do not substitute a component from a different vehicle.
- Use only original GM replacement parts available from your authorized GM dealer. Do not

use salvaged parts for repairs to the SIR system.

Discard any of the following components if it has been dropped from a height of 91 cm (3 ft) or greater:

- Inflatable restraint front end sensor
- Inflatable restraint instrument panel (I/P) module
- Inflatable restraint passenger presence system (PPS)
- Inflatable restraint roof rail module
- Inflatable restraint SDM
- Inflatable restraint side impact sensor (SIS)
- Inflatable restraint steering wheel module
- Inflatable restraint steering wheel module coil
- Inflatable restraint vehicle rollover sensor
- Seat belt pretensioner

SIR DISABLING AND ENABLING ZONE 1

Disabling Procedure

IMPORTANT: Refer to SIR Disabling and Enabling Zones before disabling the SIR system.

1. Turn the steering wheel so that the vehicle wheels are pointing straight ahead.
2. Turn OFF the ignition.
3. Remove the key from the ignition.

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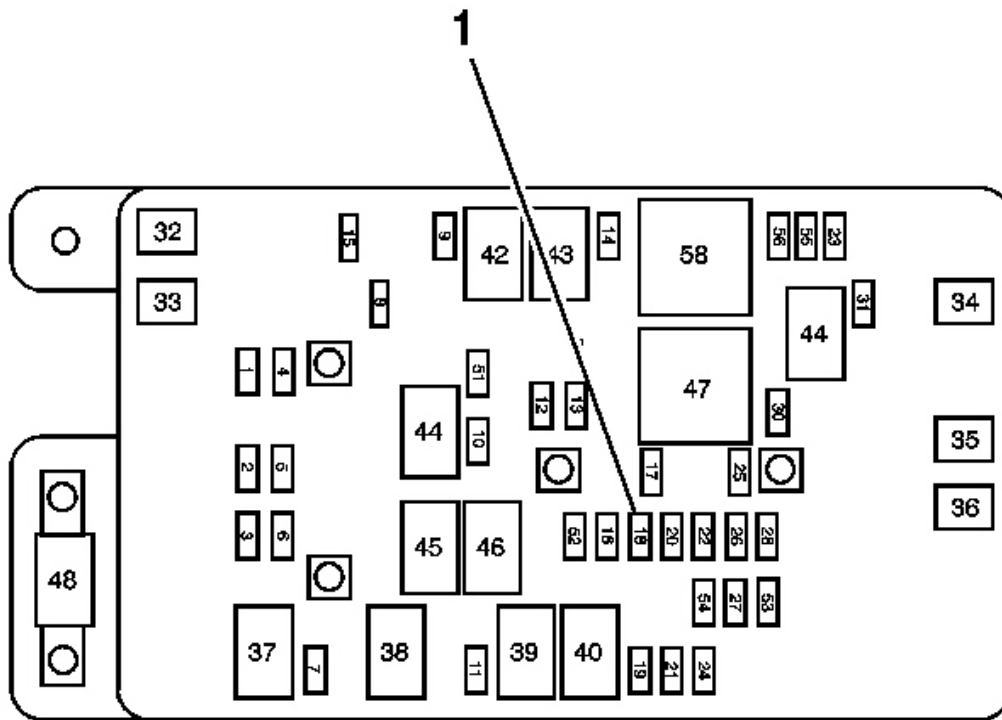


Fig. 20: View Of Fuse & Relay Block
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: With the SIR fuse removed and the ignition ON, the AIR BAG indicator illuminates. This is normal operation and does not indicate an SIR system malfunction.

4. Remove the SIR fuse from the fuse block (1) located in the underhood fuse block.
5. Remove the grille. Refer to **Grille Replacement (TrailBlazer)** or **Grille Replacement (Rainier)** or **Grille Replacement (Envoy)** in Exterior Trim.
6. Remove sensor bracket from bumper. Refer to **Inflatable Restraint Front End Sensor Replacement**.

IMPORTANT: This vehicle is equipped with 2 inflatable restraint electronic frontal sensors (EFS). When performing this procedure be sure to include both EFSs.

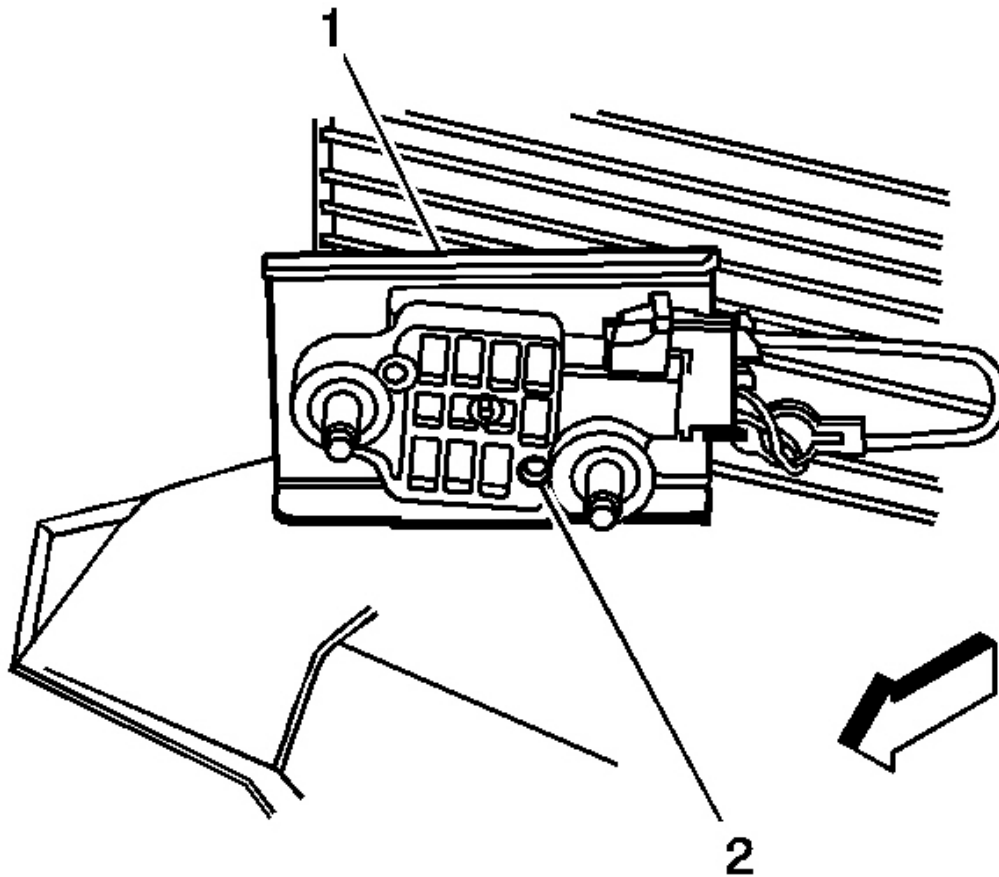


Fig. 21: View Of Connector Position Assurance At Front End Sensor Connectors
Courtesy of GENERAL MOTORS CORP.

7. Remove the connector position assurance (CPA) from both (2) EFS connectors.
8. Disconnect both EFS connectors.

Enabling Procedure

1. Remove the key from the ignition.

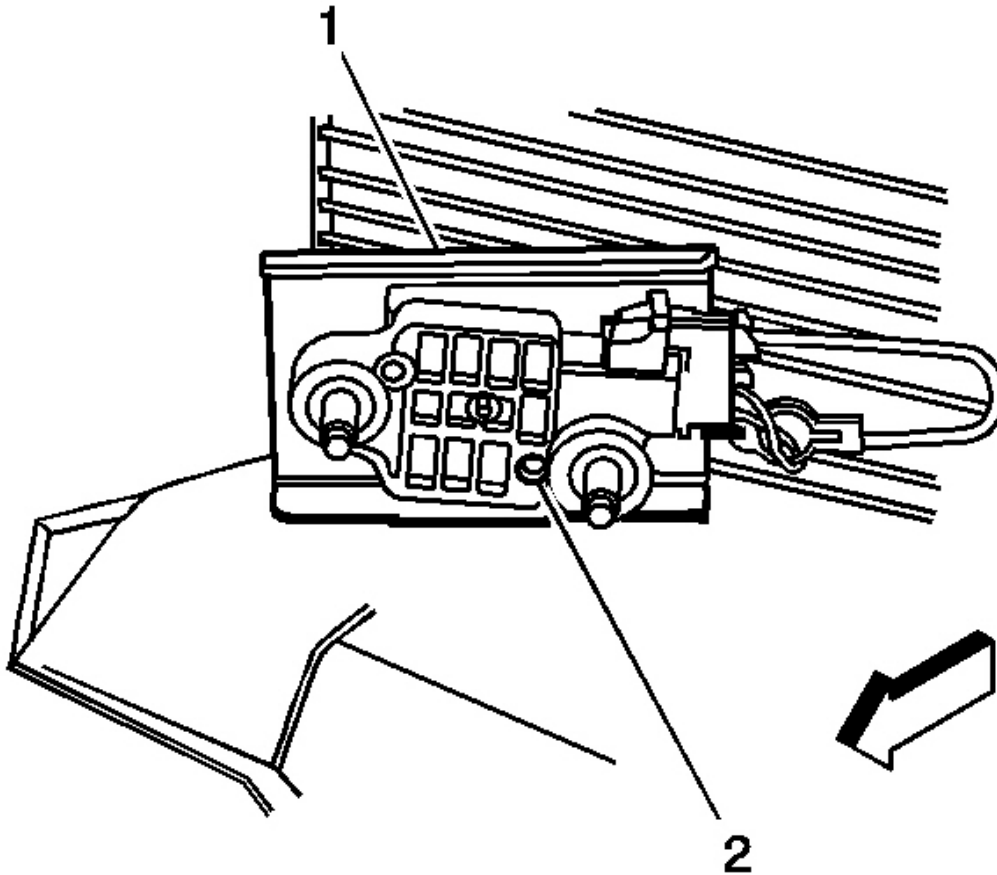


Fig. 22: View Of Connector Position Assurance At Front End Sensor Connectors
Courtesy of GENERAL MOTORS CORP.

2. Connect the EFS connectors to both (2) EFS.
3. Install the CPAs to both EFS connectors.
4. Install sensor bracket to bumper. Refer to **Inflatable Restraint Front End Sensor Replacement**.
5. Install the grille. Refer to **Grille Replacement (TrailBlazer)** or **Grille Replacement (Rainier)** or **Grille Replacement (Envoy)** in Exterior Trim.

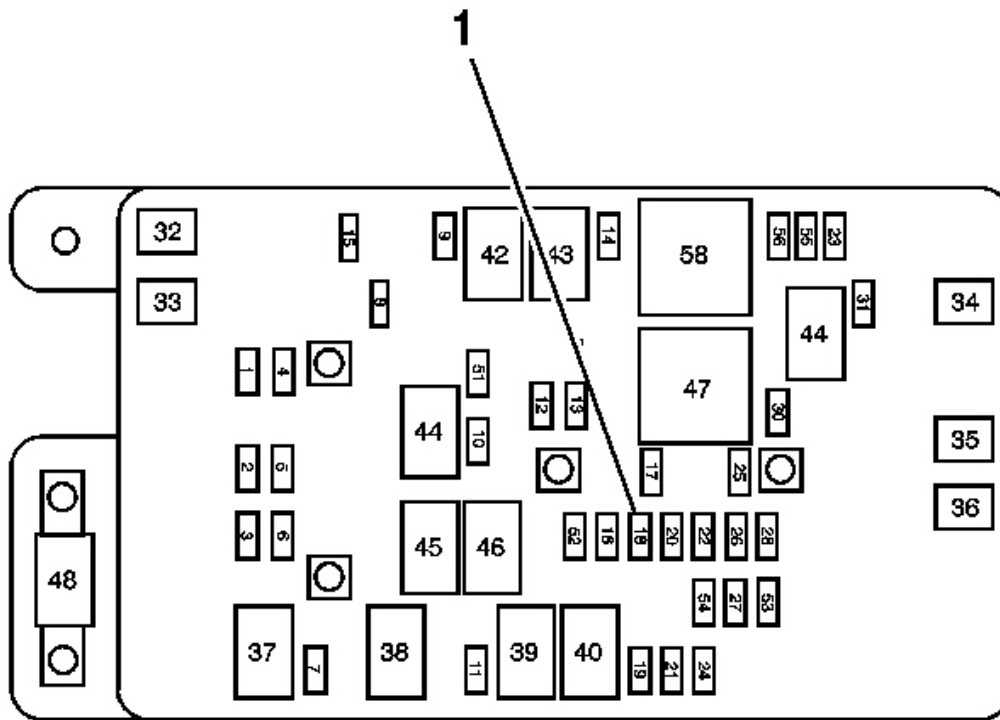


Fig. 23: View Of Fuse & Relay Block
 Courtesy of GENERAL MOTORS CORP.

6. Install the SIR fuse into the fuse block (1) located in the underhood fuse block.
7. Staying well away from all air bags, turn ON the ignition, with the engine OFF.
 1. The AIR BAG indicator will flash 7 times.
 2. The AIR BAG indicator will then turn OFF.
8. Perform the **Diagnostic System Check - Vehicle** in Vehicle DTC Information, if the AIR BAG indicator does not operate as described.

SIR DISABLING AND ENABLING ZONE 2

Disabling Procedure

IMPORTANT: Refer to SIR Disabling and Enabling Zones before disabling the SIR system.

1. Turn the steering wheel until the vehicle wheels are pointing straight ahead.
2. Turn OFF the ignition.
3. Remove the key from the ignition.

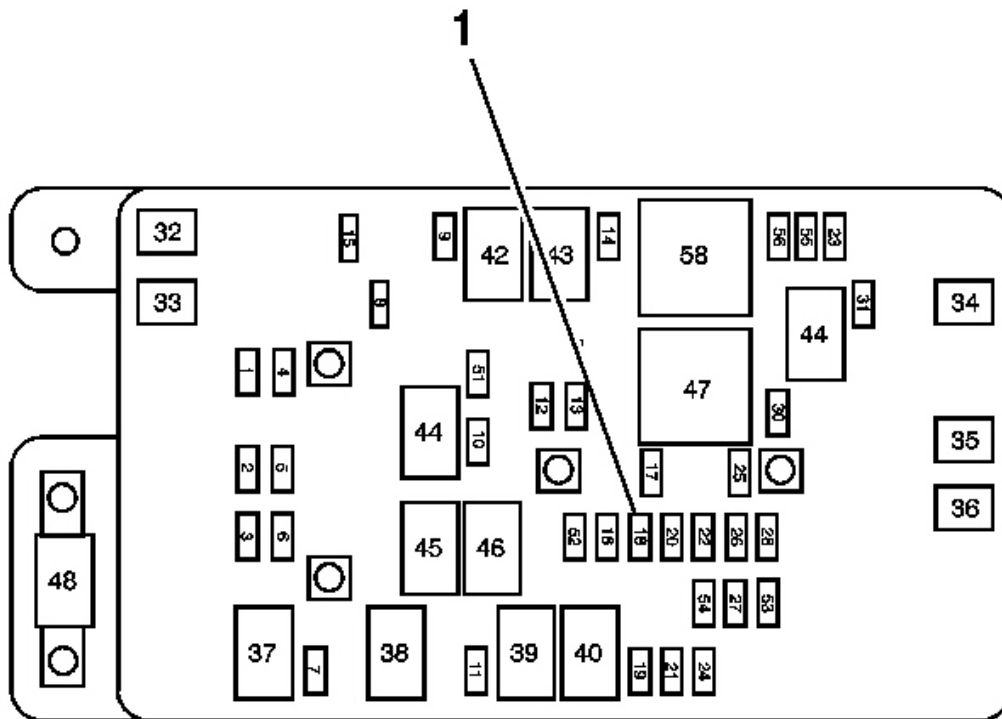


Fig. 24: View Of Fuse & Relay Block
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: With the SIR fuse removed and the ignition ON, the AIR BAG indicator illuminates. This is normal operation and does not indicate an SIR system malfunction.

4. Remove the SIR fuse from the fuse block (1) located in the underhood fuse block.
5. Remove the left door trim panel. Refer to Trim Panel Replacement - Side Front Door in Doors.

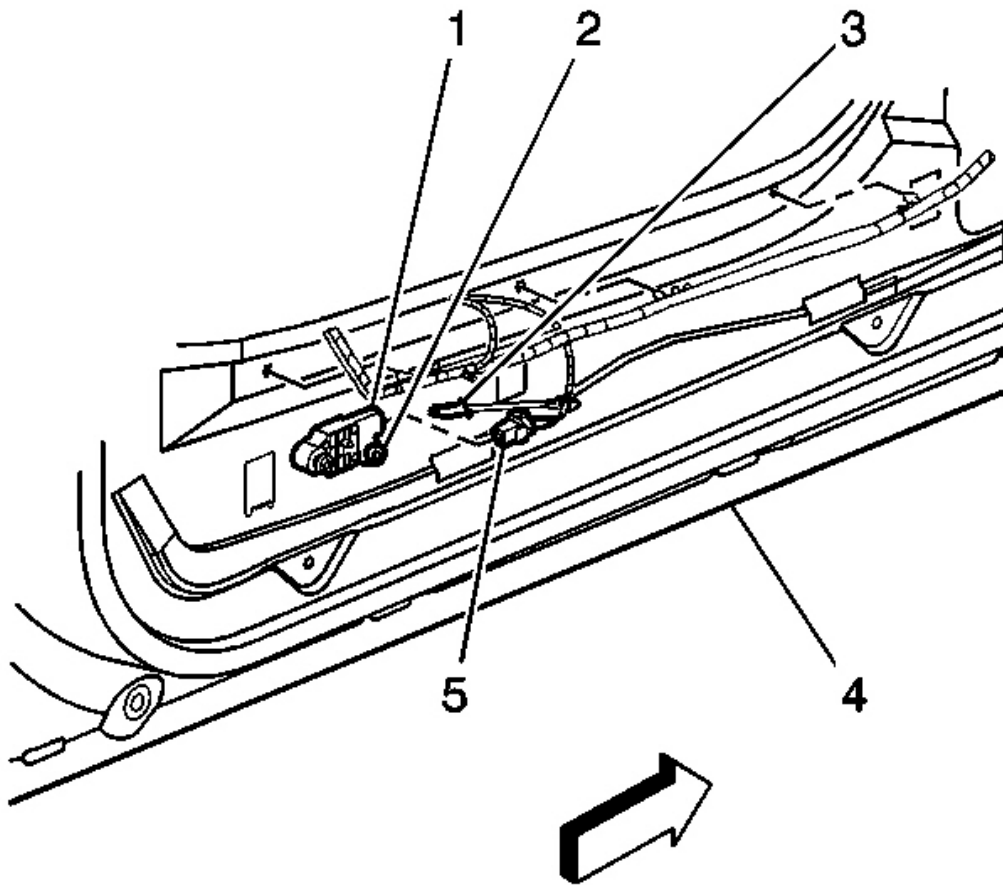


Fig. 25: View Of Connector Position Assurance (CPA) & Side Impact Sensor Yellow 2-Way Connector

Courtesy of GENERAL MOTORS CORP.

6. Remove the connector position assurance (CPA) (3) from the side impact sensor yellow 2-way connector (5) located near the middle of the door.
7. Disconnect the side impact sensor yellow 2-way connector (5) located near the middle of the door.

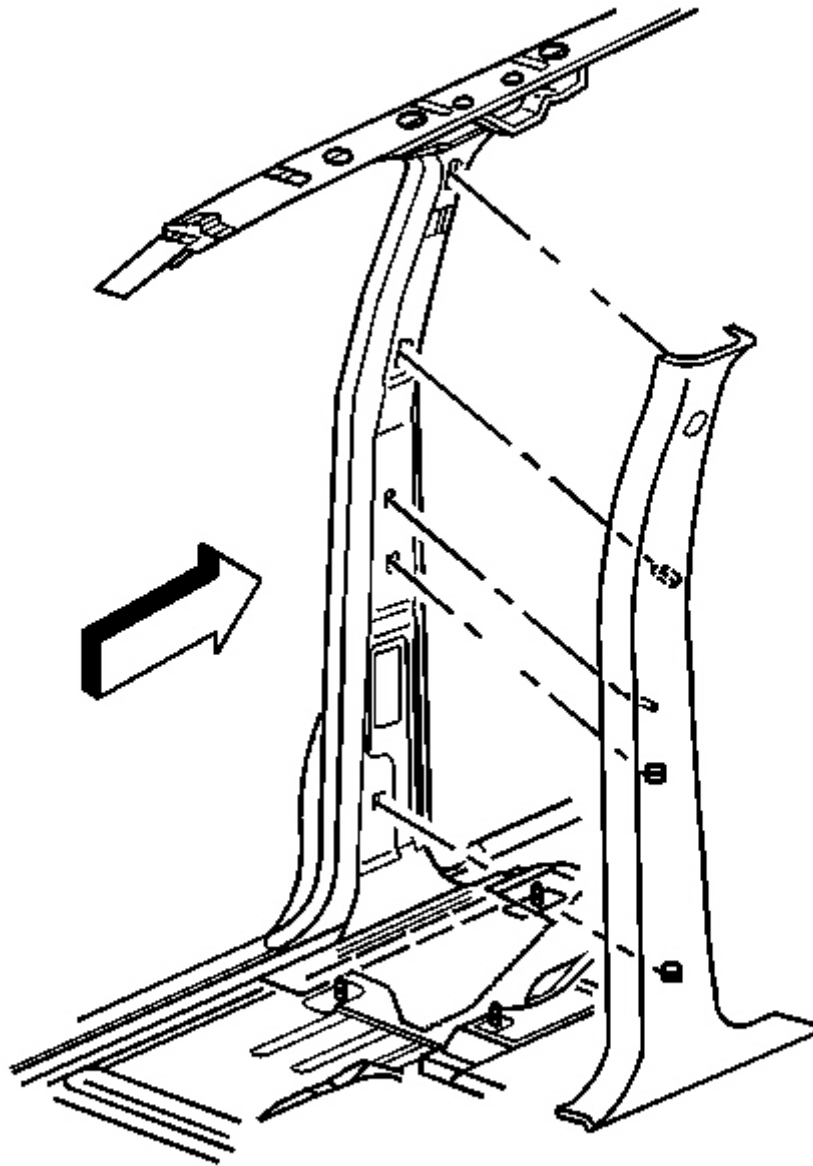


Fig. 26: Removing/Installing Garnish Molding (Center Pillar)
Courtesy of GENERAL MOTORS CORP.

8. Remove the garnish molding. Refer to **Garnish Molding Replacement - Center Pillar** in Interior Trim

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9. Remove the CPA from the inflatable restraint roof rail module - left yellow 2-way inline connector.
10. Disconnect the inflatable restraint roof rail module - left yellow 2-way inline connector from the vehicle harness connector.

Enabling Procedure

1. Remove the key from the ignition.

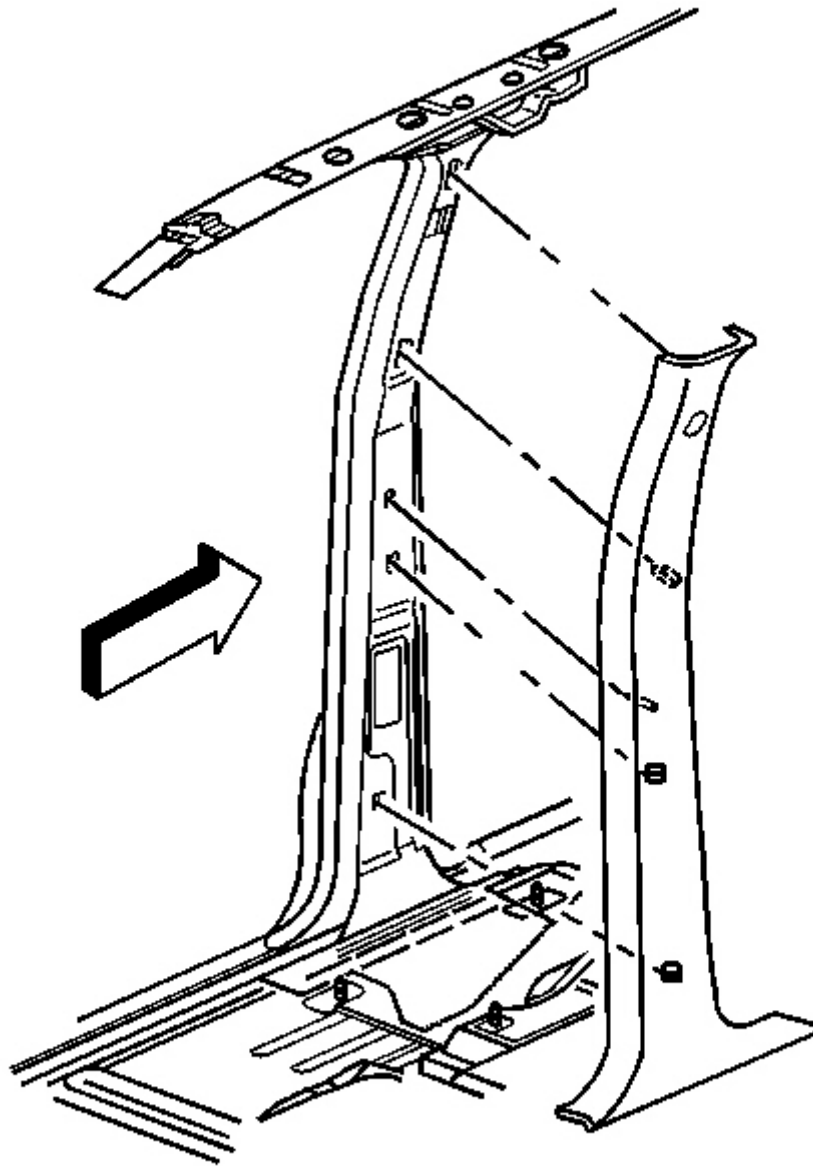


Fig. 27: Removing/Installing Garnish Molding (Center Pillar)
Courtesy of GENERAL MOTORS CORP.

2. Connect the inflatable restraint roof rail module - left yellow 2-way inline connector and install the CPA.

3. Install the garnish molding. Refer to **Garnish Molding Replacement - Center Pillar** in Interior Trim.

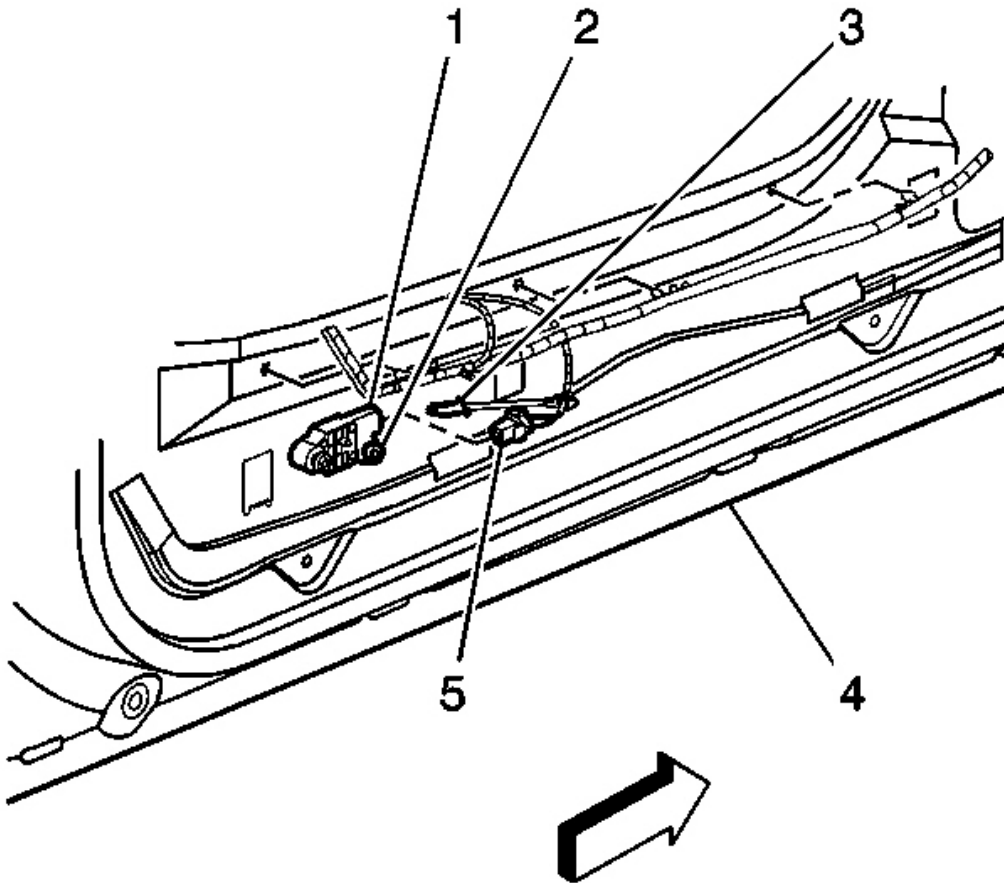


Fig. 28: View Of Connector Position Assurance (CPA) & Side Impact Sensor Yellow 2-Way Connector
Courtesy of GENERAL MOTORS CORP.

4. Connect the side impact sensor yellow 2-way connector (5) located near the middle of the door.
5. Install the CPA (3) to the side impact sensor yellow 2-way connector (5) located near the middle of the door.
6. Install the left door trim panel. Refer to **Trim Panel Replacement - Side Front Door** in Doors.

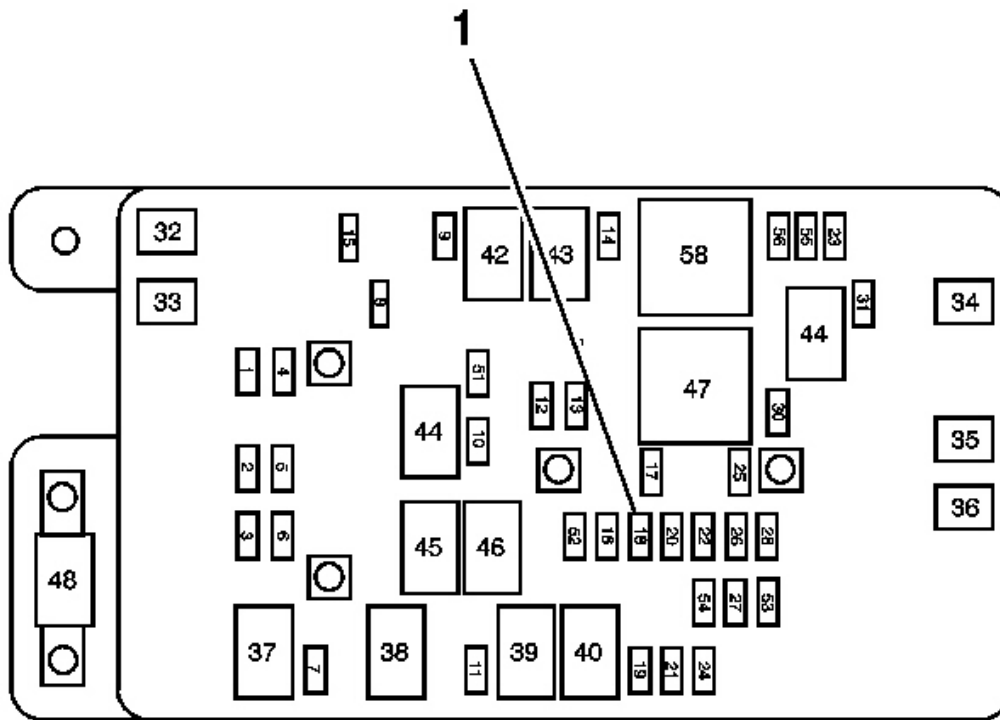


Fig. 29: View Of Fuse & Relay Block
Courtesy of GENERAL MOTORS CORP.

7. Install the SIR fuse to the fuse block (1) located in the underhood fuse block.
8. Staying well away from all air bags, turn ON the ignition, with the engine OFF.
 1. The AIR BAG indicator will flash 7 times.
 2. The AIR BAG indicator will then turn OFF.
9. Perform the **Diagnostic System Check - Vehicle** in Vehicle DTC Information, if the AIR BAG indicator does not operate as described.

SIR DISABLING AND ENABLING ZONE 3

Disabling Procedure

IMPORTANT: Refer to SIR Disabling and Enabling Zones before disabling the SIR system.

1. Turn the steering wheel until the vehicle wheels are pointing straight ahead.
2. Turn OFF the ignition.
3. Remove the key from the ignition.
4. Remove the trim panel. Refer to **Trim Panel Replacement - Knee Bolster** in Instrument Panel, Gages, and Console.

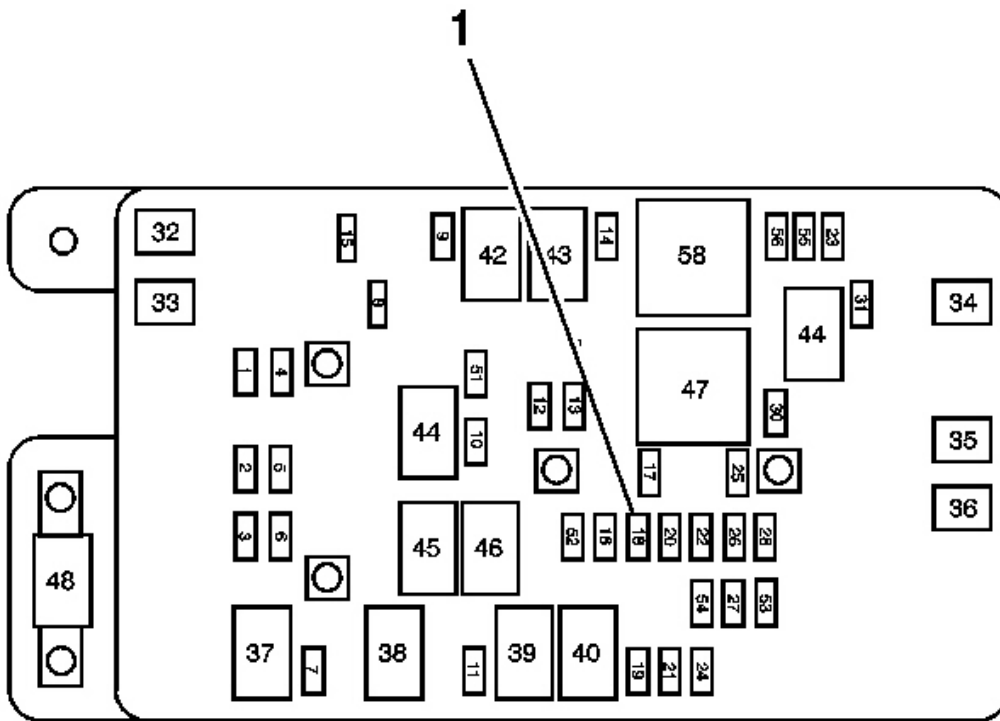


Fig. 30: View Of Fuse & Relay Block
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: With the SIR fuse removed and the ignition ON, the AIR BAG indicator illuminates. This is normal operation and does not indicate an SIR system malfunction.

5. Remove the SIR fuse from the fuse block (1) located in the underhood fuse block.

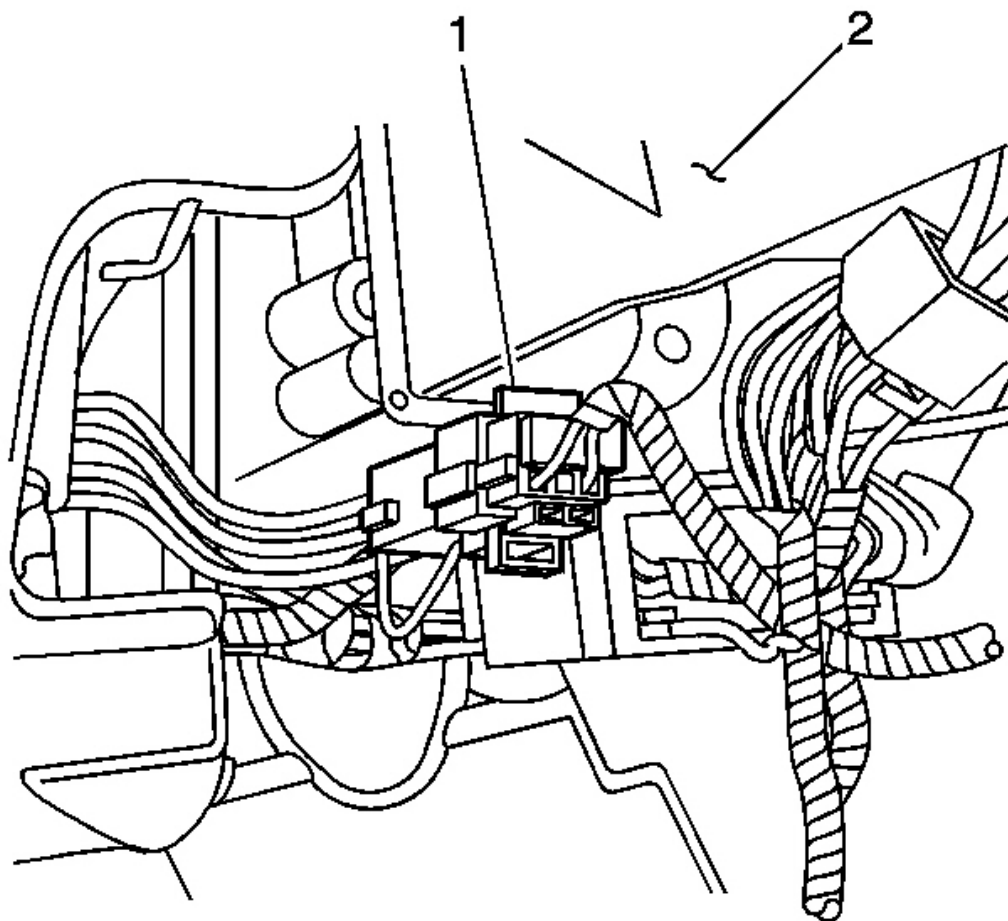


Fig. 31: Disconnecting/Reconnecting CPA & Steering Wheel Module Yellow 4-Way Connector

Courtesy of GENERAL MOTORS CORP.

6. Remove the connector position assurance (CPA) (1) from the steering wheel module yellow 4-way connector (2) located left of the steering column near the knee bolster.
7. Disconnect the steering wheel module yellow 4-way connector (2) located left of the steering column near the knee bolster.

Enabling Procedure

1. Remove the key from the ignition.

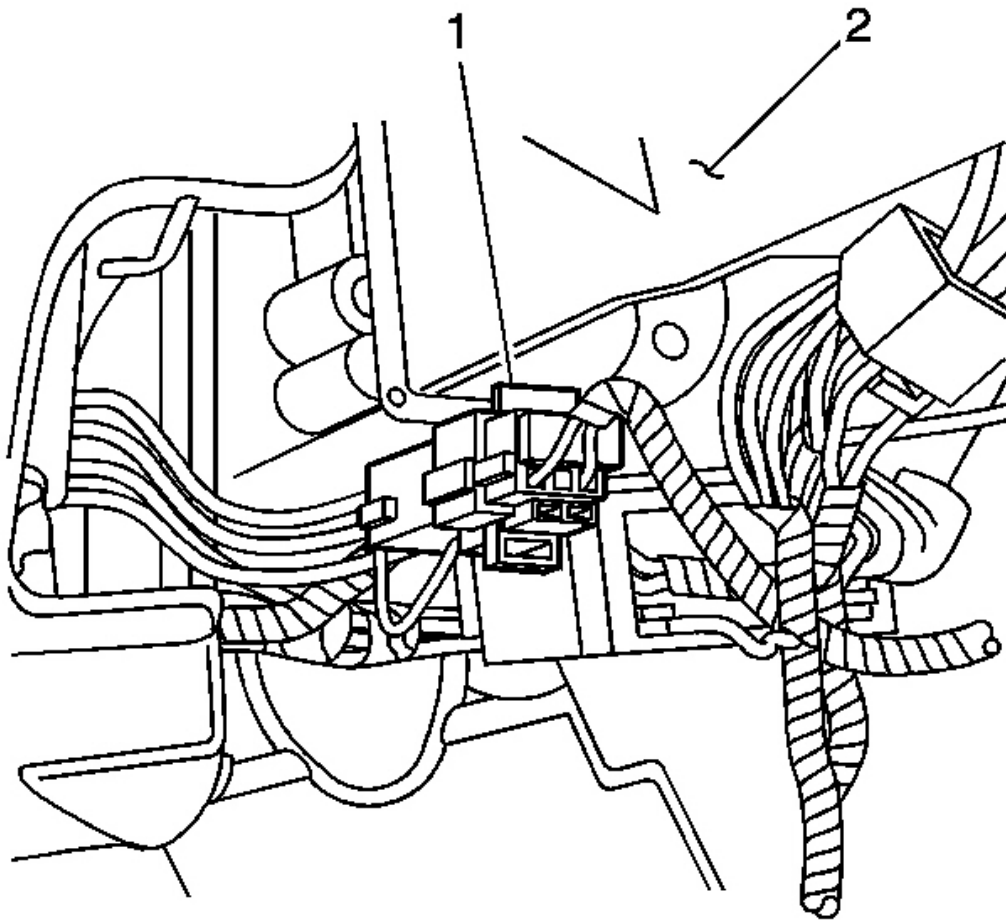


Fig. 32: Disconnecting/Reconnecting CPA & Steering Wheel Module Yellow 4-Way Connector

Courtesy of GENERAL MOTORS CORP.

2. Connect the steering wheel module yellow 4-way connector (2) located left of the steering column near the knee bolster.
3. Install the CPA (1) to the steering wheel module yellow 4-way connector (2) located left of the steering column near the knee bolster.

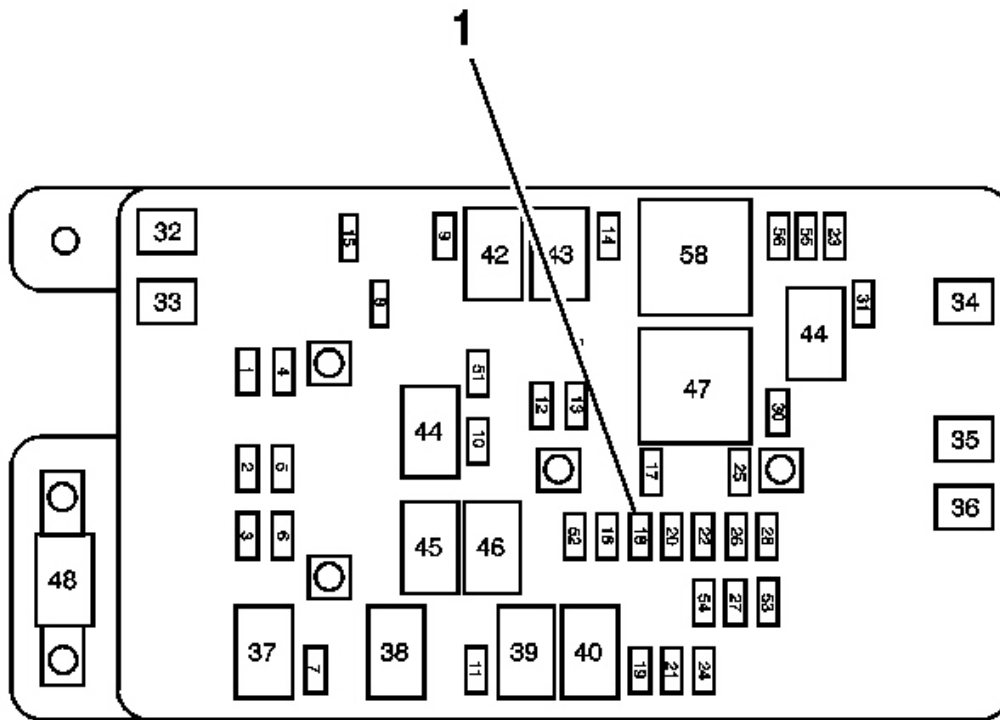


Fig. 33: View Of Fuse & Relay Block
Courtesy of GENERAL MOTORS CORP.

4. Install the SIR fuse to the fuse block (1) located in the underhood fuse block.
5. Staying well away from all air bags, turn ON the ignition, with the engine OFF.
 1. The AIR BAG indicator will flash 7 times.
 2. The AIR BAG indicator will then turn OFF.
6. Perform the **Diagnostic System Check - Vehicle** in Vehicle DTC Information, if the AIR BAG indicator does not operate as described.

SIR DISABLING AND ENABLING ZONE 5

Disabling Procedure

IMPORTANT: Refer to SIR Disabling and Enabling Zones before disabling the SIR system.

1. Turn the steering wheel until the vehicle wheels are pointing straight ahead.
2. Turn OFF the ignition.
3. Remove the key from the ignition.
4. Access the instrument panel (I/P) module connector through glove box.

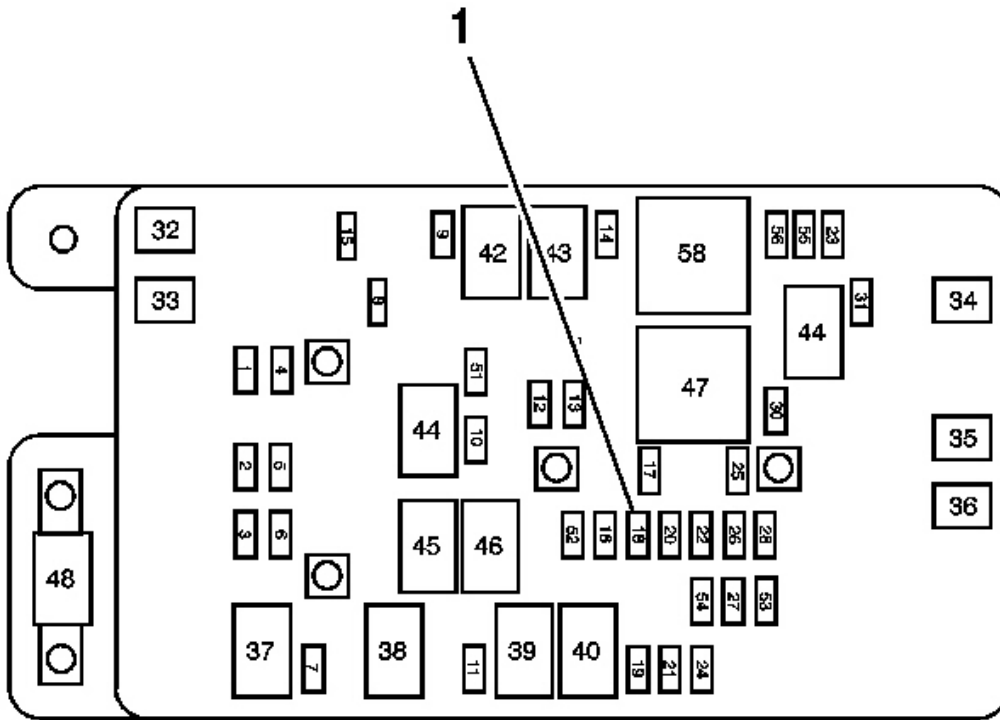


Fig. 34: View Of Fuse & Relay Block
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: With the SIR fuse removed and the ignition ON, the AIR BAG indicator illuminates. This is normal operation and does not indicate an SIR system malfunction.

5. Remove the SIR fuse from the fuse block (1) located in the underhood fuse block.

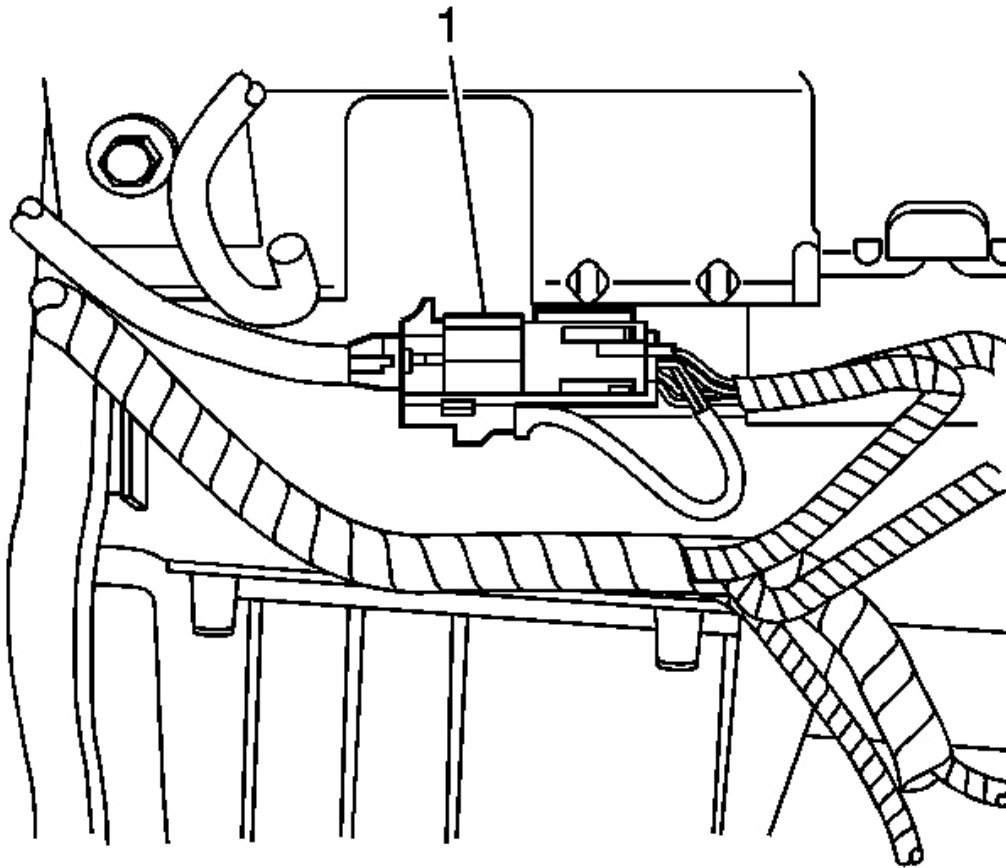


Fig. 35: Locating IP Module 4-Way Yellow Connector Behind IP Support
Courtesy of GENERAL MOTORS CORP.

6. Remove the connector position assurance (CPA) from the I/P module yellow 4-way connector (1) located behind the I/P support.
7. Disconnect the I/P module yellow 4-way connector (1) located behind the I/P support.

Enabling Procedure

1. Remove the key from the ignition.

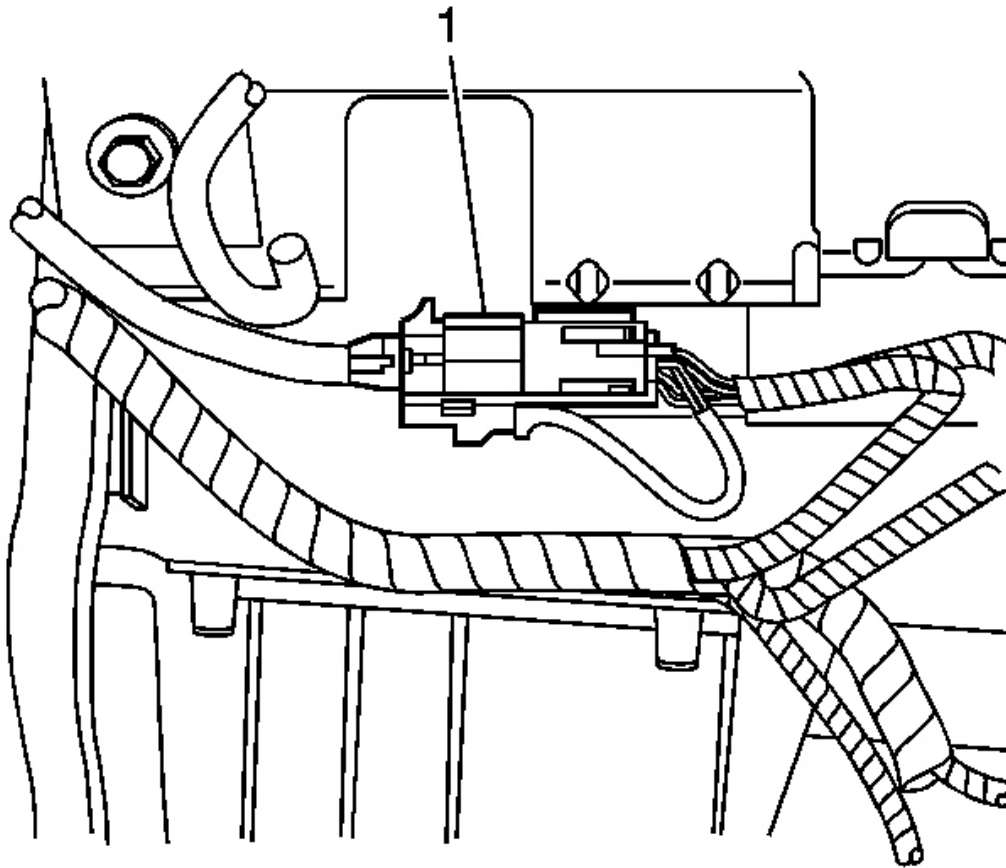


Fig. 36: Locating IP Module 4-Way Yellow Connector Behind IP Support
Courtesy of GENERAL MOTORS CORP.

2. Connect the I/P module yellow 4-way connector (1) located behind the main I/P support.
3. Install the CPA to the I/P module yellow 4-way connector (1) located behind the I/P support.

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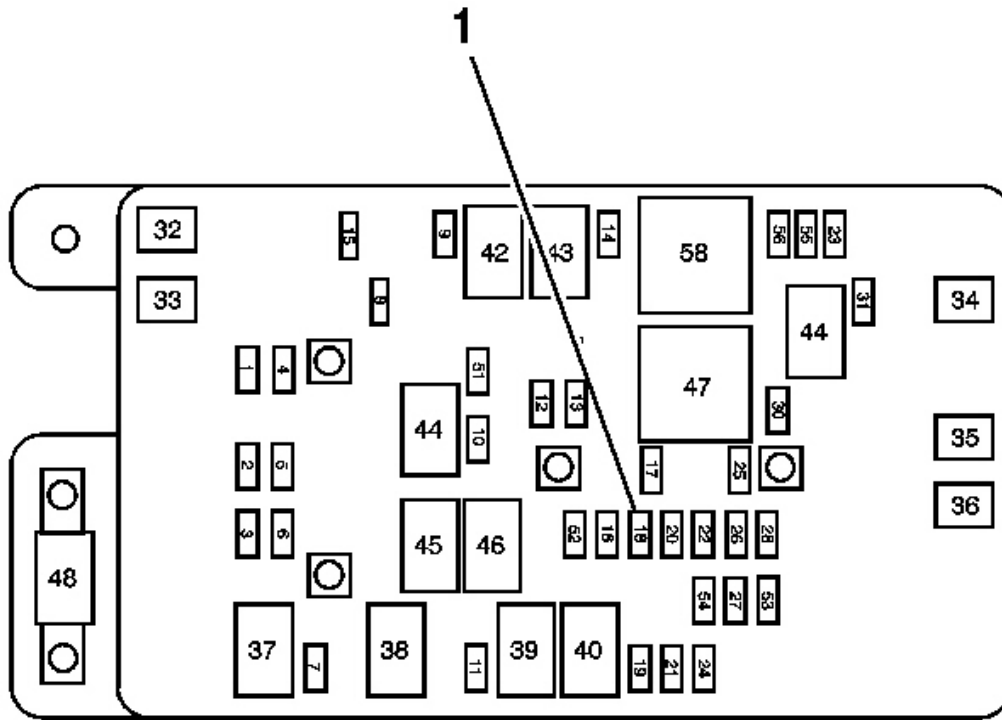


Fig. 37: View Of Fuse & Relay Block
Courtesy of GENERAL MOTORS CORP.

4. Install the SIR fuse to the fuse block (1) located in the underhood fuse block.
5. Staying well away from all air bags, turn ON the ignition, with the engine OFF.
 1. The AIR BAG indicator will flash 7 times.
 2. The AIR BAG indicator will then turn OFF.
6. Perform the **Diagnostic System Check - Vehicle** in Vehicle DTC Information, if the AIR BAG indicator does not operate as described.

SIR DISABLING AND ENABLING ZONE 6

Disabling Procedure

IMPORTANT: Refer to **SIR Disabling and Enabling Zones** before disabling the SIR system.

1. Turn the steering wheel until the vehicle wheels are pointing straight ahead.
2. Turn OFF the ignition.
3. Remove the key from the ignition.

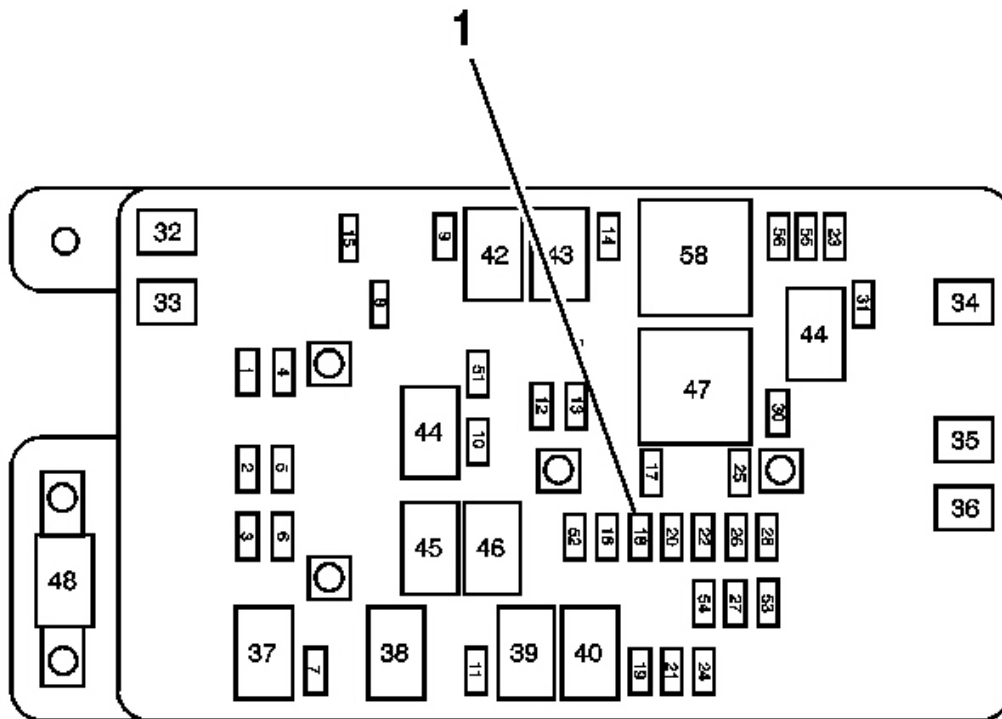


Fig. 38: View Of Fuse & Relay Block
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: With the SIR fuse removed and the ignition ON, the AIR BAG indicator illuminates. This is normal operation and does not indicate an SIR system malfunction.

4. Remove the SIR fuse from the fuse block (1) located in the underhood fuse block.
5. Remove the right door trim panel. Refer to Trim Panel Replacement - Side Front Door in Doors.

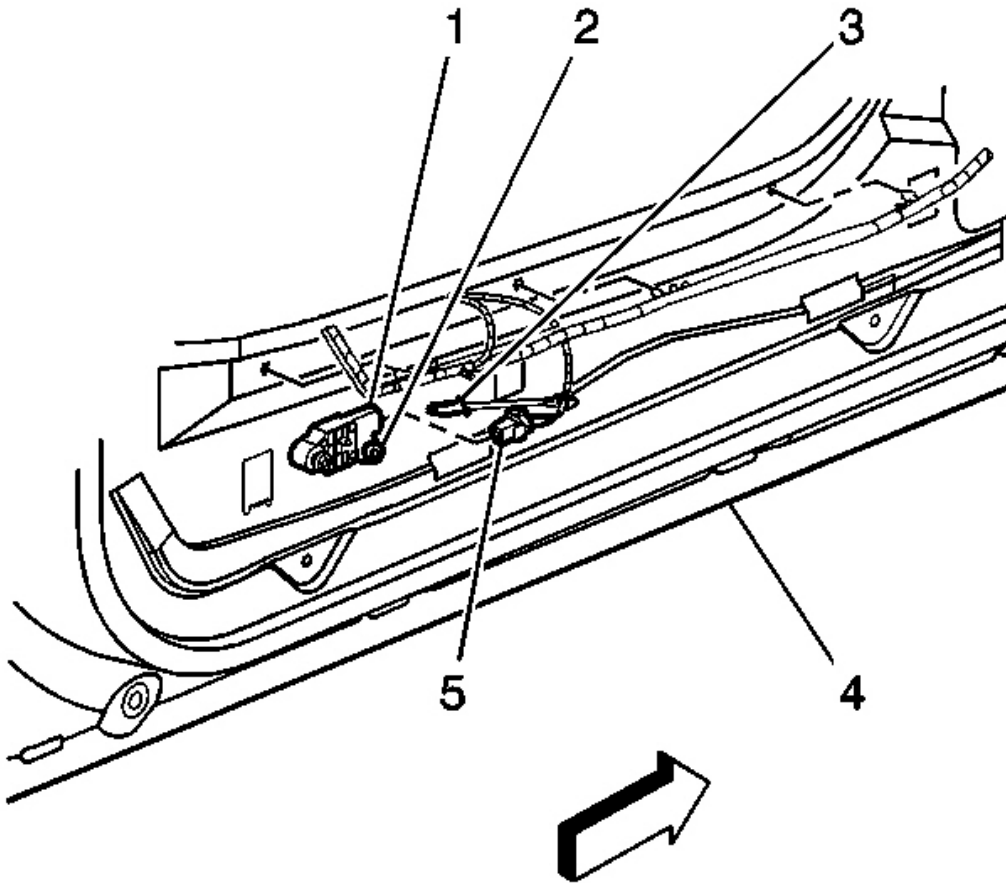


Fig. 39: View Of Connector Position Assurance (CPA) & Side Impact Sensor Yellow 2-Way Connector

Courtesy of GENERAL MOTORS CORP.

6. Remove the connector position assurance (CPA) (3) from the side impact sensor yellow 2-way connector (5) located near the middle of the door.
7. Disconnect the side impact sensor yellow 2-way connector (5) located near the middle of the door.

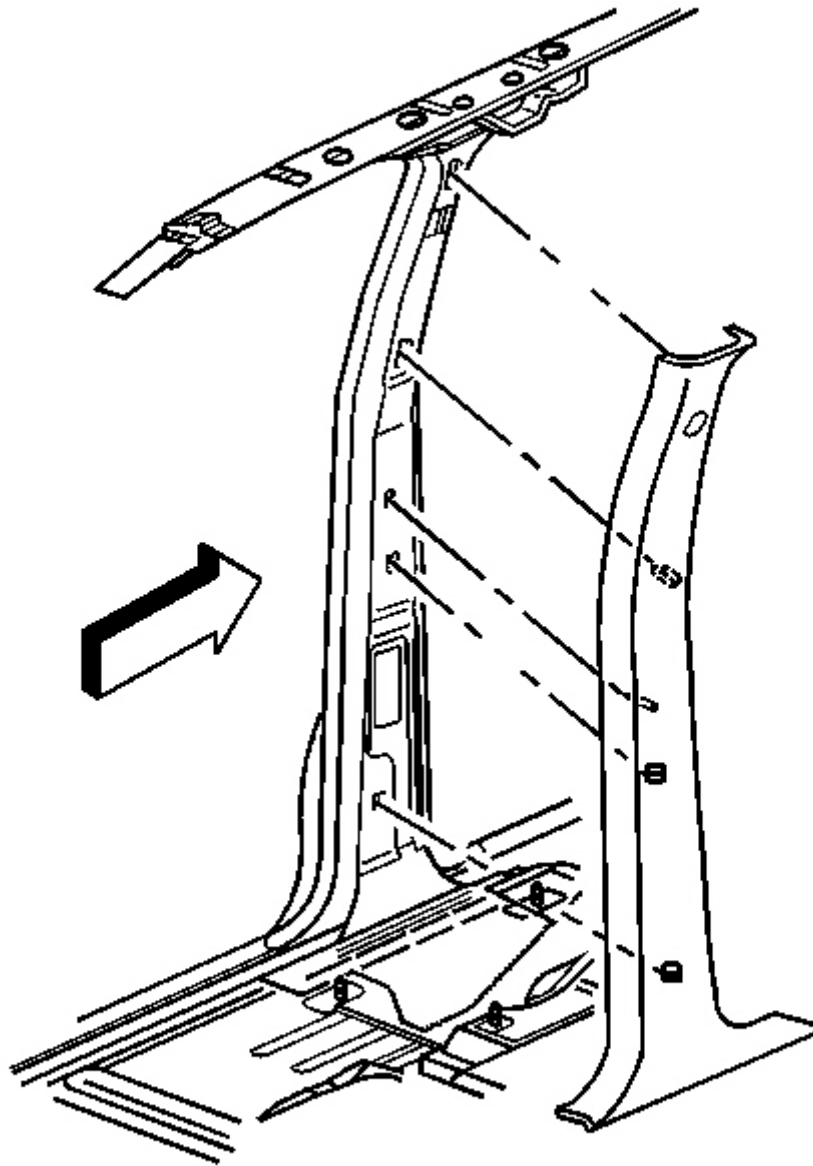


Fig. 40: Removing/Installing Garnish Molding (Center Pillar)
Courtesy of GENERAL MOTORS CORP.

8. Remove the garnish molding. Refer to **Garnish Molding Replacement - Center Pillar** in Interior Trim

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9. Remove the CPA from the inflatable restraint roof rail module-right yellow 2-way inline connector.
10. Disconnect the inflatable restraint roof rail module - right yellow 2-way inline connector from the vehicle harness connector.

Enabling Procedure

1. Remove the key from the ignition.

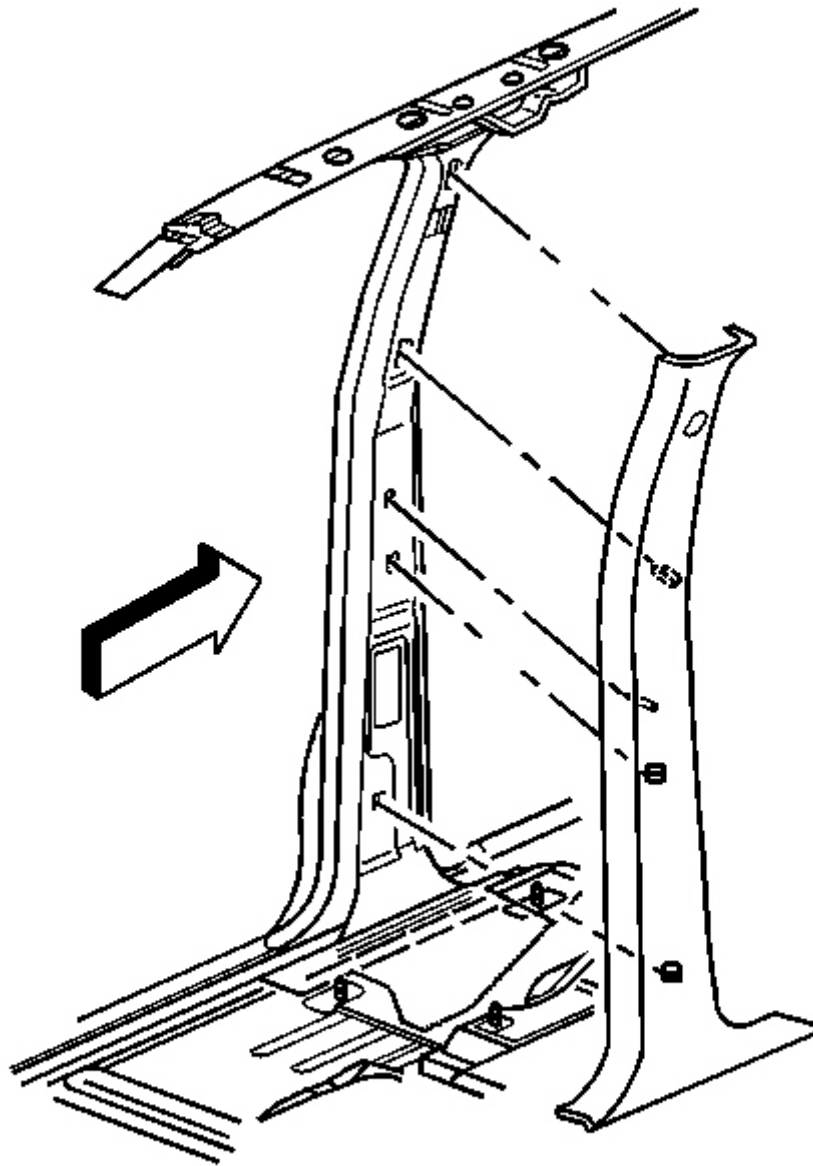


Fig. 41: Removing/Installing Garnish Molding (Center Pillar)
Courtesy of GENERAL MOTORS CORP.

2. Connect the inflatable restraint roof rail module - right yellow 2-way inline connector and install the CPA.

3. Install the garnish molding. Refer to **Garnish Molding Replacement - Center Pillar** in Interior Trim.

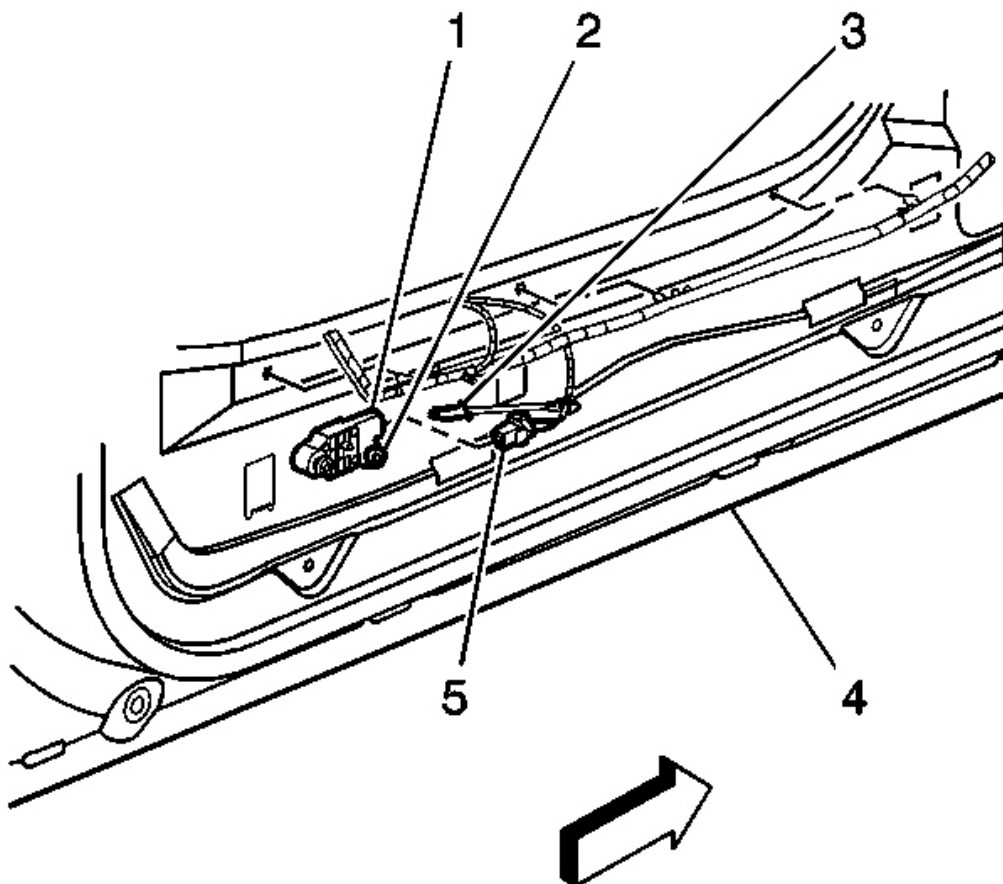


Fig. 42: View Of Connector Position Assurance (CPA) & Side Impact Sensor Yellow 2-Way Connector

Courtesy of GENERAL MOTORS CORP.

4. Connect the side impact sensor yellow 2-way connector (5) located near the middle of the door.
5. Install the CPA (3) to the side impact sensor yellow 2-way connector (5) located near the middle of the door.
6. Install the right door trim panel. Refer to **Trim Panel Replacement - Side Front Door** in Doors.

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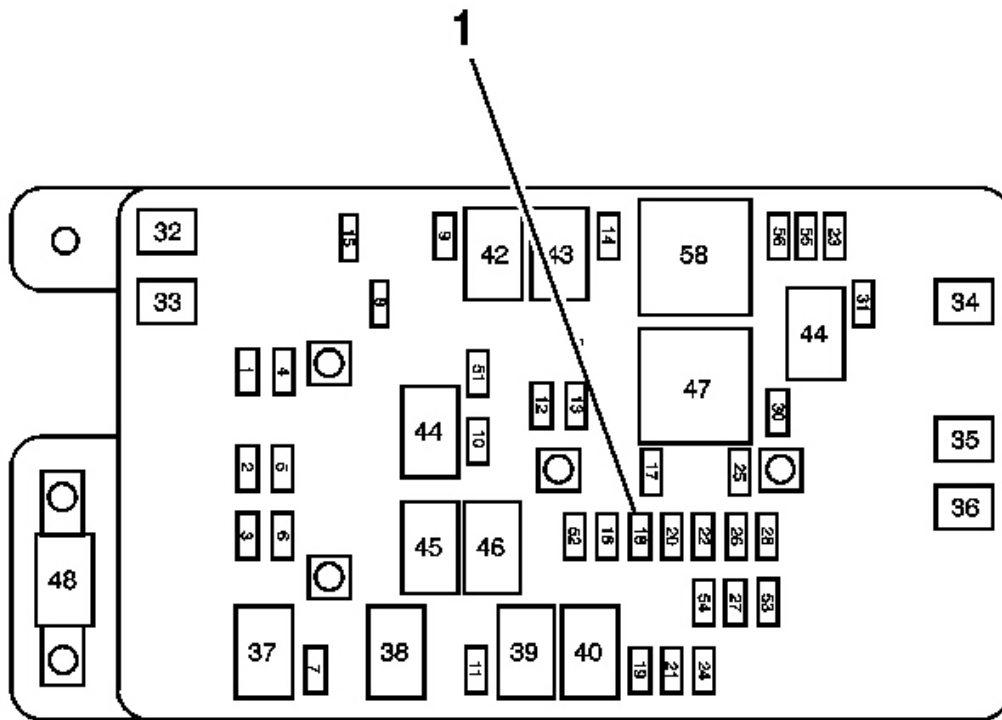


Fig. 43: View Of Fuse & Relay Block
Courtesy of GENERAL MOTORS CORP.

7. Install the SIR fuse to the fuse block (1) located in the underhood fuse block.
8. Staying well away from all air bags, turn ON the ignition, with the engine OFF.
 1. The AIR BAG indicator will flash 7 times.
 2. The AIR BAG indicator will then turn OFF.
9. Perform the **Diagnostic System Check - Vehicle** in Vehicle DTC Information, if the AIR BAG indicator does not operate as described.

SIR DISABLING AND ENABLING ZONE 7

Disabling Procedure

IMPORTANT: Refer to SIR Disabling and Enabling Zones before disabling the SIR system.

1. Turn the steering wheel until the vehicle wheels are pointing straight ahead.
2. Turn OFF the ignition.
3. Remove the key from the ignition.

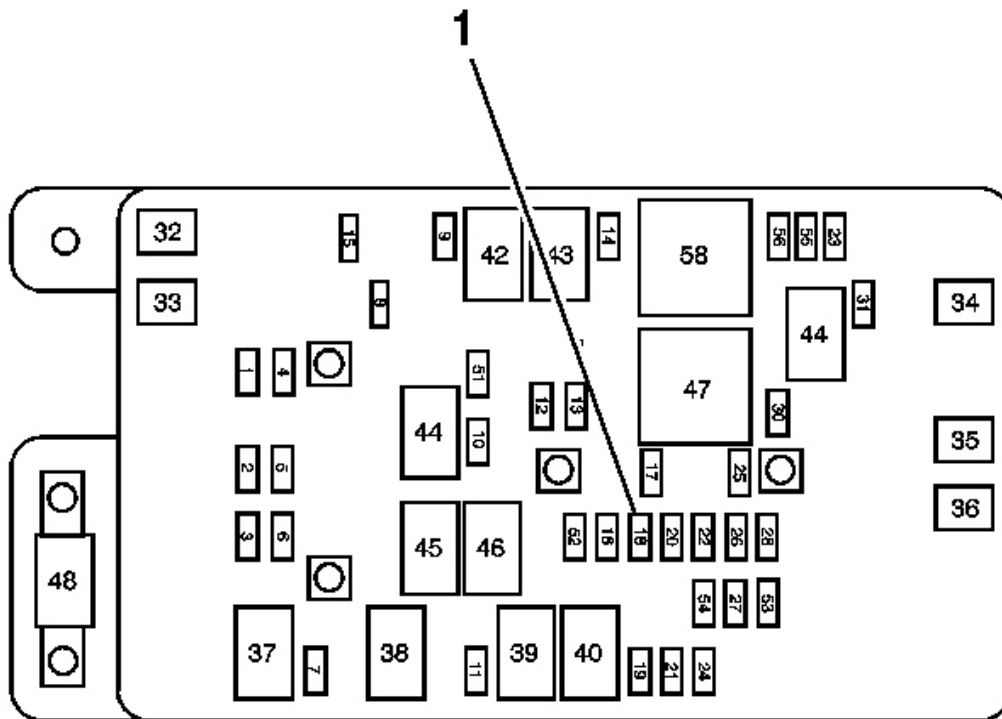


Fig. 44: View Of Fuse & Relay Block
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: With the SIR fuse removed and the ignition ON, the AIR BAG indicator illuminates. This is normal operation and does not indicate an SIR system malfunction.

4. Remove the SIR fuse from the fuse block (1) located in the underhood fuse block.

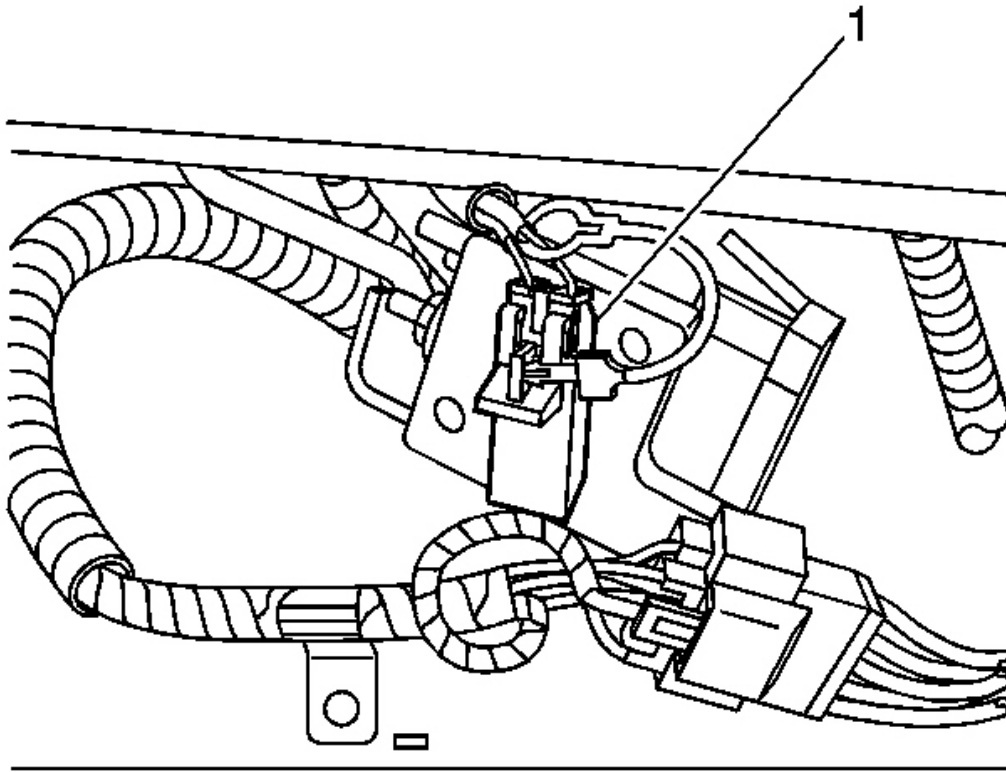


Fig. 45: Identifying CPA Clip
Courtesy of GENERAL MOTORS CORP.

5. Remove the connector position assurance (CPA) from the LF seat belt pretensioner yellow 2-way connector (1) located under the driver seat.
6. Disconnect the LF seat belt pretensioner yellow 2-way connector (1) located under the driver seat.

Enabling Procedure

1. Remove the key from the ignition.

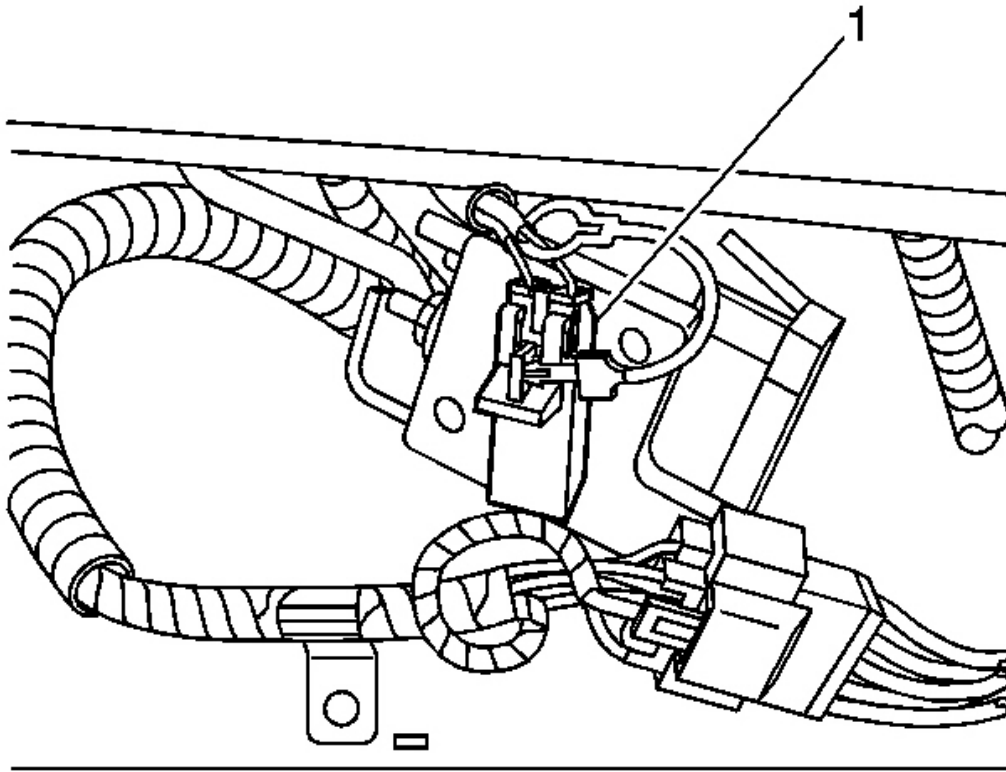


Fig. 46: Identifying CPA Clip
Courtesy of GENERAL MOTORS CORP.

2. Connect the LF seat belt pretensioner yellow 2-way connector (1) located under the driver seat.
3. Install the CPA to the LF seat belt pretensioner yellow 2-way connector (1) located under the driver seat.

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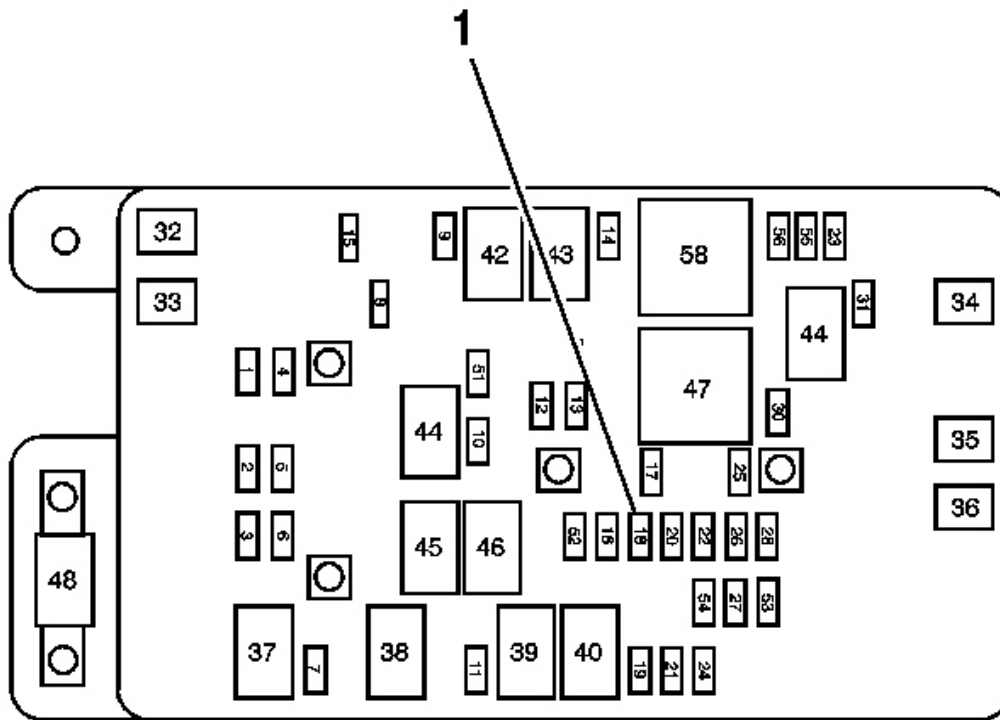


Fig. 47: View Of Fuse & Relay Block
Courtesy of GENERAL MOTORS CORP.

4. Install the SIR fuse to the fuse block (1) located in the underhood fuse block.
5. Staying well away from all air bags, turn ON the ignition, with the engine OFF.
 1. The AIR BAG indicator will flash 7 times.
 2. The AIR BAG indicator will then turn OFF.
6. Perform the **Diagnostic System Check - Vehicle** in Vehicle DTC Information, if the AIR BAG indicator does not operate as described.

SIR DISABLING AND ENABLING ZONE 8

Disabling Procedure

IMPORTANT: Refer to **SIR Service Precautions** before disabling the SIR system.

1. Turn the steering wheel until the vehicle wheels are pointing straight ahead.
2. Turn OFF the ignition.
3. Remove the key from the ignition.
4. Remove the trim panel. Refer to **Trim Panel Replacement - Knee Bolster** in Instrument Panel, Gages, and Console.
5. Access the instrument panel (I/P) module connector through the glove box.

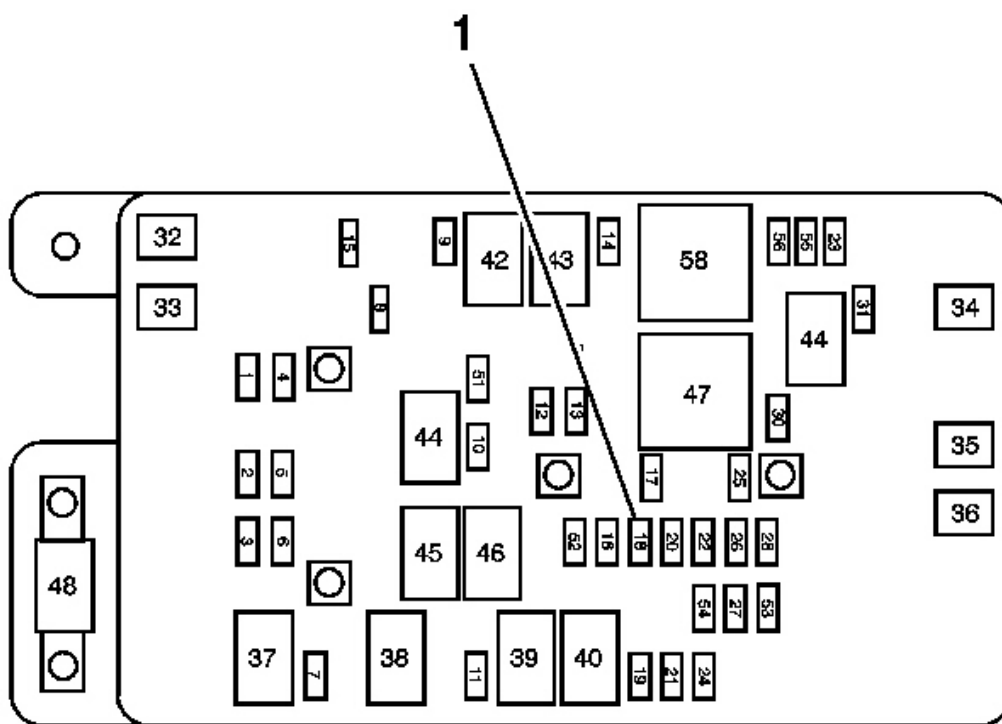


Fig. 48: View Of Fuse & Relay Block
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: With the SIR fuse removed and the ignition ON, the AIR BAG indicator illuminates. This is normal operation and does not indicate an SIR system malfunction.

6. Remove the SIR fuse from the fuse block (1) located in the underhood fuse block.

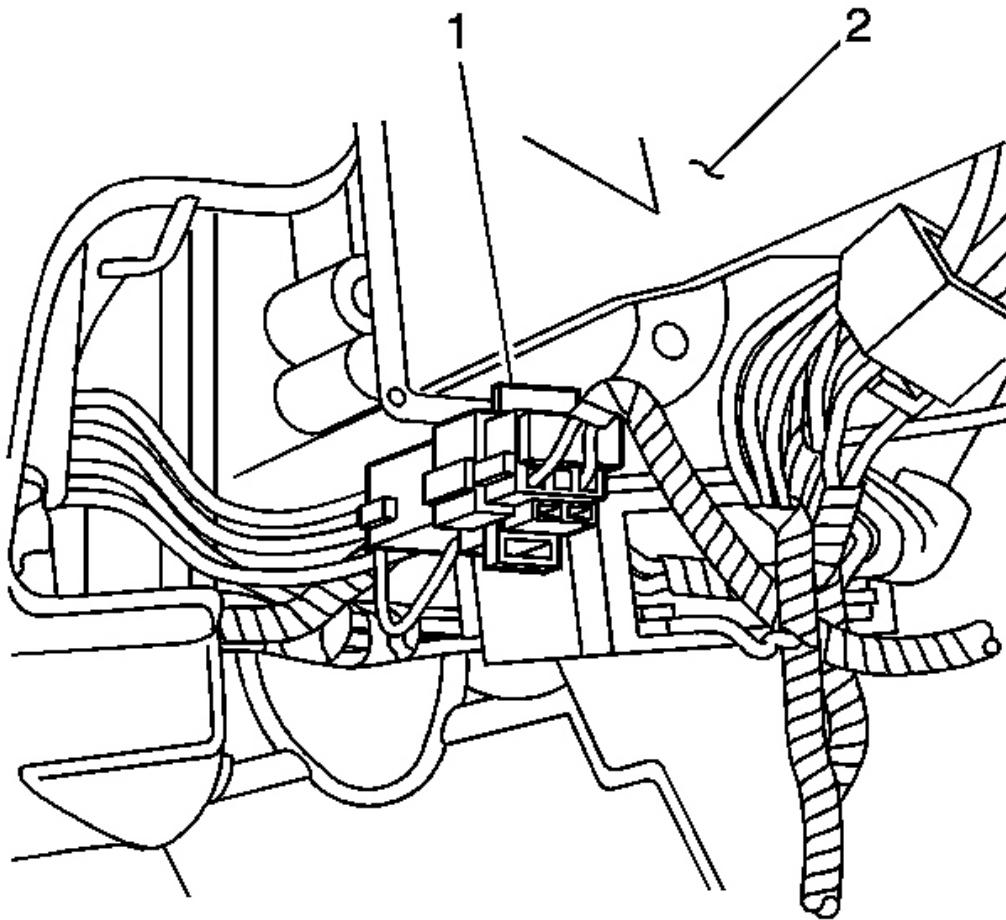


Fig. 49: Disconnecting/Reconnecting CPA & Steering Wheel Module Yellow 4-Way Connector

Courtesy of GENERAL MOTORS CORP.

7. Remove the connector position assurance (CPA) (1) from the steering wheel module yellow 4-way connector (2) located left of the steering column near the knee bolster.
8. Disconnect the steering wheel module yellow 4-way connector located left of the steering column near the knee bolster.

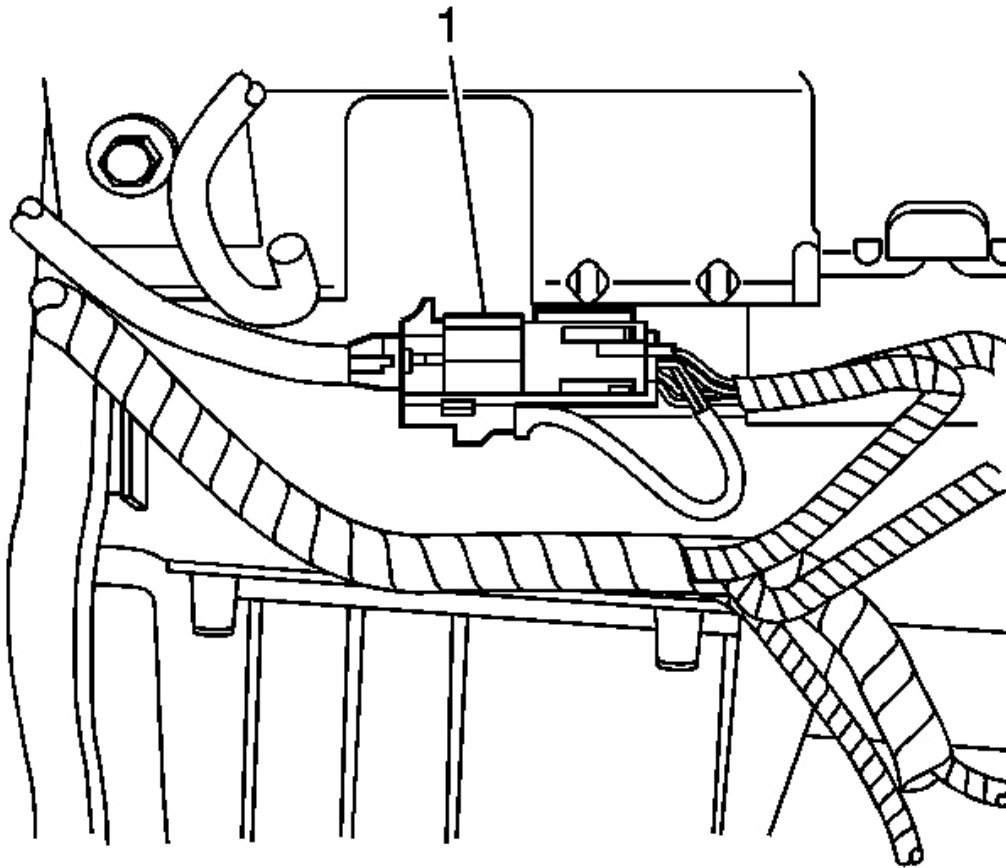


Fig. 50: Locating IP Module 4-Way Yellow Connector Behind IP Support
Courtesy of GENERAL MOTORS CORP.

9. Remove the CPA from the I/P module yellow 4-way connector (1) located behind the I/P support.
10. Disconnect the I/P module yellow 4-way connector (1) located behind the I/P support.

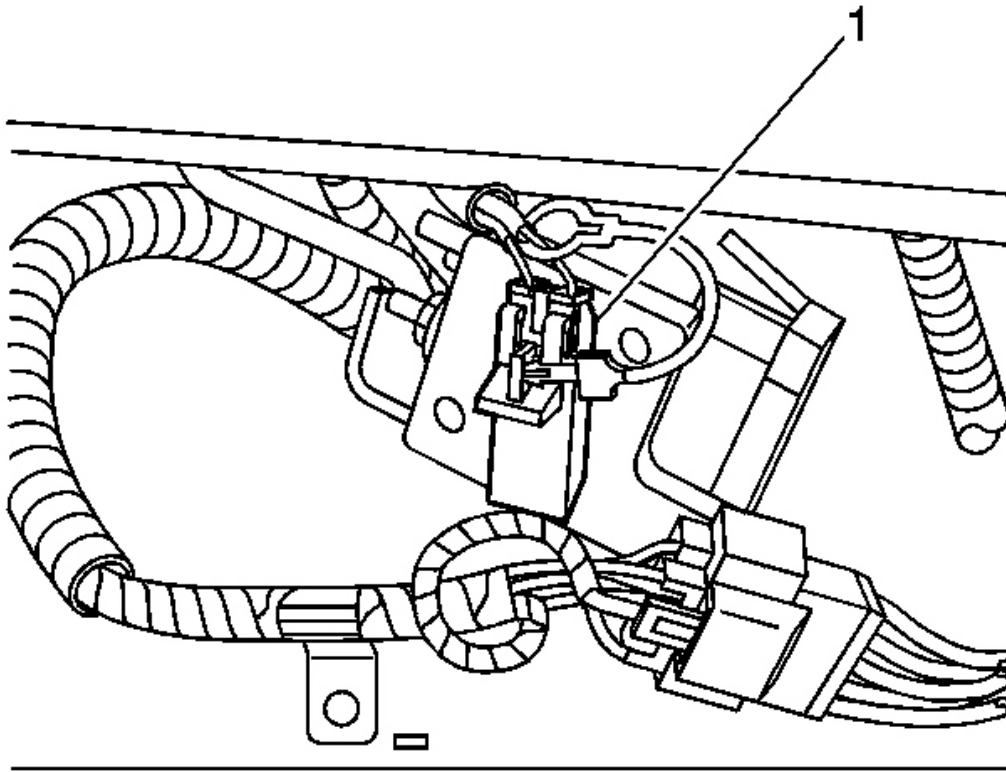


Fig. 51: Identifying CPA Clip
Courtesy of GENERAL MOTORS CORP.

11. Remove the CPA from the RF seat belt pretensioner yellow 2-way connector (1) located under the passenger seat.
12. Disconnect the RF seat belt pretensioner yellow 2-way connector (1) located under the passenger seat.

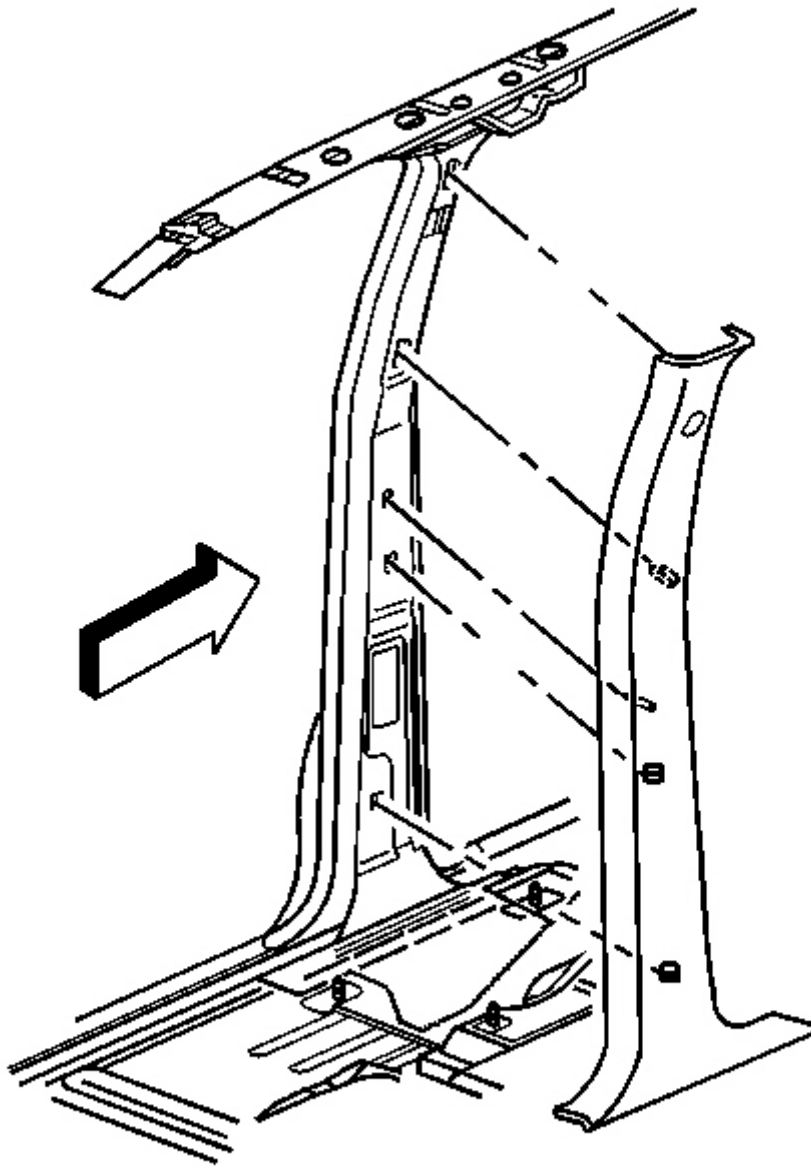


Fig. 52: Removing/Installing Garnish Molding (Center Pillar)
Courtesy of GENERAL MOTORS CORP.

13. Remove the garnish molding. Refer to **Garnish Molding Replacement - Center Pillar** in Interior Trim

14. Remove the CPA from the inflatable restraint roof rail module - right yellow 2-way inline connector.
15. Disconnect the inflatable restraint roof rail module - right yellow 2-way inline connector from the vehicle harness connector.

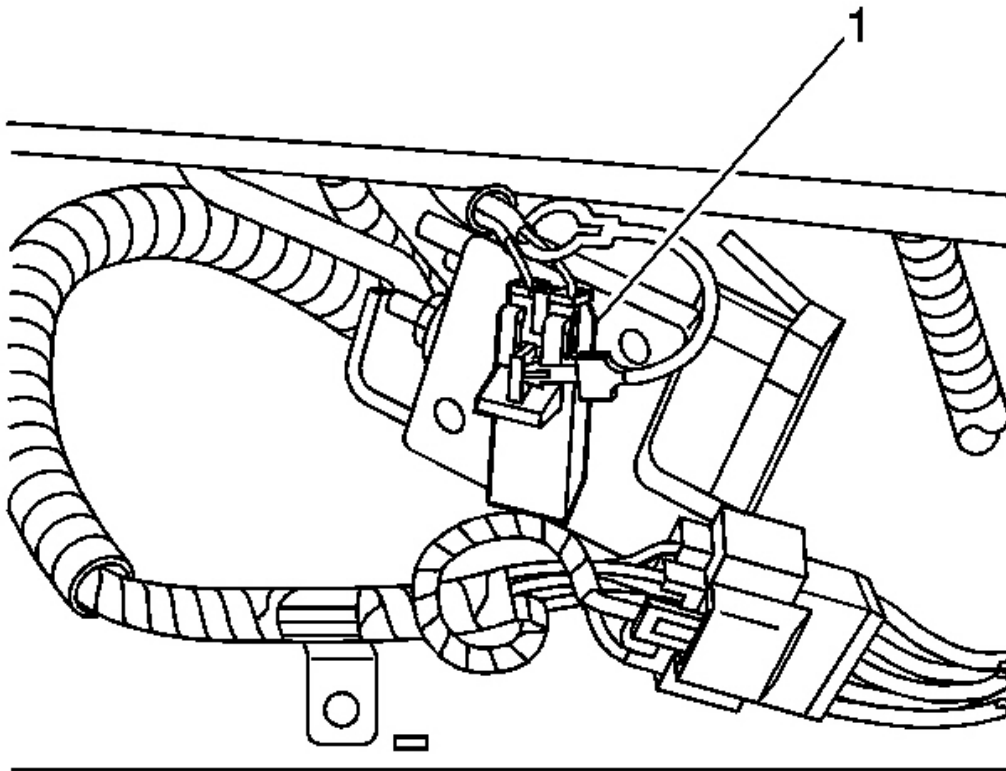


Fig. 53: Identifying CPA Clip
Courtesy of GENERAL MOTORS CORP.

16. Remove the CPA from the LF seat belt pretensioner yellow 2-way connector (1) located under the driver seat.
17. Disconnect the LF seat belt pretensioner yellow 2-way connector (1) located under the driver seat.

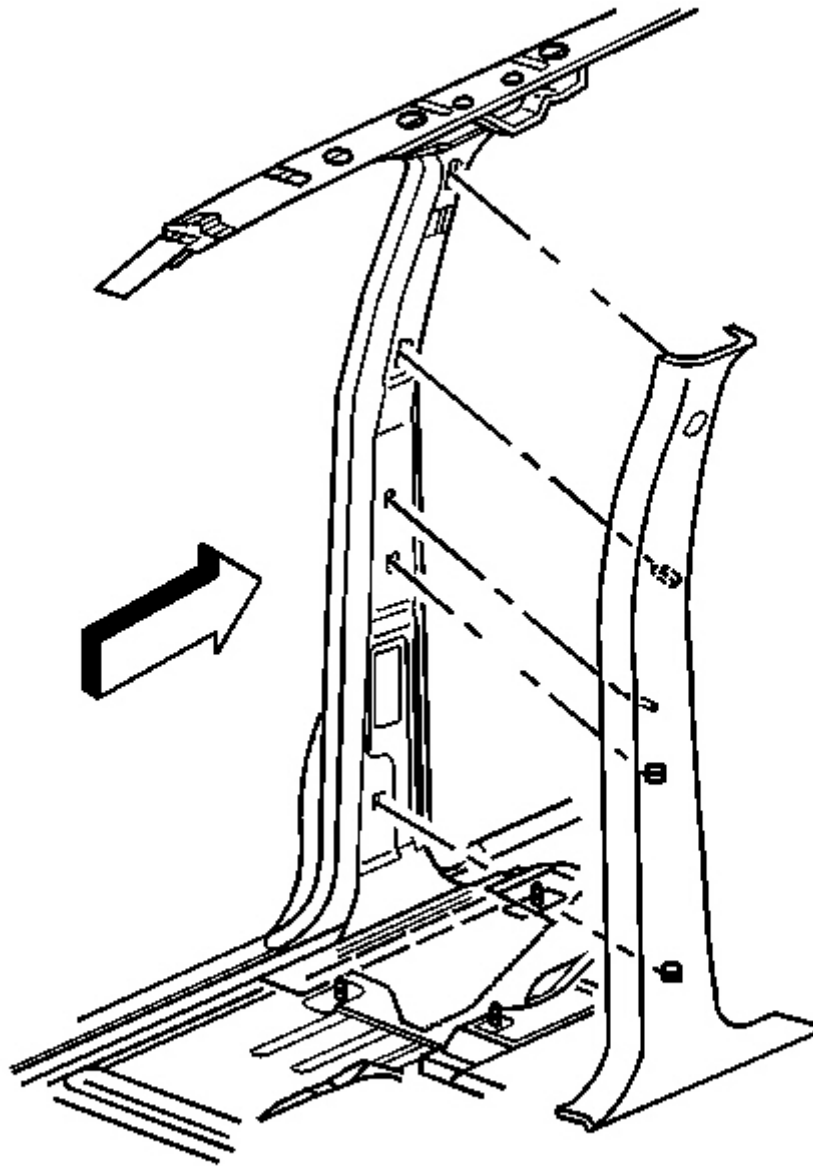


Fig. 54: Removing/Installing Garnish Molding (Center Pillar)
Courtesy of GENERAL MOTORS CORP.

18. Remove the garnish molding. Refer to **Garnish Molding Replacement - Center Pillar** in Interior Trim

19. Remove the CPA from the inflatable restraint roof rail module - left yellow 2-way inline connector.
20. Disconnect the inflatable restraint roof rail module - left yellow 2-way inline connector from the vehicle harness connector.

Enabling Procedure

1. Remove the key from the ignition.

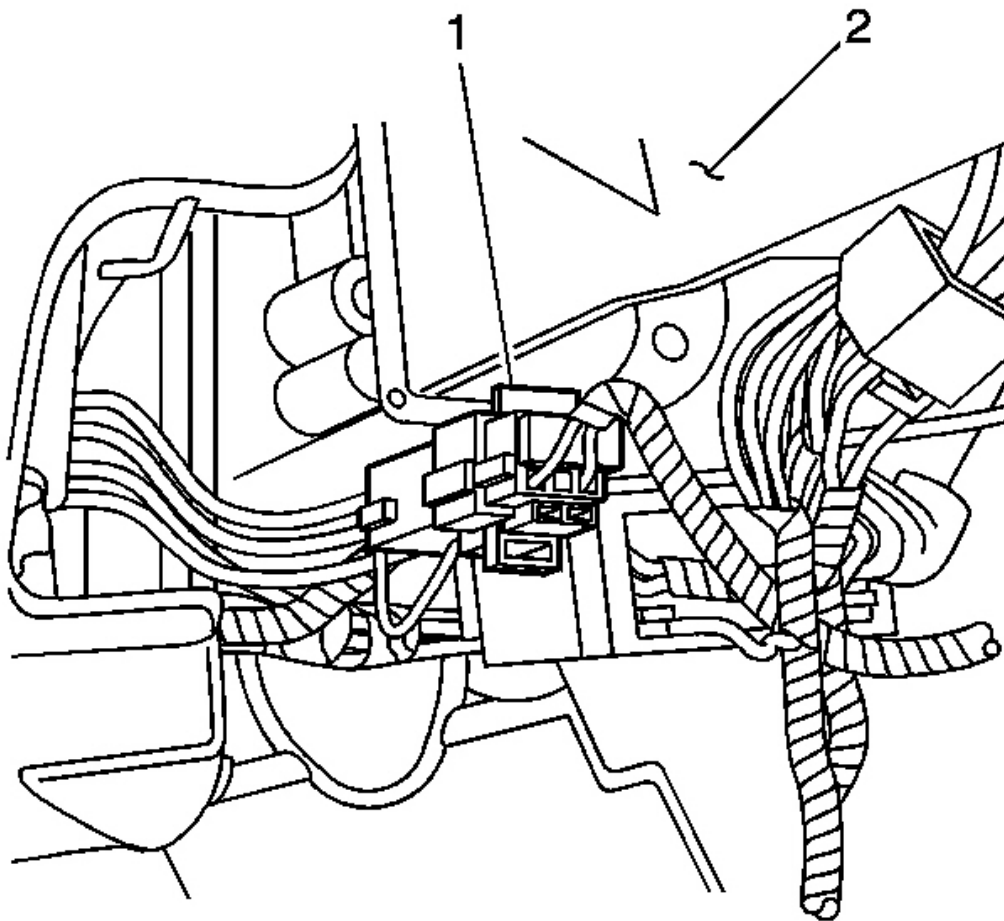


Fig. 55: Disconnecting/Reconnecting CPA & Steering Wheel Module Yellow 4-Way Connector

Courtesy of GENERAL MOTORS CORP.

2. Connect the steering wheel module yellow 4-way connector (2) located left of the steering column near the knee bolster.
3. Install the CPA (1) to the steering wheel module yellow 4-way connector located left of the steering column near the knee bolster.

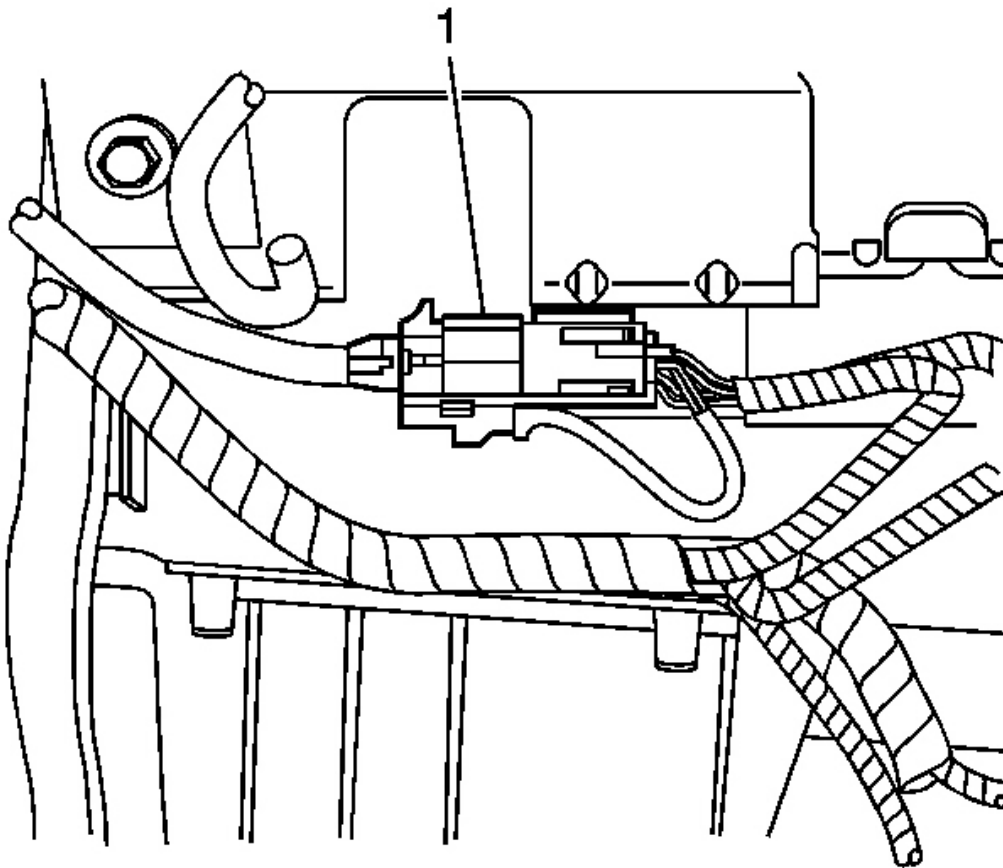


Fig. 56: Locating IP Module 4-Way Yellow Connector Behind IP Support
Courtesy of GENERAL MOTORS CORP.

4. Connect the I/P module yellow 4-way connector (1) located behind the I/P support.
5. Install the CPA to the I/P module yellow 4-way connector (1) located behind the I/P support.

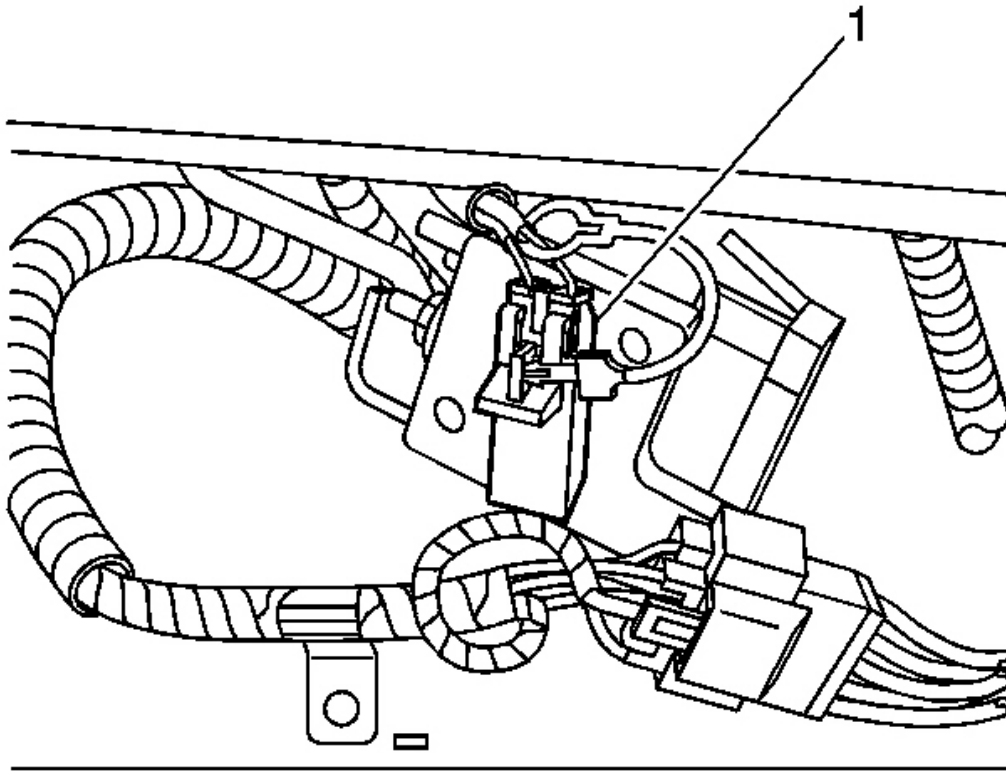


Fig. 57: Identifying CPA Clip
Courtesy of GENERAL MOTORS CORP.

6. Connect the RF seat belt pretensioner yellow 2-way connector (1) located under the passenger seat.
7. Install the CPA to the RF seat belt pretensioner yellow 2-way connector (1) located under the passenger seat.

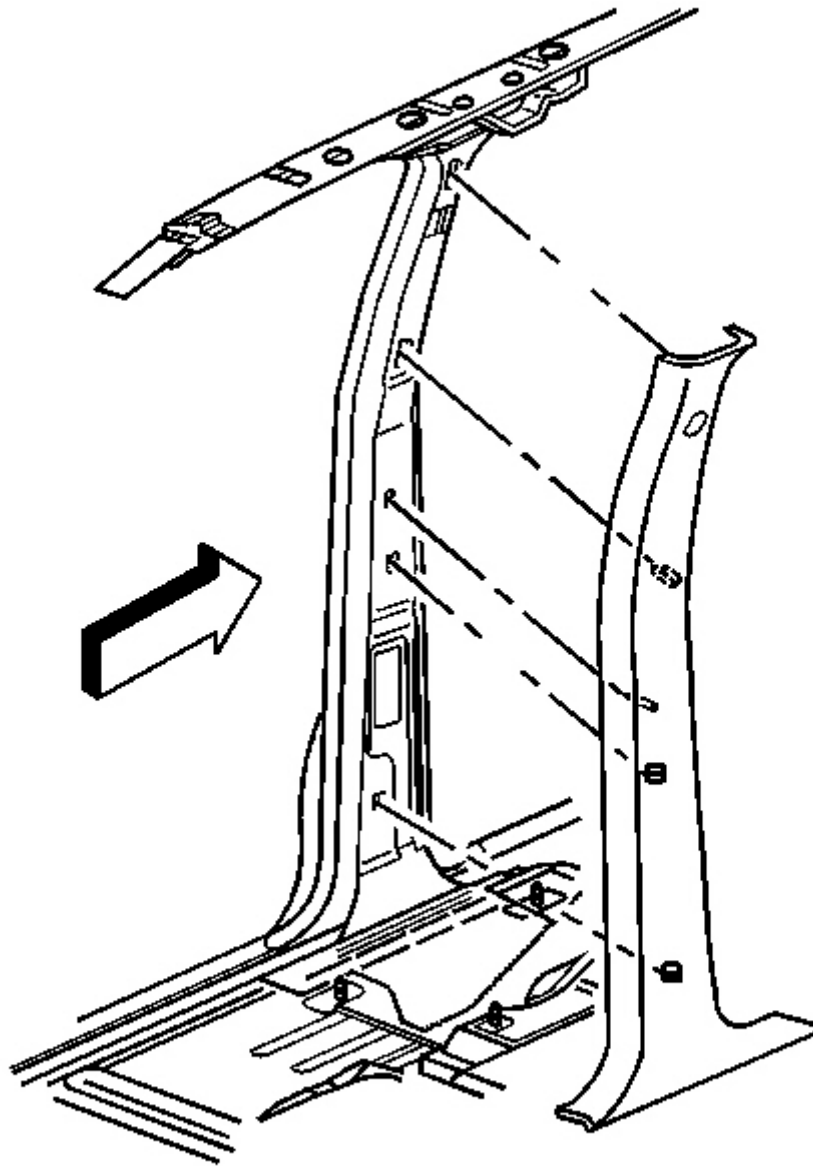


Fig. 58: Removing/Installing Garnish Molding (Center Pillar)
Courtesy of GENERAL MOTORS CORP.

8. Connect the inflatable restraint roof rail module - right yellow 2-way inline connector and install the CPA.

9. Install the garnish molding. Refer to **Garnish Molding Replacement - Center Pillar** in Interior Trim.

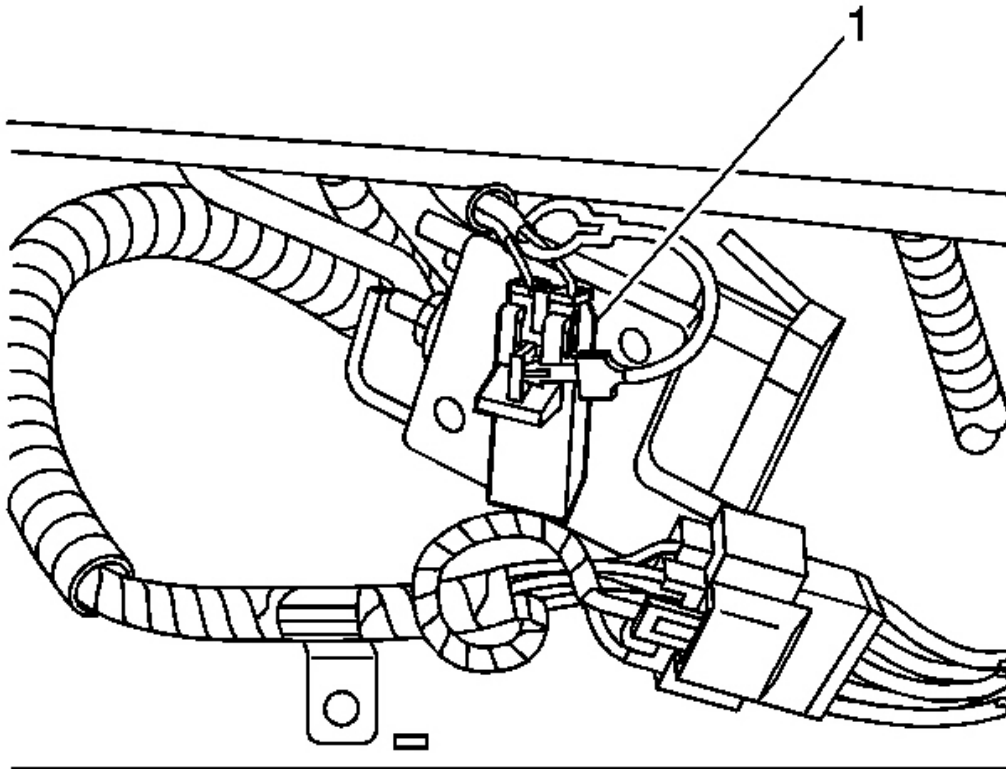


Fig. 59: Identifying CPA Clip
Courtesy of GENERAL MOTORS CORP.

10. Connect the LF seat belt pretensioner yellow 2-way connector (1) located under the driver seat.
11. Install the CPA to the LF seat belt pretensioner yellow 2-way connector (1) located under the driver seat.

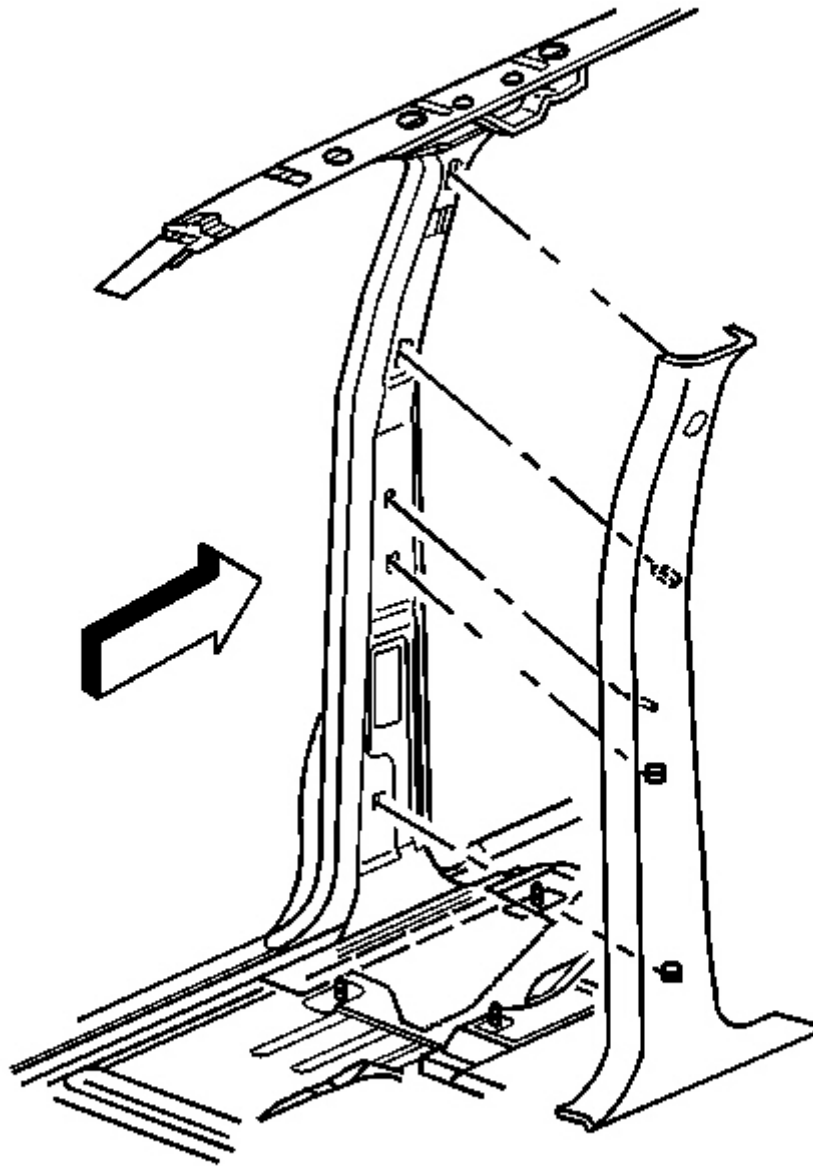


Fig. 60: Removing/Installing Garnish Molding (Center Pillar)
Courtesy of GENERAL MOTORS CORP.

12. Connect the inflatable restraint roof rail module - left yellow 2-way inline connector and install the CPA.

13. Install the garnish molding. Refer to **Garnish Molding Replacement - Center Pillar** in Interior Trim.

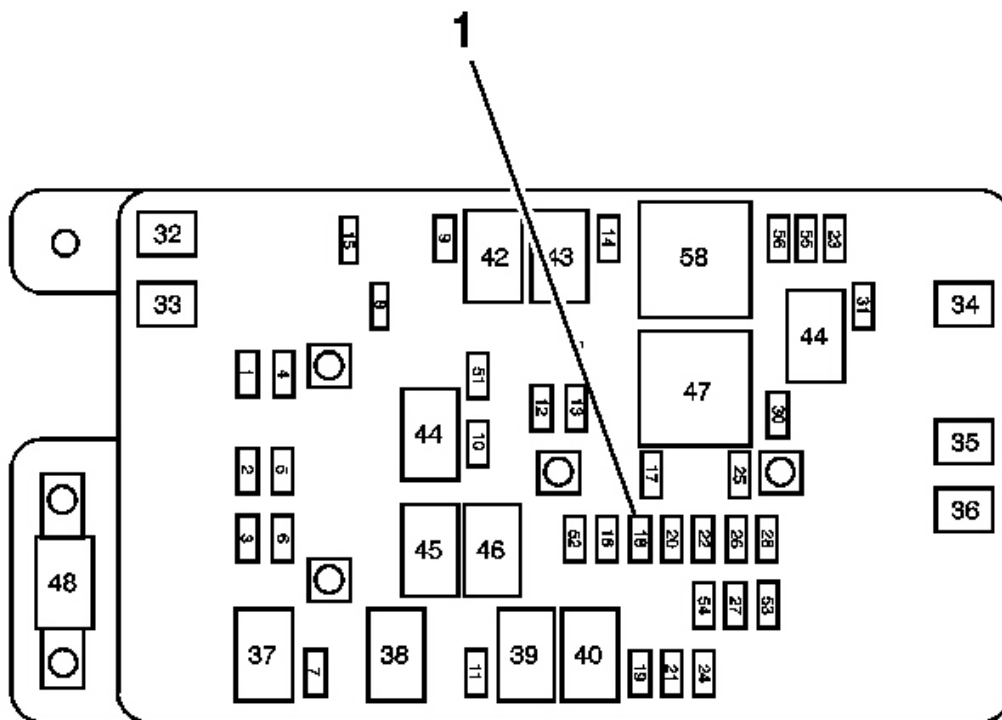


Fig. 61: View Of Fuse & Relay Block
 Courtesy of GENERAL MOTORS CORP.

14. Install the SIR fuse to the fuse block (1) located in the underhood electrical center.
15. Staying well away from all air bags, turn ON the ignition, with the engine OFF.
 1. The AIR BAG indicator will flash 7 times.
 2. The AIR BAG indicator will then turn OFF.
16. Perform the **Diagnostic System Check - Vehicle** in Vehicle DTC Information, if the AIR BAG indicator does not operate as described.

SIR DISABLING AND ENABLING ZONE 9

Disabling Procedure

IMPORTANT: Refer to SIR Disabling and Enabling Zones before disabling the SIR system.

1. Turn the steering wheel until the vehicle wheels are pointing straight ahead.
2. Turn OFF the ignition.
3. Remove the key from the ignition.

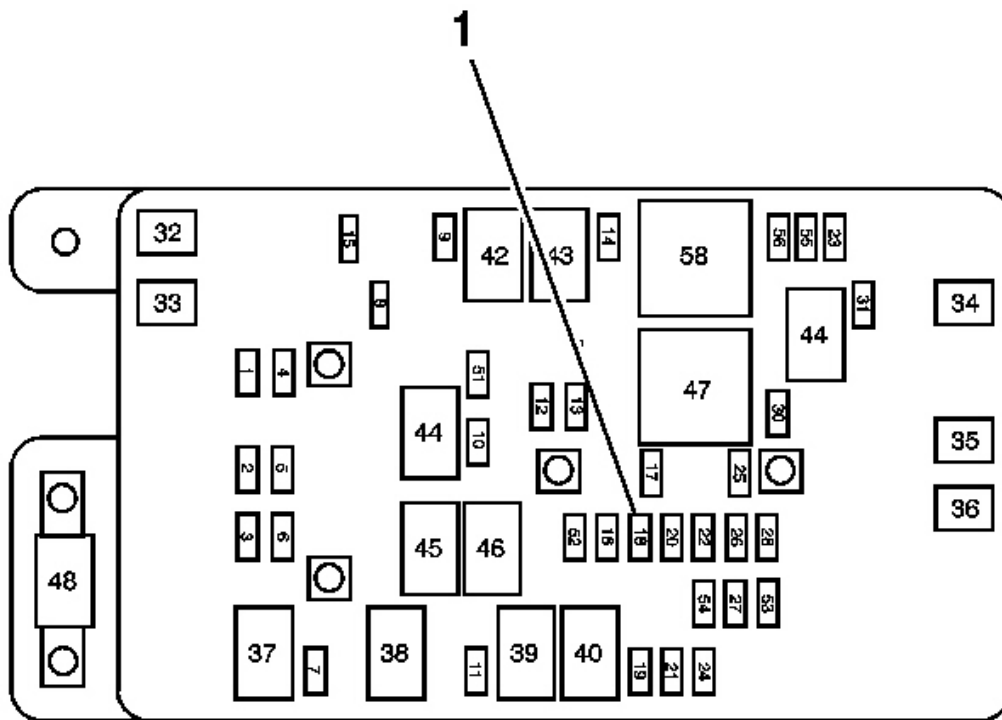


Fig. 62: View Of Fuse & Relay Block
 Courtesy of GENERAL MOTORS CORP.

IMPORTANT: With the SIR fuse removed and the ignition ON, the AIR BAG indicator illuminates. This is normal operation and does not indicate an SIR system malfunction.

4. Remove the SIR fuse from the fuse block (1) located in the underhood fuse block.

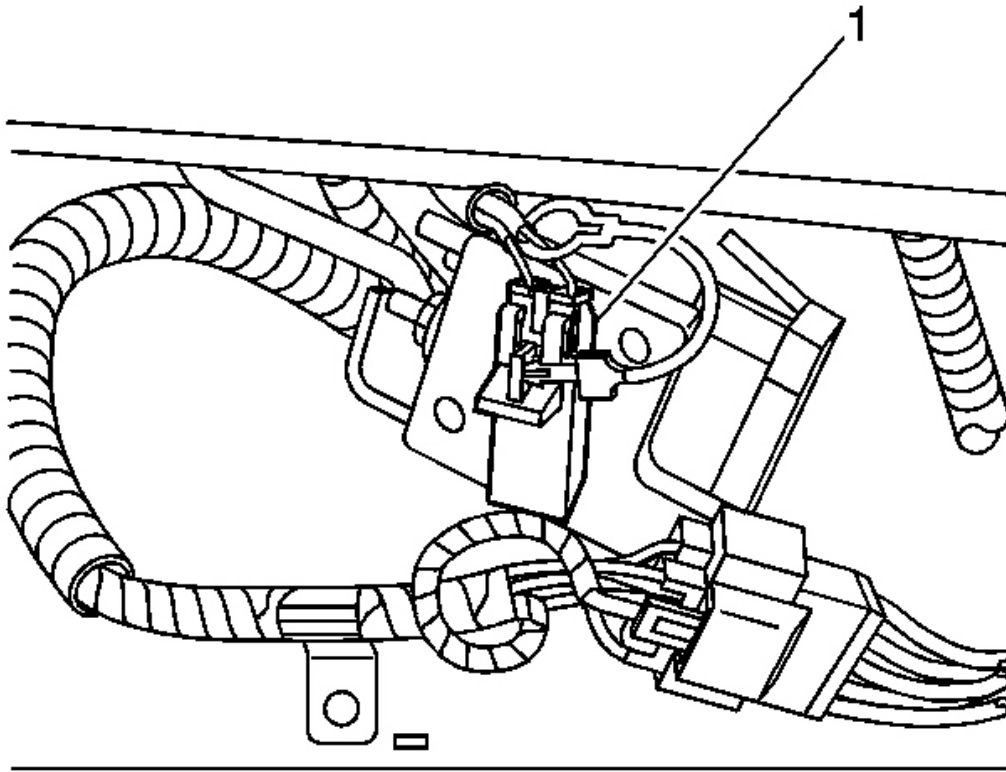


Fig. 63: Identifying CPA Clip
Courtesy of GENERAL MOTORS CORP.

5. Remove the connector position assurance (CPA) from the RF seat belt pretensioner yellow 2-way connector (1) located under the passenger seat.
6. Disconnect the RF seat belt pretensioner yellow 2-way connector (1) located under the passenger seat.

Enabling Procedure

1. Remove the key from the ignition.

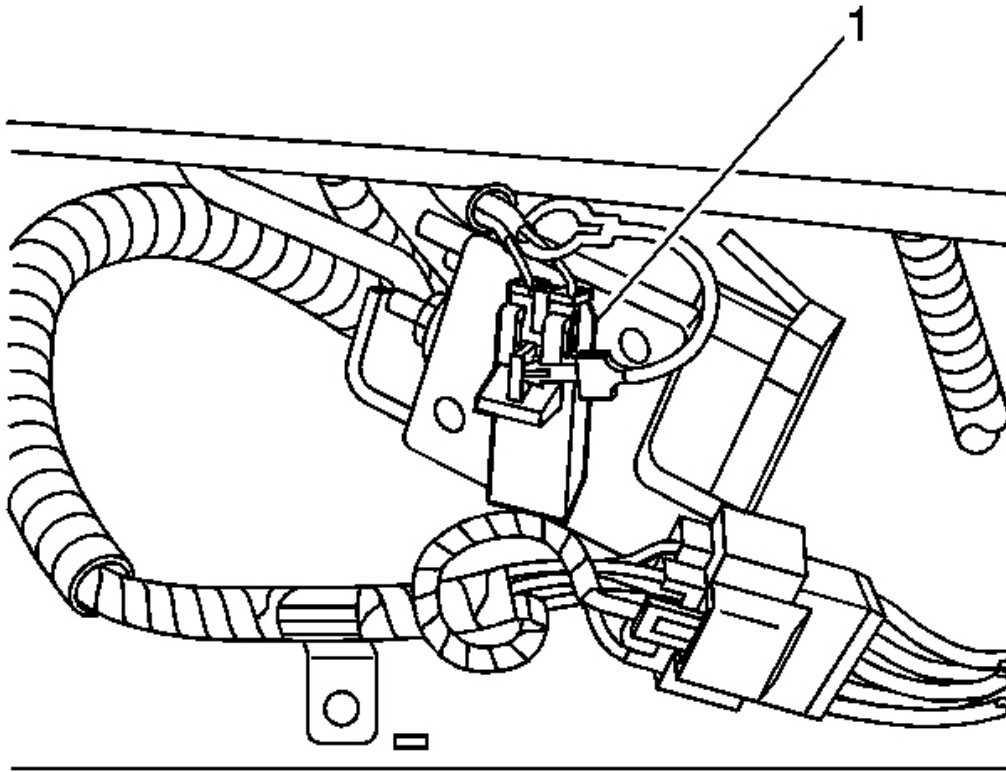


Fig. 64: Identifying CPA Clip
Courtesy of GENERAL MOTORS CORP.

2. Connect the RF seat belt pretensioner yellow 2-way connector (1) located under the passenger seat.
3. Install the CPA to the RF seat belt pretensioner yellow 2-way connector (1) located under the passenger seat.

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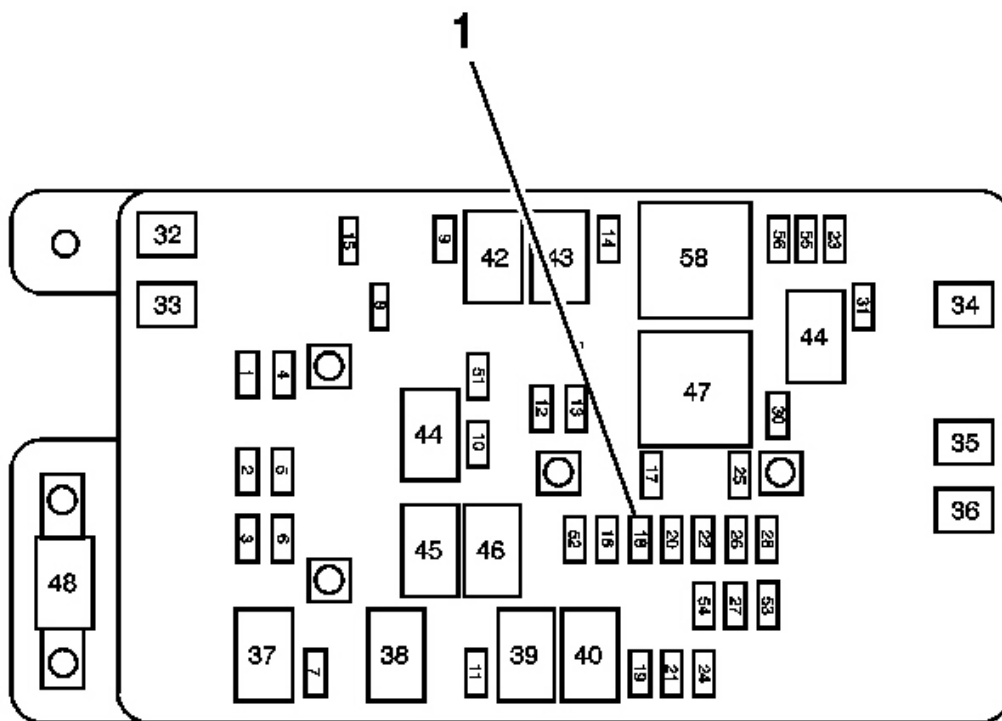


Fig. 65: View Of Fuse & Relay Block
Courtesy of GENERAL MOTORS CORP.

4. Install the SIR fuse to the fuse block (1) located in the underhood fuse block.
5. Staying well away from all air bags, turn ON the ignition, with the engine OFF.
 1. The AIR BAG indicator will flash 7 times.
 2. The AIR BAG indicator will then turn OFF.
6. Perform the **Diagnostic System Check - Vehicle** in Vehicle DTC Information, if the AIR BAG indicator does not operate as described.

INFLATABLE RESTRAINT FRONT END SENSOR REPLACEMENT

Removal Procedure

CAUTION: Do not strike or jolt the inflatable restraint front end sensor. Before applying power to the front end sensor

make sure that it is securely fastened. Failure to observe the correct installation procedure could cause SIR deployment, personal injury, or unnecessary SIR system repairs.

CAUTION: Refer to SIR Caution in Cautions and Notices.

1. Disable the SIR system. Refer to SIR Disabling and Enabling Zone 1.
2. Remove the grille. Refer to Grille Replacement (TrailBlazer) or Grille Replacement (Rainier) or Grille Replacement (Envoy) in Exterior Trim.

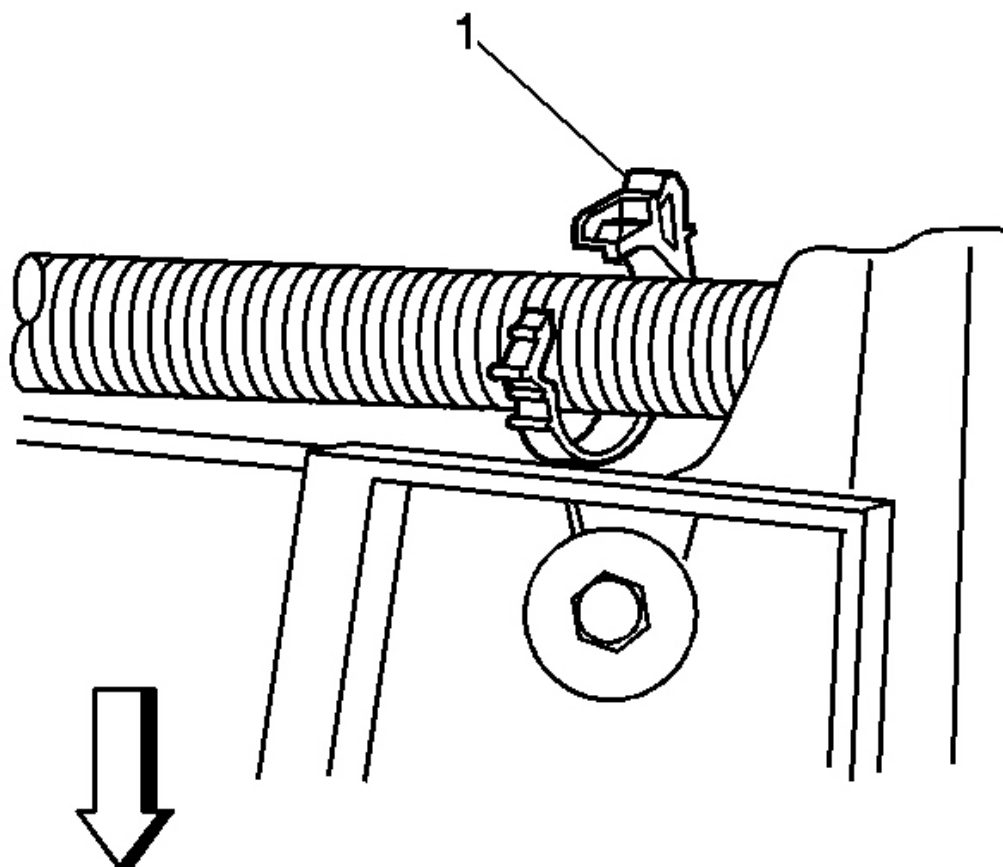


Fig. 66: Disconnecting/Reconnecting Headlamp Wire Harness Retaining Clip

Courtesy of GENERAL MOTORS CORP.

3. Remove the headlamp wire harness from the retaining clip (1).

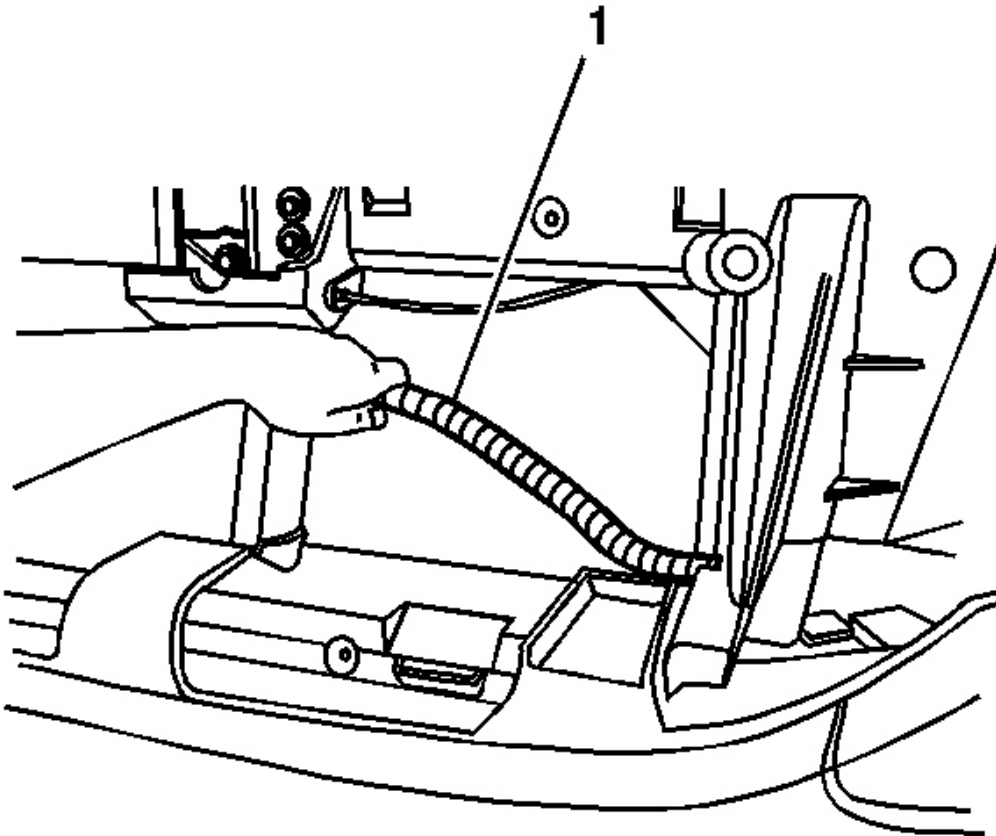


Fig. 67: Moving/Repositioning Headlamp Wire Harness
Courtesy of GENERAL MOTORS CORP.

4. Raise and support the headlamp wire harness (1) to gain access to the front end sensor.

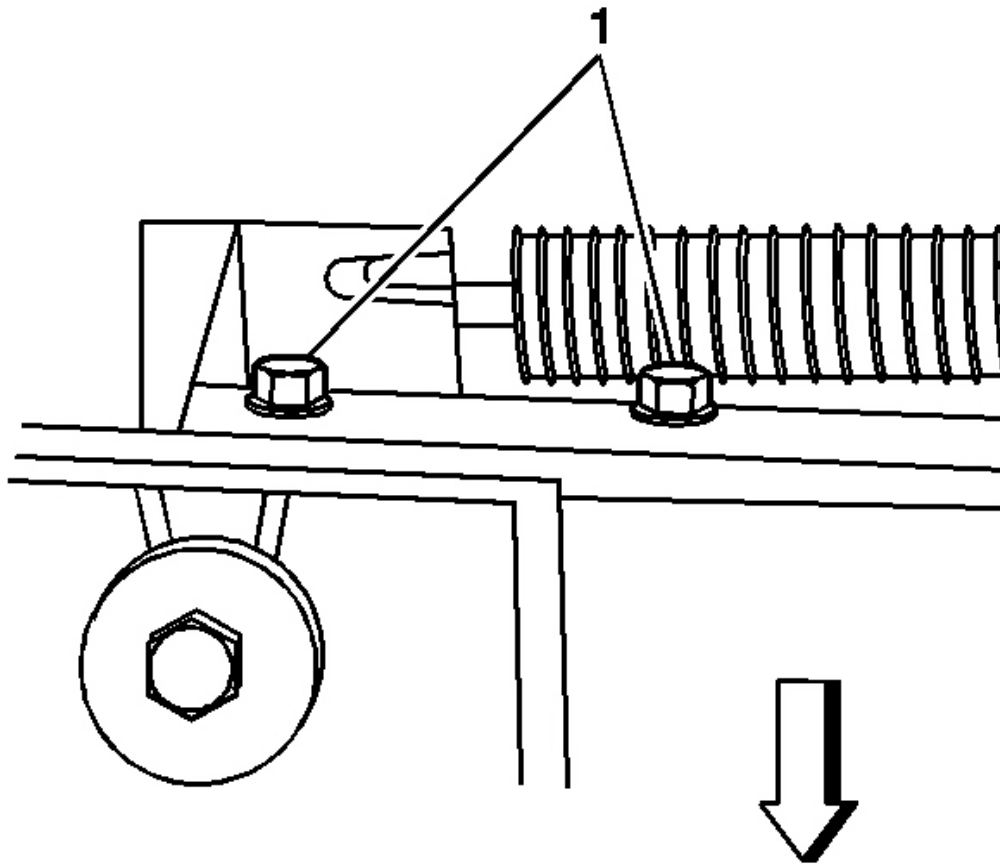


Fig. 68: Removing/Installing Sensor Retaining Bolts
Courtesy of GENERAL MOTORS CORP.

5. Loosen the bolts (1) retaining the sensor to the frame.

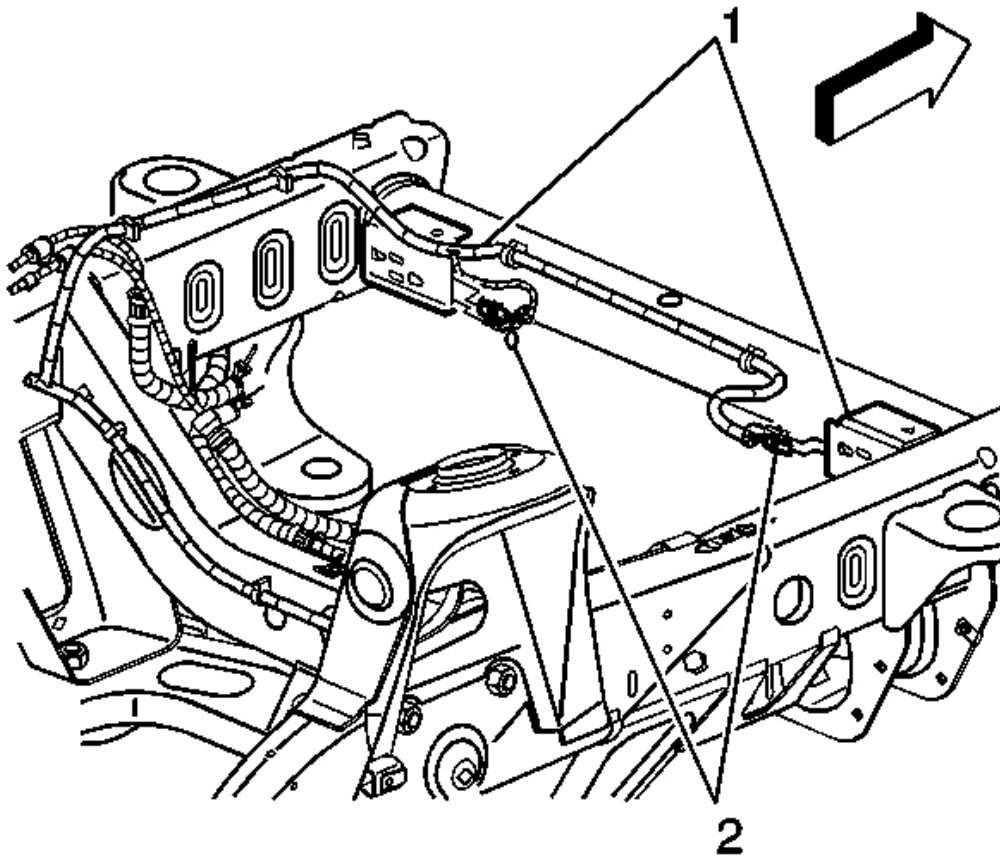


Fig. 69: Removing/Installing Sensor Assembly
Courtesy of GENERAL MOTORS CORP.

6. Remove the sensor assembly from the frame (1).

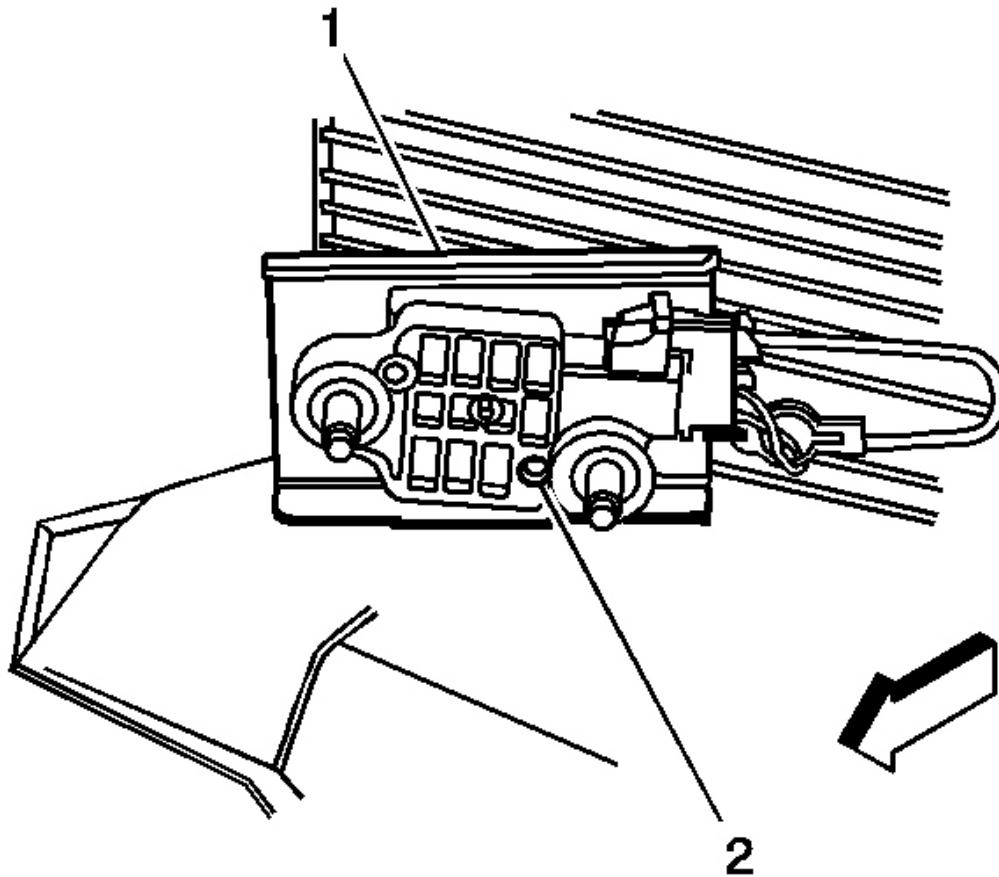


Fig. 70: View Of Connector Position Assurance At Front End Sensor Connectors
Courtesy of GENERAL MOTORS CORP.

7. Position the sensor assembly above the front bumper.
8. Remove the retaining bolts and protective cover (1) from the sensor.
9. Remove the connector-position assurance (CPA) from the sensor electrical connector.
10. Disconnect the sensor (2) electrical connector.
11. Remove the sensor from the vehicle.

Installation Procedure

1. Remove any dirt, grease, or other impurities from the mounting surface.

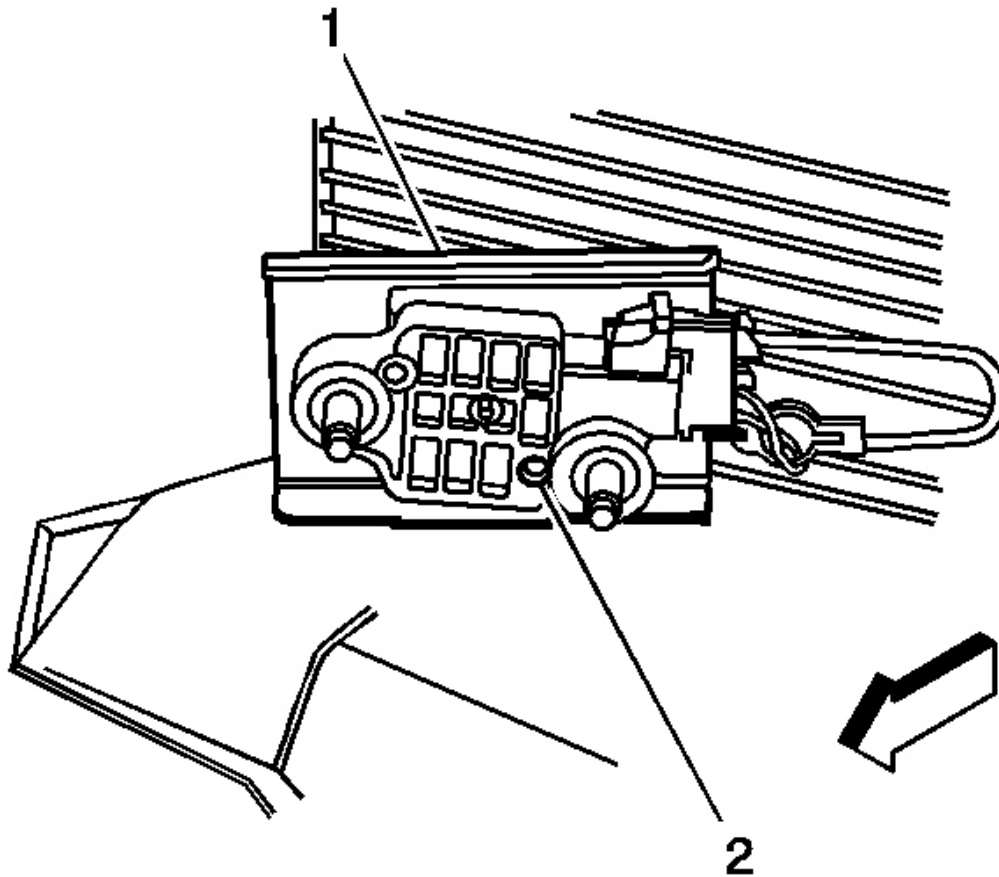


Fig. 71: View Of Connector Position Assurance At Front End Sensor Connectors
Courtesy of GENERAL MOTORS CORP.

2. Position the sensor assembly horizontally above the front bumper.
3. Connect the sensor (2) electrical connector.
4. Install the connector-position assurance (CPA) to the sensor electrical connector.
5. Install the retaining bolts and protective cover (1) to the sensor.

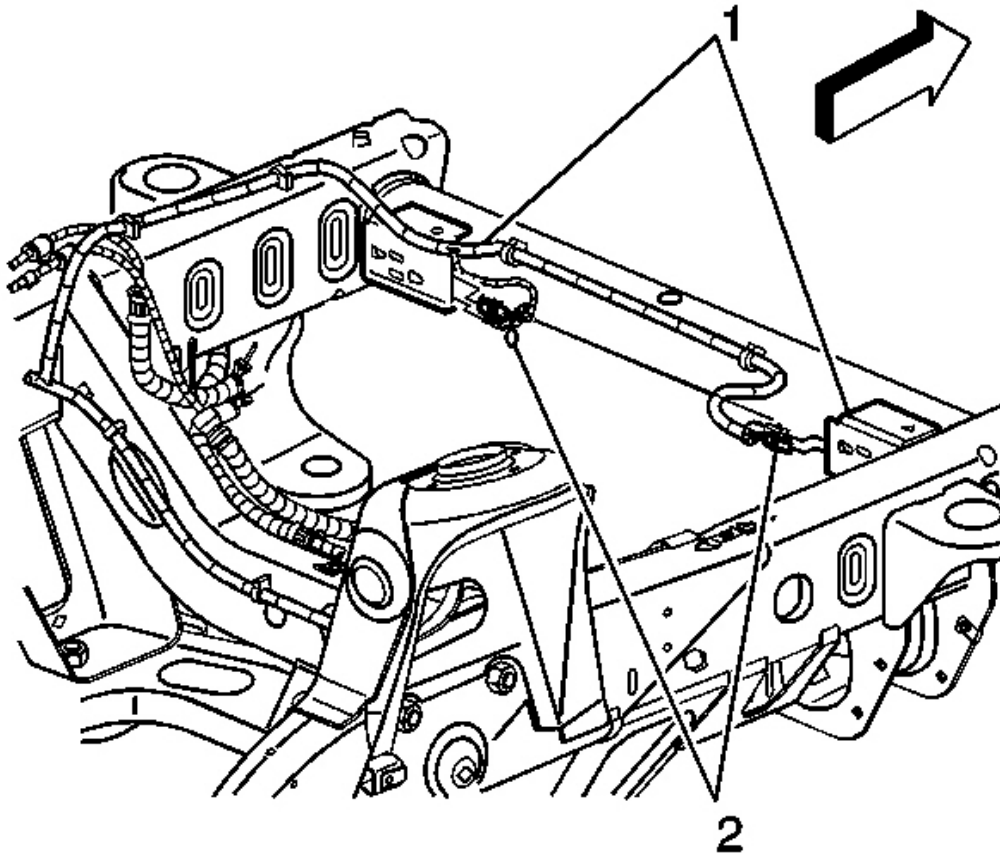


Fig. 72: Removing/Installing Sensor Assembly
Courtesy of GENERAL MOTORS CORP.

6. Position the sensor assembly horizontally to the frame (1).
7. Point the arrow on the sensor toward the front of the vehicle.

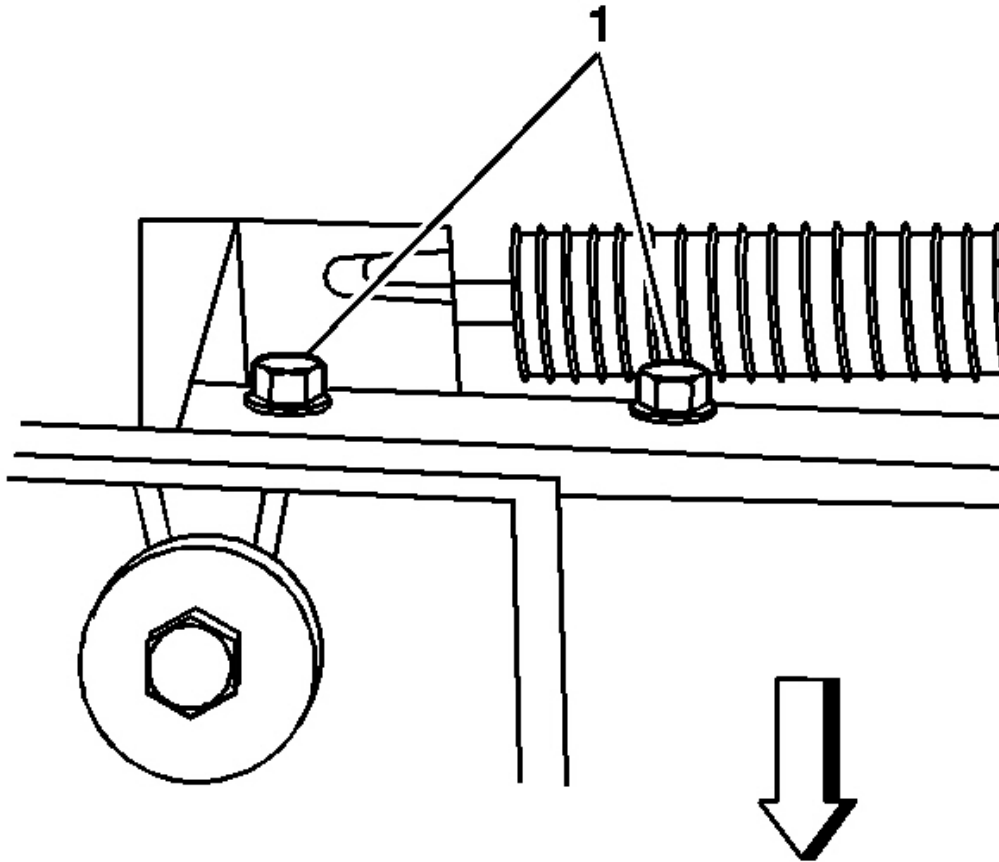


Fig. 73: Removing/Installing Sensor Retaining Bolts
Courtesy of GENERAL MOTORS CORP.

NOTE: Refer to Fastener Notice in Cautions and Notices.

8. Install the 2 bolts (1) retaining the discriminating sensor assembly to the frame.

Tighten: Tighten the bolts to 8 N.m (71 lb in).

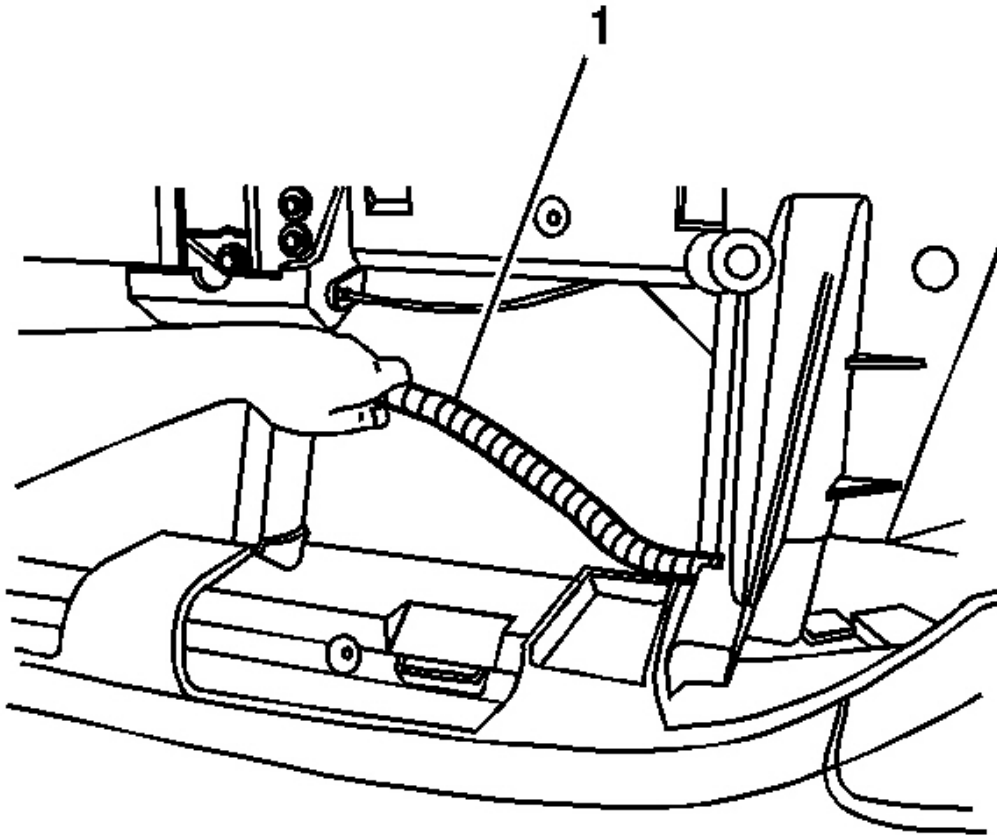


Fig. 74: Moving/Repositioning Headlamp Wire Harness
Courtesy of GENERAL MOTORS CORP.

9. Position the headlamp wire harness (1) to the retaining clip.

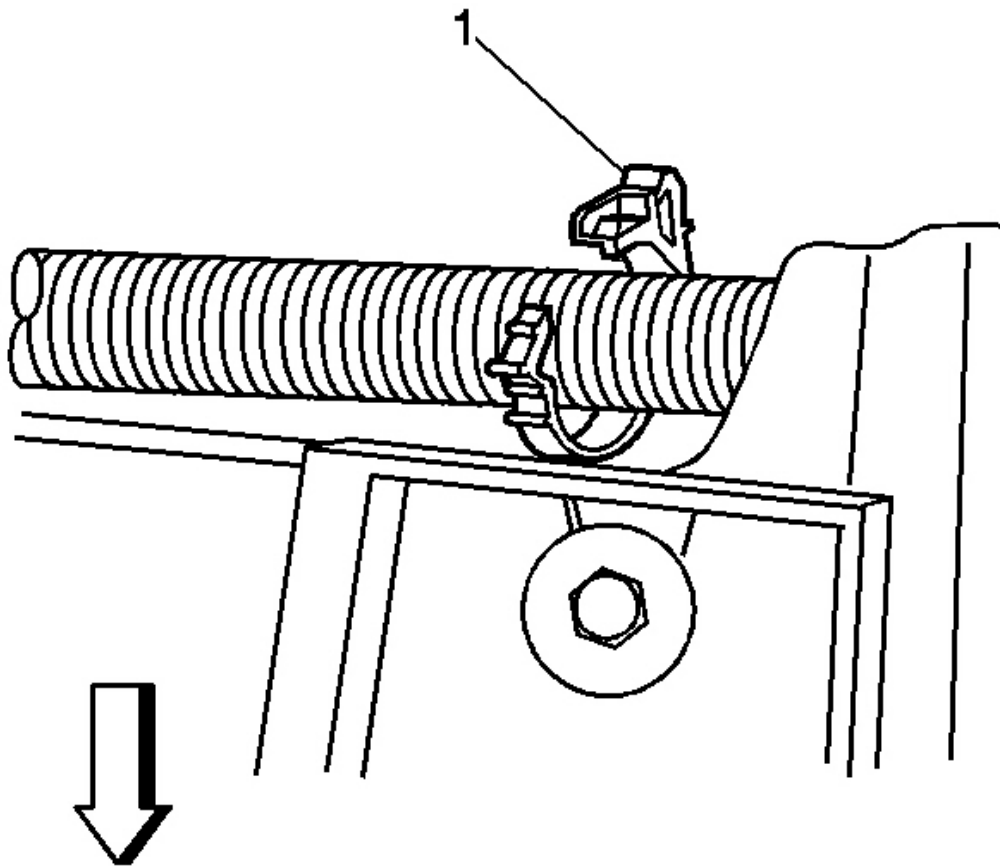


Fig. 75: Disconnecting/Reconnecting Headlamp Wire Harness Retaining Clip
Courtesy of GENERAL MOTORS CORP.

10. Install and secure the headlamp wire harness in the retaining clip (1).
11. Install the grille. Refer to **Grille Replacement (TrailBlazer)** or **Grille Replacement (Rainier)** or **Grille Replacement (Envoy)** in Exterior Trim.
12. Enable the SIR system. Refer to **SIR Disabling and Enabling Zone 1**.

INFLATABLE RESTRAINT SIDE IMPACT SENSOR REPLACEMENT

Removal Procedure

CAUTION: Do not strike or jolt the inflatable restraint side impact

sensor (SIS). Before applying power to the SIS make sure that it is securely fastened. Failure to observe the correct installation procedures could cause SIR deployment, personal injury, or unnecessary SIR system repairs.

CAUTION: Refer to SIR Caution in Cautions and Notices.

1. Disable the SIR system. Refer to **SIR Disabling and Enabling Zone 2** and **SIR Disabling and Enabling Zone 6**.
2. Remove the front door trim panel. Refer to **Trim Panel Replacement - Side Front Door** in Doors.
3. Peel the rear half of the water deflector away from the door in order to access the side impact sensor.

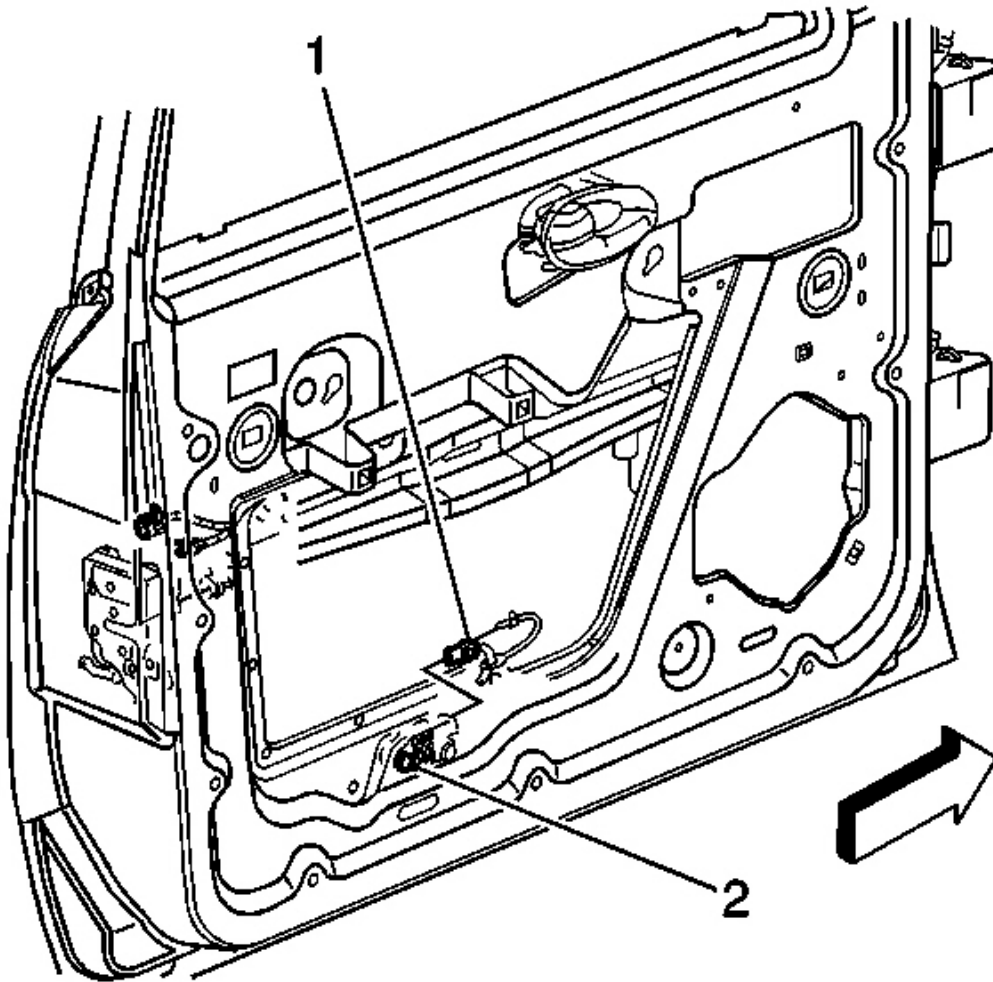


Fig. 76: Removing/Installing Side Impact Sensor
Courtesy of GENERAL MOTORS CORP.

4. Remove the screws that retain the side impact sensor (2) to the door.
5. Disconnect the impact sensor electrical connector (1) from the side impact sensor.
6. Remove the side impact sensor from the door.

Installation Procedure

1. Remove any dirt, grease, or other impurities from the mounting surface.

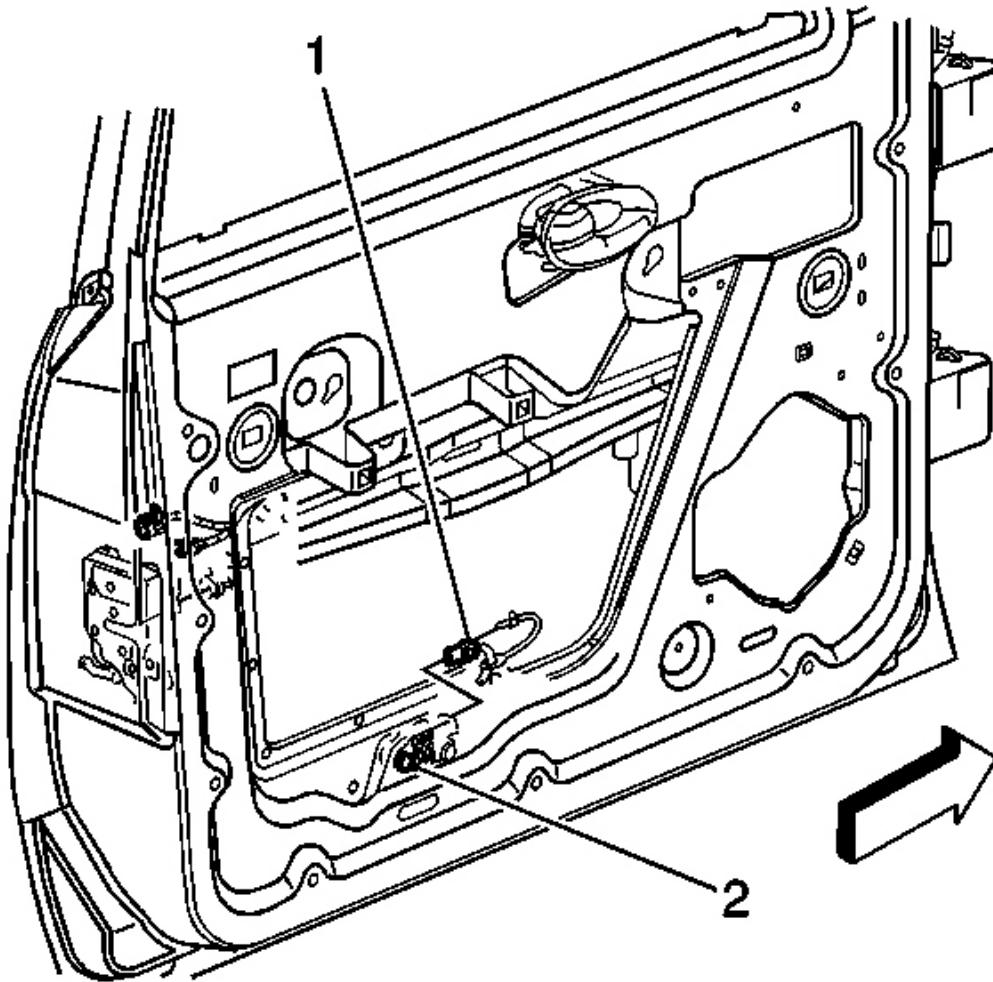


Fig. 77: Removing/Installing Side Impact Sensor
Courtesy of GENERAL MOTORS CORP.

2. Position the side impact sensor (2) horizontally to the door.
3. Connect the electrical connector (1) to the side impact sensor (2).

NOTE: Refer to Fastener Notice in Cautions and Notices.

4. Install the screws which retain the side impact sensor to the door.

Tighten: Tighten the screws to 8 N.m (71 lb in).

5. Fully seat the water deflector to the door.
6. Install the door trim panel. Refer to **Trim Panel Replacement - Side Front Door** in Doors.
7. Enable the SIR system. Refer to **SIR Disabling and Enabling Zone 2** and **SIR Disabling and Enabling Zone 6**.

INFLATABLE RESTRAINT VEHICLE ROLLOVER SENSOR REPLACEMENT

Removal Procedure

CAUTION: Refer to **SIR Caution** .

1. Disable the SIR system. Refer to **SIR Disabling and Enabling Zone 8**.

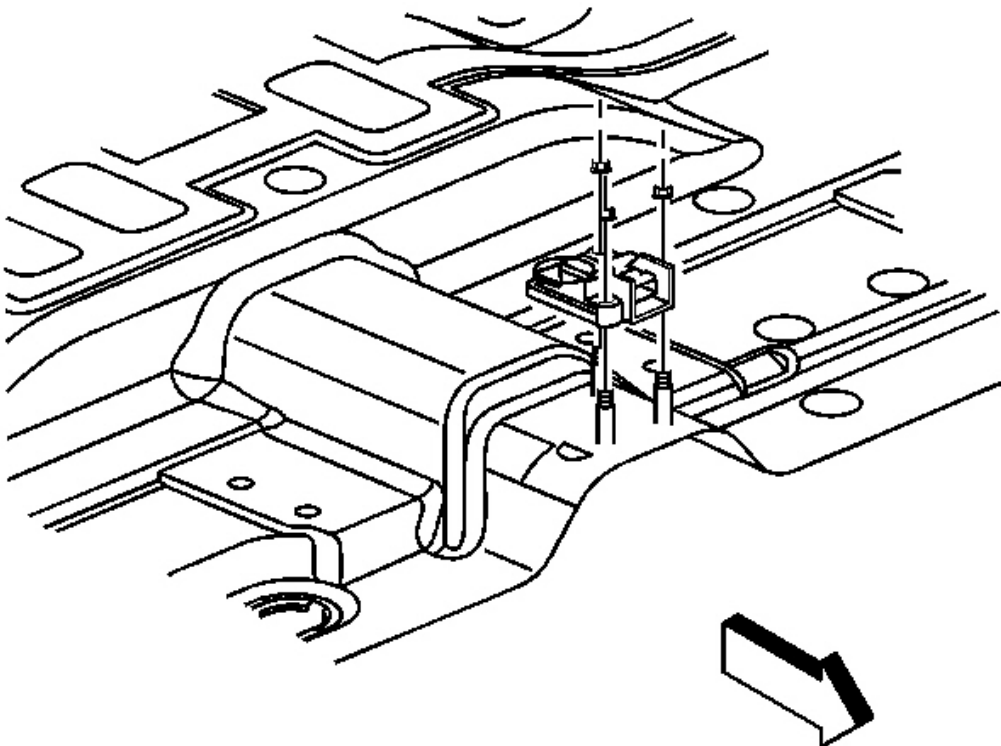


Fig. 78: Vehicle Rollover Sensor
Courtesy of GENERAL MOTORS CORP.

2. Fold back the rear carpet in order to gain access to the sensor. Refer to **Carpet Replacement - Rear (TrailBlazer, Envoy, Rainier)** or **Carpet Replacement - Rear (TrailBlazer EXT, Envoy XL)** in Interior Trim.
3. Disconnect the electrical connector.
4. Remove the nuts securing the rollover sensor to the floor panel.

Installation Procedure

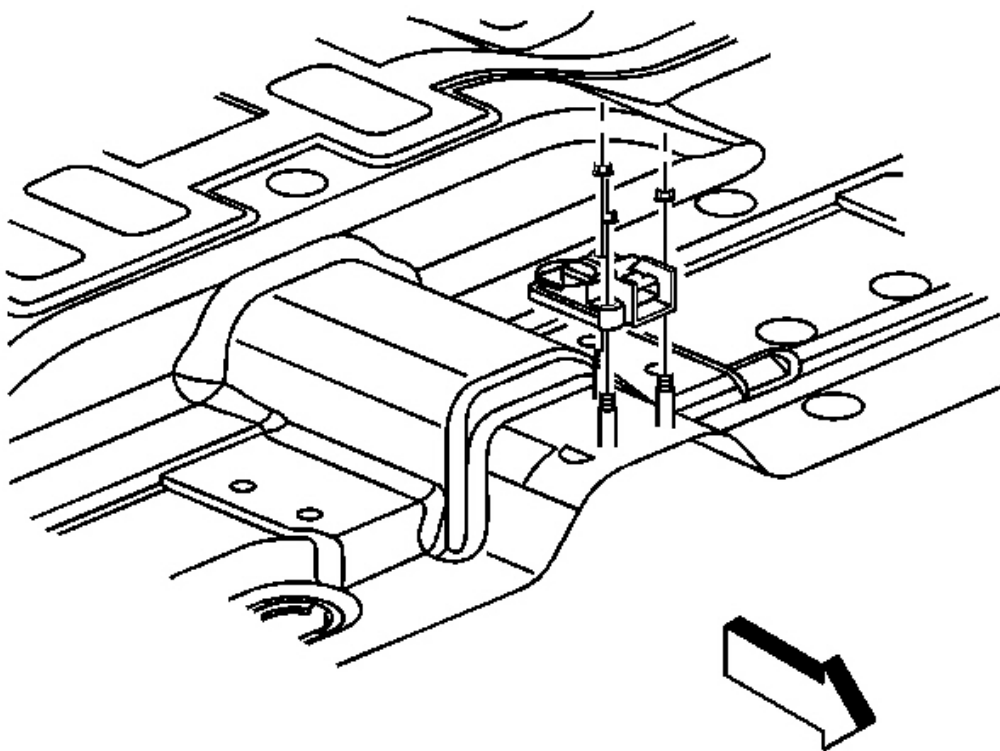


Fig. 79: Vehicle Rollover Sensor
Courtesy of GENERAL MOTORS CORP.

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

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1. Install the nuts securing the rollover sensor to the floor panel.

Tighten: Tighten the screws to 10 N.m (88 lb in).

2. Connect the electrical connectors.
3. Install the rear carpet. Refer to **Carpet Replacement - Rear (TrailBlazer, Envoy, Rainier)** or **Carpet Replacement - Rear (TrailBlazer EXT, Envoy XL)** in Interior Trim.
4. Enable the SIR system. Refer to **SIR Disabling and Enabling Zone 8**.

INFLATABLE RESTRAINT SENSING AND DIAGNOSTIC MODULE REPLACEMENT

Removal Procedure

CAUTION: Do not strike or jolt the inflatable restraint sensing and diagnostic module (SDM). Before applying power to the SDM, make sure that it is securely fastened with the arrow facing toward the front of the vehicle. Failure to observe the correct installation procedure could cause SIR deployment, personal injury, or unnecessary SIR system repairs.

CAUTION: Refer to **SIR Caution** in Cautions and Notices.

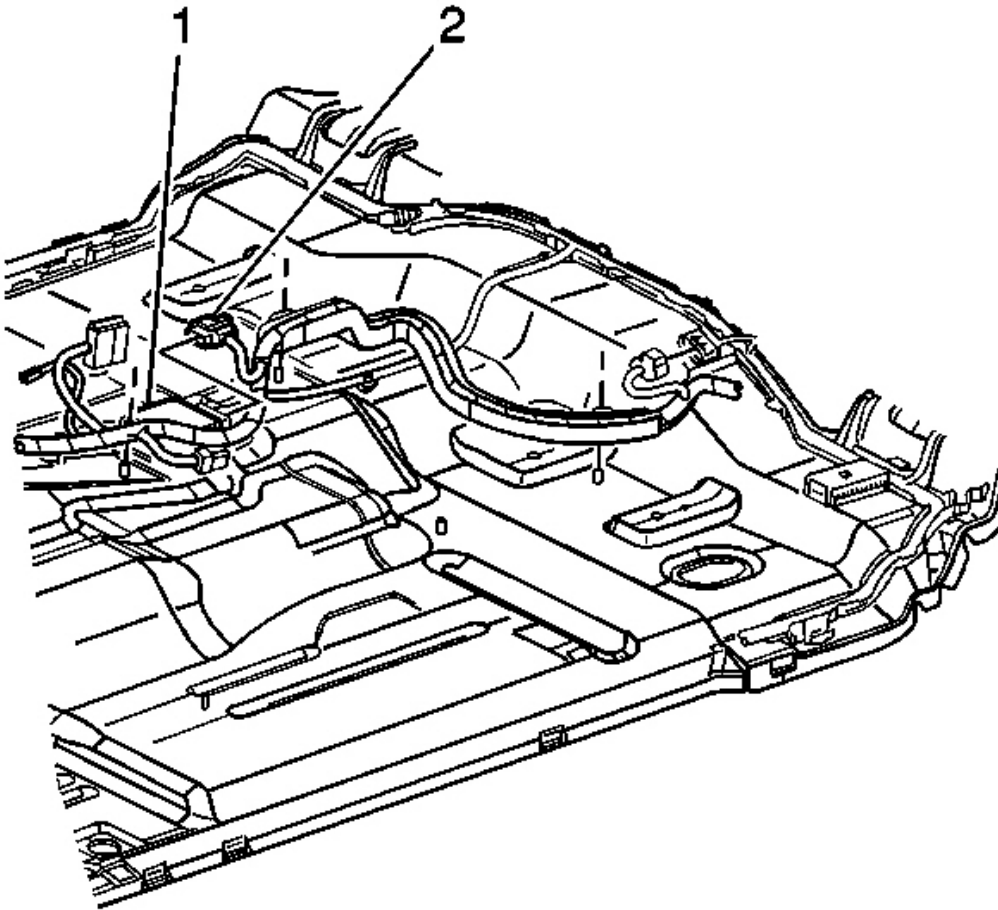


Fig. 80: Disconnecting/Reconnecting Electrical Connectors At SDM
Courtesy of GENERAL MOTORS CORP.

1. Disable the supplemental inflatable restraint (SIR) system. Refer to **SIR Disabling and Enabling Zone 8**.
2. Remove the floor console. Refer to **Console Replacement** in Instrument Panel, Gages and Console.
3. Partially remove the console mounting bracket in order to allow access to the rear carpet. Refer to **Bracket Replacement - Console Floor** in Instrument Panel, Gages, and Console.
4. Position the rear carpet in order to access the sensing and diagnostic module (SDM).
5. Disconnect the electrical connectors (2) from the SDM (1).

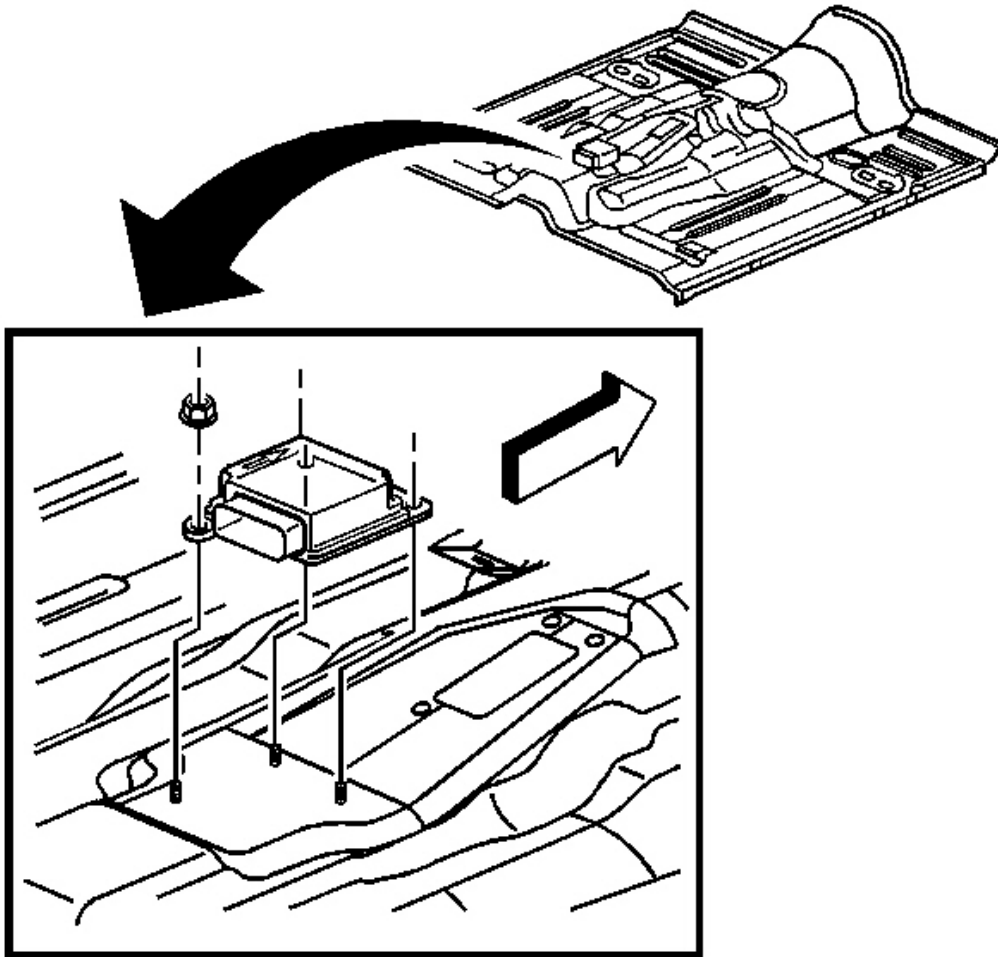


Fig. 81: Removing/Installing SDM Retaining Nuts
Courtesy of GENERAL MOTORS CORP.

6. Remove the nuts that retain the SDM to the floor panel.
7. Remove the SDM from the vehicle.

Installation Procedure

1. Remove any dirt, grease, etc. from the mounting surface.

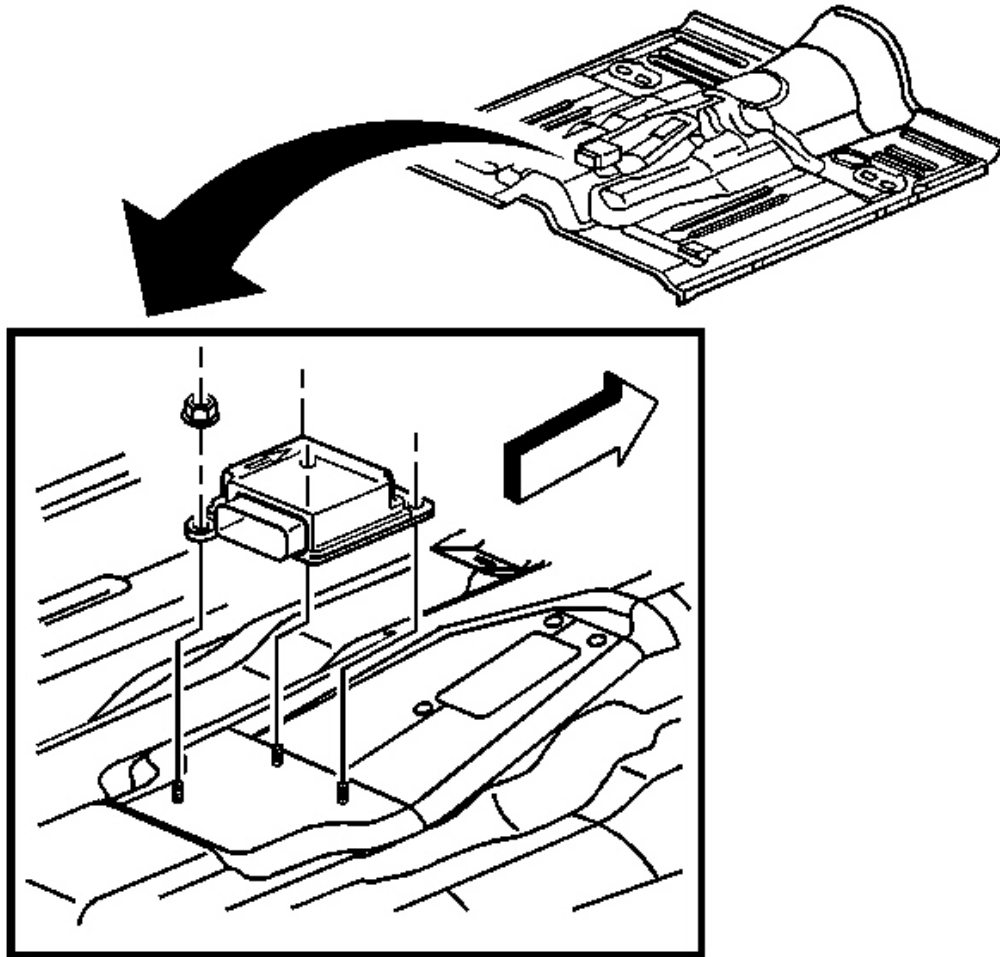


Fig. 82: Removing/Installing SDM Retaining Nuts
Courtesy of GENERAL MOTORS CORP.

2. Install the SDM horizontally to the vehicle.
3. Point the arrow on the SDM towards the front of the vehicle.

NOTE: Refer to Fastener Notice in Cautions and Notices.

4. Install the nuts that retain the SDM to the floor panel.

Tighten: Tighten the nuts to 12 N.m (106 lb in).

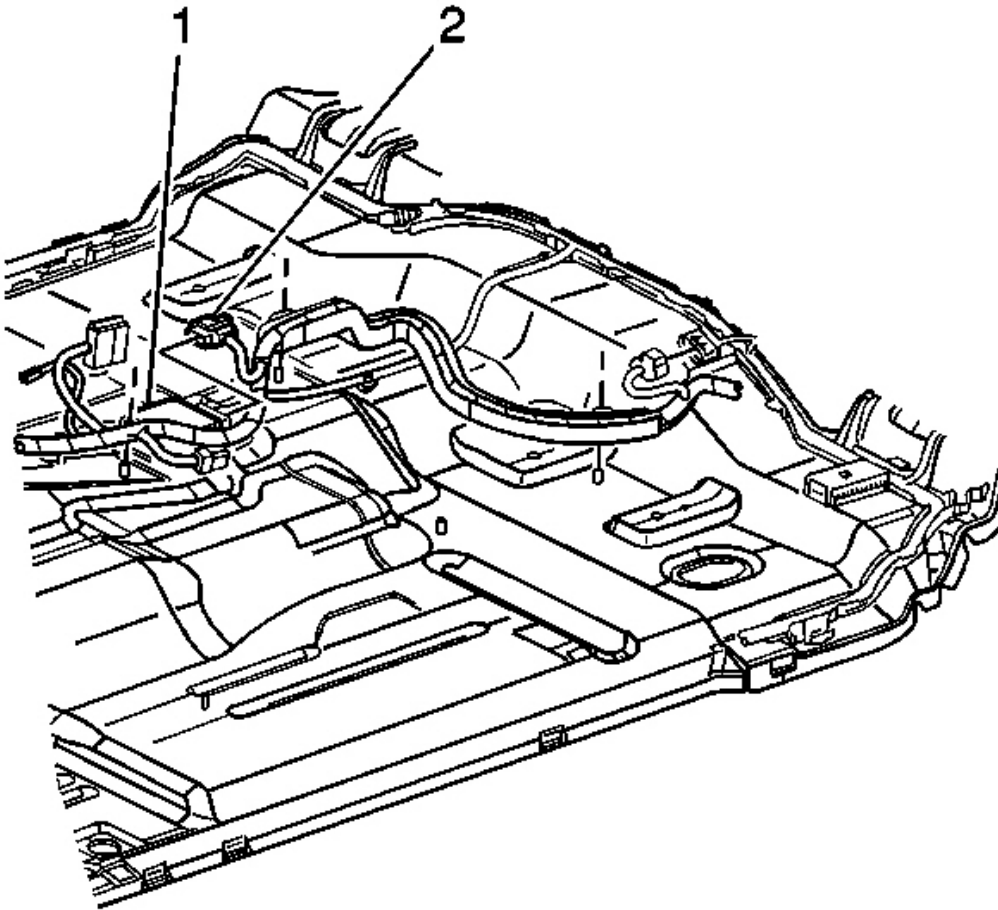


Fig. 83: Disconnecting/Reconnecting Electrical Connectors At SDM
Courtesy of GENERAL MOTORS CORP.

5. Connect the electrical connectors (2) to the SDM (1).
6. Return the carpet to the fully installed position.
7. Install the console mounting bracket to the floor panel. Refer to **Bracket Replacement - Console Floor** in Instrument Panel, Gages, and Console.
8. Install the floor console. Refer to **Console Replacement** in Instrument Panel, Gages and Console.

IMPORTANT: The AIR BAG indicator may remain ON after the SDM has

been replaced. DTC B1001 may set requiring the SDM part number to be set in multiple modules. If the indicator remains ON after enabling the SIR system, perform the diagnostic system check and follow the steps thoroughly to ensure that the SDM is set up properly.

9. Enable the SIR system. Refer to **SIR Disabling and Enabling Zone 8**.

INFLATABLE RESTRAINT STEERING WHEEL MODULE REPLACEMENT

Removal Procedure

CAUTION: Refer to SIR Inflator Module Handling and Storage Caution in Cautions and Notices.

CAUTION: Refer to SIR Caution in Cautions and Notices.

1. Disable the inflatable restraint steering wheel module. Refer to **SIR Disabling and Enabling Zone 3**.

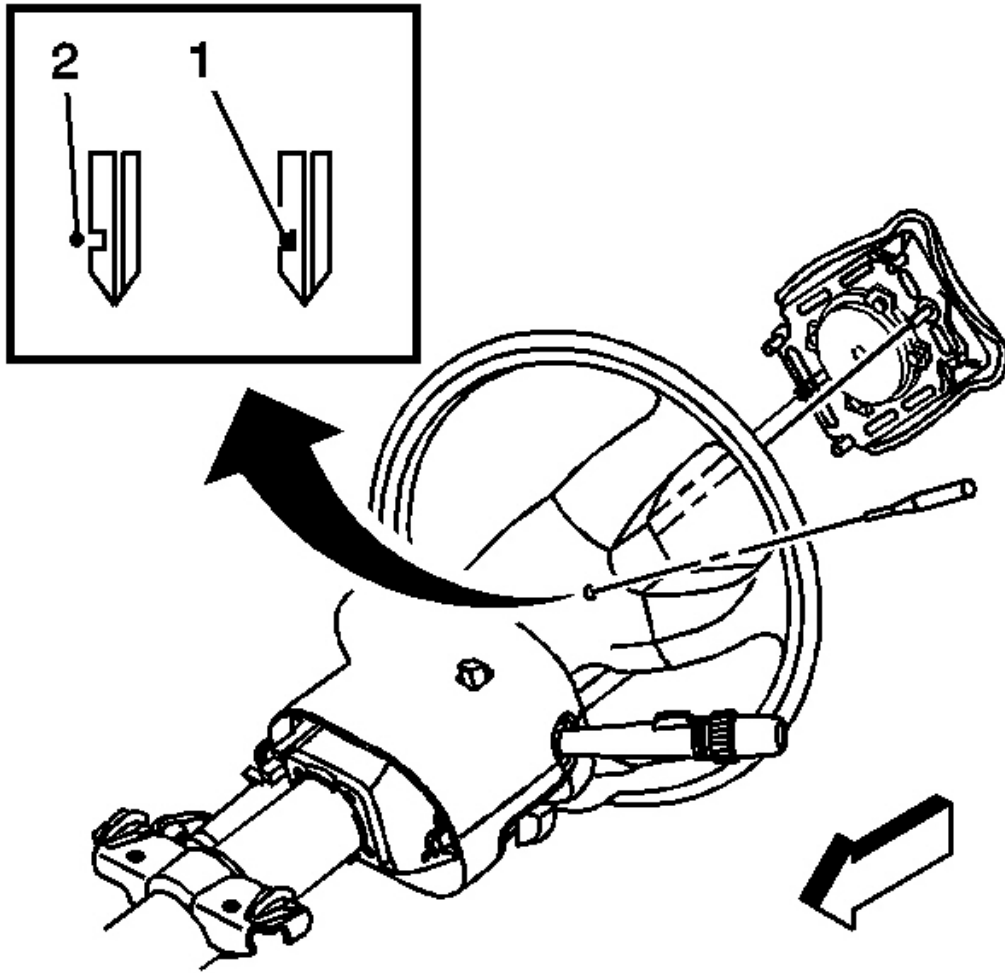


Fig. 84: Removing/Installing Leaf Spring Fasteners
Courtesy of GENERAL MOTORS CORP.

2. Using a blunt-ended tool, push the leaf spring fasteners (2) inward through the access holes. The access holes are located on both sides of the steering wheel shroud.

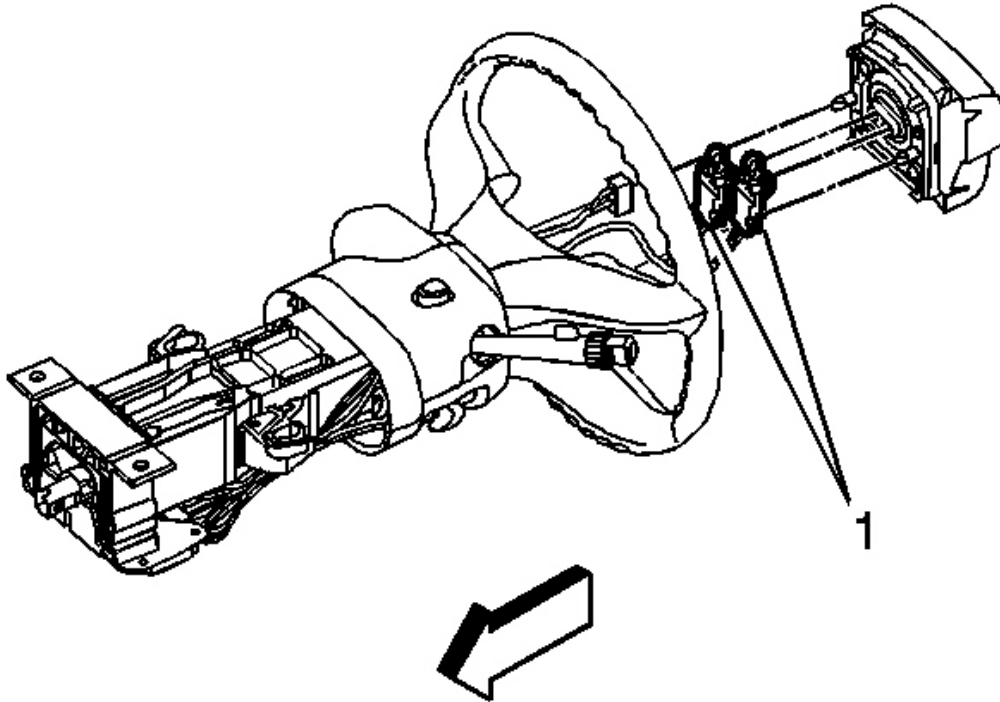


Fig. 85: Electrical Connectors & Inflatable Restraint Steering Wheel Module
Courtesy of GENERAL MOTORS CORP.

3. Lift and partially remove the inflatable restraint steering wheel module from the steering wheel in order to expose the electrical connectors (1).
4. Disconnect the connector-position assurance (CPA) retainers from the electrical connectors.
5. Disconnect the electrical connectors from the inflatable restraint steering wheel module.

IMPORTANT: Do not attempt to repair the inflatable restraint steering wheel module. The inflatable restraint steering wheel module is replaced only as an assembly.

6. Remove the inflatable restraint module from the steering wheel.
7. Fully deploy the module before disposal. If the module was replaced under warranty, fully deploy and dispose of the module after the required retention period. Refer to **Inflator Module Handling and Scrapping**.

Installation Procedure

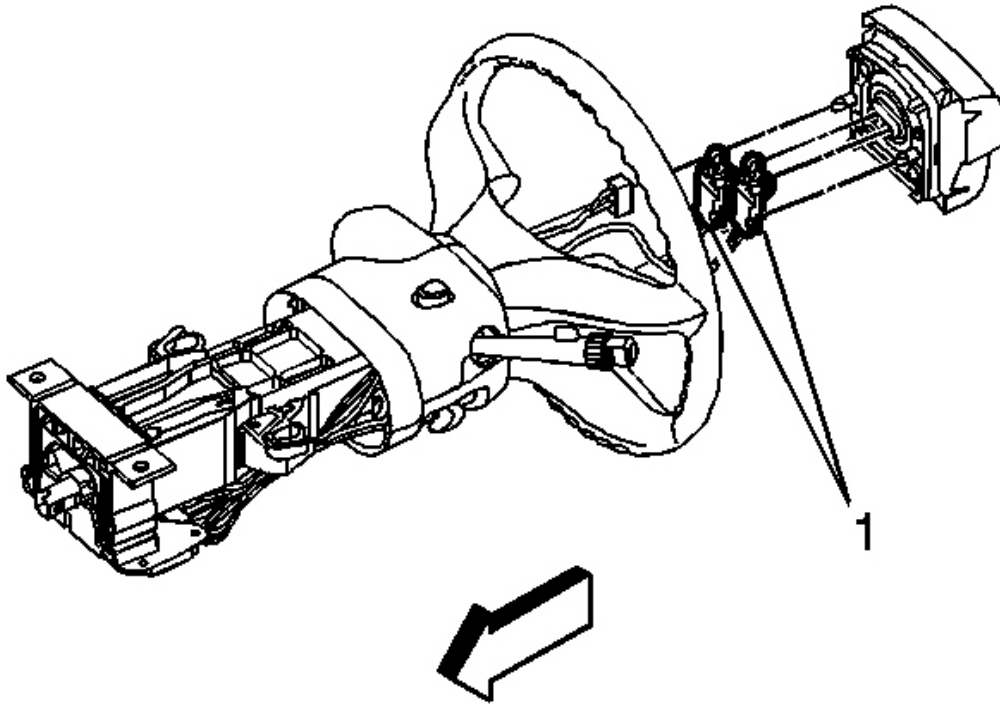


Fig. 86: Electrical Connectors & Inflatable Restraint Steering Wheel Module
Courtesy of GENERAL MOTORS CORP.

1. Position the inflatable restraint module to the steering wheel.
2. Connect the electrical connectors (1) to the inflatable restraint steering wheel module.
3. Connect the CPA retainers into the electrical connectors. Seat and lock the connections.

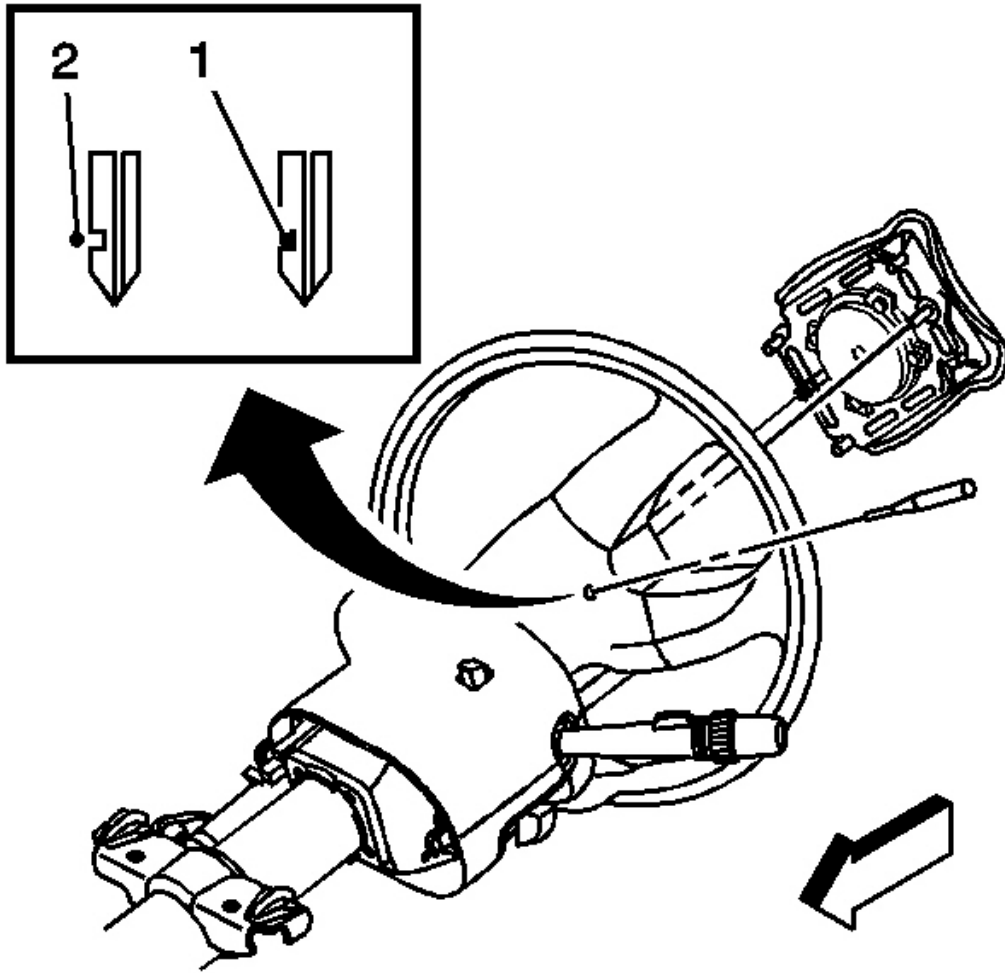


Fig. 87: Removing/Installing Leaf Spring Fasteners
Courtesy of GENERAL MOTORS CORP.

4. Position the alignment posts of the inflatable restraint module to the holes that are located on the steering wheel housing.
5. Push the inflatable restraint module into the steering wheel in order to engage and in order to latch the 2 leaf spring fasteners (1).
6. After installation, pull the sides of the inflatable restraint module in order to ensure that both leaf spring fasteners are engaged.
7. Enable the inflatable restraint steering wheel module. Refer to **SIR Disabling and**

Enabling Zone 3.

INFLATABLE RESTRAINT STEERING WHEEL MODULE COIL REPLACEMENT

Removal Procedure

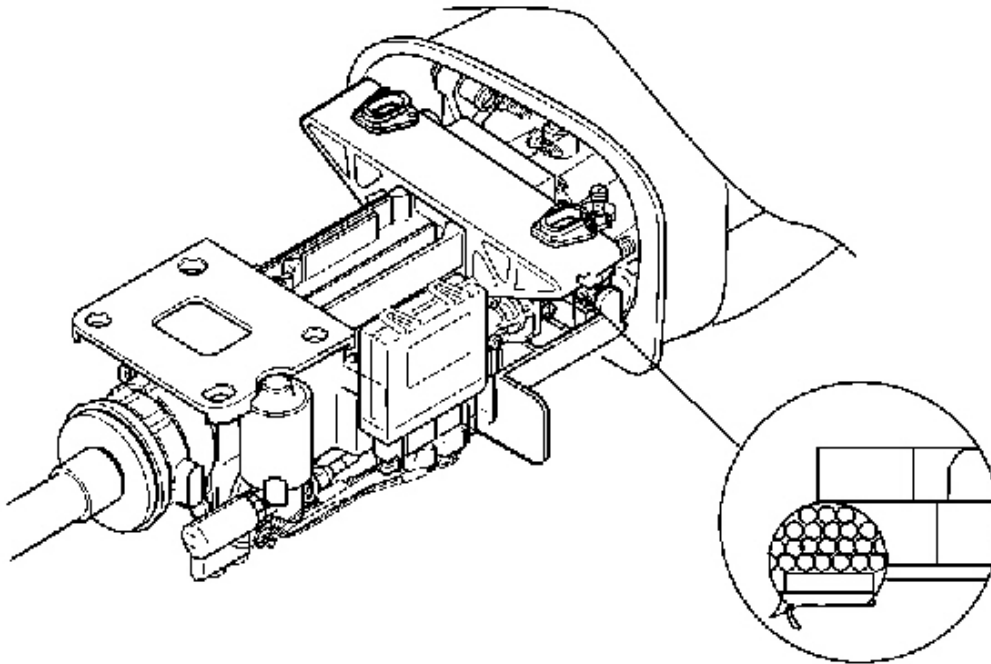


Fig. 88: Removing/Installing Plastic Mounted Steering Column Bracket
Courtesy of GENERAL MOTORS CORP.

CAUTION: Refer to SIR Caution in Cautions and Notices.

1. Disable the SIR system. Refer to **SIR Disabling and Enabling Zone 3.**
2. Tilt the steering column to the CENTER position.
3. Remove the steering wheel from the column. Refer to **Steering Wheel Replacement** in Steering Wheel and Column.
4. Remove the upper and lower trim covers. Refer to **Steering Column Trim Covers Replacement** in Steering Wheel and Column.

5. If necessary, inspect the steering column for accident damage. Refer to **Steering Column Accident Damage Inspection** in Steering Wheel and Column.

IMPORTANT: If the steering wheel has PAD control, the inflatable restraint steering wheel module coil and wire harness assembly must come off as one piece.

If the steering wheel does not have PAD control, the inflatable restraint steering wheel module coil will come off by itself.

6. Remove the wire harness strap.
7. If the steering wheel has PAD control, remove the wire harness assembly. Refer to **Steering Column Wire Harness Assembly Replacement** in Steering Wheel and Column.

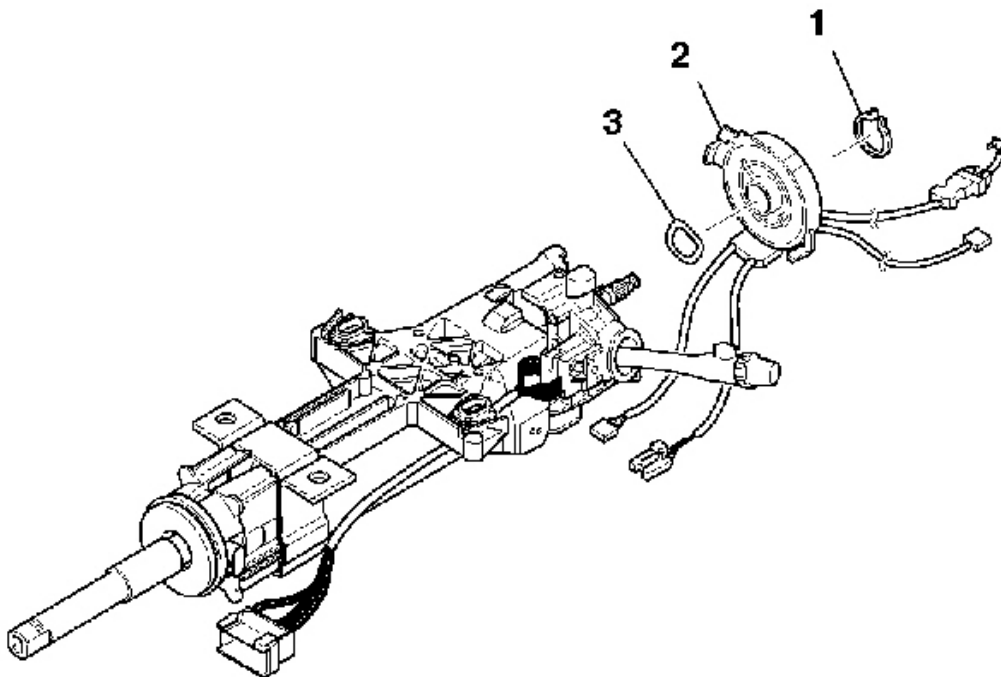


Fig. 89: Removing Steering Wheel Module Coil
Courtesy of GENERAL MOTORS CORP.

8. Remove the retaining ring (1) using snap ring pliers.
9. Remove the steering wheel module coil (2).
10. If necessary, remove the wave washer (3).

Installation Procedure

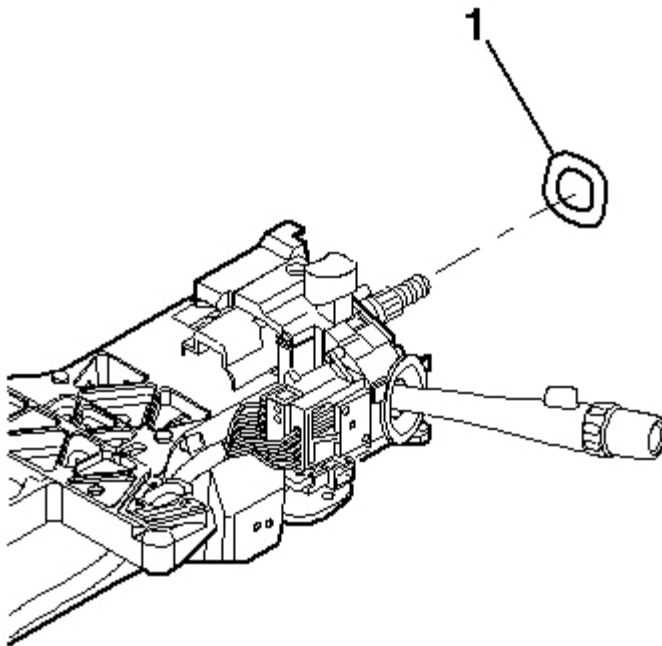


Fig. 90: Installing Wave Washer
Courtesy of GENERAL MOTORS CORP.

1. If necessary, install the wave washer (1).

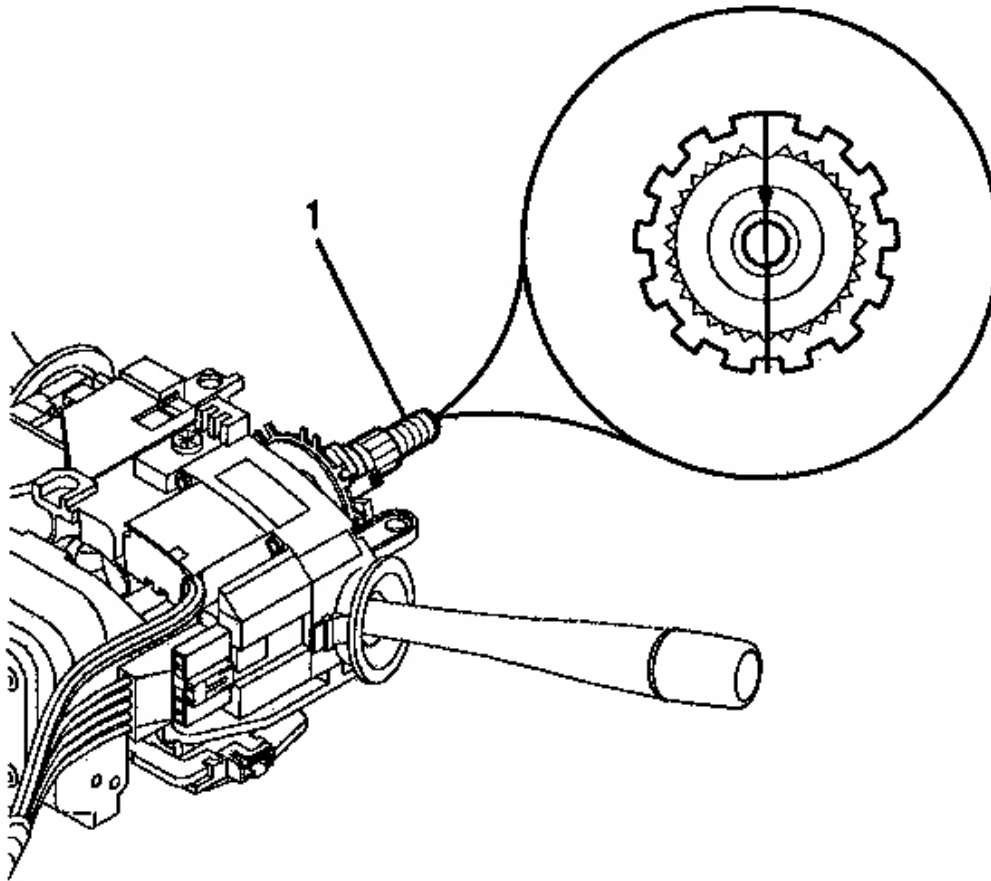


Fig. 91: View Of Block Tooth Of Steering Shaft Assembly In 12 O'clock Position
Courtesy of GENERAL MOTORS CORP.

2. Align the block tooth on the steering shaft assembly (1) to the 12 o'clock position.

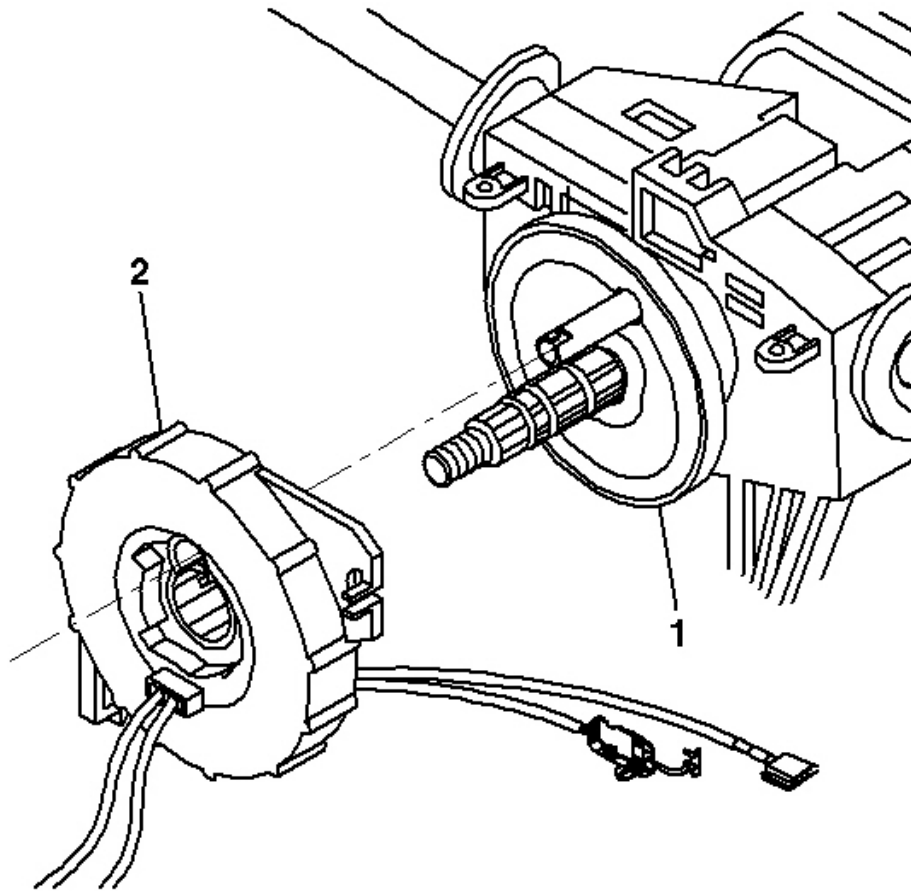


Fig. 92: Installing Inflatable Restraint Steering Wheel Module Coil
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: A new inflatable restraint steering wheel module coil is pre-centered. Do not remove the centering tab from the new inflatable restraint steering wheel module coil until installation is complete.

3. If installing the existing inflatable restraint steering wheel module coil, the coil must be centered first. Refer to **Inflatable Restraint Steering Wheel Module Coil Centering** in Steering Wheel and Column.

4. Align the inflatable restraint steering wheel module coil (2) with the horn tower sticking through the shaft lock or cam orientation plate (1).
5. Slide the steering wheel module coil (2) onto the steering shaft assembly.
6. Remove and discard the centering tab from the coil.

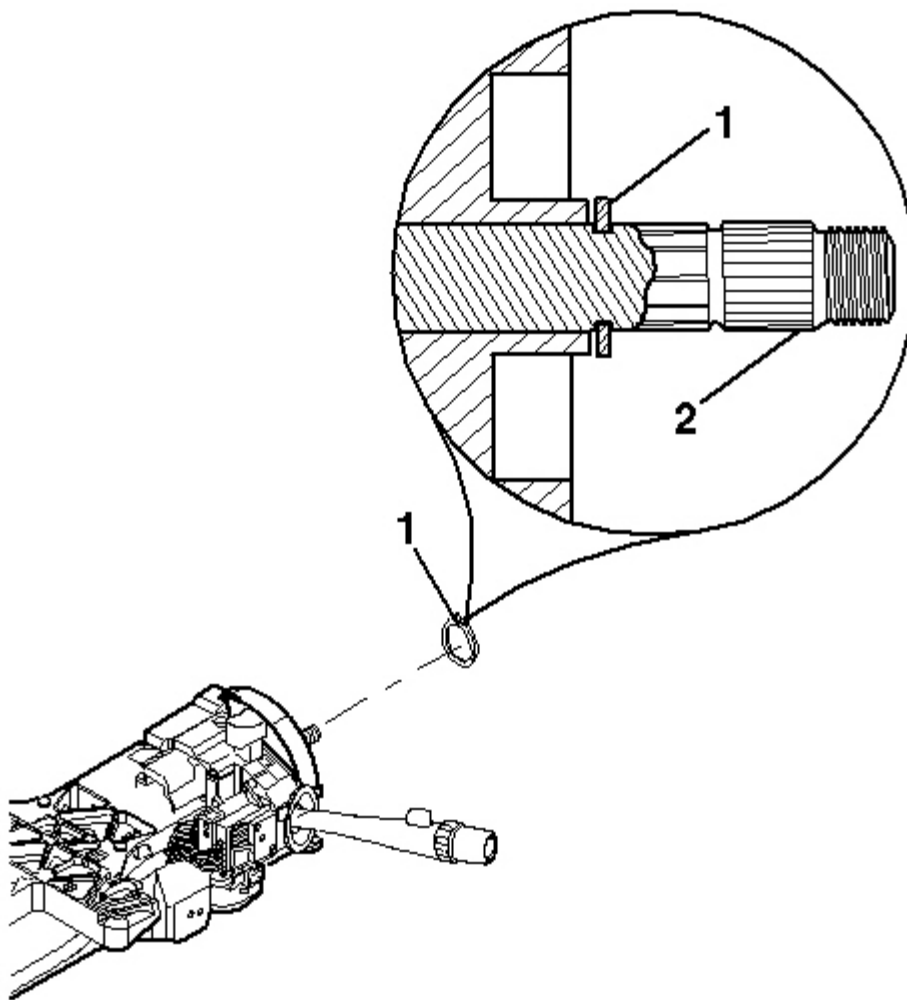


Fig. 93: Installing Retaining Ring
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: The retaining ring (1) must seat securely on the groove of the race and upper shaft assembly (2).

7. Install the retaining ring (1) using snap ring pliers.

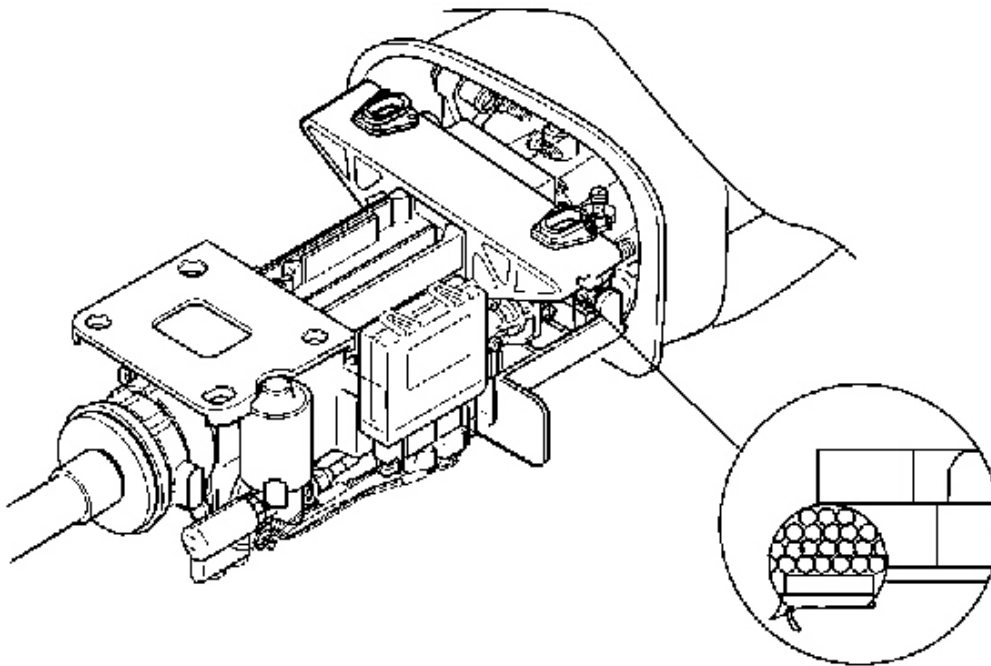


Fig. 94: Removing/Installing Plastic Mounted Steering Column Bracket
Courtesy of GENERAL MOTORS CORP.

CAUTION: Refer to SIR Inflator Module Coil Caution in Cautions and Notices.

8. If the steering wheel has PAD control, install the wire harness assembly. Refer to **Steering Column Wire Harness Assembly Replacement** in Steering Wheel and Column.
9. Install the wire harness strap.
10. Install the upper and lower trim covers. Refer to **Steering Column Trim Covers Replacement** in Steering Wheel and Column.
11. Install the steering wheel to the column. Refer to **Steering Wheel Replacement** in Steering

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Wheel and Column.

12. Enable the SIR system. Refer to **SIR Disabling and Enabling Zone 3** in Steering Wheel and Column.

INFLATABLE RESTRAINT INSTRUMENT PANEL MODULE REPLACEMENT

Removal Procedure

CAUTION: Refer to SIR Caution in Cautions and Notices.

CAUTION: Refer to SIR Inflator Module Handling and Storage Caution in Cautions and Notices.

1. Disable the SIR System. Refer to **SIR Disabling and Enabling Zone 5**.

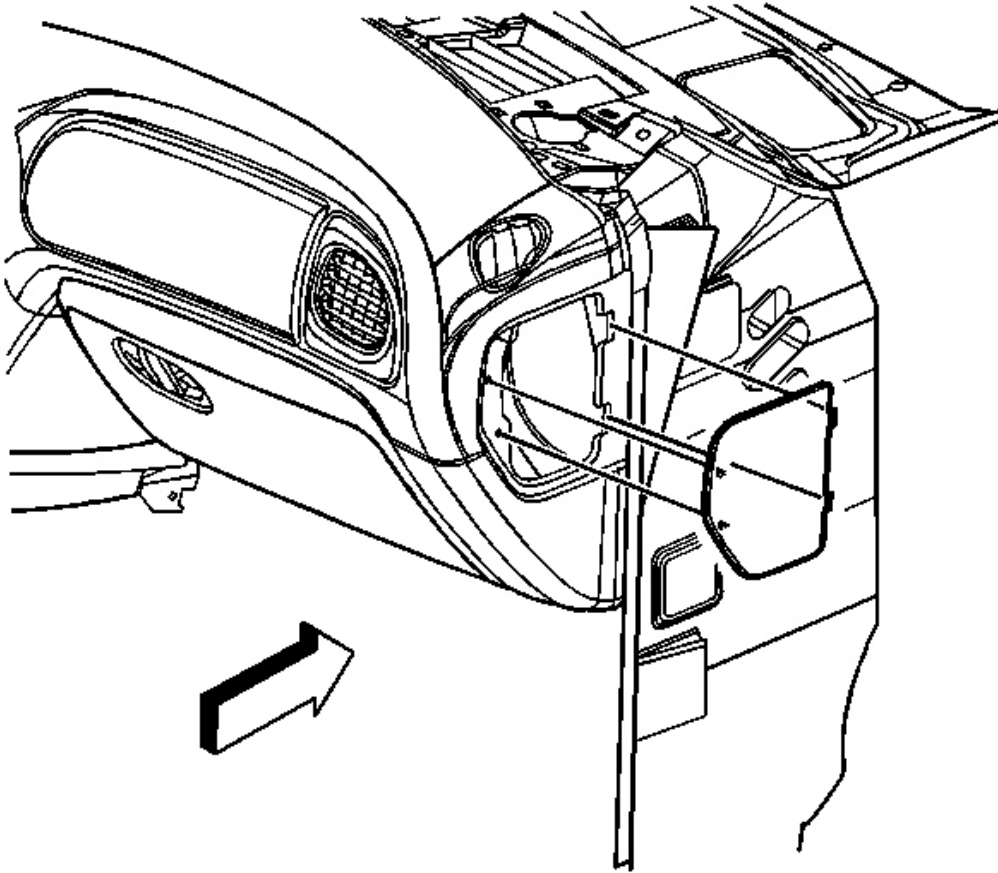


Fig. 95: Identifying Right I/P Access Cover
Courtesy of GENERAL MOTORS CORP.

2. Remove the passenger side instrument panel (I/P) access panel.

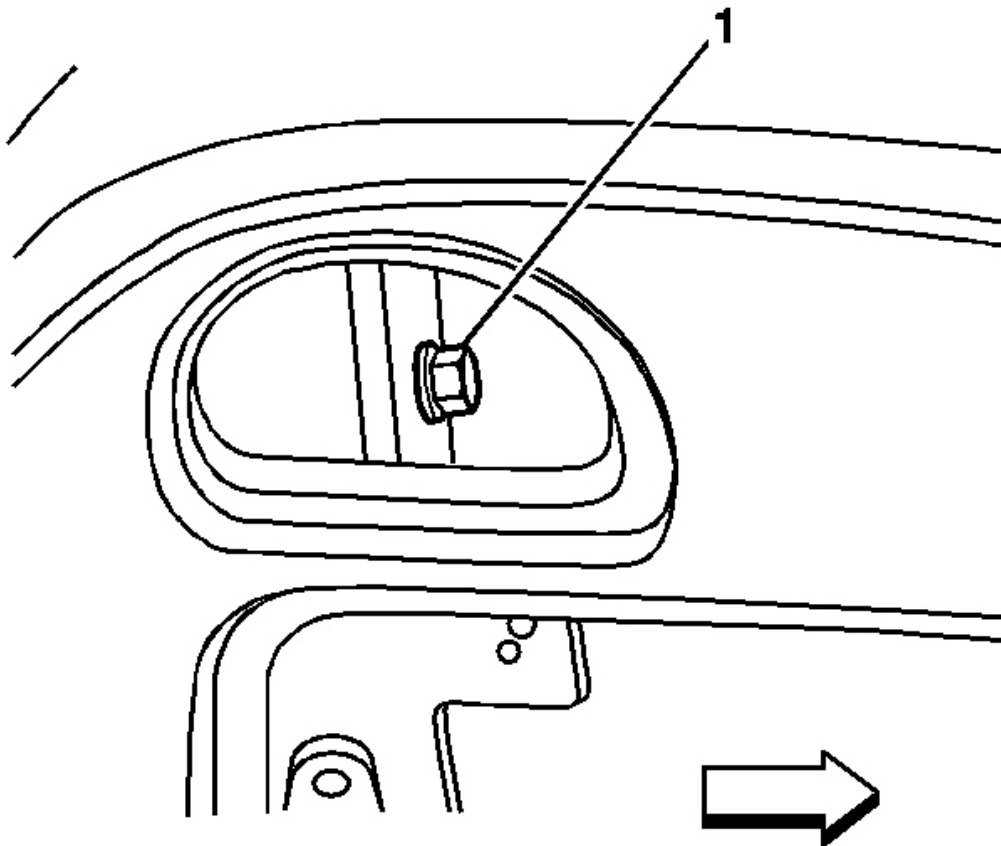


Fig. 96: Removing/Installing Passenger Air Duct Extension Screw
Courtesy of GENERAL MOTORS CORP.

3. Remove the passenger air duct extension screw (1).

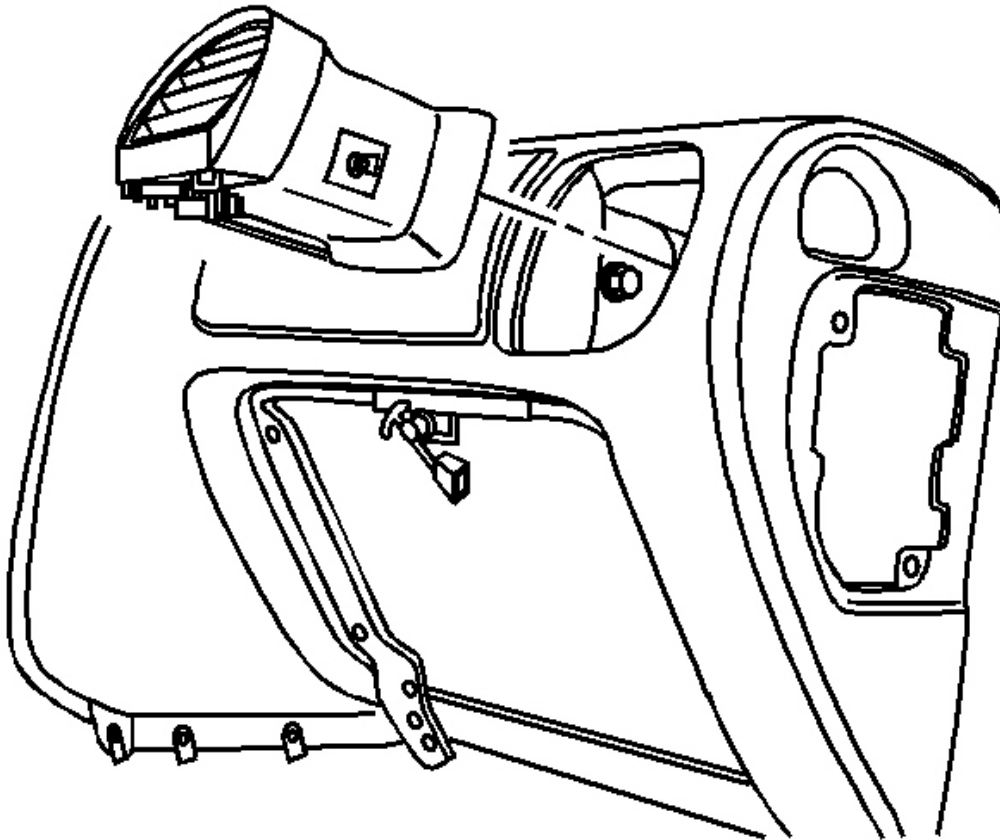


Fig. 97: Removing/Installing Air Duct Extension
Courtesy of GENERAL MOTORS CORP.

4. Remove the air duct extension from the front of the I/P.

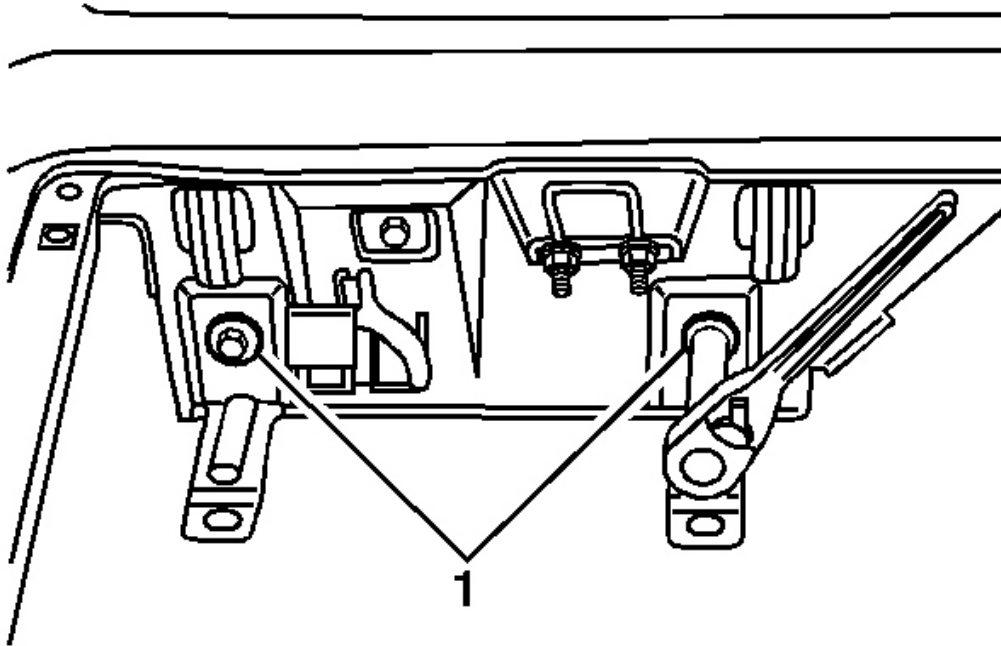


Fig. 98: Removing/Installing 2 Lower Passenger Supplemental Inflatable Restraint (PSIR) Inflator Module Retaining Bolts
Courtesy of GENERAL MOTORS CORP.

5. Open the I/P compartment door to a full down position.
6. Remove the 2 lower passenger supplemental inflatable restraint (PSIR) inflator module retaining bolts (1).

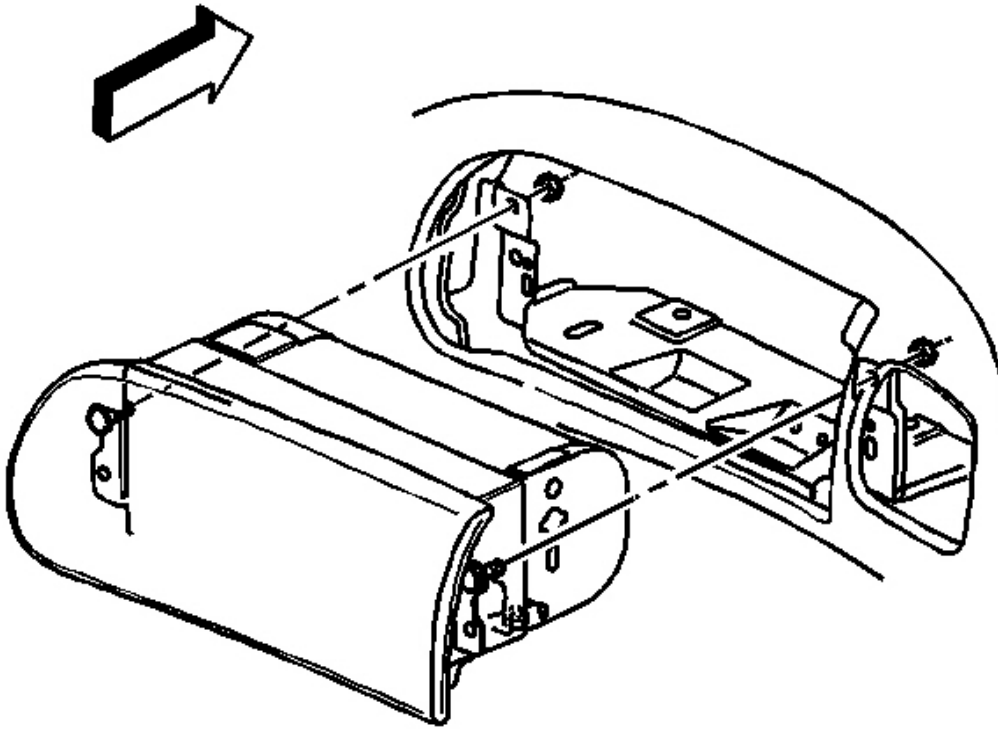


Fig. 99: Removing/Installing Side Retaining Nuts At PSIR Inflator Module
Courtesy of GENERAL MOTORS CORP.

7. Remove the 2 side retaining nuts from the PSIR inflator module.

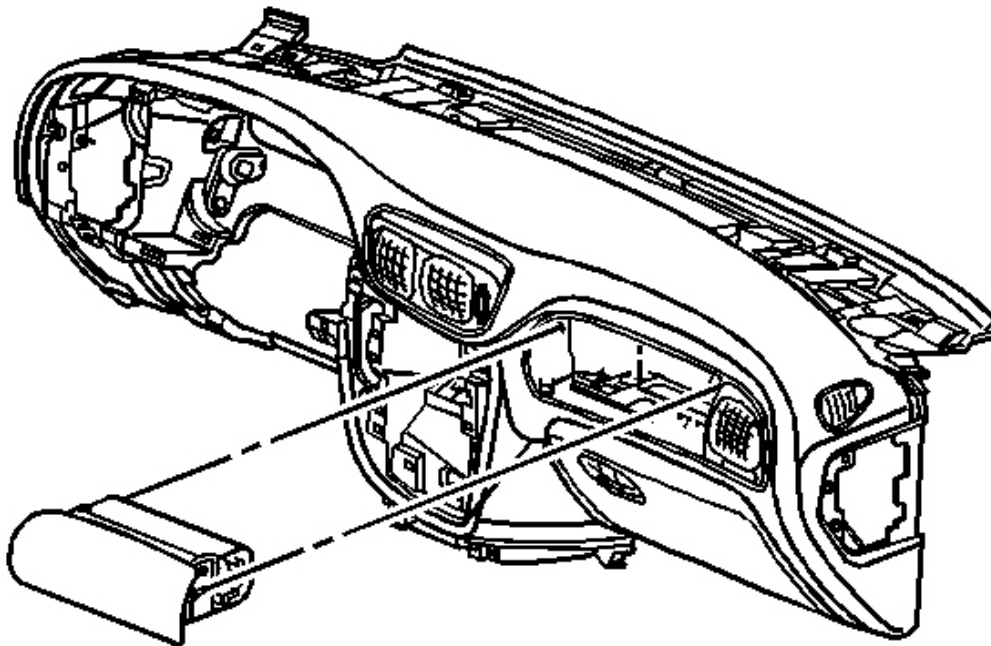


Fig. 100: Removing/Installing PSIR Inflator Module
Courtesy of GENERAL MOTORS CORP.

8. Remove the PSIR inflator module from the front of the I/P carrier.
9. Fully deploy the module before disposal. If the module was replaced under warranty, fully deploy and dispose of the module after the required retention period. Refer to **Inflator Module Handling and Scrapping**.

Installation Procedure

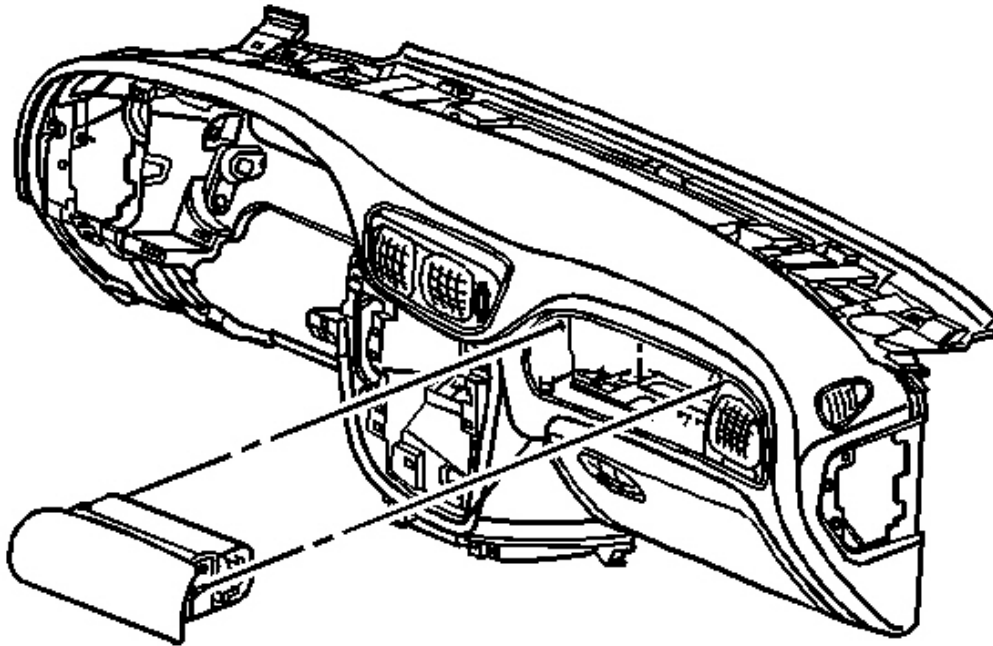


Fig. 101: Removing/Installing PSIR Inflator Module
Courtesy of GENERAL MOTORS CORP.

1. Install the PSIR inflator module to the front of the I/P carrier.

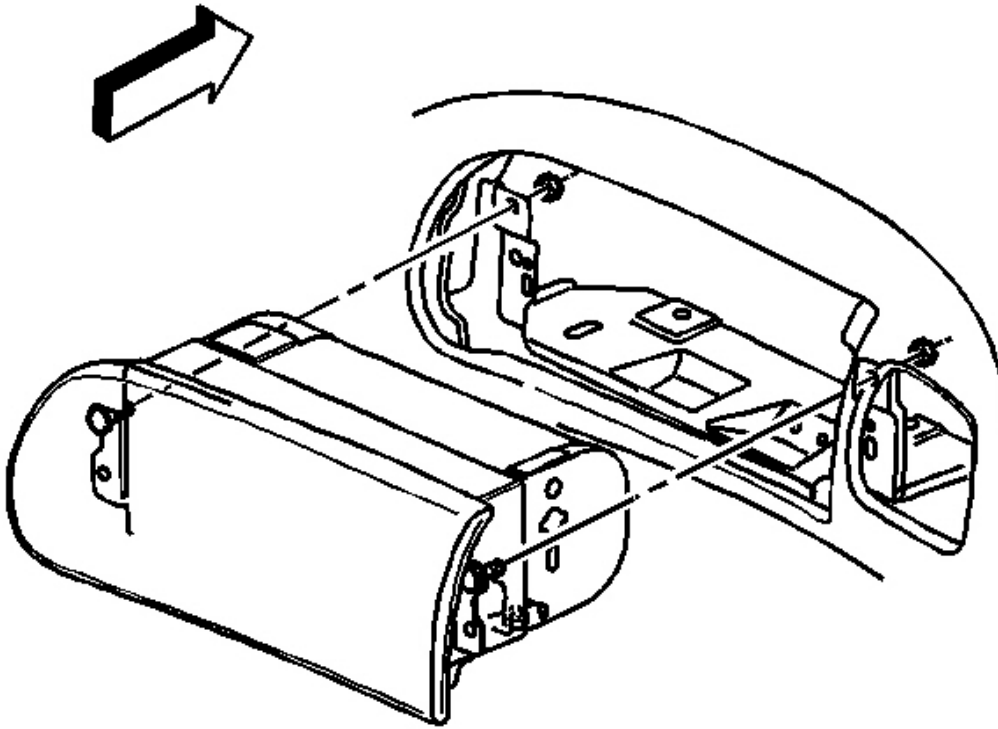


Fig. 102: Removing/Installing Side Retaining Nuts At PSIR Inflator Module
Courtesy of GENERAL MOTORS CORP.

NOTE: Refer to Fastener Notice in Cautions and Notices.

2. Install the 2 side retaining nuts to the PSIR inflator module.

Tighten: Tighten the nuts until fully driven, seated and not stripped.

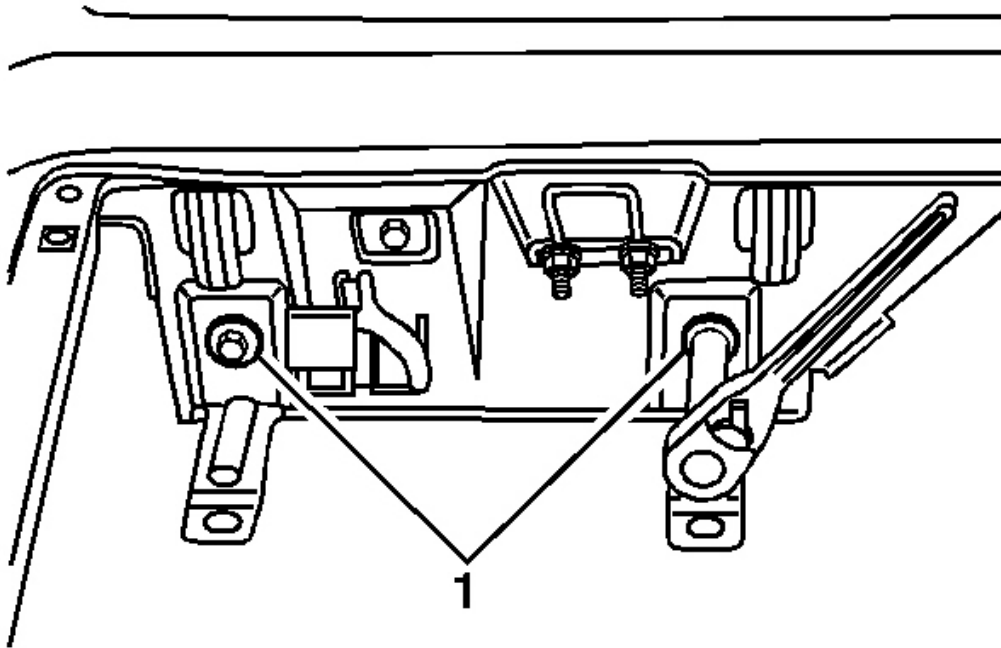


Fig. 103: Removing/Installing 2 Lower Passenger Supplemental Inflatable Restraint (PSIR) Inflator Module Retaining Bolts
Courtesy of GENERAL MOTORS CORP.

3. Install the 2 retaining bolts (1) to the PSIR inflator module.

Tighten: Tighten the bolts until fully driven, seated and not stripped.

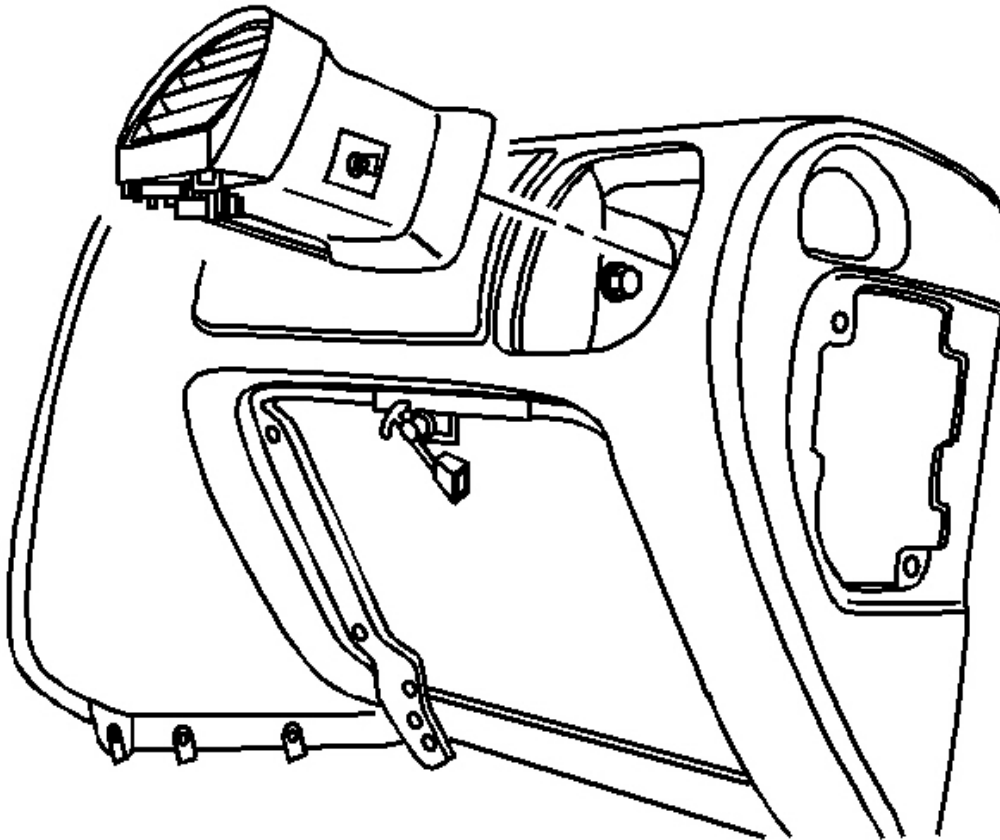


Fig. 104: Removing/Installing Air Duct Extension
Courtesy of GENERAL MOTORS CORP.

4. Install the passenger air duct extension through the front of the I/P.

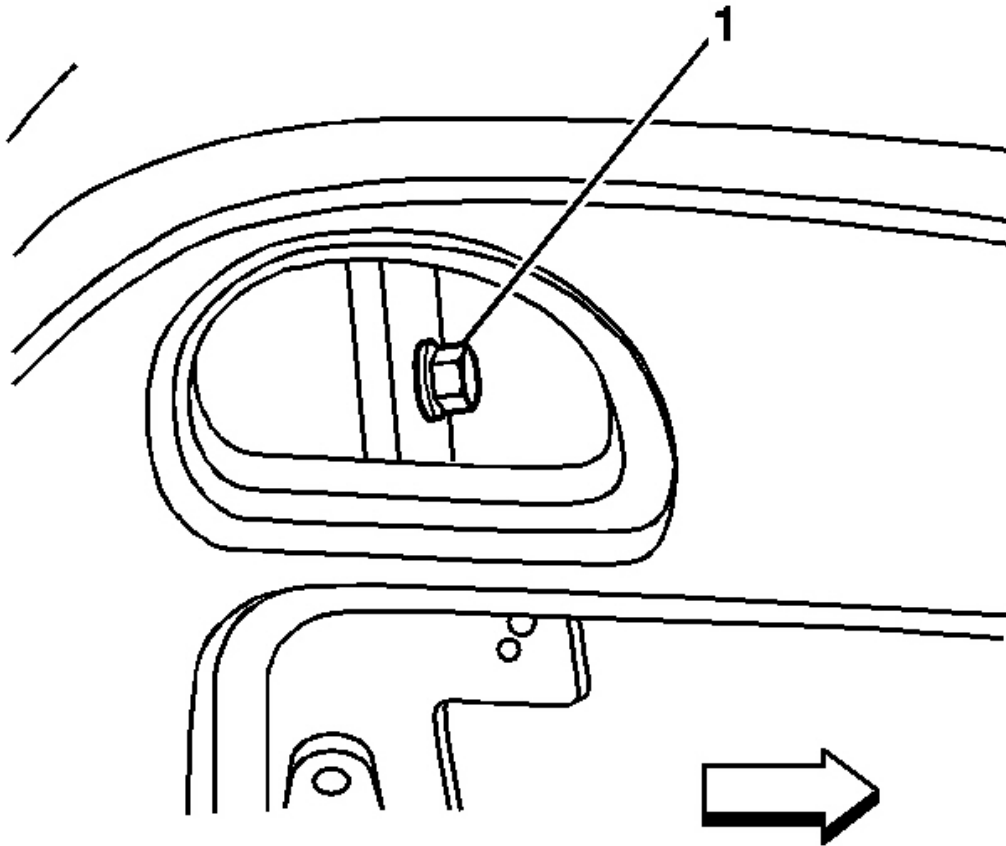


Fig. 105: Removing/Installing Passenger Air Duct Extension Screw
Courtesy of GENERAL MOTORS CORP.

5. Install the passenger air duct extension screw (1).

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

6. Close the I/P compartment door.

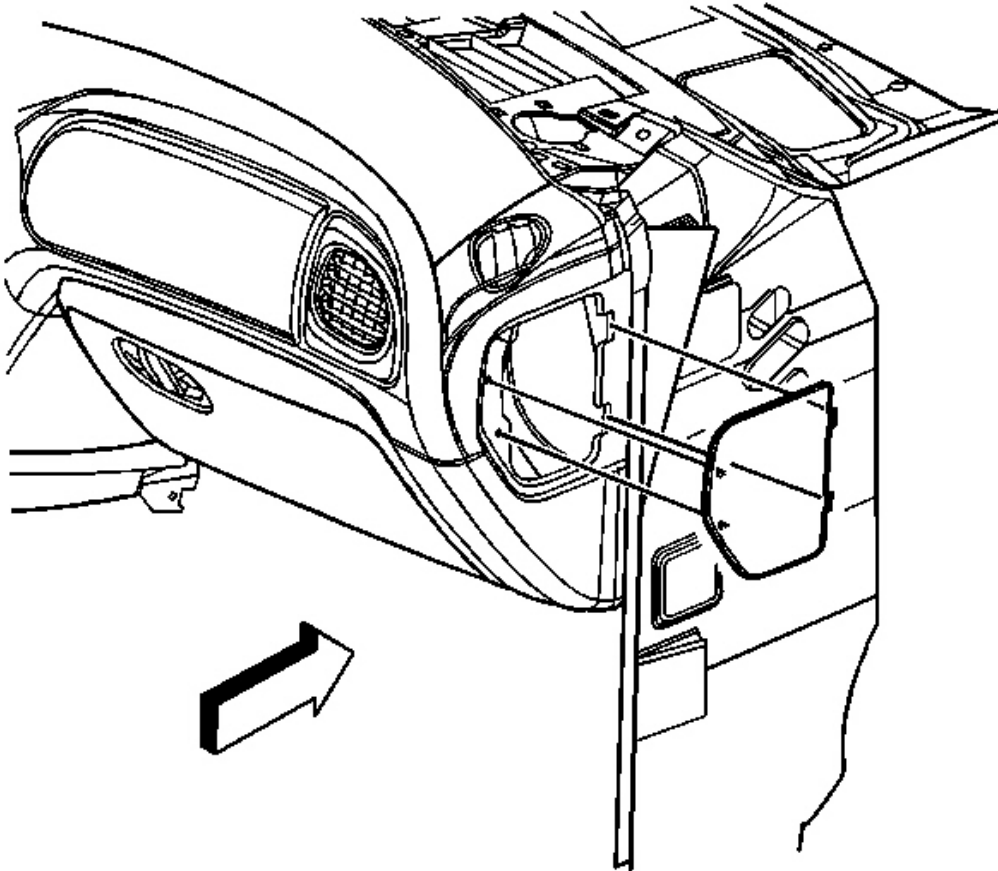


Fig. 106: Identifying Right I/P Access Cover
Courtesy of GENERAL MOTORS CORP.

7. Install the passenger side I/P access panel.
8. Enable the SIR System. Refer to **SIR Disabling and Enabling Zone 5**.

INFLATABLE RESTRAINT SEAT POSITION SENSOR REPLACEMENT

Removal Procedure

1. Remove the seat from the vehicle. Refer to **Seat Replacement - Front Bucket** .

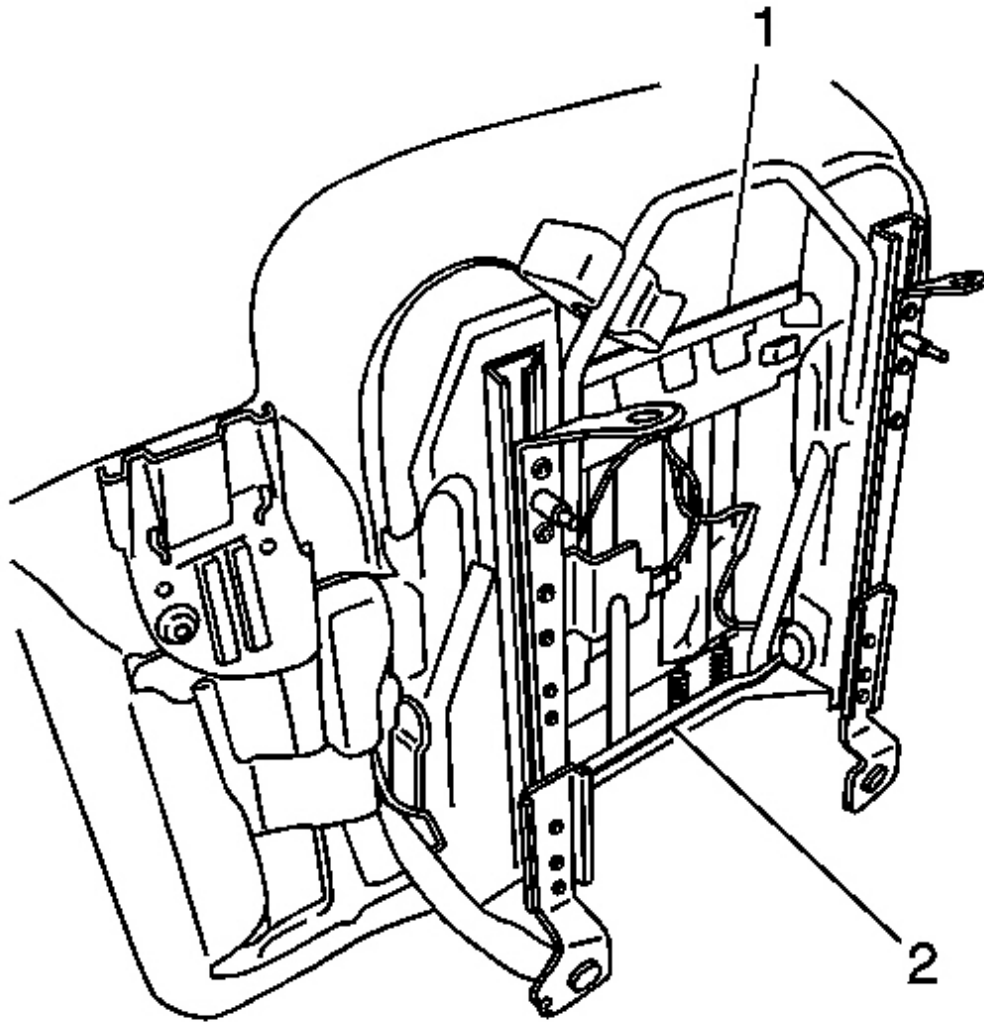


Fig. 107: View Of J-Strips

Courtesy of GENERAL MOTORS CORP.

2. Unclip the front, rear, and side J-strips (1, 2) on the underside of the seat.
3. Remove the lumbar knob by pulling the knob straight away from the seat, if equipped.
4. Remove the recliner handle. Refer to **Seat Back Recliner Handle Replacement - Front** .

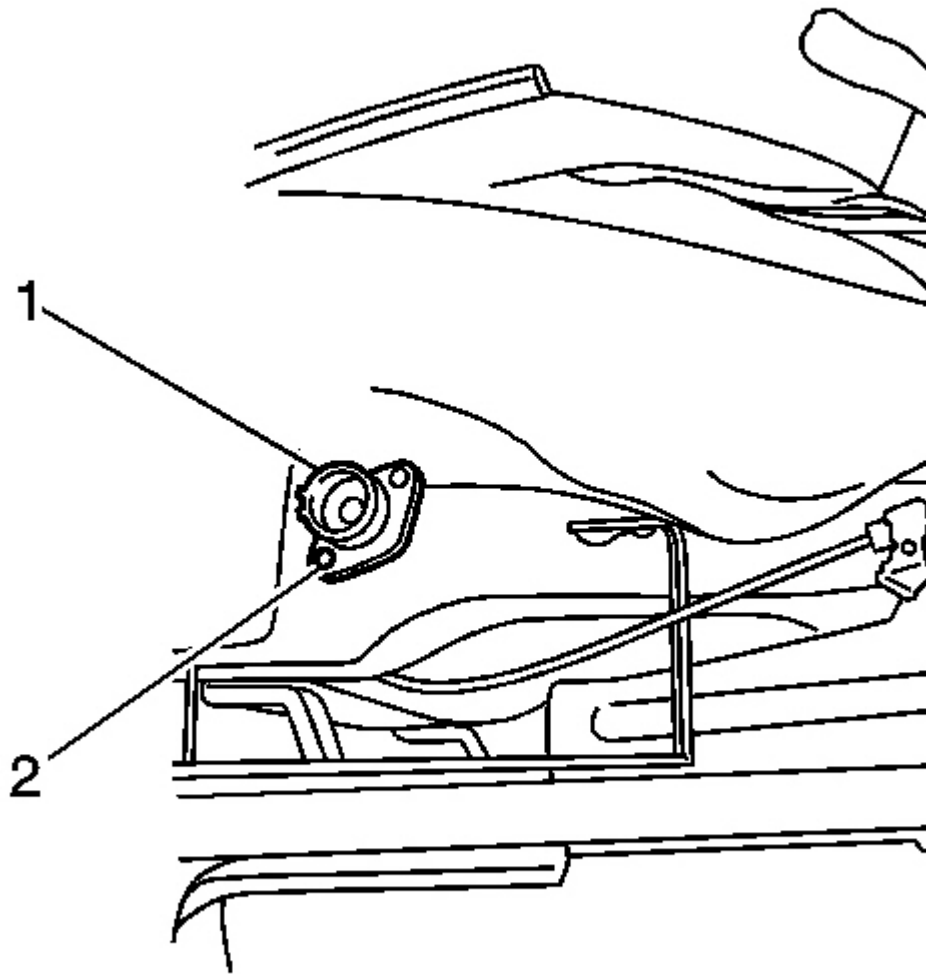


Fig. 108: View Of Lumbar Adjustment Mechanism & Retaining Screws
Courtesy of GENERAL MOTORS CORP.

5. Remove the screws (2) that retain the lumbar adjustment mechanism (1) to the seat adjuster.
6. Remove the lumbar cable from the lumbar adjustment mechanism.

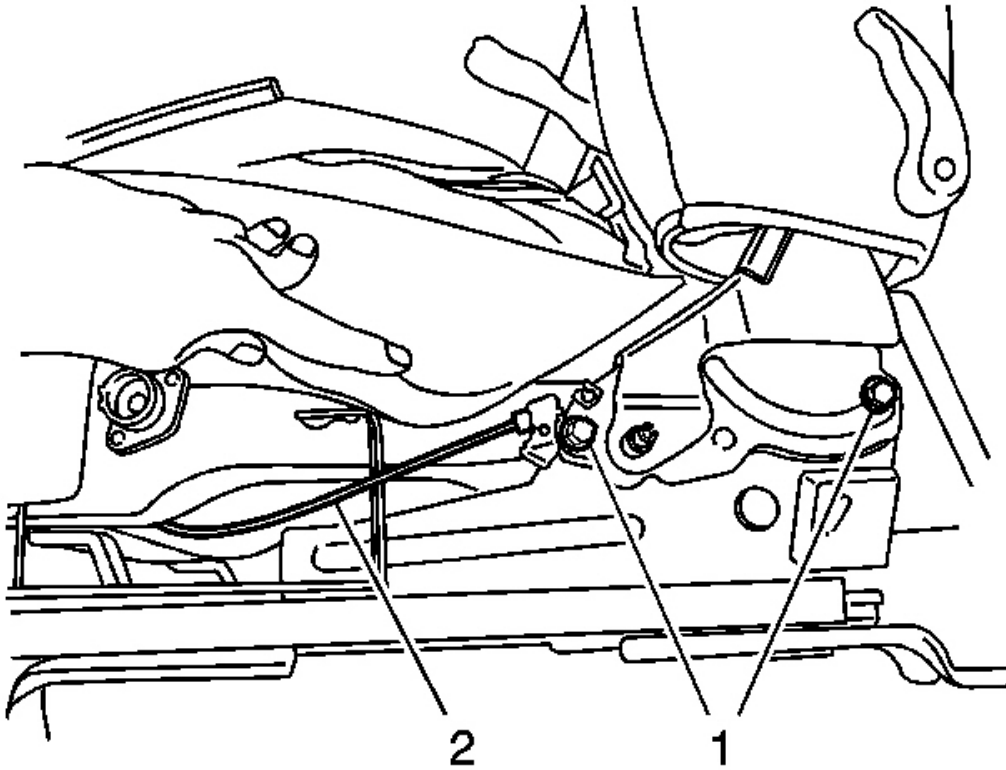


Fig. 109: View Of Seat Recliner Bolts
Courtesy of GENERAL MOTORS CORP.

7. Remove the 2 bolts (1) securing the seat recliner to the seat adjuster.
8. Remove the seat back assembly from the seat cushion assembly.

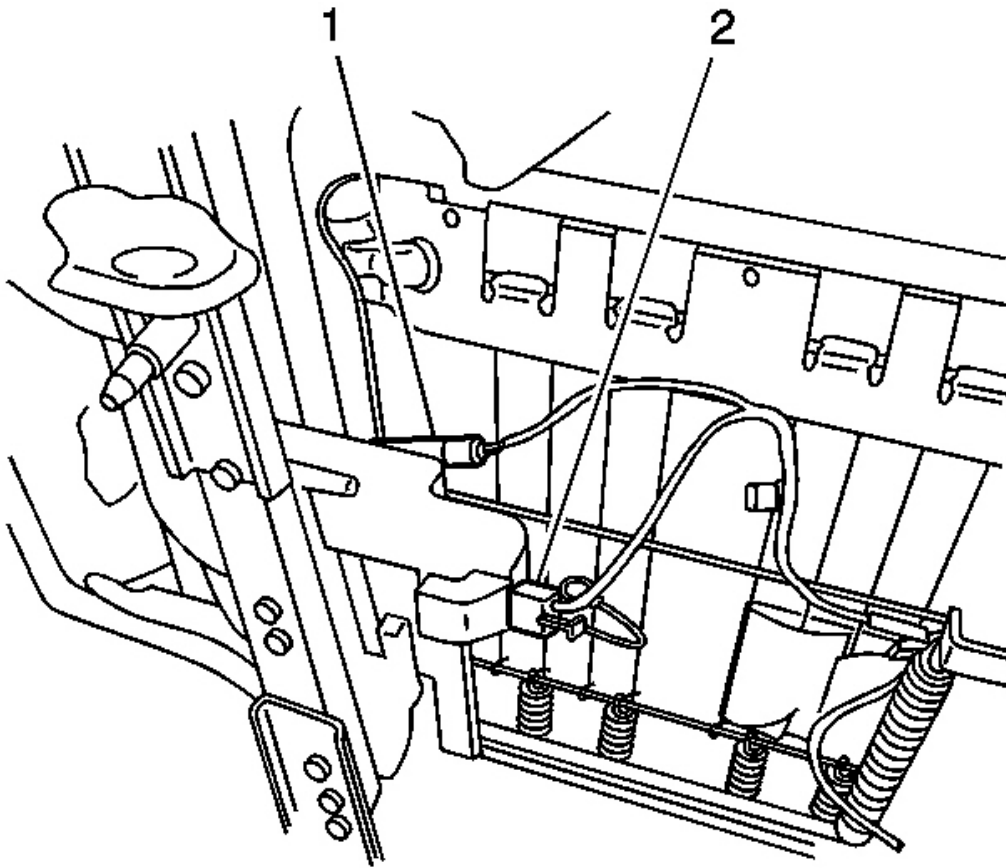


Fig. 110: View Of Seat Buckle Electrical Connector & Wiring Harness
Courtesy of GENERAL MOTORS CORP.

9. Disconnect the seat belt buckle electrical connector (1).
10. Disconnect the wiring harness (2) from the seat position switch.

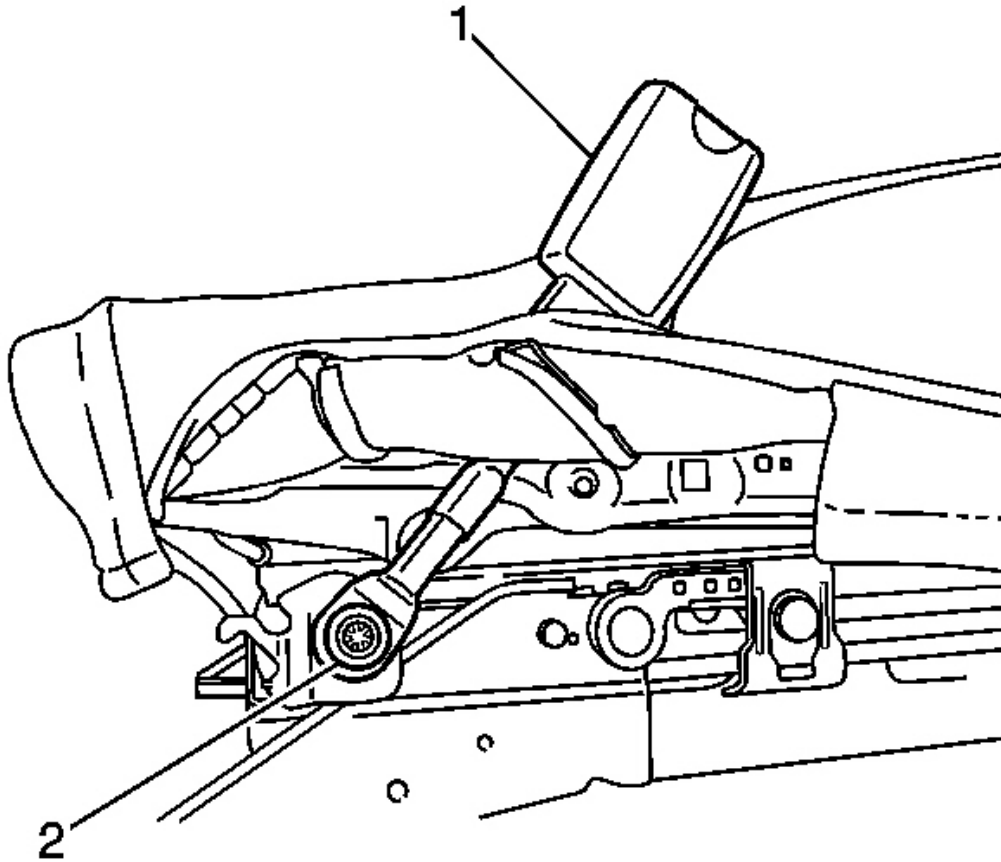


Fig. 111: View Of Seat Belt Buckle Assembly
Courtesy of GENERAL MOTORS CORP.

11. Remove the bolt (2) securing the seat belt buckle assembly (1) to the seat adjuster.
12. Remove the seat cushion cover and foam.
13. Remove the assist spring.

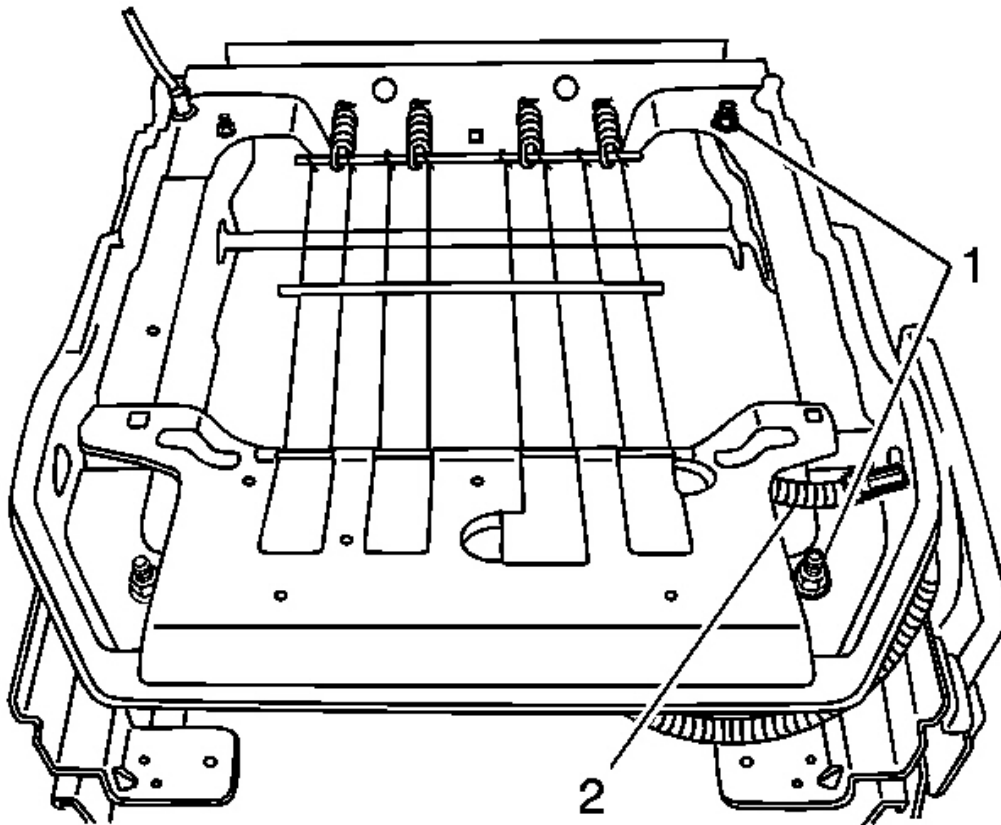


Fig. 112: View Of Wire Harness & Seat Cushion Frame Nuts
Courtesy of GENERAL MOTORS CORP.

14. Remove the 4 nuts (1) securing the seat cushion frame to the seat adjusters.
15. Remove the seat adjusters.

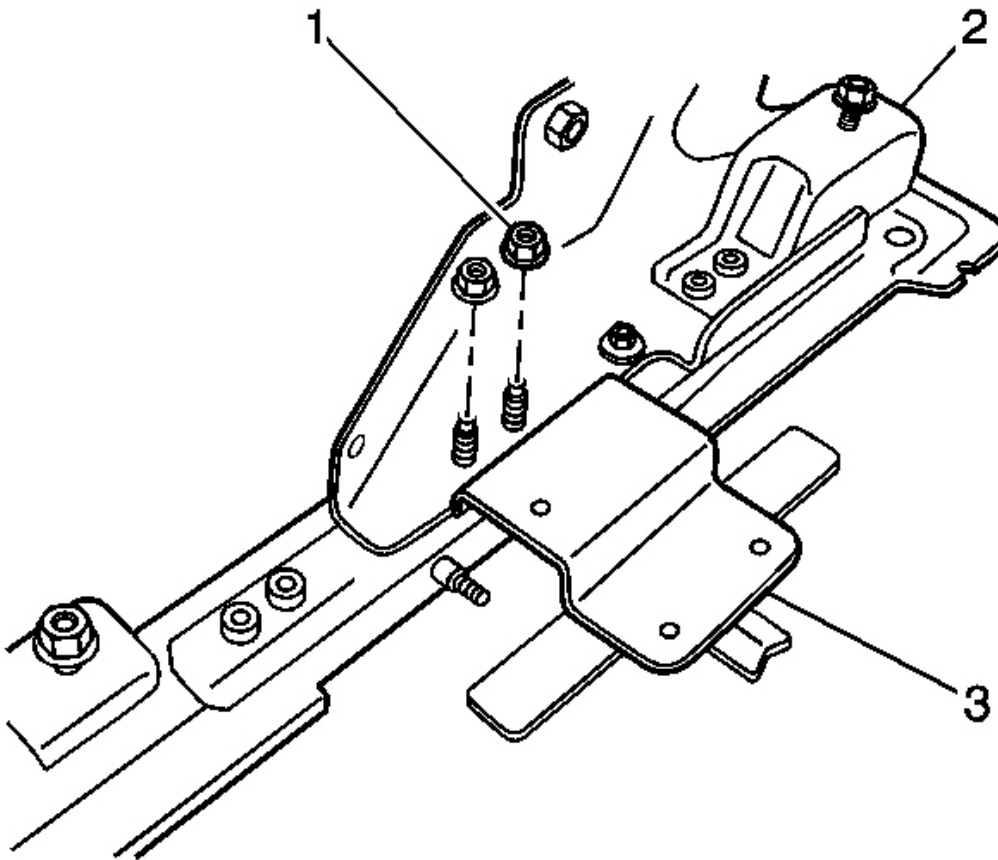


Fig. 113: View Of Seat Position Switch
Courtesy of GENERAL MOTORS CORP.

16. Remove the 2 nuts (1) securing the seat position switch (3) to the seat adjuster (2).
17. Drill out the rivets securing the sensor to the bracket.

Installation Procedure

1. Install new rivets securing the sensor to the bracket.

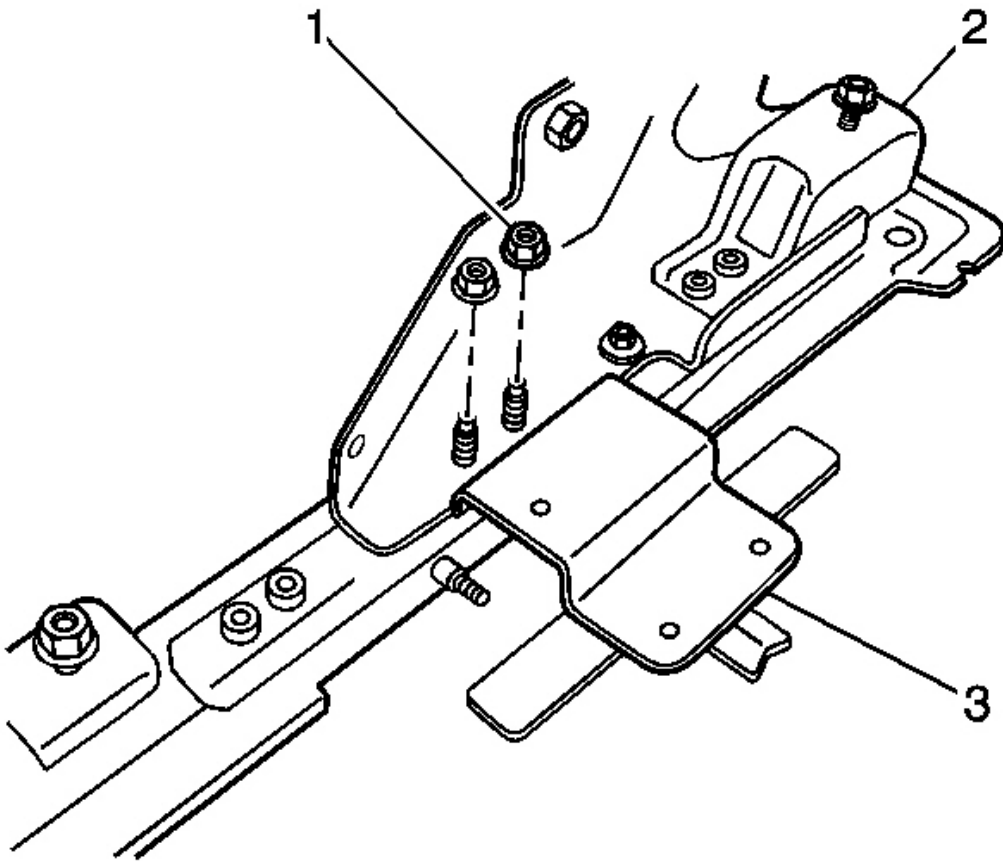


Fig. 114: View Of Seat Position Switch
Courtesy of GENERAL MOTORS CORP.

NOTE: Refer to Fastener Notice in Cautions and Notices.

2. Install the seat position switch (3) to the seat adjuster (2) with 2 nuts (1).

Tighten: Tighten the seat position switch nuts to 24 N.m (18 lb ft).

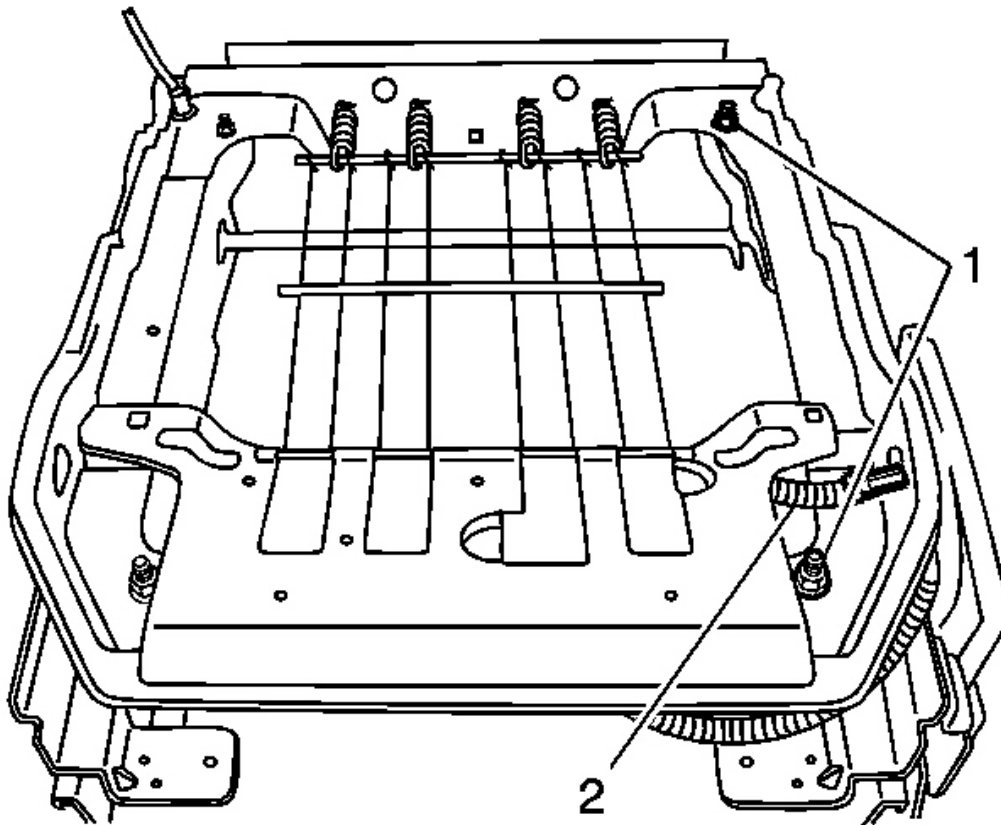


Fig. 115: View Of Wire Harness & Seat Cushion Frame Nuts
Courtesy of GENERAL MOTORS CORP.

3. Install the seat adjusters to the seat cushion frame with 4 nuts (1).

Tighten: Tighten the seat cushion frame mounting nuts to 24 N.m (18 lb ft).

4. Install the assist spring.

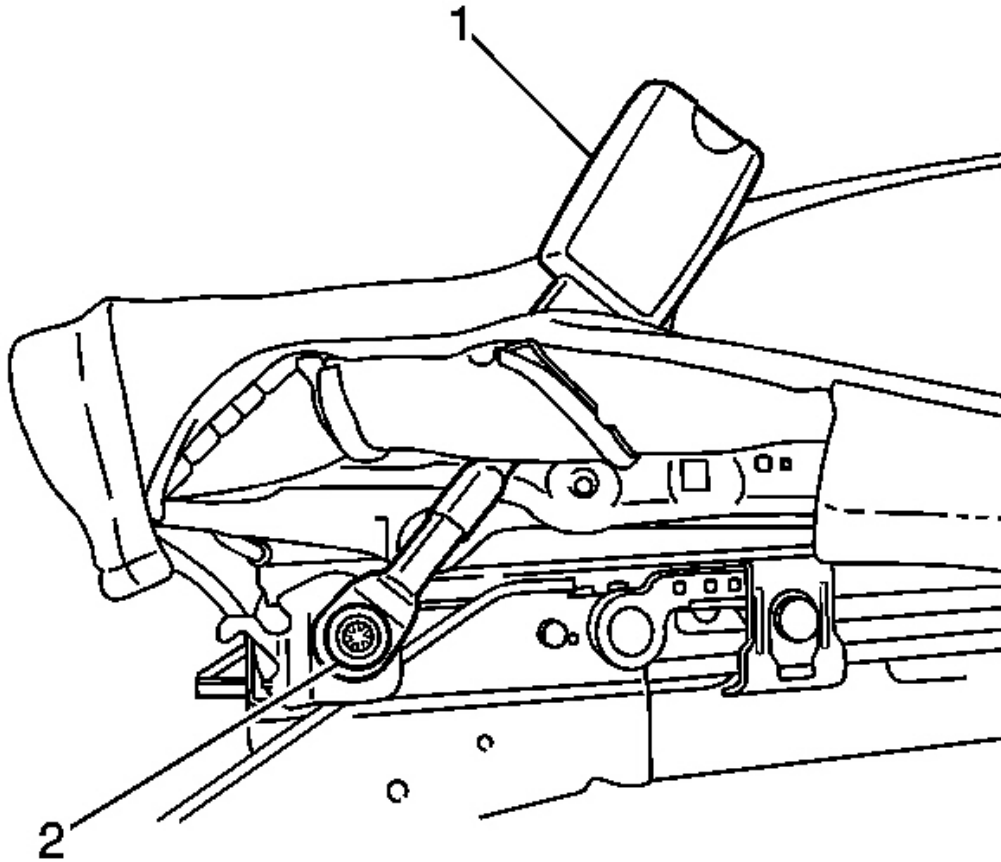


Fig. 116: View Of Seat Belt Buckle Assembly
Courtesy of GENERAL MOTORS CORP.

5. Install the seat cushion foam pad and cover to the frame.
6. Install the seat belt buckle assembly (1) through the seat cushion pad.
7. Install the seat belt buckle assembly (1) to the seat adjuster with the bolt (2).

Tighten: Tighten the seat belt buckle bolt to 55 N.m (41 lb ft).

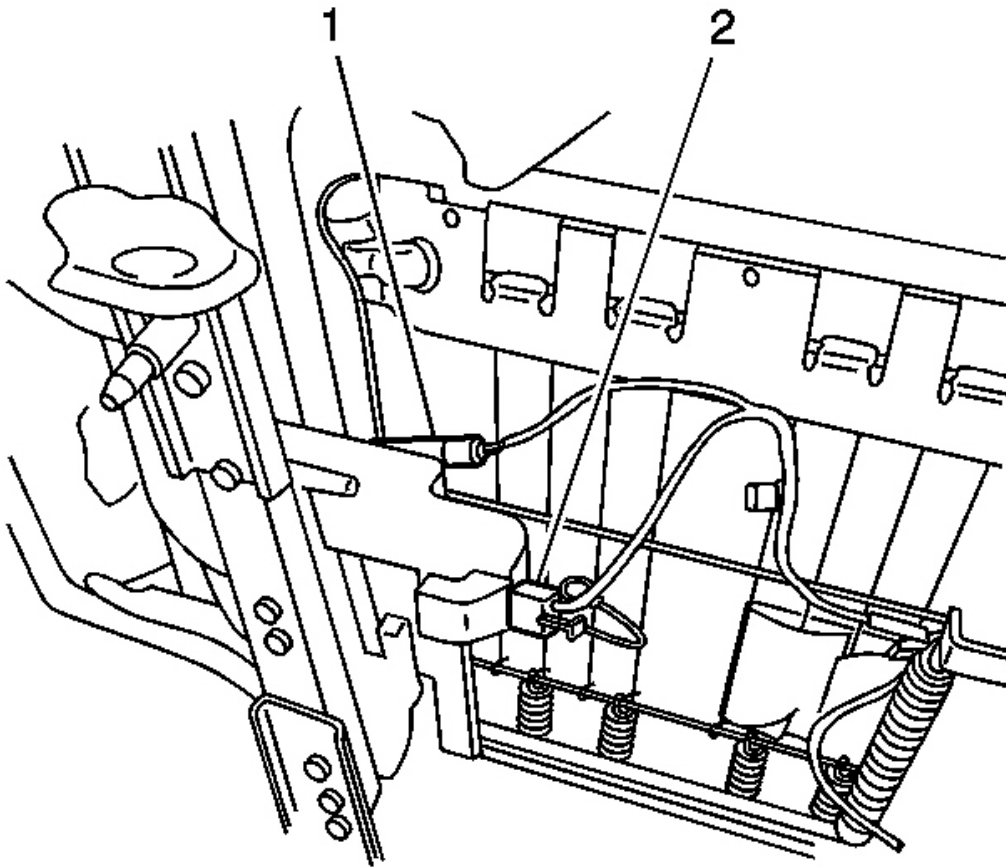


Fig. 117: View Of Seat Buckle Electrical Connector & Wiring Harness
Courtesy of GENERAL MOTORS CORP.

8. Connect the seat belt buckle electrical connector (1).
9. Connect the wiring harness (2) to the seat position switch.
10. Position the seat back assembly on the seat cushion assembly.

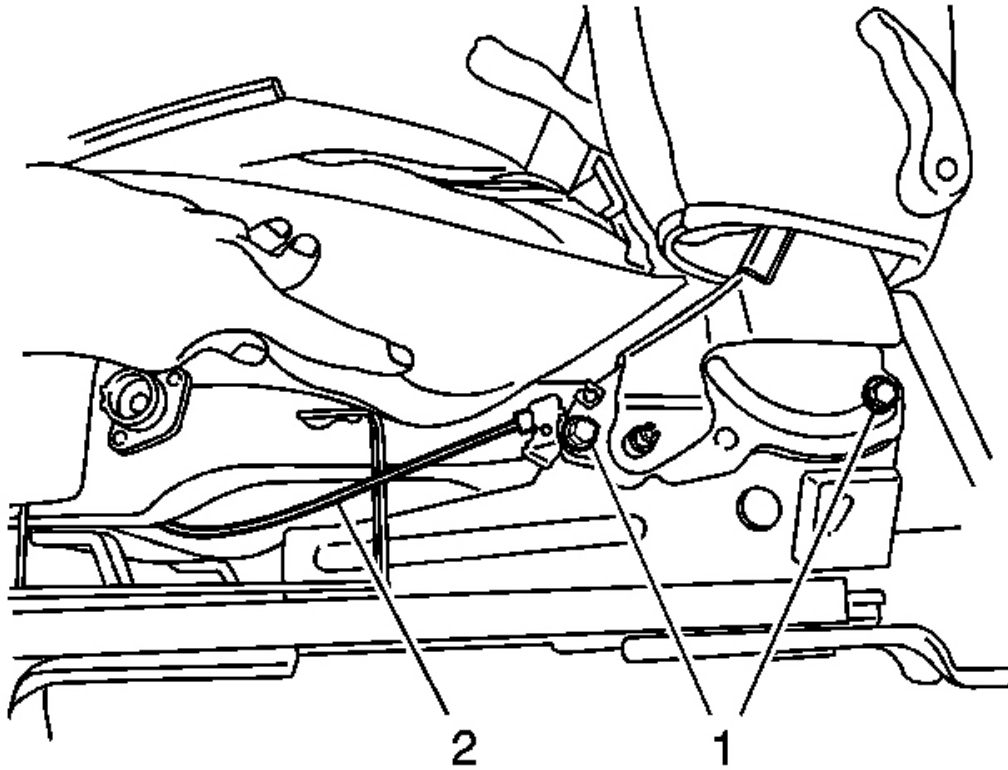


Fig. 118: View Of Seat Recliner Bolts
Courtesy of GENERAL MOTORS CORP.

11. Install the 2 bolts (1) securing the seat recliner to the seat adjuster.

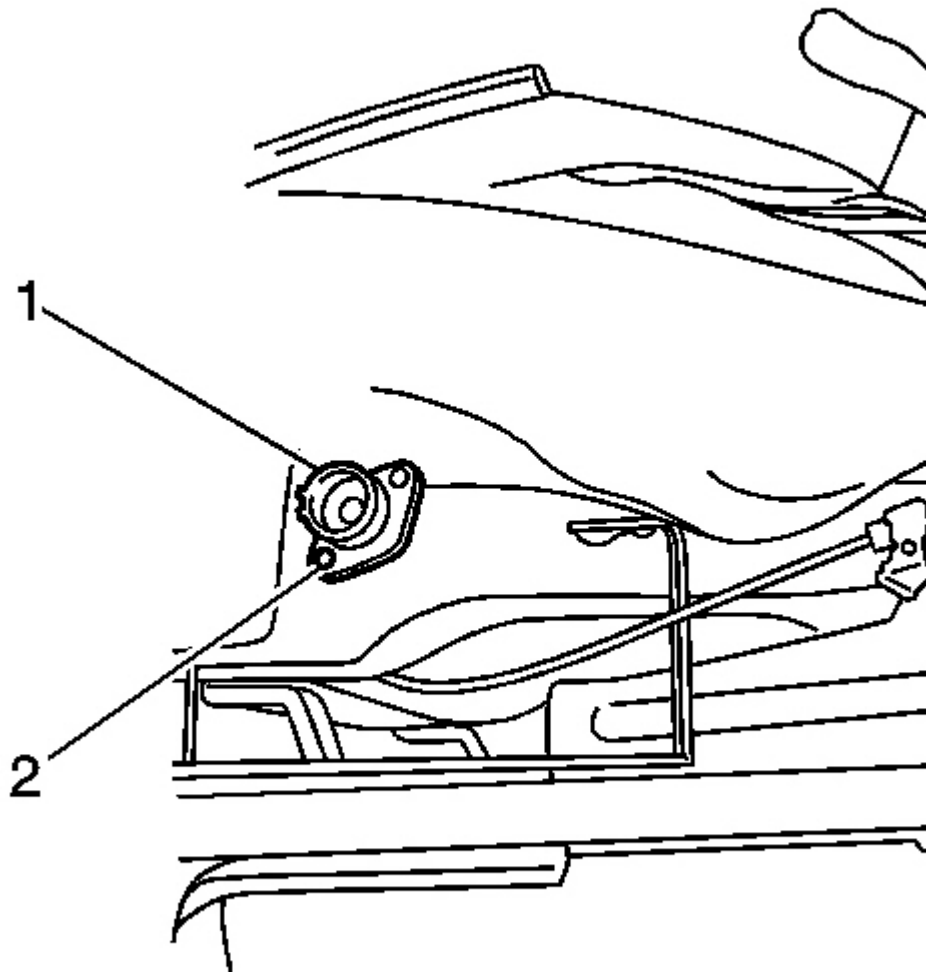


Fig. 119: View Of Lumbar Adjustment Mechanism & Retaining Screws
Courtesy of GENERAL MOTORS CORP.

12. Install the lumbar adjustment mechanism (1) to the seat adjuster with the 2 screws (2).
13. Install the lumbar cable to the lumbar adjustment mechanism.
14. Install the lumbar knob by pushing the knob straight onto the shaft, if equipped.
15. Install the recliner handle. Refer to **Seat Back Recliner Handle Replacement - Front** .

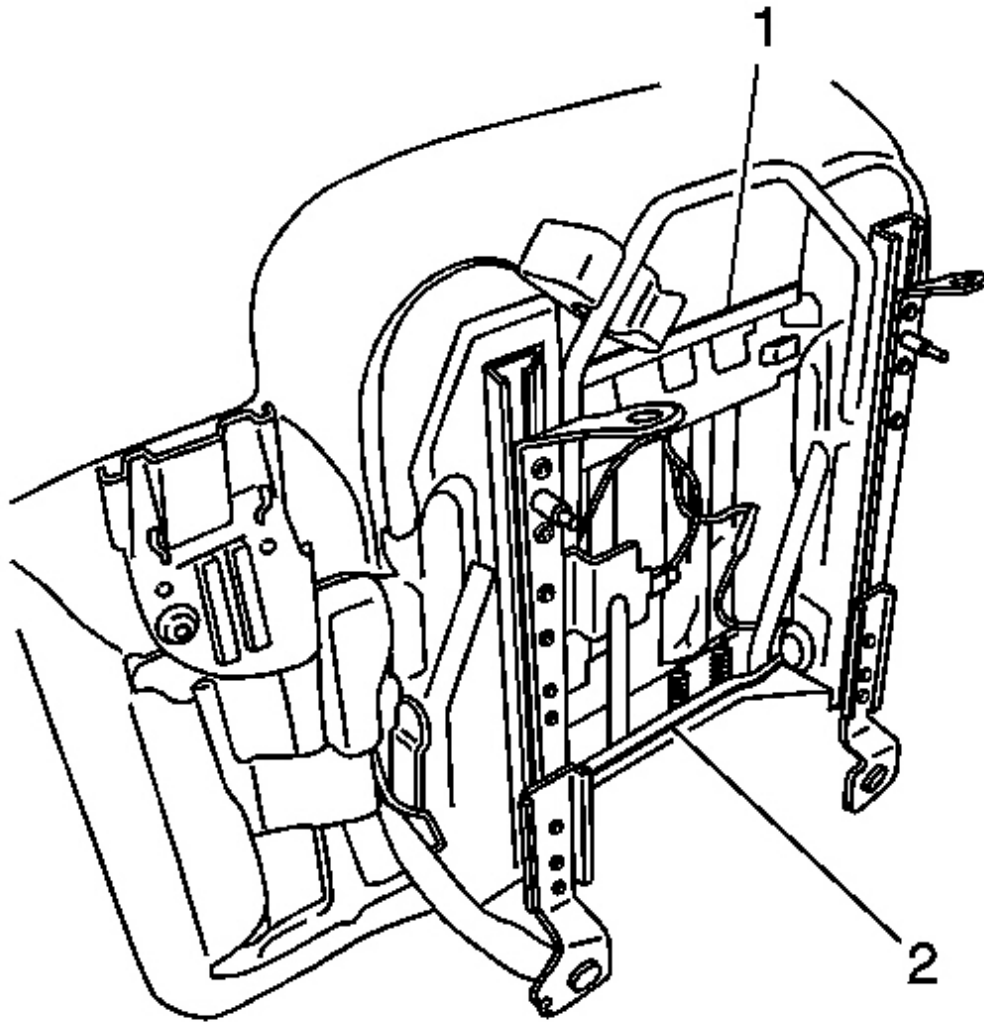


Fig. 120: View Of J-Strips

Courtesy of GENERAL MOTORS CORP.

16. Install the front, rear, and side J-strips (1, 2) to the underside of the seat.
17. Install the seat in the vehicle. Refer to **Seat Replacement - Front Bucket** .

INFLATABLE RESTRAINT PASSENGER PRESENCE SYSTEM REPLACEMENT - FRONT

Removal Procedure

CAUTION: Replace the passenger presence system as a complete assembly to prevent possible injury to the occupant. The bladder, the pressure sensor, the seat cushion, and the control module are assembled and calibrated as a unit. Using only some of the components in the service kit will cause the passenger presence system to operate improperly.

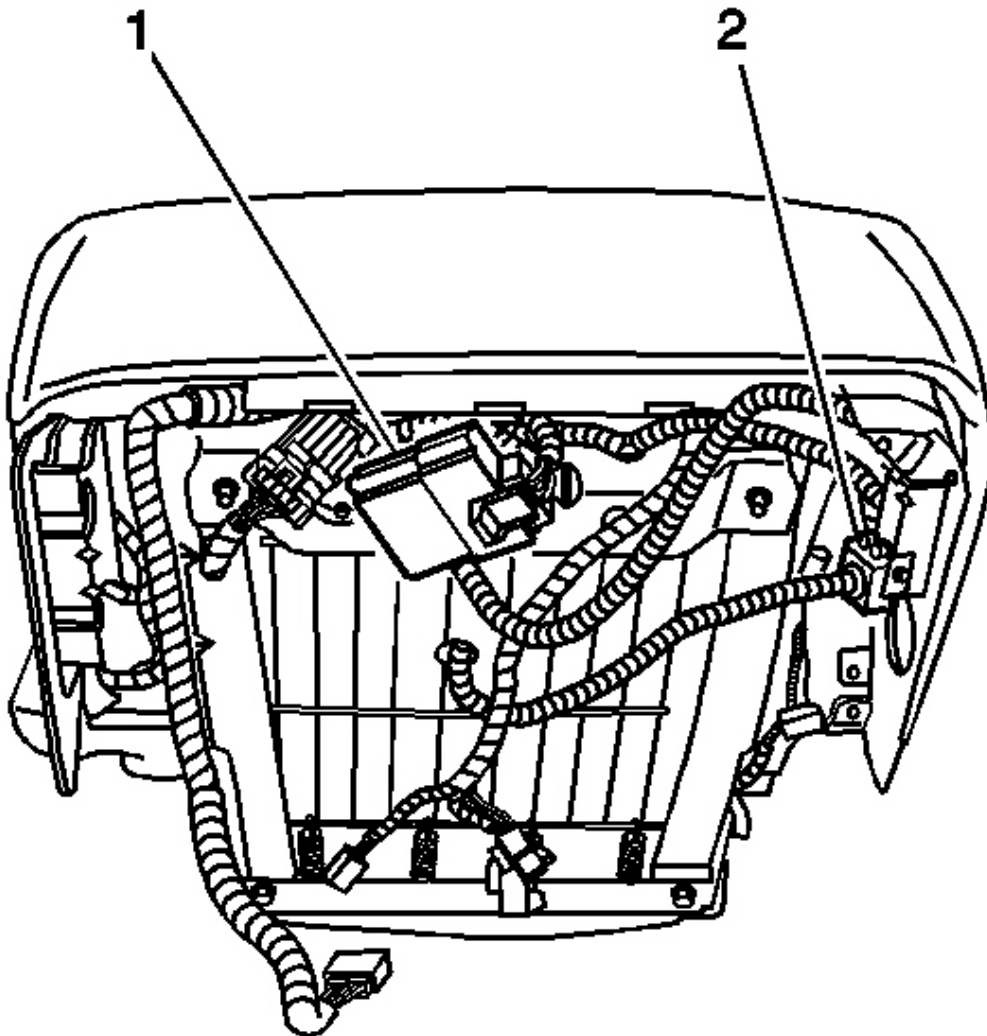


Fig. 121: View Of Electronic Control Unit & Pressure Switch

Courtesy of GENERAL MOTORS CORP.

1. Remove the seat cushion trim cover and pad.
2. Disconnect the electrical connectors.
3. Remove the bolts that retain the electronic control unit (ECU) (1) from the bottom of the passenger seat cushion frame.
4. Remove the pressure switch (2) from the bottom of the passenger seat cushion frame.

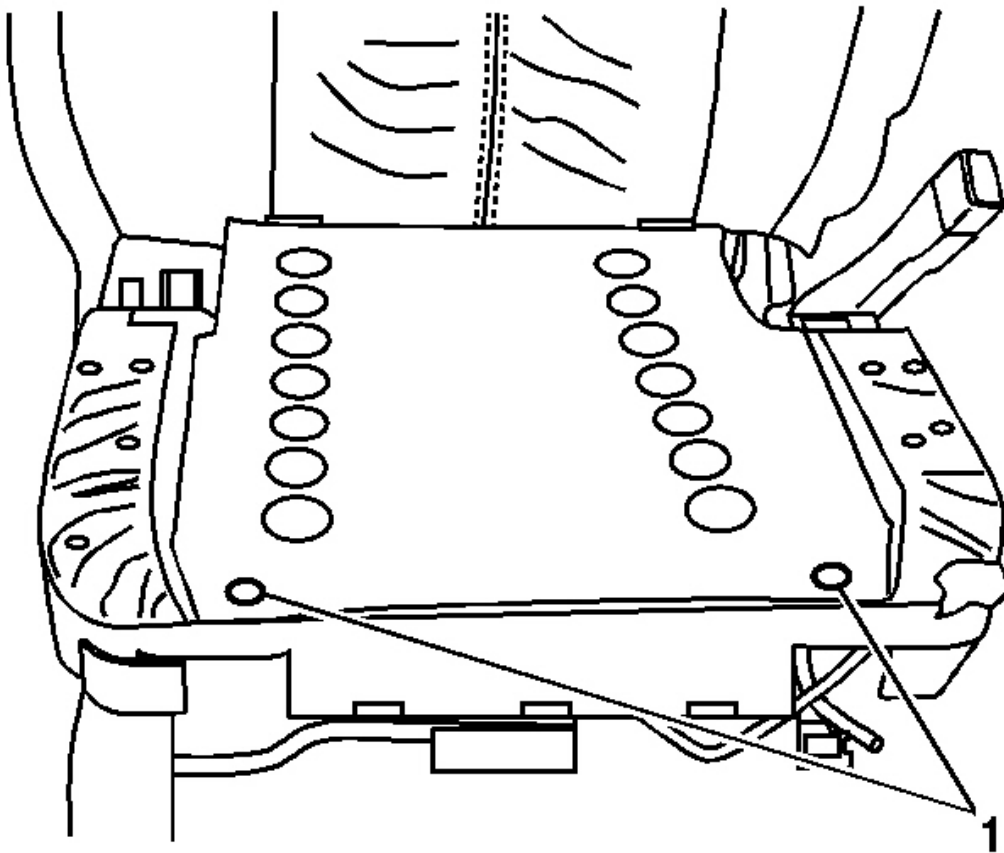


Fig. 122: Seat Cushion Frame Bladder Retainers
Courtesy of GENERAL MOTORS CORP.

5. Remove the push-in retainers (1) that hold the bladder to the seat cushion frame.
6. Remove the inflatable restraint passenger presence system from the seat.

Installation Procedures

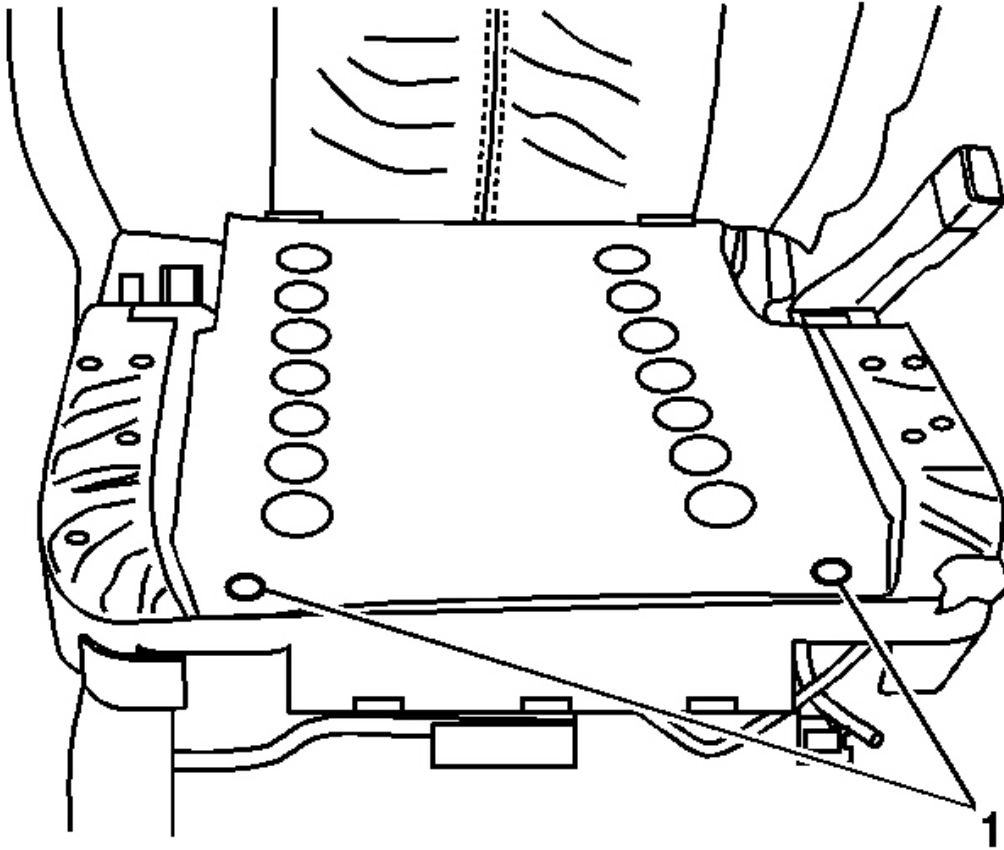


Fig. 123: Seat Cushion Frame Bladder Retainers
Courtesy of GENERAL MOTORS CORP.

1. Install the inflatable restraint passenger presence system to the seat.
2. Install the push-in retainers (1) that hold the bladder to the seat cushion frame.

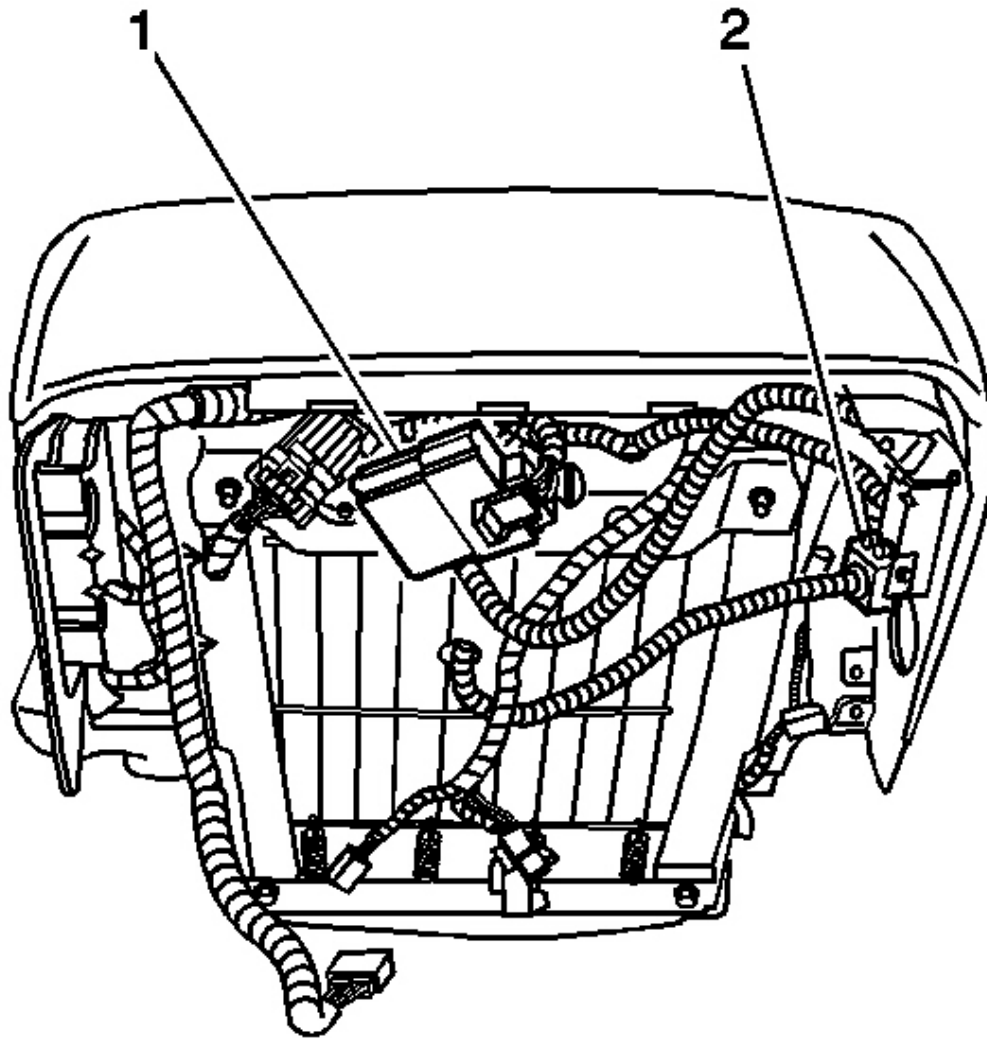


Fig. 124: View Of Electronic Control Unit & Pressure Switch
Courtesy of GENERAL MOTORS CORP.

3. Install the pressure sensor (2) to the bottom of the passenger seat cushion frame.

NOTE: Refer to Fastener Notice in Cautions and Notices.

4. Install the bolts that retain the ECU (1) to the bottom the passenger seat cushion frame.

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Tighten: Tighten the bolts to 2 N.m (18 lb in).

5. Connect the electrical connectors.
6. Install the seat cushion trim cover and pad.
7. Re-zero the inflatable restraint passenger presence system. Refer to **Passenger Presence System Programming and Setup** in Programming and Setup.

INFLATABLE RESTRAINT ROOF RAIL MODULE REPLACEMENT - FRONT

Removal Procedure

1. Disable the SIR system. Refer to **SIR Disabling and Enabling Zone 2** and **SIR Disabling and Enabling Zone 6**.
2. Remove the head restraints from the front seats. Refer to **Head Restraint Replacement - Front Seat** in SIR.
3. Lower the headliner. Refer to **Headliner Replacement (TrailBlazer, Envoy, Rainier)** or **Headliner Replacement (TrailBlazer EXT, Envoy XL)** in Interior Trim.

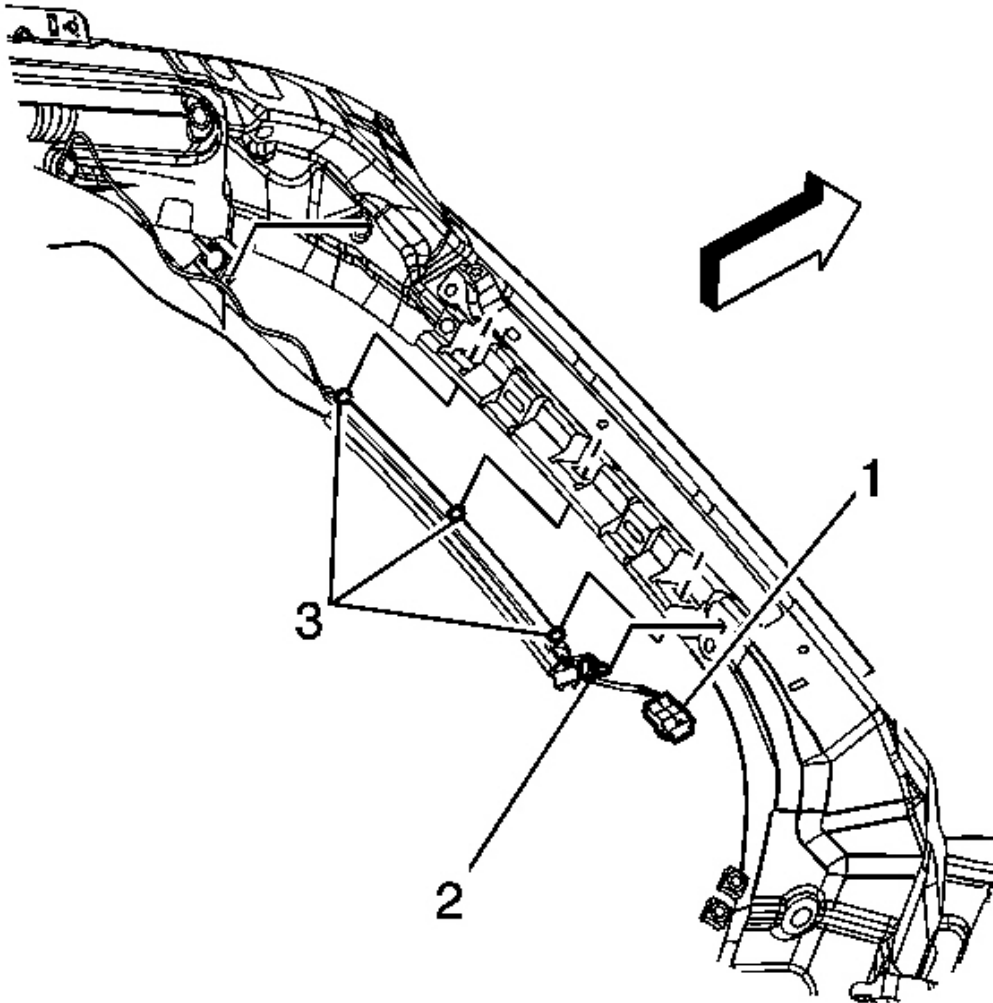


Fig. 125: View Of Roof Rail Module Connector
Courtesy of GENERAL MOTORS CORP.

4. Disconnect the roof rail air bag electrical connector (1).
5. Remove the forward tether bolt (3).
6. Remove the clips (3) from the pillar.

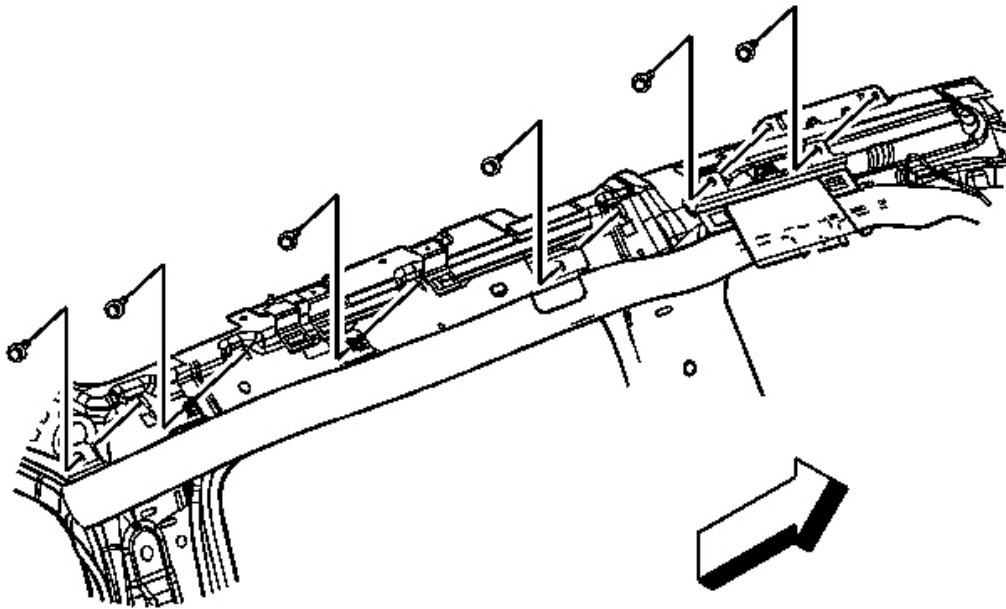


Fig. 126: View Of Pillar Clips
Courtesy of GENERAL MOTORS CORP.

7. Remove the 3 bolts retaining the rear curtain to the roof.
8. Remove the bolt retaining the bracket to the roof.

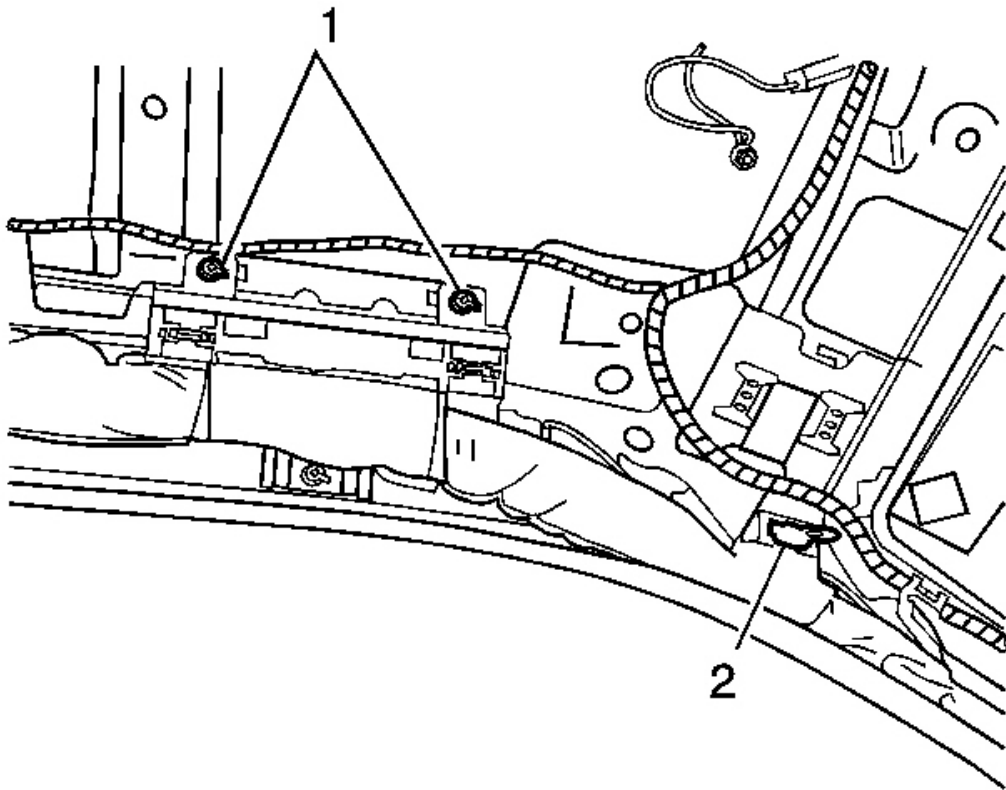


Fig. 127: View Of Forward Curtain Clip & Air Bag Module Bolts
Courtesy of GENERAL MOTORS CORP.

9. Remove the forward curtain clip (2).
10. Remove the 3 bolts (1, 3) retaining the air bag module to the roof.
11. Remove the roof rail air bag from the vehicle.

Installation Procedure

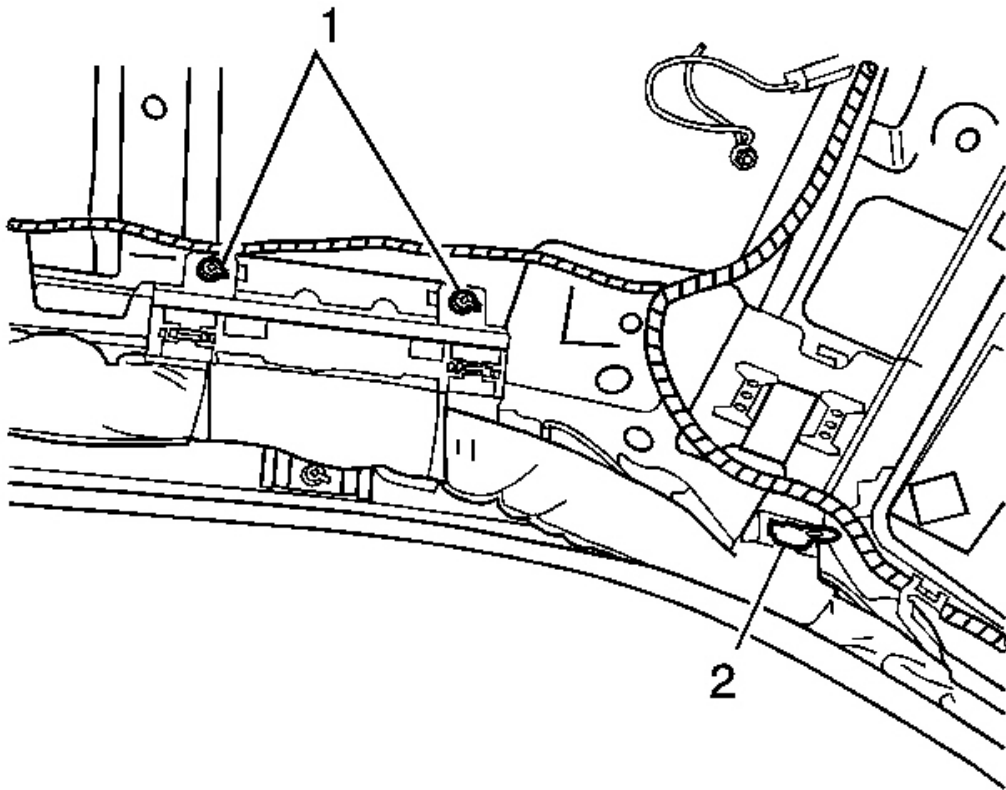


Fig. 128: View Of Forward Curtain Clip & Air Bag Module Bolts
Courtesy of GENERAL MOTORS CORP.

NOTE: Refer to Fastener Notice in Cautions and Notices.

1. Install the 3 bolts (1, 3) retaining the roof rail air bag module to the roof.

Tighten: Tighten the roof rail air bag module bolts to 9 N.m (79 lb in).

2. Install the forward curtain clip (2).
3. Install the bolt retaining the bracket to the roof.

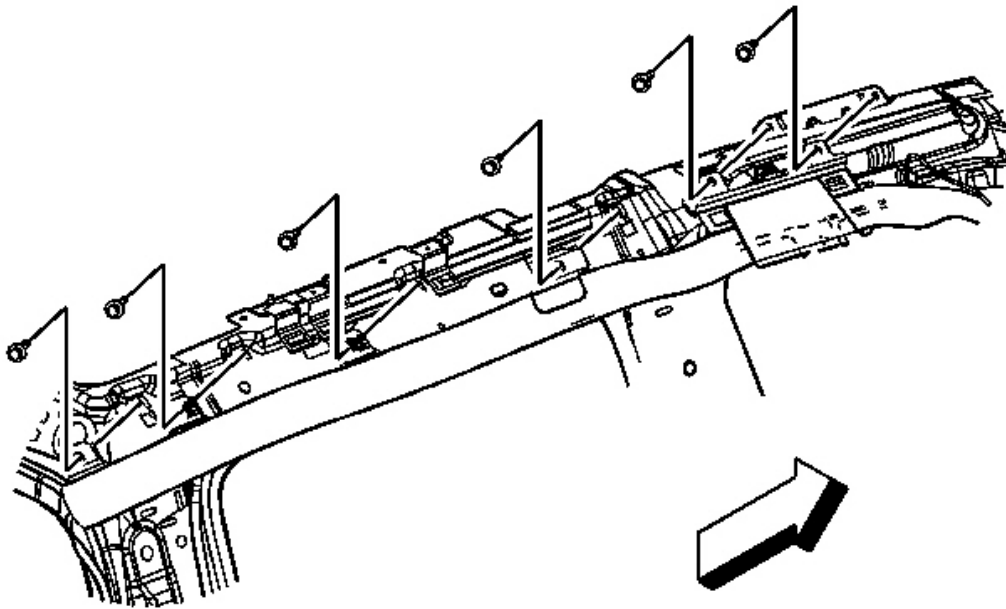


Fig. 129: View Of Pillar Clips
Courtesy of GENERAL MOTORS CORP.

4. Install the 3 bolts retaining the rear curtain to the roof.

Tighten: Tighten the roof rail air bag curtain bolts to 9 N.m (79 lb in).

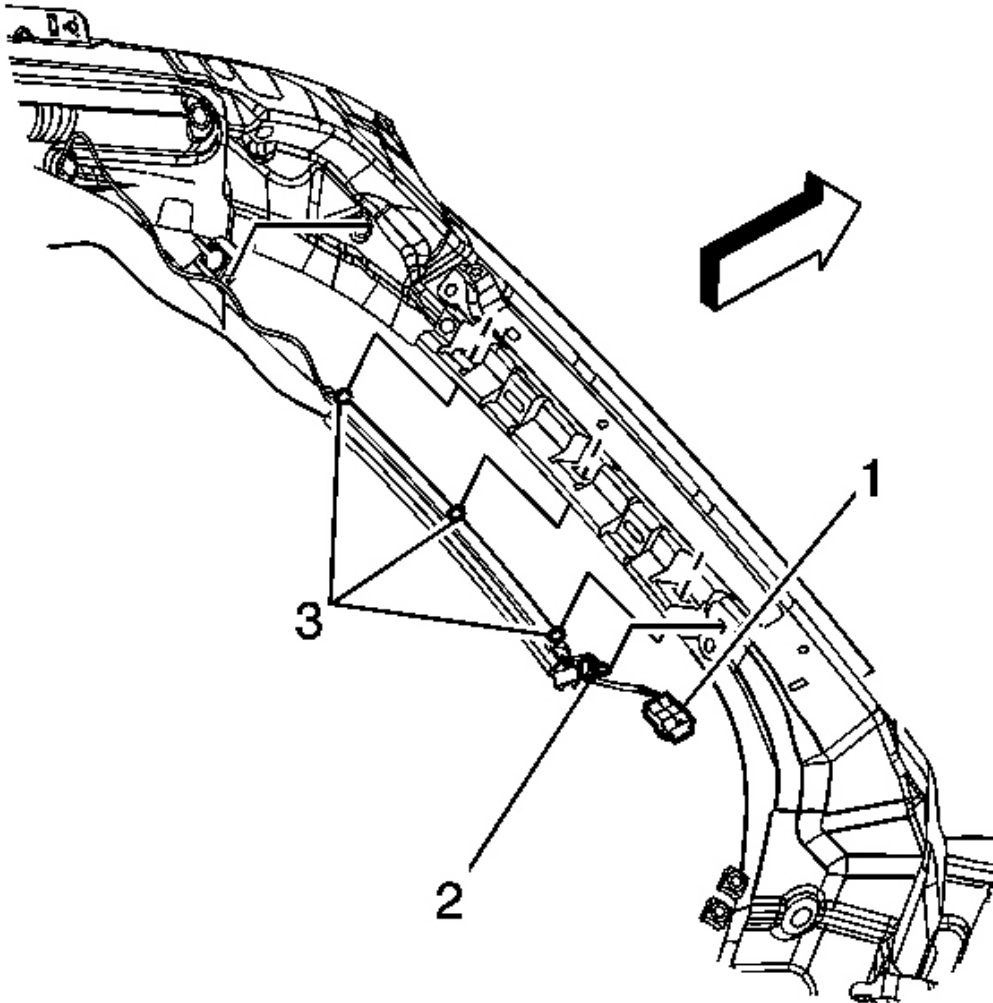


Fig. 130: View Of Roof Rail Module Connector
Courtesy of GENERAL MOTORS CORP.

5. Install the clips (3) to the pillar.
6. Install the roof rail air bag forward tether bolt (3).

Tighten: Tighten the roof rail air bag forward tether bolt to 9 N.m (79 lb in).

7. Connect the roof rail air bag electrical connector (1).
8. Install the headliner. Refer to **Headliner Replacement (TrailBlazer, Envoy, Rainier)** or

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Headliner Replacement (TrailBlazer EXT, Envoy XL) in Interior Trim.

9. Enable the SIR system. Refer to **SIR Disabling and Enabling Zone 2** and **SIR Disabling and Enabling Zone 6**.
10. Install the head restraints from the front seats. Refer to **Head Restraint Replacement - Front Seat** in SIR.

SEAT BELT RETRACTOR PRETENSIONER REPLACEMENT - FRONT

Removal Procedure

1. Remove the seat switch bezel. Refer to **Seat Switch Bezel Replacement** in Seats.
2. Remove the seat trim panel. Refer to **Seat Cushion Outer Trim Panel Replacement** in Seats.

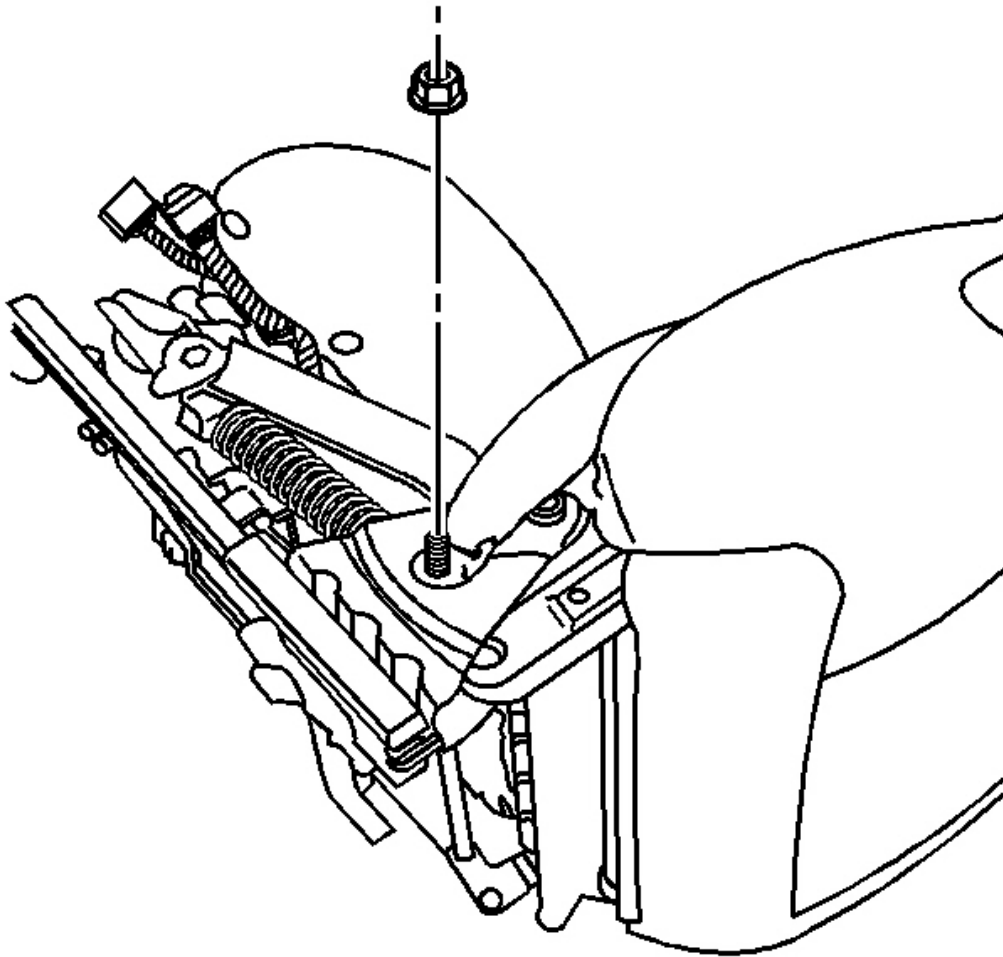


Fig. 131: Removing/Installing Seat Belt Anchor Nut
Courtesy of GENERAL MOTORS CORP.

3. Remove the seat belt anchor nut from the seat adjuster assembly.

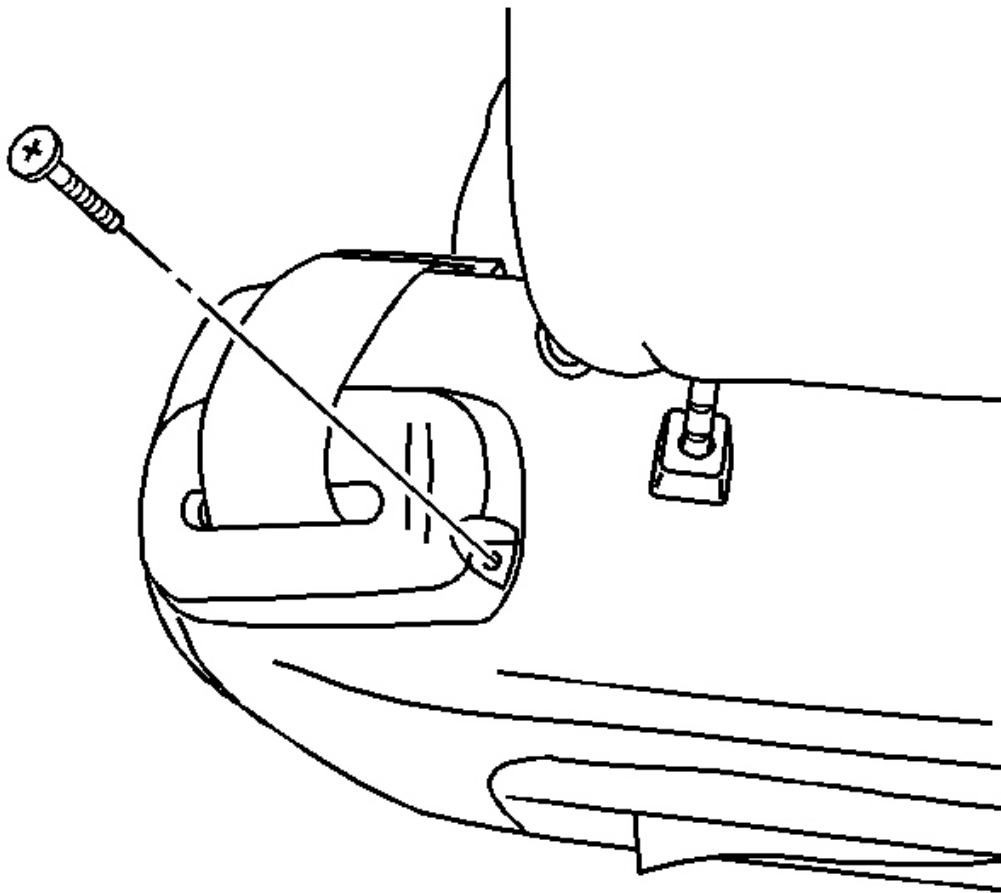


Fig. 132: Removing/Installing Seat Belt Bezel Retaining Screw
Courtesy of GENERAL MOTORS CORP.

4. Remove the screw from the front seat back seat belt bezel.
5. Slide the bezel towards the seat belt buckle.
6. Remove the seat back cover and pad. Refer to **Seat Back Cover and Pad Replacement - Front** in Seats.
7. Remove the seat back panel from the seat back frame. Refer to **Seat Back Panel Replacement - Front** in Seats.

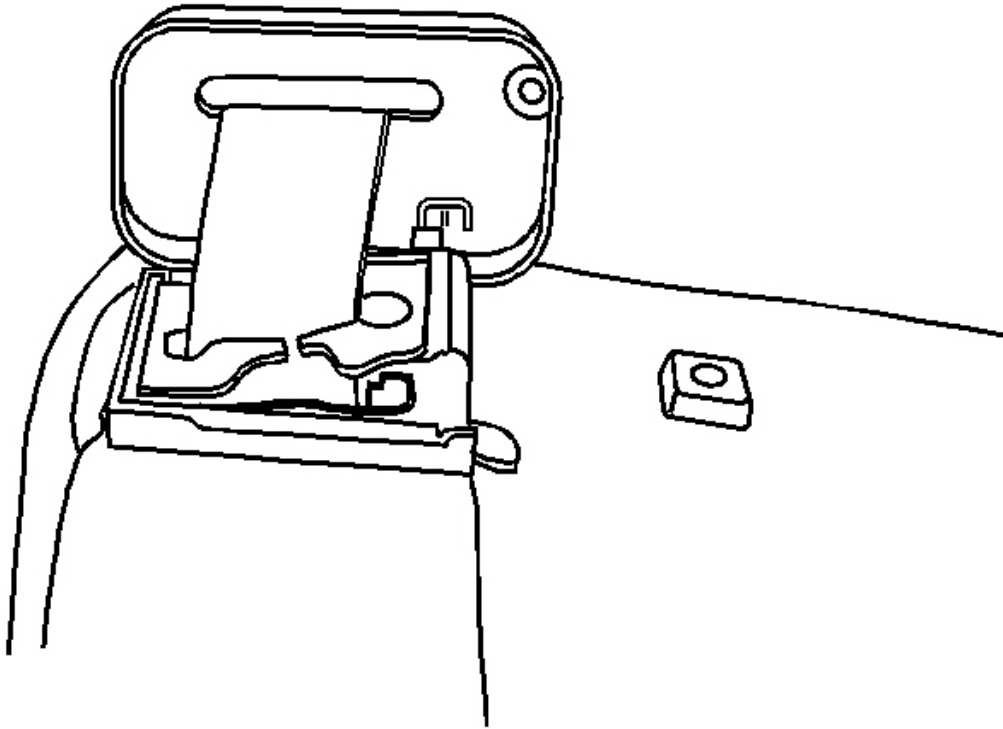


Fig. 133: Removing/Installing Seat Belt At Retractor Bracket
Courtesy of GENERAL MOTORS CORP.

8. Remove the seat belt from the retractor bracket by sliding the seat belt through the slot.

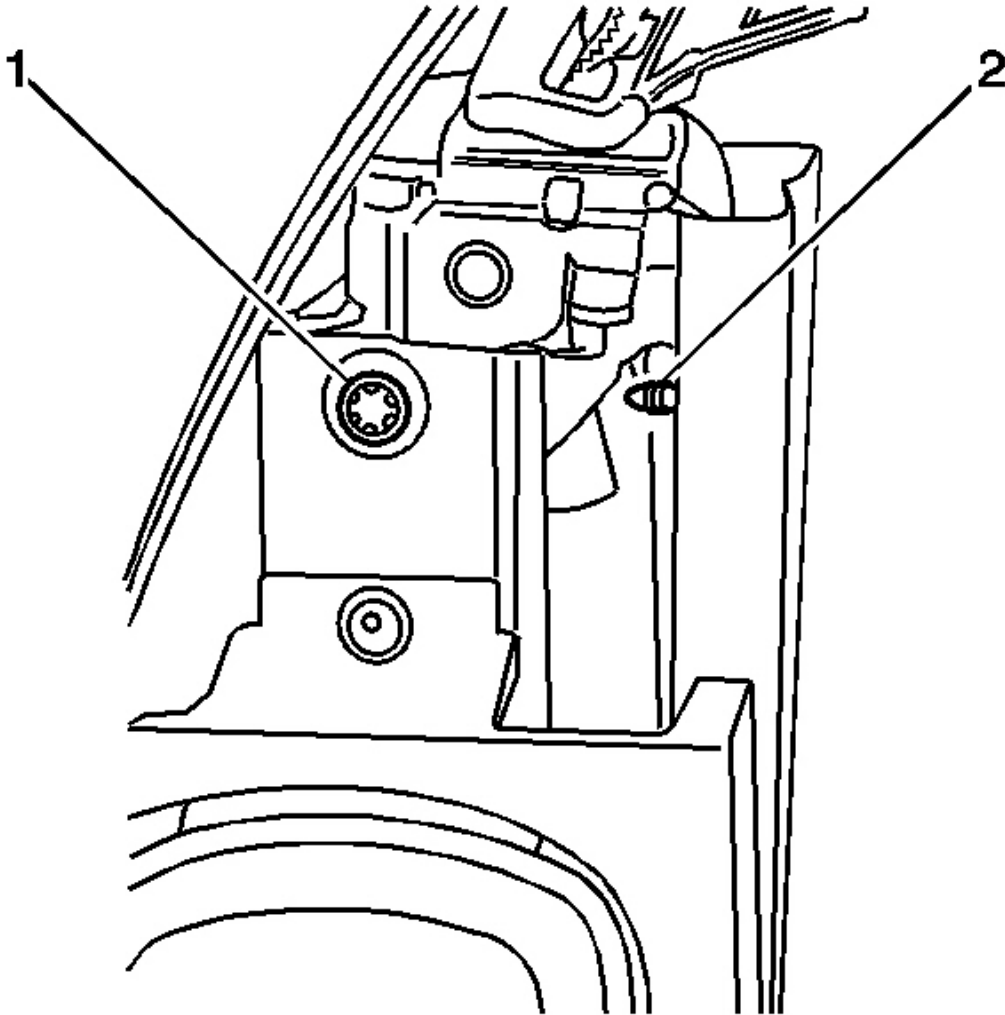


Fig. 134: Removing/Installing Seat Belt Retractor Bracket Bolt
Courtesy of GENERAL MOTORS CORP.

9. Remove the push pin (2) from the seat back frame.
10. Disconnect the electrical connector from the pretensioner.

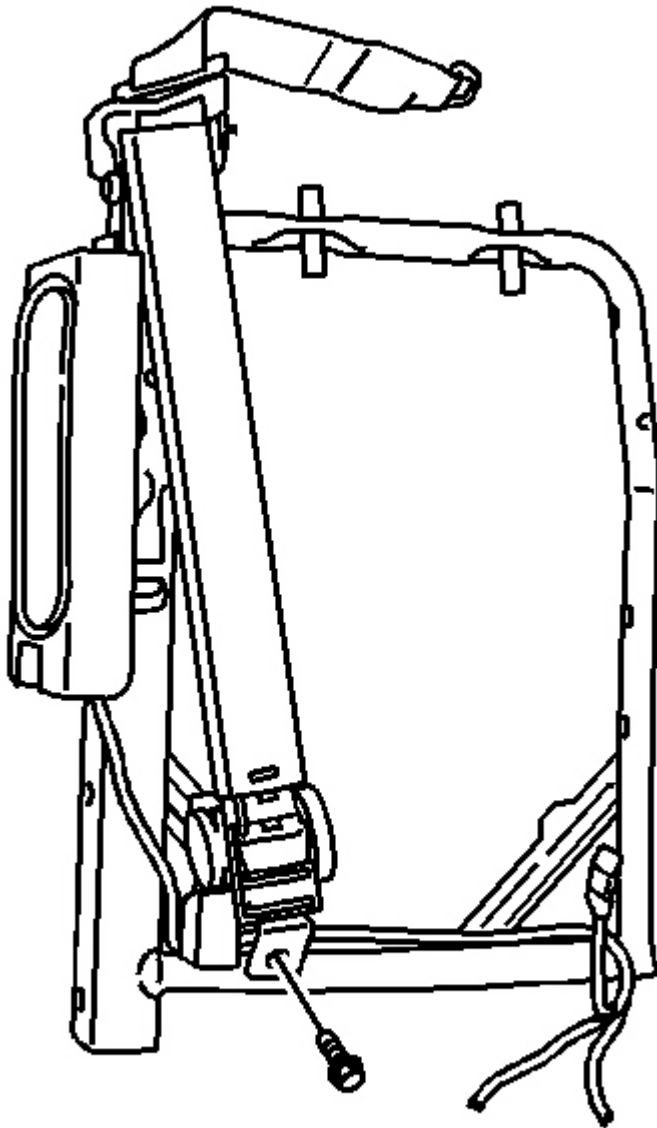


Fig. 135: Removing/Installing Lower Seat Belt Retractor Retaining Bolt
Courtesy of GENERAL MOTORS CORP.

11. Remove the lower seat belt retractor retaining bolt.
12. Remove the retractor assembly from the seat.

Installation Procedure

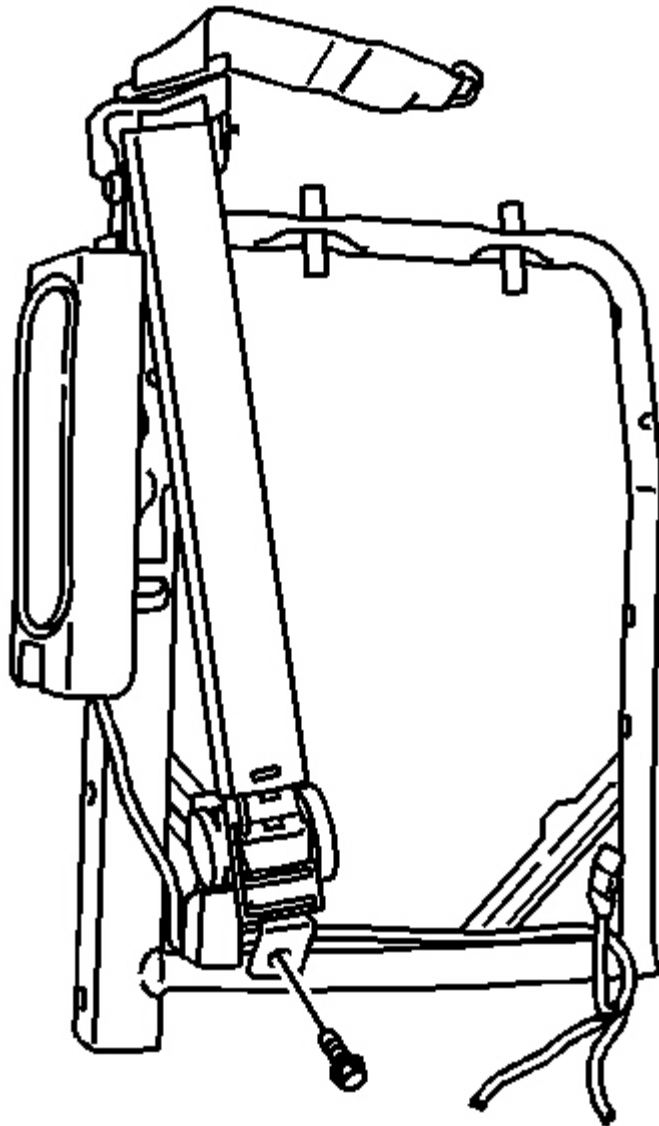


Fig. 136: Removing/Installing Lower Seat Belt Retractor Retaining Bolt
Courtesy of GENERAL MOTORS CORP.

1. Position the assembly to the seat.

NOTE: Refer to Fastener Notice in Cautions and Notices.

2. Install the lower seat belt retractor retaining bolt.

Tighten: Tighten the seat belt retractor bolt to 55 N.m (40 lb ft).

3. Connect the seat belt pretensioner electrical connector.

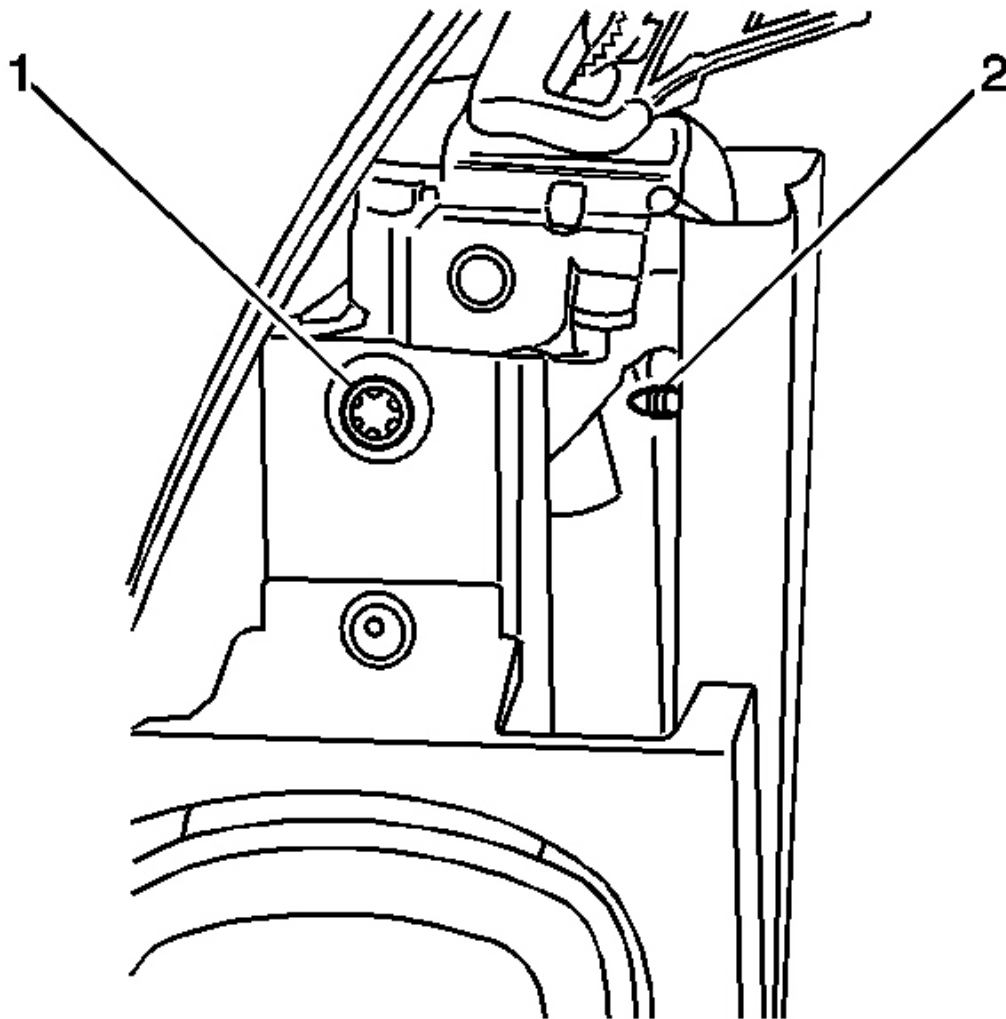


Fig. 137: Removing/Installing Seat Belt Retractor Bracket Bolt
Courtesy of GENERAL MOTORS CORP.

4. Install the push pin (2) on the seat back frame.

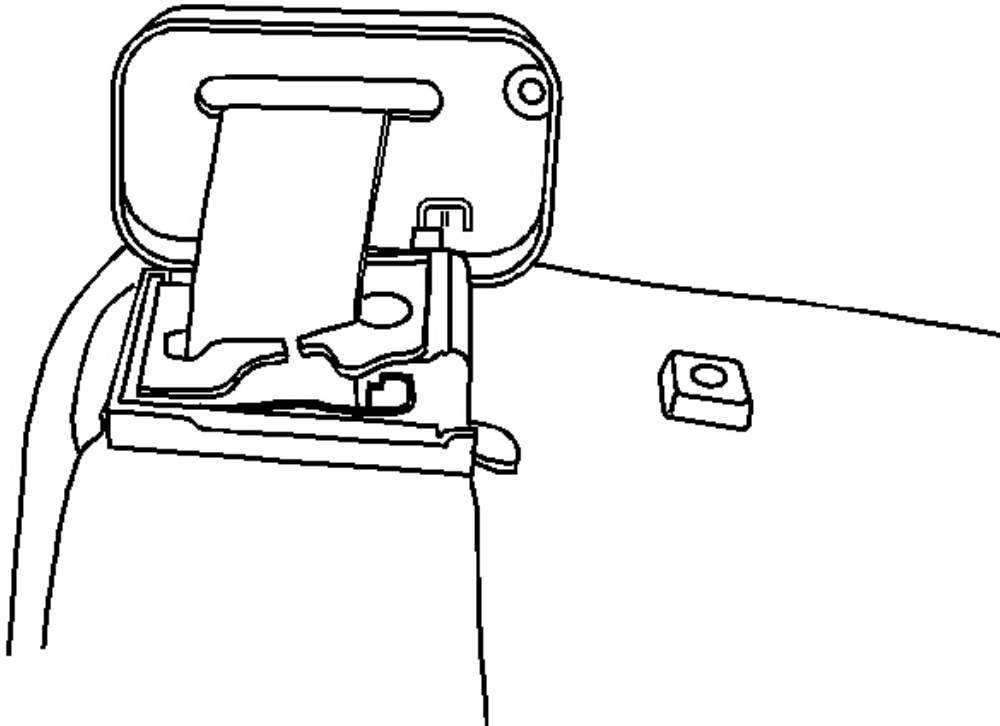


Fig. 138: Removing/Installing Seat Belt At Retractor Bracket
Courtesy of GENERAL MOTORS CORP.

5. Install the seat belt into the retractor bracket by guiding the seat belt through the slot in the bracket.
6. Install the seat back panel to the seat back frame. Refer to **Seat Back Panel Replacement - Front** in Seats.
7. Install the seat back pad and cover. Refer to **Seat Back Cover and Pad Replacement - Front** in Seats.
8. Slide the front seat back seat belt bezel onto the seat belt.

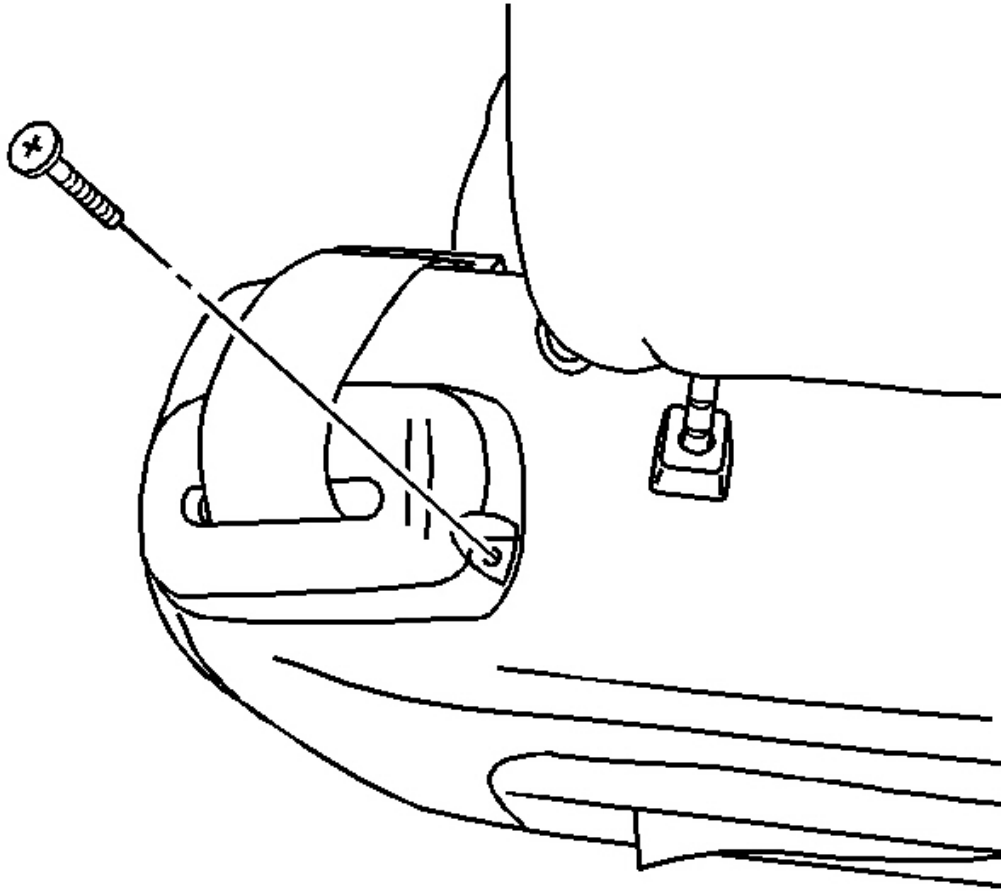


Fig. 139: Removing/Installing Seat Belt Bezel Retaining Screw
Courtesy of GENERAL MOTORS CORP.

9. Install the seat belt bezel to the retractor bracket with the screw.

Tighten: Tighten the front seat back seat belt bezel screw to 6 N.m (53 lb in).

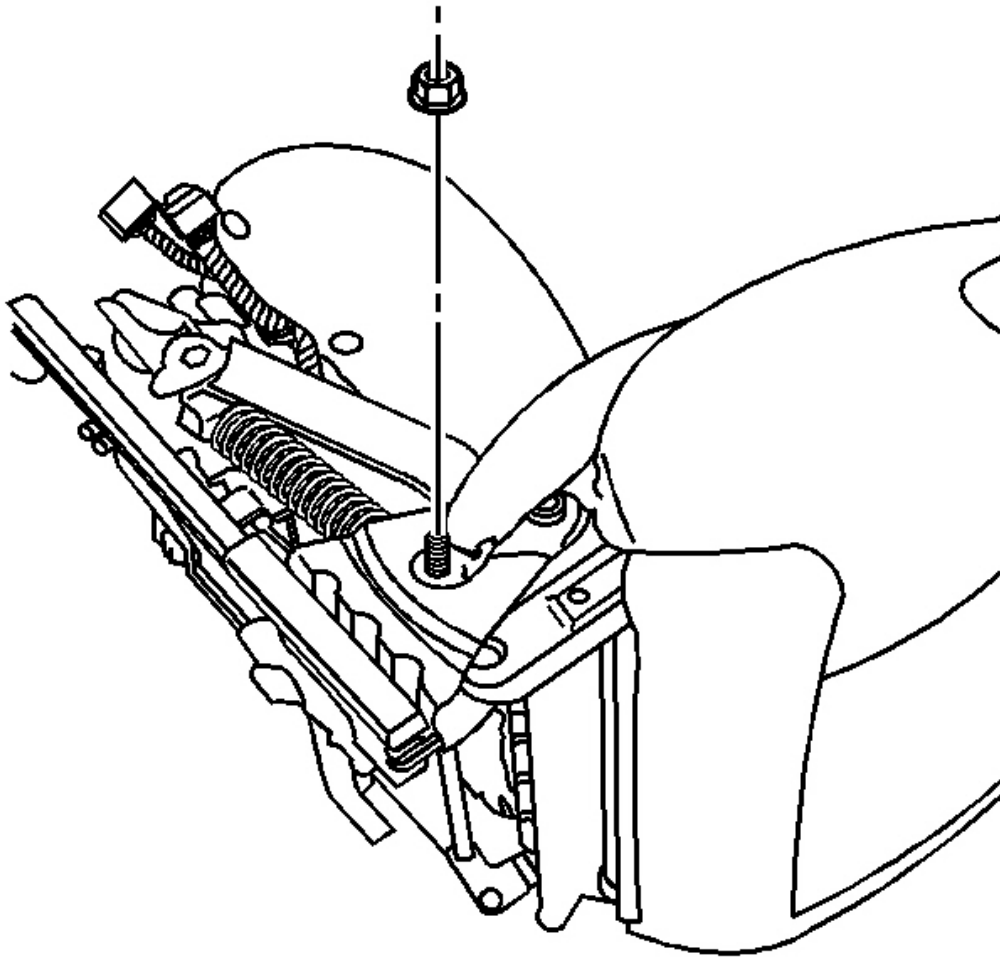


Fig. 140: Removing/Installing Seat Belt Anchor Nut
Courtesy of GENERAL MOTORS CORP.

10. Install the seat belt anchor to the seat adjuster assembly with the nut. Ensure that the seat belt webbing is not twisted.

Tighten: Tighten the seat back anchor nut to 52 N.m (38 lb ft).

11. Install the seat trim panel. Refer to **Seat Cushion Outer Trim Panel Replacement** in Seats.
12. Install the seat switch bezel. Refer to **Seat Switch Bezel Replacement** in Seats.

SEAT BELT BUCKLE PRETENSIONER REPLACEMENT

Removal Procedure

1. Remove the front seat assembly. Refer to Seat Replacement - Front Bucket in Seats.

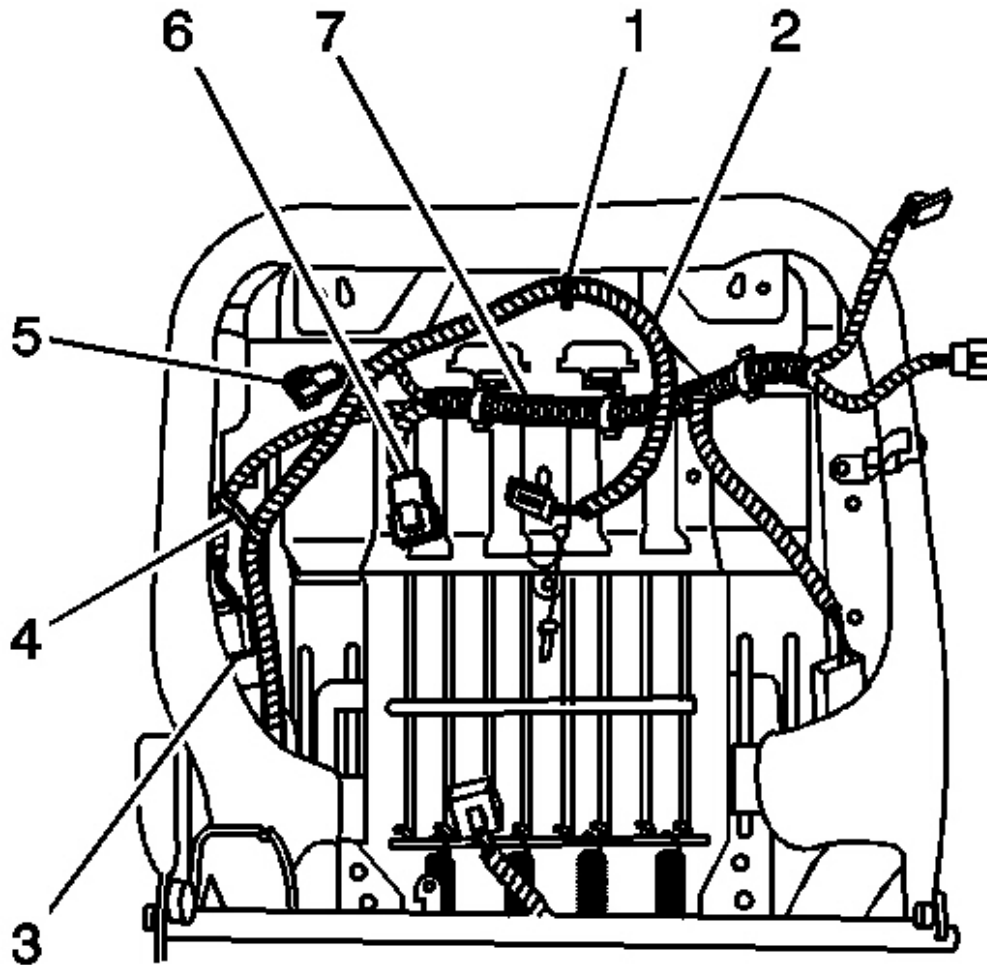


Fig. 141: Identifying Connectors & Harness
Courtesy of GENERAL MOTORS CORP.

2. Disconnect the seat belt reminder wiring harness (3) on the driver's seat.

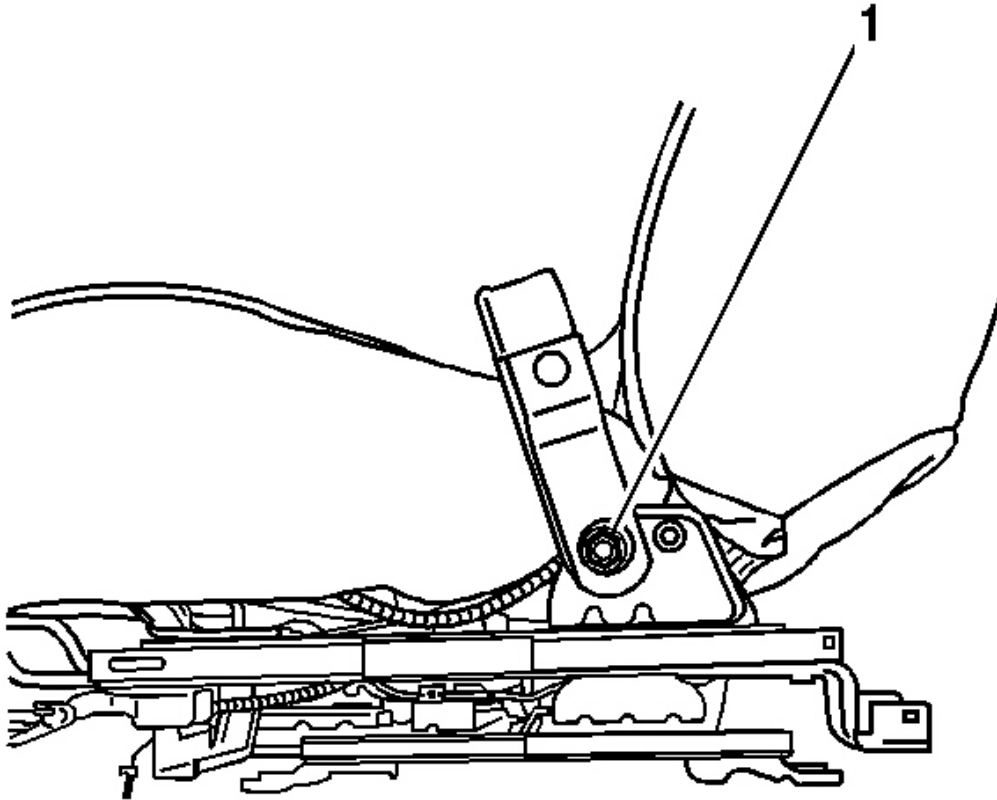


Fig. 142: Seat Belt Buckle Nut
Courtesy of GENERAL MOTORS CORP.

3. Remove the nut (1) which retains the seat belt buckle to the seat assembly.
4. Remove the seat belt buckle from the seat assembly.

Installation Procedure

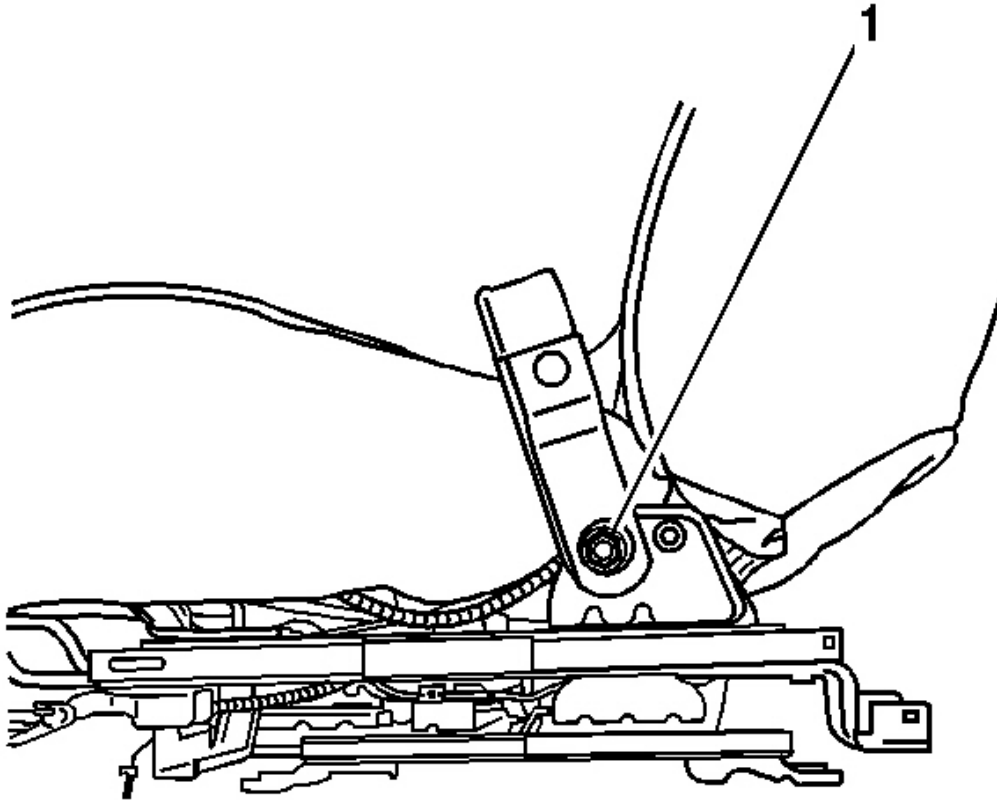


Fig. 143: Seat Belt Buckle Nut
Courtesy of GENERAL MOTORS CORP.

1. Install the seat belt buckle to the seat assembly.

NOTE: Refer to Fastener Notice in Cautions and Notices.

2. Install the nut (1) which retains the seat belt buckle to the seat assembly.

Tighten: Tighten the front seat belt buckle nut to 52 N.m (38 lb ft).

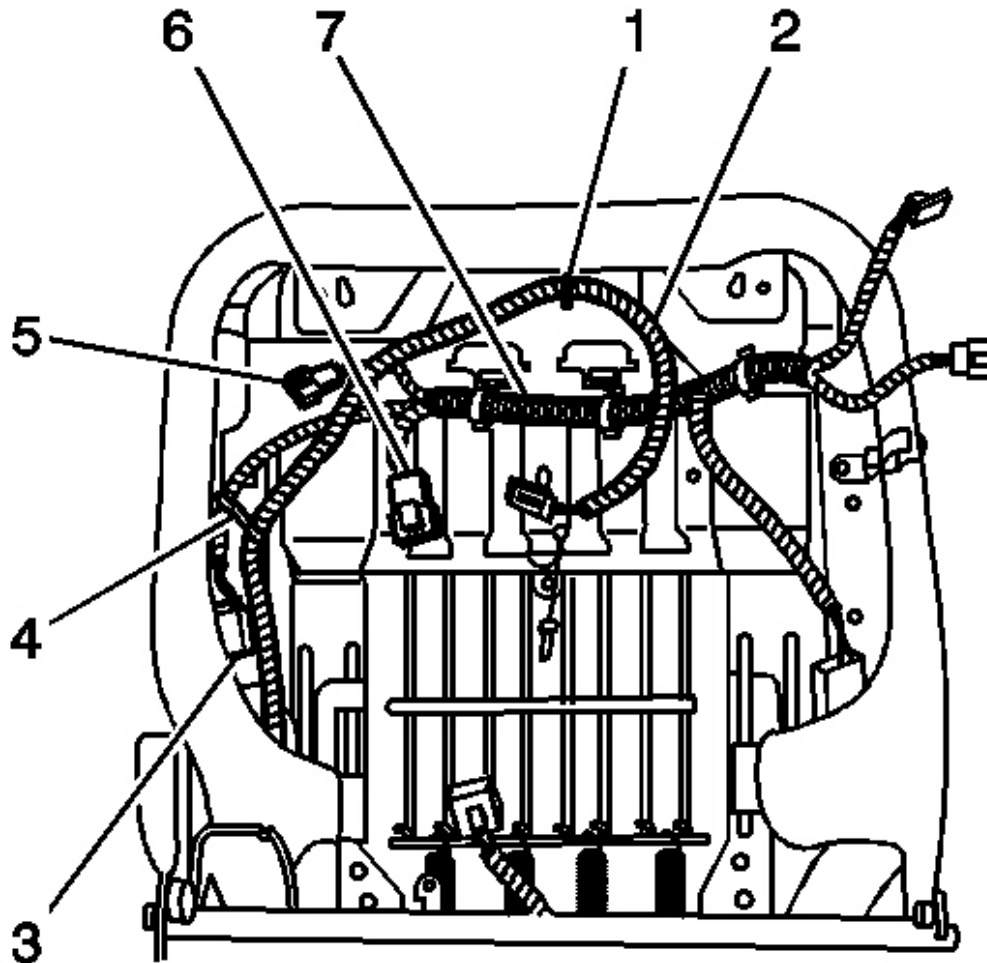


Fig. 144: Identifying Connectors & Harness
Courtesy of GENERAL MOTORS CORP.

3. Connect the seat belt reminder wiring harness (3) on the driver's seat.
4. Install the front seat assembly. Refer to **Seat Replacement - Front Bucket** in Seats.

REPAIRS AND INSPECTIONS REQUIRED AFTER A COLLISION

Accident With or Without Inflator Module Deployment - Component Inspections

CAUTION: Proper operation of the SIR sensing system requires that any

repairs to the vehicle structure return the vehicle structure to the original production configuration. Not properly repairing the vehicle structure could cause non-deployment in a collision or deployment for conditions less severe than intended.

After any collision, inspect the following components as indicated. If you detect any damage, replace the component. If you detect any damage to the mounting points or mounting hardware, repair or replace the mounting points and mounting hardware as needed.

- The steering column-Perform the steering column accident damage checking procedures. Refer to **Steering Column Accident Damage Inspection** in Steering Wheel and Column.
- The instrument panel (I/P) knee bolsters and mounting points-Inspect the knee bolsters for bending, twisting, buckling, or any other type of damage.
- The I/P brackets, braces, etc.-Inspect for bending, twisting, buckling, or any other type of damage.
- The seat belts-Perform the seat belt operational and functional checks. Refer to **Operational and Functional Checks** in Seat Belts.
- The I/P mounting points and brackets-Inspect for bending, twisting, buckling, or any other type of damage.
- The roof rail and roof rail module mounting points-Inspect for bending, twisting, buckling, or any other type of damage.
- The seats and seat mounting points-Inspect for bending, twisting, buckling, or any other type of damage.
- Passenger seat bottom equipped with Passenger Presence System (PPS) - Check for any DTCs or problems that may cause the PPS not to function properly.

Accident With Frontal Air Bag Deployment - Component Replacement and Inspections

After a collision involving air bag deployment, replace the following components. If you detect any damage, replace the component. If you detect any damage to the mounting points or mounting hardware, repair or replace the mounting points and mounting hardware as needed.

IMPORTANT: The front passenger seat is equipped with a PPS, which detects an occupant. If the requirements for disabling the I/P air bag are met then the PPS will communicate with the SDM to disable/turn off the I/P air bag, even in a accident. For more information on the PPS refer to **SIR System Description and Operation**.

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2006 RESTRAINTS SIR - Ascender, Envoy, Rainier & TrailBlazer

- Inflatable restraint front end sensors
- Inflatable restraint I/P module, if deployed and after performing the necessary inspections listed above
- Inflatable restraint sensing and diagnostic module (SDM)
- Inflatable restraint steering wheel module
- Inflatable restraint steering wheel module coil
- Seat belt pretensioners

Perform additional inspections on the following components:

- Steering wheel module coil and the coil wiring pigtail-Inspect for melting, scorching, or other damage due to excessive heat.
- Mounting points or mounting hardware for the I/P module, steering wheel module, SDM, front end sensors, seat belt pretensioners, and vehicle rollover sensor-Inspect for any damage and repair or replace each component as needed.
- Passenger Presence System (PPS) for damage to the wiring or pressure system

Accident With Side Air Bag Deployment - Component Replacement and Inspections

After a collision involving side air bag deployment, replace the following components:

- Inflatable restraint roof rail module, on the side of the impact.
- Inflatable restraint side impact sensors (SIS) (left/right), on the side of the impact
- Inflatable restraint side impact module (left/right), on the side of the impact
- Inflatable restraint SDM
- Seat belt pretensioner, on the side of impact.

Perform additional inspections on the following components:

- Mounting points or mounting hardware for the SIS, roof rail module (left/right), and seat belt pretensioner on the side of impact-Inspect for any damage and repair or replace each component as needed.
- Mounting points or mounting hardware for the SDM and vehicle rollover sensor-Inspect for any damage and repair or replace each component as needed.

Sensor Replacement Guidelines

The SIR/side air bag sensor replacement policy requires replacing sensors in the area of accident

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damage. The area of accident damage is defined as the portion of the vehicle which is crushed, bent, or damaged due to a collision. An example of this would be a moderate collision where the front of the vehicle impacts a tree, if the vehicle has an SIR sensor mounted forward of the radiator, replace the SIR sensor.

- Replace the sensor whether or not the air bags have deployed.
- Replace the sensor even if the sensor appears to be undamaged.

Sensor damage which is not visible, such as slight bending of the mounting bracket or cuts in the wire insulation, can cause improper operation of the SIR/side air bag sensing system. Do not try to determine whether the sensor is undamaged. Replace the sensor. Also, if you follow a diagnostic trouble code (DTC) table and a malfunctioning sensor is indicated, replace the sensor.

INFLATOR MODULE HANDLING AND SCRAPPING

Live and Undeployed Inflator Module

CAUTION: Refer to SIR Inflator Module Handling and Storage Caution in Cautions and Notices.

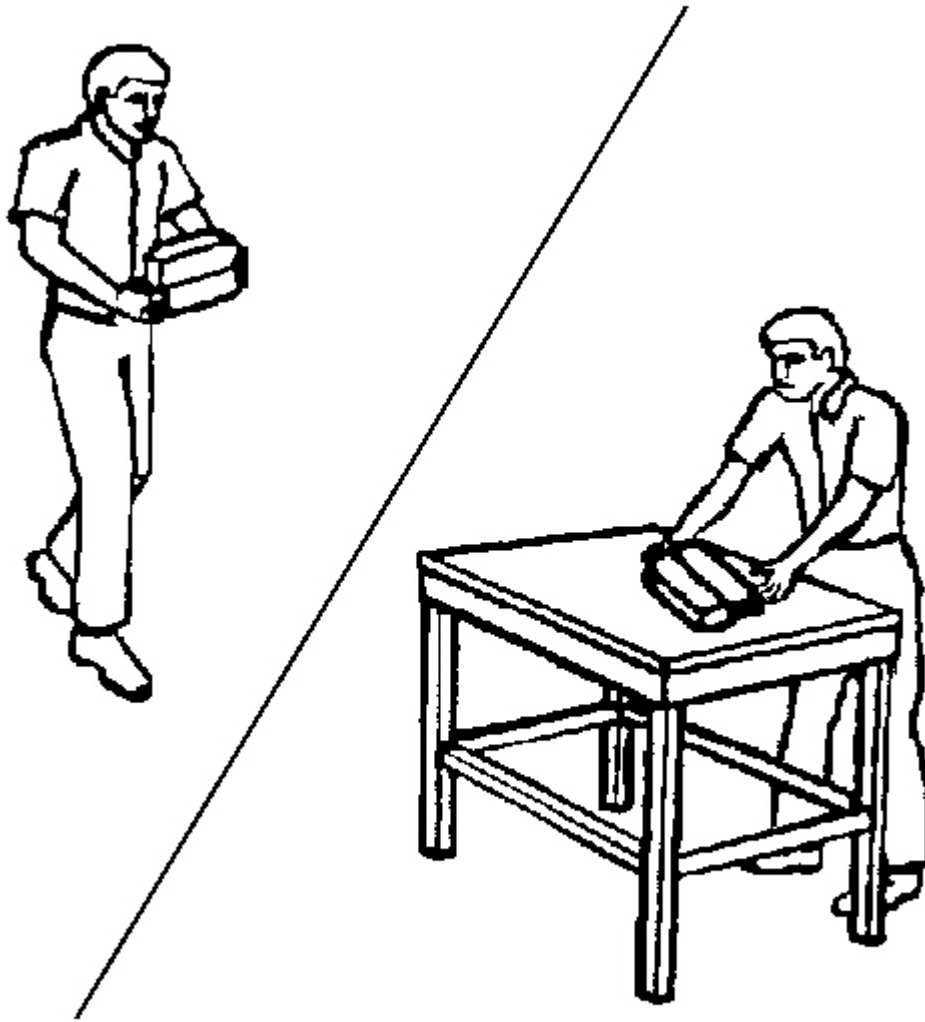


Fig. 145: View Of Proper Handling Of Undeployed Inflator Module
Courtesy of GENERAL MOTORS CORP.

Take special care when handling or storing an undeployed inflator module. An inflator module deployment produces a rapid generation of gas. This may cause the inflator module, or an object in front of the inflator module, to project through the air in the event of an unlikely deployment.

Dual Stage Inflator Module

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Dual stage inflator modules have two deployment stages. If stage 1 was used to deploy a dual stage inflator module, stage 2 may still be active. Therefore, a deployed dual stage inflator module must be treated as an active module. If disposal of a dual stage module is required, both deployment loops must be energized to deploy the air bag.

Scrapping Procedure

During the course of a vehicle's useful life, certain situations may arise which will require the disposal of a live and undeployed inflator module. Do NOT dispose a live and undeployed inflator module through normal disposal channels until the inflator module has been deployed.

Do not deploy the inflator module in the following situations:

- After replacement of an inflator module under warranty - the inflator module may need to be returned undeployed to the manufacturer.
- If the vehicle is the subject of a Product Liability report, GM-1241, related to the SIR system and is subject to a preliminary investigation - do NOT alter the SIR system in any manner.
- If the vehicle is involved in a campaign affecting the inflator modules - follow the instructions in the Campaign Service Bulletin for proper SIR handling procedures.

Deployment Procedures

You can deploy the inflator module either inside or outside of the vehicle. The method used depends upon the final disposition of the vehicle. Review the following procedures in order to determine which will work best in a given situation:

Deployment Outside Vehicle - Steering Wheel Module, I/P Module, and Roof Rail Module

Deploy the inflator module outside of the vehicle when the vehicle will be returned to service. Situations that require deployment outside of the vehicle include the following:

- Using the SIR diagnostics, you determine that the inflator module is malfunctioning.
- The inflator module is cosmetically damaged, scratched, or ripped.
- The inflator module pigtail is damaged.
- The inflator module connector is damaged.
- The inflator module connector terminals are damaged.

Deployment and disposal of a malfunctioning inflator module is subject to any required retention period.

CAUTION: In order to prevent accidental deployment and the risk of personal injury, do not dispose of an undeployed inflator module as normal shop waste. Undeployed inflator modules contain substances that could cause severe illness or personal injury if their sealed containers are damaged during disposal. Use the following deployment procedures to safely dispose of an undeployed inflator module. Failure to observe the following disposal methods may be a violation of federal, state, or local laws.

Tools Required

- **J 39401-B** SIR Deployment Fixture. See Special Tools.
 - **J 38826** SIR Deployment Harness. See Special Tools.
 - An appropriate pigtail adapter
1. Turn OFF the ignition.
 2. Remove the ignition key.
 3. Put on safety glasses.
 4. Remove the inflator module.
 - If you are removing the steering wheel module, refer to Inflatable Restraint Steering Wheel Module Replacement.
 - If you are removing the I/P module, refer to Inflatable Restraint Instrument Panel Module Replacement.
 - If you are removing a roof rail module, refer to Inflatable Restraint Roof Rail Module Replacement - Front.

CAUTION: Refer to SIR Inflator Module Handling and Storage Caution in Cautions and Notices.

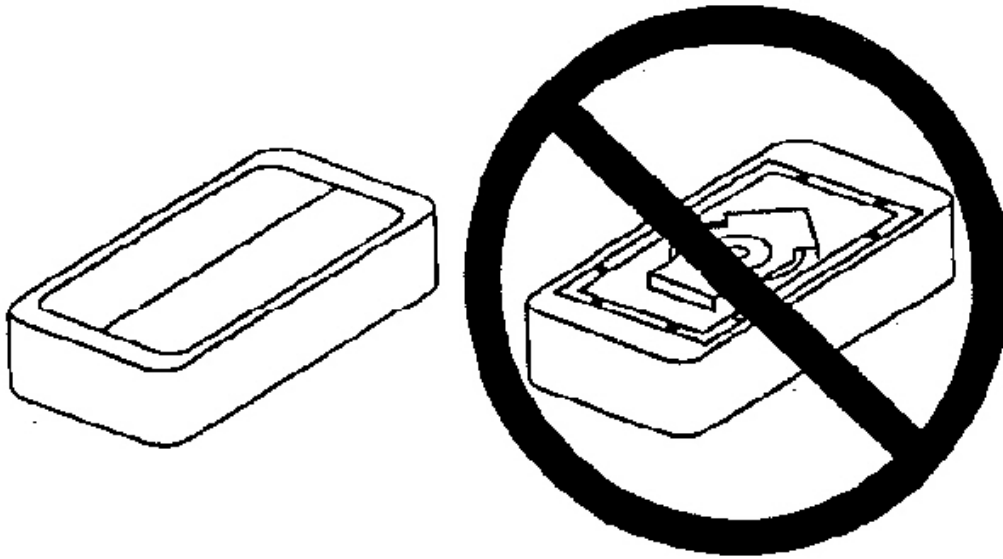


Fig. 146: Illustrating Proper Storage Of Inflator Module
Courtesy of GENERAL MOTORS CORP.

5. Place the inflator module on a work bench, with the vinyl trim cover facing up and away from the surface.

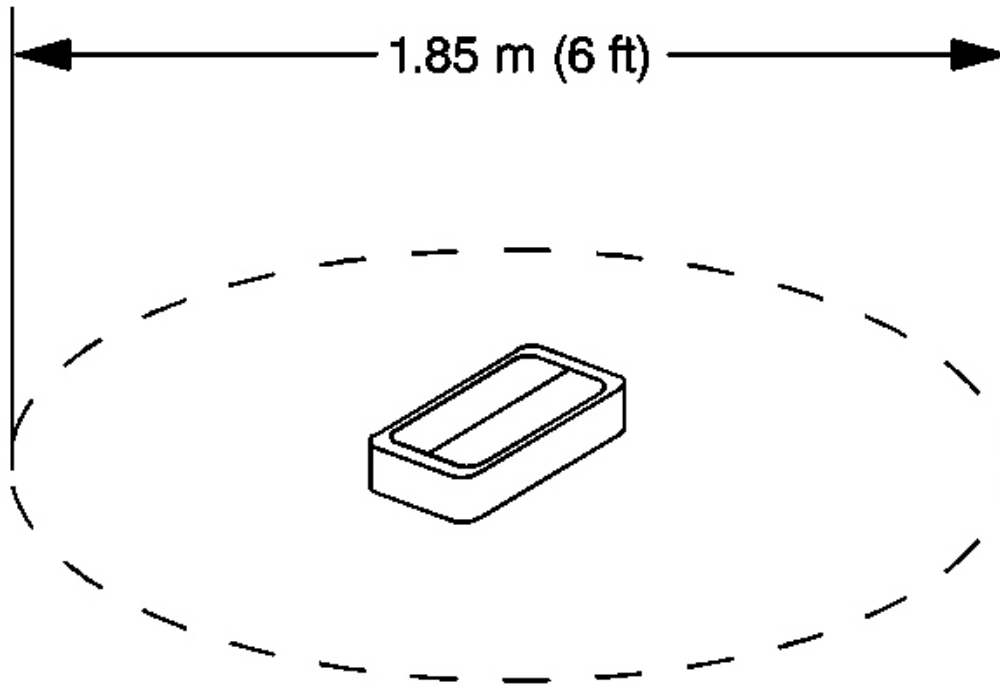


Fig. 147: Clearance For Deployment Of Inflator Module
Courtesy of GENERAL MOTORS CORP.

6. Clear a space on the ground about 1.85 m (6 ft) in diameter for deployment of the inflator module or deployment fixture. If possible, use a paved, outdoor location free of activity. Otherwise, use a space free of activity on the shop floor. Ensure you have sufficient ventilation.
7. Clear the area of loose or flammable objects.

IMPORTANT: Dual stage deployments are only used in steering wheel and I/P inflator modules. If stage 1 was used to deploy a dual stage inflator module, stage 2 may still be active. If disposal of a dual stage module is required, both deployment loops must be energized to deploy the air bag.

8. If you are deploying a steering wheel inflator module, place the inflator module in the center of the space.

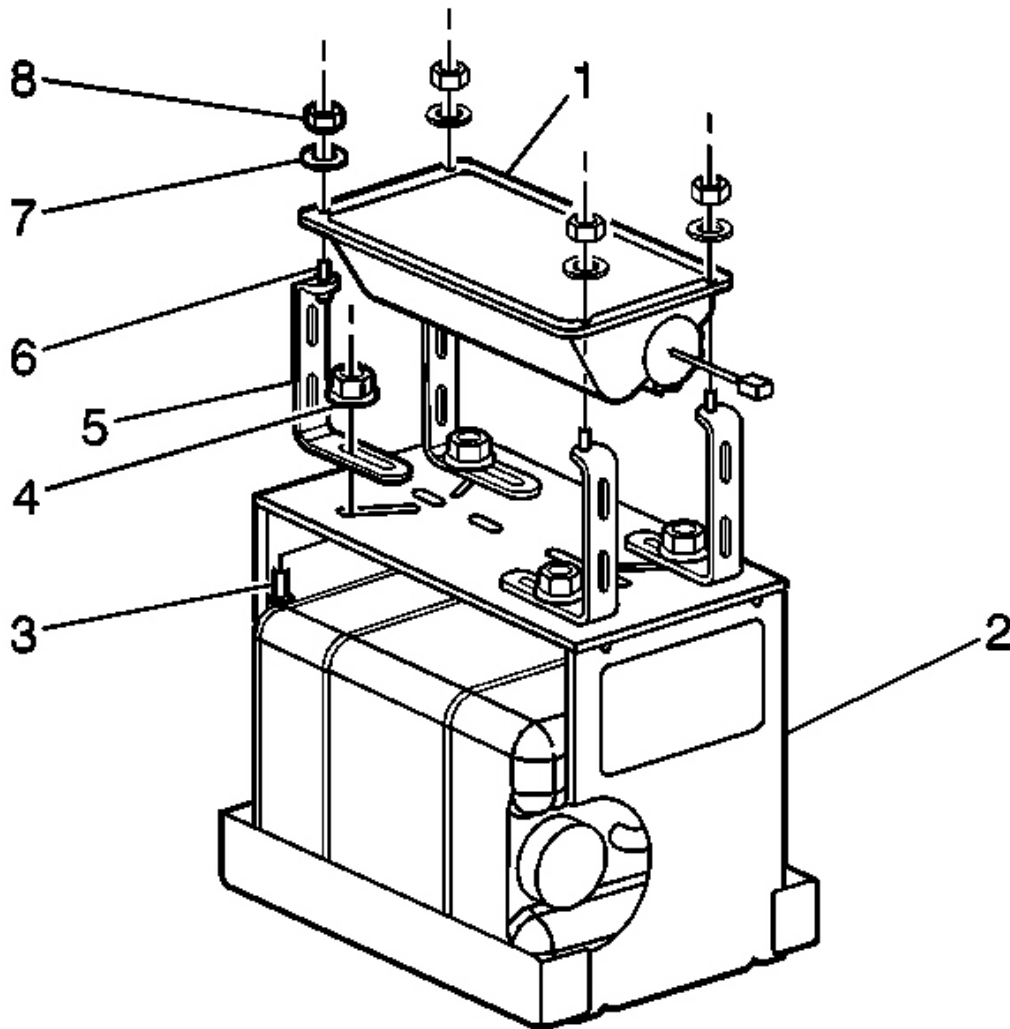


Fig. 148: Identifying I/P Module Components
Courtesy of GENERAL MOTORS CORP.

9. When deploying an I/P inflator module, perform the following instructions:
 1. Place the **J 39401-B** in the center of the cleared area. See **Special Tools**.
 2. Fill the deployment fixture with water or sand.
 3. Using the proper nuts and bolts, mount the I/P module (1) to the deployment fixture (2), with the vinyl trim facing up.

4. Securely tighten all fasteners that hold the I/P module (1) to the deployment fixture (2).

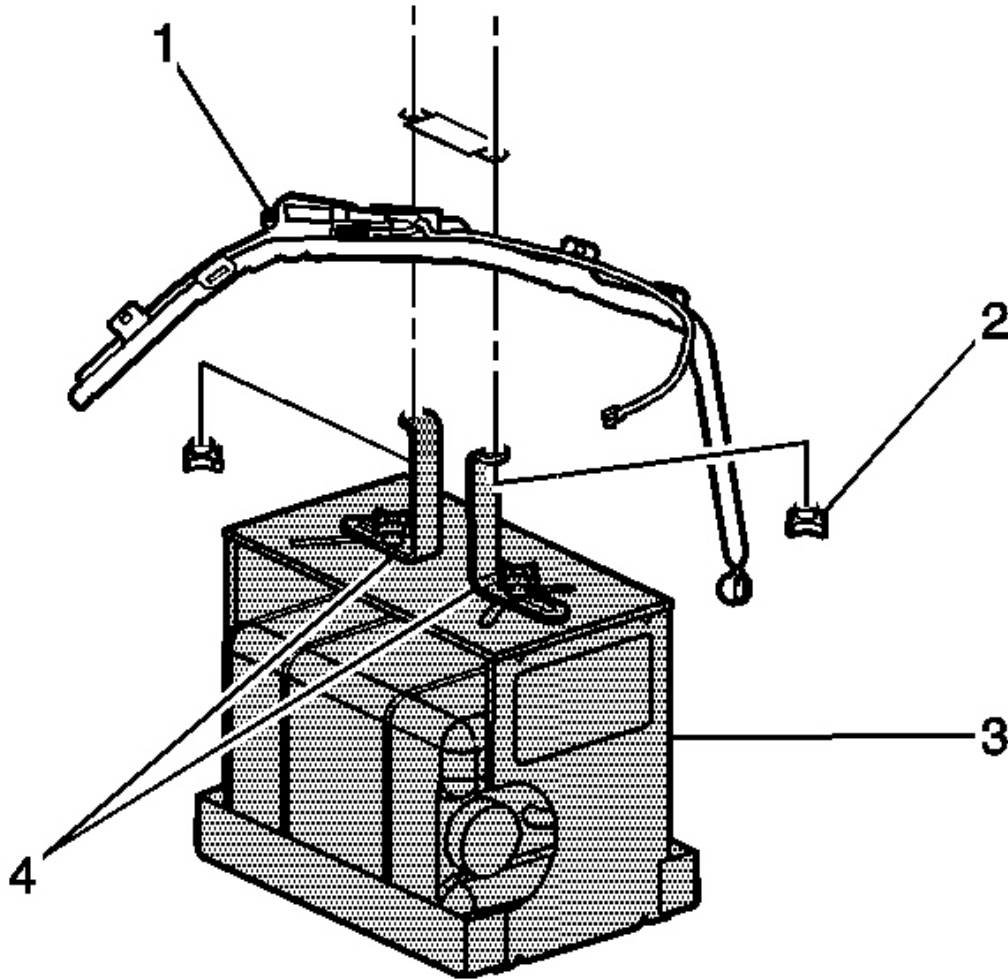


Fig. 149: Identifying Fasteners Holding Side Impact Module To Deployment Fixture
Courtesy of GENERAL MOTORS CORP.

10. When deploying a roof rail module, perform the following instructions:
 1. Place the **J 39401-B** (3) in the center of the cleared area. See **Special Tools**.
 2. Fill the deployment fixture with water or sand to provide sufficient stabilization of fixture during deployment.

3. Adjust and secure the fixture arms (4) to the deployment fixture (3), using the proper nuts and bolts.
4. Attach the roof rail module in the deployment fixture and securely tighten all fasteners.

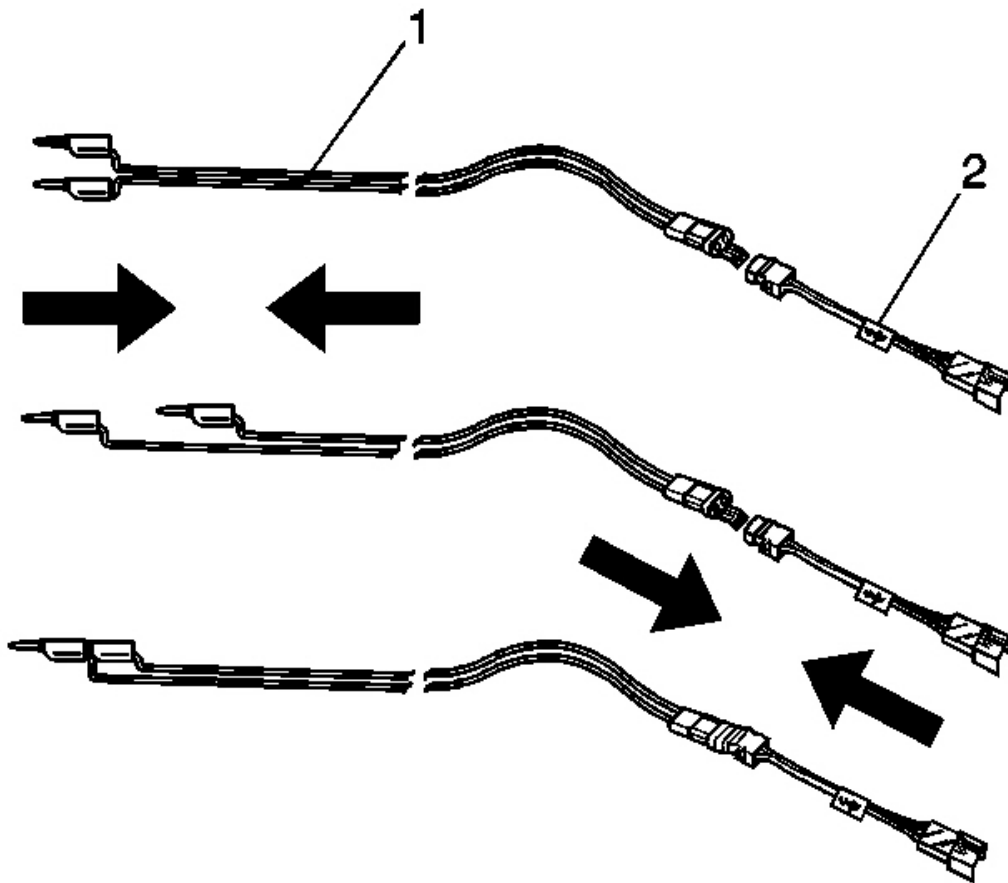


Fig. 150: Identifying SIR Deployment Harness & Adapter
Courtesy of GENERAL MOTORS CORP.

11. Inspect the SIR deployment harness and the appropriate pigtail adapter (2) for damage. Replace as needed.
12. Short the 2 SIR deployment harness leads (1) together using one banana plug seated into the other.
13. Connect the appropriate pigtail adapter (2) to the SIR deployment harness (1).

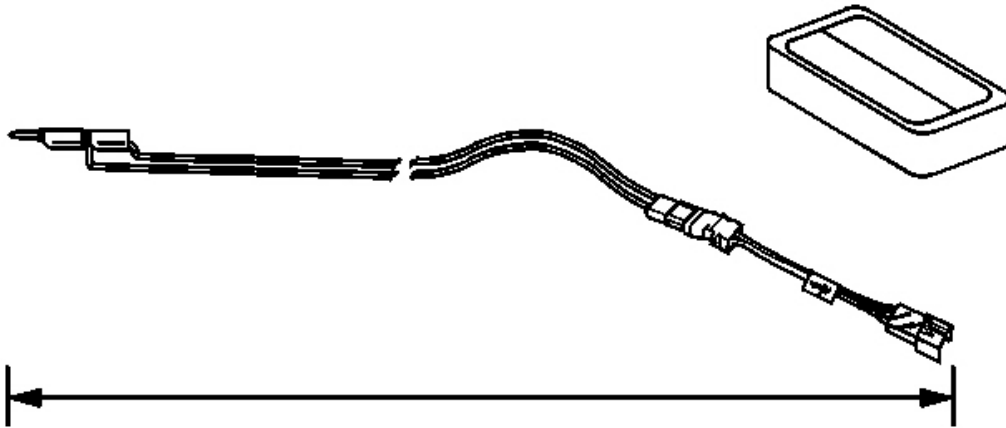


Fig. 151: Extending SIR Deployment Harness & Adapter
Courtesy of GENERAL MOTORS CORP.

14. Extend the SIR deployment harness and adapter to the full length from the deployment fixture or area.

IMPORTANT: On a dual stage inflator module, both connectors must be attached to the deployment harness adapter. This will ensure that both stage 1 and stage 2 of the deployment loops are energized, regardless of the deployment state.

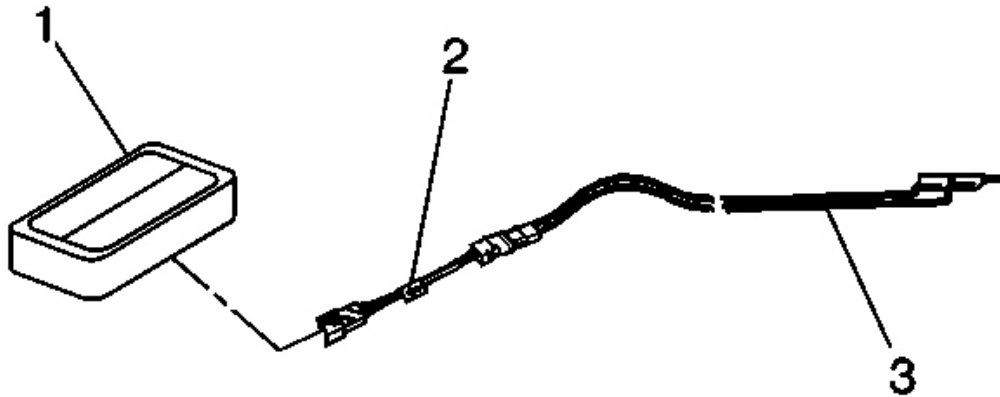


Fig. 152: Inflator Module & SIR Deployment Harness Adapter
Courtesy of GENERAL MOTORS CORP.

15. Connect the inflator module (1) to the adapter (2) on the SIR deployment harness (3).

IMPORTANT:

- The rapid expansion of gas involved with deploying an inflator module is very loud. Notify all the people in the immediate area that you intend to deploy the inflator module.
- When the inflator module deploys, the deployment fixture may jump about 30 cm (1 ft) vertically. This is a normal reaction of the inflator module due to the force of the rapid expansion of gas inside the inflator module.
- If you are deploying a dual stage inflator module with stage 1 already deployed, the fixture may not move and the noise may have been reduced.

16. Clear the area of people.

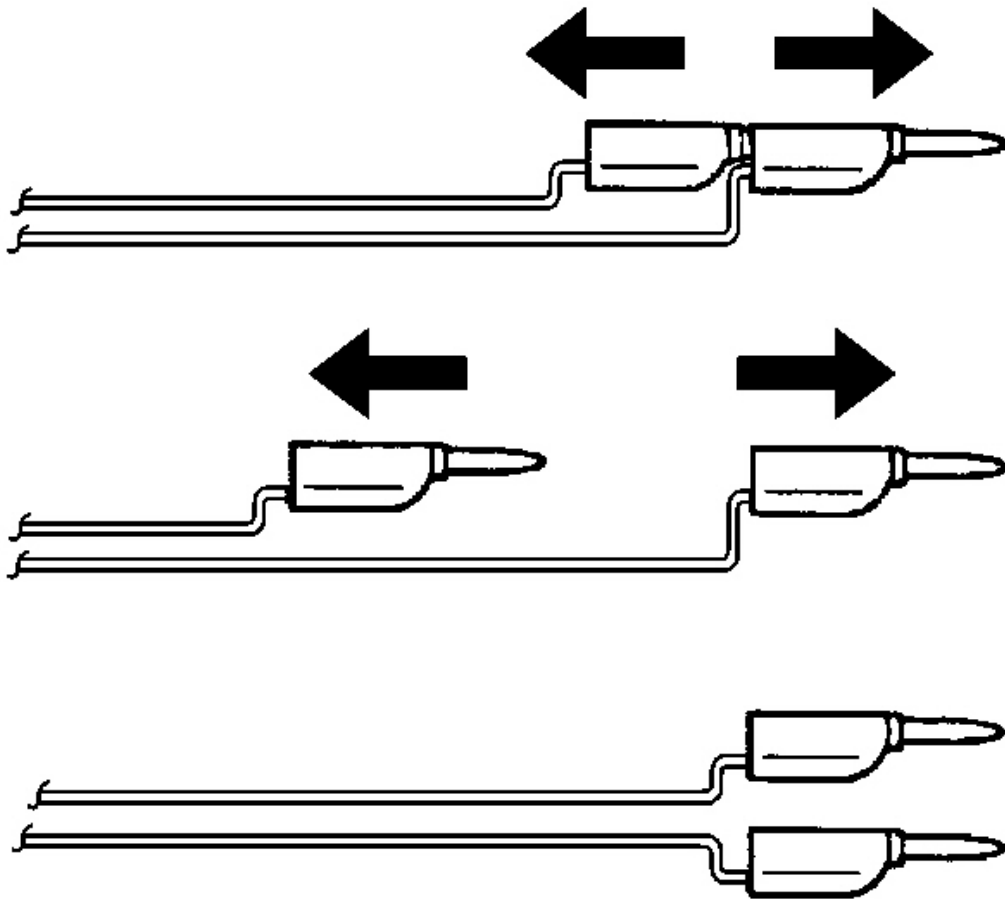


Fig. 153: Separating Banana Plugs
Courtesy of GENERAL MOTORS CORP.

17. Separate the 2 banana plugs on the SIR deployment harness that were shorted together earlier in the procedure.

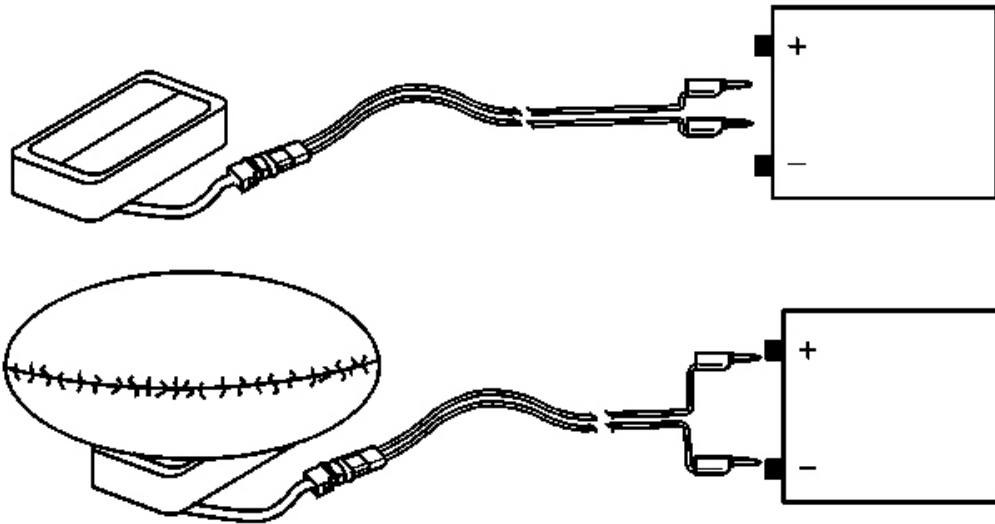


Fig. 154: Connecting SIR Deployment Harness Wires To Power Source
Courtesy of GENERAL MOTORS CORP.

18. Place a 12-volt minimum/2-amp minimum power source, such as a vehicle battery, near the shorted end of the harness.
19. Connect the SIR deployment harness wires to the power source. Deployment of the inflator module will occur when contact is made.

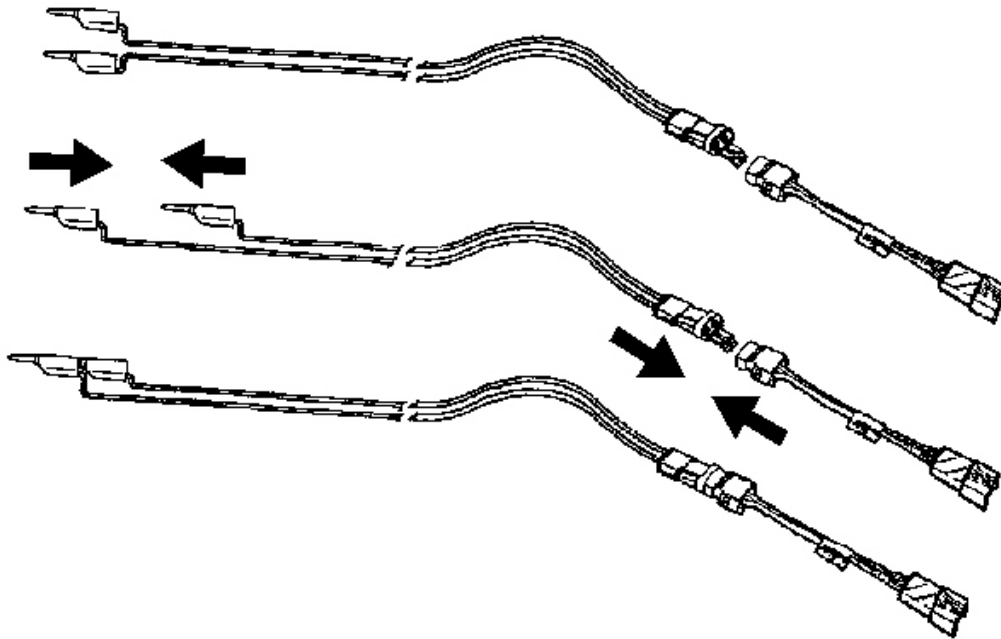


Fig. 155: View Of Deployment Harness Leads
Courtesy of GENERAL MOTORS CORP.

20. Disconnect the SIR deployment harness from the power source after the inflator module deploys.
21. If the inflator module did not deploy, disconnect the adapter and discontinue the procedure and contact the Technical Assistance Group.

If deployment was successful, proceed to the following steps.

CAUTION: After deployment, the metal surfaces of the SIR component may be very hot. To help avoid a fire or personal injury:

- Allow sufficient time for cooling before touching any metal surface of the SIR component.
- Do not place the deployed SIR component near any flammable objects.

22. Seat one banana plug into the other in order to short the deployment harness leads.

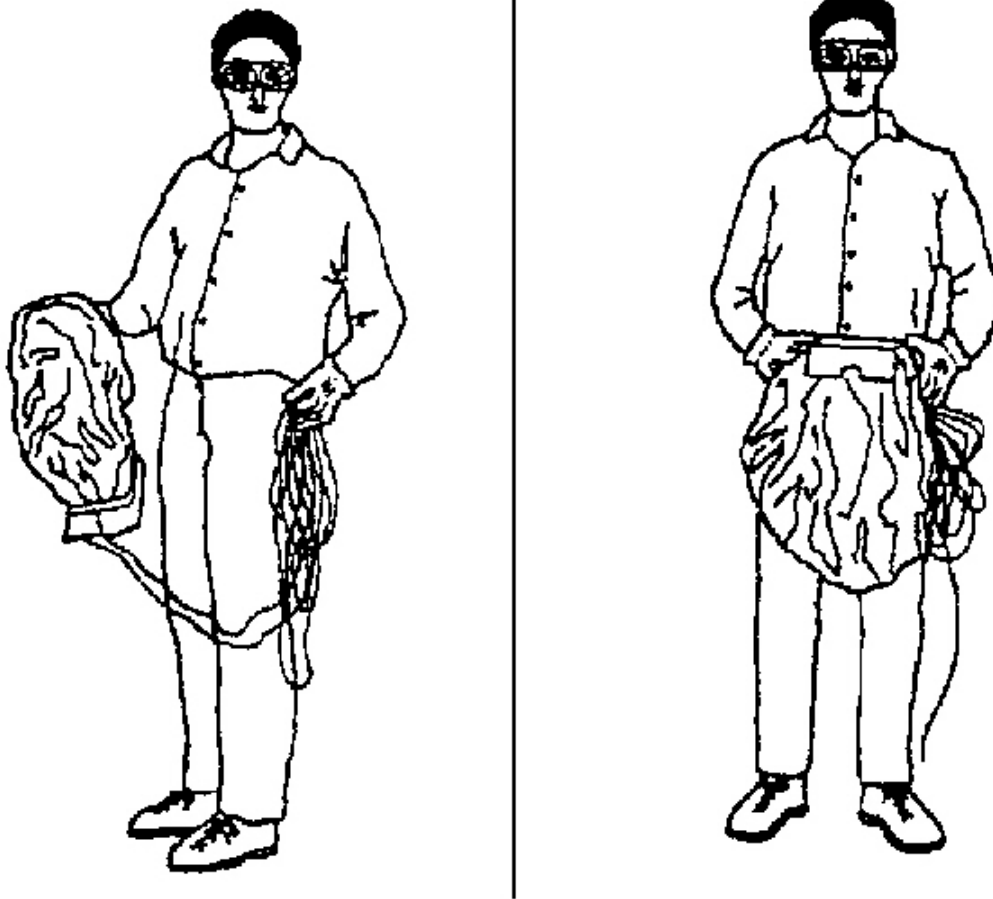


Fig. 156: Disposing Of Deployed Inflator Module
Courtesy of GENERAL MOTORS CORP.

23. Put on a pair of shop gloves.
24. Disconnect the pigtail adapter from the inflator module as soon as possible.
25. Inspect the pigtail adapter and the SIR deployment harness. Replace as needed.
26. Dispose of the deployed inflator module through normal refuse channels.
27. Wash your hands with a mild soap.

Deployment Inside Vehicle - Vehicle Scrapping Procedure

Deploy the inflator modules inside of the vehicle when destroying the vehicle or when salvaging the vehicle for parts. This includes, but is not limited to, the following situations:

- The vehicle has completed all useful life.
- Irreparable damage occurred to the vehicle in a non-deployment type accident.
- Irreparable damage occurred to the vehicle during a theft.
- The vehicle is being salvaged for parts to be used on a vehicle with a different VIN, as opposed to rebuilding as the same VIN.

CAUTION: When deploying a SIR component for disposal, perform the deployment procedures in the order listed. Failure to observe the procedures in the order listed may result in personal injury.

1. Lower the driver and passenger windows.
2. Turn the ignition switch to the OFF position and remove the ignition key.
3. Check that all inflator modules which will be deployed are mounted securely.
 - Driver inflator module is secured to the steering wheel.
 - Passenger inflator module is secured to the instrument panel.
 - Left roof rail inflator module is secured to the left roof rail.
 - Right roof rail inflator module is secured to the right roof rail.
4. Put on safety glasses.
5. Remove all loose objects from the front seats.

CAUTION: A deployed dual stage inflator module will look the same whether one or both stages were used, always assume a deployed dual stage inflator module has an active stage 2. Improper handling or servicing can activate the inflator module and cause personal injury.

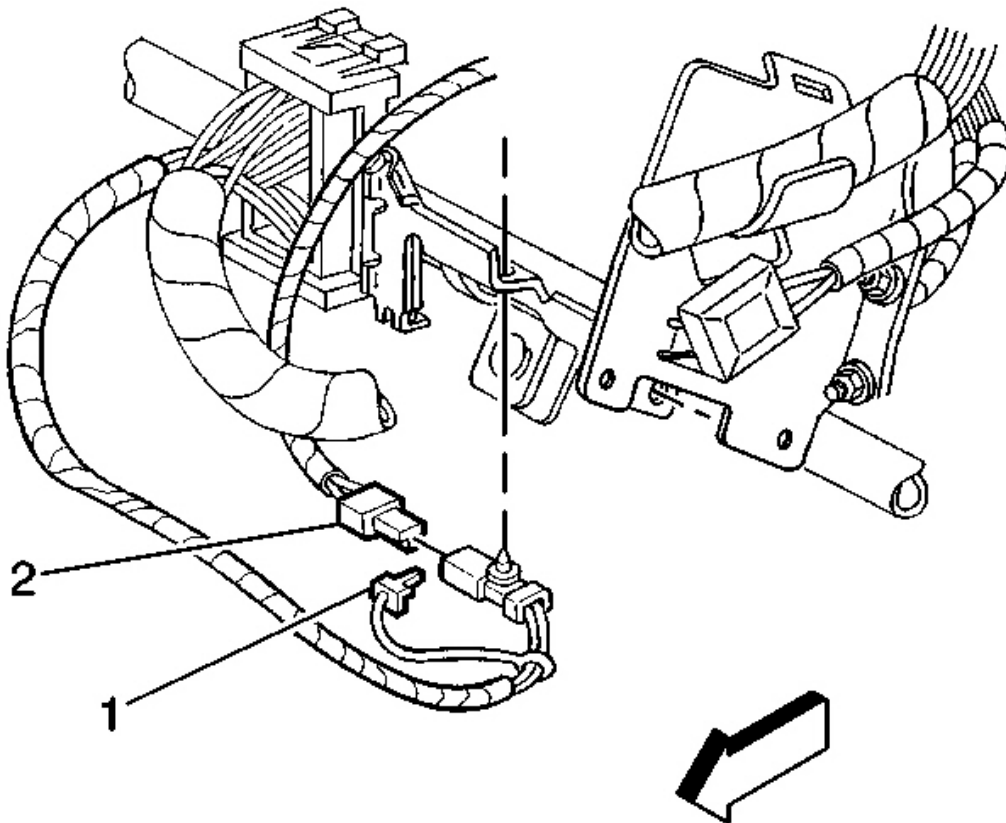


Fig. 157: Locating Inflatable Restraint Steering Wheel Module Connector
Courtesy of GENERAL MOTORS CORP.

6. Disconnect the steering wheel module yellow connector (1) from vehicle harness yellow connector (2).

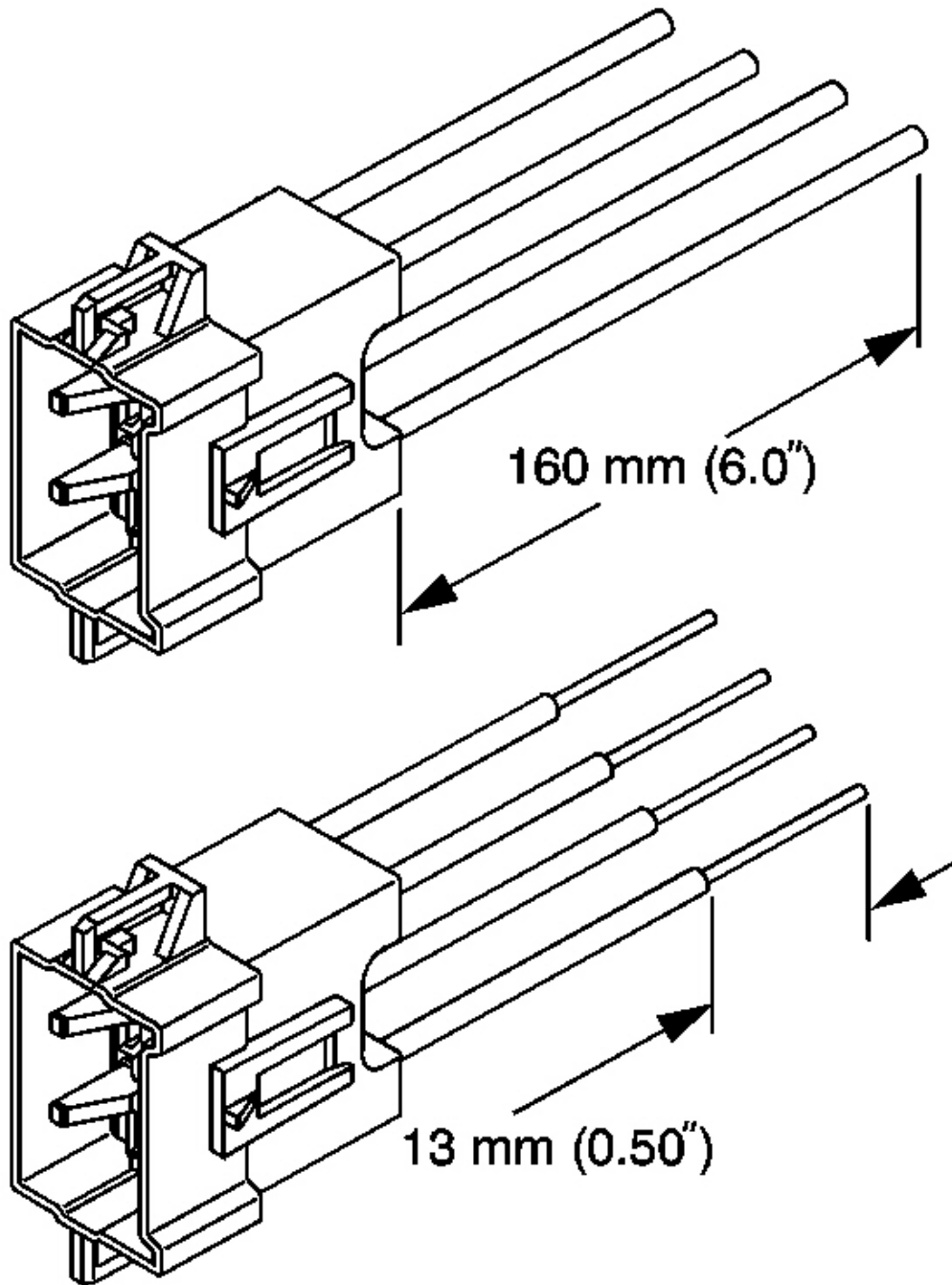


Fig. 158: Stripping SIR Wires
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: If the vehicle is equipped with dual stage air bags the steering wheel module and I/P module will each have 4 wires. Refer to SIR Connector End Views for determining high and low circuits.

7. Cut the yellow harness connector out of the vehicle, leaving at least 16 cm (6 in) of wire at the connector.
8. Strip 13 mm (0.5 in) of insulation from each of the connector wire leads.

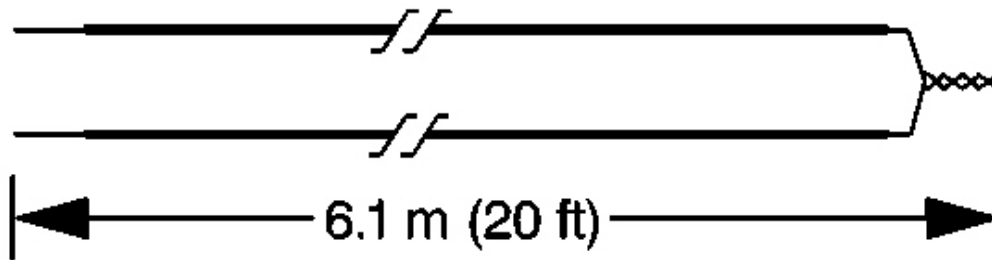


Fig. 159: Fabricating 20 Ft. Deployment Harness
Courtesy of GENERAL MOTORS CORP.

9. Cut two 6.1 m (20 ft) deployment wires from a 0.8 mm (18 gage) or thicker multi-strand wire. Use these wires to fabricate the driver deployment harness.
10. Strip 13 mm (0.5 in) of insulation from both ends of the wires.
11. Twist together one end from each of the wires in order to short the wires. Deployment wires shall remain shorted, and not connected to a power source until you are ready to deploy the inflator module.

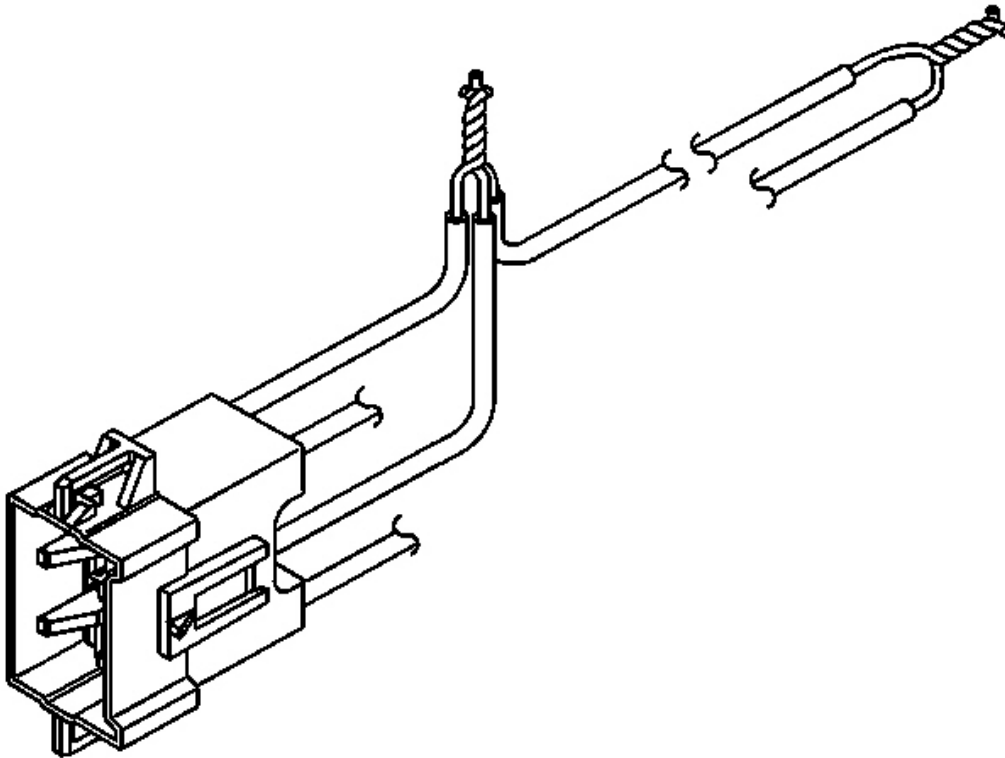


Fig. 160: Twisting Connector Wire Leads (High Circuits) To Deployment Harness Wire

Courtesy of GENERAL MOTORS CORP.

12. Twist together the 2 connector wire leads from the high circuits from both stages of the steering wheel module, to one set of deployment wires. Refer to **SIR Connector End Views** in order to determine the correct circuits.
13. Inspect that the 3-wire connection is secure.

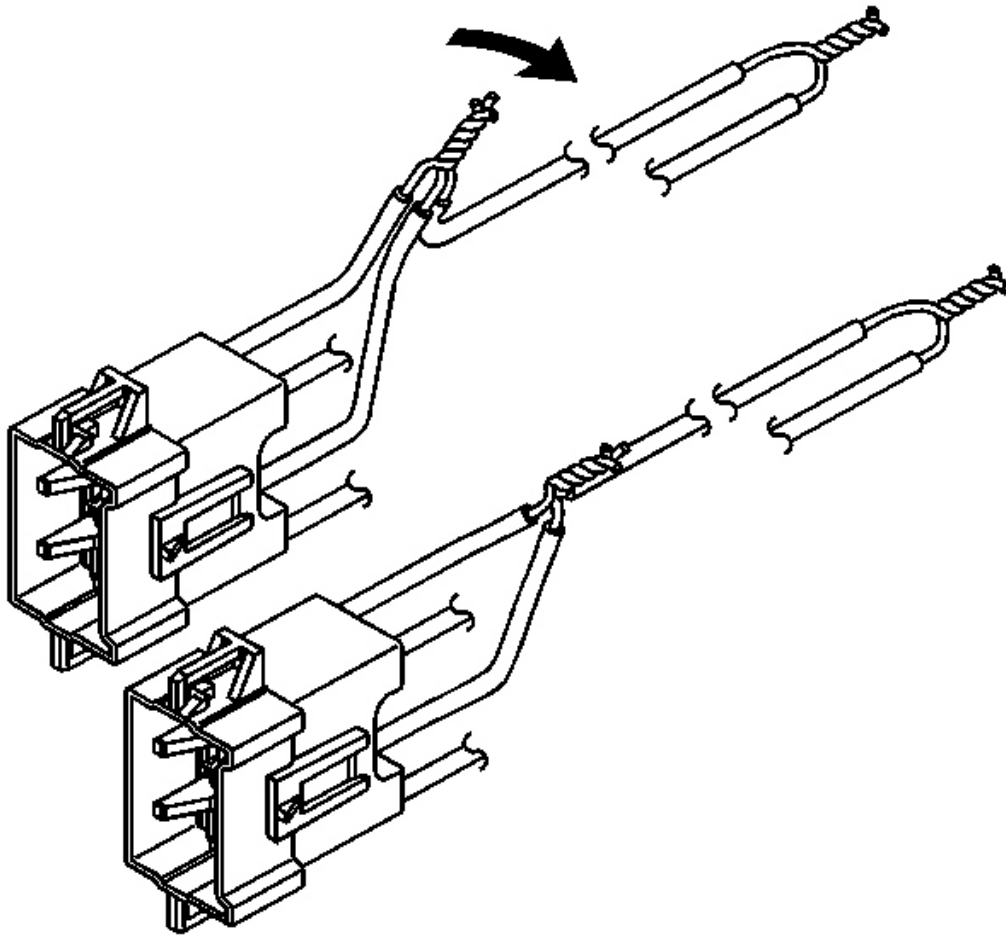


Fig. 161: Bending Twisted Connection Flat
Courtesy of GENERAL MOTORS CORP.

14. Bend flat the twisted connection.

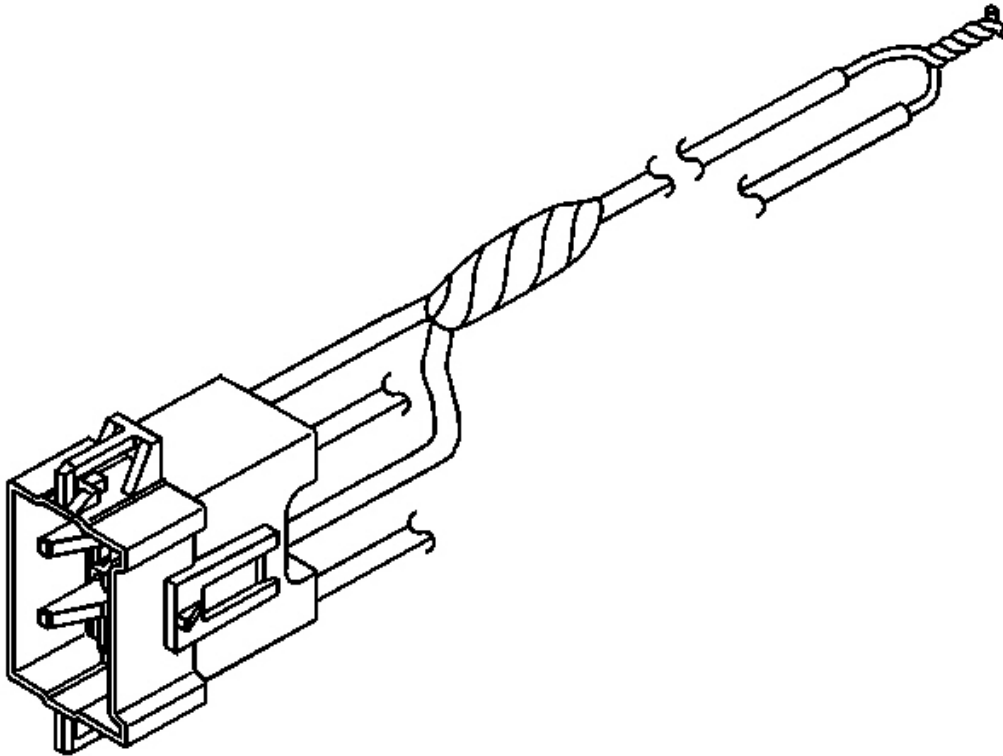


Fig. 162: Insulating Connection With Electrical Tape
Courtesy of GENERAL MOTORS CORP.

15. Secure and insulate the 3-wire connection to the deployment harness using electrical tape.

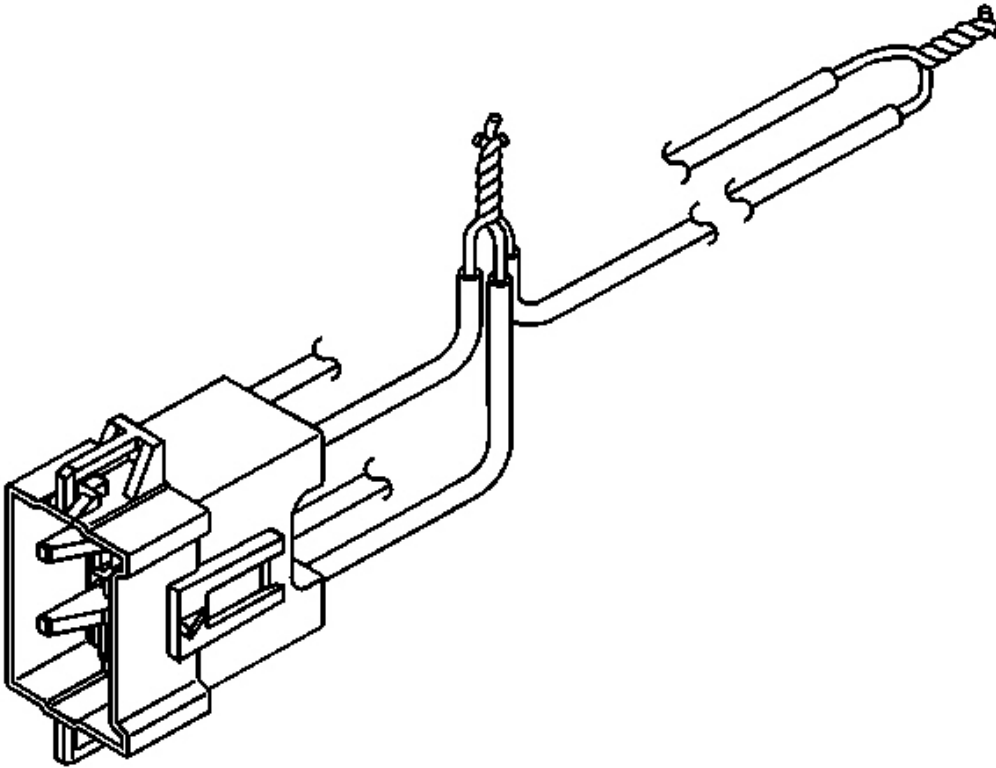


Fig. 163: Twisting Connector Wire Leads (Low Circuits) To Deployment Harness Wire

Courtesy of GENERAL MOTORS CORP.

16. Twist together the 2 connector wire leads from the low circuits from both stages of the steering wheel module, to one set of deployment wires. Refer to **SIR Connector End Views** in order to determine the correct circuits.
17. Inspect that the 3-wire connection is secure.

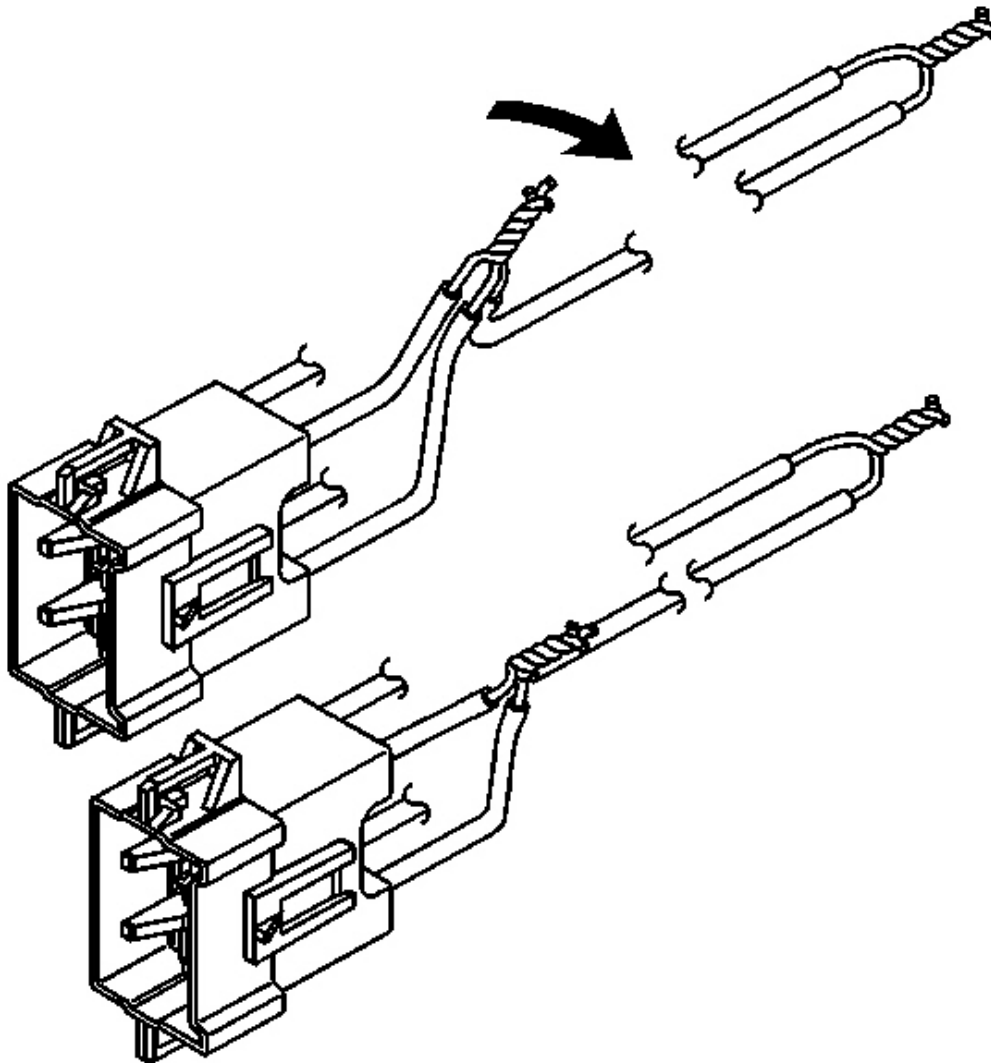


Fig. 164: Bending Twisted Connection Flat
Courtesy of GENERAL MOTORS CORP.

18. Bend flat the twisted connection.

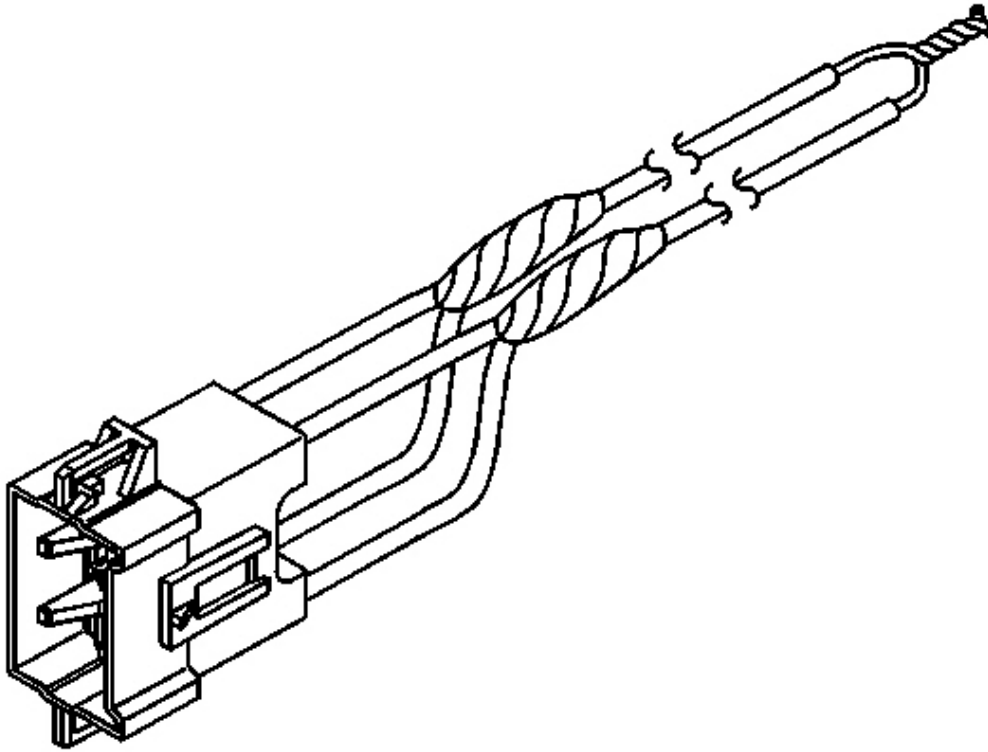


Fig. 165: Insulating Connection With Electrical Tape
Courtesy of GENERAL MOTORS CORP.

19. Secure and insulate the 3-wire connection to the deployment harness using electrical tape.
20. Connect the deployment harness to the connector on the steering wheel module.

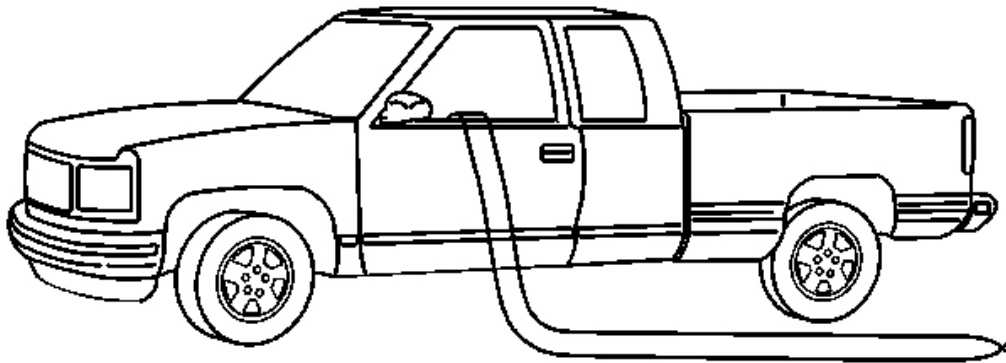


Fig. 166: Routing The Deployment Harness Out Of The Vehicle's Driver Side
Courtesy of GENERAL MOTORS CORP.

21. Route the deployment harness out of the driver side of the vehicle.

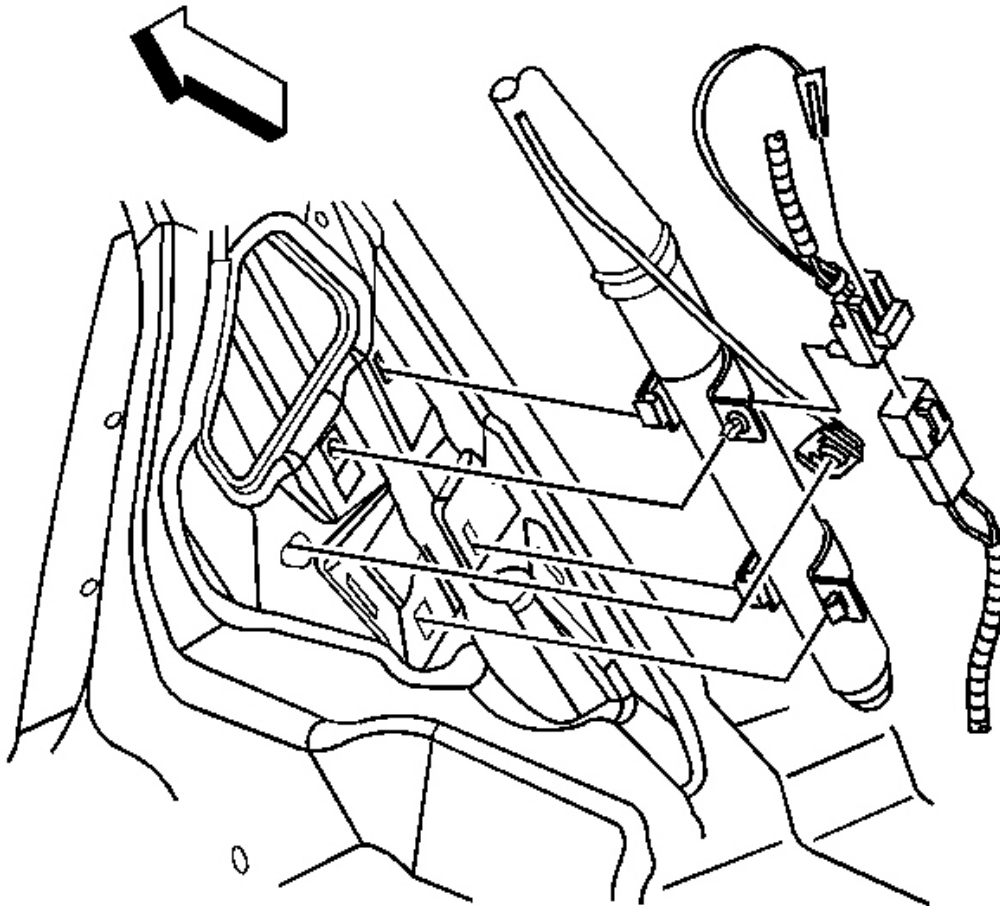


Fig. 167: Locating Roof Rail Module Connector
Courtesy of GENERAL MOTORS CORP.

22. Disconnect the yellow left roof rail harness connector from the vehicle harness connector.

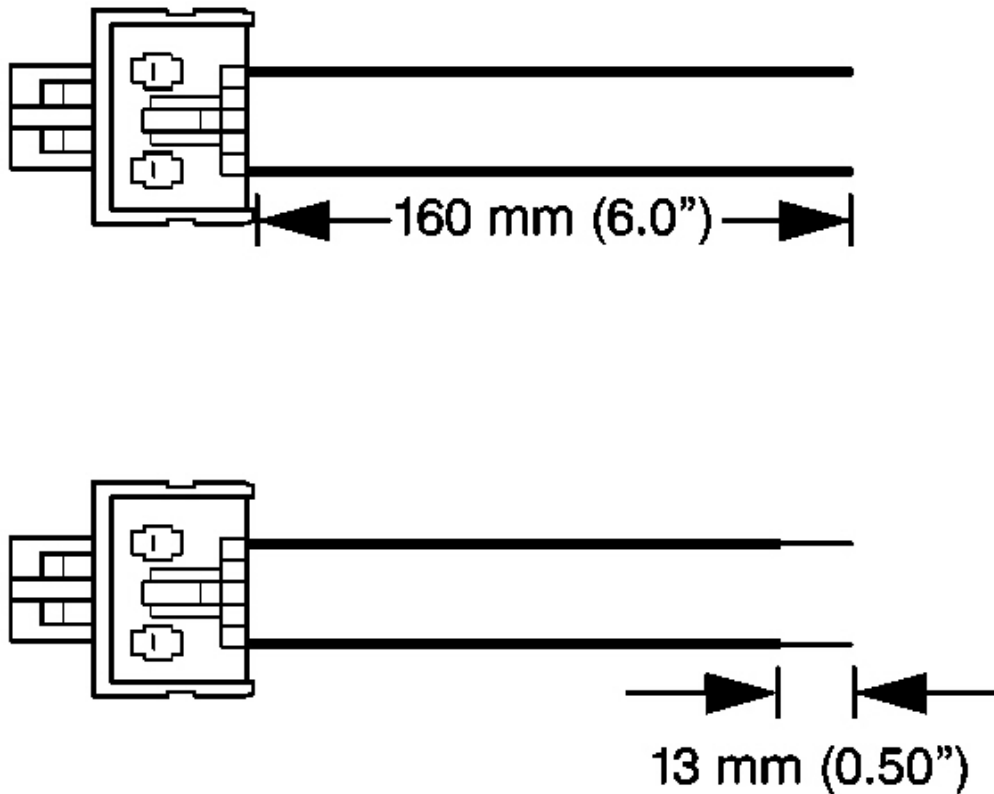


Fig. 168: Identifying Proper Stripping Of Connection Wire Leads
Courtesy of GENERAL MOTORS CORP.

23. Cut the harness connector out of the vehicle, leaving at least 16 cm (6 in) of wire at the connector.
24. Strip 13 mm (0.5 in) of insulation from each of the connector wire leads.

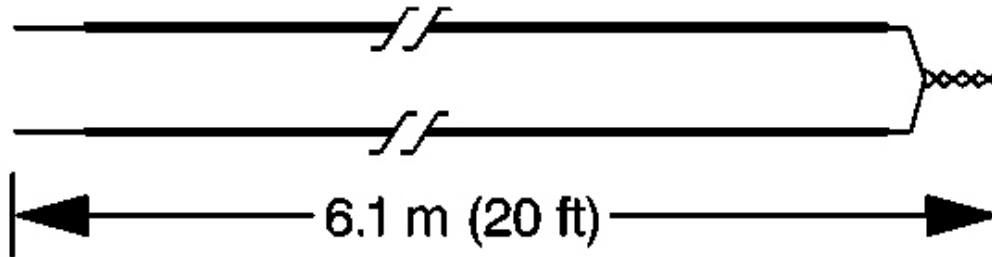


Fig. 169: Fabricating 20 Ft. Deployment Harness
Courtesy of GENERAL MOTORS CORP.

25. Cut two 6.1 m (20 ft) deployment wires from a 0.8 mm (18 gage) or thicker multi-strand wire. These wires will be used to fabricate the roof rail air bag deployment harness.
26. Strip 13 mm (0.5 in) of insulation from both ends of the wires.
27. Twist together one end from each of the wires in order to short the wires.

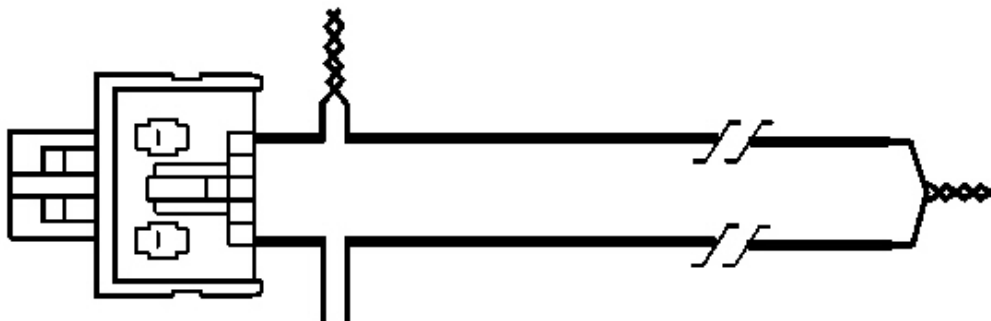


Fig. 170: View Of Proper Twisting Of Connector Wire Lead To Deployment Wire
Courtesy of GENERAL MOTORS CORP.

28. Twist together one connector wire lead to one deployment wire.

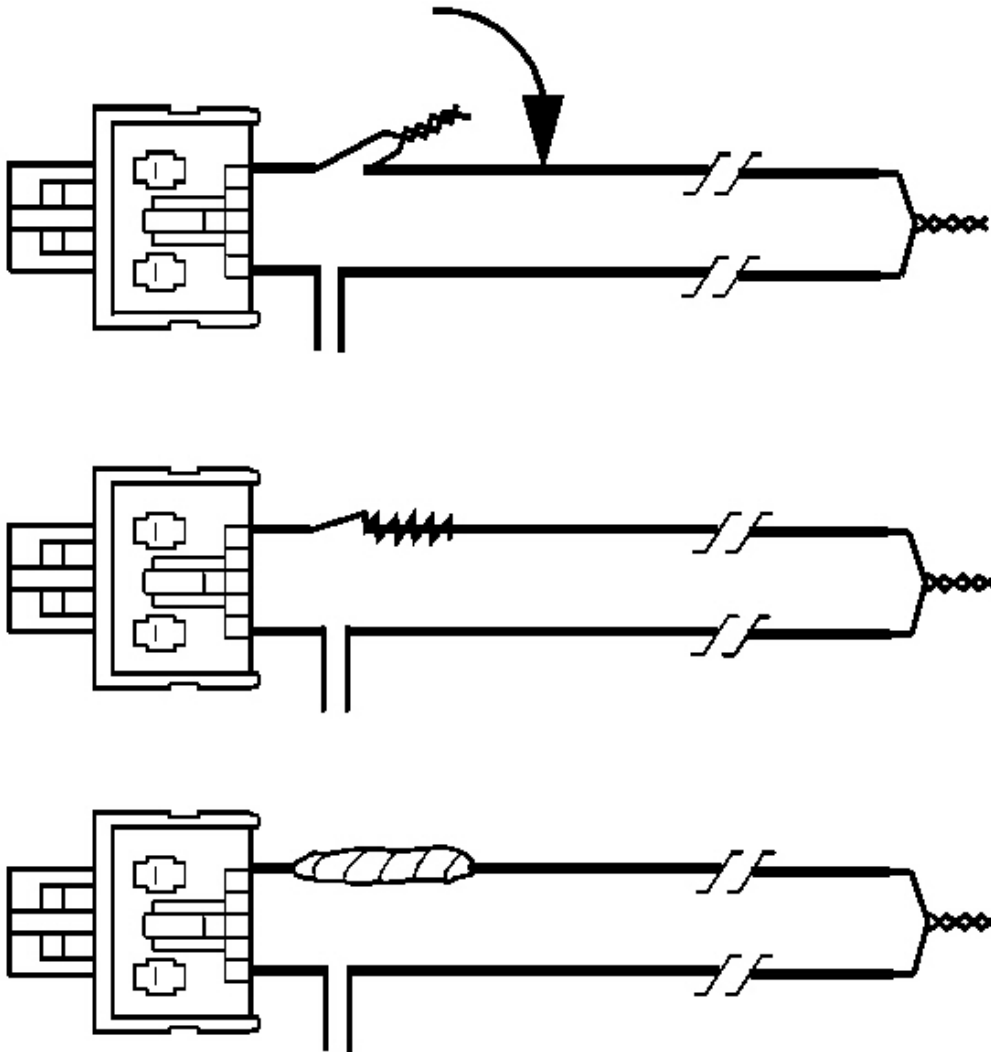


Fig. 171: Bending Twisted Connection Flat & Insulating With Tape
Courtesy of GENERAL MOTORS CORP.

29. Bend flat the twisted connection.
30. Secure and insulate the connection using electrical tape.

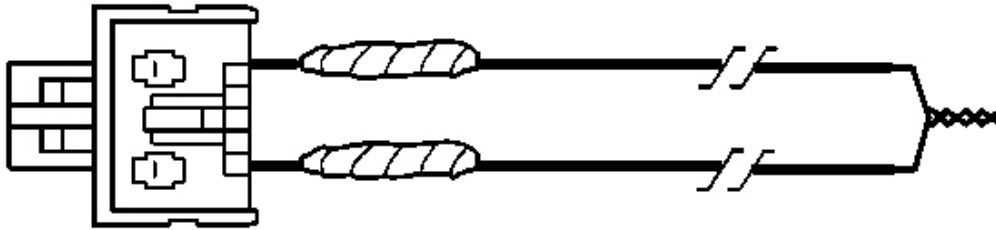


Fig. 172: Taping Remaining Connector Wire Lead To Remaining Deployment Wire
Courtesy of GENERAL MOTORS CORP.

31. Twist together, bend, and tape the remaining connector wire lead to the remaining deployment wire.
32. Connect the deployment harness to the yellow connector of the roof rail module.

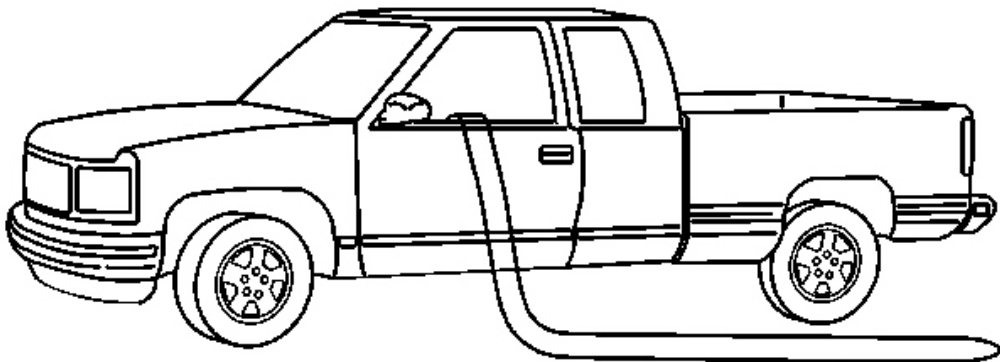


Fig. 173: Routing The Deployment Harness Out Of The Vehicle's Driver Side
Courtesy of GENERAL MOTORS CORP.

33. Route the deployment harness out of the driver side of the vehicle.

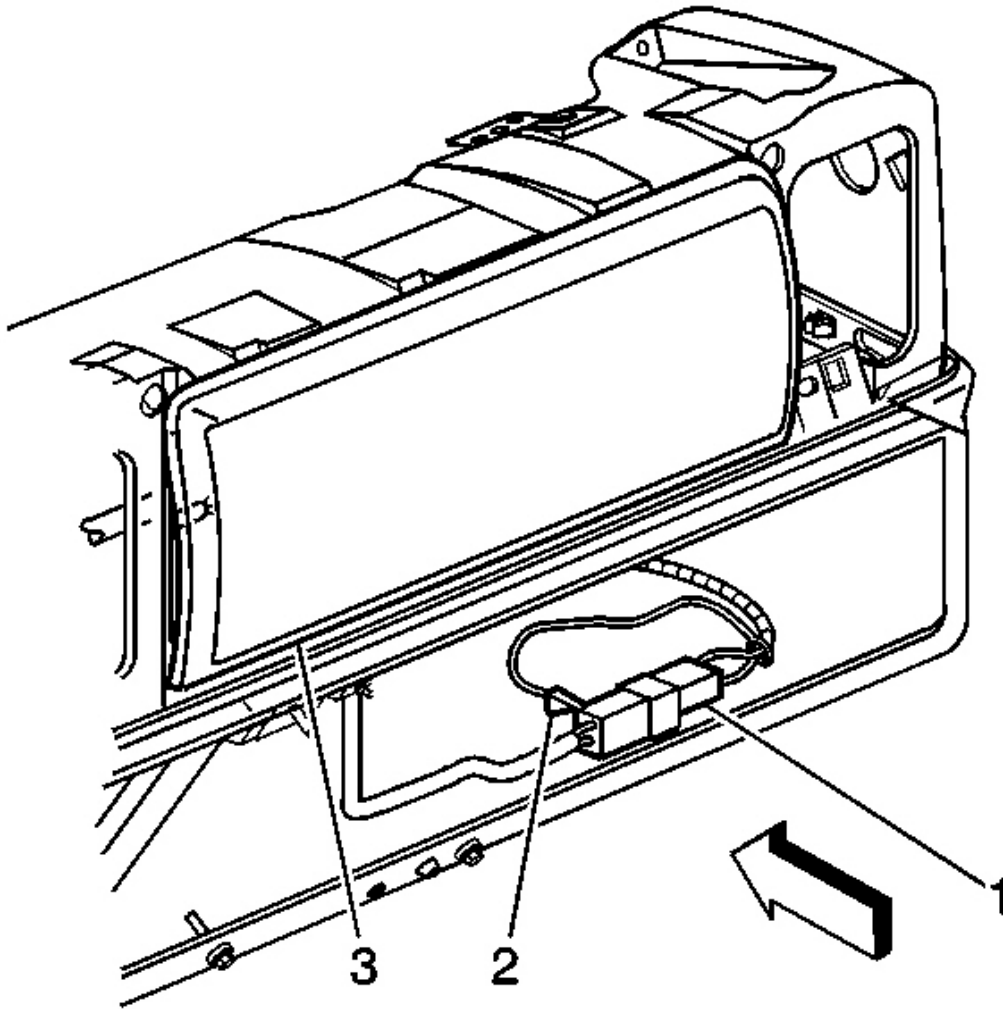


Fig. 174: View Of I/P Module Yellow Harness Connector & Vehicle Harness Connector

Courtesy of GENERAL MOTORS CORP.

34. Disconnect the I/P module yellow harness connector (1) from the vehicle harness connector (2).

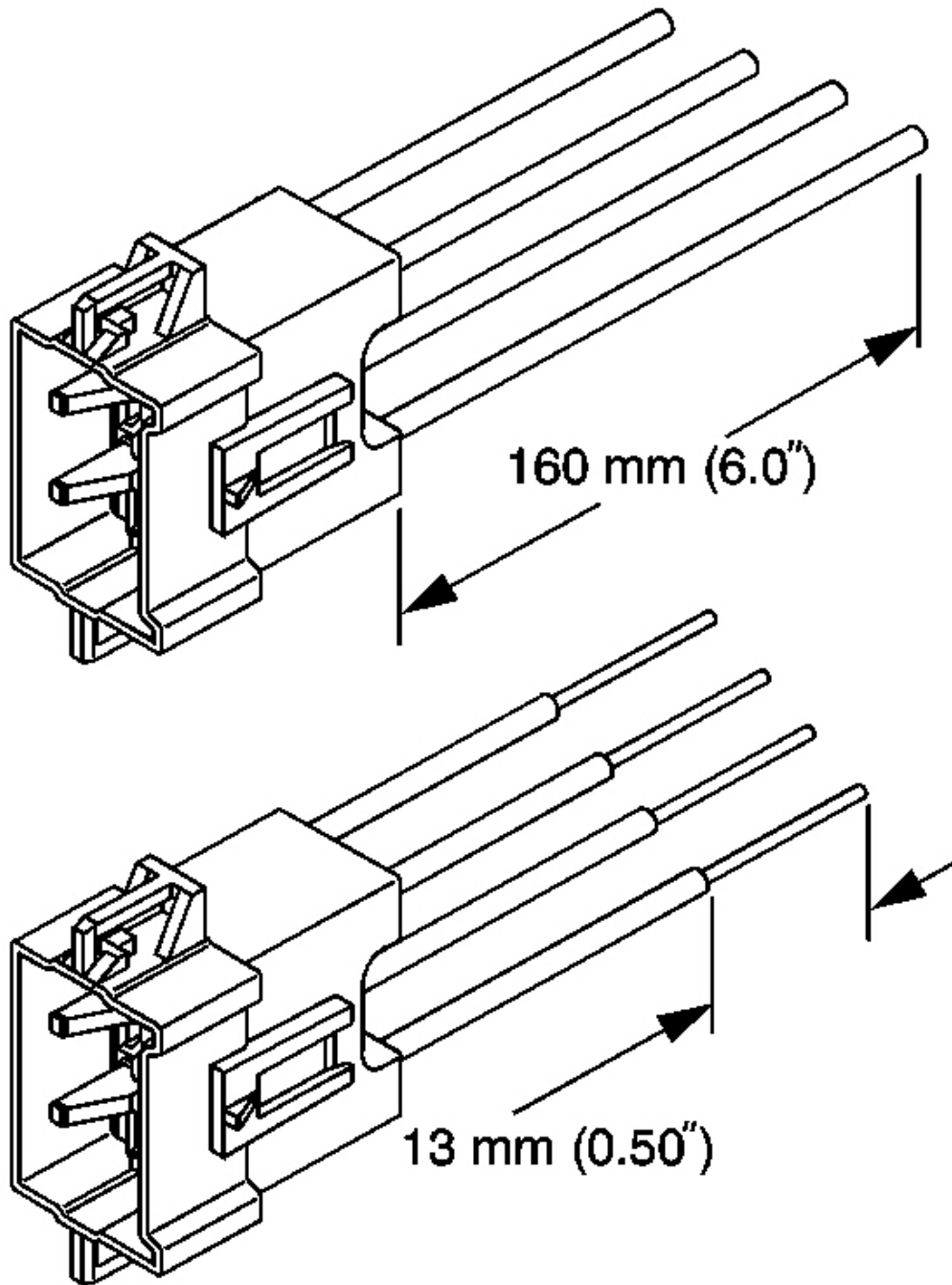


Fig. 175: Stripping SIR Wires
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: If the vehicle is equipped with dual stage air bags the steering wheel module and I/P module will each have 4 wires. Refer to SIR Connector End Views for determining high and low circuits.

35. Cut the yellow harness connector out of the vehicle, leaving at least 16 cm (6 in) of wire at the connector.
36. Strip 13 mm (0.5 in) of insulation from each of the connector wire leads.

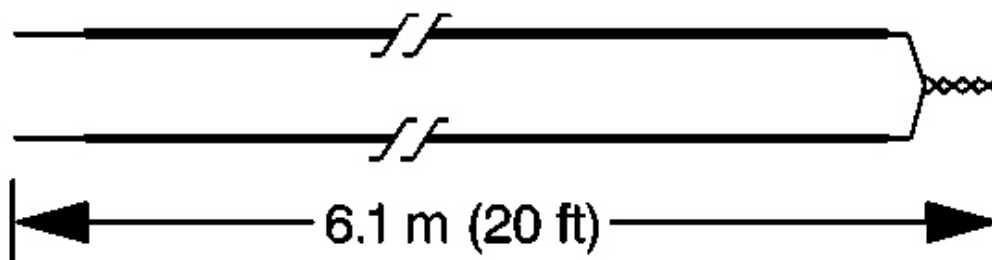


Fig. 176: Fabricating 20 Ft. Deployment Harness
Courtesy of GENERAL MOTORS CORP.

37. Cut two 6.1 m (20 ft) deployment wires from a 0.8 mm (18 gage) or thicker multi-strand wire. These wires will be used to fabricate the passenger deployment harness.
38. Strip 13 mm (0.5 in) of insulation from both ends of the wires.
39. Twist together one end from each of the wires in order to short the wires.

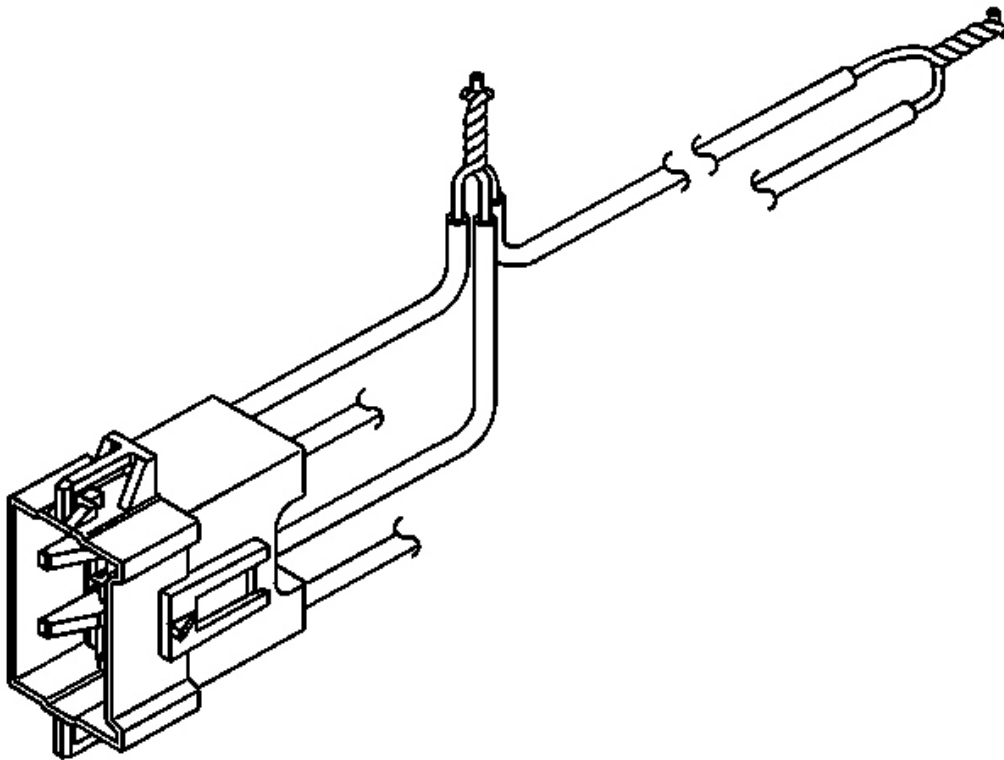


Fig. 177: Twisting Connector Wire Leads (High Circuits) To Deployment Harness Wire

Courtesy of GENERAL MOTORS CORP.

40. Twist together the 2 connector wire leads from the high circuits from both stages of the I/P module to one set of deployment wires. Refer to **SIR Connector End Views** in order to determine the correct circuits.
41. Inspect that the 3-wire connection is secure.

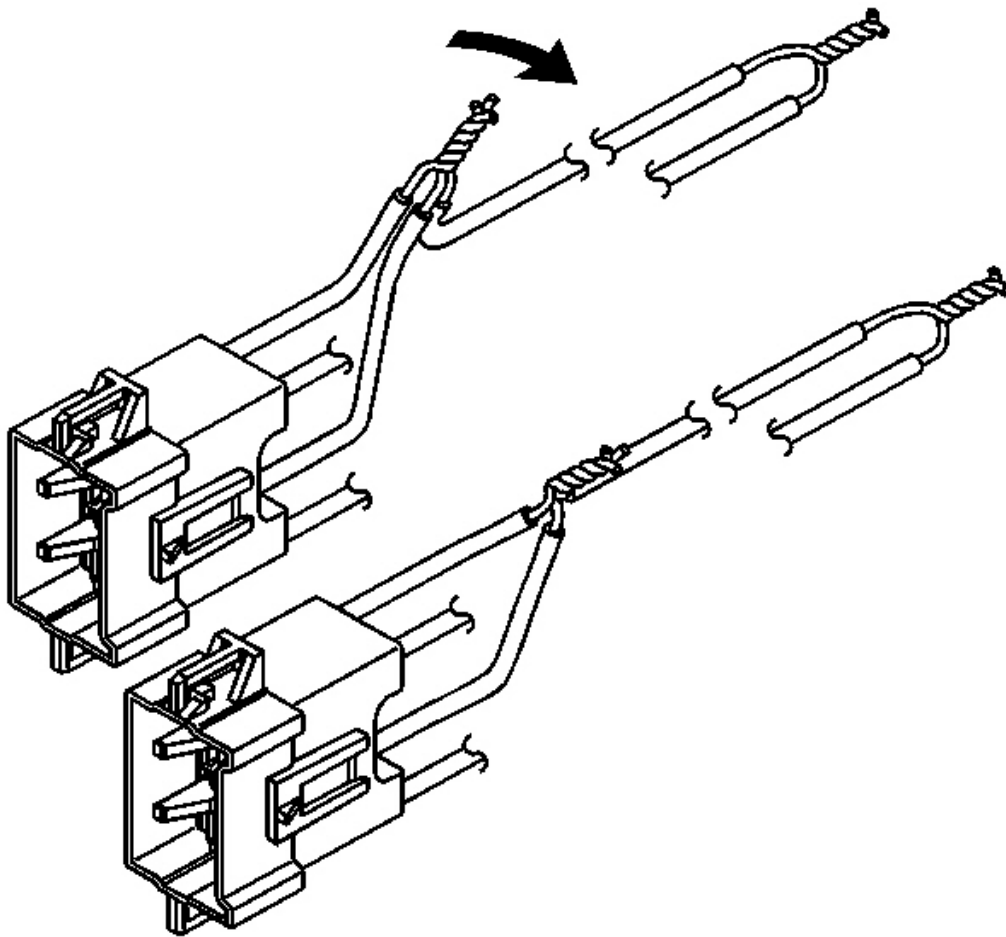


Fig. 178: Bending Twisted Connection Flat
Courtesy of GENERAL MOTORS CORP.

42. Bend flat the twisted connection.

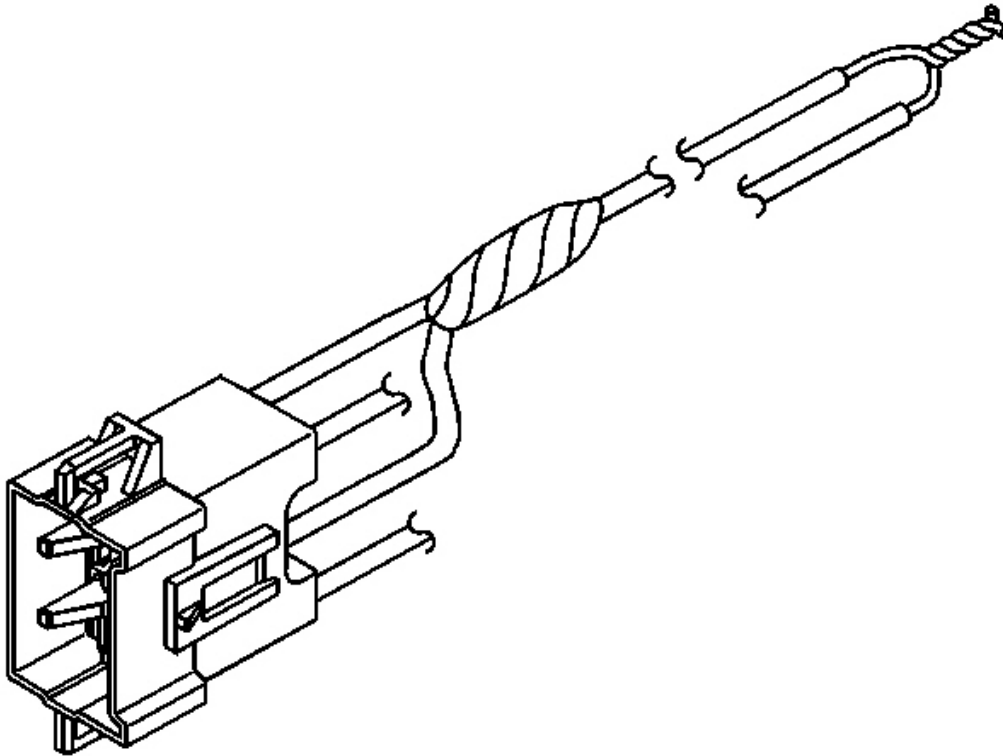


Fig. 179: Insulating Connection With Electrical Tape
Courtesy of GENERAL MOTORS CORP.

43. Secure and insulate the 3-wire connection to the deployment harness using electrical tape.

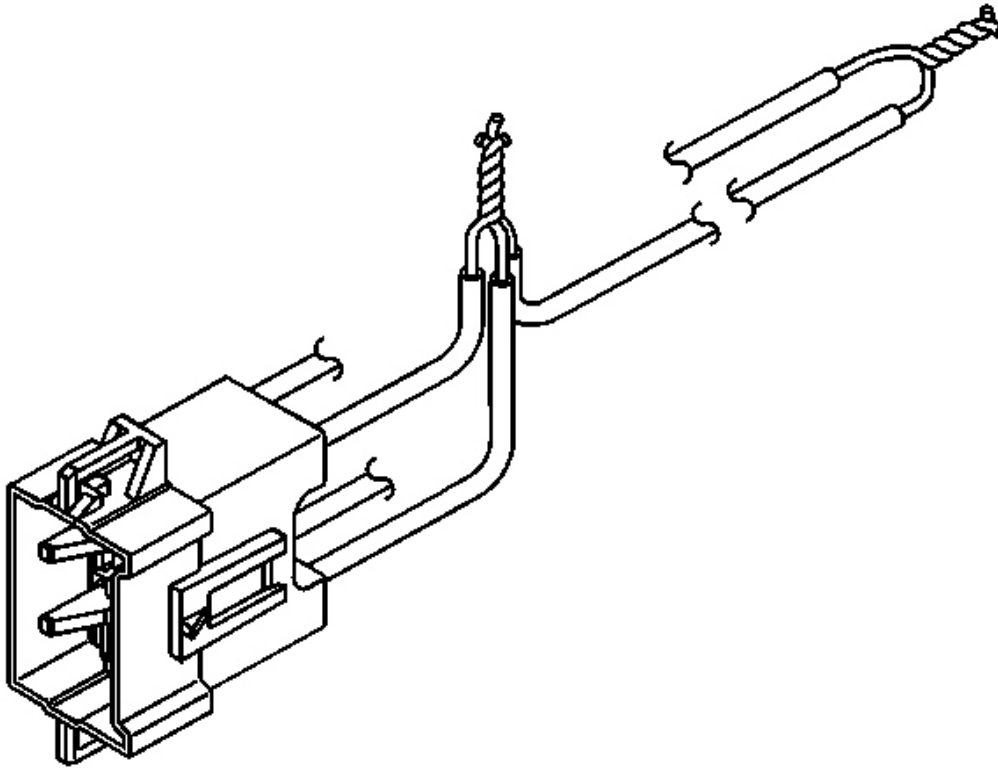


Fig. 180: Twisting Connector Wire Leads (Low Circuits) To Deployment Harness Wire

Courtesy of GENERAL MOTORS CORP.

44. Twist together the 2 connector wire leads from the low circuits from both stages of the I/P module to one set of deployment wires. Refer to **SIR Connector End Views** in order to determine the correct circuits.
45. Inspect that the 3-wire connection is secure.

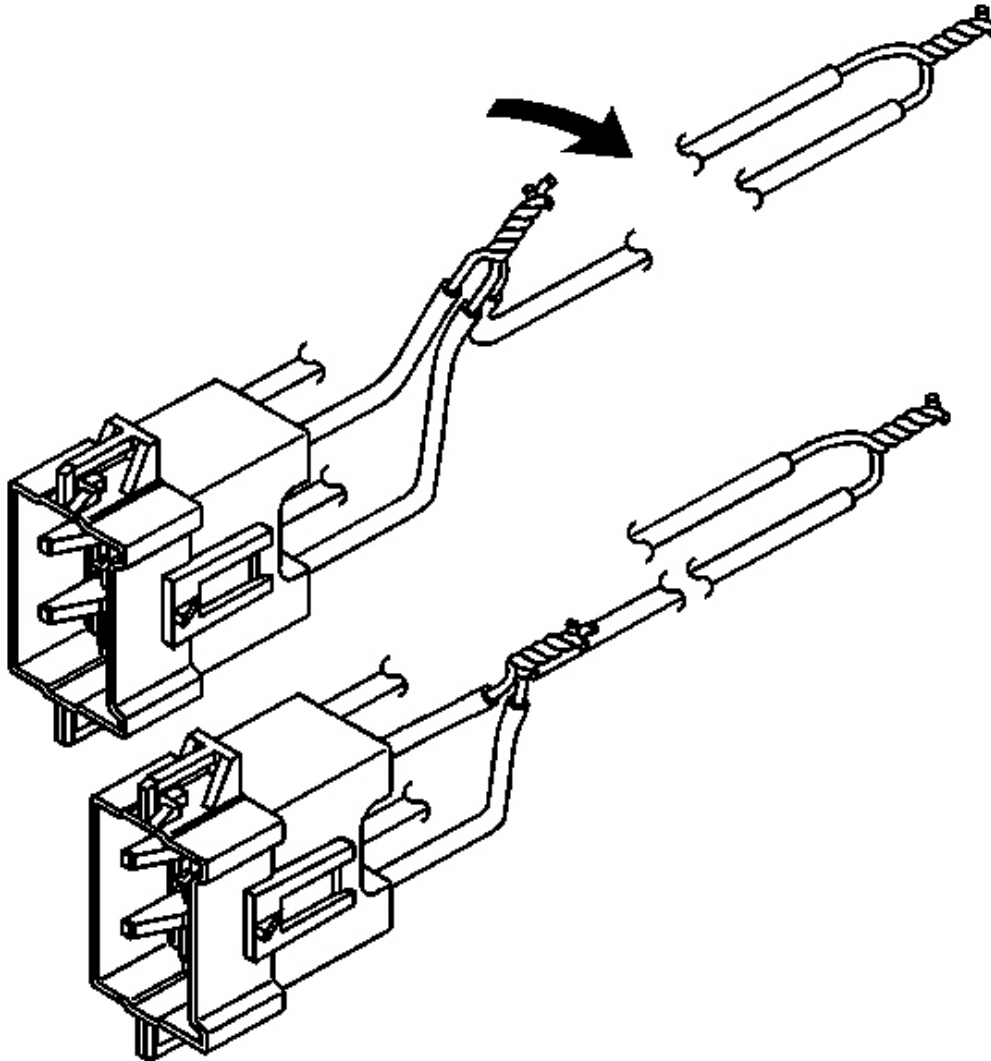


Fig. 181: Bending Twisted Connection Flat
Courtesy of GENERAL MOTORS CORP.

46. Bend flat the twisted connection.

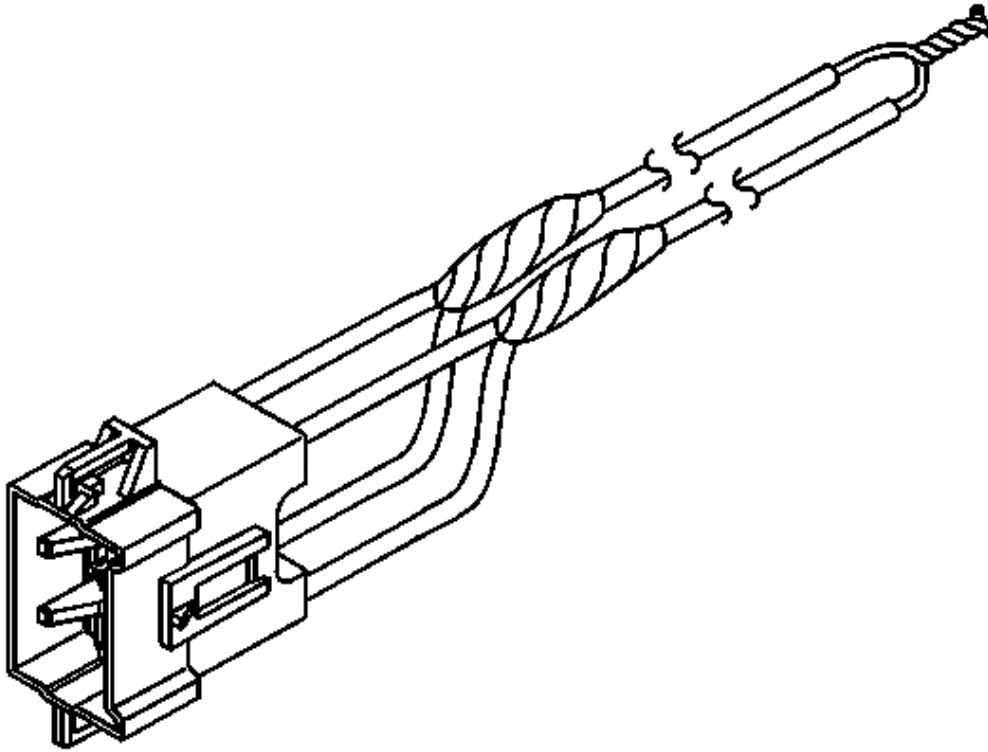


Fig. 182: Insulating Connection With Electrical Tape
Courtesy of GENERAL MOTORS CORP.

47. Secure and insulate the 3-wire connection to the deployment harness using electrical tape.
48. Connect the deployment harness to the I/P module in-line connector.

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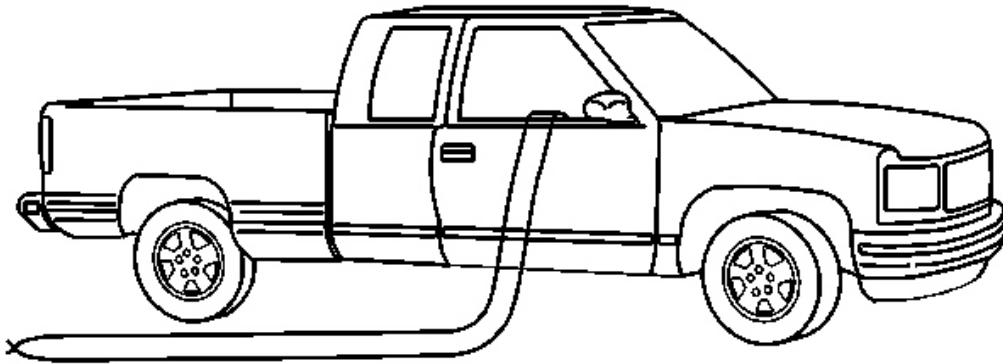


Fig. 183: Routing The Deployment Harness Out Of The Vehicle's Passenger Side
Courtesy of GENERAL MOTORS CORP.

49. Route the deployment harness out of the passenger side of the vehicle.

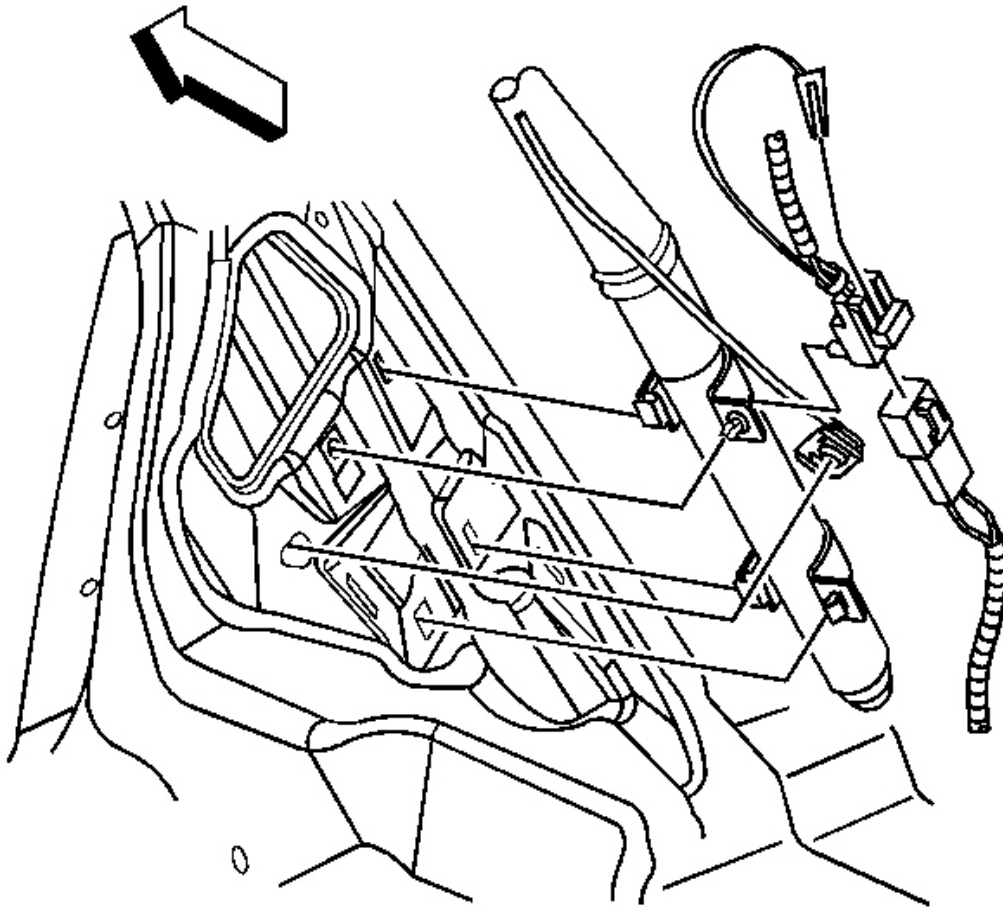


Fig. 184: Locating Roof Rail Module Connector
Courtesy of GENERAL MOTORS CORP.

50. Disconnect the yellow harness connector to the right roof rail air bag from the vehicle harness connector.

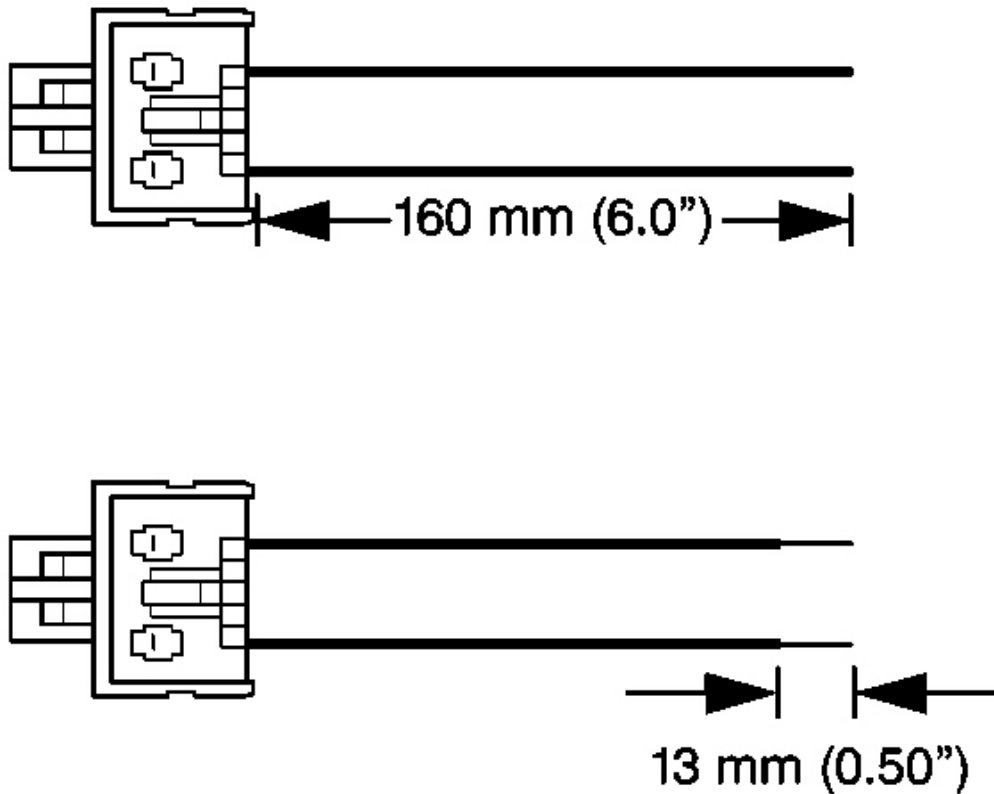


Fig. 185: Identifying Proper Stripping Of Connection Wire Leads
Courtesy of GENERAL MOTORS CORP.

51. Cut the harness connector out of the vehicle, leaving at least 16 cm (6 in) of wire at the connector.
52. Strip 13 mm (0.5 in) of insulation from each of the connector wire leads.

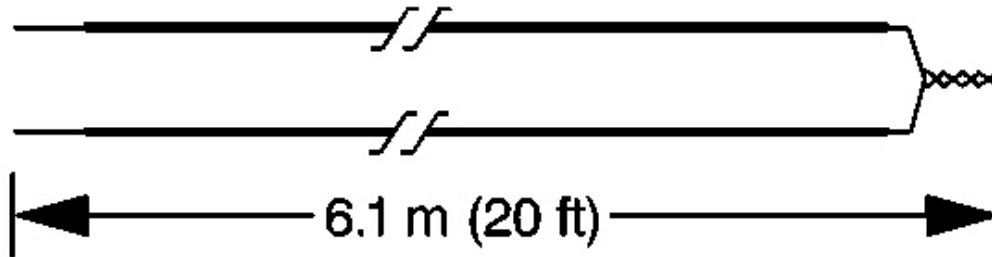


Fig. 186: Fabricating 20 Ft. Deployment Harness
Courtesy of GENERAL MOTORS CORP.

53. Cut two 6.1 m (20 ft) deployment wires from a 0.8 mm (18 gage) or thicker multi-strand wire. These wires will be used to fabricate the roof rail module deployment harness.
54. Strip 13 mm (0.5 in) of insulation from both ends of the wires.
55. Twist together one end from each of the wires in order to short the wires.

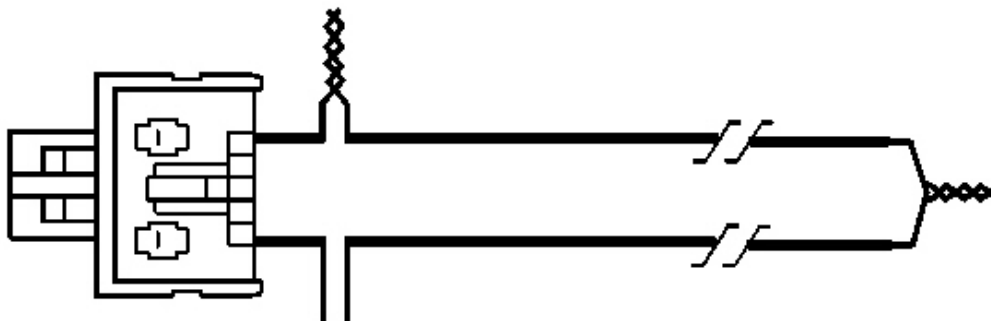


Fig. 187: View Of Proper Twisting Of Connector Wire Lead To Deployment Wire
Courtesy of GENERAL MOTORS CORP.

56. Twist together one connector wire lead to one deployment wire.

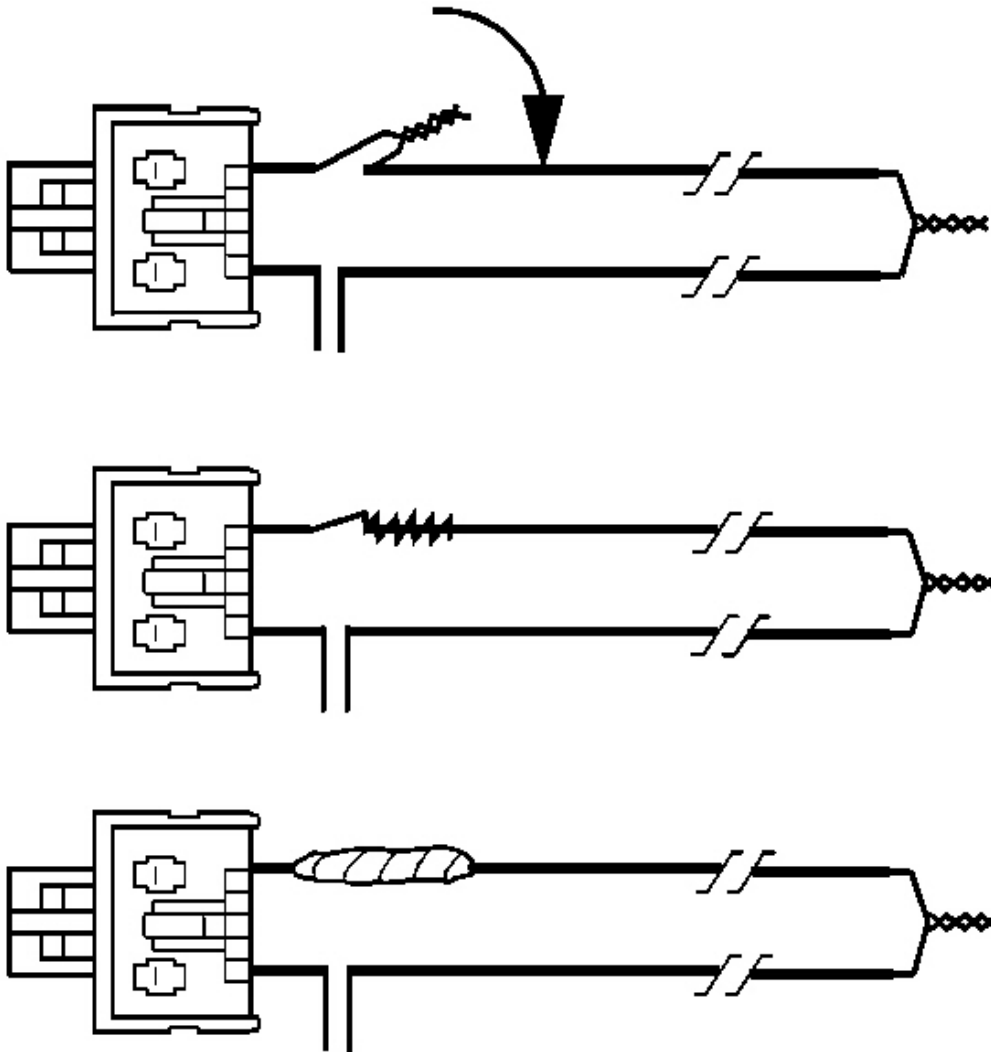


Fig. 188: Bending Twisted Connection Flat & Insulating With Tape
Courtesy of GENERAL MOTORS CORP.

57. Bend flat the twisted connection.
58. Secure and insulate the connection using electrical tape.

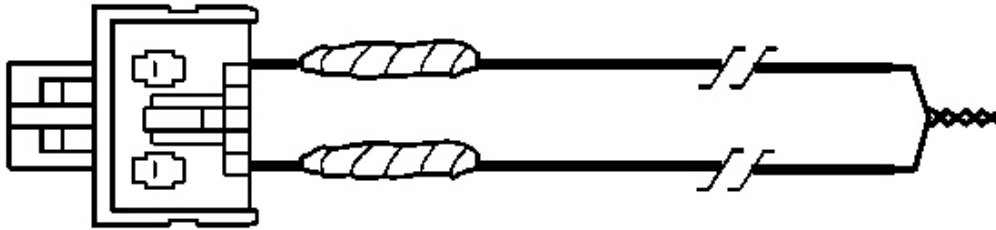


Fig. 189: Taping Remaining Connector Wire Lead To Remaining Deployment Wire
Courtesy of GENERAL MOTORS CORP.

59. Twist together, bend, and tape the remaining connector wire lead to the remaining deployment wire.

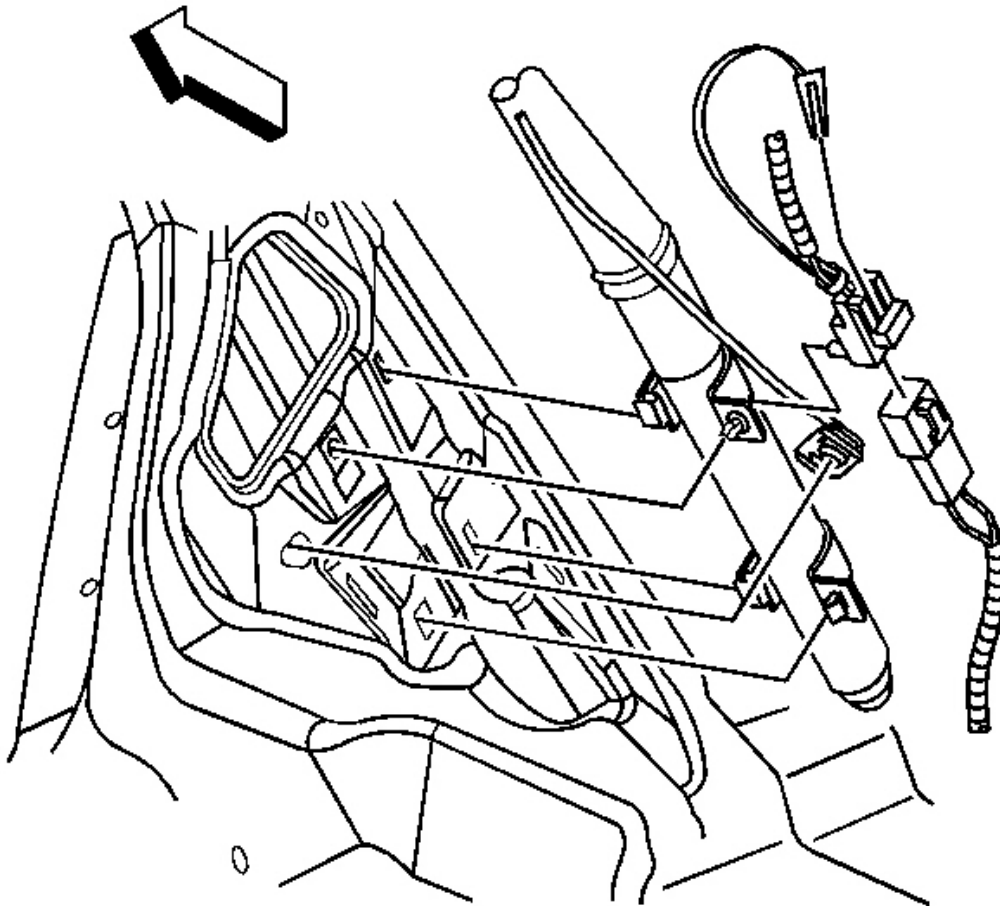


Fig. 190: Locating Roof Rail Module Connector
Courtesy of GENERAL MOTORS CORP.

60. Connect the deployment harness to the roof rail module yellow connector.

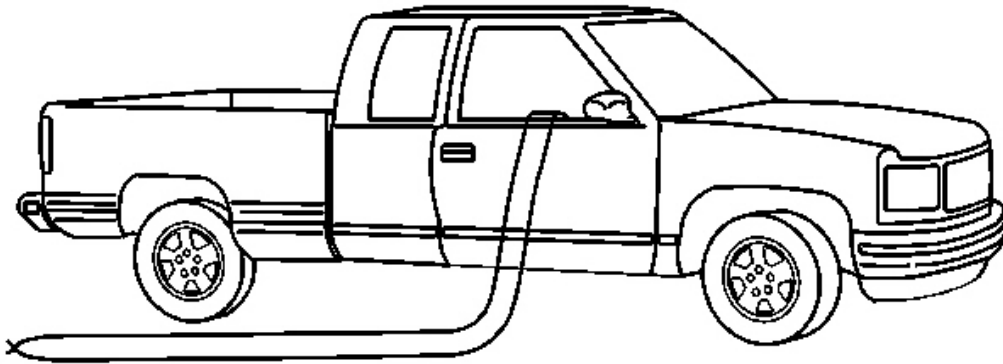


Fig. 191: Routing The Deployment Harness Out Of The Vehicle's Passenger Side
Courtesy of GENERAL MOTORS CORP.

61. Route the deployment harness out of the passenger side of the vehicle.
62. Completely cover the windshield and the front door window openings with a drop cloth.
63. Stretch to the full length all of the deployment harness wires on the right side of the vehicle.
64. Deploy each deployment loop one at a time.
65. Place a power source, 12 V minimum / 2 A minimum, such as a vehicle battery, near the shorted end of the harnesses.
66. Separate one set of wires and touch the wire ends to the power source in order to deploy the selected inflator module.
67. Disconnect the deployment harness from the power source and twist the wire ends together.
68. Continue the same process with the remaining deployment harnesses.

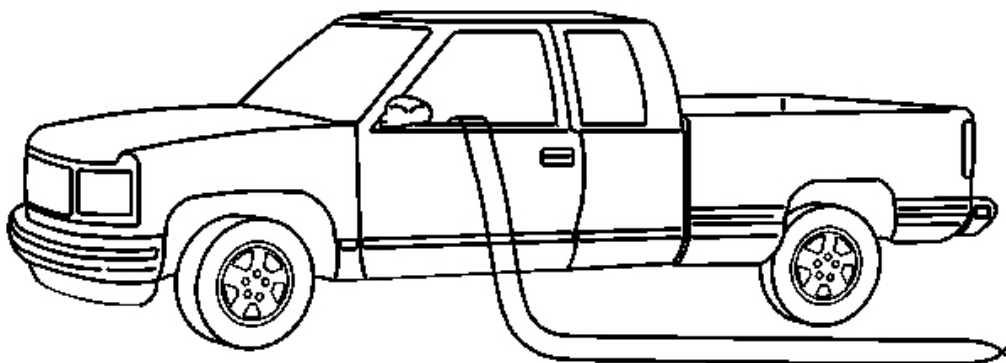


Fig. 192: Routing The Deployment Harness Out Of The Vehicle's Driver Side
Courtesy of GENERAL MOTORS CORP.

69. Stretch to the full length all of the deployment harness wires on the left side of the vehicle.
70. Deploy each deployment loop one at a time.
71. Place a power source, 12 V minimum / 2 A minimum, such as a vehicle battery, near the shorted end of the harnesses.
72. Separate one set of wires and touch the wires ends to the power source in order to deploy the selected inflator modules.
73. Disconnect the deployment harness from the power source and twist the wire ends together.
74. Continue the same process with the remaining deployment harnesses.
75. Remove the drop cloth from the vehicle.
76. Disconnect all harnesses from the vehicle.
77. Discard the harnesses.
78. Scrap the vehicle in the same manner as a non-SIR equipped vehicle.
79. If one or all of the inflator modules did not deploy, perform the following steps to remove the undeployed modules from the vehicle:
 - **Inflatable Restraint Steering Wheel Module Replacement**
 - **Inflatable Restraint Instrument Panel Module Replacement**
 - **Inflatable Restraint Roof Rail Module Replacement - Front**

Tools Required

- **J 39401-B** SIR Deployment Fixture. See **Special Tools**.
- **J 38826** SIR Deployment Harness. See **Special Tools**.
- An appropriate pigtail adapter

CAUTION: Refer to SIR Seatbelt Pretensioner Handling Caution in Cautions and Notices.

Scrapping Procedure

During the course of a vehicles useful life, certain situations may arise which will require the disposal of a live and undeployed seat belt pretensioner. Do not dispose of a live and undeployed seat belt pretensioner through normal disposal channels until the seat belt pretensioner has been deployed. The following information covers the proper procedures for disposing of a live and undeployed seat belt pretensioner. Do not deploy the seat belt pretensioner in the following situations:

- After replacement of a seat belt pretensioner under warranty-The seat belt pretensioner may need to be returned undeployed to the manufacturer.
- If the vehicle is the subject of a Product Liability report, GM1241, related to the SIR system or the seat belt system-If the vehicle is subject to the Product Liability report, do not alter the SIR or seat belt system in any manner.
- If the vehicle is involved in a campaign affecting the seat belt pretensioners-Follow the instructions in the Campaign Service Bulletin for proper SIR handling procedures.

Deployment Procedures

The seat belt pretensioner can be deployed inside or outside of the vehicle. The method used depends upon the final disposition of the vehicle. Review the following procedures in order to determine which will work best in a given situation.

Deployment Outside Vehicle for Seat Belt Pretensioners

Deploy the seat belt pretensioners outside of the vehicle when the vehicle will be returned to service. Situations that require deployment outside of the vehicle include the following:

- Using the SIR diagnostics, it is determined that the seat belt pretensioner is malfunctioning.
- The seat belt pretensioner pigtail, if equipped, is damaged.
- The seat belt pretensioner connector is damaged.

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- The seat belt pretensioner connector terminals are damaged.

Deployment and disposal of a malfunctioning seat belt pretensioner is subject to any required retention period.

CAUTION: In order to prevent accidental deployment and the risk of personal injury, do not dispose of an undeployed inflatable restraint seat belt pretensioner as normal shop waste. Undeployed seat belt pretensioners contain substances that could cause severe illness or personal injury if their sealed containers are damaged during disposal. Use the following deployment procedures to safely dispose of an undeployed seat belt pretensioner. Failure to observe the following disposal methods may be a violation of federal, state, or local laws.

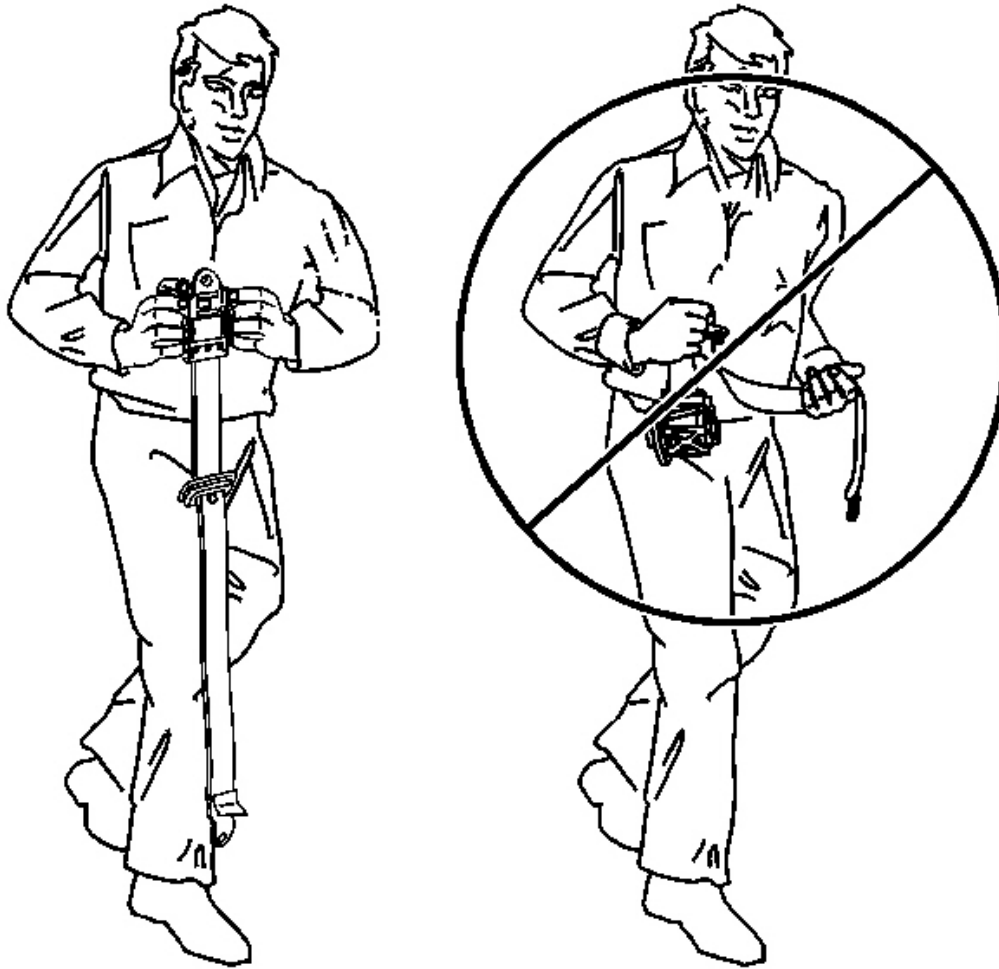


Fig. 193: Proper Transportation of Seat Belt Pretensioner
Courtesy of GENERAL MOTORS CORP.

1. Turn OFF the ignition.
2. Remove the ignition key.
3. Put on safety glasses.
4. Remove the seat belt pretensioner from the vehicle. Refer to **Seat Belt Retractor Pretensioner Replacement - Front.**
5. When carrying a seat belt pretensioner to the deployment area, keep fingers clear of the seat belt webbing.

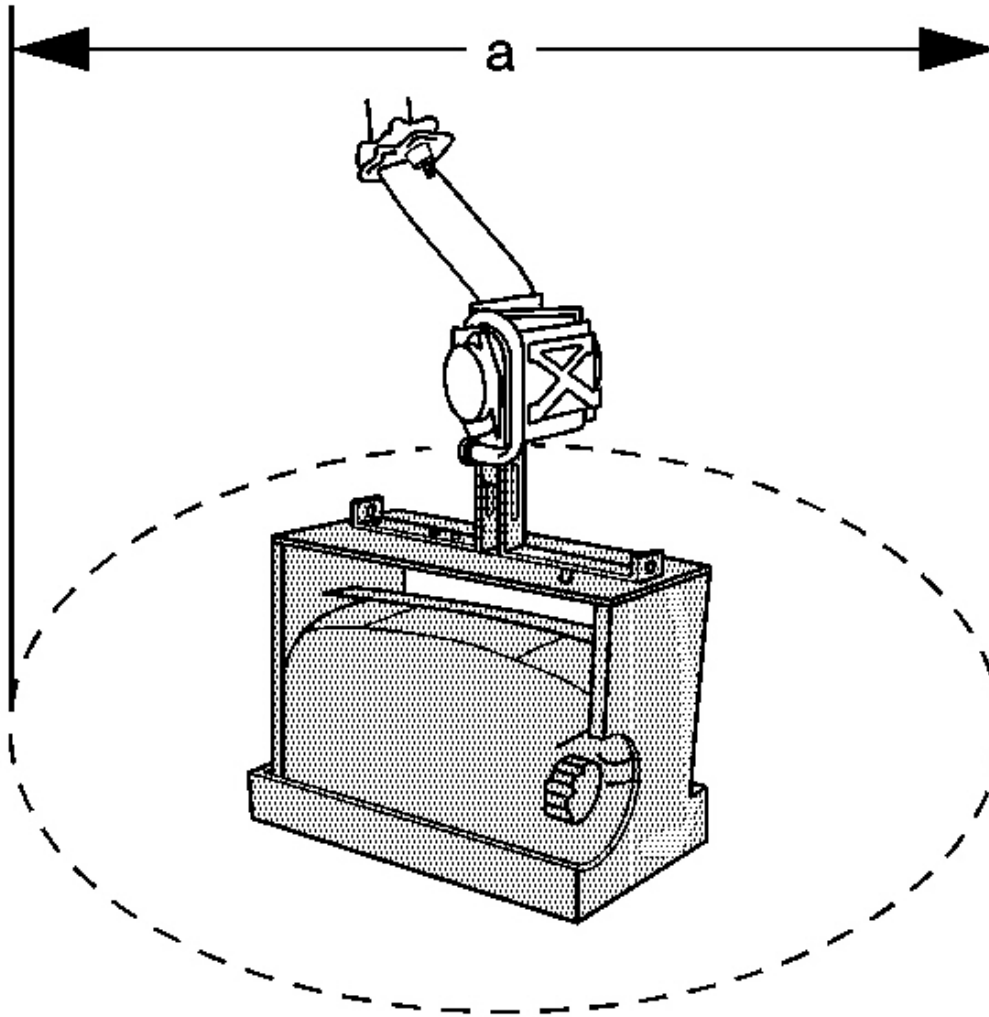


Fig. 194: Illustrating Proper Space For Deployment Of Pretensioner
Courtesy of GENERAL MOTORS CORP.

6. Clear a space on the ground about 1.85 m (6 ft) in diameter for deployment of the seat belt pretensioner. If possible, use a paved, outdoor location free of activity. Otherwise, use a space free of activity on the shop floor. Make sure you have sufficient ventilation.
7. Make sure no loose or flammable objects are in the area.
8. Place the **J 39401-B** in the center of the cleared area. See **Special Tools**.
9. Fill the fixture plastic reservoir with water or sand.

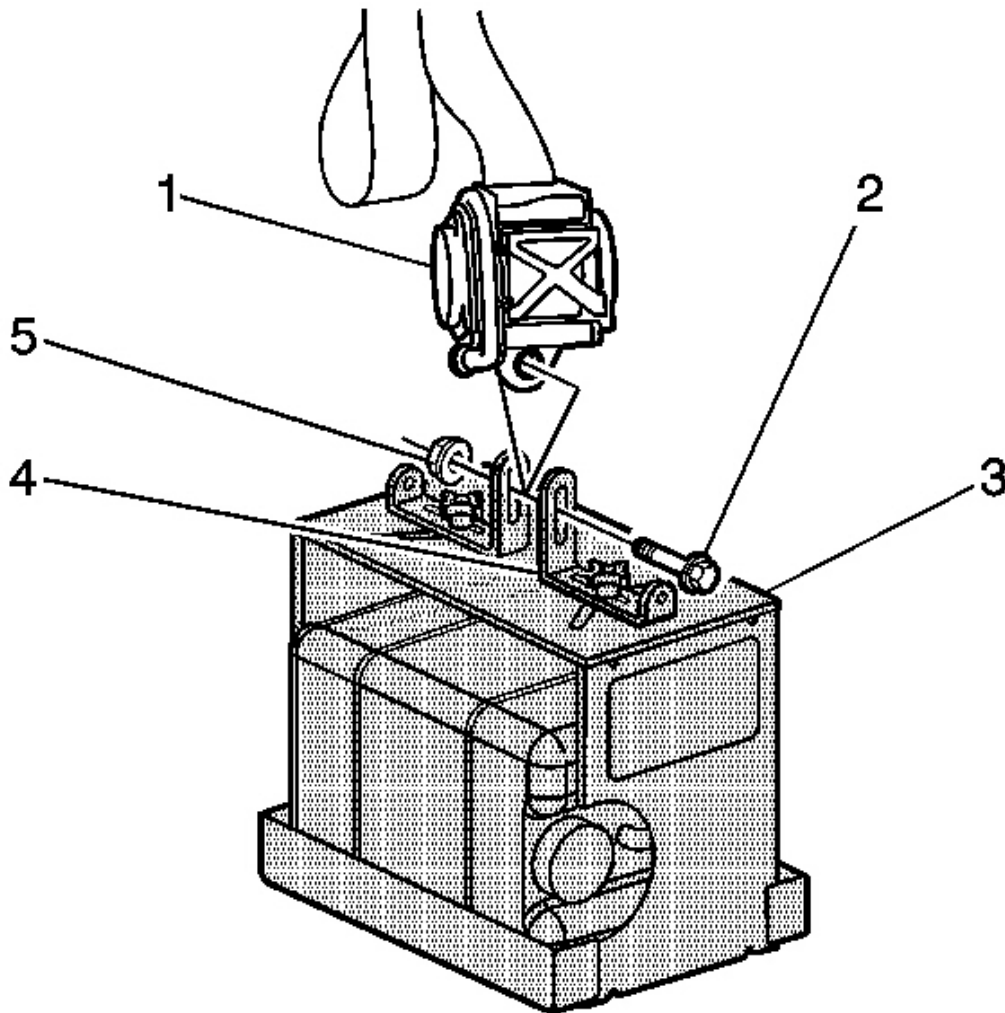


Fig. 195: Seat Belt Pretensioner And SIR Deployment Fixture
Courtesy of GENERAL MOTORS CORP.

10. Mount the seat belt pretensioner (1) in the SIR deployment fixture (3) with the open end facing up using the following mounting method.
 - Adjust and secure the **J 39401-B** arms (4) to the deployment fixture. See **Special Tools**.
 - To mount, use the proper size bolt (2) and nut (5) with washers in order to secure the seat belt pretensioner (1) to the deployment fixture brackets.

- Securely tighten all fasteners prior to deployment.

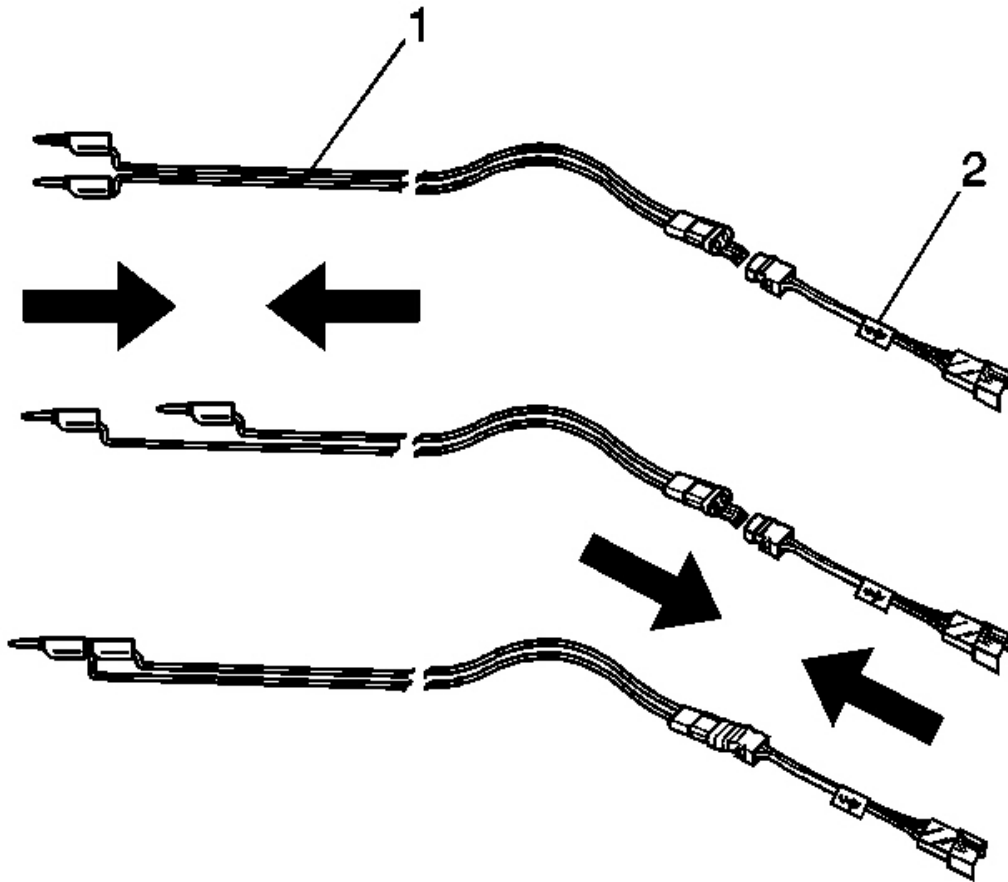


Fig. 196: Identifying SIR Deployment Harness & Adapter
Courtesy of GENERAL MOTORS CORP.

11. Inspect the **J 38826** and the appropriate pigtail adapter for damage. See **Special Tools**. Replace as needed.
12. Short the 2 SIR deployment harness (1) leads together using 1 banana plug seated into the other.
13. Connect the appropriate pigtail adapter (2) to the SIR deployment harness.

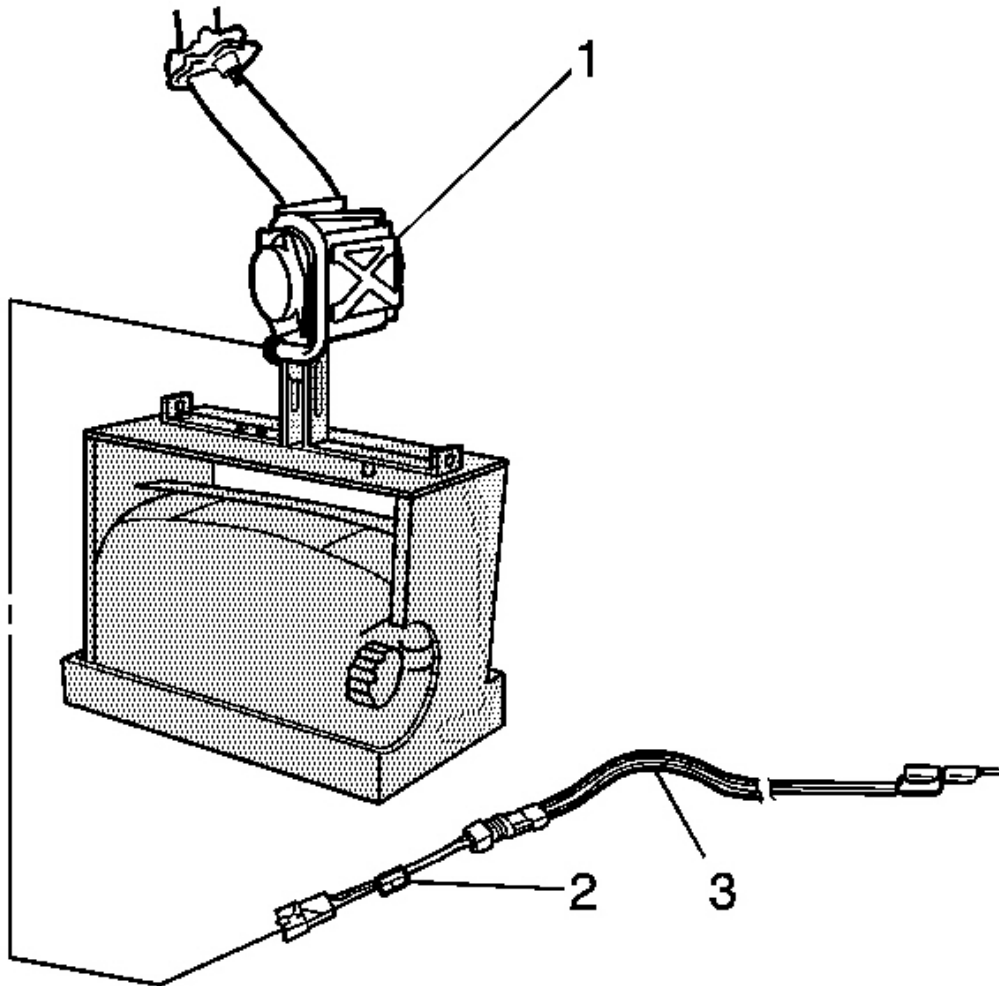


Fig. 197: Identifying Seat Belt Pretensioner Connector, Adapter & Deployment Harness

Courtesy of GENERAL MOTORS CORP.

14. Extend the SIR deployment harness and adapter to full length from the deployment fixture.
15. Connect the seat belt pretensioner connector (1) to the adapter (2) on the deployment harness (3).

IMPORTANT: When deploying a seat belt pretensioner, the rapid expansion of gas is very loud. Notify the people in the immediate area

that a seat belt pretensioner will be deployed.

16. Clear the area of people.

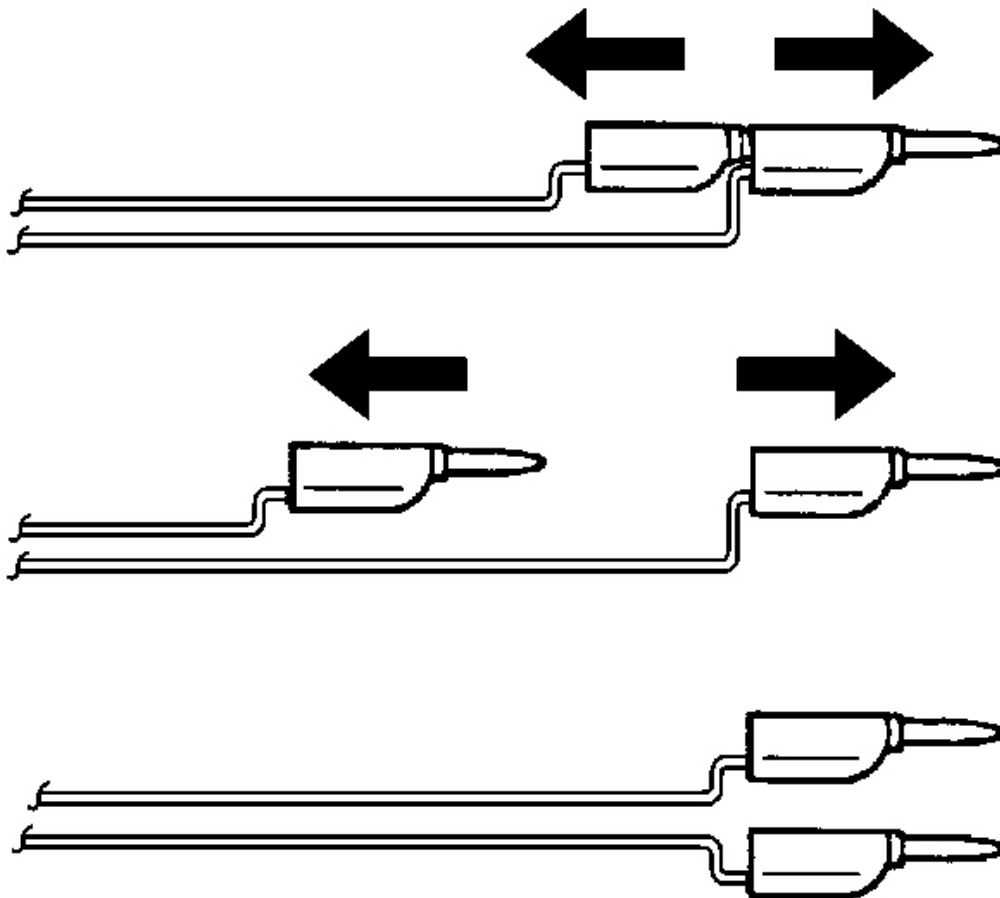


Fig. 198: Separating Banana Plugs
Courtesy of GENERAL MOTORS CORP.

17. Separate the 2 banana plugs on the SIR deployment harness.

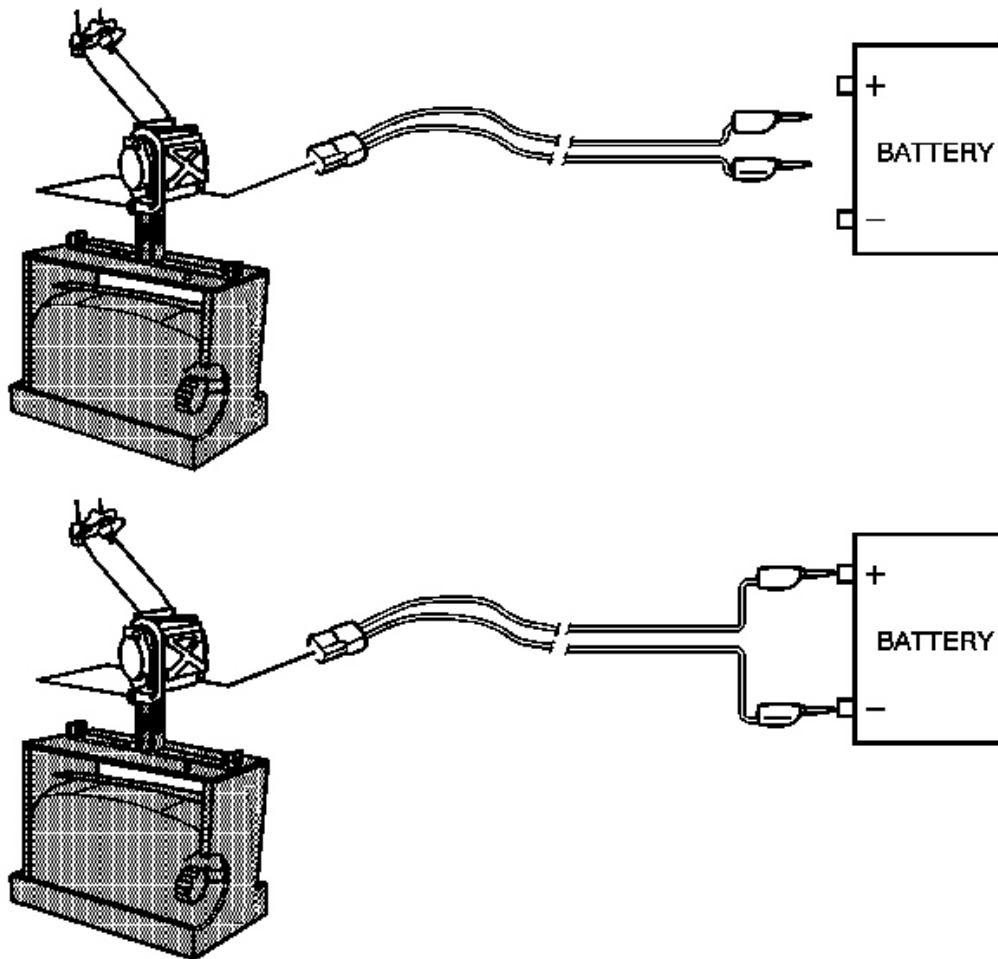


Fig. 199: Deploying Seat Belt Pretensioner
Courtesy of GENERAL MOTORS CORP.

18. Place a 12-volt minimum/2-amp minimum power source, such as a vehicle battery, near the shorted end of the harness.
19. Connect the SIR deployment harness wires to the power source. Seat belt pretensioner deployment will occur when contact is made.
20. Disconnect the SIR deployment harness from the power source after the seat belt pretensioner deploys.

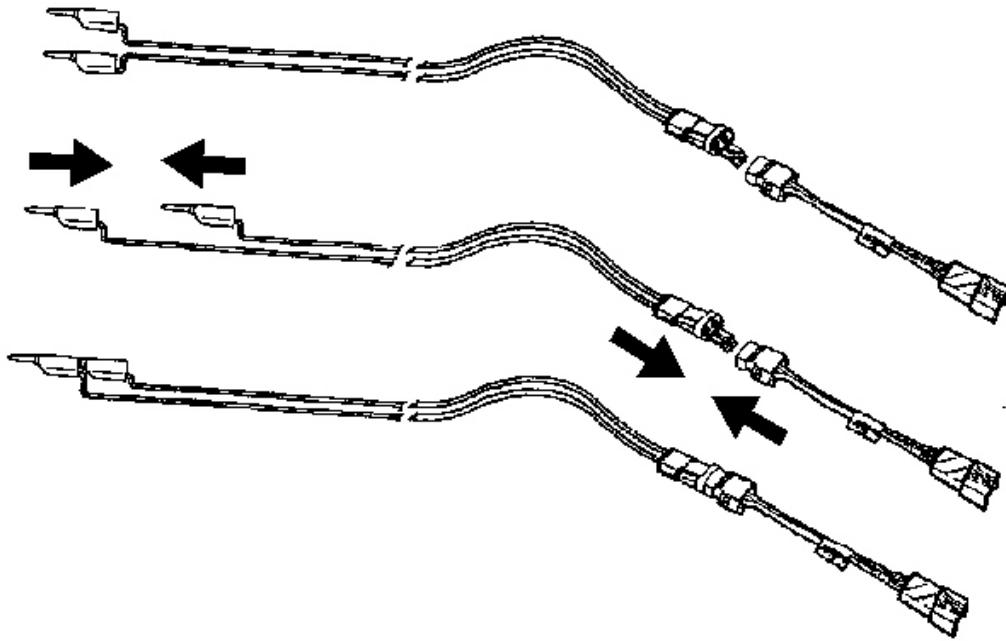


Fig. 200: View Of Deployment Harness Leads
Courtesy of GENERAL MOTORS CORP.

21. Seat one banana plug into the other in order to short the deployment harness leads.
22. If the seat pretensioner did not deploy, disconnect the adapter and discontinue the procedure. Contact the Technical Assistance Group. Otherwise, proceed to the following steps.
23. Put on a pair of shop gloves.
24. Disconnect the pigtail adapter from the seat belt pretensioner as soon as possible.
25. Dispose of the deployed seat belt pretensioner through normal refuse channels.
26. Wash hands with a mild soap.

Deployment Inside Vehicle - Vehicle Scrapping Procedure

Deploy the seat belt pretensioners inside of the vehicle when destroying the vehicle or when salvaging the vehicle for parts. This includes but is not limited to the following situations:

- The vehicle has completed its useful life.

- Irreparable damage occurs to the vehicle in a non-deployment type accident.
- Irreparable damage occurs to the vehicle during a theft.
- The vehicle is being salvaged for parts to be used on a vehicle with a different VIN as opposed to rebuilding as the same VIN.

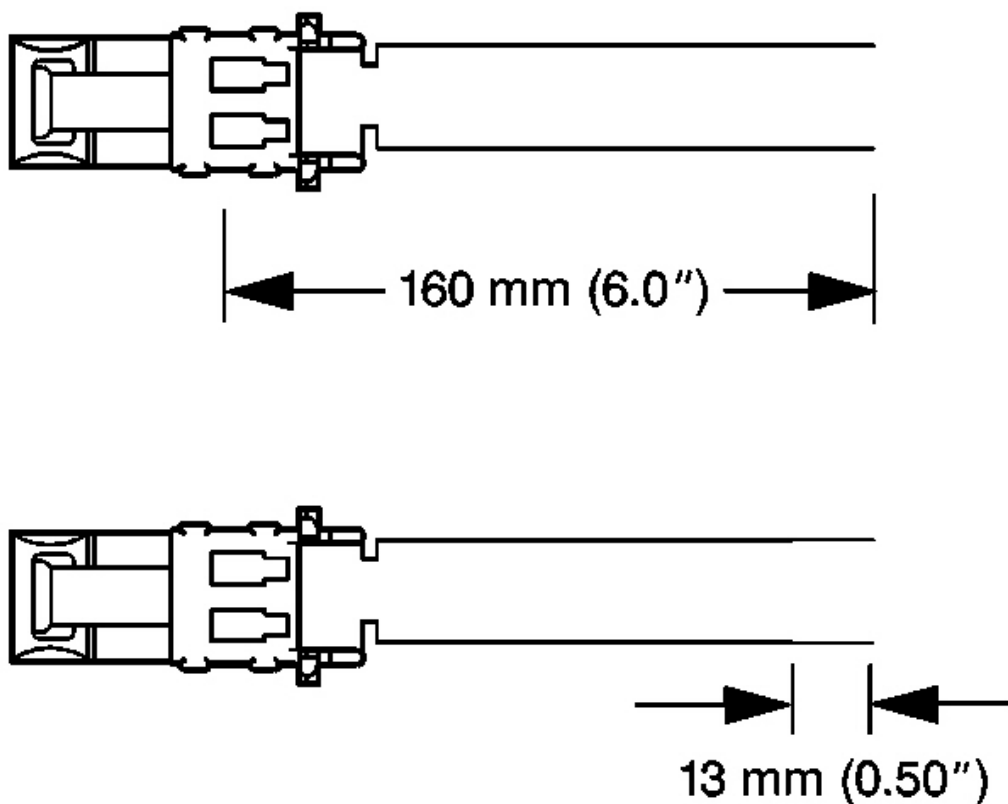


Fig. 201: Stripping Connector Wire Lead
Courtesy of GENERAL MOTORS CORP.

1. Turn OFF the ignition.
2. Remove the ignition key.
3. Put on safety glasses.
4. Remove all loose objects from the front seats.
5. Disconnect the seat belt pretensioner connector. Refer to **Seat Belt Retractor Pretensioner Replacement - Front.**

6. Cut the seat belt pretensioner harness connector out of the vehicle, leaving at least 16 cm (6 in) of wire at the connector.
7. Strip 13 mm (0.5 in) of insulation from each of the connector wire leads.

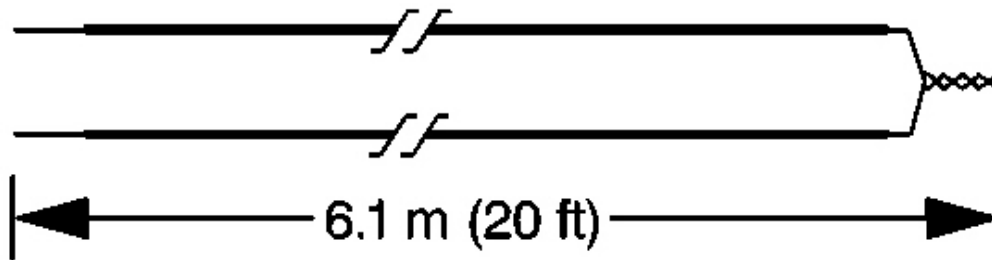


Fig. 202: Fabricating 20 Ft. Deployment Harness
Courtesy of GENERAL MOTORS CORP.

8. Cut two 6.1 m (20 ft) deployment wires from a 0.8 mm (18 gage) or thicker multi-strand wire. These wires will be used for the seat belt pretensioner deployment harness.
9. Strip 13 mm (0.5 in) of insulation from both ends of the wires cut in the previous step.
10. Twist together one end from each of the wires in order to short the wires. Deployment wires shall remain shorted, and not connected to a power source until you are ready to deploy the seat belt pretensioner.

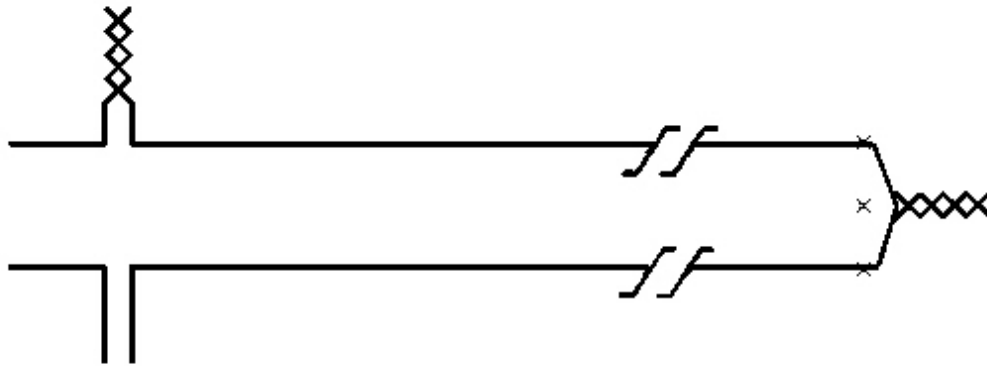


Fig. 203: Twisting Together Connector Wire Lead To Deployment Wire
Courtesy of GENERAL MOTORS CORP.

11. Twist together one connector wire lead to one deployment wire.
12. Inspect that the previous connections is secure.

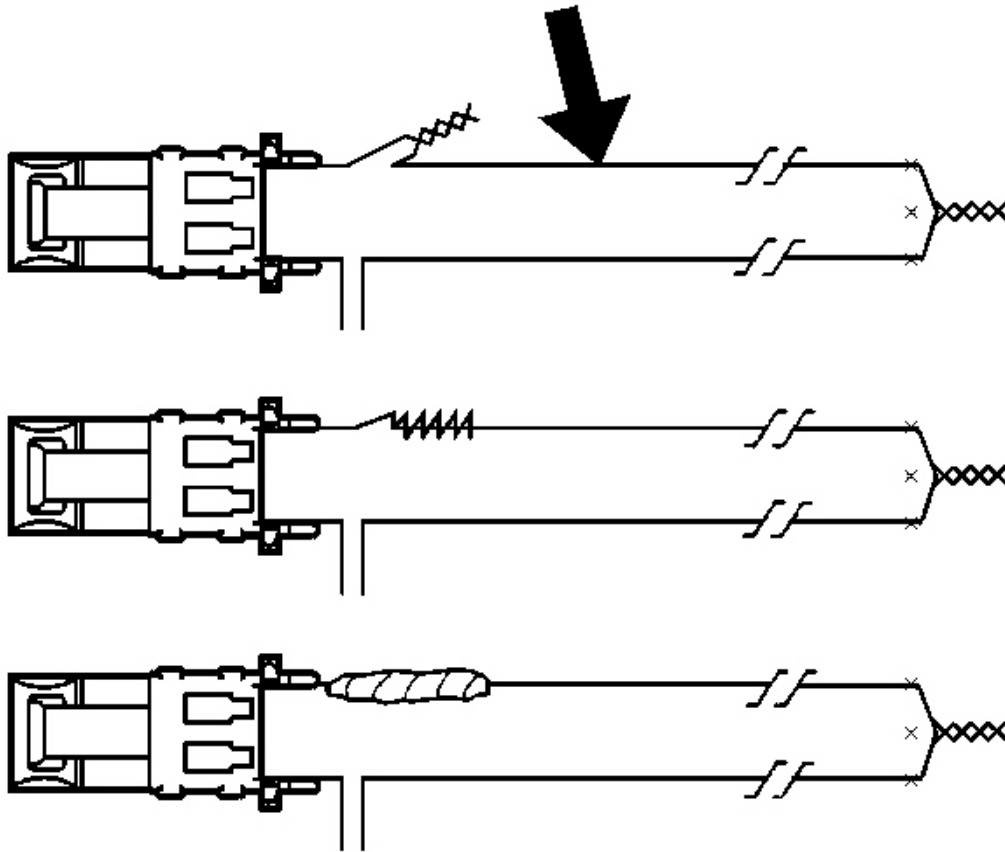


Fig. 204: Identifying I/P Module Twisted Connection
Courtesy of GENERAL MOTORS CORP.

13. Bend flat the twisted connection.
14. Secure and insulate the connection using electrical tape.

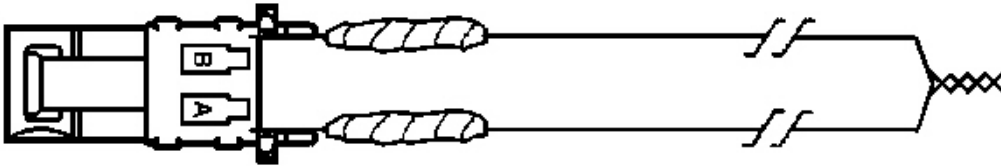


Fig. 205: View Of Dual Insulated Connector Wires
Courtesy of GENERAL MOTORS CORP.

15. Twist together, bend, and tape the remaining connector wire lead to the remaining deployment wire.

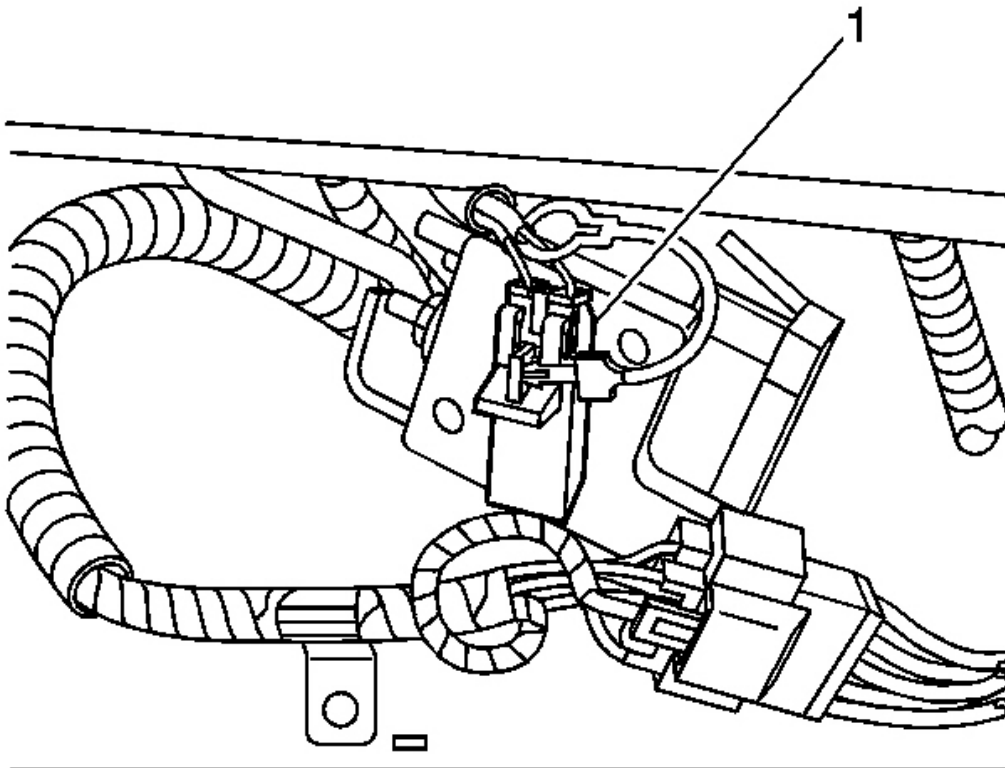


Fig. 206: Identifying CPA Clip
Courtesy of GENERAL MOTORS CORP.

16. Connect the deployment harness to the seat belt pretensioner connector.

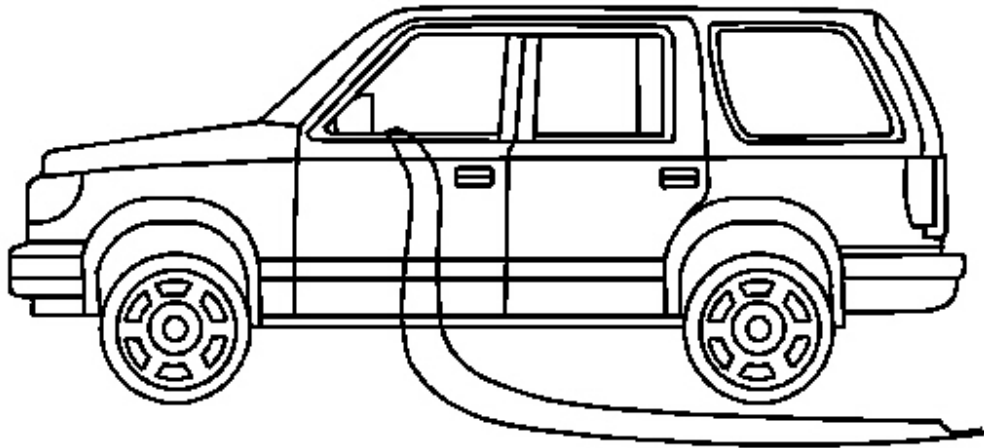


Fig. 207: Routing Wires To Apply Power For Controlled Bag Deployment (Left)
Courtesy of GENERAL MOTORS CORP.

17. Route the deployment harness out of the driver side of the vehicle.

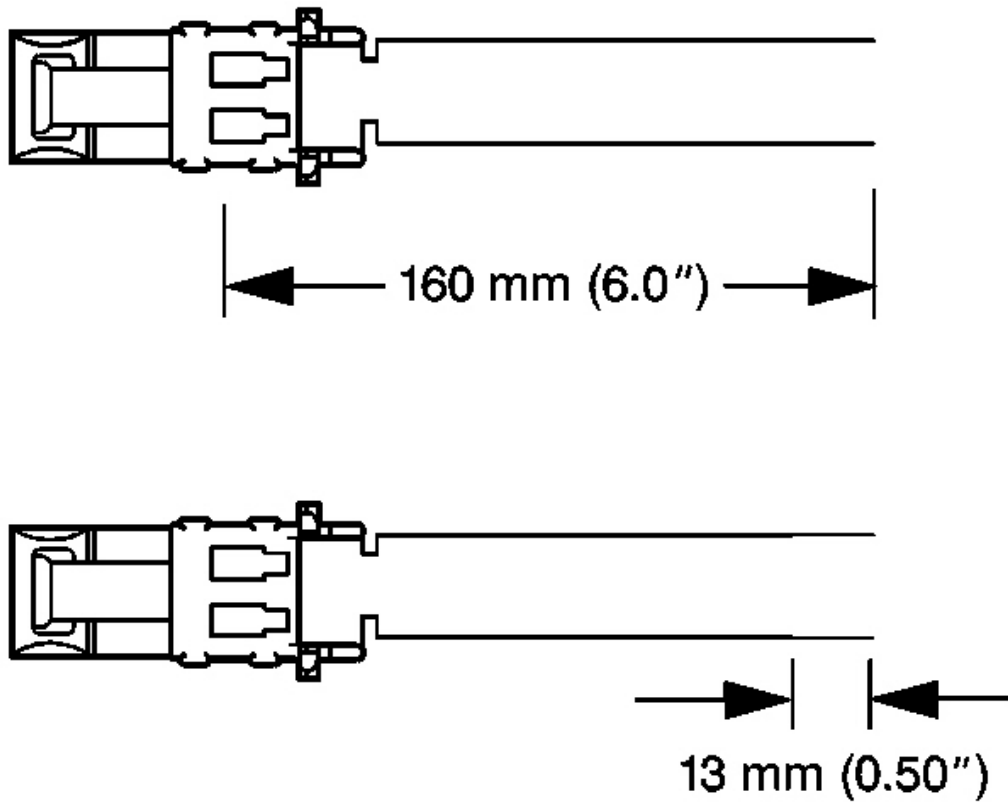


Fig. 208: Stripping Connector Wire Lead
Courtesy of GENERAL MOTORS CORP.

18. Disconnect the seat belt pretensioner connector. Refer to **Seat Belt Retractor Pretensioner Replacement - Front**.
19. Cut the seat belt pretensioner connector out of the vehicle, leaving at least 16 cm (6 in) of wire at the connector.
20. Strip 13 mm (0.5 in) of insulation from each of the connector wire leads.

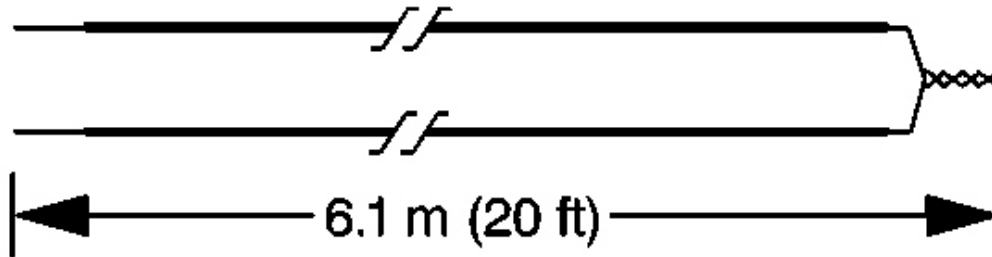


Fig. 209: Fabricating 20 Ft. Deployment Harness
Courtesy of GENERAL MOTORS CORP.

21. Cut two 6.1 m (20 ft) deployment wires from a 0.8 mm (18 gage) or thicker multi-strand wire. These wires will be used for the seat belt pretensioner deployment harness.
22. Strip 13 mm (0.5 in) of insulation from both ends of the wires cut in the previous step.
23. Twist together one end from each of the wires in order to short the wires. The deployment wires are to remain shorted, and not connected to a power source until you are ready to deploy the seat belt pretensioner.

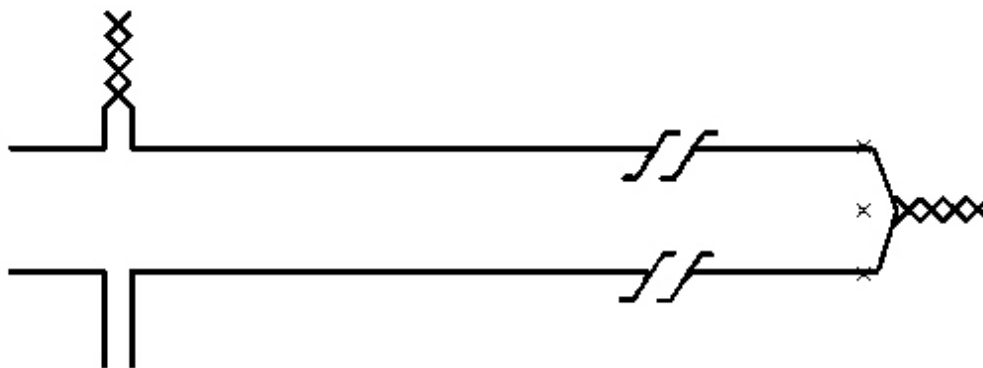


Fig. 210: Twisting Together Connector Wire Lead To Deployment Wire

Courtesy of GENERAL MOTORS CORP.

24. Twist together one connector wire lead to one deployment wire.
25. Inspect that the previous connection is secure.

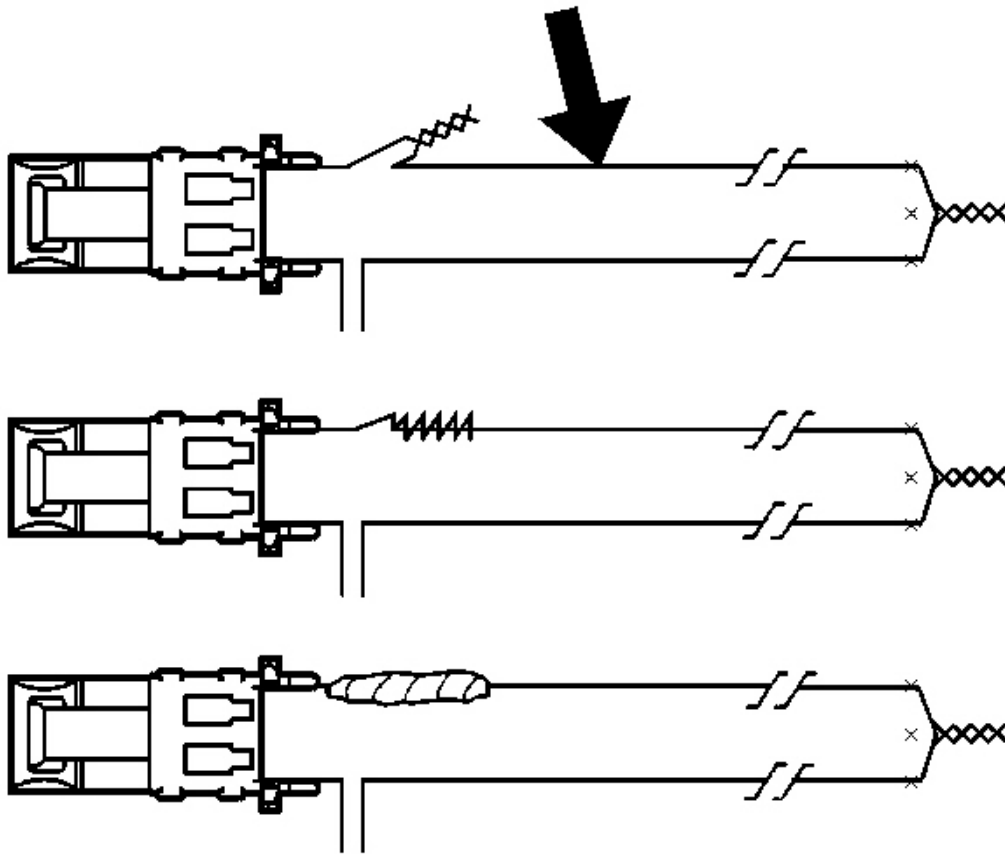


Fig. 211: Identifying I/P Module Twisted Connection
Courtesy of GENERAL MOTORS CORP.

26. Bend flat the twisted connection.
27. Secure and insulate the connection using electrical tape.

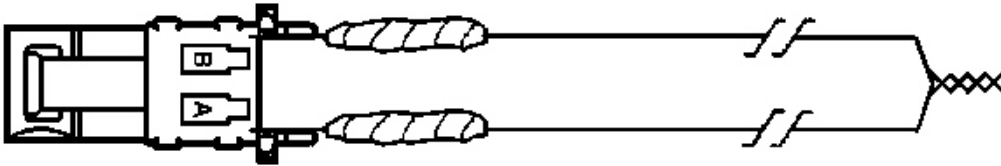


Fig. 212: View Of Dual Insulated Connector Wires
Courtesy of GENERAL MOTORS CORP.

28. Twist together, bend, and tape the remaining connector wire lead to the remaining deployment wire.

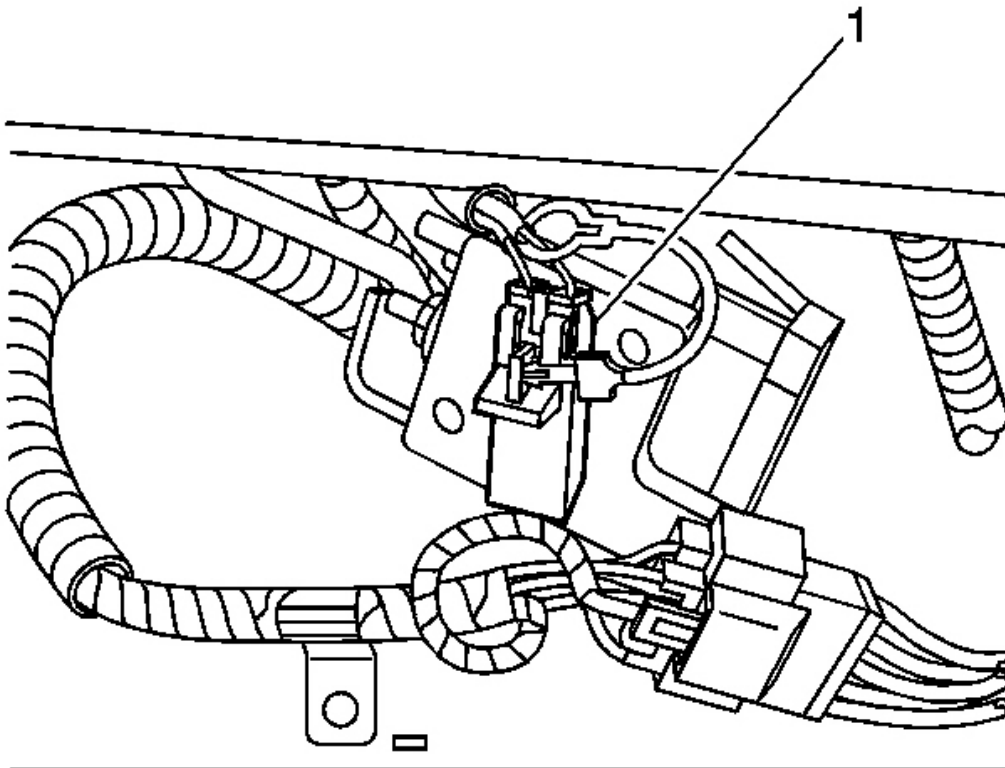


Fig. 213: Identifying CPA Clip
Courtesy of GENERAL MOTORS CORP.

29. Connect the deployment harness to the seat belt pretensioner connector.

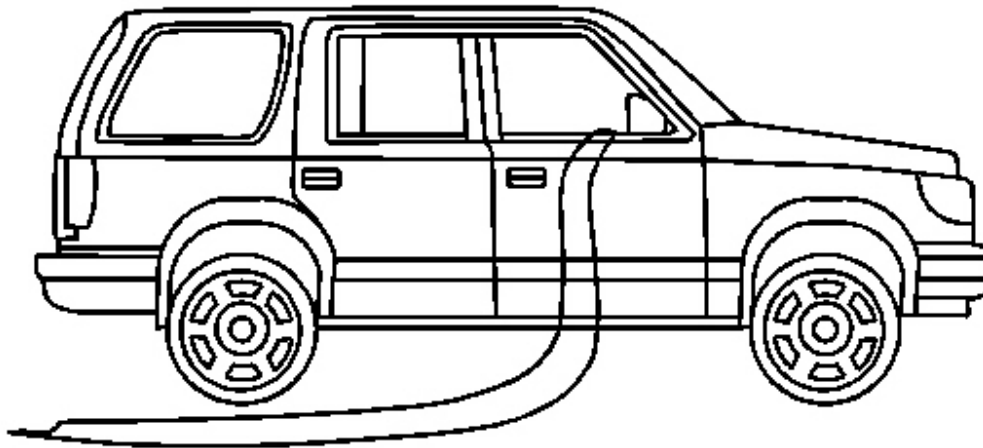


Fig. 214: Routing Wires To Apply Power For Controlled Bag Deployment (Right)
Courtesy of GENERAL MOTORS CORP.

30. Route the deployment harness out of the passenger side of the vehicle.
31. Completely cover the windshield and the front door openings with a drop cloth.
32. Deploy each deployment loop one at a time.
33. Stretch out all of the deployment harness wires on the left and right side of the vehicle to their full length.
34. Place a power source, 12-volt minimum/2-amp minimum, such as a vehicle battery, near the shorted end of the harnesses.
35. Separate one set of wires and touch the wire ends to the power source in order to deploy the seat belt pretensioners.
36. Disconnect the deployment harness from the power source and twist the wire ends together.
37. Continue the same process with the remaining deployment harnesses that are available.
38. Remove the drop cloth from the vehicle.
39. Disconnect all harnesses from the vehicle.

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40. Discard the harnesses.
41. Scrap the vehicle in the same manner as a non-SIR equipped vehicle.
42. If one or more of the seat belt pretensioners did not deploy, perform the following steps to remove the undeployed seat belt pretensioner from the vehicle, refer to **Seat Belt Retractor Pretensioner Replacement - Front**.
43. Call the Technical Assistance Group for further assistance.

DESCRIPTION AND OPERATION

SIR SYSTEM DESCRIPTION AND OPERATION

SIR System Overview

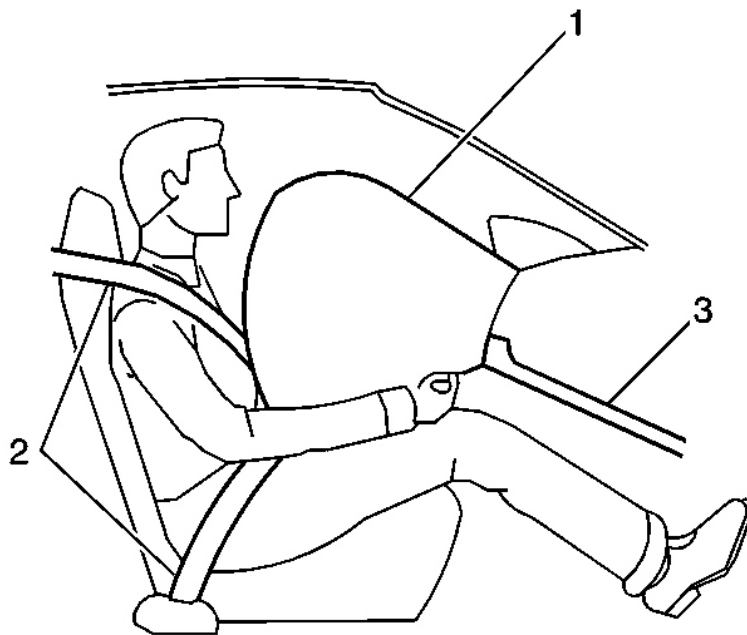
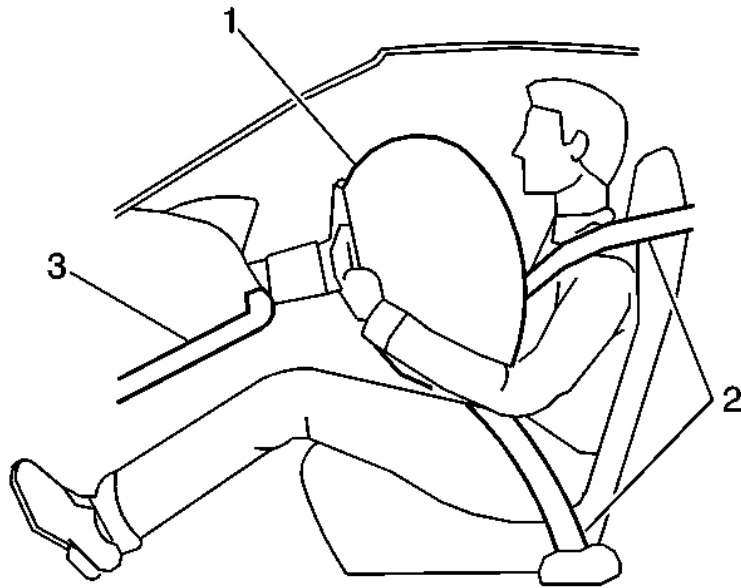


Fig. 215: Illustrating Deployed Inflatable Restraint
Courtesy of GENERAL MOTORS CORP.

The Supplemental Inflatable Restraint (SIR) System supplements the protection offered by the

occupants Seat Belt System (2). The SIR system may contain several inflator modules located throughout the vehicle, i.e. steering wheel module (1) and instrument panel (I/P) module (1). In addition to inflator modules, the vehicle contains an inflatable restraint Passenger Presence System (PPS) that measures the weight of an occupant sitting in the front passenger seat. The PPS uses the weight of the occupant to determine if the I/P inflator module will be enabled or disabled. Each inflator module has a deployment loop that is controlled by the sensing and diagnostic module (SDM) mounted inside the vehicle. The SDM determines the severity of a collision with the assistance of various sensor inputs. When the SDM detects a collision of sufficient force it will process the information provided by the sensors to further support air bag deployment. The SDM performs continuous diagnostic monitoring of the SIR system electrical components. Upon detection of a circuit malfunction, the SDM will set a DTC and inform the driver by requesting the instrument panel cluster (IPC) to turn the AIR BAG indicator ON. The steering column (1) and knee bolsters (3) are designed to absorb energy and compress during frontal collisions in order to limit leg movement and decrease the chance of injury to the driver and passenger.

Frontal SIR System Description

The frontal Supplemental Inflatable Restraint (SIR) System consists of the following components:

- AIR BAG indicator located on the instrument panel cluster (IPC)
- Driver and passenger knee bolsters
- Inflatable restraint front end sensors (left/right)
- Inflatable restraint PASSENGER AIR BAG ON/OFF indicator located on the rear view mirror
- Inflatable restraint Passenger Presence System (PPS)
- Inflatable restraint passenger seat belt tension sensor
- Inflatable restraint seat position sensors (SPS) (left/right)
- Inflatable restraint sensing and diagnostic module (SDM)
- Inflatable restraint steering wheel module
- Inflatable restraint steering wheel module coil
- Inflatable restraint wiring harnesses
- Seat belt pretensioners (left/right)
- Steering wheel and column

A frontal collision of sufficient force will deploy the frontal air bags. The SDM contains a sensing device that converts vehicle velocity changes to an electrical signal. In the event of a frontal collision, the SDM receives a signal from the front end sensors which assists the SDM in

determining the severity of some frontal collisions. The SDM contains a microprocessor that performs calculations using the measured accelerations. The SDM compares these calculations to a value stored in memory. When the generated calculations exceed the stored value, the SDM will cause current to flow through the frontal deployment loops deploying the frontal air bags. Once the air bags are inflated they quickly deflate through the air bag vent holes. After the air bags have deployed, the SDM sets a diagnostic trouble code (DTC) and requests the IPC to turn the AIR BAG indicator ON. The SDM, instrument panel (I/P) module, steering wheel module, steering wheel module coil and the connecting wires makeup the frontal deployment loops. The SDM continuously monitors the deployment loops for malfunctions and requests the IPC to turn the AIR BAG indicator ON if a fault is detected.

Side SIR System Description (Front)

The side Supplemental Inflatable Restraint (SIR) System (front) consists of the following components:

- AIR BAG indicator located in the instrument panel cluster (IPC)
- Inflatable restraint roof rail modules (left/right)
- Inflatable restraint sensing and diagnostic module (SDM)
- Inflatable restraint side impact sensors (SIS) (left/right)
- Inflatable restraint vehicle rollover sensor
- Inflatable restraint wiring harnesses

The roof rail modules (front) are located in the headliner along the roof rails. The roof rail modules contain a housing, inflatable air bag, initiating device, and a canister of gas generating material. The initiator is part of the roof rail module deployment loop. When a side impact of sufficient force occurs the SIS detects the impact and sends a signal to the SDM. The SDM compares the signal received from the SIS to a value stored in memory. When the generated signal exceeds the stored value, the SDM will cause current to flow through the side deployment loop deploying the roof rail air bag. The SDM, roof rail modules (front) and the connecting wires makeup the side deployment loops. The SDM continuously monitors the deployment loops for malfunctions and turns the AIR BAG indicator ON if a fault is present. Each roof rail module (front) is equipped with a shorting bar located on the connector of the module. The shorting bar shorts the roof rail module deployment loop circuitry to prevent unwanted deployment of the air bag when servicing the inflator module.

Inflatable Restraint Sensing and Diagnostic Module (SDM)

The sensing and diagnostic module (SDM) is a microprocessor and the control center for the Supplemental Inflatable Restraint (SIR) System. The SDM contains internal sensors along with

several external sensors, if equipped, mounted at various locations on the vehicle. In the event of a collision, the SDM performs calculations using the signals received from the internal and external sensors. The SDM compares the results of the calculations to values stored in memory. When these calculations exceed the stored value, the SDM will cause current to flow through the appropriate deployment loops to deploy the air bags. The SDM records the SIR System status when a deployment occurs and requests the instrument panel cluster (IPC) to turn the AIR BAG indicator ON. The SDM performs continuous diagnostic monitoring of the SIR System electrical components and circuitry when the ignition is turned ON. If the SDM detects a malfunction, a DTC will be stored and the SDM will request the IPC to turn the AIR BAG indicator ON. In the event that ignition 1 voltage is lost during a collision, the SDM maintains a 23-volt loop reserve (23 VLR) for deployment of the air bags. It is important to note, when disabling the SIR System for servicing or rescue operations to allow the 23 VLR to dissipate, which could take up to 1 minute.

Inflatable Restraint Passenger Presence System (PPS)

IMPORTANT: The Passenger Presence System (PPS) is a calibrated unit. When replacing the assembly all parts in the service kit must remain together. Do not mix any of the old parts with the new parts. After repairing or replacing the PPS, the system must be rezeroed in order to function properly.

The PPS is used to monitor the weight of an occupant on the front outboard passenger seat and communicate the status to the sensing and diagnostic module (SDM) whether to enable or suppress the deployment of the instrument panel (I/P) module. The PPS consist of an electronic control module, silicone filled sensor pad, pressure sensor, seat belt tension sensor, wiring harness, and PASSENGER AIR BAG ON/OFF indicators. The silicone filled sensor pad is located under the passenger seat foam cushion and is connected by a hose clamped to the pressure sensor. The weight of the occupant sitting in the front passenger seat is measured as a pressure change within the bladder by the pressure sensor. The pressure sensor sends a voltage signal to the PPS module. If the pressure from the occupants weight is less than a specified value, the PPS module will send a suppress signal to the SDM to disable the I/P module. If the pressure from the occupants weight is higher than a specified value, the PPS module will send an enable signal to the SDM to enable the I/P module. The PPS module will notify the customer of the enable/disable status by turning on one of the PASSENGER AIR BAG ON/OFF indicators located on the rear view mirror. The PPS monitors itself for faults and will set flash diagnostic trouble codes (DTCs) if a fault is detected. The PPS will also notify the SDM of a fault and the SDM will request the instrument panel cluster (IPC) to turn ON the AIR BAG indicator located on the IPC. To determine what DTCs have been set by the PPS, the Tech 2 is used to command the SDM to request the PPS to flash the DTCs using the PASSENGER AIR BAG ON/OFF

indicators located on the rear view mirror.

Inflatable Restraint Seat Position Sensors (SPS)

The seat position sensor (SPS) is used to determine the proximity of a front driver or passenger seat position with respect to the frontal air bag. The SPS interfaces with the sensing and diagnostic module (SDM). The state of the SPS allows the SDM to disable stage 2 of the frontal air bag for a front seat that is forward of a forward/rearward point in seat track travel. The SPS is a Hall effect sensor that is mounted on the outboard seat track of both the driver and passenger seats. The seat track includes a metal bracket that shunts the SPS magnetic circuit creating two states of seat position. The shunted state represents a rearward seat position. The non-shunted state represents a forward position. The SPS provides 2 current ranges, one range for the shunted state and a second range for a non-shunted state. These 2 states are inputs to the SDM. State 1 (shunted) being the rearward threshold and state 2 (non-shunted) being the forward threshold. When the SDM receives input from a SPS that state 1 threshold is reached (seat is rearward) the SDM will not disable stage 2 deployment, if required by the deployment sensors. When state 2 threshold is reached (seat is forward) the SDM will disable stage 2 deployment on the side the seat is forward. The SDM monitors the SPS circuit and if a fault is detected the SDM will set codes B0083 or B0084 and defaults to disabling stage 2 frontal deployment. This will only default on the side of the vehicle the sensor has a fault. Its important to understand that the SPS is secondary to the passenger presence system (PPS) in the disable mode the passenger air bag will not deploy regardless of the SPS status.

Inflatable Restraint Passenger Seat Belt Tension Sensor

The seat belt tension sensor is used to enhance the Passenger Presence System (PPS) when an infant car seat is properly restrained on the front outboard passenger seat. The seat belt tension sensor is a 3-wire potentiometer mounted on the lower seat belt anchor and provides an input to the PPS module. When an infant car seat is properly restrained on the front passenger seat, the seat belt is tightly secured through the infant car seat. The seat belt pulls on the tension sensor and changes the voltage signal to the PPS module. The PPS module uses the voltage signal to help determine if a tightly belted infant car seat is installed. The PPS uses the inputs from the seat belt tension sensor and the PPS pressure sensor to determine if the instrument panel (I/P) module should be suppressed or enabled. The PPS monitors the seat belt tension sensor circuits and sets DTC 023 if a fault is detected. To determine what DTCs have been set by the PPS, the Tech 2 is used to command the SDM to request the PPS to flash the DTCs using the PASSENGER AIR BAG ON/OFF indicators located on the rear view mirror.

Inflatable Restraint Vehicle Rollover Sensor

The vehicle rollover sensor is used to supplement the side Supplemental Inflatable Restraint

(SIR) System. The sensing and diagnostic module (SDM) uses the input from the vehicle rollover sensor to assist in determining the severity of a vehicle rollover or near rollover condition. If the SDM determines a deployment is warranted, the SDM will cause current to flow through the deployment loops deploying the inflatable restraint roof rail modules.

AIR BAG Indicator

The AIR BAG indicator, located on the instrument panel cluster (IPC) is used to notify the driver of Supplemental Inflatable Restraint (SIR) System malfunctions and to verify that the sensing and diagnostic module (SDM) is communicating with the IPC. When the ignition is turned ON, the SDM is supplied with ignition 1 voltage and requests the IPC to flash the AIR BAG indicator 7 times. While flashing the indicator, the SDM conducts test on all SIR system components and circuits. If no malfunctions are detected the SDM will communicate with the IPC through the class 2 serial data circuit and request the IPC to turn the AIR BAG indicator OFF. The SDM provides continuous monitoring of the air bag circuits by conducting a sequence of checks. If a malfunction is detected the SDM will store a diagnostic trouble code (DTC) and request the IPC to turn the AIR BAG indicator ON. The presence of a SIR system malfunction could result in non-deployment of the air bags. The AIR BAG indicator will remain ON until the malfunction has been repaired.

Inflatable Restraint PASSENGER AIR BAG ON/OFF Indicators

The PASSENGER AIR BAG ON/OFF indicators located on the rear view mirror are used to notify the driver when the Passenger Presence System (PPS) has enabled or disabled the instrument panel (I/P) inflator module. The PPS air bag indicators will also inform the driver of any PPS malfunctions. When the ignition is turned on, the PPS module is supplied with ignition 1 voltage and commands both PASSENGER AIR BAG ON/OFF indicators ON for 5 seconds. The PPS module conducts tests on the PPS components and circuits while both ON/OFF indicators are ON. If no malfunctions are detected the PPS module will turn the PASSENGER AIR BAG indicator ON or OFF depending on the status of the PPS. If a malfunction is detected, the PPS module will store a diagnostic trouble code (DTC), default the PPS to the OFF state and communicate with the sensing and diagnostic module (SDM) that a DTC has been set. When the SDM detects that the PPS has set a DTC, the SDM will set either DTC B0092 or B0098 and request the instrument panel cluster (IPC) to turn the AIR BAG indicator located on the IPC ON. This is done to notify the driver of any PPS malfunctions. The presence of a Supplemental Inflatable Restraint (SIR) System malfunction could result in non-deployment of the air bags. The AIR BAG indicator will remain ON until the malfunction has been repaired.

Dual Stage Inflator Modules

Dual stage inflator modules contain a housing, inflatable air bag, 2 initiating devices, canister of

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gas generating material and, in some cases, stored compressed gas. The 2 initiators are part of the inflator module deployment loop. The inflator modules have 2 stages of deployment, which varies the amount of restraint to the occupant according to the collision severity. For moderate frontal collisions the inflator modules deploy at less than full deployment which consists of stage 1 of the inflator module. For more severe frontal collisions a full deployment is initiated which consists of stage 1 and stage 2 of the inflator module. When the vehicle is involved in a collision of sufficient force, the sensing and diagnostic module (SDM) will cause current to flow through the deployment loops to the initiator. Current passing through the initiator ignites the material in the canister producing a rapid generation of gas and the release of compressed gas, if present. The gas produced from this reaction rapidly inflates the air bag. Once the air bag is inflated it quickly deflates through the air bag vent holes.

Each dual stage inflator module is equipped with a shorting bar located on the connectors of the module. The shorting bar shorts the inflator module deployment loop circuitry to prevent unwanted deployment of the air bag when it is disconnected.

Inflatable Restraint Steering Wheel Module Coil

The steering wheel module coil is attached to the steering column and is located under the steering wheel. The steering wheel module coil consists of 2 or more current-carrying coils. The coils allow the rotation of the steering wheel while maintaining continuous electrical contact between the driver deployment loop and the steering wheel module. Four coil wires are used for the steering wheel module deployment loop. Additional coil wires are used for accessories attached to the steering wheel depending on the vehicle model. The steering wheel module coil connector is located near the base of the steering column. The connector contains a shorting bar that shorts the steering wheel module coil deployment loop circuitry to prevent unwanted deployment of the air bag when it is disconnected.

Inflatable Restraint Front End Sensors

The front end sensors are equipped on vehicles to supplement the Supplemental Inflatable Restraint (SIR) System performance. The front end sensors are electronic and are not part of the deployment loops, but instead provide inputs to the sensing and diagnostic module (SDM). The front end sensors can assist in determining the severity of some frontal collisions. The SDM uses the input from the front end sensors to assist in determining the severity of a frontal collision further supporting air bag deployment. If the SDM determines a deployment is warranted, the SDM will cause current to flow through the deployment loops deploying the frontal air bags.

Inflatable Restraint Wiring Harnesses

The wiring harnesses connect the sensing and diagnostic module (SDM), inflator modules, Passenger Presence System (PPS), front end sensors, seat position sensors (SPS), passenger seat

belt tension retractor sensor, and the class 2 serial data circuit together using weather pack connectors. SIR deployment loop connectors are yellow in color for easy identification. When repairing Supplemental Inflatable Restraint (SIR) System wiring harnesses, follow the proper testing and wiring repair procedures outlined in this manual.

Seat Belt Pretensioner

The seat belt pretensioner consist of a housing, a seat belt retractor, the seat belt webbing, an initiator, and a canister of gas generating materials. The initiator is part of the seat belt pretensioner deployment loop. When the vehicle is involved in a collision of sufficient force, the sensing and diagnostic module (SDM) causes current to flow through the seat belt deployment loops to the initiator. Current passing through the initiator ignites the material in the canister producing a rapid generation of gas. The gas produced from this reaction deploys the seat belt pretensioner and retracts the seat belt webbing, which removes all of the slack in the seat belts. Depending on the severity of the collision, the seat belt pretensioner may deploy without the frontal inflator modules deploying, or they will deploy immediately before the frontal inflator modules deploy. The seat belt pretensioner will deploy immediately before the frontal inflator modules deploy. Each seat belt pretensioner is equipped with a shorting bar that is located in the connector of the seat belt pretensioner. The shorting bar shorts the seat belt pretensioner circuitry to prevent unwanted deployment of the seat belt pretensioner when the connector is disconnected.

Steering Wheel and Column

The steering wheel and column are designed to absorb energy when driver contact is made with the steering wheel or inflated air bag. In a frontal collision the driver may contact the steering wheel directly or load the steering wheel and column through the inflated air bag. When the driver applies load to the air bag or steering wheel the column will compress downward absorbing some of the impact, helping to reduce bodily injuries to the driver. The steering wheel and column must be inspected for damage after a collision.

Driver and Passenger Knee Bolsters

The knee bolsters are designed to help restrain the lower torsos of front seat occupants by absorbing energy through the front seat occupants upper legs. In a frontal collision the front seat occupants legs may come in contact with the knee bolsters. The knee bolsters are designed to crush or deform absorbing some of the impact, which helps to reduce bodily injuries. The driver and passenger knee bolsters are located in the lower part of the instrument panel and must be inspected for damage after a collision.

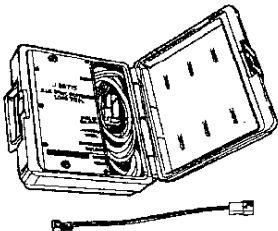

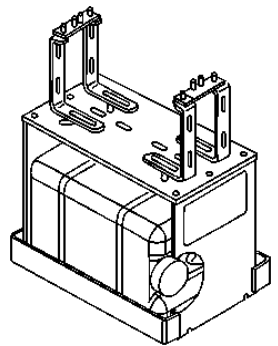
SPECIAL TOOLS AND EQUIPMENT

SPECIAL TOOLS

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Special Tools

Illustration	Tool Number/ Description
	J 38715-A SIR Driver/Passenger Load Tool
	J 38826 SIR Deployment Harness
	J 39401-B SIR Deployment Fixture