

2004 Isuzu Ascender LS

2004 RESTRAINTS SIR - Ascender

2004 RESTRAINTS

SIR - Ascender

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

Fastener Tightening Specifications

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

SCHEMATIC AND ROUTING DIAGRAMS

SIR SCHEMATIC ICONS

SIR Schematic Icons

Icon	Icon Definition
	<p>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.</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.

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SIR SCHEMATICS

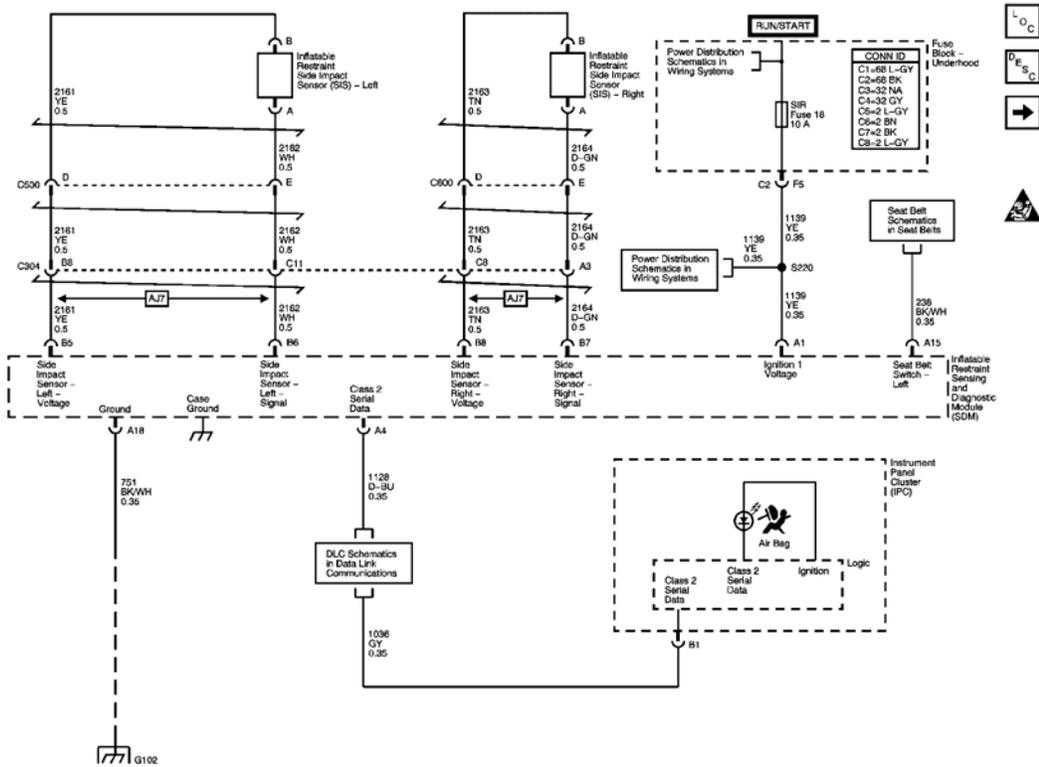


Fig. 1: Power, Ground, Serial Data, Indicator & Side Impact Sensors Schematic
Courtesy of GENERAL MOTORS CORP.

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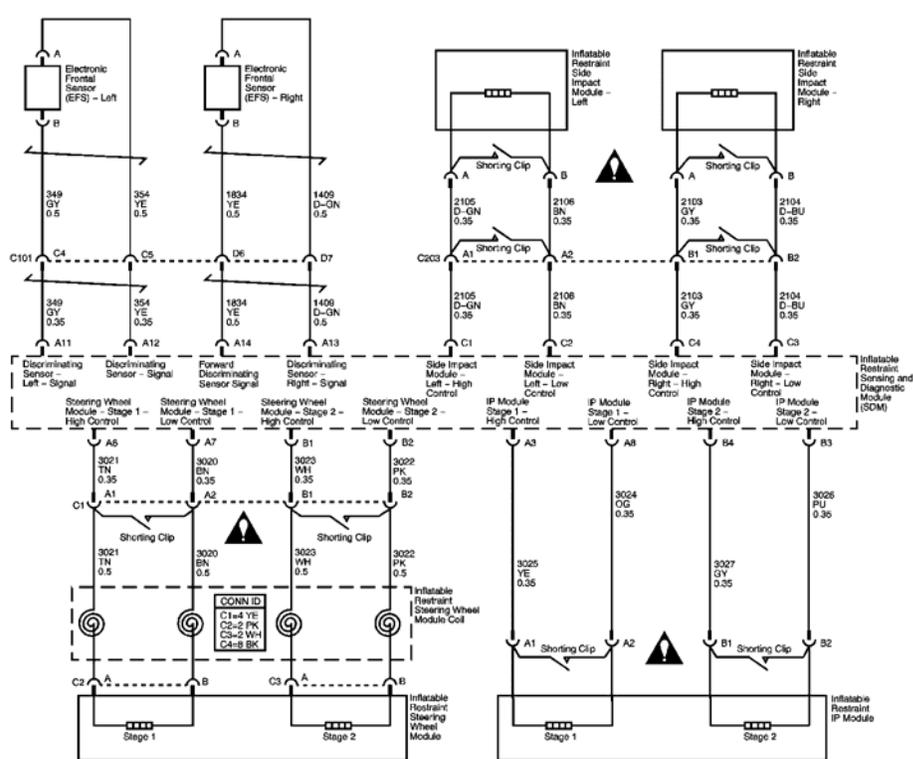


Fig. 2: Frontal Sensors & Modules Schematic
 Courtesy of GENERAL MOTORS CORP.

COMPONENT LOCATOR

SIR COMPONENT VIEWS

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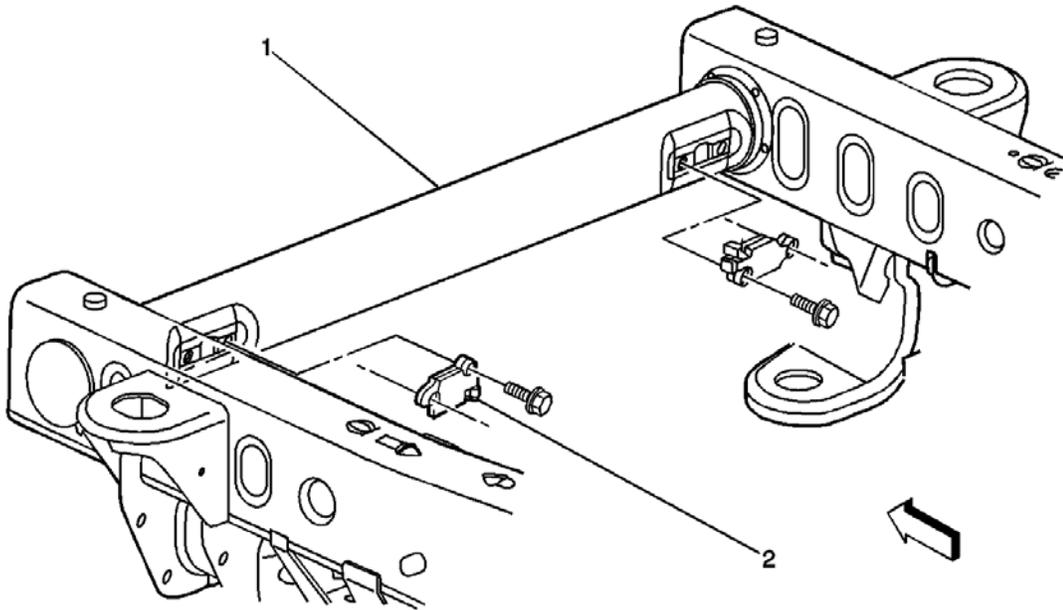


Fig. 3: Identifying Restraint Electronic Frontal Sensor
Courtesy of GENERAL MOTORS CORP.

Identifying Callouts For Fig. 3

Callout	Component Name
1	Frame, Front
2	Inflatable Restraint Electronic Frontal Sensor

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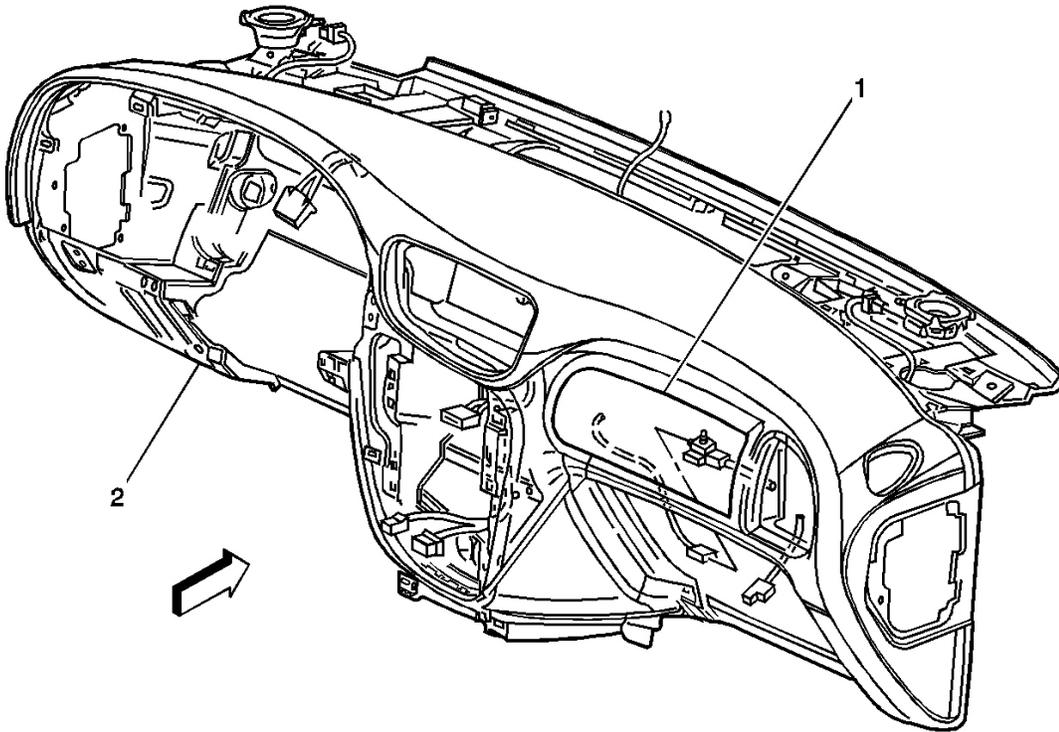


Fig. 4: Identifying Inflation Restraint I/P Module

Courtesy of GENERAL MOTORS CORP.

Identifying Callouts For Fig. 4

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

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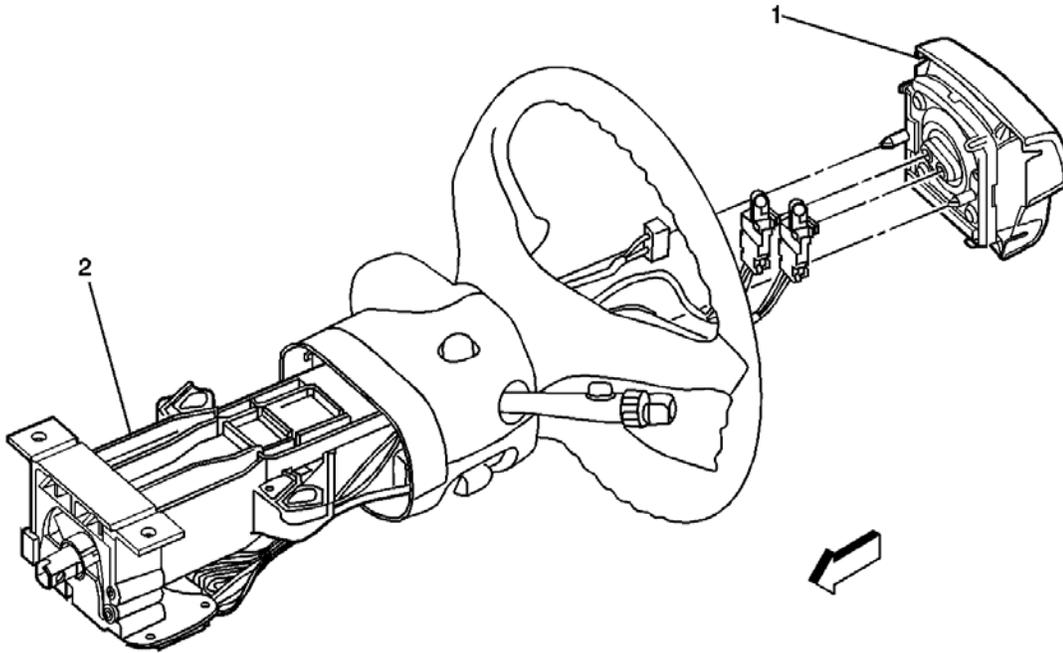


Fig. 5: Identifying Inflation Restraint Steering Wheel Module
Courtesy of GENERAL MOTORS CORP.

Identifying Callouts For Fig. 5

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

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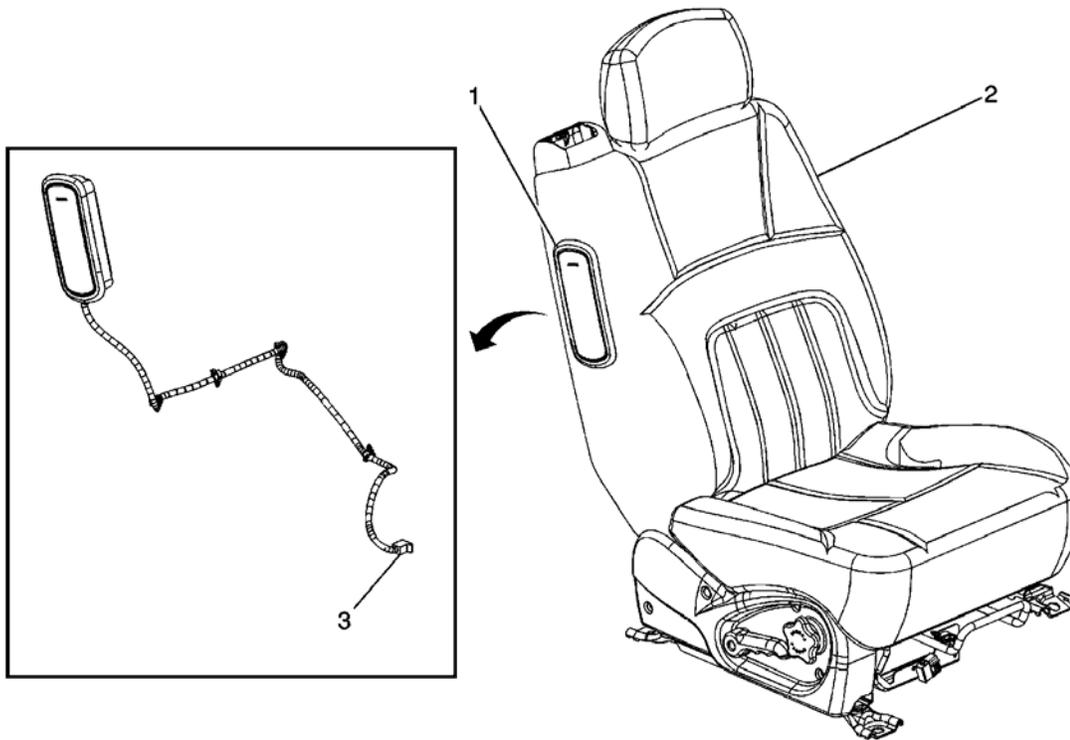


Fig. 6: Identifying Inflation Restraint Side Impact Module-Right
Courtesy of GENERAL MOTORS CORP.

Identifying Callouts For Fig. 6

Callout	Component Name
1	Inflation Restraint Side Impact Module-Right
2	Passenger Seat, Driver Seat Similar
3	SIR Connector to Body Harness

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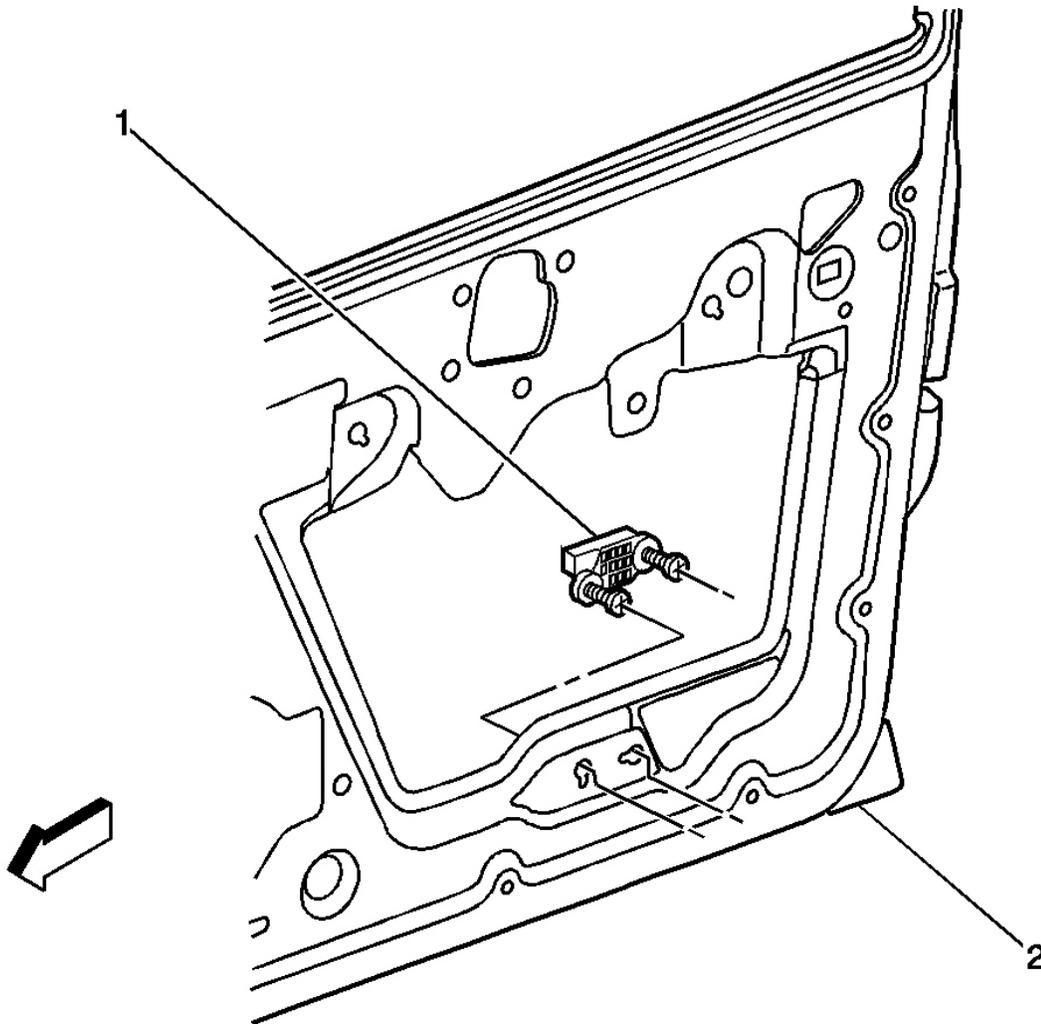


Fig. 7: Identifying Inflatable Restraint Side Impact Sensor (SIS) - Right
Courtesy of GENERAL MOTORS CORP.

Identifying Callouts For Fig. 7

Callout	Component Name
1	Inflatable Restraint Side Impact Sensor (SIS) - Right
2	Passenger Door-RF

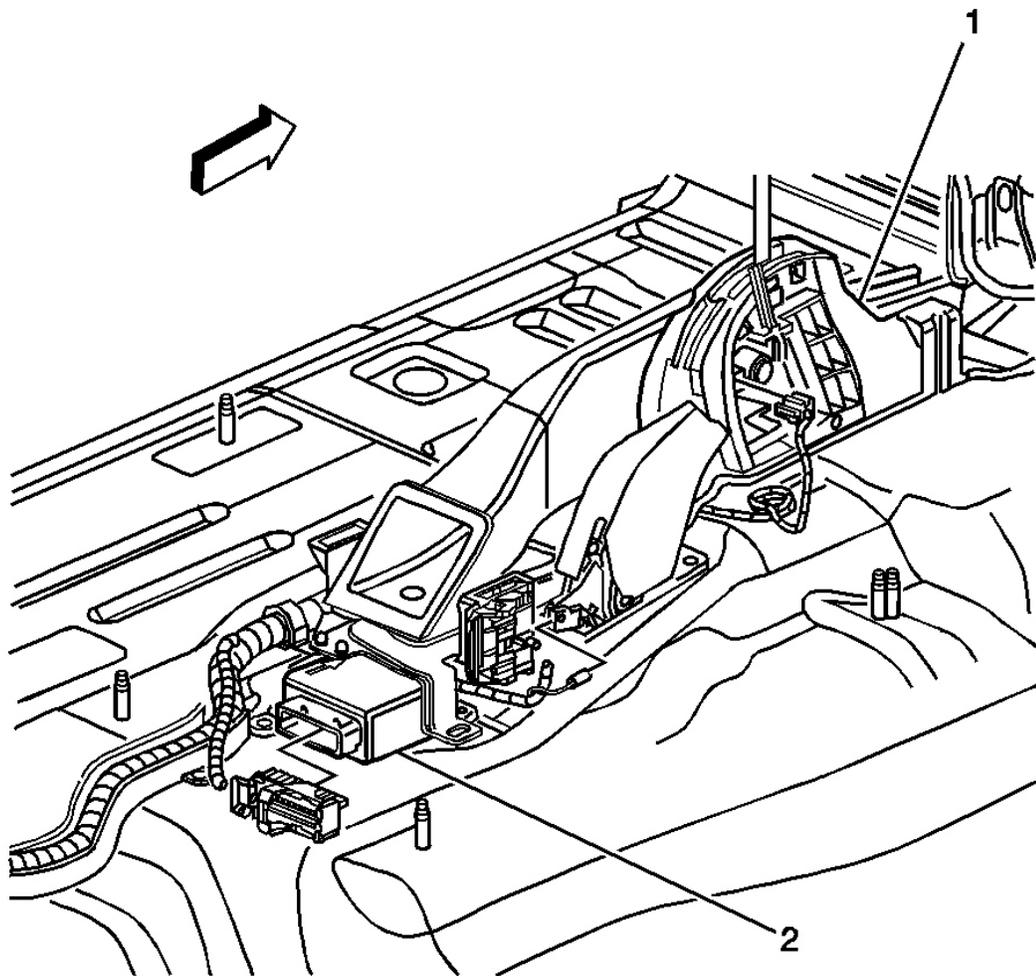


Fig. 8: Identifying Inflation Restraint Sensing and Diagnostic Module (SDM)
 Courtesy of GENERAL MOTORS CORP.

Identifying Callouts For Fig. 8

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

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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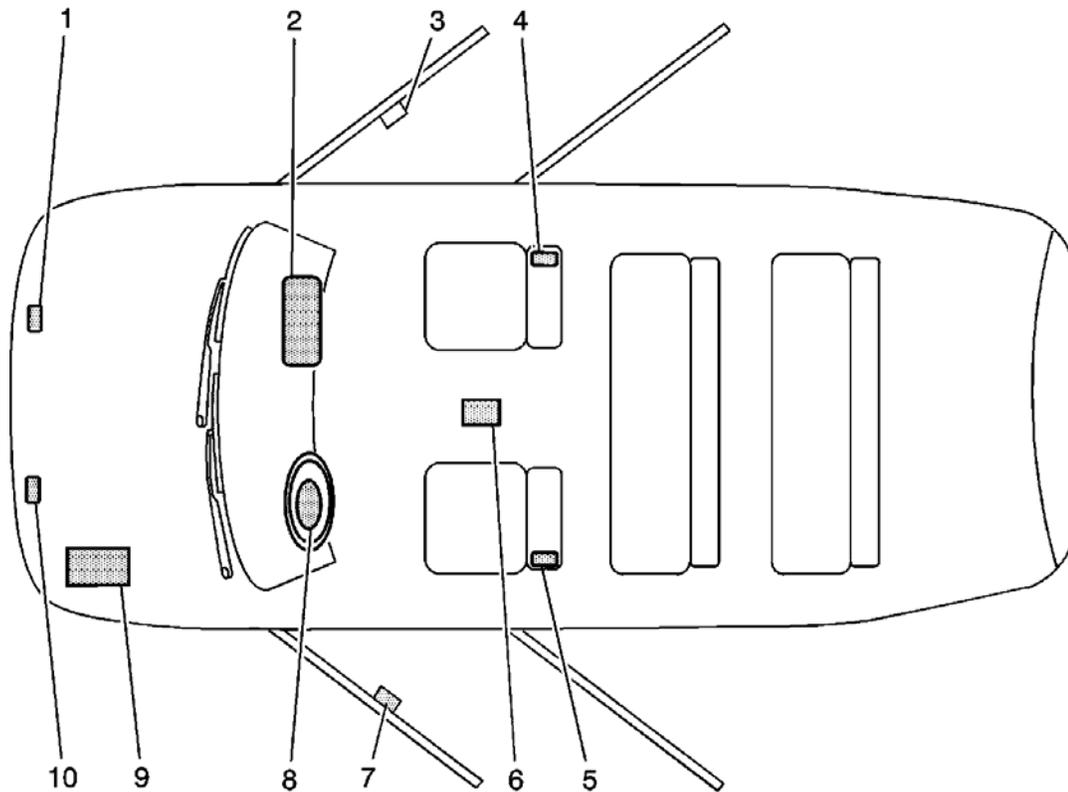


Fig. 9: Identifying SIR Zones - Isuzu Ascender
 Courtesy of GENERAL MOTORS CORP.

Identifying Callouts For Fig. 9

Callout	Component Name
1	Inflatable Restraint Front End Sensor-right- Right-Located on the front of the vehicle in the engine compartment
2	Inflatable Restraint IP 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 Side Impact Module-right-Located on the side of the right front seat
5	Inflatable Restraint Side Impact Module-left-Located on the side of the left front seat
6	Inflatable Restraint Sensing and Diagnostic Module (SDM)-Located under center floor console
7	Inflatable Restraint Side Impact Sensor (SIS)-left-Located under left front door trim near the lower rear of door frame
8	Inflatable Restraint Steering Wheel Module-Located on the steering wheel
9	Battery-Located under hood on the left side
10	Battery-Located under hood on the right side

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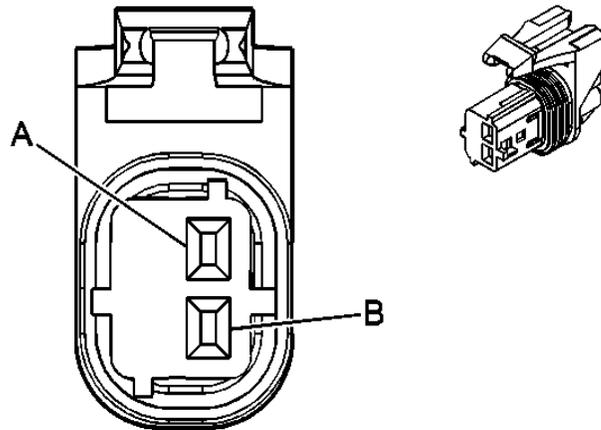
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Inflatable Restraint Front End Sensor-left-Located on the front of the vehicle in the engine compartment

SIR CONNECTOR END VIEWS

Identifying Electronic Frontal Sensor (EFS) - Left - Connector End View & Functions



Connector Part Information

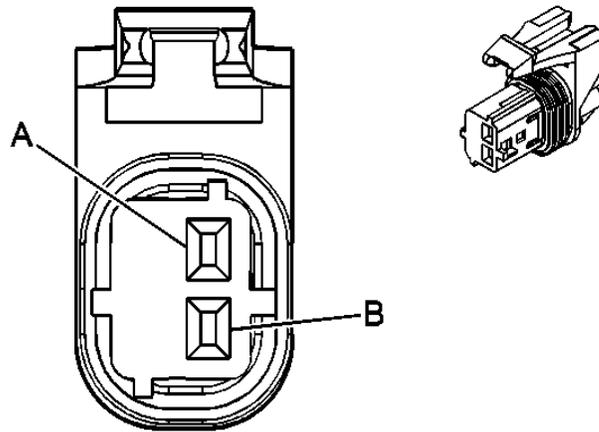
- 15356723
- 2-Way F GT 150 Series, Sealed 4.0 (YE)

Pin	Wire Color	Circuit No.	Function
A	YE	354	Discriminating Sensor - Signal
B	GY	349	Discriminating Sensor - Left - Signal

Identifying Electronic Frontal Sensor (EFS) - Right - Connector End View & Functions

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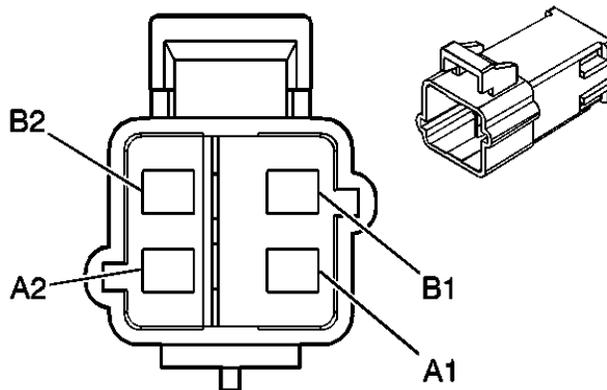


Connector Part Information

- 15356723
- 2-Way F GT 150 Series, Sealed 4.0 (YE)

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

Identifying Inflatable Restraint I/P Module Connector End View & Functions



Connector Part Information

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

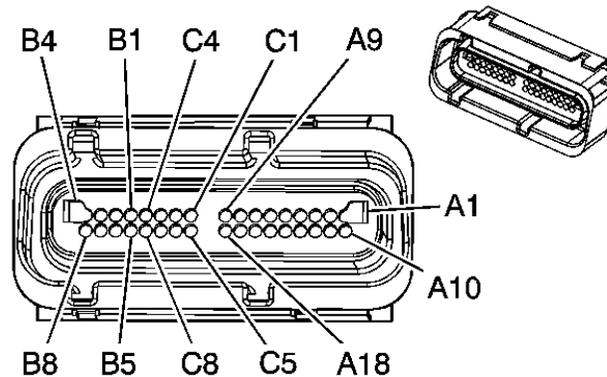
Pin	Wire Color	Circuit No.	Function
A1	YE	3025	I/P Module - Stage 1 - High Control
A2	OG	3024	I/P Module - Stage 1 - Low Control

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B1	GY	3027	I/P Module - Stage 2 - High Control
B2	PU	3026	I/P Module - Stage 2 - Low Control

Identifying Inflatable Restraint Sensing and Diagnostic Module (SDM) Connector End View & Functions



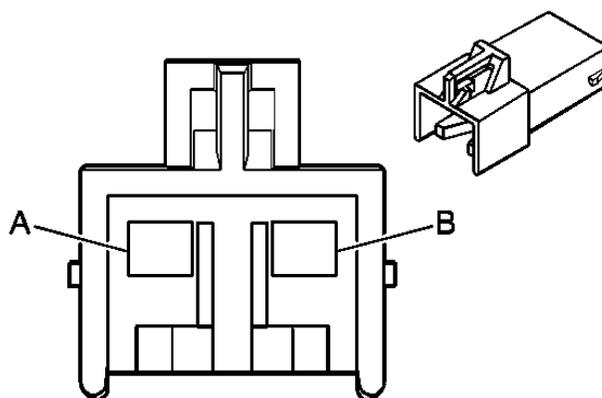
Connector Part Information		<ul style="list-style-type: none"> • 15357038 • 34-Way F Micro-Pack 100 Series (YE) 	
Pin	Wire Color	Circuit No.	Function
A1	YE	1139	Ignition 1 Voltage
A2	-	-	Not Used
A3	YE	3025	I/P Module - Stage 1 - High Control
A4	D-BU	1128	SDM Class 2 Serial Data
A5	-	-	Not Used
A6	TN	3021	Steering Wheel Module - Stage 1 - High Control
A7	BN	3020	Steering Wheel Module - Stage 1 - Low Control
A8	OG	3024	I/P Module - Stage 1 - Low Control
A9-A10	-	-	Not Used
A11	GY	349	Discriminating Sensor - Left - Signal
A12	YE	354	Discriminating Sensor - Signal
A13	D-GN	1409	Discriminating Sensor - Right - Signal
A14	YE	1834	Forward Discriminating Sensor Signal
A15	BK/WH	238	Seat Belt Switch - Left
A16-A17	-	-	Not Used
A18	BK/WH	751	Ground
B1	WH	3023	Steering Wheel Module - Stage 2 - High Control
B2	PK	3022	Steering Wheel Module - Stage 2 - Low

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			Control
B3	PU	3026	I/P Module - Stage 2 - Low Control
B4	GY	3027	I/P Module - Stage 2 - High Control
B5	YE	2161	Side Impact Sensor - Left - Voltage (AJ7)
B6	WH	2162	Side Impact Sensor - Left - Signal (AJ7)
B7	D-GN	2164	Side Impact Sensor - Right - Signal (AJ7)
B8	TN	2163	Side Impact Sensor - Right - Voltage (AJ7)
C1	D-GN	2105	Side Impact Module - Left - High Control (AJ7)
C2	BN	2106	Side Impact Module - Left - Low Control (AJ7)
C3	D-BU	2104	Side Impact Module - Right - Low Control (AJ7)
C4	GY	2103	Side Impact Module - Right - High Control (AJ7)
C5-C8	-	-	Not Used

Identifying Inflatable Restraint Side Impact Module - Left (AJ7) - Connector End View & Functions



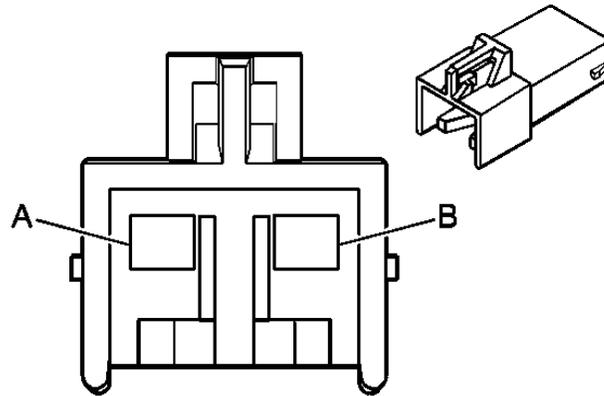
Connector Part Information		<ul style="list-style-type: none"> • 12110288 • 2-Way F Metri-Pack 280 Series (YE) 	
Pin	Wire Color	Circuit No.	Function
A	D-GN	2105	Side Impact Module - Left - High Control
B	BN	2106	Side Impact Module - Left - Low Control

Identifying Inflatable Restraint Side Impact Module - Right (AJ7) - Connector End View & Functions



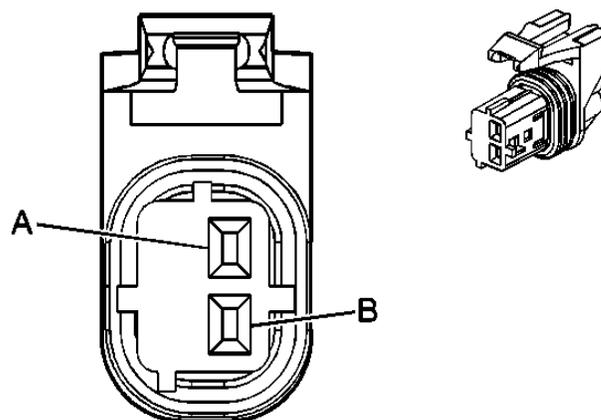
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Connector Part Information		<ul style="list-style-type: none"> • 12110288 • 2-Way F Metri-Pack 280 Series (YE) 	
Pin	Wire Color	Circuit No.	Function
A	GY	2103	Side Impact Module - Right - High Control
B	D-BU	2104	Side Impact Module - Right - Low Control

Identifying Inflatable Restraint Side Impact Sensor (SIS) - Left (AJ7) - Connector End View & Functions

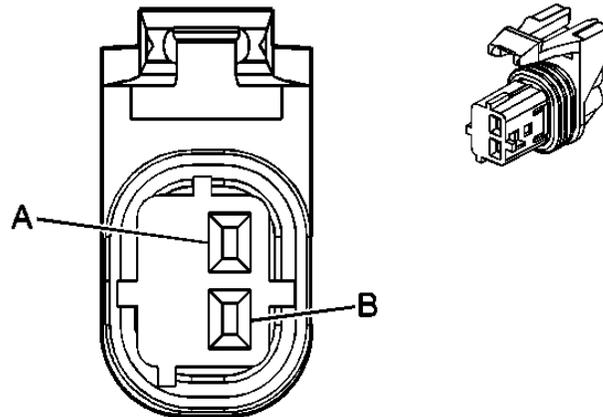


Connector Part Information		<ul style="list-style-type: none"> • 15356722 • 2-Way F GT 150 Series, Sealed 4.0 (YE) 	
Pin	Wire Color	Circuit No.	Function
A	WH	2162	Side Impact Sensor - Left - Signal
B	YE	2161	Side Impact Sensor - Left - Voltage

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Identifying Inflatable Restraint Side Impact Sensor (SIS) - Right (AJ7) - Connector End View & Functions

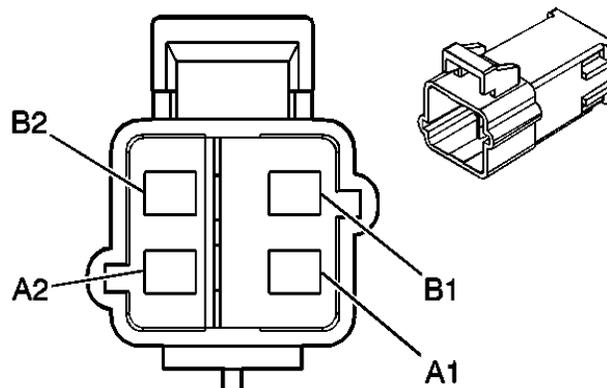


Connector Part Information

- 15356722
- 2-Way F GT 150 Sealed 4.0 (YE)

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

Identifying Inflatable Restraint Steering Wheel Module Coil C1 Connector End View & Functions



Connector Part Information

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

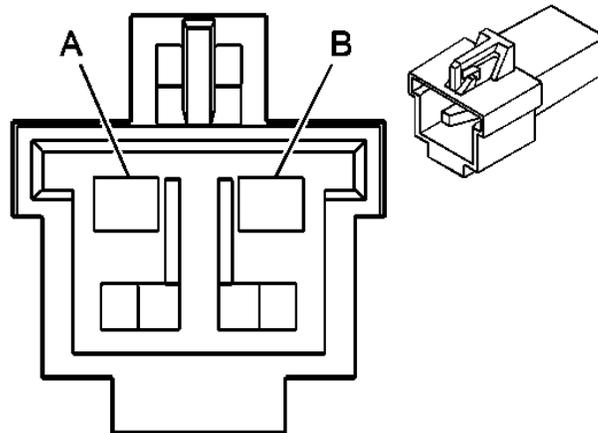
Pin	Wire Color	Circuit No.	Function
A1	TN	3021	Steering Wheel Module - Stage 1 - High

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			Control
A2	BN	3020	Steering Wheel Module - Stage 1 - Low Control
B1	WH	3023	Steering Wheel Module - Stage 2 - High Control
B2	PK	3022	Steering Wheel Module - Stage 2 - Low Control

Identifying Inflatable Restraint Steering Wheel Module Coil C2 Connector End View & Functions



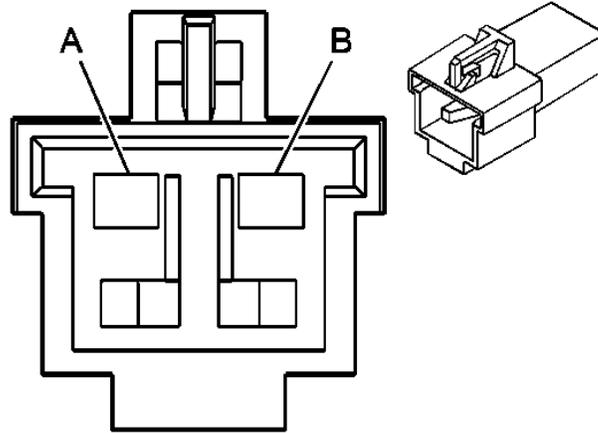
Connector Part Information		<ul style="list-style-type: none"> • 12186989 • 2-Way M Metri-Pack 280 Series P2S (WH) 	
Pin	Wire Color	Circuit No.	Function
A	TN	3021	Steering Wheel Module - Stage 1 - High Control
B	BN	3020	Steering Wheel Module - Stage 1 - Low Control

Identifying Inflatable Restraint Steering Wheel Module Coil C3 Connector End View & Functions



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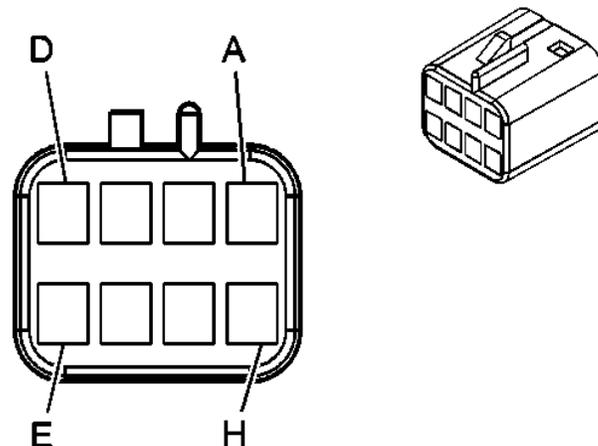


Connector Part Information

- 12186989
- 2-Way M Metri-Pack 280 Series P2S (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

Identifying Inflatable Restraint Steering Wheel Module Coil C4 Connector End View & Functions



Connector Part Information

- 12047886
- 8-Way F Metri-Pack 150 Series (BK)

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Pin	Wire Color	Circuit No.	Function
A	1327	YE	DIC Fuel Signal (STW)
B	894	D-BU	DIC Toggle Switch Signal (STW)
C	1358	D-GN	DIC Switch Signal (STW)
D	1816	OG	DIC Set/Reset Switch Signal (STW)
E	2283	WH	12 Volt Reference (STW)
F	230	BN/WH	Instrument Panel Lamps Dimming Control (STW)
G	1011	L-GN	Remote Radio Control Signal (STW)
	1011	L-GN	Remote Radio Control Signal (STW)
H	2250	BK	Ground (STW)

DIAGNOSTIC INFORMATION AND PROCEDURES

DIAGNOSTIC STARTING POINT - SIR

Begin the system diagnosis with **Diagnostic System Check - SIR**. The Diagnostic System Check - SIR will provide the following information:

- The identification of the control module(s) which commands the system.
- The ability of the control module(s) to communicate through the serial data circuit.
- The identification of any stored diagnostic trouble codes (DTCs) and their status.

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

DIAGNOSTIC SYSTEM CHECK - SIR

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

CAUTION: If the vehicle interior is exposed to moisture and becomes soaked up to the level of the sensing and diagnostic module (SDM), the SDM and SDM harness connector must be replaced. The SDM could be activated when powered, which could cause airbag deployment and result in personal injury.

These diagnostic procedures will help you to find and repair SIR system malfunctions. This service category also contains information for repairing SIR system malfunctions. For best results, use the diagnostic tables, and follow the sequence listed below:

1. Perform the A Diagnostic System Check - SIR. All SIR diagnostics must begin with the A Diagnostic System Check-SIR. The A Diagnostic System Check - SIR determines the following results:

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- Proper AIR BAG warning lamp operation
 - Ability of the SDM to communicate through the data link connector (DLC)
 - Existence of SIR current and/or history diagnostic trouble codes (DTC)
2. Refer to the diagnostic table as directed by the A Diagnostic System Check-SIR. The diagnostic tables will help enable you to diagnose any SIR system malfunction. Bypassing these procedures may result in the following problems:
 - Extended diagnostic time
 - Incorrect diagnosis
 - Incorrect parts replacement
 3. Repeat the A Diagnostic System Check-SIR after you perform any repairs or diagnostic procedures. This will verify that you correctly performed the repair. This will also ensure that no other malfunctions exist.

Test Description

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

1: This step checks to see if the AIR BAG warning lamp flashes seven times and then turns off when the ignition key is turned ON.

2: This step checks to see if the scan tool powers up.

3: This step checks to see if the scan tool can communicate with the inflatable restraint sensing and diagnostic module (SDM).

4: This step checks to see if there are any current or history diagnostic trouble codes (DTCs) present.

5: This step checks to see if there are communication DTCs (U-codes) present.

6: This step checks to see if DTC B1000 (ECU Malfunction) is present.

A Diagnostic System Check - SIR

Step	Action	Yes	No
1	1. Note the AIR BAG warning lamp while turning the ignition switch ON. 2. The AIR BAG warning lamp should turn OFF after flashing seven times. Does the AIR BAG warning lamp flash seven times and then turn off?	Go to Step 2	Go to <u>Symptoms - SIR</u>
2	Install a scan tool. Does the scan tool power up?	Go to Step 3	Go to <u>Scan Tool Does Not Power Up</u> in Data Link Communications
3	Attempt to establish communication with the inflatable restraint sensing and diagnostic module (SDM). Does the scan tool communicate with the SDM?		Go to <u>Scan Tool Does Not Communicate with Class 2 Device</u> in Data Link

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		Go to Step 4	Communications
4	<ol style="list-style-type: none"> 1. Use the scan tool to request the SIR diagnostic trouble code (DTC) display. 2. Record the displayed DTC(s) on the repair order, specifying as current or history. <p>Does the scan tool display any current or history DTCs?</p>	Go to Step 5	System OK
5	Does the scan tool display any DTC's which begin with a "U"?	Go to <u>Scan Tool Does Not Communicate with Class 2 Device</u> in Data Link Communications	Go to Step 6
6	Does the scan tool display DTC B1000?	Go to <u>DTC B1000</u> in Body Control System	Go to <u>Diagnostic Trouble Code (DTC) List</u>

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 in order to supplement the diagnostic procedures. Begin all of the diagnostic procedures with the SIR Diagnostic System Check. Use the SIR Scan Tool Data List after the following are determined:

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

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

SIR Scan Tool Data List

Scan Tool Parameter	Data List	Units Displayed	Typical Data Value
Ignition ON/Engine OFF/Driver Seat Belt Buckled			
8-Digit Part Number	Module 2 Information	8-digit number	Varies
Calibration ID	Module 1 Information	4-digit number	Varies
Component Serial Number	Module 2 Information	4-digit number	Varies

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Driver Seat Belt A/D	Data	Volts	12 volts
Driver Side Belt Status	Inputs	Buckled/Unbuckled	Buckled
Driver Side Impact Sensor ID	Module 1 Information	2-digit number	56
Electronic Front End Sensor 1 ID	Module 1 Information	2-digit number	D1
Electronic Front End Sensor 2 ID	Module 1 Information	2-digit number	D1
Ignition Voltage	Data	Volts	12 volts
Julian Date of Build	Module 1 Information	3-digit number	Varies
Manufacture Shift Code	Module 2 Information	4-digit number	Varies
Passenger Side Impact Sensor ID	Module 1 Information	2-digit number	56
PROM ID	Module 1 Information	4-digit number	Varies
Year Module Built	Module 1 Information	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 Part Number

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

Component Serial Number

The scan tool displays the SDM serial number.

Driver Seat Belt A/D

The scan tool displays 0 or 12 volts. If driver seat belt is buckled = 12 volts, unbuckled = 0 volts.

Driver Side Belt Status

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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 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 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.

Manufacture Shift Code

The scan tool displays a 4 digit number.

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.

PROM ID

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

Year Module Built

The scan tool displays what year the module was built.

DIAGNOSTIC TROUBLE CODE (DTC) LIST

Diagnostic Trouble Code (DTC) List

DTC	Description	Module
B0012, B0013,		

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B0014, B0016, B0017, or B0018	<u>DTC B0012, B0013, B0014, B0016, B0017, or B0018</u>	SDM
B0022, B0024, B0026, B0042, B0043, or B0044	<u>DTC B0022, B0024, B0026, B0042, B0043, or B0044</u>	SDM
B0028, B0029, or B0030	<u>DTC B0028, B0029, or B0030</u>	SDM
B0040, B0041, or B0045	<u>DTC B0040, B0041, or B0045</u>	SDM
B0051	<u>DTC B0051</u>	SDM
B0053	<u>DTC B0053</u>	SDM
B0077, B0078, B0079, B0080, B0081, or B0082	<u>DTC B0077, B0078, B0079, B0080, B0081, or B0082</u>	SDM
B0100, B0101, B0102, B0103, B0104, or B0105	<u>DTC B0100, B0101, B0102, B0103, B0104, or B0105</u>	SDM
B1001	<u>DTC B1001</u>	SDM

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.

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:

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- 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.
 - 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: 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

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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.

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 a Diagnostic System Check - SIR?	Go to Step 2	Go to <u>Diagnostic System Check - SIR</u>
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	-
4	<p>IMPORTANT: 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 <u>Special Tools and Equipment</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 I/P module connector. See <u>Special Tools and Equipment</u>. Use BASE 		

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	<p>OF COLUMN and PASSENGER INFLATOR connectors.</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 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 <u>Special Tools and Equipment</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 I/P module stage 1 or stage 2 high circuits 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
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 and low circuits in stage 1 or stage 2. 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. <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 I/P module. Refer to <u>Inflatable Restraint Instrument Panel Module Replacement</u>. <p>Did you complete the replacement?</p>	Go to Step 9	-
	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 		

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8	2. Replace the SDM. Refer to <u>Inflatable Restraint Sensing and Diagnostic Module Replacement</u> . 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 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.

Conditions for Running the DTC

Ignition 1 voltage is within the normal operating voltage range.

Conditions for Setting the DTC

- 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

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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
- 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

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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 a Diagnostic System Check -SIR?	Go to Step 2	Go to <u>Diagnostic System Check - SIR</u>
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 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 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. <p>Did you complete the repair?</p>	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 and Equipment</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 		

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	<p>module coil connector. See <u>Special Tools and Equipment</u>. Use BASE OF COLUMN and PASSENGER INFLATOR connectors.</p> <ol style="list-style-type: none"> 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>		
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 and Equipment</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 and Equipment</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 6	Go to Step 5
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 and Equipment</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 9	Go to Step 8
	<ol style="list-style-type: none"> 1. If DTC B0022 or B0042 is present, test the 	Go to Step 11	Go to Step 7

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7	<p>steering wheel module for a short between the high and low circuits in stage 1 or stage 2.</p> <ol style="list-style-type: none"> 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>Inflatable Restraint Steering Wheel Module Replacement</u>. 		-
	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>Inflatable Restraint Sensing and Diagnostic Module Replacement</u>. 		-
	Did you complete the replacement?	Go to Step 11	
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 B0028, B0029 OR B0030

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Circuit Description

The passenger side deployment loop consists of the following components:

- An inflatable restraint side-impact module-RF
- The inflatable restraint side-impact module wiring harness
- The side-impact module-RF high circuits
- The side-impact module-RF module low circuits

A shorting bar is used within the side-impact module-RF connector. The shorting bar will short together the side-impact module-RF high circuit, and the side-impact module-RF low circuit when the connector is disconnected. This helps 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. This flow of current will deploy the side-impact module-RF. 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.

Conditions for Running the DTC

Ignition 1 voltage is within the normal operating voltage range.

Conditions for Setting the DTC

- DTC B0028 will set when the side-impact module-RF deployment loop resistance is less than 1.3 ohms for 500 milliseconds.
- DTC B0029 will set when one of the following conditions occurs:
 - A side-impact module-RF high circuit is less than 2.4 volts and the side-impact module-RF deployment loop is more than 6 ohms for 500 milliseconds.
 - A side-impact module-RF deployment loop resistance is more than 4.8 ohms for 500 milliseconds.
- DTC B0030 will set when one of the following conditions occur:
 - A side-impact module-RF high circuits and/or low circuits is short-to-ground or short-to-voltage for 500 milliseconds.
 - A side-impact module-RF high circuit is less than 2.4 volts and side-impact module-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 does 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.

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Diagnostic Aids

The following conditions are possible causes of the malfunction:

- A short between the side-impact module-RF high circuits and low circuits.
- An open or a high resistance in the side-impact module-RF high or low circuits.
- A short-to-ground or a short-to-voltage in the side-impact module-RF high circuits or low circuits.
- A malfunctioning side-impact module-RF connector
- A malfunctioning SDM connector
- A malfunctioning side-impact module-RF
- 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 side-impact module-RF or by the side-impact module-RF wiring harness.

7: Determines which DTCs are present. If DTC B0028 is present, test the side-impact module-RF for a short between high circuits and low circuits. If DTC B0029 is present, test the side-impact module-RF high circuits and low circuits for an open and for high resistance. If DTC B0030 is present, test the side-impact module-RF high circuits and low circuits for a short-to-ground or a short-to-voltage.

DTC B0028, B0029 or B0030

Step	Action	Yes	No
Schematic Reference: <u>SIR Schematics</u> Connector End View Reference: <u>SIR Connector End Views</u>			
1	Did you perform a Diagnostic System Check-SIR?	Go to Step 2	Go to <u>Diagnostic System Check - SIR</u>
2	<ol style="list-style-type: none">1. Turn OFF the ignition.2. Disconnect the side impact module-RF wiring harness in-line connector. Refer to <u>Wiring Harness Replacement - Front Door</u> .3. Inspect the component and harness sides of the in-line connector for the side impact module-RF wiring harness for damage or corrosion that may cause the malfunction. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u>		

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	<p>and <u>Connector Repairs</u> in Wiring Systems.</p> <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 side impact module-RF wiring harness is damaged, the side impact module-RF wiring harness must be replaced. Refer to <u>Wiring Harness Replacement - Front Door</u> . 2. If the wiring harness side of side impact module-RF in-line 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	-
4	<ol style="list-style-type: none"> 1. Connect the J 38715-A SIR Driver/Passenger Load Tool to the harness side of the side impact module-RF wiring harness connector. See <u>Special Tools and Equipment</u>. Use PASSENGER INFLATOR connector. 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 B0028, B0029, or B0030 are current?</p>	Go to Step 6	Go to Step 5
5	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Disconnect and remove the J 38715-A . See <u>Special Tools and Equipment</u>. 3. Connect the side impact module-RF wiring harness in-line connector. 4. Remove the side impact module-RF connector. Refer to <u>Inflatable Restraint Side Impact Module Replacement - Front</u>. 5. Use the J 38715-30A adapter to connect the J 38715-A to the side impact module-RF connector. See <u>Special Tools and Equipment</u>. Use PASSENGER INFLATOR connector. 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 B0028, B0029, or B0030 are current?</p>	Go to Step 9	Go to Step 8
	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 		

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6	<ol style="list-style-type: none"> 2. Disconnect and remove both the J 38715-A and adapter. See <u>Special Tools and Equipment</u>. 3. Disconnect the inflatable restraint 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 side impact module-RF 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
7	<ol style="list-style-type: none"> 1. If DTC B0028 is present, test the side impact module-RF for a short between the high and low circuits. 2. If DTC B0029 is present, test the side impact module-RF high and low circuits for an open and for high resistance. 3. If DTC B0030 is present, test the side impact module-RF high and low circuits for a short to ground and for a short to voltage. 4. If any of the above conditions exist, 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 11	Go to Step 10
8	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Replace the side impact module-RF. Refer to <u>Inflatable Restraint Side Impact Module Replacement - Front</u>. <p>Did you complete the replacement?</p>	Go to Step 11	-
9	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Replace the side impact module-RF wiring harness. Refer to <u>Wiring Harness Replacement - Front Door</u>. <p>Did you complete the replacement?</p>	Go to Step 11	-
10	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Replace the SDM. Refer to <u>Inflatable Restraint Sensing and Diagnostic Module Replacement</u>. 		-

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	Did you complete the replacement?	Go to Step 11	
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 B0040, B0041 OR B0045

Circuit Description

The driver-side deployment loop consists the following components:

- An inflatable restraint side-impact module-LF
- The inflatable restraint side-impact module wiring harness
- The side-impact module-LF high circuits
- The side-impact module-LF module low circuits

A shorting bar is used within the side-impact module-LF connector. The shorting bar will short together the side-impact module-LF high circuit, and the side-impact module-LF low circuit when the connector is disconnected. This helps 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. This flow of current will deploy the side-impact module-LF. 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.

Conditions for Running the DTC

Ignition 1 voltage is within the normal operating voltage range.

Conditions for Setting the DTC

- DTC B0040 will set when the side-impact module-LF deployment loop resistance is less than 1.3 ohms for 500 milliseconds.
- DTC B0041 will set when one of the following conditions occurs:
 - A side-impact module-LF high circuit is less than 2.4 volts and the side-impact module-LF deployment loop is more than 6 ohms for 500 milliseconds.
 - A side-impact module-LF deployment loop resistance is more than 4.8 ohms for 500 milliseconds.
- DTC B0045 will set when one of the following conditions occur:
 - A side-impact module-LF high and/or low circuits is short-to-ground or short-to-voltage for 500 milliseconds.

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- A side-impact module-LF high circuit is less than 2.4 volts, and the side-impact module-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 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 side-impact module-LF high circuits and low circuits.
- An open or a high resistance in the side-impact module-LF high circuits or low circuits.
- A short to ground or a short to voltage in the side-impact module-LF high circuits or low circuits.
- A malfunctioning side-impact module-LF connector
- A malfunctioning SDM connector
- A malfunctioning side-impact module-LF
- 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 side-impact module-LF or by the side-impact module-LF wiring harness.

7: Determines which DTCs are present. If DTC B0040 is present, test the side-impact module-LF for a short between high circuits and low circuits. If DTC B0041 is present, test the side-impact module-LF high circuits and low circuits for an open and for high resistance. If DTC B0045 is present, test the side-impact module-LF high circuits and low circuits for a short-to-ground or a short-to-voltage.

DTC B0040, B0041 or B0045

Step	Action	Yes	No
Schematic Reference: <u>SIR Schematics</u>			
Connector End View Reference: <u>SIR Connector End Views</u>			

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1	<p>Did you perform a Diagnostic System Check-SIR?</p>	Go to Step 2	Go to <u>Diagnostic System Check - SIR</u>
2	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Disconnect the side-impact module-LF wiring harness in-line connector. Refer to <u>Inflatable Restraint Side Impact Module Replacement - Front</u>. 3. Inspect the component and harness sides of the in-line connector for the side-impact module-LF wiring harness 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 side-impact module-LF wiring harness is damaged, the side-impact module-LF wiring harness must be replaced. Refer to <u>Inflatable Restraint Side Impact Module Replacement - Front</u>. 2. If the wiring harness side of side-impact module-LF in-line 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	-
4	<ol style="list-style-type: none"> 1. Connect the J 38715-A SIR Driver/Passenger Load Tool to the harness side of the side-impact module-LF wiring harness connector. See <u>Special Tools and Equipment</u>. Use PASSENGER INFLATOR connector. 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 B0040, B0041, or B0045 are current?</p>	Go to Step 6	Go to Step 5
	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Disconnect and remove the J 38715-A . See <u>Special Tools and Equipment</u>. 3. Connect the side-impact module-LF wiring harness in-line connector. 		

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5	<ol style="list-style-type: none"> 4. Remove the side-impact module-LF connector. Refer to <u>Inflatable Restraint Side Impact Module Replacement - Front</u>. 5. Use J 38715-30A adapter to connect the J 38715-A to the side-impact module-LF connector. See <u>Special Tools and Equipment</u>. Use PASSENGER INFLATOR connector. 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 B0040, B0041, or B0045 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 and Equipment</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 side-impact module-LF 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
7	<ol style="list-style-type: none"> 1. If DTC B0040 is present, test the side-impact module-LF for a short between the high and low circuits. 2. If DTC B0041 is present, test the side-impact module-LF high and low circuits for an open and for high resistance. 3. If DTC B0045 is present, test the side-impact module-LF high and low circuits for a short to ground and for a short to voltage. 4. If any of the above conditions exist, 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 11	Go to Step 10
	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Replace the side-impact module-LF. Refer to 		

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8	<u>Inflatable Restraint Side Impact Module Replacement - Front.</u>		-
	Did you complete the replacement?	Go to Step 11	
9	1. Turn OFF the ignition. 2. Replace the side-impact module-LF wiring harness. Refer to <u>Wiring Harness Replacement - Front Door</u> .		-
	Did you complete the replacement?	Go to Step 11	
10	1. Turn OFF the ignition. 2. Replace the SDM. Refer to <u>Inflatable Restraint Sensing and Diagnostic Module Replacement.</u>		-
	Did you complete the replacement?	Go to Step 11	
11	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 sensing devices that convert vehicle velocity changes to electrical signals. The SDM processes the generated electrical signals and compares them to values stored in memory. When the generated signals exceed the stored values, the SDM performs additional signal processing and compares the generated signals to signals stored in memory. When two of the generated signals exceed the stored values, the SDM will cause current to flow through the inflator modules, deploying the inflator modules, and causing DTC B0051 to set.

Conditions for Running the DTC

Ignition 1 voltage is within the normal operating voltage range.

Conditions for Setting the DTC

The DTC will set when the SDM detects a frontal crash, up to 30 degrees off the centerline of the vehicle, of sufficient force to warrant deployment of the inflator modules.

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Action Taken When the DTC Sets

- The SDM turns the AIR BAG indicator ON.
- 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 diagnostic table.

DTC B0051

Step	Action	Yes	No
Schematic Reference: <u>SIR Schematics Connector End View Reference:</u> <u>SIR Connector End Views</u>			
1	Did you perform A Diagnostic System Check - SIR?	Go to Step 2	Go to <u>Diagnostic System Check - SIR</u>
2	1. Turn OFF the ignition. 2. Inspect the vehicle for signs of inflator module (s) deployment. Does the vehicle show any signs of inflator module (s) deployment?	Go to Step 5	Go to Step 3
3	Inspect the front of the vehicle and undercarriage for signs of impact/collision. Does the vehicle show any signs of impact/collision?	Go to Step 5	Go to Step 4
4	Replace the SDM. Refer to <u>Inflatable Restraint Sensing and Diagnostic Module Replacement</u> . Did you complete the replacement?	Go to Step 6	-
5	1. Install a scan tool. 2. With a scan tool, observe the SIR DTC display. 3. If a history DTC exists, refer to Diagnostic Aids for that specific DTC and diagnose the problem. 4. Replace components and perform inspections		

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	as required following an accident. Refer to <u>Repairs and Inspections Required After a Collision.</u>		
	Did you complete the action?	Go to Step 6	-
6	<ol style="list-style-type: none">1. Reconnect all SIR 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 2	System OK

DTC B0053

Circuit Description

The inflatable restraint sensing and diagnostic module (SDM) contains sensing devices that convert vehicle velocity changes to electrical signals. The SDM processes the generated electrical signals and compares them to values stored in memory. When the generated signals exceed the stored values, the SDM performs additional signal processing and compares the generated signals to signals stored in memory. When two of the generated signals exceed the stored values, the SDM will cause current to flow through the inflator modules, deploying the inflator modules. DTC B0053 will set along with DTC B0051 when a deployment occurs while a circuit malfunction is present in any one of the deployment loops.

Conditions for Running the DTC

Ignition 1 voltage is within the normal operating voltage range.

Conditions for Setting the DTC

The DTC will set when the SDM detects a frontal crash, up to 30 degrees off the centerline of the vehicle, of sufficient force to warrant deployment of the inflator modules.

Action Taken When the DTC Sets

- The SDM turns the AIR BAG indicator ON.
- 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 diagnostic table.

Diagnostic Aids

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DTC B0053 will be accompanied by another DTC (other than DTC B1000 and DTC B0051). Repair the malfunction causing the other DTCs before installing a new 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 A Diagnostic System Check - SIR?	Go to Step 2	Go to <u>Diagnostic System Check - SIR</u>
2	1. Turn OFF the ignition. 2. Inspect the vehicle for signs of inflator module (s) deployment. Does the vehicle show any signs of inflator module (s) deployment?	Go to Step 5	Go to Step 3
3	Inspect the front of the vehicle and undercarriage for signs of impact/collision. Does the vehicle show any signs of impact/collision?	Go to Step 5	Go to Step 4
4	Replace the SDM. Refer to <u>Inflatable Restraint Sensing and Diagnostic Module Replacement</u> . Did you complete the replacement?	Go to Step 6	-
5	1. Install a scan tool. 2. With a scan tool, observe the SIR DTC display. 3. If a history DTC exists, refer to Diagnostic Aids for that specific DTC and diagnose the problem. 4. Replace components and perform inspections as required following an accident. Refer to <u>Repairs and Inspections Required After a Collision</u> . Did you complete the action?	Go to Step 6	-
	1. Reconnect all SIR components. 2. Use the scan tool in order to clear the DTCs.		

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6	3. 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 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).

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.

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.

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- 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:** Tests the communication status of the SIS.
- 6:** Tests for a short to ground, a high resistance or an open in the SIS signal circuit.
- 7:** Tests for a short to ground, a high resistance or an open in the SIS voltage circuit.
- 8:** 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 - SIR?	Go to Step 2	Go to <u>Diagnostic System Check - SIR</u>
2	1. Install a scan tool. 2. Turn ON the ignition, with the engine OFF. 3. With a scan tool, request the SIR DTC display. Does the scan tool indicate that either DTC B0079, B0080, B0081, or B0082 is current?	Go to Step 12	Go to Step 3
3	1. Turn OFF the ignition. 2. If DTC B0077 is current, disconnect the left 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.		

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	Does the SIS terminals or harness connector exhibit any signs of damage or corrosion?	Go to Step 4	Go to Step 5
4	<ol style="list-style-type: none"> If the SIS terminals are damaged, replace the SIS. Refer to <u>Inflatable Restraint Side Impact Sensor Replacement</u>. 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"> Disconnect the SDM connector. Refer to <u>Inflatable Restraint Sensing and Diagnostic Module Replacement</u>. 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 13	Go to Step 6
6	<ol style="list-style-type: none"> 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. 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. <p>Did you find and correct the condition?</p>	Go to Step 13	Go to Step 7
7	<ol style="list-style-type: none"> 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. 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. <p>Did you find and correct the condition?</p>	Go to Step 13	Go to Step 8
	<ol style="list-style-type: none"> Turn ON the ignition, with the engine OFF. 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. 		

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8	<p>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.</p> <p>Did you find and correct the condition?</p>	Go to Step 13	Go to Step 9
9	<p>For DTC B0077 replace the left SIS. For DTC B0078 replace the right SIS. Refer to <u>Inflatable Restraint Side Impact Sensor Replacement</u>.</p> <p>Did you complete the replacement?</p>	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. <p>Does the DTC reset?</p>	Go to Step 11	System OK
11	<p>Replace the SDM. Refer to <u>Inflatable Restraint Sensing and Diagnostic Module Replacement</u>.</p> <p>Did you complete the replacement?</p>	Go to Step 13	-
12	<p>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>.</p> <p>Did you complete the replacement?</p>	Go to Step 13	-
13	<ol style="list-style-type: none"> 1. Reconnect all SIR system components. 2. Verify that all components, connectors and 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. <p>Does the DTC reset?</p>	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. 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).

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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 two 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

- 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:** Tests the communication status of the EFS.

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6: Tests for a short to ground, a high resistance or an open in the EFS signal circuit.

7: Tests for a short to ground, a high resistance or an open in the EFS voltage circuit.

8: 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 - SIR?	Go to Step 2	Go to <u>Diagnostic System Check - SIR</u>
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 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 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</u> 		

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	<p><u>Poor Connections</u> and <u>Connector Repairs</u> in Wiring Systems.</p>		
	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. 		
	Did you find and correct the condition?	Go to Step 13	Go to Step 9
9	<p>For DTC B0100 replace the left EFS. For DTC B0103 replace the right EFS. Refer to <u>Inflatable Restraint Front End Sensor Replacement</u>.</p>		-
	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. 		

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	Does the DTC reset?	Go to Step 11	System OK
11	Replace the SDM. Refer to <u>Inflatable Restraint Sensing and Diagnostic Module Replacement</u> . 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 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 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 Data Link Communications.

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.

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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

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	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 - SIR?	-	Go to Step 2	Go to <u>Diagnostic System Check - SIR</u>
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 vehicle identification number (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

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5	<p>Program the BCM in order for the BCM to learn the restraints ID from the SDM. Refer to <u>Body Control Module (BCM) Programming/RPO Configuration</u> in Body Control System.</p> <p>Did you complete the programming procedures?</p>	-	Go to Step 10	-
6	<p>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.</p> <p>Is the BCM programmed with the correct VIN?</p>	-	Go to Step 8	Go to Step 7
7	<p>Program the correct VIN into the BCM. Refer to <u>Body Control Module (BCM) Programming/RPO Configuration</u> in Body Control System.</p> <p>Did you complete the reprogramming procedure?</p>	-	Go to Step 10	-
8	<p>Was the sensing and diagnostic module (SDM) replaced?</p>	-	Go to Step 10	Go to Step 9
9	<p>Replace the inflatable SDM. Refer to <u>Inflatable Restraint Sensing and Diagnostic Module Replacement</u>.</p> <p>Did you complete the replacement?</p>	-	Go to Step 10	-
10	<p>Perform the Relearn Restraints ID Procedure. Refer to <u>Body Control Module (BCM) Programming/RPO Configuration</u> in Body Control System.</p> <p>Did you complete the setup procedure?</p>	-	Go to Step 11	-
11	<ol style="list-style-type: none"> 1. Verify that all components, connectors, and CPAs are properly mounted. 2. Use the scan tool in order to clear the DTCs. 3. Turn the ignition switch OFF for 10 seconds. <p>Are all SIR components properly mounted and connected?</p>	-	Go to <u>Diagnostic System Check - SIR</u>	-

SYMPTOMS - SIR

- IMPORTANT:**
1. Perform the **Diagnostic System Check - SIR** 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**.

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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.

AIR BAG INDICATOR CIRCUIT MALFUNCTION

Circuit Description

The AIR BAG warning lamp is controlled by the inflatable restraint sensing and diagnostic module (SDM) via Class 2 serial data. When the ignition switch is first turned to the RUN position, the SDM performs tests to diagnose critical malfunctions within itself. The SDM then commands the AIR BAG warning lamp OFF after it has flashed seven times.

Diagnostic Aids

- If Ignition 1 voltage is outside of the normal operating voltage range (9-16 volts), the AIR BAG warning lamp will come ON solid with no DTCs set.
- The loss of serial data communication between the inflatable restraint sensing and diagnostic module (SDM) and the instrument panel cluster (IPC), will cause the AIR BAG warning lamp to come ON solid. Refer to **DTC U1001-U1254** in Data Link Communications.

Test Description

The number(s) below refer to the step number(s) on the diagnostic table.

- 3:** This step checks to see if the AIR BAG warning lamp flashes seven times when the ignition switch is first turned to the RUN position.
- 4:** This step checks to see if DTC U1088 is present in the instrument panel cluster (IPC).
- 5:** This step checks to see if the AIR BAG warning lamp can be commanded ON.
- 6:** This step checks to see if ignition 1 voltage to the SDM is more than 9 V.
- 7:** This step determines if ignition 1 voltage to the SDM is more than 16 V or if there is a malfunctioning SDM.
- 8:** This step inspects the SDM wiring harness connector for corrosion or damage.
- 10:** Tests for an open or high resistance in the ignition 1 voltage circuit between the SDM and the SIR

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fuse.

12: Tests for an open or high resistance in the ignition 1 voltage circuit to the SIR fuse.

14: Tests for an open or high resistance in the SDM ground circuit or if there is a malfunctioning SDM.

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 SIR Diagnostic System Check?	-	Go to Step 2	Go to <u>Diagnostic System Check - SIR</u>
2	Did you perform the Instrument Cluster Diagnostic System Check?	-	Go to Step 3	Go to <u>Diagnostic System Check - Instrument Cluster</u> in Instrument Panel, Gages and Console
3	1. Turn OFF the ignition. 2. Observe the AIR BAG warning lamp while turning the ignition switch to the RUN position. Does the AIR BAG warning lamp flash seven times?	-	Go to Step 4	Go to Step 17
4	1. Install a scan tool. 2. Establish communication with the instrument cluster. 3. Use the scan tool to request the instrument cluster DTC display. Does the scan tool indicate that DTC U1088 is current?	-	Go To <u>DTC U1001-U1254</u> in Data Link Communications	Go to Step 5
	Use the scan tool to command the AIR BAG			

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5	warning lamp ON. Does the AIR BAG warning lamp command ON?	-	Go to Step 6	Go to Step 17
6	<ol style="list-style-type: none"> 1. Establish communication with the inflatable restraint sensing and diagnostic module (SDM). 2. Use the scan tool to request the SIR DTC display. <p>Does the ignition voltage displayed measure more than the specified value?</p>	9 V	Go to Step 7	Go to Step 8
7	Does the ignition voltage displayed measure more than the specified value?	16 V	Go to <u>Diagnostic System Check - Engine Electrical</u> in Engine Electrical	Go to Step 16
8	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Disconnect the inflatable restraint sensing and diagnostic module (SDM) wiring harness connector. Refer to <u>Inflatable Restraint Sensing and Diagnostic Module Replacement</u>. 3. Inspect the SDM wiring harness connector for signs of corrosion or damage. <p>Does the connector exhibit any signs of corrosion or damage?</p>	-	Go to Step 9	Go to Step 10
9	Repair or replace the inflatable restraint sensing and diagnostic module (SDM) wiring harness connector. Refer to <u>Connector Repairs</u> in Wiring Systems. Did you complete the replacement?	-	Go to Step 18	-
10	<ol style="list-style-type: none"> 1. Disable the SIR system. Refer to <u>SIR Disabling and Enabling Zones</u>. 2. Using J 39200 DMM measure the resistance between the inflatable restraint sensing and diagnostic module (SDM) wiring harness connector ignition 1 circuit and the output side of the SIR fuse. Refer to <u>Circuit Testing</u> in Wiring Systems. 	0-2 ohms		

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	Does the resistance measure within the specified value?		Go to Step 12	Go to Step 11
11	Locate and repair an open or high resistance in the ignition 1 circuit between the SIR fuse and the SDM wiring harness connector. Refer to Wiring Repairs in Wiring Systems. Did you complete the repair?	-	Go to Step 18	-
12	<ol style="list-style-type: none"> 1. Turn ON the ignition, with the engine OFF. 2. Using J 39200 DMM measure the voltage between the power feed to the SIR fuse and a known good ground. Refer to Circuit Testing in Wiring Systems. Does the voltage measure near the specified value?	12 V	Go to Step 14	Go to Step 13
13	Locate and repair an open or high resistance in the power feed circuit to the SIR fuse. Refer to Wiring Repairs in Wiring Systems. Did you complete the repair?	-	Go to Step 18	-
14	Using J 39200 DMM measure the resistance of the inflatable restraint sensing and diagnostic module (SDM) ground circuit between the SDM wiring harness connector and a known good ground. Refer to Circuit Testing in Wiring Systems. Does the resistance measure less than the specified value?	2 ohms	Go to Step 16	Go to Step 15
15	Locate and repair an open or high resistance in the inflatable restraint sensing and diagnostic module (SDM) ground circuit. Refer to Wiring Repairs in Wiring Systems. Did you find and correct the condition?	-	Go to Step 18	-
16	Replace the inflatable restraint sensing and diagnostic module (SDM). Refer to Inflatable Restraint Sensing and Diagnostic Module Replacement . Did you complete the replacement?	-	Go to Step 18	-
17	Replace the instrument cluster. Refer to Instrument Panel Cluster (IPC) Replacement in Instrument Panel, Gages and Console. Did you complete the replacement?	-	Go to Step 18	-
	<ol style="list-style-type: none"> 1. Reconnect all SIR and Instrument 			

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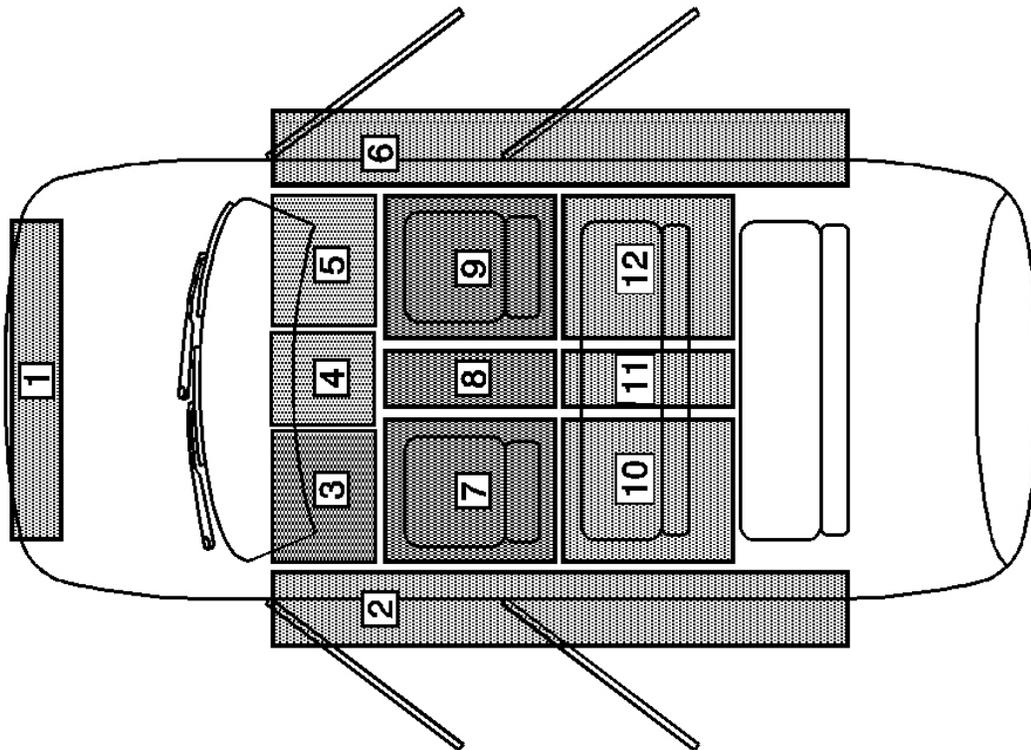
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18	Cluster system components. 2. Verify that all components, connectors, and CPAs are properly mounted. Have all SIR and Instrument Cluster components been properly connected and mounted?	-	Go to <u>Diagnostic System Check - SIR</u>	-
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SIR 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. 10: 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). 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 (IP) Module. Refer to <u>SIR Disabling and Enabling Zone 5.</u>
6	Inflatable Restraint Side Impact Sensor (SIS). Refer to <u>SIR Disabling and Enabling Zone 6.</u>
7	Inflatable Restraint Side Impact Module. 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	Inflatable Restraint Side Impact Module. Refer to <u>SIR Disabling and Enabling Zone 9.</u>
10-12	Not Used

REPAIR INSTRUCTIONS

SIR SERVICE PRECAUTIONS

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

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:

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- 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 replacement parts available from your authorized 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 IP module
- Inflatable restraint sensing and diagnostic module (SDM)
- Inflatable restraint side impact modules
- Inflatable restraint side impact sensors (SIS)
- Inflatable restraint steering wheel module
- Inflatable restraint steering wheel module coil

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's wheels are pointing straight ahead.
2. Turn OFF the ignition.
3. Remove the key from the ignition.

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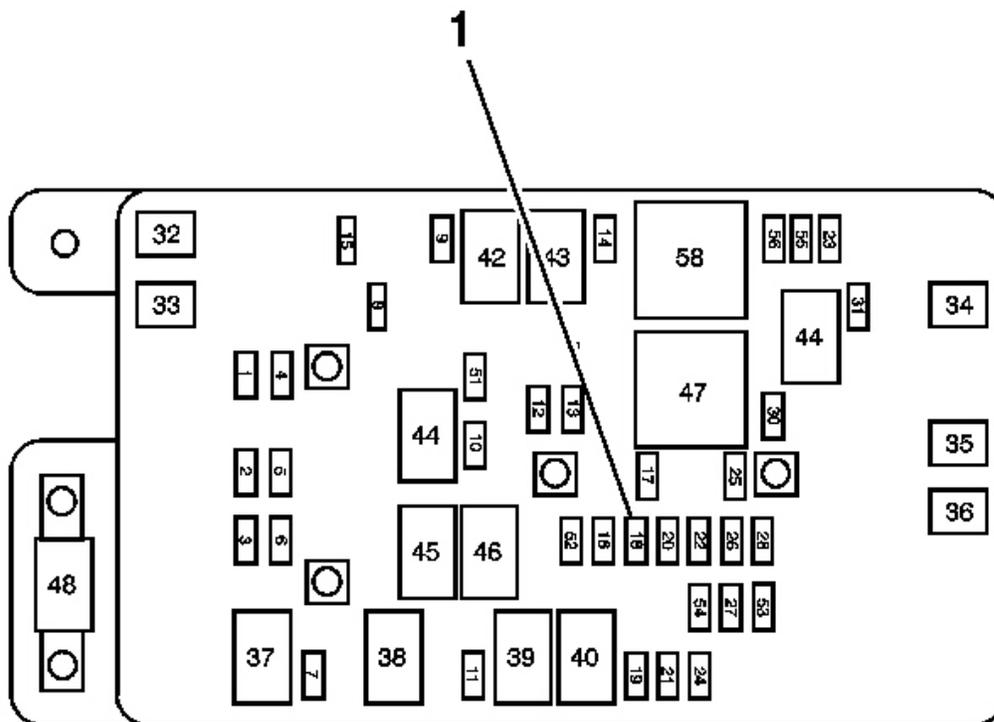


Fig. 11: View Of Fuse & Relay Block
Courtesy of GENERAL MOTORS CORP.

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** in Exterior Trim.
6. Remove sensor bracket from bumper. Refer to **Inflatable Restraint Front End Sensor Replacement**.

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

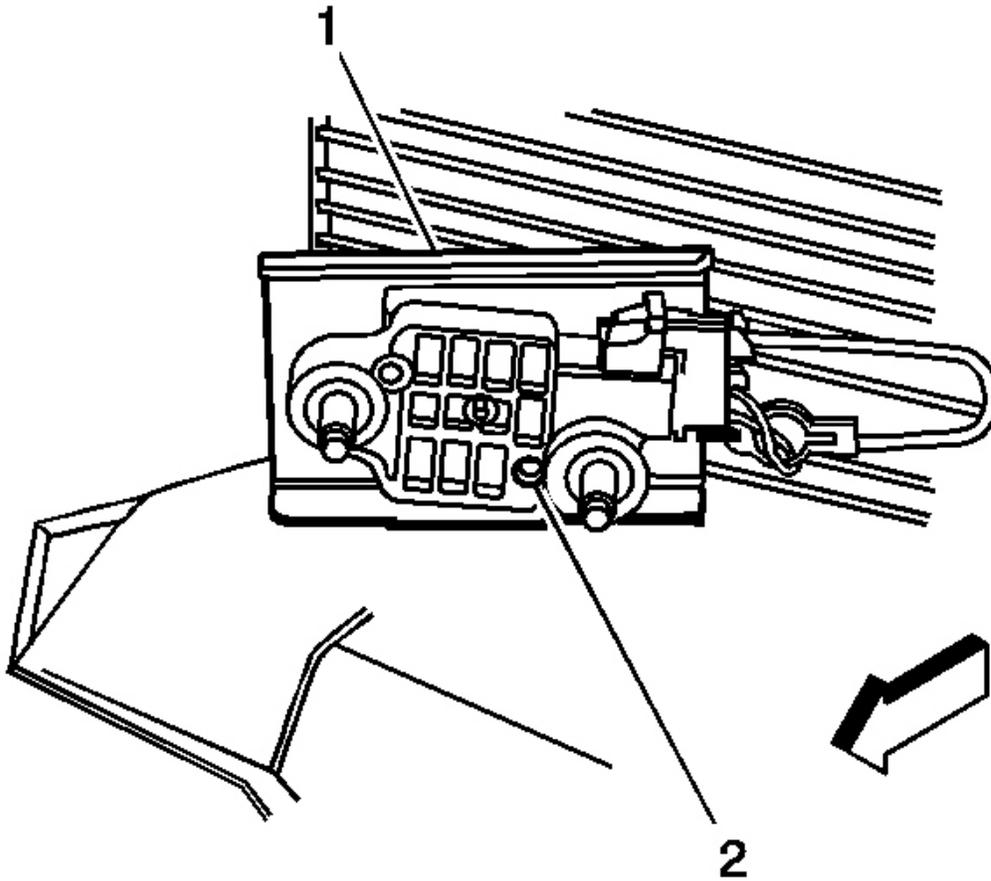


Fig. 12: View Of Connector Position Assurance At Front End Sensor Connectors
Courtesy of GENERAL MOTORS CORP.

7. Remove the Connector Position Assurance (CPA) from both (2) electronic frontal sensor (EFS) connectors.
8. Disconnect both EFS connectors.

Enabling Procedure

1. Remove the key from the ignition.

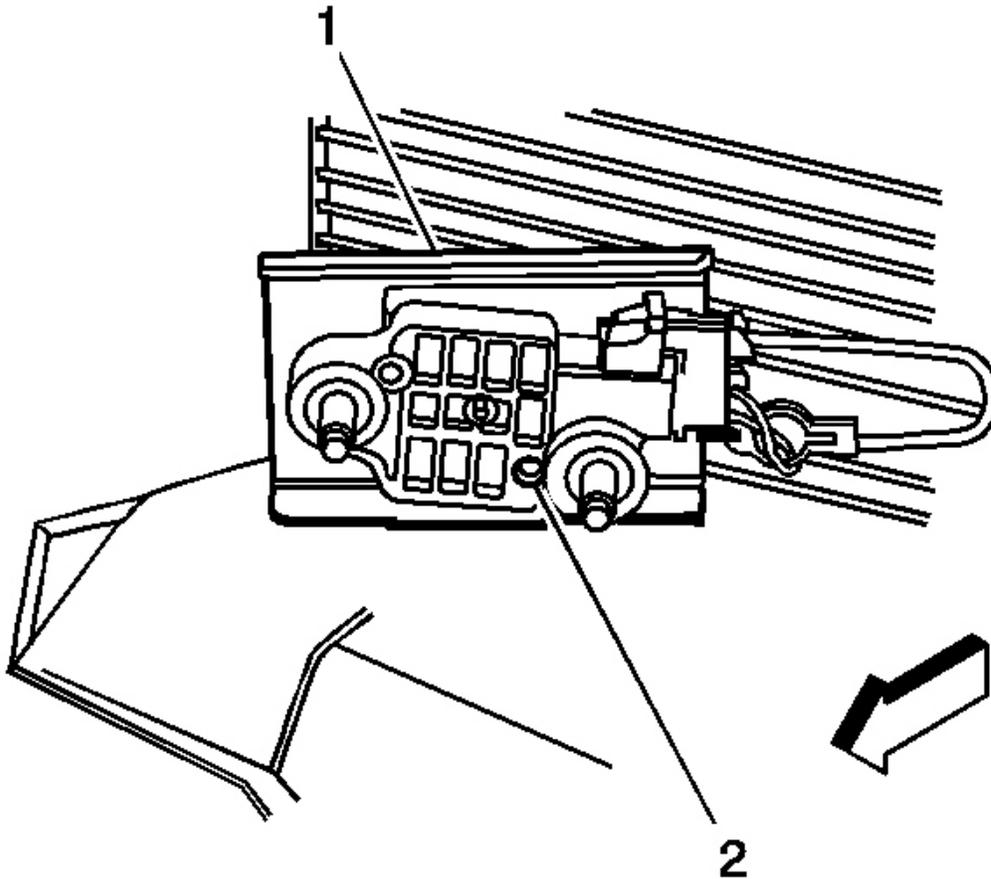


Fig. 13: View Of Connector Position Assurance At Front End Sensor Connectors
Courtesy of GENERAL MOTORS CORP.

2. Connect the EFS connectors to both (2) EFS's.
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** in Exterior Trim.

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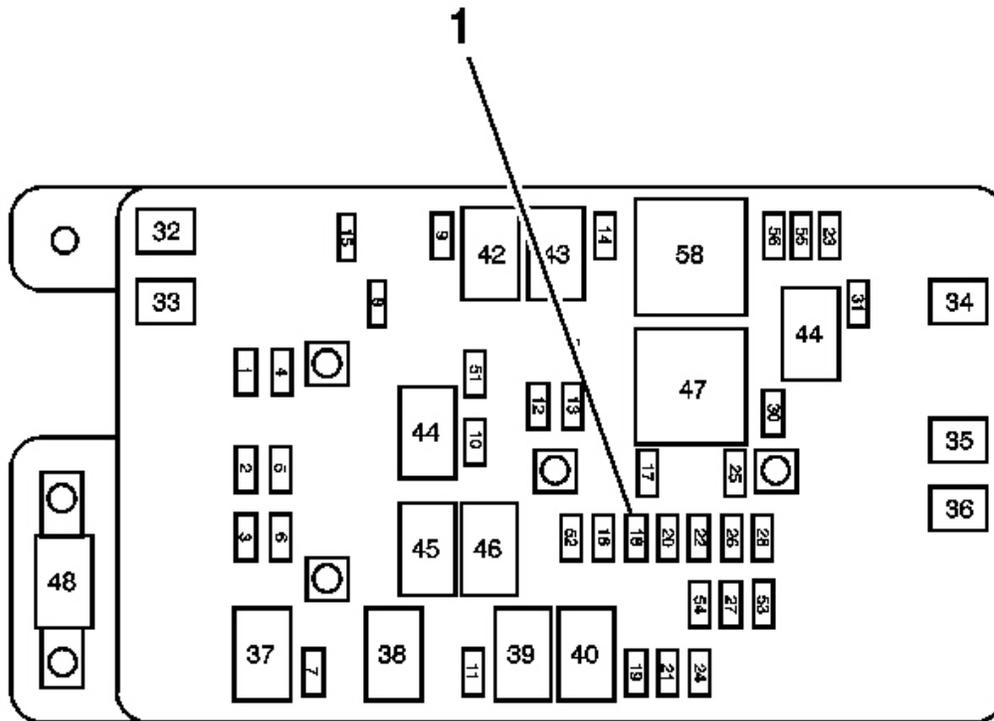


Fig. 14: View Of Fuse & Relay Block
Courtesy of GENERAL MOTORS CORP.

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 - SIR** 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's wheels are pointing straight ahead.
2. Turn OFF the ignition.

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3. Remove the key from the ignition.

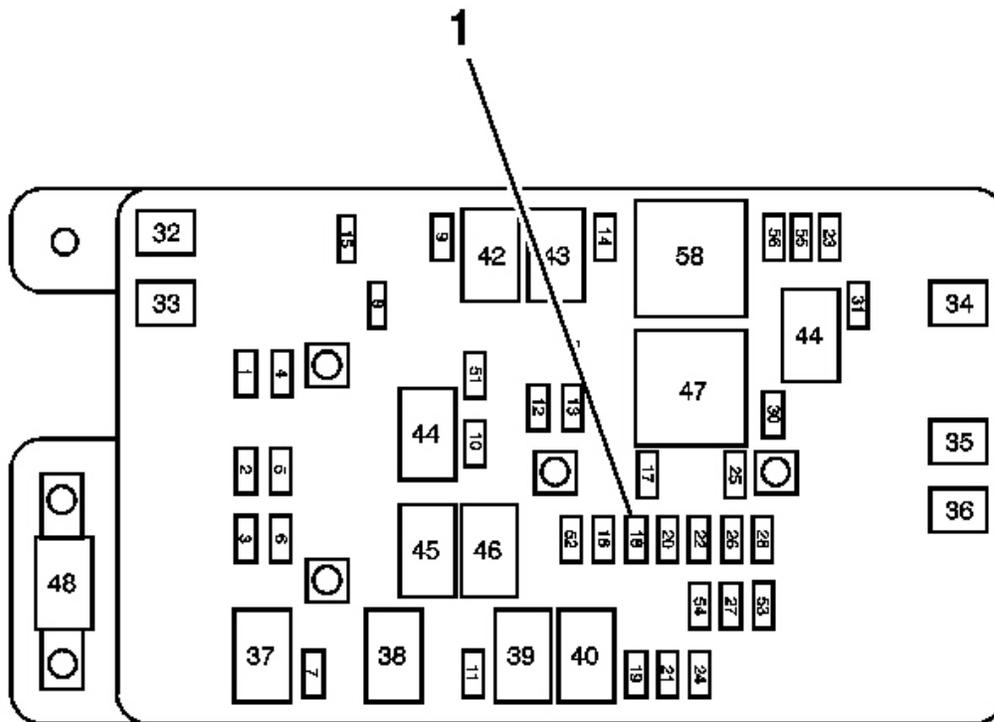


Fig. 15: View Of Fuse & Relay Block
Courtesy of GENERAL MOTORS CORP.

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 LF door trim panel. Refer to **Trim Panel Replacement - Side Front Door** in Doors.

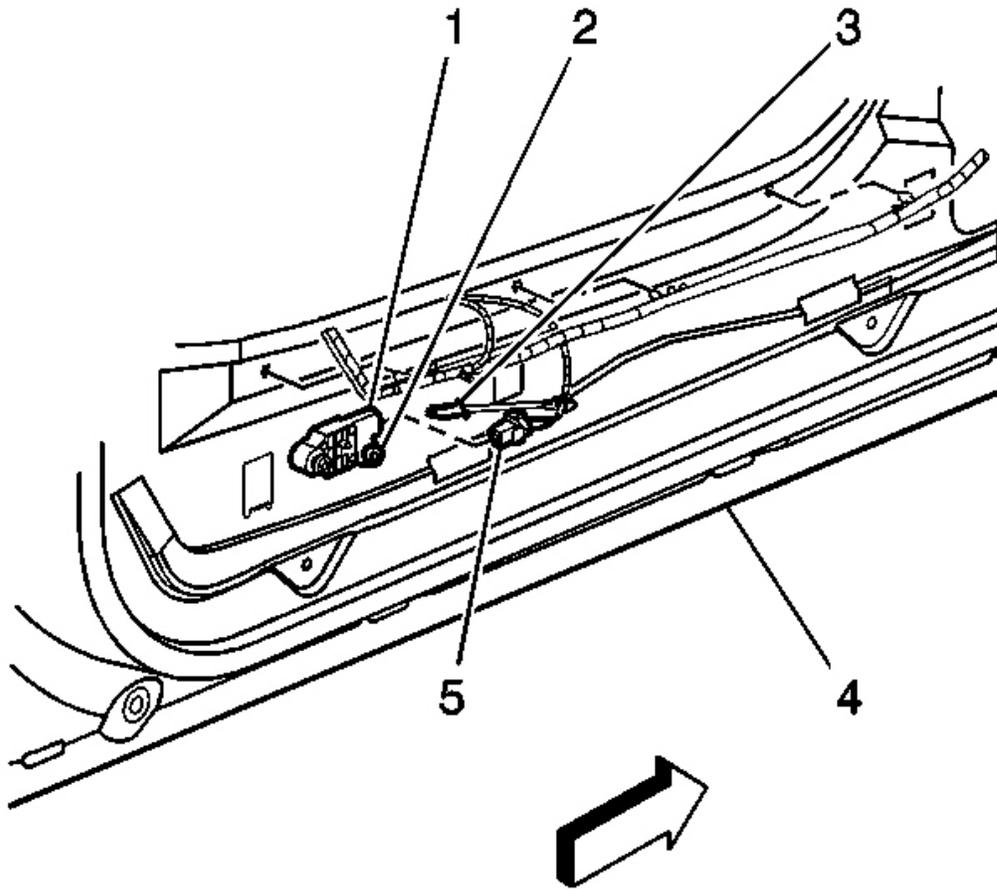


Fig. 16: View Of Connector Position Assurance (CPA) & Side Impact Sensor Yellow 2-Way Connector

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 bottom left of the door.
7. Disconnect the side impact sensor yellow 2-way connector (5) located near the bottom left of the door.

Enabling Procedure

1. Remove the key from the ignition.

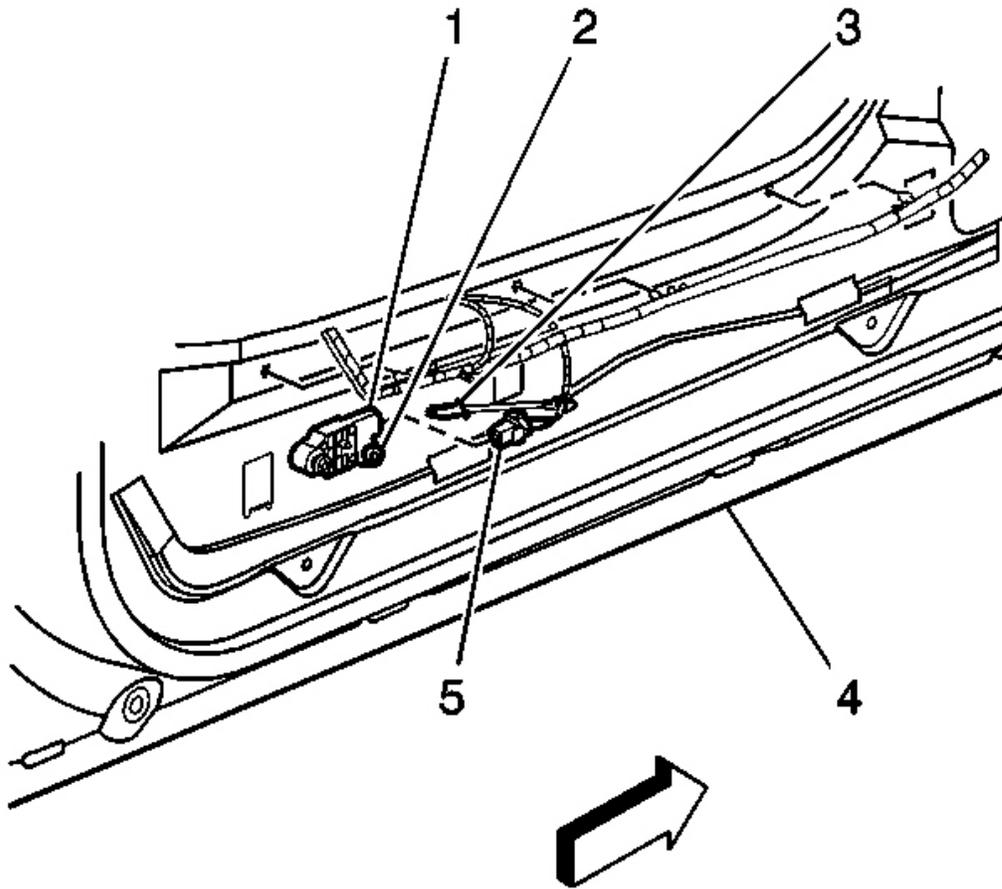


Fig. 17: View Of Connector Position Assurance (CPA) & Side Impact Sensor Yellow 2-Way Connector

Courtesy of GENERAL MOTORS CORP.

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

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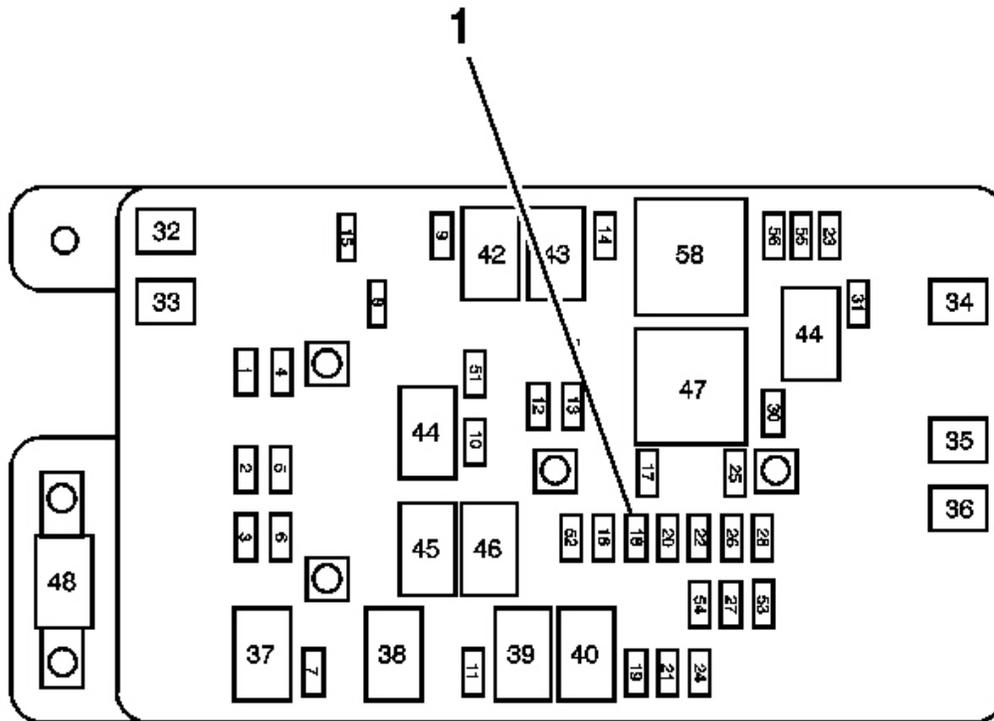


Fig. 18: View Of Fuse & Relay Block
Courtesy of GENERAL MOTORS CORP.

5. Install the SIR fuse to the fuse block (1) located in the underhood fuse block.
6. 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.
7. Perform the **Diagnostic System Check - SIR** 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's wheels are pointing straight ahead.
2. Turn OFF the ignition.

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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.

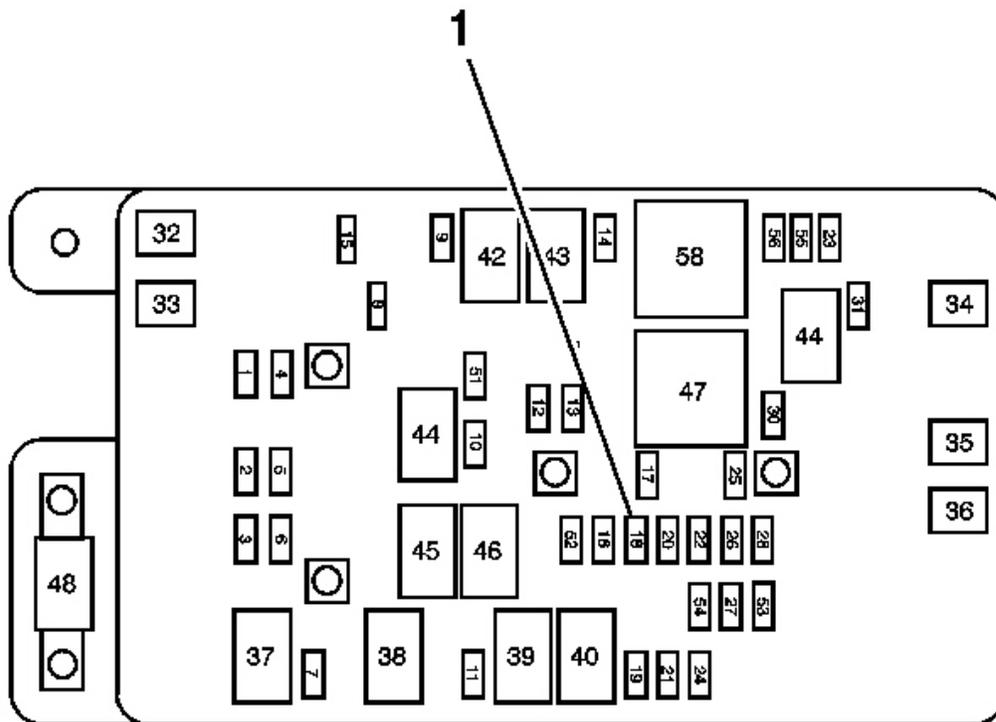


Fig. 19: View Of Fuse & Relay Block
Courtesy of GENERAL MOTORS CORP.

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.

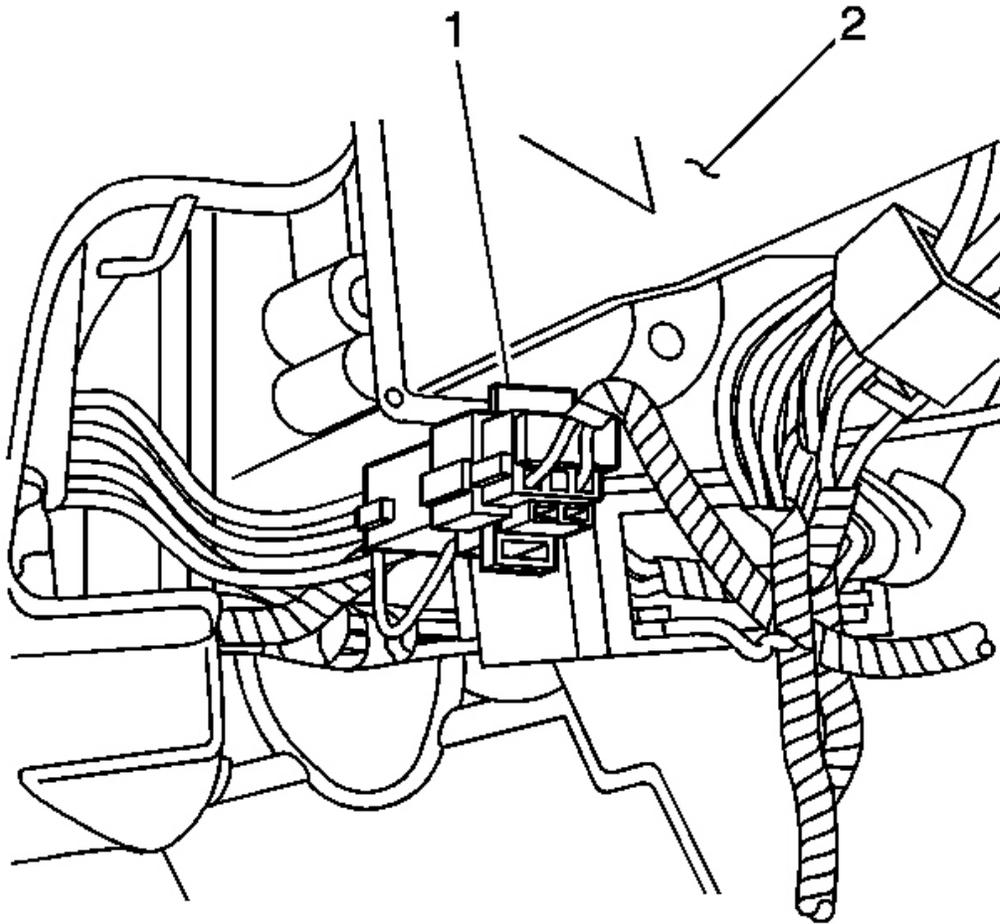


Fig. 20: Disconnecting/Reconnecting CPA & Steering Wheel Module Yellow 4-Way Connector
Courtesy of GENERAL MOTORS CORP.

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.

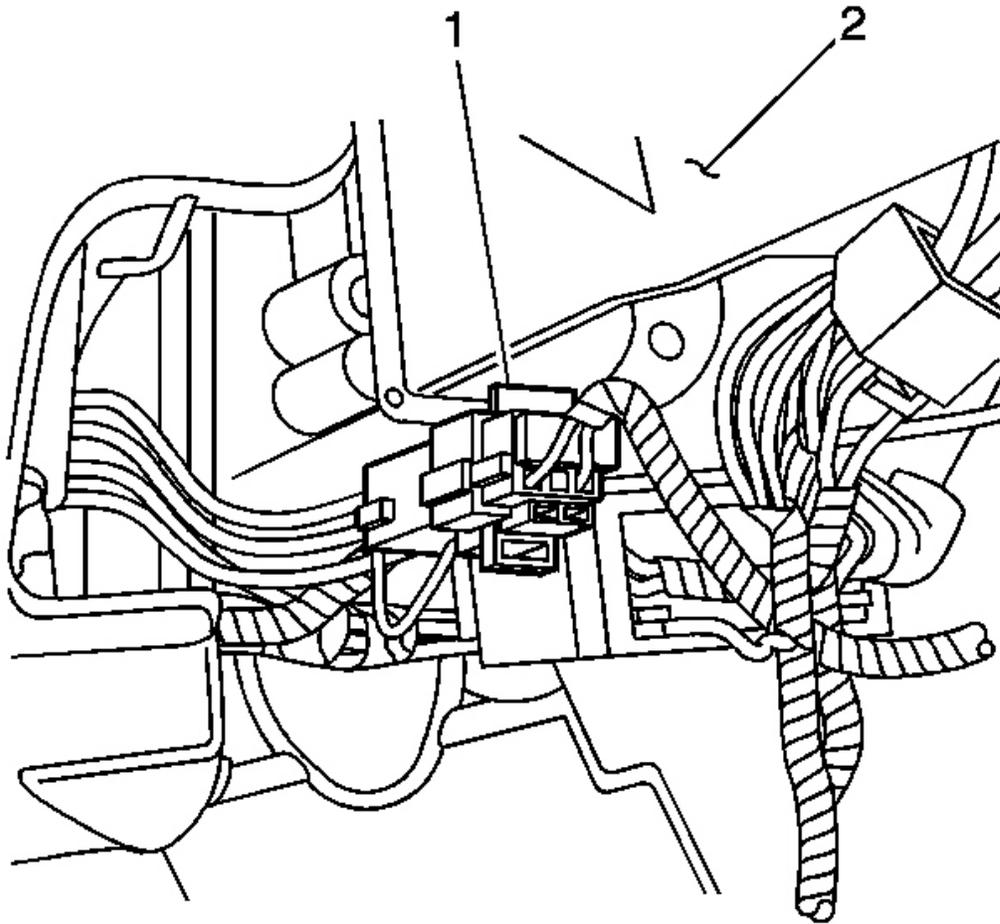


Fig. 21: Disconnecting/Reconnecting CPA & Steering Wheel Module Yellow 4-Way Connector
Courtesy of GENERAL MOTORS CORP.

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.

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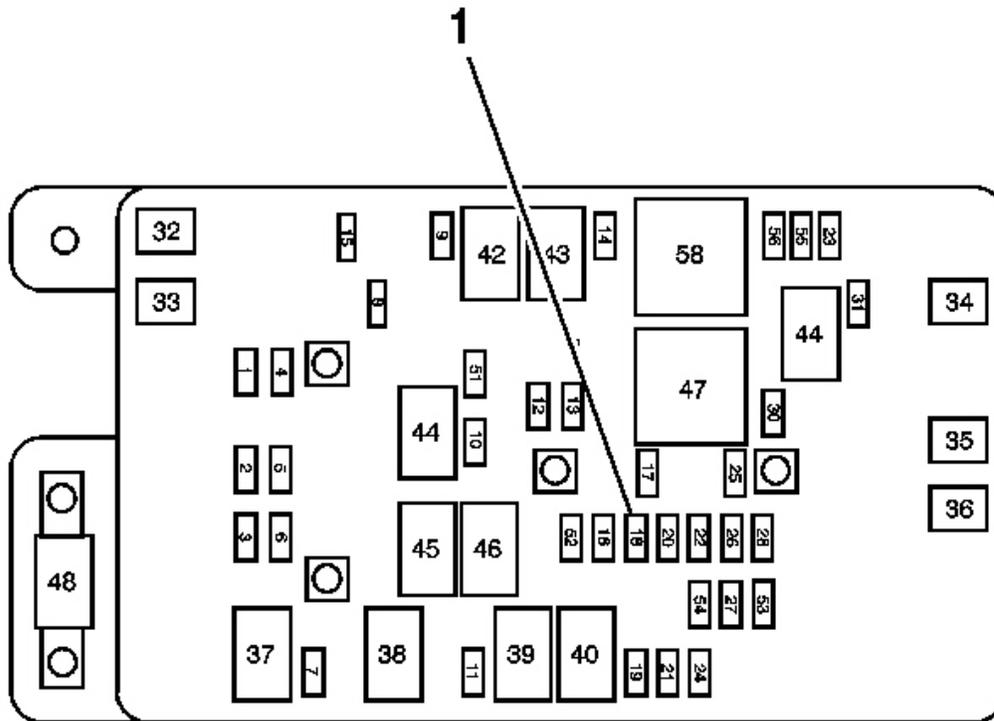


Fig. 22: View Of Fuse & Relay Block
Courtesy of GENERAL MOTORS CORP.

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 - SIR** 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's wheels are pointing straight ahead.
2. Turn OFF the ignition.

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3. Remove the key from the ignition.
4. Access I/P module connector through glove box.

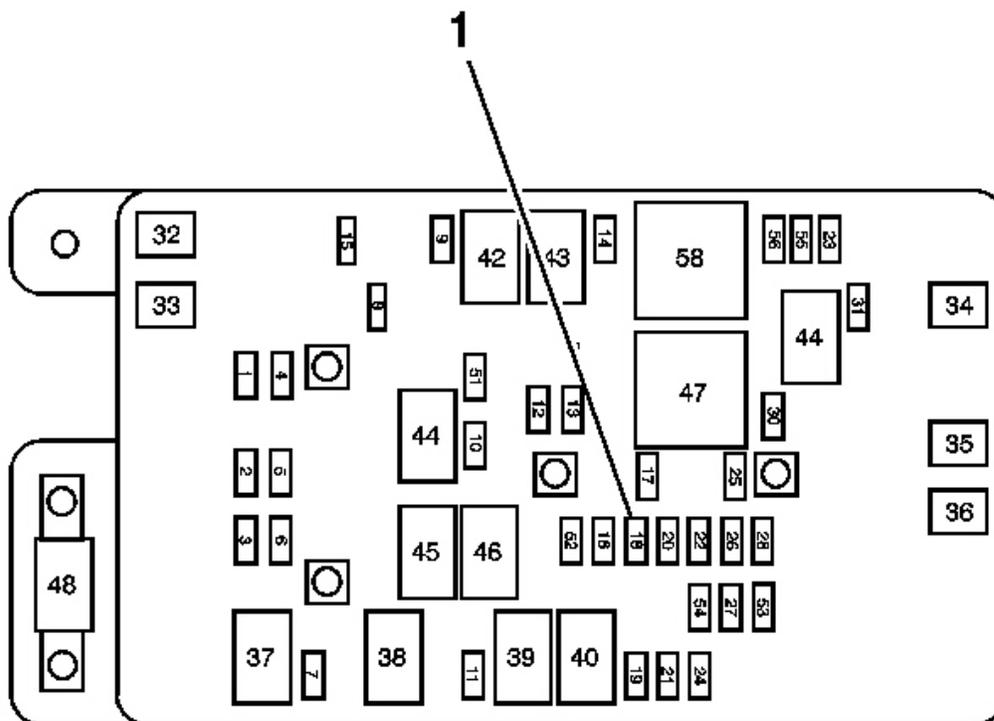


Fig. 23: View Of Fuse & Relay Block
Courtesy of GENERAL MOTORS CORP.

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.

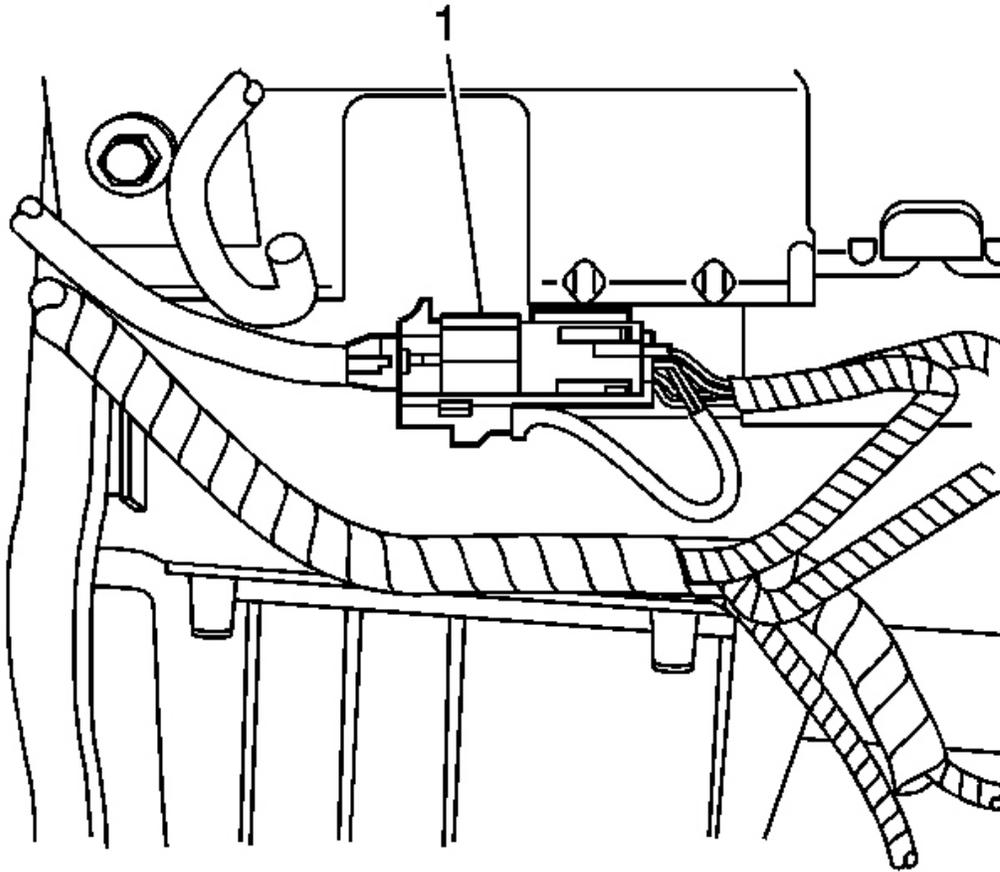


Fig. 24: Locating IP Module 4-Way Yellow Connector Behind IP Support
Courtesy of GENERAL MOTORS CORP.

6. Remove the 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.

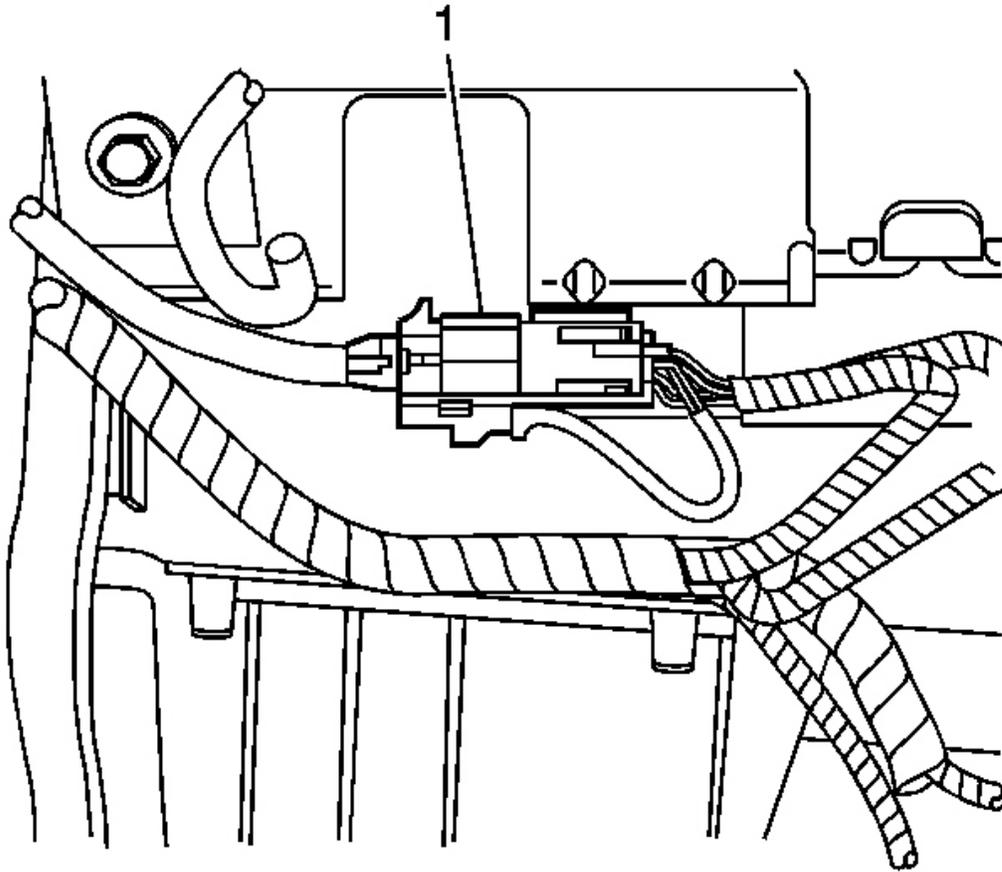


Fig. 25: Locating IP Module 4-Way Yellow Connector Behind IP Support
Courtesy of GENERAL MOTORS CORP.

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 main I/P support.

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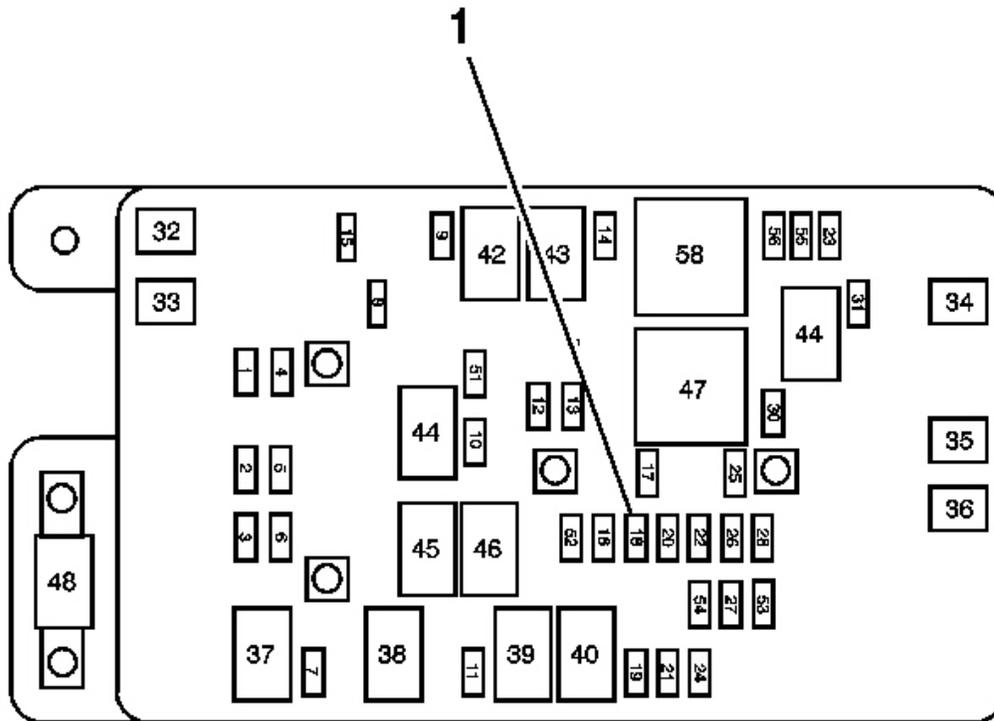


Fig. 26: View Of Fuse & Relay Block
Courtesy of GENERAL MOTORS CORP.

4. Install the SIR fuse to the fuse block (1) located in 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 - SIR** 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's wheels are pointing straight ahead.
2. Turn OFF the ignition.

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3. Remove the key from the ignition.

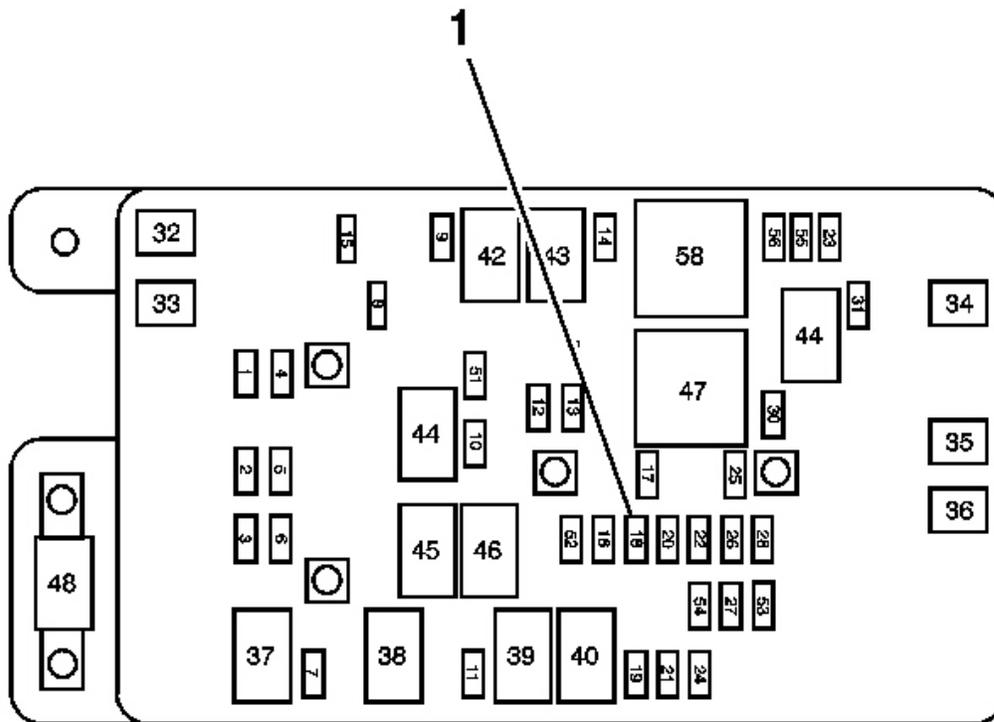


Fig. 27: View Of Fuse & Relay Block
Courtesy of GENERAL MOTORS CORP.

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 RF door trim panel. Refer to [Trim Panel Replacement - Side Front Door](#) in Doors.

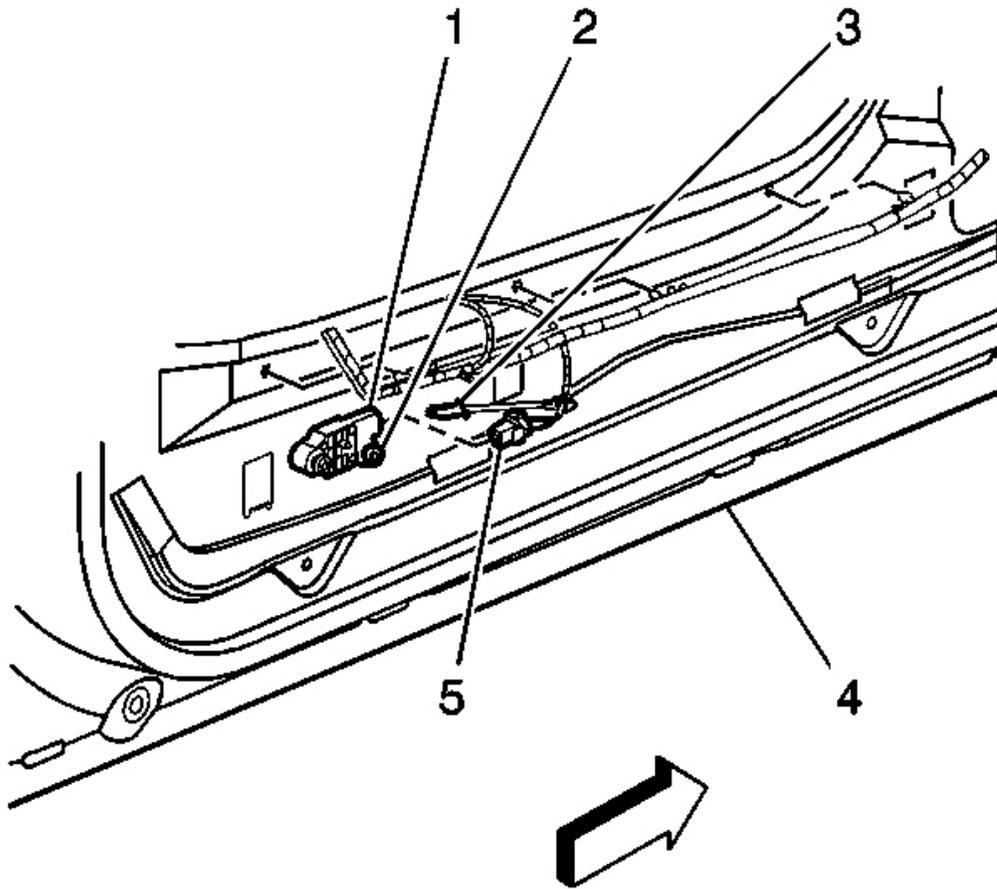


Fig. 28: View Of Connector Position Assurance (CPA) & Side Impact Sensor Yellow 2-Way Connector

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 bottom right of the door.
7. Disconnect the side impact sensor yellow 2-way connector (5) located near the bottom right of the door.

Enabling Procedure

1. Remove the key from the ignition.

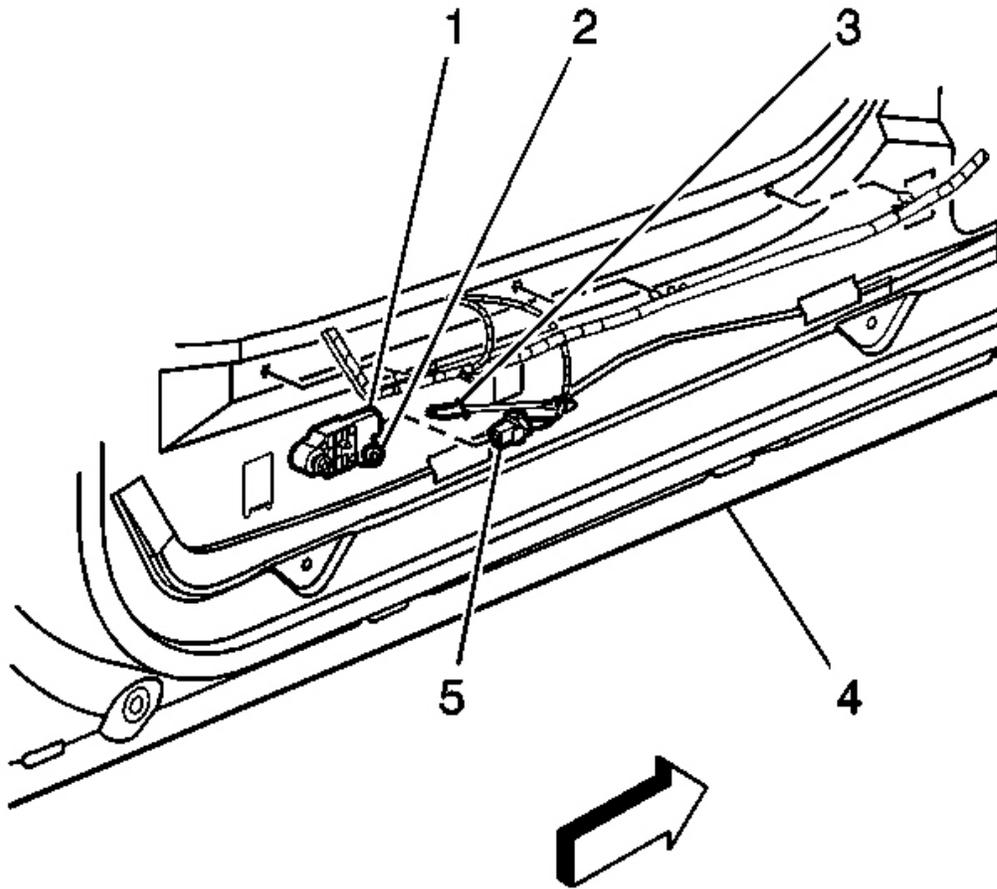


Fig. 29: View Of Connector Position Assurance (CPA) & Side Impact Sensor Yellow 2-Way Connector

Courtesy of GENERAL MOTORS CORP.

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

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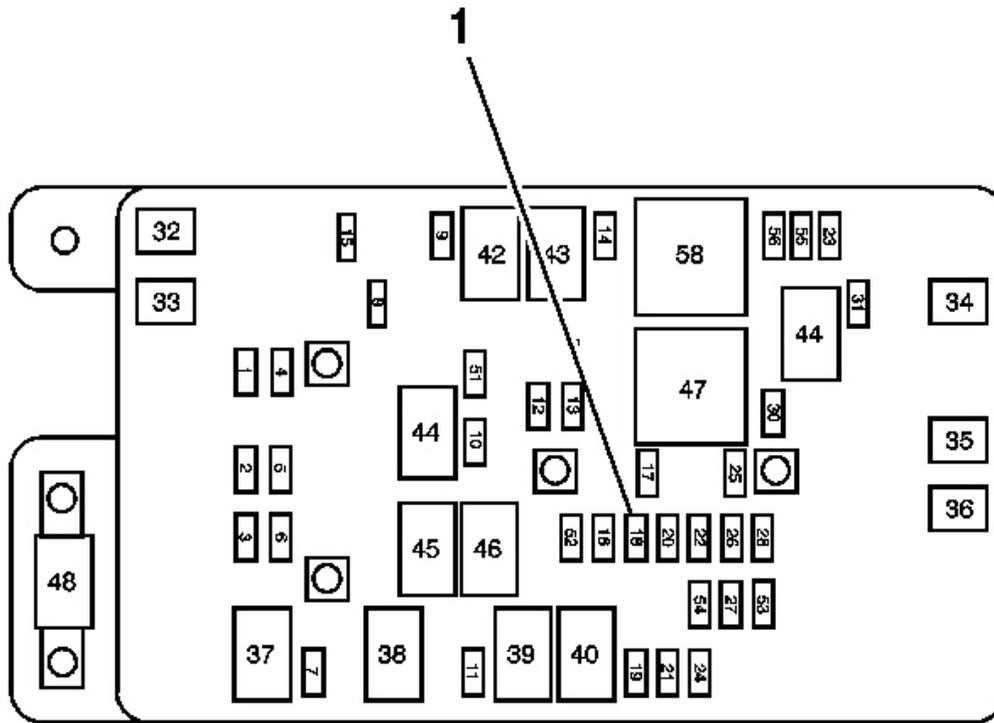


Fig. 30: View Of Fuse & Relay Block
Courtesy of GENERAL MOTORS CORP.

5. Install the SIR fuse to the fuse block (1) located in the underhood fuse block.
6. 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.
7. Perform the **Diagnostic System Check - SIR** 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's wheels are pointing straight ahead.
2. Turn OFF the ignition.

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3. Remove the key from the ignition.

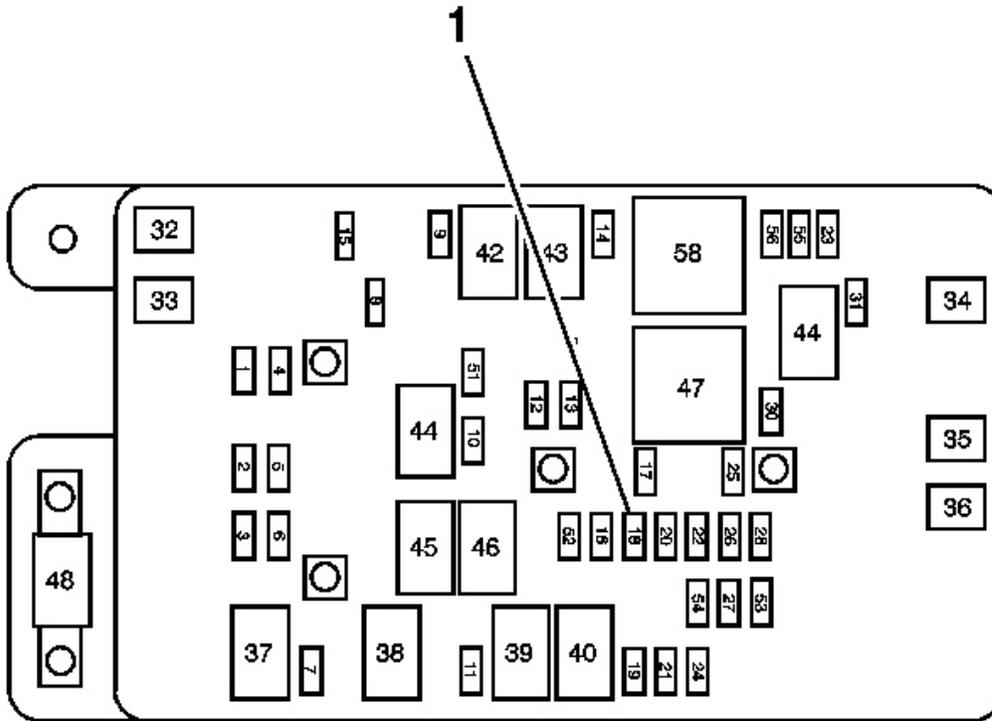


Fig. 31: View Of Fuse & Relay Block
Courtesy of GENERAL MOTORS CORP.

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.

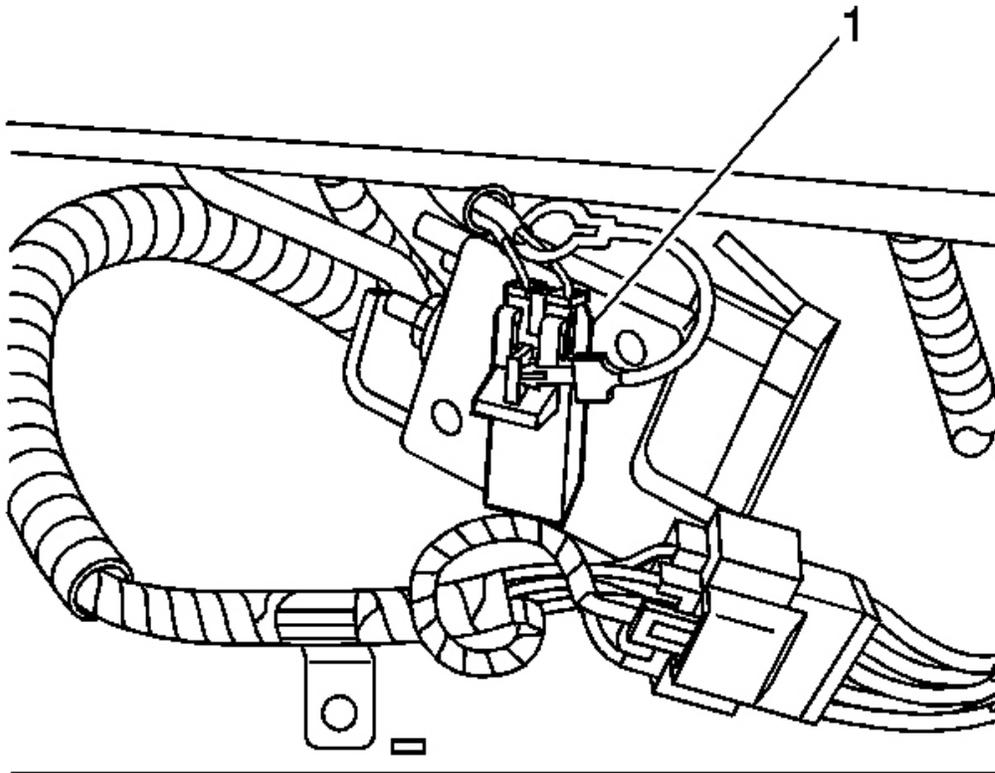


Fig. 32: Identifying CPA Clip
Courtesy of GENERAL MOTORS CORP.

5. Remove the CPA from the LF side impact module yellow 2-way connector (1) located under the driver seat.
6. Disconnect the LF side impact module yellow 2-way connector (1) located under the driver seat.

Enabling Procedure

1. Remove the key from the ignition.

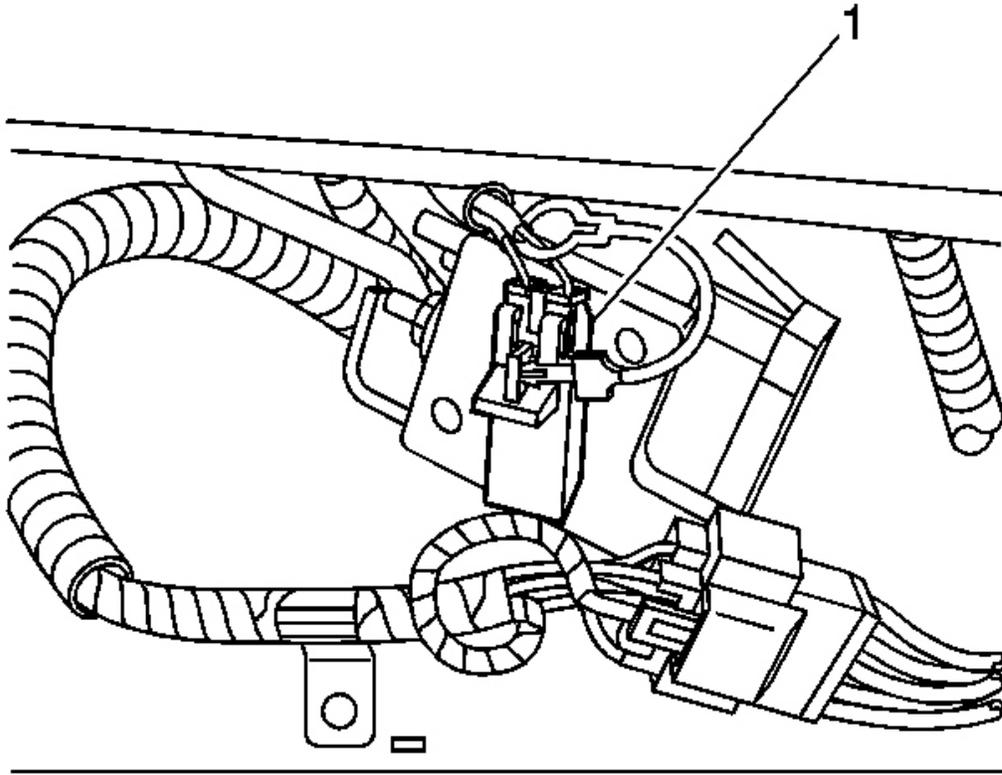


Fig. 33: Identifying CPA Clip
Courtesy of GENERAL MOTORS CORP.

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

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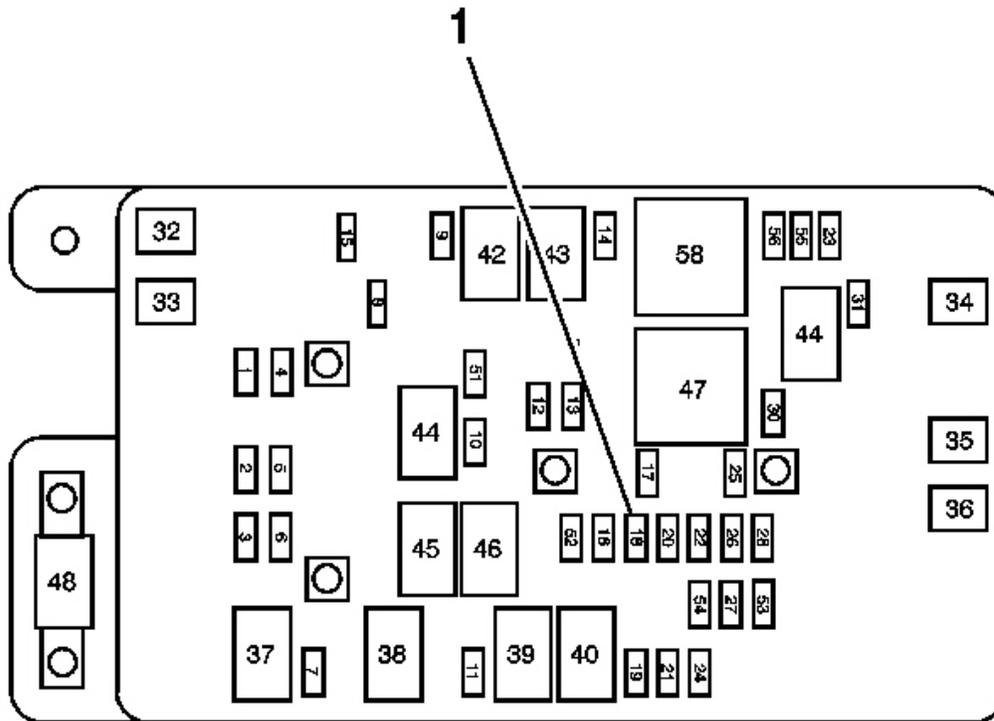


Fig. 34: View Of Fuse & Relay Block
Courtesy of GENERAL MOTORS CORP.

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 - SIR 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's wheels are pointing straight ahead.
2. Turn OFF the ignition.
3. Remove the key from the ignition.

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4. Remove the trim panel. Refer to **Trim Panel Replacement - Knee Bolster** in Instrument Panel, Gages, and Console.
5. Access the I/P module connector through the glove box.

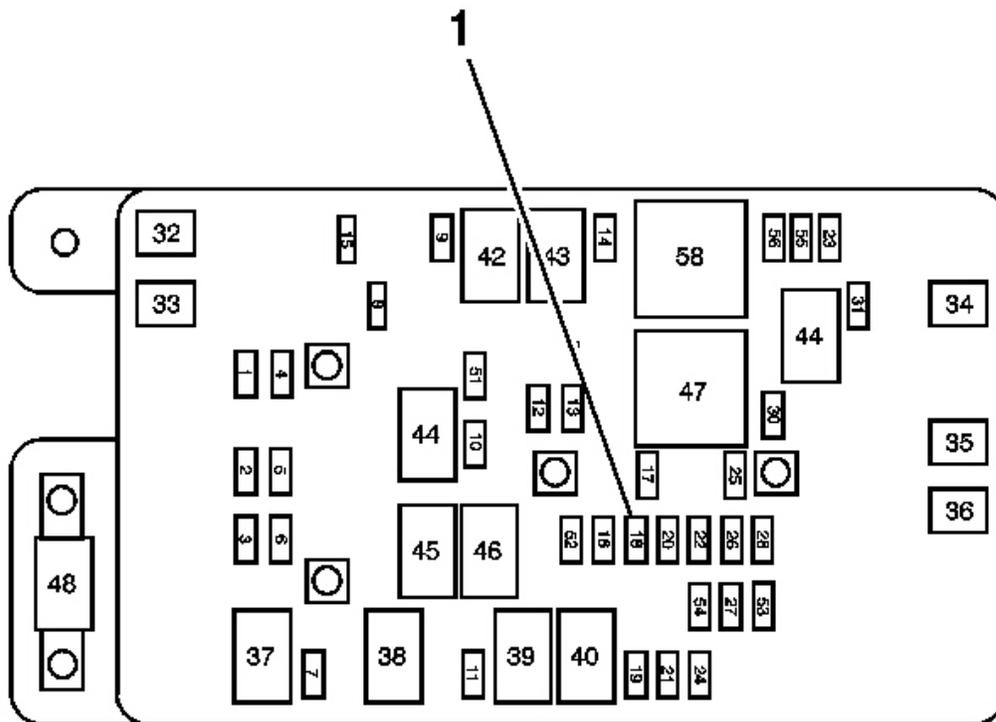


Fig. 35: View Of Fuse & Relay Block
Courtesy of GENERAL MOTORS CORP.

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.

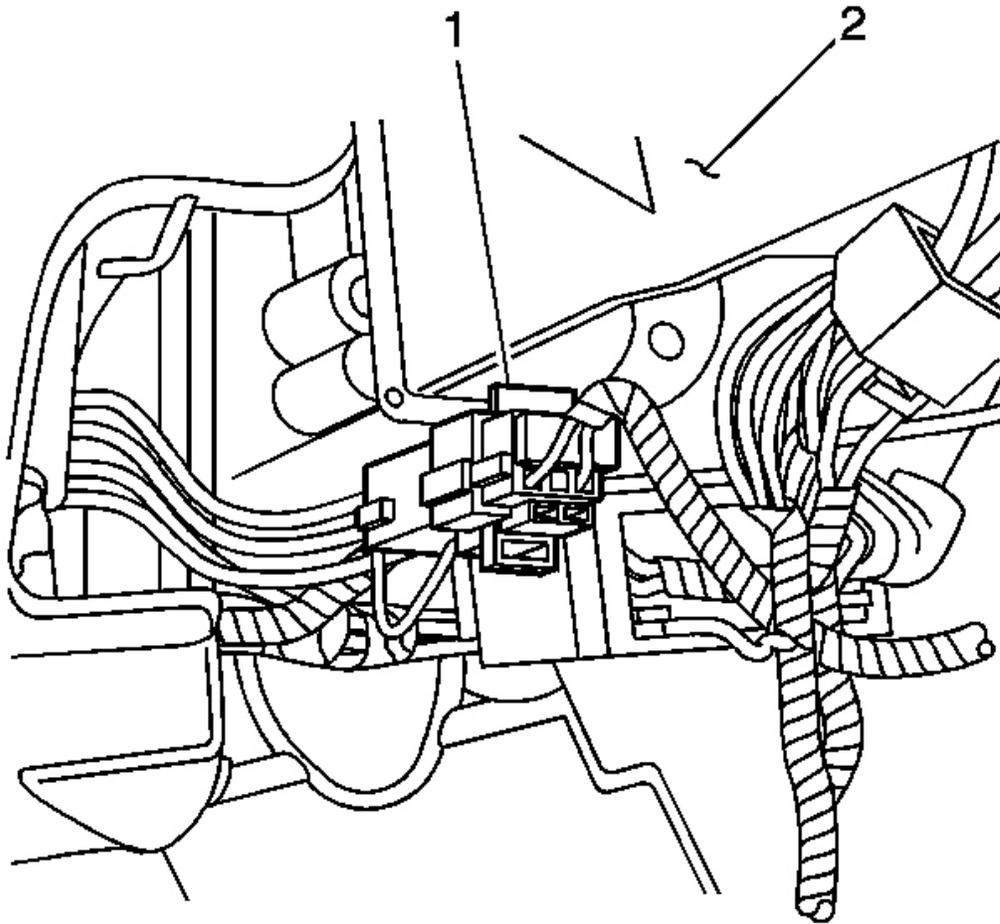


Fig. 36: Disconnecting/Reconnecting CPA & Steering Wheel Module Yellow 4-Way Connector
Courtesy of GENERAL MOTORS CORP.

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.

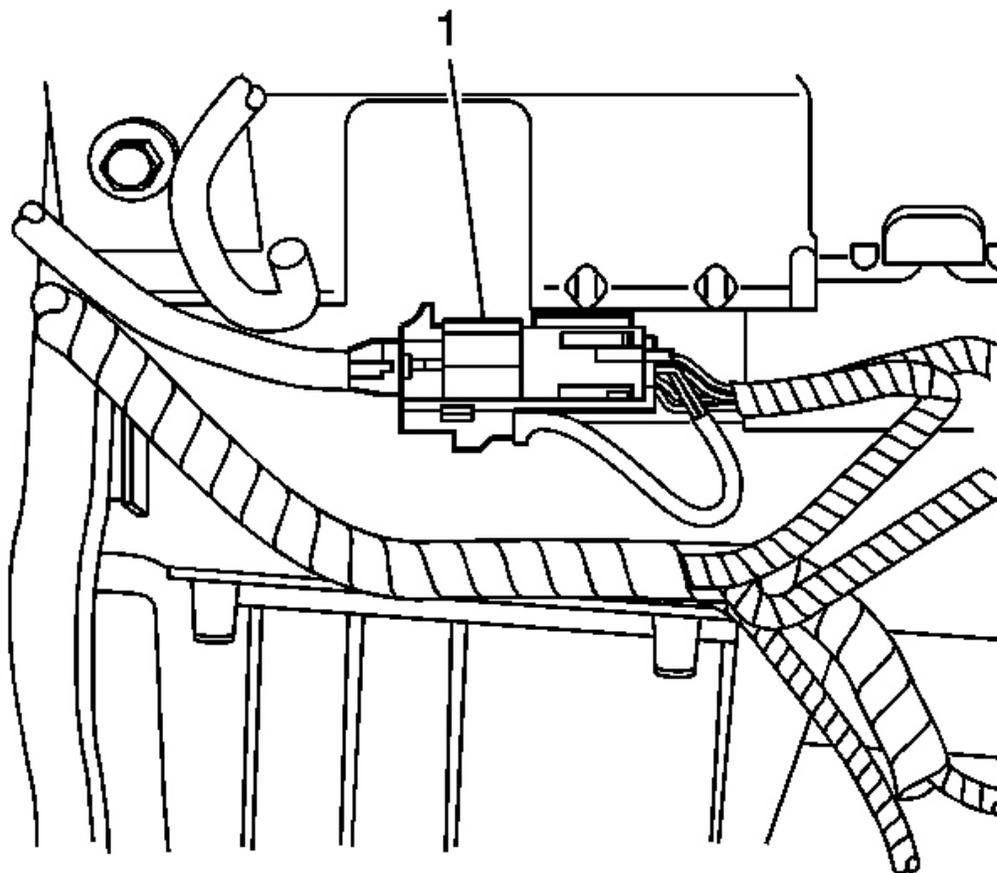


Fig. 37: Locating IP Module 4-Way Yellow Connector Behind IP Support
Courtesy of GENERAL MOTORS CORP.

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.

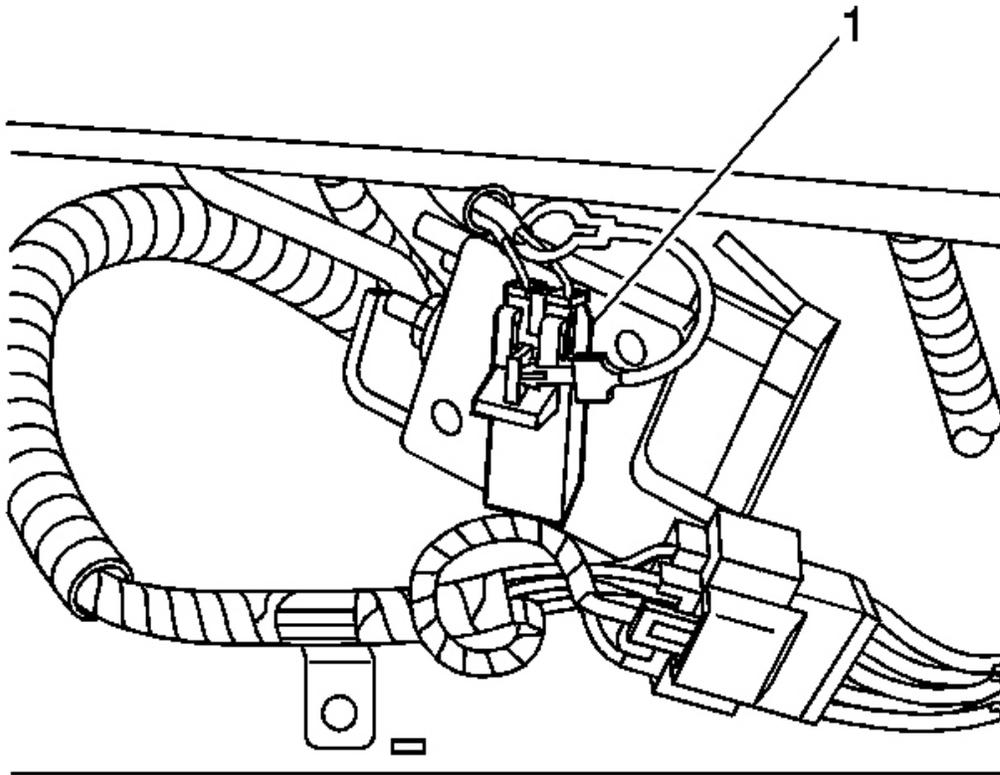


Fig. 38: Identifying CPA Clip
Courtesy of GENERAL MOTORS CORP.

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

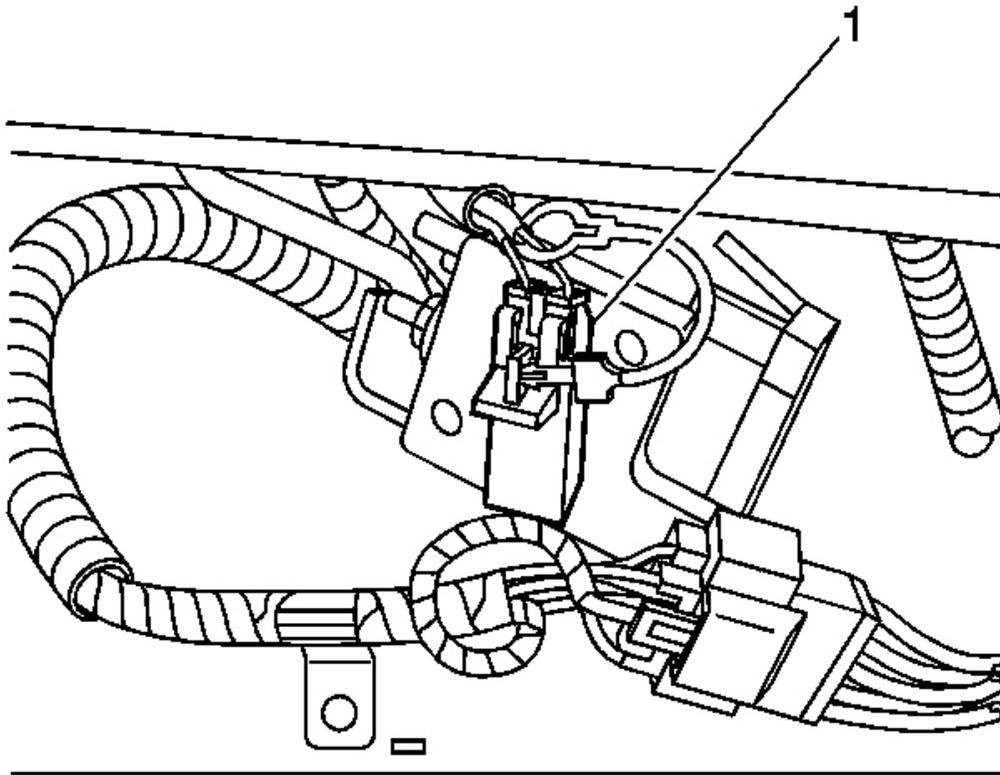


Fig. 39: Identifying CPA Clip
Courtesy of GENERAL MOTORS CORP.

13. Remove the CPA from the LF side impact module yellow 2-way connector (1) located under the driver seat.
14. Disconnect the LF side impact module yellow 2-way connector (1) located under the driver seat.

Enabling Procedure

1. Remove the key from the ignition.

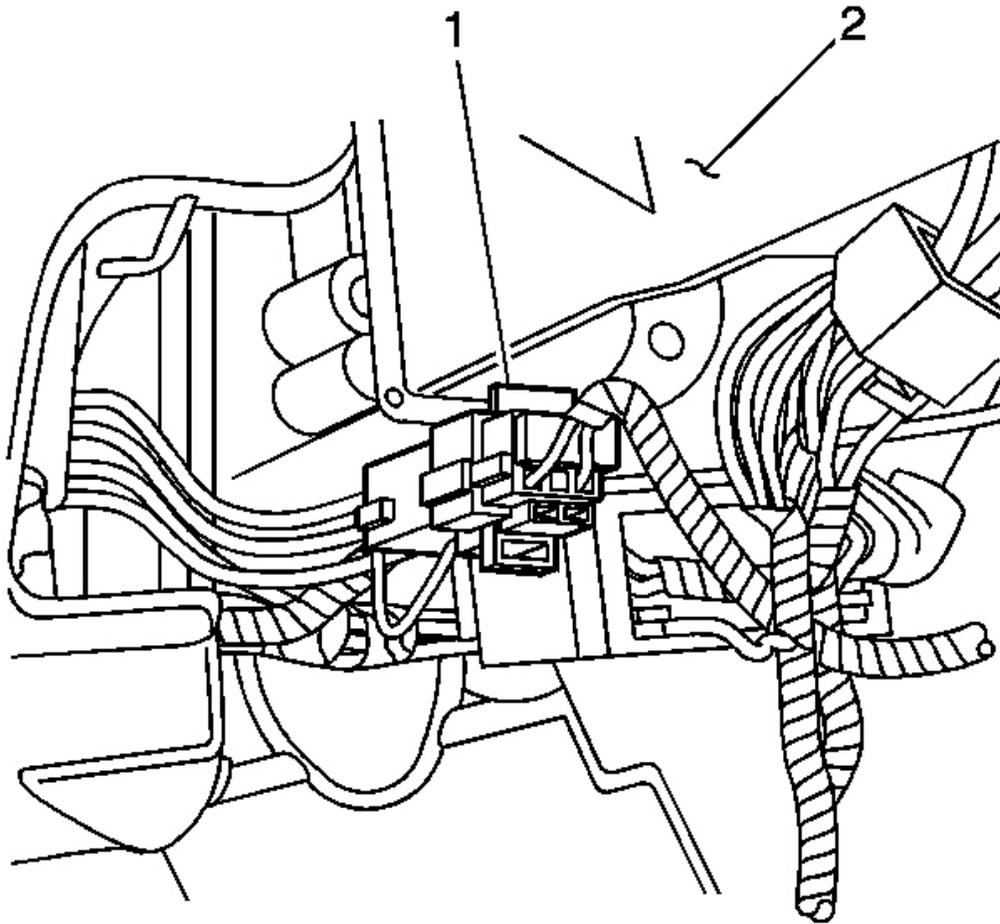


Fig. 40: Disconnecting/Reconnecting CPA & Steering Wheel Module Yellow 4-Way Connector
Courtesy of GENERAL MOTORS CORP.

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.

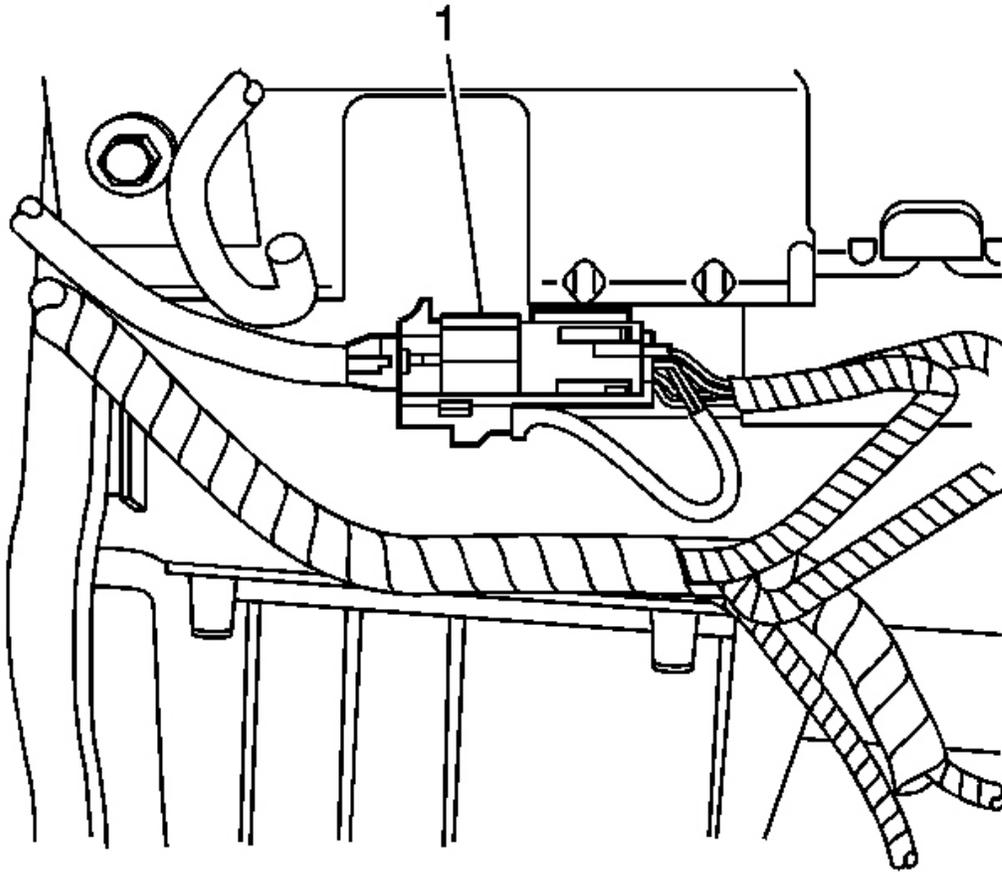


Fig. 41: Locating IP Module 4-Way Yellow Connector Behind IP Support
Courtesy of GENERAL MOTORS CORP.

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.

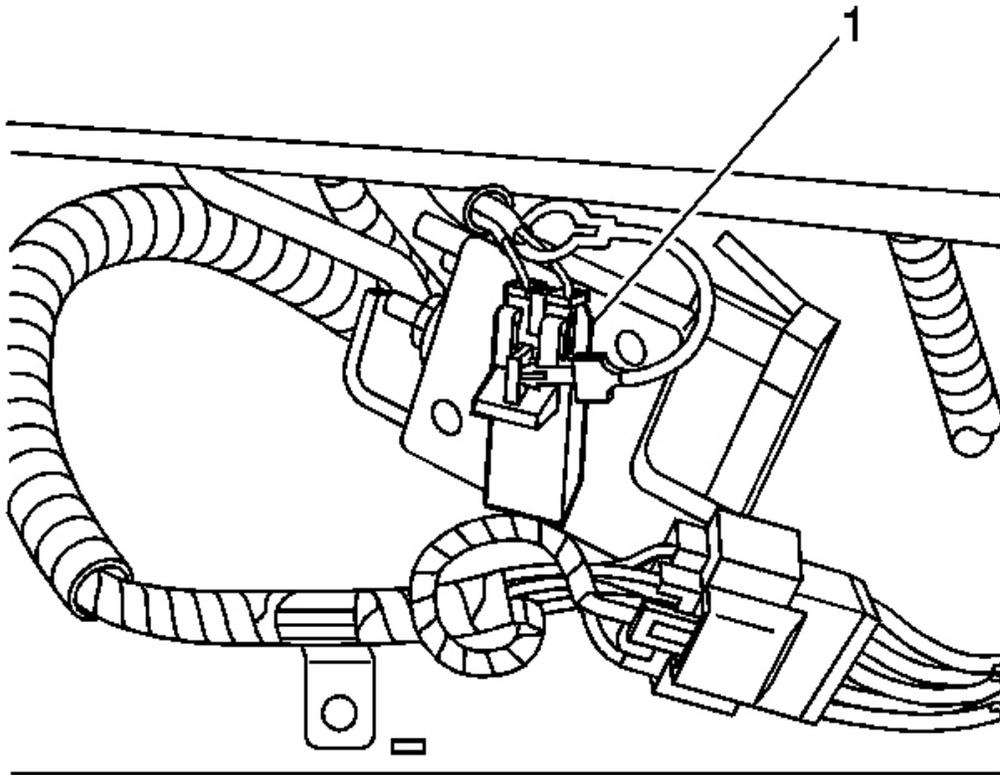


Fig. 42: Identifying CPA Clip
Courtesy of GENERAL MOTORS CORP.

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

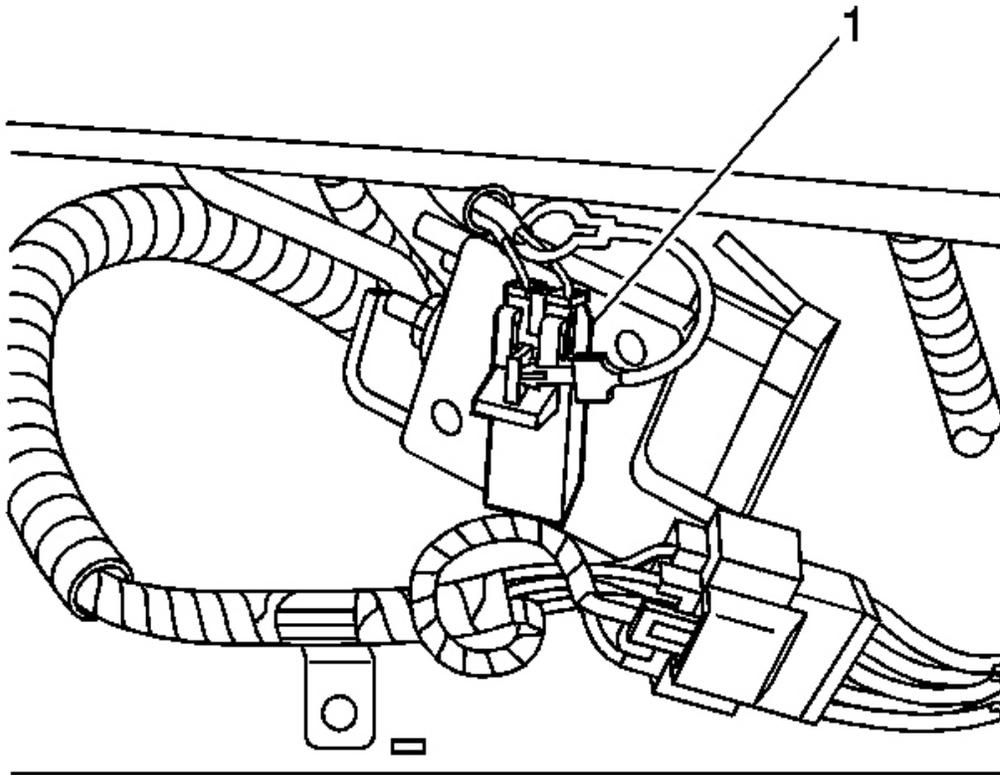


Fig. 43: Identifying CPA Clip
Courtesy of GENERAL MOTORS CORP.

8. Connect the LF side impact module yellow 2-way connector (1) located under the driver seat.
9. Install the CPA to the LF side impact module yellow 2-way connector (1) located under the driver seat.

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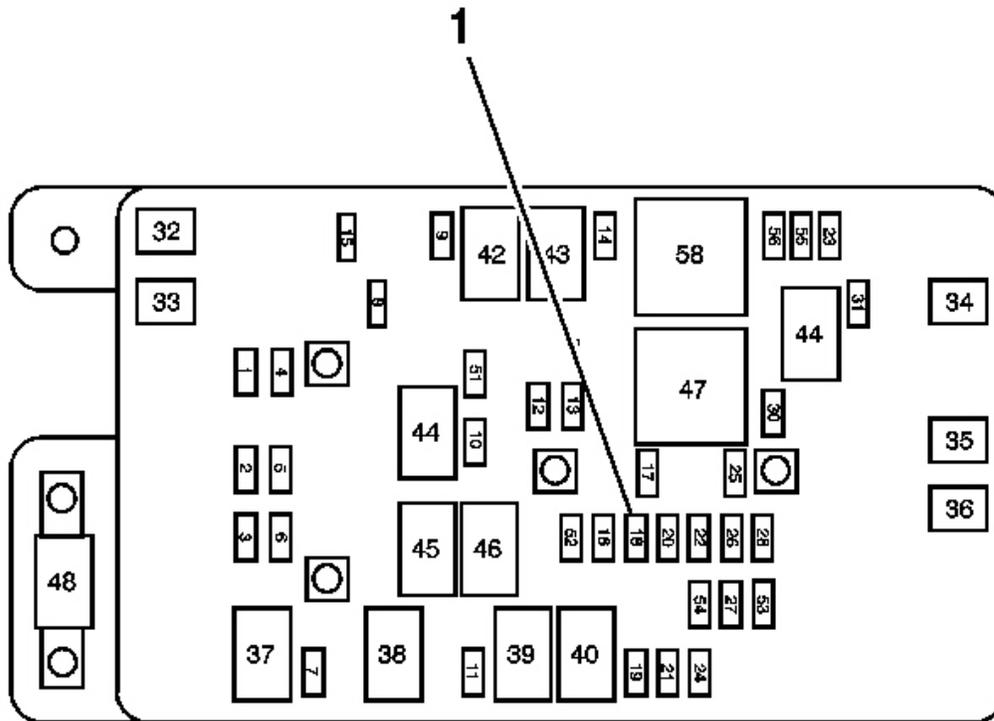


Fig. 44: View Of Fuse & Relay Block
Courtesy of GENERAL MOTORS CORP.

10. Install the SIR fuse to the fuse block (1) located in the underhood electrical center.
11. 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.
12. Perform the **Diagnostic System Check - SIR** 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's wheels are pointing straight ahead.
2. Turn OFF the ignition.

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3. Remove the key from the ignition.

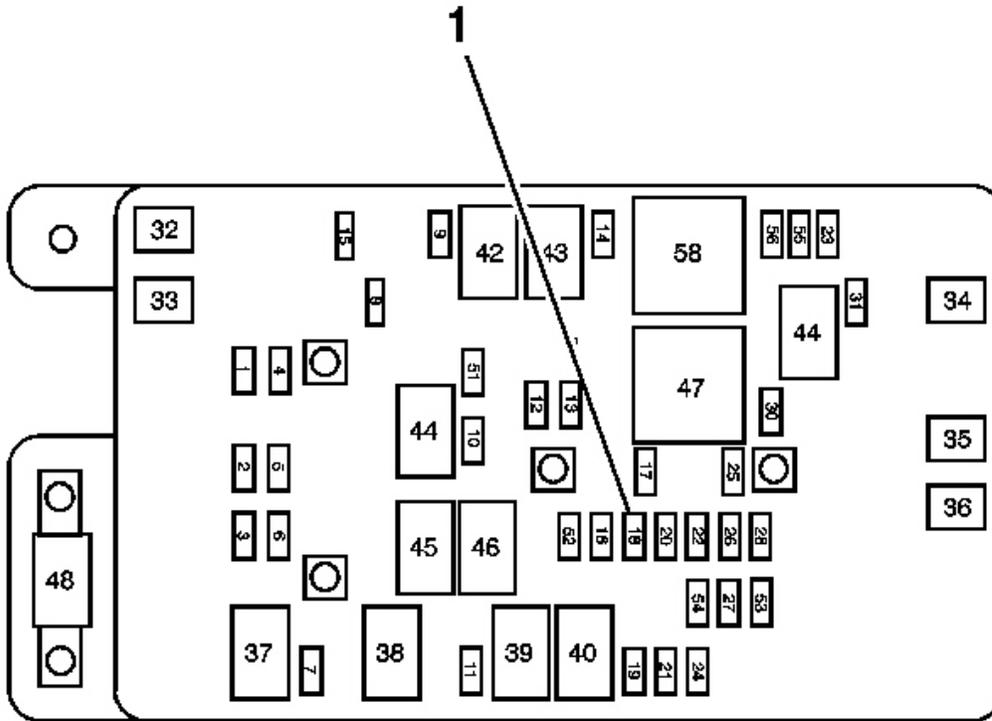


Fig. 45: View Of Fuse & Relay Block
Courtesy of GENERAL MOTORS CORP.

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.

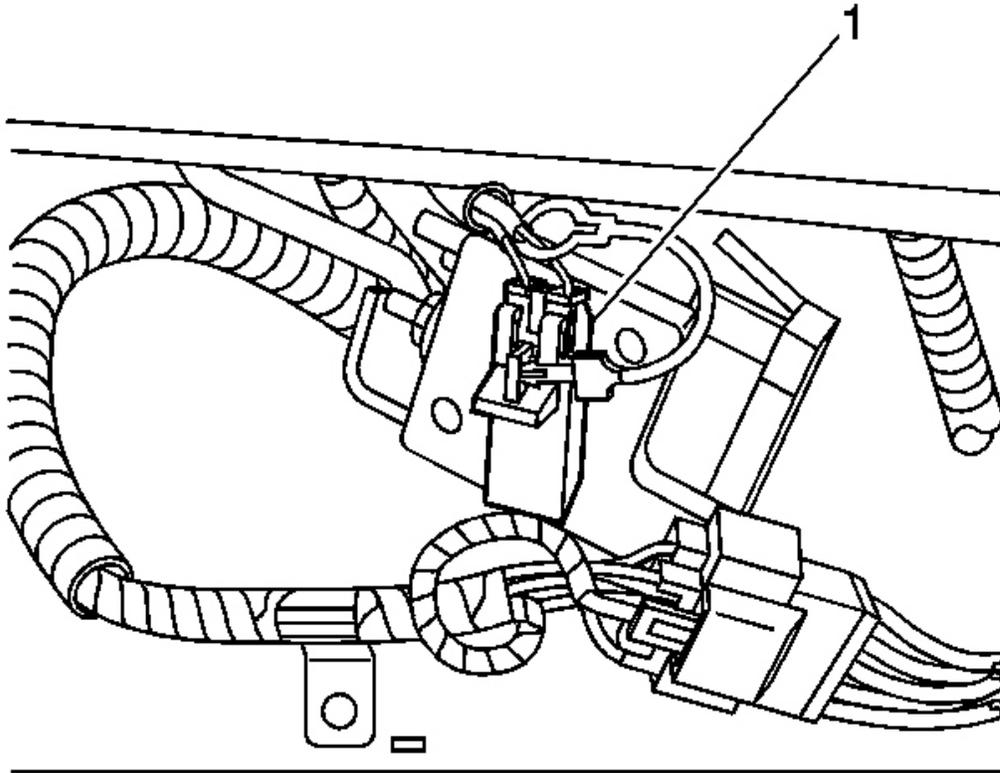


Fig. 46: Identifying CPA Clip
Courtesy of GENERAL MOTORS CORP.

5. Remove the CPA from the RF side impact module yellow 2-way connector (1) located under the passenger seat.
6. Disconnect the RF side impact module yellow 2-way connector (1) located under the passenger seat.

Enabling Procedure

1. Remove the key from the ignition.

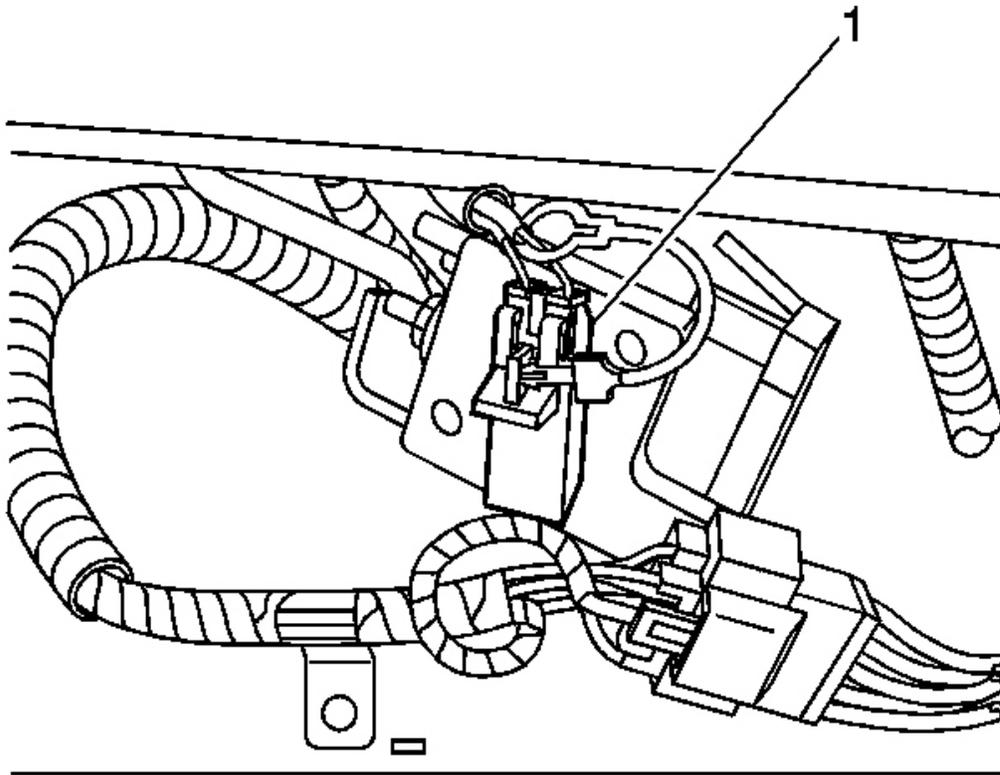


Fig. 47: Identifying CPA Clip
Courtesy of GENERAL MOTORS CORP.

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

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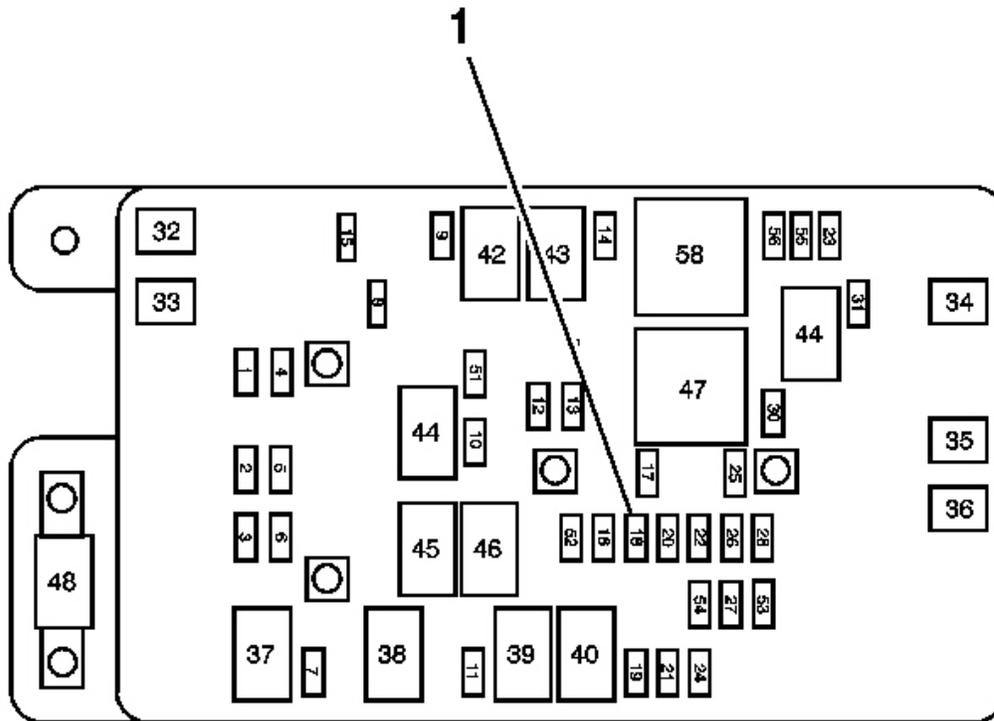


Fig. 48: View Of Fuse & Relay Block
Courtesy of GENERAL MOTORS CORP.

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 - SIR** 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 in Exterior Trim.

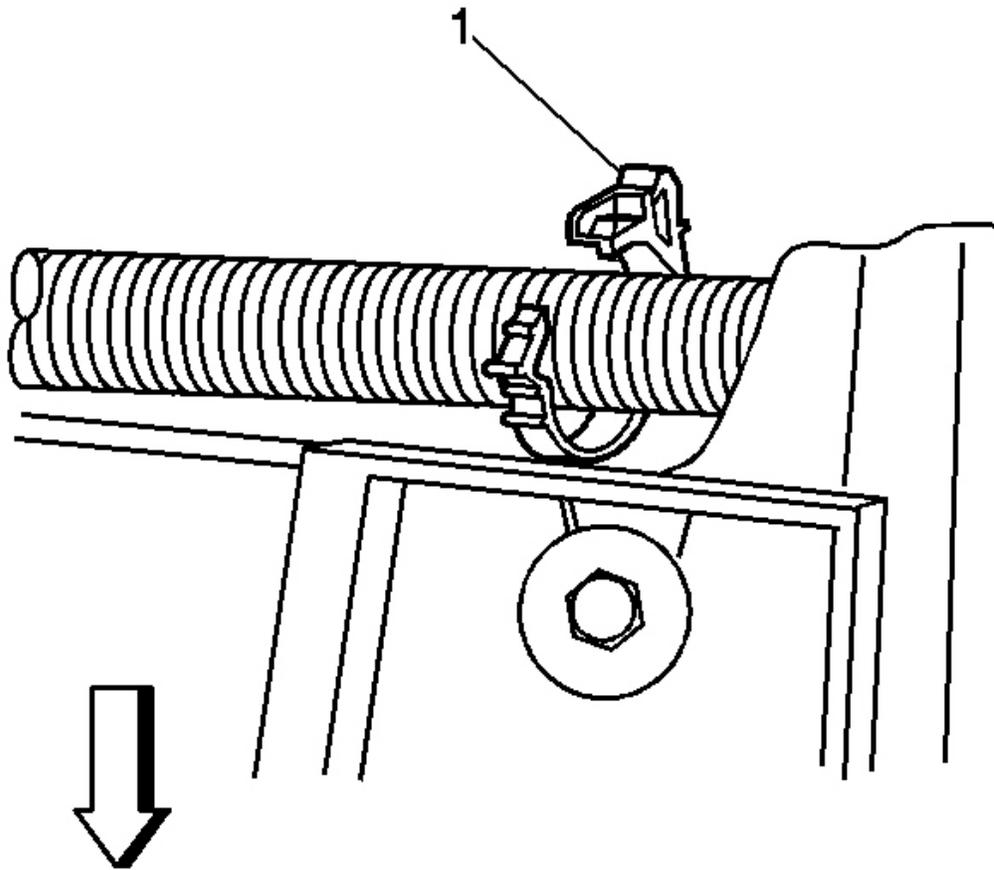


Fig. 49: Disconnecting/Reconnecting Headlamp Wire Harness Retaining Clip
Courtesy of GENERAL MOTORS CORP.

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

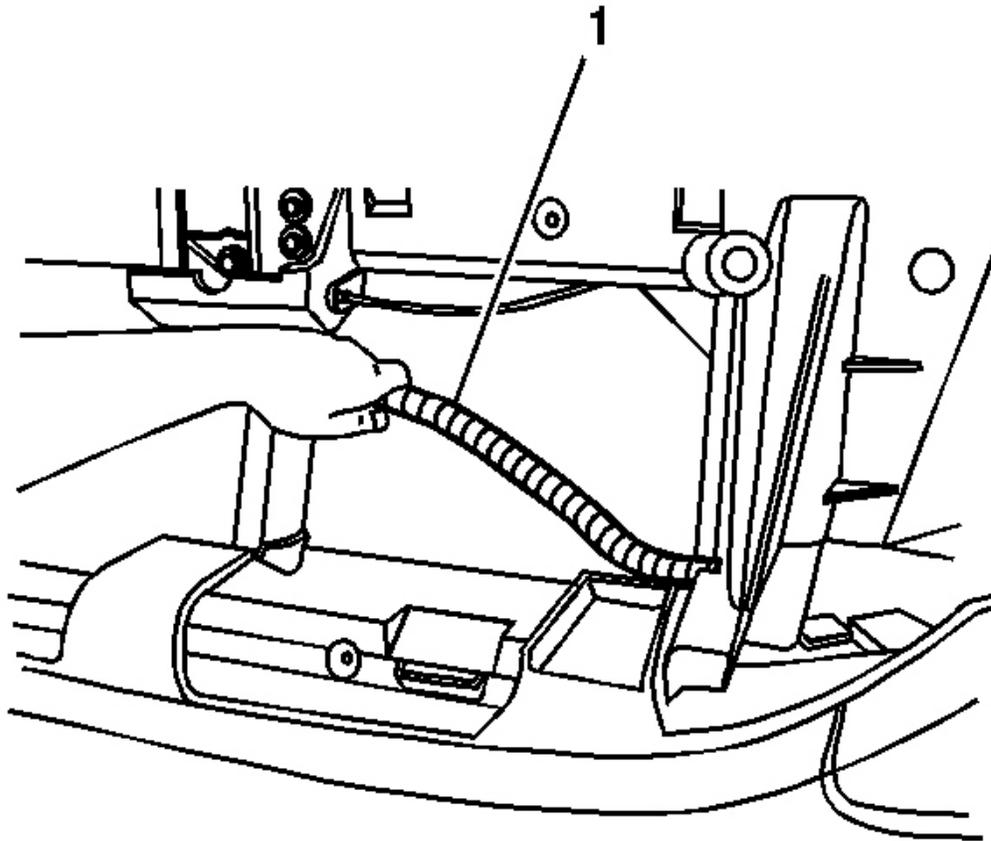


Fig. 50: Moving/Repositioning Headlamp Wire Harness
Courtesy of GENERAL MOTORS CORP.

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

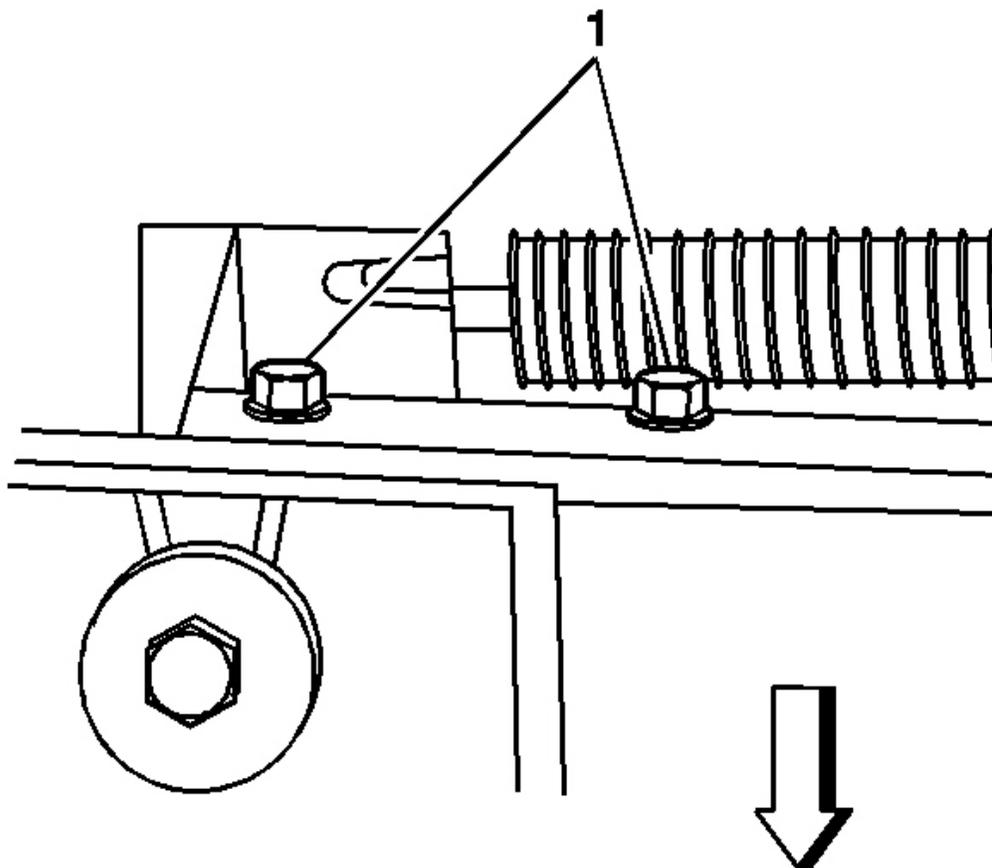


Fig. 51: Removing/Installing Sensor Retaining Bolts
Courtesy of GENERAL MOTORS CORP.

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

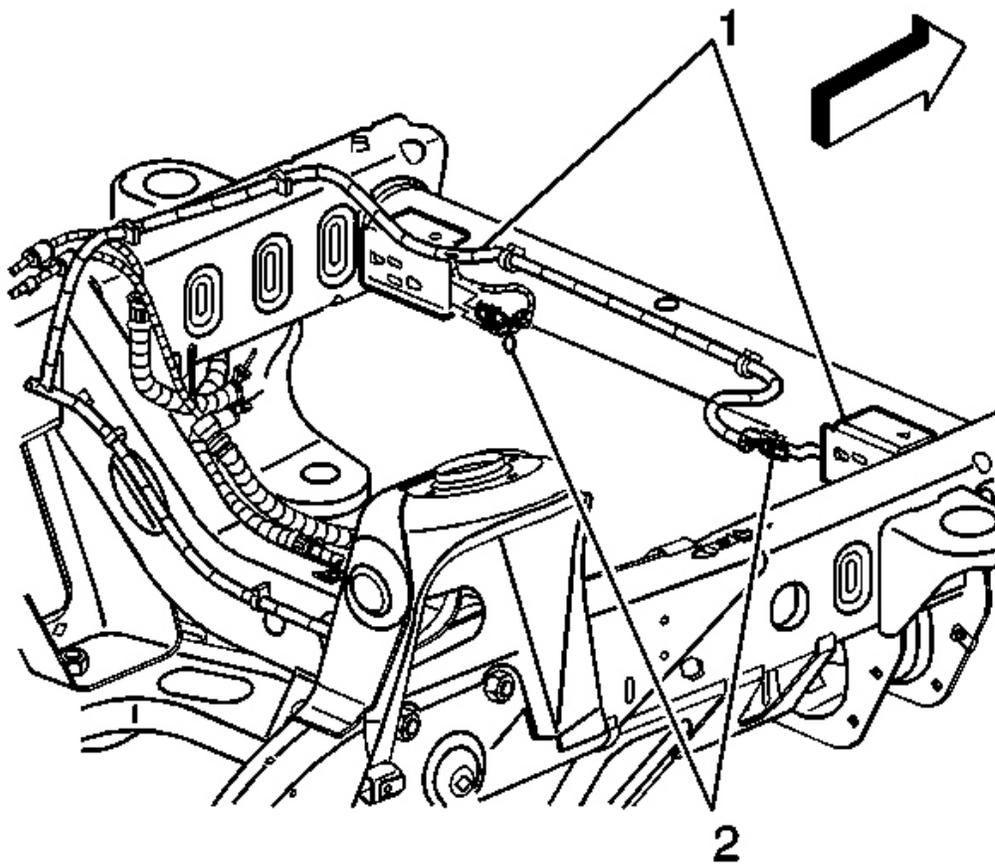


Fig. 52: Removing/Installing Sensor Assembly
Courtesy of GENERAL MOTORS CORP.

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

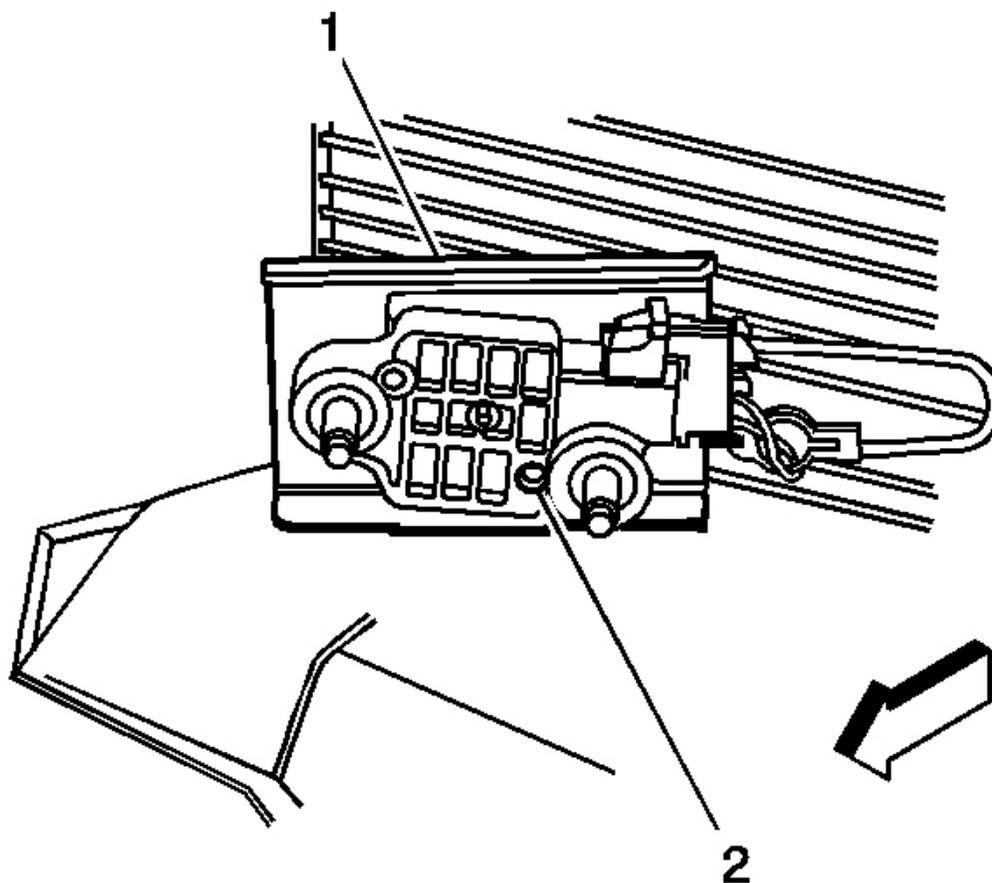


Fig. 53: View Of Connector Position Assurance At Front End Sensor Connectors
Courtesy of GENERAL MOTORS CORP.

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.

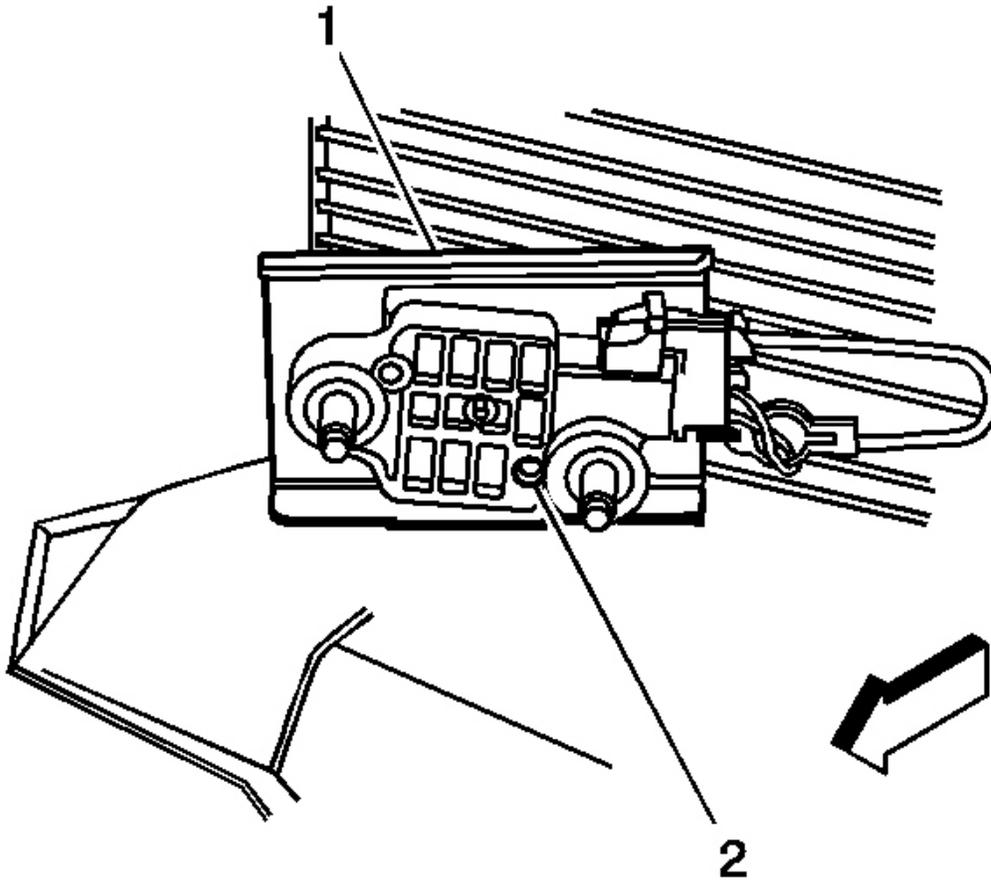


Fig. 54: View Of Connector Position Assurance At Front End Sensor Connectors
Courtesy of GENERAL MOTORS CORP.

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.

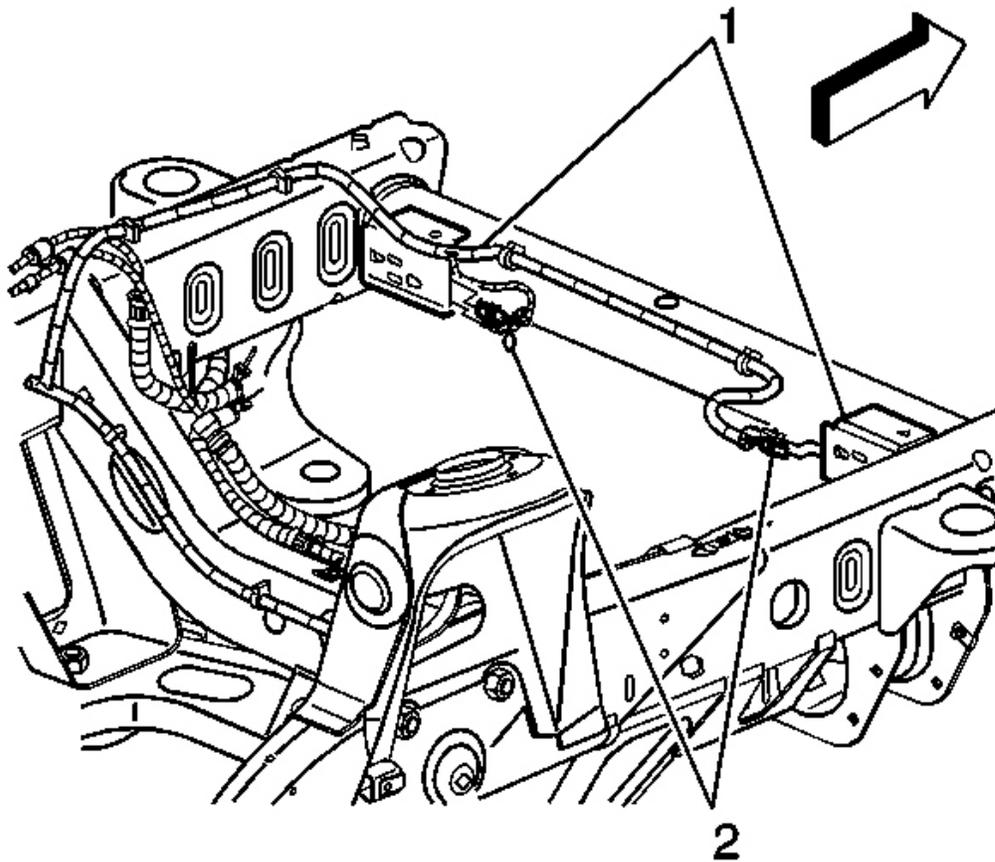


Fig. 55: Removing/Installing Sensor Assembly
Courtesy of GENERAL MOTORS CORP.

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

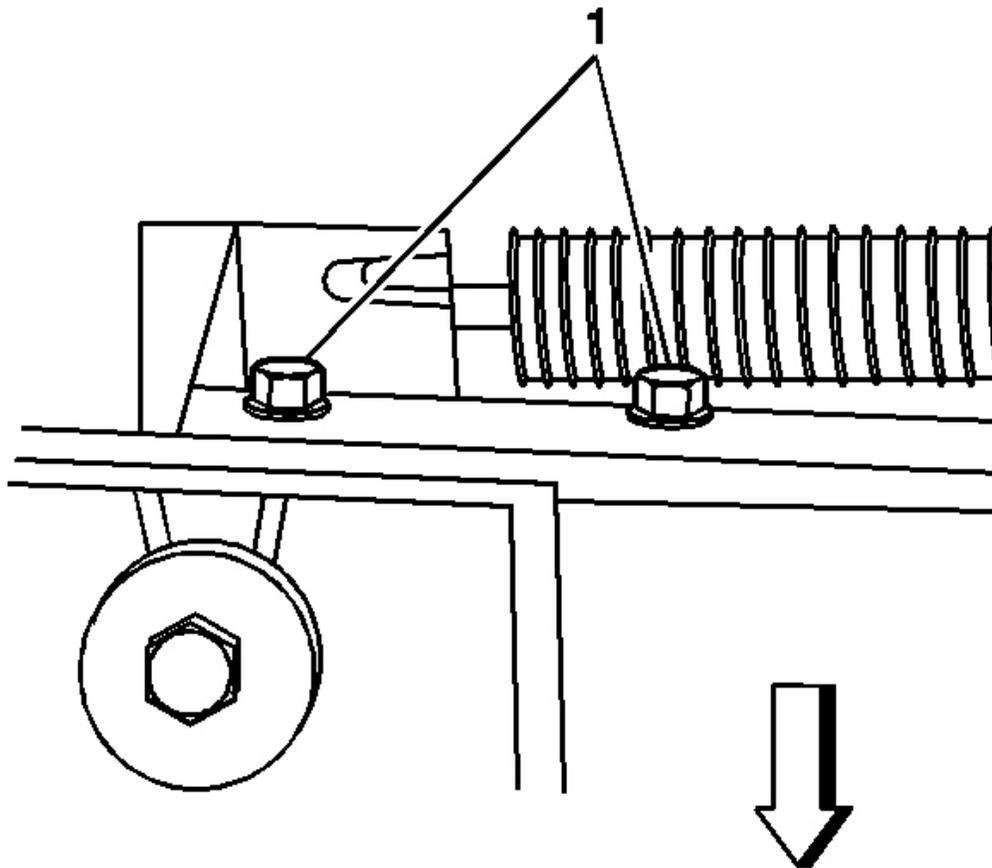


Fig. 56: Removing/Installing Sensor Retaining Bolts
Courtesy of GENERAL MOTORS CORP.

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 in. lb.).

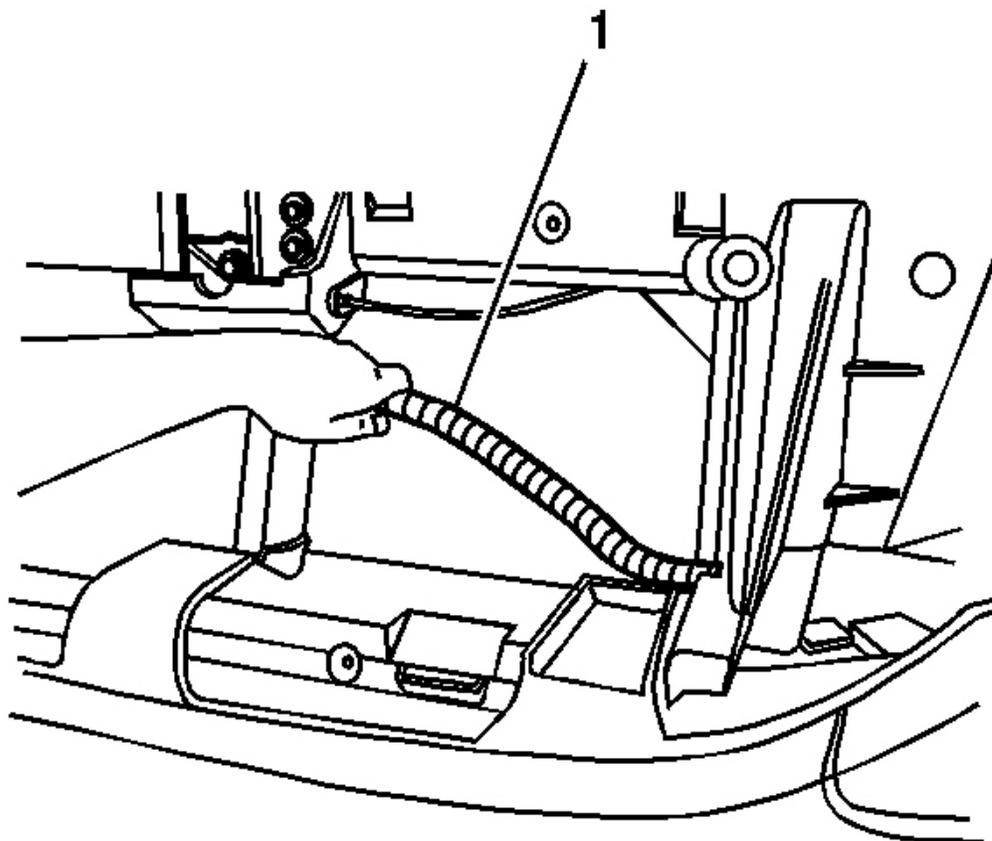


Fig. 57: Moving/Repositioning Headlamp Wire Harness
Courtesy of GENERAL MOTORS CORP.

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

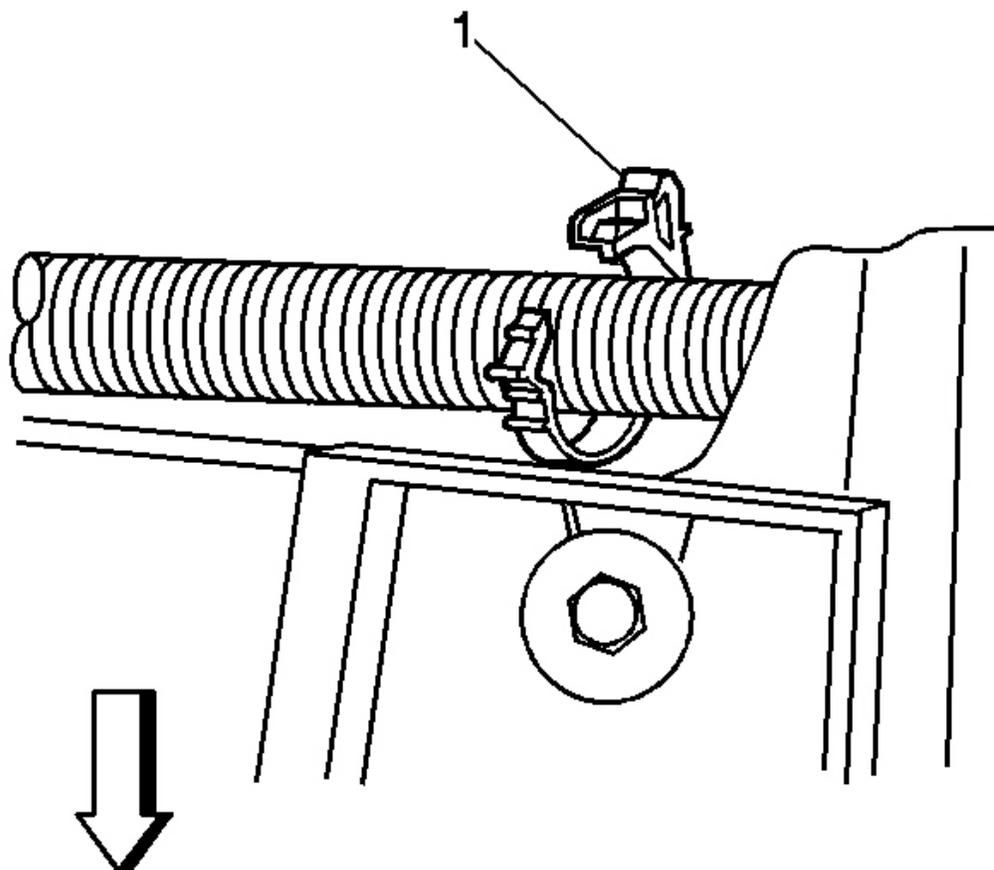


Fig. 58: Disconnecting/Reconnecting Headlamp Wire Harness Retaining Clip
Courtesy of GENERAL MOTORS CORP.

10. Install and secure the headlamp wire harness in the retaining clip (1).
11. Install the grille. Refer to **Grille Replacement** 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.

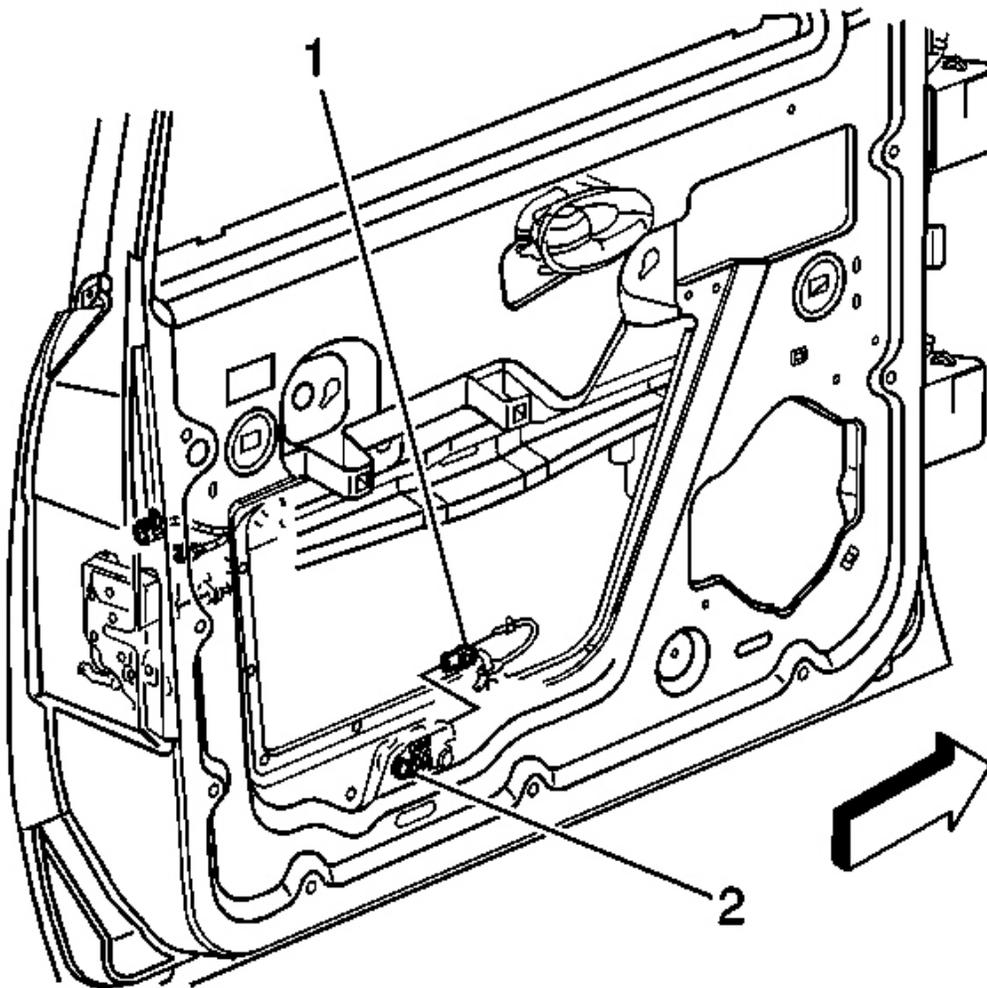


Fig. 59: Removing/Installing Side Impact Sensor

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.

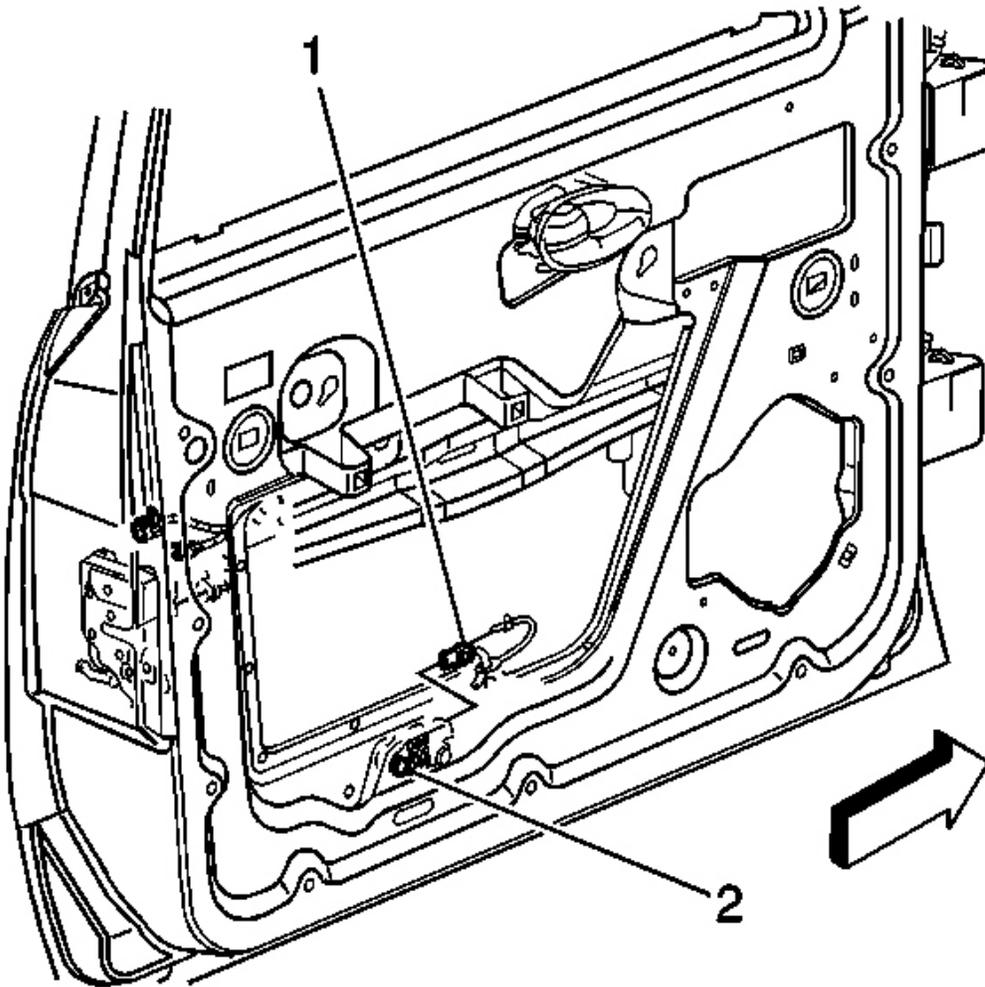


Fig. 60: Removing/Installing Side Impact Sensor
Courtesy of GENERAL MOTORS CORP.

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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 in. lb.).

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 SENSING AND DIAGNOSTIC MODULE REPLACEMENT

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.

Removal Procedure

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

1. Disable the 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.

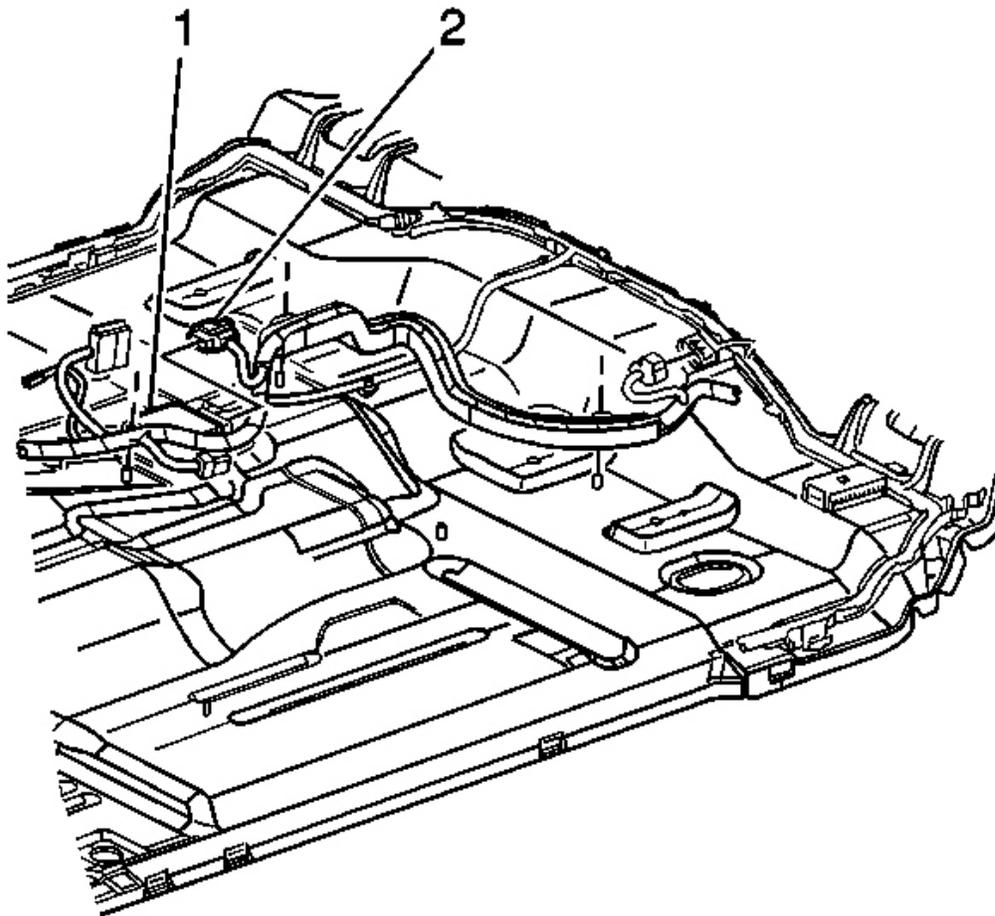


Fig. 61: Disconnecting/Reconnecting Electrical Connectors At SDM
Courtesy of GENERAL MOTORS CORP.

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).

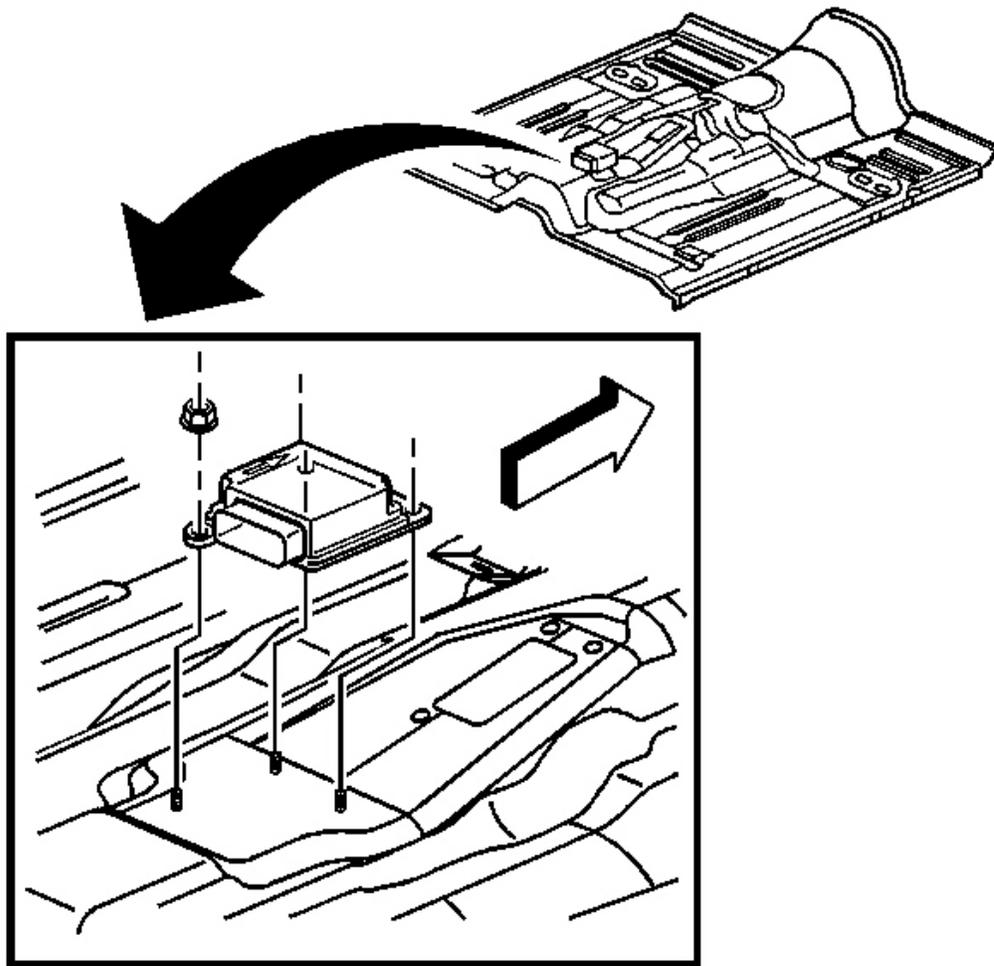


Fig. 62: Removing/Installing SDM Retaining Nuts
Courtesy of GENERAL MOTORS CORP.

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.

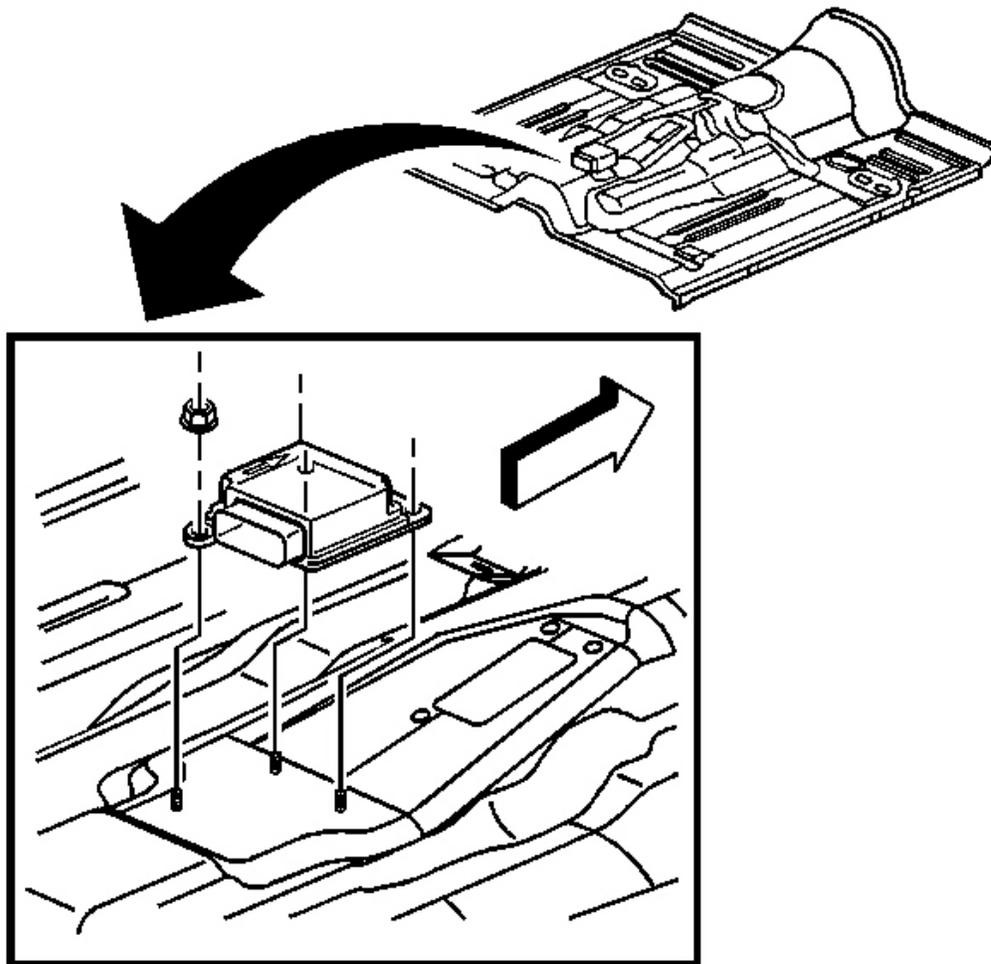


Fig. 63: Removing/Installing SDM Retaining Nuts
Courtesy of GENERAL MOTORS CORP.

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 in. lb.).

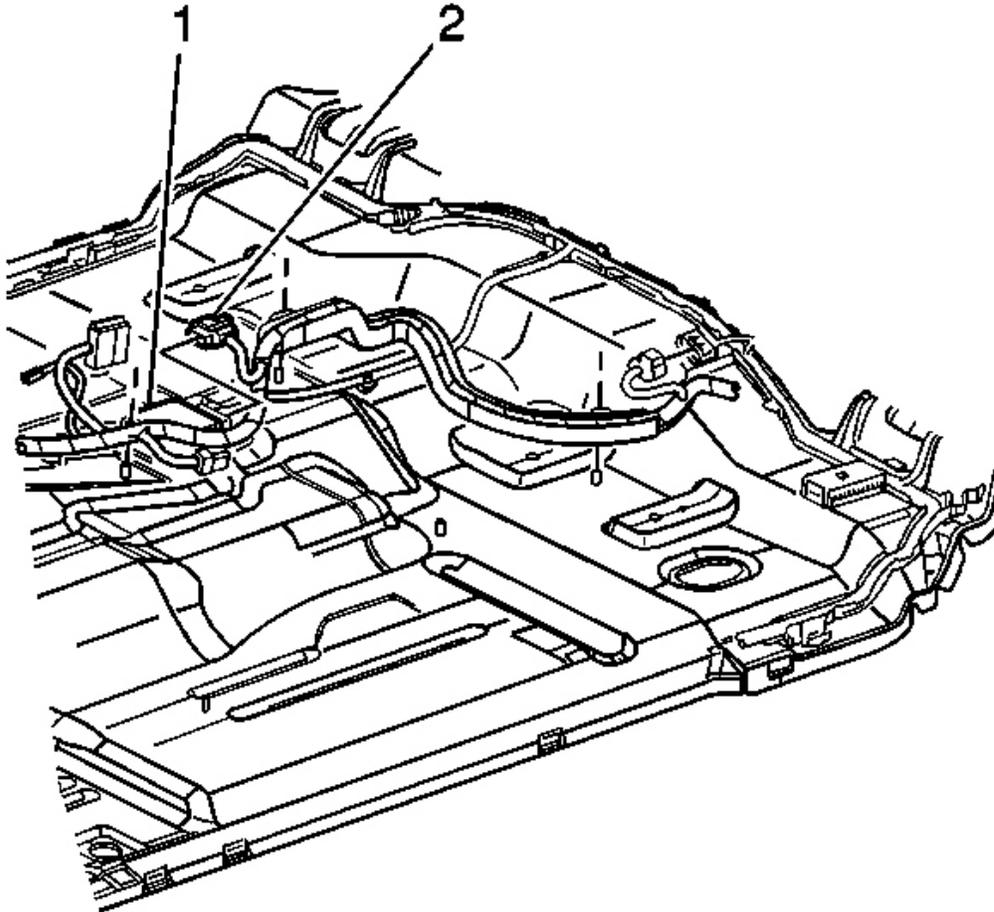


Fig. 64: Disconnecting/Reconnecting Electrical Connectors At SDM
Courtesy of GENERAL MOTORS CORP.

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 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**.

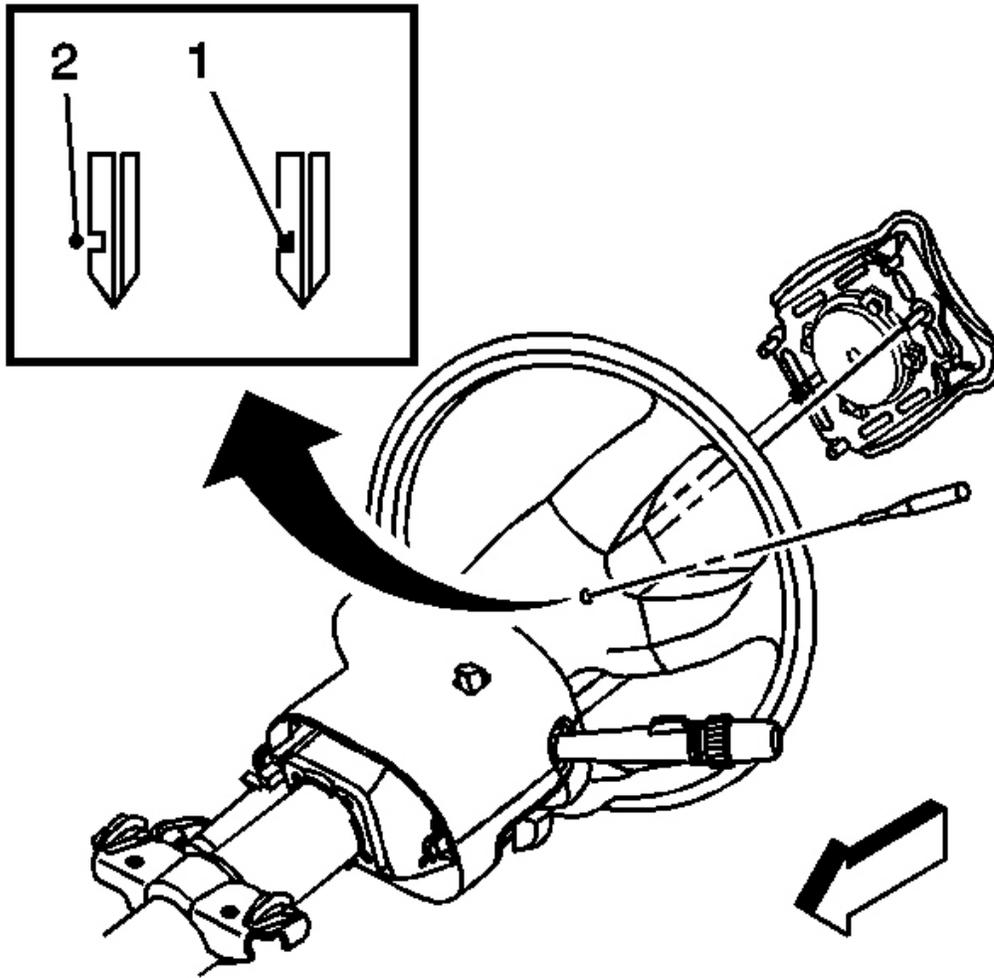


Fig. 65: Removing/Installing Leaf Spring Fasteners
Courtesy of GENERAL MOTORS CORP.

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.

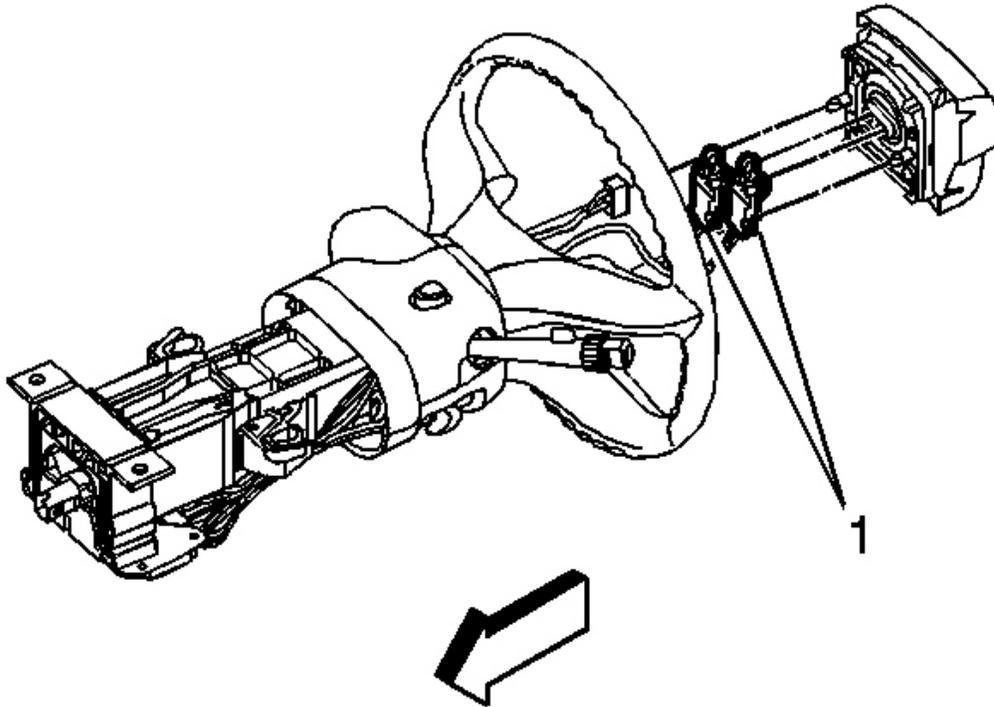


Fig. 66: Removing/Installing Inflatable Restraint Module To/From Steering Wheel
Courtesy of GENERAL MOTORS CORP.

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**.

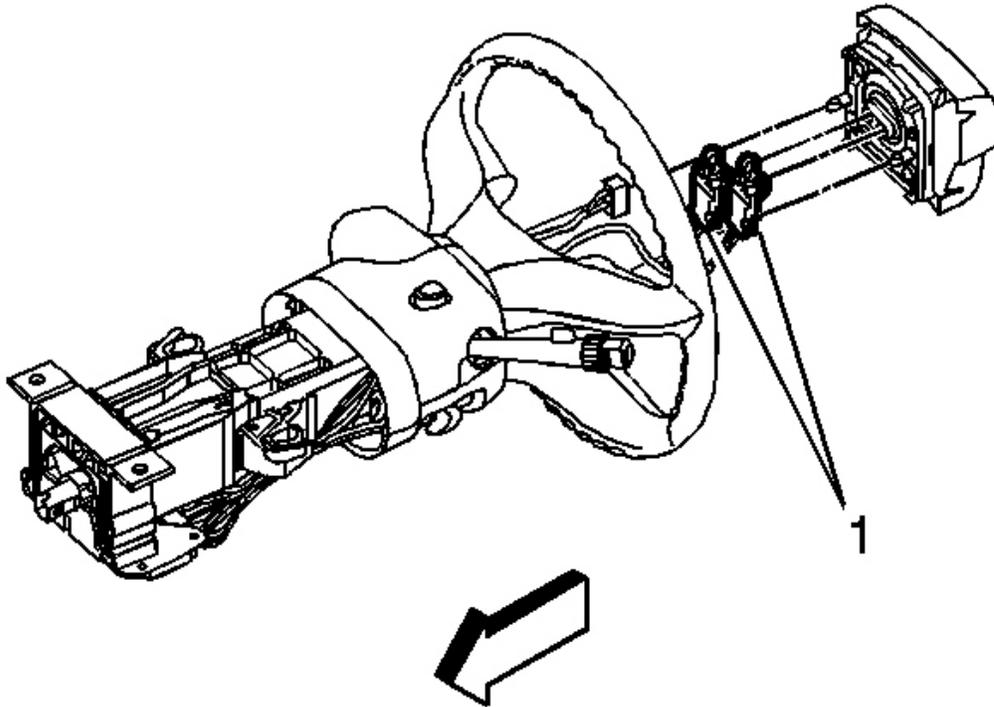


Fig. 67: Removing/Installing Inflatable Restraint Module To/From Steering Wheel
Courtesy of GENERAL MOTORS CORP.

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.

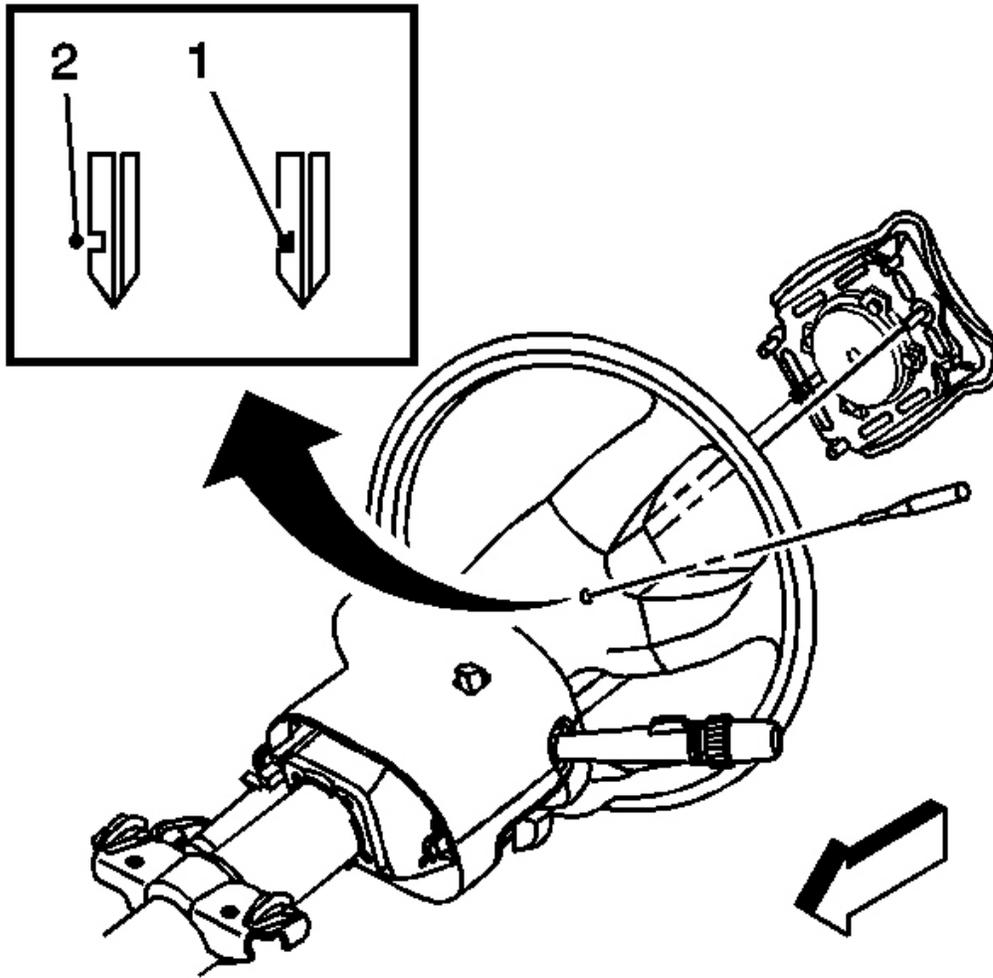


Fig. 68: Removing/Installing Leaf Spring Fasteners
 Courtesy of GENERAL MOTORS CORP.

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**.

Removal Procedure

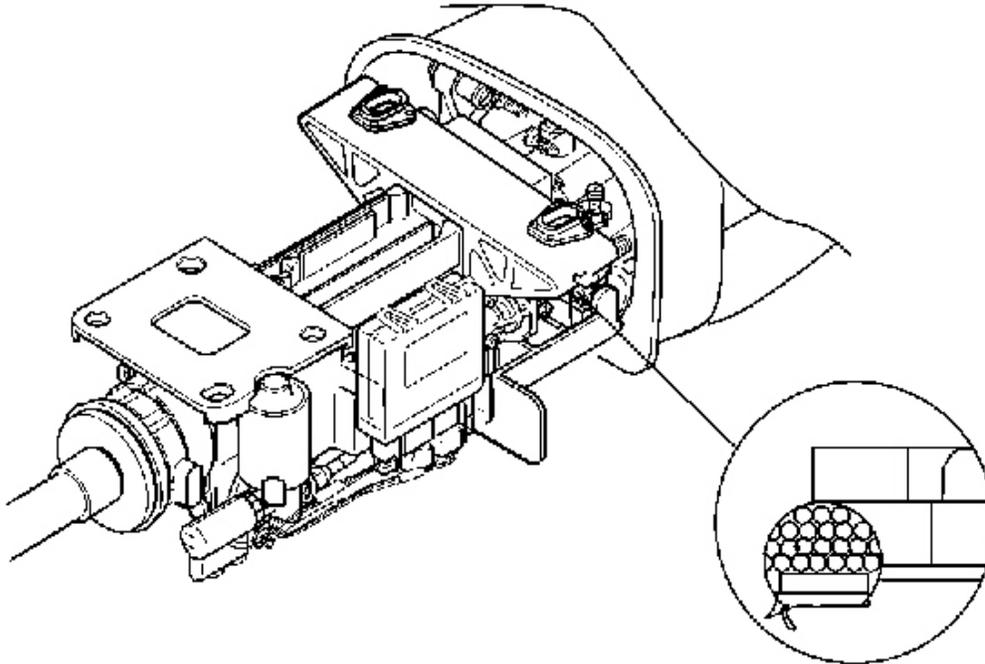


Fig. 69: Removing/Installing Plastic Mounted Steering Column Bracket
Courtesy of GENERAL MOTORS CORP.

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.

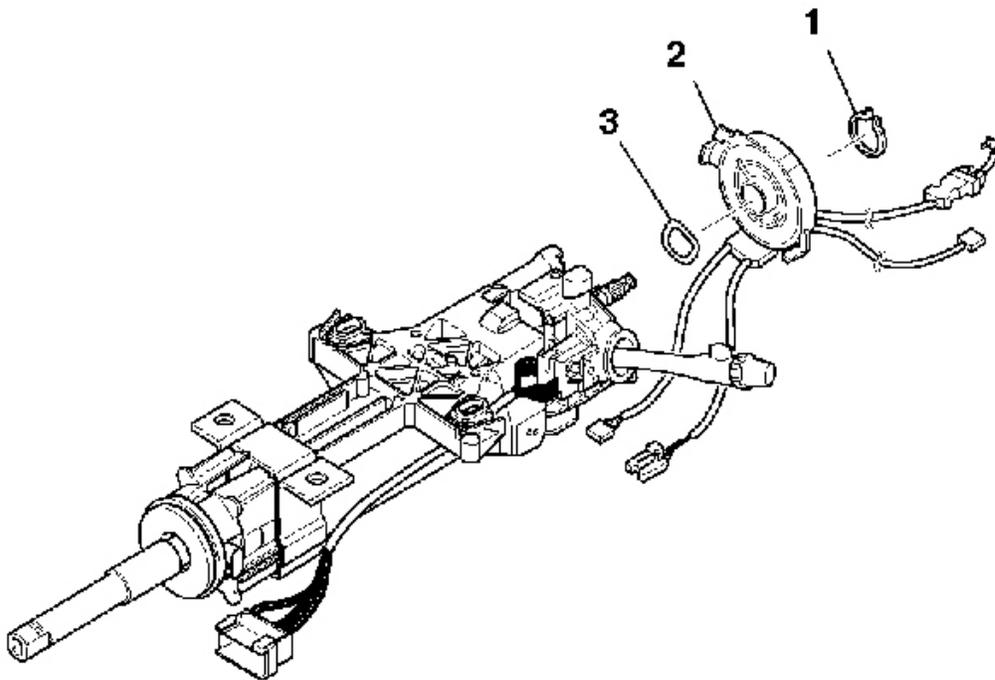


Fig. 70: Removing Steering Wheel Module Coil
Courtesy of GENERAL MOTORS CORP.

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

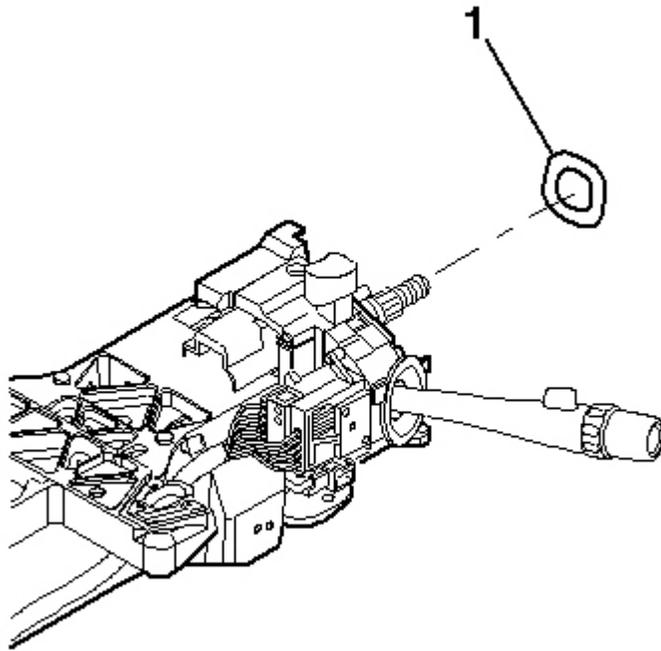


Fig. 71: Installing Wave Washer
Courtesy of GENERAL MOTORS CORP.

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

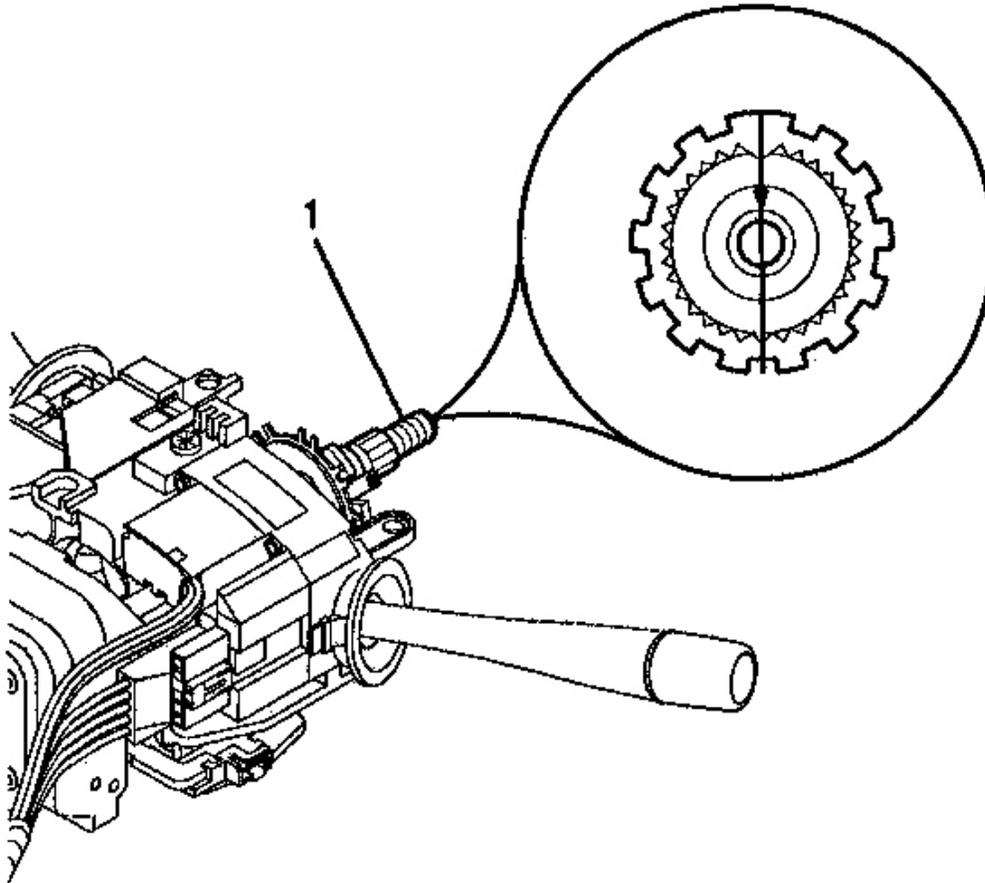


Fig. 72: View Of Block Tooth Of Steering Shaft Assembly In 12 O'clock Position
Courtesy of GENERAL MOTORS CORP.

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

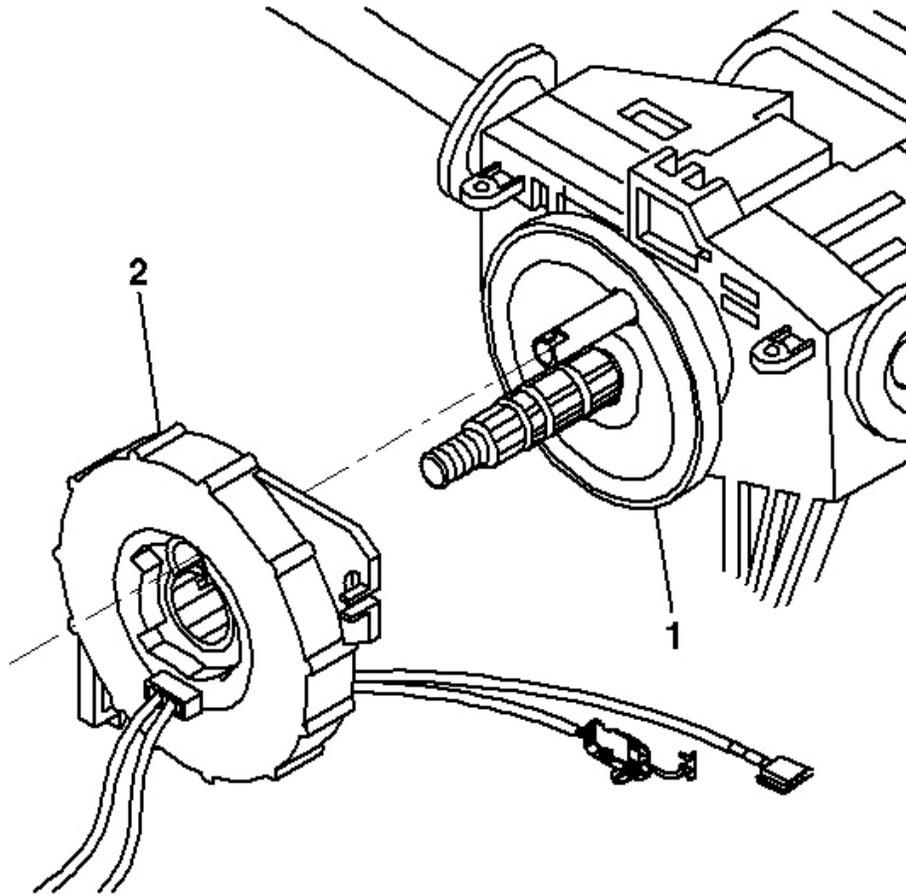


Fig. 73: Installing Inflatable Restraint Steering Wheel Module Coil
Courtesy of GENERAL MOTORS CORP.

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.

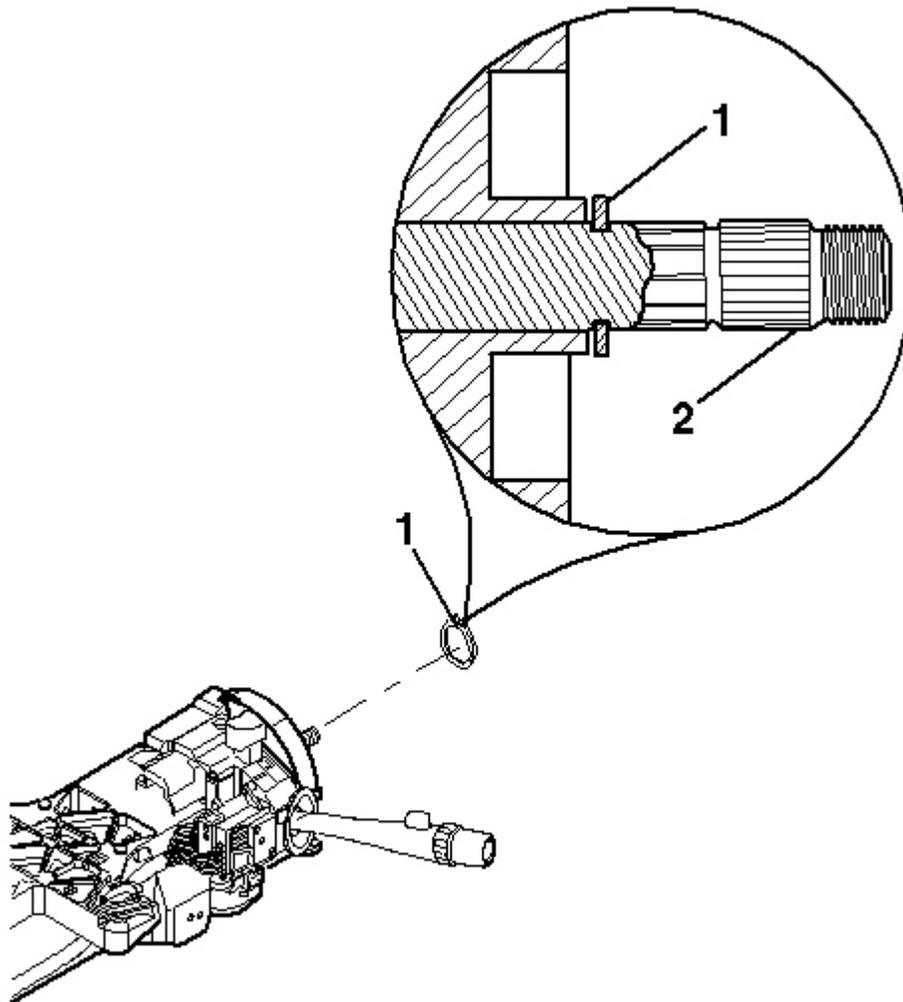


Fig. 74: Installing Retaining Ring
Courtesy of GENERAL MOTORS CORP.

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.

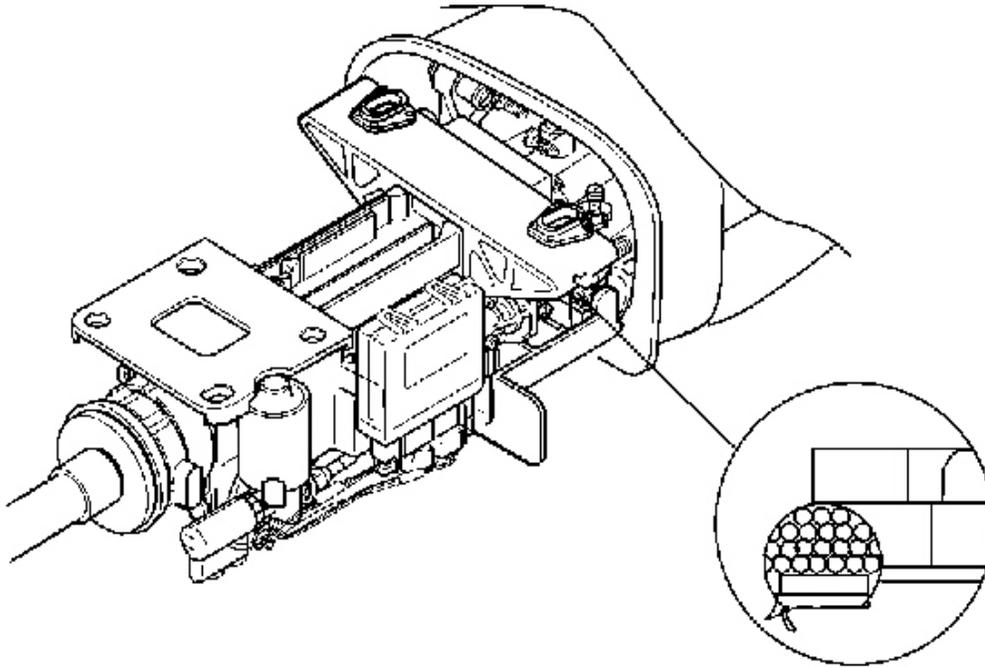


Fig. 75: Removing/Installing Plastic Mounted Steering Column Bracket
Courtesy of GENERAL MOTORS CORP.

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 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.

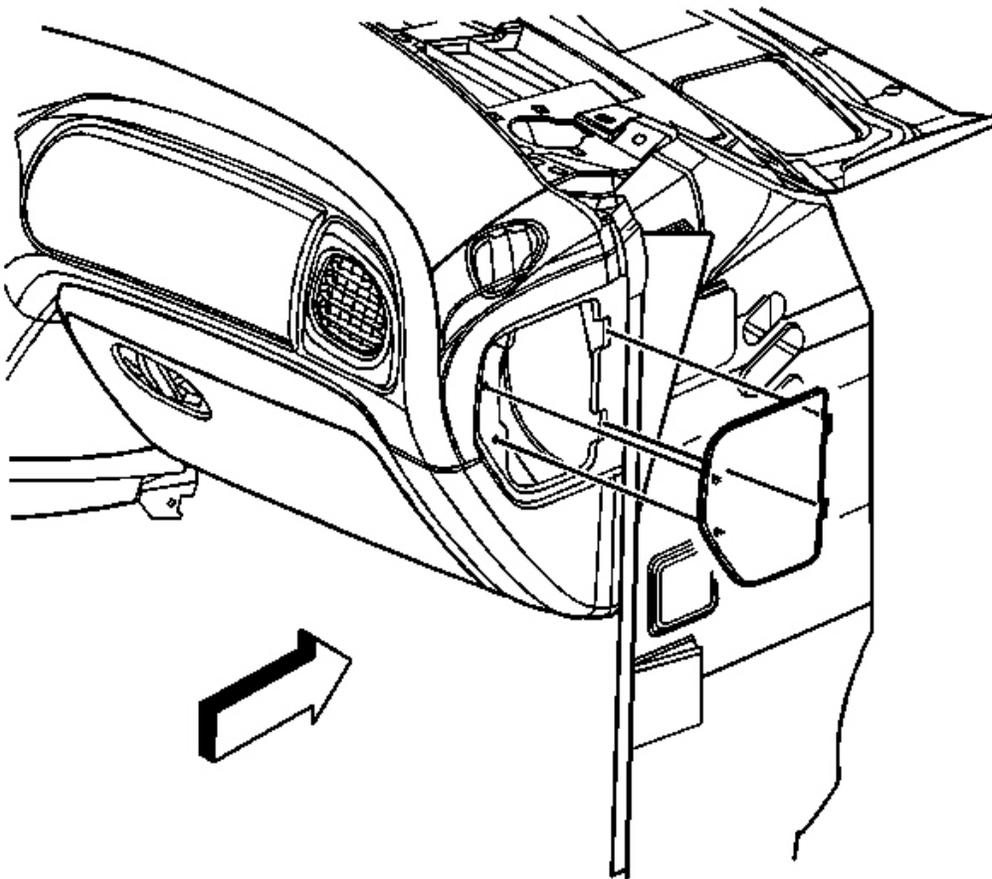


Fig. 76: Identifying Right I/P Access Cover
Courtesy of GENERAL MOTORS CORP.

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

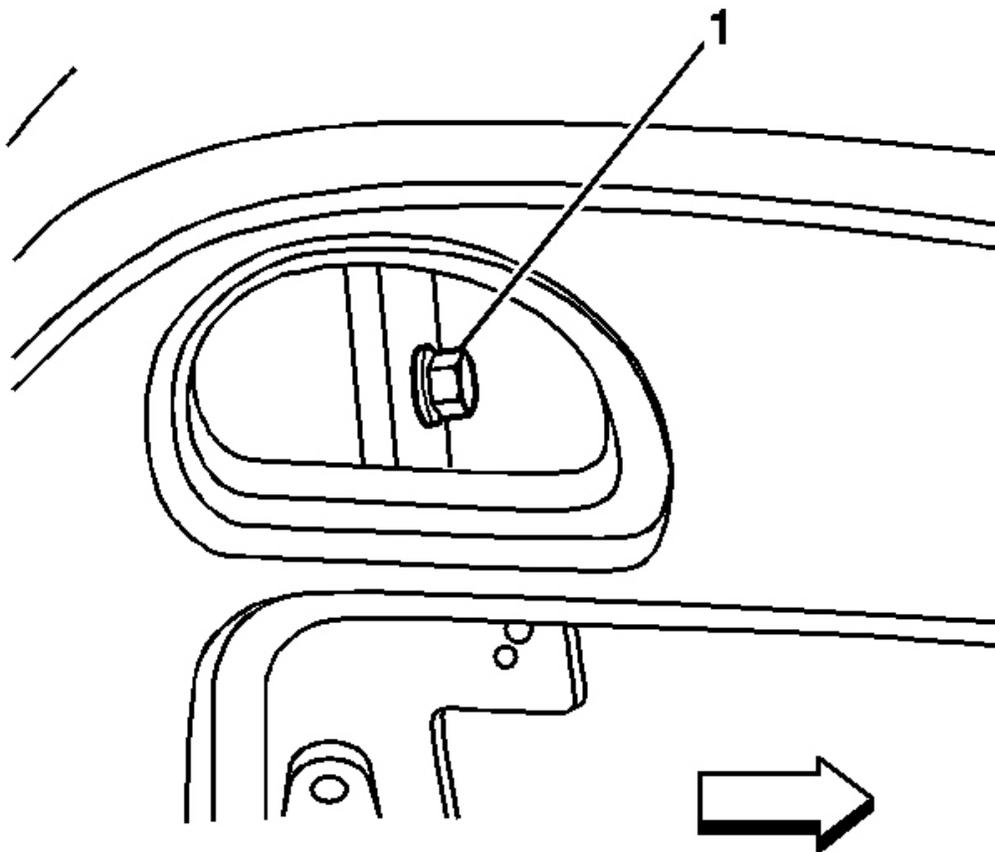


Fig. 77: Removing/Installing Passenger Air Duct Extension Screw
Courtesy of GENERAL MOTORS CORP.

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

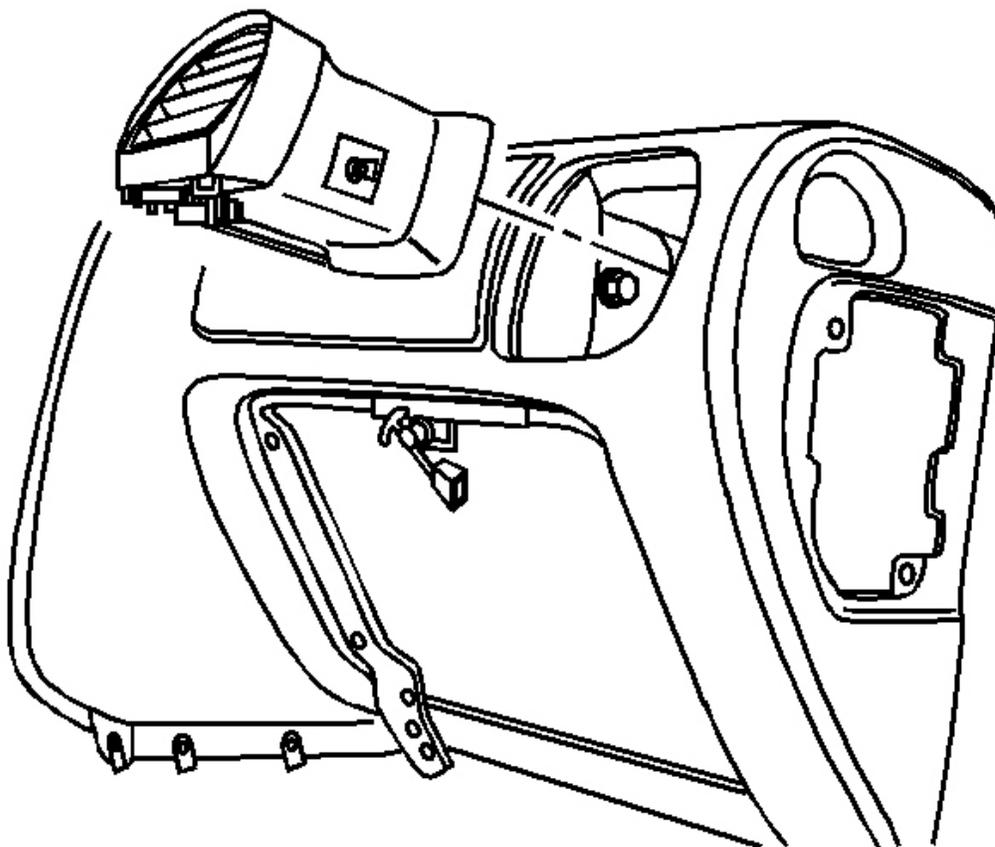


Fig. 78: Removing/Installing Air Duct Extension
Courtesy of GENERAL MOTORS CORP.

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

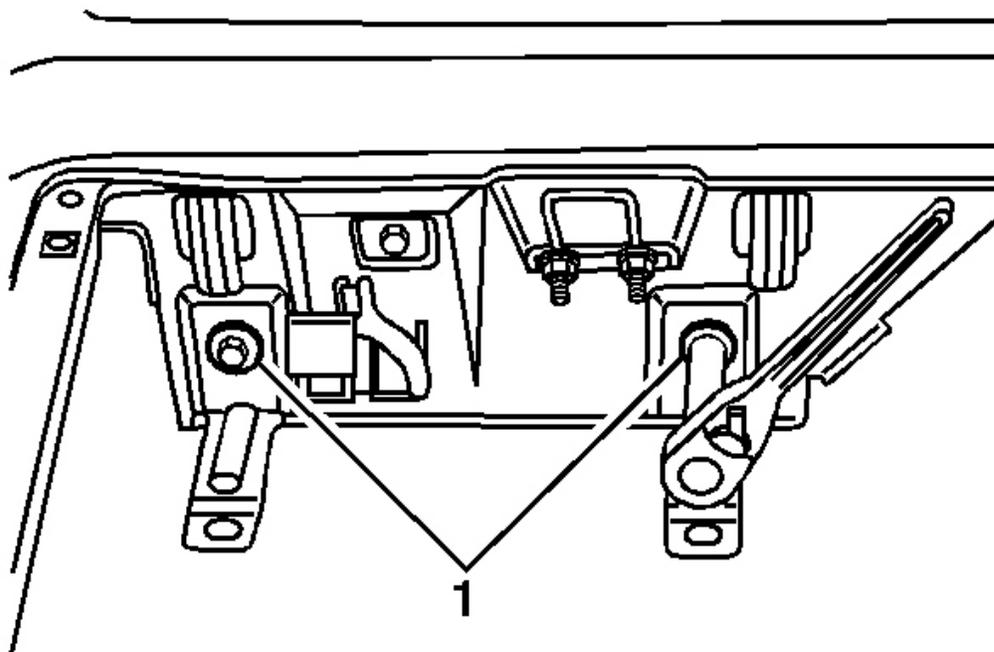


Fig. 79: Removing/Installing 2 Lower Passenger Supplemental Inflatable Restraint (PSIR) Inflator Module Retaining Bolts
Courtesy of GENERAL MOTORS CORP.

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).

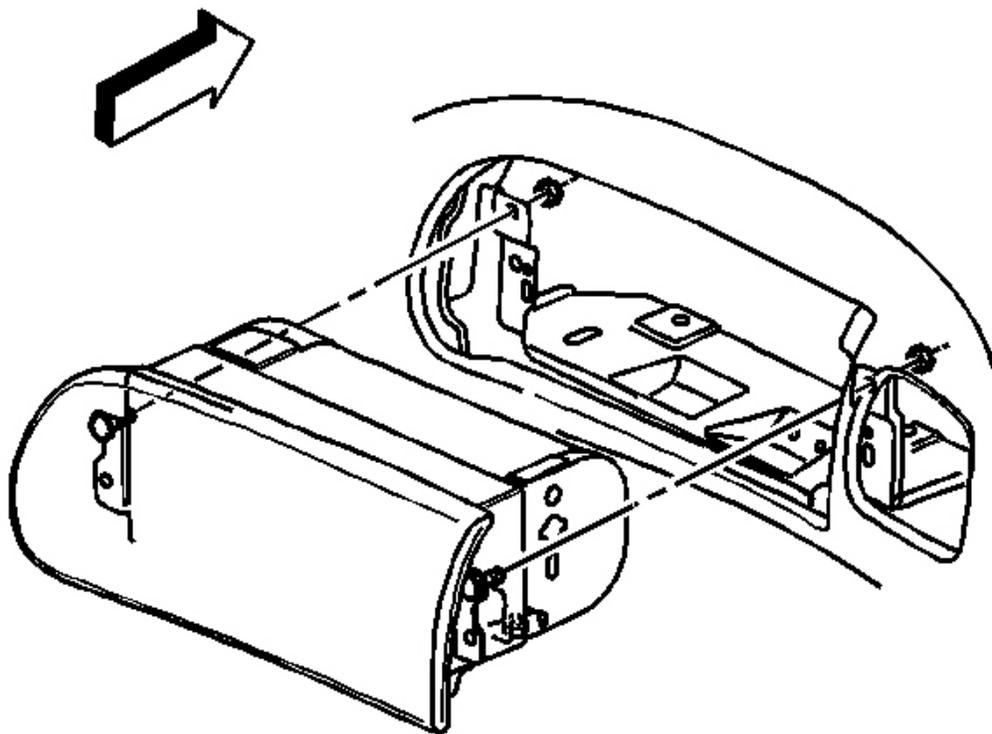


Fig. 80: Removing/Installing Side Retaining Nuts At PSIR Inflator Module
Courtesy of GENERAL MOTORS CORP.

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

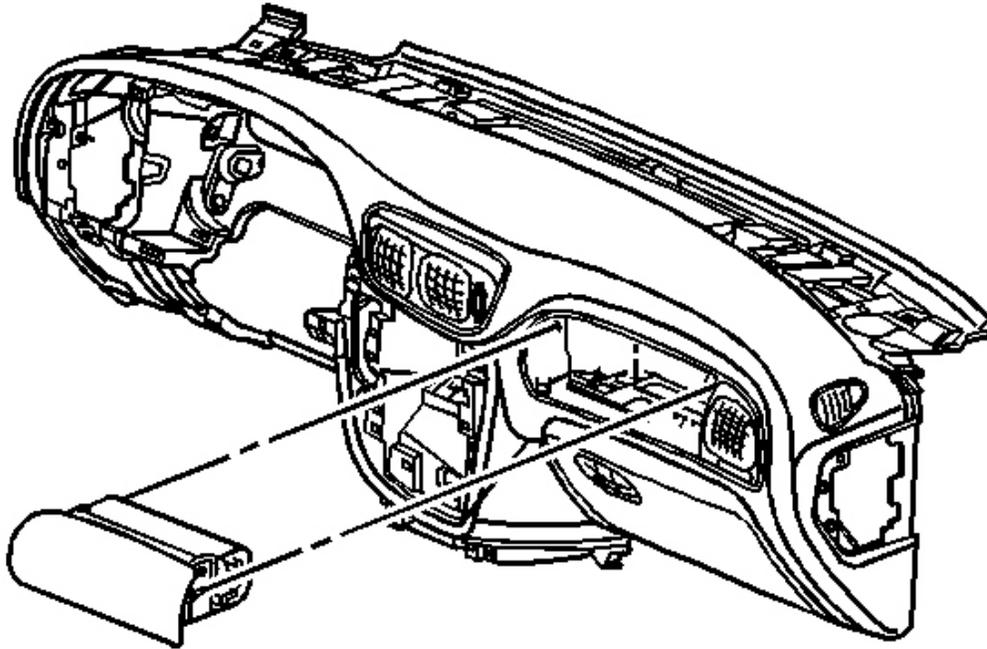


Fig. 81: Removing/Installing PSIR Inflator Module
Courtesy of GENERAL MOTORS CORP.

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

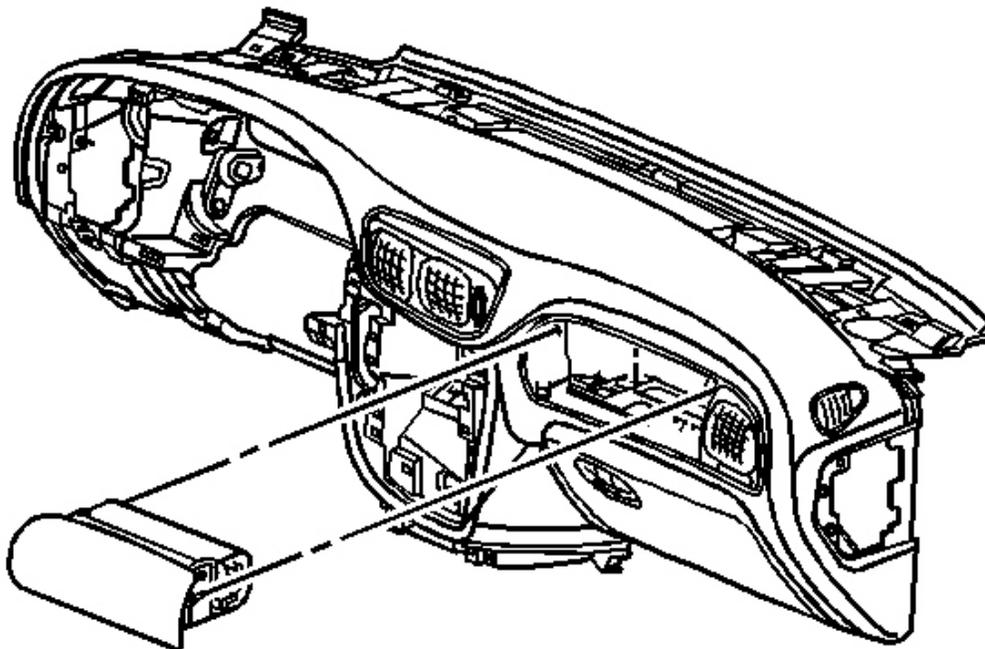


Fig. 82: Removing/Installing PSIR Inflator Module
Courtesy of GENERAL MOTORS CORP.

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

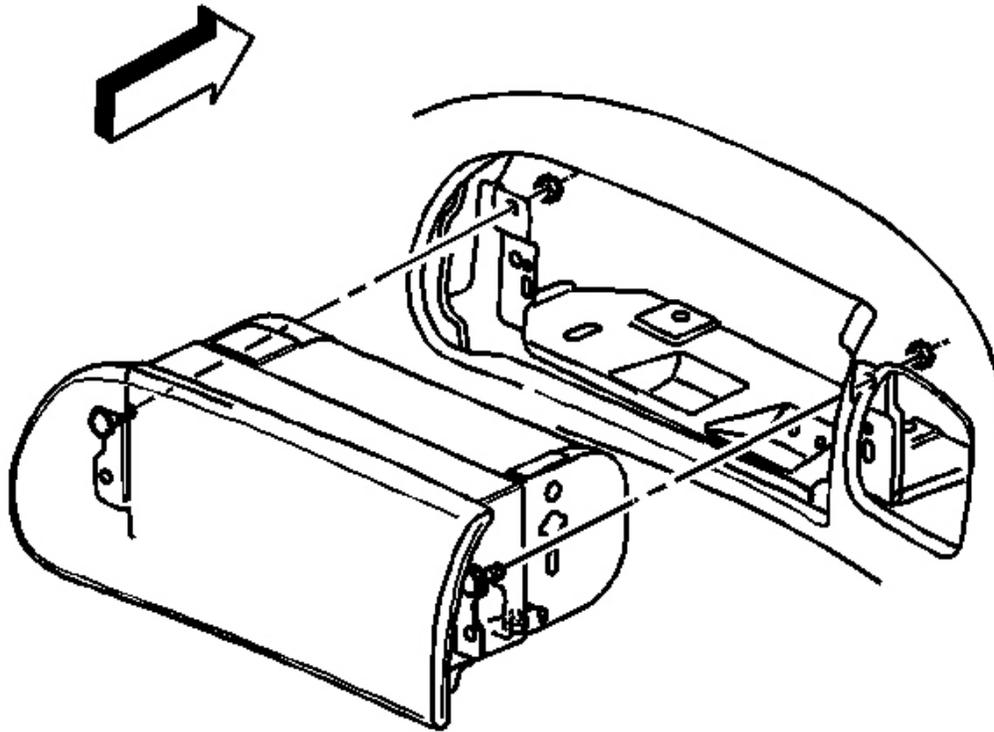


Fig. 83: Removing/Installing Side Retaining Nuts At PSIR Inflator Module
Courtesy of GENERAL MOTORS CORP.

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.

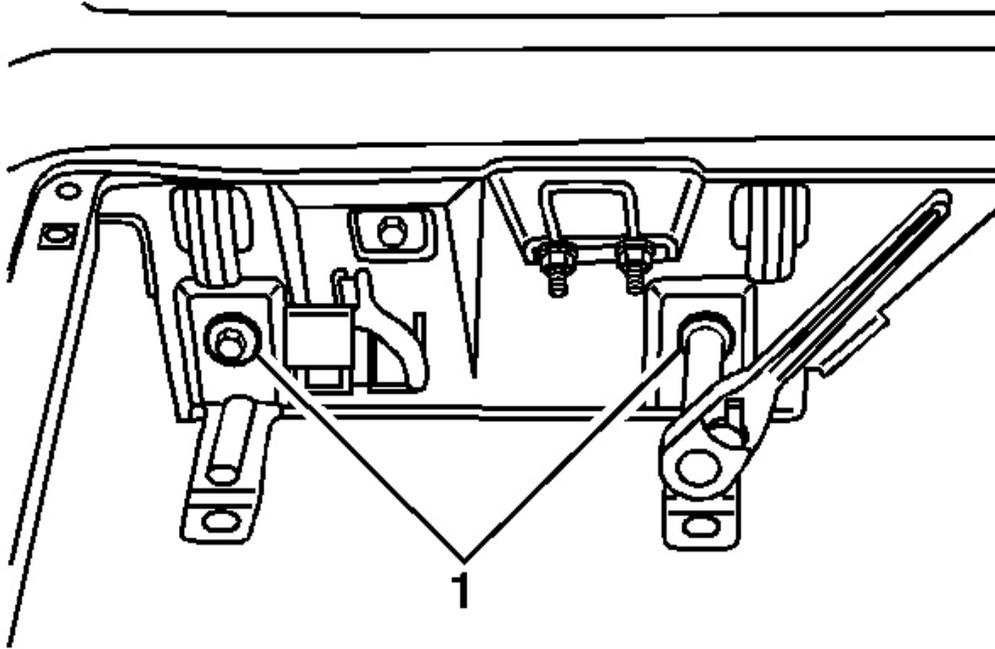


Fig. 84: Removing/Installing 2 Lower Passenger Supplemental Inflatable Restraint (PSIR) Inflator Module Retaining Bolts
Courtesy of GENERAL MOTORS CORP.

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

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

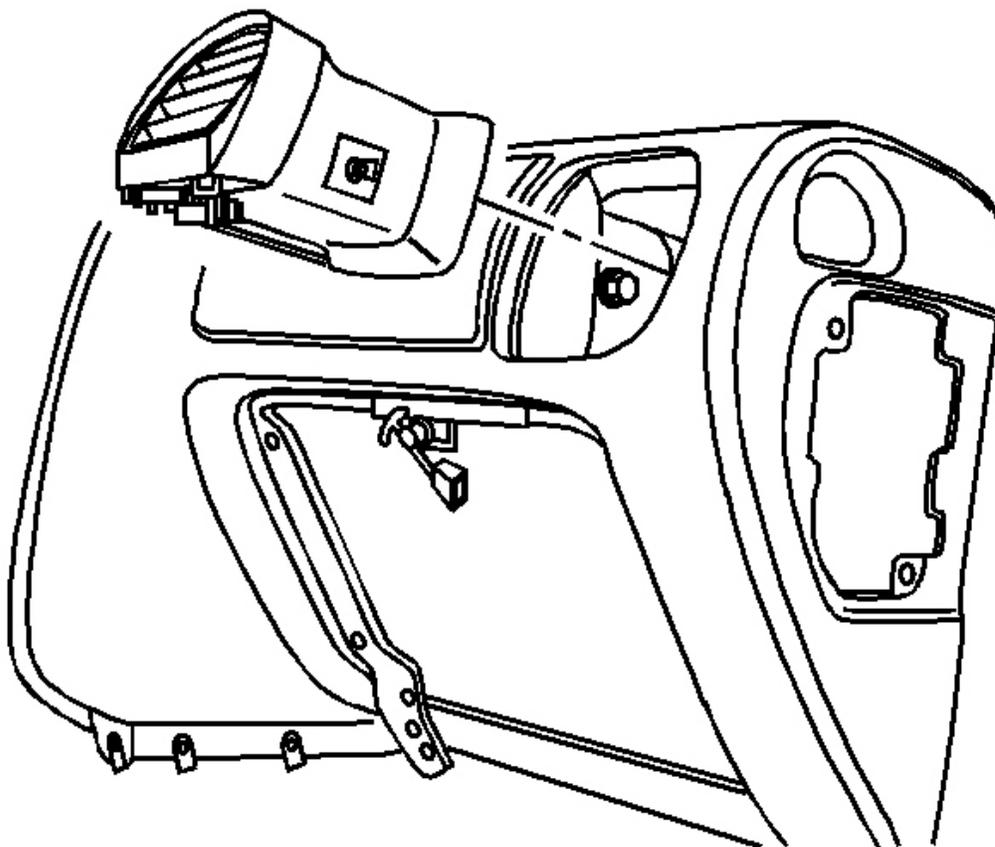


Fig. 85: Removing/Installing Air Duct Extension
Courtesy of GENERAL MOTORS CORP.

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

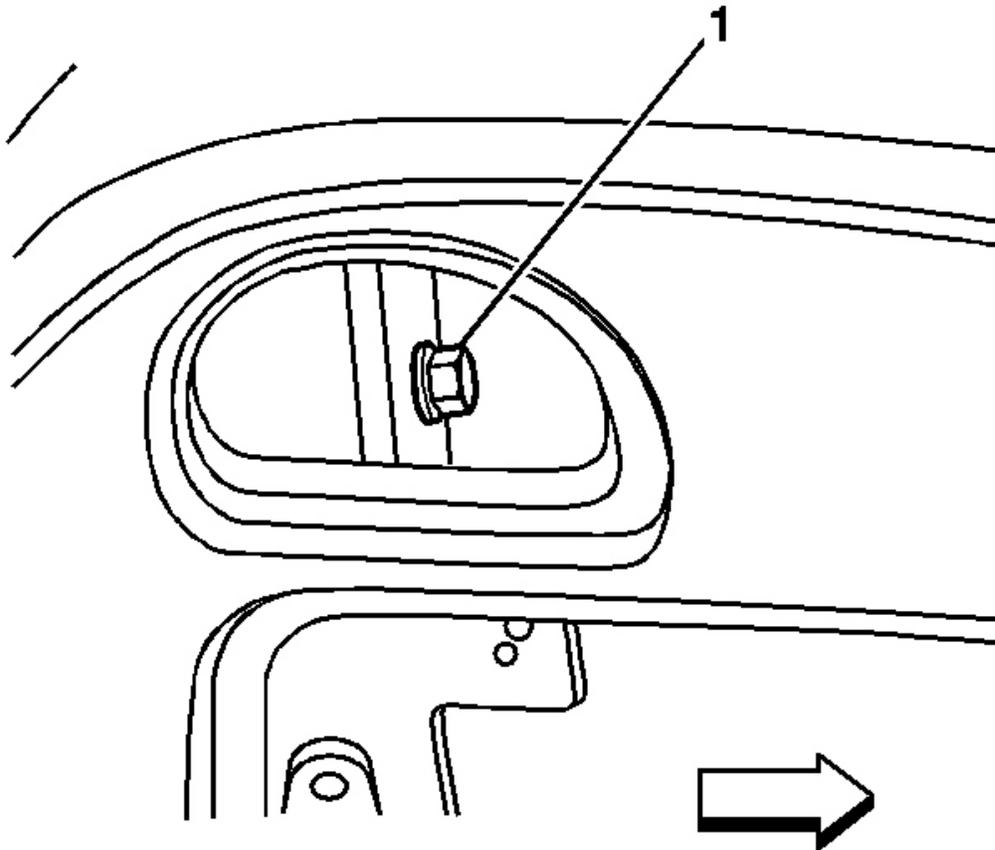


Fig. 86: Removing/Installing Passenger Air Duct Extension Screw
Courtesy of GENERAL MOTORS CORP.

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

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

6. Close the I/P compartment door.

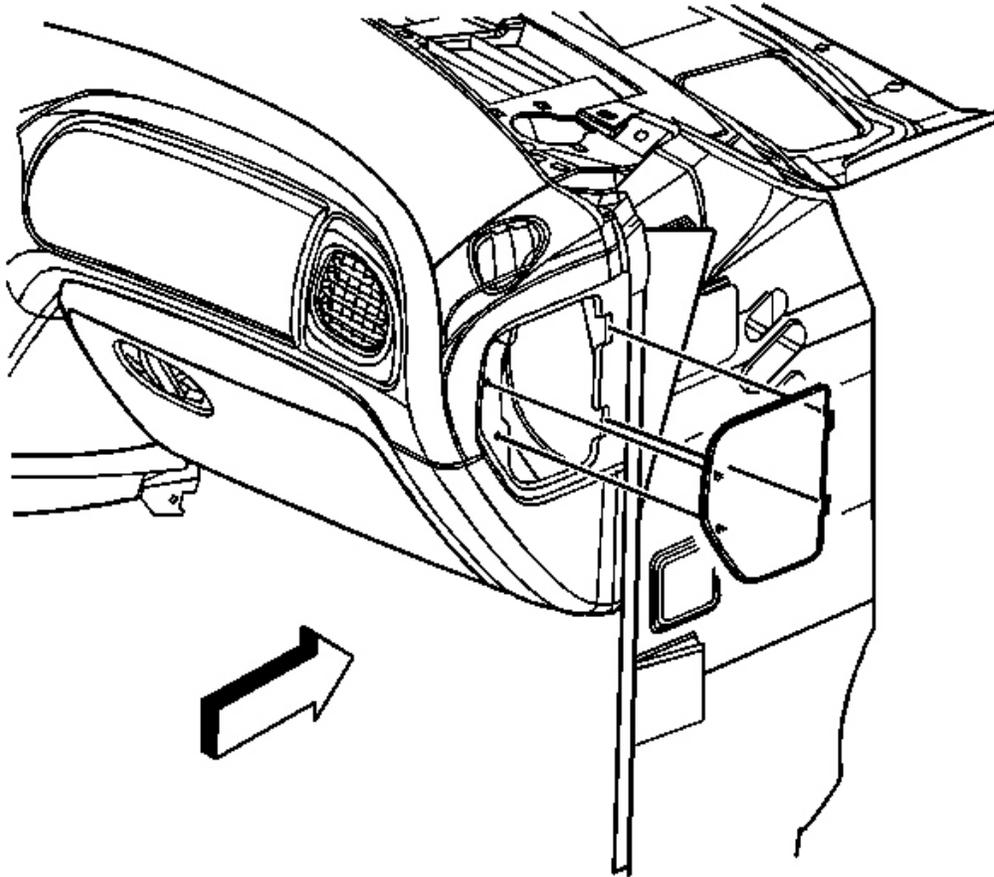


Fig. 87: Identifying Right I/P Access Cover
Courtesy of GENERAL MOTORS CORP.

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

INFLATABLE RESTRAINT SIDE IMPACT MODULE REPLACEMENT - FRONT

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.

CAUTION: Following the deployment of a side impact air bag, inspect the following parts for damage. Replace these parts if necessary:

- The seat cushion frame
- The seat recliner, if equipped
- The seat adjuster
- The seat back frame

Failure to do so may cause future personal injury.

1. Disable the SIR system. Refer to **SIR Disabling and Enabling Zone 2** and **SIR Disabling and Enabling Zone 6**.
2. Remove the seat assembly from the vehicle. Refer to **Seat Replacement - Front Bucket** in Seats.
3. Remove the seat trim panel. Refer to **Seat Cushion Outer Trim Panel Replacement** in Seats.
4. Remove the seat back cover and pad. Refer to **Seat Back Cover and Pad Replacement - Front** in Seats.
5. Remove the front seat back panel. Refer to **Seat Back Panel Replacement - Front** in Seats.

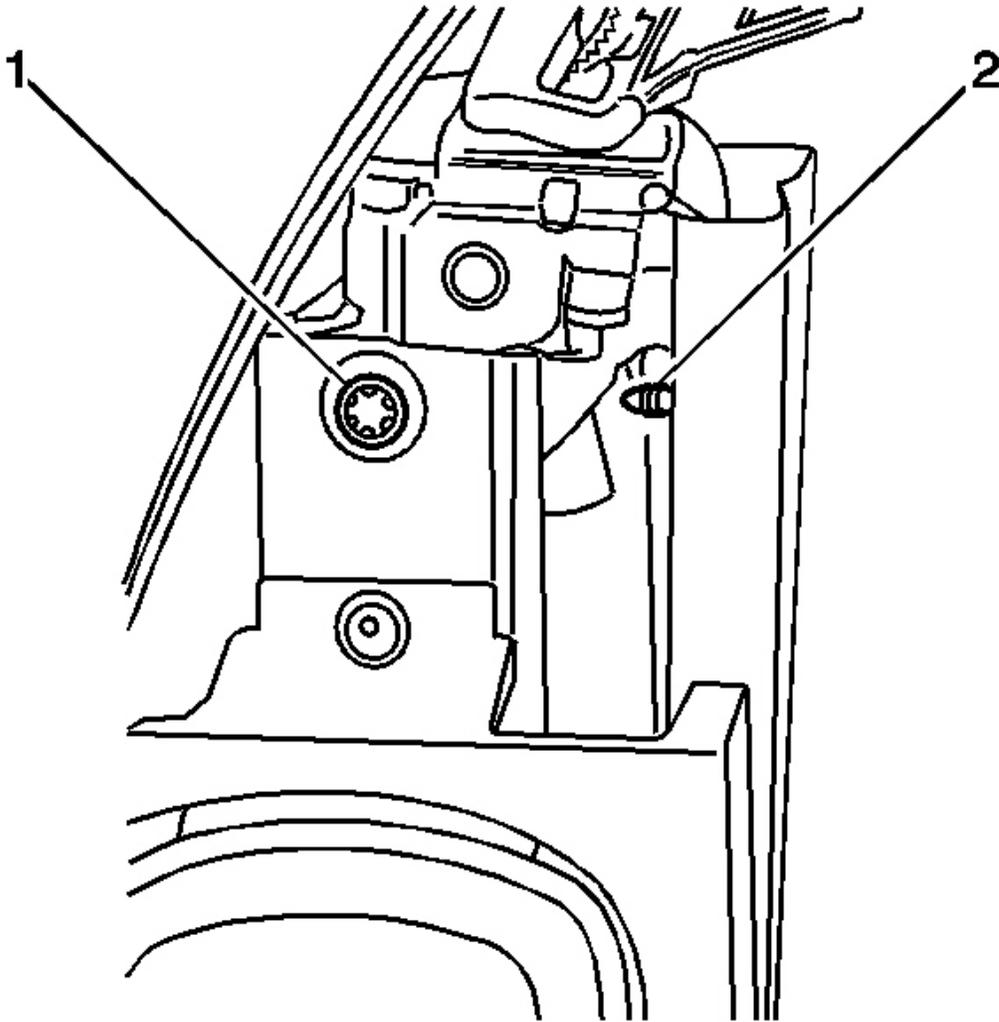


Fig. 88: Removing/Installing Seat Belt Retractor Push Pins
Courtesy of GENERAL MOTORS CORP.

6. Remove the push pin (2) securing the top of the seat belt retractor assembly to the seat back frame.

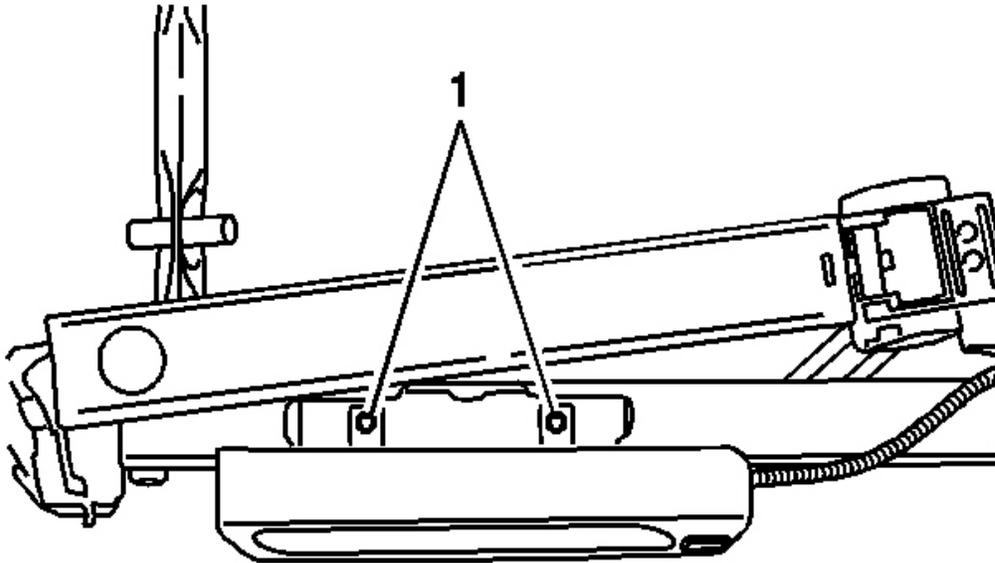


Fig. 89: Removing/Installing Screws Securing Inflatable Side Impact Module At Seat Back Frame
Courtesy of GENERAL MOTORS CORP.

7. Remove the 2 screws (1) that secure the inflatable side impact module to the seat back frame.
8. Disconnect the SIR wiring harness from the module.
9. Remove the side impact module.
10. 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

1. Connect the SIR wiring harness to the module.

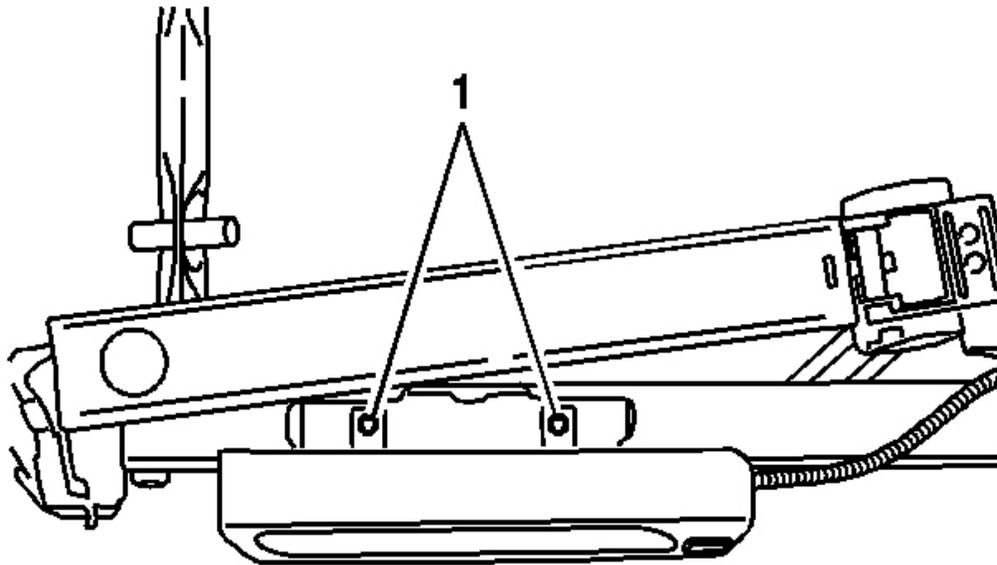


Fig. 90: Removing/Installing Screws Securing Inflatable Side Impact Module At Seat Back Frame
Courtesy of GENERAL MOTORS CORP.

NOTE: Refer to Fastener Notice in Cautions and Notices.

2. Install the inflatable side impact module to the seat back frame with the 2 screws (1).

Tighten: Tighten the screws to 9 N.m (80 in. lb.).

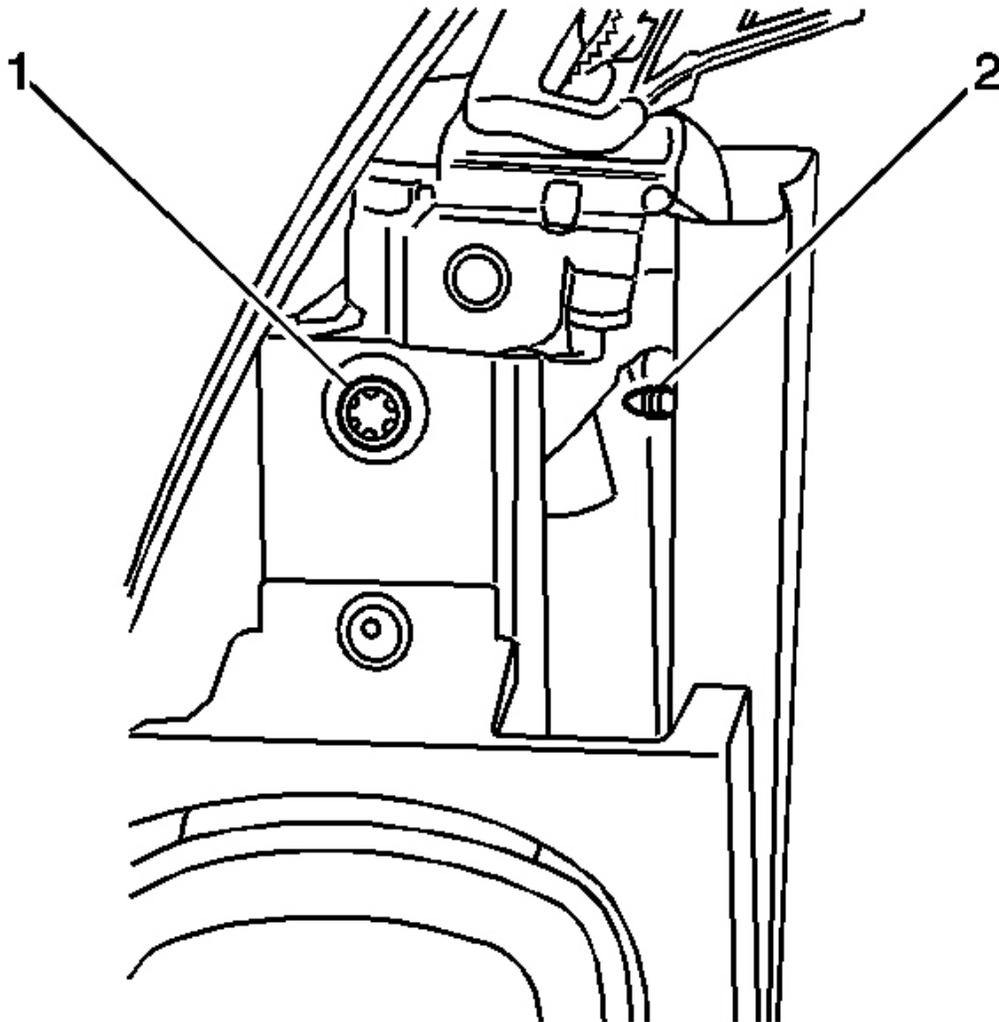


Fig. 91: Removing/Installing Seat Belt Retractor Push Pins
Courtesy of GENERAL MOTORS CORP.

3. Install the top of the seat belt retractor assembly to the seat back frame with the plastic push pin (2).
4. Install the front seat back panel. Refer to **Seat Back Panel Replacement - Front** in Seats.
5. Install the seat back cover and pad. Refer to **Seat Back Cover and Pad Replacement - Front** in Seats.
6. Install the seat trim panel. Refer to **Seat Cushion Outer Trim Panel Replacement** in Seats.
7. Install the seat assembly to the vehicle. Refer to **Seat Replacement - Front Bucket** in Seats.
8. Enable the SIR system. Refer to **SIR Disabling and Enabling Zone 2** and **SIR Disabling and Enabling Zone 6**.

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.
- The IP knee bolsters and mounting points - Inspect the knee bolsters for bending, twisting, buckling or any other type of damage.
- The IP 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 IP cross car beam - Inspect for bending, twisting, buckling or any other type of damage.
- The IP mounting points and brackets - 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.

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.

- Inflatable restraint IP module
- Inflatable restraint steering wheel module
- Inflatable restraint steering wheel module coil
- Inflatable restraint sensing and diagnostic module (SDM)
- Inflatable restraint electronic frontal sensor (EFS) (if equipped with dual stage air bags)

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 IP module, steering wheel module, SDM, and EFS sensor (if equipped with dual stage air bags) - Inspect for any damage and repair or replace each component as

needed.

Accident With Side Air Bag Deployment - Component Replacement and Inspections

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

- Inflatable restraint side impact sensors (SIS) (Left/Right), on the side of the impact.
- Inflatable restraint side impact module (LF/RF), on the side of the impact.
- Inflatable restraint sensing and diagnostic module (SDM).

Perform additional inspections on the following components.

- Mounting points or mounting hardware for the SIS, and side impact module (LF/RF) 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 - 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 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

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

Live (Undeployed) Inflator Modules

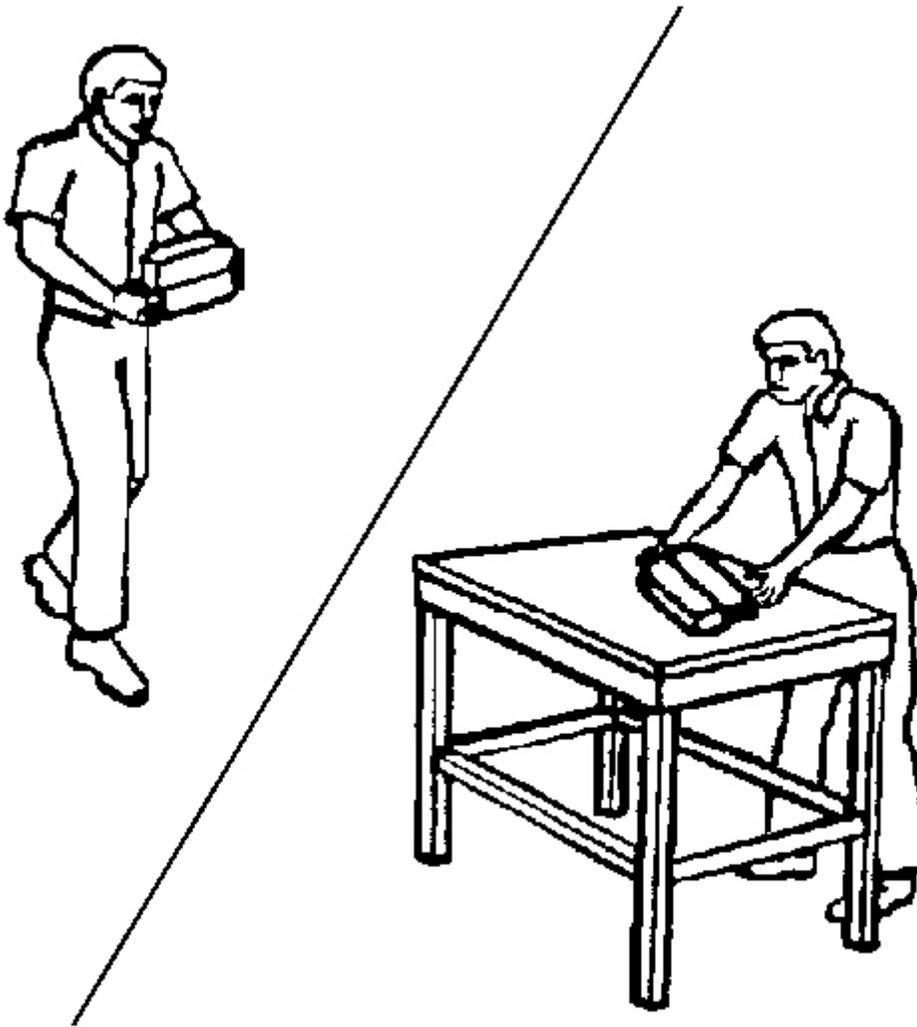


Fig. 92: View Of Proper Handling Of Undeployed Inflator Module
Courtesy of GENERAL MOTORS CORP.

Use special care when handling or storing live, undeployed, inflator modules. 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 Modules

Dual stage inflator modules have two deployment stages. If stage 1 was used to deploy the inflator module,

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stage 2 may still be active. Therefore, a deployed dual stage inflator module must be treated as an active module. If disposal of a deployed or undeployed dual stage module is required both deployment loops must be energized to deploy the air bag.

Scrapping Procedures

During the course of a vehicle's useful life, certain situations may arise which will require the disposal of a live, undeployed, inflator module. Do not dispose of a live, undeployed, inflator module through normal disposal channels until the inflator module has been deployed. The following information covers the proper procedures for disposing of a live, undeployed, inflator module.

Do not deploy an 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 service bulletin related to the SIR system. When a vehicle is the subject of a service bulletin, do not alter the SIR system in any manner.
- If the vehicle is involved in a service bulletin affecting the inflator modules. Follow the instructions in the service bulletin for proper SIR handling procedures.

Deployment Procedures

Inflator modules 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-IP Module, Side Impact Module, and Steering Wheel Module

Deploy inflator modules 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, if equipped, 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: Refer to SIR Inflator Module Disposal Caution in Cautions and Notices.

Tools Required

- **J 38826** SIR Deployment Harness. See Special Tools and Equipment.

- **J 39401-B** SIR Deployment Fixture. See **Special Tools and Equipment**.
- J 38826-75 Steering wheel module adapter
- J 38826-80 IP module adapter

1. Turn OFF the ignition.
2. Remove the ignition key.
3. Put on safety glasses.
4. Remove the inflator module. Refer to the following:
 - When removing the steering wheel module, refer to **Inflatable Restraint Steering Wheel Module Replacement**.
 - When removing the IP module, refer to **Inflatable Restraint Instrument Panel Module Replacement**.
 - When removing the side impact module, refer to **Inflatable Restraint Side Impact Module Replacement - Front**.

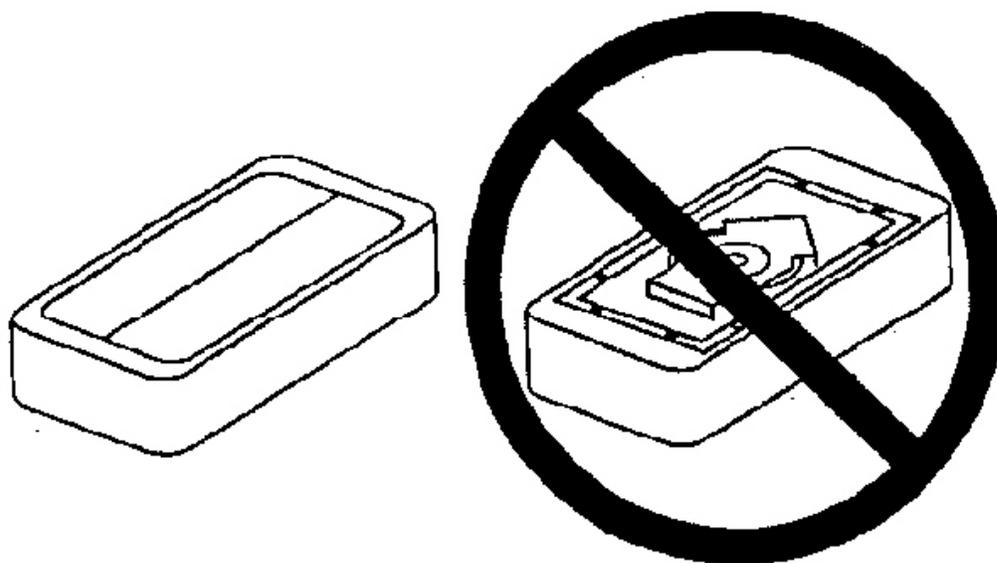


Fig. 93: Illustrating Proper Storage Of Inflator Module
Courtesy of GENERAL MOTORS CORP.

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

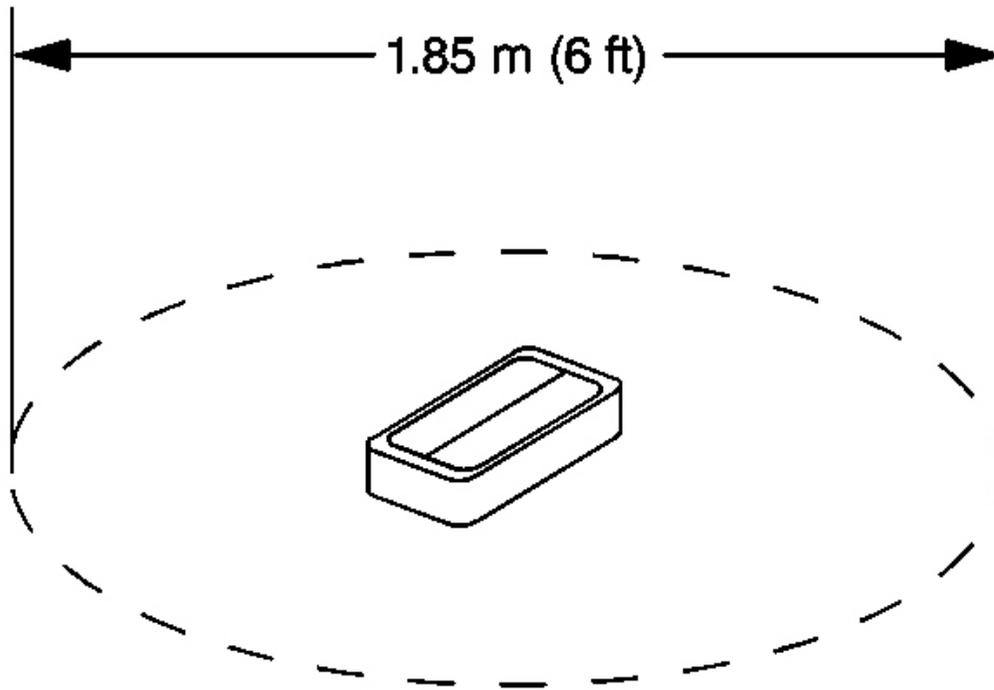


Fig. 94: Clearance For Deployment Of Inflator Module
Courtesy of GENERAL MOTORS CORP.

6. Clear an area on the floor approximately 1.85 m (6 ft) in diameter for deployment of the inflator module. If possible, use a paved, outdoor location free of activity. Otherwise, use an area 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.

IMPORTANT: Dual stage deployments are only used in steering wheel and IP inflator modules. If stage 1 was used to deploy the inflator module, stage 2 may still be active. If disposal of a deployed or undeployed dual stage module is required, both deployment loops must be energized to deploy the air bag.

8. When deploying a steering wheel module, place the steering wheel module in the center of the cleared area.

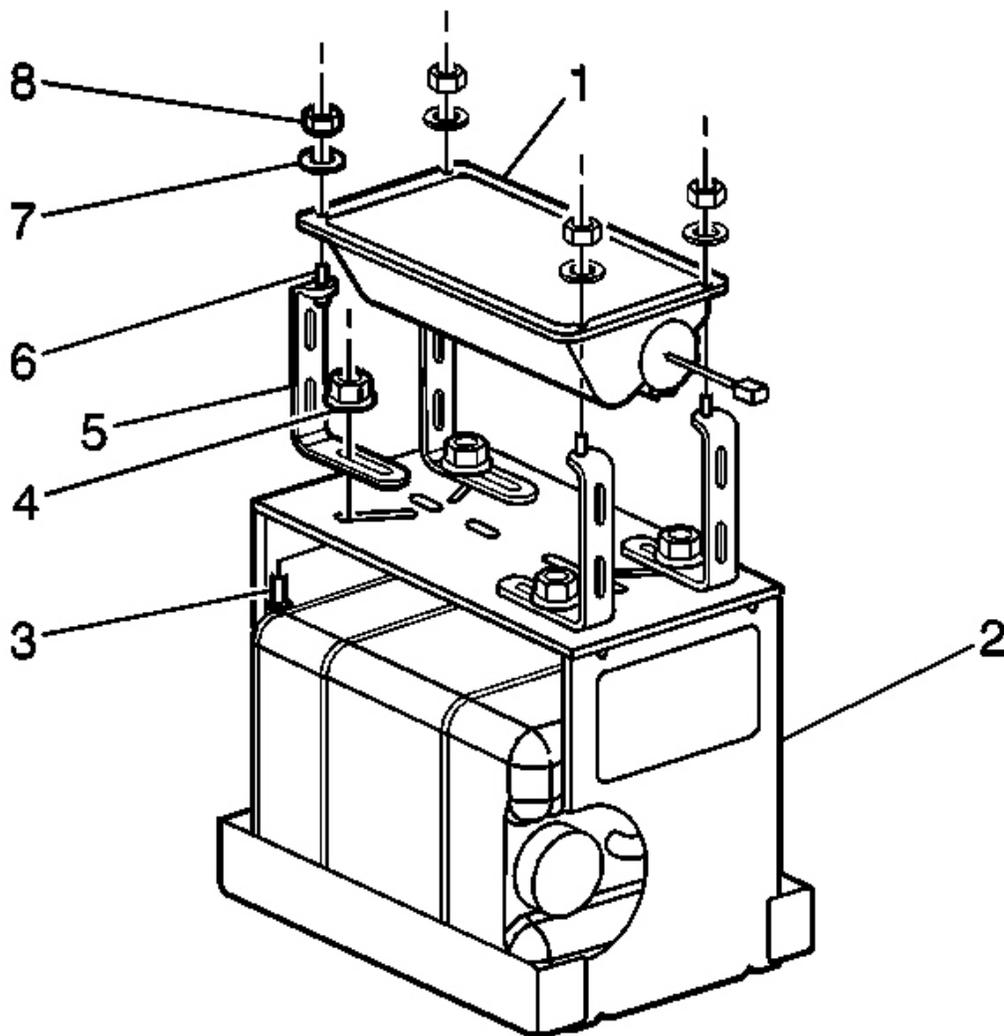


Fig. 95: Identifying I/P Module Components
Courtesy of GENERAL MOTORS CORP.

9. When deploying an IP module, refer to the following instructions:
- Place the **J 39401-B** (2) in the center of the cleared area. See **Special Tools and Equipment**.
 - Fill the deployment fixture (2) with water or sand.
 - Mount the IP module (1) in the deployment fixture (2) with the vinyl/plastic trim facing up.
 - To mount, use 4 M 6 bolts (6), nuts (8), and washers (7) to properly secure the IP module (1) to the deployment fixture (2).
 - Tighten all fasteners prior to deployment.

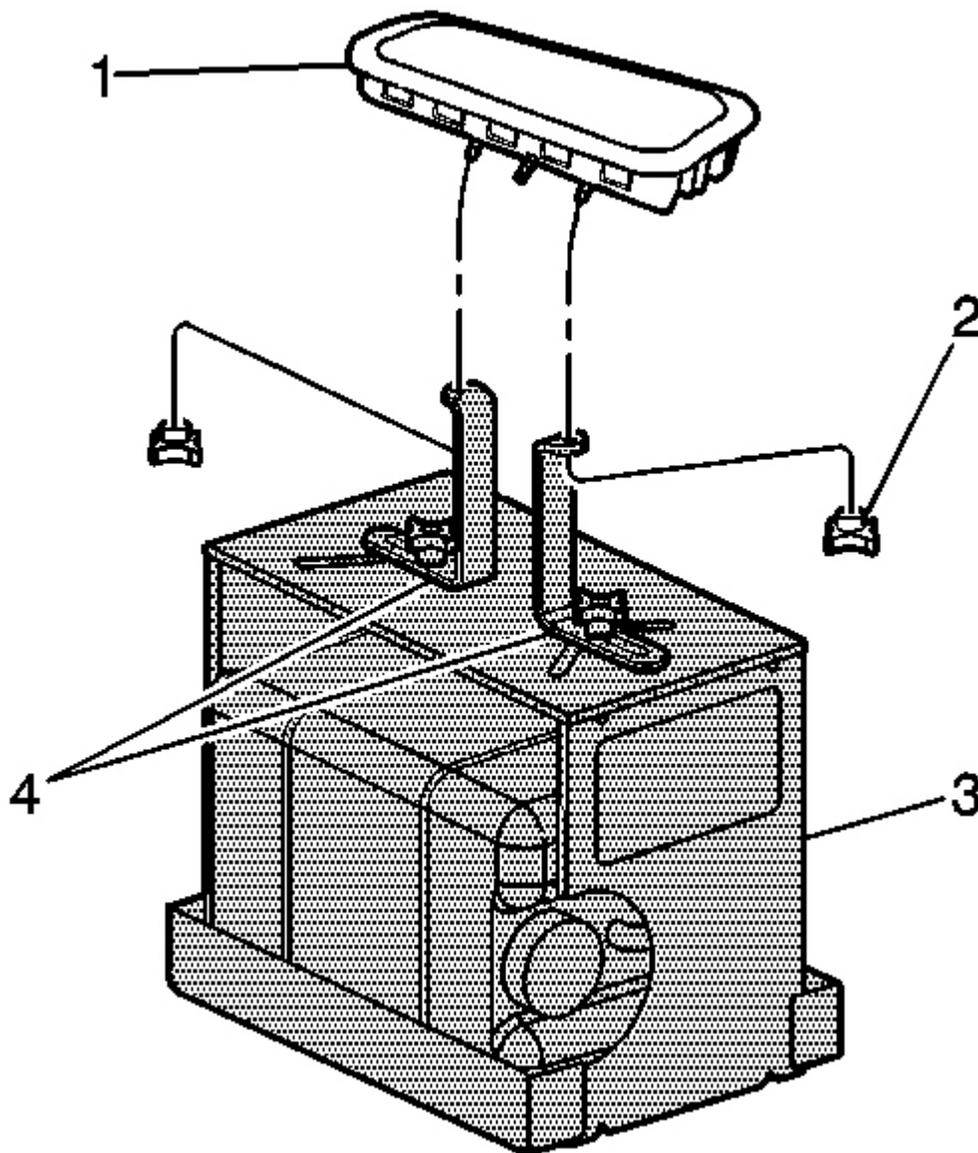


Fig. 96: View Of Side Impact Module & Components
Courtesy of GENERAL MOTORS CORP.

10. When deploying a side impact module, refer to the following instructions:
 - Place the **J 39401-B** (3) in the center of the cleared area. See **Special Tools and Equipment**.
 - Fill the deployment fixture (3) with water or sand.

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- Mount the side impact module (1) in the deployment fixture (3) with the vinyl/plastic trim facing up.
- Adjust and secure the **J 39401-B** arms (4) to the deployment fixture (3). See **Special Tools and Equipment**.
- To mount, use 2 M 6 x 1.0 nuts (2) with washers to secure the side impact module (1) to the deployment fixture arms (4).
- Tighten all fasteners prior to deployment.

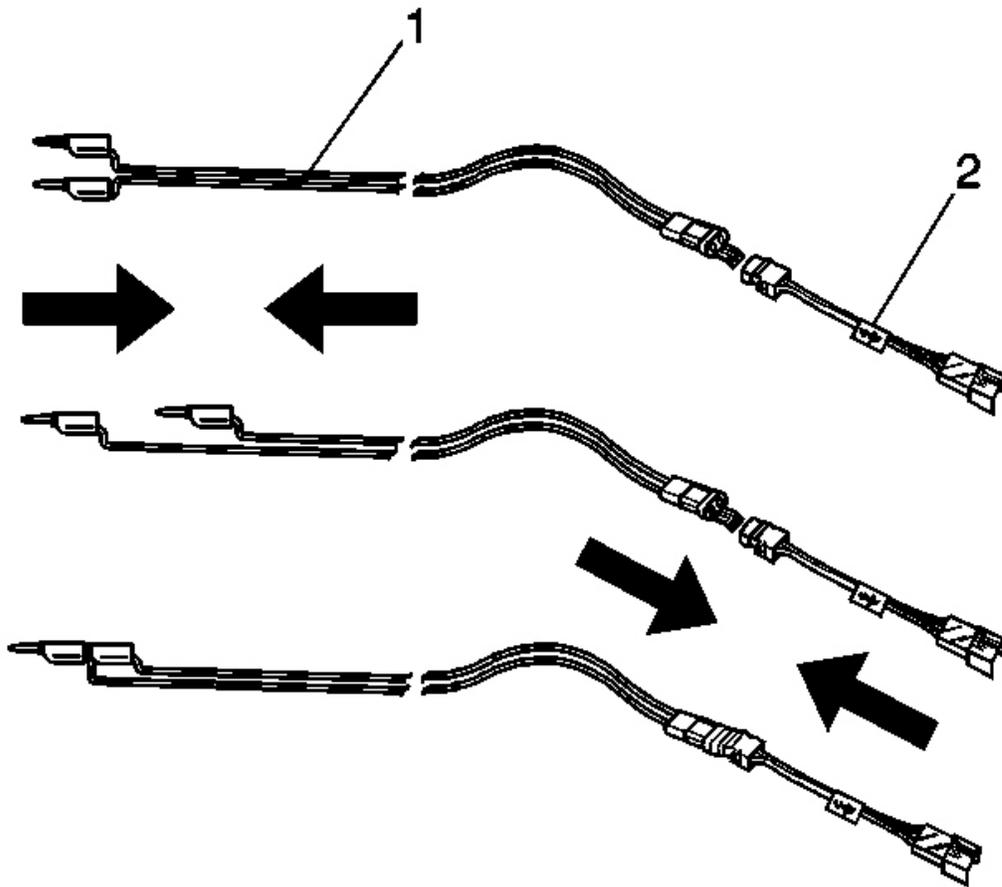


Fig. 97: Identifying SIR Deployment Harness & Adapter
Courtesy of GENERAL MOTORS CORP.

11. Inspect the **J 38826** and the appropriate pigtail adapter for damage. See **Special Tools and Equipment**. Replace as needed.
12. Short the 2 SIR deployment harness (1) leads together using one banana plug seated into the other.

13. Connect the appropriate pigtail adapter (2) to the SIR deployment harness (1).

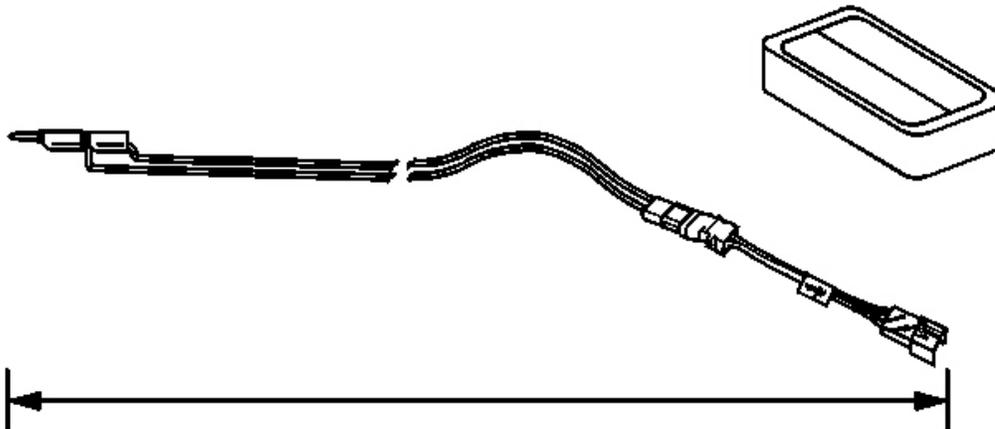


Fig. 98: Extending SIR Deployment Harness & Adapter
Courtesy of GENERAL MOTORS CORP.

14. Extend the SIR deployment harness and adapter to full length from the deployment fixture.

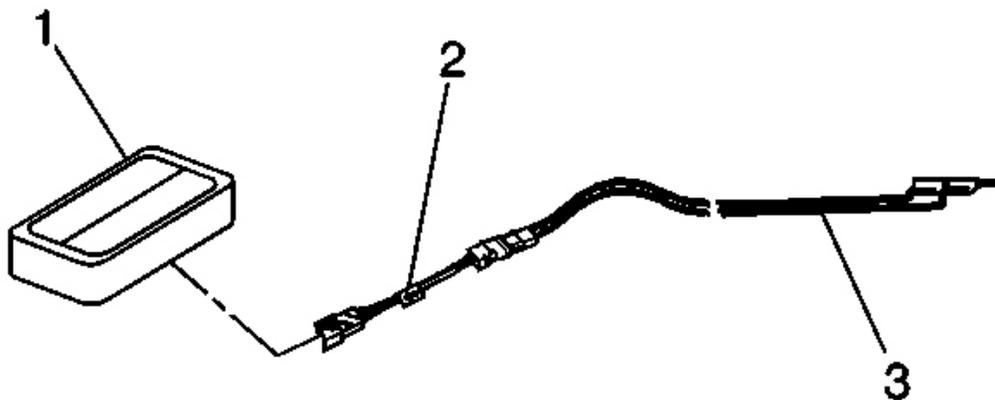


Fig. 99: Inflator Module & SIR Deployment Harness Adapter
Courtesy of GENERAL MOTORS CORP.

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 people in the immediate area that an inflator module will be deployed.
- When the inflator module deploys, the deployment fixture may jump vertically. This is a normal reaction of the inflator module due to the force of the rapid expansion of gas inside the inflator module.

16. Clear the area of people.

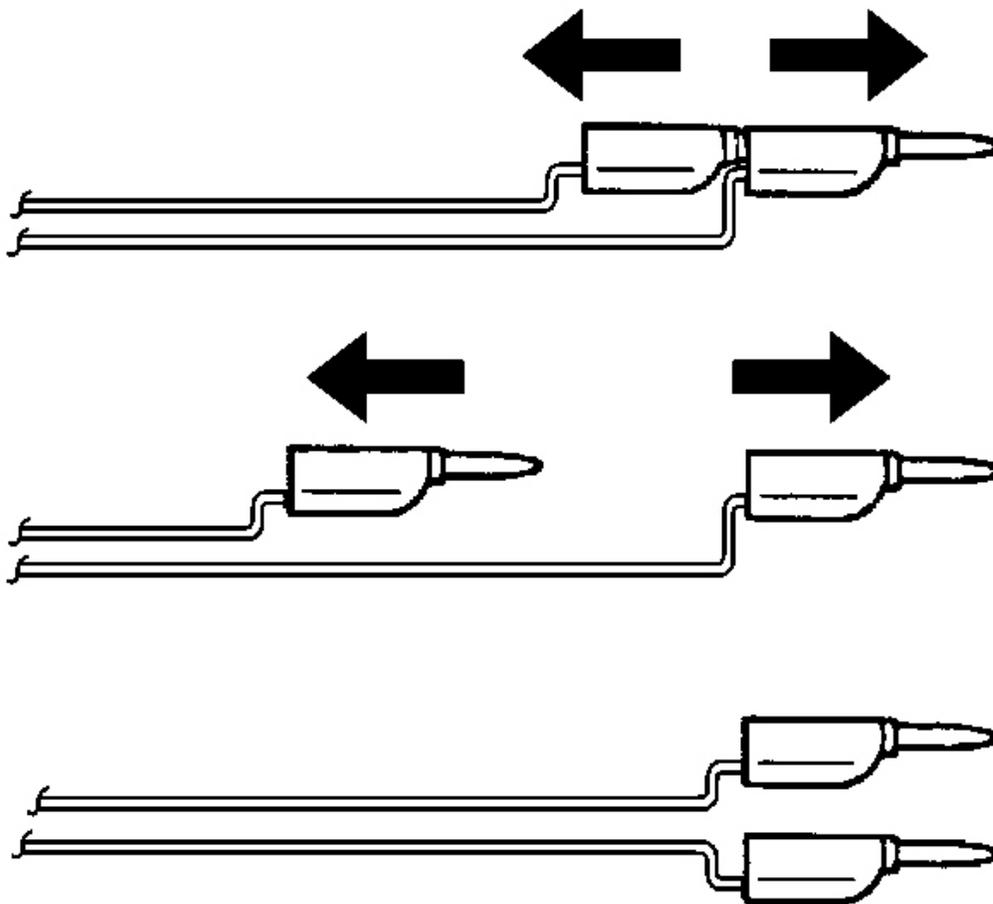


Fig. 100: Separating Banana Plugs
Courtesy of GENERAL MOTORS CORP.

17. Separate the two banana plugs on the SIR deployment harness.

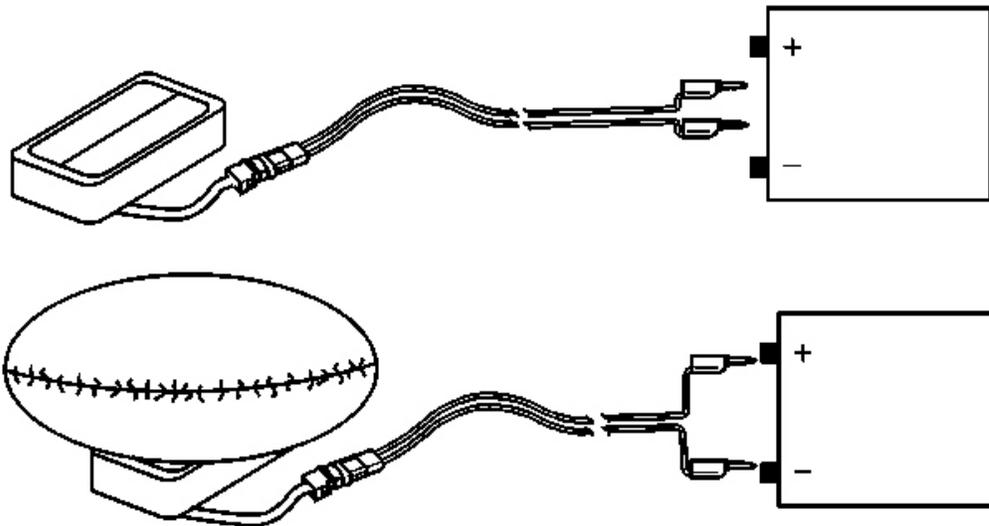


Fig. 101: Connecting SIR Deployment Harness Wires To Power Source
Courtesy of GENERAL MOTORS CORP.

18. Place a 12 V minimum/2 A minimum power source, i.e. vehicle battery, near the shorted end of the SIR deployment harness.
19. Connect the SIR deployment harness wires to the power source. Inflator module deployment will occur when contact is made.
20. Disconnect the SIR deployment harness from the power source.

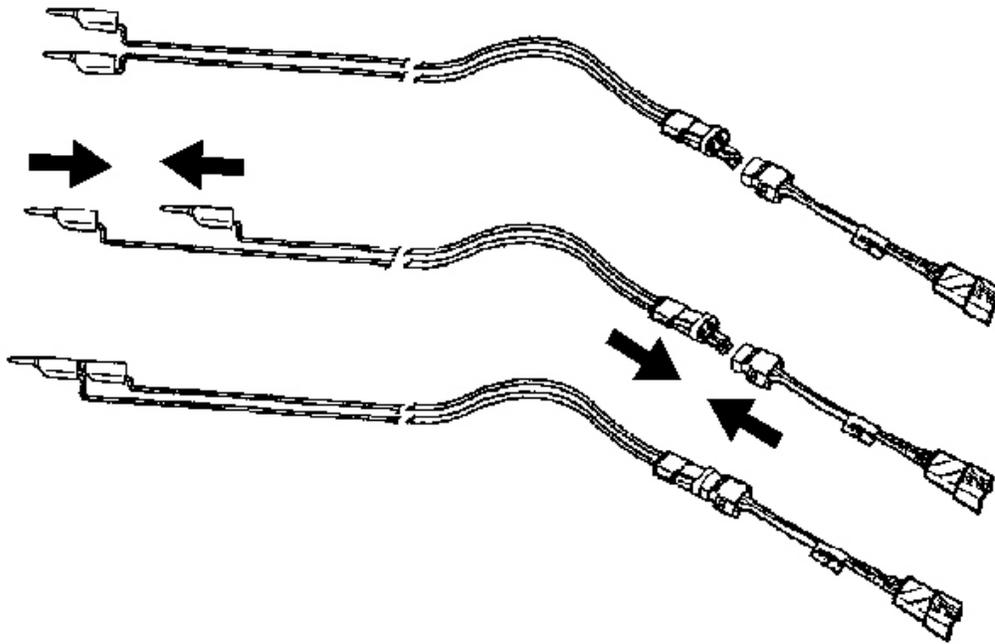


Fig. 102: View Of Deployment Harness Leads
Courtesy of GENERAL MOTORS CORP.

CAUTION: Refer to SIR Deployed Inflator Modules Are Hot Caution in Cautions and Notices.

21. Seat one banana plug into the other in order to short the deployment harness leads.
22. If the inflator module did not deploy, disconnect the adapter and discontinue the procedure. Contact the Technical Assistance Group for further assistance. Otherwise, proceed to the following steps.

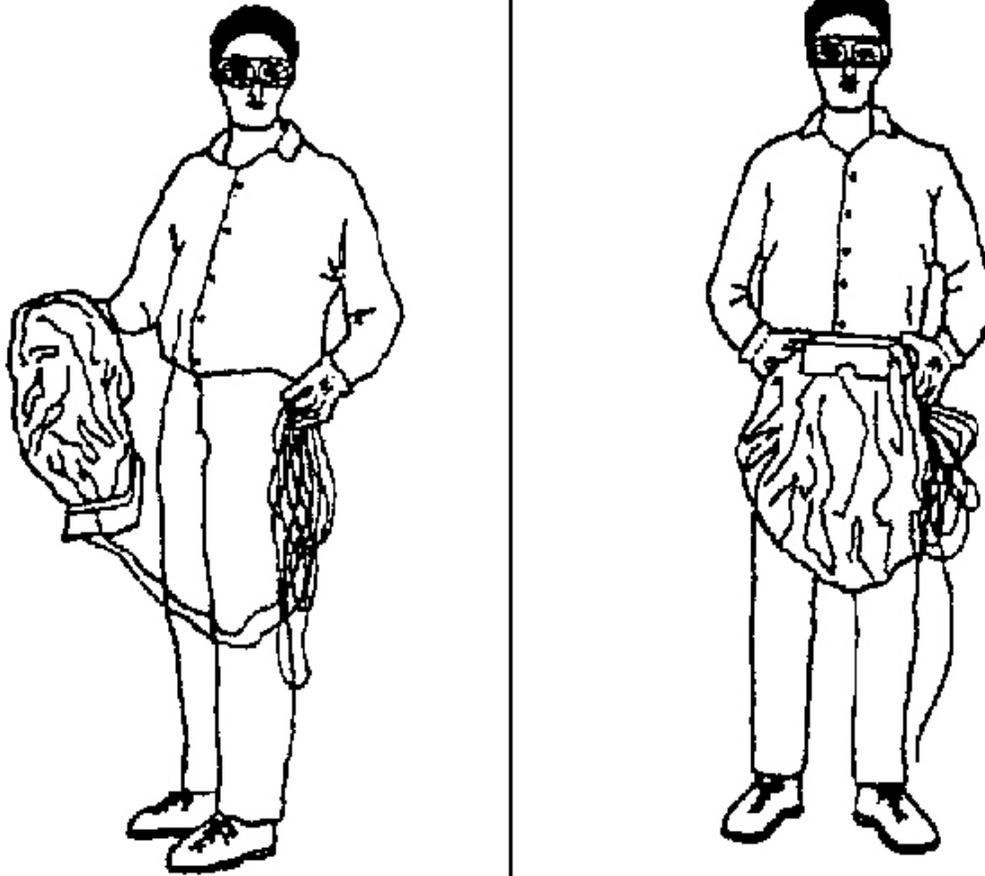


Fig. 103: Disposing Of Deployed Inflator Module
Courtesy of GENERAL MOTORS CORP.

23. Put on a pair of shop gloves.
24. Disconnect the pigtail adapter from the inflator module as soon as possible.
25. Dispose of the deployed inflator module through normal refuse channels.
26. Wash hands with a mild soap.

Deployment Inside Vehicle-Vehicle Scrapping Procedures

Deploy 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:

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- 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.

CAUTION: Refer to SIR Inflatable Module Deployment Outside Vehicle Caution in Cautions and Notices.

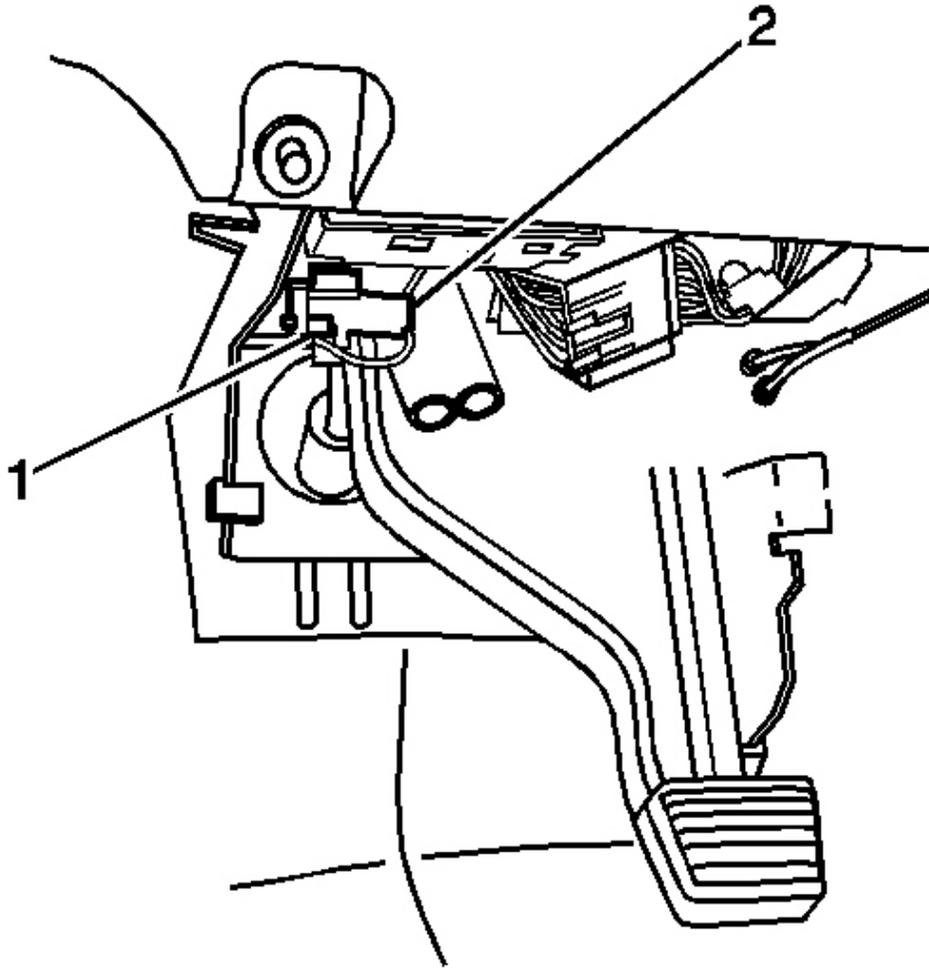


Fig. 104: View Of Connector Position Assurance (CPA) & Steering Wheel Module Yellow 4-Way Connector

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 inflatable restraint steering wheel module connector (2) located next to the steering

column.

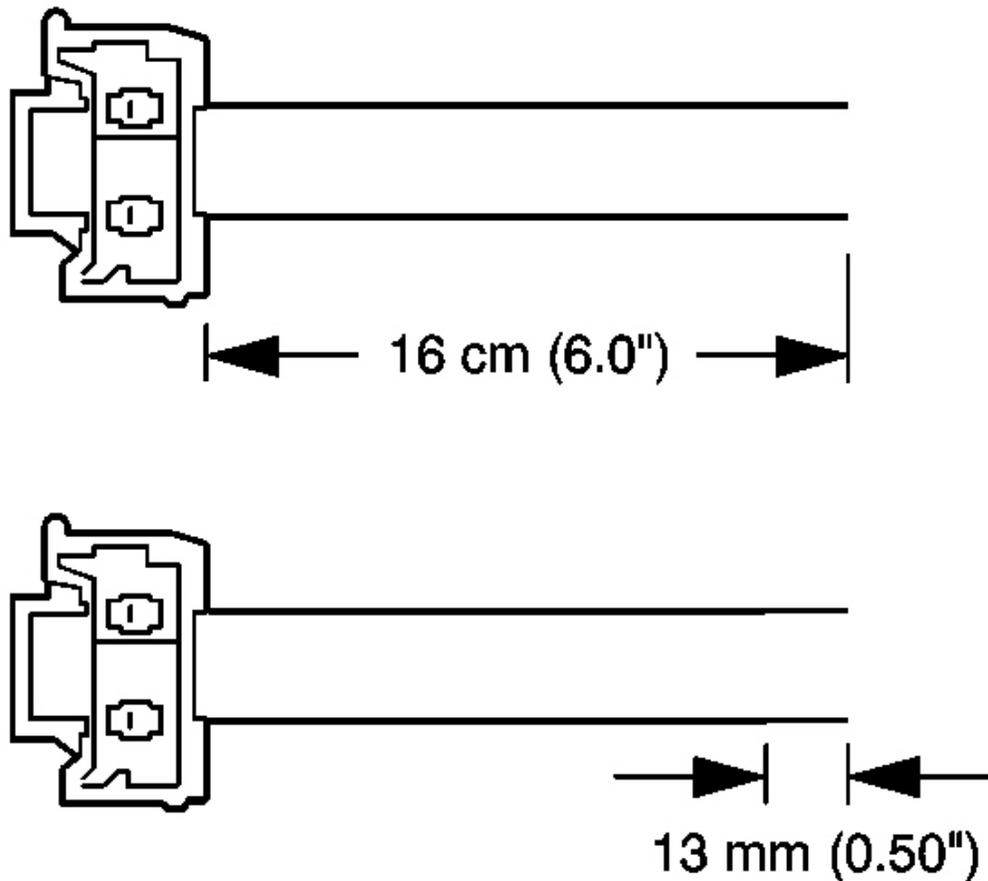


Fig. 105: Cutting The Steering Wheel Module Harness To Size
Courtesy of GENERAL MOTORS CORP.

6. Cut the steering wheel module 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.

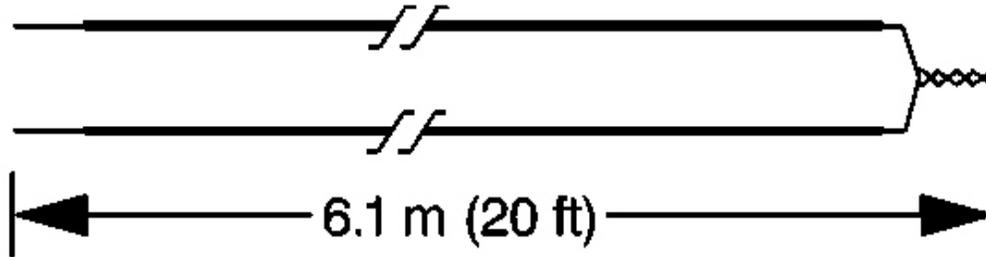


Fig. 106: Fabricating 20 Ft. Deployment Harness
Courtesy of GENERAL MOTORS CORP.

8. Cut two 6.1 m (20 ft) deployment wires from a 0.8 mm (18 gage) or thicker multi-strand wire. Use these wires to fabricate the 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 inflator module.

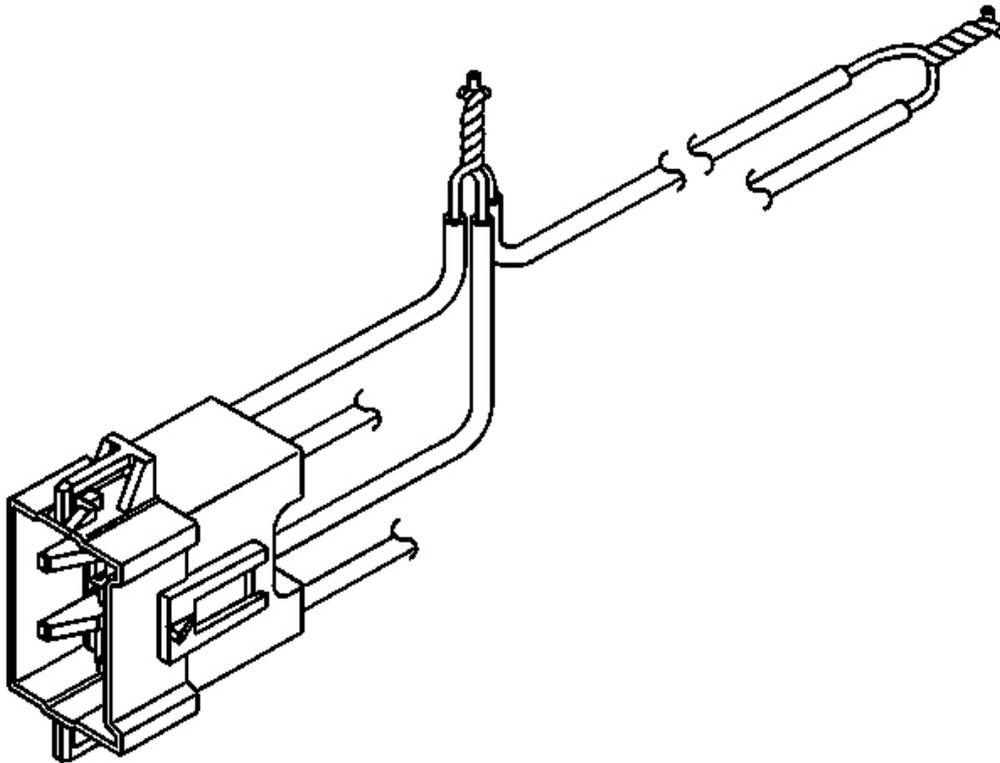


Fig. 107: Twisting Connector Wire Leads (High Circuits) To Deployment Harness Wire
Courtesy of GENERAL MOTORS CORP.

11. Twist together two connector wire leads, 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.
12. Inspect that the connection is secure.

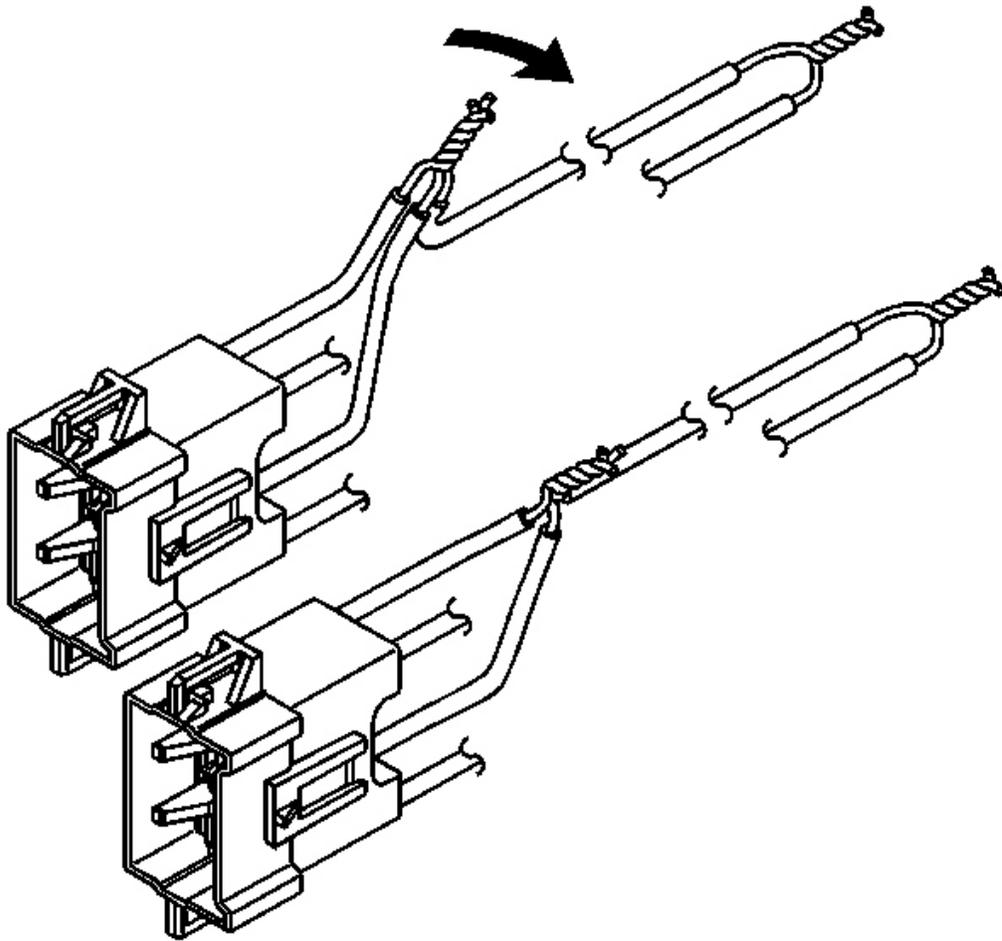


Fig. 108: Bending Twisted Connection Flat
Courtesy of GENERAL MOTORS CORP.

13. Bend flat the twisted connection.

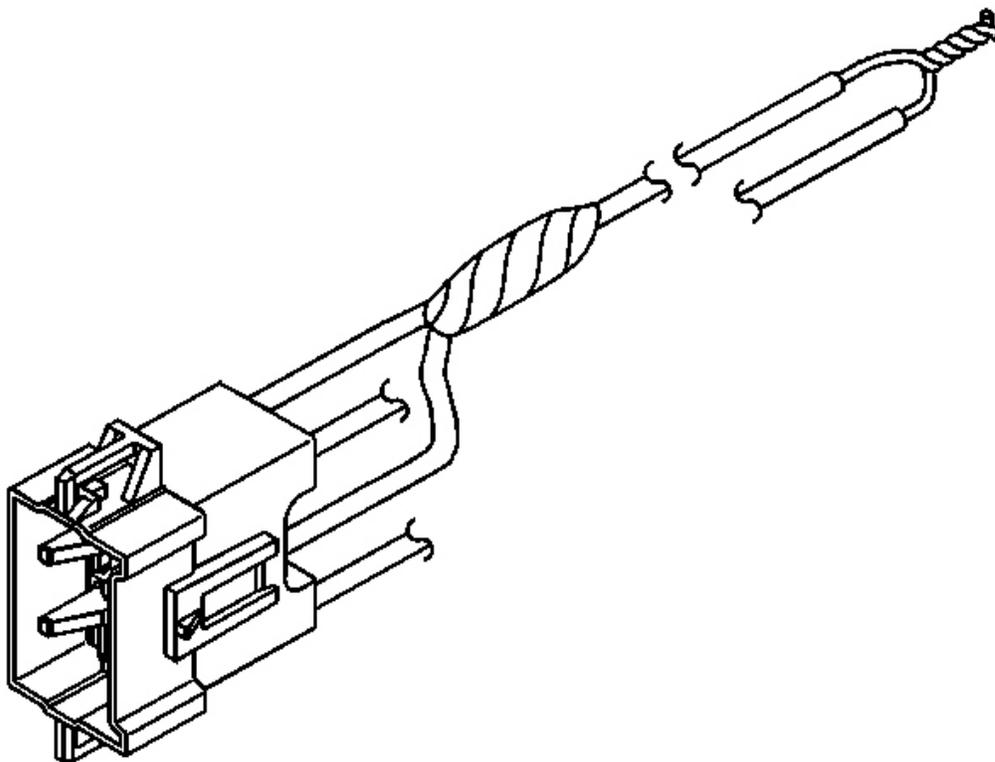


Fig. 109: Insulating Connection With Electrical Tape
Courtesy of GENERAL MOTORS CORP.

14. Secure and insulate the connection using electrical tape.

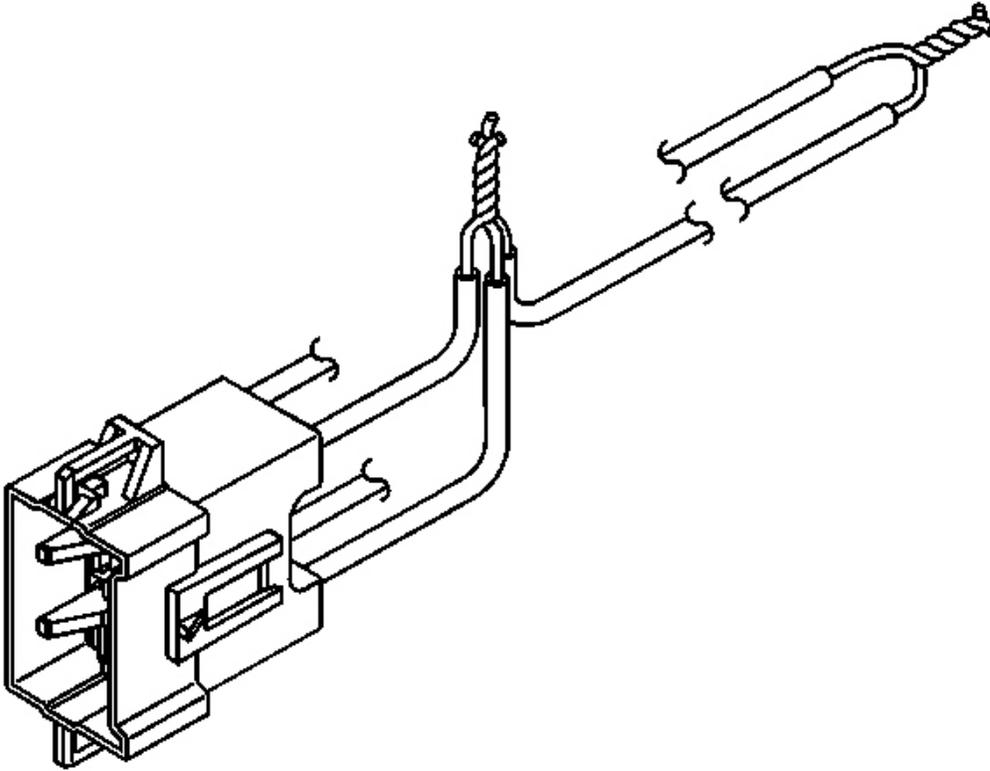


Fig. 110: Twisting Connector Wire Leads (Low Circuits) To Deployment Harness Wire
Courtesy of GENERAL MOTORS CORP.

15. Twist together two connector wire leads, 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.
16. Inspect that the connection is secure.

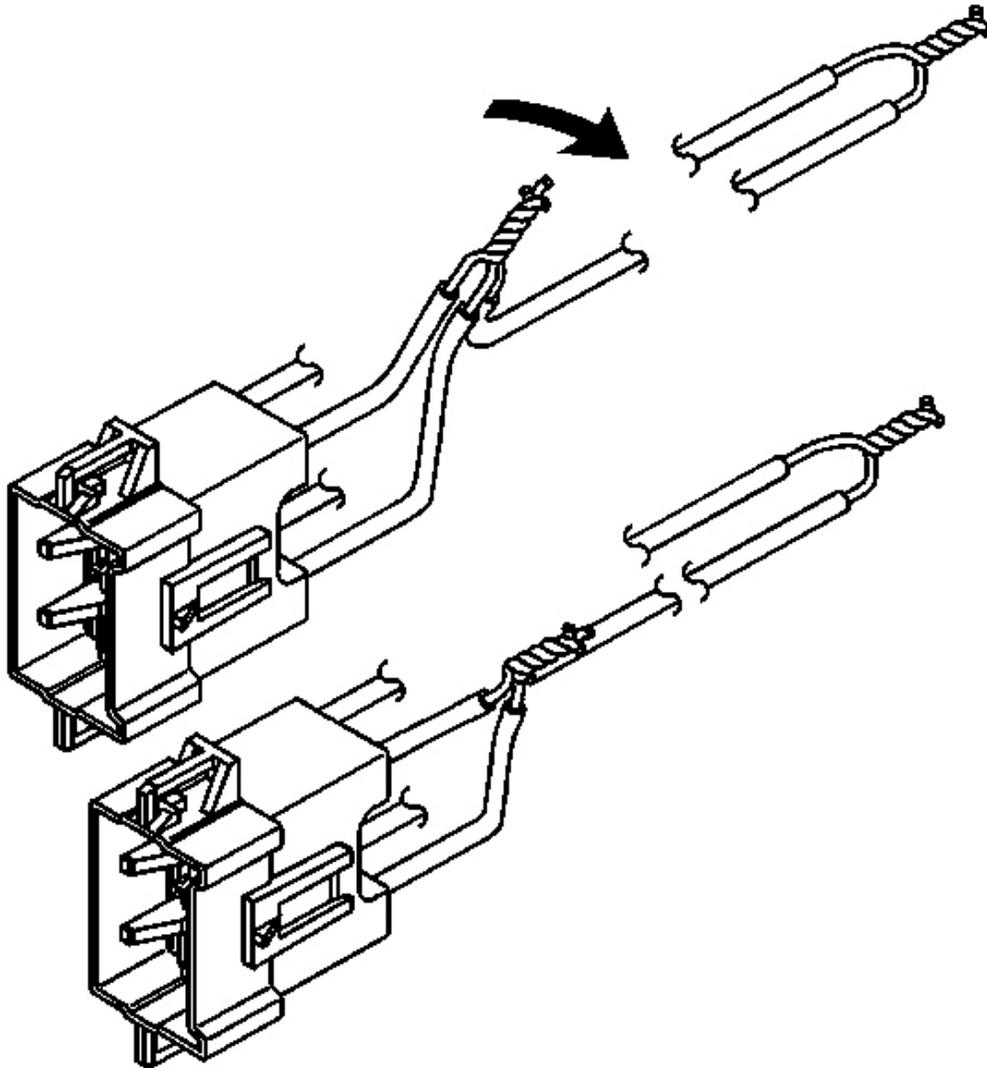


Fig. 111: Bending Twisted Connection Flat
Courtesy of GENERAL MOTORS CORP.

17. Bend flat the twisted connection.

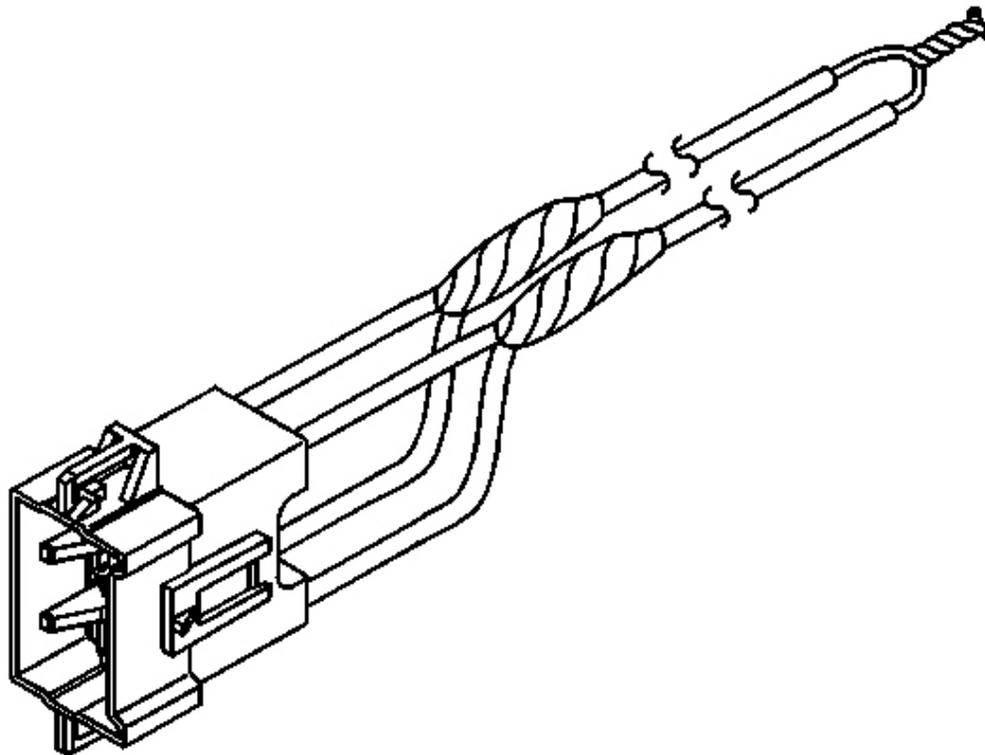


Fig. 112: Insulating Connection With Electrical Tape
Courtesy of GENERAL MOTORS CORP.

18. Secure and insulate the connection using electrical tape.
19. Connect the deployment harness to the steering wheel module connector.

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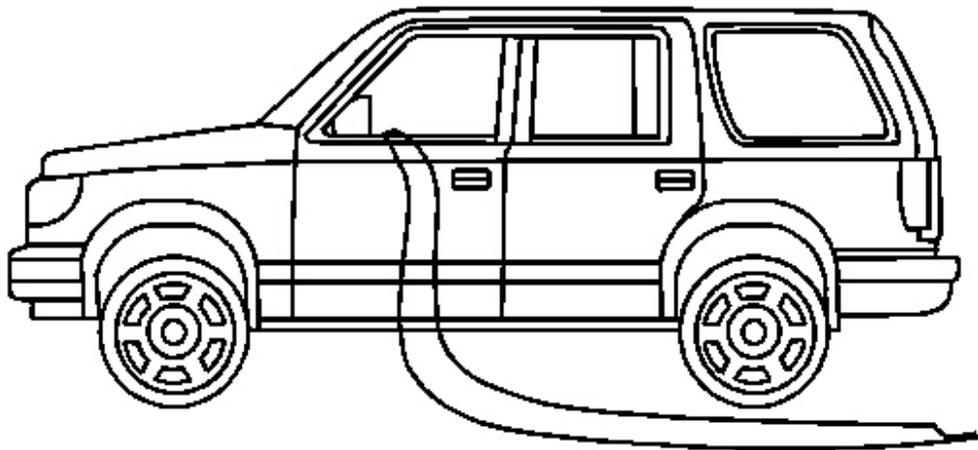


Fig. 113: Routing Wires To Apply Power For Controlled Bag Deployment (Left)
Courtesy of GENERAL MOTORS CORP.

20. Route the deployment harness out of the vehicle's driver side.

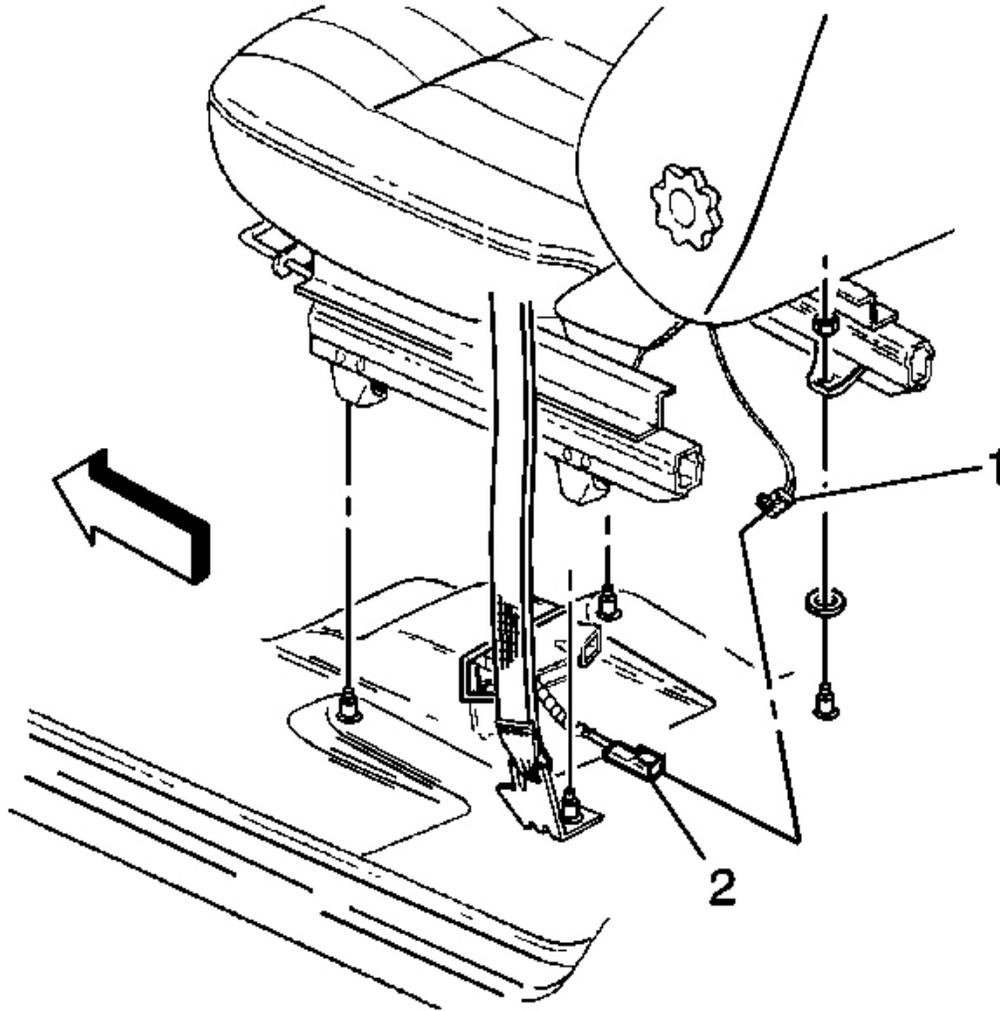


Fig. 114: Disconnecting Side Impact Module Connector
Courtesy of GENERAL MOTORS CORP.

21. Disconnect the LF side impact module connector (1) from the vehicle wiring harness (2) located under the LF seat.

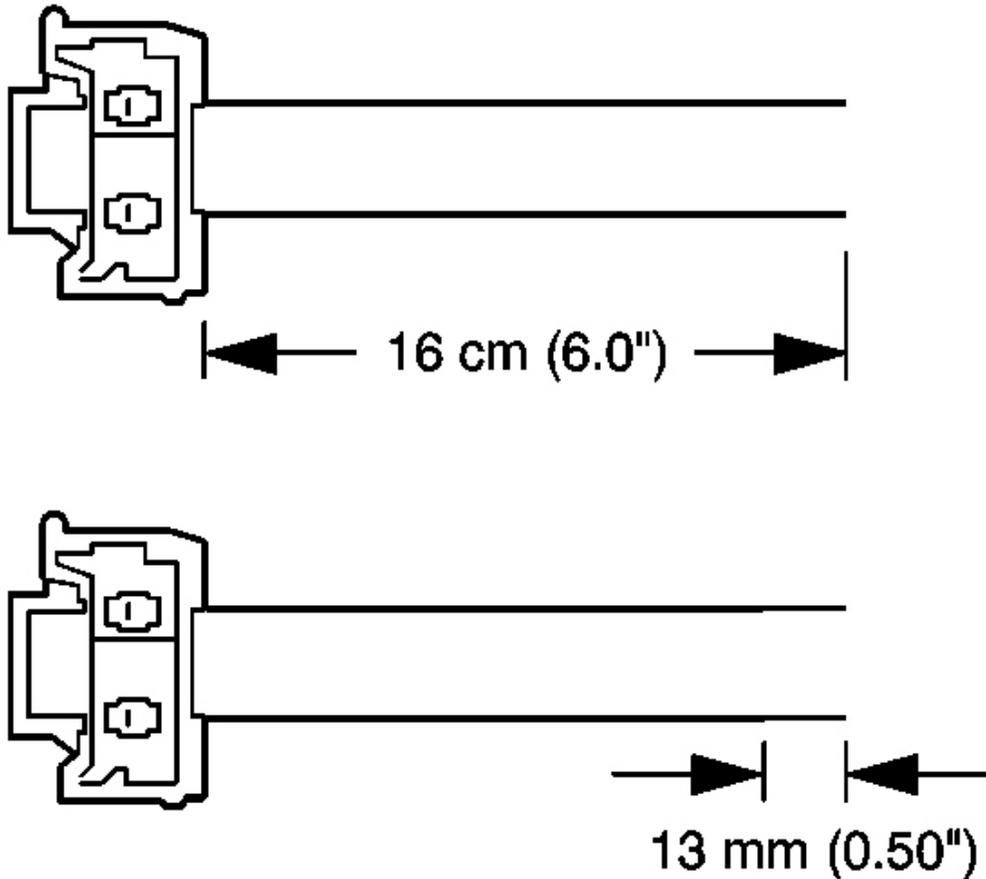


Fig. 115: Cutting The Steering Wheel Module Harness To Size
Courtesy of GENERAL MOTORS CORP.

22. Cut the LF side impact module harness connector out of the vehicle, leaving at least 16 cm (6 in) of wire at the connector.
23. Strip 13 mm (0.5 in) of insulation from each of the LF side impact module connector wire leads.

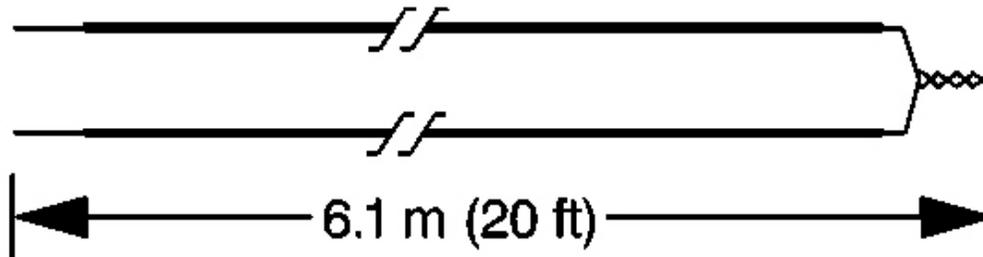


Fig. 116: Fabricating 20 Ft. Deployment Harness
Courtesy of GENERAL MOTORS CORP.

24. Cut 2 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 deployment harness.
25. Strip 13 mm (0.5 in) of insulation from both ends of the wires cut in the previous step.
26. 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 side impact module.

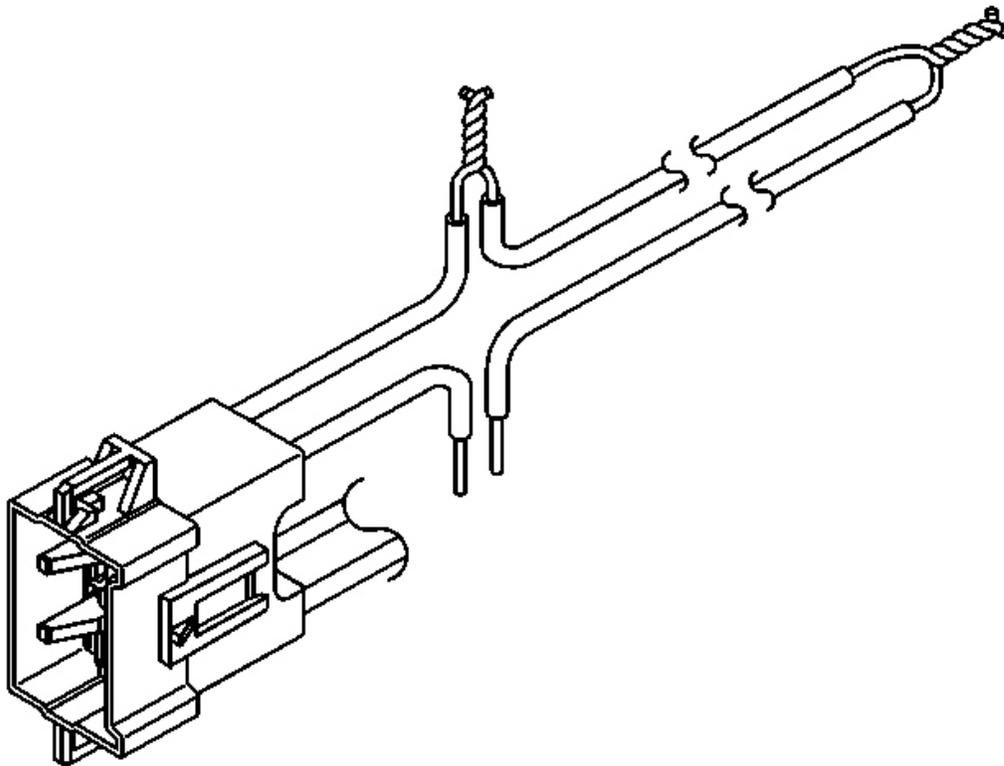


Fig. 117: Twisting Wires Connector Wire To Deployment Wire
Courtesy of GENERAL MOTORS CORP.

27. Twist together one connector wire lead to one deployment wire.
28. Inspect that the previous connection is secure.

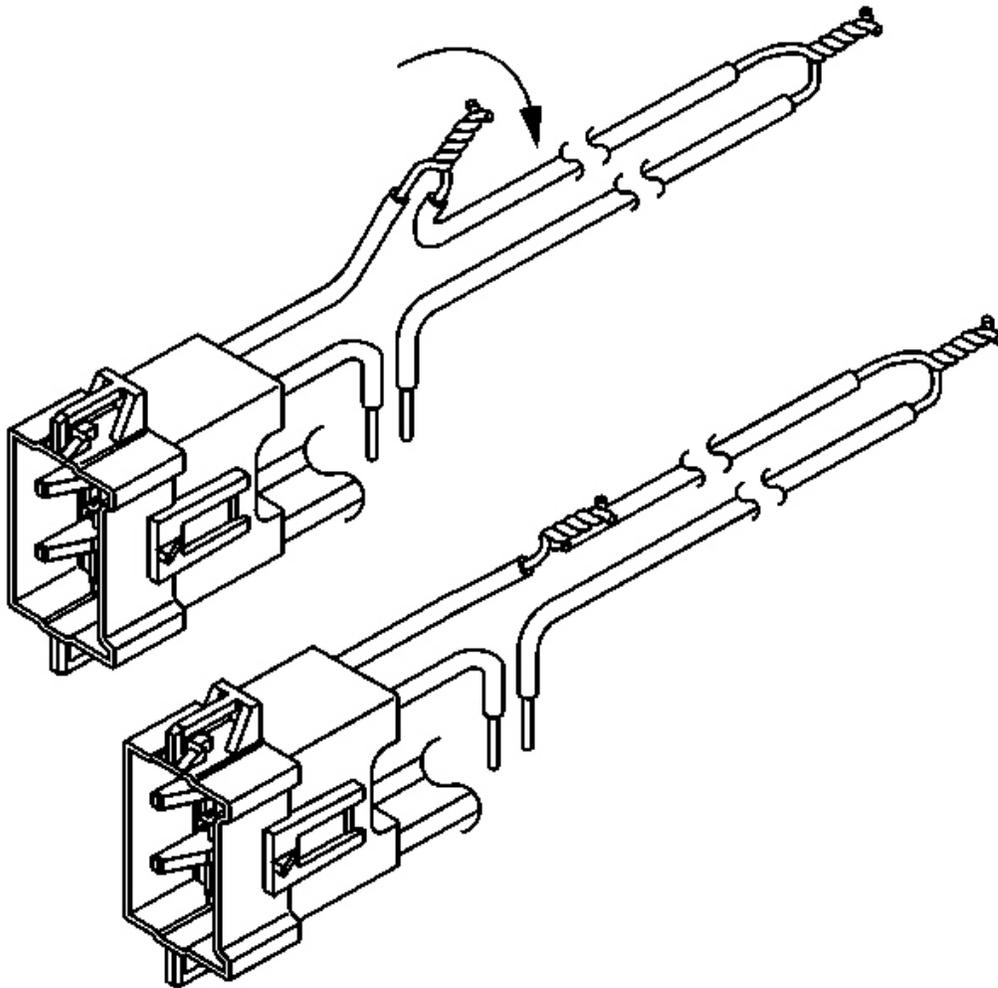


Fig. 118: Twisting & Securing Deployment Wires
Courtesy of GENERAL MOTORS CORP.

29. Bend flat the twisted connection.
30. Secure and insulate the connection using electrical tape.

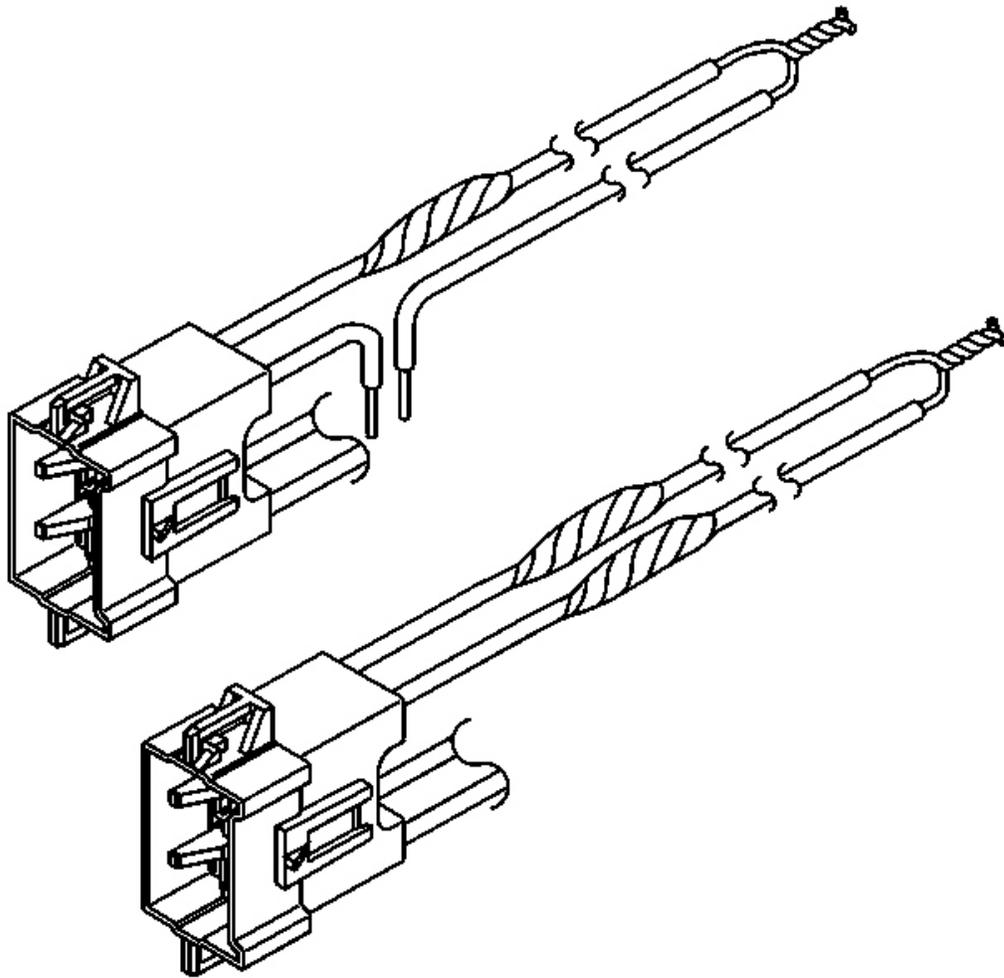


Fig. 119: Taping Deployment Wires
Courtesy of GENERAL MOTORS CORP.

31. Twist together, bend, and tape the remaining connector wire lead to the remaining deployment wire.

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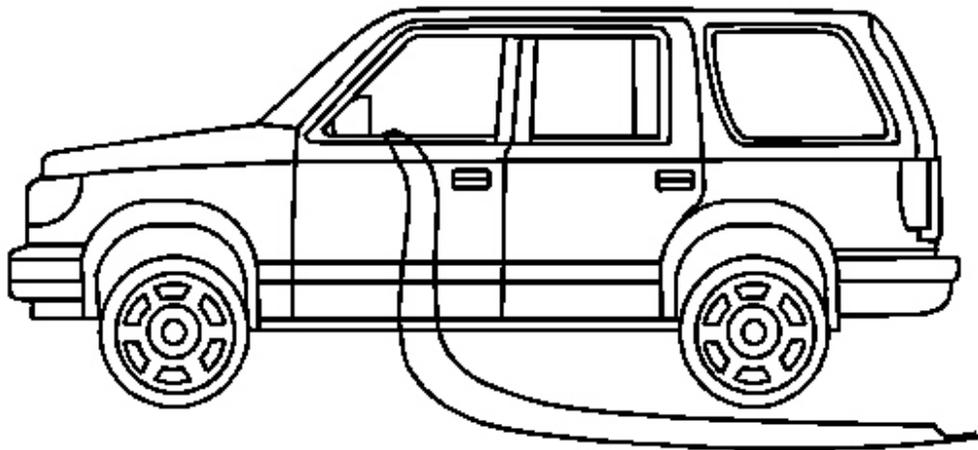


Fig. 120: Routing Wires To Apply Power For Controlled Bag Deployment (Left)
Courtesy of GENERAL MOTORS CORP.

32. Route the deployment harness out of the vehicle's driver side.

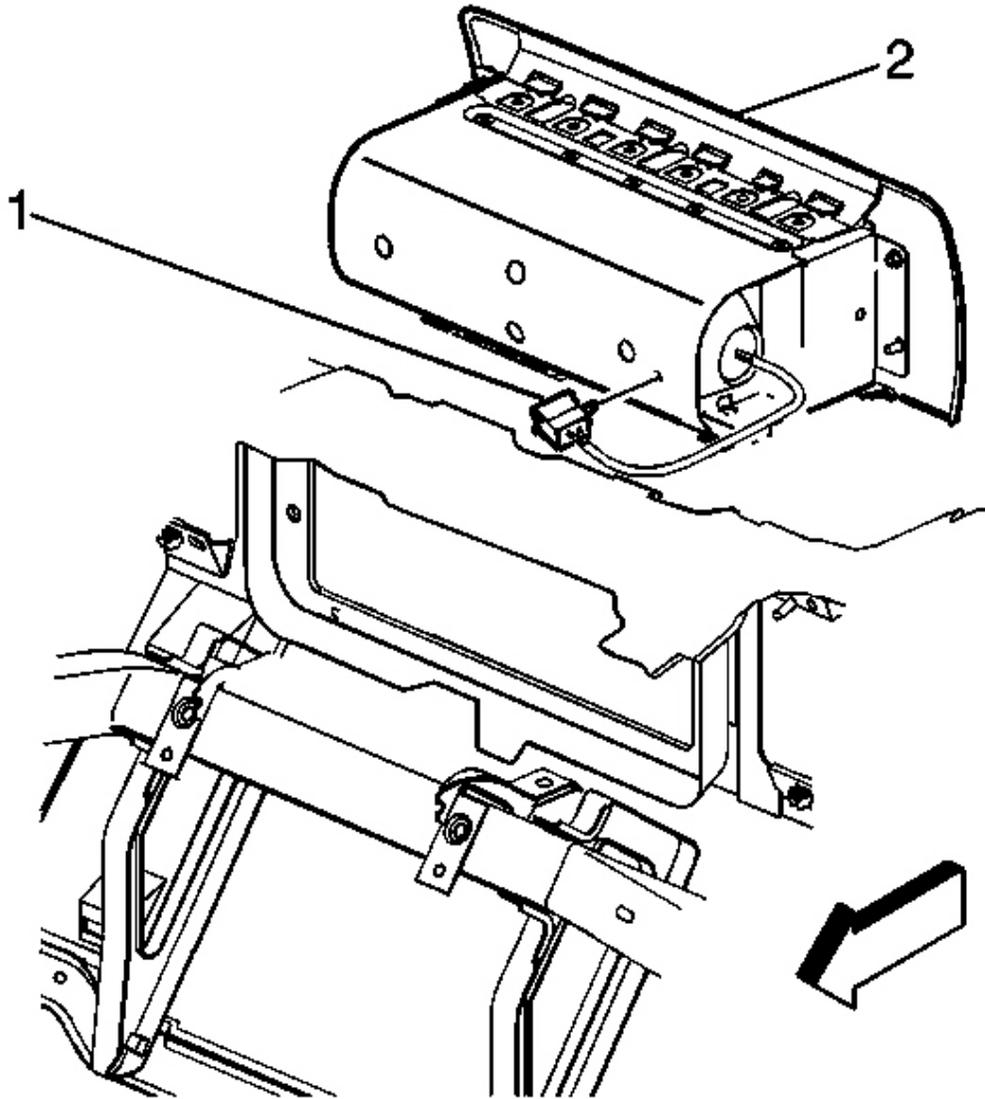


Fig. 121: Removing Connector Position Assurance (CPA) From I/P Module Yellow 4-Way Connector - Zone 5
Courtesy of GENERAL MOTORS CORP.

33. Disconnect the inflatable restraint IP module connector (1) located behind the IP module (3).

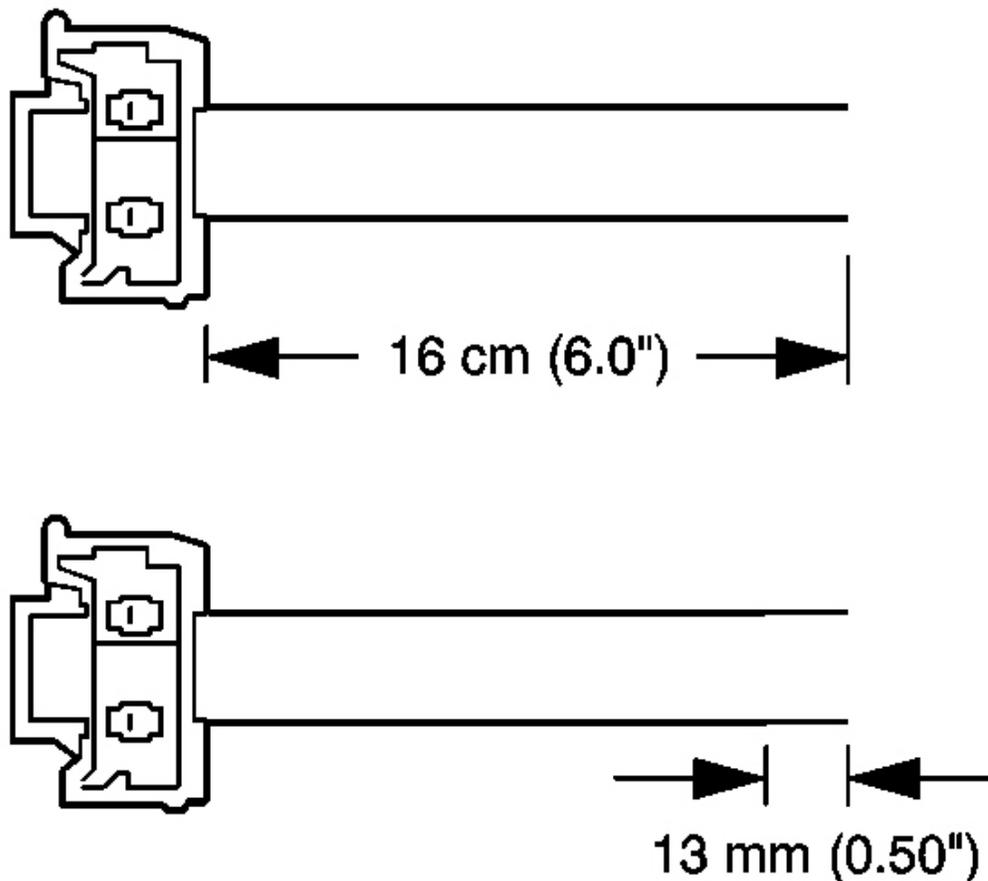


Fig. 122: Cutting The Steering Wheel Module Harness To Size
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: This vehicle is equipped with dual stage air bags. The steering wheel module and IP module will each have 4 wires. Refer to SIR Connector End Views for determining high and low circuits.

34. Cut the IP module harness connector out of the vehicle, leaving at least 16 cm (6 in) of wire at the connector.
35. Strip 13 mm (0.5 in) of insulation from each of the connector wire leads.

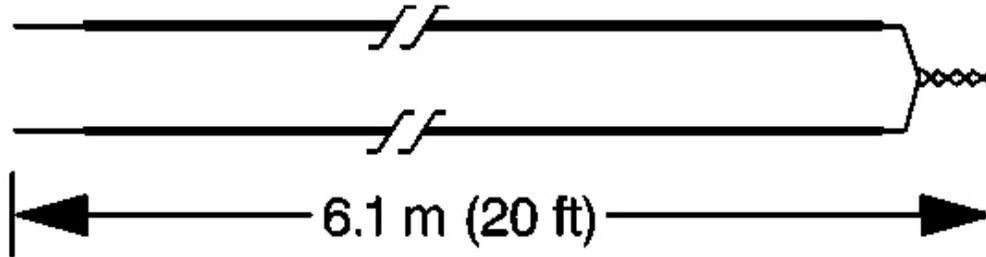


Fig. 123: Fabricating 20 Ft. Deployment Harness
Courtesy of GENERAL MOTORS CORP.

36. 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 deployment harness.
37. Strip 13 mm (0.5 in) of insulation from both ends of the wires cut in the previous step.
38. Twist together one end from each of the wires in order to short the wires.

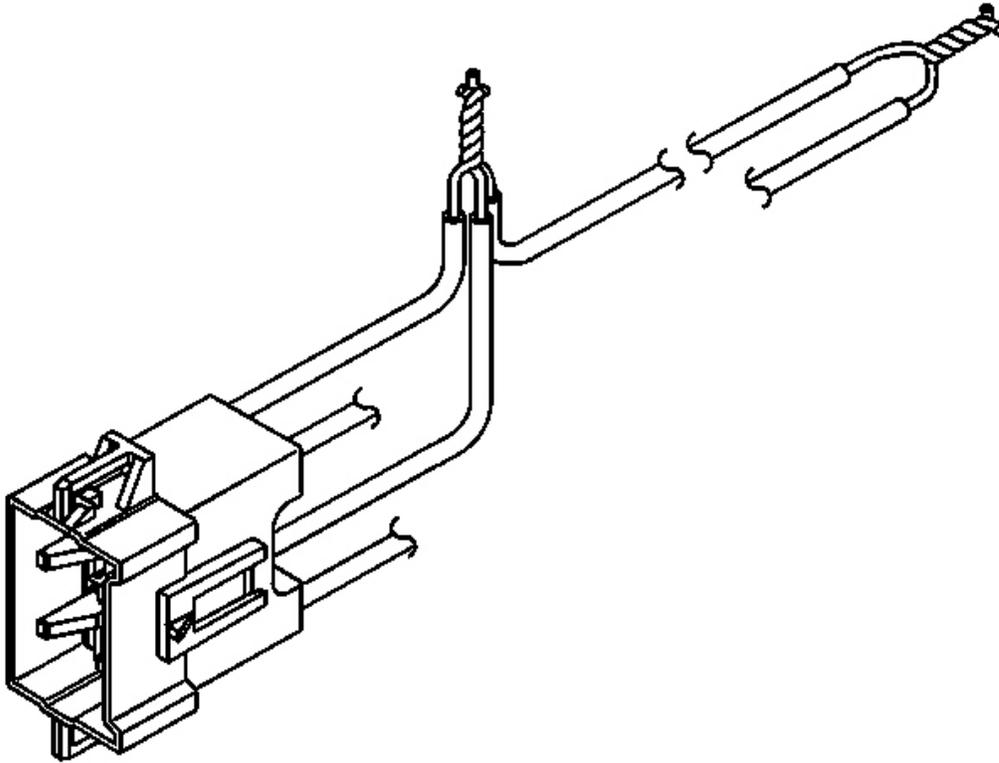


Fig. 124: Twisting Connector Wire Leads (High Circuits) To Deployment Harness Wire
Courtesy of GENERAL MOTORS CORP.

39. Twist together two connector wire leads, the high circuits from both stages of the IP module, to one set of deployment wires. Refer to **SIR Connector End Views** in order to determine the correct circuits.
40. Inspect that the connection is secure.

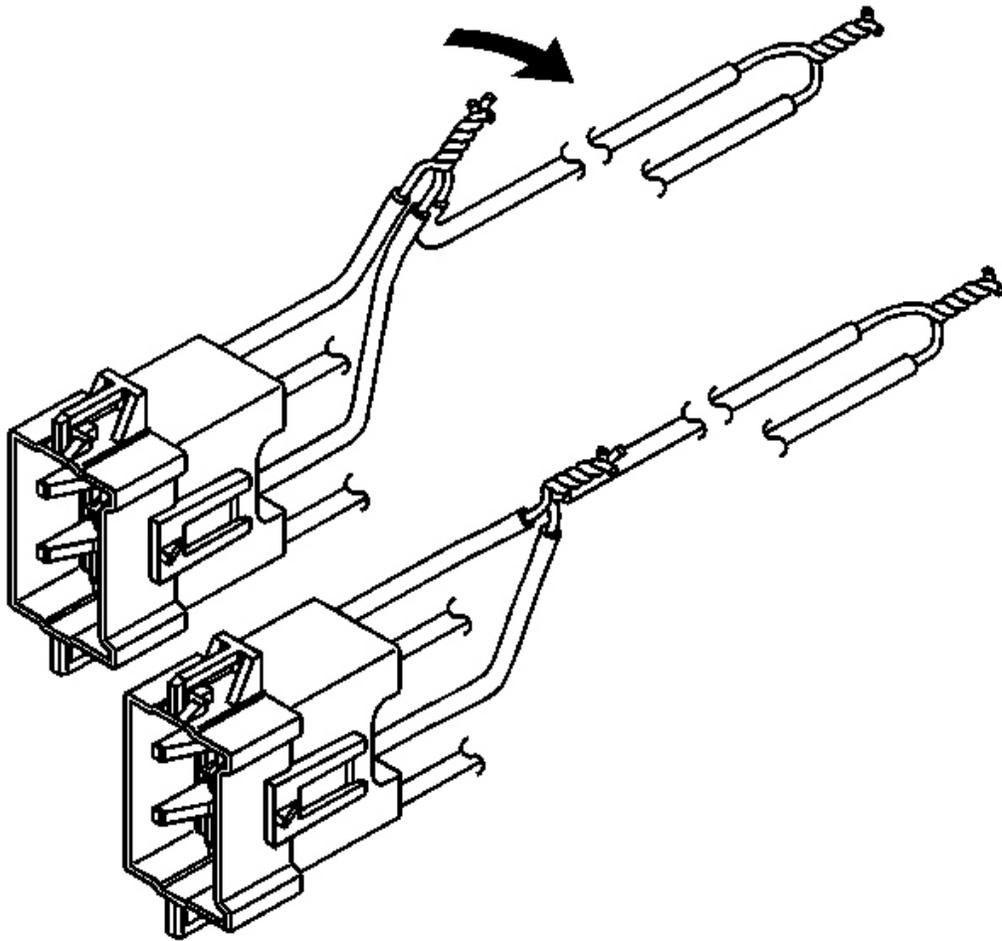


Fig. 125: Bending Twisted Connection Flat
Courtesy of GENERAL MOTORS CORP.

41. Bend flat the twisted connection.

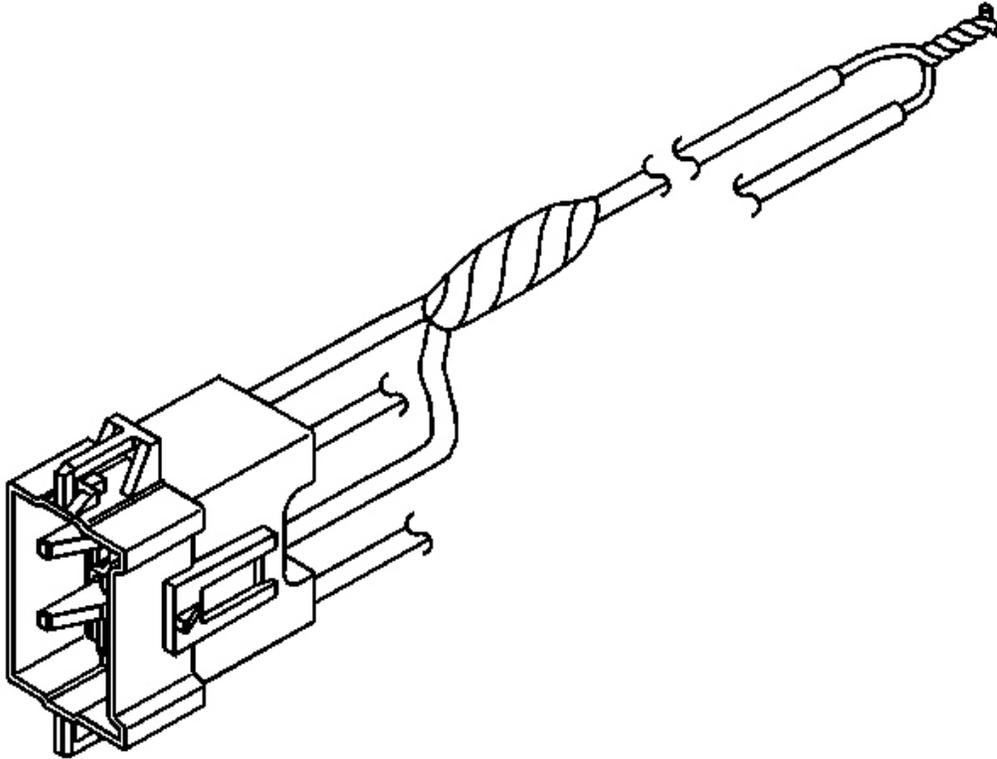


Fig. 126: Insulating Connection With Electrical Tape
Courtesy of GENERAL MOTORS CORP.

42. Secure and insulate the connection using electrical tape.

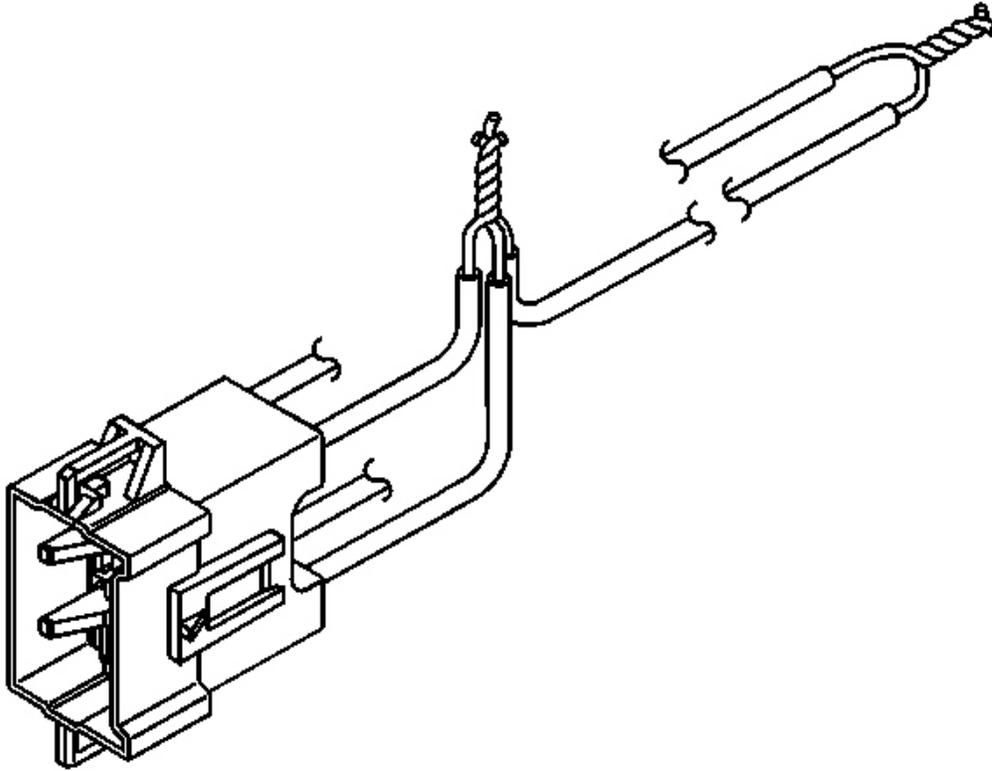


Fig. 127: Twisting Connector Wire Leads (Low Circuits) To Deployment Harness Wire
Courtesy of GENERAL MOTORS CORP.

43. Twist together two connector wire leads, the low circuits from both stages of the IP module, to one set of deployment wires. Refer to **SIR Connector End Views** in order to determine the correct circuits.
44. Inspect that the connection is secure.

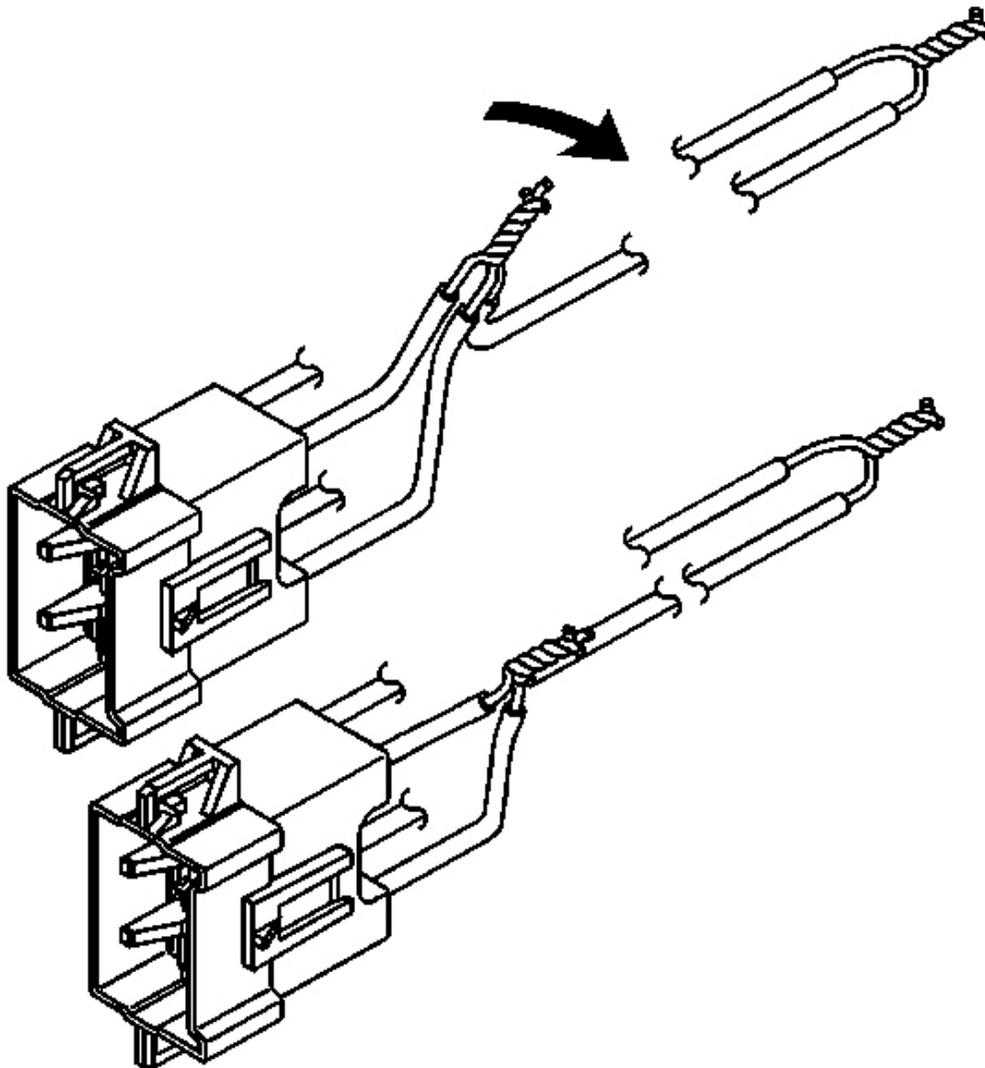


Fig. 128: Bending Twisted Connection Flat
Courtesy of GENERAL MOTORS CORP.

45. Bend flat the twisted connection.

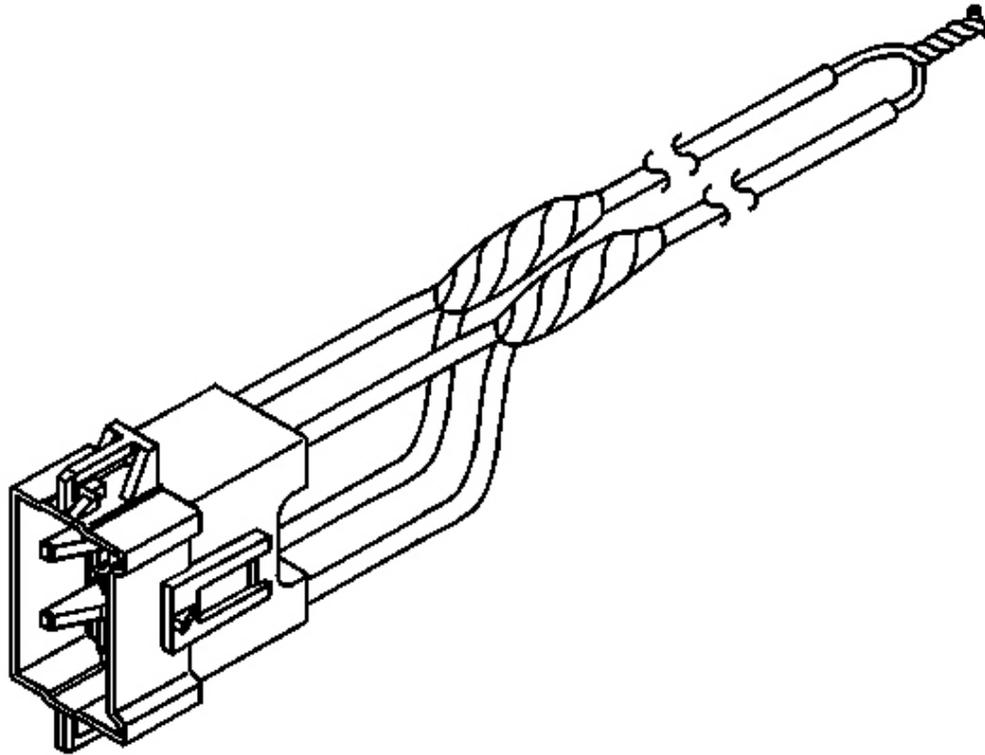


Fig. 129: Insulating Connection With Electrical Tape
Courtesy of GENERAL MOTORS CORP.

46. Secure and insulate the connection using electrical tape.
47. Connect the deployment harness to the IP module connector.

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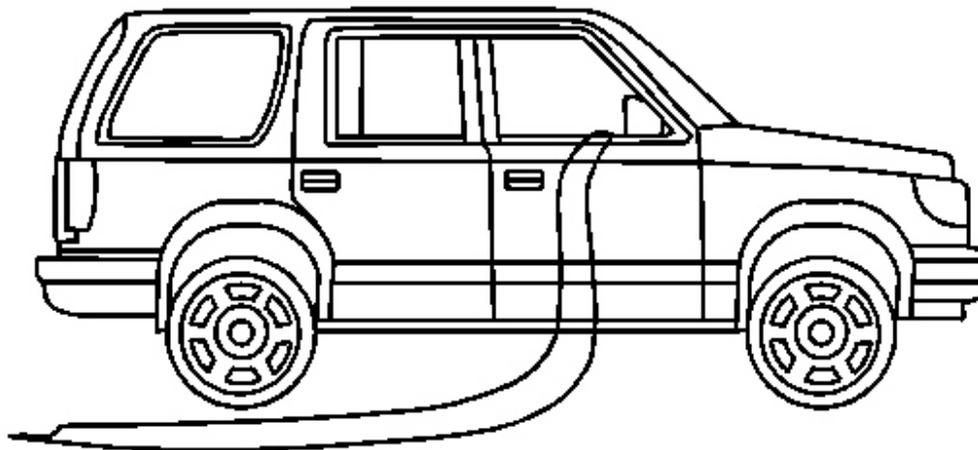


Fig. 130: Routing Wires To Apply Power For Controlled Bag Deployment (Right)
Courtesy of GENERAL MOTORS CORP.

48. Route the deployment harness out of the vehicle's passenger side.

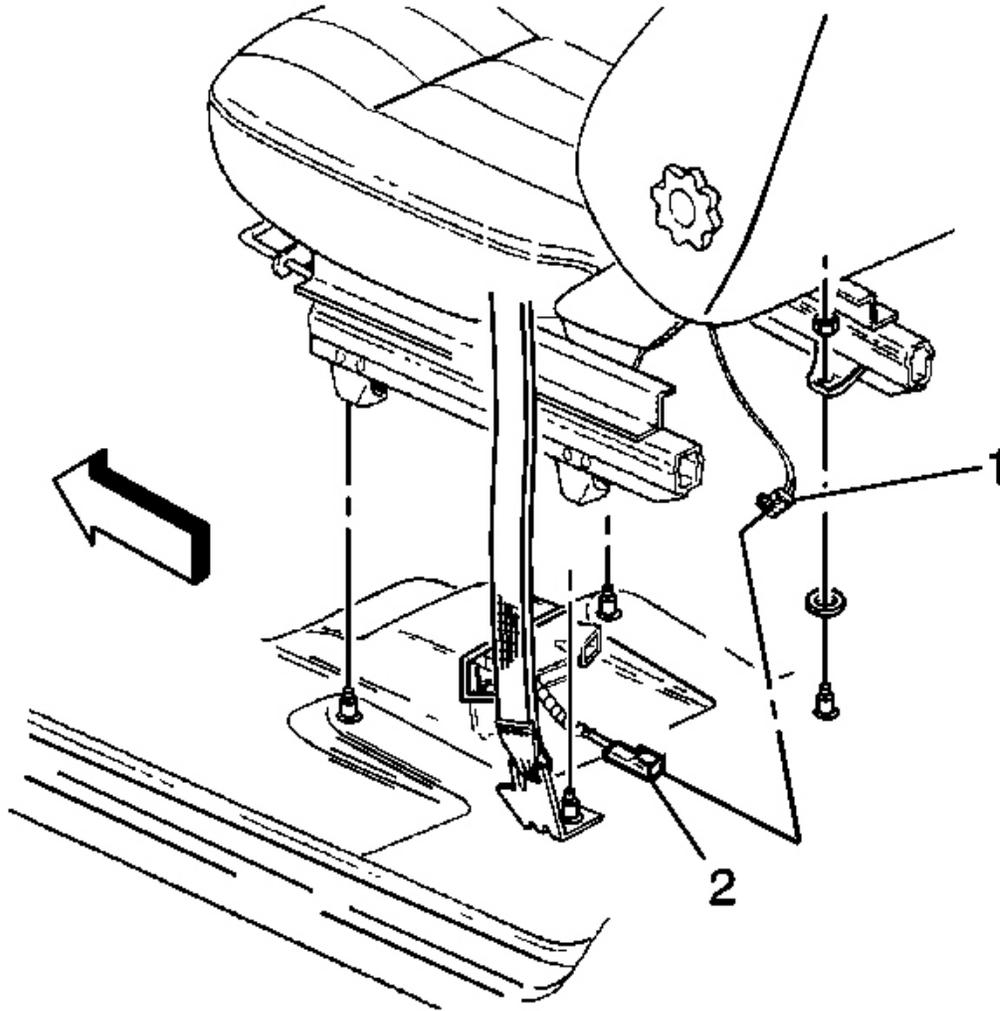


Fig. 131: Disconnecting Side Impact Module Connector
Courtesy of GENERAL MOTORS CORP.

49. Disconnect the RF side impact module connector (1) from the vehicle wiring harness (2) located under the RF seat.

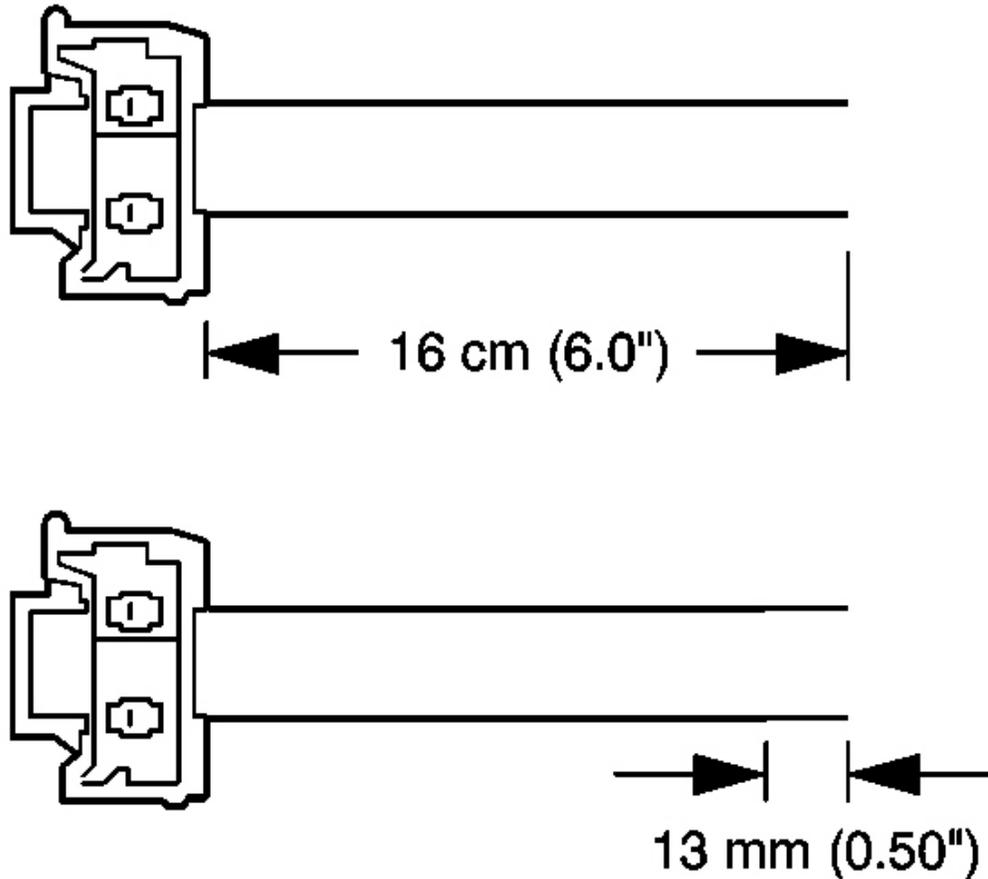


Fig. 132: Cutting The Steering Wheel Module Harness To Size
Courtesy of GENERAL MOTORS CORP.

50. Cut the RF side impact module harness connector out of the vehicle, leaving at least 16 cm (6 in) of wire at the connector.
51. Strip 13 mm (0.5 in) of insulation from each of the RF side impact module connector wire leads.

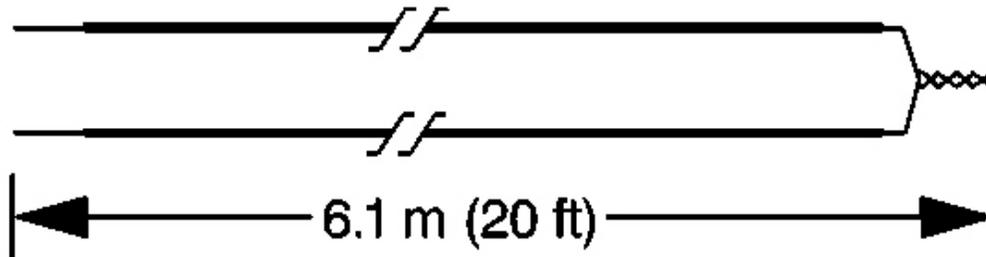


Fig. 133: Fabricating 20 Ft. Deployment Harness
Courtesy of GENERAL MOTORS CORP.

52. 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 deployment harness.
53. Strip 13 mm (0.5 in) of insulation from both ends of the wires cut in the previous step.
54. 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 side air bag module.

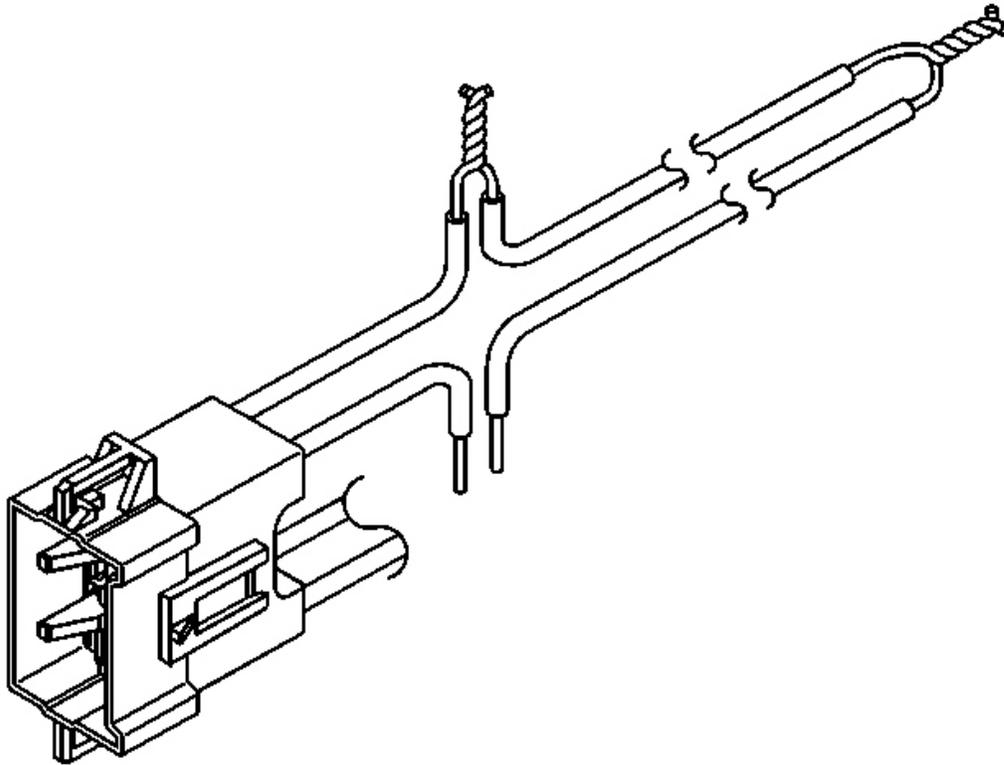


Fig. 134: Twisting Wires Catch on to Wire To Deployment Wire
Courtesy of GENERAL MOTORS CORP.

55. Twist together one connector wire lead to one deployment wire.
56. Inspect that the previous connection is secure.

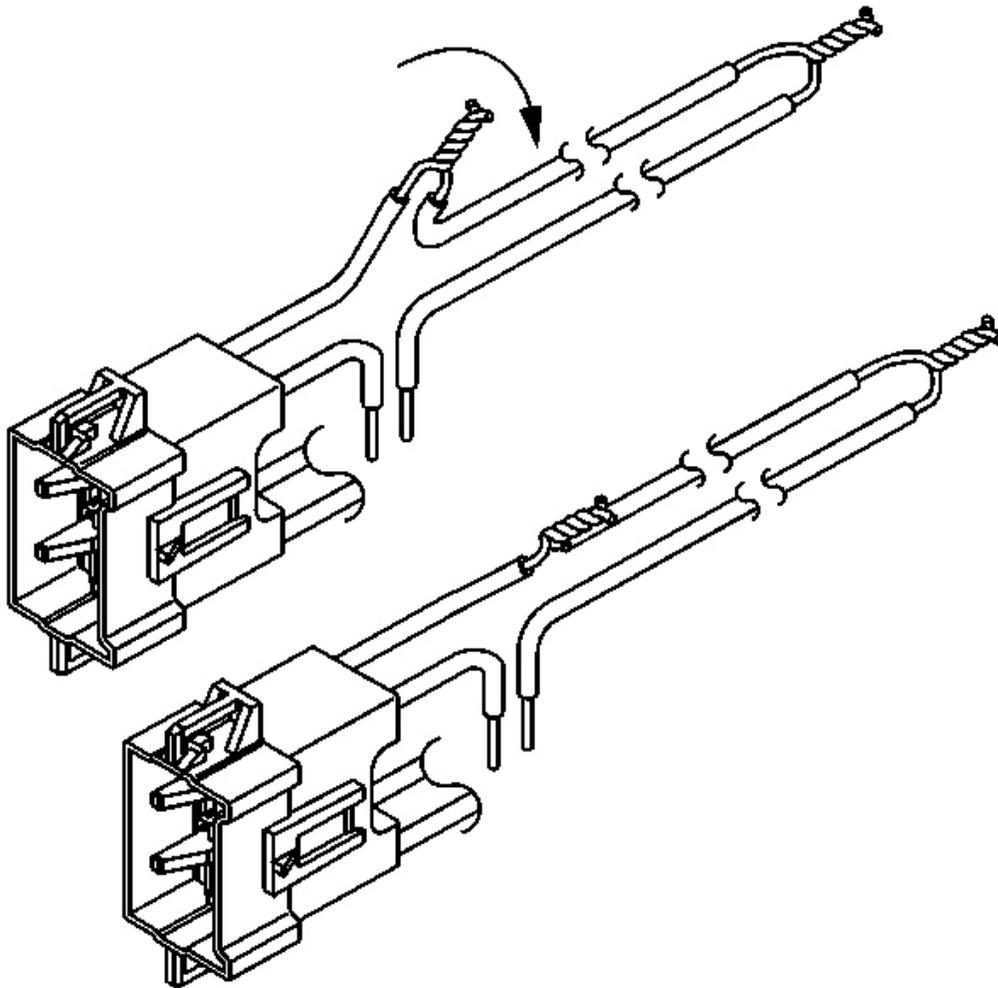


Fig. 135: Twisting & Securing Deployment Wires
Courtesy of GENERAL MOTORS CORP.

57. Bend flat the twisted connection.
58. Secure and insulate the connection using electrical tape.

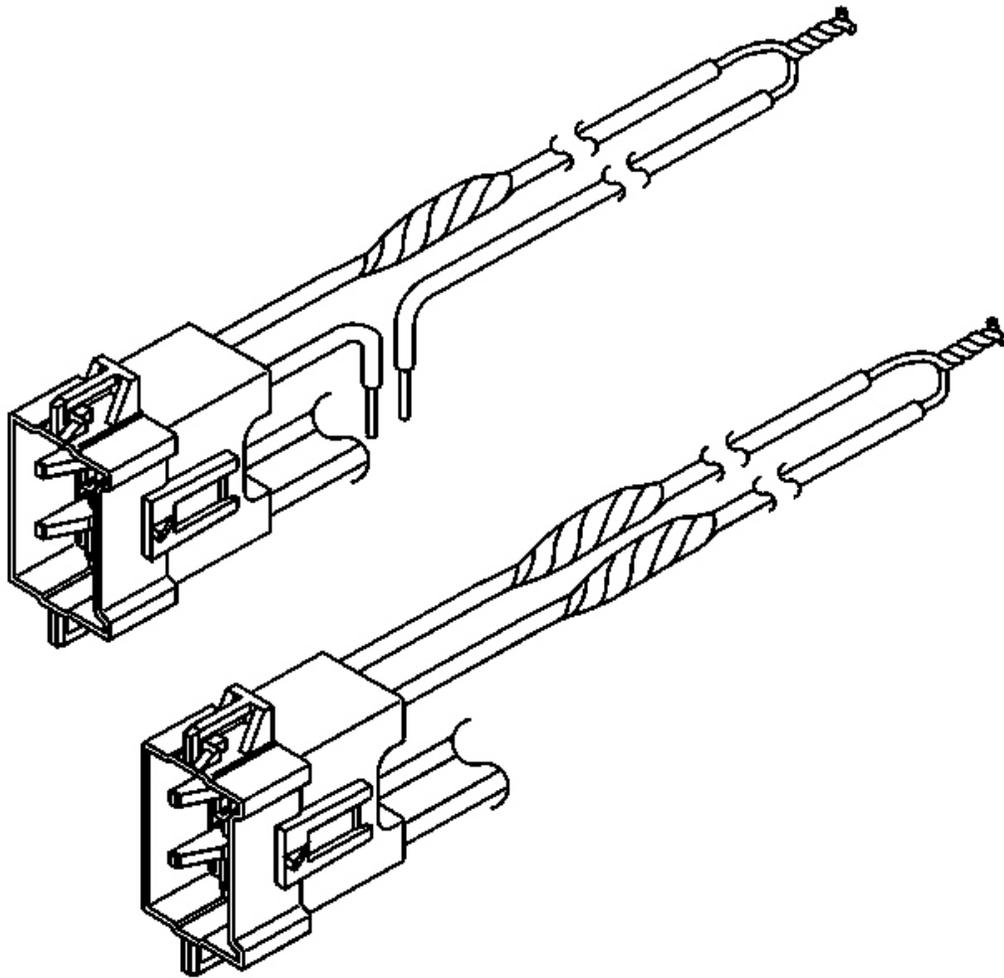


Fig. 136: Taping Deployment Wires
Courtesy of GENERAL MOTORS CORP.

59. Twist together, bend, and tape the remaining connector wire lead to the remaining deployment wire.

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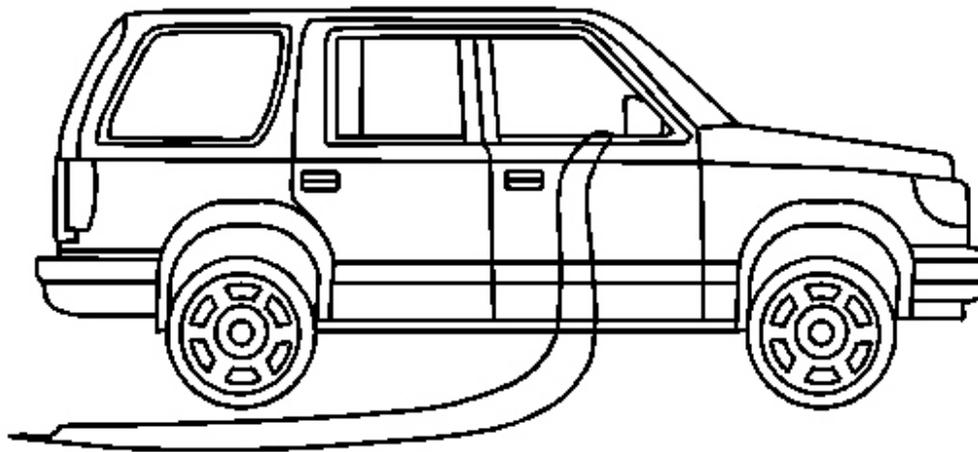


Fig. 137: Routing Wires To Apply Power For Controlled Bag Deployment (Right)
Courtesy of GENERAL MOTORS CORP.

60. Route the deployment harness out of the vehicle's passenger side.
61. Stretch the two driver side harnesses to full length.
62. Stretch the two passenger side harnesses to full length.
63. Completely cover the windshield and front door window openings with a drop cloth.

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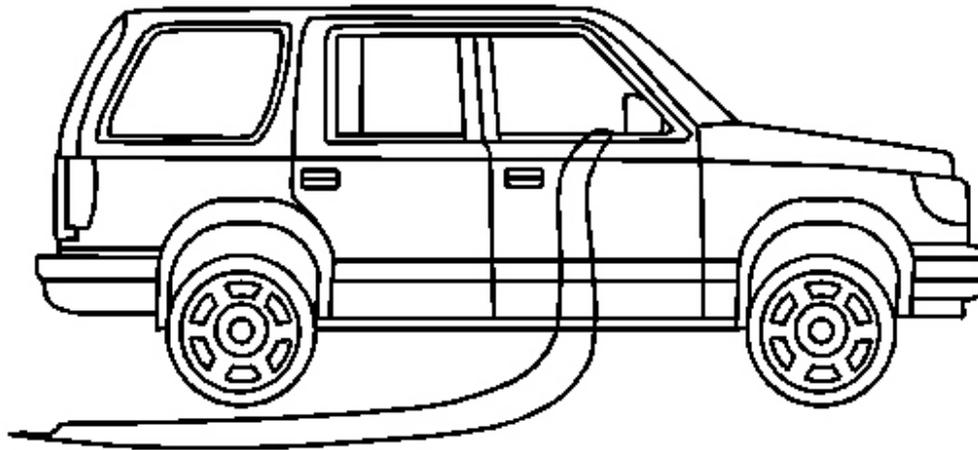


Fig. 138: Routing Wires To Apply Power For Controlled Bag Deployment (Right)
Courtesy of GENERAL MOTORS CORP.

64. Place a power source, 12 V minimum/2 A minimum, i.e., a vehicle battery, near the shorted ends of the passenger side deployment harnesses.
65. Separate the two ends of the IP module deployment harness wires.
66. Connect the IP module deployment harness wires to the power source in order to deploy the IP module.
67. Disconnect the IP module deployment harness wires from the power source.
68. Separate the two ends of the RF side impact module deployment harness wires.
69. Connect the RF side impact module deployment harness wires to the power source in order to deploy the RF side impact module.
70. Disconnect the RF side impact module deployment harness wires from the power source.

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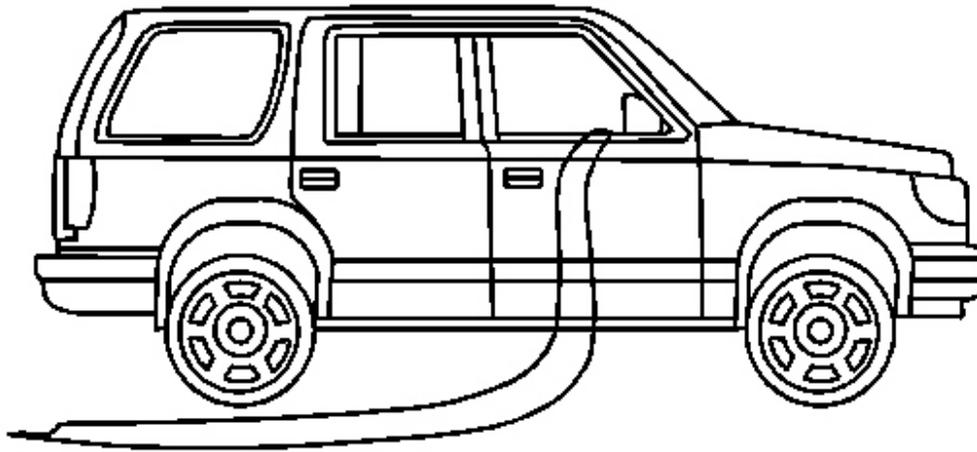


Fig. 139: Routing Wires & Applying Power For Controlled Bag Deployment (Right)
Courtesy of GENERAL MOTORS CORP.

71. Twist together one end of each wire of the IP module on the passenger side deployment harness in order to short the wires.
72. Twist together one end of each wire of the RF side impact module on the passenger side deployment harness in order to short the wires.

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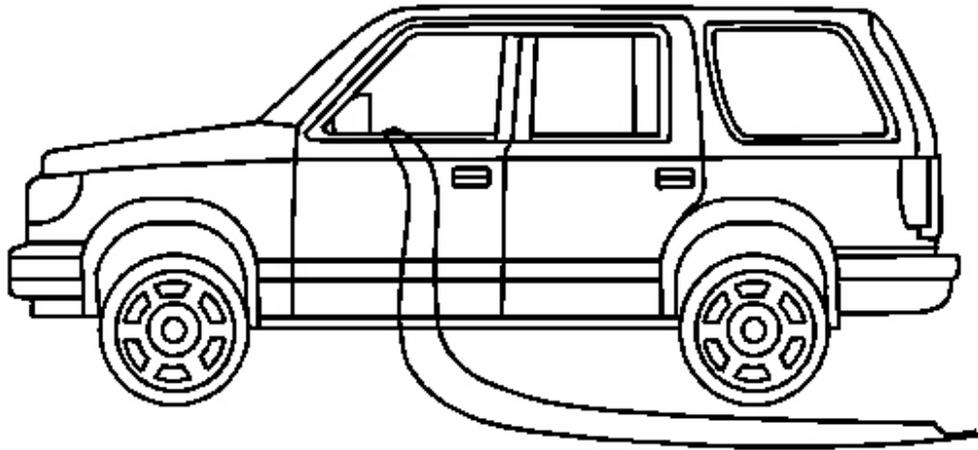


Fig. 140: Routing Wires To Apply Power For Controlled Bag Deployment (Left)
Courtesy of GENERAL MOTORS CORP.

73. Move the power source, 12 V minimum/2 A minimum, i.e., a vehicle battery, near the shorted ends of the driver side deployment harnesses.
74. Separate the two ends of the steering wheel module deployment harness wires.
75. Connect the steering wheel module deployment harness wires to the power source in order to deploy the steering wheel module.
76. Disconnect the steering wheel module deployment harness wires from the power source.
77. Separate the two ends of the LF side impact module deployment harness wires.
78. Connect the LF side impact module deployment harness wires to the power source in order to deploy the side impact module.
79. Disconnect the LF side impact module deployment harness wires from the power source.

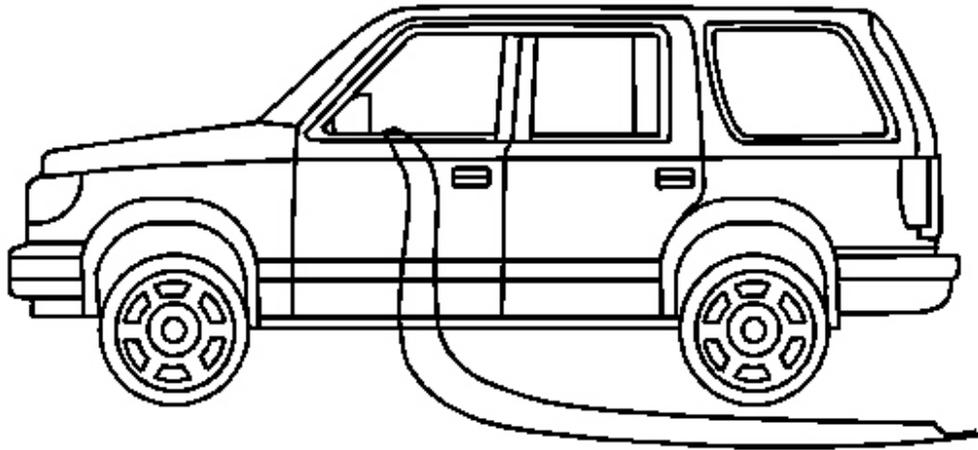


Fig. 141: Routing Wires To Apply Power For Controlled Bag Deployment (Left)
Courtesy of GENERAL MOTORS CORP.

80. Twist together one end of each wire of the steering wheel module on the driver side deployment harness in order to short the wires.
81. Twist together one end of each wire of the LF side impact module on the driver side deployment harness in order to short the wires.
82. Remove the drop cloth from the vehicle.
83. Disconnect all harnesses from the vehicle.
84. Discard the harnesses.
85. Scrap the vehicle in the same manner as a non-SIR equipped vehicle.
86. If one or more of the inflator modules did not deploy, perform the following steps to remove the undeployed module(s) from the vehicle:
 - **Inflatable Restraint Steering Wheel Module Replacement**
 - **Inflatable Restraint Instrument Panel Module Replacement**
 - **Inflatable Restraint Side Impact Module Replacement - Front**
87. Contact the technical assistance for further assistance.

DESCRIPTION AND OPERATION

SIR SYSTEM DESCRIPTION AND OPERATION

SIR System Overview

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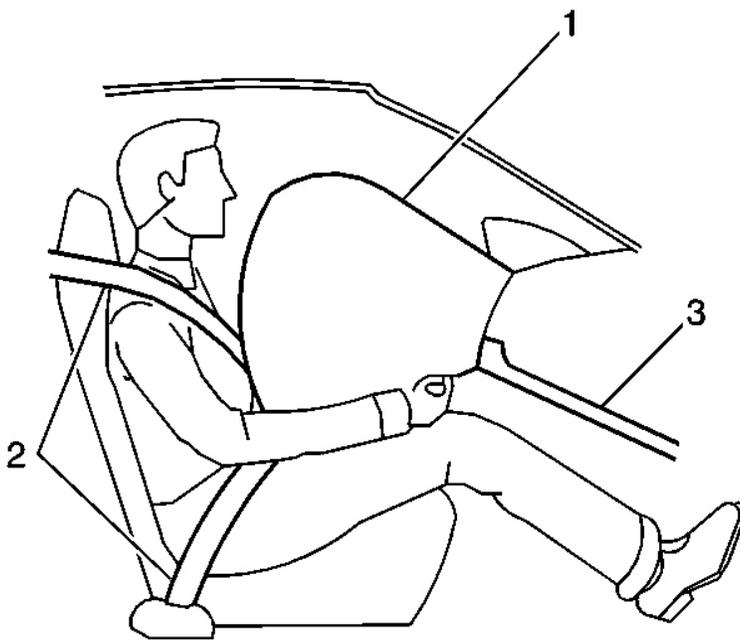
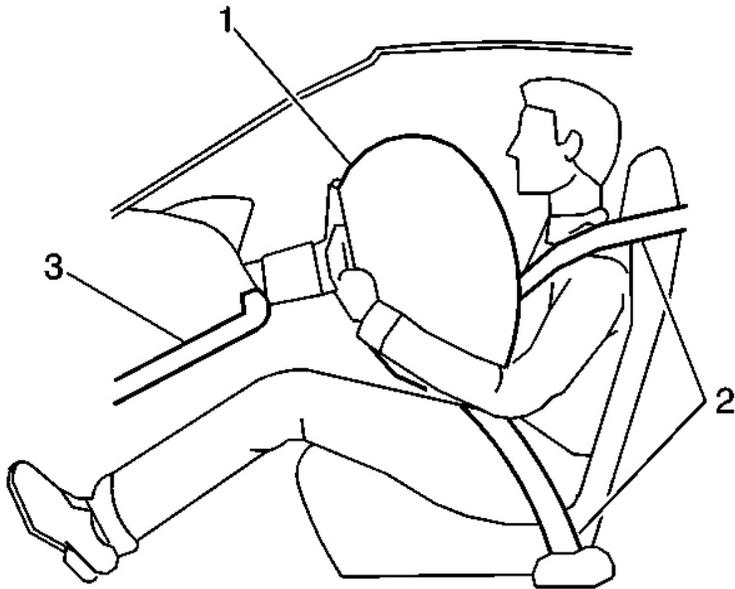


Fig. 142: Illustrating Deployed Inflatable Restraint
Courtesy of GENERAL MOTORS CORP.

The supplemental inflatable restraint (SIR) system supplements the protection offered by the occupant's seat

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belt system (2). The SIR system may contain several inflator modules located throughout the vehicle, i.e. steering wheel module (1), instrument panel (IP) module (1), side impact modules or roof rail modules. In addition to inflator modules, the vehicle may contain seat belt pretensioners that tighten the seat belt in the event of a collision, thus reducing the distance between the occupant and the seat belt when an inflator module is deployed. 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 located at strategic points on the vehicle. 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 turning 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.

After an Air Bag deployment, the SDM will send out a post-air message to the Rear Integration Module (RIM) through the class 2 serial data circuit. The RIM will unlock the doors and turn ON the interior lights 15 seconds after receipt of this message.

Frontal SIR System Description

The frontal SIR system consists of the following components:

- AIR BAG indicator located in the instrument panel cluster (IPC)
- Inflatable restraint electronic frontal sensor (EFS), if vehicle is equipped with dual stage air bags
- Inflatable restraint IP module
- Inflatable restraint sensing and diagnostic module (SDM)
- Inflatable restraint steering wheel module
- Inflatable restraint steering wheel module coil
- Inflatable restraint wiring harnesses
- Steering wheel and column

A frontal collision of sufficient force will deploy the frontal air bags. The SDM contains a sensing device (accelerometer) that converts vehicle velocity changes to an electrical signal. In the event of a frontal collision, the SDM receives a signal from the electronic frontal sensor, which assists the SDM in determining the severity of the collision. The SDM compares these signals to a value stored in memory. When the generated signals exceed the stored value, the SDM will cause current to flow through the frontal deployment loops simultaneously deploying the frontal air bags. The SDM, IP module, steering wheel module, steering wheel module coil and the connecting wires make up the frontal deployment loops. The SDM continuously monitors the deployment loops for malfunctions and turns the AIR BAG indicator ON if a fault is detected.

Inflatable Restraint Sensing and Diagnostic Module (SDM)

The sensing and diagnostic module (SDM) is a microprocessor and the control center for the SIR system. The SDM contains internal sensors along with several external sensors, if equipped, mounted at strategic locations on the vehicle. In the event of a collision, the SDM compares the signals from the internal and external sensors to a value stored in memory. When the generated signals 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

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when a deployment occurs and turns the AIR BAG indicator located in the IPC 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 command the AIR BAG indicator ON, notifying the driver that a malfunction exist. In the event that ignition positive 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 when disabling the SIR system for servicing or rescue operations to allow the 23 VLR to dissipate, which could take up to 1 minute.

AIR BAG Indicator

The AIR BAG indicator, located in the IPC is used to notify the driver of SIR system malfunctions and to verify that the SDM is communicating with the IPC. When the ignition is turned ON, the SDM is supplied with ignition positive voltage. The SDM requests the IPC to flash the AIR BAG indicator seven 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 command 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 command the IPC to turn the AIR BAG indicator ON via class 2 serial data. The presence of a SIR system malfunction could result in non-deployment of the air bags or deployment in conditions less severe than intended. The AIR BAG indicator will remain ON until the malfunction has been repaired.

Inflator Modules

The inflator modules contain a housing, inflatable air bag, an initiating device, canister of gas generating material and, in some cases, stored compressed gas. The initiator is part of the inflator module deployment loop. When the vehicle is involved in a collision of sufficient force, the 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 and/or the bag fabric.

Each inflator module is equipped with a shorting bar located on the connector of the module. The shorting bar shorts the inflator module deployment loop circuitry to prevent unwanted deployment of the air bag when servicing the inflator module.

Dual Stage Inflator Modules

Dual stage inflator modules contain a housing, inflatable air bag, two initiating devices, canister of gas generating material and, in some cases, stored compressed gas. The two initiators are part of the frontal deployment loop. The function of the frontal deployment loops are to supply current through the steering wheel and instrument panel (IP) inflator modules to deploy the air bags. The inflator modules have two 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 (low 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. The current passing through the initiators ignites the material in the canister producing a rapid generation of gas and in some cases, the release of compressed gas. 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 and/or the bag fabric.

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Each dual stage inflator modules is equipped with a shorting bar located in the connector(s) 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 two 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. Two or four (if equipped with dual stage air bags) 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 servicing the inflator module.

Inflatable Restraint Electronic Frontal Sensor (EFS)

The electronic frontal sensor (EFS) (also known as inflatable restraint front end discriminating sensor) is equipped on some vehicles to supplement the SIR system performance. The EFS is an electronic sensor (accelerometer) and is not part of the deployment loops, but instead provides an input to the SDM. The EFS can assist in determining the severity of some frontal collisions. The SDM contains a microprocessor which performs calculations using the measured accelerations and 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.

Side SIR System Description (Front)

The side SIR system (front) consists of the following components:

- AIR BAG indicator located in the instrument panel cluster (IPC)
- Inflatable restraint sensing and diagnostic module (SDM)
- Inflatable restraint side impact modules (LF/RF)
- Inflatable restraint side impact sensors (SIS) (left/right)
- Inflatable restraint wiring harnesses

The side impact modules (front) are located either in the front doors or in the outside portion of the front seat backs. The side impact modules contain a housing, inflatable air bag, initiating device, and a canister of gas generating material. The initiator is part of the side impact 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 side air bag. The SDM, side impact 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 side impact module (front) is equipped with a shorting bar located on the connector of the module. The shorting bar shorts the side impact module deployment loop circuitry to prevent unwanted deployment of the air

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bag when servicing the inflator module.

Inflatable Restraint Side Impact Sensor (SIS)

The side impact sensor (SIS) contains a sensing device (accelerometer) which monitors vehicle acceleration and velocity changes to detect side collisions that are severe enough to warrant air bag deployment. The SIS is not part of the deployment loop, but instead provides an input to the SDM. The SDM contains a microprocessor that performs calculations using the measured accelerations and 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 deployment loops deploying the side air bags.

Inflatable Restraint Wiring Harness

The inflatable restraint wiring harnesses connect the inflators modules, SDM, deployment loops, and class 2 serial data together using weather pack connectors. SIR system connectors are yellow in color for easy identification. When repairing the SIR wiring harnesses follow the proper testing and wiring repair procedures listed in this manual.

Steering Column and Wheel

The Steering wheel and columns 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 come in contact with 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 the 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 damages after a collision.

Knee Bolster

The Knee Bolsters are designed to help restrain the lower torso of front seat occupants by absorbing the energy through the front seat occupant's upper legs. In a frontal collision the front seat occupant 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 damages after a collision.

SPECIAL TOOLS AND EQUIPMENT

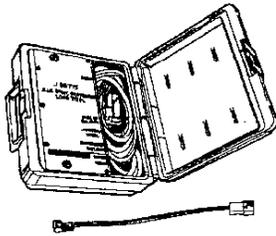
SPECIAL TOOLS

Special Tools

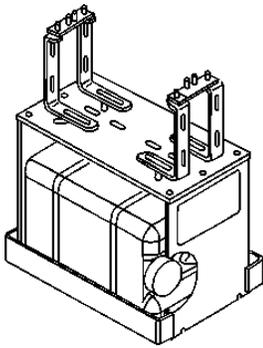
Illustration	Tool Number/ Description
	J 38715-A SIR Driver/Passenger Load Tool

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J 38826
SIR Deployment Harness



J 39401-B
SIR Deployment Fixture