2007 RESTRAINTS

Supplemental Inflatable Restraints - Outlook

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

Fastener Tightening Specifications

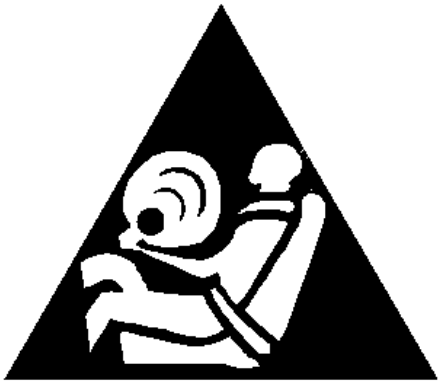
Application	Specification	
	Metric	English
Inflatable Restraint Front End Discriminating Sensor Bolt	8 N.m	71 lb in
Inflatable Restraint Instrument Panel Module Nut	10 N.m	89 lb in
Inflatable Restraint Roof Rail Module Bolts	9 N.m	80 lb in
Inflatable Restraint Seat Position Sensor Screw	3 N.m	25 lb in
Inflatable Restraint Sensing and Diagnostic Module (SDM) Bolt	10 N.m	89 lb in
Inflatable Restraint Side Impact Module Nut	5 N.m	44 lb in
Inflatable Restraint Side Impact Sensor Bolt (Front)	9 N.m	80 lb in
Inflatable Restraint Side Impact Sensor Bolt (Rear)	9 N.m	80 lb in
Inflatable Restraint Steering Wheel Module Coil	2.5 N.m	22 lb in
Inflatable Restraint Vehicle Rollover Sensor Nut	10 N.m	88 lb in
Seat Belt Retractor Pretensioner Bolt	42 N.m	31 lb ft

SCHEMATIC AND ROUTING DIAGRAMS

SIR SCHEMATIC ICONS

SIR Schematic Icons

Icon	Icon Definition
	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. Failure to observe the correct procedure could cause deployment of the SIR components, personal injury or unnecessary SIR system repairs.**



SIR SCHEMATICS

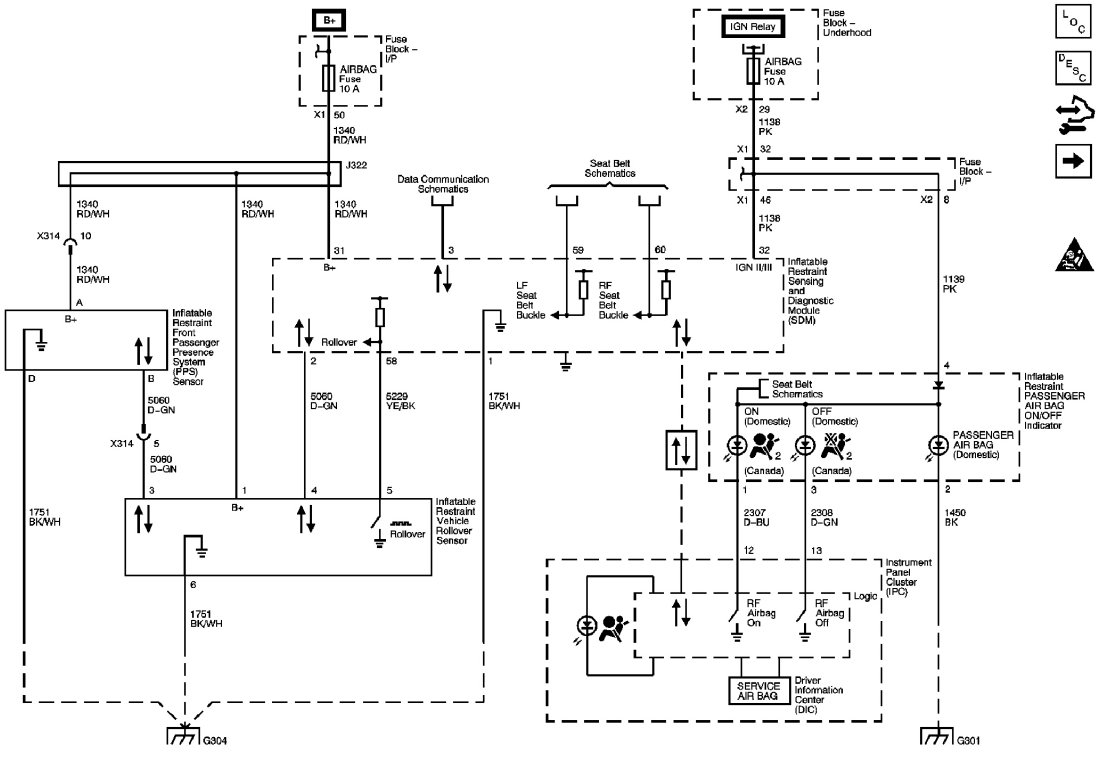


Fig. 1: Module Power, Ground, Indicators, Rollover/Passenger Presence Sensors Schematic

Courtesy of GENERAL MOTORS CORP.

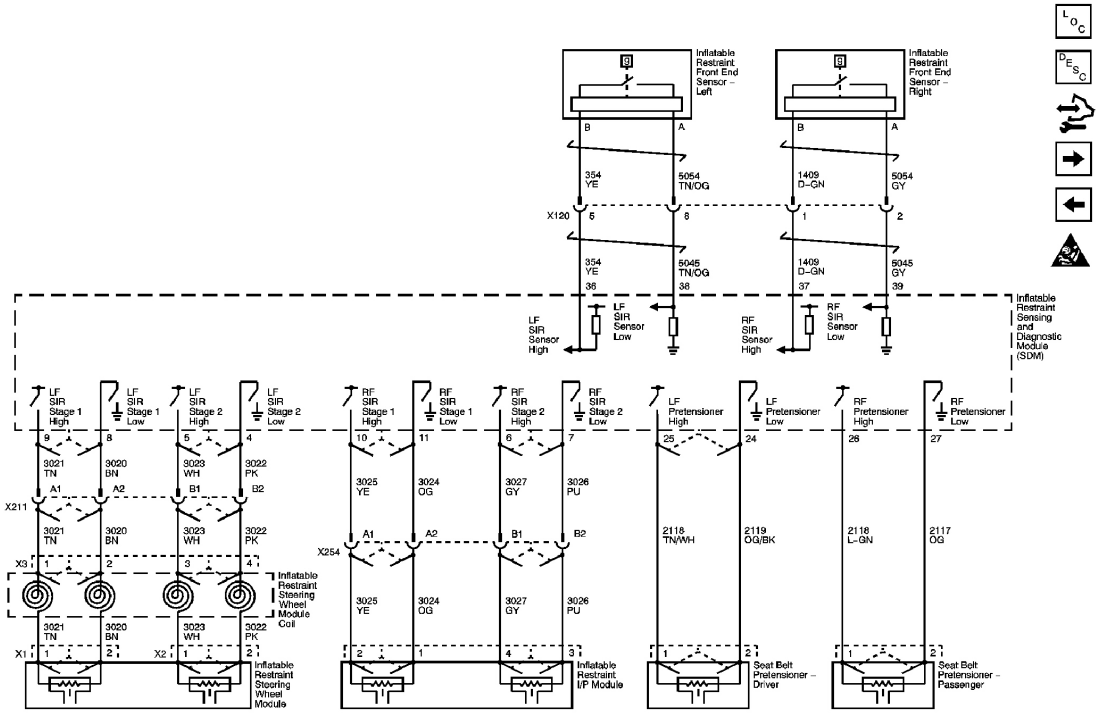


Fig. 2: Seat Position/Front End Sensors, Seat Belt Pretentioners & Front Air Bags Schematic

Courtesy of GENERAL MOTORS CORP.

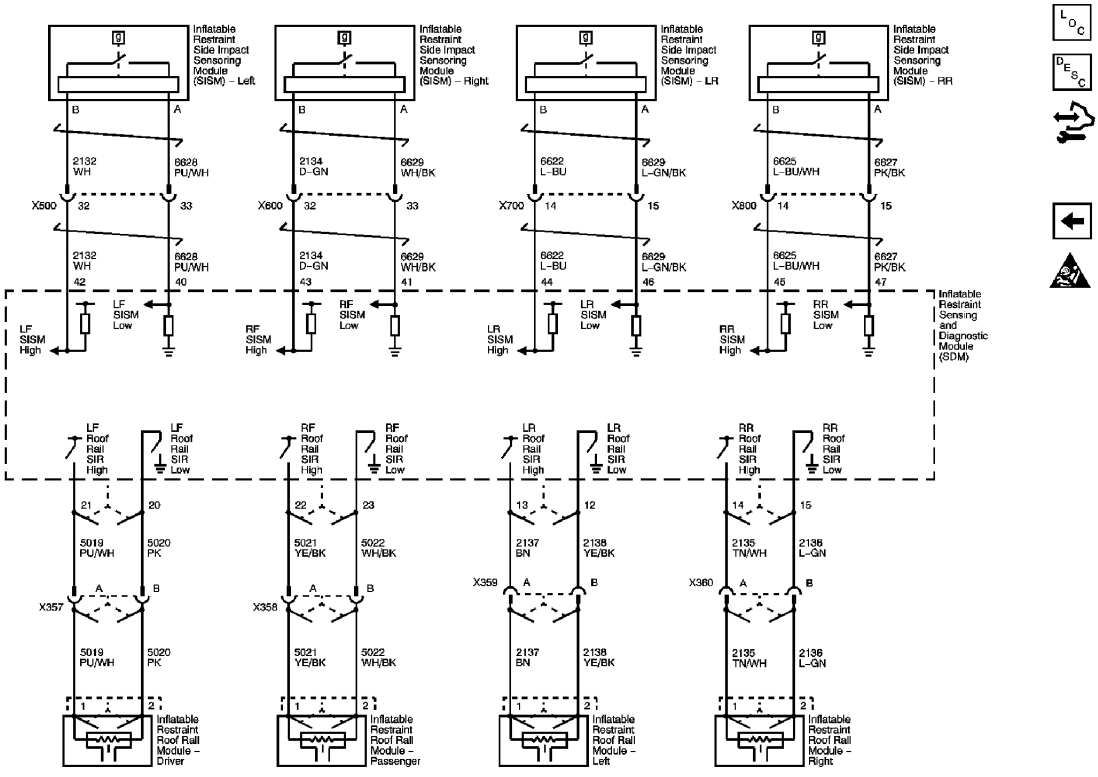


Fig. 3: Side Impact Sensors & Roof Rail/Side Impact Air Bags Schematic
Courtesy of GENERAL MOTORS CORP.

COMPONENT LOCATOR

SIR COMPONENT VIEWS

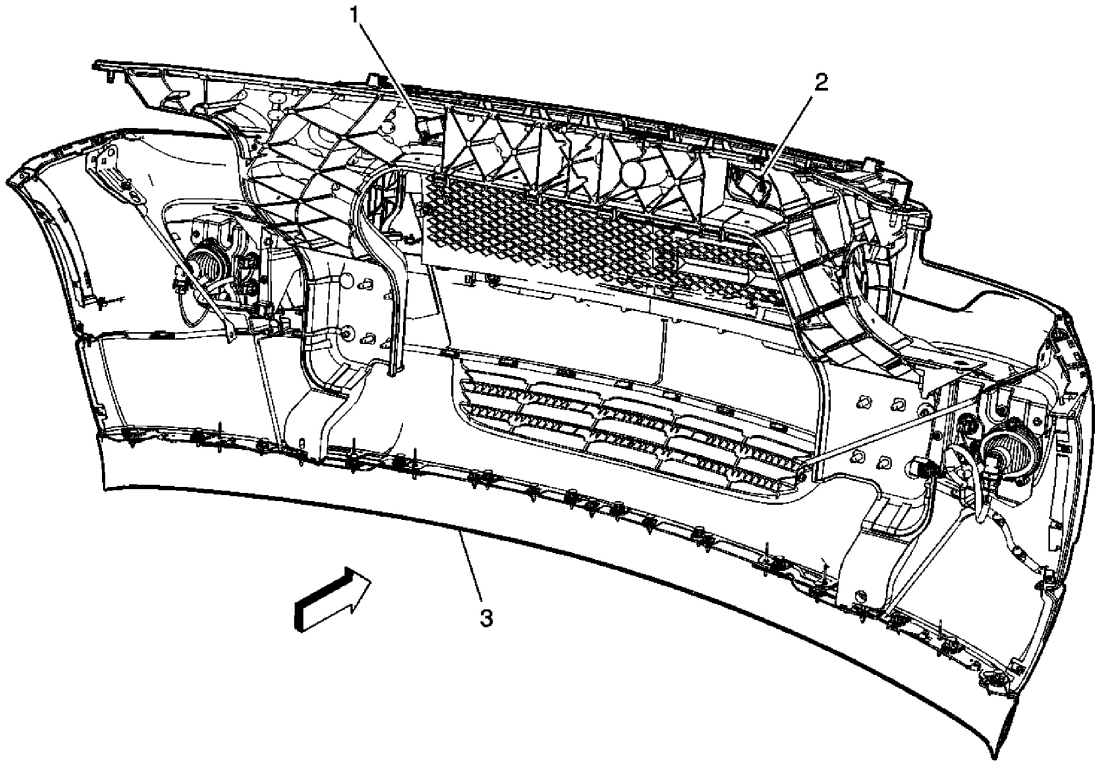


Fig. 4: Identifying Front Sensors
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 4

Callout	Component Name
1	Inflatable Restraint Front End Sensor - Left
2	Inflatable Restraint Front End Sensor - Right
3	Front Fascia

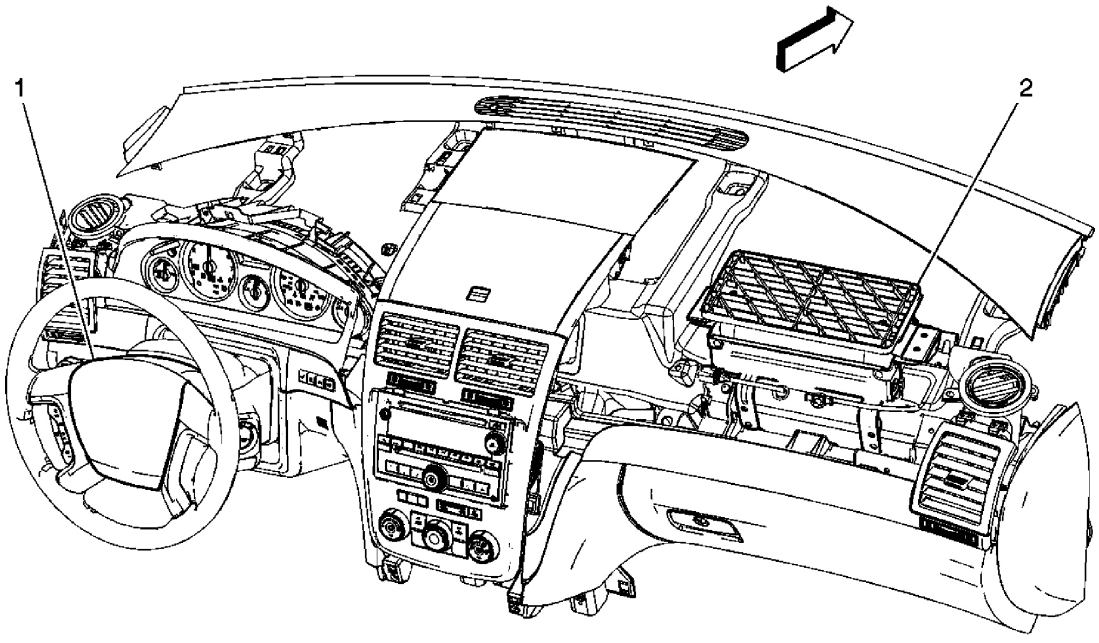


Fig. 5: View Of Front Air Bags
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 5

Callout	Component Name
1	Inflatable Restraint Steering Wheel Module
2	Inflatable Restraint I/P Module

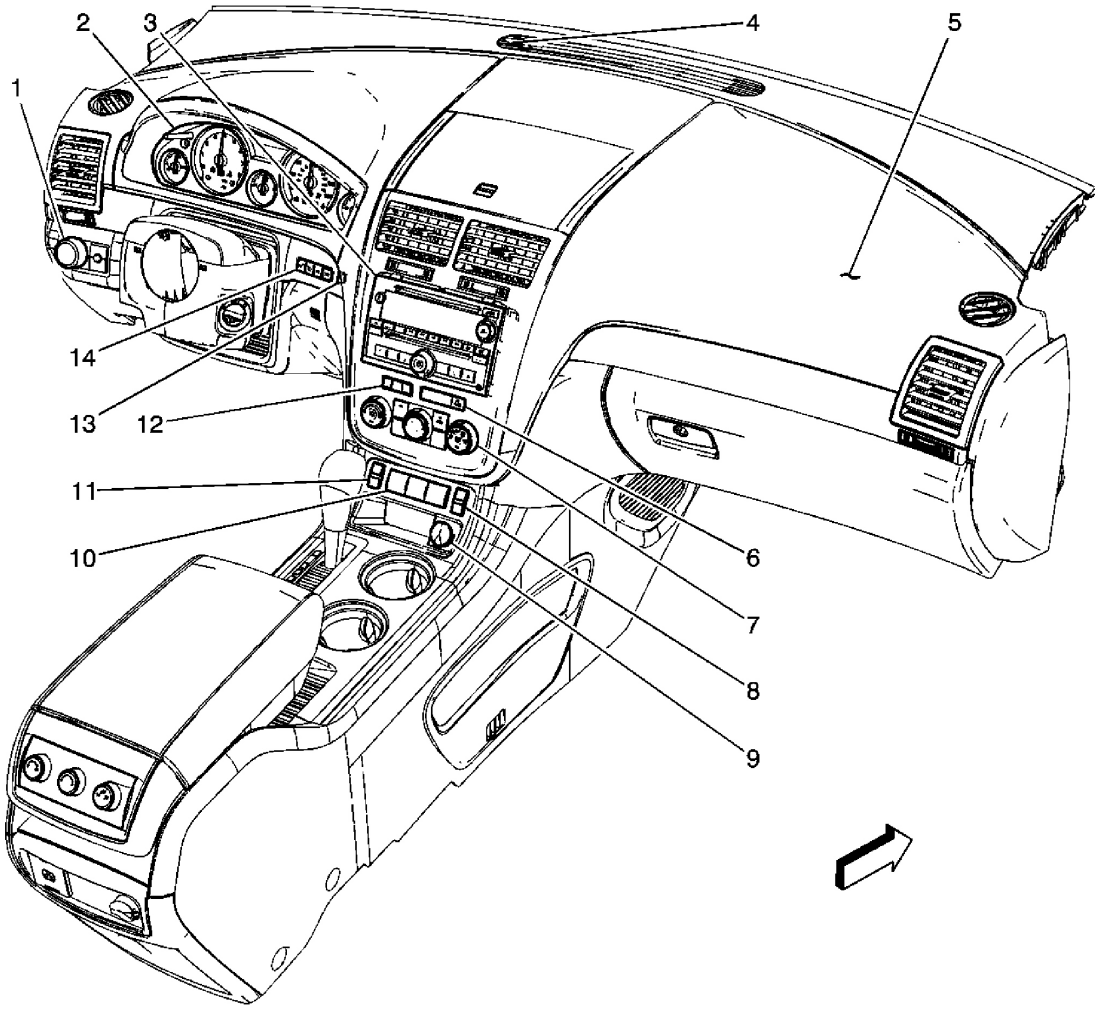


Fig. 6: Identifying I/P Components
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 6

Callout	Component Name
1	Headlamp Switch
2	Instrument Panel Cluster (IPC)
3	Radio
4	Sunload Sensor (CJ2)/Ambient Light Sensor (C67)
5	I/P Trim
6	Inflatable Restraint Passenger Air Bag ON/OFF Indicator
7	HVAC Control Module
8	Heated Seat Switch - Passenger (KA1)

9	Auxiliary Power Outlet - I/P
10	I/P Switch Assembly
11	Heated Seat Switch - Driver (KA1)
12	Hazard Switch
13	Driver Information Center (DIC) Switch (UH9)

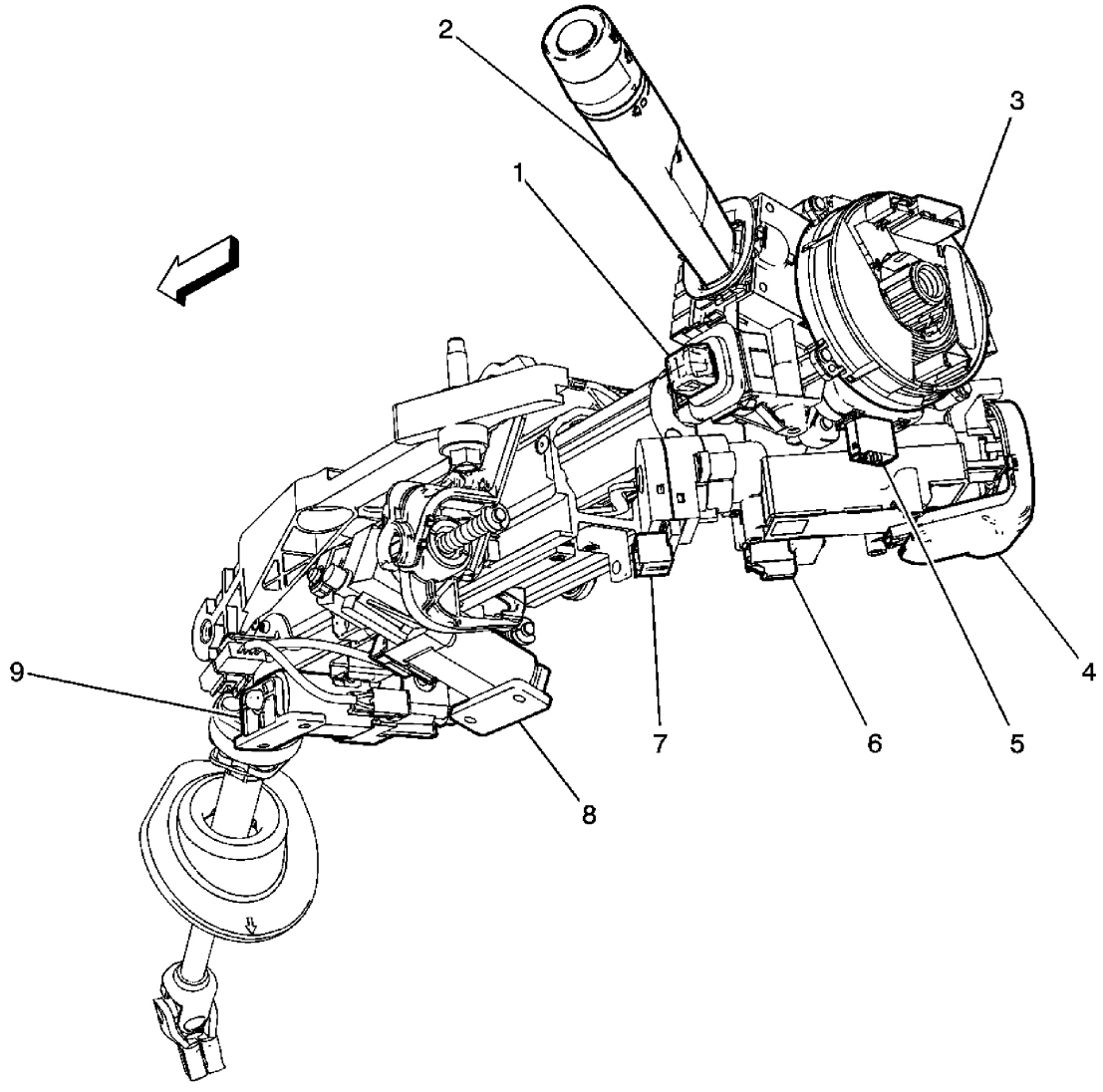


Fig. 7: Identifying Steering Column Components
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 7

Callout	Component Name

1	Tilt/Telescope Switch (N38)
2	Turn Signal/Multifunction Switch
3	Inflatable Restraint Steering Wheel Module Coil
4	Theft Deterrent Control Module
5	Steering Wheel Speed Position Sensor
6	Ignition Lock Cylinder Control Actuator
7	Ignition Switch
8	Tilt Motor
9	Telescope Actuator

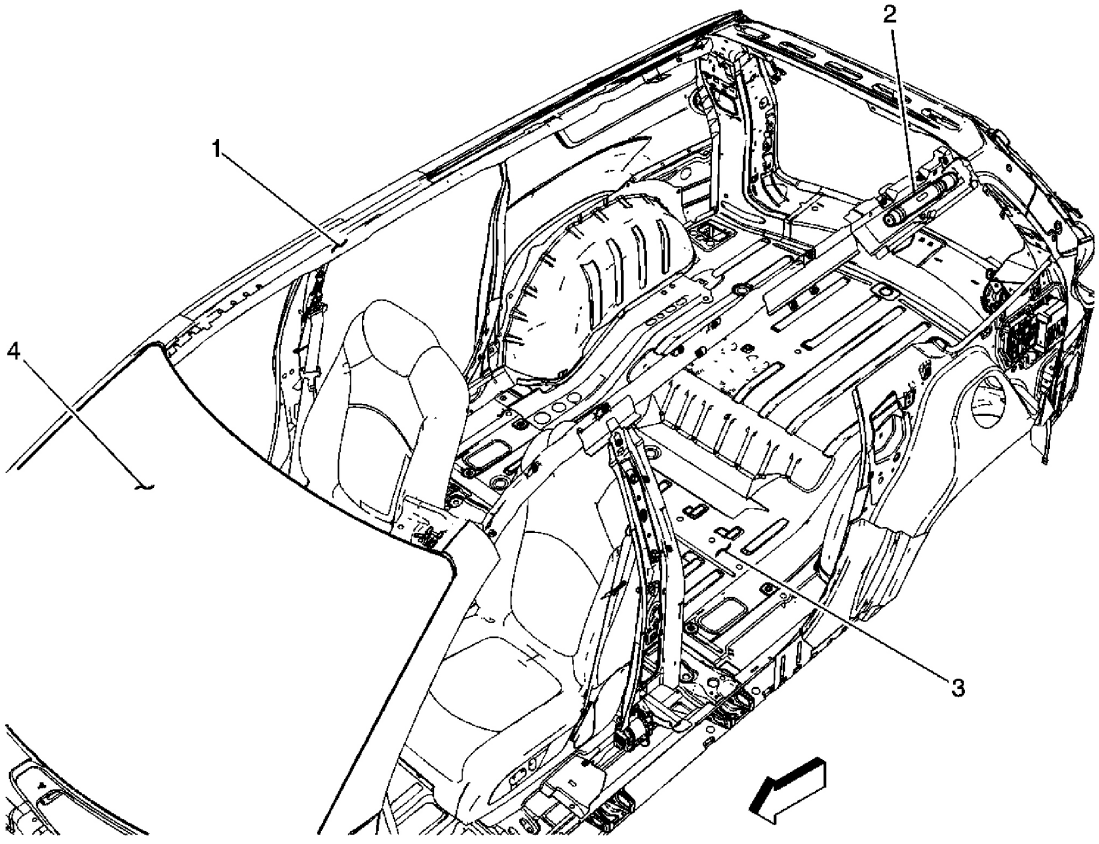


Fig. 8: View Of Roof Rail Air Bags
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 8

Callout	Component Name
1	Inflatable Restraint Roof Rail Module - Passenger

2	Inflatable Restraint Roof Rail Module - Driver
3	Floor Panel
4	Windshield

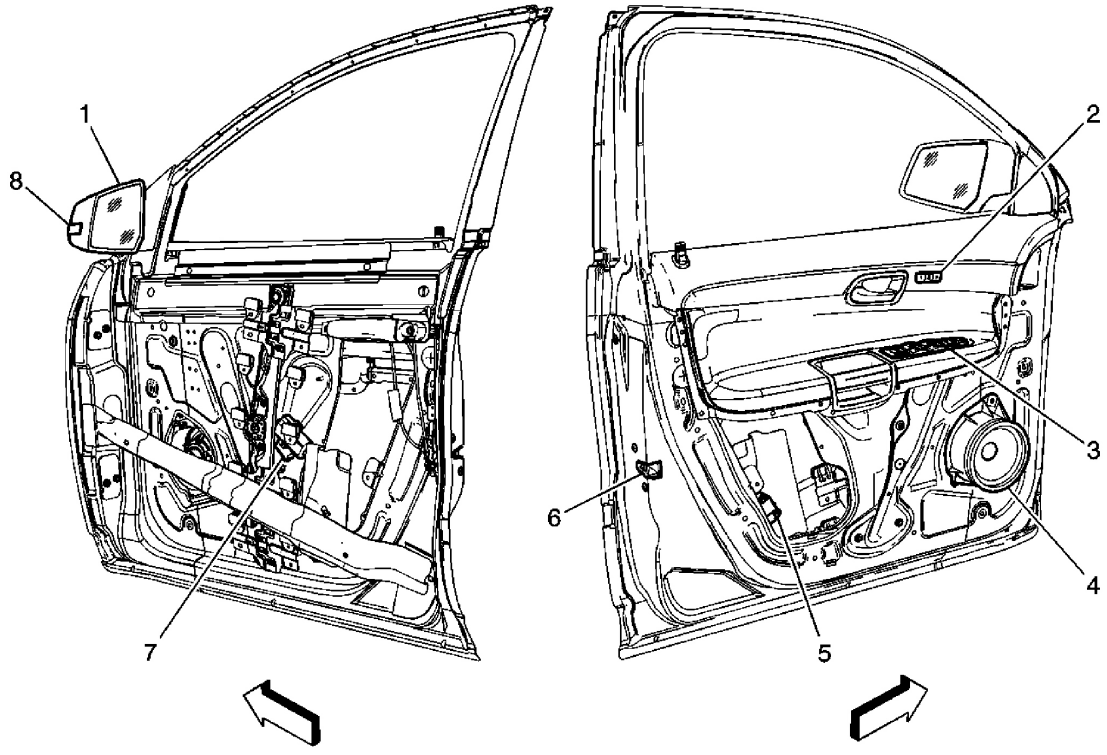


Fig. 9: Identifying Driver Door Components
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 9

Callout	Component Name
1	Outside Rearview Mirror - Driver
2	Memory Seat Switch (AG3)
3	Driver Door Module (DDM) (AXC/AXE)
4	Speaker - LF Door
5	Inflatable Restraint Side Impact Sensing Module (SISM) - Left
6	Door Latch Assembly - Driver
7	Window Motor - Driver
8	Turn Signal Lamp (Part of Outside Rearview)

2007 Saturn Outlook XE

2007 RESTRAINTS Supplemental Inflatable Restraints - Outlook

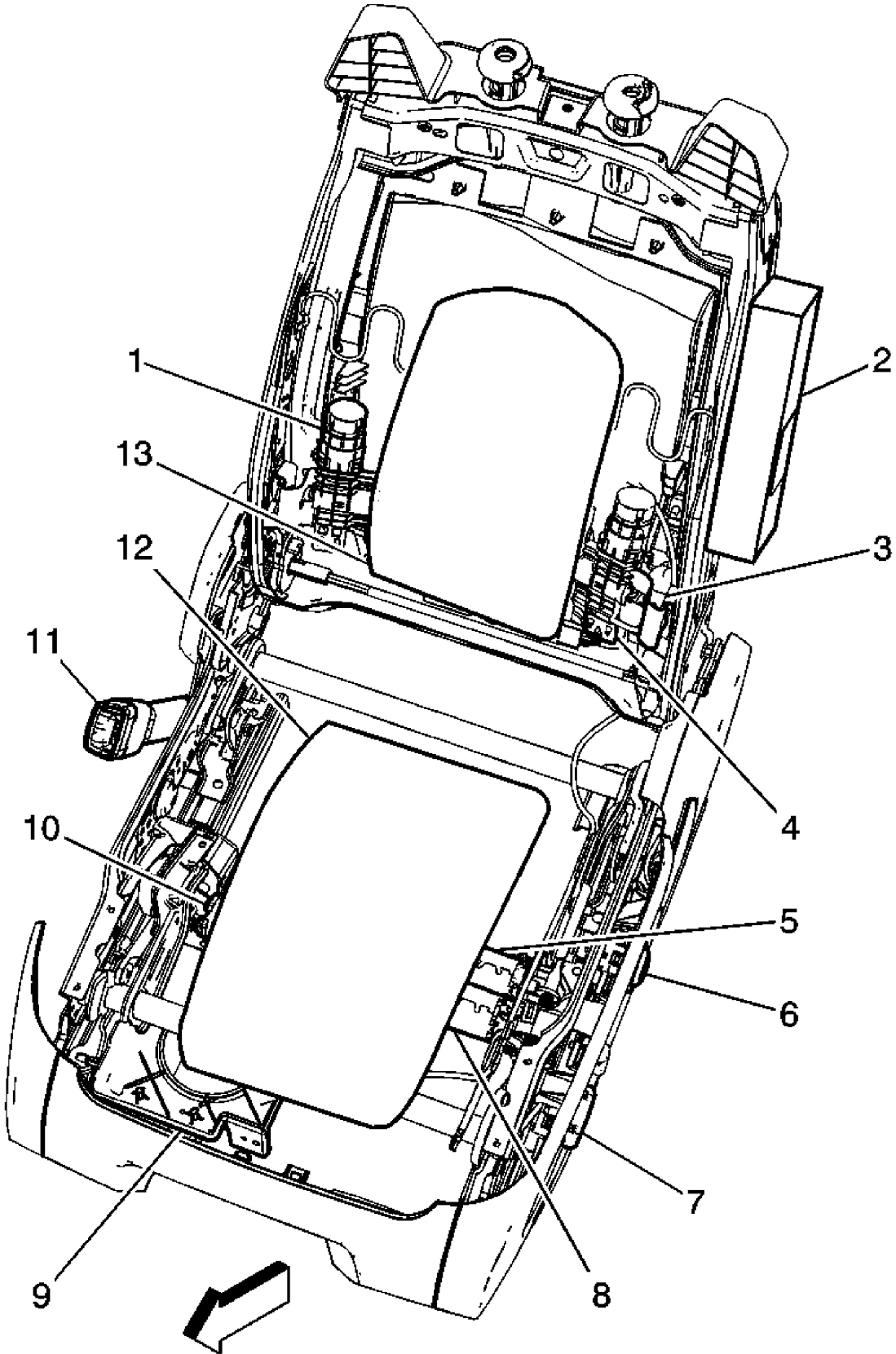


Fig. 10: View Of Driver Seat Components (Except A45)
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 10

Callout	Component Name
1	Seat Lumbar Vertical Motor - Driver
2	Inflatable Restraint Side Impact Module - Left
3	Seat Recline Motor - Driver
4	Seat Lumbar Horizontal Motor - Driver
5	Seat Horizontal Motor - Driver
6	Seat Lumbar Switch - Driver
7	Seat Adjuster Switch - Driver
8	Seat Rear Vertical Motor - Driver
9	Heated Seat Control Module - Driver (KA1)
10	Seat Front Vertical Motor - Driver
11	Seat Belt Switch - Driver
12	Heated Seat Element - Driver Cushion (KA1)
13	Heated Seat Element - Driver Back (KA1)

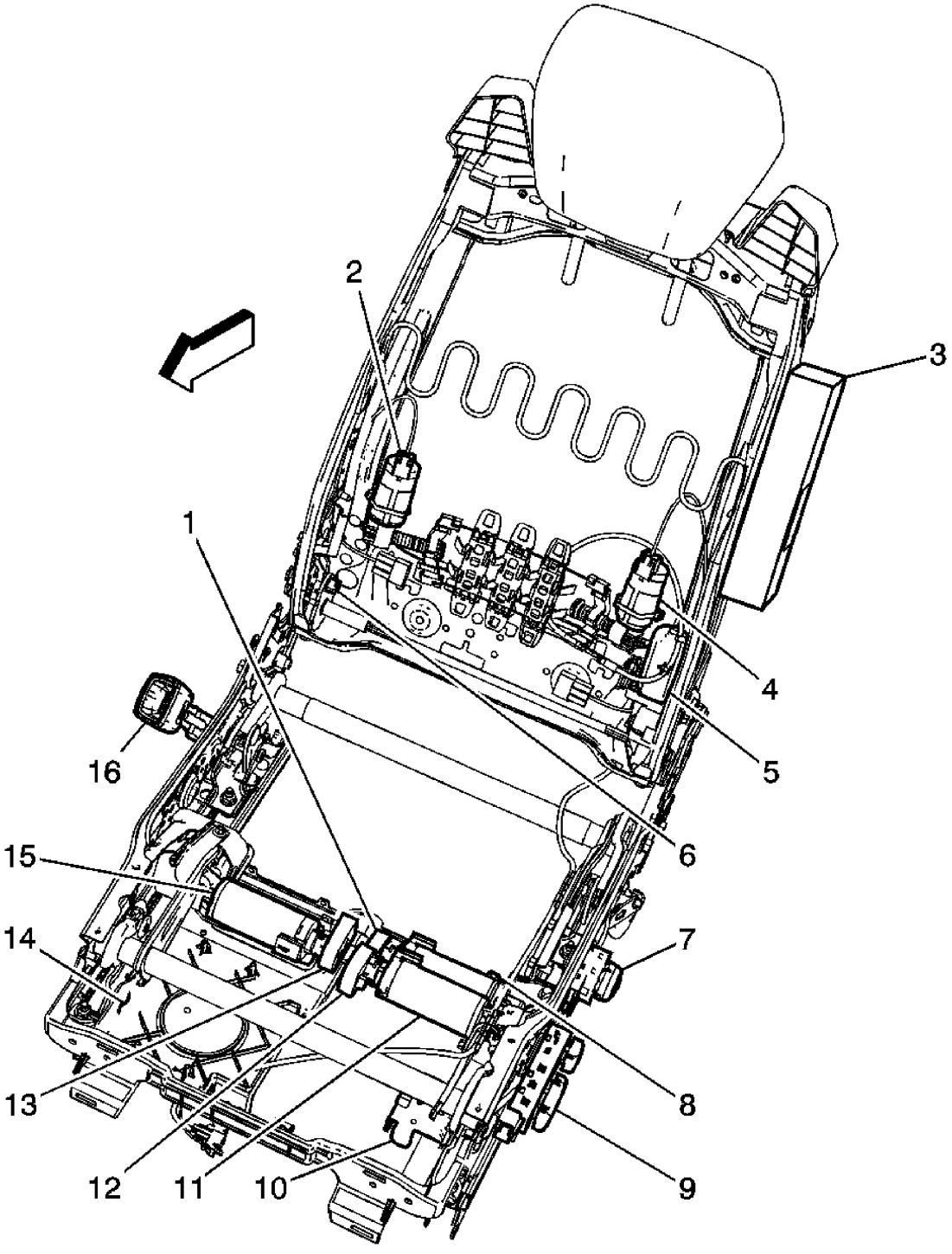


Fig. 11: Identifying Driver Seat Components (AG3)
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 11

Callout	Component Name
1	Seat Horizontal Position Sensor
2	Seat Lumbar Vertical Motor - Driver (AG3/AH5)
3	Inflatable Restraint Side Impact Module - Left
4	Seat Lumbar Horizontal Motor - Driver (AG3/AH5)
5	Seat Recline Motor - Driver (AG3/AH5)
6	Seat Recline Position Sensor - Driver
7	Seat Lumbar Switch - Driver (AG3/AH5)
8	Seat Horizontal Motor - Driver (AG1/AG3/AH5)
9	Seat Adjuster Switch - Driver (AG1/AG3/AH5)
10	Inflatable Restraint Seat Position Sensor (SPS) - Driver (W49)
11	Seat Rear Vertical Motor - Driver
12	Seat Rear Vertical Position Sensor
13	Seat Front Vertical Position Sensor
14	Memory Seat Module
15	Seat Front Vertical Motor - Driver
16	Seat Belt Switch - Driver

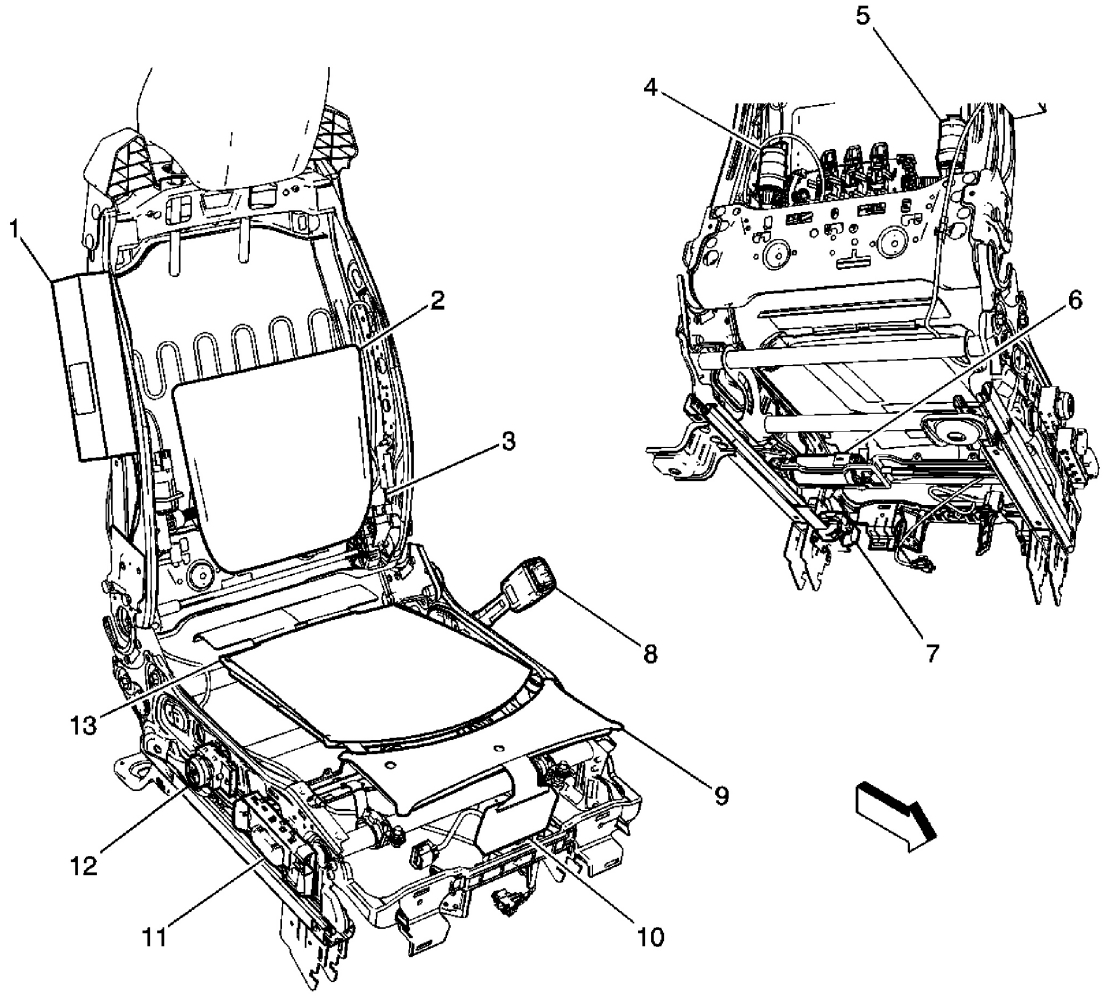


Fig. 12: Identifying Passenger Seat Components
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 12

Callout	Component Name
1	Inflatable Restraint Side Impact Module - Right
2	Heated Seat Element - Passenger Back (KA1)
3	Seat Recline Motor - Passenger (AAQ)
4	Seat Lumbar Horizontal Motot - Passenger (AAQ)
5	Seat Lumbar Vertical Motor - Passenger (AAQ)
6	Seat Horizontal Motor - Passenger
7	Inflatable Restraint Seat Position Sensor (SPS) - Passenger (W49)
8	Seat Belt Switch - Passenger

9	Inflatable Restraint Front Passenger Presence System (PPS) Sensor
10	Passenger Presence System (PPS) Module (Part of PPS Sensor)
11	Seat Adjuster Switch - Passenger
12	Seat Lumbar Switch - Passenger
13	Heated Seat Element - Passenger Back

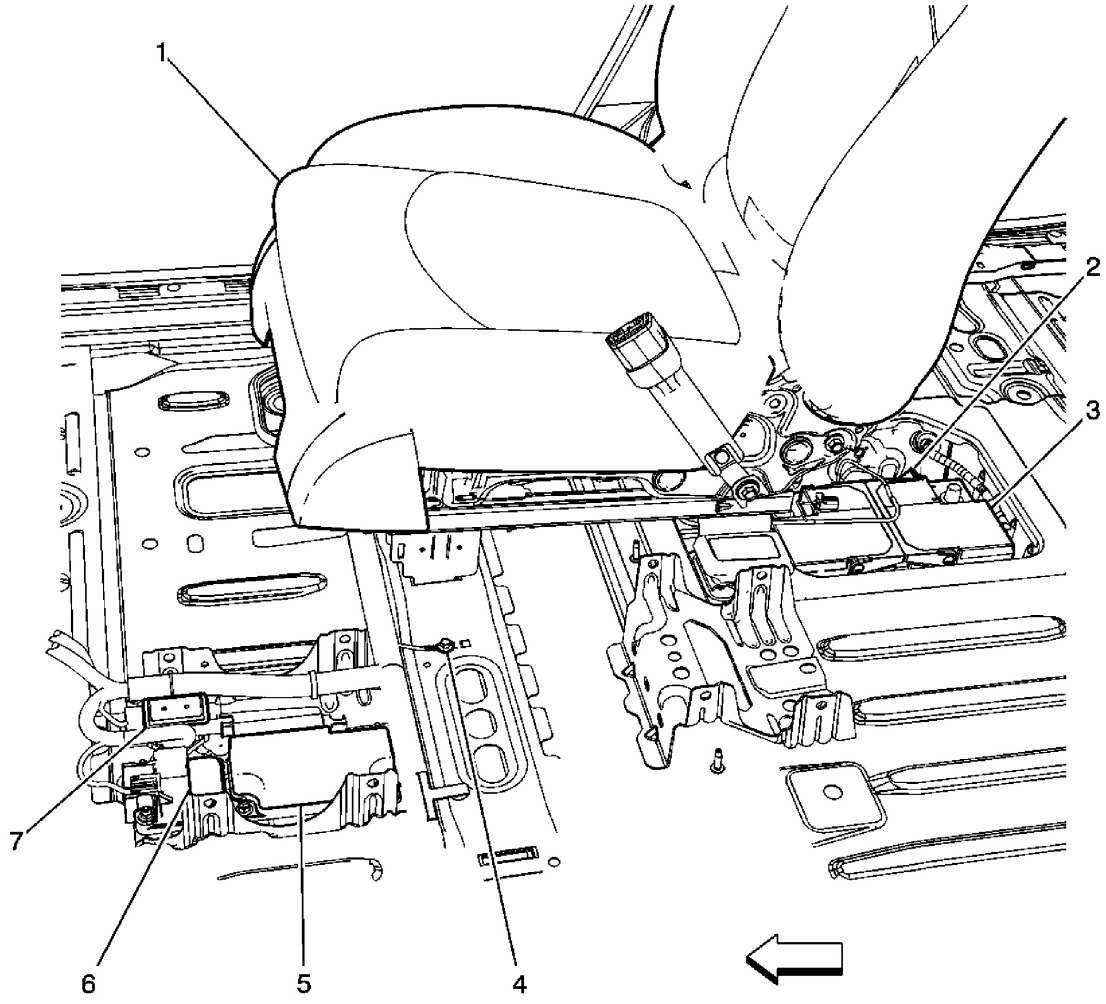


Fig. 13: Identifying Components Near Passenger Seat
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 13

Callout	Component Name
1	Passenger Seat
2	Battery Current Sensor

3	Battery
4	G304
5	Inflatable Restraint Sensing and Diagnostic Module (SDM)
6	Inflatable Restraint Vehicle Rollover Sensor
7	YAW Rate and Lateral Acceleration Sensor

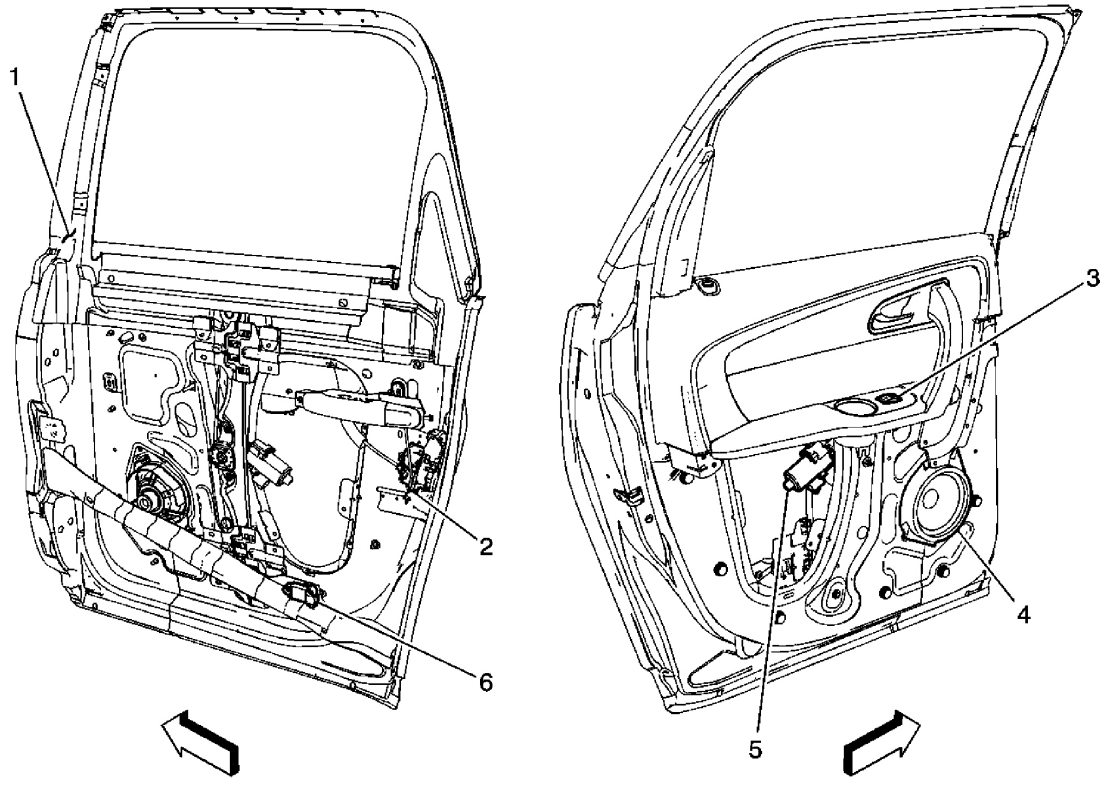


Fig. 14: Locating LR Door Components
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 14

Callout	Component Name
1	Door Frame
2	Door Latch Assembly - LR
3	Window Switch - LR
4	Speaker - LR Door
5	Window Motor - LR
6	Inflatable Restraint Side Impact Sensing Module (SISM) - LR

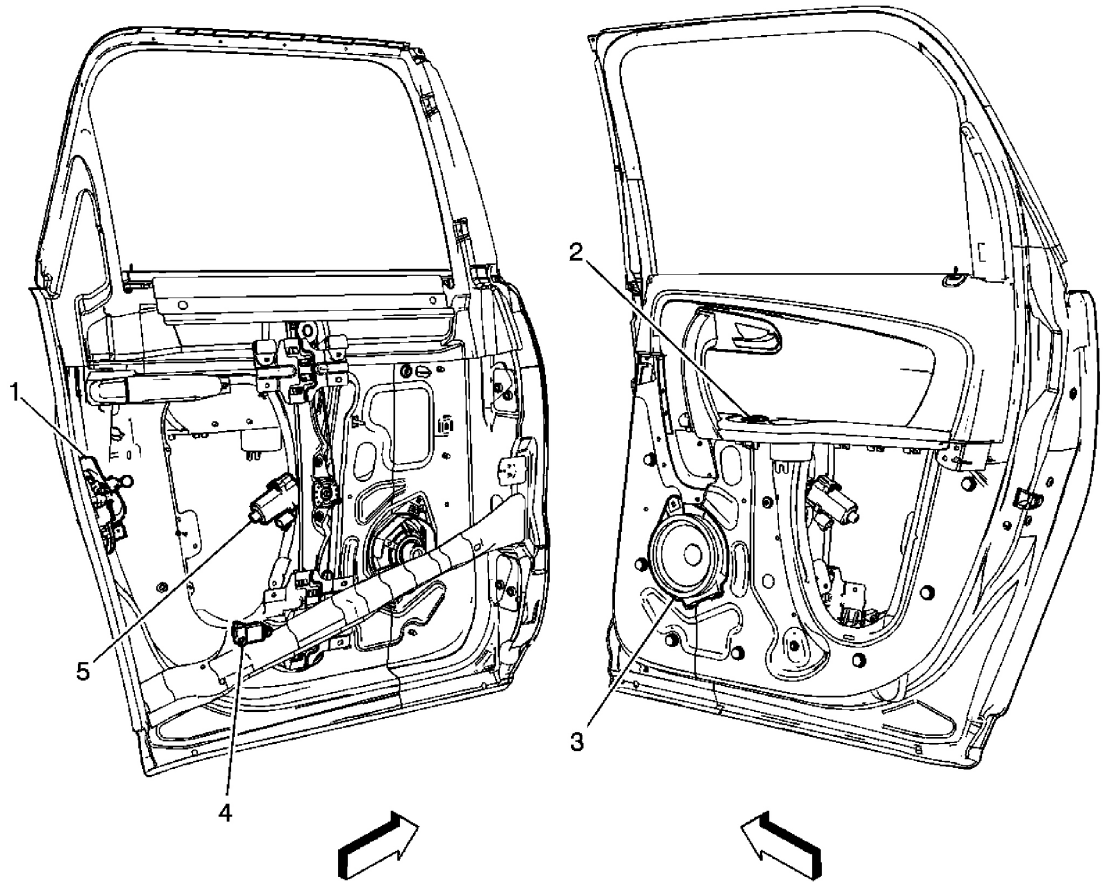


Fig. 15: Locating RR Door Components
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 15

Callout	Component Name
1	Door Latch Assembly - RR
2	Window Switch - RR
3	Speaker - RR Door
4	Inflatable Restraint Side Impact Sensing Module (SISM) - RR
5	Window Motor - RR

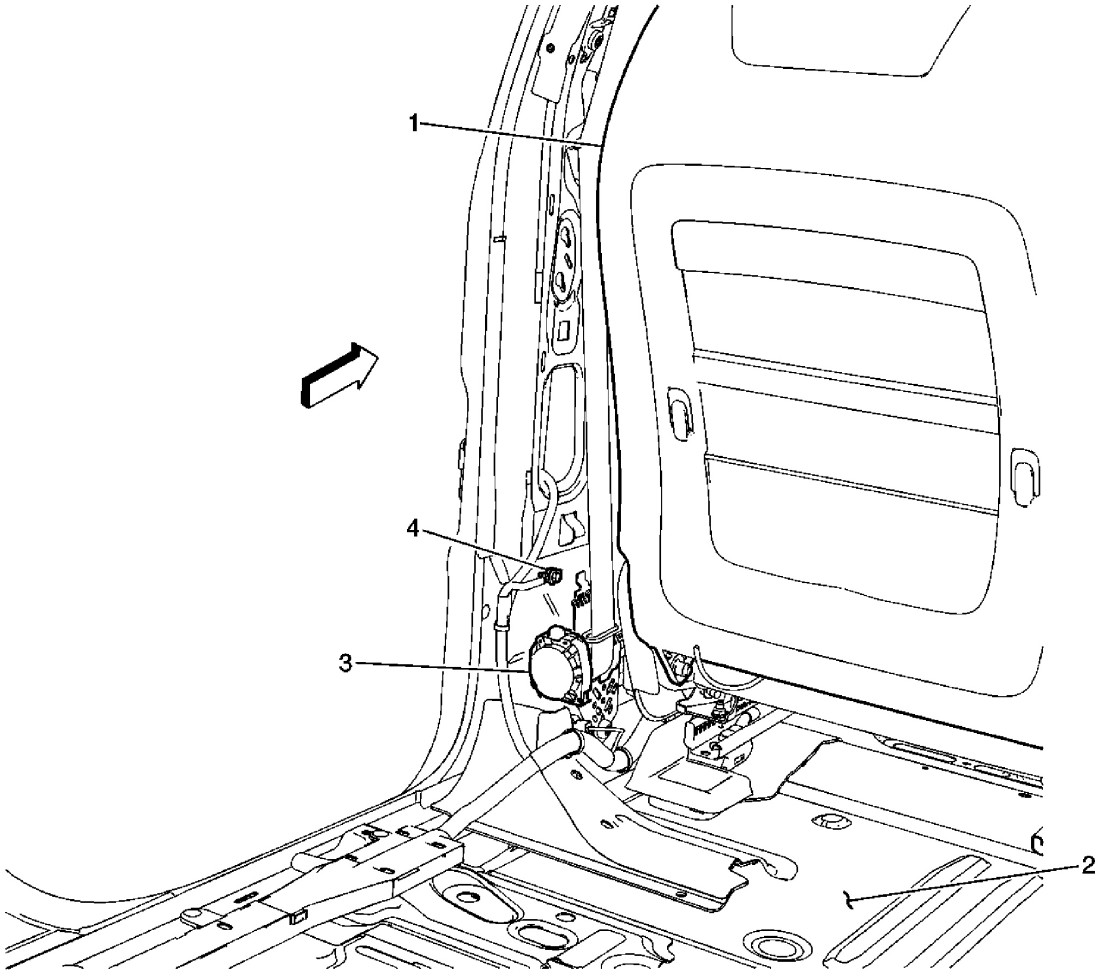


Fig. 16: View Of Components Behind Drivers Seat
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 16

Callout	Component Name
1	Passenger Seat
2	Floor Panel
3	Seat Belt Pretensioner - Driver
4	G303

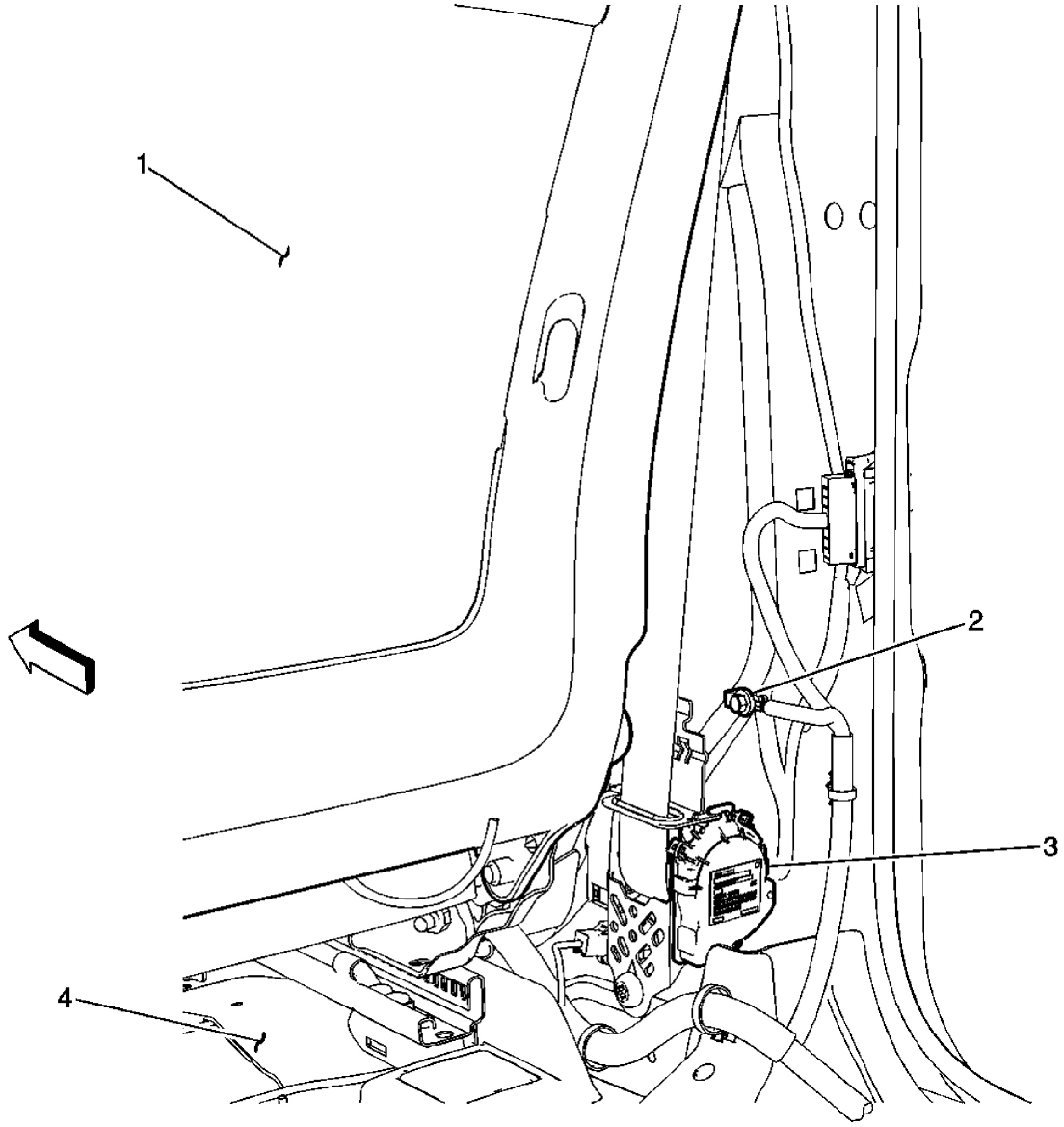


Fig. 17: Identifying Components Behind Passenger Seat
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 17

Callout	Component Name
1	Passenger Seat
2	G302
3	Seat Belt Pretensioner - Passenger
4	Floor Panel

SIR IDENTIFICATION VIEWS

The SIR 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 for a given service procedure. Refer to **SIR Disabling and Enabling**.

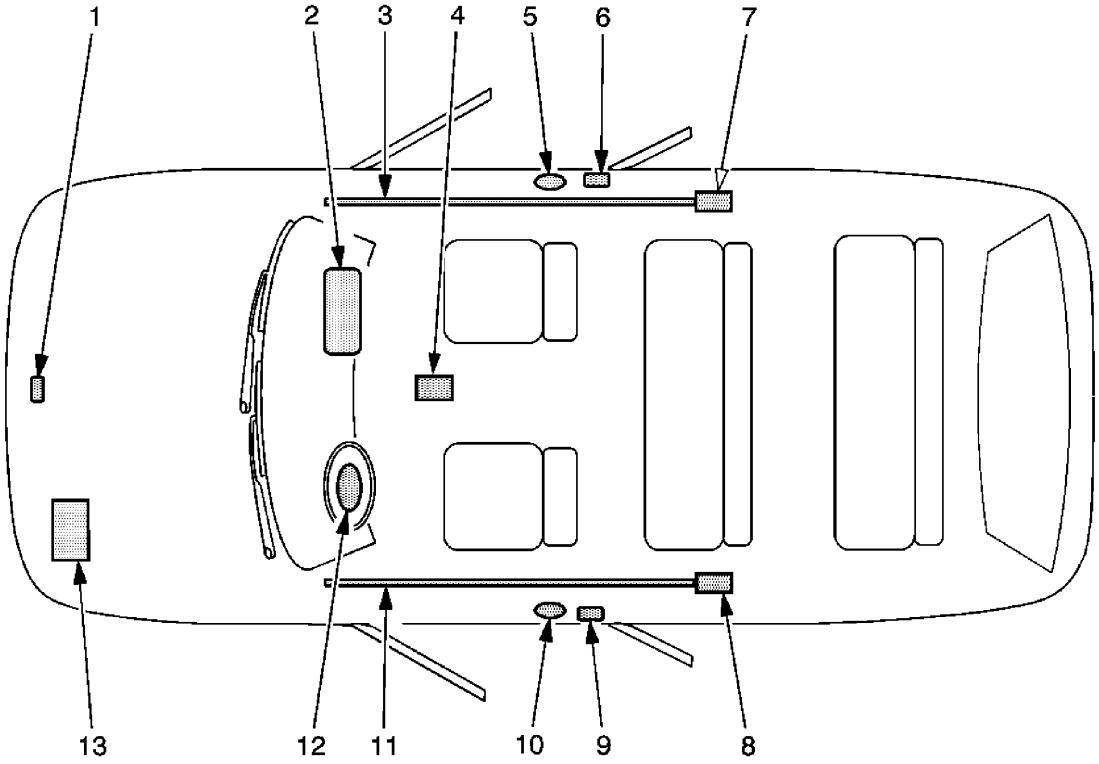


Fig. 18: View Of SIR Components
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 18

Callout	Component Name
1	Electrical Frontal Sensor (EFS)-Located under the front hood in the engine compartment
2	I/P Air Bag-Located at the top right under the instrument panel
3	Roof Rail Air Bag - Right-Located under the headliner, extending from the passenger front windshield pillar to the passenger rear windshield pillar
4	Sensing and Diagnostic Module (SDM)-Located underneath the vehicle carpet under the center console

5	Side Impact Sensor (SIS) and Seat Belt Pretensioner - RF-Located under the trim near the bottom of the center pillar
6	Seat Belt Pretensioner - RF-Located under the trim near the bottom of the center pillar
7	Roof Rail Module - Right-Located behind the garnish molding on the upper rear pillar
8	Roof Rail Module - Left-Located behind garnish molding on the upper rear pillar
9	Seat Belt Pretensioner - LF-Located under the trim near the bottom of the center pillar
10	Side Impact Sensor (SIS) - LF-Located under the trim near the bottom of the center pillar
11	Roof Rail Air Bag - Left-Located under the headliner, extending from the driver front windshield pillar to the driver rear windshield pillar
12	Steering Wheel Air Bag-Located on the steering wheel
13	Vehicle Battery-Located at the front left of the engine compartment.

SIR CONNECTOR END VIEWS

Inflatable Restraint Front End Sensor - Left (WDA)

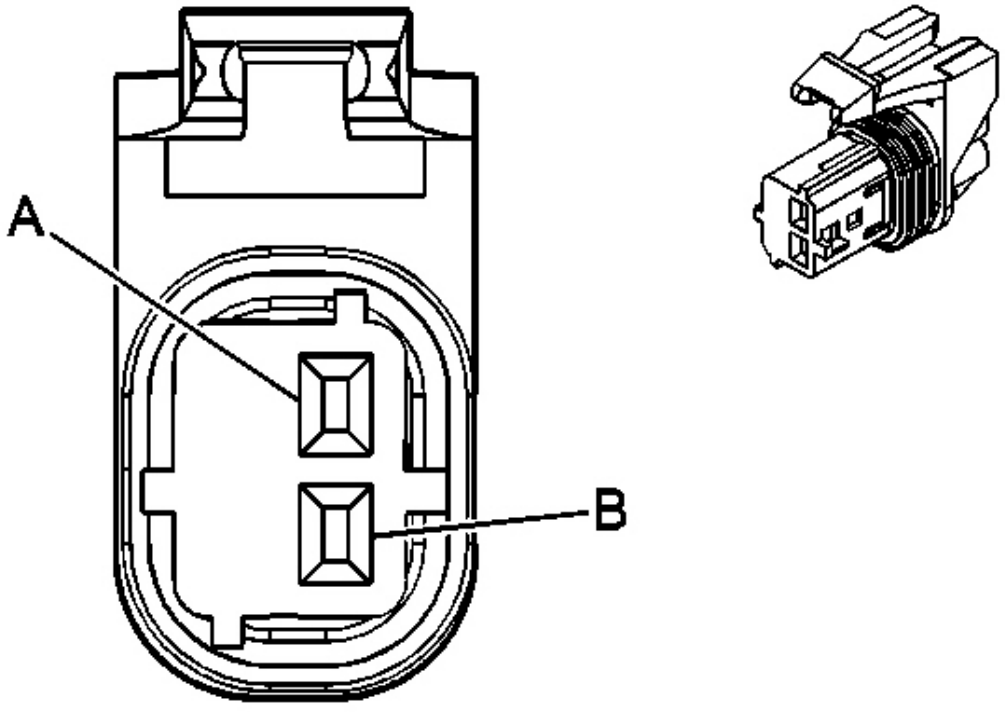


Fig. 19: Inflatable Restraint Front End Sensor - Left (WDA) Connector End View
Courtesy of GENERAL MOTORS CORP.

Inflatable Restraint Front End Sensor - Left (WDA) Connector Parts Information

Connector Part Information

- OEM: 15356723
- Service: 15306439
- Description: 2-Way F GT 150 Sealed 4.0 (YE)

Terminal Part Information

- Terminal/Tray: Service With Pigtail
- Core/Insulation Crimp: N/A
- Release Tool/Test Probe: 15315247/J-35616-2A (GY)

Inflatable Restraint Front End Sensor - Left (WDA) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.35 TN/OG	5045	Low Reference
B	0.35 YE	354	Discriminating Sensor - Signal

Inflatable Restraint Front End Sensor - Left (Z88)

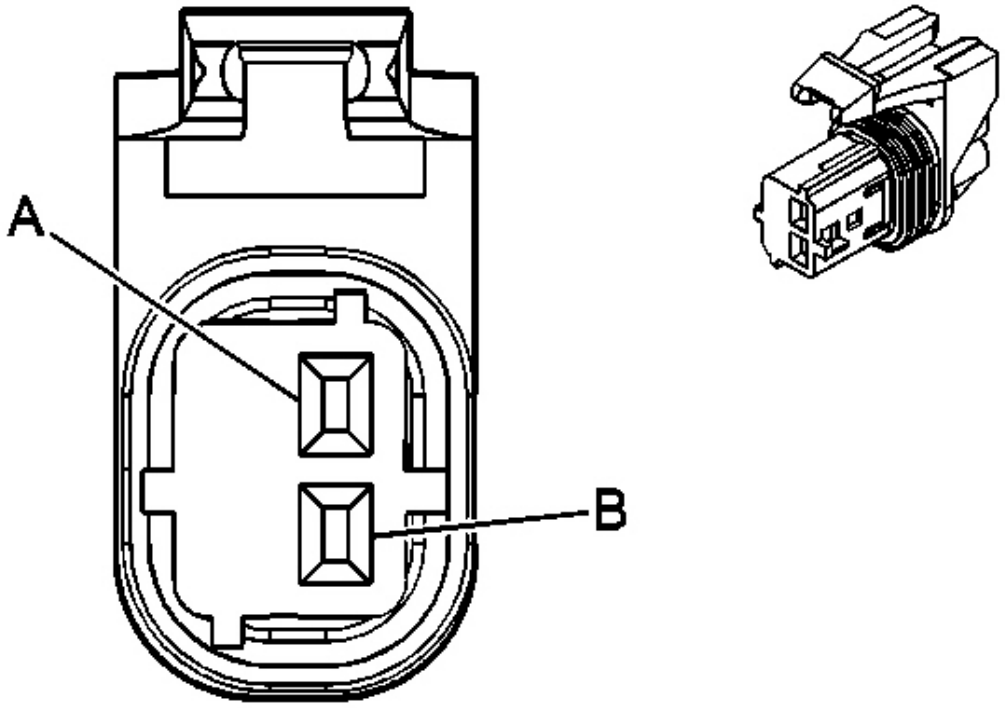


Fig. 20: Inflatable Restraint Front End Sensor - Left (Z88) Connector End View
Courtesy of GENERAL MOTORS CORP.

Inflatable Restraint Front End Sensor - Left (Z88) Connector Parts Information

Connector Part Information

- OEM: 15356723
- Service: 15306439
- Description: 2-Way F GT 150 Sealed 4.0 (YE)

Terminal Part Information

- Terminal/Tray: Service With Pigtail
- Core/Insulation Crimp: N/A
- Release Tool/Test Probe: 15315247/J-35616-2A (GY)

Inflatable Restraint Front End Sensor - Left (Z88) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.35 TN/OG	5045	Low Reference
B	0.35 YE	354	Discriminating Sensor - Signal

Inflatable Restraint Front End Sensor - Right (WDA)

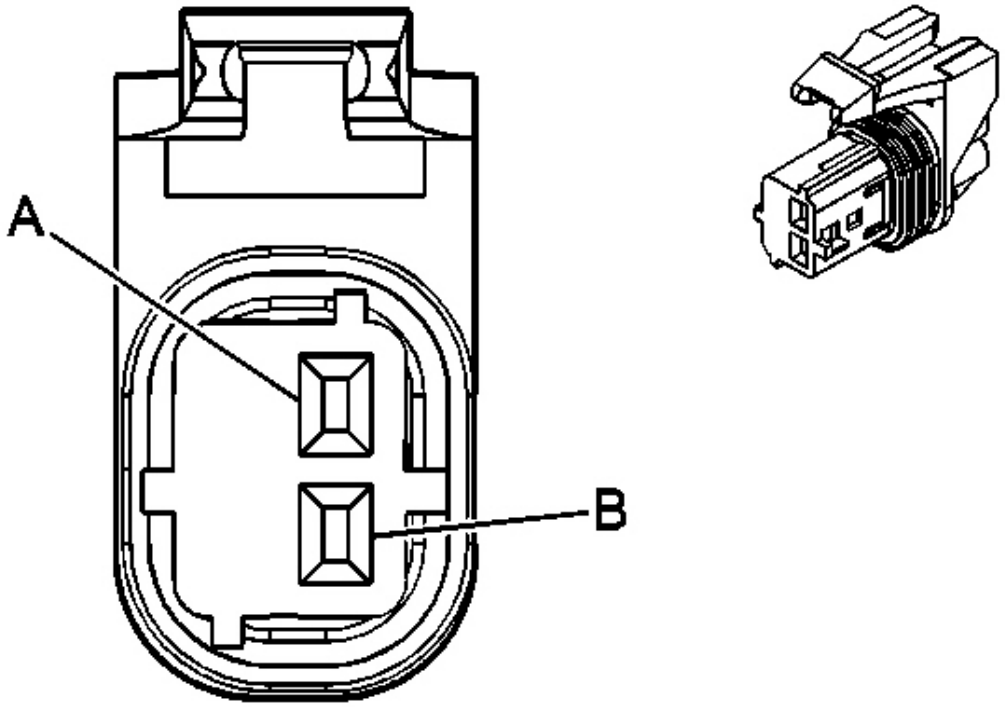


Fig. 21: Inflatable Restraint Front End Sensor - Right (WDA) Connector End View
Courtesy of GENERAL MOTORS CORP.

Inflatable Restraint Front End Sensor - Right (WDA) Connector Parts Information

Connector Part Information

- OEM: 15356723
- Service: 15306439
- Description: 2-Way F GT 150 Sealed 4.0 (YE)

Terminal Part Information

- Terminal/Tray: Service With Pigtail
- Core/Insulation Crimp: N/A
- Release Tool/Test Probe: 15315247/J-35616-2A (GY)

Inflatable Restraint Front End Sensor - Right (WDA) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.35 GY	5600	Low Reference
B	0.35 D-GN	1409	Discriminating Sensor - Right - Signal

Inflatable Restraint Front End Sensor - Right (Z88)

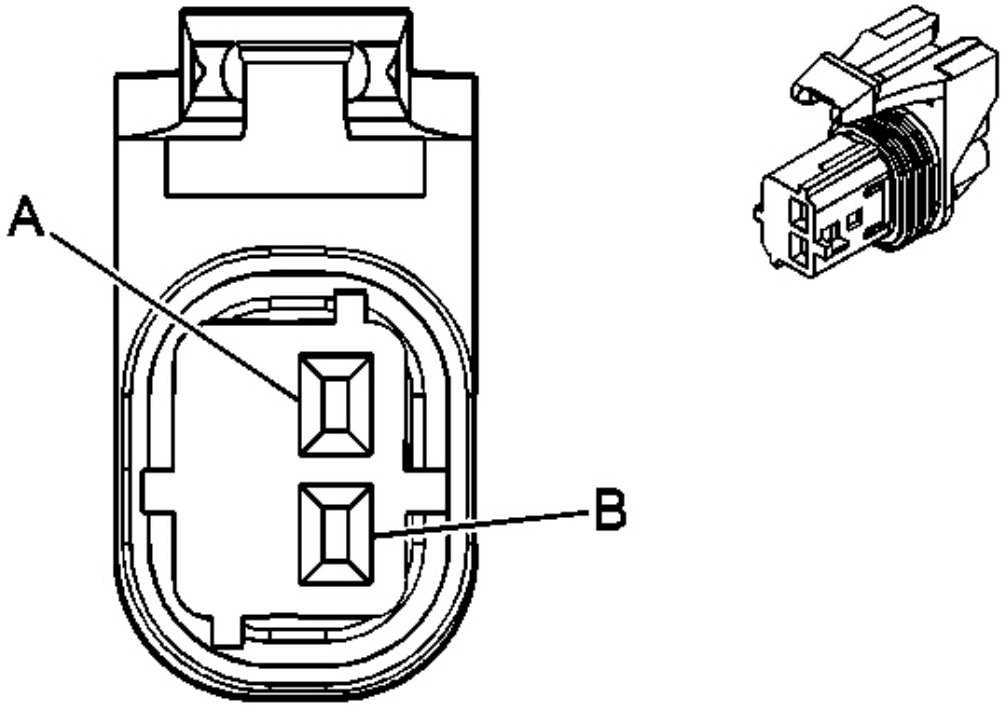


Fig. 22: Inflatable Restraint Front End Sensor - Right (Z88) Connector End View
Courtesy of GENERAL MOTORS CORP.

Inflatable Restraint Front End Sensor - Right (Z88) Connector Parts Information

Connector Part Information

- OEM: 15356723
- Service: 15306439
- Description: 2-Way F GT 150 Sealed 4.0 (YE)

Terminal Part Information

- Terminal/Tray: Service With Pigtail
- Core/Insulation Crimp: N/A
- Release Tool/Test Probe: 15315247/J-35616-2A (GY)

Inflatable Restraint Front End Sensor - Right (Z88) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.35 GY	5600	Low Reference
B	0.35 D-GN	1409	Discriminating Sensor - Right - Signal

Inflatable Restraint Front Passenger Presence System (PPS) Sensor (AAQ/AG2)

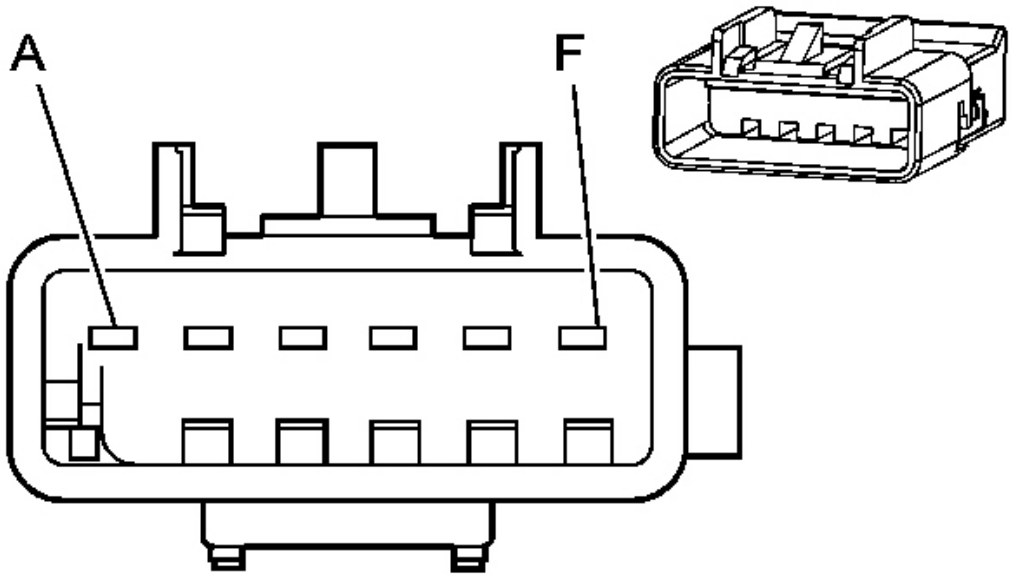


Fig. 23: Inflatable Restraint Front Passenger Presence System (PPS) Sensor (AAQ/AG2) Connector End View
Courtesy of GENERAL MOTORS CORP.

Inflatable Restraint Front Passenger Presence System (PPS) Sensor (AAQ/AG2) Connector Parts Information

Connector Part Information

- OEM: 15332142
- Service: 89046638
- Description: 6-Way M GT 150/280 Series, Sealed (BK)

Terminal Part Information

- Terminal/Tray: Service With Pigtail

- Core/Insulation Crimp: N/A
- Release Tool/Test Probe: 15315247/J-35616-3 (GY)

Inflatable Restraint Front Passenger Presence System (PPS) Sensor (AAQ/AG2) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.35 RD/WH	1340	Battery Positive Voltage
B	0.35 D-GN	5060	Low Speed GMLAN Serial Data
C	-	-	Not Used
D	0.35 BK/WH	1751	Ground
E-F	-	-	Not Used

Inflatable Restraint Front Passenger Presence System (PPS) Sensor (AG5)

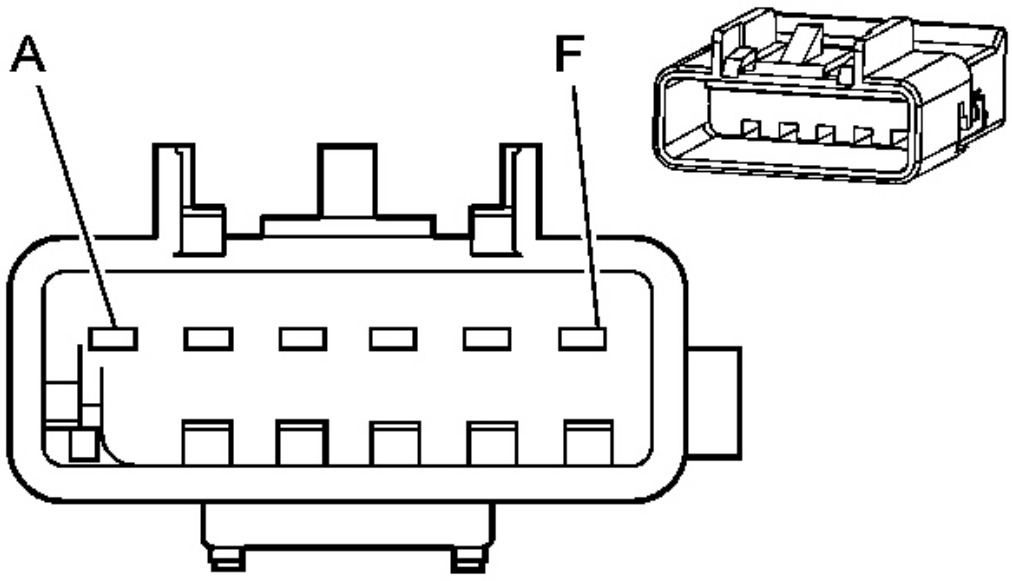


Fig. 24: Inflatable Restraint Front Passenger Presence System (PPS) Sensor (AG5) Connector End View
Courtesy of GENERAL MOTORS CORP.

Inflatable Restraint Front Passenger Presence System (PPS) Sensor (AG5) Connector

Parts Information

Connector Part Information

- OEM: 15332142
- Service: 89046638
- Description: 6-Way M GT 150/280 Series, Sealed (BK)

Terminal Part Information

- Terminal/Tray: Service With Pigtail
- Core/Insulation Crimp: N/A
- Release Tool/Test Probe: 15315247/J-35616-3 (GY)

Inflatable Restraint Front Passenger Presence System (PPS) Sensor (AG5) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.35 RD/WH	1340	Battery Positive Voltage
B	0.35 D-GN	5060	Low Speed GMLAN Serial Data
C	-	-	Not Used
D	0.35 BK/WH	1751	Ground
E-F	-	-	Not Used

Inflatable Restraint I/P Module

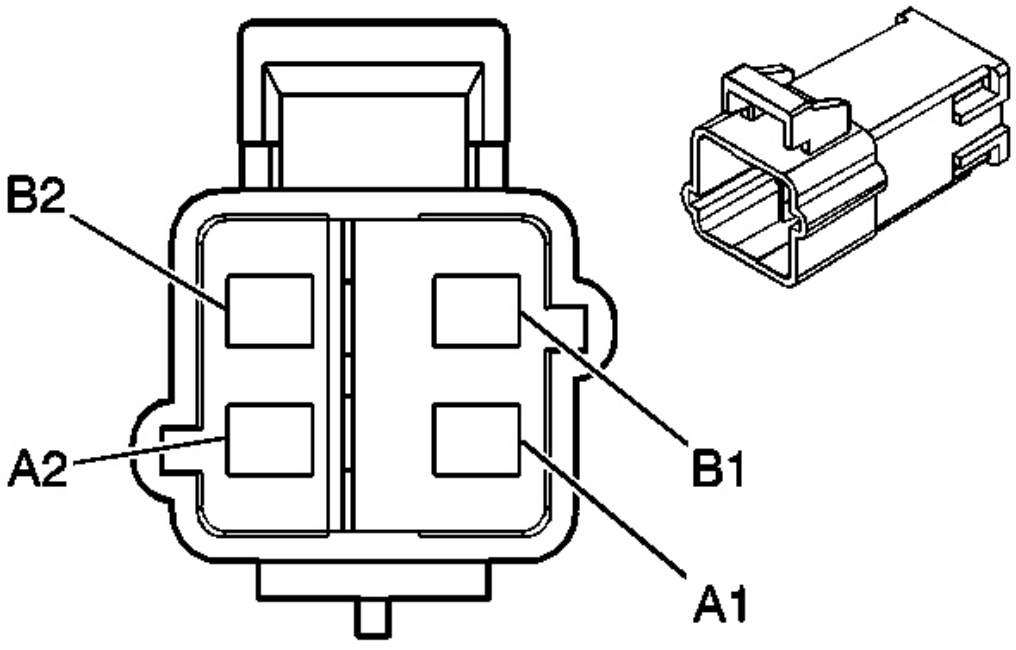


Fig. 25: Inflatable Restraint I/P Module Connector End View
Courtesy of GENERAL MOTORS CORP.

Inflatable Restraint I/P Module Connector Parts Information

Connector Part Information

- OEM: 15336476
- Service: 15336476
- Description: 4-Way M MP 280 Series (YE)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Inflatable Restraint I/P Module Connector Terminal Identification

Pin	Wire	Circuit No.	Function

A1	0.35 OG	3024	I/P Module - Stage 1 - Low Control
A2	0.35 YE	3025	I/P Module - Stage 1 - High Control
B1	0.35 PU	3026	I/P Module - Stage 2 - Low Control
B2	0.35 GY	3027	I/P Module - Stage 2 - High Control

Inflatable Restraint PASSENGER AIR BAG ON/OFF Indicator (WDA)

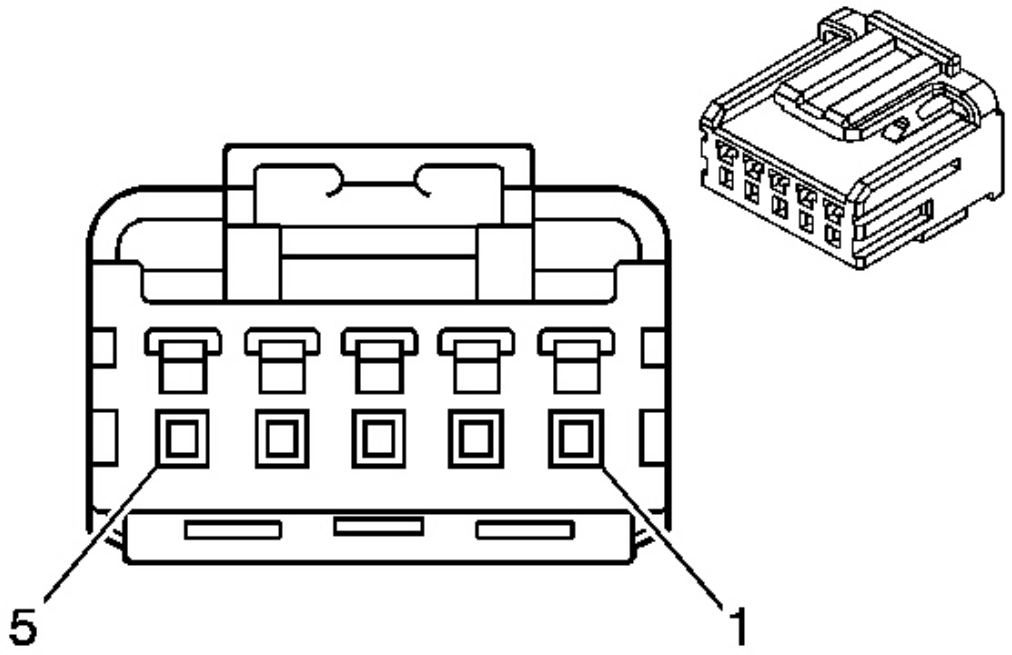


Fig. 26: Inflatable Restraint PASSENGER AIR BAG ON/OFF Indicator (WDA) Connector End View
Courtesy of GENERAL MOTORS CORP.

Inflatable Restraint PASSENGER AIR BAG ON/OFF Indicator (WDA) Connector Parts Information

Connector Part Information

- OEM: 15398877
- Service: See Catalog

- Description: 5-Way F HCM Series (NA)

Terminal Part Information

- Terminal/Tray: Service With Pigtail
- Core/Insulation Crimp: N/A
- Release Tool/Test Probe: 12094429/J-35616-64B (L-BU)

Inflatable Restraint PASSENGER AIR BAG ON/OFF Indicator (WDA) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	0.35 D-BU	2307	Passenger Air Bag On Indicator Control
2	0.35 BK	1450	Ground
3	0.35 D-GN	2308	Passenger Air Bag Off Indicator Control
4	0.35 PK	1139	Ignition II/III Voltage
5	0.35 PU	5234	Passenger Seat Belt Indicator

Inflatable Restraint PASSENGER AIR BAG ON/OFF Indicator (Z88)

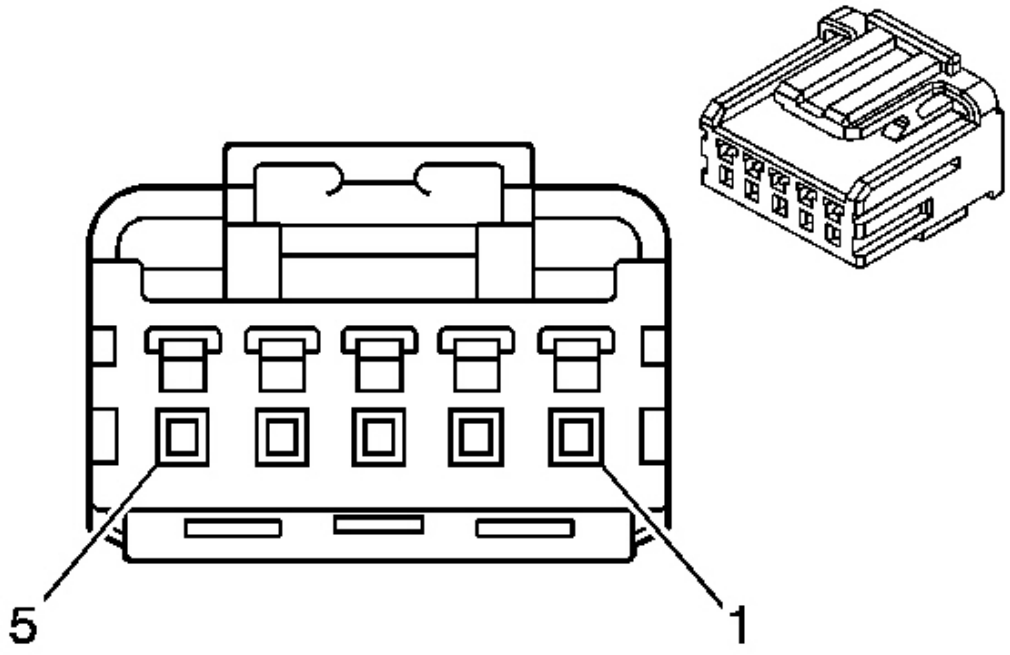


Fig. 27: Inflatable Restraint PASSENGER AIR BAG ON/OFF Indicator (Z88) Connector End View
Courtesy of GENERAL MOTORS CORP.

Inflatable Restraint PASSENGER AIR BAG ON/OFF Indicator (Z88) Connector Parts Information

Connector Part Information

- OEM: 15398877
- Service: See Catalog
- Description: 5-Way F HCM Series (NA)

Terminal Part Information

- Terminal/Tray: Service With Pigtail
- Core/Insulation Crimp: N/A
- Release Tool/Test Probe: 12094429/J-35616-64B (L-BU)

Inflatable Restraint PASSENGER AIR BAG ON/OFF Indicator (Z88) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	0.35 D-BU	2307	Passenger Air Bag On Indicator Control
2	0.35 BK	1450	Ground
3	0.35 D-GN	2308	Passenger Air Bag Off Indicator Control
4	0.35 PK	1139	Ignition II/III Voltage
5	0.35 PU	5234	Passenger Seat Belt Indicator

Inflatable Restraint Roof Rail Module - Driver

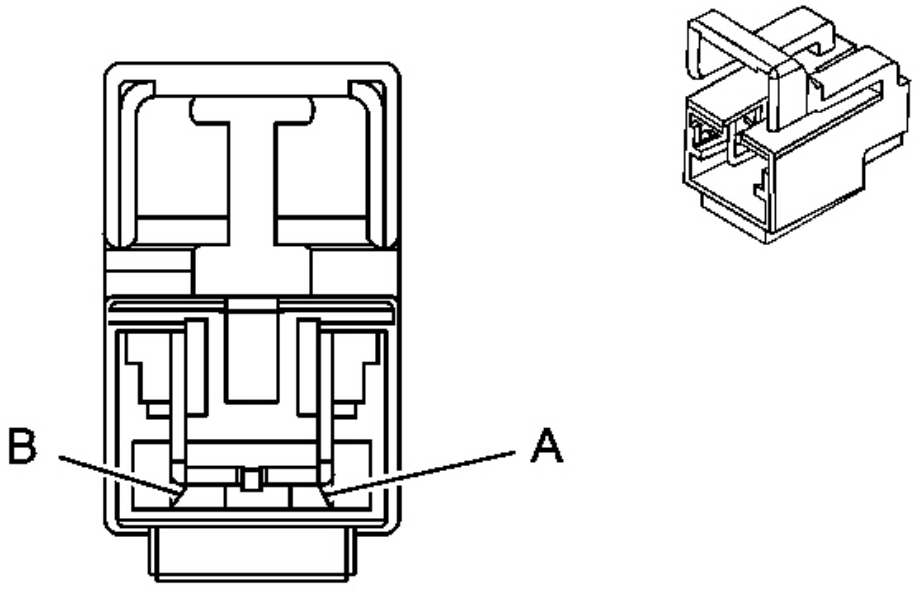


Fig. 28: Inflatable Restraint Roof Rail Module - Driver Connector End View
Courtesy of GENERAL MOTORS CORP.

Inflatable Restraint Roof Rail Module - Driver Connector Parts Information

Connector Part Information

- OEM: 12077921
- Service: See Catalog
- Description: 2-Way F Metri-Pack 280 Series (YE)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Inflatable Restraint Roof Rail Module - Driver Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.35 PU/WH	5019	Roof Rail Module - Left - High Control
B	0.35 PK	5020	Roof Rail Module - Left - Low Control

Inflatable Restraint Roof Rail Module - Passenger

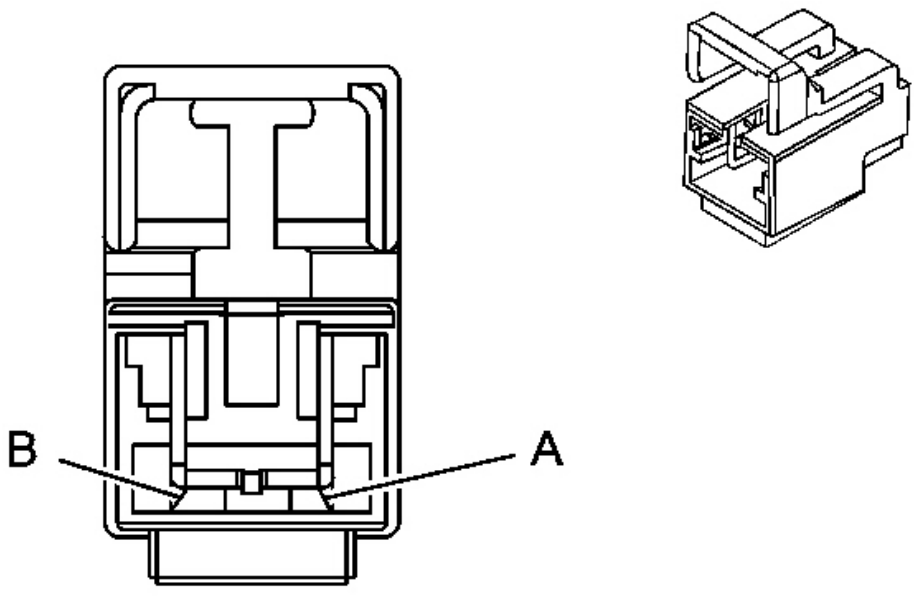


Fig. 29: Inflatable Restraint Roof Rail Module - Passenger Connector End View
Courtesy of GENERAL MOTORS CORP.

Inflatable Restraint Roof Rail Module - Passenger Connector Parts Information

Connector Part Information

- OEM: 12077921
- Service: See Catalog
- Description: 2-Way F Metri-Pack 280 Series (YE)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Inflatable Restraint Roof Rail Module - Passenger Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.35 YE/BK	5021	Roof Rail Module - Right - High Control
B	0.35 WH/BK	5022	Roof Rail Module- Right - Low Control

Inflatable Restraint Sensing and Diagnostic Module (SDM) (WDA)

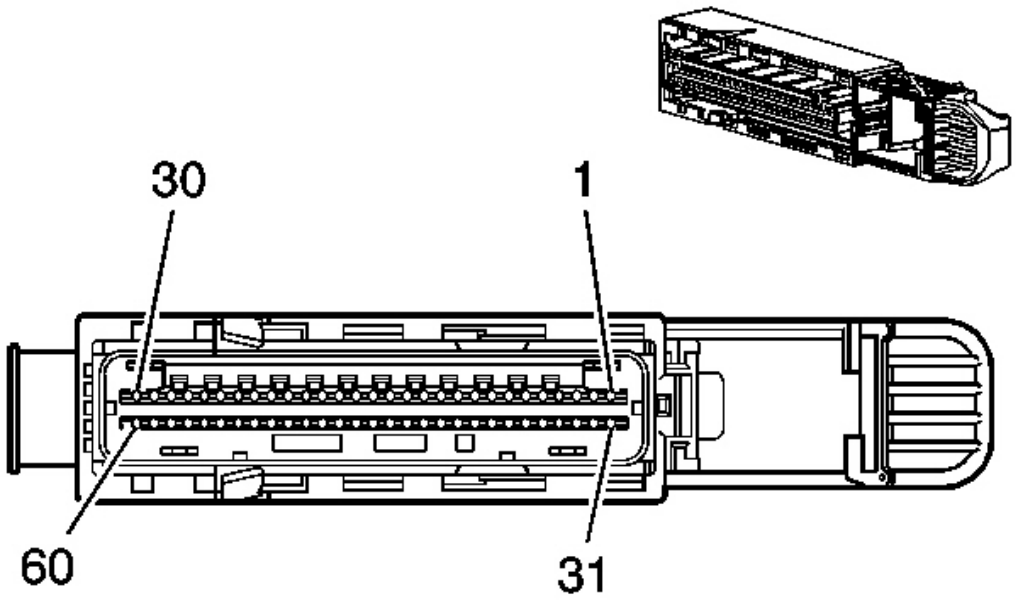


Fig. 30: Inflatable Restraint Sensing and Diagnostic Module (SDM) (WDA) Connector End View
Courtesy of GENERAL MOTORS CORP.

Inflatable Restraint Sensing and Diagnostic Module (SDM) (WDA) Connector Parts Information

Connector Part Information

- OEM: 2-184464-2
- Service: See Catalog
- Description: 60-Way F GET Series (BK)

Terminal Part Information

- Terminal/Tray: Service With Terminated Lead
- Core/Insulation Crimp: N/A
- Release Tool/Test Probe: 15315247/J-35616-64B (L-BU)

Inflatable Restraint Sensing and Diagnostic Module (SDM) (WDA) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	0.5 BK/WH	1751	Ground
2	0.35 D-GN	5060	Low Speed GMLAN Serial Data
3	0.35 D-GN	5060	Low Speed GMLAN Serial Data
4	0.35 PK	3022	Steering Wheel Module - Stage2 - Low Control
5	0.35 WH	3023	Steering Wheel Module - Stage2 - High Control
6	0.35 GY	3027	I/P Module - Stage 2 - High Control
7	0.35 PU	3026	I/P Module - Stage 2 - Low Control
8	0.35 BN	3020	Steering Wheel Module - Stage1 - Low Control
9	0.35 TN	3021	Steering Wheel Module - Stage1 - High Control
10	0.35 YE	3025	I/P Module - Stage 1 - High Control
11	0.35 OG	3024	I/P Module - Stage 1 - Low Control
12	0.5 YE/BK	2138	Side Impact Module - LF - Low Control
13	0.5 BN	2137	Side Impact Module - LF - High Control
14	0.5 TN/WH	2135	Side Impact Module - RF - High Control
15	0.5 L-GN	2136	Side Impact Module - RF - Low Control
16-19	-	-	Not Used
20	0.5 PK	5020	Roof Rail Module - Left - Low Control
21	0.5 PU/WH	5019	Roof Rail Module - Left - High Control
22	0.5 YE/BK	5021	Roof Rail Module - Right - High Control
23	0.5 WH/BK	5022	Roof Rail Module- Right - Low Control
24	0.5 OG/BK	2119	Seat Belt Pretensioner - Left - Low Control
25	0.5 TN/WH	2118	Seat Belt Pretensioner - Left - High Control

26	0.5 L-GN	2116	Seat Belt Pretensioner - Right - High Control
27	0.5 OG	2117	Seat Belt Pretensioner - Right - Low Control
28	0.35 PK	5057	Low Reference
29	0.35 L-GN	5055	Seat Position Sensor- Left - Signal
30	0.35 L-BU	5056	Seat Position Sensor- Right - Signal
31	0.35 RD/WH	1340	Battery Positive Voltage
32	0.5 PK	1139	Ignition II/III Voltage
33-35	-	-	Not Used
36	0.35 YE	354	Discriminating Sensor - Signal
37	0.35 D-GN	1409	Discriminating Sensor - Right - Signal
38	0.35 TN/OG	5045	Front End Sensor - Signal
39	0.35 GY	5600	Low Reference
40	0.35 PU/WH	6628	Low Reference
41	0.35 WH/BK	6629	Low Reference
42	0.35 WH	2132	Side Impact Sensing Module - Left - Signal
43	0.35 D-GN	2134	Side Impact Sensing Module - Right - Signal
44	0.35 L-BU	6622	Left Rear Side Impact Sensing Module Signal
45	0.35 L-BU/WH	6626	Right Rear Side Impact Sensing Module Signal
46	0.35 L-GN/BK	6623	Low Reference
47	0.35 PK/BK	6627	Low Reference
48-57	-	-	Not Used
58	0.35 YE/BK	5229	Roll Over Sensor High Signal
59	0.35 D-GN	5016	Seat Belt Switch - Left - Signal
60	0.35 OG	1362	Seat Belt Switch - Right - Signal

Inflatable Restraint Sensing and Diagnostic Module (SDM) (Z88)

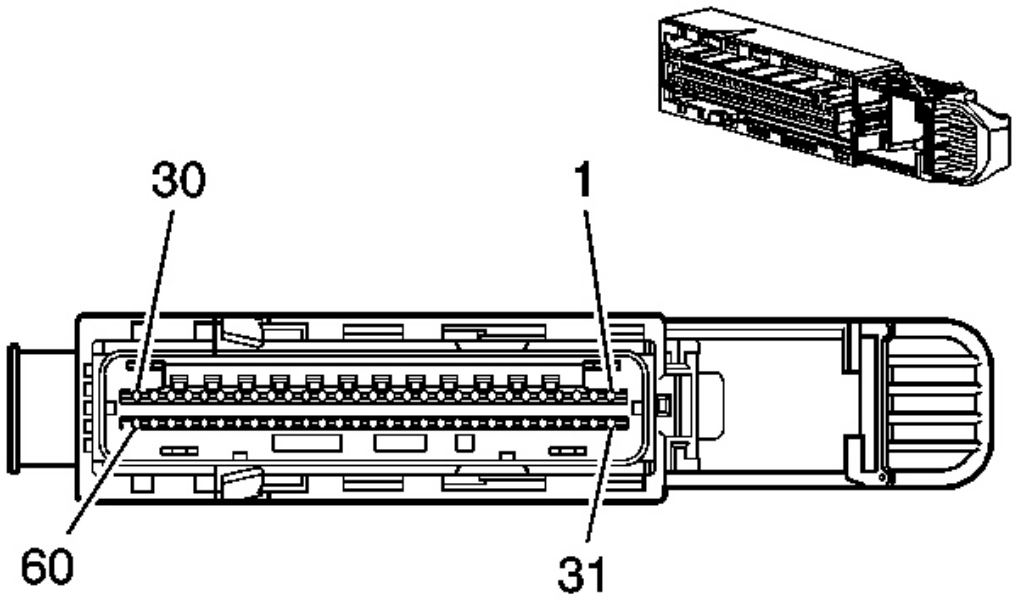


Fig. 31: Inflatable Restraint Sensing and Diagnostic Module (SDM) (Z88) Connector End View
Courtesy of GENERAL MOTORS CORP.

Inflatable Restraint Sensing and Diagnostic Module (SDM) (Z88) Connector Parts Information

Connector Part Information

- OEM: 2-184464-2
- Service: See Catalog
- Description: 60-Way F GET Series (BK)

Terminal Part Information

- Terminal/Tray: Service With Terminated Lead
- Core/Insulation Crimp: N/A
- Release Tool/Test Probe: 15315247/J-35616-64B (L-BU)

Inflatable Restraint Sensing and Diagnostic Module (SDM) (Z88) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	0.5 BK/WH	1751	Ground
2	0.35 D-GN	5060	Low Speed GMLAN Serial Data
3	0.35 D-GN	5060	Low Speed GMLAN Serial Data
4	0.35 PK	3022	Steering Wheel Module - Stage2 - Low Control
5	0.35 WH	3023	Steering Wheel Module - Stage2 - High Control
6	0.35 GY	3027	I/P Module - Stage 2 - High Control
7	0.35 PU	3026	I/P Module - Stage 2 - Low Control
8	0.35 BN	3020	Steering Wheel Module - Stage1 - Low Control
9	0.35 TN	3021	Steering Wheel Module - Stage1 - High Control
10	0.35 YE	3025	I/P Module - Stage 1 - High Control
11	0.35 OG	3024	I/P Module - Stage 1 - Low Control
12	0.5 YE/BK	2138	Side Impact Module - LF - Low Control
13	0.5 BN	2137	Side Impact Module - LF - High Control
14	0.5 TN/WH	2135	Side Impact Module - RF - High Control
15	0.5 L-GN	2136	Side Impact Module - RF - Low Control
16-19	-	-	Not Used
20	0.5 PK	5020	Roof Rail Module - Left - Low Control
21	0.5 PU/WH	5019	Roof Rail Module - Left - High Control
22	0.5 YE/BK	5021	Roof Rail Module - Right - High Control
23	0.5 WH/BK	5022	Roof Rail Module- Right - Low Control
24	0.5 OG/BK	2119	Seat Belt Pretensioner - Left - Low Control
25	0.5 TN/WH	2118	Seat Belt Pretensioner - Left - High Control

26	0.5 L-GN	2116	Seat Belt Pretensioner - Right - High Control
27	0.5 OG	2117	Seat Belt Pretensioner - Right - Low Control
28	0.35 PK	5057	Roll Over Sensor High Signal
29	0.35 L-GN	5055	Seat Position Sensor- Left - Signal
30	0.35 L-BU	5056	Seat Position Sensor- Right - Signal
31	0.35 RD/WH	1340	Battery Positive Voltage
32	0.5 PK	1139	Ignition II/III Voltage
33-35	-	-	Not Used
36	0.35 YE	354	Discriminating Sensor - Signal
37	0.35 D-GN	1409	Discriminating Sensor - Right - Signal
38	0.35 TN/OG	5045	Front End Sensor - Signal
39	0.35 GY	5600	Low Reference
40	0.35 PU/WH	6628	Low Reference
41	0.35 WH/BK	6629	Low Reference
42	0.35 WH	2132	Side Impact Sensing Module - Left - Signal
43	0.35 D-GN	2134	Side Impact Sensing Module - Right - Signal
44	0.35 L-BU	6622	Left Rear Side Impact Sensing Module Signal
45	0.35 L-BU/WH	6626	Right Rear Side Impact Sensing Module Signal
46	0.35 L-GN/BK	6623	Low Reference
47	0.35 PK/BK	6627	Low Reference
48-57	-	-	Not Used
58	0.35 YE/BK	5229	Roll Over Sensor High Signal
59	0.35 D-GN	5016	Seat Belt Switch - Left - Signal
60	0.35 OG	1362	Seat Belt Switch - Right - Signal

Inflatable Restraint Side Impact Module - Left (WDA)

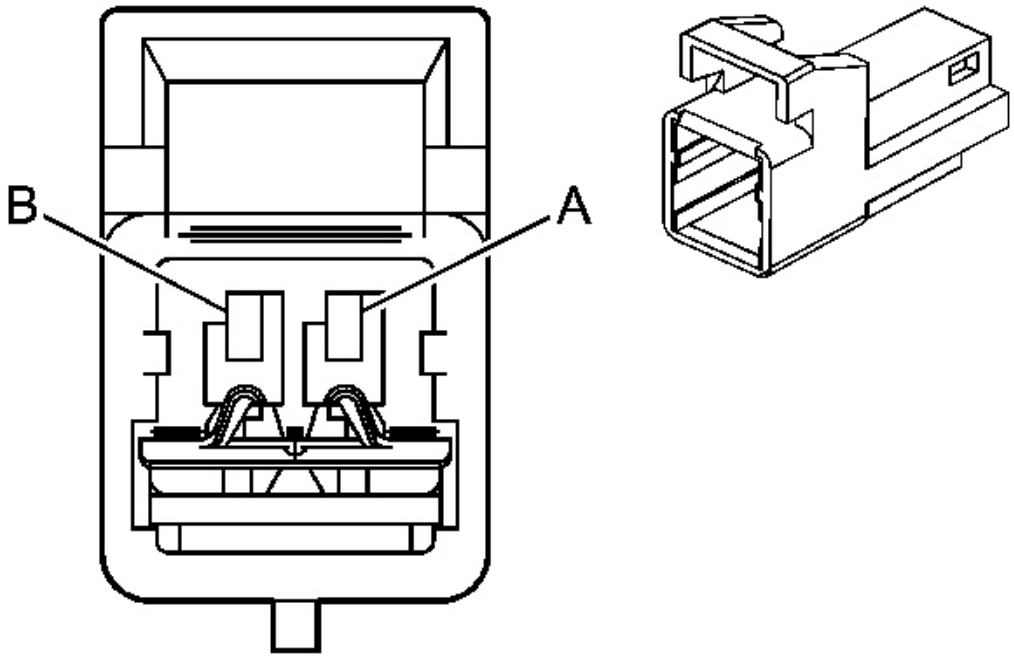


Fig. 32: Inflatable Restraint Side Impact Module - Left (WDA) Connector End View
Courtesy of GENERAL MOTORS CORP.

Inflatable Restraint Side Impact Module - Left (WDA) Connector Parts Information

Connector Part Information

- OEM: 12160816
- Service: 12160816
- Description: 2-Way M Metri-Pack 150 Series (YE)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Inflatable Restraint Side Impact Module - Left (WDA) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.5 BN	2137	Side Impact Module - LF - High Control
B	0.5 YE/BK	2138	Side Impact Module - LF - Low Control

Inflatable Restraint Side Impact Module - Left (Z88)

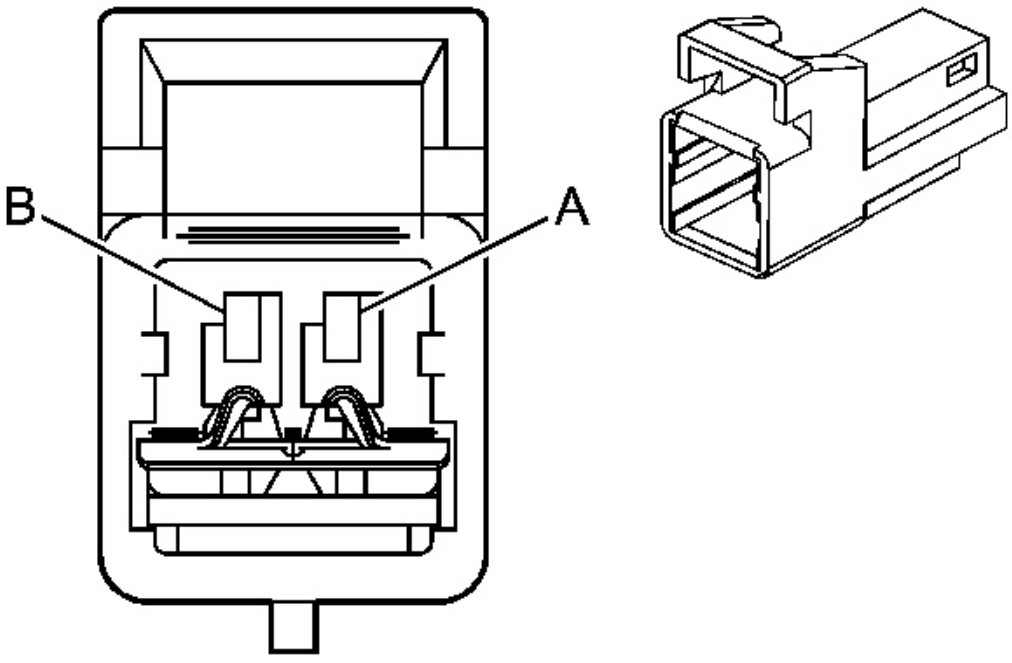


Fig. 33: Inflatable Restraint Side Impact Module - Left (Z88) Connector End View
Courtesy of GENERAL MOTORS CORP.

Inflatable Restraint Side Impact Module - Left (Z88) Connector Parts Information

Connector Part Information

- OEM: 12160816
- Service: 12160816
- Description: 2-Way M Metri-Pack 150 Series (YE)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Inflatable Restraint Side Impact Module - Left (Z88) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.5 BN	2137	Side Impact Module - LF - High Control
B	0.5 YE/BK	2138	Side Impact Module - LF - Low Control

Inflatable Restraint Side Impact Module - Right

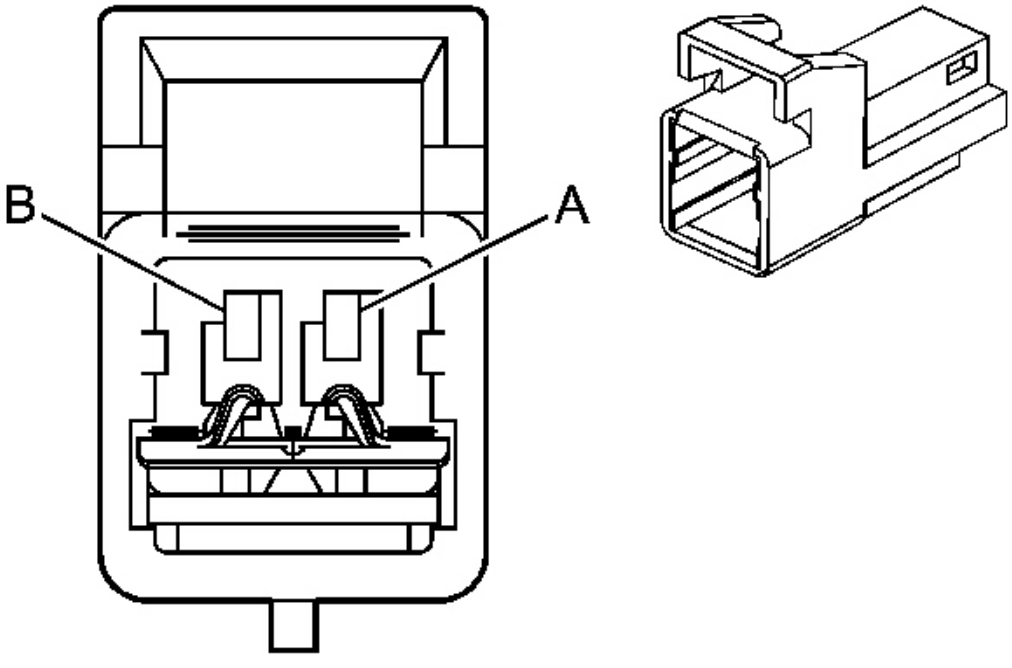


Fig. 34: Inflatable Restraint Side Impact Module - Right Connector End View
Courtesy of GENERAL MOTORS CORP.

Inflatable Restraint Side Impact Module - Right Connector Parts Information

Connector Part Information

- OEM: 12160816
- Service: 12160816
- Description: 2-Way M Metri-Pack 150 Series (YE)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Inflatable Restraint Side Impact Module - Right Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.5 TN/WH	2135	Side Impact Module - RF - High Control
B	0.5 L-GN	2136	Side Impact Module - RF - Low Control

Inflatable Restraint Side Impact Sensing Module (SISM) - LF (WDA)

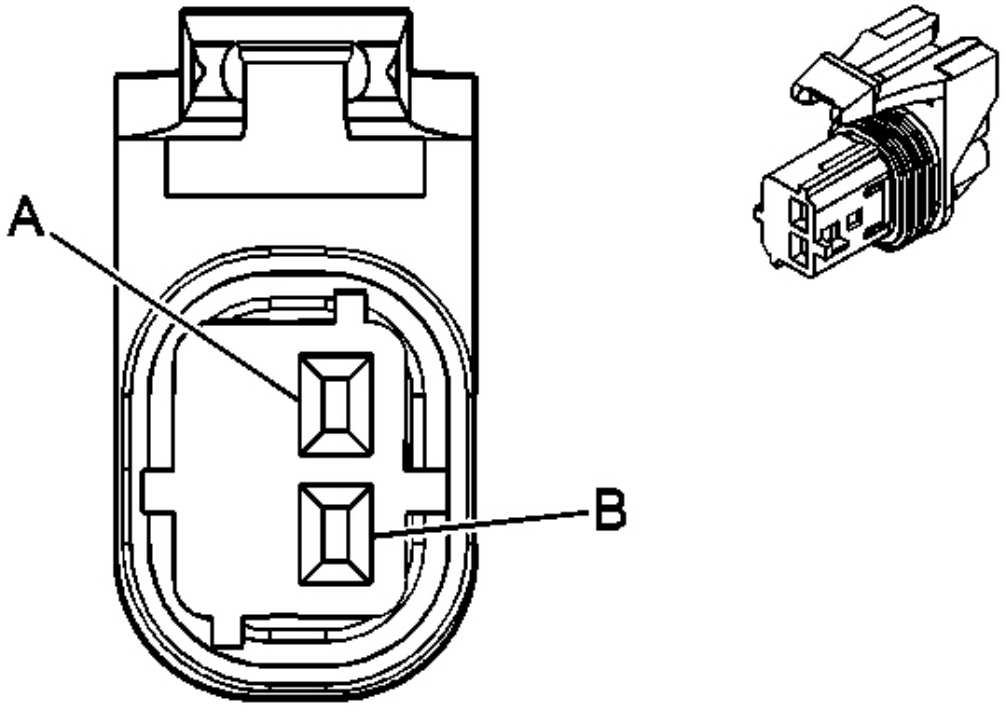


Fig. 35: Inflatable Restraint Side Impact Sensing Module (SISM) - LF (WDA) Connector End View
Courtesy of GENERAL MOTORS CORP.

Inflatable Restraint Side Impact Sensing Module (SISM) - LF (WDA) Connector Parts Information

Connector Part Information

- OEM: 15356723
- Service: 15306439
- Description: 2-Way F GT 150 Sealed 4.0 (YE)

Terminal Part Information

- Terminal/Tray: Service With Pigtail
- Core/Insulation Crimp: N/A
- Release Tool/Test Probe: 15315247/J-35616-2A (GY)

Inflatable Restraint Side Impact Sensing Module (SISM) - LF (WDA) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.35 PU/WH	6628	Low Reference
B	0.35 WH	2132	Side Impact Sensing Module - Left - Signal

Inflatable Restraint Side Impact Sensing Module (SISM) - LF (Z88)

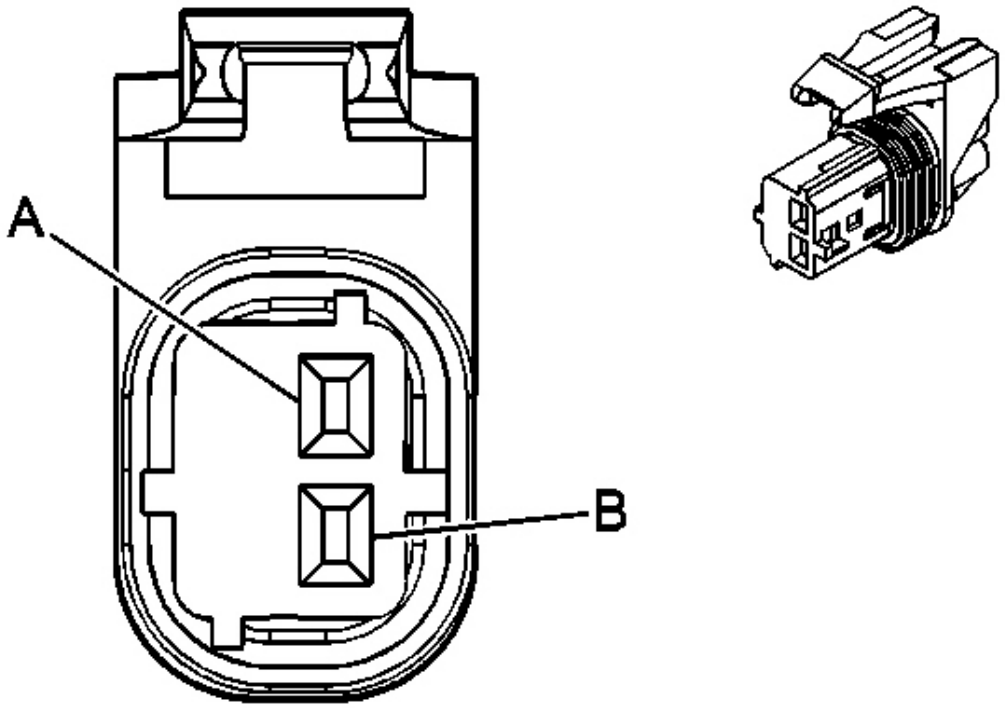


Fig. 36: Inflatable Restraint Side Impact Sensing Module (SISM) - LF (Z88) Connector End View
Courtesy of GENERAL MOTORS CORP.

Inflatable Restraint Side Impact Sensing Module (SISM) - LF (Z88) Connector Parts Information

Connector Part Information

- OEM: 15356723
- Service: 15306439
- Description: 2-Way F GT 150 Sealed 4.0 (YE)

Terminal Part Information

- Terminal/Tray: Service With Pigtail
- Core/Insulation Crimp: N/A
- Release Tool/Test Probe: 15315247/J-35616-2A (GY)

Inflatable Restraint Side Impact Sensing Module (SISM) - LF (Z88) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.35 PU/WH	6628	Low Reference
B	0.35 WH	2132	Side Impact Sensing Module - Left - Signal

Inflatable Restraint Side Impact Sensing Module (SISM) - LR (WDA)

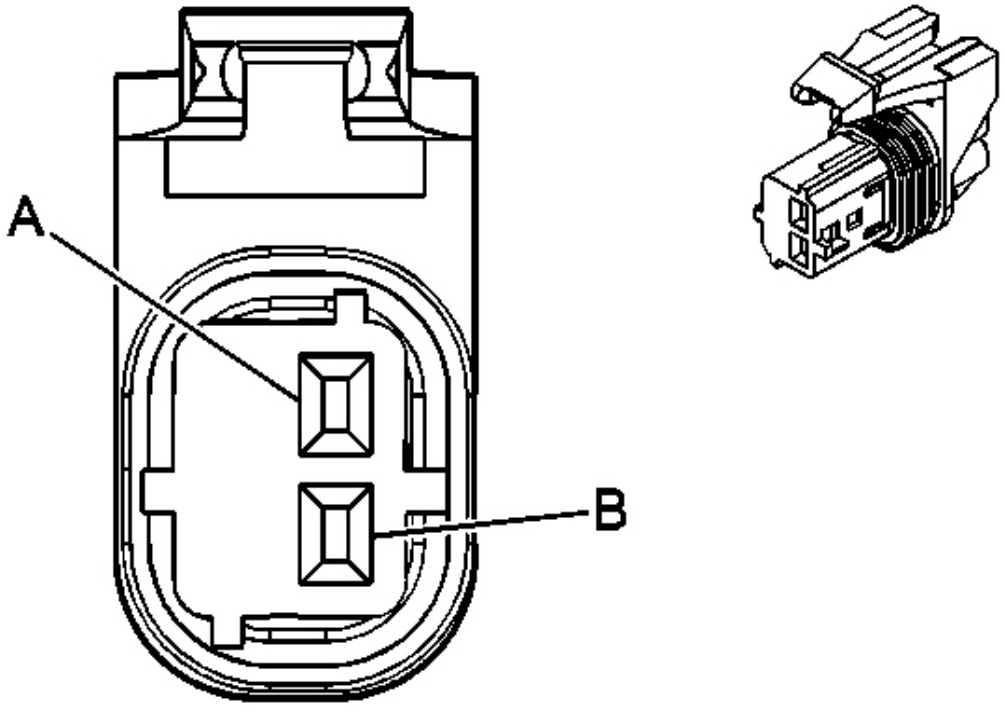


Fig. 37: Inflatable Restraint Side Impact Sensing Module (SISM) - LR (WDA) Connector End View
Courtesy of GENERAL MOTORS CORP.

Inflatable Restraint Side Impact Sensing Module (SISM) - LR (WDA) Connector Parts Information

Connector Part Information

- OEM: 15356723
- Service: 15306439
- Description: 2-Way F GT 150 Sealed 4.0 (YE)

Terminal Part Information

- Terminal/Tray: Service With Pigtail
- Core/Insulation Crimp: N/A
- Release Tool/Test Probe: 15315247/J-35616-2A (GY)

Inflatable Restraint Side Impact Sensing Module (SISM) - LR (WDA) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.35 L-GN/BK	6623	Low Reference
B	0.35 L-BU	6622	Left Rear Side Impact Sensing Module Signal

Inflatable Restraint Side Impact Sensing Module (SISM) - LR (Z88)

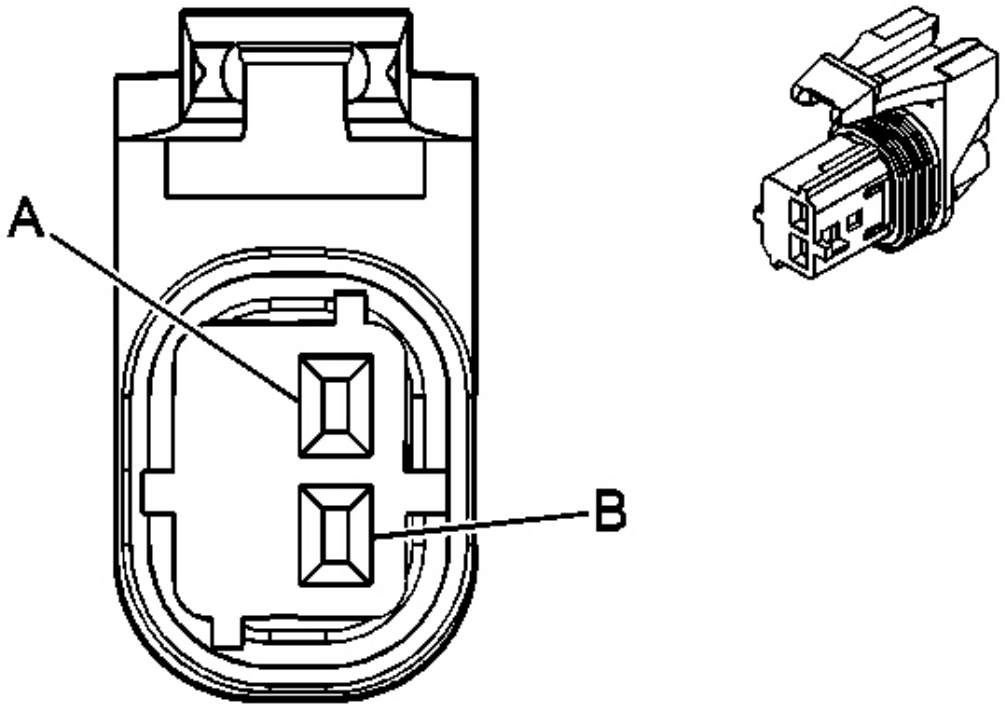


Fig. 38: Inflatable Restraint Side Impact Sensing Module (SISM) - LR (Z88) Connector End View
Courtesy of GENERAL MOTORS CORP.

Inflatable Restraint Side Impact Sensing Module (SISM) - LR (Z88) Connector Parts Information

Connector Part Information

- OEM: 15356723
- Service: 15306439
- Description: 2-Way F GT 150 Sealed 4.0 (YE)

Terminal Part Information

- Terminal/Tray: Service With Pigtail
- Core/Insulation Crimp: N/A
- Release Tool/Test Probe: 15315247/J-35616-2A (GY)

Inflatable Restraint Side Impact Sensing Module (SISM) - LR (Z88) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.35 L-GN/BK	6623	Low Reference
B	0.35 L-BU	6622	Left Rear Side Impact Sensing Module Signal

Inflatable Restraint Side Impact Sensing Module (SISM) - RF

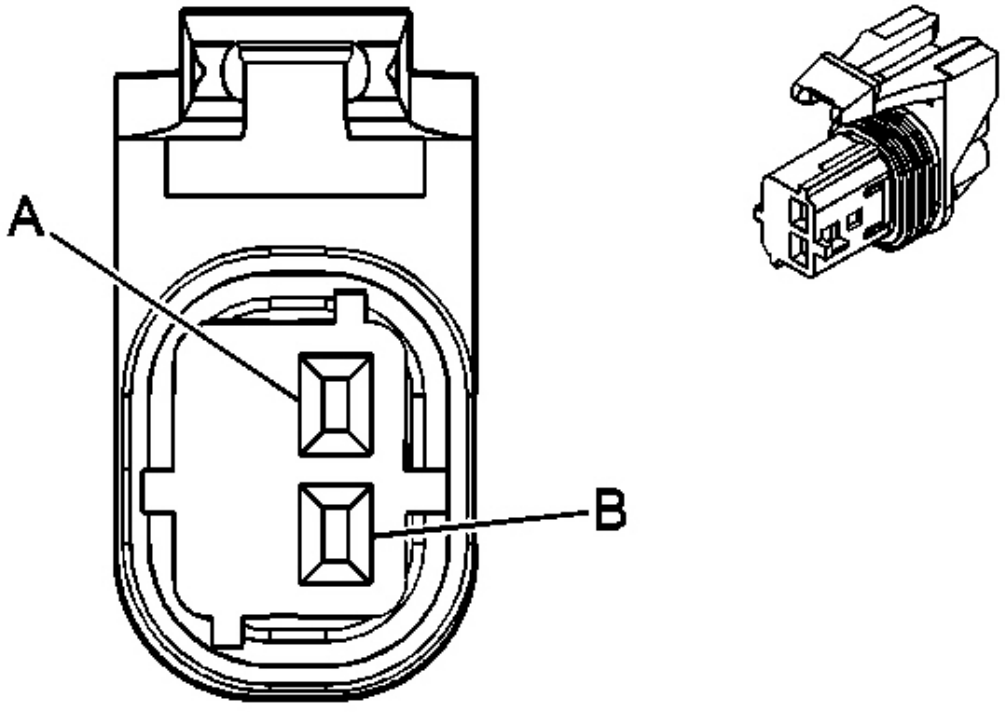


Fig. 39: Inflatable Restraint Side Impact Sensing Module (SISM) - RF Connector End View
Courtesy of GENERAL MOTORS CORP.

Inflatable Restraint Side Impact Sensing Module (SISM) - RF Connector Parts Information

Connector Part Information

- OEM: 15356723
- Service: 15306439
- Description: 2-Way F GT 150 Sealed 4.0 (YE)

Terminal Part Information

- Terminal/Tray: Service With Pigtail
- Core/Insulation Crimp: N/A
- Release Tool/Test Probe: 15315247/J-35616-2A (GY)

Inflatable Restraint Side Impact Sensing Module (SISM) - RF Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.35 WH/BK	6629	Low Reference
B	0.35 D-GN	2134	Side Impact Sensing Module - Right - Signal

Inflatable Restraint Side Impact Sensing Module (SISM) - RF (Z88)

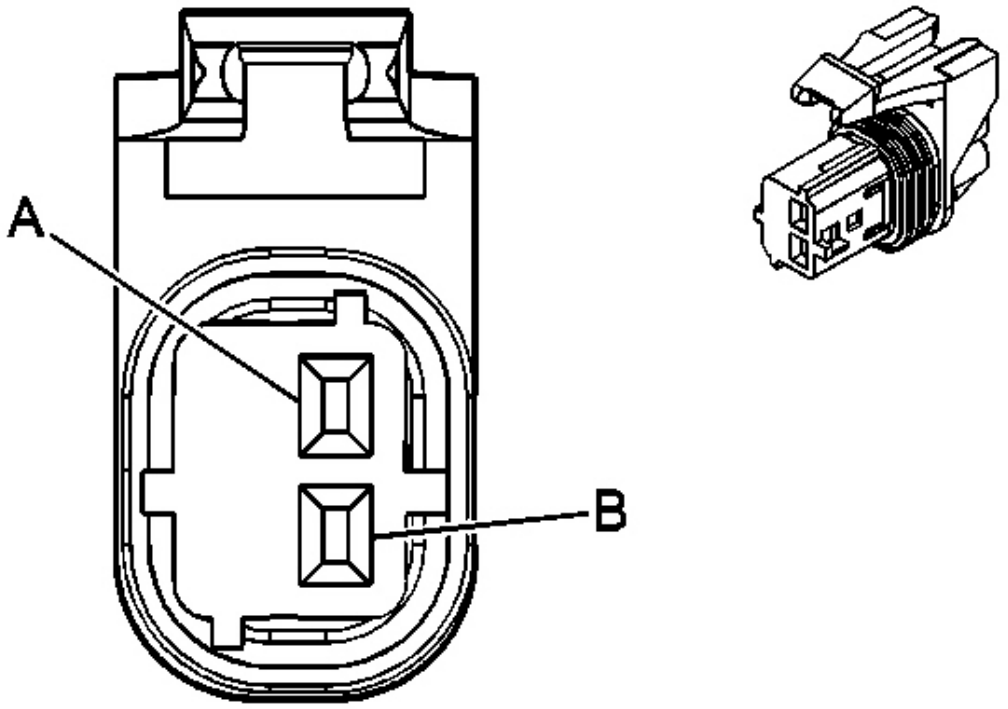


Fig. 40: Inflatable Restraint Side Impact Sensing Module (SISM) - RF (Z88) Connector End View
Courtesy of GENERAL MOTORS CORP.

Inflatable Restraint Side Impact Sensing Module (SISM) - RF (Z88) Connector Parts Information

Connector Part Information

- OEM: 15356723
- Service: 15306439
- Description: 2-Way F GT 150 Sealed 4.0 (YE)

Terminal Part Information

- Terminal/Tray: Service With Pigtail
- Core/Insulation Crimp: N/A
- Release Tool/Test Probe: 15315247/J-35616-2A (GY)

Inflatable Restraint Side Impact Sensing Module (SISM) - RF (Z88) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.35 WH/BK	6629	Low Reference
B	0.35 D-GN	2134	Side Impact Sensing Module - Right - Signal

Inflatable Restraint Side Impact Sensing Module (SISM) - RR (WDA)

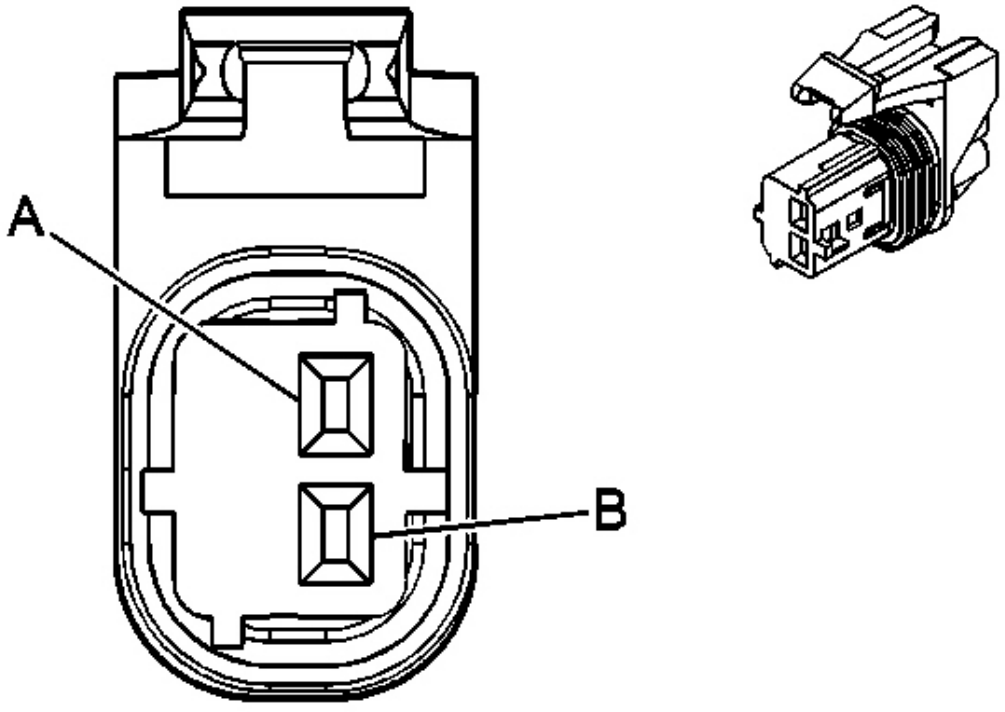


Fig. 41: Inflatable Restraint Side Impact Sensing Module (SISM) - RR (WDA) Connector End View
Courtesy of GENERAL MOTORS CORP.

Inflatable Restraint Side Impact Sensing Module (SISM) - RR (WDA) Connector Parts Information

Connector Part Information

- OEM: 15356723
- Service: 15306439
- Description: 2-Way F GT 150 Sealed 4.0 (YE)

Terminal Part Information

- Terminal/Tray: Service With Pigtail
- Core/Insulation Crimp: N/A
- Release Tool/Test Probe: 15315247/J-35616-2A (GY)

Inflatable Restraint Side Impact Sensing Module (SISM) - RR (WDA) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.35 PK/BK	6627	Low Reference
B	0.35 L-BU/WH	6626	Right Rear Side Impact Sensing Module Signal

Inflatable Restraint Side Impact Sensing Module (SISM) - RR (Z88)

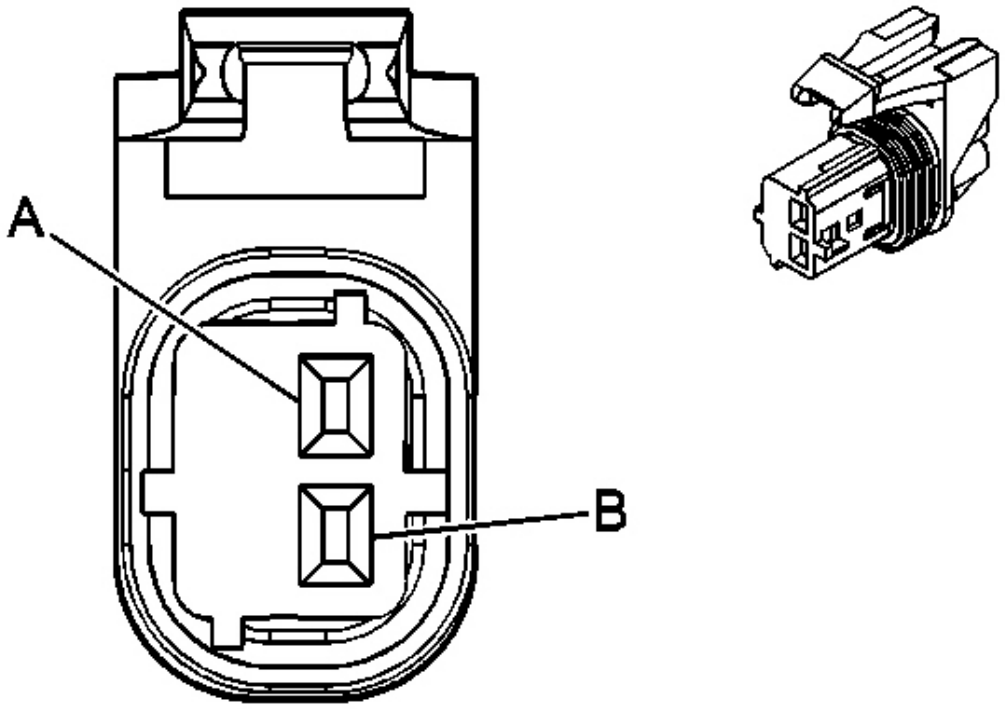


Fig. 42: Inflatable Restraint Side Impact Sensing Module (SISM) - RR (Z88) Connector End View
Courtesy of GENERAL MOTORS CORP.

Inflatable Restraint Side Impact Sensing Module (SISM) - RR (Z88) Connector Parts Information

Connector Part Information

- OEM: 15356723
- Service: 15306439
- Description: 2-Way F GT 150 Sealed 4.0 (YE)

Terminal Part Information

- Terminal/Tray: Service With Pigtail
- Core/Insulation Crimp: N/A
- Release Tool/Test Probe: 15315247/J-35616-2A (GY)

Inflatable Restraint Side Impact Sensing Module (SISM) - RR (Z88) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.35 PK/BK	6627	Low Reference
B	0.35 L-BU/WH	6626	Right Rear Side Impact Sensing Module Signal

Inflatable Restraint Steering Wheel Module Coil X1

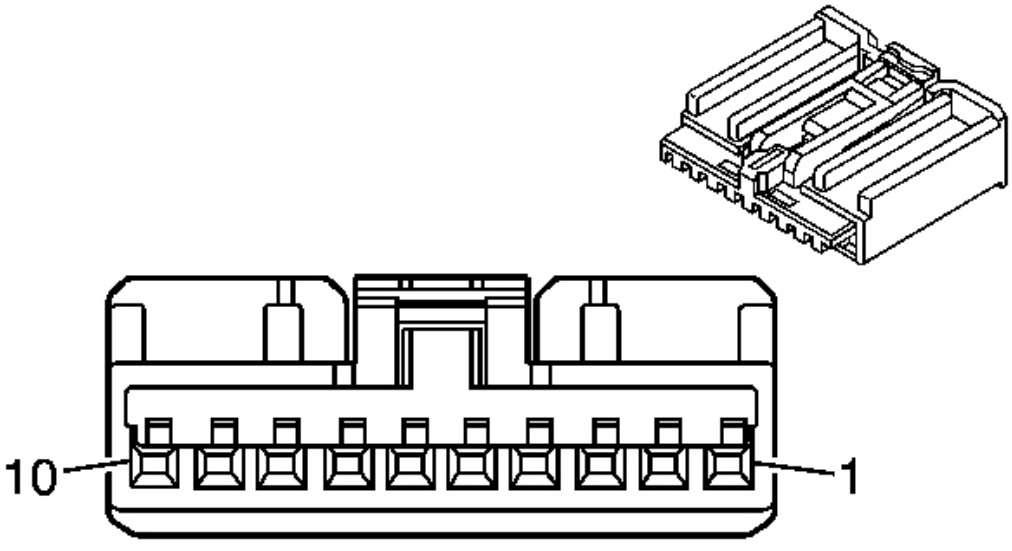


Fig. 43: Inflatable Restraint Steering Wheel Module Coil X1 Connector End View
Courtesy of GENERAL MOTORS CORP.

Inflatable Restraint Steering Wheel Module Coil X1 Connector Parts Information

Connector Part Information

- OEM: 15269795
- Service: See Catalog
- Description: 10-Way F AIT II Series (BK)

Terminal Part Information

- Terminal/Tray: Service With Terminated Lead
- Core/Insulation Crimp: N/A
- Release Tool/Test Probe: J-38125-215/J-35616-64B (L-BU)

Inflatable Restraint Steering Wheel Module Coil X1 Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	0.35 TN	28	Horn Relay Control
2	0.35 PU	1375	Remote Radio Control Supply Voltage
3	0.35 PU/WH	7005	LED Dimming Signal
4	0.35 BK/WH	1551	Ground
5	0.35 GY	1884	Cruise Control Switch Signal
6	0.35 GN/WH	7158	Cruise Control Indicator Dimming Signal
7	0.35 D-BU	1796	Steering Wheel Controls Signal (UK3)
8-10	-	-	Not Used

Inflatable Restraint Steering Wheel Module Coil X2

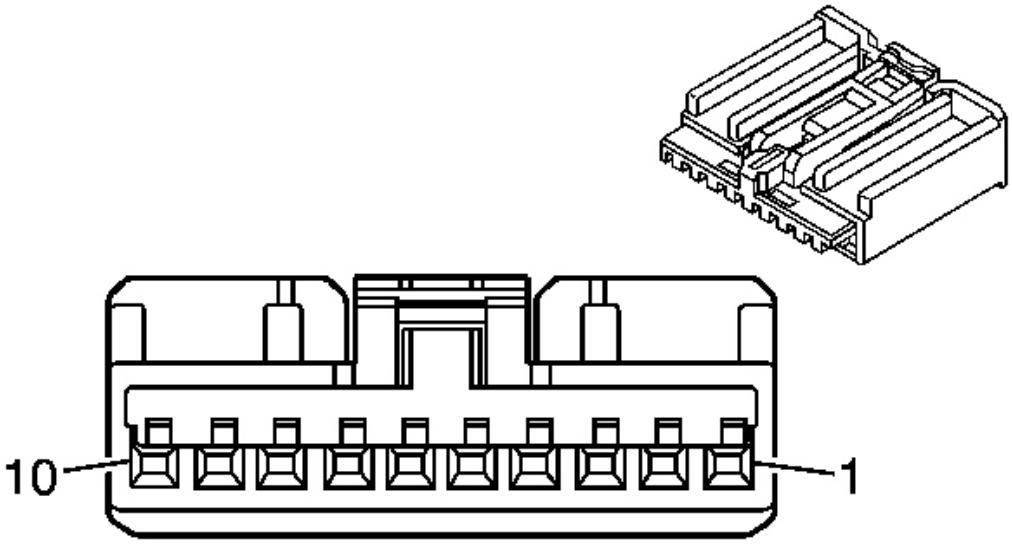


Fig. 44: Inflatable Restraint Steering Wheel Module Coil X2 Connector End View
Courtesy of GENERAL MOTORS CORP.

Inflatable Restraint Steering Wheel Module Coil X2 Connector Parts Information

Connector Part Information

- OEM: 15269795
- Service: See Catalog
- Description: 10-Way F AIT II Series (BK)

Terminal Part Information

- Terminal/Tray: Service With Terminated Lead
- Core/Insulation Crimp: N/A
- Release Tool/Test Probe: J-38125-215/J-35616-64B (L-BU)

Inflatable Restraint Steering Wheel Module Coil X2 Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1-3	-	-	Not Used
4	0.35 D-BU	1796	Steering Wheel Controls Signal (UK3)

5	0.35 GN/WH	7158	Cruise Control Indicator Dimming Signal
6	0.35 GY	1884	Cruise Control Switch Signal
7	0.35 BK/WH	1551	Ground
8	0.35 PU/WH	7005	LED Dimming Signal (UK3)
	0.35 PU/WH	7005	LED Dimming Signal
9	0.35 PU	1375	Remote Radio Control Supply Voltage
	0.35 PU	1375	Remote Radio Control Supply Voltage (UK3)
10	0.35 D-GN	29	Horn Control

Inflatable Restraint Steering Wheel Module Coil X3

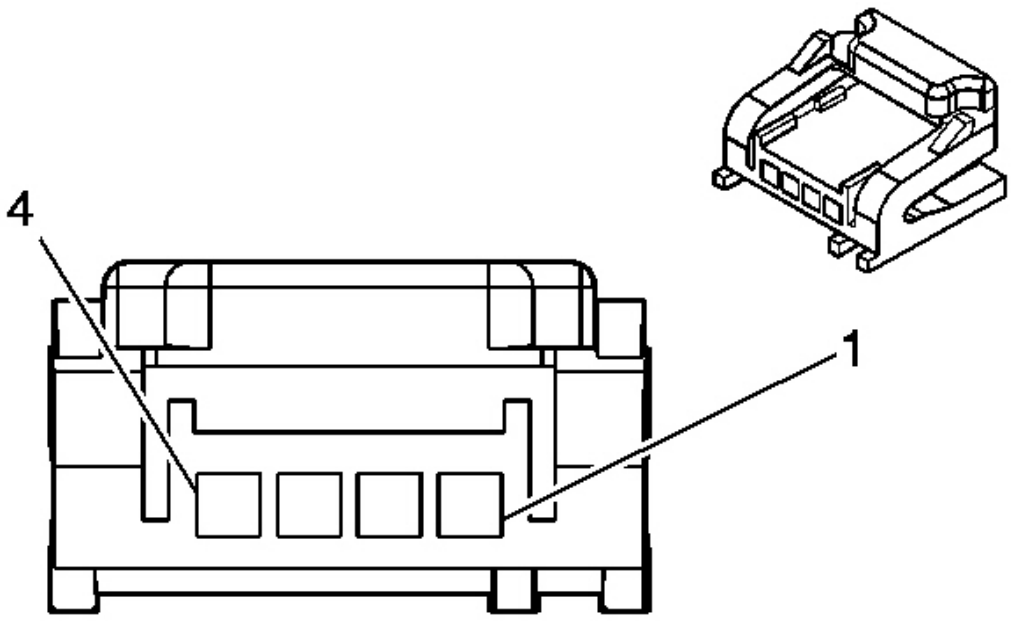


Fig. 45: Inflatable Restraint Steering Wheel Module Coil X3 Connector End View
Courtesy of GENERAL MOTORS CORP.

Inflatable Restraint Steering Wheel Module Coil X3 Connector Parts Information

Connector Part Information

- OEM: 15393421
- Service: 88987853
- Description: 4-Way F Micro-Pack 064 Series (YE)

Terminal Part Information

- Terminal/Tray: Service With Pigtail
- Core/Insulation Crimp: N/A
- Release Tool/Test Probe: 12180559-1/J-35616-64B (L-BU)

Inflatable Restraint Steering Wheel Module Coil X3 Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	0.35 TN	3021	Steering Wheel Module - Stage1 - High Control
2	0.35 BN	3020	Steering Wheel Module - Stage1 - Low Control
3	0.35 WH	3023	Steering Wheel Module - Stage2 - High Control
4	0.35 PK	3022	Steering Wheel Module - Stage2 - Low Control

Inflatable Restraint Steering Wheel Module X1

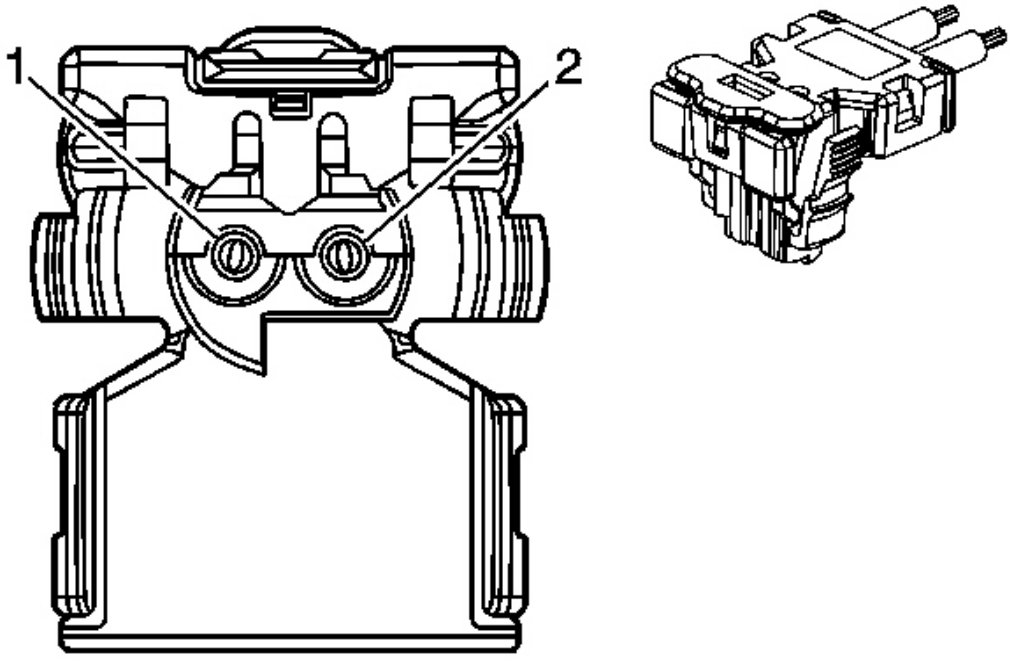


Fig. 46: Inflatable Restraint Steering Wheel Module X1 Connector End View
Courtesy of GENERAL MOTORS CORP.

Inflatable Restraint Steering Wheel Module X1 Connector Parts Information

Connector Part Information

- OEM: 54560236
- Service: See Catalog
- Description: 2-Way F (GY)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Inflatable Restraint Steering Wheel Module X1 Connector Terminal Identification

Pin	Wire	Circuit No.	Function

1	0.35 TN	3021	Steering Wheel Module - Stage1 - High Control
2	0.35 BN	3020	Steering Wheel Module - Stage1 - Low Control

Inflatable Restraint Steering Wheel Module X2

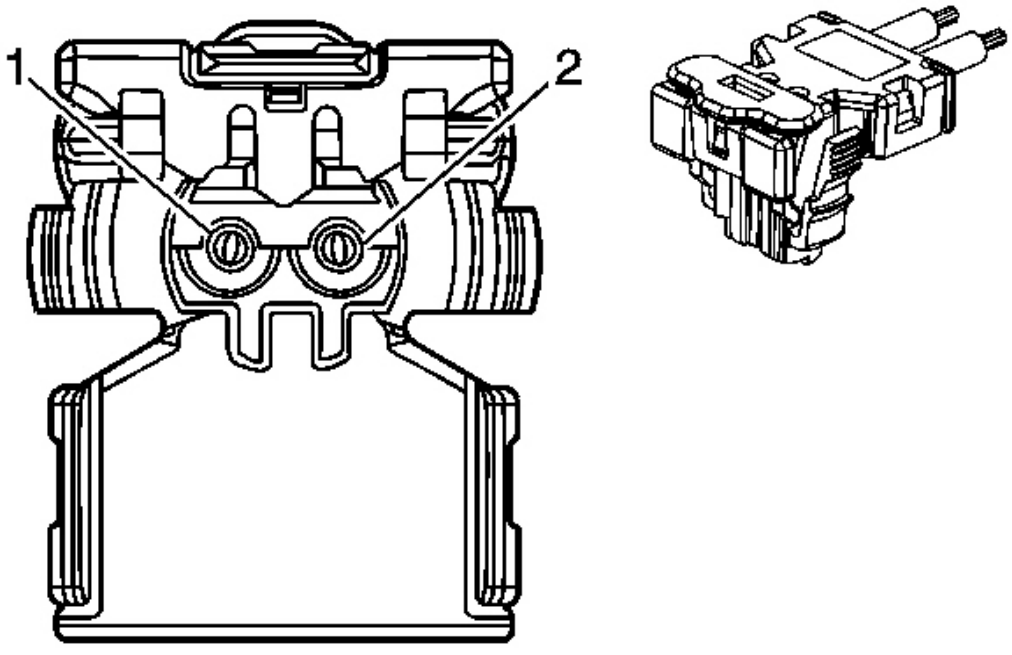


Fig. 47: Inflatable Restraint Steering Wheel Module X2 Connector End View
Courtesy of GENERAL MOTORS CORP.

Inflatable Restraint Steering Wheel Module X2 Connector Parts Information

Connector Part Information

- OEM: 54560222
- Service: See Catalog
- Description: 2-Way F (PU)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Inflatable Restraint Steering Wheel Module X2 Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	0.35 WH	3023	Steering Wheel Module - Stage2 - High Control
2	0.35 PK	3022	Steering Wheel Module - Stage2 - Low Control

Inflatable Restraint Vehicle Rollover Sensor (WDA)

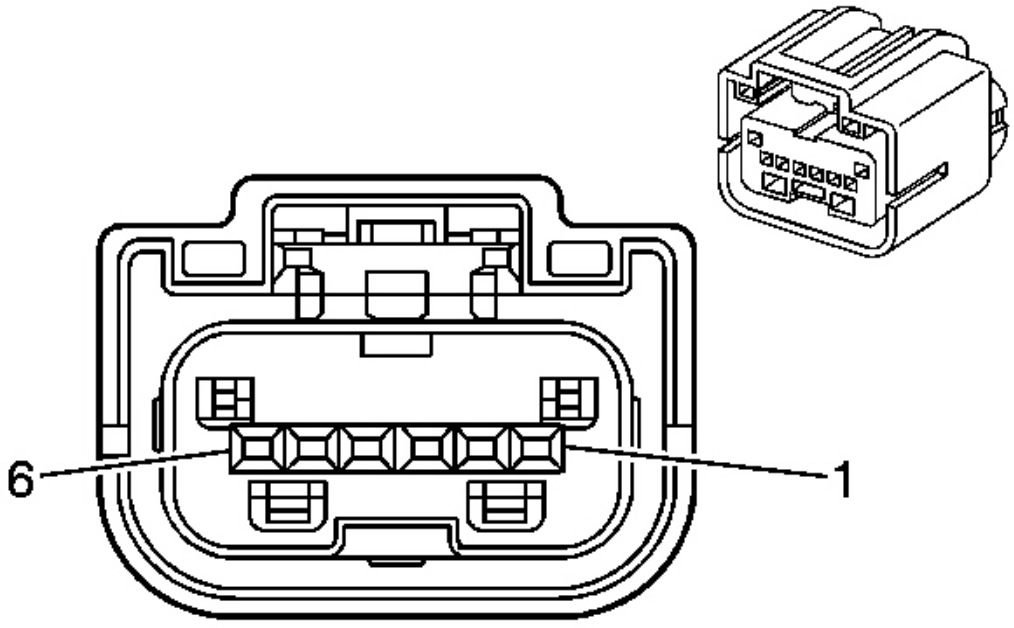


Fig. 48: Inflatable Restraint Vehicle Rollover Sensor (WDA) Connector End View
Courtesy of GENERAL MOTORS CORP.

Inflatable Restraint Vehicle Rollover Sensor (WDA) Connector Parts Information

Connector Part Information

- OEM: 6189-7001
- Service: See Catalog
- Description: 6-Way F 0.64 Series, Sealed (YE)

Terminal Part Information

- Terminal/Tray: Service With Pigtail
- Core/Insulation Crimp: N/A
- Release Tool/Test Probe: 15315247/J-35616-64B (L-BU)

Inflatable Restraint Vehicle Rollover Sensor (WDA) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	0.35 RD/WH	1340	Battery Positive Voltage
3	0.35 D-GN	5060	Low Speed GMLAN Serial Data
4	0.35 D-GN	5060	Low Speed GMLAN Serial Data
5	0.35 YE/BK	5229	Roll Over Sensor High Signal
6	0.5 BK/WH	1751	Ground

Inflatable Restraint Vehicle Rollover Sensor (Z88)

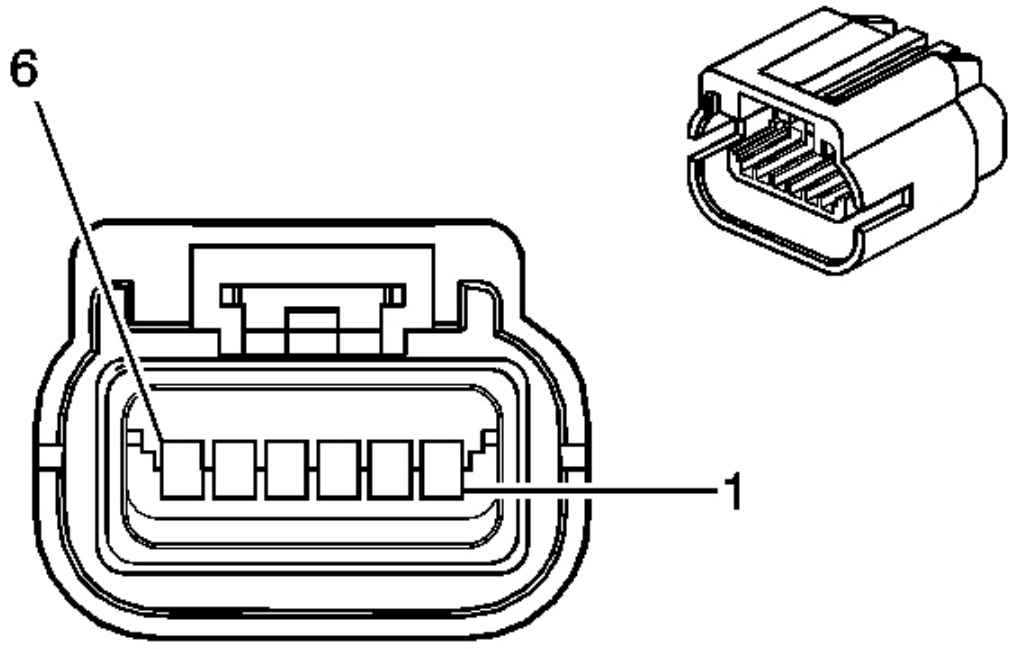


Fig. 49: Inflatable Restraint Vehicle Rollover Sensor (Z88) Connector End View
Courtesy of GENERAL MOTORS CORP.

Inflatable Restraint Vehicle Rollover Sensor (Z88) Connector Parts Information

Connector Part Information

- OEM: 6189-6936
- Service: See Catalog
- Description: 6-Way F 0.64 Series, Sealed (YE)

Terminal Part Information

- Terminal/Tray: Service With Pigtail
- Core/Insulation Crimp: N/A
- Release Tool/Test Probe: 15315247/J-35616-64B (L-BU)

Inflatable Restraint Vehicle Rollover Sensor (Z88) Connector Terminal Identification

Pin	Wire	Circuit No.	Function

1	0.35 RD/WH	1340	Battery Positive Voltage
3	0.35 D-GN	5060	Low Speed GMLAN Serial Data
4	0.35 D-GN	5060	Low Speed GMLAN Serial Data
5	0.35 YE/BK	5229	Roll Over Sensor High Signal
6	0.5 BK/WH	1751	Ground

Seat Belt Pretentioner - Driver (WDA)

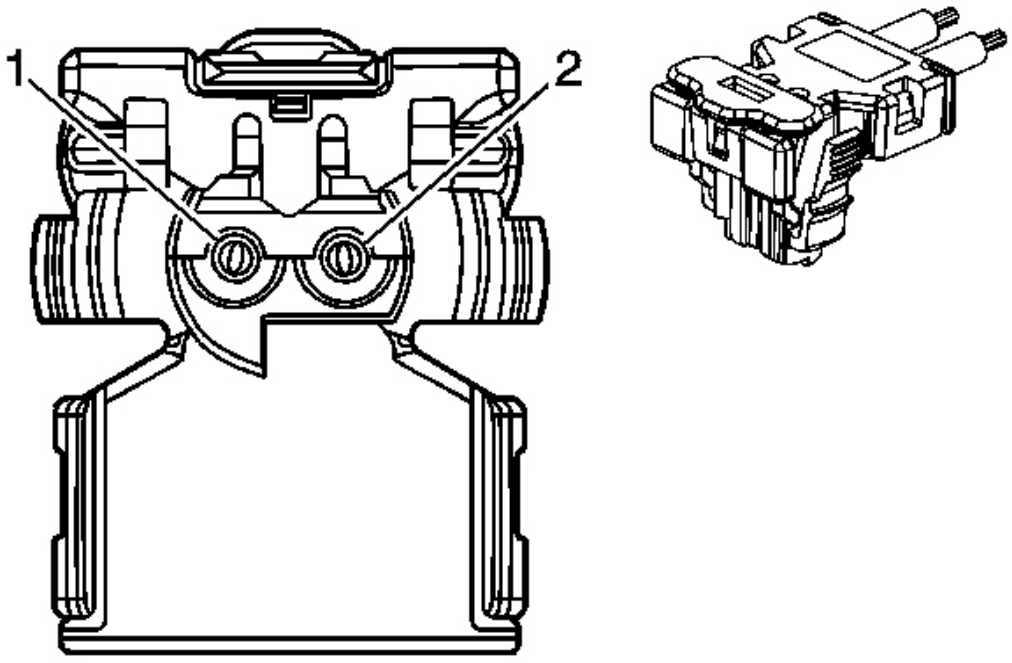


Fig. 50: Seat Belt Pretentioner - Driver (WDA) Connector End View
Courtesy of GENERAL MOTORS CORP.

Seat Belt Pretentioner - Driver (WDA) Connector Parts Information

Connector Part Information

- OEM: 54560236
- Service: See Catalog
- Description: 2-Way F FFB90-4 Type B (GY)

Terminal Part Information

- Terminal/Tray: Service With Pigtail
- Core/Insulation Crimp: N/A
- Release Tool/Test Probe: See Terminal Repair Kit

Seat Belt Pretentioner - Driver (WDA) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	0.5 TN/WH	2118	Seat Belt Pretensioner - Left - High Control
2	0.5 OG/BK	2119	Seat Belt Pretensioner - Left - Low Control

Seat Belt Pretentioner - Driver (Z88)

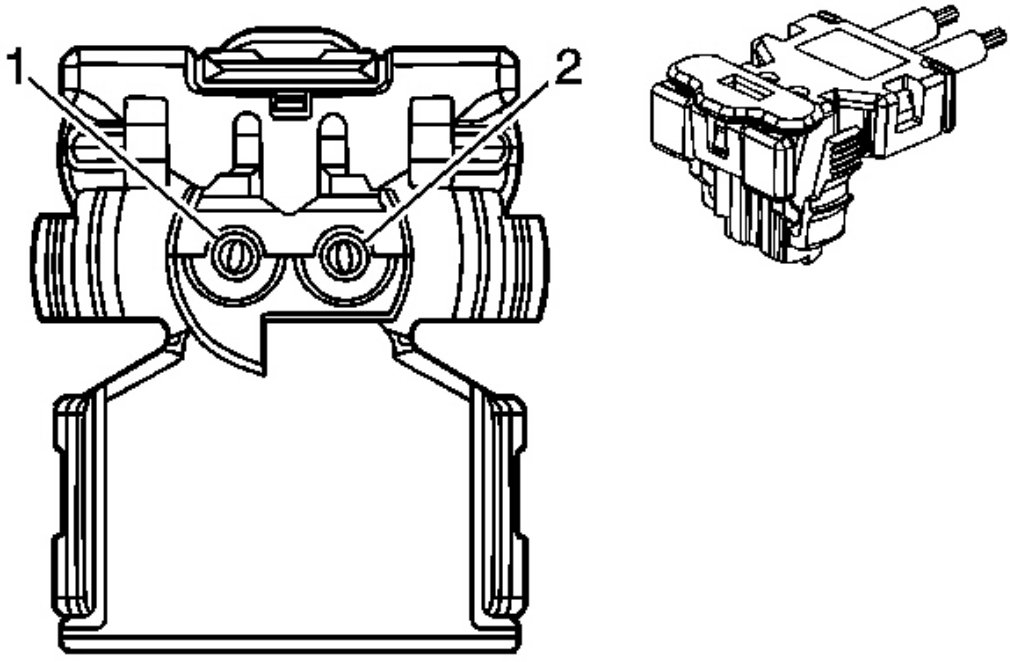


Fig. 51: Seat Belt Pretentioner - Driver (Z88) Connector End View
Courtesy of GENERAL MOTORS CORP.

Seat Belt Pretentioner - Driver (Z88) Connector Parts Information

Connector Part Information

- OEM: 54560236
- Service: See Catalog
- Description: 2-Way F FFB90-4 Type B (GY)

Terminal Part Information

- Terminal/Tray: Service With Pigtail
- Core/Insulation Crimp: N/A
- Release Tool/Test Probe: See Terminal Repair Kit

Seat Belt Pretentioner - Driver (Z88) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	0.5 TN/WH	2118	Seat Belt Pretensioner - Left - High Control
2	0.5 OG/BK	2119	Seat Belt Pretensioner - Left - Low Control

Seat Belt Pretentioner - Passenger (WDA)

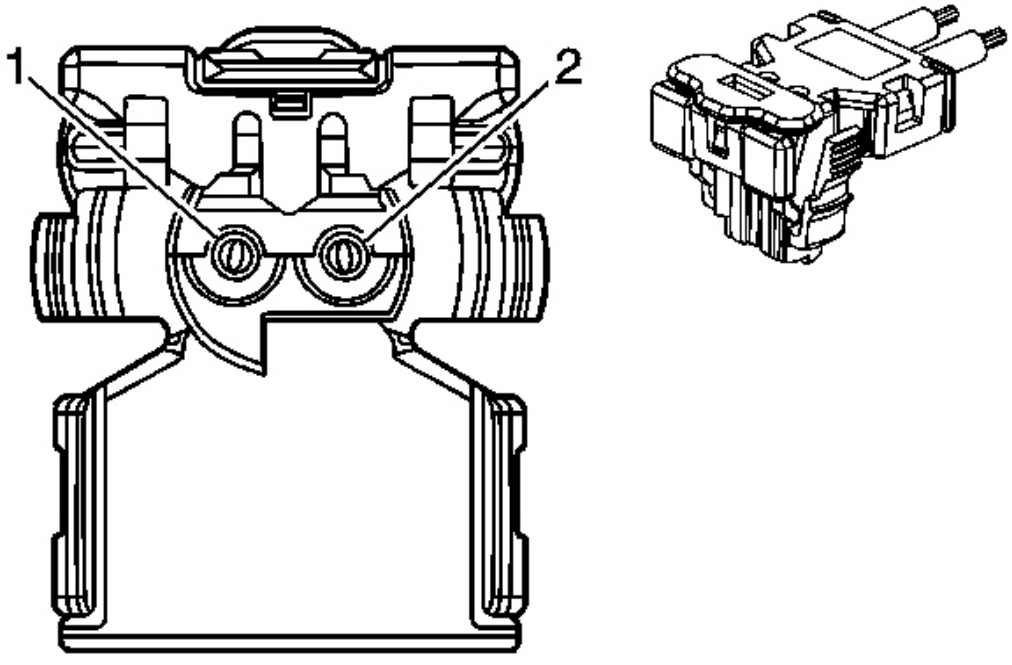


Fig. 52: Seat Belt Pretentioner - Passenger (WDA) Connector End View
Courtesy of GENERAL MOTORS CORP.

Seat Belt Pretentioner - Passenger (WDA) Connector Parts Information

Connector Part Information

- OEM: 54560236
- Service: See Catalog
- Description: 2-Way F FFB90-4 Type B (GY)

Terminal Part Information

- Terminal/Tray: Service With Pigtail
- Core/Insulation Crimp: N/A
- Release Tool/Test Probe: See Terminal Repair Kit

Seat Belt Pretentioner - Passenger (WDA) Connector Terminal Identification

Pin	Wire	Circuit No.	Function

1	0.5 L-GN	2116	Seat Belt Pretensioner - Right - High Control
2	0.5 OG	2117	Seat Belt Pretensioner - Right - Low Control

Seat Belt Pretentioner - Passenger (Z88)

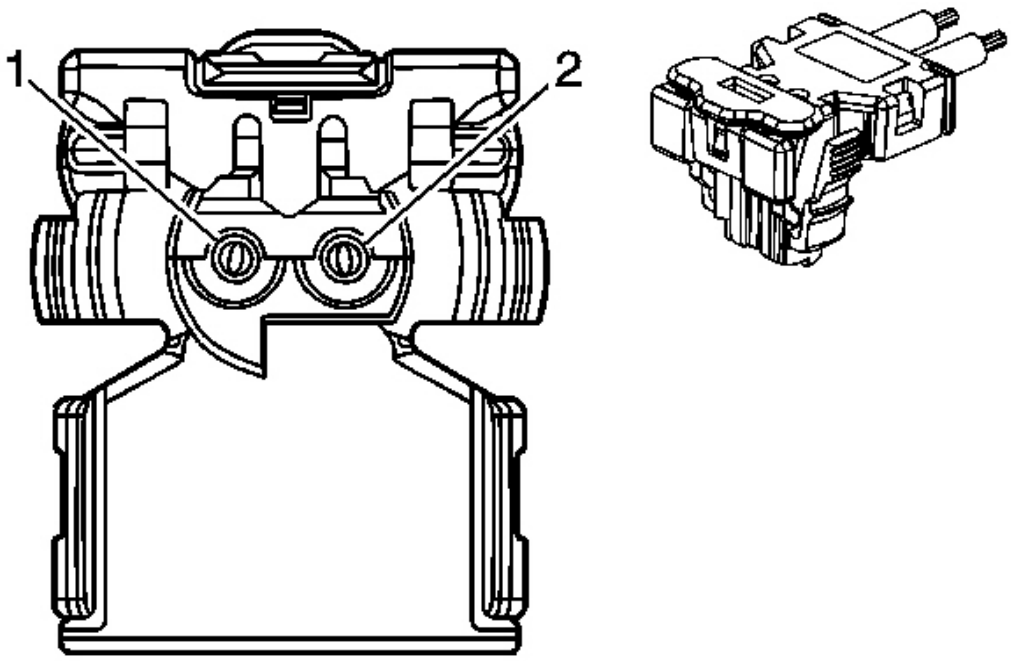


Fig. 53: Seat Belt Pretentioner - Passenger (Z88) Connector End View
Courtesy of GENERAL MOTORS CORP.

Seat Belt Pretentioner - Passenger (Z88) Connector Parts Information

Connector Part Information

- OEM: 54560236
- Service: See Catalog
- Description: 2-Way F FFB90-4 Type B (GY)

Terminal Part Information

- Terminal/Tray: Service With Pigtail
- Core/Insulation Crimp: N/A
- Release Tool/Test Probe: See Terminal Repair Kit

Seat Belt Pretentioner - Passenger (Z88) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	0.5 L-GN	2116	Seat Belt Pretensioner - Right - High Control
2	0.5 OG	2117	Seat Belt Pretensioner - Right - Low Control

DIAGNOSTIC INFORMATION AND PROCEDURES

DIAGNOSTIC CODE INDEX

DIAGNOSTIC CODE INDEX

DTC	Description
DTC B0012 or B0013	Driver Frontal Deployment Loop Stage 1 Or 2 Malfunction(s)
DTC B0014-B0045	LF Side Deployment Loop Concern(s)
DTC B0052 or B0053	Deployment Commanded with Loop DTCs Present Or Deployment Commanded
DTC B0055	Side Airbag Deployment Commanded
DTC B0056	Passenger Frontal Air Bag Suppressed
DTC B0057	Passenger Side Air Bag Suppressed
DTC B0058	Passenger Pretensioner Suppressed
DTC B0073	Passenger Seat Belt Sensor Circuit Short to Battery. Ground Or Open
DTC B0081	Passenger Presence System Erratic Or Incorrect Component Installed
DTC B0083 or B0084	Front End Sensor 1 Or 2 Concern
DTC B0085 or B0086	Left Or Right Front Side Impact Sensor Concerns
DTC B0087 or B0088	Left Or Right Rear Side Impact Sensor Concerns
DTC B0090	Rollover Sensor Incorrect Component Installed Or Internal Electronic Failure
DTC B1001	SDM Option Configuration Error
DTC B1011	System Disabled Information Stored Invalid Serial Data

	Received
DTC B1019	System Configuration Error Or Wrong Component Installed
DTC B1370	Device Ignition 1 Circuit Short to Battery, Ground or Open

DIAGNOSTIC STARTING POINT - SIR

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

- The identification of the control module which commands the system
- The ability of the control module 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 - Vehicle** will identify the correct procedure for diagnosing the system and where the procedure is located.

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 Diagnostic System Check - SIR. Use the SIR Scan Tool Data List after the following is determined:

- There is no published diagnostic trouble code (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 second 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
Operating Conditions: Ignition ON/Engine OFF/No DTCs Set/Driver Seat Belt			

Buckled/Passenger Seat Belt Unbuckled			
Battery Voltage Signal	Data	Volts	12 Volts
Driver Seat Belt Type	Sensor Data	Switch/Sensor	Switch
Psgr. Seat Belt Type	Sensor Data	Switch/Sensor	Switch
Driver Seat Belt Switch	Sensor Data	Buckled/Unbuckled	Buckled
Passenger Seat Belt Switch	Sensor Data	Buckled/Unbuckled	Unbuckled
Passenger Seat Belt Sensor	Sensor Data	mA	9 mA
Driver Seat Position Sensor	Sensor Data	Rearward/Forward	Varies
Psgr. Seat Position Sensor	Sensor Data	Rearward/Forward	Varies
Primary Key Status	Key Identification	Invalid/Valid/Unknown	Valid
Received Primary Key	Key Identification	4-digit number	Varies
Received VIN Digits 2-5	Key Identification	4-digit number	Varies
Received VIN Digits 6-7	Key Identification	2-digit number	Varies
Run/Crank	Data	Active/Inactive	Varies
SDM Primary Key	Key Identification	4-digit number	Varies
Secondary Key Status	Key Identification	Invalid/Valid/Unknown	Valid
SIR Warning Indicator	Data	OFF/ON	OFF

PPS Scan Tool Data List

Scan Tool Parameter	Data List	Units Displayed	Typical Data Value
Operating Conditions: Ignition ON/Engine OFF/No DTCs Set/Driver Seat Belt Buckled/Passenger Seat Belt Unbuckled			
Battery Voltage Signal	Data	Volts	12 Volts
Power Mode	Data	Off/Accessory/Run/Crank Request	Run
PPS Fault Status	Data	No Fault/Plant Mode/Fault/Mismatch/Barrier	No Fault
SDM Enable Status	Data	Disabled/Enabled	Enabled
PPS Enable Status	Data	Disabled/Enabled	Enabled
Passenger Classification	Data	Unknown/Calibrating/Empty Seat/Small 1/Small 2/Large/Preload	Varies
Passenger Status	Data	No Info./Valid/Invalid Class./Invalid Pos./Invalid Data/Inval. Class&Pos	Varies

Primary Key Status	Key Identification	Invalid/Valid/Unknown	Valid
PPS Key Status	Key Identification	Invalid/Valid/Unknown	Valid
PPS Primary Key	Key Identification	4-digit number	Varies
Received Primary Key	Key Identification	4-digit number	Valid

ROS Scan Tool Data List

Scan Tool Parameter	Data List	Units Displayed	Typical Data Value
Operating Conditions: Ignition ON/Engine OFF/No DTCs Set			
Battery Voltage Signal	Data	Volts	12 Volts
Current Power Mode	Data	Off/Accessory/Run/Crank Request	Run
ROS Primary Key	Data	4-digit number	Varies
Received Primary Key	Data	4-digit number	Varies
Primary Key Status	Data	Invalid/Valid/Unknown	Enabled
ROS Occupant Containment Req.	Data	Reserved/Disable/Enable	Enabled
SDM Occupant Containment Status	Data	Disable/Enable	Enabled
Average Speed	Data	km/h	Varies
Vehicle Speed Status	Data	Invalid/Valid	Valid
Engine Virtual Device	Data	Present/Not Present	Present

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.

Battery Voltage

The scan tool displays 0-20 volts. This is the system voltage measured by the SDM between the battery input and ground.

Driver Seat Belt Switch

The scan tool displays whether the driver seat belt is buckled or unbuckled.

Passenger Seat Belt Switch

The scan tool displays whether the passenger seat belt is buckled or unbuckled.

PPS Type

The scan tool displays if there is a passenger airbag suppression device used on this vehicle and if so, whether it is has an automatic, manual key switch or both.

Primary Key Status

The scan tool displays if there is a passenger airbag suppression device used on this vehicle and if so, whether it is has an automatic, manual key switch or both.

Received Primary Key

The scan tool displays what the BCM is sending out as the primary key. The SDM then compares it to what it has stored. This should match the SDM Primary Key.

Received VIN Digits 2-5

The scan tool displays the Secondary Key which includes digits 2 though 5 of the VIN that the BCM sends to the SDM.

Received VIN Digits 6-7

The scan tool displays the Secondary Key which includes digits 6 and 7 of the VIN that the BCM sends to the SDM.

Run/Crank

The scan tool displays what the current power mode of the SDM.

SDM Primary Key

The scan tool displays primary key that the SDM has stored to memory.

Secondary Key Status

The scan tool displays whether the Secondary Key is valid or invalid. This determines if the VIN stored in SDM memory matches what is stored in the BCM.

SIR Warning Indicator

The scan tool displays whether the SIR warning indicator has been requested ON or OFF.

DTC B0012 OR B0013

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptors

DTC B0012 01

Driver Frontal Deployment Loop Stage 1 Short to Battery

DTC B0012 02

Driver Frontal Deployment Loop Stage 1 Short to Ground

DTC B0012 04

Driver Frontal Deployment Loop Stage 1 Open Circuit

DTC B0012 0D

Driver Frontal Deployment Loop Stage 1 Resistance Above Threshold

DTC B0012 0E

Driver Frontal Deployment Loop Stage 1 Resistance Below Threshold

DTC B0013 01

Driver Frontal Deployment Loop Stage 2 Short to Battery

DTC B0013 02

Driver Frontal Deployment Loop Stage 2 Short to Ground

DTC B0013 04

Driver Frontal Deployment Loop Stage 2 Open Circuit

DTC B0013 0D

Driver Frontal Deployment Loop Stage 2 Resistance Above Threshold

DTC B0013 0E

Driver Frontal Deployment Loop Stage 2 Resistance Below Threshold

Diagnostic Fault Information

DTC B0012 or B0013

Circuit	Short to Ground	High Resistance	Open	Short to Voltage	Signal Performance
Steering Wheel Module Stage 1 High Circuit	B0012 02	B0012 0D	B0012 04	B0012 01	B0012 0E
Steering Wheel Module Stage 1 Low Circuit	B0012 02	B0012 0D	B0012 04	B0012 01	B0012 0E
Steering Wheel Module Stage 2 High Circuit	B0013 02	B0013 0D	B0013 04	B0013 01	B0013 0E
Steering Wheel Module Stage 2 Low Circuit	B0013 02	B0013 0D	B0013 04	B0013 01	B0013 0E

Circuit/System Description

During a frontal crash of sufficient force the inflatable restraint sensing and diagnostic module (SDM) will allow current to flow through the deployment loop in order to deploy the 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.

There are 2 shorting bars used within the steering wheel module coil connector which will short together both steering wheel module stage 1 high circuit and steering wheel module stage 1 low circuit and both steering wheel module stage 2 high circuit and steering wheel module stage 2 low circuit when the connector is disconnected. This will help to prevent unwanted deployment of the inflator module during servicing.

Conditions for Running the DTC

Ignition voltage is between 9-16 volts.

Conditions for Setting the DTC

B0012 01 Stage 1 or B0013 01 Stage 2

The steering wheel module high and/or low circuit is short to voltage for 120 milliseconds.

B0012 02 Stage 1 or B0013 02 Stage 2

The steering wheel module high and/or low circuit is short to ground for 120 milliseconds.

B0012 04 Stage 1 or B0013 04 Stage 2

The steering wheel module high and/or low circuit is open for 120 milliseconds.

B0012 0D Stage 1 or B0013 0D Stage 2

The steering wheel module deployment loop resistance is more than 5.1 ohms for 120 milliseconds.

B0012 0E Stage 1 or B0013 0E Stage 2

The steering wheel module deployment loop resistance is less than 1.3 ohms for 120 milliseconds.

Action Taken When the DTC Sets

- The SDM commands the AIR BAG indicator ON via serial data communications.
- The SIR system is disabled and no deployments are allowed.

Conditions for Clearing the DTC

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

Reference Information

Schematic Reference

SIR Schematics

Connector End View Reference

SIR Connector End Views

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**
- **SIR/SRS Wiring Repairs**

Special Tools Required

- **J 38715-A** SIR Driver/Passenger Load Tool. See **Special Tools**.
- **SA9409Z-A** SIR Driver/Passenger Load Tool

Circuit/System Testing

IMPORTANT: When removing connectors inspect for damage or corrosion. Damage or corrosion in the following requires repair or replacement of the affected component/connector.

- **The pretensioner**
- **The air bag module**
- **The SDM module**
- **The air bag wiring harness connector**
- **The SDM wiring harness connector**

1. Verify that the steering wheel module connector and the connector position assurance (CPA) are engaged.

   IMPORTANT: The connector and CPA may seat independent of each other. Both the connector and CPA should seat with an audible and/or tactile click. The CPA isolates the shorting-bars within the connector allowing the deployment circuit to operate properly.

   - If the above condition is found, make the appropriate repair.
2. Ignition OFF, disconnect the steering wheel module.
3. With the applicable adaptor, connect special tool **J 38715-A** or **SA9409Z-A** . See **Special Tools**.

4. Ignition ON, with a scan tool, verify DTC is set as current.
    - If DTC is not set or is set as history, replace the steering wheel module.
5. Ignition OFF, disconnect special tool **J 38715-A** or **SA9409Z-A** . See **Special Tools**.
6. Disconnect the steering wheel module coil in-line connector.
7. With the applicable adaptor, connect special tool **J 38715-A** or **SA9409Z-A** . See **Special Tools**.
8. Ignition ON, with a scan tool, verify DTC is set as current.
    - If DTC is not set or is set as history, replace the steering wheel module coil.
9. Ignition OFF, disconnect special tool **J 38715-A** or **SA9409Z-A** and the applicable adaptor. See **Special Tools**.
10. Ignition ON, test for less than 1 volt between the applicable HI circuit and ground.
    - If not the specified range, test the circuit for a short to voltage.
11. Test for less than 1 volt between the applicable LOW circuit and ground.
    - If not the specified range, test the circuit for a short to voltage.
12. Ignition OFF, test for infinite resistance between the applicable HI circuit and ground.
    - If not the specified range, test the circuit for a short to ground.
13. Test for infinite resistance between the applicable LOW circuit and ground.
    - If not the specified range, test the circuit for a short to ground.
14. Disconnect the harness connector at the SDM.
15. Test for less then 1 ohm of resistance between the SDM connector and the air bag module connector HI circuit.
    - If not the specified range, test the circuit for an open/high resistance.
16. Test for less then 1 ohm of resistance between the SDM connector and the air bag module connector LOW circuit.
    - If not the specified range, test the circuit for an open/high resistance.
17. If all circuits test normal, replace the SDM.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Inflatable Restraint Steering Wheel Module Replacement**
- **Control Module References** for SDM replacement, setup and programming

DTC B0014-B0045

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptors

B0014 01

LF Side Deployment Loop Short to Battery

B0014 02

LF Side Deployment Loop Short to Ground

B0014 04

LF Side Deployment Loop Open Circuit

B0014 0D

LF Side Deployment Loop Resistance Above Threshold

B0014 0E

LF Side Deployment Loop Resistance Below Threshold

B0015 01

LF Pretensioner Deployment Loop Short to Battery

B0015 02

LF Pretensioner Deployment Loop Short to Ground

B0015 04

LF Pretensioner Deployment Loop Open Circuit

B0015 0D

LF Pretensioner Deployment Loop Resistance Above Threshold

B0015 0E

LF Pretensioner Deployment Loop Resistance Below Threshold

B0016 01

LF Roof Rail Deployment Loop Stage 1 Short to Battery

B0016 02

LF Roof Rail Deployment Loop Stage 1 Short to Ground

B0016 04

LF Roof Rail Deployment Loop Stage 1 Open Circuit

B0016 0D

LF Roof Rail Deployment Loop Stage 1 Resistance Above Threshold

B0016 0E

LF Roof Rail Deployment Loop Stage 1 Resistance Below Threshold

B0018 01

LF Roof Rail Deployment Loop Stage 2 Short to Battery

B0018 02

LF Roof Rail Deployment Loop Stage 2 Short to Ground

B0018 04

LF Roof Rail Deployment Loop Stage 2 Open Circuit

B0018 0D

LF Roof Rail Deployment Loop Stage 2 Resistance Above Threshold

B0018 0E

LF Roof Rail Deployment Loop Stage 2 Resistance Below Threshold

B0019 01

Passenger Frontal Deployment Loop Stage 1 Short to Battery

B0019 02

Passenger Frontal Deployment Loop Stage 1 Short to Ground

B0019 04

Passenger Frontal Deployment Loop Stage 1 Open Circuit

B0019 0D

Passenger Frontal Deployment Loop Stage 1 Resistance Above Threshold

B0019 0E

Passenger Frontal Deployment Loop Stage 1 Resistance Below Threshold

B0020 01

Passenger Frontal Deployment Loop Stage 2 Short to Battery

B0020 02

Passenger Frontal Deployment Loop Stage 2 Short to Ground

B0020 04

Passenger Frontal Deployment Loop Stage 2 Open Circuit

B0020 0D

Passenger Frontal Deployment Loop Stage 2 Resistance Above Threshold

B0020 0E

Passenger Frontal Deployment Loop Stage 2 Resistance Below Threshold

B0021 01

RF Side Deployment Loop Short to Battery

B0021 02

RF Side Deployment Loop Short to Ground

B0021 04

RF Side Deployment Loop Open Circuit

B0021 0D

RF Side Deployment Loop Resistance Above Threshold

B0021 0E

RF Side Deployment Loop Resistance Below Threshold

B0022 01

RF Pretensioner Deployment Loop Short to Battery

B0022 02

RF Pretensioner Deployment Loop Short to Ground

B0022 04

RF Pretensioner Deployment Loop Open Circuit

B0022 0D

RF Pretensioner Deployment Loop Resistance Above Threshold

B0022 0E

RF Pretensioner Deployment Loop Resistance Below Threshold

B0023 01

RF Roof Rail Deployment Loop Stage 1 Short to Battery

B0023 02

RF Roof Rail Deployment Loop Stage 1 Short to Ground

B0023 04

RF Roof Rail Deployment Loop Stage 1 Open Circuit

B0023 0D

RF Roof Rail Deployment Loop Stage 1 Resistance Above Threshold

B0023 0E

RF Roof Rail Deployment Loop Stage 1 Resistance Below Threshold

B0025 01

RF Roof Rail Deployment Loop Stage 2 Short to Battery

B0025 02

RF Roof Rail Deployment Loop Stage 2 Short to Ground

B0025 04

RF Roof Rail Deployment Loop Stage 2 Open Circuit

B0025 0D

RF Roof Rail Deployment Loop Stage 2 Resistance Above Threshold

B0025 0E

RF Roof Rail Deployment Loop Stage 2 Resistance Below Threshold

Diagnostic Fault Information

DTC B0014-B0045

Circuit	Short to Ground	High Resistance	Open	Short to Voltage	Signal Performance
Side Impact Module - Driver - Low Control	B0014 02	B0014 04	B0014 0D	B0014 01	B0014 0E
Side Impact Module - Driver - High Control	B0014 02	B0014 04	B0014 0D	B0014 01	B0014 0E
Seat Belt Pretensioner - Driver Low Control	B0015 02	B0015 04	B0015 0D	B0015 01	B0015 0E
Seat Belt Pretensioner - Driver - High Control	B0015 02	B0015 04	B0015 0D	B0015 01	B0015 0E
Roof Rail Module - Left - Low Control	B0016 02	B0016 04	B0016 0D	B0016 01	B0016 0E
Roof Rail Module - Left - High Control	B0016 02	B0016 04	B0016 0D	B0016 01	B0016 0E
IP Module - Stage 1 - Low Control	B0019 02	B0019 04	B0019 0D	B0019 01	B0019 0E
IP Module - Stage 1 - High Control	B0019 02	B0019 04	B0019 0D	B0019 01	B0019 0E
IP Module - Stage 2 - Low Control	B0020 02	B0020 04	B0020 0D	B0020 01	B0020 0E
IP Module - Stage 2 - High Control	B0020 02	B0020 04	B0020 0D	B0020 01	B0020 0E
Side Impact Module - Passenger - Low	B0021 02	B0021 04	B0021 0D	B0021 01	B0021 0E
Side Impact Module - Passenger - High	B0021 02	B0021 04	B0021 0D	B0021 01	B0021 0E
Seat Belt Pretensioner - Passenger - Low Control	B0022 02	B0022 04	B0022 0D	B0022 01	B0022 0E
Seat Belt Pretensioner - Passenger - High Control	B0022 02	B0022 04	B0022 0D	B0022 01	B0022 0E
Roof Rail Module - Right - Low Control	B0023 02	B0023 04	B0023 0D	B0023 01	B0023 0E
Roof Rail Module - Right - High Control	B0023 02	B0023 04	B0023 0D	B0023 01	B0023 0E

Circuit/System Description

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

Conditions for Running the DTC

Ignition voltage is between 9-16 volts.

Conditions for Setting the DTC

B0014 01, B0015 01, B0016 01, B0018 01, B0019 01, B0020 01, B0021 01, B0022 01, B0023 01, B0025 01

The air bag module high and/or low circuit is short to voltage for 120 milliseconds.

B0014 02, B0015 02, B0016 02, B0018 02, B0019 02, B0020 02, B0021 02, B0022 02, B0023 02, B0025 02

The air bag module high and/or low circuit is short to ground for 120 milliseconds.

B0014 04, B0015 04, B0016 04, B0018 04, B0019 04, B0020 04, B0021 04, B0022 04, B0023 04, B0025 04

The air bag module high and/or low circuit is open for 120 milliseconds.

B0014 0D, B0015 0D, B0016 0D, B0018 0D, B0019 0D, B0020 0D, B0021 0D, B0022 0D, B0023 0D, B0025 0D

The air bag module deployment loop resistance is more than 3.9 ohms for 120 milliseconds.

B0014 0E, B0015 0E, B0016 0E, B0025 0E, B0019 0E, B0020 0E, B0021 0E, B0022 0E, B0023 0E, B0025 0E

The airbag module deployment loop resistance is less than 1.1 ohms for 120 milliseconds.

Action Taken When the DTC Sets

- The SDM commands the AIR BAG indicator ON via serial data communications.
- The SDM will store a DTC, if event occurs system will still attempt deployments.

Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists.
- A history DTC will clear once 100 malfunction-free ignition cycles have occurred.

Reference Information

Schematic Reference

SIR Schematics

Connector End View Reference

SIR Connector End Views

Description and Operation

SIR System Description and Operation

Electrical Information Reference

- Circuit Testing
- Connector Repairs
- Testing for Intermittent Conditions and Poor Connections
- Wiring Repairs
- SIR/SRS Wiring Repairs

Scan Tool Reference

- Scan Tool Data List
- Scan Tool Data Definitions

Special Tools Required

J 38715-A Driver and Passenger SIR Load Tool. See **Special Tools**.

Circuit/System Testing

IMPORTANT: When removing connectors inspect for damage or corrosion. Damage or corrosion in the following requires repair or replacement of the affected component/connector.

- **The pretensioner**
- **The air bag module**
- **The SDM module**
- **The air bag wiring harness connector**

- **The SDM wiring harness connector**

1. Ignition OFF, disconnect the harness connector at the applicable airbag module. Refer to the applicable airbag module replacement procedure.
2. With the applicable adaptor, connect **J 38715-A** . See **Special Tools**.
3. Ignition ON, with a scan tool, verify DTC is set as current.
    - If DTC is not set or is set as history, replace the applicable airbag module.
4. Ignition OFF, disconnect **J 38715-A** and the applicable adaptor. See **Special Tools**.
5. Ignition ON, test for less than 1 volt between the applicable HI circuit and ground.
    - If not the specified range, test the circuit for a short to voltage.
6. Test for less than 1 volt between the applicable LOW circuit and ground.
    - If not the specified range, test the circuit for a short to voltage.
7. Ignition OFF, test for infinite resistance between the applicable HI circuit and ground.
    - If not the specified range, test the circuit for a short to ground.
8. Test for infinite resistance between the applicable LOW circuit and ground.
    - If not the specified range, test the circuit for a short to ground.
9. Disconnect the harness connector at the SDM.
10. Test for less then 1 ohm of resistance between the SDM connector and the airbag module connector HI circuit.
    - If not the specified range, test the circuit for an open/high resistance.
11. Test for less then 1 ohm of resistance between the SDM connector and the airbag module connector LOW circuit.
    - If not the specified range, test the circuit for an open/high resistance.
12. If all circuits test normal, replace the SDM.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Inflatable Restraint Instrument Panel Module Replacement**
- **Inflatable Restraint Roof Rail Module Replacement**
- **Seat Belt Retractor Pretensioner Replacement - Front**
- **Control Module References** for SDM replacement, setup and programming

DTC B0052 OR B0053

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptors

DTC B0052

Deployment Commanded

DTC B0053

Deployment Commanded with Loop DTCs Present

Circuit/System Description

The inflatable restraint sensing and diagnostic module (SDM) contains a sensing device that converts vehicle velocity changes into an electrical signal. The SDM compares this electrical signal to a value stored in memory. When the generated signal exceeds the stored value, the SDM performs additional signal processing and compares the generated signals to values stored in memory. When 2 of the generated signals exceed the stored values, the SDM will cause current to flow through the deployment loops, deploying the air bags and/or pretensioners causing DTC B0052 to set.

Conditions for Running the DTC

Ignition voltage is between 9-16 volts.

Conditions for Setting the DTC

B0052

- The SDM detects a frontal impact of sufficient force to warrant deployment of the frontal modules.
- The SDM detects a side impact of sufficient force to warrant deployment of a side impact module and/or roof rail module.
- The SDM has deployed the seat belt pretensioner for 3 separate deployments.

B0053

SDM commands inflators deployment with loop faults present.

Action Taken When the DTC Sets

- The SDM will only set DTC B0052 or the SDM sets DTC B0053 along with DTC B0052.
- The SDM commands the AIR BAG warning lamp ON via serial data communications.
- The SDM records crash data.

Conditions for Clearing the DTC

DTC B0052 can be cleared if the following conditions are met.

- Three consecutive seat belt pretensioner deployment events have not occurred.
- One frontal or side air bag deployment has not occurred.

DTC B0052 becomes a latched code after 3 consecutive pretensioner deployments or 1 frontal or side air bag deployment. You cannot clear a latched code. Replace the SDM after following the instructions in the diagnostic table.

Diagnostic Aids

IMPORTANT: The seat belt pretensioners may deploy for impacts that are not severe enough to warrant frontal or side air bag deployment. The SDM is capable of sustaining 3 pretensioner deployment events or one frontal or side deployment event. After the maximum number of deployments has occurred, DTC B0052 sets and becomes a latched code, which cannot be cleared.

When DTC B0053 is accompanied by additional DTCs, other than B0052, repair the malfunction causing the other DTCs before replacing SDM.

Reference Information

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**
- **SIR/SRS Wiring Repairs**

Circuit/System Verification

1. Ignition OFF, inspect the vehicle for signs of inflator module or pretensioner deployment. Verify that the vehicle does not show any signs of inflator deployment.
   - If the vehicle displays any signs of inflator deployment, refer to **Repairs and Inspections Required After a Collision**.
2. Use a scan tool to clear DTCs. Verify that DTC B0052 does not reset.
   - If the DTC resets, replace the SDM.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **SIR/SRS Wiring Repairs**
- **Control Module References** for SDM replacement, setup and programming

DTC B0055

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptor

DTC B0055 00

Side Airbag Deployment Commanded

Circuit/System Description

The inflatable restraint sensing and diagnostic module (SDM) contains a sensing device that converts vehicle velocity changes into an electrical signal. The SDM compares this electrical signal to a value stored in memory. When the generated signal exceeds the stored value, the SDM performs additional signal processing and compares the generated signals to values stored in memory. When 2 of the generated signals exceed the stored values, the SDM will cause current to flow through the inflator modules, deploying the side air bags and causing DTC B0055 to set. This DTC is set when the SDM has commanded an air bag deployment with no faults present.

Conditions for Running the DTC

Ignition voltage is between 9-16 volts.

Conditions for Setting the DTC

- This SDM detects a frontal crash of sufficient force to warrant deployment of the frontal inflator modules.
- The SDM detects a side impact crash of sufficient force to warrant deployment of a side inflator module.

Action Taken When the DTC Sets

- The SDM sets a DTC.
- DTC B0052 or B0053 will set.
- The SDM commands ON the AIR BAG warning lamp via serial data communications.
- The SDM records crash data.

Conditions for Clearing the DTC

DTC B0055 is a latched code and cannot be cleared.

Reference Information

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**
- **SIR/SRS Wiring Repairs**

Circuit/System Testing

1. Ignition OFF, Verify that the vehicle does not show any signs of side impact or frontal inflator module deployment.
    - If the vehicle displays any signs of inflator deployment, refer to **Repairs and Inspections Required After a Collision**.
2. With a scan tool verify DTC B0055 is not set.
    - If DTC B0055 is set, replace the SDM.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **SIR/SRS Wiring Repairs**
- **Control Module References** for SDM replacement, setup and programming

DTC B0056

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptor

DTC B0056 00

Passenger Frontal Airbag Suppressed

Circuit/System Description

When the ignition is turned ON, the passenger presence system (PPS) and the inflatable restraint sensing and diagnostic module (SDM) performs tests to diagnose critical malfunctions within itself. The PPS is used to monitor the weight of an occupant in the front passenger seat. If the pressure from the occupant's weight is less than a specified value or an empty seat is detected, the PPS module will send a suppress signal to the SDM to disable the instrument panel (I/P) module. When the PPS detects a fault within itself, then the PPS will communicate to the SDM through GMLAN communications that a PPS fault is present. The SDM will suppress the deployment of the module and then turn the AIR BAG indicator ON.

Conditions for Running the DTC

Ignition voltage is between 9-16 volts.

Conditions for Setting the DTC

This DTC is set when the SDM has commanded an air bag deployment while the PPS has determined that the front passenger seat has one the following conditions:

- The pressure from the occupant's weight is less than a specified value. The PPS module sent a suppress signal to the SDM to suppress the I/P module.
- Empty front passenger seat

- A PPS fault was detected

Action Taken When the DTC Sets

- The SDM sets a DTC B0056.
- DTC B0052, B0053 or B0055 will set along with this DTC.
- The SDM commands ON the AIR BAG warning lamp via serial data communications.

Conditions for Clearing the DTC

This code will set along with one of the following latched codes: DTC B0052, B0053 or B0055 and cannot be cleared.

Diagnostic Aids

This code set because the PPS commanded to suppress the I/P module when the vehicle was involved in a collision and the SDM has commanded an air bag deployment.

Reference Information

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**
- **SIR/SRS Wiring Repairs**

Circuit/System Testing

1. Ignition OFF, verify that the vehicle does not show any signs of inflator module or pretensioner deployment.
   - If the vehicle displays any signs of inflator deployment, refer to **Repairs and Inspections Required After a Collision**.
2. With a scan tool, verify DTC B0052, B0053 or B0055 is not set.
   - If DTC is set, refer to **Diagnostic Trouble Code (DTC) List - Vehicle** for instructions.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

SIR/SRS Wiring Repairs

DTC B0057

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptor

DTC B0057 00

Passenger Side Airbag Suppressed

Circuit/System Description

When the ignition is turned ON, the passenger presence system (PPS) and the inflatable restraint sensing and diagnostic module (SDM) performs tests to diagnose critical malfunctions within itself. The PPS is used to monitor the weight of an occupant in the front passenger seat. If the pressure from the occupant's weight is less than a specified value or an empty seat is detected, the PPS module will send a suppress signal to the SDM to disable the passenger side impact module (front seat air bag). When the PPS detects a fault within itself, then the PPS will communicate to the SDM through GMLAN communications that a PPS fault is present. The SDM will suppress the deployment of the module and then turn the AIR BAG indicator ON.

Conditions for Running the DTC

Ignition voltage is between 9-16 volts.

Conditions for Setting the DTC

This DTC is set when the SDM has commanded an air bag deployment while the PPS has determined that the front passenger seat has one the following conditions:

- The pressure from the occupant's weight is less than a specified value. The PPS module sent a suppress signal to the SDM to suppress the side impact module.
- Empty front passenger seat
- A PPS fault was detected

Action Taken When the DTC Sets

- The SDM sets a DTC B0057.
- DTC B0052, B0053 or B0055 will set along with this DTC.
- The SDM commands ON the AIR BAG warning lamp via serial data communications.

Conditions for Clearing the DTC

This code will set along with one of the following latched codes: DTC B0052, B0053 or B0055 and cannot be cleared.

Diagnostic Aids

This code set because the PPS commanded to suppress the side impact module when the vehicle was involved in a collision and the SDM has commanded an air bag deployment.

Reference Information

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**
- **SIR/SRS Wiring Repairs**

Circuit/System Testing

1. Ignition OFF, Verify that the vehicle does not show any signs of inflator module or pretensioner deployment.
    - If the vehicle displays any signs of inflator deployment, refer to **Repairs and Inspections Required After a Collision**.
2. With a scan tool, verify DTC B0052, B0053 or B0055 is not set.
    - If DTC is set, refer to **Diagnostic Trouble Code (DTC) List - Vehicle** for instructions.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

SIR/SRS Wiring Repairs

DTC B0058

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptor

DTC B0058 00

Passenger Pretensioner Suppressed

Circuit/System Description

The inflatable restraint sensing and diagnostic module (SDM) will set DTC B0058 00 when a pretensioner deployment has been commanded but the passenger seat belt pretensioner is suppressed. The seat belt pretensioner can be suppressed at the request of the passenger presence system.

Conditions for Running the DTC

This DTC is set when a pretensioner deployment has been commanded and the passenger seat belt pretensioner has been suppressed.

Action Taken When the DTC Sets

- The SDM sets a DTC B0058.
- The SDM commands ON the AIR BAG warning lamp via serial data communications.
- DTC B0052, B0053 or B0055 will set along with this DTC.

Reference Information

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**
- **SIR/SRS Wiring Repairs**

Circuit/System Testing

Ignition ON, check for latched codes DTC B0052, B0053 or B0055. Go to the SDM menu and retrieve the DTC.

- If the latched codes DTC B0052, B0053 or B0055 are set, refer to the **Diagnostic Trouble Code (DTC) List - Vehicle** .

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

Control Module References for SDM replacement, setup and programming

SIR/SRS Wiring Repairs

DTC B0073

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptors

DTC B0073 01

Passenger Seat Belt Sensor Circuit Short to Battery

DTC B0073 02

Passenger Seat Belt Sensor Circuit Short to Ground

DTC B0073 04

Passenger Seat Belt Sensor Circuit Open

DTC B0073 06

Passenger Seat Belt Sensor Circuit Short to Ground or Open Circuit

DTC B0073 08

Passenger Seat Belt Sensor Circuit Signal Invalid

Diagnostic Fault Information

DTC B0073

Circuit	Short to Ground	High Resistance	Open	Short to Voltage	Signal Performance
Seat Belt Sensor Right Low Reference	B0073 02, 06	-	B0073 04	B0073 01	B0073 08
Seat Belt Sensor Right Signal	B0073 02, 06	-	B0073 04	B0073 01	B0073 08

Circuit/System Description

The inflatable restraint seat belt tension sensor is a 3-wire potentiometer mounted on the retractor or buckle side of the seat belt and provides an input to the passenger presence system (PPS). When an infant car seat is properly restrained on the front passenger seat, the seat belt is tightly secured through the car seat. The seat belt pulls on the tension sensor and changes the voltage signal to the PPS module. The PPS monitors the seat belt tension sensor circuit and if a fault is detected, a DTC will be set. When the PPS detects this DTC within the PPS, it will notify the customer of the enable/disable status by turning ON the OFF indicator on the PASSENGER AIR BAG ON/OFF indicators. Then the PPS will communicate to the sensing and diagnostic module (SDM) through a serial data communications circuit that a PPS fault is present. The PPS will set a DTC then communicate to the SDM to suppress the deployment of the instrument panel (I/P) module and then turn the AIR BAG indicator ON.

Conditions for Running the DTC

Ignition voltage is between 9-16 volts.

Conditions for Setting the DTC

B0073 01

The SDM detects the seat belt sensor circuit is shorted to voltage for 500 milliseconds.

B0073 02

The SDM detects the seat belt sensor circuit is shorted to ground for 500 milliseconds.

B0073 04

The SDM detects the seat belt sensor circuit is open for 500 milliseconds.

B0073 06

The SDM detects the seat belt sensor circuit is shorted to ground or an open occur for 500 milliseconds.

B0073 08

The SDM detects the seat belt sensor signal circuit is invalid for 500 milliseconds.

Action Taken When the DTC Sets

- The SDM sets a DTC B0073.
- The SDM commands ON the AIR BAG warning lamp via serial data communications.

Conditions for Clearing the DTC

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

Reference Information

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**
- **SIR/SRS Wiring Repairs**

Circuit/System Testing

IMPORTANT:

- **The seat belt tension retractor sensor is not serviced separately. The seat belt retractor replacement - right front with the seat belt tension retractor sensor must be serviced as a complete unit.**
- **When removing connectors, inspect for damage or corrosion. Damage or corrosion in the following requires repair or replacement of the affected component/connector:**

- **The seat belt retractor pretensioner - RF**
- **The PPS module**
- **The SDM module**
- **The seat belt retractor pretensioner - RF wiring harness connector**
- **The PPS wiring harness connector**
- **The SDM wiring harness connector**

1. Ignition OFF, disconnect the seat belt sensor. Refer to **Seat Belt Retractor Pretensioner Replacement - Front** in Repair Instructions for location of connector.
2. Disconnect the PPS module connector. Refer to **Inflatable Restraint Passenger Presence System Replacement - Front** in Repair Instructions for location of connector.
3. Test the seat belt tension retractor sensor signal circuit for a short to ground, a high resistance or an open. Verify that a short to ground, a high resistance or an open does not exist.
   - If any of the above conditions are found, make the appropriate repair.
4. Test the seat belt tension retractor sensor 5-volt reference circuit for a short to ground, a short to voltage, a high resistance or an open. Verify that a short to ground, a short to voltage, a high resistance or an open does not exist.
   - If any of the above conditions are found, make the appropriate repair.
5. Test the seat belt tension retractor sensor low reference circuit for a short to ground, a short to voltage, a high resistance or an open. Verify that a short to ground, a short to voltage, a high resistance or an open does not exist.
   - If any of the above conditions are found, make the appropriate repair
6. Ignition ON, engine OFF test the seat belt tension retractor sensor circuit with a DMM. Measure the voltage of the seat belt tension retractor sensor circuit harness side and ground. The voltage should read 0.05-4.5 volts.
   - If the voltage is more than 5 volts, test the seat belt tension retractor sensor circuit for a short to voltage. If the circuit tests good, replace the PPS.
7. Reconnect all PPS components. Use the scan tool to clear all PPS DTCs. Perform the Passenger Presence System Preload Test. Refer to **Passenger Presence System Preload Test**. Verify DTC B0073 does not exist.
   - If DTC B0073 reset, replace the PPS.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Seat Belt Retractor Pretensioner Replacement - Front**
- **Control Module References** for SDM and PPS replacement, setup and programming

DTC B0081

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptors

DTC B0081 0F

Passenger Presence System Erratic

DTC B0081 39

Passenger Presence System Internal Electronic Failure

DTC B0081 3A

Passenger Presence System Incorrect Component Installed

DTC B0081 71

Passenger Presence System Invalid Serial Data Received

Circuit/System Description

When the ignition is turned ON, the passenger presence system (PPS) and the inflatable restraint sensing and diagnostic module (SDM) performs tests to diagnose critical malfunctions within itself. When the SDM has completed the power-up mode, the SDM will establish communication with the PPS. The SDM will also request the instrument panel cluster to command both of the PASSENGER AIR BAG ON/OFF indicators ON for 5 seconds. The SDM will then transmit a request message to the PPS to receive the PPS verification ID. The PPS will transmit the verification ID to the SDM and the SDM will compare the ID received to data stored in memory. If the data stored in memory does not match the information transmitted by the PPS or the SDM has detects that the PPS has set a current DTC, the SDM will then disable the instrument panel

(I/P) module deployment loop, set DTC B0081 and command the AIR BAG indicator ON.

Conditions for Running the DTC

Ignition voltage is between 9-16 volts.

Conditions for Setting the DTC

All of the following conditions must exist for 5 seconds:

B0081 0F

- The SDM has received a fault present message from the PPS.
- The PPS is in assembly plant mode and the SDM is in production mode.

B0081 39

- The SDM has received a NOK message from the PPS.
- The SDM has not received a message.

B0081 3A

- The SDM has received an ID message from the PPS which does not match the ID stored in the SDM memory.
- The SDM has reset the PPS twice without detecting the correct ID message.

B0081 71

The SDM has received invalid serial data from the PPS.

Action Taken When the DTC Sets

- The SDM commands the AIR BAG indicator ON via serial data communications.
- The I/P module deployment loop will be disable.

Conditions for Clearing the DTC

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

Diagnostic Aids

If either the SDM or PPS were replaced, verify that the correct part numbers were used for the vehicle application.

Reference Information

Schematic Reference

SIR Schematics

Connector End View Reference

SIR Connector End Views

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**
- **SIR/SRS Wiring Repairs**

Circuit/System Testing

IMPORTANT: When removing connectors, inspect for damage or corrosion. Damage or corrosion in the following requires repair or replacement of the affected component/connector:

- **The PPS module**
- **The SDM module**
- **The PPS module harness connector**
- **The SDM wiring harness connector**

1. Ignition ON, Verify the passenger air bag ON/OFF indicators illuminate.
   - If the indicators do not illuminate, refer to **Passenger Presence System Indicator Circuit Malfunction**.
2. Ignition ON, verify no PPS DTCs are set.
   - If any PPS DTCs are set as current or history, refer to **Diagnostic Trouble Code (DTC) List - Vehicle** .
3. Verify the correct PPS part number is installed in the vehicle.

- If the wrong PPS was installed, replace with the correct PPS.

4. Ignition OFF, disconnect the harness connector at the PPS module.
5. Remove the SDM connector. Refer to **Inflatable Restraint Sensing and Diagnostic Module Replacement**
6. Test the occupant sensor serial data circuit for an open/high resistance between the PPS module and SDM connector.
   - If an open/high resistance exists, make the appropriate repair.
7. Ignition OFF, test for less then 1 ohm of resistance between the PPS module circuit terminal D and ground.
   - If not the specified value, test the circuit for an open/high resistance.
8. Ignition ON, verify a test lamp illuminates between the PPS module circuit terminal A and ground.
   - If the test lamp does not illuminate, test the circuit for a short to ground or an open/high resistance. If circuit tests normal replace the PPS module.
9. If all circuits test normal and DTC B0081 is set as current, replace the SDM.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

Control Module References for PPS and SDM replacement, setup and programming

DTC B0083 OR B0084

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptors

DTC B0083 00

Front End Sensor 1

DTC B0083 0F

Front End Sensor 1 Erratic (Left)

DTC B0083 39

Front End Sensor 1 Internal Electronic Failure (Left)

DTC B0083 3A

Front End Sensor 1 Incorrect Component Installed (Left)

DTC B0083 71

Front End Sensor 1 Invalid Serial Data Received (Left)

DTC B0084 00

Front End Sensor 2

DTC B0084 0F

Front End Sensor 2 Erratic (Right)

DTC B0084 39

Front End Sensor 2 Internal Electronic Failure (Right)

DTC B0084 3A

Front End Sensor 2 Incorrect Component Installed (Right)

DTC B0084 71

Front End Sensor 2 Invalid Serial Data Received (Right)

Diagnostic Fault Information

DTC B0083 or B0084

Circuit	Short to Ground	High Resistance	Open	Short to Voltage	Signal Performance
Front End Sensor 1 Signal Circuit	B0083 00	B0083 00	B0083 00	B0083 00	B0083 0F
Front End Sensor 1 Low Reference Circuit	-	B0083 00	B0083 00	B0083 00	B0083 0F

Front End Sensor 2 Signal Circuit	B0084 00	B0084 00	B0084 00	B0084 00	B0084 0F
Front End Sensor 2 Low Reference Circuit	-	B0084 00	B0084 00	B0084 00	B0084 0F

Circuit/System Description

The inflatable restraint front end sensor utilizes a unidirectional 2-wire circuit. The front end sensor 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 front end sensor. When the ignition is turned ON and input power from the SDM is first detected, the front end sensor 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 front end sensor continually communicates status messages to the SDM, which determines if a fault is present in the front end sensor circuit. When a fault is detected, the SDM may reset the front end sensor up to 2 times by removing and reapplying power to it. If the fault is still present, the SDM will set a DTC.

Conditions for Running the DTC

Ignition voltage is between 9-16 volts.

Conditions for Setting the DTC

All of the following conditions exist for 2.5 seconds:

B0083 00 or B0084 00

- The front end sensor has been shorted to ground.
- The front end sensor has been shorted to voltage.
- The front end sensor circuit is open.
- The SDM has not received a message from the front end sensor for more than 375 milliseconds.
- The front end sensor current has been above 23 mA for longer than 5 milliseconds.

B0083 0F or B0084 0F

The SDM has received erratic messages from the front end sensor.

B0083 39 or B0084 39

- The SDM has received a NOK message from the front end sensor.

- The SDM has not received a message.

B0083 3A or B0084 3A

- The SDM has received an ID message from the front end sensor, which does not match the ID stored in the SDM memory.
- The SDM has reset the front end sensor twice without detecting the correct ID message.

B0083 71 or B0084 71

The SDM has received invalid serial data from the front end sensor.

Action Taken When the DTC Sets

- The SDM commands the AIR BAG indicator ON via serial data communications.
- The SIR System is disabled and no deployments are allowed.

Conditions for Clearing the DTC

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

Diagnostic Aids

A short to voltage on the low reference circuit for either right or left front end sensor will cause the Air Bag fuse to fail/open with no DTC code set.

Reference Information

Schematic Reference

SIR Schematics

Connector End View Reference

SIR Connector End Views

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**

- **Wiring Repairs**

Circuit/System Testing

IMPORTANT: When removing connectors, inspect for damage or corrosion. Damage or corrosion in the following requires repair or replacement of the affected component/connector:

- **The front end sensor**
- **The SDM module**
- **The front end sensor wiring harness connector**
- **The SDM wiring harness connector**

1. Ignition ON, if DTC B0083 is current, disconnect the front end sensor - left connector. If DTC B0084 is current, disconnect the front end sensor - right connector.
2. Remove the SDM connector.
3. Test the signal and voltage circuits between the SDM and front end sensor for a short to voltage, short to ground or open/low resistance. Verify that a short to voltage, short to ground or open/low resistance does not exist.
   - If any of the above conditions are found, make the appropriate repair.
4. Reconnect all SIR components. With the ignition ON, use the scan tool to clear the DTCs then recheck for DTCs.
   - If DTC B0083 was current, replace the front end sensor - left. If DTC B0084 was current, replace the front end sensor - right.

Repair Procedures

- **Inflatable Restraint Front End Sensor Replacement**
- **SIR/SRS Wiring Repairs**
- **Control Module References** for SDM replacement, setup and programming

Repair Verification

Ignition ON, use the scan tool to clear the DTCs, then recheck for DTCs.

- If DTC B0083 or B0084 was current, replace the SDM.

DTC B0085 OR B0086

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptors

DTC B0085 00

Left Front Side Impact Sensor

DTC B0085 0F

Left Front Side Impact Sensor Erratic

DTC B0085 39

Left Front Side Impact Sensor Internal Electronic Failure

DTC B0085 3A

Left Front Side Impact Sensor Incorrect Component Installed

DTC B0085 71

Left Front Side Impact Sensor Invalid Serial Data Received

DTC B0086 00

Right Front Side Impact Sensor

DTC B0086 0F

Right Front Side Impact Sensor Erratic

DTC B0086 39

Right Front Side Impact Sensor Internal Electronic Failure

DTC B0086 3A

Right Front Side Impact Sensor Incorrect Component Installed

DTC B0086 71

Right Front Side Impact Sensor Invalid Serial Data Received

Diagnostic Fault Information

DTC B0085 or B0086

Circuit	Short to Ground	High Resistance	Open	Short to Voltage	Signal Performance
Side Impact Sensor LF Signal Circuit	-	B0085 00	B0085 00	B0085 00	B0085 0F
Side Impact Sensor LF Voltage	B0085 00	B0085 00	B0085 00	-	B0085 0F
Side Impact Sensor RF Signal Circuit	-	-	B0086 04	-	B0086 0F
Side Impact Sensor RF Voltage	B0086 00	B0086 00	B0086 00	-	B0086 0F

Circuit/System 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 to it. If the fault is still present, the SDM will set a DTC.

Conditions for Running the DTC

Ignition voltage is between 9-16 volts.

Conditions for Setting the DTC

All of the following conditions exist for 2.5 seconds:

B0085 02 or B0086 02

- The SIS has been shorted to ground.
- The SIS current has been above 23 mA for longer than 5 milliseconds.

B0085 05 or B0086 05

- The SIS has been shorted to voltage.
- The SIS circuit is open.
- The SDM has not received a message from the SIS for more than 375 milliseconds.

B0085 0F or B0086 0F

The SDM has received erratic messages from the SIS.

B0085 39 or B0086 39

- The SDM has received a NOK message from the SIS.
- The SDM has not received a message.

B0085 3A or B0086 3A

- The SDM has received an ID message from the SIS which does not match the ID stored in the SDM memory.
- The SDM has reset the SIS twice without detecting the correct ID message.

B0085 71 or B0086 71

The SDM has received invalid serial data from the SIS.

Action Taken When the DTC Sets

- The SDM commands the AIR BAG indicator ON via serial data communications.
- The SIR System is disabled and no deployments are allowed.

Conditions for Clearing the DTC

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

Reference Information

Schematic Reference

SIR Schematics

Connector End View Reference

SIR Connector End Views

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**
- **SIR/SRS Wiring Repairs**

Circuit/System Testing

IMPORTANT: When removing connectors, inspect for damage or corrosion. Damage or corrosion in the following requires repair or replacement of the affected component/connector:

- **The SIS**
- **The SDM module**
- **The SIS wiring harness connector**
- **The SDM wiring harness connector**

1. Ignition OFF, if DTC B0085 is current, disconnect the LF SIS connector. If DTC B0086 is current, disconnect the RF SIS connector. Refer to **Inflatable Restraint Side Impact Sensor Replacement - Front** in Repair Instructions for location of connector.
2. Remove the SDM connector. Refer to SDM replacement in Repair Instructions for location of connector.
3. Test the signal and voltage circuits between the **Inflatable Restraint Sensing and Diagnostic Module Replacement** and **Inflatable Restraint Side Impact Sensor Replacement - Front** for a short to voltage, short to ground or open/low resistance. Verify that a short to voltage, short to ground or open/low resistance does not exist.
    - If any of the above conditions are found, make the appropriate repair.
4. Reconnect all SIR components, turn the ignition ON and with a scan tool clear and recheck for DTCs.
    - If DTC B0085 is current, replace the LF SIS. If DTC B0086 is current, replace the RF

SIS. After replacement, clear and recheck for DTCs if DTC B0085 or DTC B0086 are still current, replace the SDM.

Repair Procedures

- **Inflatable Restraint Side Impact Sensor Replacement - Front**
- **Inflatable Restraint Side Impact Sensor Replacement - Rear**
- **Control Module References** for SDM replacement, setup and programming

DTC B0087 OR B0088

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptors

DTC B0087 02

LR Side Impact Sensor Short to Ground

DTC B0087 05

LR Side Impact Sensor Short to Battery or Open

DTC B0087 0F

LR Side Impact Sensor Erratic

DTC B0087 39

LR Side Impact Sensor Internal Electronic Failure

DTC B0087 3A

LR Side Impact Sensor Incorrect Component Installed

DTC B0087 71

LR Side Impact Sensor Invalid Serial Data Received

DTC B0088 02

RR Side Impact Sensor Short to Ground

DTC B0088 05

RR Side Impact Sensor Short to Battery or Open

DTC B0088 0F

RR Side Impact Sensor Erratic

DTC B0088 39

RR Side Impact Sensor Internal Electronic Failure

DTC B0088 3A

RR Side Impact Sensor Incorrect Component Installed

DTC B0088 71

RR Side Impact Sensor Invalid Serial Data Received

Circuit/System 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 to it. If the fault is still present, the SDM will set a DTC.

Conditions for Running the DTC

Ignition voltage is between 9-16 volts.

Conditions for Setting the DTC

B0087 02 or B0088 02

- The SIS has been shorted to ground.
- The SIS current has been above 23 mA for longer than 5 milliseconds.

B0087 05 or B0088 05

- The SIS has been shorted to voltage or open.
- The SDM has not received a message from the SIS for more than 375 milliseconds.

B0087 0F or B0088 0F

The SDM has received erratic messages from the SIS.

B0087 39 or B0088 39

The SDM detects an internal failure in the SIS.

B0087 3A or B0088 3A

- The SDM has received an ID message from the SIS which does not match the ID stored in the SDM memory.
- The SDM has reset the SIS twice without detecting the correct ID message.

B0087 71 or B0088 71

The SDM has received invalid serial data from the SIS.

Action Taken When the DTC Sets

- The SDM commands the AIR BAG indicator ON via serial data communications.
- The side SIR System is disabled and no side deployments are allowed. Frontal deployments and rollover detection are still enabled.

Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists and the scan tool Clear DTCs function is used.
- A history DTC will clear once 100 malfunction-free ignition cycles have occurred.

Reference Information

Schematic Reference

SIR Schematics

Connector End View Reference

SIR Connector End Views

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**
- **SIR/SRS Wiring Repairs**

Circuit/System Testing

IMPORTANT: When removing connectors inspect for damage or corrosion. Damage or corrosion in the following requires repair or replacement of the affected component/connector.

- **The SIS**
- **The SDM module**
- **The SIS wiring harness connector**
- **The SDM wiring harness connector**

1. Ignition OFF, if DTC B0087 is current, disconnect the LR SIS connector. If DTC B0088 is current, disconnect the RR SIS connector. Refer to **Inflatable Restraint Side Impact Sensor Replacement - Front** in Repair Instructions for location of connector.
2. Remove the SDM connector, refer to **Inflatable Restraint Sensing and Diagnostic Module Replacement** in Repair Instructions for location of connector.
3. Test the signal and voltage circuits between the SDM and SIS for a short to voltage, short to ground or open/low resistance. Verify that a short to voltage, short to ground or open/low resistance does not exist.
    - If any of the above conditions are found make the appropriate repair.
4. Reconnect all SIR components, then ignition ON use the scan tool to clear the DTCs then recheck for DTCs.
    - If DTC B0087 was current replace the LR SIS. If DTC B0088 was current replace the RR SIS. After replacement refer to **Repair Verification**.

Repair Procedures

- **Inflatable Restraint Side Impact Sensor Replacement - Front**
- **Inflatable Restraint Side Impact Sensor Replacement - Rear**
- **Control Module References** for SDM replacement, setup and programming

Repair Verification

Ignition ON, use the scan tool to clear the DTCs then recheck for DTCs.

- If DTC B0087 or B0088 was current replace the SDM.

DTC B0090

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptor

DTC B0090 0F

Rollover Sensor Erratic

DTC B0090 39

Rollover Sensor Internal Electronic Failure

DTC B0090 71

Rollover Sensor Invalid Serial Data Received

Circuit/System Description

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

Conditions for Running the DTC

Ignition voltage is between 9-16 volts.

Conditions for Setting the DTC

All of the following conditions must exist for 5 seconds:

B0090 0F

- The SDM received a fault present message from the ROS.
- The ROS is in assembly plant mode and the SDM is in production mode.
- The SDM has not received any data from the ROS.

B0090 3A

- The SDM has received an ID message from the vehicle rollover sensor which does not match the ID stored in the SDM memory.
- The SDM has reset the vehicle rollover sensor twice without detecting the correct ID message.

B0090 39

- The SDM has received a NOK message from the vehicle rollover sensor.
- The SDM has not received a message.

B0090 71 The SDM has received invalid serial data from the vehicle rollover sensor.

- The 4-digit primary data key stored in the SDM does not match the 4 digits stored in the BCM.
- The VIN stored in the BCM does not match that of the vehicle.

Action Taken When the DTC Sets

- The SDM commands the AIR BAG indicator ON via serial data communications.
- The side air bag deployment loops will be disabled for rollover events only. For side impact events the side air bags are still enabled.

Conditions for Clearing the DTC

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

function is used.

- A history DTC will clear once 100 malfunction-free ignition cycles have occurred.

Diagnostic Aids

If either the SDM or vehicle rollover sensor were replaced verify that the correct part numbers were used for the vehicle application and the components were properly configured. Refer to Control Module References for SDM and ROS setup and programming.

Reference Information

Schematic Reference

SIR Schematics

Connector End View Reference

SIR Connector End Views

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Circuit/System Testing

IMPORTANT: When removing connectors inspect for damage or corrosion. Damage or corrosion in the following requires repair or replacement of the affected component/connector.

- **The vehicle rollover sensor**
- **The SDM module**
- **The vehicle rollover sensor harness connector**
- **The SDM wiring harness connector**

1. For DTC B0090 39 replace the vehicle rollover sensor.
2. For DTC B0090 0F, B0090 3A and B0090 71 request DTC from ROS and repair any ROS DTC prior to continuing this diagnostic procedure.

3. With Ignition OFF, disconnect the vehicle rollover sensor connector. Refer to inflatable restraint vehicle rollover sensor replacement in repair instructions for connector location.
4. Remove the SDM connector.
5. Test the vehicle rollover sensor serial data circuit for an open or high resistance between the vehicle rollover sensor and SDM connector. Verify no open or high resistance exists.
   - If any of the above conditions are found make the appropriate repair.
6. Test the vehicle rollover sensor ignition 1 voltage circuit for a short to ground, a high resistance, or an open. Verify no short to ground, a high resistance, or an open exists.
   - If any of the above conditions are found make the appropriate repair.
7. Replace the inflatable restraint vehicle rollover sensor. Perform the Inflatable Restraint Vehicle Rollover Sensor Programming and Setup procedure.
8. Ignition ON, use the scan tool to clear the DTCs, then recheck for DTC B0090. Verify that the DTC does not reset.
   - If DTC B0090 was current replace the SDM.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Inflatable Restraint Vehicle Rollover Sensor Replacement**
- **SIR/SRS Wiring Repairs**
- **Control Module References** for SDM and BCM replacement, setup and programming

DTC B1001

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptor

DTC B1001 00

SDM Option Configuration Error

Circuit/System Description

The inflatable restraint sensing and diagnostic module (SDM) stores a primary data key, which is a 4-digit number and a secondary data key, which is a portion of the vehicle identification number (VIN). When the ignition is turned ON, the SDM compares this information to the information stored in the body control module (BCM) over the serial data communication circuit. If there is a mismatch between the information stored in the SDM and BCM, DTC B1001 will set.

Conditions for Running the DTC

Ignition voltage is between 9-16 volts.

Conditions for Setting the DTC

- The 4-digit primary data key stored in the SDM does not match the 4 digits stored in the BCM.
- The VIN stored in the BCM does not match that of the vehicle.

Action Taken When the DTC Sets

- The SDM commands ON the AIR BAG warning lamp via serial data communications.
- The SDM disables all deployments.

Conditions for Clearing the DTC

- The last 4-digit Primary Data Key in the SDM match the last 4 digits stored in the BCM.
- The VIN that is stored in the SDM matches the VIN stored in the BCM.

Diagnostic Aids

This DTC is an indication that an incorrect SDM is installed in the vehicle or that the SDM and/or the BCM was replaced without reprogramming with the new information.

Reference Information

Description and Operation Reference

SIR System Description and Operation

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**

- **Wiring Repairs**

Scan Tool Reference

- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Testing

1. Ignition ON, use the scan tool to request SIR DTCs. Verify that DTC B1001 is set as current.
    - If DTC B1001 is history, clear DTCs and recheck.
2. Verify the scan tool parameter Secondary Key Status is Valid.
    - If the Secondary Key Status is not valid, verify that Received VIN Digits 2-5 and Received VIN Digits 2-5 parameters match the vehicle VIN. If the parameters do not match the VIN, reprogram the BCM.
    - If the Secondary Key Status is not valid, verify that Received VIN Digits 2-5 and Received VIN Digits 6-7 parameters match the vehicle VIN. If the parameters match the VIN, reprogram the SDM.
3. Verify the scan tool parameter Primary Key Status is Valid.
    - If the Primary Key Status is not valid, verify that the Received Primary Key and the SDM Primary Key parameters match. If the parameters do not match, use the scan tool to perform the Setup SDM Primary Key in BCM.
4. If all parameters are correct, use the scan tool to clear the DTCs. Verify that DTC B1001 is cleared.
    - If DTC B1001 is still current, replace the SDM.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **SIR/SRS Wiring Repairs**
- **Control Module References** for SDM and BCM replacement, setup and programming

DTC B1011

Diagnostic Instructions

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

- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptor

DTC B0090 0F

Rollover Sensor Erratic

DTC B0090 39

Rollover Sensor Internal Electronic Failure

DTC B0090 71

Rollover Sensor Invalid Serial Data Received

Circuit/System Description

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

Conditions for Running the DTC

Ignition voltage is between 9-16 volts.

Conditions for Setting the DTC

If the VSS is marked as invalid or is missing.

Conditions for Clearing the DTC

- The condition for setting the DTC no longer exists.
- A history DTC will clear once 100 malfunction-free ignition cycles have occurred.

Diagnostic Aids

DTC B1011 does not indicate a ROS system malfunction and will not cause any warning

indicators to illuminate. Factors such as a long engine crank or a delay in serial data communications will cause B1011 to set.

Reference Information

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Repair Instructions

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

DTC B1019

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptors

DTC B1019 00

System Configuration Error

DTC B1019 3A

Incorrect Component Installed

Circuit/System Description

The inflatable restraint sensing and diagnostic module (SDM) runs continuous diagnostic tests on the restraints system. If the SDM does not detect the passenger presence system (PPS) indicator or detects a fault in the PPS indicator circuit, DTC B1019 3A will set.

After the SDM is programmed, the SDM setup procedure is required. During this set up procedure, the SDM will compare the content that was just programmed to the actual components

that are installed on the vehicle. If the SDM detects that there are too few or too many components on the system, DTC B1019 00 will set and not allow the setup procedure to complete.

Conditions for Running the DTC

Ignition voltage is between 9-16 volts.

Conditions for Setting the DTC

B1019 00

- The SDM was programmed with the wrong options for the vehicle.
- The wrong components were installed for the content of the vehicle.
- SDM connector may have bent pins or shorting bars causing the SDM to learn deployment loops that are not actually present.

B1019 3A

- The vehicle was configured for passenger presence system (PPS) but the SDM does not detect that the PPS indicator is present due to loss of power at indicator.
- The vehicle is not configured for PPS and the SDM detects that the PPS indicator is present.

Action Taken When the DTC Sets

- The SDM commands ON the AIR BAG warning lamp via serial data communications.
- The SDM disables all deployments when B1019 00 DTC is set current, not for B1019 3A.

Conditions for Clearing the DTC

- The correct SDM must be installed.
- The correct components must be installed.
- The PPS indicator operates as indicated in the **SIR System Description and Operation**.

Diagnostic Aids

If the SDM has been replaced, make sure that the correct part number was installed for this vehicle. If after programming the SDM and the B1019 00 sets current, check for bent pins or shorting bars at the SDM connector.

Reference Information

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Circuit/System Testing

IMPORTANT: If DTC B1001 is set current, diagnose that fault prior to following this diagnostic procedure.

B1019 3A

1. If the vehicle is equipped with a PPS system, verify the PPS indicator is present.
   - If not present, install the PPS status indicator
2. Verify the PPS Indicator operates as indicated in the **SIR System Description and Operation**.
   - If operation differs from that outlined in the Description and Operation, correct the fault in the PPS indicator circuit; refer to **Passenger Presence System Indicator Circuit Malfunction** to correct the condition.

B1019 00

1. Verify that the vehicle is equipped with all the SIR components it was configured for.
   - Restore the vehicle to the original content and perform the Setup New SDM special function in the scan tool.
2. Remove the SDM connector and verify the SDM connector is in good condition and has no bent pins, terminals or shorting bars.
   - If damage is found, repair the bent pins, terminals or shorting bars as needed and then perform the Setup New SDM special function in the scan tool.
3. Verify the correct SDM part number was installed.
   - If wrong SDM was installed, replace SDM
4. Verify the SDM was programmed with the correct software.
   - If SDM was not programmed correctly, reprogram SDM. Use the Scan Tool to program the SDM. Refer to **Repair Instructions** for programming procedure.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **SIR/SRS Wiring Repairs**
- **Control Module References** for SDM or BCM replacement, setup and programming

DTC B1370

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptors

DTC B1370 01

Device Ignition 1 Circuit Short to Battery

DTC B1370 06

Device Ignition 1 Circuit Short to Ground or Open

Diagnostic Fault Information

DTC B1370

Circuit	Short to Ground	High Resistance	Open	Short to Voltage	Signal Performance
Ignition 1 Circuit	B1370 06	-	B1370 06	B1370 01	B1370 06

Circuit/System Description

The inflatable restraint sensing and diagnostic module (SDM) monitors the ignition 1 signal from the ignition switch. The SDM also compares the ignition 1 input to the power mode message communicated over the vehicle bus. When the vehicle ignition switch is placed in the RUN or CRANK position, voltage is applied to the SDM ignition 1 input terminal. If a fault is detected in the SDM ignition 1 circuit, then DTC B1370 will set.

Conditions for Running the DTC

Ignition voltage is between 9-16 volts.

Conditions for Setting the DTC

The following conditions exist for at least 10 seconds.

B1370 01

The SDM detects a short to battery in the ignition 1 voltage circuit when the switch is in the OFF position.

B1370 06

- The SDM detects a short to ground or an open in the ignition 1 voltage circuit when the ignition switch is in RUN or CRANK.
- The SDM sees that the vehicle power mode message is Run/Crank but does not detect the Run/Crank voltage on the ignition 1 input.
- There is an open circuit on the in the control side of the RUN/Crank relay.

Action Taken When the DTC Sets

- The SDM commands the AIR BAG indicator ON via serial data communications.
- The SDM stores DTC to memory.
- The SDM determines its power mode only from the GMLAN power mode messages and discards the ignition 1 input for the remainder of the ignition cycle.

Conditions for Clearing the DTC

- A current DTC clears when the malfunction is no longer present.
- A history DTC clears when the module ignition cycle counter reaches the reset threshold, without a repeat of the malfunction.

Diagnostic Aids

The SIR fuse could be open and DTC B1370 will set if the low reference circuit is shorted to voltage/battery with no sensor code set for one of the following sensors:

- Right or Left front end sensors
- Right or Left side impact sensors

There is a current fault on the control side of the RUN/CRANK relay.

Reference Information

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Circuit/System Testing

IMPORTANT: When removing connectors, inspect for damage or corrosion. Damage or corrosion in the following requires repair or replacement of the affected component/connector:

- **The SDM module**
- **The SDM wiring harness connector**

1. Ignition OFF, remove the Air Bag fuse from the underhood fuse center. Ignition ON, engine OFF test the voltage from the supply voltage side of the AIR BAG fuse to a ground with a DMM. The voltage should read 9-16 volts.
   - If the voltage is less than 9-16 volts, correct the open or short on the voltage supply circuit or the open in the control side of the RUN/CRANK relay.
2. Remove the SDM connector. With the air bag fuse removed, test the ignition 1 voltage circuit between the underhood fuse center and the SDM for a short to voltage or an open. Verify that a short to voltage or an open does not exist.
   - If any of the above conditions are found, make the appropriate repair.
   - If ignition 1 voltage circuit test normal then refer to **Diagnostic Aids** within this repair.
3. If all circuits test normal, replace the SDM.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **SIR/SRS Wiring Repairs**
- **Control Module References** for SDM replacement, setup and programming

PASSENGER PRESENCE SYSTEM PRELOAD TEST

Introduction

The Passenger Presence System (PPS) is a calibrated system that requires checking for preloads within each region when the system has been serviced or replaced. If the passenger seat bottom cushion, seat bottom trim or heater pad has been serviced, reinstalled or removed for any reason, the procedure below will check for any preloads on the PPS. The PPS module cannot be tested for preload until it is unlocked using SPS programming. A service replacement PPS module does not require an unlock procedure prior to an initial preload test. Once a preload test has been performed, the PPS module will lock regardless of a pass or fail status. If a module needs to be retested, it must first be unlocked with SPS programming. Before you start, read these procedures carefully and completely. For further information regarding the PPS, refer to **SIR System Description and Operation**.

Conditions for Setting the DTC

IMPORTANT:

- **The PPS will not function properly if the PPS detects a preload within a region.**
- **The Diagnostic System Check - Vehicle must be performed after successfully completing the preload test procedure to ensure the system is functioning properly.**

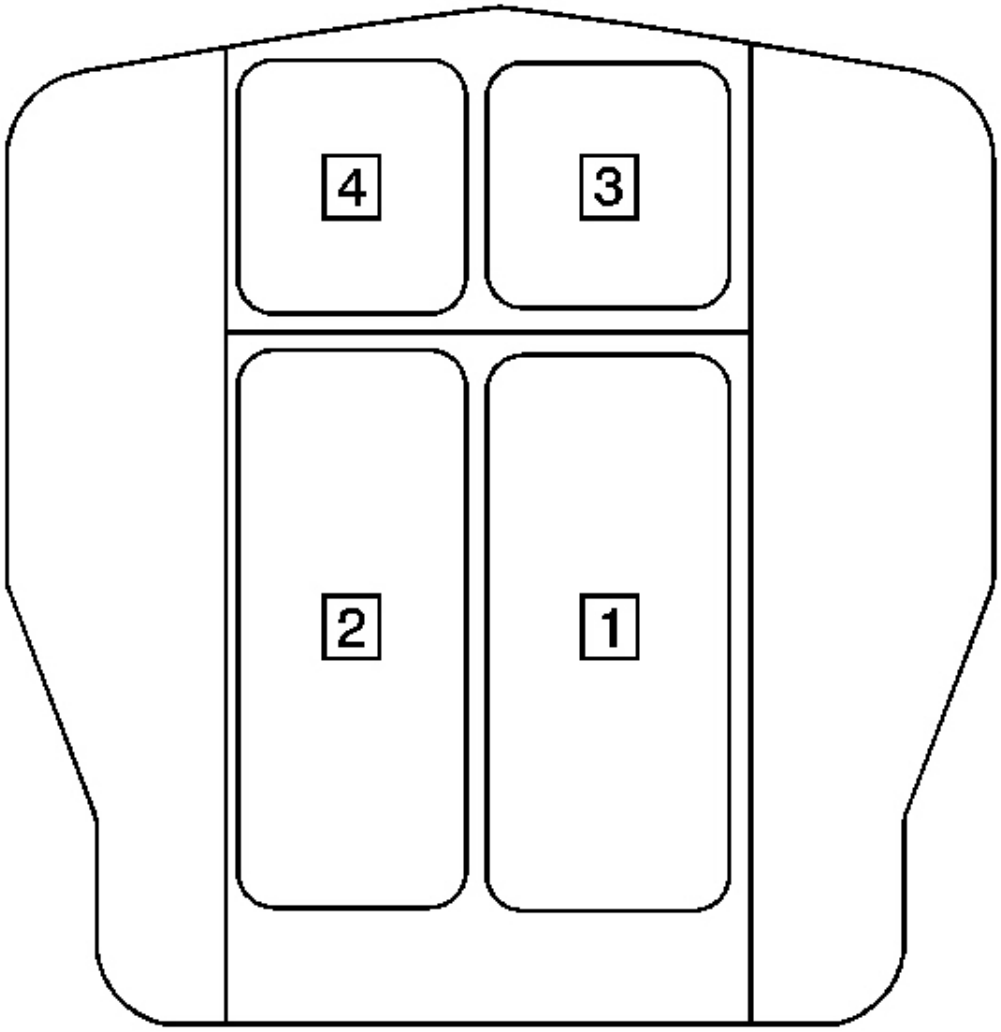


Fig. 54: Four Regions Of Passenger Presence System (PPS)
Courtesy of GENERAL MOTORS CORP.

The PPS will fail the preload test when a region has detected a preload/pressure on it. If a preload test fails, the scan tool will display a chart as illustrated below. A Yes status indicates which region(s) have a preload condition. Refer to the chart below and the above illustration to identify the failed region.

The Sensor Mat is Preloaded

Preload Regions	Status
Region 1	Yes/No
Region 2	Yes/No
Region 3	Yes/No
Region 4	Yes/No

Passenger Presence System Preload System Test Procedure (New Module)

1. Empty the front outboard passenger seat.
2. With the scan tool, perform the Preload Passenger Presence System procedure.
3. If the test fails, adjust the seat bottom trim and massage the cover to ensure unwanted pressure is not present in the specified area. Proceed to the Passenger Presence System Preload Test (Existing Module) to retest after adjustment is made.
4. Once the test successfully completes, cycle the ignition key OFF.
5. Perform the **Diagnostic System Check - Vehicle** after successfully completing the preload test procedure to ensure the system is functioning properly.

Passenger Presence System Preload System Test Procedure (Existing Module)

1. With **Service Programming System (SPS)** , unlock the PPS module.
2. Empty the front outboard passenger seat.
3. With the scan tool, perform the Preload Passenger Presence System procedure.
4. If the test fails, adjust the seat bottom trim and massage the cover to ensure unwanted pressure is not present in the specified area and restart the Passenger Presence System Preload Test (Existing Module).
5. Once the test successfully completes, cycle the ignition key OFF.
6. Perform the **Diagnostic System Check - Vehicle** after successfully completing the preload test procedure to ensure the system is functioning properly.

SYMPTOMS - SIR

IMPORTANT: Complete the following steps before using the symptom tables:

1. Perform **Diagnostic System Check - Vehicle** before using the symptom tables in order to verify that all of the following are true:
   - There are no DTCs set.
   - The inflatable restraint sensing and diagnostic module (SDM) can communicate via the serial data link.

2. Review the SIR system description and operation in order to familiarize yourself with the system functions. Refer to **SIR System Description and Operation**.

Visual/Physical Inspection

- Inspect for aftermarket devices which could affect the operation of the SIR system. Refer to **Checking Aftermarket Accessories** .
- 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** .

Symptom List

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

- **Air Bag Indicator Circuit Malfunction** in order to diagnose the symptom.
- **Passenger Presence System Indicator Circuit Malfunction** in order to diagnose the symptom.

AIR BAG INDICATOR CIRCUIT MALFUNCTION

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

Circuit/System Description

When the ignition is turned ON, the instrument panel cluster (IPC) flashes the AIR BAG indicator 7 times. The inflatable restraint sensing and diagnostic module (SDM) performs diagnostic tests on the SIR system and then commands the IPC to turn the AIR BAG indicator OFF if no SIR malfunction exists. The AIR BAG indicator is controlled by the SDM via serial data communications. If the ignition 1 voltage is outside of the normal operating voltage range 9-16 volts, the SDM will command the IPC to turn the AIR BAG indicator ON with no DTCs present then disables all deployment loops.

Reference Information

Schematic Reference

SIR Schematics

Connector End View Reference

SIR Connector End Views

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Diagnostic Aids

A DTC B1370 may set if the ignition 1 circuit is outside the 9-16 volts range.

Circuit/System Testing

1. Ignition ON, use the scan tool to request the SIR data list display. Observe the Battery Voltage Parameter. The battery voltage on the scan tool should read 9-16 volts.
    - If the voltage is less than 9 volts, refer to **Diagnostic System Check - Vehicle** .
2. Ignition ON, monitor the IPC. The SIR warning indicator should flash then turn OFF. Verify that the SIR warning indicator flashes and then turns OFF.
    - If the SIR warning indicator continually flashes then reprogrammed the SDM.
3. Using the scan tool, go to Body and Accessories, then go onward to Special Functions to Instrument Panel Cluster and then go to Display Test. In the Display Test mode you can turn ON or OFF all the instrument panel indicators when commanded ON. Commanded the IPC indicators ON. The Air Bag indicator should turn ON.
    - If the Air Bag indicator does not turn ON, replace the IPC.
4. If the scan tool commands the Air Bag indicator ON and OFF, replace the SDM.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **SIR/SRS Wiring Repairs**

- **Control Module References** for IPC and SDM replacement, setup and programming

PASSENGER PRESENCE SYSTEM INDICATOR CIRCUIT MALFUNCTION

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

Circuit/System Description

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

Reference Information

Schematic Reference

SIR Schematics

Connector End View Reference

SIR Connector End Views

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**
- **SIR/SRS Wiring Repairs**

Circuit/System Testing

IMPORTANT: When removing connectors, inspect for damage or corrosion. Damage or corrosion in the following requires repair or replacement of the affected component/connector:

- **The IPC module**
- **The PPS module**
- **The SDM module**
- **The IPC module wiring harness connector**
- **The PPS module wiring harness connector**
- **The SDM wiring harness connector**

1. Using the scan tool, go to Body and Accessories, then go onward to Special Functions to Instrument Panel Cluster (IPC) and then go to Display Test. In the Display Test mode you can turn ON or OFF all the instrument panel indicators when commanded ON. Commanded the IPC indicators ON. The PPS indicators should turn ON.
    - If the passenger AIR BAG ON/OFF indicator does not turn ON, remove the connector from the PPS indicator display.
    - On the PPS connector, test and repair the passenger AIR BAG ON/OFF indicator voltage circuit for a short to ground, a high resistance or an open. If any of these conditions are found, make the appropriate repair.
    - Connect a test lamp between the ignition 1 voltage circuit and passenger AIR BAG OFF indicator control circuit on the passenger AIR BAG ON/OFF indicator connector. With the passenger seat empty, use a scan tool to command the display test. Verify the test lamp illuminates.
        - If test lamp illuminates, replace the passenger AIR BAG ON/OFF indicator.
    - Remove the IPC connector. Test and repair both ON and OFF indicator control circuits between the PPS indicator and the IPC for a short to voltage, high resistance or an open. If any of these conditions are found, make the appropriate repair.

      Refer to **Inflatable Restraint Instrument Panel Module Replacement** in Repair Instructions for connector location.

      IMPORTANT: The IPC must be serviced/replaced as a complete unit.

    - If passenger AIR BAG ON/OFF indicator voltage, ON and OFF circuits test good, replace the IPC.
2. PPS indicators turns ON when command ON then replace the PPS.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

Control Module References for IPC and PPS replacement, setup and programming

SIR DISABLING AND ENABLING

SIR component location affects how a vehicle should be serviced. There are parts of the SIR system installed in various locations around a vehicle. To find the location of the SIR components refer to **SIR Identification Views**.

There are several reasons for disabling the SIR system, such as repairs to the SIR system or servicing a component near or attached to an SIR component. There are several ways to disable the SIR system depending on what type of service is being performed. The following information covers the proper procedures for disabling/enabling the SIR system.

SIR Disabling and Enabling

Condition	Action
If the vehicle was involved in an accident with an air bag deployment.	Disconnect the negative battery cable(s) *. Refer to **Repairs and Inspections Required After a Collision**.
When performing SIR diagnostics.	Follow the appropriate SIR service manual diagnostic procedure(s) *
When removing or replacing an SIR component or a component attached to an SIR component.	Disconnect the negative battery cable(s) *
If the vehicle is suspected of having shorted electrical wires.	Disconnect the negative battery cable(s) *
When performing electrical diagnosis on components other than the SIR system.	Remove the SIR/Airbag fuse(s) when indicated by the diagnostic procedure to disable the SIR system
* DTCs will be lost when the negative battery cable is disconnected.	

SIR Service Precautions

CAUTION: When performing service on or near the SIR components or the SIR wiring, the SIR system must be disabled. Failure to observe the correct procedure could cause deployment of the SIR components. Serious injury can occur. Failure to observe

the correct procedure could also result in unnecessary SIR system repairs.

The inflatable restraint sensing and diagnostic module (SDM) maintains a reserved energy supply. The reserved energy supply provides deployment power for the air bags if the SDM loses battery power during a collision. Deployment power is available for as much as 1 minute after disconnecting the vehicle power. Waiting 1 minute before working on the system after disabling the SIR system prevents deployment of the air bags from the reserved energy supply.

General Service Instructions

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

- Do not expose inflator modules to temperatures above 65°C (150°F).
- Verify the correct replacement part number. Do not substitute a component from a different vehicle.
- Use only original GM replacement parts available from your authorized GM dealer. Do not use salvaged parts for repairs to the SIR system.

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

- Inflatable restraint sensing and diagnostic module (SDM)
- Any Inflatable restraint air bag module
- Inflatable restraint steering wheel module coil
- Any Inflatable restraint sensor
- Inflatable restraint seat belt pretensioners
- Inflatable restraint Passenger Presence System (PPS) module or sensor

Disabling Procedure - Air Bag Fuse

1. Turn the steering wheel so that the vehicles wheels are pointing straight ahead.
2. Place the ignition in the OFF position.

IMPORTANT: The SDM may have more than one fused power input. To ensure there is no unwanted SIR deployment, personal injury or unnecessary SIR system repairs, remove all fuses supplying power to the SDM. With all SDM fuses removed

and the ignition switch in the ON position, the AIR BAG warning indicator illuminates. This is normal operation and does not indicate a SIR system malfunction.

3. Locate and remove the fuse(s) supplying power to the SDM. Refer to **SIR Schematics** or **Electrical Center Identification Views** .
4. Wait 1 minute before working on the system.

Enabling Procedure - Air Bag Fuse

1. Place the ignition in the OFF position.
2. Install the fuse(s) supplying power to the SDM. Refer to **SIR Schematics** or **Electrical Center Identification Views** .
3. Turn the ignition switch to the ON position. The AIR BAG indicator will flash then turn OFF.
4. Perform the Diagnostic System Check - Vehicle if the AIR BAG warning indicator does not operate as described. Refer to **Diagnostic System Check - Vehicle** .

Disabling Procedure - Negative Battery Cable

1. Turn the steering wheel so that the vehicles wheels are pointing straight ahead.
2. Place the ignition in the OFF position.
3. Disconnect the negative battery cable from the battery. Refer to **Battery Negative Cable Disconnection and Connection** .
4. Wait 1 minute before working on system.

Enabling Procedure - Negative Battery Cable

1. Place the ignition in the OFF position.
2. Connect the negative battery cable to the battery. Refer to **Battery Negative Cable Disconnection and Connection** .
3. Turn the ignition switch to the ON position. The AIR BAG indicator will flash then turn OFF.
4. Perform the Diagnostic System Check - Vehicle if the AIR BAG warning indicator does not operate as described. Refer to **Diagnostic System Check - Vehicle** .

REPAIR INSTRUCTIONS

INFLATABLE RESTRAINT FRONT END SENSOR REPLACEMENT

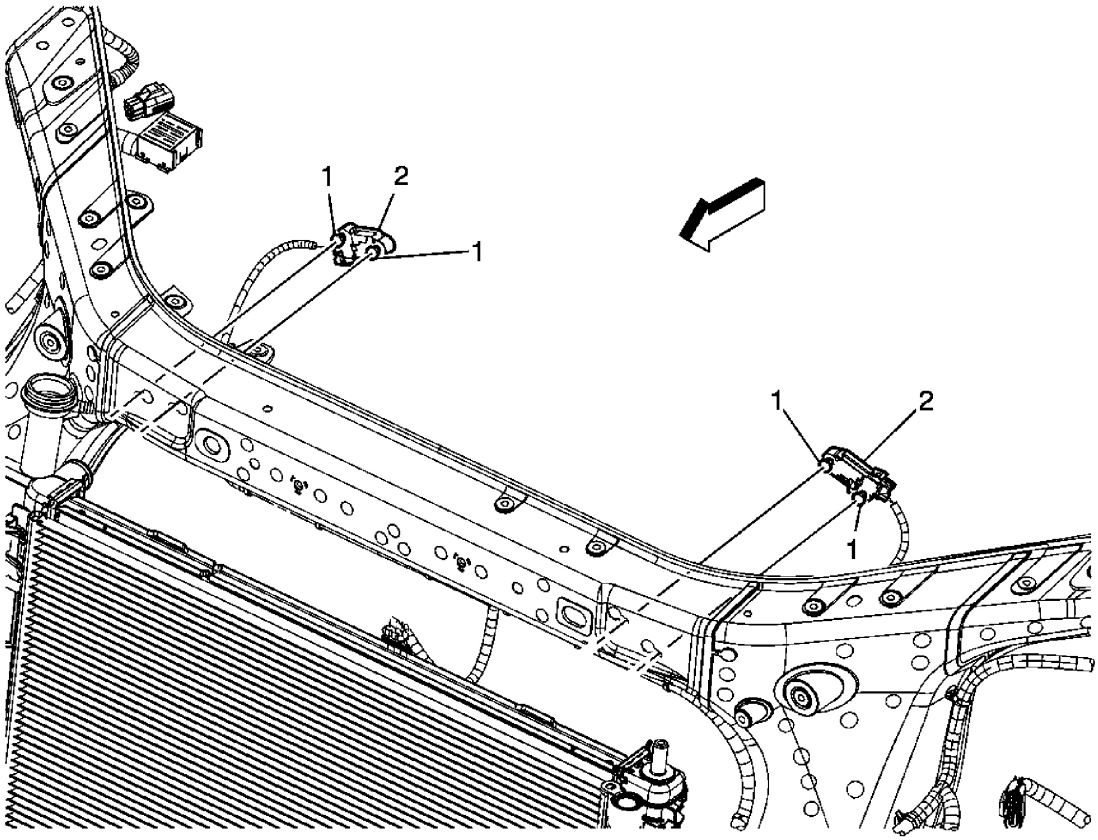


Fig. 55: View Of Inflatable Restraint Front End Sensor
Courtesy of GENERAL MOTORS CORP.

Inflatable Restraint Front End Sensor Replacement

Callout	Component Name
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.** **Preliminary Procedure:** Disable the supplemental inflatable restraint (SIR) system. Refer to **SIR Disabling and Enabling**.	
1	Supplemental Inflatable Restraint Front End Discriminating Sensor Bolt (Qty: 4) **NOTE:** **Refer to Fastener Notice .**

	Tip: Loosen bolts in order to remove sensor. **Tighten:** 8 N.m (71 lb in)
2	Supplemental Inflatable Restraint Front End Discriminating Sensor Assembly (Qty: 2) **Tip:** 1. Remove connector position assurance (CPA) retainer. 2. Disconnect electrical connector.

INFLATABLE RESTRAINT VEHICLE ROLLOVER SENSOR REPLACEMENT

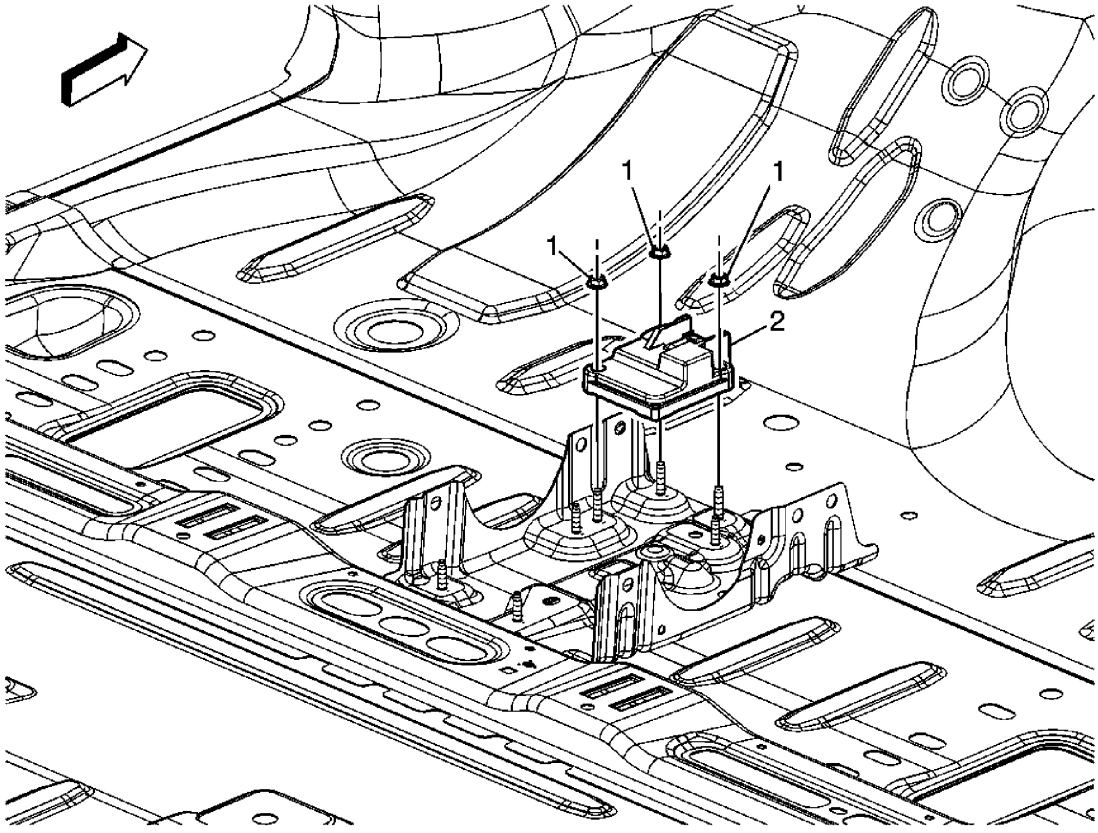


Fig. 56: View Of Inflatable Restraint Vehicle Rollover Sensor
Courtesy of GENERAL MOTORS CORP.

Inflatable Restraint Vehicle Rollover Sensor Replacement

Callout	Component Name

CAUTION:
Refer to SIR Caution .

Preliminary Procedures

1. Disable the SIR system. Refer to **SIR Disabling and Enabling**.
2. Remove the front floor console. Refer to **Front Floor Console Replacement** .

1	Inflatable Restraint Vehicle Rollover Sensor Nut (Qty: 3) **NOTE:** **Refer to Fastener Notice .** **Tighten:** 10 N.m (88 lb ft)
2	Inflatable Restraint Vehicle Rollover Sensor Assembly **Tip:** 1. Position carpet in order to access sensor. 2. Disconnect the electrical connectors.

INFLATABLE RESTRAINT SENSING AND DIAGNOSTIC MODULE REPLACEMENT

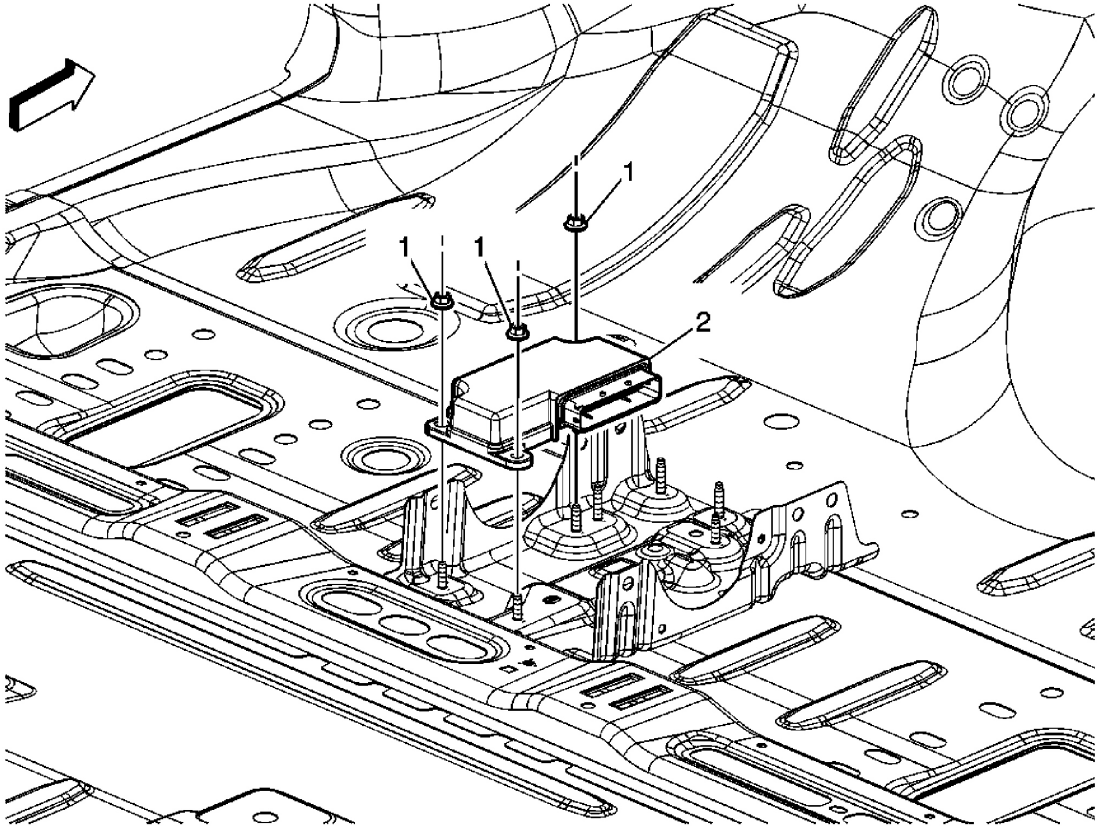


Fig. 57: Identifying Inflatable Restraint Sensing & Diagnostic Module
Courtesy of GENERAL MOTORS CORP.

Inflatable Restraint Sensing and Diagnostic Module Replacement

Callout	Component Name
CAUTION: **Refer to SIR Caution .** **Preliminary Procedures** 1. Disable the SIR system. Refer to **SIR Disabling and Enabling**. 2. Remove the front floor console. Refer to **Front Floor Console Replacement** .	
1	Inflatable Restraint Sensor and Diagnostic Module Nut (Qty: 3) **NOTE:** **Refer to Fastener Notice .** **Tighten:** 10 N.m (88 lb ft)

2	Inflatable Restraint Sensor and Diagnostic Module Assembly **Tip:** 1. Position carpet in order to access sensor. 2. Disconnect the electrical connectors.

INFLATABLE RESTRAINT STEERING WHEEL MODULE REPLACEMENT

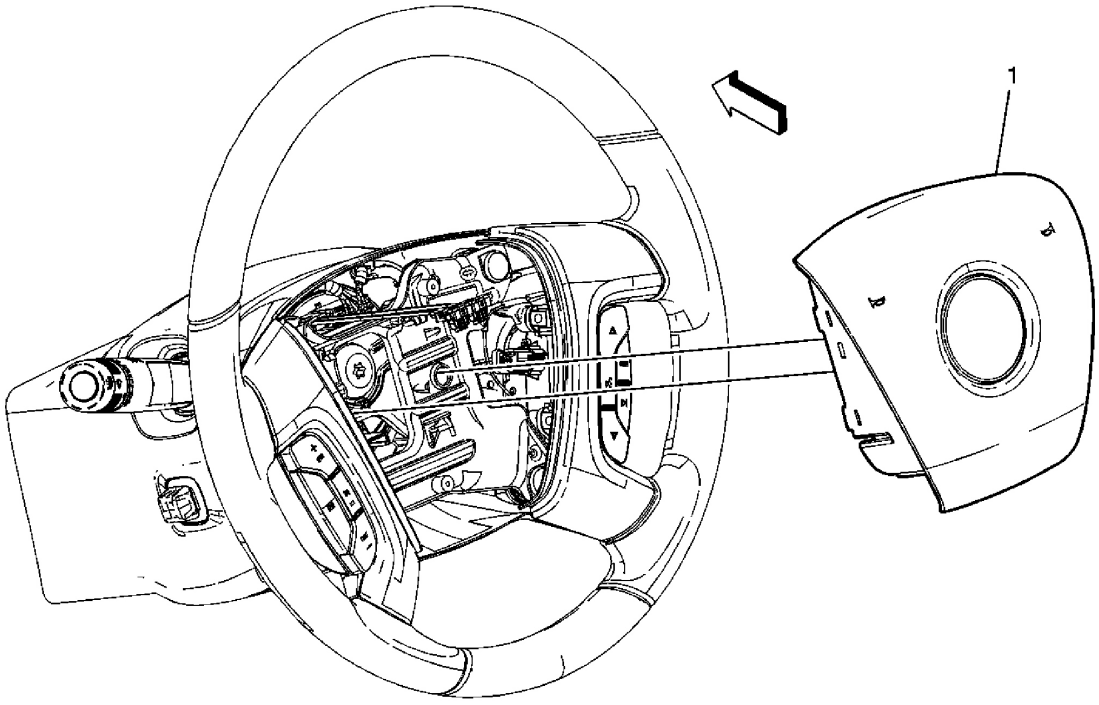


Fig. 58: Identifying Inflatable Restraint Steering Wheel Module
Courtesy of GENERAL MOTORS CORP.

Inflatable Restraint Steering Wheel Module Replacement

Callout	Component Name
CAUTION: **Refer to SIR Caution .** **Preliminary Procedures** 1. Disable the SIR. Refer to **SIR Disabling and Enabling**. 2. On back side of the steering wheel are 2 openings, place the wheel so that one opening is on top.	

3. Using a blunt-ended tool, push the spring fastener inward through the access hole. Repeat the step for the other opening.	
1	Steering Wheel Inflatable Restraint Module Assembly **Tip:** 1. Release the connector position assurance (CPA) retainer. 2. Disconnect the electrical connectors. 3. 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**.

INFLATABLE RESTRAINT STEERING WHEEL MODULE COIL REPLACEMENT

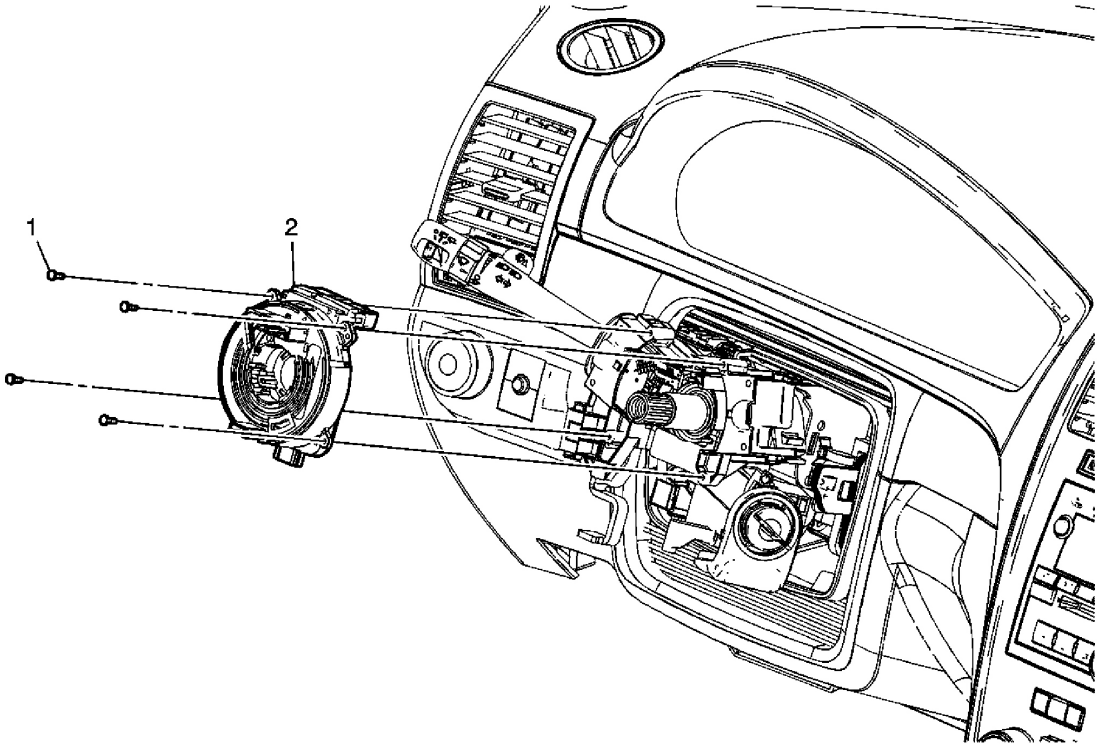


Fig. 59: View Of Inflatable Restraint Steering Wheel Module Coil
Courtesy of GENERAL MOTORS CORP.

Inflatable Restraint Steering Wheel Module Coil Replacement

Callout	Component Name

Preliminary Procedures

1. Remove the steering wheel. Refer to **Steering Wheel Replacement** .
2. Remove the steering column upper trim cover. Refer to **Steering Column Upper Trim Cover Replacement** .
3. Remove the steering column lower trim cover. Refer to **Steering Column Lower Trim Cover Replacement** .
4. Remove the ignition lock cylinder opening trim cover. Refer to **Ignition Lock Cylinder Opening Trim Cover Replacement** .

1	Inflatable Restraint Steering Wheel Module Coil Bolt (Qty: 4)
2	Inflatable Restraint Steering Wheel Module Coil

INFLATABLE RESTRAINT STEERING WHEEL MODULE COIL CENTERING

Tools Required

J 42640 Steering Column Anti-rotation Pin

Centering Procedure

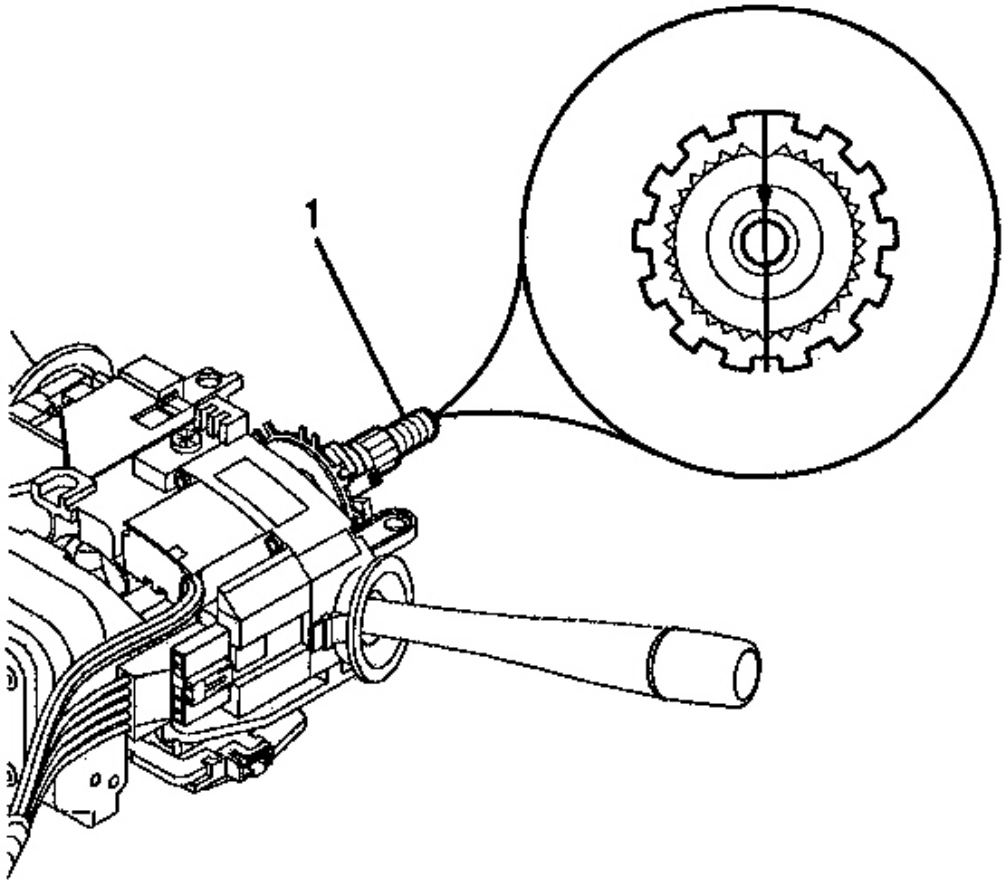


Fig. 60: View Of Block Tooth Of Steering Shaft Assembly In 12 O'clock Position
Courtesy of GENERAL MOTORS CORP.

NOTE: The new SIR coil assembly will be centered. Improper alignment of the SIR coil assembly may damage the unit, causing an inflatable restraint malfunction.

1. Verify the following conditions before centering the SIR coil :
   - The wheels on the vehicle are pointed straight ahead.
   - The block tooth (1) of the steering shaft is in the 12 o'clock position.
   - The ignition switch is in the LOCK position or **J 42640** is installed in the upper tilt head.

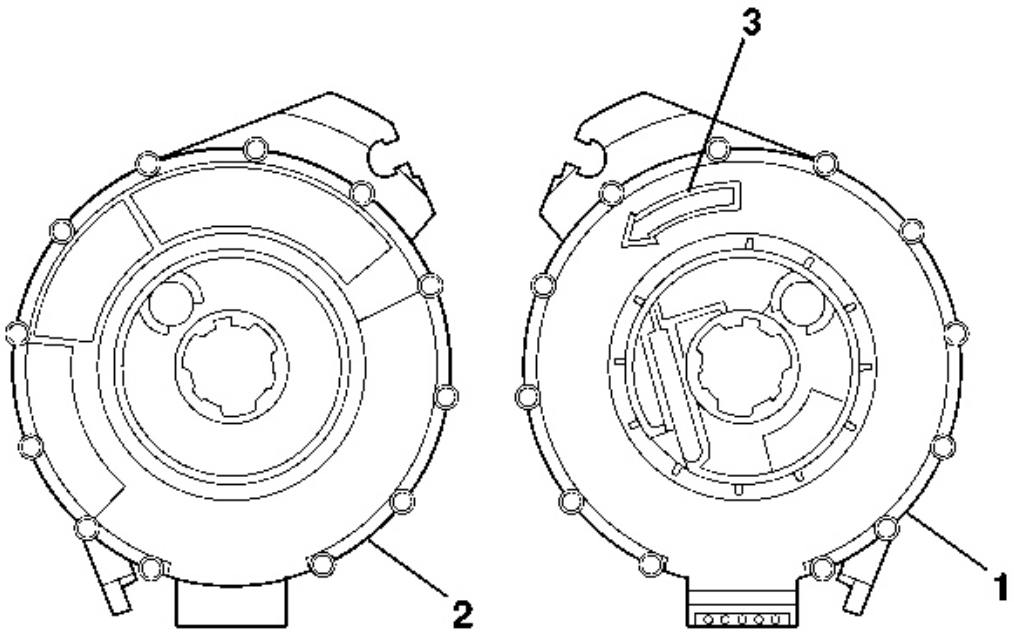


Fig. 61: Identifying SIR Coil (Without Centering Window, Without Spring Service Lock)
Courtesy of GENERAL MOTORS CORP.

2. If the front side (3) of the SIR coil does NOT have a centering window and the back side (2) does NOT have a spring service lock (1), perform the following steps:
    1. Hold the coil with the face up.
    2. Rotate the coil hub clockwise until the coil ribbon stops.
    3. Rotate the coil hub, slowly, counter clockwise, for 2.5 revolutions. This is center position.
    4. While maintaining the coil hub in center position, align the centered SIR coil with the horn tower and slide onto the steering shaft.

INFLATABLE RESTRAINT INSTRUMENT PANEL MODULE REPLACEMENT

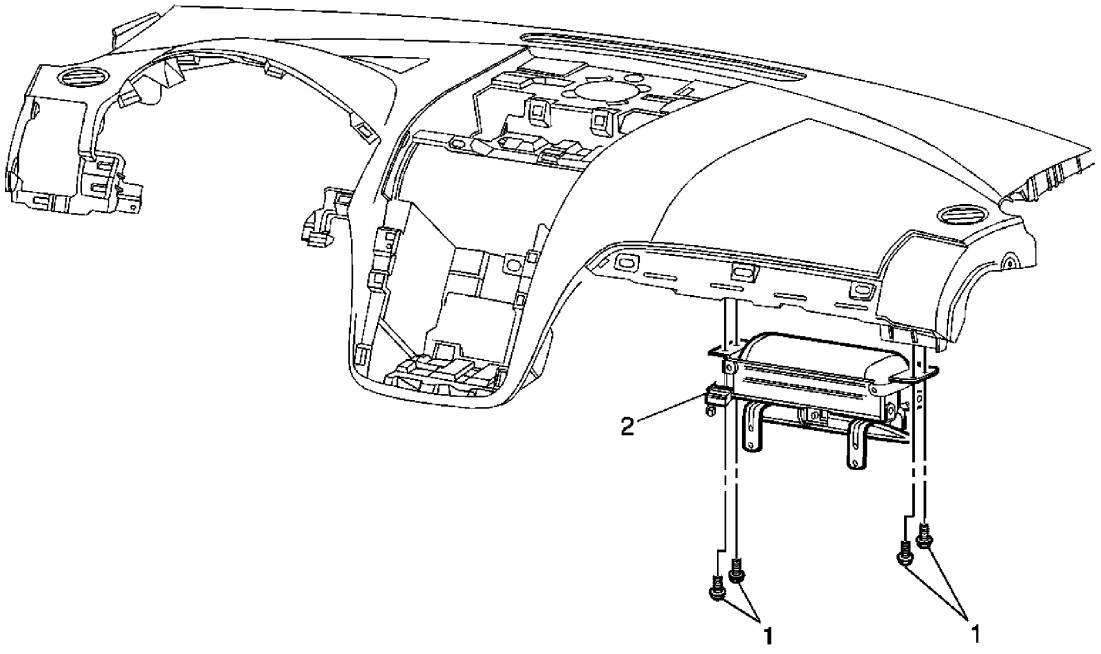


Fig. 62: View Of Inflatable Restraint Instrument Panel Module
Courtesy of GENERAL MOTORS CORP.

Inflatable Restraint Instrument Panel Module Replacement

Callout	Component Name
Preliminary Procedure: Remove the instrument panel trim pad. Refer to **Instrument Panel Trim Pad Replacement** .	
1	Instrument Panel Inflatable Restraint Module Nut (Qty: 4) **Tighten:** 10 N.m (89 lb in)
2	Instrument Panel Inflatable Restraint Module **Procedure:** 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**.

INFLATABLE RESTRAINT SEAT POSITION SENSOR REPLACEMENT

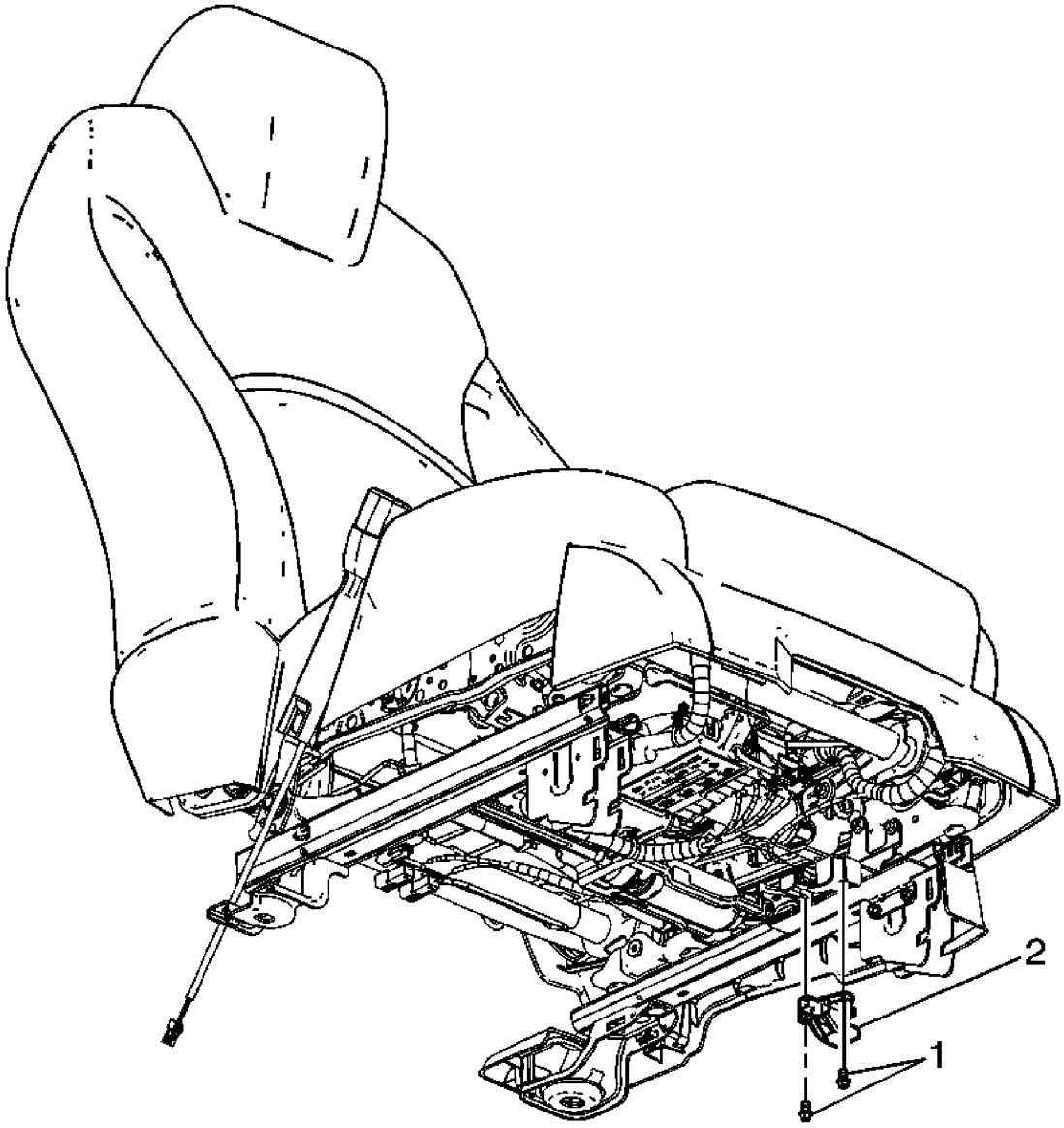


Fig. 63: Identifying Inflatable Restraint Seat Position Sensor
Courtesy of GENERAL MOTORS CORP.

Inflatable Restraint Seat Position Sensor Replacement

Callout	Component Name
CAUTION: **Refer to SIR Caution .** **Preliminary Procedures**	

	1. Disable the supplemental inflatable restraint (SIR) system. Refer to **SIR Disabling and Enabling**. 2. Remove the drivers seat. Refer to **Bucket Seat Replacement** .
1	Inflatable Restraint Seat Position Sensor Screw (Qty: 2) **NOTE:** **Refer to Fastener Notice .** **Tighten:** 3 N.m (25 lb in)
2	Inflatable Restraint Position Sensor Assembly **Procedure:** Disconnect the electrical connector.

INFLATABLE RESTRAINT PASSENGER PRESENCE SYSTEM REPLACEMENT - FRONT

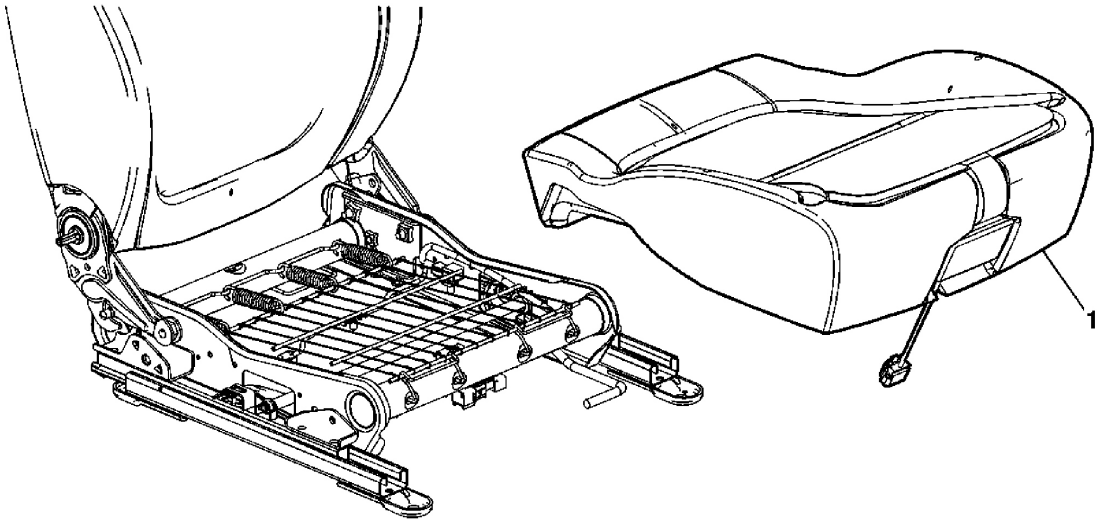


Fig. 64: View Of Inflatable Restraint Passenger Presence System - Front
Courtesy of GENERAL MOTORS CORP.

Inflatable Restraint Passenger Presence System Replacement - Front

Callout	Component Name
Preliminary Procedure 1. Remove the front seat. Refer to **Bucket Seat Replacement** . 2. Remove the seat cushion cover. Refer to **Front Seat Cushion Cover and Pad**	

Replacement .	
1	Inflatable Restraint Front Passenger Presence System Assembly **CAUTION:** **Replace the passenger presence system as a complete assembly to prevent possible injury to the occupant. All the components in the service kit are assembled and calibrated as a unit. Using only some of the components in the service kit will cause the passenger presence system to operate improperly.** **CAUTION:** **To avoid personal injury, perform a preload test on the passenger presence system whenever you remove or replace the seat cushion trim. Failure to do so may cause the system to malfunction.** **Procedures** 1. Re-zero the inflatable restraint passenger presence system whenever the seat cushion or any component of the passenger presence system is removed. Refer to **Passenger Presence System Programming and Setup** 2. Program the inflatable restraint passenger presence system after replacement. Refer to **Control Module References** .

INFLATABLE RESTRAINT SIDE IMPACT MODULE REPLACEMENT - FRONT

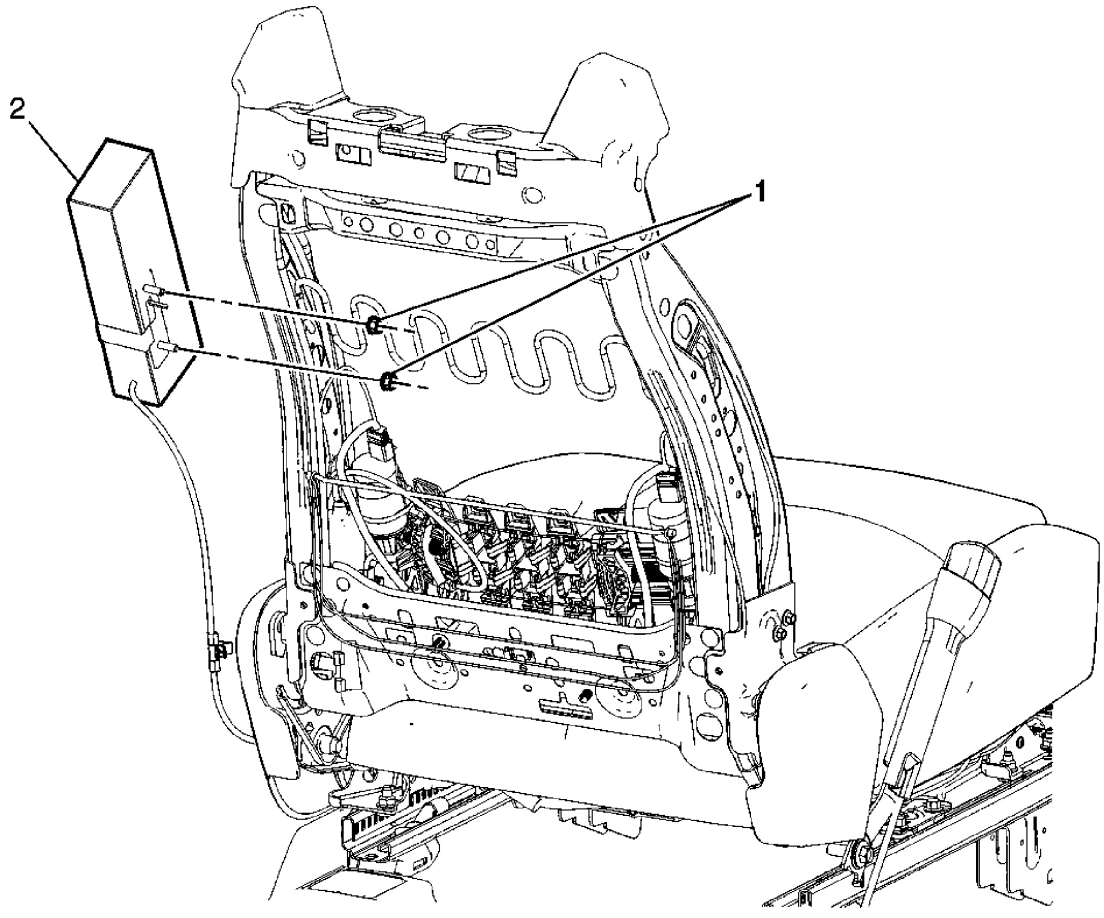


Fig. 65: Identifying Inflatable Restraint Side Impact Module - Front
Courtesy of GENERAL MOTORS CORP.

Inflatable Restraint Side Impact Module Replacement - Front

Callout	Component Name

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.

Preliminary Procedure

1. Disable the SIR system. Refer to **SIR Disabling and Enabling**.
2. Remove the seat back cushion cover and pad. Refer to **Front Seat Back Cushion Cover and Pad Replacement** .

1	Side Impact Inflatable Restraint Nut (Qty: 2) **NOTE:** **Refer to Fastener Notice .** **Tighten:** 5 N.m (44 lb in)
2	Inflatable Restraint Module Assembly **Procedure** 1. Disconnect the electrical connector. 2. 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**.

INFLATABLE RESTRAINT SIDE IMPACT SENSOR REPLACEMENT - FRONT

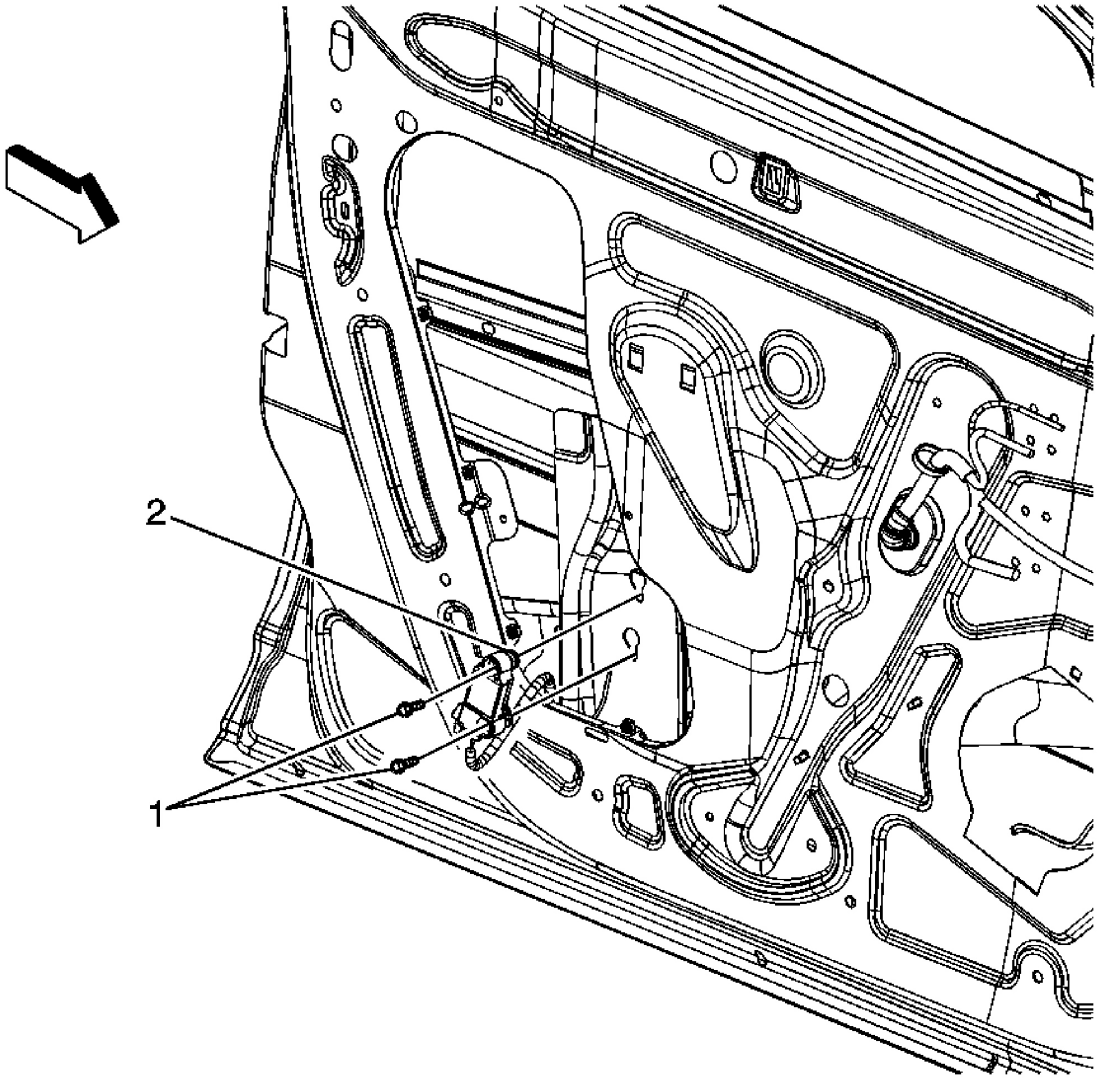


Fig. 66: Identifying Inflatable Restraint Side Impact Sensor - Front
Courtesy of GENERAL MOTORS CORP.

Inflatable Restraint Side Impact Sensor Replacement - Front

Callout	Component Name
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. Failure to observe the correct procedure could cause deployment of the SIR components, personal injury or unnecessary SIR system repairs.** **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.

Preliminary Procedures

1. Disable the supplemental inflatable restraint (SIR) system. Refer to **SIR Disabling and Enabling**.
2. Remove front side door trim panel. Refer to **Front Side Door Trim Panel Replacement - Left Side** or **Front Side Door Trim Panel Replacement - Right Side** .
3. Remove front side door water deflector. Refer to **Front Side Door Water Deflector Replacement** .

1	Inflatable Restraint Side Impact Sensor Module Bolt (Qty: 2) **NOTE:** **Refer to Fastener Notice .** **Procedure** 1. Loosen the bolts and slide sensor out of key hole slots. 2. Disconnect the electrical connector. **Tighten:** 9 N.m (80 lb in)
2	Inflatable Restraint Side Impact Sensor Module

INFLATABLE RESTRAINT SIDE IMPACT SENSOR REPLACEMENT - REAR

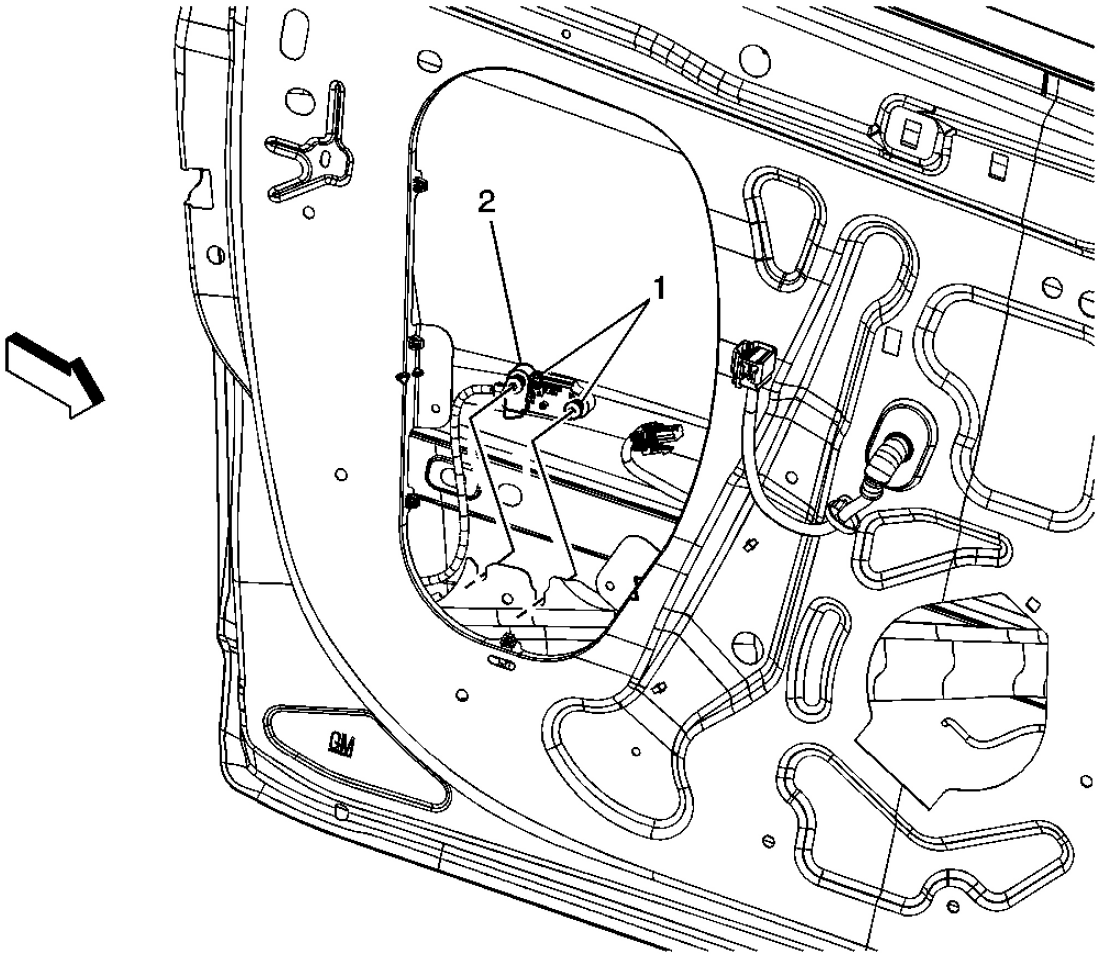


Fig. 67: Locating Inflatable Restraint Side Impact Sensor - Rear
Courtesy of GENERAL MOTORS CORP.

Inflatable Restraint Side Impact Sensor Replacement - Rear

Callout	Component Name

CAUTION:

When performing service on or near the SIR components or the SIR wiring, the SIR system must be disabled. Refer to Inflatable Restraint Side Impact Sensor Replacement - Front. Failure to observe the correct procedure could cause deployment of the SIR components, personal injury or unnecessary SIR system repairs.

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.

Preliminary Procedures

1. Disable the supplemental inflatable restraint (SIR) system. Refer to **SIR Disabling and Enabling**.
2. Remove the rear side door trim panel. Refer to **Rear Side Door Trim Panel Replacement** .
3. Remove the rear side door water deflector. Refer to **Rear Side Door Water Deflector Replacement** .

1	Inflatable Restraint Side Impact Sensor Module Bolts (Qty: 2) **NOTE:** **Refer to Fastener Notice .** **Procedures** 1. Loosen the bolts and slide sensor out of key hole slots. 2. Disconnect electrical connector. **Tighten:** 9 N.m (80 lb in)
2	Inflatable Restraint Side Impact Sensor Module

INFLATABLE RESTRAINT ROOF RAIL MODULE REPLACEMENT

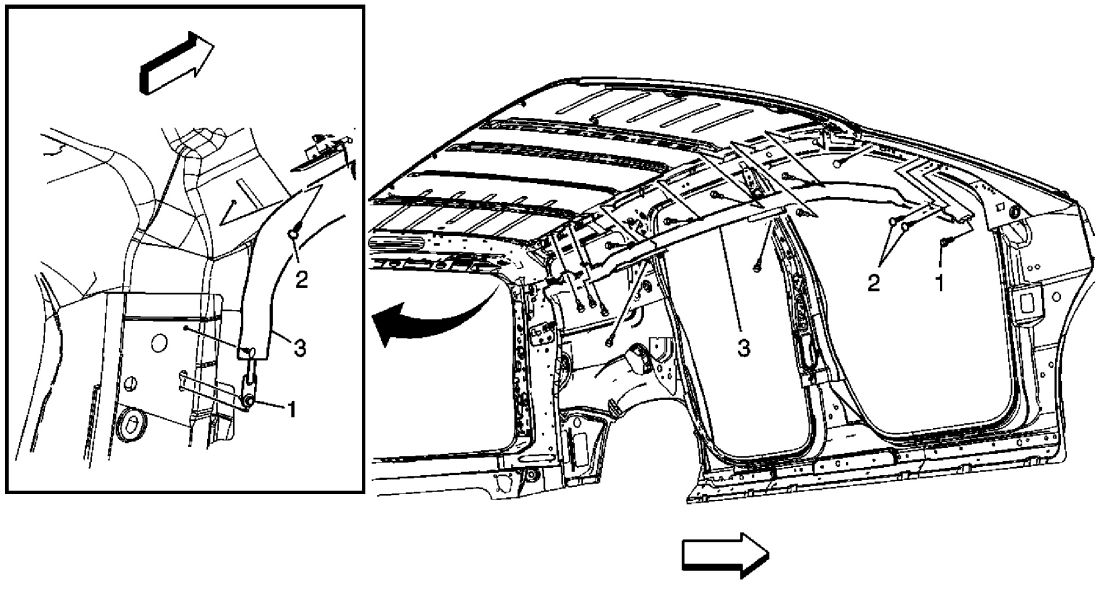


Fig. 68: Identifying Inflatable Restraint Roof Rail Module

Courtesy of GENERAL MOTORS CORP.

Inflatable Restraint Roof Rail Module Replacement

Callout	Component Name
Preliminary Procedure 1. Disable the SIR system. Refer to **SIR Disabling and Enabling**. 2. Remove the headliner assembly. Refer to **Headlining Trim Panel Replacement** .	
1	Inflatable Restraint Roof Side Rail Bolt (Qty: 11) Mandatory Tightening Sequence **NOTE:** **Refer to Fastener Notice .** **Tighten:** 9 N.m (80 lb in)
2	Inflatable Restraint Roof Side Rail Retainer (Qty: 6)
3	Inflatable Restraint Roof Side Rail Module Assembly **CAUTION:** **In order to prevent SIR deployment, personal injury or unnecessary SIR system repairs, do not strike the door or the door pillar in the area of the side impact sensor (SIS). Turn OFF the ignition and remove the key when performing service in the area of the SIS.** **CAUTION:** **Refer to SIR Caution .** **CAUTION:** **Refer to SIR Inflator Module Handling and Storage Caution .** **Procedure:** Disconnect the electrical connector.

SEAT BELT RETRACTOR PRETENSIONER REPLACEMENT - FRONT

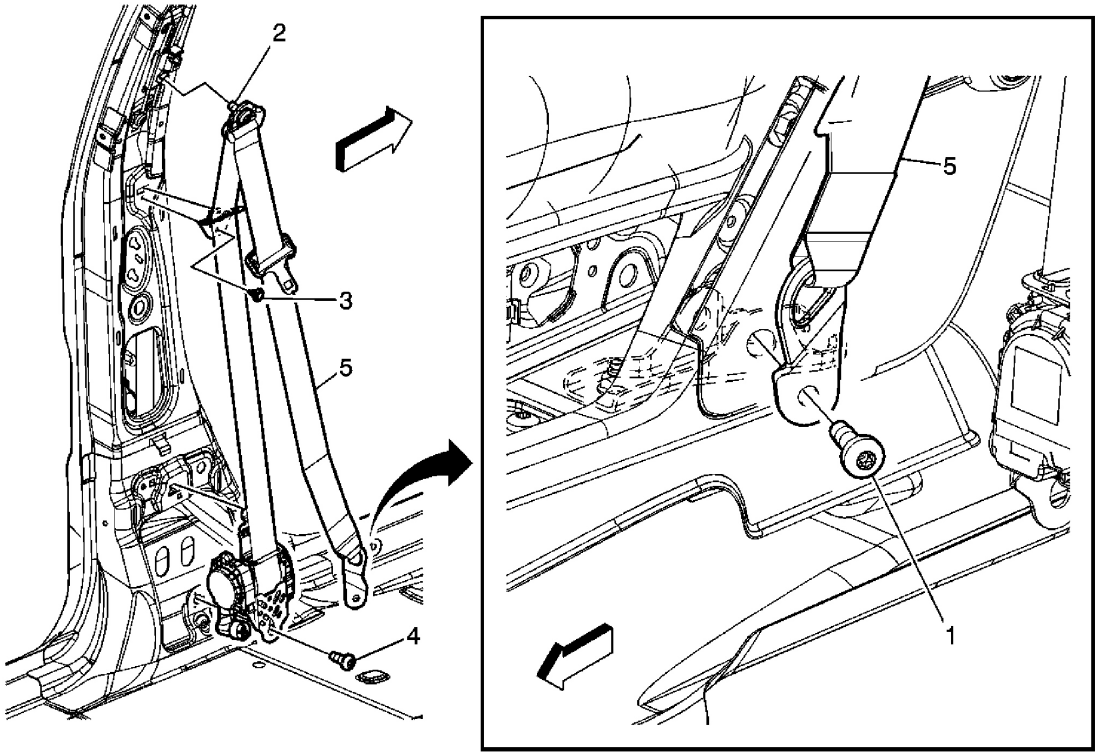


Fig. 69: Locating Seat Belt Retractor Pretensioner - Front
Courtesy of GENERAL MOTORS CORP.

Seat Belt Retractor Pretensioner Replacement - Front

Callout	Component Name

CAUTION:
Refer to SIR Caution .

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

Preliminary Procedure

1. Disable the SIR. Refer to **SIR Disabling and Enabling**.
2. Remove the center pillar lower garnish molding. Refer to **Center Pillar Lower Garnish Molding Replacement** .

3. Remove the center pillar upper garnish molding. Refer to **Center Pillar Upper Garnish Molding Replacement** .	
1	Front Seat Shoulder Belt Anchor Plate Bolt **NOTE:** **Refer to Fastener Notice .** **Tighten:** 45 N.m (33 lb ft)
2	Front Seat Shoulder Belt Adjuster Bolt **Tighten:** 45 N.m (33 lb ft)
3	Front Seat Shoulder Belt Guide Bolt **Tighten:** 10 N.m (88 lb in)
4	Front Seat Shoulder Belt Retractor Bolt **Tip:** Disconnect electrical connector. **Tighten:** 45 N.m (33 lb ft)
5	Front Seat Shoulder Belt Retractor Assembly

REPAIRS AND INSPECTIONS REQUIRED AFTER A COLLISION

Accident With or Without Air Bag 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 a collision, inspect the following components as indicated. If any damage is detected, replace the component. If damage to the mounting points or mounting hardware is detected, repair the component or replace the hardware as needed.

- Steering column-Perform the steering column accident damage checking procedures. Refer to **Steering Column Accident Damage Inspection** .
- Instrument panel (I/P) knee bolsters and mounting points-Inspect the knee bolsters for bending, twisting, buckling or any other type of damage.

- I/P brackets, braces, etc.-Inspect for bending, twisting, buckling or any other type of damage.
- Seat belts-Perform the seat belt operational and functional checks. Refer to **Operational and Functional Checks** .
- Seats and seat mounting points-Inspect for bending, twisting, buckling or any other type of damage.
- Passenger seat bottom equipped with Passenger Presence System (PPS)-Check for any DTCs or problems that may cause the PPS not to function properly.

Accident With Frontal Deployment - Component Replacement and Inspections

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

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

- Inflatable restraint I/P module, if deployed and after performing the necessary inspections listed above.
- Inflatable restraint steering wheel module
- Inflatable restraint SDM
- Inflatable restraint front end sensors
- Inflatable restraint seat belt retractor pretensioners

Perform additional inspections on the following components.

- Steering wheel module coil and the coil wiring pigtail-Inspect for melting, scorching or other damage due to excessive heat.
- Mounting points or mounting hardware for the I/P module, steering wheel module, SDM and pretensioners-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), on the side of the impact

- Inflatable restraint roof rail module, on the side of the impact (Impala)
- Inflatable restraint side impact module, on the side of the impact (Monte Carlo)
- Inflatable restraint SDM
- Inflatable restraint seat belt retractor pretensioners

Perform additional inspections on the following components.

- Mounting points or mounting hardware for the SIS-Inspect for any damage and repair or replace each component as needed.
- Mounting points or mounting hardware for the roof rail module (Impala) on the side of impact-Inspect for any damage and repair or replace each component as needed.
- Mounting points or mounting hardware for the side impact module (Monte Carlo) on the side of impact-Inspect for any damage and repair or replace each component as needed.
- Mounting points or mounting hardware for the SDM and seat belt retractor pretensioners-Inspect for any damage and repair or replace each component as needed.

INFLATOR MODULE HANDLING AND SCRAPPING

Live and Undeployed Inflator Module

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

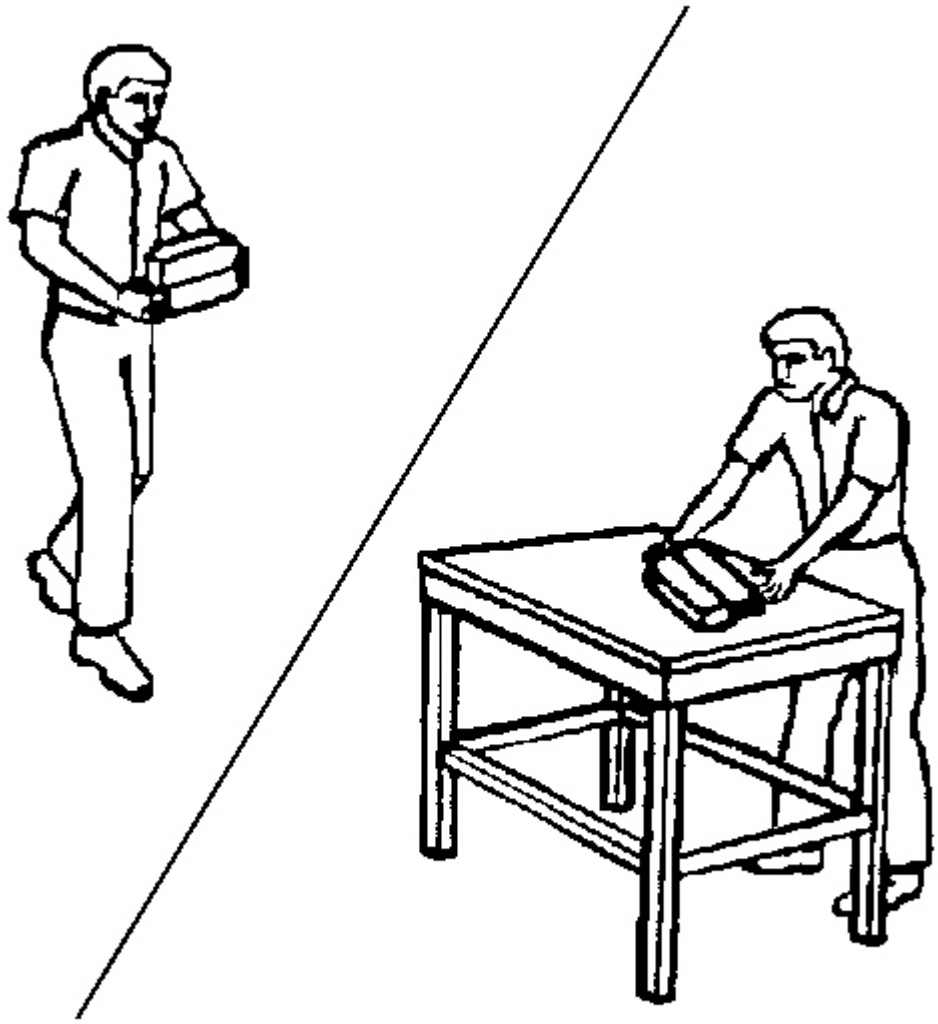


Fig. 70: View Of Proper Handling Of Undeployed Inflator Module
Courtesy of GENERAL MOTORS CORP.

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

Dual Stage Inflator Module

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

Scrapping Procedure

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

Do not deploy the inflator module in the following situations:

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

Deployment Procedures

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

Tools Required

- **SA9207Z-A** or **J 38826** SIR Deployment Harness. See **Special Tools**.
- **SA9413NE** or **J 39401-B** SIR Deployment Fixture. See **Special Tools**.
- An appropriate pigtail adapter

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

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

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

- The inflator module connector terminals are damaged.

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

CAUTION: Refer to SIR Inflator Module Disposal Caution .

1. Turn OFF the ignition.
2. Remove the ignition key.
3. Put on safety glasses.
4. Remove the inflator module.

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

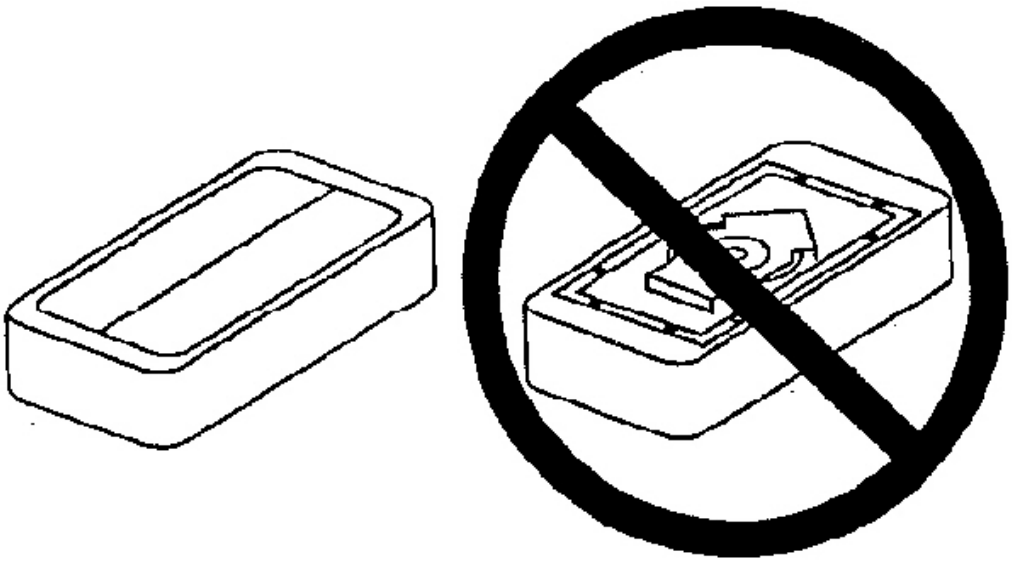


Fig. 71: Identifying Proper Storage Of Inflator Module
Courtesy of GENERAL MOTORS CORP.

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

from the surface.

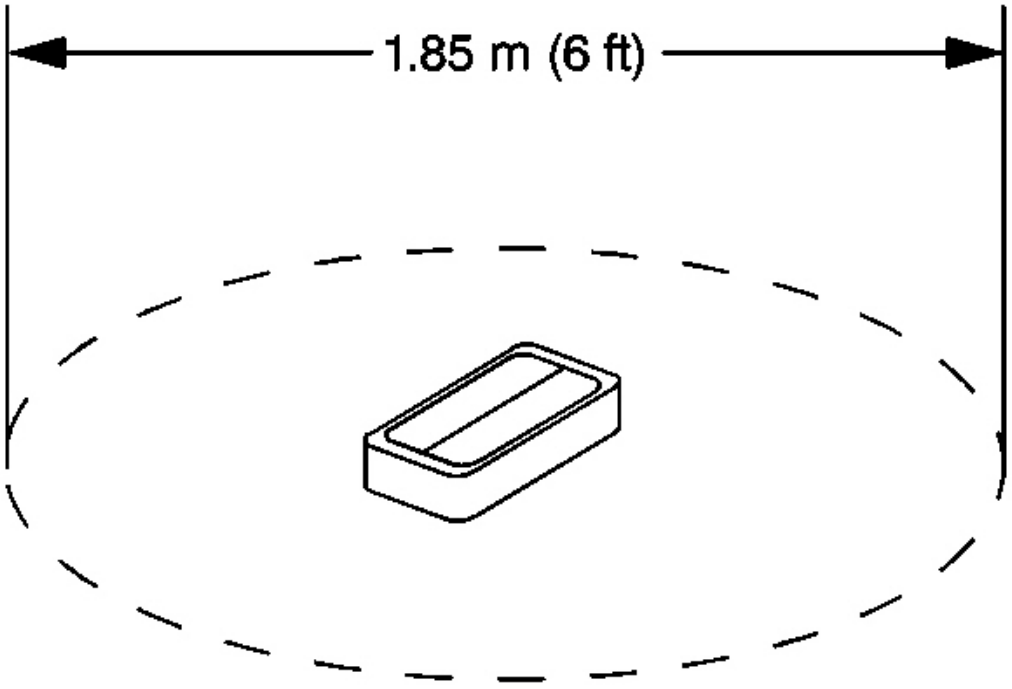


Fig. 72: Identifying Clearance For Deployment Of Inflator Module
Courtesy of GENERAL MOTORS CORP.

6. Clear a space on the ground about 1.85 m (6 ft) in diameter for deployment of the inflator module or deployment fixture. If possible, use a paved, outdoor location free of activity. Otherwise, use a space free of activity on the shop floor. Ensure you have sufficient ventilation.
7. Clear the area of loose or flammable objects.

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

8. If you are deploying a steering wheel inflator module, place the inflator module in the center of the space.

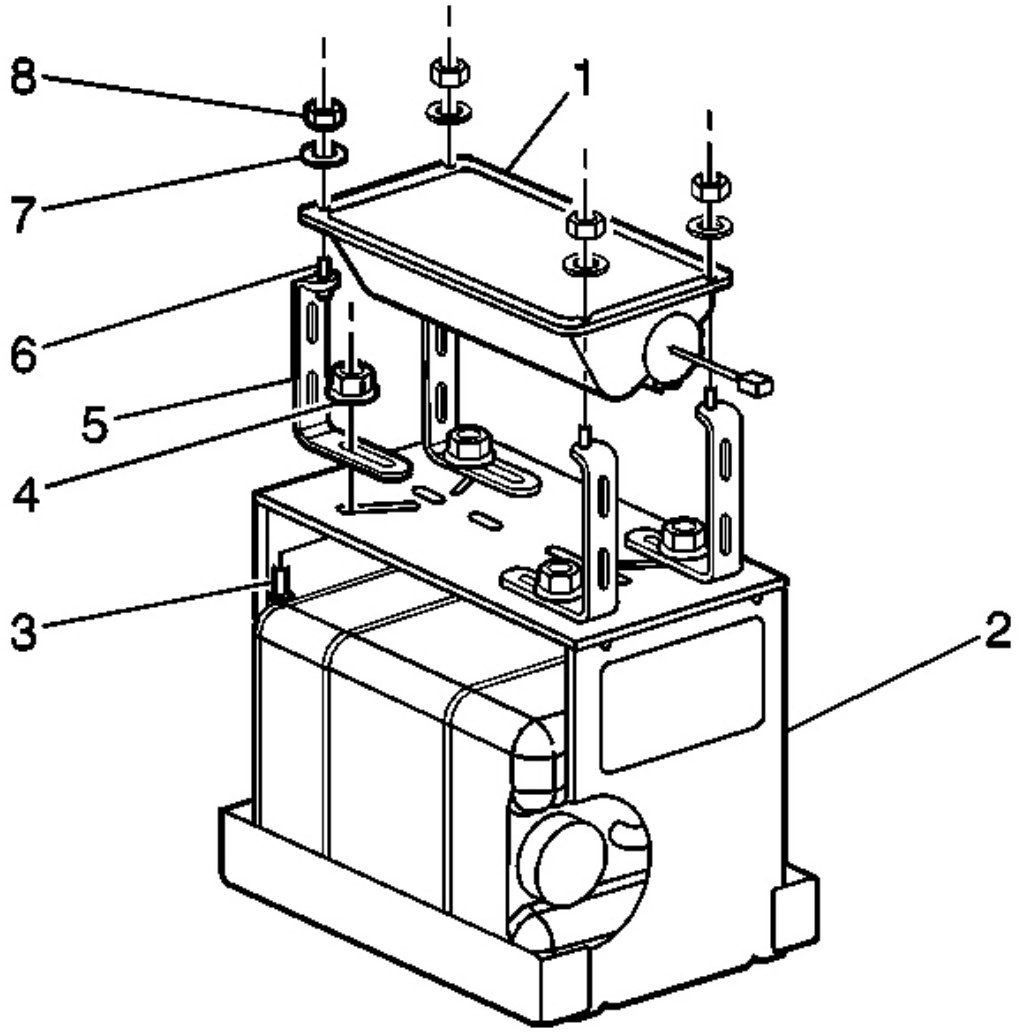


Fig. 73: Identifying I/P Module Components
Courtesy of GENERAL MOTORS CORP.

9. When deploying an I/P inflator module, perform the following instructions:
    1. Place the **SA9413NE** or **J 39401-B** SIR Deployment Fixture (2) in the center of the cleared area. See **Special Tools**.

2. Fill the deployment fixture with water or sand.
3. Using the proper nuts and bolts, mount the I/P module (1) to the deployment fixture (2), with the vinyl trim facing up.
4. Securely tighten all fasteners that hold the I/P module (1) to the deployment fixture (2).

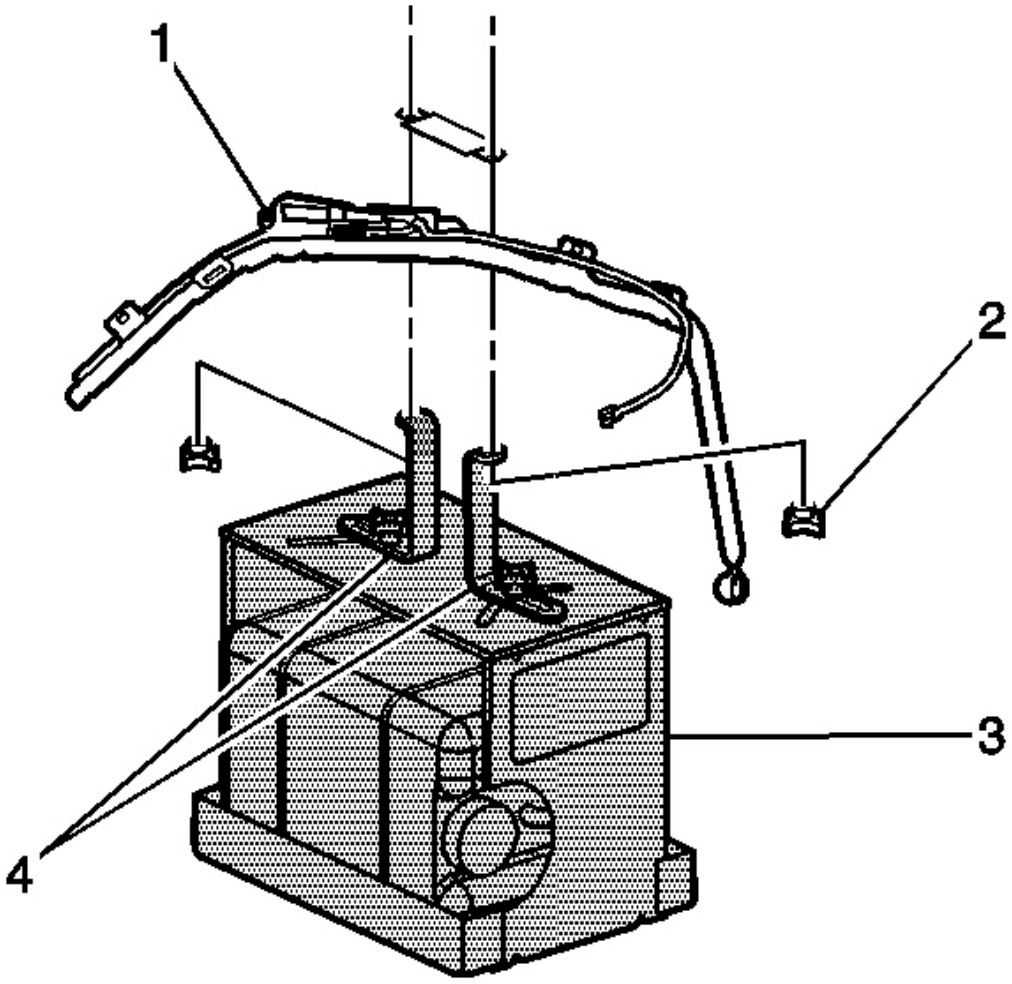


Fig. 74: Identifying Fasteners Holding Side Impact Module To Deployment Fixture
Courtesy of GENERAL MOTORS CORP.

10. When deploying a roof rail module, perform the following instructions:

1. Place the **SA9413NE** or **J 39401-B** SIR Deployment Fixture (3) in the center of the cleared area. See **Special Tools**.
2. Fill the deployment fixture with water or sand to provide sufficient stabilization of fixture during deployment.
3. Adjust and secure the fixture arms (4) to the deployment fixture (3), using the proper nuts and bolts.
4. Attach the roof rail module in the deployment fixture and securely tighten all fasteners.

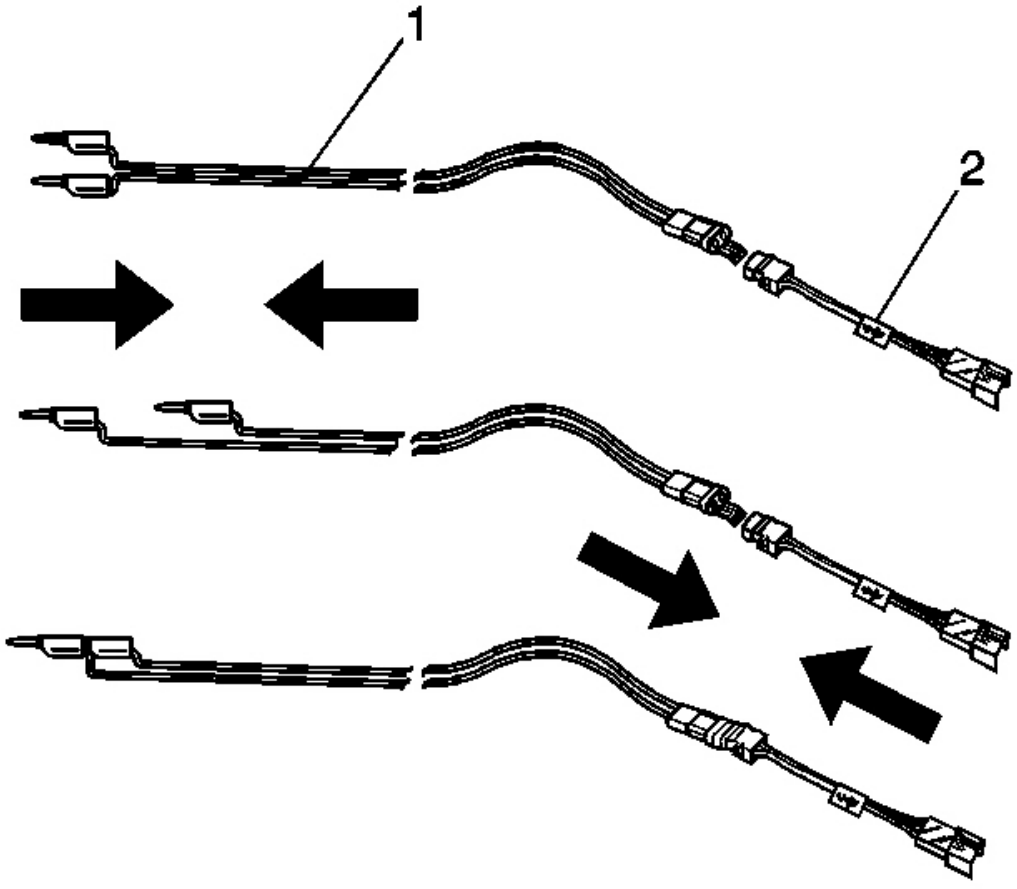


Fig. 75: Identifying SIR Deployment Harness & Adapter
Courtesy of GENERAL MOTORS CORP.

11. Inspect the **SA9207Z-A** or **J 38826** and the appropriate pigtail adapter (2) for damage. See

Special Tools. Replace as needed.

12. Short the 2 SIR deployment harness leads (1) together using one banana plug seated into the other.
13. Connect the appropriate pigtail adapter (2) to the SIR deployment harness (1).

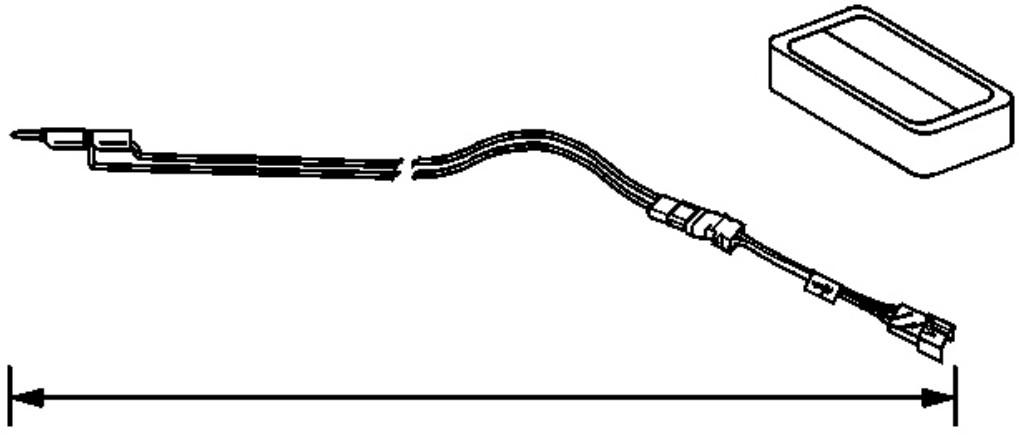


Fig. 76: Identifying Extended SIR Deployment Harness & Adapter
Courtesy of GENERAL MOTORS CORP.

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

IMPORTANT: On a dual stage inflator module, both connectors must be attached to the deployment harness adapter. This will ensure that both stage 1 and stage 2 of the deployment loops are energized, regardless of the deployment state.

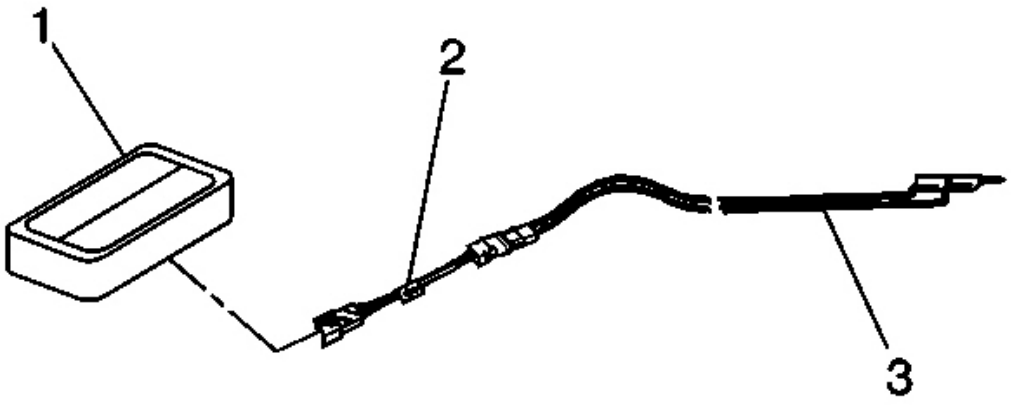


Fig. 77: Identifying Inflator Module, SIR Deployment Harness & Adapter
Courtesy of GENERAL MOTORS CORP.

15. Connect the inflator module (1) to the adapter (2) on the SIR deployment harness (3).

IMPORTANT:

- **The rapid expansion of gas involved with deploying an inflator module is very loud. Notify all the people in the immediate area that you intend to deploy the inflator module.**
- **When the inflator module deploys, the deployment fixture may jump about 30 cm (1 ft) vertically. This is a normal reaction of the inflator module due to the force of the rapid expansion of gas inside the inflator module.**
- **If you are deploying a dual stage inflator module with stage 1 already deployed, the fixture may not move and the noise may have been reduced.**

16. Clear the area of people.

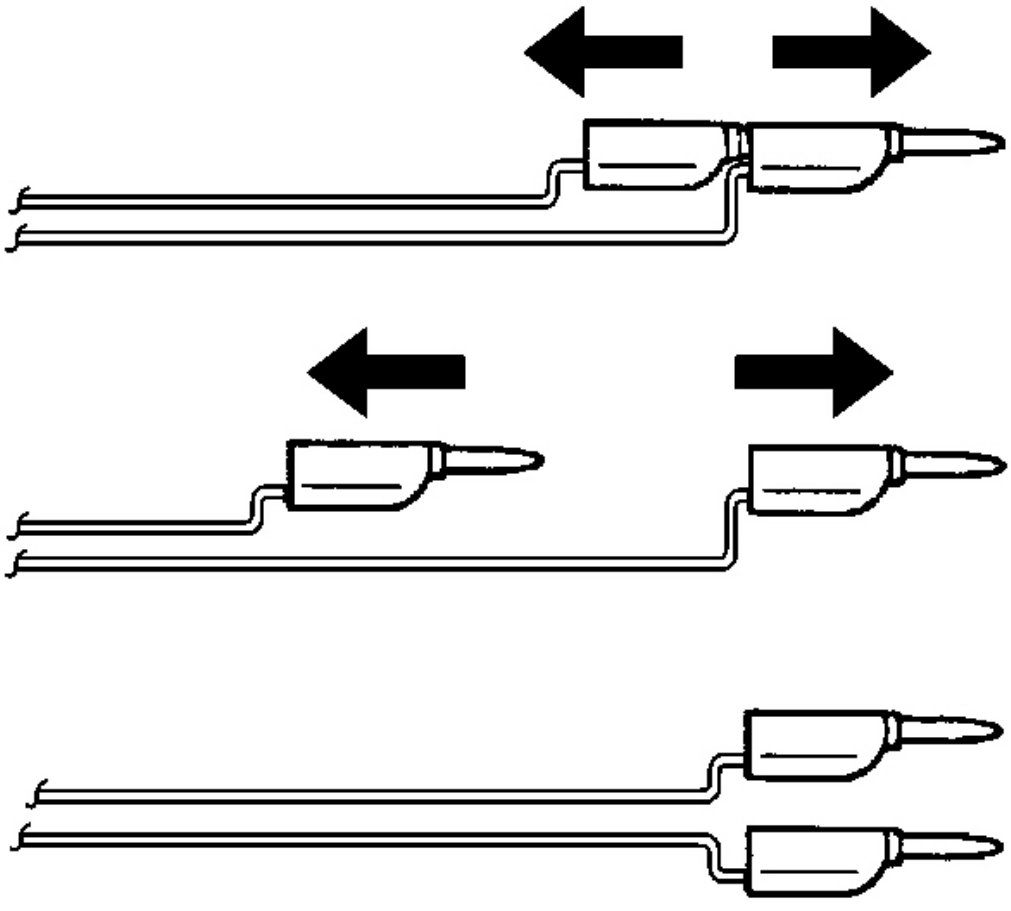


Fig. 78: View Of Banana Plugs
Courtesy of GENERAL MOTORS CORP.

17. Separate the 2 banana plugs on the SIR deployment harness that were shorted together earlier in the procedure.

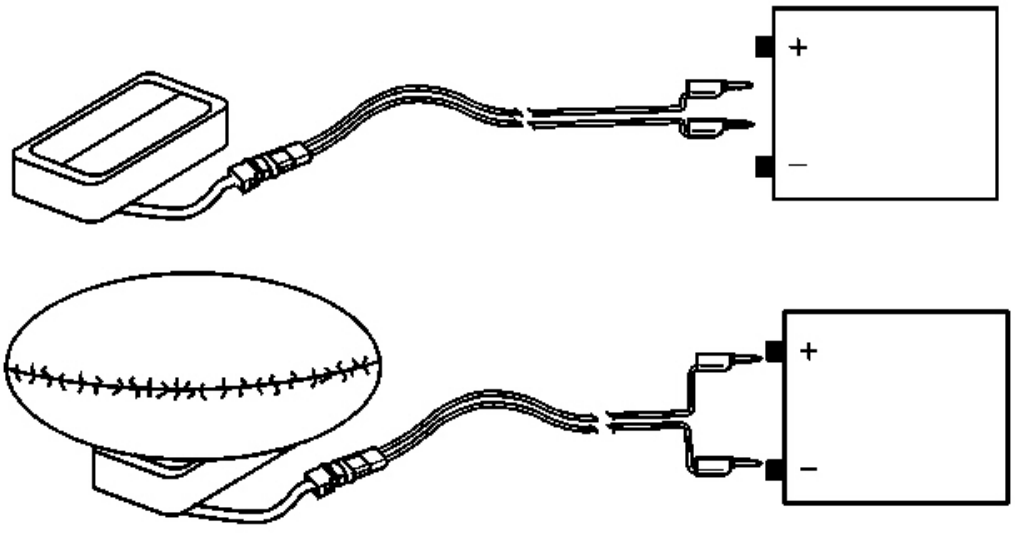


Fig. 79: Identifying SIR Deployment Harness Wires To Power Source
Courtesy of GENERAL MOTORS CORP.

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

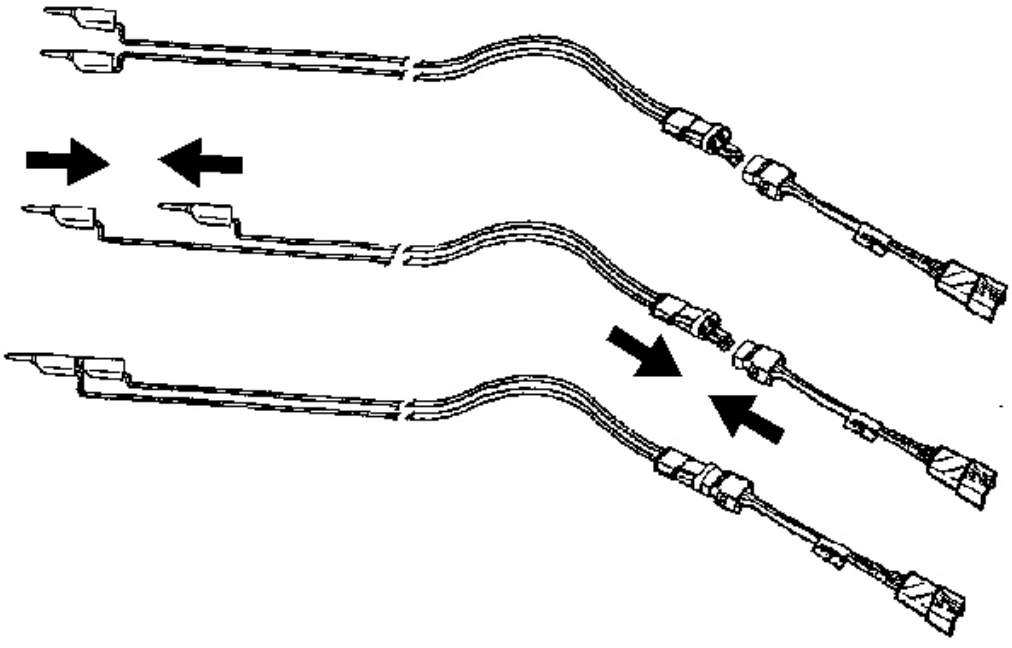


Fig. 80: View Of Deployment Harness Leads
Courtesy of GENERAL MOTORS CORP.

20. Disconnect the SIR deployment harness from the power source after the inflator module deploys.
21. If the inflator module did not deploy, disconnect the adapter and discontinue the procedure and contact the Technical Assistance Group.

    If deployment was successful, proceed to the following steps.

CAUTION: Refer to SIR Deployed Inflator Modules Are Hot Caution .

22. Seat one banana plug into the other in order to short the deployment harness leads.

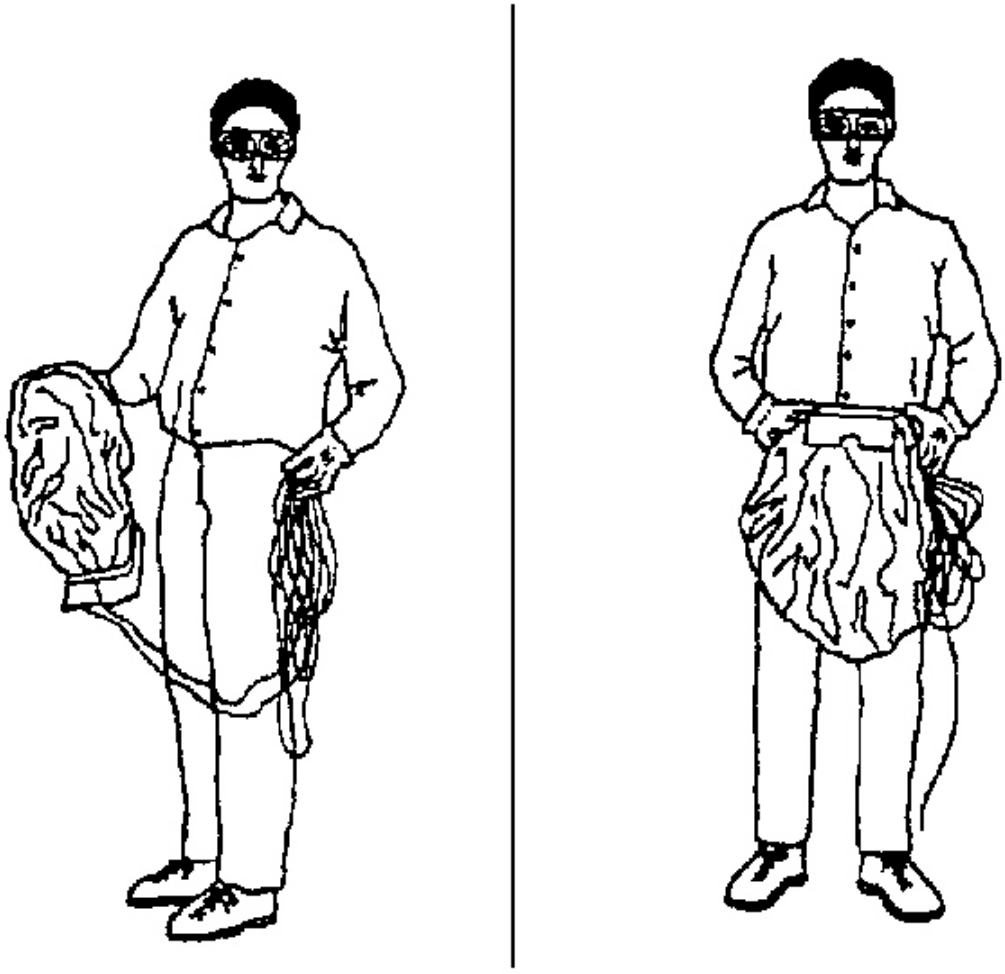


Fig. 81: Identifying Procedure For Disposing Of Deployed Inflator Module
Courtesy of GENERAL MOTORS CORP.

23. Put on a pair of shop gloves.
24. Disconnect the pigtail adapter from the inflator module as soon as possible.
25. Inspect the pigtail adapter and the SIR deployment harness. Replace as needed.
26. Dispose of the deployed inflator module through normal refuse channels.
27. Wash your hands with a mild soap.

Deployment Inside Vehicle - Vehicle Scrapping Procedure

Deploy the inflator modules inside of the vehicle when destroying the vehicle or when salvaging the vehicle for parts. This includes, but is not limited to, the following situations:

- The vehicle has completed all useful life.
- Irreparable damage occurred to the vehicle in a non-deployment type accident.
- Irreparable damage occurred to the vehicle during a theft.
- The vehicle is being salvaged for parts to be used on a vehicle with a different VIN, as opposed to rebuilding as the same VIN.

CAUTION: Refer to SIR Inflatable Module Deployment Outside Vehicle Caution .

1. Lower the driver and passenger windows.
2. Turn the ignition switch to the OFF position and remove the ignition key.
3. Check that all inflator modules which will be deployed are mounted securely.
   - Driver inflator module is secured to steering wheel.
   - Passenger inflator module is secured to instrument panel.
   - Left roof rail inflator module is secured to left roof rail.
   - Right roof rail inflator module is secured to right roof rail.
4. Put on safety glasses.
5. Remove all loose objects from the front seats.

CAUTION: A deployed dual stage inflator module will look the same whether one or both stages were used, always assume a deployed dual stage inflator module has an active stage 2. Improper handling or servicing can activate the inflator module and cause personal injury.

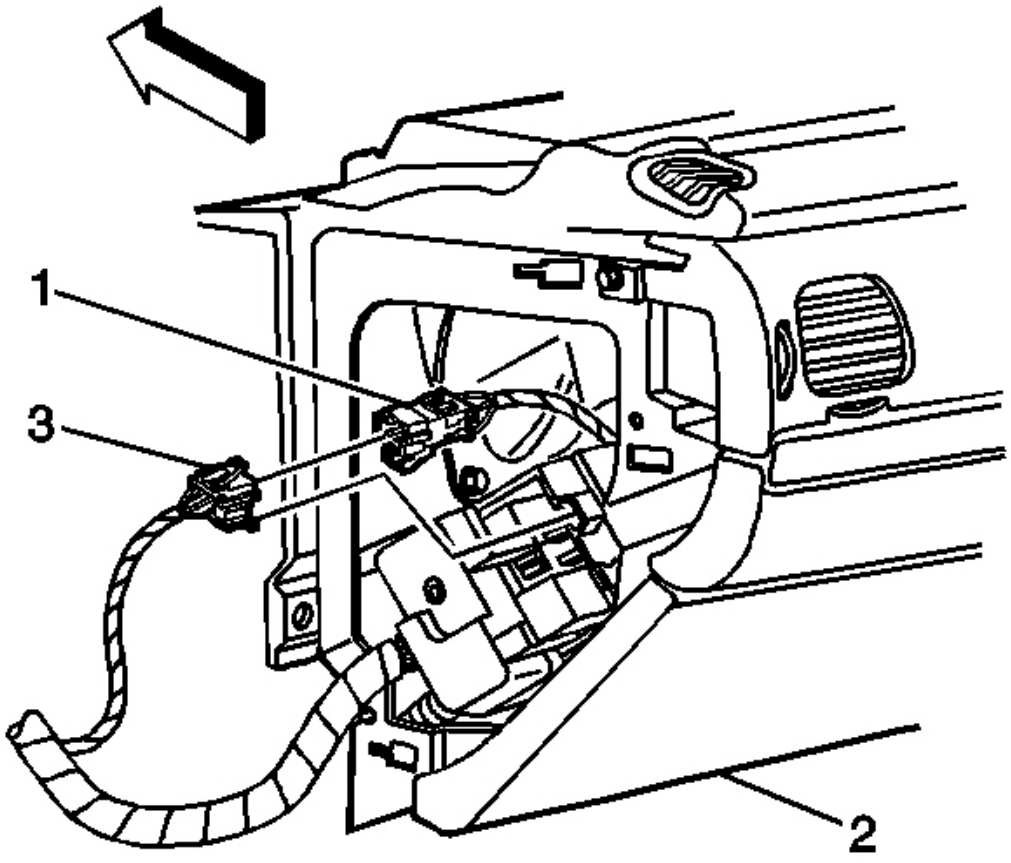


Fig. 82: Identifying I/P Module Connector To Vehicle Harness Connector (LH Side I/P)
Courtesy of GENERAL MOTORS CORP.

6. Disconnect the steering wheel module yellow connector (1) from vehicle harness yellow connector (3).

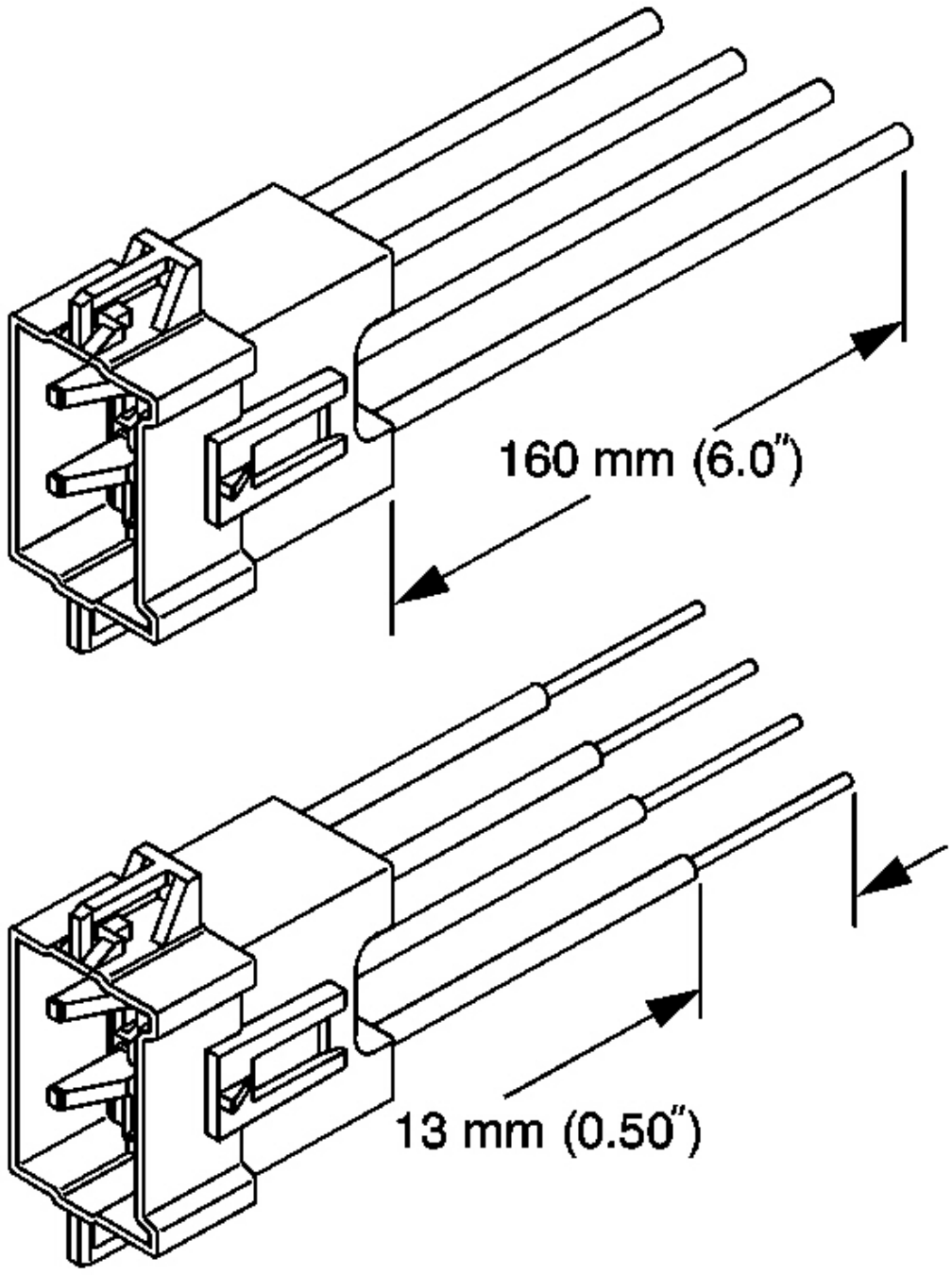


Fig. 83: Identifying Stripped SIR Wires
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: If the vehicle is equipped with dual stage air bags the steering wheel module and I/P module will each have 4 wires. Refer to SIR Connector End Views for determining high and low circuits.

7. Cut the yellow harness connector out of the vehicle, leaving at least 16 cm (6 in) of wire at the connector.
8. Strip 13 mm (0.5 in) of insulation from each of the connector wire leads.

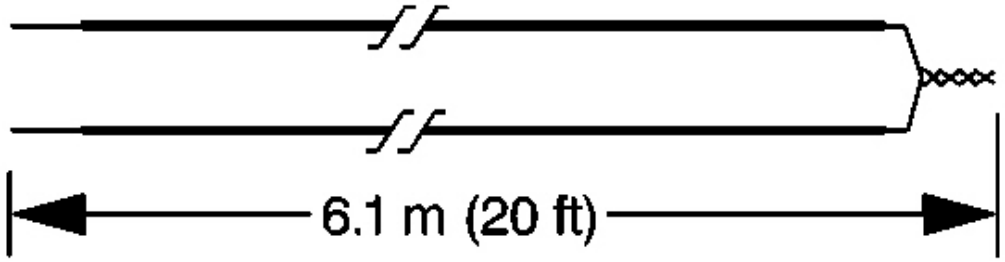


Fig. 84: Fabricating 20 Ft. Deployment Harness
Courtesy of GENERAL MOTORS CORP.

9. Cut two 6.1 m (20 ft) deployment wires from a 0.8 mm (18 gage) or thicker multi-strand wire. Use these wires to fabricate the driver deployment harness.
10. Strip 13 mm (0.5 in) of insulation from both ends of the wires.
11. Twist together one end from each of the wires in order to short the wires. Deployment wires shall remain shorted and not connected to a power source until you are ready to deploy the inflator module.

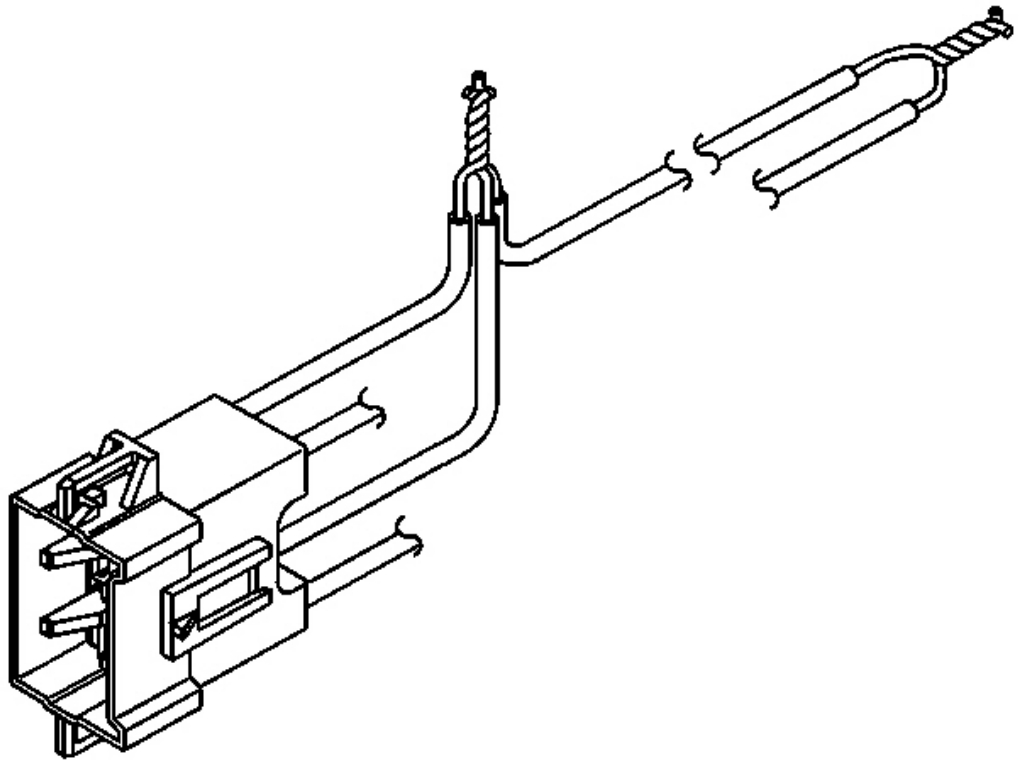


Fig. 85: Twisting Connector Wire Leads (High Circuits) To Deployment Harness Wire
Courtesy of GENERAL MOTORS CORP.

12. Twist together the 2 connector wire leads from the high circuits from both stages of the steering wheel module, to one set of deployment wires. Refer to **SIR Connector End Views** in order to determine the correct circuits.
13. Inspect that the 3-wire connection is secure.

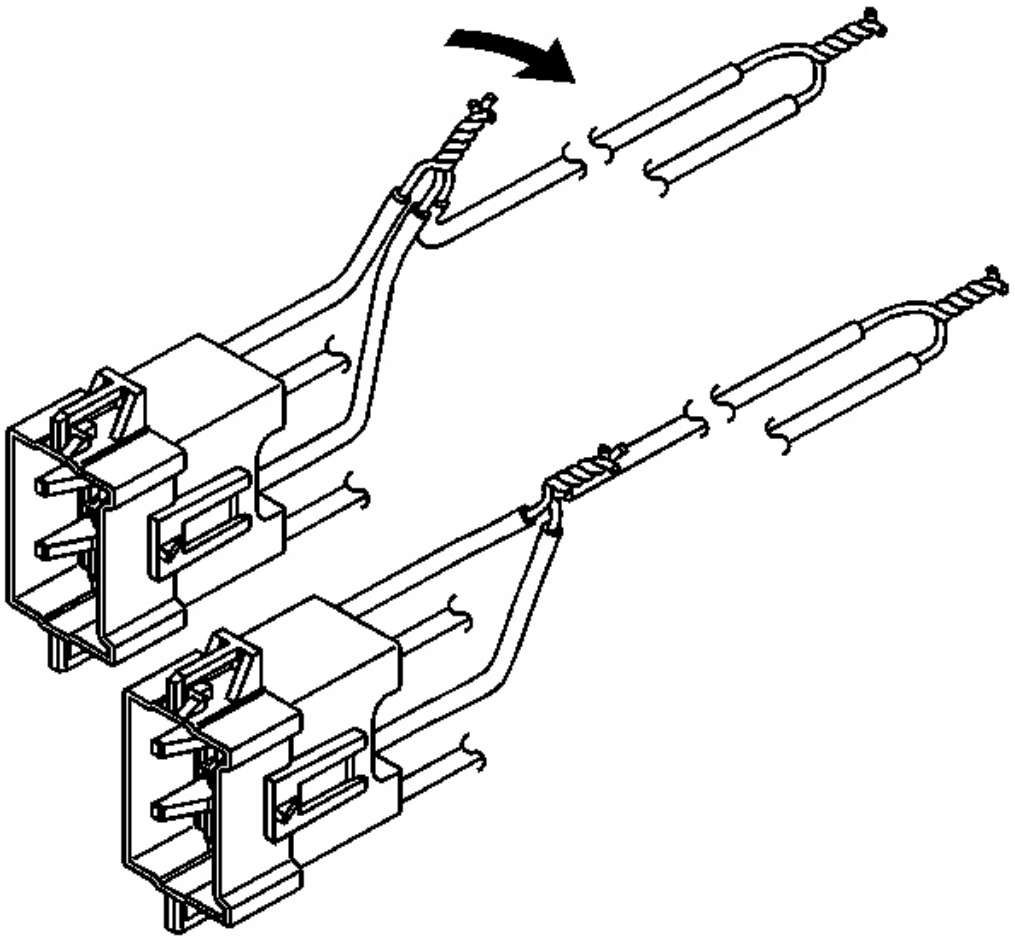


Fig. 86: Bending Twisted Connection Flat
Courtesy of GENERAL MOTORS CORP.

14. Bend flat the twisted connection.

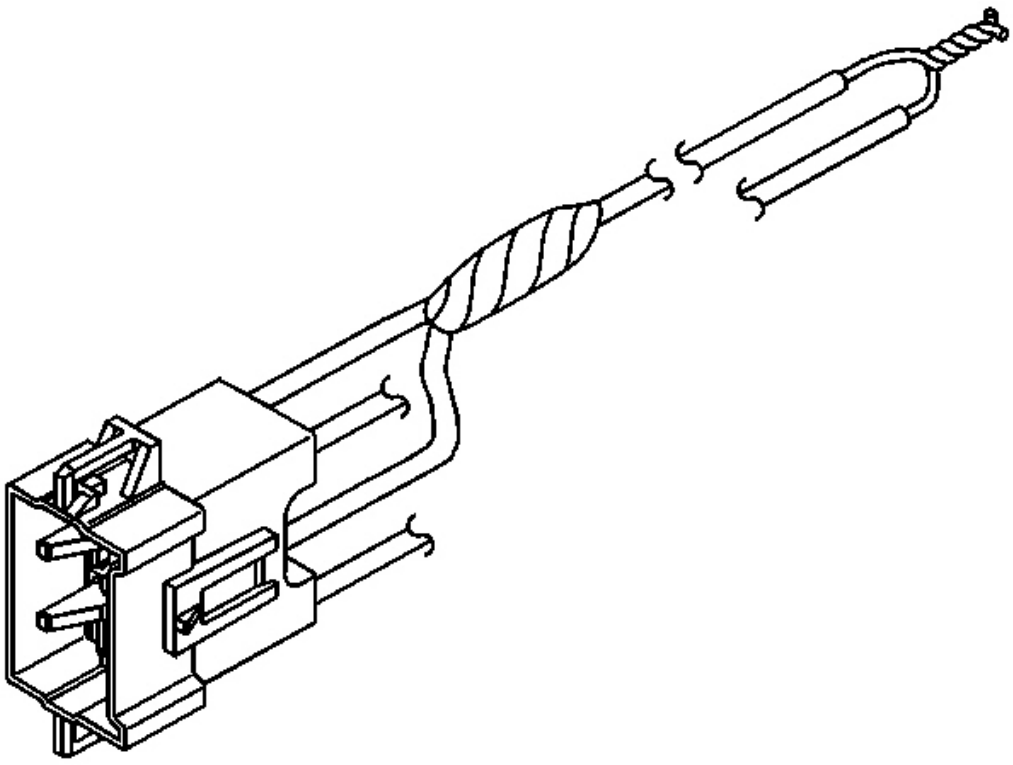


Fig. 87: Insulating Connection With Electrical Tape
Courtesy of GENERAL MOTORS CORP.

15. Secure and insulate the 3-wire connection to the deployment harness using electrical tape.

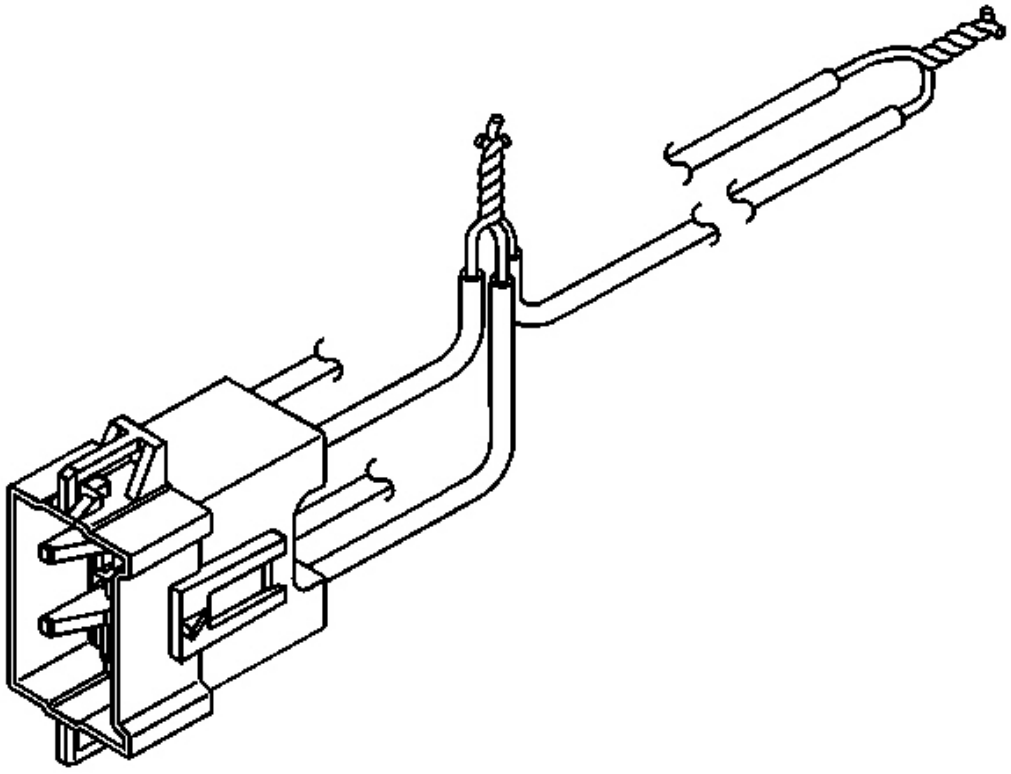


Fig. 88: Twisting Connector Wire Leads (Low Circuits) To Deployment Harness Wire
Courtesy of GENERAL MOTORS CORP.

16. Twist together the 2 connector wire leads from the low circuits from both stages of the steering wheel module, to one set of deployment wires. Refer to **SIR Connector End Views** in order to determine the correct circuits.
17. Inspect that the 3-wire connection is secure.

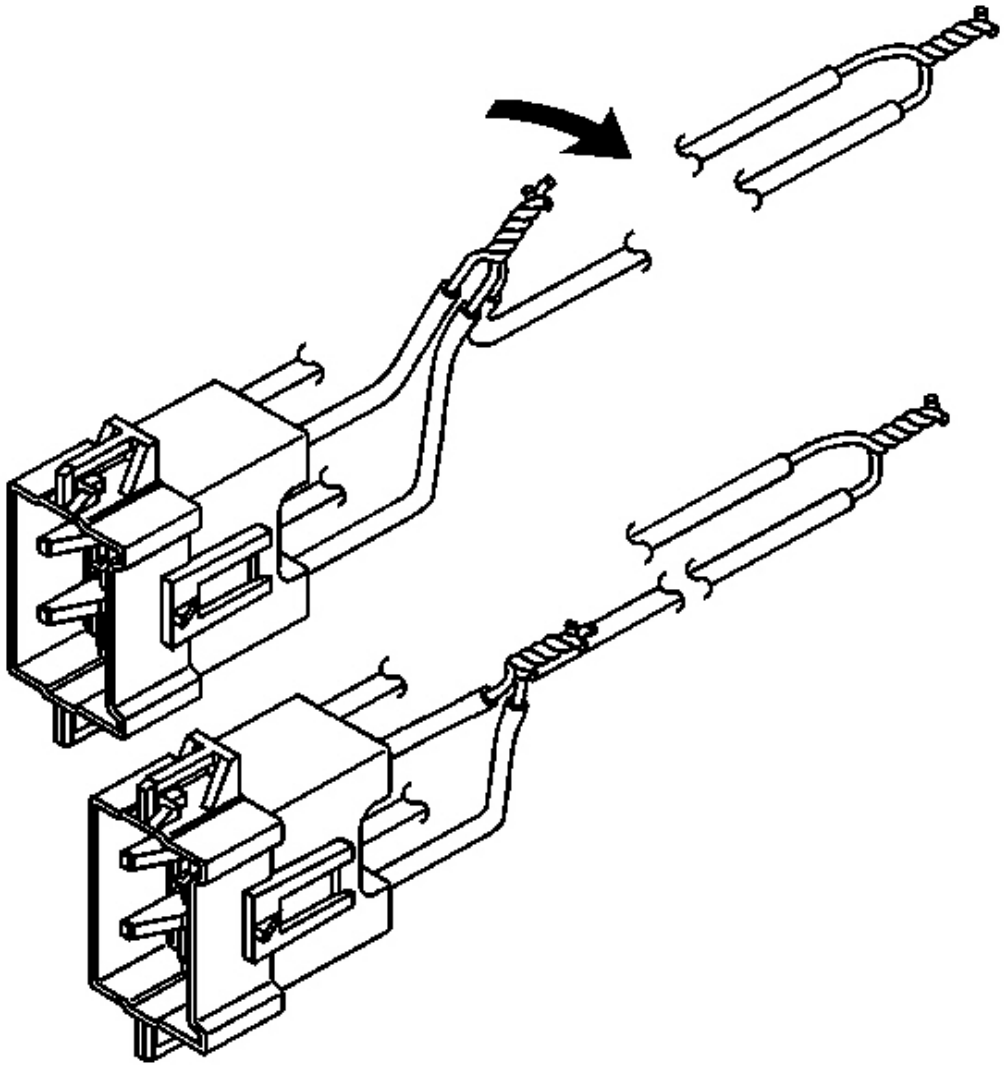


Fig. 89: Bending Twisted Connection Flat
Courtesy of GENERAL MOTORS CORP.

18. Bend flat the twisted connection.

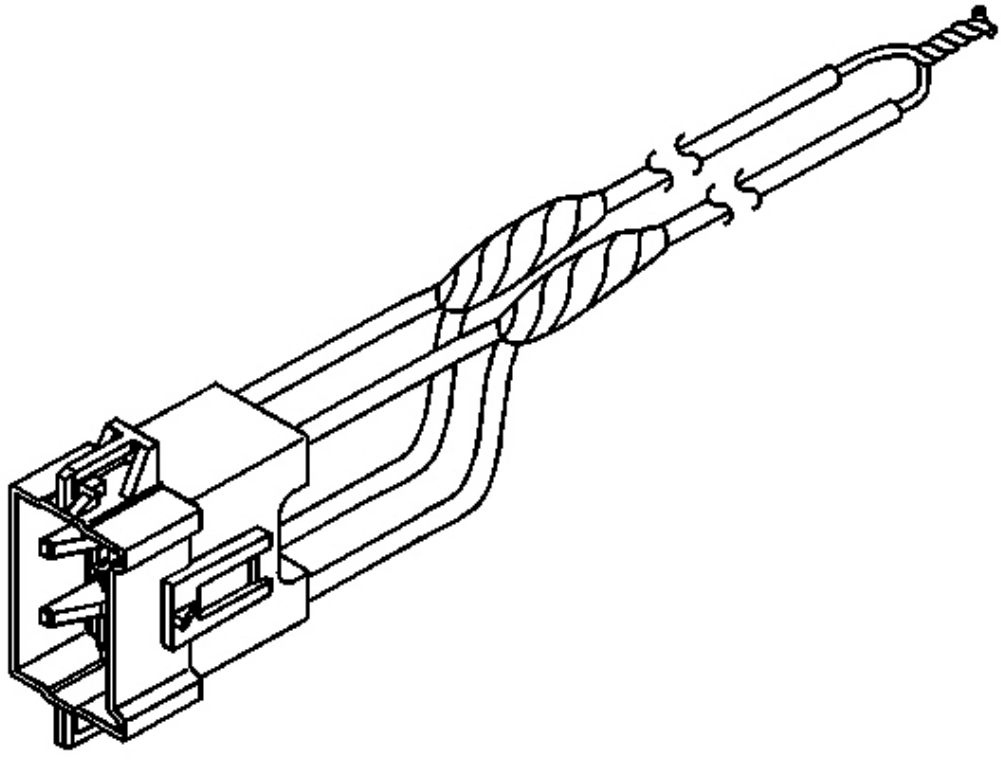


Fig. 90: Insulating Connection With Electrical Tape
Courtesy of GENERAL MOTORS CORP.

19. Secure and insulate the 3-wire connection to the deployment harness using electrical tape.
20. Connect the deployment harness to the connector on the steering wheel module.

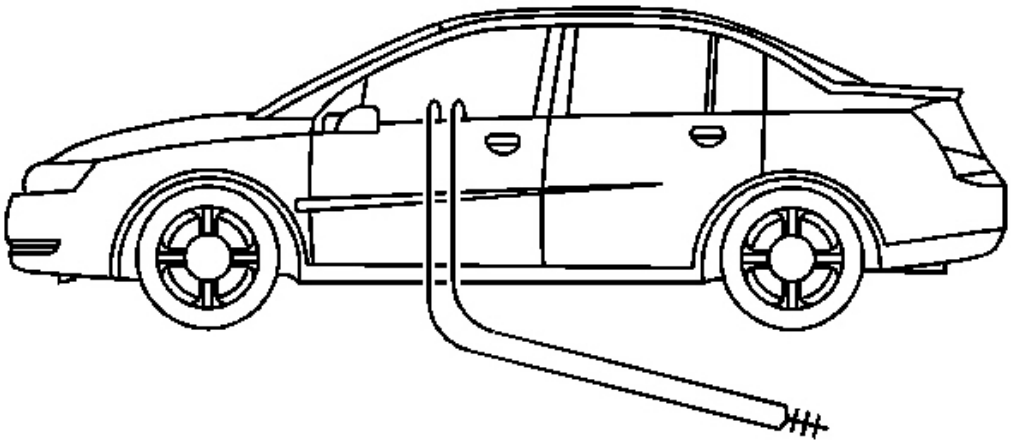


Fig. 91: View Of Routing Deployment Harness Out Of Driver Side Of Vehicle
Courtesy of GENERAL MOTORS CORP.

21. Route the deployment harness out of the driver side of the vehicle.

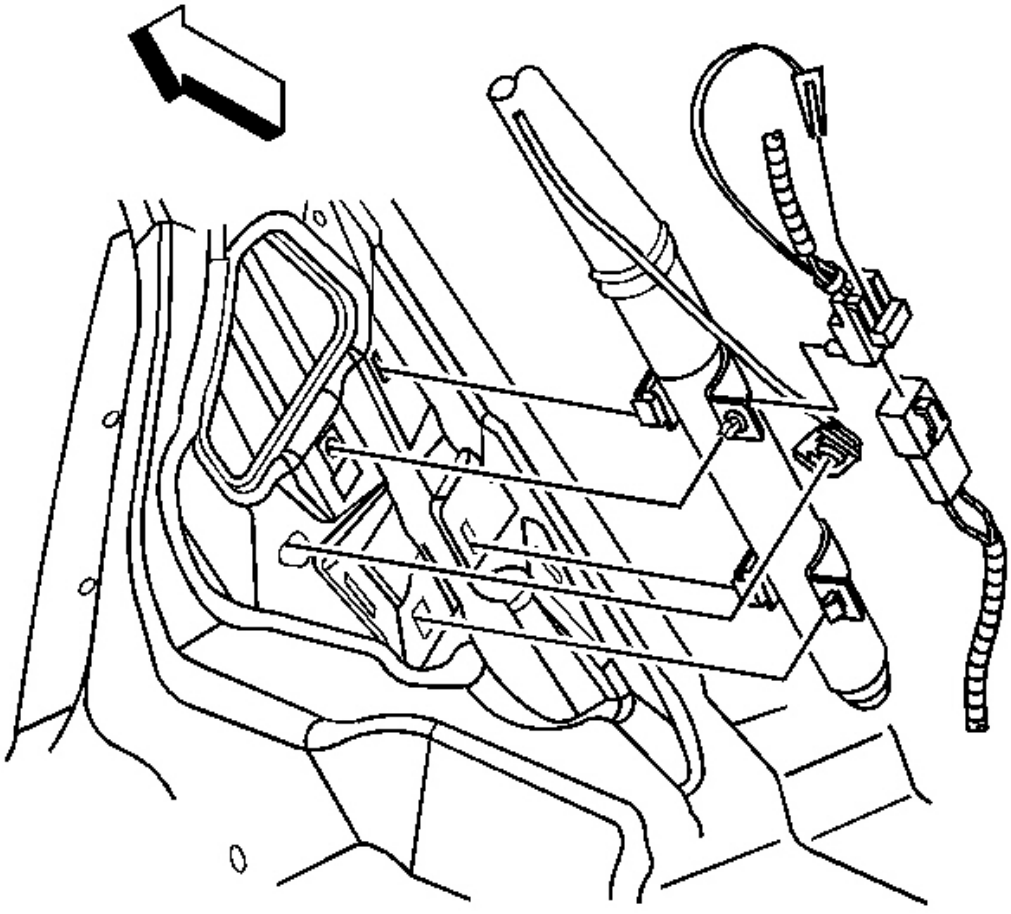


Fig. 92: Locating Roof Rail Module Connector
Courtesy of GENERAL MOTORS CORP.

22. Disconnect the yellow left roof rail harness connector from the vehicle harness connector.

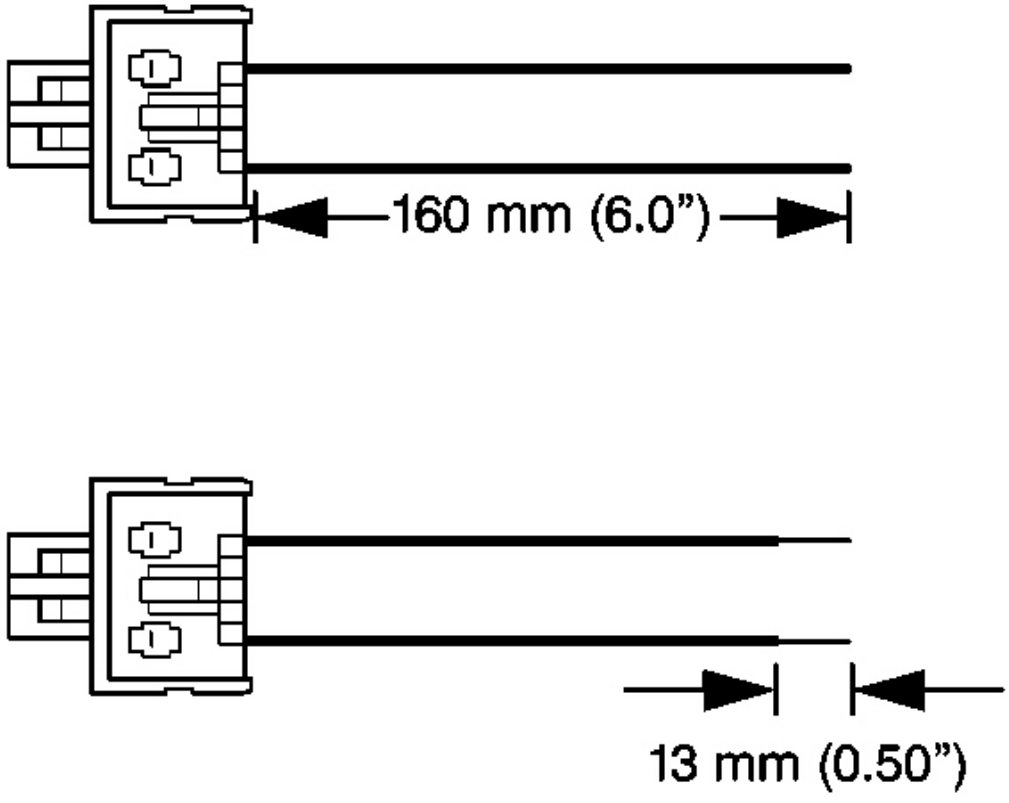


Fig. 93: Identifying Proper Stripping Of Connection Wire Leads
Courtesy of GENERAL MOTORS CORP.

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

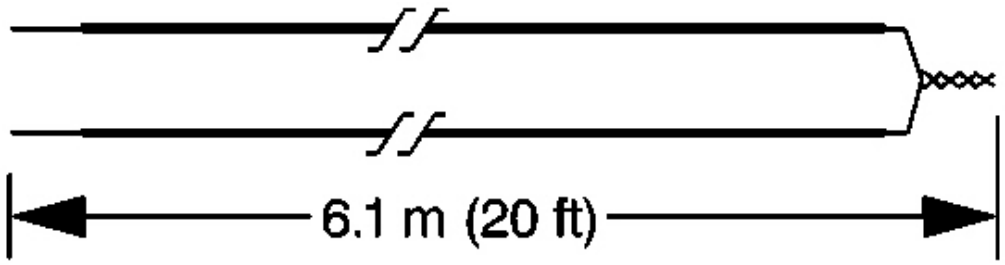


Fig. 94: Fabricating 20 Ft. Deployment Harness
Courtesy of GENERAL MOTORS CORP.

25. Cut two 6.1 m (20 ft) deployment wires from a 0.8 mm (18 gage) or thicker multi-strand wire. These wires will be used to fabricate the roof rail air bag deployment harness.
26. Strip 13 mm (0.5 in) of insulation from both ends of the wires.
27. Twist together one end from each of the wires in order to short the wires.

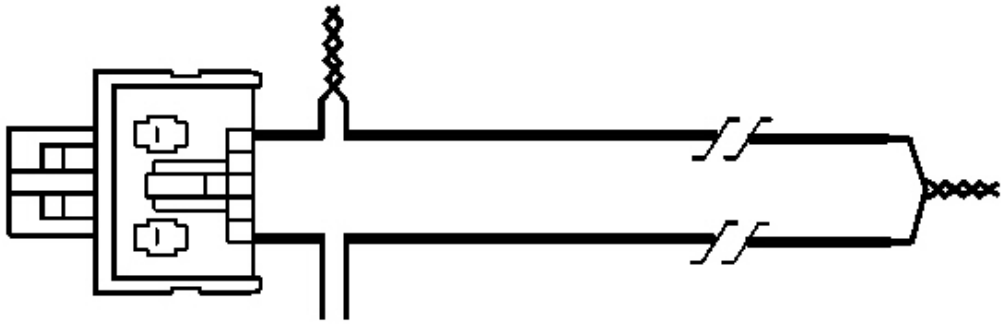


Fig. 95: View Of Proper Twisting Of Connector Wire Lead To Deployment Wire
Courtesy of GENERAL MOTORS CORP.

28. Twist together one connector wire lead to one deployment wire.

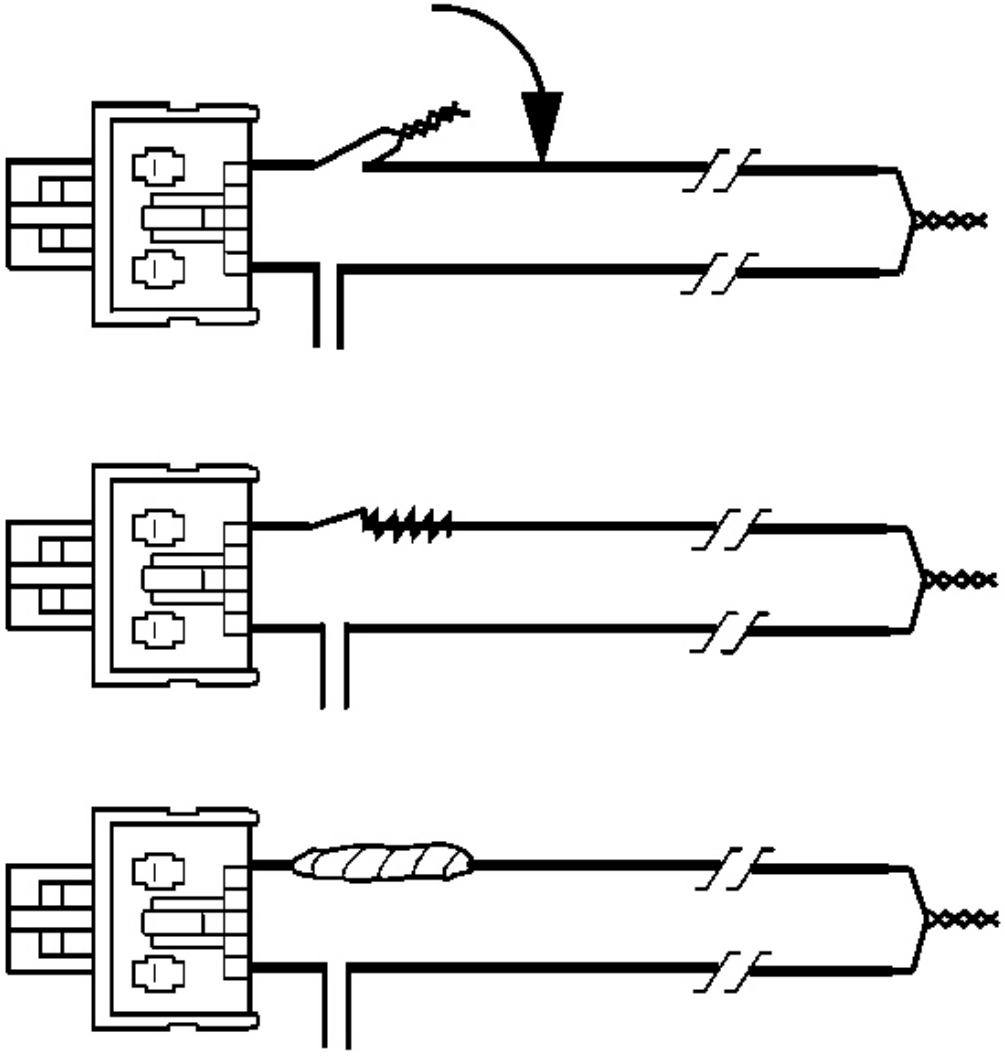


Fig. 96: Bending Twisted Connection Flat & Insulating With Tape
Courtesy of GENERAL MOTORS CORP.

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

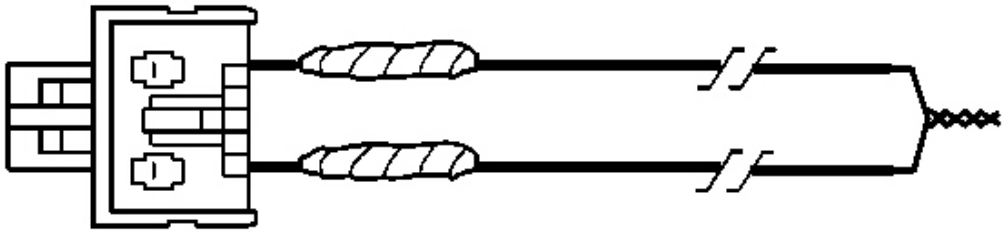


Fig. 97: Identifying Remaining Connector Lead & Electrical Tape
Courtesy of GENERAL MOTORS CORP.

31. Twist together, bend and tape the remaining connector wire lead to the remaining deployment wire.
32. Connect the deployment harness to the yellow connector of the roof rail module.

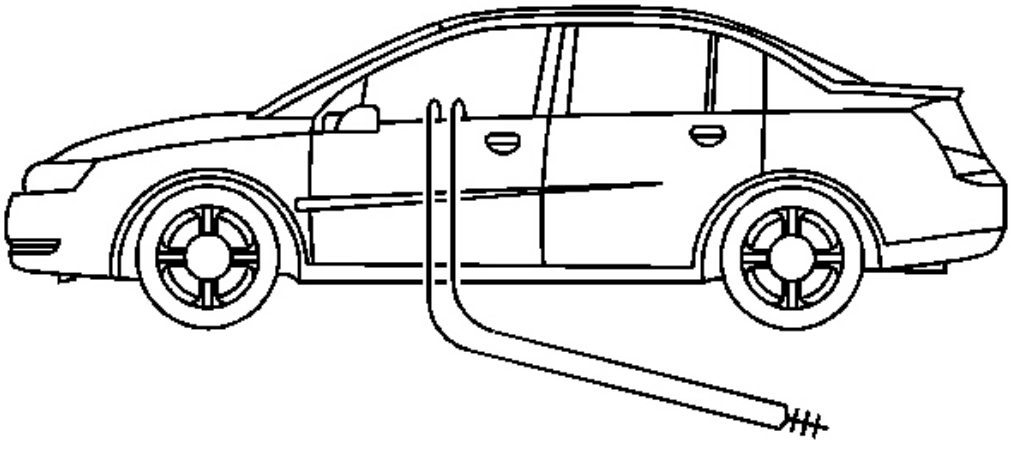


Fig. 98: View Of Routing Deployment Harness Out Of Driver Side Of Vehicle
Courtesy of GENERAL MOTORS CORP.

33. Route the deployment harness out of the driver side of the vehicle.

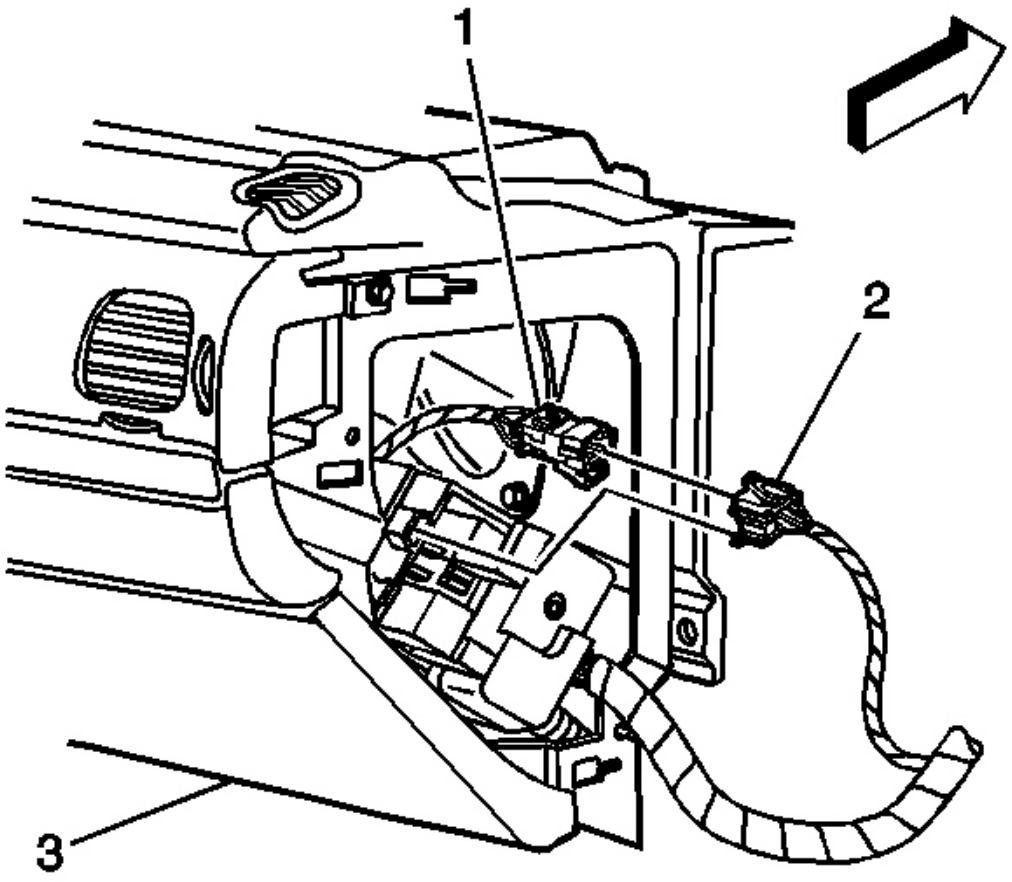


Fig. 99: Identifying I/P Module Connector To Vehicle Harness Connector
Courtesy of GENERAL MOTORS CORP.

34. Disconnect the I/P module yellow harness connector (1) from the vehicle harness connector (2).

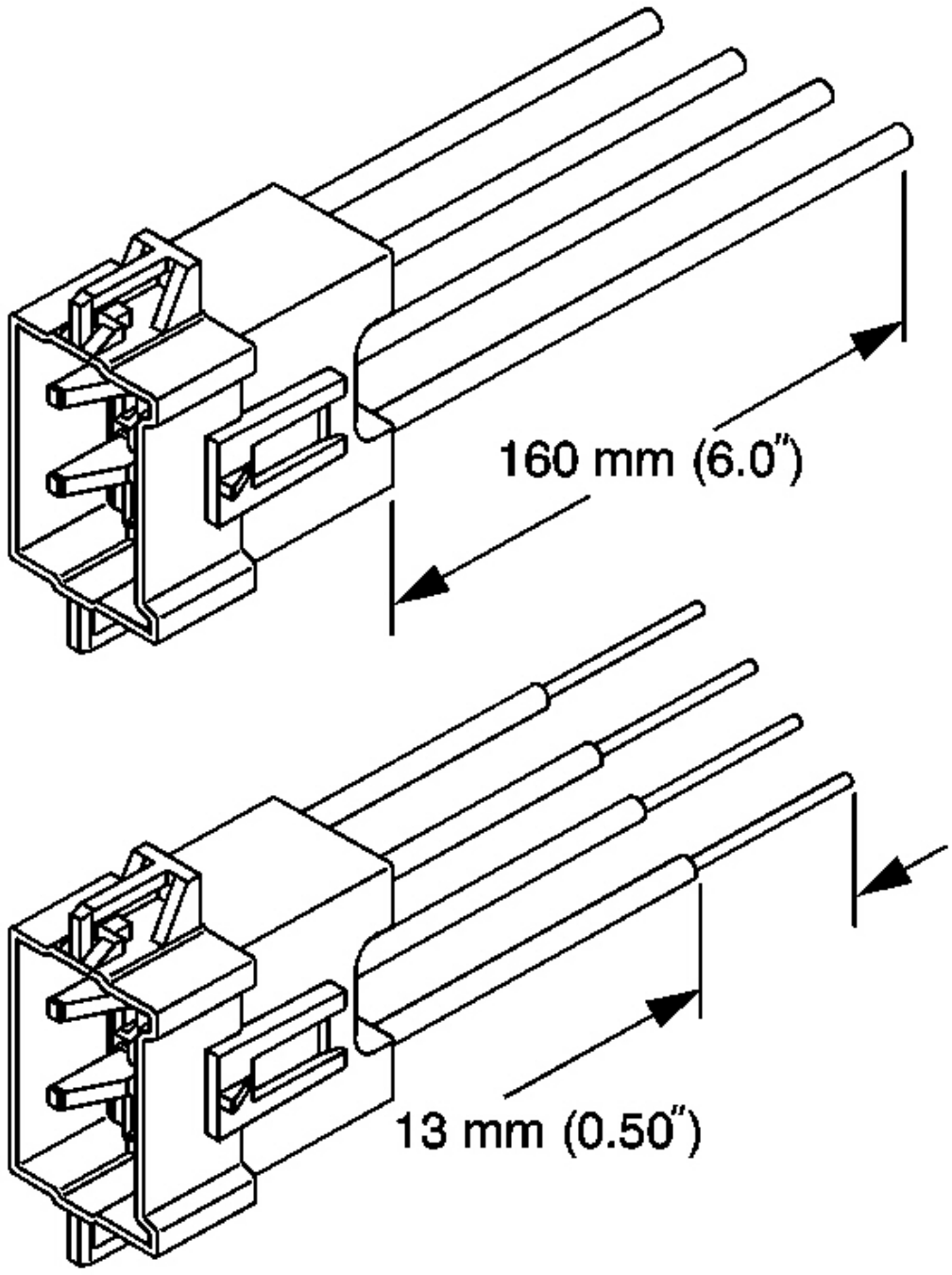


Fig. 100: Identifying Striped SIR Wires
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: If the vehicle is equipped with dual stage air bags the steering wheel module and I/P module will each have 4 wires. Refer to SIR Connector End Views for determining high and low circuits.

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

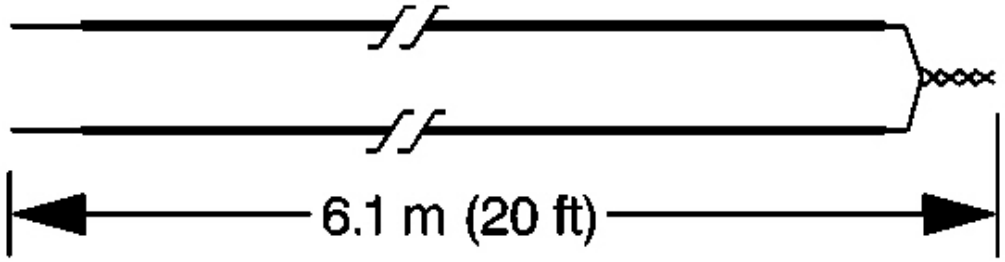


Fig. 101: Fabricating 20 Ft. Deployment Harness
Courtesy of GENERAL MOTORS CORP.

37. Cut two 6.1 m (20 ft) deployment wires from a 0.8 mm (18 gage) or thicker multi-strand wire. These wires will be used to fabricate the passenger deployment harness.
38. Strip 13 mm (0.5 in) of insulation from both ends of the wires.
39. Twist together one end from each of the wires in order to short the wires.

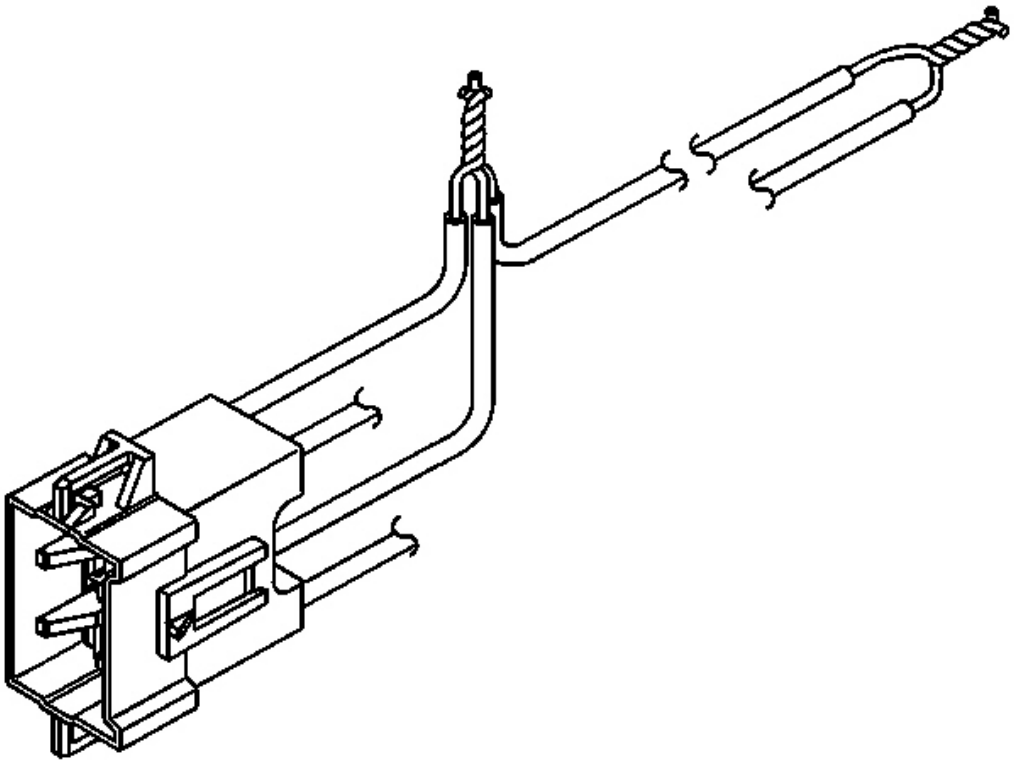


Fig. 102: Twisting Connector Wire Leads (High Circuits) To Deployment Harness Wire
Courtesy of GENERAL MOTORS CORP.

40. Twist together the 2 connector wire leads from the high circuits from both stages of the I/P module to one set of deployment wires. Refer to **SIR Connector End Views** in order to determine the correct circuits.
41. Inspect that the 3-wire connection is secure.

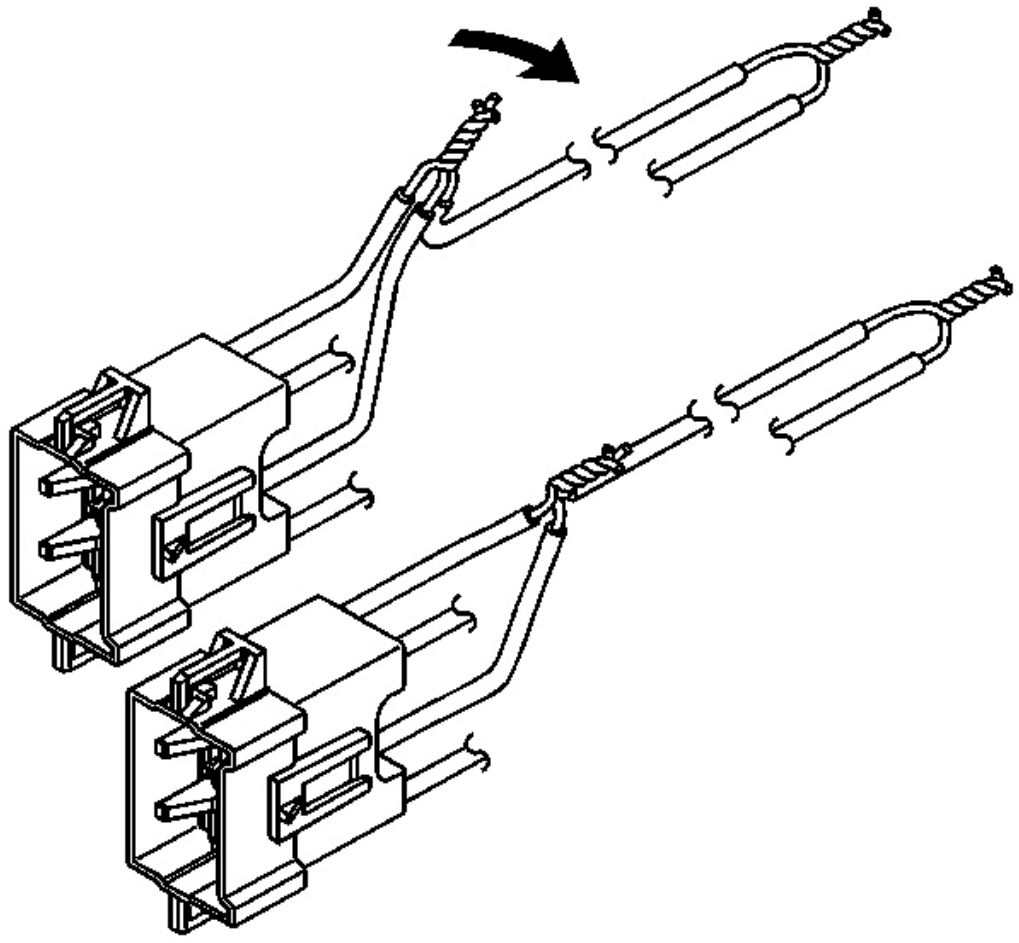


Fig. 103: Bending Twisted Connection Flat
Courtesy of GENERAL MOTORS CORP.

42. Bend flat the twisted connection.

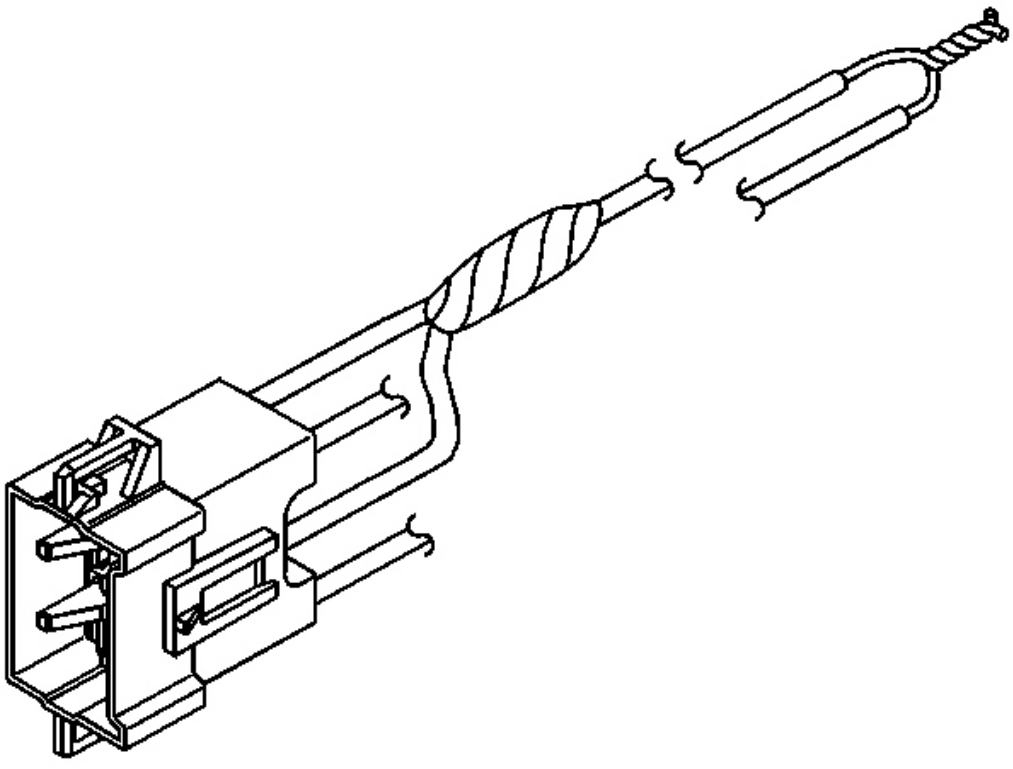


Fig. 104: Insulating Connection With Electrical Tape
Courtesy of GENERAL MOTORS CORP.

43. Secure and insulate the 3-wire connection to the deployment harness using electrical tape.

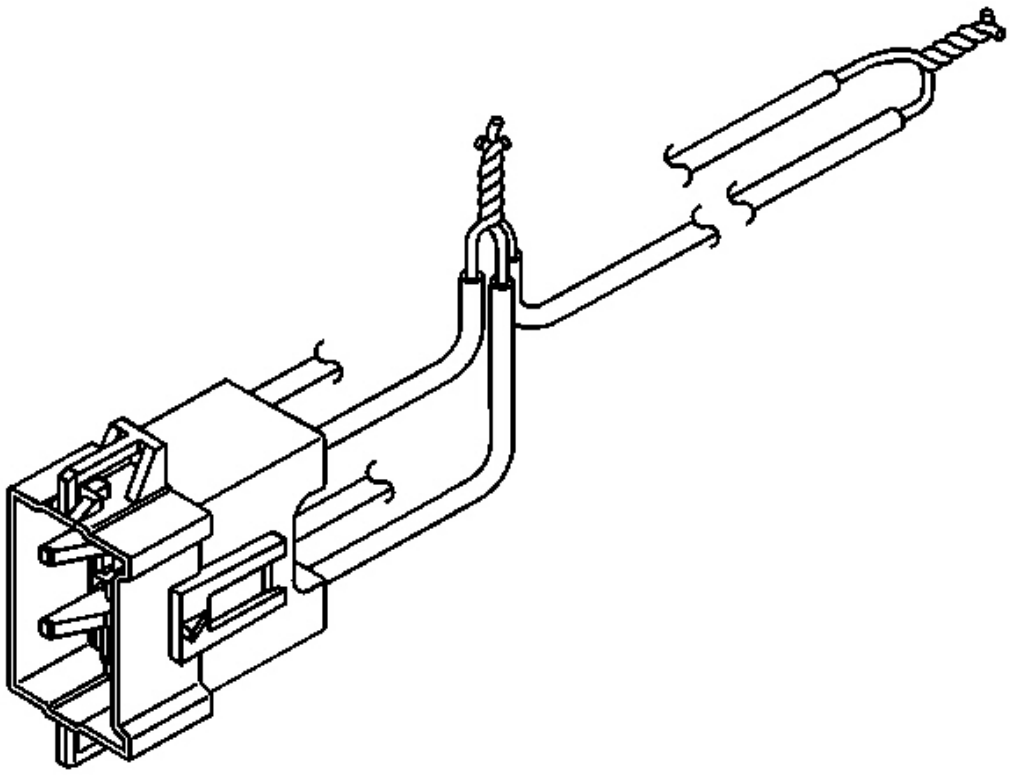


Fig. 105: Twisting Connector Wire Leads (Low Circuits) To Deployment Harness Wire
Courtesy of GENERAL MOTORS CORP.

44. Twist together the 2 connector wire leads from the low circuits from both stages of the I/P module to one set of deployment wires. Refer to **SIR Connector End Views** in order to determine the correct circuits.
45. Inspect that the 3-wire connection is secure.

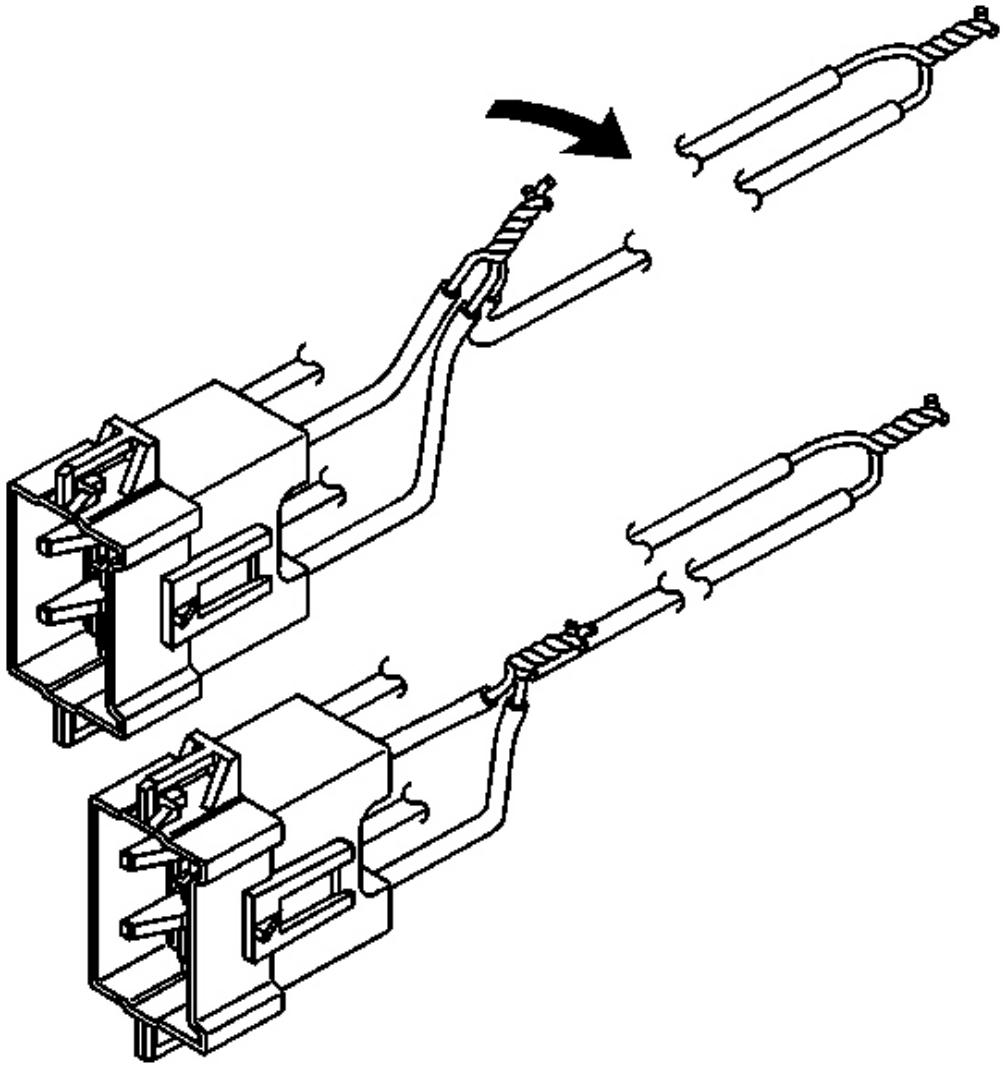


Fig. 106: Bending Twisted Connection Flat
Courtesy of GENERAL MOTORS CORP.

46. Bend flat the twisted connection.

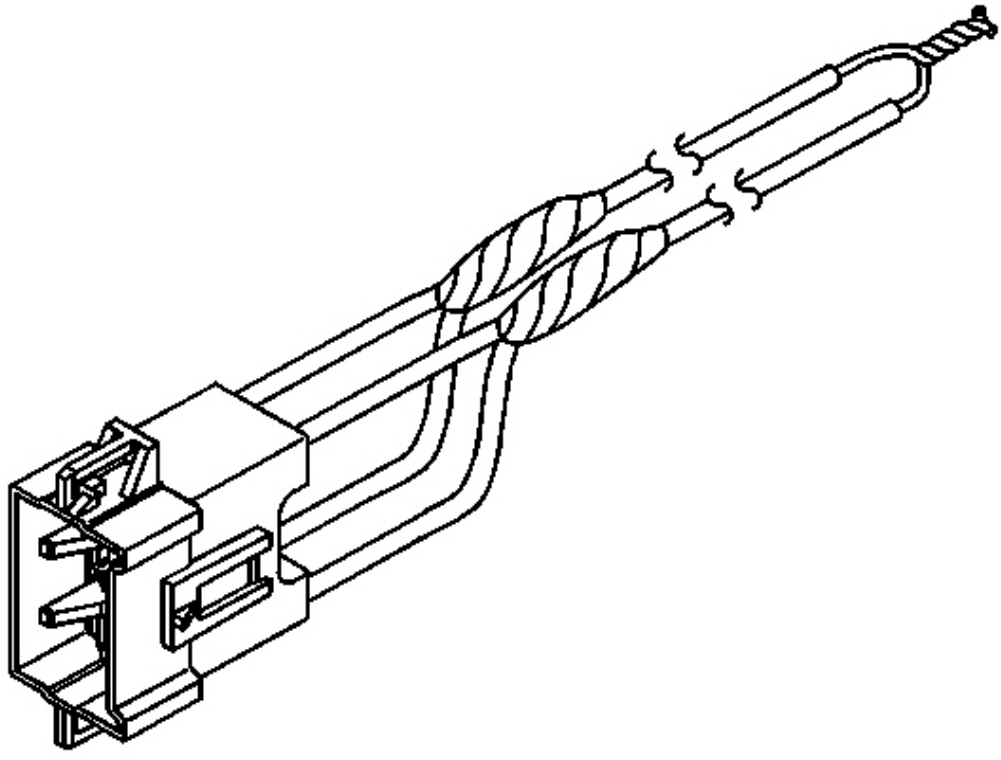


Fig. 107: Insulating Connection With Electrical Tape
Courtesy of GENERAL MOTORS CORP.

47. Secure and insulate the 3-wire connection to the deployment harness using electrical tape.
48. Connect the deployment harness to the I/P module in-line connector.

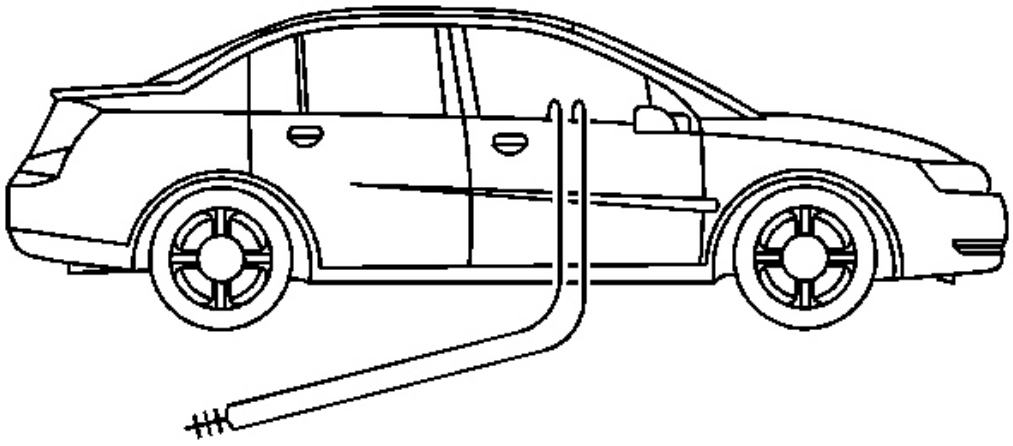


Fig. 108: View Of Routing Deployment Harness Out Of Passenger Side Of Vehicle
Courtesy of GENERAL MOTORS CORP.

49. Route the deployment harness out of the passenger side of the vehicle.

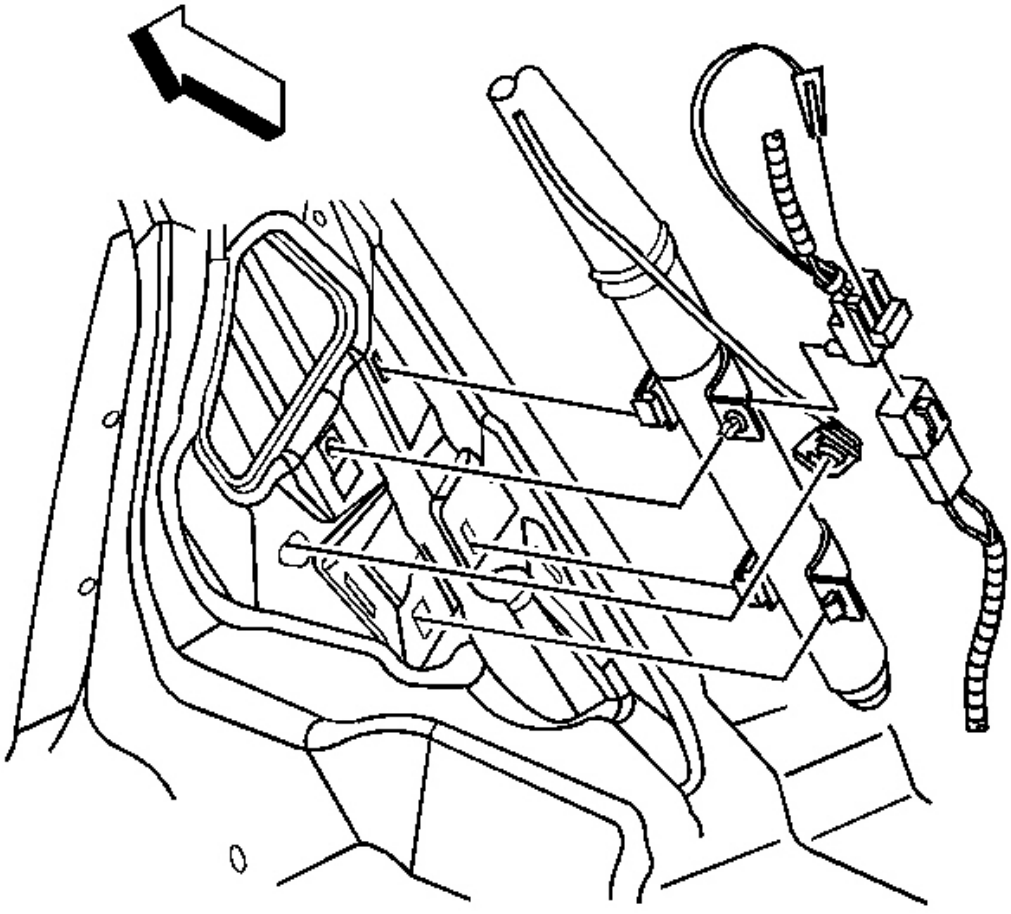


Fig. 109: Locating Roof Rail Module Connector
Courtesy of GENERAL MOTORS CORP.

50. Disconnect the yellow harness connector to the right roof rail air bag from the vehicle harness connector.

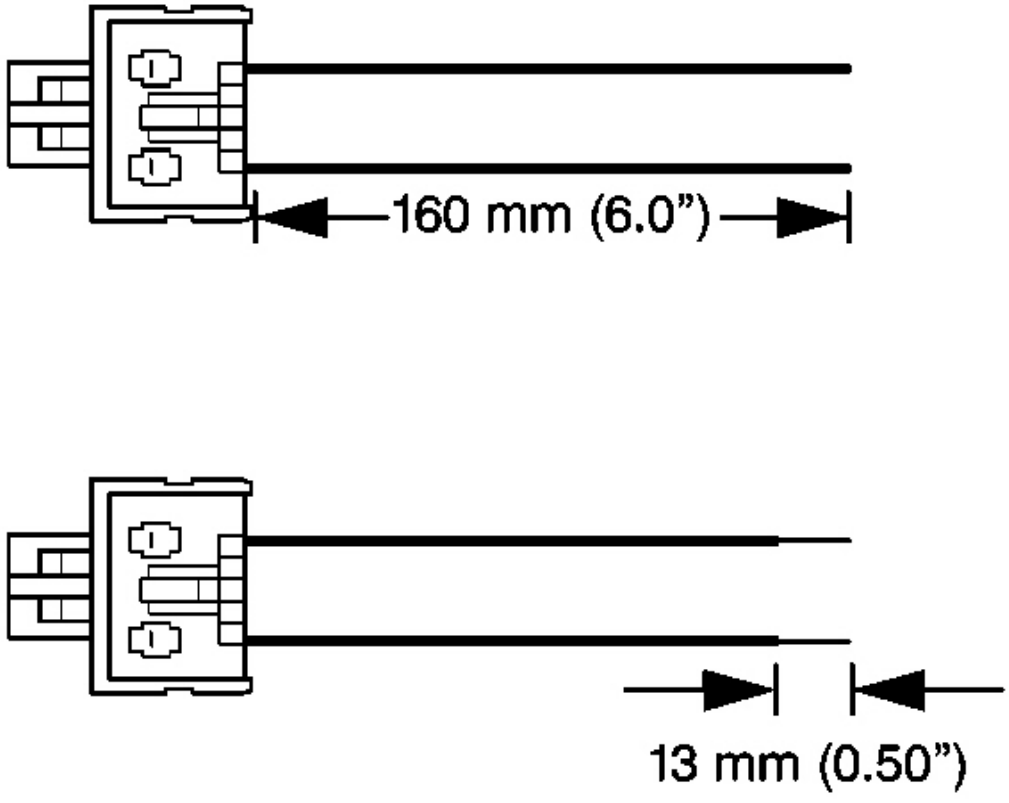


Fig. 110: Identifying Proper Stripping Of Connection Wire Leads
Courtesy of GENERAL MOTORS CORP.

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

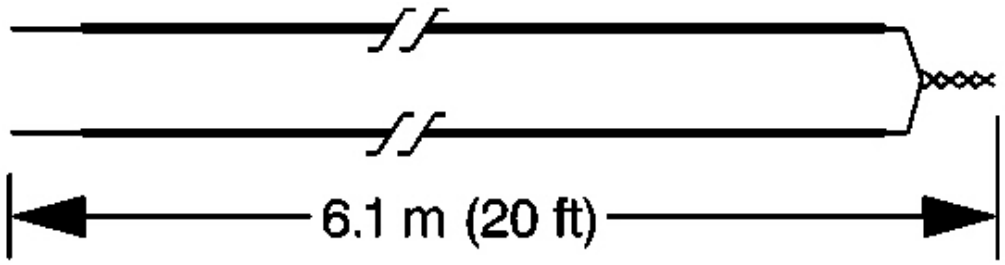


Fig. 111: Fabricating 20 Ft. Deployment Harness
Courtesy of GENERAL MOTORS CORP.

53. Cut two 6.1 m (20 ft) deployment wires from a 0.8 mm (18 gage) or thicker multi-strand wire. These wires will be used to fabricate the roof rail air bag deployment harness.
54. Strip 13 mm (0.5 in) of insulation from both ends of the wires.
55. Twist together one end from each of the wires in order to short the wires.

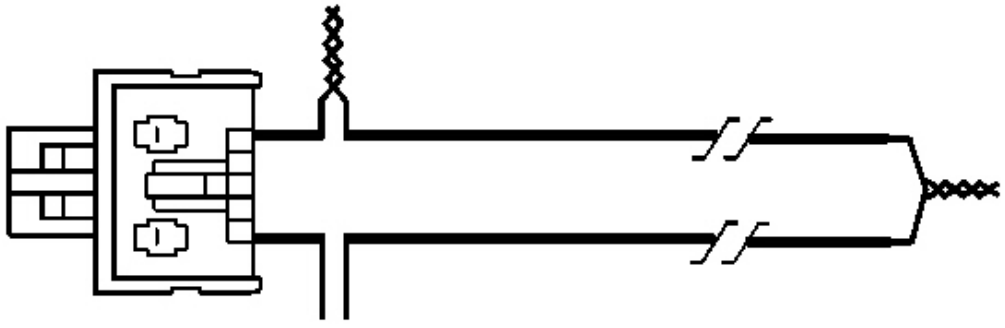


Fig. 112: View Of Proper Twisting Of Connector Wire Lead To Deployment Wire
Courtesy of GENERAL MOTORS CORP.

56. Twist together one connector wire lead to one deployment wire.

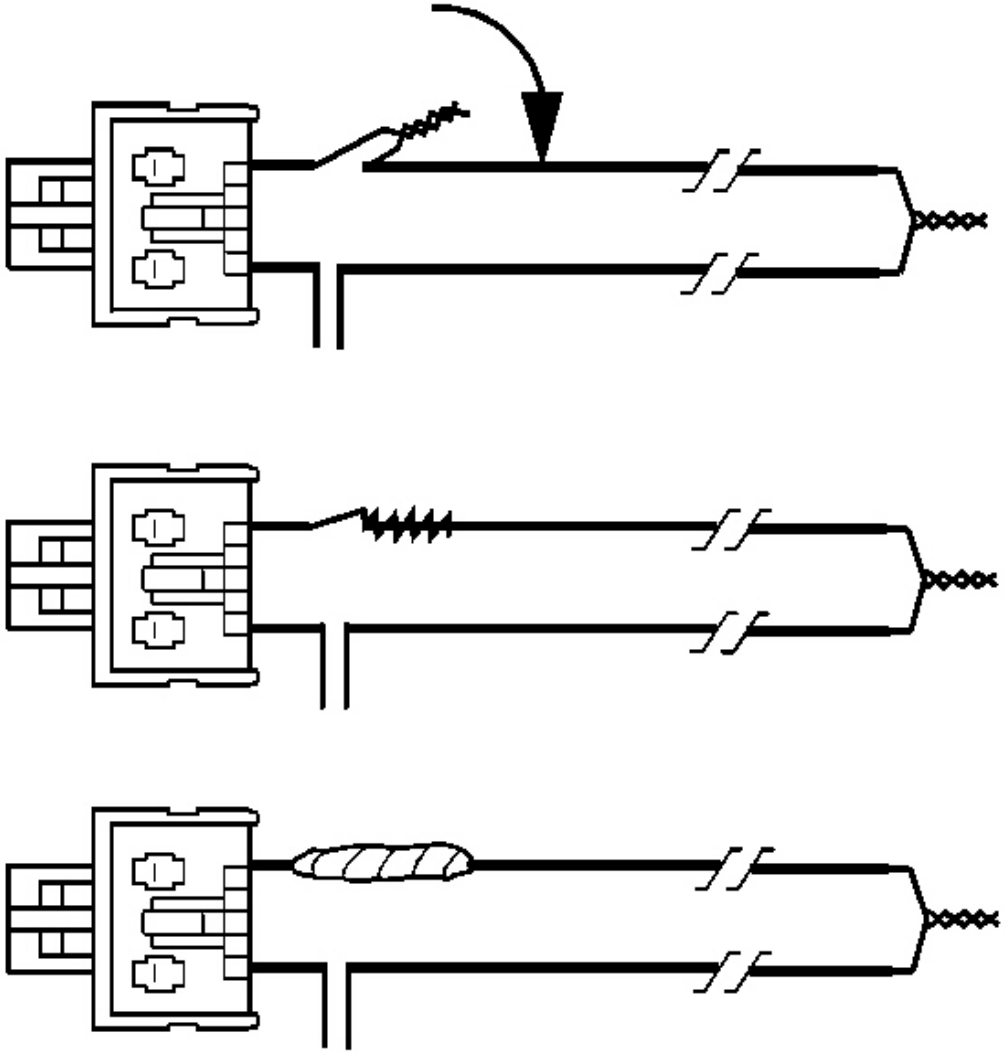


Fig. 113: Bending Twisted Connection Flat & Insulating With Tape
Courtesy of GENERAL MOTORS CORP.

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

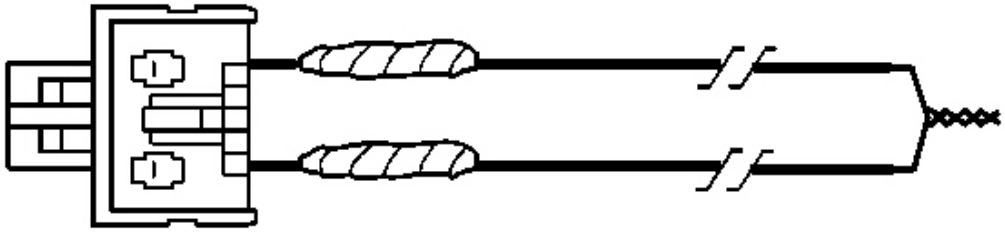


Fig. 114: Identifying Remaining Connector Lead & Electrical Tape
Courtesy of GENERAL MOTORS CORP.

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

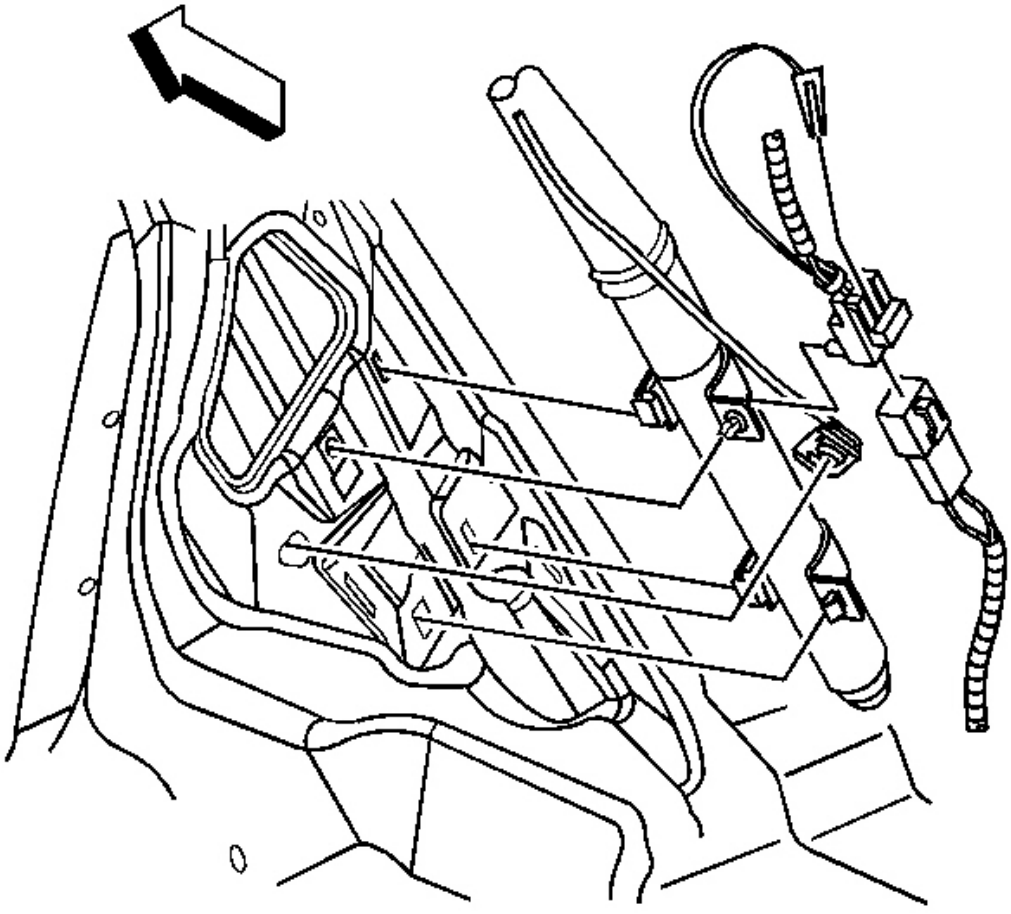


Fig. 115: Locating Roof Rail Module Connector
Courtesy of GENERAL MOTORS CORP.

60. Connect the deployment harness to the roof rail module yellow connector.

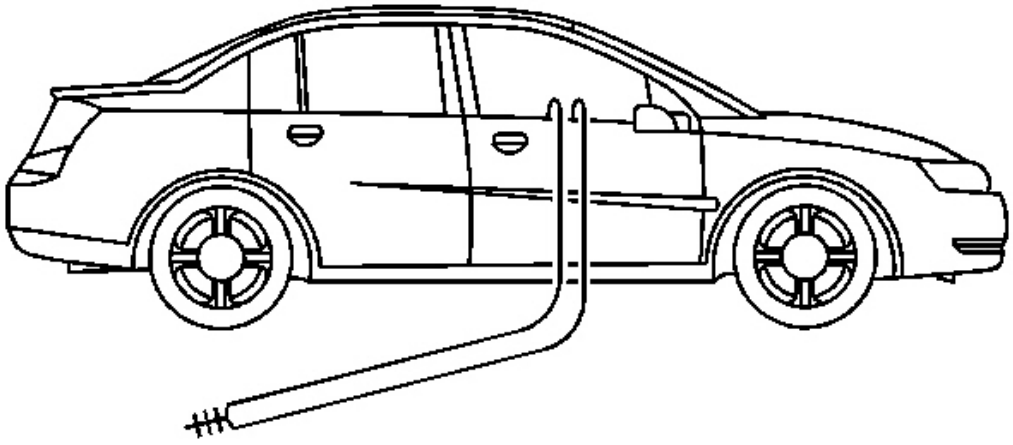


Fig. 116: View Of Routing Deployment Harness Out Of Passenger Side Of Vehicle
Courtesy of GENERAL MOTORS CORP.

61. Route the deployment harness out of the passenger side of the vehicle.
62. Completely cover the windshield and the front door window openings with a drop cloth.
63. Stretch to the full length all of the deployment harness wires on the right side of the vehicle.
64. Deploy each deployment loop one at a time.
65. Place a power source, 12 V minimum/2 A minimum, such as a vehicle battery, near the shorted end of the harnesses.
66. Separate one set of wires and touch the wire ends to the power source in order to deploy the selected inflator module.
67. Disconnect the deployment harness from the power source and twist the wire ends together.
68. Continue the same process with the remaining deployment harnesses.

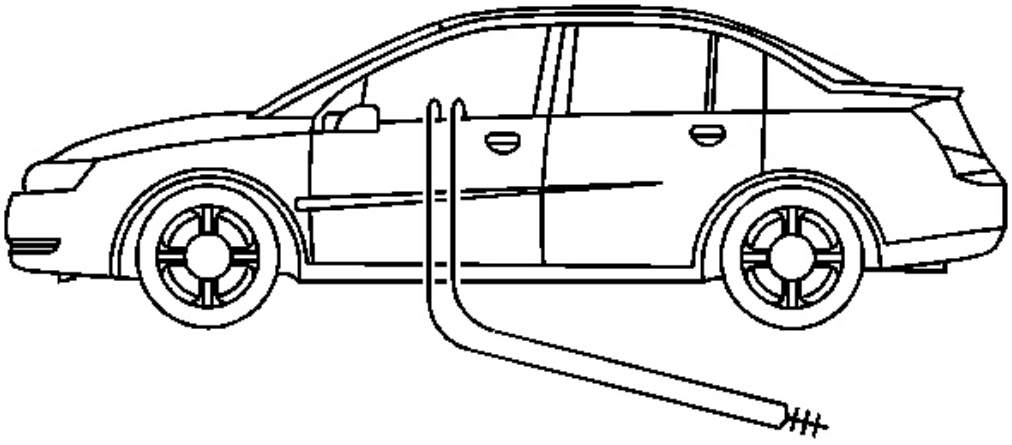


Fig. 117: View Of Routing Deployment Harness Out Of Driver Side Of Vehicle
Courtesy of GENERAL MOTORS CORP.

69. Stretch to the full length all of the deployment harness wires on the left side of the vehicle.
70. Deploy each deployment loop one at a time.
71. Place a power source, 12 V minimum/2 A minimum, such as a vehicle battery, near the shorted end of the harnesses.
72. Separate one set of wires and touch the wires ends to the power source in order to deploy the selected inflator modules.
73. Disconnect the deployment harness from the power source and twist the wire ends together.
74. Continue the same process with the remaining deployment harnesses.
75. Remove the drop cloth from the vehicle.
76. Disconnect all harnesses from the vehicle.
77. Discard the harnesses.
78. Scrap the vehicle in the same manner as a non-SIR equipped vehicle.
79. If one or all of the inflator modules did not deploy, remove the undeployed modules from the vehicle.

PRETENSIONER HANDLING AND SCRAPPING

CAUTION: When carrying an undeployed inflatable restraint seat belt

retractor pretensioner:

- **Do not carry the seat belt pretensioner by the seat belt webbing or pigtail connector, if equipped.**
- **Carry the seat belt pretensioner by the housing, keeping hands and fingers away from the seat belt webbing.**
- **Make sure the opening, from which the seat belt webbing extends, faces downward and the seat belt webbing hangs freely.**

Failure to observe these guidelines may result in personal injury.

Scrapping Procedure

During the course of a vehicles useful life, certain situations may arise which will require the disposal of a live and undeployed seat belt retractor pretensioner. Do not dispose of a live and undeployed seat belt pretensioner through normal disposal channels until the seat belt pretensioner has been deployed. The following information covers the proper procedures for disposing of a live and undeployed seat belt pretensioner. Do not deploy the seat belt retractor pretensioner in the following situations:

- After replacement of a seat belt retractor pretensioner under warranty. The seat belt retractor pretensioner may need to be returned undeployed to the manufacturer.
- If the vehicle is the subject of a Product Liability report, GM1241, related to the SIR system or the seat belt system. If the vehicle is subject to the Product Liability report, do not alter the SIR or seat belt system in any manner.
- If the vehicle is involved in a campaign affecting the seat belt retractor pretensioners. Follow the instructions in the Campaign Service Bulletin for proper SIR handling procedures.

Deployment Procedures

The seat belt pretensioner can be deployed inside or outside of the vehicle. The method used depends upon the final disposition of the vehicle. Review the following procedures in order to determine which will work best in a given situation.

Deployment Inside the Vehicle

Refer to **Inflator Module Handling and Scrapping** for deploying the pretensioner inside vehicle under Vehicle Scrapping Procedure.

Tools Required

- **J 38826** SIR Deployment Harness. See **Special Tools**.
- J 38826-25 for seat belt pretensioner module adapter
- **J 39401-B** SIR Deployment Fixture. See **Special Tools**.
- An appropriate pigtail adaptor

Deployment Outside Vehicle for Seat Belt Pretensioners

Deploy the seat belt pretensioners outside of the vehicle when the vehicle will be returned to service. Situations that require deployment outside of the vehicle include the following:

- Using the SIR diagnostics, it is determined that the seat belt pretensioner is malfunctioning.
- The seat belt pretensioner pigtail, if equipped, is damaged.
- The seat belt retractor pretensioner connector is damaged.
- The seat belt retractor pretensioner connector terminals are damaged.

Deployment and disposal of a malfunctioning seat belt pretensioner is subject to any required retention period.

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

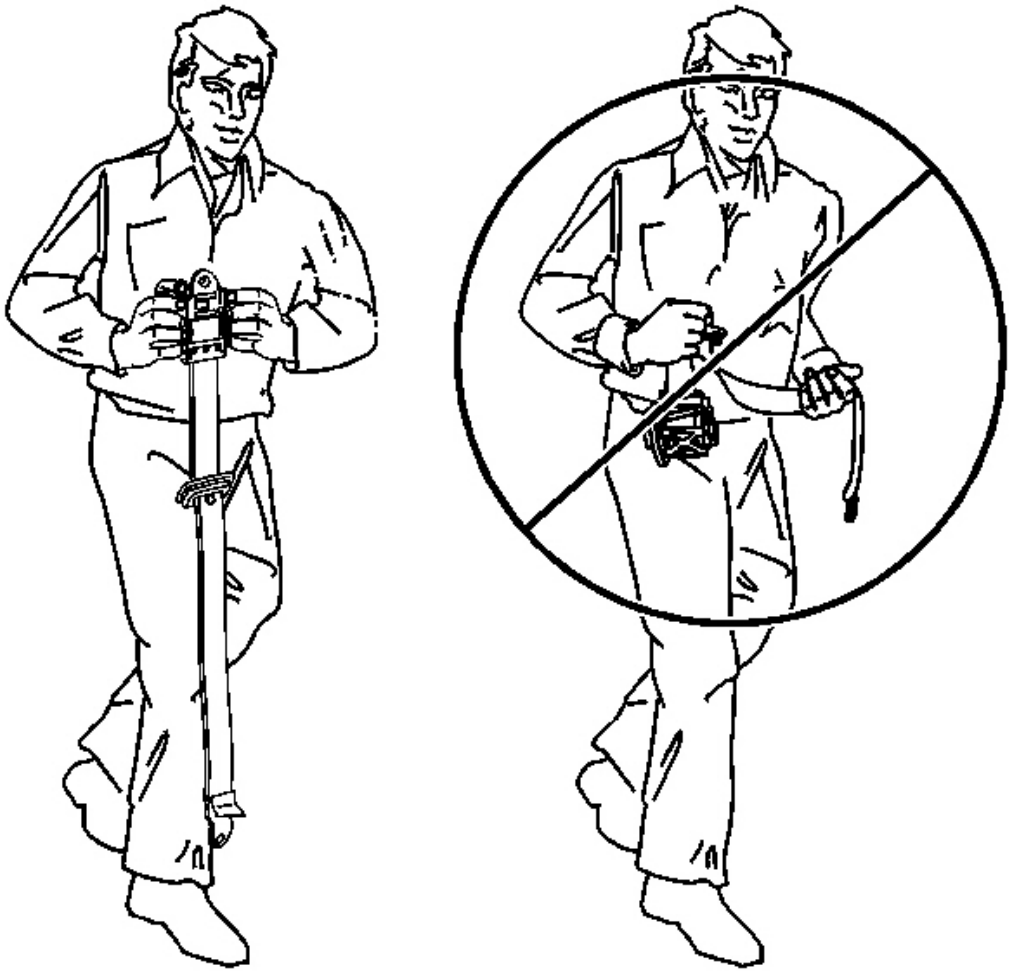


Fig. 118: Identifying Proper Transportation Of Seat Belt Pretensioner
Courtesy of GENERAL MOTORS CORP.

1. Turn OFF the ignition.
2. Remove the ignition key.
3. Put on safety glasses.
4. Remove the seat belt retractor pretensioner from the vehicle. Refer to **Seat Belt Retractor Pretensioner Replacement - Front**.
5. When carrying a seat belt retractor pretensioner to the deployment area, keep fingers clear of the seat belt webbing.

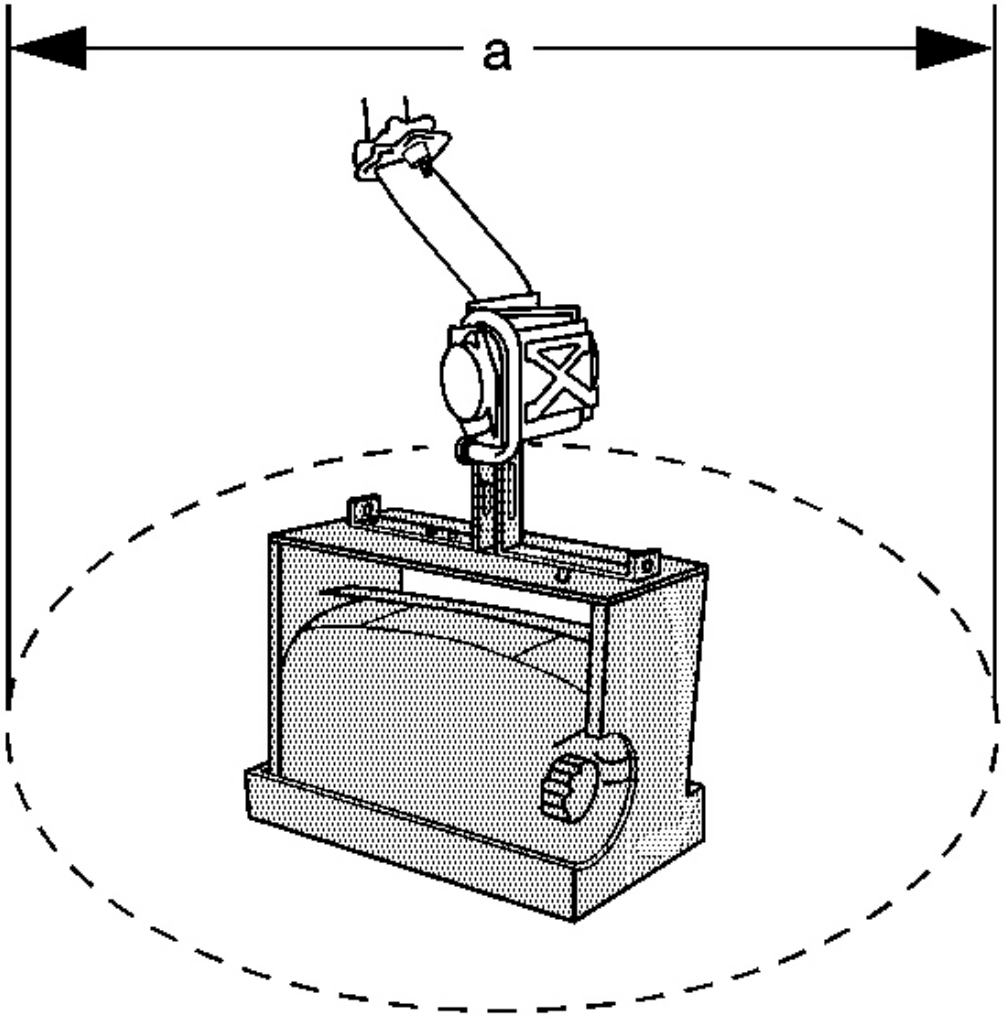


Fig. 119: Identifying Proper Space For Deployment Of Pretensioner
Courtesy of GENERAL MOTORS CORP.

6. Clear a space on the ground about 1.85 m (6 ft) in diameter (a) for deployment of the seat belt pretensioner. If possible, use a paved, outdoor location free of activity. Otherwise, use a space free of activity on the shop floor. Make sure you have sufficient ventilation.
7. Make sure no loose or flammable objects are in the area.
8. Place the **J 39401-B** in the center of the cleared area. See **Special Tools**.
9. Fill the fixture plastic reservoir with water or sand.

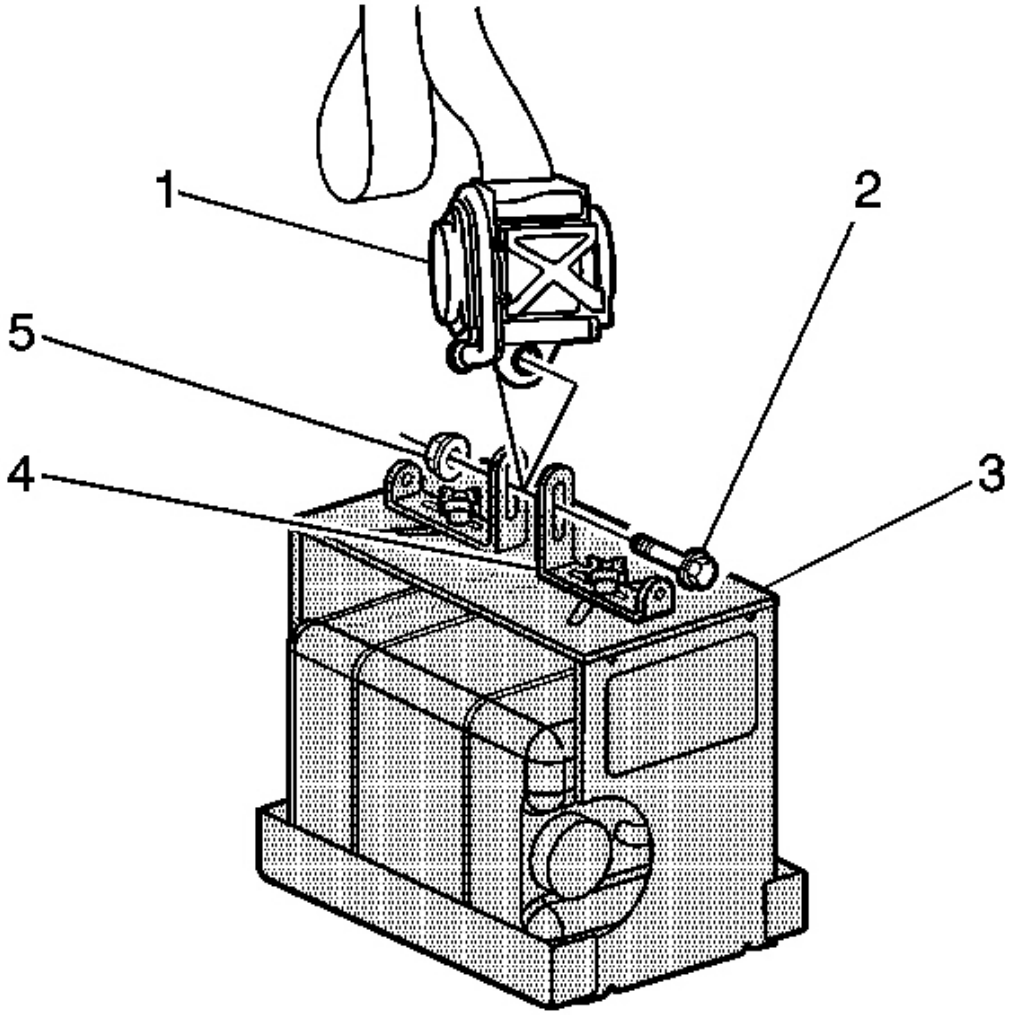


Fig. 120: Identifying Seat Belt Pretensioner And SIR Deployment Fixture
Courtesy of GENERAL MOTORS CORP.

10. Mount the seat belt pretensioner (1) in the SIR deployment fixture (3) with the open end facing up using the following mounting method.
    - Adjust and secure the **J 39401-B** arms (4) to the deployment fixture, with the short slotted portions of the arms standing vertically and facing toward the center of the deployment fixture. See **Special Tools**.
    - To mount, use the proper size bolt (2) and nut (5) with washers in order to secure the

seat belt pretensioner (1) to the deployment fixture brackets.

- Securely tighten all fasteners prior to deployment.

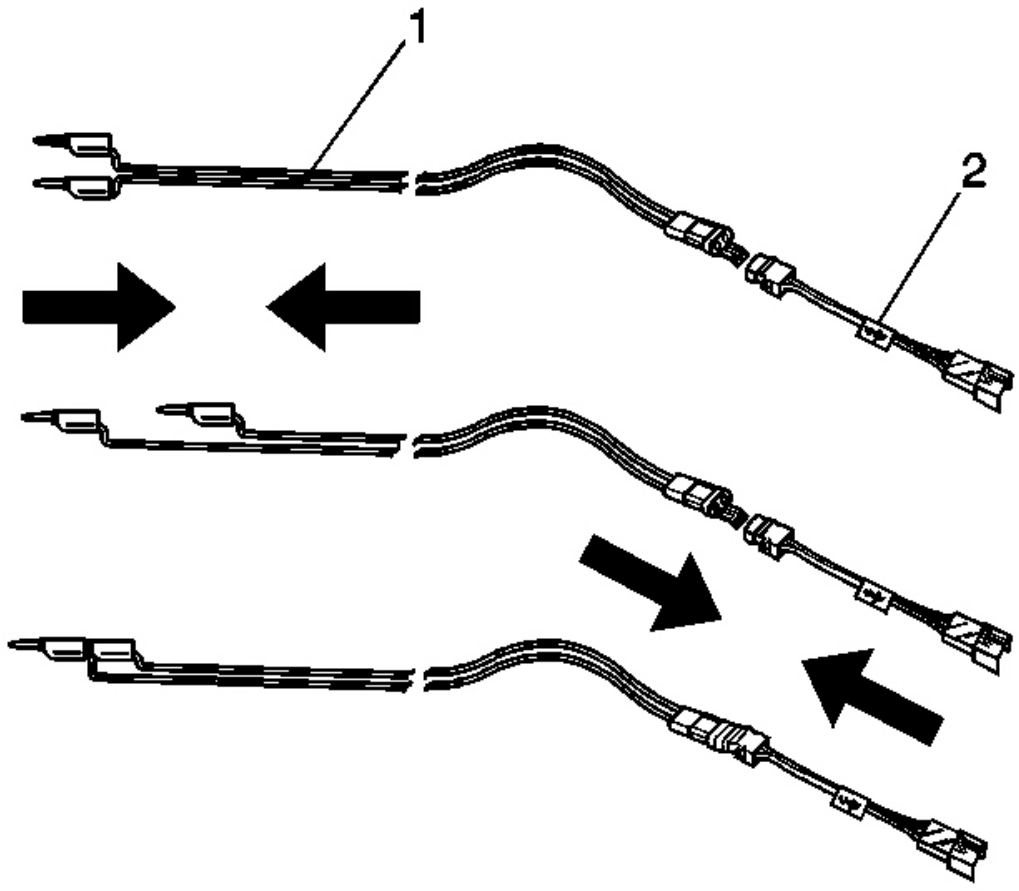


Fig. 121: Identifying SIR Deployment Harness & Adapter
Courtesy of GENERAL MOTORS CORP.

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

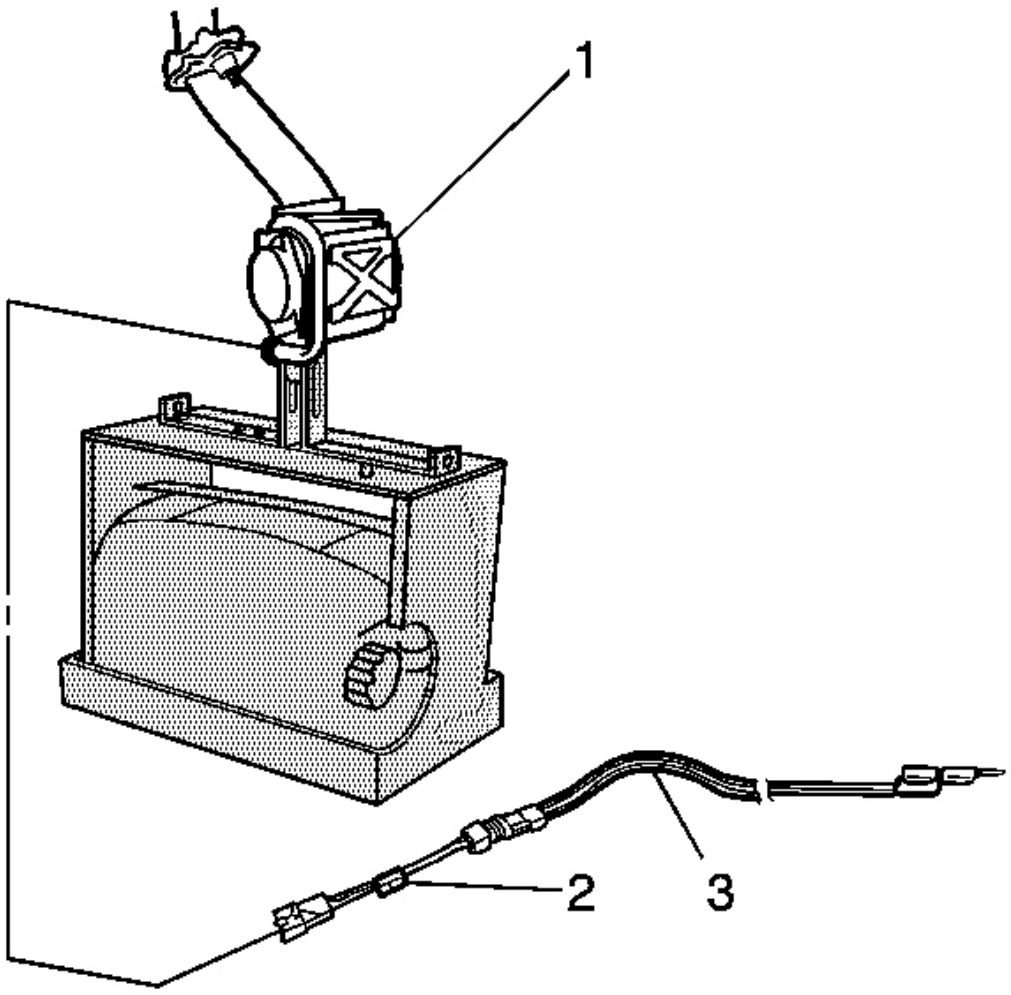


Fig. 122: Identifying Seat Belt Pretensioner Connector, Adapter & Deployment Harness
Courtesy of GENERAL MOTORS CORP.

13. Connect the appropriate pigtail adapter (2) to the SIR deployment harness (1).
14. Extend the SIR deployment harness and adapter to full length from the deployment fixture.
15. Connect the seat belt pretensioner connector to the adapter on the deployment harness.

IMPORTANT: When deploying a seat belt retractor pretensioner, the rapid expansion of gas is very loud. Notify the people in the

immediate area that a seat belt pretensioner will be deployed.

16. Clear the area of people.

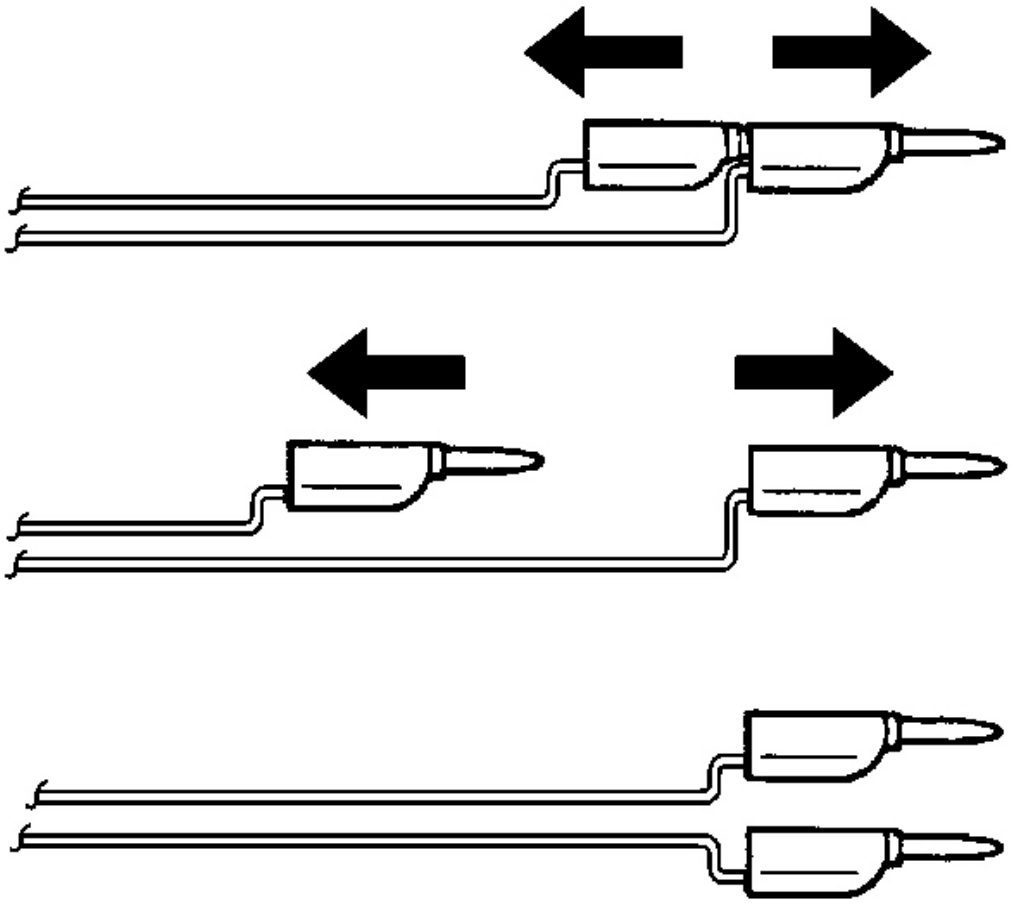


Fig. 123: View Of Banana Plugs
Courtesy of GENERAL MOTORS CORP.

17. Separate the 2 banana plugs on the SIR deployment harness.

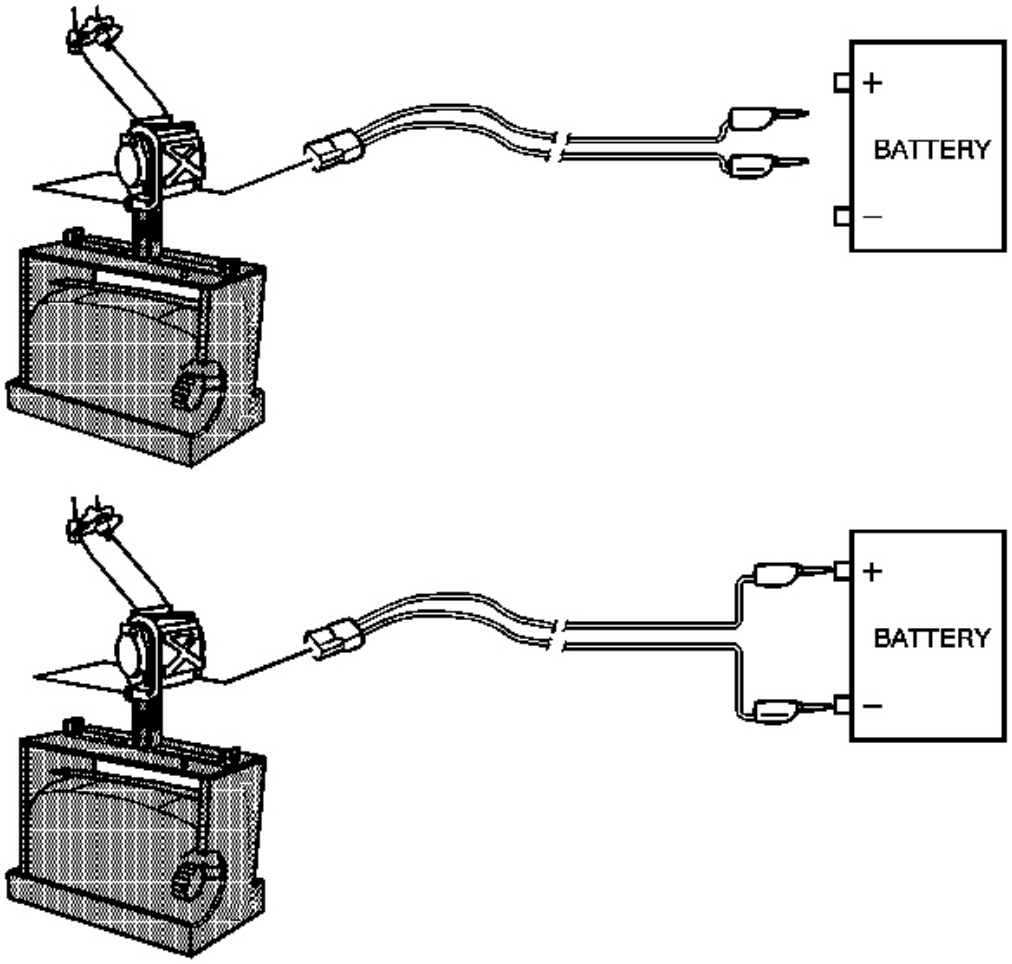


Fig. 124: View Of 12 Volt Power Source For Seat Belt Pretensioner
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: When the seat belt retractor pretensioner deploys, the deployment fixture may jump about 30 cm (1 ft) vertically. This is a normal reaction of the seat belt pretensioner due to the force of the rapid expansion of gas inside the pretensioner.

18. Place a 12 V minimum/2 A minimum power source, such as a vehicle battery, near the shorted end of the harness.

19. Connect the SIR deployment harness wires to the power source. Seat belt pretensioner deployment will occur when contact is made.
20. Disconnect the SIR deployment harness from the power source after the seat belt retractor pretensioner deploys.

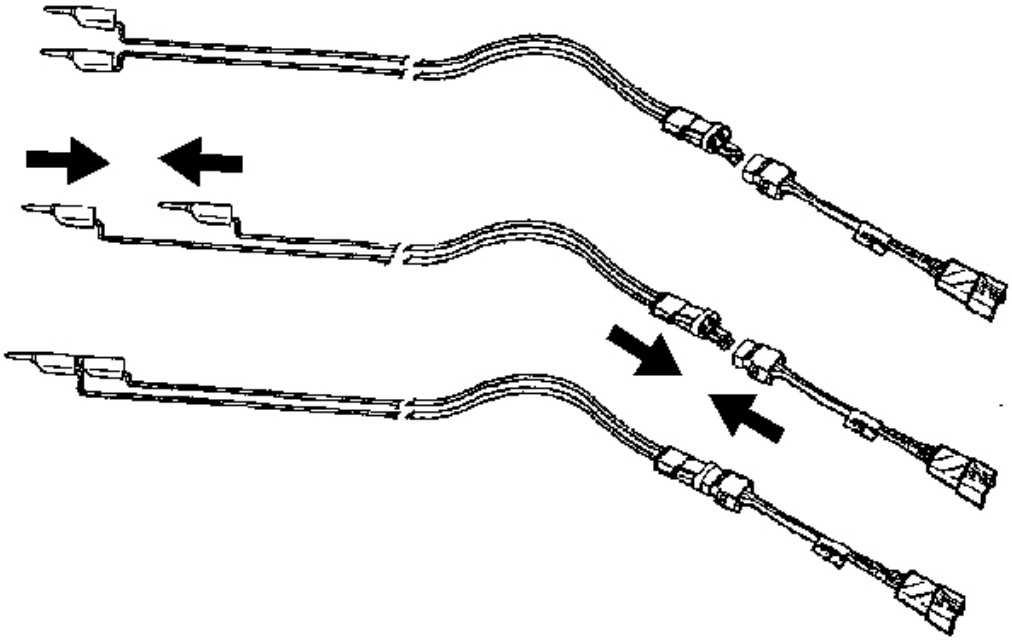


Fig. 125: View Of Deployment Harness Leads
Courtesy of GENERAL MOTORS CORP.

21. Seat one banana plug into the other in order to short the deployment harness leads.
22. If the seat belt retractor pretensioner did not deploy, disconnect the adapter and discontinue the procedure. Contact the Technical Assistance Group. Otherwise, proceed to the following steps.
23. Put on a pair of shop gloves.
24. Disconnect the pigtail adapter from the seat belt retractor pretensioner as soon as possible.
25. Dispose of the deployed seat belt retractor pretensioner through normal refuse channels.
26. Wash hands with a mild soap.

DESCRIPTION AND OPERATION

SIR SYSTEM DESCRIPTION AND OPERATION

SIR System Overview

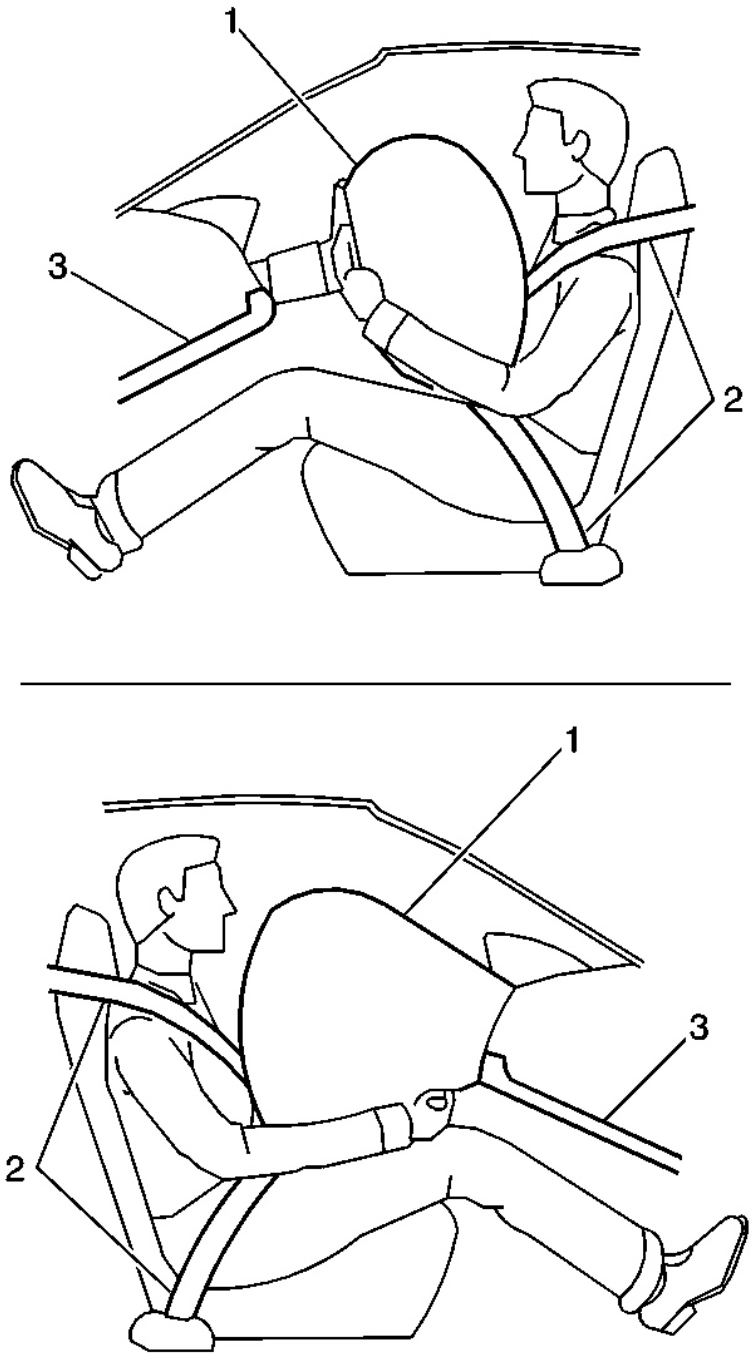


Fig. 126: Illustrating Deployed Inflatable Restraint
Courtesy of GENERAL MOTORS CORP.

The supplemental inflatable restraint (SIR) system supplements the protection offered by the

occupants Seat Belt System (2). The SIR system may contain several inflator modules located throughout the vehicle, i.e. steering wheel module (1), instrument panel (I/P) module (1) 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, it will process the information provided by the sensors to further support air bag or pretensioner deployment. The SDM will deploy the frontal air bags and pretensioners if it detects a collision of sufficient force. If the force of the impact is not sufficient to warrant inflator module deployment, the SDM may still deploy the seat belt pretensioners. 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.

Frontal SIR System Description

The frontal supplemental inflatable restraint (SIR) system consists of the following components:

- AIR BAG indicator located in the instrument panel cluster (IPC)
- Inflatable restraint sensing and diagnostic module (SDM)
- Inflatable restraint passenger presence system (PPS)
- Inflatable restraint Passenger AIR BAG ON/OFF indicator
- Inflatable restraint instrument panel (I/P) module
- Inflatable restraint steering wheel module
- Inflatable restraint steering wheel module coil
- Inflatable restraint seat belt retractor pretensioners
- Inflatable restraint wiring harnesses
- Steering wheel and column
- Driver and front passenger knee bolsters

A frontal collision of sufficient force will deploy the frontal air bags and/or pretensioners. The sensing and diagnostic module (SDM) contains a sensing device that converts vehicle velocity changes to an electrical signal. The SDM compares these signals to values stored in memory. If the signals exceed a stored value, the SDM will determine the severity of the impact and either cause current to flow through the frontal deployment loops deploying the frontal air bags and

pretensioners or it will deploy the pretensioners only. The SDM, I/P module, steering wheel module, steering wheel module coil, seat belt retractor pretensioners 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 supplemental inflatable restraint (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 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.

Inflatable Restraint Passenger Presence System

IMPORTANT: The passenger presence system (PPS), heated seat element (if equipped) and the seat bottom foam cushion is a calibrated unit and cannot be service separately. After repairing or replacing the PPS, the system must be rezeroed in order to function properly.

The PPS is used to monitor the weight of an occupant on the front outboard passenger seat and communicate the status to the sensing and diagnostic module (SDM) whether to enable or suppress the deployment of the instrument panel (I/P) inflator module. The PPS consist of an electronic control module, sensor mat, heated seat element (if equipped), wiring harness and PASSENGER AIR BAG ON/OFF indicators. The sensor is made up of several flexible conductive metal strips placed underneath the seat cushion trim. These sensor strips transmit and receive a low-level electric field. The weight of the occupant sitting in the front passenger seat is measured as a change in current flow within the sensor mat. If the sensor determines that the occupant weight is less than a specified value, the PPS module will send a suppress signal to the SDM to disable the I/P module. If the sensor determines the occupant weight is higher than a specified value, the PPS module will send an enable signal to the SDM to enable the I/P. The PPS module will notify the customer of the enable/disable status by turning on one of the

PASSENGER AIR BAG ON/OFF indicators located in the center of the instrument panel cluster (IPC). The PPS monitors itself for faults and will display flash diagnostic trouble codes (DTCs) when a fault is detected and the SDM commands it by using the PASSENGER AIR BAG ON/OFF indicators. The PPS will also notify the SDM of a fault and the SDM will request the IPC to turn the AIR BAG indicator located on the IPC ON. To determine what DTCs have been set by the PPS, the scan tool is used to command the SDM to request the PPS to flash the DTCs using the PASSENGER AIR BAG ON/OFF indicators located on the I/P.

Inflatable Restraint PASSENGER AIR BAG ON/OFF indicator

The PASSENGER AIR BAG ON/OFF indicators is used to notify the driver and passenger when the I/P and the right front air bag is enable or disable.

AIR BAG Indicator

The AIR BAG indicator, located in the instrument panel cluster (IPC) is used to notify the driver of SIR system malfunctions and to verify that the sensing and diagnostic module (SDM) is communicating with the IPC. When the ignition is turned ON, the SDM is supplied with ignition 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.

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 (I/P) 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 is 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.

Each dual stage inflator modules is equipped with a shorting bar located in the connectors of the module. The shorting bar shorts the inflator module deployment loop circuitry to prevent unwanted deployment of the air bag when it is disconnected.

Inflatable Restraint Seat Belt Retractor Pretensioners

The seat belt retractor pretensioners consist of a housing, a seat belt retractor, the seat belt webbing, an initiator and a canister of gas generating materials. The initiator is part of the seat belt pretensioner deployment loop. When the vehicle is involved in a collision of sufficient force, the sensing and diagnostic module (SDM) causes current to flow through the seat belt deployment loops to the initiator. Current passing through the initiator ignites the material in the canister producing a rapid generation of gas. The gas produced from this reaction deploys the seat belt pretensioners and retracts the seat belt webbing, which removes all of the slack in the seat belts. Depending on the severity of the collision, the seat belt pretensioners may deploy without the frontal inflator modules deploying or they will deploy immediately before the frontal inflator modules deploy. Each seat belt pretensioner is equipped with a shorting bar that is located in the connector of the seat belt pretensioner. The shorting bar shorts the seat belt pretensioner circuitry to prevent unwanted deployment of the seat belt pretensioner when the connector is disconnected.

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.

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 occupants 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.

Side SIR System Description

The side supplemental inflatable restraint (SIR) system 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 sensors (SIS)
- Inflatable restraint roof rail modules
- Inflatable restraint wiring harnesses

Inflatable Restraint Roof Rail Modules

The roof rail modules are located under the headliner extending from the front windshield pillar to the rear window pillar. The roof rail modules contain a housing, inflatable air bag, initiating device and a canister of gas generating material. The initiator is part of the roof rail module deployment loop. When a side impact of sufficient force occurs the SIS detects the impact and sends a signal to the sensing and diagnostic module (SDM). The SDM compares the signal received from the SIS to a value stored in memory. When the generated signal exceeds the stored value, the SDM will cause current to flow through the side deployment loop deploying the roof rail air bags. The SDM, roof rail modules and the connecting wires make up the side deployment loops. The SDM continuously monitors the deployment loops for malfunctions and turns the AIR BAG indicator ON if a fault is present.

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

Inflatable Restraint Side Impact Sensor (SIS)

The side impact sensor (SIS) contains a sensing device 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 sensing and

diagnostic module (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 roof rail module air bags.

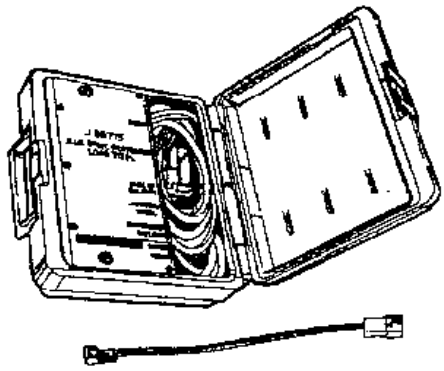
Inflatable Restraint Wiring Harness

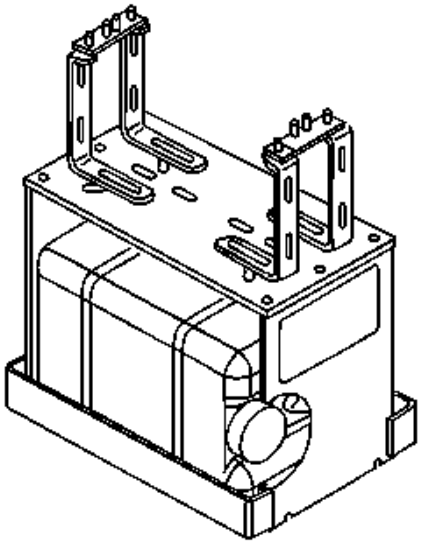
The inflatable restraint wiring harnesses connect the inflators modules, sensing and diagnostic module (SDM), deployment loops and class 2 serial data together using weather pack connectors. SIR system connectors are yellow in color for easy identification. When repairing the SIR wiring harnesses follow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

SPECIAL TOOLS AND EQUIPMENT

SPECIAL TOOLS

Special Tools

Illustration	Tool Number/Description
	J 38715-A Driver and Passenger SIR Load Tool
	J 38826 SIR Deployment Harness

	
	J 39401-B SIR Deployment Fixture
	J 42640 Steering Column Anti-rotation Pin