

RESTRAINTS

Supplemental Inflatable Restraints - Coupe & Wagon

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

Fastener Tightening Specifications

Application	Specification	
	Metric	English
Driver or Passenger Seat Belt Tensioner Assembly Fastener	45 N.m	33 lb ft
Driver or Passenger Seat Belt Tensioner Fastener	6 N.m	53 lb in
Front Seat Belt Tensioner Fastener	6 N.m	53 lb in
Inflatable Restraint Front End Sensor Mounting Bolt	11 N.m	97 lb in
Inflatable Restraint Front Seat Side Module Nut	9 N.m	80 lb in
Inflatable Restraint Sensing and Diagnostic Module Bolt	7 N.m	56 lb in
Inflatable Restraint Sensing and Diagnostic Module Nut	7 N.m	56 lb in
Inflatable Restraint Side Impact Sensor Assembly Bolt	9 N.m	80 lb in
Inflatable Restraint Side Impact Sensor Module Bolt	9 N.m	80 lb in
Steering Wheel Airbag Coil Bolt	3 N.m	27 lb in
Instrument Panel Inflatable Restraint Module Nuts	10 N.m	89 lb in
Roof Side Rail Inflatable Restraint Module Electrical Harness Bolt	9 N.m	80 lb in
Roof Side Rail Inflatable Restraint Module Integral Bolts	9 N.m	80 lb in
Seat Shoulder Belt Guide Fastener	47 N.m	35 lb ft
Seat Shoulder Belt Retractor Fastener	45 N.m	33 lb ft
Seat Belt Retractor Anchor Plate Nut	47 N.m	35 lb ft

SCHEMATIC WIRING DIAGRAMS

SIR WIRING SCHEMATICS

Power, Ground, Indicators and Passenger Presence System

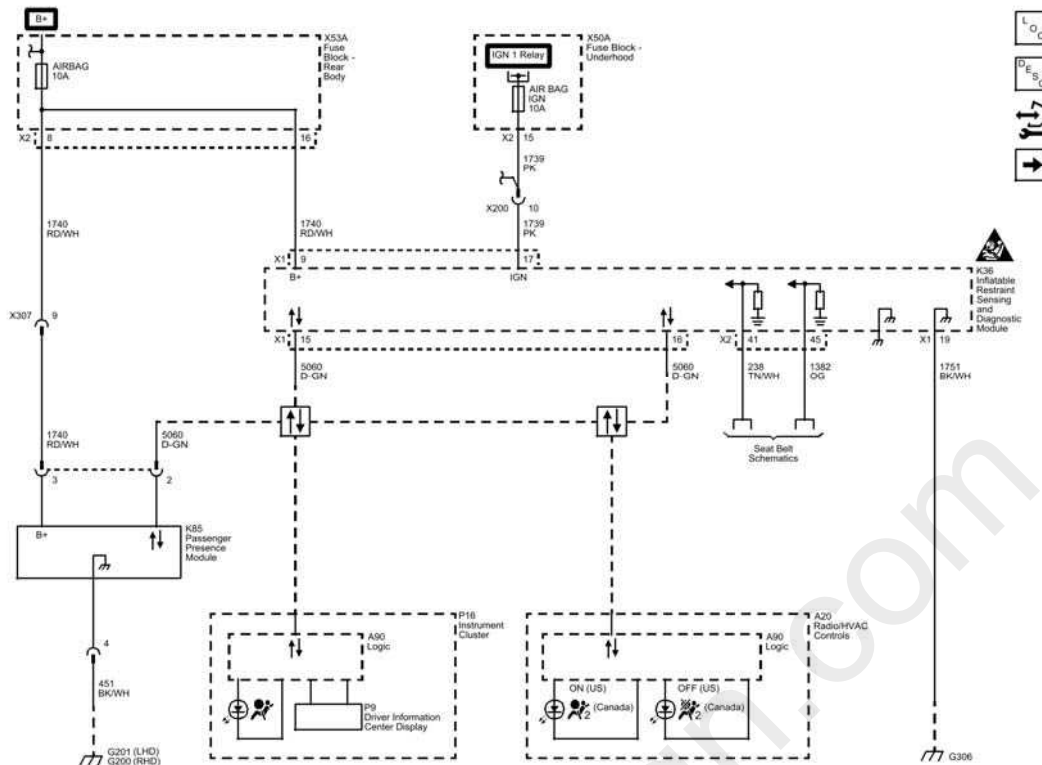


Fig. 1: Power, Ground, Indicators and Passenger Presence System
Courtesy of GENERAL MOTORS COMPANY

Front Air Bags, Front End Sensors, and Seat Belt Pretensioners

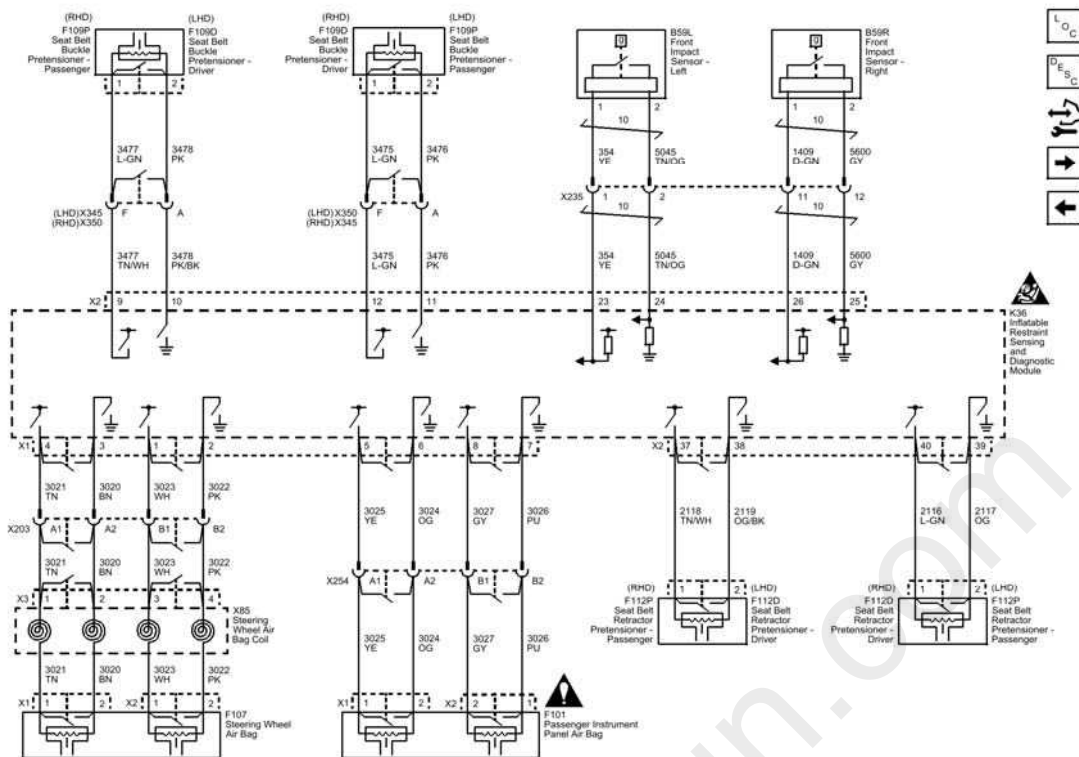


Fig. 2: Front Air Bags, Front End Sensors, and Seat Belt Pretensioners
Courtesy of GENERAL MOTORS COMPANY

Roof Rail Modules and Side Impact Sensors

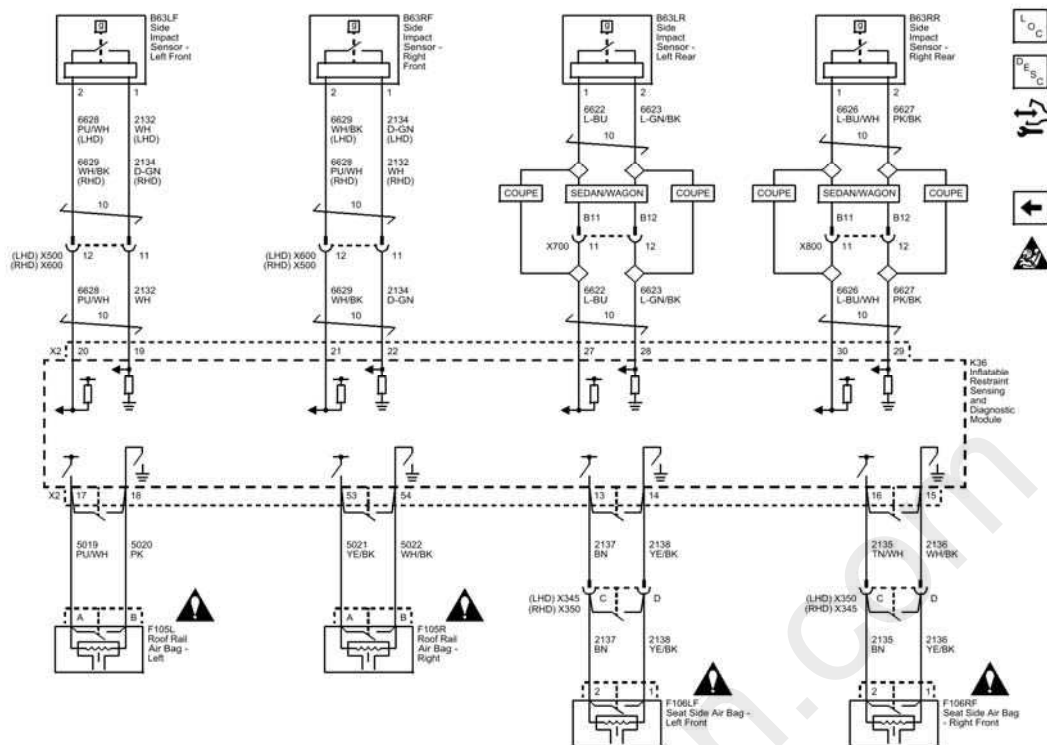


Fig. 3: Roof Rail Modules and Side Impact Sensors
 Courtesy of GENERAL MOTORS COMPANY

COMPONENT LOCATOR

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**.

Cadillac CTS

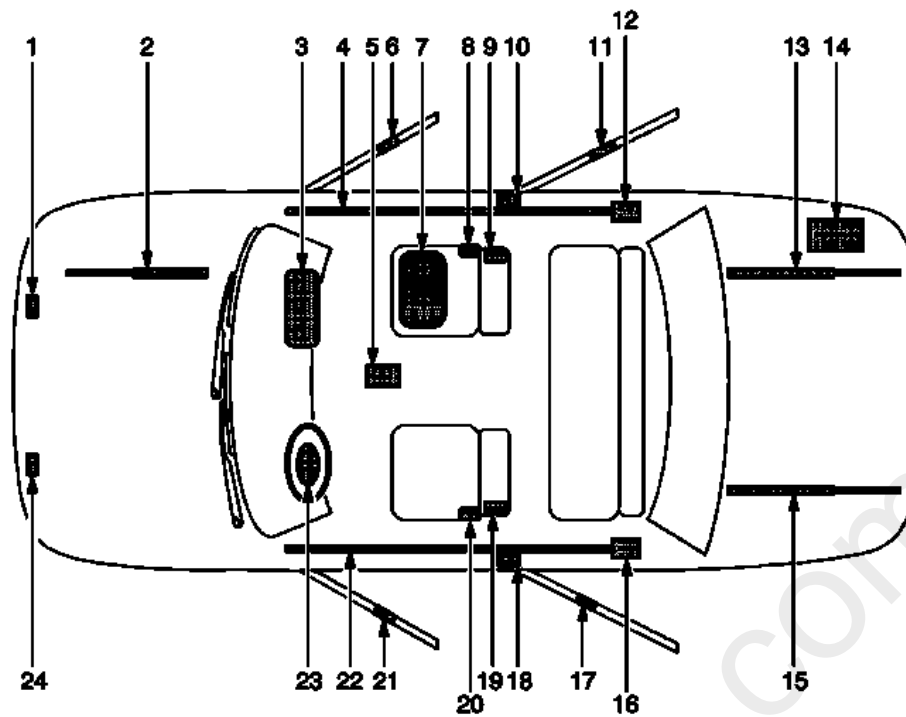


Fig. 4: Cadillac CTS SIR Identification Views
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Right Front Impact Sensor-Located on the front of the vehicle in the engine compartment
2	Front Hood Assist Rod-A gas shock located under the front hood on the passenger side
3	Passenger Instrument Panel Air Bag-Located at the top right under the instrument panel
4	Right Roof Rail Air Bag-Located under the headliner, extending from the passenger front windshield pillar to the passenger rear windshield pillar
5	Inflatable Restraint Sensing and Diagnostic Module (SDM)-Located underneath the vehicle carpet under the center console
6	Right Front Side Impact Sensor-Located inside front passenger door
7	Passenger Presence System-Located under the front passenger seat trim cover
8	Passenger Seat Belt Anchor Tensioner-Located on the outboard side of the passenger seat
9	Right Front Side Impact Air Bag-Located on the seat back of passenger seat
10	Passenger Seat Belt Retractor Pretensioner-Located under the trim near the bottom of the center pillar
11	Right Rear Side Impact Sensor-Located inside rear passenger door
12	Inflator Module for Right Roof Rail Air Bag-Located on the passengers side behind the garnish molding on the upper rear pillar

13	Rear Compartment Lid Assist Rod-A gas shock is located under the rear trunk lid on the passenger side
14	Vehicle Battery-Located inside rear compartment on the passenger side behind the trim
15	Rear Compartment Lid Assist Rod-A gas shock is located under the rear trunk lid on the driver side
16	Inflator Module for Left Roof Rail Air Bag-Located on the driver side behind the garnish molding on the upper rear pillar
17	Left Rear Side Impact Sensor-Located inside rear passenger door
18	Driver Seat Belt Retractor Pretensioner-Located under the trim near the bottom of the center pillar
19	Left Front Side Impact Air Bag-Located on the seat back of driver seat
20	Driver Seat Belt Anchor Tensioner-Located on the outboard side of the driver seat
21	Left front Side Impact Sensor-Located inside driver door
22	Left Roof Rail Air Bag-Located under the headliner, extending from the driver front windshield pillar to the driver rear windshield pillar
23	Driver Steering Wheel Air Bag-Located on the steering wheel
24	Left Front Impact Sensor-Located on the front of the vehicle in the engine compartment

DIAGNOSTIC INFORMATION AND PROCEDURES

DIAGNOSTIC CODE INDEX

DIAGNOSTIC CODE INDEX

DTC	Description
<u>DTC B0012 or B0013</u>	DTC B0012 01 Driver Steering Wheel Air Bag Deployment Loop Stage 1 Short to Battery
	DTC B0012 02 Driver Steering Wheel Air Bag Deployment Loop Stage 1 Short to Ground
	DTC B0012 04 Driver Steering Wheel Air Bag Deployment Loop Stage 1 Open Circuit
	DTC B0012 0D Driver Steering Wheel Air Bag Deployment Loop Stage 1 Resistance Above Threshold
	DTC B0012 0E Driver Steering Wheel Air Bag Deployment Loop Stage 1 Resistance Below Threshold
	DTC B0013 01 Driver Steering Wheel Air Bag Deployment Loop Stage 2 Short to Battery
	DTC B0013 02 Driver Steering Wheel Air Bag Deployment Loop Stage 2 Short to Ground
	DTC B0013 04 Driver Steering Wheel Air Bag Deployment Loop Stage 2 Open Circuit
	DTC B0013 0D Driver Steering Wheel Air Bag Deployment Loop Stage 2 Resistance Above Threshold
	DTC B0013 0E Driver Steering Wheel Air Bag Deployment Loop Stage 2

	Resistance Below Threshold
<u>DTC B0014-B0045</u>	DTC B0014 01 Driver Seat Side Air Bag Deployment Loop Short to Battery DTC B0014 02 Driver Seat Side Air Bag Deployment Loop Short to Ground DTC B0014 04 Driver Seat Side Air Bag Deployment Loop Open Circuit DTC B0014 0D Driver Seat Side Air Bag Deployment Loop Resistance Above Threshold DTC B0014 0E Driver Seat Side Air Bag Deployment Loop Resistance Below Threshold DTC B0015 01 Driver Seat Belt Retractor Pretensioner Deployment Loop Short to Battery DTC B0015 02 Driver Seat Belt Retractor Pretensioner Deployment Loop Short to Ground DTC B0015 04 Driver Seat Belt Retractor Pretensioner Deployment Loop Open Circuit DTC B0015 0D Driver Seat Belt Retractor Pretensioner Deployment Loop Resistance Above Threshold DTC B0015 0E Driver Seat Belt Retractor Pretensioner Deployment Loop Resistance Below Threshold DTC B0016 01 Left Roof Rail Air Bag Deployment Loop Stage 1 Short to Battery DTC B0016 02 Left Roof Rail Air Bag Deployment Loop Stage 1 Short to Ground DTC B0016 04 Left Roof Rail Air Bag Deployment Loop Stage 1 Open Circuit DTC B0016 0D Left Roof Rail Air Bag Deployment Loop Stage 1 Resistance Above Threshold DTC B0016 0E Left Roof Rail Air Bag Deployment Loop Stage 1 Resistance Below Threshold DTC B0019 01 Passenger Instrument Panel Air Bag Deployment Loop Stage 1 Short to Battery DTC B0019 02 Passenger Instrument Panel Air Bag Deployment Loop Stage 1 Short to Ground DTC B0019 04 Passenger Instrument Panel Air Bag Deployment Loop Stage 1 Open Circuit DTC B0019 0D Passenger Instrument Panel Air Bag Deployment Loop Stage 1 Resistance Above Threshold DTC B0019 0E Passenger Instrument Panel Air Bag Deployment Loop Stage 1 Resistance Below Threshold DTC B0020 01 Passenger Instrument Panel Air Bag Deployment Loop Stage 2 Short to Battery DTC B0020 02 Passenger Instrument Panel Air Bag Deployment Loop Stage 2 Short to Ground DTC B0020 04 Passenger Instrument Panel Air Bag Deployment Loop Stage 2 Open Circuit DTC B0020 0D Passenger Instrument Panel Air Bag Deployment Loop Stage 2 Resistance Above Threshold DTC B0020 0E Passenger Instrument Panel Air Bag Deployment Loop Stage 2 Resistance Below Threshold

	DTC B0021 01 Passenger Seat Side Air Bag Deployment Loop Short to Battery DTC B0021 02 Passenger Seat Side Air Bag Deployment Loop Short to Ground DTC B0021 04 Passenger Seat Side Air Bag Deployment Loop Open Circuit DTC B0021 0D Passenger Seat Side Air Bag Deployment Loop Resistance Above Threshold DTC B0021 0E Passenger Seat Side Air Bag Deployment Loop Resistance Below Threshold DTC B0022 01 Passenger Seat Belt Retractor Pretensioner Deployment Loop Short to Battery DTC B0022 02 Passenger Seat Belt Retractor Pretensioner Deployment Loop Short to Ground DTC B0022 04 Passenger Seat Belt Retractor Pretensioner Deployment Loop Open Circuit DTC B0022 0D Passenger Seat Belt Retractor Pretensioner Deployment Loop Resistance Above Threshold DTC B0022 0E Passenger Seat Belt Retractor Pretensioner Deployment Loop Resistance Below Threshold DTC B0023 01 Right Roof Rail Air Bag Deployment Loop Stage 1 Short to Battery DTC B0023 02 Right Roof Rail Air Bag Deployment Loop Stage 1 Short to Ground DTC B0023 04 Right Roof Rail Air Bag Deployment Loop Stage 1 Open Circuit DTC B0023 0D Right Roof Rail Air Bag Deployment Loop Stage 1 Resistance Above Threshold DTC B0023 0E Right Roof Rail Air Bag Deployment Loop Stage 1 Resistance Below Threshold
<u>DTC B001A or B001B</u>	DTC B001A 01 Driver Seat Belt Anchor Pretensioner Deployment Loop Short to Battery DTC B001A 02 Driver Seat Belt Anchor Pretensioner Deployment Loop Short to Ground DTC B001A 04 Driver Seat Belt Anchor Pretensioner Deployment Loop Open DTC B001A 0D Driver Seat Belt Anchor Pretensioner Deployment Loop High Resistance DTC B001A 0E Driver Seat Belt Anchor Pretensioner Deployment Loop Low Resistance DTC B001B 01 Passenger Seat Belt Anchor Pretensioner Deployment Loop Short to Battery DTC B001B 02 Passenger Seat Belt Anchor Pretensioner Deployment Loop Short to Ground DTC B001B 04 Passenger Seat Belt Anchor Pretensioner Deployment Loop Open DTC B001B 0D Passenger Seat Belt Anchor Pretensioner Deployment Loop High Resistance DTC B001B 0E Passenger Seat Belt Anchor Pretensioner Deployment Loop Low Resistance

<u>DTC B0052</u>	DTC B0052 00 Deployment Commanded DTC B0052 56 Deployment Commanded Too Many Transitions
<u>DTC B0056-B0058</u>	DTC B0056 00 Passenger Frontal Air Bag Suppressed DTC B0057 00 Passenger Side Air Bag Suppressed DTC B0058 00 Passenger Pretensioner Suppressed
<u>DTC B0074</u>	DTC B0074 00 Passenger Presence Sensor DTC B0074 0D Passenger Presence Sensor Circuit Resistance Above Threshold DTC B0074 0E Passenger Presence Sensor Circuit Resistance Below Threshold DTC B0074 0F Passenger Presence Sensor Circuit Erratic (Wet Seat)
<u>DTC B0079</u>	DTC B0079 01 Driver Seat Position Sensor Circuit Short to Battery DTC B0079 02 Driver Seat Position Sensor Circuit Short to Ground DTC B0079 04 Driver Seat Position Sensor Circuit Open DTC B0079 06 Driver Seat Position Sensor Circuit Short to Ground or Open Circuit DTC B0079 08 Driver Seat Position Sensor Circuit Signal Invalid
<u>DTC B0080</u>	DTC B0080 01 Passenger Seat Position Sensor Circuit Short to Battery DTC B0080 02 Passenger Seat Position Sensor Circuit Short to Ground DTC B0080 04 Passenger Seat Position Sensor Circuit Open DTC B0080 06 Passenger Seat Position Sensor Circuit Short to Ground or Open Circuit DTC B0080 08 Passenger Seat Position Sensor Circuit Signal Invalid
<u>DTC B0081</u>	DTC B0081 00 Passenger Presence Module Malfunction (sets in the Inflatable Restraint Sensing and Diagnostic Module) DTC B0081 11 Passenger Presence Module Above Threshold (Build Check Failure) (sets in the Passenger Presence Module) DTC B0081 3A Passenger Presence Module Incorrect Component Installed (sets in the Inflatable Restraint Sensing and Diagnostic Module) DTC B0081 4B Passenger Presence Module Calibration Not Learned (sets in the Passenger Presence Module) DTC B0081 5A Passenger Presence Module Plausibility Failure (sets in the Passenger Presence Module)
<u>DTC B0083-B0088</u>	DTC B0083 00 Left Front Impact Sensor DTC B0083 0F Left Front Impact Sensor Erratic DTC B0083 39 Left Front Impact Sensor Internal Electronic Failure DTC B0083 3A Left Front Impact Sensor Incorrect Component Installed DTC B0084 00 Right Front Impact Sensor DTC B0084 0F Right Front Impact Sensor Erratic DTC B0084 39 Right Front Impact Sensor Internal Electronic Failure DTC B0084 3A Right Front Impact Sensor Incorrect Component Installed 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 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 B0087 00 Left Rear Side Impact Sensor DTC B0087 0F Left Rear Side Impact Sensor Erratic DTC B0087 39 Left Rear Side Impact Sensor Internal Electronic Failure DTC B0087 3A Left Rear Side Impact Sensor Incorrect Component Installed DTC B0088 00 Right Rear Side Impact Sensor DTC B0088 0F Right Rear Side Impact Sensor Erratic DTC B0088 39 Right Rear Side Impact Sensor Internal Electronic Failure DTC B0088 3A Right Rear Side Impact Sensor Incorrect Component Installed
<u>DTC B1001 (PPS)</u>	DTC B1001 00 Option Configuration Error
<u>DTC B1001 (SDM)</u>	DTC B1001 00 SDM Option Configuration Error
<u>DTC B1019</u>	DTC B1019 00 SIR System Configuration Error DTC B1019 3A SIR System Configuration Error Incorrect Component Installed
<u>DTC B1370</u>	DTC B1370 06 Device Ignition 1 Circuit Short to Ground or Open

DTC B0012 OR B0013: DRIVER STEERING WHEEL AIR BAG DEPLOYMENT LOOP

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 Steering Wheel Air Bag Deployment Loop Stage 1 Short to Battery

DTC B0012 02

Driver Steering Wheel Air Bag Deployment Loop Stage 1 Short to Ground

DTC B0012 04

Driver Steering Wheel Air Bag Deployment Loop Stage 1 Open Circuit

DTC B0012 0D

Driver Steering Wheel Air Bag Deployment Loop Stage 1 Resistance Above Threshold

DTC B0012 0E

Driver Steering Wheel Air Bag Deployment Loop Stage 1 Resistance Below Threshold

DTC B0013 01

Driver Steering Wheel Air Bag Deployment Loop Stage 2 Short to Battery

DTC B0013 02

Driver Steering Wheel Air Bag Deployment Loop Stage 2 Short to Ground

DTC B0013 04

Driver Steering Wheel Air Bag Deployment Loop Stage 2 Open Circuit

DTC B0013 0D

Driver Steering Wheel Air Bag Deployment Loop Stage 2 Resistance Above Threshold

DTC B0013 0E

Driver Steering Wheel Air Bag Deployment Loop Stage 2 Resistance Below Threshold

Diagnostic Fault Information

Circuit	Short to Ground	Low Resistance	High Resistance	Open	Short to Voltage
Driver Steering Wheel Air Bag Stage 1 High Circuit	B0012 02	B0012 0E	B0012 0D	B0012 04	B0012 01
Driver Steering Wheel Air Bag Stage 1 Low Reference	B0012 02	B0012 0E	B0012 0D	B0012 04	B0012 01
Driver Steering Wheel Air Bag Stage 2 High Circuit	B0013 02	B0013 0E	B0013 0D	B0013 04	B0013 01
Driver Steering Wheel Air Bag Stage 2 Low Reference	B0013 02	B0013 0E	B0013 0D	B0013 04	B0013 01

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 driver steering wheel air bag. 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 driver steering wheel module coil connector which will short together both driver steering wheel air bag stage 1 high circuit and driver steering wheel air bag stage 1 low circuit and both driver steering wheel air bag stage 2 high circuit and driver steering wheel air bag stage 2 low circuit when the connector is disconnected. This will help to prevent unwanted deployment of the air bag 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 driver steering wheel air bag high and/or low circuit is shorted to voltage for 120 milliseconds.

B0012 02 Stage 1 or B0013 02 Stage 2

The driver steering wheel air bag high and/or low circuit is shorted to ground for 120 milliseconds.

B0012 04 Stage 1 or B0013 04 Stage 2

The driver steering wheel air bag high and/or low circuit is open for 120 milliseconds.

B0012 0D Stage 1 or B0013 0D Stage 2

The driver steering wheel air bag deployment loop resistance is greater than 5.1 ohms for 120 milliseconds.

B0012 0E Stage 1 or B0013 0E Stage 2

The driver steering wheel air bag deployment loop resistance is less than 1.3 ohms for 120 milliseconds.

Action Taken When the DTC Sets

- The SDM request the instrument panel cluster (IPC) to illuminate the AIR BAG indicator ON.
- The SIR system is disabled and no deployments are allowed.
- The SDM will store a DTC, however if an event occurs the system will still attempt deployments.

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.

Reference Information

Schematic Reference

SIR Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX - COUPE AND WAGON

Description and Operation

Supplemental Inflatable Restraint System Description and Operation

Electrical Information Reference

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

Scan Tool Reference

Control Module References for scan tool information

Special Tools

- **J 38715-A** SIR Driver/Passenger Load Tool
- **SA9409Z-A** SIR Driver/Passenger Load Tool

Circuit/System Testing

NOTE:

- Refer to SIR Service Precautions.
- When removing the connectors inspect for damage or corrosion. Damage or corrosion to the following requires repair or replacement of the affected component/connector:
 - Driver steering wheel air bag
 - SDM
 - Driver steering wheel air bag wiring harness connector
 - SDM wiring harness connector

If the appropriate load tool adaptor can not be located, use two 3A fused jumper wires with appropriate test probe terminals to connect the harness connector to the load tool test tool.

NOTE:

The connector and connector position assurance (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.

1. Verify that the driver steering wheel air bag connector and CPA are engaged.
 - If the CPA or connector is not properly engaged, make the appropriate repair.
2. Ignition OFF, disconnect the harness connector at the driver steering wheel air bag.

3. With the appropriate load tool adaptor, connect **J 38715-A** SIR driver/passenger load tool or **SA9409Z-A** SIR driver/passenger load tool in place of the driver steering wheel air bag.
4. Ignition ON, verify the DTC is set as current.
 - If the DTC is not set or is set as history, cycle ignition OFF, disconnect the adapter and **J 38715-A** SIR driver/passenger load tool or **SA9409Z-A** SIR driver/passenger load tool , reconnect the harness connector at the driver steering wheel air bag, and cycle the ignition ON. If the DTC resets after reconnecting the module, replace the driver steering wheel air bag.
5. Ignition OFF, disconnect **J 38715-A** SIR driver/passenger load tool or **SA9409Z-A** SIR driver/passenger load tool and the adaptor.
6. Disconnect the harness connector at the steering wheel module coil.
7. With the appropriate adaptor, connect **J 38715-A** SIR driver/passenger load tool or **SA9409Z-A** SIR driver/passenger load tool.
8. Ignition ON, verify the DTC is set as current.
 - If the DTC is not set or is set as history, replace the steering wheel module coil.
9. Ignition OFF, disconnect **J 38715-A** SIR driver/passenger load tool or **SA9409Z-A** SIR driver/passenger load tool and the adaptor.
10. Ignition ON, test for less than 1 volt between the appropriate high control circuit terminal and ground.
 - Stage 1 terminal 1
 - Stage 2 terminal 3
 - If greater than the specified range, test the control circuit for a short to voltage.
11. Test for less than 1 volt between the appropriate low control circuit terminal and ground.
 - Stage 1 terminal 2
 - Stage 2 terminal 4
 - If greater than the specified range, test the control circuit for a short to voltage.
12. Ignition OFF, test for infinite resistance between the appropriate high control circuit terminal and ground.
 - Stage 1 terminal 1
 - Stage 2 terminal 3
 - If not the specified value, test the control circuit for a short to ground.
13. Test for infinite resistance between the appropriate low control circuit terminal and ground.
 - Stage 1 terminal 2
 - Stage 2 terminal 4
 - If not the specified value, test the control circuit for a short to ground.
14. Disconnect the harness connector at the SDM.
15. Test for less then 1 ohm between the following high control circuit terminals.
 - Steering wheel module coil connector Stage 1 terminal 1 X3 and SDM terminal 9
 - Steering wheel module coil connector Stage 2 terminal 3 X3 and SDM terminal 5
 - If not within the specified range, test the control circuit for an open/high resistance.
16. Test for less then 1 ohm between the following low control circuit terminals.
 - Steering wheel module coil connector Stage 1 terminal 2 X3 and SDM terminal 8

- Steering wheel module coil connector Stage 2 terminal 4 X3 and SDM terminal 4
 - If not within the specified range, test the circuit for an open/high resistance.
17. If all circuits test normal, replace the SDM.

Repair Instructions

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

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

DTC B0014-B0045: AIR BAG DEPLOYMENT LOOP

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 B0014 01

Driver Seat Side Air Bag Deployment Loop Short to Battery

DTC B0014 02

Driver Seat Side Air Bag Deployment Loop Short to Ground

DTC B0014 04

Driver Seat Side Air Bag Deployment Loop Open Circuit

DTC B0014 0D

Driver Seat Side Air Bag Deployment Loop Resistance Above Threshold

DTC B0014 0E

Driver Seat Side Air Bag Deployment Loop Resistance Below Threshold

DTC B0015 01

Driver Seat Belt Retractor Pretensioner Deployment Loop Short to Battery

DTC B0015 02

Driver Seat Belt Retractor Pretensioner Deployment Loop Short to Ground

DTC B0015 04

Driver Seat Belt Retractor Pretensioner Deployment Loop Open Circuit

DTC B0015 0D

Driver Seat Belt Retractor Pretensioner Deployment Loop Resistance Above Threshold

DTC B0015 0E

Driver Seat Belt Retractor Pretensioner Deployment Loop Resistance Below Threshold

DTC B0016 01

Left Roof Rail Air Bag Deployment Loop Stage 1 Short to Battery

DTC B0016 02

Left Roof Rail Air Bag Deployment Loop Stage 1 Short to Ground

DTC B0016 04

Left Roof Rail Air Bag Deployment Loop Stage 1 Open Circuit

DTC B0016 0D

Left Roof Rail Air Bag Deployment Loop Stage 1 Resistance Above Threshold

DTC B0016 0E

Left Roof Rail Air Bag Deployment Loop Stage 1 Resistance Below Threshold

DTC B0019 01

Passenger Instrument Panel Air Bag Deployment Loop Stage 1 Short to Battery

DTC B0019 02

Passenger Instrument Panel Air Bag Deployment Loop Stage 1 Short to Ground

DTC B0019 04

Passenger Instrument Panel Air Bag Deployment Loop Stage 1 Open Circuit

DTC B0019 0D

Passenger Instrument Panel Air Bag Deployment Loop Stage 1 Resistance Above Threshold

DTC B0019 0E

Passenger Instrument Panel Air Bag Deployment Loop Stage 1 Resistance Below Threshold

DTC B0020 01

Passenger Instrument Panel Air Bag Deployment Loop Stage 2 Short to Battery

DTC B0020 02

Passenger Instrument Panel Air Bag Deployment Loop Stage 2 Short to Ground

DTC B0020 04

Passenger Instrument Panel Air Bag Deployment Loop Stage 2 Open Circuit

DTC B0020 0D

Passenger Instrument Panel Air Bag Deployment Loop Stage 2 Resistance Above Threshold

DTC B0020 0E

Passenger Instrument Panel Air Bag Deployment Loop Stage 2 Resistance Below Threshold

DTC B0021 01

Passenger Seat Side Air Bag Deployment Loop Short to Battery

DTC B0021 02

Passenger Seat Side Air Bag Deployment Loop Short to Ground

DTC B0021 04

Passenger Seat Side Air Bag Deployment Loop Open Circuit

DTC B0021 0D

Passenger Seat Side Air Bag Deployment Loop Resistance Above Threshold

DTC B0021 0E

Passenger Seat Side Air Bag Deployment Loop Resistance Below Threshold

DTC B0022 01

Passenger Seat Belt Retractor Pretensioner Deployment Loop Short to Battery

DTC B0022 02

Passenger Seat Belt Retractor Pretensioner Deployment Loop Short to Ground

DTC B0022 04

Passenger Seat Belt Retractor Pretensioner Deployment Loop Open Circuit

DTC B0022 0D

Passenger Seat Belt Retractor Pretensioner Deployment Loop Resistance Above Threshold

DTC B0022 0E

Passenger Seat Belt Retractor Pretensioner Deployment Loop Resistance Below Threshold

DTC B0023 01

Right Roof Rail Air Bag Deployment Loop Stage 1 Short to Battery

DTC B0023 02

Right Roof Rail Air Bag Deployment Loop Stage 1 Short to Ground

DTC B0023 04

Right Roof Rail Air Bag Deployment Loop Stage 1 Open Circuit

DTC B0023 0D

Right Roof Rail Air Bag Deployment Loop Stage 1 Resistance Above Threshold

DTC B0023 0E

Right Roof Rail Air Bag Deployment Loop Stage 1 Resistance Below Threshold

Diagnostic Fault Information

Circuit	Short to Ground	Low Resistance	High Resistance	Open	Short to Voltage
Driver Seat Side Air Bag Low Control	B0014 02	B0014 0E	B0014 0D	B0014 04	B0014 01
Driver Seat Side Air Bag High					

Control	B0014 02	B0014 0E	B0014 0D	B0014 04	B0014 01
Driver Seat Belt Retractor Pretensioner Low Control	B0015 02	B0015 0E	B0015 0D	B0015 04	B0015 01
Driver Seat Belt Retractor Pretensioner High Control	B0015 02	B0015 0E	B0015 0D	B0015 04	B0015 01
Left Roof Rail Air Bag Low Control	B0016 02	B0016 0E	B0016 0D	B0016 04	B0016 01
Left Roof Rail Air Bag High Control	B0016 02	B0016 0E	B0016 0D	B0016 04	B0016 01
Passenger Instrument Panel Air Bag Stage 1 Low Control	B0019 02	B0019 0E	B0019 0D	B0019 04	B0019 01
Passenger Instrument Panel Air Bag Stage 1 High Control	B0019 02	B0019 0E	B0019 0D	B0019 04	B0019 01
Passenger Instrument Panel Air Bag Stage 2 Low Control	B0020 02	B0020 0E	B0020 0D	B0020 04	B0020 01
Passenger Instrument Panel Air Bag Stage 2 High Control	B0020 02	B0020 0E	B0020 0D	B0020 04	B0020 01
Passenger Seat Side Air Bag Low Control	B0021 02	B0021 0E	B0021 0D	B0021 04	B0021 01
Passenger Seat Side Air Bag High Control	B0021 02	B0021 0E	B0021 0D	B0021 04	B0021 01
Passenger Seat Belt Retractor Pretensioner Low Control	B0022 02	B0022 0E	B0022 0D	B0022 04	B0022 01
Passenger Seat Belt Retractor Pretensioner High Control	B0022 02	B0022 0E	B0022 0D	B0022 04	B0022 01
Right Roof Rail Air Bag Low Control	B0023 02	B0023 0E	B0023 0D	B0023 04	B0023 01
Right Roof Rail Air Bag - High Control	B0023 02	B0023 0E	B0023 0D	B0023 04	B0023 01

Circuit/System Description

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 an air bag or pretensioner. There are 2 shorting bars used within the connector which will short together both high and low circuits, when the connector is disconnected. This will help to prevent unwanted deployment of the air bag or pretensioner during servicing.

Conditions for Running the DTC

Ignition voltage is between 9-16 V.

Conditions for Setting the DTC

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

The high and/or low circuit is shorted to voltage for 120 milliseconds.

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

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

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

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

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

The air bag or pretensioner deployment loop resistance is greater than 3.9 ohms for 120 milliseconds.

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

The air bag or pretensioner deployment loop resistance is less than 1.1 ohms for 120 milliseconds.

Action Taken When the DTC Sets

- The SDM requests the instrument panel cluster (IPC) to illuminate the AIR BAG indicator ON.
- The SDM will store a DTC, however if an event occurs the system will still attempt deployments.

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.

Reference Information

Schematic Reference

SIR Schematics

Connector End View Reference

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Supplemental Inflatable Restraint System Description and Operation

Electrical Information Reference

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

- **Wiring Repairs**
- **Connector Repairs**

Scan Tool Reference

Control Module References for scan tool information

Special Tools

- **J 38715-A** SIR Driver/Passenger Load Tool
- **SA9409Z-A** SIR Driver/Passenger Load Tool

Circuit/System Testing

NOTE:

- Refer to **SIR Service Precautions**.
- When removing connectors inspect for damage or corrosion. Damage or corrosion to the following requires repair or replacement of the affected component/connector:
 - Seat belt retractor pretensioner
 - Air Bag
 - SDM
 - Seat belt retractor pretensioner wiring harness connector
 - Air bag wiring harness connector
 - SDM wiring harness connector

NOTE:

The connector and connector position assurance (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.

1. Verify that the appropriate air bag or pretensioner connector and the CPA are engaged.
 - If the connector or CPA is not properly engaged, make the appropriate repair.
2. Ignition OFF, disconnect the harness connector at the appropriate air bag or pretensioner.
3. With the appropriate load tool adaptor, connect **J 38715-A** SIR driver/passenger load tool in place of the air bag or pretensioner.
4. Ignition ON, with a scan tool, verify DTC is set as current.
 - If the DTC is not set or is set as history, cycle ignition OFF, disconnect the **J 38715-A** SIR driver/passenger load tool and the adapter, reconnect the harness connector at the air bag or pretensioner and cycle the ignition ON. If the DTC resets after reconnecting the module, replace the air bag or pretensioner.
5. Disconnect the harness connector at the SDM.
6. Ignition ON, test for less than 1 V between the appropriate high control circuit terminal and ground.

- Passenger instrument panel air bag Stage 1 terminal 1 X1
 - Passenger instrument panel air bag Stage 2 terminal 2 X2
 - Left roof rail air bag terminal A
 - Right roof rail air bag terminal A (RHD)
 - Right roof rail module terminal B
 - Driver seat side air bag terminal 2
 - Passenger seat side air bag terminal 2
 - Driver seat belt retractor pretensioner terminal 1
 - Passenger seat belt retractor pretensioner terminal 1
 - If greater than the specified range, test the control circuit for a short to voltage.
7. Test for less than 1 V between the appropriate low control circuit terminal and ground.
- Passenger instrument panel air bag Stage 1 terminal 2 X1
 - Passenger instrument panel air bag Stage 2 terminal 1 X2
 - Left roof rail air bag terminal B
 - Right roof rail air bag terminal A
 - Driver seat side air bag terminal 1
 - Passenger seat side air bag terminal 1
 - Driver seat belt retractor pretensioner terminal 2
 - Passenger seat belt retractor pretensioner terminal 2
 - If greater than the specified range, test the circuit control for a short to voltage.
8. Ignition OFF, test for infinite resistance between the appropriate high control circuit terminal and ground.
- Passenger instrument panel air bag Stage 1 terminal 1 X1
 - Passenger instrument panel air bag Stage 2 terminal 2 X2
 - Left roof rail air bag terminal A
 - Right roof rail air bag terminal A (RHD)
 - Right roof rail module terminal B
 - Driver seat side air bag terminal 2
 - Passenger seat side air bag terminal 2
 - Driver seat belt retractor pretensioner terminal 1
 - Passenger seat belt retractor pretensioner terminal 1
 - If not the specified value, test the control circuit for a short to ground.
9. Test for infinite resistance between the appropriate low control circuit terminal and ground.
- Passenger instrument panel air bag Stage 1 terminal 2 X1
 - Passenger instrument panel air bag Stage 2 terminal 1 X2
 - Left roof rail air bag terminal B
 - Right roof rail air bag terminal A
 - Driver seat side air bag terminal 1
 - Passenger seat side air bag terminal 1

- Driver seat belt retractor pretensioner terminal 2
 - Passenger seat belt retractor pretensioner terminal 2
 - If not the specified value, test the control circuit for a short to ground.
10. Test for less than 1 ohms between the following high control circuit terminals.
- Passenger instrument panel air bag Stage 1 terminal 1 X1 and SDM terminal 5
 - Passenger instrument panel air bag Stage 2 terminal 2 X2 and SDM terminal 8
 - Left roof rail air bag terminal A and SDM terminal 17 X2
 - Right roof rail air bag terminal A and SDM terminal 53 X2
 - Driver seat side air bag terminal 2 and SDM terminal 13 X2
 - Passenger seat side air bag terminal 2 and SDM terminal 16 X2
 - Driver seat belt retractor pretensioner terminal 1 and SDM terminal 9 X2
 - Passenger seat belt retractor pretensioner terminal 1 and SDM terminal 12 X2
 - If greater than the specified range, test the control circuit for an open/high resistance.
11. Test for less than 1 ohms between the following low control circuit terminals.
- Passenger instrument panel air bag Stage 1 terminal 2 X1 and SDM terminal 6
 - Passenger instrument panel air bag Stage 2 terminal 1 X2 and SDM terminal 7
 - Left roof rail air bag terminal B and SDM terminal 18 X2
 - Right roof rail air bag terminal B and SDM terminal 54 X2
 - Driver seat side air bag terminal 1 and SDM terminal 14 X2
 - Passenger seat side air bag terminal 1 and SDM terminal 15 X2
 - Driver seat belt retractor pretensioner terminal 2 and SDM terminal 10 X2
 - Passenger seat belt retractor pretensioner terminal 2 and SDM terminal 11 X2
 - If greater than the specified range, test the control circuit for an open/high resistance.
12. If all circuits test normal, replace the SDM.

Repair Instructions

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

- **Airbag Instrument Panel Module Replacement**
- **Airbag Roof Side Rail Module Replacement**
- **Seat Belt Retractor Pretensioner Replacement - Front (AQ9 and Coupe prior to VIN B0100175), Seat Belt Retractor Pretensioner Replacement - Front (W2E), Seat Belt Retractor Pretensioner Replacement - Front (AQ9 and Coupe)**
- **SIR/SRS Wiring Repairs**
- **Control Module References** for SDM replacement, setup, and programming

DTC B001A OR B001B: SEAT BELT ANCHOR PRETENSIONER DEPLOYMENT LOOP

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** provide an overview of each diagnostic category.

DTC Descriptors

DTC B001A 01

Driver Seat Belt Anchor Pretensioner Deployment Loop Short to Battery

DTC B001A 02

Driver Seat Belt Anchor Pretensioner Deployment Loop Short to Ground

DTC B001A 04

Driver Seat Belt Anchor Pretensioner Deployment Loop Open

DTC B001A 0D

Driver Seat Belt Anchor Pretensioner Deployment Loop High Resistance

DTC B001A 0E

Driver Seat Belt Anchor Pretensioner Deployment Loop Low Resistance

DTC B001B 01

Passenger Seat Belt Anchor Pretensioner Deployment Loop Short to Battery

DTC B001B 02

Passenger Seat Belt Anchor Pretensioner Deployment Loop Short to Ground

DTC B001B 04

Passenger Seat Belt Anchor Pretensioner Deployment Loop Open

DTC B001B 0D

Passenger Seat Belt Anchor Pretensioner Deployment Loop High Resistance

DTC B001B 0E

Passenger Seat Belt Anchor Pretensioner Deployment Loop Low Resistance

Diagnostic Fault Information

Circuit	Short to Ground	High Resistance	Open	Short to Voltage	Signal Performance
Driver Seat Belt Anchor Pretensioner Low Control	B001A 02, B001A 0E	B001A 0D	B001A 04	B001A 01	-
Driver Seat Belt Anchor Pretensioner High Control	B001A 02, B001A 0E	B001A 0D	B001A 04	B001A 01	-
Passenger Seat Belt Anchor Pretensioner Low Control	B001B 02, B001B 0E	B001B 0D	B001B 04	B001B 01	-
Passenger Seat Belt Anchor Pretensioner High Control	B001B 02, B001B 0E	B001B 0D	B001B 04	B001B 01	-

Circuit/System Description

During a side or frontal crash of sufficient force the inflatable restraint sensing and diagnostic module will allow current to flow through the deployment loop in order to deploy the appropriate seat belt anchor pretensioner. The inflatable restraint sensing and diagnostic module performs continuous diagnostic tests on the deployment loops to check for proper circuit continuity and for shorts to ground or voltage.

A shorting bar used within the seat belt anchor pretensioner connector will short together both seat belt anchor pretensioner high and low control circuits when the connector is disconnected, this will help to prevent unwanted deployment of the pretensioner during servicing.

Conditions for Running the DTC

Ignition voltage is between 9-16 V.

Conditions for Setting the DTC

B001A 01, B001B 01

The seat belt anchor pretensioner control circuit is shorted to voltage for 120 milliseconds.

B001A 02, B001B 02

The seat belt anchor pretensioner control circuit is shorted to ground for 120 milliseconds.

B001A 04, B001B 04

The seat belt anchor pretensioner control circuit is open for 120 milliseconds.

B001A 0D, B001B 0D

The seat belt anchor pretensioner deployment loop resistance is more than 4.2 ohms for 120 milliseconds.

B001A 0E, B001B 0E

The seat belt anchor pretensioner deployment loop resistance is less than 1.7 ohms for 120 milliseconds.

Action Taken When the DTC Sets

- The inflatable restraint sensing and diagnostic module requests the instrument cluster to illuminate the AIR BAG indicator.
- The inflatable restraint sensing and diagnostic module will store a DTC, however if an event occurs the system will still attempt deployments.

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 Aid

NOTE: The following diagnostic aids apply for both current and history DTCs.

An incorrectly installed CPA or incorrectly seated connector can cause a shorting bar to short both control circuits together. Check the connectors and CPAs if a DTC with symptom byte 02 or 0E is set, to ensure that the shorting bars are not causing the circuits to be shorted together. Shorting bars locations are listed below:

- Inline connectors - on the seat belt anchor pretensioner side of the harness connector
- Harness side of the inflatable restraint sensing and diagnostic module connector

Terminal fretting, an incorrectly installed CPA, or incorrectly seated connector can cause an open/high resistance condition. Check the circuit terminals for fretting, incorrectly installed CPAs, or incorrectly seated connectors if a DTC with symptom byte 04 or 0D is set.

If the seat belt anchor pretensioner has deployed under unexpected conditions and/or DTC with symptom byte 01 is set, check both control circuits for a short to voltage.

Reference Information

Schematic Reference

SIR Schematics

Connector End View Reference

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

Scan Tool Reference

Control Module References for scan tool information

Special Tools

EL-38125-580 Terminal Release Tool Kit

Circuit/System Verification

NOTE:

- Refer to **SIR Service Precautions**
- Inspect all terminals for damage or corrosion when disconnecting connectors. Damage or corrosion in the following requires repair or replacement of the affected component/connector.
 - Seat belt anchor pretensioner
 - Inflatable restraint sensing and diagnostic module
 - Seat belt anchor pretensioner wiring harness connector
 - Inflatable restraint sensing and diagnostic module wiring harness connector
- The connector and connector position assurance (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. Replace any CPA that is damaged or missing.
- If the condition is intermittent or cannot be duplicated, disconnect the connectors and add dielectric grease / lubricant (Nyogel 760G or equivalent, meeting GM specification 9986087). This procedure will correct the high resistance condition due to terminal fretting corrosion.

1. Verify the scan tool Deployment Loop Resistance 1 and 2 parameters stay consistently between 2.1 and 4.0 ohms without any spikes or dropouts while moving the harness near each connector listed below:
 - F113 Seat Belt Anchor Pretensioner
 - Any inline harness
 - K36 Inflatable Restraint Sensing and Diagnostic Module
 - **If less than 2.1 or greater than 4.0 ohms**

Refer to Circuit/System Testing.

- **If there are spikes or dropouts, perform the following**
- Inspect each connector terminal and harness for damage or corrosion and repair as necessary
- Apply dielectric grease / lubricant (Nyogel 760G or equivalent, meeting GM specification 9986087) to each connector terminal
- Insure each connector and CPA is correctly seated.
- **If within 2.1 and 4.0 ohms without any spikes or dropouts**

2. All OK

Circuit/System Testing

NOTE:

- Refer to **SIR Service Precautions.**
- **Inspect all terminals for damage or corrosion when disconnecting connectors. Damage or corrosion in the following requires repair or replacement of the affected component/connector.**
 - **Seat belt anchor pretensioner**
 - **Inflatable restraint sensing and diagnostic module**
 - **Seat belt anchor pretensioner wiring harness connector**
 - **Inflatable restraint sensing and diagnostic module wiring harness connector**
- **The connector and connector position assurance (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. Replace any CPA that is damaged or missing.**
- **If the condition is intermittent or cannot be duplicated, disconnect the connectors and add dielectric grease / lubricant (Nyogel 760G or equivalent, meeting GM specification 9986087). This procedure will correct the high resistance condition due to terminal fretting corrosion.**

1. Ignition OFF, disconnect the scan tool and then disconnect the harness connector at the appropriate F113 Seat Belt Anchor Pretensioner and then wait 120 seconds.
2. Test for greater than 25 ohms between the control circuit terminals listed below:
 - F113D Seat Belt Anchor pretensioner - Driver terminal 1 and 2
 - F113P Seat Belt Anchor pretensioner - Passenger terminal 1 and 2
 - **If 25 ohms or less**

1. Disconnect the harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.

NOTE:

Some connectors may be equipped with shorting bars as a safety component to prevent accidental inflator deployment. When testing on a connector with shorting bars, the shorting bars must be disabled to ensure accurate test results. Insert an appropriate pick from EL-38125-580 and depress the shorting bars above the

appropriate terminals. This will lift the shorting bar from the terminal and allow accurate test results. Take care not to damage the connector, shorting bar, or terminal when depressing the shorting bar.

2. Test for infinite resistance between the two control circuits.
 - If less than infinite resistance, repair the short between the two circuits.
 - If infinite resistance, replace the K36 Inflatable Restraint Sensing and Diagnostic Module.
 - **If greater than 25 ohms**
3. Ignition ON.
4. Test for less than 11 V between the control circuit terminals listed below and ground:
 - F113 Seat Belt Anchor Pretensioner control circuit terminal 1
 - F113 Seat Belt Anchor Pretensioner control circuit terminal 2
 - **If 11 V or greater**
 1. Ignition OFF, disconnect the harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module, ignition ON.
 2. Test for less than 1 V between the control circuit and ground.
 - If 1 V or greater, repair the short to voltage on the circuit.
 - If less than 1 V, replace the K36 Inflatable Restraint Sensing and Diagnostic Module.
 - **If less than 11 V**
5. Ignition OFF.
6. Test for greater than 25 ohms between the control circuit terminals listed below and ground:
 - F113 Seat Belt Anchor Pretensioner control circuit terminal 1
 - F113 Seat Belt Anchor Pretensioner control circuit terminal 2
 - **If 25 ohms or less**
 1. Disconnect the harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
 2. Test for infinite resistance between the control circuit and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 - If infinite resistance, replace the K36 Inflatable Restraint Sensing and Diagnostic Module.
 - **If greater than 25 ohms**
7. Ignition OFF, install a 3 A fused jumper wire between the control circuit terminals listed below, ignition ON:
 - F113D Seat Belt Anchor Pretensioner - Driver terminal 1 and 2
 - F113P Seat Belt Anchor Pretensioner - Passenger terminal 1 and 2
8. Verify the scan tool Deployment Loop Resistance parameter is less than 2 ohms.
 - **If 2 ohms or greater**
 1. Ignition OFF, disconnect the harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
 2. Test for less than 2 ohms in each control circuit end to end.

- If 2 ohms or greater, repair the open/high resistance in the circuit.
 - If less than 2 ohms, replace the K36 Inflatable Restraint Sensing and Diagnostic Module.
 - **If less than 2 ohms**
9. Ignition OFF, connect the harness connector at the F113 Seat Belt Anchor Pretensioner, press in the CPA (if equipped) until an audible and/or tactile click is heard.
 10. Ignition ON, clear DTCs. Operate the vehicle within the Conditions for Running the DTC.
 11. Verify DTC B001A or B001B is not set.
 - **If DTC B001A or B001B is set**

Replace the F113 Seat Belt Anchor Pretensioner.

 - **If DTC B001A or B001B is not set**
 12. All OK.

Repair Instructions

Perform the **Diagnostic Repair Verification** after completing the repair.

- **Front Seat Belt Anchor Plate Tensioner Replacement (AQ9), Front Seat Belt Anchor Plate Tensioner Replacement (W2E)**
- **SIR/SRS Wiring Repairs**
- **Control Module References** for inflatable restraint sensing and diagnostic module replacement, programming and setup

DTC B0052: DEPLOYMENT COMMANDED

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using the 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 00

Deployment Commanded

DTC B0052 56

Deployment Commanded Too Many Transitions

Circuit/System Description

The inflatable restraint sensing and diagnostic module (SDM) senses vehicle impacts and provides deployment

signals to the air bags and anchor and/or retractor pretensioners when warranted. The inflatable restraint sensing and diagnostic module sets DTC B0052 after each command for deployment. DTC B0052 will latch and not clear after 3 commanded deployments by the inflatable restraint sensing and diagnostic module. Therefore the inflatable restraint sensing and diagnostic module has to be replaced.

Conditions for Running the DTC

Ignition voltage is between 9-16 V.

Conditions for Setting the DTC

- The inflatable restraint sensing and diagnostic module detects a frontal impact of sufficient force to warrant deployment of the frontal air bags.
- The inflatable restraint sensing and diagnostic module detects a side impact or rollover (if equipped) of sufficient force to warrant deployment of a seat air bag and/or roof rail air bag.

Action Taken When the DTC Sets

The inflatable restraint sensing and diagnostic module requests the instrument cluster to illuminate the AIR BAG indicator.

Conditions for Clearing the DTC

- DTC B0052 00 is a DTC that may be cleared with a scan tool without replacing the inflatable restraint sensing and diagnostic module. This DTC will not clear if deployment has been commanded more than two times, and the inflatable restraint sensing and diagnostic module would have to be replaced.
- DTC B0052 56 is a latched DTC. The DTC cannot be cleared with the scan tool. Replacement of the inflatable restraint sensing and diagnostic module is required.

Reference Information

Schematic Reference

SIR Schematics

Connector End View Reference

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- **Connector Repairs**

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

1. Verify that DTC B0052 00 is not set.

- **If DTC B0052 00 is set**

Clear the DTC. If the DTC will not clear, replace the K36 Inflatable Restraint Sensing and Diagnostic Module.

- **If DTC B0052 00 is not set**

2. Verify that DTC B0052 56 is not set.

- **If DTC B0052 56 is set**

Replace the K36 Inflatable Restraint Sensing and Diagnostic Module.

- **If DTC B0052 56 is not set**

3. All OK.

Repair Instructions

Perform the **Diagnostic Repair Verification** after completing the repair.

Control Module References for inflatable restraint sensing and diagnostic module replacement, programming and setup

DTC B0056-B0058: AIR BAG/PRETENSIONER SUPPRESSED

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 B0056 00

Passenger Frontal Air Bag Suppressed

DTC B0057 00

Passenger Side Air Bag Suppressed

DTC B0058 00

Passenger Pretensioner 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 instrument panel air bag. When the PPS detects a fault within itself, then the PPS will communicate to the SDM through serial data communications that a PPS fault is present. The SDM will disable the deployment of the air bag or pretensioner 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 occupants weight is less than a specified value. The PPS module sent a disable signal to the SDM to disable the passenger instrument panel air bag.
- Empty front passenger seat
- A PPS fault was detected

Action Taken When the DTC Sets

- DTC B0056 and B0058 will only set if there is a child seated or the passenger seat is empty.
- DTC B0052, B0053, or B0055 will set along with this DTC.
- The SDM commands the AIR BAG indicator ON.

Conditions for Clearing the DTC

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

Reference Information

Schematic Reference

SIR Schematics

Connector End View Reference

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- **Connector Repairs**

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

1. Ignition OFF, verify that the vehicle does not show any signs of air bag or pretensioner deployment.
 - If the vehicle displays any signs of deployment, refer to **Repairs and Inspections Required After a Collision**.
2. Verify DTC B0052, B0053, or B0055 is not set.
 - If DTC is set, refer to **Diagnostic Trouble Code (DTC) List - Vehicle**.
3. Clear DTCs. Verify DTC B0056, B0057, or B0058 is not set.
 - If any of the DTCs are set, replace the SDM.

Repair Instructions

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

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

DTC B0074: PASSENGER PRESENCE SENSOR

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 B0074 00

Passenger Presence Sensor

DTC B0074 0D

Passenger Presence Sensor Circuit Resistance Above Threshold

DTC B0074 0E

Passenger Presence Sensor Circuit Resistance Below Threshold

DTC B0074 0F

Passenger Presence Sensor Circuit Erratic (Wet Seat)

Circuit/System Description

The passenger presence sensor continually monitors itself and if a fault in this circuit occurs, a DTC will set in the passenger presence module. When the inflatable restraint sensing and diagnostic module (SDM) detects this DTC within the passenger presence module, it will notify the customer of the enable/disable status by illuminating the OFF indicator on the PASSENGER AIR BAG ON/OFF indicators. Then the passenger presence module will communicate to the SDM through serial data communications that a PPS fault is present. The SDM will then disable the deployment of the passenger instrument panel air bag and then illuminate the AIR BAG warning indicator.

Conditions for Running the DTC

Ignition voltage is between 9-16 V.

Conditions for Setting the DTC

- The SDM has received a fault message from the passenger presence module.
- The passenger presence module detects a wet seat fault if DTC B0074 0F is set.

Action Taken When the DTC Sets

- The SDM disables the passenger instrument panel air bag deployment loop.
- The SDM will illuminate the OFF portion of the PASSENGER AIR BAG ON/OFF indicator.
- The SDM requests the instrument panel cluster (IPC) to illuminate the AIR BAG indicator.

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

- If either the SDM or PPS were replaced verify that the correct part numbers were used for the vehicle application.
- If this DTC is set as either current or history it may have been caused by an electronic device. If an electronic device (Computers, MP3 Players, Cell Phones, Diagnostic Scan Tool, Power Inverter, etc.) was placed on the passenger seat the passenger presence module may command the passenger air bag indicator to turn on and/or command the passenger seat belt indicator to turn on. Make sure there are no objects on the passenger seat and clear the DTCs. If this DTC resets then perform this diagnostic. If the DTC does not reset there is no further work needed on the passenger presence system.
- If this DTC is set as either current or history it may have been caused by an aftermarket seat heater. The aftermarket seat heater may command the passenger air bag indicator to turn on and/or command the passenger seat belt indicator to turn on. Remove the aftermarket seat heater from the passenger seat and clear the DTCs. If this DTC resets then perform this diagnostic. If the DTC does not reset there is no further work needed on the passenger presence system.

Reference Information

Schematic Reference

SIR Schematics

Connector End View Reference

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Testing

NOTE: The passenger presence system (PPS) is a calibrated unit. When replacing the assembly all parts in the service kit must remain together. Do not mix any of the old parts with the new parts. PPS comes in as part of a service kit which contains a seat foam, presence sensor and a electronic control unit (ECU) module (if applicable).

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

- **Passenger presence module**
- **Passenger presence sensor wiring harness**

1. Verify that no other passenger presence module DTCs are set.
 - If other passenger presence module DTCs are set, investigate those DTCs first.
2. Verify that DTC B0074 0F is not set.
 - If this DTC is set, verify there are no electronic devices on the passenger seat. If not, then verify the seat is dry by removing the trim from the seat bottom frame. IF the seat is wet, allow 24-48 hours dry time with trim completely off. If the DTC is history, do not replace the passenger presence module. Clear the passenger presence module codes.
3. Verify that DTC B0074 00, B0074 0D, or B0074 0E is not set.
 - If any of the DTCs are set then replace the passenger presence module.

Repair Instructions

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

Control Module References for passenger presence system replacement, programming and setup

DTC B0079: DRIVER SEAT POSITION SENSOR CIRCUIT

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 B0079 01

Driver Seat Position Sensor Circuit Short to Battery

DTC B0079 02

Driver Seat Position Sensor Circuit Short to Ground

DTC B0079 04

Driver Seat Position Sensor Circuit Open

DTC B0079 06

Driver Seat Position Sensor Circuit Short to Ground or Open Circuit

DTC B0079 08

Driver Seat Position Sensor Circuit Signal Invalid

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Driver Seat Position Sensor Signal	B0079 02, B0079 06	B0079 04, B0079 06	B0079 01	B0079 08
Driver Seat Position Sensor Low Reference	B0079 02, B0079 06	B0079 04, B0079 06	B0079 01	B0079 08
Passenger Seat Position Sensor Signal	B0080 02, B0080 06	B0080 04, B0080 06	B0080 01	B0080 08
Passenger Seat Position Sensor Low Reference	B0080 02, B0080 06	B0080 04, B0080 06	B0080 01	B0080 08

Circuit/System Description

The seat position sensor is used to determine the proximity of a front driver seat position with respect to the driver steering wheel air bag. The seat position sensor is a hall effect sensor that is mounted on the seat track of the front driver seat. The seat position sensor is connected to the sensing and diagnostic module (SDM) with a low reference and a signal circuit. The SDM uses the state of the seat position sensor to determine the need for a stage 2 deployment of the driver steering wheel air bag. When the seat is in the forward position stage 2 deployment is disabled, and when in the rearward position stage 2 deployment is enabled. The SDM monitors the driver seat position sensor signal circuit and if a fault is detected, the SDM will set DTC B0079 and defaults to disabling stage 2 driver steering wheel air bag deployment.

Conditions for Running the DTC

Ignition voltage is between 9-16 volts.

Conditions for Setting the DTC

B0079 01

The SDM detects the driver seat position sensor signal circuit is shorted to voltage for 500 milliseconds.

B0079 02

The SDM detects the driver seat position sensor signal circuit is shorted to ground for 500 milliseconds.

B0079 04

The SDM detects the driver seat position sensor signal circuit is open for 500 milliseconds.

B0079 06

The SDM detects the driver seat position sensor signal circuit is shorted to ground or an open for 500 milliseconds.

B0079 08

The SDM detects an invalid signal on the driver seat position sensor signal circuit.

Action Taken When the DTC Sets

- The SDM defaults the seat position sensor to seat forward threshold.
- The SDM requests the instrument panel cluster (IPC) to illuminate the AIR BAG indicator.

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.

Reference Information

Schematic Reference

SIR Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX - COUPE AND WAGON

Description and Operation

Supplemental Inflatable Restraint System Description and Operation

Electrical Information Reference

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

Ignition ON, observe the SDM Driver Seat Position Sensor parameter while moving the driver seat fully forward and fully rearward. The parameter should cycle between Forward to Rearward as the seat is moved in the respective direction and DTC B0079 should not set.

- If the parameters are correct and DTC B0079 is set, replace the SDM.

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:

- **Seat position sensor**
- **SDM**
- **Seat position sensor wiring harness connector**
- **SDM wiring harness connector**

1. Ignition OFF, disconnect the harness connector at the driver seat position sensor.
2. Test for less than 10 ohms between low reference circuit terminal 1 and ground.
 - If greater than the specified range, test the low reference circuit for an open/high resistance. If the circuit tests normal, replace the SDM.
3. Ignition ON, test for 4.5-5.5 volts between the signal circuit terminal 2 and ground.
 - If less than the specified range, test the signal circuit for an open/high resistance or a short to ground. If the circuit tests normal, replace the SDM.
 - If greater than the specified range, test the signal circuit for a short to voltage. If the circuit tests normal, replace the SDM.
4. If the circuits test normal, test or replace the driver seat position sensor.

Repair Instructions

Perform the **Diagnostic Repair Verification** after completing the repair.

Refer to Driver Seat Position Sensor replacement

Control Module References for SDM replacement, setup, and programming

DTC B0080: PASSENGER SEAT POSITION SENSOR

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 B0080 01

Passenger Seat Position Sensor Circuit Short to Battery

DTC B0080 02

Passenger Seat Position Sensor Circuit Short to Ground

DTC B0080 04

Passenger Seat Position Sensor Circuit Open

DTC B0080 06

Passenger Seat Position Sensor Circuit Short to Ground or Open Circuit

DTC B0080 08

Passenger Seat Position Sensor Circuit Signal Invalid

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Driver Seat Position Sensor Signal	B0079 02, B0079 06	B0079 04, B0079 06	B0079 01	B0079 08
Driver Seat Position Sensor Low Reference	B0079 02, B0079 06	B0079 04, B0079 06	B0079 01	B0079 08
Passenger Seat Position Sensor Signal	B0080 02, B0080 06	B0080 04, B0080 06	B0080 01	B0080 08
Passenger Seat Position Sensor Low Reference	B0080 02, B0080 06	B0080 04, B0080 06	B0080 01	B0080 08

Circuit/System Description

The seat position sensor is used to determine the proximity of a front passenger seat position with respect to the passenger instrument panel air bag. The seat position sensor is a hall effect sensor that is mounted on the seat track of the front passenger seat. The seat position sensor is connected to the inflatable restraint sensing and diagnostic module (SDM) with a low reference and a signal circuit. The SDM uses the state of the seat position sensor to determine the need for a stage 2 deployment of the passenger instrument panel air bag. When the seat is in the forward position stage 2 deployment is disabled, and when in the rearward position stage 2 deployment is enabled. The SDM monitors the passenger seat position sensor signal circuit and if a fault is detected, the SDM will set DTC B0080 and defaults to disabling stage 2 passenger instrument panel air bag deployment.

Conditions for Running the DTC

Ignition voltage is between 9-16 volts.

Conditions for Setting the DTC

B0080 01

The SDM detects the passenger seat position sensor signal circuit is shorted to voltage for 500 milliseconds.

B0080 02

The SDM detects the passenger seat position sensor signal circuit is shorted to ground for 500 milliseconds.

B0080 04

The SDM detects the passenger seat position sensor signal circuit is open for 500 milliseconds.

B0080 06

The SDM detects the passenger seat position sensor signal circuit is shorted to ground or an open for 500 milliseconds.

B0080 08

The SDM detects an invalid signal on the passenger seat position sensor signal circuit.

Action Taken When the DTC Sets

- The SDM defaults the seat position sensor to seat forward threshold.
- The SDM requests the instrument panel cluster (IPC) to illuminate the AIR BAG indicator.

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.

Reference Information

Schematic Reference

SIR Schematics

Connector End View Reference

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Electrical Information Reference

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

Ignition ON, observe the SDM Psgr. Seat Position Sensor parameter while moving the passenger seat fully forward and fully rearward. The parameter should cycle between Forward to Rearward as the seat is moved in the respective direction and DTC B0080 should not set.

- If the parameters are correct and DTC B0080 is set, replace the SDM.

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:

- **Passenger seat position sensor**
- **SDM**
- **Passenger seat position sensor wiring harness connector**
- **SDM wiring harness connector**

1. Ignition OFF, disconnect the harness connector at the passenger seat position sensor.
2. Test for less than 10 ohms between low reference circuit terminal 1 and ground.
 - If greater than the specified range, test the low reference circuit for an open/high resistance. If the circuit tests normal, replace the SDM.
3. Ignition ON, test for 4.5-5.5 volts between the signal circuit terminal 2 and ground.
 - If less than the specified range, test the signal circuit for an open/high resistance or a short to ground. If the circuit tests normal, replace the SDM.
 - If greater than the specified range, test the signal circuit for a short to voltage. If the circuit tests normal, replace the SDM.
4. If the circuits test normal, test or replace the passenger seat position sensor.

Repair Instructions

Perform the **Diagnostic Repair Verification** after completing the repair.

Refer to Driver Seat Position Sensor replacement

Control Module References for SDM replacement, setup, and programming

DTC B0081: PASSENGER PRESENCE MODULE

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 00

Passenger Presence Module Malfunction (sets in the Inflatable Restraint Sensing and Diagnostic Module)

DTC B0081 11

Passenger Presence Module Above Threshold (Build Check Failure) (sets in the Passenger Presence Module)

DTC B0081 3A

Passenger Presence Module Incorrect Component Installed (sets in the Inflatable Restraint Sensing and Diagnostic Module)

DTC B0081 4B

Passenger Presence Module Calibration Not Learned (sets in the Passenger Presence Module)

DTC B0081 5A

Passenger Presence Module Plausibility Failure (sets in the Passenger Presence Module)

Circuit/System Description

When the ignition is turned ON, the Passenger Presence Module and the Inflatable Restraint Sensing and Diagnostic Module performs tests to diagnose critical malfunctions within itself. When the Inflatable Restraint Sensing and Diagnostic Module has completed the power-up mode, the Inflatable Restraint Sensing and Diagnostic Module will establish communication with the Passenger Presence Module. The Inflatable Restraint Sensing and Diagnostic Module will also request the instrument panel cluster to illuminate both of the PASSENGER AIR BAG ON/OFF indicators for 5 seconds. If the Inflatable Restraint Sensing and Diagnostic Module detects that the Passenger Presence Module has set a current DTC, the Inflatable Restraint Sensing and

Diagnostic Module will then disable the passenger instrument panel air bag deployment loop, set DTC B0081, and illuminate the AIR BAG indicator.

Conditions for Running the DTC

Ignition voltage is between 9-16 V.

Conditions for Setting the DTC

Any of the following conditions must exist for 5 seconds:

B0081 00

The Inflatable Restraint Sensing and Diagnostic Module has a general fault present.

B0081 11

The Passenger Presence Module is above maximum threshold. The Passenger Presence Module failed the preload/build check.

B0081 3A

The Inflatable Restraint Sensing and Diagnostic Module has received a mismatch message indicating the wrong Passenger Presence Module is installed on the vehicle.

B0081 4B

The Passenger Presence Module is not calibrated. Preload procedure has not been run.

B0081 5A

The Passenger Presence Module detects a plausibility error.

Action Taken When the DTC Sets

- The Inflatable Restraint Sensing and Diagnostic Module requests the instrument panel cluster (IPC) to illuminate the AIR BAG indicator.
- The passenger instrument panel air bag deployment loop will be disabled.

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

- If either the Inflatable Restraint Sensing and Diagnostic Module or Passenger Presence Module were

replaced verify that the correct part numbers were used for the vehicle application.

- If this DTC is set as either current or history it may have been caused by an electronic device. If an electronic device (Computers, MP3 Players, Cell Phones, Diagnostic Scan Tool, Power Inverter, etc.) was placed on the passenger seat the Passenger Presence Module may command the passenger air bag indicator to turn on and/or command the passenger seat belt indicator to turn on. Make sure there are no objects on the passenger seat and clear the DTCs. If this DTC resets then perform this diagnostic. If the DTC does not reset there is no further work needed on the passenger presence system.
- If this DTC is set as either current or history it may have been caused by an aftermarket seat heater. The aftermarket seat heater may command the passenger air bag indicator to turn on and/or command the passenger seat belt indicator to turn on. Remove the aftermarket seat heater from the passenger seat and clear the DTCs. If this DTC resets then perform this diagnostic. If the DTC does not reset there is no further work needed on the passenger presence system.

Reference Information

Schematic Reference

SIR Schematics

Connector End View Reference

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Supplemental Inflatable Restraint System Description and Operation

Electrical Information Reference

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

NOTE:

- **When removing connectors inspect for damage, corrosion or poor connection. Damage or corrosion in the following requires repair or replacement of the affected component/connector.**
- **Passenger Presence Module**
- **Inflatable Restraint Sensing and Diagnostic Module**

- **Passenger Presence Module harness connector**
- **Inflatable Restraint Sensing and Diagnostic Module wiring harness connector**

1. Ignition ON, verify that DTC B0081 is the only DTC set in the Inflatable Restraint Sensing and Diagnostic Module or Passenger Presence Module.
 - If any other DTCs are set, refer to **Diagnostic Trouble Code (DTC) List - Vehicle**
2. Verify DTC B0081 00, or DTC B0081 3A is not set in the Inflatable Restraint Sensing and Diagnostic Module. If any of these DTCs set in the Inflatable Restraint Sensing and Diagnostic Module diagnose the following:
 - Inflatable Restraint Sensing and Diagnostic Module DTC B0081 00:
 - If DTC B0081 00 sets in the Inflatable Restraint Sensing and Diagnostic Module then refer to step #3 and diagnose the Passenger Presence Module DTC B0081 5A. By diagnosing the Passenger Presence Module DTC B0081 5A, DTC B0081 00 will be fixed in the Inflatable Restraint Sensing and Diagnostic Module.
 - Inflatable Restraint Sensing and Diagnostic Module DTC B0081 3A:
 - Either an incorrect replacement Passenger Presence Module or Inflatable Restraint Sensing and Diagnostic Module was placed in this vehicle. Check and make sure the part #'s are correct for each module. If the part #'s are correct clear this DTC and see if DTC B0081 3A resets as a current DTC. If DTC B0081 3A resets then replace the Passenger Presence Module. Clear DTCs again and check if DTC B0081 3A sets as current again. If DTC B0081 3A sets again then replace the Inflatable Restraint Sensing and Diagnostic Module.
3. Verify DTC B0081 11, DTC B0081 4B, or DTC B0081 5A is not set in the Passenger Presence Module. If any of these DTCs set in the Passenger Presence Module diagnose the following:
 - Passenger Presence Module DTC B0081 11:
 - If DTC B0081 11 sets in the Passenger Presence Module if the correct calibration was not learned by the Passenger Presence Module. Make sure there is nothing on the passenger seat, not even a scan tool. Perform the Passenger Presence Module Preload procedure, refer to **Passenger Presence System Preload Test**. Clear the DTC's and check if DTC B0081 11 sets again in the Passenger Presence Module. If DTC B0081 11 sets again replace the Passenger Presence Module.
 - Passenger Presence Module DTC B0081 4B:
 - If DTC B0081 4B sets in the Passenger Presence Module if the correct calibration was not learned by the Passenger Presence Module. Make sure there is nothing on the passenger seat, not even a scan tool. Perform the Passenger Presence Module Preload procedure, refer to **Passenger Presence System Preload Test**. Clear the DTC's and check if DTC B0081 11 sets again in the Passenger Presence Module. If DTC B0081 11 sets again replace the Passenger Presence Module.
 - Passenger Presence Module DTC B0081 5A:
 - If DTC B0081 5A sets in the Passenger Presence Module check the connections at the Inflatable Restraint Sensing and Diagnostic Module and Passenger Presence Module. Clear the DTC's and check if DTC B0081 5A sets again in the Passenger Presence Module. If DTC B0081 5A sets then replace the Passenger Presence Module. Clear DTCs again and check if DTC B0081 5A sets as current again. If DTC B0081 5A sets again then replace the Inflatable

Restraint Sensing and Diagnostic Module.

Repair Instructions

Perform the **Diagnostic Repair Verification** after completing the repair.

- **SIR/SRS Wiring Repairs**
- **Control Module References** for passenger presence system and Inflatable Restraint Sensing and Diagnostic Module replacement, programming and setup

DTC B0083-B0088: FRONT IMPACT SENSOR

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

Left Front Impact Sensor

DTC B0083 0F

Left Front Impact Sensor Erratic

DTC B0083 39

Left Front Impact Sensor Internal Electronic Failure

DTC B0083 3A

Left Front Impact Sensor Incorrect Component Installed

DTC B0084 00

Right Front Impact Sensor

DTC B0084 0F

Right Front Impact Sensor Erratic

DTC B0084 39

Right Front Impact Sensor Internal Electronic Failure

DTC B0084 3A

Right Front Impact Sensor Incorrect Component Installed

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 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 B0087 00

Left Rear Side Impact Sensor

DTC B0087 0F

Left Rear Side Impact Sensor Erratic

DTC B0087 39

Left Rear Side Impact Sensor Internal Electronic Failure

DTC B0087 3A

Left Rear Side Impact Sensor Incorrect Component Installed

DTC B0088 00

Right Rear Side Impact Sensor

DTC B0088 0F

Right Rear Side Impact Sensor Erratic

DTC B0088 39

Right Rear Side Impact Sensor Internal Electronic Failure

DTC B0088 3A

Right Rear Side Impact Sensor Incorrect Component Installed

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Left Front Impact Sensor Signal	B0083 00	B0083 00	B0083 00	B0083 0F
Left Front Impact Sensor Low Reference	-	B0083 00	-	B0083 0F
Right Front Impact Sensor Signal	B0084 00	B0084 00	B0084 00	B0084 0F
Right Front Impact Sensor Low Reference	-	B0084 00	-	B0084 0F
Left Front Side Impact Sensor Signal	B0085 00	B0085 00	B0085 00	B0085 0F
Left Front Side Impact Sensor Low Reference	-	B0085 00	-	B0085 0F
Right Front Side Impact Sensor Signal	B0086 00	B0086 00	B0086 00	B0086 0F
Right Front Side Impact Sensor Low Reference	-	B0086 00	-	B0086 0F
Left Rear Side Impact Sensor Signal	B0087 00	B0087 00	B0087 00	B0087 0F
Left Rear Side Impact Sensor Low Reference	-	B0087 00	-	B0087 0F
Right Rear Side Impact Sensor Signal	B0088 00	B0088 00	B0088 00	B0088 0F
Right Rear Side Impact Sensor	-	B0088 00	-	B0088 0F

Low Reference				
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Circuit/System Description

The impact sensors utilize a bidirectional 2-wire circuit. The impact 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 each of the impact sensors. When the ignition is turned ON and input power from the SDM is first detected, each impact 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 sensors continually communicate status messages to the SDM, which determines if a fault is present in the impact sensor or circuit. When a fault is detected, the SDM may reset the appropriate 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 V.

Conditions for Setting the DTC

All of the following conditions exist for 2.5 seconds:

B0083 00, B0084 00, B0085 00, B0086 00, B0087 00, or B0088 00

- The impact sensor signal circuit is shorted to voltage, shorted to ground, or has an open/high resistance.
- The impact sensor low reference circuit is open.
- The impact sensor current has been above 23 mA for longer than 5 milliseconds.

B0083 0F, B0084 0F, B0085 0F, B0086 0F, B0087 0F, or B0088 0F

The SDM has received erratic messages from the impact sensor.

B0083 39, B0084 39, B0085 39, B0086 39, B0087 39, or B0088 39

- The SDM has received a Not OK (NOK) message from the impact sensor.
- The SDM has not received a message.

B0083 3A, B0084 3A, B0085 3A, B0086 3A, B0087 3A, or B0088 3A

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

Action Taken When the DTC Sets

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

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.

Reference Information

Schematic Reference

SIR Schematics

Connector End View Reference

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Supplemental Inflatable Restraint System Description and Operation

Electrical Information Reference

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

NOTE: Refer to SIR Service Precautions

Inspect all terminals for damage or corrosion when disconnecting connectors. Damage or corrosion in the following requires repair or replacement of the affected component/connector.

- The impact sensor
- The SDM
- The impact sensor wiring harness connector
- The SDM wiring harness connector

NOTE: The connector and connector position assurance (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. Replace any CPA that is damaged or missing.

If the condition is intermittent or cannot be duplicated, disconnect the connectors and add dielectric grease / lubricant (Nyogel 760G or equivalent, meeting GM specification 9986087). This procedure will correct the high resistance condition due to terminal fretting corrosion.

1. Verify that DTC B0083-B0088 symptom byte 39 or 71 is not set as current.
 - If symptom byte 39 or 71 is set as current, replace the appropriate B59 front impact sensor or B63 side impact sensor.
2. Verify that the SDM calibrations match the VIN data, software part number, and calibration part number.
 - If not the correct data or part number, program the SDM.
3. Verify the correct impact sensors have the correct part numbers, matching the label part numbers with the parts book.
 - If the part numbers do not match, replace the incorrect B59 front impact sensor or B63 side impact sensor
4. Verify that DTC B0083-B0088 symptom byte 01, 02, 04, 05, or 0C is not set as current.
 - If symptom byte 01, 02, 04, 05, or 0C is set as current, refer to Circuit/System Testing.

Circuit/System Testing

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

- **The impact sensor**
- **The SDM**
- **The impact sensor wiring harness connector**
- **The SDM wiring harness connector**

1. Ignition OFF, disconnect the harness connector at the appropriate impact sensor and the harness connector at the SDM.
2. Test for infinite resistance between the signal circuit terminal 1 (front impact sensor) or 2 (rear impact sensor) and ground.
 - If less than the specified range, test the signal circuit for a short to ground.
3. Ignition ON, test for less than 1 V between the signal circuit terminal 1 (front impact sensor) or 2 (rear impact sensor) and ground.
 - If greater than the specified range, test the circuit for a short to voltage.
4. Test for less than 1 ohms between the appropriate low reference circuit terminal at the impact sensor and the appropriate low reference circuit terminal at the SDM:
 - **Left Front Impact Sensor - Low Reference circuit terminal 2 at the sensor and the low reference**

circuit terminal 24 X2 at the SDM.

- Right Front Impact Sensor - Low Reference circuit terminal 2 at the sensor and the low reference circuit terminal 25 X2 at the SDM.
 - Left Front Side Impact Sensor - Low Reference circuit terminal 1 at the sensor and the low reference circuit terminal 19 X2 at the SDM.
 - Right Front Side Impact Sensor - Low Reference circuit terminal 1 at the sensor and the low reference circuit terminal 22 X2 at the SDM.
 - Left Rear Side Impact Sensor - Low Reference circuit terminal 2 at the sensor and the low reference circuit terminal 28 X2 at the SDM.
 - Right Rear Side Impact Sensor - Low Reference circuit terminal 2 at the sensor and the low reference circuit terminal 29 X2 at the SDM.
 - If greater than the specified range, test the circuit for an open/high resistance.
5. Test for less than 1 ohms between the appropriate signal circuit terminal at the sensor and the appropriate signal circuit terminal at the SDM:
- Left Front Impact Sensor - Signal circuit terminal 1 at the sensor and the signal circuit terminal 23 X2 at the SDM.
 - Right Front Impact Sensor - Signal circuit terminal 1 at the sensor and the signal circuit terminal 26 X2 at the SDM.
 - Left Front Side Impact Sensor - Signal circuit terminal 2 at the sensor and the signal circuit terminal 20 X2 at the SDM.
 - Right Front Side Impact Sensor - Signal circuit terminal 2 at the sensor and the signal circuit terminal 21 X2 at the SDM.
 - Left Rear Side Impact Sensor - Signal circuit terminal 1 at the sensor and the signal circuit terminal 27 X2 at the SDM.
 - Right Rear Side Impact Sensor - Signal circuit terminal 1 at the sensor and the signal circuit terminal 30 X2 at the SDM.
 - If greater than the specified range, test the circuit for an open/high resistance.
6. If all circuits test normal, replace the impact sensor.
7. Clear DTCs and operate the vehicle within the condition for running the DTC. Verify DTC B0083, B0084, B0085, B0086, B0087, or B0088 does not set.
- If any of the DTCs set, replace the SDM.

Repair Instructions

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

- **Airbag Front End Sensor Replacement**
- **Airbag Side Impact Sensor Replacement - Front Side Door**
- **Airbag Side Impact Sensor Replacement - Rear Side Door (Wagon)**
- **Control Module References** for SDM replacement, setup, and programming

DTC B1001 (PPS): OPTION CONFIGURATION ERROR

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

Option Configuration Error

Circuit/System Description

The inflatable restraint sensing and diagnostic module (SDM) stores a 4-digit primary key for the inflatable restraint passenger presence system (PPS). The SDM sends the PPS module the primary key. If the PPS module determines that it is the wrong primary key, the PPS module will set DTC B1001 and send the SDM a vehicle mismatch message. The SDM then will set DTC B0081 and illuminate the SIR warning indicator. The PPS module does not use a secondary key.

Conditions for Running the DTC

Ignition voltage is between 9-16 volts.

Conditions for Setting the DTC

The 4-digit primary key stored in the SDM does not match the 4-digit key stored in the PPS module.

Action Taken When the DTC Sets

- The SDM requests the instrument panel cluster (IPC) to illuminate the AIR BAG indicator.
- The passenger instrument panel air bag deployment is disabled.

Conditions for Clearing the DTC

The 4-digit Primary Key in the SDM and in the PPS module match.

Diagnostic Aids

This DTC is an indication that the PPS module was not set-up correctly, is not the correct part number or that the PPS module is defective.

Reference Information

Schematic Reference

SIR Schematics

Connector End View Reference

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

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

- **PPS module**
- **PPS module wiring harness**

1. Verify the correct PPS module part number has been installed
 - If the wrong PPS module part number was installed, replace with the correct PPS module.
2. Verify that DTC B1001 is not set as current in the PPS module.
 - If DTC is set as current, perform the PPS Preload procedure. Verify the SDM is sending the correct key. If DTC resets replace the PPS module.

Repair Instructions

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

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

DTC B1001 (SDM): SDM OPTION CONFIGURATION ERROR

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.

Conditions for Running the DTC

Ignition voltage is between 9-16 V.

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 is not in the acceptable range of VINs allowed by the SDM calibration.

Action Taken When the DTC Sets

- The SDM requests the instrument panel cluster (IPC) to illuminate the AIR BAG indicator.
- 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 stored in the BCM is in the acceptable range of VINs allowed by the SDM calibration.

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 the BCM with the new information.

Reference Information

Schematic Reference

SIR Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX - COUPE AND WAGON

Description and Operation

Supplemental Inflatable Restraint System Description and Operation

Electrical Information Reference

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Testing

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

- **SDM**
- **SDM wiring harness**

1. Ignition ON, verify the scan tool Primary Key Status parameter displays Valid.
 - If not the specified value, verify the scan tool SDM Primary Key matches the Received Primary Key. If the key does not match, perform the Setup SDM Primary Key in BCM procedure.
2. Ignition ON, verify the scan tool Secondary Key Status displays Valid.
 - If not the specified value, verify the scan tool received VIN Digits 2-7 match the vehicle VIN.
 - If the VIN does not match, reprogram the BCM and perform the Setup SDM Primary Key in BCM procedure.
 - If the VIN matches, reprogram the SDM, ensure the correct SDM calibration is used and perform the Setup SDM Primary Key in BCM procedure.

Repair Instructions

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

Control Module References for SDM or BCM replacement, setup, and programming

DTC B1019: SIR SYSTEM CONFIGURATION

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

SIR System Configuration Error

DTC B1019 3A

SIR System Configuration Error Incorrect Component Installed

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 passenger instrument panel air bag. When the ignition is turned ON, the ignition voltage is supplied to the passenger air bag ON/OFF indicators and to the PPS module. The instrument panel cluster (IPC) grounds all indicator control circuits to the passenger air bag ON/OFF indicators for illumination.

The serial data messages sent from the supplemental inflatable restraints system to the radio, serving as a gateway, transmitting the information to the IPC to control the indicators as necessary.

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 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 the AIR BAG indicator ON.
- The SDM disables all deployments when B1019 00 DTC is set as current.

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 **Supplemental Inflatable Restraint 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 DTC B1019 00 sets as current, check for bent pins or shorting bars at the SDM connector.

Reference Information

Schematic Reference

SIR Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX - COUPE AND WAGON

Description and Operation

Supplemental Inflatable Restraint System Description and Operation

Electrical Information Reference

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

B1019 3A

1. With a scan tool, verify DTC B1370 is not set as current in the SDM.
 - If DTC is current refer to **DTC B1370**.
2. If equipped with PPS, verify the appropriate PPS indicator segments illuminate by occupying and un-occupying the passenger seat.
 - If the PPS indicator segments do not illuminate properly, replace the PPS indicator.

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.

- PPS module
- SDM
- PPS module wiring harness connector
- SDM wiring harness connector

B1019 00

1. Ignition ON, verify the scan tool End Model Part Number is correct for the vehicle.
 - If the part number is incorrect, reprogram the SDM.

IMPORTANT:

- If not equipped with PPS, the scan tool parameter should display Not Present and the PPS indicator should not be present on the vehicle
- If equipped with PPS, the scan tool parameter should display Auto, Manual, or Auto + Man and the PPS indicator should be present on the vehicle

2. Observe the scan tool PPS Options parameter to determine how the vehicle PPS is currently configured in the SDM. Verify the actual vehicle equipment and the current configuration indicated by the scan tool parameter are the same.
 - If the original configuration does not match the actual vehicle equipment, reprogram the SDM with the correct configuration.
3. Ignition OFF, disconnect the harness connectors at the SDM and verify the 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 perform the Setup New SDM procedure.
4. Connect the harness connector at the SDM.
5. Ignition ON, verify the scan tool System Configuration matches the actual components installed on the vehicle.

- If the System Configuration does not match the actual components installed, reprogram the SDM with the correct components.
- 6. Ignition ON, clear all PPS and SDM DTCs.
- 7. Verify DTC B1019 does not set.
 - If DTC sets, replace the SDM.

Repair Instructions

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: DEVICE IGNITION 1 CIRCUIT SHORT TO GROUND OR OPEN

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using the 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 06

Device Ignition 1 Circuit Short to Ground or Open

Circuit/System Description

The inflatable restraint sensing and diagnostic module (SDM) monitors the ignition 1 signal from the ignition switch. When the vehicle ignition switch is placed in the RUN or CRANK position, the switch supplies voltage to the SDM ignition 1 input terminal.

Conditions for Running the DTC

Ignition voltage is between 9-16 volts.

Conditions for Setting the DTC

The SDM detects a short to ground or an open in the ignition 1 voltage circuit for at least 10 seconds when the ignition switch is in RUN or CRANK .

Action Taken When the DTC Sets

- The SDM commands the AIR BAG indicator ON.
- The SDM determines its power mode from the serial data message and discards the ignition 1 input for

the remainder of the ignition cycle.

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.

Reference Information

Schematic Reference

SIR Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX - COUPE AND WAGON

Description and Operation

Supplemental Inflatable Restraint System Description and Operation

Electrical Information Reference

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

Scan Tool Reference

Control Module References for scan tool information.

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.

- **SDM**
- **SDM wiring harness**

1. Ignition ON, verify DTC B1370 is not set in any other control modules.
 - If the DTC is set in any other control module, refer to **DTC B1370-B1379, B1380-B1389, or B1440-B1443**.
2. Ignition OFF, disconnect the harness connector at the SDM.
3. Ignition ON, verify a test lamp illuminates between the ignition circuit terminal 32 and ground.

- If the test lamp does not illuminate, test the ignition circuit for a short to ground or an open high resistance.
4. If all circuits test normal, replace the SDM.

Repair Instructions

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

The passenger presence system consists of an electronic control module, a conductive based sensor mat, wiring harness, and PASSENGER AIR BAG ON/OFF indicators. The sensor mat 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 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 passenger presence system. A service replacement passenger presence module does not require an unlock procedure prior to an initial preload test.

Passenger Presence System Preload System Test

NOTE:

- Before the passenger presence system can be checked for preloads the front passenger seat must be completely empty of all items. The presence of any items on the front passenger seat will affect the calibration and operation of the passenger presence system. When the preload test is performed, the instrument cluster and dash lights will begin illuminating at varying intensity. This is normal operation during the Passenger Presence Sensor Learn procedure and does not indicate additional system faults.
- The **Diagnostic System Check - Vehicle** must be performed after successfully completing the preload test procedure to ensure the system is functioning properly.

1. Empty the front passenger seat, this system is susceptible to conductive material.
2. With the scan tool, perform the Passenger Presence Sensor Learn procedure.
3. Using the scan tool, check for DTC B0081 in history. If the Passenger Presence Sensor Learn procedure fails or DTC B0081 is current, confirm that there is no conductive material on the seat. Perform the Passenger Presence Sensor Learn test again. If the test fails again, for heated seats, ensure that the sensor pad is on top of the heater element. Once the test successfully completes, cycle the ignition OFF.
4. Perform the **Diagnostic System Check - Vehicle** after successfully completing the Passenger Presence Sensor Learn procedure to ensure the system is functioning properly.

SYMPTOMS - SIR

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

1. Perform the **Diagnostic System Check - Vehicle** , before using the symptom tables in order to verify that all of the following are true:
 - There are no diagnostic trouble codes (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 **Supplemental Inflatable Restraint 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

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

Symptom List

Refer to **Air Bag Indicator Malfunction (Passenger)**, **Air Bag Indicator Malfunction (Driver)** in order to diagnose the symptom.

AIR BAG INDICATOR MALFUNCTION (DRIVER)

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. 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.

Reference Information

Schematic Reference

SIR Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX - COUPE AND WAGON

Description and Operation

Supplemental Inflatable Restraint System Description and Operation

Electrical Information Reference

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

Scan Tool Reference

Control Module References for scan tool information.

Circuit/System Testing

1. Cycle the key from OFF to ON, monitor the IPC. The SIR warning indicator should flash then turn OFF.
 - If the SIR warning indicator continually flashes, reprogram the SDM.
2. With a scan tool, perform the IPC display test to command the IPC indicators ON and OFF. The Air Bag indicator should cycle between the commanded states.
 - If the Air Bag indicator does not cycle between the commanded states, replace the IPC.
3. If all circuits test normal, replace the SDM.

Repair Instructions

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

AIR BAG INDICATOR MALFUNCTION (PASSENGER)

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 presence system (PPS) sensor continually monitors itself and uses the passenger presence module/passenger presence sensor in order to turn the passenger air bag indicator on/off in the radio/hvac control. When someone is sitting in the passenger seat the passenger presence module/passenger presence sensor communicates with the radio/hvac control to turn the passenger air bag indicator on. If no one is sitting in the passenger seat the radio/hvac control also receives a message to illuminate the passenger air bag off indicator.

Reference Information

Schematic Reference

SIR Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX - COUPE AND WAGON

Description and Operation

Supplemental Inflatable Restraint System Description and Operation

Electrical Information Reference

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

Scan Tool Reference

Control Module References for scan tool information.

Circuit/System Testing

1. With a scan tool, monitor the passenger classification in the PPS data list. With no one sitting in the passenger seat the scan tool should display Empty. While monitoring the passenger classification have someone sit in the passenger seat. The status should change indicate someone is sitting in the passenger seat.
 - If the passenger classification does not change states, replace the passenger presence module.
2. If passenger clarification does change states, replace the radio/hvac control. Refer to **Radio, Video, and Audio Player and Navigation Information Display Replacement** .

Repair Instructions

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

- **SIR/SRS Wiring Repairs**
- **Control Module References** for passenger presence system 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 **Supplemental Inflatable Restraint System Description and Operation**.

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.

Condition	Action
If the vehicle was involved in an accident with an air bag deployment.	Disconnect the negative battery cable(s) *. Refer to <u>Repairs and Inspections Required After a Collision</u> .
When performing SIR diagnostics.	Follow the appropriate SIR service manual diagnostic procedure(s) *
When moving, removing or replacing an SIR component or a component attached to an SIR component. (Anytime you remove fasteners.)	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

WARNING: 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 Inflatable Restraint Sensing and Diagnostic Module loses battery power during a collision. Deployment power is available for as much as 2 minutes after disconnecting the vehicle power. Waiting 2 minutes 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 air bags to temperatures above 65°C (149°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 92 cm (3 feet) or greater:

- Inflatable Restraint Sensing and Diagnostic Module (SDM)
- Any air bag
- Driver steering wheel air bag coil
- Any impact sensor
- Seat belt anchor and/or retractor pretensioners
- Passenger presence module and/or occupant 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.

WARNING: 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 Inflatable Restraint Sensing and Diagnostic Module. Refer to **SIR Schematics**, or **Electrical Center Identification Views** .
4. Wait 2 minutes 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 Inflatable Restraint Sensing and Diagnostic Module. Refer to **SIR Schematics**, or **Electrical Center Identification Views** .
3. Turn the ignition switch to the ON position. The AIR BAG indicator will illuminate or 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 (Coupe)** , **Battery Negative Cable Disconnection and Connection (Wagon)** .
4. Wait 2 minutes 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 (Coupe)** , **Battery Negative Cable Disconnection and Connection (Wagon)** .
3. Turn the ignition switch to the ON position. The AIR BAG indicator will illuminate or 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

SIR SERVICE PRECAUTIONS

General Service Instructions

WARNING: 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.

NOTE: The Inflatable Restraint Sensing and Diagnostic Module (SDM) maintains a reserved energy supply. The reserved energy supply provides deployment power for the SIR air bags. Deployment power may be available for up to 2 minutes after disconnecting the vehicle power. Disabling the SIR system prevents deployment of the SIR air bags from the reserved energy supply.

NOTE: 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 air bags to temperatures above 65°C (149°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

NOTE: Discard any of the following components if it has been dropped from a height of 92 cm (3 ft) or greater:

- Inflatable Restraint Sensing and Diagnostic Module
- Passenger instrument panel air bag
- Driver steering wheel air bag
- Driver steering wheel air bag coil
- Roof rail air bags
- Front and /or side impact sensors
- Seat belt anchor and/or retractor pretensioners
- Front seat side air bag

AIRBAG FRONT END SENSOR REPLACEMENT

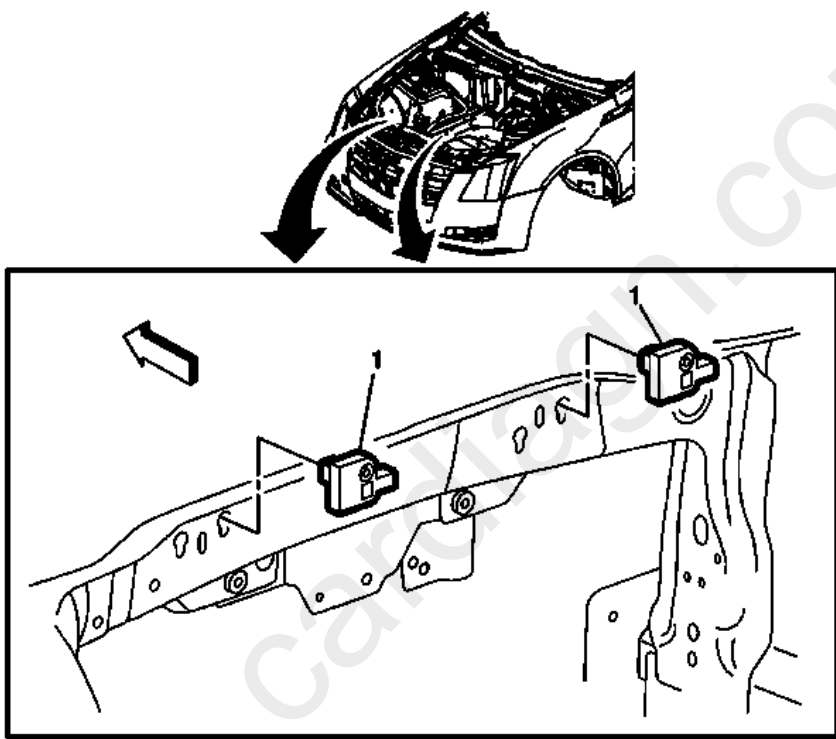


Fig. 5: Inflatable Restraint Front End Sensor
 Courtesy of GENERAL MOTORS COMPANY

Airbag Front End Sensor Replacement

Callout	Component Name
WARNING: Refer to <u>SIR Warning</u> .	
Preliminary Procedures	
1. Disable the supplemental inflatable restraint (SIR) system. Refer to <u>SIR Disabling and Enabling</u> .	
2. Remove the front compartment sight shield. Refer to <u>Front Compartment Sight Shields</u>	

Replacement .

Inflatable Restraint Front End Sensor Assembly

CAUTION:

Refer to Fastener Caution .

Procedure

- 1
 1. Loosen the bolt and slide the sensor out of the keyhole slot.
 2. For the front end sensor, follow mandatory fastening sequence to eliminate the clockwise rotation of the electronic front sensors.

TIP: The bolt is integral to the sensor assembly and DOES NOT remove separately.

Tighten

11 (97 lb in)

AIRBAG SENSING AND DIAGNOSTIC MODULE REPLACEMENT

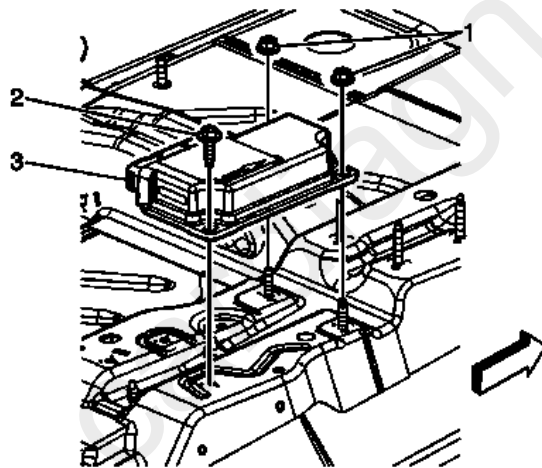


Fig. 6: Inflatable Restraint Sensing and Diagnostic Module

Courtesy of GENERAL MOTORS COMPANY

Airbag Sensing and Diagnostic Module Replacement

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

Preliminary Procedures

1. Disable the supplemental inflatable restraint (SIR) system. Refer to **SIR Disabling and Enabling**.
2. Remove the console. Refer to **Front Floor Console Replacement (Right Hand Drive)** , **Front Floor Console Replacement (Left Hand Drive)** .
3. Disconnect the electrical connector.

1	Inflatable Restraint Sensing and Diagnostic Module Nut (Qty: 2) CAUTION: Refer to <u>Fastener Caution</u> . Tighten 7 N.m (56 lb in)
2	Inflatable Restraint Sensing and Diagnostic Module Bolt Tighten 7 N.m (56 lb in)
3	Inflatable Restraint Sensing and Diagnostic Module Assembly • When installing, ensure the arrow on the module is pointed towards the front of the vehicle. • If installing a replacement module, program the module. Refer to <u>Control Module References</u> .

AIRBAG STEERING WHEEL MODULE REPLACEMENT

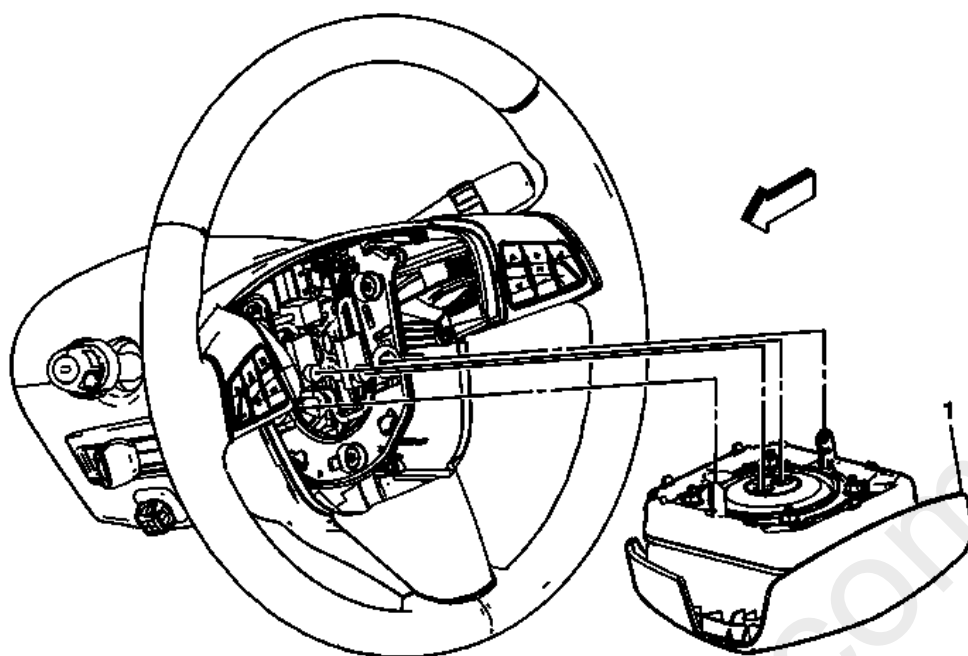


Fig. 7: Identifying Inflatable Restraint Steering Wheel Module
 Courtesy of GENERAL MOTORS COMPANY

Airbag Steering Wheel Module Replacement

Callout	Component Name
WARNING: Refer to <u>SIR Inflator Module Handling and Storage Warning</u> .	
WARNING: Refer to <u>SIR Warning</u> .	
Preliminary Procedures 1. Disable the SIR system. Refer to <u>SIR Disabling and Enabling</u>. 2. On the side of the steering wheel are 2 circular 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.	
	Steering Wheel Inflatable Restraint Module WARNING: After installation of the steering wheel airbag module to the steering wheel, slightly pull the module outward. If there is no give on the airbag module then it is secured correctly. If the airbag module is not fully attached personal injury could result.

1	Procedure 1. Release the connector position assurance (CPA) retainer. 2. Disconnect the electrical connectors. 3. Refer to <u>Inflatable Restraint Module Handling and Scrapping (Europe)</u>, <u>Inflatable Restraint Module Handling and Scrapping (Except Europe)</u>.
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STEERING WHEEL AIRBAG COIL REPLACEMENT

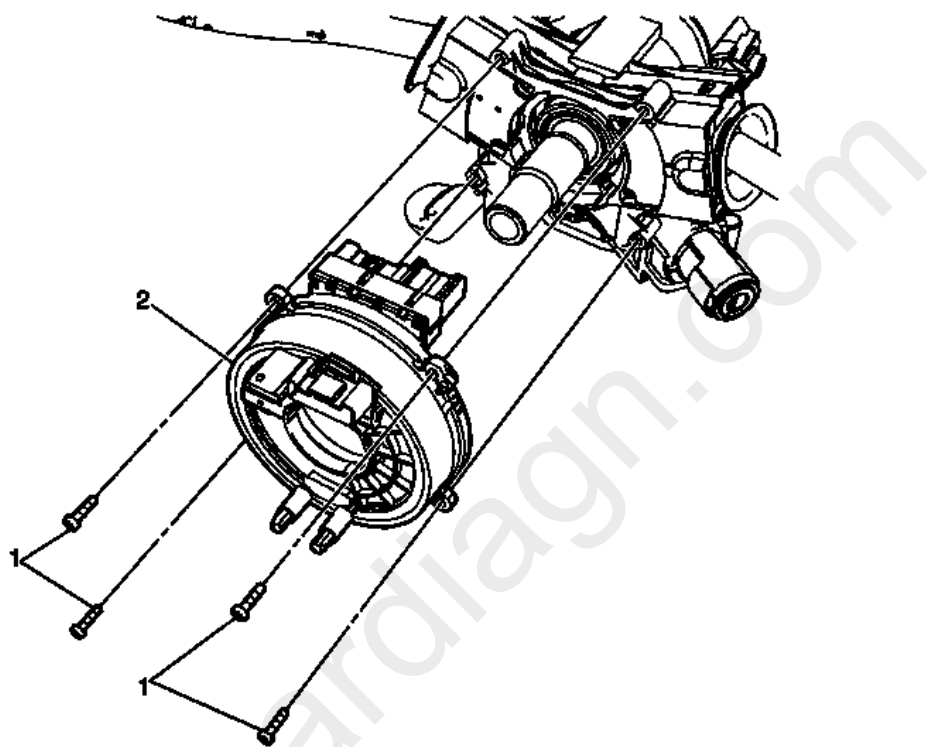


Fig. 8: Inflatable Restraint Steering Wheel Module Coil
 Courtesy of GENERAL MOTORS COMPANY

Steering Wheel Airbag Coil Replacement

Callout	Component Name
Preliminary Procedures 1. Remove the steering wheel. Refer to <u>Steering Wheel Replacement</u> . 2. Remove the steering column shroud. Refer to <u>Steering Column Shroud Replacement (Without Key Release Lever Knob)</u> , <u>Steering Column Shroud Replacement (With Key Release Lever Knob)</u> .	
	Steering Wheel Airbag Coil Bolt (Qty: 4) CAUTION: Refer to <u>Fastener Caution</u> .

1	Tighten 3 N.m (27 lb in).
2	Steering Wheel Airbag Coil Procedure 1. Disconnect any electrical connectors as needed. 2. Transfer any parts as needed.

AIRBAG STEERING WHEEL MODULE COIL CENTERING

Special Tools

J 42640 Steering Column Anti-rotation Pin

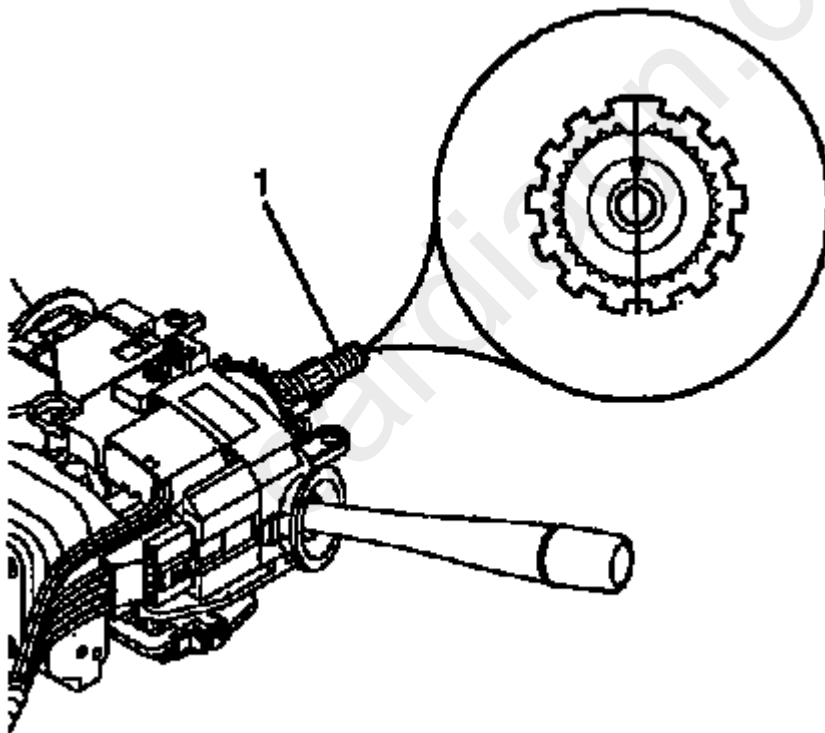


Fig. 9: View Of Block Tooth Of Steering Shaft Assembly In 12 O'clock Position
Courtesy of GENERAL MOTORS COMPANY

CAUTION: 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 inflatable restraint steering wheel module 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 and start switch is in the LOCK position, or **J 42640** steering column anti-rotation pin is installed.

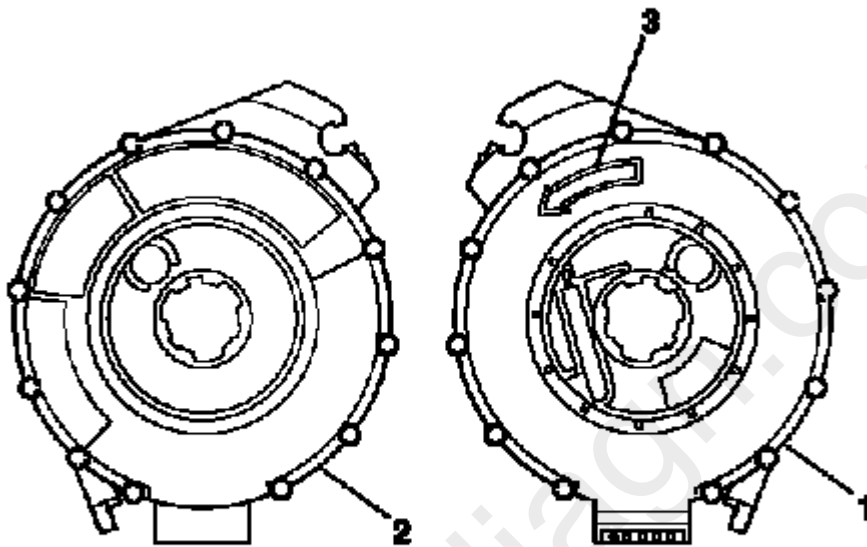


Fig. 10: Centering SIR Coil (Without Centering Window, Without Spring Service Lock)
Courtesy of GENERAL MOTORS COMPANY

2. If the front side (3) of the inflatable restraint steering wheel module 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 coil with the horn tower and slide onto the steering shaft.

AIRBAG INSTRUMENT PANEL MODULE REPLACEMENT

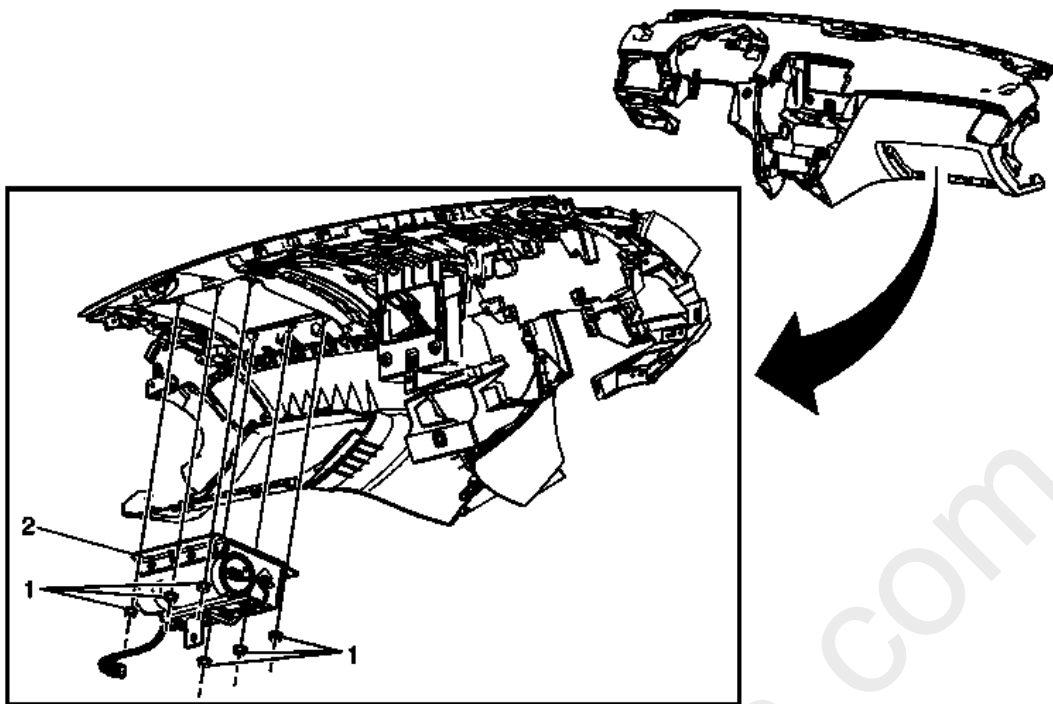


Fig. 11: Inflatable Restraint Instrument Panel Module
 Courtesy of GENERAL MOTORS COMPANY

Airbag Instrument Panel Module Replacement

Callout	Component Name
WARNING: Refer to <u>SIR Inflator Module Handling and Storage Warning</u> .	
WARNING: Refer to <u>SIR Warning</u> .	
Preliminary Procedure	
1. Disable the SIR system. Refer to <u>SIR Disabling and Enabling</u> . 2. Remove the instrument panel lower trim panel. Refer to <u>Instrument Panel Lower Trim Panel Replacement (Left Hand Drive)</u> , <u>Instrument Panel Lower Trim Panel Replacement (Right Hand Drive)</u> .	
1	Instrument Panel Inflatable Restraint Module Nut (Qty: 6) CAUTION: Refer to <u>Fastener Caution</u> . Tighten

	10 (89 lb in)
2	Instrument Panel Inflatable Restraint Module Assembly Procedure 1. Refer to <u>Inflatable Restraint Module Handling and Scrapping (Europe)</u>, <u>Inflatable Restraint Module Handling and Scrapping (Except Europe)</u>. 2. Enable the SIR system. Refer to <u>SIR Disabling and Enabling</u>.

INFLATABLE RESTRAINT PASSENGER PRESENCE SYSTEM REPLACEMENT - FRONT

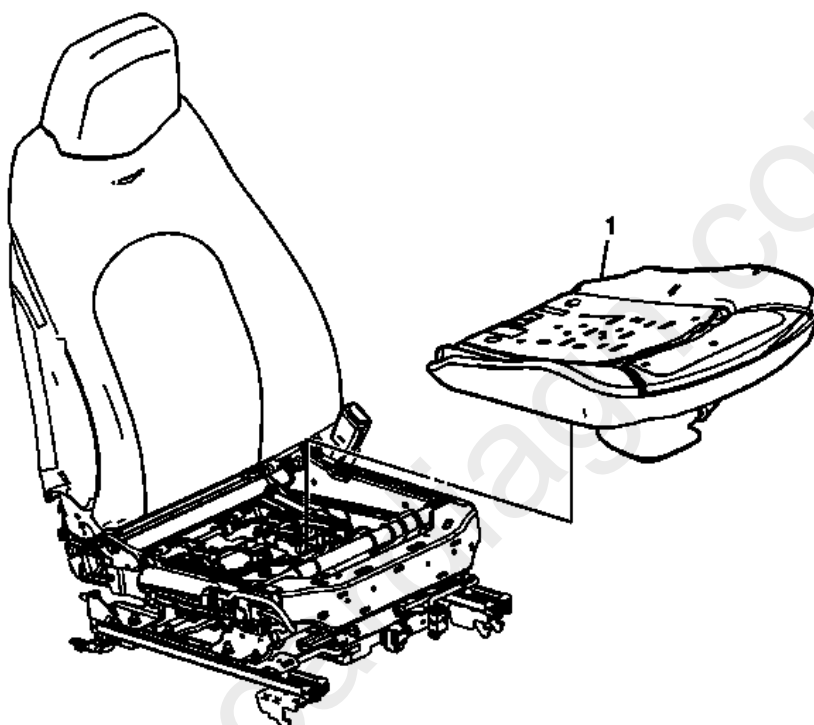


Fig. 12: Inflatable Restraint Passenger Presence System - Front
Courtesy of GENERAL MOTORS COMPANY

Inflatable Restraint Passenger Presence System Replacement - Front

Callout	Component Name
Preliminary Procedure	
1. Remove the front seat. Refer to <u>Front Seat Removal and Installation - Bucket (W2E)</u> , <u>Front Seat Removal and Installation - Bucket (AQ9)</u> . 2. Remove the seat cushion cover. Refer to <u>Front Seat Cushion Cover and Pad Replacement (W2E)</u> , <u>Front Seat Cushion Cover and Pad Replacement (AQ9)</u> .	
	Inflatable Restraint Front Passenger Presence System Assembly

WARNING:

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.

WARNING:

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.

1

Procedures

1. Preload Test the inflatable restraint passenger presence system whenever the seat cushion or any component of the passenger presence system is removed. Refer to **Control Module References** .
2. Program the inflatable restraint passenger presence system after replacement. Refer to **Control Module References** .
 - The passenger presence system is an integral part of the pad on the passenger seat cushion.
 - The sensor, module and seat cushion pad must be replaced as a unit.
 - Note the routing of the wiring harness and connector location for installation.

FRONT SEAT OUTBOARD SEAT BACK AIRBAG REPLACEMENT (W2E)

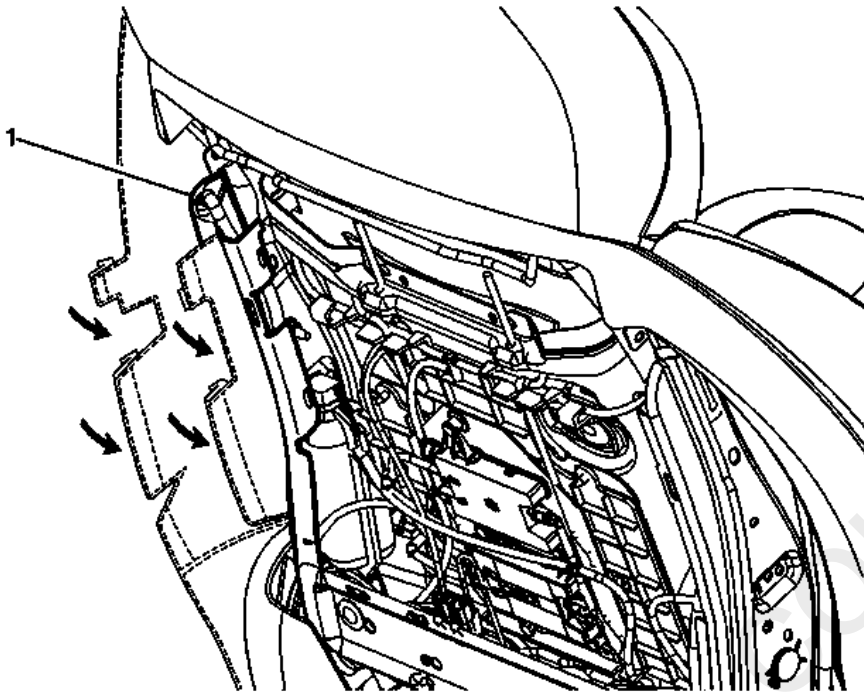


Fig. 13: Driver or Passenger Seat Side Inflatable Restraint Module (W2E)
 Courtesy of GENERAL MOTORS COMPANY

Front Seat Outboard Seat Back Airbag Replacement (W2E)

Callout	Component Name
WARNING: 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. WARNING: Do not repair or replace the seat stitching or seams in the seat back trim cover with an internal mounted seat side airbag module. Replace the complete seat back trim cover from the OEM. Non-OEM seat stitching may cause improper airbag deployment which could result in personal injury. Preliminary Procedure 1. Disable the SIR system. Refer to <u>SIR Disabling and Enabling.</u> 2. Remove the front seat. Refer to <u>Front Seat Removal and Installation - Bucket (W2E)</u> .	

3. Remove the front seat back cushion finish panel. Refer to **Front Seat Back Cushion Finish Panel Replacement (W2E)** .
4. Remove the driver or passenger seat cushion air pump. Refer to **Driver or Passenger Seat Cushion Air Pump Replacement (W2E)** .
5. Remove the front seat back cushion cover and pad. Refer to **Front Seat Back Cushion Cover and Cushion Pad Replacement (W2E)** .

Driver or Passenger Seat Side Inflatable Restraint Module

Procedure

1

1. Disconnect CPA connector from the airbag module.
2. Disconnect the electrical harness and note the routing for re-installation.
3. Remove the airbag module from the two inside cover flaps.
4. Note routing of airbag module through 'flap' on the top of the seat back cover during re-installation of the airbag module. The new airbag module should be mounted through the holes in seatback cover panel.
5. The lower portion of the cushion cover must route behind the airbag (between the airbag and the seat back frame) before the cover can attach to the seat back frame.
6. Attach the outer J-channel retainers that route the seat back cover over the airbag module and attaches to the seat back frame. Refer to **Front Seat Back Cushion Cover and Cushion Pad Replacement (W2E)**
7. Refer to **Inflatable Restraint Module Handling and Scrapping (Europe)**, **Inflatable Restraint Module Handling and Scrapping (Except Europe)**.

FRONT SEAT OUTBOARD SEAT BACK AIRBAG REPLACEMENT (AQ9)

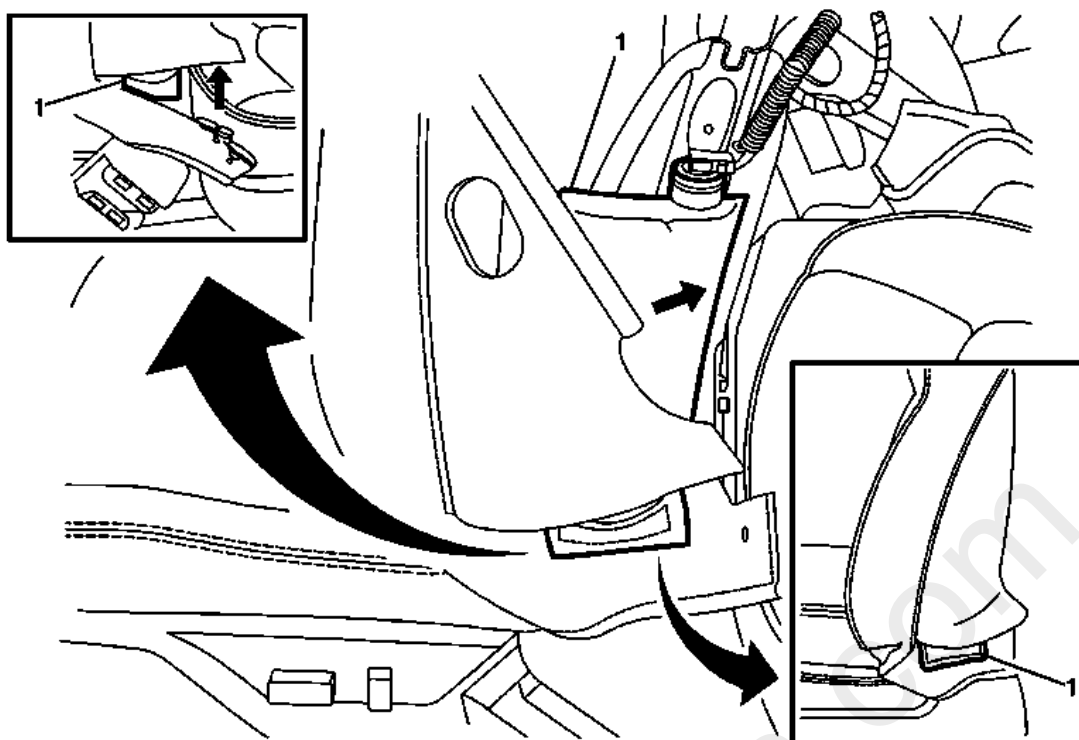


Fig. 14: Driver or Passenger Seat Side Inflatable Restraint Module
 Courtesy of GENERAL MOTORS COMPANY

Front Seat Outboard Seat Back Airbag Replacement (AQ9)

Callout	Component Name
WARNING: 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. WARNING: Do not repair or replace the seat stitching or seams in the seat back trim cover with an internal mounted seat side airbag module. Replace the complete seat back trim cover from the OEM. Non-OEM seat stitching may cause improper airbag deployment which could result in personal injury. Preliminary Procedures 1. Disable the SIR system. Refer to <u>SIR Disabling and Enabling</u>. 2. Remove the front seat back cushion finish panel. Refer to <u>Front Seat Back Cushion Finish Panel</u>	

Replacement (AQ9) .

3. Reposition the outer side only of the front seat back cushion cover and pad to gain access to the airbag module nuts. Refer to **Front Seat Back Cushion Cover and Cushion Pad Replacement (AQ9) .**

Driver or Passenger Seat Side Inflatable Restraint Module

Procedure

1. Disconnect CPA connector from the airbag module.
2. Disconnect the electrical harness and note the routing for re-installation.
3. Note the routing of the seat back cover underneath the airbag module during re-installation of the airbag module.
4. The lower portion of the cushion cover must route behind the airbag (between the airbag and the seat back frame) before the cover can attach to the seat back frame.
5. Attach the J-channel retainer that routes the seat back cover over the airbag module and attaches to the airbag module bracket for re-installation. Refer to **Front Seat Back Cushion Cover and Cushion Pad Replacement (AQ9) .**
6. The bottom portion of the airbag is exposed upon final build completion, prior to the seat back finish panel being installed.
7. Refer to **Inflatable Restraint Module Handling and Scrapping (Europe).**
Inflatable Restraint Module Handling and Scrapping (Except Europe).

AIRBAG SIDE IMPACT SENSOR REPLACEMENT - FRONT SIDE DOOR

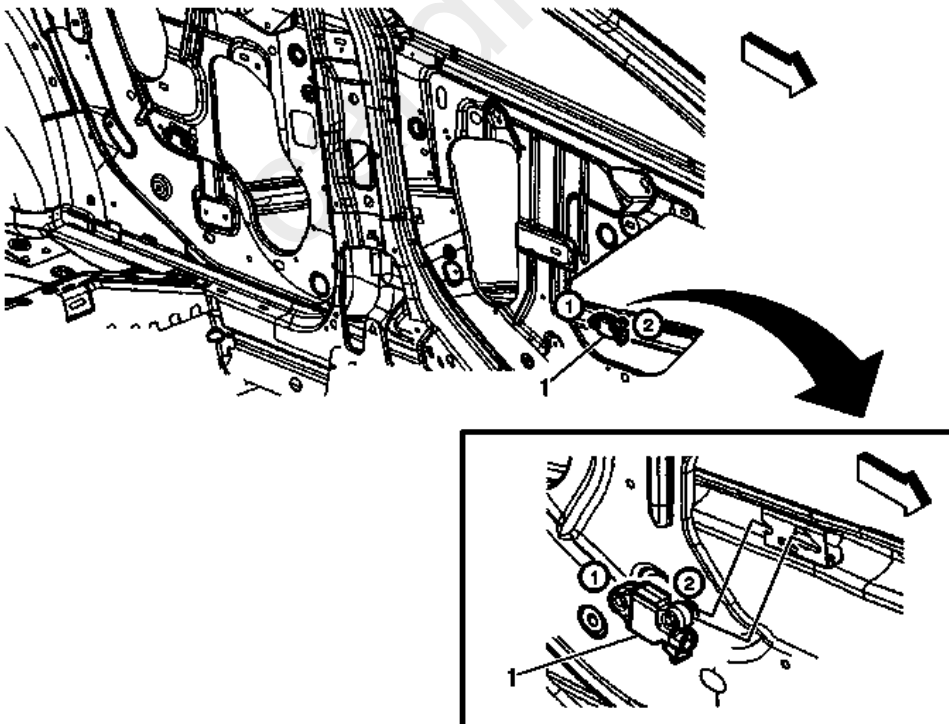


Fig. 15: Identifying Inflatable Restraint Side Impact Sensor - Front Side Door
 Courtesy of GENERAL MOTORS COMPANY

Airbag Side Impact Sensor Replacement - Front Side Door

Callout	Component Name
WARNING: When performing service on or near the SIR components or the SIR wiring, the SIR system must be disabled. Refer to <u>SIR Disabling and Enabling</u> . Failure to observe the correct procedure could cause deployment of the SIR components, personal injury, or unnecessary SIR system repairs. WARNING: 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 <u>SIR Disabling and Enabling</u>. 2. Remove the front side door trim panel. Refer to <u>Front Side Door Trim Panel Replacement (Coupe)</u> , <u>Front Side Door Trim Panel Replacement (Wagon)</u> .	
1	Inflatable Restraint Side Impact Sensor Assembly CAUTION: Refer to <u>Fastener Caution</u> . Procedure 1. Loosen the bolts and slide the sensor out of the keyhole slots. 2. For the driver or passenger side sensor, follow mandatory fastening sequence to eliminate the clockwise rotation of the side impact sensors. TIP: The bolts are integral to the sensor assembly, DO NOT remove separately. Tighten 9 N.m (80 lb in)

AIRBAG SIDE IMPACT SENSOR REPLACEMENT - REAR SIDE DOOR (WAGON)

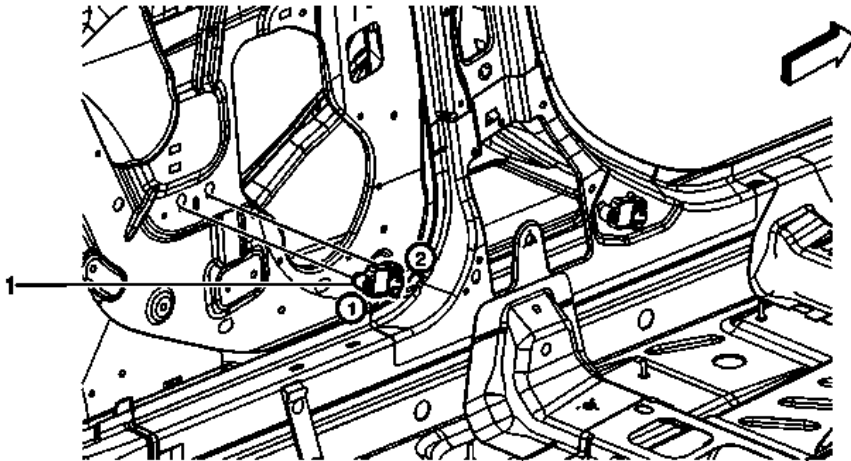


Fig. 16: Inflatable Restraint Side Impact Sensor - Rear Side Door
 Courtesy of GENERAL MOTORS COMPANY

Airbag Side Impact Sensor Replacement - Rear Side Door (Wagon)

Callout	Component Name
WARNING: When performing service on or near the SIR components or the SIR wiring, the SIR system must be disabled. Refer to <u>SIR Disabling and Enabling</u> . Failure to observe the correct procedure could cause deployment of the SIR components, personal injury, or unnecessary SIR system repairs.	
WARNING: 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 <u>SIR Disabling and Enabling</u>. 2. Remove rear side door trim panel. Refer to <u>Rear Side Door Trim Panel Replacement (Wagon)</u> . 3. Remove rear side door water deflector.	
1	Inflatable Restraint Side Impact Sensor Module CAUTION: Refer to <u>Fastener Caution</u> . Procedure 1. Loosen the bolts and slide the sensor out of the keyhole slots. 2. For the driver side rear door sensor, follow mandatory fastening sequence to eliminate the clockwise rotation of the side impact sensors.

TIP: The bolts are integral to the sensor assembly, DO NOT remove separately.
Tighten
9 N.m (80 lb in)

AIRBAG ROOF SIDE RAIL MODULE REPLACEMENT

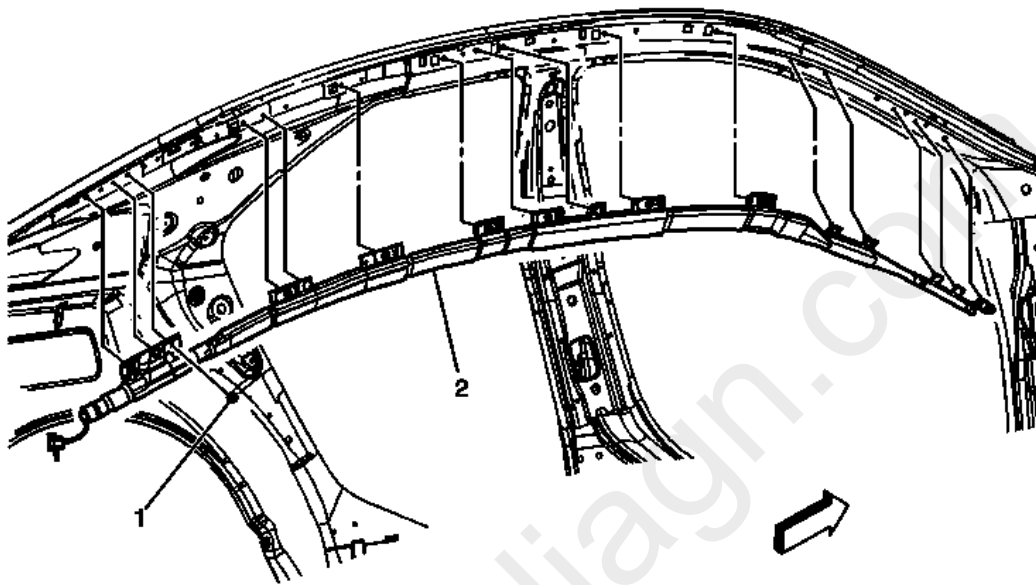


Fig. 17: Roof Side Rail Inflatable Restraint Module
Courtesy of GENERAL MOTORS COMPANY

Airbag Roof Side Rail Module Replacement

Callout	Component Name
WARNING: 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. WARNING: When installing the roof rail airbag, do not twist or turn the airbag 360 degrees. Securing the roof rail airbag with an airbag twisted or turned 360 degrees may cause the airbag not to deploy correctly and could cause personal injury. WARNING: Refer to <u>SIR Warning</u> .	

WARNING:

Refer to SIR Inflator Module Handling and Storage Warning .

Preliminary Procedures

1. Disable the SIR system. Refer to SIR Disabling and Enabling.
2. Lower the side of the headliner. Refer to Headlining Trim Panel Replacement (Coupe) ,
Headlining Trim Panel Replacement (Wagon) .

1	Roof Side Rail Inflatable Restraint Module Nut CAUTION: Refer to <u>Fastener Caution</u> . Tighten 9 N.m (80 lb in)
2	Rear Roof Side Rail Inflatable Restraint Module Assembly Procedure 1. Disconnect the electrical connector. 2. Loosen the roof side rail inflatable restraint module bolts. (Qty: 8) 3. Remove the push in retainers (Qty: 7) securing the roof side rail inflatable restraint module to the vehicle. 4. Remove the roof side rail inflatable restraint module from the vehicle. TIP: The bolts and the push in fasteners are an integral part of the module and should remain with the module. Tighten 9 N.m (80 lb in)

FRONT SEAT BELT ANCHOR PLATE TENSIONER REPLACEMENT (W2E)

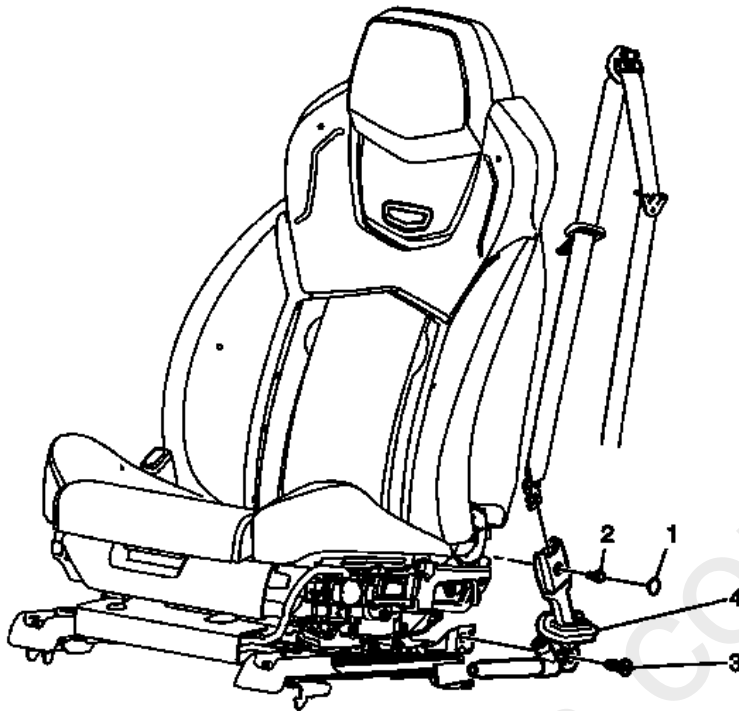


Fig. 18: Driver Or Passenger Seat Belt Tensioner (W2E)
Courtesy of GENERAL MOTORS COMPANY

Front Seat Belt Anchor Plate Tensioner Replacement (W2E)

Callout	Component Name
WARNING: Refer to <u>SIR Warning</u> .	
WARNING: 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 Procedures	
1. Move the front seat to a full forward and full up position. 2. Disable the SIR. Refer to <u>SIR Disabling and Enabling</u> . 3. Remove the driver or passenger seat adjuster switch bezel. Refer to <u>Driver or Passenger Seat Adjuster Switch Bezel Replacement (W2E)</u> .	
1	Driver or Passenger Seat Belt Tensioner Cover
	Driver or Passenger Seat Belt Tensioner Fastener

2	CAUTION: Refer to <u>Fastener Caution</u> . Tighten 6 (53 lb in)
3	Driver or Passenger Seat Belt Tensioner Fastener Tighten 45 (33 lb ft)
4	Driver or Passenger Seat Belt Tensioner Assembly Procedure 1. Disconnect the electrical connector. 2. Refer to <u>Pretensioner Handling and Scrapping (Europe)</u>, <u>Pretensioner Handling and Scrapping (Except Europe)</u>.

FRONT SEAT BELT ANCHOR PLATE TENSIONER REPLACEMENT (AQ9)

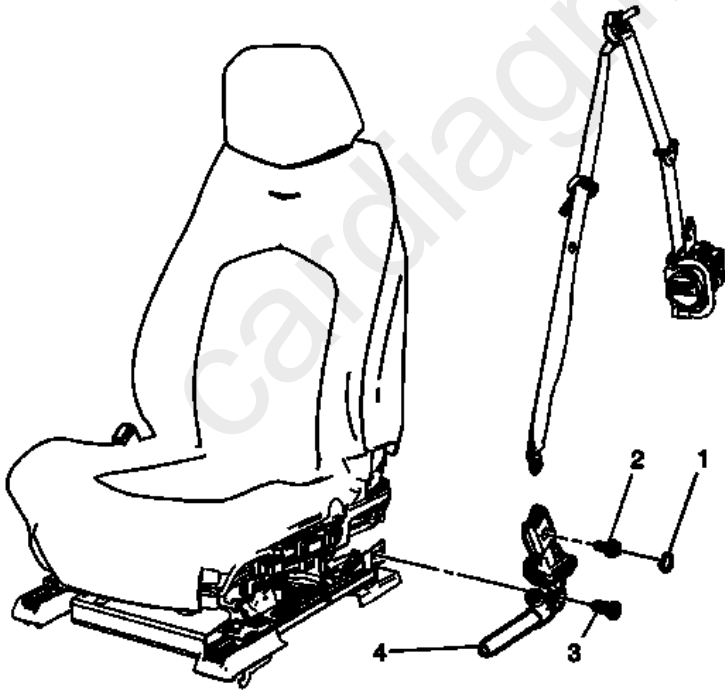


Fig. 19: Front Seat Belt Anchor Plate Tensioner & Components (AQ9)
 Courtesy of GENERAL MOTORS COMPANY

Front Seat Belt Anchor Plate Tensioner Replacement (AQ9)

Callout	Component Name

WARNING:

Refer to **SIR Warning** .

WARNING:

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 Procedures

1. Move the front seat to a full forward and full up position.
2. Disable the SIR. Refer to **SIR Disabling and Enabling**.
3. Remove the driver or passenger seat adjuster switch bezel. Refer to **Driver or Passenger Seat Adjuster Switch Bezel Replacement (AQ9)** .

1	Driver or Passenger Seat Belt Tensioner Cover
2	Driver or Passenger Seat Belt Tensioner Fastener CAUTION: Refer to <u>Fastener Caution</u> . Tighten 6 (53 lb in)
3	Driver or Passenger Seat Belt Tensioner Fastener Tighten 45 (33 lb ft)
4	Driver or Passenger Seat Belt Tensioner Assembly Procedure 1. Disconnect the electrical connector. 2. Refer to <u>Pretensioner Handling and Scrapping (Europe)</u>, <u>Pretensioner Handling and Scrapping (Except Europe)</u>.

SEAT BELT RETRACTOR PRETENSIONER REPLACEMENT - FRONT (W2E)

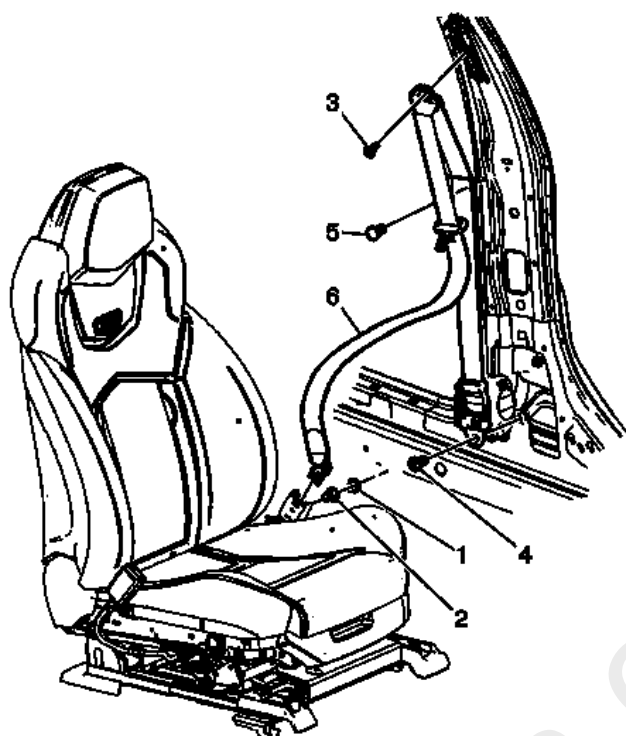


Fig. 20: Seat Belt Retractor Pretensioner - Front (W2E)

Courtesy of GENERAL MOTORS COMPANY

Seat Belt Retractor Pretensioner Replacement - Front (W2E)

Callout	Component Name
WARNING: Refer to <u>SIR Warning</u> . WARNING: 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. WARNING: Refer to <u>SIR Inflator Module Handling and Storage Warning</u> . Preliminary Procedures 1. Move the front seat to a full forward and full up position. 2. Disable the SIR. Refer to <u>SIR Disabling and Enabling</u>. 3. Remove the upper and lower center pillar trim panel. Refer to <u>Center Pillar Upper Trim Panel Replacement (Wagon)</u> , and <u>Center Pillar Lower Trim Panel Replacement (Wagon)</u> .	

4. Remove seat adjuster switch bezel. Refer to <u>Driver or Passenger Seat Adjuster Switch Bezel Replacement (W2E)</u> .	
1	Front Seat Belt Tensioner Cover Assembly
2	Front Seat Belt Tensioner Fastener CAUTION: Refer to <u>Fastener Caution</u> . Tighten 6 N.m (53 lb in)
3	Seat Shoulder Belt Guide Fastener Tighten 47 N.m (35 lb ft)
4	Seat Shoulder Belt Retractor Fastener Tighten 45 N.m (33 lb ft)
5	Seat Belt Push On Retainer Procedure Use a flat-bladed tool to remove locking pin in retainer.
6	Seat Shoulder Belt Retractor Assembly Procedure 1. Disconnect the electrical connector. 2. Refer to <u>Pretensioner Handling and Scrapping (Europe)</u>, <u>Pretensioner Handling and Scrapping (Except Europe)</u>.

SEAT BELT RETRACTOR PRETENSIONER REPLACEMENT - FRONT (AQ9 AND COUPE PRIOR TO VIN B0100175)

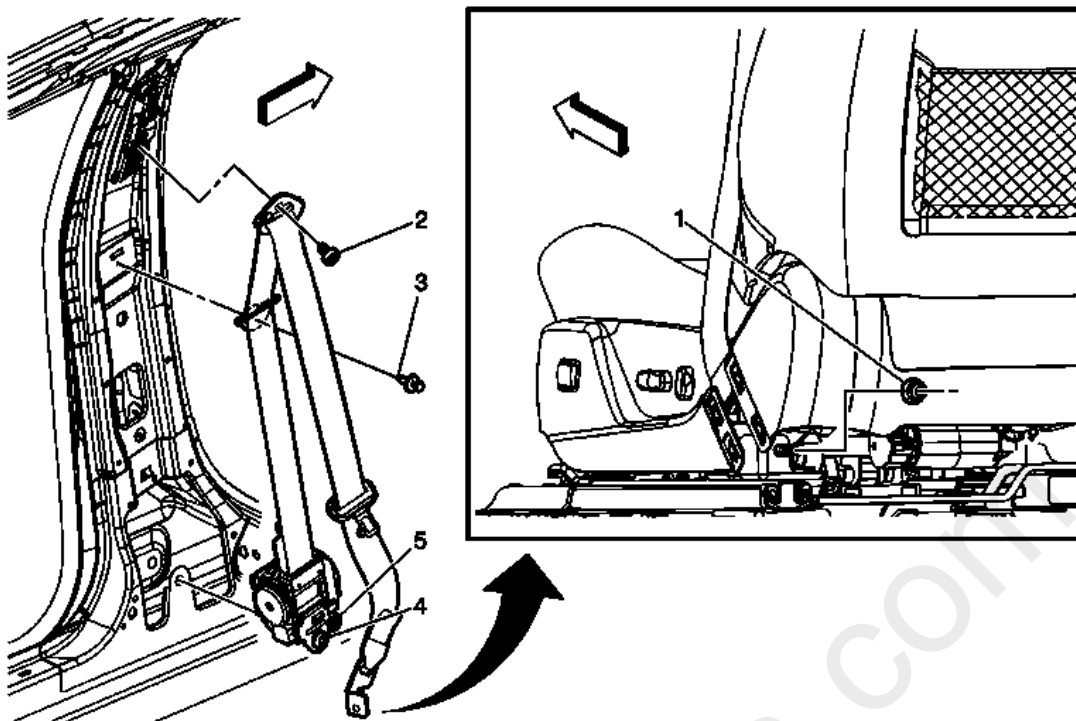


Fig. 21: Seat Belt Retractor Pretensioner - Front (AQ9 and Coupe prior to VIN B0100175)
Courtesy of GENERAL MOTORS COMPANY

Seat Belt Retractor Pretensioner Replacement - Front (AQ9 and Coupe prior to VIN B0100175)

Callout	Component Name
WARNING: Refer to <u>SIR Warning</u> . WARNING: 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 Procedures 1. Move the front seat to a full forward and full up position. 2. Disable the SIR. Refer to <u>SIR Disabling and Enabling</u>. 3. Remove the upper and lower center pillar trim panel. Refer to <u>Center Pillar Upper Trim Panel Replacement (Wagon)</u> , and <u>Center Pillar Lower Trim Panel Replacement (Wagon)</u> .	
	Seat Belt Retractor Anchor Plate Nut
	CAUTION:

1	Refer to <u>Fastener Caution</u> . Tighten 47 N.m (35 lb ft)
2	Seat Shoulder Belt Guide Fastener Tighten 47 N.m (35 lb ft)
3	Seat Belt Push On Retainer Procedure Use a flat-bladed tool to remove locking pin in retainer.
4	Seat Shoulder Belt Retractor Fastener Tighten 45 N.m (33 lb ft)
5	Seat Shoulder Belt Retractor Assembly Procedure 1. Disconnect the electrical connector. 2. Refer to <u>Pretensioner Handling and Scrapping (Europe)</u>, <u>Pretensioner Handling and Scrapping (Except Europe)</u>.

SEAT BELT RETRACTOR PRETENSIONER REPLACEMENT - FRONT (AQ9 AND COUPE)

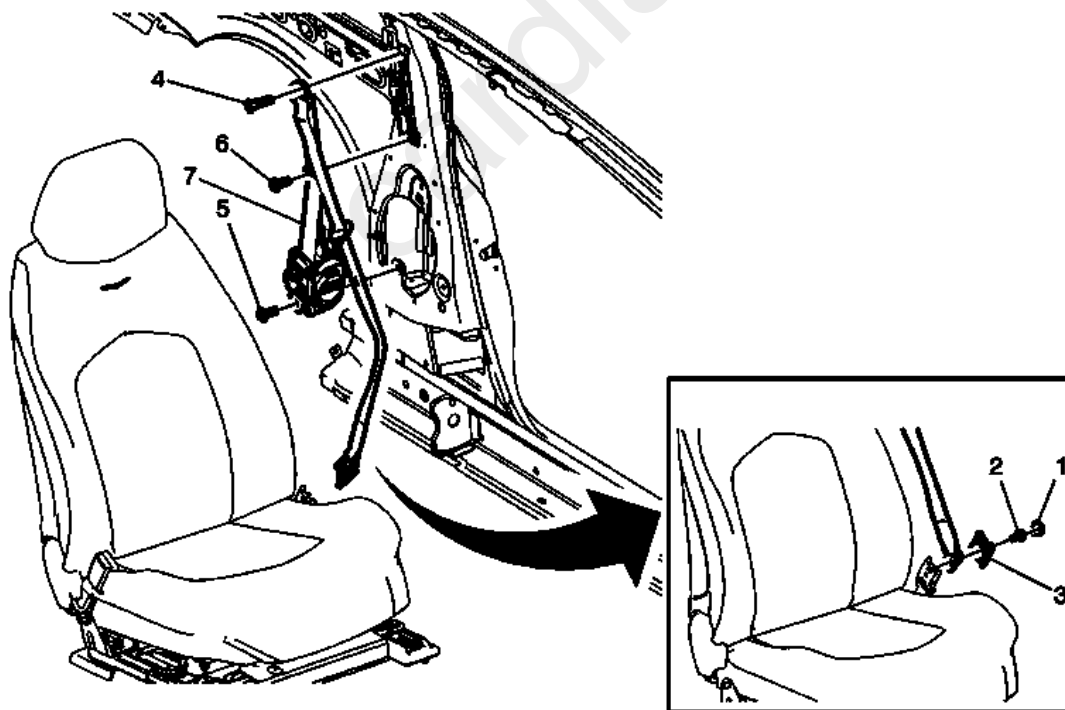


Fig. 22: Seat Belt Retractor Pretensioner - Front (AQ9 and Coupe)

Courtesy of GENERAL MOTORS COMPANY

Seat Belt Retractor Pretensioner Replacement - Front (AQ9 and Coupe)

Callout	Component Name
WARNING: Refer to <u>SIR Warning</u> .	
WARNING: 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.	
WARNING: Refer to <u>SIR Inflator Module Handling and Storage Warning</u> .	
Preliminary Procedures 1. Move the front seat to a full forward and full up position. 2. Disable the SIR. Refer to <u>SIR Disabling and Enabling</u>. 3. Remove the center pillar upper garnish molding. Refer to <u>Center Pillar Upper Garnish Molding Replacement (Coupe)</u> . 4. Remove the body side front lower trim panel. Refer to <u>Body Side Front Lower Trim Panel Replacement (Coupe)</u> .	
1	Front Seat Belt Tensioner Cover Bolt (Retractor Side) Cover
2	Front Seat Belt Tensioner Cover Bolt (Retractor Side) Fastener CAUTION: Refer to <u>Fastener Caution</u> . Tighten 6 (53 lb in)
3	Front Seat Belt Tensioner (Retractor Side) Assembly
4	Seat Shoulder Belt Guide Fastener Tighten 47 (35 lb ft)
5	Seat Shoulder Belt Retractor Fastener Tighten 45 (33 lb ft)
6	Seat Belt Push On Retainer Procedure Use a flat-bladed tool to remove locking pin in retainer.

7	Seat Shoulder Belt Retractor Assembly Procedure 1. Disconnect the electrical connector. 2. Refer to <u>Pretensioner Handling and Scrapping (Europe), Pretensioner Handling and Scrapping (Except Europe).</u>
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REPAIRS AND INSPECTIONS REQUIRED AFTER A COLLISION

Accident With or Without Air Bag Deployment - Component Inspections

WARNING: Proper operation of the Supplemental Inflatable Restraint (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 of the air bag(s) in a frontal collision or deployment of the air bag(s) for conditions less severe than intended.

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

- The steering column-Inspect the steering column for bending, twisting, buckling or any type of damage.
- The instrument panel knee bolsters and mounting points-Inspect the knee bolsters for bending, twisting, buckling, or any other type of damage.
- The instrument panel brackets, braces, etc.-Inspect for bending, twisting, buckling, or any other type of damage.
- The seat belts-Perform the seat belt operational and functional checks. Refer to **Repairs and Inspections Required After a Collision**.
- The instrument panel cross car beam-Inspect for bending, twisting, buckling, or any other type of damage.
- The instrument panel mounting points and brackets-Inspect for bending, twisting, buckling, or any other type of damage.
- The seats and seat mounting points-Inspect for bending, twisting, buckling, or any other type of damage.
- The roof and headliner mounting points.
- The brake pedal --Inspect the brake pedal for bending, twisting, buckling or any type of damage.

Accident With Frontal Air Bag Deployment - Component Replacement and Inspections

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

- Driver Steering Wheel Air Bag
- Passenger instrument panel air bag, if deployed

- Inflatable Restraint Sensing and Diagnostic Module (SDM), if the Inflatable Restraint Sensing and Diagnostic Module has set DTC B0052 and will not clear
- Front and/or Side Impact Sensors
- Driver/Passenger Seat Side Air Bag, if deployed
- Seat back cover if Side Seat Air Bag is deployed
- Driver/Passenger Seat Belt Anchor and/or Retractor Pretensioners

Perform additional inspections on the following components.

- Steering wheel air bag coil and the coil wiring pigtail-Inspect for melting, scorching, or other damage due to excessive heat.
- Mounting points or mounting hardware for the passenger instrument panel air bag, steering wheel air bag, Inflatable Restraint Sensing and Diagnostic Module, seat side air bag (if deployed) and seat belt anchor and/or retractor pretensioners-Inspect for any damage and repair or replace each component as needed.

Accident With Side Seat Air Bag Deployment - Component Replacement and Inspections

After a collision involving driver/passenger side seat air bag deployment, replace the following components.

- Left/right side impact sensors on the side of the impact.
- Left/right roof rail air bag on the side of the impact.
- Inflatable Restraint Sensing and Diagnostic Module (SDM), if the Inflatable Restraint Sensing and Diagnostic Module has set DTC B0052 and will not clear.
- Inflatable Restraint Seat Belt Anchor and/or Retractor Pretensioner.
- Driver or passenger seat back cushion cover replacement.

WARNING: Do not repair or replace the seat stitching or seams in the seat back trim cover with an internal mounted seat side airbag module. Replace the complete seat back trim cover from the OEM. Non-OEM seat stitching may cause improper airbag deployment which could result in personal injury.

Perform additional inspections on the following components.

- Mounting points or mounting hardware for the side impact sensors, and driver/passenger side seat air bags on the side of impact-Inspect for any damage and repair or replace each component as needed.
- Mounting points, mounting hardware, headliner and trim pieces for the left/right roof rail air bag on the side of impact-Inspect for any damage and repair or replace each component as needed.
- Mounting points or mounting hardware for the Inflatable Restraint Sensing and Diagnostic Module and seat belt anchor and/or retractor pretensioners-Inspect for any damage and repair or replace each component as needed.
- The seat cushion frame
- The seat recliner and cover, if equipped
- The seat adjuster

- The seat back frame
- Door trim assembly
- Impacted seat cushion side covers and switches

Accident With Seat Belt Pretensioner Deployment Only - Component Replacement and Inspections

After a collision involving driver/passenger Seat Belt Retractor or Anchor Pretensioner deployment, replace the following components.

- Driver and Passenger Inflatable restraint seat belt anchor pretensioner and/or retractor pretensioner
- Inflatable Restraint Sensing and Diagnostic Module (SDM), if the Inflatable Restraint Sensing and Diagnostic Module has set DTC B0052 and will not clear

Perform additional inspections for any damage and repair or replace each component as needed on the following components.

- Mounting points or mounting hardware for the Inflatable Restraint Sensing and Diagnostic Module
- Mounting points or mounting hardware for the Seat Belt Anchor Pretensioners
- Mounting points or mounting hardware for the Seat Belt Retractor Pretensioners

Impact Sensor Replacement Guidelines

The impact sensor replacement policy requires replacing sensors in the area of the accident damage. The area of accident damage is defined as the portion of the vehicle which is crushed, bent, or damaged due to a collision. An example of this would be a moderate collision where the front of the vehicle impacts a object. If the vehicle has an impact sensor mounted forward of the radiator, it must be replaced.

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

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

INFLATABLE RESTRAINT MODULE HANDLING AND SCRAPPING (EUROPE)

Special Tools

EL-38826 SIR Deployment Harness

For equivalent regional tools, refer to **Special Tools**.

Live and Undeployed Air Bag

WARNING: Refer to SIR Inflator Module Handling and Storage Warning .

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

Dual Stage Air Bags

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

Scrapping Procedure

At the end of a vehicle's useful life, certain situations may arise which will require the disposal of a live and undeployed air bag. Do NOT dispose a live and undeployed air bag through normal disposal channels until the air bag has been deployed.

Do not deploy the air bag in the following situations:

- After replacement of an air bag under warranty-the air bag 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 air bags - follow the instructions in the campaign service bulletin for proper SIR handling procedures.

Deployment Procedures

NOTE: Some countries, states or localities may not allow service deployment of air bags without special permission or training. Local laws regarding deploying and scrapping of air bags/devices with pyrotechnics must be followed.

You can only deploy the air bag inside of the vehicle.

Deployment Inside Vehicle - Vehicle Scrapping Procedure

Deploy the air bags 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.

WARNING: Refer to SIR Inflatable Module Deployment Outside Vehicle Warning .

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 air bags which will be deployed are mounted securely.
4. Remove all loose objects from the front seats.

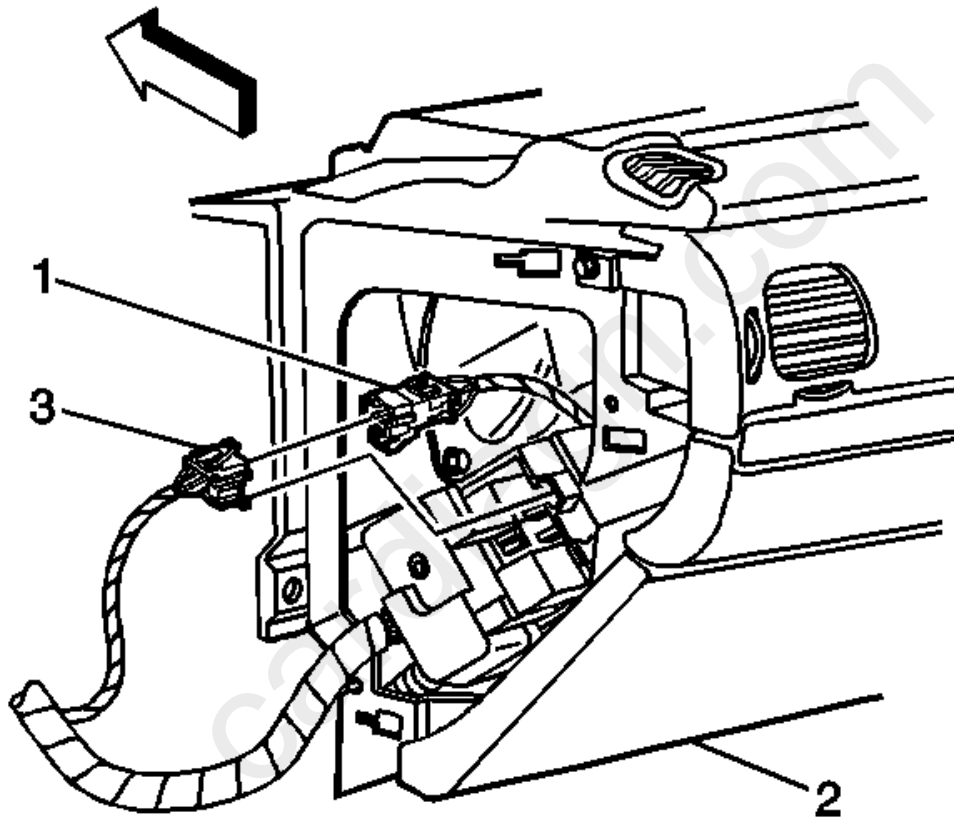


Fig. 23: Identifying I/P Module Connector To Vehicle Harness Connector (LH Side I/P)
Courtesy of GENERAL MOTORS COMPANY

WARNING: 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.

5. Disconnect the steering wheel air bag yellow connector (1) from vehicle harness yellow connector (3).

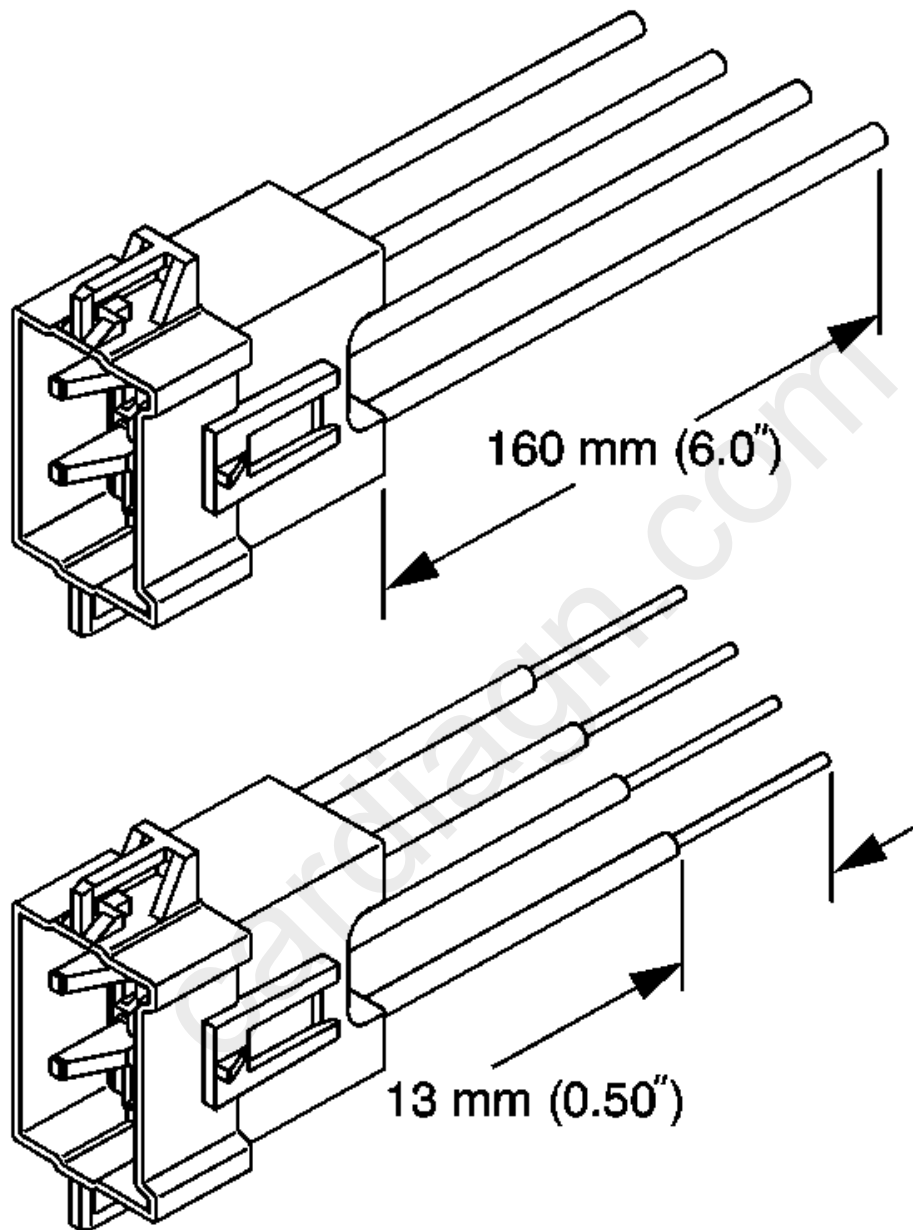


Fig. 24: Stripping SIR Wires

Courtesy of GENERAL MOTORS COMPANY

NOTE: If the vehicle is equipped with dual stage air bags the steering wheel air

bag and instrument panel air bag will each have 4 wires. Refer to COMPONENT CONNECTOR END VIEWS - INDEX - COUPE AND WAGON for determining high and low circuits.

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

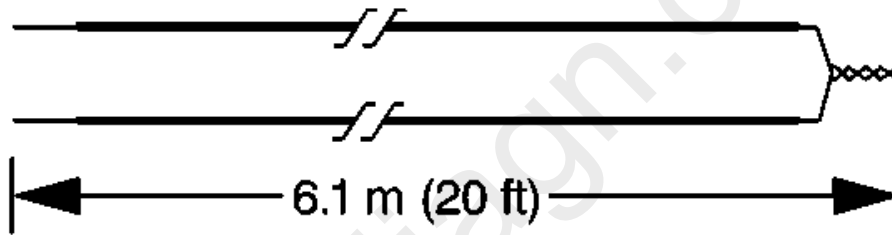


Fig. 25: Fabricating 20 Ft. Deployment Harness
Courtesy of GENERAL MOTORS COMPANY

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

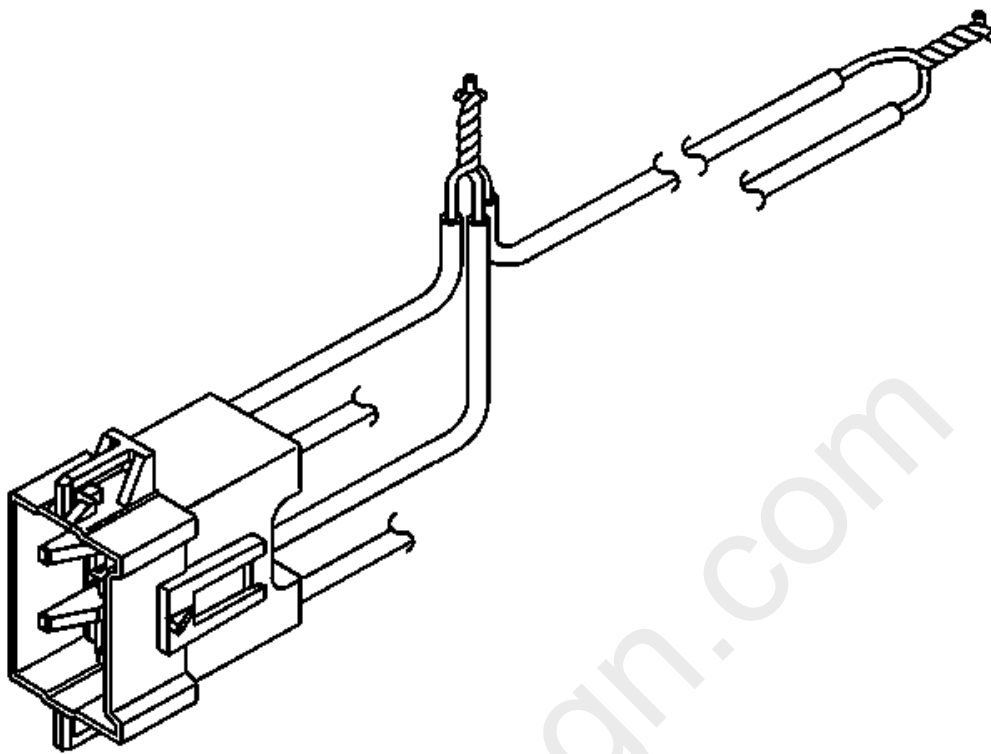


Fig. 26: Twisting Connector Wire Leads (High Circuits) To Deployment Harness Wire
Courtesy of GENERAL MOTORS COMPANY

11. Twist together the 2 connector wire leads from the high circuits from both stages of the steering wheel air bag, to one set of deployment wires. Refer to **COMPONENT CONNECTOR END VIEWS - INDEX - COUPE AND WAGON** in order to determine the correct circuits.
12. Inspect that the 3-wire connection is secure.
13. Secure and insulate the 3-wire connection to the deployment harness using electrical tape.

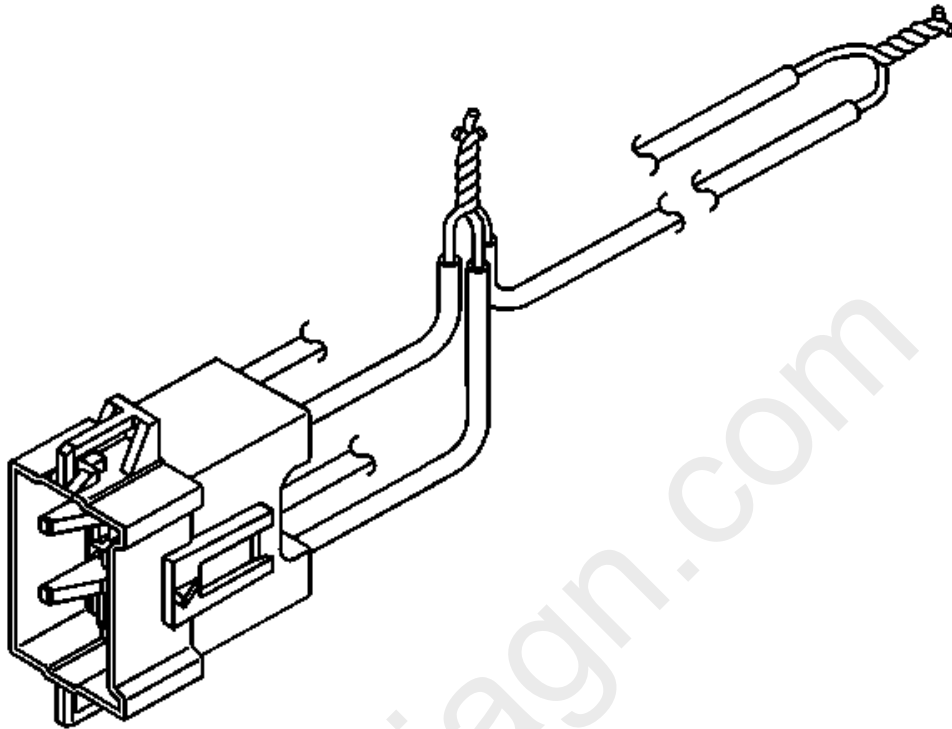


Fig. 27: Twisting Connector Wire Leads (Low Circuits) To Deployment Harness Wire
Courtesy of GENERAL MOTORS COMPANY

14. Twist together the 2 connector wire leads from the low circuits from both stages of the steering wheel air bag, to one set of deployment wires. Refer to **COMPONENT CONNECTOR END VIEWS - INDEX - COUPE AND WAGON** in order to determine the correct circuits.
15. Inspect that the 3-wire connection is secure.
16. Secure and insulate the 3-wire connection to the deployment harness using electrical tape.
17. Connect the deployment harness to the connector on the steering wheel air bag.
18. Route the deployment harness out of the driver side of the vehicle.
19. Disconnect the yellow left roof rail harness connector from the vehicle harness connector.
20. Cut the harness connector out of the vehicle, leaving at least 16 cm (6 in) of wire at the connector.
21. Strip 13 mm (0.5 in) of insulation from each of the connector wire leads.
22. Cut two 6.1 m (20 ft) deployment wires from a 0.8 mm (18 gauge) or thicker multi-strand wire. These wires will be used to fabricate the roof rail air bag deployment harness.
23. Strip 13 mm (0.5 in) of insulation from both ends of the wires.

24. Twist together one end from each of the wires in order to short the wires.
25. Twist together one connector wire lead to one deployment wire.
26. Secure and insulate the connection using electrical tape.
27. Twist together and tape the remaining connector wire lead to the remaining deployment wire.
28. Connect the deployment harness to the yellow connector of the roof rail air bag.
29. Route the deployment harness out of the driver side of the vehicle.

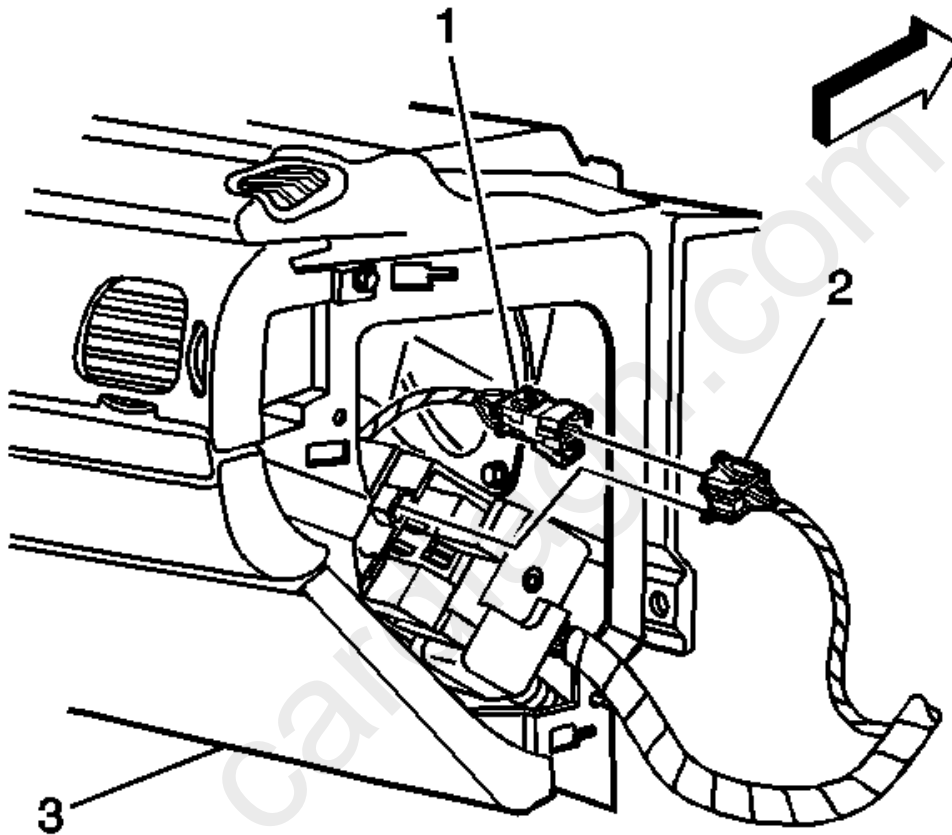


Fig. 28: Identifying I/P Module Connector To Vehicle Harness Connector
Courtesy of GENERAL MOTORS COMPANY

30. Disconnect the instrument panel air bag yellow harness connector (1) from the vehicle harness connector (2).

NOTE: If the vehicle is equipped with dual stage air bags the steering wheel air bag and instrument panel air bag will each have 4 wires. Refer to COMPONENT CONNECTOR END VIEWS - INDEX - COUPE AND WAGON for determining high and low circuits.

31. Cut the yellow harness connector out of the vehicle, leaving at least 16 cm (6 in) of wire at the connector.
32. Strip 13 mm (0.5 in) of insulation from each of the connector wire leads.
33. Cut two 6.1 m (20 ft) deployment wires from a 0.8 mm (18 gauge) or thicker multi-strand wire. These wires will be used to fabricate the passenger deployment harness.
34. Strip 13 mm (0.5 in) of insulation from both ends of the wires.
35. Twist together one end from each of the wires in order to short the wires.
36. Twist together the 2 connector wire leads from the high circuits from both stages of the instrument panel air bag to one set of deployment wires. Refer to **COMPONENT CONNECTOR END VIEWS - INDEX - COUPE AND WAGON** in order to determine the correct circuits.
37. Inspect that the 3-wire connection is secure.
38. Secure and insulate the 3-wire connection to the deployment harness using electrical tape.
39. Twist together the 2 connector wire leads from the low circuits from both stages of the instrument panel air bag to one set of deployment wires. Refer to **COMPONENT CONNECTOR END VIEWS - INDEX - COUPE AND WAGON** in order to determine the correct circuits.
40. Inspect that the 3-wire connection is secure.
41. Secure and insulate the 3-wire connection to the deployment harness using electrical tape.
42. Connect the deployment harness to the instrument panel air bag in-line connector.
43. Route the deployment harness out of the passenger side of the vehicle.
44. Disconnect the yellow harness connector to the right roof rail air bag from the vehicle harness connector.
45. Cut the harness connector out of the vehicle, leaving at least 16 cm (6 in) of wire at the connector.
46. Strip 13 mm (0.5 in) of insulation from each of the connector wire leads.
47. Cut two 6.1 m (20 ft) deployment wires from a 0.8 mm (18 gauge) or thicker multi-strand wire. These wires will be used to fabricate the roof rail air bag deployment harness.
48. Strip 13 mm (0.5 in) of insulation from both ends of the wires.
49. Twist together one end from each of the wires in order to short the wires.
50. Twist together one connector wire lead to one deployment wire.
51. Secure and insulate the connection using electrical tape.
52. Twist together and tape the remaining connector wire lead to the remaining deployment wire.
53. Connect the deployment harness to the roof rail air bag yellow connector.
54. Route the deployment harness out of the passenger side of the vehicle.
55. Completely cover the windshield and the front door window openings with a drop cloth.
56. Stretch to the full length all of the deployment harness wires on the right side of the vehicle.
57. Deploy each deployment loop one at a time.
58. Place a power source, 12 V minimum/2A minimum, such as a vehicle battery, near the shorted end of the harnesses.
59. Separate one set of wires and touch the wire ends to the power source in order to deploy the selected air bag.
60. Disconnect the deployment harness from the power source and twist the wire ends together.
61. Continue the same process with the remaining deployment harnesses.

62. Disconnect all harnesses from the vehicle.
63. Discard the harnesses.
64. Scrap the vehicle in the same manner as a non-SIR equipped vehicle.
65. If one or all of the air bags did not deploy, remove the undeployed air bags from the vehicle.

INFLATABLE RESTRAINT MODULE HANDLING AND SCRAPPING (EXCEPT EUROPE)

NOTE: Do not use this document if vehicle is being serviced in Europe.

Special Tools

- **EL-38826** SIR Deployment Harness
- **EL-39401-B** SIR Deployment Fixture

For equivalent regional tools, refer to **Special Tools**.

Live and Undeployed Air Bag

WARNING: Refer to **SIR Inflator Module Handling and Storage Warning** .

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

Dual Stage Air Bags

Dual stage air bags have two deployment stages. If stage 1 was used to deploy a dual stage air bag, stage 2 may still be active. Therefore, a deployed dual stage air bag must be treated as an active air bag. If disposal of a dual stage air bag 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 air bag. Do NOT dispose a live and undeployed air bag through normal disposal channels until the air bag has been deployed.

Do not deploy the air bag in the following situations:

- After replacement of an air bag under warranty-the air bag 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 air bags - follow the instructions in the campaign service bulletin for proper SIR handling procedures.

Deployment Procedures

NOTE: Some countries, states or localities may not allow service deployment of air bags without special permission or training. Local laws regarding deploying and scrapping of air bags/devices with pyrotechnics must be followed.

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

Deployment Outside Vehicle - Steering Wheel Air Bag, Instrument Panel Air Bag, and Roof Rail Air Bag

Deploy the air bag 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 air bag is malfunctioning.
- The air bag is cosmetically damaged, scratched, or ripped.
- The air bag pigtail is damaged.
- The air bag connector is damaged.
- The air bag connector terminals are damaged.

Deployment and disposal of a malfunctioning air bag is subject to any required retention period.

WARNING: Refer to SIR Inflator Module Disposal Warning .

1. Turn OFF the ignition.

WARNING: Refer to SIR Inflator Module Handling and Storage Warning .

2. Remove the air bag.

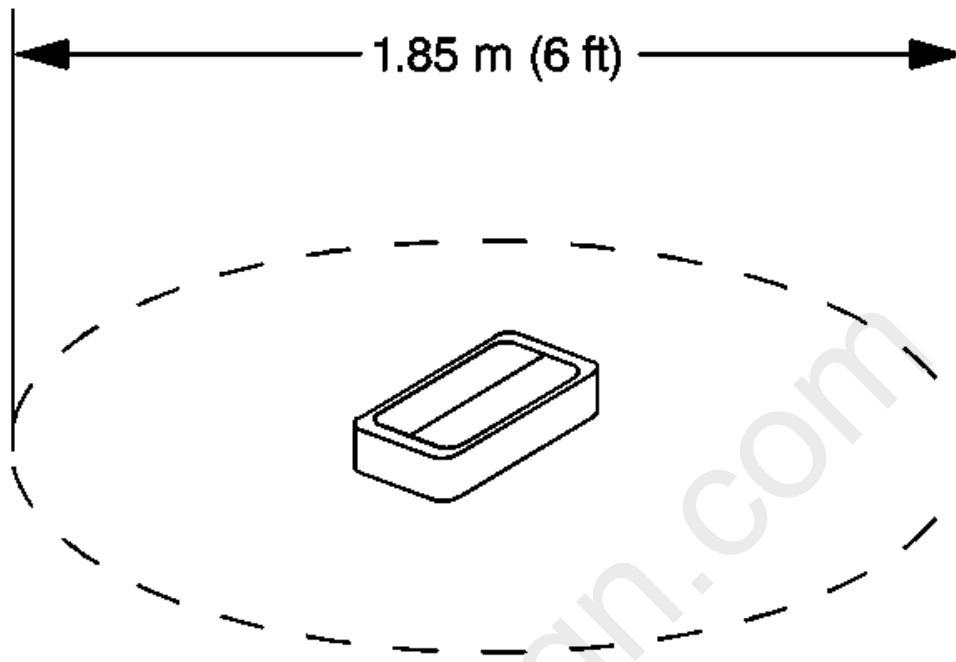


Fig. 29: Identifying Clearance For Deployment Of Inflator Module
Courtesy of GENERAL MOTORS COMPANY

3. Clear a space on the ground about 1.85 m (6 ft) in diameter for deployment of the air bag 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.
4. Clear the area of loose or flammable objects.

NOTE: Dual stage deployments are only used in steering wheel and instrument panel air bags. If stage 1 was used to deploy a dual stage air bag, stage 2 may still be active. If disposal of a dual stage air bag is required, both deployment loops must be energized to deploy the air bag.

5. If you are deploying a steering wheel air bag, place the air bag in the center of the space with the vinyl trim cover facing up and away from the surface.

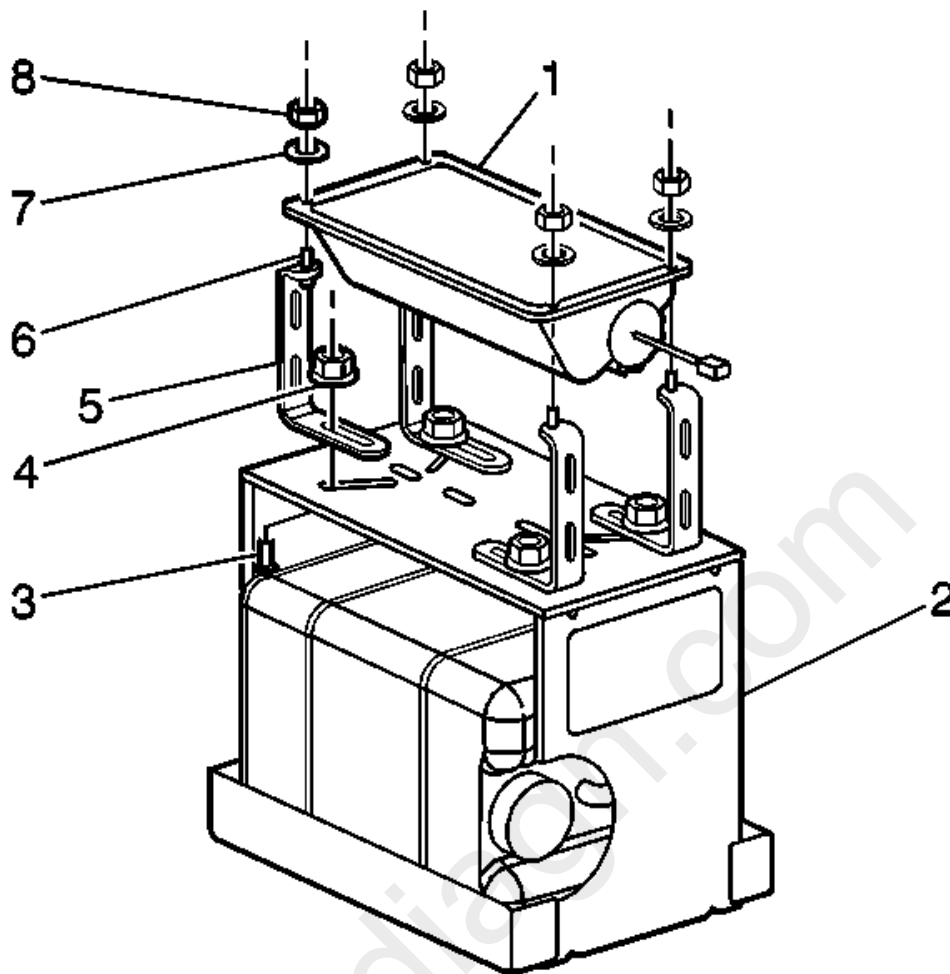


Fig. 30: Identifying I/P Module Components
Courtesy of GENERAL MOTORS COMPANY

6. When deploying an instrument panel air bag, perform the following instructions:
 1. Place the **EL-39401-B** fixture in the center of the cleared area.
 2. Fill the deployment fixture with water or sand.
 3. Using the proper nuts and bolts, mount the instrument panel air bag (1) to the deployment fixture (2), with the vinyl trim facing up.
 4. Securely tighten all fasteners that hold the instrument panel air bag (1) to the deployment fixture (2).

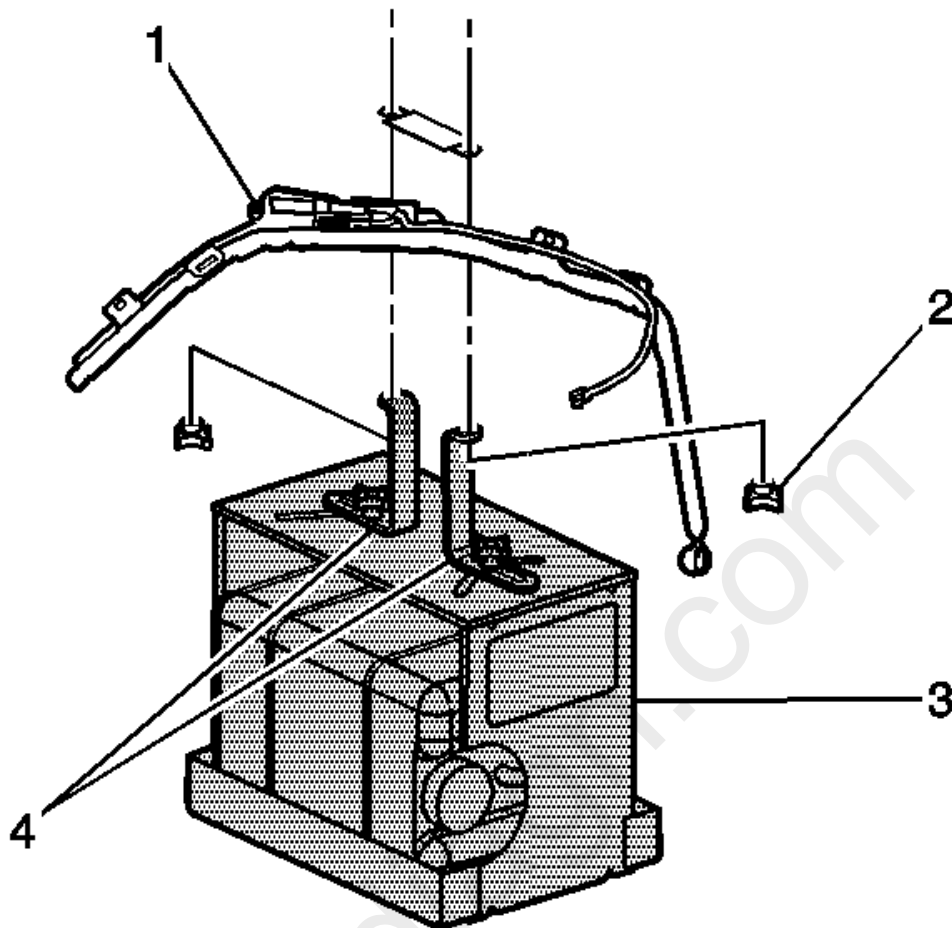


Fig. 31: Identifying Fasteners Holding Side Impact Module To Deployment Fixture
Courtesy of GENERAL MOTORS COMPANY

7. When deploying a roof rail air bag, perform the following instructions:
 1. Place the **EL-39401-B** fixture (3) in the center of the cleared area.
 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 air bag in the deployment fixture and securely tighten all fasteners.

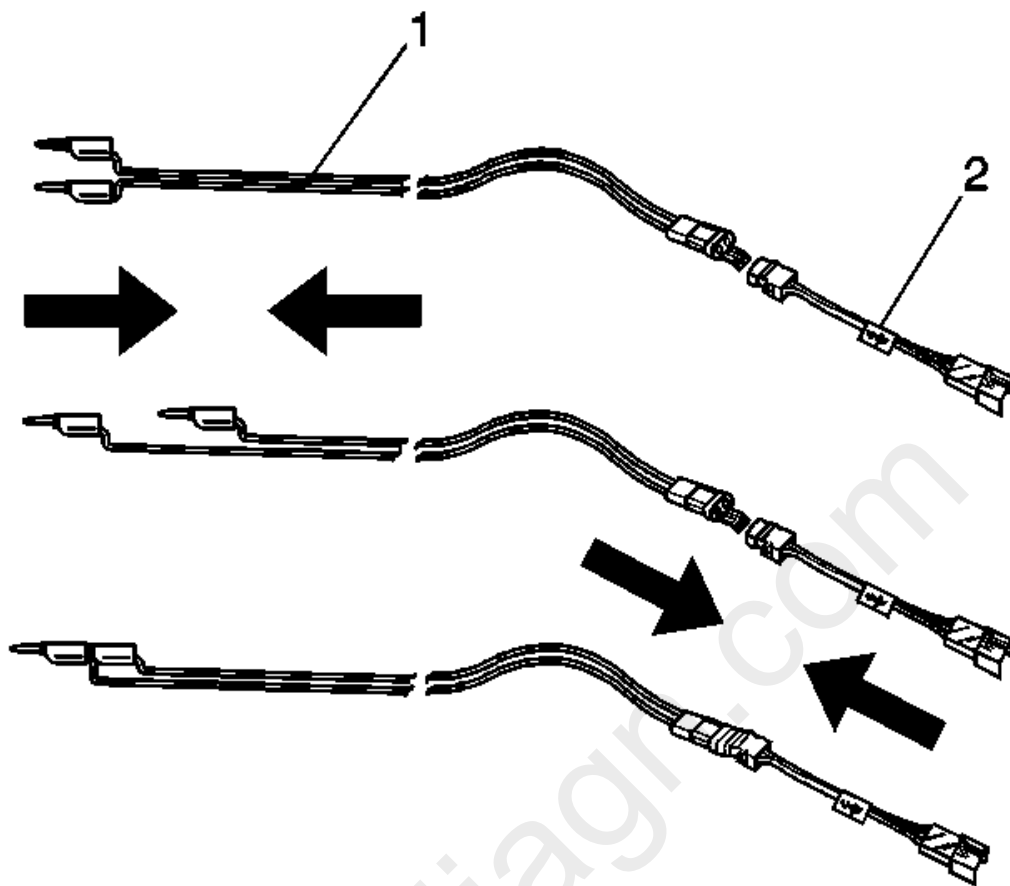


Fig. 32: Identifying SIR Deployment Harness & Adapter
Courtesy of GENERAL MOTORS COMPANY

8. Inspect the **EL-38826** harness and the appropriate pigtail adapter (2) for damage. Replace as needed.
9. Short the 2 SIR deployment harness leads (1) together using one banana plug seated into the other.
10. Connect the appropriate pigtail adapter (2) to the SIR deployment harness (1).

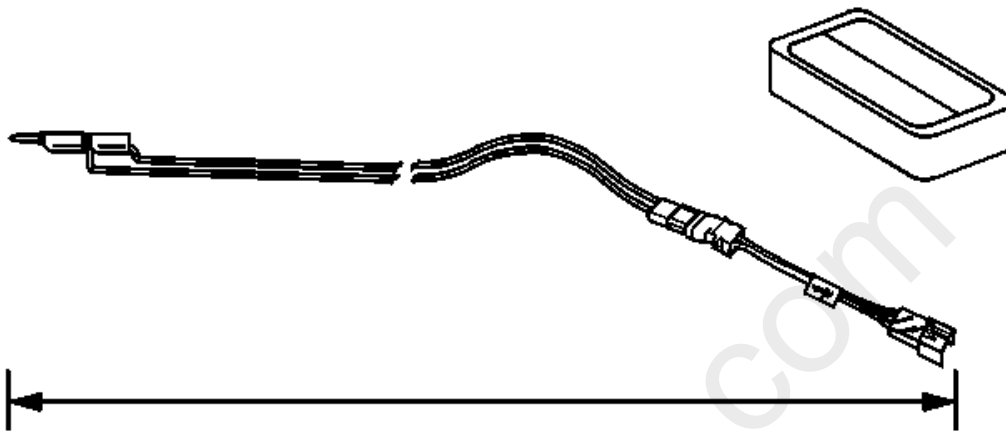


Fig. 33: Extending SIR Deployment Harness & Adapter
Courtesy of GENERAL MOTORS COMPANY

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

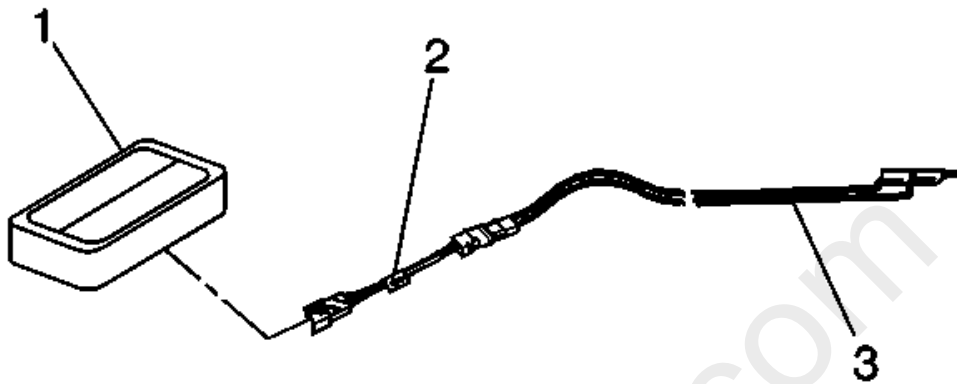


Fig. 34: Identifying Inflator Module, SIR Deployment Harness & Adapter
Courtesy of GENERAL MOTORS COMPANY

NOTE: On a dual stage air bag, 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.

12. Connect the air bag (1) to the adapter (2) on the SIR deployment harness (3).

NOTE:

- The rapid expansion of gas involved with deploying an air bag is very loud. Notify all the people in the immediate area that you intend to deploy the air bag.
- When the air bag deploys, the deployment fixture may jump about 30 cm (1 ft) vertically. This is a normal reaction of the air bag due to the force of the rapid expansion of gas inside the air bag.

- If you are deploying a dual stage air bag with stage 1 already deployed, the fixture may not move and the noise may have been reduced.

13. Clear the area of people.

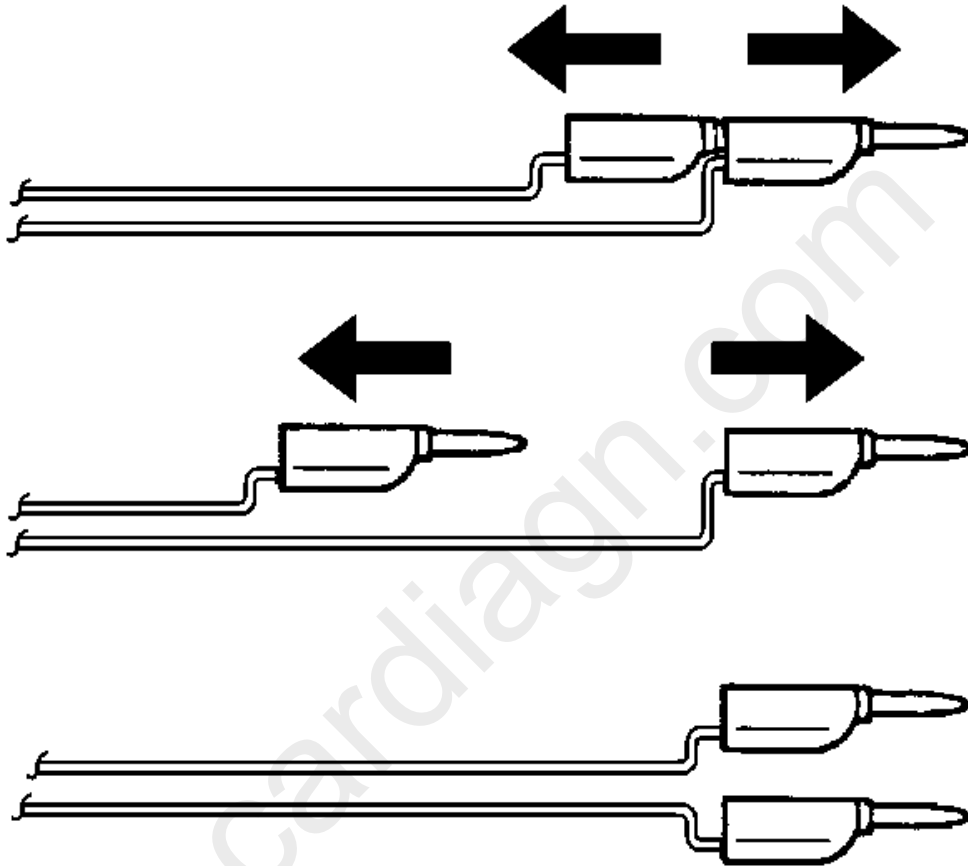


Fig. 35: Separating Banana Plugs

Courtesy of GENERAL MOTORS COMPANY

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

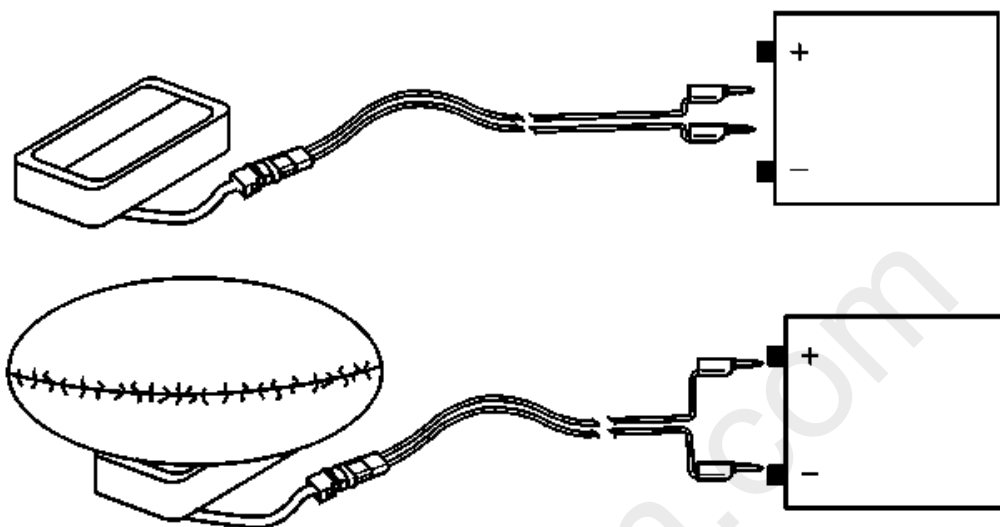


Fig. 36: Connecting SIR Deployment Harness Wires To Power Source
Courtesy of GENERAL MOTORS COMPANY

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

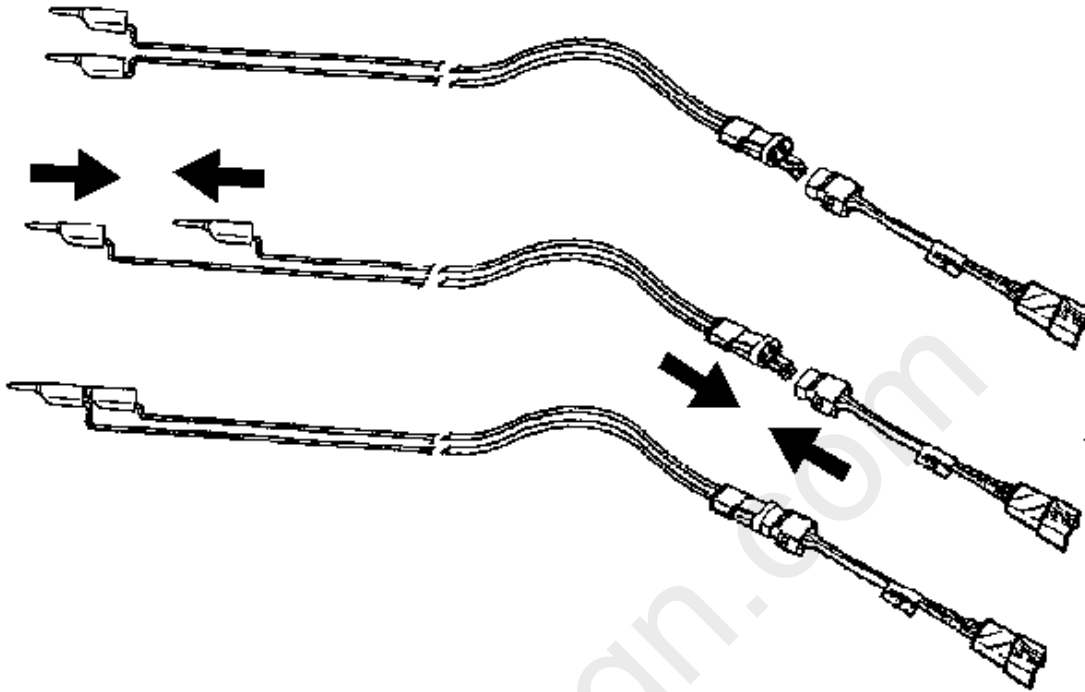


Fig. 37: View Of Deployment Harness Leads
Courtesy of GENERAL MOTORS COMPANY

17. Disconnect the SIR deployment harness from the power source after the air bag deploys.
18. If the air bag 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.

WARNING: Refer to SIR Deployed Inflator Modules Are Hot Warning .

19. Seat one banana plug into the other in order to short the deployment harness leads.
20. Put on a pair of shop gloves.

21. Disconnect the pigtail adapter from the air bag as soon as possible.
22. Inspect the pigtail adapter and the SIR deployment harness. Replace as needed.
23. Dispose of the deployed air bag through normal refuse channels.
24. Wash your hands with a mild soap.

Deployment Inside Vehicle - Vehicle Scrapping Procedure

Deploy the air bags 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.

WARNING: Refer to SIR Inflatable Module Deployment Outside Vehicle Warning .

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 air bags which will be deployed are mounted securely.
4. Remove all loose objects from the front seats.

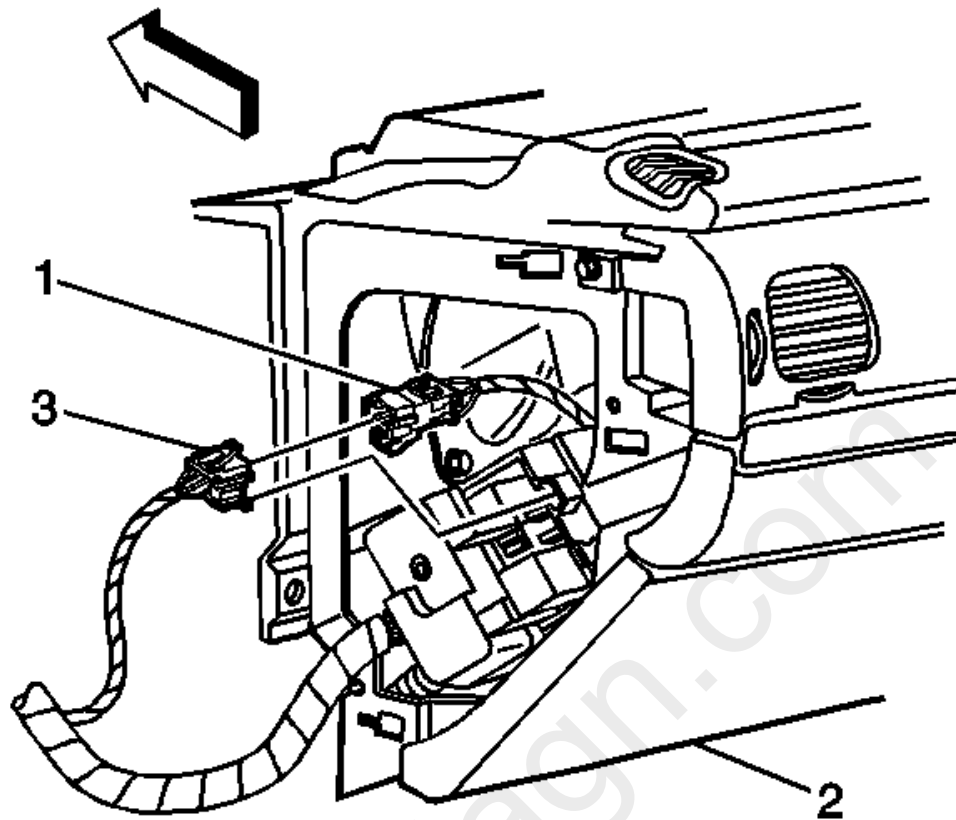


Fig. 38: Identifying I/P Module Connector To Vehicle Harness Connector (LH Side I/P)
Courtesy of GENERAL MOTORS COMPANY

WARNING: 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.

5. Disconnect the steering wheel air bag yellow connector (1) from vehicle harness yellow connector (3).

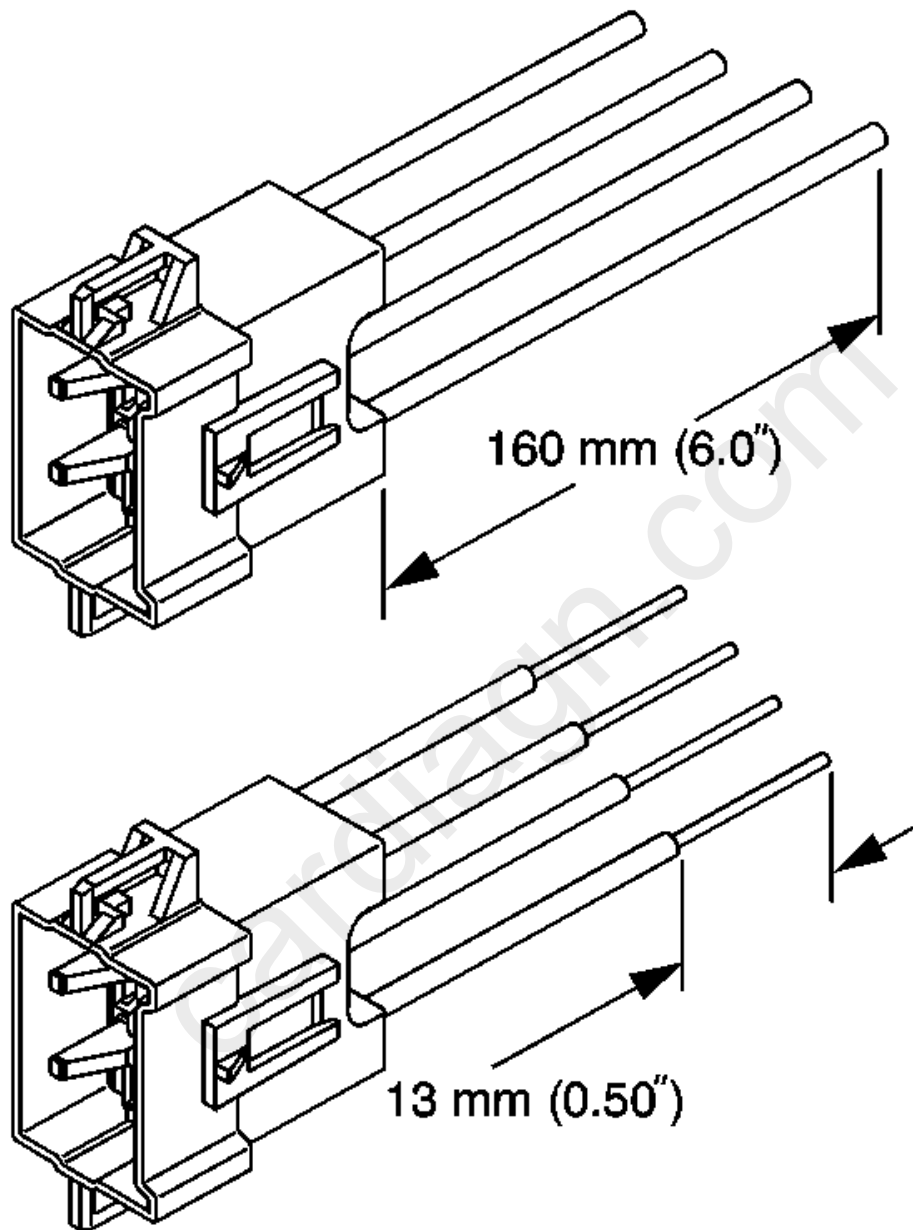


Fig. 39: Stripping SIR Wires

Courtesy of GENERAL MOTORS COMPANY

NOTE: If the vehicle is equipped with dual stage air bags the steering wheel air

bag and instrument panel air bag will each have 4 wires. Refer to COMPONENT CONNECTOR END VIEWS - INDEX - COUPE AND WAGON for determining high and low circuits.

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

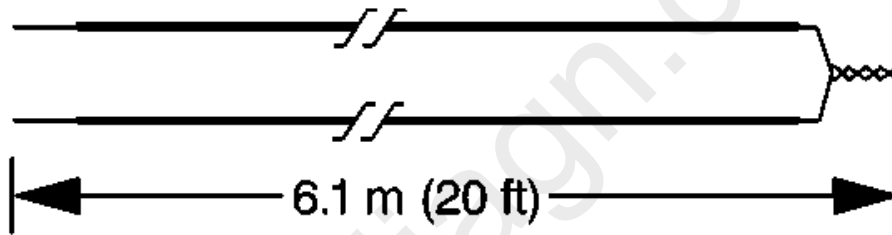


Fig. 40: Fabricating 20 Ft. Deployment Harness
Courtesy of GENERAL MOTORS COMPANY

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

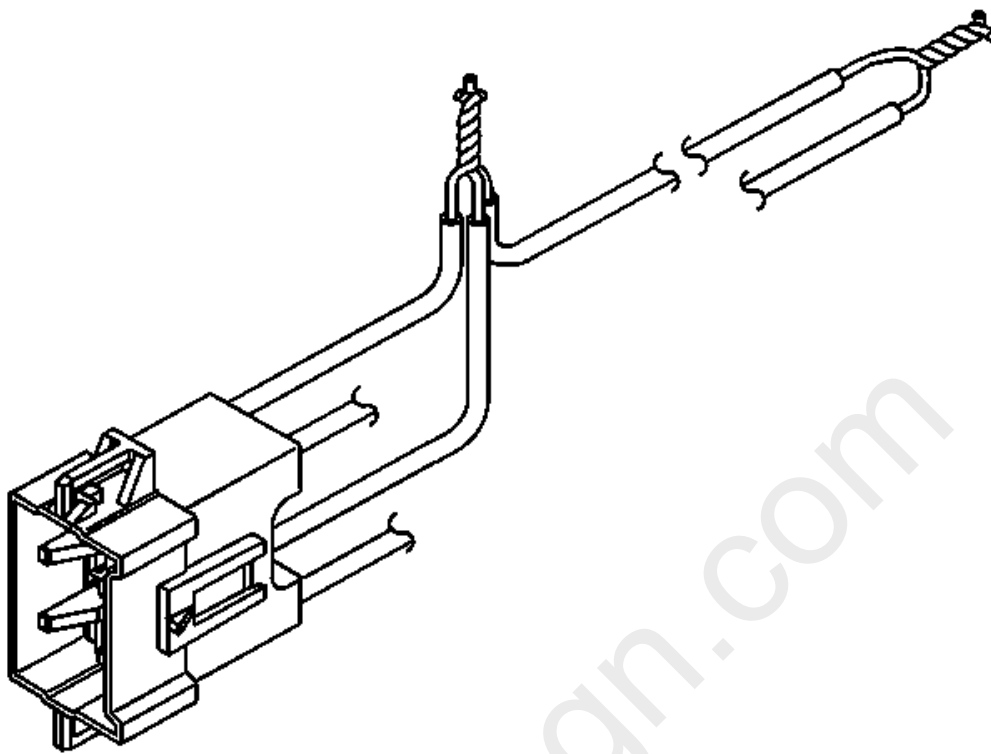


Fig. 41: Twisting Connector Wire Leads (High Circuits) To Deployment Harness Wire
Courtesy of GENERAL MOTORS COMPANY

11. Twist together the 2 connector wire leads from the high circuits from both stages of the steering wheel air bag, to one set of deployment wires. Refer to **COMPONENT CONNECTOR END VIEWS - INDEX - COUPE AND WAGON** in order to determine the correct circuits.
12. Inspect that the 3-wire connection is secure.
13. Secure and insulate the 3-wire connection to the deployment harness using electrical tape.

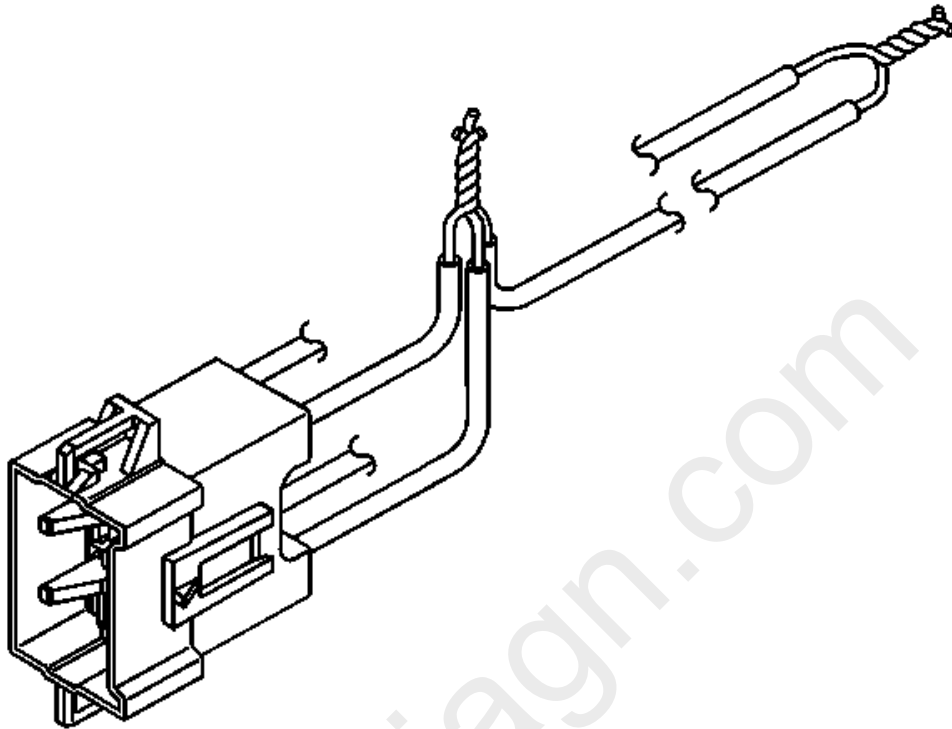


Fig. 42: Twisting Connector Wire Leads (Low Circuits) To Deployment Harness Wire
Courtesy of GENERAL MOTORS COMPANY

14. Twist together the 2 connector wire leads from the low circuits from both stages of the steering wheel air bag, to one set of deployment wires. Refer to **COMPONENT CONNECTOR END VIEWS - INDEX - COUPE AND WAGON** in order to determine the correct circuits.
15. Inspect that the 3-wire connection is secure.
16. Secure and insulate the 3-wire connection to the deployment harness using electrical tape.
17. Connect the deployment harness to the connector on the steering wheel air bag.
18. Route the deployment harness out of the driver side of the vehicle.
19. Disconnect the yellow left roof rail harness connector from the vehicle harness connector.
20. Cut the harness connector out of the vehicle, leaving at least 16 cm (6 in) of wire at the connector.
21. Strip 13 mm (0.5 in) of insulation from each of the connector wire leads.
22. Cut two 6.1 m (20 ft) deployment wires from a 0.8 mm (18 gauge) or thicker multi-strand wire. These wires will be used to fabricate the roof rail air bag deployment harness.
23. Strip 13 mm (0.5 in) of insulation from both ends of the wires.

24. Twist together one end from each of the wires in order to short the wires.
25. Twist together one connector wire lead to one deployment wire.
26. Secure and insulate the connection using electrical tape.
27. Twist together and tape the remaining connector wire lead to the remaining deployment wire.
28. Connect the deployment harness to the yellow connector of the roof rail air bag.
29. Route the deployment harness out of the driver side of the vehicle.

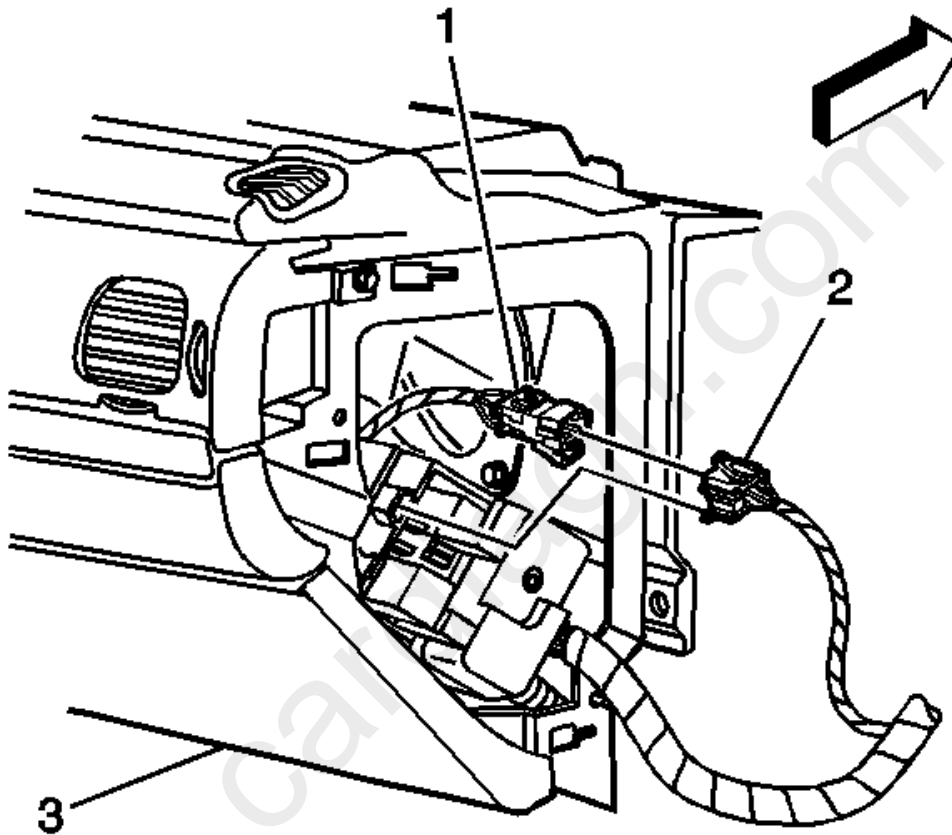


Fig. 43: Identifying I/P Module Connector To Vehicle Harness Connector
Courtesy of GENERAL MOTORS COMPANY

30. Disconnect the instrument panel air bag yellow harness connector (1) from the vehicle harness connector (2).

NOTE: If the vehicle is equipped with dual stage air bags the steering wheel air bag and instrument panel air bag will each have 4 wires. Refer to COMPONENT CONNECTOR END VIEWS - INDEX - COUPE AND WAGON for determining high and low circuits.

31. Cut the yellow harness connector out of the vehicle, leaving at least 16 cm (6 in) of wire at the connector.
32. Strip 13 mm (0.5 in) of insulation from each of the connector wire leads.
33. Cut two 6.1 m (20 ft) deployment wires from a 0.8 mm (18 gauge) or thicker multi-strand wire. These wires will be used to fabricate the passenger deployment harness.
34. Strip 13 mm (0.5 in) of insulation from both ends of the wires.
35. Twist together one end from each of the wires in order to short the wires.
36. Twist together the 2 connector wire leads from the high circuits from both stages of the instrument panel air bag to one set of deployment wires. Refer to **COMPONENT CONNECTOR END VIEWS - INDEX - COUPE AND WAGON** in order to determine the correct circuits.
37. Inspect that the 3-wire connection is secure.
38. Secure and insulate the 3-wire connection to the deployment harness using electrical tape.
39. Twist together the 2 connector wire leads from the low circuits from both stages of the instrument panel air bag to one set of deployment wires. Refer to **COMPONENT CONNECTOR END VIEWS - INDEX - COUPE AND WAGON** in order to determine the correct circuits.
40. Inspect that the 3-wire connection is secure.
41. Secure and insulate the 3-wire connection to the deployment harness using electrical tape.
42. Connect the deployment harness to the instrument panel air bag in-line connector.
43. Route the deployment harness out of the passenger side of the vehicle.
44. Disconnect the yellow harness connector to the right roof rail air bag from the vehicle harness connector.
45. Cut the harness connector out of the vehicle, leaving at least 16 cm (6 in) of wire at the connector.
46. Strip 13 mm (0.5 in) of insulation from each of the connector wire leads.
47. Cut two 6.1 m (20 ft) deployment wires from a 0.8 mm (18 gauge) or thicker multi-strand wire. These wires will be used to fabricate the roof rail air bag deployment harness.
48. Strip 13 mm (0.5 in) of insulation from both ends of the wires.
49. Twist together one end from each of the wires in order to short the wires.
50. Twist together one connector wire lead to one deployment wire.
51. Secure and insulate the connection using electrical tape.
52. Twist together and tape the remaining connector wire lead to the remaining deployment wire.
53. Connect the deployment harness to the roof rail air bag yellow connector.
54. Route the deployment harness out of the passenger side of the vehicle.
55. Completely cover the windshield and the front door window openings with a drop cloth.
56. Stretch to the full length all of the deployment harness wires on the right side of the vehicle.
57. Deploy each deployment loop one at a time.
58. Place a power source, 12 V minimum/2A minimum, such as a vehicle battery, near the shorted end of the harnesses.
59. Separate one set of wires and touch the wire ends to the power source in order to deploy the selected air bag.
60. Disconnect the deployment harness from the power source and twist the wire ends together.
61. Continue the same process with the remaining deployment harnesses.

62. Disconnect all harnesses from the vehicle.
63. Discard the harnesses.
64. Scrap the vehicle in the same manner as a non-SIR equipped vehicle.
65. If one or all of the air bags did not deploy, remove the undeployed air bags from the vehicle.

PRETENSIONER HANDLING AND SCRAPPING (EUROPE)

Special Tools

EL-38826 SIR Deployment Harness

For equivalent regional tools, refer to **Special Tools**.

Scrapping Procedure

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

- After replacement of a pretensioner under warranty. The pretensioner may need to be returned undeployed to the original manufacturer of pretensioner.
- If the vehicle is the subject of a Product Liability report 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 pretensioners. Follow the instructions in the Campaign Service Bulletin for proper SIR handling procedures.

Deployment Procedures

NOTE: **Some countries, states or localities may not allow service deployment of air bags without special permission or training. Local laws regarding deploying and scrapping of air bags/devices with pyrotechnics must be followed.**

The pretensioner can only be deployed inside of the vehicle. Refer to **Inflatable Restraint Module Handling and Scrapping (Europe)**, **Inflatable Restraint Module Handling and Scrapping (Except Europe)** for deploying the pretensioner inside vehicle under Vehicle Scrapping Procedure.

PRETENSIONER HANDLING AND SCRAPPING (EXCEPT EUROPE)

NOTE: **Do not use this document if vehicle is being serviced in Europe.**

Special Tools

- **EL-39401-B SIR Deployment Fixture**

- **EL-38826** SIR Deployment Harness

For equivalent regional tools, refer to **Special Tools**.

Scrapping Procedure

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

- After replacement of a pretensioner under warranty. The pretensioner may need to be returned undeployed to the original manufacturer of pretensioner.
- If the vehicle is the subject of a Product Liability report 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 pretensioners. Follow the instructions in the Campaign Service Bulletin for proper SIR handling procedures.

Deployment Procedures

NOTE: **Some countries, states or localities may not allow service deployment of air bags without special permission or training. Local laws regarding deploying and scrapping of air bags/devices with pyrotechnics must be followed.**

The 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 **Inflatable Restraint Module Handling and Scrapping (Europe)**, **Inflatable Restraint Module Handling and Scrapping (Except Europe)** for deploying the pretensioner inside vehicle under Vehicle Scrapping Procedure.

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, you determine that the seat belt pretensioner is malfunctioning.
- The pretensioner pigtail (if equipped) is damaged.
- The pretensioner connector is damaged.
- The pretensioner connector terminal is damaged.

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

WARNING: In order to prevent accidental deployment of the pretensioner which could cause personal injury, do not dispose of an undeployed pretensioner as normal shop waste. The undeployed pretensioner contains substances that could cause severe illness or personal injury if the sealed container is damaged during disposal. Use the following deployment procedures to safely dispose of an undeployed pretensioner. Failure to dispose of a pretensioner as instructed may be a violation of federal, state, or local laws.

WARNING: When you are deploying a pretensioner for disposal, perform the deployment procedures in the order listed. Failure to follow the procedures in the order listed may result in personal injury.

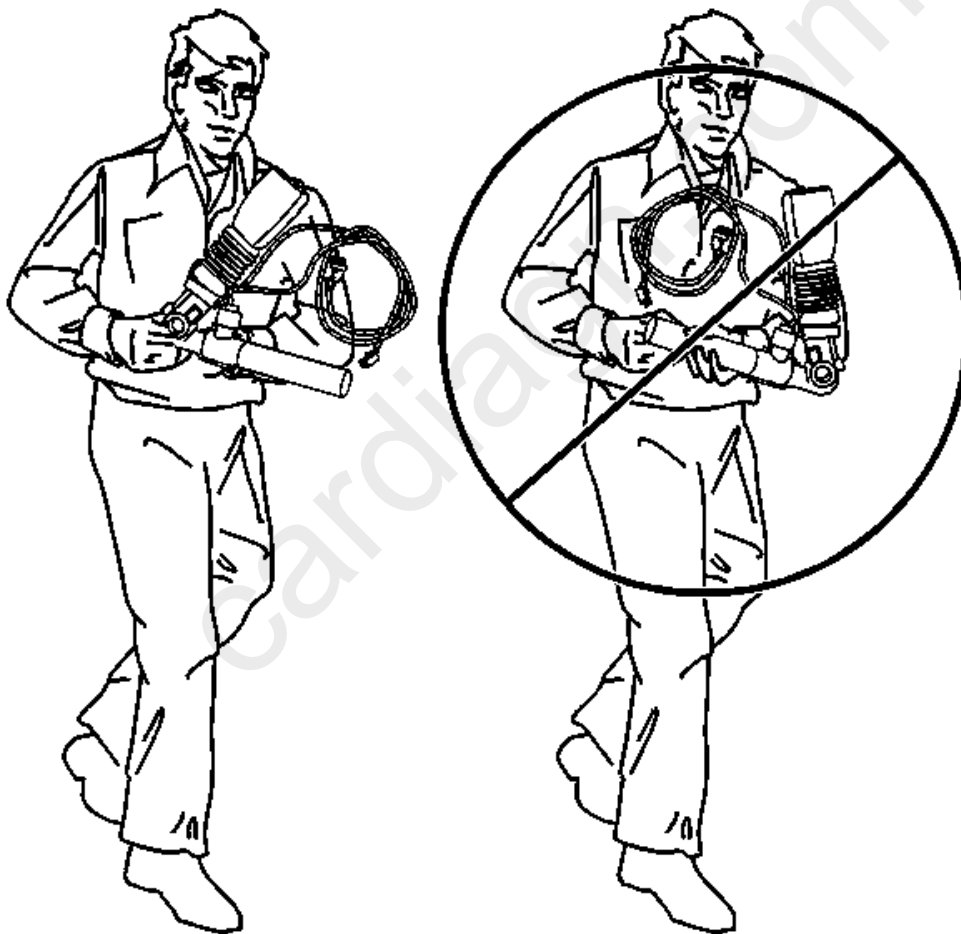


Fig. 44: Proper Pretensioner Carrying
Courtesy of GENERAL MOTORS COMPANY

1. Turn the ignition switch to the OFF position.

2. Remove the ignition key.
3. Put on safety glasses.
4. Remove the seat belt pretensioner from the vehicle.
5. When carrying a pretensioner to the deployment area keep the open end of pretensioner pointed away from the body.

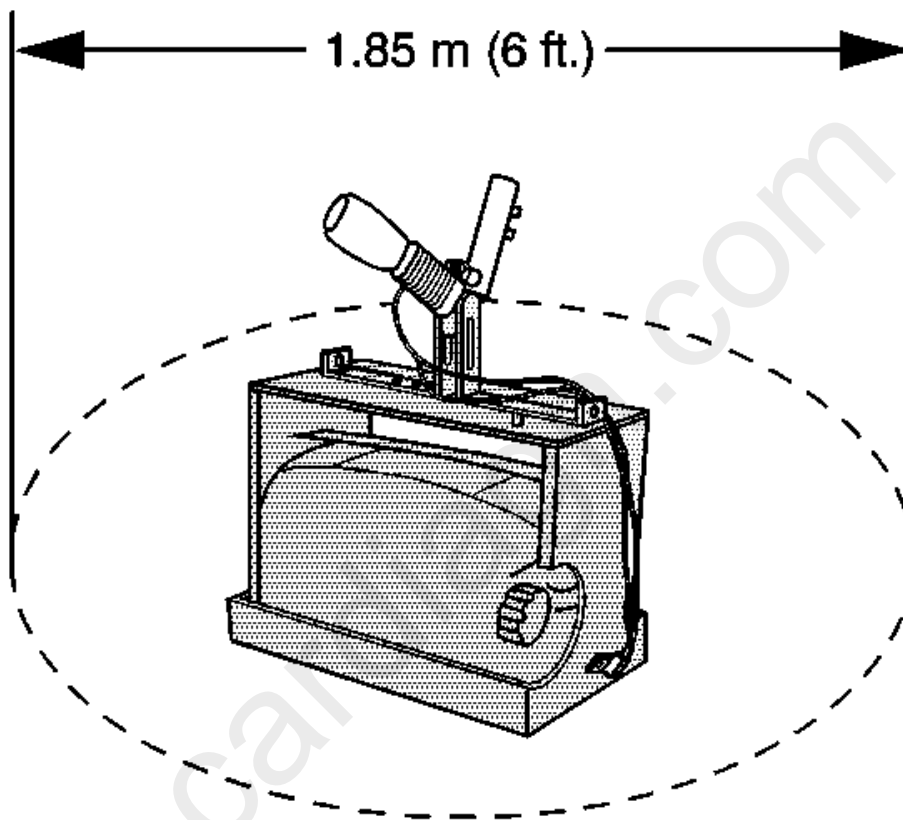


Fig. 45: Pretensioner Deployment Area
Courtesy of GENERAL MOTORS COMPANY

6. Clear a space on the ground about 1.85 M (6 ft) in diameter for deployment of the 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 **EL-39401-B** SIR deployment fixture in the center of the cleared area.
9. Fill the fixture plastic reservoir with water or sand.

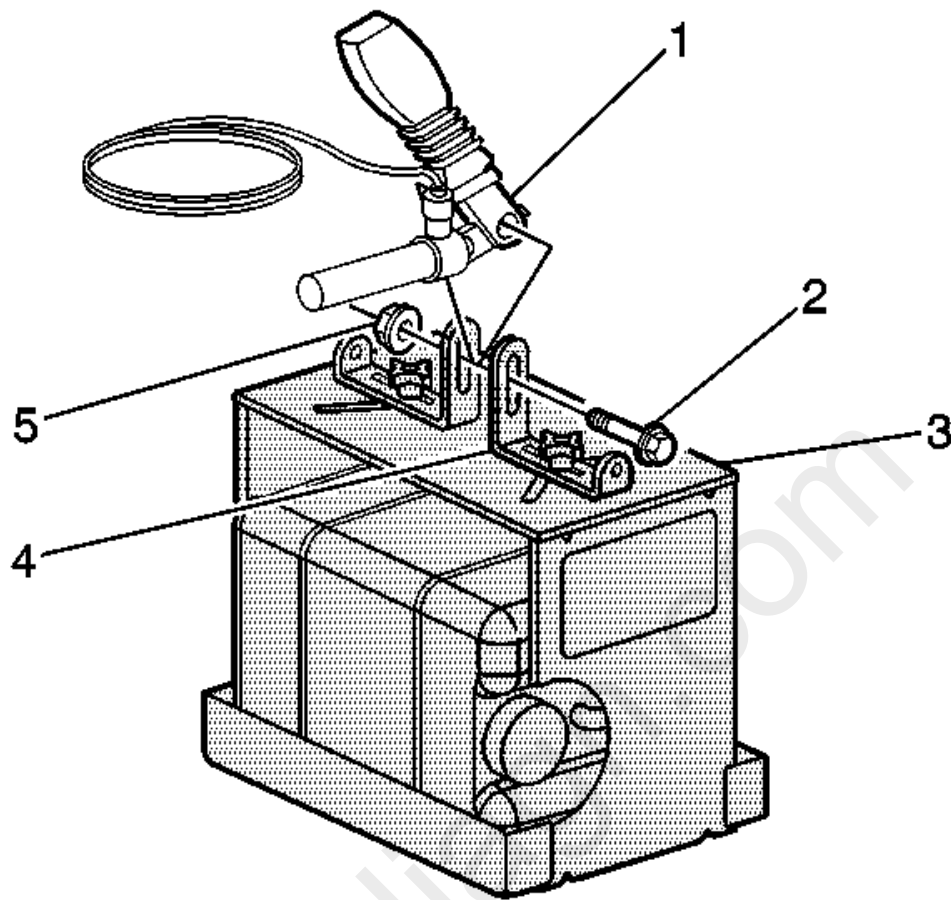


Fig. 46: Mounting Pretensioner In SIR Deployment Fixture
Courtesy of GENERAL MOTORS COMPANY

10. Mount the pretensioner (1) in the SIR deployment fixture (3) with the open end facing up using the following mounting method.
 1. Adjust and secure the EL-39401-B arms (4) to the deployment fixture (3).
 2. To mount, use the proper size bolt (2) and nut (5) with washers in order to secure the pretensioner (1) to the deployment fixture brackets (4).
 3. Securely tighten all fasteners prior to deployment.

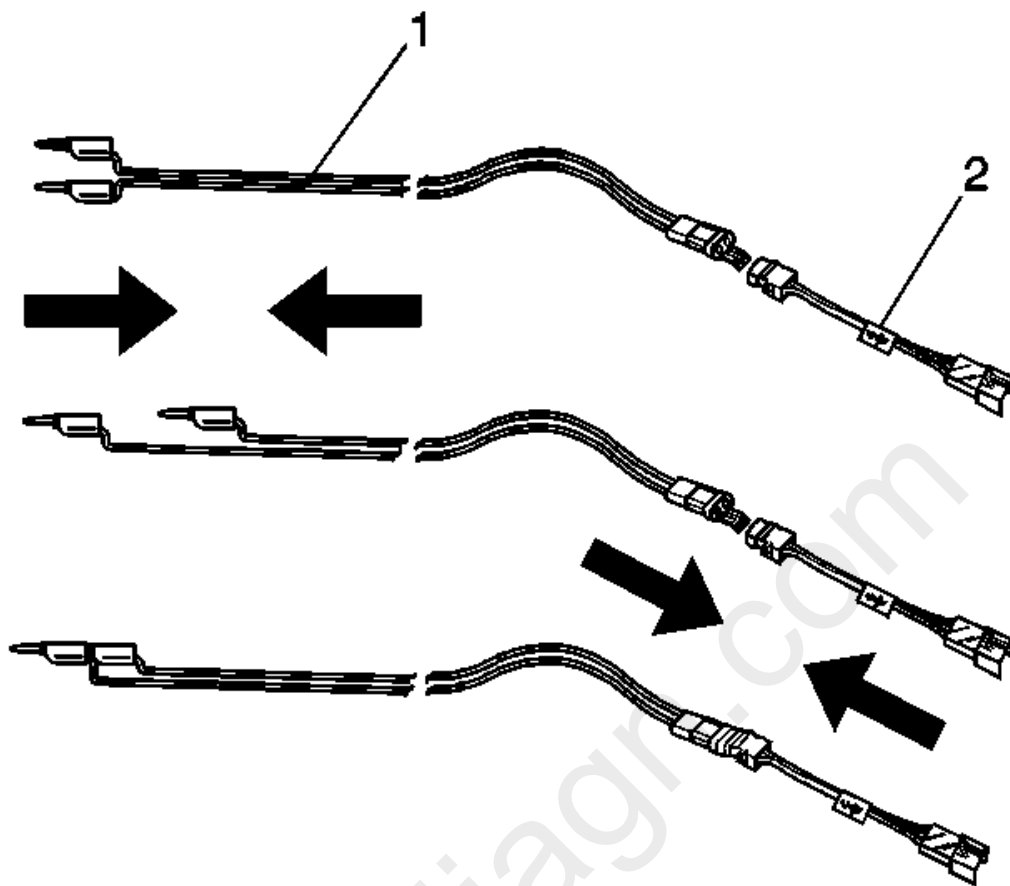


Fig. 47: Identifying SIR Deployment Harness & Adapter
Courtesy of GENERAL MOTORS COMPANY

11. Inspect the **EL-38826** SIR deployment harness and the appropriate pigtail adapter for damage. Replace as needed.
12. Short the 2 SIR deployment harness (1) leads together using one banana plug seated into the other.
13. Connect the appropriate pigtail adapter (2) to the SIR deployment harness (1).

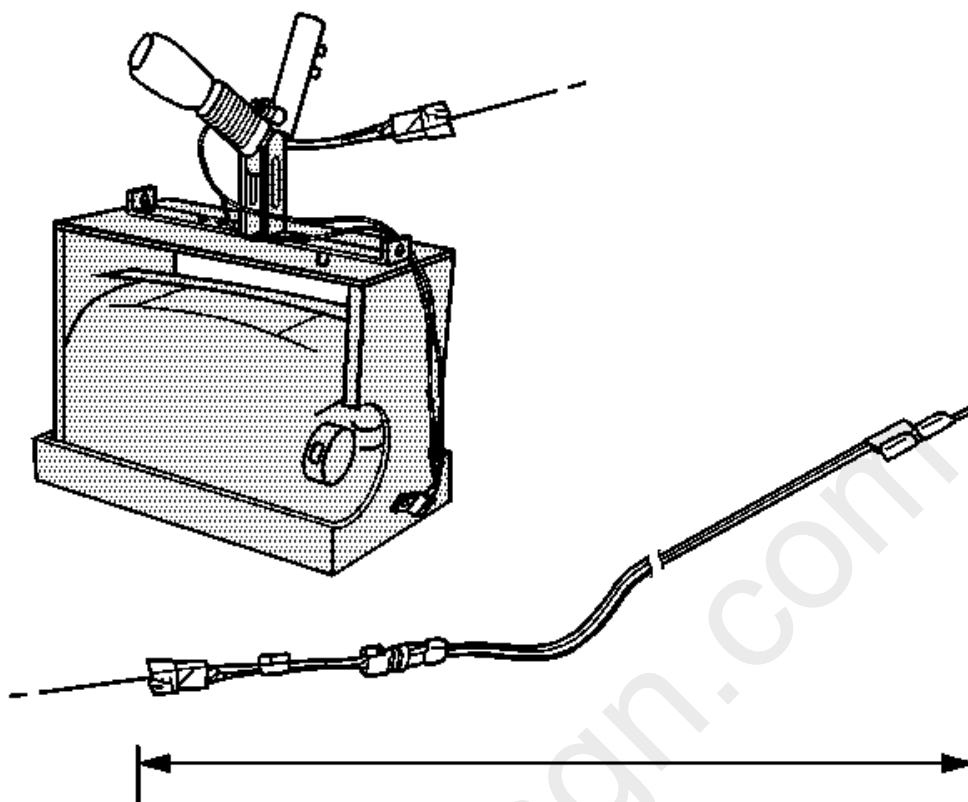


Fig. 48: Extending SIR Deployment Harness & Adapter
Courtesy of GENERAL MOTORS COMPANY

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

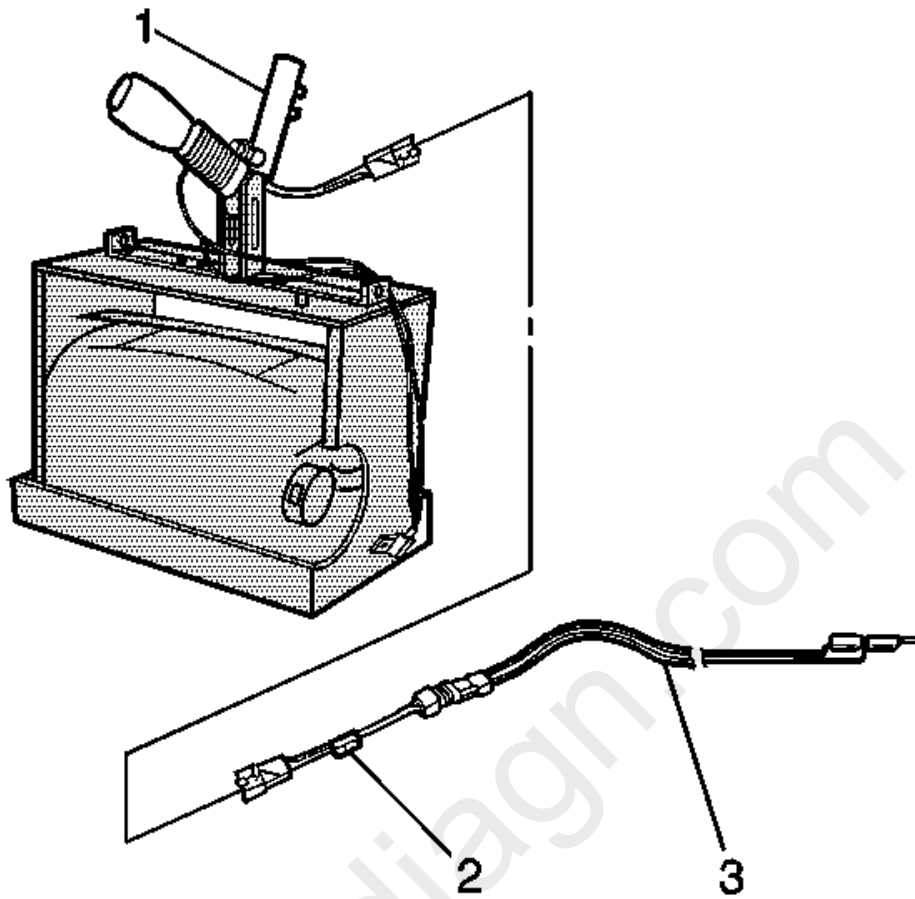


Fig. 49: Connecting Pretensioner To Adapter
Courtesy of GENERAL MOTORS COMPANY

15. Connect the pretensioner (1) to the adapter (2) on the deployment harness (3).

NOTE: The rapid gas expansion involved with deploying a pretensioner is very loud. Notify all the people in the immediate area that you intend to deploy the seat belt pretensioner.

16. Clear the area of people.

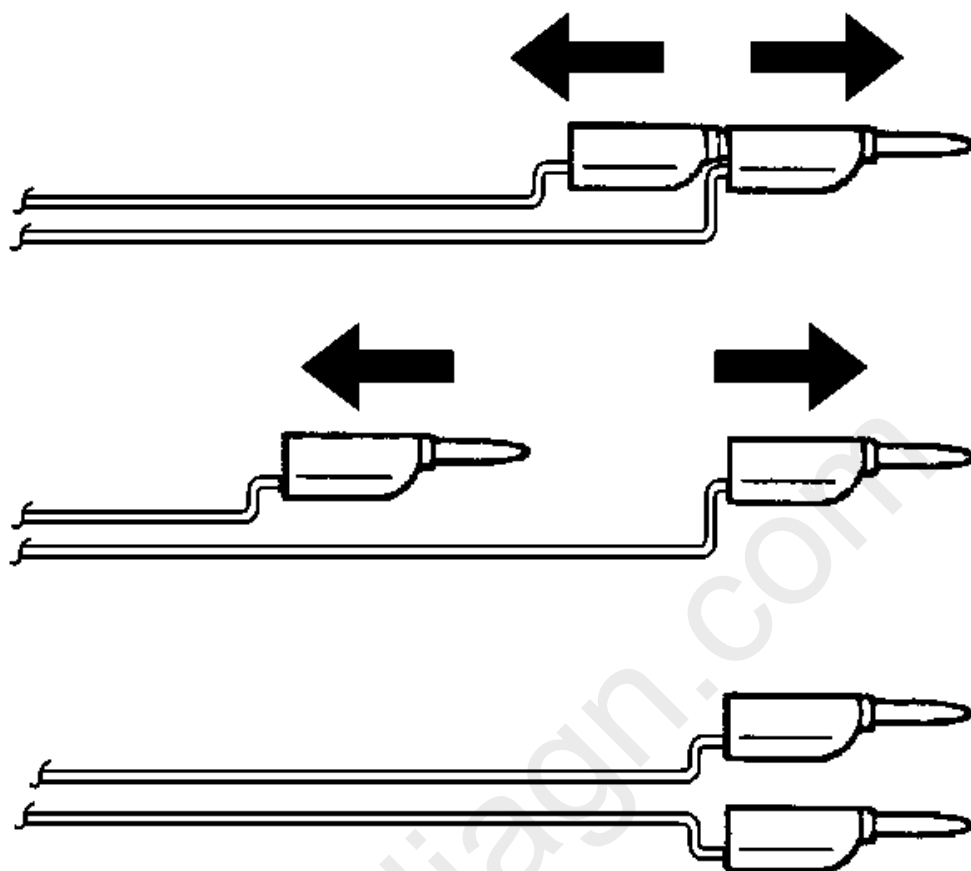


Fig. 50: Separating Banana Plugs

Courtesy of GENERAL MOTORS COMPANY

WARNING: When you are deploying a pretensioner for disposal, perform the deployment procedures in the order listed. Failure to follow the procedures in the order listed may result in personal injury.

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

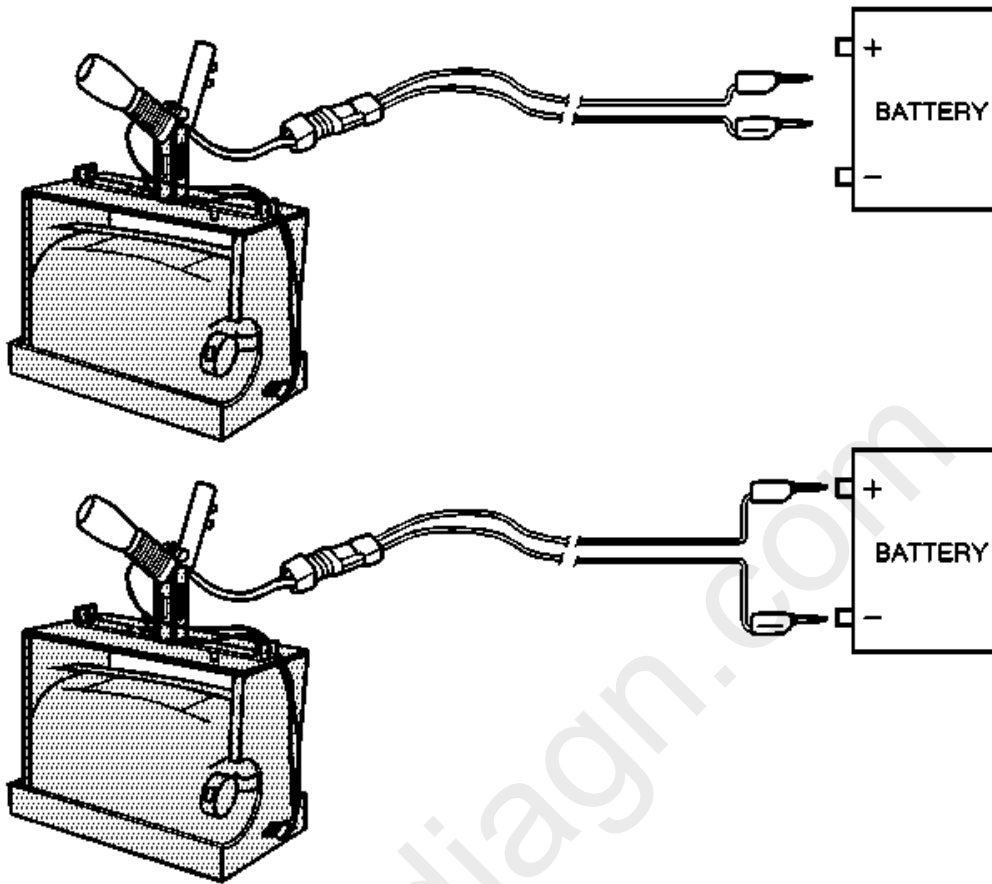


Fig. 51: Deploying Pretensioner

Courtesy of GENERAL MOTORS COMPANY

NOTE: When the seat belt 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 (i.e., vehicle battery) near the shorted end of the harness.
19. Connect the SIR deployment harness wires to the power source. Pretensioner deployment will occur when contact is made.
20. Disconnect the SIR deployment harness from the power source after the pretensioner deploys.

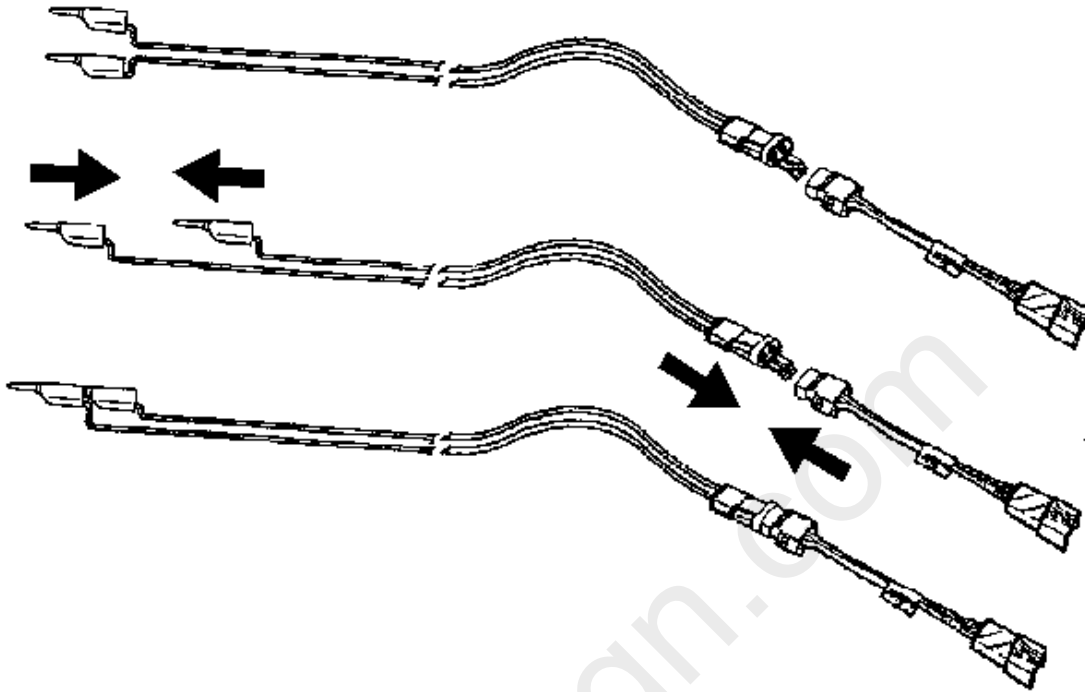


Fig. 52: View Of Deployment Harness Leads
Courtesy of GENERAL MOTORS COMPANY

21. Seat one banana plug into the other in order to short the deployment harness leads.
22. If the 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 pretensioner as soon as possible.
25. Inspect the pigtail adapter and the SIR deployment harness. Replace as needed.
26. Dispose of the deployed pretensioner through normal refuse channels.
27. Wash hands with a mild soap.

DESCRIPTION AND OPERATION

SUPPLEMENTAL INFLATABLE RESTRAINT SYSTEM DESCRIPTION AND OPERATION

SIR System Overview

The supplemental inflatable restraint (SIR) system supplements the protection offered by the seat belts. The SIR system contains an inflatable restraint sensing and diagnostic module (SDM), air bags, seat belt pretensioners (anchor and retractor), and impact sensors. The inflatable restraint sensing and diagnostic module determines the severity of a collision with the assistance of impact sensors located at strategic points on the vehicle. When the inflatable restraint sensing and diagnostic module detects a collision, the inflatable restraint sensing and diagnostic module will process the information provided by the sensors to further support air bag or pretensioner deployment. The inflatable restraint sensing and diagnostic module will deploy the air bags and pretensioners if it detects a collision of sufficient force. If the force of the impact is not sufficient to warrant air bag deployment, the inflatable restraint sensing and diagnostic module may still deploy the seat belt pretensioners. The inflatable restraint sensing and diagnostic module contains a sensing device that converts vehicle velocity changes to an electrical signal. The inflatable restraint sensing and diagnostic module compares these signals to values stored in memory. If the signals exceed a stored value, the inflatable restraint sensing and diagnostic module 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 inflatable restraint sensing and diagnostic module continuously monitors the deployment loops for malfunctions and illuminates the SIR system AIR BAG indicator if a fault is detected. The inflatable restraint sensing and diagnostic module performs continuous diagnostic monitoring of the SIR system electrical components. Upon detection of a circuit malfunction, the inflatable restraint sensing and diagnostic module will set a DTC and inform the driver by illuminating the SIR system AIR BAG indicator. The steering column and knee bolsters 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.

SIR System AIR BAG Indicator

The SIR system AIR BAG indicator, located in the instrument cluster, is used to notify the driver of SIR system malfunctions and to verify that the inflatable restraint sensing and diagnostic module is communicating with the instrument cluster. When the ignition is turned ON, the inflatable restraint sensing and diagnostic module is supplied with ignition positive voltage. The instrument cluster will momentarily turn on the SIR system AIR BAG indicator. While the indicator is on, the inflatable restraint sensing and diagnostic module conducts tests on all SIR system components and circuits. If no malfunctions are detected the inflatable restraint sensing and diagnostic module will communicate with the instrument cluster through the serial data circuit and command the SIR system AIR BAG indicator OFF. The inflatable restraint sensing and diagnostic module provides continuous monitoring of the air bag circuits by conducting a sequence of checks. If a malfunction is detected the inflatable restraint sensing and diagnostic module will store a diagnostic trouble code (DTC) and command the instrument cluster to illuminate the SIR system AIR BAG indicator via 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 SIR system AIR BAG indicator will remain ON until the malfunction has been repaired.

Inflatable Restraint Sensing and Diagnostic Module (SDM)

The inflatable restraint sensing and diagnostic module (SDM) is a microprocessor and the control center for the supplemental inflatable restraint (SIR) system. The inflatable restraint sensing and diagnostic module contains internal sensors along with external impact sensors, mounted at strategic locations on the vehicle. In the event of a collision, the inflatable restraint sensing and diagnostic module compares the signals from the internal and

external impact sensors to a value stored in memory. When the generated signals exceed the stored value, the inflatable restraint sensing and diagnostic module will cause current to flow through the appropriate deployment loops to deploy the air bags. The inflatable restraint sensing and diagnostic module records the SIR system status when a deployment occurs and illuminates the SIR system AIR BAG indicator located in the instrument cluster. The inflatable restraint sensing and diagnostic module performs continuous diagnostic monitoring of the SIR system electrical components and circuitry when the ignition is turned ON. If the inflatable restraint sensing and diagnostic module detects a malfunction, a DTC will be stored and the inflatable restraint sensing and diagnostic module will request the instrument cluster to illuminate the SIR system AIR BAG indicator, notifying the driver that a malfunction exists. In the event that ignition positive voltage is lost during a collision, the inflatable restraint sensing and diagnostic module maintains a 23-volt loop reserve for deployment of the air bags. It is important when disabling the SIR system for servicing or rescue operations to allow the 23-volt loop reserve to dissipate, which could take up to 1 minute.

Air Bags

This vehicle contains 6 air bags. The 6 air bags are located in the steering wheel (dual air bags), instrument panel (passenger side) (dual air bags), driver side (B-pillar), passenger side (B-pillar), left roof rail, and right roof rail. To view the locations of the air bags refer to **SIR Identification Views**. Air bags contain a housing, inflatable air bag, two initiating devices (if dual air bags), canister of gas generating material and, in some cases, stored compressed gas. The deployment loops supply current to deploy the air bags. The steering wheel and passenger instrument panel air bag have two stages of deployment, which varies the amount of restraint to the occupant according to the collision severity. For moderate frontal collisions the air bags deploy at less than full deployment which consists of stage 1 of the air bag. For more severe frontal collisions a full deployment is initiated which consists of stage 1 and stage 2 of the air bag. The current passing through the air bags ignites the material in the canister producing a rapid generation of gas and in some cases, the release of compressed gas. The gas produced from this reaction rapidly inflates the air bag. Once the air bag is inflated it quickly deflates through the air bag vent holes and/or the bag fabric. A shorting bar (if equipped) is located in the connector.

Seat Belt Pretensioners (Anchor and Retractor)

The seat belt pretensioners (driver and passenger) consist of a housing, seat belt retractor (located in the B-pillar), seat belt anchor (located on the floor), seat belt webbing, an initiator, and a canister of gas generating materials. To view the locations of the seat belt pretensioners refer to **SIR Identification Views**. The initiator is part of the seat belt pretensioner deployment loop. When the vehicle is involved in a collision of sufficient force, the inflatable restraint sensing and diagnostic module 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 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 air bags deploying, or they will deploy immediately before the frontal air bags deploy. A shorting bar (if equipped) is located in the connector.

Impact Sensors

This vehicle contains 6 impact sensors. The 6 impact sensors are located in the front of the vehicle (2, left and right), and the 4 doors. To view the locations of the impact sensors refer to **SIR Identification Views**. The impact sensors contain a sensing device which monitors vehicle acceleration and velocity changes to detect side collisions that are severe enough to warrant air bag deployment. The impact sensors are not part of the deployment loop, but instead provide input to the inflatable restraint sensing and diagnostic module. The

inflatable restraint sensing and diagnostic module 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 inflatable restraint sensing and diagnostic module will cause current to flow through the deployment loops deploying the appropriate air bags.

Passenger Presence Detection System and Passenger Air Bag Indicator

NOTE: **The passenger presence system (PPS) is a calibrated unit. When replacing the assembly all parts in the service kit must remain together. Do not mix any of the old parts with the new parts. After repairing or replacing the passenger presence system, the preload test must be performed in order to function properly.**

The passenger presence detection system (PPS) is used to monitor the type of occupant that is sitting in the front passenger seat and communicate the status to the inflatable restraint sensing and diagnostic module (SDM). The inflatable restraint sensing and diagnostic module then uses this information to determine whether to enable or suppress the deployment of the passenger instrument panel air bag. The passenger presence detection system consists of an electronic control module, a sensor mat in the seat, a harness, and PASSENGER AIR BAG ON/OFF indicators. The passenger presence detection system transmits and receives a low-level electric field. The measured capacitance value of this field is used to determine the type of occupant sitting in the front passenger seat. If the measured capacitance is less than a calibrated value, then the passenger presence module will send a hard wire signal to the inflatable restraint sensing and diagnostic module to disable the passenger instrument panel air bag. If the measured capacitance is greater than a calibrated value, then the passenger presence module will send a serial data signal to the inflatable restraint sensing and diagnostic module to enable the passenger instrument panel air bag. The passenger presence detection system module will notify the customer of the enable/disable status by illuminating one of the PASSENGER AIR BAG ON/OFF indicator. The passenger presence detection system monitors itself for faults and will displays diagnostic trouble codes (DTCs) on the scan tool. When a fault is detected, the passenger presence module sends out a message to the inflatable restraint sensing and diagnostic module. The inflatable restraint sensing and diagnostic module responds by sending a command message to the instrument panel cluster to illuminate the SIR system AIR BAG indicator.

Seat Belt Indicators

The seat belt indicators are controlled through the inflatable restraint sensing and diagnostic module (SDM). For further information on seat belt indicators refer to **Seat Belt System Description and Operation** .

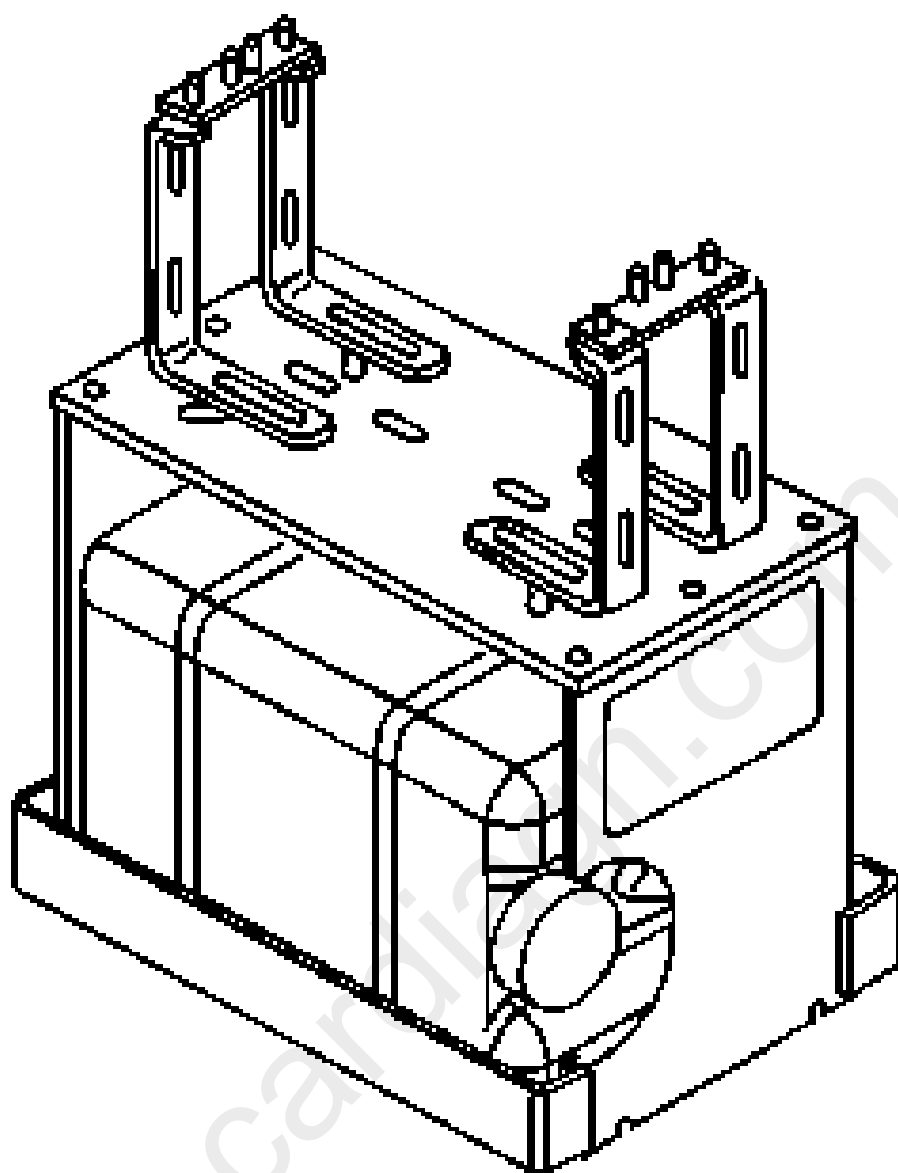
SPECIAL TOOLS AND EQUIPMENT

SPECIAL TOOLS

Illustration	Tool Number/ Description



EL 38826
J 38826
KM 799-3
SIR
Deployment
Harness



EL 39401-
B
J 39401-B
SIR
Deployment
Fixture