Supplemental Inflatable Restraints

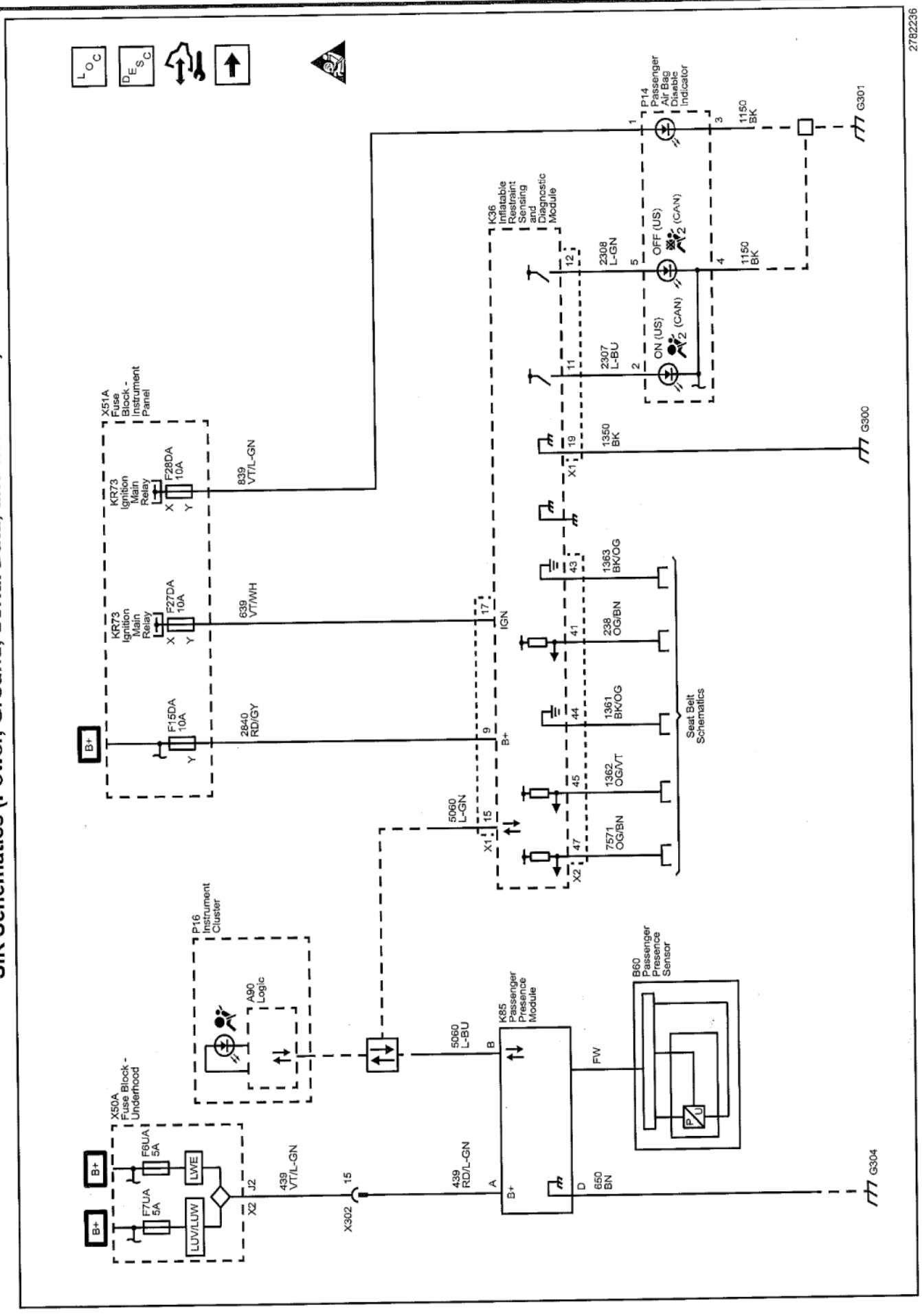
Specifications

Fastener Tightening Specifications

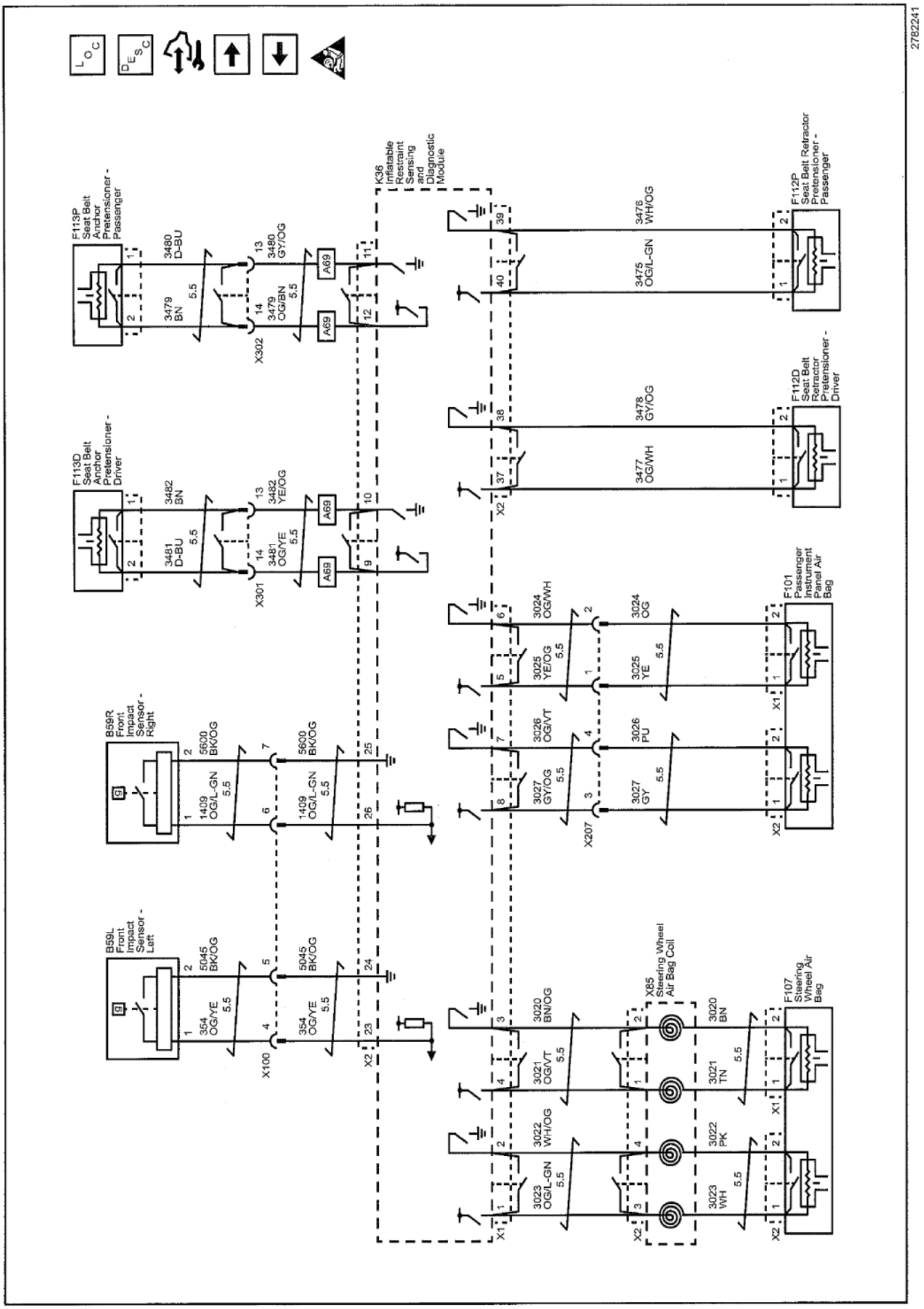
Application	Specification	
	Metric	English
Driver or Passenger Seat Belt Tensioner Cover Fastener	7.5 N•m	66 lb in
Driver or Passenger Seat Belt Tensioner Fastener	45 N•m	33 lb ft
Driver or Passenger Seat Shoulder Belt Fastener	45 N•m	33 lb ft
Driver or Passenger Seat Side Inflatable Restraint Module Fastener	4 N•m	35 lb in
Driver or Passenger Shoulder Belt Retractor Fastener	45 N•m	33 lb ft
Front Seat Belt Anchor Plate Fastener	8 N•m	70 lb in
Front Seat Belt Retractor D Ring Fastener	45 N•m	33 lb ft
Front Seat Shoulder Belt Retractor Fastener	45 N•m	33 lb ft
Inflatable Restraint Front End Discriminating Sensor	7.5 N•m	66 lb in
Inflatable Restraint Roof Side Rail Fastener	9.5 N•m	84 lb in
Inflatable Restraint Sensing and Diagnostic Module Fastener	10 N•m	89 lb in
Inflatable Restraint Side Impact Sensor	7.5 N•m	66 lb in
Instrument Panel Lower Air Bag Fastener	9 N•m	80 lb in
Rear Seat Side Inflatable Restraint Module Bracket Bolt	3.5 N•m	31 lb in
Rear Seat Side Inflatable Restraint Module Nut	3.5 N•m	31 lb in

Schematic and Routing Diagrams

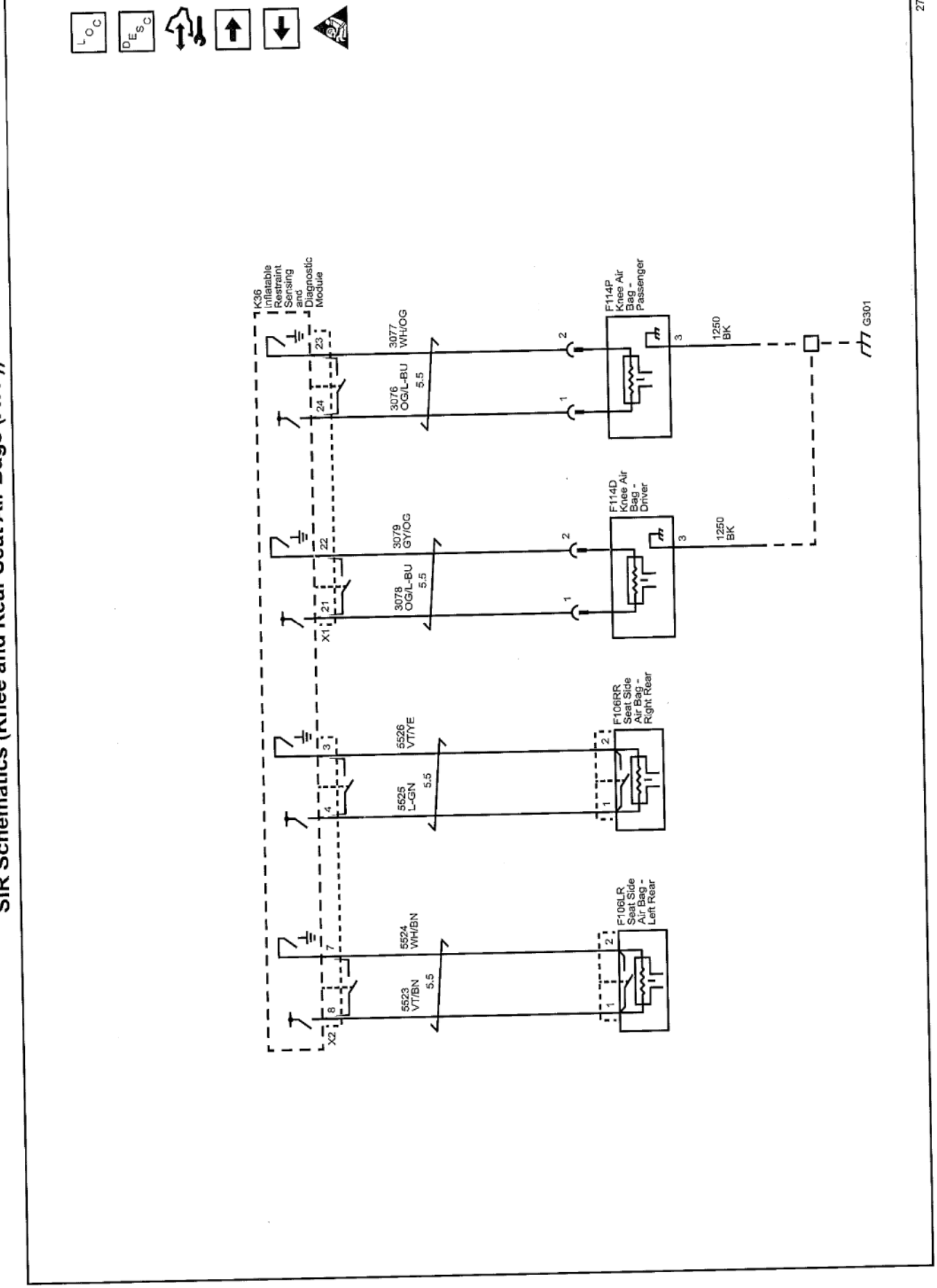
SIR Schematics (Power, Ground, Serial Data, and Indicators)



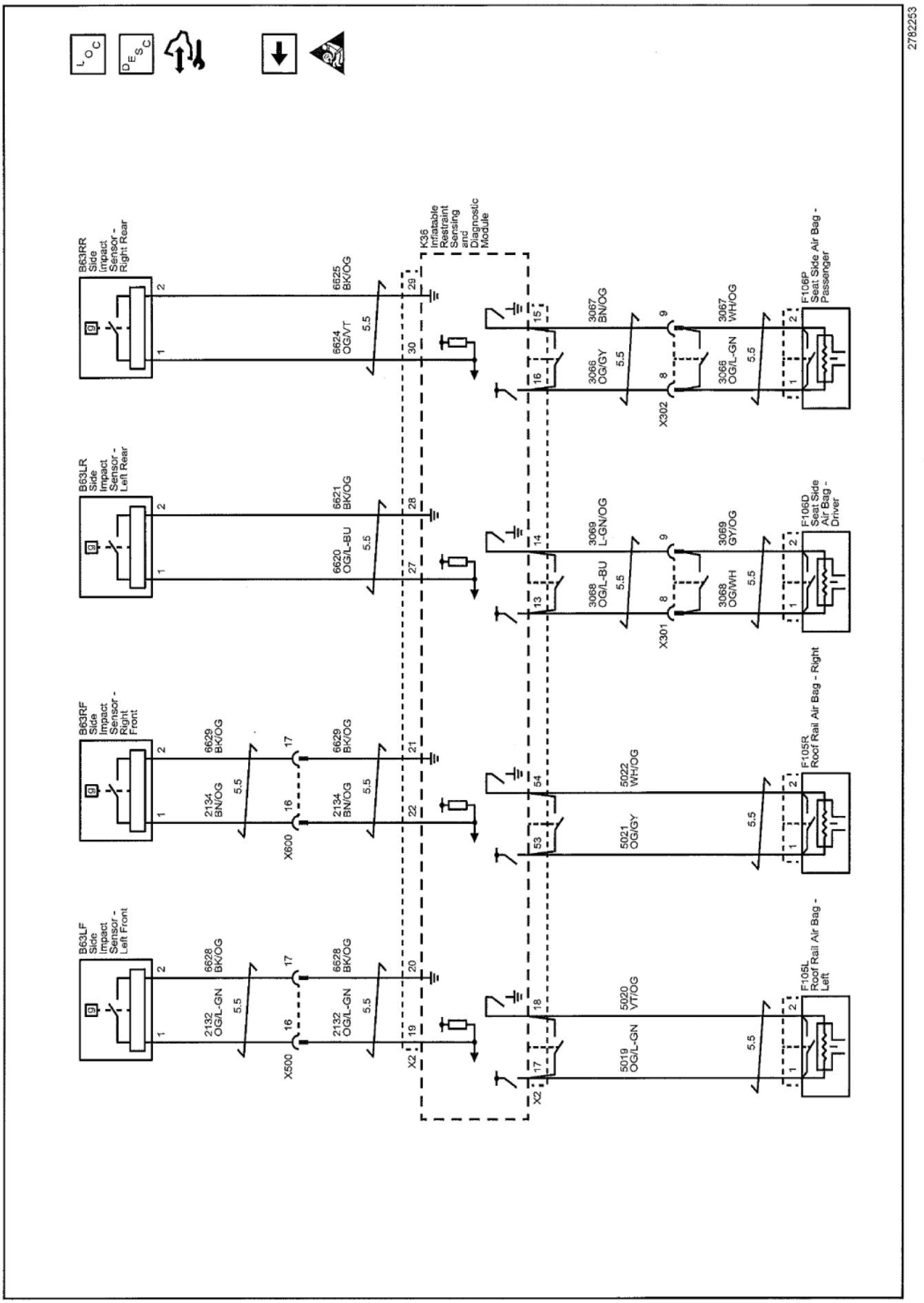
SIR Schematics (Front Impact Sensors, Retractors, Driver and Passenger Air Bags)



SIR Schematics (Knee and Rear Seat Air Bags (AYF))



SIR Schematics (Side Impact Sensors, Seat and Roof Air Bags)

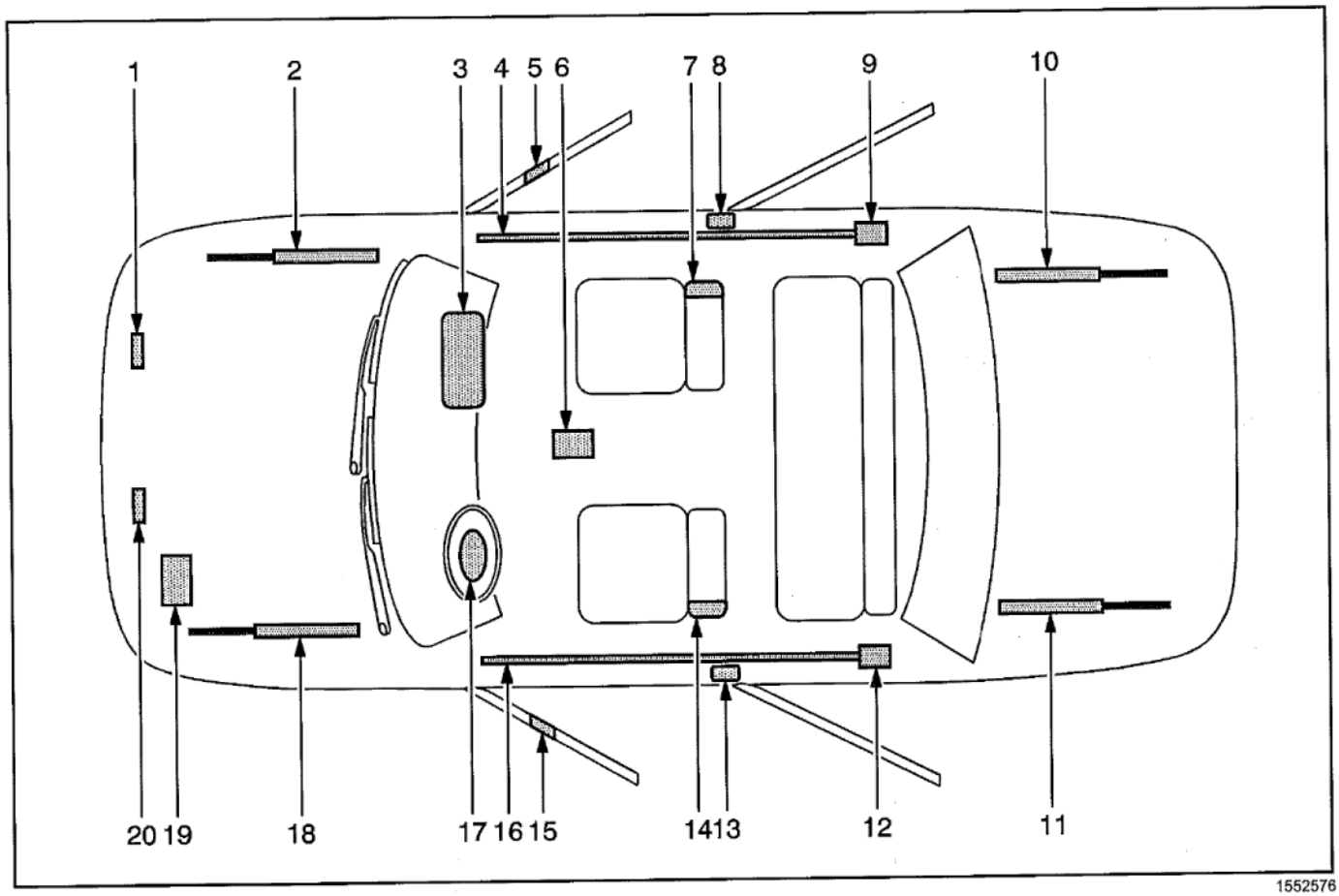


Component Locator

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 on page 13-112*.

Supplemental Inflatable Restraint Identification Views



1552576

Legend

(1) Right Front Impact Sensor - Located under the hood at the front right side of the vehicle
(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) Right Front Side Impact Sensor - Located behind door panel on the passenger front door
(6) Inflatable Restraint Sensing and Diagnostic Module - Located underneath the vehicle carpet under the center console
(7) Passenger Seat Side Air Bag - Located on the seat back of passenger seat
(8) Passenger Seat Belt Retractor Pretensioner - Located under the trim near the bottom of the center pillar on the passenger side of vehicle
(9) Inflator Module for Right Roof Rail Air Bag - Located behind the garnish molding on the upper rear pillar
(10) Rear Hood Assist Rod - A gas shock located under the rear truck lid on the passenger side
(11) Rear Hood Assist Rod - A gas shock located under the rear truck lid on the driver side
(12) Inflator Module for Left Roof Rail Air Bag - Located behind garnish molding on the upper rear pillar
(13) Driver Seat Belt Retractor Pretensioner - Located under the trim near the bottom of the center pillar on the driver side of vehicle

(14) Driver Seat Side Air Bag - Located on the seat back of driver seat
(15) Left Front Side Impact Sensor - Located behind door panel on the driver front door
(16) Left Roof Rail Air Bag - Located under the headliner, extending from the driver front windshield pillar to the driver rear windshield pillar
(17) Driver Steering Wheel Air Bag - Located on the steering wheel
(18) Front Hood Assist Rod - A gas shock located under the front hood on the driver side
(19) Vehicle Battery - Located at the front left of the engine compartment
(20) Left Front Impact Sensor - Located under the hood at the front left side of the vehicle

Diagnostic Information and Procedures

DTC B0012 or B0013

Diagnostic Instructions

- Perform the *Diagnostic System Check - Vehicle on page 6-66* prior to using this diagnostic procedure.
- Review *Strategy Based Diagnosis on page 6-58* for an overview of the diagnostic approach.
- *Diagnostic Procedure Instructions on page 6-59* 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
DTC B0012 0D: Driver Steering Wheel Air Bag Deployment Loop Stage 1 High Resistance
DTC B0012 0E: Driver Steering Wheel Air Bag Deployment Loop Stage 1 Low Resistance
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
DTC B0013 0D: Driver Steering Wheel Air Bag Deployment Loop Stage 2 High Resistance
DTC B0013 0E: Driver Steering Wheel Air Bag Deployment Loop Stage 2 Low Resistance

Diagnostic Fault Information

Circuit	Short to Ground	High Resistance	Open	Short to Voltage	Signal Performance
Steering Wheel Air Bag Stage 1 High Control	B0012 02, B0012 0E	B0012 0D	B0012 04, B0012 0D	B0012 01	—
Steering Wheel Air Bag Stage 1 Low Control	B0012 02, B0012 0E	B0012 0D	B0012 04, B0012 0D	B0012 01	—
Steering Wheel Air Bag Stage 2 High Control	B0013 02, B0013 0E	B0013 0D	B0013 04, B0013 0D	B0013 01	—
Steering Wheel Air Bag Stage 2 Low Control	B0013 02, B0013 0E	B0013 0D	B0013 04, B0013 0D	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 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 steering wheel air bag coil connector which will short together both steering wheel air bag stage 1 high control circuit and steering wheel air bag stage 1 low control circuit and both steering wheel air bag stage 2 high control circuit and steering wheel air bag stage 2 low control circuit when the connector is disconnected. This will help to prevent unwanted deployment of the steering wheel air bag during servicing.

Conditions for Running the DTC

Ignition voltage is between 9–16 V.

Conditions for Setting the DTC

B0012 01 stage 1 or B0013 01 stage 2

The Steering Wheel Air Bag deployment loop is shorted to voltage for 2 seconds.

B0012 02 stage 1 or B0013 02 stage 2

The Steering Wheel Air Bag deployment loop is shorted to ground for 2 seconds.

B0012 04 stage 1 or B0013 04 stage 2

The Steering Wheel Air Bag deployment loop is open for 2 seconds.

B0012 0D stage 1 or B0013 0D stage 2

The Steering Wheel Air Bag deployment loop resistance is greater than 4.4 Ω for 2 seconds.

B0012 0E stage 1 or B0013 0E stage 2

The Steering Wheel Air bag deployment loop resistance is less than 1.7 Ω for 2 seconds.

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 deployment.

Conditions for Clearing the DTC

- The condition for setting the DTC is 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.

A worn steering wheel air bag coil can cause a repeated history DTC to set. To verify this condition, turn the steering wheel 360 degrees in one direction then back 360 degrees in the other direction, multiple times, while viewing the scan tool Deployment Loop Resistance parameters.

An incorrectly installed connector position assurance (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 the shorting bars are not causing the circuits to be shorted together. Shorting bars are used in the locations listed below:

- Steering Wheel Air Bag assembly
- Steering Wheel Air Bag Coil assembly
- Inline harness connectors
- Harness side of the Inflatable Restraint Sensing and Diagnostic Module connector

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

Reference Information

Schematic Reference

SIR Schematics on page 13-69

Connector End View Reference

Component Connector End Views on page 11-269

Description and Operation

Supplemental Inflatable Restraint System Description and Operation on page 13-145

Electrical Information Reference

- *Circuit Testing on page 11-526*
- *Testing for Intermittent Conditions and Poor Connections on page 11-531*
- *Wiring Repairs on page 11-537*
- *Connector Repairs on page 11-548*

Scan Tool Reference

Control Module References on page 6-3 for scan tool information

Special Tools

EL-38125-580 Terminal Release Tool Kit

Circuit/System Verification

Note:

- Refer to *SIR Service Precautions on page 13-113*.
- 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.
  - Steering wheel air bag
  - Steering wheel air bag coil
  - Inflatable Restraint Sensing and Diagnostic Module
  - Air bag 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 appropriate scan tool Deployment Loop Resistance parameters stay consistently between 2.1–4.0 Ω without any spikes or dropouts while turning the steering wheel 360 degrees in one direction then back 360 degrees in the other direction.

⇒ **If less than 2.1 Ω or greater than 4.0 Ω**

Refer to Circuit/System Testing.

⇒ **If there are spikes or dropouts**

Replace the X85 Steering Wheel Air Bag Coil.

⇓ **If between 2.1–4.0 Ω without any spikes or dropouts**

2. Verify DTC B0012 or B0013 is only set as a history DTC.

⇒ **If the DTC is set as current**

Refer to Circuit/System Testing.

⇓ **If the DTC is set as history**

3. Verify the scan tool Deployment Loop Resistance parameters stay consistently between 2.1–4.0 Ω without any drop outs or spikes while moving the harness near each connector listed below.
   - X85 Steering Wheel Air Bag Coil
   - F107 Steering Wheel Air Bag
   - Any inline harness connector
   - K36 Inflatable Restraint Sensing and Diagnostic Module

⇒ **If the reading is erratic while moving the harness, perform the following**

- Inspect each connector terminal for damage or corrosion and repair as necessary.
- Apply dielectric grease / lubricant (Nyogel 760G or equivalent, meeting GM specification 9986087) to each connector terminal.
- Ensure each connector and CPA is correctly seated.

⇓ **If between 2.1–4.0 Ω without any spikes or dropouts**

4. All OK.

Circuit/System Testing

1. Ignition OFF, disconnect the scan tool and disconnect the appropriate harness connector listed below at the F107 Steering Wheel Air Bag.
   - DTC B0012 connector X1
   - DTC B0013 connector X2
2. Test for greater than 25 Ω between the control circuit terminal 1 and the control circuit terminal 2 at the harness connector.

⇒ **If 25 Ω or less**

2.1. Disconnect the X1 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 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.

2.2. 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 Ω**

3. Ignition ON.
4. Test for less than 11 V between each control circuit terminal listed below and ground:
   - Control circuit terminal 1
   - Control circuit terminal 2

⇒ **If 11 V or greater**

4.1. Ignition OFF, disconnect the X1 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module, ignition ON.

4.2. 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 Ω between each control circuit terminal listed below and ground:
   - Control circuit terminal 1
   - Control circuit terminal 2

⇒ **If 25 Ω or less**

6.1. Disconnect the X1 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 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.

6.2. 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 Ω**

7. Install a 3 A fused jumper wire between the control circuit terminal 1 and the control circuit terminal 2, ignition ON.
8. Verify the appropriate scan tool Deployment Loop Resistance parameter is consistently less than 2 Ω while turning the steering wheel 360 degrees in one direction then back 360 degrees in the other direction.

⇒ **If the reading is erratic while turning the steering wheel**

Replace the X85 Steering Wheel Air Bag Coil.

⇒ **If 2 Ω or greater**

8.1. Ignition OFF, disconnect the X1 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.

8.2. Test for less than 2 Ω in the X85 Steering Wheel Air Bag Coil and each control circuit end to end.

⇒ If 2 Ω or greater, replace the X85 Steering Wheel Air Bag Coil or repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the K36 Inflatable Restraint Sensing and Diagnostic Module.

⇓ **If less than 2 Ω**

9. Ignition OFF, connect the harness connector at the F107 Steering Wheel Air Bag, 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 B0012 or B0013 is not set.

⇒ **If DTC B0012 or B0013 is set**

Replace the F107 Steering Wheel Air Bag.

⇓ **If DTC B0012 or B0013 is not set**

12. All OK.

Repair Instructions

Perform the *Diagnostic Repair Verification on page 6-92* after completing the repair.

- *Steering Wheel Airbag Coil Replacement on page 13-119*
- *Airbag Steering Wheel Module Replacement on page 13-118*
- *SIR/SRS Wiring Repairs on page 11-548*
- *Control Module References on page 6-3* for Inflatable Restraint Sensing and Diagnostic Module replacement, programming and setup

DTC B0014, B0021, B0031, or B0038

Diagnostic Instructions

- Perform the *Diagnostic System Check - Vehicle on page 6-66* prior to using this diagnostic procedure.
- Review *Strategy Based Diagnosis on page 6-58* for an overview of the diagnostic approach.
- *Diagnostic Procedure Instructions on page 6-59* 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
DTC B0014 0D: Driver Seat Side Air Bag Deployment Loop High Resistance
DTC B0014 0E: Driver Seat Side Air Bag Deployment Loop Low Resistance
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
DTC B0021 0D: Passenger Seat Side Air Bag Deployment Loop High Resistance
DTC B0021 0E: Passenger Seat Side Air Bag Deployment Loop Low Resistance

Diagnostic Fault Information

Circuit	Short to Ground	High Resistance	Open	Short to Voltage	Signal Performance
Left Front Seat Air Bag High Control	B0014 02, B0014 0E	B0014 0D	B0014 04, B0014 0D	B0014 01	—
Left Front Seat Air Bag Low Control	B0014 02, B0014 0E	B0014 0D	B0014 04, B0014 0D	B0014 01	—
Right Front Seat Air Bag High Control	B0021 02, B0021 0E	B0021 0D	B0021 04, B0021 0D	B0021 01	—
Right Front Seat Air Bag Low Control	B0021 02, B0021 0E	B0021 0D	B0021 04, B0021 0D	B0021 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 an air bag. There are 2 shorting bars used within the connector that will short together the control circuits, when the connector is disconnected. This will help to prevent unwanted deployment of the air bag or retractor pretensioner during servicing.

Conditions for Running the DTC

Ignition voltage is between 9–16 V.

Conditions for Setting the DTC

B0014 01, B0021 01

The air bag control circuit is shorted to voltage for 2 seconds.

B0014 02, B0021 02

The air bag control circuit is shorted to ground for 2 seconds.

B0014 04, B0021 04

The air bag control circuit is open for 2 seconds.

B0014 0D, B0021 0D

The air bag deployment loop resistance is greater than 4.2 Ω for 2 seconds.

B0014 0E, B0021 0E

The air bag deployment loop resistance is less than 1.4 Ω for 2 seconds.

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 connector position assurance (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 the shorting bars are not causing the circuits to be shorted together. Shorting bars are used in the locations listed below:

- Left and right seat air bags
- Inline harness connector
- Harness side of the Inflatable Restraint Sensing and Diagnostic Module connector

Terminal fretting or incorrectly seated connector can cause an open/high resistance condition. Check the circuit terminals for fretting or incorrectly seated connector if a DTC with symptom byte 04 or 0D is set. DTCs of deployment loops which are in the seat can occur because of stress or damage to the harness due to seat movement. Move the seat to the full extent of travel while using the scan tool to observe deployment type loop parameters.

Reference Information

Schematic Reference

SIR Schematics on page 13-69

Connector End View Reference

Component Connector End Views on page 11-269

Description and Operation

Supplemental Inflatable Restraint System Description and Operation on page 13-145

Electrical Information Reference

- *Circuit Testing on page 11-526*
- *Testing for Intermittent Conditions and Poor Connections on page 11-531*
- *Wiring Repairs on page 11-537*
- *Connector Repairs on page 11-548*

Scan Tool Reference

Control Module References on page 6-3 for scan tool information

Special Tools

EL-38125-580 Terminal Release Tool Kit

Circuit/System Verification

Note: Refer to *SIR Service Precautions on page 13-113*.

- 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 air bag
  - Inflatable Restraint Sensing and Diagnostic Module
  - All wiring harness connectors
  - 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.
- 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 appropriate scan tool Deployment Loop Resistance parameters stay consistently between 2.1 and 4.0 Ω without any spikes or dropouts while moving the harness near each connector.
   - F106 Seat Air Bag
   - Any inline harness connector
   - K36 Inflatable Restraint Sensing and Diagnostic Module

⇒ **If less than 2.1 or greater than 4.0 Ω**

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.
- Ensure each connector and CPA is correctly seated.

⇓ **If within 2.1 and 4.0 Ω without any spikes or dropouts**

2. All OK.

Circuit/System Testing

1. Ignition OFF, disconnect the scan tool and then disconnect the appropriate F106 Seat Air Bag harness connector. It may take up to 2 minutes for all vehicle systems to power down.
2. Test for greater than 25 Ω between the control circuit terminals 1 and 2.

⇒ **If 25 Ω or less**

2.1. Disconnect the X2 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.

2.2. 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 Ω**

3. Ignition ON.
4. Test for less than 11 V between the control circuit terminals listed below and ground:
   - Control circuit terminal 1
   - Control circuit terminal 2

⇒ **If 11 V or greater**

4.1. Ignition OFF, disconnect the X2 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module, ignition ON.

4.2. 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 Ω between the control circuit terminals listed below and ground:
   - Control circuit terminal 1
   - Control circuit terminal 2

⇒ **If 25 Ω or less**

6.1. Disconnect the X2 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.

6.2. 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 Ω**

7. Ignition OFF, install a 3 A fused jumper wire between the control circuit terminals 1 and 2. Ignition ON.
8. Verify the scan tool Deployment Loop Resistance parameter is less than 2 Ω.

⇒ **If 2 Ω or greater**

8.1. Ignition OFF, disconnect the X2 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.

8.2. Test for less than 2 Ω in each control circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the K36 Inflatable Restraint Sensing and Diagnostic Module.

⇓ **If less than 2 Ω**

9. Ignition OFF, connect the harness connector at the F106 Seat Air Bag, 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 B0014, B0021, B0031, or B0038 is not set.

⇒ **If DTC B0014, B0021, B0031, or B0038 is set**

Replace the appropriate F106 Seat Air Bag.

⇓ **If DTC B0014, B0021, B0031, or B0038 is not set**

12. All OK.

Repair Instructions

Perform the *Diagnostic Repair Verification on page 6-92* after completing the repair.

- *Front Seat Outboard Seat Back Airbag Replacement on page 13-125*
- *Control Module References on page 6-3* for Inflatable Restraint Sensing and Diagnostic Module replacement, programming and setup

DTC B0015, B001A, B001B, or B0022

Diagnostic Instructions

- Perform the *Diagnostic System Check - Vehicle on page 6-66* prior to using this diagnostic procedure.
- Review *Strategy Based Diagnosis on page 6-58* for an overview of the diagnostic approach.
- *Diagnostic Procedure Instructions on page 6-59* provides an overview of each diagnostic category.

DTC Descriptors

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
DTC B0015 0D: Driver Seat Belt Retractor Pretensioner Deployment Loop High Resistance
DTC B0015 0E: Driver Seat Belt Retractor Pretensioner Deployment Loop Low Resistance
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
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 High Resistance
DTC B0022 0E: Passenger Seat Belt Retractor Pretensioner Deployment Loop Low Resistance

Diagnostic Fault Information

Circuit	Short to Ground	High Resistance	Open	Short to Voltage	Signal Performance
Driver Seat Belt Retractor Pretensioner High Control	B0015 02, B0015 0E	B0015 0D	B0015 04, B0015 0D	B0015 01	—
Driver Seat Belt Retractor Pretensioner Low Control	B0015 02, B0015 0E	B0015 0D	B0015 04, B0015 0D	B0015 01	—
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	—
Passenger Seat Belt Retractor Pretensioner High Control	B0022 02, B0022 0E	B0022 0D	B0022 04, B0022 0D	B0022 01	—
Passenger Seat Belt Retractor Pretensioner Low Control	B0022 02, B0022 0E	B0022 0D	B0022 04, B0022 0D	B0022 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 an air bag or pretensioner. There are 2 shorting bars which will short together control 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

B0015 01, B001A 01, B001B 01, B0022 01

The pretensioner control circuit is shorted to voltage for 2 seconds.

B0015 02, B001A 02, B001B 02, B0022 02

The pretensioner control circuit is shorted to ground for 2 seconds.

B0015 04, B001A 04, B001B 04, B0022 04

The pretensioner control circuit is open for 2 seconds.

B0015 0D, B001A 0D, B001B 0D, B0022 0D

The pretensioner deployment loop resistance is greater than 4.2 Ω for 2 seconds.

B0015 0E, B001A 0E, B001B 0E, B0022 0E

The pretensioner deployment loop resistance is less than 1.4 Ω for 2 seconds.

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 connector position assurance (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 the shorting bars are not causing the circuits to be shorted together. Shorting bars are used in the locations listed below:

- Driver and passenger anchor or retractor pretensioners
- Inline harness connectors
- Harness side of the Inflatable Restraint Sensing and Diagnostic Module connector

Terminal fretting or incorrectly seated connectors can cause an open/high resistance condition. Check the circuit terminals for fretting or incorrectly seated connector if a DTC with symptom byte 04 or 0D is set. DTCs of deployment loops which are in the seat can occur because of stress or damage to the harness due to seat movement. Move the seat to the full extent of travel while using the scan tool to observe deployment type loop parameters.

Reference Information

Schematic Reference

SIR Schematics on page 13-69

Connector End View Reference

Component Connector End Views on page 11-269

Description and Operation

Supplemental Inflatable Restraint System Description and Operation on page 13-145

Electrical Information Reference

- *Circuit Testing on page 11-526*
- *Testing for Intermittent Conditions and Poor Connections on page 11-531*
- *Wiring Repairs on page 11-537*
- *Connector Repairs on page 11-548*

Scan Tool Reference

Control Module References on page 6-3 for scan tool information

Special Tools

EL-38125-580 Terminal Release Tool Kit

Circuit/System Verification

Note: Refer to *SIR Service Precautions on page 13-113*.

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
- Seat Belt Retractor Pretensioner
- Inflatable Restraint Sensing and Diagnostic Module
- Seat Belt Anchor Pretensioner wiring harness connector
- Seat Belt Retractor Pretensioner wiring harness connector
- Inflatable Restraint Sensing and Diagnostic Module 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.

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 appropriate scan tool Deployment Loop Resistance parameters stay consistently between 2.1 and 4.0 Ω without any spikes or dropouts while moving the harness near each connector listed below:
   - F112 Seat Belt Retractor Pretensioner
   - F113 Seat Belt Anchor Pretensioner
   - Any inline harness connector
   - K36 Inflatable Restraint Sensing and Diagnostic Module

⇒ **If less than 2.1 or greater than 4.0 Ω**

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 Ω without any spikes or dropouts**

2. All OK

Circuit/System Testing

1. Ignition OFF. Scan tool disconnected. It may take up to 2 minutes for all vehicle systems to power down. Disconnect the appropriate harness connector listed below:
   - F112 Seat Belt Retractor Pretensioner
   - F113 Seat Belt Anchor Pretensioner
2. Test for greater than 25 Ω between the control circuit terminals 1 and 2.

⇒ **If 25 Ω or less**

2.1. Disconnect the X2 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.

2.2. 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 Ω**

3. Ignition ON.
4. Test for less than 11 V between the control circuit terminals listed below and ground:
   - Control circuit terminal 1
   - Control circuit terminal 2

⇒ **If 11 V or greater**

4.1. Ignition OFF. Disconnect the X2 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module. Ignition ON.

4.2. 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 Ω between the control circuit terminals listed below and ground:
   - Control circuit terminal 1
   - Control circuit terminal 2

⇒ **If 25 Ω or less**

6.1. Disconnect the X2 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.

6.2. 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 Ω**

7. Ignition OFF. Install a 3 A fused jumper wire between the appropriate control circuit terminals 1 and 2. Ignition ON.

8. Verify the scan tool Deployment Loop Resistance parameter is less than 2 Ω.

⇒ **If 2 Ω or greater**

8.1. Ignition OFF.

8.2. Disconnect the X2 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.

8.3. Test for less than 2 Ω in each control circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the K36 Inflatable Restraint Sensing and Diagnostic Module.

⇓ **If less than 2 Ω**

9. Ignition OFF, connect the harness connector at the F112 Seat Belt Retractor Pretensioner or 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 B0015, B001A, B001B, or B0022 is not set.

⇒ **If DTC B0015, B001A, B001B, or B0022 is set**

Replace the appropriate F112 Seat Belt Retractor Pretensioner or F113 Seat Belt Anchor Pretensioner.

⇓ **If DTC B0015, B001A, B001B, or B0022 is not set**

12. All OK.

Repair Instructions

Perform the *Diagnostic Repair Verification on page 6-92* after completing the repair.

- *Front Seat Belt Anchor Plate Tensioner Replacement on page 13-130*
- *Driver or Passenger Seat Shoulder Belt Replacement (without A69) on page 13-131* or *Driver or Passenger Seat Shoulder Belt Replacement (with A69) on page 13-133*
- *SIR/SRS Wiring Repairs on page 11-548*
- *Control Module References on page 6-3* for Inflatable Restraint Sensing and Diagnostic Module replacement, programming and setup

DTC B0016, B0018, B0023, or B0025

Diagnostic Instructions

- Perform the *Diagnostic System Check - Vehicle on page 6-66* prior to using this diagnostic procedure.
- Review *Strategy Based Diagnosis on page 6-58* for an overview of the diagnostic approach.
- *Diagnostic Procedure Instructions on page 6-59* provides an overview of each diagnostic category.

DTC Descriptors

DTC B0016 01: Left Roof Rail Air Bag Deployment Loop Short to Battery
DTC B0016 02: Left Roof Rail Air Bag Deployment Loop Short to Ground
DTC B0016 04: Left Roof Rail Air Bag Deployment Loop Open
DTC B0016 0D: Left Roof Rail Air Bag Deployment Loop High Resistance
DTC B0016 0E: Left Roof Rail Air Bag Deployment Loop Low Resistance
DTC B0023 01: Right Roof Rail Air Bag Deployment Loop Short to Battery
DTC B0023 02: Right Roof Rail Air Bag Deployment Loop Short to Ground
DTC B0023 04: Right Roof Rail Air Bag Deployment Loop Open
DTC B0023 0D: Right Roof Rail Air Bag Deployment Loop High Resistance
DTC B0023 0E: Right Roof Rail Air Bag Deployment Loop Low Resistance

Diagnostic Fault Information

Circuit	Short to Ground	High Resistance	Open	Short to Voltage	Signal Performance
Left Roof Rail Air Bag High Control	B0016 02, B0016 0E	B0016 0D	B0016 04, B0016 0D	B0016 01	—
Left Roof Rail Air Bag Low Control	B0016 02, B0016 0E	B0016 0D	B0016 04, B0016 0D	B0016 01	—
Right Roof Rail Air Bag High Control	B0023 02, B0023 0E	B0023 0D	B0023 04, B0023 0D	B0023 01	—
Right Roof Rail Air Bag Low Control	B0023 02, B0023 0E	B0023 0D	B0023 04, B0023 0D	B0023 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 an air bag or pretensioner. There are 2 shorting bars which will short together control 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

B0016 01, B0023 01

The air bag control circuit is shorted to voltage for 2 seconds.

B0016 02, B0023 02

The air bag control circuit is shorted to ground for 2 seconds.

B0016 04, B0023 04

The air bag control circuit is open for 2 seconds.

B0016 0D, B0023 0D

The air bag deployment loop resistance is greater than 4.2 Ω for 2 seconds.

B0016 0E, B0023 0E

The air bag deployment loop resistance is less than 1.4 Ω for 2 seconds.

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 connector position assurance (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 the shorting bars are not causing the circuits to be shorted together. Shorting bars are used in the locations listed below:

- Left and right Roof Rail Air Bags
- Inline harness connectors
- Harness side of the Inflatable Restraint Sensing and Diagnostic Module connector

Terminal fretting or incorrectly seated connectors can cause an open/high resistance condition. Check the circuit terminals for fretting or incorrectly seated connector if a DTC with symptom byte 04 or 0D is set. DTCs of deployment loops which are in the seat DTC can occur because of stress or damage to the harness due to seat movement. Move the seat to the full extent of travel while using the scan tool to observe deployment type loop parameters.

Reference Information

Schematic Reference

SIR Schematics on page 13-69

Connector End View Reference

Component Connector End Views on page 11-269

Description and Operation

Supplemental Inflatable Restraint System Description and Operation on page 13-145

Electrical Information Reference

- *Circuit Testing on page 11-526*
- *Testing for Intermittent Conditions and Poor Connections on page 11-531*
- *Wiring Repairs on page 11-537*
- *Connector Repairs on page 11-548*

Scan Tool Reference

Control Module References on page 6-3 for scan tool information

Special Tools

EL-38125-580 Terminal Release Tool Kit

Circuit/System Verification

Note:

- Refer to *SIR Service Precautions on page 13-113*.
- 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.
  - Roof Rail Air Bag
  - Inflatable Restraint Sensing and Diagnostic Module
  - Roof Rail Air Bag 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.
- 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 appropriate scan tool Deployment Loop Resistance parameters stay consistently between 2.1 and 4.0 Ω without any spikes or dropouts while moving the harness near each connector listed below:
   - F105L Roof Rail Air Bag – Left
   - F105R Roof Rail Air Bag – Right
   - Any inline harness connector
   - K36 Inflatable Restraint Sensing and Diagnostic Module

⇒ **If less than 2.1 or greater than 4.0 Ω**

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
- Insure each connector and CPA is correctly seated.

⇓ **If within 2.1 and 4.0 Ω without any spikes or dropouts**

2. All OK

Circuit/System Testing

1. Ignition OFF. Scan tool disconnected. It may take up to 2 minutes for all vehicle systems to power down. Disconnect the appropriate harness connector at the Roof Rail Air Bag listed below:
   - DTC B0016 – F105L Roof Rail Air Bag – Left
   - DTC B0023 – F105R Roof Rail Air Bag – Right
2. Test for greater than 25 Ω between the control circuit terminals 1 and 2.

⇒ **If 25 Ω or less**

2.1. Disconnect the X2 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.

2.2. 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 Ω**

3. Ignition ON.
4. Test for less than 11 V between the control circuit terminals listed below and ground:
   - Control circuit terminal 1
   - Control circuit terminal 2

⇒ **If 11 V or greater**

4.1. Ignition OFF. Disconnect the X2 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module. Ignition ON.

4.2. 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 Ω between the control circuit terminals listed below and ground:
   - Control circuit terminal 1
   - Control circuit terminal 2

⇒ **If 25 Ω or less**

6.1. Disconnect the X2 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.

6.2. 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 Ω**

7. Ignition OFF. Install a 3 A fused jumper wire between the appropriate control circuit terminals 1 and 2. Ignition ON.
8. Verify the scan tool Deployment Loop Resistance parameter is less than 2 Ω.

⇒ **If 2 Ω or greater**

8.1. Ignition OFF. Disconnect the X2 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.

8.2. Test for less than 2 Ω in each control circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the K36 Inflatable Restraint Sensing and Diagnostic Module.

⇓ **If less than 2 Ω**

9. Ignition OFF, connect the harness connector at the F105L Roof Rail Air Bag, 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 B0016 or B0023 is not set.

⇒ **If DTC B0016 or B0023 is set**

Replace the appropriate F105L Roof Rail Air Bag.

⇓ **If DTC B0016 or B0023 is not set**

12. All OK.

Repair Instructions

Perform the *Diagnostic Repair Verification on page 6-92* after completing the repair.

- *Airbag Roof Side Rail Module Replacement - Rear on page 13-129*
- *SIR/SRS Wiring Repairs on page 11-548*
- *Control Module References on page 6-3* for Inflatable Restraint Sensing and Diagnostic Module replacement, programming and setup

DTC B0017 or B0024

Diagnostic Instructions

- Perform the *Diagnostic System Check - Vehicle on page 6-66* prior to using this diagnostic procedure.
- Review *Strategy Based Diagnosis on page 6-58* for an overview of the diagnostic approach.
- *Diagnostic Procedure Instructions on page 6-59* provides an overview of each diagnostic category.

DTC Descriptors

DTC B0017 01: Driver Knee Air Bag Deployment Loop Short to Battery
DTC B0017 02: Driver Knee Air Bag Deployment Loop Short to Ground
DTC B0017 04: Driver Knee Air Bag Deployment Loop Open
DTC B0017 0D: Driver Knee Air Bag Deployment Loop High Resistance
DTC B0017 0E: Driver Knee Air Bag Deployment Loop Low Resistance
DTC B0024 01: Passenger Knee Air Bag Deployment Loop Short to Battery
DTC B0024 02: Passenger Knee Air Bag Deployment Loop Short to Battery
DTC B0024 04: Passenger Knee Air Bag Deployment Loop Open
DTC B0024 0D: Passenger Knee Air Bag Deployment Loop High Resistance
DTC B0024 0E: Passenger Knee Air Bag Deployment Loop Low Resistance

Diagnostic Fault Information

Circuit	Short to Ground	High Resistance	Open	Short to Voltage	Signal Performance
Driver Knee Air Bag High Control	B0017 02, B0017 0E	B0017 0D	B0017 04, B0017 0D	B0017 01	—
Driver Knee Air Bag Low Control	B0017 02, B0017 0E	B0017 0D	B0017 04, B0017 0D	B0017 01	—
Passenger Knee Air Bag High Control	B0024 02, B0024 0E	B0024 0D	B0024 04, B0024 0D	B0024 01	—
Passenger Knee Air Bag Low Control	B0024 02, B0024 0E	B0024 0D	B0024 04, B0024 0D	B0024 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. There are two shorting bars used within the connector that will short together the control circuits, when the connector is disconnected. This will help to prevent unwanted deployment of the air bag or retractor pretensioner during servicing.

Conditions for Running the DTC

Ignition voltage is between 9–16 V.

Conditions for Setting the DTC

B0017 01, B0024 01

The air bag control circuit is shorted to voltage for 2 seconds.

B0017 02, B0024 02

The air bag control circuit is shorted to ground for 2 seconds.

B0017 04, B0024 04

The air bag control circuit is open for 2 seconds.

B0017 0D, B0024 0D

The air bag deployment loop resistance is greater than 4.2 Ω for 2 seconds.

B0017 0E, B0024 0E

The air bag deployment loop resistance is less than 1.4 Ω for 2 seconds.

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 connector position assurance (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 the shorting bars are not causing the circuits to be shorted together. Shorting bars are used in the locations listed below:

- Driver and passenger knee air bags
- Inline harness connectors
- Harness side of the inflatable restraint sensing and diagnostic module connector

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

Reference Information

Schematic Reference

SIR Schematics on page 13-69

Connector End View Reference

Component Connector End Views on page 11-269

Description and Operation

Supplemental Inflatable Restraint System Description and Operation on page 13-145

Electrical Information Reference

- *Circuit Testing on page 11-526*
- *Testing for Intermittent Conditions and Poor Connections on page 11-531*
- *Wiring Repairs on page 11-537*
- *Connector Repairs on page 11-548*

Scan Tool Reference

Control Module References on page 6-3 for scan tool information

Special Tools

EL-38125-580 Terminal Release Tool Kit

Circuit/System Verification

Note:

- Refer to *SIR Service Precautions on page 13-113*.
- 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.
  - Knee air bag
  - Inflatable restraint sensing and diagnostic module
  - All wiring harness connectors
  - 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.
- 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 parameters stay consistently between 2.1 and 4.0 Ω without any spikes or dropouts while moving the harness near each connector listed below:
   - F114D Knee Air Bag – Driver
   - F114P Knee Air Bag – Passenger
   - Any inline harness connector
   - K36 Inflatable Restraint Sensing and Diagnostic Module

⇒ **If less than 2.1 or greater than 4.0 Ω**

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
- Ensure each connector and CPA is correctly seated

⇓ **If between 2.1 and 4.0 Ω without any spikes or dropouts**

2. All OK

Circuit/System Testing

1. Ignition OFF, disconnect the scan tool and disconnect the harness connector at the appropriate F114 Knee Air Bag.
2. Test for greater than 25 Ω between the control circuit terminals 1 and 2.

⇒ **If 25 Ω or less**

2.1. Disconnect the X1 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.

2.2. Test for infinite resistance between the 2 control circuits.

⇒ If less than infinite resistance, repair the short between the 2 circuits.

⇒ If infinite resistance, replace the K36 Inflatable Restraint Sensing and Diagnostic Module.

⇓ **If greater than 25 Ω**

3. Ignition ON.
4. Test for less than 11 V between the control circuit terminals listed below and ground:
   - Control circuit terminal 1
   - Control circuit terminal 2

⇒ **If 11 V or greater**

4.1. Ignition OFF, disconnect the X1 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module, ignition ON.

4.2. 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 Ω between the control circuit terminals listed below and ground:
   - Control circuit terminal 1
   - Control circuit terminal 2

⇒ **If 25 Ω or less**

6.1. Disconnect the X1 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.

6.2. 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 Ω**

7. Install a 3 A fused jumper wire between the control circuit terminals 1 and 2, ignition ON.
8. Verify the scan tool Deployment Loop Resistance parameter is less than 2 Ω.

⇒ **If 2 Ω or greater**

8.1. Ignition OFF, disconnect the X1 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.

8.2. Test for less than 2 Ω in each control circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the K36 Inflatable Restraint Sensing and Diagnostic Module.

⇓ **If less than 2 Ω**

9. Ignition OFF, connect the harness connector at the F114 Knee Air Bag, 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 B0017 or B0024 is not set.

⇒ **If DTC B0017 or B0024 is set**

Replace the appropriate F114 Knee Air Bag.

⇓ **If DTC B0017 or B0024 is not set**

12. All OK.

Repair Instructions

Perform the *Diagnostic Repair Verification on page 6-92* after completing the repair.

- *Instrument Panel Lower Airbag Replacement - Driver Side on page 13-122*
- *Instrument Panel Lower Airbag Replacement - Passenger Side on page 13-123*
- *Control Module References on page 6-3* for K36 Inflatable Restraint Sensing and Diagnostic Module replacement, programming, and setup

DTC B0019 or B0020

Diagnostic Instructions

- Perform the *Diagnostic System Check - Vehicle on page 6-66* prior to using this diagnostic procedure.
- Review *Strategy Based Diagnosis on page 6-58* for an overview of the diagnostic approach.
- *Diagnostic Procedure Instructions on page 6-59* provides an overview of each diagnostic category.

DTC Descriptors

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
DTC B0019 0D: Passenger Instrument Panel Air Bag Deployment Loop Stage 1 High Resistance
DTC B0019 0E: Passenger Instrument Panel Air Bag Deployment Loop Stage 1 Low Resistance
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
DTC B0020 0D: Passenger Instrument Panel Air Bag Deployment Loop Stage 2 High Resistance
DTC B0020 0E: Passenger Instrument Panel Air Bag Deployment Loop Stage 2 Low Resistance

Diagnostic Fault Information

Circuit	Short to Ground	High Resistance	Open	Short to Voltage	Signal Performance
Passenger Instrument Panel Air Bag Stage 1 High Control	B0019 02, B0019 0E	B0019 0D	B0019 04, B0019 0D	B0019 01	—
Passenger Instrument Panel Air Bag Stage 1 Low Control	B0019 02, B0019 0E	B0019 0D	B0019 04, B0019 0D	B0019 01	—
Passenger Instrument Panel Air Bag Stage 2 High Control	B0020 02, B0020 0E	B0020 0D	B0020 04, B0020 0D	B0020 01	—
Passenger Instrument Panel Air Bag Stage 2 Low Control	B0020 02, B0020 0E	B0020 0D	B0020 04, B0020 0D	B0020 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 which will short the control circuits together 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

B0019 01, B0020 01

The air bag control circuit is shorted to voltage for 2 seconds.

B0019 02, B0020 02

The air bag control circuit is shorted to ground for 2 seconds.

B0019 04, B0020 04

The air bag control circuit is open for 2 seconds.

B0019 0D, B0020 0D

The air bag deployment loop resistance is greater than 4.2 Ω for 2 seconds.

B0019 0E, B0020 0E

The air bag deployment loop resistance is less than 1.4 Ω for 2 seconds.

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 connector position assurance (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 the shorting bars are not causing the circuits to be shorted together. Shorting bars are used in the locations listed below:

- Passenger Instrument Panel Air Bag
- Inline harness connectors
- Harness side of the Inflatable Restraint Sensing and Diagnostic Module connector

Terminal fretting or incorrectly seated connectors can cause an open/high resistance condition. Check the circuit terminals for fretting or incorrectly seated connector if a DTC with symptom byte 04 or 0D is set. DTCs of deployment loops which are in the seat can occur because of stress or damage to the harness due to seat movement. Move the seat to the full extent of travel while using the scan tool to observe deployment type loop parameters.

Reference Information

Schematic Reference

SIR Schematics on page 13-69

Connector End View Reference

Component Connector End Views on page 11-269

Description and Operation

Supplemental Inflatable Restraint System Description and Operation on page 13-145

Electrical Information Reference

- *Circuit Testing on page 11-526*
- *Testing for Intermittent Conditions and Poor Connections on page 11-531*
- *Wiring Repairs on page 11-537*
- *Connector Repairs on page 11-548*

Scan Tool Reference

Control Module References on page 6-3 for scan tool information

Special Tools

EL-38125-580 Terminal Release Tool Kit

Circuit/System Verification

Note:

- Refer to *SIR Service Precautions on page 13-113*.
- 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.
  - Passenger Instrument Panel Air Bag
  - Inflatable Restraint Sensing and Diagnostic Module
  - Passenger Instrument Panel Air Bag 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.
- 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 parameters stay consistently between 2.1–4.0 Ω without any spikes or dropouts while moving the harness near each connector listed below:
   - F101 Passenger Instrument Panel Air Bag
   - Any inline harness connector
   - K36 Inflatable Restraint Sensing and Diagnostic Module

⇒ **If less than 2.1 Ω or greater than 4.0 Ω**

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 between 2.1–4.0 Ω without any spikes or dropouts**

2. All OK.

Circuit/System Testing

1. Ignition OFF, scan tool disconnected, disconnect the X203 inline harness connector for the F101 Passenger Instrument Panel Air Bag. It may take up to 2 minutes for all vehicle systems to power down.
2. Test for greater than 25 Ω between the appropriate control circuit terminals listed below on the K36 Inflatable Restraint Sensing and Diagnostic Module side of the connector:
   - F101 Passenger Instrument Panel Air Bag stage 1 X203 terminal 1 and 2
   - F101 Passenger Instrument Panel Air Bag stage 2 X203 terminal 4 and 5

⇒ **If 25 Ω or less**

2.1. Disconnect the X1 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.

2.2. 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 Ω**

3. Ignition ON.
4. Test for less than 11 V between each control circuit terminal listed below and ground:
   - X203 control circuit terminal 1
   - X203 control circuit terminal 2
   - X203 control circuit terminal 4
   - X203 control circuit terminal 5

⇒ **If 11 V or greater**

4.1. Ignition OFF, disconnect the X1 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module, ignition ON.

4.2. Test for less than 1 V between each 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 Ω between each control circuit terminal listed below and ground:
   - X203 control circuit terminal 1
   - X203 control circuit terminal 2
   - X203 control circuit terminal 4
   - X203 control circuit terminal 5

⇒ **If 25 Ω or less**

6.1. Disconnect the X1 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.

6.2. 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 Ω**

7. Install a 3 A fused jumper wire between the control circuit terminals listed below:
   - F101 Passenger Instrument Panel Air Bag stage 1 X203 terminal 1 and 2
   - F101 Passenger Instrument Panel Air Bag stage 2 X203 terminal 4 and 5
8. Ignition ON.
9. Verify the scan tool Deployment Loop Resistance parameter is less than 2 Ω.

⇒ **If 2 Ω or greater**

9.1. Ignition OFF, disconnect the X1 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.

9.2. Test for less than 2 Ω in each control circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the K36 Inflatable Restraint Sensing and Diagnostic Module.

⇓ **If less than 2 Ω**

10. Ignition OFF, connect the X203 inline harness connector and disconnect the appropriate X1 (DTC B0019) or X2 (DTC B0020) harness connector at the F101 Passenger Instrument Panel Air Bag, ignition ON.
11. Test for less than 11 V between each control circuit terminals listed below and ground:
    - F101 Passenger Instrument Panel Air Bag control circuit terminal 1 X1
    - F101 Passenger Instrument Panel Air Bag control circuit terminal 2 X1
    - F101 Passenger Instrument Panel Air Bag control circuit terminal 1 X2
    - F101 Passenger Instrument Panel Air Bag control circuit terminal 2 X2

⇒ **If 11 V or greater**

Repair the short to voltage on the circuit.

⇓ **If less than 11 V**

12. Ignition OFF.
13. Test for greater than 25 Ω between each control circuit terminals listed below and ground:
    - F101 Passenger Instrument Panel Air Bag control circuit terminal 1 X1
    - F101 Passenger Instrument Panel Air Bag control circuit terminal 2 X1
    - F101 Passenger Instrument Panel Air Bag control circuit terminal 1 X2
    - F101 Passenger Instrument Panel Air Bag control circuit terminal 2 X2

⇒ **If 25 Ω or less**

Repair the short to ground on the circuit.

⇓ **If greater than 25 Ω**

14. Install a 3 A fused jumper wire between the control circuit terminals listed below:
    - F101 Passenger Instrument Panel Air Bag stage 1 control circuit terminal 1 X1 and 2 X1
    - F101 Passenger Instrument Panel Air Bag stage 2 control circuit terminal 1 X2 and 2 X2
15. Ignition ON.
16. Verify the scan tool Deployment Loop Resistance parameter is less than 2 Ω.

⇒ **If 2 Ω or greater**

16.1. Ignition OFF, disconnect the X1 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.

16.2. Test for less than 2 Ω in each control circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit between the F101 Passenger Instrument Panel Air Bag connector and the X203 inline harness connector.

⇒ If less than 2 Ω, replace the K36 Inflatable Restraint Sensing and Diagnostic Module.

⇓ **If less than 2 Ω**

17. Ignition OFF, connect the harness connector at the F101 Passenger Instrument Panel Air Bag, press in the CPA (if equipped) until an audible and/or tactile click is heard.
18. Ignition ON, clear DTCs. Operate the vehicle within the Conditions for Running the DTC.
19. Verify DTC B0019 or B0020 is not set.

⇒ **If DTC B0019 or B0020 is set**

Replace the F101 Passenger Instrument Panel Air Bag.

⇓ **If DTC B0019 or B0020 is not set**

20. All OK.

Repair Instructions

Perform the *Diagnostic Repair Verification on page 6-92* after completing the repair.

- *Airbag Instrument Panel Module Replacement on page 13-121*
- *SIR/SRS Wiring Repairs on page 11-548*
- *Control Module References on page 6-3* for Inflatable Restraint Sensing and Diagnostic Module control module replacement, programming and setup

DTC B0052

Diagnostic Instructions

- Perform the *Diagnostic System Check - Vehicle on page 6-66* prior to using the diagnostic procedure.
- Review *Strategy Based Diagnosis on page 6-58* for an overview of the diagnostic approach.
- *Diagnostic Procedure Instructions on page 6-59* 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 then 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 on page 13-69

Connector End View Reference

Component Connector End Views on page 11-269

Description and Operation

Supplemental Inflatable Restraint System Description and Operation on page 13-145

Electrical Information Reference

- *Circuit Testing on page 11-526*
- *Testing for Intermittent Conditions and Poor Connections on page 11-531*
- *Wiring Repairs on page 11-537*
- *Connector Repairs on page 11-548*

Scan Tool Reference

Control Module References on page 6-3 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 on page 6-92* after completing the repair.

Control Module References on page 6-3 for inflatable restraint sensing and diagnostic module replacement, programming and setup

DTC B0074

Diagnostic Instructions

- Perform the *Diagnostic System Check - Vehicle on page 6-66* prior to using this diagnostic procedure.
- Review *Strategy Based Diagnosis on page 6-58* for an overview of the diagnostic approach.
- *Diagnostic Procedure Instructions on page 6-59* provides an overview of each diagnostic category.

DTC Descriptors

DTC B0074 00: Passenger Presence Sensor Circuit Malfunction

DTC B0074 04: Passenger Presence Sensor Open

Circuit/System Description

The passenger presence module monitors the passenger presence sensor status continuously. Whenever the passenger presence sensor has an internal malfunction, the passenger presence module will set DTC B0074.

Conditions for Running the DTC

Ignition voltage is between 9–16 V.

Conditions for Setting the DTC

B0074 00

The passenger presence module has detected a disconnection from the passenger presence sensor.

B0074 04

The passenger presence module has detected an open circuit.

Action Taken When the DTC Sets

The Inflatable Restraint Sensing and Diagnostic Module will set a DTC B0081 00 after receiving a fault present message from the passenger presence module and requests the instrument cluster 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 Inflatable Restraint Sensing and Diagnostic Module or Passenger Presence System 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 on page 13-69

Connector End View Reference

Component Connector End Views on page 11-269

Description and Operation

Supplemental Inflatable Restraint System Description and Operation on page 13-145

Electrical Information Reference

- *Circuit Testing on page 11-526*
- *Testing for Intermittent Conditions and Poor Connections on page 11-531*
- *Connector Repairs on page 11-548*
- *Wiring Repairs on page 11-537*

Scan Tool Reference

Control Module References on page 6-3 for scan tool information

Circuit/System Verification

Note: This system allows you to service each component separately (module and sensor/sensing mat). Perform a *Passenger Presence System Rezeroing on page 13-109*

- Passenger presence sensor
- Passenger presence sensor harness connector

- Passenger presence module
- Passenger presence module harness connector
- Seat wiring harness to vehicle 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.

1. Observe with the scan tool if the fault changes status while moving the passenger seat forward and backward through its full range of motion. The status should stay consistent.

⇒ **The status changes**

If the status changes this could be indication of a seat to vehicle harness connection issue, refer to Circuit/System Testing.

⇓ **The status does not change**

2. Observe with the scan tool if the fault changes status while moving the harness near each connector listed below. The status should stay consistent.
   - Passenger presence module
   - Passenger presence sensor
   - Any seat harness inline

   ⇒ **The status changes**

   If the reading is erratic while moving the harness, perform the following:
   - Inspect each connector terminal for damage or corrosion and repair as necessary.
   - Insure each connector and CPA is correctly seated.

   ⇓ **The status does not change**
3. All OK.

Circuit/System Testing

Note: This system allows you to service each component separately (module and sensor/sensing mat). Perform a *Passenger Presence System Rezeroing on page 13-109*

1. Verify that all K85 Passenger Presence Module and B60 Passenger Presence Sensor connectors are fully seated.
2. Verify DTC B0074 is not set.

⇒ **DTC B0074 is set.**

⇒ Replace the B60 Passenger Presence Sensor.

⇓ **DTC B0074 does not set.**

3. All OK.

Repair Instructions

Perform the *Diagnostic Repair Verification on page 6-92* after completing the repair.

Control Module References on page 6-3 for Passenger Presence Sensor, Passenger Presence Module, or Inflatable Restraint Sensing and Diagnostic Module replacement, programming, and setup

DTC B0081 (Inflatable Restraint Sensing and Diagnostic Module)

Diagnostic Instructions

- Perform the *Diagnostic System Check - Vehicle on page 6-66* prior to using this diagnostic procedure.
- Review *Strategy Based Diagnosis on page 6-58* for an overview of the diagnostic approach.
- *Diagnostic Procedure Instructions on page 6-59* provides an overview of each diagnostic category.

DTC Descriptors

DTC B0081 00: Passenger Presence Module Malfunction

DTC B0081 3A: Passenger Presence Module Incorrect Component Installed

DTC B0081 71: Passenger Presence Module Invalid Serial Data Received

Circuit/System Description

When the ignition is turned ON, the Inflatable Restraint Sensing and Diagnostic Module and the Passenger Presence Module perform tests to diagnose critical malfunctions. Upon a successful power-up mode the Inflatable Restraint Sensing and Diagnostic Module will illuminate both PASSENGER AIRBAG ON/OFF indicators located in the overhead center console. If the Inflatable Restraint Sensing and Diagnostic Module detects a fault in the Passenger Presence Module, it may disable the front passenger air bag deployment loop, set DTC B0081 00 or DTC B0081 3A and illuminate the AIRBAG indicator.

Conditions for Running the DTC

Ignition voltage is between 9–16 V.

Conditions for Setting the DTC

B0081 00

The Inflatable Restraint Sensing and Diagnostic Module has received a fault present message from the Passenger Presence Module.

B0081 3A

The Inflatable Restraint Sensing and Diagnostic Module has received a message from the Passenger Presence Module indicating a vehicle to Passenger Presence Module mismatch.

B0081 71

The Inflatable Restraint Sensing and Diagnostic Module sets this DTC when the Inflatable Restraint Sensing and Diagnostic Module has received invalid serial data from the Passenger Presence Module.

Action Taken When the DTC Sets

- The Inflatable Restraint Sensing and Diagnostic Module requests the instrument cluster 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 on page 13-69

Connector End View Reference

Component Connector End Views on page 11-269

Description and Operation

Supplemental Inflatable Restraint System Description and Operation on page 13-145

Electrical Information Reference

- *Circuit Testing on page 11-526*
- *Testing for Intermittent Conditions and Poor Connections on page 11-531*
- *Connector Repairs on page 11-548*
- *Wiring Repairs on page 11-537*

Scan Tool Reference

Control Module References on page 6-3 for scan tool information

Circuit/System Verification

Note: This system allows you to service each component separately (module and sensor/sensing mat). Perform a passenger presence system rezero procedure whenever a component is replaced.

Note: Both the Inflatable Restraint Sensing and Diagnostic Module and Passenger Presence Module set DTC B0081 but with different symptom bytes. Therefore it is important to identify which module has set the DTC B0081. Use the symptom bytes as a way of identify the correct module to diagnose. Use the table below in identifying specific module DTC B0081 application and symptom byte that sets with it.

1. Verify that DTC B1001 is not set in the Inflatable Restraint Sensing and Diagnostic Module.

⇒ **If DTC B1001 is set in the Inflatable Restraint Sensing and Diagnostic Module**

Refer to *DTC B1001 on page 13-106*.

⇓ **If DTC B1001 does not set in the Inflatable Restraint Sensing and Diagnostic Module**

2. Verify that DTC B0074, B101D, or B101E is not set in the Passenger Presence Module.

⇒ **If any of these DTCs are set in the Passenger Presence Module, refer to *Diagnostic Trouble Code (DTC) List - Vehicle on page 6-69***

⇓ **If none of these DTCs are set in the Passenger Presence Module**

Note: The Inflatable Restraint Sensing and Diagnostic Module sets a redundant B0081 00 DTC when the Passenger Presence Module sets a DTC B0081 11 or B0081 42.

3. Verify that DTC B0081 00 is not set in the Inflatable Restraint Sensing and Diagnostic Module

⇒ **If DTC B0081 00 is set**

Refer to the Passenger Presence Module *DTC B0081 (Inflatable Restraint Sensing and Diagnostic Module) on page 13-98* or *DTC B0081 (Passenger Presence Module) on page 13-100*.

⇓ **If DTC B0081 00 is not set**

Note: The Inflatable Restraint Sensing and Diagnostic Module sets a B0081 3A when an incorrect Passenger Presence Module is installed.

4. Verify that DTC B0081 3A is not set in the Inflatable Restraint Sensing and Diagnostic Module.

⇒ **If DTC B0081 3A is set**

Replace the K85 Passenger Presence Module.

⇓ **If DTC B0081 3A is not set**

5. Verify that DTC B0081 71 is not set in the Inflatable Restraint Sensing and Diagnostic Module.

⇒ **If DTC B0081 71 is set**

Replace the B60 Passenger Presence Sensor.

⇓ **If DTC B0081 71 is not set**

6. All OK.

Repair Instructions

Perform the *Diagnostic Repair Verification on page 6-92* after completing the repair.

Control Module References on page 6-3 for Passenger Presence Module and Inflatable Restraint Sensing and Diagnostic Module replacement, programming and setup

DTC B0081 (Passenger Presence Module)

Diagnostic Instructions

- Perform the *Diagnostic System Check - Vehicle on page 6-66* prior to using this diagnostic procedure.
- Review *Strategy Based Diagnosis on page 6-58* for an overview of the diagnostic approach.
- *Diagnostic Procedure Instructions on page 6-59* provides an overview of each diagnostic category.

DTC Descriptors

DTC B0081 11: Passenger Presence Module High Input

DTC B0081 4B: Passenger Presence Module Calibration Not Learned

Circuit/System Description

When the ignition is turned ON, the Inflatable Restraint Sensing and Diagnostic Module and the Passenger Presence Module perform tests to diagnose critical malfunctions. Upon a successful power-up mode the Inflatable Restraint Sensing and Diagnostic Module will illuminate both PASSENGER AIRBAG ON/OFF indicators. If the Inflatable Restraint Sensing and Diagnostic Module detects a fault in the Passenger Presence Module, it may disable the passenger instrument panel air bag deployment loop, set DTC B0081 and illuminate the AIRBAG 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 11

The Passenger Presence Module has failed the preload procedure.

B0081 4B

The Passenger Presence Module is not calibrated.

Action Taken When the DTC Sets

- The Inflatable Restraint Sensing and Diagnostic Module requests the instrument cluster 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 system were replaced verify that the correct part numbers were used for the vehicle application.
- An 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.
- If this DTC is set as either current or history it may have been caused by:
  - An aftermarket seat heater
  - A scan tool, laptop, or other electronic device is in the seat
  - The seat is damp or wet
  - An object is in the seat

Reference Information

Description and Operation

Supplemental Inflatable Restraint System Description and Operation on page 13-145

Scan Tool Reference

Control Module References on page 6-3 for scan tool information

Circuit/System Verification

Use the table below in identifying specific module DTC B0081 application and symptom byte that sets with it.

DTC	Symptom Bytes	
B0081 – Inflatable Restraint Sensing and Diagnostic Module	00	3A
B0081 – Passenger Presence Module	11	4B

Note:

- This system is serviced as a kit (seat foam, module and sensing mat). Perform a passenger presence system preload procedure whenever a component is replaced. Refer to *Passenger Presence System Programming and Setup on page 6-12*.
- Both Inflatable Restraint Sensing and Diagnostic Module and Passenger Presence Module set DTC B0081 but with different symptoms bytes. Therefore it is important to identify which module has set the DTC B0081. Use the symptom bytes as a way of identify the correct module to diagnose.
- The Inflatable Restraint Sensing and Diagnostic Module sets a B0081 3A when an incorrect Passenger Presence Module is installed.

1. Verify that DTC B0081 3A is not set in the Inflatable Restraint Sensing and Diagnostic Module.

⇒ **If DTC B0081 3A is set in the Inflatable Restraint Sensing and Diagnostic Module**

Replace the K85 Passenger Presence Module.

⇓ **If DTC B0081 3A is not set in the Inflatable Restraint Sensing and Diagnostic Module**

Note: The Inflatable Restraint Sensing and Diagnostic Module sets a B0081 00 DTC when the Passenger Presence Module sets a DTC B0081 11 or B0081 4B.

2. Verify that DTC B0081 11 or DTC B0081 4B is not set in the Passenger Presence Module.

⇒ **If DTC B0081 11 or DTC B0081 4B is set in the Passenger Presence Module**

Perform the passenger presence system rezero procedure. Refer to *Passenger Presence System Programming and Setup on page 6-12*.

⇓ **If DTC B0081 11 or DTC B0081 4B is not set in the Passenger Presence Module**

3. All OK.

Repair Instructions

Perform the *Diagnostic Repair Verification on page 6-92* after completing the repair.

Control Module References on page 6-3 for Passenger Presence Module or Inflatable Restraint Sensing and Diagnostic Module replacement, programming and setup

DTC B0083-B0088

Diagnostic Instructions

- Perform the *Diagnostic System Check - Vehicle on page 6-66* prior to using this diagnostic procedure.
- Review *Strategy Based Diagnosis on page 6-58* for an overview of the diagnostic approach.
- *Diagnostic Procedure Instructions on page 6-59* provides an overview of each diagnostic category.

DTC Descriptors

DTC B0083 01: Left Front Impact Sensor Short to Battery
DTC B0083 02: Left Front Impact Sensor Short to Ground
DTC B0083 04: Left Front Impact Sensor Open
DTC B0083 05: Left Front Impact Sensor High/Voltage Open
DTC B0083 0C: Left Front Impact Sensor Low Current
DTC B0083 39: Left Front Impact Sensor Internal Electronic Failure
DTC B0083 3A: Left Front Impact Sensor Incorrect Component Installed
DTC B0083 71: Left Front Impact Sensor Invalid Serial Data Received
DTC B0084 01: Right Front Impact Sensor Short to Battery
DTC B0084 02: Right Front Impact Sensor Short to Ground
DTC B0084 04: Right Front Impact Sensor Open
DTC B0084 05: Right Front Impact Sensor High/Voltage Open
DTC B0084 0C: Right Front Impact Sensor Low Current
DTC B0084 39: Right Front Impact Sensor Internal Electronic Failure
DTC B0084 3A: Right Front Impact Sensor Incorrect Component Installed
DTC B0084 71: Right Front Impact Sensor Invalid Serial Data Received
DTC B0085 01: Left Front Side Impact Sensor Short to Battery
DTC B0085 02: Left Front Side Impact Sensor Short to Ground
DTC B0085 04: Left Front Side Impact Sensor Open
DTC B0085 05: Left Front Side Impact Sensor High/Voltage Open
DTC B0085 0C: Left Front Side Impact Sensor Low Current
DTC B0085 39: Left Front Side Impact Sensor Internal Malfunction
DTC B0085 3A: Left Front Side Impact Sensor Incorrect Component Installed
DTC B0085 71: Left Front Side Impact Sensor Invalid Serial Data Received
DTC B0086 01: Right Front Side Impact Sensor Short to Battery
DTC B0086 02: Right Front Side Impact Sensor Short to Ground
DTC B0086 04: Right Front Side Impact Sensor Open
DTC B0086 05: Right Front Side Impact Sensor High/Voltage Open
DTC B0086 0C: Right Front Side Impact Sensor Low Current
DTC B0086 39: Right Front Side Impact Sensor Internal Malfunction
DTC B0086 3A: Right Front Side Impact Sensor Incorrect Component Installed
DTC B0086 71: Right Front Side Impact Sensor Invalid Data
DTC B0087 01: Left Rear Side Impact Sensor Short to Battery
DTC B0087 02: Left Rear Side Impact Sensor Short to Ground
DTC B0087 04: Left Rear Side Impact Sensor Open
DTC B0087 05: Left Rear Side Impact Sensor High/Voltage Open
DTC B0087 0C: Left Rear Side Impact Sensor Low Current
DTC B0087 39: Left Rear Side Impact Sensor Internal Malfunction
DTC B0087 3A: Left Rear Side Impact Sensor Incorrect Component Installed
DTC B0087 71: Left Rear Side Impact Sensor Invalid Serial Data Received
DTC B0088 01: Right Rear Side Impact Sensor Short to Battery
DTC B0088 02: Right Rear Side Impact Sensor Short to Ground

DTC B0088 04: Right Rear Side Impact Sensor Open
DTC B0088 05: Right Rear Side Impact Sensor High/Voltage Open
DTC B0088 0C: Right Rear Side Impact Sensor Low Current
DTC B0088 39: Right Rear Side Impact Sensor Internal Malfunction
DTC B0088 3A: Right Rear Side Impact Sensor Incorrect Component Installed
DTC B0088 71: Right Rear Side Impact Sensor Invalid Data

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Left Front Impact Sensor High Signal	B0083 02, B0083 0C	B0083 04, B0083 05	B0083 01	B0083 3A
Left Front Impact Sensor Low Reference	B0083 02, B0083 0C	B0083 04, B0083 05	B0083 01	B0083 3A
Right Front Impact Sensor High Signal	B0084 02, B0084 0C	B0084 04, B0084 05	B0084 01	B0084 3A
Right Front Impact Sensor Low Reference	B0084 02, B0084 0C	B0084 04, B0084 05	B0084 01	B0084 3A
Left Front Side Impact Sensor High Signal	B0085 02, B0085 0C	B0085 04, B0085 05	B0085 01	B0085 39
Left Front Side Impact Low Reference	B0085 02, B0085 0C	B0085 04, B0085 05	B0085 01	B0085 39
Right Front Side Impact Sensor High Signal	B0086 02, B0086 0C	B0086 04, B0086 05	B0086 01	B0086 39
Right Front Side Impact Sensor Low Reference	B0086 02, B0086 0C	B0086 04, B0086 05	B0086 01	B0086 39
Left Rear Side Impact Sensor High Signal	B0087 02, B0087 0C	B0087 04, B0087 05	B0087 01	B0087 39
Left Rear Side Impact Sensor Low Reference	B0087 02, B0087 0C	B0087 04, B0087 05	B0087 01	B0087 39
Right Rear Side Impact Sensor High Signal	B0088 02, B0088 0C	B0088 04, B0088 05	B0088 01	B0088 39
Right Rear Side Impact Sensor Low Reference	B0088 02, B0088 0C	B0088 04, B0088 05	B0088 01	B0088 39

Circuit/System Description

The impact sensors are equipped on vehicles to supplement the Supplemental Inflatable Restraint (SIR) System performance. The impact sensors are electronic and are not part of the deployment loops, but instead provide inputs to the Inflatable Restraint Sensing and Diagnostic Module. The impact sensors can assist in determining the severity of some frontal and side collisions. The Inflatable Restraint Sensing and Diagnostic Module uses the input from the impact sensors to assist in determining the severity of a collision further supporting air bag deployment. If the Inflatable Restraint Sensing and Diagnostic Module determines a deployment is warranted, the Inflatable Restraint Sensing and Diagnostic Module will cause current to flow through the deployment loops deploying the air bags.

Conditions for Running the DTC

Ignition voltage is between 9–16 V.

Conditions for Setting the DTC

Any of the following conditions exist for 10 seconds:

B0083 01, B0084 01, B0085 01, B0086 01, B0087 01, B0088 01

The sensor has been shorted to voltage.

B0083 02, B0084 02, B0085 02, B0086 02, B0087 02, B0088 02

- The sensor has been shorted to ground.
- The sensor current is greater than 23 mA for greater than 5 milliseconds.

B0083 04, B0084 04, B0085 04, B0086 04, B0087 04, B0088 04

- The sensor circuit is open.
- The Inflatable Restraint Sensing and Diagnostic Module has not received a message from the sensor for greater than 375 milliseconds.

B0083 05, B0084 05, B0085 05, B0086 05, B0087 05, B0088 05

- The sensor circuit is open or high resistance.
- The Inflatable Restraint Sensing and Diagnostic Module has not received a message from the sensor for greater than 375 milliseconds.

B0083 0C, B0084 0C, B0085 0C, B0086 0C, B0087 0C, B0088 0C

- The sensor has been shorted to ground.
- The sensor current is greater than 23 mA for greater than 5 milliseconds.

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

- The Inflatable Restraint Sensing and Diagnostic Module has received a Not OK message from the sensor.
- The Inflatable Restraint Sensing and Diagnostic Module has not received a message.

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

- The Inflatable Restraint Sensing and Diagnostic Module has received identification message from the sensor, which does not match the identification stored in the Inflatable Restraint Sensing and Diagnostic Module memory.
- The Inflatable Restraint Sensing and Diagnostic Module has reset the sensor twice without detecting the correct identification message.

B0083 71, B0084 71, B0085 71, B0086 71, B0087 71, B0088 71

The Inflatable Restraint Sensing and Diagnostic Module has received invalid serial data from the sensor.

Action Taken When the DTC Sets

The Inflatable Restraint Sensing and Diagnostic Module requests the instrument panel cluster 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.
- An ignition cycle is required for the DTC to go from current to history.

Reference Information

Schematic Reference

SIR Schematics on page 13-69

Connector End View Reference

Component Connector End Views on page 11-269

Description and Operation

Supplemental Inflatable Restraint System Description and Operation on page 13-145

Electrical Information Reference

- *Circuit Testing on page 11-526*
- *Testing for Intermittent Conditions and Poor Connections on page 11-531*
- *Connector Repairs on page 11-548*
- *Wiring Repairs on page 11-537*

Scan Tool Reference

Control Module References on page 6-3 for scan tool information

Circuit/System Verification

Note:

- Refer to *SIR Service Precautions on page 13-113*.
- 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.
  - Impact sensor
  - Inflatable Restraint Sensing and Diagnostic Module
  - Impact sensor 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 that DTC B0083–B0088 symptom byte 3A, 39, or 71 is not set as current.

⇒ **If DTC B0083–B0088 symptom byte 3A, 39 or 71 is set as current**

Replace the appropriate B59 or B63 Impact Sensor.

⇓ **If DTC B0083–B0088 symptom byte 3A, 39 or 71 is not set as current**

2. Verify that DTC B0083–B0088 symptom byte 01, 02, 04, or 05 is not set as current.

⇒ **If DTC B0083–B0088 symptom byte 01, 02, 04, or 05 is set as current**

Refer to Circuit/System Testing.

⇓ **If DTC B0083–B0088 symptom byte 01, 02, 04, 05 is not set as current**

3. All OK.

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the appropriate B59 or B63 Impact Sensor, wait 120 seconds.
2. Test for less than 10 Ω between the low reference circuit terminal 2 and ground.

⇒ **If 10 Ω or greater**

2.1. Ignition OFF, disconnect the harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.

2.2. Test for less than 2 Ω in the low reference circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the K36 Inflatable Restraint Sensing and Diagnostic Module.

⇓ **If less than 10 Ω**

3. Test for greater than 50k Ω between the signal circuit terminal 1 and ground.

⇒ **If 50k Ω or less**

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

3.2. Test for infinite resistance between the signal 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 50k Ω**

4. Ignition ON, test for less than 1 V between the signal circuit terminal 1 and ground.

⇒ **If greater than 1 V**

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

4.2. Ignition ON, test for less than 1 V between the signal circuit and ground.

⇒ If greater than 1 V, 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 1 V**

5. Disconnect the harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
6. Test for less than 2 Ω between the B59 or B63 Impact Sensor signal circuit end to end from the impact sensor terminal 1 and the appropriate K36 Inflatable Restraint Sensing and Diagnostic Module terminal listed below:
   - B63LF Side Impact Sensor – Left Front – Terminal 19 X2
   - B59L Front Impact Sensor – Left – Terminal 23 X2
   - B63RF Side Impact Sensor – Right Front – Terminal 22 X2
   - B59R Front Impact Sensor – Right – Terminal 26 X2
   - B63LR Side Impact Sensor – Left Rear – Terminal 27 X2
   - B63RR Side Impact Sensor – Right Rear – Terminal 30 X2

⇒ **If 2 Ω or greater**

Repair the open/high resistance in the circuit.

⇓ **If less than 2 Ω**

7. Ignition OFF, connect all harness connectors, press in the CPA (if equipped) until an audible and/or tactile click is heard.
8. Ignition ON, clear DTCs. Operate the vehicle within the Conditions for Running the DTC.
9. Verify the DTC does not set.

⇒ **If the DTC sets**

Replace the B59 or B63 Impact Sensor.

⇓ **If the DTC does not set**

10. All OK.

Repair Instructions

Perform the *Diagnostic Repair Verification on page 6-92* after completing the repair.

- *Airbag Side Impact Sensor Replacement (with AYF/AYO) on page 13-116*
- *Front End Inflatable Restraint Discriminating Sensor Replacement on page 13-115*
- *Control Module References on page 6-3* for Inflatable Restraint Sensing and Diagnostic Module replacement, programming and setup

DTC B1001

Diagnostic Instructions

- Perform the *Diagnostic System Check - Vehicle on page 6-66* prior to using this diagnostic procedure.
- Review *Strategy Based Diagnosis on page 6-58* for an overview of the diagnostic approach.
- *Diagnostic Procedure Instructions on page 6-59* provides an overview of each diagnostic category

DTC Descriptor

DTC B1001 00: Option Configuration

Circuit/System Description

The inflatable restraint sensing and diagnostic module (SDM) stores a primary data key, which is a 4-digit number. When the ignition is turned ON, the inflatable restraint sensing and diagnostic module compares this information to the information stored in the Body Control Module (BCM) via serial data. If there is a mismatch between the information stored in the inflatable restraint sensing and diagnostic module and Body Control Module, DTC B1001 will set.

Conditions for Running the DTC

System voltage is between 9–16 V.

Conditions for Setting the DTC

The 4-digit Primary Data Key stored in the inflatable restraint sensing and diagnostic module does not match the 4 digits stored in the Body Control Module.

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 disables all deployments.

Conditions for Clearing the DTC

The last 4-digit Primary Data Key in the inflatable restraint sensing and diagnostic module matches the last 4 digits stored in the Body Control Module.

Diagnostic Aids

- This DTC is an indication that an incorrect inflatable restraint sensing and diagnostic module is installed in the vehicle, or that the inflatable restraint sensing and diagnostic module and/or the Body Control Module was replaced without reprogramming the Body Control Module with the new information.
- If the inflatable restraint sensing and diagnostic module was previously programmed and DTC B1001 is now set, the setup portion of program was not completed. Proceed to the inflatable restraint sensing and diagnostic module Setup portion of the *Inflatable Restraint Sensing and Diagnostic Module Programming and Setup on page 6-10*

Reference Information

Schematic Reference

SIR Schematics on page 13-69

Connector End View Reference

Component Connector End Views on page 11-269

Description and Operation

Supplemental Inflatable Restraint System Description and Operation on page 13-145

Electrical Information Reference

- *Circuit Testing on page 11-526*
- *Testing for Intermittent Conditions and Poor Connections on page 11-531*
- *Wiring Repairs on page 11-537*
- *Connector Repairs on page 11-548*

Scan Tool Reference

Control Module References on page 6-3 for scan tool information

Circuit/System Verification

1. Verify the scan tool K36 Inflatable Restraint Sensing and Diagnostic Module Primary Key Status paramater is Valid.

⇒ **If the K36 Inflatable Restraint Sensing and Diagnostic Module Primary Key Status parameter is Invalid**

Perform the K36 Inflatable Restraint Sensing and Diagnostic Module setup. Refer to *Inflatable Restraint Sensing and Diagnostic Module Programming and Setup on page 6-10.*

⇓ **If the K36 Inflatable Restraint Sensing and Diagnostic Module Primary Key Status parameter is Valid**

2. All OK.

Repair Instructions

Perform the *Diagnostic Repair Verification on page 6-92* after completing the repair.

- *SIR/SRS Wiring Repairs on page 11-548*
- *Control Module References on page 6-3* for K36 Inflatable Restraint Sensing and Diagnostic Module replacement, programming and setup

DTC B1019

Diagnostic Instructions

- Perform the *Diagnostic System Check - Vehicle on page 6-66* prior to using this diagnostic procedure.
- Review *Strategy Based Diagnosis on page 6-58* for an overview of the diagnostic approach.
- *Diagnostic Procedure Instructions on page 6-59* provides an overview of each diagnostic category.

DTC Descriptor

DTC B1019 00: System Configuration Error

Circuit/System Description

The inflatable restraint sensing and diagnostic module monitors the number of safety components installed on the vehicle. When the ignition is turned ON, the inflatable restraint sensing and diagnostic module evaluates the number of safety components installed and compares it to the number of components the inflatable restraint sensing and diagnostic module expects to see on the vehicle with its current calibration. If there is a mismatch between detected components and the components programmed with the inflatable restraint sensing and diagnostic module calibration, DTC B1019 will set. The components (if equipped) that the inflatable restraint sensing and diagnostic module will detect include inflatable restraint deployment loops, impact sensors, passenger presence system components, seat position sensors, disable switches, and seat belt switches.

Conditions for Running the DTC

Ignition voltage is between 9–16 V.

Conditions for Setting the DTC

The setup for the inflatable restraint sensing and diagnostic module has not been completed and the inflatable restraint sensing and diagnostic module does not detect the passenger presence system (if equipped), the correct number of sensors, or deployment loops, that is expected with this calibration.

Action Taken When the DTC Sets

- The inflatable restraint sensing and diagnostic module requests the instrument cluster to illuminate the AIR BAG warning indicator.
- The DTC must be cleared before running the setup inflatable restraint sensing and diagnostic module.
- Air bag indicator will continue to flash until inflatable restraint sensing and diagnostic module setup procedure is complete.

Conditions for Clearing the DTC

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

Diagnostic Aids

The inflatable restraint sensing and diagnostic module scan tool deployment loop, impact sensor, and passenger presence (if equipped) data will match what the inflatable restraint sensing and diagnostic module has been programmed to expect to see on the vehicle. B1019 DTC will set if a deployment loop or impact sensor is added or removed from the system, or if the passenger presence is not detected.

DTC B1019 will set when an open/high resistance DTC sets for a deployment loop or impact sensor. This causes mismatch between the learned and actual components connected to the inflatable restraint sensing and diagnostic module.

DTC B1019 can set with no other DTCs if an unused deployment loop or impact sensor circuit is shorted to ground. This causes a mismatch between the learned and actual components connected to the inflatable restraint sensing and diagnostic module.

Reference Information

Schematic Reference

- *Seat Belt Schematics on page 13-48*
- *SIR Schematics on page 13-69*

Connector End View Reference

Component Connector End Views on page 11-269

Description and Operation

- *Seat Belt System Description and Operation on page 13-66*
- *Supplemental Inflatable Restraint System Description and Operation on page 13-145*

Electrical Information Reference

- *Circuit Testing on page 11-526*
- *Testing for Intermittent Conditions and Poor Connections on page 11-531*
- *Connector Repairs on page 11-548*
- *Wiring Repairs on page 11-537*

Scan Tool Reference

Control Module References on page 6-3 for scan tool information

Circuit/System Verification

Note: DTC B1019 can set after the inflatable restraint sensing and diagnostic module has been replaced and/or reprogrammed before the setup procedure is completed. The setup procedure cannot be completed if DTC B1019 is set as current or history. If a short or open is detected in a deployment circuit prior to the setup procedure being performed, the inflatable restraint sensing and diagnostic module will set DTC B1019.

1. Ignition ON.
2. Verify no other K36 Inflatable Restraint Sensing and Diagnostic Module DTCs are set.

⇒ **If other K36 Inflatable Restraint Sensing and Diagnostic Module DTCs are set**

Diagnose those DTCs first. Refer to *Diagnostic Trouble Code (DTC) List - Vehicle on page 6-69*

⇓ **If no other K36 Inflatable Restraint Sensing and Diagnostic Module DTCs are set**

3. Verify the enabled impact sensors identified in the scan tool data list match the number of actual impact sensors installed on the vehicle.

⇒ **If the number of enabled impact sensors do not match**

3.1. Verify the correct K36 Inflatable Restraint Sensing and Diagnostic Module calibration file is loaded in the K36 Inflatable Restraint Sensing and Diagnostic Module.

⇒ If the K36 Inflatable Restraint Sensing and Diagnostic Module calibration file is correct and the vehicle contains an incorrect number of sensors, identify which sensors are missing to make the vehicle match the K36 Inflatable Restraint Sensing and Diagnostic Module impact sensor calibration scan tool data list.

⇓ If the calibration file is incorrect

3.2. Reprogram the K36 Inflatable Restraint Sensing and Diagnostic Module. Refer to *Inflatable Restraint Sensing and Diagnostic Module Programming and Setup on page 6-10*

⇓ **If the number of enabled impact sensors match**

4. Verify the enabled deployment loops identified in the scan tool data list match the deployment loops installed on the vehicle.

⇒ **If the number of enabled deployment loops do not match**

4.1. Verify the correct K36 Inflatable Restraint Sensing and Diagnostic Module calibration file is loaded in the K36 Inflatable Restraint Sensing and Diagnostic Module.

⇒ If the K36 Inflatable Restraint Sensing and Diagnostic Module calibration file is correct and the vehicle contains an incorrect number of loops, identify which deployment loops are missing to make the vehicle match the K36 Inflatable Restraint Sensing and Diagnostic Module impact sensor calibration scan tool data list.

⇓ If the calibration file is incorrect

4.2. Program the K36 Inflatable Restraint Sensing and Diagnostic Module. Refer to *Inflatable Restraint Sensing and Diagnostic Module Programming and Setup on page 6-10*

⇓ **If the number of enabled deployment loops match**

5. Verify a passenger presence system is equipped on the vehicle.

⇒ **If a passenger presence system is not equipped on the vehicle**

Replace the K36 Inflatable Restraint Sensing and Diagnostic Module.

⇓ **If a passenger presence system is equipped on the vehicle**

6. Verify the Passenger Presence System Enable Status parameter identified in the scan tool data list is Enabled.

⇒ **If the Passenger Presence System Enable Status parameter is not Enabled**

Refer to *Inflatable Restraint Sensing and Diagnostic Module Programming and Setup on page 6-10*

⇓ **If the Passenger Presence System parameter is Enabled**

7. Verify the Passenger Presence System Learn Status parameter identified in the scan tool data list is Learned.

⇒ **If the Passenger Presence System Learn Status parameter is not Learned**

7.1. Verify the scan tool can communicate with the passenger presence system.

⇒ If the scan tool will not communicate with the passenger presence system, refer to *Scan Tool Does Not Communicate with Low Speed GMLAN Device on page 11-62*

⇓ If the scan tool communicates

7.2. Ignition OFF, disconnect the scan tool, wait 2 min.

7.3. Ignition ON, connect the scan tool, verify DTC B1019 is not set as current.

⇒ If the DTC is set as current, refer to *Inflatable Restraint Sensing and Diagnostic Module Programming and Setup on page 6-10*

⇓ If the DTC is not set as current

7.4. All OK.

⇓ **If the Passenger Presence System Learn status is Learned**

8. Replace the K36 Inflatable Restraint Sensing and Diagnostic Module.

Repair Instructions

Perform the *Diagnostic Repair Verification on page 6-92* after completing the repair.

- *SIR/SRS Wiring Repairs on page 11-548*
- *Control Module References on page 6-3* for inflatable restraint sensing and diagnostic module replacement, programming and setup

Passenger Presence System Rezeroing

Introduction

The inflatable restraints passenger presence system is a calibrated system that requires re-zeroing or a zero check anytime the seat cushion trim attachments have been removed or the passenger presence system has been replaced. The procedures below are designed to assist in the re-zeroing of the passenger presence system. Before you start, read these procedures carefully and completely. For further information regarding the passenger presence system refer to *Supplemental Inflatable Restraint System Description and Operation on page 13-145*.

Note: The following procedures must be followed:

1. Read this procedure carefully and completely.
2. The passenger presence system will not function properly if the passenger presence system re-zeroing procedure is not performed.
3. Perform the *Diagnostic Repair Verification on page 6-92* after successfully completing the re-zeroing procedure to ensure the system is functioning properly.

Passenger Presence System Re-zeroing Procedure

Note:

- Before the passenger presence system can be re-zeroed the front passenger seat must be completely empty of all items. The presence of any liquid or items on the front passenger seat will affect the calibration and operation of the passenger presence system.
- DTC B0081 will set if the re-zero system test is performed with:
  - An aftermarket seat heater located too close to the sensor mat
  - A scan tool, laptop, or other electronic device is in the seat
  - The seat is damp or wet
  - An object or person is in the seat

1. Verify that the temperature is between 32°F to 100°F before running a re-zero procedure.
2. Verify the seat is completely dry.
3. Empty the front outboard passenger seat.
4. Verify that all SIR and passenger presence system components, connectors, and connector position assurances are properly connected and mounted.
5. Install a scan tool.
6. Turn ON the ignition, with the engine OFF.

Note: The presence of current DTCs, except DTC B0081 11 or B0081 4B, will prevent the passenger presence system from re-zeroing and may set additional DTCs.

7. With a scan tool, perform the Passenger Presence Sensor Learn procedure.
8. If the test fails, confirm that the seat is empty and completely dry. Perform the Passenger Presence Sensor Learn test again. If the test fails again, verify DTC B0081 is not set as current, if the DTC is set refer to *Diagnostic Trouble Code (DTC) List - Vehicle on page 6-69*. If the test successfully completed, cycle the ignition OFF.
9. After the passenger presence system has been successfully re-zeroed, perform the *Diagnostic Repair Verification on page 6-92*.

Symptoms - SIR

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

1. Perform *Diagnostic System Check - Vehicle on page 6-66* before using the symptom tables in order to verify that all of the following are true:
   - There are no DTCs set.
   - The inflatable restraint sensing and diagnostic module (SDM) can communicate via the serial data link.
2. Review the SIR system description and operation in order to familiarize yourself with the system functions. Refer to *Supplemental Inflatable Restraint System Description and Operation on page 13-145*.

Visual/Physical Inspection

- Inspect for aftermarket devices which could affect the operation of the SIR system. Refer to *Checking Aftermarket Accessories on page 11-525*.
- Inspect the easily accessible or visible system components for obvious damage or conditions which could cause the symptom.

Intermittent

Faulty electrical connections or wiring may be the cause of intermittent conditions. Refer to *Testing for Intermittent Conditions and Poor Connections on page 11-531*.

Symptom List

Refer to *Air Bag Indicator Circuit Malfunction (Driver) on page 13-109* or *Air Bag Indicator Circuit Malfunction (Passenger) on page 13-110* in order to diagnose the symptom.

Air Bag Indicator Circuit Malfunction (Driver)

Diagnostic Instructions

- Perform the *Diagnostic System Check - Vehicle on page 6-66* prior to using this diagnostic procedure.
- Review *Strategy Based Diagnosis on page 6-58* for an overview of the diagnostic approach.
- *Diagnostic Procedure Instructions on page 6-59* provides an overview of each diagnostic category.

Circuit/System Description

When the ignition is turned ON the driver air bag indicator will illuminate, and then turn OFF after the bulb check is complete. The inflatable restraint sensing and diagnostic module (SDM) performs diagnostic tests on the SIR system during the bulb check. If any malfunction exists the inflatable restraint sensing and diagnostic module will request the instrument cluster to illuminate the air bag indicator steady, via serial data. If a preexisting malfunction exists, the air bag indicator will illuminate steady immediately after the ignition is turned ON. If the ignition 1 voltage is outside of the normal operating voltage range of 9–16 V, the inflatable restraint sensing and diagnostic module will command the instrument cluster to illuminate the air bag indicator ON, even with no DTCs present, and then disable all deployment loops.

Diagnostic Aids

- A DTC B1370 may set if the ignition 1 circuit is outside the 9–16 V range.
- A flashing driver air bag indicator is displayed if the inflatable restraint sensing and diagnostic module was programmed but did not fully complete the programming. For a flashing driver airbag indicator, refer to *Inflatable Restraint Sensing and Diagnostic Module Programming and Setup on page 6-10*.

Reference Information

Schematic Reference

SIR Schematics on page 13-69

Connector End View Reference

Component Connector End Views on page 11-269

Description and Operation

Supplemental Inflatable Restraint System Description and Operation on page 13-145

Electrical Information Reference

- *Circuit Testing on page 11-526*
- *Testing for Intermittent Conditions and Poor Connections on page 11-531*
- *Connector Repairs on page 11-548*
- *Wiring Repairs on page 11-537*

Scan Tool Reference

Control Module References on page 6-3 for scan tool information

Circuit/System Verification

1. Verify the test lamp turns ON and OFF when commanding the Passenger Seat Belt Reminder Indicator ON and OFF with a scan tool.

⇒ **If the air bag indicator does not turn ON or OFF**

Replace the P16 Instrument Cluster.

⇓ **If the air bag indicator does turn ON or OFF**

2. Replace the K36 inflatable restraint sensing and diagnostic module.

Repair Instructions

Perform the *Diagnostic Repair Verification on page 6-92* after completing the repair.

- *SIR/SRS Wiring Repairs on page 11-548*
- *Control Module References on page 6-3* for Instrument Cluster or inflatable restraint sensing and diagnostic module replacement, programming and setup

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Air Bag Indicator Circuit Malfunction (Passenger)

Diagnostic Instructions

- Perform the *Diagnostic System Check - Vehicle on page 6-66* prior to using this diagnostic procedure.
- Review *Strategy Based Diagnosis on page 6-58* for an overview of the diagnostic approach.
- *Diagnostic Procedure Instructions on page 6-59* provides an overview of each diagnostic category.

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Passenger Air Bag OFF Indicator Control	2	2*	4	—
Passenger Air Bag ON Indicator Control	3	3*	5	—
Passenger Air Bag Disable Indicator Ground	—	1	1	—

1. Both indicators always OFF
2. The OFF indicator will not illuminate
3. The ON indicator will not illuminate
4. The OFF indictor always ON
5. The ON indicator always ON

* High resistance may cause the appropriate indicator to illuminate less bright than normal

Circuit/System Description

The passenger air bag ON/OFF indicators are used to notify the driver when the passenger presence system has enabled or disabled the passenger instrument panel air bag. When the ignition is turned ON, the ignition voltage is supplied to the passenger presence module. When the Inflatable Restraint Sensing and Diagnostic Module receives the appropriate serial data message from the passenger presence module the Inflatable Restraint Sensing and Diagnostic Module will then provide voltage to the appropriate indicator.

Reference Information

Schematic Reference

SIR Schematics on page 13-69

Connector End View Reference

Component Connector End Views on page 11-269

Description and Operation

Supplemental Inflatable Restraint System Description and Operation on page 13-145

Electrical Information Reference

- *Circuit Testing on page 11-526*
- *Connector Repairs on page 11-548*
- *Testing for Intermittent Conditions and Poor Connections on page 11-531*
- *Wiring Repairs on page 11-537*

Scan Tool Reference

Control Module References on page 6-3 for scan tool information

Circuit/System Verification

1. Ignition ON.
2. Verify no other Inflatable Restraint Sensing and Diagnostic Module DTCs are set.

⇒ **If other Inflatable Restraint Sensing and Diagnostic Module DTCs are set**

Diagnose those DTCs first. Refer to *Diagnostic Trouble Code (DTC) List - Vehicle on page 6-69*

⇓ **If no other Inflatable Restraint Sensing and Diagnostic Module DTCs are set**

3. Verify the passenger air bag ON indicator and passenger air bag OFF indicators turn ON and OFF when commanded ON and OFF with a scan tool.

⇒ **If the passenger air bag indicators do not change**

Refer to Circuit/System Testing

⇓ **If the passenger air bag indicators change**

4. All OK.

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:

- Passenger air bag disable on/off indicator.
- Passenger air bag disable on/off indicator wiring harness.

1. Ignition OFF, disconnect the harness connector at the P14 Passenger Air Bag Disable Indicator.
2. Test for less than 10 Ω between the ground circuit terminal 4 and ground.

⇒ **If 10 Ω or greater**

2.1. Test for less than 2 Ω in the ground circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, repair the open/high resistance in the ground connection.

⇓ **If less than 10 Ω**

3. Ignition ON, command the passenger air bag OFF indictor OFF with a scan tool.
4. Test for less than 11 V between the control circuit terminal 5 and ground.

⇒ **If 11 V or greater**

4.1. Ignition OFF, disconnect the X1 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module. Ignition ON.

4.2. 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. Command the passenger air bag OFF indicator ON with a scan tool.
6. Test for greater than 4 V between the control circuit terminal 5 and ground.

⇒ **If 4 V or less**

6.1. Ignition OFF, disconnect the X1 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.

6.2. Test for infinite resistance between the control circuit and ground.

⇒ If less than infinite resistance, repair the short to ground on the circuit.

6.3. Test for less than 2 Ω in each control circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the K36 Inflatable Restraint Sensing and Diagnostic Module.

⇓ **If greater than 4 V**

7. Command the passenger air bag ON indicator OFF with a scan tool.
8. Test for less than 11 V between the control circuit terminal 2 and ground.

⇒ **If 11 V or greater**

8.1. Ignition OFF, disconnect the X1 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module. Ignition ON.

8.2. 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**

9. Command the passenger air bag ON indicator ON with a scan tool.
10. Test for greater than 4 V between the control circuit terminal 2 and ground.

⇒ **If 4 V or less**

10.1. Ignition OFF, disconnect the X1 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.

10.2. Test for infinite resistance between the control circuit and ground.

⇒ If less than infinite resistance, repair the short to ground on the circuit.

10.3. Test for less than 2 Ω in each control circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the K36 Inflatable Restraint Sensing and Diagnostic Module.

⇓ **If greater than 4 V**

11. Replace the P14 Passenger Air Bag Disable Indicator.

Repair Instructions

Perform the *Diagnostic Repair Verification on page 6-92* after completing the repair.

- *Instrument Panel Airbag Arming Status Display Replacement on page 13-128*
- *Control Module References on page 6-3* for K36 Inflatable Restraint Sensing and Diagnostic Module replacement, programming and setup

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 on page 13-145*.

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 *Repairs and Inspections Required After a Collision on page 13-134*.
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 on page 13-69* or *Electrical Center Identification Views on page 11-240*.
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 on page 13-69* or *Electrical Center Identification Views on page 11-240*.
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 on page 6-66*.

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 on page 9-713*.
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 on page 9-713*.
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 on page 6-66*.

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.

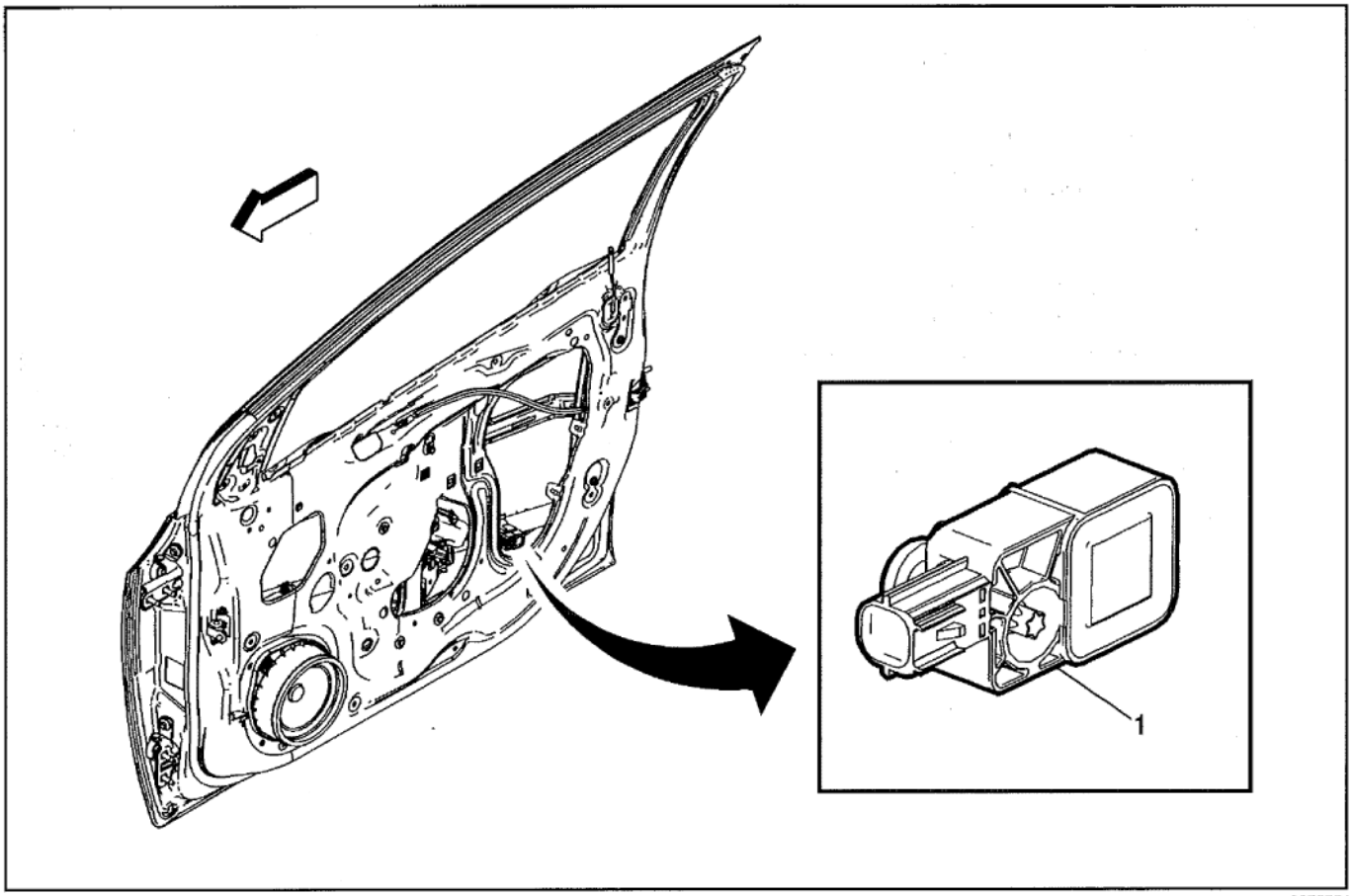
Note: The following are general service instructions which must be followed in order to properly repair the vehicle and return it to its original integrity:

- 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 achor and/or retractor pretensioners
- Front seat side air bag

Inflatable Restraint Remote Impact Sensor Replacement

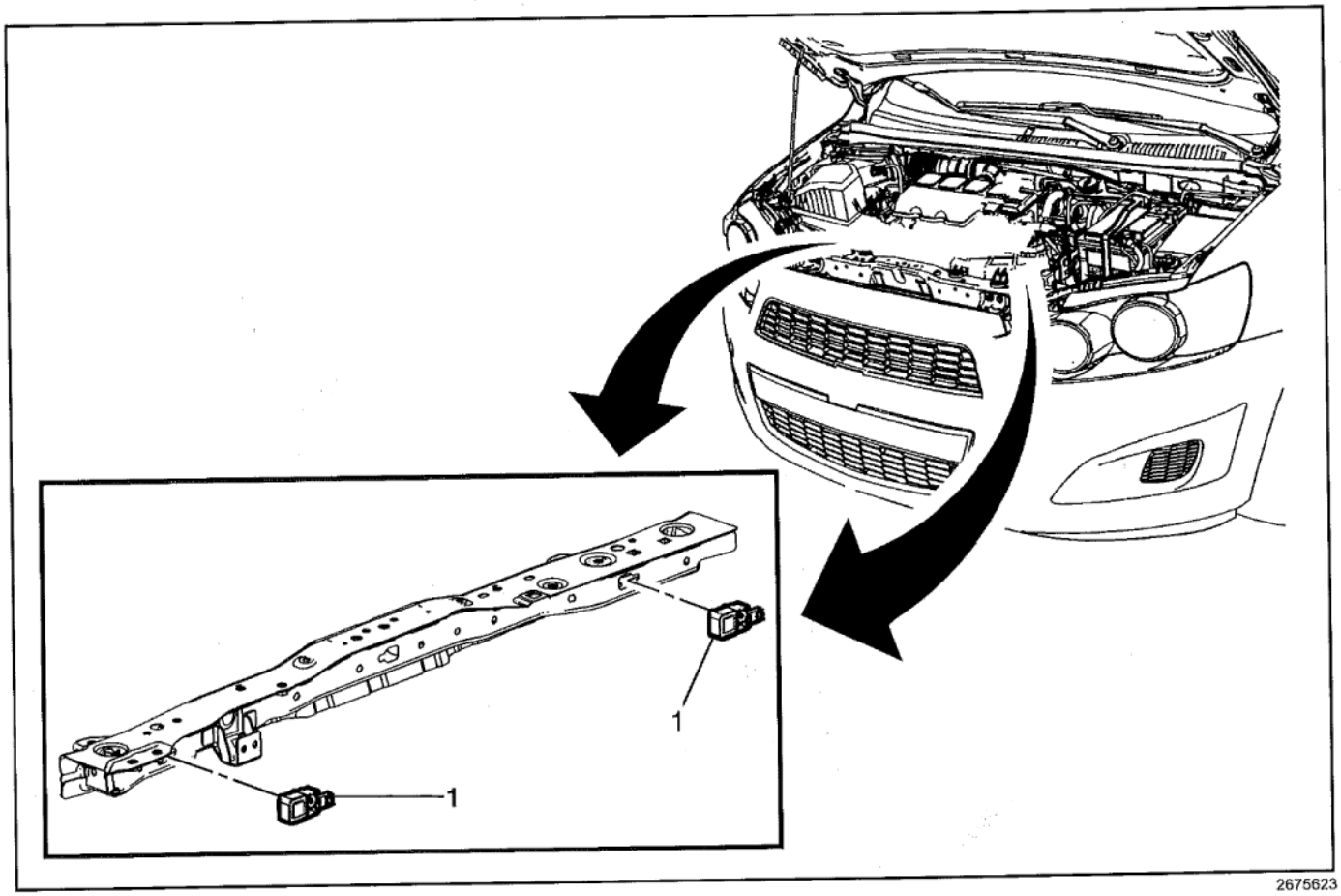


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Inflatable Restraint Remote Impact Sensor Replacement

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 SIR Disabling and Enabling . 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 *SIR Disabling and Enabling on page 13-112*. 2. Remove front side door trim panel. Refer to *Front Side Door Trim Replacement on page 2-67*.	
1	Inflatable Restraint Remote Impact Sensor Assembly **Caution:** Refer to *Fastener Caution on page 0-8*. **Procedure** 1. Loosen the fastener and slide the sensor out of key hole slot. 2. The bolt is integral to the sensor assembly, DO NOT remove separately. 3. Disconnect the electrical connector. **Tighten** 7.5 N•m (66 lb in)

Front End Inflatable Restraint Discriminating Sensor Replacement

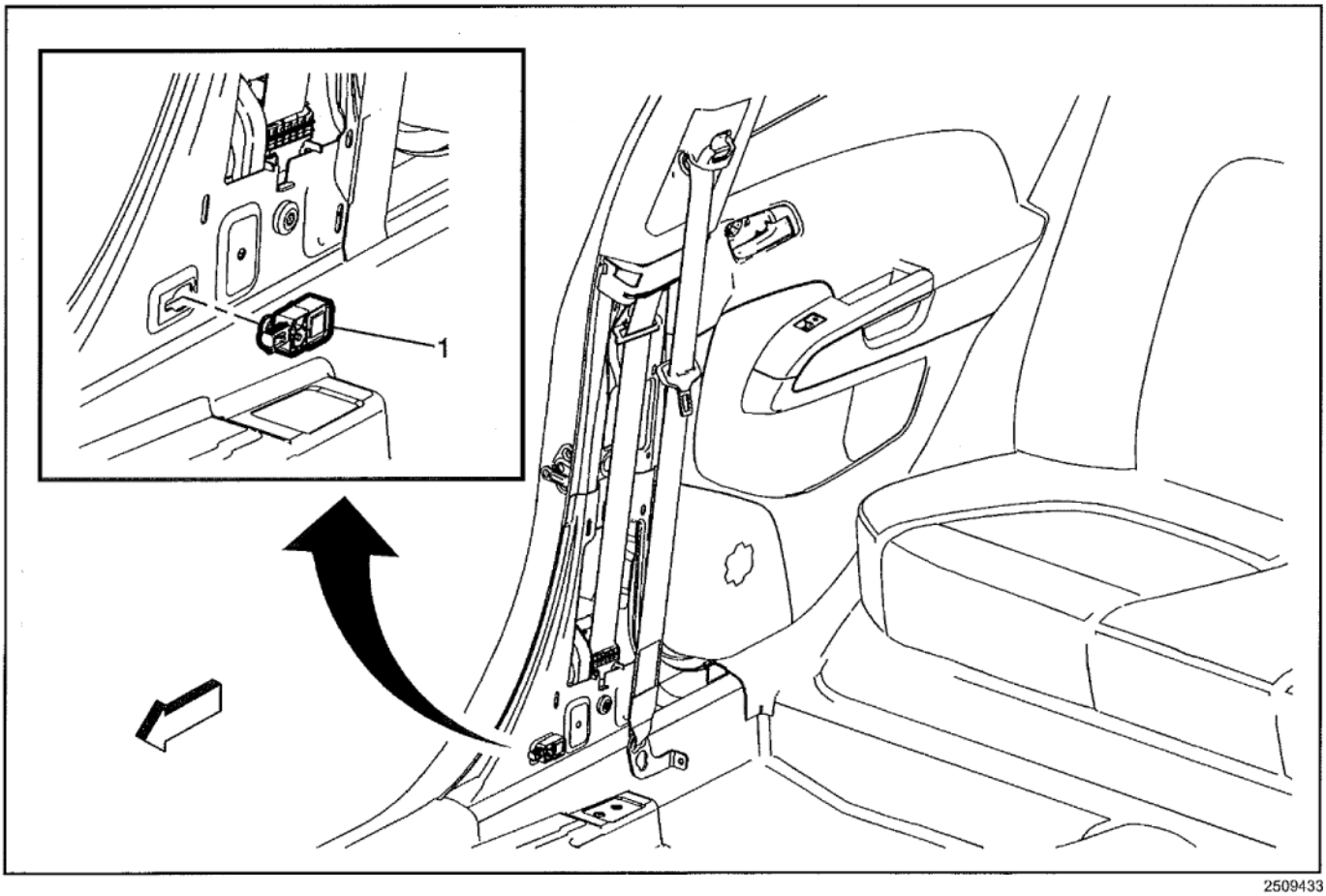


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Front End Inflatable Restraint Discriminating Sensor Replacement

Callout	Component Name
Warning: Refer to SIR Warning on page 0-7. ***Warning: Refer to SIR Inflator Module Handling and Storage Warning on page 0-6.*** ***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.*** **Preliminary Procedures** 1. Disable the supplemental inflatable restraint (SIR) system. Refer to *SIR Disabling and Enabling on page 13-112*. 2. If replacing the left side sensor, reposition the surge tank without draining the coolant. Refer to *Radiator Surge Tank Replacement on page 9-630*.	
1	Front End Inflatable Restraint Discriminating Sensor Assembly (Qty: 2) **Caution:** Refer to *Fastener Caution on page 0-8*. **Procedure** 1. Disconnect electrical connector. 2. Loosen the bolts and slide the sensor out of the keyhole slots. 3. The bolts are integral to the sensor assembly and DO NOT remove separately. **Tighten** 7.5 N•m (66 lb in)

Airbag Side Impact Sensor Replacement (with AYF/AYO)

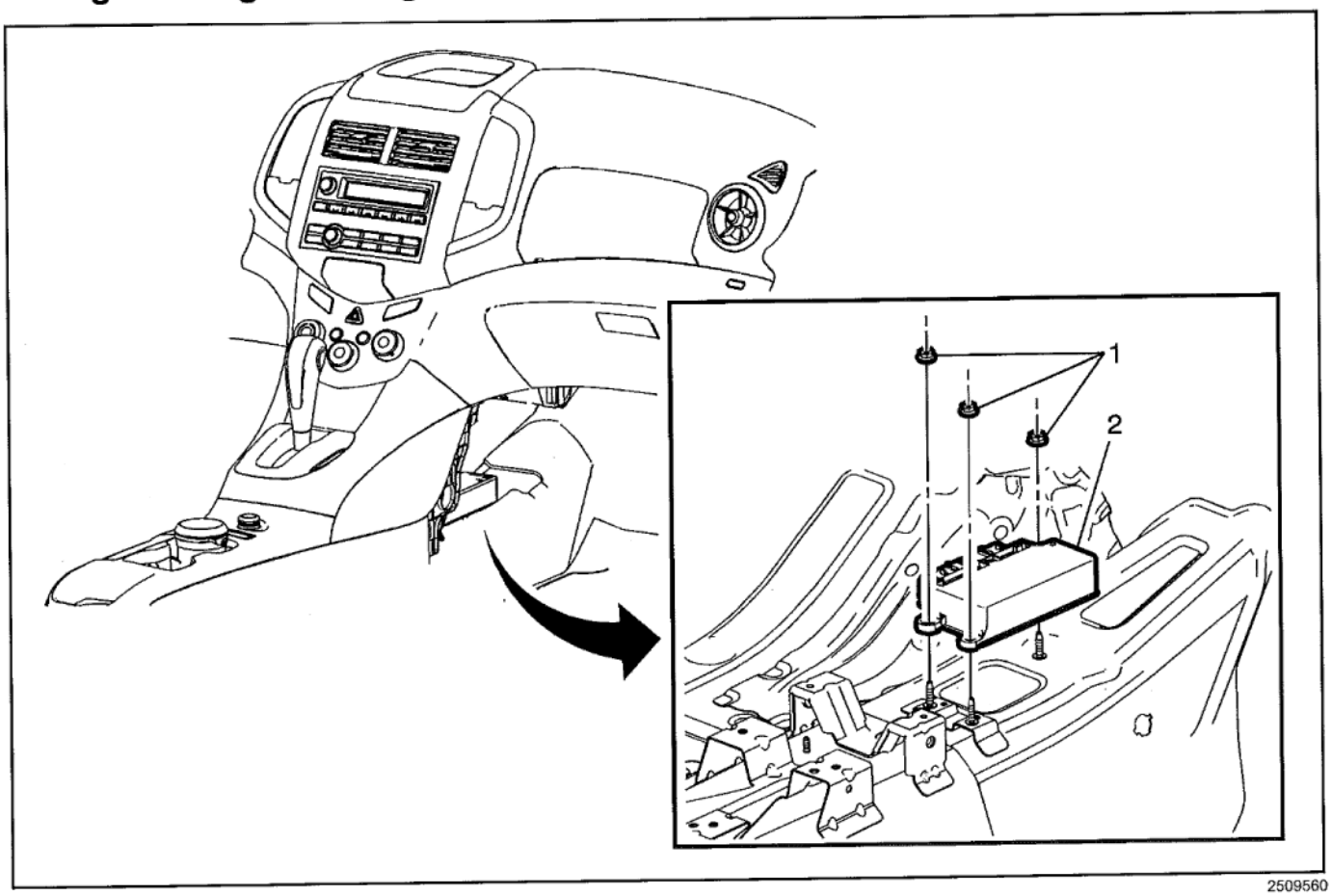


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Airbag Side Impact Sensor Replacement (with AYF/AYO)

Callout	Component Name
	Warning: Refer to SIR Warning on page 0-7. ***Warning: Refer to SIR Inflator Module Handling and Storage Warning on page 0-6.*** ***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.*** **Preliminary Procedures** 1. Disable the SIR system. Refer to *SIR Disabling and Enabling on page 13-112*. 2. Remove the center pillar lower trim panel. Refer to *Center Pillar Lower Trim Panel Replacement on page 2-76*.
1	Inflatable Restraint Side Impact Sensor Assembly **Caution:** Refer to *Fastener Caution on page 0-8*. **Procedure** 1. Disconnect electrical connector. 2. Loosen the fasteners and slide the sensor out of the keyhole slots. 3. The bolts are integral to the sensor assembly, DO NOT remove separately. **Tighten** 7.5 N•m (66 lb in)

Airbag Sensing and Diagnostic Module Replacement



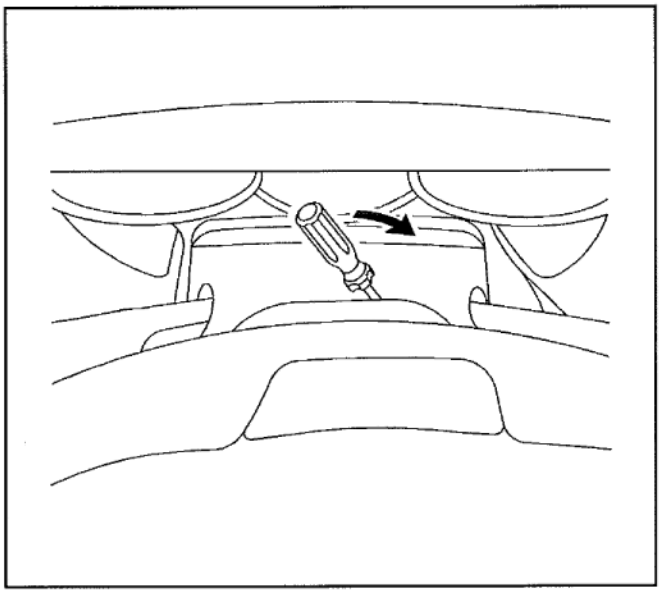
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Airbag Sensing and Diagnostic Module Replacement

Callout	Component Name
Warning: Refer to SIR Warning on page 0-7. ***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.*** **Preliminary Procedures** 1. Disable the supplemental inflatable restraint (SIR) system. Refer to *SIR Disabling and Enabling on page 13-112.* 2. Remove the front floor console extension. Refer to *Front Floor Console Extension Replacement - Left Side on page 2-60* or *Front Floor Console Extension Replacement - Right Side on page 2-59.* 3. Disconnect the electrical connector.	
1	Inflatable Restraint Sensing and Diagnostic Module Fastener (Qty: 3) **Caution:** Refer to *Fastener Caution on page 0-8.* **Tighten** 10 N•m (89 lb in)
2	Inflatable Restraint Sensing and Diagnostic Module Assembly **Tip:** • 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 *Control Module References on page 6-3.*

Airbag Steering Wheel Module Replacement

Removal Procedure

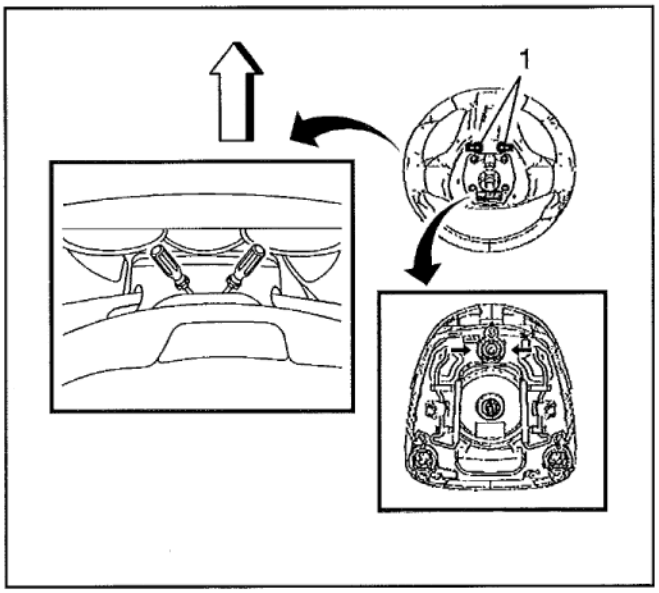


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Warning: Refer to SIR Inflator Module Handling and Storage Warning on page 0-6.

Warning: Refer to SIR Warning on page 0-7.

1. Disable the SIR system. Refer to *SIR Disabling and Enabling on page 13-112.*
2. Rotate the steering wheel 180 degrees.

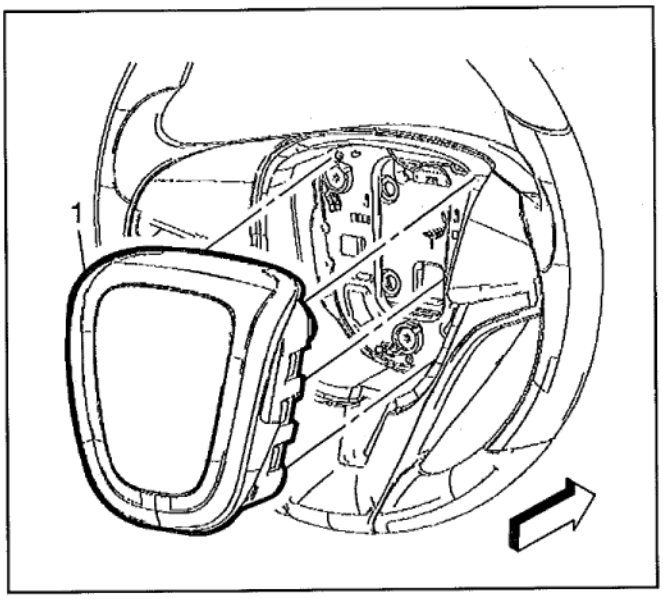


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3. Using a blunt-ended tool, push the spring fastener inward through the access hole (1) located on the rear of the steering wheel by pulling the tool outwards.
4. Keeping the tool inserted, repeat the step for other opening.
5. Keeping the upper step pull the steering wheel inflatable restraint module out of the steering wheel.
6. Disconnect the electrical connectors.
7. Remove the steering wheel inflatable restraint module.

Installation Procedure

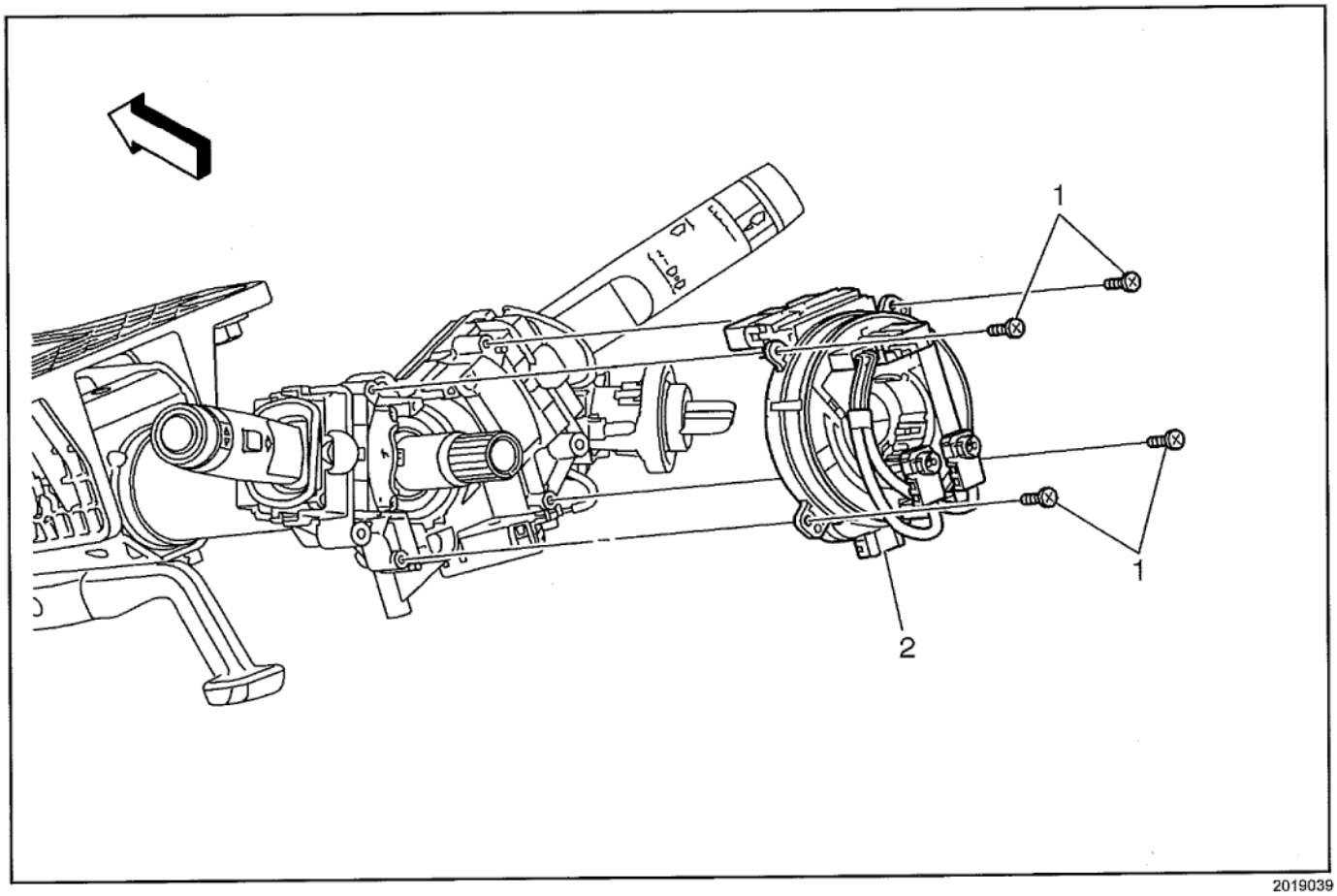
1. Connect the electrical connectors.



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2. Align the steering wheel module fasteners to the steering column fastener holes.
3. Push the steering wheel module (1) firmly into the steering column in order to engage the fasteners.
4. Enable the SIR system. Refer to *SIR Disabling and Enabling on page 13-112*.
5. After replacing the module, fully deploy the module before disposal. If the module was replaced under warranty, fully deploy and dispose of the module after the required retention period. Refer to *Inflatable Restraint Module Handling and Scrapping on page 13-135*.

Steering Wheel Airbag Coil Replacement



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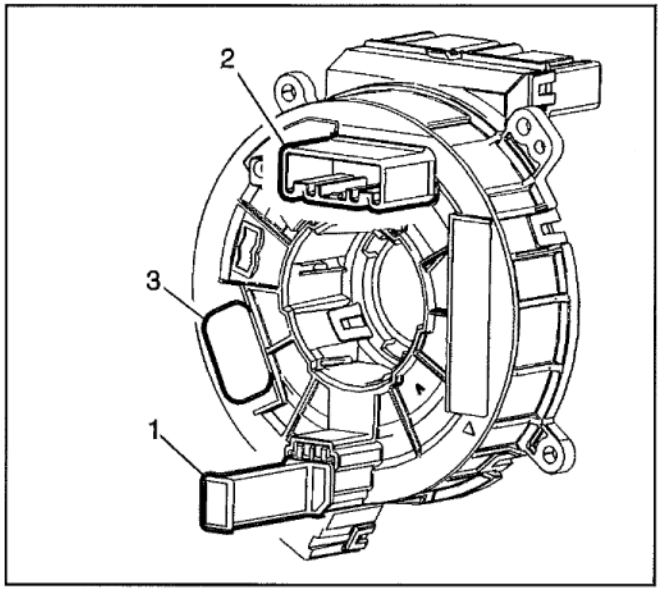
Steering Wheel Airbag Coil Replacement

Callout	Component Name
Preliminary Procedures 1. Remove the steering wheel. Refer to *Steering Wheel Replacement on page 15-32.* 2. Remove the steering column upper trim cover. Refer to *Steering Column Upper Trim Cover Replacement on page 15-28.* 3. Remove the steering column lower trim cover. Refer to *Steering Column Lower Trim Cover Replacement on page 15-29.*	
1	Steering Wheel Inflatable Restraint Module Coil Bolt (Qty: 4) **Caution:** Refer to *Fastener Caution on page 0-8.*
2	Steering Wheel Inflatable Restraint Module Coil **Procedure** 1. Disconnect any electrical connectors as necessary. 2. Use tape in order to secure the old coil in the center position. 3. Remove the old coil from the steering column. 4. Transfer the steering angle sensor. Refer to *Steering Angle Sensor Replacement on page 15-36.* 5. Ensure the coil is centered during installation. If you are installing a NEW coil, ensure the centering tab is on the coil. If the coil is not centered, refer to *Airbag Steering Wheel Module Coil Centering on page 13-120.*

Airbag Steering Wheel Module Coil Centering

Note: If a double wire harness strap is installed onto the wire harness assembly and steering column, the original holder for the wire strap(s) MUST be reused during installation.

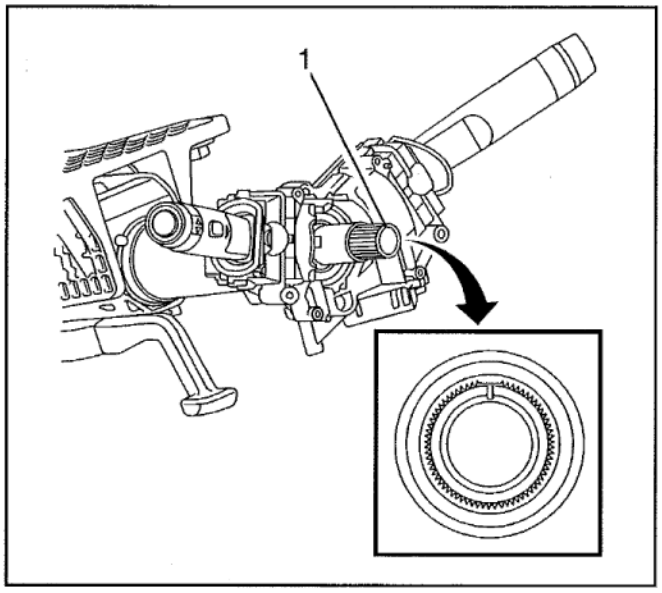
1. Remove the wire harness strap(s) where necessary.



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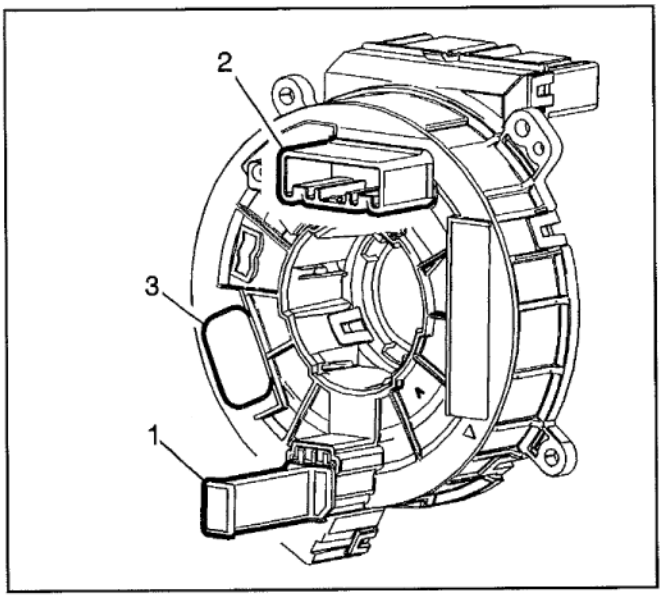
Caution: The new SIR coil assembly will be centered. Improper alignment of the SIR coil assembly may damage the unit, causing an inflatable restraint malfunction.

2. Inspect the inflatable restraint steering wheel module coil. If the yellow lock pin (1) is present, the uplead post (2) is at the 12:00 position and the loop (u-turn) appears in the centering window (3) then the coil is already in the centered position and no further action is required.



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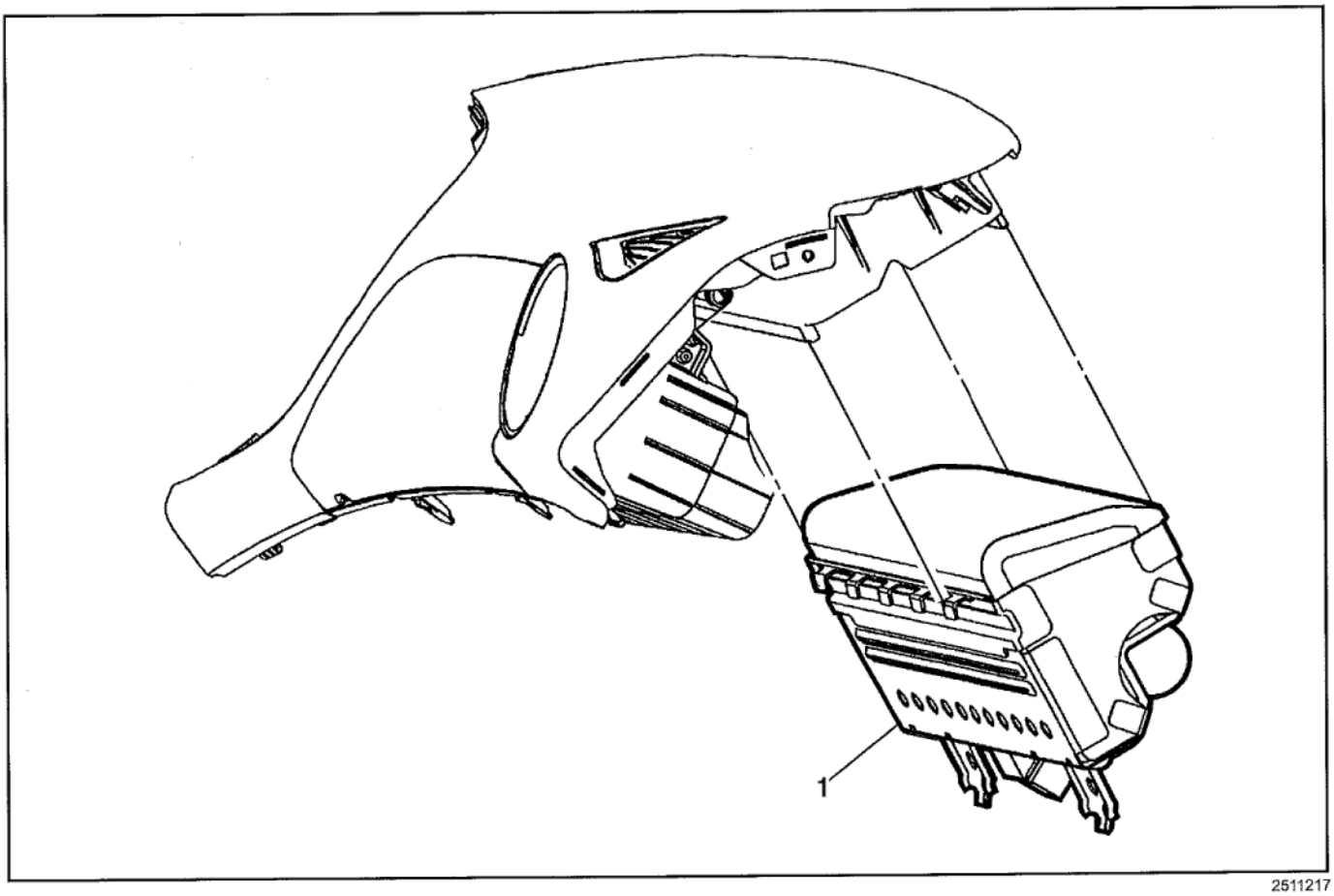
3. If the coil needs to be centered, perform the following preliminary steps:
   - The wheels on the vehicle are straight ahead.
   - The block tooth (1) on the steering shaft is in the 12 o'clock position.
   - The ignition switch is in the LOCK position.



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4. To center the coil, perform the following steps:
   - Hold the coil with the face up.
   - Slowly rotate the coil hub clockwise until the coil ribbon stops.
   - Slowly rotate the coil hub counterclockwise approximately 2.5 turns until the uplead post (2) is at the 12:00 position.
   - View the centering window (3) and ensure the loop (u-turn) is visible. If the loop is visible then the coil is in the CENTER position.
   - While holding the coil hub in the CENTER position, align the coil with the steering column components and slide onto the steering shaft.
5. If a double wire harness strap is installed onto the wire harness assembly and steering column, the wires must be routed up against the column. One wire harness strap will surround one lead from the coil to the steering column. The other wire harness strap will surround all other leads to the steering column.

Airbag Instrument Panel Module Replacement

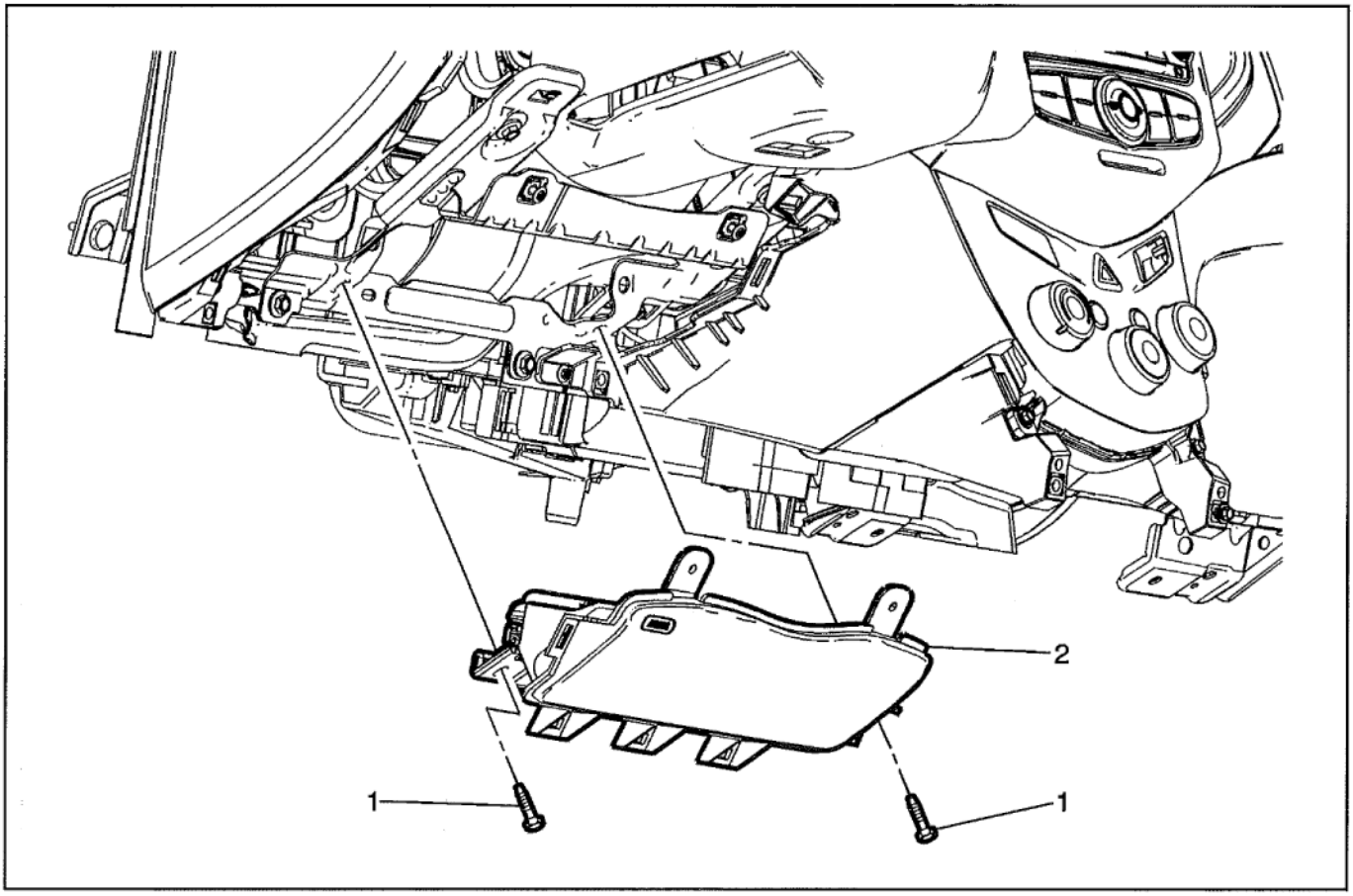


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Airbag Instrument Panel Module Replacement

Callout	Component Name
Warning: Refer to SIR Inflator Module Handling and Storage Warning on page 0-6.	
Warning: Refer to SIR Warning on page 0-7.	
Preliminary Procedure 1. Disable the SIR system. Refer to *SIR Disabling and Enabling on page 13-112.* 2. Remove the instrument panel upper trim panel assembly – right side. Refer to *Instrument Panel Upper Trim Panel Replacement - Right Side on page 2-34.*	
1	Instrument Panel Inflatable Restraint Module Assembly **Procedure** 1. Ensure that the instrument panel inflatable restraint module is fully deployed before disposal. If the module was replaced under warranty, fully deploy and dispose of the module after the required retention period. Refer to *Inflatable Restraint Module Handling and Scrapping on page 13-135.* 2. Enable the SIR system. Refer to *SIR Disabling and Enabling on page 13-112.*

Instrument Panel Lower Airbag Replacement - Driver Side

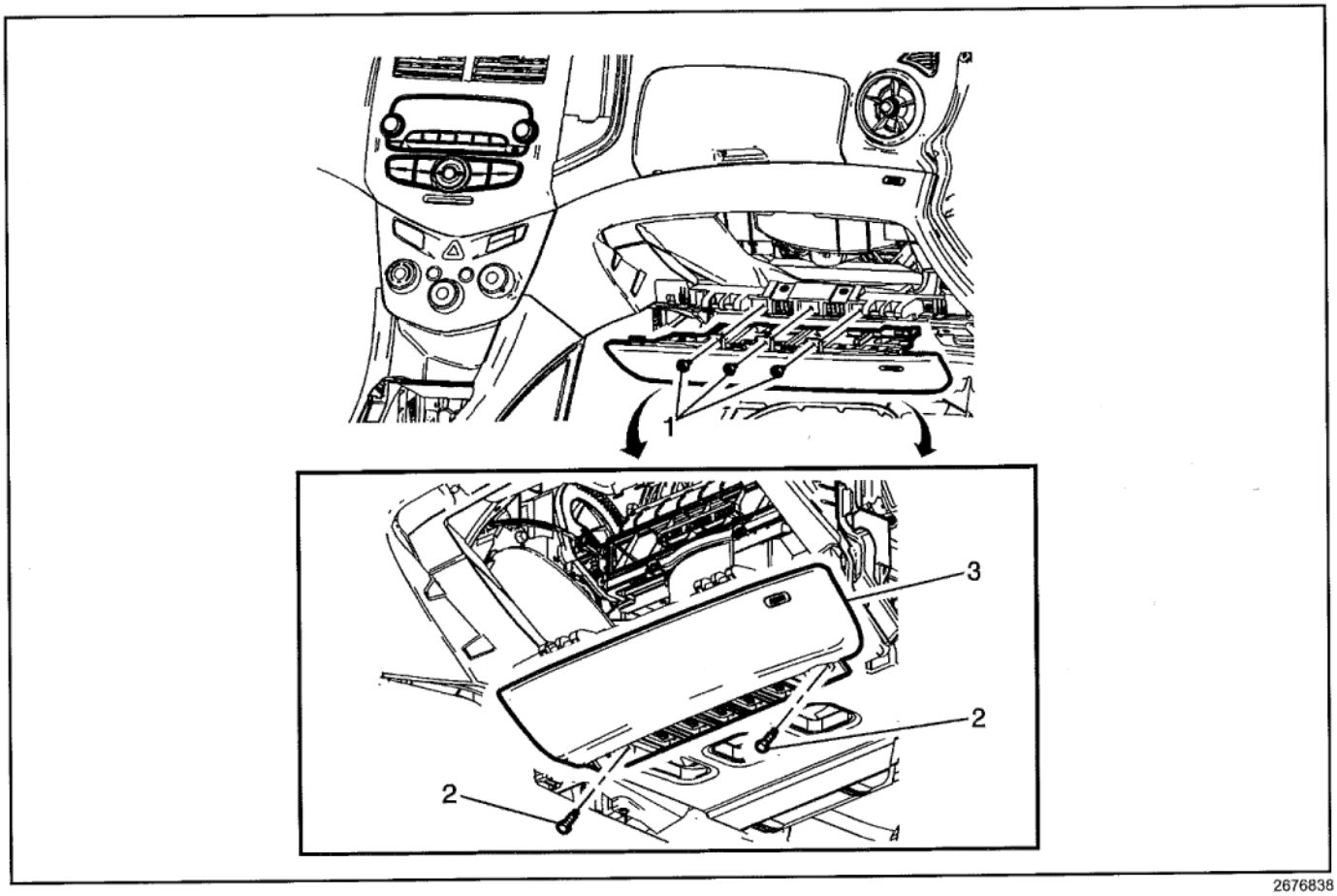


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Instrument Panel Lower Airbag Replacement - Driver Side

Callout	Component Name
	Warning: Refer to SIR Inflator Module Handling and Storage Warning on page 0-6. ***Warning: Refer to SIR Warning on page 0-7.*** **Preliminary Procedure** 1. Disable the SIR system. Refer to *SIR Disabling and Enabling on page 13-112.* 2. Remove the instrument panel lower trim pad cover. Refer to *Instrument Panel Lower Trim Pad Cover Replacement (Without AAL) on page 2-40* or *Instrument Panel Lower Trim Pad Cover Replacement (With AAL) on page 2-41.*
1	Instrument Panel Lower Airbag Fastener (Qty: 2) **Caution:** Refer to *Fastener Caution on page 0-8.* **Tighten** 9 N•m (80 lb in)
2	Inflatable Restraint Instrument Panel Lower Module Assembly – Driver Side **Procedure** 1. Ensure that the instrument panel inflatable restraint module is fully deployed before disposal. If the module was replaced under warranty, fully deploy and dispose of the module after the required retention period. Refer to *Inflatable Restraint Module Handling and Scrapping on page 13-135.* 2. Enable the SIR system. Refer to *SIR Disabling and Enabling on page 13-112.*

Instrument Panel Lower Airbag Replacement - Passenger Side

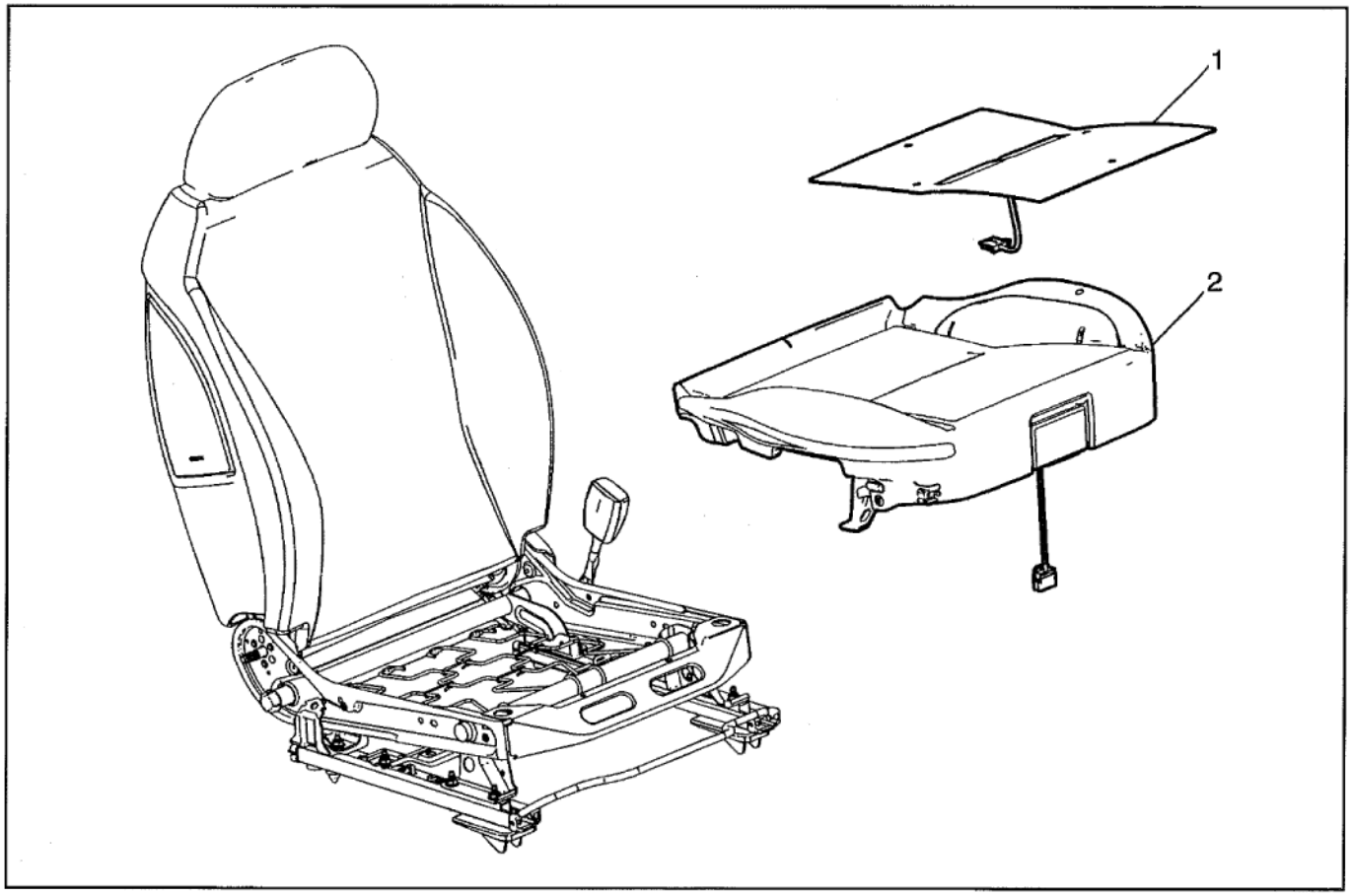


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Instrument Panel Lower Airbag Replacement - Passenger Side

Callout	Component Name
	Warning: Refer to SIR Inflator Module Handling and Storage Warning on page 0-6. ***Warning: Refer to SIR Warning on page 0-7.*** **Preliminary Procedure** 1. Disable the SIR system. Refer to *SIR Disabling and Enabling on page 13-112.* 2. Remove the instrument panel lower compartment. Refer to *Instrument Panel Lower Compartment Replacement on page 2-44.*
1	Instrument Panel Compartment Reinforcement Fastener (Qty: 3) **Caution:** Refer to *Fastener Caution on page 0-8.*
2	Instrument Panel Lower Airbag Fastener (Qty: 2) **Tighten** 9 N•m (80 lb in)
3	Inflatable Restraint Instrument Panel Lower Module Replacement – Passenger Side **Procedure** 1. Ensure that the instrument panel inflatable restraint module is fully deployed before disposal. If the module was replaced under warranty, fully deploy and dispose of the module after the required retention period. Refer to *Inflatable Restraint Module Handling and Scrapping on page 13-135.* 2. Enable the SIR system. Refer to *SIR Disabling and Enabling on page 13-112.*

Airbag Front Passenger Presence Sensor Replacement

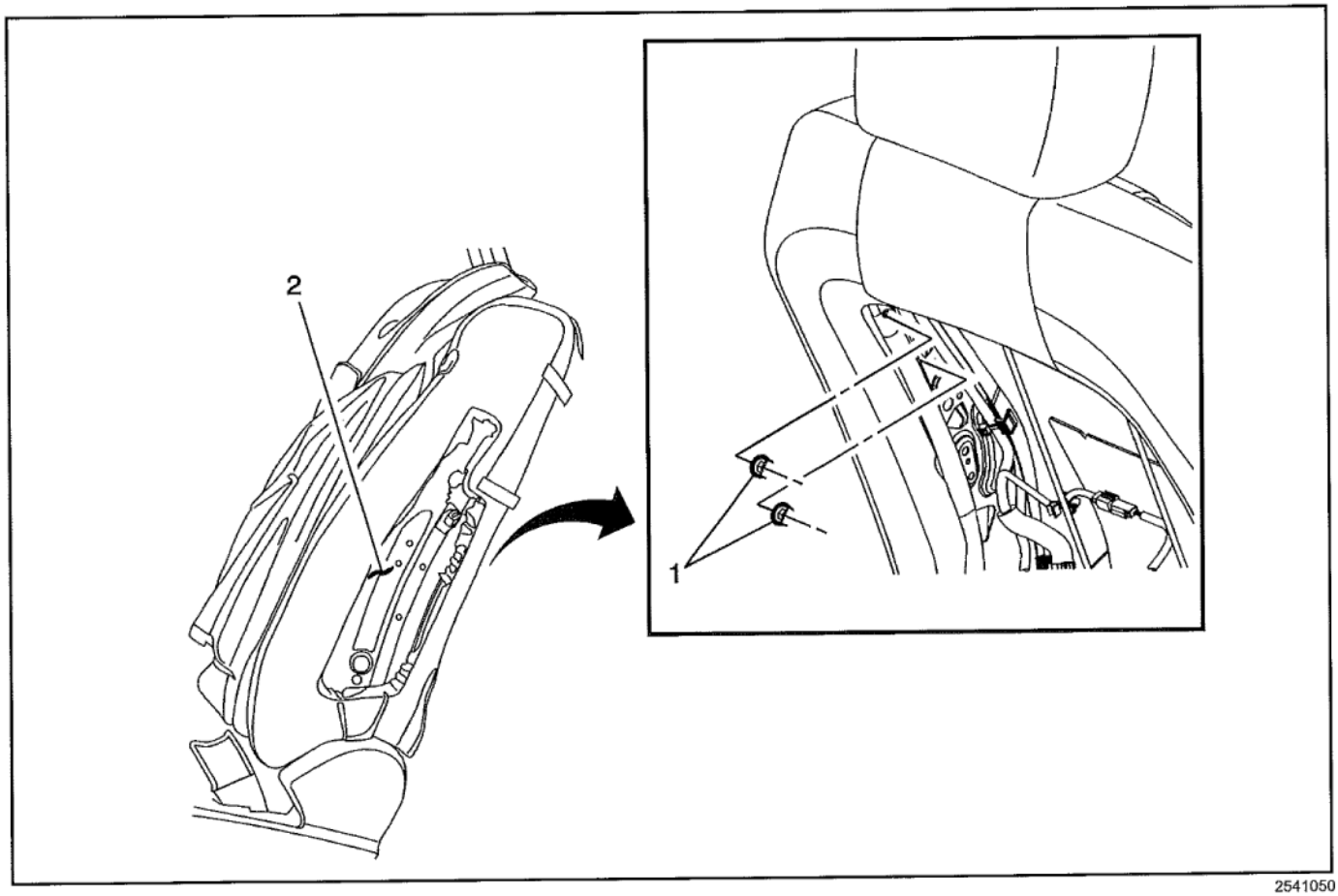


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Airbag Front Passenger Presence Sensor Replacement

Callout	Component Name
	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.*** **Preliminary Procedure** 1. Remove the front passenger seat. Refer to *Driver or Passenger Seat Removal and Installation on page 14-4*. 2. Remove the front seat cushion cover and pad. Refer to *Front Seat Cushion Cover and Pad Replacement on page 14-14*.
1	Passenger Seat Cushion Heater (if equipped) **Procedure** 1. Disconnect the electrical connector. 2. If either the seat cushion heater or one of the components of the passenger presence system need replacement, both the seat cushion heater and the complete passenger presence kit must be replaced.
2	Inflatable Restraint Passenger Presence System **Procedures** 1. Re-zero the inflatable restraint passenger presence system whenever the seat cushion or any component of the passenger presence system is removed. Refer to *Control Module References on page 6-3*. 2. Program the inflatable restraint passenger presence system after replacement. Refer to *Control Module References on page 6-3*. **Tip:** • 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

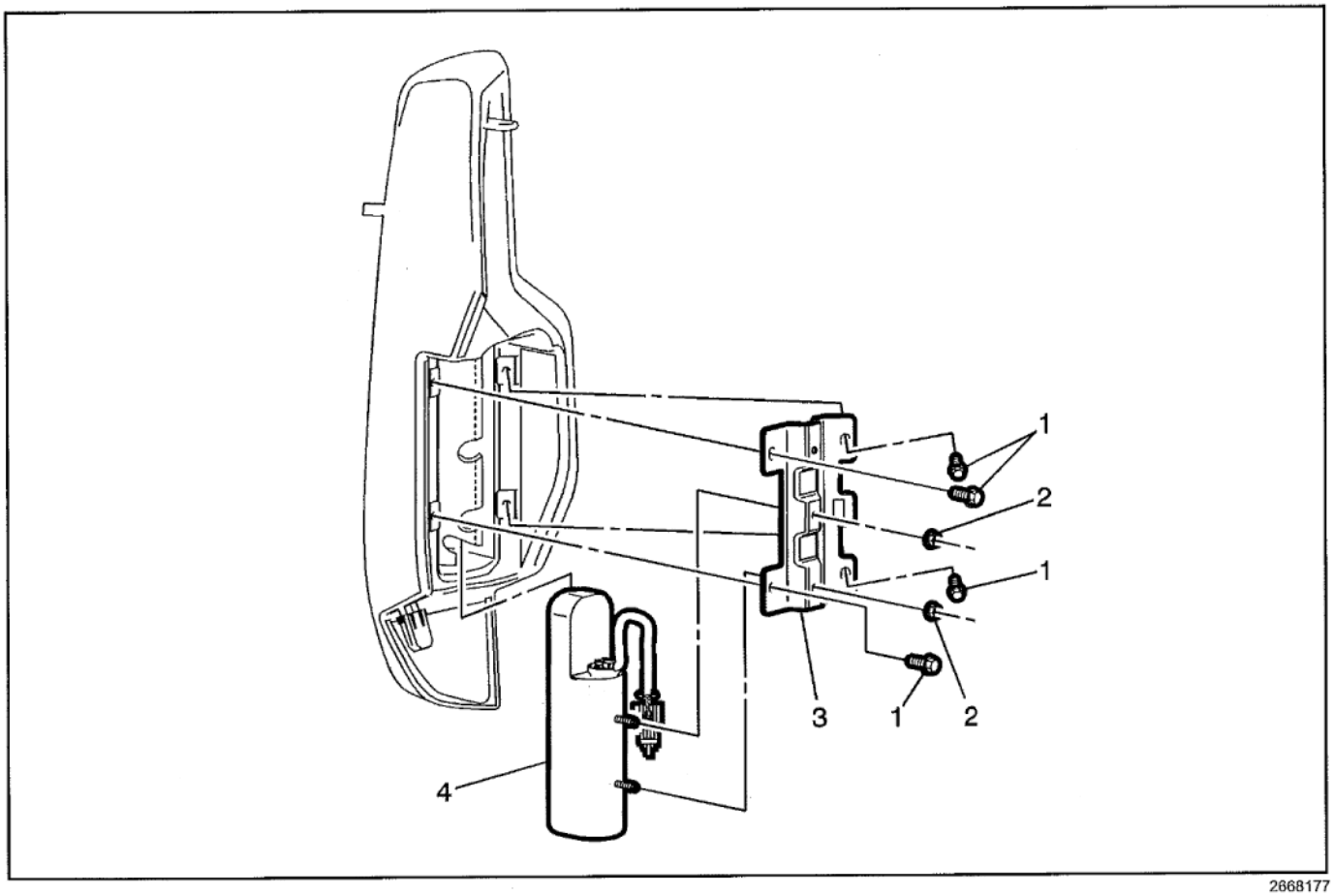


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Front Seat Outboard Seat Back Airbag Replacement

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 *SIR Disabling and Enabling on page 13-112*. 2. Remove the driver or passenger seat. Refer to *Driver or Passenger Seat Removal and Installation on page 14-4*. 3. Remove the driver or passenger seat back cushion cover and pad. Refer to *Driver or Passenger Seat Back Cover and Pad Replacement on page 14-15*.	
1	Seat Side Inflatable Restraint Module Nut (Qty: 2) **Caution:** Refer to *Fastener Caution on page 0-8* **Tighten** 4 N•m (35 lb in)
2	Driver or Passenger Seat Side Inflatable Restraint Module **Procedure** 1. Disconnect the electrical connector. 2. Remove the seat side inflatable restraint module. 3. Fully deploy the module before disposal. If the module was replaced under warranty, fully deploy and dispose of the module after the required retention period. Refer to *Inflatable Restraint Module Handling and Scrapping on page 13-135*.

Rear Seat Outboard Seat Back Airbag Replacement



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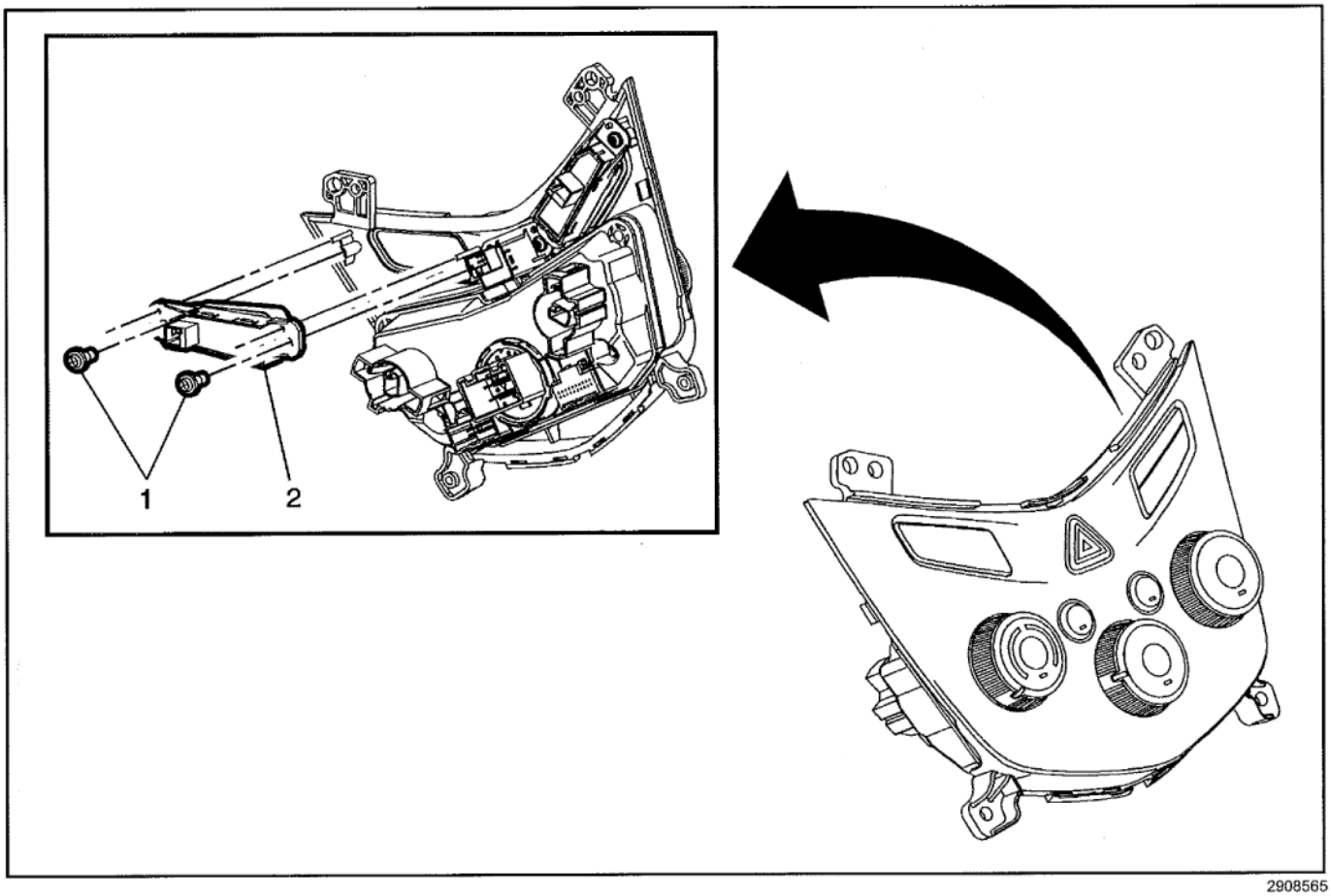
Rear Seat Outboard Seat Back Airbag Replacement

Callout	Component Name
Warning: Following the deployment of a rear seat side air bag, inspect the following parts for damage. Replace these parts if necessary: • ***The rear seat side bolster, attachments, brackets and wiring*** • ***The rear seat back frame, cushion and cover*** • ***The rear seat cushion frame, cushion and cover*** ***Failure to do so may cause future personal injury.*** **Preliminary Procedures** 1. Disable the SIR system, if equipped. Refer to *SIR Disabling and Enabling on page 13-112*. 2. Remove the rear seat back cushion bolster. Refer to *Rear Seat Back Bolster Replacement on page 14-21*.	
1	Rear Seat Side Inflatable Restraint Module Bracket Bolt (Qty: 4) **Caution:** Refer to *Fastener Caution on page 0-8*. **Tighten** 3.5 N•m (31 lb in)
2	Rear Seat Side Inflatable Restraint Module Nut (Qty: 2) **Caution:** Refer to *Fastener Caution on page 0-8*. **Tighten** 3.5 N•m (31 lb in)
3	Rear Seat Side Inflatable Restraint Module Bracket

Rear Seat Outboard Seat Back Airbag Replacement (cont'd)

Callout	Component Name
4	Rear Seat Side Inflatable Restraint Module **Procedure** 1. Remove the connector position assurance (CPA) from the module electrical connector. 2. Disconnect the electrical connector. 3. Slide airbag out of airbag chute. 4. Install seat side airbag into airbag chute with connector facing down. Airbag mounting studs must fit through airbag chute holes and then into the module bracket. 5. If the module was replaced under warranty, fully deploy and dispose of the module after the required retention period. Refer to *Inflatable Restraint Module Handling and Scrapping on page 13-135*.

Instrument Panel Airbag Arming Status Display Replacement

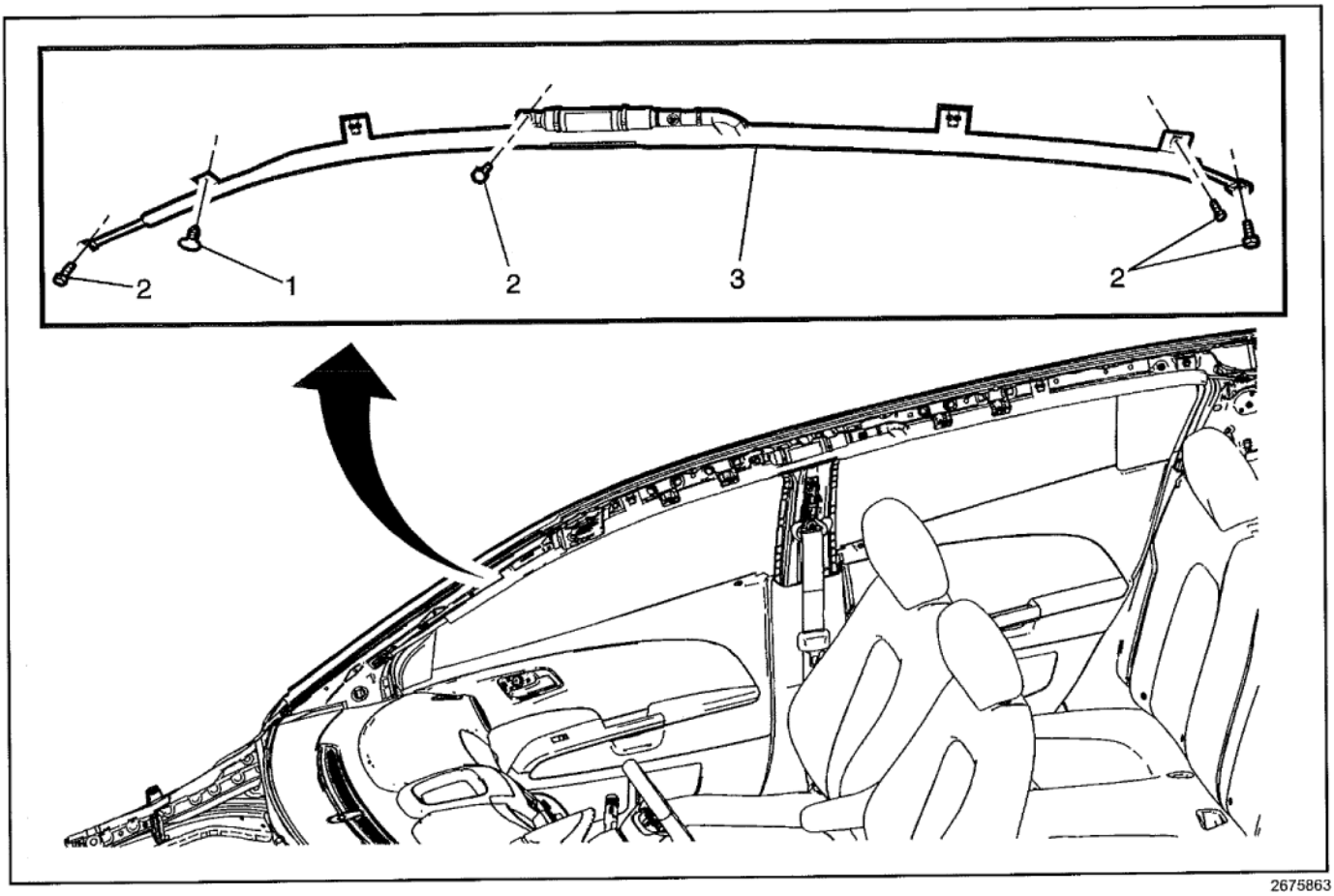


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Instrument Panel Airbag Arming Status Display Replacement

Callout	Component Name
Preliminary Procedure Remove the heater and air conditioning control. Refer to *Heater and Air Conditioning Control Replacement on page 10-79*.	
1	Instrument Cluster Display Switch Fastener (Qty: 2) **Caution:** Refer to *Fastener Caution on page 0-8*.
2	Inflatable Restraint Instrument Panel Module Indicator **Procedure** Disconnect the electrical connector.

Airbag Roof Side Rail Module Replacement - Rear



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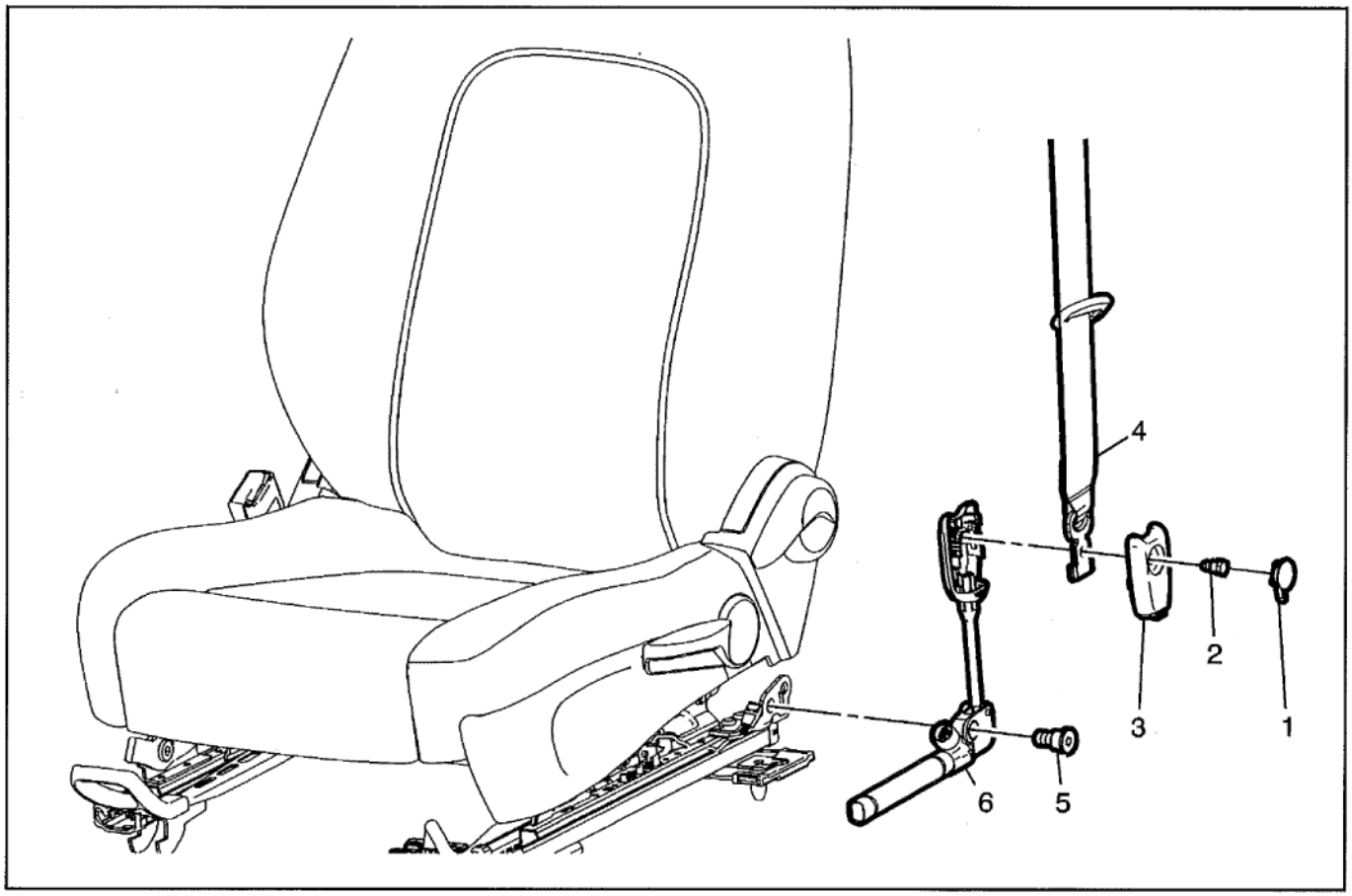
Airbag Roof Side Rail Module Replacement - Rear

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 SIR Warning on page 0-7.*** ***Warning: Refer to SIR Inflator Module Handling and Storage Warning on page 0-6.*** **Preliminary Procedures** 1. Disable the SIR system. Refer to *SIR Disabling and Enabling on page 13-112* 2. It is only necessary to lower the headliner. Only do those steps in headliner replacement that will lower the headliner enough to gain access to the part. Refer to *Headlining Trim Panel Replacement (Sedan with Sunroof) on page 2-26* or *Headlining Trim Panel Replacement (Hatchback with Sunroof) on page 2-24* or *Headlining Trim Panel Replacement (Hatchback without Sunroof) on page 2-25* or *Headlining Trim Panel Replacement (Sedan without Sunroof) on page 2-27*	
1	Inflatable Restraint Roof Side Rail Module Retainer
2	Inflatable Restraint Roof Side Rail Module Fastener (Qty: 4) **Caution:** Refer to *Fastener Caution on page 0-8.* **Tighten** 9.5 N•m (84 lb in)

Airbag Roof Side Rail Module Replacement - Rear (cont'd)

Callout	Component Name
3	Inflatable Restraint Roof Side Rail Module Assembly **Procedure** 1. Disconnect the electrical connector. 2. Release the integral roof side rail module retainers. 3. Remove the roof side rail inflatable restraint module from the vehicle. 4. Fully deploy the module before disposal. If the module was replaced under warranty, fully deploy and dispose of the module after the required retention period. Refer to *Inflatable Restraint Module Handling and Scrapping on page 13-135*.

Front Seat Belt Anchor Plate Tensioner Replacement



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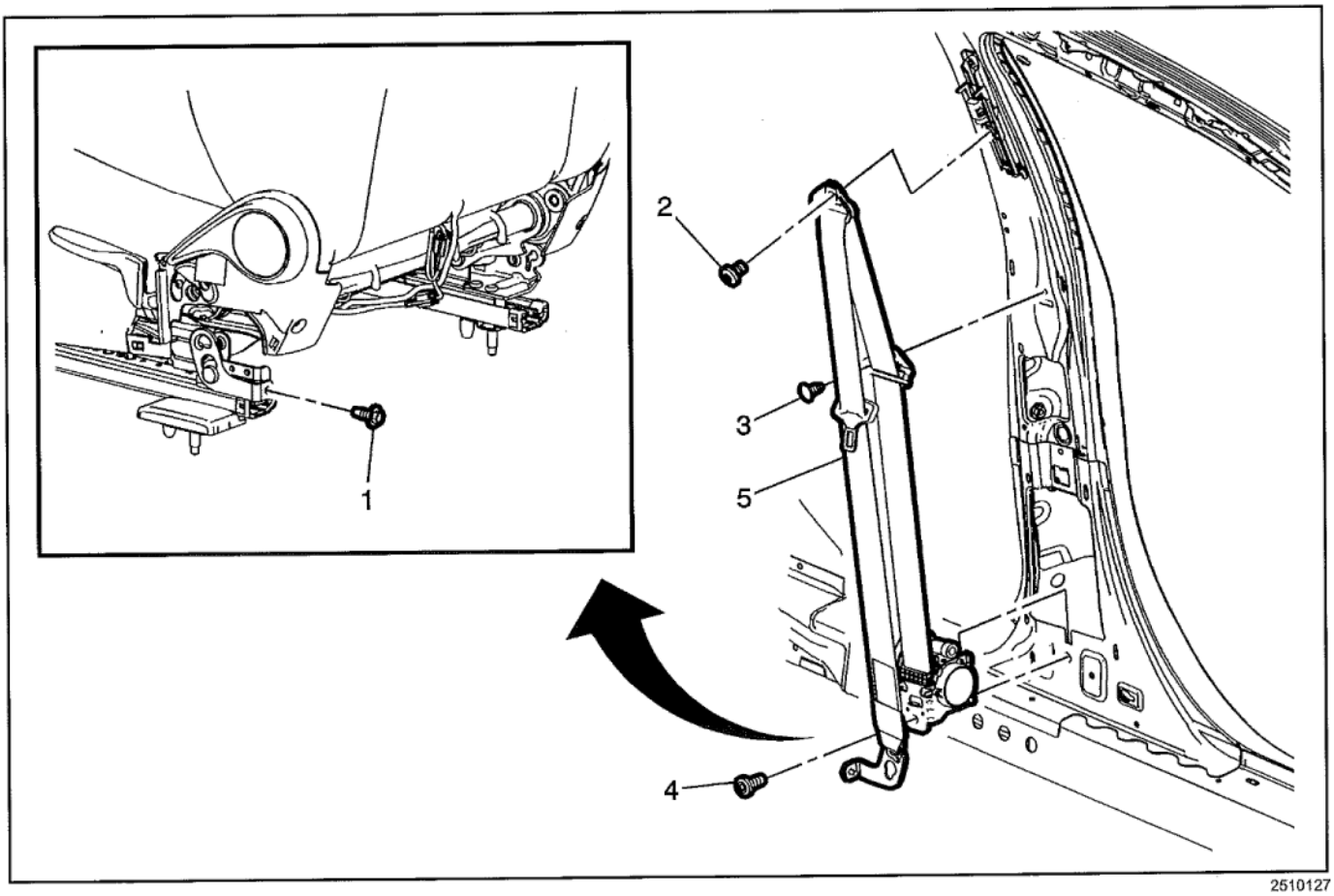
Front Seat Belt Anchor Plate Tensioner Replacement

Callout	Component Name
	Warning: Refer to SIR Warning on page 0-7. ***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 the full forward and full up position. 2. Disable the SIR. Refer to *SIR Disabling and Enabling on page 13-112*. 3. For pretensioner handling and scrapping. Refer to *Pretensioner Handling and Scrapping on page 13-142*.

Front Seat Belt Anchor Plate Tensioner Replacement (cont'd)

Callout	Component Name
1	Driver or Passenger Seat Belt Tensioner Cover
2	Driver or Passenger Seat Belt Tensioner Cover Fastener **Caution:** Refer to *Fastener Caution on page 0-8* **Tighten** 7.5 N•m (66 lb in)
3	Driver or Passenger Seat Belt Tensioner Cover
4	Driver or Passenger Seat Belt Tensioner Seat Belt Latch **Procedure** Remove the seat belt with latch from front seat belt tensioner.
5	Driver or Passenger Seat Belt Tensioner Fastener **Tighten** 45 N•m (33 lb ft)
6	Driver or Passenger Seat Belt Tensioner Assembly **Procedure** Disconnect the electrical connector.

Driver or Passenger Seat Shoulder Belt Replacement (without A69)

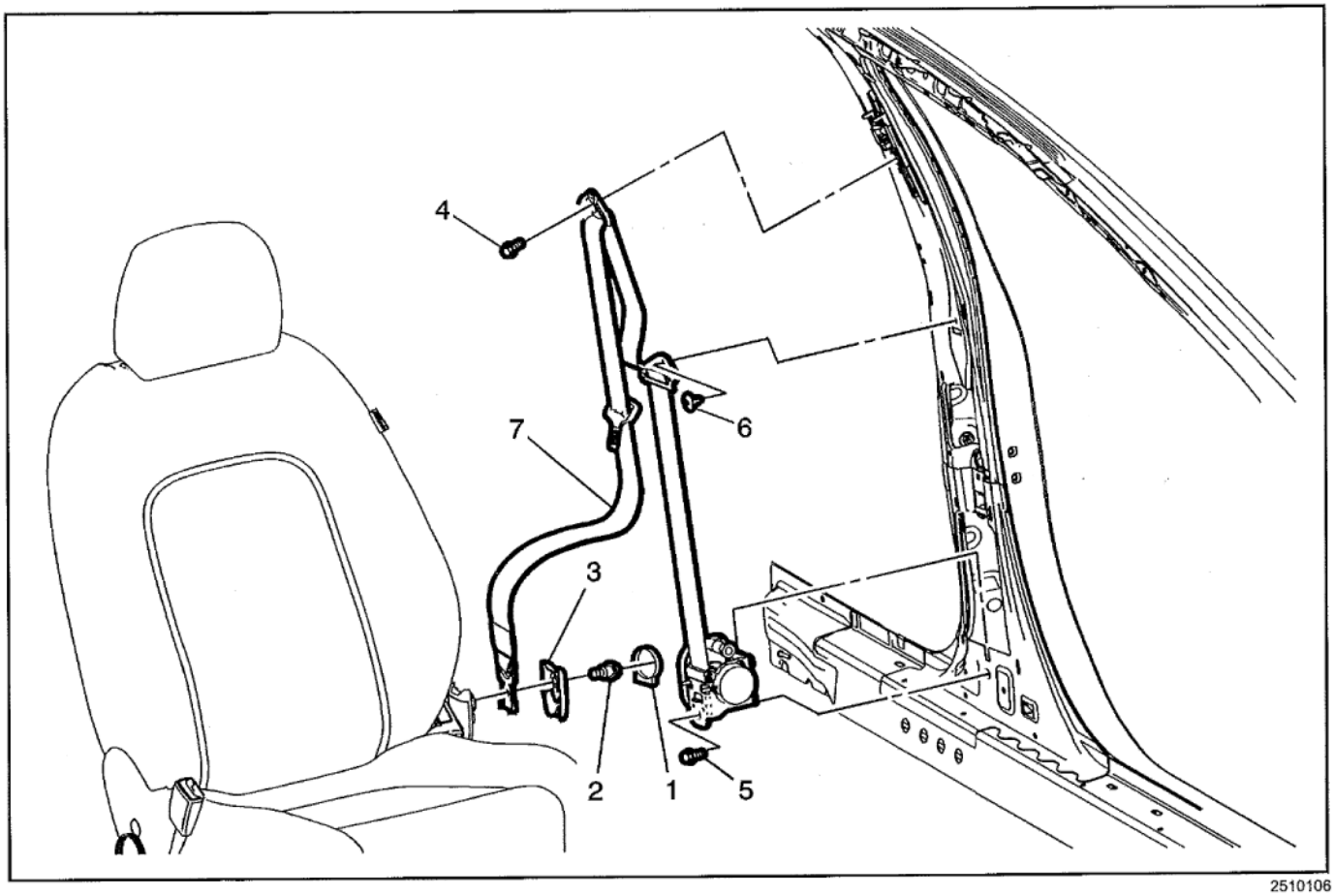


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Driver or Passenger Seat Shoulder Belt Replacement (without A69)

Callout	Component Name
Warning: Refer to SIR Warning on page 0-7. ***Warning: Refer to SIR Seatbelt Pretensioner Handling Warning on page 0-6.*** ***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. Remove the center pillar upper trim panel. Refer to *Center Pillar Upper Trim Panel Replacement on page 2-75.* 2. Remove the front seat lower finish cover. Refer to *Front Seat Belt Anchor Plate Tensioner Cover Replacement (4 Way) on page 14-10.*	
1	Front Seat Belt Anchor Plate Fastener **Caution:** Refer to *Fastener Caution on page 0-8.* **Tighten** 8 N•m (70 lb in)
2	Front Seat Belt Retractor D Ring Fastener **Tighten** 45 N•m (33 lb ft)
3	Front Seat Shoulder Belt Guide Retainer
4	Front Seat Shoulder Belt Retractor Fastener **Tighten** 45 N•m (33 lb ft)
5	Front Seat Shoulder Belt Assembly

Driver or Passenger Seat Shoulder Belt Replacement (with A69)



2510106

Driver or Passenger Seat Shoulder Belt Replacement (with A69)

Callout	Component Name
Warning: Refer to SIR Warning on page 0-7.	
Warning: Refer to SIR Inflator Module Handling and Storage Warning on page 0-6.	
Warning: Refer to SIR Seatbelt Pretensioner Handling Warning on page 0-6.	
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 on page 13-112*. 3. Remove the center pillar upper trim panel. Refer to *Center Pillar Upper Trim Panel Replacement on page 2-75*.	
1	Driver or Passenger Seat Belt Tensioner Cover
2	Driver or Passenger Seat Belt Tensioner Cover Fastener **Caution:** Refer to *Fastener Caution on page 0-8*. **Tighten** 7.5 N•m (66 lb in)
3	Driver or Passenger Seat Belt Tensioner Cover
4	Driver or Passenger Seat Shoulder Belt Fastener **Tighten** 45 N•m (33 lb ft)

Driver or Passenger Seat Shoulder Belt Replacement (with A69) (cont'd)

Callout	Component Name
5	Driver or Passenger Shoulder Belt Retractor Fastener **Tighten** 45 N•m (33 lb ft)
6	Driver or Passenger Seat Belt Push On Retainer **Procedure** Use a flat-bladed tool to remove locking pin in retainer.
7	Driver or Passenger Seat Shoulder Belt Retractor Assembly **Procedure** 1. Disconnect the electrical connector. 2. Full deploy the module before disposal. If the module was replaced under warranty, full deploy and dispose of the module after the required retention period. Refer to *Pretensioner Handling and Scrapping on page 13-142*.

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 on page 13-57*.
- 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

Special Tools

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

For equivalent regional tools, refer to *Special Tools on page 13-147*.

Live and Undeployed Air Bag

Warning: Refer to SIR Inflator Module Handling and Storage Warning on page 0-6.

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.

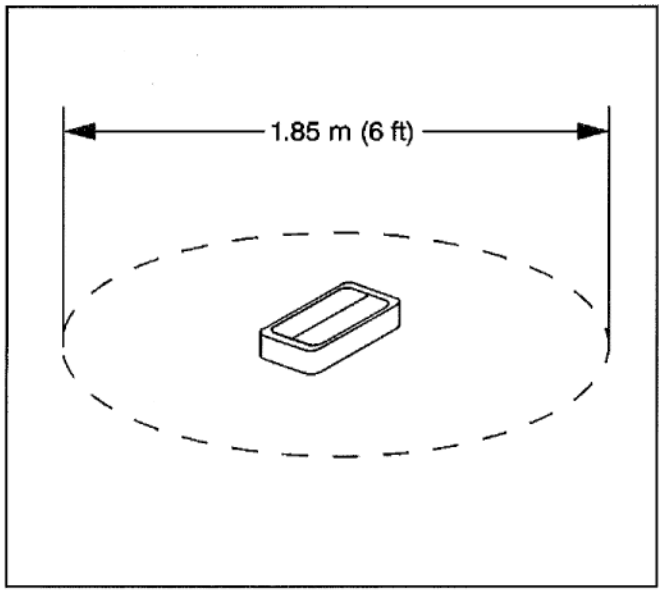
Deployment and disposal of a malfunctioning air bag is subject to any required retention period.

Warning: Refer to SIR Inflator Module Disposal Warning on page 0-6.

1. Turn OFF the ignition.

Warning: Refer to SIR Inflator Module Handling and Storage Warning on page 0-6.

2. Remove the air bag.

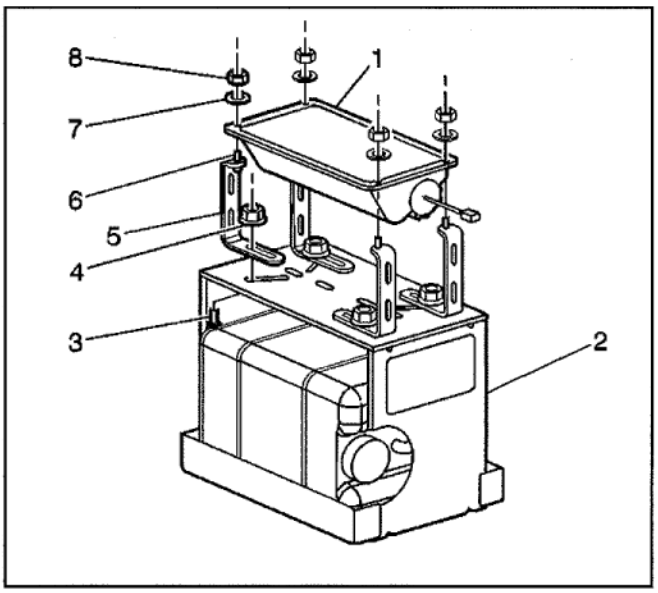


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3. Clear a space on the ground about 1.85 m (6 ft) in diameter for deployment of the air bag or deployment fixture. If possible, use a paved, outdoor location free of activity. Otherwise, use a space free of activity on the shop floor. Ensure you have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

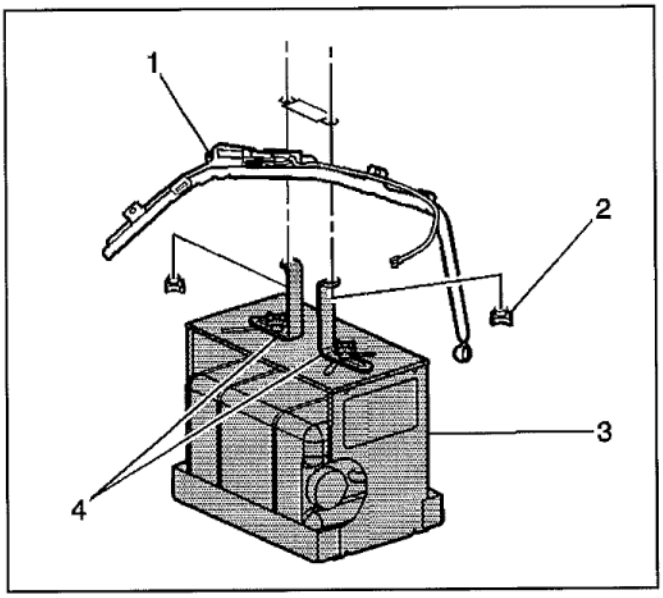
Note: Dual stage deployments are only used in steering wheel and instrument panel air bags. If stage 1 was used to deploy a dual stage air bag, stage 2 may still be active. If disposal of a dual stage air bag is required, both deployment loops must be energized to deploy the air bag.

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.



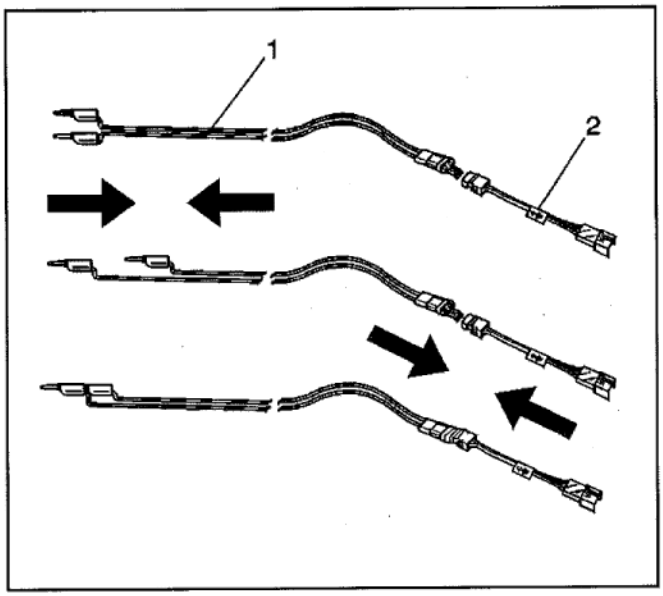
453892

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



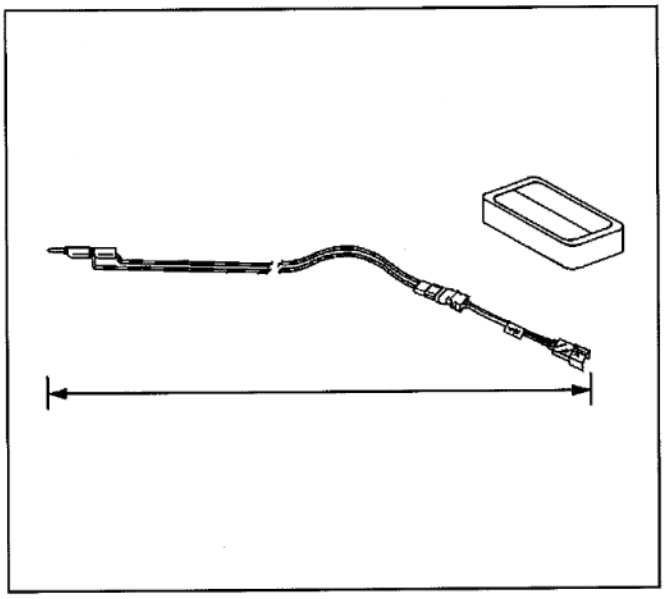
816848

7. When deploying a roof rail air bag, perform the following instructions:
   7.1. Place the *EL-39401-B* fixture (3) in the center of the cleared area.
   7.2. Fill the deployment fixture with water or sand to provide sufficient stabilization of fixture during deployment.
   7.3. Adjust and secure the fixture arms (4) to the deployment fixture (3), using the proper nuts and bolts.
   7.4. Attach the roof rail air bag in the deployment fixture and securely tighten all fasteners.



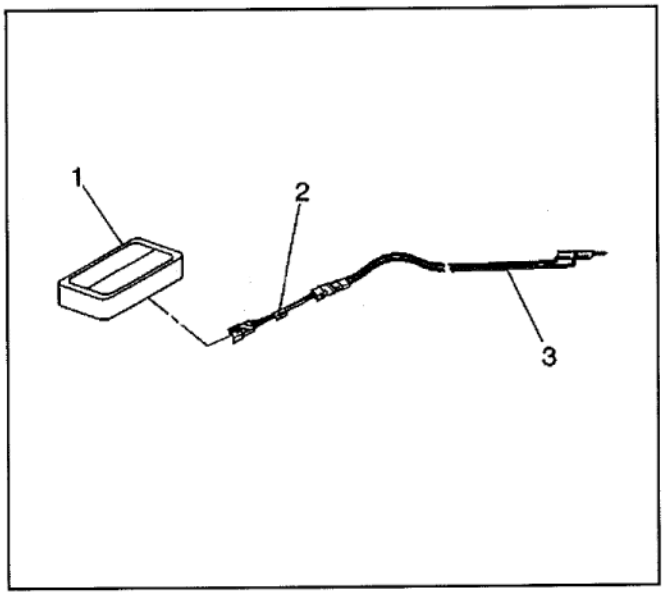
68645

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).



68655

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



68656

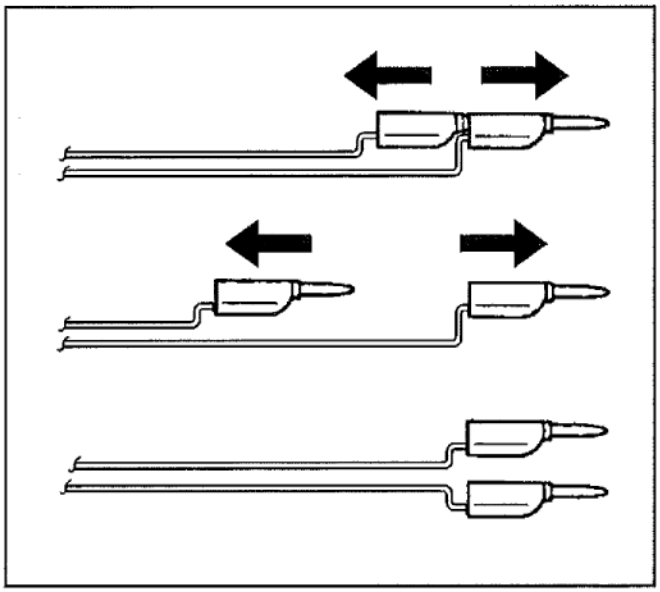
Note: On a dual stage air bag, both connectors must be attached to the deployment harness adapter. This will ensure that both stage 1 and stage 2 of the deployment loops are energized, regardless of the deployment state.

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

Note:

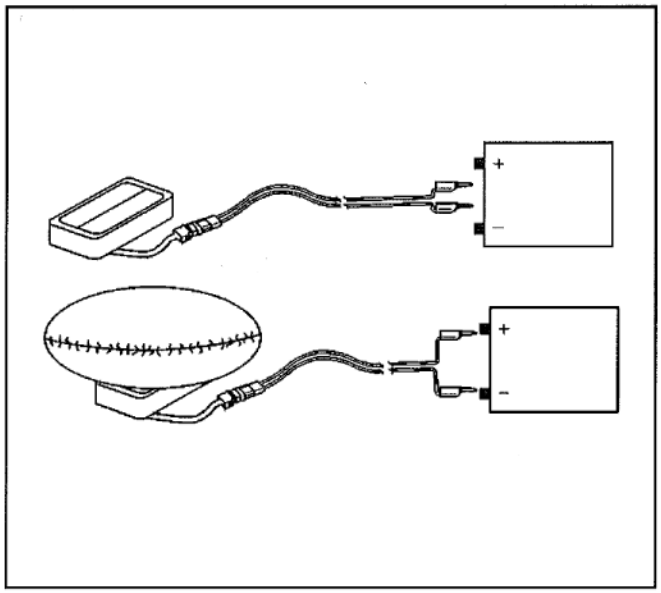
- The rapid expansion of gas involved with deploying an air bag is very loud. Notify all the people in the immediate area that you intend to deploy the air bag.
- When the air bag deploys, the deployment fixture may jump about 30 cm (1 ft) vertically. This is a normal reaction of the air bag due to the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



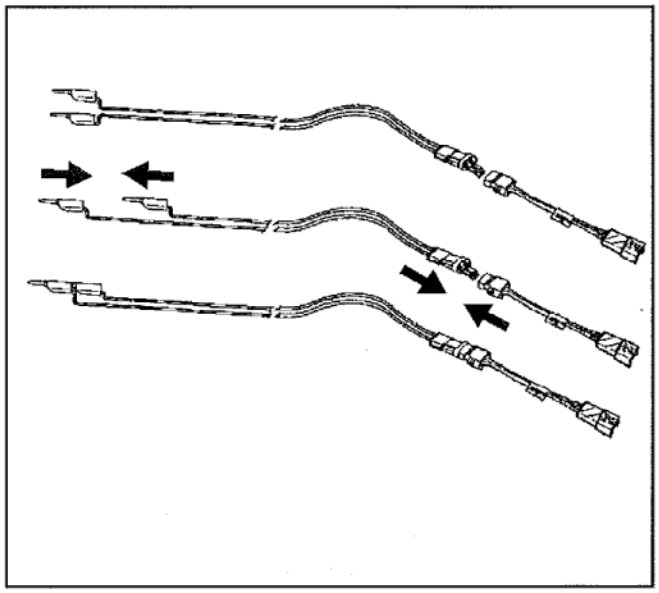
39382

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



39388

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.



9581

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 on page 0-6.

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

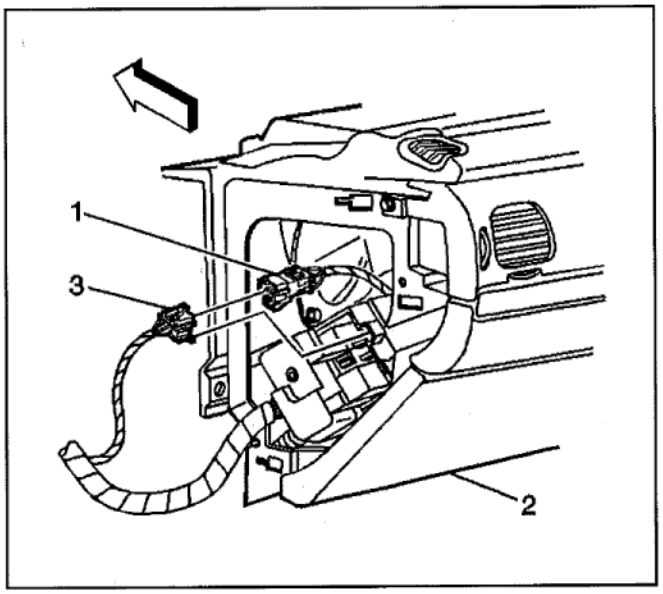
Deploy the air bags inside of the vehicle when destroying the vehicle or when salvaging the vehicle for parts. This includes, but is not limited to, the following situations:

- The vehicle has completed all useful life.
- Irrepairable damage occurred to the vehicle in a non-deployment type accident.
- Irrepairable 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 on page 0-6.

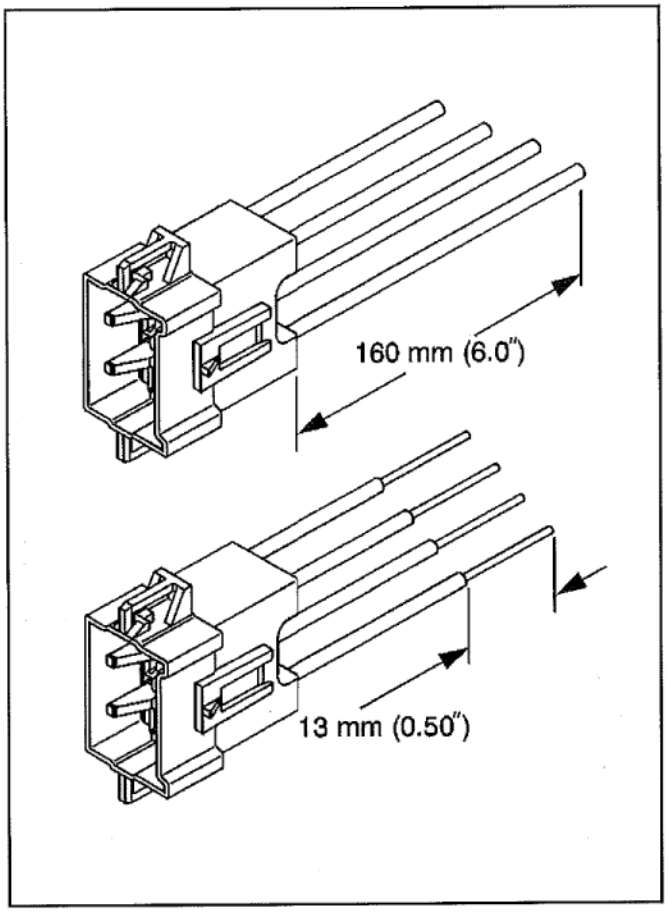
1. Lower the driver and passenger windows.
2. Turn the ignition switch to the OFF position and remove the ignition key.
3. Check that all air bags which will be deployed are mounted securely.
4. Remove all loose objects from the front seats.



812533

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.

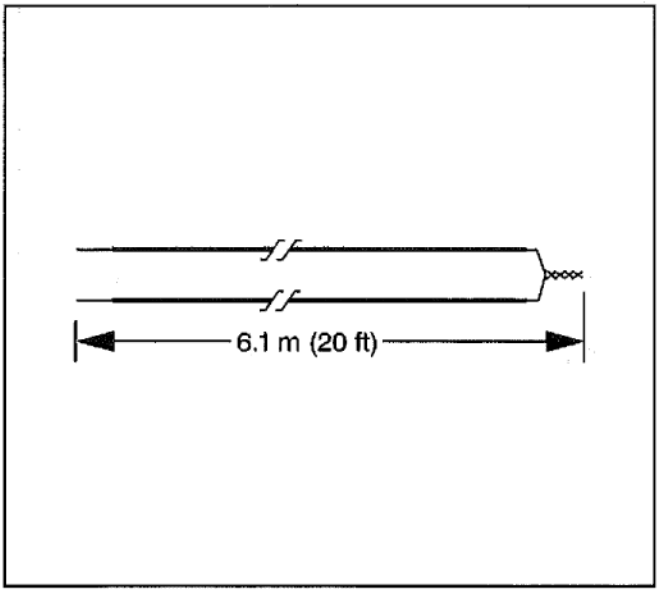
5. Disconnect the steering wheel air bag yellow connector (1) from vehicle harness yellow connector (3).



566915

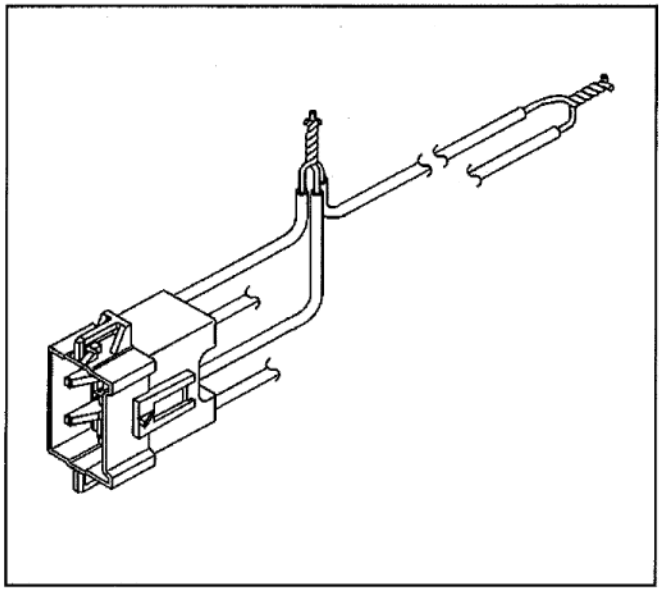
Note: If the vehicle is equipped with dual stage air bags the steering wheel air bag and instrument panel air bag will each have 4 wires. Refer to *Component Connector End Views on page 11-269* for determining high and low circuits.

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.



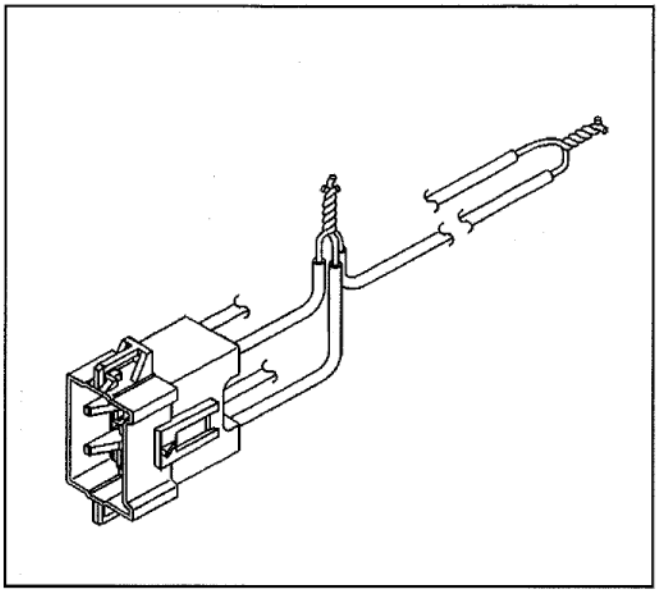
68651

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.



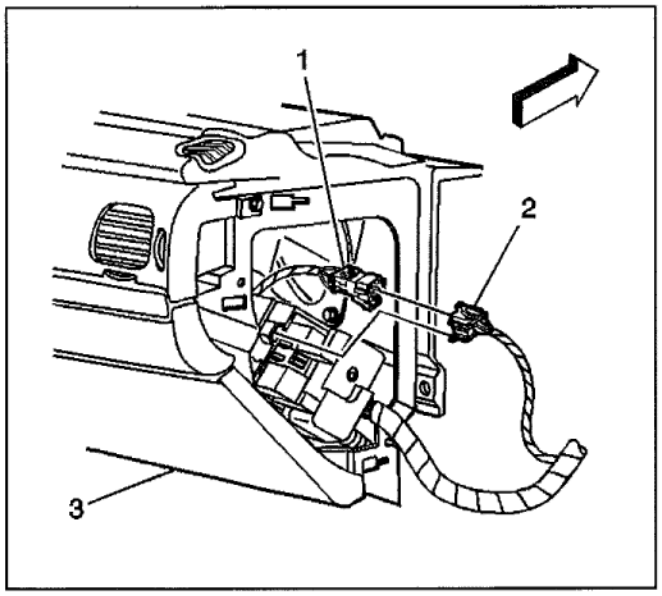
566918

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 on page 11-269* 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.



566932

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 on page 11-269* 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.



816857

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 on page 11-269* 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 on page 11-269* 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 on page 11-269* 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

Scrapping Procedure

During the course of a vehicles 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 (GM-1241). 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 on page 13-135* 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.

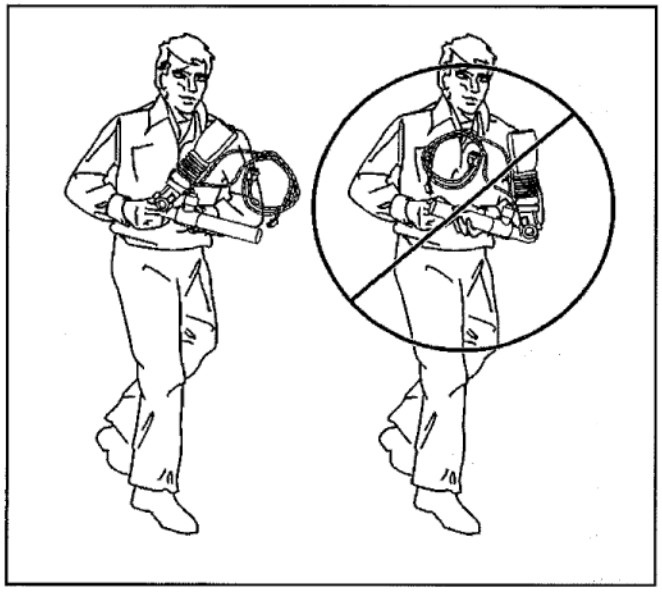
Deployment and disposal of a malfunctioning seat belt pretensioner is subject to any required retention period.

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.

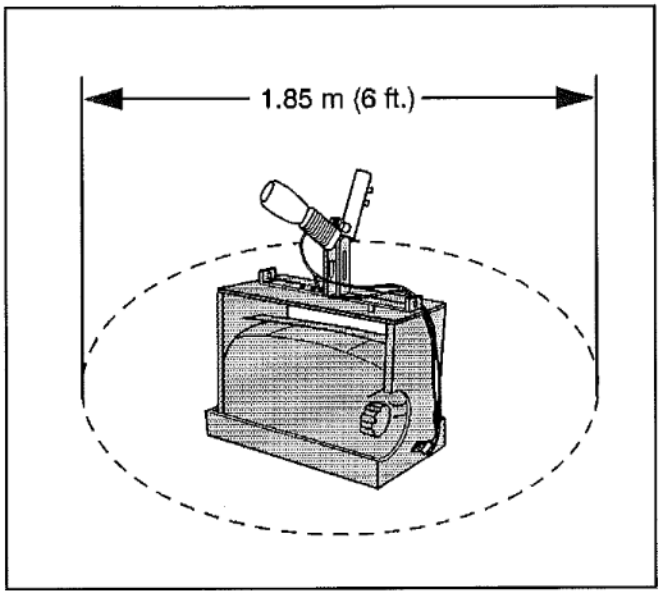
Special Tools

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



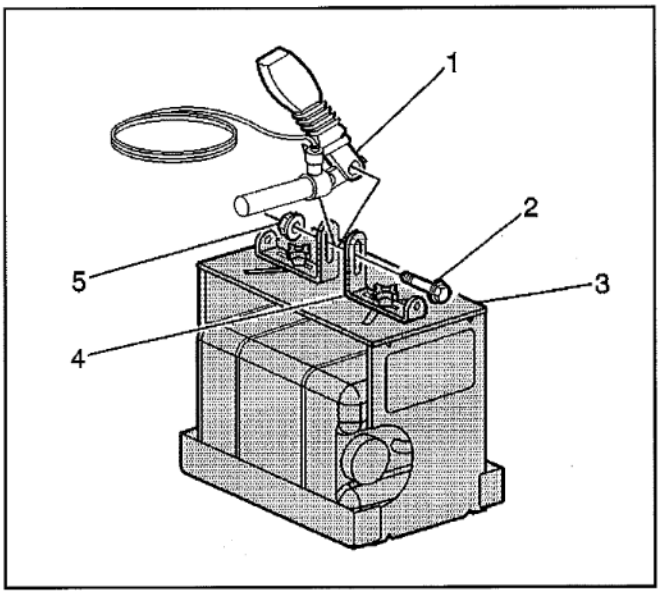
483842

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.



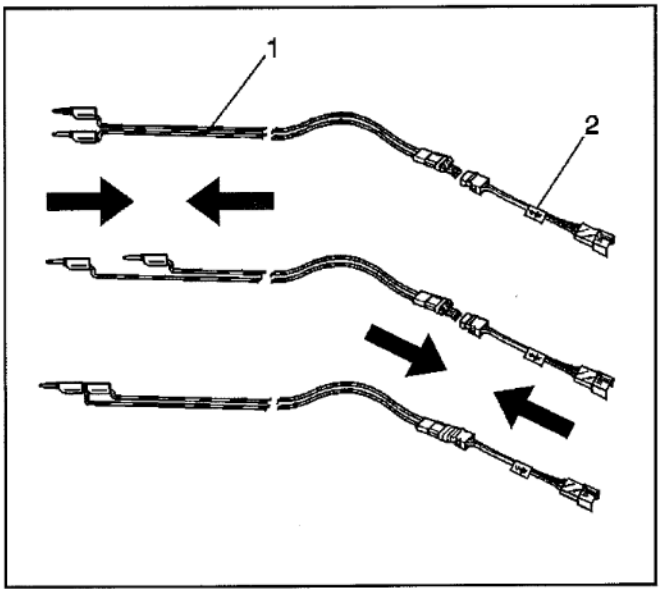
483844

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.



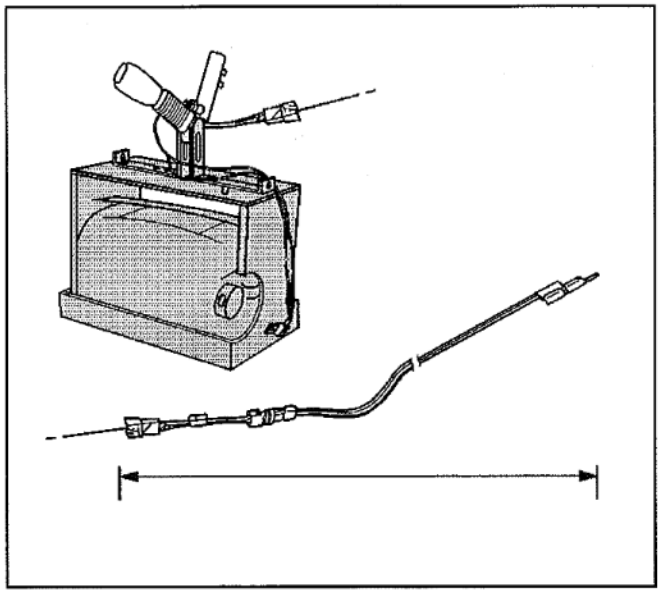
483846

10. Mount the pretensioner (1) in the SIR deployment fixture (3) with the open end facing up using the following mounting method.
    10.1. Adjust and secure the EL-39401-B arms (4) to the deployment fixture (3).
    10.2. 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).
    10.3. Securely tighten all fasteners prior to deployment.



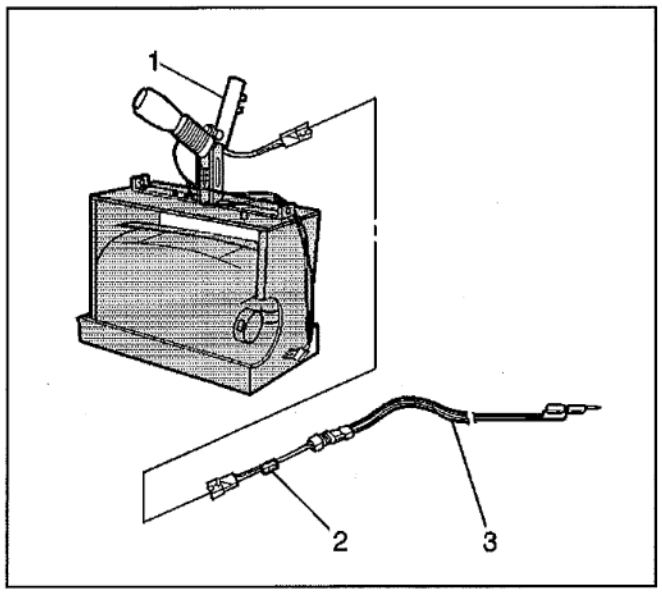
68645

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).



483848

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

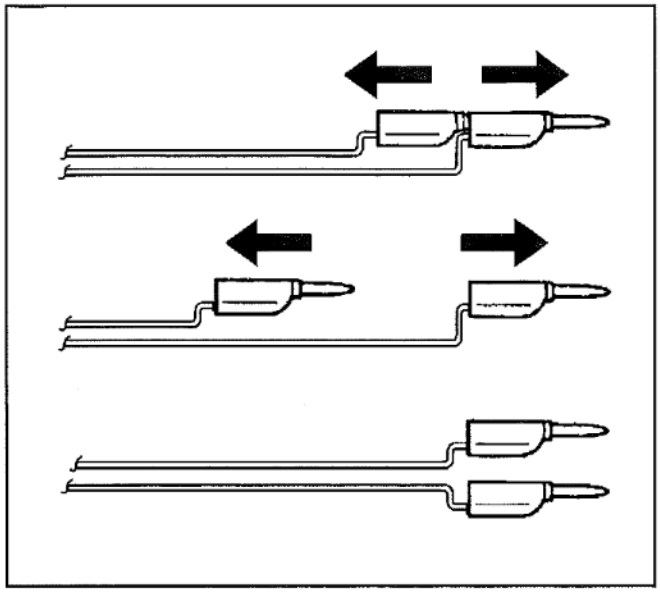


483850

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.

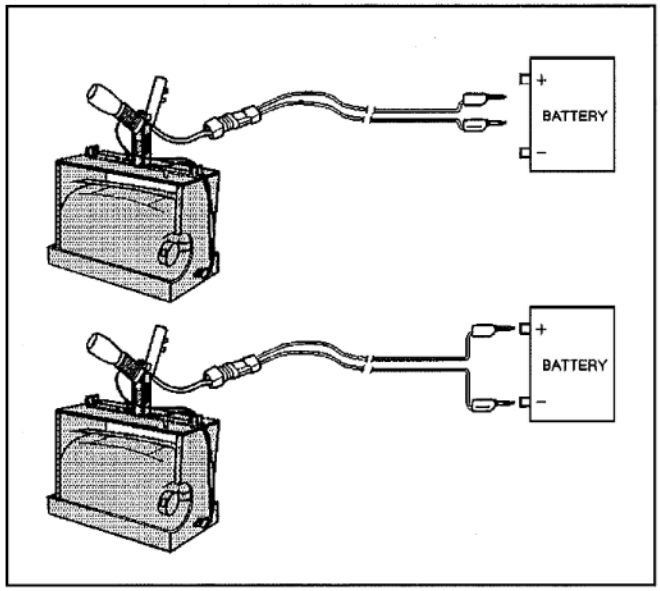
16. Clear the area of people.



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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.

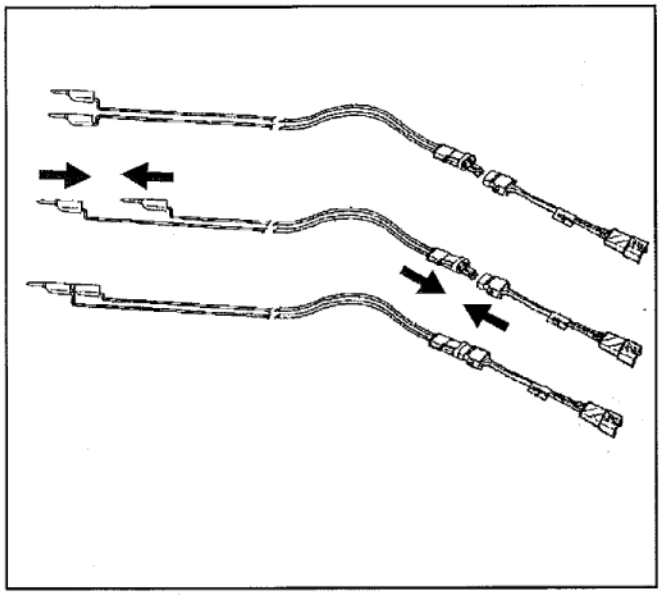
17. Separate the 2 banana plugs on the SIR deployment harness.



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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.



9581

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 SDM determines the severity of a collision with the assistance of side impact sensors located at strategic points on the vehicle. When the SDM detects a collision, the SDM will process the information provided by the sensors to further support air bag or pretensioner deployment. The SDM 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 SDM may still deploy the seat belt pretensioners. The SDM contains a sensing device that converts vehicle velocity changes to an electrical signal. The SDM compares these signals to values stored in memory. If the signals exceed a stored value, the SDM will determine the severity of the impact and either cause current to flow through the frontal deployment loops deploying the frontal air bags and pretensioners, or it will deploy the pretensioners only. The SDM continuously monitors the deployment loops for malfunctions and illuminates the AIR BAG indicator if a fault is detected. The SDM performs continuous diagnostic monitoring of the SIR system electrical components. Upon detection of a circuit malfunction, the SDM will set a DTC and inform the driver by illuminating the 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.

AIR BAG Indicator (Driver)

The 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 (SDM) is communicating with the instrument cluster. When the ignition is turned ON, the SDM is supplied with ignition positive voltage. The instrument cluster will momentarily turn on the AIR BAG indicator. While the indicator is on, the SDM conducts tests on all SIR system components and circuits. If no malfunctions are detected the SDM will communicate with the instrument cluster through the serial data circuit and command the AIR BAG indicator OFF. The SDM provides continuous monitoring of the air bag circuits by conducting a sequence of checks. If a malfunction is detected the SDM will store a diagnostic trouble code (DTC) and command the instrument cluster to illuminate the 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 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 SDM contains internal sensors along with external impact sensors, mounted at strategic locations on the vehicle. In the event of a collision, the SDM 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 SDM will cause current to flow through the appropriate deployment loops to deploy the air bags. The SDM records the SIR system status when a deployment occurs and illuminates the AIR BAG indicator located in the instrument cluster. The SDM performs continuous diagnostic monitoring of the SIR system electrical components and circuitry when the ignition is turned ON. If the SDM detects a malfunction, a DTC will be stored and the SDM will request the instrument cluster to illuminate the AIR BAG indicator, notifying the driver that a malfunction exists. In the event that ignition positive voltage is lost during a collision, the SDM 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 10 air bags. The 10 air bags are located in the steering wheel (dual inflators), instrument panel (passenger side) (dual inflators), driver side (B-pillar), passenger side (B-pillar), driver side (C-pillar), passenger side (C-pillar), driver side knee, passenger side knee, left roof rail, and right roof rail. To view the locations of the air bags refer to *SIR Identification Views on page 13-73*. Air bags contain a housing, inflatable air bag, two initiating devices (if dual inflator), canister of gas generating material and, in some cases, stored compressed gas. The deployment loops supply current through the inflator modules to deploy the air bags. The steering wheel and instrument panel passenger side air bags 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 bag, ignites the material in the canister producing a rapid generation of gas and is some cases, the release of compressed gas. The gas produced from this reaction rapidly inflates the air bag. Once the air bag is inflated it quickly deflates through the air bag vent holes and/or the bag fabric. Each air bag is equipped with a shorting bar located in the connectors of the module. The shorting bar shorts the air bag deployment loop circuitry to prevent unwanted deployment of the air bag when it is disconnected.

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 pretentioners refer to *SIR Identification Views on page 13-73*. The initiator is part of the seat belt pretensioner deployment loop. When the vehicle is involved in a collision of sufficient force, the SDM causes current to flow through the seat belt deployment loops to the initiator. Current passing through the initiator ignites the material in the canister producing a rapid generation of gas. The gas produced from this reaction deploys the seat belt pretensioners 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. Each seat belt pretensioner is equipped with a shorting bar that is located in the connector of the seat belt pretensioner. The shorting bar shorts the seat belt pretensioner circuitry to prevent unwanted deployment of the seat belt pretensioner when the connector is disconnected.

Impact Sensors

This vehicle contains 6 impact sensors. The 6 impact sensors are located in the front of the vehicle (2), 2 in the B-pillars (left and right), and 2 in the C-Pillars (left and right). To view the locations of the impact sensors refer to *SIR Identification Views on page 13-73*. 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 SDM. The SDM contains a microprocessor that performs calculations using the measured accelerations and compares these calculations to a value stored in memory. When the generated calculations exceed the stored value, the SDM will cause current to flow through the deployment loops deploying the appropriate impact module air bags.

Passenger Presence Detection System and Air Bag Indicator (Passenger)

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 PPS, the preload test must be performed in order to function properly.

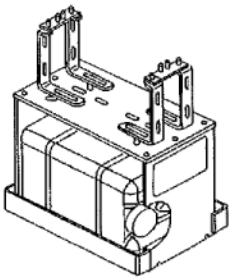
The passenger presence system (PPS) is used to monitor the type of occupant that is sitting in the front passenger seat and communicate the status to the inflatable restraint sensing and diagnostic module (SDM). The SDM then uses this information to determine whether to enable or suppress the passenger instrument panel air bag. The PPS consists of an electronic control module, a sensor mat in the seat, a harness, and PASSENGER AIR BAG ON/OFF indicators. The PPS 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 PPS module will send a serial data signal to the SDM 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 SDM to enable the passenger instrument panel air bag. The SDM will notify the customer of the enable/disable status by illuminating one of the PASSENGER AIR BAG ON/OFF indicator. The passenger presence module 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 SDM. The SDM responds by sending a command message to the IPC to illuminate the 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 on page 13-66*.

Special Tools and Equipment

Illustration	Tool Number/ Description
 9082	EL 38826 J 38826 KM 799-3 SIR Deployment Harness

Illustration	Tool Number/ Description
 456738	EL 39401-B J 39401-B SIR Deployment Fixture