SPECIFICATIONS

FASTENER SPECIFICATIONS

Reusable Threaded Fastener Tightening Specifications

NOTE:

All fasteners listed in this table can be reused after removal.

Application	Specification Metric (English)
Airbag Front End Discriminating Sensor Bolt	7.5 N.m (66 lb in)
Airbag Rear Side Door Side Impact Sensor Fastener	7.5 N.m (66 lb in)
Airbag Sensing and Diagnostic Module Nut	9 N.m (80 lb in)
Airbag Side Impact Sensor Fastener	7.5 N.m (66 lb in)
Driver or Passenger Seat Belt Anchor Plate Tensioner Fastener	5 N.m (80 lb in)
Driver or Passenger Seat Belt Retractor Fastener	45 N.m (33 lb ft)
Driver or Passenger Seat Belt Tensioner Fastener	45 N.m (33 lb ft)
Front Seat Outboard Seat Back Airbag Nut	3.75 N.m (33 lb in)
Roof Side Rail Inflatable Restraint Module Fastener	9 N.m (80 lb in)

SCHEMATIC WIRING DIAGRAMS

SIR WIRING SCHEMATICS

Power, Ground, Serial Data and Passenger Presence

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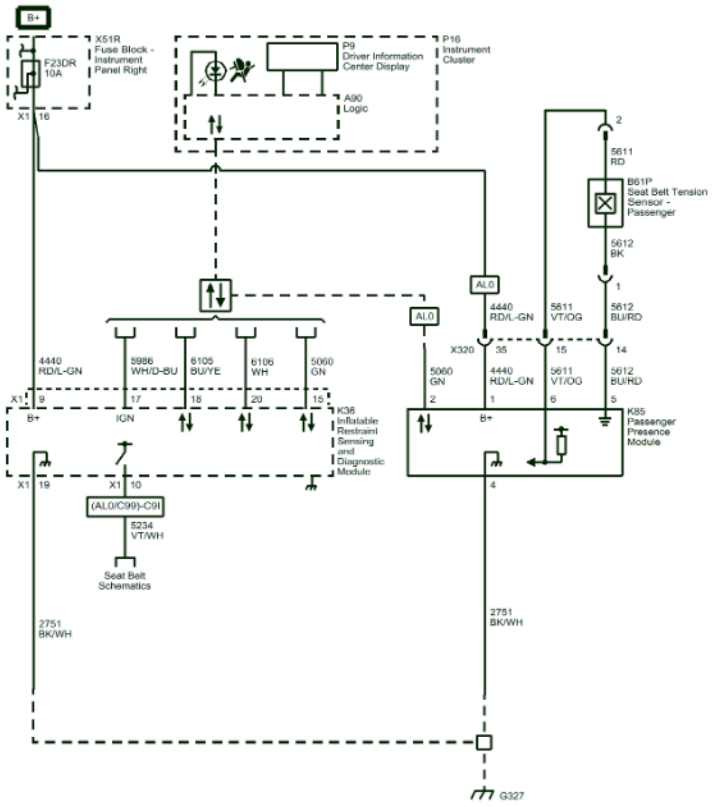


Fig. 1: Power, Ground, Serial Data and Passenger Presence
Courtesy of GENERAL MOTORS COMPANY

Seat Position, Disable Switch and Indicators (except E29)

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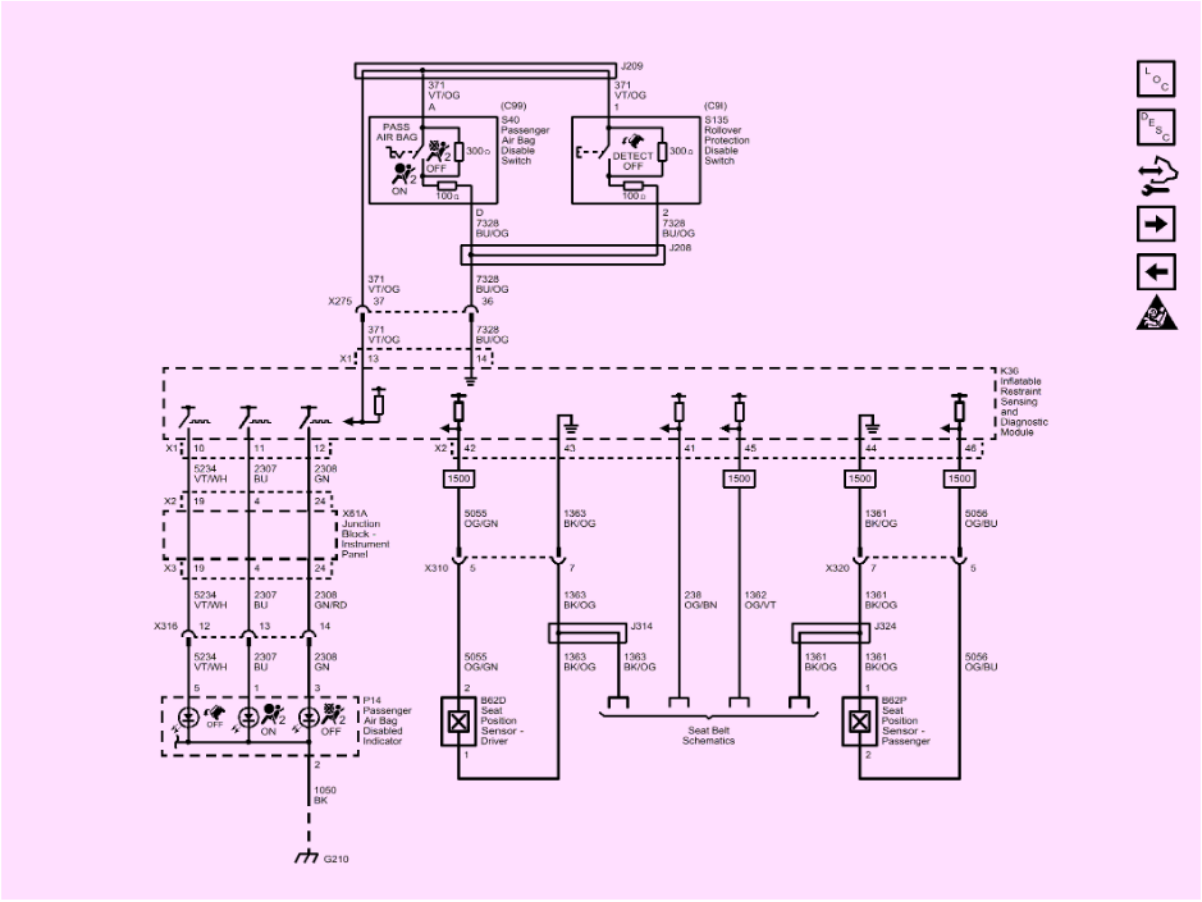


Fig. 2: Seat Position, Disable Switch and Indicators (except E29)
Courtesy of GENERAL MOTORS COMPANY

Seat Position, Disable Switch and Indicators (E29)

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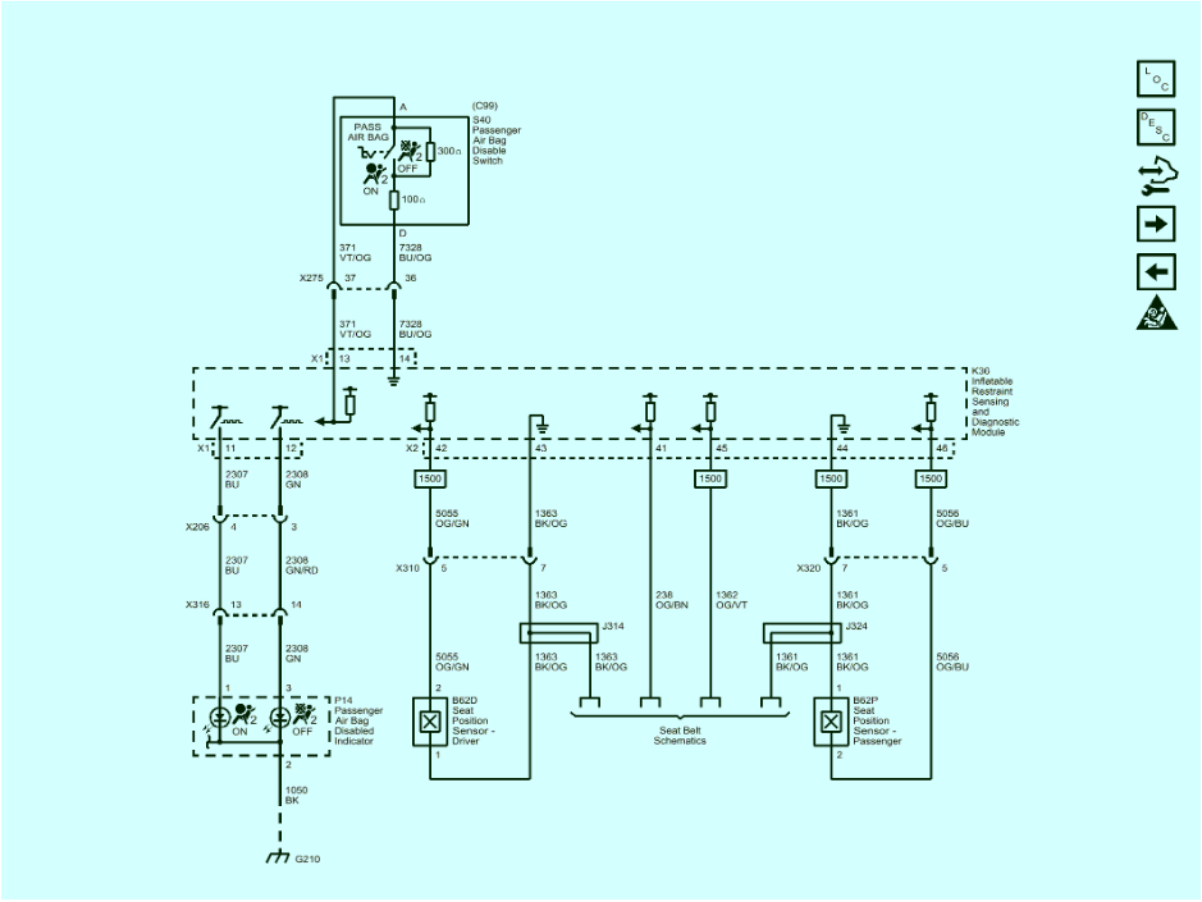


Fig. 3: Seat Position, Disable Switch and Indicators (E29)
Courtesy of GENERAL MOTORS COMPANY

Frontal Impact Sensing and Deployment (1500)

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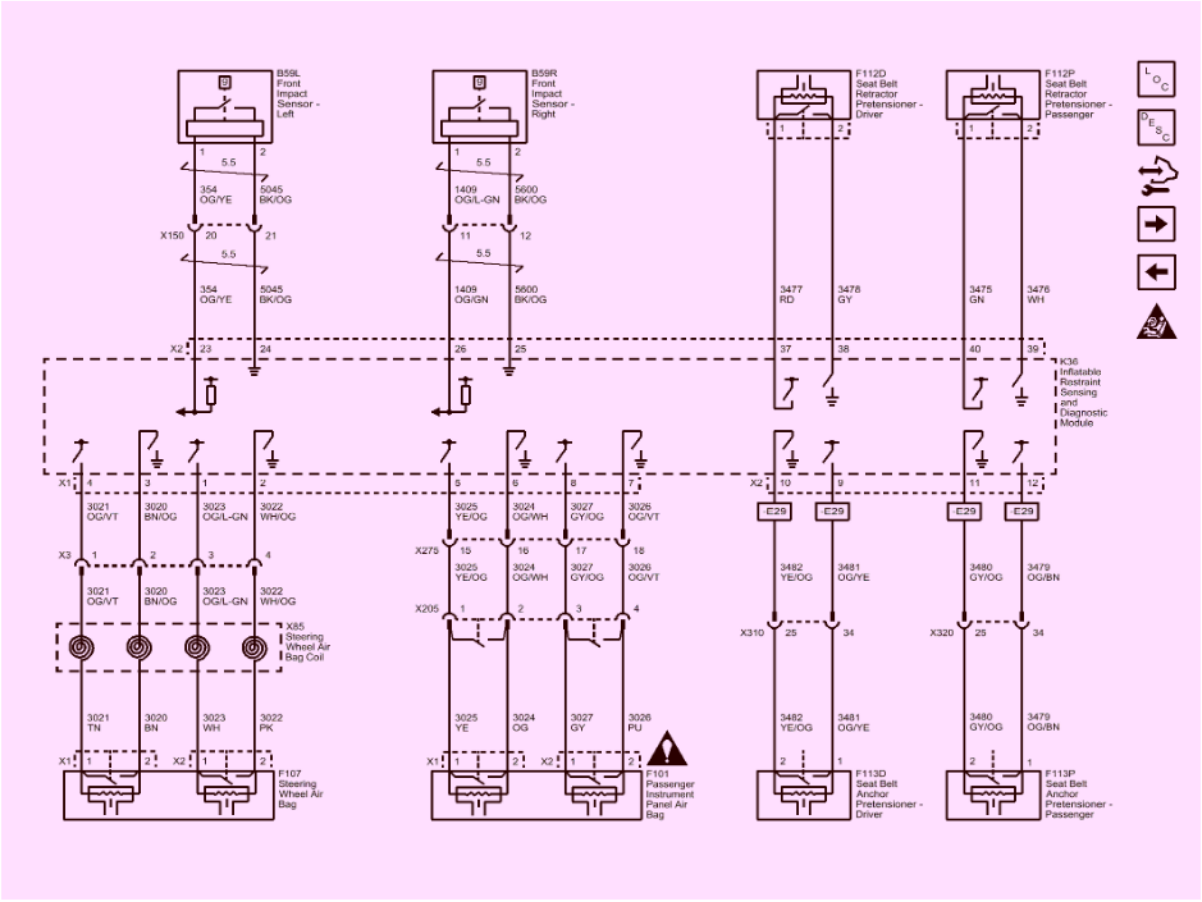


Fig. 4: Frontal Impact Sensing and Deployment (1500)
Courtesy of GENERAL MOTORS COMPANY

Frontal Impact Sensing and Deployment (2500/3500)

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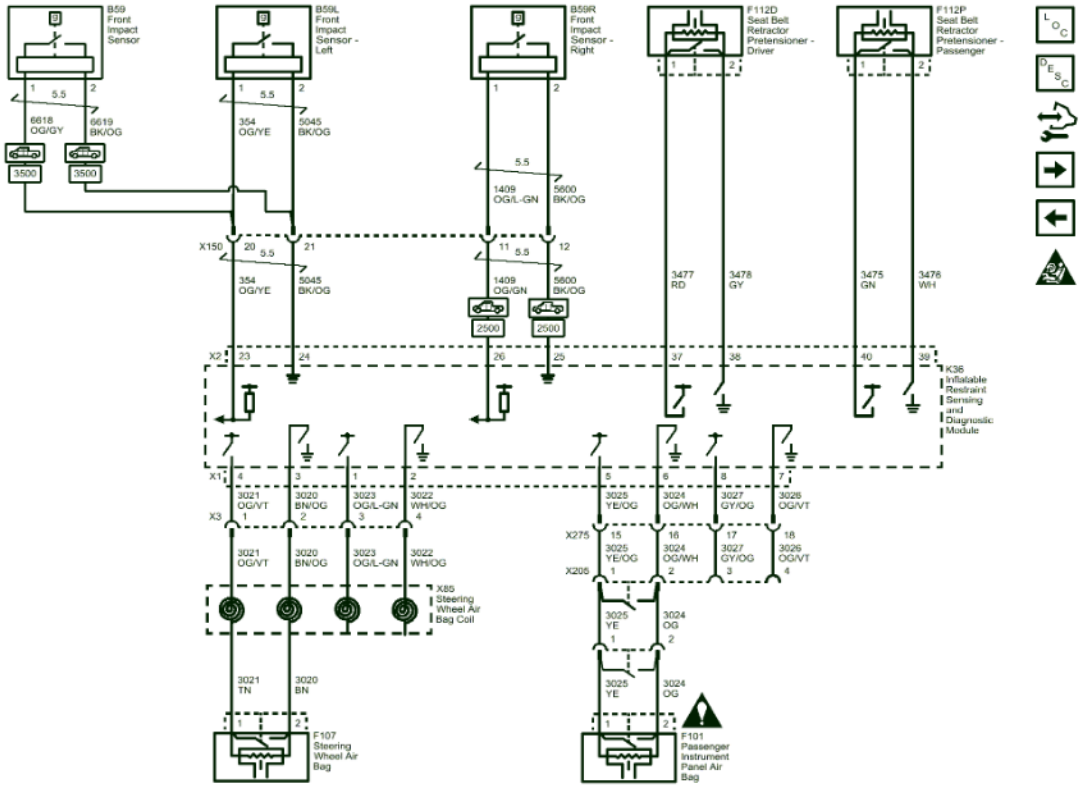


Fig. 5: Frontal Impact Sensing and Deployment (2500/3500)
Courtesy of GENERAL MOTORS COMPANY

Side Impact Sensing and Deployment (AY0)

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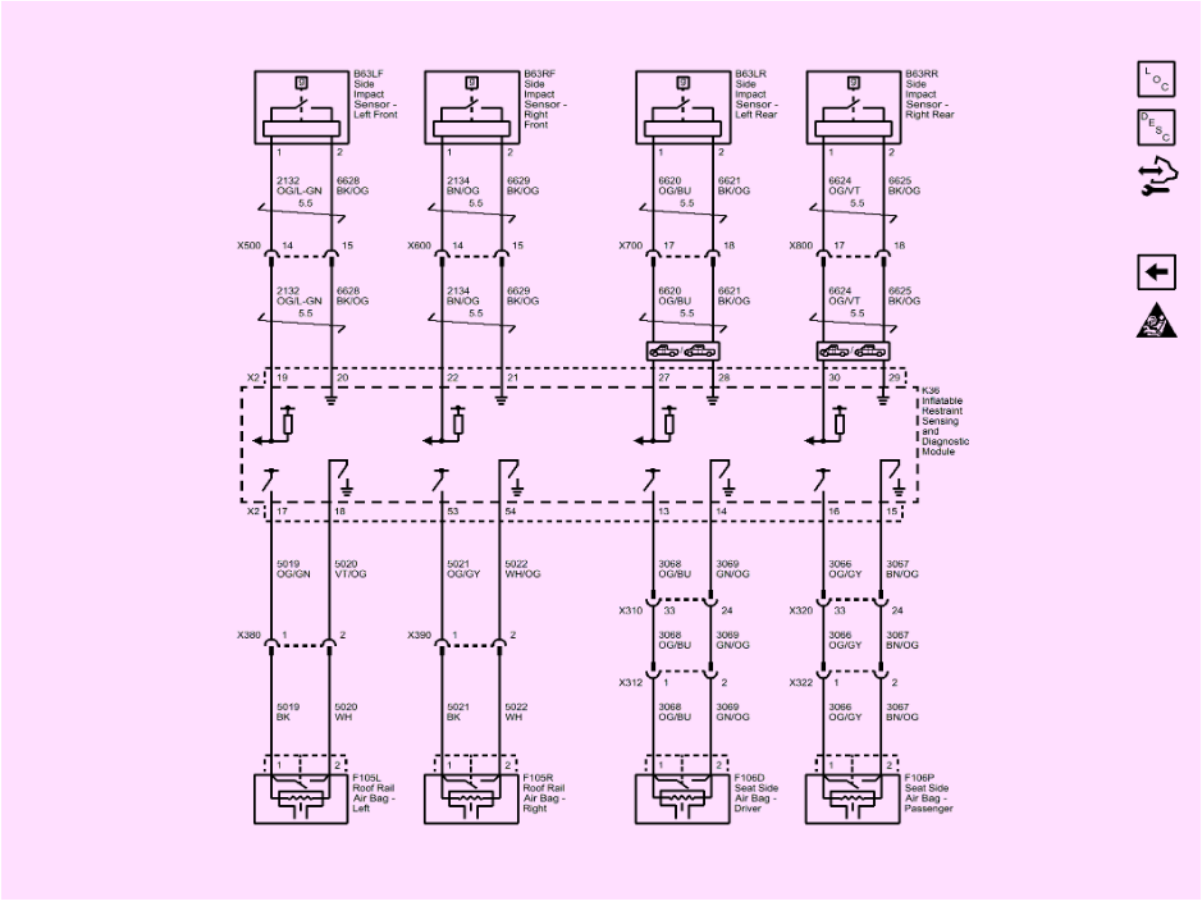


Fig. 6: Side Impact Sensing and Deployment (AY0)
Courtesy of GENERAL MOTORS COMPANY

DIAGNOSTIC INFORMATION AND PROCEDURES

DTC B0012 OR B0013: DRIVER STEERING WHEEL AIR BAG DEPLOYMENT LOOP STAGE 1/2

Diagnostic Instructions

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

DTC Descriptors

DTC B0012 01

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

DTC B0012 02

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

DTC B0012 04

Driver Steering Wheel Air Bag Deployment Loop Stage 1 Open

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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
Driver Steering Wheel Air Bag Stage 1 High Control	B0012 02, B0012 0E	B0012 0D	B0012 04, B0012 0D	B0012 01	-
Driver Steering Wheel Air Bag Stage 1 Low Control	B0012 02, B0012 0E	B0012 0D	B0012 04, B0012 0D	B0012 01	-
Driver Steering Wheel Air Bag Stage 2 High Control	B0013 02, B0013 0E	B0013 0D	B0013 04, B0013 0D	B0013 01	-
Driver 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 two 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

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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 s

B0012 02 stage 1 or B0013 02 stage 2

The steering wheel air bag deployment loop is shorted to ground for 2 s

B0012 04 stage 1 or B0013 04 stage 2

The steering wheel air bag deployment loop is open for 2 s

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 s

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 s

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

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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

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Supplemental Inflatable Restraint System Description and Operation

Electrical Information Reference

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

Scan Tool Reference

Control Module References for scan tool information

Special Tools

EL-38125-580 Terminal Release Tool Kit

Circuit/System Verification

NOTE:

- **Refer to SIR Service Precautions.**
- **Inspect all terminals for damage or corrosion when disconnecting connectors. Damage or corrosion in the following requires repair or replacement of the affected component/connector.**
  - **Driver steering wheel air bag**
  - **Driver 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**

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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 Driver 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.
    - **If 25 Ω or less**
    1. Disconnect the X1 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.

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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. 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**

1. Ignition OFF, disconnect the X1 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module, ignition ON.
2. Test for less than 1 V between the control circuit and ground.
    - If 1 V or greater, repair the short to voltage on the circuit.
    - If less than 1 V, replace the K36 Inflatable Restraint Sensing and Diagnostic Module.

- **If less than 11 V**

5. Ignition OFF.
6. Test for greater than 25 Ω between each control circuit terminal listed below and ground:
    - Control circuit terminal 1
    - Control circuit terminal 2

- **If 25 Ω or less**

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. 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**

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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**
    1. Ignition OFF, disconnect the X1 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
    2. Test for less than 2 Ω in the K85 Steering Wheel Airbag 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**

      Test or 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** after completing the repair.

- **Steering Wheel Airbag Coil Replacement**
- **Steering Wheel Airbag Replacement**
- **SIR/SRS Wiring Repairs**
- **Control Module References** for inflatable restraint sensing and diagnostic module replacement, programming and setup

DTC B0014, B0021, B0031, OR B0038: SEAT SIDE AIR BAG DEPLOYMENT LOOP

Diagnostic Instructions

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

DTC Descriptors

DTC B0014

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Driver Seat Side Air Bag Deployment Loop

DTC B0021

Passenger Seat Side Air Bag Deployment Loop

For symptom byte information refer to **Symptom Byte List** .

Diagnostic Fault Information

Circuit	Short to Ground	High Resistance	Open	Short to Voltage	Signal Performance
Left Side Air Bag High Control	B0014 02, B0014 0E	B0014 0D	B0014 04, B0014 0D	B0014 01	-
Left Side Air Bag Low Control	B0014 02, B0014 0E	B0014 0D	B0014 04, B0014 0D	B0014 01	-
Right Side Air Bag High Control	B0021 02, B0021 0E	B0021 0D	B0021 04, B0021 0D	B0021 01	-
Right Side 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 (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

B0014 01, B0021 01

The air bag control circuit is shorted to voltage for 2 s

B0014 02, B0021 02

The air bag control circuit is shorted to ground for 2 s

B0014 04, B0021 04

The air bag control circuit is open for 2 s

B0014 0D, B0021 0D

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

B0014 0E, B0021 0E

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

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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:

- F106D Seat Side Air Bag - Driver
- F106P Seat Side Air Bag - Passenger
- Inline harness connectors
- Harness side of the K36 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

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Supplemental Inflatable Restraint System Description and Operation

Electrical Information Reference

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

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- **Connector Repairs**

Scan Tool Reference

Control Module References for scan tool information

Special Tools

EL-38125-580 Terminal Release Tool Kit

Circuit/System Verification

NOTE: **Refer to SIR Service Precautions.**

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

- **F106D Seat Side Air Bag - Driver**
- **F106P Seat Side Air Bag - Passenger**
- **K36 Inflatable Restraint Sensing and Diagnostic Module**
- **All wiring harness connectors**
- **K36 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.
   - F106D Seat Side Air Bag - Driver
   - F106P Seat Side 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

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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/Vehicle OFF, disconnect the scan tool and then disconnect the appropriate F106 Seat Side Air Bag harness connector.
2. Test for greater than 25 Ω between the control circuit terminals 1 and 2.
   - **If 25 Ω or less**
   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. 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/Vehicle in Service Mode.
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**
   1. Ignition OFF/Vehicle OFF, disconnect the X2 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module, Ignition ON/Vehicle in Service Mode.
   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/Vehicle 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**
   1. Disconnect the X2 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic

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Module.

2. Test for infinite resistance between the control circuit and ground.
    - If less than infinite resistance, repair the short to ground on the circuit.
    - If infinite resistance, replace the K36 Inflatable Restraint Sensing and Diagnostic Module.

- **If greater than 25 Ω**

7. Ignition OFF/Vehicle OFF, install a 3 A fused jumper wire between the control circuit terminals 1 and 2. Ignition ON/Vehicle in Service Mode.
8. Verify the scan tool Deployment Loop Resistance parameter is less than 2 Ω.
    - **If 2 Ω or greater**
    1. Ignition OFF/Vehicle OFF, disconnect the X2 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
    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/Vehicle OFF, connect the harness connector at the F106 Seat Side Air Bag, press in the CPA (if equipped) until an audible and/or tactile click is heard.
10. Ignition ON/Vehicle in Service Mode, 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 Side Air Bag.

    - **If DTC B0014, B0021, B0031, or B0038 is not set**
12. All OK.

Repair Instructions

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

- **Front Seat Outboard Seat Back Airbag Replacement**
- **Control Module References** for module replacement, programming and setup.

DTC B0015, B001A, B001B, OR B0022: SEAT BELT RETRACTOR PRETENSIONER

Diagnostic Instructions

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

DTC Descriptors

DTC B0015

Driver Seat Belt Retractor Pretensioner Deployment Loop

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DTC B001A

Driver Seat Belt Anchor Pretensioner Deployment Loop

DTC B001B

Passenger Seat Belt Anchor Pretensioner Deployment Loop

DTC B0022

Passenger Seat Belt Retractor Pretensioner Deployment Loop

For symptom byte information refer to **Symptom Byte List** .

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 (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 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 s.

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B0015 02, B001A 02, B001B 02, B0022 02

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

B0015 04, B001A 04, B001B 04, B0022 04

The pretensioner control circuit is open for 2 s.

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

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

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

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

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

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Connector End View Reference

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

Scan Tool Reference

Control Module References for scan tool information

Special Tools

EL-38125-580 Terminal Release Tool Kit

Circuit/System Verification

NOTE: **Refer to SIR Service Precautions.**

- **Inspect all terminals for damage or corrosion when disconnecting connectors. Damage or corrosion in the following requires repair or replacement of the affected component/connector.**
  - **Seat belt retractor pretensioner**
  - **Seat belt anchor pretensioner**
  - **Inflatable restraint sensing and diagnostic module**
  - **Seat belt retractor pretensioner wiring harness connector**
  - **Seat belt anchor pretensioner wiring harness connector**
  - **Inflatable restraint sensing and diagnostic module wiring harness connector**
- **The connector and connector position assurance (CPA) may seat independent of each other. Both the connector and CPA should seat with an audible and/or tactile click. The CPA isolates the shorting-bars within the connector allowing the deployment circuit to operate properly.**
- **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

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- 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. 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**
   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 deployment. When testing on a connector with shorting bars, the shorting bars must be disabled to ensure accurate test results. Insert an appropriate pick from EL-38125-580 and depress the shorting bars above the appropriate terminals. This will lift the shorting bar from the terminal and allow accurate test results. Take care not to damage the connector, shorting bar, or terminal when depressing the shorting bar.**

   2. Test for infinite resistance between the two control circuits.
      - If less than infinite resistance, repair the short between the two circuits.
      - If infinite resistance, replace the K36 Inflatable Restraint Sensing and Diagnostic Module.
   - **If greater than 25 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**
   1. Ignition OFF. Disconnect the X2 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module. Ignition ON

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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**
    1. Disconnect the X2 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
    2. Test for infinite resistance between the control circuit and ground.
        - If less than infinite resistance, repair the short to ground on the circuit.
        - If infinite resistance, replace the K36 Inflatable Restraint Sensing and Diagnostic Module.
    - **If greater than 25 Ω**
7. Install a 3 A fused jumper wire between the control circuit terminals 1 and 2. Ignition ON.
8. Verify the appropriate scan tool Deployment Loop Resistance parameter is less than 2 Ω.
    - **If 2 Ω or greater**
    1. Ignition OFF. Disconnect the X2 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
    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 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** after completing the repair.

- **Front Seat Belt Anchor Plate Tensioner Replacement**
- **Seat Belt Retractor Pretensioner Replacement - Front (Crew Cab, Extended Cab)Seat Belt Retractor Pretensioner Replacement - Front (Regular Cab)**
- **SIR/SRS Wiring Repairs**

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

DTC B0016, B0018, B0023, OR B0025: ROOF RAIL AIR BAG DEPLOYMENT LOOP

Diagnostic Instructions

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

DTC Descriptors

DTC B0016

Left Roof Rail Air Bag Deployment Loop

DTC B0023

Right Roof Rail Air Bag Deployment Loop

For symptom byte information refer to **Symptom Byte List** .

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 (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 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 s.

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B0016 02, B0023 02

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

B0016 04, B0023 04

The air bag control circuit is open for 2 s.

B0016 0D, B0023 0D

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

B0016 0E, B0023 0E

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

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

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Connector End View Reference

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Description and Operation

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

Scan Tool Reference

Control Module References for scan tool information

Special Tools

EL-38125-580 Terminal Release Tool Kit

Circuit/System Verification

NOTE:

- **Refer to SIR Service Precautions.**
- **Inspect all terminals for damage or corrosion when disconnecting connectors. Damage or corrosion in the following requires repair or replacement of the affected component/connector.**
  - **Roof rail air bag**
  - **Roof rail air bag wiring harness connector**
  - **Inflatable restraint sensing and diagnostic module**
  - **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 parameter stays 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

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- 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
- 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. Scan tool disconnected. Disconnect the harness connector at the appropriate F105 Roof Rail Air Bag. It may take up to 2 min 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**
   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. 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**
   1. Ignition OFF. Disconnect the X2 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module. Ignition ON.
   2. Test for less than 1 V between the control circuit and ground.
      - If 1 V or greater, repair the short to voltage on the circuit.
      - If less than 1 V, replace the K36 Inflatable Restraint Sensing and Diagnostic Module.
   - **If less than 11 V**
5. Ignition OFF.

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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**
    1. Disconnect the X2 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
    2. Test for infinite resistance between the control circuit and ground.
        - If less than infinite resistance, repair the short to ground on the circuit.
        - If infinite resistance, replace the K36 Inflatable Restraint Sensing and Diagnostic Module.
    - **If greater than 25 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**
    1. Ignition OFF. Disconnect the X2 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
    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 F105 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**

      Test or replace the F105 Roof Rail Air Bag.

    - **If DTC B0016 or B0023 is not set**
12. All OK.

Repair Instructions

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

- **Front and Rear Row Seat Roof Rail Airbag Replacement**
- **SIR/SRS Wiring Repairs**
- **Control Module References** for inflatable restraint sensing and diagnostic module replacement, programming and setup

DTC B0019 OR B0020: PASSENGER INSTRUMENT PANEL AIR BAG DEPLOYMENT LOOP STAGE 1/2

Diagnostic Instructions

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

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- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptors

DTC B0019

Passenger Instrument Panel Air Bag Deployment Loop Stage 1

DTC B0020

Passenger Instrument Panel Air Bag Deployment Loop Stage 2

For symptom byte information refer to **Symptom Byte List** .

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 s.

B0019 02, B0020 02

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

B0019 04, B0020 04

The air bag control circuit is open for 2 s.

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B0019 0D, B0020 0D

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

B0019 0E, B0020 0E

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

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.

Reference Information

Schematic Reference

SIR Schematics

Connector End View Reference

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

Scan Tool Reference

Control Module References for scan tool information

Special Tools

EL-38125-580 Terminal Release Tool Kit

Circuit/System Verification

NOTE:

- **Refer to SIR Service Precautions.**
- **Inspect all terminals for damage or corrosion when disconnecting connectors. Damage or corrosion in the following requires repair or replacement of the affected component/connector.**
  - **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.

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- **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 X205 inline harness connector for the F101 Passenger Instrument Panel Air Bag. It may take up to 2 min 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 X205 terminal 1 and 2
   - F101 Passenger Instrument Panel Air Bag stage 2 X205 terminal 4 and 5
   - **If 25 Ω or less**
   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. 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 on the instrument panel harness side of the connector and ground:
   - X205 control circuit terminal 1
   - X205 control circuit terminal 2
   - X205 control circuit terminal 4
   - X205 control circuit terminal 5
   - **If 11 V or greater**
   1. Ignition OFF, disconnect the X1 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module, ignition ON.
   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 on the instrument panel harness side of the connector and ground:
   - X205 control circuit terminal 1

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- X205 control circuit terminal 2
- X205 control circuit terminal 4
- X205 control circuit terminal 5
- **If 25 Ω or less**

1. Disconnect the X1 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
2. Test for infinite resistance between the control circuit and ground.
    - If less than infinite resistance, repair the short to ground on the circuit.
    - If infinite resistance, replace the K36 Inflatable Restraint Sensing and Diagnostic Module.

- **If greater than 25 Ω**

7. Install a 3 A fused jumper wire between the control circuit terminals listed below on the instrument panel harness side of the connector:
    - F101 Passenger Instrument Panel Air Bag stage 1 X205 terminal 1 and 2
    - F101 Passenger Instrument Panel Air Bag stage 2 X205 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**

    1. Ignition OFF, disconnect the X1 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
    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 X205 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**

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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**
    1. Ignition OFF, disconnect the X1 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
    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 X205 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**

      Test or 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** after completing the repair.

- **Instrument Panel Airbag Replacement**
- **SIR/SRS Wiring Repairs**
- **Control Module References** for inflatable restraint sensing and diagnostic module control module replacement, programming and setup

DTC B0052: DEPLOYMENT COMMANDED

Diagnostic Instructions

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

DTC Descriptors

DTC B0052 00

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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

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Supplemental Inflatable Restraint System Description and Operation

Electrical Information Reference

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

1. Verify that DTC B0052 00 is not set.
   - **If DTC B0052 00 is set**

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

   - **If DTC B0052 00 is not set**
2. Verify that DTC B0052 56 is not set.
   - **If DTC B0052 56 is set**

     Replace the K36 Inflatable Restraint Sensing and Diagnostic Module.

   - **If DTC B0052 56 is not set**
3. All OK.

Repair Instructions

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

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

DTC B0071: PASSENGER SEAT BELT TENSION SENSOR

Diagnostic Instructions

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

DTC Descriptors

DTC B0071 03

Passenger Seat Belt Tension Sensor Circuit Voltage Below Threshold

DTC B0071 04

Passenger Seat Belt Tension Sensor Circuit Open

DTC B0071 07

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Passenger Seat Belt Tension Sensor Circuit Voltage Above Threshold

DTC B0071 08

Passenger Seat Belt Tension Sensor Circuit Voltage Performance - Signal Invalid

Diagnostic Fault Information

Circuit	Short to Ground	High Resistance	Open	Short to Voltage	Signal Performance
Passenger Seat Belt Tension Sensor Signal	B0071 03	-	B0071 04	B0071 07	B0071 08
Passenger Seat Belt Tension Sensor Voltage Reference	B0071 03	-	B0071 03	-	-
Passenger Seat Belt Tension Sensor Low Reference	-	-	B0071 07	-	-

Circuit/System Description

The seat belt tension sensor is a 2-wire sensor mounted on the passenger seat belt retractor and provides an input to the passenger presence module. When an infant car seat is properly restrained on the front passenger seat, the seat belt is tightly secured through the car seat. The seat belt pulls on the tension sensor and changes the voltage signal to the passenger presence module. The passenger presence module monitors the belt tension sensor signal circuit and if a fault is detected, DTC will be set. When the passenger presence module detects this DTC it will send out a serial data message and the inflatable restraint sensing and diagnostic module will notify the customer of the enable/disable status by illuminating the OFF indicator on the PASSENGER AIR BAG ON/OFF indicators. The inflatable restraint sensing and diagnostic module will then suppress the deployment of the passenger instrument panel air bag and illuminate the AIR BAG indicator.

Conditions for Running the DTC

Ignition voltage is between 9-16 volts.

Conditions for Setting the DTC

- The passenger presence module detects the voltage at the passenger seat belt tension sensor signal circuit is less than 0.5 volt or greater than 4.5 volts for 1 second.
- The passenger presence module detects the voltage at the passenger seat belt tension sensor voltage reference circuit is less than 4.5 volts or greater than 9.1 volts for 1 second.
- The passenger presence module detects the amperage at the passenger seat belt tension sensor low reference circuit is 25 MA or greater for 1 second.

Action Taken When the DTC Sets

- The passenger presence module will set a DTC, and then communicate with the inflatable restraint sensing and diagnostic module.
- The inflatable restraint sensing and diagnostic module will set DTC B0081
- The inflatable restraint sensing and diagnostic module disables the passenger instrument panel air bag.

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- The passenger presence module will illuminate the passenger air bag status OFF indicator.
- The inflatable restraint sensing and diagnostic module requests the instrument panel 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

Inspect the passenger seat belt tension sensor signal, voltage reference, and low reference circuits carefully for cutting and/or chafing.

Reference Information

Schematic Reference

SIR Schematics

Connector End View Reference

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Description and Operation

Supplemental Inflatable Restraint System Description and Operation

Electrical Information Reference

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Testing

NOTE: **The seat belt buckle replacement with the seat belt tension sensor must be serviced as a complete unit.**

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

- **Passenger seat belt tension sensor**
- **Passenger presence module**
- **Passenger seat belt tension sensor wiring harness connector**
- **Passenger presence module wiring harness connector**

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1. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the B61P Seat Belt Tension Sensor - Passenger. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 10 Ω between the low reference circuit terminal 1 and ground.
    - **If greater than 10 Ω**
    1. Ignition OFF, disconnect the harness connector at the K85 Passenger Presence Module. It may take up to 2 min for all vehicle systems to power down.
    2. Test for less than 10 Ω between the low reference circuit and ground.
        - If less than 10 Ω, replace the K85 Passenger Presence Module.
        - If greater than 10 Ω, repair the open/high resistance.
    - **If less than 10 Ω**
3. Ignition ON.
4. Test for less than 6 V between the passenger seat belt tension sensor signal circuit terminal 2 and ground.
    - **If 6 V or greater**
    1. Ignition OFF, disconnect the harness connector at the K85 Passenger Presence Module, ignition ON.
    2. Test for less than 1 V between the signal circuit and ground.
        - If 1 V or greater, repair the short to voltage on the circuit.
        - If less than 1 V, replace the K85 Passenger Presence Module.
    - **If less than 6 V**
5. Ignition OFF, test for greater than 5K Ω between the passenger seat belt tension sensor signal circuit terminal 2 and ground. It may take up to 2 minutes for all vehicle systems to power down.
    - **If less than 5K Ω**
    1. Disconnect the harness connector at the K85 Passenger Presence Module.
    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 K85 Passenger Presence Module.
    - **If greater than 5K Ω**
6. Disconnect the harness connector at the K85 Passenger Presence Module.
7. Test for less than 2 Ω between the B61P Seat Belt Tension Sensor - Passenger signal circuit terminal 2 and the K85 Passenger Presence Module signal circuit terminal 6.
    - **If 2 Ω or greater**

      Repair the open/high resistance in the circuit.

    - **If less than 2 Ω**
8. If all circuits test normal, replace the B61P Seat Belt Tension Sensor - Passenger.
9. Ignition ON, clear DTCs. Operate the vehicle within the Conditions for Running the DTC.
10. Verify DTC B0071 does not set.
    - **If DTC B0071 is set**

      Replace the K85 Passenger Presence Module.

    - **If DTC B0071 is not set**

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11. All OK.

Repair Instructions

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

- **SIR/SRS Wiring Repairs**
- **Seat Belt Retractor Pretensioner Replacement - Front (Crew Cab, Extended Cab)Seat Belt Retractor Pretensioner Replacement - Front (Regular Cab)** for B61P Seat Belt Tension Sensor - Passenger
- **Control Module References** for passenger presence module replacement, setup, and programming

DTC B0079 OR B0080: DRIVER/PASSENGER SEAT POSITION SENSOR

Diagnostic Instructions

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

DTC Descriptors

DTC B0079 01

Driver Seat Position Sensor Circuit Short to Battery

DTC B0079 02

Driver Seat Position Sensor Circuit Short to Ground

DTC B0079 04

Driver Seat Position Sensor Circuit Open

DTC B0079 05

Driver Seat Position Sensor Circuit High Voltage or Open

DTC B0079 06

Driver Seat Position Sensor Circuit Low Voltage or Open

DTC B0079 08

Driver Seat Position Sensor Circuit Performance-Signal Invalid

DTC B0079 0C

Driver Seat Position Sensor Circuit Low Current

DTC B0080 01

Passenger Seat Position Sensor Circuit Short to Battery

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DTC B0080 02

Passenger Seat Position Sensor Circuit Short to Ground

DTC B0080 04

Passenger Seat Position Sensor Circuit Open

DTC B0080 05

Passenger Seat Position Sensor Circuit High Voltage or Open

DTC B0080 06

Passenger Seat Position Sensor Circuit Low Voltage or Open

DTC B0080 08

Passenger Seat Position Sensor Circuit Performance-Signal Invalid

DTC B0080 0C

Passenger Seat Position Sensor Circuit Low Current

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Driver Seat Position Signal	B0079 02, B0079 06	B0079 04, B0079 05, B0079 06, B0079 0C	B0079 01	B0079 08
Driver Seat Position Sensor Low Reference	B0079 02, B0079 06	B0079 04, B0079 05, B0079 06, B0079 0C	B0079 01	B0079 08
Passenger Seat Position Sensor Signal	B0080 02, B0080 06	B0080 04, B0080 05, B0080 06, B0080 0C	B0080 01	B0080 08
Passenger Seat Position Sensor Low Reference	B0080 02, B0080 06	B0080 04, B0080 05, B0080 06, B0080 0C	B0080 01	B0080 08

Circuit/System Description

The seat position sensor is used to determine the proximity of the front driver or passenger seat position with respect to the front air bag. There are two states of seat position, forward and rearward. The seat position sensor interfaces with the inflatable restraint sensing and diagnostic module (SDM) and allows the inflatable restraint sensing and diagnostic module to disable stage 2 of the air bag for a front seat that is forward of the forward/rearward point in seat track. The seat position sensor provides two current ranges, one range for the forward seat position and one for rearward seat position. When the inflatable restraint sensing and diagnostic module receives input from a seat position sensor that the seat is rearward, and the inflatable restraint sensing and diagnostic module will not disable stage 2 deployment. When the seat is forward, the inflatable restraint sensing and diagnostic module will disable stage 2 deployment. The inflatable restraint sensing and diagnostic

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module monitors the seat position sensor circuit and if a fault is detected, the inflatable restraint sensing and diagnostic module will set DTC B0079 or B0080 and disable stage 2 frontal deployment.

Conditions for Running the DTC

Ignition voltage is between 9-16 V.

Conditions for Setting the DTC

B0079 01, B0080 01

The inflatable restraint sensing and diagnostic module detects the seat position sensor signal circuit is shorted to voltage for 2 s

B0079 02, B0080 02

The inflatable restraint sensing and diagnostic module detects the seat position sensor signal circuit is shorted to ground for 2 s

B0079 04, B0080 04

The inflatable restraint sensing and diagnostic module detects the seat position sensor signal circuit is open for 2 s

B0079 05, B0080 05

The inflatable restraint sensing and diagnostic module detects the seat position sensor signal circuit is open or has a high voltage condition for 2 s

B0079 06, B0080 06

The inflatable restraint sensing and diagnostic module detects the seat position sensor signal circuit is shorted to ground or an open for 2 s

B0079 08, B0080 08

The inflatable restraint sensing and diagnostic module detects an invalid signal on the seat position sensor signal circuit.

B0079 0C, B0080 0C

The inflatable restraint sensing and diagnostic module detects a low current condition in the seat position sensor signal circuit for 2 s

Action Taken When the DTC Sets

- The inflatable restraint sensing and diagnostic module defaults the seat position sensor to seat forward threshold.
- 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 present.

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

Reference Information

Schematic Reference

SIR Schematics

Connector End View Reference

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Supplemental Inflatable Restraint System Description and Operation

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

1. Verify that DTC B0079 08 or B0080 08 is not set.
   - **If DTC B0079 08 or B0080 08 is set.**

     Replace the appropriate B62 Seat Position Sensor.

   - **If DTC B0079 08 or B0080 08 is not set.**
2. Verify that DTC B0079 or B0080 is not set.
   - **If DTC B0079 or B0080 is set.**

     Refer to Circuit/System Testing.

   - **If DTC B0079 or B0080 is not set.**
3. 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 component/connector:**

- **B62 Seat Position Sensor**
- **K36 Inflatable Restraint Sensing and Diagnostic Module module**

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- **B62 Seat Position Sensor wiring harness connector**
- **K36 Inflatable Restraint Sensing and Diagnostic Module wiring harness connector**

1. Ignition OFF. Disconnect the harness connector at the appropriate B62 Seat Position Sensor. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 10 Ω between the low reference circuit terminal 1 and ground.
    - **If 10 Ω or greater**
    1. Ignition OFF, disconnect the X2 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
    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. Ignition ON.
4. Test for 1-9 V between the signal circuit terminal 2 and ground.
    - **If less than 1 V**
    1. Ignition OFF. Disconnect the harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
    2. Test for infinite resistance between the signal circuit and ground.
        - If less than infinite resistance, repair the short to ground on the circuit.
    3. Test for less than 2 Ω in the signal 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 9 V**
    1. Ignition OFF. Disconnect the X2 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module. Ignition ON.
    2. Test for less than 1 V between the signal 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 between 1-9 V**
5. Replace the B62 Seat Position Sensor.

Repair Instructions

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

- **Airbag Front Seat Position Sensor Replacement**
- **SIR/SRS Wiring Repairs**
- **Control Module References** for inflatable restraint sensing and diagnostic module replacement, programming and setup

DTC B0081: PASSENGER PRESENCE MODULE (INFLATABLE RESTRAINT SENSING AND DIAGNOSTIC MODULE)

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Diagnostic Instructions

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

DTC Descriptors

DTC B0081 00

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

DTC B0081 11

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

DTC B0081 3A

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

DTC B0081 4B

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

DTC B0081 5A

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

DTC B0081 71

Passenger Presence Module Invalid Serial Data Received (sets in Inflatable Restraint Sensing and Diagnostic Module)

Circuit/System Description

When the ignition is turned ON, the Passenger Presence Module and the Inflatable Restraint Sensing and Diagnostic Module performs tests to diagnose critical malfunctions within itself. When the Inflatable Restraint Sensing and Diagnostic Module has completed the power-up mode, the Inflatable Restraint Sensing and Diagnostic Module will establish communication with the Passenger Presence Module. The Inflatable Restraint Sensing and Diagnostic Module will also request the instrument panel cluster to illuminate both of the PASSENGER AIR BAG ON/OFF indicators for 5 seconds. If the Inflatable Restraint Sensing and Diagnostic Module detects that the Passenger Presence Module has set a current DTC, the Inflatable Restraint Sensing and Diagnostic Module will then disable the passenger instrument panel air bag deployment loop, set DTC B0081, and illuminate the AIR BAG indicator.

Conditions for Running the DTC

Ignition voltage is between 9-16 V.

Conditions for Setting the DTC

Any of the following conditions must exist for 5 seconds:

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B0081 00

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

B0081 11

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

B0081 3A

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

B0081 4B

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

B0081 5A

The Passenger Presence Module detects a plausibility error.

B0081 71

The Inflatable Restraint Sensing and Diagnostic Module has received invalid or no 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.

Reference Information

Schematic Reference

SIR Schematics

Connector End View Reference

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

NOTE:

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

1. Ignition ON, verify that DTC B0081 is the only DTC set in the Inflatable Restraint Sensing and Diagnostic Module or Passenger Presence Module.
   - If any other DTCs are set, refer to **Diagnostic Trouble Code (DTC) List - Vehicle** .
2. Verify DTC B0081 00, DTC B0081 3A, or DTC B0081 71 is not set in the Inflatable Restraint Sensing and Diagnostic Module. If any of these DTCs set in the Inflatable Restraint Sensing and Diagnostic Module diagnose the following:
   - Inflatable Restraint Sensing and Diagnostic Module DTC B0081 00:
     - If DTC B0081 00 sets in the Inflatable Restraint Sensing and Diagnostic Module then refer to step 3 and diagnose the Passenger Presence Module DTC B0081 5A. By diagnosing the Passenger Presence Module DTC B0081 5A, DTC B0081 00 will be fixed in the Inflatable Restraint Sensing and Diagnostic Module.
   - Inflatable Restraint Sensing and Diagnostic Module DTC B0081 3A:
     - Either an incorrect replacement Passenger Presence Module or Inflatable Restraint Sensing and Diagnostic Module was placed in this vehicle. Check and make sure the part numbers are correct for each module. If the part numbers are correct clear this DTC and see if DTC B0081 3A resets as a current DTC. If DTC B0081 3A resets then replace the Passenger Presence Module. Clear DTCs again and check if DTC B0081 3A sets as current again. If DTC B0081 3A sets again then replace the Inflatable Restraint Sensing and Diagnostic Module.
   - Inflatable Restraint Sensing and Diagnostic Module DTC B0081 71:
     - If DTC B0081 71 sets in the Inflatable Restraint Sensing and Diagnostic Module then refer to Circuit/System Testing below.
3. DTC B0081 11, DTC B0081 4B, or DTC B0081 5A is set in the Passenger Presence Module, diagnose

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the following:

- Passenger Presence Module DTC B0081 11:
  - If DTC B0081 11 sets in the Passenger Presence Module if the correct calibration was not learned by the Passenger Presence Module. Make sure there is nothing on the passenger seat, not even a scan tool. Perform the Passenger Presence Module Preload procedure, refer to **Passenger Presence System Programming and Setup** . Clear the DTC's and check if DTC B0081 11 sets again in the Passenger Presence Module. If DTC B0081 11 sets again replace the Passenger Presence Module.
- Passenger Presence Module DTC B0081 4B:
  - If DTC B0081 4B sets in the Passenger Presence Module if the correct calibration was not learned by the Passenger Presence Module. Make sure there is nothing on the passenger seat, not even a scan tool. Perform the Passenger Presence Module Preload procedure, refer to **Passenger Presence System Programming and Setup** . Clear the DTC's and check if DTC B0081 11 sets again in the Passenger Presence Module. If DTC B0081 11 sets again replace the Passenger Presence Module.
- Passenger Presence Module DTC B0081 5A:
  - If DTC B0081 5A sets in the Passenger Presence Module check the connections at the Inflatable Restraint Sensing and Diagnostic Module and Passenger Presence Module. Clear the DTC's and check if DTC B0081 5A sets again as a current DTC in the Passenger Presence Module. If DTC B0081 5A sets then replace the Passenger Presence Module. Clear DTCs again and check if DTC B0081 5A sets as current again. If DTC B0081 5A sets again then replace the Inflatable Restraint Sensing and Diagnostic Module.

Repair Instructions

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

Control Module References 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** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptors

DTC B0081 11

Passenger Presence Module High Input

DTC B0081 4B

Passenger Presence Module Calibration Not Learned

DTC B0081 5A

Passenger Presence Module Not Plausible

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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 air bag indicator.

Conditions for Running the DTC

Ignition voltage is between 9-16 V.

Conditions for Setting the DTC

Any of the following conditions must exist for 5 s.

B0081 11

The passenger presence module has failed the rezero procedure.

B0081 4B

The passenger presence module is not calibrated.

B0081 5A

The passenger presence module sets this code when the passenger presence module has lost communication with the inflatable restraint sensing and diagnostic 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

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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

Description and Operation

Supplemental Inflatable Restraint System Description and Operation

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

NOTE:

- **This system is serviced as a kit (seat foam, module and sensing mat). Perform a passenger presence system rezero procedure whenever a component is replaced. Refer to Passenger Presence System Programming and Setup .**
- **Both K36 Inflatable Restraint Sensing and Diagnostic Module and K85 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 K36 Inflatable Restraint Sensing and Diagnostic Module sets a B0081 3A when an incorrect K85 Passenger Presence Module is installed.**

1. Verify that the seat is free of any objects or an aftermarket seat heater.
   - **If objects and/or an aftermarket seat heater is present**
   1. Remove objects and/or aftermarket seat heater.
   2. Ignition ON, clear the DTC.
   3. Verify that DTC B0081 is not set
      - If the DTC B0081 is set, replace the K85 Passenger Presence Module
      - If the DTC B0081 is not set
   4. All OK.
   - **If the seat is empty and does not have an aftermarket seat heater**
2. Verify that DTC B0081 3A is not set in the K36 Inflatable Restraint Sensing and Diagnostic Module.
   - **If DTC B0081 3A is set in the K36 Inflatable Restraint Sensing and Diagnostic Module**

     Replace the K85 Passenger Presence Module.

   - **If DTC B0081 3A is not set in the K36 Inflatable Restraint Sensing and Diagnostic Module**
3. Verify that DTC B0081 11 or DTC B0081 4B is not set in the K85 Passenger Presence Module.

NOTE: **The K36 Inflatable Restraint Sensing and Diagnostic Modulesets a redundant B0081 00 DTC when the K85 Passenger Presence Module sets a**

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DTC B0081 11 or B0081 4B.

- **If DTC B0081 11 or DTC B0081 4B is set in the K85 Passenger Presence Module**

  Perform the passenger presence system rezero procedure. Refer to **Passenger Presence System Programming and Setup** .

- **If neither of these DTCs are set in the K85 Passenger Presence Module**

4. Verify DTC B0081 5A is not set in the K85 Passenger Presence Module.
   - **If DTC B0081 5A is set in the K85 Passenger Presence Module**
   1. Verify the connections at the K36 Inflatable Restraint Sensing and Diagnostic Module and K85 Passenger Presence Module, for terminal corrosion, properly seated connectors, and the connector position assurance is installed.
   2. Clear the DTC.
   3. Verify DTC B0081 5A does not set in the K85 Passenger Presence Module.
      - If DTC B0081 5A sets, replace the K85 Passenger Presence Module.
      - If DTC B0081 5A does not set
   4. All OK.
   - **If DTC B0081 5A is not set in the K85 Passenger Presence Module**
5. All OK.

Repair Instructions

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

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

DTC B0083 OR B0084: FRONT IMPACT SENSOR

Diagnostic Instructions

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

DTC Descriptors

DTC B0083

Left Front Impact Sensor

DTC B0084

Right Front Impact Sensor

For symptom byte information refer to **Symptom Byte List** .

Diagnostic Fault Information

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Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Left Front Impact Sensor High Signal	B0083 02	B0083 05, B0083 71	B0083 05	B0083 08, B0083 39, B0083 0F
Left Front Impact Sensor Low Reference	B0083 02	B0083 05, B0083 71	-	-
Right Front Impact Sensor High Signal	B0084 02	B0084 05, B0084 71	B0084 05	B0084 08, B0084 39, B0084 0F
Right Front Impact Sensor Low Reference	B0084 02	B0084 05, B0084 71	-	-

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 s:

B0083 02, B0084 02

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

B0083 05, B0084 05

- The impact sensor has an open or high resistance.
- The impact sensor has been shorted to voltage.

B0083 08, B0084 08

The impact sensor has an invalid signal.

B0083 0F, B0084 0F

The impact sensor has an erratic signal.

B0083 39, B0084 39

- The inflatable restraint sensing and diagnostic module has received a Not OK message from the impact sensor.

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- The inflatable restraint sensing and diagnostic has not received a message.

B0083 3A, B0084 3A

- The inflatable restraint sensing and diagnostic module has received identification message from the impact 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 impact sensor twice without detecting the correct identification message.

B0083 71, B0084 71

The inflatable restraint sensing and diagnostic module has received invalid 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.

Diagnostic Aid

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

Terminal fretting, damaged terminals, damaged connectors, 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 05 or 71 is set.

Reference Information

Schematic Reference

SIR Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Supplemental Inflatable Restraint System Description and Operation

Electrical Information Reference

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

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- **Wiring Repairs**

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

NOTE:

- **Refer to SIR Service Precautions.**
- **Inspect all terminals for damage or corrosion when disconnecting connectors. Damage or corrosion in the following requires repair or replacement of the affected component/connector.**
  - **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 or B0084 symptom byte 08, 0F, 3A, or 39 is not set as current.
   - **If DTC B0083 or B0084 symptom byte 08, 0F, 3A, or 39 is set as current**

     Replace the appropriate B59 Front Impact Sensor.

   - **If DTC B0083 or B0084 symptom byte 08, 0F, 3A, or 39 is not set as current**
2. Verify that DTC B0083 or B0084 symptom byte 02, 05 or 71 is not set as current.
   - **If DTC B0083 or B0084 symptom byte 02, 05 or 71 is set as current**

     Refer to Circuit/System Testing.

   - **If DTC B0083 or B0084 symptom byte 02, 05 or 71 is not set as current**
3. All OK.

Circuit/System Testing

1. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the appropriate B59 Front Impact Sensor. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 10 Ω between the low reference circuit terminal 2 and ground.
   - **If 10 Ω or greater**
     1. Ignition OFF, disconnect the harness connector at the K36 Inflatable Restraint Sensing and

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Diagnostic Module.

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**

1. Disconnect the harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
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, wait 1 min
5. Test for less than 1 V between the signal circuit terminal 1 and ground.

- **If 1 V or greater**

1. Ignition OFF, disconnect the harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module, ignition ON.
2. Test for less than 1 V between the 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**

NOTE: **When using the MIN MAX function, autorange on the DMM may not function properly. To ensure accurate test results, turn off autorange and manually set the DMM range to 000.0 V.**

6. Ignition OFF, install a DMM between the signal circuit terminal 1 and ground. Set the DMM to capture DC voltage using the MIN MAX function. Turn off autorange and manually set the DMM range to 000.0 V. Ignition ON.
7. Verify the MAX voltage captured by the DMM is between 4-9V.

- **If less than 4 V**

1. Disconnect the X2 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
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
3. Test for less than 2 Ω in the signal circuit end to end.
    - If 2 Ω or greater, repair the open/high resistance in the circuit.
    - If less than 2 Ω, replace the Inflatable Restraint Sensing and Diagnostic Module.

- **If greater than 9V**

1. Ignition OFF. Disconnect the X2 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module. Ignition ON.
2. Test for less than 1 V between the signal circuit terminal 1 and ground.

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- 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 between 4-9V**

8. Ignition OFF, reconnect all harness connectors, press in the CPA (if equipped) until an audible and/or tactile click is heard.
9. Ignition ON, clear DTCs. Operate the vehicle within the Conditions for Running the DTC.
10. Verify the DTC B0083 or B0084 does not set.
    - **If the DTC is set**

      Replace the B59 Front Impact Sensor.

    - **If the DTC is not set**
11. All OK.

Repair Instructions

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

- **Front End Inflatable Restraint Discriminating Sensor Replacement** for B59 Front Impact Sensor replacement
- **Control Module References** for Inflatable Restraint Sensing and Diagnostic Module replacement, programming, and setup

DTC B0085-B0088: FRONT SIDE IMPACT SENSOR (WITHOUT RPO EPG)

Diagnostic Instructions

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

DTC Descriptors

DTC B0085

Left Front Side Impact Sensor

DTC B0086

Right Front Side Impact Sensor

DTC B0087

Left Rear Side Impact Sensor

DTC B0088

Right Rear Side Impact Sensor

For symptom byte information refer to **Symptom Byte List** .

Diagnostic Fault Information

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Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Left Front Side Impact Sensor High Signal	B0085 02	B0085 05, B0085 71	B0085 05	B0085 08, B0085 39, B0085 0F
Left Front Side Impact sensor Low Reference	B0085 02	B0085 05, B0085 71	-	-
Right Front Side Impact Sensor High Signal	B0086 02	B0086 05, B0086 71	B0086 05	B0086 08, B0086 39,B0086 0F
Right Front Side Impact Sensor Low Reference	B0086 02	B0086 05, B0086 71	-	-
Left Rear Side Impact Sensor High Signal	B0087 02	B0087 05, B0087 71	B0087 05	B0087 08, B0087 39, B0087 0F
Left Rear Side Impact Sensor Low Reference	B0087 02	B0087 05, B0087 71	-	-
Right Rear Side Impact Sensor High Signal	B0088 02	B0088 05, B0088 71	B0088 05	B0088 08, B0088 39, B0088 0F
Right Rear Side Impact Sensor Low Reference	B0088 02	B0088 05, B0088 71	-	-

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 s:

B0085 02, B0086 02, B0087 02, B0088 02

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

B0085 05, B0086 05, B0087 05, B0088 05

- The impact sensor has an open or high resistance.
- The impact sensor has been shorted to voltage.

B0085 08, B0086 08, B0087 08, B0088 08

The impact sensor has an invalid signal.

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B0085 0F, B0086 0F, B0087 0F, B0088 0F

The impact sensor has an erratic signal.

B0085 39, B0086 39, B0087 39, B0088 39

- The inflatable restraint sensing and diagnostic module has received a Not OK message from the impact sensor.
- The inflatable restraint sensing and diagnostic has not received a message.

B0085 3A, B0086 3A, B0087 3A, B0088 3A

- The inflatable restraint sensing and diagnostic module has received identification message from the impact 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 impact sensor twice without detecting the correct identification message.

B0085 71, B0086 71, B0087 71, B0088 71

The inflatable restraint sensing and diagnostic module has received invalid 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.

Diagnostic Aid

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

Terminal fretting, damaged terminals, damaged connectors, 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 05 or 71 is set.

Reference Information

Schematic Reference

SIR Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

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Supplemental Inflatable Restraint System Description and Operation

Electrical Information Reference

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

NOTE:

- **Refer to SIR Service Precautions.**
- **Inspect all terminals for damage or corrosion when disconnecting connectors. Damage or corrosion in the following requires repair or replacement of the affected component/connector.**
  - **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 B0085-B0088 symptom byte 08, 0F, 3A, or 39 is not set as current.
   - **If DTC B0085-B0088 symptom byte 08, 0F, 3A, or 39 is set as current**

     Replace the appropriate B63 Side Impact Sensor.

   - **If DTC B0085-B0088 symptom byte 08, 0F, 3A, or 39 is not set as current**
2. Verify that DTC B0083-B0088 symptom byte 02, 05 or 71 is not set as current.
   - **If DTC B0085-B0088 symptom byte 02, 05 or 71 is set as current**

     Refer to Circuit/System Testing.

   - **If DTC B0085-B0088 symptom byte 02, 05 or 71 is not set as current**
3. All OK.

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Circuit/System Testing

1. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the appropriate B63 SideImpact Sensor. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 10 Ω between the low reference circuit terminal 2 and ground.
    - **If 10 Ω or greater**
    1. Ignition OFF, disconnect the harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
    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**
    1. Disconnect the harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
    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, wait 1 min.
5. Test for less than 1 V between the signal circuit terminal 1 and ground.
    - **If 1 V or greater**
    1. Ignition OFF, disconnect the harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module, ignition ON.
    2. Test for less than 1 V between the 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**

NOTE: **When using the MIN MAX function, autorange on the DMM may not function properly. To ensure accurate test results, turn off autorange and manually set the DMM range to 000.0 V.**

6. Ignition OFF, install a DMM between the signal circuit terminal 1 and ground. Set the DMM to capture DC voltage using the MIN MAX function. Turn off autorange and manually set the DMM range to 000.0 V. Ignition ON.
7. Verify the MAX voltage captured by the DMM is between 4-9V.
    - **If less than 4 V**
    1. Disconnect the X2 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
    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

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3. Test for less than 2 Ω in the signal circuit end to end.
    - If 2 Ω or greater, repair the open/high resistance in the circuit.
    - If less than 2 Ω, replace the Inflatable Restraint Sensing and Diagnostic Module.

- **If greater than 9V**

1. Ignition OFF. Disconnect the X2 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module. Ignition ON.
2. Test for less than 1 V between the signal circuit terminal 1 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 between 4-9V**

8. Ignition OFF, reconnect all harness connectors, press in the CPA (if equipped) until an audible and/or tactile click is heard.
9. Ignition ON, clear DTCs. Operate the vehicle within the Conditions for Running the DTC.
10. Verify the DTC B0085-B0088 does not set.
    - **If the DTC is set**

      Replace the B63 Side Impact Sensor.

    - **If the DTC is not set**
11. All OK.

Repair Instructions

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

- **Airbag Side Impact Sensor Replacement** for B63LF Side Impact Sensor - Left Front and B63RF Side Impact Sensor - Right Front replacement
- **Airbag Side Impact Rear Sensor Replacement (Crew Cab)Airbag Side Impact Rear Sensor Replacement (Extended Cab)** for B63LR Side Impact Sensor - Left Rear and B63RR Side Impact Sensor - Right Rear replacement
- **Control Module References** for Inflatable Restraint Sensing and Diagnostic Module replacement, programming, and setup

DTC B0085 OR B0088: FRONT SIDE IMPACT SENSOR (RPO EPG)

Diagnostic Instructions

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

DTC Descriptors

DTC B0085 02

Left Front Side Impact Sensor Short to Ground

DTC B0085 05

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Left Front Side Impact Sensor High Voltage/Open

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 Data

DTC B0088 02

Right Rear Side Impact Sensor Short to Ground

DTC B0088 05

Right Rear Side Impact Sensor High Voltage/Open

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 Side Impact Sensor High Signal	B0085 02, B0088 02	B0085 05	B0085 05, B0088 05	B0085 39
Left Front Side Impact Sensor Low Reference	B0085 02, B0088 02	B0085 05	B0085 05, B0088 05	B0085 39
Right Rear Side Impact Sensor High Signal	B0085 02, B0088 02	B0088 05	B0085 05, B0088 05	B0088 39
Right Rear Side Impact Sensor Low Reference	B0085 02, B0088 02	B0088 05	B0085 05, B0088 05	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 (SDM). The impact sensors can assist in determining the severity of some frontal and side collisions. The inflatable restraint sensing and diagnostic

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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:

B0085 02, B0088 02

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

B0085 05, B0088 05

- 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.

B0085 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.

B0085 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 impact sensor twice without detecting the correct identification message.

B0085 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 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

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Schematic Reference

SIR Schematics

Connector End View Reference

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Description and Operation

Supplemental Inflatable Restraint System Description and Operation

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

NOTE:

- **SIR Service Precautions**
- **Inspect all terminals for damage or corrosion when disconnecting connectors. Damage or corrosion in the following requires repair or replacement of the affected component/connector.**
  - **Impact sensor**
  - **inflatable restraint sensing and diagnostic module**
  - **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.**

1. Ignition ON.
2. Verify that DTC B0085 or B0088 symptom byte 39 or 71 is not set as current.
   - **If DTC B0085 or B0088 symptom byte 39 or 71 is set as current**

     Replace the sensor listed below:

   - B0085 - B63LF Side Impact Sensor-Left Front
   - B0088 - B63RR Side Impact Sensor-Right Rear
   - **If DTC B0085 or B0088 symptom byte 39 or 71 is not set as current**
3. Verify that DTC B0085 or B0088 symptom byte 3A is not set as current.

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- **If DTC B0085 or B0088 symptom byte 3A is set as current**

  Replace the incorrect B63 Side Impact Sensor

- **If DTC B0085 or B0088 symptom byte 3A is not set as current**

4. Verify that DTC B0085 or B0088 symptom byte 02 or 05 is set as current.
   - **If only DTC B0085 symptom byte 02 or 05 is set as current**

     Refer to Circuit/System Testing - Only DTC B0085 or B0088 is set.

   - **If only DTC B0088 symptom byte 02 or 05 is set as current**

     Refer to Circuit/System Testing - Only DTC B0085 or B0088 is set.

   - **If both DTC B0085 or B0088 symptom byte 02 or 05 is set as current**

     Refer to Circuit/System Testing - Both DTC B0085 and B0088 are set.

   - **If DTC B0085 or B0088 symptom byte 02 or 05 is not set as current**
5. All OK.

Circuit/System Testing

NOTE: **The signal circuit is shared at the K36 Inflatable Restraint Sensing and Diagnostic Module between the B63LF Side Impact Sensor - Left Front and the B63RR Side Impact Sensor - Right Rear (DTC B0085 and DTC B0088). Therefore a short to ground or short to voltage in either of these signal circuits can set a DTC for both circuits, and an open in either circuit should only set its corresponding DTC.**

Only DTC B0085 or B0088 is set

1. Ignition OFF, disconnect the harness connector at the appropriate B63 Side Impact Sensor. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 10 Ω between the low reference circuit terminal 2 and ground.
   - **If 10 Ω or greater**
   1. Disconnect the X2 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
   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. Ignition ON.
4. Test for less than 10 V between the signal circuit terminal 1 and ground.
   - **If 10 V or greater**
   1. Disconnect the X2 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
   2. Test for less than 1 V between the signal circuit and ground.

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- If 1 V or greater, repair the short to voltage in the circuit.
- If less than 1 V, replace the K36 Inflatable Restraint Sensing and Diagnostic Module.

- **If less than 10 V**

5. Disconnect the X2 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
6. Test for less than 2 Ω between the B63 Side Impact Sensor signal circuit terminal 1 and the appropriate K36 Inflatable Restraint Sensing and Diagnostic Module signal circuit terminal listed below:
   - Left front signal terminal 19 X2
   - Right rear signal terminal 30 X2
   - **If 2 Ω or greater**

     Repair the open/high resistance in the circuit.

   - **If less than 2 Ω**
7. Ignition OFF, reconnect 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**
   1. Replace the B63 side impact sensor.
   2. Verify the DTC does not set.
      - If the DTC sets, replace the K36 Inflatable Restraint Sensing and Diagnostic Module.
      - If the DTC does not set.
   3. All OK.
   - **If the DTC does not set**
10. All OK.

Both DTC B0085 and B0088 are set

1. Ignition OFF. Disconnect the X2 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module. It may take up to 2 min for all vehicle systems to power down.
2. Test for greater than 50k Ω between each signal circuit listed below and ground:
   - Left front signal circuit - terminal 19 X2
   - Right rear signal circuit - terminal 30 X2
   - **If 50k Ω or less**
   1. Ignition OFF. Disconnect the harness connector at the B63 Side Impact Sensor that failed the test. Ignition ON.
   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 B63 Side Impact Sensor.
   - **If greater than 50k Ω**
3. Ignition ON.
4. Test for less than 1 V between the signal circuit terminals listed below and ground:
   - Left front signal circuit - terminal 19 X2

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- Right rear signal circuit - terminal 30 X2
- **If 1 V or greater**

1. Disconnect the harness connector at the B63 Side Impact Sensor that failed the test.
2. Test for less than 1 V between signal circuit and ground.
    - If 1 V or greater, repair the short to voltage in the circuit.
    - If less than 1 V, replace the B63 Side Impact Sensor.

- **If less than 1 V**

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

      Replace the K36 Inflatable Restraint Sensing and Diagnostic Module.

    - **If the DTC does not set**
8. All OK.

Repair Instructions

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

- **Airbag Side Impact Sensor Replacement**
- **Airbag Side Impact Rear Sensor Replacement (Crew Cab)Airbag Side Impact Rear Sensor Replacement (Extended Cab)**
- **Control Module References** for inflatable restraint sensing and diagnostic module replacement, programming and setup

DTC B0086 OR B0087: FRONT SIDE IMPACT SENSOR (RPO EPG)

Diagnostic Instructions

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

DTC Descriptors

DTC B0086 02

Right Front Side Impact Sensor Short to Ground

DTC B0086 05

Right Front Side Impact Sensor High Voltage/Open

DTC B0086 39

Right Front Side Impact Sensor Internal Malfunction

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DTC B0086 3A

Right Front Side Impact Sensor Incorrect Component Installed

DTC B0086 71

Right Front Side Impact Sensor Invalid Data

DTC B0087 02

Left Rear Side Impact Sensor Short to Ground

DTC B0087 05

Left Rear Side Impact Sensor High Voltage/Open

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 Data

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Right Front Side Impact Sensor High Signal	B0086 02, B0087 02	B0086 05	B0086 05, B0087 05	B0086 39
Right Front Side Impact Sensor Low Reference	B0086 02, B0087 02	B0086 05	B0086 05, B0087 05	B0086 39
Left Rear Side Impact Sensor High Signal	B0086 02, B0087 02	B0087 05	B0086 05, B0087 05	B0087 39
Left Rear Side Impact Sensor Low Reference	B0086 02, B0087 02	B0087 05	B0086 05, B0087 05	B0087 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 (SDM). 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

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Ignition voltage is between 9-16 V.

Conditions for Setting the DTC

Any of the following conditions exist for 10 seconds:

B0086 02, B0087 02

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

B0086 05, B0087 05

- 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.

B0086 39, B0087 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.

B0086 3A, B0087 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 impact sensor twice without detecting the correct identification message.

B0086 71, B0087 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 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

Connector End View Reference

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COMPONENT CONNECTOR END VIEWS - INDEX

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Supplemental Inflatable Restraint System Description and Operation

Electrical Information Reference

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

NOTE:

- **SIR Service Precautions**
- **Inspect all terminals for damage or corrosion when disconnecting connectors. Damage or corrosion in the following requires repair or replacement of the affected component/connector.**
  - **Impact sensor**
  - **inflatable restraint sensing and diagnostic module**
  - **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.**

1. Ignition ON.
2. Verify that DTC B0086 or B0087 symptom byte 39 or 71 is not set as current.
   - **If DTC B0086 or B0087 symptom byte 39 or 71 is set as current**

     Replace the sensor listed below:

   - B0086 - B63RF Side Impact Sensor - Right Front
   - B0087 - B63LR Side Impact Sensor - Left Rear
   - **If DTC B0086 or B0087 symptom byte 39 or 71 is not set as current**
3. Verify that DTC B0086 or B0087 symptom byte 3A is not set as current.
   - **If DTC B0086 or B0087 symptom byte 3A is set as current**

     Replace the appropriate B63 Side Impact Sensor

   - **If DTC B0086 or B0087 symptom byte 3A is not set as current**

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4. Verify that DTC B0086 or B0087 symptom byte 02 or 05 is set as current.
    - **If only DTC B0086 symptom byte 02 or 05 is set as current**

      Refer to Circuit/System Testing - Only DTC B0086 or B0087 is set.
    - **If only DTC B0087 symptom byte 02 or 05 is set as current**

      Refer to Circuit/System Testing - Only DTC B0086 or B0087 is set.
    - **If both DTC B0086 or B0087 symptom byte 02 or 05 is set as current**

      Refer to Circuit/System Testing - Both DTC B0086 and B0087 are set.
    - **If DTC B0086 or B0087 symptom byte 02 or 05 is not set as current**
5. All OK.

Circuit/System Testing

NOTE: **The signal circuit is shared at the K36 Inflatable Restraint Sensing and Diagnostic Module between the B63RF Side Impact Sensor Right Front and the B63LR Side Impact Sensor Left Rear (DTC B0086 and DTC B0087). Therefore a short to ground or short to voltage in either of these signal circuits can set a DTC for both circuits, and an open in either circuit should only set its corresponding DTC.**

Only DTC B0086 or B0087 is set

1. Ignition OFF, disconnect the harness connector at the appropriate B63 Side Impact Sensor. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 10 Ω between the low reference circuit terminal 2 and ground.
    - **If 10 Ω or greater**
    1. Disconnect the X2 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
    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. Ignition ON.
4. Test for less than 10 V between the signal circuit terminal 1 and ground.
    - **If 10 V or greater**
    1. Disconnect the X2 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
    2. Test for less than 1 V between the signal circuit and ground.
        - If 1 V or greater, repair the short to voltage in the circuit.
        - If less than 1 V, replace the K36 Inflatable Restraint Sensing and Diagnostic Module.
    - **If less than 10 V**
5. Disconnect the X2 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.

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6. Test for less than 2 Ω between the B63 Side Impact Sensor signal circuit terminal 1 and the appropriate K36 Inflatable Restraint Sensing and Diagnostic Module signal circuit terminal listed below:
    - Right front signal circuit - terminal 22 X2
    - Left rear signal circuit - terminal 27 X2
    - **If 2 Ω or greater**

      Repair the open/high resistance in the circuit.

    - **If less than 2 Ω**
7. Ignition OFF, reconnect 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**
    1. Replace the B63 Side Impact Sensor.
    2. Verify the DTC does not set.
        - If the DTC sets, replace the K36 Inflatable Restraint Sensing and Diagnostic Module.
        - If the DTC does not set.
    3. All OK.
    - **If the DTC does not set**
10. All OK.

Both DTC B0086 and B0087 are set

1. Ignition OFF. Disconnect the X2 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module. It may take up to 2 min for all vehicle systems to power down.
2. Test for greater than 50k Ω between each signal circuit listed below and ground:
    - Right front signal circuit - terminal 22 X2
    - Left rear signal circuit - terminal 27 X2
    - **If 50k Ω or less**
    1. Disconnect the harness connector at the B63 Side Impact Sensor that failed the test.
    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 B63 Side Impact Sensor.
    - **If greater than 50k Ω**
3. Ignition ON.
4. Test for less than 1 V between the signal circuit terminals listed below and ground:
    - Right front signal circuit - terminal 22 X2
    - Left rear signal circuit - terminal 27 X2
    - **If 1 V or greater**
    1. Ignition OFF. Disconnect the harness connector at the B63 Side Impact Sensor that failed the test. Ignition ON.
    2. Test for less than 1 V between signal circuit and ground.

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- If 1 V or greater, repair the short to voltage in the circuit.
- If less than 1 V, replace the B63 Side Impact Sensor.

- **If less than 1 V**

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

     Replace the K36 Inflatable Restraint Sensing and Diagnostic Module.

   - **If the DTC does not set**
8. All OK.

Repair Instructions

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

- **Airbag Side Impact Sensor Replacement**
- **Airbag Side Impact Rear Sensor Replacement (Crew Cab)Airbag Side Impact Rear Sensor Replacement (Extended Cab)**
- **Control Module References** for inflatable restraint sensing and diagnostic module replacement, programming and setup

DTC B0091: CENTER FRONT IMPACT SENSOR

Diagnostic Instructions

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

DTC Descriptors

DTC B0091

Center Front Impact Sensor

For symptom byte information refer to **Symptom Byte List** .

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Signal	B0091 02	B0091 04 , B0091 05, B0091 71	B0091 01, B0091 05	B0091 08, B0091 39, B0091 0F
Low Reference	B0091 02	B0091 04 , B0091 05, B0091 71	-	-

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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 appropriate air bags. The center front impact sensor and side impact sensors utilize a bidirectional 2-wire circuit. The sensors modulate current on the interface to send identification, state of health, and deployment commands to the inflatable restraint sensing and diagnostic module. The inflatable restraint sensing and diagnostic module serves as a power source and a ground for the sensors. When the ignition is turned ON and input power from the inflatable restraint sensing and diagnostic module is first detected, the sensors respond by performing internal diagnostics and sending an identification to the inflatable restraint sensing and diagnostic module. The inflatable restraint sensing and diagnostic module considers the identification to be valid if the response time is less than 5 s. The sensors continually communicate status messages to the inflatable restraint sensing and diagnostic module, which determines if a fault is present in the sensor circuit. When a fault is detected, the inflatable restraint sensing and diagnostic module may reset the sensors up to 2 times by removing and reapplying power to it. If the fault is still present, the inflatable restraint sensing and diagnostic module will set a DTC.

Conditions for Running the DTC

Ignition voltage is between 9-16 V.

Conditions for Setting the DTC

B0091 02

- The inflatable restraint sensing and diagnostic module has detected the center front impact sensor has been shorted to ground.
- The center front impact sensor current is greater than 23 mA for greater than 5 ms.

B0091 04

The impact sensor has an open or high resistance.

B0091 05

- The impact sensor has an open or high resistance.
- The impact sensor has been shorted to voltage.

B0091 08

The impact sensor has an invalid signal.

B0091 0F

The impact sensor has an erratic signal.

B0091 39

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- The inflatable restraint sensing and diagnostic module has received a Not OK message from the center front impact sensor.
- The inflatable restraint sensing and diagnostic module has not received a message.

B0091 3A

- The inflatable restraint sensing and diagnostic module has received identification message from the center front impact 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 center front impact sensor twice without detecting the correct identification message.

B0091 71

The inflatable restraint sensing and diagnostic module has received invalid serial data from the center front impact 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.
- The SIR system is disabled and no deployments are allowed.

Conditions for Clearing the DTC

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

Diagnostic Aid

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

Terminal fretting, damaged terminals, damaged connectors, 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 05 or 71 is set.

Reference Information

Schematic Reference

SIR Schematics

Connector End View Reference

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- **Circuit Testing**

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

NOTE:

- **Refer to SIR Service Precautions.**
- **Inspect all terminals for damage or corrosion when disconnecting connectors. Damage or corrosion in the following requires repair or replacement of the affected component/connector.**
  - **Front impact sensor**
  - **Side impact sensor**
  - **Inflatable restraint sensing and diagnostic module**
  - **Front impact sensor wiring harness connector**
  - **Side 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 B0091 symptom byte 08, 0F, 3A, 39 or 71 is not set as current.
   - **If DTC B0091 symptom byte 08, 0F, 3A, 39 or 71 is set as current**

     Replace the B59 Front Impact Sensor.

   - **If DTC B0091 symptom byte 08, 0F, 3A, 39 or 71 is not set as current**
2. Verify that DTC B0091 symptom byte 01, 02, 04, or 05 is not set as current.
   - **If DTC B0091 symptom byte 01, 02, 04, or 05 is set as current**

     Refer to Circuit/System Testing.

   - **If DTC B0091 symptom byte 01, 02, 04, 05 is not set as current**
3. All OK.

Circuit/System Testing

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1. Ignition OFF, and all vehicle systems OFF, disconnect the harness connector at the B59 Front Impact Sensor. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 10 Ω between the low reference circuit terminal 2 and ground.
    - **If 10 Ω or greater**
    1. Ignition OFF, disconnect the X2 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
    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**
    1. Disconnect the harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
    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, wait 1 min, test for less than 1 V between the signal circuit terminal 1 and ground.
    - **If 1 V or greater**
    1. Ignition OFF, disconnect the harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module, ignition ON.
    2. Test for less than 1 V between the 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**

NOTE: **When using the MIN MAX function, autorange on the DMM may not function properly. To ensure accurate test results, turn off autorange and manually set the DMM range to 000.0 V.**

5. Ignition OFF, install a DMM between the signal circuit terminal 1 and ground. Set the DMM to capture DC voltage using the MIN MAX function. Turn off autorange and manually set the DMM range to 000.0 V. Ignition ON.
6. Verify the MAX voltage captured by the DMM is between 4-9V.
    - **If less than 4 V**
    1. Disconnect the X2 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
    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
    3. Test for less than 2 Ω in the signal circuit end to end.
        - If 2 Ω or greater, repair the open/high resistance in the circuit.
        - If less than 2 Ω, replace the Inflatable Restraint Sensing and Diagnostic Module.

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- **If greater than 9V**

1. Ignition OFF. Disconnect the X2 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module. Ignition ON.
2. Test for less than 1 V between the signal circuit terminal 1 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 between 4-9V**

7. Ignition OFF, reconnect 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 Front Impact Sensor.

    - **If the DTC does not set**
10. All OK.

Repair Instructions

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

- **Front End Inflatable Restraint Discriminating Sensor Replacement**
- **Control Module References** for inflatable restraint sensing and diagnostic module replacement, programming and setup

DTC B0098: PASSENGER AIR BAG DISABLE SWITCH

Diagnostic Instructions

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

DTC Descriptors

DTC B0098 01

Passenger Air Bag Disable Switch Circuit Short to Battery

DTC B0098 02

Passenger Air Bag Disable Switch Circuit Short to Ground

DTC B0098 04

Passenger Air Bag Disable Switch Circuit Open

Diagnostic Fault Information

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Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Passenger Air Bag Disable Switch Signal	B0098 02	B0098 04	B0098 01	-
Passenger Air Bag Disable Switch Ground	-	B0098 04	B0098 04	-

Circuit/System Description

When the ignition switch is turned to ON, the inflatable restraint sensing and diagnostic module (SDM) will perform turn-on test to diagnose critical malfunctions within inflatable restraint sensing and diagnostic module itself. The inflatable restraint sensing and diagnostic module continuously checks the disable switch position switch and circuit defect by letting the regular voltage flow through the disable switch circuit and verifying the current.

Conditions for Running the DTC

Ignition voltage is between 9-16 V.

Conditions for Setting the DTC

B0098 01

The inflatable restraint sensing and diagnostic module detects a short to voltage in the passenger air bag disable switch signal circuit.

B0098 02

The inflatable restraint sensing and diagnostic module detects a short to ground in the passenger air bag disable switch signal circuit.

B0098 04

The inflatable restraint sensing and diagnostic module detects an open/high resistance in the passenger air bag disable switch signal circuit or the passenger air bag disable switch ground circuit.

Action Taken When the DTC Sets

The inflatable restraint sensing and diagnostic module will ignore the signal from the passenger air bag disable switch and will continuously enable the passenger air bag.

Conditions for Clearing the DTC

- The DTC will be current for as long as the fault is present.
- When the fault is no longer present, the DTC will be a history DTC.
- A history DTC will clear after 50 ignition cycles.

Reference Information

Schematic Reference

SIR Schematics

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Connector End View Reference

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

Observe the scan tool Passenger Air Bag Disabled Switch parameter while commanding the passenger air bag ON and OFF by using the S40 Passenger Air Bag Disable Switch. The value should change between On and Off

Circuit/System Testing

1. Ignition OFF.
2. Disconnect the harness connector at the S40 Passenger Air Bag Disable Switch.
3. Test for less than 30 Ω between the ground circuit terminal 3 and ground.
    - **If 30 Ω or greater**
    1. Ignition OFF, disconnect the harness connector at the K36 inflatable restraint sensing and diagnostic module.
    2. Test for less than 2 Ω in the Passenger Air Bag Disable Switch ground circuit end to end.
        - If 2 Ω or greater, replace the 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 30 Ω**
4. Ignition ON, test for 1-3 V between the signal circuit terminal 1 and ground.
    - **If less than 1 V**
    1. Disconnect the harness connector at the K36 inflatable restraint sensing and diagnostic module.
    2. Test for infinite resistance between the signal circuit and ground.
        - If less than infinite resistance, repair the short to ground on the circuit.
    3. Test for less than 2 Ω in the signal 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 3 V**
    1. Ignition OFF.

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2. Disconnect the harness connector at the K36 inflatable restraint sensing and diagnostic module.
3. Ignition ON.
4. Test for less than 1 V between the signal 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 between 1-3 V**

5. Replace the S40 Passenger Air Bag Disable Switch.

Component Testing

1. Disconnect the harness connector at the S40 Passenger Air Bag Disable Switch.
2. With the switch in the AIR BAG ON position, test for 380-420 Ω between the signal terminal 1 and the ground terminal 3.
    - **If not between 380-420 Ω**

      Replace the S40 Passenger Air Bag Disable Switch.

    - **If between 380-420 Ω**
3. With the switch in the AIR BAG OFF position, test for 95-105 Ω, between the signal terminal 1 and the ground terminal 3.
    - **If not between 95-105 Ω**

      Replace the S40 Passenger Air Bag Disable Switch.

    - **If between 95-105 Ω**
4. All OK.

Repair Instructions

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

- **Instrument Panel Airbag Disable Switch Replacement**
- **Control Module References** for inflatable restraint sensing and diagnostic module replacement, programming and setup

DTC B008F: ROLLOVER PROTECTION DISABLE SWITCH

Diagnostic Instructions

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

DTC Descriptors

DTC B008F 02

Rollover Protection Disable Switch Circuit Short to Ground

DTC B008F 05

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Rollover Protection Disable Switch Circuit High Voltage/Open

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Rollover Protection Disable Switch Signal	B008F 02	B008F 05	B008F 05	-
Rollover Protection Disable Switch Ground	-	B008F 05	-	-

Circuit/System Description

When the ignition switch is turned to ON, the inflatable restraint sensing and diagnostic module (SDM) will perform turn-on test to diagnose critical malfunctions within inflatable restraint sensing and diagnostic module itself. The inflatable restraint sensing and diagnostic module continuously checks the rollover protection disable switch position and circuit defect by letting the regular voltage flow through the rollover protection disable switch circuit and verifying the current.

Conditions for Running the DTC

Ignition voltage is between 9-16 V.

Conditions for Setting the DTC

B008F 02

The inflatable restraint sensing and diagnostic module detects a short to ground in the rollover protection disable switch signal circuit.

B008F 05

The inflatable restraint sensing and diagnostic module detects a short to voltage or an open/high resistance in the rollover protection disable switch signal circuit.

Action Taken When the DTC Sets

The inflatable restraint sensing and diagnostic module will ignore the signal from the passenger air bag disable switch and will continuously enable the passenger instrument panel air bag.

Conditions for Clearing the DTC

- The DTC will be current for as long as the fault is present.
- When the fault is no longer present, the DTC will be a history DTC.
- A history DTC will clear after 50 ignition cycles.

Reference Information

Schematic Reference

SIR Schematics

Connector End View Reference

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

1. Ignition ON.
2. Verify the Rollover Protection indicator turns On and Off while pressing the S135 Roof Rail Air Bag Disable Switch for 3 s.
    - **If the indicator does not change**

      Refer to Circuit/System Testing

    - **If the indicator changes**
3. All OK.

Circuit/System Testing

1. Ignition OFF, and all vehicle systems OFF, disconnect the harness connector at the S135 Roof Rail Air Bag Disable Switch. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 30 Ω between the low reference circuit terminal 3 and ground.
    - **If 30 Ω or greater**
    1. Ignition OFF, disconnect the harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
    2. Test for less than 2 Ω in the rollover protection disable switch ground circuit end to end.
        - If 2 Ω or greater, replace the 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 30 Ω**
3. Ignition ON.
4. Test for B+ between the signal circuit terminal 1 and ground.
    - **If less than B+**
    1. Disconnect the harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
    2. Test for infinite resistance between the signal circuit and ground.
        - If less than infinite resistance, repair the short to ground on the circuit.
    3. Test for less than 2 Ω in the signal circuit end to end.

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- 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 B+**

5. Test or replace the S135 Roof Rail Air Bag Disable Switch.

Component Testing

1. Disconnect the harness connector at the S135 Roof Rail Air Bag Disable Switch.
2. With the switch open, test for 380-420 Ω between the signal terminal 1 and the ground terminal 3.
   - **If not between 380-420 Ω**

     Replace the S135 Roof Rail Air Bag Disable Switch.

   - **If between 380-420 Ω**
3. With the switch pressed, test for 95-105 Ω, between the signal terminal 1 and the ground terminal 3.
   - **If not between 95-105 Ω**

     Replace the S135 Roof Rail Air Bag Disable Switch.

   - **If between 95-105 Ω**
4. All OK.

Repair Instructions

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

- **Rollover Protection Disable Switch Replacement**
- **Control Module References** for inflatable restraint sensing and diagnostic module replacement, programming, and setup

DTC B067A, B067F, OR B0680: ROLLOVER PROTECTION INDICATOR

Diagnostic Instructions

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

DTC Descriptors

DTC B067A 01

Rollover Protection OFF Indicator Circuit Short to Battery

DTC B067A 02

Rollover Protection OFF Indicator Circuit Short to Ground

DTC B067A 04

Rollover Protection OFF Indicator Circuit Open

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DTC B067A 05

Rollover Protection OFF Indicator Circuit High Voltage/Open

DTC B067F 01

Passenger Air Bag On Indicator Circuit Short to Battery

DTC B067F 02

Passenger Air Bag On Indicator Circuit Short to Ground

DTC B067F 04

Passenger Air Bag On Indicator Circuit Open

DTC B067F 05

Passenger Air Bag On Indicator Circuit High Voltage/Open

DTC B0680 01

Passenger Air Bag Off Indicator Circuit Short to Battery

DTC B0680 02

Passenger Air Bag Off Indicator Circuit Short to Ground

DTC B0680 04

Passenger Air Bag Off Indicator Circuit Open

DTC B0680 05

Passenger Air Bag Off Indicator Circuit High Voltage/Open

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Passenger Air Bag OFF Indicator Control	B0680 02	B0680 04, B0680 05	B0680 01, B0680 05	-
Passenger Air Bag ON Indicator Control	B067F 02	B067F 04, B067F 05	B067F 01, B067F 05	-
Rollover Protection OFF Indicator Control	B067A 02	B067A 04, B067A 05	B067A 01, B067A 05	-
Passenger Air Bag Disable Indicator Ground	-	B067A 04, B067A 05, B067F 04, B067F 05, B0680 04, B0680 05	-	-

Circuit/System Description

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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 inflatable restraint sensing and diagnostic module (SDM) receives the appropriate serial data message from the passenger presence module (if equipped) the inflatable restraint sensing and diagnostic module will then provide voltage to the appropriate indicator. When air bag disable switch (if equipped) has been switched to either OFF or ON, the corresponding air bag indicator will be illuminated by the inflatable restraint sensing and diagnostic module. If the vehicle is equipped with a rollover protection disable switch, when pressed and held, will disable rollover protection and the inflatable restraint sensing and diagnostic module will illuminate the rollover protection disabled indicator.

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 improper voltage on the control circuit of the indicator.

Actions Taken When the DTC Sets

- The inflatable restraint sensing and diagnostic module requests the instrument cluster to illuminate the air bag indicator.
- Passenger air bag ON and OFF indicators are disabled.

Conditions for Clearing the DTC

The condition for setting the DTC no longer exists.

Reference Information

Schematic Reference

SIR Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Supplemental Inflatable Restraint System Description and Operation

Electrical Information Reference

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

Scan Tool Reference

Control Module References for scan tool information

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Circuit/System Verification

NOTE: **The passenger air bag ON and OFF indicators may not operate as expected if there are supplemental inflatable restraint (SIR) DTCs. Repair all SIR DTCs before proceeding with this diagnostic.**

1. Ignition ON.
2. Verify the appropriate Indicators turn On and Off when commanded On and Off with a scan tool.
   - **If the indicators do not change**

     Refer to Circuit/System Testing

   - **If the indicators change**
3. 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.**
- **Rollover protection disable indicator.**
- **Passenger air bag disable on/off indicator wiring harness.**
- **Rollover protection disable indicator wiring harness.**

DTC B067A

1. Ignition OFF, and all vehicle systems OFF, disconnect the scan tool, disconnect the harness connector at the P14 Passenger Air Bag Disable Indicator, may take up to 10 min for all systems to shut down.
2. Test for less than 10 Ω between the ground circuit terminal 2 and ground.
   - **If 10 Ω or greater**
   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 Rollover Protection Off Indictor OFF with a scan tool.
4. Verify the test lamp does not illuminate between the control circuit terminal 5 and ground.
   - **If the test lamp illuminates**
   1. Ignition OFF, disconnect the X1 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module. Ignition ON.
   2. Test for less than 1 V between the control circuit and ground.
      - If 1 V or greater, repair the short to voltage on the circuit.
      - If less than 1 V, replace the K36 Inflatable Restraint Sensing and Diagnostic Module.
   - **If the test lamp does not illuminate**
5. Command the Rollover Protection Off Indictor On with a scan tool.

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6. Verify the test lamp illuminates between the control circuit terminal 5 and ground.
    - **If the test lamp does not illuminate**
    1. Ignition OFF. Disconnect the X1 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
    2. Test for infinite resistance between the control circuit and ground.
        - If less than infinite resistance, repair the short to ground on the circuit.
    3. Test for less than 2 Ω in the 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 the test lamp illuminates**
7. Test or replace the P14 Passenger Air Bag Disable Indicator.

DTC B067F

1. Ignition OFF, and all vehicle systems OFF, disconnect the scan tool, disconnect the harness connector at the P14 Passenger Air Bag Disable Indicator, may take up to 10 min for all systems to shut down.
2. Test for less than 10 Ω between the ground circuit terminal 2 and ground.
    - **If 10 Ω or greater**
    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. Command the Passenger Airbag On Indictor OFF with a scan tool.
4. Verify a test lamp does not illuminate between the control circuit terminal 1 and ground.
    - **If the test lamp illuminates**
    1. Ignition OFF, disconnect the X1 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module. Ignition ON.
    2. Test for less than 1 V between the control circuit and ground.
        - If 1 V or greater, repair the short to voltage on the circuit.
        - If less than 1 V, replace the K36 Inflatable Restraint Sensing and Diagnostic Module.
    - **If the test lamp does not illuminate**
5. Command the Passenger Airbag On Indictor On, with a scan tool.
6. Verify the test lamp illuminates between the control circuit terminal 1 and ground.
    - **If the test lamp does not illuminate**
    1. Ignition OFF, disconnect the X1 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
    2. Test for infinite resistance between the control circuit and ground.
        - If less than infinite resistance, repair the short to ground on the circuit.
        - If infinite resistance
    3. Test for less than 2 Ω in the 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.

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- **If the test lamp illuminates**

7. Test or replace the P14 Passenger Air Bag Disable Indicator.

DTC B0680

1. Ignition OFF, and all vehicle systems OFF, disconnect the scan tool, disconnect the harness connector at the P14 Passenger Air Bag Disable Indicator, may take up to 10 min for all systems to shut down.
2. Test for less than 10 Ω between the ground circuit terminal 2 and ground.
    - **If 10 Ω or greater**
    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 Airbag Off Indictor OFF with a scan tool.
4. Verify the test lamp does not illuminate between the control circuit terminal 3 and ground.
    - **If the test lamp illuminates**
    1. Ignition OFF, disconnect the X1 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module. Ignition ON.
    2. Test for less than 1 V between the control circuit and ground.
        - If 1 V or greater, repair the short to voltage on the circuit.
        - If less than 1 V, replace the K36 Inflatable Restraint Sensing and Diagnostic Module.
    - **If the test lamp does not illuminate**
5. Command the Passenger Airbag Off Indictor On with a scan tool.
6. Verify the test lamp illuminates between the control circuit terminal 3 and ground.
    - **If the test lamp does not illuminate**
    1. Ignition OFF. Disconnect the X1 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
    2. Test for infinite resistance between the control circuit and ground.
        - If less than infinite resistance, repair the short to ground on the circuit.
    3. Test for less than 2 Ω in the 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 the test lamp illuminates**
7. Test or replace the P14 Passenger Air Bag Disable Indicator.

Repair Instructions

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

- **Instrument Panel Airbag Arming Status Display Replacement**
- **Control Module References** for control module replacement, programming and setup

DTC B1019: SYSTEM CONFIGURATION ERROR

Diagnostic Instructions

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

DTC Descriptor

DTC 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

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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.

DTC B1019 can set with no other DTCs if a deployment loop, seat belt, or impact sensor circuit is connected to the Inflatable Restraint Sensing and Diagnostic Module and the software calibration does not have that input/output as valid. This causes a mismatch between the scan tool Enable/Disable status and Learned/Not Learned status. The inverse of this, when the calibration has loops or components as equipped but they are not physically connected to the module, can also cause DTC B1019 to set with no other DTCs. The scan tool Enable/Disable status and Learned/Not Learned status information can be found in the "Deployment Loop Configuration Data" and "Sensor Configuration Data" in the scan tool.

Reference Information

Schematic Reference

- **Seat Belt Schematics**
- **SIR Schematics**

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

- **Seat Belt System Description and Operation**
- **Supplemental Inflatable Restraint System Description and Operation**

Electrical Information Reference

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

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.

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

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

- **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**
   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
   2. Reprogram the K36 Inflatable Restraint Sensing and Diagnostic Module. Refer to **Inflatable Restraint Sensing and Diagnostic Module Programming and Setup**
   - **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**
   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
   2. Program the K36 Inflatable Restraint Sensing and Diagnostic Module. Refer to **Inflatable Restraint Sensing and Diagnostic Module Programming and Setup**
   - **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 scan tool Passenger Presence System Enable Status parameter is Enabled.
   - **If the Passenger Presence System Enable Status parameter is not Enabled**

     Refer to **Inflatable Restraint Sensing and Diagnostic Module Programming and Setup**

   - **If the Passenger Presence System parameter is Enabled**
7. Verify the scan tool Passenger Presence System Learn Status parameter is Learned.
   - **If the Passenger Presence System Learn Status parameter is not Learned**
   1. Verify the scan tool can communicate with the passenger presence system.

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

2. Ignition OFF, disconnect the scan tool. It may take up to 2 min for all vehicle systems to power down. Ignition ON.
3. 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**
   - If the DTC is not set as current
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** after completing the repair.

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

PASSENGER PRESENCE SYSTEM REZEROING

Introduction

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

NOTE: The following procedures must be followed:

1. Read this procedure carefully and completely.
2. The PPS will not function properly if the PPS rezeroing procedure is not performed.
3. Perform the **Diagnostic Repair Verification** after successfully completing the rezeroing procedure to ensure the system is functioning properly.

Passenger Presence System (PPS) Rezeroing Procedure

NOTE: Before rezeroing the PPS, the front passenger seat must be completely empty of all items. The presence of any items on the front passenger seat will affect the calibration and operation of the PPS. The passenger seat must be between 0Â°C to 45Â°C (32Â°F to 113Â°F).

1. Empty the front outboard passenger seat.
2. Verify that all SIR and PPS components, connectors, and connector position assurances (CPAs) are properly connected and mounted.
3. Install a scan tool.
4. Turn ON the ignition, with the engine OFF.

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NOTE: **DTC B0081 4B may be set prior to rezeroing the system if the system was replaced with a service kit. All other SIR and PPS DTCs must be cleared before rezeroing the PPS. The presence of current or history DTCs will prevent the PPS from rezeroing and may set additional DTCs.**

5. Use the scan tool in order to clear the SIR and PPS DTCs.
6. With a scan tool, request the Passenger Presence Sensor Learn procedure.
7. Initiate the Passenger Presence Sensor Learn procedure. The PPS will illuminate both PASSENGER AIR BAG ON and OFF indicators until this procedure has been completed.
8. When the Passenger Presence Sensor Learn procedure has been successfully completed, the PPS will display the current system status.
9. If the Passenger Presence Sensor Learn procedure was unsuccessful, repeat this procedure. Due to the communication status between the SDM and the PPS module, this procedure may have to be repeated until a successful rezero attempt has been achieved.
10. After the PPS has been successfully rezeroed, perform the **Diagnostic Repair Verification** .

SYMPTOMS - SIR

NOTE: **Complete the following steps before using the symptom tables:**

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

Visual/Physical Inspection

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

Intermittent

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

Symptom List

Refer to **Airbag Indicator Malfunction (Driver)Airbag Indicator Malfunction (Passenger)** in order to diagnose the symptom.

AIRBAG INDICATOR MALFUNCTION (DRIVER)

Diagnostic Instructions

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

Circuit/System Description

When the ignition is turned ON the 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** .

Reference Information

Schematic Reference

SIR Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Supplemental Inflatable Restraint System Description and Operation

Electrical Information Reference

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

1. Verify the air bag indicator turns ON and OFF when commanding the All Indicators ON and OFF with a scan tool.
    - **If the air bag indicator does not turn ON or OFF**

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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** after completing the repair.

- **SIR/SRS Wiring Repairs**
- **Control Module References** for instrument cluster or inflatable restraint sensing and diagnostic module replacement, programming and setup

AIRBAG INDICATOR MALFUNCTION (PASSENGER)

Diagnostic Instructions

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

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Passenger Air Bag OFF Indicator Control	B0680 02	B0680 04, B0680 05	B0680 01, B0680 05	-
Passenger Air Bag ON Indicator Control	B067F 02	B067F 04, B067F 05	B067F 01, B067F 05	-
Rollover Protection OFF Indicator Control	B067A 02	B067A 04, B067A 05	B067A 01, B067A 05	-
Passenger Air Bag Disable Indicator Ground	-	B067A 04, B067A 05, B067F 04, B067F 05, B0680 04, B0680 05	-	-

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 inflatable restraint sensing and diagnostic module (SDM) receives the appropriate serial data message from the passenger presence module (if equipped) the inflatable restraint sensing and diagnostic module will then provide voltage to the appropriate indicator. When air bag disable switch (if equipped) has been switched to either OFF or ON, the corresponding air bag indicator will be illuminated by the inflatable restraint sensing and diagnostic module. If the vehicle is equipped with a rollover protection disable switch, when pressed and held, will disable rollover protection and the inflatable restraint sensing and diagnostic module will illuminate the rollover protection disabled indicator.

Reference Information

Schematic Reference

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SIR Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Supplemental Inflatable Restraint System Description and Operation

Electrical Information Reference

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

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**

   - **If no other K36 Inflatable Restraint Sensing and Diagnostic Module DTCs are set**
3. Verify the appropriate Indicators turn On and Off when commanded On and Off with a scan tool.
   - **If the indicators do not change**

     Refer to Circuit/System Testing

   - **If the 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.**
- **Rollover protection disable indicator.**
- **Passenger air bag disable on/off indicator wiring harness.**
- **Rollover protection disable indicator wiring harness.**

1. Ignition OFF, and all vehicle systems OFF, disconnect the scan tool, disconnect the harness connector at the P14 Passenger Air Bag Disable Indicator, wait 2 min.

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2. Test for less than 10 Ω between the ground circuit terminal 2 and ground.
    - **If 10 Ω or greater**
    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 Airbag Off Indictor OFF with a scan tool.
4. Verify the test lamp does not illuminate between the control circuit terminal 3 and ground.
    - **If the test lamp illuminates**
    1. Ignition OFF, disconnect the X1 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module. Ignition ON.
    2. Test for less than 1 V between the control circuit and ground.
        - If 1 V or greater, repair the short to voltage on the circuit.
        - If less than 1 V, replace the K36 Inflatable Restraint Sensing and Diagnostic Module.
    - **If the test lamp does not illuminate**
5. Command the Passenger Airbag Off Indictor On with a scan tool.
6. Verify the test lamp illuminates between the control circuit terminal 3 and ground.
    - **If the test lamp does not illuminate**
    1. Ignition OFF. Disconnect the X1 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
    2. Test for infinite resistance between the control circuit and ground.
        - If less than infinite resistance, repair the short to ground on the circuit.
    3. Test for less than 2 Ω in the 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 the test lamp illuminates**
7. Command the Passenger Airbag On Indictor OFF with a scan tool.
8. Verify a test lamp does not illuminate between the control circuit terminal 1 and ground.
    - **If the test lamp illuminates**
    1. Ignition OFF, disconnect the X1 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module. Ignition ON.
    2. Test for less than 1 V between the control circuit and ground.
        - If 1 V or greater, repair the short to voltage on the circuit.
        - If less than 1 V, replace the K36 Inflatable Restraint Sensing and Diagnostic Module.
    - **If the test lamp does not illuminate**
9. Command the Passenger Airbag On Indictor On, with a scan tool.
10. Verify the test lamp illuminates between the control circuit terminal 1 and ground.
    - **If the test lamp does not illuminate**
    1. Ignition OFF, disconnect the X1 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
    2. Test for infinite resistance between the control circuit and ground.

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

3. Test for less than 2 Ω in the 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 the test lamp illuminates**

11. Verify the vehicle is equipped with RPO C9I.
    - **If not equipped with RPO C9I**

      Replace the P14 Passenger Air Bag Disable Indicator.

    - **If equipped with RPO C9I**
12. Ignition ON, command the Rollover Protection Off Indictor OFF with a scan tool.
13. Verify the test lamp does not illuminate between the control circuit terminal 5 and ground.
    - **If the test lamp illuminates**

    1. Ignition OFF, disconnect the X1 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module. Ignition ON.
    2. Test for less than 1 V between the control circuit and ground.
       - If 1 V or greater, repair the short to voltage on the circuit.
       - If less than 1 V, replace the K36 Inflatable Restraint Sensing and Diagnostic Module.

    - **If the test lamp does not illuminate**
14. Command the Rollover Protection Off Indictor On with a scan tool.
15. Verify the test lamp illuminates between the control circuit terminal 5 and ground.
    - **If the test lamp does not illuminate**

    1. Ignition OFF. Disconnect the X1 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
    2. Test for infinite resistance between the control circuit and ground.
       - If less than infinite resistance, repair the short to ground on the circuit.
    3. Test for less than 2 Ω in the 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 the test lamp illuminates**
16. Test or replace the P14 Passenger Air Bag Disable Indicator.

Repair Instructions

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

- **Instrument Panel Airbag Arming Status Display Replacement**
- **Control Module References** for 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

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various locations around a vehicle. To find the location of the SIR components refer to **Supplemental Inflatable Restraint System Description and Operation**.

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

Condition	Action
If the vehicle was involved in an accident with an air bag deployment.	Disconnect the negative battery cable(s) *. Refer to **Repairs and Inspections Required After a Collision**.
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
* DTC's may 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 85Â°C (185Â°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 80 cm (31.5 Inches) or greater:

- Inflatable Restraint Sensing and Diagnostic Module (SDM)

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- Any air bag
- Driver steering wheel air bag coil
- Any impact sensor
- Seat belt anchor and/or retractor pretensioners
- Passenger presence module and/or occupant sensor

Disabling Procedure - Air Bag Fuse

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

WARNING: The SDM may have more than one fused power input. To ensure there is no unwanted SIR deployment, personal injury, or unnecessary SIR system repairs, remove all fuses supplying power to the SDM. With all SDM fuses removed and the ignition switch in the ON position, the AIR BAG warning indicator illuminates. This is normal operation, and does not indicate a SIR system malfunction.

3. Locate and remove the fuse(s) supplying power to the Inflatable Restraint Sensing and Diagnostic Module. Refer to **SIR Schematics**, or **Electrical Center Identification Views** **Electrical Center Identification Views** .
4. Wait 2 minutes before working on the system.

Enabling Procedure - Air Bag Fuse

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

Disabling Procedure - Negative Battery Cable

1. Turn the steering wheel so that the vehicles wheels are pointing straight ahead.
2. Place the ignition in the OFF position.
3. Disconnect the negative battery cable from the battery. Refer to **Battery Negative Cable Disconnection and Connection (L96 LC8)** **Battery Negative Cable Disconnection and Connection (L83, L8B, LV3)** **Battery Negative Cable Disconnection and Connection (Dual Battery)** **Battery Negative Cable Disconnection and Connection (L5P)** .
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 (L96 LC8)** **Battery Negative Cable Disconnection and Connection (L83, L8B, LV3)** **Battery Negative Cable Disconnection and Connection (Dual Battery)** **Battery Negative Cable**

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Disconnection and Connection (L5P) .

3. Turn the ignition switch to the ON position. The AIR BAG indicator will illuminate or flash then turn OFF.
4. Perform the Diagnostic System Check - Vehicle if the AIR BAG warning indicator does not operate as described. Refer to Diagnostic System Check - Vehicle .

REPAIR INSTRUCTIONS

SIR SERVICE PRECAUTIONS

General Service Instructions

WARNING: If a service procedure indicates that a module is to be replaced, a new production unit MUST be ordered from the GM Parts Catalog or certified supplier. Using a module that has been reset by a 3rd party company is strictly prohibited. Not using a new production unit may result in improper performance of the safety system in the event of an accident, which may result in bodily injury.

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 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.

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 85 Â°C (185 Â°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 80 cm (31.49 in) or greater:

- Inflatable Restraint Sensing and Diagnostic Module
- Passenger instrument panel air bag

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- 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
- Knee air bag

AIRBAG SIDE IMPACT SENSOR REPLACEMENT

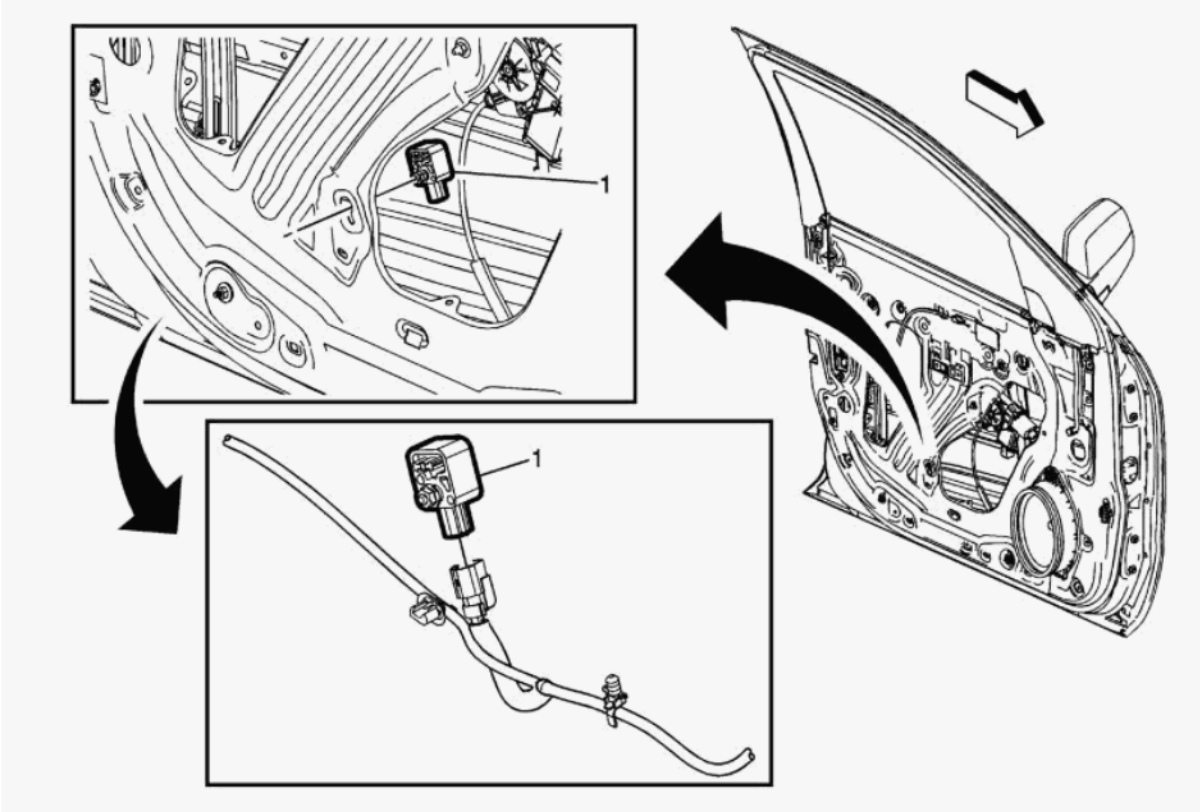


Fig. 7: Airbag Side Impact Sensor
Courtesy of GENERAL MOTORS COMPANY

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**	

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Callout	Component Name
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**.
2. Remove the front side door trim panel. Refer to **Front Side Door Trim Replacement (With A31)**

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Callout	Component Name
	Front Side Door Trim Replacement (Without A31) .
1	Airbag Side Impact Sensor Assembly **CAUTION:** **Refer to Fastener Caution .** **Procedure** 1. Disconnect the 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. **NOTE:** **The sensor is located on the inside of the front door inner panel.** **Tighten** 7.5 N.m (66 lb in)

ROLLOVER PROTECTION DISABLE SWITCH REPLACEMENT

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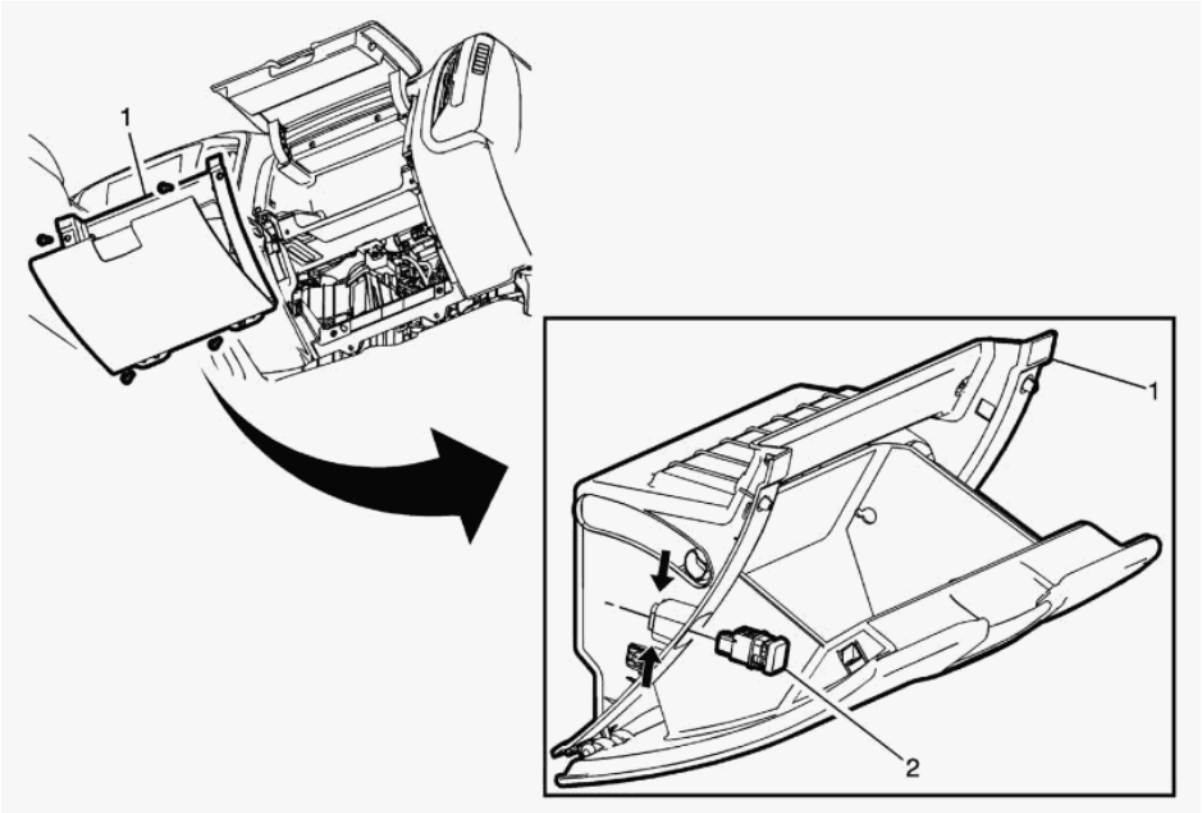


Fig. 8: Rollover Protection Disable Switch
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Instrument Panel Compartment Refer to **Instrument Panel Compartment Replacement** .
2	Rollover Protection Disable Switch **Procedure** Using the appropriate tool, depress the tabs on the switch to remove.

AIRBAG SENSING AND DIAGNOSTIC MODULE REPLACEMENT (CREW CAB WITHOUT HP5)

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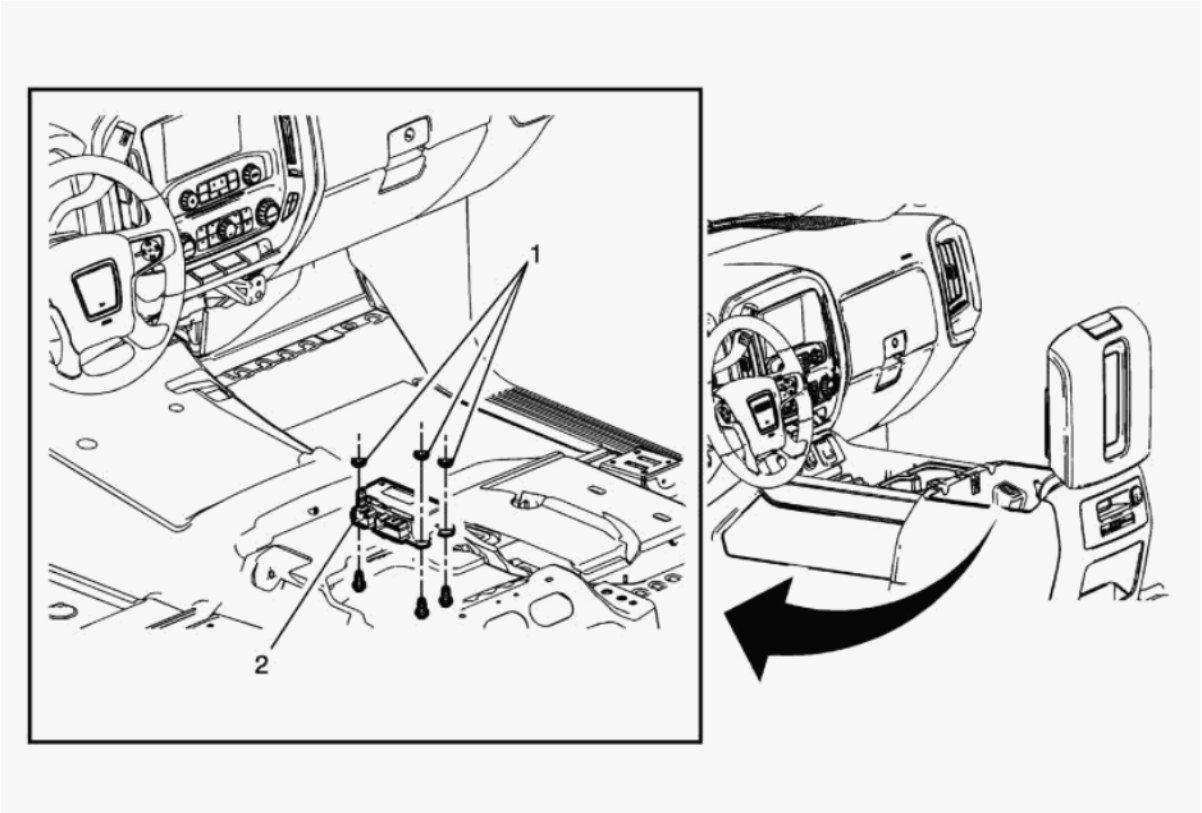


Fig. 9: Airbag Sensing and Diagnostic Module (Crew Cab Without HP5)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
WARNING: **Do not strike or jolt the inflatable restraint Sensing and Diagnostic Module (SDM). Before applying power to the SDM, make sure that it is securely fastened. Failure to observe the correct installation procedure could cause Supplemental**	

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Callout	Component Name
Inflatable Restraint (SIR) deployment, personal injury, or unnecessary SIR system repairs. **WARNING:** **Refer to SIR Warning .** **Preliminary Procedures** 1. Disable the supplemental inflatable restraint (SIR) system. Refer to **SIR Disabling and Enabling**. 2. Remove the front floor console front compartment cover. Refer to **Front Floor Console Front Compartment Cover Replacement** . 3. Disconnect the electrical connector.	
1	Airbag Sensing and Diagnostic Module Nut (Qty: 3) **CAUTION:** **Refer to Fastener Caution .** **Tighten** 9 N.m (80 lb in)
2	Airbag Sensing and Diagnostic Module Assembly **Procedure** If installing a replacement module, program the module. Refer to **Control Module References** .

AIRBAG SENSING AND DIAGNOSTIC MODULE REPLACEMENT (EXTENDED CAB, REGULAR CAB WITHOUT HP5)

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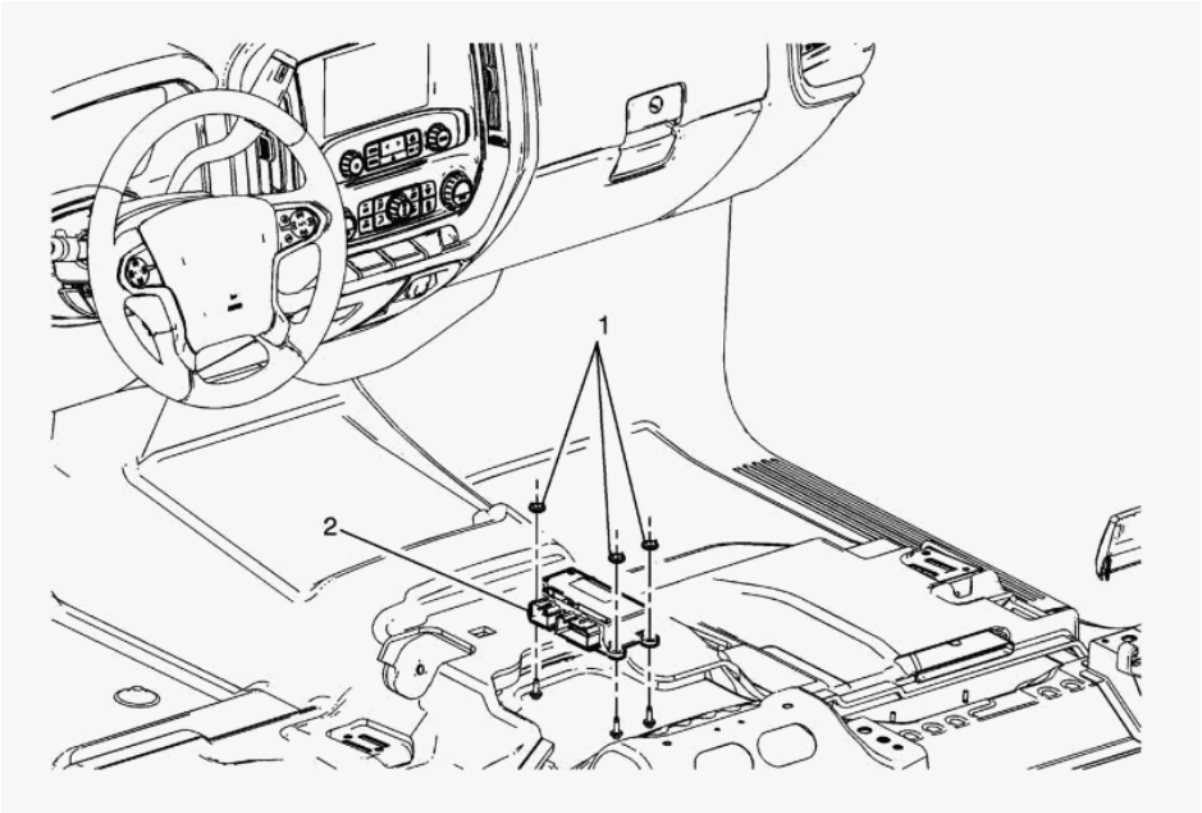


Fig. 10: Airbag Sensing and Diagnostic Module (Extended Cab, Regular Cab Without HP5)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
WARNING: **Do not strike or jolt the inflatable restraint Sensing and Diagnostic Module (SDM). Before applying power to the SDM, make sure that it is securely fastened. Failure to observe the correct installation procedure could cause Supplemental**	

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Callout	Component Name
Inflatable Restraint (SIR) deployment, personal injury, or unnecessary SIR system repairs. **WARNING:** **Refer to SIR Warning .** **Preliminary Procedures** 1. Disable the supplemental inflatable restraint (SIR) system. Refer to **SIR Disabling and Enabling**. 2. Remove the front center seat. Refer to **Front Center Seat Removal and Installation (Except HP5)** 3. Disconnect the electrical connector.	
1	Airbag Sensing and Diagnostic Module Nut (Qty: 3) **CAUTION:** **Refer to Fastener Caution .** **Tighten** 9 N.m (80 lb in)
2	Airbag Sensing and Diagnostic Module Assembly **Procedure** If installing a replacement module, program the module. Refer to **Control Module References** .

AIRBAG SENSING AND DIAGNOSTIC MODULE REPLACEMENT (CREW CAB WITH HP5)

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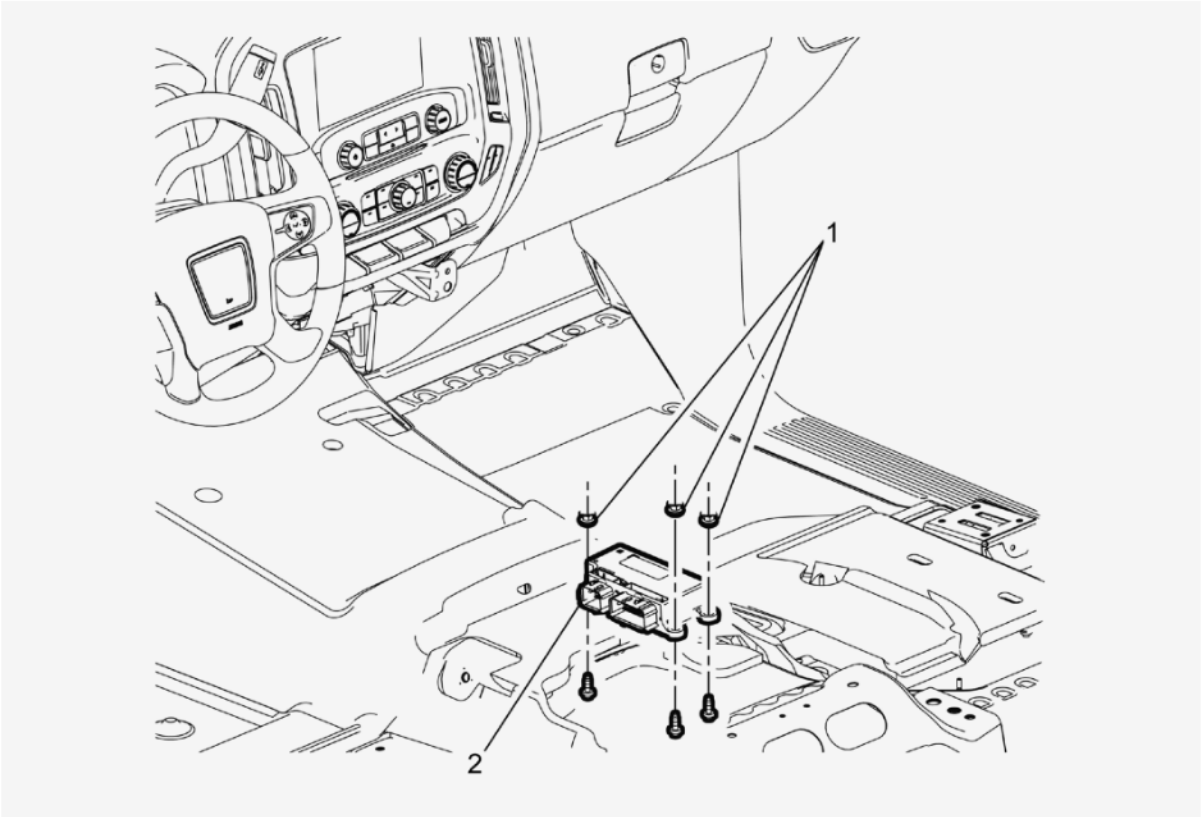


Fig. 11: Airbag Sensing and Diagnostic Module (Crew Cab With HP5)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
WARNING: **Do not strike or jolt the inflatable restraint Sensing and Diagnostic Module (SDM). Before applying power to the SDM, make sure that it is securely fastened. Failure to observe the correct installation procedure could cause Supplemental**	

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Callout	Component Name
Inflatable Restraint (SIR) deployment, personal injury, or unnecessary SIR system repairs. **WARNING:** **Refer to SIR Warning .** **Preliminary Procedures** 1. Disable the supplemental inflatable restraint (SIR) system. Refer to **SIR Disabling and Enabling**. 2. Remove the high voltage battery. Refer to **High Voltage Battery Replacement and Shipping Preparation (with Center Console)** **High Voltage Battery Replacement and Shipping Preparation (with Front Center Seat)** . 3. Disconnect the electrical connector.	
1	Airbag Sensing and Diagnostic Module Nut (Qty: 3) **CAUTION:** **Refer to Fastener Caution .** **Tighten** 9 N.m (80 lb in)
2	Airbag Sensing and Diagnostic Module Assembly **Procedure** If installing a replacement module, program the module. Refer to **Control Module References** .

AIRBAG SENSING AND DIAGNOSTIC MODULE REPLACEMENT (EXTENDED CAB, REGULAR CAB WITH HP5)

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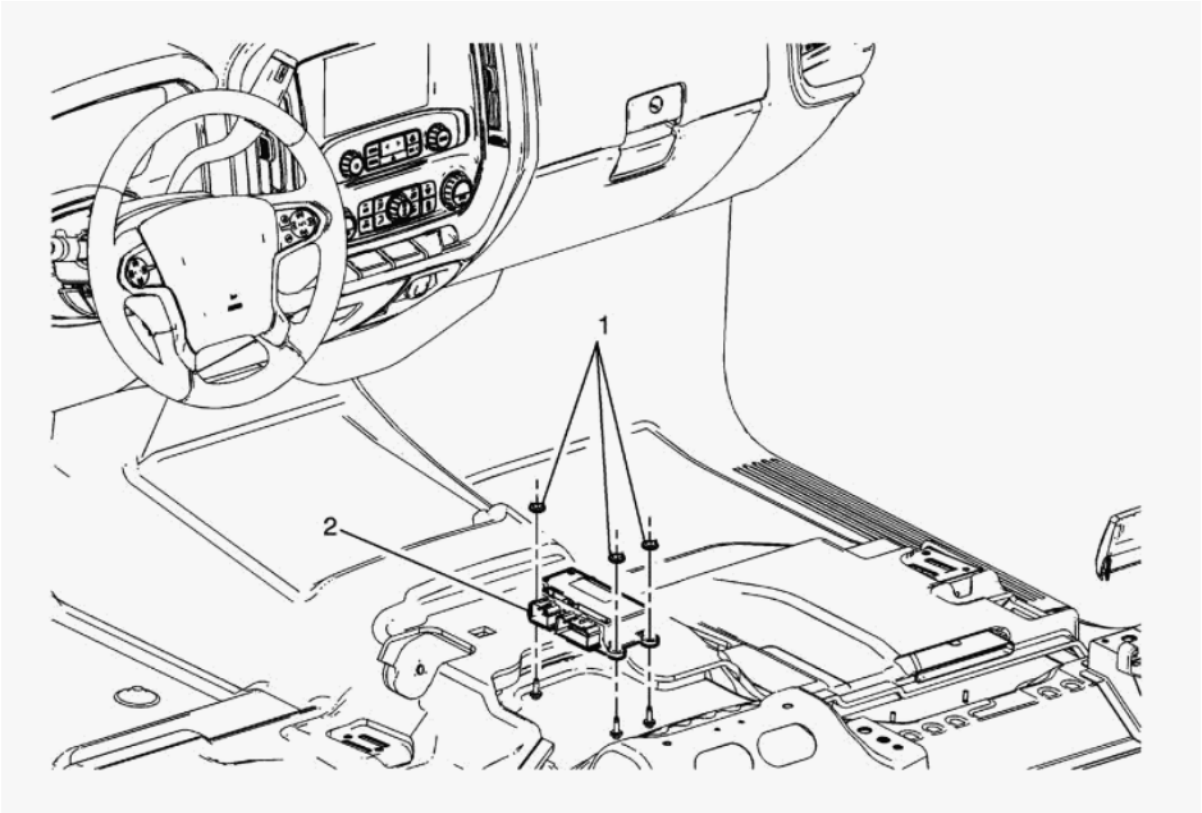


Fig. 12: Airbag Sensing and Diagnostic Module (Extended Cab, Regular Cab With HP5)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
WARNING: Do not strike or jolt the inflatable restraint Sensing and Diagnostic Module (SDM). Before applying power to the SDM, make sure that it is securely fastened. Failure to observe the correct installation procedure could cause Supplemental	

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Callout	Component Name
Inflatable Restraint (SIR) deployment, personal injury, or unnecessary SIR system repairs. **WARNING:** **Refer to SIR Warning .** **Preliminary Procedures** 1. Disable the high voltage system. Refer to **High Voltage Disabling** . 2. Disable the supplemental inflatable restraint (SIR) system. Refer to **SIR Disabling and Enabling**. 3. Remove the high voltage battery. Refer to **High Voltage Battery Replacement and Shipping Preparation (with Center Console)** **High Voltage Battery Replacement and Shipping Preparation (with Front Center Seat)** . 4. Disconnect the electrical connector.	
1	Airbag Sensing and Diagnostic Module Nut (Qty: 3) **CAUTION:** **Refer to Fastener Caution .** **Tighten** 9 N.m (80 lb in)
2	Airbag Sensing and Diagnostic Module Assembly **Procedure** If installing a replacement module, program the module. Refer to **Control Module References** .

STEERING WHEEL AIRBAG REPLACEMENT

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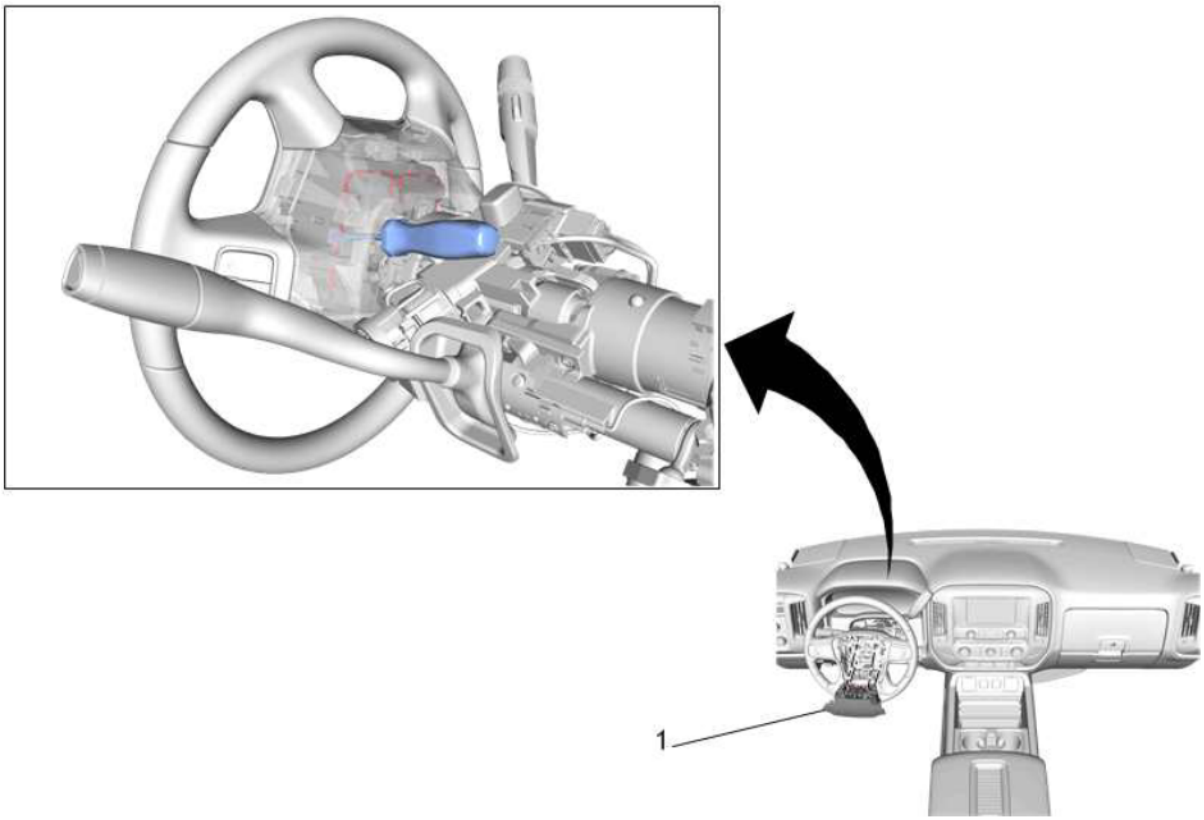


Fig. 13: Steering Wheel Airbag (Chevrolet / GMC)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
WARNING: **Refer to SIR Inflator Module Handling and Storage Warning .** **WARNING:** **Refer to SIR Warning .** **Preliminary Procedure** 1. Remove the steering column shroud. Refer to **Steering Column Shroud Replacement (Manual Tilt) Steering Column Shroud Replacement (Manual Tilt and Telescope)** . 2. Disable the SIR system. Refer to **SIR Disabling and Enabling**.	
1	Steering Wheel Inflatable Restraint Module **WARNING:**

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Callout	Component Name
	After installation of the steering wheel airbag module to the steering wheel, slightly pull the module outward. If there is no give on the airbag module then it is secured correctly. If the airbag module is not fully attached personal injury could result. **Procedure** 1. Rotate steering wheel counter clockwise to line up lower left hand spoke with the ignition key or lower right hand spoke with turn signal. 2. From the backside of the steering wheel fully insert a small screwdriver or equivalent tool at a slight angle pointing towards the top of the steering wheel. 3. Apply and keep constant pressure on handle as close to upper spoke above the metal steering wheel hook. Lift the screwdriver handle up to push spring toward the center of the steering wheel, at the same time pull out on the steering wheel airbag cover to release. Rotate and repeat the steps to release the other side. 4. Release the connector position assurance (CPA) retainer. 5. Disconnect the electrical connectors. 6. Refer to **Inflatable Restraint Module Handling and Scrapping**.

STEERING WHEEL AIRBAG COIL REPLACEMENT

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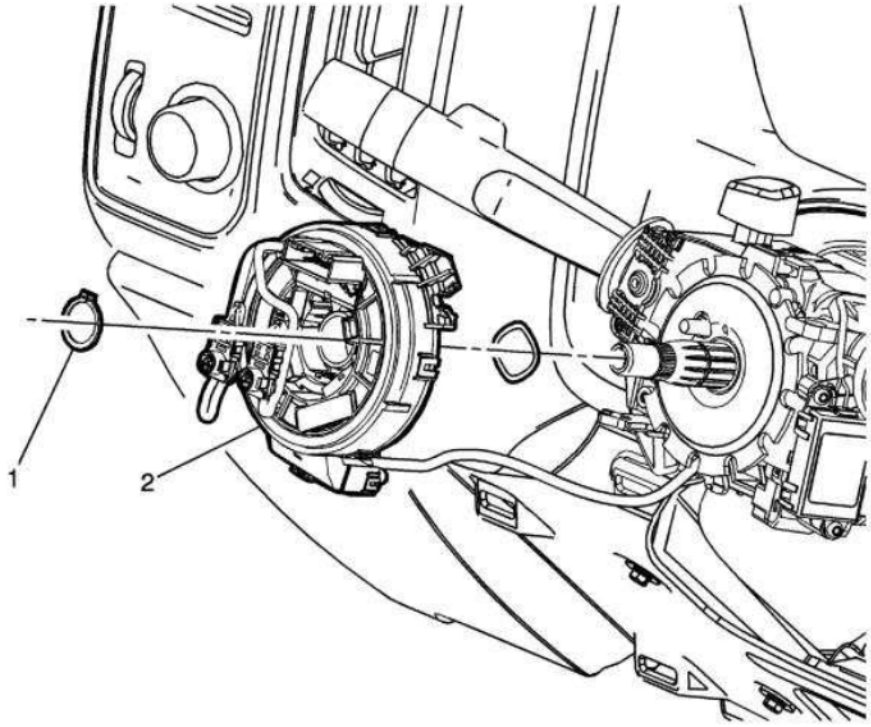


Fig. 14: Steering Wheel Airbag Coil
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
CAUTION: With wheels of the vehicle facing straight ahead, secure the steering wheel utilizing steering column anti-rotation pin, steering column lock, or a strap to prevent rotation. Locking of the steering column will prevent damage and a possible malfunction of the SIR system. The steering wheel must be secured in position before	

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Callout	Component Name
disconnecting the following components: • **The steering column** • **The intermediate shaft(s)** • **The steering gear** **After disconnecting these components, do not rotate the steering wheel or move the front tires and wheels. Failure to follow this procedure may cause the SIR coil assembly to become un-centered and cause possible damage to the SIR coil. If you think the SIR coil has became un-centered, refer to your specific SIR coil's centering procedure to re-center SIR Coil.** **Preliminary Procedures** 1. **Steering Wheel Replacement** 2. **Steering Column Shroud Replacement (Manual Tilt)** **Steering Column Shroud Replacement (Manual Tilt and Telescope)** 3. **Instrument Panel Knee Bolster Replacement** 4. Disconnect the electrical connectors.	
1	Steering Wheel Airbag Coil Retaining Ring

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Callout	Component Name
	CAUTION: **Refer to Procedure Fastener Caution.** 1. With the front wheels of the vehicle in the straight ahead position, use the **CH-42640** anti-rotation pin to lock the steering column. The ignition and start switch should be in the OFF-LOCK position. 2. Remove the steering wheel airbag coil retaining ring. DISCARD the retaining ring. 3. Install a NEW steering wheel airbag coil retaining ring. **Special Tools** **CH-42640** Steering Column Anti-Rotation Pin Equivalent regional tools:**Special Tools**
2	Steering Wheel Airbag Coil **Procedure** 1. Ensure the steering wheel airbag coil wave washer is in place. 2. Ensure the steering wheel airbag coil is CENTERED during installation. **Airbag Steering Wheel Module Coil Centering** 3. Align the steering wheel airbag coil with the turn signal switch cancel cam and seat the coil firmly. **NOTE:** • **After removing the steering wheel airbag coil, secure the steering wheel airbag coil wave washer until installation of the coil. Do NOT leave the washer off during**

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Callout	Component Name
	installation of the coil. • Do NOT remove the centering tab from the steering wheel airbag coil until the installation is complete. If the centering tab is missing then re-center the assembly using the appropriate centering procedure.

AIRBAG STEERING WHEEL MODULE COIL CENTERING

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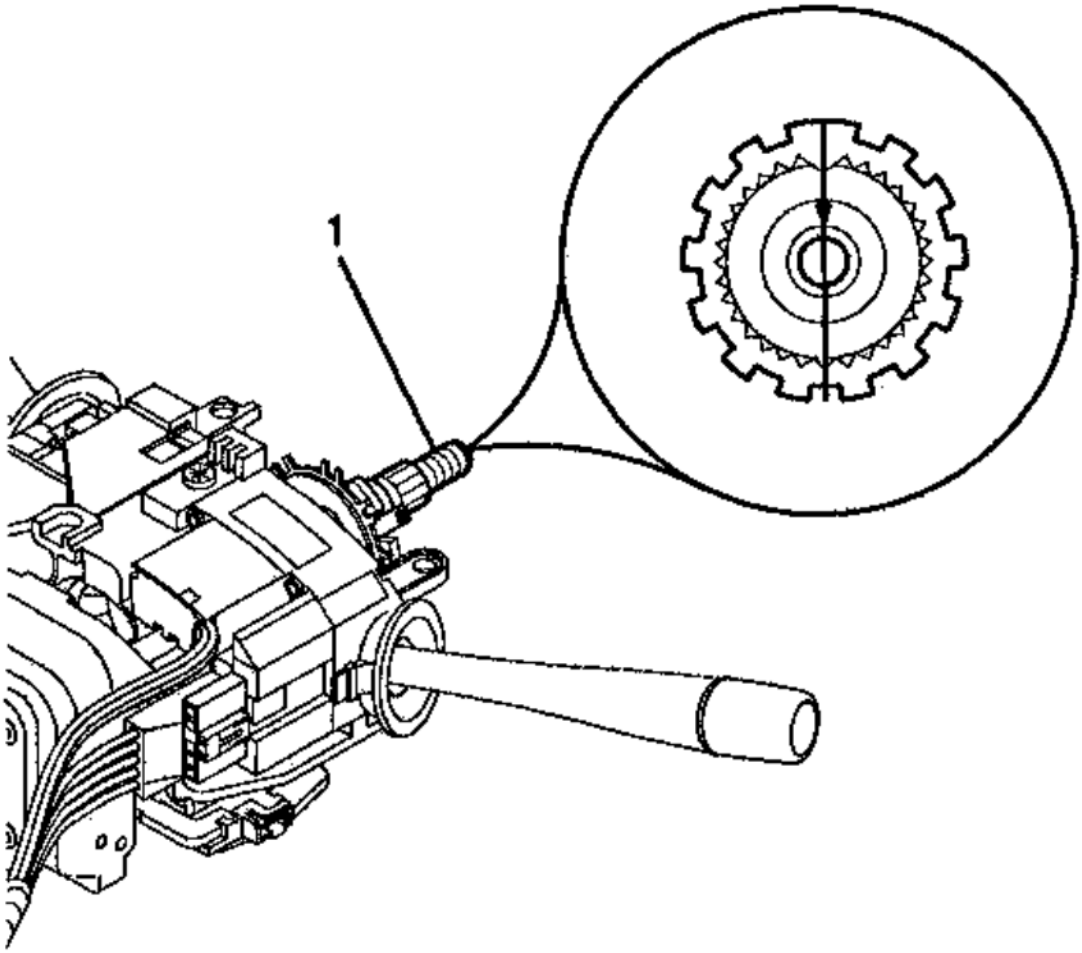


Fig. 15: View Of Block Tooth Of Steering Shaft Assembly In 12 O'clock Position
Courtesy of GENERAL MOTORS COMPANY

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

1. Verify the following conditions before centering the SIR coil:
   - The front wheels of the vehicle are in the straight ahead position.
   - The block tooth (1) of the steering shaft assembly is in the 12 o'clock position.
   - The ignition switch is in the LOCK position.

NOTE: If a double wire harness strap is installed onto the wire harness assembly and the column, you must reuse the holder for the wire straps during the installation.

2. Remove the wire harness strap or straps where necessary.

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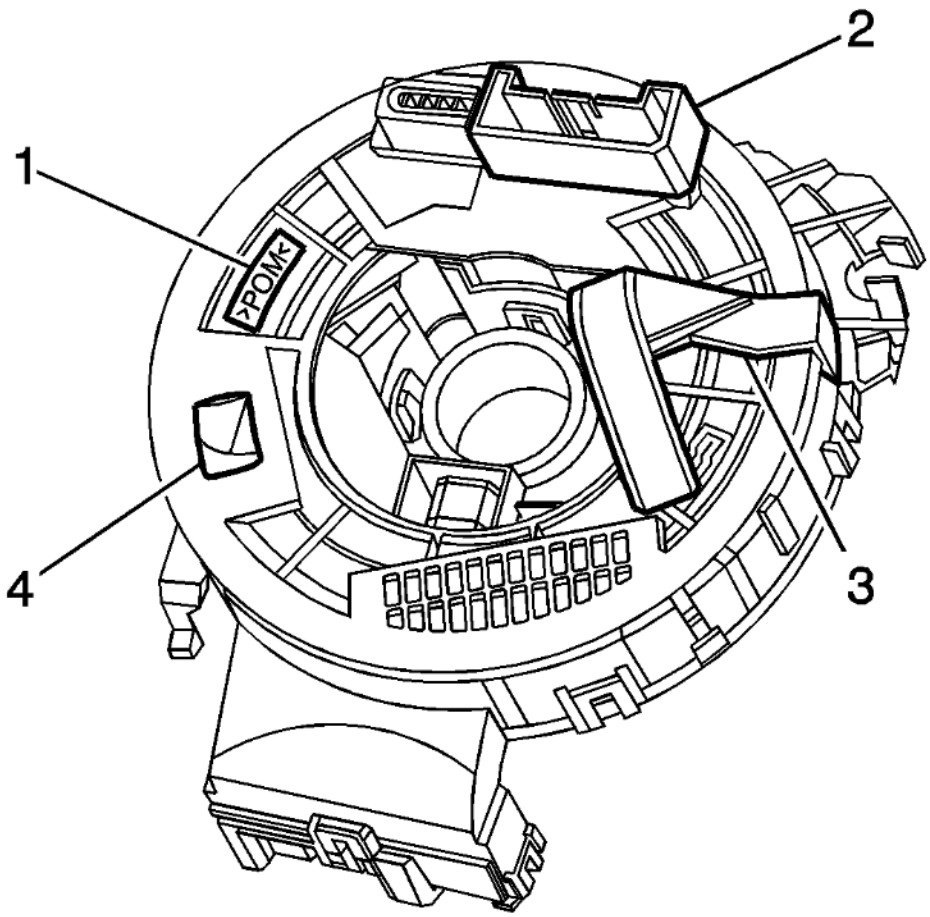


Fig. 16: View Of Coil POM Letters
Courtesy of GENERAL MOTORS COMPANY

3. Hold the SIR coil and look at the side with the letters POM (1).
4. Rotate the coil hub clockwise until the coil ribbon stops.

CAUTION: Do not rotate the SIR coil more than 3 turns counterclockwise from the center position. There is no stop in the counterclockwise direction. Rotating the SIR coil more than 3 turns counterclockwise from the center position will damage the SIR coil, causing an inflatable restraint malfunction.

5. From the clockwise stop, rotate the coil hub slowly counterclockwise approximately 3.3 turns. Place the uplead connector (2) in the 12 o'clock position. Ensure the flat wire cable loop appears in the centering window (4). This is the CENTER position.
6. If you have the orange lock pin (3), use the lock pin to lock the SIR coil in the center position.

   If you do not have the orange lock pin, hold the SIR coil in the center position.

7. Align the SIR coil with the horn tower and slide the SIR coil onto the steering shaft assembly.
8. If a double wire harness strap is installed onto the wire harness assembly and the column, you must route

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the wires up against the steering 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.

INSTRUMENT PANEL AIRBAG REPLACEMENT

Removal Procedure

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

WARNING: Refer to SIR Warning .

1. Disable the SIR system. Refer to **SIR Disabling and Enabling**.
2. Remove the instrument panel assembly. Refer to **Instrument Panel Assembly Replacement** .

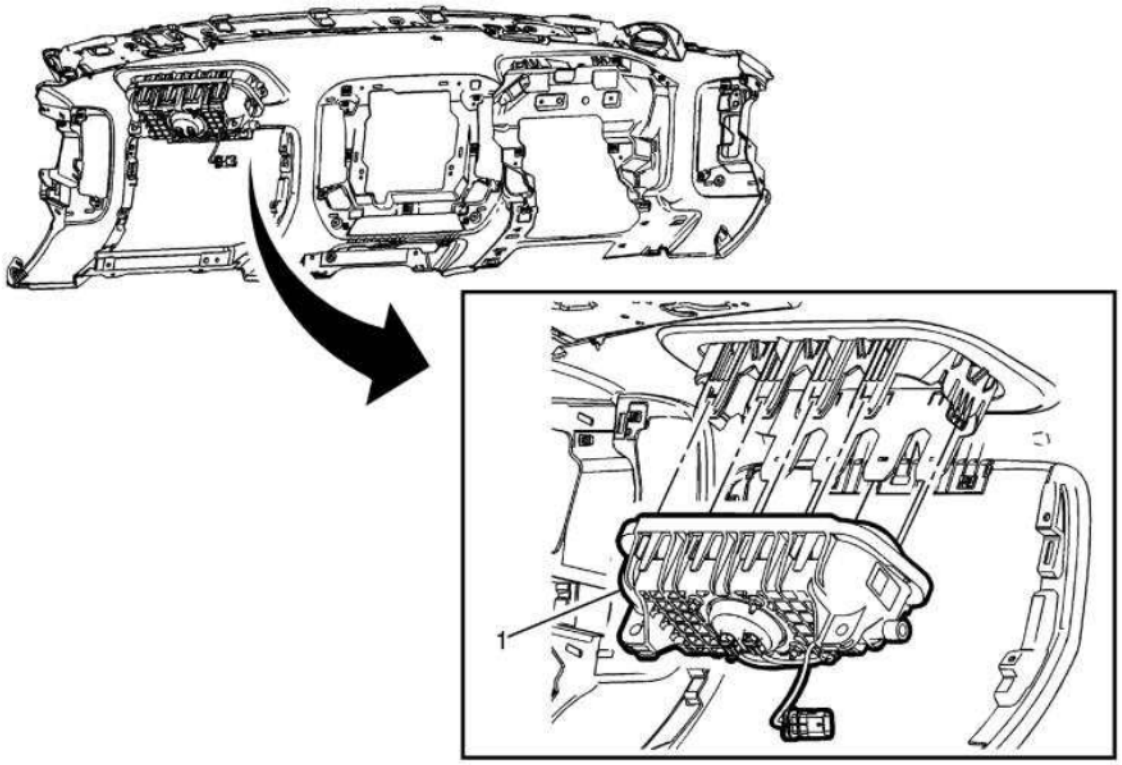


Fig. 17: Instrument Panel Airbag
Courtesy of GENERAL MOTORS COMPANY

NOTE: Ensure that the wiring harness is not damaged and connectors on the airbag are not disturbed during the procedure.

3. Insert a wood straight edge (1), one per side behind all locking tabs, to simultaneously release the instrument panel airbag housing (2) from instrument panel (I/P) chute without overextending the airbag locking tabs. Use a wood straight edge that is approximately 50.8 cm long, 5 mm thick (20 in long, 0.20 in thick) with a rounded edge.
4. Refer to **Inflatable Restraint Module Handling and Scrapping**.

Installation Procedure

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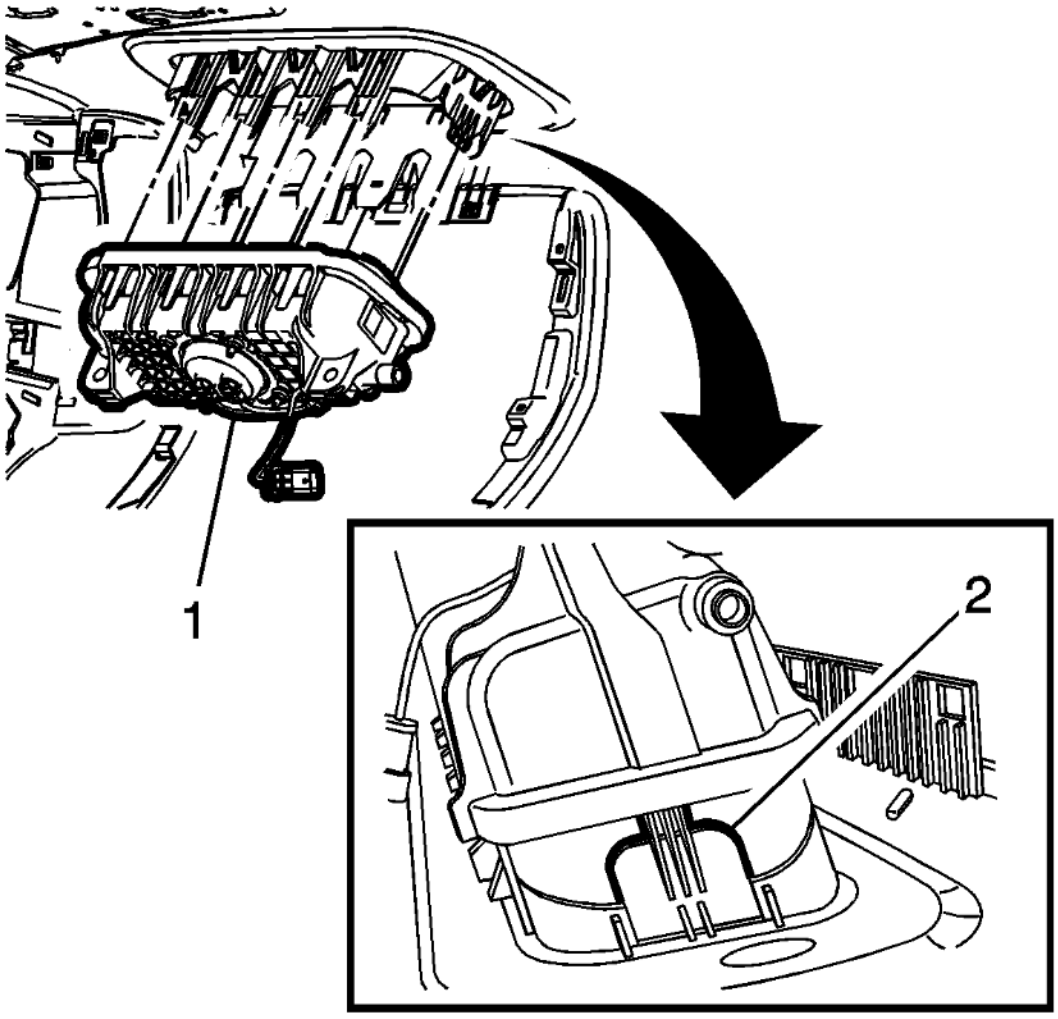


Fig. 18: Instrument Panel Airbag
Courtesy of GENERAL MOTORS COMPANY

1. While installing the airbag into the I/P chute (1) (white in color) ensure that the side tabs are aligned with the slots on airbag housing (dark colored).
2. Push on the airbag module with slight rocking motion to engage all tabs with the chute. After audible click of engagement, pull gently on the airbag module to ensure that snaps are engaged.
3. Enable the SIR system. Refer to **SIR Disabling and Enabling**.

AIRBAG FRONT PASSENGER PRESENCE MODULE REPLACEMENT

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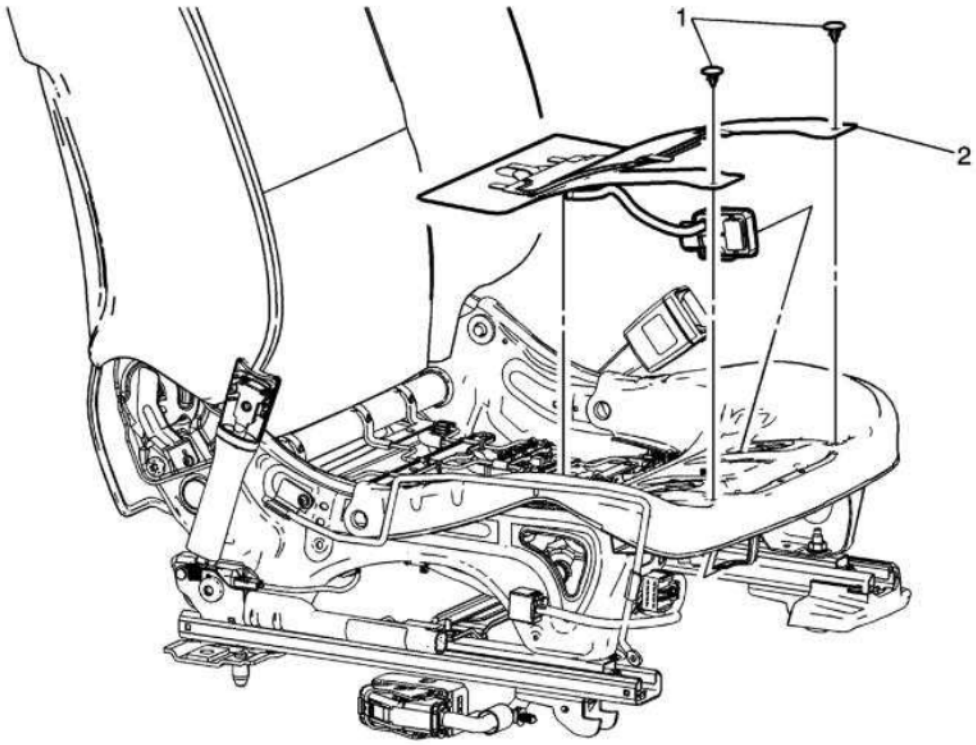


Fig. 19: Inflatable Restraint Front Passenger Presence Module
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
WARNING: Refer to SIR Warning . **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	

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Callout	Component Name
a unit. Using only some of the components in the service kit will cause the passenger presence system to operate improperly. **Preliminary Procedure** 1. Remove the driver or passenger seat. Refer to **Driver or Passenger Seat Removal and Installation** . 2. Remove the front seat cushion cover and pad. Refer to **Front Seat Cushion Cover and Pad Replacement** .	
1	Inflatable Restraint Front Passenger Presence Module Retainer (Qty: 2)
2	Inflatable Restraint Front Passenger Presence Module **Procedure** 1. Unhook the module from the bracket on the underside of seat frame and push up through seat pan. 2. Disconnect and remove the sensor and module from the seat pan. 3. Program the inflatable restraint passenger presence system after replacement. Refer to **Passenger Presence System Rezeroing**.

FRONT END INFLATABLE RESTRAINT DISCRIMINATING SENSOR REPLACEMENT

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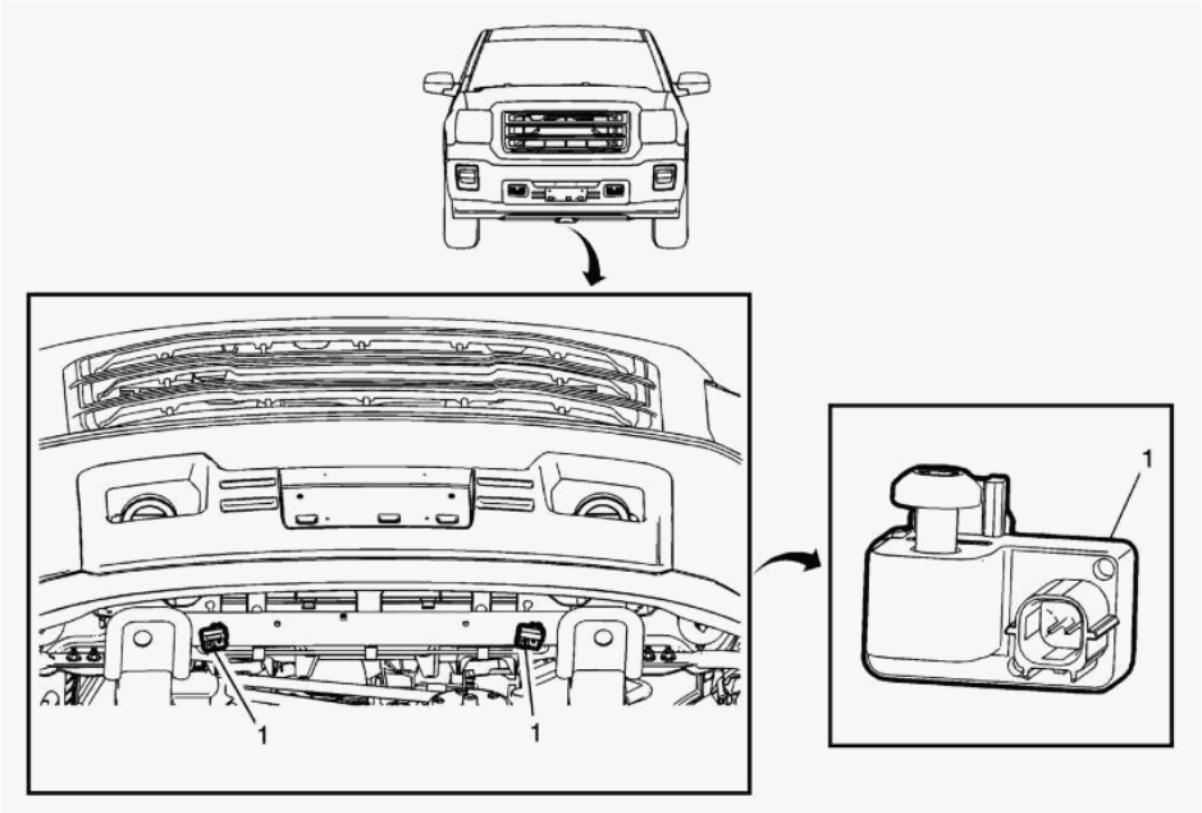


Fig. 20: Airbag Front End Discriminating Sensor
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
WARNING: Refer to SIR Warning . WARNING: Refer to SIR Inflator Module Handling and Storage Warning . WARNING: Following the deployment of a side impact air bag, inspect the following parts for damage. Replace these parts if	

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Callout	Component Name
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**. 2. Remove the steering gear skid shield. Refer to **Steering Gear Skid Shield Replacement** .	
1	Airbag Front End Discriminating Sensor Assembly (Qty: 2) **CAUTION:** **Refer to Fastener Caution .** **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. **NOTE:** **Integral sensor assembly bolt uses Left Hand threads. Use counterclockwise rotation to loosen fastener at TORXÂ® tip**

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Callout	Component Name
	end. If accessing at pan head end of the fastener, use clockwise rotation to loosen bolt. **Tighten** 7.5 N.m (66 lb in)

AIRBAG FRONT SEAT POSITION SENSOR REPLACEMENT

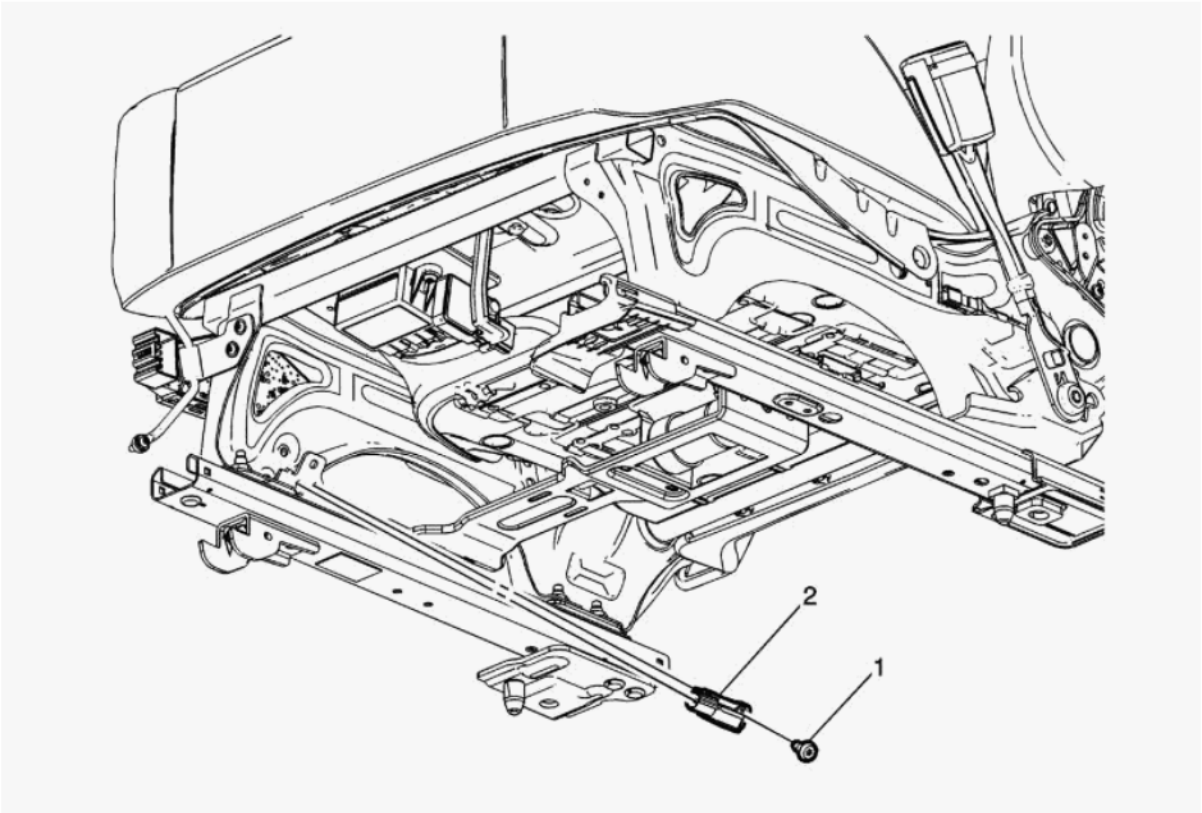


Fig. 21: Inflatable Restraint Seat Position Sensor
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
WARNING: **Refer to SIR Warning .** **Preliminary Procedures** 1. Disable the supplemental inflatable restraint (SIR) system. Refer to **SIR Disabling and Enabling**. 2. Remove the drivers seat. Refer to **Driver or Passenger Seat Removal and Installation** .	

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Callout	Component Name
1	Airbag Front Seat Position Sensor Fastener (Qty: 2) **CAUTION:** **Refer to Fastener Caution .** **Procedure** Loosen and reposition the front seat wiring harness connector bracket to access the fastener.
2	Airbag Front Seat Position Sensor **Procedure** Disconnect the electrical connector.

FRONT AND REAR ROW SEAT ROOF RAIL AIRBAG REPLACEMENT

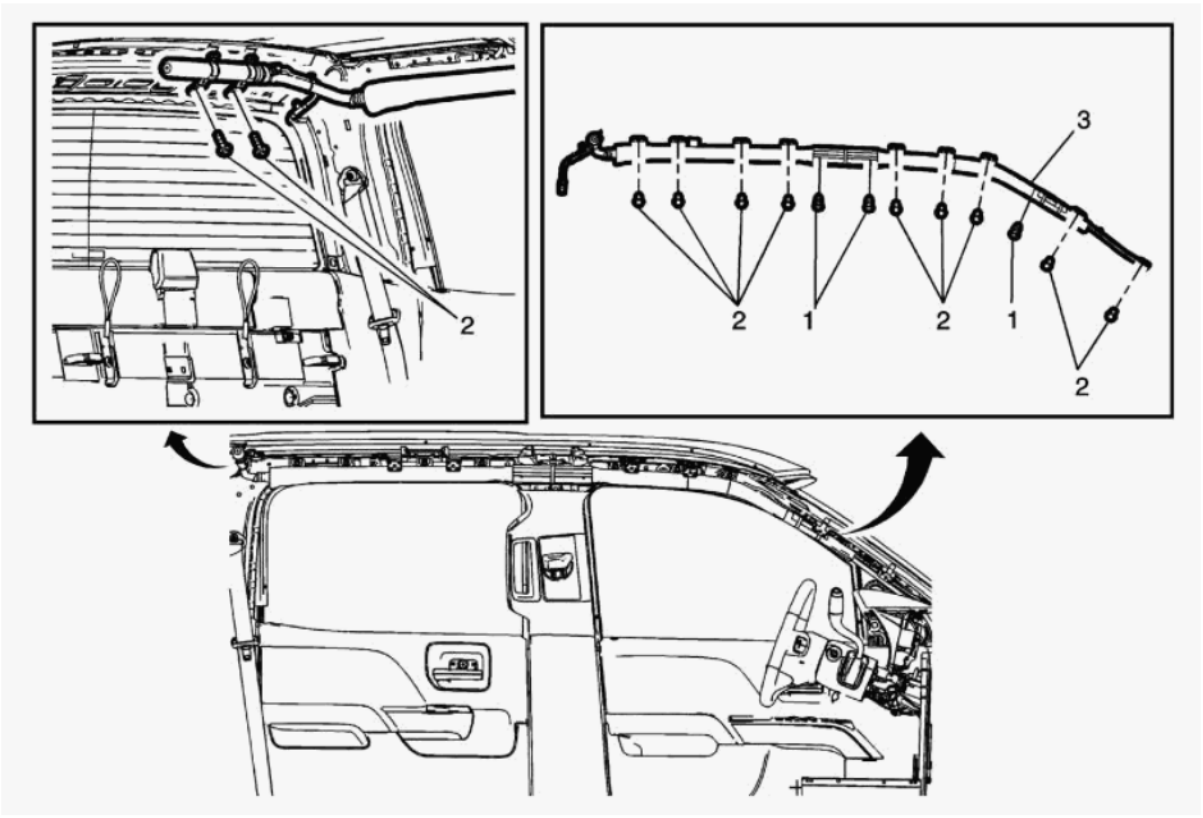


Fig. 22: Front and Rear Row Seat Roof Rail Airbag
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
WARNING: **In order to prevent SIR deployment, personal**	

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Callout	Component Name
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 .	

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Callout	Component Name
WARNING: Refer to SIR Inflator Module Handling and Storage Warning. **Preliminary Procedures** 1. Disable the SIR system. Refer to **SIR Disabling and Enabling** 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 (Crew Cab Without Sunroof)** **Headlining Trim Panel Replacement (Crew Cab With Sunroof)** **Headlining Trim Panel Replacement (Extended Cab)** **Headlining Trim Panel Replacement (Regular Cab)**	
1	Roof Side Rail Inflatable Restraint Module Retainer (Qty: 4)
2	Roof Side Rail Inflatable Restraint Module Fastener (Qty: 11) **CAUTION:** Refer to Fastener Caution . **Tighten** 9 N.m (80 lb in)
3	Front and Rear Row Roof Rail Airbag Assembly **Procedure** 1. Disconnect the electrical connector. 2. Remove the roof rail airbag module from the vehicle. 3. Refer to **Inflatable Restraint Module Handling and Scrapping**.

FRONT SEAT OUTBOARD SEAT BACK AIRBAG REPLACEMENT

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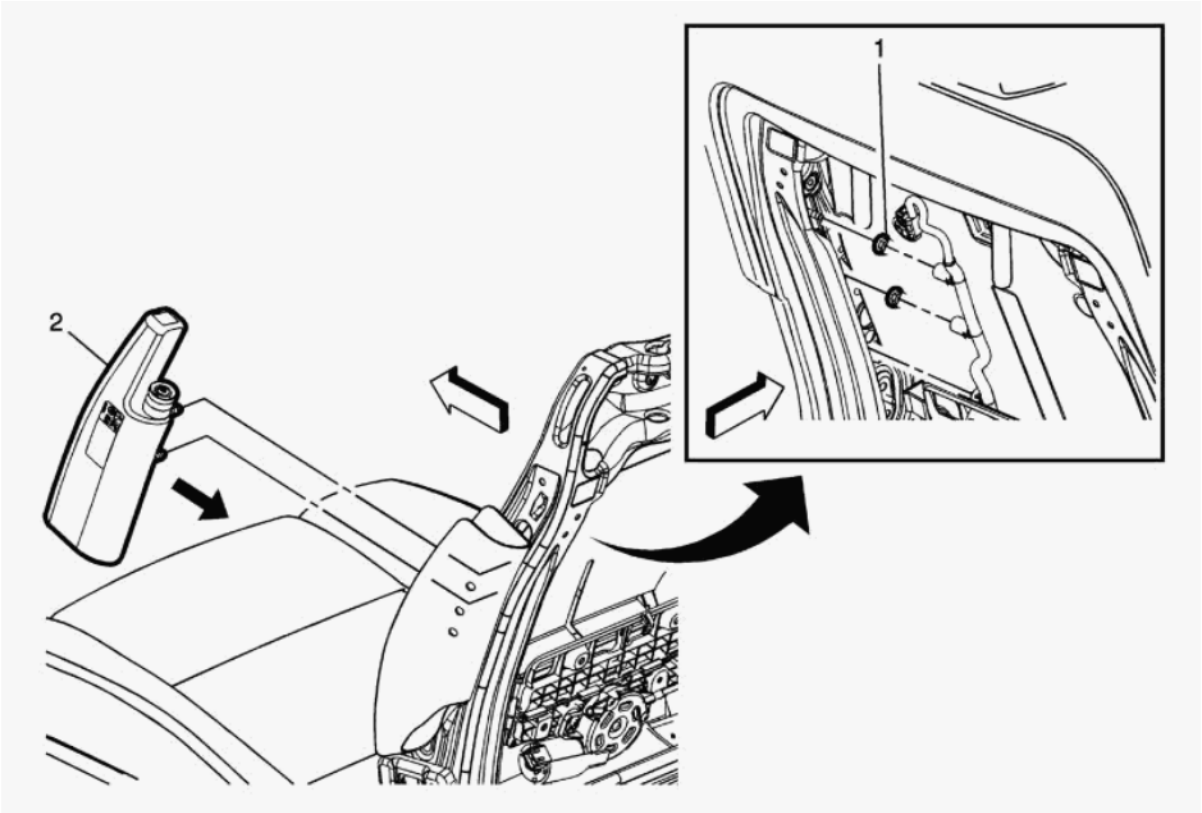


Fig. 23: Front Seat Outboard Seat Back Airbag
Courtesy of GENERAL MOTORS COMPANY

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**	

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Callout	Component Name
	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**.
2. Remove the driver or passenger seat. Refer to **Driver or Passenger Seat Removal and Installation** .
3. Remove the driver or passenger seat back cushion cover and pad. Refer to **Driver or Passenger Seat Back Cover and Pad Replacement** .

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Callout	Component Name
1	Front Seat Outboard Seat Back Airbag Nut (Qty: 2) **CAUTION:** **Refer to** Fastener Caution . **Tighten** 3.75 N.m (33 lb in)
2	Front Seat Outboard Seat Back Airbag **Procedure** 1. Release the CPA and disconnect the electrical connector. 2. Refer to **Inflatable Restraint Module Handling and Scrapping**.

AIRBAG SIDE IMPACT REAR SENSOR REPLACEMENT (CREW CAB)

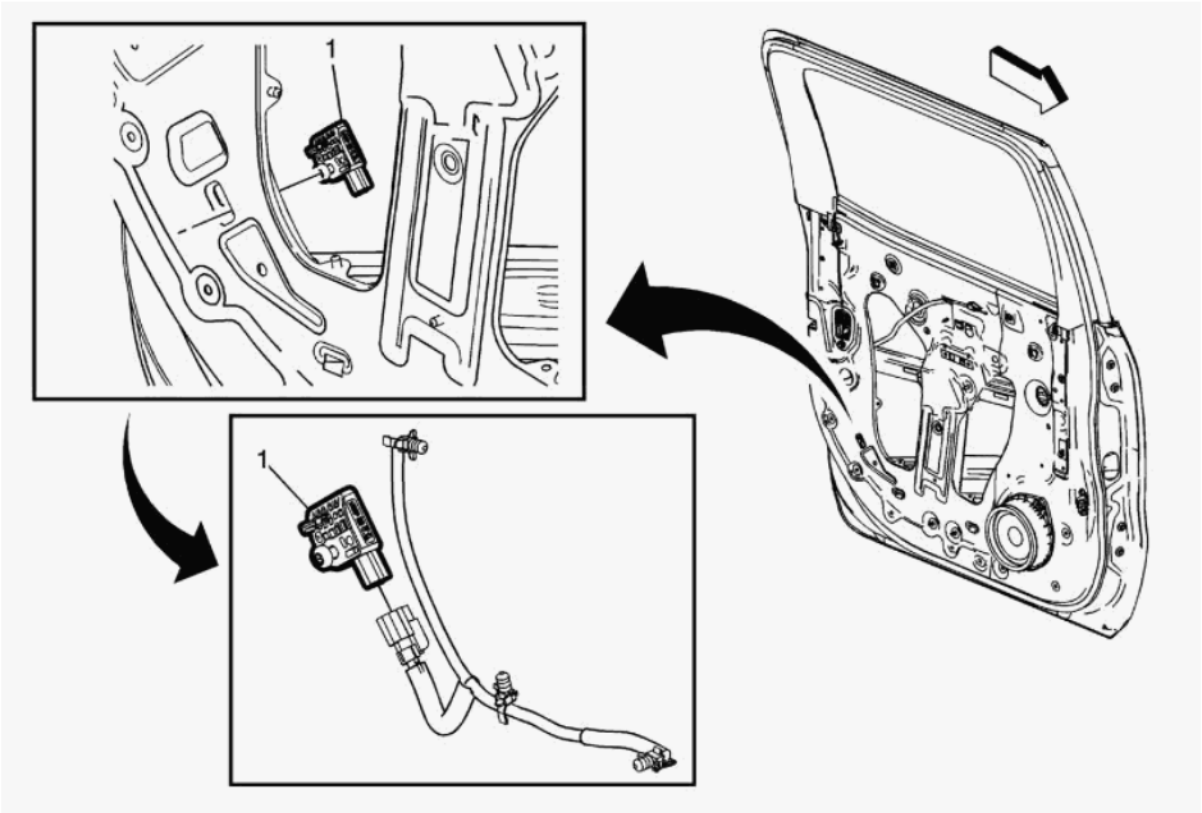


Fig. 24: Airbag Rear Side Door Side Impact Sensor (Crew Cab)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
WARNING:	

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Callout	Component Name
Refer to **SIR Warning** . **WARNING:** Refer to **SIR Inflator Module Handling and Storage Warning** . **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**.
2. Remove the rear side door trim panel. Refer to **Rear Side Door Trim Panel Replacement (Crew Cab, Extended Cab)** .

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AIRBAG SIDE IMPACT REAR SENSOR REPLACEMENT (EXTENDED CAB)

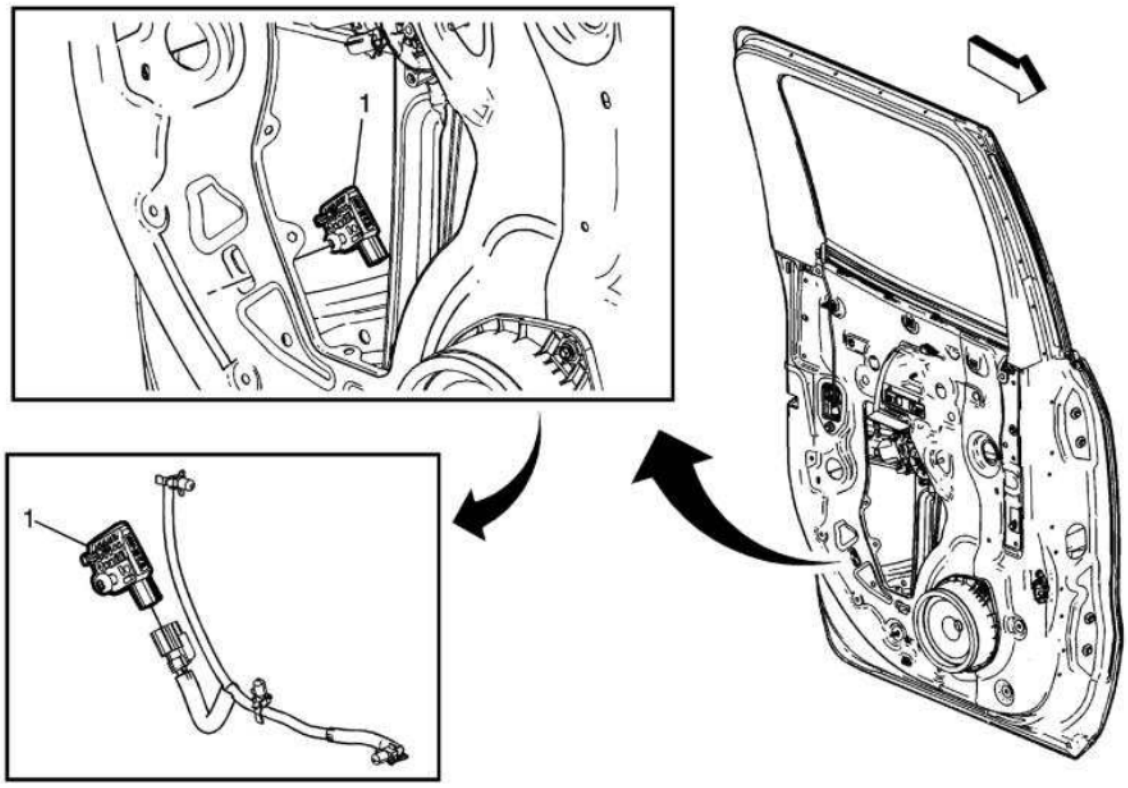


Fig. 25: Airbag Rear Side Door Side Impact Sensor (Extended Cab)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
WARNING: Refer to SIR Warning . **WARNING:** Refer to SIR Inflator Module Handling and Storage Warning . **WARNING:** Following the deployment of a side impact air bag, inspect the following parts for damage.	

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Callout	Component Name
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**. 2. Remove the rear side door trim panel. Refer to **Rear Side Door Trim Panel Replacement (Crew Cab, Extended Cab)** .	
1	Airbag Rear Side Door Side Impact Sensor Assembly **CAUTION:** **Refer to Fastener Caution .** **Procedure** 1. Disconnect electrical connector. 2. Loosen the fastener and slide the sensor out of the keyhole slot. **NOTE:** **Integral sensor assembly bolt uses Left Hand threads. Use counterclockwise rotation to**

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Callout	Component Name
	loosen fastener at TORXÂ® tip end. If accessing at pan head end of the fastener, use clockwise rotation to loosen bolt. **Tighten** 7.5 N.m (66 lb in)

INSTRUMENT PANEL AIRBAG DISABLE SWITCH REPLACEMENT

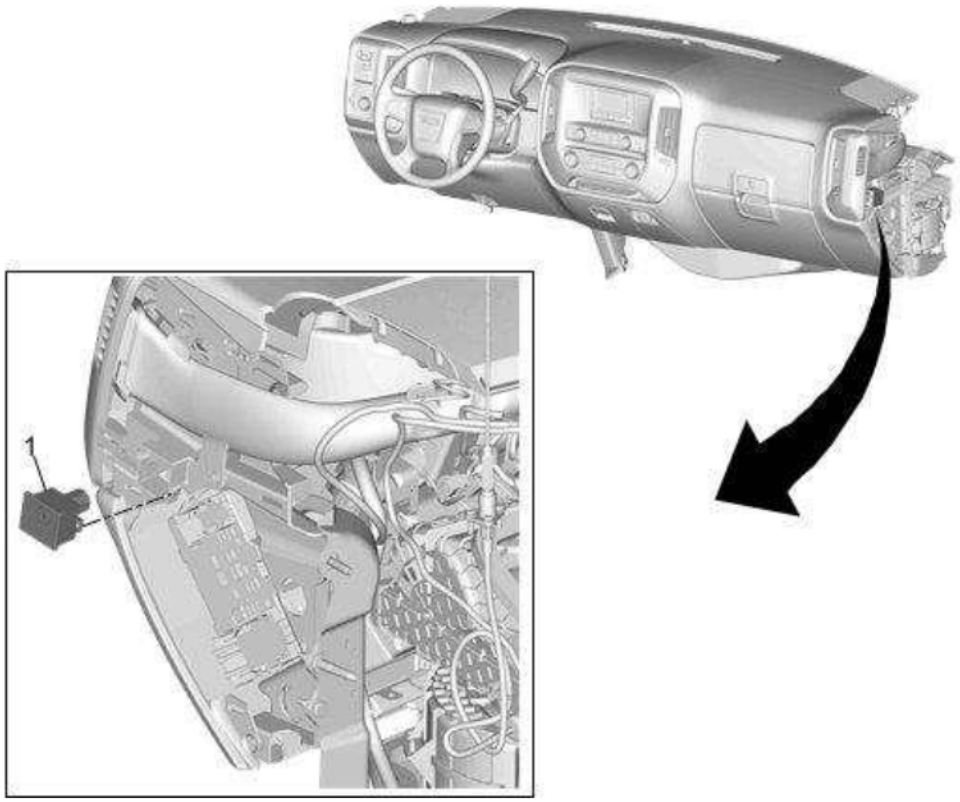


Fig. 26: Instrument Panel Airbag Disable Switch
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
WARNING: Verify the proper installation of the airbag disable switch.	

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Callout	Component Name
Ensure the airbag disable switch is functioning properly by activating and deactivating the switch. If the airbag disable switch is not properly installed, and its function is not verified, the airbag may discharge improperly and cause personal injury or death. **WARNING:** **Refer to SIR Warning .** **Preliminary Procedure** 1. Disable the supplemental inflatable restraint (SIR) system. Refer to **SIR Disabling and Enabling**. 2. Remove the instrument panel fuse block access hole cover. Refer to **Instrument Panel Fuse Block Access Hole Cover Replacement** .	
1	Instrument Panel Airbag Disable Switch Assembly **Procedure** 1. Using the appropriate tool, depress the tabs on the switch to remove 2. Disconnect the electrical connector.

INSTRUMENT PANEL AIRBAG ARMING STATUS DISPLAY REPLACEMENT

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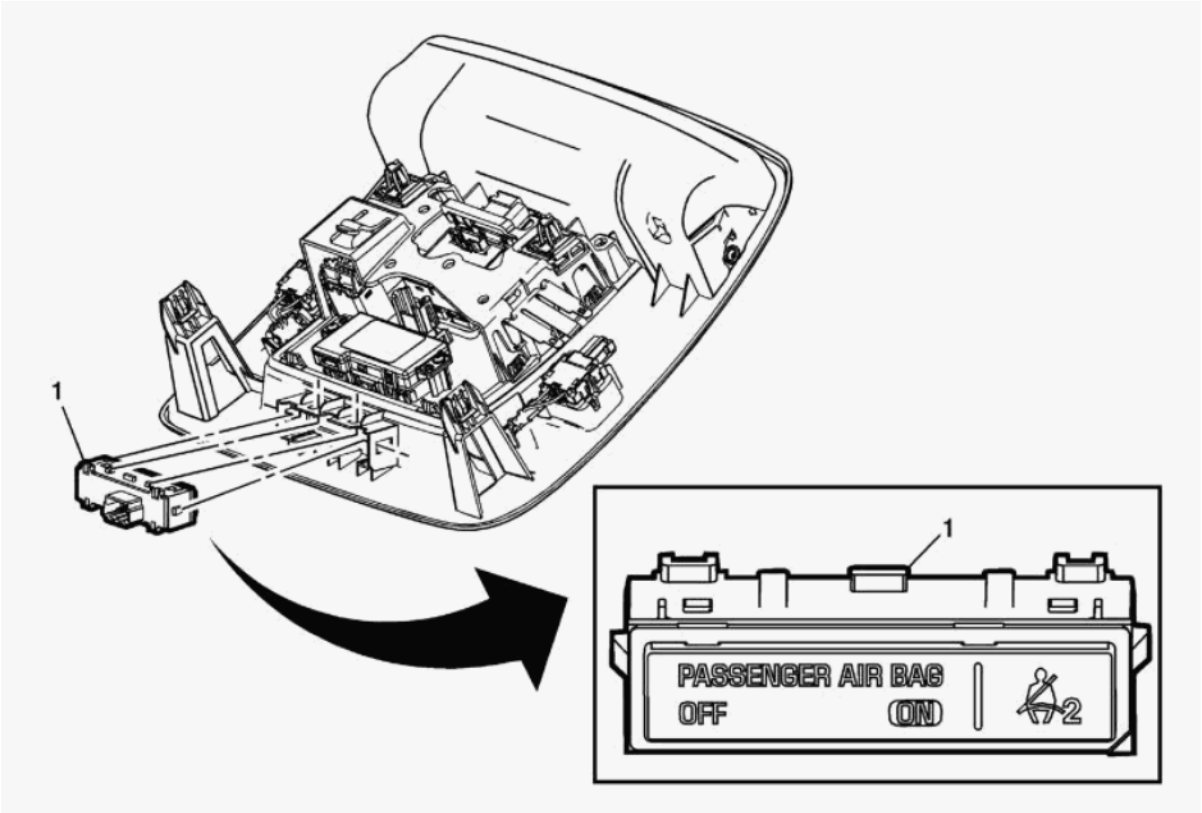


Fig. 27: Instrument Panel Airbag Arming Status Display
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove the roof console. Refer to **Roof Console Replacement** .	
1	Instrument Panel Airbag Arming Status Display Assembly **Procedure** 1. Disconnect the electrical connector. 2. Depress the 4 tabs to release from the roof console.

FRONT SEAT BELT ANCHOR PLATE TENSIONER REPLACEMENT

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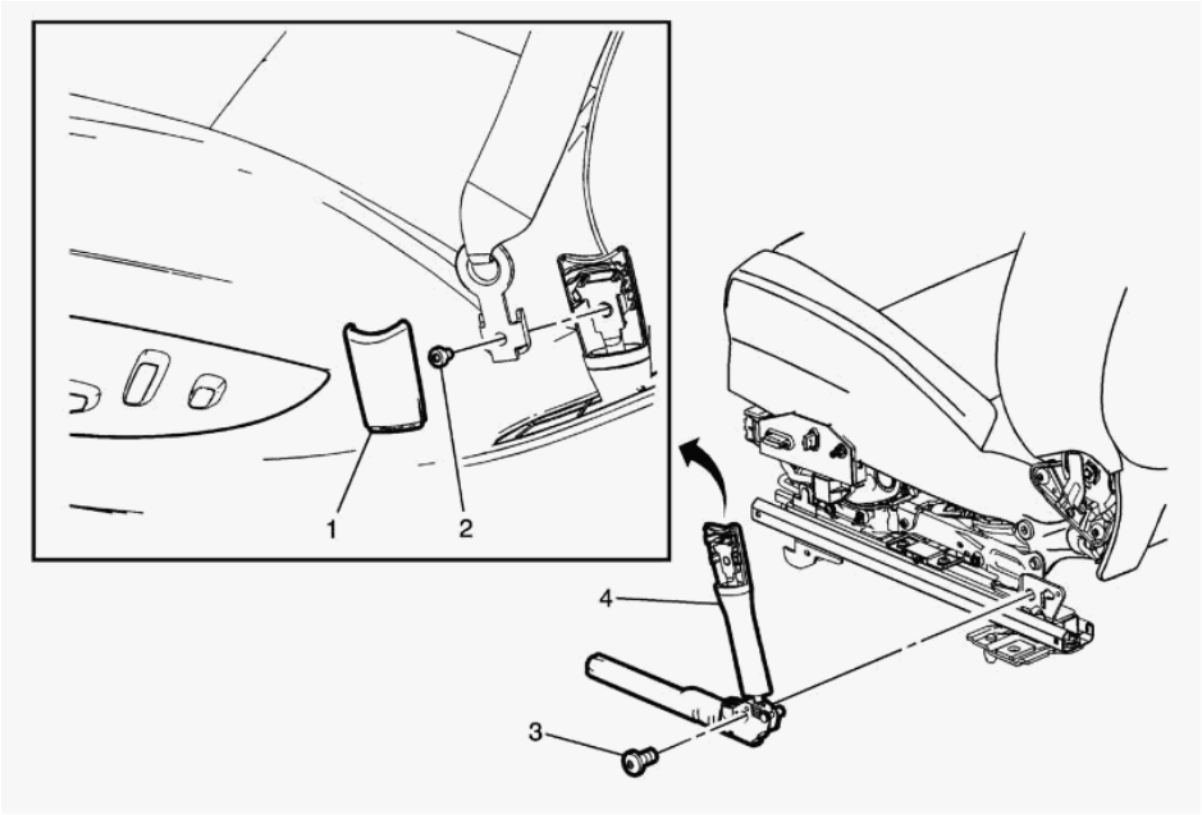


Fig. 28: Front Seat Belt Anchor Plate Tensioner
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
WARNING: **Refer to SIR Warning .** **WARNING:** **In order to prevent accidental deployment and the risk of personal injury, do not dispose of an undeployed inflatable restraint seat belt pretensioner as normal shop waste. Undeployed seat belt pretensioners**	

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Callout	Component Name
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 appropriate country, regional 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**.
3. Remove the front seat belt anchor plate tensioner cover. Refer to **Front Seat Belt Anchor Plate Tensioner Cover Replacement** .
4. For pretensioner handling and scrapping, refer to **Pretensioner Handling and Scrapping**.

1	Driver or Passenger Seat Belt Anchor Plate Tensioner Cover
2	Driver or Passenger Seat Belt Anchor Plate Tensioner Fastener **CAUTION:** **Refer to Fastener Caution**

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Callout	Component Name
	Tighten 5 N.m (44 lb in)
3	Driver or Passenger Seat Belt Tensioner Fastener **CAUTION:** **Refer to** **Fastener Caution** **Tighten** 45 N.m (33 lb ft)
4	Driver or Passenger Seat Belt Anchor Plate Tensioner Assembly **Procedure** Disconnect the electrical connector.

SEAT BELT RETRACTOR PRETENSIONER REPLACEMENT - FRONT (CREW CAB, EXTENDED CAB)

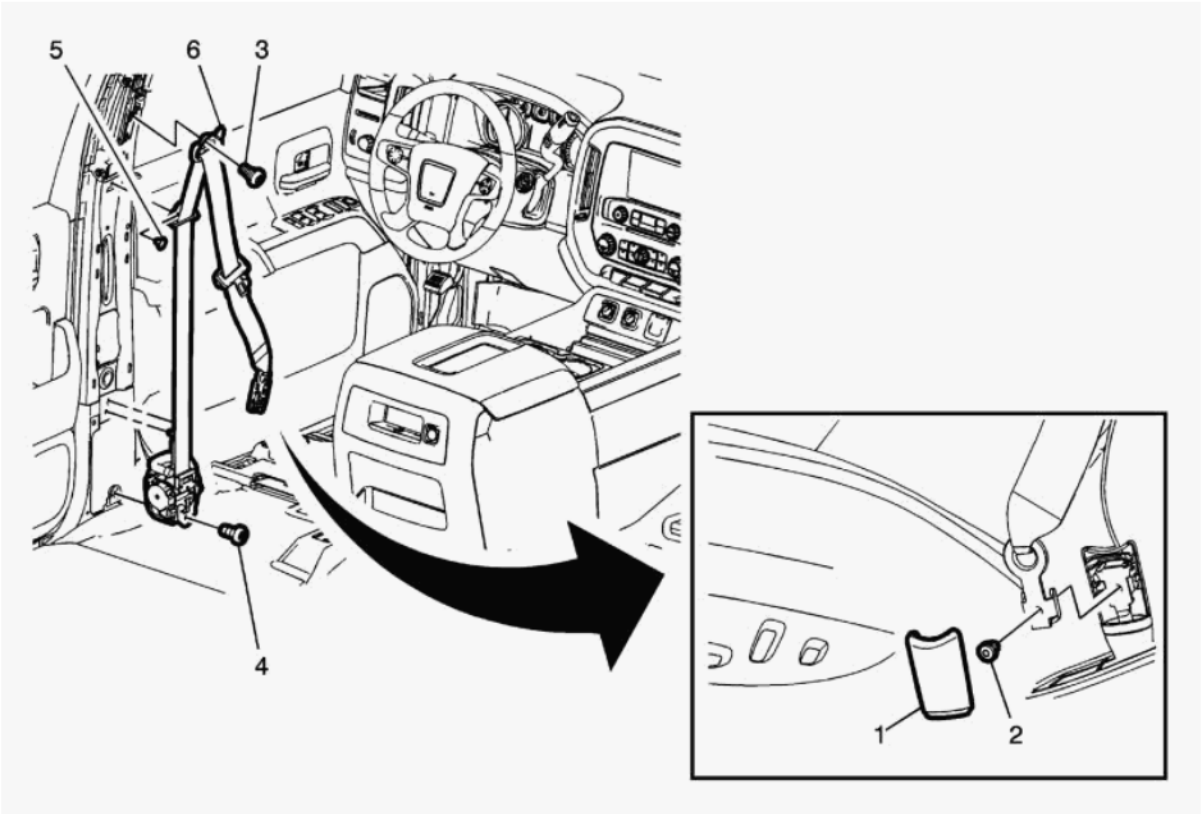


Fig. 29: Seat Belt Retractor Pretensioner - Front (Crew Cab, Extended Cab)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
WARNING:	

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Callout	Component Name
Refer to SIR Warning . WARNING: Refer to SIR Inflator Module Handling and Storage Warning . WARNING: In order to prevent accidental deployment and the risk of personal injury, do not dispose of an undeployed inflatable restraint seat belt pretensioner as normal shop waste. Undeployed seat belt pretensioners contain substances that could cause severe illness or personal injury if their sealed containers are damaged during disposal. Use the following deployment procedures to safely dispose of an undeployed	

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Callout	Component Name
seat belt pretensioner. Failure to observe the following disposal methods may be a violation of appropriate country, regional or local laws. **Preliminary Procedures** 1. Move the front seat to a full forward and full up position. 2. Disable the SIR. Refer to **SIR Disabling and Enabling**. 3. Remove the center pillar upper trim panel. Refer to **Center Pillar Upper Trim Panel Replacement** .	
1	Driver or Passenger Seat Belt Anchor Plate Tensioner Cover
2	Driver or Passenger Seat Belt Anchor Plate Tensioner Fastener **CAUTION:** **Refer to Fastener Caution .** **Tighten** 5 N.m (44 lb in)
3	Driver or Passenger Seat Belt Retractor Fastener (Upper) **Tighten** 45 N.m (33 lb ft)
4	Driver or Passenger Seat Belt Retractor Fastener (Lower) **Tighten** 45 N.m (33 lb ft)
5	Driver or Passenger Seat Belt Retractor Push On Retainer **Procedure** Use a flat-bladed tool to remove locking pin in retainer.
6	Driver or Passenger Seat Belt Retractor Assembly **Procedure** 1. Disconnect the electrical connector. 2. Refer to **Pretensioner Handling and Scrapping**. 3. If vehicle is equipped with front seat motorized retractor (AX7). Refer to **Control**

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Callout	Component Name
	Module References .

SEAT BELT RETRACTOR PRETENSIONER REPLACEMENT - FRONT (REGULAR CAB)

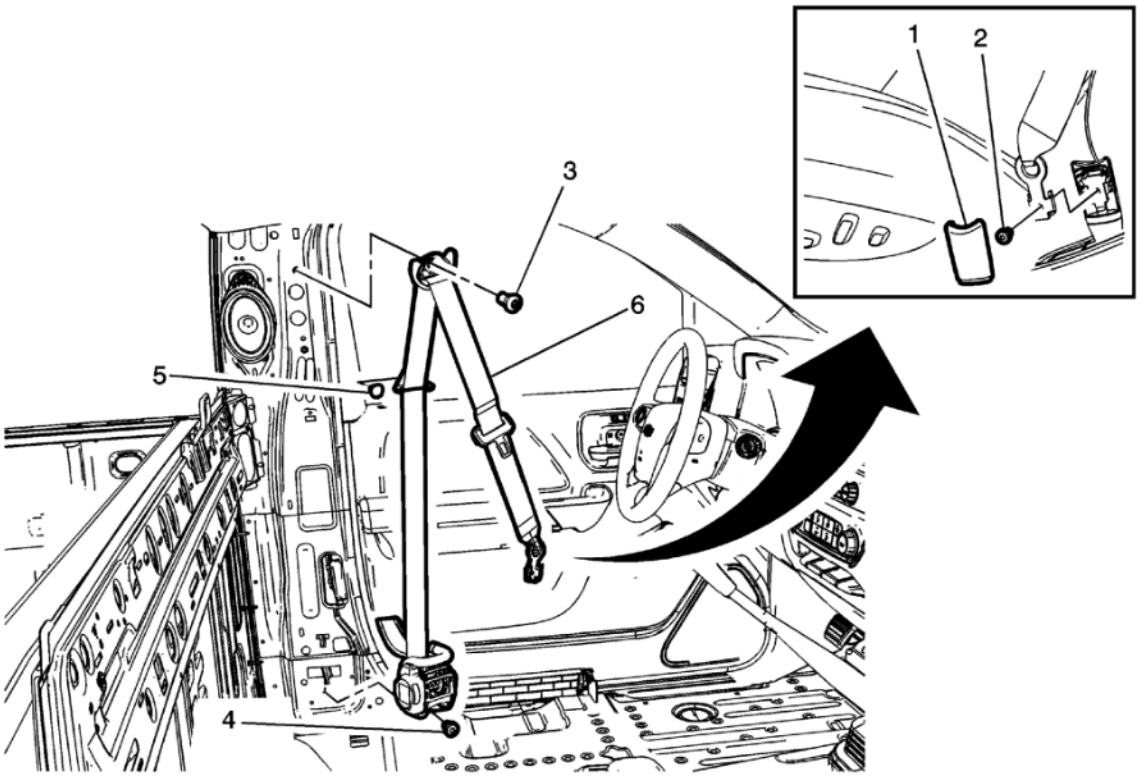


Fig. 30: Seat Belt Retractor Pretensioner - Front (Regular Cab)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
WARNING: Refer to SIR Warning .	
WARNING: Refer to SIR Inflator Module Handling and Storage Warning .	
WARNING: In order to prevent accidental deployment	

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Callout	Component Name
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 appropriate country, regional or local laws.	

Preliminary Procedures

1. Move the front seat to a full forward and full up position.

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Callout	Component Name
2. Disable the SIR. Refer to **SIR Disabling and Enabling**. 3. Remove the body lock pillar garnish molding. Refer to **Body Lock Pillar Garnish Molding Replacement (Regular Cab)** .	
1	Driver or Passenger Seat Belt Anchor Plate Tensioner Cover
2	Driver or Passenger Seat Belt Anchor Plate Tensioner Fastener **CAUTION:** **Refer to Fastener Caution .** **Tighten** 5 N.m (44 lb in)
3	Driver or Passenger Seat Belt Retractor Fastener (Upper) **Tighten** 45 N.m (33 lb ft)
4	Driver or Passenger Seat Belt Retractor Fastener (Lower) **Tighten** 45 N.m (33 lb ft)
5	Driver or Passenger Seat Belt Retractor Push On Retainer **Procedure** Use a flat-bladed tool to remove locking pin in retainer.
6	Driver or Passenger Seat Belt Retractor Assembly **Procedure** 1. Disconnect the electrical connector. 2. Refer to **Pretensioner Handling and Scrapping**.

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.

NOTE: **Hybrid Vehicles Only - Perform an inspection of the high voltage system for damage. Refer to High Voltage System Inspection under the Hybrid/EV Controls repair section.**

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

Accident With Frontal Air Bag Deployment - Component Replacement and Inspections

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

- Driver steering wheel air bag
- Passenger instrument panel air bag, if deployed
- Inflatable restraint sensing and diagnostic module (SDM), if SDM has DTC B0052 56
- 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, SDM, 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 SDM has DTC B0052 56.
- Inflatable restraint seat belt anchor and/or retractor pretensioner.
- Driver or passenger seat back cushion cover replacement.

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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 SDM 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

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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**.

Live and Undeployed Air Bag

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

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

Dual Stage Air Bags

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

Scrapping Procedure

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

Do not deploy the air bag in the following situations:

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

Deployment Procedures

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

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

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

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

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

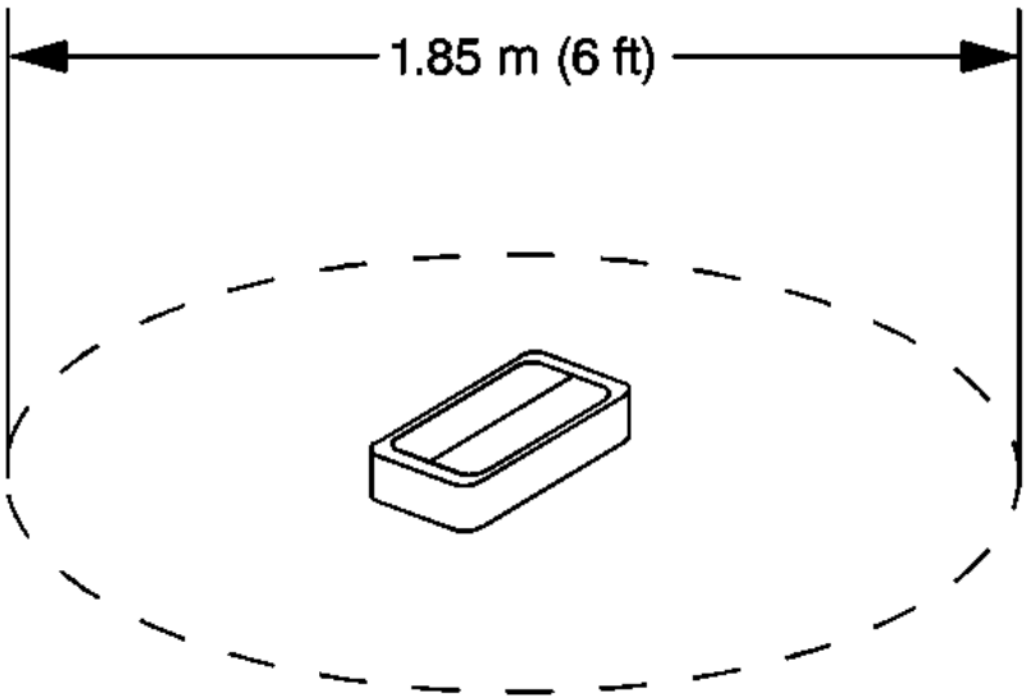
Deployment and disposal of a malfunctioning air bag is subject to any required retention period.

WARNING: Refer to SIR Inflator Module Disposal Warning .

1. Turn OFF the ignition.

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

2. Remove the air bag.



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Fig. 31: Identifying Clearance For Deployment Of Inflator Module
Courtesy of GENERAL MOTORS COMPANY

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

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

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

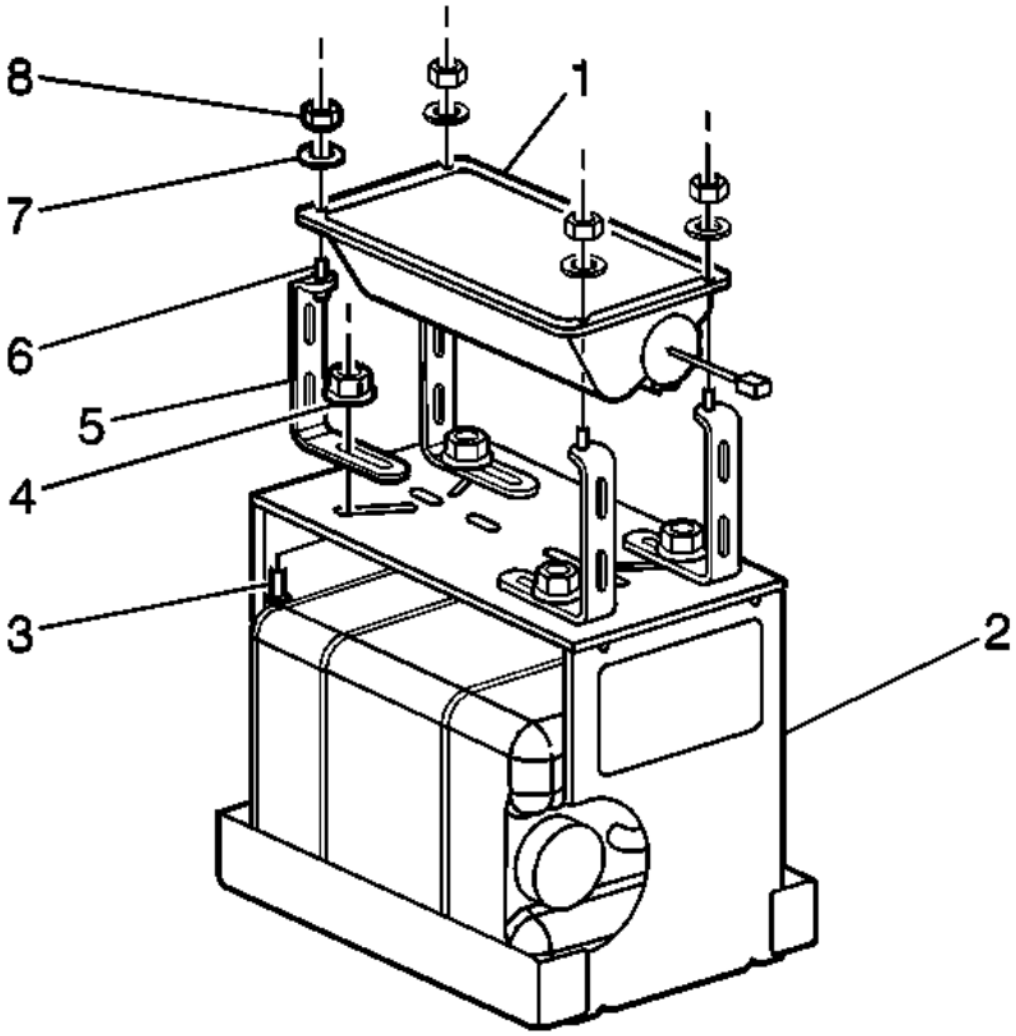


Fig. 32: Identifying I/P Module Components
Courtesy of GENERAL MOTORS COMPANY

6. When deploying an instrument panel air bag, perform the following instructions:

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

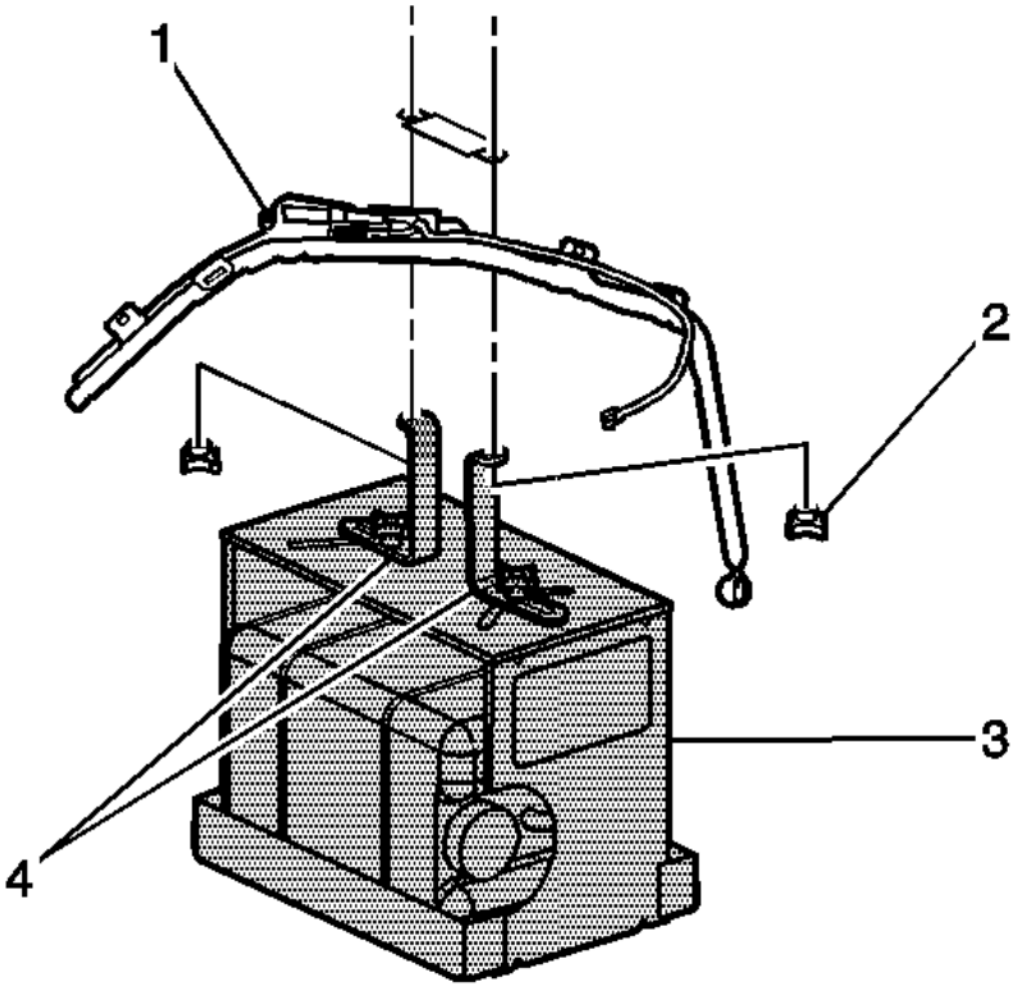


Fig. 33: Identifying Fasteners Holding Side Impact Module To Deployment Fixture
Courtesy of GENERAL MOTORS COMPANY

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

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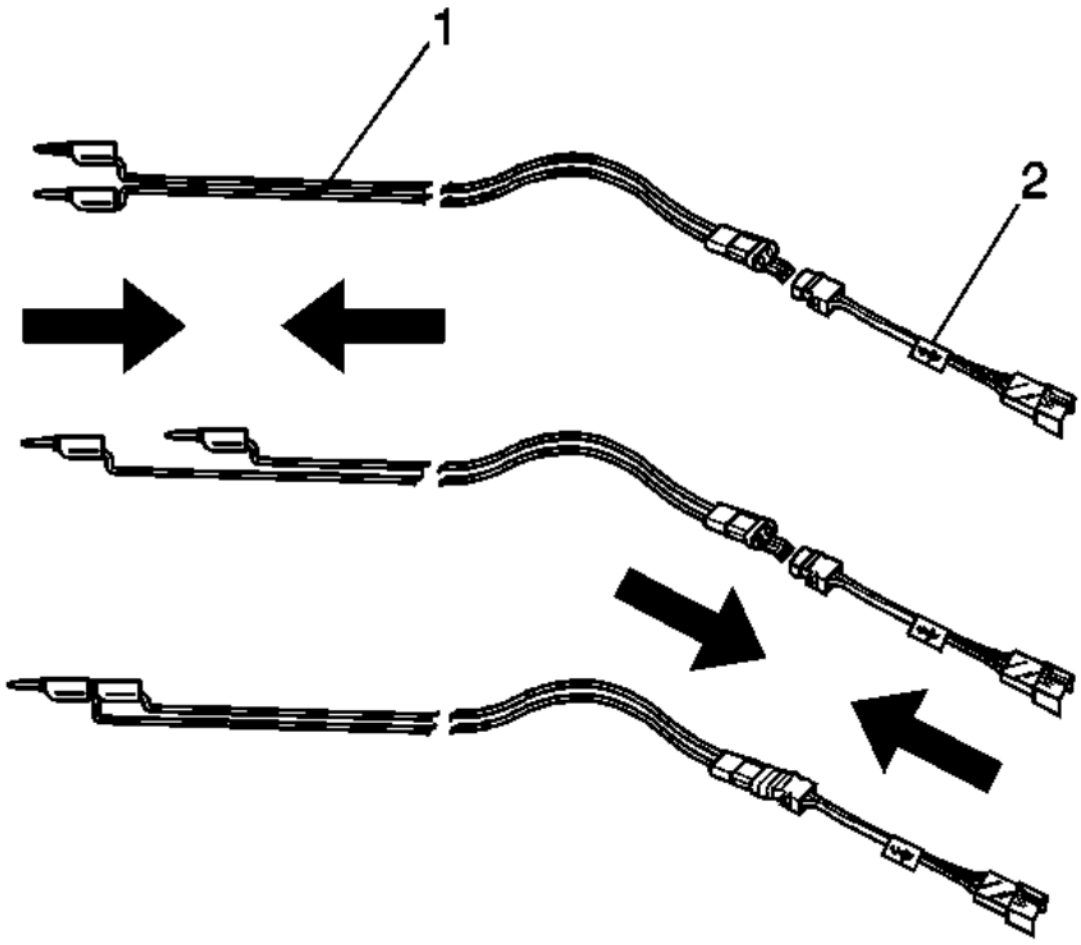


Fig. 34: Identifying SIR Deployment Harness & Adapter
Courtesy of GENERAL MOTORS COMPANY

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

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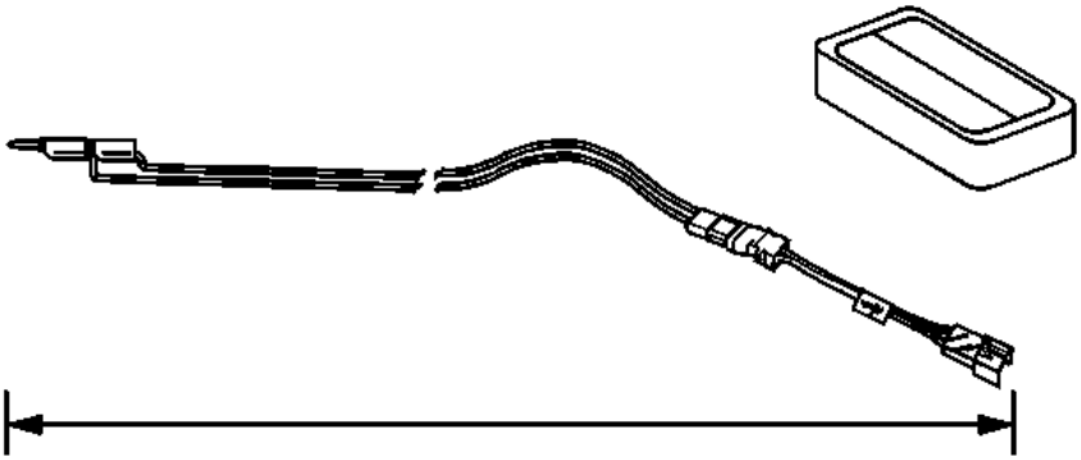


Fig. 35: Extending SIR Deployment Harness & Adapter
Courtesy of GENERAL MOTORS COMPANY

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

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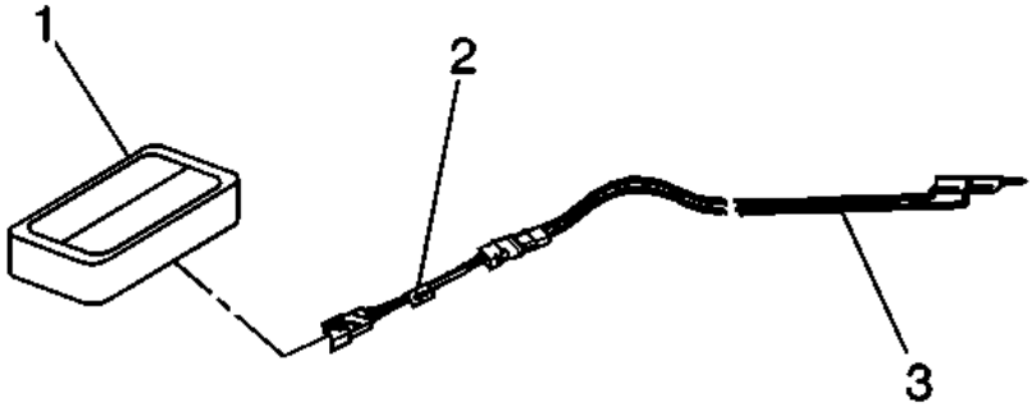


Fig. 36: Identifying Inflator Module, SIR Deployment Harness & Adapter
Courtesy of GENERAL MOTORS COMPANY

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

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

NOTE:

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

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13. Clear the area of people.

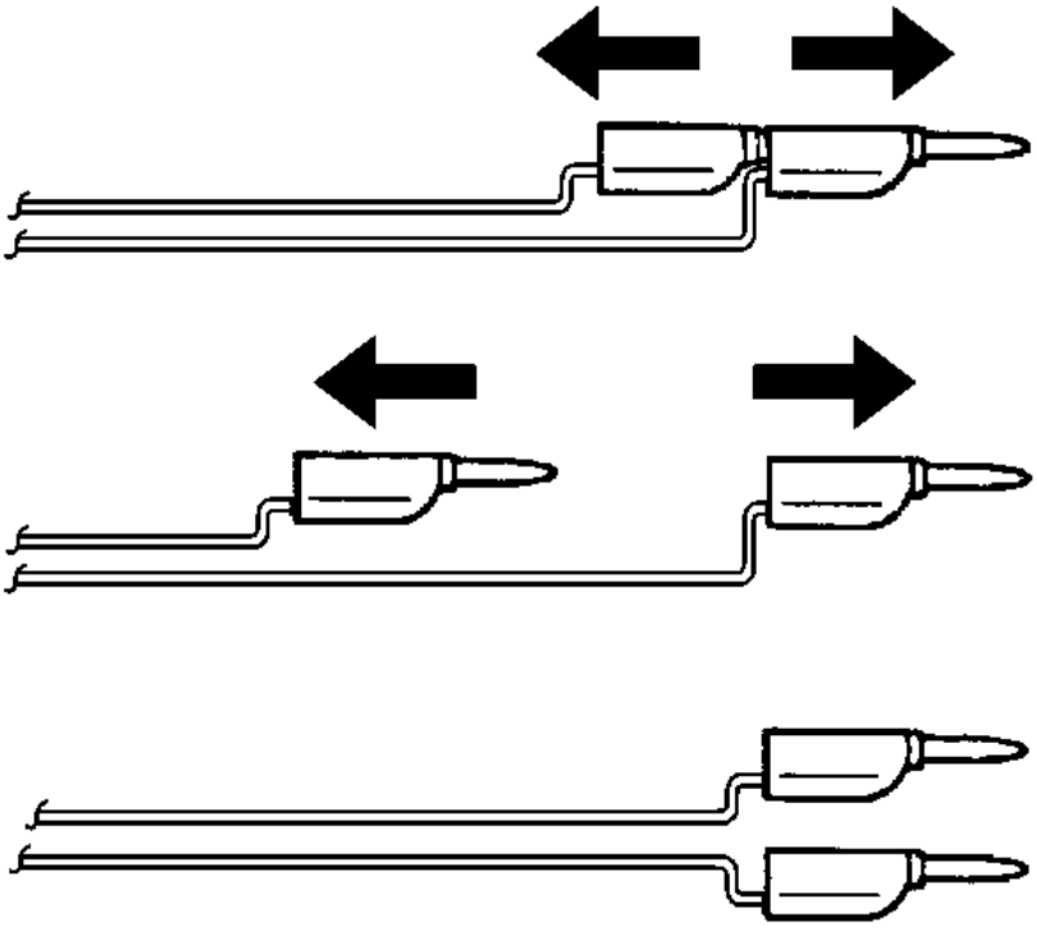


Fig. 37: Separating Banana Plugs
Courtesy of GENERAL MOTORS COMPANY

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

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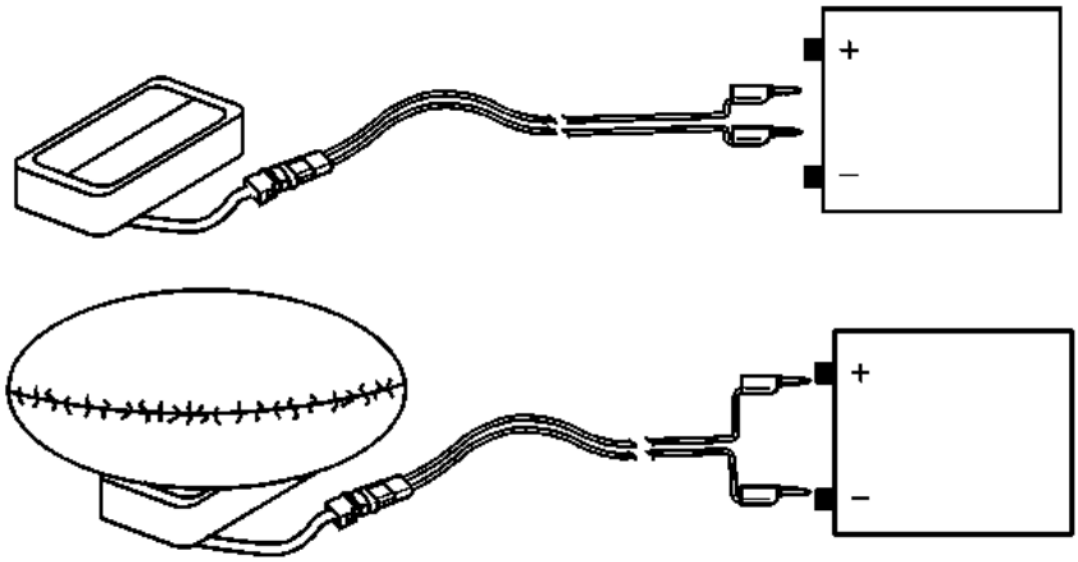


Fig. 38: Identifying SIR Deployment Harness Wires To Power Source
Courtesy of GENERAL MOTORS COMPANY

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

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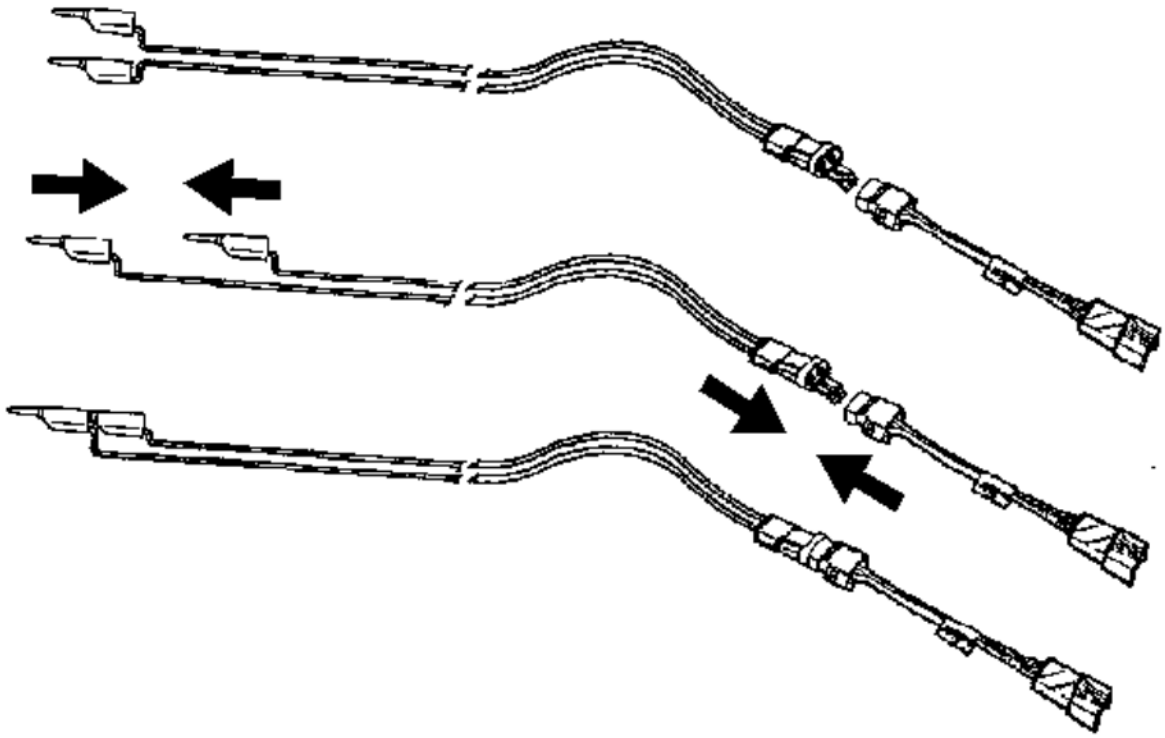


Fig. 39: View Of Deployment Harness Leads
Courtesy of GENERAL MOTORS COMPANY

17. Disconnect the SIR deployment harness from the power source after the air bag deploys.
18. If the air bag did not deploy, disconnect the adapter and discontinue the procedure and contact the Technical Assistance Group.

    If deployment was successful, proceed to the following steps.

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

19. Seat one banana plug into the other in order to short the deployment harness leads.
20. Put on a pair of shop gloves.
21. Disconnect the pigtail adapter from the air bag as soon as possible.
22. Inspect the pigtail adapter and the SIR deployment harness. Replace as needed.
23. Dispose of the deployed air bag through normal refuse channels.
24. Wash your hands with a mild soap.

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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 .

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

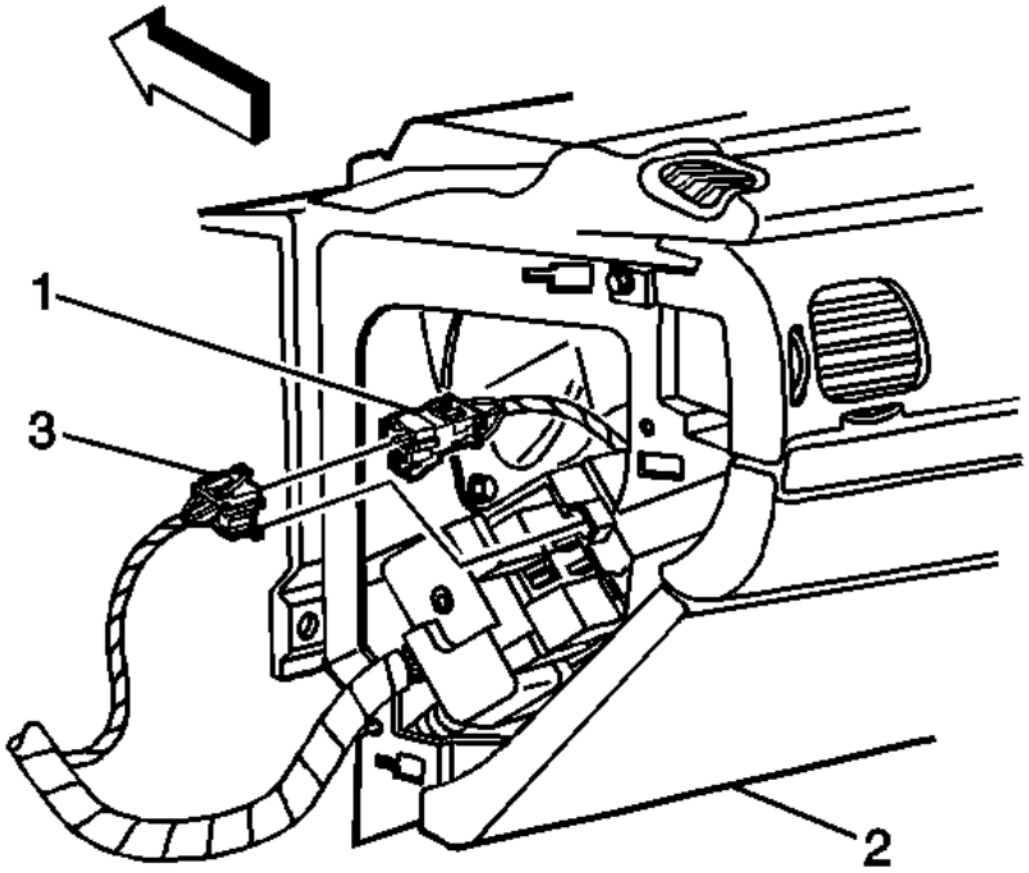
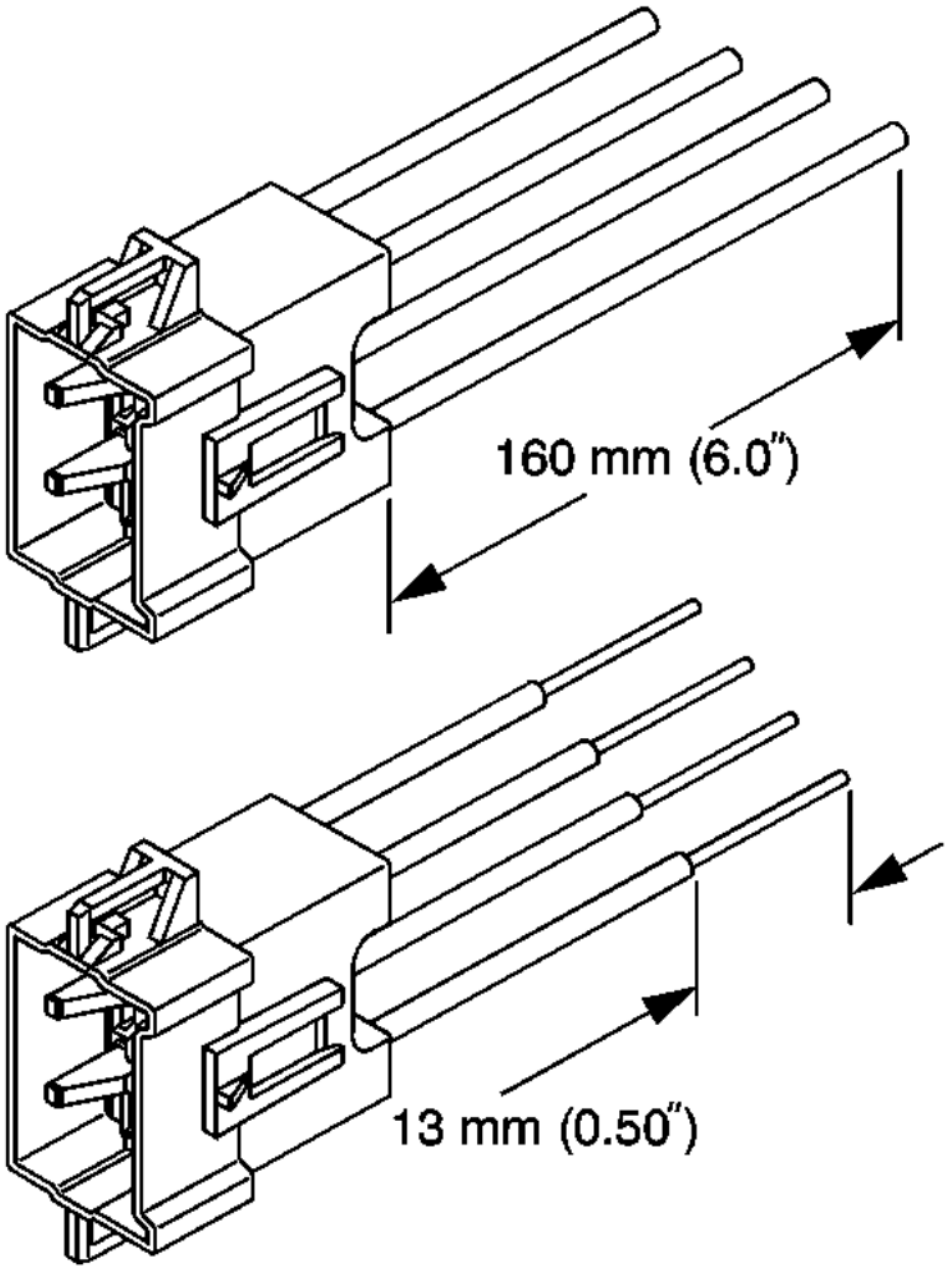


Fig. 40: Identifying I/P Module Connector To Vehicle Harness Connector (LH Side I/P)
Courtesy of GENERAL MOTORS COMPANY

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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).



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Fig. 41: Stripping SIR Wires
Courtesy of GENERAL MOTORS COMPANY

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

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

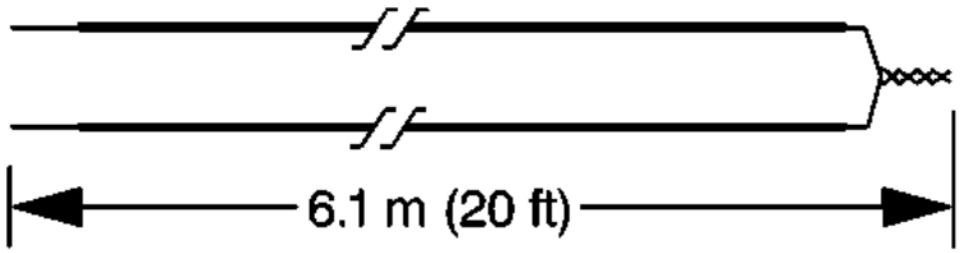


Fig. 42: Fabricating 20 Ft. Deployment Harness
Courtesy of GENERAL MOTORS COMPANY

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

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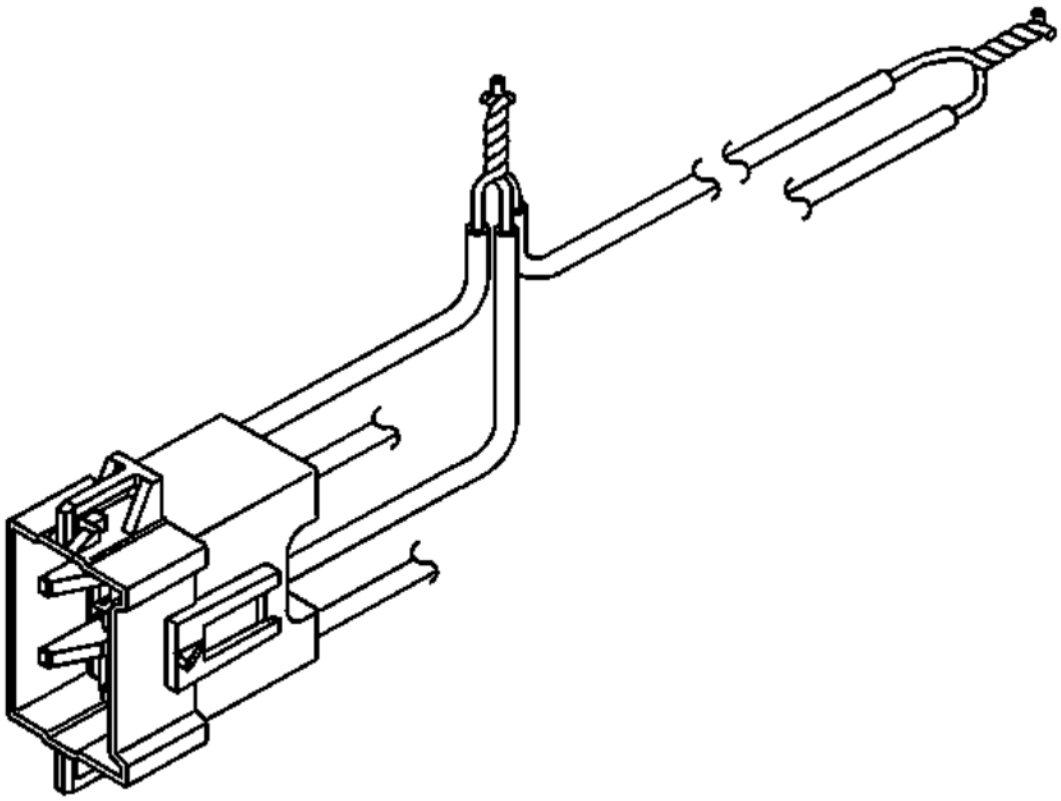


Fig. 43: Twisting Connector Wire Leads (High Circuits) To Deployment Harness Wire
Courtesy of GENERAL MOTORS COMPANY

11. Twist together the 2 connector wire leads from the high circuits from both stages of the steering wheel air bag, to one set of deployment wires. Refer to **COMPONENT CONNECTOR END VIEWS - INDEX** 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.

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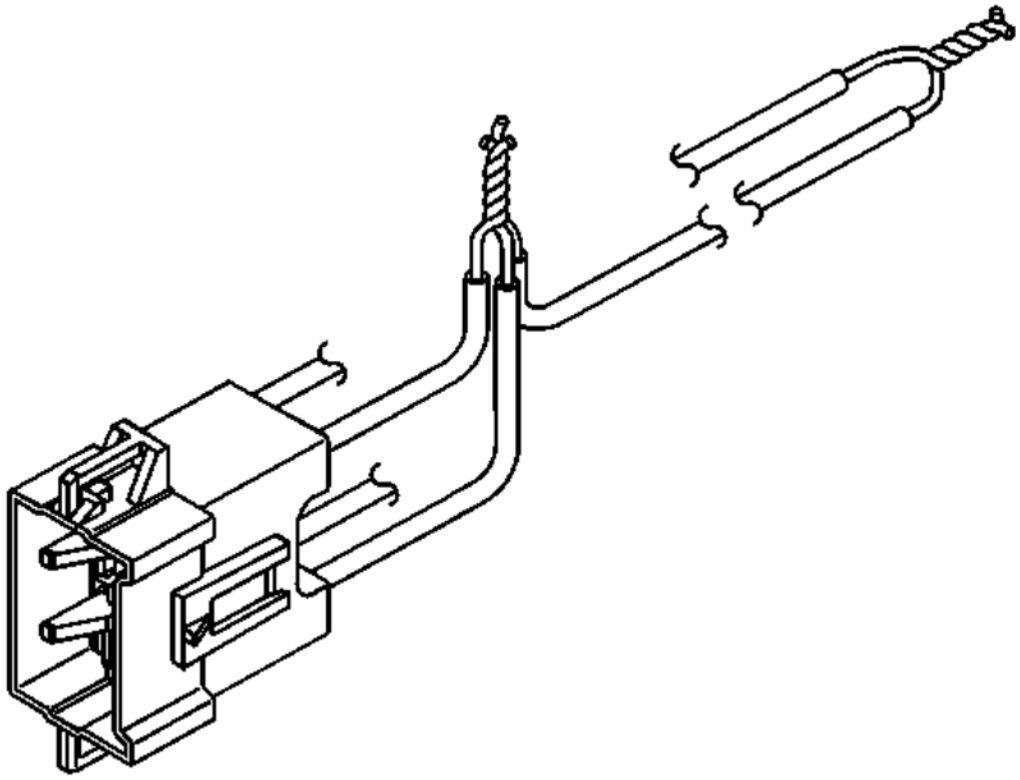


Fig. 44: Twisting Connector Wire Leads (Low Circuits) To Deployment Harness Wire
Courtesy of GENERAL MOTORS COMPANY

14. Twist together the 2 connector wire leads from the low circuits from both stages of the steering wheel air bag, to one set of deployment wires. Refer to **COMPONENT CONNECTOR END VIEWS - INDEX** 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.

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26. Secure and insulate the connection using electrical tape.
27. Twist together and tape the remaining connector wire lead to the remaining deployment wire.
28. Connect the deployment harness to the yellow connector of the roof rail air bag.
29. Route the deployment harness out of the driver side of the vehicle.

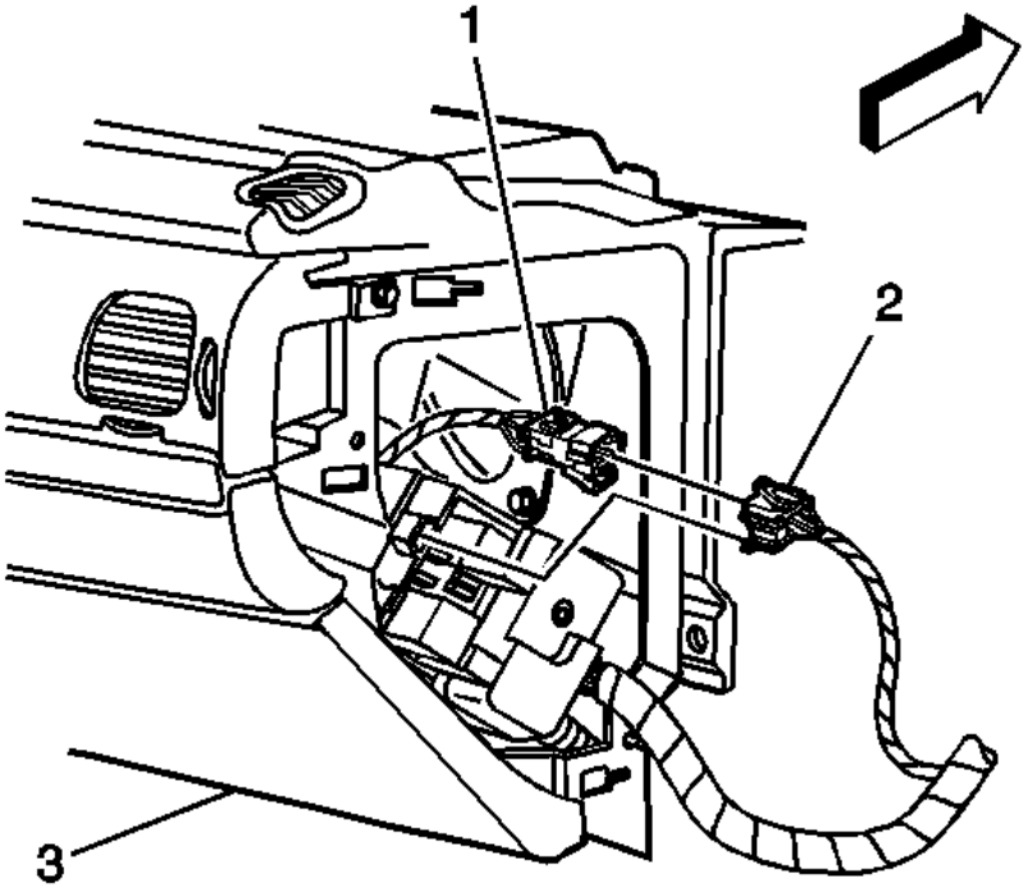


Fig. 45: Identifying I/P Module Connector To Vehicle Harness Connector
Courtesy of GENERAL MOTORS COMPANY

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

NOTE: **If the vehicle is equipped with dual stage air bags the steering wheel air bag and instrument panel air bag will each have 4 wires. Refer to COMPONENT CONNECTOR END VIEWS - INDEX 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.

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34. Strip 13 mm (0.5 in) of insulation from both ends of the wires.
35. Twist together one end from each of the wires in order to short the wires.
36. Twist together the 2 connector wire leads from the high circuits from both stages of the instrument panel air bag to one set of deployment wires. Refer to **COMPONENT CONNECTOR END VIEWS - INDEX** in order to determine the correct circuits.
37. Inspect that the 3-wire connection is secure.
38. Secure and insulate the 3-wire connection to the deployment harness using electrical tape.
39. Twist together the 2 connector wire leads from the low circuits from both stages of the instrument panel air bag to one set of deployment wires. Refer to **COMPONENT CONNECTOR END VIEWS - INDEX** 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

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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** 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.**

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Special Tools

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

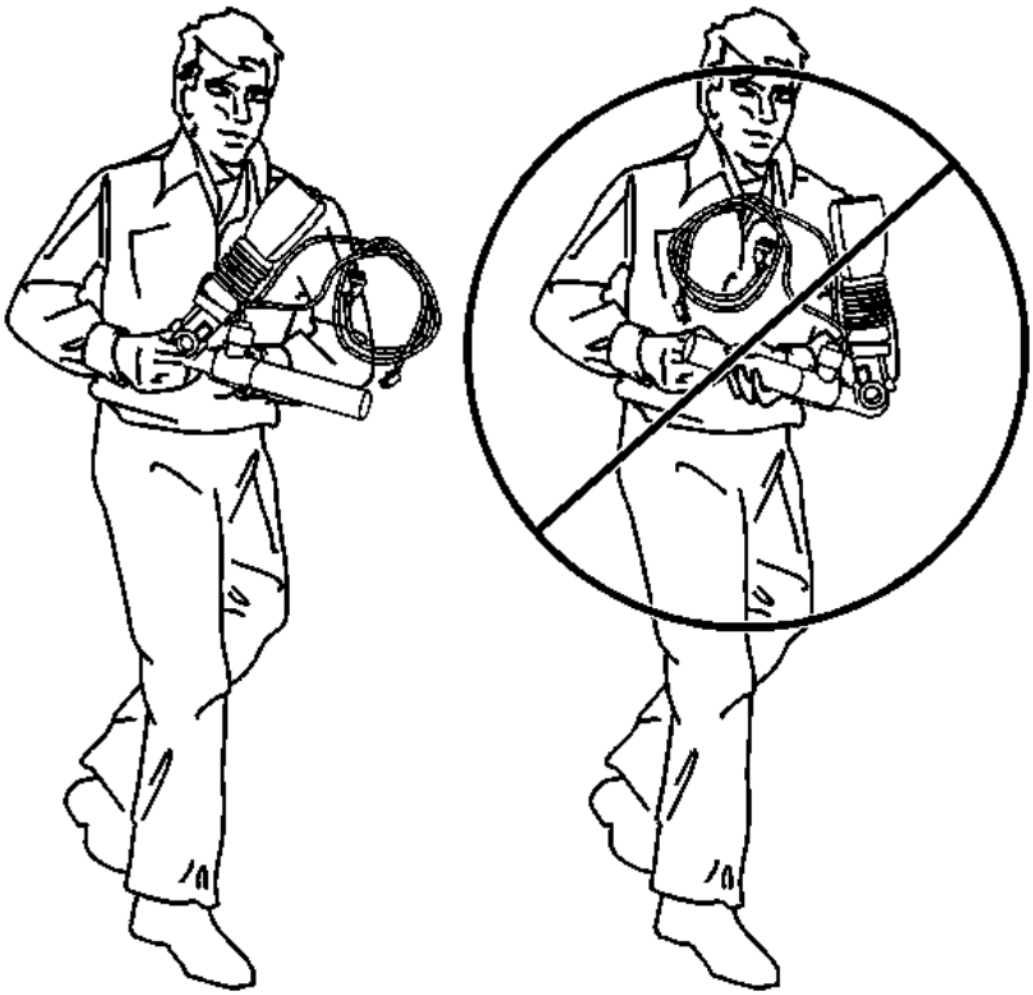


Fig. 46: Proper Pretensioner Carrying
Courtesy of GENERAL MOTORS COMPANY

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

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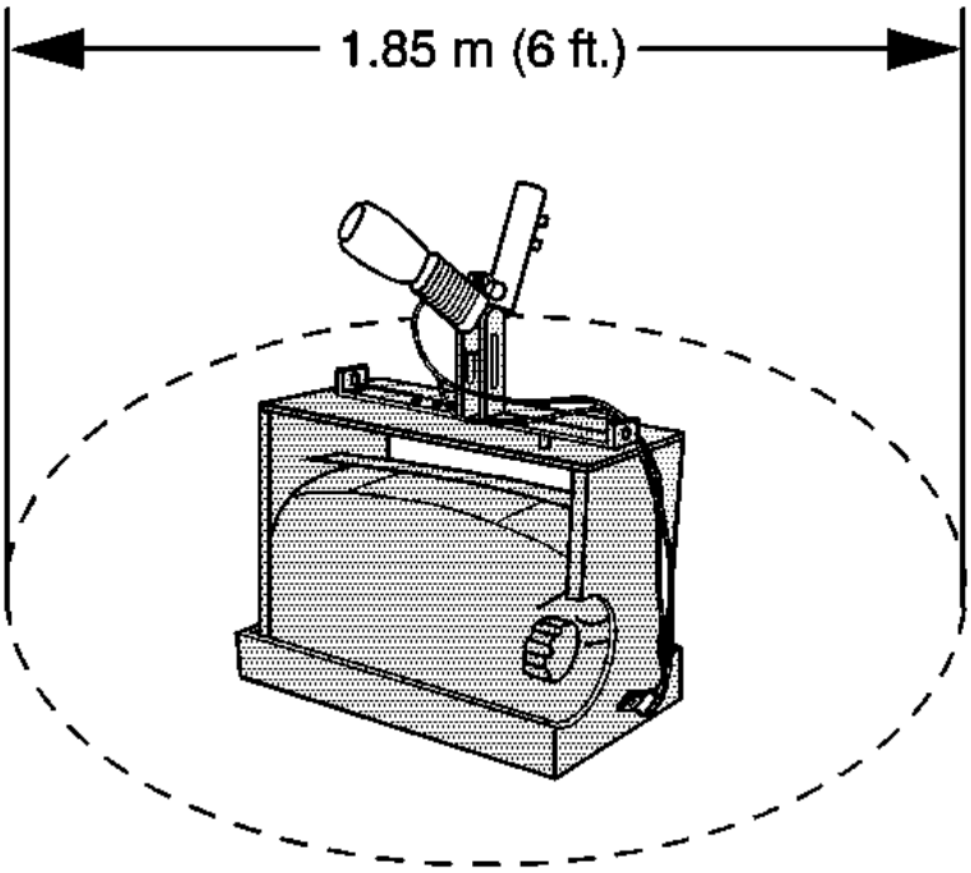


Fig. 47: Pretensioner Deployment Area
Courtesy of GENERAL MOTORS COMPANY

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

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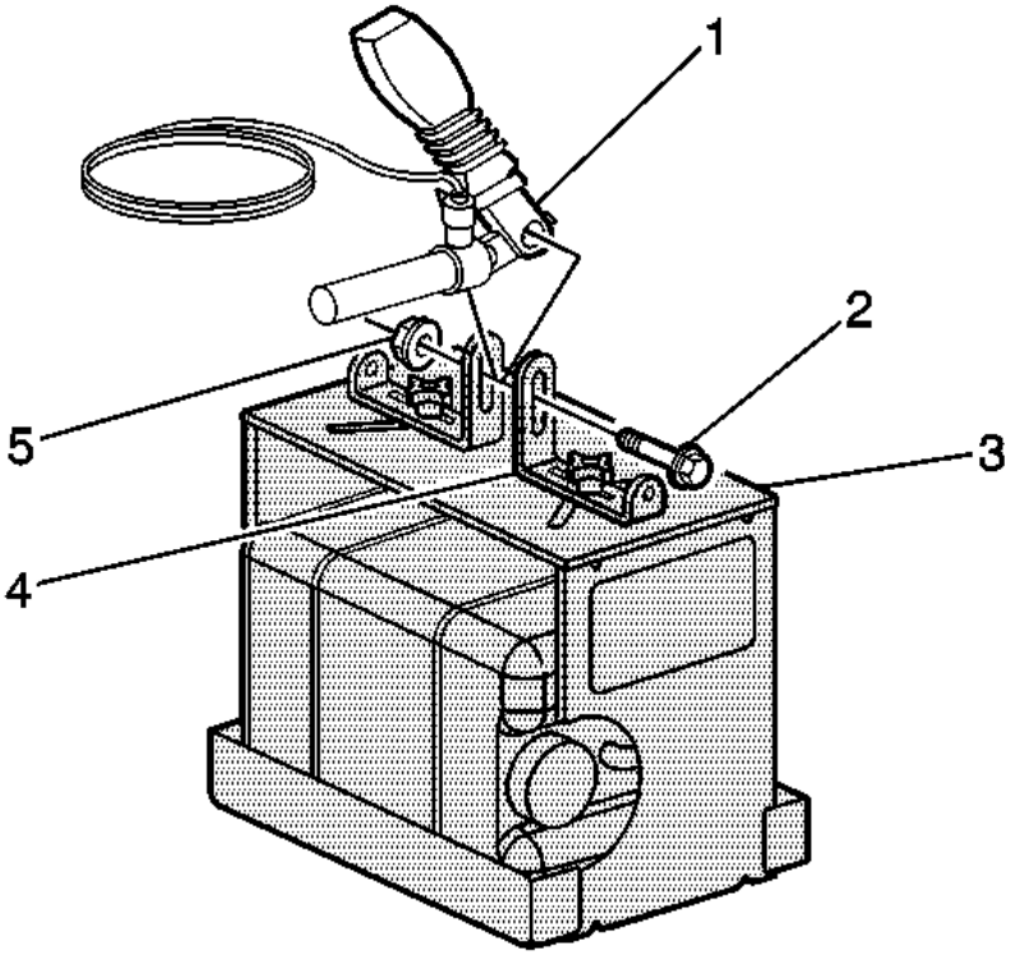


Fig. 48: Mounting Pretensioner In SIR Deployment Fixture
Courtesy of GENERAL MOTORS COMPANY

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

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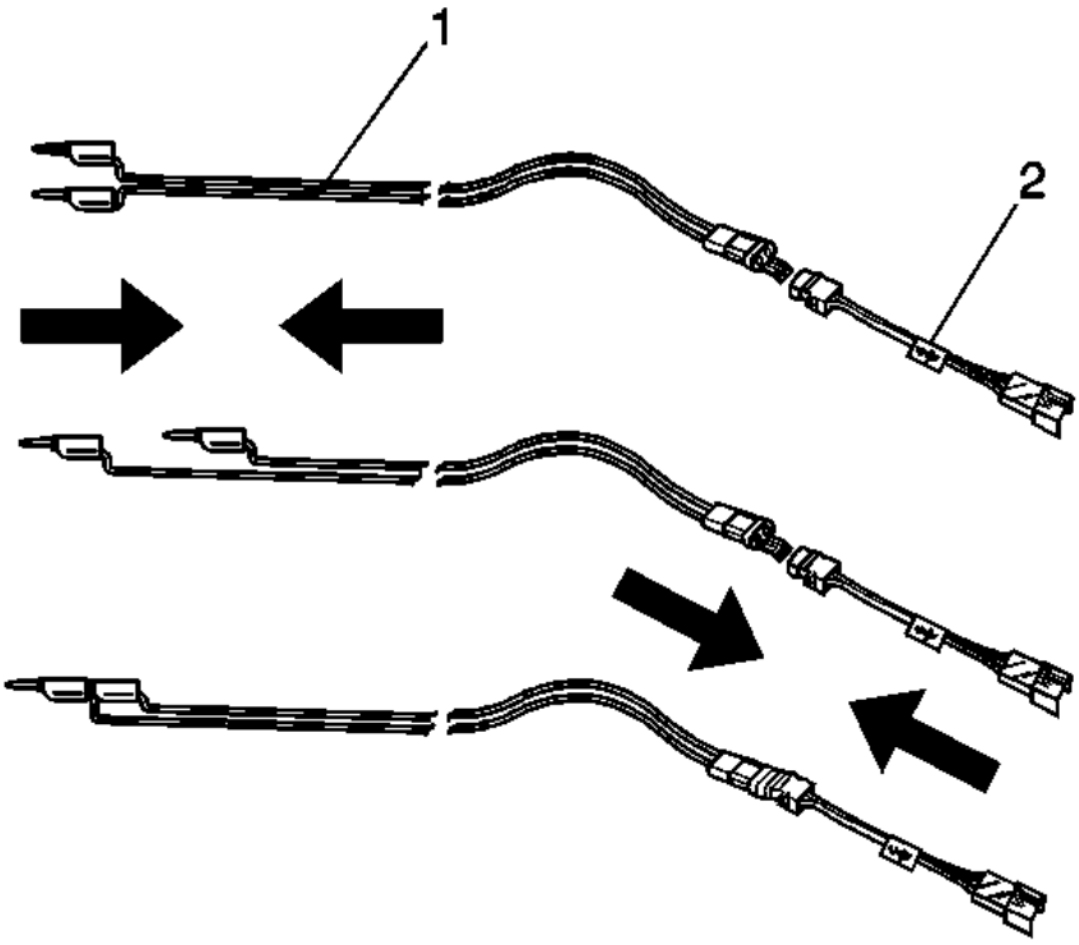


Fig. 49: Identifying SIR Deployment Harness & Adapter
Courtesy of GENERAL MOTORS COMPANY

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

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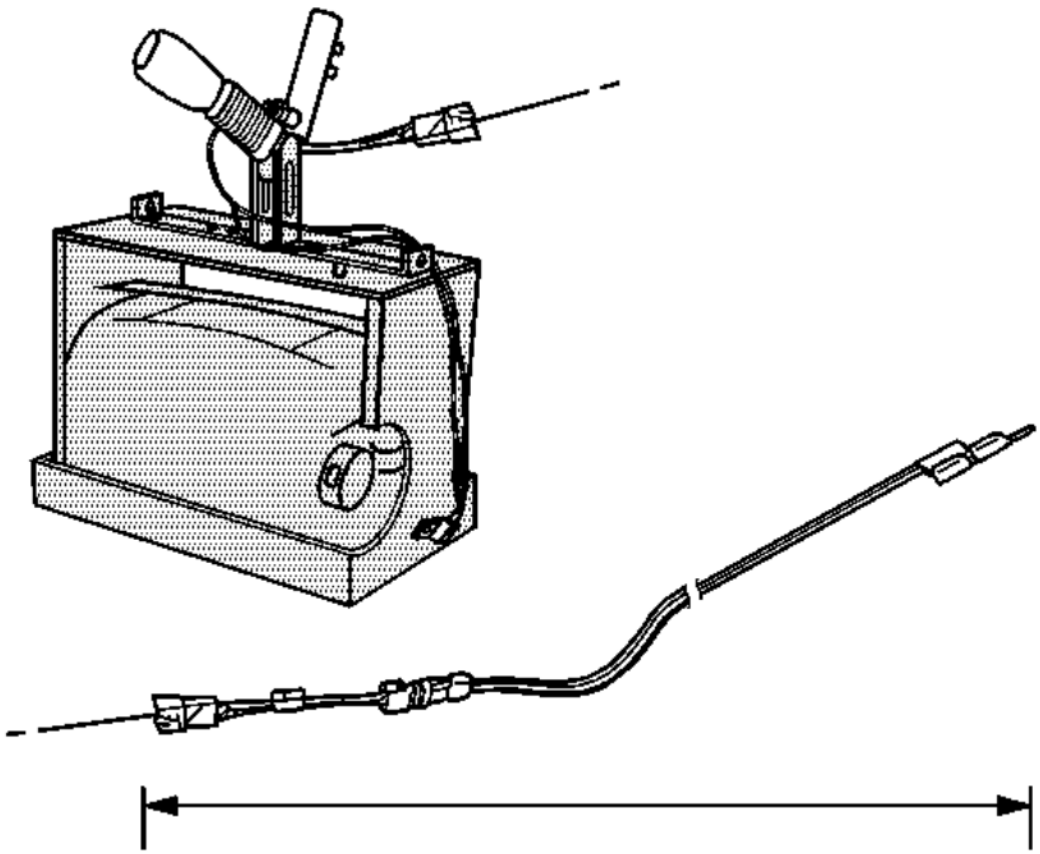


Fig. 50: Extending SIR Deployment Harness & Adapter
Courtesy of GENERAL MOTORS COMPANY

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

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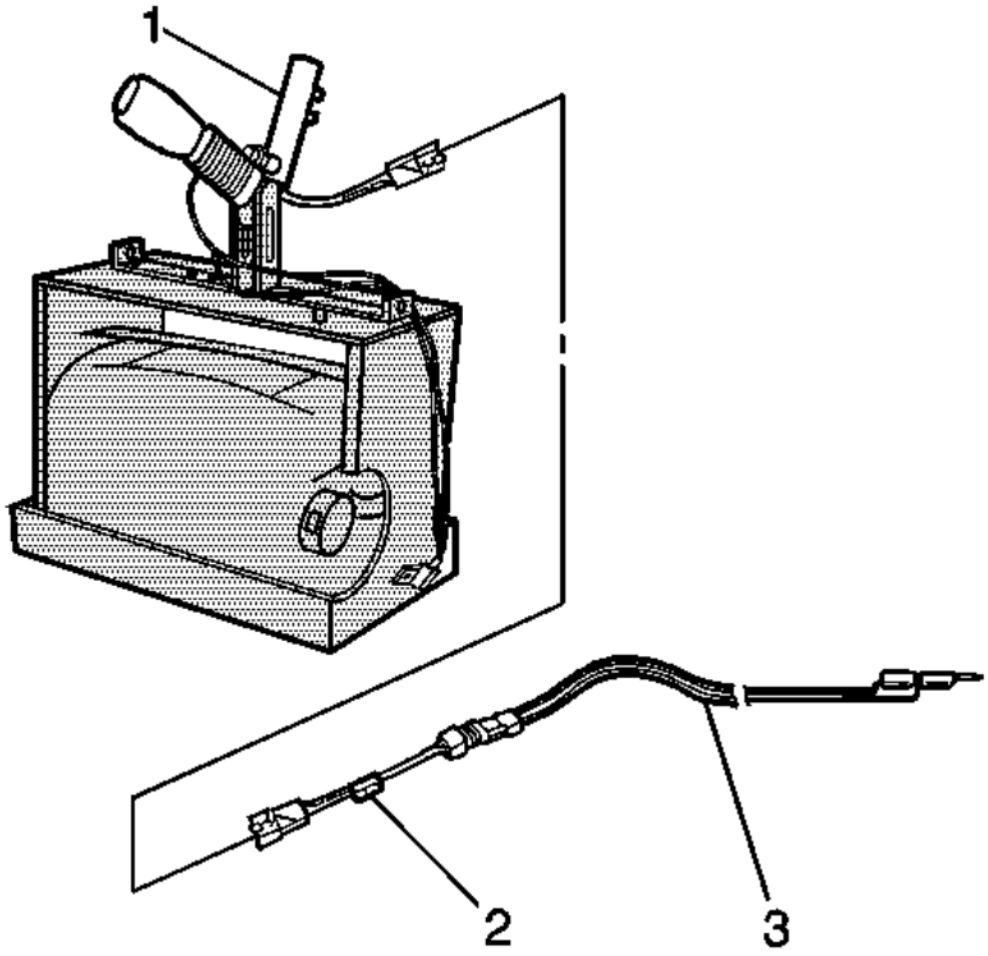


Fig. 51: Connecting Pretensioner To Adapter
Courtesy of GENERAL MOTORS COMPANY

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

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

16. Clear the area of people.

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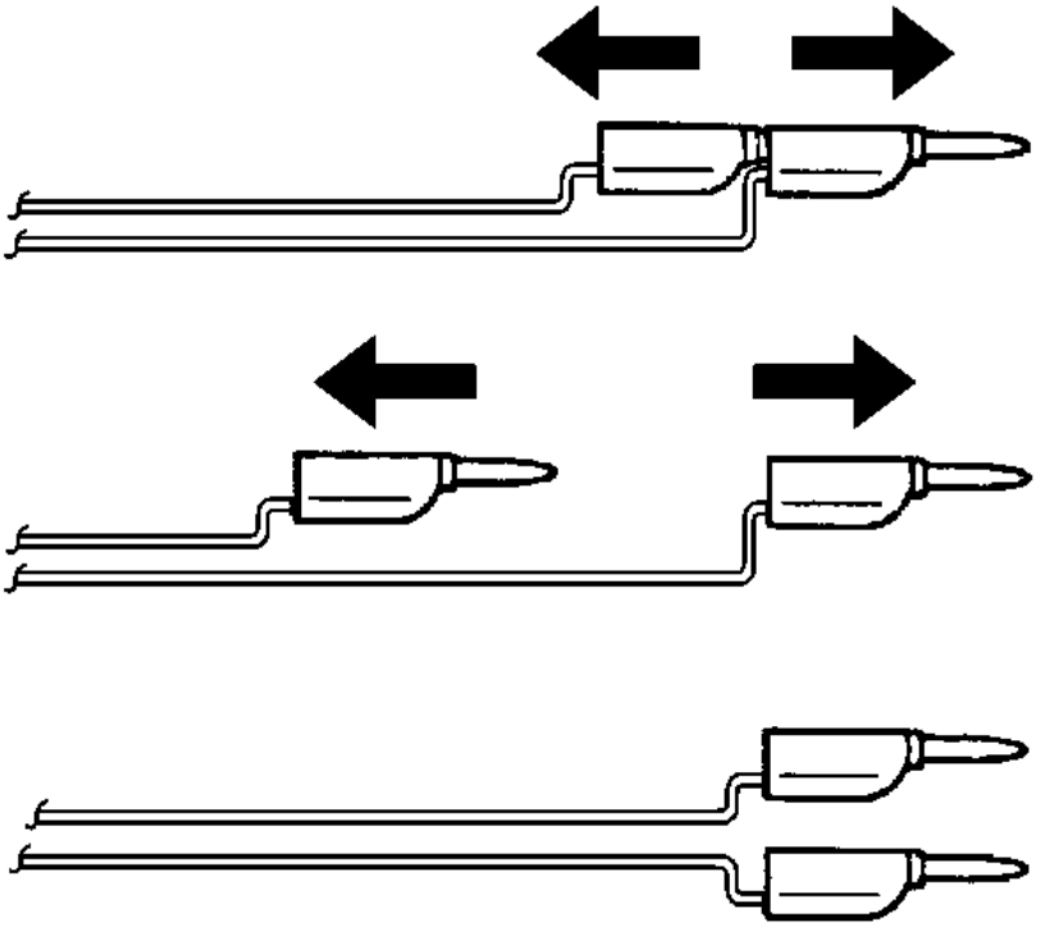


Fig. 52: Separating Banana Plugs
Courtesy of GENERAL MOTORS COMPANY

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

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

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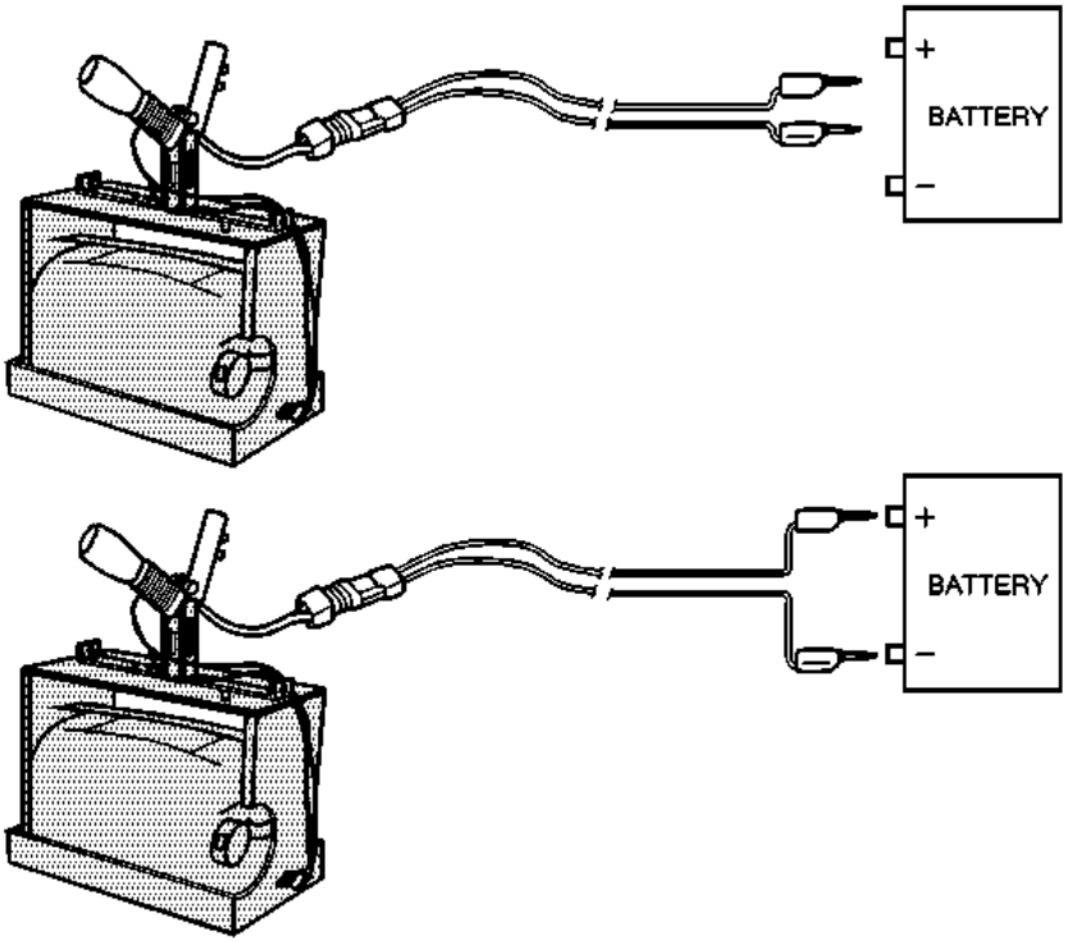


Fig. 53: Deploying Pretensioner
Courtesy of GENERAL MOTORS COMPANY

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

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

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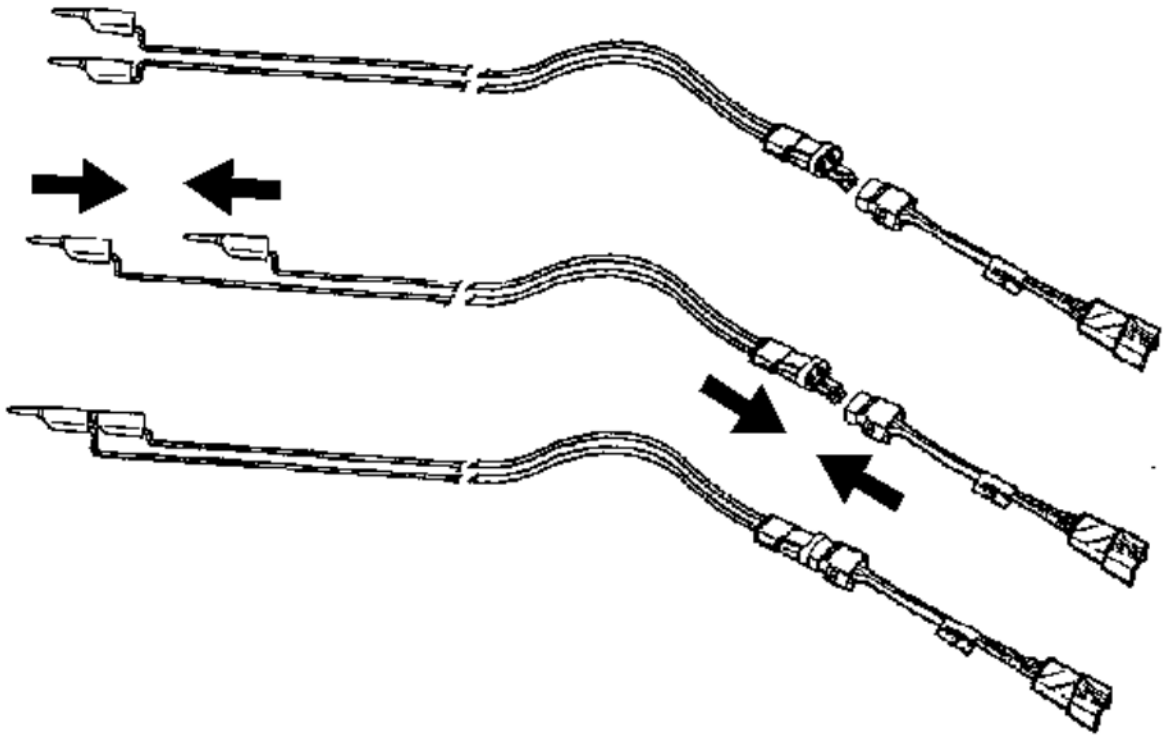


Fig. 54: View Of Deployment Harness Leads
Courtesy of GENERAL MOTORS COMPANY

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

DESCRIPTION AND OPERATION

SUPPLEMENTAL INFLATABLE RESTRAINT SYSTEM DESCRIPTION AND OPERATION

SIR System Overview

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

SIR System AIR BAG Indicator

The SIR system AIR BAG indicator, located in the instrument cluster, is used to notify the driver of SIR system malfunctions and to verify that the Inflatable Restraint Sensing and Diagnostic Module (SDM) is communicating with the instrument cluster. When the ignition is turned ON, the Inflatable Restraint Sensing and Diagnostic Module is supplied with ignition positive voltage. The instrument cluster will momentarily turn on the SIR system AIR BAG indicator. While the indicator is on, the Inflatable Restraint Sensing and Diagnostic Module conducts tests on all SIR system components and circuits. If no malfunctions are detected the Inflatable Restraint Sensing and Diagnostic Module will communicate with the instrument cluster through the serial data circuit and command the SIR system AIR BAG indicator OFF. The Inflatable Restraint Sensing and Diagnostic Module provides continuous monitoring of the air bag circuits by conducting a sequence of checks. If a malfunction is detected the Inflatable Restraint Sensing and Diagnostic Module will store a diagnostic trouble code (DTC) and command the instrument cluster to illuminate the SIR system AIR BAG indicator via serial data. The presence of a SIR system malfunction could result in non-deployment of the air bags or deployment in conditions less severe than intended. The SIR system AIR BAG indicator will remain ON until the malfunction has been repaired.

Inflatable Restraint Sensing and Diagnostic Module (SDM)

The Inflatable Restraint Sensing and Diagnostic Module (SDM) is a microprocessor and the control center for the supplemental inflatable restraint (SIR) system. The Inflatable Restraint Sensing and Diagnostic Module contains internal sensors along with external impact sensors, mounted at strategic locations on the vehicle. In the event of a collision, the Inflatable Restraint Sensing and Diagnostic Module compares the signals from the internal and external impact sensors to a value stored in memory. When the generated signals exceed the stored value, the Inflatable Restraint Sensing and Diagnostic Module will cause current to flow through the appropriate deployment loops to deploy the air bags. The Inflatable Restraint Sensing and Diagnostic Module records the SIR system status when a deployment occurs and illuminates the SIR system AIR BAG indicator located in the instrument cluster. The Inflatable Restraint Sensing and Diagnostic Module performs continuous diagnostic monitoring of the SIR system electrical components and circuitry when the ignition is turned ON. If the Inflatable Restraint Sensing and Diagnostic Module detects a malfunction, a DTC will be stored and the

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Inflatable Restraint Sensing and Diagnostic Module will request the instrument cluster to illuminate the SIR system AIR BAG indicator, notifying the driver that a malfunction exists. In the event that ignition positive voltage is lost during a collision, the Inflatable Restraint Sensing and Diagnostic Module maintains a 23-volt loop reserve for deployment of the air bags. It is important when disabling the SIR system for servicing or rescue operations to allow the 23-volt loop reserve to dissipate, which could take up to 1 minute.

Air Bags

This vehicle contains up to 6 air bags. The 6 air bags are located in the steering wheel (dual inflators), instrument panel (passenger side) (dual inflators), driver side seat, passenger side seat, left roof rail, and right roof rail. To view the locations of the air bags refer to **Master Electrical Component List** . Air bags contain a housing, inflatable air bag, two initiating devices (if dual air bags), canister of gas generating material and, in some cases, stored compressed gas. The deployment loops supply current to deploy the air bags. The driver steering wheel and passenger instrument panel 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 bags ignite 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. A shorting bar (if equipped) is located in the connector.

Seat Belt Pretensioners (Anchor and Retractor)

The seat belt pretensioners (driver and passenger) consist of a housing, seat belt retractor (located in the B-pillar), seat belt anchor (located on the floor), seat belt webbing, an initiator, and a canister of gas generating materials. To view the locations of the seat belt pretentioners refer to **Master Electrical Component List** . The initiator is part of the seat belt pretensioner deployment loop. When the vehicle is involved in a collision of sufficient force, the Inflatable Restraint Sensing and Diagnostic Module causes current to flow through the seat belt deployment loops to the initiator. Current passing through the initiator ignites the material in the canister producing a rapid generation of gas. The gas produced from this reaction deploys the seat belt pretensioners which removes all of the slack in the seat belts. Depending on the severity of the collision, the seat belt pretensioners may deploy without the frontal air bags deploying, or they will deploy immediately before the frontal air bags deploy. A shorting bar (if equipped) is located in the connector.

Impact Sensors

There are multiple impact sensors which may be located in the front of the vehicle, in the front doors or on the B-pillar, and on the C-pillar depending on the vehicle configuration. To view the locations of the impact sensors refer to **Master Electrical Component List** . The front of vehicle, B-pillar, and C-pillar impact sensors contain a sensing device which monitors vehicle acceleration to detect collisions that are severe enough to warrant air bag deployment. The front door impact sensors contain a sensing device which monitors the door cavity air pressure change to detect side collisions that are severe enough to warrant air bag deployment. It is important when working on components in the door to make sure any items which have a sealing impact on the door (water deflector, exterior door handle, speaker, door harness grommet, or sealing strip) are securely fastened when reinstalled. The impact sensors are not part of the deployment loop, but instead provide input to the Inflatable Restraint Sensing and Diagnostic Module (SDM). The Inflatable Restraint Sensing and Diagnostic Module contains a microprocessor that performs calculations using the measured inputs from acceleration and pressure sensors. When the generated calculations exceed the stored value, the Inflatable Restraint Sensing and Diagnostic Module will cause current to flow through the deployment loops deploying the appropriate air bags.

Passenger Presence Detection System and Passenger Air Bag Indicator

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

The passenger presence system is used to monitor the weight of an occupant in the front passenger seat and communicate the status to the inflatable restraint sensing and diagnostic module (SDM) whether to enable or suppress the deployment of the passenger instrument panel air bag. The passenger presence system consist of a passenger presence module, silicone filled sensor pad, passenger seat belt tension sensor, wiring harness, and PASSENGER AIR BAG ON/OFF indicators. The silicone filled sensor pad is located under the passenger seat foam cushion and is connected by a hose clamped to the passenger presence module. The weight of the occupant sitting in the front passenger seat is measured as a pressure change within the bladder by the passenger presence module. If the pressure from the occupants weight is less than a specified value, the passenger presence module will send a suppress signal to the inflatable restraint sensing and diagnostic module to disable the passenger instrument panel air bag. If the pressure from the occupant's weight is higher than a specified value, the passenger presence module will send an enable signal to the inflatable restraint sensing and diagnostic module to enable the passenger instrument panel air bag. The inflatable restraint sensing and diagnostic module will notify the customer of the enable/disable status by turning ON one of the PASSENGER AIR BAG ON/OFF. The passenger presence system monitors itself for faults and will displays diagnostic trouble codes (DTCs) on the scan tool. When a fault is detected, the passenger presence module sends out a message to the inflatable restraint sensing and diagnostic module. The inflatable restraint sensing and diagnostic module responds by sending a command message to the instrument cluster to illuminate the SIR system AIR BAG indicator.

Seat Belt Tension Sensor

The seat belt tension sensor is a sensor mounted on the passenger seat belt retractor and provides an input to the passenger presence module. When an infant car seat is properly restrained on the front passenger seat, the seat belt is tightly secured through the car seat. The seat belt pulls on the tension sensor and changes the voltage signal to the passenger presence module. If the shoulder portion of a passenger belt is pulled out all the way, the child restraint locking feature may be engaged and may disable the passenger air bag.

Seat Position Sensors (If Equipped)

The seat position sensor is used to determine the proximity of the front driver or passenger seat position with respect to the front air bag. There are two states of seat position, forward and rearward. The seat position sensor interfaces with the inflatable restraint sensing and diagnostic module (SDM) and allows the inflatable restraint sensing and diagnostic module to disable stage 2 of the air bag for a front seat that is forward of the forward/rearward point in seat track. The seat position sensor provides two current ranges, one range for the forward seat position and one for rearward seat position. When the inflatable restraint sensing and diagnostic module receives input from a seat position sensor that the seat is rearward, and the inflatable restraint sensing and diagnostic module will not disable stage 2 deployment. When the seat is forward, the inflatable restraint sensing and diagnostic module will disable stage 2 deployment. The inflatable restraint sensing and diagnostic module monitors the seat position sensor circuit and if a fault is detected, the inflatable restraint sensing and diagnostic module will set DTC B0079 or B0080 and disable stage 2 frontal deployment.

Passenger Air Bag Disable Switch (If Equipped)

The passenger air bag disable switch is used to turn the passenger frontal air bag on or off. The customer can decide to disable the passenger air bag by turning this switch on. When the inflatable restraint sensing and diagnostic module sees a ground circuit from this switch the passenger air bag is turned off. The vehicle has a

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PASSENGER AIR BAG ON/OFF indicator to tell the customer when the passenger air bag is on or off based on the disable switch position.

Rollover Protection Disable Switch (If Equipped)

If the vehicle has a Rollover Disable switch that you can use to manually turn on or off the deployment of associated airbags and pretensioners when the algorithm has determined that a rollover event is likely and/or imminent. This only prevents the deployment of calibrated airbags and pretensioners in the case of a rollover event; This does not affect deployments due to front, side or rear events.

Upon powering up the vehicle, the rollover enabled airbags and pretensioners are enabled. If it is desired to disable deployments due to a rollover event, the ignition switch must be in the RUN power mode without the engine running. The Rollover Disabled Switch must be pressed and held for several seconds until a confirmation "beep" is heard. The change of state is confirmed as well by the illumination of the Rollover Disable Icon. The engine can then be started. Do not cycle ignition back to OFF before starting the engine, for this will re-enable these airbags.. The rollover disable feature will remain enabled until the ignition is turned off or the rollover disable switch is pressed again to re-enable the associated airbags and pretensioners.

Seat Belt Indicators

The seat belt indicators are controlled through the Inflatable Restraint Sensing and Diagnostic Module (SDM). For further information on seat belt indicators refer to **Seat Belt System Description and Operation** .

SPECIAL TOOLS AND EQUIPMENT

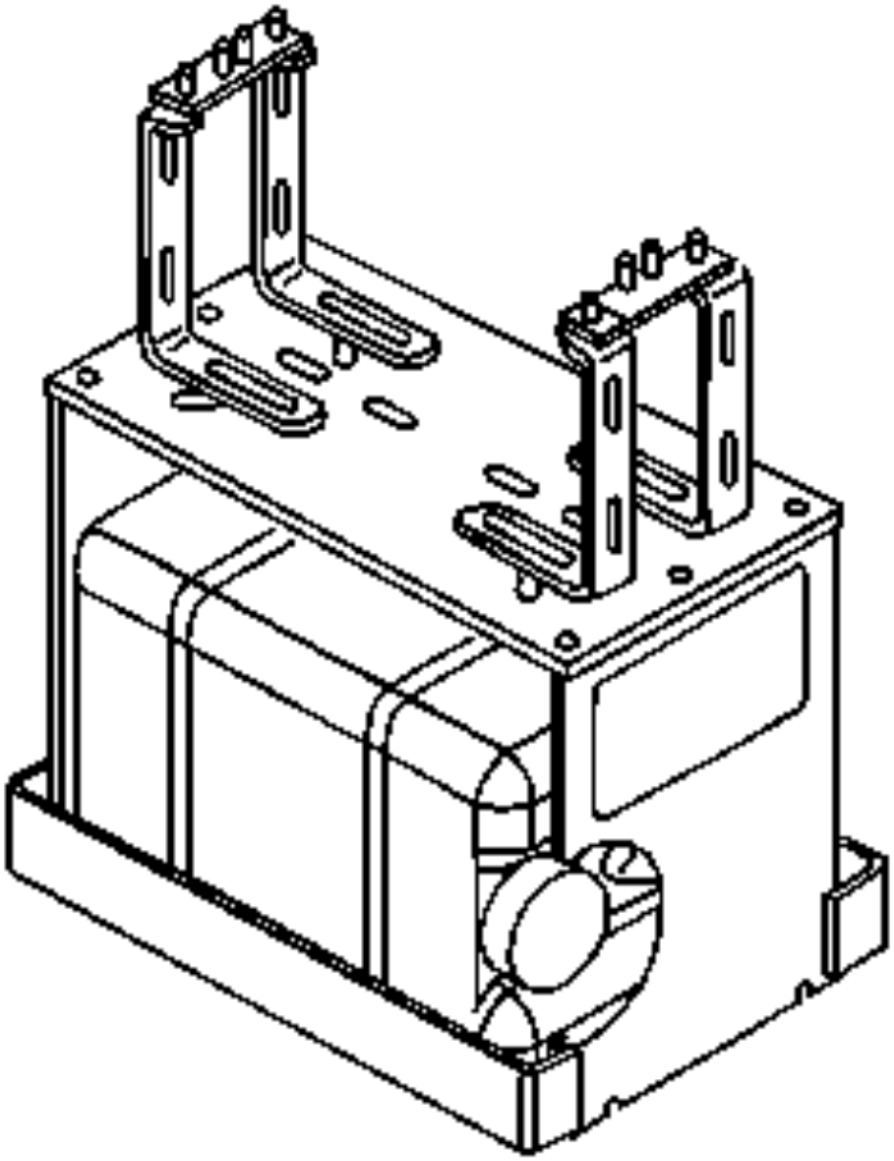
SPECIAL TOOLS

Illustration	Tool Number/ Description

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

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

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