

## 2017 RESTRAINTS

### Supplemental Inflatable Restraints - Encore, Trax

## SPECIFICATIONS

### FASTENER SPECIFICATIONS

#### Reusable Threaded Fastener Tightening Specifications

**NOTE:**

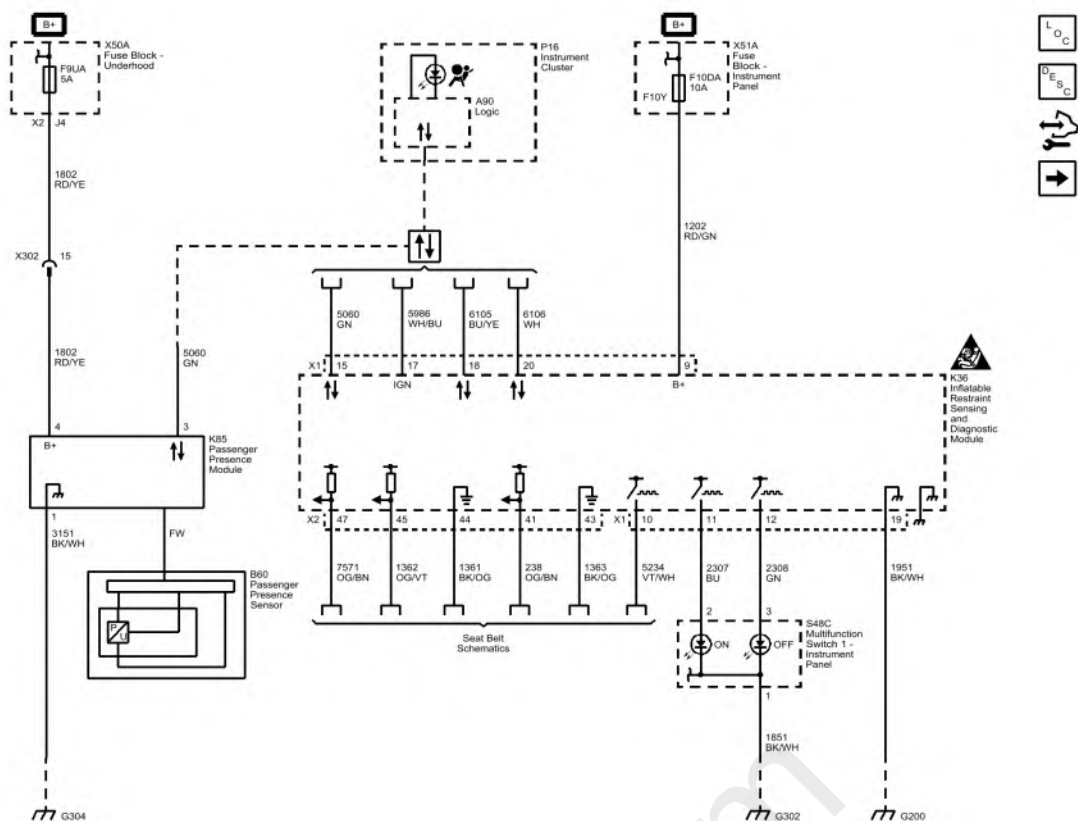
*All fasteners listed in this table can be reused after removal.*

| Application                                                 | Specification      |
|-------------------------------------------------------------|--------------------|
|                                                             | Metric (English)   |
| Driver or Passenger Seat Belt Tensioner Cover Fastener      | 5 N.m (44 lb in)   |
| Driver or Passenger Seat Belt Tensioner Fastener            | 45 N.m (33 lb ft)  |
| Front Seat Belt Retractor Lower Fastener                    | 45 N.m (33 lb ft)  |
| Front Seat Belt Retractor Upper Fastener                    | 45 N.m (33 lb ft)  |
| Inflatable Restraint Front End Discriminating Sensor        | 7.5 N.m (66 lb in) |
| Inflatable Restraint Instrument Panel Lower Module Nut      | 9 N.m (80 lb in)   |
| Inflatable Restraint Remote Impact Sensor Assembly          | 7.5 N.m (66 lb in) |
| Inflatable Restraint Sensing and Diagnostic Module Fastener | 10 N.m (89 lb in)  |
| Inflatable Restraint Side Impact Sensor                     | 7.5 (66 lb in)     |
| Instrument Cluster Display Switch Fastener                  | 1.2 N.m (11 lb in) |
| Instrument Panel Bolt                                       | 2.5 N.m (22 lb in) |
| Instrument Panel Lower Airbag Bracket Bolt                  | 9 N.m (80 lb in)   |
| Rear Seat Bolster Airbag Bracket Bolt                       | 3.5 N.m (31 lb in) |
| Rear Seat Bolster Airbag Nut                                | 3.5 N.m (31 lb in) |
| Roof Side Rail Inflatable Restraint Module Fastener         | 9.5 N.m (84 lb in) |
| Seat Side Inflatable Restraint Module Nut                   | 3.5 N.m (31 lb in) |
| Steering Wheel Airbag Coil Bolt                             | 31 N.m (27 lb in)  |

## SCHEMATIC WIRING DIAGRAMS

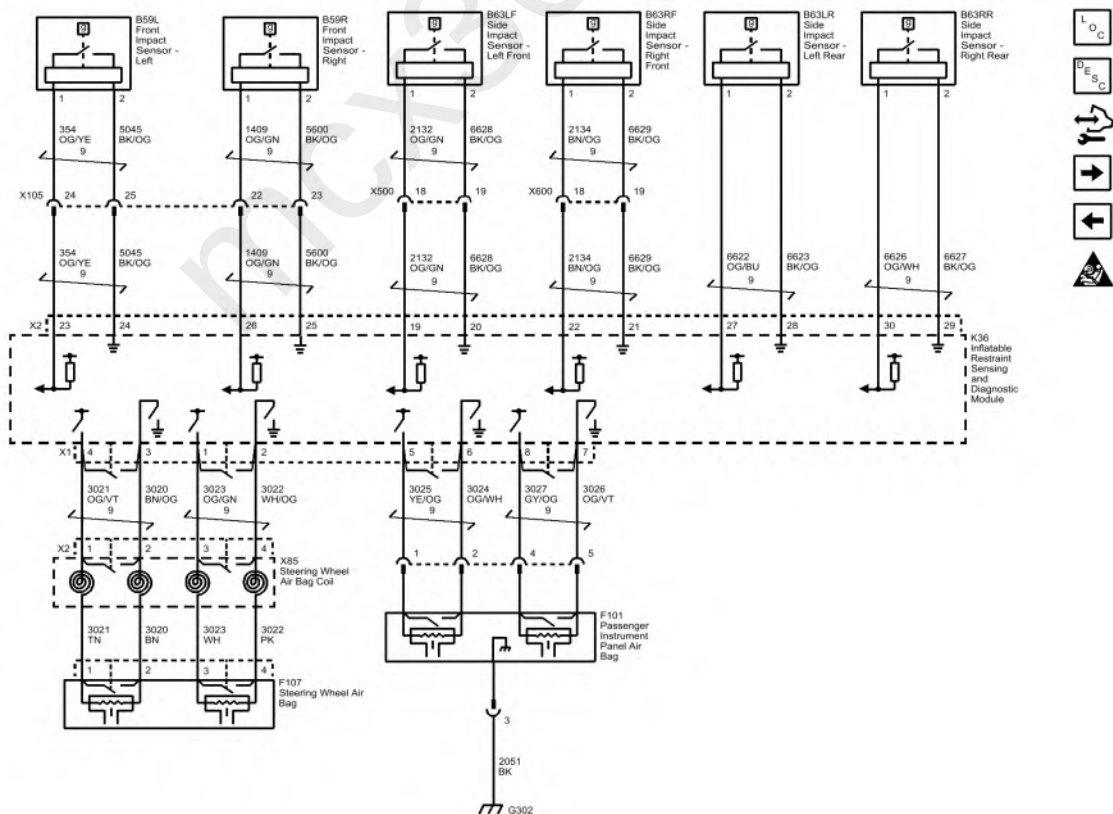
### SIR WIRING SCHEMATICS (BUICK)

Power, Ground, Passenger Presence, Serial Data and Indicators (Buick)



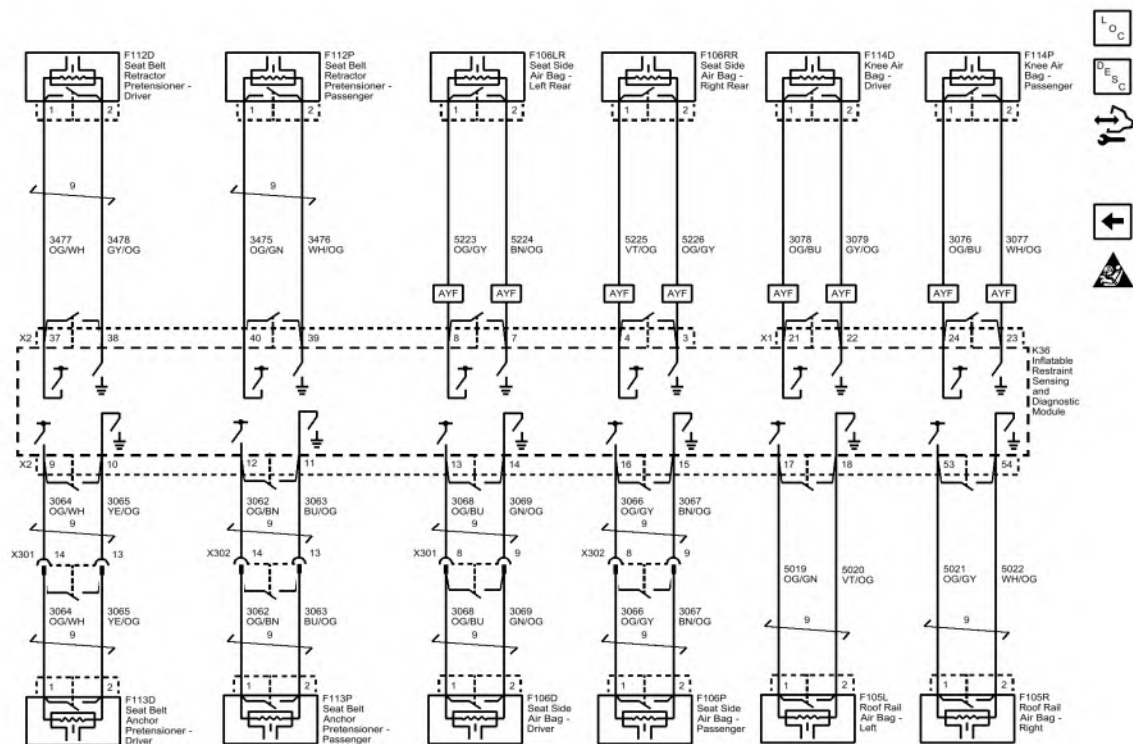
**Fig. 1: Power, Ground, Passenger Presence, Serial Data and Indicators (Buick)**  
Courtesy of GENERAL MOTORS COMPANY

### Front Air Bags and Impact Sensors (Buick)



**Fig. 2: Front Air Bags and Impact Sensors (Buick)**  
Courtesy of GENERAL MOTORS COMPANY

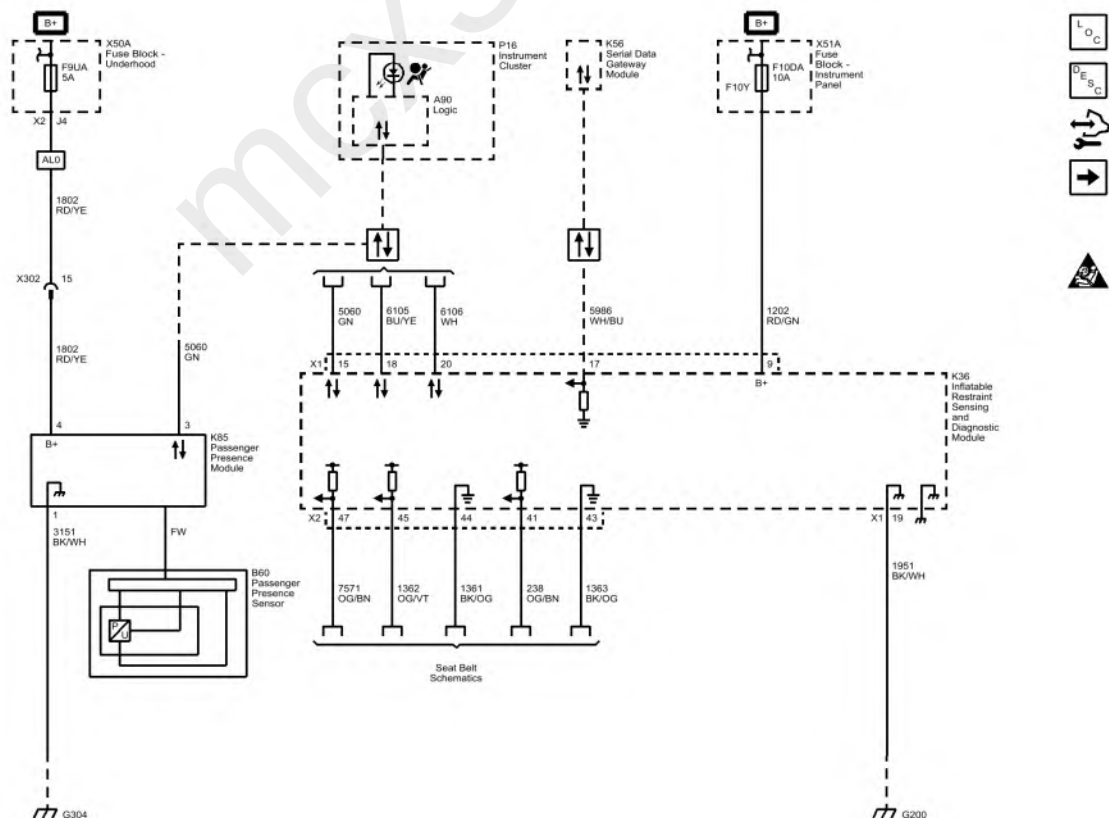
### Seat, Knee, and Roof Air Bags (Buick)



**Fig. 3: Seat, Knee, and Roof Air Bags (Buick)**  
Courtesy of GENERAL MOTORS COMPANY

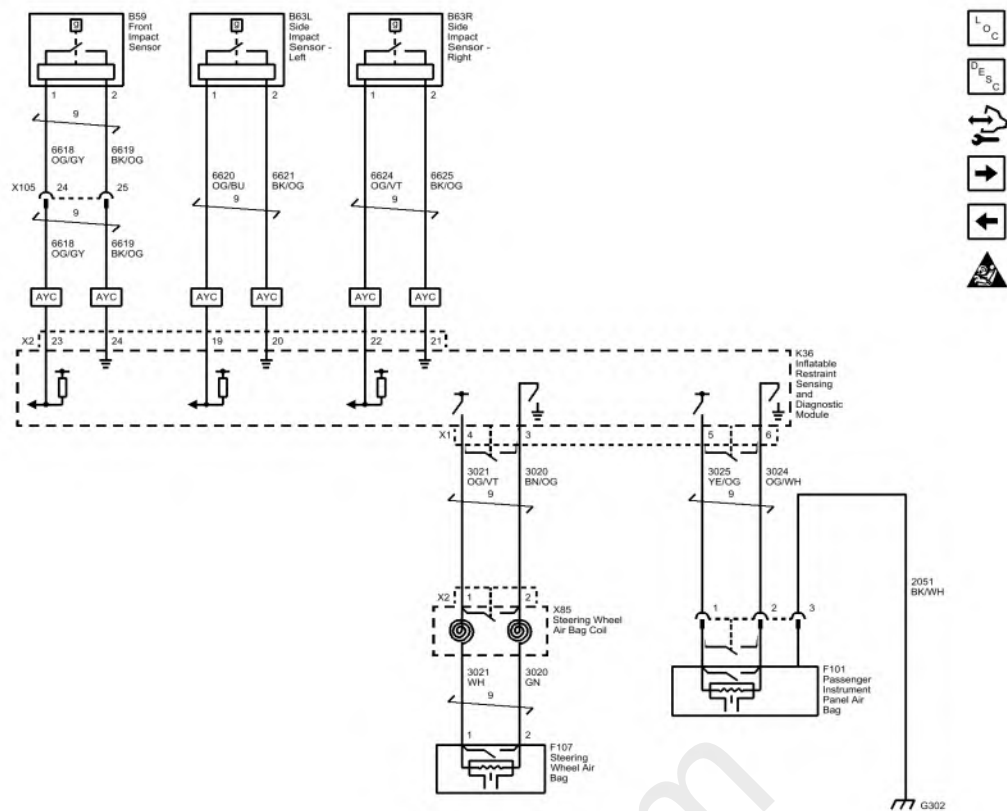
### SIR WIRING SCHEMATICS (CHEVROLET)

Power, Ground, Passenger Presence, Disable Switch, Serial Data, and Indicators (Chevrolet)



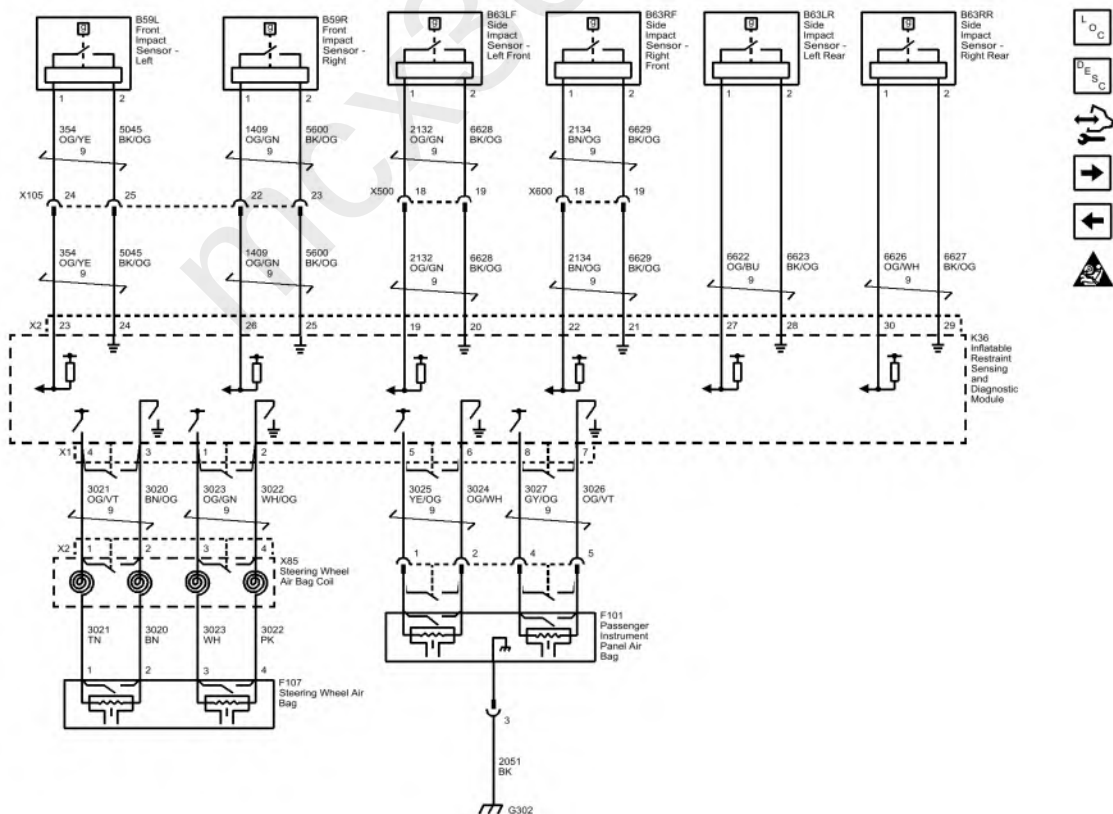
**Fig. 4: Power, Ground, Passenger Presence, Disable Switch, Serial Data, and Indicators (Chevrolet)**  
Courtesy of GENERAL MOTORS COMPANY

Sensors and Front Air Bags (Chevrolet)



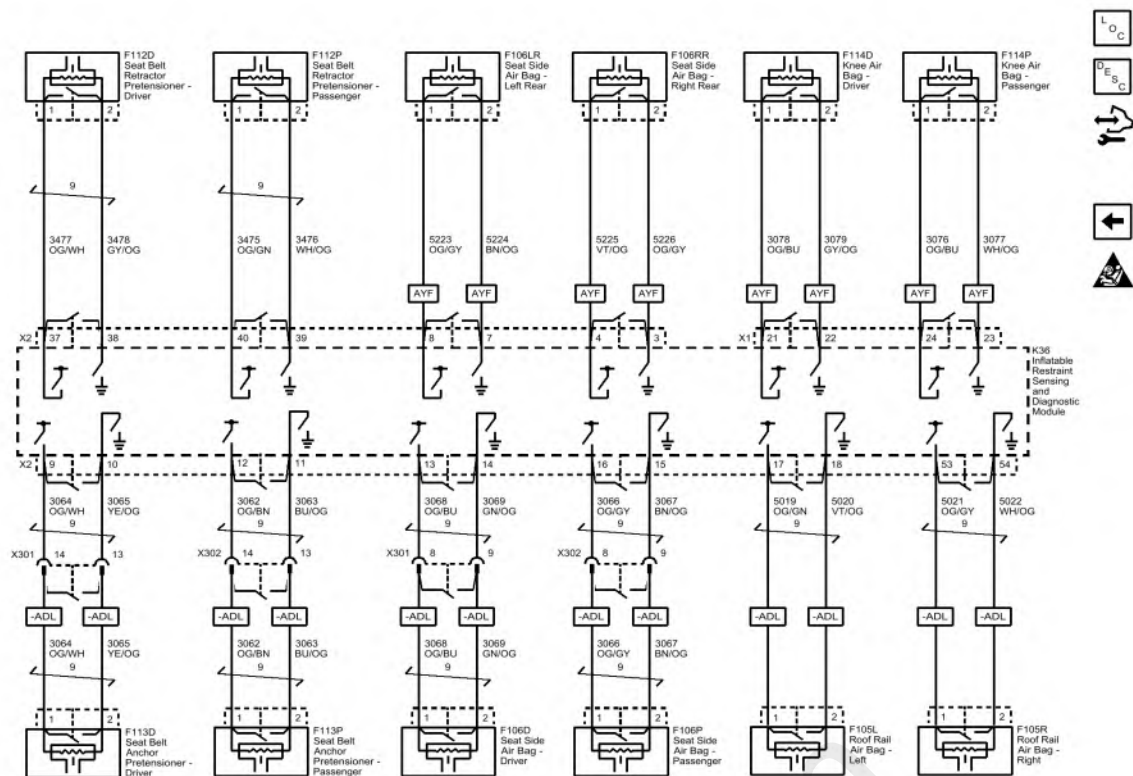
**Fig. 5: Sensors and Front Air Bags (Chevrolet)**  
Courtesy of GENERAL MOTORS COMPANY

### Sensors and Front Air Bags (Chevrolet with AYF)



**Fig. 6: Sensors and Front Air Bags (Chevrolet with AYF)**  
Courtesy of GENERAL MOTORS COMPANY

### Pretensioners, Seat Air Bags, Knee Air Bags, and Roof Air Bags (Chevrolet)



**Fig. 7: Pretensioners, Seat Air Bags, Knee Air Bags, and Roof Air Bags (Chevrolet)**  
 Courtesy of GENERAL MOTORS COMPANY

## DIAGNOSTIC INFORMATION AND PROCEDURES

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

#### 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

##### 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

**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**

| <b>Circuit</b>                                     | <b>Short to Ground</b> | <b>High Resistance</b> | <b>Open</b>           | <b>Short to Voltage</b> | <b>Signal Performance</b> |
|----------------------------------------------------|------------------------|------------------------|-----------------------|-------------------------|---------------------------|
| Driver Steering Wheel Air Bag Stage 1 High Control | B0012 02,<br>B0012 0E  | B0012 0D               | B0012 04,<br>B0012 0D | B0012 01                | -                         |
| Driver Steering Wheel Air Bag Stage 1 Low Control  | B0012 02,<br>B0012 0E  | B0012 0D               | B0012 04,<br>B0012 0D | B0012 01                | -                         |
| Driver Steering Wheel Air Bag Stage 2 High Control | B0013 02,<br>B0013 0E  | B0013 0D               | B0013 04,<br>B0013 0D | B0013 01                | -                         |
| Driver Steering Wheel Air Bag Stage 2 Low Control  | B0013 02,<br>B0013 0E  | B0013 0D               | B0013 04,<br>B0013 0D | B0013 01                | -                         |

**Circuit/System Description**

During a frontal crash of sufficient force the inflatable restraint sensing and diagnostic module (SDM) will allow current to flow through the deployment loop in order to deploy the steering wheel air bag. The SDM performs continuous diagnostic tests on the deployment loops to check for proper circuit continuity and for shorts to ground or voltage. There are 2 shorting bars used within the steering wheel air bag coil connector which will short together both steering wheel air bag stage 1 high control circuit and steering wheel air bag stage 1 low control circuit and both steering wheel air bag stage 2 high control circuit and steering wheel air bag stage 2 low control circuit when the connector is disconnected. This will help to prevent unwanted deployment of the steering wheel air bag during servicing.

**Conditions for Running the DTC**

Ignition voltage is between 9-16 V.

**Conditions for Setting the DTC****B0012 01 stage 1 or B0013 01 stage 2**

The steering wheel air bag deployment loop is shorted to voltage for 2 seconds.

**B0012 02 stage 1 or B0013 02 stage 2**

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

**B0012 04 stage 1 or B0013 04 stage 2**

The steering wheel air bag deployment loop is open for 2 seconds.

## **B0012 0D stage 1 or B0013 0D stage 2**

The steering wheel air bag deployment loop resistance is greater than 4.4  $\Omega$  for 2 seconds.

## **B0012 0E stage 1 or B0013 0E stage 2**

The steering wheel air bag deployment loop resistance is less than 1.7  $\Omega$  for 2 seconds.

### **Action Taken When the DTC Sets**

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

### **Conditions for Clearing the DTC**

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

### **Diagnostic Aid**

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

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

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

- Steering wheel air bag assembly
- Steering wheel air bag coil assembly
- Inline harness connectors
- Harness side of the inflatable restraint sensing and diagnostic module connector

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

### **Reference Information**

Schematic Reference

**SIR Schematics (Buick)****SIR Schematics (Chevrolet)**

Connector End View Reference

**COMPONENT CONNECTOR END VIEWS - INDEX (ENCORE)****COMPONENT CONNECTOR END VIEWS - INDEX (TRAX)**

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**

**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 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  $\Omega$  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  $\Omega$  or greater than 4.0  $\Omega$**

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  $\Omega$  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  $\Omega$  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  $\Omega$  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  $\Omega$  between the control circuit terminal 1 and the control circuit terminal 2.

- **If 25  $\Omega$  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  $\Omega$**

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  $\Omega$  between each control circuit terminal listed below and ground:

- Control circuit terminal 1
- Control circuit terminal 2

- **If 25  $\Omega$  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  $\Omega$**

7. Install a 3 A fused jumper wire between the control circuit terminal 1 and the control circuit terminal 2, ignition ON.

8. Verify DTC B0012 0E or B0013 0E is set while turning the steering wheel 360 degrees in one direction then back 360 degrees in the other direction.

- **If DTC B0012 0E or B0013 0E is not set**

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

2. Test for less than 2  $\Omega$  in the K85 Steering Wheel Airbag Coil and each control circuit end to end.

- If 2  $\Omega$  or greater, replace the X85 Steering Wheel Air Bag Coil or repair the open/high resistance in the circuit.
- If less than 2  $\Omega$ , replace the K36 Inflatable Restraint Sensing and Diagnostic Module.

- **If DTC B0012 0E or B0013 0E is set**

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 \(Buick\)](#)[Steering Wheel Airbag Coil Replacement \(Chevrolet, Without BTM\)](#)[Steering Wheel Airbag Coil Replacement \(Chevrolet, With BTM\)](#)
- [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: DRIVER 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 01**

Driver Seat Side Air Bag Deployment Loop Short to Battery

**DTC B0014 02**

Driver Seat Side Air Bag Deployment Loop Short to Ground

**DTC B0014 04**

Driver Seat Side Air Bag Deployment Loop Open

**DTC B0014 0D**

Driver Seat Side Air Bag Deployment Loop High Resistance

**DTC B0014 0E**

Driver Seat Side Air Bag Deployment Loop Low Resistance

**DTC B0021 01**

Passenger Seat Side Air Bag Deployment Loop Short to Battery

**DTC B0021 02**

Passenger Seat Side Air Bag Deployment Loop Short to Ground

**DTC B0021 04**

Passenger Seat Side Air Bag Deployment Loop Open

**DTC B0021 0D**

Passenger Seat Side Air Bag Deployment Loop High Resistance

**DTC B0021 0E**

Passenger Seat Side Air Bag Deployment Loop Low Resistance

**DTC B0031 01**

Left Rear Seat Side Air Bag Deployment Loop Short to Battery

**DTC B0031 02**

Left Rear Seat Side Air Bag Deployment Loop Short to Ground

**DTC B0031 04**

Left Rear Seat Side Air Bag Deployment Loop Open

**DTC B0031 0D**

Left Rear Seat Side Air Bag Deployment Loop High Resistance

**DTC B0031 0E**

Left Rear Seat Side Air Bag Deployment Loop Low Resistance

**DTC B0038 01**

Right Rear Seat Side Air Bag Deployment Loop Short to Battery

**DTC B0038 02**

**DTC B0038 04**

Right Rear Seat Side Air Bag Deployment Loop Open

**DTC B0038 0D**

Right Rear Seat Side Air Bag Deployment Loop High Resistance

**DTC B0038 0E**

Right Rear Seat Side Air Bag Deployment Loop Low Resistance

**Diagnostic Fault Information**

| <b>Circuit</b>                             | <b>Short to Ground</b> | <b>High Resistance</b> | <b>Open</b>        | <b>Short to Voltage</b> | <b>Signal Performance</b> |
|--------------------------------------------|------------------------|------------------------|--------------------|-------------------------|---------------------------|
| Left Front Seat Side Air Bag High Control  | B0014 02, B0014 0E     | B0014 0D               | B0014 04, B0014 0D | B0014 01                | -                         |
| Left Front Seat Side Air Bag Low Control   | B0014 02, B0014 0E     | B0014 0D               | B0014 04, B0014 0D | B0014 01                | -                         |
| Right Front Seat Side Air Bag High Control | B0021 02, B0021 0E     | B0021 0D               | B0021 04, B0021 0D | B0021 01                | -                         |
| Right Front Seat Side Air Bag Low Control  | B0021 02, B0021 0E     | B0021 0D               | B0021 04, B0021 0D | B0021 01                | -                         |
| Left Rear Seat Side Air Bag High Control   | B0031 02, B0031 0E     | B0031 0D               | B0031 04, B0031 0D | B0031 01                | -                         |
| Left Rear Seat Side Air Bag Low Control    | B0031 02, B0031 0E     | B0031 0D               | B0031 04, B0031 0D | B0031 01                | -                         |
| Right Rear Seat Side Air Bag High Control  | B0038 02, B0038 0E     | B0038 0D               | B0038 04, B0038 0D | B0038 01                | -                         |
| Right Rear Seat Side Air Bag Low Control   | B0038 02, B0038 0E     | B0038 0D               | B0038 04, B0038 0D | B0038 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 2 shorting bars used within the connector that will short the control circuits together 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, B0031 01, B0038 01**

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

**B0014 02, B0021 02, B0031 02, B0038 02**

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

**B0014 04, B0021 04, B0031 04, B0038 04**

The air bag control circuit is open for 2 seconds.

**B0014 0D, B0021 0D, B0031 0D, B0038 0D**

The air bag deployment loop resistance is greater than 4.2  $\Omega$  for 2 seconds.

#### **B0014 0E, B0021 0E, B0031 0E, B0038 0E**

The air bag deployment loop resistance is less than 1.4  $\Omega$  for 2 seconds.

#### **Action Taken When the DTC Sets**

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

#### **Conditions for Clearing the DTC**

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

#### **Diagnostic Aid**

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

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

- Front and rear seat side air bags
- 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 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 (Buick)****SIR Schematics (Chevrolet)**

Connector End View Reference

**COMPONENT CONNECTOR END VIEWS - INDEX (ENCORE)****COMPONENT CONNECTOR END VIEWS - INDEX (TRAX)**

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

## 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 side air bag
  - Inflatable restraint sensing and diagnostic module
  - All wiring harness connectors
  - Inflatable restraint sensing and diagnostic module wiring harness connector
- The connector and connector position assurance (CPA) may seat independent of each other. Both the connector and CPA should seat with an audible and/or tactile click. The CPA isolates the shorting-bars within the connector allowing the deployment circuit to operate properly.
- If the condition is intermittent or cannot be duplicated, disconnect the connectors and add dielectric grease/lubricant (Nyogel 760G or equivalent, meeting GM specification 9986087). This procedure will correct the high resistance condition due to terminal fretting corrosion.

1. Verify the appropriate scan tool Deployment Loop Resistance parameters stay consistently between 2.1-4.0  $\Omega$  without any spikes or dropouts while moving the harness near each connector.

- F106 Seat Side Air Bag
- Any inline harness connector
- K36 Inflatable Restraint Sensing and Diagnostic Module
- If less than 2.1  $\Omega$  or greater than 4.0  $\Omega$

Refer to Circuit/System Testing.

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

2. All OK

## Circuit/System Testing

1. Ignition OFF, scan tool disconnected, disconnect the harness connector at the appropriate F106 Seat Side Air Bag.
2. Test for greater than 25  $\Omega$  between the control circuit terminals 1 and 2.
  - If 25  $\Omega$  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 2 control circuits.

- If less than infinite resistance, repair the short between the 2 circuits.
- If infinite resistance, replace the K36 Inflatable Restraint Sensing and Diagnostic Module.

- **If greater than 25  $\Omega$**

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 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.

6. Test for greater than 25  $\Omega$  between each control circuit terminal listed below and ground:

- Control circuit terminal 1
- Control circuit terminal 2
- **If 25  $\Omega$  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  $\Omega$**

7. Install a 3 A fused jumper wire between the control circuit terminals 1 and 2, ignition ON.

8. Verify DTC B0014 0E, B0021 0E, B0031 0E, or B0038 0E is set.

- **If B0014 0E, B0021 0E, B0031 0E, or B0038 0E is not set**

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

2. Test for less than 2  $\Omega$  in each control circuit end to end.

- If 2  $\Omega$  or greater, repair the open/high resistance in the circuit.
- If less than 2  $\Omega$ , replace the K36 Inflatable Restraint Sensing and Diagnostic Module.

- **If B0014 0E, B0021 0E, B0031 0E, or B0038 0E is set**

9. Ignition 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, 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**

Test or replace the 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](#)
- [Rear Seat Bolster Airbag Replacement \(AYF\)](#)
- [Control Module References](#) for inflatable restraint sensing and diagnostic module replacement, programming, and setup

## **DTC B0015, B001A, B001B, OR B0022: DRIVER SEAT BELT RETRACTOR PRETENSIONER DEPLOYMENT LOOP**

### Diagnostic Instructions

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

### DTC Descriptors

#### **DTC B0015 01**

Driver Seat Belt Retractor Pretensioner Deployment Loop Short to Battery

#### **DTC B0015 02**

Driver Seat Belt Retractor Pretensioner Deployment Loop Short to Ground

#### **DTC B0015 04**

Driver Seat Belt Retractor Pretensioner Deployment Loop Open

#### **DTC B0015 0D**

Driver Seat Belt Retractor Pretensioner Deployment Loop High Resistance

#### **DTC B0015 0E**

Driver Seat Belt Retractor Pretensioner Deployment Loop Low Resistance

#### **DTC B001A 01**

Driver Seat Belt Anchor Pretensioner Deployment Loop Short to Battery

#### **DTC B001A 02**

Driver Seat Belt Anchor Pretensioner Deployment Loop Short to Ground

#### **DTC B001A 04**

Driver Seat Belt Anchor Pretensioner Deployment Loop Open

#### **DTC B001A 0D**

Driver Seat Belt Anchor Pretensioner Deployment Loop High Resistance

#### **DTC B001A 0E**

Driver Seat Belt Anchor Pretensioner Deployment Loop Low Resistance

#### **DTC B001B 01**

Passenger Seat Belt Anchor Pretensioner Deployment Loop Short to Battery

#### **DTC B001B 02**

Passenger Seat Belt Anchor Pretensioner Deployment Loop Short to Ground

#### **DTC B001B 04**

Passenger Seat Belt Anchor Pretensioner Deployment Loop Open

#### **DTC B001B 0D**

Passenger Seat Belt Anchor Pretensioner Deployment Loop High Resistance

#### **DTC B001B 0E**

Passenger Seat Belt Anchor Pretensioner Deployment Loop Low Resistance

#### **DTC B0022 01**

Passenger Seat Belt Retractor Pretensioner Deployment Loop Short to Battery

#### **DTC B0022 02**

Passenger Seat Belt Retractor Pretensioner Deployment Loop Short to Ground

#### **DTC B0022 04**

Passenger Seat Belt Retractor Pretensioner Deployment Loop Open Circuit

#### **DTC B0022 0D**

Passenger Seat Belt Retractor Pretensioner Deployment Loop High Resistance

#### **DTC B0022 0E**

Passenger Seat Belt Retractor Pretensioner Deployment Loop Low Resistance

#### **Diagnostic Fault Information**

| <b>Circuit</b>                                          | <b>Short to Ground</b> | <b>High Resistance</b> | <b>Open</b>        | <b>Short to Voltage</b> | <b>Signal Performance</b> |
|---------------------------------------------------------|------------------------|------------------------|--------------------|-------------------------|---------------------------|
| 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 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

#### **B0015 01, B001A 01, B001B 01, B0022 01**

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

#### **B0015 02, B001A 02, B001B 02, B0022 02**

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

#### **B0015 04, B001A 04, B001B 04, B0022 04**

The pretensioner control circuit is open for 2 seconds.

#### **B0015 0D, B001A 0D, B001B 0D, B0022 0D**

The pretensioner deployment loop resistance is greater than 4.2  $\Omega$  for 2 seconds.

#### **B0015 0E, B001A 0E, B001B 0E, B0022 0E**

The pretensioner deployment loop resistance is less than 1.4  $\Omega$  for 2 seconds.

### Action Taken When the DTC Sets

- The Inflatable Restraint and Sensing Diagnostic Module requests the instrument cluster to illuminate the AIR BAG indicator.
- The Inflatable Restraint and Sensing 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 and Sensing Diagnostic Module connector

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

## Reference Information

Schematic Reference

[SIR Schematics \(Buick\)](#)[SIR Schematics \(Chevrolet\)](#)

Connector End View Reference

[COMPONENT CONNECTOR END VIEWS - INDEX \(ENCORE\)](#)[COMPONENT CONNECTOR END VIEWS - INDEX \(TRAX\)](#)

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.
  - Seat belt retractor pretensioner
  - Inflatable restraint and sensing diagnostic module
  - Seat belt retractor pretensioner wiring harness connector
  - Passenger instrument panel air bag wiring harness connector
  - Seat side air bag wiring harness connector
  - Roof rail air bag wiring harness connector
  - Inflatable Restraint and Sensing 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 2.1-4.0  $\Omega$  without any spikes or dropouts while moving the harness near each connector listed below:
  - F112 Seat Belt Retractor Pretensioner

- F113 Seat Belt Anchor Pretensioner
- Any inline harness connector
- K36 Inflatable Restraint and Sensing Diagnostic Module
- **If less than 2.1  $\Omega$  or greater than 4.0  $\Omega$**

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 between 2.1–4.0  $\Omega$  without any spikes or dropouts**

2. All OK

### Circuit/System Testing

1. Ignition OFF, scan tool disconnected, disconnect the appropriate harness connector listed below. It may take up to 2 min for all vehicle systems to power down.

- F112 Seat Belt Retractor Pretensioner
- F113 Seat Belt Anchor Pretensioner

2. Test for greater than 25  $\Omega$  between the control circuit terminals 1 and 2.

- **If 25  $\Omega$  or less**

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

- **If greater than 25  $\Omega$**

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

- **If less than 11 V**

5. Ignition OFF.

6. Test for greater than 25  $\Omega$  between each control circuit terminal listed below and ground:

- Control circuit terminal 1
- Control circuit terminal 2

- **If 25  $\Omega$  or less**

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

- **If greater than 25  $\Omega$**

7. Install a 3 A fused jumper wire between the control circuit terminals 1 and 2, ignition ON.
8. Verify DTC B0015 0E, B001A 0E, B001B 0E, or B0022 0E is set.
  - **If B0015 0E, B001A 0E, B001B 0E, or B0022 0E is not set**
    1. Ignition OFF, disconnect the X2 harness connector at the K36 Inflatable Restraint and Sensing Diagnostic Module.
    2. Test for less than 2  $\Omega$  in each control circuit end to end.
      - If 2  $\Omega$  or greater, repair the open/high resistance in the circuit.
      - If less than 2  $\Omega$ , replace the K36 Inflatable Restraint and Sensing Diagnostic Module.
  - **If B0015 0E, B001A 0E, B001B 0E, or B0022 0E is set**
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 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](#)
- [Front Seat Belt Retractor Replacement \(With A69\)](#)
- [SIR/SRS Wiring Repairs](#)
- [Control Module References](#) for Inflatable Restraint and Sensing Diagnostic Module replacement, programming and setup

## DTC B0016, B0018, B0023, OR B0025: 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 01

Left Roof Rail Air Bag Deployment Loop Short to Battery

#### DTC B0016 02

Left Roof Rail Air Bag Deployment Loop Short to Ground

**DTC B0016 04**

Left Roof Rail Air Bag Deployment Loop Open

**DTC B0016 0D**

Left Roof Rail Air Bag Deployment Loop High Resistance

**DTC B0016 0E**

Left Roof Rail Air Bag Deployment Loop Low Resistance

**DTC B0023 01**

Right Roof Rail Air Bag Deployment Loop Short to Battery

**DTC B0023 02**

Right Roof Rail Air Bag Deployment Loop Short to Ground

**DTC B0023 04**

Right Roof Rail Air Bag Deployment Loop Open

**DTC B0023 0D**

Right Roof Rail Air Bag Deployment Loop High Resistance

**DTC B0023 0E**

Right Roof Rail Air Bag Deployment Loop Low Resistance

**Diagnostic Fault Information**

| <b>Circuit</b>                       | <b>Short to Ground</b> | <b>High Resistance</b> | <b>Open</b>        | <b>Short to Voltage</b> | <b>Signal Performance</b> |
|--------------------------------------|------------------------|------------------------|--------------------|-------------------------|---------------------------|
| 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 seconds.

**B0016 02, B0023 02**

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

#### **B0016 04, B0023 04**

The air bag control circuit is open for 2 seconds.

#### **B0016 0D, B0023 0D**

The air bag deployment loop resistance is greater than 4.2  $\Omega$  for 2 seconds.

#### **B0016 0E, B0023 0E**

The air bag deployment loop resistance is less than 1.4  $\Omega$  for 2 seconds.

#### **Action Taken When the DTC Sets**

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

#### **Conditions for Clearing the DTC**

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

#### **Diagnostic Aid**

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

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

- Left and right roof rail air bags
- Inline harness connectors
- Harness side of the inflatable restraint sensing and diagnostic module connector

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

#### **Reference Information**

Schematic Reference

**SIR Schematics (Buick)****SIR Schematics (Chevrolet)**

Connector End View Reference

**COMPONENT CONNECTOR END VIEWS - INDEX (ENCORE)**, **COMPONENT CONNECTOR END VIEWS - INDEX (TRAX)**

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.
  - 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 DTC B0016 or B0023 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**

2. Verify DTC B0016 or B0023 is only set as a history DTC while moving the harness near each connector listed below:

- F105L Roof Rail Air Bag - Left
- F105R Roof Rail Air Bag - Right
- Any inline harness connector
- K36 inflatable restraint sensing and diagnostic module
- **If the DTC is set as current 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 the DTC is set as history**

3. 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  $\Omega$  between the control circuit terminals 1 and 2.

- **If 25  $\Omega$  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  $\Omega$**

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.

6. Test for greater than 25  $\Omega$  between the control circuit terminals listed below and ground:

- Control circuit terminal 1
- Control circuit terminal 2

- **If 25  $\Omega$  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  $\Omega$**

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

8. Verify DTC B0016 0E or B0023 0E is set

- **If DTC B0016 0E or B0023 0E is not set**

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

2. Test for less than 2  $\Omega$  in each control circuit end to end.

- If 2  $\Omega$  or greater, repair the open/high resistance in the circuit.

- If less than 2  $\Omega$ , replace the K36 inflatable restraint sensing and diagnostic module.
- **If DTC B0016 0E or B0023 0E is set**
  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.

- [Roof Side Rail Airbag Replacement \(Buick\)](#)[Roof Side Rail Airbag Replacement \(Chevrolet\)](#)
- [SIR/SRS Wiring Repairs](#)
- [Control Module References](#) for inflatable restraint sensing and diagnostic module replacement, programming and setup

## DTC B0017 OR B0024: DRIVER KNEE 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 B0017 01

Driver Knee Air Bag Deployment Loop Short to Battery

#### DTC B0017 02

Driver Knee Air Bag Deployment Loop Short to Ground

#### DTC B0017 04

Driver Knee Air Bag Deployment Loop Open

#### DTC B0017 0D

Driver Knee Air Bag Deployment Loop High Resistance

#### DTC B0017 0E

Driver Knee Air Bag Deployment Loop Low Resistance

#### DTC B0024 01

Passenger Knee Air Bag Deployment Loop Short to Battery

#### DTC B0024 02

Passenger Knee Air Bag Deployment Loop Short to Battery

#### DTC B0024 04

**DTC B0024 0D**

Passenger Knee Air Bag Deployment Loop High Resistance

**DTC B0024 0E**

Passenger Knee Air Bag Deployment Loop Low Resistance

**Diagnostic Fault Information**

| <b>Circuit</b>                      | <b>Short to Ground</b> | <b>High Resistance</b> | <b>Open</b>           | <b>Short to Voltage</b> | <b>Signal Performance</b> |
|-------------------------------------|------------------------|------------------------|-----------------------|-------------------------|---------------------------|
| Driver Knee Air Bag High Control    | B0017 02,<br>B0017 0E  | B0017 0D               | B0017 04,<br>B0017 0D | B0017 01                | -                         |
| Driver Knee Air Bag Low Control     | B0017 02,<br>B0017 0E  | B0017 0D               | B0017 04,<br>B0017 0D | B0017 01                | -                         |
| Passenger Knee Air Bag High Control | B0024 02,<br>B0024 0E  | B0024 0D               | B0024 04,<br>B0024 0D | B0024 01                | -                         |
| Passenger Knee Air Bag Low Control  | B0024 02,<br>B0024 0E  | B0024 0D               | B0024 04,<br>B0024 0D | B0024 01                | -                         |

**Circuit/System Description**

During a side or frontal crash of sufficient force the Inflatable Restraint Sensing and Diagnostic Module (SDM) will allow current to flow through the deployment loop in order to deploy an air bag. There are two shorting bars used within the connector that will short together the control circuits, when the connector is disconnected. This will help to prevent unwanted deployment of the air bag or retractor pretensioner during servicing.

**Conditions for Running the DTC**

Ignition voltage is between 9-16 V.

**Conditions for Setting the DTC****B0017 01, B0024 01**

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

**B0017 02, B0024 02**

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

**B0017 04, B0024 04**

The air bag control circuit is open for 2 seconds.

**B0017 0D, B0024 0D**

The air bag deployment loop resistance is greater than 4.2  $\Omega$  for 2 seconds.

**B0017 0E, B0024 0E**

The air bag deployment loop resistance is less than 1.4  $\Omega$  for 2 seconds.

**Action Taken When the DTC Sets**

- The Inflatable Restraint Sensing and Diagnostic Module requests the instrument cluster to illuminate the AIR BAG indicator.
- The Inflatable Restraint Sensing and Diagnostic Module will store a DTC, however if an event occurs the system will still attempt deployments.

## Conditions for Clearing the DTC

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

## Diagnostic Aid

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

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

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

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

## Reference Information

Schematic Reference

[SIR Schematics \(Buick\)](#)[SIR Schematics \(Chevrolet\)](#)

Connector End View Reference

[COMPONENT CONNECTOR END VIEWS - INDEX \(ENCORE\)](#), [COMPONENT CONNECTOR END VIEWS - INDEX \(TRAX\)](#)

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.
  - Knee air bag
  - Inflatable restraint sensing and diagnostic module
  - All wiring harness connectors

- Inflatable restraint sensing and diagnostic module wiring harness connector
  - The connector and connector position assurance (CPA) may seat independent of each other. Both the connector and CPA should seat with an audible and/or tactile click. The CPA isolates the shorting-bars within the connector allowing the deployment circuit to operate properly.
  - If the condition is intermittent or cannot be duplicated, disconnect the connectors and add dielectric grease/lubricant (Nyogel 760G or equivalent, meeting GM specification 9986087). This procedure will correct the high resistance condition due to terminal fretting corrosion.
1. Verify the scan tool Deployment Loop Resistance parameters stay consistently between 2.1 and 4.0  $\Omega$  without any spikes or dropouts while moving the harness near each connector listed below:
    - F114D Knee Air Bag - Driver
    - F114P Knee Air Bag - Passenger
    - Any inline harness connector
    - K36 Inflatable Restraint Sensing and Diagnostic Module
    - **If less than 2.1 or greater than 4.0  $\Omega$**

Refer to Circuit/System Testing.

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

### Circuit/System Testing

1. Ignition OFF, disconnect the scan tool and disconnect the harness connector at the appropriate F114 Knee Air Bag.
2. Test for greater than 25  $\Omega$  between the control circuit terminals 1 and 2.
  - **If 25  $\Omega$  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 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 2 control circuits.
  - If less than infinite resistance, repair the short between the 2 circuits.
  - If infinite resistance, replace the K36 Inflatable Restraint Sensing and Diagnostic Module.
  - **If greater than 25  $\Omega$**
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 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  $\Omega$  between the control circuit terminals listed below and ground:
  - Control circuit terminal 1
  - Control circuit terminal 2
  - **If 25  $\Omega$  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  $\Omega$**
7. Install a 3 A fused jumper wire between the control circuit terminals 1 and 2, ignition ON.
8. Verify DTC B0017 0E or B0024 0E is set
  - **If B0017 0E or B0024 0E is not set**
    1. Ignition OFF, disconnect the X1 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
    2. Test for less than 2  $\Omega$  in each control circuit end to end.
      - If 2  $\Omega$  or greater, repair the open/high resistance in the circuit.
      - If less than 2  $\Omega$ , replace the K36 Inflatable Restraint Sensing and Diagnostic Module.
  - **If B0017 0E or B0024 0E is set**
9. Ignition OFF, connect the harness connector at the F114 Knee Air Bag, press in the CPA (if equipped) until an audible and/or tactile click is heard.
10. Ignition ON, clear DTCs. Operate the vehicle within the Conditions for Running the DTC.
11. Verify DTC B0017 or B0024 is not set.
  - **If DTC B0017 or B0024 is set**

Replace the appropriate F114 Knee Air Bag.
  - **If DTC B0017 or B0024 is not set**
12. All OK.

### Repair Instructions

Perform the [Diagnostic Repair Verification](#) after completing the repair.

- [Instrument Panel Lower Airbag Replacement - Driver Side \(AYF\)](#)
- [Instrument Panel Lower Airbag Replacement - Passenger Side \(AYF\)](#)
- [Control Module References](#) for K36 Inflatable Restraint Sensing and Diagnostic Module replacement, programming, and setup

**DTC B0019 OR B0020: PASSENGER INSTRUMENT PANEL AIR BAG DEPLOYMENT LOOP STAGE (WITHOUT AY0 OR AYF)**

## 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 B0019 01

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

### DTC B0019 02

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

### DTC B0019 04

Passenger Instrument Panel Air Bag Deployment Loop Stage 1 Open

### DTC B0019 0D

Passenger Instrument Panel Air Bag Deployment Loop Stage 1 High Resistance

### DTC B0019 0E

Passenger Instrument Panel Air Bag Deployment Loop Stage 1 Low Resistance

## Diagnostic Fault Information

| Circuit      | Short to Ground       | High Resistance | Open                  | Short to Voltage | Signal Performance |
|--------------|-----------------------|-----------------|-----------------------|------------------|--------------------|
| High Control | B0019 02,<br>B0019 0E | B0019 0D        | B0019 04,<br>B0019 0D | B0019 01         | -                  |
| Low Control  | B0019 02,<br>B0019 0E | B0019 0D        | B0019 04,<br>B0019 0D | B0019 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 is a shorting bar which will short together the 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

### B0019 01

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

### B0019 02

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

### B0019 04

The air bag control circuit is open for 2 seconds.

### B0019 0D

The air bag deployment loop resistance is greater than 4.2  $\Omega$  for 2 seconds.

## **B0019 0E**

The air bag deployment loop resistance is less than 1.4  $\Omega$  for 2 seconds.

### **Action Taken When the DTC Sets**

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

### **Conditions for Clearing the DTC**

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

### **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 SDM connector

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

### **Reference Information**

Schematic Reference

**SIR Schematics (Buick)****SIR Schematics (Chevrolet)**

Connector End View Reference

**COMPONENT CONNECTOR END VIEWS - INDEX (ENCORE)** **COMPONENT CONNECTOR END VIEWS - INDEX (TRAX)**

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

## 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
- Passenger instrument panel air bag
- Seat side air bag
- Roof rail air bag
- Inflatable restraint sensing and diagnostic module
- Seat belt retractor pretensioner wiring harness connector
- Passenger instrument panel air bag wiring harness connector
- Seat side air bag wiring harness connector
- Roof rail air bag wiring harness connector
- Inflatable restraint sensing and diagnostic module wiring harness connector

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

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

1. Verify the scan tool Deployment Loop Resistance 1 parameter stay consistently between 2.1 and 4.0  $\Omega$  without any spikes or dropouts while moving the harness near each connector listed below:
  - F105 Passenger Instrument Panel Air Bag
  - Any inline harness connector
  - K36 Inflatable Restraint Sensing and Diagnostic Module
  - **If less than 2.1 or greater than 4.0  $\Omega$**

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  $\Omega$  without any spikes or dropouts**

2. All OK

## Circuit/System Testing

1. Ignition OFF. Scan tool disconnected. Disconnect the X207 inline harness connector for the F105 Passenger Instrument Panel Air Bag. It may take up to 2 minutes for all vehicle systems to power down.
2. Test for greater than 25  $\Omega$  between the X207 control circuit terminal 1 and 2 on the K36 Inflatable Restraint Sensing and Diagnostic Module side of the connector.

- **If 25  $\Omega$  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 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  $\Omega$**

3. Ignition ON.

4. Test for less than 11 V between the control circuit terminals listed below and ground:

- X207 control circuit terminal 1
- X207 control circuit terminal 2

- **If 11 V or greater**

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

2. Test for less than 1 V between the control circuit and ground.

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

- **If less than 11 V**

5. Ignition OFF.

6. Test for greater than 25  $\Omega$  between the control circuit terminals listed below and ground:

- X207 control circuit terminal 1
- X207 control circuit terminal 2

- **If 25  $\Omega$  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  $\Omega$**

7. Install a 3 A fused jumper wire between the F105 Passenger Instrument Panel Air Bag X207 control circuit terminals 1 and 2. Ignition ON.

8. Verify DTC B0019 0E is set.

- **If B0019 0E is not set**

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

2. Test for less than 2  $\Omega$  in each control circuit end to end.

- If 2  $\Omega$  or greater, repair the open/high resistance in the circuit.
- If less than 2  $\Omega$ , replace the K36 Inflatable Restraint Sensing and Diagnostic Module.

- **If B0019 0E is set**

9. Ignition OFF. Reconnect inline harness connector X207. Disconnect the F105 Passenger Instrument Panel Air Bag harness connector. Ignition ON.

10. Test for less than 11 V between the control circuit terminals listed below and ground:

- F105 Passenger Instrument Panel Air Bag control circuit terminal 1
- F105 Passenger Instrument Panel Air Bag control circuit terminal 2
- **If 11 V or greater**

Repair the short to voltage on the circuit.

- **If less than 11 V**

11. Ignition OFF.

12. Test for greater than 25  $\Omega$  between the control circuit terminals listed below and ground:

- F105 Passenger Instrument Panel Air Bag control circuit terminal 1
- F105 Passenger Instrument Panel Air Bag control circuit terminal 2
- **If 25  $\Omega$  or less**

Repair the short to ground on the circuit.

- **If greater than 25  $\Omega$**

13. Install a 3 A fused jumper wire between the F105 Passenger Instrument Panel Air Bag X207 control circuit terminals 1 and 2. Ignition ON.

14. Verify the scan tool Deployment Loop Resistance parameter is less than 2  $\Omega$ .

- **If greater than 2  $\Omega$**

Repair the open/high resistance in the circuit between the F105 Passenger Instrument Panel Air Bag connector and the X207 inline harness connector.

- **If less than 2  $\Omega$**

15. Ignition OFF, connect the harness connector at the F105 Passenger Instrument Panel Air Bag, press in the CPA (if equipped) until an audible and/or tactile click is heard.

16. Ignition ON, clear DTCs. Operate the vehicle within the Conditions for Running the DTC.

17. Verify DTC B0019 is not set.

- **If DTC B0019 is set**

Replace the F105 Passenger Instrument Panel Air Bag.

- **If DTC B0019 is not set**

18. All OK.

### Repair Instructions

Perform the [Diagnostic Repair Verification](#) after completing the repair.

- [Airbag Instrument Panel Module 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 (WITH AY0 OR AYF)

### 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 B0019 01**

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

**DTC B0019 02**

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

**DTC B0019 04**

Passenger Instrument Panel Air Bag Deployment Loop Stage 1 Open

**DTC B0019 0D**

Passenger Instrument Panel Air Bag Deployment Loop Stage 1 High Resistance

**DTC B0019 0E**

Passenger Instrument Panel Air Bag Deployment Loop Stage 1 Low Resistance

**DTC B0020 01**

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

**DTC B0020 02**

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

**DTC B0020 04**

Passenger Instrument Panel Air Bag Deployment Loop Stage 2 Open

**DTC B0020 0D**

Passenger Instrument Panel Air Bag Deployment Loop Stage 2 High Resistance

**DTC B0020 0E**

Passenger Instrument Panel Air Bag Deployment Loop Stage 2 Low Resistance

**Diagnostic Fault Information**

| <b>Circuit</b>                                          | <b>Short to Ground</b> | <b>High Resistance</b> | <b>Open</b>           | <b>Short to Voltage</b> | <b>Signal Performance</b> |
|---------------------------------------------------------|------------------------|------------------------|-----------------------|-------------------------|---------------------------|
| Passenger Instrument Panel Air Bag Stage 1 High Control | B0019 02,<br>B0019 0E  | B0019 0D               | B0019 04,<br>B0019 0D | B0019 01                | -                         |
| Passenger Instrument Panel Air Bag Stage 1 Low Control  | B0019 02,<br>B0019 0E  | B0019 0D               | B0019 04,<br>B0019 0D | B0019 01                | -                         |
| Passenger Instrument Panel Air Bag Stage 2 High Control | B0020 02,<br>B0020 0E  | B0020 0D               | B0020 04,<br>B0020 0D | B0020 01                | -                         |
| Passenger Instrument Panel Air Bag Stage 2 Low Control  | B0020 02,<br>B0020 0E  | B0020 0D               | B0020 04,<br>B0020 0D | B0020 01                | -                         |

**Circuit/System Description**

During a side or frontal crash of sufficient force the inflatable restraint sensing and diagnostic module (SDM) will allow current to flow through the deployment loop in order to deploy an air bag or pretensioner. There are 2 shorting bars which will short the control circuits together when the connector is disconnected. This will help to prevent unwanted deployment of the air bag or pretensioner during servicing.

### Conditions for Running the DTC

Ignition voltage is between 9-16 V.

### Conditions for Setting the DTC

#### **B0019 01, B0020 01**

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

#### **B0019 02, B0020 02**

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

#### **B0019 04, B0020 04**

The air bag control circuit is open for 2 seconds.

#### **B0019 0D, B0020 0D**

The air bag deployment loop resistance is greater than 4.2  $\Omega$  for 2 seconds.

#### **B0019 0E, B0020 0E**

The air bag deployment loop resistance is less than 1.4  $\Omega$  for 2 seconds.

### Action Taken When the DTC Sets

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

### Conditions for Clearing the DTC

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

### Diagnostic Aid

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

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

- Passenger instrument panel air bag
- Inline harness connectors
- Harness side of the inflatable restraint sensing and diagnostic module connector

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

### Reference Information

Schematic Reference

[SIR Schematics \(Buick\)](#)[SIR Schematics \(Chevrolet\)](#)

Connector End View Reference

[COMPONENT CONNECTOR END VIEWS - INDEX \(ENCORE\)](#)[COMPONENT CONNECTOR END VIEWS - INDEX \(TRAX\)](#)

## 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.**
  - 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  $\Omega$  without any spikes or dropouts while moving the harness near each connector listed below:

- F105 Passenger Instrument Panel Air Bag
- Any inline harness connector
- K36 inflatable restraint sensing and diagnostic module
- **If less than 2.1  $\Omega$  or greater than 4.0  $\Omega$**

Refer to Circuit/System Testing.

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

2. All OK.

### Circuit/System Testing

1. Ignition OFF, scan tool disconnected, disconnect the X206 inline harness connector for the F105 Passenger Instrument Panel Air Bag. It may take up to 2 min for all vehicle systems to power down.
2. Test for greater than  $25\ \Omega$  between the appropriate control circuit terminals listed below on the K36 Inflatable Restraint Sensing and Diagnostic Module side of the connector:

- F105 Passenger Instrument Panel Air Bag stage 1 X206 terminal 1 and 2
- F105 Passenger Instrument Panel Air Bag stage 2 X206 terminal 4 and 5
- **If  $25\ \Omega$  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  $25\ \Omega$**

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:

- X206 control circuit terminal 1
- X206 control circuit terminal 2
- X206 control circuit terminal 4
- X206 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  $25\ \Omega$  between each control circuit terminal listed below on the instrument panel harness side of the connector and ground:

- X206 control circuit terminal 1
- X206 control circuit terminal 2
- X206 control circuit terminal 4
- X206 control circuit terminal 5

- **If  $25\ \Omega$  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  $\Omega$**
7. Install a 3 A fused jumper wire between the control circuit terminals listed below on the instrument panel harness side of the connector:
    - F105 Passenger Instrument Panel Air Bag stage 1 X206 terminal 1 and 2
    - F105 Passenger Instrument Panel Air Bag stage 2 X206 terminal 4 and 5
  8. Ignition ON.
  9. Verify DTC B0017 0E or B0024 0E is set.
    - **If DTC B0017 0E or B0024 0E is not set**
      1. Ignition OFF, disconnect the X1 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
      2. Test for less than 2  $\Omega$  in each control circuit end to end.
        - If 2  $\Omega$  or greater, repair the open/high resistance in the circuit.
        - If less than 2  $\Omega$ , replace the K36 Inflatable Restraint Sensing and Diagnostic Module.
    - **If DTC B0017 0E or B0024 0E is set**
  10. Ignition OFF, connect the X206 inline harness connector and disconnect the appropriate X1 (DTC B0019) or X2 (DTC B0020) harness connector at the F105 Passenger instrument panel air bag, ignition ON.
  11. Test for less than 11 V between each control circuit terminals listed below and ground:
    - F105 Passenger Instrument Panel Air Bag control circuit terminal 1 X1
    - F105 Passenger Instrument Panel Air Bag control circuit terminal 2 X1
    - F105 Passenger Instrument Panel Air Bag control circuit terminal 1 X2
    - F105 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  $\Omega$  between each control circuit terminals listed below and ground:
    - F105 Passenger Instrument Panel Air Bag control circuit terminal 1 X1
    - F105 Passenger Instrument Panel Air Bag control circuit terminal 2 X1
    - F105 Passenger Instrument Panel Air Bag control circuit terminal 1 X2
    - F105 Passenger Instrument Panel Air Bag control circuit terminal 2 X2
    - **If 25  $\Omega$  or less**  
Repair the short to ground on the circuit.
    - **If greater than 25  $\Omega$**
  14. Install a 3 A fused jumper wire between the control circuit terminals listed below:
    - F105 Passenger Instrument Panel Air Bag stage 1 control circuit terminal 1 X1 and 2 X1
    - F105 Passenger Instrument Panel Air Bag stage 2 control circuit terminal 1 X2 and 2 X2
  15. Ignition ON.
  16. Verify DTC B0017 0E or B0024 0E is set.
    - **If DTC B0017 0E or B0024 0E is not set**
      1. Ignition OFF, disconnect the X1 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
      2. Test for less than 2  $\Omega$  in each control circuit end to end.
        - If 2  $\Omega$  or greater, repair the open/high resistance in the circuit between the F105 Passenger Instrument Panel Air Bag connector and the X206 inline harness connector.

- If less than 2  $\Omega$ , replace the K36 Inflatable Restraint Sensing and Diagnostic Module.

- **If less than 2  $\Omega$**

17. Ignition OFF, connect the harness connector at the F105 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 F105 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.

- [Airbag Instrument Panel Module 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

Deployment Commanded

#### DTC B0052 56

Deployment Commanded Too Many Transitions

### Circuit/System Description

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

### Conditions for Running the DTC

Ignition voltage is between 9-16 V.

### Conditions for Setting the DTC

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

### Action Taken When the DTC Sets

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

### Conditions for Clearing the DTC

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

### Reference Information

Schematic Reference

#### SIR Schematics (Buick)SIR Schematics (Chevrolet)

Connector End View Reference

#### COMPONENT CONNECTOR END VIEWS - INDEX (ENCORE), COMPONENT CONNECTOR END VIEWS - INDEX (TRAX)

Description and Operation

#### Supplemental Inflatable Restraint System Description and Operation

Electrical Information Reference

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

Scan Tool Reference

Control Module References for scan tool information

### Circuit/System 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

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 | Open/High Resistance | Short to Voltage | Signal Performance |
|--------------------------------------------------|-----------------|----------------------|------------------|--------------------|
| Passenger Seat Belt Tension Sensor Signal        | B0071 03        | B0071 04             | B0071 07         | B0071 08           |
| 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 V or greater than 4.5 V for 1 s.
- The passenger presence module detects the voltage at the passenger seat belt tension sensor voltage reference circuit is less than 4.5 V or greater than 9.1 V for 1 s.
- The passenger presence module detects the amperage at the passenger seat belt tension sensor low reference circuit is 25 mA or greater for 1 s.

## 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.
- 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 and low reference circuits carefully for cutting and/or chafing.

#### Reference Information

Schematic Reference

#### Seat Belt Schematics (Buick) Seat Belt Schematics (Chevrolet)

Connector End View Reference

#### COMPONENT CONNECTOR END VIEWS - INDEX (ENCORE) COMPONENT CONNECTOR END VIEWS - INDEX (TRAX)

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
- K36 Inflatable Restraint Sensing and Diagnostic Module
- Passenger seat belt tension sensor wiring harness connector
- K36 Inflatable Restraint Sensing and Diagnostic Module wiring harness connector

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  $\Omega$  between the low reference circuit terminal 2 and ground.
  - **If greater than 10  $\Omega$** 
    1. Ignition OFF, disconnect the 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 less than 10  $\Omega$  between the low reference circuit and ground.
      - If less than 10  $\Omega$ , replace the K36 Inflatable Restraint Sensing and Diagnostic Module.
      - If greater than 10  $\Omega$ , repair the open/high resistance.
  - **If less than 10  $\Omega$**
3. Ignition ON.
4. Test for less than 6 V between the signal circuit terminal 1 and ground.
  - **If 6 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 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 6 V**
5. Ignition OFF.
6. Test for greater than 5K  $\Omega$  between the signal circuit terminal 1 and ground. It may take up to 2 minutes for all vehicle systems to power down.
  - **If less than 5K  $\Omega$** 
    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 5K  $\Omega$**
7. Disconnect the harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
8. Test for less than 2  $\Omega$  between the B61P Seat Belt Tension Sensor - Passenger signal circuit terminal 1 and the K36 Inflatable Restraint Sensing and Diagnostic Module signal circuit connector X2, terminal 47.
  - **If 2  $\Omega$  or greater**

Repair the open/high resistance in the circuit.
  - **If less than 2  $\Omega$**
9. If all circuits test normal, replace the B61P Seat Belt Tension Sensor - Passenger.
10. Ignition ON, clear DTCs. Operate the vehicle within the Conditions for Running the DTC.
11. Verify DTC B0071 does not set.
  - **If DTC B0071 is set**

Replace the K36 Inflatable Restraint Sensing and Diagnostic Module.
  - **If DTC B0071 is not set**
12. All OK.

## Repair Instructions

Perform the [Diagnostic Repair Verification](#) after completing the repair.

- [Front Seat Belt Retractor Replacement \(With A69\)](#) for B61P Seat Belt Tension Sensor - Passenger
- [Control Module References](#) for control module replacement, programming, and setup

## **DTC B0074: PASSENGER PRESENCE SENSOR**

### **Diagnostic Instructions**

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

### **DTC Descriptors**

#### **DTC B0074 00**

Passenger Presence Sensor Circuit Malfunction

#### **DTC B0074 04**

Passenger Presence Sensor Open

### **Circuit/System Description**

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

### **Conditions for Running the DTC**

Ignition voltage is between 9-16 V.

### **Conditions for Setting the DTC**

#### **B0074 00**

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

#### **B0074 04**

The passenger presence module has detected an open circuit.

### **Action Taken When the DTC Sets**

The Inflatable Restraint Sensing and Diagnostic Module will set a DTC B0081 00 after receiving a fault present message from the passenger presence module and requests the instrument cluster to illuminate the AIR BAG indicator.

### **Conditions for Clearing the DTC**

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

### **Diagnostic Aids**

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

passenger seat and clear the DTCs. If this DTC resets then perform this diagnostic. If the DTC does not reset there is no further work needed on the passenger presence system.

## Reference Information

Schematic Reference

[SIR Schematics \(Buick\)](#)[SIR Schematics \(Chevrolet\)](#)

Connector End View Reference

[COMPONENT CONNECTOR END VIEWS - INDEX \(ENCORE\)](#), [COMPONENT CONNECTOR END VIEWS - INDEX \(TRAX\)](#)

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:** This system allows you to service each component separately (module and sensor/sensing mat). Perform a [Passenger Presence System Rezeroing](#)

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

**The connector and connector position assurance (CPA) may seat independent of each other. Both the connector and CPA should seat with an audible and/or tactile click.**

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

- **The status changes**

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

- **The status does not change**

2. Observe with the scan tool if the fault changes status while moving the harness near each connector listed below. The status should stay consistent.

- Passenger presence module
- Passenger presence sensor
- Any seat harness inline

- **The status changes**

If the reading is erratic while moving the harness, perform the following:

- Inspect each connector terminal for damage or corrosion and repair as necessary.
- Insure each connector and CPA is correctly seated.
- **The status does not change**

3. All OK.

### Circuit/System Testing

**NOTE:** This system allows you to service each component separately (module and sensor/sensing mat). Perform a **Passenger Presence System Rezeroing**

1. Verify that all K85 Passenger Presence Module and B60 Passenger Presence Sensor connectors are fully seated.
2. Verify DTC B0074 is not set.
  - **DTC B0074 is set.**
  - Replace the B60 Passenger Presence Sensor.
  - **DTC B0074 does not set.**
3. All OK.

### Repair Instructions

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

**Control Module References** for Passenger Presence Sensor, Passenger Presence Module, or Inflatable Restraint Sensing and Diagnostic Module replacement, programming, and setup

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

#### Diagnostic Instructions

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

#### DTC Descriptors

##### **DTC B0081 00**

Passenger Presence Module Malfunction

##### **DTC B0081 3A**

Passenger Presence Module Incorrect Component Installed

##### **DTC B0081 71**

Passenger Presence Module Invalid Serial Data Received

### Circuit/System Description

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

#### Conditions for Running the DTC

Ignition voltage is between 9-16 V.

#### Conditions for Setting the DTC

## **B0081 00**

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

## **B0081 3A**

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

## **B0081 71**

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

### **Action Taken When the DTC Sets**

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

### **Conditions for Clearing the DTC**

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

### **Diagnostic Aids**

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

### **Reference Information**

Schematic Reference

**SIR Schematics (Buick)****SIR Schematics (Chevrolet)**

Connector End View Reference

**COMPONENT CONNECTOR END VIEWS - INDEX (ENCORE)** **COMPONENT CONNECTOR END VIEWS - INDEX (TRAX)**

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

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

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

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

Refer to [DTC B1001](#).

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

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

- If any of these DTCs are set in the Passenger Presence Module, refer to [Diagnostic Trouble Code \(DTC\) List - Vehicle](#)
- If none of these DTCs are set in the Passenger Presence Module

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

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

- If DTC B0081 00 is set

Refer to the Passenger Presence Module [DTC B0081 \(Inflatable Restraint Sensing and Diagnostic Module\)](#) [DTC B0081 \(Passenger Presence Module\)](#).

- If DTC B0081 00 is not set

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

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

- If DTC B0081 3A is set

Replace the K85 Passenger Presence Module.

- If DTC B0081 3A is not set

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

- If DTC B0081 71 is set

Replace the B60 Passenger Presence Sensor.

- If DTC B0081 71 is not set

6. All OK.

### Repair Instructions

Perform the [Diagnostic Repair Verification](#) 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 (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

### **Circuit/System Description**

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

### **Conditions for Running the DTC**

Ignition voltage is between 9-16 V.

### **Conditions for Setting the DTC**

Any of the following conditions must exist for 5 seconds.

#### **B0081 11**

The Passenger Presence Module has failed the preload procedure.

#### **B0081 4B**

The Passenger Presence Module is not calibrated.

### **Action Taken When the DTC Sets**

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

### **Conditions for Clearing the DTC**

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

### **Diagnostic Aids**

- If either the Inflatable Restraint Sensing and Diagnostic Module or passenger presence system were replaced verify that the correct part numbers were used for the vehicle application.

- An aftermarket seat heater may command the passenger air bag indicator to turn on and/or command the passenger seat belt indicator to turn on. Remove the aftermarket seat heater from the passenger seat and clear the DTCs. If this DTC resets then perform this diagnostic. If the DTC does not reset there is no further work needed on the passenger presence system.
- If this DTC is set as either current or history it may have been caused by:
  - An aftermarket seat heater
  - A scan tool, laptop, or other electronic device is in the seat
  - The seat is damp or wet
  - An object is in the seat

## Reference Information

Description and Operation

## Supplemental Inflatable Restraint System Description and Operation

Scan Tool Reference

Control Module References for scan tool information

## Circuit/System Verification

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

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

## NOTE:

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

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

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

Replace the K85 Passenger Presence Module.

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

## NOTE:

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

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

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

Perform the passenger presence system rezero procedure. Refer to [Passenger Presence System Programming and Setup](#).

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

3. All OK.

### Repair Instructions

Perform the [Diagnostic Repair Verification](#) after completing the repair.

[Control Module References](#) for Passenger Presence Module or Inflatable Restraint Sensing and Diagnostic Module replacement, programming and setup

## DTC B0083-B0088: LEFT/RIGHT 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 01

Left Front Impact Sensor Short to Battery

#### DTC B0083 02

Left Front Impact Sensor Short to Ground

#### DTC B0083 04

Left Front Impact Sensor Open

#### DTC B0083 05

Left Front Impact Sensor High/Voltage Open

#### DTC B0083 0C

Left Front Impact Sensor Low Current

#### DTC B0083 39

Left Front Impact Sensor Internal Electronic Failure

#### DTC B0083 3A

Left Front Impact Sensor Incorrect Component Installed

#### DTC B0083 71

Left Front Impact Sensor Invalid Serial Data Received

#### DTC B0084 01

Right Front Impact Sensor Short to Battery

#### DTC B0084 02

Right Front Impact Sensor Short to Ground

#### DTC B0084 04

Right Front Impact Sensor Open

**DTC B0084 05**

Right Front Impact Sensor High/Voltage Open

**DTC B0084 0C**

Right Front Impact Sensor Low Current

**DTC B0084 39**

Right Front Impact Sensor Internal Electronic Failure

**DTC B0084 3A**

Right Front Impact Sensor Incorrect Component Installed

**DTC B0084 71**

Right Front Impact Sensor Invalid Serial Data Received

**DTC B0085 01**

Left Front Side Impact Sensor Short to Battery

**DTC B0085 02**

Left Front Side Impact Sensor Short to Ground

**DTC B0085 04**

Left Front Side Impact Sensor Open

**DTC B0085 05**

Left Front Side Impact Sensor High/Voltage Open

**DTC B0085 0C**

Left Front Side Impact Sensor Low Current

**DTC B0085 39**

Left Front Side Impact Sensor Internal Malfunction

**DTC B0085 3A**

Left Front Side Impact Sensor Incorrect Component Installed

**DTC B0085 71**

Left Front Side Impact Sensor Invalid Serial Data Received

**DTC B0086 01**

Right Front Side Impact Sensor Short to Battery

**DTC B0086 02**

Right Front Side Impact Sensor Short to Ground

**DTC B0086 04**

Right Front Side Impact Sensor Open

**DTC B0086 05**

Right Front Side Impact Sensor High/Voltage Open

**DTC B0086 0C**

Right Front Side Impact Sensor Low Current

**DTC B0086 39**

Right Front Side Impact Sensor Internal Malfunction

**DTC B0086 3A**

Right Front Side Impact Sensor Incorrect Component Installed

**DTC B0086 71**

Right Front Side Impact Sensor Invalid Data

**DTC B0087 01**

Left Rear Side Impact Sensor Short to Battery

**DTC B0087 02**

Left Rear Side Impact Sensor Short to Ground

**DTC B0087 04**

Left Rear Side Impact Sensor Open

**DTC B0087 05**

Left Rear Side Impact Sensor High/Voltage Open

**DTC B0087 0C**

Left Rear Side Impact Sensor Low Current

**DTC B0087 39**

Left Rear Side Impact Sensor Internal Malfunction

**DTC B0087 3A**

Left Rear Side Impact Sensor Incorrect Component Installed

**DTC B0087 71**

Left Rear Side Impact Sensor Invalid Serial Data Received

**DTC B0088 01**

Right Rear Side Impact Sensor Short to Battery

**DTC B0088 02**

Right Rear Side Impact Sensor Short to Ground

**DTC B0088 04**

Right Rear Side Impact Sensor Open

**DTC B0088 05**

**DTC B0088 0C**

Right Rear Side Impact Sensor Low Current

**DTC B0088 39**

Right Rear Side Impact Sensor Internal Malfunction

**DTC B0088 3A**

Right Rear Side Impact Sensor Incorrect Component Installed

**DTC B0088 71**

Right Rear Side Impact Sensor Invalid Data

**Diagnostic Fault Information**

| <b>Circuit</b>                               | <b>Short to Ground</b> | <b>Open/High Resistance</b>  | <b>Short to Voltage</b> | <b>Signal Performance</b> |
|----------------------------------------------|------------------------|------------------------------|-------------------------|---------------------------|
| Left Front Impact Sensor High Signal         | B0083 02, B0083 0C     | B0083 04, B0083 05, B0083 71 | B0083 01                | B0083 3A                  |
| Left Front Impact Sensor Low Reference       | B0083 02, B0083 0C     | B0083 04, B0083 05, B0083 71 | B0083 01                | B0083 3A                  |
| Right Front Impact Sensor High Signal        | B0084 02, B0084 0C     | B0084 04, B0084 05, B0084 71 | B0084 01                | B0084 3A                  |
| Right Front Impact Sensor Low Reference      | B0084 02, B0084 0C     | B0084 04, B0084 05, B0084 71 | B0084 01                | B0084 3A                  |
| Left Front Side Impact Sensor High Signal    | B0085 02, B0085 0C     | B0085 04, B0085 05, B0085 71 | B0085 01                | B0085 39                  |
| Left Front Side Impact Low Reference         | B0085 02, B0085 0C     | B0085 04, B0085 05, B0085 71 | B0085 01                | B0085 39                  |
| Right Front Side Impact Sensor High Signal   | B0086 02, B0086 0C     | B0086 04, B0086 05, B0086 71 | B0086 01                | B0086 39                  |
| Right Front Side Impact Sensor Low Reference | B0086 02, B0086 0C     | B0086 04, B0086 05, B0086 71 | B0086 01                | B0086 39                  |
| Left Rear Side Impact Sensor High Signal     | B0087 02, B0087 0C     | B0087 04, B0087 05, B0087 71 | B0087 01                | B0087 39                  |
| Left Rear Side Impact Sensor Low Reference   | B0087 02, B0087 0C     | B0087 04, B0087 05, B0087 71 | B0087 01                | B0087 39                  |
| Right Rear Side Impact Sensor High Signal    | B0088 02, B0088 0C     | B0088 04, B0088 05, B0088 71 | B0088 01                | B0088 39                  |
| Right Rear Side Impact Sensor Low Reference  | B0088 02, B0088 0C     | B0088 04, B0088 05, B0088 71 | B0088 01                | B0088 39                  |

**Circuit/System Description**

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

**Conditions for Running the DTC**

Ignition voltage is between 9-16 V.

### Conditions for Setting the DTC

Any of the following conditions exist for 10 seconds:

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

The sensor has been shorted to voltage.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

### Action Taken When the DTC Sets

The Inflatable Restraint Sensing and Diagnostic Module requests the instrument panel cluster to illuminate the AIR BAG indicator.

### Conditions for Clearing the DTC

- The condition for setting the DTC no longer exists.
- A history DTC will clear once 100 malfunction-free ignition cycles have occurred.
- An ignition cycle is required for the DTC to go from current to history.

### 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 \(Buick\)](#)[SIR Schematics \(Chevrolet\)](#)

Connector End View Reference

[COMPONENT CONNECTOR END VIEWS - INDEX \(ENCORE\)](#), [COMPONENT CONNECTOR END VIEWS - INDEX \(TRAX\)](#)

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:

- 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-B0088 symptom byte 08, 0F, 3A, or 39 is not set as current.

- If DTC B0083-B0088 symptom byte 08, 0F, 3A, or 39 is set as current

Replace the appropriate B59 or B63 Impact Sensor.

- If DTC B0083-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 B0083-B0088 symptom byte 02, 05 or 71 is set as current**

Refer to Circuit/System Testing.

- **If DTC B0083-B0088 symptom byte 02, 05 or 71 is not set as current**

3. All OK.

### Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the appropriate B59 or B63 Impact Sensor. It may take up to 2 min for all vehicle systems to power down.

2. Test for less than 10  $\Omega$  between the low reference circuit terminal 2 and ground.

- **If 10  $\Omega$  or greater**

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

2. Test for less than 2  $\Omega$  in the low reference circuit end to end.

- If 2  $\Omega$  or greater, repair the open/high resistance in the circuit.
- If less than 2  $\Omega$ , replace the K36 Inflatable Restraint Sensing and Diagnostic Module.

- **If less than 10  $\Omega$**

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

- **If 50k  $\Omega$  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  $\Omega$**

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

- **If greater than 1 V**

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

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

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

- **If less than 1 V**

**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  $\Omega$  in the signal circuit end to end.

- If 2  $\Omega$  or greater, repair the open/high resistance in the circuit.

- If less than 2  $\Omega$ , 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**

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

- **If the DTC sets**

Replace the B59 or B63 Impact Sensor.

- **If the DTC does not set**

10. All OK.

## Repair Instructions

Perform the [Diagnostic Repair Verification](#) after completing the repair.

- [Airbag Side Impact Sensor Replacement \(Center Pillar, Buick\)](#)[Airbag Side Impact Sensor Replacement \(Center Pillar, Chevrolet\)](#)
- [Airbag Remote Impact Sensor Replacement \(Front Side Door\)](#)
- [Airbag Front End Discriminating Sensor Replacement \(Buick\)](#)[Airbag Front End Discriminating Sensor Replacement \(Chevrolet\)](#)
- [Control Module References](#) for Inflatable Restraint Sensing and Diagnostic Module replacement, programming and setup

## DTC B009: 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 01

Center Front Impact Sensor Short to Battery

#### DTC B0091 02

Center Front Impact Sensor Short to Ground

#### DTC B0091 04

Center Front Impact Sensor Open Circuit

#### DTC B0091 05

Center Front Impact Sensor High Voltage/Open

#### DTC B0091 0C

Center Front Impact Sensor Low Current

## **DTC B0091 39**

Center Front Impact Sensor Internal Malfunction

## **DTC B0091 3A**

Center Front Impact Sensor Incorrect Component Installed

## **DTC B0091 71**

Center Front Impact Sensor Invalid Data

### **Diagnostic Fault Information**

| <b>Circuit</b> | <b>Short to Ground</b> | <b>High Resistance</b> | <b>Open</b>        | <b>Short to Voltage</b> | <b>Signal Performance</b> |
|----------------|------------------------|------------------------|--------------------|-------------------------|---------------------------|
| Signal         | B0091 02               | B0091 04               | B0091 0C, B0091 04 | B0091 01, B0091 05      | B0091 39, B0091 71        |
| Low Reference  | B0091 02               | B0091 04               | B0091 0C, B0091 04 | B0091 01                | B0091 39, B0091 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 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 seconds. 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 01**

The inflatable restraint sensing and diagnostic module has detected the center front impact sensor has been shorted to voltage

#### **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 milliseconds.

#### **B0091 04**

- The inflatable restraint sensing and diagnostic module has detected an open/high resistance in the center front impact sensor.
- The inflatable restraint sensing and diagnostic module has not received a message from the center front impact sensor for greater than 375 milliseconds.

#### **B0091 05 and B0091 0C**

- The inflatable restraint sensing and diagnostic module has detected the center front impact sensor has been shorted to voltage.
- The inflatable restraint sensing and diagnostic module has detected an open/high resistance in the center front impact sensor.
- The inflatable restraint sensing and diagnostic module has not received a message from the center front impact sensor for greater than 375 milliseconds.

#### **B0091 39**

- The inflatable restraint sensing and diagnostic module has received a Not OK (NOK) 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.

#### **Reference Information**

Schematic Reference

**SIR Schematics (Buick)** **SIR Schematics (Chevrolet)**

Connector End View Reference

**COMPONENT CONNECTOR END VIEWS - INDEX (ENCORE)** **COMPONENT CONNECTOR END VIEWS - INDEX (TRAX)**

Description and Operation

**Supplemental Inflatable Restraint System Description and Operation**

Electrical Information Reference

- **Circuit Testing**

- [Testing for Intermittent Conditions and Poor Connections](#)
- [Wiring Repairs](#)
- [Connector Repairs](#)

Scan Tool Reference

[Control Module References](#) for scan tool information

[Circuit/System 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 39 or 71 is not set as current.

- If DTC B0091 symptom byte 39 or 71 is set as current

Replace the B59 Front Impact Sensor.

- If DTC B0091 symptom byte 39 or 71 is not set as current

2. Verify that DTC B0091 symptom byte 3 A is not set as current.

- If DTC B0091 symptom byte 3 A is set as current

Replace the incorrect B59 Front Impact Sensor

- If DTC B0091 symptom byte 3 A is not set as current

3. 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

4. All OK.

[Circuit/System Testing](#)

1. Ignition 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  $\Omega$  between the low reference circuit terminal 2 and ground.
  - **If 10  $\Omega$  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  $\Omega$  in the low reference circuit end to end.
      - If 2  $\Omega$  or greater, repair the open/high resistance in the circuit.
      - If less than 2  $\Omega$ , replace the K36 Inflatable Restraint Sensing and Diagnostic Module.
  - **If less than 10  $\Omega$**
3. Test for greater than 50k  $\Omega$  between the signal circuit terminal 1 and ground.
  - **If 50k  $\Omega$  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  $\Omega$**
4. Ignition ON.
5. Test for less than 10 V between the signal circuit terminal 1 and ground.
  - **If 10 V or greater**
    1. Ignition OFF, disconnect the harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
    2. Ignition ON, test for less than 1 V between the signal circuit and ground.
      - If greater than 1 V, repair the short to voltage on the circuit.
      - If less than 1 V, replace the K36 Inflatable Restraint Sensing and Diagnostic Module.
  - **If less than 10 V**
6. Ignition OFF, disconnect the X2 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
7. Test for less than 2  $\Omega$  between the signal circuit end to end from the B59 Front Impact Sensor terminal 1 and the K36 Inflatable Restraint Sensing and Diagnostic Module terminal 23 X2.
  - **If 2  $\Omega$  or greater**

Repair the open/high resistance in the circuit.
  - **If less than 2  $\Omega$**
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 does not set.
  - **If the DTC sets**

Replace the B59 Front Impact Sensor.
  - **If the DTC does not set**
11. All OK.

### Repair Instructions

Perform the [Diagnostic Repair Verification](#) after completing the repair.

- [Airbag Front End Discriminating Sensor Replacement \(Buick\)](#)[Airbag Front End Discriminating Sensor Replacement \(Chevrolet\)](#)
- [Control Module References](#) for inflatable restraint sensing and diagnostic module replacement, programming and setup

## **DTC B1001: OPTION CONFIGURATION**

### **Diagnostic Instructions**

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

### **DTC Descriptor**

#### **DTC B1001 00**

Option Configuration

### **Circuit/System Description**

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

### **Conditions for Running the DTC**

System voltage is between 9-16 V.

### **Conditions for Setting the DTC**

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

### **Action Taken When the DTC Sets**

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

### **Conditions for Clearing the DTC**

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

### **Diagnostic Aids**

- This DTC is an indication that an incorrect inflatable restraint sensing and diagnostic module is installed in the vehicle, or that the inflatable restraint sensing and diagnostic module and/or the body control module was replaced without reprogramming the body control module with the new information.
- If the inflatable restraint sensing and diagnostic module was previously programmed and DTC B1001 is now set, the setup portion of program was not completed. Proceed to the inflatable restraint sensing and diagnostic module setup portion of the [Inflatable Restraint Sensing and Diagnostic Module Programming and Setup](#)

### **Reference Information**

Schematic Reference

[SIR Schematics \(Buick\)](#)[SIR Schematics \(Chevrolet\)](#)

Connector End View Reference

[COMPONENT CONNECTOR END VIEWS - INDEX \(ENCORE\)](#), [COMPONENT CONNECTOR END VIEWS - INDEX \(TRAX\)](#)

## Supplemental Inflatable Restraint System Description and Operation

### Electrical Information Reference

- [Circuit Testing](#)
- [Testing for Intermittent Conditions and Poor Connections](#)
- [Wiring Repairs](#)
- [Connector Repairs](#)

### Scan Tool Reference

### Control Module References for scan tool information

### Circuit/System Verification

1. Verify the scan tool K36 Inflatable Restraint Sensing and Diagnostic Module Primary Key Status parameter is Valid.
  - **If the K36 Inflatable Restraint Sensing and Diagnostic Module Primary Key Status parameter is Invalid**  
  
Perform the K36 Inflatable Restraint Sensing and Diagnostic Module setup. Refer to [Inflatable Restraint Sensing and Diagnostic Module Programming and Setup](#) .
  - **If the K36 Inflatable Restraint Sensing and Diagnostic Module Primary Key Status parameter is Valid**
2. All OK.

### Repair Instructions

Perform the [Diagnostic Repair Verification](#) after completing the repair.

- [SIR/SRS Wiring Repairs](#)
- [Control Module References](#) for inflatable restraint sensing and diagnostic module replacement, programming and setup

## **DTC B1019: SYSTEM CONFIGURATION ERROR**

### Diagnostic Instructions

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

### DTC Descriptor

### **DTC B1019 00**

System Configuration Error

### Circuit/System Description

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

### Conditions for Running the DTC

Ignition voltage is between 9-16 V.

### Conditions for Setting the DTC

The setup for the Inflatable Restraint Sensing and Diagnostic Module has not been completed and the Inflatable Restraint Sensing and Diagnostic Module does not detect the passenger presence system (if equipped), the correct number of sensors, or deployment loops, that is expected with this calibration.

### Action Taken When the DTC Sets

- The Inflatable Restraint Sensing and Diagnostic Module requests the instrument cluster to illuminate the AIR BAG warning indicator.
- The DTC must be cleared before running the setup Inflatable Restraint Sensing and Diagnostic Module.
- Air bag indicator will continue to flash until Inflatable Restraint Sensing and Diagnostic Module setup procedure is complete.

### Conditions for Clearing the DTC

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

### Diagnostic Aids

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

DTC B1019 will set when an open/high resistance DTC sets for a deployment loop or impact sensor. This causes mismatch between the learned and actual components connected to the Inflatable Restraint Sensing and Diagnostic Module.

DTC B1019 can set with no other DTCs if an unused deployment loop or impact sensor circuit is shorted to ground. This causes a mismatch between the learned and actual components connected to the Inflatable Restraint Sensing and Diagnostic Module.

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 \(Buick\)](#) [Seat Belt Schematics \(Chevrolet\)](#)
- [SIR Schematics \(Buick\)](#) [SIR Schematics \(Chevrolet\)](#)

#### Connector End View Reference

### COMPONENT CONNECTOR END VIEWS - INDEX (ENCORE) COMPONENT CONNECTOR END VIEWS - INDEX (TRAX)

#### Description and Operation

- [Seat Belt System Description and Operation](#)
- [Supplemental Inflatable Restraint System Description and Operation](#)

- [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.
  - **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.

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

**NOTE:** The following procedures must be followed:

1. Read this procedure carefully and completely.
2. The passenger presence system will not function properly if the passenger presence system re-zeroing procedure is not performed.
3. Perform the [Diagnostic Repair Verification](#) after successfully completing the re-zeroing procedure to ensure the system is functioning properly.

### Passenger Presence System Re-zeroing Procedure

**NOTE:**

- Before the passenger presence system can be re-zeroed the front passenger seat must be completely empty of all items. The presence of any liquid or items on the front passenger seat will affect the calibration and operation of the passenger presence system.
- DTC B0081 will set if the re-zero system test is performed with:
  - An aftermarket seat heater located too close to the sensor mat

- A scan tool, laptop, or other electronic device is in the seat
- The seat is damp or wet
- An object or person is in the seat

1. Verify that the temperature is between 32°F (0°C) to 100°F (38 °C) before running a re-zero procedure.
2. Verify the seat is completely dry.
3. Empty the front outboard passenger seat.
4. Verify that all SIR and passenger presence system components, connectors, and connector position assurances are properly connected and mounted.
5. Install a scan tool.
6. Turn ON the ignition, with the engine OFF.

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

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

## 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](#) in order to diagnose the symptom.

## AIRBAG INDICATOR MALFUNCTION

## Diagnostic Instructions

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

### Circuit/System Description

When the ignition is turned ON, during the bulb check, the driver air bag indicator will flash, and then turn OFF after the bulb check. The inflatable restraint sensing and diagnostic module (SDM) performs diagnostic tests on the SIR system during the bulb check. If any malfunction exists the SDM 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 air bag indicator, refer to [Inflatable Restraint Sensing and Diagnostic Module Programming and Setup](#).

### Reference Information

Schematic Reference

[SIR Schematics \(Buick\)](#) [SIR Schematics \(Chevrolet\)](#)

Connector End View Reference

[COMPONENT CONNECTOR END VIEWS - INDEX \(ENCORE\)](#), [COMPONENT CONNECTOR END VIEWS - INDEX \(TRAX\)](#)

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

If the driver air bag indicator is flashing, refer to [Inflatable Restraint Sensing and Diagnostic Module Programming and Setup](#).

### Circuit/System Testing

1. Verify K36 Inflatable Restraint Sensing and Diagnostic Module DTCs are not set.

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

Refer to [Diagnostic Trouble Code \(DTC\) List - Vehicle](#).

- **If Inflatable Restraint Sensing and Diagnostic Module DTCs are not set**

2. Verify the air bag indicator turns ON and OFF when commanding the Instrument Cluster All Indicators ON and OFF with a scan tool.

- **If air bag indicator does not turn on or off**

If the air bag indicator does not turn ON and OFF as expected, replace the P16 Instrument Cluster.

- **If air bag indicator does turn on or off**

3. 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

### SIR DISABLING AND ENABLING

SIR component location affects how a vehicle should be serviced. There are parts of the SIR system installed in various locations around a vehicle. To find the location of the SIR components refer to [Supplemental Inflatable Restraint System Description and Operation](#).

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

| Condition                                                                                                                        | Action                                                                                                                    |
|----------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| If the vehicle was involved in an accident with an air bag deployment.                                                           | Disconnect the negative battery cable(s) *. Refer to <a href="#">Repairs and Inspections Required After a Collision</a> . |
| 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 85°C (185°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)
- 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 \(Buick\)](#), [SIR Schematics \(Chevrolet\)](#), or [Electrical Center Identification Views \(Buick\)](#), [Electrical Center Identification Views \(Chevrolet\)](#).
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 \(Buick\)](#), [SIR Schematics \(Chevrolet\)](#), or [Electrical Center Identification Views \(Buick\)](#), [Electrical Center Identification Views \(Chevrolet\)](#).
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 \(without KL9\)](#), [Battery Negative Cable Disconnection and Connection \(with KL9\)](#).
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 \(without KL9\)](#), [Battery Negative Cable Disconnection and Connection \(with KL9\)](#).

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

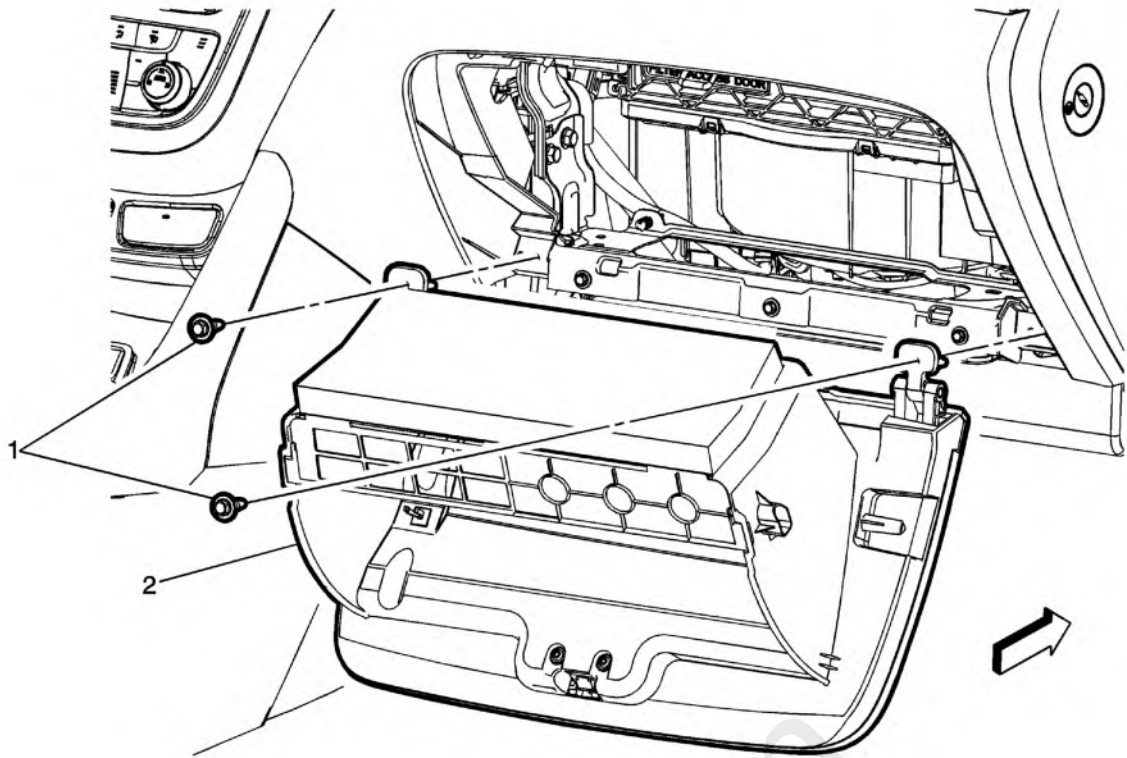
#### General Service Instructions

- 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 °C (185 °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:

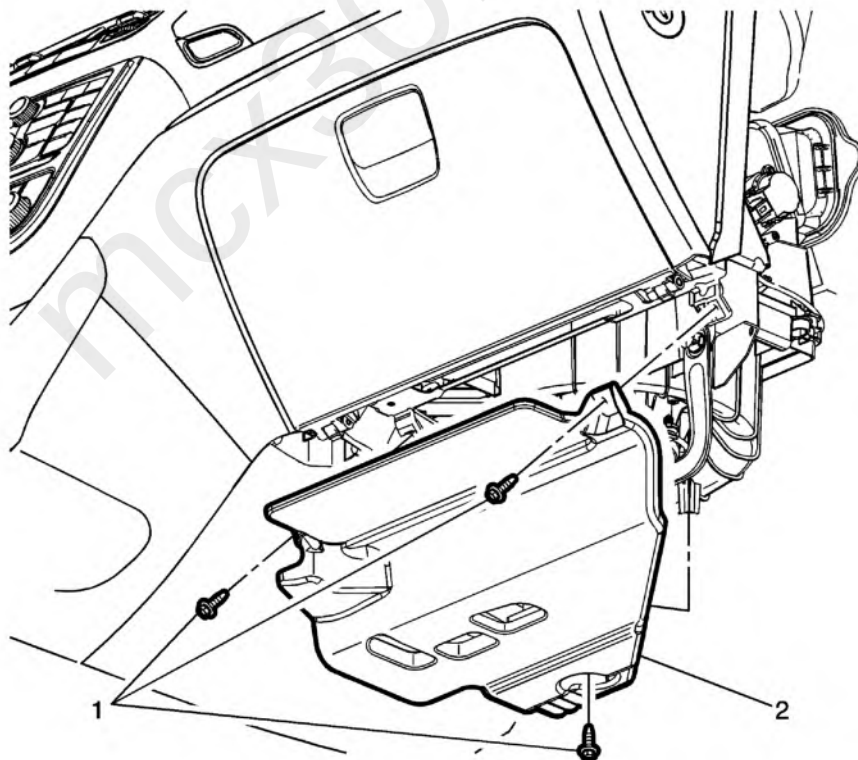
- Inflatable Restraint Sensing and Diagnostic Module
- Passenger instrument panel air bag
- Driver steering wheel air bag
- Driver steering wheel air bag coil
- Roof rail air bags
- Front and /or side impact sensors
- Seat belt anchor and/or retractor pretensioners
- Front seat side air bag
- Knee air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

### INSTRUMENT PANEL LOWER AIRBAG BRACKET REPLACEMENT



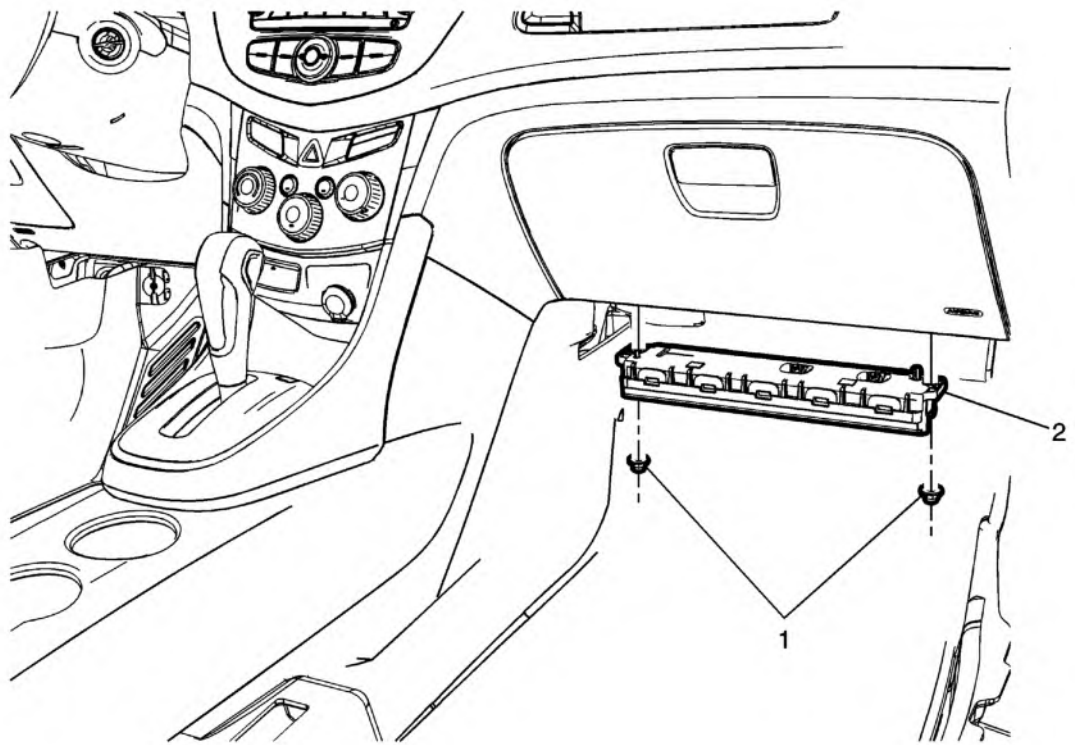
**Fig. 8: Instrument Panel Compartment**  
Courtesy of GENERAL MOTORS COMPANY

1. Remove Instrument Panel Compartment (2) [Instrument Panel Compartment Replacement](#)



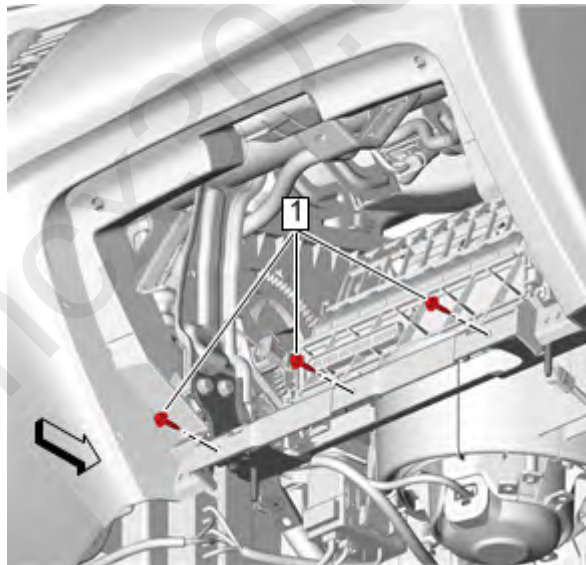
**Fig. 9: Instrument Panel Lower Trim Panel Insulator**  
Courtesy of GENERAL MOTORS COMPANY

2. Remove Instrument Panel Lower Trim Panel Insulator (2) [Instrument Panel Lower Trim Panel Insulator Replacement \(Chevrolet\)](#), [Instrument Panel Lower Trim Panel Insulator Replacement \(Buick\)](#).



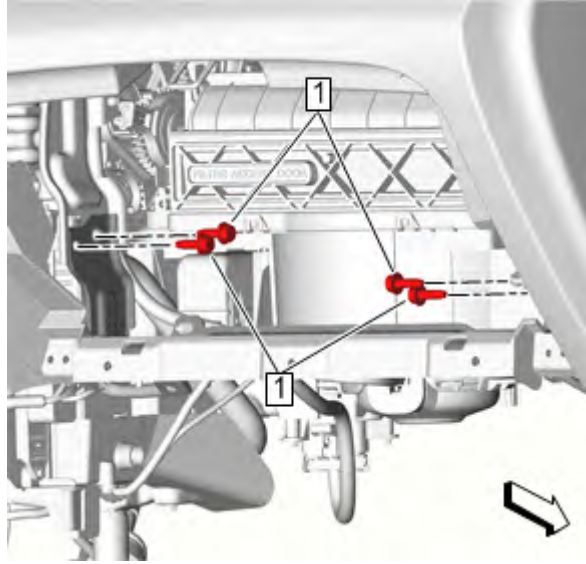
**Fig. 10: Instrument Panel Lower Airbag - Passenger Side (AYF)**  
 Courtesy of GENERAL MOTORS COMPANY

3. Remove Instrument Panel Lower Airbag - Passenger Side (2) **Instrument Panel Lower Airbag Replacement - Passenger Side (AYF)**



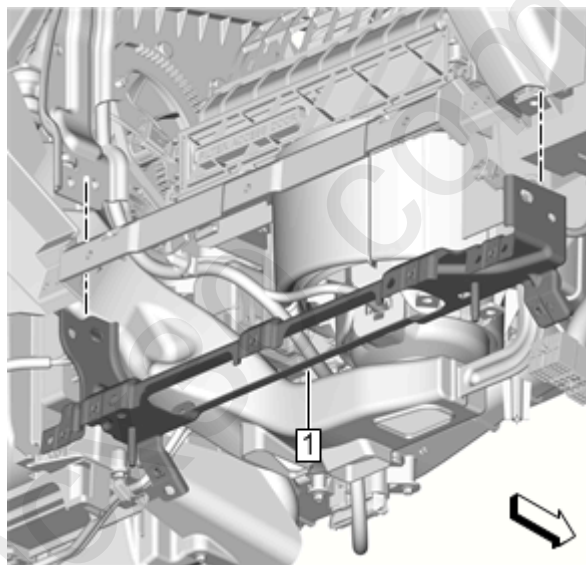
**Fig. 11: Instrument Panel Bolt**  
 Courtesy of GENERAL MOTORS COMPANY

4. Remove Instrument Panel Bolt (1)



**Fig. 12: Instrument Panel Lower Airbag Bracket Bolt**  
**Courtesy of GENERAL MOTORS COMPANY**

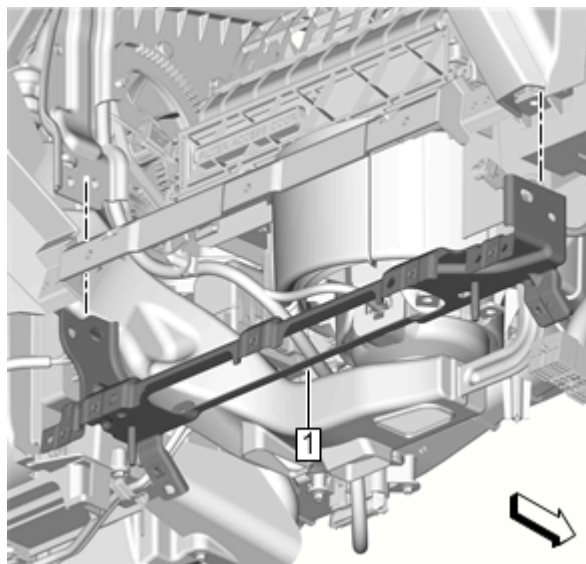
5. Remove Instrument Panel Lower Airbag Bracket Bolt (1)
6. Disconnect and reposition harness as necessary.



**Fig. 13: Instrument Panel Lower Airbag Bracket**  
**Courtesy of GENERAL MOTORS COMPANY**

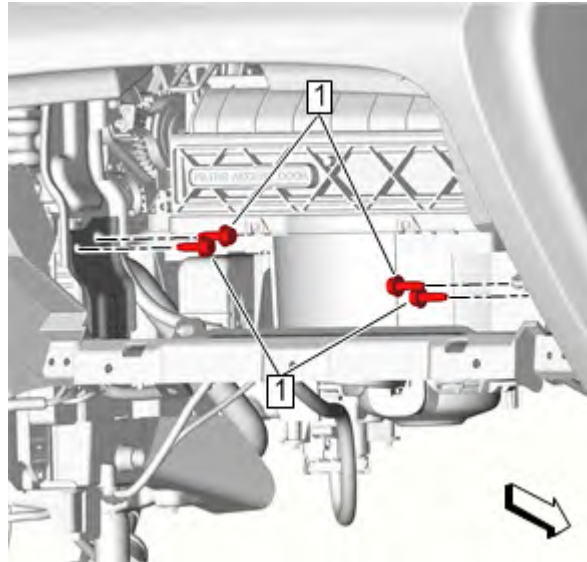
7. Remove Instrument Panel Lower Airbag Bracket (1)

### **Installation Procedure**



**Fig. 14: Instrument Panel Lower Airbag Bracket**  
Courtesy of GENERAL MOTORS COMPANY

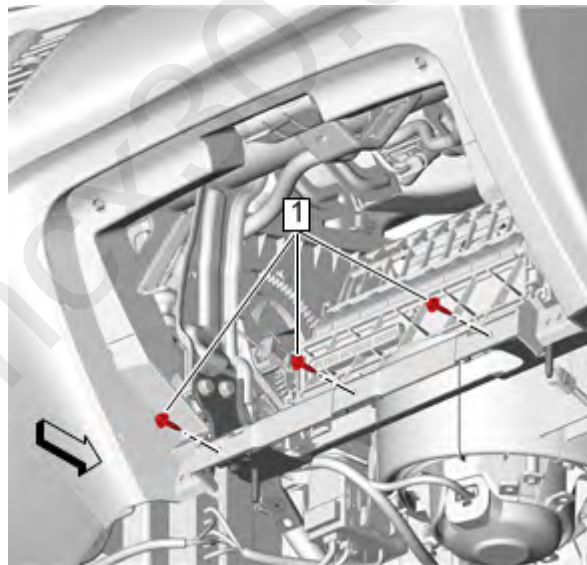
1. Install Instrument Panel Lower Airbag Bracket (1)



**Fig. 15: Instrument Panel Lower Airbag Bracket Bolt**  
Courtesy of GENERAL MOTORS COMPANY

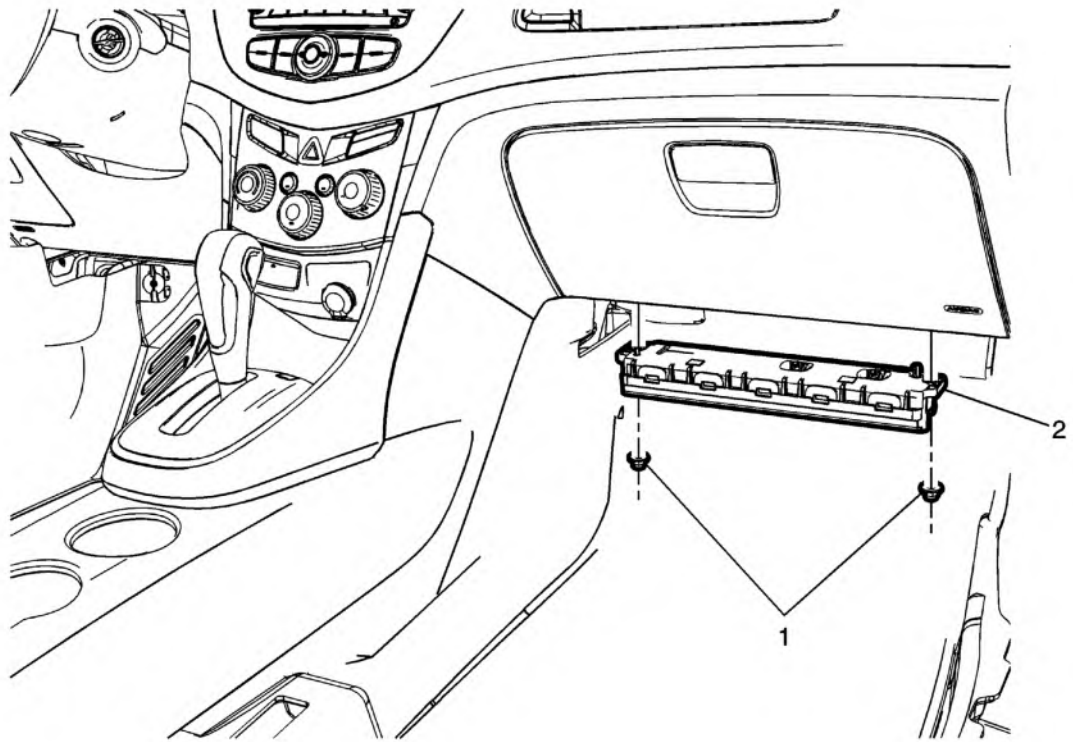
**CAUTION:** Refer to **Fastener Caution** .

2. Install Instrument Panel Lower Airbag Bracket Bolt (1) and tighten 9 N.m (80 lb in)
3. Install the wiring harness.



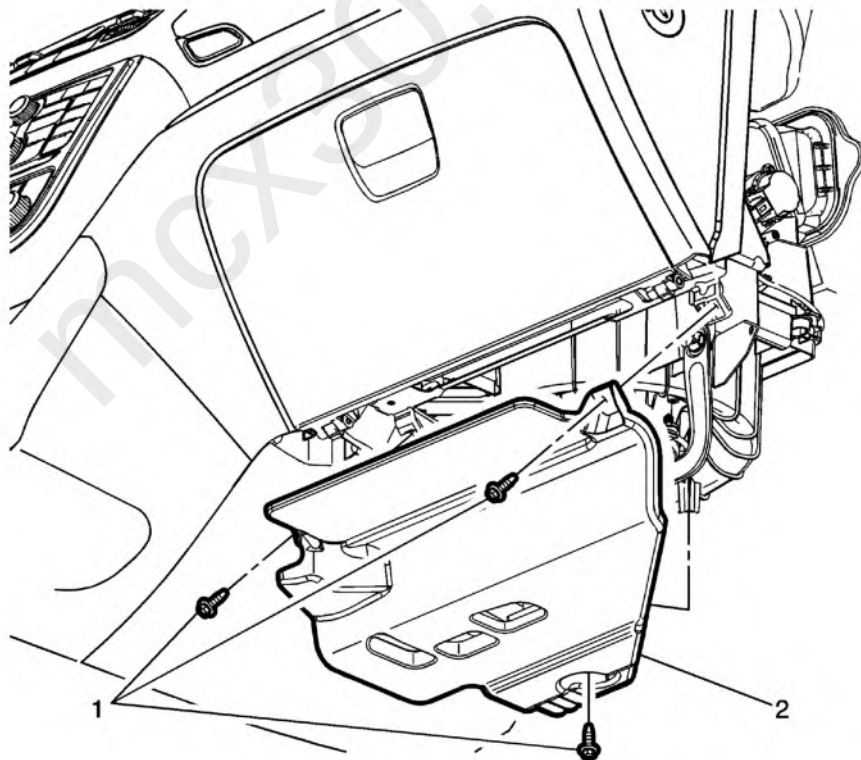
**Fig. 16: Instrument Panel Bolt**  
Courtesy of GENERAL MOTORS COMPANY

4. Install Instrument Panel Bolt (1) and tighten 2.5 N.m (22 lb in)



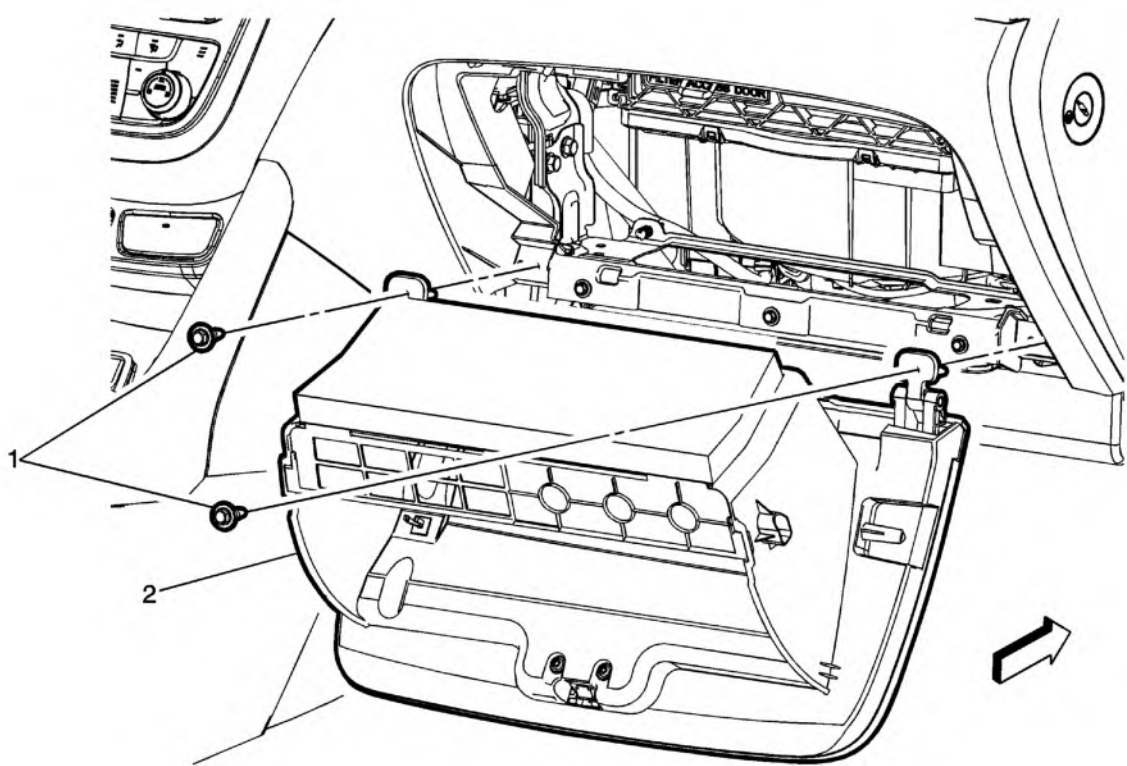
**Fig. 17: Instrument Panel Lower Airbag - Passenger Side (AYF)**  
 Courtesy of GENERAL MOTORS COMPANY

5. Install Instrument Panel Lower Airbag - Passenger Side (2) **Instrument Panel Lower Airbag Replacement - Passenger Side (AYF)**



**Fig. 18: Instrument Panel Lower Trim Panel Insulator**  
 Courtesy of GENERAL MOTORS COMPANY

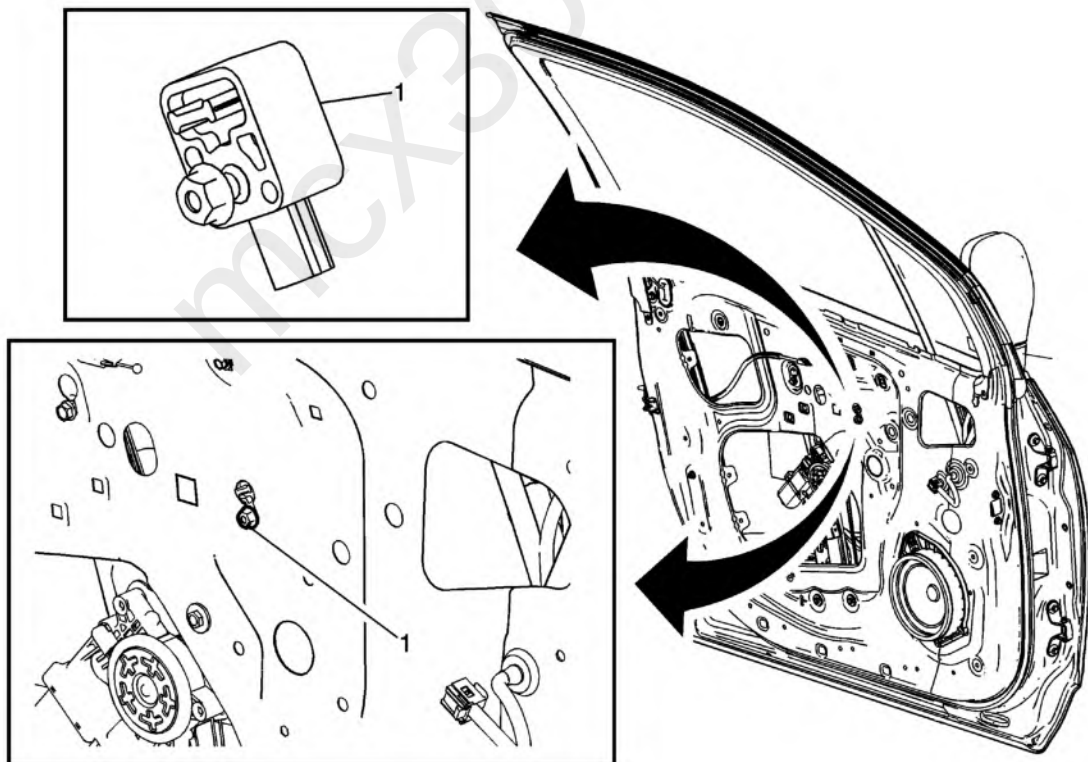
6. Install Instrument Panel Lower Trim Panel Insulator (2) **Instrument Panel Lower Trim Panel Insulator Replacement (Chevrolet)**, **Instrument Panel Lower Trim Panel Insulator Replacement (Buick)**



**Fig. 19: Instrument Panel Compartment**  
 Courtesy of GENERAL MOTORS COMPANY

7. Install Instrument Panel Compartment (2) **Instrument Panel Compartment Replacement**

### **AIRBAG REMOTE IMPACT SENSOR REPLACEMENT (FRONT SIDE DOOR)**

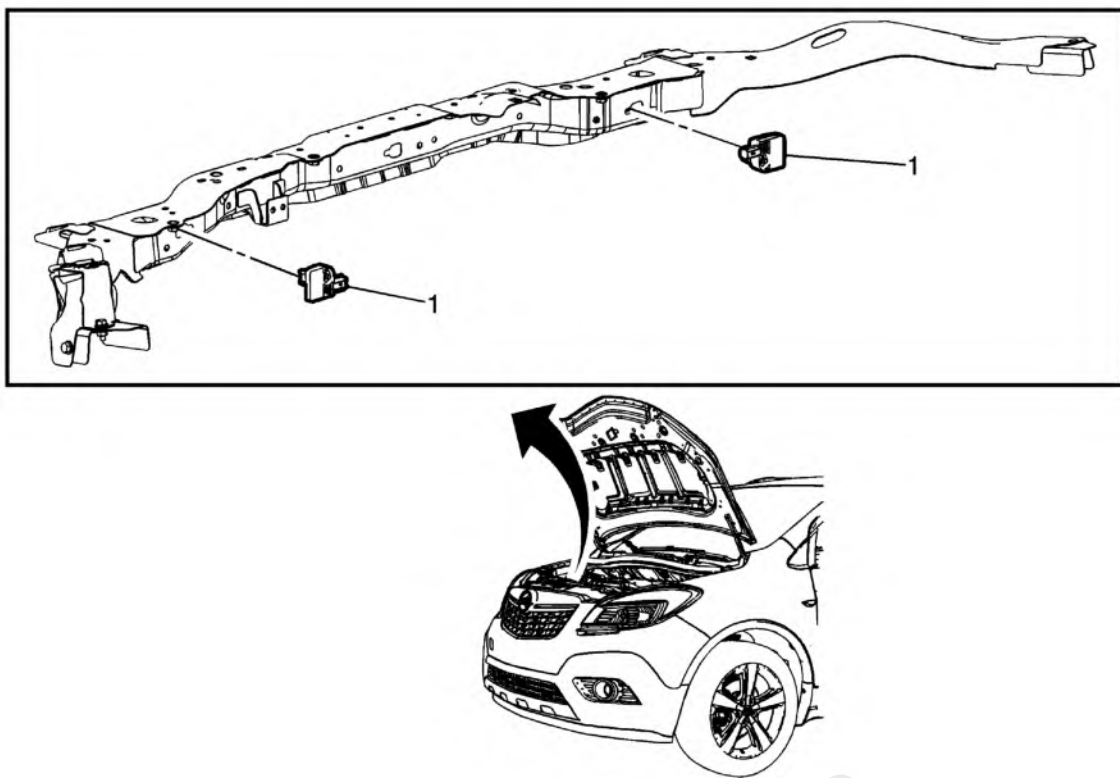


**Fig. 20: Inflatable Restraint Remote Impact Sensor**  
 Courtesy of GENERAL MOTORS COMPANY

| Callout | Component Name |
|---------|----------------|
|         |                |

| Callout | Component Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|         | <p><b>WARNING:</b></p> <p>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.</p> <p><b>WARNING:</b></p> <p>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.</p> <p><b>Preliminary Procedures</b></p> <ol style="list-style-type: none"> <li>1. Disable the supplemental inflatable restraint (SIR) system. Refer to <a href="#">SIR Disabling and Enabling</a>.</li> <li>2. Remove the front side door trim panel. Refer to <a href="#">Front Side Door Trim Replacement (Buick)</a>.<br/><a href="#">Front Side Door Trim Replacement (Chevrolet)</a>.</li> </ol> |
| 1       | <p>Inflatable Restraint Remote Impact Sensor Assembly</p> <p><b>CAUTION:</b><br/>Refer to <a href="#">Fastener Caution</a>.</p> <p><b>Procedure</b></p> <ol style="list-style-type: none"> <li>1. Disconnect the electrical connector.</li> <li>2. Loosen the fasteners and slide the sensor out of the keyhole slots.</li> <li>3. The bolts are integral to the sensor assembly, DO NOT remove separately.</li> </ol> <p><b>NOTE:</b><br/>The sensor is located on the inside of the front door inner panel.</p> <p><b>Tighten</b><br/>7.5 N.m (66 lb in)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

## AIRBAG FRONT END DISCRIMINATING SENSOR REPLACEMENT (BUICK)

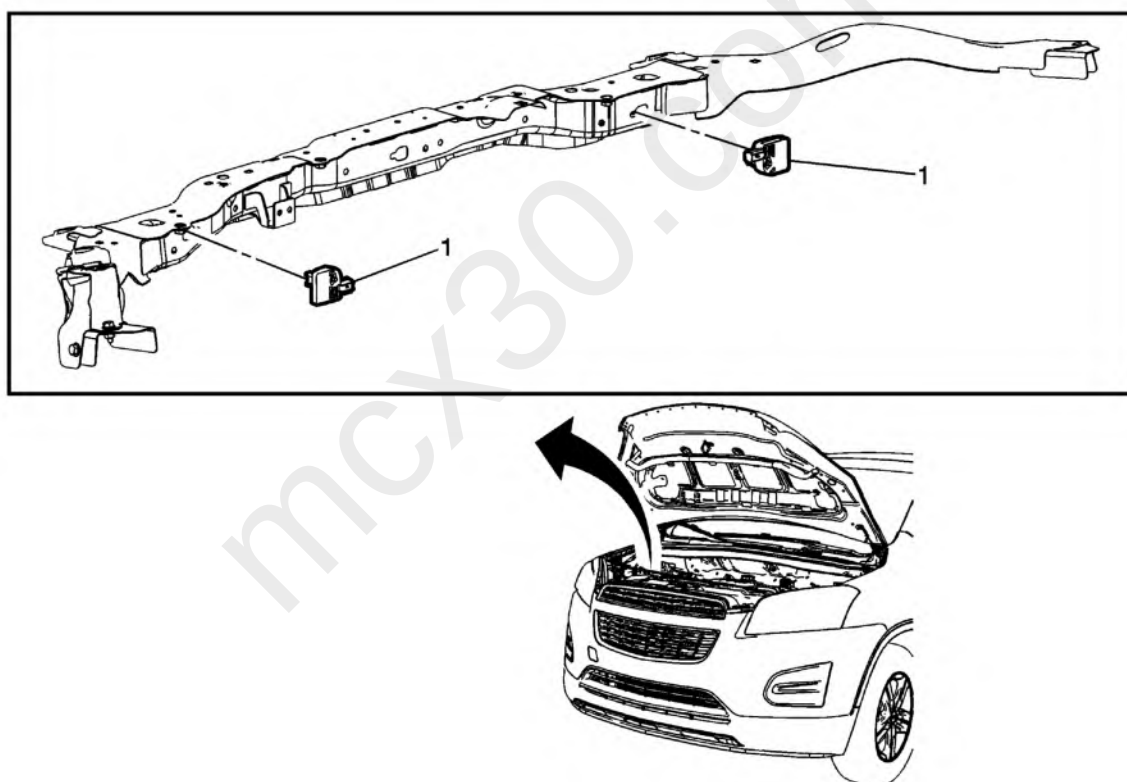


**Fig. 21: Airbag Front End Discriminating Sensor (Encore).**  
Courtesy of GENERAL MOTORS COMPANY

| Callout                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Component Name |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| <p><b>WARNING:</b><br/>Refer to <a href="#">SIR Warning</a> .</p> <p><b>WARNING:</b><br/>Refer to <a href="#">SIR Inflator Module Handling and Storage Warning</a> .</p> <p><b>WARNING:</b><br/>Following the deployment of a side impact air bag, inspect the following parts for damage. Replace these parts if necessary:</p> <ul style="list-style-type: none"> <li>• The seat cushion frame</li> <li>• The seat recliner, if equipped</li> <li>• The seat adjuster</li> <li>• The seat back frame</li> </ul> <p>Failure to do so may cause future personal injury.</p> <p><b>Preliminary Procedures</b></p> <ol style="list-style-type: none"> <li>1. Disable the supplemental inflatable restraint (SIR) system. Refer to <a href="#">SIR Disabling and Enabling</a>.</li> <li>2. Remove the front bumper fascia opening upper cover. Refer to <a href="#">Front Bumper Fascia Opening Upper Cover Replacement</a> .</li> </ol> |                |

| Callout | Component Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1       | <p>Inflatable Restraint Front End Discriminating Sensor Assembly (Qty: 2)</p> <p><b>CAUTION:</b><br/>Refer to <a href="#">Fastener Caution</a> .</p> <p><b>Procedure</b></p> <ol style="list-style-type: none"> <li>1. Disconnect electrical connector.</li> <li>2. Loosen the bolts and slide the sensors out of the keyhole slots.</li> </ol> <p><b>NOTE:</b><br/>Integral sensor assembly bolt uses Left Hand threads. Use counterclockwise rotation to loosen fastener at TORX<sup>®</sup> tip end. If accessing at pan head end of the fastener, use clockwise rotation to loosen bolt.</p> <p><b>Tighten</b><br/>7.5 N.m (66 lb in)</p> |

## AIRBAG FRONT END DISCRIMINATING SENSOR REPLACEMENT (CHEVROLET)



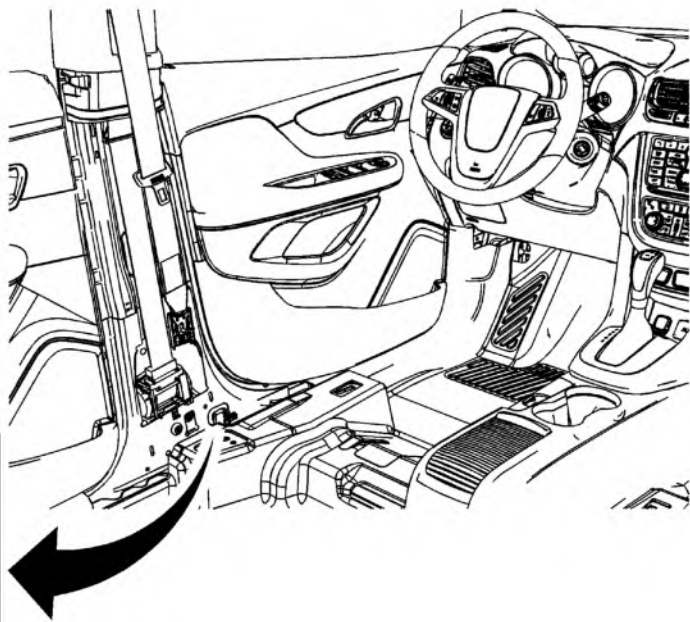
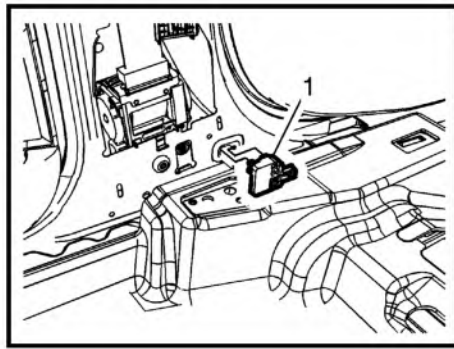
**Fig. 22: Front End Inflatable Restraint Discriminating Sensor (Trax).**

Courtesy of GENERAL MOTORS COMPANY

| Callout | Component Name |
|---------|----------------|
|         |                |

| Callout | Component Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|         | <p><b>WARNING:</b><br/>Refer to <a href="#">SIR Warning</a> .</p> <p><b>WARNING:</b><br/>Refer to <a href="#">SIR Inflator Module Handling and Storage Warning</a> .</p> <p><b>WARNING:</b><br/>Following the deployment of a side impact air bag, inspect the following parts for damage. Replace these parts if necessary:</p> <ul style="list-style-type: none"> <li>• The seat cushion frame</li> <li>• The seat recliner, if equipped</li> <li>• The seat adjuster</li> <li>• The seat back frame</li> </ul> <p>Failure to do so may cause future personal injury.</p> <p><b>Preliminary Procedures</b></p> <ol style="list-style-type: none"> <li>1. Disable the supplemental inflatable restraint (SIR) system. Refer to <a href="#">SIR Disabling and Enabling</a>.</li> <li>2. If servicing the driver side sensor, remove the front bumper fascia opening upper cover. Refer to <a href="#">Front Bumper Fascia Opening Upper Cover Replacement</a> .</li> <li>3. If servicing the driver side sensor, reposition the front compartment forward lamp harness relay center.</li> </ol> |
| 1       | <p>Inflatable Restraint Front End Discriminating Sensor Assembly (Qty: 2)</p> <p><b>CAUTION:</b><br/>Refer to <a href="#">Fastener Caution</a> .</p> <p><b>Procedure</b></p> <ol style="list-style-type: none"> <li>1. Disconnect electrical connector.</li> <li>2. Loosen the bolts and slide the sensors out of the keyhole slots.</li> </ol> <p><b>NOTE:</b><br/>Integral sensor assembly bolt uses Left Hand threads. Use counterclockwise rotation to loosen fastener at TORX<sup>®</sup> tip end. If accessing at pan head end of the fastener, use clockwise rotation to loosen bolt.</p> <p><b>Tighten</b><br/>7.5 N.m (66 lb in)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

## AIRBAG SIDE IMPACT SENSOR REPLACEMENT (CENTER PILLAR, BUICK)

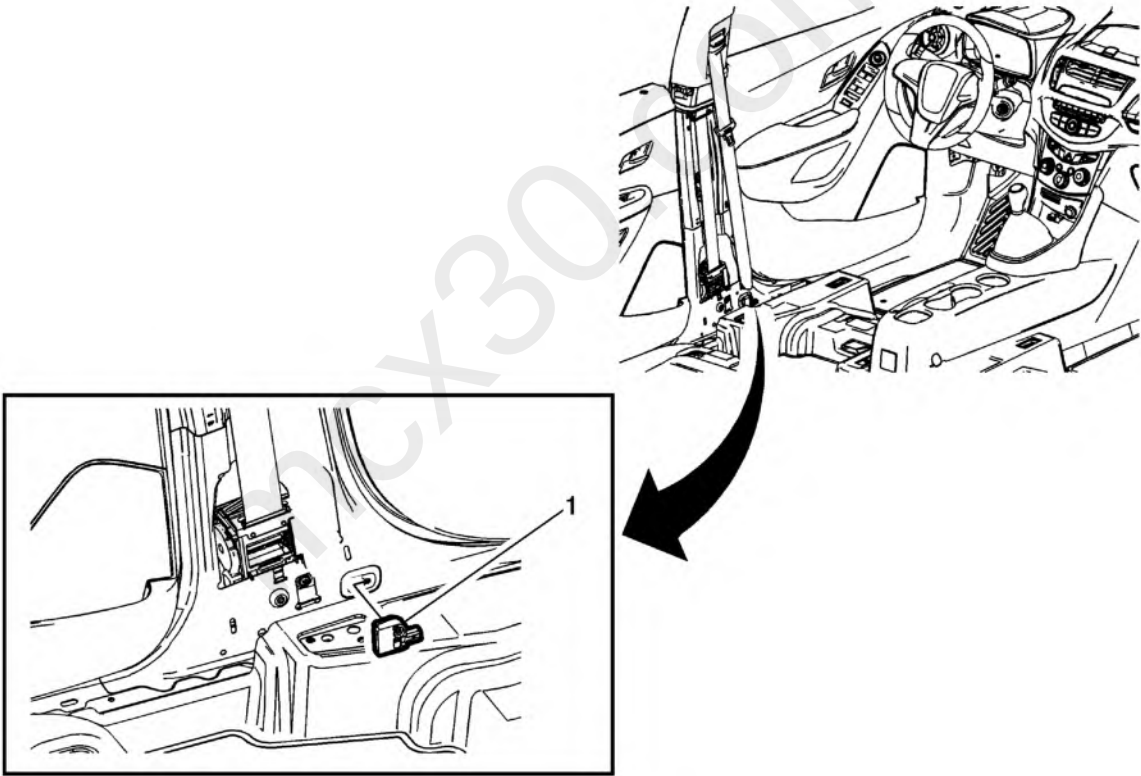


**Fig. 23: Airbag Side Impact Sensor (Encore)**  
Courtesy of GENERAL MOTORS COMPANY

| Callout                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Component Name |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| <p><b>WARNING:</b><br/>Refer to <a href="#">SIR Warning</a> .</p> <p><b>WARNING:</b><br/>Refer to <a href="#">SIR Inflator Module Handling and Storage Warning</a> .</p> <p><b>WARNING:</b><br/>Following the deployment of a side impact air bag, inspect the following parts for damage. Replace these parts if necessary:</p> <ul style="list-style-type: none"> <li>• The seat cushion frame</li> <li>• The seat recliner, if equipped</li> <li>• The seat adjuster</li> <li>• The seat back frame</li> </ul> <p>Failure to do so may cause future personal injury.</p> <p><b>Preliminary Procedures</b></p> <ol style="list-style-type: none"> <li>1. Disable the SIR system. Refer to <a href="#">SIR Disabling and Enabling</a>.</li> <li>2. Remove the center pillar lower trim panel. Refer to <a href="#">Center Pillar Lower Trim Panel Replacement (Buick)</a> .</li> </ol> |                |

| Callout | Component Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1       | <p>Inflatable Restraint Side Impact Sensor Assembly</p> <p><b>CAUTION:</b><br/>Refer to <a href="#">Fastener Caution</a> .</p> <p><b>Procedure</b></p> <ol style="list-style-type: none"> <li>1. Disconnect electrical connector.</li> <li>2. Loosen the fasteners and slide the sensor out of the keyhole slots.</li> </ol> <p><b>NOTE:</b><br/>Integral sensor assembly bolt uses Left Hand threads. Use counterclockwise rotation to loosen fastener at TORX<sup>®</sup> tip end. If accessing at pan head end of the fastener, use clockwise rotation to loosen bolt.</p> <p><b>Tighten</b><br/>7.5 N.m (66 lb in)</p> |

**AIRBAG SIDE IMPACT SENSOR REPLACEMENT (CENTER PILLAR, CHEVROLET)**

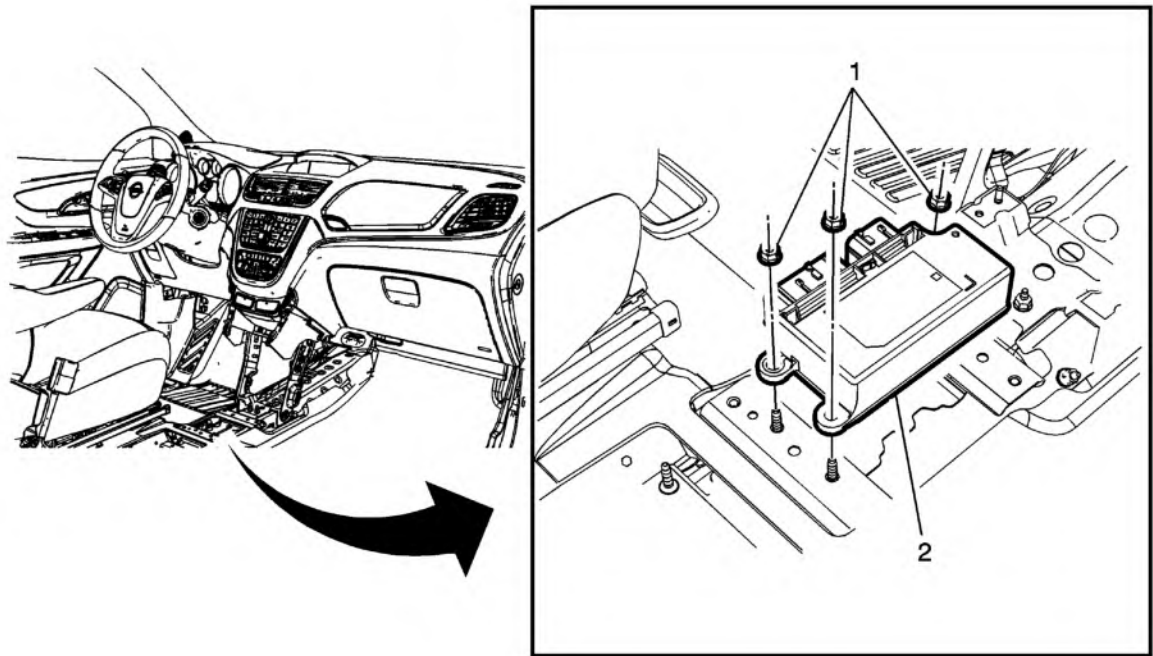


**Fig. 24: Airbag Side Impact Sensor (Center Pillar, Trax)**  
 Courtesy of GENERAL MOTORS COMPANY

| Callout | Component Name |
|---------|----------------|
|         |                |

| Callout | Component Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|         | <p><b>WARNING:</b><br/>Refer to <a href="#">SIR Warning</a> .</p> <p><b>WARNING:</b><br/>Refer to <a href="#">SIR Inflator Module Handling and Storage Warning</a> .</p> <p><b>WARNING:</b><br/>Following the deployment of a side impact air bag, inspect the following parts for damage. Replace these parts if necessary:</p> <ul style="list-style-type: none"> <li>• The seat cushion frame</li> <li>• The seat recliner, if equipped</li> <li>• The seat adjuster</li> <li>• The seat back frame</li> </ul> <p>Failure to do so may cause future personal injury.</p> <p><b>Preliminary Procedures</b></p> <ol style="list-style-type: none"> <li>1. Disable the SIR system. Refer to <a href="#">SIR Disabling and Enabling</a>.</li> <li>2. Remove the center pillar lower trim panel. Refer to <a href="#">Center Pillar Lower Trim Panel Replacement (Chevrolet)</a> .</li> </ol> |
| 1       | <p>Inflatable Restraint Side Impact Sensor Assembly</p> <p><b>CAUTION:</b><br/>Refer to <a href="#">Fastener Caution</a> .</p> <p><b>Procedure</b></p> <ol style="list-style-type: none"> <li>1. Disconnect electrical connector.</li> <li>2. Loosen the fasteners and slide the sensor out of the keyhole slots.</li> </ol> <p><b>NOTE:</b><br/>Integral sensor assembly bolt uses Left Hand threads. Use counterclockwise rotation to loosen fastener at TORX<sup>®</sup> tip end. If accessing at pan head end of the fastener, use clockwise rotation to loosen bolt.</p> <p><b>Tighten</b><br/>7.5 N.m (66 lb in)</p>                                                                                                                                                                                                                                                                  |

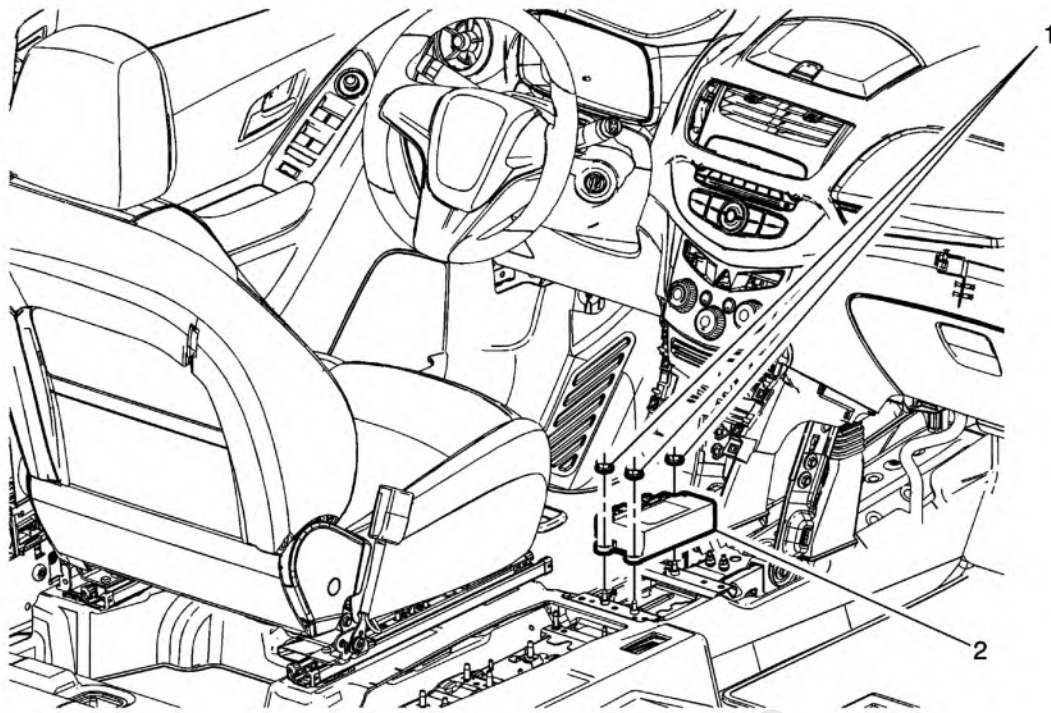
## AIRBAG SENSING AND DIAGNOSTIC MODULE REPLACEMENT (BUICK)



**Fig. 25: Airbag Sensing and Diagnostic Module (Encore).**

Courtesy of GENERAL MOTORS COMPANY

| Callout                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Component Name                                                                                                                                                                                                                                                |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>WARNING:</b><br/>Refer to <a href="#">SIR Warning</a> .</p> <p><b>WARNING:</b><br/>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 Inflatable Restraint (SIR) deployment, personal injury, or unnecessary SIR system repairs.</p> <p><b>Preliminary Procedures</b></p> <ol style="list-style-type: none"> <li>1. Disable the supplemental inflatable restraint (SIR) system. Refer to <a href="#">SIR Disabling and Enabling</a>.</li> <li>2. Remove the transmission control. Refer to <a href="#">Transmission Control Replacement</a> .</li> </ol> |                                                                                                                                                                                                                                                               |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <p>Inflatable Restraint Sensing and Diagnostic Module Fastener (Qty: 3)</p> <p><b>CAUTION:</b><br/>Refer to <a href="#">Fastener Caution</a> .</p> <p><b>Procedure</b><br/>Disconnect the electrical connectors.<br/><b>Tighten</b><br/>10 N.m (89 lb in)</p> |
| 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <p>Inflatable Restraint Sensing and Diagnostic Module Assembly</p> <p><b>Procedure</b><br/>If installing a replacement module, program the module. Refer to <a href="#">Control Module References</a> .</p>                                                   |



**Fig. 26: Airbag Sensing and Diagnostic Module (Trax).**

Courtesy of GENERAL MOTORS COMPANY

| Callout                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Component Name                                                                                                                                                                                                                                                |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>WARNING:</b><br/>Refer to <a href="#">SIR Warning</a> .</p> <p><b>WARNING:</b><br/>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 Inflatable Restraint (SIR) deployment, personal injury, or unnecessary SIR system repairs.</p> <p><b>Preliminary Procedures</b></p> <ol style="list-style-type: none"> <li>1. Disable the supplemental inflatable restraint (SIR) system. Refer to <a href="#">SIR Disabling and Enabling</a>.</li> <li>2. Remove the transmission control. Refer to <a href="#">Transmission Control Replacement</a> .</li> </ol> |                                                                                                                                                                                                                                                               |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <p>Inflatable Restraint Sensing and Diagnostic Module Fastener (Qty: 3)</p> <p><b>CAUTION:</b><br/>Refer to <a href="#">Fastener Caution</a> .</p> <p><b>Procedure</b><br/>Disconnect the electrical connectors.<br/><b>Tighten</b><br/>10 N.m (89 lb in)</p> |
| 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <p>Inflatable Restraint Sensing and Diagnostic Module Assembly</p> <p><b>Procedure</b><br/>If installing a replacement module, program the module. Refer to <a href="#">Control Module References</a> .</p>                                                   |

## STEERING WHEEL AIRBAG REPLACEMENT

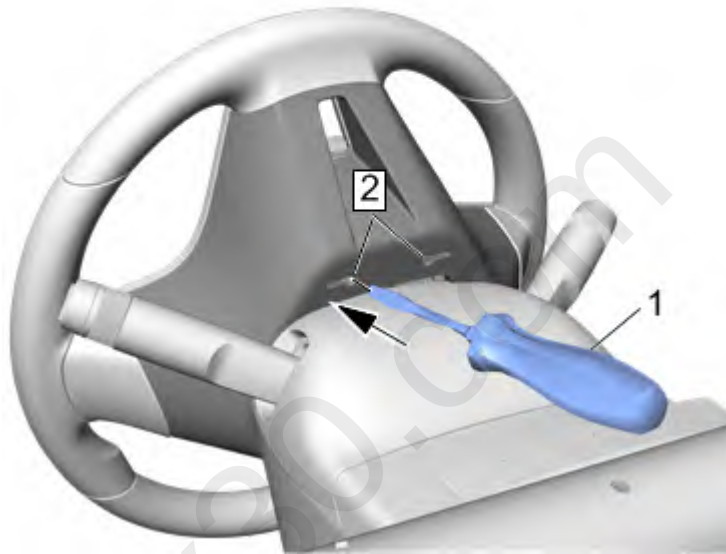
### Removal Procedure

**WARNING:** When replacing either a steering wheel or driver airbag, it is mandatory that both components are sourced from the same country. Parts from different countries are not interchangeable and may cause a malfunction of the air bag system causing personal injury.

**WARNING:** Refer to [SIR Inflator Module Handling and Storage Warning](#) .

**WARNING:** Refer to [SIR Warning](#) .

1. Disable the supplemental inflatable restraint (SIR) system. [SIR Disabling and Enabling](#).
2. Lower the steering column and move to the maximum rear end position.
3. Rotate the steering wheel 180 degrees.

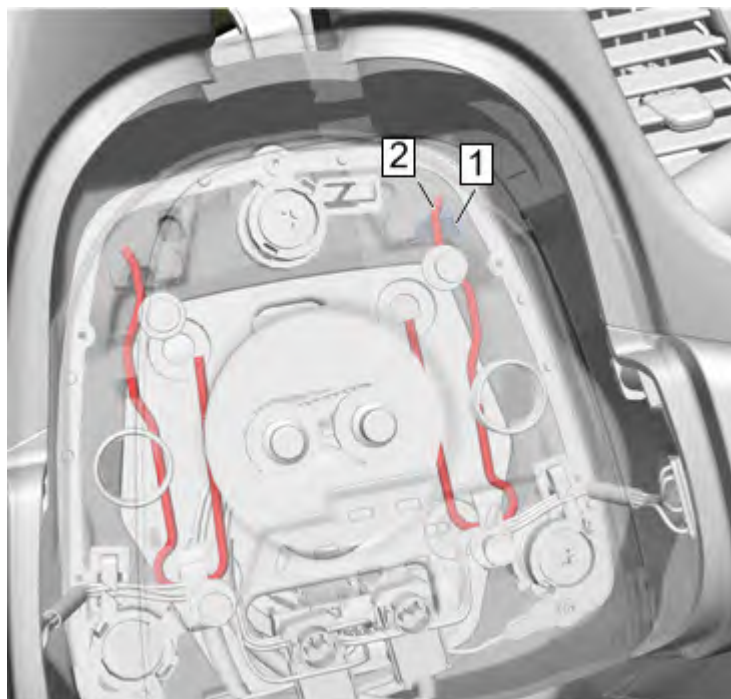


**Fig. 27: Service Opening**

Courtesy of GENERAL MOTORS COMPANY

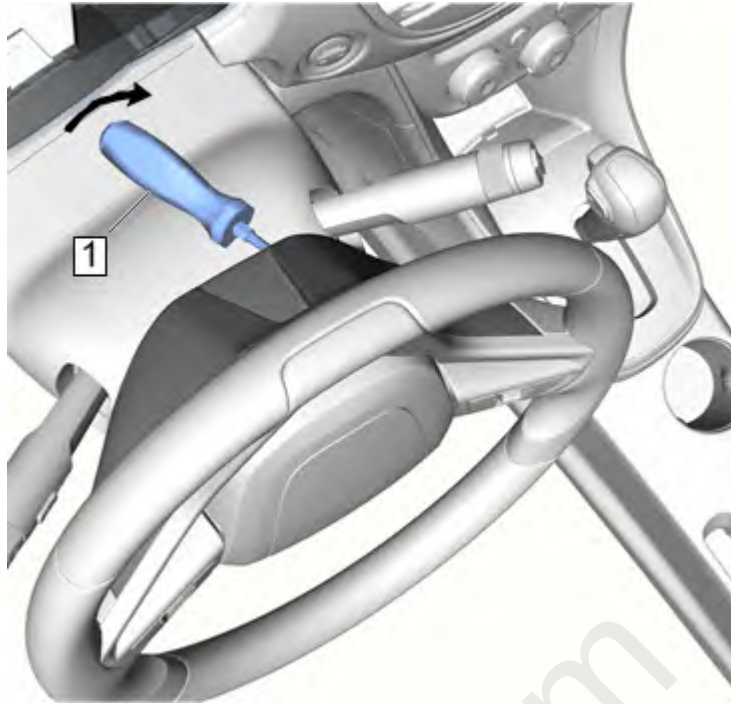
**NOTE:** The end tip of the flathead screwdriver should be vertical.

4. Insert a small flathead screwdriver (1) diagonally through the service openings (2) on the back side of the steering wheel.



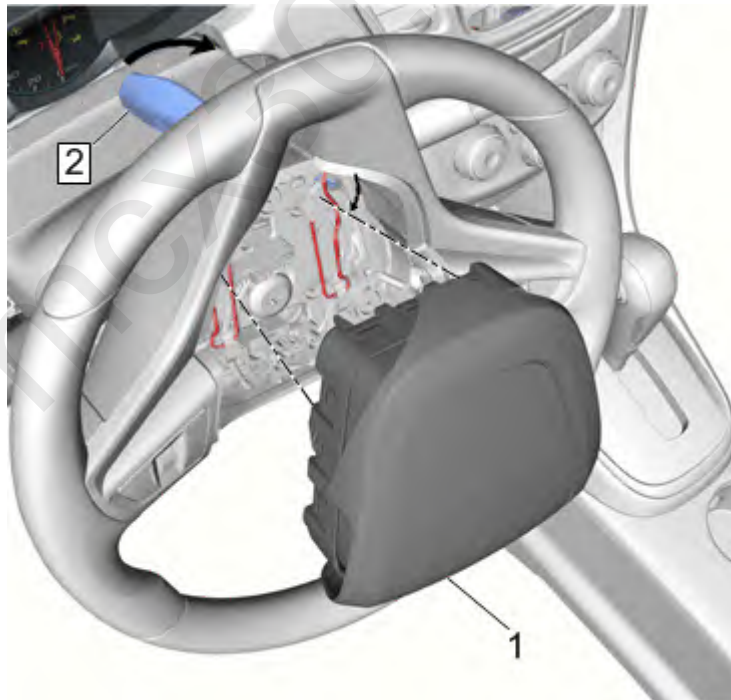
**Fig. 28: Spring Fastener**  
Courtesy of GENERAL MOTORS COMPANY

5. The tip of the screwdriver (1) should be in the right side of the spring fastener.(2)



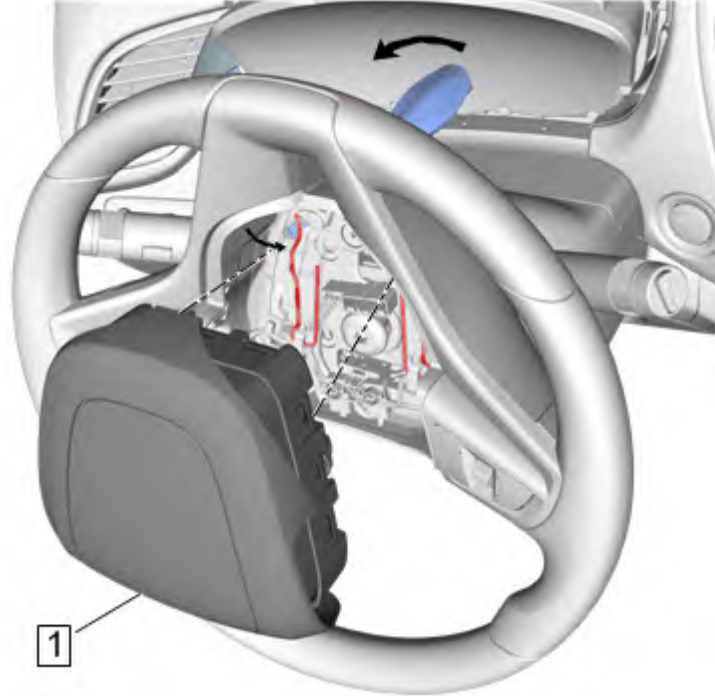
**Fig. 29: Moving Screwdriver**  
Courtesy of GENERAL MOTORS COMPANY

6. Pull the screwdriver (1) in the opposite direction of the steering column to push the spring fastener.



**Fig. 30: Steering Wheel Air Bag Right Corner**  
Courtesy of GENERAL MOTORS COMPANY

7. Pull the right corner of the steering wheel air bag (1) while pulling the screwdriver until the locking tab is released.



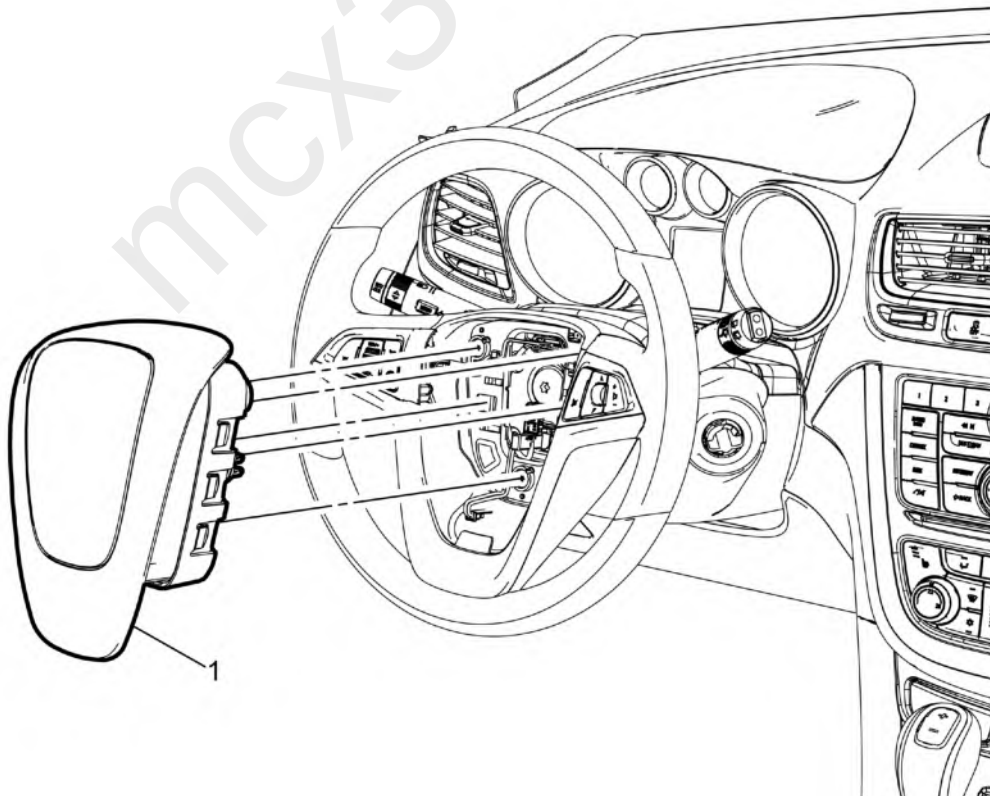
**Fig. 31: Steering Wheel Air Bag Left Corner**

Courtesy of GENERAL MOTORS COMPANY

8. Pull the left corner of the steering wheel air bag (1) while pulling the screwdriver until the locking tab is released.
9. Disconnect the electrical connectors.
10. Steering Wheel Airbag Remove

#### Installation Procedure

1. Connect the electrical connectors.



**Fig. 32: Steering Wheel Airbag (Encore)**

Courtesy of GENERAL MOTORS COMPANY

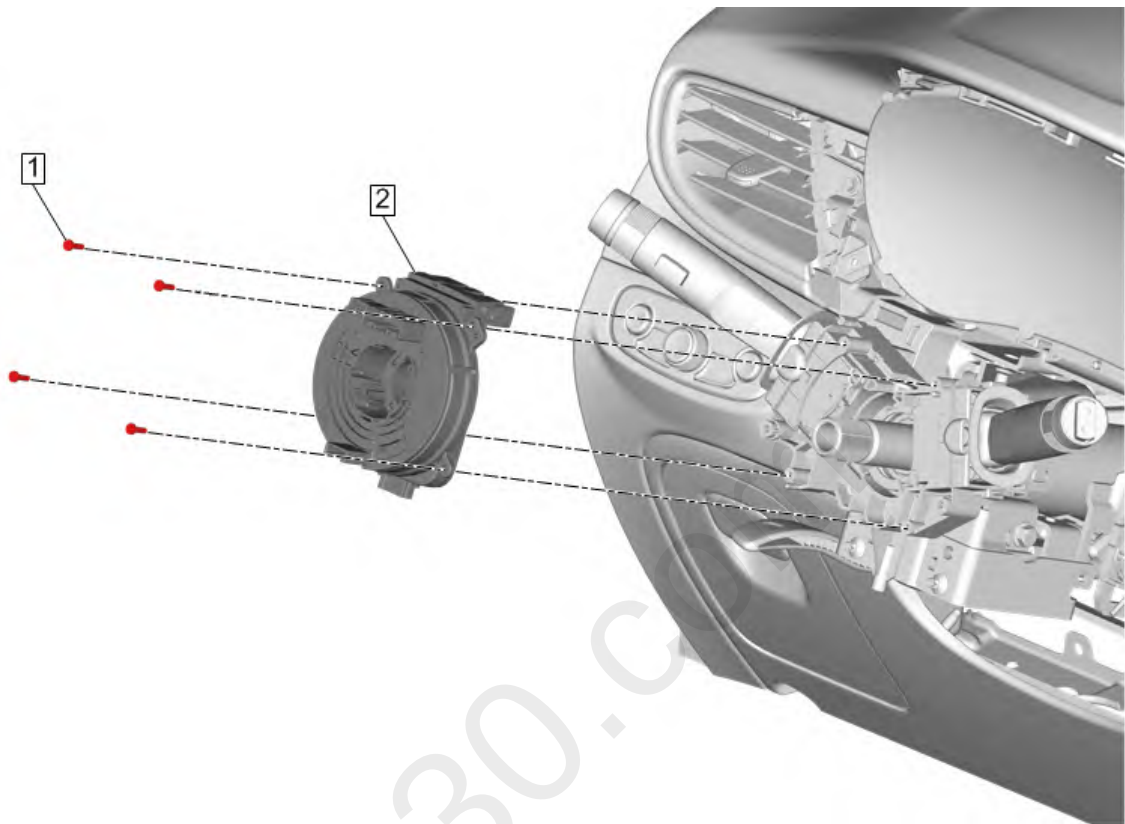
2. Align the steering wheel airbag fasteners to the steering column fastener holes.

**WARNING:** After installation of the steering wheel airbag module to the steering

wheel, slightly pull the module outward. If there is no give on the airbag module then it is secured correctly. If the airbag module is not fully attached personal injury could result.

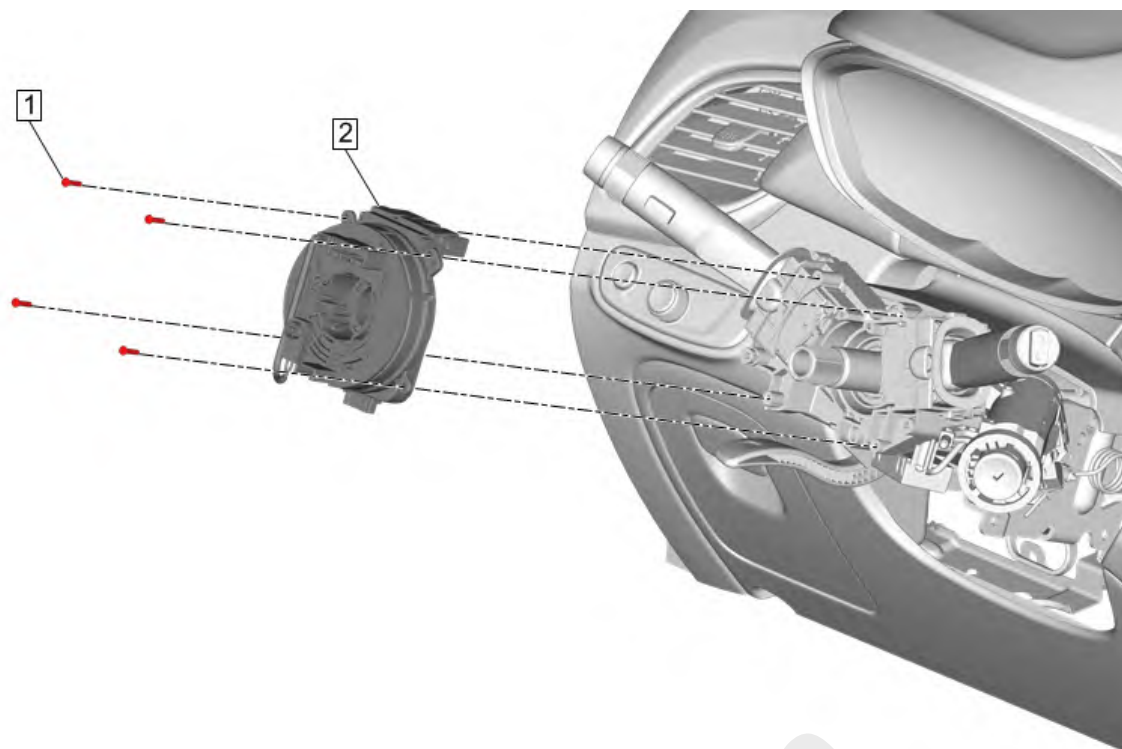
3. Push the steering wheel airbag (1) firmly into the steering column in order to engage the fasteners.
4. Enable the SIR System. [SIR Disabling and Enabling](#).
5. [Inflatable Restraint Module Handling and Scrapping](#).

## STEERING WHEEL AIRBAG COIL REPLACEMENT (BUICK)



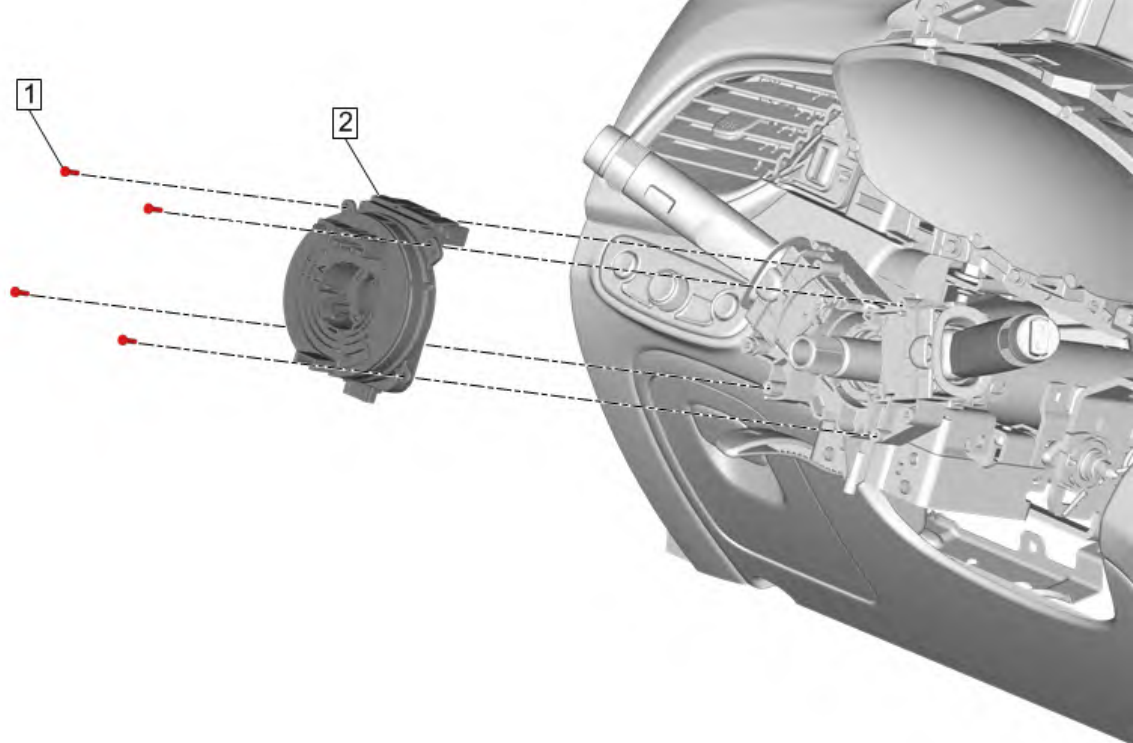
**Fig. 33: Steering Wheel Airbag Coil Replacement (Encore).**  
Courtesy of GENERAL MOTORS COMPANY

| Callout                                                                                                                                                                                                                            | Component Name                                                                                                                                                                                                                                                                                                                             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Preliminary Procedures</b> <ol style="list-style-type: none"> <li>1. <a href="#">Steering Wheel Replacement (Buick)</a>.</li> <li>2. <a href="#">Steering Column Lower Trim Cover Replacement (Buick, With BTM)</a>.</li> </ol> |                                                                                                                                                                                                                                                                                                                                            |
| 1                                                                                                                                                                                                                                  | Steering Wheel Airbag Coil Bolt (4)<br><br><b>CAUTION:</b><br>Refer to <a href="#">Fastener Caution</a> .<br><br><b>Tighten</b><br>3 N.m (27 lb in)                                                                                                                                                                                        |
| 2                                                                                                                                                                                                                                  | Steering Wheel Airbag Coil<br><br><b>Procedure</b> <ol style="list-style-type: none"> <li>1. Disconnect the electrical connectors.</li> <li>2. Transfer components as necessary.</li> <li>3. Ensure the steering wheel airbag coil is CENTERED during installation. <a href="#">Airbag Steering Wheel Module Coil Centering</a></li> </ol> |



**Fig. 34: Steering Wheel Airbag Coil (Chevrolet, Without BTM).**  
Courtesy of GENERAL MOTORS COMPANY

| Callout                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Component Name                                                                                                                                                                                                                                                                                                                    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Preliminary Procedures</b> <ol style="list-style-type: none"> <li><a href="#">Steering Wheel Replacement (Chevrolet)</a></li> <li>Reposition the steering column upper trim cover as necessary. <a href="#">Steering Column Upper Trim Cover Replacement (Chevrolet, Without BTM)</a></li> <li><a href="#">Ignition Lock Cylinder Opening Trim Cover Replacement (Chevrolet, Without BTM)</a></li> <li><a href="#">Steering Column Lower Trim Cover Replacement (Chevrolet, Without BTM)</a></li> </ol> |                                                                                                                                                                                                                                                                                                                                   |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Steering Wheel Airbag Coil Bolt (Qty: 4)<br><br><b>CAUTION:</b><br>Refer to <a href="#">Fastener Caution</a> .<br><br><b>Tighten</b><br>3 N.m (27 lb in)                                                                                                                                                                          |
| 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Steering Wheel Airbag Coil<br><br><b>Procedure</b> <ol style="list-style-type: none"> <li>Disconnect the electrical connectors.</li> <li>Transfer components as necessary.</li> <li>Ensure the steering wheel airbag coil is CENTERED during installation. <a href="#">Airbag Steering Wheel Module Coil Centering</a></li> </ol> |

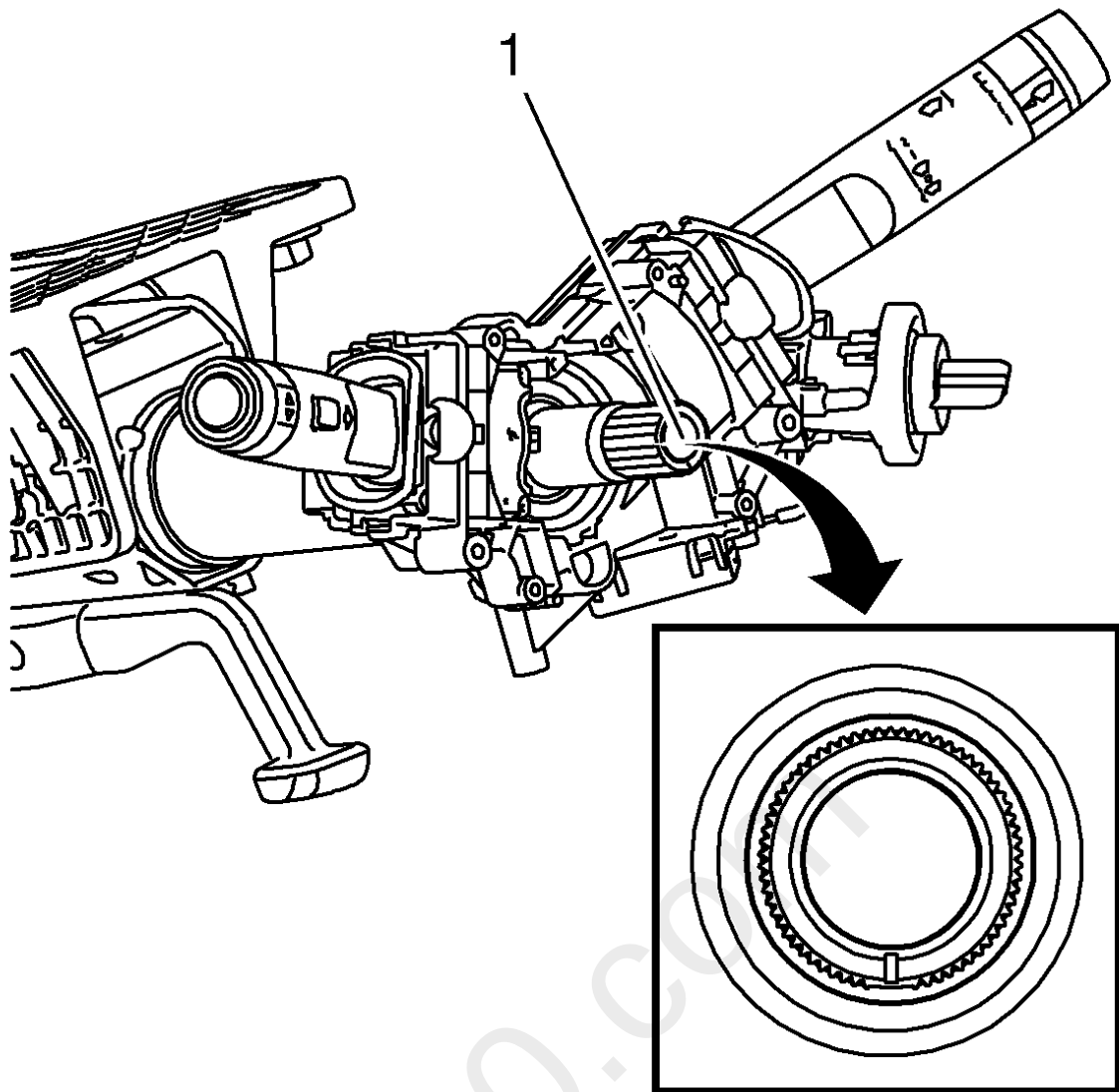


**Fig. 35: Steering Wheel Airbag Coil (Chevrolet, With BTM)**

Courtesy of GENERAL MOTORS COMPANY

| Callout                                                                                                                                                                                                                            | Component Name                                                                                                                                                                                                                                                                                                                             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Preliminary Procedures</b> <ol style="list-style-type: none"> <li><a href="#">Steering Wheel Replacement (Chevrolet)</a></li> <li><a href="#">Steering Column Lower Trim Cover Replacement (Chevrolet, With BTM)</a></li> </ol> |                                                                                                                                                                                                                                                                                                                                            |
| 1                                                                                                                                                                                                                                  | Steering Wheel Airbag Coil Bolt (Qty: 4)<br><br><b>CAUTION:</b><br>Refer to <a href="#">Fastener Caution</a> .<br><br><b>Tighten</b><br>3 N.m (27 lb in)                                                                                                                                                                                   |
| 2                                                                                                                                                                                                                                  | Steering Wheel Airbag Coil<br><br><b>Procedure</b> <ol style="list-style-type: none"> <li>1. Disconnect the electrical connectors.</li> <li>2. Transfer components as necessary.</li> <li>3. Ensure the steering wheel airbag coil is CENTERED during installation. <a href="#">Airbag Steering Wheel Module Coil Centering</a></li> </ol> |

## **AIRBAG STEERING WHEEL MODULE COIL CENTERING**



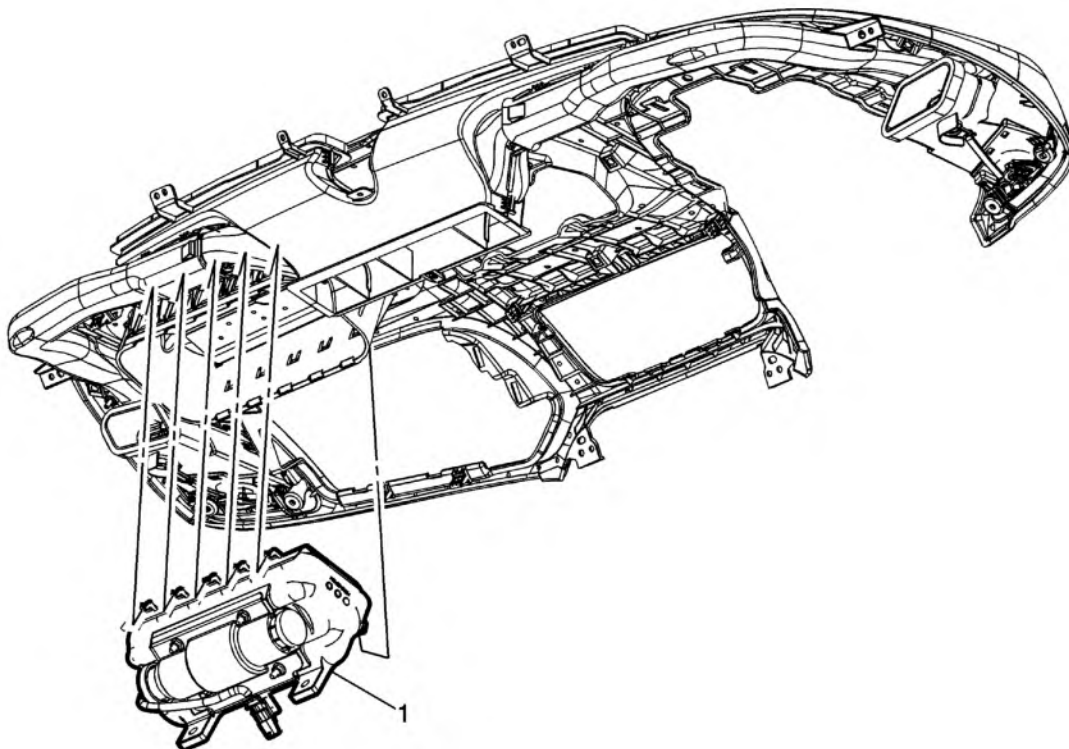
**Fig.36: Steering Shaft Centering Mark**

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 steering wheel inflatable restraint module coil:
  - The wheels on the vehicle are straight ahead.
  - The centering mark (1) of the steering shaft is in the 6 o'clock position.
2. Turn the lobe of the coil clockwise until the coil ribbon stops. Do not force.
3. Turn the lobe of the coil counterclockwise approximately 3 turns to the Neutral position.

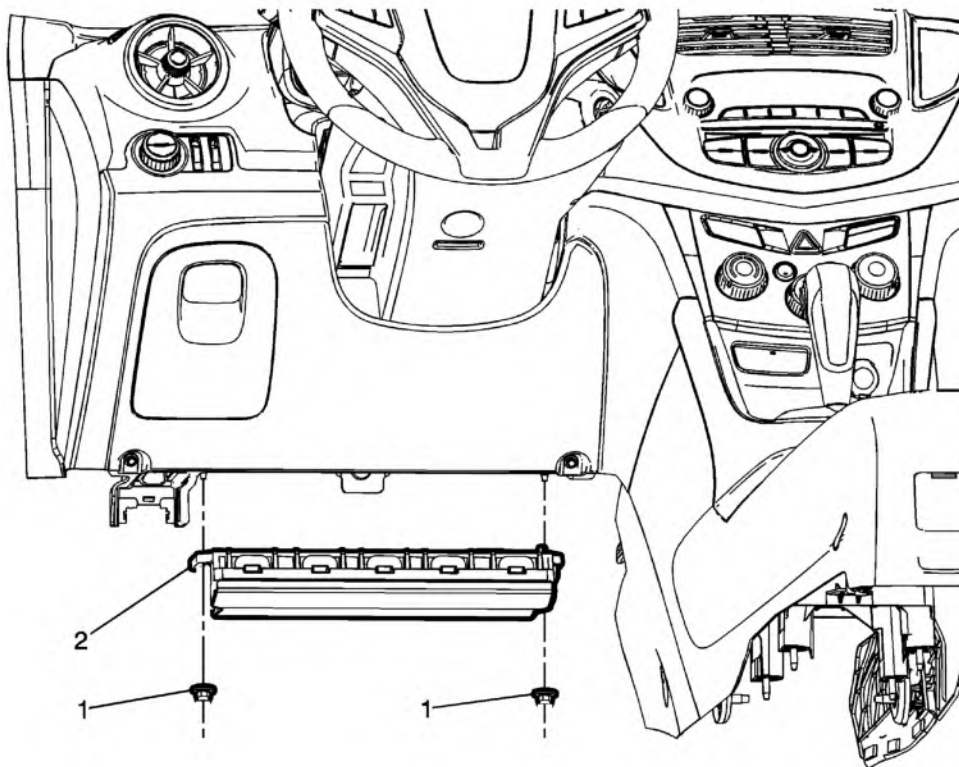
## **AIRBAG INSTRUMENT PANEL MODULE REPLACEMENT**



**Fig. 37: Airbag Instrument Panel Module**  
Courtesy of GENERAL MOTORS COMPANY

| Callout                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Component Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>WARNING:</b><br/>Refer to <a href="#">SIR Inflator Module Handling and Storage Warning</a> .</p> <p><b>WARNING:</b><br/>Refer to <a href="#">SIR Warning</a> .</p> <p><b>Preliminary Procedures</b></p> <ol style="list-style-type: none"> <li>1. Disable the SIR system. Refer to <a href="#">SIR Disabling and Enabling</a>.</li> <li>2. Remove the instrument panel assembly. Refer to <a href="#">Instrument Panel Assembly Replacement (Buick)</a>, <a href="#">Instrument Panel Assembly Replacement (Chevrolet)</a>.</li> <li>3. Remove the instrument panel outer air outlet duct. Refer to <a href="#">Instrument Panel Outer Air Outlet Duct Replacement (Buick)</a>, <a href="#">Instrument Panel Outer Air Outlet Duct Replacement (Chevrolet)</a>.</li> </ol> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <p>Airbag Instrument Panel Module</p> <p><b>Procedure</b></p> <ol style="list-style-type: none"> <li>1. Refer to <a href="#">Inflatable Restraint Module Handling and Scrapping</a>.</li> <li>2. Insert a wood straight edge, one per side behind all locking tabs, to simultaneously release the instrument panel airbag housing from the instrument panel chute without overextending the airbag locking tabs. Use a wood straight edge that is approximately 50.8 cm (20 in) long and 5 mm (0.20 in) thick with a rounded edge.</li> <li>3. Enable the SIR system. Refer to <a href="#">SIR Disabling and Enabling</a>.</li> </ol> |

## INSTRUMENT PANEL LOWER AIRBAG REPLACEMENT - DRIVER SIDE (AYF)

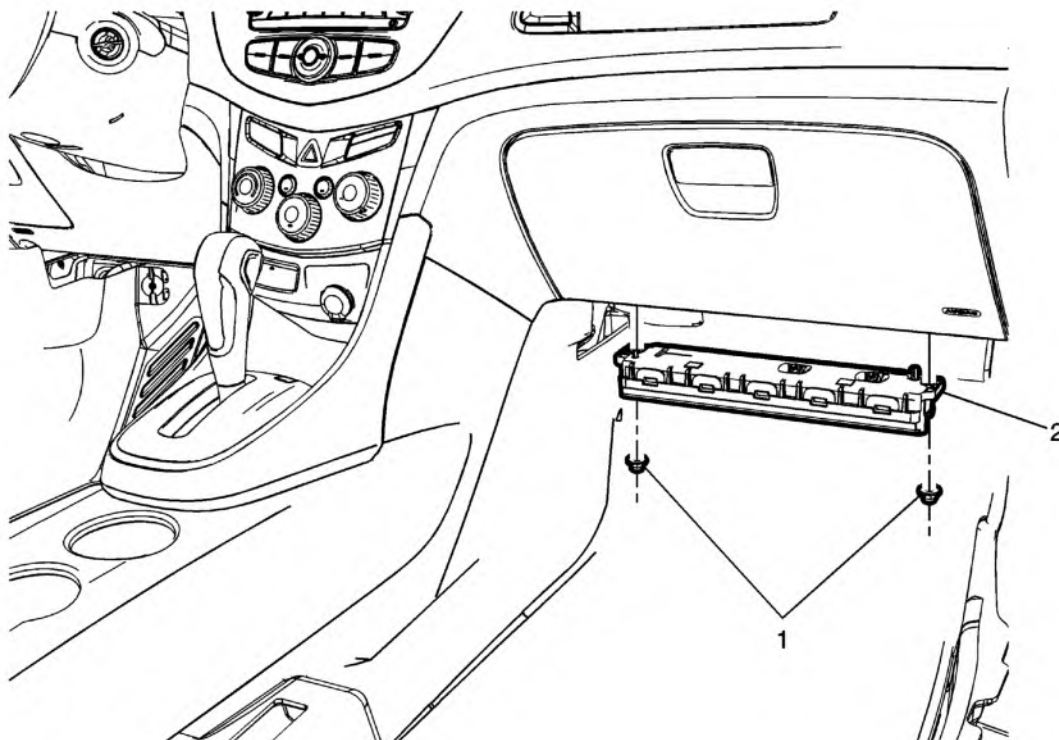


**Fig. 38: Instrument Panel Lower Airbag - Driver Side (AYF)**

Courtesy of GENERAL MOTORS COMPANY

| Callout                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Component Name                                                                                                                                                                                                                                                                                                          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>WARNING:</b><br>Refer to <a href="#">SIR Inflator Module Handling and Storage Warning</a> .<br><br><b>WARNING:</b><br>Refer to <a href="#">SIR Warning</a> .<br><br><b>Preliminary Procedure</b><br><br>1. Disable the SIR system. Refer to <a href="#">SIR Disabling and Enabling</a> .<br>2. Remove the instrument panel knee bolster. Refer to <a href="#">Instrument Panel Knee Bolster Replacement (Buick)</a> <a href="#">Instrument Panel Knee Bolster Replacement (Chevrolet)</a> . |                                                                                                                                                                                                                                                                                                                         |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Inflatable Restraint Instrument Panel Lower Module Nut (Qty: 2)<br><br><b>CAUTION:</b><br>Refer to <a href="#">Fastener Caution</a> .<br><br><b>Tighten</b><br>9 N.m (80 lb in)                                                                                                                                         |
| 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Inflatable Restraint Instrument Panel Lower Module Assembly - Driver Side<br><br><b>Procedure</b><br><br>1. Disconnect the electrical connector.<br>2. Refer to <a href="#">Inflatable Restraint Module Handling and Scrapping</a> .<br>3. Enable the SIR system. Refer to <a href="#">SIR Disabling and Enabling</a> . |

## INSTRUMENT PANEL LOWER AIRBAG REPLACEMENT - PASSENGER SIDE (AYF)

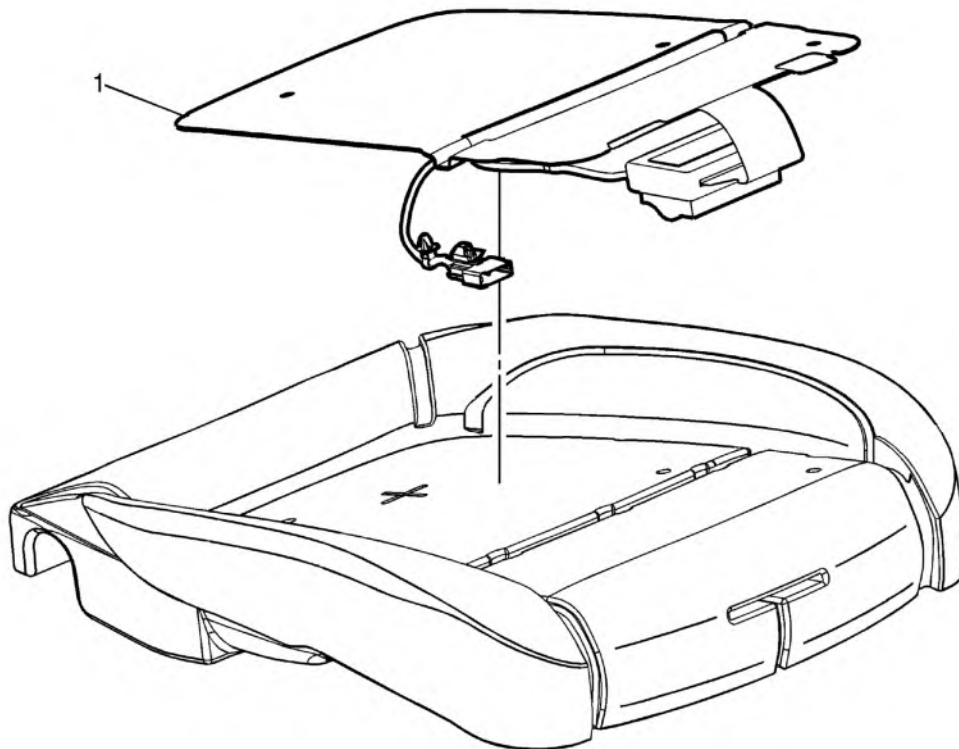


**Fig. 39: Instrument Panel Lower Airbag - Passenger Side (AYF)**

Courtesy of GENERAL MOTORS COMPANY

| Callout                                                                                                    | Component Name                                                                                                                                                                                                                                                                                                                                                                  |
|------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>WARNING:</b><br>Refer to <a href="#">SIR Inflator Module Handling and Storage Warning</a> .             |                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>WARNING:</b><br>Refer to <a href="#">SIR Warning</a> .                                                  |                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Preliminary Procedure</b> Disable the SIR system. Refer to <a href="#">SIR Disabling and Enabling</a> . |                                                                                                                                                                                                                                                                                                                                                                                 |
| 1                                                                                                          | Inflatable Restraint Instrument Panel Lower Module Nut (Qty: 2)<br><br><b>CAUTION:</b><br>Refer to <a href="#">Fastener Caution</a> .<br><br><b>Tighten</b><br>9 N.m (80 lb in)                                                                                                                                                                                                 |
| 2                                                                                                          | Inflatable Restraint Instrument Panel Lower Module Assembly - Passenger Side<br><br><b>Procedure</b> <ol style="list-style-type: none"> <li>1. Disconnect the electrical connector.</li> <li>2. Refer to <a href="#">Inflatable Restraint Module Handling and Scrapping</a>.</li> <li>3. Enable the SIR system. Refer to <a href="#">SIR Disabling and Enabling</a>.</li> </ol> |

## AIRBAG FRONT PASSENGER PRESENCE SENSOR REPLACEMENT

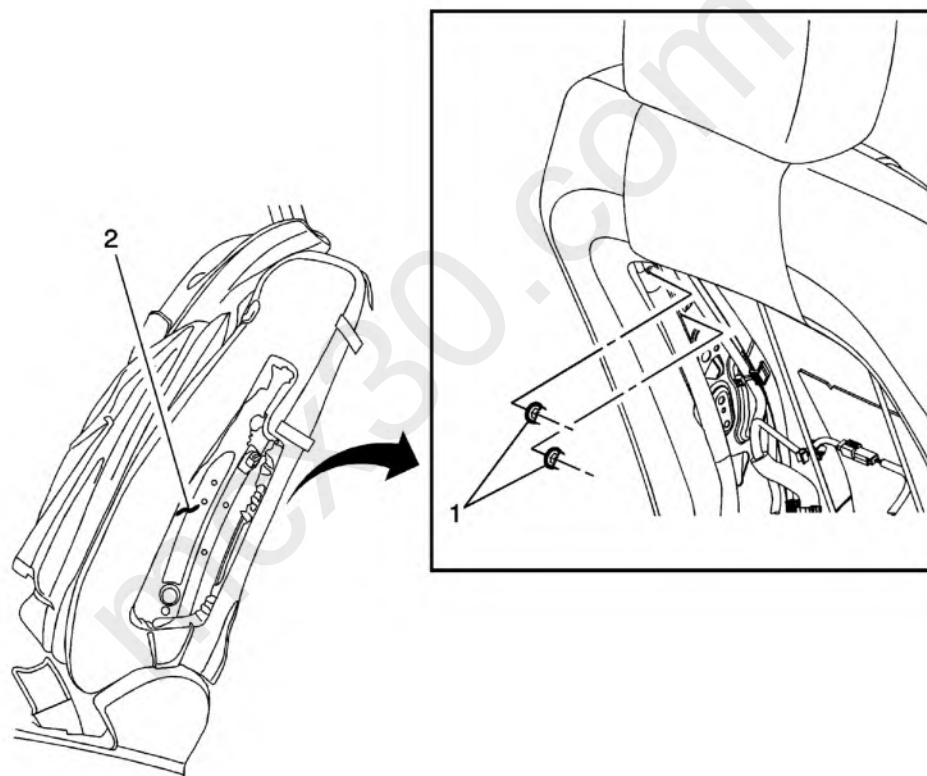


**Fig. 40: Airbag Front Passenger Presence Sensor**  
 Courtesy of GENERAL MOTORS COMPANY

| Callout                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Component Name |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| <p><b>WARNING:</b><br/>           Replace the passenger presence system as a complete assembly to prevent possible injury to the occupant. All the components in the service kit are assembled and calibrated as a unit. Using only some of the components in the service kit will cause the passenger presence system to operate improperly.</p> <p><b>WARNING:</b><br/>           To avoid personal injury, perform a preload test on the passenger presence system whenever you remove or replace the seat cushion trim. Failure to do so may cause the system to malfunction.</p> <p><b>Preliminary Procedure</b></p> <ol style="list-style-type: none"> <li>1. Remove the passenger front seat. Refer to <a href="#">Driver or Passenger Seat Removal and Installation</a> .</li> <li>2. Remove the front seat cushion cover and pad. Refer to <a href="#">Front Seat Cushion Cover and Pad Replacement</a> .</li> </ol> |                |

| Callout | Component Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1       | Inflatable Restraint Front Passenger Presence System Assembly<br><br><b>Procedures</b> <ol style="list-style-type: none"> <li>1. Whenever the inflatable restraint passenger presence system or any component of the passenger presence system is removed. Refer to <a href="#">Control Module References</a>.</li> <li>2. Re-zero the inflatable restraint passenger presence system after replacement. Refer to <a href="#">Passenger Presence System Rezeroing</a>.</li> <li>3. Disengage the passenger presence system assembly from the seat cushion by sliding the sensor belt through the cushion pad. <ul style="list-style-type: none"> <li>• The passenger presence system is an integral part of the pad on the passenger seat cushion.</li> <li>• The sensor, module and seat cushion pad must be replaced as a unit.</li> <li>• Note the routing of the wiring harness and connector location for installation.</li> </ul> </li> </ol> |

## FRONT SEAT OUTBOARD SEAT BACK AIRBAG REPLACEMENT

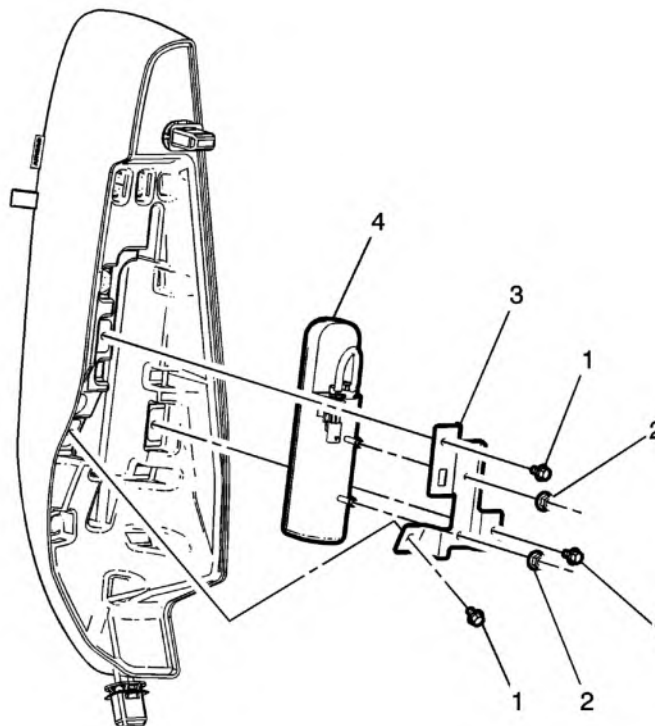


**Fig. 41: Front Seat Side Inflatable Restraint Module**  
Courtesy of GENERAL MOTORS COMPANY

| Callout | Component Name |
|---------|----------------|
|         |                |

| Callout                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Component Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>WARNING:</b></p> <p>Following the deployment of a side impact air bag, inspect the following parts for damage. Replace these parts if necessary:</p> <ul style="list-style-type: none"> <li>• The seat cushion frame</li> <li>• The seat recliner, if equipped</li> <li>• The seat adjuster</li> <li>• The seat back frame</li> </ul> <p>Failure to do so may cause future personal injury.</p> <p><b>WARNING:</b></p> <p>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.</p> <p><b>Preliminary Procedure</b></p> <ol style="list-style-type: none"> <li>1. Disable the SIR system. Refer to <a href="#">SIR Disabling and Enabling</a>.</li> <li>2. Remove the driver or passenger seat. Refer to <a href="#">Driver or Passenger Seat Removal and Installation</a>.</li> <li>3. Remove the driver or passenger seat back cushion cover and pad. Refer to <a href="#">Driver or Passenger Seat Back Cover and Pad Replacement</a>.</li> </ol> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <p>Seat Side Inflatable Restraint Module Nut (Qty: 2)</p> <p><b>CAUTION:</b><br/>Refer to <a href="#">Fastener Caution</a></p> <p><b>Tighten</b><br/>3.5 N.m (31 lb in)</p>                                                                                                                                                                                                                                                                                                                               |
| 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <p>Driver or Passenger Seat Side Inflatable Restraint Module</p> <p><b>Procedure</b></p> <ol style="list-style-type: none"> <li>1. Disconnect the electrical connector.</li> <li>2. Remove the seat side inflatable restraint module.</li> <li>3. Fully deploy the module before disposal. If the module was replaced under warranty, fully deploy and dispose of the module after the required retention period. Refer to <a href="#">Inflatable Restraint Module Handling and Scrapping</a>.</li> </ol> |

## REAR SEAT BOLSTER AIRBAG REPLACEMENT (AYF)

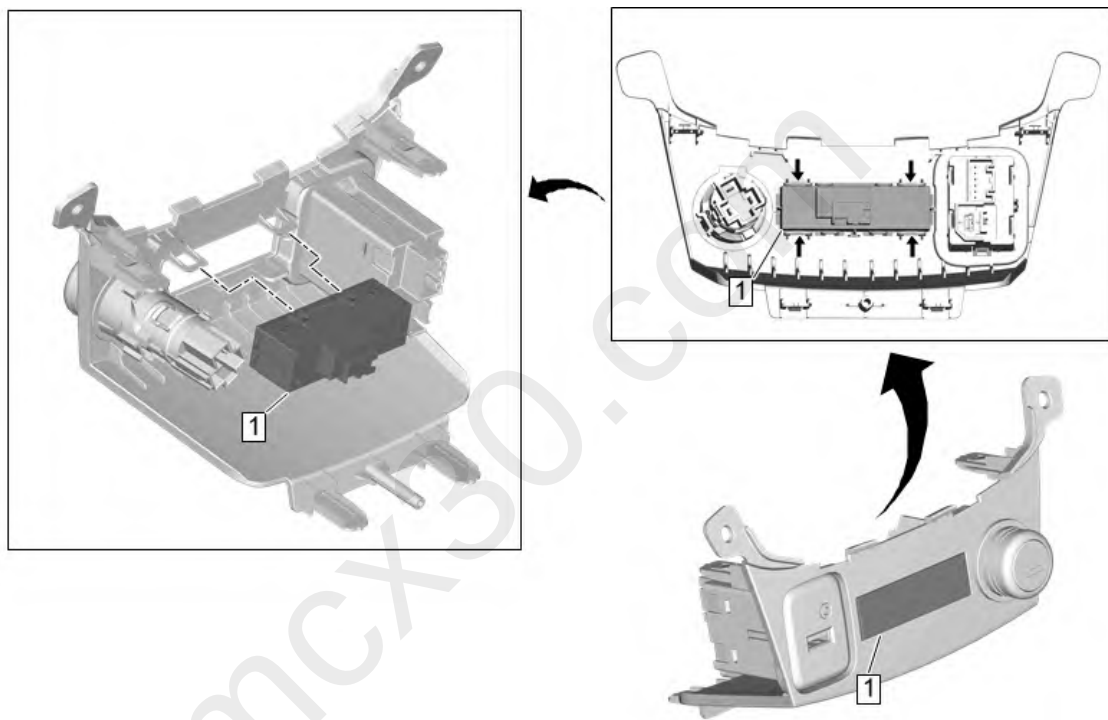


**Fig. 42: Rear Seat Bolster Airbag (AYF)**  
Courtesy of GENERAL MOTORS COMPANY

| Callout                                                                                                                                                                                                                                                                                                                                                                                                                                 | Component Name                                                                                                                                                   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>WARNING:</b><br>Following the deployment of a rear seat side air bag, inspect the following parts for damage. Replace these parts if necessary: <ul style="list-style-type: none"> <li>• The rear seat side bolster, attachments, brackets and wiring</li> <li>• The rear seat back frame, cushion and cover</li> <li>• The rear seat cushion frame, cushion and cover</li> </ul> Failure to do so may cause future personal injury. |                                                                                                                                                                  |
| <b>Preliminary Procedures</b> <ol style="list-style-type: none"> <li>1. Disable the SIR system, if equipped. Refer to <a href="#">SIR Disabling and Enabling</a>.</li> <li>2. Remove the rear seat back cushion bolster. Refer to <a href="#">Rear Seat Back Bolster Replacement (AYF)</a>.</li> </ol>                                                                                                                                  |                                                                                                                                                                  |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                       | Rear Seat Bolster Airbag Bracket Bolt (Qty: 3)<br><br><b>CAUTION:</b><br>Refer to <a href="#">Fastener Caution</a> .<br><br><b>Tighten</b><br>3.5 N.m (31 lb in) |
| 2                                                                                                                                                                                                                                                                                                                                                                                                                                       | Rear Seat Bolster Airbag Nut (Qty: 2)<br><br><b>CAUTION:</b><br>Refer to <a href="#">Fastener Caution</a> .<br><br><b>Tighten</b><br>3.5 N.m (31 lb in)          |

| Callout | Component Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3       | Rear Seat Bolster Airbag Bracket                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 4       | <p>Rear Seat Bolster Airbag</p> <p><b>Procedure</b></p> <ol style="list-style-type: none"> <li>1. Remove the connector position assurance (CPA) from the module electrical connector.</li> <li>2. Disconnect the electrical connector.</li> <li>3. Slide airbag out of airbag chute.</li> <li>4. Install seat side airbag into airbag chute with connector facing down. Airbag mounting studs must fit through airbag chute holes and then into the module bracket.</li> <li>5. Refer to <a href="#">Inflatable Restraint Module Handling and Scrapping</a>.</li> </ol> |

## INSTRUMENT PANEL AIRBAG ARMING STATUS DISPLAY REPLACEMENT (CHEVROLET)

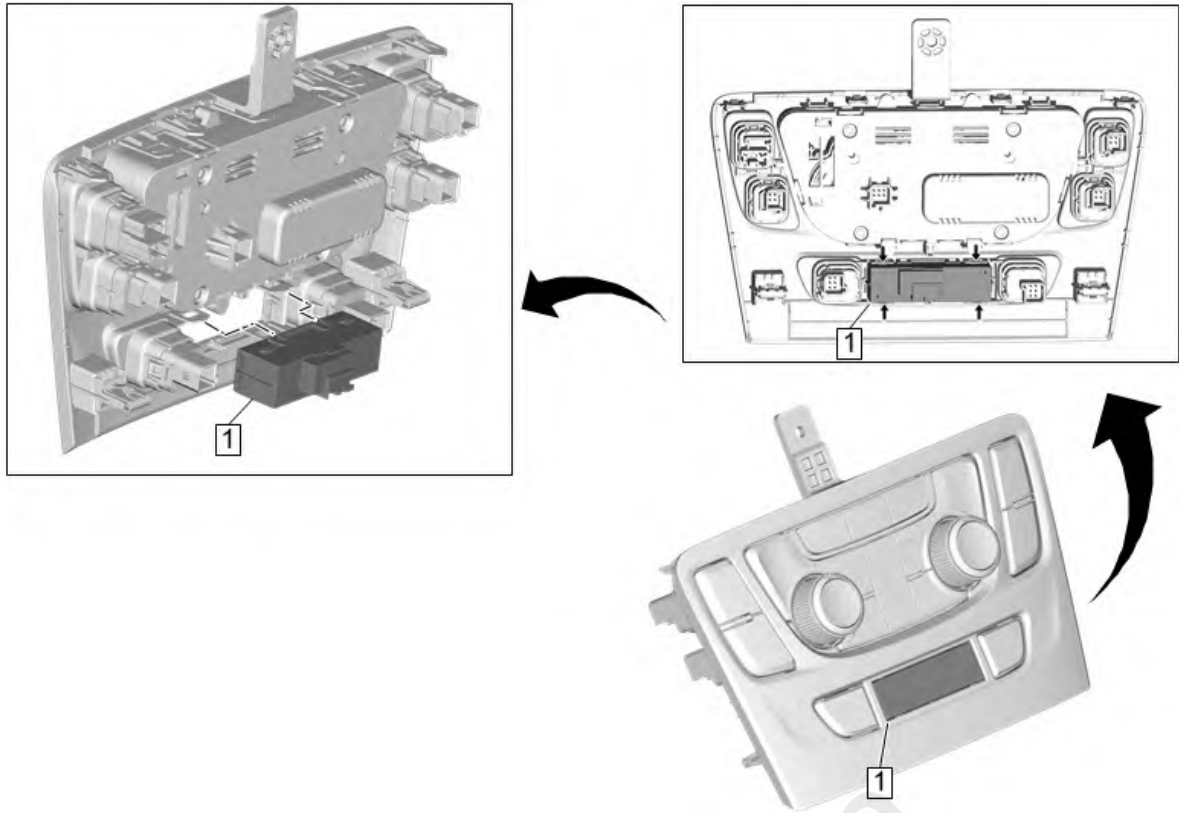


**Fig. 43: Instrument Panel Airbag Arming Status Display (Chevrolet)**

Courtesy of GENERAL MOTORS COMPANY

| Callout                                                                                                  | Component Name                                                                                                                                      |
|----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Preliminary Procedure</b><br><b><a href="#">Front Floor Lower Console Replacement (Chevrolet)</a></b> |                                                                                                                                                     |
| 1                                                                                                        | <p>Instrument Panel Airbag Arming Status Display</p> <p><b>Procedure</b></p> <p>Depress the tabs to release from the front floor lower console.</p> |

## INSTRUMENT PANEL AIRBAG ARMING STATUS DISPLAY REPLACEMENT (BUICK)

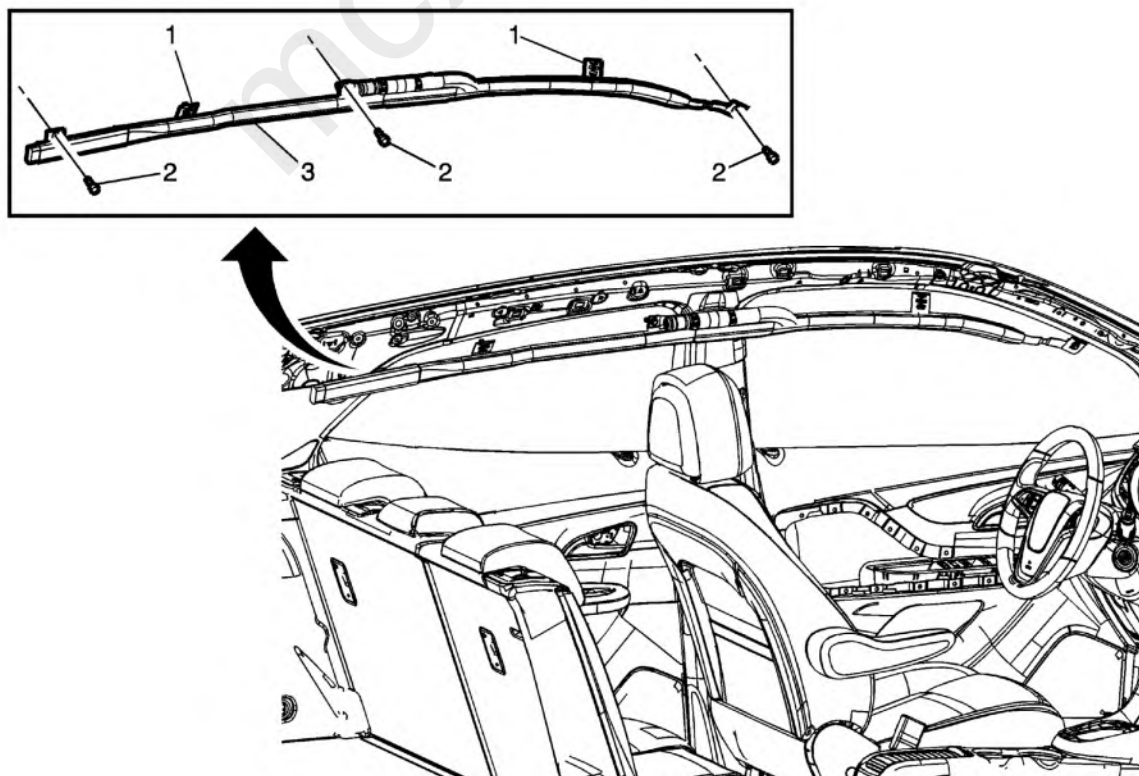


**Fig. 44: Instrument Panel Airbag Arming Status Display (Encore).**

Courtesy of GENERAL MOTORS COMPANY

| Callout                                                            | Component Name                                                                                                                              |
|--------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Preliminary Procedure</b>                                       |                                                                                                                                             |
| <b><u>Instrument Panel Accessory Bezel Replacement (Buick)</u></b> |                                                                                                                                             |
| 1                                                                  | Instrument Panel Airbag Arming Status Display<br><b>Procedure</b><br>Depress the tabs to release from the instrument panel accessory bezel. |

## ROOF SIDE RAIL AIRBAG REPLACEMENT (BUICK)

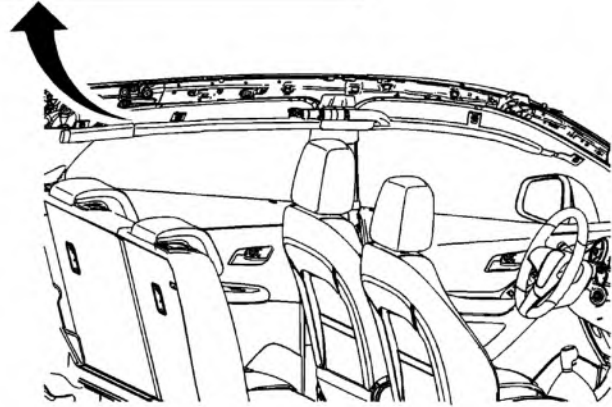
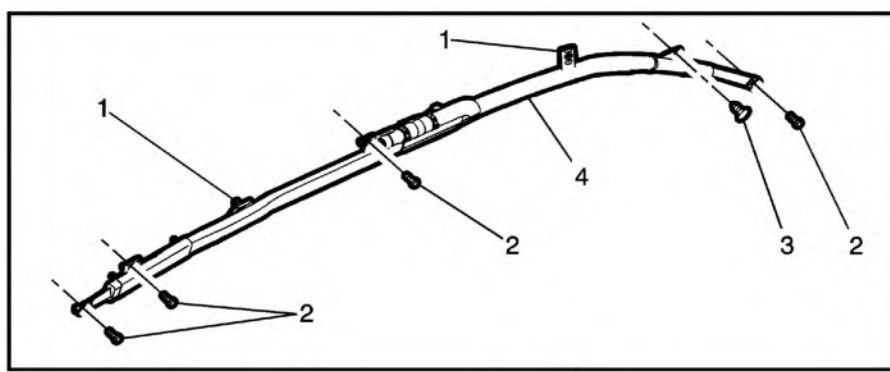


**Fig. 45: Airbag Roof Side Rail Module (Encore).**

Courtesy of GENERAL MOTORS COMPANY

| Callout                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Component Name                                                                                                                                                                                                                                                                                                                                     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>WARNING:</b><br/>In order to prevent SIR deployment, personal injury, or unnecessary SIR system repairs, do not strike the door or the door pillar in the area of the side impact sensor (SIS). Turn OFF the ignition and remove the key when performing service in the area of the SIS.</p> <p><b>WARNING:</b><br/>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.</p> <p><b>WARNING:</b><br/>Refer to <a href="#">SIR Warning</a> .</p> <p><b>WARNING:</b><br/>Refer to <a href="#">SIR Inflator Module Handling and Storage Warning</a> .</p> <p><b>Preliminary Procedures</b></p> <ol style="list-style-type: none"> <li>1. Disable the SIR system. Refer to <a href="#">SIR Disabling and Enabling</a></li> <li>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 <a href="#">Headlining Trim Panel Replacement (Without Sunroof, Buick)</a>, <a href="#">Headlining Trim Panel Replacement (With Sunroof, Buick)</a>.</li> </ol> |                                                                                                                                                                                                                                                                                                                                                    |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Roof Side Rail Inflatable Restraint Module Retainer (Qty: 2)                                                                                                                                                                                                                                                                                       |
| 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Roof Side Rail Inflatable Restraint Module Fastener (Qty: 3) <p><b>CAUTION:</b><br/>Refer to <a href="#">Fastener Caution</a> .</p> <p><b>Tighten</b><br/>9.5 N.m (84 lb in)</p>                                                                                                                                                                   |
| 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Roof Side Rail Inflatable Restraint Module Assembly <p><b>Procedure</b></p> <ol style="list-style-type: none"> <li>1. Disconnect the electrical connector.</li> <li>2. Remove the roof side rail inflatable restraint module from the vehicle.</li> <li>3. Refer to <a href="#">Inflatable Restraint Module Handling and Scrapping</a>.</li> </ol> |

## ROOF SIDE RAIL AIRBAG REPLACEMENT (CHEVROLET)

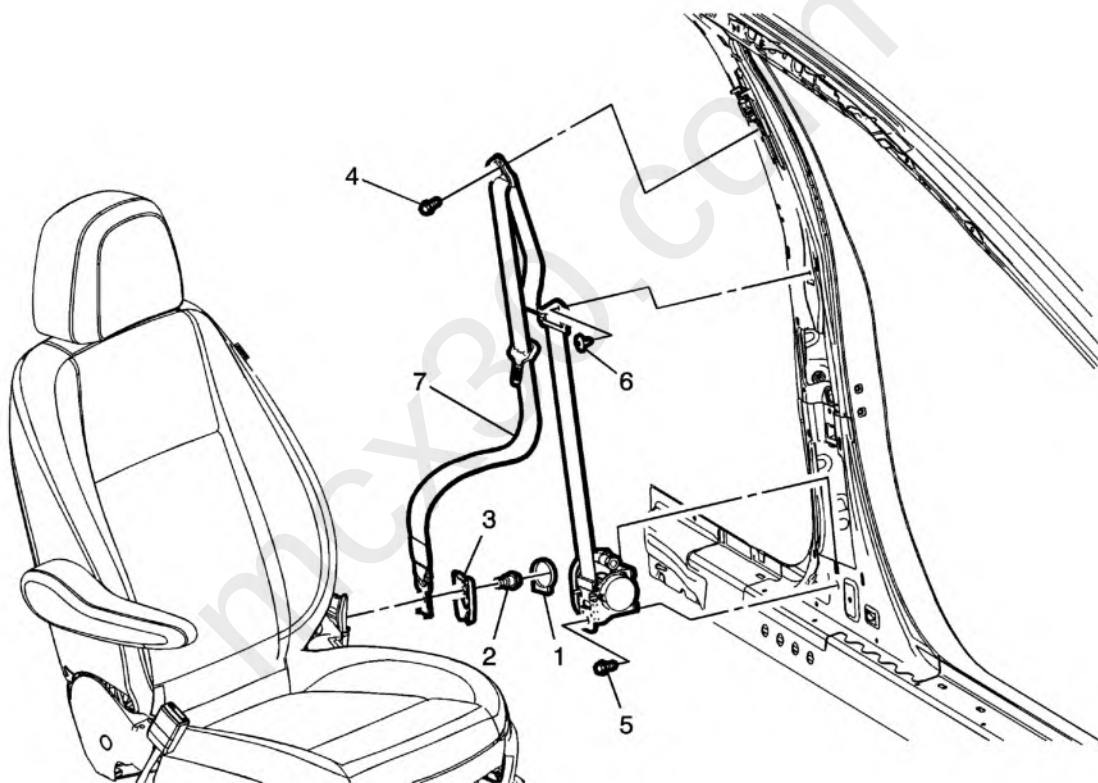


**Fig. 46: Airbag Roof Side Rail Module (Trax).**  
Courtesy of GENERAL MOTORS COMPANY

| Callout                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Component Name                                               |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|
| <p><b>WARNING:</b></p> <p>In order to prevent SIR deployment, personal injury, or unnecessary SIR system repairs, do not strike the door or the door pillar in the area of the side impact sensor (SIS). Turn OFF the ignition and remove the key when performing service in the area of the SIS.</p> <p><b>WARNING:</b></p> <p>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.</p> <p><b>WARNING:</b></p> <p>Refer to <a href="#">SIR Warning</a> .</p> <p><b>WARNING:</b></p> <p>Refer to <a href="#">SIR Inflator Module Handling and Storage Warning</a> .</p> <p><b>Preliminary Procedures</b></p> <ol style="list-style-type: none"> <li>1. Disable the SIR system. Refer to <a href="#">SIR Disabling and Enabling</a></li> <li>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 <a href="#">Headlining Trim Panel Replacement (With Sunroof, Chevrolet)</a> <a href="#">Headlining Trim Panel Replacement (Without Sunroof, Chevrolet)</a>.</li> </ol> |                                                              |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Roof Side Rail Inflatable Restraint Module Retainer (Qty: 2) |

| Callout | Component Name                                                                                                                                                                                                                                                                               |
|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2       | Roof Side Rail Inflatable Restraint Module Fastener (Qty: 4)<br><br><b>CAUTION:</b><br>Refer to <a href="#">Fastener Caution</a> .<br><br><b>Tighten</b><br>9.5 N.m (84 lb in)                                                                                                               |
| 3       | Roof Side Rail Inflatable Restraint Module Push-In Retainer                                                                                                                                                                                                                                  |
| 4       | Roof Side Rail Inflatable Restraint Module Assembly<br><br><b>Procedure</b><br><br>1. Disconnect the electrical connector.<br>2. Remove the roof side rail inflatable restraint module from the vehicle.<br>3. Refer to <a href="#">Inflatable Restraint Module Handling and Scrapping</a> . |

## FRONT SEAT BELT RETRACTOR REPLACEMENT (WITH A69)



**Fig. 47: Front Seat Belt Retractor (With A69).**  
**Courtesy of GENERAL MOTORS COMPANY**

| Callout | Component Name |
|---------|----------------|
|         |                |

| Callout                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Component Name                                                                                                                                                                                                                                                                                                                  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>WARNING:</b><br/>Refer to <a href="#">SIR Warning</a> .</p> <p><b>WARNING:</b><br/>Refer to <a href="#">SIR Inflator Module Handling and Storage Warning</a> .</p> <p><b>WARNING:</b><br/>Refer to <a href="#">SIR Seatbelt Pretensioner Handling Warning</a> .</p> <p><b>WARNING:</b><br/>In order to prevent accidental deployment and the risk of personal injury, do not dispose of an undeployed inflatable restraint seat belt pretensioner as normal shop waste. Undeployed seat belt pretensioners contain substances that could cause severe illness or personal injury if their sealed containers are damaged during disposal. Use the following deployment procedures to safely dispose of an undeployed seat belt pretensioner. Failure to observe the following disposal methods may be a violation of appropriate country, regional or local laws.</p> <p><b>Preliminary Procedures</b></p> <ol style="list-style-type: none"> <li>1. Move the front seat to a full forward and full up position.</li> <li>2. Disable the SIR. Refer to <a href="#">SIR Disabling and Enabling</a>.</li> <li>3. Remove the center pillar upper trim panel. Refer to <a href="#">Center Pillar Upper Trim Panel Replacement (Buick)</a>, <a href="#">Center Pillar Upper Trim Panel Replacement (Chevrolet)</a> .</li> </ol> |                                                                                                                                                                                                                                                                                                                                 |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Driver or Passenger Seat Belt Tensioner Cover                                                                                                                                                                                                                                                                                   |
| 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Driver or Passenger Seat Belt Tensioner Cover Fastener<br><br><b>CAUTION:</b><br>Refer to <a href="#">Fastener Caution</a> .<br><br><b>Tighten</b><br>5 N.m (44 lb in)                                                                                                                                                          |
| 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Driver or Passenger Seat Belt Tensioner Cover                                                                                                                                                                                                                                                                                   |
| 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Front Seat Belt Retractor Upper Fastener<br><b>Tighten</b><br>45 N.m (33 lb ft)                                                                                                                                                                                                                                                 |
| 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Front Seat Belt Retractor Lower Fastener<br><br><b>NOTE:</b><br><b>When the seat belt retractor is replaced with a new one, there is no thread in the nut welded to the retractor. This is normal as the bolt will make the thread in the welded nut when the bolt is tightened.</b><br><br><b>Tighten</b><br>45 N.m (33 lb ft) |
| 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Front Seat Belt Push-On Retainer<br><b>Procedure</b><br>Use a flat-bladed tool to remove locking pin in retainer.                                                                                                                                                                                                               |

| Callout | Component Name                                                                                                                                                                                                                 |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7       | Front Seat Belt Retractor Assembly<br><br><b>Procedure</b> <ol style="list-style-type: none"> <li>1. Disconnect the electrical connector.</li> <li>2. Refer to <a href="#">Pretensioner Handling and Scrapping</a>.</li> </ol> |

## FRONT SEAT BELT ANCHOR PLATE TENSIONER REPLACEMENT



**Fig. 48: Front Seat Belt Anchor Plate Tensioner**  
 Courtesy of GENERAL MOTORS COMPANY

| Callout                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Component Name                                |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|
| <b>WARNING:</b><br>Refer to <a href="#">SIR Warning</a> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                               |
| <b>WARNING:</b><br>In order to prevent accidental deployment and the risk of personal injury, do not dispose of an undeployed inflatable restraint seat belt pretensioner as normal shop waste. Undeployed seat belt pretensioners contain substances that could cause severe illness or personal injury if their sealed containers are damaged during disposal. Use the following deployment procedures to safely dispose of an undeployed seat belt pretensioner. Failure to observe the following disposal methods may be a violation of appropriate country, regional or local laws. |                                               |
| <b>Preliminary Procedures</b> <ol style="list-style-type: none"> <li>1. Move the front seat to the full forward and full up position.</li> <li>2. Disable the SIR. Refer to <a href="#">SIR Disabling and Enabling</a>.</li> <li>3. For pretensioner handling and scrapping. Refer to <a href="#">Pretensioner Handling and Scrapping</a>.</li> <li>4. Remove the front seat belt anchor plate tensioner cover. Refer to <a href="#">Front Seat Belt Anchor Plate Tensioner Cover Replacement</a> .</li> </ol>                                                                           |                                               |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Driver or Passenger Seat Belt Tensioner Cover |

| Callout | Component Name                                                                                                                                                       |
|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2       | Driver or Passenger Seat Belt Tensioner Cover Fastener<br><br><b>CAUTION:</b><br>Refer to <a href="#">Fastener Caution</a><br><br><b>Tighten</b><br>5 N.m (44 lb in) |
| 3       | Driver or Passenger Seat Belt Tensioner Cover                                                                                                                        |
| 4       | Driver or Passenger Seat Belt Tensioner Seat Belt Latch<br><b>Procedure</b><br>Remove the seat belt with latch from front seat belt tensioner.                       |
| 5       | Driver or Passenger Seat Belt Tensioner Fastener<br><b>Tighten</b><br>45 N.m (33 lb ft)                                                                              |
| 6       | Driver or Passenger Seat Belt Tensioner Assembly<br><b>Procedure</b><br>Disconnect the electrical connector.                                                         |

## REPAIRS AND INSPECTIONS REQUIRED AFTER A COLLISION

### Accident With or Without Air Bag Deployment - Component Inspections

**WARNING:** Proper operation of the Supplemental Inflatable Restraint (SIR) sensing system requires that any repairs to the vehicle structure return the vehicle structure to the original production configuration. Not properly repairing the vehicle structure could cause non-deployment of the air bag(s) in a frontal collision or deployment of the air bag(s) for conditions less severe than intended.

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

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

### Accident With Frontal Air Bag Deployment - Component Replacement and Inspections

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

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

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

Perform additional inspections on the following components.

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

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

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

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

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

Perform additional inspections on the following components.

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

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

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

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

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

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

### Impact Sensor Replacement Guidelines

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

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

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

## INFLATABLE RESTRAINT MODULE HANDLING AND SCRAPPING

### Special Tools

**EL-38826** SIR Deployment Harness

For equivalent regional tools, refer to [Special Tools](#).

### Live and Undeployed Air Bag

**WARNING:** Refer to [SIR Inflator Module Handling and Storage Warning](#) .

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

### Dual Stage Air Bags

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

### Scrapping Procedure

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

Do not deploy the air bag in the following situations:

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

### Deployment Procedures

**NOTE:** Some countries, states or localities may not allow service deployment of air bags without special permission or training. Local laws regarding deploying

and scrapping of air bags/devices with pyrotechnics must be followed.

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

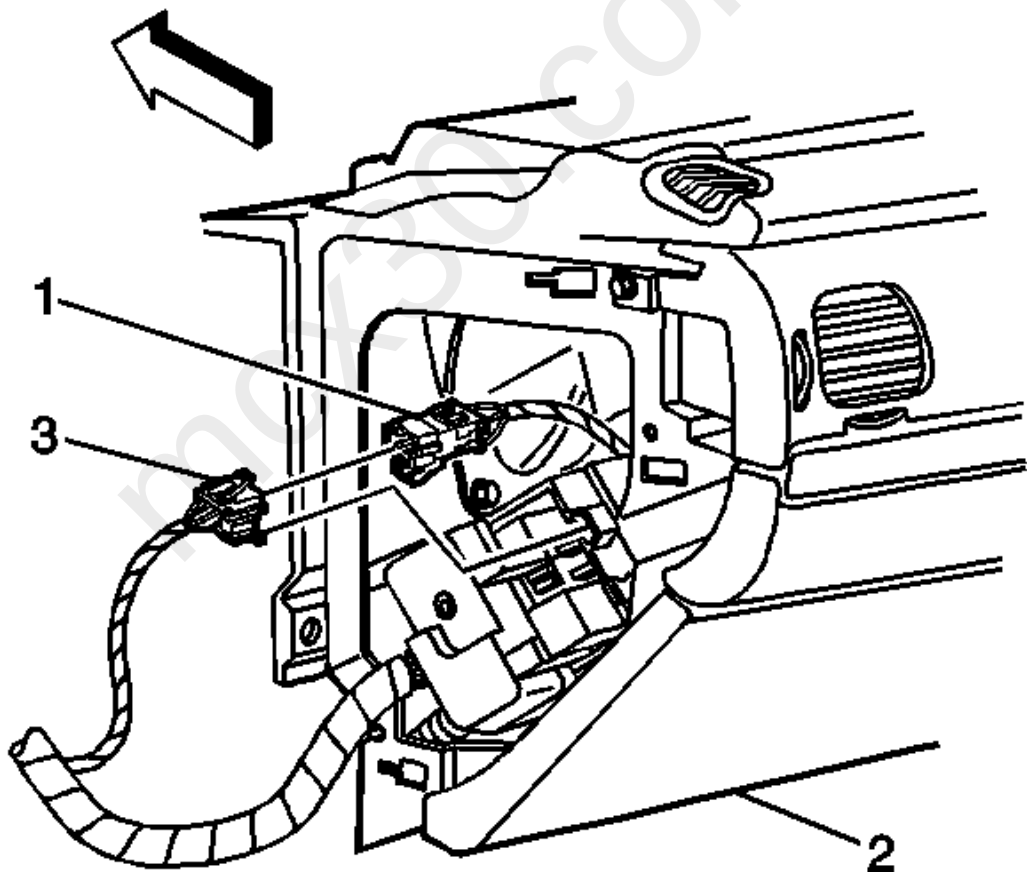
### Deployment Inside Vehicle - Vehicle Scrapping Procedure

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

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

**WARNING:** Refer to [SIR Inflatable Module Deployment Outside Vehicle Warning](#) .

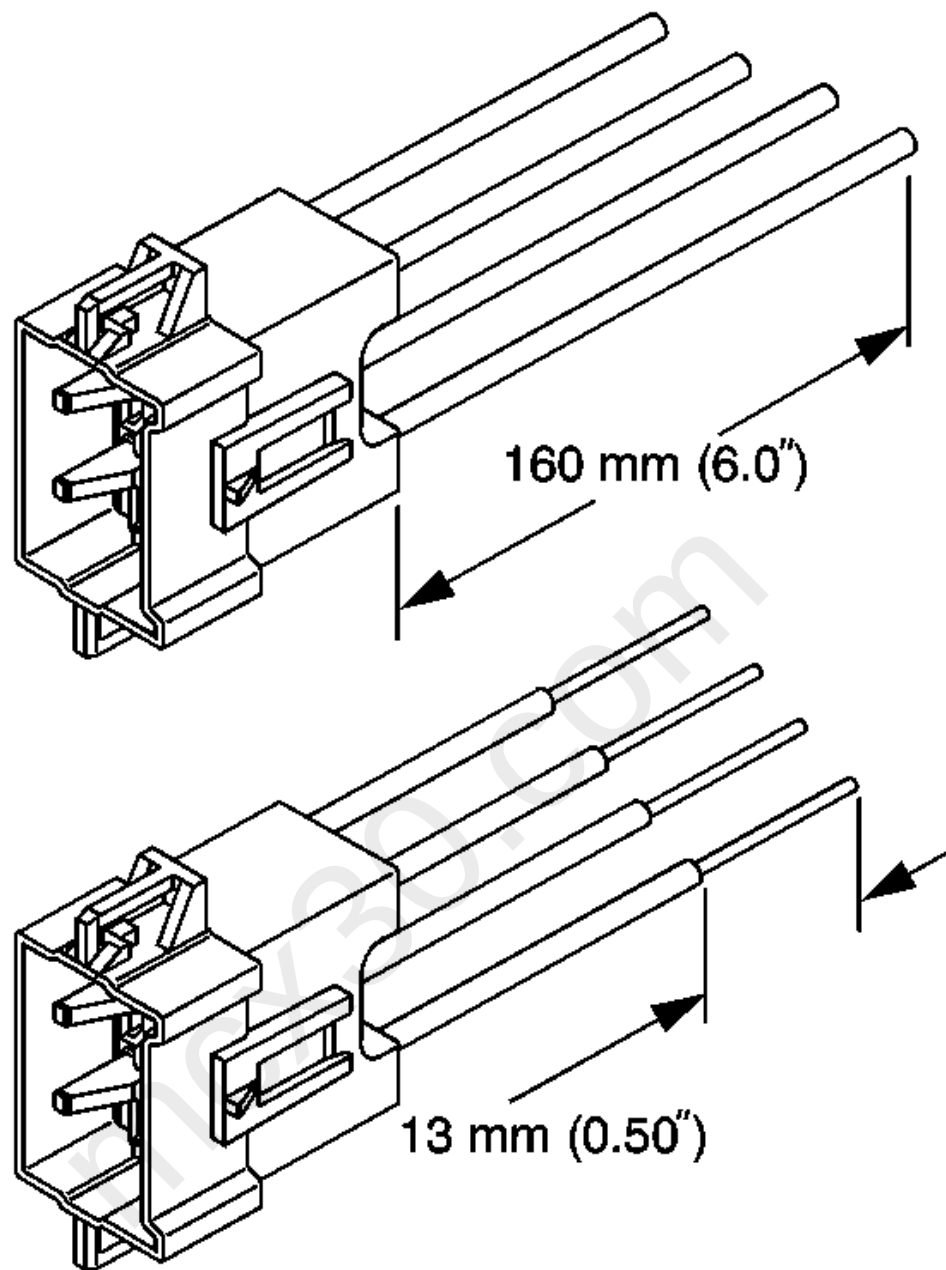
1. Lower the driver and passenger windows.
2. Turn the ignition switch to the OFF position and remove the ignition key.
3. Check that all air bags which will be deployed are mounted securely.
4. Remove all loose objects from the front seats.



**Fig. 49: Identifying I/P Module Connector To Vehicle Harness Connector (LH Side I/P)**  
Courtesy of GENERAL MOTORS COMPANY

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

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

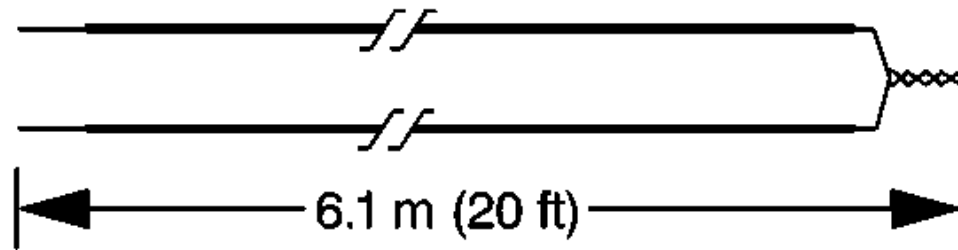


**Fig. 50: Stripping SIR Wires**

Courtesy of GENERAL MOTORS COMPANY

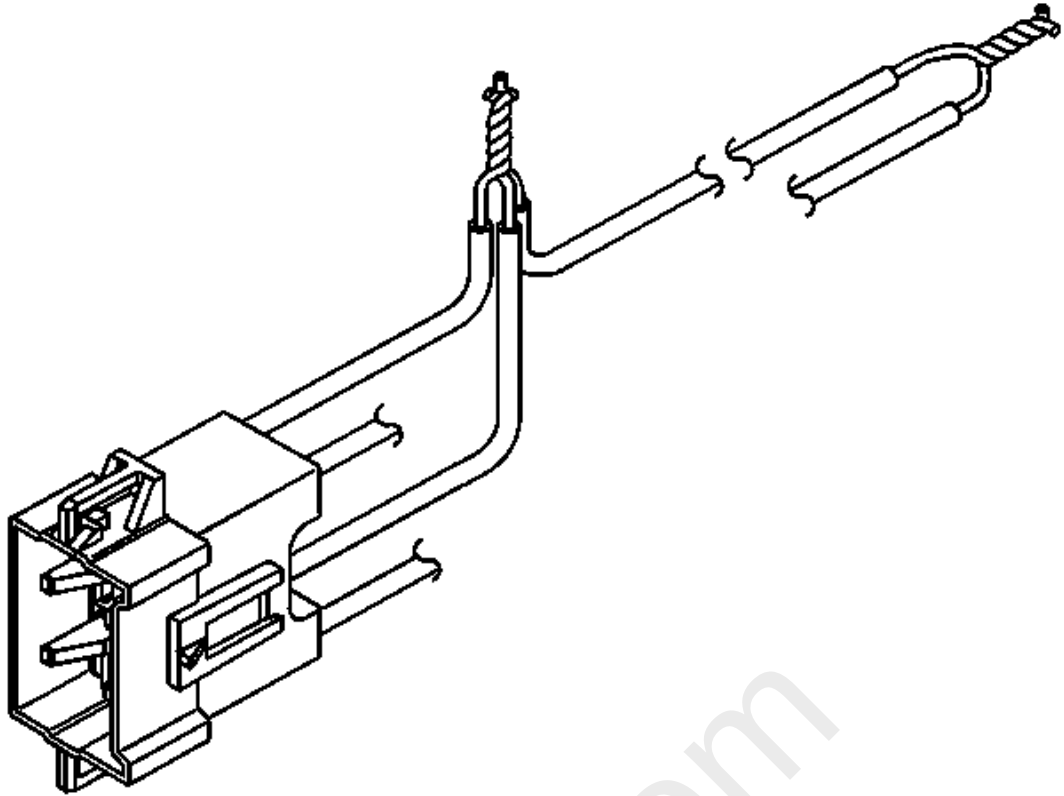
**NOTE:** If the vehicle is equipped with dual stage air bags the steering wheel air bag and instrument panel air bag will each have 4 wires. Refer to [COMPONENT CONNECTOR END VIEWS - INDEX \(ENCORE\)](#) [COMPONENT CONNECTOR END VIEWS - INDEX \(TRAX\)](#) for determining high and low circuits.

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.



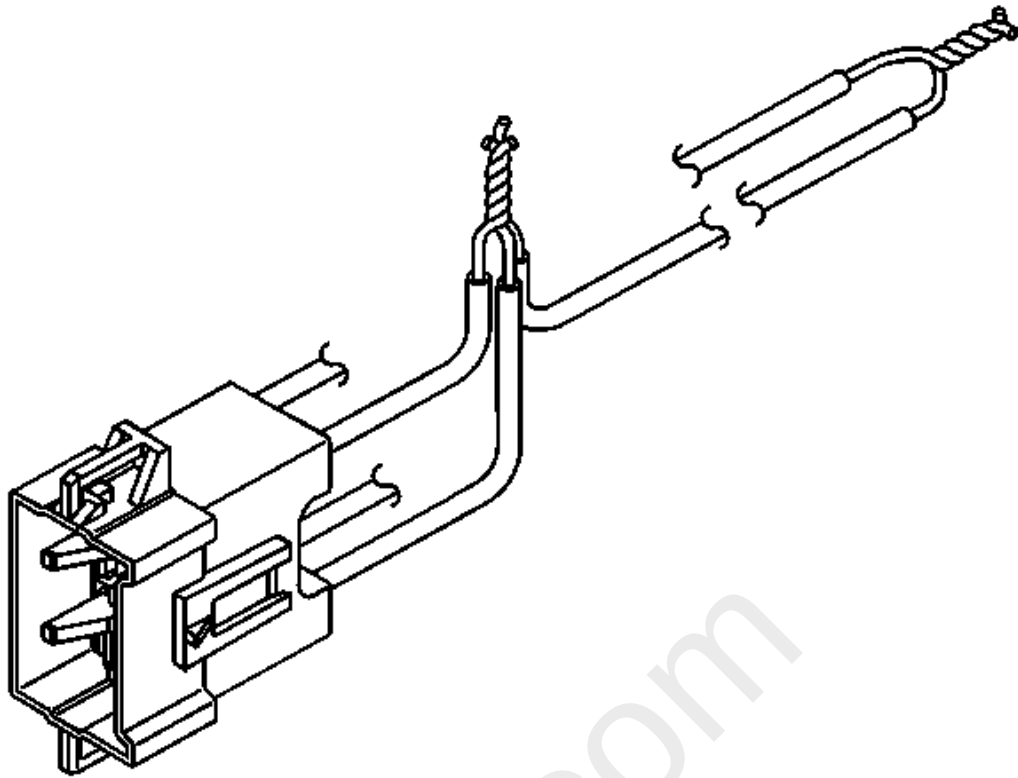
**Fig. 51: Fabricating 20 Ft. Deployment Harness**  
**Courtesy of GENERAL MOTORS COMPANY**

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



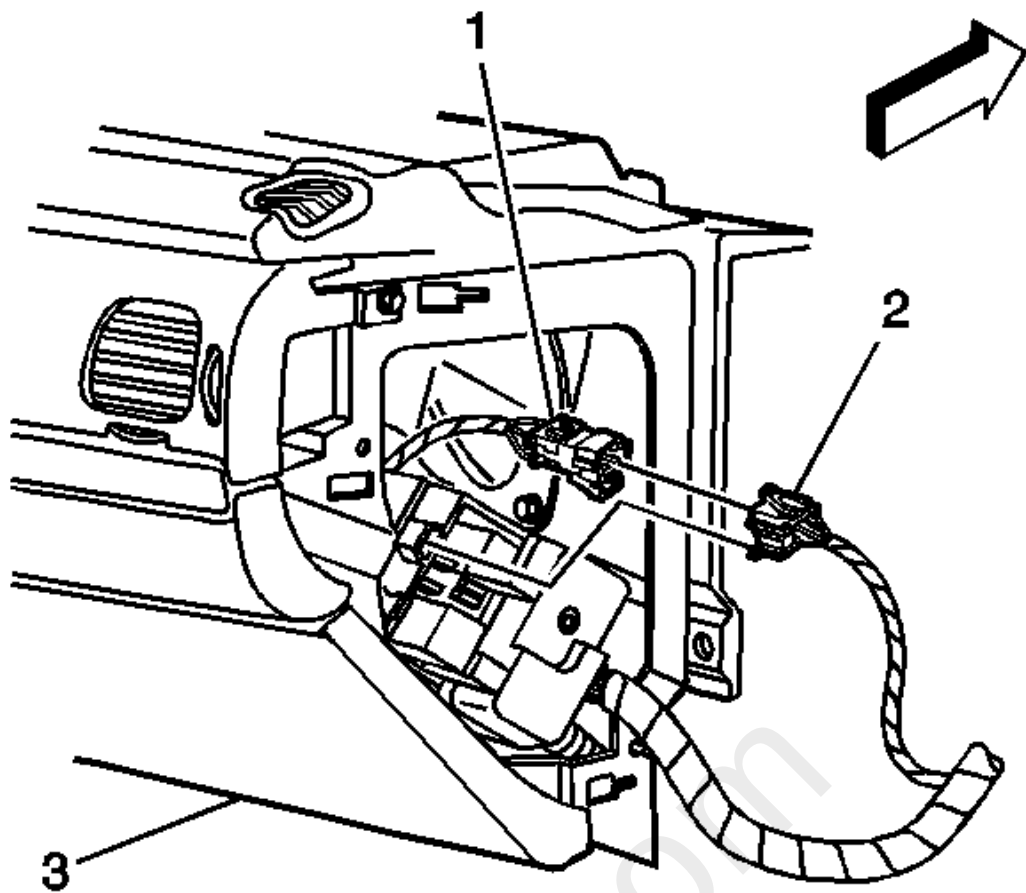
**Fig. 52: Twisting Connector Wire Leads (High Circuits) To Deployment Harness Wire**  
Courtesy of GENERAL MOTORS COMPANY

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 (ENCORE)**, **COMPONENT CONNECTOR END VIEWS - INDEX (TRAX)** in order to determine the correct circuits.
12. Inspect that the 3-wire connection is secure.
13. Secure and insulate the 3-wire connection to the deployment harness using electrical tape.



**Fig. 53: 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 (ENCORE)**, **COMPONENT CONNECTOR END VIEWS - INDEX (TRAX)** in order to determine the correct circuits.
15. Inspect that the 3-wire connection is secure.
16. Secure and insulate the 3-wire connection to the deployment harness using electrical tape.
17. Connect the deployment harness to the connector on the steering wheel air bag.
18. Route the deployment harness out of the driver side of the vehicle.
19. Disconnect the yellow left roof rail harness connector from the vehicle harness connector.
20. Cut the harness connector out of the vehicle, leaving at least 16 cm (6 in) of wire at the connector.
21. Strip 13 mm (0.5 in) of insulation from each of the connector wire leads.
22. Cut two 6.1 m (20 ft) deployment wires from a 0.8 mm (18 gauge) or thicker multi-strand wire. These wires will be used to fabricate the roof rail air bag deployment harness.
23. Strip 13 mm (0.5 in) of insulation from both ends of the wires.
24. Twist together one end from each of the wires in order to short the wires.
25. Twist together one connector wire lead to one deployment wire.
26. Secure and insulate the connection using electrical tape.
27. Twist together and tape the remaining connector wire lead to the remaining deployment wire.
28. Connect the deployment harness to the yellow connector of the roof rail air bag.
29. Route the deployment harness out of the driver side of the vehicle.



**Fig. 54: 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 (ENCORE) COMPONENT CONNECTOR END VIEWS - INDEX (TRAX) for determining high and low circuits.**

31. Cut the yellow harness connector out of the vehicle, leaving at least 16 cm (6 in) of wire at the connector.
32. Strip 13 mm (0.5 in) of insulation from each of the connector wire leads.
33. Cut two 6.1 m (20 ft) deployment wires from a 0.8 mm (18 gauge) or thicker multi-strand wire. These wires will be used to fabricate the passenger deployment harness.
34. Strip 13 mm (0.5 in) of insulation from both ends of the wires.
35. Twist together one end from each of the wires in order to short the wires.
36. Twist together the 2 connector wire leads from the high circuits from both stages of the instrument panel air bag to one set of deployment wires. Refer to COMPONENT CONNECTOR END VIEWS - INDEX (ENCORE) COMPONENT CONNECTOR END VIEWS - INDEX (TRAX) 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 (ENCORE) COMPONENT CONNECTOR END VIEWS - INDEX (TRAX) 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**

### **Special Tools**

#### **EL-38826 SIR Deployment Harness**

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

### **Scrapping Procedure**

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

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

### **Deployment Procedures**

**NOTE:**

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

The pretensioner can only be deployed inside of the vehicle. Refer to [Inflatable Restraint Module Handling and Scrapping](#) for deploying the pretensioner inside vehicle under Vehicle Scrapping Procedure.

## **DESCRIPTION AND OPERATION**

### **SUPPLEMENTAL INFLATABLE RESTRAINT SYSTEM DESCRIPTION AND OPERATION**

#### **SIR System Overview**

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

#### **AIR BAG Indicator (Driver)**

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

#### **Inflatable Restraint Sensing and Diagnostic Module (SDM)**

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

## Air Bags

Air bags contain a housing, inflatable air bag, two initiating devices (if dual inflator), canister of gas generating material and, in some cases, stored compressed gas. The deployment loops supply current through the inflator modules to deploy the air bags. The steering wheel and instrument panel passenger side air bags have two stages of deployment, which varies the amount of restraint to the occupant according to the collision severity. For moderate frontal collisions the air bags deploy at less than full deployment which consists of stage 1 of the air bag. For more severe frontal collisions a full deployment is initiated which consists of stage 1 and stage 2 of the air bag. The current passing through the air bag, ignites the material in the canister producing a rapid generation of gas and in some cases, the release of compressed gas. The gas produced from this reaction rapidly inflates the air bag. Once the air bag is inflated it quickly deflates through the air bag vent holes and/or the bag fabric. Each air bag is equipped with a shorting bar located in the connectors of the module. The shorting bar shorts the air bag deployment loop circuitry to prevent unwanted deployment of the air bag when it is disconnected. To view the locations of the air bags refer to [Master Electrical Component List \(Buick\)](#), [Master Electrical Component List \(Chevrolet\)](#).

### Seat Belt Pretensioners (Anchor and Retractor)

The seat belt pretensioners (driver and passenger) consist of a housing, seat belt retractor (located in the B-pillar), seat belt anchor (located on the floor), seat belt webbing, an initiator, and a canister of gas generating materials. To view the locations of the seat belt pretensioners refer to [Master Electrical Component List \(Buick\)](#), [Master Electrical Component List \(Chevrolet\)](#). The initiator is part of the seat belt pretensioner deployment loop. When the vehicle is involved in a collision of sufficient force, the SDM causes current to flow through the seat belt deployment loops to the initiator. Current passing through the initiator ignites the material in the canister producing a rapid generation of gas. The gas produced from this reaction deploys the seat belt pretensioners which removes all of the slack in the seat belts. Depending on the severity of the collision, the seat belt pretensioners may deploy without the frontal air bags deploying, or they will deploy immediately before the frontal air bags deploy. Each seat belt pretensioner is equipped with a shorting bar that is located in the connector of the seat belt pretensioner. The shorting bar shorts the seat belt pretensioner circuitry to prevent unwanted deployment of the seat belt pretensioner when the connector is disconnected.

### Impact Sensors

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 \(Buick\)](#), [Master Electrical Component List \(Chevrolet\)](#). 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 Air Bag Indicator (Passenger) (If Equipped)

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

The passenger presence system (PPS) is used to monitor the type of occupant that is sitting in the front passenger seat and communicate the status to the inflatable restraint sensing and diagnostic module (SDM). The SDM then uses this information to determine whether to enable or suppress the passenger instrument panel air bag. The PPS consists of an electronic control module, a sensor mat in the seat, a harness, and PASSENGER AIR BAG ON/OFF indicators. The PPS transmits and receives a low-level electric field.

The measured capacitance value of this field is used to determine the type of occupant sitting in the front passenger seat. If the measured capacitance is less than a calibrated value, then the PPS module will send a serial data signal to the SDM to disable the passenger instrument panel air bag. If the measured capacitance is greater than a calibrated value, then the passenger presence module will send a serial data signal to the SDM to enable the passenger instrument panel air bag. The SDM will notify the customer of the enable/disable status by illuminating one of the PASSENGER AIR BAG ON/OFF indicator. The passenger presence module monitors itself for faults and will displays diagnostic trouble codes (DTCs) on the scan tool. When a fault is detected, the passenger presence module sends out a message to the SDM. The SDM responds by sending a command message to the IPC to illuminate the AIR BAG indicator.

#### 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 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.

#### 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/<br>Description                                     |
|--------------|-----------------------------------------------------------------|
|              | EL 38826<br>J 38826<br>KM 799-3<br>SIR<br>Deployment<br>Harness |

| Illustration                                                                                                                                                                                                                                                                                                                                                              | Tool<br>Number/<br>Description |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
|  <p>The illustration shows three items: a rectangular carrying case with a latch, a coiled cable with connectors at both ends, and a separate short cable with a connector at one end. A large, faint watermark 'mcx30.com' is visible across the center of the illustration area.</p> |                                |