Supplemental Restraints

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Description and Operation

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Supplemental Inflatable Restraint System Description and Operation

SIR System Overview

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

SIR System AIR BAG Indicator

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

Inflatable Restraint Sensing and Diagnostic Module (SDM)

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

Air Bags

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

is located in the connector.

Seat Belt Pretensioners (Anchor and Retractor)

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

Impact Sensors

This vehicle contains 6 impact sensors. The 6 impact sensors are located in the front of the vehicle (2, left and right), and the 4 doors. To view the locations of the impact sensors refer to Master Electrical Component List. The impact sensors contain a sensing device which monitors vehicle acceleration and velocity changes to detect side collisions that are severe enough to warrant air bag deployment. The impact sensors are not part of the deployment loop, but instead provide input to the inflatable restraint sensing and diagnostic module. The inflatable restraint sensing and diagnostic module contains a microprocessor that performs calculations using the measured accelerations and compares these calculations to a value stored in memory. When the generated calculations exceed the stored value, the inflatable restraint sensing and diagnostic module will cause current to flow through the deployment loops deploying the appropriate air bags.

Passenger Presence Detection System and Passenger Air Bag Indicator

Note**:**

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

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

Seat Belt Indicators

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

Diagnostic Information and Procedures

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2. SUPPLEMENTAL RESTRAINTS
3. DIAGNOSTIC INFORMATION AND PROCEDURES
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DTC B0012

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

DTCâ€‰B0012â€‰01

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

DTCâ€‰B0012â€‰02

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

DTCâ€‰B0012â€‰04

Driver Steering Wheel Air Bag Deployment Loop Stage 1 Open

DTCâ€‰B0012â€‰0D

Driver Steering Wheel Air Bag Deployment Loop Stage 1 High Resistance

DTCâ€‰B0012â€‰0E

Driver Steering Wheel Air Bag Deployment Loop Stage 1 Low Resistance

Diagnostic Fault Information

Circuit	Short to Ground	High Resistance	Open	Short to Voltage	Signal Performance
Driver Steering Wheel Air Bag High Control	B0012â€‰02, B0012â€‰0E	B0012â€‰0D	B0012â€‰04, B0012â€‰0D	B0012â€‰01	â€”
Driver Steering Wheel Air Bag Low Control	B0012â€‰02, B0012â€‰0E	B0012â€‰0D	B0012â€‰04, B0012â€‰0D	B0012â€‰01	â€”

Circuit/System Description

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

Conditions for Running the DTC

Ignition voltage is between 9â€“16â€‰V.

Conditions for Setting the DTC

B0012â€‰01

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

B0012â€‰02

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

B0012â€‰04

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

B0012â€‰0D

The driver steering wheel air bag deployment loop resistance is greater than 4.4â€‰â„¦ for 2 seconds.

B0012â€‰0E

The driver steering wheel deployment loop resistance is less than 1.7â€‰â„¦ 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 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 Aids

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 360Â° in one direction then back 360Â° in the other direction, multiple times, while viewing the scan tool Deployment Loop Resistance 1 and 2 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 and Sensing 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

Connector End View Reference

Component Connector End Views

Description and Operation

Supplemental Inflatable Restraint System Description and Operation

Electrical Information Reference

- Circuit Testing
- Connector Repairs

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- Testing for Intermittent Conditions and Poor Connections
- Wiring Repairs

Scan Tool Reference

Control Module References for scan tool information

Special Tools

EL-38125-580 Terminal Release Tool Kit

Circuit/System Verification

Note:

Refer to SIR Service Precautions

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

- Driver Steering Wheel Air bag
- Driver steering wheel air bag coil
- Inflatable Restraint and Sensing Diagnostic Module
- Air bag wiring harness connector
- Inflatable Restraint and Sensing Diagnostic Module wiring harness connector

Note:

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

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

1. Verify the appropriate scan tool Deployment Loop Resistance parameters stay consistently between 2.1 and 4.0â€‰â„¦ without any spikes or dropouts while turning the steering wheel 360 degrees in one direction then back 360 degrees in the other direction.
2.
    - **If less than 2.1 or greater than 4.0â€‰â„¦**
    - Refer to Circuit/System Testing.
3.
    - **If there are spikes or dropouts**
    - Replace the X85 driver steering wheel air bag coil.
4.
    - **If within 2.1 and 4.0â€‰â„¦ without any spikes or dropouts**
5. Verify DTC B0012 is only set as a history DTC.
6.
    - **If the DTC is set as current**
    - Refer to Circuit/System Testing.
7.
    - **If the DTC is set as history**
8. Verify the scan tool Deployment Loop Resistance parameters stay consistently between 2.1 and 4.0â€‰â„¦ without any drop outs or

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spikes while moving the harness near each connector listed below.

9.

- X85 Steering wheel air bag coil
- F107 Steering wheel air bag.
- Any harness inline
- K36 Inflatable Restraint and Sensing Diagnostic Module

10.

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

11.

- 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.
- Insure each connector and CPA is correctly seated.

12.

- **If within 2.1 and 4.0â€‰â„¦ without any spikes or dropouts**

13. All OK

Circuit/System Testing

1. Ignition OFF, disconnect the scan tool and disconnect the harness connector at the F107 steering wheel air bag. It may take up to 2 minutes for all vehicle systems to power down.
2. Test for greater than 25â€‰â„¦ between the control circuit terminal 1 and the control circuit terminal 2.
3.

- **If 25â€‰â„¦ or less**

4.

1. Disconnect the X1 harness connector at the K36 Inflatable Restraint and Sensing Diagnostic Module.
2. 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.

3. Test for infinite resistance between the two control circuits.
4.

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

5.

- **If greater than 25â€‰â„¦**

6. Ignition ON.
7. Test for less than 11â€‰V between the control circuit terminals listed below and ground:
8.

- Control circuit terminal 1

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- Control circuit terminal 2

9.

- **If 11â€‰V or greater**

10.

1. Ignition OFF. Disconnect the X1 harness connector at the K36 Inflatable Restraint and Sensing Diagnostic Module, ignition ON.
2. Test for less than 1â€‰V between the control circuit and ground.
3.
   - If 1â€‰V or greater, repair the short to voltage on the circuit.
   - If less than 1â€‰V, replace the K36 Inflatable Restraint and Sensing Diagnostic Module.

11.

- **If less than 11â€‰V**

12. Ignition OFF. Install a 3â€‰A fused jumper wire between the control circuit terminal 1 and the control circuit terminal 2, ignition ON.
13. Verify the scan tool Deployment Loop Resistance parameter is consistently less than 2 â„¦ while turning the steering wheel 360 degrees in one direction then back 360 degrees in the other direction.

14.

- **If the reading is erratic while turning the steering wheel**
- Replace the X85 steering wheel air bag coil.

15.

- **If 2â€‰â„¦ or greater**

16.

1. Ignition OFF, disconnect the harness connector X1 at the K36 Inflatable Restraint and Sensing Diagnostic Module.
2. Test for less than 2â€‰â„¦ in the steering wheel air bag coil and each control circuit end to end.
3.
   - If 2â€‰â„¦ or greater, replace the coil or repair the open/high resistance in the circuit.
   - If less than 2â€‰â„¦, replace the K36 Inflatable Restraint and Sensing Diagnostic Module.

17.

- **If less than 2â€‰â„¦**

18. 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.
19. Ignition ON, clear DTCs. Operate the vehicle within the Conditions for Running the DTC.
20. Verify DTC B0012 or B0013 is not set.

21.

- **If DTC B0012 or B0013 is set**
- Replace the F107 steering wheel air bag.

22.

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

23. All OK.

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Repair Instructions

Perform the Diagnostic Repair Verification after completing the repair.

- Airbag Steering Wheel Module Replacement
- Steering Wheel Airbag Coil Replacement
- SIR/SRS Wiring Repairs
- Control Module References for Inflatable Restraint and Sensing Diagnostic Module replacement, programming and setup

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DTC B0014, B0021, B0031, or B0038

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

DTCâ€‰B0014

Driver Seat Side Air Bag Deployment Loop

DTCâ€‰B0021

Passenger Seat Side Air Bag Deployment Loop

For symptom byte information refer to Symptom Byte List.

Diagnostic Fault Information

Circuit	Short to Ground	High Resistance	Open	Short to Voltage	Signal Performance
Left Side Air Bag High Control	B0014â€‰02, B0014â€‰0E	B0014â€‰0D	B0014â€‰04, B0014â€‰0D	B0014â€‰01	â€”
Left Side Air Bag Low Control	B0014â€‰02, B0014â€‰0E	B0014â€‰0D	B0014â€‰04, B0014â€‰0D	B0014â€‰01	â€”
Right Side Air Bag High Control	B0021â€‰02, B0021â€‰0E	B0021â€‰0D	B0021â€‰04, B0021â€‰0D	B0021â€‰01	â€”
Right Side Air Bag Low Control	B0021â€‰02, B0021â€‰0E	B0021â€‰0D	B0021â€‰04, B0021â€‰0D	B0021â€‰01	â€”

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 9â€“16â€‰V.

Conditions for Setting the DTC

B0014â€‰01, B0021â€‰01

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

B0014â€‰02, B0021â€‰02

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

B0014â€‰04, B0021â€‰04

The air bag control circuit is open for 2â€‰s

B0014â€‰0D, B0021â€‰0D

The air bag deployment loop resistance is greater than 4.2â€‰â„¦ for 2â€‰s

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B0014â€‰0E, B0021â€‰0E

The air bag deployment loop resistance is less than 1.4â€‰â„¦ for 2â€‰s

Action Taken When the DTC Sets

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

Conditions for Clearing the DTC

- The condition for setting the DTC no longer exists.
- A history DTC will clear once 100â€‰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:

- F106Dâ€‰Seat Side Air Bag - Driver
- F106Pâ€‰Seat Side Air Bag - Passenger
- Inline harness connectors
- Harness side of the K36â€‰Inflatable Restraint Sensing and Diagnostic Module connector

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

Reference Information

Schematic Reference

SIR Schematics

Connector End View Reference

Master Electrical Component List

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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

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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.

- F106Dâ€‰Seat Side Air Bag - Driver
- F106Pâ€‰Seat Side Air Bag - Passenger
- K36â€‰Inflatable Restraint Sensing and Diagnostic Module
- All wiring harness connectors
- K36â€‰Inflatable Restraint Sensing and Diagnostic Module wiring harness connector

Note:

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

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

1. Verify the appropriate scan tool Deployment Loop Resistance parameters stay consistently between 2.1 and 4.0â€‰â„¦ without any spikes or dropouts while moving the harness near each connector.
2.
    - F106Dâ€‰Seat Side Air Bag - Driver
    - F106Pâ€‰Seat Side Air Bag - Passenger
    - Any inline harness connector
    - K36â€‰Inflatable Restraint Sensing and Diagnostic Module
3.
    - **If less than 2.1 or greater than 4.0â€‰â„¦**
    - Refer to Circuit/System Testing.
4.
    - **If there are spikes or dropouts, perform the following**
5.
    - 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.
6.
    - **If within 2.1 and 4.0â€‰â„¦ without any spikes or dropouts**
7. All OK

Circuit/System Testing

1. Ignition OFF/Vehicle OFF, disconnect the scan tool and then disconnect the appropriate F106â€‰Seat Side Air Bag harness connector.
2. Test for greater than 25â€‰â„¦ between the control circuit terminals 1 and 2.
3.

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- **If 25â€‰â„¦ or less**

4.

1. Disconnect the X2 harness connector at the K36â€‰Inflatable Restraint Sensing and Diagnostic Module.
2. 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.
3. Test for infinite resistance between the two control circuits.
4.

   - If less than infinite resistance, repair the short between the two circuits.
   - If infinite resistance, replace the K36â€‰Inflatable Restraint Sensing and Diagnostic Module.

5.

- **If greater than 25â€‰â„¦**

6. Ignition ON/Vehicle in Service Mode.
7. Test for less than 11â€‰V between the control circuit terminals listed below and ground:
8.

   - Control circuit terminal 1
   - Control circuit terminal 2

9.

- **If 11â€‰V or greater**

10.

1. Ignition OFF/Vehicle OFF, disconnect the X2 harness connector at the K36â€‰Inflatable Restraint Sensing and Diagnostic Module, Ignition ON/Vehicle in Service Mode.
2. Test for less than 1â€‰V between the control circuit and ground.
3.

   - If 1â€‰V or greater, repair the short to voltage on the circuit.
   - If less than 1â€‰V, replace the K36â€‰Inflatable Restraint Sensing and Diagnostic Module.

11.

- **If less than 11â€‰V**

12. Ignition OFF/Vehicle OFF.
13. Test for greater than 25â€‰â„¦ between the control circuit terminals listed below and ground:
14.

    - Control circuit terminal 1
    - Control circuit terminal 2

15.

- **If 25â€‰â„¦ or less**

16.

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1. Disconnect the X2 harness connector at the K36â€‰Inflatable Restraint Sensing and Diagnostic Module.
2. Test for infinite resistance between the control circuit and ground.
3.
    - If less than infinite resistance, repair the short to ground on the circuit.
    - If infinite resistance, replace the K36â€‰Inflatable Restraint Sensing and Diagnostic Module.

17.
    - **If greater than 25â€‰â„¦**

18. Ignition OFF/Vehicle OFF, install a 3â€‰A fused jumper wire between the control circuit terminals 1 and 2. Ignition ON/Vehicle in Service Mode.
19. Verify the scan tool Deployment Loop Resistance parameter is less than 2â€‰â„¦.
20.
    - **If 2â€‰â„¦ or greater**

21.
    1. Ignition OFF/Vehicle OFF, disconnect the X2 harness connector at the K36â€‰Inflatable Restraint Sensing and Diagnostic Module.
    2. Test for less than 2â€‰â„¦ in each control circuit end to end.
    3.
        - If 2â€‰â„¦ or greater, repair the open/high resistance in the circuit.
        - If less than 2â€‰â„¦, replace the K36â€‰Inflatable Restraint Sensing and Diagnostic Module.

22.
    - **If less than 2â€‰â„¦**

23. Ignition OFF/Vehicle OFF, connect the harness connector at the F106â€‰Seat Side Air Bag, press in the CPA (if equipped) until an audible and/or tactile click is heard.
24. Ignition ON/Vehicle in Service Mode, clear DTCs. Operate the vehicle within the Conditions for Running the DTC.
25. Verify DTC B0014, B0021, B0031, or B0038 is not set.
26.
    - **If DTC B0014, B0021, B0031, or B0038 is set**
    - Replace the appropriate F106â€‰Seat Side Air Bag.

27.
    - **If DTC B0014, B0021, B0031, or B0038 is not set**

28. All OK.

Repair Instructions

Perform the Diagnostic Repair Verification after completing the repair.

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

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1. SAFETY AND SECURITY
2. SUPPLEMENTAL RESTRAINTS
3. DIAGNOSTIC INFORMATION AND PROCEDURES
4.

DTC B0015, B001A, B001B, or B0022

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

DTCâ€‰B0015â€‰01

Driver Seat Belt Retractor Pretensioner Deployment Loop Short to Battery

DTCâ€‰B0015â€‰02

Driver Seat Belt Retractor Pretensioner Deployment Loop Short to Ground

DTCâ€‰B0015â€‰04

Driver Seat Belt Retractor Pretensioner Deployment Loop Open

DTCâ€‰B0015â€‰0D

Driver Seat Belt Retractor Pretensioner Deployment Loop High Resistance

DTCâ€‰B0015â€‰0E

Driver Seat Belt Retractor Pretensioner Deployment Loop Low Resistance

DTCâ€‰B0022â€‰01

Passenger Seat Belt Retractor Pretensioner Deployment Loop Short to Battery

DTCâ€‰B0022â€‰02

Passenger Seat Belt Retractor Pretensioner Deployment Loop Short to Ground

DTCâ€‰B0022â€‰04

Passenger Seat Belt Retractor Pretensioner Deployment Loop Open Circuit

DTCâ€‰B0022â€‰0D

Passenger Seat Belt Retractor Pretensioner Deployment Loop High Resistance

DTCâ€‰B0022â€‰0E

Passenger Seat Belt Retractor Pretensioner Deployment Loop Low Resistance

Diagnostic Fault Information

Circuit	Short to Ground	High Resistance	Open	Short to Voltage	Signal Performance
Driver Seat Belt Retractor Pretensioner High Control	B0015â€‰02, B0015â€‰0E	B0015â€‰0D	B0015â€‰04, B0015â€‰0D	B0015â€‰01	â€”
Driver Seat Belt Retractor Pretensioner Low Control	B0015â€‰02, B0015â€‰0E	B0015â€‰0D	B0015â€‰04, B0015â€‰0D	B0015â€‰01	â€”
Passenger Seat Belt Retractor Pretensioner High Control	B0022â€‰02, B0022â€‰0E	B0022â€‰0D	B0022â€‰04, B0022â€‰0D	B0022â€‰01	â€”

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Circuit	Short to Ground	High Resistance	Open	Short to Voltage	Signal Performance
Passenger Seat Belt Retractor Pretensioner Low Control	B0022â€‰02, B0022â€‰0E	B0022â€‰0D	B0022â€‰04, B0022â€‰0D	B0022â€‰01	â€”

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 9â€“16â€‰V.

Conditions for Setting the DTC

B0015â€‰01, B0022â€‰01

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

B0015â€‰02, B0022â€‰02

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

B0015â€‰04, B0022â€‰04

The pretensioner control circuit is open for 2 seconds.

B0015â€‰0D, B0022â€‰0D

The pretensioner deployment loop resistance is greater than 4.2â€‰â„¦ for 2 seconds.

B0015â€‰0E, B0022â€‰0E

The pretensioner deployment loop resistance is less than 1.4â€‰â„¦ 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 100â€‰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 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

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parameters.

Reference Information

Schematic Reference

SIR Schematics

Connector End View Reference

Master Electrical Component List

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
- Passenger instrument panel air bag
- Seat side air bag
- Roof rail air bag
- SDM
- 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
- SDM wiring harness connector

Note:

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

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.

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1. Verify the appropriate scan tool Deployment Loop Resistance parameters stay consistently between 2.1 and 4.0â€‰â„¦ without any spikes or dropouts while moving the harness near each connector listed below:
2.
    - F112 Seat belt retractor pretensioner
    - Any inline harness connector
    - K36 SDM
3.
    - **If less than 2.1 or greater than 4.0â€‰â„¦**
    - Refer to Circuit/System Testing.
4.
    - **If there are spikes or dropouts, perform the following**
5.
    - 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.
6.
    - **If within 2.1 and 4.0â€‰â„¦ without any spikes or dropouts**
7. All OK

Circuit/System Testing

1. Ignition OFF. Disconnect the scan tool. Disconnect the appropriate F112 seat belt retractor pretensioner harness connector. It may take up to 2 minutes for all vehicle systems to power down.
2. Test for greater than 25â€‰â„¦ between the control circuit terminals 1 and 2.
3.
    - **If 25â€‰â„¦ or less**
4.
    1. Disconnect the X2 harness connector at the K36 SDM.
    2. 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.
    3. Test for infinite resistance between the two control circuits.
    4.
        - If less than infinite resistance, repair the short between the two circuits.
        - If infinite resistance, replace the K36 SDM.
5.
    - **If greater than 25â€‰â„¦**
6. Ignition ON.

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7. Test for less than 11â€‰V between the control circuit terminals listed below and ground:
8.
    - Control circuit terminal 1
    - Control circuit terminal 2
9.
    - **If 11â€‰V or greater**
10.
    1. Ignition OFF. Disconnect the X2 harness connector at the K36 SDM. Ignition ON.
    2. Test for less than 1â€‰V between the control circuit and ground.
    3.
        - If 1â€‰V or greater, repair the short to voltage on the circuit.
        - If less than 1â€‰V, replace the K36 SDM.
11.
    - **If less than 11â€‰V**
12. Ignition OFF.
13. Test for greater than 25â€‰â„¦ between the control circuit terminals listed below and ground:
14.
    - Control circuit terminal 1
    - Control circuit terminal 2
15.
    - **If 25â€‰â„¦ or less**
16.
    1. Disconnect the X2 harness connector at the K36 SDM.
    2. Test for infinite resistance between the control circuit and ground.
    3.
        - If less than infinite resistance, repair the short to ground on the circuit.
        - If infinite resistance, replace the K36 SDM.
17.
    - **If greater than 25â€‰â„¦**
18. Ignition OFF. Install a 3â€‰A fused jumper wire between the appropriate control circuit terminals 1 and 2. Ignition ON.
19. Verify the scan tool Deployment Loop Resistance parameter is less than 2â€‰â„¦.
20.
    - **If 2â€‰â„¦ or greater**
21.
    1. Ignition OFF. Disconnect the X2 harness connector at the K36 SDM.
    2. Test for less than 2â€‰â„¦ in each control circuit end to end.

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3.

- If 2 â€‰â„¦ or greater, repair the open/high resistance in the circuit.
- If less than 2â€‰â„¦, replace the K36 SDM.

22.

- **If less than 2â€‰â„¦**

23. Ignition OFF, connect the harness connector at the F112 seat belt retractor pretensioner, press in the CPA (if equipped) until an audible and/or tactile click is heard.
24. Ignition ON, clear DTCs. Operate the vehicle within the Conditions for Running the DTC.
25. Verify DTC B0015, B001A, B001B, or B0022 is not set.
26.

- **If DTC B0015, B001A, B001B, or B0022 is set**
- Replace the appropriate F112 seat belt retractor pretensioner.

27.

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

28. All OK.

Repair Instructions

Perform the Diagnostic Repair Verification after completing the repair.

- Driver or Passenger Seat Belt Replacement
- SIR/SRS Wiring Repairs
- Control Module References for SDM replacement, programming and setup

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1. SAFETY AND SECURITY
2. SUPPLEMENTAL RESTRAINTS
3. DIAGNOSTIC INFORMATION AND PROCEDURES
4.

DTC B0016, B0018, B0023, or B0025

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

DTCâ€‰B0016

Left Roof Rail Air Bag Deployment Loop

DTCâ€‰B0023

Right Roof Rail Air Bag Deployment Loop

Diagnostic Fault Information

Circuit	Short to Ground	High Resistance	Open	Short to Voltage	Signal Performance
Left Roof Rail Air Bag High Control	B0016â€‰02, B0016â€‰0E	B0016â€‰0D	B0016â€‰04, B0016â€‰0D	B0016â€‰01	â€”
Left Roof Rail Air Bag Low Control	B0016â€‰02, B0016â€‰0E	B0016â€‰0D	B0016â€‰04, B0016â€‰0D	B0016â€‰01	â€”
Right Roof Rail Air Bag High Control	B0023â€‰02, B0023â€‰0E	B0023â€‰0D	B0023â€‰04, B0023â€‰0D	B0023â€‰01	â€”
Right Roof Rail Air Bag Low Control	B0023â€‰02, B0023â€‰0E	B0023â€‰0D	B0023â€‰04, B0023â€‰0D	B0023â€‰01	â€”

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 9â€“16â€‰V.

Conditions for Setting the DTC

B0016â€‰01, B0023â€‰01

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

B0016â€‰02, B0023â€‰02

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

B0016â€‰04, B0023â€‰04

The air bag control circuit is open for 2â€‰seconds.

B0016â€‰0D, B0023â€‰0D

The air bag deployment loop resistance is greater than 4.2â€‰â„¦ for 2â€‰seconds.

B0016â€‰0E, B0023â€‰0E

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The air bag deployment loop resistance is less than 1.4â€‰â„¦ for 2â€‰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 100â€‰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

Connector End View Reference

Master Electrical Component List

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:

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- Refer to SIR Service Precautions.
- Inspect all terminals for damage or corrosion when disconnecting connectors. Damage or corrosion in the following requires repair or replacement of the affected component/connector.
-
    - Roof rail air bag
    - Roof rail air bag wiring harness connector
    - Inflatable restraint sensing and diagnostic module
    - Inflatable restraint sensing and diagnostic module wiring harness connector
- The connector and connector position assurance (CPA) may seat independent of each other. Both the connector and CPA should seat with an audible and/or tactile click. The CPA isolates the shorting-bars within the connector allowing the deployment circuit to operate properly.
- If the condition is intermittent or cannot be duplicated, disconnect the connectors and add dielectric grease / lubricant (Nyogel 760G or equivalent, meeting GM specification 9986087). This procedure will correct the high resistance condition due to terminal fretting corrosion.

1. Verify the appropriate scan tool Deployment Loop Resistance parameter stays consistently between 2.1 and 4.0â€‰â„¦ without any spikes or dropouts while moving the harness near each connector listed below:
2.
    - F105L Roof Rail Air Bag â€“ Left
    - F105R Roof Rail Air Bag â€“ Right
    - Any inline harness connector
    - K36â€‰inflatable restraint sensing and diagnostic module
3.
    - **If less than 2.1 or greater than 4.0â€‰â„¦**
    - Refer to Circuit/System Testing.
    - **If there are spikes or dropouts, perform the following**
4.
    - Inspect each connector terminal and harness for damage or corrosion and repair as necessary
    - Ensure each connector and CPA is correctly seated.
5.
    - **If within 2.1 and 4.0â€‰â„¦ without any spikes or dropouts**
6. 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 25â€‰â„¦ between the control circuit terminals 1 and 2.
3.
    - **If 25â€‰â„¦ or less**
4.
    1. Disconnect the X2 harness connector at the K36â€‰inflatable restraint sensing and diagnostic module.
    2. Note:

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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.

3. Test for infinite resistance between the two control circuits.
4.
    - If less than infinite resistance, repair the short between the two circuits.
    - If infinite resistance, replace the K36â€‰inflatable restraint sensing and diagnostic module.
5.
    - **If greater than 25â€‰â„¦**
6. Ignition ON.
7. Test for less than 11â€‰V between the control circuit terminals listed below and ground:
8.
    - Control circuit terminal 1
    - Control circuit terminal 2
9.
    - **If 11â€‰V or greater**
10.
    1. Ignition OFF. Disconnect the X2 harness connector at the K36â€‰inflatable restraint sensing and diagnostic module. Ignition ON.
    2. Test for less than 1â€‰V between the control circuit and ground.
    3.
        - If 1â€‰V or greater, repair the short to voltage on the circuit.
        - If less than 1â€‰V, replace the K36â€‰inflatable restraint sensing and diagnostic module.
11.
    - **If less than 11â€‰V**
12. Ignition OFF.
13. Test for greater than 25â€‰â„¦ between the control circuit terminals listed below and ground:
14.
    - Control circuit terminal 1
    - Control circuit terminal 2
15.
    - **If 25â€‰â„¦ or less**
16.
    1. Disconnect the X2 harness connector at the K36â€‰inflatable restraint sensing and diagnostic module.
    2. Test for infinite resistance between the control circuit and ground.
    3.
        - If less than infinite resistance, repair the short to ground on the circuit.
        - If infinite resistance, replace the K36â€‰inflatable restraint sensing and diagnostic module.

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17.
    - **If greater than 25â€‰â„¦**
18. Ignition OFF. Install a 3â€‰A fused jumper wire between the control circuit terminals 1 and 2. Ignition ON.
19. Verify the scan tool Deployment Loop Resistance parameter is less than 2â€‰â„¦.
20.
    - **If 2â€‰â„¦ or greater**
21.
    1. Ignition OFF. Disconnect the X2 harness connector at the K36â€‰inflatable restraint sensing and diagnostic module.
    2. Test for less than 2â€‰â„¦ in each control circuit end to end.
    3.
        - If 2â€‰â„¦ or greater, repair the open/high resistance in the circuit.
        - If less than 2â€‰â„¦, replace the K36â€‰inflatable restraint sensing and diagnostic module.
22.
    - **If less than 2â€‰â„¦**
23. 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.
24. Ignition ON, clear DTCs. Operate the vehicle within the Conditions for Running the DTC.
25. Verify DTCâ€‰B0016 or B0023 is not set.
26.
    - **If DTCâ€‰B0016 or B0023 is set**
    - Test or replace the F105 Roof Rail Air Bag.
27.
    - **If DTCâ€‰B0016 or B0023 is not set**
28. All OK.

Repair Instructions

Perform the Diagnostic Repair Verification after completing the repair.

- Roof Side Rail Airbag Replacement
- Control Module References for inflatable restraint sensing and diagnostic module replacement, programming and setup

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1. SAFETY AND SECURITY
2. SUPPLEMENTAL RESTRAINTS
3. DIAGNOSTIC INFORMATION AND PROCEDURES
4.

DTC B0017 or B0024

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

DTCâ€‰B0017

Driver Knee Air Bag Deployment Loop

DTCâ€‰B0024

Passenger Knee Air Bag Deployment Loop

Diagnostic Fault Information

Circuit	Short to Ground	High Resistance	Open	Short to Voltage	Signal Performance
Driver Knee Air Bag High Control	B0017â€‰02, B0017â€‰0E	B0017â€‰0D	B0017â€‰04, B0017â€‰0D	B0017â€‰01	â€”
Driver Knee Air Bag Low Control	B0017â€‰02, B0017â€‰0E	B0017â€‰0D	B0017â€‰04, B0017â€‰0D	B0017â€‰01	â€”
Passenger Knee Air Bag High Control	B0024â€‰02, B0024â€‰0E	B0024â€‰0D	B0024â€‰04, B0024â€‰0D	B0024â€‰01	â€”
Passenger Knee Air Bag Low Control	B0024â€‰02, B0024â€‰0E	B0024â€‰0D	B0024â€‰04, B0024â€‰0D	B0024â€‰01	â€”

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 9â€“16â€‰V.

Conditions for Setting the DTC

B0017â€‰01, B0024â€‰01

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

B0017â€‰02, B0024â€‰02

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

B0017â€‰04, B0024â€‰04

The air bag control circuit is open for 2â€‰seconds.

B0017â€‰0D, B0024â€‰0D

The air bag deployment loop resistance is greater than 4.2â€‰â„¦ for 2â€‰seconds.

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B0017â€‰0E, B0024â€‰0E

The air bag deployment loop resistance is less than 1.4â€‰â„¦ for 2â€‰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 100â€‰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 byteâ€‰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 byteâ€‰04 or 0D is set.

Reference Information

Schematic Reference

SIR Schematics

Connector End View Reference

Master Electrical Component List

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

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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 (Nyogelâ€‰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 4.0â€‰â„¦ without any spikes or dropouts while moving the harness near each connector listed below:
2.
    - F114D Knee Air Bag â€“ Driver
    - F114P Knee Air Bag â€“ Passenger
    - Any inline harness connector
    - K36 Inflatable Restraint Sensing and Diagnostic Module
3.
    - **If less than 2.1 or greater than 4.0â€‰â„¦**
    - Refer to Circuit/System Testing.
4.
    - **If there are spikes or dropouts, perform the following:**
5.
    - Inspect each connector terminal and harness for damage or corrosion and repair as necessary.
    - Apply dielectric grease/lubricant (Nyogelâ€‰760G or equivalent, meeting GM specification 9986087) to each connector terminal
    - Ensure each connector and CPA is correctly seated
6.
    - **If between 2.1 and 4.0â€‰â„¦ without any spikes or dropouts**
7. 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 25â€‰â„¦ between the control circuit terminalsâ€‰1 and 2.
3.
    - **If 25â€‰â„¦ or less**
4.

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1. Disconnect the X1 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
2. 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.
3. Test for infinite resistance between the 2 control circuits.
4.
   - If less than infinite resistance, repair the short between the 2 circuits.
   - If infinite resistance, replace the K36 Inflatable Restraint Sensing and Diagnostic Module.
5.
   - **If greater than 25â€‰â„¦**
6. Ignition ON.
7. Test for less than 11â€‰V between the control circuit terminals listed below and ground:
8.
   - Control circuit terminal 1
   - Control circuit terminal 2
9.
   - **If 11â€‰V or greater**
10.
    1. Ignition OFF, disconnect the X1 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module, ignition ON.
    2. Test for less than 1â€‰V between the control circuit and ground.
    3.
       - If 1â€‰V or greater, repair the short to voltage on the circuit.
       - If less than 1â€‰V, replace the K36 Inflatable Restraint Sensing and Diagnostic Module.
11.
    - **If less than 11â€‰V**
12. Ignition OFF.
13. Test for greater than 25â€‰â„¦ between the control circuit terminals listed below and ground:
14.
    - Control circuit terminal 1
    - Control circuit terminal 2
15.
    - **If 25â€‰â„¦ or less**
16.
    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.

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3.

- 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.

17.

- **If greater than 25â€‰â„¦**

18. Install a 3â€‰A fused jumper wire between the control circuit terminalsâ€‰1 and 2, ignition ON.
19. Verify DTCâ€‰B0017â€‰0E or B0024â€‰0E is set
20.

- **If B0017â€‰0E or B0024â€‰0E is not set**

21.

1. Ignition OFF, disconnect the X1 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
2. Test for less than 2â€‰â„¦ in each control circuit end to end.
3.

- If 2â€‰â„¦ or greater, repair the open/high resistance in the circuit.
- If less than 2â€‰â„¦, replace the K36 Inflatable Restraint Sensing and Diagnostic Module.

22.

- **If B0017â€‰0E or B0024â€‰0E is set**

23. 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.
24. Ignition ON, clear DTCs. Operate the vehicle within the Conditions for Running the DTC.
25. Verify DTCâ€‰B0017 or B0024 is not set.
26.

- **If DTCâ€‰B0017 or B0024 is set**
- Replace the appropriate F114 Knee Air Bag.

27.

- **If DTCâ€‰B0017 or B0024 is not set**

28. All OK.

Repair Instructions

Perform the Diagnostic Repair Verification after completing the repair.

- Airbag Instrument Panel Module Replacement
- Control Module References for K36 Inflatable Restraint Sensing and Diagnostic Module replacement, programming, and setup

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1. SAFETY AND SECURITY
2. SUPPLEMENTAL RESTRAINTS
3. DIAGNOSTIC INFORMATION AND PROCEDURES
4.

DTC B0019 or B0020

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

DTCâ€‰B0019â€‰01

Passenger Instrument Panel Air Bag Deployment Loop Stageâ€‰1 Short to Battery

DTCâ€‰B0019â€‰02

Passenger Instrument Panel Air Bag Deployment Loop Stageâ€‰1 Short to Ground

DTCâ€‰B0019â€‰04

Passenger Instrument Panel Air Bag Deployment Loop Stageâ€‰1 Open

DTCâ€‰B0019â€‰0D

Passenger Instrument Panel Air Bag Deployment Loop Stageâ€‰1 High Resistance

DTCâ€‰B0019â€‰0E

Passenger Instrument Panel Air Bag Deployment Loop Stageâ€‰1 Low Resistance

Diagnostic Fault Information

Circuit	Short to Ground	High Resistance	Open	Short to Voltage	Signal Performance
High Control	B0019â€‰02, B0019â€‰0E	B0019â€‰0D	B0019â€‰04, B0019â€‰0D	B0019â€‰01	â€”
Low Control	B0019â€‰02, B0019â€‰0E	B0019â€‰0D	B0019â€‰04, B0019â€‰0D	B0019â€‰01	â€”

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 9â€“16â€‰V.

Conditions for Setting the DTC

B0019â€‰01

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

B0019â€‰02

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

B0019â€‰04

The air bag control circuit is open for 2â€‰seconds.

B0019â€‰0D

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The air bag deployment loop resistance is greater than 4.2â€‰â„¦ for 2â€‰seconds.

B0019â€‰0E

The air bag deployment loop resistance is less than 1.4â€‰â„¦ for 2â€‰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 100â€‰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

Connector End View Reference

Master Electrical Component List

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

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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
- SDM
- 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
- SDM wiring harness connector

Note:

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

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

1. Verify the scan tool Deployment Loop Resistance 1 and 2 parameters stay consistently between 2.1 and 4.0â€‰â„¦ without any spikes or dropouts while moving the harness near each connector listed below:
2.
    - F105 Passenger instrument panel air bag
    - Any inline harness connector
    - K36 SDM
3.
    - **If less than 2.1 or greater than 4.0â€‰â„¦**
    - Refer to Circuit/System Testing.
4.
    - **If there are spikes or dropouts, perform the following**
5.
    - 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.
6.
    - **If within 2.1 and 4.0â€‰â„¦ without any spikes or dropouts**
7. All OK

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Circuit/System Testing

1. Ignition OFF. Scan tool disconnected. Disconnect the harness connector at 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 25â€‰â„¦ between the control circuit terminals 1 and 2.
3.
    - **If 25â€‰â„¦ or less**
4.
    1. Disconnect the X1 harness connector at the K36 SDM.
    2. 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.
    3. Test for infinite resistance between the two control circuits.
    4.
        - If less than infinite resistance, repair the short between the two circuits.
        - If infinite resistance, replace the K36 SDM.
5.
    - **If greater than 25â€‰â„¦**
6. Ignition ON.
7. Test for less than 11â€‰V between the control circuit terminals listed below and ground:
8.
    - Control circuit terminal 1
    - Control circuit terminal 2
9.
    - **If 11â€‰V or greater**
10.
    1. Ignition OFF. Disconnect the X1 harness connector at the K36 SDM. Ignition ON.
    2. Test for less than 1â€‰V between the control circuit and ground.
    3.
        - If 1â€‰V or greater, repair the short to voltage on the circuit.
        - If less than 1â€‰V, replace the K36 SDM.
11.
    - **If less than 11â€‰V**
12. Ignition OFF. Test for greater than 25â€‰â„¦ between the control circuit terminals listed below and ground:
13.
    - Control circuit terminal 1
    - Control circuit terminal 2

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14.
    - **If 25â€‰â„¦ or less**
15.
    1. Disconnect the X1 harness connector at the K36 SDM.
    2. Test for infinite resistance between the control circuit and ground.
    3.
        - If less than infinite resistance, repair the short to ground on the circuit.
        - If infinite resistance, replace the K36 SDM.
16.
    - **If greater than 25â€‰â„¦**
17. Install a 3â€‰A fused jumper wire between the control circuit terminals 1 and 2. Ignition ON.
18. Verify the scan tool Deployment Loop Resistance parameter is less than 2â€‰â„¦.
19.
    - **If 2â€‰â„¦ or greater**
20.
    1. Ignition OFF. Disconnect the X1 harness connector at the K36 SDM.
    2. Test for less than 2â€‰â„¦ in each control circuit end to end.
    3.
        - If 2â€‰â„¦ or greater, repair the open/high resistance in the circuit.
        - If less than 2â€‰â„¦, replace the K36 SDM.
21.
    - **If less than 2â€‰â„¦**
22. 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.
23. Ignition ON, clear DTCs. Operate the vehicle within the Conditions for Running the DTC.
24. Verify DTC B0019 or B0020 is not set.
25.
    - **If DTC B0019 or B0020 is set**
    - Replace the F105 passenger instrument panel air bag.
26.
    - **If DTC B0019 or B0020 is not set**
27. 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 SDM replacement, programming and setup

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1. SAFETY AND SECURITY
2. SUPPLEMENTAL RESTRAINTS
3. DIAGNOSTIC INFORMATION AND PROCEDURES
4.

DTC B0052

Diagnostic Instructions

- Perform the Diagnostic System Check prior to using this diagnostic procedure: Diagnostic System Check - Vehicle
- Review the description of Strategy Based Diagnosis: Strategy Based Diagnosis
- An overview of each diagnostic category can be found here: Diagnostic Procedure Instructions

DTC Descriptor

Deployment Commanded Circuit

Symptom Byte Information: Symptom Byte List

Circuit/System Description

Component	Description
K36 Inflatable Restraint Sensing and Diagnostic Module	The control module monitors several sensors that can detect a collision. When a collision is detected, the control module will trigger certain air bags and seat belt pretensioners, depending on the angle and severity of the impact.

Conditions for Running the DTC

- Ignition = On
- Ignition Voltage = 9> to 16 V

Conditions for Setting the DTC

Deployment Commanded

Actions Taken When the DTC Sets

Air Bag Malfunction Indicator = On

Conditions for Clearing the DTC

Use a scan tool.

Reference Information

Schematic Reference

SIR Schematics

Connector End View Reference

Master Electrical Component List

Description and Operation

Supplemental Inflatable Restraint System Description and Operation

Electrical Information Reference

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

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- Wiring Repairs

Scan Tool Reference

Control Module References

Circuit/System Verification

Note **:**

Refer to: SIR Service Precautions

1. Ignition >> On / Vehicle >> In Service Mode
2. Refer to: Repairs and Inspections Required After a Collision
3. Clear DTCs - Use a scan tool.
4. Verify DTC B0052 not set.
5.
    - **If the DTC is set**
    - Replace the component: K36 Inflatable Restraint Sensing and Diagnostic Module
6.
    - **If the DTC is not set**
7. All OK.

Repair Instructions

Perform the Diagnostic Repair Verification after completing the repair: Diagnostic Repair Verification

For control module replacement, programming, and setup refer to: Control Module References

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1. **SAFETY AND SECURITY**
2. SUPPLEMENTAL RESTRAINTS
3. DIAGNOSTIC INFORMATION AND PROCEDURES
4.

DTC B0081

Diagnostic Instructions

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

DTC Descriptors

DTCâ€‰B0081â€‰00

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

DTCâ€‰B0081â€‰11

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

DTCâ€‰B0081â€‰3A

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

DTCâ€‰B0081â€‰4B

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

DTCâ€‰B0081â€‰5A

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

DTCâ€‰B0081â€‰71

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

Circuit/System Description

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

Conditions for Running the DTC

Ignition voltage is between 9â€“16â€‰V.

Conditions for Setting the DTC

Any of the following conditions must exist for 5â€‰seconds:

B0081â€‰00

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

B0081â€‰11

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

B0081â€‰3A

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

B0081â€‰4B

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

B0081â€‰5A

The Passenger Presence Module detects a plausibility error.

B0081â€‰71

The Inflatable Restraint Sensing and Diagnostic Module has received invalid or no serial data from the Passenger Presence Module.

Action Taken When the DTC Sets

- The inflatable restraint sensing and diagnostic module requests the instrument cluster to illuminate the AIR BAG indicator.
- The passenger instrument panel air bag deployment loop will be disabled.

Conditions for Clearing the DTC

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

Diagnostic Aids

If either the inflatable restraint sensing and diagnostic module or passenger presence module were replaced verify that the correct part numbers were used for the vehicle application.

Reference Information

Schematic Reference

SIR Schematics

Connector End View Reference

Master Electrical Component List

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

K85 Passenger Presence Module: Scan Tool Information for scan tool information

Circuit/System Verification

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

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

2. Ignition ON, verify that DTC B0081 is the only DTC set in the Inflatable Restraint Sensing and Diagnostic Module or Passenger Presence Module.
3.
   - If any other DTCs are set, refer to Diagnostic Trouble Code (DTC) List - Vehicle.
4. Verify DTCâ€‰B0081â€‰00, DTCâ€‰B0081â€‰3A, or DTCâ€‰B0081â€‰71 is not set in the Inflatable Restraint Sensing and Diagnostic Module. If any of these DTCs set in the Inflatable Restraint Sensing and Diagnostic Module diagnose the following:
5.
   - Inflatable Restraint Sensing and Diagnostic Module DTCâ€‰B0081â€‰00:
   -
     - If DTCâ€‰B0081â€‰00 sets in the Inflatable Restraint Sensing and Diagnostic Module then refer to step 3 and diagnose the Passenger Presence Module DTCâ€‰B0081â€‰5A. By diagnosing the Passenger Presence Module DTCâ€‰B0081â€‰5A, DTCâ€‰B0081â€‰00 will be fixed in the Inflatable Restraint Sensing and Diagnostic Module.
   - Inflatable Restraint Sensing and Diagnostic Module DTCâ€‰B0081â€‰3A:
   -
     - Either an incorrect replacement Passenger Presence Module or Inflatable Restraint Sensing and Diagnostic Module was placed in this vehicle. Check and make sure the part numbers are correct for each module. If the part numbers are correct clear this DTC and see if DTCâ€‰B0081â€‰3A resets as a current DTC. If DTCâ€‰B0081â€‰3A resets then replace the Passenger Presence Module. Clear DTCs again and check if DTCâ€‰B0081â€‰3A sets as current again. If DTCâ€‰B0081â€‰3A sets again then replace the Inflatable Restraint Sensing and Diagnostic Module.
   - Inflatable Restraint Sensing and Diagnostic Module DTCâ€‰B0081â€‰71:
   -
     - If DTCâ€‰B0081â€‰71 sets in the Inflatable Restraint Sensing and Diagnostic Module then refer to Circuit/System Testing below.
6. DTCâ€‰B0081â€‰11, DTCâ€‰B0081â€‰4B, or DTCâ€‰B0081â€‰5A is set in the Passenger Presence Module, diagnose the following:
7.
   - Passenger Presence Module DTCâ€‰B0081â€‰11:
   -
     - If DTCâ€‰B0081â€‰11 sets in the Passenger Presence Module if the correct calibration was not learned by the Passenger Presence Module. Make sure there is nothing on the passenger seat, not even a scan tool. Perform the Passenger Presence Module Preload procedure, refer to Passenger Presence System Rezeroing. Clear the DTC's and check if DTCâ€‰B0081â€‰11 sets again in the Passenger Presence Module. If DTCâ€‰B0081â€‰11 sets again replace the Passenger Presence Module.
   - Passenger Presence Module DTCâ€‰B0081â€‰4B:
   -
     - If DTCâ€‰B0081â€‰4B sets in the Passenger Presence Module if the correct calibration was not learned by the Passenger Presence Module. Make sure there is nothing on the passenger seat, not even a scan tool. Perform the Passenger Presence Module Preload procedure, refer to Passenger Presence System Rezeroing. Clear the DTC's and check if DTCâ€‰B0081â€‰11 sets again in the Passenger Presence Module. If DTCâ€‰B0081â€‰11 sets again replace the Passenger Presence Module.
   - Passenger Presence Module DTCâ€‰B0081â€‰5A:
   -

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- If DTCâ€‰B0081â€‰5A sets in the Passenger Presence Module check the connections at the Inflatable Restraint Sensing and Diagnostic Module and Passenger Presence Module. Clear the DTC's and check if DTCâ€‰B0081â€‰5A sets again as a current DTC in the Passenger Presence Module. If DTCâ€‰B0081â€‰5A sets then replace the Passenger Presence Module. Clear DTCs again and check if DTCâ€‰B0081â€‰5A sets as current again. If DTCâ€‰B0081â€‰5A sets again then replace the Inflatable Restraint Sensing and Diagnostic Module.

Repair Instructions

Perform the Diagnostic Repair Verification after completing the repair.

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1. SAFETY AND SECURITY
2. SEAT BELTS
3. DIAGNOSTIC INFORMATION AND PROCEDURES
4.

DTC B0082

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

DTCâ€‰B0082â€‰01

Seat Belt Reminder Sensor Short to Battery

DTCâ€‰B0082â€‰02

Seat Belt Reminder Sensor Short to Ground

DTCâ€‰B0082â€‰04

Seat Belt Reminder Sensor Open Circuit

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Seat Belt Reminder Sensor Signal	B0082â€‰02	B0082â€‰04	B0082â€‰01	â€”
Seat Belt Reminder Sensor Ground	â€”	B0082â€‰04	B0082â€‰04	â€”

Circuit/System Description

The passenger seat belt reminder sensor is within the passenger seat cushion and provides an input to the inflatable restraint sensing and diagnostic module (SDM). The SDM supplies a low reference circuit and a seat belt reminder sensor signal circuit to determine seated or unseated condition of passenger seat.

Conditions for Running the DTC

Ignition voltage is between 9â€“16â€‰V.

Conditions for Setting the DTC

B0082â€‰01

The SDM detects a short to voltage in the seat belt reminder sensor signal circuit.

B0082â€‰02

The SDM detects a short to ground in the seat belt reminder sensor signal circuit.

B0082â€‰04

The SDM detects an open/high resistance in the seat belt reminder sensor signal circuit or the seat belt reminder sensor ground circuit.

Action Taken When the DTC Sets

The SIR System is disabled and no deployments are allowed.

Conditions for Clearing the DTC

- The DTC will be current for as long as the fault is present.

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

Reference Information

Schematic Reference

SIR Schematics

Connector End View Reference

Master Electrical Component List

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. Ignition ON, with the passenger seat unoccupied, verify the scan tool Passenger Seat Occupancy Status parameter is Empty Seat.
2. With the passenger seat occupied, verify the scan tool Passenger Seat Occupancy Status parameter is Occupied.

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the B60 seat belt reminder sensor.
2. Test for less than 30â€‰Î© between the ground circuit terminal 2 and ground.
3.
    - If greater than the specified range, test the ground circuit for an open/high resistance. If the circuit tests normal, replace the K36 SDM.
4. Ignition ON, test for 4.75â€“5.25â€‰V between the signal circuit terminal 1 and ground.
5.
    - If less than the specified range, test the signal circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the K36 SDM.
    - If greater than the specified range, test the signal circuit for a short to voltage. If the circuit tests normal, replace the K36 SDM.
6. If all circuits test normal, replace the B60 seat belt reminder sensor.

Repair Instructions

Perform the Diagnostic Repair Verification after completing the diagnostic procedure.

- Driver or Passenger Seat Cushion Pad Replacement
- Control Module References for SDM replacement, setup and programming

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1. **SAFETY AND SECURITY**
2. SUPPLEMENTAL RESTRAINTS
3. DIAGNOSTIC INFORMATION AND PROCEDURES
4.

DTC B0085 or B0086

Diagnostic Instructions

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

DTC Descriptors

DTCâ€‰B0085â€‰01

Left Front Side Impact Sensor Short to Battery

DTCâ€‰B0085â€‰02

Left Front Side Impact Sensor Short to Ground

DTCâ€‰B0085â€‰04

Left Front Side Impact Sensor Open

DTCâ€‰B0085â€‰05

Left Front Side Impact Sensor High Voltage/Open

DTCâ€‰B0085â€‰0C

Left Front Side Impact Sensor Low Current

DTCâ€‰B0085â€‰39

Left Front Side Impact Sensor Internal Malfunction

DTCâ€‰B0085â€‰3A

Left Front Side Impact Sensor Incorrect Component Installed

DTCâ€‰B0085â€‰71

Left Front Side Impact Sensor Invalid Data

DTCâ€‰B0086â€‰01

Right Front Side Impact Sensor Short to Battery

DTCâ€‰B0086â€‰02

Right Front Side Impact Sensor Short to Ground

DTCâ€‰B0086â€‰04

Right Front Side Impact Sensor Open

DTCâ€‰B0086â€‰05

Right Front Side Impact Sensor High Voltage/Open

DTCâ€‰B0086â€‰0C

Right Front Side Impact Sensor Low Current

DTCâ€‰B0086â€‰39

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Right Front Side Impact Sensor Internal Malfunction

DTCâ€‰B0086â€‰3A

Right Front Side Impact Sensor Incorrect Component Installed

DTCâ€‰B0086â€‰71

Right Front Side Impact Sensor Invalid Data

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Left Side Impact Sensor High Signal	B0085â€‰02	B0085â€‰04, B0085â€‰05	B0085â€‰01	B0085â€‰39
Left Side Impact Sensor Low Reference	B0085â€‰02	B0085â€‰04, B0085â€‰05	B0085â€‰01	B0085â€‰39
Right Side Impact Sensor High Signal	B0086â€‰02	B0086â€‰04, B0086â€‰05	B0086â€‰01	B0086â€‰39
Right Side Impact Sensor Low Reference	B0086â€‰02	B0086â€‰04, B0086â€‰05	B0086â€‰01	B0086â€‰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 9â€“16â€‰V.

Conditions for Setting the DTC

Any of the following conditions exist for 10â€‰seconds:

B0085â€‰01, B0086â€‰01

The sensor has been shorted to voltage.

B0085â€‰02, B0086â€‰02

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

B0085â€‰04, B0085â€‰05, B0085â€‰0C, B0086â€‰04, B0086â€‰05, B0086â€‰0C

- The sensor circuit is open.
- The inflatable restraint sensing and diagnostic module has not received a message from the sensor for greater than 375â€‰milliseconds.

B0085â€‰39, B0086â€‰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.

B0085â€‰3A, B0086â€‰3A

- The inflatable restraint sensing and diagnostic module has received identification message from the sensor, which does not match the identification stored in the inflatable restraint sensing and diagnostic module memory.
- The inflatable restraint sensing and diagnostic module has reset the impact sensor twice without detecting the correct identification message.

B0085â€‰71, B0086â€‰71

The inflatable restraint sensing and diagnostic module has received invalid serial data from the sensor.

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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 100â€‰malfunction-free ignition cycles have occurred.
- An ignition cycle is required for the DTC to go from current to history.

Reference Information

Schematic Reference

SIR Schematics

Connector End View Reference

Master Electrical Component List

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 B0085 or B0086 symptom byte 3A, 39, or 71 is not set as current.
2.
    - **If DTC B0085 or B0086 symptom byte 3A, 39 or 71 is set as current**

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- Replace the appropriate B59 or B63 impact sensor.

3.

- **If DTC B0085 or B0086 symptom byte 3A, 39 or 71 is not set as current**

4. Verify that DTC B0085 or B0086 symptom byte 01, 02, 04, or 05 is not set as current.

5.

- **If DTC B0085 or B0086 symptom byte 01, 02, 04, or 05 is set as current**
- Refer to Circuit/System Testing.

6.

- **If DTC B0085 or B0086 symptom byte 01, 02, 04, 05 is not set as current**

7. All OK.

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the appropriate B59 or B63 impact sensor, wait 120 seconds.
2. Test for less than 10â€‰â„¦ between the low reference circuit terminal 2 and ground.
3.

- **If 10â€‰â„¦ or greater**

4.

1. Ignition OFF, disconnect the harness connector at the K36 inflatable restraint sensing and diagnostic module.
2. Test for less than 2â€‰â„¦ in the low reference circuit end to end.
3.

- If 2â€‰â„¦ or greater, repair the open/high resistance in the circuit.
- If less than 2â€‰â„¦, replace the K36 inflatable restraint sensing and diagnostic module.

5.

- **If less than 10â€‰â„¦**

6. Test for greater than 50kâ€‰â„¦ between the signal circuit terminal 1 and ground.
7.

- **If 50kâ€‰â„¦ or less**

8.

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.
3.

- 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.

9.

- **If greater than 50kâ€‰â„¦**

10. Ignition ON, test for less than 1â€‰V between the signal circuit terminal 1 and ground.
11.

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- **If 1â€‰V or greater**

12.

    1. Ignition OFF, disconnect the harness connector at the K36 inflatable restraint sensing and diagnostic module.
    2. Ignition ON, test for less than 1â€‰V between the signal circuit and ground.
    3.

        - If greater than 1â€‰V, repair the short to voltage on the circuit.
        - If less than 1â€‰V, replace the K36 inflatable restraint sensing and diagnostic module.

13.

- **If less than 1â€‰volt**

14. Ignition OFF, disconnect the harness connector at the inflatable restraint sensing and diagnostic module.
15. Test for less than 2â€‰â„¦ between the signal circuit end to end from the impact sensor terminal 1 and the inflatable restraint sensing and diagnostic module terminal listed below:

16.

- Left front side impact sensor terminal 19 X2
- Right front side impact sensor terminal 22 X2

17.

- **If 2â€‰â„¦ or greater**
- Repair the open/high resistance in the circuit.

18.

- **If less than 2â€‰â„¦**

19. Ignition OFF, reconnect all harness connectors, press in the CPA (if equipped) until an audible and/or tactile click is heard.
20. Ignition ON, clear DTCs. Operate the vehicle within the Conditions for Running the DTC.
21. Verify the DTC does not set.
22.

- **If the DTC sets**
- Replace the appropriate B63 side impact sensor.

23.

- **If the DTC does not set**

24. All OK.

Repair Instructions

Perform the Diagnostic Repair Verification after completing the repair.

- Airbag Side Impact Sensor Replacement
- Control Module References for inflatable restraint sensing and diagnostic module replacement, programming and setup

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1. SAFETY AND SECURITY
2. SUPPLEMENTAL RESTRAINTS
3. DIAGNOSTIC INFORMATION AND PROCEDURES
4.

DTC B0091

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

DTCâ€‰B0091

Front Impact Sensor

Diagnostic Fault Information

Circuit	Short to Ground	High Resistance	Open	Short to Voltage	Signal Performance
Front Impact Sensor High Signal	B0091â€‰02	B0091â€‰04	B0091â€‰0Câ€‰, B0091â€‰04	B0091â€‰01, B0091â€‰05	B0091â€‰39, B0091â€‰71
Front Impact Sensor Low Reference	â€”	B0091â€‰04	B0091â€‰0Câ€‰, B0091â€‰04	B0091â€‰01	B0091â€‰39, B0091â€‰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 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 5â€‰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 2â€‰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 9â€“16â€‰V.

Conditions for Setting the DTC

B0091â€‰01

The Inflatable Restraint Sensing and Diagnostic Module has detected the Front impact sensor has been shorted to voltage

B0091â€‰02

- The Inflatable Restraint Sensing and Diagnostic Module has detected the Front impact sensor has been shorted to ground.
- The Front impact sensor current is greater than 23â€‰mA for greater than 5â€‰milliseconds.

B0091â€‰04

- The Inflatable Restraint Sensing and Diagnostic Module has detected an open/high resistance in the Front impact sensor.

- The Inflatable Restraint Sensing and Diagnostic Module has not received a message from the Front impact sensor for greater than 375â€‰milliseconds.

  B0091â€‰05 and B0091â€‰0C

- The Inflatable Restraint Sensing and Diagnostic Module has detected the Front impact sensor has been shorted to voltage.
- The Inflatable Restraint Sensing and Diagnostic Module has detected an open/high resistance in the Front impact sensor.
- The Inflatable Restraint Sensing and Diagnostic Module has not received a message from the Front impact sensor for greater than 375 milliseconds.

  B0091â€‰39

- The Inflatable Restraint Sensing and Diagnostic Module has received a Not OK (NOK) message from the Front impact sensor.
- The Inflatable Restraint Sensing and Diagnostic Module has not received a message.

  B0091â€‰3A

- The Inflatable Restraint Sensing and Diagnostic Module has received identification message from the 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 Front impact sensor twice without detecting the correct identification message.

B0091â€‰71

The Inflatable Restraint Sensing and Diagnostic Module has received invalid serial data from the 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 100â€‰malfunction-free ignition cycles have occurred.

Reference Information

Schematic Reference

SIR Schematics

Connector End View Reference

Master Electrical Component List

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

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Circuit/System Verification

1. For DTC B0091â€‰39, B0091â€‰3A and B0091â€‰71, replace the B59â€‰Front Impact Sensor.
2. For DTC B0091â€‰01, B0091â€‰02, B0091â€‰04, B0091â€‰05 and B0091â€‰0C, perform the Circuit/System Testing.

Circuit/System Testing

1. Ignition OFF.
2. Disconnect the harness connector at the B59â€‰Front Impact Sensor, wait 120 seconds.
3. Test for less than 10â€‰â„¦ between the low reference circuit terminalâ€‰2 and ground.
4.
   - **If 10 â„¦ or greater**
5.
   1. Ignition OFF, disconnect the X2 harness connector at the K36â€‰Inflatable Restraint Sensing and Diagnostic Module.
   2. Test for less than 2â€‰â„¦ in the low reference circuit end to end.
   3.
      - If 2â€‰â„¦ or greater, repair the open/high resistance in the circuit.
      - If less than 2â€‰â„¦, replace the K36â€‰Inflatable Restraint Sensing and Diagnostic Module.
6.
   - **If less than 10â€‰â„¦**
7. Test for greater than 50kâ€‰â„¦ between the signal circuit terminalâ€‰1 and ground.
8.
   - **If 50kâ€‰â„¦ or less**
9.
   1. Disconnect the X2 harness connector at the K36â€‰Inflatable Restraint Sensing and Diagnostic Module.
   2. Test for infinite resistance between the signal circuit and ground.
   3.
      - If less than infinite resistance, repair the short to ground on the circuit.
      - If infinite resistance, replace the K36â€‰Inflatable Restraint Sensing and Diagnostic Module.
10.
    - **If greater than 50kâ€‰â„¦**
11. Disconnect the X2 harness connector at the Inflatable Restraint Sensing and Diagnostic Module.
12. Test for less than 2â€‰â„¦ between the B59â€‰Front Impact Sensor signal circuit terminalâ€‰1 and the Inflatable Restraint Sensing and Diagnostic Module terminalâ€‰23â€‰X2.
13.
    - **If 2â€‰â„¦ or greater**
    - Repair the open/high resistance in the circuit.
14.
    - **If less than 2â€‰â„¦**

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15. Replace the B59â€‰Front Impact Sensor.

Repair Instructions

Perform the Diagnostic Repair Verification after completing the repair.

- Airbag Front End Discriminating Sensor Replacement
- Control Module References for module replacement, programming and setup

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1. SAFETY AND SECURITY
2. SUPPLEMENTAL RESTRAINTS
3. DIAGNOSTIC INFORMATION AND PROCEDURES
4.

DTC B0098

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

DTCâ€‰B0098â€‰01

Passenger Air Bag Disable Switch Circuit Short to Battery

DTCâ€‰B0098â€‰02

Passenger Air Bag Disable Switch Circuit Short to Ground

DTCâ€‰B0098â€‰04

Passenger Air Bag Disable Switch Circuit Open

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Passenger Air Bag Disable Switch Signal	B0098â€‰02	B0098â€‰04	B0098â€‰01	â€”
Passenger Air Bag Disable Switch Ground	â€”	B0098â€‰04	B0098â€‰04	â€”

Circuit/System Description

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

Conditions for Running the DTC

Ignition voltage is between 9â€“16â€‰V.

Conditions for Setting the DTC

B0098â€‰01

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

B0098â€‰02

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

B0098â€‰04

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

Action Taken When the DTC Sets

The SDM will ignore the signal from the passenger air bag disable switch and will continuously enable the passenger instrument panel air bag.

Conditions for Clearing the DTC

- The DTC will be current for as long as the fault is present.

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

Reference Information

Schematic Reference

SIR Schematics

Connector End View Reference

Master Electrical Component List

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

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

Circuit/System Testing

1. Ignition OFF.
2. Disconnect the harness connector at the S40 Passenger Air Bag Disable Switch.
3. Test for less than 30â€‰â„¦ between the ground circuit terminal 3 and ground.
4.
    - **If 30 â„¦ or greater**
5.
    1. Ignition OFF, disconnect the harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
    2. Test for less than 2 â„¦ in the S40 Passenger Air Bag Disable Switch ground circuit end to end.
    3.
        - If 2 â„¦ or greater, replace the open/high resistance in the circuit.
        - If less than 2 â„¦, replace the K36 Inflatable Restraint Sensing and Diagnostic Module.
6.
    - **If less than 30 â„¦**
7. Ignition ON, test for 4.75-5.25V between the signal circuit terminal 1 and ground.
8.
    - **If less than 4.75V**

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9.

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.
3.
   - If less than infinite resistance, repair the short to ground on the circuit.
4. Test for less than 2 â„¦ in the signal circuit end to end.
5.
   - If 2 â„¦ or greater, repair the open/high resistance in the circuit.
   - If less than 2 â„¦, replace the K36 Inflatable Restraint Sensing and Diagnostic Module.

10.

- **If greater than 5.25V**

11.

1. Ignition OFF.
2. Disconnect the harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
3. Ignition ON.
4. Test for less than 1 V between the signal circuit and ground.
5.
   - 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.

12.

- **If between 4.75â€“5.25V**

13. Replace the S40 Passenger Air Bag Disable Switch.

Component Testing

1. Disconnect the harness connector at the S40 Passenger Air Bag Disable Switch.
2. With the switch open, test for 380â€“420â€‰â„¦ between the signal terminalâ€‰1 and the ground terminalâ€‰3.
3.
   - **If not between 380â€“420â€‰â„¦**
4.
   - Replace the S40 Passenger Air Bag Disable Switch.
5.
   - **If between 380â€“420â€‰â„¦**
6. With the switch closed, test for 95â€“105â€‰â„¦, between the signal terminalâ€‰1 and the ground terminalâ€‰3.
7.
   - **If not between 95â€“105â€‰â„¦**
8.
   - Replace the S40 Passenger Air Bag Disable Switch.

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9.
    - **If between 95â€“105â€‰â„¦**
10. All OK.

Repair Instructions

Perform the Diagnostic Repair Verification after completing the diagnostic procedure.

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

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1. SAFETY AND SECURITY
2. SUPPLEMENTAL RESTRAINTS
3. DIAGNOSTIC INFORMATION AND PROCEDURES
4.

DTC B1001 (Passenger Presence System)

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

DTCâ€‰B1001â€‰00

Option Configuration Error

Circuit/System Description

The Inflatable Restraint Sensing and Diagnostic Module (SDM) stores a 4-digit primary key for the Passenger Presence Module. The Inflatable Restraint Sensing and Diagnostic Module sends the Passenger Presence Module the primary key. If the Passenger Presence Module determines that it is the wrong primary key, the Passenger Presence Module will set DTCâ€‰B1001 and send the Inflatable Restraint Sensing and Diagnostic Module a vehicle mismatch message. The Inflatable Restraint Sensing and Diagnostic Module then will set DTCâ€‰B0081 and illuminate the SIR warning indicator. The Passenger Presence Module does not use a secondary key.

Conditions for Running the DTC

Ignition voltage is between 9â€“16â€‰volts.

Conditions for Setting the DTC

The 4-digit primary key stored in the Inflatable Restraint Sensing and Diagnostic Module does not match the 4-digit key stored in the Passenger Presence Module.

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 passenger instrument panel air bag deployment is disabled.

Conditions for Clearing the DTC

The 4-digit Primary Key in the Inflatable Restraint Sensing and Diagnostic Module and in the Passenger Presence Module match.

Diagnostic Aids

This DTC is an indication that the passenger presence system module was not set-up correctly, is not the correct part number or that the Passenger Presence Module is defective.

Reference Information

Schematic Reference

SIR Schematics

Connector End View Reference

Master Electrical Component List

Description and Operation

Supplemental Inflatable Restraint System Description and Operation

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Electrical Information Reference

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

Note:

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

- Passenger Presence Module
- Passenger Presence Module wiring harness

1. Verify the correct K85 Passenger Presence Module part number has been installed
2.
    - **If the K85 Passenger Presence Module installed has an incorrect part number**
    - Replace the K85 Passenger Presence Module.
3.
    - **If the K85 Passenger Presence Module installed has a correct part number**
4. Verify that DTCâ€‰B1001 is not set as current in the K85 Passenger Presence Module.
5.
    - **If DTC is set as current, . If Inflatable Restraint Sensing and Diagnostic Module part number is correct**
6.
    1. Verify the Inflatable Restraint Sensing and Diagnostic Module part number is correct.
    2.
        - If the K36 Inflatable Restraint Sensing and Diagnostic Module part number is incorrect, replace the K36 Inflatable Restraint Sensing and Diagnostic Module
    3.
        - If the K36 Inflatable Restraint Sensing and Diagnostic Module part number is correct
    4. Replace the K85 Passenger Presence Module
7.
    - **If the DTC is no set as current**
8. All OK.

Repair Instructions

Perform the Diagnostic Repair Verification after completing the diagnostic procedure.

Control Module References for K85 Passenger Presence Module and K36 Inflatable Restraint Sensing and Diagnostic Module replacement, setup, and programming

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1. SAFETY AND SECURITY
2. SUPPLEMENTAL RESTRAINTS
3. DIAGNOSTIC INFORMATION AND PROCEDURES
4.

DTC B1001 (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 Descriptor

DTCâ€‰B1001â€‰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, DTCâ€‰B1001 will set.

Conditions for Running the DTC

System voltage is between 9â€“16â€‰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 K36 Inflatable Restraint Sensing and Diagnostic Module: Programming and Setup

Reference Information

Schematic Reference

SIR Schematics

Connector End View Reference

Master Electrical Component List

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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 the scan tool K36 Inflatable Restraint Sensing and Diagnostic Module Primary Key Status paramater is Valid.
2.
    - **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 K36 Inflatable Restraint Sensing and Diagnostic Module: Programming and Setup.
3.
    - **If the K36 Inflatable Restraint Sensing and Diagnostic Module Primary Key Status parameter is Valid**
4. All OK.

Repair Instructions

Perform the Diagnostic Repair Verification after completing the repair.

Control Module References for module replacement, programming and setup

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1. SAFETY AND SECURITY
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DTC B1019

Diagnostic Instructions

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

DTC Descriptor

DTCâ€‰B1019â€‰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, DTCâ€‰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 9â€“16â€‰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 100â€‰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.

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Reference Information

Schematic Reference

- Seat Belt Schematics
- SIR Schematics

Connector End View Reference

Master Electrical Component List

Description and Operation

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

Electrical Information Reference

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

Note:

DTCâ€‰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 DTCâ€‰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 DTCâ€‰B1019.

1. Ignition ON.
2. Verify no other K36 Inflatable Restraint Sensing and Diagnostic Module DTCs are set.
3.
    - **If other K36 Inflatable Restraint Sensing and Diagnostic Module DTCs are set**
    - Diagnose those DTCs first. Refer to Diagnostic Trouble Code (DTC) List - Vehicle
4.
    - **If no other K36 Inflatable Restraint Sensing and Diagnostic Module DTCs are set**
5. Verify the enabled impact sensors identified in the scan tool data list match the number of actual impact sensors installed on the vehicle.
6.
    - **If the number of enabled impact sensors do not match**
7.
    1. Verify the correct K36 Inflatable Restraint Sensing and Diagnostic Module calibration file is loaded in the K36 Inflatable Restraint Sensing and Diagnostic Module.
    2.
        - 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.

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3.

- If the calibration file is incorrect

4. Reprogram the K36 Inflatable Restraint Sensing and Diagnostic Module. Refer to K36 Inflatable Restraint Sensing and Diagnostic Module: Programming and Setup

8.

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

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

10.

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

11.

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

2.

- 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.

3.

- If the calibration file is incorrect

4. Program the K36 Inflatable Restraint Sensing and Diagnostic Module. Refer to K36 Inflatable Restraint Sensing and Diagnostic Module: Programming and Setup

12.

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

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

14.

- **If a passenger presence system is not equipped on the vehicle**
- Replace the K36 Inflatable Restraint Sensing and Diagnostic Module.

15.

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

16. Verify the scan tool Passenger Presence System Enable Status parameter is Enabled.

17.

- **If the Passenger Presence System Enable Status parameter is not Enabled**
- Refer to K36 Inflatable Restraint Sensing and Diagnostic Module: Programming and Setup

18.

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

19. Verify the scan tool Passenger Presence System Learn Status parameter is Learned.

20.

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

21.

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

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2.

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

3.

- If the scan tool communicates

4. Ignition OFF, disconnect the scan tool. It may take up to 2 min for all vehicle systems to power down. Ignition ON.
5. Verify DTC B1019 is not set as current.
6.

- If the DTC is set as current, refer to K36 Inflatable Restraint Sensing and Diagnostic Module: Programming and Setup

7.

- If the DTC is not set as current

8. All OK.

22.

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

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

Repair Instructions

Perform the Diagnostic Repair Verification after completing the repair.

Control Module References for module replacement, programming and setup

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Passenger Presence System Rezeroing

Introduction

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

Note**:**

The following procedures must be followed:

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

Passenger Presence System (PPS) Rezeroing Procedure

Note**:**

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

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

   DTCâ€‰B0081â€‰4B may be set prior to rezeroing the system if the system was replaced with a service kit. All other SIR and PPS DTCs must be cleared before rezeroing the PPS. The presence of current or history DTCs will prevent the PPS from rezeroing and may set additional DTCs.
6. Use the scan tool in order to clear the SIR and PPS DTCs.
7. With a scan tool, request the Passenger Presence Sensor Learn procedure.
8. Initiate the Passenger Presence Sensor Learn procedure. The PPS will illuminate both PASSENGER AIR BAG ON and OFF indicators until this procedure has been completed.
9. When the Passenger Presence Sensor Learn procedure has been successfully completed, the PPS will display the current system status.
10. If the Passenger Presence Sensor Learn procedure was unsuccessful, repeat this procedure. Due to the communication status between the SDM and the PPS module, this procedure may have to be repeated until a successful rezero attempt has been achieved.
11. After the PPS has been successfully rezeroed, perform the Diagnostic Repair Verification.

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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:
2.
    - There are no DTCs set.
    - The inflatable restraint sensing and diagnostic module (SDM) can communicate via the serial data link.
3. 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.
- 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.

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Airbag Indicator Malfunction (Driver)

Diagnostic Instructions

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

Circuit/System Description

When the ignition is turned ON, 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 ignitionâ€‰1 voltage is outside of the normal operating voltage range of 9â€“16â€‰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 DTCâ€‰B1370 may set if the ignitionâ€‰1 circuit is outside the 9â€“16â€‰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 K36 Inflatable Restraint Sensing and Diagnostic Module: Programming and Setup.

Reference Information

Schematic Reference

SIR Schematics

Connector End View Reference

Master Electrical Component List

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 K36 Inflatable Restraint Sensing and Diagnostic Module: Programming and Setup.

Circuit/System Testing

1. Verify K36â€‰Inflatable Restraint Sensing and Diagnostic Module DTCs are not set.

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2.
    - **If Inflatable Restraint Sensing and Diagnostic Module DTCs are set**
    - Refer to Diagnostic Trouble Code (DTC) List - Vehicle.
3.
    - **If Inflatable Restraint Sensing and Diagnostic Module DTCs are not set**
4. Verify the air bag indicator turns ON and OFF when commanding the Instrument Cluster All Indicators ON and OFF with a scan tool.
5.
    - **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.
6.
    - **If air bag indicator does turn on or off**
7. Replace the K36â€‰Inflatable Restraint Sensing and Diagnostic Module.

Repair Instructions

Perform the Diagnostic Repair Verification after completing the repair.

Control Module References for module replacement, programming and setup

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Airbag Indicator Malfunction (Passenger)

Diagnostic Instructions

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

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Passenger Air Bag Disable Switch Signal	B0098â€‰02	B0098â€‰04	B0098â€‰01	â€”
Seat Belt Reminder Sensor Signal	B0082â€‰02	B0082â€‰04	B0082â€‰01	â€”
Passenger Air Bag OFF Indicator Control â€” Info Display Module	2	2*	4	â€”
Passenger Air Bag ON Indicator Control â€” Info Display Module	3	3*	5	â€”
Info Display Module Ground	â€”	1, 2*, 3*	â€”	â€”
Passenger Air Bag Disable Switch Ground	â€”	B0098â€‰04	B0098â€‰04	â€”
Seat Belt Reminder Sensor Ground	â€”	B0082â€‰04	B0082â€‰04	â€”
1. Both Indicators Always Off 2. The Off Indicator Always Off 3. The On Indicator Always Off 4. The Off Indictor Always On 5. The On Indicator Always On * High resistance may cause the appropriate indicator to illuminate less bright than normal				

Circuit/System Description

The passenger air bag ON/OFF indicators are used to notify the driver when the passenger instrument panel air bag is enabled or disabled, either by a empty or occupied passenger seat or when the driver enables or turns thepassenger instrument panel air bag on or off by using the passenger air bag disable switch. When the sensing and diagnostic module (SDM) receives a signal from the seat belt reminder sensor the SDM will then provide voltage to the appropriate indicator.

Reference Information

Schematic Reference

SIR Schematics

Connector End View Reference

Master Electrical Component List

Description and Operation

Supplemental Inflatable Restraint System Description and Operation

Electrical Information Reference

- Circuit Testing
- Connector Repairs

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- Testing for Intermittent Conditions and Poor Connections
- Wiring Repairs

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

Note:

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

1. Ignition ON, with the passenger seat unoccupied, verify the scan tool Passenger Seat Occupancy Status parameter is Empty Seat.
2.
    - If not the specified value, refer to Seat Belt Reminder Sensor Malfunction.
3. With the passenger seat occupied, verify the scan tool Passenger Seat Occupancy Status parameter is Occupied.
4.
    - If not the specified value, refer toSeat Belt Reminder Sensor Malfunction.
5. Observe the scan tool Passenger Air Bag Disabled Switch parameter while commanding the passenger air bag ON and OFF by using the S40 passenger air bag disable switch. The value should change between On and Off.
6.
    - If the value is always On or always Off, refer to Passenger Air Bag Disable Switch Malfunction.
7. Observe the passenger air bag OFF indicator and the passenger air bag ON indicator while commanding the passenger air bag ON and OFF by using the S40 passenger air bag disable switch. Each indicator should turn ON and OFF while changing between the commanded states.
8.
    - If either or both indicators are always ON or always OFF, refer to Passenger Air Bag Indicator Malfunction.

Circuit/System Testing

Seat Belt Reminder Sensor Malfunction

1. Ignition OFF, disconnect the harness connector at the B60 seat belt reminder sensor.
2. Test for less than 30â€‰Î© between the ground circuit terminal 2 and ground.
3.
    - If greater than the specified range, test the ground circuit for an open/high resistance. If the circuit tests normal, replace the K36 SDM
4. Ignition ON, test for 4.75â€“5.25â€‰V between the signal circuit terminal 1 and ground.
5.
    - If less than the specified range, test the signal circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the K36 SDM.
    - If greater than the specified range, test the signal circuit for a short to voltage. If the circuit tests normal, replace the K36 SDM.
6. If all circuits test normal, replace the B60 seat belt reminder sensor.

Passenger Air Bag Disable Switch Malfunction

1. Verify B0098 is not set in the SDM. If DTC B0098 is not set the turn the ignition OFF, disconnect the harness connector at the S40 passenger air bag disable switch.
2. Test for less than 30â€‰Î© between the ground circuit terminal 3 and ground.

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3.
    - If greater than the specified range, test the ground circuit for an open/high resistance. If the circuit tests normal, replace the K36 SDM
4. Ignition ON, test for 4.75â€“5.25â€‰V between the signal circuit terminal 1 and ground.
5.
    - If less than the specified range, test the signal circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the K36 SDM.
    - If greater than the specified range, test the signal circuit for a short to voltage. If the circuit tests normal, replace the K36 SDM.
6. If all circuits test normal, replace the S40 passenger air bag disable switch.

Passenger Air Bag Indicator Malfunction

1. Ignition OFF, disconnect the harness connector at the P17 info display module.
2. Test for less than 30â€‰Î© between the ground circuit terminal 7 and ground.
3.
    - If greater than the specified range, test the ground circuit for an open/high resistance.
4. Connect the harness connector at the P17 info display module and disconnect the X1 harness connector at the K36 SDM.
5. Ignition ON, verify that the air bag indicators are not illuminated.
6.
    - Control terminal 5
    - Control terminal 6
7.
    - If not the specified condition, test the control circuit terminals listed below for a short to B+. If the circuit tests normal, replace the P17 info display module.
8. Connect a 3â€‰A fused jumper wire between the control circuit terminal listed below and B+. Verify the appropriate air bag indicator is illuminated.
9.
    - Control terminal 5
    - Control terminal 6
10.
    - If the air bag indicator is not illuminated, test the control circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the P17 info display module.
11. If all circuits tests normal, replace the K36 SDM

Repair Instructions

Perform the Diagnostic Repair Verification after completing the diagnostic procedure.

- Instrument Panel Airbag Arming Status Display Replacement
- Instrument Panel Airbag Switch Replacement
- Driver or Passenger Seat Cushion Pad Replacement
- Control Module References for SDM replacement, setup, and programming

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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 Repairs and Inspections Required After a Collision.
When performing SIR diagnostics.	Follow the appropriate SIR service manual diagnostic procedure(s) *
When moving, removing or replacing an SIR component or a component attached to an SIR component. (Anytime you remove fasteners.)	Disconnect the negative battery cable(s) *
If the vehicle is suspected of having shorted electrical wires.	Disconnect the negative battery cable(s) *
When performing electrical diagnosis on components other than the SIR system.	Remove the SIR/Airbag fuse(s) when indicated by the diagnostic procedure to disable the SIR system
* DTCâ€™s may be lost when the negative battery cable is disconnected.	

SIR Service Precautions Other Notice: warning-sio

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 2â€‰minutes after disconnecting the vehicle power. Waiting 2â€‰minutes before working on the system after disabling the SIR system prevents deployment of the air bags from the reserved energy supply.

General Service Instructions

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

- Do not expose air bags to temperatures above 85Â°C (185Â°F).
- Verify the correct replacement part number. Do not substitute a component from a different vehicle.
- Use only original GM replacement parts available from your authorized GM dealer. Do not use salvaged parts for repairs to the SIR system.

Discard any of the following components if it has been dropped from a height of 80â€‰cm (31.5â€‰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 â€“ 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.
3. 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.

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4. Locate and remove the fuse(s) supplying power to the Inflatable Restraint Sensing and Diagnostic Module. Refer to SIR Schematics or Master Electrical Component List.
5. Wait 2 minutes before working on the system.

Enabling Procedure â€“ Air Bag Fuse

1. Place the ignition in the OFF position.
2. Install the fuse(s) supplying power to the Inflatable Restraint Sensing and Diagnostic Module. Refer to SIR Schematics or Master Electrical Component List.
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 â€“ Vehicle if the AIR BAG warning indicator does not operate as described. Refer to Diagnostic System Check - Vehicle.

Disabling Procedure â€“ Negative Battery Cable

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

Enabling Procedure â€“ Negative Battery Cable

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

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Repair Instructions

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SIR Service Precautions

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.

General Service Instructions

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 85â€‰Â°C (185â€‰Â°F)
- Verify the correct replacement part number. Do not substitute a component from a different vehicle.
- Use only original GM replacement parts available from your authorized GM dealer. Do not use salvaged parts for repairs to the SIR system

Note:

Discard any of the following components if it has been dropped from a height of 80â€‰cmâ€‰(31.5â€‰in) or greater:

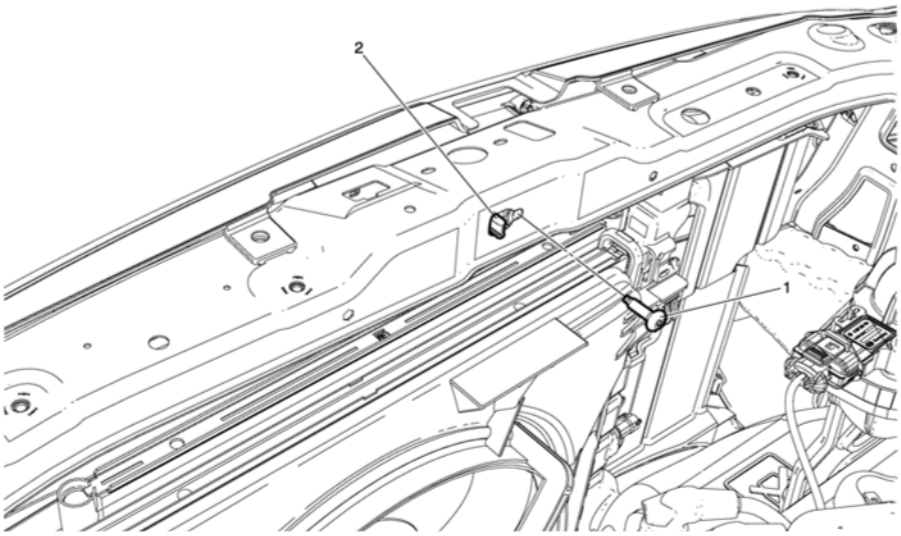
- Inflatable Restraint Sensing and Diagnostic Module
- Passenger Presence System
- Airbag
- Driver steering wheel airbag coil
- Seat belt pretensioner
- Impact sensor

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Airbag Front End Discriminating Sensor Replacement

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Callout	Component Name

Callout	Component Name
Warning: Refer to SIR Warning. Warning: Following the deployment of a side impact air bag, inspect the following parts for damage. Replace these parts if necessary: • The seat cushion frame • The seat recliner, if equipped • The seat adjuster • The seat back frame Failure to do so may cause future personal injury. Preliminary Procedure Disable the SIR system. Refer to SIR Disabling and Enabling.	
1	Inflatable Restraint Front End Sensor Bolt Caution: Refer to Fastener Caution. Tighten 7.5â€‰N-m (66â€‰lbâ€‰in)
2	Inflatable Restraint Front End Sensor Assembly Procedure 1. Disconnect electrical connector. 2. Loosen the bolt and slide the sensor out of the keyhole slot. Note: The bolt is integral to the sensor assembly, DO NOT remove separately. Note: Integral sensor assembly bolt uses Left Hand threads. Use counterclockwise rotation to loosen fastener at TORXÂ® tip end. If accessing at pan head end of the fastener, use clockwise rotation to loosen bolt.

Related Part Information

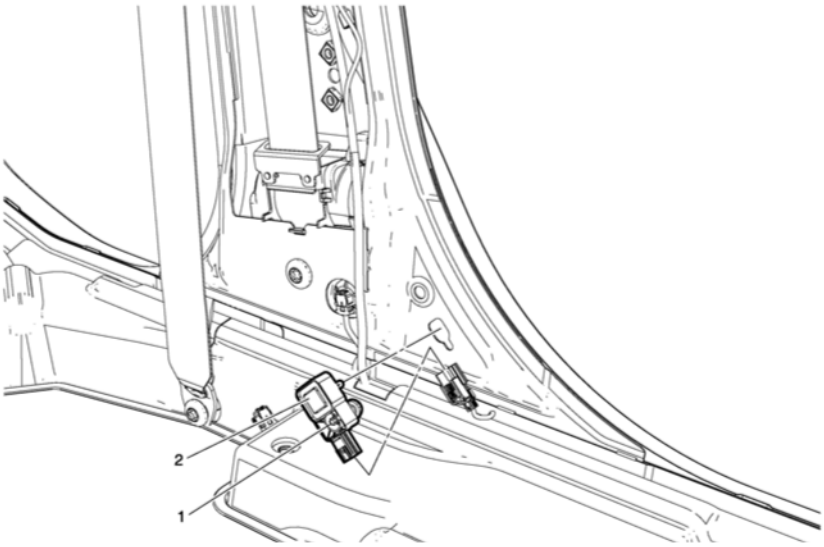
Part Name	Catalog Name	Part Code
Airbag Front End Discriminating Sensor	SENSOR,AIRBAG F/END DISCRM	0115A
Airbag Front End Discriminating Sensor	SENSOR,AIRBAG F/END DISCRM	0115B

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Airbag Side Impact Sensor Replacement

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Callout	Component Name

Callout	Component Name
Warning: Refer to SIR Warning. Warning: Refer to SIR Inflator Module Handling and Storage Warning. Warning: Following the deployment of a side impact air bag, inspect the following parts for damage. Replace these parts if necessary: • The seat cushion frame • The seat recliner, if equipped • The seat adjuster • The seat back frame Failure to do so may cause future personal injury. Preliminary Procedure 1. Disable the SIR system. Refer to SIR Disabling and Enabling 2. Remove center pillar lower garnish molding. Refer to Center Pillar Lower Trim Panel Replacement.	
1	Inflatable Restraint Side Impact Sensor Screw Caution: Refer to Fastener Caution. Tighten 7.5â€‰N-m (66â€‰lbâ€‰in)
2	Inflatable Restraint Side Impact Sensor Assembly Procedure 1. Disconnect electrical connector. 2. Loosen the bolts and slide the sensor out of the keyhole slots. Note: The bolt is integral to the sensor assembly, DO NOT remove separately. Note: Integral sensor assembly bolt uses Left Hand threads. Use counterclockwise rotation to loosen fastener at TORXÂ® tip end. If accessing at pan head end of the fastener, use clockwise rotation to loosen bolt.

Related Part Information

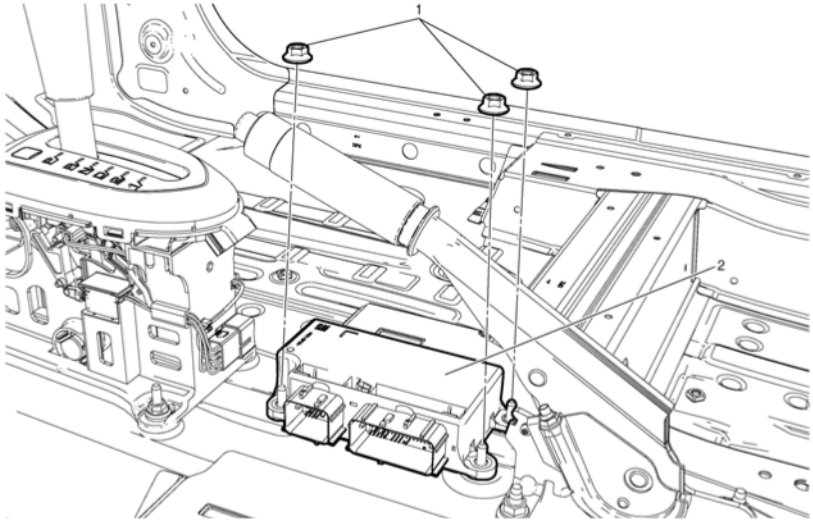
Part Name	Catalog Name	Part Code
Airbag Side Impact Sensor	SENSOR,AIRBAG SI IMP	0480A
Airbag Side Impact Sensor	SENSOR,AIRBAG SI IMP	0480B

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Airbag Sensing and Diagnostic Module Replacement

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Callout	Component Name
	Preliminary Procedures 1. Disable the supplemental inflatable restraint (SIR) system. Refer to SIR Disabling and Enabling. 2. Remove the instrument panel lower trim panel. Refer to Front Floor Console Replacement. 3. Disconnect the electrical connector.
1	Inflatable Restraint Sensing and Diagnostic Module Nut (Qty:â€‰3) Caution: Refer to Fastener Caution. Tighten 10â€‰N-m (89â€‰lbâ€‰in)

Callout	Component Name
2	Inflatable Restraint Sensing and Diagnostic Module Procedure After replacement, refer to Control Module References for programming and setup information.

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Airbag Steering Wheel Module Replacement

Removal Procedure

Warning**:**

When carrying a live inflator module, make sure the bag opening is pointed away from you. This minimizes the chance of injury in the case of an accidental deployment. Never carry the inflator module by the wires. Never carry the inflator module by the connector on the underside of the module.

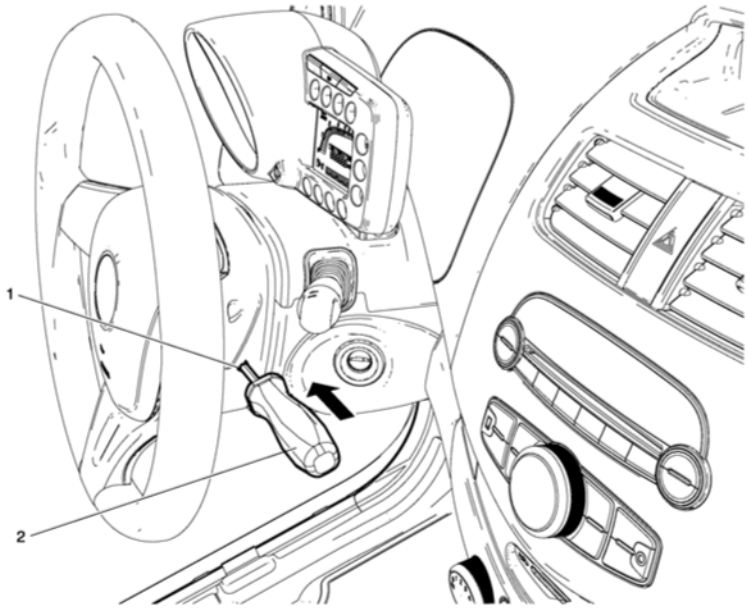
Make sure that the bag and trim cover are facing up whenever you place a live inflator module on any surface. This is necessary to provide a free space for the bag to expand in the unlikely event of accidental deployment.

Never rest the steering column assembly on the steering wheel with the inflator module face down, and the column vertical. This may result in personal injury.

Warning**:**

Refer to SIR Warning.

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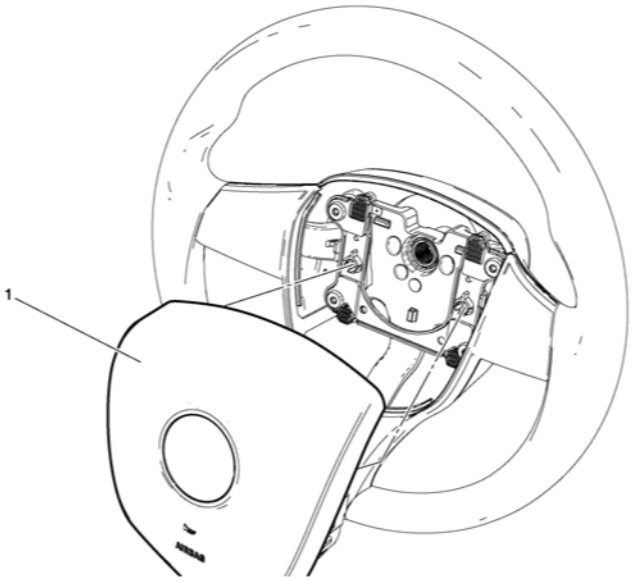
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1. Click here for full size
2. Disable the supplemental inflatable restraint (SIR) system. Refer to SIR Disabling and Enabling.
3. Insert suitable toolsâ€‰(2) to the openingsâ€‰(1) on both sides of the steering wheel.

4. Release the springs in direction of the arrows by pushing the tool horizontally.
5. Disconnect the electrical connectors.

Installation Procedure

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1. Click here for full size
2. Connect the electrical connectors.
3. Align the steering wheel module fasteners to the steering column fastener holes.
4. Push the steering wheel moduleâ€‰(1) firmly into the steering column in order the engage the fasteners.
5. Enable the SIR system. Refer to SIR Disabling and Enabling.
6. After replacing the module, fully deploy the old module before disposal.

Related Part Information

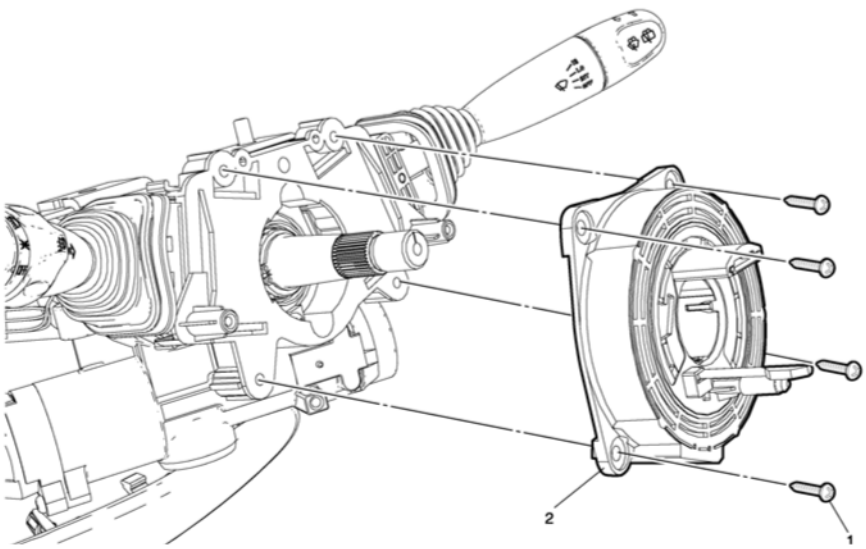
Part Name	Catalog Name	Part Code
Steering Wheel Airbag	AIRBAG,STRG WHL	0060A

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Steering Wheel Airbag Coil Replacement

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Callout	Component Name
	Preliminary Procedures 1. Remove the steering column upper trim cover. Refer to Steering Column Lower Trim Cover Replacement. 2. Remove the steering column lower trim cover. Refer to Steering Column Upper Trim Cover Replacement. 3. Remove the steering wheel. Refer to Steering Wheel Replacement.
1	Steering Wheel Inflatable Restraint Module Coil Screw Bolt (Qty:â€‰4) Caution: Refer to Fastener Caution. Tighten 1.5â€‰N-m (13â€‰lbâ€‰in)

Callout	Component Name
2	Steering Wheel Inflatable Restraint Module Coil Assembly Procedure Disconnect any electrical connectors as needed. Tip • Do not remove the centering tab from a new steering wheel inflatable restraint module coil until it has been installed or re-centering will be required. • If re-centering of the steering wheel inflatable restraint module coil is needed then refer to Steering Wheel Airbag Coil Replacement.

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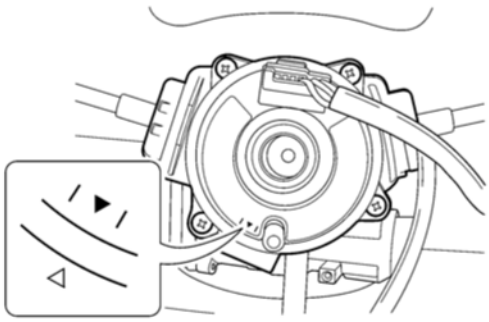
Airbag Steering Wheel Module Coil Centering

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 that the wheels on the vehicle are straight ahead before centering the supplemental inflatable restraint (SIR) steering wheel module coil.
2. Turn the lobe of the clock spring clockwise until the coil ribbon stops. Do not force.
3. Turn the lobe of the clock spring counterclockwise approximately 3â€‰turns to the neutral position.

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5. Properly align until the arrows face each other. This indicates the CENTER position.

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Airbag Instrument Panel Module Replacement

Removal Procedure

1. Warning:

   When carrying a live inflator module, make sure the bag opening is pointed away from you. This minimizes the chance of injury in the case of an accidental deployment. Never carry the inflator module by the wires. Never carry the inflator module by the connector on the underside of the module.

   Make sure that the bag and trim cover are facing up whenever you place a live inflator module on any surface. This is necessary to provide a free space for the bag to expand in the unlikely event of accidental deployment.

   Never rest the steering column assembly on the steering wheel with the inflator module face down, and the column vertical. This may result in personal injury.

2. Warning:

   Refer to SIR Warning.

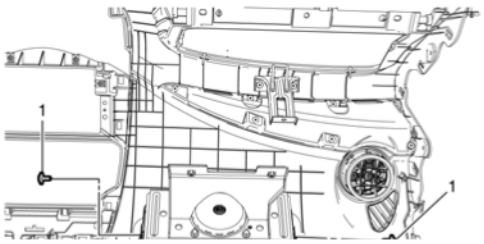
3. Disable the SIR system. Refer to SIR Disabling and Enabling.

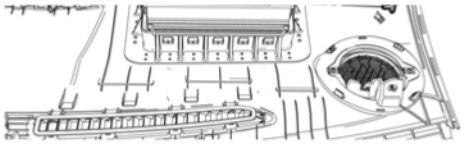
4. Remove the instrument panel assembly. Refer to Instrument Panel Assembly Replacement.

5. Remove the windshield defroster nozzle. Refer to Windshield Defroster Nozzle Replacement.

6. Remove the instrument panel outer air outlet duct. Refer to Instrument Panel Outer Air Outlet Duct Replacement.

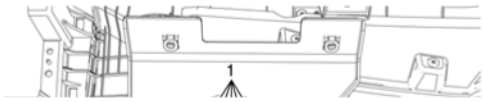
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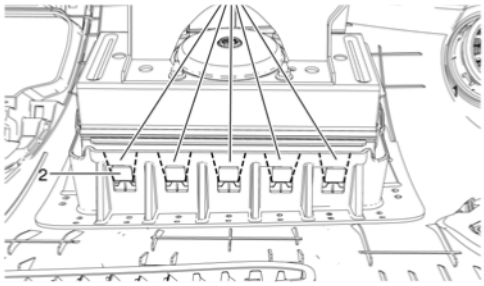


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8. Remove the instrument panel inflatable restraint module boltsâ€‰(1).



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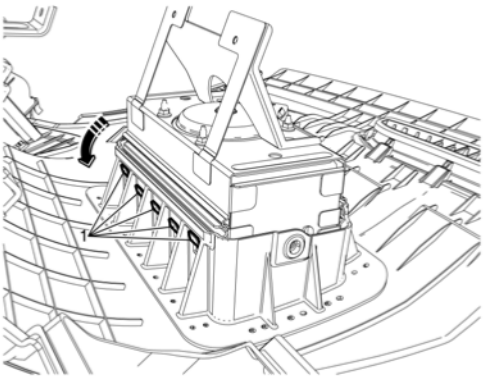
10. If the airbag module should be removed in order to replace the instrument panel with new one follow the stepâ€‰6â€“7. If the airbag module should be removed in order to replace the passenger airbag module with new one follow the stepâ€‰8â€“10. Cut one side of the airbag module chuteâ€‰(1) partly to release the hooksâ€‰(2) of module from the chute.

11. Warning**:**

    Never install the passenger airbag module into the instrument panel assembly that airbag module chute is cut. This may cause incorrect deployment when the passenger airbag is deployed.

12. Remove the passenger airbag module from the instrument panel after releasing the hooks of uncut side from the passenger airbag module chute.

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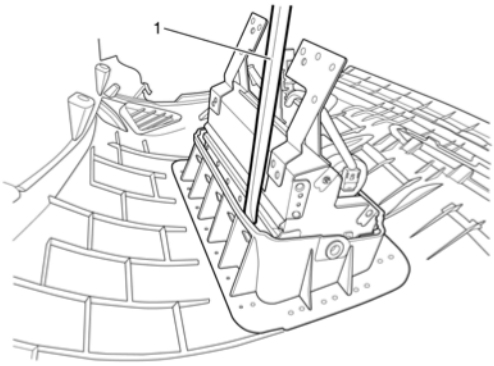


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14. Note:

    Hooks on I/P compartment side can be released more easily from the chute because these hooks are shorter than the opposite hooks.

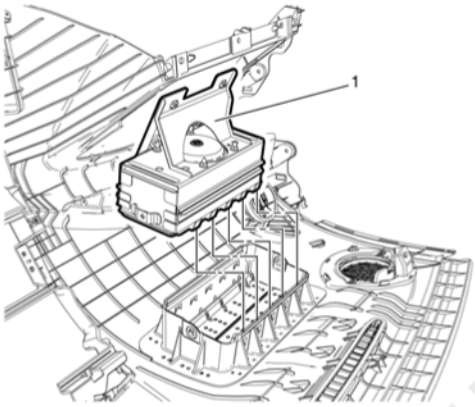
15. Roughly straighten the hooksâ€‰(1) of side that is close to I/P compartment by using the plier.



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17. One by one release straightened hooks from the hole of chute by pushing the chute out of hook using the flat tip screw driverâ€‰(1) or similar tool.

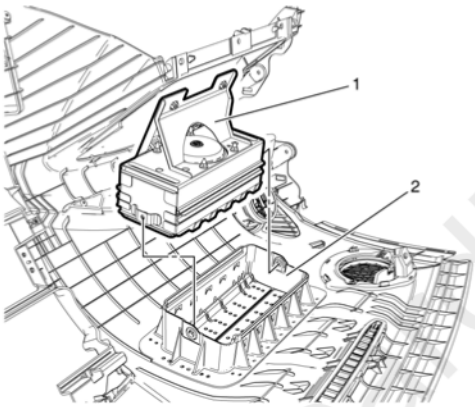


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19. Remove the passenger airbag moduleâ€‰(1) from the instrument panel releasing the hooks of opposite side from the hole of chute.

Installation Procedure



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1. Click here for full size
2. Warning:

   Never install the passenger airbag module into the instrument panel assembly that airbag module chute is cut. This may cause incorrect deployment when the passenger airbag is deployed.

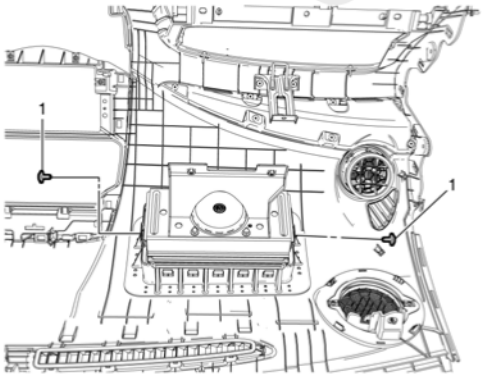
3. Position new or existing passenger airbag moduleâ€‰(1) to the chuteâ€‰(2) on new or existing instrument panel.

4. Caution:

   Make sure that the passenger airbag is installed into the chute completely.

5. Push the passenger airbag moduleâ€‰(1) into the chuteâ€‰(2) until the hooks of airbag module is inserted in the holes of chute completely.

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6.
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7. Caution:

   Refer to Fastener Caution.

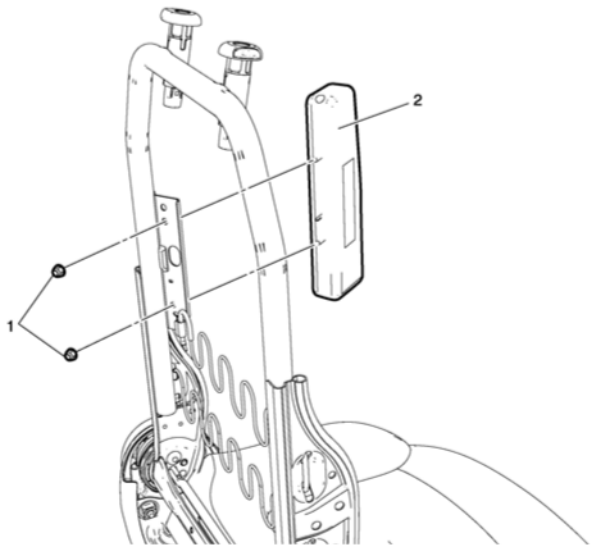
8. Install the passenger airbag module boltsâ€‰(1) and tighten to 10â€‰N-m (89â€‰lbâ€‰in).
9. Install the instrument panel outer air outlet duct. Refer to Instrument Panel Outer Air Outlet Duct Replacement.
10. Install the windshield defroster nozzle. Refer to Windshield Defroster Nozzle Replacement.
11. Install the instrument panel assembly. Refer to Instrument Panel Assembly Replacement.
12. Enable the SIR system. Refer to SIR Disabling and Enabling.
13. After replacing the module, fully deploy the old module before disposal.

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Front Seat Outboard Seat Back Airbag Replacement

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Callout	Component Name

Callout	Component Name
Warning: Refer to SIR Warning. Warning: Following the deployment of a side impact air bag, inspect the following parts for damage. Replace these parts if necessary: • The seat cushion frame • The seat recliner, if equipped • The seat adjuster • The seat back frame Failure to do so may cause future personal injury. Warning: Do not repair or replace the seat stitching or seams in the seat back trim cover with an internal mounted seat side airbag module. Replace the complete seat back trim cover from the OEM. Non-OEM seat stitching may cause improper airbag deployment which could result in personal injury. Preliminary Procedures 1. Disable the SIR system. Refer to SIR Disabling and Enabling. 2. Remove the front seatback cushion cover. Refer to Driver or Passenger Seat Back Cushion Cover Replacement.	
1	Front Seat Side Inflatable Restraint Module Nut (Qty:â€‰2) Caution: Refer to Fastener Caution. Tighten 4â€‰N-m (36â€‰lbâ€‰in)
2	Front Seat Side Inflatable Restraint Module Assembly Tip Disconnect the electrical connector.

Related Part Information

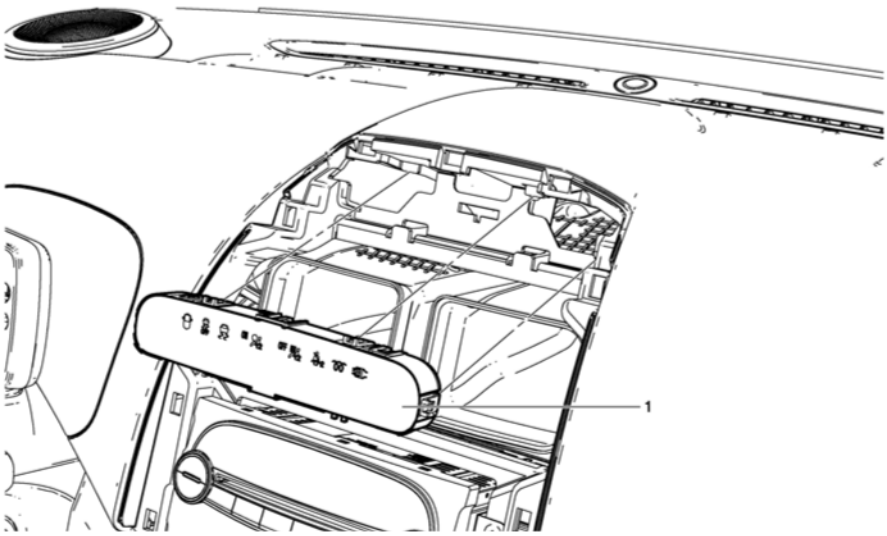
Part Name	Catalog Name	Part Code
Passenger Seat Side Airbag	AIRBAG,P/SEAT SI	0025A
Driver Seat Side Airbag	AIRBAG,D/SEAT SI	0030A
Front Seat Side Airbag	AIRBAG,F/SEAT SI	X0040
Front Seat Side Inflatable Restraint Module	MODULE,F/SEAT SI INFL RST	X0115
Front Seat Outboard Seat Back Airbag	AIRBAG,F/SEAT OUTBOARD ST BK	0600A

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Instrument Panel Airbag Arming Status Display Replacement

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Callout	Component Name
Preliminary Procedure Remove the instrument panel center molding. Refer to Instrument Panel Center Molding Replacement.	
1	Inflatable Restraint Instrument Panel Module Indicator Procedure 1. Remove the indicator from the instrument panel releasing the tab of the indicator. 2. Disconnect the electrical connectors.

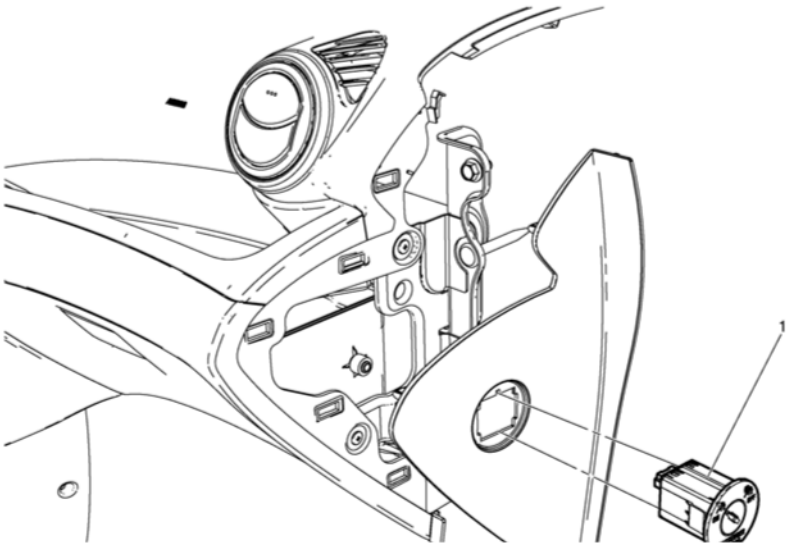
Related Part Information

Part Name	Catalog Name	Part Code
Instrument Panel Airbag Arming Status Display	DISPLAY,I/P AIRBAG ARMING STATUS	X0077

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Instrument Panel Airbag Switch Replacement

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Callout	Component Name
Preliminary Procedure Remove the instrument panel outer trim cover of passenger side. Refer to Instrument Panel Outer Trim Cover Replacement.	
1	Passenger Airbag Disable Switch Danger: Verify the proper installation of the airbag disable switch. Ensure the airbag disable switch is functioning properly by activating and deactivating the switch. If the airbag disable switch is not properly installed, and its function is not verified, the airbag may discharge improperly and cause personal injury or death. Procedure 1. Disconnect the electrical and antenna cable connectors. 2. Remove the passenger airbag disable switch from the outer trim cover.

Related Part Information

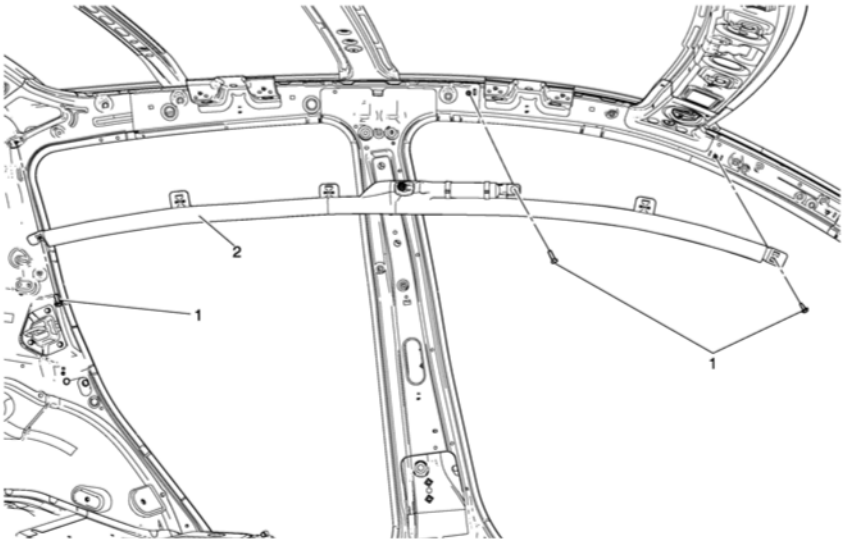
Part Name	Catalog Name	Part Code
Instrument Panel Airbag Switch	SWITCH,I/P AIRBAG	0085U

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Roof Side Rail Airbag Replacement

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Callout	Component Name
Warning: In order to prevent SIR deployment, personal injury, or unnecessary SIR system repairs, do not strike the door or the door pillar in the area of the side impact sensor (SIS). Turn OFF the ignition and remove the key when performing service in the area of the SIS. Warning: When 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. Preliminary Procedures 1. Disable the SIR system. Refer to SIR Disabling and Enabling. 2. Remove the headliner. Refer to Headlining Trim Panel Replacement.	

Callout	Component Name
1	Inflatable Restraint Roof Rail Bolt (Qty:â€‰4) Caution: Refer to Fastener Caution. Tighten 10â€‰N-m (89â€‰lbâ€‰in)
2	Inflatable Restraint Roof Rail Module Assembly Tip Disconnect the electrical connector.

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Repairs and Inspections Required After a Collision

Accident With or Without Air Bag Deployment â€“ 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 columnâ€”Inspect the steering column for bending, twisting, buckling or any type of damage.
- The steering wheel â€“ Inspect for bending, twisting, buckling or any type of visible damage. Replace the steering wheel if the steering wheel airbag has deployed.
- The instrument panel knee bolsters and mounting pointsâ€”Inspect the knee bolsters for bending, twisting, buckling, or any other type of damage.
- The instrument panel brackets, braces, etc.â€”Inspect for bending, twisting, buckling, or any other type of damage.
- The seat beltsâ€”Perform the seat belt operational and functional checks. Refer to Repairs and Inspections Required After a Collision.
- The instrument panel cross car beamâ€”Inspect for bending, twisting, buckling, or any other type of damage.
- The instrument panel mounting points and bracketsâ€”Inspect for bending, twisting, buckling, or any other type of damage.
- The seats and seat mounting pointsâ€”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 â€“ 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)
- 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 pigtailâ€”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 pretensionersâ€”Inspect for any damage and repair or replace each component as needed.

Accident With Side Seat Air Bag Deployment â€“ Component Replacement and Inspections

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

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- 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)
- 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 impactâ€”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 impactâ€”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 pretensionersâ€”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 â€“ 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)

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. If the impact sensor or the mounting structure of the impact sensor is damaged, the impact sensor 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.

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Inflatable Restraint Module Handling and Scrapping (Except Europe)

Note**:**

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

Special Tools

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

For equivalent regional tools, refer to Special Tools.

Live and Undeployed Air Bag

Warning**:**

Refer to SIR Inflator Module Handling and Storage Warning.

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

Dual Stage Air Bags

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

Scrapping Procedure

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

Do not deploy the air bag in the following situations:

- After replacement of an air bag under warrantyâ€”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 â€” do NOT alter the SIR system in any manner.
- If the vehicle is involved in a campaign affecting the air bags â€” follow the instructions in the campaign service bulletin for proper SIR handling procedures.

Deployment Procedures

Note**:**

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

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

Deployment Outside Vehicle â€“ Steering Wheel Air Bag, Instrument Panel Air Bag, and Roof Rail Air Bag

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

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

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- The air bag connector is damaged.
- The air bag connector terminals are damaged.

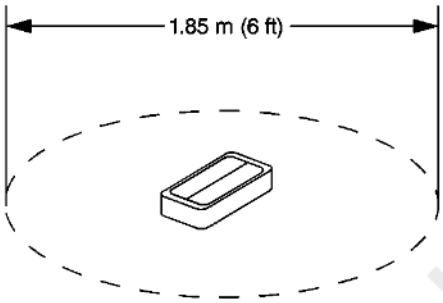
Deployment and disposal of a malfunctioning air bag is subject to any required retention period.

Warning:

Refer to SIR Inflator Module Disposal Warning.

1. Turn OFF the ignition.
2. Warning:

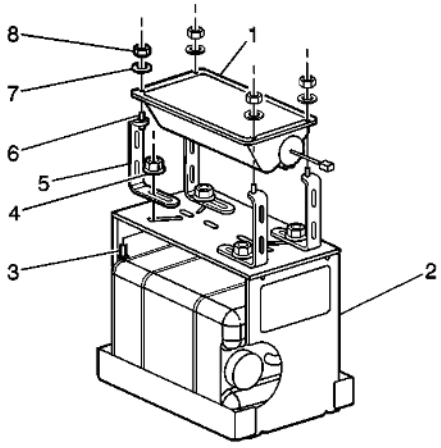
   Refer to SIR Inflator Module Handling and Storage Warning.
3. Remove the air bag.



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4. Click here for full size
5. Clear a space on the ground about 1.85â€‰m (6â€‰ft) in diameter for deployment of the air bag or deployment fixture. If possible, use a paved, outdoor location free of activity. Otherwise, use a space free of activity on the shop floor. Ensure you have sufficient ventilation.
6. Clear the area of loose or flammable objects.
7. Note:

   Dual stage deployments are only used in steering wheel and instrument panel air bags. If stageâ€‰1 was used to deploy a dual stage air bag, stageâ€‰2 may still be active. If disposal of a dual stage air bag is required, both deployment loops must be energized to deploy the air bag.
8. If you are deploying a steering wheel air bag, place the air bag in the center of the space with the vinyl trim cover facing up and away from the surface.



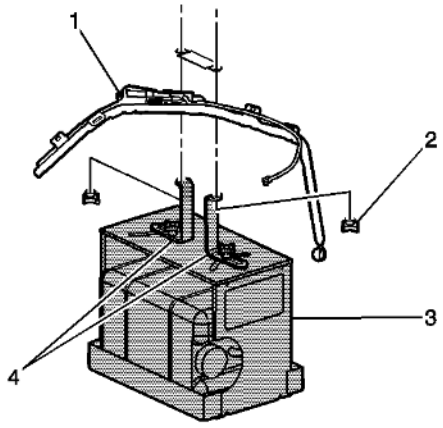
9. [Click here for full size]

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

11.

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

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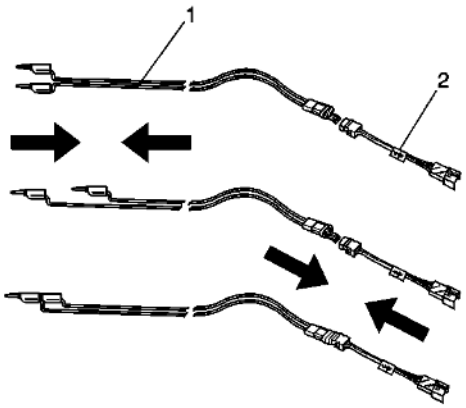
12. [Click here for full size]

13. When deploying a roof rail air bag, perform the following instructions:

14.

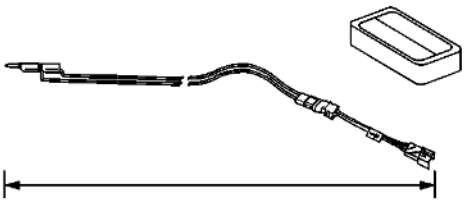
    1. Place the *EL-39401-B* fixture(3) in the center of the cleared area.
    2. Fill the deployment fixture with water or sand to provide sufficient stabilization of fixture during deployment.
    3. Adjust and secure the fixture armsâ€‰(4) to the deployment fixtureâ€‰(3), using the proper nuts and bolts.
    4. Attach the roof rail air bag in the deployment fixture and securely tighten all fasteners.

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15. Click here for full size
16. Inspect the *EL-38826* harness and the appropriate pigtail adapterâ€‰(2) for damage. Replace as needed.
17. Short the 2â€‰SIR deployment harness leadsâ€‰(1) together using one banana plug seated into the other.
18. Connect the appropriate pigtail adapterâ€‰(2) to the SIR deployment harnessâ€‰(1).

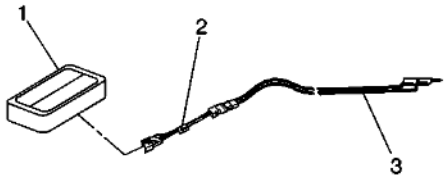
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19.
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20. Extend the SIR deployment harness and adapter to the full length from the deployment fixture or area.

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21. [Click here for full size]
22. Note:

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

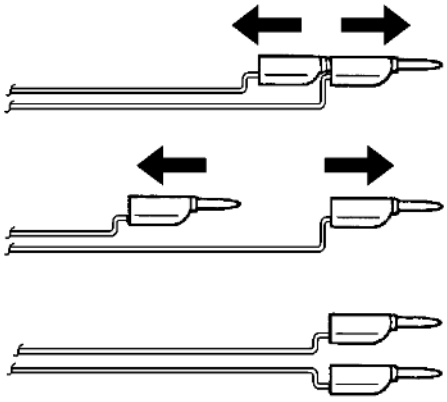
23. Connect the air bagâ€‰(1) to the adapterâ€‰(2) on the SIR deployment harnessâ€‰(3).

24. Note:

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

25. Clear the area of people.

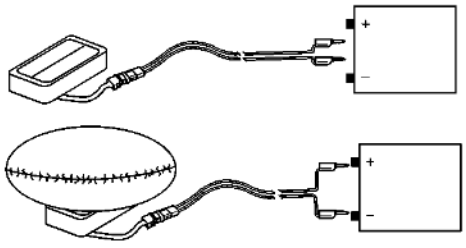
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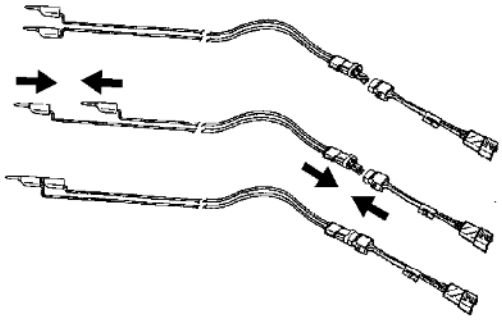
27. Separate the 2â€‰banana plugs on the SIR deployment harness that were shorted together earlier in the procedure.

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28. Click here for full size
29. Place a 12â€‰V minimum/2A minimum power source, such as a vehicle battery, near the shorted end of the harness.
30. Connect the SIR deployment harness wires to the power source. Deployment of the air bag will occur when contact is made.

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31. Click here for full size
32. Disconnect the SIR deployment harness from the power source after the air bag deploys.
33. If the air bag did not deploy, disconnect the adapter and discontinue the procedure and contact the Technical Assistance Group.
34. If deployment was successful, proceed to the following steps.
35. Warning:

    Refer to SIR Deployed Inflator Modules Are Hot Warning.
36. Seat one banana plug into the other in order to short the deployment harness leads.
37. Put on a pair of shop gloves.
38. Disconnect the pigtail adapter from the air bag as soon as possible.
39. Inspect the pigtail adapter and the SIR deployment harness. Replace as needed.
40. Dispose of the deployed air bag through normal refuse channels.
41. Wash your hands with a mild soap.

Deployment Inside Vehicle â€“ 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:

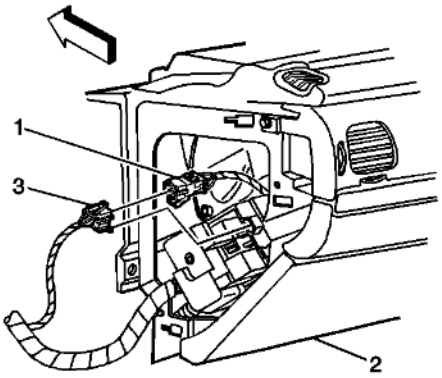
- The vehicle has completed all useful life.
- Irreparable damage occurred to the vehicle in a non-deployment type accident.
- Irreparable damage occurred to the vehicle during a theft.
- The vehicle is being salvaged for parts to be used on a vehicle with a different VIN, as opposed to rebuilding as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

Warning:

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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.

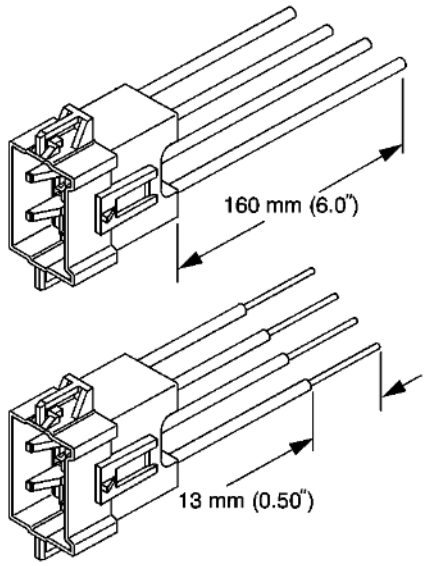


5. Click here for full size
6. Warning:

   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.

7. Disconnect the steering wheel air bag yellow connectorâ€‰(1) from vehicle harness yellow connectorâ€‰(3).

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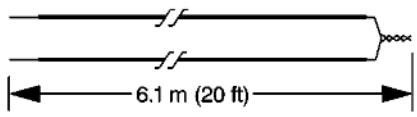


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9. Note:

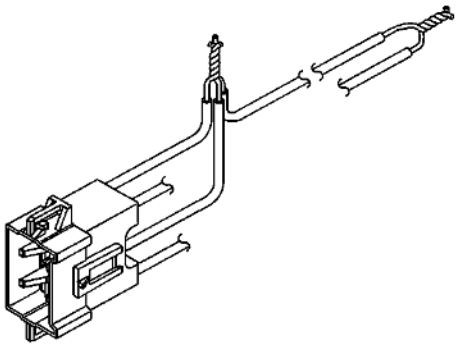
   If the vehicle is equipped with dual stage air bags the steering wheel air bag and instrument panel air bag will each have 4â€‰wires. Refer to Master Electrical Component List for determining high and low circuits.

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



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

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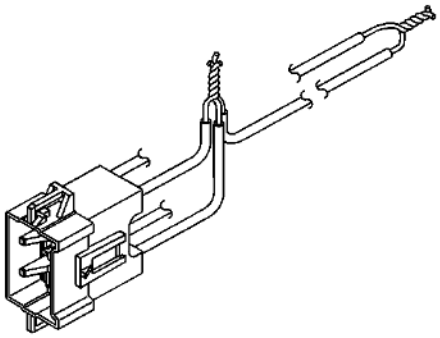
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17. Twist together the 2 connector wire leads from the high circuits from both stages of the steering wheel air bag, to one set of deployment wires. Refer to Master Electrical Component List in order to determine the correct circuits.

18. Inspect that the 3-wire connection is secure.

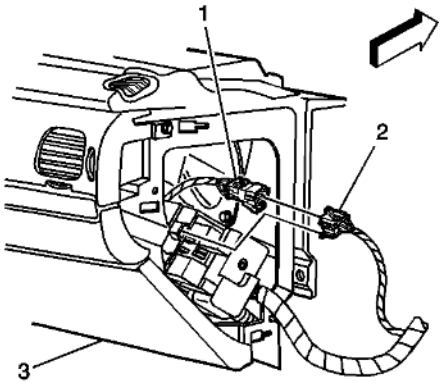
19. Secure and insulate the 3-wire connection to the deployment harness using electrical tape.

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20. Click here for full size
21. 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 Master Electrical Component List in order to determine the correct circuits.
22. Inspect that the 3-wire connection is secure.
23. Secure and insulate the 3-wire connection to the deployment harness using electrical tape.
24. Connect the deployment harness to the connector on the steering wheel air bag.
25. Route the deployment harness out of the driver side of the vehicle.
26. Disconnect the yellow left roof rail harness connector from the vehicle harness connector.
27. Cut the harness connector out of the vehicle, leaving at least 16â€‰cm (6â€‰in) of wire at the connector.
28. Strip 13â€‰mm (0.5â€‰in) of insulation from each of the connector wire leads.
29. Cut two 6.1â€‰m (20â€‰ft) deployment wires from a 0.8â€‰mm (18â€‰gauge) or thicker multi-strand wire. These wires will be used to fabricate the roof rail air bag deployment harness.
30. Strip 13â€‰mm (0.5â€‰in) of insulation from both ends of the wires.
31. Twist together one end from each of the wires in order to short the wires.
32. Twist together one connector wire lead to one deployment wire.
33. Secure and insulate the connection using electrical tape.
34. Twist together and tape the remaining connector wire lead to the remaining deployment wire.
35. Connect the deployment harness to the yellow connector of the roof rail air bag.
36. Route the deployment harness out of the driver side of the vehicle.

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37. [Click here for full size]

38. Disconnect the instrument panel air bag yellow harness connectorâ€‰(1) from the vehicle harness connectorâ€‰(2).

39. Note:

    If the vehicle is equipped with dual stage air bags the steering wheel air bag and instrument panel air bag will each have 4â€‰wires. Refer to Master Electrical Component List for determining high and low circuits.

40. Cut the yellow harness connector out of the vehicle, leaving at least 16â€‰cm (6â€‰in) of wire at the connector.

41. Strip 13â€‰mm (0.5â€‰in) of insulation from each of the connector wire leads.

42. Cut two 6.1â€‰m (20â€‰ft) deployment wires from a 0.8â€‰mm (18â€‰gauge) or thicker multi-strand wire. These wires will be used to fabricate the passenger deployment harness.

43. Strip 13â€‰mm (0.5â€‰in) of insulation from both ends of the wires.

44. Twist together one end from each of the wires in order to short the wires.

45. Twist together the 2â€‰connector wire leads from the high circuits from both stages of the instrument panel air bag to one set of deployment wires. Refer to Master Electrical Component List in order to determine the correct circuits.

46. Inspect that the 3-wire connection is secure.

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

48. Twist together the 2â€‰connector wire leads from the low circuits from both stages of the instrument panel air bag to one set of deployment wires. Refer to Master Electrical Component List in order to determine the correct circuits.

49. Inspect that the 3-wire connection is secure.

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

51. Connect the deployment harness to the instrument panel air bag in-line connector.

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

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53. Disconnect the yellow harness connector to the right roof rail air bag from the vehicle harness connector.
54. Cut the harness connector out of the vehicle, leaving at least 16â€‰cm (6â€‰in) of wire at the connector.
55. Strip 13â€‰mm (0.5â€‰in) of insulation from each of the connector wire leads.
56. Cut two 6.1â€‰m (20â€‰ft) deployment wires from a 0.8â€‰mm (18â€‰gauge) or thicker multi-strand wire. These wires will be used to fabricate the roof rail air bag deployment harness.
57. Strip 13â€‰mm (0.5â€‰in) of insulation from both ends of the wires.
58. Twist together one end from each of the wires in order to short the wires.
59. Twist together one connector wire lead to one deployment wire.
60. Secure and insulate the connection using electrical tape.
61. Twist together and tape the remaining connector wire lead to the remaining deployment wire.
62. Connect the deployment harness to the roof rail air bag yellow connector.
63. Route the deployment harness out of the passenger side of the vehicle.
64. Completely cover the windshield and the front door window openings with a drop cloth.
65. Stretch to the full length all of the deployment harness wires on the right side of the vehicle.
66. Deploy each deployment loop one at a time.
67. Place a power source, 12â€‰V minimum/2A minimum, such as a vehicle battery, near the shorted end of the harnesses.
68. Separate one set of wires and touch the wire ends to the power source in order to deploy the selected air bag.
69. Disconnect the deployment harness from the power source and twist the wire ends together.
70. Continue the same process with the remaining deployment harnesses.
71. Disconnect all harnesses from the vehicle.
72. Discard the harnesses.
73. Scrap the vehicle in the same manner as a non-SIR equipped vehicle.
74. If one or all of the air bags did not deploy, remove the undeployed air bags from the vehicle.

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1. **SAFETY AND SECURITY**
2. SUPPLEMENTAL RESTRAINTS
3. REPAIR INSTRUCTIONS
4.

Inflatable Restraint Module Handling and Scrapping (Europe)

Special Tools

EL-38826 SIR Deployment Harness

For equivalent regional tools, refer to Special Tools.

Live and Undeployed Air Bag

Warning**:**

Refer to SIR Inflator Module Handling and Storage Warning.

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

Dual Stage Air Bags

Dual stage air bags have two deployment stages. If stageâ€‰1 was used to deploy a dual stage air bag, stageâ€‰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 warrantyâ€”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 â€” do NOT alter the SIR system in any manner.
- If the vehicle is involved in a campaign affecting the air bags â€” 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 â€“ 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:

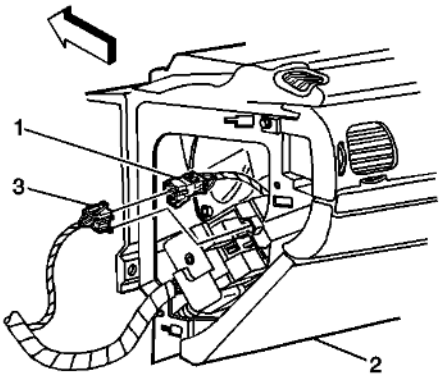
- The vehicle has completed all useful life.
- Irreparable damage occurred to the vehicle in a non-deployment type accident.
- Irreparable damage occurred to the vehicle during a theft.
- The vehicle is being salvaged for parts to be used on a vehicle with a different VIN, as opposed to rebuilding as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

Warning**:**

Refer to SIR Inflatable Module Deployment Outside Vehicle Warning.

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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.

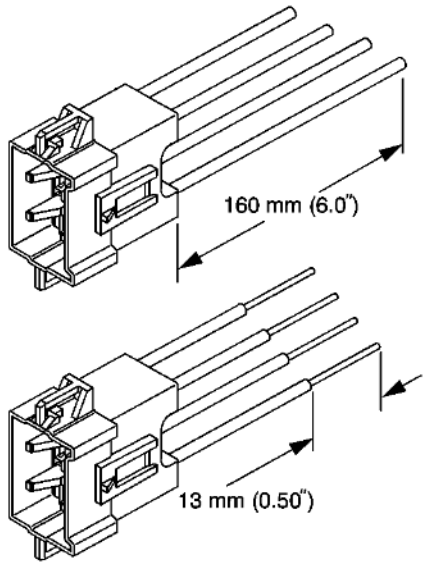


5. Click here for full size
6. Warning:

   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.

7. Disconnect the steering wheel air bag yellow connectorâ€‰(1) from vehicle harness yellow connectorâ€‰(3).

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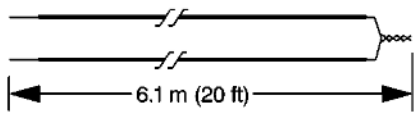


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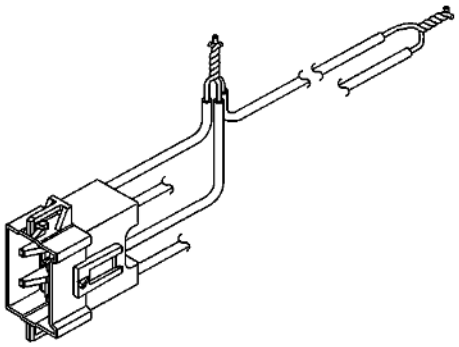
   If the vehicle is equipped with dual stage air bags the steering wheel air bag and instrument panel air bag will each have 4â€‰wires. Refer to Master Electrical Component List for determining high and low circuits.

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



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

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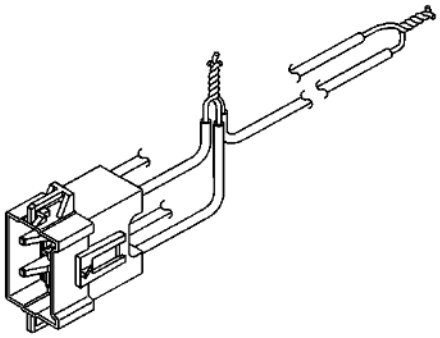
16. Click here for full size

17. 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 Master Electrical Component List in order to determine the correct circuits.

18. Inspect that the 3-wire connection is secure.

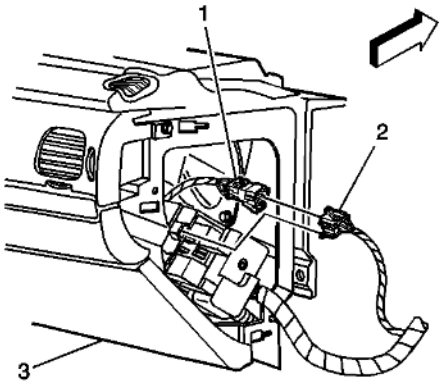
19. Secure and insulate the 3-wire connection to the deployment harness using electrical tape.

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20. Click here for full size
21. 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 Master Electrical Component List in order to determine the correct circuits.
22. Inspect that the 3-wire connection is secure.
23. Secure and insulate the 3-wire connection to the deployment harness using electrical tape.
24. Connect the deployment harness to the connector on the steering wheel air bag.
25. Route the deployment harness out of the driver side of the vehicle.
26. Disconnect the yellow left roof rail harness connector from the vehicle harness connector.
27. Cut the harness connector out of the vehicle, leaving at least 16â€‰cm (6â€‰in) of wire at the connector.
28. Strip 13â€‰mm (0.5â€‰in) of insulation from each of the connector wire leads.
29. Cut two 6.1â€‰m (20â€‰ft) deployment wires from a 0.8â€‰mm (18â€‰gauge) or thicker multi-strand wire. These wires will be used to fabricate the roof rail air bag deployment harness.
30. Strip 13â€‰mm (0.5â€‰in) of insulation from both ends of the wires.
31. Twist together one end from each of the wires in order to short the wires.
32. Twist together one connector wire lead to one deployment wire.
33. Secure and insulate the connection using electrical tape.
34. Twist together and tape the remaining connector wire lead to the remaining deployment wire.
35. Connect the deployment harness to the yellow connector of the roof rail air bag.
36. Route the deployment harness out of the driver side of the vehicle.

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37. Click here for full size

38. Disconnect the instrument panel air bag yellow harness connectorâ€‰(1) from the vehicle harness connectorâ€‰(2).

39. Note:

    If the vehicle is equipped with dual stage air bags the steering wheel air bag and instrument panel air bag will each have 4â€‰wires. Refer to Master Electrical Component List for determining high and low circuits.

40. Cut the yellow harness connector out of the vehicle, leaving at least 16â€‰cm (6â€‰in) of wire at the connector.

41. Strip 13â€‰mm (0.5â€‰in) of insulation from each of the connector wire leads.

42. Cut two 6.1â€‰m (20â€‰ft) deployment wires from a 0.8â€‰mm (18â€‰gauge) or thicker multi-strand wire. These wires will be used to fabricate the passenger deployment harness.

43. Strip 13â€‰mm (0.5â€‰in) of insulation from both ends of the wires.

44. Twist together one end from each of the wires in order to short the wires.

45. Twist together the 2â€‰connector wire leads from the high circuits from both stages of the instrument panel air bag to one set of deployment wires. Refer to Master Electrical Component List in order to determine the correct circuits.

46. Inspect that the 3-wire connection is secure.

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

48. Twist together the 2â€‰connector wire leads from the low circuits from both stages of the instrument panel air bag to one set of deployment wires. Refer to Master Electrical Component List in order to determine the correct circuits.

49. Inspect that the 3-wire connection is secure.

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

51. Connect the deployment harness to the instrument panel air bag in-line connector.

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

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53. Disconnect the yellow harness connector to the right roof rail air bag from the vehicle harness connector.
54. Cut the harness connector out of the vehicle, leaving at least 16â€‰cm (6â€‰in) of wire at the connector.
55. Strip 13â€‰mm (0.5â€‰in) of insulation from each of the connector wire leads.
56. Cut two 6.1â€‰m (20â€‰ft) deployment wires from a 0.8â€‰mm (18â€‰gauge) or thicker multi-strand wire. These wires will be used to fabricate the roof rail air bag deployment harness.
57. Strip 13â€‰mm (0.5â€‰in) of insulation from both ends of the wires.
58. Twist together one end from each of the wires in order to short the wires.
59. Twist together one connector wire lead to one deployment wire.
60. Secure and insulate the connection using electrical tape.
61. Twist together and tape the remaining connector wire lead to the remaining deployment wire.
62. Connect the deployment harness to the roof rail air bag yellow connector.
63. Route the deployment harness out of the passenger side of the vehicle.
64. Completely cover the windshield and the front door window openings with a drop cloth.
65. Stretch to the full length all of the deployment harness wires on the right side of the vehicle.
66. Deploy each deployment loop one at a time.
67. Place a power source, 12â€‰V minimum/2A minimum, such as a vehicle battery, near the shorted end of the harnesses.
68. Separate one set of wires and touch the wire ends to the power source in order to deploy the selected air bag.
69. Disconnect the deployment harness from the power source and twist the wire ends together.
70. Continue the same process with the remaining deployment harnesses.
71. Disconnect all harnesses from the vehicle.
72. Discard the harnesses.
73. Scrap the vehicle in the same manner as a non-SIR equipped vehicle.
74. If one or all of the air bags did not deploy, remove the undeployed air bags from the vehicle.

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1. **SAFETY AND SECURITY**
2. SUPPLEMENTAL RESTRAINTS
3. REPAIR INSTRUCTIONS
4.

Pretensioner Handling and Scrapping (Europe)

Special Tools

EL-38826 SIR Deployment Harness

For equivalent regional tools, refer to Special Tools.

Scrapping Procedure

During the course of a 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 â€" 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.

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1. **SAFETY AND SECURITY**
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Pretensioner Handling and Scrapping (Except Europe)

Note**:**

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

Special Tools

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

For equivalent regional tools, refer to Special Tools.

Scrapping Procedure

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

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

Deployment Procedures

Note**:**

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

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

Deployment Inside the Vehicle

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

Deployment Outside Vehicle for Seat Belt Pretensioners

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

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

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

Warning**:**

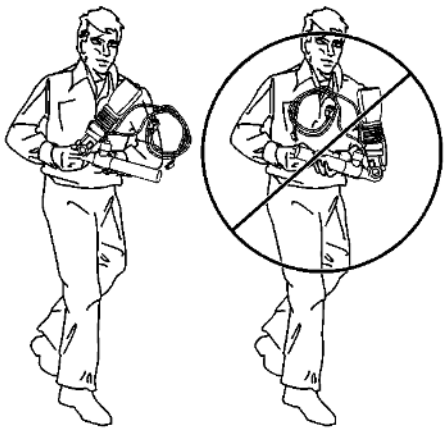
In order to prevent accidental deployment of the pretensioner which could cause personal injury, do not dispose of an undeployed pretensioner as normal shop waste. The undeployed pretensioner contains substances that could cause severe illness or personal injury if the sealed container is damaged during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

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pretensioner as instructed may be a violation of federal, state, or local laws.

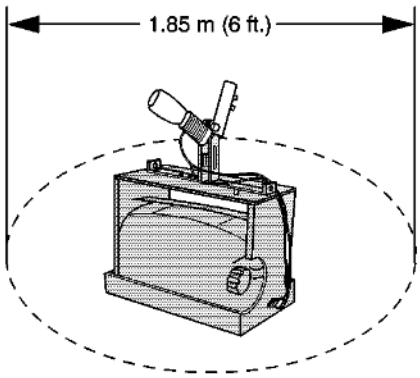
Warning:

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



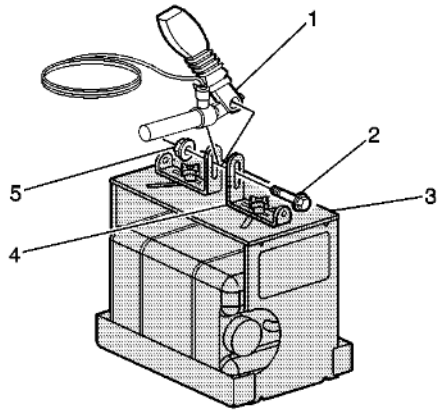
1. Click here for full size
2. Turn the ignition switch to the OFF position.
3. Remove the ignition key.
4. Put on safety glasses.
5. Remove the seat belt pretensioner from the vehicle.
6. When carrying a pretensioner to the deployment area keep the open end of pretensioner pointed away from the body.

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

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12.

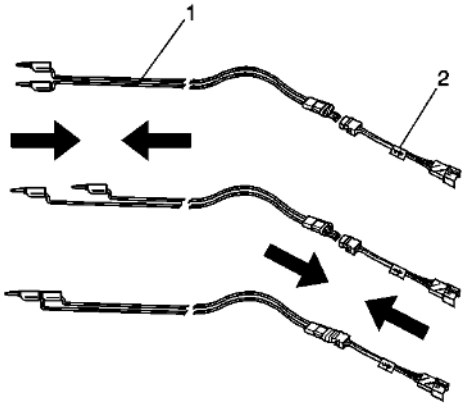
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13. Mount the pretensionerâ€‰(1) in the SIR deployment fixtureâ€‰(3) with the open end facing up using the following mounting method.

14.

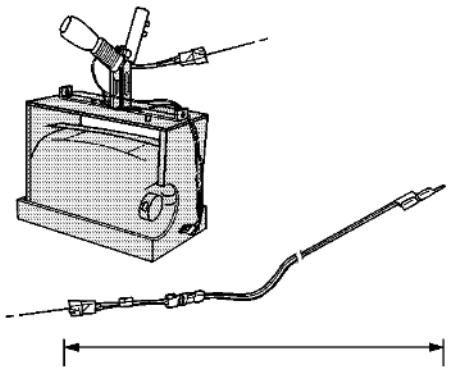
1. Adjust and secure the EL-39401-B armsâ€‰(4) to the deployment fixtureâ€‰(3).
2. To mount, use the proper size boltâ€‰(2) and nutâ€‰(5) with washers in order to secure the pretensionerâ€‰(1) to the deployment fixture bracketsâ€‰(4).
3. Securely tighten all fasteners prior to deployment.

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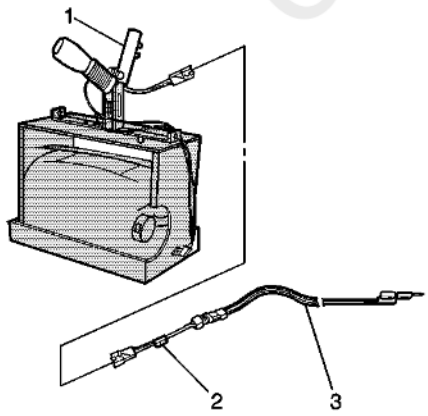
15. Click here for full size
16. Inspect the *EL-38826* SIR deployment harness and the appropriate pigtail adapter for damage. Replace as needed.
17. Short the 2 SIR deployment harnessâ€‰(1) leads together using one banana plug seated into the other.
18. Connect the appropriate pigtail adapterâ€‰(2) to the SIR deployment harnessâ€‰(1).

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19.
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20. Extend the SIR deployment harness and adapter to full length from the deployment fixture.



21.

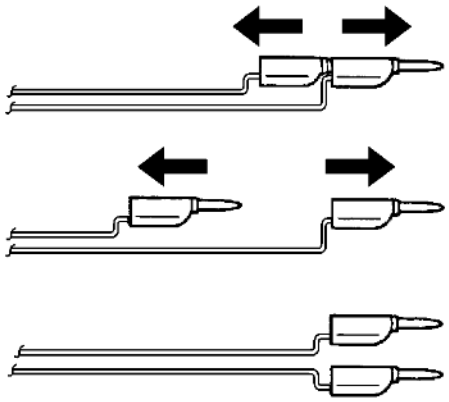
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22. Connect the pretensionerâ€‰(1) to the adapterâ€‰(2) on the deployment harnessâ€‰(3).
23. Note:

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

24. Clear the area of people.

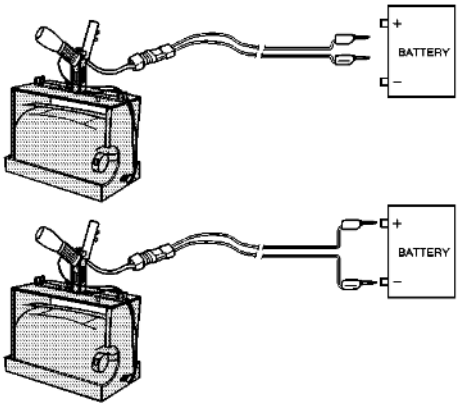


25. Click here for full size
26. Warning:

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

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

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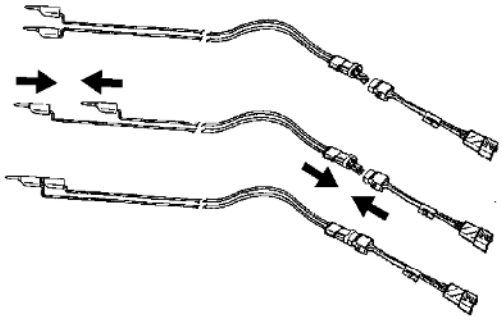


28. [Click here for full size]
29. Note:

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

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

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33. Click here for full size
34. Seat one banana plug into the other in order to short the deployment harness leads.
35. If the pretensioner did not deploy, disconnect the adapter and discontinue the procedure. Contact the Technical Assistance Group. Otherwise, proceed to the following steps.
36. Put on a pair of shop gloves.
37. Disconnect the pigtail adapter from the pretensioner as soon as possible.
38. Inspect the pigtail adapter and the SIR deployment harness. Replace as needed.
39. Dispose of the deployed pretensioner through normal refuse channels.
40. Wash hands with a mild soap.

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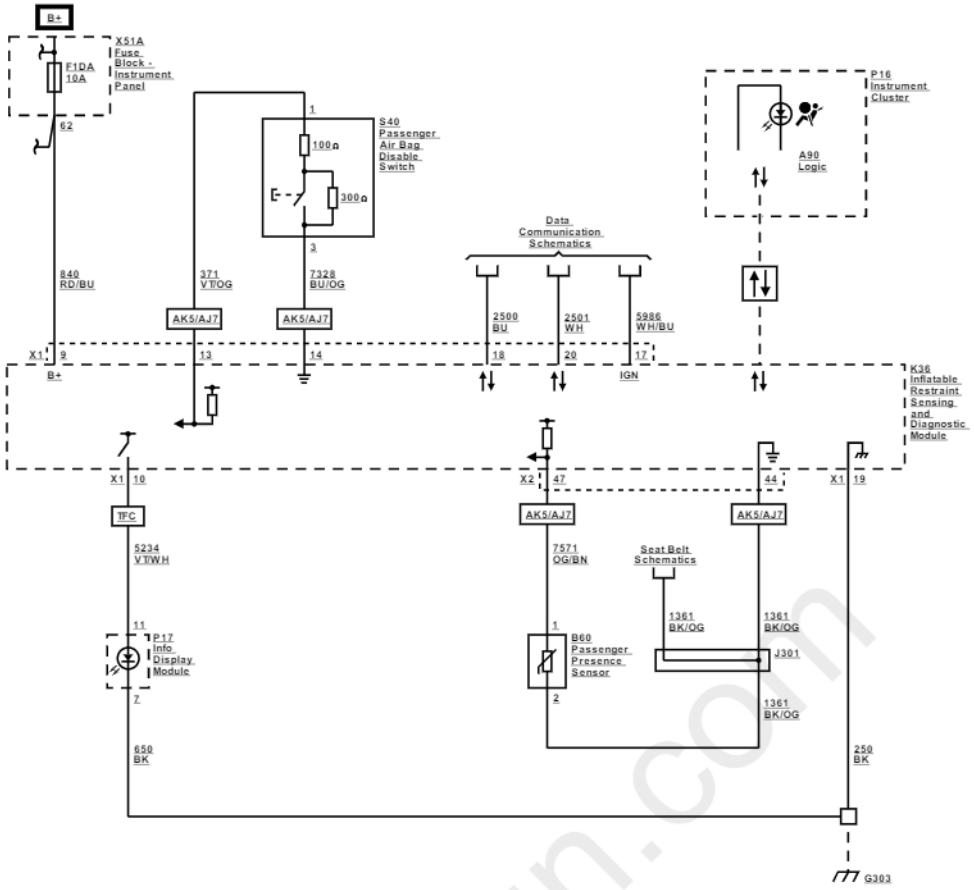
Schematic and Routing Diagrams

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SIR Schematics

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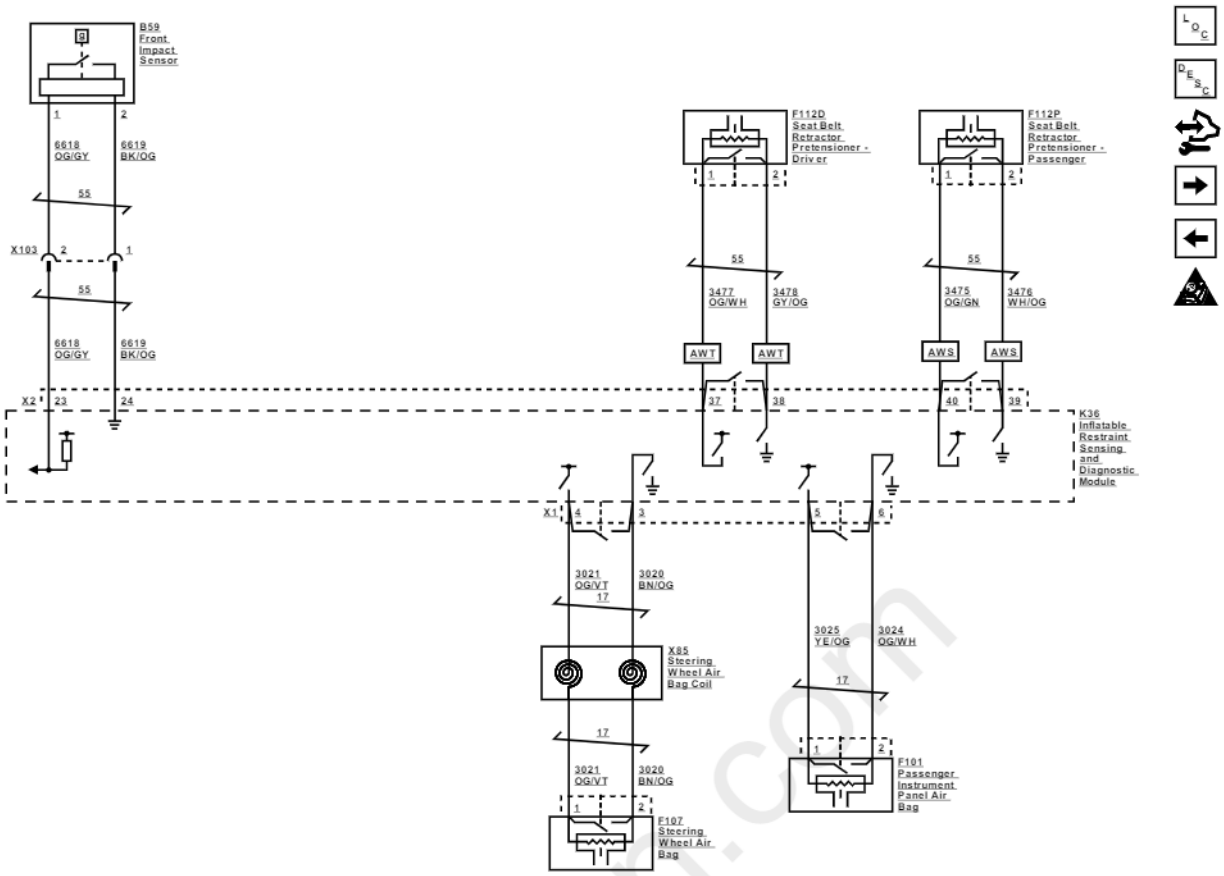
Module Power, Ground, Serial Data, Passenger Presence, and Air Bag Disable



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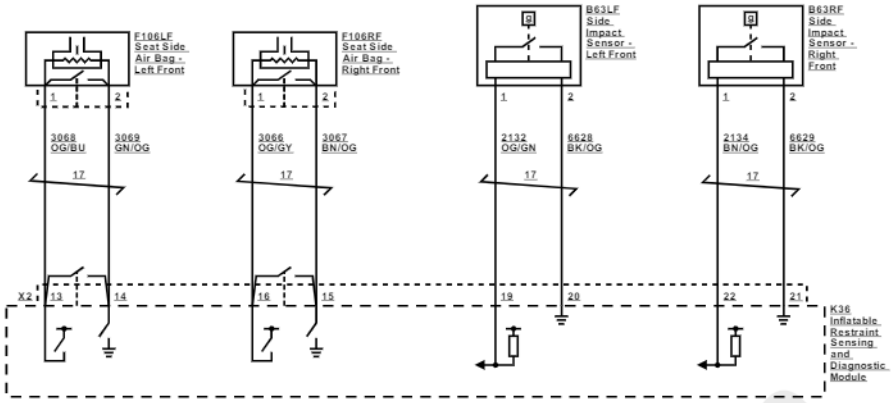
Front Air Bags and Impact Sensor, and Seat Belt Pretensioners



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Side Impact Sensors, Side Air Bags, and Roof Rail Air Bags



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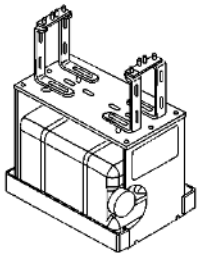
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Special Tools and Equipment

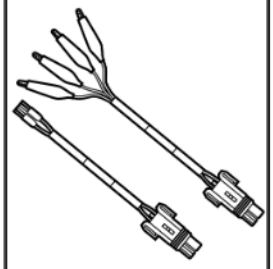
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1. **SAFETY AND SECURITY**
2. SUPPLEMENTAL RESTRAINTS
3. SPECIAL TOOLS AND EQUIPMENT
4.

Special Tools

Illustration	Tool Number/Description
 Click here for full size	ELâ€‰38826 Jâ€‰38826 SIR Deployment Harness
 Click here for full size	ELâ€‰39401-B Jâ€‰39401-B SIR Deployment Fixture

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Illustration	Tool Number/Description
 Click here for full size	ELâ€‰38826â€“200 SIR Deployment Harness Jumper

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