

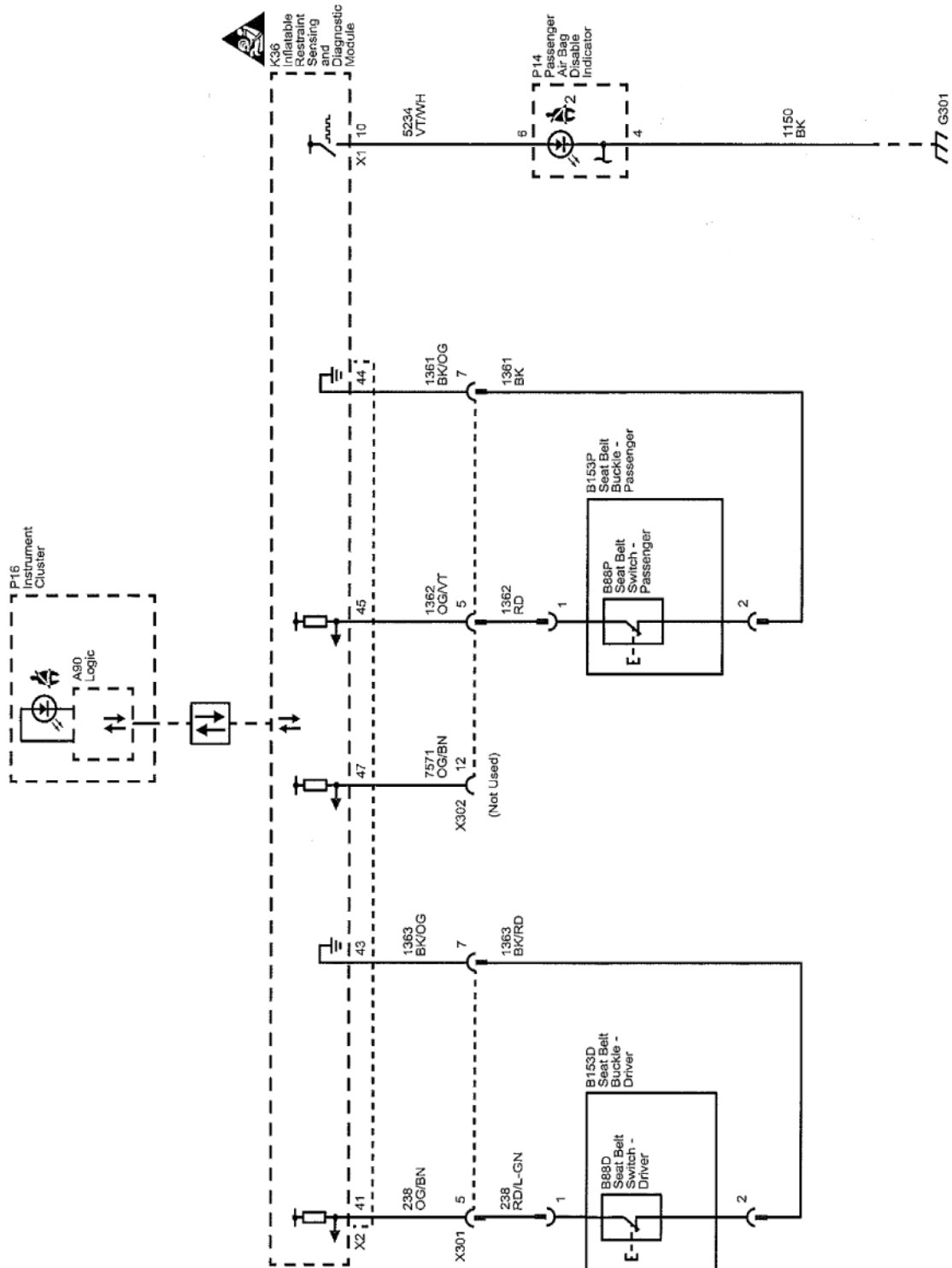
# Seat Belts

## Specifications

### Fastener Tightening Specifications

| Application                                     | Specification |          |
|-------------------------------------------------|---------------|----------|
|                                                 | Metric        | English  |
| Driver or Passenger Seat Belt Buckle Fastener   | 45 N•m        | 33 lb ft |
| Driver or Passenger Seat Shoulder Belt Fastener | 45 N•m        | 33 lb ft |
| Front Seat Shoulder Belt Guide Adjuster Bolt    | 45 N•m        | 33 lb ft |
| Rear Seat Belt Buckle Fastener                  | 45 N•m        | 33 lb ft |
| Rear Seat Center Shoulder Belt Buckle Fastener  | 45 N•m        | 33 lb ft |
| Rear Seat Shoulder Belt Anchor Plate Fastener   | 45 N•m        | 33 lb ft |
| Rear Seat Shoulder Belt Retractor Fastener      | 45 N•m        | 33 lb ft |

## Schematic and Routing Diagrams



## Diagnostic Information and Procedures

### Seat Belt System Operational and Functional Checks

**Note:** If the vehicle has been in a collision, refer to *Repairs and Inspections Required After a Collision* on page 13-57 for additional information.

Perform the following inspection from the driver seat:

1. Turn the ignition switch to the ON position. Verify proper operation of the seat belt reminder lamp with the belt buckled and with the belt unbuckled.
2. Inspect the shoulder belt guide in order to ensure that the following conditions are met:
  - The shoulder belt guide swivels freely.
  - The seat belt webbing is seated flat in the guide slot.
  - The seat belt webbing does not bind.
3. Verify that the seat belt buckle faces inboard and is accessible.
4. Verify that the seat belt retractor units are securely attached.
5. Verify that the seat belt anchor bolts are secure.
6. Fully extend the seat belt webbing. Verify that the seat belt webbing does not have any twists or tears.
7. Allow the seat belt webbing to retract. Verify that the seat belt webbing returns freely and completely back into the retractor. If the seat belt webbing will not retract, refer to *Seat Belt Does Not Retract* on page 13-53.
8. Snap the seat belt latch plate into the buckle.
9. Sharply tug on the seat belt latch plate and the buckle. Verify that the seat belt latch plate and the buckle remain locked when tugged.
10. Push the button on the buckle:
  - Verify that the seat belt latch plate releases easily from the buckle.
  - Verify that the button returns to its original position.

Perform the following inspection procedure from the passenger seat.

1. Verify the automatic locking retractor (ALR) feature operates properly by performing the following checks:
  - 1.1. Pull the seat belt all the way out of the retractor until it stops.
  - 1.2. Slowly allow the belt to retract partially, while listening for a ratcheting sound.
  - 1.3. Sharply tug on the belt ensuring that the retractor lock sets and does not allow the belt to be pulled from the retractor.
  - 1.4. After performing steps 1.1 through 1.3 ensure the belt fully retracts.
2. Repeat the inspection procedure steps 2 through 10 from the passenger seat.

Perform the following steps in order to inspect the left and right rear seat belts:

1. Inspect the shoulder belt guide in order to ensure that the following conditions are met:
  - The seat belt webbing is seated flat in the guide slot.
  - The seat belt webbing does not bind.
2. Verify that the seat belt buckle is accessible.
3. Verify that the seat belt retractor units are securely attached.
4. Verify that the seat belt anchor bolts are secure.
5. Fully extend the seat belt webbing. Verify that the seat belt webbing does not have any twists or tears.
6. Allow the seat belt webbing to retract. Verify that the seat belt webbing returns freely and completely back into the retractor.
7. Snap the seat belt latch plate into the buckle.
8. Sharply tug on the seat belt latch plate and the buckle. Verify that the seat belt latch plate and the buckle remain locked when tugged.
9. Push the button on the buckle:
  - Verify that the seat belt latch plate releases easily from the buckle.
  - Verify that the button returns to its original position.

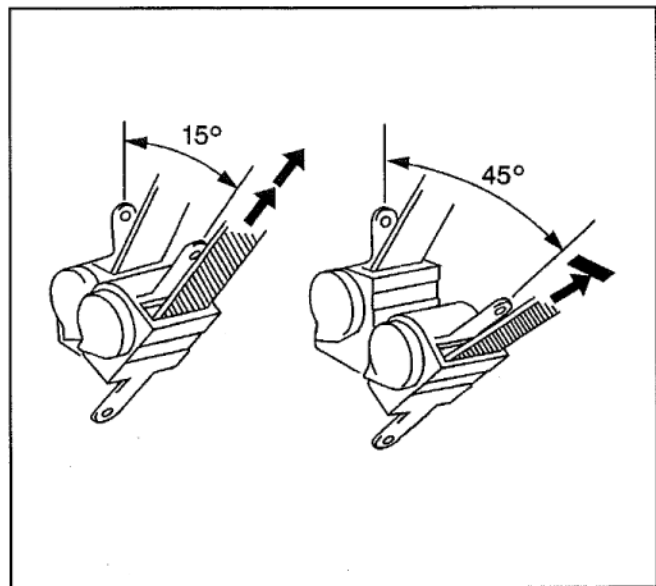
## Emergency Locking Retractors

**Warning:** Perform this test in an area clear of other vehicles or obstructions. Do not conduct this test on the open road. A large, empty parking lot is suitable. Failure to observe this precaution may result in damage to the vehicle and possible personal injury.

1. Fasten the seat belts, an assistant is needed when the retractor under test is not part of the driver seat belt.
2. Accelerate the vehicle slowly to 16 km/h (10 mph) and apply the brakes firmly.
3. Verify that the seat belt locks when braking firmly.

**Note:** When performing this check, note the position that the retractors are mounted. Some retractors are not mounted at a zero degree inclination.

4. If the belt does not lock, proceed with the following steps:
  - 4.1. Remove the seat belt retractor assembly.
  - 4.2. Tilt the seat belt retractor slowly.



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- 4.3. Ensure that the seat belt webbing can be pulled from the retractor at an inclination of 15 degrees forward or less, from the retractors mounted position.
- 4.4. Ensure the retractor cannot be pulled from the retractor at an inclination of 45 degrees forward or more.
- 4.5. If a seat belt retractor does not operate as described, replace the retractor assembly.

## DTC B0072 or B0073

### Diagnostic Instructions

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

### DTC Descriptors

**DTC B0072:** Driver Seat Belt Switch Circuit

**DTC B0073:** Passenger Seat Belt Switch Circuit

For symptom byte information refer to *Symptom Byte List* on page 6-85.

### Diagnostic Fault Information

| Circuit                           | Short to Ground       | High Resistance                    | Open                  | Short to Voltage      | Signal Performance |
|-----------------------------------|-----------------------|------------------------------------|-----------------------|-----------------------|--------------------|
| Driver Seat Belt Switch Signal    | B0072 02,<br>B0072 0B | B0072 04,<br>B0072 06,<br>B0072 0C | B0072 04,<br>B0072 06 | B0072 01,<br>B0072 05 | B0072 08           |
| Passenger Seat Belt Switch Signal | B0073 02,<br>B0073 0B | B0073 04,<br>B0073 06,<br>B0073 0C | B0073 04,<br>B0073 06 | B0073 01,<br>B0073 05 | B0073 08           |

### Circuit/System Description

The inflatable restraint seat belt buckle switch is within the seat belt buckle and provides an input to the inflatable restraint sensing and diagnostic module (SDM). The inflatable restraint sensing and diagnostic module supplies a low reference circuit and a seat belt switch signal circuit to determine a buckled or unbuckled condition. The inflatable restraint sensing and diagnostic module monitors the seat belt switch circuits and if a fault is detected a DTC will be set.

### Conditions for Running the DTC

Ignition voltage is between 9–16 V.

### Conditions for Setting the DTC

#### B0072 01 or B0073 01

The seat belt switch circuit is shorted to voltage.

#### B0072 02 or B0073 02

The seat belt switch circuit is shorted to ground.

#### B0072 04 or B0073 03

The seat belt switch circuit is open.

#### B0072 05 or B0073 05

The seat belt switch circuit is shorted to voltage or open.

#### B0072 06 or B0073 06

The seat belt switch circuit is shorted to ground or open.

#### B0072 08 or B0073 08

The seat belt switch signal is invalid.

#### B0072 0B or B0073 0B

The seat belt switch signal is above threshold.

#### B0072 0C or B0073 0C

The seat belt switch signal is below threshold.

### Action Taken When the DTC Sets

The inflatable restraint sensing and diagnostic module will store a DTC and illuminate the air bag indicator in the instrument cluster.

### Conditions for Clearing the DTC

The condition for setting the DTC no longer exists.

### Reference Information

#### Schematic Reference

*SIR Schematics* on page 13-69

#### Connector End View Reference

*Component Connector End Views* on page 11-269

#### Description and Operation

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

#### Electrical Information Reference

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

## Scan Tool Reference

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

## Circuit/System Verification

1. Ignition ON.
2. Verify the appropriate scan tool Seat Belt Status parameter changes between Buckled and Unbuckled when the seat belt is buckled and unbuckled.

⇒ **If the parameter does not change**

Refer to Circuit/System Testing.

↓ **If the parameter changes**

3. All OK.

## Circuit/System Testing

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

- B153D Seat Belt Buckle-Driver
- B153P Seat Belt Buckle-Passenger
- K36 Inflatable Restraint Sensing and Diagnostic Module

1. Ignition OFF. Scan tool disconnected. Disconnect the harness connector at the appropriate B153 Seat Belt Buckle. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 5  $\Omega$  between the low reference circuit terminal 2 and ground.

⇒ **If 5  $\Omega$  or greater**

- 2.1. Ignition OFF, disconnect the harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
  - 2.2. Test for less than 2  $\Omega$  in the low reference circuit end to end.
- ⇒ If 2  $\Omega$  or greater, repair the open/high resistance in the circuit.
- ⇒ If less than 2  $\Omega$ , replace the K36 Inflatable Restraint Sensing and Diagnostic Module.

↓ **If less than 5  $\Omega$**

3. Ignition ON.
4. Verify the appropriate scan tool Seat Belt Status parameter is Buckled.

⇒ **If not Buckled**

- 4.1. Ignition OFF, disconnect the harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
  - 4.2. Test for infinite resistance between the signal circuit terminal 1 and ground.
- ⇒ If less than infinite resistance, repair the short to ground on the circuit.

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

↓ **If Buckled**

5. Install a 3 A fused jumper wire between the signal circuit terminal 1 and the low reference circuit terminal 2.

6. Verify the appropriate scan tool Seat Belt Status parameter is Unbuckled.

⇒ **If not Unbuckled**

- 6.1. Ignition OFF, disconnect the harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module, ignition ON.
- 6.2. Test for less than 1 V between the signal circuit and ground.

⇒ If 1 V or greater, repair the short to voltage on the circuit.

↓ **If less than 1 V**

- 6.3. Test for less than 2  $\Omega$  in the signal circuit end to end.

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

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

↓ **If Unbuckled**

7. Test or replace the B153 Seat Belt Buckle.

## Component Testing

1. Ignition OFF. Scan tool disconnected. Disconnect the harness connector at the appropriate B153 Seat Belt Buckle. It may take up to 2 min for all vehicle systems to power down.

2. Test for infinite resistance between the signal terminal 1 and the low reference terminal 2.

⇒ **If less than infinite resistance**

Replace the B153 Seat Belt Buckle.

↓ **If infinite resistance**

3. Insert the seat belt into the buckle.
4. Test for less than 5  $\Omega$  between the signal terminal 1 and the low reference terminal 2.

⇒ **If 5  $\Omega$  or greater**

Replace the B153 Seat Belt Buckle.

↓ **If less than 5  $\Omega$**

5. All OK.

## Repair Instructions

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

- *Front Seat Belt Buckle Replacement* on page 13-59
- *SIR/SRS Wiring Repairs* on page 11-548
- *Control Module References* on page 6-3 for inflatable restraint sensing and diagnostic module replacement, programming, and setup.

## Symptoms - Seat Belts

**Note:** Review the seat belt system description and operation in order to familiarize yourself with the system and how it functions. Refer to *Seat Belt System Description and Operation* on page 13-66.

### Visual/Physical Inspection

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

### Intermittent

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

## Symptom List

Refer to the following symptom diagnostic procedure in order to diagnose the symptom:

- Seat Belt Indicator Malfunction - Driver* on page 13-53
- Seat Belt Indicator Malfunction - Passenger* on page 13-55

## Seat Belt Does Not Retract

- Grab the seat belt webbing and slowly and firmly extract 15–25 mm (5/8–1 in) of webbing from the seat belt.
- Release the seat belt and allow the webbing to slowly retract back into the retractor.
- Check to see if the seat belt is released. If the seat belt is not released, repeat steps 1 and 2, two times more.
- If the retractor does not release after repeating the steps, replace with a new retractor.

## Seat Belt Indicator Malfunction - Driver

### Diagnostic Instructions

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

### Diagnostic Fault Information

| Circuit                                                                                                      | Short to Ground | Open/High Resistance | Short to Voltage | Signal Performance |
|--------------------------------------------------------------------------------------------------------------|-----------------|----------------------|------------------|--------------------|
| Driver Seat Belt Switch Signal                                                                               | 1               | 2                    | 2                | —                  |
| Driver Seat Belt Switch Low Reference                                                                        | —               | 2                    | —                | —                  |
| 1. Indicator will remain ON with seat belt buckled.<br>2. Indicator will illuminate only for the bulb check. |                 |                      |                  |                    |

### Circuit/System Description

The driver seat belt switch is a 2-wire switch wired to the Inflatable Restraint Sensing and Diagnostic Module (SDM) using a signal circuit and a low reference circuit. When the seat belt is unbuckled the switch is closed, and when the seat belt is buckled the switch is open. The Inflatable Restraint Sensing and Diagnostic Module sends the status of the driver seat belt via serial data to the instrument cluster. After receiving the message, the instrument cluster controls the illumination of the driver seat belt indicator.

### Reference Information

#### Schematic Reference

*Seat Belt Schematics* on page 13-48

#### Connector End View Reference

*Component Connector End Views* on page 11-269

### Description and Operation

*Seat Belt System Description and Operation* on page 13-66

### Electrical Information Reference

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

### Scan Tool Reference

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

## Circuit/System Verification

1. Verify the driver seat belt indicator turns ON and OFF when commanding the instrument cluster all indicators ON and OFF with a scan tool.
  - ⇒ **If the driver seat belt indicator does not turn ON and OFF as commanded.**  
Replace the P16 Instrument Cluster.
  - ↓ **If the driver seat belt indicator does turn ON and OFF as commanded**
2. Verify the scan tool Driver Seat Belt Switch parameter changes between Buckled and Unbuckled when buckling and unbuckling the driver seat belt.
  - ⇒ **If the parameter does not change**  
Refer to Circuit/System Testing.
  - ↓ **If the parameter changes**
3. All OK.

## Circuit/System Testing

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

- B153D Seat Belt Buckle-Driver
  - Seat belt switch harness connector
  - K36 Inflatable Restraint Sensing and Diagnostic Module
  - Inflatable Restraint Sensing and Diagnostic Module wiring harness connector
1. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the B153D Seat Belt Buckle-Driver. It may take up to 2 minutes for all vehicle systems to power down.
  2. Test for less than 5  $\Omega$  between the low reference circuit terminal 2 and ground.
    - ⇒ **If 5  $\Omega$  or greater**
      - 2.1. Disconnect the X2 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
      - 2.2. Test for less than 2  $\Omega$  in each low reference circuit end to end.
        - ⇒ If 2  $\Omega$  or greater, repair the open/high resistance in the circuit.
        - ⇒ If less than 2  $\Omega$ , replace the K36 Inflatable Restraint Sensing and Diagnostic Module.
    - ↓ **If less than 5  $\Omega$**
  3. Ignition ON.
  4. Verify the scan tool Driver Seat Belt Status parameter is Buckled.
    - ⇒ **If not Buckled**
      - 4.1. Ignition OFF, disconnect the X2 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
      - 4.2. Test for infinite resistance between the seat belt switch signal circuit terminal 1 and ground.
        - ⇒ If less than infinite resistance, repair the short to ground on the circuit.

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

### ↓ If Buckled

5. Install a 3 A fused jumper wire between the signal circuit terminal 1 and the low reference circuit terminal 2.
6. Verify the scan tool Driver Seat Belt Status parameter is Unbuckled.

### ⇒ If Unbuckled

- 6.1. Ignition OFF, disconnect the X2 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module, ignition ON.
- 6.2. Test for less than 1 V between the signal circuit and ground.
  - ⇒ If 1 V or greater, repair the short to voltage on the circuit.
  - ↓ If less than 1 V
- 6.3. Test for less than 2  $\Omega$  in each circuit end to end.
  - ⇒ If 2  $\Omega$  or greater, repair the open/high resistance in the circuit.
  - ⇒ If less than 2  $\Omega$ , replace the K36 Inflatable Restraint Sensing and Diagnostic Module.

### ↓ If Unbuckled

7. Test or replace the B153D Seat Belt Buckle-Driver.

## Component Testing

1. Ignition OFF, disconnect the harness connector at the B153D Seat Belt Buckle-Driver, buckle the driver seat belt.
2. Test for infinite resistance between the signal circuit terminal 1 and the low reference terminal 2.
  - ⇒ **If not infinite resistance**  
Replace the B153D Seat Belt Buckle-Driver.
  - ↓ **If infinite resistance**
3. Unbuckle the driver seat belt.
4. Test for less than 1  $\Omega$  between the signal circuit terminal 1 and the low reference terminal 2.
  - ⇒ **If 1  $\Omega$  or greater**  
Replace the B153D Seat Belt Buckle-Driver.
  - ↓ **If less than 1  $\Omega$**
5. All OK.

## Repair Instructions

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

- *Front Seat Belt Buckle Replacement* on page 13-59
- *Control Module References* on page 6-3 for Inflatable Restraint Sensing and Diagnostic Module or instrument cluster replacement, programming and setup

## Seat Belt Indicator Malfunction - Passenger

### Diagnostic Instructions

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

### Diagnostic Fault Information

| Circuit                                  | Short to Ground | Open/High Resistance | Short to Voltage | Signal Performance |
|------------------------------------------|-----------------|----------------------|------------------|--------------------|
| Passenger Seat Belt Switch Signal        | 1               | 2                    | 2                | —                  |
| Passenger Seat Belt Indicator Control    | 3               | 3                    | 4                | —                  |
| Passenger Seat Belt Switch Low Reference | —               | 2                    | —                | —                  |
| Ground                                   | —               | 3                    | —                | —                  |

1. Indicator will remain ON with seat belt buckled.  
 2. Indicator will illuminate only for the bulb check.  
 3. Indicator will not illuminate.  
 4. Indicator always ON.

### Circuit/System Description

When an individual is sitting in the passenger seat the passenger presence sensor detects the individual. A signal to the Inflatable Restraint Sensing and Diagnostic Module indicates a person is in the passenger seat. The Inflatable Restraint Sensing and Diagnostic Module will turn the passenger seat belt indicator. The passenger seat belt switch is a 2-wire switch wired to the Inflatable Restraint Sensing and Diagnostic Module using a signal circuit and a low reference circuit. When the seat belt is unbuckled the switch is closed, and when the seat belt is buckled the switch is open. The Inflatable Restraint Sensing and Diagnostic Module sends the status of the passenger seat belt via a hard wire to the passenger air bag disable indicator. After receiving the message, the passenger air bag disable indicator controls the illumination of the passenger seat belt indicator.

### Diagnostic Aids

Objects on the passenger seat can cause the passenger seat belt reminder to be commanded on. Depending on the sensing technology used, a conductive object (computers, MP3 players, cell phones, diagnostic scan tool, wires, a hand, etc.) placed on the passenger seat may cause the Passenger Presence Detection Module to command the passenger air bag indicator ON and/or command the passenger seat belt indicator ON. The fasten seat belt chime will also sound.

### Reference Information

#### Schematic Reference

*Seat Belt Schematics* on page 13-48

### Connector End View Reference

*Component Connector End Views* on page 11-269

### Description and Operation

*Seat Belt System Description and Operation* on page 13-66

### Electrical Information Reference

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

### Scan Tool Reference

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

### Circuit/System Verification

1. Ignition ON.
  2. Verify the passenger seat belt indicator turns ON and OFF when commanding the Passenger Seat Belt Reminder Indicator with a scan tool.
- ⇒ **If the passenger seat belt indicator does not turn ON and OFF**  
 Refer to Seat Belt Indicator Malfunction in Circuit/System Testing.
- ↓ **If the passenger seat belt indicator turns ON and OFF**

3. Verify the scan tool Passenger Seat Belt Status parameter changes between Buckled and Unbuckled when buckling and unbuckling the seat belt.
  - ⇒ **If the parameter does not change between Buckled and Unbuckled when buckling and unbuckling the seat belt**  
Refer to Seat Belt Switch Malfunction in Circuit/System Testing.
  - ↓ **If the parameter changes between Buckled and Unbuckled when buckling and unbuckling the seat belt**
4. All OK.

## Circuit/System Testing

### Passenger Seat Belt Switch Malfunction

1. Ignition OFF. Disconnect the harness connector at the B153P Seat Belt Buckle–Passenger.
2. Test for less than 5  $\Omega$  between the low reference circuit terminal 2 and ground.
  - ⇒ **If 5  $\Omega$  or greater**
    - 2.1. Disconnect the X2 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
    - 2.2. Test for less than 2  $\Omega$  in each control circuit end to end.
      - ⇒ If 2  $\Omega$  or greater, repair the open/high resistance in the circuit.
      - ⇒ If less than 2  $\Omega$ , replace the K36 Inflatable Restraint Sensing and Diagnostic Module.
  - ↓ **If less than 5  $\Omega$**
3. Ignition ON.
4. Verify the scan tool Passenger Seat Belt Status parameter listed below is Buckled.
  - ⇒ **If not Buckled**
    - 4.1. Disconnect the X2 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
    - 4.2. Test for infinite resistance between the seat belt switch signal circuit terminal 1 and ground.
      - ⇒ If less than infinite resistance, repair the short to ground on the circuit.
      - ⇒ If less than 2  $\Omega$ , replace the K36 Inflatable Restraint Sensing and Diagnostic Module.
  - ↓ **If Buckled**
5. Install a 3 A fused jumper wire between the signal circuit terminal 1 and the low reference circuit terminal 2.

6. Verify the scan tool Passenger Seat Belt Status parameter is Unbuckled.
  - ⇒ **If not Unbuckled**
    - 6.1. Ignition OFF. Disconnect the X2 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module. Ignition ON.
    - 6.2. Test for less than 1 V between the signal circuit and ground.
      - ⇒ If 1 V or greater, repair the short to voltage on the circuit.
    - 6.3. Test for less than 2  $\Omega$  in each circuit end to end.
      - ⇒ If 2  $\Omega$  or greater, repair the open/high resistance in the circuit.
      - ⇒ If less than 2  $\Omega$ , replace the K36 Inflatable Restraint Sensing and Diagnostic Module.
  - ↓ **If Unbuckled**
7. Test or replace the B153P Seat Belt Buckle–Passenger.

### Passenger Seat Belt Indicator Malfunction

1. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the P14 Passenger Air Bag Disable Indicator.
2. Test for less than 10  $\Omega$  between the ground circuit terminal 4 and ground.
  - ⇒ **If 10  $\Omega$  or greater**
    - 2.1. Ignition OFF.
    - 2.2. Test for less than 2  $\Omega$  in the ground circuit end to end.
      - ⇒ If 2  $\Omega$  or greater, repair the open/high resistance in the circuit.
      - ⇒ If less than 2  $\Omega$ , repair the open/high resistance in the ground connection.
  - ↓ **If less than 10  $\Omega$**
3. Ignition ON. With a scan tool, command the Passenger Seat Belt Reminder Indicator OFF.
4. Test for less than 11 V between the control circuit terminal 6 and ground.
  - ⇒ **If 11 V or greater**
    - 4.1. Ignition OFF. Disconnect the X1 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module. Ignition ON.
    - 4.2. Test for less than 1 V between the control circuit terminal 6 and ground.
      - ⇒ If 1 V or greater, repair the short to voltage on the circuit.
      - ⇒ If less than 1 V, replace the K36 Inflatable Restraint Sensing and Diagnostic Module.
  - ↓ **If less than 11 V**
5. With a scan tool, command the Passenger Seat Belt Reminder Indicator ON.

6. Test for greater than 4 V between the control circuit terminal 6 and ground.

⇒ **If 4 V or less**

- 6.1. Ignition OFF. Disconnect the X 1 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
- 6.2. Test for infinite resistance between the control circuit terminal 6 and ground.
  - ⇒ If less than infinite resistance, repair the short to ground on the circuit.
- 6.3. Test for less than 2  $\Omega$  between the control circuit terminal 6 and ground.
  - ⇒ If 2  $\Omega$  or greater repair the open/high resistance in the circuit.
  - ⇒ If less than 2  $\Omega$  replace the K36 Inflatable Restraint Sensing and Diagnostic Module.

↓ **If greater than 4 V**

7. Replace the P14 Passenger Air Bag Disable Indicator.

## Component Testing

1. Ignition OFF. Disconnect the harness connector at the B153P Seat Belt Buckle–Passenger. Buckle the B153P Seat Belt Buckle–Passenger.
2. Test for infinite resistance between the signal circuit terminal 1 and the low reference terminal 2 at the B153P Seat Belt Buckle–Passenger.

⇒ **If less than infinite resistance**

Replace the B153P Seat Belt Buckle–Passenger.

↓ **If infinite resistance**

3. Unbuckle the B153P Seat Belt Buckle–Passenger.
4. Test for less than 1  $\Omega$  between the signal circuit terminal 1 and the low reference terminal 2 at the B153P Seat Belt Buckle–Passenger.

⇒ **If 1  $\Omega$  or greater**

Replace the B153P Seat Belt Buckle–Passenger.

↓ **If less than 1  $\Omega$**

5. All OK.

## Repair Instructions

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

- *Front Seat Belt Buckle Replacement* on page 13-59
- *Instrument Panel Airbag Arming Status Display Replacement* on page 13-128
- *Control Module References* on page 6-3 for Inflatable Restraint Sensing and Diagnostic Module and Instrument Cluster replacement, programming and setup

## Seat Belt Service Precautions

**Note:** If the vehicle has been in a collision, refer to *Repairs and Inspections Required After a Collision* on page 13-57 for additional information.

- Do not bleach or dye the seat belt webbing. Use only the following items in order to clean the seat belt webbing:
  - A mild soap and water solution
  - A soft brush or cloth
- Keep sharp edges and damaging objects away from the seat belts. Avoid bending or damaging any part of the seat belt buckle or the latch plate. Replace any seat belts which are cut or damaged in any way.
- Use only the correct seat belt anchor bolts/screws and tighten the anchor bolts/screws to the correct torque value. Refer to *Fastener Tightening Specifications* on page 13-47. When installing seat belt anchor bolts, start the bolt by hand to ensure that the bolt is threaded straight.
- Some seat belts and retractors require service as a set, with service replacement parts only. Do not attempt to repair to individual components that require service as a set.
- Verify that the replacement part number is correct for the vehicle at that seating position. Do not substitute a seat belt from a different seating position.

## Repair Instructions

### Repairs and Inspections Required After a Collision

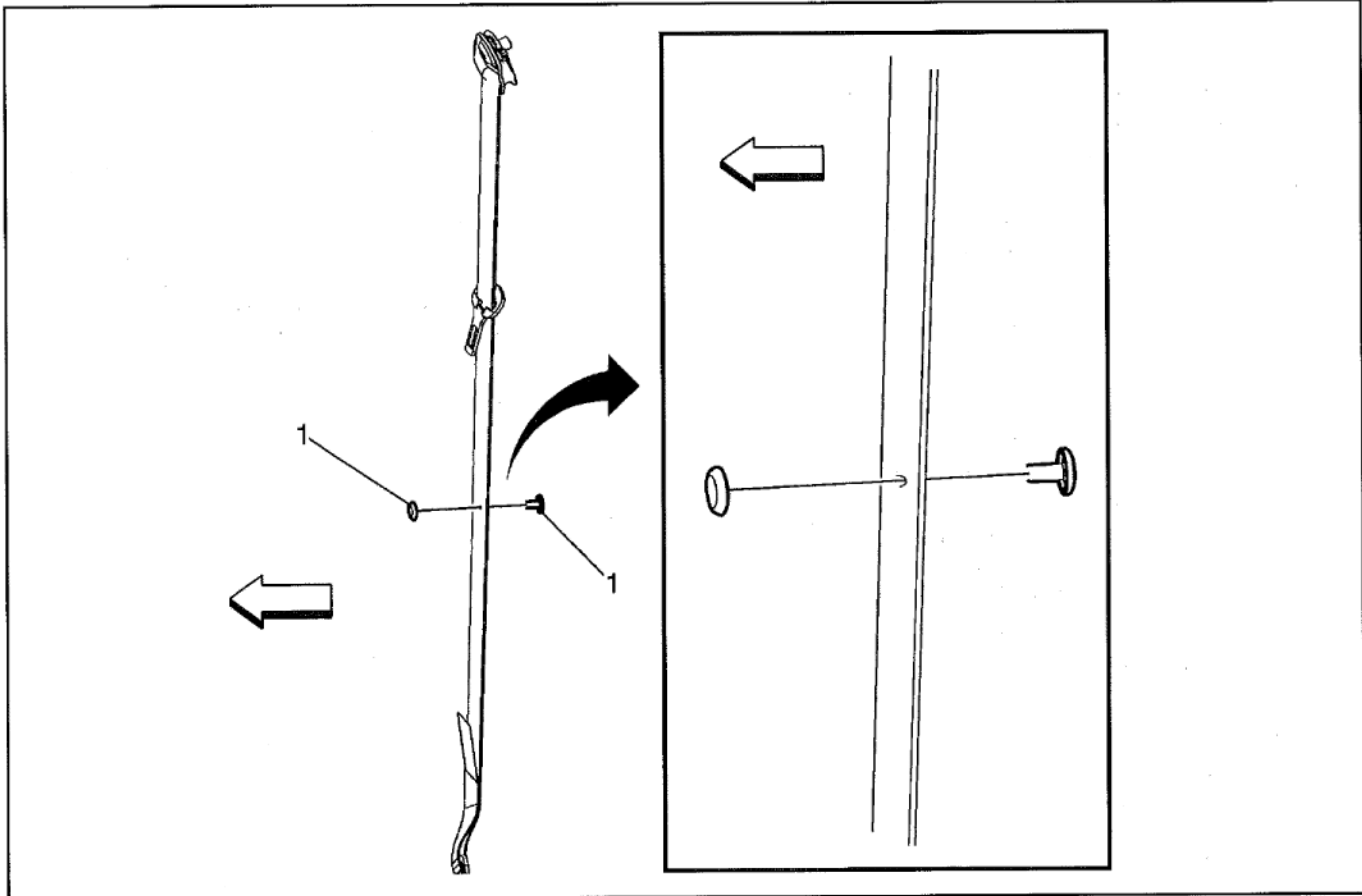
**Warning:** *Restraint systems can be damaged in a collision. To help avoid injury and ensure that all parts in need of replacement are replaced:*

- *Replace any seat belt system that was in use during the collision serious enough to deploy any automatic restraint device such as air bags and seat belt pretensioners. This not only includes seat belt systems in use by people of adult size, but seat belt systems used to secure child restraints, infant carriers and booster seats, including LATCH system and top tether anchorages.*
- *Replace any seat belt system that has torn, worn, or damaged components. This not only includes adult seat belt systems, but built-in child restraints and LATCH system components, if any.*
- *Replace any seat belt system if you observe the words "REPLACE" or "CAUTION", or if a yellow tag is visible. Do not replace a seat belt if only the child seat caution label is visible.*
- *Replace any seat belt system if you are doubtful about its condition. This not only includes adult seat belt systems, but built-in child restraints, LATCH system components, and any restraint system used to secure infant carriers, child restraints, and booster seats.*

**Do NOT replace single seat belt system components in vehicles that have been in a collision as described above. Always replace the entire seat belt system with the buckle, guide and retractor assembly, which includes the latch and webbing material.**

After a minor collision where no automatic restraint device was deployed, seat belt system replacement may not be necessary, unless some of the parts are torn, worn, or damaged.

## Seat Belt Latch Stop Installation

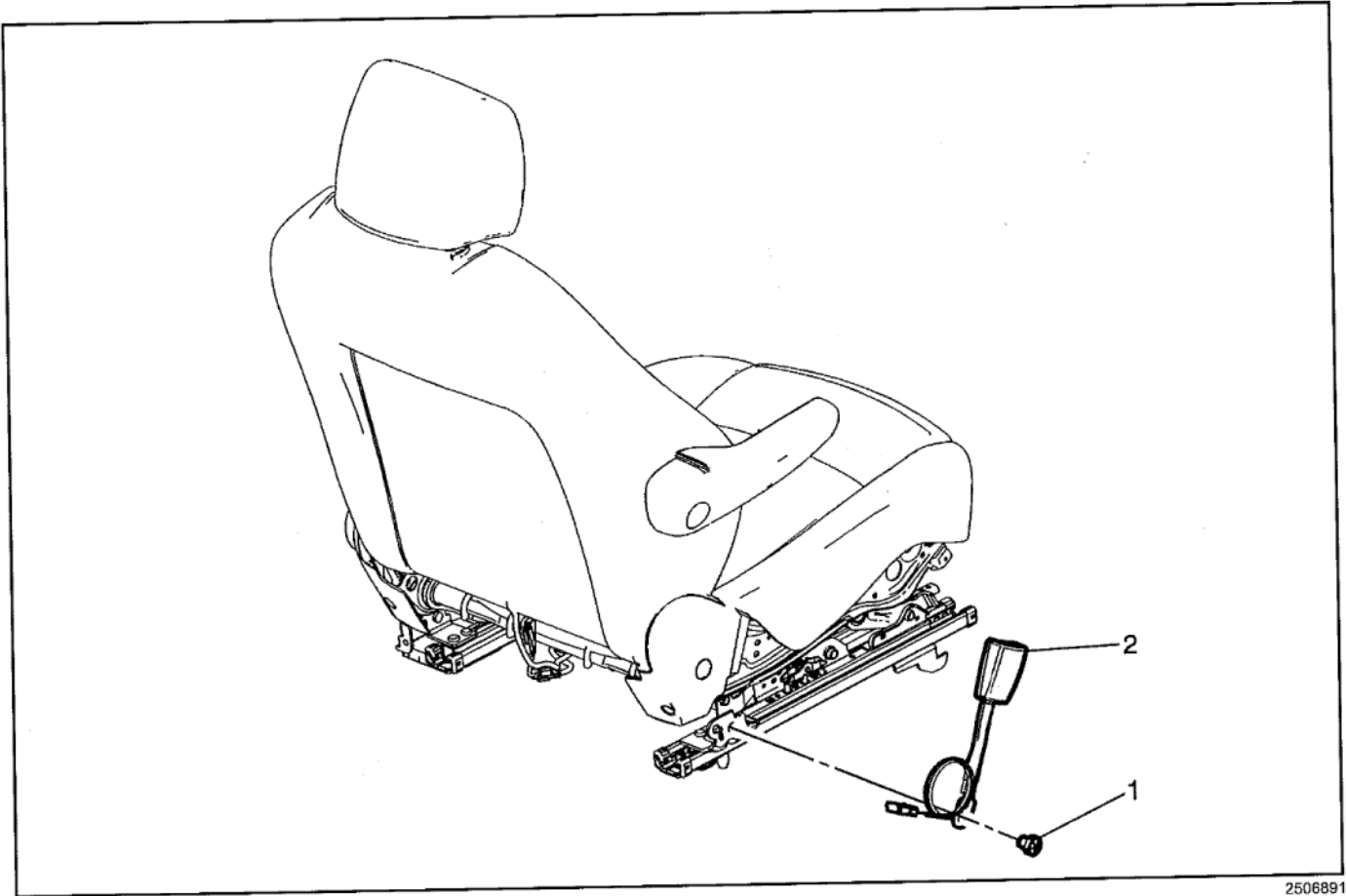


1923784

## Seat Belt Latch Stop Installation

| Callout                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Component Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Preliminary Procedure</b> <ol style="list-style-type: none"> <li>1. Locate the hole in the seat belt webbing where the original seat belt stop button was located.</li> <li>2. If the original hole in the seat belt webbing is not visible, perform the following: <ul style="list-style-type: none"> <li>• If either the right or left stop button is missing use the opposing seat belt as a reference.</li> <li>• With the opposing seat belt fully stowed, measure the distance between the seat belt lower anchor and the stop button.</li> <li>• Using the measurement obtained above, measure and mark the location of the missing stop button on the center of the seat belt webbing.</li> </ul> </li> <li>3. Ensure the seat belt latch plate is located above the mark or original hole.</li> </ol> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>Seat Belt Stop Button</b><br><b>Procedure</b> <ol style="list-style-type: none"> <li>1. Work the male half of the stop button through the hole in the webbing or at the marked location.</li> <li>2. Align the female half of the stop button with the male half of the stop button.</li> <li>3. Snap the two halves together.</li> <li>4. Trim off any excess of the male half of the stop button flush with the female half of the stop button.</li> </ol> <p><b>Tip:</b> Ensure the male half of the stop button is facing forward in the vehicle in order to ensure the stop button will not snag customers clothing.</p> |

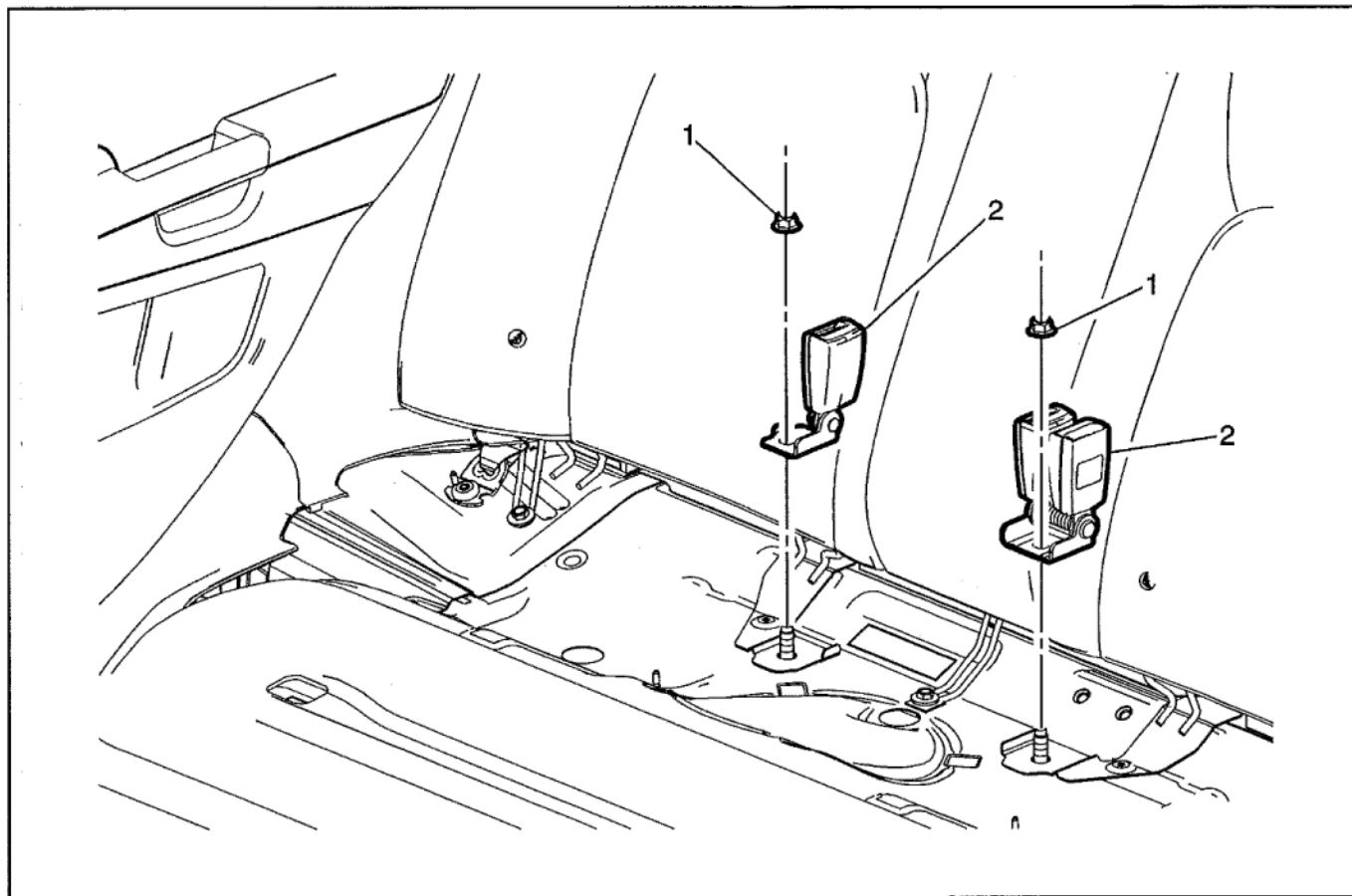
## Front Seat Belt Buckle Replacement



### Front Seat Belt Buckle Replacement

| Callout                                                                                                                                 | Component Name                                                                                                                                        |
|-----------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Preliminary Procedures</b><br>Remove the front seat. Refer to <i>Driver or Passenger Seat Removal and Installation</i> on page 14-4. |                                                                                                                                                       |
| 1                                                                                                                                       | Driver or Passenger Seat Belt Buckle Fastener<br><b>Caution:</b> Refer to <i>Fastener Caution</i> on page 0-8.<br><b>Tighten</b><br>45 N•m (33 lb ft) |
| 2                                                                                                                                       | Driver or Passenger Seat Belt Buckle Assembly<br><b>Procedure</b><br>Disconnect the electrical connector, if equipped.                                |

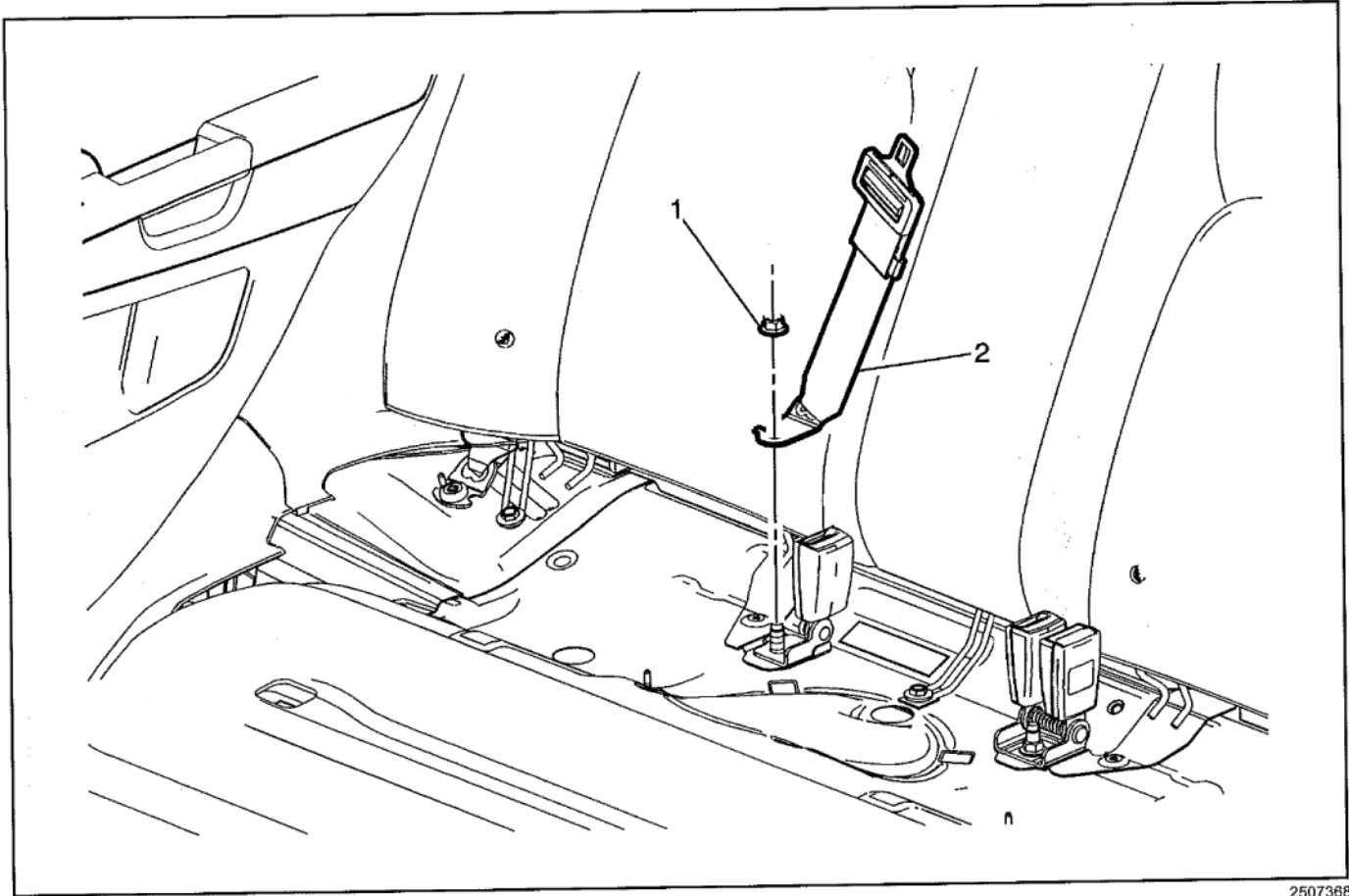
## Rear Seat Belt Buckle Replacement



2507300

### Rear Seat Belt Buckle Replacement

| Callout                                                                                                                                 | Component Name                                                                                                                                  |
|-----------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Preliminary Procedure</b><br>Remove the rear seat cushion. Refer to <i>Rear Seat Cushion Removal and Installation</i> on page 14-24. |                                                                                                                                                 |
| 1                                                                                                                                       | Rear Seat Belt Buckle Fastener (Qty: 2)<br><b>Caution:</b> Refer to <i>Fastener Caution</i> on page 0-8.<br><b>Tighten</b><br>45 N•m (33 lb ft) |
| 2                                                                                                                                       | Rear Seat Belt Buckle Assembly (Qty: 2)                                                                                                         |

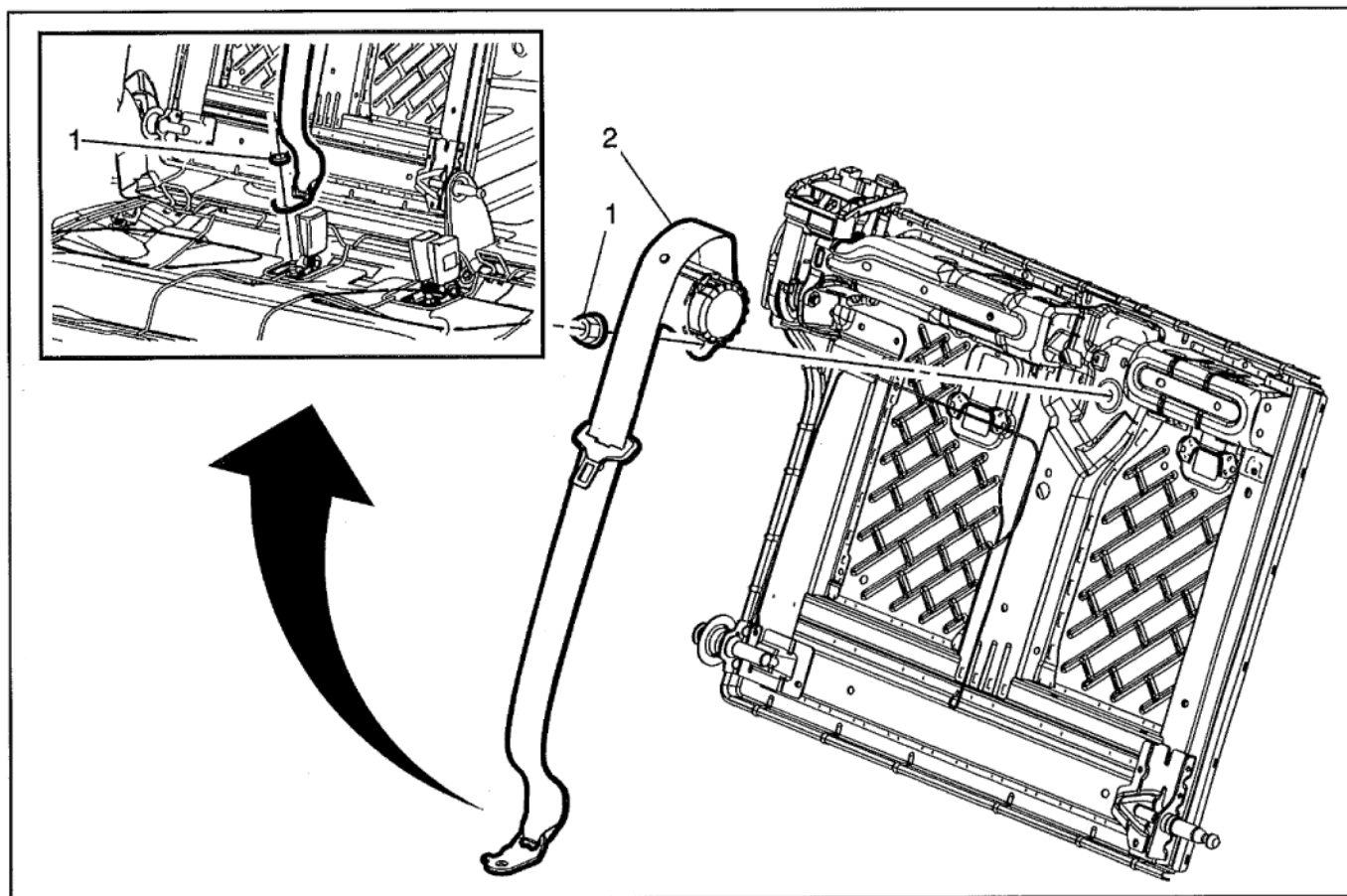
**Rear Seat Center Shoulder Belt Replacement (Sedan)**

2507388

**Rear Seat Center Shoulder Belt Replacement (Sedan)**

| Callout                                                                                                                                  | Component Name                                                                                                                                         |
|------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Preliminary Procedures</b><br>Remove the rear seat cushion. Refer to <i>Rear Seat Cushion Removal and Installation</i> on page 14-24. |                                                                                                                                                        |
| 1                                                                                                                                        | Rear Seat Center Shoulder Belt Buckle Fastener<br><b>Caution:</b> Refer to <i>Fastener Caution</i> on page 0-8.<br><b>Tighten</b><br>45 N•m (33 lb ft) |
| 2                                                                                                                                        | Rear Seat Center Shoulder Belt                                                                                                                         |

## Rear Seat Center Shoulder Belt Replacement (Hatchback)

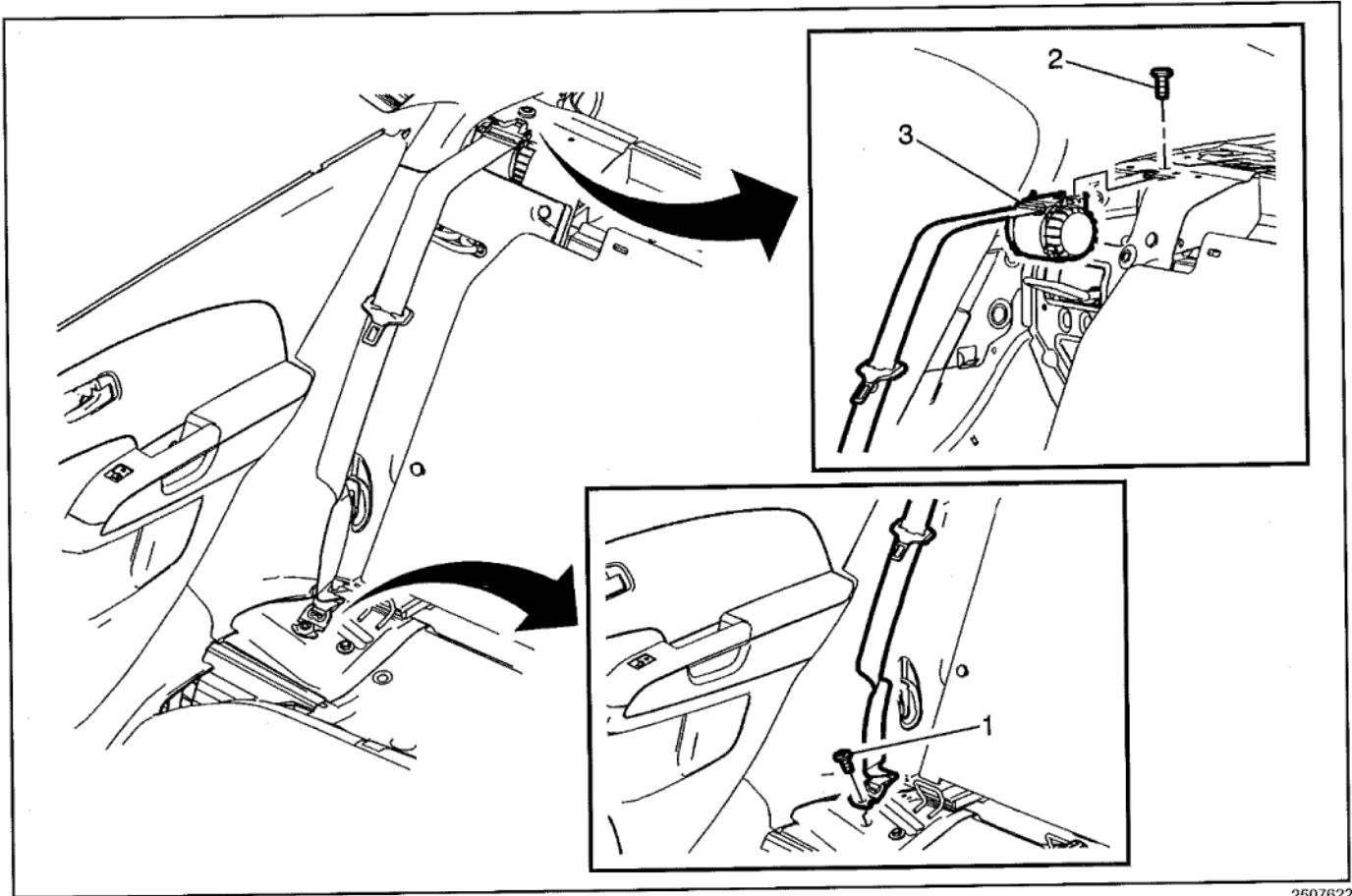


2511421

### Rear Seat Center Shoulder Belt Replacement (Hatchback)

| Callout                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Component Name                                                                                                                                           |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Preliminary Procedures</b> <ol style="list-style-type: none"> <li>1. Remove the rear seat cushion. Refer to <i>Rear Seat Cushion Removal and Installation</i> on page 14-24.</li> <li>2. Remove the rear seat back cushion. Refer to <i>Rear Seat Back Cushion Removal and Installation (40%)</i> on page 14-26 or <i>Rear Seat Back Cushion Removal and Installation (60%)</i> on page 14-27.</li> <li>3. Remove the rear seat cushion cover and pad. Refer to <i>Rear Seat Cushion Cover and Pad Replacement</i> on page 14-23.</li> </ol> |                                                                                                                                                          |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Rear Seat Center Shoulder Belt Fastener (Qty: 2)<br><b>Caution:</b> Refer to <i>Fastener Caution</i> on page 0-8.<br><b>Tighten</b><br>45 N•m (33 lb ft) |
| 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Rear Seat Center Shoulder Belt Assembly                                                                                                                  |

## Shoulder Belt Replacement - Rear (Sedan)

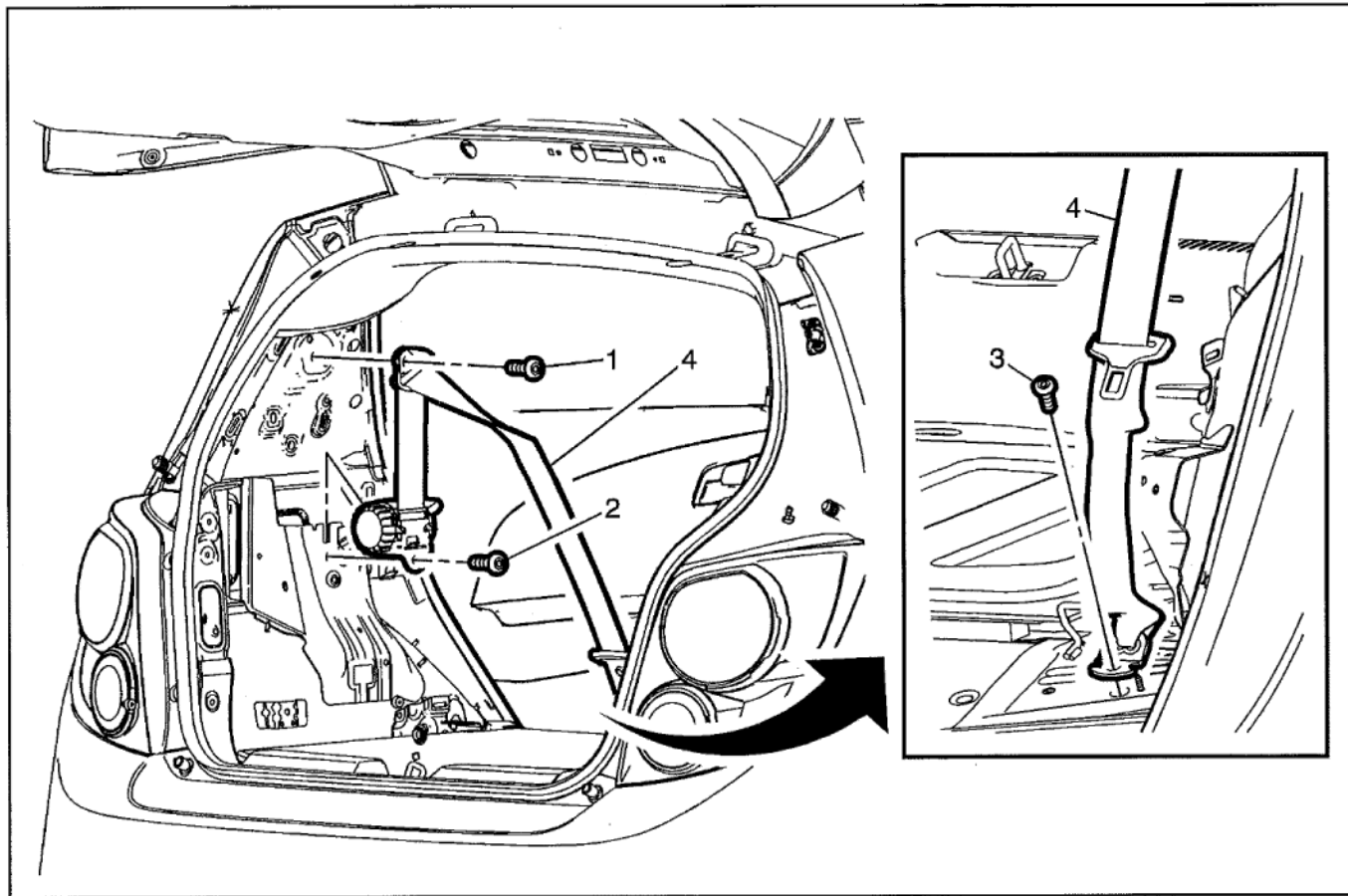


2507622

## Shoulder Belt Replacement - Rear (Sedan)

| Callout                                                                                                                             | Component Name                                                                                                                                        |
|-------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Preliminary Procedure</b><br>Remove the rear window panel trim. Refer to <i>Rear Window Panel Trim Replacement</i> on page 2-81. |                                                                                                                                                       |
| 1                                                                                                                                   | Rear Seat Shoulder Belt Anchor Plate Fastener<br><b>Caution:</b> Refer to <i>Fastener Caution</i> on page 0-8.<br><b>Tighten</b><br>45 N•m (33 lb ft) |
| 2                                                                                                                                   | Rear Seat Shoulder Belt Retractor Fastener<br><b>Tighten</b><br>45 N•m (33 lb ft)                                                                     |
| 3                                                                                                                                   | Rear Seat Shoulder Belt                                                                                                                               |

## Shoulder Belt Replacement - Rear (Hatchback)

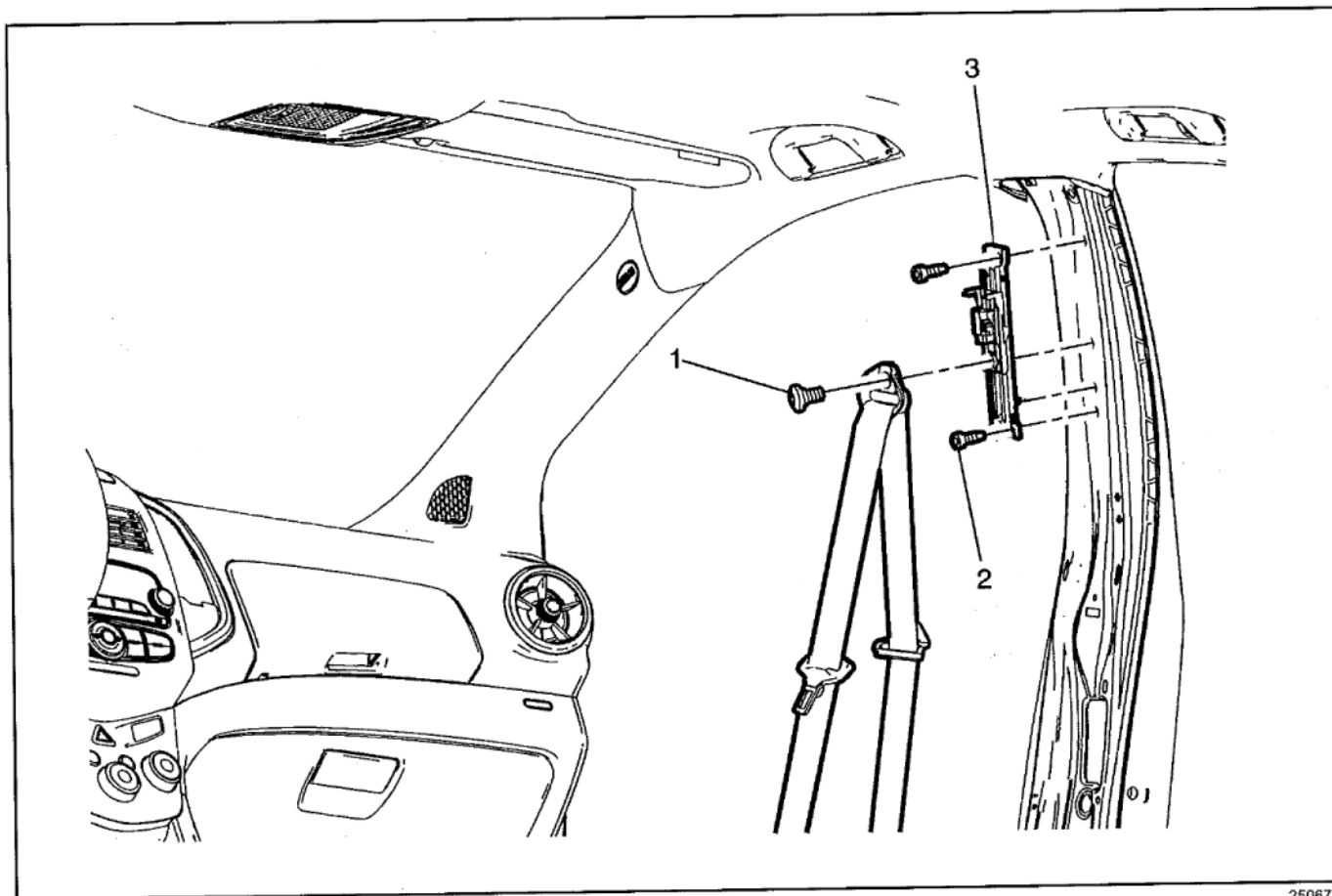


2511261

## Shoulder Belt Replacement - Rear (Hatchback)

| Callout                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Component Name                                                                                                                           |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Preliminary Procedures</b> <ol style="list-style-type: none"> <li>1. Remove the rear seat cushion. Refer to <i>Rear Seat Cushion Removal and Installation</i> on page 14-24.</li> <li>2. Remove the body lock pillar upper trim. Refer to <i>Body Lock Pillar Upper Trim Panel Replacement (Hatchback)</i> on page 2-77 or <i>Body Lock Pillar Upper Trim Panel Replacement (Sedan)</i> on page 2-78.</li> <li>3. Remove the quarter inner trim finish panel. Refer to <i>Quarter Inner Trim Finish Panel Replacement (Hatchback)</i> on page 2-79.</li> </ol> |                                                                                                                                          |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Rear Seat Shoulder Belt Fastener<br><b>Caution:</b> Refer to <i>Fastener Caution</i> on page 0-8.<br><b>Tighten</b><br>45 N•m (33 lb ft) |
| 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Rear Seat Shoulder Belt Retractor Fastener<br><b>Tighten</b><br>45 N•m (33 lb ft)                                                        |
| 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Rear Seat Shoulder Belt Bracket Fastener<br><b>Tighten</b><br>45 N•m (33 lb ft)                                                          |
| 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Rear Seat Shoulder Belt Assembly                                                                                                         |

## Front Seat Belt Guide Adjuster Replacement (with AHU)



2506720

## Front Seat Belt Guide Adjuster Replacement (with AHU)

| Callout                                                                                                                                              | Component Name                                                                                                                                          |
|------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Preliminary Procedures</b><br>Remove the center pillar upper trim panel. Refer to <i>Center Pillar Upper Trim Panel Replacement</i> on page 2-75. |                                                                                                                                                         |
| 1                                                                                                                                                    | Driver or Passenger Seat Shoulder Belt Fastener<br><b>Caution:</b> Refer to <i>Fastener Caution</i> on page 0-8.<br><b>Tighten</b><br>45 N•m (33 lb ft) |
| 2                                                                                                                                                    | Front Seat Shoulder Belt Guide Adjuster Bolt (Qty: 2)<br><b>Tighten</b><br>45 N•m (33 lb ft)                                                            |
| 3                                                                                                                                                    | Front Seat Shoulder Belt Guide Adjuster                                                                                                                 |

## Description and Operation

### Seat Belt System Description and Operation

#### Restraint System

**Note:** If the vehicle has been in a collision, refer to *Repairs and Inspections Required After a Collision* on page 13-57.

The vehicle has front and rear seat belts that are the primary means of occupant restraint. Seat belts help to keep the occupants inside the passenger compartment and to gradually reduce the impact forces during the following events:

- Frontal impact type crashes
- Rear impact type crashes
- Side impact type crashes
- Roll-over type crashes

All seat belt retractors have emergency locks. The retractors remain unlocked during normal operation and under normal driving conditions. The retractors remain unlocked during normal conditions in order to allow free movement of the upper body of each occupant.

A pendulum locks the seat belt webbing into position. The pendulum causes a locking bar to engage a cog on the spool of the retractor mechanism when the following conditions occur:

- A rapid extraction of the seat belt webbing from the retractor
- An abrupt change in vehicle speed
- An abrupt change in vehicle direction
- Operation of the vehicle on a steep upgrade
- Operation of the vehicle on a downgrade

The seat belts have an automatic locking (cinch) feature. The cinch feature is activated when the seat belt webbing is completely extended from the retractor. The cinch feature prevents the webbing from extending beyond the position from which it is allowed to retract. Use of the cinch feature is recommended for securing a child seat. The cinch feature may be cancelled by allowing the webbing to wind back completely into the retractor. After the cinch feature is cancelled, the webbing is unlocked. After the cinch feature is cancelled, the webbing will extend from the retractor. This vehicle is also equipped with a supplemental inflatable restraint (SIR) system. Refer to *Supplemental Inflatable Restraint System Description and Operation* on page 13-145.

#### Front Seat Belt System

The front seat belt system includes a driver and passenger seat belt pretensioner retractor and anchor. Both front seat belt pretensioners includes a seat belt switch in the seat buckle which controls a reminder lamp and a tone alarm.

**Note:** The front passenger seat is equipped with a passenger presence detection sensor, which detects an occupant. If the passenger presence detection sensor detects an empty front passenger seat, then the passenger fasten safety belt indicator will be disabled.

- When the driver seat belt is buckled and the ignition switch is turned ON, the following events will occur:
  - The tone alarm will not operate.
  - The reminder lamp will not operate.
- When the passenger seat belt is buckled with an occupant sitting in the passenger front seat, then the ignition switch is turned ON, the following events will occur:
  - The tone alarm will not operate.
  - The reminder lamp, which is located within the hazard warning switch, will not be turned ON.
- When the driver seat belt is not buckled and the ignition switch is in the ON position, the following events will occur:
  - The tone alarm will operate for 4–8 seconds and then go OFF.
  - The fasten safety belt indicator will turn ON for 20 seconds, until the driver seat belt is buckled.
- When the passenger seat belt is not buckled with an occupant sitting in the passenger front seat, then the ignition switch is turned ON, the following events will occur:
  - The tone alarm will operate for 4–8 seconds and then go OFF.
  - The reminder lamp, which is located within the hazard warning switch, will be turned ON.

#### Rear Seat Belt System

The Rear Seat Belt System includes the following components:

- The rear seat belt retractor is located at the wheelhouse panel and attached to the floor panel by the rear seat shoulder belt retractor bracket.
- The rear seat belt buckles and the center seat belt buckle are attached to each seat.
- Each of the rear seat belts include a seat belt switch in the seat buckle which controls a reminder lamp and a tone alarm.
- When the ignition switch is turned ON, a rear seat belt is buckled, the rear doors are closed and the speed exceeds 10 kph (6.5 mph) the following events will occur:
  - The tone alarm will not operate.
  - The rear seat belt indicator in the Driver Information Center will illuminate for 35 seconds.

- When the ignition switch is turned ON, a rear seat belt is not buckled for the duration of the ignition cycle, the rear doors are closed and the speed exceeds 10 kph (6.5 mph) the following events will occur:
  - The tone alarm will not operate.
  - The rear seat belt indicator in the Driver Information Center will not operate.
- When the ignition switch is turned ON, a rear seat belt is buckled and during that ignition cycle is unbuckled with the rear doors closed at all times and the speed exceeding 10 kph (6.5 mph) the following events will occur:
  - The tone alarm will operate for 3 seconds.
  - The rear seat belt indicator in the Driver Information Center will illuminate and remain on until the seat belt is buckled again or the ignition cycle ends.

## Child Seat Restraint System

**Warning:** *A child in a rear-facing child restraint can be seriously injured if the right-front passengers air bag inflates. This is because the back of a rear-facing child restraint would be very close to the inflating air bag. NEVER use a rear-facing child restraint in this vehicle. If a forward-facing child restraint is suitable for your child, ALWAYS move the front passenger seat as far back as it will go and then install the child restraint. Be sure the child restraint position does not conflict with any additional requirements provided by the manufacturer. For more information, refer to the vehicle owners manual and the instruction that came with the child restraint.*

A child in a rear-facing child restraint can be seriously injured if the right-front passengers air bag inflates. This is because the back of a rear-facing child restraint would be very close to the inflating air bag. NEVER use a rear-facing child restraint in this vehicle. If a forward-facing child restraint is suitable for your child, ALWAYS move the front passenger seat as far back as it will go and then install the child restraint. Be sure the child restraint position does not conflict with any additional requirements provided by the manufacturer.

For more information, refer to the vehicle owners manual and the instruction that came with the child restraint.

The child seat may only be used in a forward facing seating location. The child seat should be installed and secured according to the manufacturer's directions. If the child seat has a top strap, the seat will need to be anchored. Passengers should not be allowed to sit at locations where the seat belts are being used to secure the child seat.

All vehicles are equipped with a dual-mode type retractor with emergency and automatic locking features. The automatic locking feature is for restraint of a child seat. The child seat can be secured by pulling the seat belt all the way out to lock it. Then tighten the seat belt around the child seat.

If a child seat is to be used in the second seat position, a special dealer-installed anchor must be used in order to anchor the child seat top strap. This only applies to the seats designed with the top strap provision and for the vehicles sold in Canada. In order to ensure the correct top strap angle, the child seat is only to be used at the seating position for which the top strap anchor is installed.

## Fasten Safety Belt Indicators

There are three fasten safety belt indicators for this vehicle. The driver fasten safety belt reminder is displayed in the instrument cluster, the passenger fasten safety belt reminder is displayed in the hazard warning switch, and the rear fasten safety belt reminder is displayed in the driver information center. The fasten safety belt indicator may only be ON during RUN. The fasten safety belt indicator illuminates under the following conditions:

- During the bulb check
- The inflatable restraint sensing and diagnostic module (SDM) sends the status of the driver seat belt to the instrument cluster via serial data. The passenger seat belt status is sent to the hazard warning switch via a hard wire. The rear seat belt status is sent to the driver information center via serial data. If any of the seat belts are unfastened, the instrument cluster will send a message requesting a chime sound to be turned ON after a bulb check.