

RESTRAINTS

Seat Belts - Escalade, Suburban, Tahoe, Yukon

SPECIFICATIONS

FASTENER SPECIFICATIONS

Application	Specification	
	Metric	English
Child Seat Restraint System Belt Bracket Bolt	35 N.m	26 lb ft
Front Center Seat Belt Buckle Bolt	45 N.m	33 lb ft
Front Seat Belt Buckle Bolt	52 N.m	38 lb ft
Front Seat Belt Guide Adjuster Bolt	45 N.m	33 lb ft
Front Seat Belt Latch Bolt	45 N.m	33 lb ft
Front Seat Belt Retractor Bolt	45 N.m	33 lb ft
Rear Center Seat Belt Retractor Bolt	45 N.m	33 lb ft
Rear Seat Belt Anchor Plate Bolt	45 N.m	33 lb ft
Rear Seat Belt Anchor Plate Nut	45 N.m	33 lb ft
Rear Seat Belt Buckle Bolt	53 N.m	39 lb ft
Rear Seat Belt Retractor Bolt	45 N.m	33 lb ft
Rear Seat Center Bracket Nut	45 N.m	33 lb ft
Rear Seat Upper Guide Bolt	45 N.m	33 lb ft

SCHEMATIC WIRING DIAGRAMS

SEAT BELT WIRING SCHEMATICS

Seat Belts

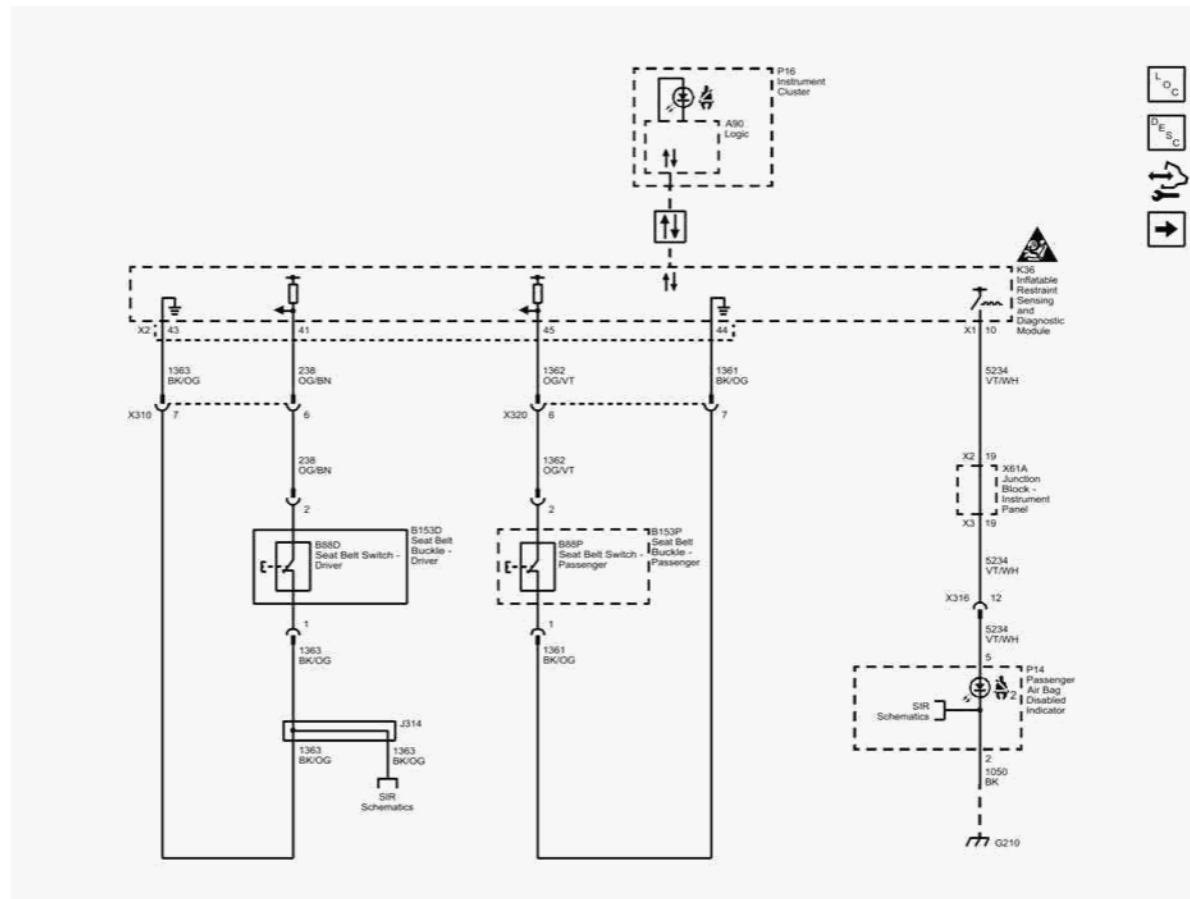


Fig. 1: Seat Belts

Courtesy of GENERAL MOTORS COMPANY

Motors (AX7)

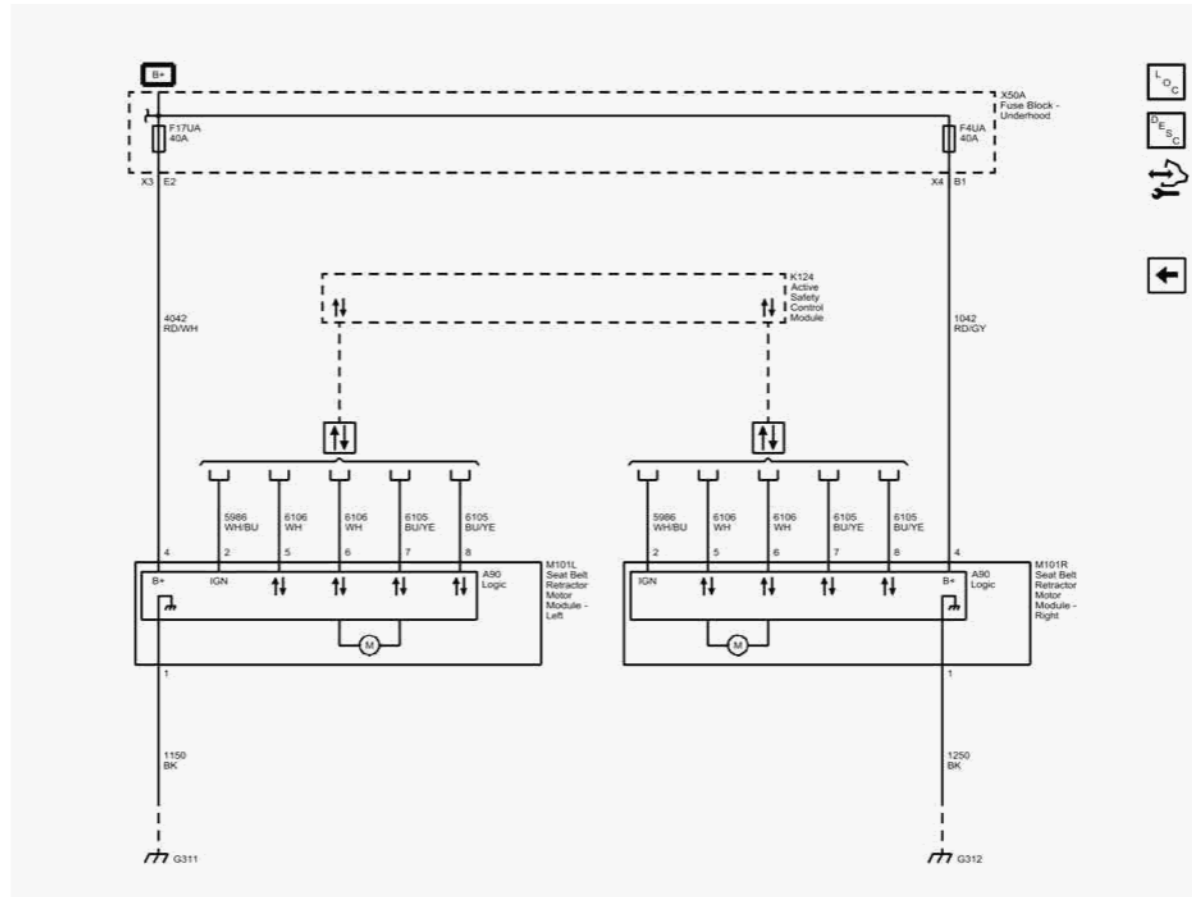


Fig. 2: Motors (AX7)

Courtesy of GENERAL MOTORS COMPANY

DIAGNOSTIC INFORMATION AND PROCEDURES

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](#).

Visual/Physical Inspection

- Inspect for aftermarket devices which could affect the operation of the seat belt system. Refer to [Checking Aftermarket Accessories](#).

- Inspect the easily accessible or visible system components for obvious damage or conditions which could cause the symptom.

Intermittent

Faulty electrical connections or wiring may be the cause of intermittent conditions. Refer to [Testing for Intermittent Conditions and Poor Connections](#).

Symptom List

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

- [Seat Belt Indicator Malfunction - Driver](#)
- [Seat Belt Indicator Malfunction - Passenger](#)

SEAT BELT DOES NOT RETRACT

1. Grasp the seat belt and pull it out slowly and evenly from the retractor, do that in 15-25mm (5/8-1in) increments, continuing until the seat belts entire length has been pulled out.
2. Release the seat belt, and allow the retractor to slowly retract the full length of the seat belt. The seat belt must retract without any additional help.
3. Additionally, make sure, that the seat belt can be stopped any time while retracting and then resumed while being released again. This must also be possible in all retracting positions.
4. Should problems be observed in step 3, perform the first two steps 2 more times.
5. Should the retractor, after performing these steps, not function freely and properly, it is to be replaced with a new part.

SEAT BELT 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.

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
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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. 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

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Seat Belt System Description and Operation

Electrical Information Reference

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

1. 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 Diver 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 min for all vehicle systems to power down.

2. Test for less than 5 Ω between the low reference circuit terminal 1 and ground.

- **If 5 Ω or greater**

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

2. Test for less than 2 Ω in each low reference circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , replace the K36 Inflatable Restraint Sensing and Diagnostic Module.
 - **If less than 5 Ω**
3. Ignition ON.
4. Verify the scan tool Driver Seat Belt Status parameter is Buckled.
 - **If not Buckled**
 1. Ignition OFF, disconnect the X2 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
 2. Test for infinite resistance between the seat belt switch signal circuit terminal 2 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 2 and the low reference circuit terminal 1.
6. Verify the scan tool Driver Seat Belt Status parameter is Unbuckled.
 - **If Unbuckled**
 1. Ignition OFF, disconnect the X2 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module, ignition ON.
 2. Test for less than 1 V between the signal circuit and ground.
 - If 1 V or greater, repair the short to voltage on the circuit.
 - If less than 1 V
 3. Test for less than 2 Ω in each circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , replace the K36 Inflatable Restraint Sensing and Diagnostic Module.
 - **If 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 2 and the low reference terminal 1.
 - **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 Ω between the signal circuit terminal 2 and the low reference terminal 1.

- **If 1 Ω or greater**

Replace the B153D Seat Belt Buckle-Driver.

- **If less than 1 Ω**

5. All OK.

Repair Instructions

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

- [Front Seat Belt Buckle Replacement](#)
- [Control Module References](#) 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](#) 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 Seat Belt Switch Signal	1	2	2	-
Passenger Seat Belt Switch Low Reference	-	2	-	-
Passenger Seat Belt Indicator Control	3	3	4	-
Ground	-	3	-	-

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
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 on. The passenger 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 passenger seat belt via a hard wire to the passenger air bag disable switch. After receiving the message, the passenger air bag disable switch 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 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

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

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Seat Belt System Description and Operation

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

Scan Tool Reference

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

Circuit/System Verification

1. Ignition ON.
2. Verify the passenger seat belt indicator turns ON and OFF when performing the Passenger Seat Belt Reminder Indicator On/Off Control Function with a scan tool.
 - **If the passenger seat belt indicator does not turn ON and OFF**

Refer to Circuit/System Testing - Seat Belt Indicator Malfunction.
 - **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 Circuit/System Testing - Seat Belt Switch Malfunction.
 - **If the parameter changes between Buckled and Unbuckled when buckling and unbuckling the seat belt**
4. All OK.

Circuit/System Testing

Seat Belt Switch Malfunction

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

- B153P Seat Belt Buckle - Passenger

- **Seat belt switch harness connector**
- **K36 Inflatable Restraint Sensing and Diagnostic Module**
- **Inflatable Restraint Sensing and Diagnostic Module harness connector**

1. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the B153 Seat Belt Buckle - Passenger. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 5 Ω between the low reference circuit terminal 1 and ground.
 - **If 5 Ω or greater**
 1. Disconnect the harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
 2. Test for less than 2 Ω in each control circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , replace the K36 Inflatable Restraint Sensing and Diagnostic Module.
 - **If less than 5 Ω**
3. Ignition ON.
4. Verify the scan tool Passenger Seat Belt Status parameter is Buckled.
 - **If the scan tool Passenger Seat Belt Status parameter does not display Buckled**
 1. Disconnect the harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
 2. Test for infinite resistance between the signal circuit terminal 2 and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 - If less infinite resistance, replace the K36 Inflatable Restraint Sensing and Diagnostic Module.
 - **If the scan tool Passenger Seat Belt Status parameter does display Buckled**
5. Install a 3 A fused jumper wire between the signal circuit terminal 2 and the ground circuit terminal 1.
6. Verify the scan tool Passenger Seat Belt Status parameter is Unbuckled.
 - **If the scan tool Passenger Seat Belt Status parameter is not Unbuckled**
 1. Disconnect the harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
 2. Ignition ON.
 3. 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

4. Test for less than 2 Ω in each circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , replace the K36 Inflatable Restraint Sensing and Diagnostic Module.
 - **If the scan tool Passenger Seat Belt Status parameter does display Unbuckled**
7. Ignition OFF, connect all harness connectors. Ignition ON.
8. Verify the scan tool Passenger Seat Belt Status parameter changes between Buckled and Unbuckled when buckling and unbuckling the seat belt.
 - **If the Passenger Seat Belt Status parameter is not Buckled and Unbuckled**
 Test or replace the B153 Seat Belt Buckle - Passenger.
 - **If the Passenger Seat Belt Status parameter does display Buckled and Unbuckled**
9. All OK.

Seat Belt Indicator Malfunction

1. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the P14 Passenger Air Bag Disable Indicator. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 20 Ω between the ground circuit terminal 2 and ground.
 - **If 20 Ω or greater**
 1. Ignition OFF.
 2. Test for less than 2 Ω in the ground circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , repair the open/high resistance in the ground connection.
 - **If less than 20 Ω**
3. Connect a test lamp between the control circuit terminal 5 and ground, ignition ON.
4. Verify the test lamp turns ON and OFF when commanding the Passenger Seat Belt Reminder On and Off with a scan tool.
 - **If the test lamp is always ON**
 1. Ignition OFF, disconnect the harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module. Ignition ON.
 2. Test for less than 1 V between the control circuit and ground.
 - If 1V or greater, repair the short to voltage on the circuit.

- If less than 1V, replace the K36 Inflatable Restraint Sensing and Diagnostic Module.
- **If the test lamp is always OFF**
 1. Ignition OFF, disconnect the harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
 2. Test for infinite resistance between the control circuit and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 3. Test for less than 2 Ω in the control circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , replace the K36 Inflatable Restraint Sensing and Diagnostic Module.
- **If test lamp turns on and off while changing between the commanded states**
- 5. Test or replace the P14 Passenger Air Bag Disable Indicator.

Component Testing

1. Ignition OFF, disconnect the harness connector at the B153 Seat Belt Buckle - Passenger.
2. Buckle the passenger seat belt.
3. Test for infinite resistance between the signal circuit terminal 2 and the low reference circuit terminal 1.
 - **If less than infinite resistance**

Replace the B153 Seat Belt Buckle - Passenger.
 - **If infinite resistance**
4. B88 seat belt switch in the unbuckled position.
5. Test for less than 2 Ω between the signal circuit terminal 2 and the low reference terminal 1.
 - **If 2 Ω or greater**

Replace the B153 Seat Belt Buckle - Passenger.
 - **If less than 2 Ω**
6. All OK.

Repair Instructions

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

- [Front Seat Belt Buckle Replacement](#)
- [Instrument Panel Airbag Arming Status Display Replacement](#)
- [Control Module References](#) for inflatable restraint sensing and diagnostic module replacement, programming and setup

SEAT BELT RETRACTOR MOTOR MODULE MALFUNCTION

Diagnostic Instructions

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

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Motorized Seat Belt Battery Positive Voltage	1	1	-	-
Ground	-	1	-	-
1. Motorized seat belt retractor motor module will not pretension.				

Circuit/System Description

The motorized seat belt retractor motor modules are motorized seat belt pretensioners that operated independent from each other, and from the inflatable restraint sensing and diagnostic module. The motorized seat belt retractor motor modules normally remove slack from the seat belt, and under certain conditions apply tension to the seat belt of the driver seat, and if occupied, the passenger seat as well. A motorized seat belt is a seat belt with a motor coupled to the shoulder belt retractor. The motor performs a reversible, pretightening action (retraction) to reduce the slack in the seat belt. The motorized seat belt provides the driver and passenger a sense of safety and, in the case of severe braking or a crash, more quickly couples the occupant to the vehicle, enhancing the safety to the occupant.

Motorized seat belts monitor vehicle information to determine when to perform each of the following retractions

- Full retraction for such situations but not limited to: panic braking and or skidding
- Dynamic support for lateral and longitudinal dynamics
- Slack removal when the vehicle speed above enable speed

Preconditions for motorized seat belt retractions

- Seat belt buckle is latched
- Vehicle speed greater than or equal to 25 kph (16 mph)
- All messages on serial data are received as valid

Triggers that may cause motorized seat belt retractions

- Emergency Braking
- Sudden Emergency / Panic Braking
- High Vehicle Deceleration Detection
- Ice Braking Detection
- Oversteer and Understeer

Motorized seat belt inputs

- Vehicle Power Mode
- Transmission Gear
- Wheel Speeds
- Vehicle Acceleration
- Accelerator Pedal Position
- Steering Wheel Angle and Gradient
- Yaw Rate and Lat/Long Acceleration
- Brake Pedal Position, Gradient, Pressure, Initial Travel
- Vehicle Stability

Motorized seat belt output signals

- Driver information center message - motorized seat belt Failed "Service Automatic Seatbelt Tightening"
- Driver information center message - motorized seat belt Unavailable "Automatic Seatbelt Tightening Unavailable"

Motorized seat belt retractions are inhibited when seat belt unbuckled

Driver and passenger motorized seat belts operate independently

Diagnostic Aids

Driver information center message "Automatic Seatbelt Tightening Unavailable" will have corresponding messages in the scan tool Seat Belt Retractor Motor Disable History Data

The scan tool Seat Belt Retractor Motor Disable History Data parameters are a list of the ten previous reasons the seat belt retractor motor module system was disabled. These parameters may help in the diagnosis of an intermittent concern or a customer concern which is the result of normal system operation. The following is a brief description of potential causes which may aid in diagnosis:

- Seat Belt Status
- Brake Pedal Pressure Signal Invalid
- Invalid Data Received From Yaw Rate Sensor Module
- Invalid Data Received From Steering Wheel Angle Sensor Module
- Accelerator Pedal Position Signal Invalid
- Non-Driven Wheel Speed Signal Invalid
- Driven Wheel Speed Signal Invalid
- Invalid Gear
- Overtemperature
- Overvoltage
- Undervoltage
- Exceeded Number of Attempts (Replacement required)
- DTC Present

Reference Information

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Seat Belt Schematics

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- [Wiring Repairs](#)

Scan Tool Reference

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

Circuit/System Verification

1. Verify the appropriate M101 Seat Belt Retractor Motor Module applies tension to the seat belt with the appropriate seat belt is buckled, and when commanding the M101 Seat Belt Retractor Motor Module - Seat Belt Retractor Motor with a scan tool.
 - **If the appropriate seat belt does not apply tension as commanded .**

Refer to Circuit/System Testing.
 - **If the appropriate seat belt does apply tension as commanded**
2. 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.

- **M101 Seat Belt Retractor Motor Module**
- **M101 Seat Belt Retractor Motor Module harness connector**

1. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the M101 Seat Belt Retractor Motor Module. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 10 Ω between the low reference circuit terminal 1 and ground.
 - **If 10 Ω or greater**
 1. Test for less than 2 Ω in the ground circuit end to end.

- If 2 Ω or greater, repair the open/high resistance in the circuit.
- If less than 2 Ω , repair the open/high resistance in the ground connection.

- **If less than 10 Ω**

3. Verify a test lamp illuminates between the B+ circuit terminal 4 and ground.

- **If the test lamp does not illuminate and the circuit fuse is good**

1. Ignition OFF.

2. Test for less than 2 Ω in the B+ circuit end to end.

- If 2 Ω or greater, repair the open/high resistance in the circuit.
- If less than 2 Ω , verify the fuse is not open and there is voltage at the fuse.

- **If the test lamp does not illuminate and the circuit fuse is open**

1. Ignition OFF.

2. Test for infinite resistance between the B+ circuit and ground.

- If less than infinite resistance, repair the short to ground on the circuit.
- If infinite resistance, replace the disconnected control module.

- **If the test lamp illuminates**

4. Ignition ON, verify a test lamp illuminates between each ignition circuit terminal and ground.

- **If the test lamp does not illuminate and the circuit fuse is good**

1. Ignition OFF.

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

- If 2 Ω or greater, repair the open/high resistance in the circuit.
- If less than 2 Ω , verify the fuse is OK and there is voltage at the fuse.

- **If the test lamp does not illuminate and the circuit fuse is open**

1. Ignition OFF.

2. Test for infinite resistance between the ignition circuit and ground.

- If less than infinite resistance, repair the short to ground on the circuit.
- If infinite resistance, replace the disconnected control module.

- **If the test lamp illuminates**

5. Ignition OFF and all vehicle systems OFF. It may take up to 2 min for all vehicle systems to power down.

6. Test for less than 2 Ω in each of the serial data circuits end to end between the control module harness connector and the DLC terminals High

speed GMLAN serial data circuit terminal 6 and 14

- **If 2 Ω or greater**

Repair the open/high resistance in the circuit.

- **If less than 2 Ω**

7. Replace the appropriate M101 Seat Belt Retractor Motor Module.

Repair Instructions

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

[Control Module References](#) for seat belt retractor motor module replacement, programming and setup

SEAT BELT SERVICE PRECAUTIONS

IMPORTANT: If the vehicle has been in a collision, refer to [Repairs and Inspections Required After a Collision](#) 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 Specifications](#). 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.

FRONT SEAT BELT BUCKLE REPLACEMENT

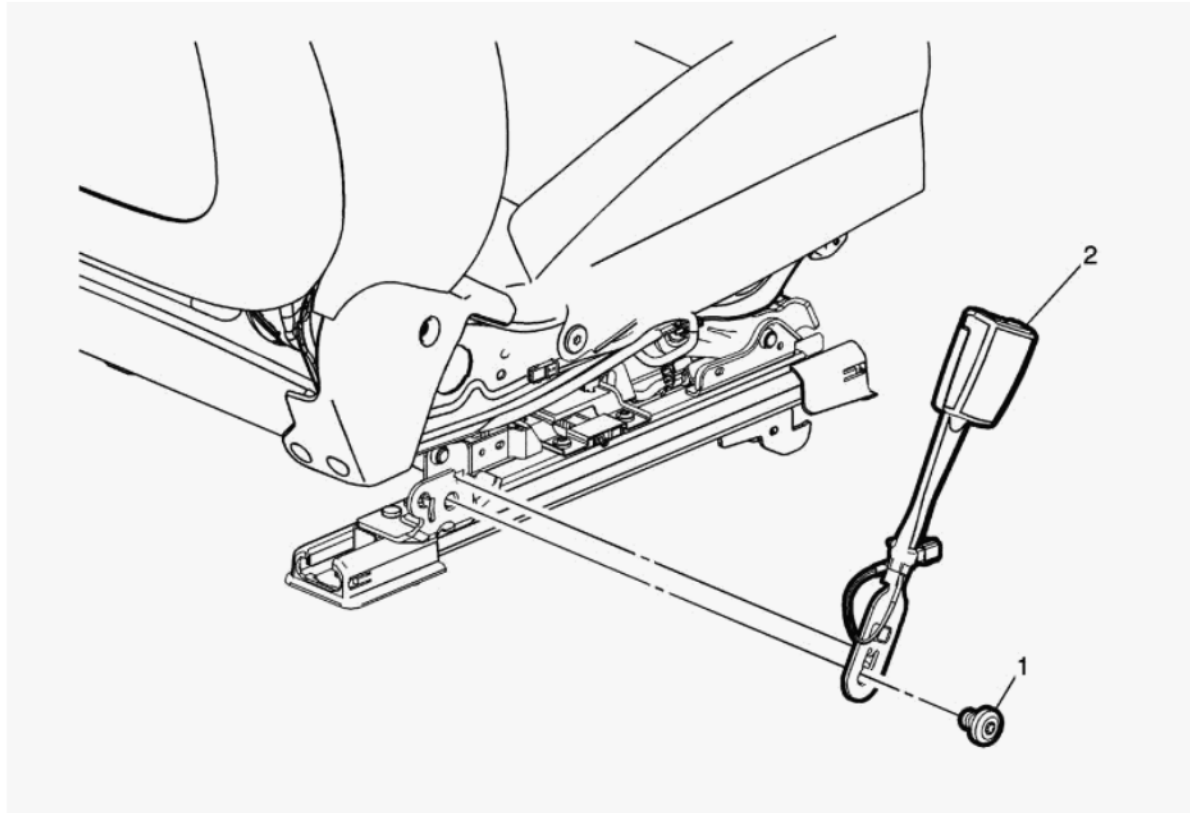


Fig. 3: Front Seat Belt Buckle

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove the driver or passenger seat. Refer to Driver or Passenger Seat Removal and Installation .	
1	Front Seat Belt Buckle Fastener CAUTION: Refer to Fastener Caution .

Callout	Component Name
	Tighten 52 N.m (38 lb ft)
2	Front Seat Belt Buckle Procedure Disconnect the electrical connector.

FRONT SEAT BELT LATCH REPLACEMENT

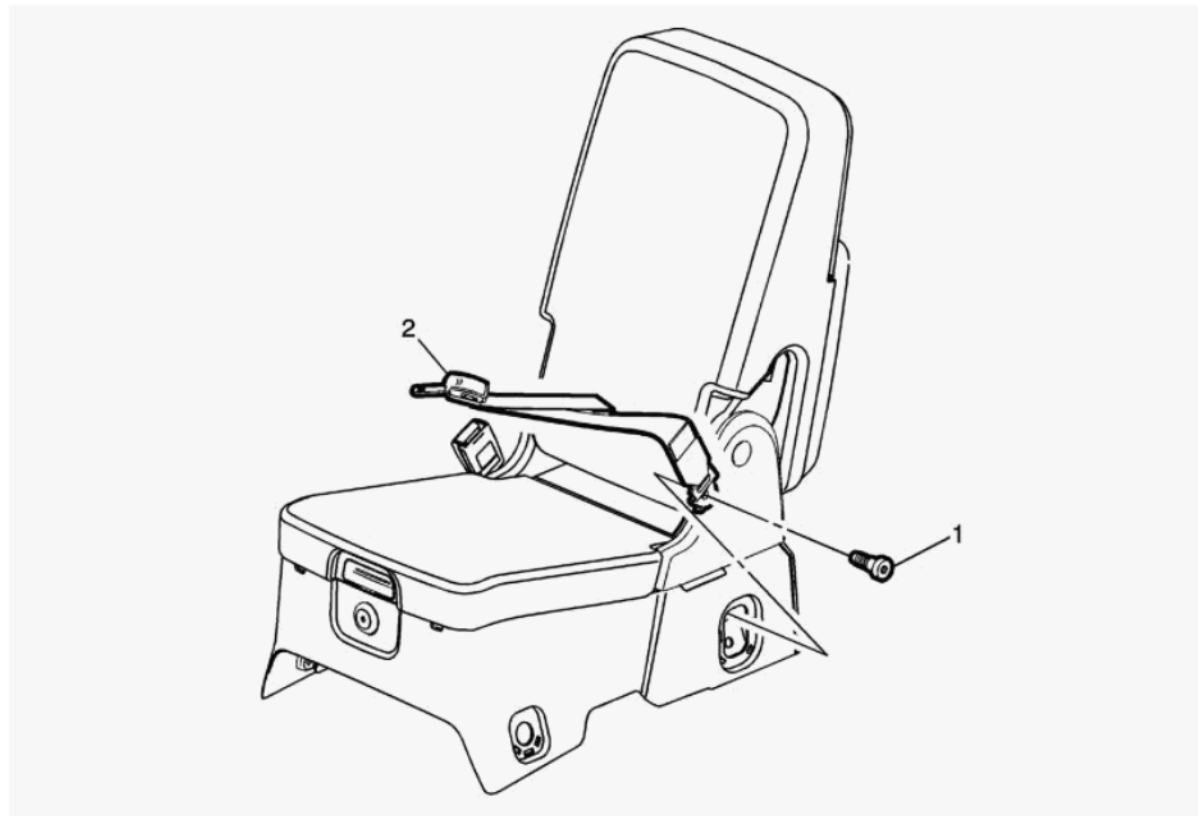


Fig. 4: Front Seat Belt Latch

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure	

Callout	Component Name
Remove the front center seat. Refer to Front Center Seat Removal and Installation .	
1	Front Seat Belt Latch Bolt CAUTION: Refer to Fastener Caution . Tighten 45 N.m (33 lb ft)
2	Front Seat Belt Latch Procedure Disconnect the electrical connector.

REAR SEAT BELT BUCKLE REPLACEMENT (SPLIT BENCH)

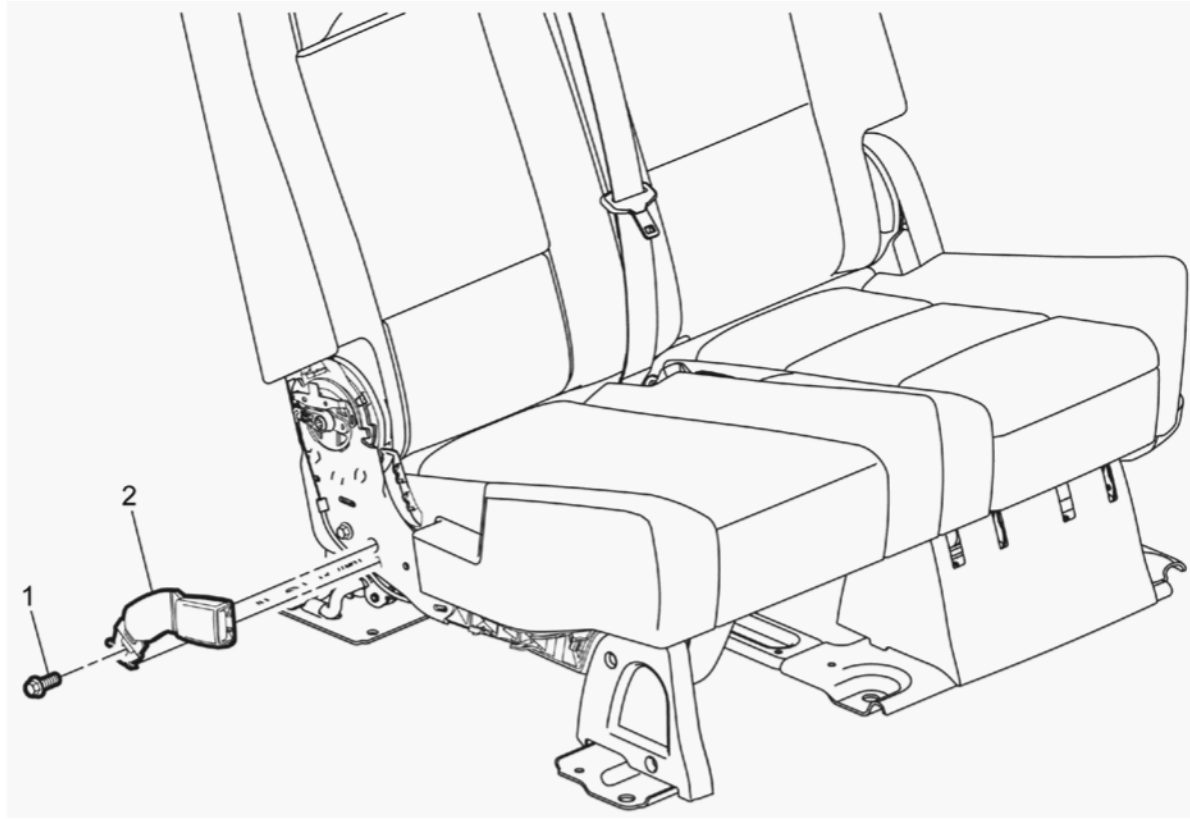


Fig. 5: Rear Seat Belt Buckle (Split Bench)

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure <u>Rear Seat Cushion Inner Panel Replacement</u> . Note: The 60% seat is shown, the 40% seat is similar.	
1	Rear Seat Belt Buckle Fastener CAUTION: Refer to <u>Fastener</u> <u>Caution</u> .

Callout	Component Name
	Tighten 45 N.m (33 lb ft)
2	Rear Seat Belt Buckle

REAR SEAT BELT BUCKLE REPLACEMENT (BUCKET)



Fig. 6: Rear Seat Belt Buckle (Bucket)

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure	
Remove the rear seat cushion inner panel. Refer to Rear Seat Cushion Inner Panel Replacement .	

Callout	Component Name
1	Rear Seat Belt Buckle Fastener CAUTION: Refer to <u>Fastener Caution</u> . Tighten 45 N.m (33 lb ft)
2	Rear Seat Belt Buckle

REAR CENTER SEAT BELT RETRACTOR REPLACEMENT (SPLIT BENCH)

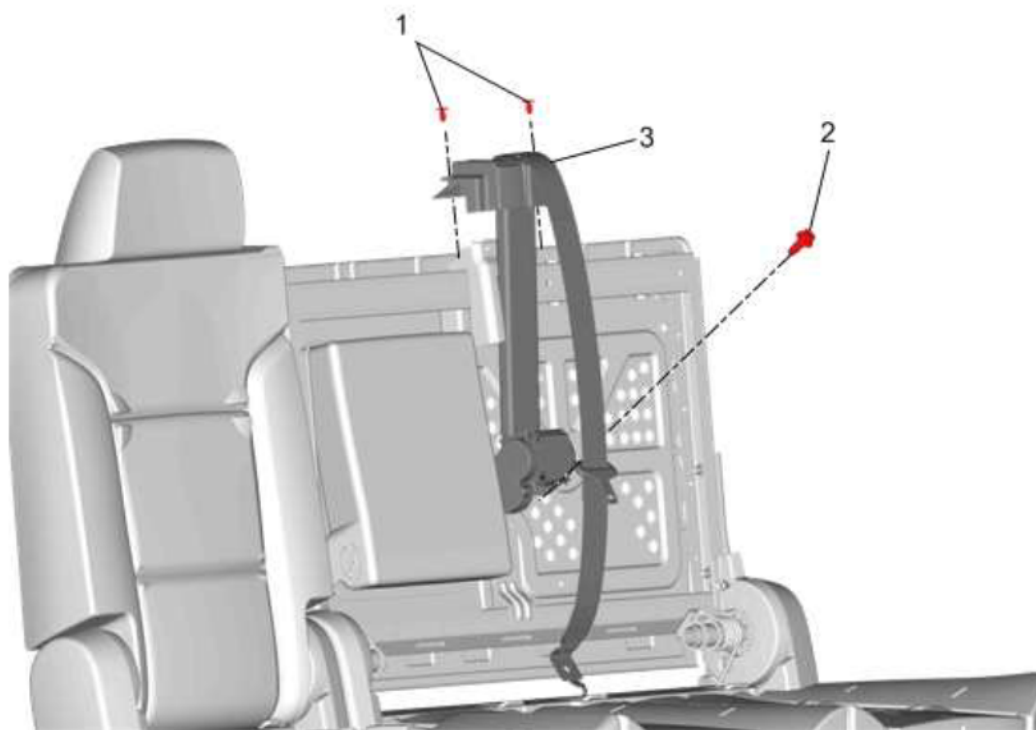


Fig. 7: Rear Center Seat Belt Retractor (Split Bench)

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures 1. <u>Rear Seat Center Buckle Side Belt Replacement</u> 2. <u>Rear Seat Back Cushion Cover and Pad Replacement (40%)</u> <u>Rear Seat Back Cushion Cover and Pad Replacement (Bucket)</u> <u>Rear Seat Back Cushion Cover and Pad Replacement (60%)</u>	
1	Rear Center Seat Belt Retractor Retainer
2	Rear Center Seat Belt Retractor Fastener CAUTION: Refer to <u>Fastener</u> <u>Caution</u> . Tighten 45 N.m (33 lb ft)
3	Rear Center Seat Belt Retractor

REAR SEAT CENTER BUCKLE SIDE BELT REPLACEMENT

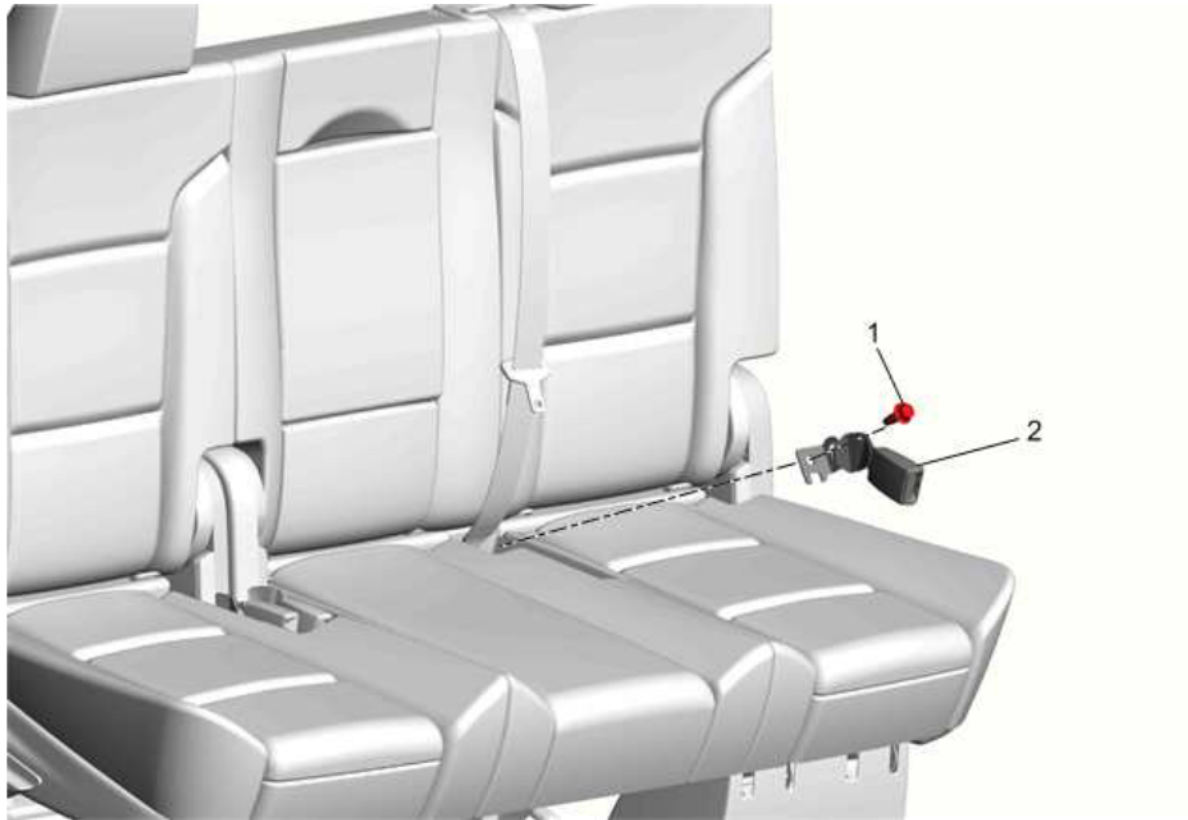


Fig. 8: Rear Seat Center Buckle Side Belt

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Rear Seat Belt Buckle Fastener CAUTION: Refer to <u>Fastener Caution</u> . Tighten 45 N.m (33 lb ft)

Callout	Component Name
2	Rear Seat Belt Buckle Procedure Reposition the flap to access the seat buckle fastener.

REAR SEAT BELT RETRACTOR REPLACEMENT (LONG WHEELBASE)

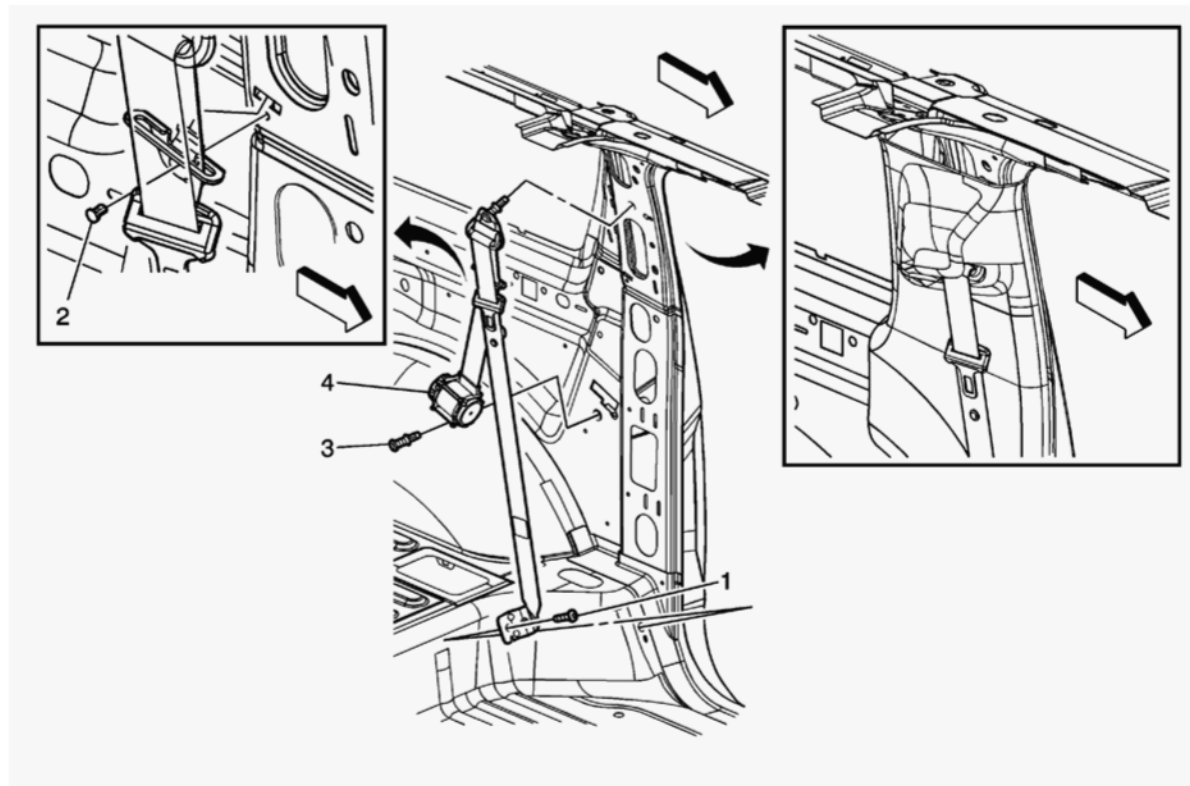


Fig. 9: View Of Rear Seat Belt Retractor Assembly & Components

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures	
1.	Remove the rear seat. Refer to Rear Seat Removal and Installation (60/40 Bench) Rear Seat Removal and Installation (Bucket) .
2.	Remove the quarter lower rear trim panel. Refer to Quarter Lower Rear Trim Panel Replacement (Left Side, Extended

Callout	Component Name
<u>Wheelbase) Quarter Lower Rear Trim Panel Replacement (Right Side, Extended Wheelbase) .</u>	
1	Rear Seat Shoulder Belt Anchor Plate Fastener CAUTION: Refer to <u>Fastener</u> <u>Caution</u> . Tighten 45 N.m (32 lb ft)
2	Rear Seat Belt Retractor Upper Fastener Tighten 45 N.m (32 lb ft)
3	Rear Seat Belt Retractor Lower Fastener Tighten 45 N.m (32 lb ft)
4	Rear Seat Belt Retractor

REAR SEAT BELT RETRACTOR REPLACEMENT (SHORT WHEELBASE)

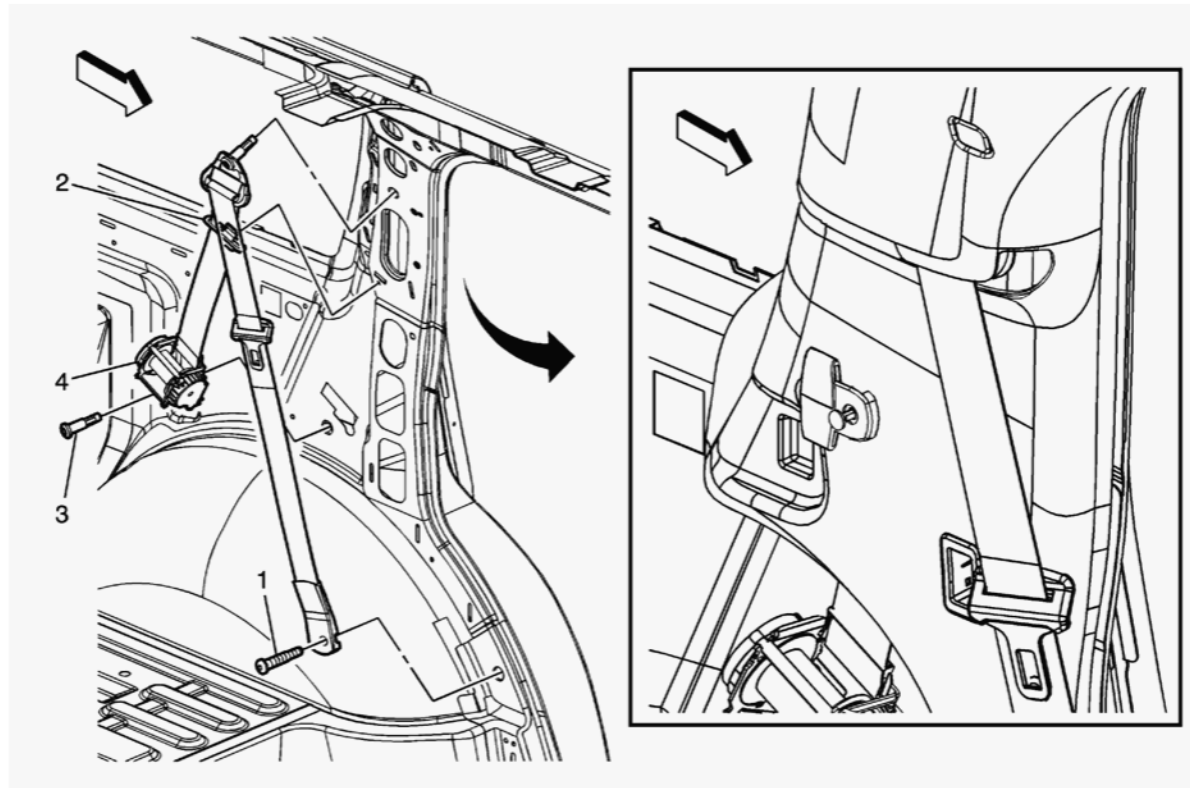


Fig. 10: View Of Rear Seat Belt Retractor Assembly & Components

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure 1. Disable roof rail SIR system. Refer to SIR Disabling and Enabling . 2. Remove quarter lower rear trim panel. Refer to Quarter Lower Rear Trim Panel Replacement (Left Side, Standard Wheelbase) Quarter Lower Rear Trim Panel Replacement (Right Side, Standard Wheelbase) .	
1	Rear Seat Shoulder Belt Anchor Bolt CAUTION: Refer to Fastener

Callout	Component Name
	Caution . Tighten 43 N.m (32 lb ft)
2	Rear Seat Shoulder Belt Guide
3	Rear Seat Shoulder Belt Retractor Bolt Tighten 43 N.m (32 lb ft)
4	Rear Seat Shoulder Belt Retractor Assembly

3RD ROW SEAT BELT BUCKLE REPLACEMENT (40% BENCH)

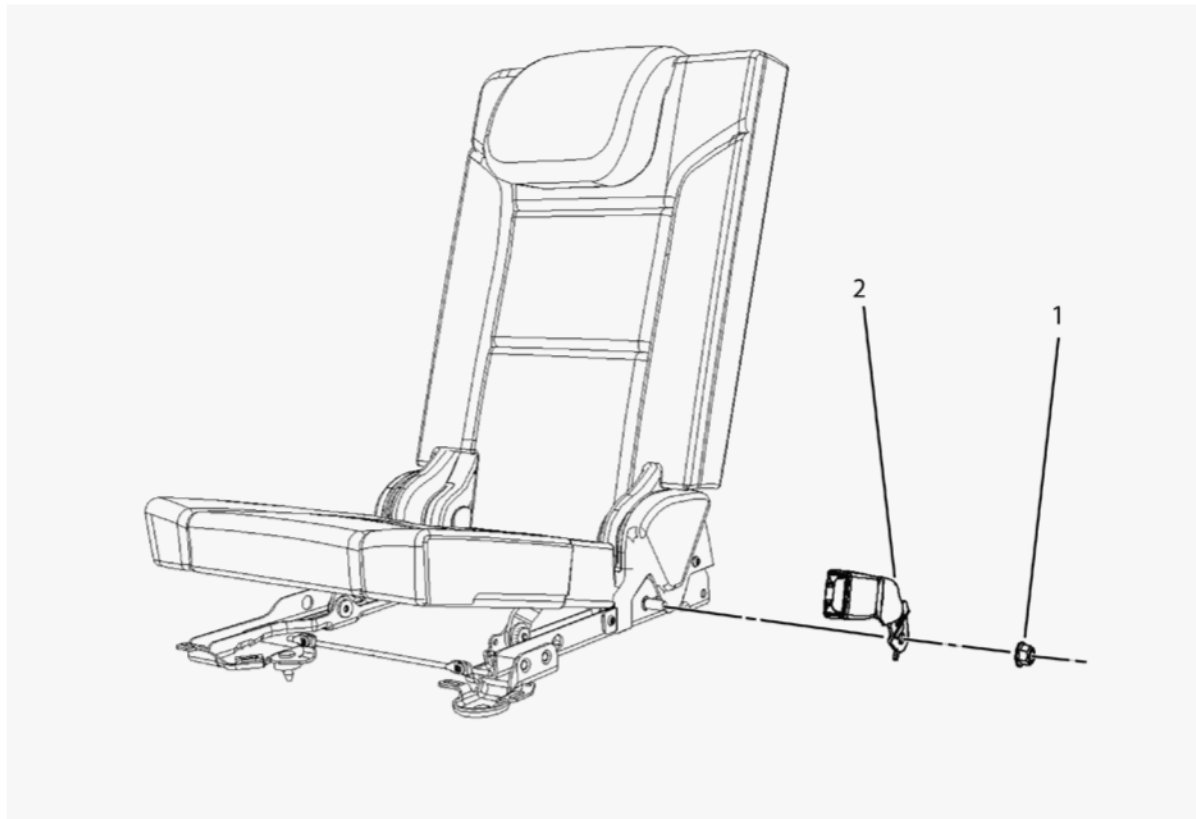


Fig. 11: 3rd Row Seat Belt Buckle (40% Bench)

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures Separate the 3rd row seat. Refer to Rear Seat Separation (3rd Row Power with AS8) Rear Seat Separation (3rd Row Manual with ARN) Rear Seat Separation .	
1	3rd Row Rear Seat Belt Buckle Nut CAUTION: Refer to Fastener Caution . Tighten 45 N.m (33 lb ft)
2	3rd Row Rear Seat Belt Buckle Procedure Inset the tab on the seat belt buckle anchor into the slot on the 3rd row seat frame.

3RD ROW SEAT BELT BUCKLE REPLACEMENT (60% BENCH)

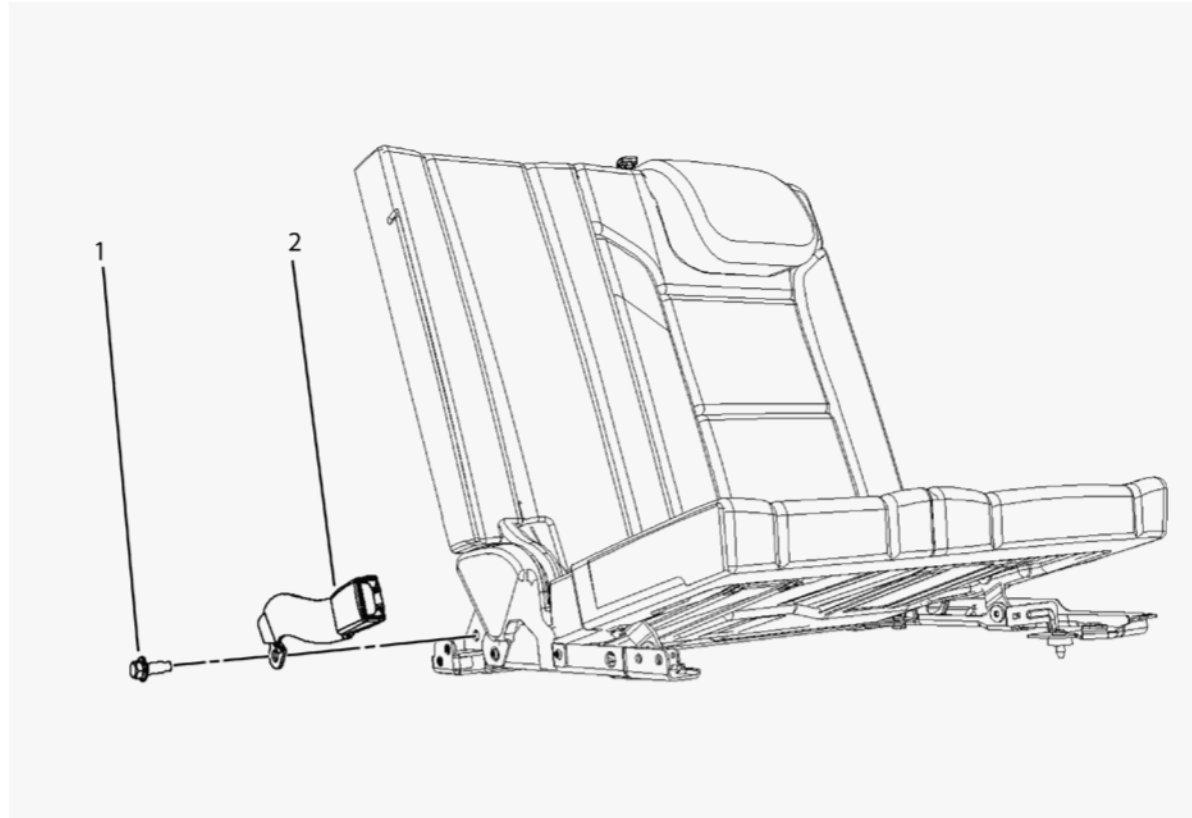


Fig. 12: 3rd Row Seat Belt Buckle (60% Bench)

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures Separate the 3rd row seat. Refer to Rear Seat Separation (3rd Row Power with AS8) Rear Seat Separation (3rd Row Manual with ARN) Rear Seat Separation .	
1	3rd Row Rear Seat Belt Buckle Bolt CAUTION: Refer to Fastener Caution .

Callout	Component Name
	Tighten 45 N.m (33 lb ft)
2	3rd Row Rear Seat Belt Buckle Procedure Position the tab on the seat belt buckle anchor over the 3rd row seat frame.

3RD ROW CENTER SEAT BELT BUCKLE REPLACEMENT

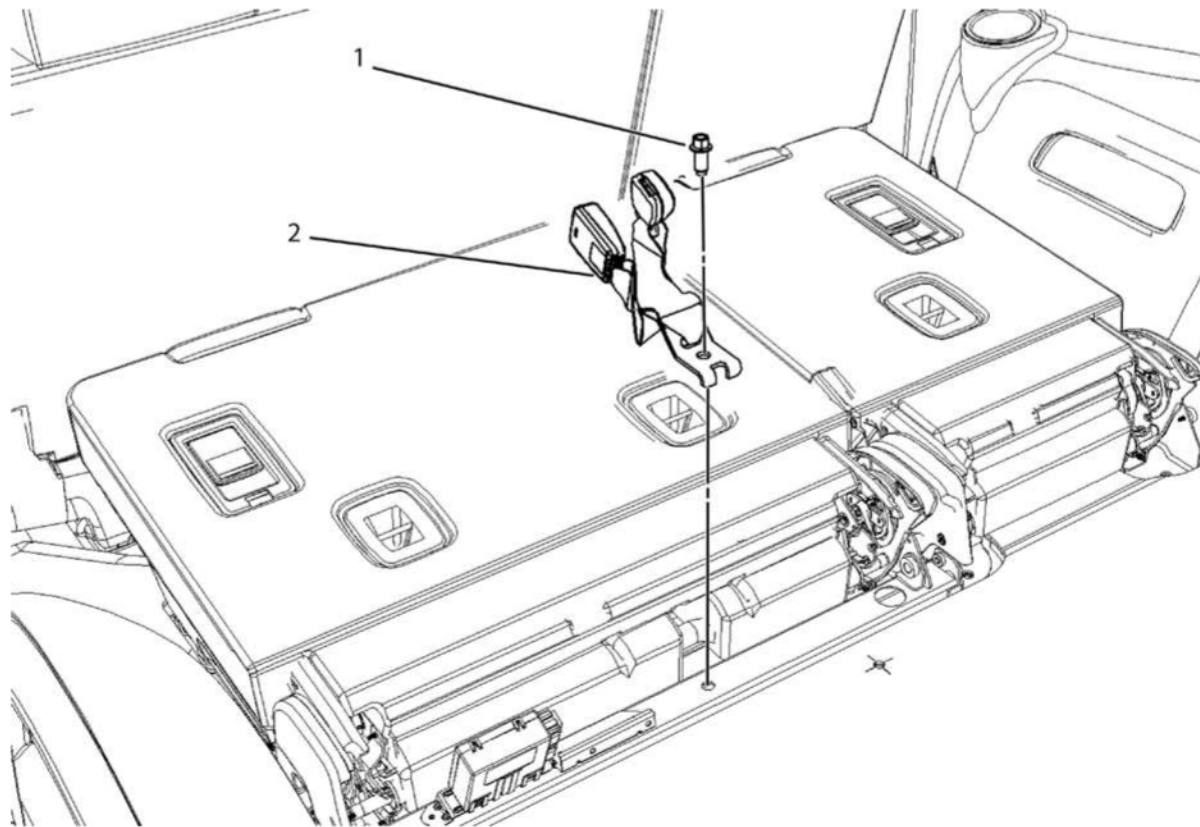


Fig. 13: 3rd Row Center Seat Belt Buckle

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
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Callout	Component Name
1	3rd Row Rear Seat Center Belt Anchor Bolt CAUTION: Refer to <u>Fastener</u> <u>Caution</u> . Tighten 45 N.m (33 lb ft)
2	3rd Row Rear Seat Center Belt Buckle Assembly Procedure 1. Feed the seat belt buckle anchor through the opening in the 3rd row center seat cushion. 2. Position the tabs on the seat belt buckle anchor over and behind the 3rd row seat frame.

3RD ROW CENTER SEAT BELT RETRACTOR REPLACEMENT (LONG WHEELBASE)

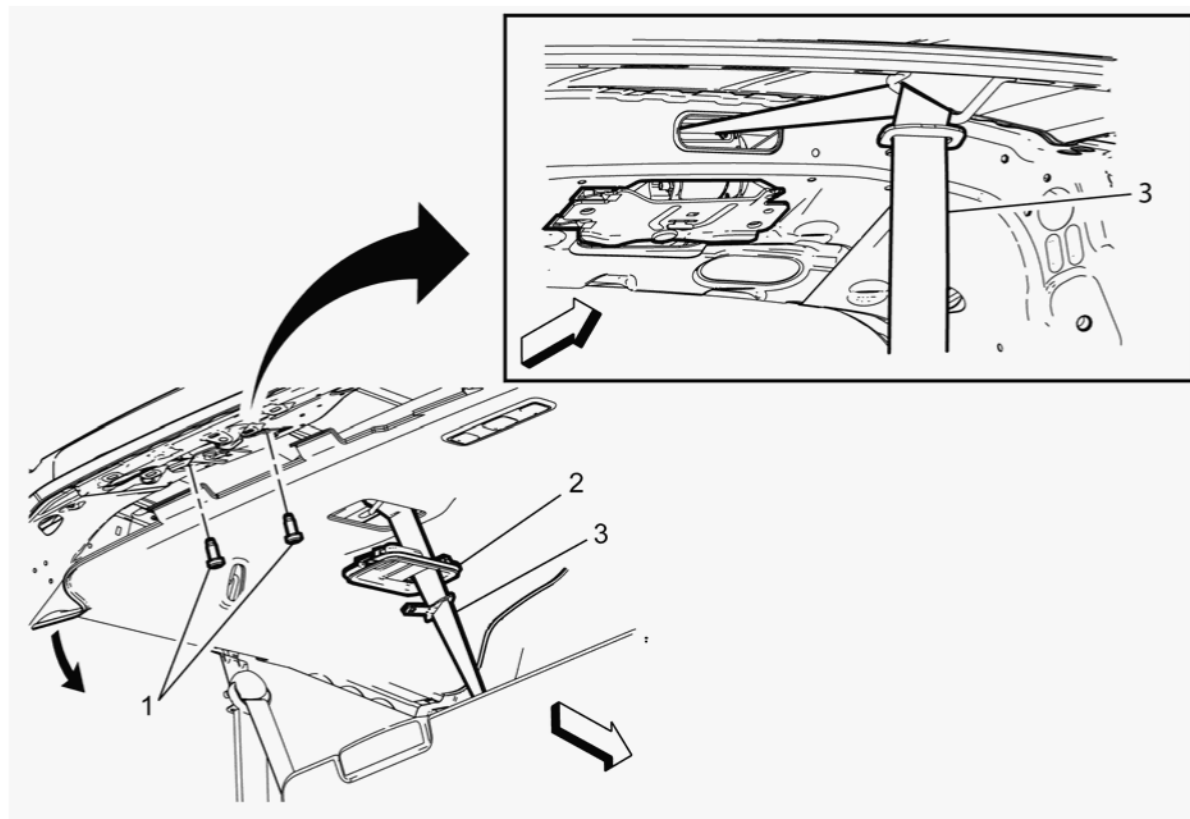


Fig. 14: 3rd Row Center Seat Belt Retractor (Long Wheelbase)

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures	
1. Remove the roof rear header garnish molding. Refer to Roof Rear Header Garnish Molding Replacement (Extended Wheelbase) . 2. Remove the body rear corner upper garnish molding. Refer to Body Rear Corner Upper Garnish Molding Replacement (Extended Wheelbase) . 3. Remove the coat hook. Refer to Coat Hook Replacement .	
1	3rd Row Rear Center Seat Belt Retractor Fastener (Qty: 2) CAUTION:

Callout	Component Name
	Refer to <u>Fastener</u> <u>Caution</u> . Procedure Gently pull down on the rear of the headliner to gain access to the retractor fasteners. Tighten 45 N.m (32 lb ft)
2	Rear Seat Belt Opening Bezel Procedure Disengage the shoulder belt from the center belt buckle and slide it through the rear seat belt opening bezel.
3	3rd Row Rear Center Seat Belt Retractor Procedure Slide the belt through the headliner opening and then disengage and remove the retractor from the vehicle.

3RD ROW CENTER SEAT BELT RETRACTOR REPLACEMENT (SHORT WHEELBASE)

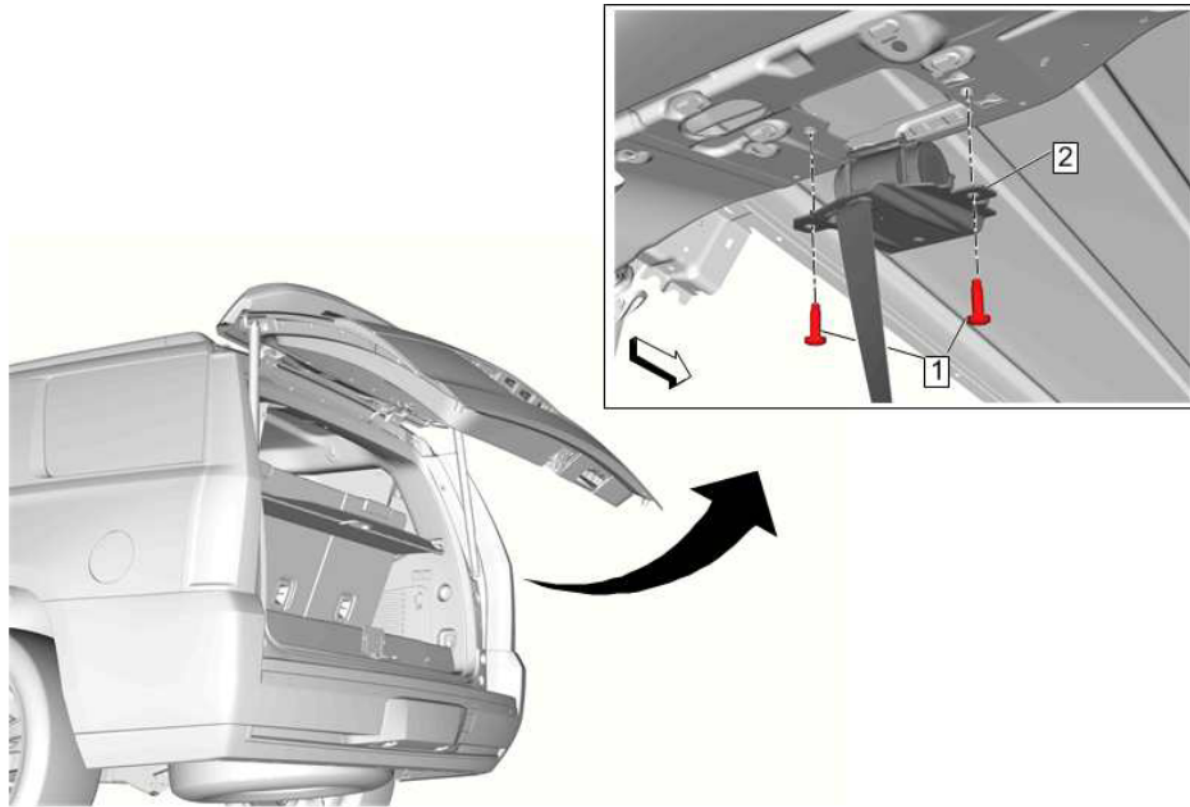


Fig. 15: 3rd Row Center Seat Belt Retractor (Short Wheelbase)

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures 1. Remove the roof rear header garnish molding. Refer to Roof Rear Header Garnish Molding Replacement (Standard Wheelbase) . 2. Remove the body rear corner upper garnish molding. Refer to Body Rear Corner Upper Garnish Molding Replacement (Standard Wheelbase) .	
1	3rd Row Rear Center Seat Belt Retractor Fastener (Qty: 2) CAUTION:

Callout	Component Name
	Refer to <u>Fastener</u> <u>Caution</u> . Procedure Gently pull down on the rear of the headliner to gain access to the retractor fasteners. Tighten 45 N.m (32 lb ft)
3	3rd Row Rear Center Seat Belt Retractor Procedure Disengage and remove the retractor from the vehicle.

3RD ROW SEAT BELT RETRACTOR REPLACEMENT (SHORT WHEELBASE)

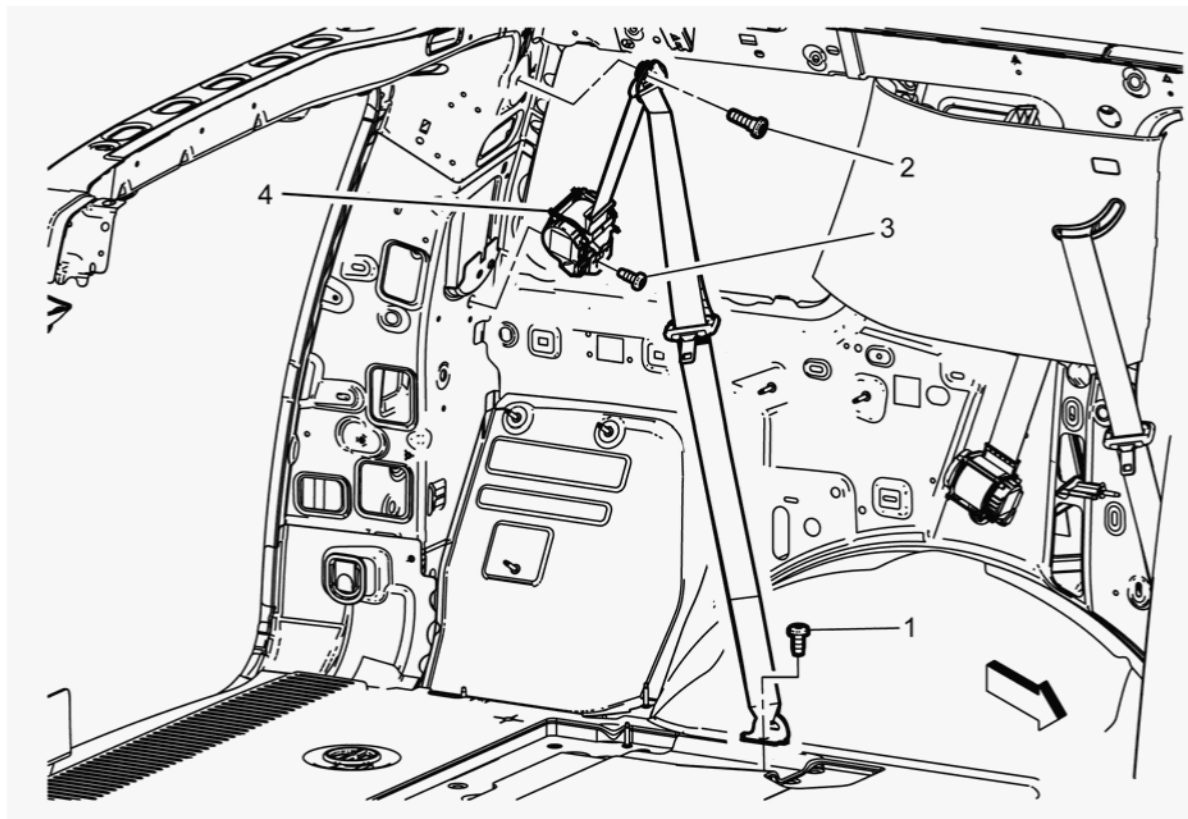


Fig. 16: 3rd Row Seat Belt Retractor (Short Wheelbase)

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove the quarter lower rear trim panel. Refer to Quarter Lower Rear Trim Panel Replacement (Left Side, Standard Wheelbase) Quarter Lower Rear Trim Panel Replacement (Right Side, Standard Wheelbase) .	
1	3rd Row Rear Seat Shoulder Belt Anchor Plate Fastener CAUTION: Refer to Fastener Caution .

Callout	Component Name
	Tighten 45 N.m (32 lb ft)
2	3rd Row Rear Seat Belt Retractor Upper Fastener Tighten 45 N.m (32 lb ft)
3	3rd Row Rear Seat Belt Retractor Lower Fastener Tighten 45 N.m (32 lb ft)
4	3rd Row Rear Seat Belt Retractor

3RD ROW SEAT BELT RETRACTOR REPLACEMENT (LONG WHEELBASE)

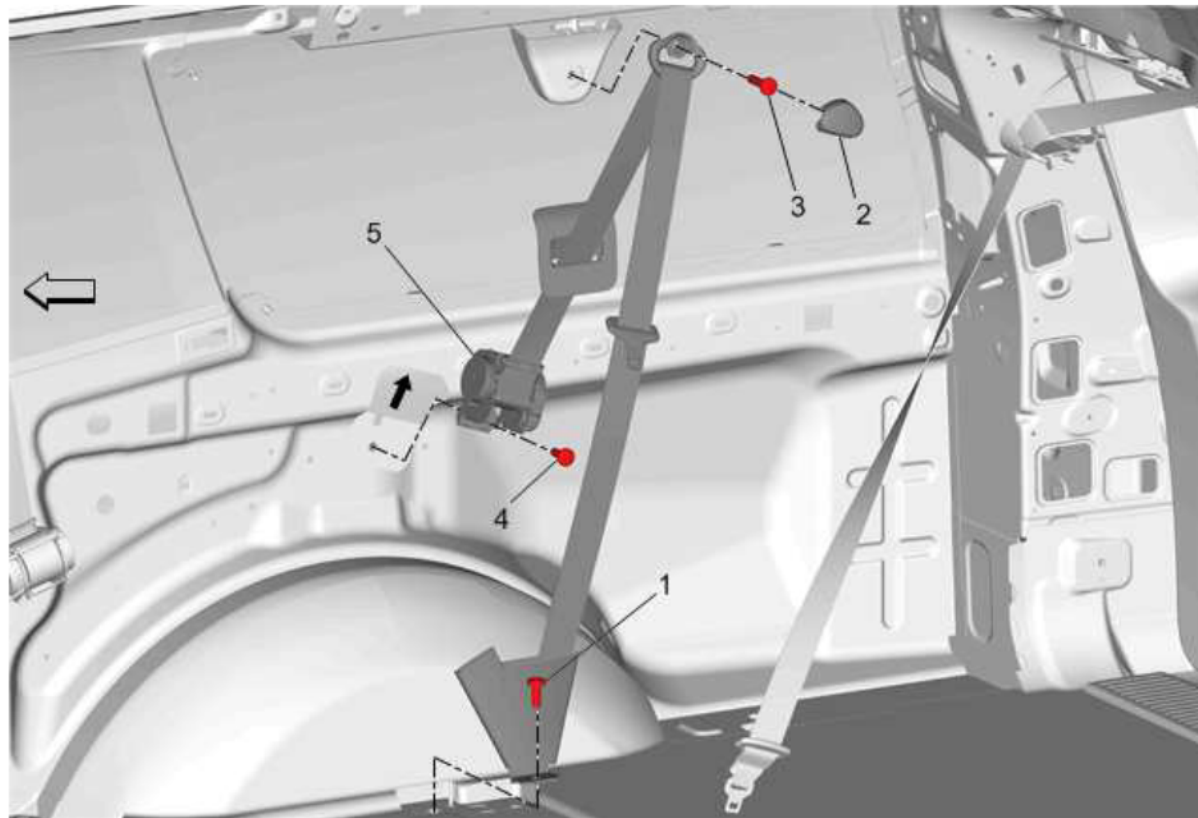


Fig. 17: 3rd Row Seat Belt Retractor (Long Wheelbase)

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures 1. Remove the 3rd row seat. Refer to 3rd Row Seat Removal and Installation . 2. Remove the quarter lower rear trim panel. Refer to Quarter Lower Rear Trim Panel Replacement (Left Side, Extended Wheelbase) Quarter Lower Rear Trim Panel Replacement (Right Side, Extended Wheelbase) .	
1	3rd Row Rear Seat Shoulder Belt Anchor Plate Fastener CAUTION: Refer to Fastener Caution . Tighten 45 N.m (32 lb ft)
2	3rd Row Rear Seat Belt Retractor Cover
3	3rd Row Rear Seat Belt Retractor Upper Fastener Tighten 45 N.m (32 lb ft)
4	3rd Row Rear Seat Belt Retractor Lower Fastener Tighten 45 N.m (32 lb ft)
5	3rd Row Rear Seat Belt Retractor

REAR SEAT BELT INTERMEDIATE GUIDE REPLACEMENT (2ND ROW)

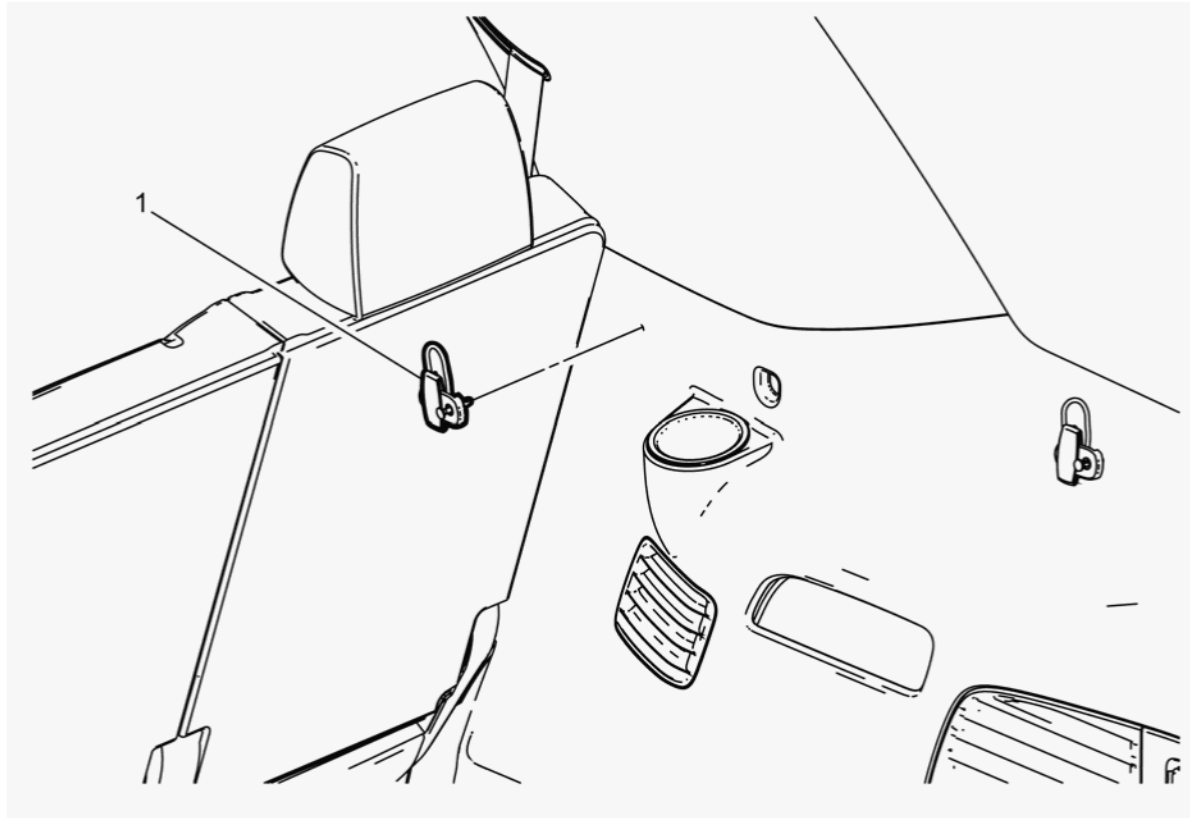


Fig. 18: Rear Seat Belt Intermediate Guide (2nd Row)

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Rear Seat Belt Intermediate Guide Procedure Release the push-in retainer on the guide using a hook type tool to pull outward on the retainer.

REAR SEAT BELT INTERMEDIATE GUIDE REPLACEMENT (3RD ROW)

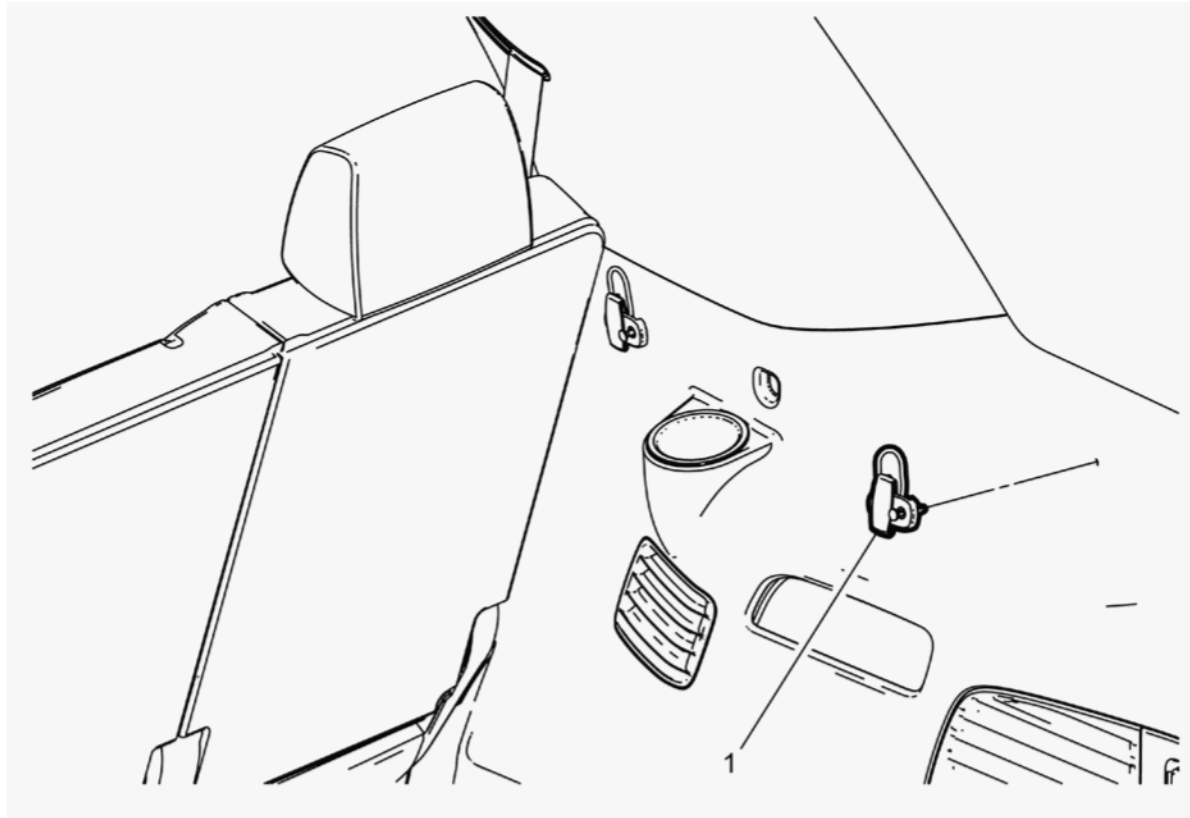


Fig. 19: Rear Seat Belt Intermediate Guide (3rd Row)

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Rear Seat Belt Intermediate Guide Procedure Release the push-in retainer on the guide using a hook type tool to pull outward on the retainer.

DESCRIPTION AND OPERATION

SEAT BELT SYSTEM DESCRIPTION AND OPERATION

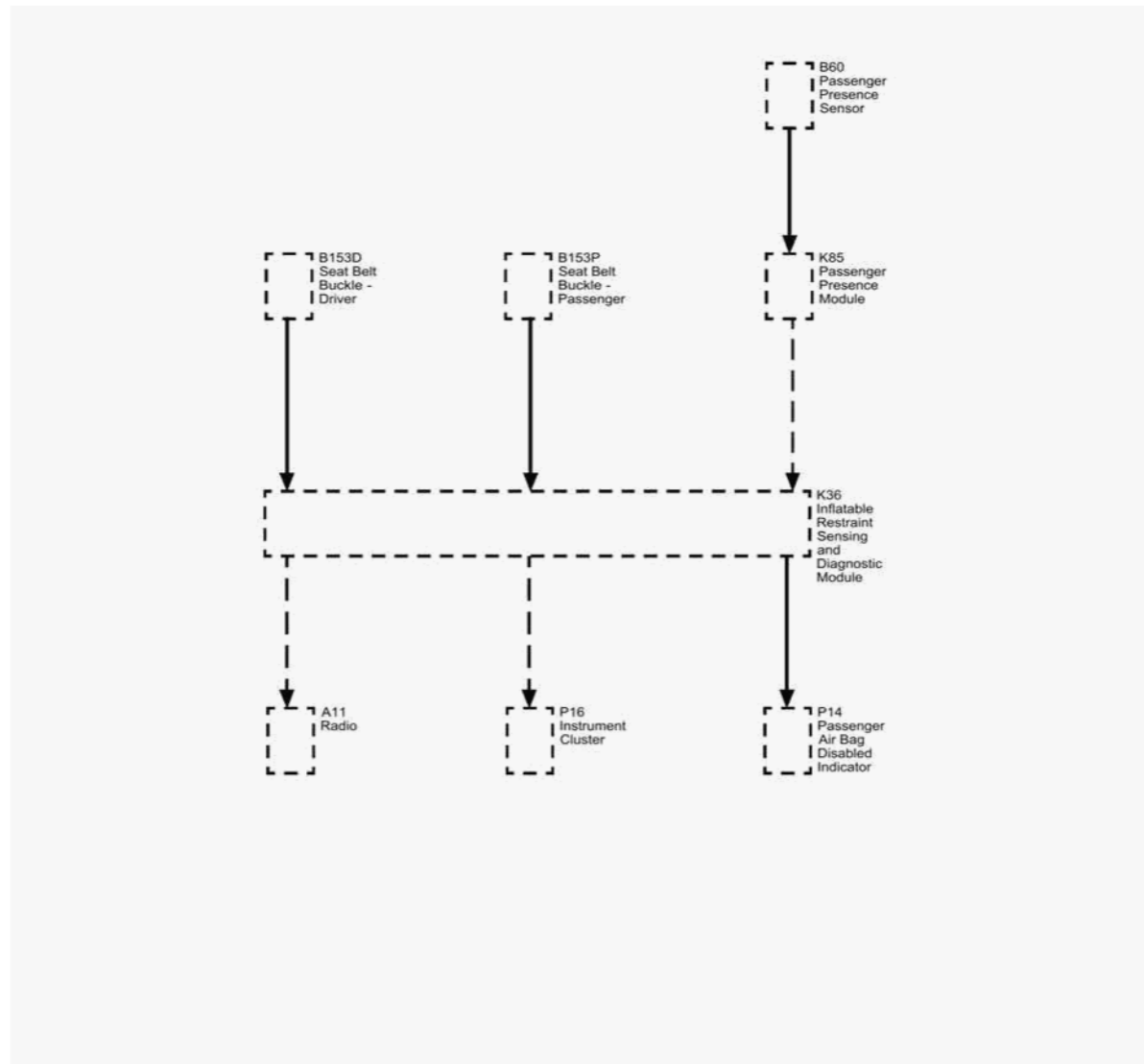


Fig. 20: Seat Belt System Block Diagram

Courtesy of GENERAL MOTORS COMPANY

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

Callout	Component Name
A11	A11 Radio
P16	P16 Instrument Cluster
B60	B60 Passenger Presence Sensor
K85	Passenger Presence Module
P14	P14 Passenger Air Bag Disabled Indicator

NOTE: Not all items shown in block diagram are available in this publication

Restraint System

NOTE: If the vehicle has been in a collision, refer to [Repairs and Inspections Required After a Collision](#)

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](#)

Motorized Seat Belts

A motorized seat belt is a seat belt with a motor coupled to the shoulder belt retractor. The motorized seat belt provides the driver and passenger a sense of safety and, in the case of severe braking or a crash, more quickly couples the occupant to the vehicle, enhancing the safety to the occupant.

Motorized seat belts monitor vehicle information to determine when to perform each of the following retractions

- Full retraction for such situations but not limited to: panic braking and or skidding
- Dynamic support for lateral and longitudinal dynamics

Preconditions for motorized seat belt retractions

- Seat belt buckle is latched
- Vehicle speed greater than or equal to 25 kph (16 mph)
- All messages on serial data are received as valid

Triggers that may cause motorized seat belt retractions

- Emergency Braking
- Sudden Emergency / Panic Braking
- High Vehicle Deceleration Detection
- Ice Braking Detection
- Oversteer and Understeer

Motorized seat belt inputs

- Vehicle Power Mode
- Transmission Gear
- Wheel Speeds
- Vehicle Acceleration

- Accelerator Pedal Position
- Steering Wheel Angle and Gradient
- Yaw Rate and Lat/Long Acceleration
- Brake Pedal Position, Gradient, Pressure, Initial Travel
- Vehicle Stability

Motorized seat belt output signals

- Driver information center message - motorized seat belt Failed "Service Automatic Seatbelt Tightening"
- Driver information center message - motorized seat belt Unavailable "Automatic Seatbelt Tightening Unavailable"

Motorized seat belt retractions are inhibited when seat belt unbuckled

Driver and passenger motorized seat belts operate independently

Front Seat Belt System

The front seat belt system includes a driver and passenger seat belt pretensioner retractor. 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 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.

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.

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.

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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 is a fasten safety belt indicator for this vehicle. The driver fasten safety belt reminder is displayed in the instrument cluster. 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. 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.
