

2017 RESTRAINTS

Seat Belts - CT6

SPECIFICATIONS

FASTENER SPECIFICATIONS

Reusable Threaded Fastener Tightening Specifications

NOTE:

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

Application	Specification
	Metric (English)
Front Seat Belt Buckle Fastener	40 N.m (30 lb ft)
Front Seat Belt Guide Adjuster Bolt	45 N.m (33 lb ft)
Rear Seat Belt Buckle Fastener	45 N.m (33 lb ft)
Rear Seat Belt Retractor Anchor Plate Bolt	45 N.m (33 lb ft)
Rear Seat Belt Retractor Anchor Plate Nut	45 N.m (33 lb ft)
Rear Seat Belt Retractor Bolt	45 N.m (33 lb ft)
Rear Seat Belt Retractor Fastener	45 N.m (33 lb ft)
Rear Seat Center Belt Nut-Lower	45 N.m (33 lb ft)
Rear Seat Center Belt Nut-Upper Front	9 N.m (80 lb in)
Rear Seat Center Belt Nut-Upper Rear	45 N.m (33 lb ft)

SCHEMATIC WIRING DIAGRAMS

SEAT BELT WIRING SCHEMATICS

Switches and Indicators

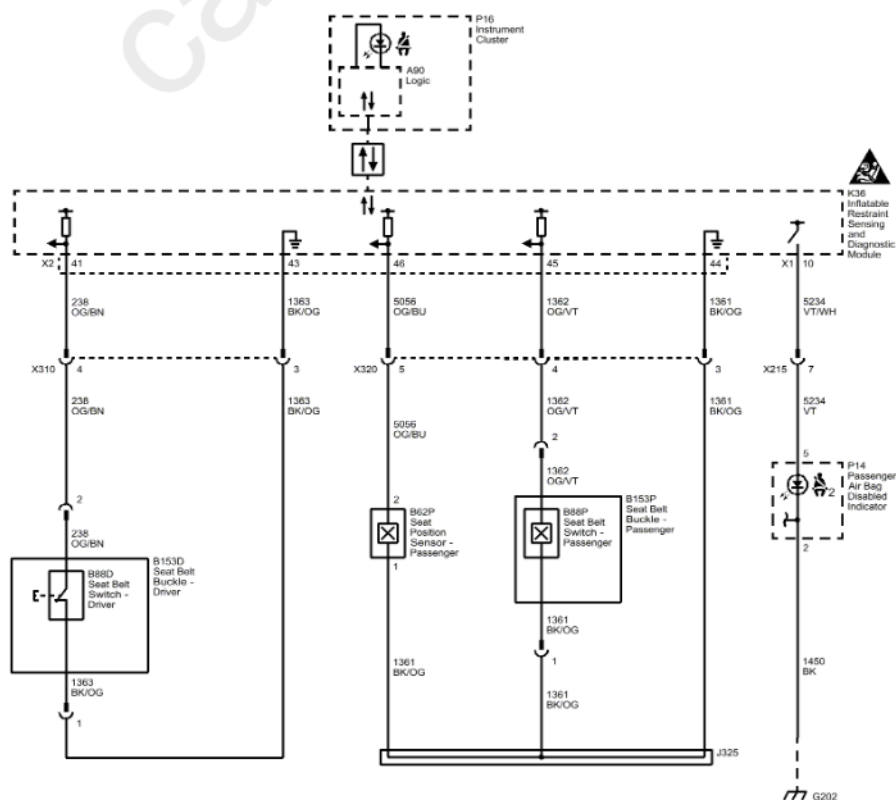


Fig. 1: Switches and Indicators
 Courtesy of GENERAL MOTORS COMPANY

Motors (AX7)

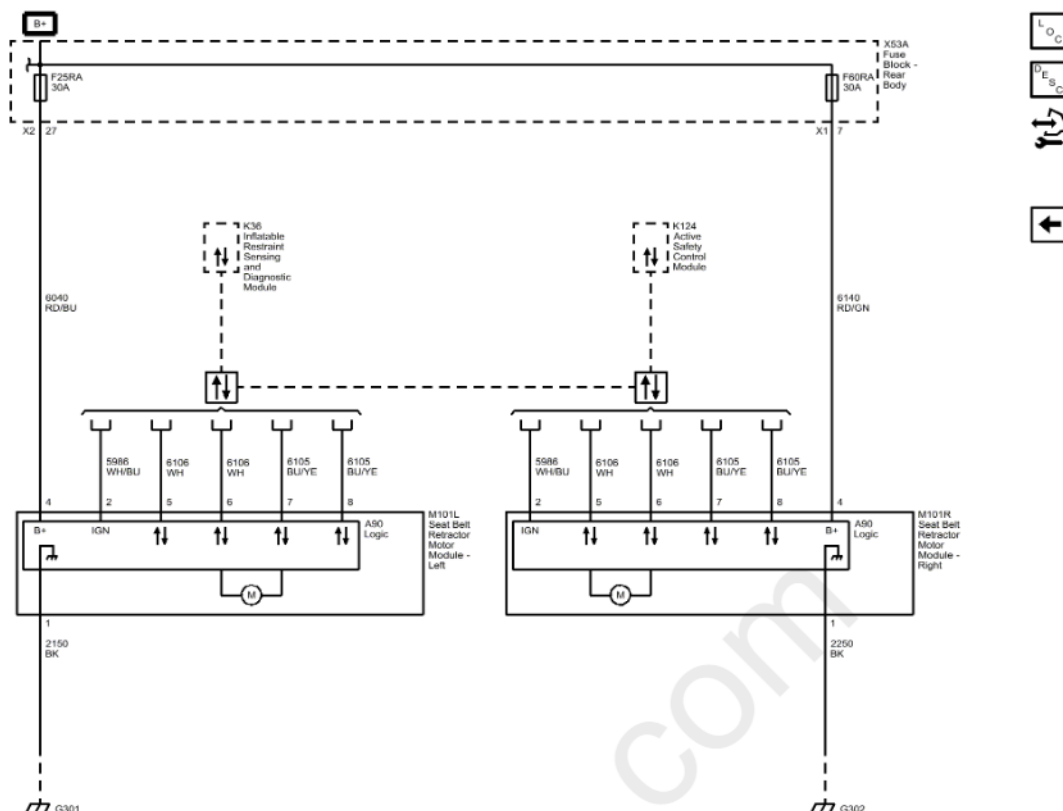


Fig. 2: Motors (AX7)
 Courtesy of GENERAL MOTORS COMPANY

DIAGNOSTIC INFORMATION AND PROCEDURES

DTC B0072 OR B0073: DRIVER/PASSENGER SEAT BELT SWITCH CIRCUIT

Diagnostic Instructions

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

DTC Descriptors

DTC B0072

Driver Seat Belt Switch Circuit

DTC B0073

Passenger Seat Belt Switch Circuit

For symptom byte information, refer to [Symptom Byte List](#).

Diagnostic Fault Information

Circuit	Short to Ground	High Resistance	Open	Short to Voltage	Signal Performance
Driver Seat Belt Buckle Signal	B0072 02, B0072 0B	B0072 04, B0072 06, B0072 0C	B0072 04, B0072 06	B0072 01, B0072 05	B0072 08

Circuit	Short to Ground	High Resistance	Open	Short to Voltage	Signal Performance
Driver Seat Belt Buckle Low Reference	-	B0072 04, B0072 06, B0072 0C	B0072 04, B0072 06	-	-
Passenger Seat Belt Buckle Signal	B0073 02, B0073 0B	B0073 04, B0073 06, B0073 0C	B0073 04, B0073 06	B0073 01, B0073 05	B0073 08
Passenger Seat Belt Buckle Low Reference	-	B0073 04, B0073 06, B0073 0C	B0073 04, B0073 06	-	-

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 buckle signal circuit to determine a buckled or unbuckled condition. The inflatable restraint sensing and diagnostic module monitors the seat belt buckle 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 buckle circuit is shorted to voltage.

B0072 02 or B0073 02

The seat belt buckle circuit is shorted to ground.

B0072 04 or B0073 03

The seat belt buckle circuit is open.

B0072 05 or B0073 05

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

B0072 06 or B0073 06

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

B0072 08 or B0073 08

The seat belt buckle signal is invalid.

B0072 0B or B0073 0B

The seat belt buckle signal is above threshold.

B0072 0C or B0073 0C

The seat belt buckle 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

Seat Belt Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Supplemental Inflatable Restraint System Description and Operation

Electrical Information Reference

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

Scan Tool Reference

Control Module References for scan tool information.

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, 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 Ω between the low reference circuit terminal 1 and ground.
 - **If 5 Ω or greater**
 1. Ignition OFF, disconnect the harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
 2. Test for less than 2 Ω in the low reference circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , replace the K36 Inflatable Restraint Sensing and Diagnostic Module.
 - **If less than 5 Ω**

3. Ignition ON.

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

- **If not Buckled**

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

2. Test for infinite resistance between the signal circuit 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 appropriate scan tool Seat Belt Status parameter is Unbuckled.

- **If not Unbuckled**

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

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

- If 1 V or greater, repair the short to voltage on the circuit.
- If less than 1 V

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

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

- **If Unbuckled**

7. Test or replace the B153 Seat Belt Buckle.

Component Testing

1. Ignition OFF, disconnect the harness connector at the B153 Seat Belt Buckle.

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

- **If 5 Ω or greater**

Replace the B153 Seat Belt Buckle.

- **If less than 5 Ω**

3. Insert the seat belt into the buckle.

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

- **If less than infinite resistance**

Replace the B153 Seat Belt Buckle.

- **If infinite resistance**

5. All OK.

Repair Instructions

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

- **Front Seat Belt Buckle Replacement**

- **SIR/SRS Wiring Repairs**

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

DTC B0082: SEAT BELT REMINDER SENSOR

Diagnostic Instructions

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

DTC Descriptors

DTC B0082 01

Seat Belt Reminder Sensor Short to Battery

DTC B0082 02

Seat Belt Reminder Sensor Short to Ground

DTC B0082 04

Seat Belt Reminder Sensor Open Circuit

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Seat Belt Reminder Sensor Signal	B0082 02	B0082 04	B0082 01	-
Seat Belt Reminder Sensor Low Reference	-	B0082 04	-	-

Circuit/System Description

The seat belt reminder sensor is within the passenger seat cushion 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 reminder sensor signal circuit to determine seated or unseated condition of passenger seat.

Conditions for Running the DTC

Ignition voltage is between 9-16 V.

Conditions for Setting the DTC

B0082 01

The Inflatable Restraint Sensing and Diagnostic Module detects a short to voltage in the seat belt reminder sensor signal circuit.

B0082 02

The Inflatable Restraint Sensing and Diagnostic Module detects a short to ground in the seat belt reminder sensor signal circuit

B0082 04

The Inflatable Restraint Sensing and Diagnostic Module detects an open/high resistance in the seat belt reminder sensor signal circuit or the seat belt reminder sensor ground circuit

Action Taken When the DTC Sets

The SIR System is disabled and no deployments are allowed.

Conditions for Clearing the DTC

- The DTC will be current for as long as the fault is present
- When the fault is no longer present, the DTC will be a history DTC

- A history DTC will clear after 50 ignition cycles

Reference Information

Schematic Reference

Seat Belt Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Supplemental Inflatable Restraint System Description and Operation

Electrical Information Reference

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

Scan Tool Reference

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

Circuit/System Verification

1. Ignition ON.
2. Verify, with the passenger seat unoccupied, the scan tool Passenger Seat Occupancy Status parameter is Empty Seat.
 - **If not Empty Seat**
Refer to Circuit/System Testing
 - **If Empty Seat**
3. Verify, with the passenger seat occupied, the scan tool Passenger Seat Occupancy Status parameter is Occupied.
 - **If not Occupied**
Refer to Circuit/System Testing
 - **If Occupied**
4. All OK.

Circuit/System Testing

1. Ignition OFF. Disconnect the harness connector at the B60 Passenger Presence Sensor, wait 120 seconds.
2. Test for less than 30 Ω between the low reference circuit terminal 2 and ground.
 - **If 30 Ω or greater**
 1. Ignition OFF, disconnect the X2 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
 2. Test for less than 2 Ω in the low reference circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , replace the K36 Inflatable Restraint Sensing and Diagnostic Module.
 - **If less than 30 Ω**
3. Ignition ON.
4. Test for 4.75-5.25 V between the signal circuit terminal 1 and ground.

- **If less than 4.75 V**
 1. Disconnect the X2 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
 2. Test for infinite resistance between the signal circuit and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 3. Test for less than 2 Ω in the signal circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , replace the K36 Inflatable Restraint Sensing and Diagnostic Module.
 - **If greater than 5.25 V**
 1. Ignition OFF. Disconnect the X2 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module. Ignition ON.
 2. Test for less than 1 V between the signal circuit and ground.
 - If 1 V or greater, repair the short to voltage on the circuit.
 - If less than 1 V, replace the K36 Inflatable Restraint Sensing and Diagnostic Module.
 - **If between 4.75-5.25 V**
5. Replace the B60 Passenger Presence Sensor.

Repair Instructions

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

- [Front Seat Cushion Cover and Pad Replacement](#) for Passenger Presence Sensor replacement
- [Control Module References](#) for Inflatable Restraint Sensing and Diagnostic Module control module replacement, programming and setup.

DTC B059A: PASSENGER SEAT BELT INDICATOR CIRCUIT

Diagnostic Instructions

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

DTC Descriptors

DTC B059A 01

Passenger Seat Belt Indicator Circuit Short to Battery

DTC B059A 02

Passenger Seat Belt Indicator Circuit Short to Ground

DTC B059A 04

Passenger Seat Belt Indicator Circuit Open

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 Buckle Low Reference	-	2	-	-
Passenger Seat Belt Indicator Control	B059A 02, 3	B059A 04, 3	B059A 01, 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

The inflatable restraint sensing and diagnostic module (SDM) monitors the passenger seat status and the passenger seat belt buckle switch and provides an output to the passenger seat belt indicator. When the inflatable restraint sensing and diagnostic module detects the passenger seat is occupied and the seat belt is not fastened, the inflatable restraint sensing and diagnostic module supplies a pulse width modulated signal to control the passenger seat belt indicator circuit. The inflatable restraint sensing and diagnostic module monitors the passenger seat belt indicator 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

B059A 01

The passenger seat belt indicator circuit is shorted to voltage.

B059A 02

The passenger seat belt indicator circuit is shorted to ground.

B059A 04

The passenger seat belt indicator circuit is open.

Action Taken When the DTC Sets

The inflatable restraint sensing and diagnostic module will store the DTC.

Conditions for Clearing the DTC

The condition for setting the DTC no longer exists.

Reference Information

Schematic Reference

SIR Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Supplemental Inflatable Restraint System Description and Operation

Electrical Information Reference

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

Scan Tool Reference

Circuit/System Verification

1. Ignition ON.
2. Verify the Passenger Seat Belt Reminder Indicator turns On and Off when commanded On and Off with a scan tool.
 - **If the passenger seat belt reminder indicator does not change**
Refer to Circuit/System Testing
 - **If the passenger seat belt reminder indicator 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.

- **P14 Passenger Air Bag Disable Indicator**
- **K36 Inflatable Restraint Sensing and Diagnostic Module**

1. Ignition 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 10 Ω between the ground circuit terminal 2 and ground.
 - **If 10 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 10 Ω**
3. Connect a test lamp between the control circuit terminal 5 and ground, ignition ON.
4. Verify the test lamp is OFF when commanding the Passenger Seat Belt Reminder Indicator OFF with a scan tool.
 - **If the test lamp is 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 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 test lamp is OFF**
5. Verify the test lamp is ON when commanding the Passenger Seat Belt Reminder Indicator ON with a scan tool.
 - **If the test lamp is 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 terminal 5 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 is ON**
6. Test or replace the P14 Passenger Air Bag Disable Indicator.

Repair Instructions

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

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

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. Grab the seat belt webbing and slowly and firmly extract 15-25 mm (5/8-1 in) of webbing from the seat belt.
2. Release the seat belt and allow the webbing to slowly retract back into the retractor.
3. Check to see if the seat belt is released. If the seat belt is not released, repeat steps 1 and 2, two times more.
4. 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](#) 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
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 minutes for all vehicle systems to power down.
2. Test for less than 5 Ω between the low reference circuit terminal 2 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 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**
 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 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 Ω between the signal circuit terminal 1 and the low reference terminal 2.
 - **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	B0072 02, B0072 0B, 1 1	B0072 04, B0072 06, B0072 0C, 2	B0072 01, B0072 05, 2	-
Passenger Seat Belt Buckle Low Reference	-	B0073 04, B0073 06, B0073 0C, 2	-	-
Passenger Seat Belt Indicator Control	B059A 02, 3	B059A 04, 3	B059A 01, 4	-
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 system 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 controls the illumination of the passenger seat belt indicator via a hard wire.

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

Connector End View Reference

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. Ignition ON, have an occupant sit in the passenger seat.
2. Verify the scan tool Passenger Presence Module Seat Occupancy Status parameter is Occupied.
 - **If not Occupied**
Replace the K85 Passenger Presence Module.
 - **If Occupied**
3. Verify the test lamp turns ON and OFF when commanding the Passenger Seat Belt Reminder Indicator ON and OFF 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**
4. 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**
5. All OK.

Circuit/System Testing

Seat Belt Switch Malfunction

1. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the B153P Seat Belt Buckle - Passenger. It may take up to 2 min for all vehicle systems to power down.

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

- B153 Seat Belt buckle
- Seat belt switch harness connector
- K36 Inflatable Restraint Sensing and Diagnostic Module
- inflatable restraint sensing and diagnostic module harness connector

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 the low reference circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , replace the K36 Inflatable Restraint Sensing and Diagnostic Module.

- **If less than 5 Ω**

3. Ignition ON.

4. Verify the scan tool Passenger Seat Belt Status parameter is Buckled.

- **If not Buckled**

1. Disconnect the 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 less than 2 Ω , 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 Passenger Seat Belt Status parameter is Unbuckled.

- **If not Unbuckled**

1. Disconnect the harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module, ignition ON.
2. Test for less than 1 V between the signal circuit and ground.
 - If 1 V or greater, repair the short to voltage on the circuit.
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 B153P Seat Belt Buckle - Passenger.

Seat Belt Indicator Malfunction

1. Ignition OFF. Scan tool disconnected. 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 10 Ω between the ground circuit terminal 2 and ground.

- **If 10 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 10 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 Indicator 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 1 V or greater, repair the short to voltage on the circuit.
 - If less than 1 V, replace the K36 Inflatable Restraint Sensing and Diagnostic Module.

- **If the test lamp 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 terminal 5 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**

5. Test or 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 passenger 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 B153P Seat Belt Buckle - Passenger.

- **If infinite resistance**

3. Unbuckle the passenger 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**

Test or replace the B153P Seat Belt Buckle - Passenger.

- **If less than 1 Ω**

5. 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, passenger presence module or instrument cluster 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

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 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.

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

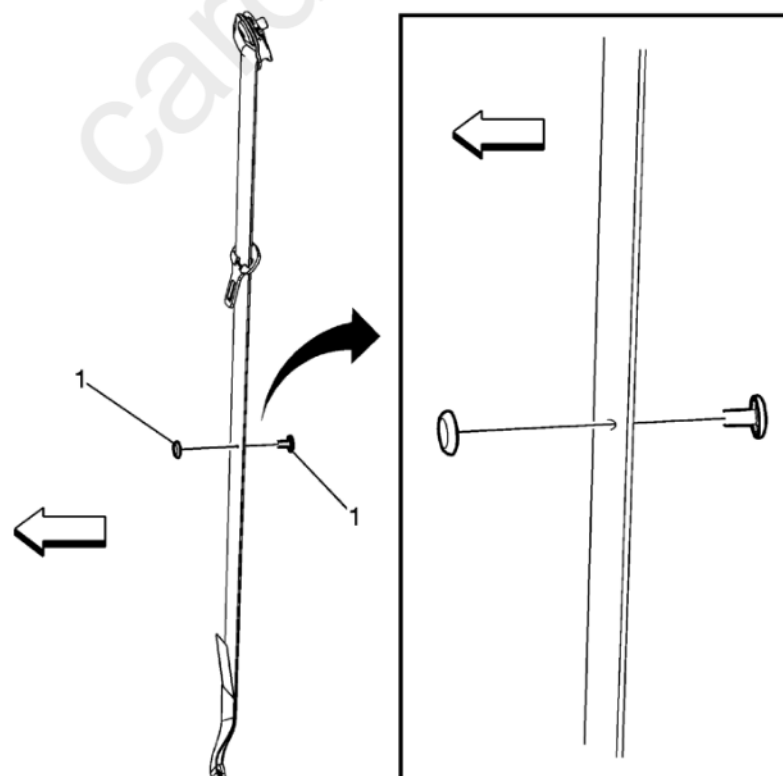


Fig. 3: View Of Seat Belt Latch Stop Components
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure 1. Locate the hole in the seat belt webbing where the original seat belt stop button was located. 2. If the original hole in the seat belt webbing is not visible, perform the following: • If either the right or left stop button is missing use the opposing seat belt as a reference. • With the opposing seat belt fully stowed, measure the distance between the seat belt lower anchor and the stop button. • Using the measurement obtained above, measure and mark the location of the missing stop button on the center of the seat belt webbing. 3. Ensure the seat belt latch plate is located above the mark or original hole.	
1	Seat Belt Stop Button Procedure 1. Work the male half of the stop button through the hole in the webbing or at the marked location. 2. Align the female half of the stop button with the male half of the stop button. 3. Snap the two halves together. 4. Trim off any excess of the male half of the stop button flush with the female half of the stop button. TIP: 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.

FRONT SEAT BELT BUCKLE REPLACEMENT



Fig. 4: Front Seat Belt Buckle
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Driver or Passenger Seat Removal and Installation	

Callout	Component Name
1	Front Seat Belt Buckle Fastener CAUTION: Refer to Fastener Caution . Tighten 40 N.m (30 lb ft)
2	Front Seat Belt Buckle

REAR SEAT BELT BUCKLE REPLACEMENT (EXCEPT PLATINUM)

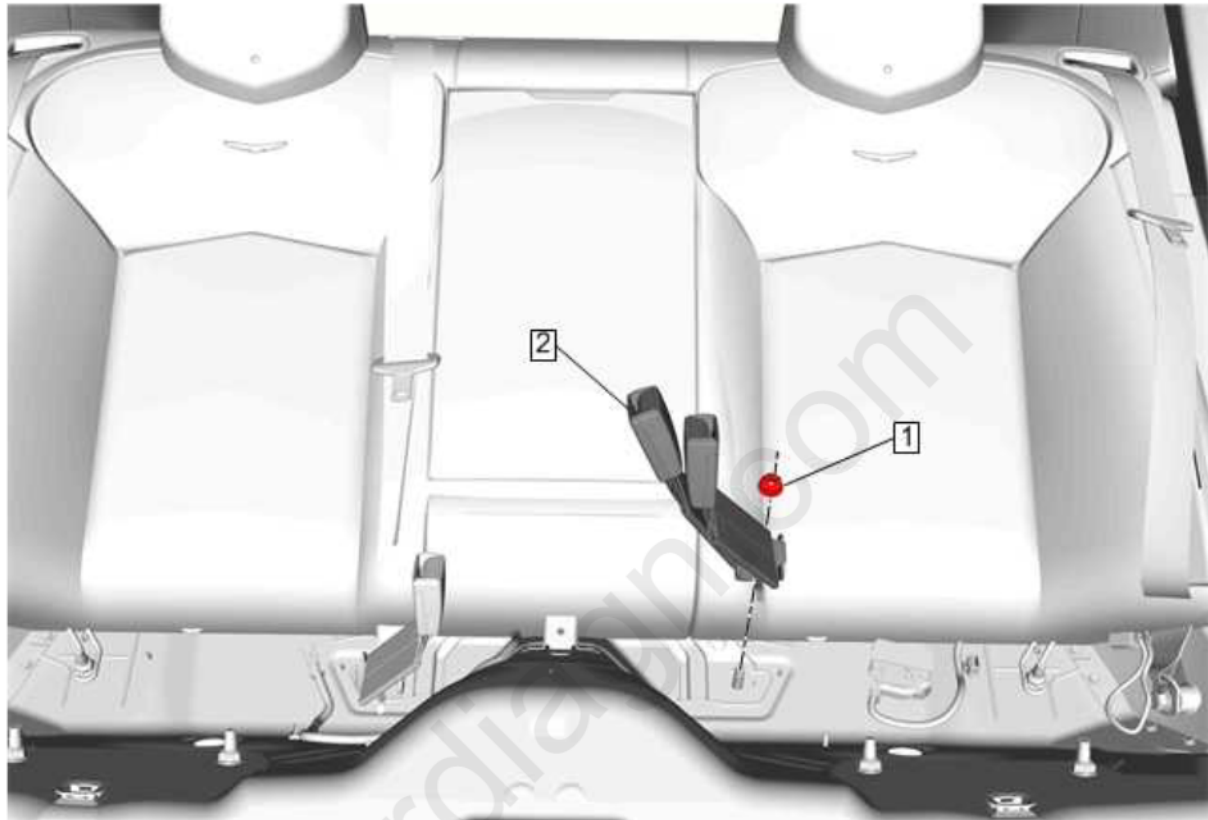


Fig. 5: Rear Seat Belt Buckle (Base)

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure <u>Rear Seat Cushion Removal and Installation (except Platinum)</u>	
1	Rear Seat Belt Buckle Fastener CAUTION: Refer to Fastener Caution . Tighten 45 N.m (33 lb ft)
2	Rear Seat Belt Buckle

REAR SEAT BELT BUCKLE REPLACEMENT (PLATINUM)

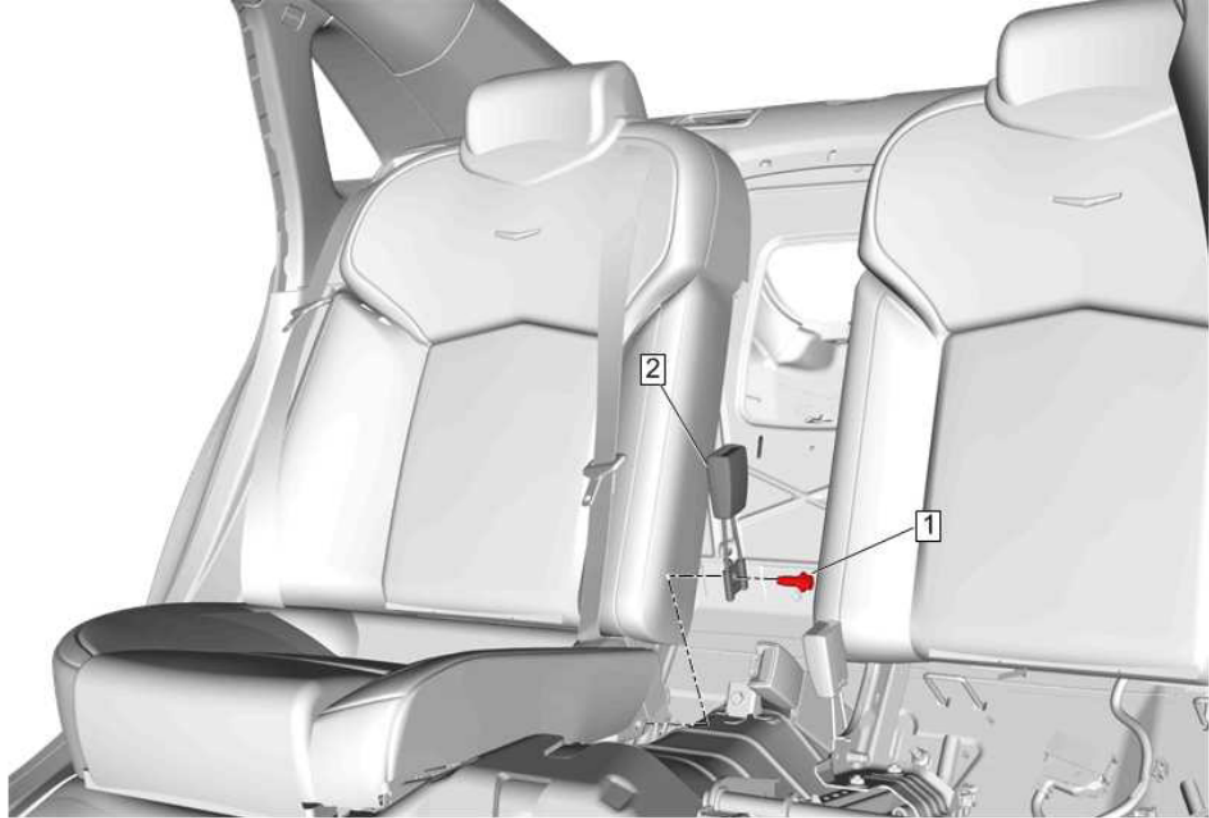


Fig. 6: Rear Seat Belt Buckle (Platinum)

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure <u>Rear Seat Cushion Removal and Installation (Platinum 40%)</u> <u>Rear Seat Cushion Removal and Installation (Platinum 20%)</u>	
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 (EXCEPT PLATINUM)

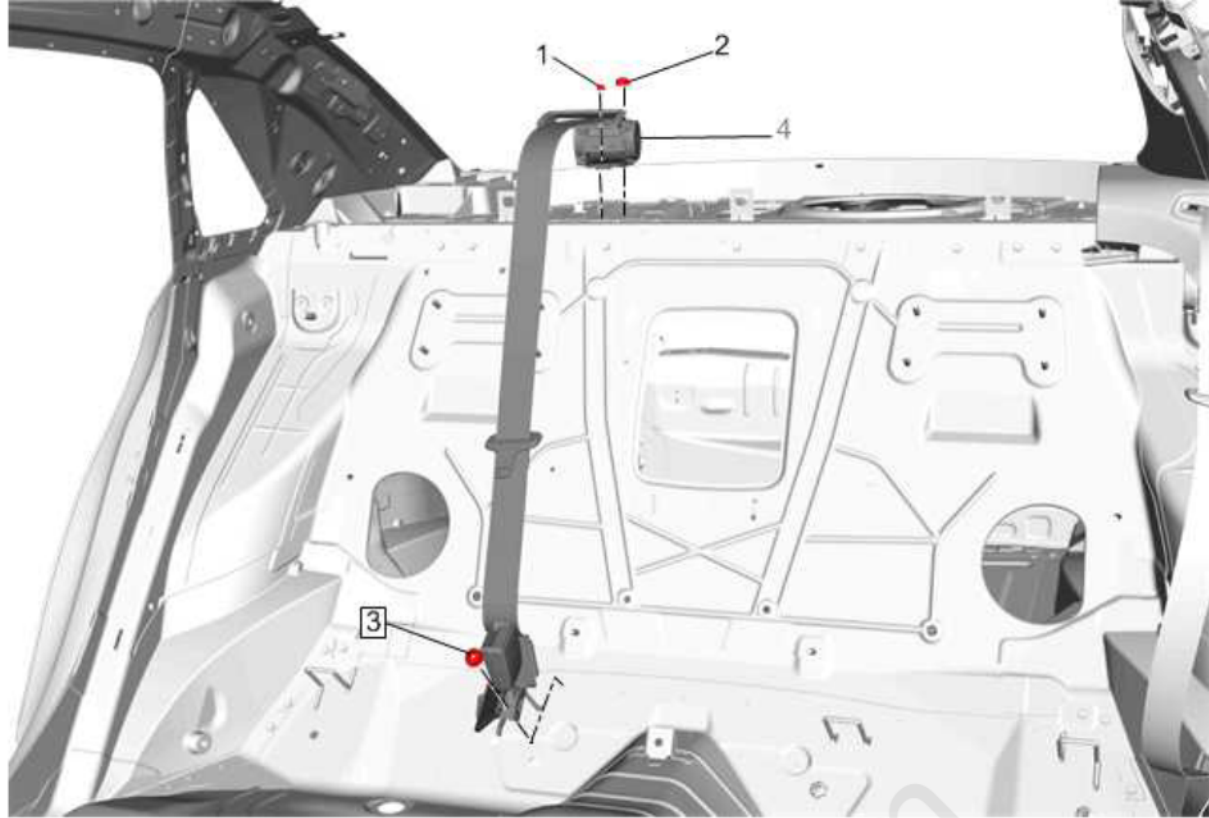


Fig. 7: Rear Center Seat Belt Retractor (Except Platinum)

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure	
<u>Rear Window Panel Trim Replacement (Without Platinum)</u>	
1	Rear Seat Center Belt Nut-Upper Front CAUTION: Refer to <u>Fastener Caution</u> . Tighten 9 N.m (80 lb in)
2	Rear Seat Center Belt Nut-Upper Rear Tighten 45 N.m (33 lb ft)
3	Rear Seat Center Belt Nut-Lower Tighten 45 N.m (33 lb ft)
4	Rear Center Seat Belt Retractor

REAR CENTER SEAT BELT RETRACTOR REPLACEMENT (PLATINUM)

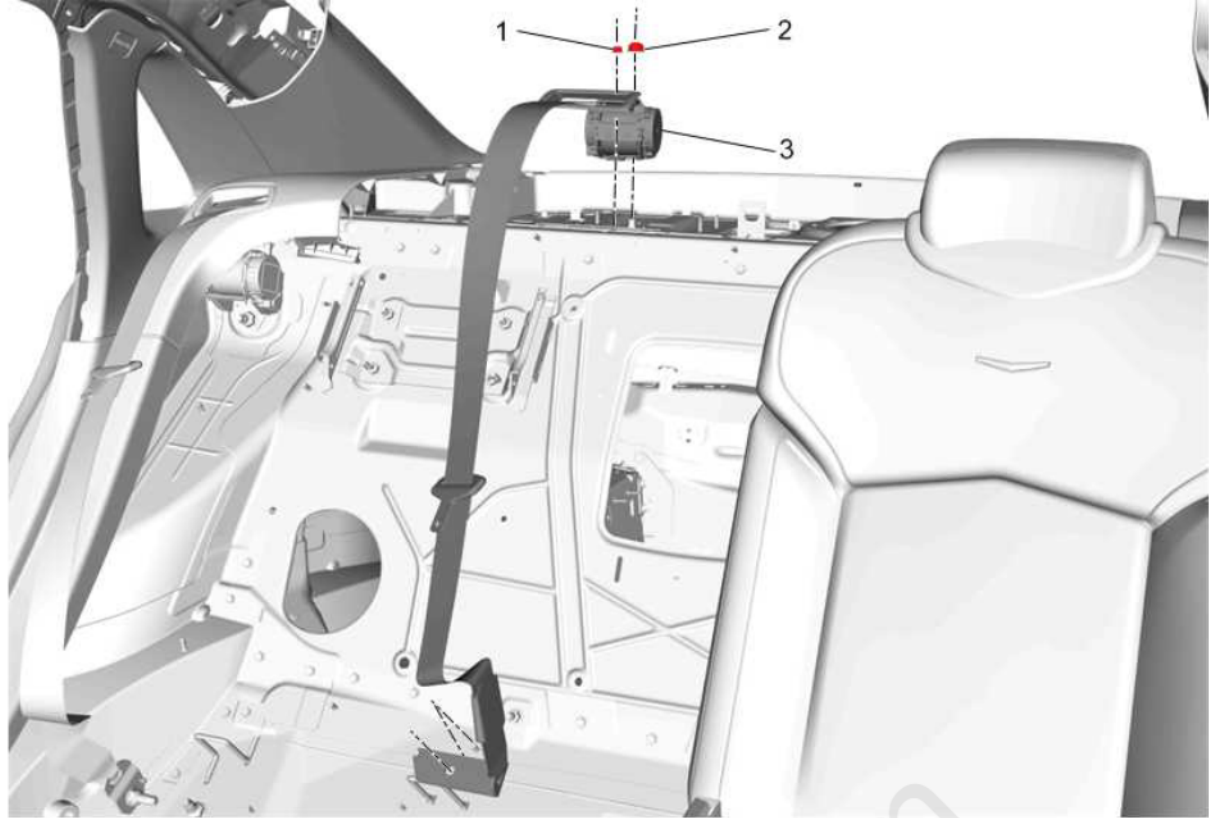


Fig. 8: Rear Center Seat Belt Retractor (Platinum)

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures	
<u>Rear Window Panel Trim Replacement (With Platinum)</u>	
1	Rear Seat Center Belt Nut-Upper Front CAUTION: Refer to <u>Fastener Caution</u> . Tighten 9 N.m (80 lb in)
2	Rear Seat Center Belt Nut-Upper Rear Tighten 45 N.m (33 lb ft)
3	Rear Center Seat Belt Retractor

FRONT SEAT BELT GUIDE ADJUSTER REPLACEMENT

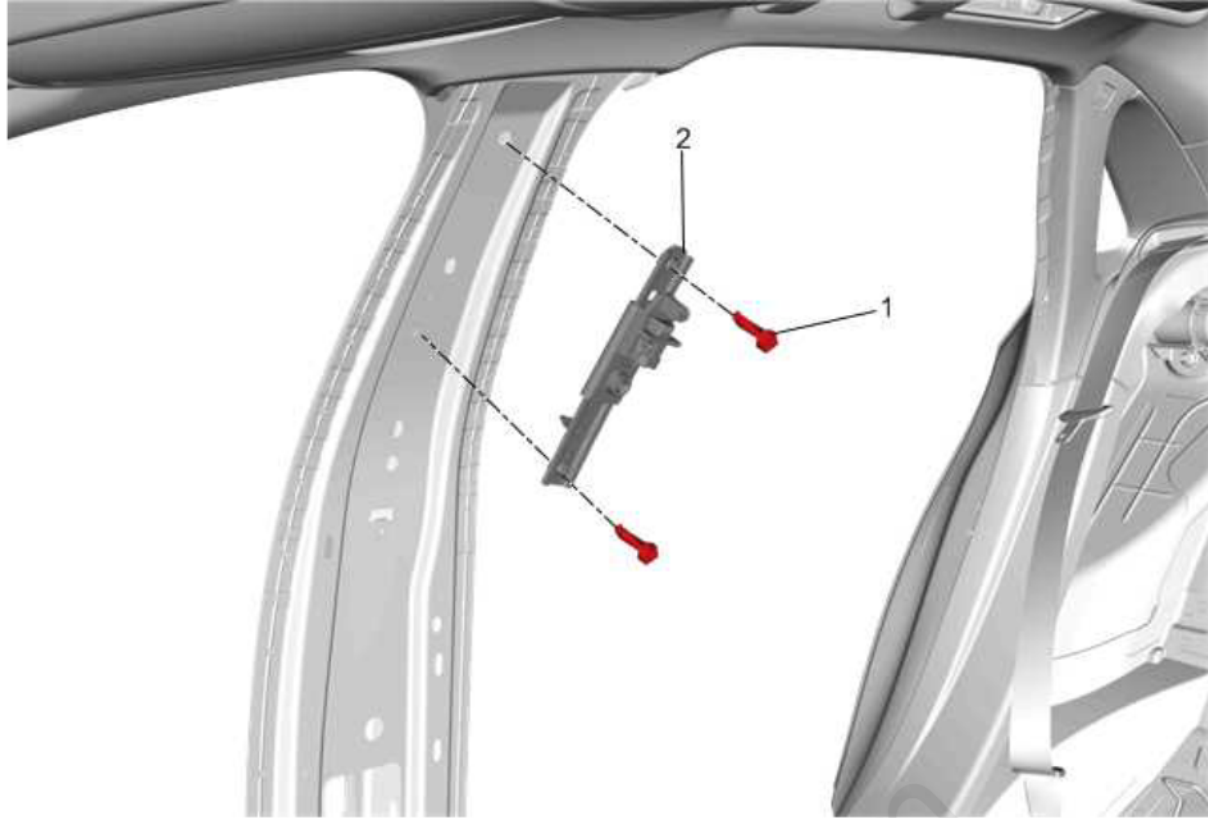


Fig. 9: Front Seat Belt Guide Adjuster
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures 1. <u>Center Pillar Upper Trim Panel Replacement</u> 2. Disconnect the seat belt. Refer to <u>Front Seat Belt Retractor Replacement</u>	
1	Front Seat Belt Guide Adjuster Bolt [2x] CAUTION: Refer to <u>Fastener Caution</u> . Tighten 45 N.m (33 lb ft)
2	Front Seat Belt Guide Adjuster Procedure Release the retainer.

REAR SEAT BELT RETRACTOR REPLACEMENT (EXCEPT PLATINUM)

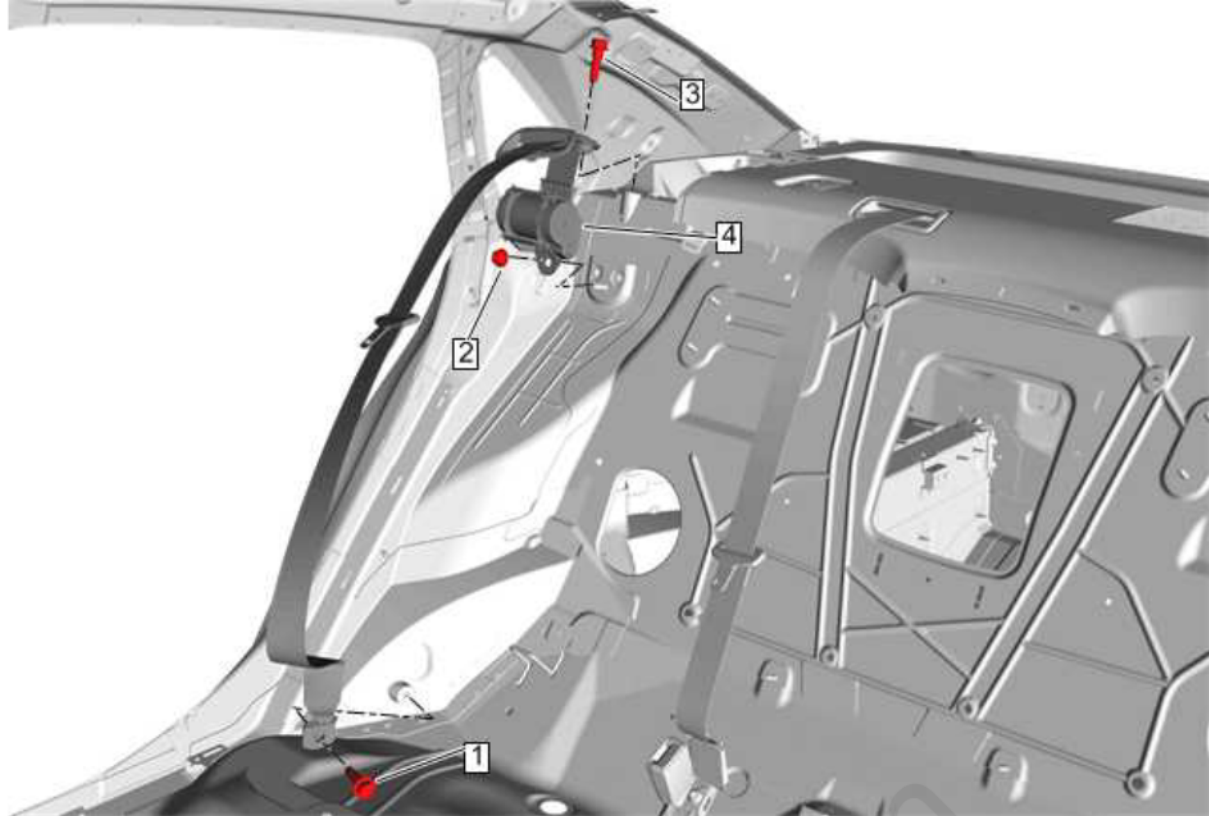


Fig. 10: Rear Seat Belt Retractor (Except Platinum)

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure <u>Body Side Rear Window Lower Garnish Molding Replacement</u>	
1	Rear Seat Belt Retractor Anchor Plate Bolt CAUTION: Refer to <u>Fastener Caution</u> . Tighten 45 N.m (33 lb ft)
2	Rear Seat Belt Retractor Fastener Tighten 45 N.m (33 lb ft)
3	Rear Seat Belt Retractor Bolt Tighten 45 N.m (33 lb ft)
4	Rear Seat Belt Retractor Procedure Release the retainers.

REAR SEAT BELT RETRACTOR REPLACEMENT (PLATINUM)

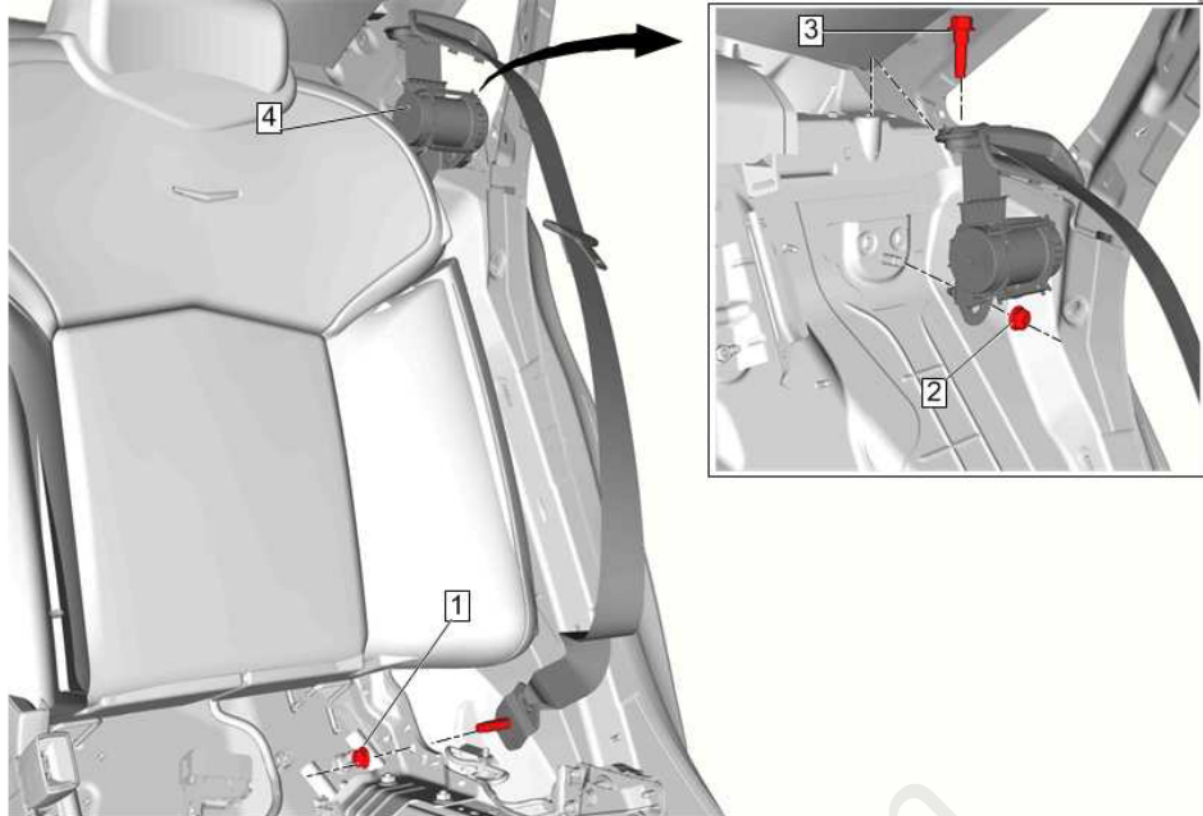


Fig. 11: Rear Seat Belt Retractor (Platinum)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures 1. Rear Seat Cushion Removal and Installation (Platinum 40%) Rear Seat Cushion Removal and Installation (Platinum 20%) 2. Body Side Rear Window Lower Garnish Molding Replacement	
1	Rear Seat Belt Retractor Anchor Plate Nut CAUTION: Refer to Fastener Caution . Tighten 45 N.m (33 lb ft)
2	Rear Seat Belt Retractor Fastener Tighten 45 N.m (33 lb ft)
3	Rear Seat Belt Retractor Bolt Tighten 45 N.m (33 lb ft)
4	Rear Seat Belt Retractor Procedure Release the retainers.

DESCRIPTION AND OPERATION

SEAT BELT SYSTEM DESCRIPTION AND OPERATION

Seat Belt Block Diagram

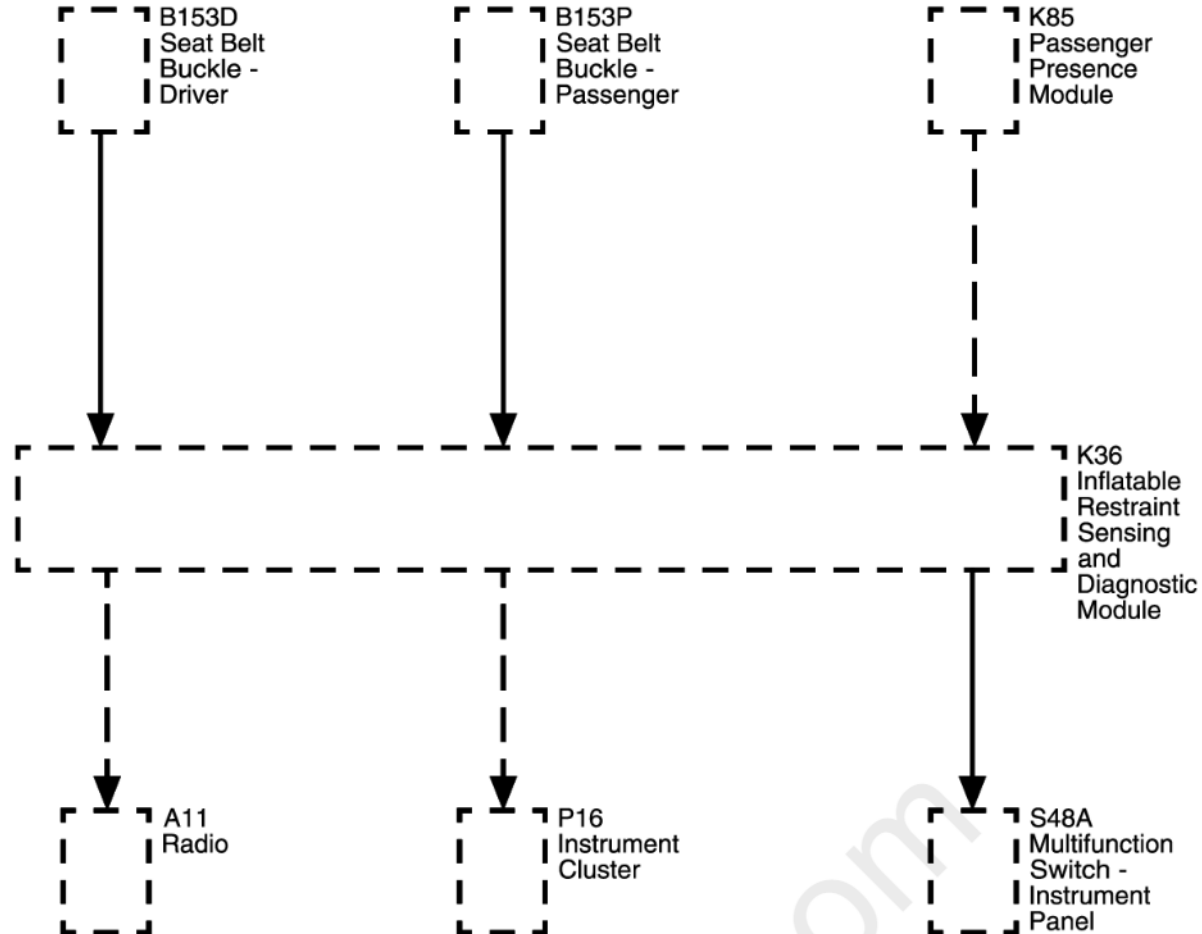


Fig. 12: Seat Belt Block Diagram

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
B153D	B153D Seat Belt Buckle - Driver
B153P	B153P Seat Belt Buckle - Passenger
K85	Passenger Presence Module
K36	K36 Inflatable Restraint Sensing and Diagnostic Module
S48A	S48A Multifunction Switch - Instrument Panel
P16	P16 Instrument Cluster
A11	A11 Radio

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](#)

Front Seat Belt System

The front seat belt system includes a driver and passenger seat belt retractor pretensioner. 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 sensor, which detects an occupant. If the passenger presence 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 Instrument Panel Multifunction 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 Instrument Panel Multifunction 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.

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 two fasten safety belt indicators for this vehicle. The driver fasten safety belt reminder is displayed in the instrument cluster and the passenger fasten safety belt reminder is displayed in the Instrument Panel Multifunction Switch. 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 Instrument Panel Multifunction Switch via a hard wire. 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.
-