

2018 RESTRAINTS

Seat Belts - Equinox & Terrain

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	45 N.m (33 lb ft)
Rear Center Seat Belt Retractor Nut	45 N.m (33 lb ft)
Rear Seat Belt Anchor Bolt	45 N.m (33 lb ft)
Rear Seat Belt Buckle Nut	45 N.m (33 lb ft)
Rear Seat Belt Retractor Bolt	45 N.m (33 lb ft)
Rear Seat Belt Upper Guide Bolt	45 N.m (33 lb ft)

SCHEMATIC WIRING DIAGRAMS

SEAT BELT WIRING SCHEMATICS

Seat Belts - Front (With AL0)

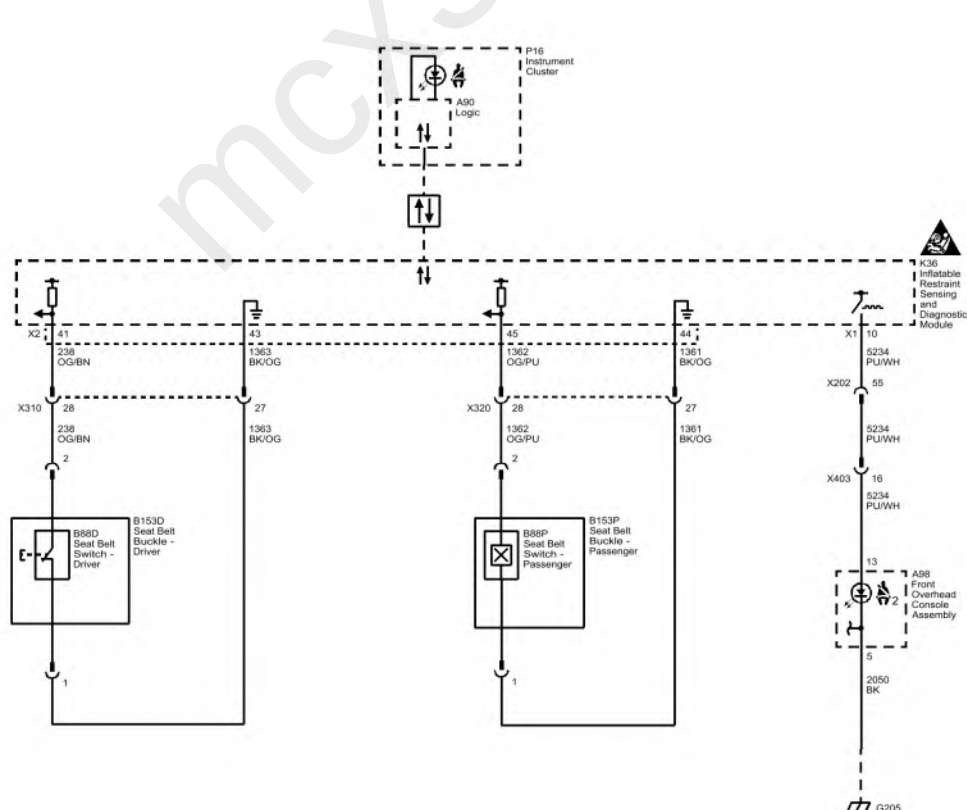


Fig. 1: Seat Belts - Front (With AL0).

Courtesy of GENERAL MOTORS COMPANY

Seat Belts - Front (Without AL0)

NOTE: If the vehicle has been in a collision, refer to Repairs and Inspections Required After a Collision for additional information.

Perform the following inspection from the driver seat:

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

Repeat the inspection procedure, steps 2 - 10, from the front passenger seat.

Perform the following steps in order to inspect the center seat belts:

1. Verify that the center seat belts are accessible.
2. Verify that the center seat belts have no twists or tears in the webbing.
3. Snap the center seat belt latch plate into the buckle.
4. Sharply tug on the seat belt latch plate and the buckle. Verify that the seat belt latch plate and the buckle remain locked when tugged.
5. Push the button on the buckle:
 - Verify that the seat belt latch plate releases easily from the buckle.
 - Verify that the button returns to the original position.

Emergency Locking Retractors

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

1. Fasten the seat belts, an assistant is needed when the retractor under test is not part of the driver seat belt.
2. Accelerate the vehicle slowly to 16 km/h (10 mph) and apply the brakes firmly.
3. Verify that the seat belt locks when braking firmly.
4. If the belt does not lock, proceed with the following steps:
 1. Remove the seat belt retractor assembly.
 2. Tilt the seat belt retractor slowly.

3. Ensure that the seat belt webbing can be pulled from the retractor at an inclination of 15 degrees or less and cannot be pulled from the retractor at an inclination of 45 degrees or more.

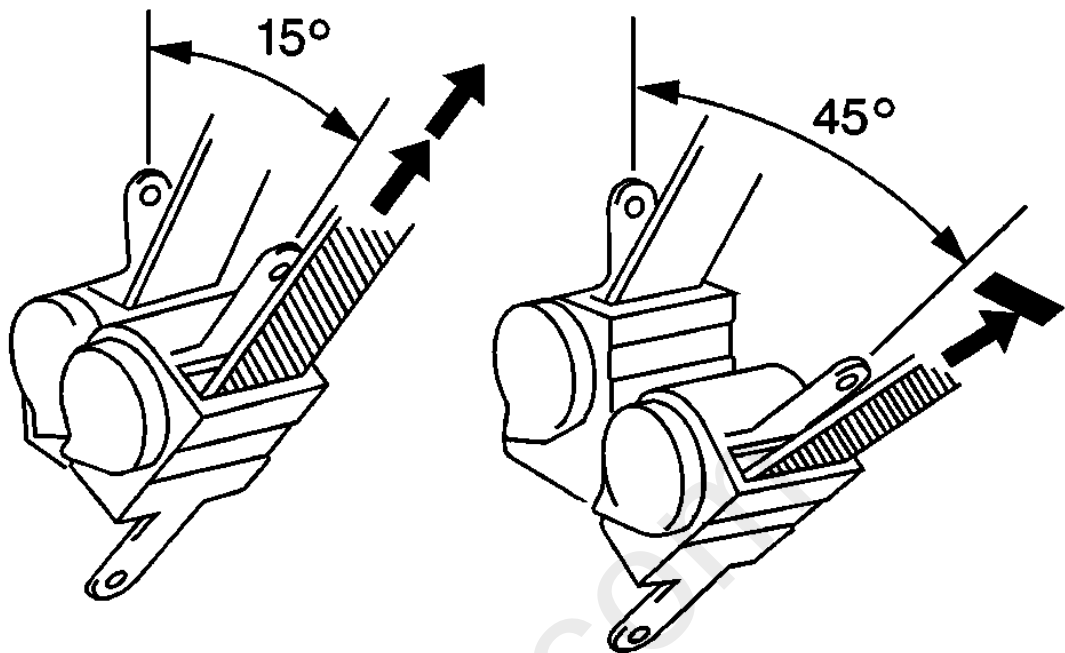


Fig. 4: Checking Seat Belt Retractor Inclination
Courtesy of GENERAL MOTORS COMPANY

4. If the seat belt retractor does not operate as described, replace the retractor assembly.

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
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 Wiring 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 below.
 - **Go to next step: 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.
 - **Go to next step: 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.
 - **Go to next step: 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.
 - Go to next step: 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.
 - **Go to next step: 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.
 - **Go to next step: 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.
 - **Go to next step: 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 Wiring 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 below
 - **Go to next step: 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 below
 - **Go to next step: 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.
 - **Go to next step: 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.
 - **Go to next step: 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 Indicator Control	B059A 02	B059A 04	B059A 01	-

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

Seat Belt Wiring Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Seat Belt 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 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.

- **A98 Front Overhead Console Assembly.**
- **K36 Inflatable Restraint Sensing and Diagnostic Module**

1. Ignition OFF, disconnect the harness connector at the A98 Front Overhead Console Assembly.
2. Test for less than 10 Ω between the ground circuit terminal 5 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.
 - **Go to next step: If less than 10 Ω**
3. Passenger seat occupied.
4. Test for less than 11 V between the control circuit terminal 13 and ground.
 - **If 11 V or greater**
 1. Ignition OFF.
 2. Disconnect the harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
 3. Ignition ON.
 4. Test for less than 1 V between the 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.
 - **Go to next step: If less than 11 V**
5. Test for greater than 25 Ω between the control circuit terminal 13 and ground.
 - **If 25 Ω or less**
 1. 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.
 - **Go to next step: If greater than 25 Ω**
6. Test or replace the A98 Front Overhead Console Assembly.

Repair Instructions

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

- [Roof Console Replacement](#) for A98 Front Overhead Console Assembly 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. Grasp the seat belt and pull it out slowly and evenly from the retractor, do that in 15-25 mm (5/8-1 in) 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
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 Wiring Schematics](#)

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.
 - **Go to next step: 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 below.
 - **Go to next step: 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.

- **Go to next step: 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.
 - **Go to next step: 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.
 - **Go to next step: 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.
 - **Go to next step: 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.
 - **Go to next step: 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	2	-
1. Indicator will remain ON with seat belt buckled. 2. Indicator will illuminate only for the bulb check.				

Circuit/System Description

When an individual is sitting in the passenger seat the passenger presence sensor detects the individual. A signal to the SDM indicates a person is in the passenger seat. The SDM will turn the passenger seat belt indicator. The passenger seat belt switch is a 2-wire switch wired to the inflatable restraint sensing and diagnostic module (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 SDM sends the status of the passenger seat belt via a hard wire to the passenger air bag disable indicator. After receiving the message, the passenger air bag disable indicator controls the illumination of the passenger seat belt indicator.

Reference Information

Schematic Reference

[Seat Belt Wiring 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. Ignition ON/Vehicle in Service Mode.
2. With a scan tool, Command the Passenger Seat Belt Reminder Indicator ON and OFF.
 - If the passenger seat belt reminder indicator turns ON and OFF as commanded, refer to [Passenger Seat Belt Switch Malfunction](#).
 - If the passenger seat belt reminder indicator does not turn ON and OFF as commanded, refer to [Passenger Seat Belt Indicator Malfunction](#).

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.

- **B153 Seat Belt Buckle**
- **B153 Seat Belt Buckle harness connector**
- **K36 Inflatable Restraint Sensing and Diagnostic Module**
- **K36 Inflatable Restraint Sensing and Diagnostic Module harness connector**
- **A98 Front Overhead Console Assembly**

Passenger Seat Belt Switch Malfunction

1. Ignition OFF/Vehicle OFF. Disconnect the harness connector at the B153P Seat Belt Buckle - Passenger.
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 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.
 - **Go to next step: If less than 5 Ω**
3. Ignition ON/Vehicle in Service Mode.
4. Verify the scan tool Passenger Seat Belt Status parameter listed below is Buckled.
 - **If the scan tool Passenger Seat Belt Status parameter does not display Buckled**
 1. 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 less than 2 Ω , replace the K36 Inflatable Restraint Sensing and Diagnostic Module.
 - **Go to next step: 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 low reference circuit terminal 1.
6. Verify the scan tool Passenger Seat Belt Status parameter is Unbuckled.
 - **If the scan tool Passenger Seat Belt Status parameter does not display Unbuckled**
 1. Ignition OFF. Disconnect the X2 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module. Ignition ON/Vehicle in Service Mode.
 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.
 - **Go to next step: If the scan tool Passenger Seat Belt Status parameter does display Unbuckled**
7. Replace the B153P Seat Belt Buckle - Passenger.

Passenger Seat Belt Indicator Malfunction

1. Ignition OFF/Vehicle OFF. Disconnect the harness connector at the A98 Front Overhead Console Assembly.
2. Test for less than 10 Ω between the ground circuit terminal 5 and ground.

- **If 10 Ω or greater**

Repair the open/high resistance in the circuit.

- **Go to next step: If less than 10 Ω**

3. Ignition ON/Vehicle in Service Mode. With a scan tool, command the Passenger Seat Belt Reminder Indicator OFF.

4. Test for less than 11 V between the control circuit terminal 13 and ground.

- **If 11 V or greater**

1. Ignition OFF/Vehicle OFF. Disconnect the X1 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module. Ignition ON/Vehicle in Service Mode.

2. Test for less than 1 V between the A98 Front Overhead Console Assembly control circuit terminal 13 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.

- **Go to next step: If less than 11 V**

5. With a scan tool, command the Passenger Seat Belt Reminder Indicator ON.

6. Test for greater than 4 V between the control circuit terminal 13 and ground.

- **If 4 V or less**

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

2. Test for infinite resistance between the control circuit terminal 13 and ground.

- If less than infinite resistance, repair the short to ground on the circuit.

3. Test for less than 2 Ω between the control circuit terminal 13 and ground.

- 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.

- **Go to next step: If greater than 4 V**

7. Replace the A98 Front Overhead Console Assembly.

Component Testing

1. Ignition OFF. Disconnect the harness connector at the B153P Seat Belt Buckle - Passenger. Buckle the B153P Seat Belt Buckle - Passenger.

2. Test for infinite resistance between the signal circuit terminal 1 and the low reference terminal 2 at the B153P Seat Belt Buckle - Passenger.

- **If there is not infinite resistance**

Replace the B153P Seat Belt Buckle - Passenger.

- **Go to next step: If there is infinite resistance**

3. Unbuckle the B153P Seat Belt Buckle - Passenger.

4. Test for less than 1 Ω between the signal circuit terminal 2 and the low reference terminal 1 at the B153P Seat Belt Buckle - Passenger.

- **If 1 Ω or greater**

Replace the B153P Seat Belt Buckle - Passenger.

- **Go to next step: If less than 1 Ω**

5. All OK.

Repair Instructions

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

- [Front Seat Belt Buckle Replacement](#)
- [Roof Console Replacement](#)

- **Control Module References** for 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.

FRONT SEAT BELT BUCKLE REPLACEMENT

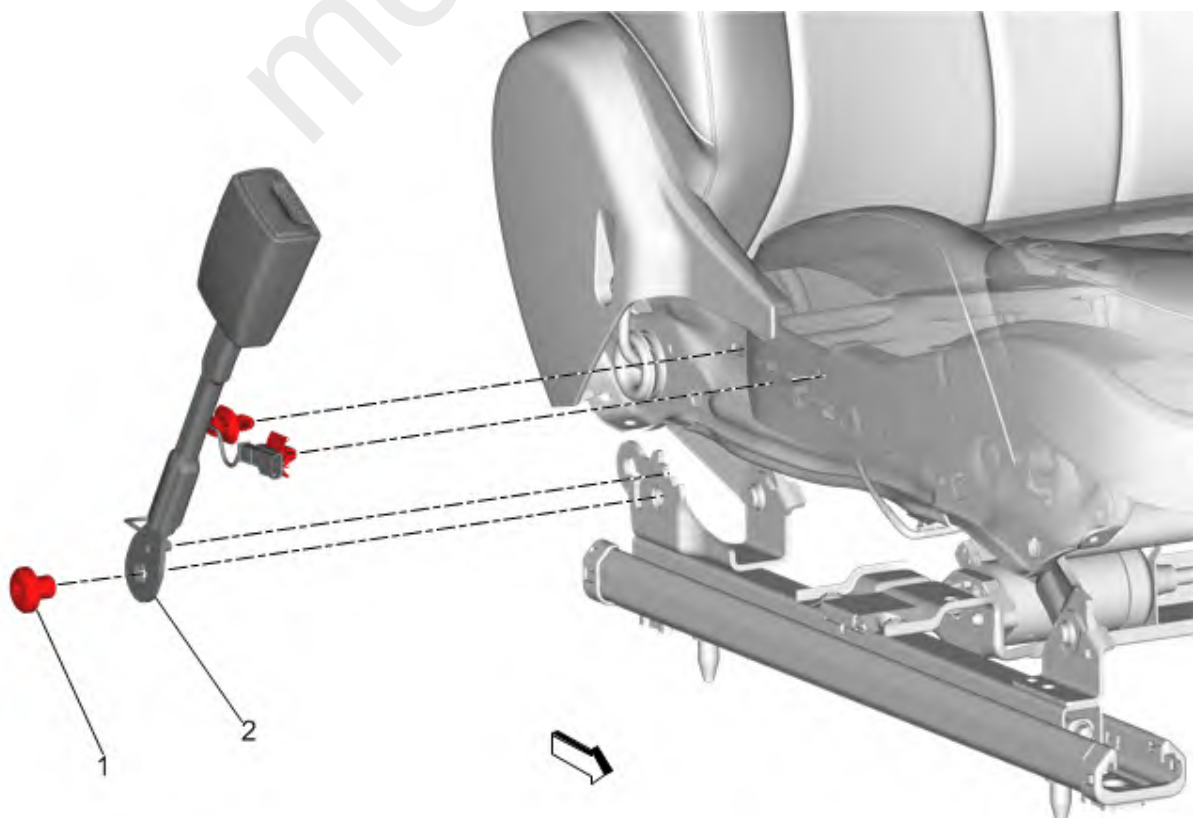


Fig. 5: Front Seat Belt Buckle
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure <u>Driver or Passenger Seat Removal and Installation</u>	
1	Front Seat Belt Buckle Fastener CAUTION: Refer to <u>Fastener Caution</u> . Tighten 45 N.m (33 lb ft)
2	Front Seat Belt Buckle Procedure 1. Disengage the retainers from the seat frame. 2. Disconnect the electrical connector.

REAR SEAT BELT BUCKLE REPLACEMENT (LEFT SIDE)

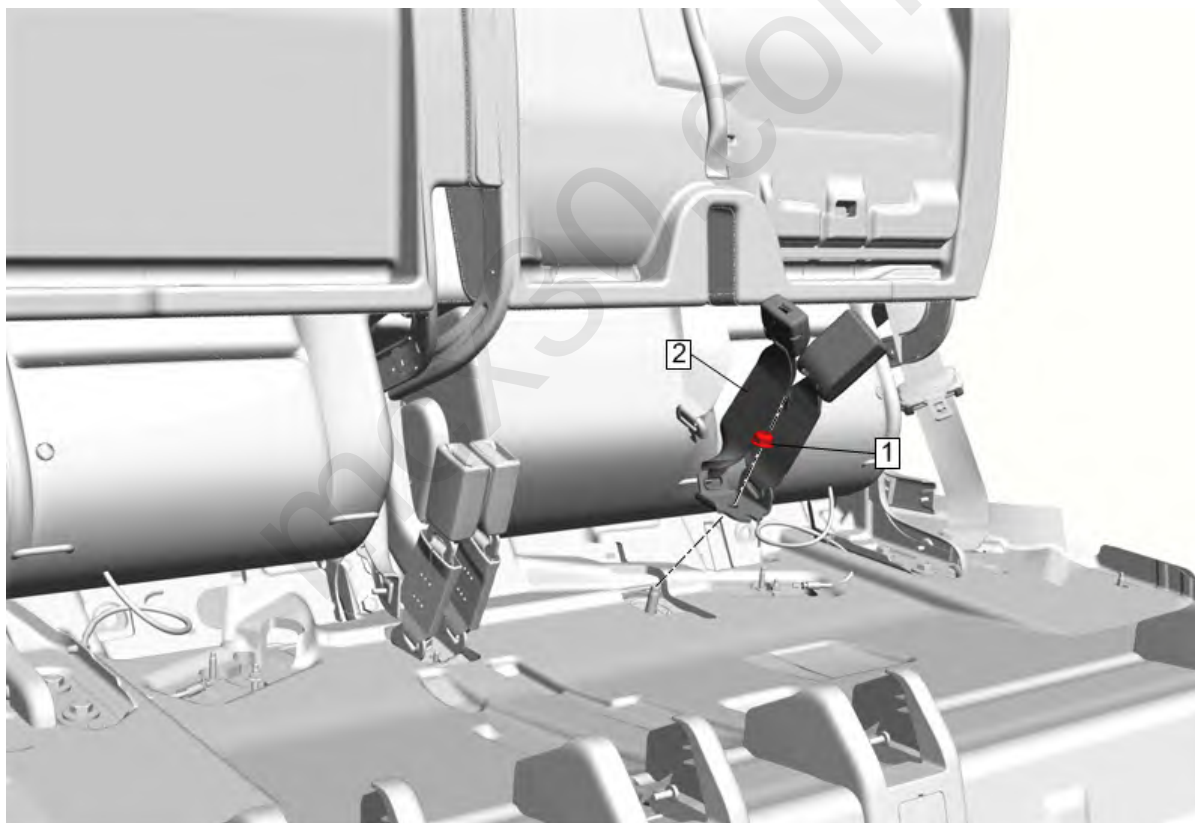


Fig. 6: Rear Seat Belt Buckle (Left Side)
 Courtesy of GENERAL MOTORS COMPANY

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

Callout	Component Name
2	Rear Seat Belt Buckle Procedure Using a suitable tool, press the button to release the belt from the mini buckle.

REAR SEAT BELT BUCKLE REPLACEMENT (RIGHT SIDE)

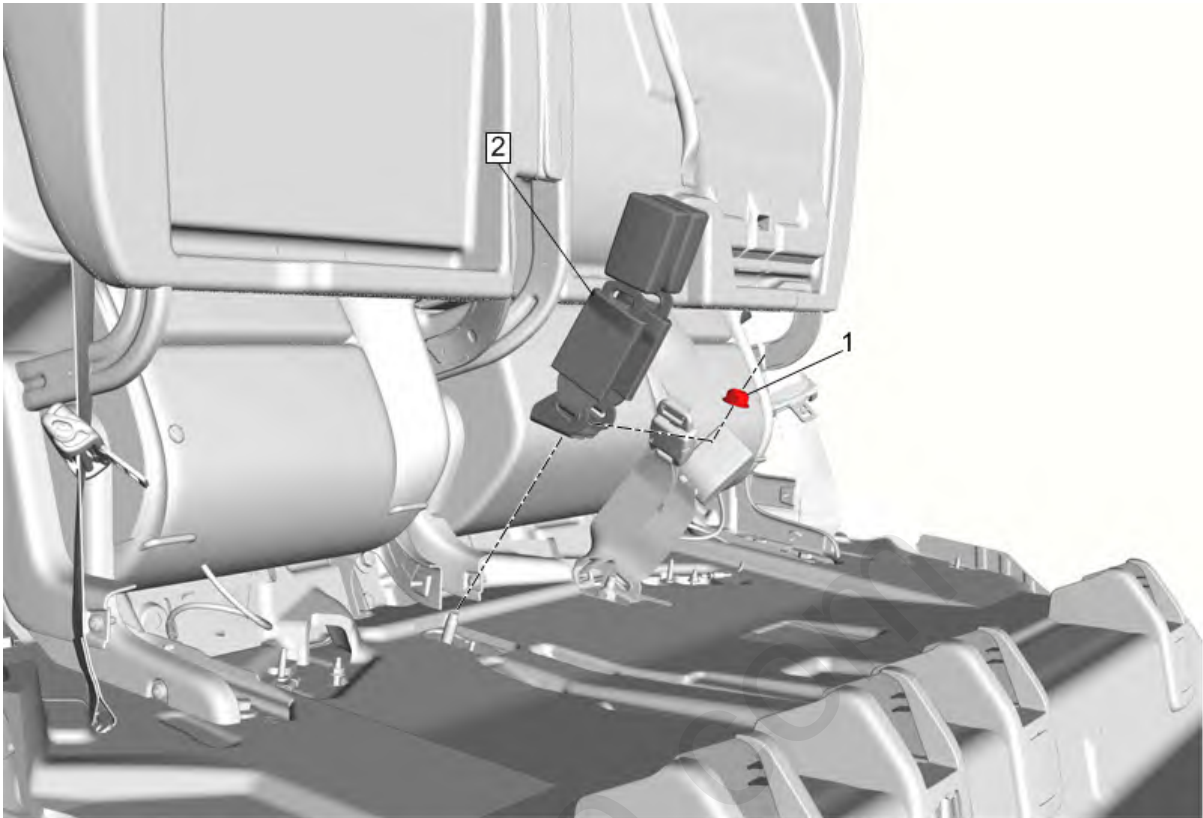


Fig. 7: Rear Seat Belt Buckle (Right Side)
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Rear Seat Belt Buckle Nut 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

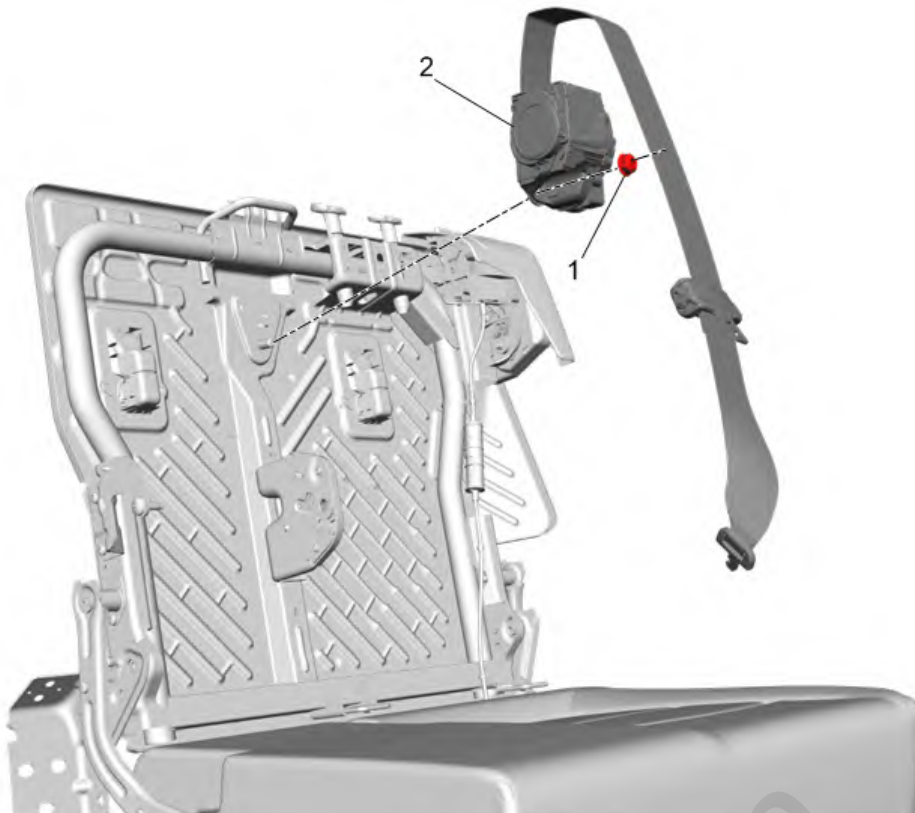


Fig. 8: Rear Center Seat Belt Retractor
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure <u>Rear Seat Back Cushion Cover and Pad Replacement (60%). Rear Seat Back Cushion Cover and Pad Replacement (40%).</u>	
1	Rear Center Seat Belt Retractor Nut CAUTION: Refer to <u>Fastener Caution</u> . Tighten 45 N.m (33 lb ft)
2	Rear Center Seat Belt Retractor Procedure Using a suitable tool, press the button to release the belt from the mini buckle.

REAR SEAT BELT RETRACTOR REPLACEMENT

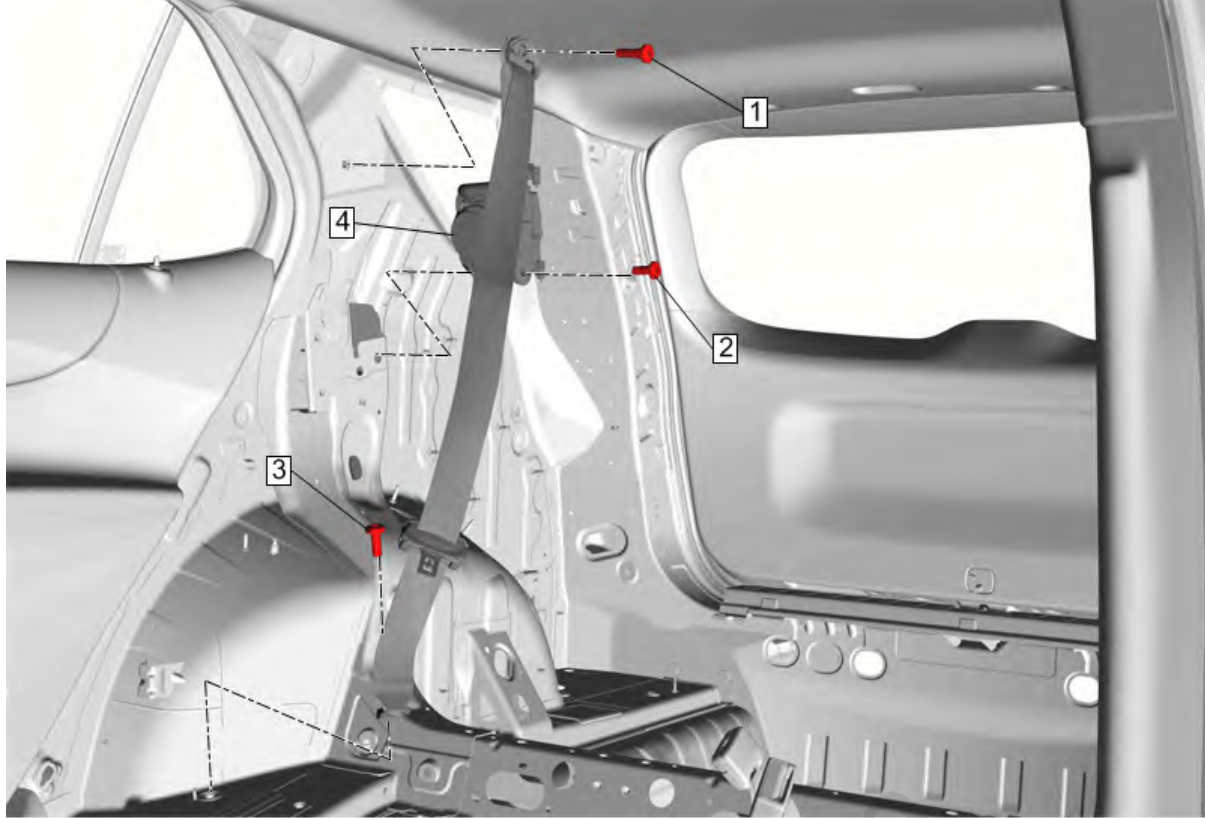


Fig. 9: Rear Seat Belt Retractor

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures 1. Quarter Window Trim Finish Panel Replacement 2. Remove the front bolts and fold the seat up. Rear Seat Removal and Installation	
1	Rear Seat Belt Upper Guide Bolt CAUTION: Refer to Fastener Caution . Tighten 45 N.m (33 lb ft)
2	Rear Seat Belt Retractor Bolt Tighten 45 N.m (33 lb ft)
3	Rear Seat Belt Anchor Bolt Tighten 45 N.m (33 lb ft)
4	Rear Seat Belt Retractor

DESCRIPTION AND OPERATION

SEAT BELT SYSTEM DESCRIPTION AND OPERATION

Seat Belt with P14, P16 and B60 Block Diagram

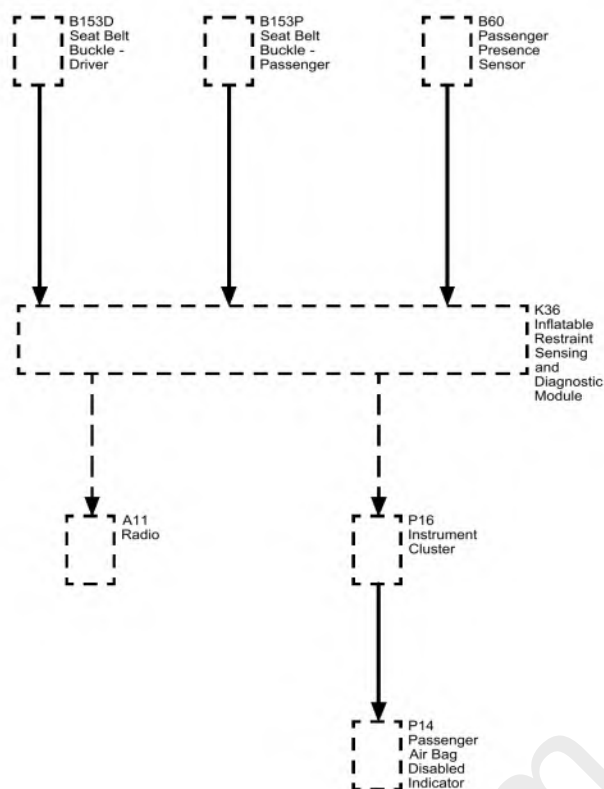


Fig. 10: Seat Belt with P14, P16 and B60 Block Diagram

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
B153D	B153D Seat Belt Buckle - Driver
B153P	B153P Seat Belt Buckle - Passenger
B60	B60 Passenger Presence Sensor
K36	K36 Inflatable Restraint Sensing and Diagnostic Module
A11	A11 Radio
P16	P16 Instrument Cluster
P14	P14 Passenger Air Bag Disabled Indicator

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 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 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 Passenger Air Bag Disable Indicator, 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 Passenger Air Bag Disable Indicator, 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 front passenger air bag inflates, 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 owner's manual and the instructions that came with the child restraint.

A child in a rear-facing child restraint can be seriously injured if the right-front passenger's 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 owner's 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 passenger air bag disable indicator. 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 passenger air bag disable indicator via a hardwire. 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.
-