

2008 ACCESSORIES & EQUIPMENT

Power Seats - LaCrosse

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

Application	Specification	
	Metric	English
Adjuster to Floorpan Bolts	42 N.m	31 lb ft
Adjuster Track Cover Screws	2 N.m	18 lb in

SCHEMATIC AND ROUTING DIAGRAMS

DRIVER SEAT SCHEMatics

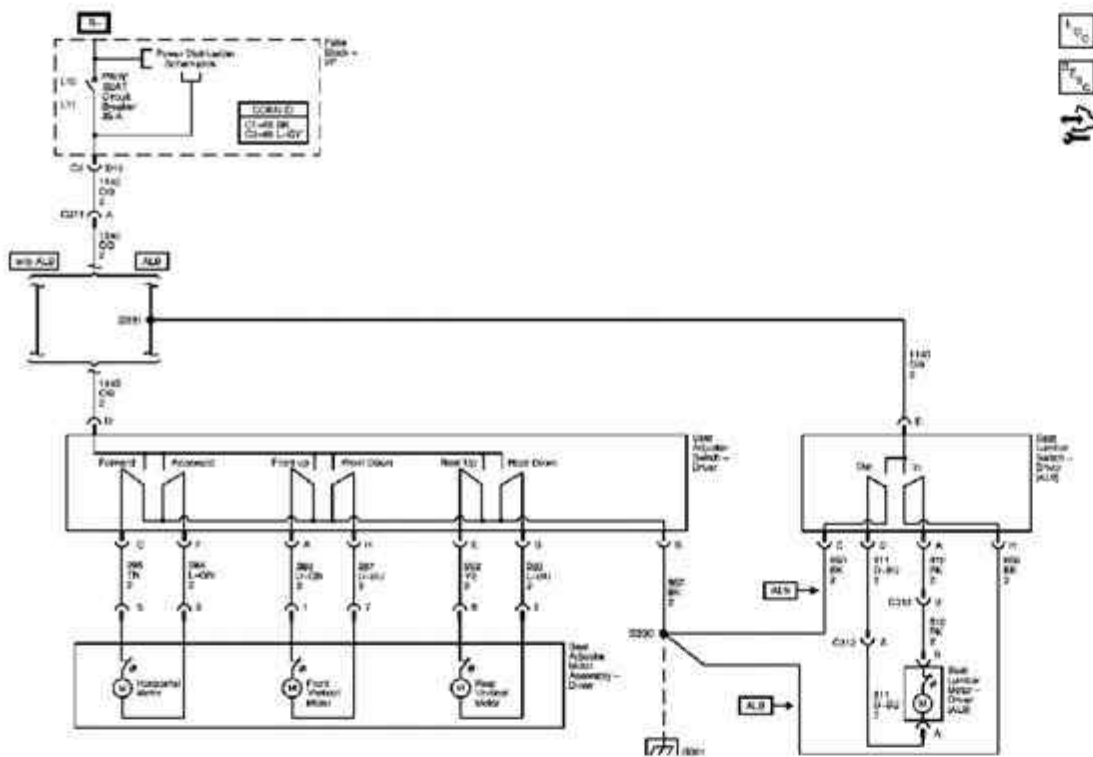


Fig. 1: Driver Seat Power and Lumbar Controls Schematic
 Courtesy of GENERAL MOTORS CORP.

PASSENGER SEAT SCHEMatics

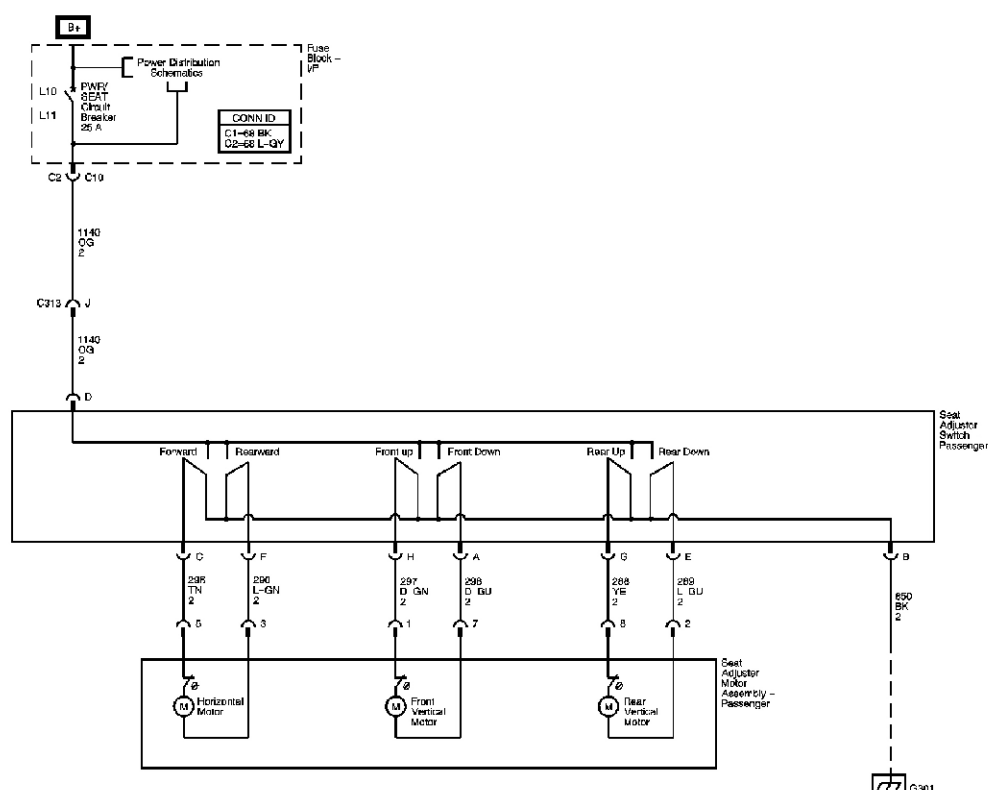


Fig. 2: Passenger Seat Power Controls Schematic
 Courtesy of GENERAL MOTORS CORP.

DIAGNOSTIC INFORMATION AND PROCEDURES

DIAGNOSTIC STARTING POINT - SEATS

Begin the system diagnosis with the **Diagnostic System Check - Vehicle**. The Diagnostic System Check - Vehicle will provide the following information:

- The identification of the control modules which command the system
- The ability of the control modules to communicate through the serial data circuit
- The identification of any stored diagnostic trouble codes (DTCs) and their status

The Use of the Diagnostic System Check - Vehicle will identify the correct procedure for diagnosing the system and where the procedure is located.

SYMPTOMS - POWER SEATS

IMPORTANT: The following steps must be completed before using the symptom tables.

Refer to the system description and operation from the following list in order to familiarize yourself with the system functions:

- **Lumbar Support Description and Operation**
- **Power Seats System Description and Operation**

Visual/Physical Inspection

- Inspect for aftermarket devices which could affect the operation of the power seats. Refer to **Checking Aftermarket Accessories**.
- Inspect the easily accessible or visible system components for obvious damage or conditions which could cause the symptom.

- Inspect the seat adjuster track for conditions which may cause binding or objects within the seat adjustment range which obstruct movement or interfere with wiring.

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 a symptom diagnostic procedure from the following list in order to diagnose the symptom:

- **Lumbar Support Inoperative**
- **Power Seat Inoperative**

LUMBAR SUPPORT INOPERATIVE

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
Seat Lumbar Switch B+	1, 2	1, 2	1, 2	-
Lumbar Motor Forward Control	2	2	2	-
Lumbar Motor Rearward Control	2	2	2	-
Seat Lumbar Switch Ground	-	2	-	-
1. Power Seats Inoperative 2. Lumbar Support Inoperative				

Circuit/System Description

The seat lumbar switch is supplied with battery positive voltage from the PWR SEAT circuit breaker located in the I/P fuse block. The seat lumbar switch contains inward and outward adjustment switches that are normally open to ground. The seat lumbar switch provides both power and ground to the lumbar motor. When the seat lumbar switch is operated to the outward position, battery voltage is applied through the outward switch contacts to the lumbar motor outward control circuit. The lumbar motor inward control circuit supplies ground through the switch contacts of the inward switch to G301. The motor will operate to move the lumbar support outward toward the occupant's back until the lumbar is fully extended or the lumbar switch is released. Operating the seat lumbar switch to the inward position reverses this process. Voltage is applied through the contacts of the inward switch to the lumbar motor through the lumbar motor inward control circuit. The lumbar motor outward control circuit supplies ground for the circuit through G301. The motor will operate to move the lumbar support inward away from the occupant's back until the lumbar is fully retracted or the lumbar switch is released. The lumbar motor contains an internal electronic circuit breaker (PTC) that will open if the motor overheats or binds. The circuit breaker will reset when voltage has been removed from the lumbar motor.

Reference Information

Schematic Reference

Driver Seat Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Lumbar Support 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

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the seat lumbar switch.
2. Ignition OFF, verify that a test lamp illuminates between B+ and the ground circuit terminal C.
 - If the test lamp does not illuminate, test the ground circuit for an open/high resistance.
3. Ignition OFF, verify that a test lamp illuminates between B+ and the ground circuit terminal H.
 - If the test lamp does not illuminate, test the ground circuit for an open/high resistance.
4. Ignition ON, verify that a test lamp illuminates between the B+ circuit terminal E and ground.
 - If the test lamp does not illuminate, test the B+ circuit for a short to ground or an open/high resistance.
5. Reconnect the harness connector at the seat lumbar switch.
6. Ignition OFF, disconnect the harness connector at the seat lumbar motor.
7. Connect a test lamp between control circuit terminal A and ground.
8. Ignition ON, operate the outward lumbar switch ON and OFF. The test lamp should turn ON and OFF as the forward switch is operated.
 - If the test lamp is always OFF, test the control circuit terminal A for a short to ground or an open/high resistance. If the circuit tests normal, replace the seat lumbar switch.
 - If the test lamp is always ON, test the control circuit terminal A for a short to voltage. If the circuit tests normal, replace the seat lumbar switch.
9. Connect a test lamp between control circuit terminal B and ground.
10. Ignition ON, operate the inward lumbar switch ON and OFF. The test lamp should turn ON and OFF as the rearward switch is operated.
 - If the test lamp is always OFF, test the control circuit terminal B for a short to ground or an open/high resistance. If the circuit tests normal, replace the seat lumbar switch.
 - If the test lamp is always ON, test the control circuit terminal B for a short to voltage. If the circuit tests normal, replace the seat lumbar switch.
11. If all circuits tests normal, test or replace the seat lumbar motor.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Lumbar Switch Replacement**
- **Front Seat Lumbar Support Replacement**

POWER SEAT ADJUSTER MECHANICAL DIAGNOSIS

Condition	Possible Cause	Correction
Horizontal Operation of Seat Not Smooth but Jerky-Apparent Hard Operation	The adjuster horizontal actuator is damaged.	Replace the adjuster assembly.
Horizontal Chuck or Looseness	• The horizontal actuator is improperly adjusted to the rack. • The top plate subassembly is loose.	• Replace the adjuster assembly. • Replace the adjuster assembly.
One Adjuster Will Not Operate Horizontally	• The horizontal drive cable is disconnected or damaged. • The horizontal actuator is inoperative.	• Inspect the drive cables, they must be straight to be engaged. Replace if damaged. • Replace the adjuster assembly.
One Adjuster Will not Operate Vertically	• The vertical drive cable is disconnected or damaged. • The vertical actuator subassembly is inoperative.	• Inspect the vertical drive cables, replace if damaged. • Replace the adjuster assembly.
Both Adjusters Will Not Operate Horizontally and/or Vertically	• The motor is damaged or inoperative. • The wiring harness is damaged.	• Replace the adjuster assembly • Replace the wiring harness.
Vertical Chuck or Looseness	The vertical actuator is inoperative.	Replace the adjuster assembly.

POWER SEAT INOPERATIVE

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
Seat Adjuster Switch B+	1, 2	1, 2	1, 2	-
Horizontal Motor Forward Control	1	1	1	-
Horizontal Motor Rearward Control	1	1	1	-
Front Vertical Motor Front Up Control	1	1	1	-
Front Vertical Motor Front Down	1	1	1	-

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2008 ACCESSORIES & EQUIPMENT Power Seats - LaCrosse

Control				
Rear Vertical Motor Rear Up Control	1	1	1	-
Rear Vertical Motor Rear Down Control	1	1	1	-
Lumbar Motor Forward Control	2	2	2	-
Lumbar Motor Rearward Control	2	2	2	-
Seat Adjuster Switch Ground	-	1	-	-
Seat Lumbar Switch Ground	-	2	-	-
1. Power Seats Inoperative				
2. Lumbar Support Inoperative				

Circuit/System Description

Battery voltage is supplied at all times to the seat adjuster switch from the PWR SEAT 25 A circuit breaker located in the I/P fuse block. When the seat adjuster switches are in an inactive state, the switch contacts are closed to the switch ground circuit.

All power seat motors are reversible. For example, when the seat horizontal forward switch is pressed to move the entire seat forward, battery voltage is applied through the switch contacts and the seat horizontal motor forward control circuit to the motor. The motor is grounded through the horizontal motor rearward switch contacts and the horizontal motor rearward control circuit to the motor. The motor runs in order to drive the entire seat forward until the switch is released. Moving the entire seat rearward works similarly to moving the entire seat forward, except that battery positive voltage and ground are applied on opposite circuits causing the motor to run in the opposite direction. All seat motors are powered this way.

Reference Information**Schematic Reference****Driver Seat Schematics****Connector End View Reference****Component Connector End Views****Description and Operation****Power Seats 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****Circuit/System Testing**

1. Ignition OFF, disconnect the harness connector at the inoperative seat adjuster switch.
2. Ignition OFF, verify that a test lamp illuminates between B+ and the ground circuit terminal B.
 - o If the test lamp does not illuminate, test the ground circuit for an open/high resistance.
3. Ignition ON, verify that a test lamp illuminates between the B+ circuit terminal D and ground.
 - o If the test lamp does not illuminate, test the B+ circuit for a short to ground or an open/high resistance.
4. Connect the harness connector at the seat adjuster switch.
5. Ignition OFF, disconnect the harness connector at the inoperative seat adjuster motor assembly.
6. Ignition OFF, test for less than 5.0 ohms of resistance between the appropriate motor control circuit terminal and ground.
 - o If greater than the specified range, test the motor control circuit for a short to voltage or an open/high resistance. If the circuit tests normal, test or replace the seat adjuster switch.
7. Connect a test lamp between the motor control circuit terminals for the inoperative motor.
8. Ignition ON, operate the appropriate seat adjuster switch in both directions. The test lamp should turn ON and OFF as the seat adjuster switch is operated.
 - o If the test lamp does not illuminate for both directions, test the motor control circuits for a short to ground or an open/high resistance. If the circuits test normal replace the seat adjuster switch.
9. If all circuits test normal, test or replace the inoperative seat adjuster motor assembly.

Repair Procedures

Perform the Diagnostic Repair Verification after completing the diagnostic procedure.

- Power Seat Switch Replacement
- Power Seat Adjuster Mechanism Replacement

REPAIR INSTRUCTIONS

POWER SEAT SWITCH REPLACEMENT

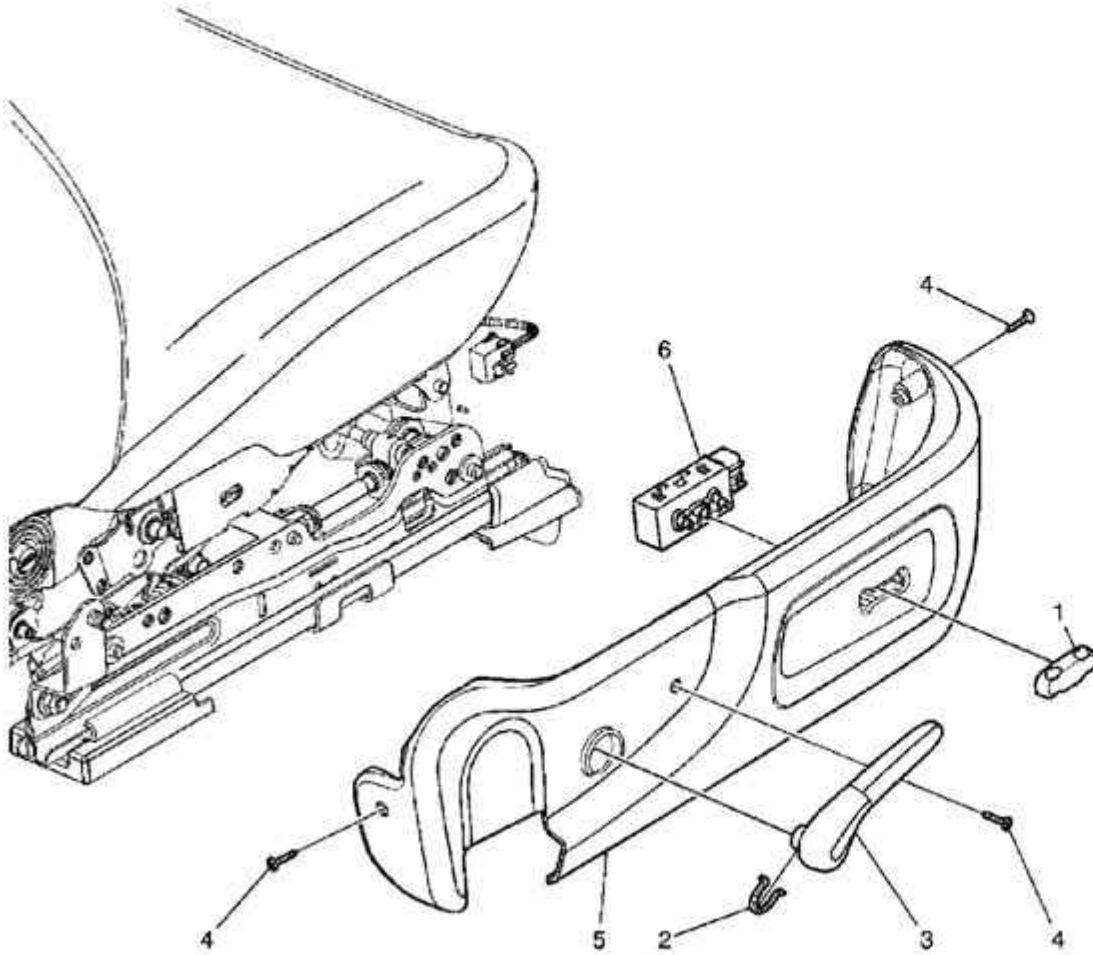


Fig. 3: Identifying Power Front Seat Switch
 Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	Power Seat Adjuster Switch Knob
2	Seat Recliner Handle Retainer Clip
3	Seat Recliner Handle
4	Seat Adjuster Finish Cover Screw (Qty: 3) NOTE: Refer to <u>Fastener Notice</u> . Tighten: 2 N.m (18 lb in)
5	Seat Adjuster Finish Cover
6	Power Seat Adjuster Switch Tip: 1. Disconnect the electrical connector. 2. Unclip the switch from the seat outer adjuster cover.

POWER SEAT ADJUSTER MECHANISM REPLACEMENT

Removal Procedure

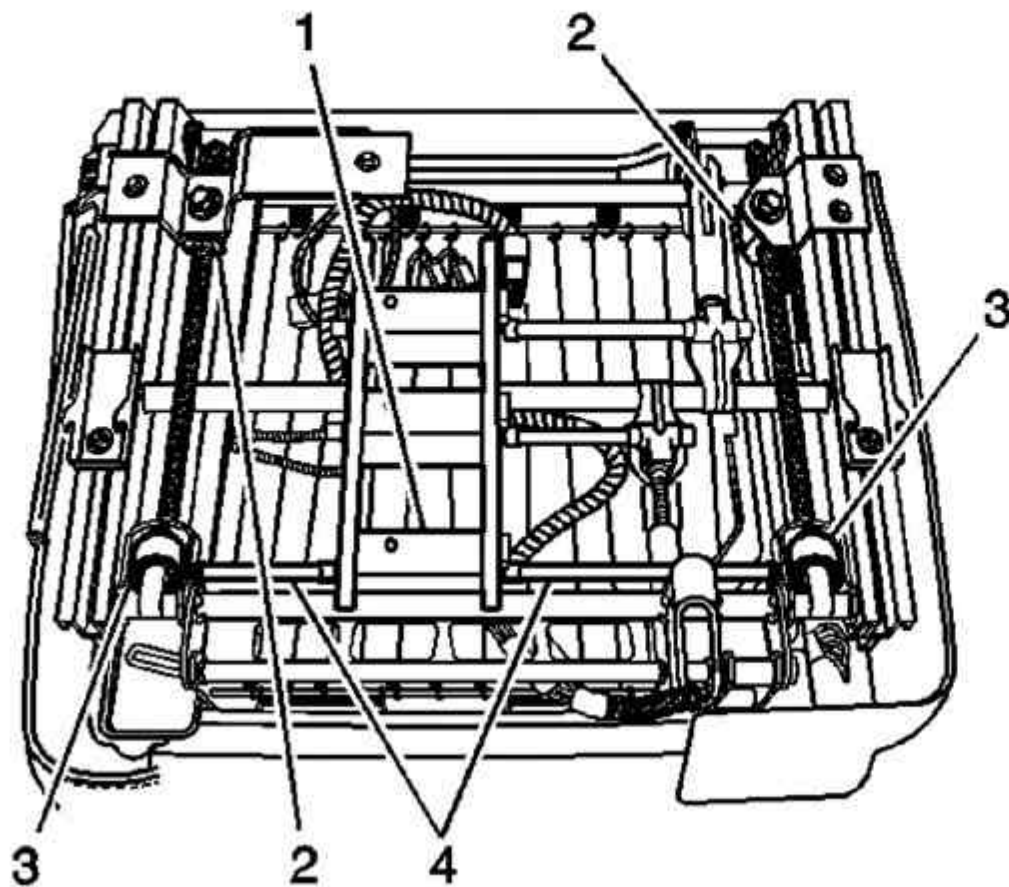


Fig. 4: Identifying Power Seat Components
Courtesy of GENERAL MOTORS CORP.

1. If one side of the seat adjuster is not working, perform the following procedure:
 1. The horizontal drive motor (1) and drive cables (4) are located at the front of the seat. Verify that both cables are straight. If a cable is bent an end will be pulled out of the drive motor or drive screw. Straighten the cable. You may have to toggle the seat switch to get the cable ends to properly seat.
 2. Run the seat forward until the seat removal bolts are accessible.
 3. Once the seat is removed examine the cables to assure that no damage has occurred.
 4. The two sides of the seat adjuster will now be out of sync. Align these sides or the adjuster may be noisy and the motor may overheat and fail.

Use the following steps to align the adjuster:

1. Tip the seat rearward.
2. Reconnect the adjuster to the power switch.
3. Run the seat adjuster rearward until the drive bracket (3) and the anchor bracket (2) are together on one side of the adjuster.
4. Disconnect the drive cable on that side and run the opposite side rearward until its brackets touch.
5. Re-attach the cables (4) to the motor and verify that the cables are straight between the motor (1) and the drive brackets (3).

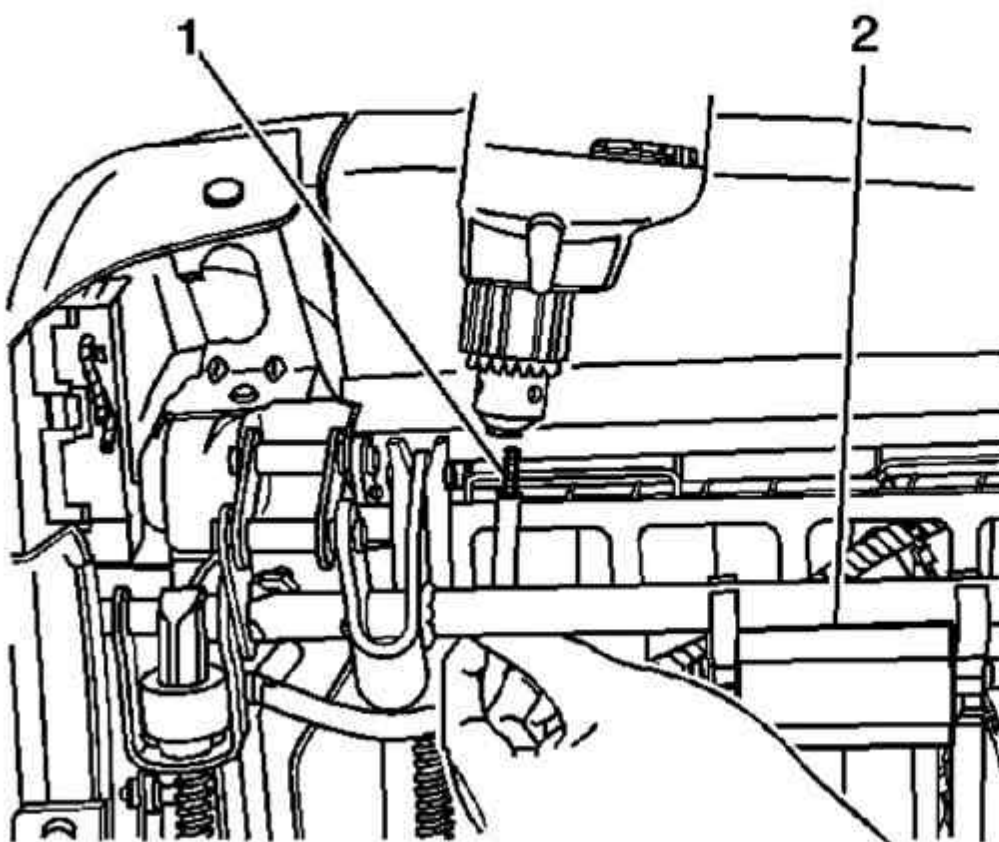


Fig. 5: Identifying Horizontal Drive Motor & Drive Cable
Courtesy of GENERAL MOTORS CORP.

2. If the power seat motor is not operable, and the bolts that secure the adjuster to the floor pan are not accessible, perform the following procedure:
 1. From the front of the seat, disconnect both drive cables at the horizontal drive motor (2), which is located at the front of the seat adjuster.
 2. Attach a drill motor to a drive cable (1).
 3. Alternately run both sides of the adjuster forward until the seat removal bolts are accessible.
3. Remove the front seat. Refer to **Front Seat Replacement - Bucket**.
4. Remove the seat trim panel. Refer to **Front Seat Adjuster Track Finish Cover Replacement**.

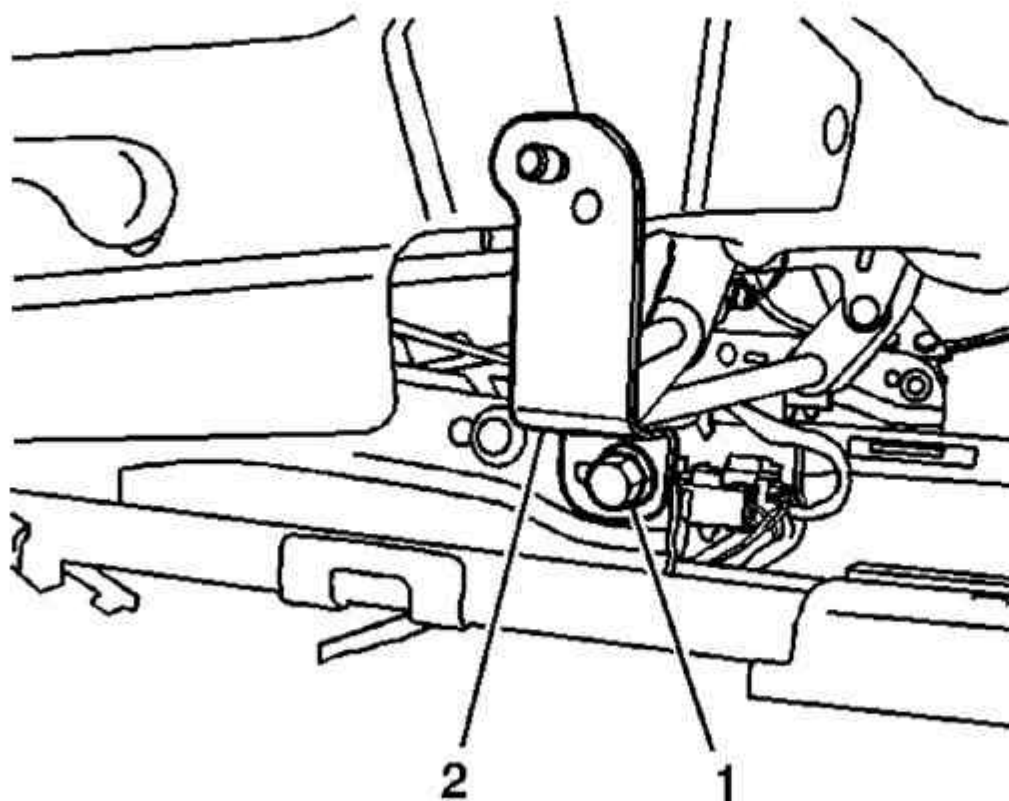


Fig. 6: Identifying Seat Belt Bracket & Bolt
Courtesy of GENERAL MOTORS CORP.

5. Remove the seat belt bracket (2) on the door side of the seat. The new seat adjuster does not have this part.
6. Remove the seat belt pretensioner. Refer to **Seat Belt Buckle Pretensioner Replacement**.

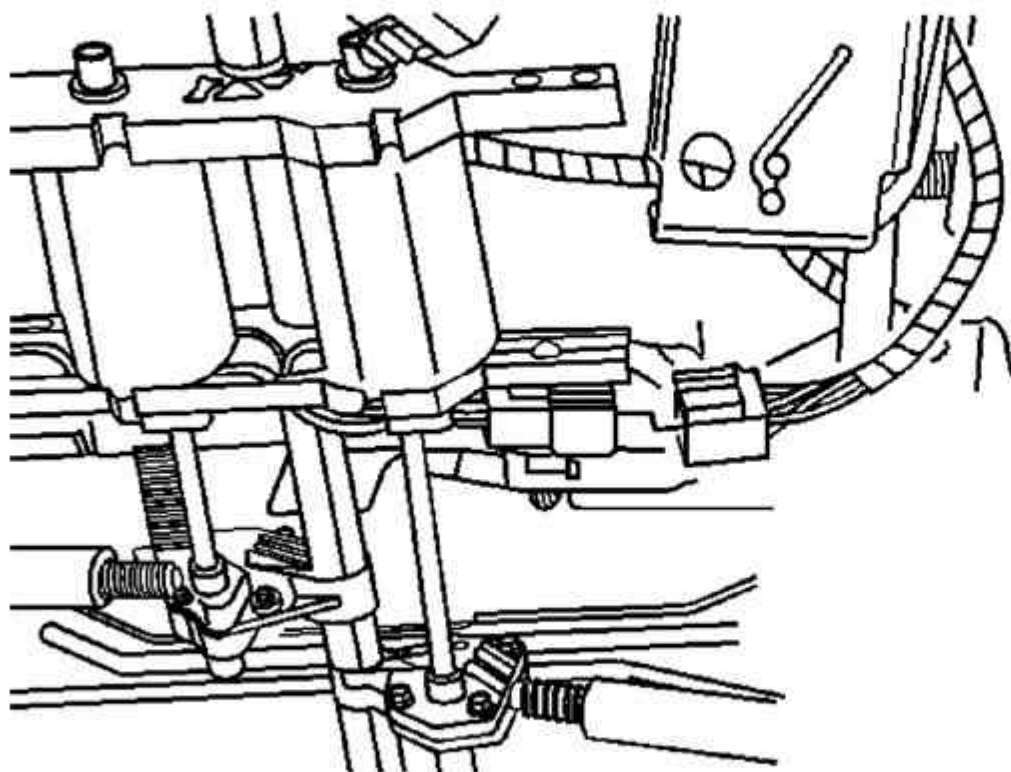


Fig. 7: View Of Power Seat Motor Electrical Harness
Courtesy of GENERAL MOTORS CORP.

7. If equipped, remove the electrical harness from the power seat motor harness.

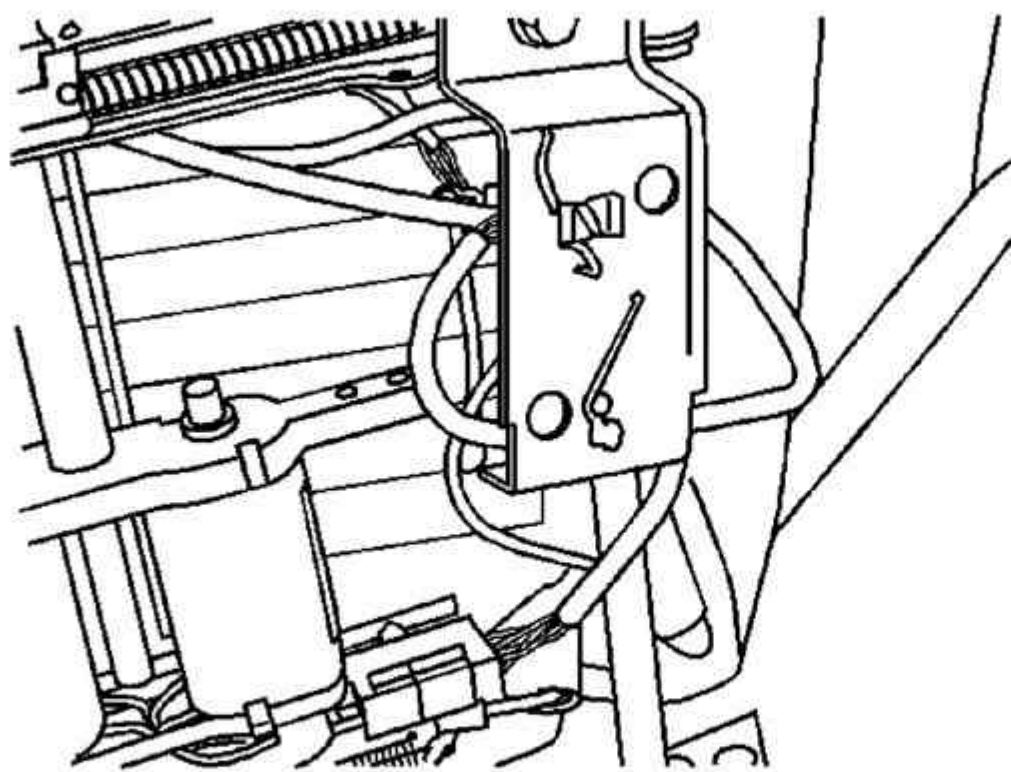


Fig. 8: View Of Adjuster Bracket Electrical Harness Clip & Harness Retainer
Courtesy of GENERAL MOTORS CORP.

8. Remove the electrical harness clip and disconnect the harness retainer from the adjuster bracket.
9. Recline the seat back to the full reclined position.
10. Remove the trim cover J-hooks from under the seat pan.

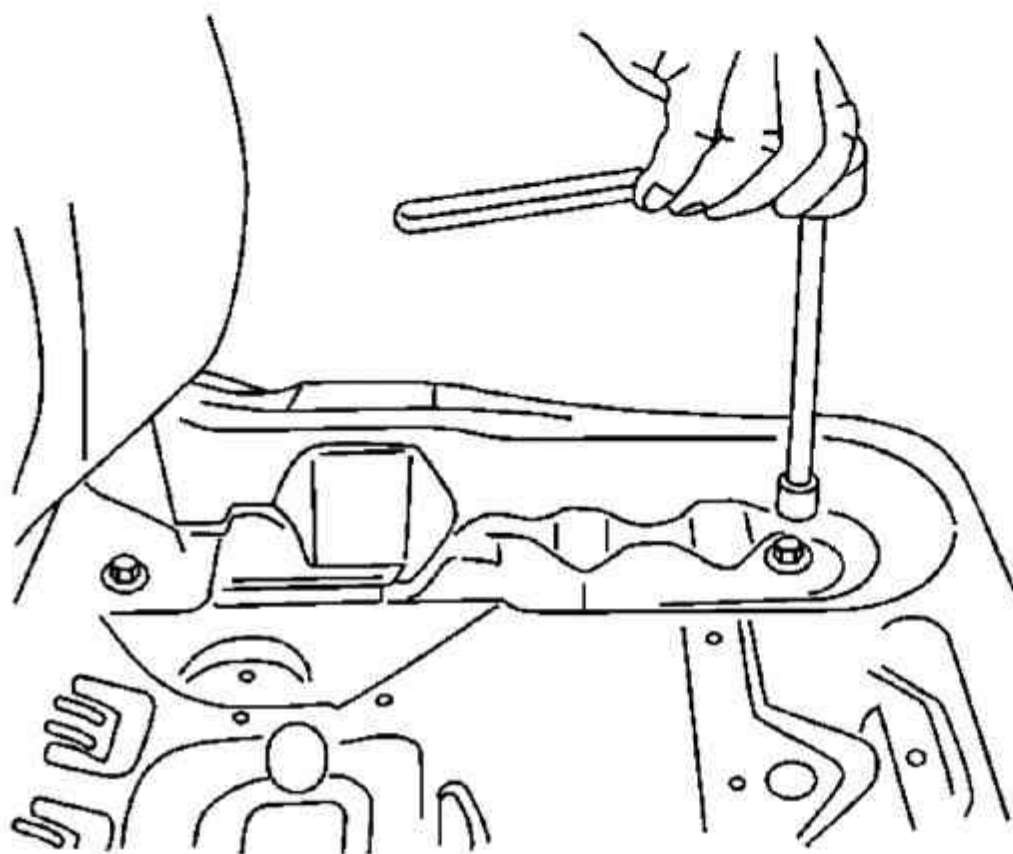


Fig. 9: Identifying Front Seat Pan Bolts
Courtesy of GENERAL MOTORS CORP.

11. Remove the seat trim and the pad to access the seat pan bolts.
12. Remove the 4 seat pan bolts.
13. Remove the seat pan

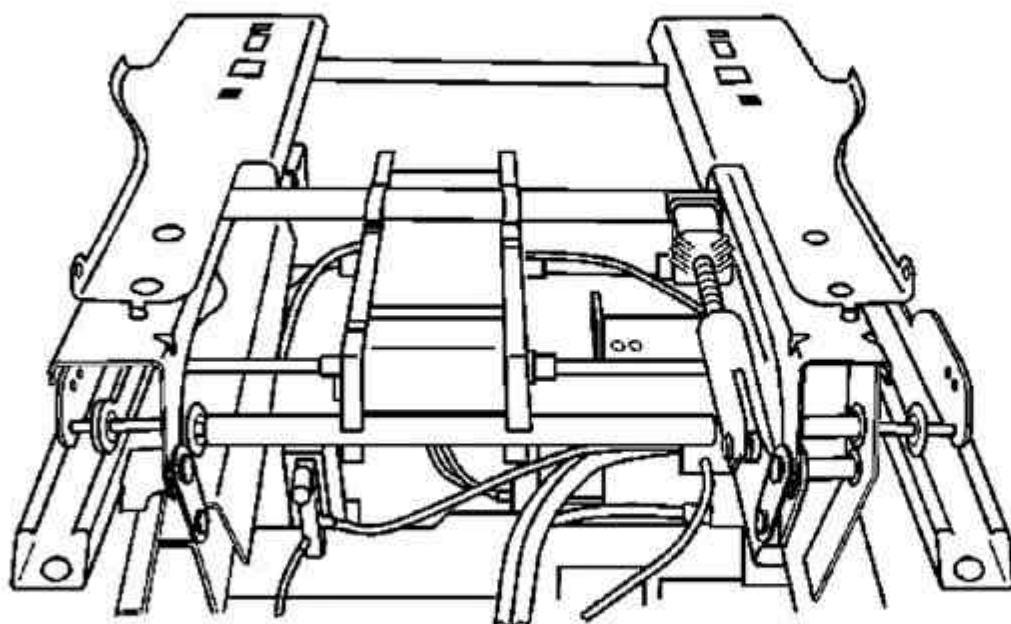


Fig. 10: View Of Adjuster Cover Plates
Courtesy of GENERAL MOTORS CORP.

14. Remove the 2 adjuster cover plates.

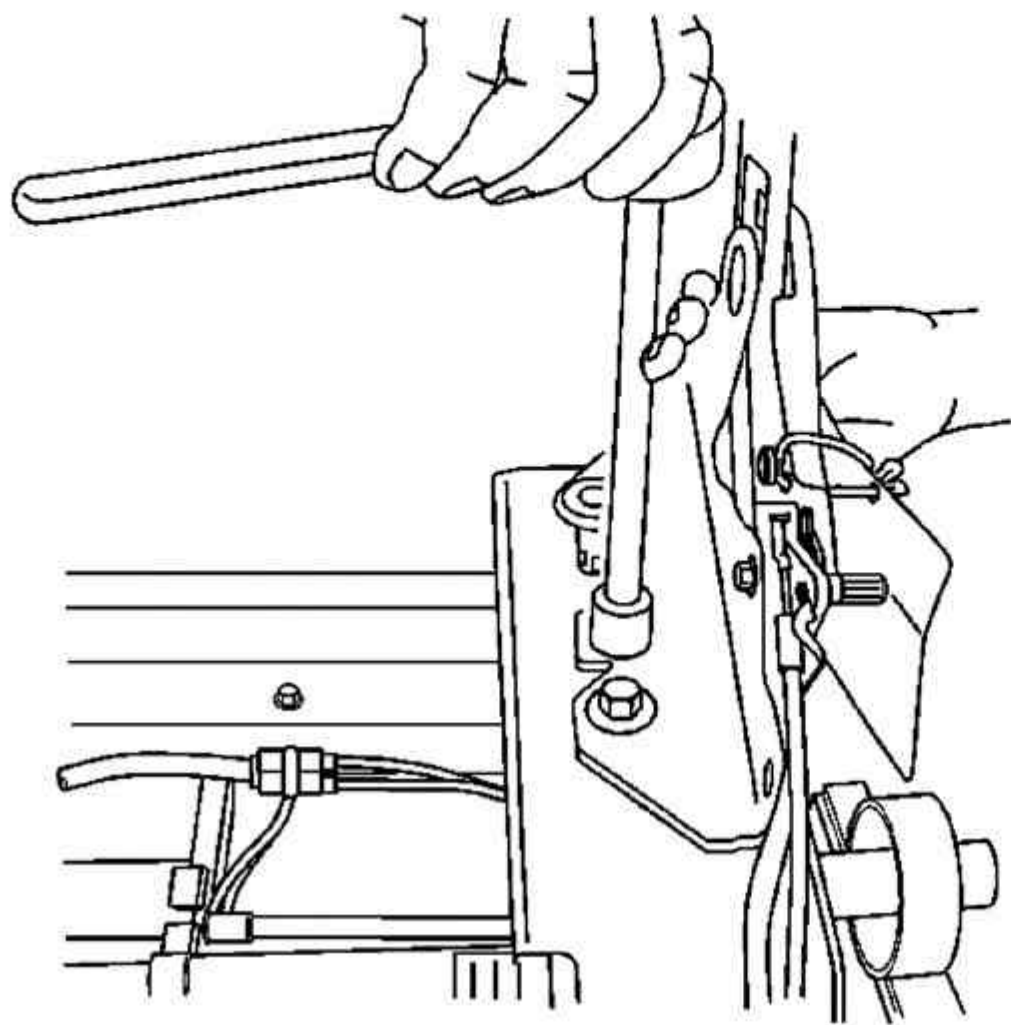


Fig. 11: Identifying Front Seat Back Frame Bolts
Courtesy of GENERAL MOTORS CORP.

15. Remove the seat back frame bolts.
16. Remove the seat back from the adjuster.
17. Remove the seat adjuster.

Installation Procedure

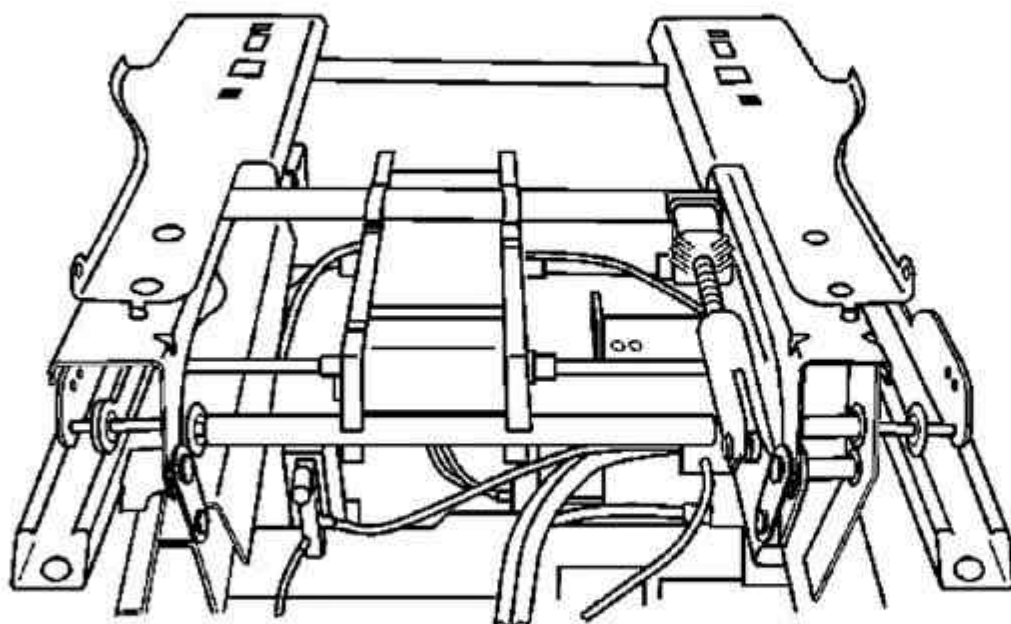


Fig. 12: View Of Adjuster Cover Plates
Courtesy of GENERAL MOTORS CORP.

1. Place the adjuster covers on the seat adjuster.

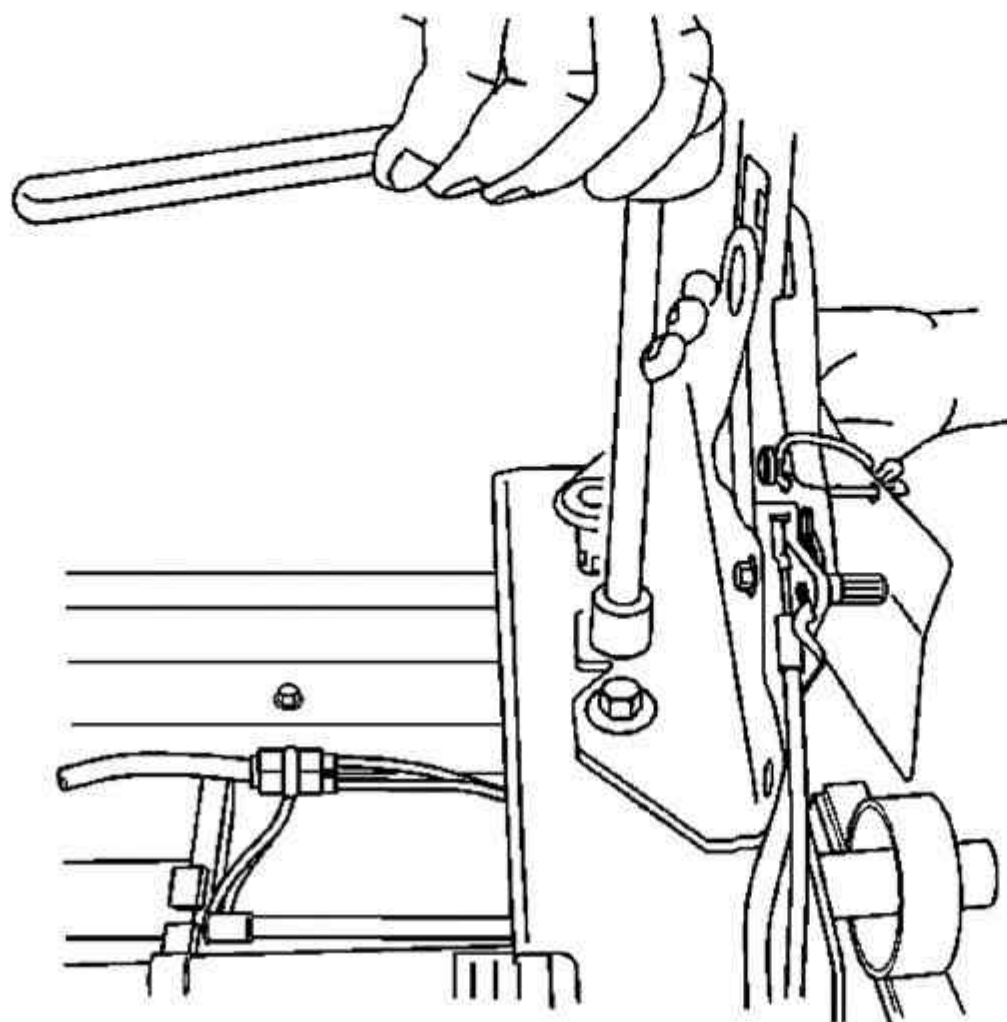


Fig. 13: Identifying Front Seat Back Frame Bolts
Courtesy of GENERAL MOTORS CORP.

2. Place the seat back frame on the adjuster covers.

NOTE: Refer to Fastener Notice .

3. Install the bolts that secure the seat back to the adjuster.

Tighten: Tighten the bolts to 24 N.m (18 lb ft).

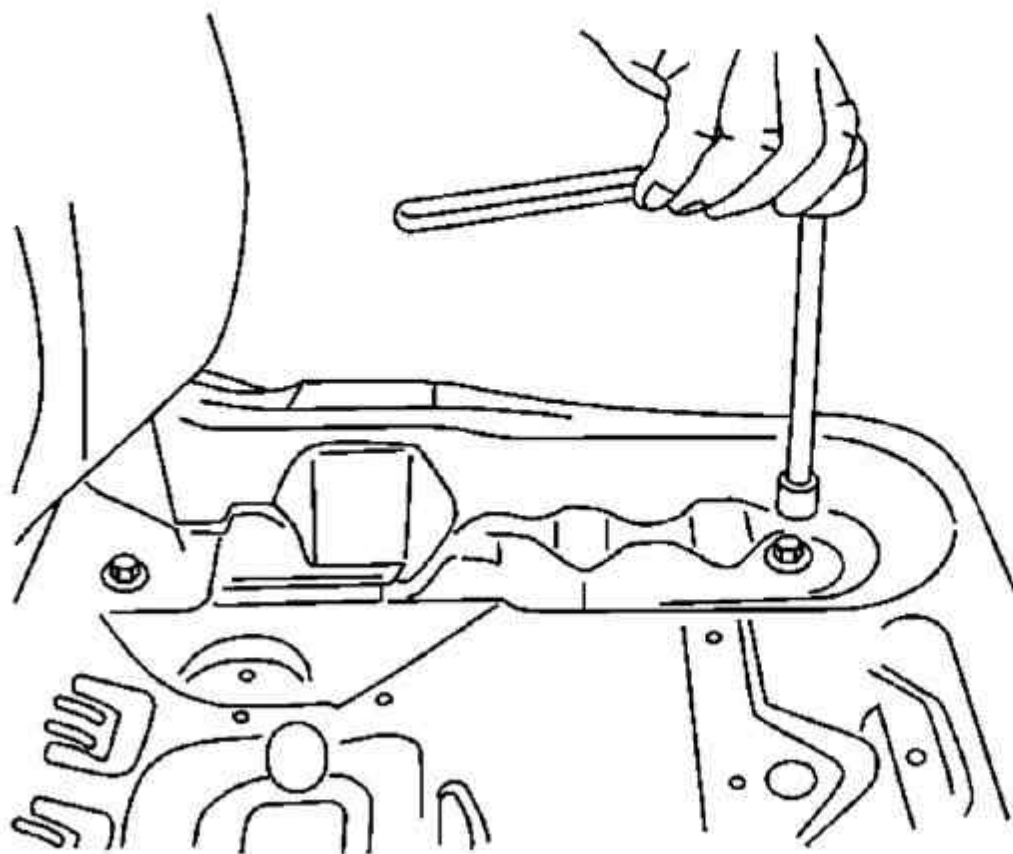


Fig. 14: Identifying Front Seat Pan Bolts
Courtesy of GENERAL MOTORS CORP.

4. Install the seat pan.
5. Install the bolts that secure the seat pan to the adjuster.

Tighten: Tighten the bolts to 24 N.m (18 lb ft).

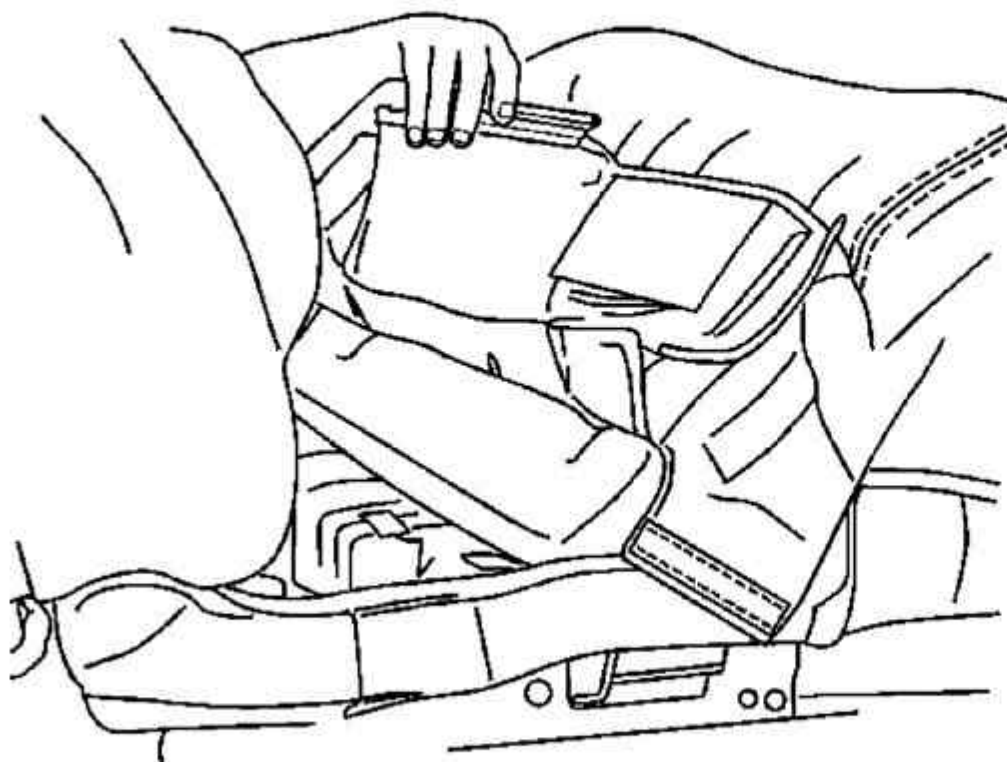


Fig. 15: Identifying Rear Cushion Cover (Front Seat)
Courtesy of GENERAL MOTORS CORP.

6. Install the seat pad and trim cover together.
7. Install the seat cushion J-hooks and the hook and loop retainers to secure the trim to the seat pan.
8. Press down on the cushion trim pad to secure the hook and loop retainers to the seat pad.

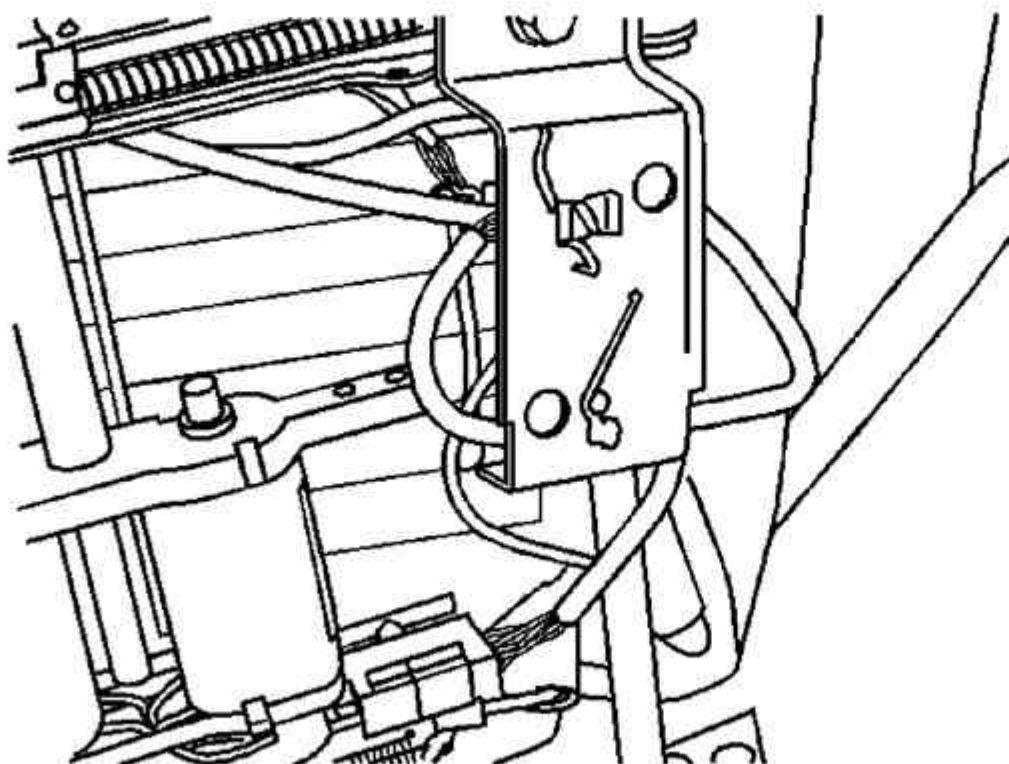


Fig. 16: View Of Adjuster Bracket Electrical Harness Clip & Harness Retainer
Courtesy of GENERAL MOTORS CORP.

9. Install the electrical harness clip and the retainer on the adjuster bracket.

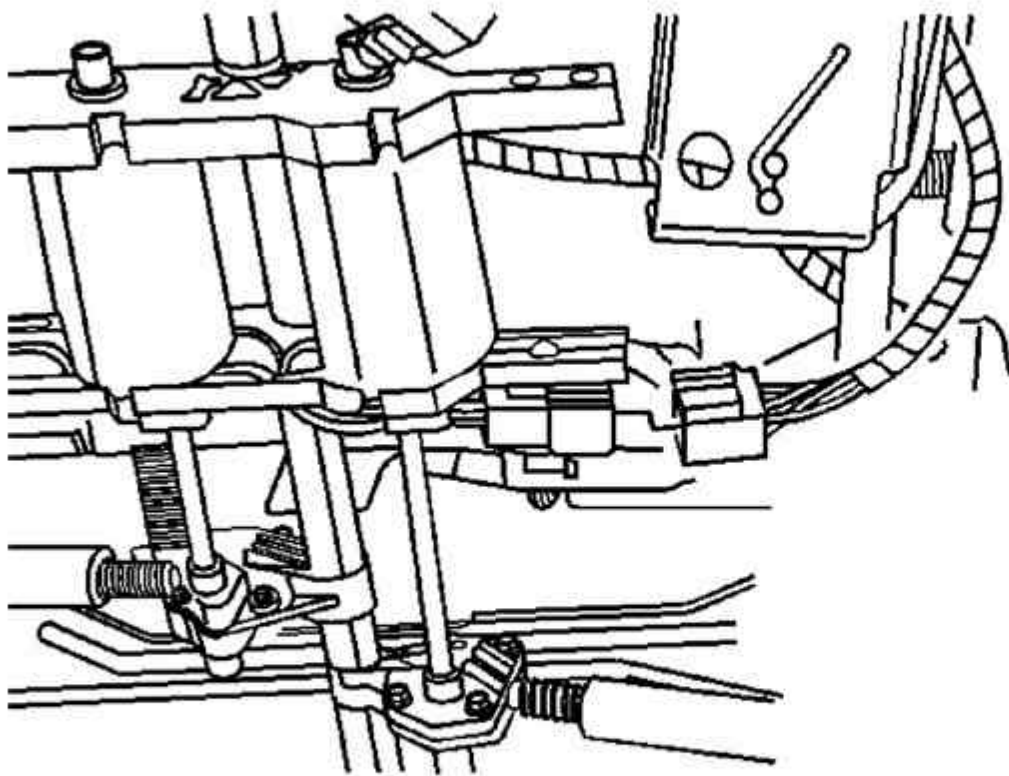


Fig. 17: View Of Power Seat Motor Electrical Harness
Courtesy of GENERAL MOTORS CORP.

10. Connect the electrical harness to the seat motor harness.
11. Install the seat belt pretensioner. Refer to Seat Belt Buckle Pretensioner Replacement.
12. Install the seat belt bracket.
13. Install the seat trim panel. Refer to Front Seat Adjuster Track Finish Cover Replacement.

IMPORTANT: Inspect the drive cables. Verify that the cables are straight between the motors and the drive screws.

14. Install the front seat. Refer to Front Seat Replacement - Bucket.

SEAT ADJUSTER PHASE ADJUSTMENT

Adjustment Procedure

1. Disable the SIR. Refer to SIR Disabling and Enabling.

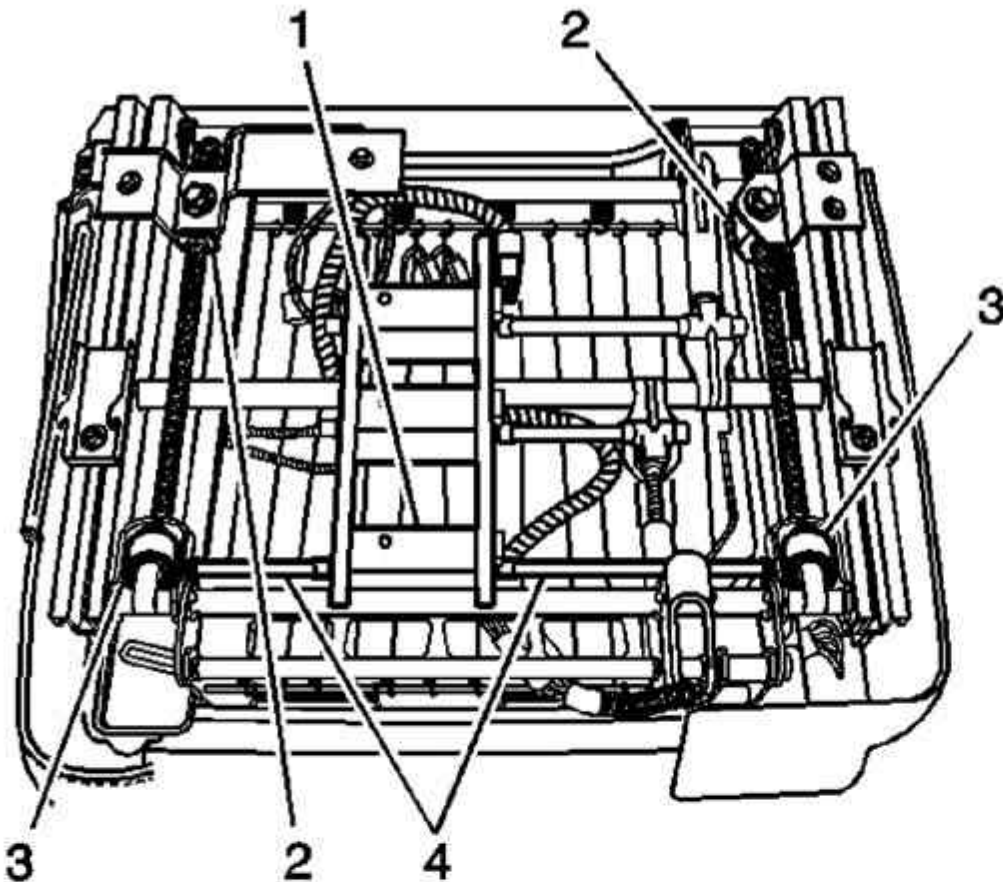


Fig. 18: Identifying Power Seat Components
Courtesy of GENERAL MOTORS CORP.

2. Using the power seat switch, run the seat adjuster rearward until the drive bracket (3) and the anchor bracket (2) are together on either side of the adjuster.
3. Remove the drive cable (4) from the side of the adjuster which contains the brackets that touch.
4. Use the power seat switch to run the adjuster rearward until the other pair of brackets are together.

5. Install the removed drive cable.

IMPORTANT: Inspect all 4 cables to verify that the cables are straight.

6. Test the adjuster for proper operation.
7. Enable the SIR. Refer to SIR Disabling and Enabling.

DRIVER SEAT AND PASSENGER SEAT HORIZONTAL ADJUSTER CABLE REPLACEMENT

Removal Procedure

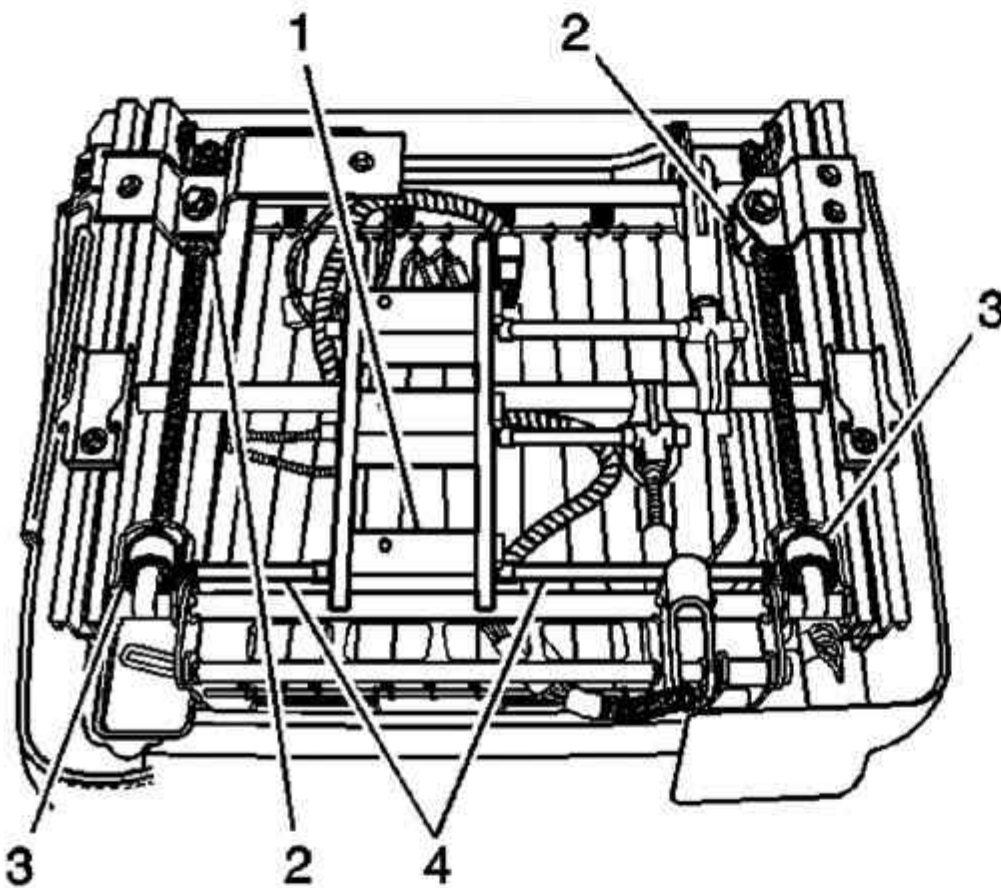


Fig. 19: Identifying Power Seat Components
Courtesy of GENERAL MOTORS CORP.

1. If one side of the seat adjuster is not working, perform the following procedure:
 1. The horizontal drive motor (1) and the drive cables (4) are located at the front of the seat. Verify that both cables are straight. If a cable is bent, an end will be pulled out of the drive motor or the drive screw. Straighten the cable. The seat switch may have to be toggled back and forth to get the cable ends to seat properly.
 2. Run the seat forward until the seat removal bolts are accessible.

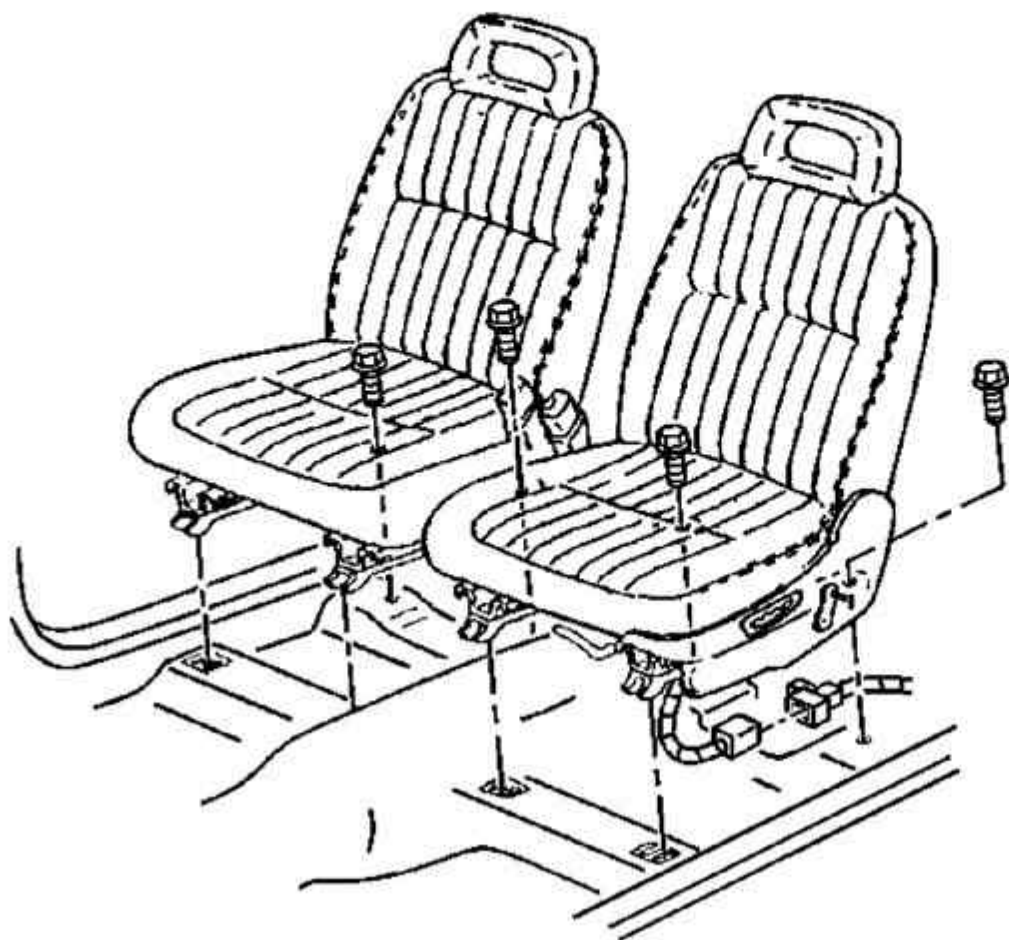


Fig. 20: View Of Front Seat Bolts
Courtesy of GENERAL MOTORS CORP.

2. Remove the front seat bolts.
3. Tip the seat forward and disconnect the electrical connector from the seat electrical harness.
4. Disengage the seat hook attachments from the floor pan.
5. Tip the seat rearward to expose the horizontal drive cables (4).

IMPORTANT: The short cable is not replaceable.

6. Bend the long flexible cable at the center and pull the cable out of the motor (1) and the drive screw (3).
7. Remove the cable from the vehicle.

Installation Procedure

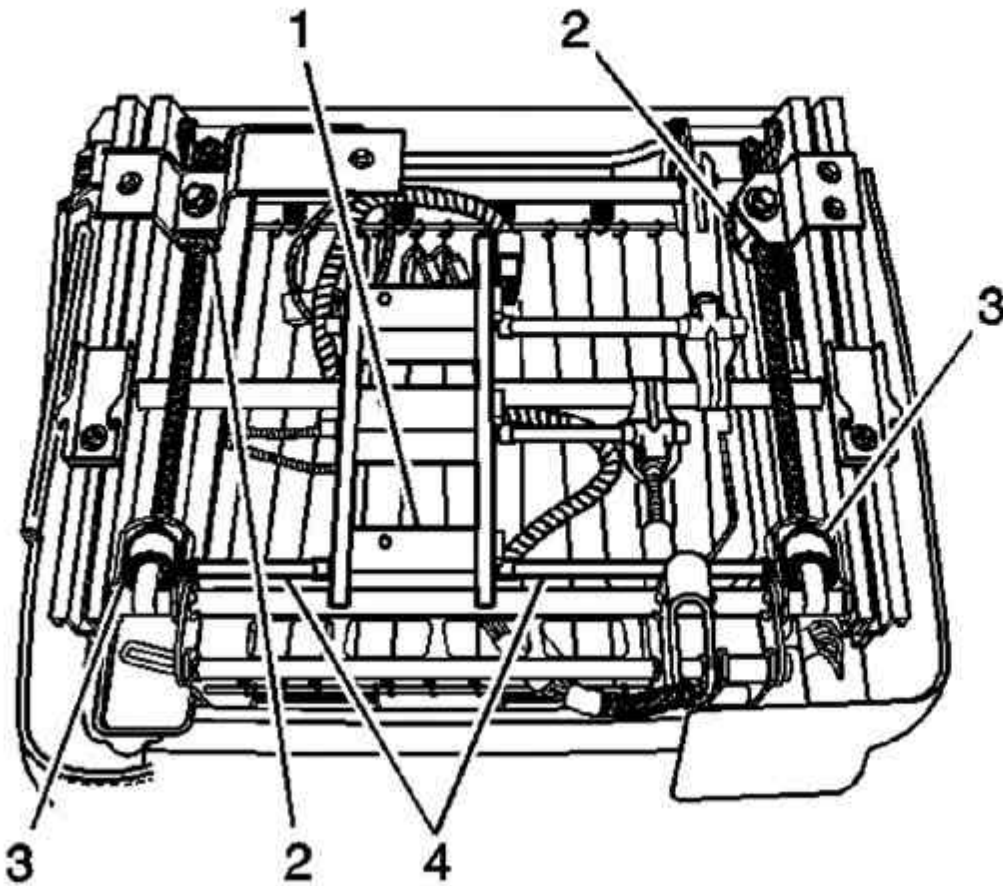


Fig. 21: Identifying Power Seat Components
Courtesy of GENERAL MOTORS CORP.

1. Insert the end of one cable (4) into the drive screw (3).
2. Bend the cable and insert the other end into the motor (1).

IMPORTANT: Examine all 4 drive cables to ensure that the cables are straight.

3. Connect the electrical connector to the seat wire harness and test the seat for proper operation.
4. Examine the horizontal drive cables for synchronization. Refer to Seat Adjuster Phase Adjustment.

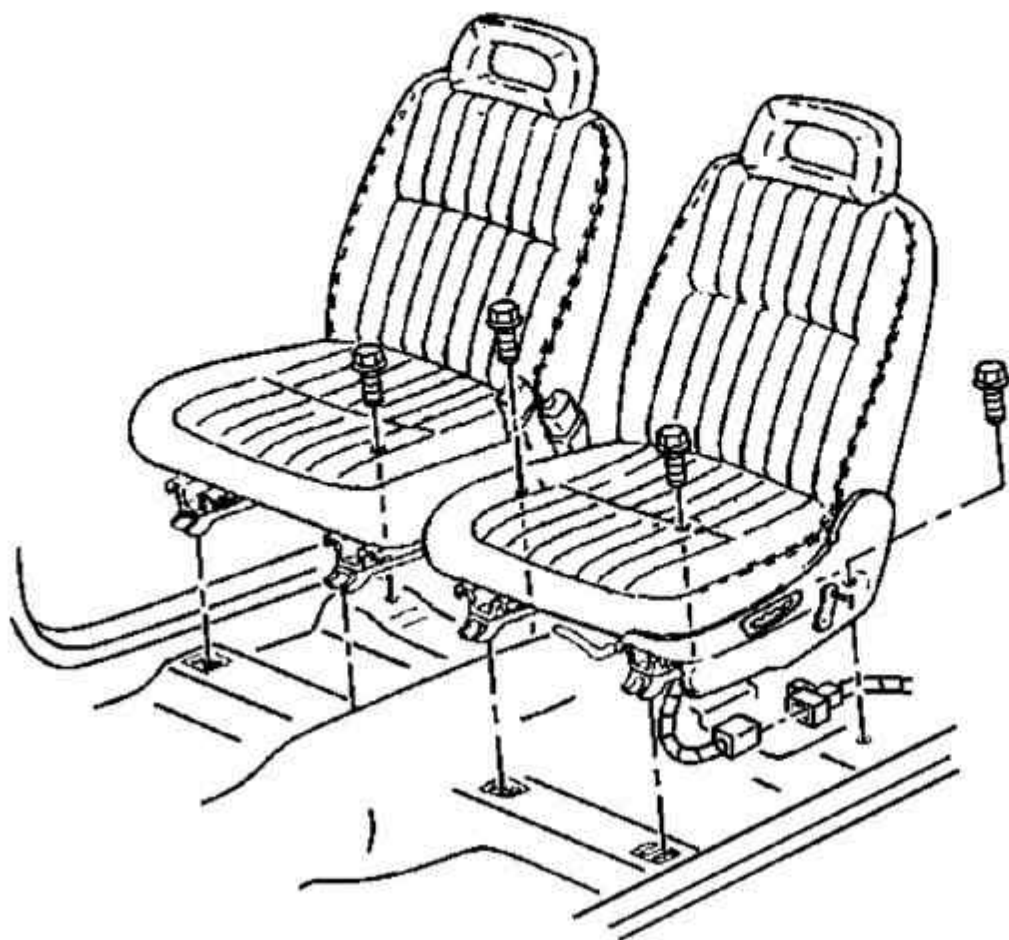


Fig. 22: View Of Front Seat Bolts
Courtesy of GENERAL MOTORS CORP.

5. Tip the seat forward and engage the seat hook attachments to the floor plan.

NOTE: Refer to Fastener Notice .

6. Install the bolts that secure the adjuster to the floor plan.

Tighten: Tighten the bolts to 42 N.m (31 lb ft).

DRIVER SEAT AND PASSENGER SEAT VERTICAL ADJUSTER CABLE REPLACEMENT

Removal Procedure

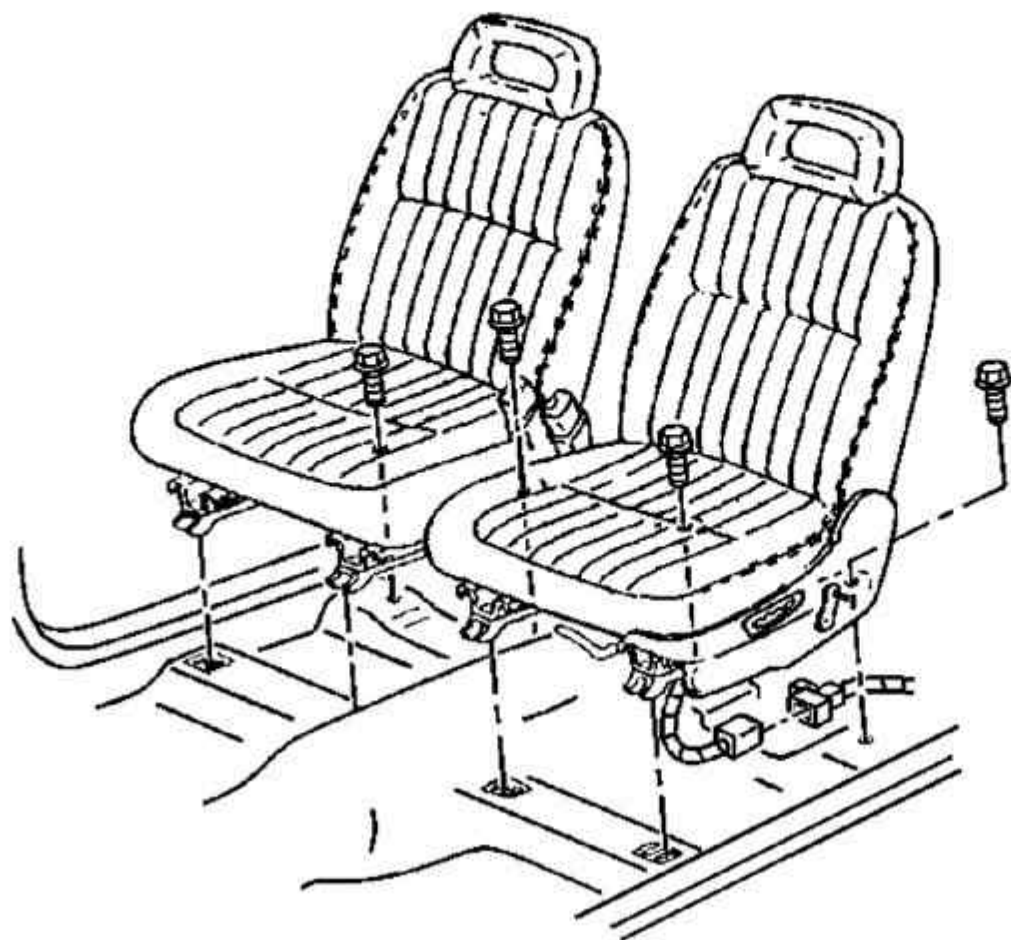


Fig. 23: View Of Front Seat Bolts
Courtesy of GENERAL MOTORS CORP.

1. Remove the front bolts.
2. Tip the seat forward and disconnect the electrical connector from the seat electrical harness.
3. Disengage the seat hook attachments from the floor pan.

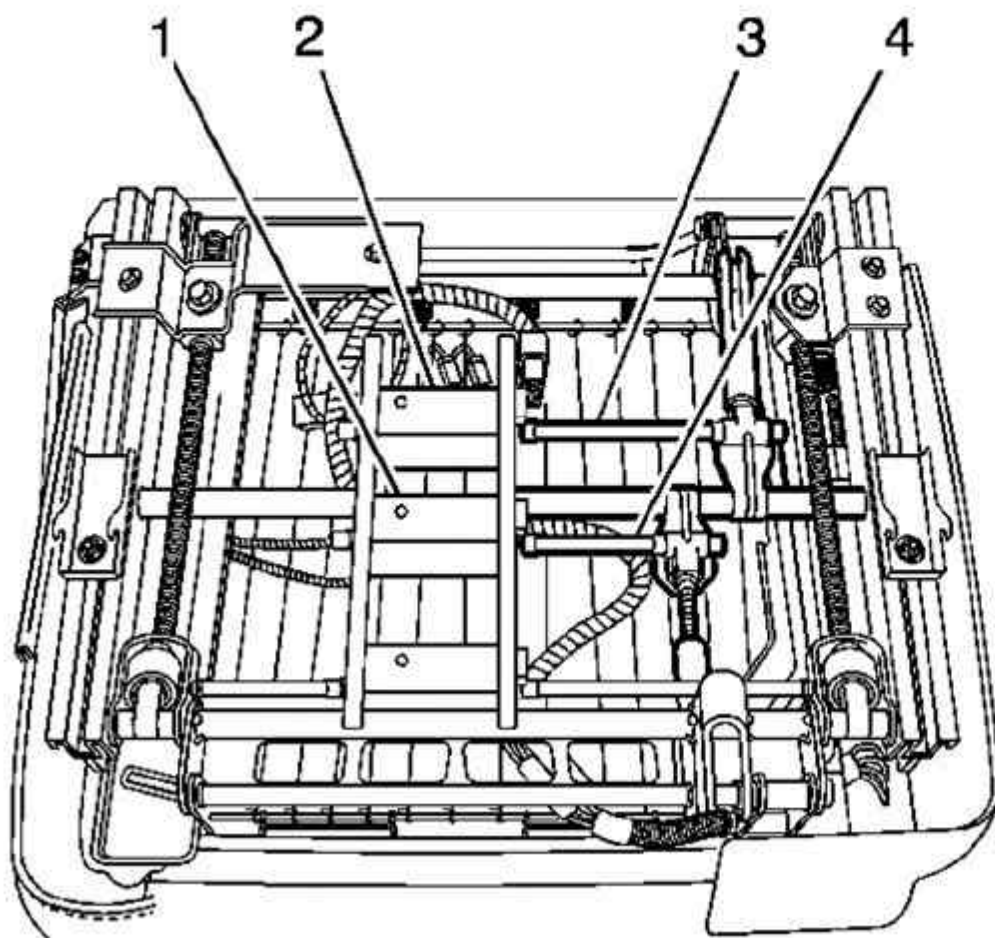


Fig. 24: Identifying Vertical Drive Cables & Motor
Courtesy of GENERAL MOTORS CORP.

4. Tip the seat forward to expose the vertical drive cables (3 or 4).
5. To remove either cable perform the following procedure:
 1. Bend the flexible cable at the center.
 2. Pull the cable out of the motor (1 or 2) and the drive screw.

Installation Procedure

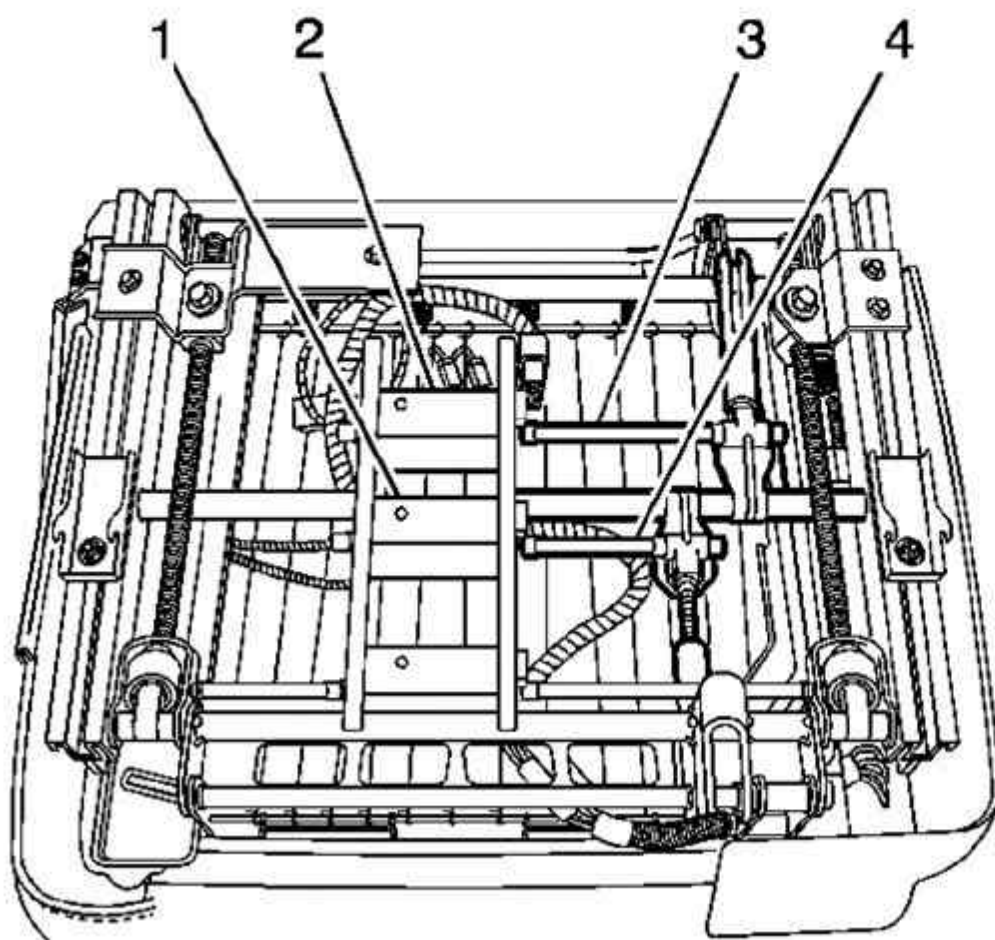


Fig. 25: Identifying Vertical Drive Cables & Motor
Courtesy of GENERAL MOTORS CORP.

1. Insert the end of the replacement cable (3 or 4) into the drive screw.
2. Bend the cable and insert the other end into the motor (1 or 2).
3. If required, repeat the above procedure for the second drive cable.

IMPORTANT: Examine all 4 drive cables to ensure that the cables are straight.

4. Connect the electrical connector to the seat wire harness and test the seat for proper operation.

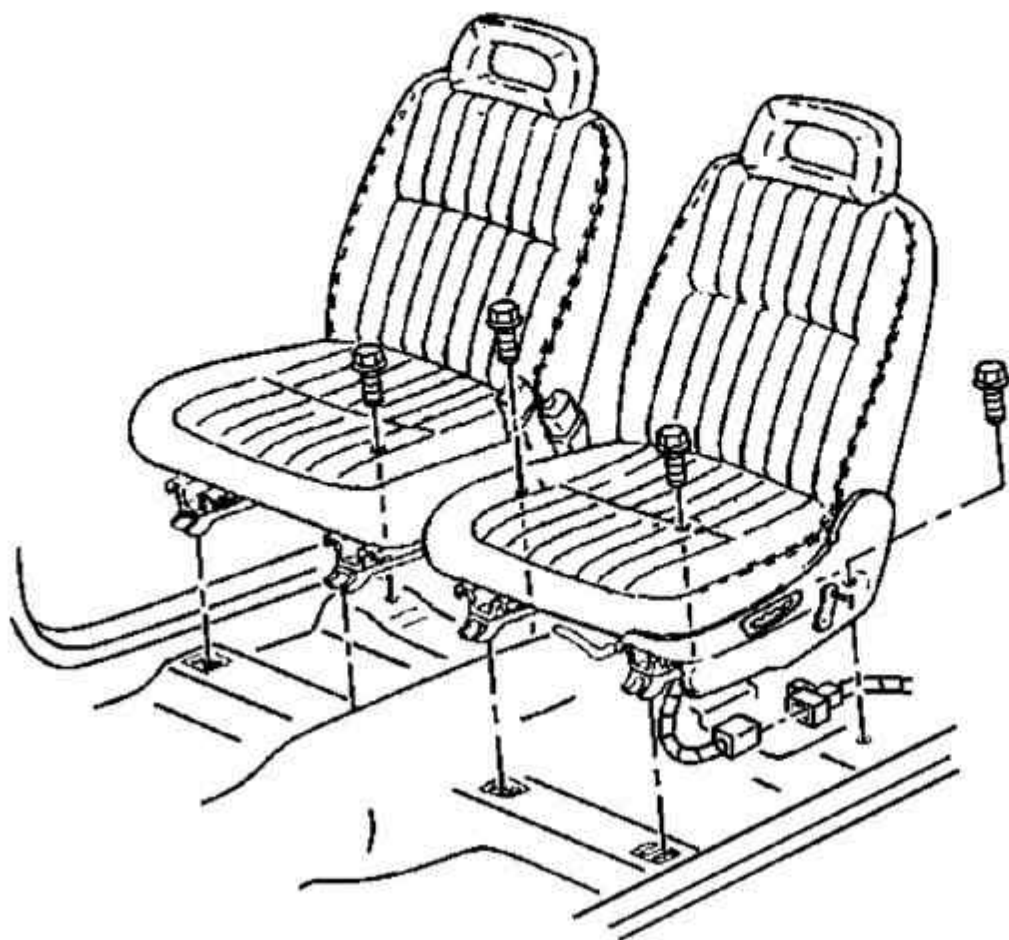


Fig. 26: View Of Front Seat Bolts
Courtesy of GENERAL MOTORS CORP.

5. Tip the seat forward and engage the seat hook attachments to the floor plan.

NOTE: Refer to Fastener Notice .

6. Install the bolts that secure the adjuster to the floor plan.

Tighten: Tighten the bolts to 42 N.m (31 lb ft).

LUMBAR SWITCH REPLACEMENT

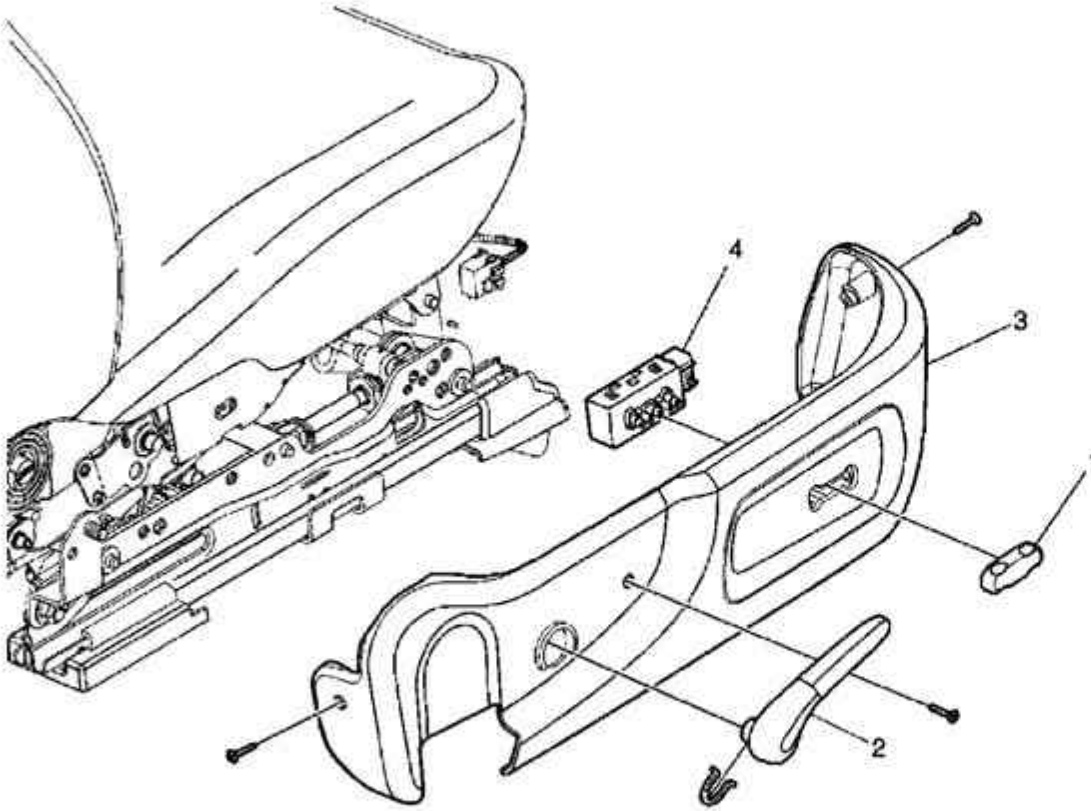


Fig. 27: View Of Front Seat Lumbar Support switch
 Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Fastener Tightening Specifications: Refer to <u>Fastener Tightening Specifications</u> .	
1	Power Seat Adjuster Switch Knob
2	Seat Recliner Handle Refer to <u>Driver Seat and Passenger Seat Recliner Handle Replacement</u> .
3	Seat Adjuster Finish Cover Refer to <u>Front Seat Adjuster Track Finish Cover Replacement</u> .
4	Power Seat Lumbar Switch Tip: 1. Disconnect the electrical connector. 2. Release the switch from the finish cover.

FRONT SEAT LUMBAR SUPPORT REPLACEMENT

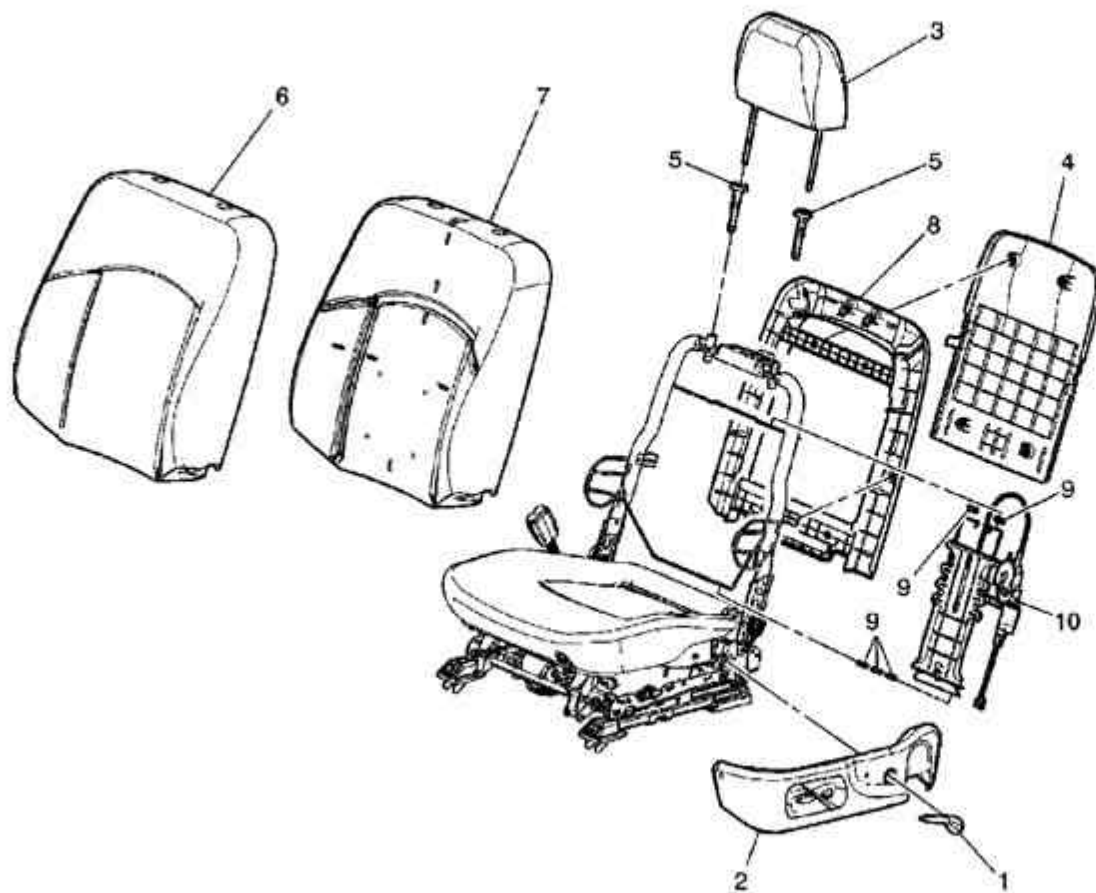


Fig. 28: View Of Front Seat Lumbar Support Components
 Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Fastener Tightening Specifications: Refer to <u>Fastener Tightening Specifications</u> .	
Preliminary Procedure:	
Remove the front bucket seat. Refer to <u>Front Seat Replacement - Bucket</u> .	
1	Front Seat Recliner Handle
2	Front Seat Trim Panel
3	Head Restraint Assembly Tip: Push in the button on the head restraint guides to release the head restraint from the seat.
4	Seat Back Cushion Panel Tip: Pull from the bottom edge of the panel to remove.
5	Head Restraint Guide (Qty: 2) Tip: Squeeze the bottom of the guide and push upward to remove.
6	Seat Back Cushion Cover Tip: Remove the hog rings that attach the seat cushion cover to the seat cushion.
7	Seat Back Cushion Pad
8	Seat Back Pocket
9	Seat Power Lumbar Support Retainer (Qty: 5)
10	Seat Power Lumbar Support Assembly

DESCRIPTION AND OPERATION

LUMBAR SUPPORT DESCRIPTION AND OPERATION

Power Lumbar System Components

- Seat lumbar switch

- Seat lumbar motor
- PWR SEAT circuit breaker 25 amp

Power Lumbar Description and Operation

The seat lumbar switch is supplied with battery positive voltage from the PWR SEAT circuit breaker located in the I/P fuse block. The seat lumbar switch contains inward and outward adjustment switches that are normally open to ground. The seat lumbar switch provides both power and ground to the lumbar motor. When the seat lumbar switch is operated to the outward position, battery voltage is applied through the outward switch contacts to the lumbar motor outward control circuit. The lumbar motor inward control circuit supplies ground through the switch contacts of the inward switch to G301. The motor will operate to move the lumbar support outward toward the occupant's back until the lumbar is fully extended or the lumbar switch is released. Operating the seat lumbar switch to the inward position reverses this process. Voltage is applied through the contacts of the inward switch to the lumbar motor through the lumbar motor inward control circuit. The lumbar motor outward control circuit supplies ground for the circuit through G301. The motor will operate to move the lumbar support inward away from the occupant's back until the lumbar is fully retracted or the lumbar switch is released. The lumbar motor contains an internal electronic circuit breaker (PTC) that will open if the motor overheats or binds. The circuit breaker will reset when voltage has been removed from the lumbar motor.

POWER SEATS SYSTEM DESCRIPTION AND OPERATION**Power Seats System Components**

The driver and front passenger power seat systems each consist of the following components:

- Seat adjuster switch
- Seat horizontal motor
- Seat front vertical motor
- Seat rear vertical motor
- PWR SEAT circuit breaker 25 amp

Power Seat Adjuster Switch

The driver and front passenger seat adjuster switches are supplied battery positive voltage at all times from the PWR SEAT circuit breaker located in the I/P fuse block. The seat adjuster switches provide both power and ground to the selected seat adjuster motors. The seat adjuster switches are grounded through the switch ground circuit at G 301.

Power Seat Adjuster Motors

The seat adjuster motor assembly consists of three motors. They are the horizontal motor, front vertical motor, and rear vertical motor. Each seat adjuster motor operates independently. The horizontal motor moves the entire seat forward and rearward. Both vertical motors run simultaneously when the seat switch is operated to move the entire seat up and down. Or they can be selected independently to vertically tilt the front or rear of the seat up and down. Each motor contains an internal electronic circuit breaker (PTC) that will open if the motor overheats or binds. The circuit breaker will reset when voltage has been removed from the lumbar motor.

Horizontal Adjuster Motor

When the seat switch is operated to move the entire seat forward, battery positive voltage is applied through the horizontal motor forward switch contacts and the horizontal motor forward control circuit to the motor. The motor is grounded through the horizontal motor rearward switch contacts and the horizontal motor rearward control circuit to the motor. The motor runs in order to drive the entire seat forward until the switch is released. Moving the entire seat rearward works similarly to moving the entire seat forward, except that battery positive voltage and ground are applied on opposite circuits causing the motor to run in the opposite direction.

Rear Vertical Adjuster Motor

When the seat switch is operated to tilt the rear of the seat up, battery positive voltage is applied through the rear vertical motor up switch contacts and the rear vertical motor up control circuit to the rear vertical motor. The motor is grounded through the rear vertical motor down switch contacts and the rear vertical motor down control circuit to the rear vertical motor. The motor runs in order to drive the rear of the seat up until the switch is released. Tilting the rear of the seat down works similarly to tilting the rear of the seat up, except that battery positive voltage and ground are applied on opposite circuits causing the motor to run in the opposite direction.

Front Vertical Adjuster Motor

When the seat switch is operated to tilt the front of the seat up, battery positive voltage is applied through the front vertical motor up switch contacts and the front vertical motor up control circuit to the front vertical motor. The motor is grounded through the front vertical motor down switch contacts and the front vertical motor down control circuit to the front vertical motor. The motor runs in order to drive the front of the seat up until the switch is released. Tilting the front of the seat down works similarly to tilting the front of the seat up, except that battery positive voltage and ground are applied on opposite circuits causing the motor to run in the opposite direction.

Entire Seat Up or Down

When the seat switch is operated in order to move the entire seat to the up position, battery positive voltage is simultaneously applied through the front and rear vertical motor up switch contacts and the front and rear vertical motor up control circuits to both vertical motors. The motors are grounded through the front and rear vertical motor down switch contacts and the front and rear vertical motor down control circuits to both vertical motors. Both motors run simultaneously in order to drive the entire seat up until the switch is released. Moving the entire seat down works similarly to moving the entire seat up, except that battery positive voltage and ground are applied on the opposite circuits causing the motors to run in the opposite direction.

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