

2013 ACCESSORIES & EQUIPMENT

Power Seats - Cruze

SCHEMATIC WIRING DIAGRAMS

DRIVER SEAT WIRING SCHEMATICS

ADS Wiring Schematics

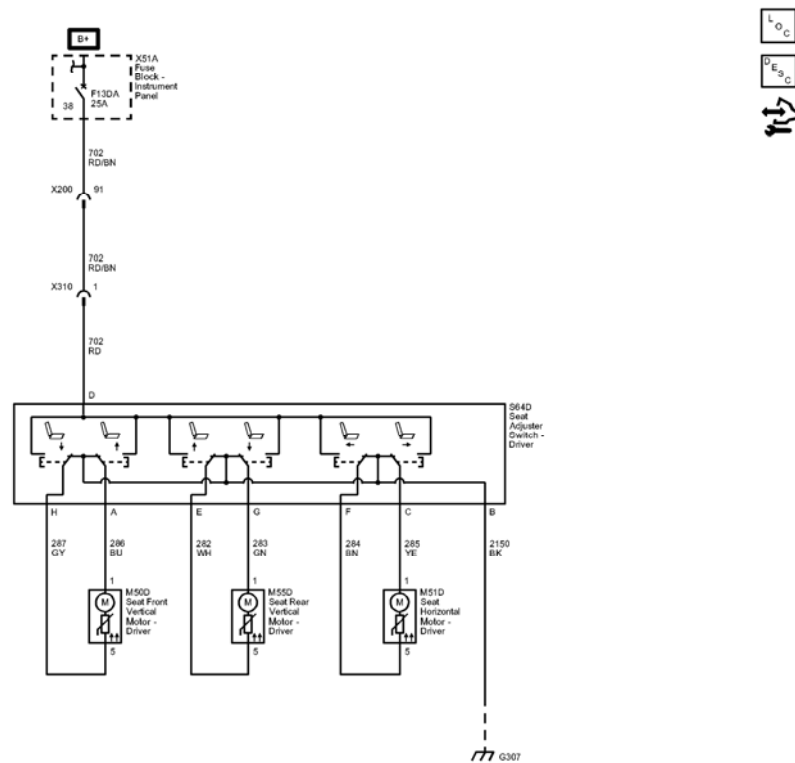


Fig. 1: Driver Seat (ADS) Wiring Schematics
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
702	Battery Positive Voltage
702_RD/BN	702 RD/BN
CAV D	D
702_RD/BN	702 RD/BN
702_RD	702 RD
CAV_91	91
CAV_1	1
CAV_38	38

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287	Driver Power Seat Front Vertical Motor Down Control
287_GY	287 GY
CAV_5	5
CAV_H	H
286	Driver Power Seat Front Vertical Motor Up Control
286_BU	286 BU
CAV_1	1
CAV_A	A
282	Driver Power Seat Rear Vertical Motor Up Control
282_WH	282 WH
CAV_5	5
CAV_E	E
283	Driver Power Seat Rear Vertical Motor Down Control
283_GN	283 GN
CAV_1	1
CAV_G	G
284	Driver Power Seat Horizontal Motor Rearward Control
284_BN	284 BN
CAV_5	5
CAV_F	F
285	Driver Power Seat Horizontal Motor Forward Control
285_YE	285 YE
CAV_1	1
CAV_C	C
2150	Ground
2150_BK	2150 BK
CAV_B	B
F13DA	F13DA 25A
X200	X200
X310	X310
M50D	(ADS)
S64D	(ADS)
X51A	
M55D	(ADS)
M51D	(ADS)

DIAGNOSTIC INFORMATION AND PROCEDURES

SYMPTOMS - POWER SEATS

NOTE: Review the system description in order to familiarize yourself with the system

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functions. Refer to **Power Seats System Description and Operation**.

Visual/Physical Inspection

- Inspect for aftermarket devices which could affect the operation of the seat systems. 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 **Power Seat Malfunction** diagnostic procedure in order to diagnose the symptom.

POWER SEAT 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
B+	1	1	-	-
Front Vertical Motor Down Control	1	1	-	-
Front Vertical Motor Up Control	1	1	-	-
Horizontal Motor Forward Control	1	1	-	-
Horizontal Motor Rearward Control	1	1	-	-
Rear Vertical Motor Down Control	1	1	-	-
Rear Vertical Motor Up Control	1	1	-	-
Ground	-	1	-	-
1. Power seat inoperative				

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Circuit/System Description

Power seat is completely controlled through the seat adjuster switch. Battery voltage is supplied at all times to the seat switch through a 20 A fuse located in the instrument panel fuse block. When the seat switches are in an inactive state, the switch contacts are closed to the switch ground circuit.

All 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 rearward control circuit to the motor. With the horizontal motor rearward switch contacts closed to the switch ground circuit, 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 - INDEX

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

Circuit/System Verification

1. Verify the driver seat directional motors listed below operate while operating the seat switches in both directions.
 - M51D Seat Horizontal Motor - Driver
 - M50D Seat Front Vertical Motor - Driver
 - M55D Seat Rear Vertical Motor - Driver
 - **If all seat motors do not operate**

Refer to Circuit/System Testing below - Seat Adjuster Switch Circuit Test.

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- **If 1 or more seat motors operate**

Refer to Circuit/System Testing below - Seat Motor Circuit Test.

- **If all seat motors operate**

2. All OK.

Circuit/System Testing

Seat Adjuster Switch Circuit Test

1. Ignition OFF, disconnect the harness connector at the S64D Seat Adjuster Switch - Driver.
2. Test for less than 10 ohms between the ground circuit terminal B and ground.
 - **If 10 ohms or greater**
 1. Ignition OFF.
 2. Test for less than 2 ohms in the ground circuit end to end.
 - If 2 ohms or greater, repair the open/high resistance in the circuit.
 - If less than 2 ohms, repair the open/high resistance in the ground connection.
 - **If less than 10 ohms**
3. Ignition ON.
4. Verify a test lamp illuminates between the B+ circuit terminal D and ground.
 - **If the test lamp does not illuminate**
 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
 3. Test for less than 2 ohms in the B+ circuit end to end.
 - If 2 ohms or greater, repair the open/high resistance in the circuit.
 - If less than 2 ohms, verify the circuit breaker is not open and there is voltage at the circuit breaker.
 - **If the test lamp illuminates**
5. Test or replace the S64D Seat Adjuster Switch - Driver.

Seat Motor Circuit Test

1. Ignition OFF, disconnect the harness connector at the appropriate seat motor listed below:
 - M51D Seat Horizontal Motor - Driver
 - M50D Seat Front Vertical Motor - Driver
 - M55D Seat Rear Vertical Motor - Driver
2. Connect a test lamp between control circuit terminal 1 and control circuit terminal 5, ignition ON.
3. Verify the test lamp illuminates when commanding the seat motor Up and Down or Forward and

Rearward using the seat adjuster switch.

- **If the test lamp does not illuminate during either of the commands**

1. Ignition OFF, disconnect the harness connector at the S64D Seat Adjuster Switch - Driver.
2. Test for infinite resistance between each control circuit and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 - If infinite resistance
3. Test for less than 2 ohms in each control circuit end to end.
 - If 2 ohms or greater, repair the open/high resistance in the circuit.
 - If less than 2 ohms, test or replace the S64D Seat Adjuster Switch - Driver.

- **If the test lamp illuminates during each of the commands**

4. Test or replace the seat motor.

Component Testing

Seat Adjuster Switch Test

1. Ignition OFF, disconnect the harness connector at the S64D Seat Adjuster Switch - Driver.
2. Test for infinite resistance between the B+ terminal D and each control terminal with the switch in the open position.
 - **If less than infinite resistance**

Replace the S64D Seat Adjuster Switch - Driver.

- **If infinite resistance**

3. Test for less than 2 ohms between the B+ terminal D and each control terminal with the appropriate switch in the closed position.
 - **If 2 ohms or greater**

Replace the S64D Seat Adjuster Switch - Driver.

- **If less than 2 ohms**

4. Test for less than 2 ohms between the ground terminal B and each control terminal with the switch in the open position.
 - **If 2 ohms or greater**

Replace the S64D Seat Adjuster Switch - Driver.

- **If less than 2 ohms**

5. All OK.

Seat Motor

1. Ignition OFF, disconnect the harness connector at the appropriate seat motor listed below:

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- M51D Seat Horizontal Motor - Driver
- M50D Seat Front Vertical Motor - Driver
- M55D Seat Rear Vertical Motor - Driver

NOTE: When performing the following tests, make sure that the seat is not already in the position the test is attempting to produce.

2. Install a 30 A fused jumper wire between control terminal 1 and 12 V.
3. Momentarily install a jumper wire between control terminal 5 and ground. The seat motor should momentarily perform the appropriate FORWARD/ REARWARD/ UP/ DOWN function.
 - **If the motor does not perform the FORWARD/ REARWARD/ UP/ DOWN function**
Replace the motor.
 - **If the motor performs the FORWARD/ REARWARD/ UP/ DOWN function**
4. Reverse the jumper wires; the motor should perform FORWARD/ REARWARD/ UP/ DOWN function.
 - **If the motor does not perform the FORWARD/ REARWARD/ UP/ DOWN function**
Replace the motor.
 - **If the motor performs the FORWARD/ REARWARD/ UP/ DOWN function**
5. All OK.

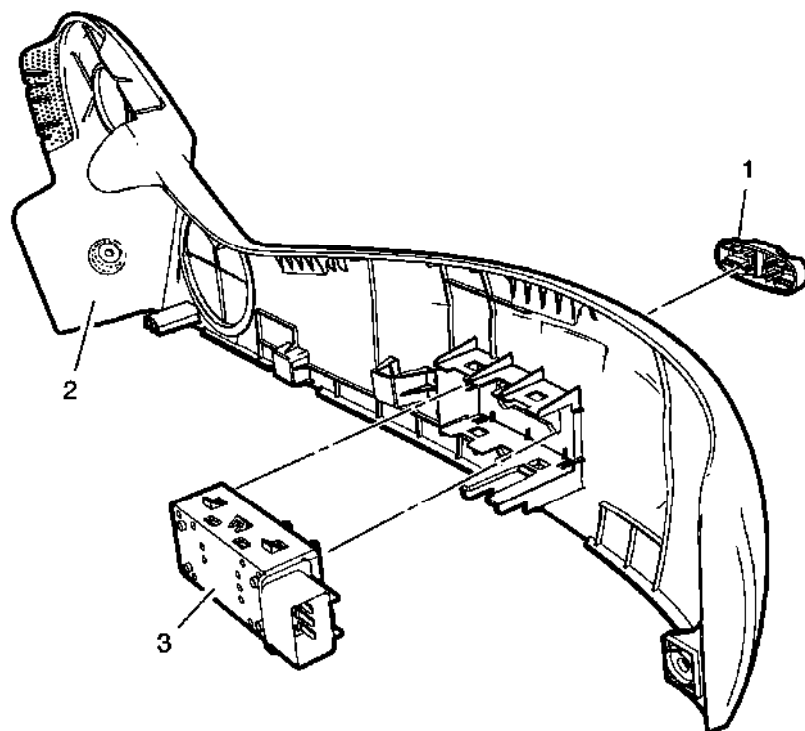
Repair Instructions

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

- **Driver Seat Adjuster Switch Replacement**
- **Front Seat Tilt Adjuster Actuator Replacement**
- **Front Seat Adjuster Actuator Replacement**
- **Driver Seat Outer Adjuster Rear Vertical Actuator Replacement**

REPAIR INSTRUCTIONS

DRIVER SEAT ADJUSTER SWITCH REPLACEMENT

**Fig. 2: Driver Seat Adjuster Switch**

Courtesy of GENERAL MOTORS COMPANY

Driver Seat Adjuster Switch Replacement

Callout	Component Name
1	Seat Adjuster Switch Knob
2	Seat Cushion Outer Trim Panel Refer to <u>Front Seat Cushion Outer Trim Panel Replacement</u> .
3	Front Seat Adjuster Switch Procedure Disconnect electrical connector.

FRONT SEAT TILT ADJUSTER ACTUATOR REPLACEMENT

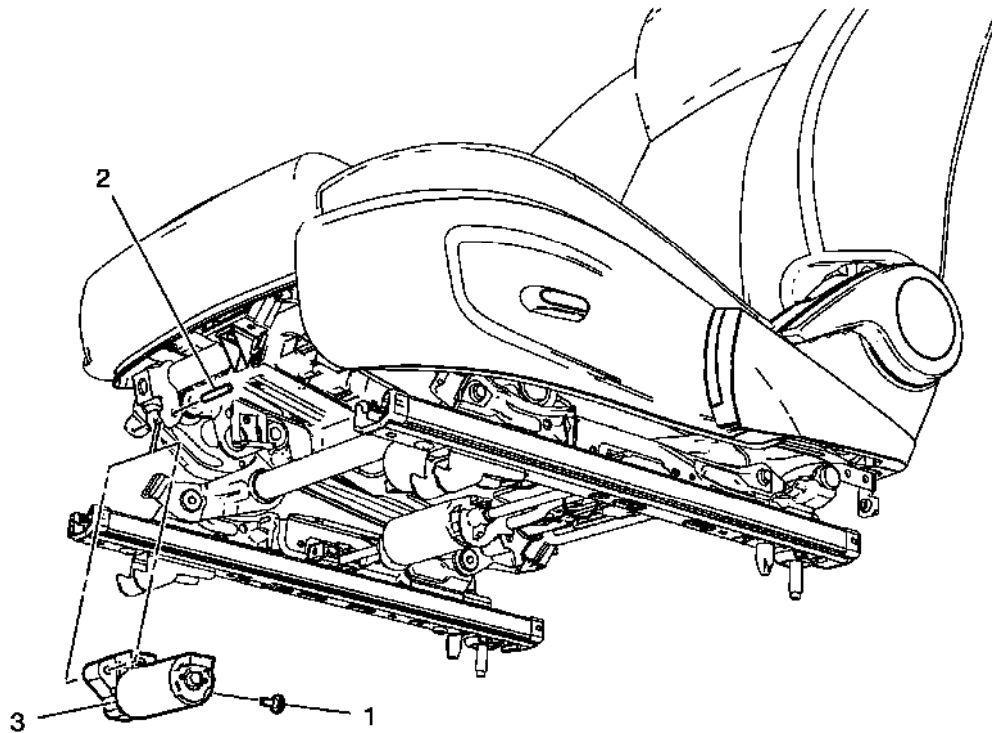


Fig. 3: Identifying Front Seat Tilt Adjuster Actuator, Screw And Roll Pin
Courtesy of GENERAL MOTORS COMPANY

Front Seat Tilt Adjuster Actuator Replacement

Callout	Component Name
Preliminary Procedures Remove the front seat. Refer to <u>Driver or Passenger Seat Removal and Installation</u> .	
1	Front Seat Tilt Actuator Screw CAUTION: Refer to <u>Fastener Caution</u> . Tighten 10 N.m (89 lb in)
2	Roll Pin Procedure Use a hammer and small round tool to tap the roll pin out.
3	Front Seat Tilt Adjuster Actuator Procedure Disconnect electrical connector.

FRONT SEAT ADJUSTER ACTUATOR REPLACEMENT

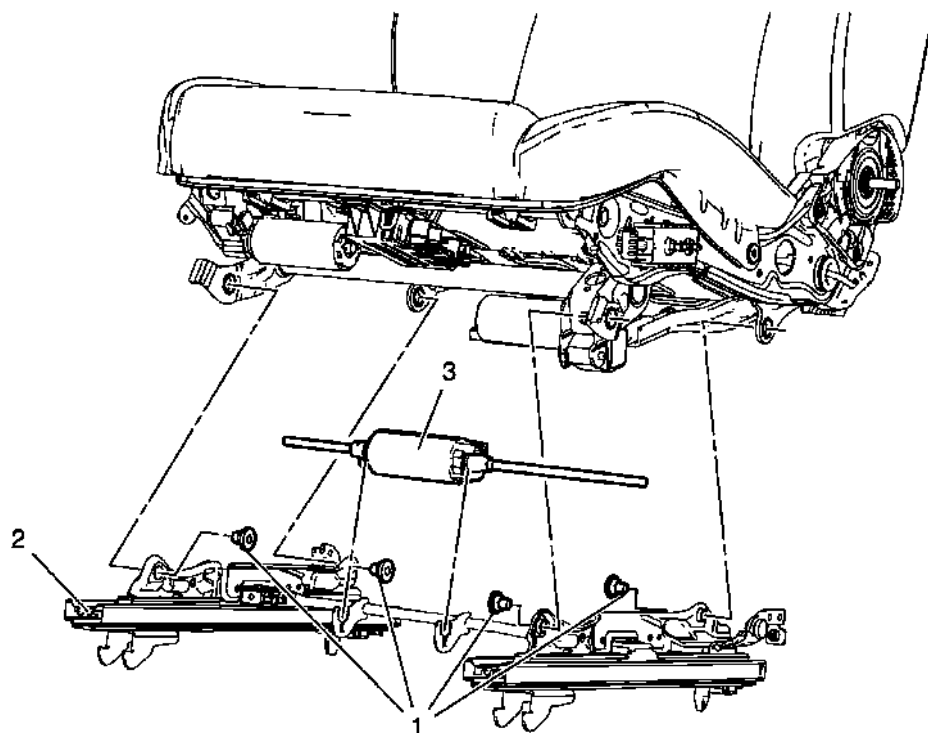


Fig. 4: Identifying Front Seat Adjuster Actuator, Adjuster Track And Screw
Courtesy of GENERAL MOTORS COMPANY

Front Seat Adjuster Actuator Replacement

Callout	Component Name
Preliminary Procedures Remove the front seat. Refer to <u>Driver or Passenger Seat Removal and Installation</u> .	
1	Front Seat Adjuster Track Screw CAUTION: Refer to <u>Fastener Caution</u> . Tighten 42 N.m (31 lb ft)
2	Front Seat Adjuster Track
3	Front Seat Adjuster Actuator Procedure Disconnect electrical connector.

DRIVER SEAT OUTER ADJUSTER REAR VERTICAL ACTUATOR REPLACEMENT

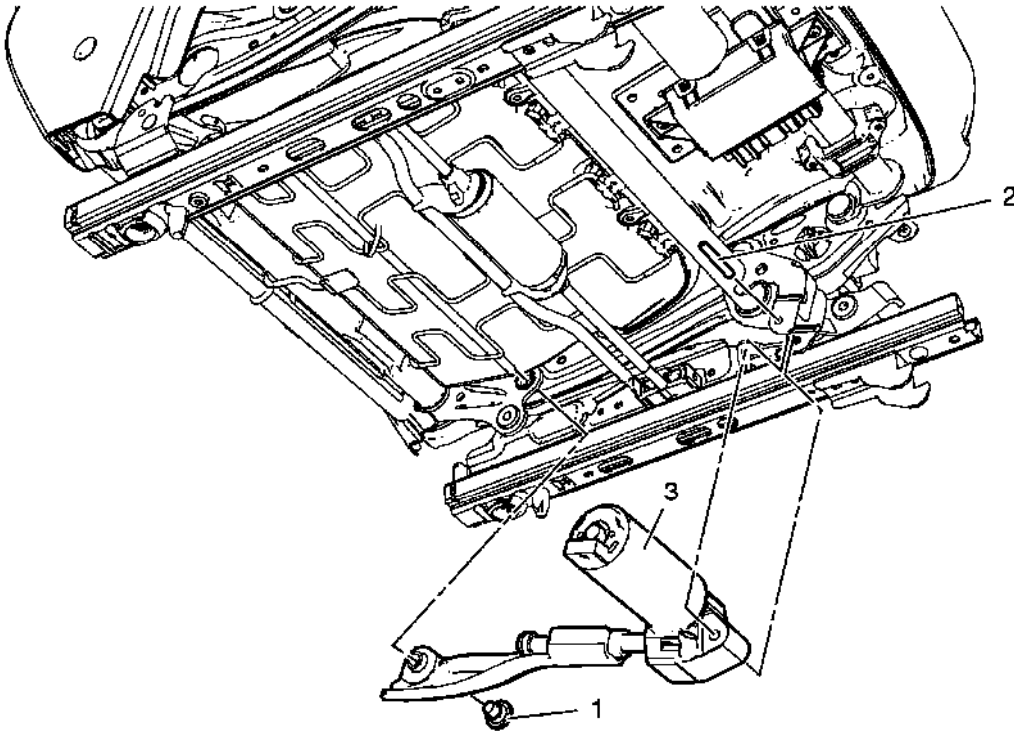


Fig. 5: View Of Driver Seat Outer Adjuster Rear Vertical Actuator, Screw And Roll Pin
Courtesy of GENERAL MOTORS COMPANY

Driver Seat Outer Adjuster Rear Vertical Actuator Replacement

Callout	Component Name
Preliminary Procedure Remove the front seat. Refer to <u>Driver or Passenger Seat Removal and Installation</u> .	
1	Front Seat Outer Adjuster Rear Vertical Actuator Screw CAUTION: Refer to <u>Fastener Caution</u> . Tighten 42 N.m (31 lb ft)
2	Roll Pin Procedure Use a hammer and small round tool to tap the roll pin out.
3	Front Seat Outer Adjuster Rear Vertical Actuator Procedure Disconnect electrical connector.

DESCRIPTION AND OPERATION

POWER SEATS SYSTEM DESCRIPTION AND OPERATION

The power seat system consists of the following components:

- Seat adjuster switch
- Seat horizontal motor
- Seat front vertical motor
- Seat rear vertical motor

Seat Adjuster Switch

The seat switches provide both power and ground to the selected seat motors. Battery positive voltage is supplied at all times to the driver seat switches through a 25 A circuit breaker located in the instrument panel fuse block.

Motors

All of the seat motors operate independently of each other. Each motor contains an electronic circuit breaker (PTC) that opens in the event of a circuit overload and will reset only after voltage has been removed from the circuit. There are three seat position motors. These are the horizontal motor, front vertical motor, and the rear vertical motor. The horizontal motor moves the entire seat forward and rearward. The seat vertical motors may operate independently to tilt the front or rear of the seat cushion up or down. Both motors can also run simultaneously to move the entire seat up or down.

Seat Operation

All seat motors are reversible. For example, when the seat horizontal forward switch is pressed to move the entire seat forward, ground is applied through the switch contacts and the seat horizontal motor forward control circuit to the motor. With the horizontal motor rearward switch contacts closed to the switch B+ circuit, 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 voltage and ground are applied on opposite circuits causing the motor to run in the opposite direction. All seat motors are powered this way.