

2008 Chevrolet Silverado 1500

2008 ACCESSORIES & EQUIPMENT Power Seats - Cab & Chassis Sierra, Cab & Chassis Silverado, Sierra & Silverado

2008 ACCESSORIES & EQUIPMENT

Power Seats - Cab & Chassis Sierra, Cab & Chassis Silverado, Sierra & Silverado

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

Application	Specification	
	Metric	English
Front Memory Seat Switch Screw	2 N.m	18 lb in
Front Seat Cushion Frame Nut	9 N.m	80 lb in
Front Seat Recliner Motor Bolt	10 N.m	89 lb in
Memory Seat Module Nut	9 N.m	80 lb in

SCHEMATIC AND ROUTING DIAGRAMS

DRIVER SEAT SCHEMATICS

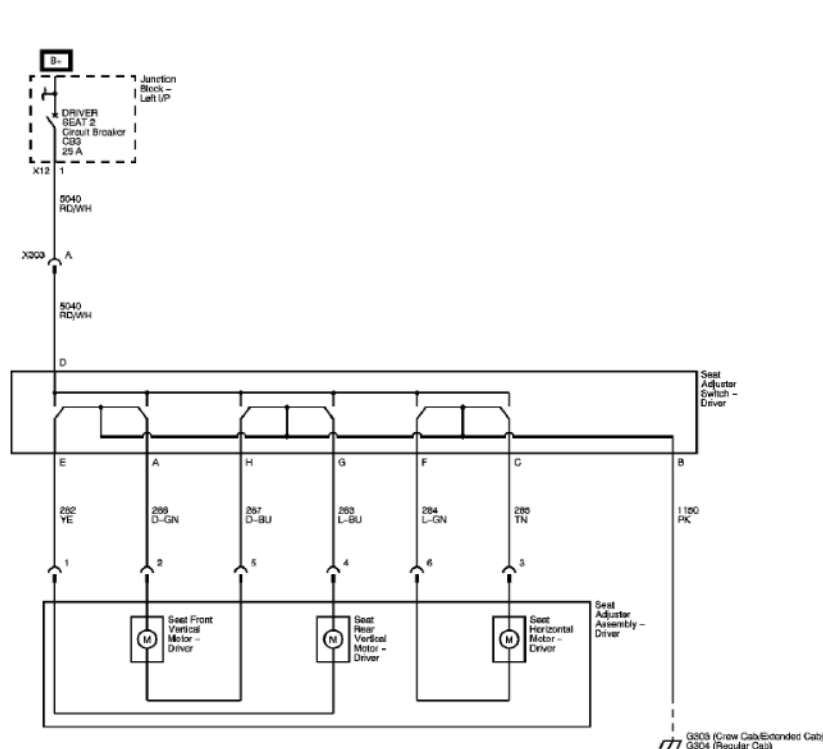


Fig. 1: 6-Way Power (-AN3)

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Courtesy of GENERAL MOTORS CORP.

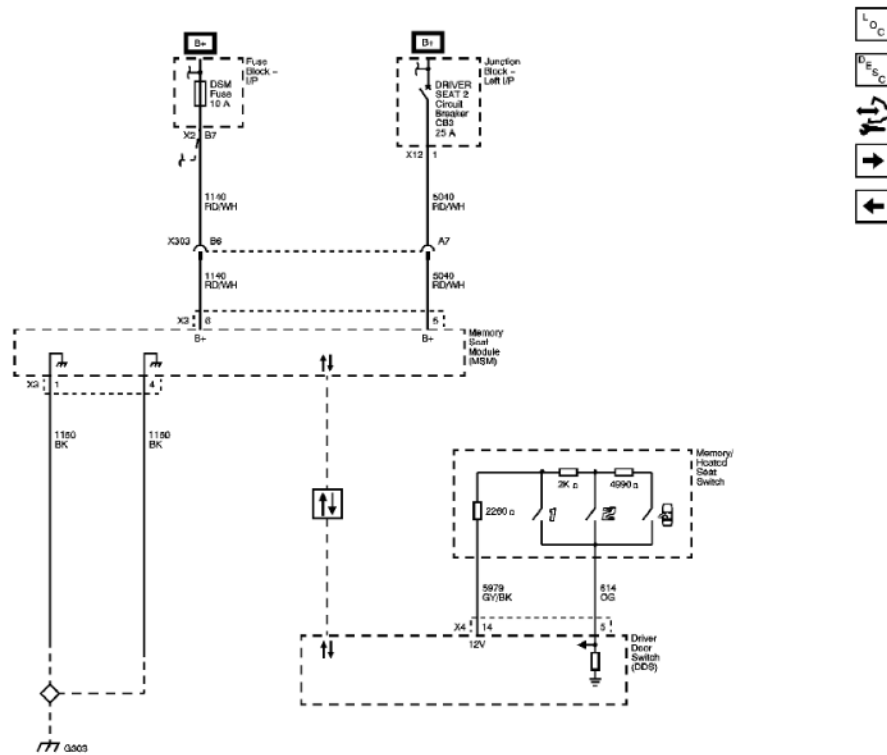


Fig. 2: Module Power, Ground, Serial Data and Memory Switch (AN3)
Courtesy of GENERAL MOTORS CORP.

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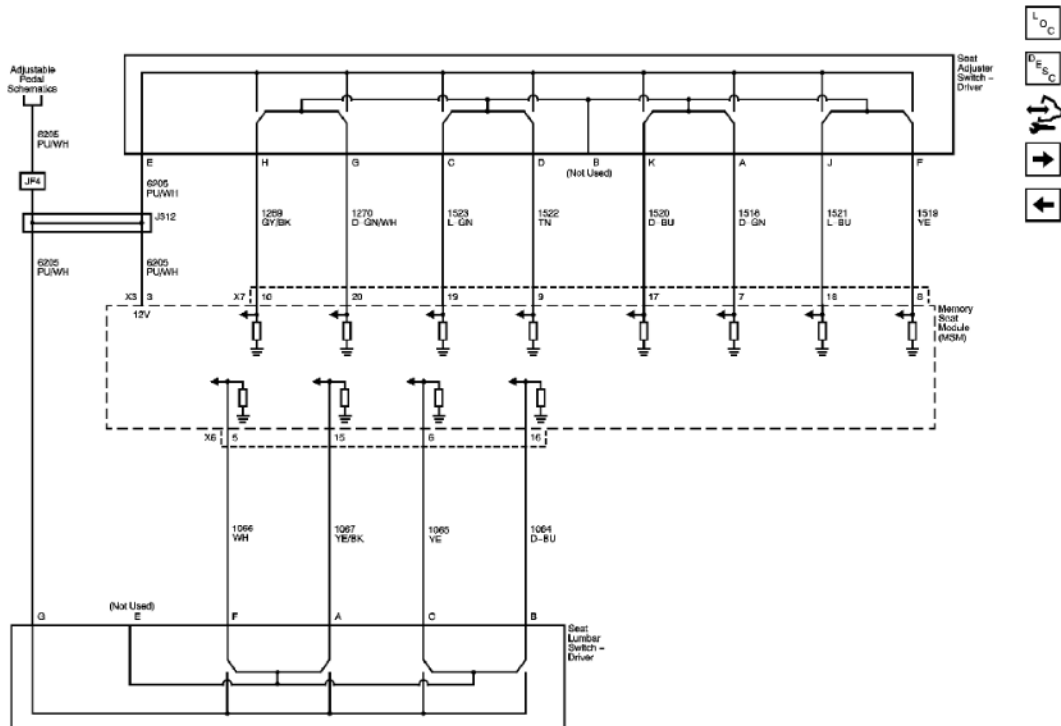


Fig. 3: Seat Adjuster Switches (AN3)
 Courtesy of GENERAL MOTORS CORP.

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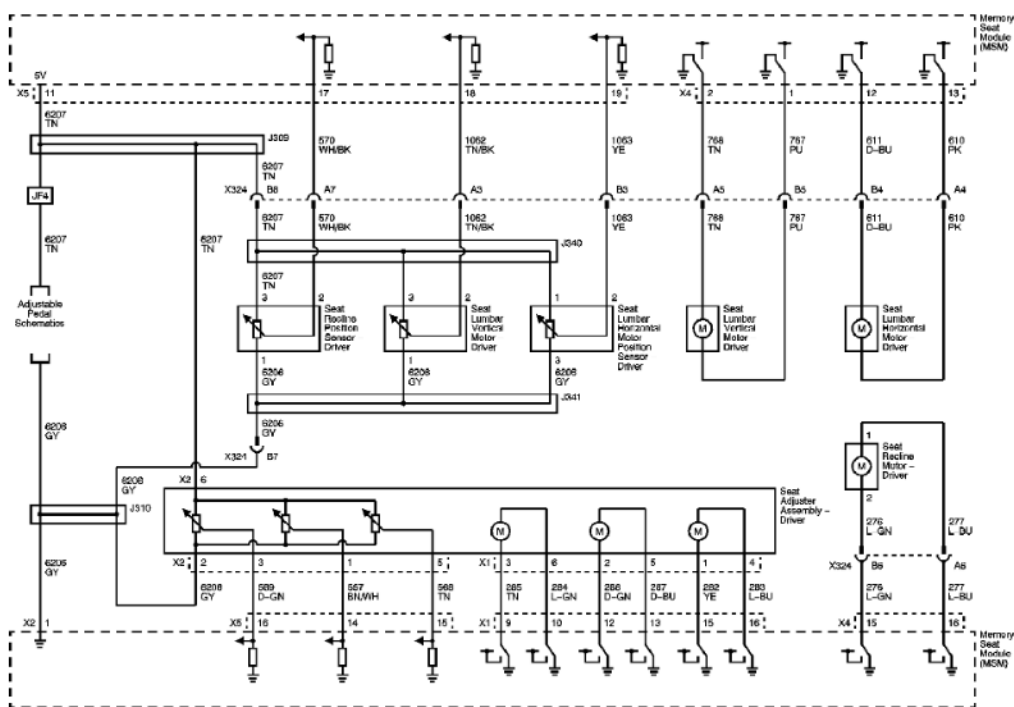


Fig. 4: Motors and Position Sensors (AN3)
Courtesy of GENERAL MOTORS CORP.

PASSENGER SEAT SCHEMATICS

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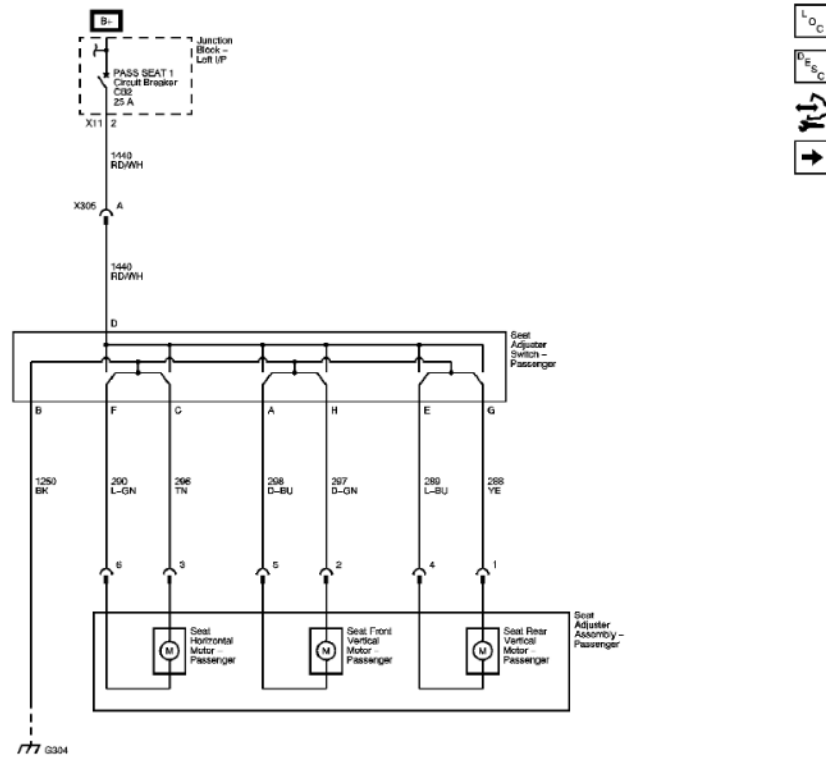


Fig. 5: 6-Way Power (-AN3)

Courtesy of GENERAL MOTORS CORP.

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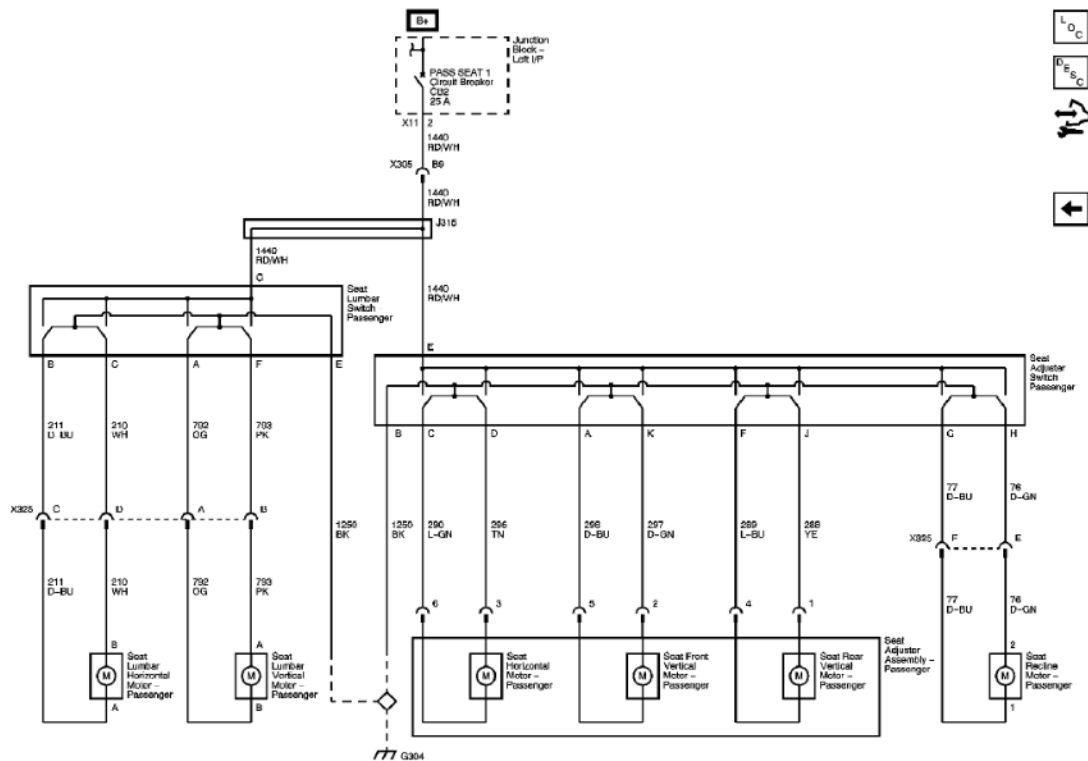


Fig. 6: 8-Way Power (AN3)

Courtesy of GENERAL MOTORS CORP.

DIAGNOSTIC INFORMATION AND PROCEDURES

DIAGNOSTIC CODE INDEX

DIAGNOSTIC CODE INDEX

DTC	Description
DTC B1335	B1335 00: Device Power 3 Circuit B1335 0B: Device Power 3 Circuit Current Above Threshold B1335 42: Device Power 3 Circuit Calibration Data Set Not Programed B1335 4B: Device Power 3 Circuit Calibration Not Learned
DTC B1395	B1395 02: Device Voltage Reference Output Circuit Shorted to Ground B1395 05: Device Voltage Reference Output Circuit Shorted to Battery or Open
DTC B1735, B1740,	B1735 01: Driver Seat Front Up Switch Circuit Short to

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**B1745, B1750, B1755,
B1760, B1815, or B1820**

Battery
B1740 01: Driver Seat Front Down Switch Circuit Short to
Battery
B1745 01: Driver Seat Rear Up Switch Circuit Short to
Battery
B1750 01: Driver Seat Rear Down Switch Circuit Short to
Battery
B1755 01: Driver Seat Assembly Horizontal Forward Switch
Circuit Short to Battery
B1760 01: Driver Seat Assembly Horizontal Rearward Switch
Circuit Short to Battery
B1815 01: Driver Seat Recline Forward Switch Circuit Short
to Battery
B1820 01: Driver Seat Recline Rearward Switch Circuit Short
to Battery

**DTC B1825, B1850,
B1860, B2355, B2365, or
B2375**

B1825 01: Driver Seat Recline Position Sensor Circuit Short to
Battery
B1825 06: Driver Seat Recline Position Sensor Circuit Short to
Ground or Open
B1825 5A: Driver Seat Recline Position Sensor Circuit
Plausibility Failure
B1850 01: Driver Seat Lumbar Horizontal Position Sensor
Circuit Short to Battery
B1850 06: Driver Seat Lumbar Horizontal Position Sensor
Circuit Short to Ground or Open
B1850 5A: Driver Seat Lumbar Horizontal Position Sensor
Circuit Plausibility Failure
B1860 01: Driver Seat Lumbar Vertical Position Sensor
Circuit Short to Battery
B1860 06: Driver Seat Lumbar Vertical Position Sensor
Circuit Short to Ground or Open
B1860 5A: Driver Seat Lumbar Vertical Position Sensor
Circuit Plausibility Failure
B2355 01: Driver Seat Front Vertical Position Sensor Circuit
Short to Battery
B2355 06: Driver Seat Front Vertical Position Sensor Circuit
Short to Ground or Open
B2355 5A: Driver Seat Front Vertical Position Sensor Circuit
Plausibility Failure
B2365 01: Driver Seat Rear Vertical Position Sensor Circuit

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	Short to Battery B2365 06: Driver Seat Rear Vertical Position Sensor Circuit Short to Ground or Open B2365 5A: Driver Seat Rear Vertical Position Sensor Circuit Plausibility Failure B2375 01: Driver Seat Assembly Horizontal Position Sensor Circuit Short to Battery B2375 06: Driver Seat Assembly Horizontal Position Sensor Circuit Short to Ground or Open B2375 5A: Driver Seat Assembly Horizontal Position Sensor Circuit Plausibility Failure
<u>DTC B3920 or B3921</u>	B3920 01: Group 1 Seat Motors Circuit Shorted to Battery or Open B3920 02: Group 1 Seat Motors Circuit Shorted to Ground

DIAGNOSTIC STARTING POINT - SEATS

Begin the system diagnosis with the **Diagnostic System Check - Vehicle** . The Diagnostic System Check 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 will identify the correct procedure for diagnosing the system and where the procedure is located.

DTC B1335

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 B1335 00

Device Power 3 Circuit

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DTC B1335 0B

Device Power 3 Circuit Current Above Threshold

DTC B1335 42

Device Power 3 Circuit Calibration Data Set Not Programed

DTC B1335 4B

Device Power 3 Circuit Calibration Not Learned

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Driver Seat Front Vertical Motor Down Control	B3920 02	1	B3920 01	B1335 00 B1335 0B
Driver Seat Front Vertical Motor Up Control	B3920 02	1	B3920 01	B1335 00 B1335 0B
Driver Seat Rear Vertical Motor Down Control	B3920 02	1	B3920 01	B1335 00 B1335 0B
Driver Seat Rear Vertical Motor Up Control	B3920 02	1	B3920 01	B1335 00 B1335 0B
Driver Seat Horizontal Motor Forward Control	B3920 02	1	B3920 01	B1335 00 B1335 0B
Driver Seat Horizontal Motor Rearward Control	B3920 02	1	B3920 01	B1335 00 B1335 0B
Driver Seat Recline Motor Forward Control	B3920 02	1	B3920 01	B1335 00 B1335 0B
Driver Seat Recline Motor Rearward Control	B3920 02	1	B3920 01	B1335 00 B1335 0B
Driver Seat Lumbar Motor Up Control	B3920 02	1	B3920 01	B1335 00 B1335 0B
Driver Seat Lumbar Motor Down Control	B3920 02	1	B3920 01	B1335 00 B1335 0B
Driver Seat Lumbar Motor Forward Control	B3920 02	1	B3920 01	B1335 00 B1335 0B
Driver Seat Lumbar Motor				B1335 00

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Rearward Control	B3920 02	1	B3920 01	B1335 0B
Adjustable Pedal Motor Forward Control	B3920 02	1	B3920 01	B1335 00 B1335 0B
Adjustable Pedal Motor Rearward Control	B3920 02	1	B3920 01	B1335 00 B1335 0B
1. Power seat motor inoperative				

Circuit/System Description

The memory seat module (MSM) monitors the current supplied to the seat adjuster motors. The MSM can detect both absolute and differential current levels from the seat motors. Absolute current is the maximum allowable current the module will supply to the motors. A differential current mismatch occurs when the current supplied to the seat motors does not match the current returning from the motors.

Conditions for Running the DTC

The MSM establishes that it is not closing to a shorted motor control circuit before the motors are active.

Conditions for Setting the DTC

The following conditions exist for more than 1 second:

B1335 00

Current out of the module does not match the current returning to the module within 5 amps.

B1335 0B

The absolute current or an over-current has exceeded the maximum value allowed.

B1335 42

This DTC will set if the module calibration is not programmed.

B1335 4B

This DTC will set if the module calibration is out of range.

Action Taken When the DTC Sets

The adjustable pedal motor and all driver seat adjuster motors are disabled.

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Conditions for Clearing the DTC

- The current DTC will clear and set the code to history, 3 seconds after no motor movement is requested or the current is no longer mismatched, and the ignition is cycled OFF then back to ACC or RUN.
- A history DTC will clear after 50 ignition cycles or with a scan tool using the clear DTCs function.

Reference Information

Schematic Reference

- Driver Seat Schematics
- Passenger Seat Schematics
- Adjustable Pedal Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Memory Seats 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

Module Internal Malfunction

If DTCs B1335 42 or B1335 4B are set history or current, the only option is module replacement.

Circuit/System Testing

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1. Use a scan tool to clear the current and history diagnostic trouble code.
2. Ignition ON, while observing the scan tool for DTCs, operate the seat adjuster switch in both directions for each directional motor.
3. Disconnect the suspect seat motor for which the DTC set.
4. Clear the current and history diagnostic trouble code.
5. While observing the scan tool for DTCs, operate the suspect seat motor adjuster switch in both directions.
 - If the DTC set current or history, test the motor control circuits for a short to ground, or an open/high resistance. If the circuits test normal, replace the memory seat module.
6. If all circuits/connections test normal, replace the seat motor.

Repair Procedures

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

- **Front Seat Recliner Actuator Motor Replacement**
- **Front Seat Lumbar Support Replacement**
- **Front Seat Adjuster Replacement (Power)**
- **Brake Pedal Assembly Replacement**
- **Control Module References** for MSM replacement, setup, and programming

DTC B1395

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 B1395 02

Device Voltage Reference Output Circuit Shorted to Ground

DTC B1395 05

Device Voltage Reference Output Circuit Shorted to Battery or Open

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Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
5-Volt Reference	B1395 02	B1395 05	B1395 05	-
Memory Seat Sensor Low Reference	-	B1825 01, B1850 01, B1860 01, B2355 01, B2365 01, B2375 01	-	-
Driver Seat Front Vertical Position Sensor Signal	B2355 06	B2355 06	B2355 01	-
Driver Seat Rear Vertical Position Sensor Signal	B2365 06	B2365 06	B2365 01	-
Driver Seat Horizontal Position Sensor Signal	B2375 06	B2375 06	B2375 01	-
Driver Seat Lumbar Vertical Position Sensor Signal	B1860 06	B1860 06	B1860 01	-
Driver Seat Lumbar Horizontal Position Sensor Signal	B1850 06	B1850 06	B1850 01	-
Driver Seat Recline Position Sensor Signal	B1825 06	B1825 06	B1825 01	-

Circuit/System Description

The memory seat module (MSM) supplies a 5-volt reference voltage to the driver seat and adjustable pedal position sensors. The MSM monitors this reference voltage to ensure the accuracy of the voltages being returned from the sensors. If the voltage exceeds the normal operating range, errors will occur in the memory recall operations of the seat and adjustable pedals.

Conditions for Running the DTC

The memory seat module must be powered.

Conditions for Setting the DTC

The following conditions exist for more than 1 second:

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The reference voltage drops below 4.75 volts.

B1395 05

The reference voltage exceeds 5.15 volts.

Action Taken When the DTC Sets

All memory recall functions will be disabled.

Conditions for Clearing the DTC

- The current DTC will clear 3 seconds after the reference voltage returns to normal operating range, and the ignition is cycled OFF then back to ACC or RUN.
- A history DTC will clear after 50 ignition cycles or with a scan tool using the clear DTCs function.

Reference Information

Schematic Reference

- Driver Seat Schematics
- Passenger Seat Schematics
- Adjustable Pedal Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Memory Seats Description and Operation

Electrical Information Reference

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

Scan Tool Reference

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Control Module References for Scan Tool Information

Diagnostic Aids

An internal short to ground in one of the position sensors may set this DTC.

Circuit/System Testing

Ignition ON, test for 4.75-5.15 volts between the 5-volt reference circuit and ground.

- If less than 4.75 volts, test the 5-volt reference circuit to all position sensors for a short to ground or an open. If the circuit tests normal, replace the memory seat module.
- If greater than 5.15 volts, test the 5-volt reference circuit to all position sensors or a short to voltage. If the circuit tests normal, replace the memory seat module.

Repair Procedures

Perform the Diagnostic Repair Verification after completing the diagnostic procedure.

- Front Seat Adjuster Replacement (Power)
- Front Seat Lumbar Support Replacement
- Front Seat Recliner Actuator Motor Replacement
- Brake Pedal Assembly Replacement
- Control Module References for MSM replacement, setup, and programming

DTC B1735, B1740, B1745, B1750, B1755, B1760, B1815, OR B1820

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 B1735 01

Driver Seat Front Up Switch Circuit Short to Battery

DTC B1740 01

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Driver Seat Front Down Switch Circuit Short to Battery

DTC B1745 01

Driver Seat Rear Up Switch Circuit Short to Battery

DTC B1750 01

Driver Seat Rear Down Switch Circuit Short to Battery

DTC B1755 01

Driver Seat Assembly Horizontal Forward Switch Circuit Short to Battery

DTC B1760 01

Driver Seat Assembly Horizontal Rearward Switch Circuit Short to Battery

DTC B1815 01

Driver Seat Recline Forward Switch Circuit Short to Battery

DTC B1820 01

Driver Seat Recline Rearward Switch Circuit Short to Battery

Circuit Description

When the power seat switches are pressed, they send a 12-volt signal through the switch signal circuits to the memory seat module (MSM). The MSM then commands the driver seat motors to move in response to the switch signals.

Conditions for Running the DTC

The memory seat module must be powered.

Conditions for Setting the DTC

- If a seat switch circuit is active in one direction and the switch for the opposite direction is pressed, this DTC will set.
- Multiple DTCs will set if one of the switch signal circuits is shorted to voltage.

Action Taken When the DTC Sets

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- A motor output driven in response to a switch considered failed, is deactivated for both directions.
- All memory recall commands are ignored.
- The MSM will respond to any other switch signal that has not set a DTC.

Conditions for Clearing the DTC

- The current DTC will clear and set the code to history, 3 seconds after the fault is no longer present and the ignition is cycled OFF then back to ACC or RUN.
- A history DTC will clear after 50 ignition cycles or with a scan tool using the clear DTCs function.

Reference Information

Schematic Reference

Driver Seat Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Memory Seats 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

Ignition ON, observe the scan tool seat switch parameters while pressing the appropriate seat directional switches. The reading should change between Inactive and Active.

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Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the seat adjuster switch.
2. Test for infinite resistance between each seat direction signal terminal and the switch B+ terminal with the switch in the open position.
 - If not Inactive, test the signal circuit that displays Active for a short to voltage. If the circuit tests normal, replace the MSM.
3. If all circuits test normal, test or replace the seat adjuster switch.

Component Testing

1. Ignition OFF, disconnect the harness connector at the seat adjuster switch.
2. Test for infinite resistance between each seat direction signal terminal and the switch B+ terminal with the switch in the open position.
 - If less than infinite resistance, replace the switch.
3. Test for less than 1 ohm of resistance between each seat direction signal terminal and the B+ terminal with the switch in the closed position.
 - If greater than 1 ohm, replace the switch.

Repair Procedures

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

- **Power Seat Switch Replacement**
- **Control Module References** for memory seat module replacement, setup, and programming

DTC B1825, B1850, B1860, B2355, B2365, OR B2375

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 B1825 01

Driver Seat Recline Position Sensor Circuit Short to Battery

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DTC B1825 06

Driver Seat Recline Position Sensor Circuit Short to Ground or Open

DTC B1825 5A

Driver Seat Recline Position Sensor Circuit Plausibility Failure

DTC B1850 01

Driver Seat Lumbar Horizontal Position Sensor Circuit Short to Battery

DTC B1850 06

Driver Seat Lumbar Horizontal Position Sensor Circuit Short to Ground or Open

DTC B1850 5A

Driver Seat Lumbar Horizontal Position Sensor Circuit Plausibility Failure

DTC B1860 01

Driver Seat Lumbar Vertical Position Sensor Circuit Short to Battery

DTC B1860 06

Driver Seat Lumbar Vertical Position Sensor Circuit Short to Ground or Open

DTC B1860 5A

Driver Seat Lumbar Vertical Position Sensor Circuit Plausibility Failure

DTC B2355 01

Driver Seat Front Vertical Position Sensor Circuit Short to Battery

DTC B2355 06

Driver Seat Front Vertical Position Sensor Circuit Short to Ground or Open

DTC B2355 5A

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Driver Seat Front Vertical Position Sensor Circuit Plausibility Failure

DTC B2365 01

Driver Seat Rear Vertical Position Sensor Circuit Short to Battery

DTC B2365 06

Driver Seat Rear Vertical Position Sensor Circuit Short to Ground or Open

DTC B2365 5A

Driver Seat Rear Vertical Position Sensor Circuit Plausibility Failure

DTC B2375 01

Driver Seat Assembly Horizontal Position Sensor Circuit Short to Battery

DTC B2375 06

Driver Seat Assembly Horizontal Position Sensor Circuit Short to Ground or Open

DTC B2375 5A

Driver Seat Assembly Horizontal Position Sensor Circuit Plausibility Failure

Circuit Description

The position sensor that sets this diagnostic trouble code (DTC) is either attached to the seat directional motor drive cable or directly to the motor it monitors. It receives a 5-volt reference and ground from the memory seat module (MSM). The sensor sends a voltage signal that varies with the movement of the seat through the signal circuit to the MSM. Then based on this voltage signal, the MSM determines the position of the seat.

Conditions for Running the DTC

The memory seat module must be powered.

Conditions for Setting the DTC

B1825, B1850, B1860, B2355, B2365, B2375 01

If the MSM sees the analog input from this sensor is greater than 4.65 volts, the sensor will be

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considered out of range and the MSM will set this DTC.

B1825, B1850, B1860, B2355, B2365, B2375 06

If the MSM sees the analog input from this sensor is less than 0.27 volt, the sensor will be considered out of range and the MSM will set this DTC.

B1825, B1850, B1860, B2355, B2365, B2375 5A

This DTC will set, if the MSM is controlling a motor in one direction and it's position sensor is tracking the motor in the opposite direction. The sensor is either mounted or wired incorrectly, or the polarity of the motor control circuits are reversed.

Action Taken When the DTC Sets

The MSM disables the memory recall and easy exit/entry action commands of the motor monitored by the sensor. The motor will respond to manual positioning commands.

Conditions for Clearing the DTC

- The current DTC will clear and set to history, when the MSM sees the analog input from the sensor as between 0.27-4.65 volts and the ignition is cycled OFF then back to ACC or RUN.
- A history DTC will clear after 50 ignition cycles or with a scan tool using the clear DTCs function.

Diagnostic Aids

- All position sensors use common ground and 5-volt reference circuits.
- If the 5-volt reference circuit is shorted to voltage, multiple codes will set.
- If the 5-volt reference circuit is shorted to ground, multiple codes will set.
- If the sensor ground circuit is open, multiple codes will set.

Reference Information

Schematic Reference

Driver Seat Schematics

Connector End View Reference

Component Connector End Views

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Description and Operation

Memory Seats 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

Ignition ON, observe the scan tool Driver Seat and Lumbar position sensor parameters. The readings should be between 0.27-2.65 volts and change while adjusting seat and lumbar positions.

Circuit/System Testing

B1825

1. Ignition OFF, disconnect the harness connector X2 at the seat recline motor.
2. Ignition OFF, test for less than 2 ohms of resistance between the low reference circuit terminal 1 and ground.
 - If greater than 2 ohms, test the low reference circuit for an open/high resistance. If the circuit tests normal, replace the MSM.
3. Ignition ON, test for 4.8-5.2 volts between the 5-volt reference circuit terminal 3 and ground.
 - If less than 4.8 volts, test the 5-volt reference circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the MSM.
 - If greater than 5.2 volts, test the 5-volt reference circuit for a short to voltage. If the circuit tests normal, replace the MSM.
4. Verify the scan tool Driver Seat Recline Sensor parameter is less than 2.0 volts.
 - If greater than 2.0 volts, test the signal circuit terminal 2 for a short to voltage. If the circuit tests normal, replace the MSM.
5. Install a 3A fused jumper wire between the signal circuit terminal 2 and the 5-volt reference

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circuit terminal 3. Verify the scan tool Driver Seat Recline Sensor parameter is greater than 4.65 volts.

- If less than 4.65 volts, test the signal circuit for short to ground or an open/high resistance. If the circuit tests normal, replace the MSM.

6. If all circuits test normal, test or replace the seat recline position sensor.

B2355, B2365, B2375

1. Ignition OFF, disconnect the harness connector X2 at the seat adjuster motor assembly.
2. Ignition OFF, test for less than 2 ohms of resistance between the low reference circuit terminal 2 and ground.
 - If greater than 2 ohms, test the low reference circuit for an open/high resistance. If the circuit tests normal, replace the MSM.
3. Ignition ON, test for 4.8-5.2 volts between the 5-volt reference circuit terminal 6 and ground.
 - If less than 4.8 volts, test the 5-volt reference circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the MSM.
 - If greater than 5.2 volts, test the 5-volt reference circuit for a short to voltage. If the circuit tests normal, replace the MSM.
4. Verify the appropriate scan tool Driver Seat Sensor parameter is less than 2.0 volts.
 - If greater than 2.0 volts, test the appropriate signal circuit for a short to voltage. If the circuit tests normal, replace the MSM.
 - Seat front vertical position sensor terminal 1
 - Seat rear vertical position sensor terminal 5
 - Seat horizontal position sensor terminal 3
5. Install a 3A fused jumper wire between the signal circuit and the 5-volt reference circuit terminal 6. Verify the appropriate scan tool Driver Seat position sensor parameter is greater than 4.65 volts.
 - Seat front vertical position sensor terminal 1
 - Seat rear vertical position sensor terminal 5
 - Seat horizontal position sensor terminal 3
 - If less than 4.65 volts, test the signal circuit for short to ground or an open/high resistance. If the circuit tests normal, replace the MSM.
6. If all circuits test normal, test or replace the seat adjuster motor assembly.

B1850, B1860

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1. Ignition OFF, disconnect the harness connector X2 at the seat lumbar motor assembly.
2. Ignition OFF, test for less than 2 ohms of resistance between the low reference circuit terminal C and ground.
 - If greater than 2 ohms, test the low reference circuit for an open/high resistance. If the circuit tests normal, replace the MSM.
3. Ignition ON, test for 4.8-5.2 volts between the 5-volt reference circuit terminal A and ground.
 - If less than 4.8 volts, test the 5-volt reference circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the MSM.
 - If greater than 5.2 volts, test the 5-volt reference circuit for a short to voltage. If the circuit tests normal, replace the MSM.
4. Verify the appropriate scan tool Lumbar Sensor parameter is less than 2.0 volts.
 - If greater than 2.0 volts, test the appropriate signal circuit for a short to voltage. If the circuit tests normal, replace the MSM.
 - Lumbar vertical position sensor terminal B
 - Lumbar horizontal position sensor terminal D
5. Install a 3A fused jumper wire between the signal circuit and the 5-volt reference circuit terminal C. Verify the appropriate scan tool Lumbar Sensor parameter is greater than 4.65 volts.
 - Lumbar vertical position sensor terminal B
 - Lumbar horizontal position sensor terminal D
 - If less than 4.65 volts, test the signal circuit for short to ground or an open/high resistance. If the circuit tests normal, replace the MSM.
6. If all circuits test normal, test or replace the lumbar motor assembly.

Repair Procedures

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

- **Front Seat Adjuster Replacement (Power)**
- **Front Seat Lumbar Support Replacement**
- **Front Seat Recliner Actuator Motor Replacement**
- **Control Module References** for MSM replacement, setup, and programming

DTC B3920 OR B3921

Diagnostic Instructions

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2008 ACCESSORIES & EQUIPMENT Power Seats - Cab & Chassis Sierra, Cab & Chassis Silverado, Sierra & Silverado

- 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 B3920 01

Group 1 Seat Motors Circuit Shorted to Battery or Open

DTC B3920 02

Group 1 Seat Motors Circuit Shorted to Ground

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Driver Seat Front Vertical Motor Down Control	B3920 02	1	B3920 01	-
Driver Seat Front Vertical Motor Up Control	B3920 02	1	B3920 01	-
Driver Seat Rear Vertical Motor Down Control	B3920 02	1	B3920 01	-
Driver Seat Rear Vertical Motor Up Control	B3920 02	1	B3920 01	-
Driver Seat Horizontal Motor Forward Control	B3920 02	1	B3920 01	-
Driver Seat Horizontal Motor Rearward Control	B3920 02	1	B3920 01	-
Driver Seat Recline Motor Forward Control	B3920 02	1	B3920 01	-
Driver Seat Recline Motor Rearward Control	B3920 02	1	B3920 01	-
Driver Seat Lumbar Motor Down Control	B3920 02	1	B3920 01	-
Driver Seat Lumbar Motor Forward Control	B3920 02	1	B3920 01	-
Driver Seat Lumbar Motor Up				

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Control	B3920 02	1	B3920 01	-
Driver Seat Lumbar Motor Rearward Control	B3920 02	1	B3920 01	-
Adjustable Pedal Motor Forward Down Control	B3920 02	1	B3920 01	-
Adjustable Pedal Motor Rearward Control	B3920 02	1	B3920 01	-
1. Power seat motor inoperative				

Circuit/System Description

The memory seat module (MSM) controls the seat, lumbar, and adjustable pedal motors via half bridges that are connected to a common power rail internal to the module. Group 1 includes the following motors:

- Seat front vertical motor
- Seat rear vertical motor
- Seat horizontal motor
- Seat recline motor
- Seat lumbar horizontal motor
- Seat lumbar vertical motor
- Adjustable pedal motor

When a power seat switch is pressed or when a memory recall is requested, each seat or lumbar motor receives battery voltage and ground from the MSM via the motor control circuits. All seat and lumbar motors are reversible, so the direction the seat moves depends on which control circuit voltage is applied and which control circuit the ground is applied. For example, to move the seat in the forward direction, the module applies voltage to the seat horizontal motor forward control circuit, and ground to the seat horizontal motor rearward control circuit. When the seat is operated in the opposite direction, the module reverses the polarity and applies voltage and ground to the opposite circuits to move the seat in the rearward direction. All seat and lumbar motors are powered this way.

Conditions for Running the DTC

The MSM must be powered.

Conditions for Setting the DTC

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The MSM detects a short to battery voltage on a group 1 motor control circuit.

B3920 02

The MSM detects a short to ground on a group 1 motor control circuit.

Action Taken When the DTC Sets

The MSM disables all motors in the group for which the DTC was set.

Conditions for Clearing the DTC

- The current DTC clears when the malfunction is no longer present, and the power mode changes to OFF then back to ACC or RUN.
- A history DTC will clear after 50 ignition cycles or with a scan tool using the clear DTCs function.

Reference Information

Schematic Reference

- Driver Seat Schematics
- Passenger Seat Schematics
- Adjustable Pedal Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Memory Seats Description and Operation

Electrical Information Reference

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

Scan Tool Reference

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Control Module References for Scan Tool Information

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector X1 at the MSM.
2. Ignition ON, verify that a test does not illuminate between any of the following motor control circuits and ground:
 - Front vertical motor terminal 12
 - Front vertical motor terminal 13
 - Rear vertical motor terminal 15
 - Rear vertical motor terminal 16
 - Seat horizontal motor terminal 9
 - Seat horizontal motor terminal 10
 - If the test lamp illuminates, test the control circuit for a short to voltage.
3. Test for infinite resistance between the following motor control circuits and ground:
 - Front vertical motor terminal 12
 - Front vertical motor terminal 13
 - Rear vertical motor terminal 15
 - Rear vertical motor terminal 16
 - Seat horizontal motor terminal 9
 - Seat horizontal motor terminal 10
 - If less than infinite resistance, test the motor control circuit for a short to ground.
4. Test for greater resistance values than specified between the following motor control circuits:
 - 1 ohm for front vertical motor terminal 12 and terminal 13
 - 1 ohm for rear vertical motor terminal 15 and terminal 16
 - 1 ohm for seat horizontal motor terminal 9 and terminal 10
 - If less than the specified resistance, test the control circuits for a short together or shorted motor.
5. Ignition OFF, disconnect the harness connector X4 at the MSM.
6. Ignition ON, verify that a test does not illuminate between any of the following motor control circuits and ground:
 - Lumbar vertical motor terminal 1
 - Lumbar vertical motor terminal 2

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- Lumbar horizontal motor terminal 12
 - Lumbar horizontal motor terminal 13
 - Seat recline motor terminal 15
 - Seat recline motor terminal 16
 - Adjustable pedal motor terminal 9
 - Adjustable pedal motor terminal 10
 - If the test lamp illuminates, test the control circuit for a short to voltage.
7. Test for infinite resistance between the following motor control circuits and ground:
- Lumbar vertical motor terminal 1
 - Lumbar vertical motor terminal 2
 - Lumbar horizontal motor terminal 12
 - Lumbar horizontal motor terminal 13
 - Seat recline motor terminal 15
 - Seat recline motor terminal 16
 - Adjustable pedal motor terminal 9
 - Adjustable pedal motor terminal 10
 - If less than infinite resistance, test the motor control circuit for a short to ground.
8. Test for greater resistance values than specified between the following motor control circuits:
- 1 ohm for lumbar horizontal motor terminal 12 and terminal 13
 - 1 ohm for recline motor terminal 15 and terminal 16
 - If less than the specified resistance, test the control circuits for a short together or shorted motor.
9. If all circuits test normal, replace the MSM.

Repair Procedures

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

- **Front Seat Adjuster Replacement (Power)**
- **Front Seat Recliner Actuator Motor Replacement**
- **Front Seat Lumbar Support Replacement**
- **Brake Pedal Assembly Replacement**
- **Control Module References** for the memory seat module replacement, programming and

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setup

SYMPTOMS - POWER SEATS

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

1. Perform the **Diagnostic System Check - Vehicle** before using the Symptom Tables in order to verify that all of the following are true:
 - There are no DTCs set.
 - The control modules can communicate via the serial data link.
2. Review the system operation in order to familiarize yourself with the system functions. Refer to the following system descriptions:
 - **Memory Seats Description and Operation**
 - **Power Seats System Description and Operation**

Visual/Physical Inspection

- Inspect for aftermarket devices which could affect the operation of the 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 a symptom diagnostic procedure from the following list in order to diagnose the symptom:

- **Memory Seat Feature Inoperative**
- **Power Seat Inoperative (w/o Memory)** or **Power Seat Inoperative (w/Memory)**

MEMORY SEAT FEATURE INOPERATIVE

Diagnostic Instructions

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- 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
Memory Switch Signal	1	1	1	-
Memory Switch Supply Voltage	-	1	-	-
1. Memory Seat Feature Inoperative				

Circuit/System Description

Battery positive voltage is supplied to the memory function switch from the driver door switch (DDS). When a memory switch is pressed, battery voltage is applied through the switch contacts, a series of resistors, and thorough the memory switch signal circuit to the DDS. The door control module then sends a message via the GMLAN serial data line to the memory seat module (MSM) indicating the memory recall request. The MSM then commands the appropriate seat motors to move to the pre-recorded seat positions stored in memory in response to the switch input.

Reference Information

Schematic Reference

Driver Seat Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Memory Seats Description and Operation

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

1. Verify that all manual power seat and lumbar functions operate as described in the description and operation.
2. Verify that memory positions for driver 1 and driver 2 have been recorded to memory, by observing the scan tool Driver Position Module, Memory Data 1 and Memory Data 2 parameters.

Circuit/System Testing

1. Ignition ON, verify the scan tool Memory Recall Switches parameter is approximately 2.74 volts while pressing the memory 1 switch.
 - If the parameter is not the specified value, refer to Memory Switch component test below. If the switch tests normal, replace the driver door switch.
2. Verify the scan tool Memory Recall Switches parameter is approximately 1.78 volts while pressing the memory 2 switch.
 - If the parameter is not the specified value, replace the memory switch.
3. Verify the scan tool Memory Recall Switches parameter is approximately 0.96 volt while pressing the EXIT switch.
 - If the parameter is not the specified value, replace the memory switch.
4. If all circuits test normal, replace the memory seat module.

Component Testing

Memory Switch

1. Disconnect the X4 harness connector at driver door switch.
2. Test for infinite resistance between the memory switch signal circuit terminal 5 and the switch supply voltage circuit terminal 14.
 - If not infinite, replace the memory switch.
3. Test the resistance between terminal 14 and terminal 5 while pressing the memory 1, memory 2, and EXIT buttons. Compare the resistance readings to the values in the Memory

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Switch Values table below.

- If the resistance is not within the specified range, replace the memory switch.

Memory Switch Values

Switch Position	Resistance
Idle	Infinite
Memory 1	2.03K-2.49K ohms
Memory 2	3.83K-4.69K ohms
Exit	9.32K-10.18K ohms

Repair Procedures

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

- **Driver Seat Adjuster Memory Switch Replacement (Crew Cab)**
- **Control Module References** for MSM of DDS replacement, programming, and setup

POWER SEAT INOPERATIVE (W/O MEMORY)

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

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

Circuit/System Description

Power seats without memory are completely controlled through the power seat switch. Battery voltage is supplied to the power seat switch through the power seat circuit breaker. While the seat adjuster switches are in an inactive state the switch contacts are closed to the power seat switch ground circuit. When a power seat switch is pressed to an active state the switch contact is closed to the battery voltage supply circuit. Each seat adjuster motor is controlled by the power seat switch through 2 motor control circuits. The seat adjuster motors are bidirectional and the direction of adjuster motor rotation is determined by which of the adjuster motor control circuits is switched to battery voltage while the other remains grounded.

Reference Information

Schematic Reference

- Driver Seat Schematics
- Passenger Seat Schematics

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2008 ACCESSORIES & EQUIPMENT Power Seats - Cab & Chassis Sierra, Cab & Chassis Silverado, Sierra & Silverado

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 for scan tool information

Circuit/System Verification

1. Operate the horizontal, front vertical, and rear vertical switches in both directions.
 - If the power seat is inoperative in all directions, refer to Power Seat Switch Circuit Test below.
 - If 1 or 2 of the seat adjuster motors operate, refer to Seat Adjuster Circuit Test below.
2. Operate the recline in both directions.
 - If the recline function is inoperative, refer to Recliner Actuator Circuit Test below.
3. Operate the horizontal and vertical lumbar switches in both directions.
 - If both lumbar functions are inoperative, refer to Lumbar Switch Circuit Test below.
 - If 1 lumbar function is inoperative, refer to Lumbar Support Circuit Test below.

Circuit/System Testing

Power Seat Switch Circuit Test

1. Disconnect the harness connector at the power seat switch.
2. Verify that a test lamp illuminates between the ground circuit terminal B and B+.
 - If the test lamp does not illuminate, repair the ground circuit for an open/high resistance.

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3. Verify that a test lamp illuminates between the listed B+ circuit terminal and ground.
 - With AN3 terminal E
 - Without AN3 terminal D
 - If the test lamp does not illuminate, repair the B+ circuit for an open/high resistance or short to ground.
4. If all circuits test normal, test or replace the power seat switch.

Lumbar Switch Circuit Test

1. Disconnect the harness connector at the lumbar switch.
2. Verify that a test lamp illuminates between the ground circuit terminal E and B+.
 - If the test lamp does not illuminate, repair the ground circuit for an open/high resistance.
3. Verify that a test lamp illuminates between the B+ circuit terminal G and ground.
 - If the test lamp does not illuminate, repair the B+ circuit for an open/high resistance or short to ground.
4. If all circuits test normal, test or replace the lumbar switch.

Seat Adjuster Circuit Test

1. Ignition OFF, disconnect the harness connector at the seat adjuster assembly.
2. Ignition OFF, test for less than 1.0 ohm between the affected control circuit terminal listed and ground.
 - Rear vertical terminal 1
 - Front vertical terminal 2
 - Horizontal terminal 3
 - If greater than the specified range, test the control circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the power seat switch.
3. Ignition OFF, test for less than 1.0 ohm between the affected control circuit terminal listed and ground.
 - Rear vertical terminal 4
 - Front vertical terminal 5
 - Horizontal terminal 6
 - If greater than the specified range, test the control circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the power seat switch.

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4. Connect a test lamp between the affected control circuit terminals listed.
 - Rear vertical terminal 1 to terminal 4
 - Front vertical terminal 2 to terminal 5
 - Horizontal terminal 3 to terminal 6
5. Operate the affected switch in both directions. The test lamp should turn ON when the switch is pressed in both directions.
 - If the test lamp remains OFF during either of the commands, test for a short to ground on either control circuit. If the circuits test normal, replace the power seat switch.
6. If all circuits test normal, test or replace the seat adjuster.

Recliner Actuator Circuit Test

1. Ignition OFF, disconnect the harness connector at the redline motor.
2. Ignition OFF, test for less than 1.0 ohm between the control circuit terminal A and ground.
 - If greater than the specified range, test the control circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the power seat switch.
3. Ignition OFF, test for less than 1.0 ohm between the control circuit terminal B and ground.
 - If greater than the specified range, test the control circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the power seat switch.
4. Connect a test lamp between control circuit terminal A and control circuit terminal B.
5. Operate the recline switch in both directions. The test lamp should turn ON when the switch is pressed in both directions.
 - If the test lamp remains OFF during either of the commands, test for a short to ground on either control circuit. If the circuits test normal, replace the power seat switch.
6. If all circuits test normal, test or replace the recliner motor.

Lumbar Support Circuit Test

1. Ignition OFF, disconnect the harness connector at the lumbar adjuster assembly.
2. Ignition OFF, test for less than 1.0 ohm between the affected control circuit terminal listed and ground.
 - Vertical lumbar terminal A
 - Horizontal lumbar terminal C
 - If greater than the specified range, test the control circuit for a short to voltage or an open/high resistance. If circuit tests normal, replace the lumbar switch.
3. Ignition OFF, test for less than 1.0 ohm between the affected control circuit terminal listed

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and ground.

- Vertical lumbar terminal B
- Horizontal lumbar terminal D
 - If greater than the specified range, test the control circuit for a short to voltage or an open/high resistance. If circuit tests normal, replace the lumbar switch.
- 4. Connect a test lamp between affected control circuit terminals listed.
 - Vertical lumbar terminal A to terminal B
 - Horizontal lumbar terminal C to terminal D
- 5. Operate the affected switch in both directions. The test lamp should turn ON when the switch is pressed in both directions.
 - If the test lamp remains OFF during either of the commands, test for a short to ground on either control circuit. If the circuits test normal, replace the lumbar switch.
- 6. If all circuits test normal, test or replace the lumbar support.

Component Testing

Seat Adjuster Switch Test

1. Ignition OFF, disconnect the harness connector at the seat adjuster switch.
2. Test for infinite resistance between each control terminal and the B+ terminal with the switch in the open position.
 - If less than the specified value, replace the seat adjuster switch.
3. Test for less than 1 ohm between each control terminal and the B+ terminal with the switch in the closed position.
 - If greater than the specified range, replace the seat adjuster switch.
4. Test for less than 1 ohm between each control terminal and the ground terminal with the switch in the open position.
 - If greater than the specified range, replace the seat adjuster switch.

Repair Procedures

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

- **Power Seat Switch Replacement**
- **Front Seat Adjuster Replacement (Power)**
- **Lumbar Switch Replacement**
- **Front Seat Lumbar Support Replacement**

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• Front Seat Recliner Actuator Motor Replacement

POWER SEAT INOPERATIVE (W/MEMORY)

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	-	-
B+	2	2	-	-
Front Vertical Down Switch Signal	2	1	B1735 01, B1740 01, B1745 01, B1750 01, B1755 01, B1760 01, B1815 01, B1820 01	-
Front Vertical Up Switch Signal	2	1	B1735 01, B1740 01, B1745 01, B1750 01, B1755 01, B1760 01, B1815 01, B1820 01	-
Horizontal Forward Switch Signal	2	1	B1735 01, B1740 01, B1745 01, B1750 01, B1755 01, B1760 01, B1815 01, B1820 01	-
Horizontal Rearward Switch Signal	2	1	B1735 01, B1740 01, B1745 01, B1750 01, B1755 01, B1760 01, B1815 01, B1820 01	-
Lumbar Down Switch Signal	2	1	B1735 01, B1740 01, B1745 01, B1750 01, B1755 01, B1760 01, B1815 01, B1820 01	-
Lumbar Up Switch Signal	2	1	B1735 01, B1740 01, B1745 01, B1750 01, B1755 01, B1760 01,	-

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			B1815 01, B1820 01	
Lumbar Forward Switch Signal	2	1	B1735 01, B1740 01, B1745 01, B1750 01, B1755 01, B1760 01, B1815 01, B1820 01	-
Lumbar Rearward Switch Signal	2	1	B1735 01, B1740 01, B1745 01, B1750 01, B1755 01, B1760 01, B1815 01, B1820 01	-
Rear Vertical Down Switch Signal	2	1	B1735 01, B1740 01, B1745 01, B1750 01, B1755 01, B1760 01, B1815 01, B1820 01	-
Rear Vertical Up Switch Signal	2	1	B1735 01, B1740 01, B1745 01, B1750 01, B1755 01, B1760 01, B1815 01, B1820 01	-
Recline Forward Switch Signal	2	1	B1735 01, B1740 01, B1745 01, B1750 01, B1755 01, B1760 01, B1815 01, B1820 01	-
Recline Rearward Switch Signal	2	1	B1735 01, B1740 01, B1745 01, B1750 01, B1755 01, B1760 01, B1815 01, B1820 01	-
Front Vertical Motor Front Down Control	B3920 02	1	B3920 01	B2355 5A
Front Vertical Motor Front Up Control	B3920 02	1	B3920 01	B2355 5A
Horizontal Motor Forward Control	B3920 02	1	B3920 01	B2375 5A
Horizontal Motor Rearward Control	B3920 02	1	B3920 01	B2375 5A
Lumbar Horizontal Motor Forward Control	B3920 02	1	B3920 01	B1850 5A

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Lumbar Horizontal Motor Rearward Control	B3920 02	1	B3920 01	B1850 5A
Lumbar Vertical Motor Down Control	B3920 02	1	B3920 01	B1860 5A
Lumbar Vertical Motor Up Control	B3920 02	1	B3920 01	B1860 5A
Rear Vertical Motor Rear Down Control	B3920 02	1	B3920 01	B2365 5A
Rear Vertical Motor Rear Up Control	B3920 02	1	B3920 01	B2365 5A
Recline Motor Forward Control	B3920 02	1	B3920 01	B1825 5A
Recline Motor Rearward Control	B3920 02	1	B3920 01	B1825 5A
Ground	-	-	-	-
Ground	-	-	-	-
1. Driver power seat, lumbar, and memory functions inoperative				
2. Scan Tool Does Not Communicate with Low Speed GMLAN Device				

Circuit/System Description

The 8-way power driver seat with memory is controlled by the memory seat module (MSM). The low current battery supply circuit from the DSM 10A fuse supplies the logic power and reference voltages to the MSM. The high current battery supply circuit from the DRIVER SEAT 2 25A circuit breaker supplies the MSM power rail 1 which is used to drive the power seat motors, adjustable pedals motor, and seat heater elements with heated seats only. The MSM supplies a battery voltage reference circuit to the seat adjuster and lumbar switches. The switch signal circuits are referenced from ground within the MSM and when a switch is activated the signal circuit goes high. Each seat adjuster motor is controlled by the MSM through 2 motor control circuits. While the seat adjuster motors are in an inactive state the motor control circuits are closed to ground circuit contacts within the MSM. The MSM operates the seat adjuster motors by switching one of a motors control circuits to battery voltage. The seat adjuster motors are bidirectional and the direction of adjuster motor rotation is determined by which of the adjuster motor control circuits is switched to battery voltage while the other remains grounded.

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2008 ACCESSORIES & EQUIPMENT Power Seats - Cab & Chassis Sierra, Cab & Chassis Silverado, Sierra & Silverado

Reference Information

Schematic Reference

Driver Seat Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Memory Seats 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. Install a scan tool and display the MSM switch inputs.
2. Verify that none of the power seat switch parameters are Active while in an inactive state.
 - If not the specified value, refer to the Power Seat Switch Circuit Test below.
3. Verify that the power seat switch parameters are Active while the switch is pressed.
 - If not the specified value, refer to the Power Seat Switch Circuit Test below.
4. Verify that none of the lumbar switch parameters are Active while in an inactive state.
 - If not the specified value, refer to the Lumbar Switch Circuit Test below.
5. Verify that the lumbar switch parameters are Active while the switch is pressed.
 - If not the specified value, refer to the Lumbar Switch Circuit Test below.
6. If the switch inputs to the MSM function normal, refer to the affected Motor Control Circuit Test below.

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Circuit/System Testing

Power Seat Switch Circuit Test

1. Ignition OFF, disconnect the harness connector at the power seat switch.
2. Ignition ON, verify that a test lamp illuminates between the B+ reference circuit terminal E and ground.
 - If the test lamp does not illuminate, test the B+ reference circuit for a short to ground or an open/high resistance.
3. Verify the scan tool power seat switch parameters are Inactive.
 - If not the specified values, test the affected signal circuit terminal listed for a short to voltage. If the circuit tests normal, replace the MSM.
 - Front vertical down switch terminal K
 - Front vertical up switch terminal A
 - Horizontal forward switch terminal D
 - Horizontal rearward switch terminal C
 - Rear vertical down switch terminal J
 - Rear vertical up switch terminal F
 - Recline forward switch terminal H
 - Recline rearward switch terminal G
4. Install a 3A fused jumper wire between the affected signal circuit terminal listed and the B+ reference circuit terminal E. Verify the affected scan tool power seat switch parameter is Active.
 - Front vertical down switch terminal K
 - Front vertical up switch terminal A
 - Horizontal forward switch terminal D
 - Horizontal rearward switch terminal C
 - Rear vertical down switch terminal J
 - Rear vertical up switch terminal F
 - Recline forward switch terminal H
 - Recline rearward switch terminal G
 - If not the specified value, test the signal circuit for an open/high resistance. If the circuit tests normal, replace the MSM.
5. If all circuits test normal, test or replace the power seat switch.

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Lumbar Switch Circuit Test

1. Ignition OFF, disconnect the harness connector at the lumbar switch.
2. Ignition ON, verify that a test lamp illuminates between the B+ reference circuit terminal G and ground.
 - If the test lamp does not illuminate, test the B+ reference circuit for a short to ground or an open/high resistance.
3. Verify the scan tool lumbar switch parameters are Inactive.
 - If not the specified values, test the affected signal circuit terminal listed for a short to voltage. If the circuit tests normal, replace the MSM.
 - Lumbar down switch terminal K
 - Lumbar up switch terminal A
 - Lumbar forward switch terminal D
 - Lumbar rearward switch terminal C
4. Install a 3A fused jumper wire between the affected signal circuit terminal listed and the B+ reference circuit terminal G. Verify the affected scan tool lumbar switch parameter is Active.
 - Lumbar down switch terminal K
 - Lumbar up switch terminal A
 - Lumbar forward switch terminal D
 - Lumbar rearward switch terminal C
 - If not the specified value, test the signal circuit for an open/high resistance. If the circuit tests normal, replace the MSM.
5. If all circuits test normal, test or replace the lumbar switch.

Seat Adjuster Motor Control Circuit Test

1. Ignition OFF, disconnect the X1 harness connector at the seat adjuster assembly.
2. Ignition OFF, test for less than 1.0 ohm between the affected control circuit terminal listed and ground.
 - Rear vertical terminal 1
 - Front vertical terminal 2
 - Horizontal terminal 3
 - If greater than the specified range, test the control circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the MSM.

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3. Ignition OFF, test for less than 1.0 ohm between the affected control circuit terminal listed and ground.
 - Rear vertical terminal 4
 - Front vertical terminal 5
 - Horizontal terminal 6
 - If greater than the specified range, test the control circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the MSM.
4. Connect a test lamp between the affected control circuit terminals listed.
 - Rear vertical terminal 1 to terminal 4
 - Front vertical terminal 2 to terminal 5
 - Horizontal terminal 3 to terminal 6
5. Command the affected function in both directions with a scan tool. The test lamp should turn ON when commanding the affected function in both states.
 - If the test lamp remains OFF during either of the commands, test for a short to ground on either control circuit. If the circuits test normal, replace the MSM.
6. If all circuits test normal, test or replace the seat adjuster.

Recline Motor Control Circuit Test

1. Ignition OFF, disconnect the harness connector at the recline motor.
2. Ignition OFF, test for less than 1.0 ohm between the control circuit terminal A and ground.
 - If greater than the specified range, test the control circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the MSM.
3. Ignition OFF, test for less than 1.0 ohm between the control circuit terminal B and ground.
 - If greater than the specified range, test the control circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the MSM.
4. Connect a test lamp between control circuit terminal A and control circuit terminal B.
5. Command the recline Forward and Rearward with a scan tool. The test lamp should turn ON when commanding the Forward and Rearward states.
 - If the test lamp remains OFF during either of the commands, test for a short to ground on either control circuit. If the circuits test normal, replace the MSM.
6. If all circuits test normal, test or replace the recliner motor.

Lumbar Motor Control Circuit Test

1. Ignition OFF, disconnect the X1 harness connector at the lumbar adjuster assembly.

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2. Ignition OFF, test for less than 1.0 ohm between the affected control circuit terminal listed and ground.
 - Vertical lumbar terminal A
 - Horizontal lumbar terminal C
 - If greater than the specified range, test the control circuit for a short to voltage or an open/high resistance. If circuit tests normal, replace the MSM.
3. Ignition OFF, test for less than 1.0 ohm between the affected control circuit terminal listed and ground.
 - Vertical lumbar terminal B
 - Horizontal lumbar terminal D
 - If greater than the specified range, test the control circuit for a short to voltage or an open/high resistance. If circuit tests normal, replace the MSM.
4. Connect a test lamp between affected control circuit terminals listed.
 - Vertical lumbar terminal A to terminal B
 - Horizontal lumbar terminal C to terminal D
5. Command the affected function in both directions with a scan tool. The test lamp should turn ON when commanding the affected function in both states.
 - If the test lamp remains OFF during either of the commands, test for a short to ground on either control circuit. If the circuits test normal, replace the MSM.
6. If all circuits test normal, test or replace the lumbar support.

Component Testing

Seat Adjuster Switch Test

1. Ignition OFF, disconnect the harness connector at the seat adjuster switch.
2. Test for infinite resistance between each control terminal and the B+ terminal with the switch in the open position.
 - If less than the specified value, replace the seat adjuster switch.
3. Test for less than 1 ohm between each control terminal and the B+ terminal with the switch in the closed position.
 - If greater than the specified range, replace the seat adjuster switch.
4. Test for less than 1 ohm between each control terminal and the ground terminal with the switch in the open position.
 - If greater than the specified range, replace the seat adjuster switch.

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Repair Procedures

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

- **Power Seat Switch Replacement**
- **Lumbar Switch Replacement**
- **Front Seat Adjuster Replacement (Power)**
- **Front Seat Lumbar Support Replacement**
- **Front Seat Recliner Actuator Motor Replacement**
- **Control Module References** for MSM replacement, setup, and programming

REPAIR INSTRUCTIONS

FRONT SEAT ADJUSTER SWITCH KNOB REPLACEMENT

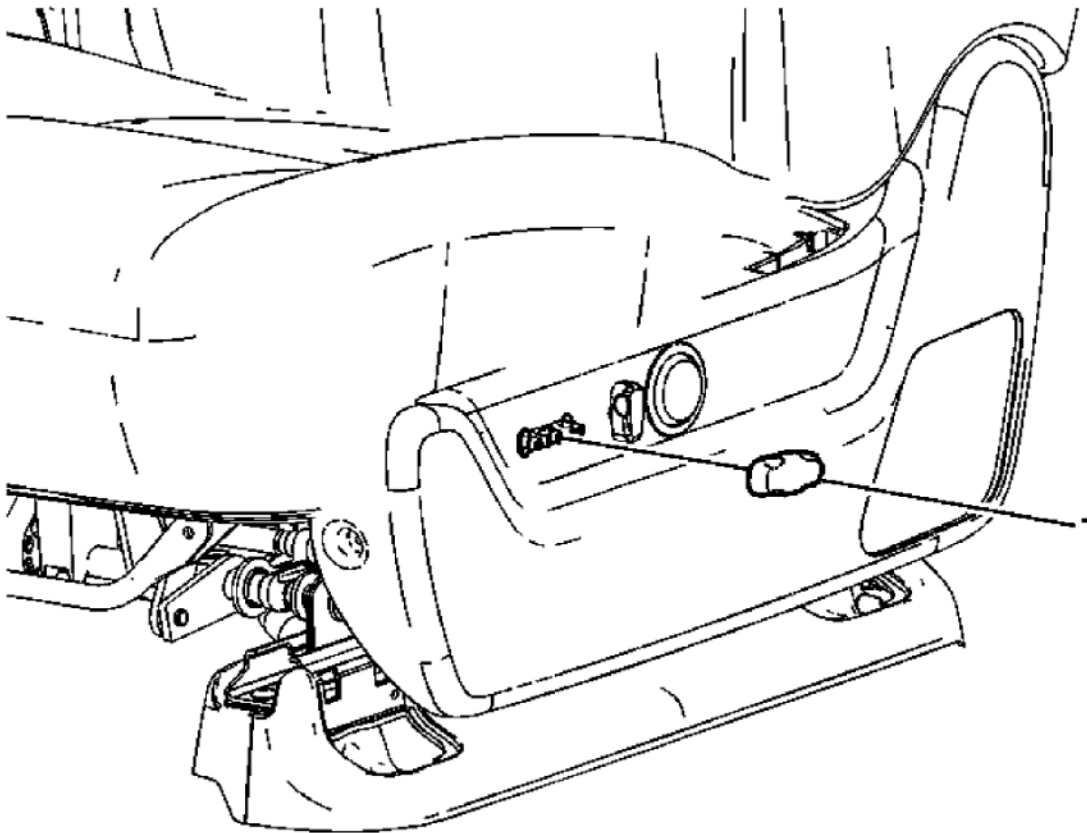


Fig. 7: View Of Front Seat Adjuster Switch Knob
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Callout	Component Name
1	Front Seat Adjuster Switch Knob Tip: Pull outward from seat to remove. If too tight, a flat-bladed tool may be used to help disengage the knob from the switch.

POWER SEAT SWITCH REPLACEMENT

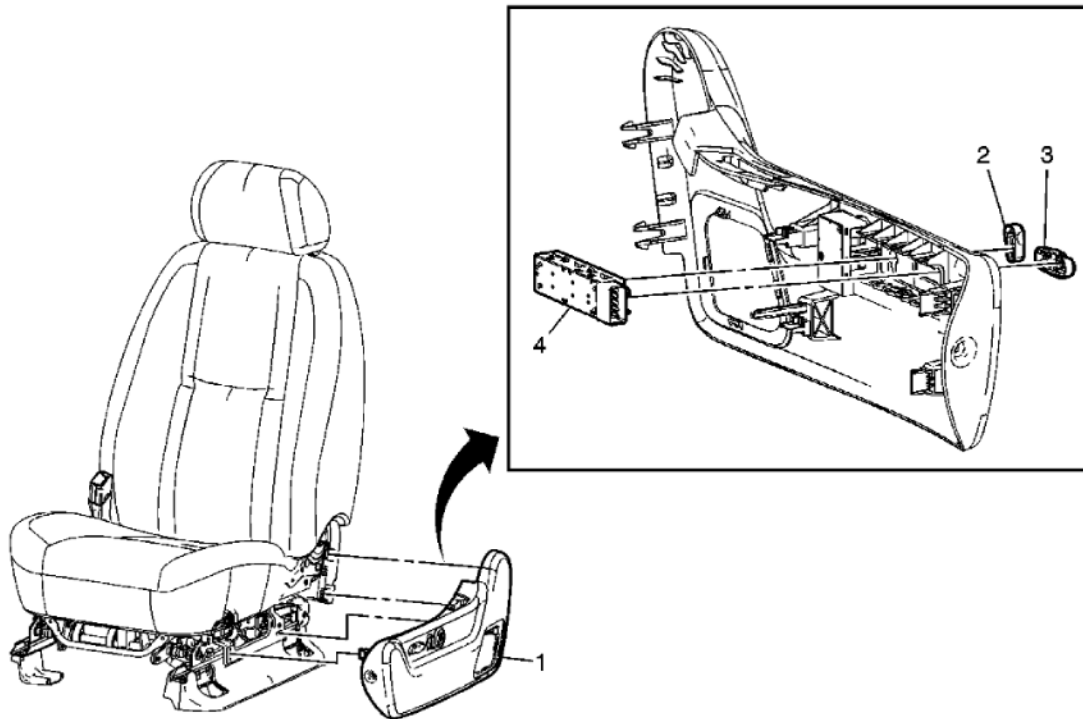


Fig. 8: View Of Front Seat Adjuster Switch & Components
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	Front Seat Adjuster Outer Finish Cover Refer to <u>Front Seat Cushion Outer Trim Panel Replacement (Manual)</u> or <u>Front Seat Cushion Outer Trim Panel Replacement (Power)</u> .
2	Front Seat Recliner Switch Knob Tip: Pull off to remove.
3	Front Seat Adjuster Switch Knob Tip: Pull off to remove.
4	Front Seat Adjuster and Recliner Switch Tip: Use a small flat bladed tool to disengage the switch from the outer finish

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cover.

DRIVER SEAT ADJUSTER MEMORY SWITCH REPLACEMENT (CREW CAB)

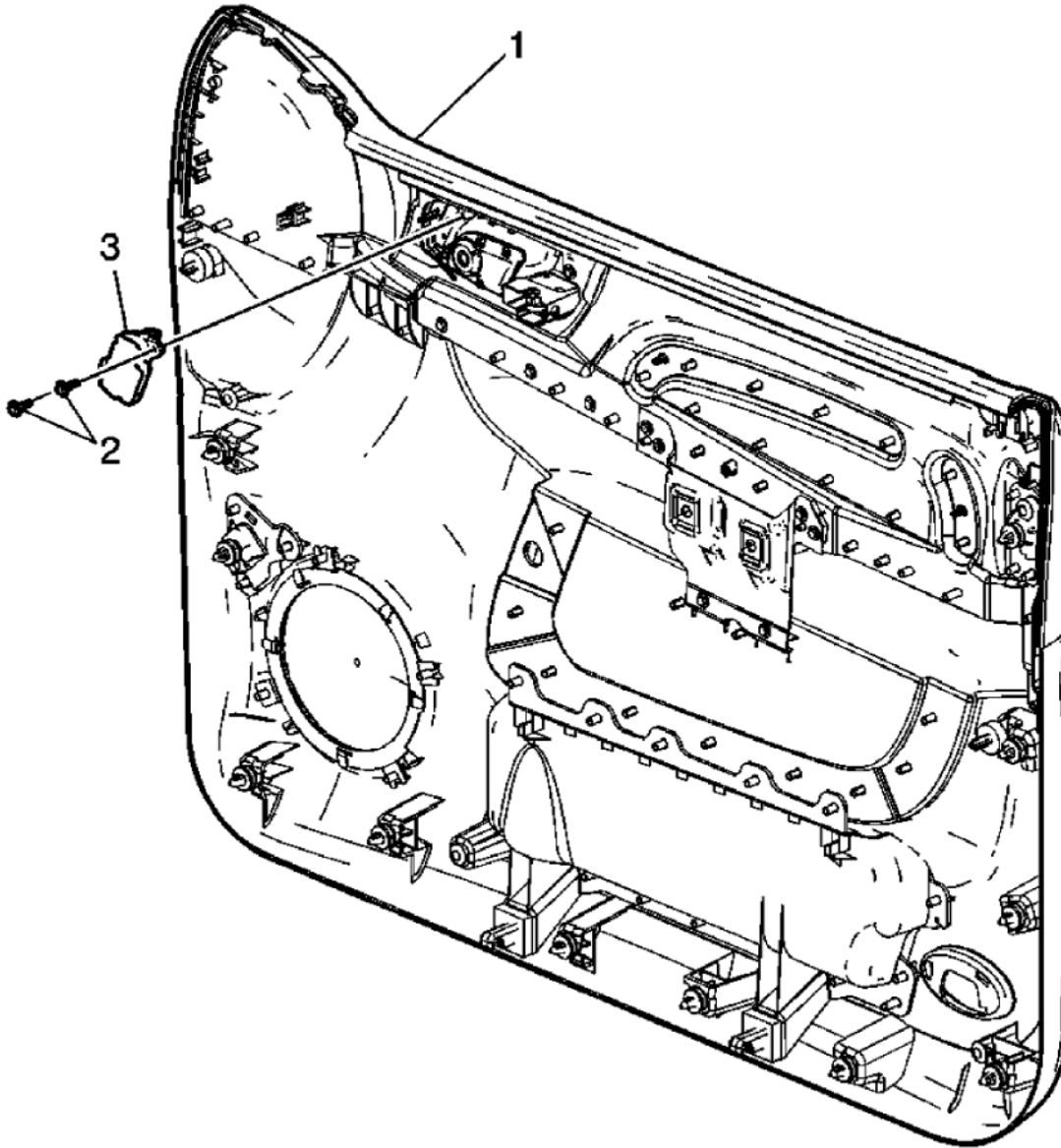


Fig. 9: Driver Seat Adjuster Memory Switch (Crew Cab)

Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	Front Side Door Trim Panel Refer to Front Side Door Trim Panel Replacement (YE9) or Front Side

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	<u>Door Trim Panel Replacement (SLT) .</u>
2	Front Memory Seat Switch Screw (Qty: 2) NOTE: Refer to <u>Fastener Notice</u> . Tighten: 2 N.m (18 lb in)
3	Front Memory Seat Switch Assembly Tip: Disconnect the electrical connector.

MEMORY SEAT CONTROL MODULE REPLACEMENT

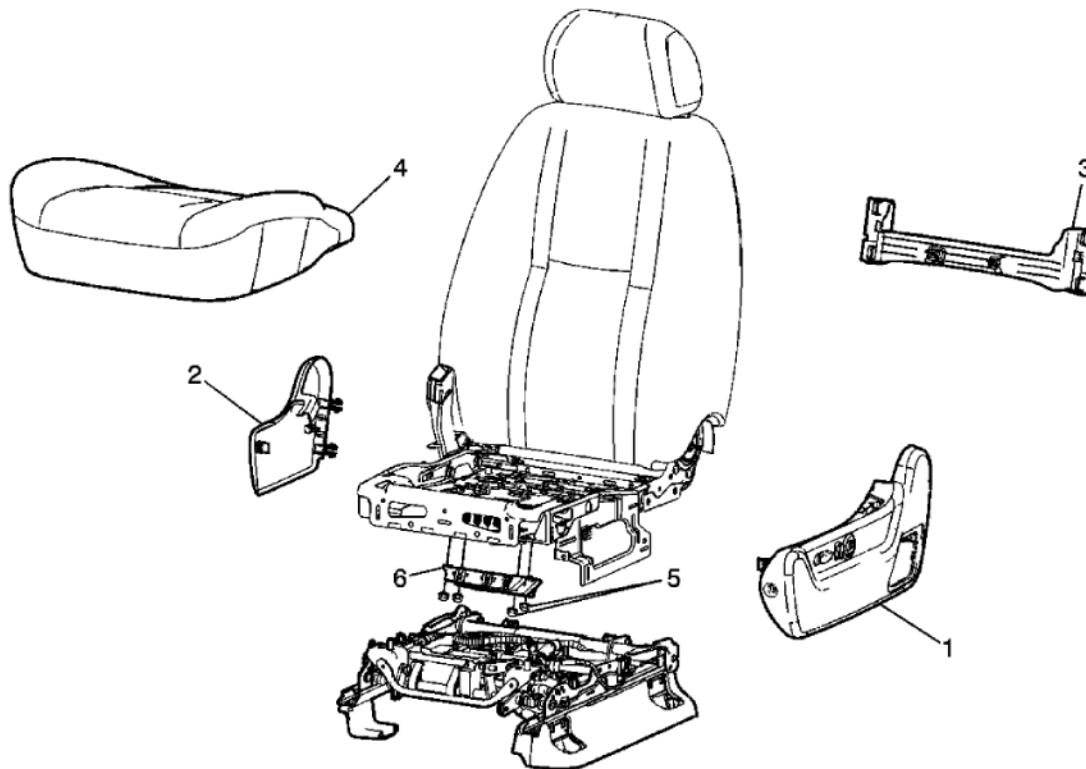


Fig. 10: View Of Memory Seat Control Module & Components
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedure: Remove the front driver seat. Refer to <u>Front Seat Replacement - Bucket</u> .	
	Driver Seat Adjuster Outer Finish Cover

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1	Refer to <u>Front Seat Cushion Outer Trim Panel Replacement (Manual)</u> or <u>Front Seat Cushion Outer Trim Panel Replacement (Power)</u> .
2	Driver Seat Adjuster Inner Finish Cover Refer to <u>Front Seat Cushion Inner Trim Panel Replacement</u> .
3	Driver Seat Riser Finish Cover Procedure: Pull rearward to disengage the cover from the seat riser.
4	Driver Seat Cushion Cover and Pad Refer to <u>Seat Cushion Trim Cover and Pad Replacement</u> .
5	Memory Seat Module Nut (Qty: 4) NOTE: Refer to <u>Fastener Notice</u> . Tighten: 9 N.m (80 lb in)
6	Memory Seat Module Procedure 1. Disconnect the electrical connector. 2. Refer to <u>Control Module References</u> for programming and set-up information.

FRONT SEAT ADJUSTER REPLACEMENT (POWER)

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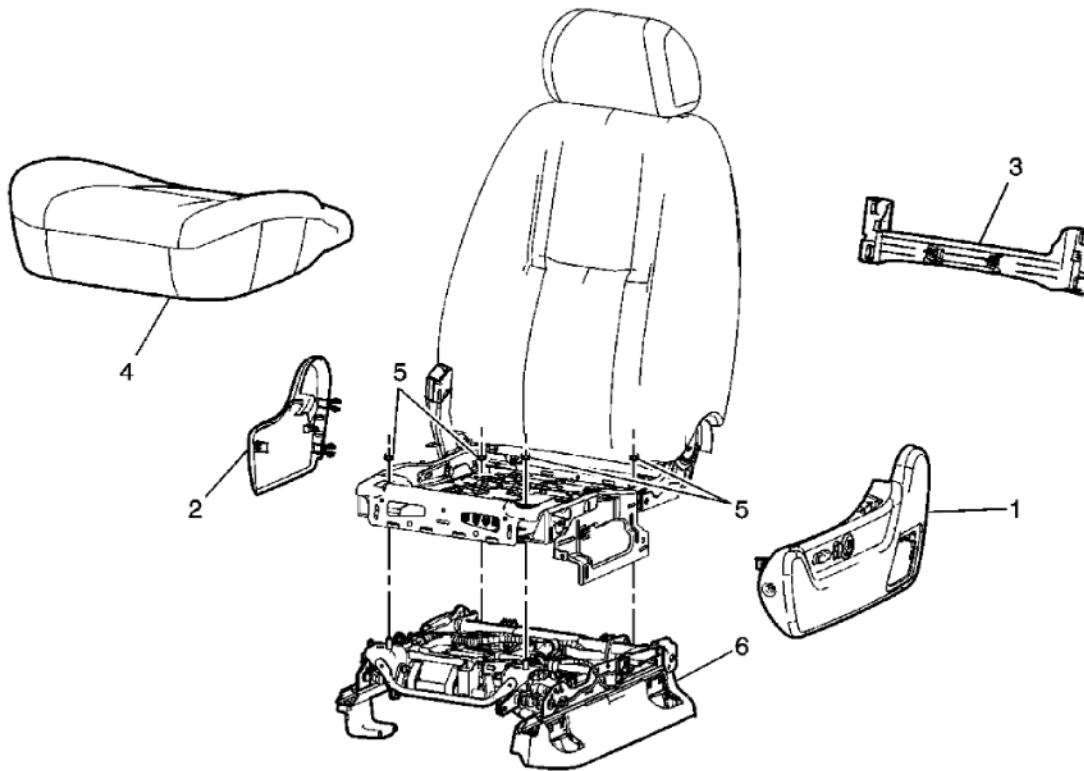


Fig. 11: Front Seat Adjuster (Power)

Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedure: Remove the front seat. Refer to <u>Front Seat Replacement - Bucket</u> .	
1	Front Seat Adjuster Outer Finish Cover Refer to <u>Front Seat Cushion Outer Trim Panel Replacement (Manual)</u> or <u>Front Seat Cushion Outer Trim Panel Replacement (Power)</u> .
2	Front Seat Adjuster Inner Finish Cover Refer to <u>Front Seat Cushion Inner Trim Panel Replacement</u> .
3	Front Seat Riser Finish Cover Tip: Pull rearward to disengage the cover from the seat riser.
4	Seat Cushion Cover and Pad Refer to <u>Seat Cushion Trim Cover and Pad Replacement</u> .
5	Front Seat Cushion Frame Nut (Qty: 4) NOTE: Refer to <u>Fastener Notice</u> .

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Tighten: 9 N.m (80 lb in)

6 Front Seat Adjuster Assembly

LUMBAR SWITCH REPLACEMENT

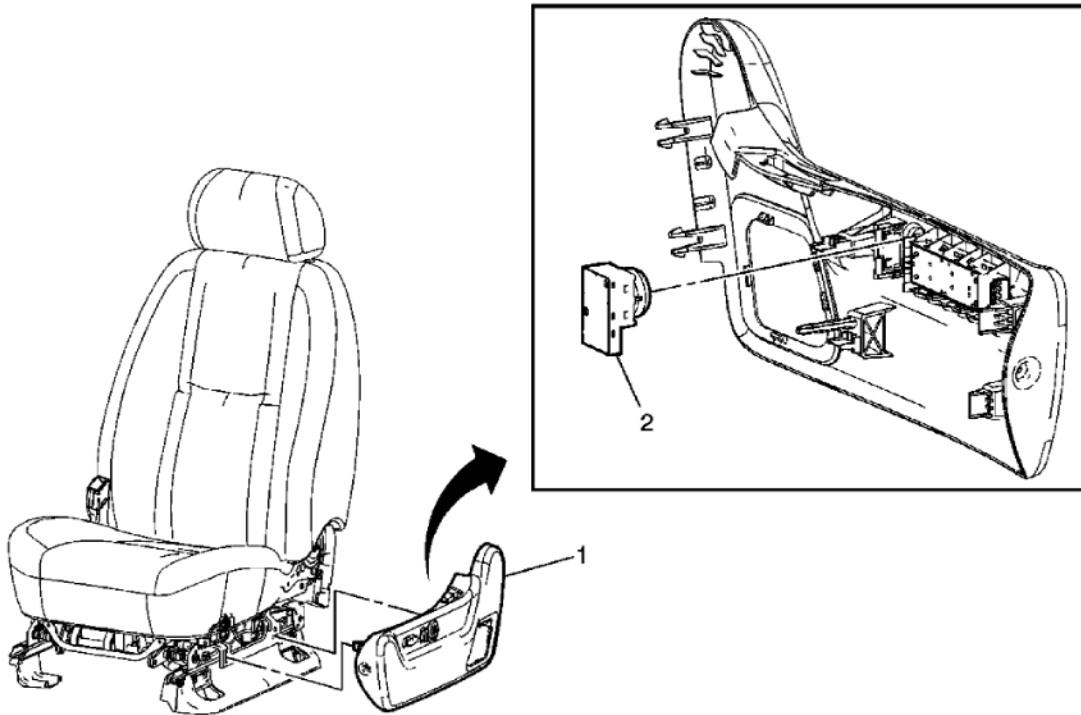


Fig. 12: View Of Lumbar Control Switch & Outer Finish Cover
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	Front Seat Adjuster Outer Finish Cover Refer to <u>Front Seat Cushion Outer Trim Panel Replacement (Manual)</u> or <u>Front Seat Cushion Outer Trim Panel Replacement (Power)</u> .
2	Lumbar Control Switch Tip: Use a small flat bladed tool to disengage the lumbar control switch from the outer finish cover.

FRONT SEAT LUMBAR SUPPORT REPLACEMENT

The front seat lumbar support is serviced as part of the seat back assembly. If the lumbar support needs to be replaced the entire seat back frame kit will need to be installed. Refer to **Front Seat**

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Back Frame Replacement .

FRONT SEAT RECLINER ACTUATOR MOTOR REPLACEMENT

The front seat recliner actuator motor is serviced as part of the seat back assembly. If the actuator motor needs to be replaced the entire seat back frame kit will need to be installed. Refer to **Front Seat Back Frame Replacement .**

DESCRIPTION AND OPERATION

MEMORY SEATS DESCRIPTION AND OPERATION

Battery voltage is supplied to the driver seat module through a 25 A circuit breaker. The driver seat module supplies the seat adjuster switch assembly with a battery positive reference voltage. While the seat adjuster switches are in an inactive state the switch contacts are closed to the adjuster switch common circuit. When a seat adjuster switch is pressed to an active state the switch contact is closed to the reference voltage circuit. Battery voltage on a switch signal circuit indicates to the driver seat module the switch status is active. Each seat adjuster motor is controlled by the driver seat module through 2 motor control circuits. While the seat adjuster motors are in an inactive state the motor control circuits are closed to ground circuit contacts within the driver seat module. The driver seat module operates the seat adjuster motors by switching one of a motors control circuits to battery voltage. The seat adjuster motors are bidirectional and the direction of adjuster motor rotation is determined by which of the adjuster motor control circuits is switched to battery voltage while the other remains grounded.

Memory Set/Recall Operation

The seat adjuster motors are equipped with internal position sensors. The adjuster motor position sensors are monitored by the driver seat module and are used to determine the seat position when storing or recalling memory settings. The driver seat adjuster motors use potentiometer type position sensors. The position sensors are supplied with a 5-volt positive reference and ground circuits from the driver seat module. The position sensor signal circuits return to an analog input within the driver seat module. During adjuster motor operation the position sensor provides a voltage change proportional to the change in revolution of the adjuster motor shaft. The driver seat module monitors the voltage from the position sensor signal circuits to determine the adjuster motor positions when storing or recalling memory seat position settings.

The memory recall switch assembly on the driver door provides inputs to the driver door module. Battery voltage is supplied to the memory recall switch assembly from the driver door module. When a RCL 1, RCL 2, or EXIT switch is pressed, the switch contacts close the appropriate switch signal circuit to the battery voltage supply circuit within the memory recall switch

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assembly. When the driver door module receives active switch signals from the memory recall switch assembly, the appropriate commands are sent to the driver seat module using the GMLAN Serial Data circuit. The Body Control Module software version determines the personalization features available.

Memory seat recall operation is allowed only with the transmission selector lever in the PARK position while the ignition is on. The transmission selector lever position data is provided to the driver seat module by a message through the GMLAN Serial Data circuit.

POWER SEATS SYSTEM DESCRIPTION AND OPERATION

There are 2 options of power seat systems available in full size trucks. The first is 6 way driver and passenger power seats without memory. The second is an 8-way driver seat plus 4-way lumbar with memory, heat and optional cool function. While the passenger has 8-way power seats with heat and optional cool function. For the driver memory seat operation, refer to **Memory Seats Description and Operation**. Power seats without memory are completely controlled through the power seat switch. Battery voltage is supplied to the power seat switch through the power seat circuit breaker. While the seat adjuster switches are in an inactive state the switch contacts are closed to the power seat switch ground circuit. When a power seat switch is pressed to an active state the switch contact is closed to the battery voltage supply circuit. Each seat adjuster motor is controlled by the power seat switch through 2 motor control circuits. The seat adjuster motors are bidirectional and the direction of adjuster motor rotation is determined by which of the adjuster motor control circuits is switched to battery voltage while the other remains grounded.