

2017 ACCESSORIES & EQUIPMENT

Power Seats - Impala

SPECIFICATIONS

FASTENER SPECIFICATIONS

Reusable Threaded Fastener Tightening Specifications

NOTE:

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

Application	Specification
	Metric (English)
Front Seat Recliner Actuator Motor Fastener	6 N.m (53 lb in)
Front Seat Tilt Adjuster Actuator Bolt	42 N.m (31 lb ft)

SCHEMATIC WIRING DIAGRAMS

DRIVER SEAT WIRING SCHEMATICS

Seat Position (without A45)

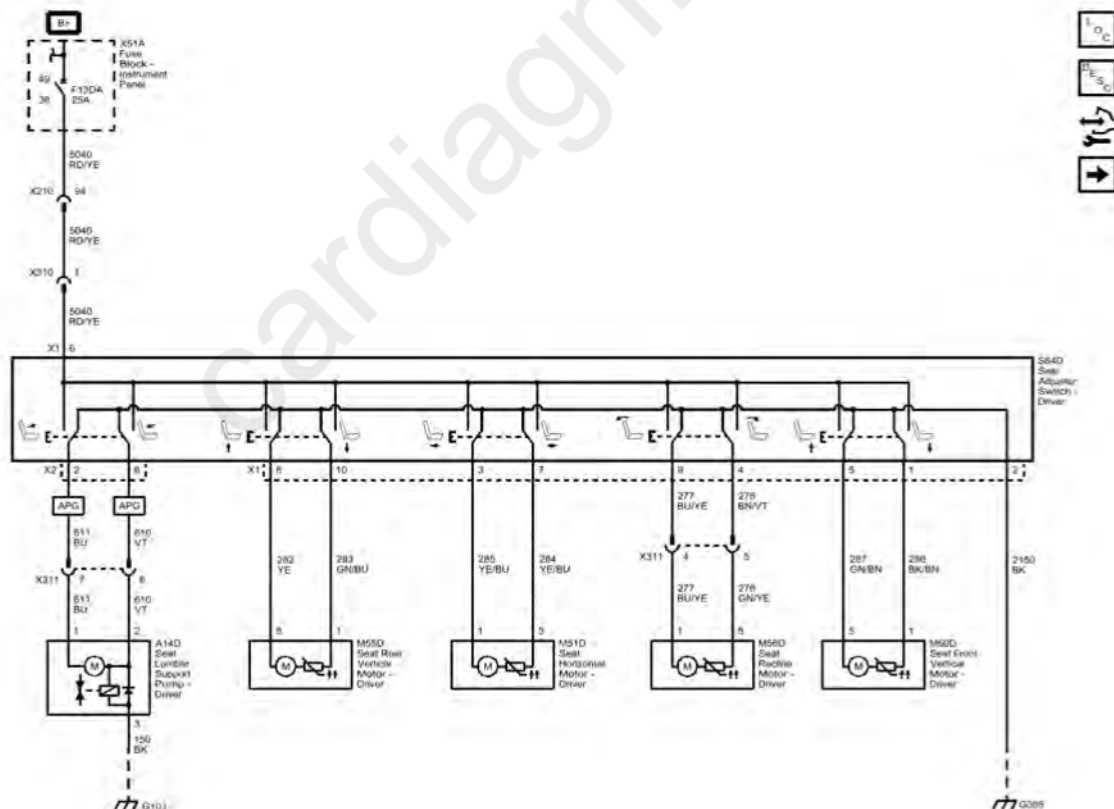


Fig. 1: Seat Position (without A45)

Courtesy of GENERAL MOTORS COMPANY

Power, Ground, Serial Data, and Seat Memory Switch (A45)

Seat Position - 2 Way (A6C)

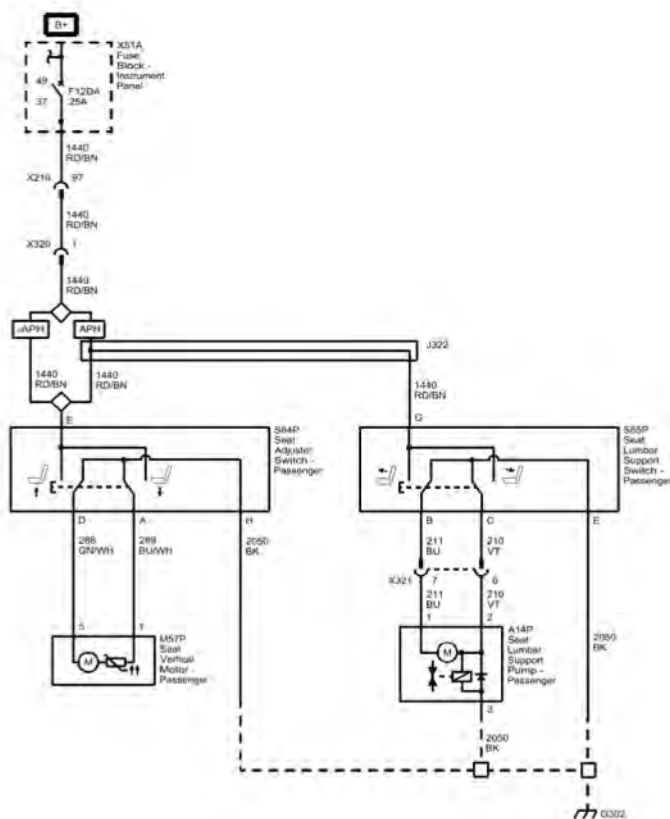


Fig. 4: Seat Position - 2 Way (A6C)
Courtesy of GENERAL MOTORS COMPANY

Seat Position - 8 Way (AG2)

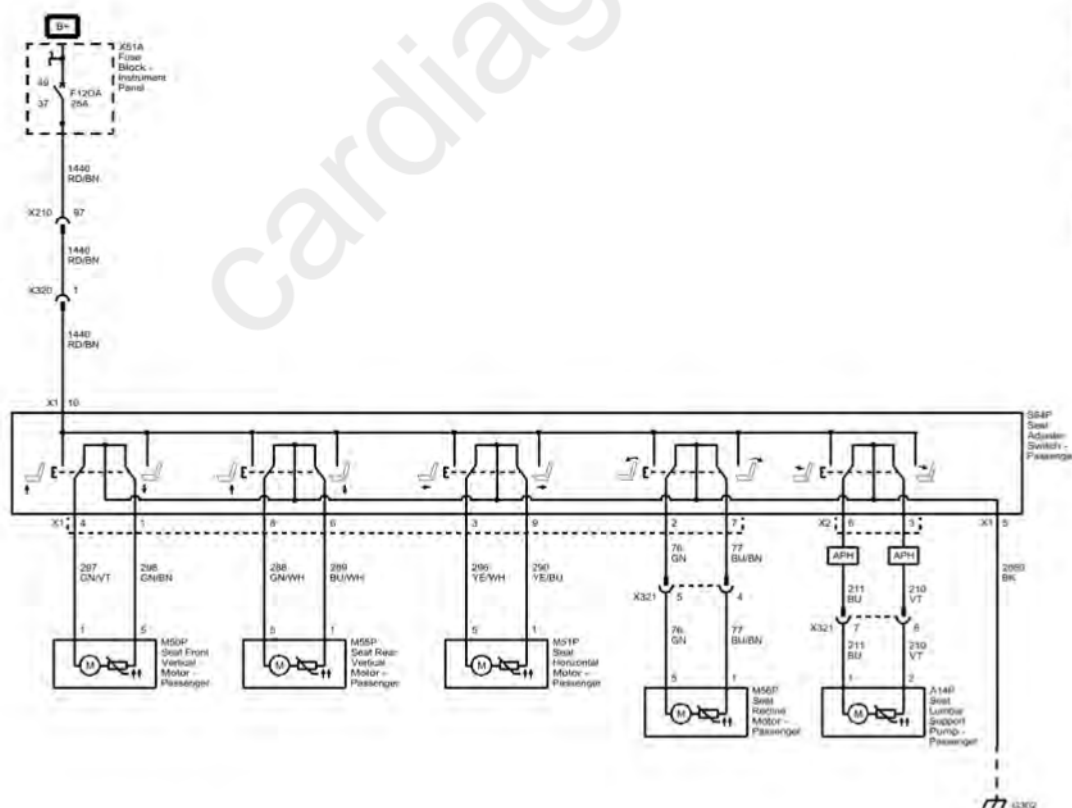


Fig. 5: Seat Position - 8 Way (AG2)
Courtesy of GENERAL MOTORS COMPANY

DIAGNOSTIC INFORMATION AND PROCEDURES

DTC B1405, B1825, B2355, B2365, OR B2375: CONTROL MODULE VOLTAGE/POSITION SENSOR

Diagnostic Instructions

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

DTC Descriptors

DTC B1405

Control Module Voltage Reference Output 2 Circuit

DTC B1825

Seat Recline Position Sensor Circuit

DTC B2355

Seat Front Vertical Position Sensor Circuit

DTC B2365

Seat Rear Vertical Position Sensor Circuit

DTC B2375

Seat Assembly Horizontal Position Sensor Circuit

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

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
12 V Reference	B1405 02, B1825 06, B2355 06, B2365 06, B2375 06	B1825 06, B2355 06, B2365 06, B2375 06	-	-
Seat Front Vertical Position Sensor Signal	B2355 06	B2355 06	B1825 01, B2355 01, B2365 01, B2375 01	B2355 5A
Seat Rear Vertical Position Sensor Signal	B2365 06	B2365 06	B1825 01, B2355 01, B2365 01, B2375 01	B2365 5A
Seat Horizontal Position Sensor Signal	B2375 06	B2375 06	B1825 01, B2355 01, B2365 01, B2375 01	B2375 5A
Seat Recline Position Sensor Signal	B1825 06	B1825 06	B1825 01, B2355 01, B2365 01, B2375 01	B1825 5A

Circuit Description

The seat memory control module monitors the position of the seat motors by using hall effect position sensors which are an internal part of each motor. The module supplies each sensor with a 12 V reference

circuit only when any seat motor is active, and a low side signal circuit. During seat motor operation, the hall effect position sensor provides a determined number of pulse signals for every revolution of the motor shaft. The scan tool displays these pulse signals as counts that range from 0 - 65, 535. The module counts the feedback pulses from each sensor to determine seat position and end of travel limits for each of the seat motors. High scan tool count values indicate forward or upward seat positions while low count values indicate rearward or downward seat positions.

Conditions for Running the DTC

- Any seat motor must be active.
- DTC B1325 must not be present.
- Module battery voltage must be between 9 - 16 V.

Conditions for Setting the DTC

The seat memory control module does not detect position sensor movement or pulse signals while the adjuster motor is active. The following conditions will set this DTC:

B1405 02

The seat memory control module detects a short to ground or an open on the 12 V reference circuit.

B1825 01, B2355 01, B2365 01, or B2375 01

The seat memory control module detects a voltage greater than 5 V on the sensor signal circuit.

B1825 06, B2355 06, B2365 06, or B2375 06

The seat memory control module detects a short to ground or an open on the sensor signal circuit.

Action Taken When the DTC Sets

- With a short to ground or an open circuit, the seat memory control module disables the memory recall and easy exit/entry action commands of the motor monitored by the sensor. The motor will respond to manual position commands.
- With a short to battery voltage, the seat memory control module disables the memory recall and easy exit/entry action commands for all four seat motors. The motors will respond to manual position commands.

Conditions for Clearing the DTC

- The current DTC clears when the fault is no longer present and the power mode changes to OFF then back to ACC or RUN.
- The history DTC will clear after 40 consecutive fault-free ignition cycles have occurred.

Reference Information

Schematic Reference

Driver Seat Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

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 Testing

1. Ignition OFF, disconnect the harness connector at the appropriate driver seat motor listed below for which the DTC set:
 - M50D Seat Front Vertical Motor - Driver
 - M55D Seat Rear Vertical Motor - Driver
 - M51D Seat Horizontal Motor - Driver
 - M56D Seat Recline Motor - Driver
2. Ignition ON.
3. Test for greater than 10.8 V between the 12 V reference circuit terminal 4 and ground while pressing any power seat switch.
 - **If 10.8 V or less**
 1. Ignition OFF, disconnect the X5 harness connector at the K40 Seat Memory Control Module.
 2. Test for infinite resistance between the 12 V reference 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 Ω in the 12 V reference circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , replace the K40 Seat Memory Control Module.
 - **If greater than 10.8 V**
4. Test for 0.1 - 2.0 V between the signal circuit terminal 2 and ground.
 - **If less than 0.1 V**
 1. Ignition OFF, disconnect the X5 harness connector at the K40 Seat Memory Control Module.
 2. Test for infinite resistance between the signal circuit and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 - If infinite resistance
 3. Test for less than 2 Ω in the signal circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , replace the K40 Seat Memory Control Module.
 - **If greater than 2.0 V**
 1. Ignition OFF, disconnect the X5 harness connector at the K40 Seat Memory Control Module, ignition ON.
 2. Test for less than 1 V between each signal circuit listed below and ground.
 - Seat front vertical position sensor terminal 12
 - Seat horizontal position sensor terminal 11
 - Seat rear vertical position sensor terminal 25
 - Seat recline position sensor terminal 26
 - If 1 V or greater, repair the short to voltage on the circuit.
 - If less than 1 V, replace the K40 Seat Memory Control Module.
 - **If between 0.1 - 2.0 V**
5. Test or replace the seat motor.

Repair Instructions

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

- [Front Seat Tilt Adjuster Actuator Replacement](#)
- [Driver or Passenger Seat Cushion Frame Replacement](#)
- [Driver or Passenger Seat Recliner Actuator Replacement](#)
- [Control Module References](#) for K40 Seat Memory Control Module replacement, programming and setup

DTC B1735, B1740, B1745, B1750, B1755, B1760, B1815, B1820, B1830, B1835, B1840, OR B1845: SEAT SWITCH CIRCUITS

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

Seat Front Up Switch Circuit

DTC B1740

Seat Front Down Switch Circuit

DTC B1745

Seat Rear Up Switch Circuit

DTC B1750

Seat Rear Down Switch Circuit

DTC B1755

Seat Assembly Forward Switch Circuit

DTC B1760

Seat Assembly Rearward Switch Circuit

DTC B1815

Seat Recline Forward Switch Circuit

DTC B1820

Seat Recline Rearward Switch Circuit

DTC B1830

Seat Lumbar Support Forward Switch Circuit

DTC B1835

Seat Lumbar Support Rearward Switch Circuit

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

Diagnostic Fault Information

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Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Front Vertical Up Switch Signal	B1735 59, B1740 59, B1745 59, B1750 59, B1755 59, B1760 59, B1815 59, B1820 59, B1830 59, B1835 59	1	-	-
Front Vertical Down Switch Signal	B1735 59, B1740 59, B1745 59, B1750 59, B1755 59, B1760 59, B1815 59, B1820 59, B1830 59, B1835 59	1	-	-
Rear Vertical Up Switch Signal	B1735 59, B1740 59, B1745 59, B1750 59, B1755 59, B1760 59, B1815 59, B1820 59, B1830 59, B1835 59	1	-	-
Rear Vertical Down Switch Signal	B1735 59, B1740 59, B1745 59, B1750 59, B1755 59, B1760 59, B1815 59, B1820 59, B1830 59, B1835 59	1	-	-
Horizontal Forward Switch Signal	B1735 59, B1740 59, B1745 59, B1750 59, B1755 59, B1760 59, B1815 59, B1820 59, B1830 59, B1835 59	1	-	-

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Horizontal Rearward Switch Signal	B1735 59, B1740 59, B1745 59, B1750 59, B1755 59, B1760 59, B1815 59, B1820 59, B1830 59, B1835 59	1	-	-
Recline Forward Switch Signal	B1735 59, B1740 59, B1745 59, B1750 59, B1755 59, B1760 59, B1815 59, B1820 59, B1830 59, B1835 59	1	-	-
Recline Rearward Switch Signal	B1735 59, B1740 59, B1745 59, B1750 59, B1755 59, B1760 59, B1815 59, B1820 59, B1830 59, B1835 59	1	-	-
Seat Lumbar Forward Switch Signal	B1735 59, B1740 59, B1745 59, B1750 59, B1755 59, B1760 59, B1815 59, B1820 59, B1830 59, B1835 59	2	-	-
Seat Lumbar Rearward Switch Signal	B1735 59, B1740 59, B1745 59, B1750 59, B1755 59, B1760 59, B1815 59, B1820 59, B1830 59, B1835 59	2	-	-
1. Power seat is inoperative 2. Lumbar support is inoperative				

Circuit/System Description

The seat memory control module supplies a reference voltage to each signal circuit of the driver seat adjuster switch. When the power seat or lumbar switches are pressed, the appropriate signal circuit from the seat memory control module is pulled low through the switch contacts indicating the power seat

command. The seat memory control module then commands the driver seat or lumbar to move in response to the switch signals.

Conditions for Running the DTC

- DTC B1325 must not be present.
- Module battery voltage must be between 9 - 16 V.

Conditions for Setting the DTC

- If a seat or lumbar switch circuit is active in one direction and the switch for the opposite direction is pressed, this DTC will set.
- A short to ground on a switch signal circuit.

Action Taken When the DTC Sets

- A motor output driven in response to a switch considered failed, is deactivated for both directions.
- All memory recall commands are ignored.
- The seat memory control module 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 DTC to history, when the fault is no longer present and the ignition is cycled OFF then back to ACC or RUN.
- The history DTC will clear after 40 consecutive fault-free ignition cycles have occurred.

Diagnostic Aids

- If one of the switch signal circuits is shorted to ground, multiple DTCs will set.
- If a switch is stuck in one direction and the switch is pressed in the opposite direction, a single DTC will set.

Reference Information

Schematic Reference

Driver Seat Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

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. Ignition ON.
2. Verify the scan tool seat switch parameters listed below change between Inactive and Forward/Rearward or UP/Down when pressing the appropriate seat directional switch.

- Driver Seat Cushion Front Vertical Switch
- Driver Seat Cushion Rear Vertical Switch
- Driver Seat Horizontal Switch
- Driver Seat Back Switch
- Driver Lumbar Support Horizontal Switch
- **If the parameter does not change**

Refer to Circuit/System Testing.

- **If the parameter changes**

3. All OK.

Circuit/System Testing

1. Ignition OFF, disconnect the X1 and X2 harness connectors at the S64D Seat Adjuster Switch - Driver.
2. Verify that all scan tool driver seat switch parameters listed below are Inactive:
 - Driver Seat Cushion Front Vertical Switch
 - Driver Seat Cushion Rear Vertical Switch
 - Driver Seat Horizontal Switch
 - Driver Seat Back Switch
 - Driver Lumbar Support Horizontal Switch
 - **If not Inactive**
 1. Ignition OFF, disconnect the X5 harness connector at the K40 Seat Memory Control Module, ignition ON.
 2. Test for infinite resistance between the appropriate signal circuit terminal listed below and ground:
 - Front vertical up switch terminal 1 X1
 - Front vertical down switch terminal 5 X1
 - Rear vertical up switch terminal 8 X1
 - Rear vertical down switch terminal 10 X1
 - Horizontal forward switch terminal 3 X1
 - Horizontal rearward switch terminal 7 X1
 - Recline forward switch terminal 4 X1
 - Recline rearward switch terminal 9 X1
 - Driver seat lumbar forward terminal 2 X2
 - Driver seat lumbar rearward terminal 6 X2
 - If less than infinite resistance, repair the short to ground on the circuit.
 - If infinite resistance, replace the K40 Seat Memory Control Module.
 - **If Inactive**
3. Install a 3 A fused jumper wire between the appropriate signal circuit terminal listed below and the ground circuit terminal 6.
 - Front vertical up switch terminal 1 X1
 - Front vertical down switch terminal 5 X1
 - Rear vertical up switch terminal 8 X1
 - Rear vertical down switch terminal 10 X1
 - Horizontal forward switch terminal 3 X1
 - Horizontal rearward switch terminal 7 X1
 - Recline forward switch terminal 4 X1
 - Recline rearward switch terminal 9 X1
 - Driver seat lumbar forward terminal 2 X2
 - Driver seat lumbar rearward terminal 6 X2

4. Verify the appropriate scan tool seat switch parameter is Forward/Rearward or UP/Down.

- **If not Forward/Rearward or UP/Down**

1. Ignition OFF, disconnect the X5 harness connector at the K40 Seat Memory Control Module, ignition ON.

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

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

3. Ignition OFF.

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

- If 2 Ω or greater, repair the open/high resistance in the circuit.
- If less than 2 Ω , replace the K40 Seat Memory Control Module.

- **If Forward/Rearward or UP/Down**

5. Test or replace the S64D Seat Adjuster Switch - Driver.

Component Testing

Seat Adjuster Switch Test

1. Ignition OFF, disconnect the X1 and X2 harness connectors at the S64D Seat Adjuster Switch - Driver.

2. Test for infinite resistance between the ground terminal 6 X1 and each signal 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 Ω between the ground terminal 6 X1 and each signal terminal with the appropriate switch in the closed position.

- **If 2 Ω or greater**

Replace the S64D Seat Adjuster Switch - Driver.

- **If less than 2 Ω**

4. All OK.

Repair Instructions

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

- [Driver or Passenger Seat Adjuster Switch Replacement \(Multiple\)](#)[Driver or Passenger Seat Adjuster Switch Replacement \(Vertical\)](#)
- [Control Module References](#) for K40 Seat Memory Control Module replacement, programming and setup

DTC B2755 OR B2765: MEMORY SWITCH CIRCUITS

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 B2755

Driver Memory Select Switch Circuit

DTC B2765

Seat Memory Set Switch Circuit

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

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Memory Seat Switch Signal (1)	B2755 02	1	B2755 01	B2755 59
Memory Seat Switch Set Signal	B2765 59	1	-	-
Low Reference	-	1	-	-
1. Memory recall is inoperative				

Circuit/System Description

Low reference is supplied to the driver seat memory switch from the seat memory control module. When a memory switch is pressed, the signal circuit from the seat memory control module is pulled low through the switch contacts and series of resistors indicating the memory recall request. In response to this signal, the seat memory control module commands the appropriate seat motors to move to the pre-recorded seat positions stored in memory.

Conditions for Running the DTC

- DTC B1327 must not be present.
- Battery voltage must be between 9 - 16 V.

Conditions for Setting the DTC

B2755 01

If the seat memory control module detects a short to voltage on the memory seat switch signal circuit this DTC will set.

B2755 02

If the seat memory control module detects a short to ground on the memory seat switch signal circuit this DTC will set.

B2755 59

The seat memory control module detects a stuck Memory 1, Memory 2, or Exit switch for a given amount of time.

B2765 59

If the memory set switch signal is active for greater than 15 s this DTC will set.

Actions Taken When the DTC Sets

- Current and history codes are set.
- All memory recall commands and are ignored.

Conditions for Clearing the DTCs

- The DTC automatically clears when the switch circuit setting the DTC is no longer active.
- A history DTC will clear once 50 consecutive fault-free ignition cycles have occurred.

Reference Information

Driver Seat Schematics

Connector End View Reference

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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. Ignition ON.
2. Verify the scan tool Seat Memory Control Module Memory Recall Switches parameter changes between Inactive and Memory 1 when pressing the memory 1 switch.
 - **If the parameter does not change**
Refer to Circuit/System Testing.
 - **If the parameter changes**
3. Verify the scan tool Seat Memory Control Module Memory Recall Switches parameter changes between Inactive and Memory 2 when pressing the memory 2 switch.
 - **If the parameter does not change**
Refer to Circuit/System Testing.
 - **If the parameter changes**
4. Verify the scan tool Memory Recall Switches parameter changes between Inactive and Exit when pressing the EXIT switch.
 - **If the parameter does not change**
Refer to Circuit/System Testing.
 - **If the parameter changes**
5. Verify the scan tool Memory Recall Switches parameter changes between Inactive and Set when pressing the SET switch.
 - **If the parameter does not change**
Refer to Circuit/System Testing.
 - **If the parameter changes**
6. All OK.

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the S47D Seat Memory Switch - Driver.
2. Ignition ON, press a power seat switch in order to wake up the K40 Seat Memory Control Module.

3. Test for 9 V or greater between each signal circuit terminal listed below and ground:
 - Memory set switch signal terminal 5
 - Memory switch signal terminal 6
 - **If less than 9 V**
 1. Ignition OFF, disconnect the X6 harness connector at the K40 Seat Memory Control Module.
 2. Test for infinite resistance between the signal circuit and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 - If infinite resistance
 3. Test for less than 2 Ω in the signal circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , replace the K40 Seat Memory Control Module.
 - **If 9 V or greater**
4. Ignition OFF, disconnect the X6 harness connector at the K40 Seat Memory Control Module, ignition ON.
5. Test for less than 1 V between each signal circuit terminal listed below and ground:
 - Memory set switch signal terminal 5
 - Memory switch signal terminal 6
 - **If 1 V or greater**

Repair the short to voltage on the circuit.
 - **If less than 1 V**
6. Test or replace the S47D Seat Memory Switch - Driver.

Component Testing

Driver Seat Memory Switch

1. Ignition OFF, disconnect the harness connector at the S47D Seat Memory Switch - Driver.
2. Test for infinite resistance between each signal terminal listed below and the low reference terminal 1 with the switch in the open position.
 - Terminal 5
 - Terminal 6
 - **If less than infinite resistance**

Replace the S47D Seat Memory Switch - Driver.
 - **If infinite resistance**
3. Test for less than 4 Ω between the signal terminal 5 and the low reference terminal 1 while pressing the memory SET button.
 - **If 4 Ω or greater**

Replace the S47D Seat Memory Switch - Driver.
 - **If less than 4 Ω**
4. Test for 570 - 697 Ω between the signal terminal 6 and the low reference terminal 1 while pressing the memory 1 button.
 - **If not between 570 - 697 Ω**

Replace the S47D Seat Memory Switch - Driver.
 - **If between 570 - 697 Ω**
5. Test for 1803 - 2204 Ω between the signal terminal 6 and the low reference terminal 1 while pressing the memory 2 button.
 - **If not between 1803 - 2204 Ω**

Replace the S47D Seat Memory Switch - Driver.

- **If between 1803 - 2204 Ω**

6. Test for 5.52k - 6.74 k Ω between the signal terminal 6 and the low reference terminal 1 while pressing the Exit button.

- **If not between 5.52k - 6.74 k Ω**

Replace the S47D Seat Memory Switch - Driver.

- **If between 5.52k - 6.74 k Ω**

7. All OK.

Repair Instructions

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

- [Driver Seat Adjuster Memory Switch Replacement](#)
- [Control Module References](#) for K40 Seat Memory Control Module replacement, programming and setup

DTC B3920: SEAT MOTORS GROUP 1 COMMON CIRCUIT

Diagnostic Instructions

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

DTC Descriptors

DTC B3920

Seat Motors Group 1 Common Circuit

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

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Seat Front Vertical Motor Down Control	B3920 02	1	B3920 01	B3920 00, B3920 0B
Seat Front Vertical Motor Up Control	B3920 02	1	B3920 01	B3920 00, B3920 0B
Seat Horizontal Motor Forward Control	B3920 02	1	B3920 01	B3920 00, B3920 0B
Seat Horizontal Motor Rearward Control	B3920 02	1	B3920 01	B3920 00, B3920 0B
Seat Rear Vertical Motor Down Control	B3920 02	1	B3920 01	B3920 00, B3920 0B
Seat Rear Vertical Motor Up Control	B3920 02	1	B3920 01	B3920 00, B3920 0B
Seat Recline Motor Forward Control	B3920 02	1	B3920 01	B3920 00, B3920 0B
Seat Recline Motor Rearward Control	B3920 02	1	B3920 01	B3920 00, B3920 0B
Seat Lumbar Motor Forward Control	B3920 02	2	B3920 01	B3920 00, B3920 0B
Seat Lumbar Motor Rearward Control	B3920 02	2	B3920 01	B3920 00, B3920 0B

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
1. Power seat and memory functions are inoperative 2. Lumbar support functions are inoperative				

Circuit/System Description

The seat memory control module controls the seat and lumbar motors via half bridges that are connected to power rails internal to the module. The seat memory control module connects all of the motor control circuits on each power rail to a common reference point whenever they are not in operation. The module monitors all seat motor control circuits for a shorted to ground or voltage before enabling any seat motor.

When a power seat switch is pressed or when a memory recall is requested, each seat motor receives battery voltage and ground from the seat memory control module via the motor control circuits. All motors are reversible, so the direction the motor rotates depends on which control circuit voltage is applied and which control circuit ground is applied. When the switch 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 opposite direction.

Conditions for Running the DTC

- DTC B1325 must not be present.
- Module battery voltage must be between 9 - 16 V.

Conditions for Setting the DTC

B3920 00

Current out of the module does not match the current returning to the module from 1.5 - 5 A.

B3920 01

The voltage on any power rail 1 motor control circuit exceeds 2.78 V for 100 ms.

B3920 02

The voltage on any power rail 1 motor control circuit is below 1.47 V for 100 ms.

B3920 0B

The differential current measured through the high and low side of the power rail is within tolerance of each other, but the absolute current or an over-current has exceeded the maximum value.

Action Taken When the DTC Sets

The seat memory control module will not allow operation of any motor on the power rail for which the DTC was set.

Conditions for Clearing the DTC

- The current DTC clears when the fault is no longer present and the power mode changes to OFF then back to ACC or RUN.
- The history DTC will clear after 40 consecutive fault-free ignition cycles have occurred.

Reference Information

Schematic Reference

Driver Seat Schematics

Connector End View Reference

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- [Wiring Repairs](#)

Scan Tool Reference

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

[Circuit/System Testing](#)

B3920 01 or B3920 02

1. Ignition OFF, disconnect the X3 harness connector at the K40 Seat Memory Control Module and the harness connector at the A14D Seat Lumbar Support Pump - Driver.
2. Test for infinite resistance between each control circuit terminal listed below and ground:
 - Front vertical motor up control terminal 3
 - Front vertical motor down control terminal 4
 - Rear vertical motor up control terminal 5
 - Rear vertical motor down control terminal 6
 - Horizontal motor forward control terminal 11
 - Horizontal motor rearward control terminal 12
 - Recline motor forward control terminal 1
 - Recline motor rearward control terminal 2
 - Lumbar forward control terminal 9
 - Lumbar rearward control terminal 10
 - **If less than infinite resistance**

Repair the short to ground on the circuit.
 - **If infinite resistance**
3. Ignition ON.
4. Test for less than 1 V between each control circuit terminal listed below and ground:
 - Front vertical motor up control terminal 3
 - Front vertical motor down control terminal 4
 - Rear vertical motor up control terminal 5
 - Rear vertical motor down control terminal 6
 - Horizontal motor forward control terminal 11
 - Horizontal motor rearward control terminal 12
 - Recline motor forward control terminal 1
 - Recline motor rearward control terminal 2
 - Lumbar forward control terminal 9
 - Lumbar rearward control terminal 10
 - **If 1 V or greater**

Repair the short to voltage on the circuit.
 - **If less than 1 V**
5. Replace the K40 Seat Memory Control Module.

1. Ignition ON.
2. Clear the current and history DTC.
3. Determine which motor set this DTC by operating the driver seat and lumbar motors listed below one at a time in both directions. Check for the DTC to set between each motor test.
 - M50D Seat Front Vertical Motor - Driver
 - M55D Seat Rear Vertical Motor - Driver
 - M51D Seat Horizontal Motor - Driver
 - M56D Seat Recline Motor - Driver
 - A14D Seat Lumbar Support Pump - Driver
4. Ignition OFF, disconnect the harness connector at the seat motor for which the DTC set, ignition ON.
5. Clear the DTC.
6. Verify that DTC B3920 00 or B3920 0B does not set while operating the seat adjuster switch in both directions.
 - **If DTC B3920 00 or B3920 0B sets**
 1. Test for infinite resistance between the appropriate control circuit terminals listed below:
 - All seat motors control circuit terminal 1 and control circuit terminal 5
 - Lumbar motor control circuit terminal 1 and control circuit terminal 2
 - If less than infinite resistance, repair the short between the circuits.
 - If infinite resistance
 2. Test for less than 2 Ω in each control circuit end to end:
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , replace the seat motor or lumbar support pump.
 - **If DTC B3920 00 or B3920 0B does not set**
7. Replace the seat motor or lumbar support pump.

Repair Instructions

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

- **Front Seat Tilt Adjuster Actuator Replacement**
- **Driver or Passenger Seat Cushion Frame Replacement**
- **Driver or Passenger Seat Recliner Actuator Replacement**
- **Front Seat Back Lumbar Replacement**
- **Control Module References** for K40 Seat Memory Control Module replacement, programming and setup

SYMPTOMS - POWER SEATS

NOTE: 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:
 - **Lumbar Support Description and Operation (Without Memory A45)****Lumbar Support Description and Operation (With Memory A45)**
 - **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:

- [Lumbar Support Malfunction \(With Memory A45\)](#)[Lumbar Support Malfunction \(Without Memory A45\)](#)[Lumbar Support Malfunction \(With 2-Way Passenger Seat A6C\)](#)
- [Memory Seat Feature Malfunction](#)
- [Power Seat Malfunction \(8-Way without Memory A45\)](#)[Power Seat Malfunction \(2-Way without Memory A45\)](#)[Power Seat Malfunction \(With Memory A45\)](#)

LUMBAR SUPPORT MALFUNCTION (WITH MEMORY A45)

Diagnostic Instructions

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

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Driver Seat Lumbar Forward Switch Signal	B1735 59, B1740 59, B1745 59, B1750 59, B1755 59, B1760 59, B1815 59, B1820 59, B1830 59, B1835 59	1	-	-
Driver Seat Lumbar Rearward Switch Signal	B1735 59, B1740 59, B1745 59, B1750 59, B1755 59, B1760 59, B1815 59, B1820 59, B1830 59, B1835 59	1	-	-
Driver Power Seat Lumbar Motor Forward Control	B3920 02	1	B3920 01	-
Driver Power Seat Lumbar Motor Rearward Control	B3920 02	1	B3920 01	-
Lumbar Motor Control	B3920 02	1	B3920 01	-
1. The driver seat lumbar support is inoperative				

Circuit/System Description

The seat memory control module supplies a reference voltage to each signal circuit of the driver seat lumbar switch. When the lumbar switches are pressed, the appropriate signal circuit from the seat memory control module is pulled low through the switch contacts indicating the lumbar support command. The control module then applies battery voltage through the lumbar forward control circuit to the seat lumbar support pump. The pump energizes its internal inflate solenoid and runs to inflate the lumbar bladder until the switch is released. When the lumbar rearward switch is pressed to deflate the lumbar support, the signal circuit from the seat memory control module is pulled low indicating the lumbar support command. Battery voltage is applied through the deflate control circuit to the lumbar support pump. The pump energizes its internal deflate solenoid and air is released from the bladder until the switch is released.

Reference Information

Schematic Reference

Driver Seat Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Lumbar Support Description and Operation (Without Memory A45)**Lumbar Support Description and Operation (With Memory A45)**

Electrical Information Reference

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

1. Ignition ON.
2. Verify that all power seat functions operate when being controlled by the S64D Seat Adjuster Switch - Driver.
 - **If any power seat function does not operate**

Refer to **Power Seat Malfunction (8-Way without Memory A45)****Power Seat Malfunction (2-Way without Memory A45)****Power Seat Malfunction (With Memory A45)**.
 - **If all power seat functions operate**
3. Verify the scan tool Driver Seat Lumbar Horizontal Switch parameter changes between Inactive and Forward and Rearward when pressing the lumbar switch in both directions.
 - **If the parameter does not change**

Refer to Circuit/System Testing - Lumbar Support Switch Circuit Test.
 - **If the parameter changes**
4. Verify the lumbar support pump turns ON when the lumbar support switch is pressed in the FORWARD direction. The lumbar support bladder should inflate until the bladder is 100% inflated or the switch is released.
 - **If the pump does not turn ON or the bladder does not inflate**

Refer to Circuit/System Testing - Lumbar Support Pump Circuit Test.

- **If the pump turns ON and the bladder inflates**

5. Verify the lumbar support bladder deflates when the lumbar REARWARD switch is pressed. The bladder should deflate until the bladder is 100% deflated or the switch is released.

- **If bladder does not deflate**

Refer to Circuit/System Testing - Lumbar Support Pump Circuit Test.

- **If the bladder deflates**

6. All OK.

Circuit/System Testing

Lumbar Support Switch Circuit Test

1. Ignition OFF, disconnect the X2 harness connector at the S64D Seat Adjuster Switch - Driver.
2. Verify the scan tool Driver Seat Lumbar Horizontal Switch parameter is Inactive:
 - **If not Inactive**
 1. Ignition OFF, disconnect the X5 harness connector at the K40 Seat Memory Control Module.
 2. Test for Infinite resistance between the appropriate signal circuit terminal listed below and ground.
 - Lumbar forward switch signal terminal 2
 - Lumbar rearward switch signal terminal 6
 - If less than infinite resistance, repair the short to ground on the circuit.
 - If infinite resistance, replace the K40 Seat Memory Control Module.
 - **If Inactive**
3. Install a 3 A fused jumper wire between each signal circuit terminal listed below and ground, one at a time.
 - Lumbar forward switch signal terminal 2
 - Lumbar rearward switch signal terminal 6
4. Verify the scan tool Driver Seat Lumbar Horizontal Switch parameter is Forward/Rearward.
 - **If not Forward/Rearward**
 1. Ignition OFF, disconnect the X5 harness connector at the K40 Seat Memory Control Module, ignition ON.
 2. Test for less than 1 V between the signal circuit and ground.
 - If 1 V or greater, repair the short to voltage on the circuit.
 - If less than 1 V
 3. Test for less than 2 Ω in the signal circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , replace the K40 Seat Memory Control Module.
 - **If Forward/Rearward**
5. Test or replace the S64D Seat Adjuster Switch - Driver.

Lumbar Support Pump Circuit Test

1. Ignition OFF, disconnect the harness connector at the A14D Seat Lumbar Support Pump - Driver.
2. Connect a test lamp between control circuit terminal 1 and control circuit terminal 2, ignition ON.
3. Verify the test lamp turns ON when pressing the lumbar switch in the Forward and Rearward directions.
 - **If the test lamp remains OFF during either of the commands**
 1. Ignition OFF, disconnect the X3 harness connector at the K40 Seat Memory Control Module.

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 Ω in each control circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , replace the K40 Seat Memory Control Module.
- **If the test lamp turns ON during each of the commands**
4. Test or replace the A14D Seat Lumbar Support Pump - Driver.

Component Testing

Lumbar Support Switch

1. Ignition OFF, disconnect the X1 and X2 harness connector at the S64D Seat Adjuster Switch - Driver.
2. Test for infinite resistance between the ground terminal 6 X1 and each lumbar signal 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 Ω between the ground terminal 6 X1 and each lumbar signal terminal with the appropriate switch in the closed position.
 - **If 2 Ω or greater**

Replace the S64D Seat Adjuster Switch - Driver.
 - **If less than 2 Ω**
4. All OK.

Repair Instructions

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

- [Driver or Passenger Seat Adjuster Switch Replacement \(Multiple\)](#)[Driver or Passenger Seat Adjuster Switch Replacement \(Vertical\)](#)
- [Front Seat Back Lumbar Replacement](#)
- [Control Module References](#) for K40 Seat Memory Control Module replacement, programming and setup

LUMBAR SUPPORT MALFUNCTION (WITHOUT MEMORY A45)

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
Power Seat Lumbar Motor Forward Control	1	2	-	-
Power Seat Lumbar Motor Rearward Control	1	2	-	-
Ground	-	1	-	-

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
1. The power seat and the lumbar support functions are inoperative 2. The lumbar support is inoperative				

Circuit/System Description

Battery voltage is supplied at all times to the seat adjuster switch through a 25 A fuse located in the instrument panel fuse block. When the lumbar switch is pressed to inflate the lumbar support, battery voltage is applied through the switch contacts and the inflate control circuit to the seat lumbar support pump. In response to this command, the pump energizes its internal inflate solenoid and runs to inflate the lumbar bladder until the switch is released. When the switch is pressed to deflate the lumbar support, battery voltage is applied through the switch contacts and the deflate control circuit to the seat lumbar support pump. The pump energizes its internal deflate solenoid and air is released from the bladder until the switch is released.

Reference Information

Schematic Reference

- [Driver Seat Schematics](#)
- [Passenger Seat Schematics](#)

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Lumbar Support Description and Operation (Without Memory A45)Lumbar Support Description and Operation (With Memory A45)

Electrical Information Reference

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

Circuit/System Verification

1. Ignition ON.
2. Verify that all power seat functions operate when being controlled by the S64 Seat Adjuster Switch.

- **If any power seat function does not operate**

Refer to [Power Seat Malfunction \(8-Way without Memory A45\)](#)[Power Seat Malfunction \(2-Way without Memory A45\)](#)[Power Seat Malfunction \(With Memory A45\)](#).

- **If all power seat functions operate**

3. Verify the lumbar support pump turns ON when the lumbar support switch is pressed in the FORWARD direction. The lumbar support bladder should inflate until the bladder is 100% inflated or the switch is released.

- **If the pump does not turn ON or the bladder does not inflate**

Refer to Circuit/System Testing

- **If the pump turns ON and the bladder inflates**

4. Verify the lumbar support bladder deflates when the lumbar REARWARD switch is pressed. The bladder should deflate until it is 100% deflated or the switch is released

- **If the bladder does not deflate**

Refer to Circuit/System Testing

- **If the bladder deflates**

5. All OK.

Circuit/System Testing

1. Ignition OFF, all vehicle systems OFF, disconnect the harness connector at the appropriate seat lumbar support pump listed below. It may take up to 2 min for all vehicle systems to power down.
 - A14D Seat Lumbar Support Pump - Driver
 - A14P Seat Lumbar Support Pump - Passenger
2. Test for less than 10 Ω between the ground circuit terminal 3 and ground.
 - **If 10 Ω or greater**
 1. Ignition OFF.
 2. Test for less than 2 Ω in the ground circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , repair the open/high resistance in the ground connection.
 - **If less than 10 Ω**
3. Test for less than 10 Ω between each control circuit terminal listed below and ground, one at a time.
 - Lumbar forward control terminal 1
 - Lumbar rearward control terminal 2
 - **If 10 Ω or greater**
 1. Ignition OFF, disconnect the X2 harness connector at the S64 Seat Adjuster Switch.
 2. Test for less than 2 Ω in the control circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , test or replace the S64 Seat Adjuster Switch.
 - **If less than 10 Ω**
4. Connect a test lamp between control circuit terminal 1 and control circuit terminal 2, ignition ON.
5. Verify the test lamp turns ON when pressing the lumbar switch in both directions.
 - **If the test lamp remains OFF during either of the commands**
 1. Ignition OFF, remove the test lamp, disconnect the X2 harness connector at the S64 Seat Adjuster Switch.
 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, test or replace the S64 Seat Adjuster Switch.
 - **If the test lamp turns ON during each of the commands**
6. Test or replace the A14 Seat Lumbar Support Pump.

Repair Instructions

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

- [Driver or Passenger Seat Adjuster Switch Replacement \(Multiple\)](#)[Driver or Passenger Seat Adjuster Switch Replacement \(Vertical\)](#)
- [Front Seat Back Lumbar Replacement](#)

LUMBAR SUPPORT MALFUNCTION (WITH 2-WAY PASSENGER SEAT A6C)

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
Power Seat Lumbar Motor Forward Control	1	2	-	-
Power Seat Lumbar Motor Rearward Control	1	2	-	-
Ground	-	1	-	-
1. The power seat and the lumbar support functions are inoperative 2. The lumbar support is inoperative				

Circuit/System Description

Battery voltage is supplied at all times to the seat adjuster switch through a 25 A fuse located in the instrument panel fuse block. When the lumbar switch is pressed to inflate the lumbar support, battery voltage is applied through the switch contacts and the inflate control circuit to the seat lumbar support pump. In response to this command, the pump energizes its internal inflate solenoid and runs to inflate the lumbar bladder until the switch is released. When the switch is pressed to deflate the lumbar support, battery voltage is applied through the switch contacts and the deflate control circuit to the seat lumbar support pump. The pump energizes its internal deflate solenoid and air is released from the bladder until the switch is released.

Reference Information

Schematic Reference

Passenger Seat Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Lumbar Support Description and Operation (Without Memory A45)Lumbar Support Description and Operation (With Memory A45)

Electrical Information Reference

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

Circuit/System Verification

1. Ignition ON.
2. Verify the lumbar support pump turns ON when the lumbar support switch is pressed in the FORWARD direction. The lumbar support bladder should inflate until the bladder is 100% inflated or the switch is released.
 - **If the pump does not turn ON**
Refer to Circuit/System Testing
 - **If the pump turns ON**
3. Verify the lumbar support bladder deflates when the lumbar REARWARD switch is pressed. The bladder should deflate until it is 100% deflated or the switch is released
 - **If the bladder does not deflate**

- **If the bladder deflates**

4. All OK.

Circuit/System Testing

1. Ignition OFF, all vehicle systems OFF, disconnect the harness connector at the S65P Seat Lumbar Support Switch - Passenger. It may take up to 2 min for all vehicle systems to power down.

2. Test for less than 10 Ω between the ground circuit terminal E and ground.

- **If 10 Ω or greater**

1. Ignition OFF.

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

- If 2 Ω or greater, repair the open/high resistance in the circuit.
- If less than 2 Ω , repair the open/high resistance in the ground connection.

- **If less than 10 Ω**

3. Ignition ON.

4. Verify a test lamp illuminates between the appropriate B+ circuit terminal G and ground.

- **If the test lamp does not illuminate**

1. Ignition OFF, remove the test lamp.

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 Ω in the B+ circuit end to end.

- If 2 Ω or greater, repair the open/high resistance in the circuit.
- If less than 2 Ω , verify the circuit breaker is not open and there is voltage at the circuit breaker.

- **If the test lamp illuminates**

5. Ignition OFF, all vehicle systems OFF, connect the harness connector at the S65P Seat Lumbar Support Switch - Passenger. Disconnect the harness connector at the A14P Seat Lumbar Support Pump - Passenger. It may take up to 2 min for all vehicle systems to power down.

6. Test for less than 10 Ω between the ground circuit terminal 3 and ground.

- **If 10 Ω or greater**

1. Ignition OFF.

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

- If 2 Ω or greater, repair the open/high resistance in the circuit.
- If less than 2 Ω , repair the open/high resistance in the ground connection.

- **If less than 10 Ω**

7. Connect a test lamp between control circuit terminal 1 and control circuit terminal 2, ignition ON.

8. Verify the test lamp turns ON when pressing the lumbar switch in both directions.

- **If the test lamp remains OFF during either of the commands**

1. Ignition OFF, remove the test lamp, disconnect the harness connector at the S65P Seat Lumbar Support Switch - Passenger.

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 Ω in each control circuit end to end.

- If 2 Ω or greater, repair the open/high resistance in the circuit.
- If infinite resistance, test or replace the S65P Seat Lumbar Support Switch - Passenger.

- **If the test lamp turns ON during each of the commands**

9. Test or replace the A14P Seat Lumbar Support Pump - Passenger.

Repair Instructions

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

- [Driver or Passenger Seat Adjuster Switch Replacement \(Multiple\)](#)[Driver or Passenger Seat Adjuster Switch Replacement \(Vertical\)](#)
- [Front Seat Back Lumbar Replacement](#)

MEMORY SEAT FEATURE 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
Memory Seat Switch Signal (1)	B2755 02	1	B2755 01	B2755 59
Memory Seat Switch Set Signal	B2765 59	1	-	-
Low Reference	-	1	-	-
1. Memory recall is inoperative				

Circuit/System Description

Low reference is supplied to the driver seat memory switch from the seat memory control module. When a memory switch is pressed, the signal circuit from the seat memory control module is pulled low through the switch contacts and series of resistors indicating the memory recall request. In response to this signal, the seat memory control module commands the appropriate seat motors to move to the pre-recorded seat positions stored in memory.

Diagnostic Aids

The seat memory control module must be awake when measuring voltage from either one of the memory seat switch signal circuits. Voltage readings of 0.0 V or 5 V are possible if the module is not fully awake and result in misdiagnosing the circuit.

Reference Information

Schematic Reference

Driver Seat Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

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. Ignition ON.
2. Verify that all manual power seat functions operate when being controlled by the S64D Seat Adjuster Switch - Driver.

- **If any manual power seat function does not operate**

Refer to [Power Seat Malfunction \(8-Way without Memory A45\)](#)[Power Seat Malfunction \(2-Way without Memory A45\)](#)[Power Seat Malfunction \(With Memory A45\)](#)

- **If all manual power seat functions operate**

3. Refer to Circuit/System Testing.

Circuit/System Testing

1. Ignition OFF, all vehicle systems OFF, disconnect the harness connector at the S47D Seat Memory Switch - Driver. It may take up to 2 min for all vehicle system to power down.
2. Test for less than 30 Ω between the low reference circuit terminal 1 and ground.
 - **If 30 Ω or greater**
 1. Ignition OFF, disconnect the X6 harness connector at the K40 Seat Memory Control Module.
 2. Test for less than 2 Ω in the low reference circuit end to end
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , replace the K40 Seat Memory Control Module.
 - **If less than 30 Ω**
3. Ignition ON, press a power seat switch in order to wake up the K40 Seat Memory Control Module.
4. Test for 9 V or greater between each signal circuit terminal listed below and ground:
 - Memory set switch signal terminal 5
 - Memory switch signal terminal 6
 - **If less than 9 V**
 1. Ignition OFF, disconnect the X6 harness connector at the K40 Seat Memory Control Module.
 2. Test for infinite resistance between the signal circuit and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 - If infinite resistance
 3. Test for less than 2 Ω in the signal circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , replace the K40 Seat Memory Control Module.
 - **If 9 V or greater**
5. Ignition OFF, disconnect the X6 harness connector at the K40 Seat Memory Control Module, ignition ON.
6. Test for less than 1 V between each signal circuit terminal listed below and ground:
 - Memory set switch signal terminal 5
 - Memory switch signal terminal 6
 - **If 1 V or greater**

Repair the short to voltage on the circuit.

- **If less than 1 V**

7. Test or replace the S47D Seat Memory Switch - Driver.

Component Testing

Driver Seat Memory Switch

1. Ignition OFF, disconnect the harness connector at the S47D Seat Memory Switch - Driver.
2. Test for infinite resistance between each signal terminal listed below and the low reference terminal 1 with the switch in the open position.

- Terminal 5
- Terminal 6
- **If less than infinite resistance**

Replace the S47D Seat Memory Switch - Driver.

- **If infinite resistance**

3. Test for less than 4 Ω between the signal terminal 5 and the low reference terminal 1 while pressing the memory SET button.

- **If 4 Ω or greater**

Replace the S47D Seat Memory Switch - Driver.

- **If less than 4 Ω**

4. Test for 573 - 701 Ω between the signal terminal 6 and the low reference terminal 1 while pressing the memory 1 button.

- **If not between 573 - 701 Ω**

Replace the S47D Seat Memory Switch - Driver.

- **If between 573 - 701 Ω**

5. Test for 1800 - 2201 Ω between the signal terminal 6 and the low reference terminal 1 while pressing the memory 2 button.

- **If not between 1800 - 2201 Ω**

Replace the S47D Seat Memory Switch - Driver.

- **If between 1800 - 2201 Ω**

6. Test for 5.52k - 6.73 k Ω between the signal terminal 6 and the low reference terminal 1 while pressing the Exit button.

- **If not between 5.52k - 6.73 k Ω**

Replace the S47D Seat Memory Switch - Driver.

- **If between 5.52k - 6.73 k Ω**

7. All OK.

Repair Instructions

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

- [Driver Seat Adjuster Memory Switch Replacement](#)
- [Control Module References](#) for K40 Seat Memory Control Module replacement, programming and setup

POWER SEAT ADJUSTER MECHANICAL DIAGNOSIS

Condition	Possible Cause	Correction

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 stright 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 MALFUNCTION (8-WAY WITHOUT MEMORY A45)

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	-	-
Power Seat Front Vertical Motor Down Control	1	2	-	-
Power Seat Front Vertical Motor Up Control	1	2	-	-
Power Seat Horizontal Motor Forward Control	1	3	-	-
Power Seat Horizontal Motor Rearward Control	1	3	-	-
Power Seat Rear Vertical Motor Down Control	1	4	-	-

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Power Seat Rear Vertical Motor Up Control	1	4	-	-
Power Seat Recline Motor Forward Control	1	5	-	-
Power Seat Recline Motor Rearward Control	1	5	-	-
Ground	-	1	-	-
1. All power seat functions are inoperative 2. The seat front vertical motor is inoperative 3. The seat horizontal motor is inoperative 4. The seat rear vertical is inoperative 5. The seat back recline motor is inoperative				

Circuit/System Description

The driver seat without memory and the passenger seat are completely controlled through their respective seat adjuster switches. Battery voltage is supplied at all times to the seat adjuster switch through a 25 A circuit breaker 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 forward 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 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](#)
- [Passenger 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 appropriate driver or passenger seat directional motors listed below operate while operating the seat switches in both directions.
 - M50 Seat Front Vertical Motor
 - M55 Seat Rear Vertical Motor
 - M51 Seat Horizontal Motor
 - M56 Seat Recline Motor

- **If all seat motors do not operate**

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

- **If 1 or more seat motors operate but not all**

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

- **If all seat motors operate**

2. All OK.

Circuit/System Testing

Seat Adjuster Switch Circuit Test

1. Ignition OFF and all vehicle systems OFF, disconnect the X1 harness connector at the appropriate seat adjuster switch listed below. It may take up to 2 min for all vehicle systems to power down.
 - S64D Seat Adjuster Switch - Driver
 - S64P Seat Adjuster Switch - Passenger
2. Test for less than 10 Ω between the appropriate ground circuit terminal listed below and ground:
 - Driver seat terminal 2
 - Passenger seat terminal 5
 - **If 10 Ω or greater**
 1. Ignition OFF.
 2. Test for less than 2 Ω in the ground circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , repair the open/high resistance in the ground connection.
 - **If less than 10 Ω**
3. Ignition ON.
4. Verify a test lamp illuminates between the appropriate B+ circuit terminal listed below and ground:
 - Driver seat terminal 6
 - Passenger seat terminal 10
 - **If the test lamp does not illuminate**
 1. Ignition OFF, remove the test lamp.
 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 Ω in the B+ circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , verify the circuit breaker is not open and there is voltage at the circuit breaker.
 - **If the test lamp illuminates**
5. Test or replace the S64 Seat Adjuster Switch.

Seat Motor Circuit Test

1. Ignition OFF, disconnect the harness connector at the appropriate seat motor listed below:
 - M50 Seat Front Vertical Motor
 - M55 Seat Rear Vertical Motor
 - M51 Seat Horizontal Motor
 - M56 Seat Recline Motor
2. Connect a test lamp between control circuit terminal 1 and control circuit terminal 5, ignition ON.

3. Verify the test lamp turns ON when commanding the seat motor Up and Down or Forward and Rearward using the seat adjuster switch.

- **If the test lamp remains OFF during either of the commands**

1. Ignition OFF, remove the test lamp, disconnect the harness connector at the S64 Seat Adjuster Switch.
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 Ω in each control circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , test or replace the S64 Seat Adjuster Switch

- **If the test lamp turns ON 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 S64 Seat Adjuster Switch.
2. Test for infinite resistance between the B+ terminal and each control terminal with the switch in the open position.
 - **If less than infinite resistance**
Replace the S64 Seat Adjuster Switch.
 - **If infinite resistance**
3. Test for less than 2 Ω between the B+ terminal and each control terminal with the appropriate switch in the closed position.
 - **If 2 Ω or greater**
Replace the S64 Seat Adjuster Switch.
 - **If less than 2 Ω**
4. Test for less than 2 Ω between the ground terminal and each control terminal with the switch in the open position.
 - **If 2 Ω or greater**
Replace the S64 Seat Adjuster Switch.
 - **If less than 2 Ω**
5. All OK.

Seat Motor

1. Ignition OFF, disconnect the harness connector at the appropriate seat motor listed below:
 - M50 Seat Front Vertical Motor
 - M55 Seat Rear Vertical Motor
 - M51 Seat Horizontal Motor
 - M56 Seat Recline Motor

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 repair.

- [Driver or Passenger Seat Adjuster Switch Replacement \(Multiple\)](#)[Driver or Passenger Seat Adjuster Switch Replacement \(Vertical\)](#)
- [Front Seat Tilt Adjuster Actuator Replacement](#)
- [Driver or Passenger Seat Cushion Frame Replacement](#)
- [Driver or Passenger Seat Recliner Actuator Replacement](#)

POWER SEAT MALFUNCTION (2-WAY WITHOUT MEMORY A45)

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	-	-
Power Seat Vertical Motor Down Control	1	1	-	-
Power Seat Vertical Motor Up Control	1	1	-	-
Ground	-	1	-	-
1. The power seat is inoperative				

Circuit/System Description

Battery voltage is supplied at all times to the seat adjuster switch through a 25 A circuit breaker located in the instrument panel fuse block. When the seat switch is in an inactive state, the switch contacts are closed to the switch ground circuit.

The seat vertical motor is reversible. For example, when the seat vertical up switch is pressed to move the entire seat up, battery voltage is applied through the switch contacts and the seat vertical motor up control circuit to the motor. With the vertical motor down switch contacts closed to the switch ground circuit, the motor runs 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 voltage and ground are applied on opposite circuits causing the motor to run in the opposite direction.

Reference Information

Schematic Reference

[Passenger Seat Schematics](#)

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 Testing

1. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the S64P Seat Adjuster Switch - Passenger. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 10 Ω between the ground circuit terminal H and ground.
 - **If 10 Ω or greater**
 1. Ignition OFF.
 2. Test for less than 2 Ω in the ground circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , repair the open/high resistance in the ground connection.
 - **If less than 10 Ω**
3. Ignition ON.
4. Verify a test lamp illuminates between the B+ circuit terminal E 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 Ω in the B+ circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , verify the circuit breaker is not open and there is voltage at the circuit breaker.
 - **If the test lamp illuminates**
5. Ignition OFF, connect the harness connector at the S64P Seat Adjuster Switch - Passenger and disconnect the harness connector at the M57P Seat Vertical Motor - Passenger.
6. Connect a test lamp between control circuit terminal 1 and control circuit terminal 5, ignition ON.
7. Verify the test lamp turns ON when commanding the M57P Seat Vertical Motor - Passenger Up and Down using the seat adjuster switch.
 - **If the test lamp remains OFF during either of the commands**
 1. Ignition OFF, disconnect the harness connector at the S64P Seat Adjuster Switch - Passenger.
 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 Ω in each control circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , test or replace the S64P Seat Adjuster Switch - Passenger.
 - **If the test lamp turns ON during each of the commands**

8. Test or replace the M57P Seat Vertical Motor - Passenger.

Component Testing

Seat Adjuster Switch Test

1. Ignition OFF, disconnect the harness connector at the S64P Seat Adjuster Switch - Passenger.
2. Test for infinite resistance between the B+ terminal E and each control terminal with the switch in the open position.
 - **If less than infinite resistance**
Replace the S64P Seat Adjuster Switch - Passenger.
3. Test for less than 2 Ω between the B+ terminal E and each control terminal with the appropriate switch in the closed position.
 - **If 2 Ω or greater**
Replace the S64P Seat Adjuster Switch - Passenger.
 - **If less than 2 Ω**
4. Test for less than 2 Ω between the ground terminal H and each control terminal with the switch in the open position.
 - **If 2 Ω or greater**
Replace the S64P Seat Adjuster Switch - Passenger.
 - **If less than 2 Ω**
5. All OK.

Seat Motor

1. Ignition OFF, disconnect the harness connector at the M57P Seat Vertical Motor - Passenger.

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 UP/ DOWN function.
 - **If the motor does not perform the UP/ DOWN function**
Replace the M57P Seat Vertical Motor - Passenger.
 - **If the motor performs the UP/ DOWN function**
4. Reverse the jumper wires; the motor should perform UP/ DOWN function.
 - **If the motor does not perform the UP/ DOWN function**
Replace the M57P Seat Vertical Motor - Passenger.
 - **If the motor performs the UP/ DOWN function**
5. All OK.

Repair Instructions

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

- **Driver or Passenger Seat Adjuster Switch Replacement (Multiple)****Driver or Passenger Seat Adjuster Switch Replacement (Vertical)**
- **Driver or Passenger Seat Cushion Frame Replacement**

POWER SEAT MALFUNCTION (WITH MEMORY A45)

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 Memory Control Module B+ Terminal 1 X1	U0208 00	U0208 00	-	-
Seat Memory Control Module B+ Terminal 2 X1	1	1	-	-
Power Seat Front Vertical Up Switch Signal	B1735 59, B1740 59, B1745 59, B1750 59, B1755 59, B1760 59, B1815 59, B1820 59, B1830 59, B1835 59	2	-	-
Power Seat Front Vertical Down Switch Signal	B1735 59, B1740 59, B1745 59, B1750 59, B1755 59, B1760 59, B1815 59, B1820 59, B1830 59, B1835 59	2	-	-
Power Seat Rear Vertical Up Switch Signal	B1735 59, B1740 59, B1745 59, B1750 59, B1755 59, B1760 59, B1815 59, B1820 59, B1830 59, B1835 59	3	-	-
Power Seat Rear Vertical Down Switch Signal	B1735 59, B1740 59, B1745 59, B1750 59, B1755 59, B1760 59, B1815 59, B1820 59, B1830 59, B1835 59	3	-	-

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Power Seat Horizontal Forward Switch Signal	B1735 59, B1740 59, B1745 59, B1750 59, B1755 59, B1760 59, B1815 59, B1820 59, B1830 59, B1835 59	4	-	-
Power Seat Horizontal Rearward Switch Signal	B1735 59, B1740 59, B1745 59, B1750 59, B1755 59, B1760 59, B1815 59, B1820 59, B1830 59, B1835 59	4	-	-
Power Seat Recline Forward Switch Signal	B1735 59, B1740 59, B1745 59, B1750 59, B1755 59, B1760 59, B1815 59, B1820 59, B1830 59, B1835 59	5	-	-
Power Seat Recline Rearward Switch Signal	B1735 59, B1740 59, B1745 59, B1750 59, B1755 59, B1760 59, B1815 59, B1820 59, B1830 59, B1835 59	5	-	-
Driver Power Seat Front Vertical Motor Down Control	B3920 02	2	B3920 01	B3920 00, B3920 0B
Driver Power Seat Front Vertical Motor Up Control	B3920 02	2	B3920 01	B3920 00, B3920 0B
Driver Power Seat Rear Vertical Motor Down Control	B3920 02	3	B3920 01	B3920 00, B3920 0B
Driver Power Seat Rear Vertical Motor Up Control	B3920 02	3	B3920 01	B3920 00, B3920 0B
Driver Power Seat Horizontal Motor Forward Control	B3920 02	4	B3920 01	B3920 00, B3920 0B
Driver Power Seat Horizontal Motor Rearward Control	B3920 02	4	B3920 01	B3920 00, B3920 0B
Driver Power Seat Recline Motor Forward Control	B3920 02	5	B3920 01	B3920 00, B3920 0B

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Driver Power Seat Recline Motor Rearward Control	B3920 02	5	B3920 01	B3920 00, B3920 0B
Ground	-	U0208 00, 2	-	-
1. All power seat and memory functions inoperative 2. The seat front vertical motor is inoperative 3. The seat rear vertical is inoperative 4. The seat horizontal motor is inoperative 5. The seat back recline motor is inoperative				

Circuit/System Description

Battery voltage is supplied at all times to the seat memory control module through a 5 A fuse located in the underhood fuse block. This voltage is used by the module for logic power. Battery positive voltage is also supplied at all times to the seat memory control module through a 25 A circuit breaker located in the instrument panel fuse block. This voltage is connected to a power rail internal to the seat memory control module and is used to drive the power seat motors. Each seat motor is controlled by the seat memory control module by applying power and ground through the control circuits to the motor.

All motors are reversible. For example, when the seat switch is operated to move the entire seat forward, the switch signal circuit from the seat memory control module is pulled low indicating the entire seat forward command. In response to this signal, the seat memory control module applies battery voltage through the driver seat horizontal motor forward control circuit and ground through the driver seat horizontal motor rearward control circuit to the motor. The motor runs 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 the opposite circuits causing the motor to run in the opposite direction.

Reference Information

Schematic Reference

Driver Seat Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

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. Ignition ON.
2. Verify the scan tool seat switch parameters listed below change between Inactive and Forward/Rearward or Up/Down when pressing the appropriate switch.
 - Driver Seat Horizontal Switch
 - Driver Seat Cushion Front Vertical Switch

- Driver Seat Cushion Rear Vertical Switch
- Driver Seat Back Switch
- **If the parameter does not change**

Refer to Circuit/System Testing - Driver Seat Adjuster Switch Circuit Test

- **If the parameter changes**

3. Verify the seat directional motors listed below operate while operating the appropriate seat switches in both directions.

- M51D Seat Horizontal Motor - Driver
- M50D Seat Front Vertical Motor - Driver
- M55D Seat Rear Vertical Motor - Driver
- M56D Seat Recline Motor - Driver
- **If any seat motor does not operate**

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

- **If all seat motors operate**

4. All OK.

Circuit/System Testing

Driver Seat Adjuster Switch Circuit Test

1. Ignition OFF and all vehicle systems OFF, disconnect the X1 harness connector at the S64D Seat Adjuster Switch - Driver. It may take up to 2 min for all vehicle systems to power down.

2. Test for less than 10 Ω between the ground circuit terminal 6 and ground.

- **If 10 Ω or greater**

1. Ignition Off.

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

- If 2 Ω or greater, repair the open/high resistance in the circuit.
- If less than 2 Ω , repair the open/high resistance in the ground connection.

- **If less than 10 Ω**

3. Install a 3 A fused jumper wire between the ground circuit terminal 6 and the appropriate signal circuit terminal listed below, ignition ON.

- Front vertical up switch terminal 1
- Front vertical down switch terminal 5
- Rear vertical up switch terminal 8
- Rear vertical down switch terminal 10
- Horizontal forward switch terminal 3
- Horizontal rearward switch terminal 7
- Recline forward switch terminal 4
- Recline rearward switch terminal 9

4. Verify the appropriate scan tool seat switch parameter is Forward/Rearward or UP/Down.

- **If not Forward/Rearward or UP/Down**

1. Ignition OFF, disconnect the X5 harness connector at the K40 Seat Memory Control Module, ignition ON.

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

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

3. Ignition OFF.

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

- If 2 Ω or greater, repair the open/high resistance in the circuit.

- If less than 2 Ω , replace the K40 Seat Memory Control Module.

- **If Forward/Rearward or UP/Down**

5. Test or replace the S64D Seat Adjuster Switch - Driver.

Seat Motor Control Circuit Test

1. Ignition OFF, disconnect the X1 harness connector at the K40 Seat Memory Control Module, ignition ON.
2. Verify that a test lamp illuminates between the B+ circuit terminal 2 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 Ω in the B+ circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , verify the circuit breaker is OK and there is voltage at the circuit breaker.
 - **If the test lamp illuminates.**
3. Ignition OFF, connect the X1 harness connector at the K40 Seat Memory Control Module and 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
 - M56D Seat Recline Motor - Driver
4. Connect a test lamp between control circuit terminal 1 and control circuit terminal 5, ignition ON.

NOTE: Once a seat motor is commanded On using the scan tool, the seat function may not work using the seat adjuster switch until you back out of the scan tool Control Functions menu.

5. Verify the test lamp turns ON when commanding the seat motor in the Up/Down or Forward/Rearward states with a scan tool.
 - **If the test lamp remains OFF during either of the commands**
 1. Ignition OFF, disconnect the X3 harness connector at the K40 Seat Memory Control Module.
 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 Ω in each control circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , replace the K40 Seat Memory Control Module.
 - **If the test lamp turns ON during each of the commands**
6. Test or replace the seat motor.

Component Testing

Seat Adjuster Switch Test

1. Ignition OFF, disconnect the X1 and X2 harness connectors at the S64D Seat Adjuster Switch - Driver.
2. Test for infinite resistance between the ground terminal 6 X1 and each signal 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 Ω between the ground terminal 6 X1 and each signal terminal with the appropriate switch in the closed position.

- **If 2 Ω or greater**

Replace the S64D Seat Adjuster Switch - Driver.

- **If less than 2 Ω**

4. All OK.

Seat Motor

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
- M56D Seat Recline 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 repair.

- [Driver or Passenger Seat Adjuster Switch Replacement \(Multiple\)](#)[Driver or Passenger Seat Adjuster Switch Replacement \(Vertical\)](#)
- [Front Seat Tilt Adjuster Actuator Replacement](#)
- [Driver or Passenger Seat Cushion Frame Replacement](#)
- [Driver or Passenger Seat Recliner Actuator Replacement](#)
- [Control Module References](#) for K40 Seat Memory Control Module replacement, programming and setup

REPAIR INSTRUCTIONS

WIRE TO WIRE REPAIR - SEATS

Special Tools

- EL-38125-10 Splice Sleeve Crimping Tool (non GMNA)

- **J-38125-5A** Ultra Torch Special Tool
- **J-38125-8** Splice Sleeve Crimping Tool (GMNA)

For equivalent regional tools, refer to [Special Tools](#).

WARNING: In order to reduce the risk of personal injury, loss of high voltage isolation to ground and higher system impedance, do not attempt to repair any HV wiring, connector, or terminal that is damaged. High voltage coaxial type cables are not repairable. Never attempt to repair a coaxial type cable. The entire cable/harness or component must be replaced. In order to maintain system integrity and personal safety, never attempt to repair any high voltage wiring, cables, or terminals. Performing this procedure on high voltage circuits may result in serious injury or death.

NOTE: If the wiring harness internal to the transmission is damaged, the wiring harness must be replaced. The use of splice sleeves in an attempt to repair the internal transmission wires, connectors, or terminals could result in performance issues.

NOTE: Do not splice wires in Door Harness Grommets.

NOTE: The DuraSeal splice sleeves have the following 2 critical features:

- A special heat shrink sleeve environmentally seals the splice. The heat shrink sleeve contains a sealing adhesive inside.
- A cross hatched (knurled) core crimp provides the necessary low resistance contact integrity for these sensitive, low energy circuits.

Use only DuraSeal splice sleeves to form a one-to-one splice on all types of insulation except high voltage and specialty cables. Use DuraSeal splice sleeves where there are special requirements such as moisture sealing. Follow the instructions below in order to splice copper wire using DuraSeal splice sleeves.

Splice Sleeve Selection

Splice Sleeve Color	Crimp Tool Nest Color		Wire Gauge mm ² / (AWG)
	3 Crimp Nests	4 Crimp Nests	
Salmon (Yellow-Pink) 19300089	Red (1) or Red/Green (1)	Red (2)	0.22 - 0.8/(18 - 26)
Blue 19168447	Blue (2)	Blue (3)	1.0 - 2.0/(14 - 16)
Yellow 19168448	Yellow (3)	Yellow (4)	3.0 - 5.0/(10 - 12)

NOTE: You must perform the following procedures in the listed order. Repeat the procedure if any wire strands are damaged. You must obtain a clean strip with all of the wire strands intact.

1. Open the harness by removing any tape:
 - Use a sewing seam ripper, available from sewing supply stores, in order to cut open the harness in order to avoid wire insulation damage.
 - Use the DuraSeal splice sleeves on all types of insulation except Tefzel and coaxial.
 - Do not use the crimp and DuraSeal splice sleeve to form a splice with more than 2 wires coming together.
2. Cut as little wire off the harness as possible. You may need the extra length of wire in order to change the location of a splice.

Adjust splice locations so that each splice is at least 40 mm (1.5 in) away from the other splices, harness branches, or connectors.

3. Strip the insulation:

- When adding a length of wire to the existing harness, use the same size wire as the original wire.
 - Perform one of the following items in order to find the correct wire size:
 - Find the wire on the schematic and convert to regional wiring gauge size.
 - If you are unsure of the wire size, begin with the largest opening in the wire stripper and work down until achieving a clean strip of the insulation.
 - Strip approximately 5.0 mm (0.20 in) of insulation from each wire to be spliced.
 - Do not nick or cut any of the strands. Inspect the stripped wire for nicks or cut strands.
 - If the wire is damaged, repeat this procedure after removing the damaged section.
4. For high temperature wiring, slide a section of high temperature SCT1 shrink tubing down the length of wire to be spliced. Ensure that the shrink tubing will not interfere with the splice procedure.
5. Select the proper DuraSeal splice sleeve according to the wire size. Refer to the above table at the beginning of the repair procedure for the color coding of the DuraSeal splice sleeves and the crimp tool nests.

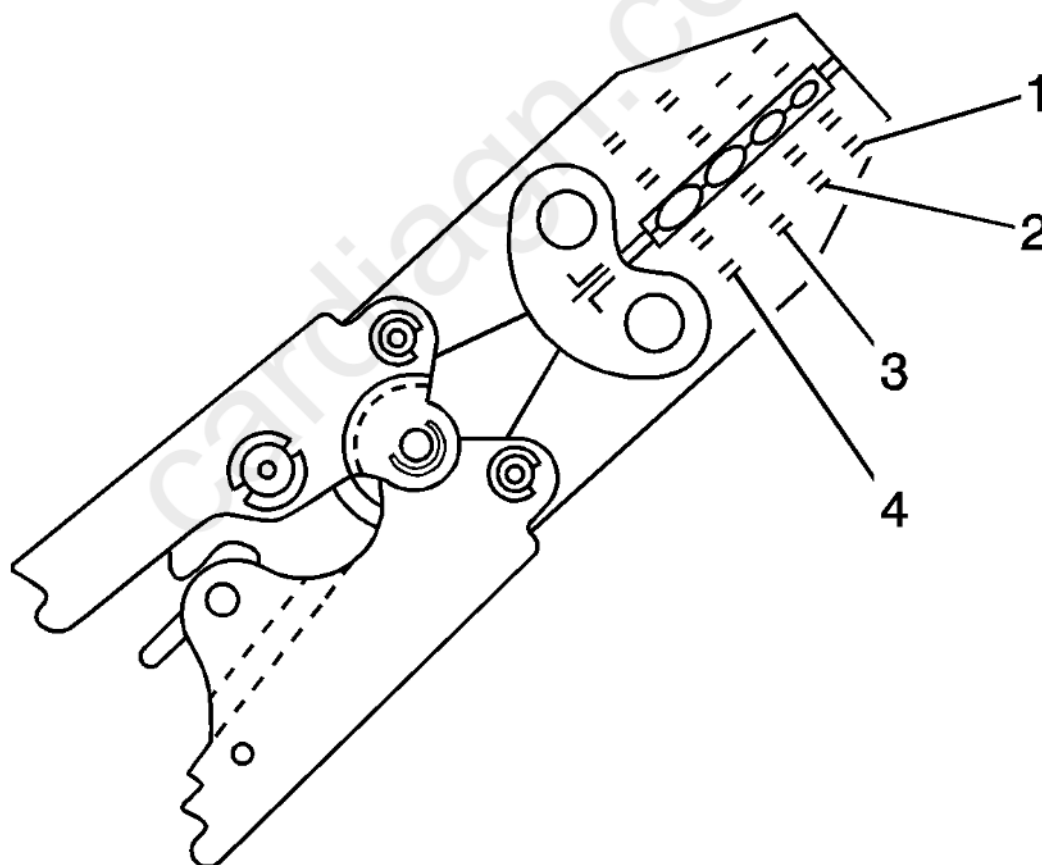


Fig. 6: Splice Sleeve Crimping Tool With 4 Crimp Nests
Courtesy of GENERAL MOTORS COMPANY

6. The **EL-38125-10** splice sleeve crimping tool has four crimp nests. The largest crimp nest (4) is used for crimping 10 and 12 gauge wires. The second largest crimp nest (3) is used for crimping 14 and 16 gauge wires. The third largest crimp nest (2) is used for crimping 18 and 20 gauge wires. The smallest crimp nest (1) is used for crimping 22 to 26 gauge wires. The crimp nests are referenced in the table (farther above) under the crimp tool nest color.

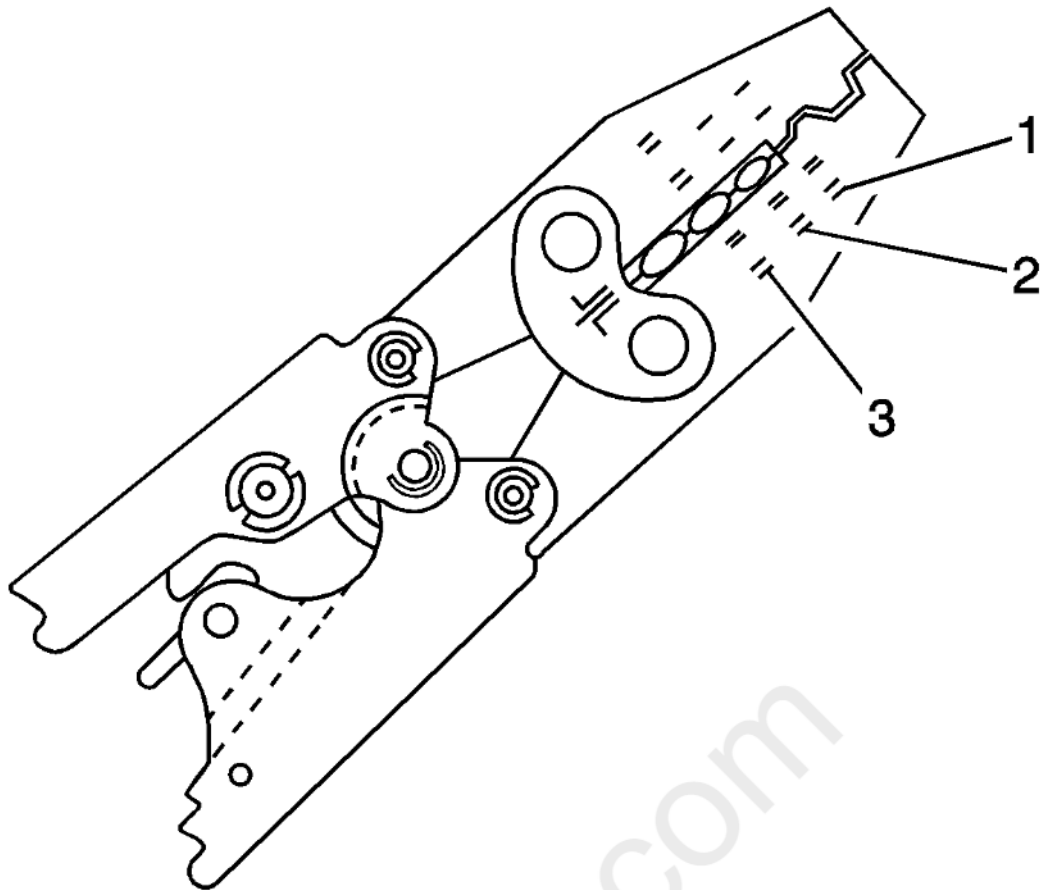


Fig. 7: Splice Sleeve Crimping Tool With 3 Crimp Nests
Courtesy of GENERAL MOTORS COMPANY

7. The **J-38125-8** splice sleeve crimping tool has three crimp nests. The largest crimp nest (3) is used for crimping 10 and 12 gauge wires. The second largest crimp nest (2) is used for crimping 14 and 16 gauge wires. The smallest crimp nest (1) is used for crimping 18 to 20 gauge wires. The crimp nests are referenced in the table (farther above) under the crimp tool nest color.
8. Use the splice sleeve crimp tool in order to position the DuraSeal splice sleeve in the proper color nest of the splice sleeve crimp tool. For the four crimp nest tool, use the three largest crimp nests to crimp the splice sleeves. For the three crimp nest tool, use all three crimp nests to crimp the splice sleeves. Use the four and three crimp tool diagrams (above) and the table (farther above) to match the splice sleeve with the correct crimp nest. The crimp tool diagram callout numbers match the numbers in the table (under crimp tool nest color).

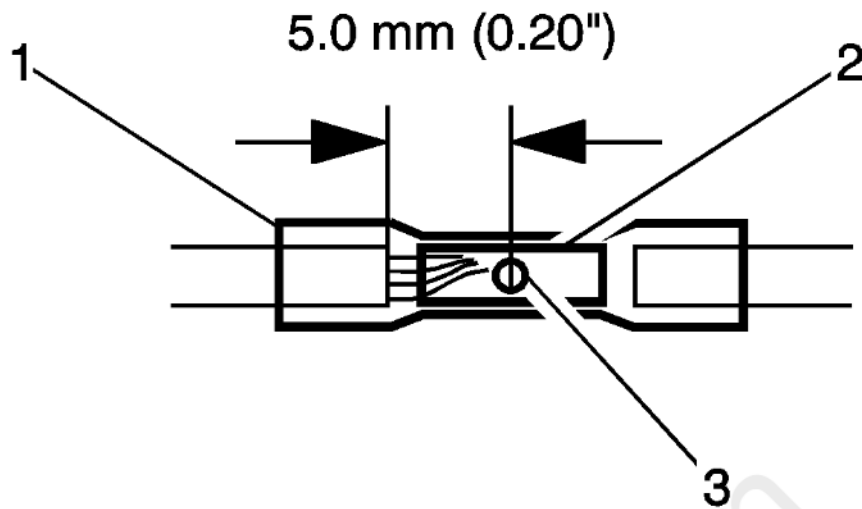


Fig. 8: Identifying Duraseal Splice Sleeve

Courtesy of GENERAL MOTORS COMPANY

9. Place the DuraSeal splice sleeve in the nest. Ensure that the crimp falls midway between the end of the barrel and the stop. The sleeve has a stop (3) in the middle of the barrel (2) in order to prevent the wire (1) from going further. Close the hand crimper handles slightly in order to firmly hold the DuraSeal splice sleeve in the proper nest.



Fig. 9: Crimped Duraseal Splice Sleeve

Courtesy of GENERAL MOTORS COMPANY

10. Insert the wire into the splice sleeve barrel until the wire hits the barrel stop. Refer to **Folded-Over Wire Repair** for splicing wires of 0.35 mm or less (22, 24, 26 gauge sizes) and for splicing wires of different gauges.
11. Tightly close the handles of the crimp tool until the crimper handles open when released.

The crimper handles will not open until you apply the proper amount of pressure to the DuraSeal splice sleeve. Repeat steps 4 and 6 for the opposite end of the splice.



Fig. 10: Crimped Duraseal Splice Sleeve
Courtesy of GENERAL MOTORS COMPANY

12. Using the heat torch, apply heat to the crimped area of the barrel.
13. Start in the middle and gradually move the heat barrel to the open ends of the tubing:
 - The tubing will shrink completely as the heat is moved along the insulation.
 - A small amount of sealant will come out of the end of the tubing when sufficient shrinkage is achieved.

Weatherpack™ Wiring Repair

NOTE: Some replacement pigtail connectors may be delivered without the terminated leads installed into the connector. For Weatherpack™ connectors, all terminated leads included in the package should to be installed into the connector. If the connector end view shows that a terminal is not occupied, the extra terminated lead(s) need to be installed and the end(s) sealed using a DuraSeal splice sleeve and taped back into the harness.

1. Insert the wire into the splice sleeve barrel until the wire hits the barrel stop. Refer to **Folded-Over Wire Repair** for splicing wires of 0.35 mm or less (22, 24, 26 gauge sizes) and for splicing wires of different gauges.

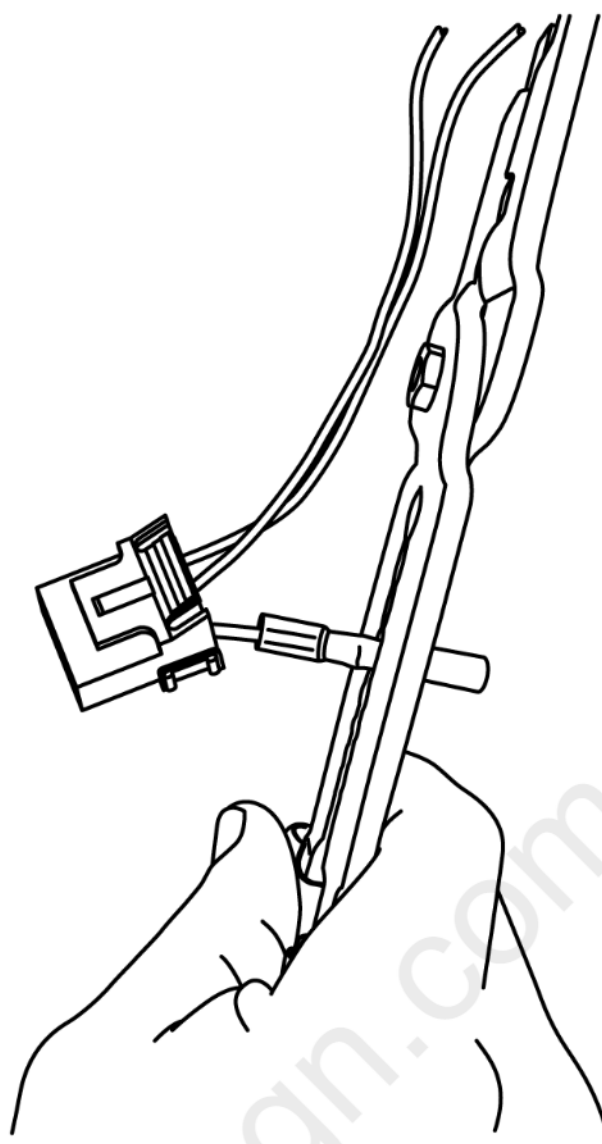


Fig. 11: Tightly Close Handles Of Crimp Tool
Courtesy of GENERAL MOTORS COMPANY

2. Tightly close the handles of the crimp tool until the crimper handles open when released.

The crimper handles will not open until you apply the proper amount of pressure to the DuraSeal splice sleeve. Holding the DuraSEAL with one hand gently tug on the wire to ensure it is crimped in the DuraSeal.

3. Using the heat torch, apply heat to the crimped area of the barrel.

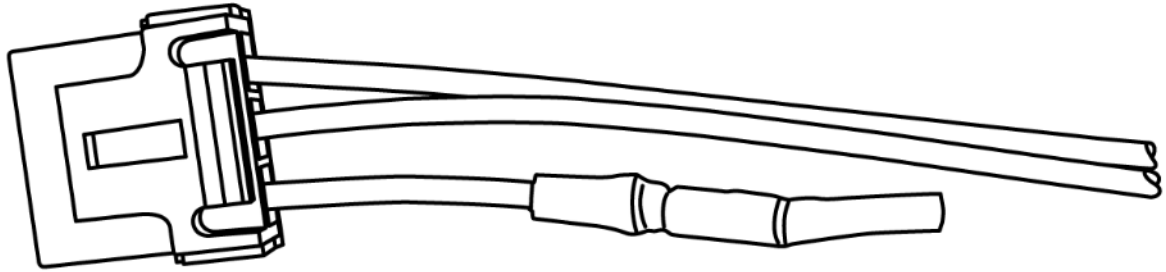


Fig. 12: Heat To Crimped Area Of Barrel

Courtesy of GENERAL MOTORS COMPANY

4. Start in the middle and gradually move the heat barrel to the open ends of the tubing:
 - The tubing will shrink completely as the heat is moved along the insulation.
 - A small amount of sealant will come out of the end of the tubing when sufficient shrinkage is achieved.



Fig. 13: Taping Extra Terminated Leads Back Into Harness
Courtesy of GENERAL MOTORS COMPANY

5. Tape the extra terminated lead(s) back into the harness.

High Temperature Wiring Repairs

Use the following procedures to perform high temperature wiring repairs:

1. Center the high temperature SCT1 shrink tube over the DuraSeal splice sleeve.
2. Using the heat torch, apply heat to the high temperature heat shrink tubing.
3. Gradually move the heat from the center to the open end of the tubing:
 - The tubing will shrink completely as the heat is moved along the insulation.
 - A small amount of sealant will come out of the end of the tubing when sufficient shrinkage is achieved.
4. Replace any reflective tape and clips that may have been removed during the repair.

CONNECTOR RECONNECTION - SEATS

Special Tools

EL-35616 Terminal Test Probe Kit

For equivalent regional tools, refer to [Special Tools](#) .

When the condition is not currently present, but is indicated in DTC history, the cause may be intermittent. An intermittent may also be the cause when there is a customer complaint, but the symptom cannot be duplicated. Refer to the Symptom Table of the system that is suspect of causing the condition before trying to locate an intermittent condition.

Most intermittent conditions are caused by faulty electrical connections or wiring. Inspect for the following items:

- Loose, corroded, or painted terminal stud/fastener
- Wiring broken inside the insulation
- Poor connection between the male and female terminal at a connector
- A terminal not seated all the way into the connector body
- Poor terminal to wire connection - Some conditions which fall under this description are poor crimps, poor solder joints, crimping over the wire insulation rather than the wire itself, and corrosion in the wire to terminal contact area, etc.
- Pierced or damaged insulation can allow moisture to enter the wiring causing corrosion. The conductor can corrode inside the insulation, with little visible evidence. Look for swollen and stiff sections of wire in the suspect circuits.
- Wiring which has been pinched, cut, or its insulation rubbed through may cause an intermittent open or short as the bare area touches other wiring or parts of the vehicle.
- Wiring that comes in contact with hot or exhaust components
- Refer to [**Inducing Intermittent Fault Conditions**](#) in order to duplicate the conditions required, in order to verify the customer concern.
- Refer to [**Testing for Electrical Intermittents**](#) for test procedures to detect intermittent open, high resistance, short to ground, and short to voltage conditions.
- Refer to [**Scan Tool Snapshot Procedure**](#) for advanced intermittent diagnosis and Vehicle Data Recorder operation.

Testing for Terminal Fretting

Some intermittent conditions can be caused by wire terminal fretting corrosion. Fretting corrosion is a build-up of insulating, oxidized wear debris that can form when there is a small motion between electrical contacts. The oxidized wear debris can pile up enough at the electrical contact spots that the electrical resistance across the connection increases. Movement between the contacting surfaces as small as 10 to 100 microns can cause fretting. To put this in perspective, a sheet of paper is about 100 microns thick, so fretting motion is small and hard to see. Vibration and thermal expansion/contraction are the main sources that create fretting motion. Since vehicles vibrate and can experience large temperature swings, they are a good source for fretting motion. Tin, copper, nickel, and iron surfaces are all susceptible to fretting corrosion. Fretting corrosion can be difficult to see but it looks like small, dark smudges on the terminals contact surface.

To correct a fretting condition disconnect the suspect connector and add dielectric grease / lubricant (Nyogel 760G or equivalent, meeting GM specification 9986087) to both sides of the connector terminals. Then reconnect the connector and wipe away any excess lubricant. This will correct the additional terminal contact resistance due to the terminal fretting corrosion.

Testing for Proper Terminal Contact

It is important to test terminal contact at the component and any inline connectors before replacing a suspect component. Mating terminals must be inspected to ensure good terminal contact. A poor connection between the male and female terminal at a connector may be the result of contamination or deformation.

Contamination may be caused by the connector halves being improperly connected. A missing or damaged connector seal, damage to the connector itself, or exposing the terminals to moisture and dirt can also cause contamination. Contamination, usually in the underhood or underbody connectors, leads to terminal corrosion, causing an open circuit or intermittently open circuit.

Deformation is caused by probing the mating side of a connector terminal without the proper adapter. Always use the **EL-35616** kit when probing connectors. Other causes of terminal deformation are improperly joining the connector halves, or repeatedly separating and joining the connector halves. Deformation, usually to the female terminal contact tang, can result in poor terminal contact causing an open or intermittently open circuit.

Testing for Proper Terminal Contact in Bussed Electrical Centers

It is very important to use the correct test adapter when testing for proper terminal contact of fuses and relays in a bussed electrical center. Use the **EL-35616** kit to test for proper terminal contact. Failure to use the **EL-35616** kit can result in improper diagnosis of the bussed electrical center.

Follow the procedure below in order to test terminal contact:

1. Separate the connector halves.
2. Visually inspect the connector halves for contamination. Contamination may result in a white or green build-up within the connector body or between terminals. This causes high terminal resistance, intermittent contact, or an open circuit. An underhood or underbody connector that shows signs of contamination should be replaced in its entirety: terminals, seals, and connector body.
3. Using an equivalent male terminal/terminated lead, verify that the retention force is significantly different between a known good terminal and the suspect terminal. Replace the female terminal in question.

Flat Wire Connectors

There are no serviceable parts for flat wire connectors on the harness side or the component side.

Follow the procedure below in order to test terminal contact:

1. Remove the component in question.
2. Visually inspect each side of the connector for signs of contamination. Avoid touching either side of the connector as oil from your skin may be a source of contamination as well.
3. Visually inspect the terminal bearing surfaces of the flat wire circuits for splits, cracks, or other imperfections that could cause poor terminal contact. Visually inspect the component side connector to ensure that all of the terminals are uniform and free of damage or deformation.
4. Insert the appropriate adapter into the flat wire harness connector in order to test the circuit in question.

Control Module/Component Voltage and Grounds

Poor voltage or ground connections can cause widely varying symptoms.

- Test all control module voltage supply circuits. Many vehicles have multiple circuits supplying voltage to a control module. Other components in the system may have separate voltage supply circuits that may also need to be tested. Inspect connections at the module/component connectors, fuses, and any intermediate connections between the voltage source and the module/component. A test lamp or a DMM may indicate that voltage is present, but neither tests the ability of the circuit to carry sufficient current. Operate the component to test the ability of the circuit to carry sufficient current. Refer to [Circuit Testing](#) , and [Power Distribution Schematics](#) .
- Test all control module ground and system ground circuits. The control module may have multiple ground circuits. Other components in the system may have separate grounds that may also need to be tested. Inspect grounds for clean and tight connections at the grounding point (screw or stud). Inspect the connections at the component and in splice packs, where applicable. Operate the component to test the ability of the circuit to carry sufficient current. Refer to [Circuit Testing](#) , and [Ground Distribution Schematics](#) .

Temperature Sensitivity

- An intermittent condition may occur when a component/connection reaches normal operating temperature. The condition may occur only when the component/connection is cold, or only when the component/connection is hot.
- Freeze Frame, Failure Records, Snapshot, or Vehicle Data Recorder data may help with this type of intermittent condition, where applicable.
- If the intermittent is related to heat, review the data for a relationship with the following:
 - High ambient temperatures
 - Underhood/engine generated heat
 - Circuit generated heat due to a poor connection, or high electrical load

- Higher than normal load conditions, towing, etc.
- If the intermittent is related to cold, review the data for the following:
 - Low ambient temperatures - In extremely low temperatures, ice may form in a connection or component. Inspect for water intrusion.
 - The condition only occurs on a cold start.
 - The condition goes away when the vehicle warms up.
- Information from the customer may help to determine if the trouble follows a pattern that is temperature related.
- If temperature is suspected of causing an intermittent fault condition, attempt to duplicate the condition. Refer to [Inducing Intermittent Fault Conditions](#) in order to duplicate the conditions required.

Electromagnetic Interference and Electrical Noise

Some electrical components/circuits are sensitive to electromagnetic interference or other types of electrical noise. Inspect for the following conditions:

- A mis-routed harness that is too close to high voltage/high current devices such as secondary ignition components, motors, generator etc. - These components may induce electrical noise on a circuit that could interfere with normal circuit operation.
- Electrical system interference caused by a malfunctioning relay, or a control module driven solenoid or switch - These conditions can cause a sharp electrical surge. Normally, the condition will occur when the malfunctioning component is operating.
- Installation of non-factory or aftermarket add on accessories such as lights, 2-way radios, amplifiers, electric motors, remote starters, alarm systems, cell phones, etc. - These accessories may create interference in other circuits while operating and the interference would disappear when the accessory is not operating. Refer to [Checking Aftermarket Accessories](#).
- Test for an open diode across the A/C compressor clutch and for other open diodes. Some relays may contain a clamping diode.
- The generator may be allowing AC noise into the electrical system.

Incorrect Control Module

- There are only a few situations where reprogramming a control module is appropriate:
 - A new service control module is installed.
 - A control module from another vehicle is installed.
 - Revised software/calibration files have been released for this vehicle.

NOTE: **DO NOT re-program the control module with the SAME software/calibration files that are already present in the control module. This is not an effective repair for any type of concern.**

- Verify that the control module contains the correct software/calibration. If incorrect programming is found, reprogram the control module with the most current software/calibration. Refer to [Control Module References](#) for replacement, setup, and programming.

DRIVER OR PASSENGER SEAT ADJUSTER SWITCH REPLACEMENT (MULTIPLE)

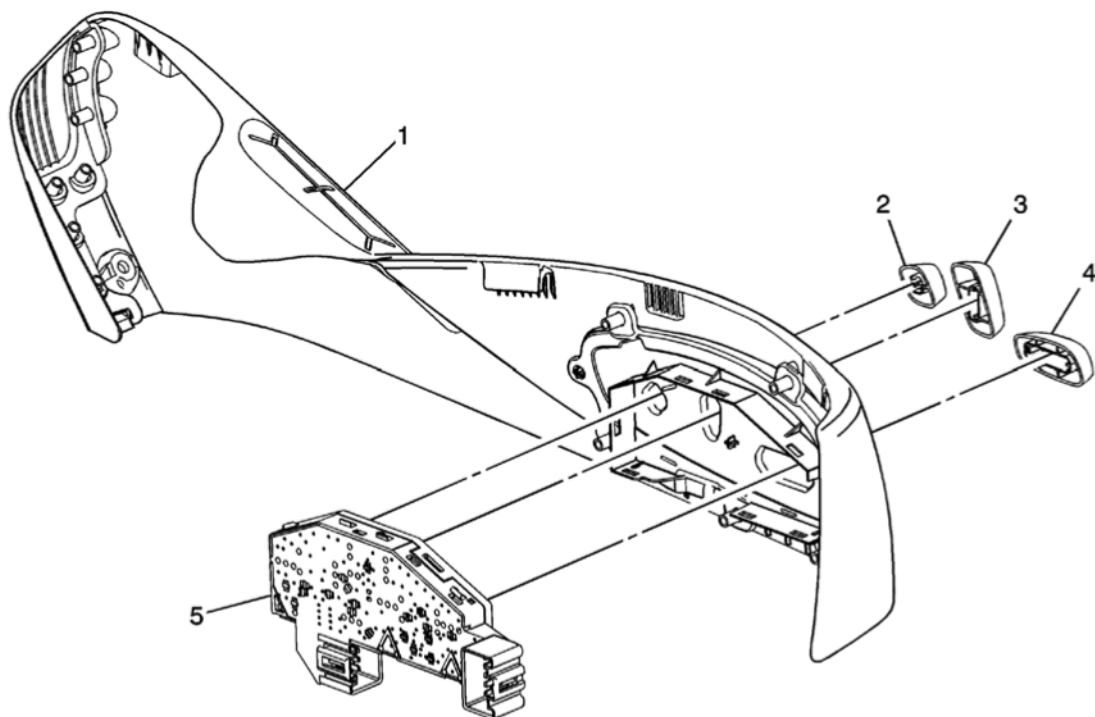


Fig. 14: Driver or Passenger Seat Adjuster Switch (Multiple)

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure	
Remove the front seat cushion outer finish cover. Refer to Front Seat Cushion Outer Finish Cover Replacement .	
1	Front Seat Cushion Outer Finish Cover
2	Driver or Passenger Seat Lumbar Support Actuator Knob
3	Front Seat Recliner Knob
4	Front Seat Adjuster Knob
5	Driver or Passenger Seat Adjuster Switch
Procedure	
Use a flat-bladed tool to release the switch from the finish cover.	

DRIVER OR PASSENGER SEAT ADJUSTER SWITCH REPLACEMENT (VERTICAL)

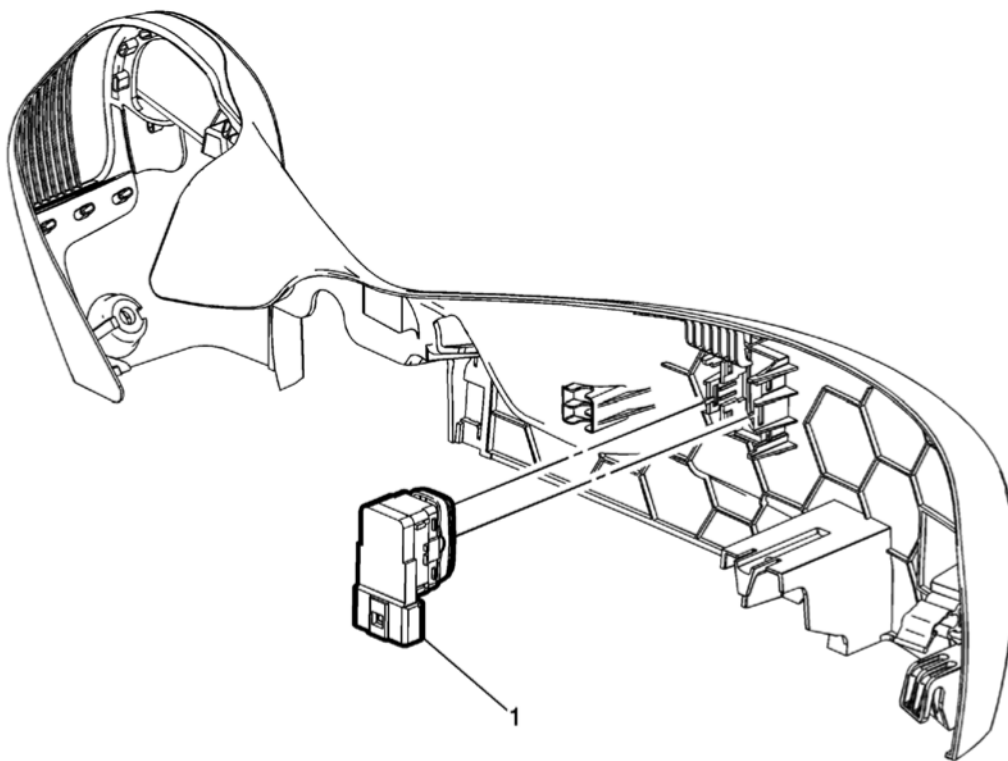


Fig. 15: Driver or Passenger Seat Adjuster Switch Knob (Vertical)

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove the driver or passenger seat outer recliner finish cover. Refer to Front Seat Cushion Outer Finish Cover Replacement .	
1	Driver or Passenger seat Adjuster Switch Knob NOTE: Use a flat-bladed tool to release the switch from the finish cover.

DRIVER SEAT ADJUSTER MEMORY SWITCH REPLACEMENT

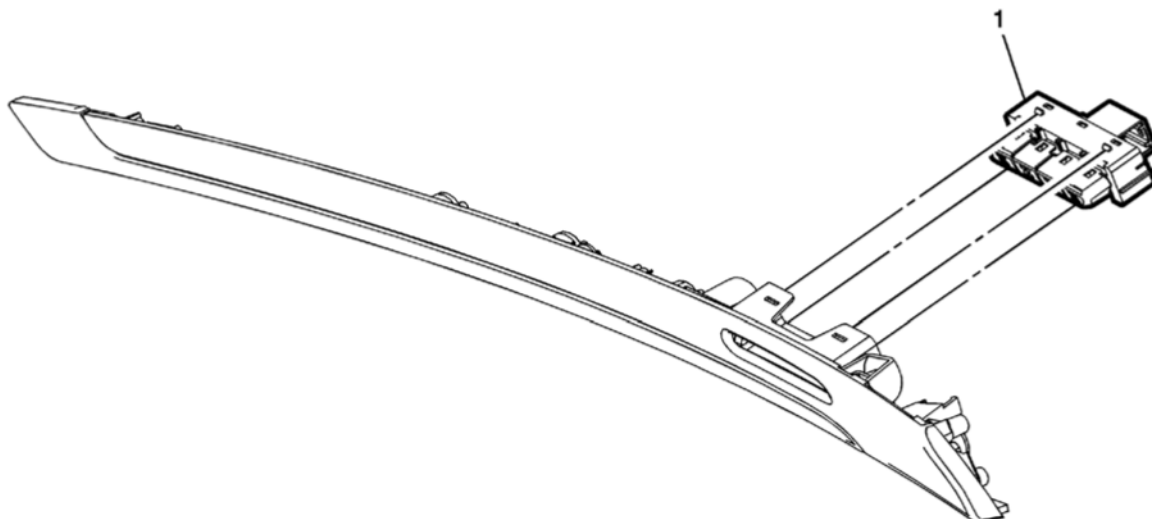


Fig. 16: Driver Seat Adjuster Memory Switch
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure 1. Remove front side door trim. Refer to Front Side Door Trim Replacement . 2. Remove the front side door trim panel finish panel applique. Refer to Front Side Door Trim Finish Panel Applique Replacement .	
1	Driver Seat Adjuster Memory Switch Procedure 1. Disconnect the electrical connector. 2. Release the integral tabs on the top and bottom of the switch and remove from the front side door trim panel finish panel applique.

DRIVER OR PASSENGER SEAT ADJUSTER MEMORY MODULE REPLACEMENT

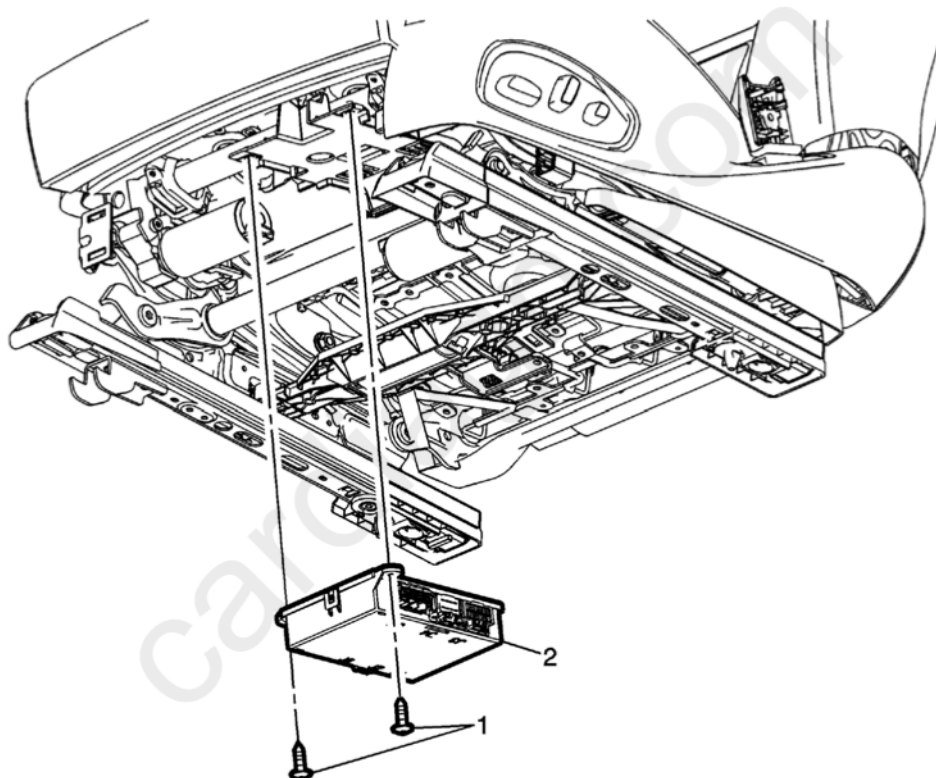


Fig. 17: Driver or Passenger Seat Adjuster Memory Module
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove the front seat. Refer to Driver or Passenger Seat Removal and Installation .	
1	Driver or Passenger Seat Adjuster Memory Module Fastener (Qty: 2) CAUTION: Refer to Fastener Caution .

Callout	Component Name
2	Driver or Passenger Seat Adjuster Memory Module Procedure 1. Disconnect the electrical connectors. 2. Remove the module from the adjuster memory and wiring harness bracket. 3. Refer to Control Module References for programing and setup information.

FRONT SEAT TILT ADJUSTER ACTUATOR REPLACEMENT

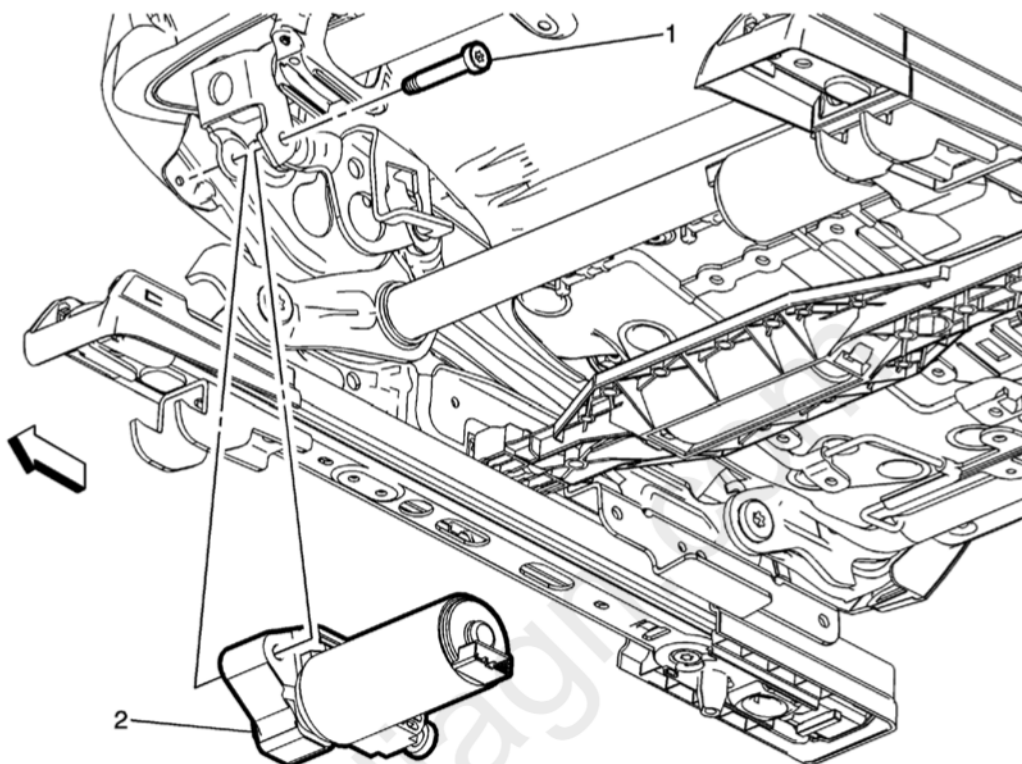


Fig. 18: Front Seat Tilt Adjuster Actuator
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove the front seat. Refer to Driver or Passenger Seat Removal and Installation .	
1	Front Seat Tilt Adjuster Actuator Bolt CAUTION: Refer to Fastener Caution . Procedure 1. Set the seat to it's highest position. 2. Use a hammer and small round tool to tap the bolt out from the actuator. Tighten 42 N.m (31 lb ft)

Callout	Component Name
2	Front Seat Tilt Adjuster Actuator Procedure 1. Disconnect the electrical connector. 2. Rotate the actuator downward and slide the actuator ball nut out of the bracket.

DRIVER OR PASSENGER SEAT LUMBAR CONTROL SWITCH REPLACEMENT

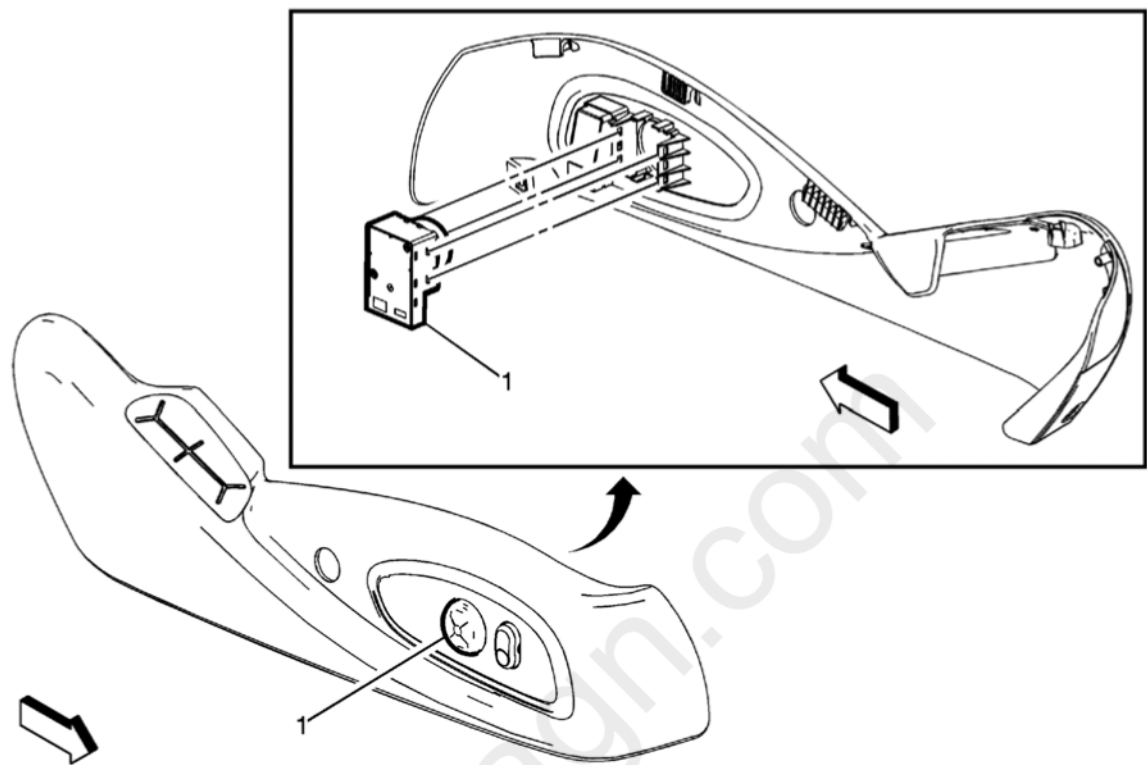


Fig. 19: Driver or Passenger Seat Lumbar Control Switch
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove the front seat cushion outer finish cover. Refer to Front Seat Cushion Outer Finish Cover Replacement .	
1	Driver or Passenger Seat Lumbar Control Switch Procedure Use a flat-bladed tool to release the lumbar control switch from the outer recliner cover.

DRIVER OR PASSENGER SEAT RECLINER ACTUATOR REPLACEMENT

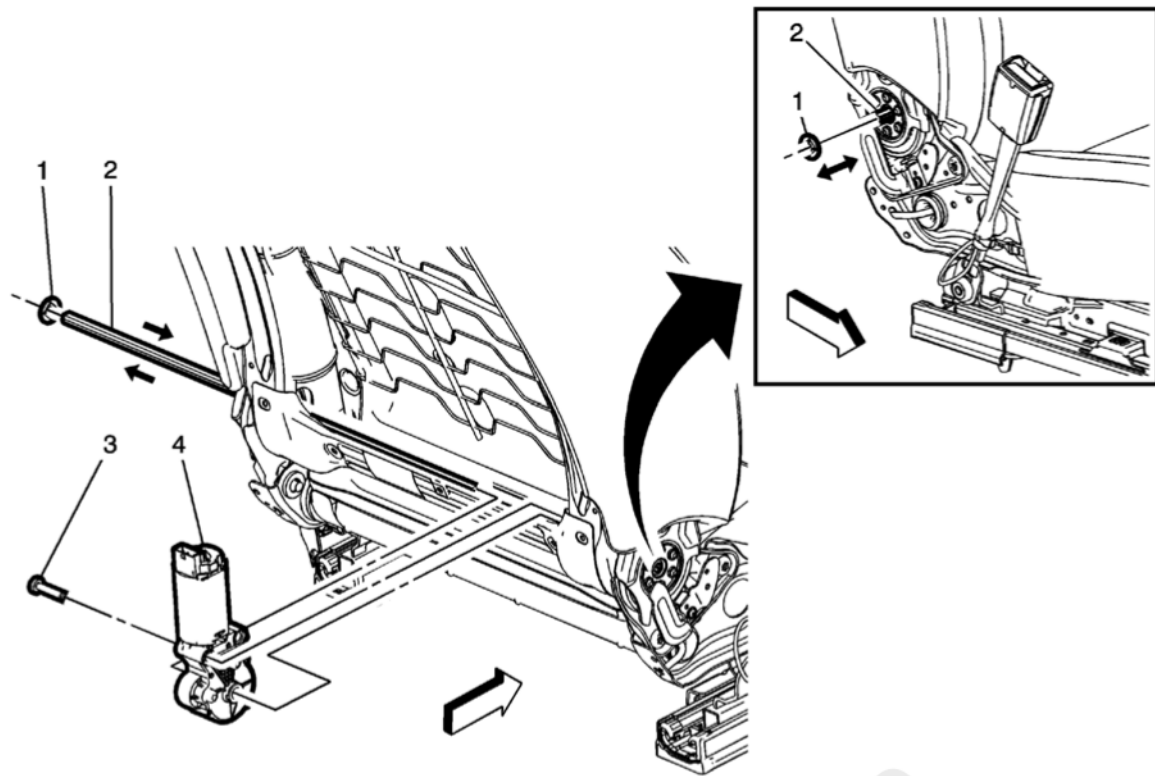


Fig. 20: Driver or Passenger Seat Recliner Actuator
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
WARNING: Refer to SIR Warning .	
Preliminary Procedure 1. Remove the driver or passenger seat. Refer to Driver or Passenger Seat Removal and Installation . 2. Remove driver or passenger seat inner recliner finish cover. Refer to Driver or Passenger Seat Inner Recliner Finish Cover Replacement . 3. Remove front seat cushion outer finish cover. Refer to Front Seat Cushion Outer Finish Cover Replacement . 4. Remove the front seat inner and outer recliner attachment bracket, if equipped.	
1	Front Seat Recliner Rod Jam Nut NOTE: Replace with new rod jam nut.
2	Recliner Rod Procedure Gently tap the recliner rod outward until the rod is free of the recliner motor.
3	Front Seat Recliner Actuator Motor Fastener CAUTION: Refer to Fastener Caution . Procedure Disconnect the electric connector. Tighten 6 N.m (53 lb in)
4	Front Seat Recliner Actuator Motor

FRONT SEAT BACK WIRING HARNESS REPLACEMENT



Fig. 21: Front Seat Back Wiring Harness
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
WARNING: Refer to SIR Warning . Preliminary Procedures 1. SIR Disabling and Enabling 2. Driver or Passenger Seat Removal and Installation 3. Driver or Passenger Seat Back Cover and Pad Replacement	
1	Front Seat Back Wiring Harness NOTE: Typical wiring harness shown, individual harness may be different due to option content.

FRONT SEAT CUSHION WIRING HARNESS REPLACEMENT

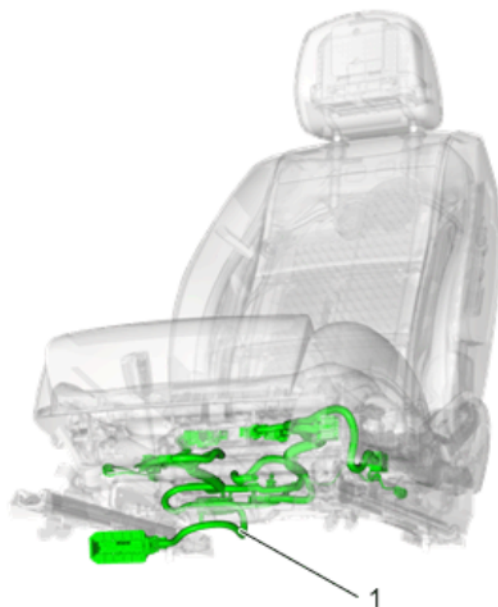


Fig. 22: Front Seat Cushion Wiring Harness
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
WARNING: Refer to SIR Warning . Preliminary Procedures SIR Disabling and Enabling Driver or Passenger Seat Removal and Installation	
1	Front Seat Cushion Wiring Harness NOTE: Typical wiring harness shown, individual harness may be different due to option content.

DESCRIPTION AND OPERATION

LUMBAR SUPPORT DESCRIPTION AND OPERATION (WITHOUT MEMORY A45)

Lumbar Support Components

The driver and front passenger seat pneumatic lumbar support system each consist of the following components:

- Seat Lumbar support switch
- Seat lumbar support pump

Circuit Description

When the lumbar forward switch is pressed to inflate the lumbar support, battery voltage is applied through the switch contacts and the inflate control circuit to the seat lumbar support pump. The pump energizes its internal inflate solenoid and the pump runs to inflate the lumbar bladder until the switch is released. When the lumbar rearward switch is pressed to deflate the lumbar support, battery voltage is

applied through the switch contacts and the deflate control circuit to the lumbar support pump. The lumbar pump energizes its internal deflate solenoid and air is released from the bladder until the bladder is 100% deflated or the switch is released.

LUMBAR SUPPORT DESCRIPTION AND OPERATION (WITH MEMORY A45)

Lumbar Support Components

The driver seat pneumatic lumbar support system consists of the following components:

- Seat Lumbar support switch
- Seat memory control module
- Seat lumbar support pump

Circuit Description

Ground is supplied at all times to the driver seat adjuster switch through the switch ground circuit and ground connection. The seat memory control module supplies a low current voltage to each signal circuit of the driver seat adjuster switch. When the lumbar forward switch is pressed to increase the lumbar support, the lumbar forward signal circuit from the seat memory control module is pulled low through the switch contacts indicating the lumbar inflate command. The seat memory control module then applies battery voltage through the lumbar forward control circuit to the seat lumbar support pump. The internal inflate solenoid is energized and the pump runs to inflate the lumbar bladder until the switch is released. When the lumbar rearward switch is pressed to deflate the lumbar support, the lumbar rearward signal circuit from the seat memory control module is pulled low through the switch contacts indicating the lumbar deflate command. The seat memory control module then applies battery voltage through the deflate control circuit to the lumbar support pump. The pump energizes its internal deflate solenoid and air is released from the bladder until the bladder is 100% deflated or the switch is released.

MEMORY SEATS DESCRIPTION AND OPERATION

The memory seat system consists of the following components:

- K40 Seat memory control module
- S64 Driver seat adjuster switch
- S47 Driver seat memory switch
- M51 Driver seat horizontal motor with position sensor
- M50 Driver seat front vertical motor with position sensor
- M55 Driver seat rear vertical motor with position sensor
- M65 Driver seat recline motor with position sensor

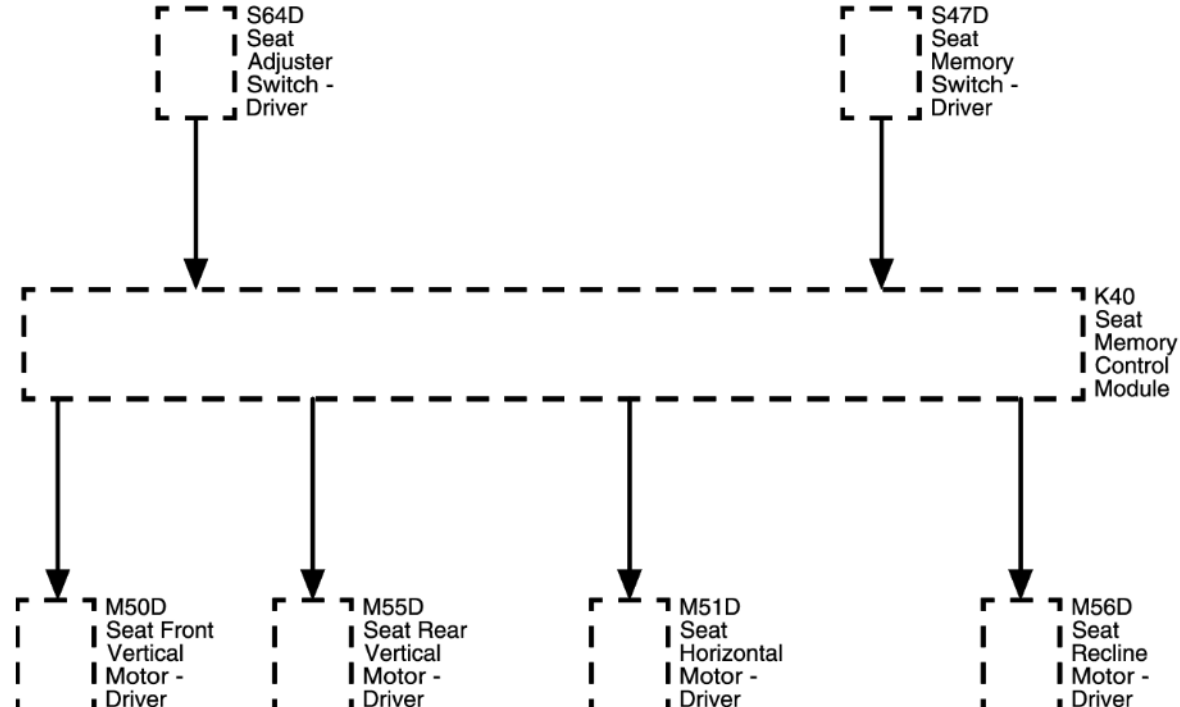


Fig. 23: Memory Seat Block Diagram

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
S64D	S64D Seat Adjuster Switch - Driver
S47D	S47D Seat Memory Switch - Driver
K40	K40 Seat Memory Control Module
M56D	M56D Seat Recline Motor - Driver
M51D	M51D Seat Horizontal Motor - Driver
M55D	M55D Seat Rear Vertical Motor - Driver
M50D	M50D Seat Front Vertical Motor - Driver

Driver Seat Adjuster Switch

The seat memory control module supplies a low current voltage to each signal circuit of the seat adjuster switch. When the driver seat adjuster switches are pressed, the appropriate signal circuit from the seat memory control module is pulled low through the switch contacts indicating the power seat command. The seat memory control module then commands the appropriate driver seat motor to move in response to the switch signal.

Seat Memory Control Module Power and Grounds

Battery voltage is supplied at all times to the seat memory control module through two different circuits. One circuit is used by the module to apply power to the driver seat motors and lumbar motors, if equipped, when commanded ON. The second battery voltage circuit is used to power up module and supply a reference voltage to the seat position sensors. Ground is provided to the seat memory control module through a single ground circuit and ground connection.

Seat Motors

There are 4 motors that move the position of the seat. These are the seat horizontal motor, seat front vertical motor, seat rear vertical motor, and the seat back recline motor. The horizontal motor moves the entire seat forward and rearward. The seat front vertical motor moves the front of the seat cushion up or down. The seat rear vertical motor moves the rear of the seat cushion up and down. Due to the seat adjuster switch design the front tilt and the seat height adjuster motor cannot be operated at the same time. The recline motor moves the angle of the seat back forward or rearward.

The seat memory control module controls all seat and lumbar motors via half bridges that are connected to a single power rail internal to the module. The module connects all seat and lumbar motor outputs to a common ground whenever they are not in operation. The seat memory control module checks to see if any motor control circuits are shorted to ground or voltage before enabling any seat or lumbar motor. All of the motors operate independently of each other. Each motor contains a electronic circuit breaker (PTC), which will reset only after voltage has been removed from the motor.

All seat motors are reversible. For example, when a seat switch is pressed to move the entire seat forward, ground is applied through the switch contacts onto the seat horizontal forward switch signal circuit to the seat memory control module. In response to this signal, the module applies battery voltage through the driver seat horizontal motor forward control circuit and ground through the driver seat horizontal motor rearward control circuit to the motor. The motor runs in order to drive the entire seat forward. Moving the entire seat rearward works similarly to moving the entire seat forward, except that battery voltage and ground are applied on the opposite circuits causing the motor to run in the opposite direction. All of the motors are powered this way.

Position Sensors

To monitor seat position, each seat motor has an internal 2-wire hall-effect position sensor. The seat memory control module supplies all the sensors with a common 12 V reference when the seat is moving and a unique signal circuit for each sensor. During seat motor operation, the position sensors provide a specific number of pulse signals for every revolution of the motor shaft.

The seat memory control module determines seat position by keeping a running counter where movement in the forward/upward direction adds counts and movement in the rearward/down direction subtracts counts. The value of the counter will be in the range of 0 - 65, 535

The value of these counters, which represent seat positions, are stored in memory for future seat memory recall operation. During a memory seat position recall, the seat memory control module moves the seat in such a way to return it the stored counter value.

Memory Functions

In all power modes except crank, memory recalls can be initiated by pressing and holding one of the memory position buttons until the seat reaches the stored memory position associated with the activated button. This is called a supervised recall.

The seat memory control module supplies a ground at all times through a low reference circuit to the driver seat memory switch. The module also supplies memory set and memory recall signal circuits to the seat memory switch. When a memory recall switch is pressed, the signal circuit from the seat memory control module is pulled low through the switch contacts and a series of resistors indicating the memory recall request. In response to this signal, the seat memory control module commands the appropriate seat motors to move to the pre-recorded seat positions stored in memory.

Refer to the Owner's Manual for storing memory positions.

Auto Memory Recall and Easy Exit

The seat memory control module will not perform Auto Memory Seat Recall and Easy Exit functions unless these options are enabled in vehicle personalization using the radio/HVAC controls.

Refer to Instruments and Controls/Vehicle Personalization in the Owner's Manual for the following memory personalization options:

- Auto Memory Recall
- Easy Exit Options

The radio/HVAC controls reports the auto memory recall option settings to the seat memory control module via serial data message. The module will then store the memory recall option setting and examine it before making a memory seat adjustment. The auto memory recall option setting stored within the module will not change until the auto memory recall option setting in vehicle personalization is changed.

POWER SEATS SYSTEM DESCRIPTION AND OPERATION

The driver and passenger 8-way power seat systems each consist of the following components:

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

The 2-way power seat system consists of a seat adjuster switch and a seat vertical motor.

NOTE: The passenger seat block diagram is identical to the driver seat.

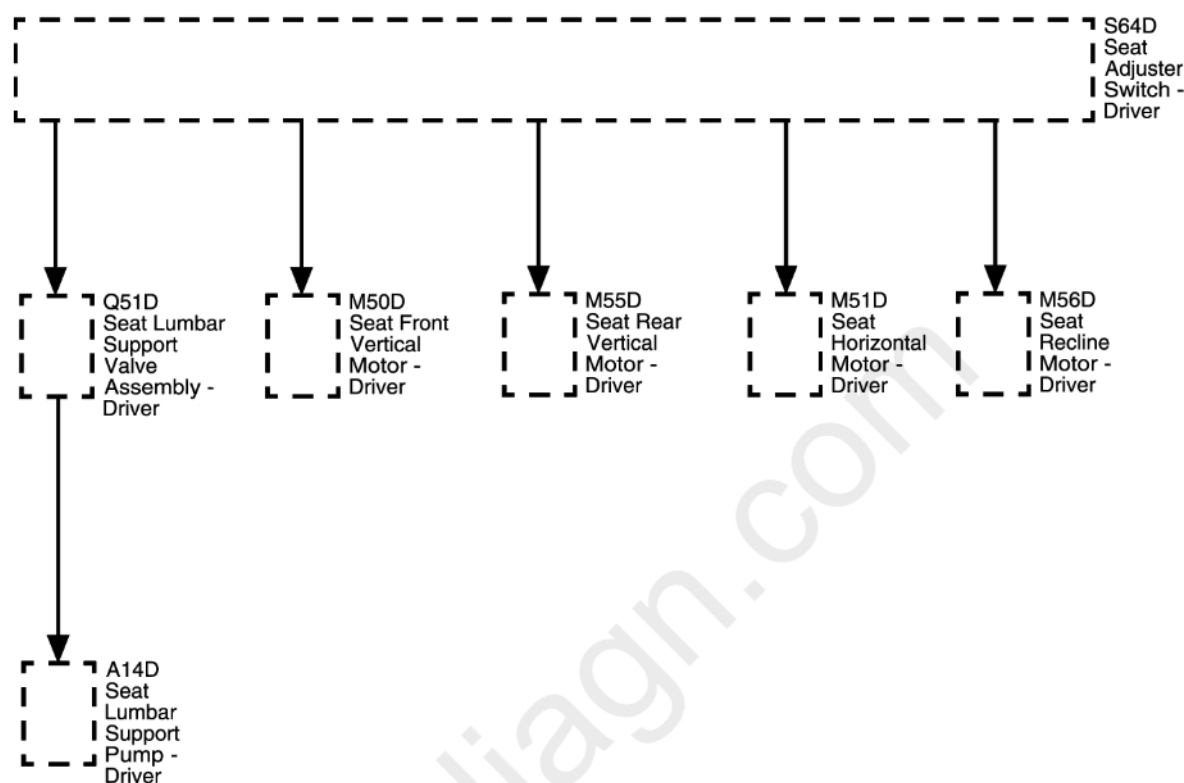


Fig. 24: Power Seat Without Memory - Passenger Seat Identical to Driver Seat Block Diagram
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
S64D	S64D Seat Adjuster Switch - Driver
M56D	M56D Seat Recline Motor - Driver
M51D	M51D Seat Horizontal Motor - Driver
M55D	M55D Seat Rear Vertical Motor - Driver
M50D	M50D Seat Front Vertical Motor - Driver
Q51D	Q51D Seat Lumbar Support Valve Assembly - Driver
A14D	A14D Seat Lumbar Support Pump - Driver

Seat 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 four seat position motors and two lumbar motors. These are the horizontal motor, front vertical motor, rear vertical motor, and the seat back recline motor. The seat 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. The recline motor moves the angle of the seat back forward or rearward.

Seat Operation

The seat switches provide both power and ground to the selected seat motors.

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 forward 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 voltage and ground are applied on opposite circuits causing the motor to run in the opposite direction. All seat motors are powered this way.

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