

2017 ACCESSORIES & EQUIPMENT

Seat Heating and Cooling - Encore, Trax

SCHEMATIC WIRING DIAGRAMS

HEATED/COOLED SEAT WIRING SCHEMATICS (BUICK)

Heated Seats (Buick with KA1 without AAG)

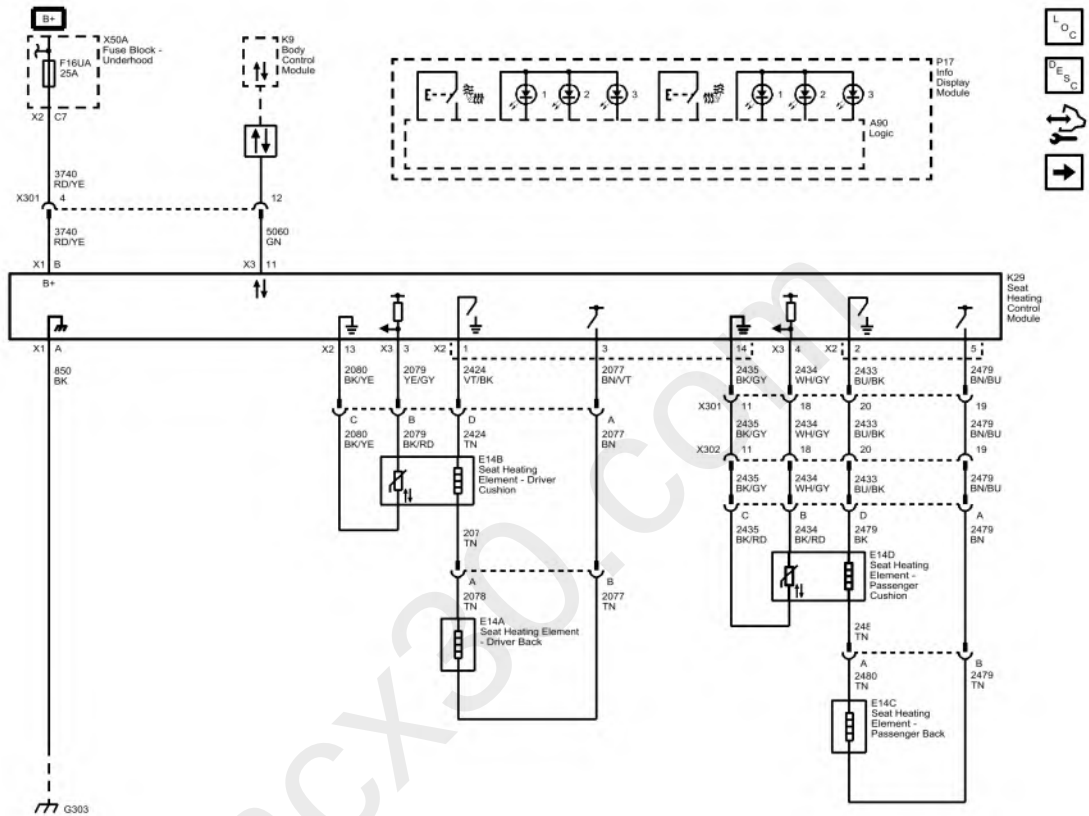


Fig. 1: Heated Seats (Buick with KA1 without AAG)
Courtesy of GENERAL MOTORS COMPANY

Heated Seats (Buick with KA1 with AAG)

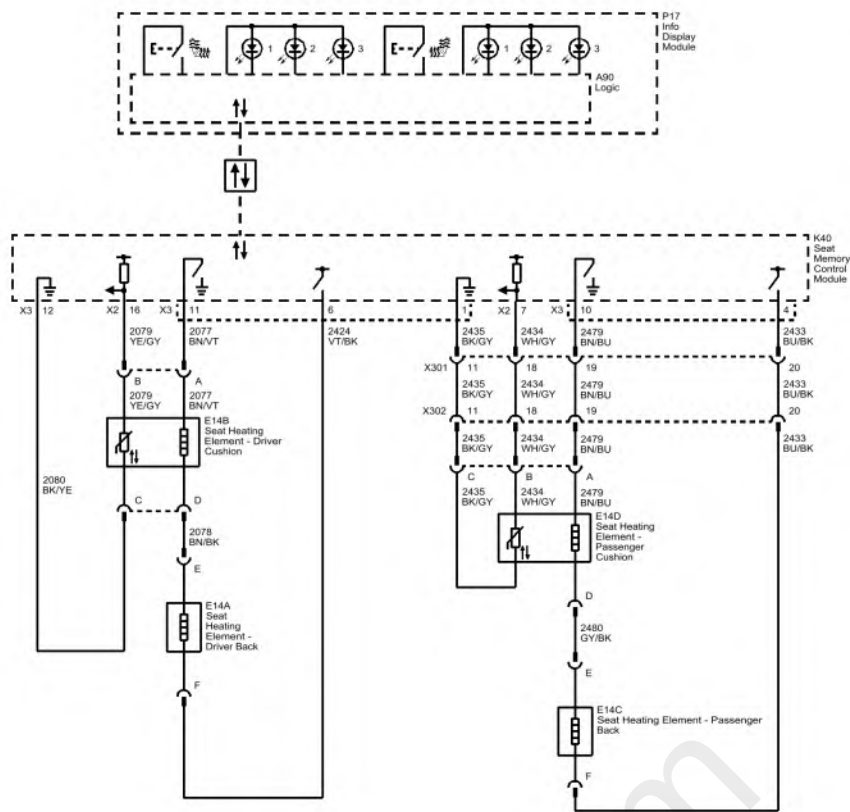


Fig. 2: Heated Seats (Buick with KA1 with AAG)
Courtesy of GENERAL MOTORS COMPANY

HEATED/COOLED SEAT WIRING SCHEMATICS (CHEVROLET)

Heated Seats (Chevrolet with KA1)

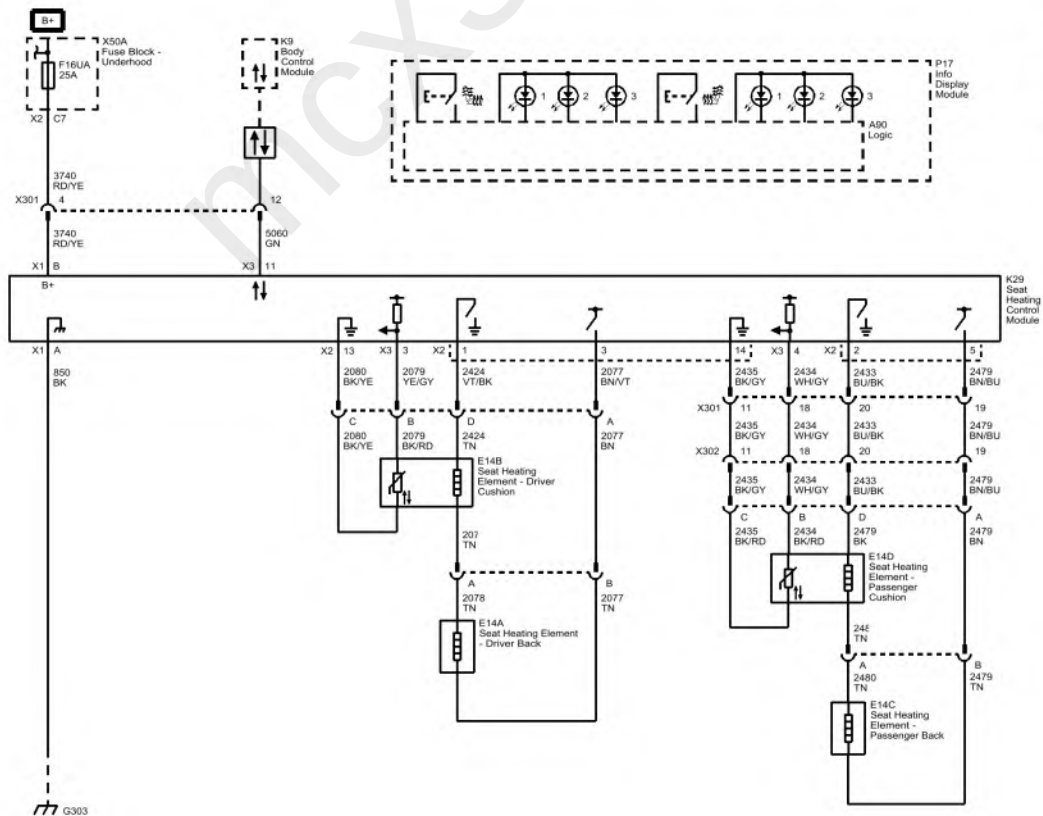


Fig. 3: Heated Seats (Chevrolet with KA1)
Courtesy of GENERAL MOTORS COMPANY

DTC B1925 OR B2170: DRIVER SEAT CUSHION HEATER SENSOR (WITHOUT MEMORY AAG)

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 B1925 02

Driver Seat Cushion Heater Sensor Circuit Short to Ground

DTC B1925 05

Driver Seat Cushion Heater Sensor Circuit High Voltage/Open

DTC B2170 02

Passenger Seat Cushion Heater Sensor Circuit Short to Ground

DTC B2170 05

Passenger Seat Cushion Heater Sensor Circuit High Voltage/Open

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Driver Heated Seat Element Control Terminal 3 X2	B242A 02	B2425 0D	B242A 01	B2425 0B, B2425 0E
Driver Heated Seat Element Control Terminal 1 X2	B242A 02	B2425 0D	B242A 01	B2425 0B, B2425 0E
Driver Heated Seat Cushion Temperature Sensor Signal	B1925 02	B1925 05	B1925 05	B2345 13
Driver Heated Seat Cushion Temperature Sensor Low Reference	-	B1925 05	-	B2345 13
Passenger Heated Seat Element Control Terminal 5 X2	B242A 02	B2430 0D	B242A 01	B2430 0B, B2430 0E
Passenger Heated Seat Element Control Terminal 2 X2	B242A 02	B2430 0D	B242A 01	B2430 0B, B2430 0E
Passenger Heated Seat Cushion Temperature Sensor Signal	B2170 02	B2170 05	B2170 05	B2345 13
Passenger Heated Seat Cushion Temperature Sensor Low Reference	-	B2170 05	-	B2345 13

Circuit/System Description

The heated seat temperature sensor is located in the seat cushion just under the seat cover with the seat heating element. The seat heating control module supplies a 5 V reference voltage through the temperature sensor signal circuit and a ground through the low reference circuit to the sensor. The module monitors the voltage of the sensor signal circuit to determine the temperature of the seat. The temperature sensor varies in resistance based on the temperature of the heating element causing the signal voltage to change. Once the seat reaches the set temperature, the module will then cycle the

control circuit of the heating elements ON and OFF in order to maintain the desired seat temperature based on the feedback voltage from the sensor.

Conditions for Running the DTC

- DTC B1325 must not be present.
- The seat heating control module must be powered.

Conditions for Setting the DTC

B1925 02 or B2170 02

The temperature sensor voltage drops below 0.6 V for more than 1 s.

B1925 05 or B2170 05

The temperature sensor voltage is greater than 5 V for more than 1 s.

Action Taken When the DTC Sets

The heated seat function for the affected seat will be disabled.

Conditions for Clearing the DTC

- The current DTC will clear and set the code to history 3 s after the reference voltage returns to normal operating range 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.

Reference Information

Schematic Reference

[Heated/Cooled Seat Schematics \(Buick\)](#)[Heated/Cooled Seat Schematics \(Chevrolet\)](#)

Connector End View Reference

[COMPONENT CONNECTOR END VIEWS - INDEX \(ENCORE\)](#) [COMPONENT CONNECTOR END VIEWS - INDEX \(TRAX\)](#)

Description and Operation

[Heated 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 and all vehicle systems OFF, disconnect the harness connector at the appropriate E14 Seat Heating Element - Cushion. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 10 Ω between the low reference circuit terminal C and ground.
 - **If 10 Ω or greater**
 1. Ignition OFF, disconnect the X2 harness connector at the K29 Seat Heating 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 K29 Seat Heating Control Module.
- **If less than 10 Ω**
3. Ignition ON.
4. Test for 4.8-5.2 V between the signal circuit terminal B and ground.
 - **If less than 4.8 V**
 1. Ignition OFF, disconnect the X3 harness connector at the K29 Seat Heating 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 K29 Seat Heating Control Module.
 - **If greater than 5.2 V**
 1. Ignition OFF, disconnect the X3 harness connector at the K29 Seat Heating 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, replace the K29 Seat Heating Control Module.
 - **If between 4.8-5.2 V**
5. Test or replace the E14 Seat Heating Element - Cushion.

Component Testing

Seat Cushion Heating Element

1. Ignition OFF, disconnect the harness connector at the appropriate E14 Seat Heating Element - Cushion.
2. Test for 500 Ω -300 k Ω between the signal circuit terminal B and the low reference circuit terminal C.
 - **If not between 500 Ω -300 k Ω**

Replace the E14 Seat Heating Element - Cushion.
 - **If between 500 Ω -300 k Ω**
3. All OK.

Repair Instructions

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

- [Front Seat Cushion Heater Replacement](#)
- [Control Module References](#) for K29 Seat Heating Control Module replacement, programming and setup

DTC B1925 OR B2170: DRIVER SEAT CUSHION HEATER SENSOR (WITH MEMORY AAG)

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 B1925 02

Driver Seat Cushion Heater Sensor Circuit Short to Ground

DTC B1925 05

Driver Seat Cushion Heater Sensor Circuit High Voltage/Open

DTC B2170 02

Passenger Seat Cushion Heater Sensor Circuit Short to Ground

DTC B2170 05

Passenger Seat Cushion Heater Sensor Circuit High Voltage/Open

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Seat Memory Control Module B+ Terminal 5	B242A 02, B2425 0D, B2430 0D, 1, 2	B242A 02, B2425 0D, B2430 0D, 1, 2	-	-
Driver Heated Seat Element Control Terminal 11 X3	B242A 02	B2425 0D	B242A 01	B2425 0E
Driver Heated Seat Element Control Terminal 6 X3	B242A 02	B2425 0D	B242A 01	B2425 0E
Driver Heated Seat Temperature Sensor Signal	B1925 02	B1925 05	B1925 05	-
Driver Heated Seat Temperature Sensor Low Reference	-	B1925 05	-	-
Passenger Heated Seat Element Control Terminal 10 X3	B242A 02	B2430 0D	B242A 01	B2430 0E
Passenger Heated Seat Element Control Terminal 4 X3	B242A 02	B2430 0D	B242A 01	B2430 0E
Passenger Heated Seat Temperature Sensor Signal	B2170 02	B2170 05	B2170 05	-
Passenger Heated Seat Temperature Sensor Low Reference	-	B2170 05	-	-
1. Power seats inoperative 2. Heated seats inoperative				

Circuit/System Description

The heated seat temperature sensor is located in the seat cushion just under the seat cover with the seat heating element. The seat memory control module supplies a 5 V reference voltage through the temperature sensor signal circuit and a ground through the low reference circuit to the sensor. The module monitors the voltage of the sensor signal circuit to determine the temperature of the seat. The temperature sensor varies in resistance based on the temperature of the heating element causing the signal voltage to change. Once the seat reaches the set temperature, the module will then cycle the control circuit of the heating elements ON and OFF in order to maintain the desired seat temperature based on the feedback voltage from the sensor.

Conditions for Running the DTC

- DTC B1325 must not be present.

- The seat memory control module must be powered.

Conditions for Setting the DTC

B1925 02 or B2170 02

The temperature sensor voltage drops below 0.6 V for more than 1 s.

B1925 05 or B2170 05

The temperature sensor voltage is greater than 5 V for more than 1 s.

Action Taken When the DTC Sets

The heated seat function for the affected seat will be disabled.

Conditions for Clearing the DTC

- The current DTC will clear and set the code to history 3 s after the reference voltage returns to normal operating range 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.

Reference Information

Schematic Reference

Heated/Cooled Seat Schematics (Buick)Heated/Cooled Seat Schematics (Chevrolet)

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX (ENCORE) COMPONENT CONNECTOR END VIEWS - INDEX (TRAX)

Description and Operation

Heated 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 and all vehicle systems OFF, disconnect the harness connector at the appropriate E14B or E14D Seat Heating Element - Cushion. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 10 Ω between the low reference circuit terminal C and ground.
 - **If 10 Ω or greater**
 1. Ignition OFF, disconnect the X3 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 10 Ω**
3. Ignition ON.

4. Test for 4.8-5.2 V between the signal circuit terminal B and ground.

- **If less than 4.8 V**

1. Ignition OFF, disconnect the X2 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 5.2 V**

1. Ignition OFF, disconnect the X2 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, replace the K40 Seat Memory Control Module.

- **If between 4.8-5.2 V**

5. Test or replace the E14 Seat Heating Element - Cushion.

Component Testing

Seat Cushion Heating Element

1. Ignition OFF, disconnect the harness connector at the appropriate E14B or E14D Seat Heating Element - Cushion.
2. Test for 500 Ω -300 k Ω between the signal circuit terminal B and the low reference circuit terminal C.
 - **If not between 500 Ω -300 k Ω**

Replace the E14 Seat Heating Element - Cushion.
 - **If between 500 Ω -300 k Ω**
3. All OK.

Repair Instructions

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

- [Driver or Passenger Seat Back Heater Replacement](#)
- [Front Seat Cushion Heater Replacement](#)
- [Control Module References](#) for K40 Seat Memory Control Module replacement, programming and setup

DTC B2345: SEAT HEATER DISABLE CIRCUIT LOW VOLTAGE/HIGH TEMPERATURE (WITHOUT MEMORY AAG)

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 B2345 13

Seat Heater Disable Circuit Low Voltage/High Temperature

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Driver Heated Seat Element Control Terminal 3 X2	B242A 02	B2425 0D	B242A 01	B2425 0B, B2425 0E
Driver Heated Seat Element Control Terminal 1 X2	B242A 02	B2425 0D	B242A 01	B2425 0B, B2425 0E
Driver Heated Seat Cushion Temperature Sensor Signal	B1925 02	B1925 05	B1925 05	B2345 13
Driver Heated Seat Cushion Temperature Sensor Low Reference	-	B1925 05	-	B2345 13
Passenger Heated Seat Element Control Terminal 5 X2	B242A 02	B2430 0D	B242A 01	B2430 0B, B2430 0E
Passenger Heated Seat Element Control Terminal 2 X2	B242A 02	B2430 0D	B242A 01	B2430 0B, B2430 0E
Passenger Heated Seat Cushion Temperature Sensor Signal	B2170 02	B2170 05	B2170 05	B2345 13
Passenger Heated Seat Cushion Temperature Sensor Low Reference	-	B2170 05	-	B2345 13

Circuit/System Description

The heated seat temperature sensor is located in the seat cushion just under the seat cover with the seat heating element. The seat heating control module supplies a 5 V reference voltage through the temperature sensor signal circuit and a ground through the low reference circuit to the sensor. The module monitors the voltage of the sensor signal circuit to determine the temperature of the seat. The temperature sensor varies in resistance based on the temperature of the heating element causing the signal voltage to change. Once the seat reaches the set temperature, the module will then cycle the control circuit of the heating elements ON and OFF in order to maintain the desired seat temperature based on the feedback voltage from the sensor.

Conditions for Running the DTC

The seat heating control module must be powered.

Conditions for Setting the DTC

B2345 13

Any temperature sensor input that remains below 1.5 V for more than 1 s.

Action Taken When the DTC Sets

The heated seat function for both seats will be disabled.

Conditions for Clearing the DTC

- The current DTC will clear and set the code to history 3 s after the reference voltage returns to the normal operating range 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.

Reference Information

Schematic Reference

[Heated/Cooled Seat Schematics \(Buick\)](#)[Heated/Cooled Seat Schematics \(Chevrolet\)](#)

COMPONENT CONNECTOR END VIEWS - INDEX (ENCORE), COMPONENT CONNECTOR END VIEWS - INDEX (TRAX)

Description and Operation

Heated 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 X2 and X3 harness connectors at the K29 Seat Heating Control Module.
2. Test for greater than 3.0 k Ω between the signal and the low reference circuit terminals listed below:
 - Driver seat cushion terminal 3 X3 and terminal 13 X2
 - Passenger seat cushion terminal 4 X3 and terminal 14 X2
 - **If less than 3.0 k Ω**
 1. Ignition OFF, disconnect the harness connector at the appropriate E14 Seat Heating Element - Cushion.
 2. Test for Infinite resistance between the signal and low reference circuits.
 - If less than infinite resistance, repair the short between the circuits.
 - If infinite resistance, test or replace the E14 Seat Heating Element - Cushion.
 - **If greater than 3.0 k Ω**
3. Replace the K29 Seat Heating Control Module.

Repair Instructions

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

- **Front Seat Cushion Heater Replacement**
- **Control Module References** for K29 Seat Heating Control Module replacement, setup and programming

DTC B2345: SEAT HEATER DISABLE CIRCUIT LOW VOLTAGE HIGH/TEMPERATURE (WITH MEMORY AAG)

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 B2345 13

Seat Heater Disable Circuit Low Voltage High/Temperature

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Seat Memory Control Module B+ Terminal 5 X4	B242A 02, B2425 0D, B2430 0D, 1, 2	B242A 02, B2425 0D, B2430 0D, 1, 2	-	-
Driver Heated Seat Element Control Terminal 11 X3	B242A 02	B2425 0D	B242A 01	B2425 0E
Driver Heated Seat Element Control Terminal 6 X3	B242A 02	B2425 0D	B242A 01	B2425 0E
Driver Heated Seat Temperature Sensor Signal	B1925 02	B1925 05	B1925 05	B2345 13
Driver Heated Seat Temperature Sensor Low Reference	-	B1925 05	-	B2345 13
Passenger Heated Seat Element Control Terminal 10 X3	B242A 02	B2430 0D	B242A 01	B2430 0E
Passenger Heated Seat Element Control Terminal 4 X3	B242A 02	B2430 0D	B242A 01	B2430 0E
Passenger Heated Seat Temperature Sensor Signal	B2170 02	B2170 05	B2170 05	B2345 13
Passenger Heated Seat Temperature Sensor Low Reference	-	B2170 05	-	B2345 13
1. Power seats inoperative 2. Heated seats inoperative				

Circuit/System Description

The seat memory control module controls seat heating operation for both the driver and front passenger seats. The heating elements are controlled through individual high side and low side control circuits. The low side control circuits for both seats are connected to a common reference point internal to the module. This reference point is biased to approximately 2.5 V. Before the seat memory control module will allow heated seat operation, it checks to see if this biased voltage is shorted to ground or voltage. Once the module verifies that it is not closing to a shorted heating element, it allows for heated seat operation. The module will then continue to monitor the heating elements for a shorted circuit.

Conditions for Running the DTC

The seat memory control module must be powered.

Conditions for Setting the DTC

B2345 13

Any temperature sensor input that remains below 1.5 V for more than 1 s.

Action Taken When the DTC Sets

The heated seat function for both front seats will be disabled.

Conditions for Clearing the DTC

- The current DTC will clear and set the code to history 3 s after the reference voltage returns to the normal operating range 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.

Reference Information

[Heated/Cooled Seat Schematics \(Buick\)](#)[Heated/Cooled Seat Schematics \(Chevrolet\)](#)

Connector End View Reference

[COMPONENT CONNECTOR END VIEWS - INDEX \(ENCORE\)](#) [COMPONENT CONNECTOR END VIEWS - INDEX \(TRAX\)](#)

Description and Operation

[Heated 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 X2 and X3 harness connectors at the K40 Seat Memory Control Module.
2. Test for greater than 3.0 k Ω between the signal and the low reference circuits listed below:
 - E14B driver seat cushion terminal 16 X2 and terminal 12 X3
 - E14D passenger seat cushion terminal 7 X2 and terminal 1 X3
 - **If less than 3.0 k Ω**
 1. Ignition OFF, disconnect the harness connector at the appropriate E14B or E14D Seat Heating Element - Cushion.
 2. Test for Infinite resistance between the signal and low reference circuits.
 - If less than infinite resistance, repair the short between the circuits.
 - If infinite resistance, test or replace the E14 Seat Heating Element - Cushion.
 - **If greater than 3.0 k Ω**
3. Replace the K40 Seat Memory Control Module.

Component Testing

Seat Cushion Heating Element

1. Ignition OFF, disconnect the harness connector at the appropriate E14B or E14D Seat Heating Element - Cushion.
2. Test for 500 Ω -300 k Ω between the signal circuit terminal B and the low reference circuit terminal C.
 - **If not between 500 Ω -300 k Ω**

Replace the E14 Seat Heating Element - Cushion.
 - **If between 500 Ω -300 k Ω**
3. All OK.

Repair Instructions

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

- [Front Seat Cushion Heater Replacement](#)

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

DTC B2425 OR B2430: DRIVER/PASSENGER SEAT CUSHION HEATER (WITHOUT MEMORY AAG)

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 B2425 0B

Driver Seat Cushion Heater Circuit High Current

DTC B2425 0D

Driver Seat Cushion Heater Circuit High Resistance

DTC B2425 0E

Driver Seat Cushion Heater Circuit Low Resistance

DTC B2430 0B

Passenger Seat Cushion Heater Circuit High Current

DTC B2430 0D

Passenger Seat Cushion Heater Circuit High Resistance

DTC B2430 0E

Passenger Seat Cushion Heater Circuit Low Resistance

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Driver Heated Seat Element Control Terminal 3 X2	B242A 02	B2425 0D	B242A 01	B2425 0B, B2425 0E
Driver Heated Seat Element Control Terminal 1 X2	B242A 02	B2425 0D	B242A 01	B2425 0B, B2425 0E
Driver Heated Seat Cushion Temperature Sensor Signal	B1925 02	B1925 05	B1925 05	B2345 13
Driver Heated Seat Cushion Temperature Sensor Low Reference	-	B1925 05	-	B2345 13
Passenger Heated Seat Element Control Terminal 5 X2	B242A 02	B2430 0D	B242A 01	B2430 0B, B2430 0E
Passenger Heated Seat Element Control Terminal 2 X2	B242A 02	B2430 0D	B242A 01	B2430 0B, B2430 0E
Passenger Heated Seat Cushion Temperature Sensor Signal	B2170 02	B2170 05	B2170 05	B2345 13

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Passenger Heated Seat Cushion Temperature Sensor Low Reference	-	B2170 05	-	B2345 13

Circuit/System Description

The driver and front passenger heated seats are controlled by the seat heating control module that is located under the driver seat cushion. When the heated seat is active, the module applies power through a common voltage supply circuit to the seat heater elements. The module controls the seat temperature by providing a pulse width modulation (PWM) ground through the seat heater element control circuit to the heater element. The module then monitors the current flow through the heating element and the rate of change of the temperature sensor to verify correct heated seat operation.

Conditions for Running the DTC

- DTC B1325 must not be present.
- Engine must be ON.
- The seat heating control module must be powered and the heated seat must be enabled.

Conditions for Setting the DTC

B2425 0D or B2430 0D

The seat heating control module measures the current and voltage output to the seat heating element every 60 s. If the module calculates that the heating element resistance is above maximum resistance, it does another re-check 10 s later before it sets this DTC.

B2425 0B, B2425 0E, B2430 0B, or B2430 0E

The seat heating control module measures the current and voltage output to the seat heating element every 60 s. If the module calculates that the heating element resistance is below minimum resistance, it does another re-check 10 s later before it sets this DTC and disables heated seat operation.

Action Taken When the DTC Sets

The heated seat function for the affected seat will be disabled.

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

[Heated/Cooled Seat Schematics \(Buick\)](#)[Heated/Cooled Seat Schematics \(Chevrolet\)](#)

Connector End View Reference

[COMPONENT CONNECTOR END VIEWS - INDEX \(ENCORE\)](#) [COMPONENT CONNECTOR END VIEWS - INDEX \(TRAX\)](#)

Description and Operation

[Heated 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

B2425 0B, B2425 0D, or B2425 0E

1. Ignition OFF, disconnect the harness connector at the E14A Seat Heating Element - Driver Back.

NOTE: Element resistance must be measured twice to ensure that all failure conditions are simulated. First with the seat unoccupied, then with the seat occupied.

2. Test for 0.5-2.0 Ω between control circuit terminal A and control circuit terminal B.

- If not between 0.5-2.0 Ω

Replace the E14A Seat Heating Element - Driver Back.

- If between 0.5-2.0 Ω

3. Connect the harness connector at the E14A Seat Heating Element - Driver Back and disconnect the X2 harness connector at the K29 Seat Heating Control Module.

NOTE: Element resistance must be measured twice to ensure that all failure conditions are simulated. First with the seat unoccupied, then with the seat occupied.

4. Test for 1-5 Ω between control circuit terminal 3 and control circuit terminal 1.

- If less than 1 Ω

1. Ignition OFF, disconnect the harness connector at the E14B Seat Heating Element - Driver Cushion.

2. Test for infinite resistance between the control circuits.

- If less than infinite resistance, repair the short between the circuits.
- If infinite resistance, test or replace the E14B Seat Heating Element - Driver Cushion.

- If greater than 5 Ω

1. Ignition OFF, disconnect the harness connector at the E14B Seat Heating Element - Driver Cushion.

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 , test or replace the E14B Seat Heating Element - Driver Cushion.

- If between 1-5 Ω

5. Replace the K29 Seat Heating Control Module.

B2430 0B, B2430 0D, or B2430 0E

1. Ignition OFF, disconnect the harness connector at the E14C Seat Heating Element - Passenger Back.

NOTE: Element resistance must be measured twice to ensure that all failure conditions are simulated. First with the seat unoccupied, then with the seat occupied.

2. Test for 0.5-2.0 Ω between control circuit terminal A and control circuit terminal B.

- If not between 0.5-2.0 Ω

Replace the E14C Seat Heating Element - Passenger Back.

- **If between 0.5-2.0 Ω**

3. Connect the harness connector at the E14C Seat Heating Element - Passenger Back and disconnect the X2 harness connector at the K29 Seat Heating Control Module.

NOTE: Element resistance must be measured twice to ensure that all failure conditions are simulated. First with the seat unoccupied, then with the seat occupied.

4. Test for 1-5 Ω between control circuit terminal 5 and control circuit terminal 2.

- **If less than 1 Ω**

1. Ignition OFF, disconnect the harness connector at the E14D Seat Heating Element - Passenger Cushion.

2. Test for infinite resistance between the control circuits.

- If less than infinite resistance, repair the short between the circuits.
- If infinite resistance, test or replace the E14D Seat Heating Element - Passenger Cushion.

- **If greater than 5 Ω**

1. Ignition OFF, disconnect the harness connector at the E14D Seat Heating Element - Passenger Cushion.

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 , test or replace the E14D Seat Heating Element - Passenger Cushion.

- **If between 1-5 Ω**

5. Replace the K29 Seat Heating Control Module.

Repair Instructions

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

- [Front Seat Cushion Heater Replacement](#)
- [Control Module References](#) for K29 Seat Heating Control Module replacement, programming and setup

DTC B2425 OR B2430: DRIVER/PASSENGER SEAT CUSHION HEATER (WITH MEMORY AAG)

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 B2425 0B

Driver Seat Cushion Heater Circuit High Current

DTC B2425 0D

Driver Seat Cushion Heater Circuit High Resistance

DTC B2425 0E

Driver Seat Cushion Heater Circuit Low Resistance

DTC B2430 0B

DTC B2430 0D

Passenger Seat Cushion Heater Circuit High Resistance

DTC B2430 0E

Passenger Seat Cushion Heater Circuit Low Resistance

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Seat Memory control Module B+ Terminal 5 X4	B242A 02, B2425 0D, B2430 0D, 1, 2	B242A 02, B2425 0D, B2430 0D, 1, 2	-	-
Driver Heated Seat Element Control Terminal 11 X3	B242A 02	B2425 0D	B242A 01	B2425 0E
Driver Heated Seat Element Control Terminal 6 X3	B242A 02	B2425 0D	B242A 01	B2425 0E
Driver Heated Seat Temperature Sensor Signal	B1925 02	B1925 05	B1925 05	-
Driver Heated Seat Temperature Sensor Low Reference	-	B1925 05	-	-
Passenger Heated Seat Element Control Terminal 10 X3	B242A 02	B2430 0D	B242A 01	B2430 0E
Passenger Heated Seat Element Control Terminal 4 X3	B242A 02	B2430 0D	B242A 01	B2430 0E
Passenger Heated Seat Temperature Sensor Signal	B2170 02	B2170 05	B2170 05	-
Passenger Heated Seat Temperature Sensor Low Reference	-	B2170 05	-	-
1. Power seats inoperative 2. Heated seats inoperative				

Circuit/System Description

The driver and front passenger heated seats are controlled by the seat memory control module that is located under the driver seat cushion. When the heated seat is active, the module applies power through a common voltage supply circuit to the seat heater elements. The module controls the seat temperature by providing a pulse width modulation (PWM) ground through the seat heater element control circuit to the heater elements. The module then monitors the current flow through the heating elements and the rate of change of the temperature sensor to verify correct heated seat operation.

Conditions for Running the DTC

- DTC B1325 must not be present.
- The seat memory control module must be powered and the heated seat must be enabled.

Conditions for Setting the DTC**B2425 0D or B2430 0D**

By measuring current and voltage output to the seat heating elements every 10 s, the seat memory control module calculates that the heating element resistance is above the maximum resistance.

B2425 0B, B2425 0E, B2430 0B, or B2430 0E

By measuring current and voltage output to the seat heating elements every 10 s, the seat memory control module calculates that the heating element resistance is below the minimum resistance.

Action Taken When the DTC Sets

The heated seat function for the affected seat will be disabled.

Conditions for Clearing the DTC

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

Reference Information

Schematic Reference

Heated/Cooled Seat Schematics (Buick)Heated/Cooled Seat Schematics (Chevrolet)

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX (ENCORE) COMPONENT CONNECTOR END VIEWS - INDEX (TRAX)

Description and Operation

Heated 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

B2425 0B, B2425 0D, or B2425 0E

1. Ignition OFF, disconnect the X4 harness connector at the K40 Seat Memory Control Module, ignition ON.
2. Verify a test lamp illuminates between the B+ circuit terminal 5 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 fuse is not open and there is voltage at the fuse.
 - **If the test lamp illuminates**
3. Ignition OFF, connect the X4 harness connector at the K40 Seat Memory Control Module and disconnect the harness connector at the E14A Seat Heating Element - Driver Back.

NOTE: Element resistance must be measured twice to ensure that all failure conditions are simulated. First with the seat unoccupied, then with the seat occupied.

4. Test for 0.5-2.0 Ω between control circuit terminal A and control circuit terminal B.

- **If not between 0.5-2.0 Ω**

Replace the E14A Seat Heating Element - Driver Back.

- **If between 0.5-2.0 Ω**

5. Connect the harness connector at the E14A Seat Heating Element - Driver Back and disconnect the X3 harness connector at the K40 Seat Memory Control Module.

6. Test for 1-5 Ω between control circuit terminal 11 and control circuit terminal 6.

- **If less than 1 Ω**

1. Ignition OFF, disconnect the harness connector at the E14B Seat Heating Element - Driver Cushion.

2. Test for infinite resistance between the control circuits.

- If less than infinite resistance, repair the short between the circuits.
- If infinite resistance, test or replace the E14B Seat Heating Element - Driver Cushion.

- **If greater than 5 Ω**

1. Ignition OFF, disconnect the harness connector at the E14B Seat Heating Element - Driver Cushion.

2. Test for less than 2 Ω in the control circuits 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 E14B Seat Heating Element - Driver Cushion.

- **If between 1-5 Ω**

7. Replace the K40 Seat Memory Control Module.

B2430 0B, B2430 0D, or B2430 0E

1. Ignition OFF, disconnect the X4 harness connector at the K40 Seat Memory Control Module, ignition ON.

2. Verify a test lamp illuminates between the B+ circuit terminal 5 and ground.

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

1. Ignition OFF.

2. 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 fuse is not open and there is voltage at the fuse.

- **If the test lamp illuminates**

3. Ignition OFF, connect the X4 harness connector at the K40 Seat Memory Control Module and disconnect the harness connector at the E14C Seat Heating Element - Passenger Back.

NOTE: Element resistance must be measured twice to ensure that all failure conditions are simulated. First with the seat unoccupied, then with the seat occupied.

4. Test for 0.5-2.0 Ω between control circuit terminal A and control circuit terminal B.

- **If not between 0.5-2.0 Ω**

Replace the E14C Seat Heating Element - Passenger Back.

- **If between 0.5-2.0 Ω**

5. Connect the harness connector at the E14C Seat Heating Element - Passenger Back and disconnect the X3 harness connector at the K40 Seat Memory Control Module.

6. Test for 1-5 Ω between control circuit terminal 10 and control circuit terminal 4.

- **If less than 1 Ω**
 1. Ignition OFF, disconnect the harness connector at the E14D Seat Heating Element - Passenger Cushion.
 2. Test for infinite resistance between the control circuits.
 - If less than infinite resistance, repair the short between the circuits.
 - If infinite resistance, test or replace the E14D Seat Heating Element - Passenger Cushion.
 - **If greater than 5 Ω**
 1. Ignition OFF, disconnect the harness connector at the E14D Seat Heating Element - Passenger Cushion.
 2. Test for less than 2 Ω in the control circuits 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 E14D Seat Heating Element - Passenger Cushion.
 - **If between 1-5 Ω**
7. Replace the K40 Seat Memory Control Module.

Repair Instructions

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

- [Driver or Passenger Seat Back Heater Replacement](#)
- [Front Seat Cushion Heater Replacement](#)
- [Control Module References](#) for K40 Seat Memory Control Module replacement, programming and setup

DTC B242A: SEAT HEATERS COMMON (WITHOUT MEMORY AAG)

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 B242A 01

Seat Heaters Common Circuit Short to Battery

DTC B242A 02

Seat Heaters Common Circuit Short to Ground

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Driver Heated Seat Element Control Terminal 3 X2	B242A 02	B2425 0D	B242A 01	B2425 0B, B2425 0E
Driver Heated Seat Element Control Terminal 1 X2	B242A 02	B2425 0D	B242A 01	B2425 0B, B2425 0E
Driver Heated Seat Cushion Temperature Sensor Signal	B1925 02	B1925 05	B1925 05	B2345 13
Driver Heated Seat Cushion Temperature Sensor Low Reference	-	B1925 05	-	B2345 13
Passenger Heated Seat Element Control Terminal 5 X2	B242A 02	B2430 0D	B242A 01	B2430 0B, B2430 0E

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Passenger Heated Seat Element Control Terminal 2 X2	B242A 02	B2430 0D	B242A 01	B2430 0B, B2430 0E
Passenger Heated Seat Cushion Temperature Sensor Signal	B2170 02	B2170 05	B2170 05	B2345 13
Passenger Heated Seat Cushion Temperature Sensor Low Reference	-	B2170 05	-	B2345 13

Circuit/System Description

The seat heating control module controls the seat heating operation for both the driver and front passenger seats. The module controls the heating element through individual high side and low side control circuits. The low side control circuits for both seats are connected to a common reference point internal to the module. This reference point is biased to approximately 2.5 V. Before the seat heating control module will allow heated seat operation, it checks to see if this biased voltage is shorted to ground or voltage. Once the module verifies that it is not closing to a shorted heating element, it allows for heated seat operation. The module then continues to monitor the heating elements for a shorted circuit.

Conditions for Running the DTC

- DTC B1325 must not be present.
- The seat heating control module must be powered.

Conditions for Setting the DTC

B242A 01

The seat heating control module detects a short to voltage on the heater element control circuits.

B242A 02

The seat heating control module detects a short to ground on the heater element control circuits.

Action Taken When the DTC Sets

The heated seat function for both seats will be disabled.

Conditions for Clearing the DTC

- The current DTC will clear and set a history code 3 s after the reference voltage returns to normal operating range 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.

Reference Information

Schematic Reference

[Heated/Cooled Seat Schematics \(Buick\)](#)[Heated/Cooled Seat Schematics \(Chevrolet\)](#)

Connector End View Reference

[COMPONENT CONNECTOR END VIEWS - INDEX \(ENCORE\)](#) [COMPONENT CONNECTOR END VIEWS - INDEX \(TRAX\)](#)

Description and Operation

[Heated 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 X2 harness connector at the K29 Seat Heating Control Module.
2. Test for infinite resistance between each control circuit terminal listed below and ground:
 - Terminal 1
 - Terminal 2
 - **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 the control circuit terminals listed below and ground:
 - Terminal 1
 - Terminal 2
 - **If 1 V or greater**

Repair the short to voltage on the circuit.

- **If less than 1 V**

5. Replace the K29 Seat Heating Control Module.

Repair Instructions

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

[Control Module References](#) for K29 Seat Heating Control Module replacement, programming and setup

DTC B242A: SEAT HEATERS COMMON (WITH MEMORY AAG)

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 B242A 01

Seat Heaters Common Circuit Short to Battery

DTC B242A 02

Seat Heaters Common Circuit Short to Ground

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Seat Memory Control Module B+ Terminal 5 X4	B242A 02, B2425 0D, B2430 0D, 1, 2	B242A 02, B2425 0D, B2430 0D, 1, 2	-	-
Driver Heated Seat Element Control Terminal 11 X3	B242A 02	B2425 0D	B242A 01	B2425 0E
Driver Heated Seat Element Control Terminal 6 X3	B242A 02	B2425 0D	B242A 01	B2425 0E
Driver Heated Seat Temperature Sensor Signal	B1925 02	B1925 05	B1925 05	-
Driver Heated Seat Temperature Sensor Low Reference	-	B1925 05	-	-
Passenger Heated Seat Element Control Terminal 10 X3	B242A 02	B2430 0D	B242A 01	B2430 0E
Passenger Heated Seat Element Control Terminal 4 X3	B242A 02	B2430 0D	B242A 01	B2430 0E
Passenger Heated Seat Temperature Sensor Signal	B2170 02	B2170 05	B2170 05	-
Passenger Heated Seat Temperature Sensor Low Reference	-	B2170 05	-	-
1. Power seats inoperative 2. Heated seats inoperative				

Circuit/System Description

The seat memory control module controls seat heating operation for both the driver and front passenger seats. The heating elements are controlled through individual high side and low side control circuits. The low side control circuits for both seats are connected to a common reference point internal to the module. This reference point is biased to approximately 2.5 V. Before the seat memory control module will allow heated seat operation, it checks to see if this biased voltage is shorted to ground or voltage. Once the module verifies that it is not closing to a shorted heating element, it allows for heated seat operation. The module will then continue to monitor the heating elements for a shorted circuit.

Conditions for Running the DTC

- DTC B1325 must not be present.
- The seat memory control module must be powered.

Conditions for Setting the DTC

B242A 01

The seat memory control module detects a short to voltage on the heater element control circuits.

B242A 02

The seat memory control module detects a short to ground on the heater element control circuits.

Action Taken When the DTC Sets

The heated seat function for both seats will be disabled.

Conditions for Clearing the DTC

- The current DTC will clear and set a history code 3 s after the reference voltage returns to normal operating range 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.

Reference Information

Schematic Reference

Heated/Cooled Seat Schematics (Buick)Heated/Cooled Seat Schematics (Chevrolet)

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX (ENCORE) COMPONENT CONNECTOR END VIEWS - INDEX (TRAX)

Description and Operation

Heated 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 X4 harness connector at the K40 Seat Memory Control Module, ignition ON.
2. Verify a test lamp illuminates between the B+ circuit terminal 5 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 fuse is not open and there is voltage at the fuse.
 - **If the test lamp illuminates**
3. Ignition OFF, connect the X4 harness connector at the K40 Seat Memory Control Module and disconnect the X3 harness connector at the K40 Seat Memory Control Module.
4. Test for infinite resistance between the control circuit terminals listed below and ground:
 - Terminal 11
 - Terminal 10
 - **If less than infinite resistance**
Repair the short to ground on the circuit.
 - **If infinite resistance**
5. Ignition ON.
6. Test for less than 1 V between the control circuit terminals listed below and ground:
 - Terminal 11
 - Terminal 10
 - **If 1 V or greater**

Repair the short to voltage on the circuit.

- If less than 1 V

7. Replace the K40 Seat Memory Control Module.

Repair Instructions

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

[Control Module References](#) for K40 Seat Memory Control Module replacement, programming and setup

SYMPTOMS - SEAT HEATING AND COOLING

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

1. When diagnosing a heated seat system condition 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 module(s) can communicate via the serial data link.
2. Review the system operation in order to familiarize yourself with the system functions. Refer to [Heated Seats Description and Operation](#).

Visual/Physical Inspection

- Inspect for aftermarket devices which could affect the operation of the power seats. Refer to [Checking Aftermarket Accessories](#) .
- Inspect the easily accessible or visible system components for obvious damage or conditions which could cause the symptom.
- Inspect the seat adjuster track for conditions which may cause binding or objects within the seat adjustment range which obstruct movement or interfere with wiring.

Intermittent

Faulty electrical connections or wiring may be the cause of intermittent conditions. Refer to [Testing for Intermittent Conditions and Poor Connections](#) .

Symptom List

Refer to the [Front Heated Seat Malfunction \(Without Memory AAG\)](#)[Front Heated Seat Malfunction \(With Memory AAG\)](#) diagnostic procedure in order to diagnose the symptom.

FRONT HEATED SEAT MALFUNCTION (WITHOUT MEMORY AAG)

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 Heated Seat Element Control Terminal 3 X2	B242A 02	B2425 0D	B242A 01	B2425 0B, B2425 0E
Driver Heated Seat Element Control Terminal 1 X2	B242A 02	B2425 0D	B242A 01	B2425 0B, B2425 0E
Driver Heated Seat Cushion Temperature Sensor Signal	B1925 02	B1925 05	B1925 05	B2345 13

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Driver Heated Seat Cushion Temperature Sensor Low Reference	-	B1925 05	-	B2345 13
Passenger Heated Seat Element Control Terminal 5 X2	B242A 02	B2430 0D	B242A 01	B2430 0B, B2430 0E
Passenger Heated Seat Element Control Terminal 2 X2	B242A 02	B2430 0D	B242A 01	B2430 0B, B2430 0E
Passenger Heated Seat Cushion Temperature Sensor Signal	B2170 02	B2170 05	B2170 05	B2345 13
Passenger Heated Seat Cushion Temperature Sensor Low Reference	-	B2170 05	-	B2345 13

Circuit/System Description

The driver and passenger heated seats are controlled by separate heated seat switches that are located in the HVAC control module. When a heated seat switch is pressed, a serial data message is sent from the HVAC control module to the seat heating control module indicating the heated seat command. In response to this message, the seat heating control module applies battery positive voltage through the element supply voltage circuit to the appropriate seat heating elements. The seat heating control module then sends a serial data message back to the HVAC control module to either illuminate or turn off the appropriate temperature indicator.

Reference Information

Schematic Reference

[Heated/Cooled Seat Schematics \(Buick\)](#)[Heated/Cooled Seat Schematics \(Chevrolet\)](#)

Connector End View Reference

[COMPONENT CONNECTOR END VIEWS - INDEX \(ENCORE\)](#) [COMPONENT CONNECTOR END VIEWS - INDEX \(TRAX\)](#)

Description and Operation

[Heated 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. Engine ON.
2. Verify that no heated seat DTCs are set.
 - If any heated seat DTC is set

Refer to [Diagnostic Trouble Code \(DTC\) List - Vehicle](#)

- **If no heated seat DTCs are set**

3. Verify the scan tool Front Seat Heating Control Module Driver Seat Heating/Venting/Cooling Mode parameter changes between Off and Back & Cushion Heat after pressing the driver heated seat switch.

- **If the parameter does not change**

Replace the A26 HVAC Controls.

- **If the parameter changes**

4. Verify the scan tool Passenger Front Seat Heating/Venting/Cooling Mode Switch parameter changes between Off and Back & Cushion Heat after pressing the passenger heated seat switch.

- **If the parameter does not change**

Replace the A26 HVAC Controls.

- **If the parameter changes**

5. Replace the K29 Seat Heating Control Module.

Repair Instructions

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

[Control Module References](#) for K29 Seat Heating Control Module replacement, programming and setup

FRONT HEATED SEAT MALFUNCTION (WITH MEMORY AAG)

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 5 X4	B242A 02, B2425 0D, B2430 0D, 1, 2	B242A 02, B2425 0D, B2430 0D, 1, 2	-	-
Driver Heated Seat Element Control Terminal 11 X3	B242A 02	B2425 0D	B242A 01	B2425 0B, B2425 0E
Driver Heated Seat Element Control Terminal 6 X3	B242A 02	B2425 0D	B242A 01	B2425 0B, B2425 0E
Driver Heated Seat Temperature Sensor Signal	B1925 02	B1925 05	B1925 05	-
Driver Heated Seat Temperature Sensor Low Reference	-	B1925 05	-	-
Passenger Heated Seat Element Control Terminal 10 X3	B242A 02	B2430 0D	B242A 01	B2430 0B, B2430 0E
Passenger Heated Seat Element Control Terminal 4 X3	B242A 02	B2430 0D	B242A 01	B2430 0B, B2430 0E
Passenger Heated Seat Temperature Sensor Signal	B2170 02	B2170 05	B2170 05	-

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Passenger Heated Seat Temperature Sensor Low Reference	-	B2170 05	-	-
1. Power seats inoperative 2. Heated seats inoperative				

Circuit/System Description

The driver and passenger heated seats are controlled by separate heated seat switches that are located in the HVAC controls. When a heated seat switch is pressed, a serial data message is sent from the HVAC controls to the seat memory control module indicating the heated seat command. In response to this message, the seat memory control module applies battery positive voltage through the element supply voltage circuit to the appropriate seat heating elements. The seat memory control module then sends a serial data message back to the HVAC controls to either illuminate or turn off the appropriate temperature indicator.

Reference Information

Schematic Reference

[Heated/Cooled Seat Schematics \(Buick\)](#)[Heated/Cooled Seat Schematics \(Chevrolet\)](#)

Connector End View Reference

[COMPONENT CONNECTOR END VIEWS - INDEX \(ENCORE\)](#), [COMPONENT CONNECTOR END VIEWS - INDEX \(TRAX\)](#)

Description and Operation

[Heated 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 X4 harness connector at the K40 Seat Memory Control Module, ignition ON.
2. Verify a test lamp illuminates between the B+ circuit terminal 5 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 fuse is not open and there is voltage at the fuse.
 - **If the test lamp illuminates**

3. Ignition OFF, connect the X4 harness connector at the K40 Seat Memory Control Module, Engine ON,
4. Verify the scan tool Seat Memory Control Module Driver Seat Heating/Venting/Cooling Mode parameter changes between Off and Back & Cushion Heat after pressing the driver heated seat switch.
 - **If the parameter does not change**

Replace the A26 HVAC Controls.
 - **If the parameter changes**
5. Verify the scan tool Passenger Front Seat Heating/Venting/Cooling Mode parameter changes between Off and Back & Cushion Heat after pressing the passenger heated seat switch.
 - **If the parameter does not change**

Replace the A26 HVAC Controls.
 - **If the parameter changes**
6. Replace the K40 Seat Memory Control Module.

Repair Instructions

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

- [Heater and Air Conditioning User Interface Control 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.

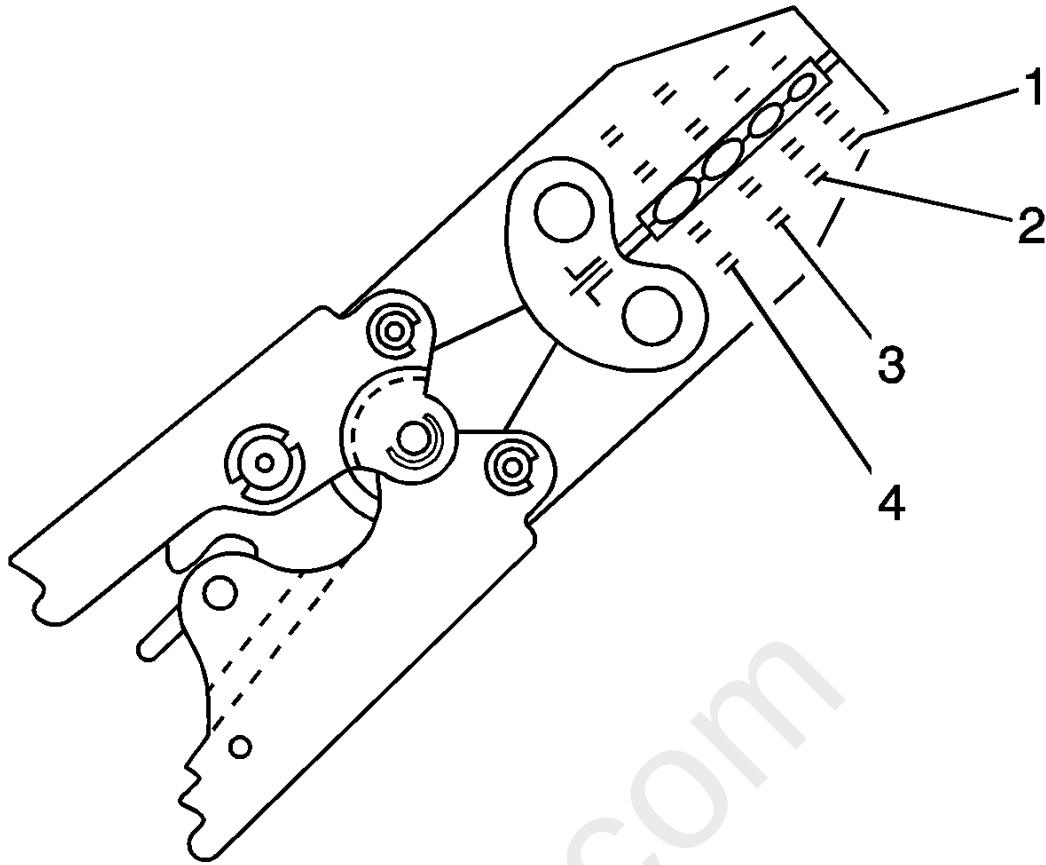


Fig. 4: Splice Sleeve Crimping Tool With 4 Crimp Nests
Courtesy of GENERAL MOTORS COMPANY

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.

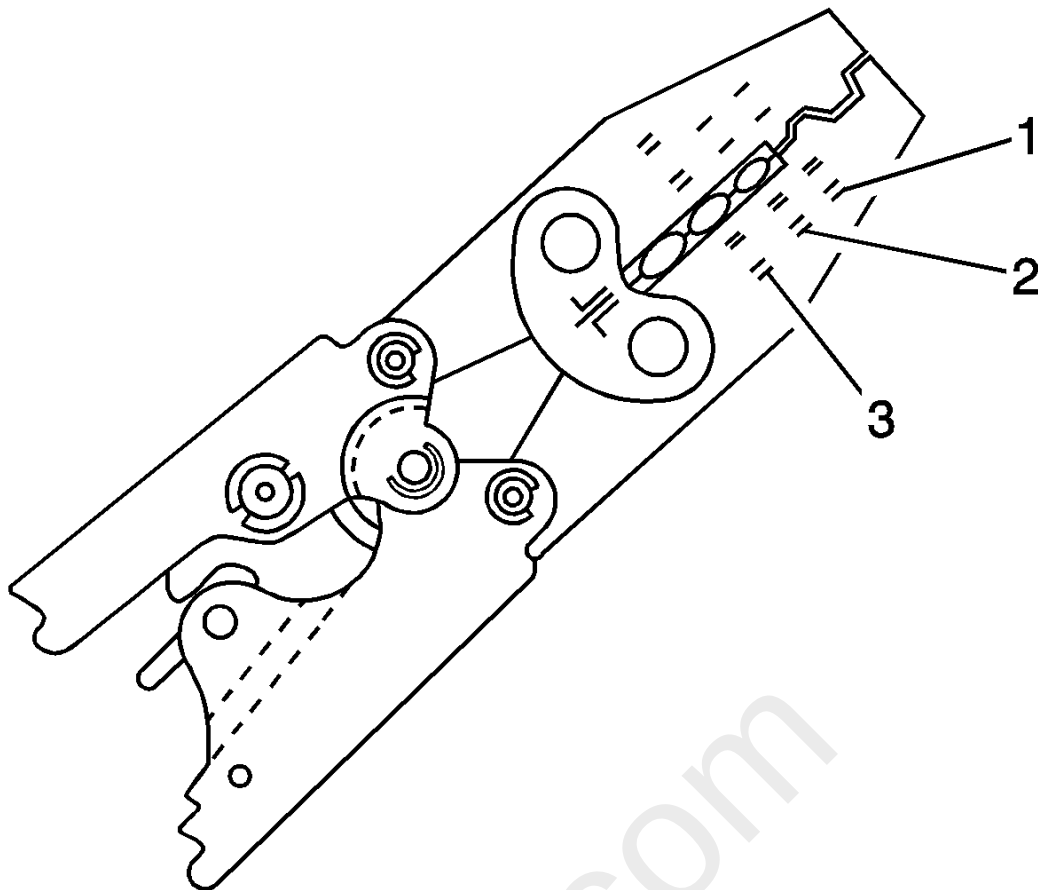


Fig. 5: Splice Sleeve Crimping Tool With 3 Crimp Nests
Courtesy of GENERAL MOTORS COMPANY

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).

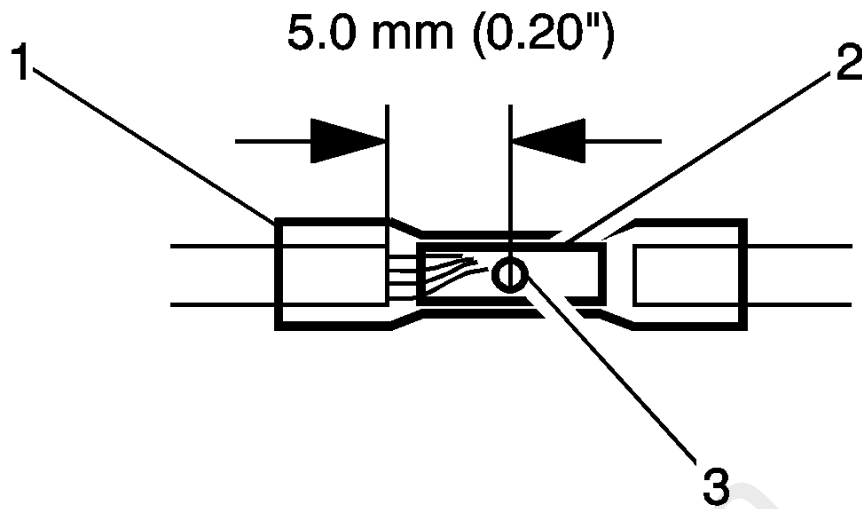


Fig. 6: Identifying Duraseal Splice Sleeve

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. 7: 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. 8: 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.

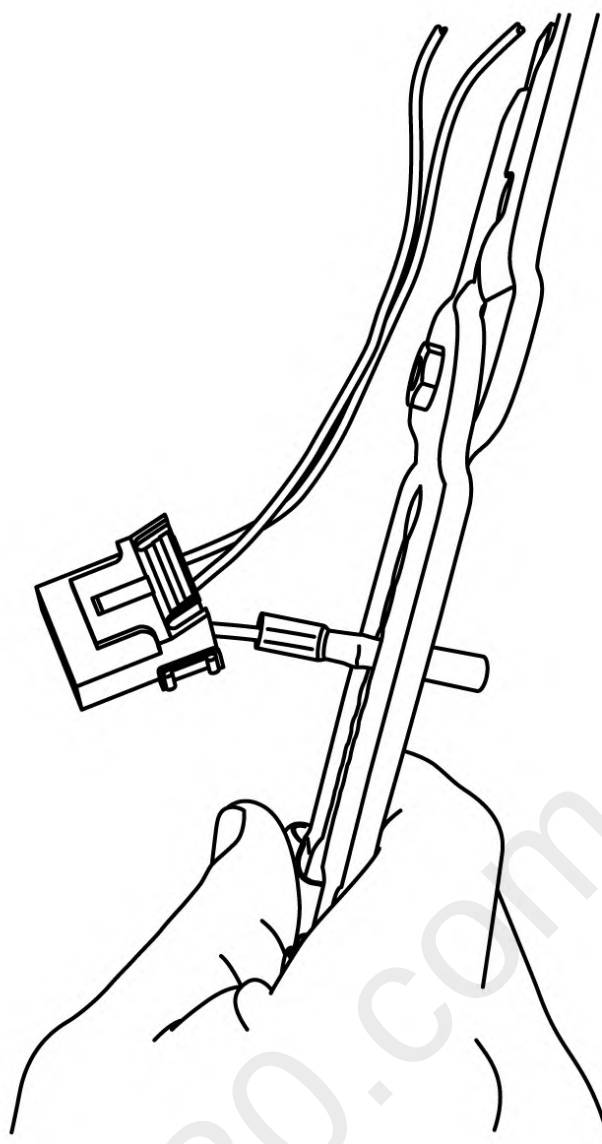


Fig. 9: Tightly Close Handles Of Crimp Tool

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.

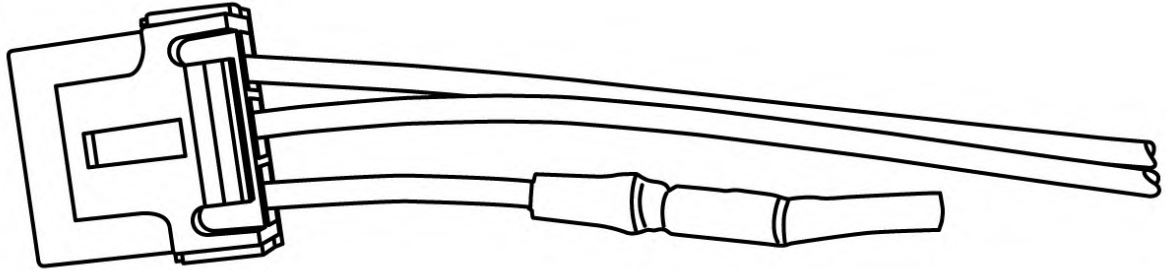


Fig. 10: Heat To Crimped Area Of Barrel

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.

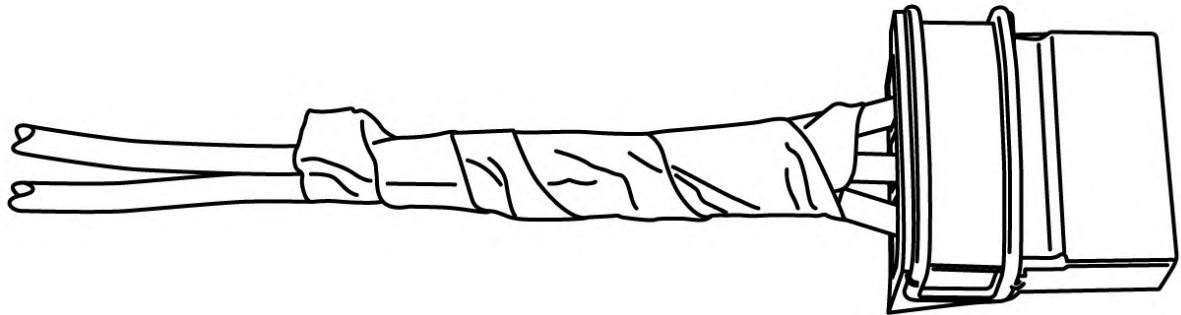


Fig. 11: Taping Extra Terminated Leads Back Into Harness
Courtesy of GENERAL MOTORS COMPANY

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 \(Buick\)](#) , [Power Distribution Schematics \(Chevrolet\)](#) .
- 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 \(Buick\)](#) , [Ground Distribution Schematics \(Chevrolet\)](#) .

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.

FRONT SEAT HEATER CONTROL MODULE REPLACEMENT

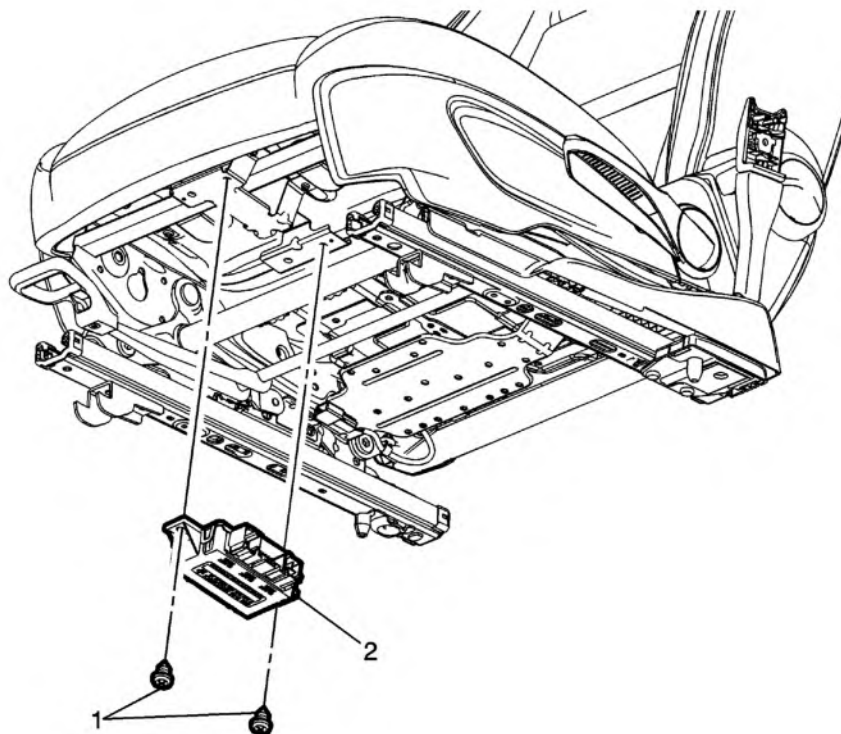


Fig. 12: Front Seat Heater Control Module
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Front Seat Heater Control Module Fastener (Qty: 2) CAUTION: Refer to Fastener Caution .
2	Front Seat Heater Control Module Procedure 1. Disconnect the electrical connector. 2. Disconnect the module from the bracket, then pull downward away from the bottom of the seat. 3. Refer to Control Module References for programming and setup information.

DRIVER OR PASSENGER SEAT BACK HEATER REPLACEMENT

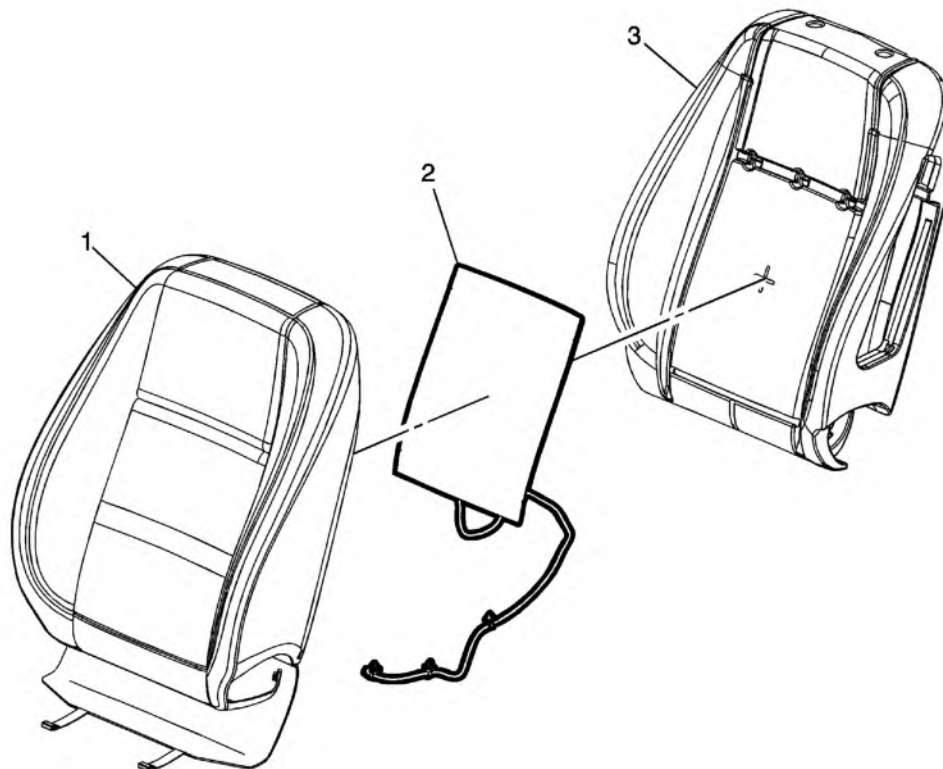


Fig. 13: Driver Or Passenger Seat Back Cushion Heater
 Courtesy of GENERAL MOTORS COMPANY

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 the driver or passenger seat back cushion cover and pad. Refer to Driver or Passenger Seat Back Cover and Pad Replacement .	
1	Driver or Passenger Seat Back Cushion Cover Procedure Separate the seat back cushion cover from the seat cushion pad.
2	Driver or Passenger Seat Back Cushion Heater Procedure 1. Disconnect the electrical connector. 2. Heater is a integral part of the seat back cushion pad. The pad and heater should be replaced as a assembly.
3	Driver or Passenger Seat Back Cushion Pad

FRONT SEAT CUSHION HEATER REPLACEMENT

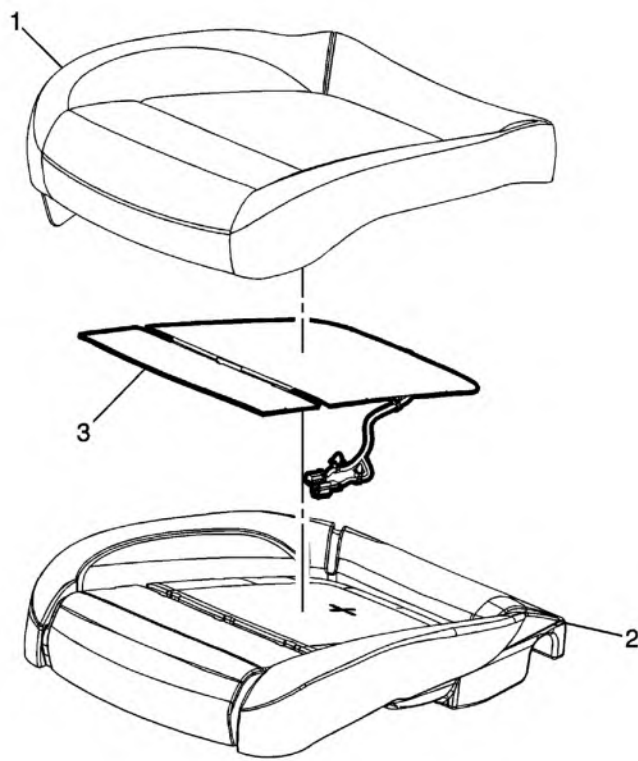


Fig. 14: Driver Or Passenger Seat Cushion Heater
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
WARNING: Refer to SIR Warning . Preliminary Procedures 1. Remove the driver or passenger seat. Refer to Driver or Passenger Seat Removal and Installation . 2. Remove the front seat cushion cover and pad. Refer to Front Seat Cushion Cover and Pad Replacement .	
1	Front Seat Cushion Cover Procedure Separate the seat cushion cover from the seat cushion pad by pulling the cover away from the pad.
2	Front Seat Cushion Pad NOTE: The seat belt presence sensor and heat mat if equipped, are integral parts of the seat cushion pad.
3	Front Seat Cushion Heater Procedure Heater is a integral part of the seat cushion pad. The pad and heater should be replaced as a assembly.

DESCRIPTION AND OPERATION

HEATED SEATS DESCRIPTION AND OPERATION

Heated Seat Components

The driver and passenger heated seats consist of the following components:

- Left heated seat switch
- Right heated seat switch
- HVAC control module
- Seat memory control module or seat heating control module
- Driver seat cushion heating element
- Driver seat back heating element
- Driver seat cushion temperature sensor
- Passenger seat cushion heating element
- Passenger seat back heating element
- Passenger seat cushion temperature sensor

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

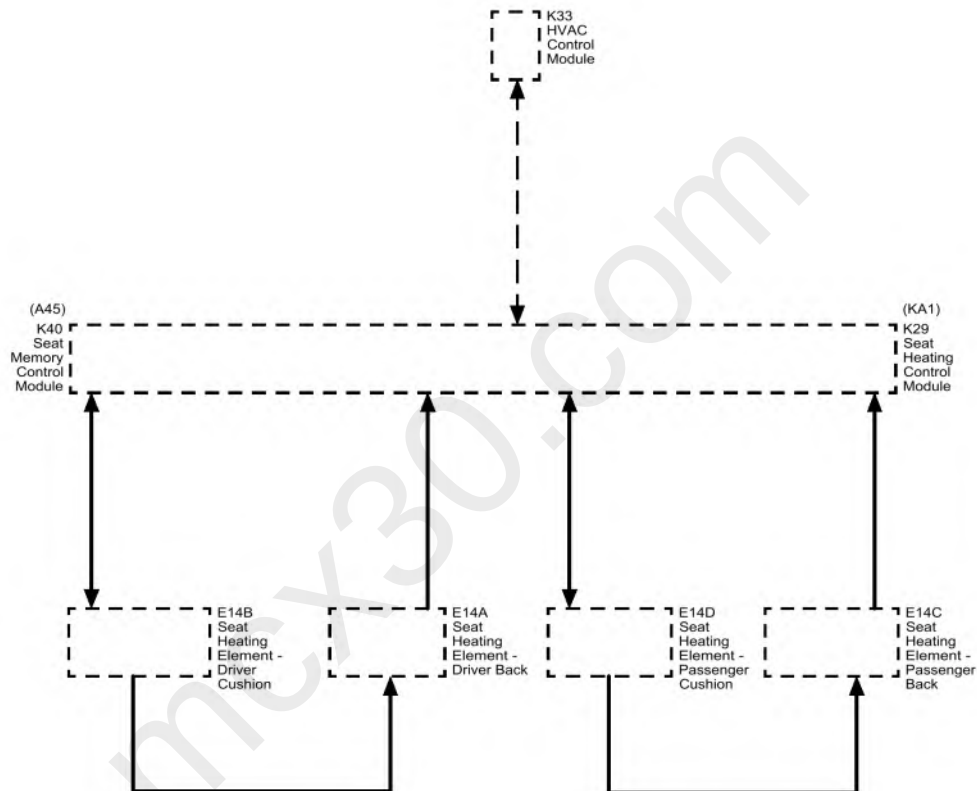


Fig. 15: Heated Seat Block Diagram
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
A45	MEMORY: SEAT ADJUSTER, MIRROR, POWER, DRIVER, PERSONALIZATION
KA1	HEATER SEAT FRT: DRVR and PASS
K29	K29 Seat Heating Control Module
E14C	E14C Seat Heating Element - Passenger Back
E14D	E14D Seat Heating Element - Passenger Cushion
E14A	E14A Seat Heating Element - Driver Back
E14B	E14B Seat Heating Element - Driver Cushion
K33	K33 HVAC Control Module

Callout	Component Name
K40	K40 Seat Memory Control Module

Heated Seat Operation

The driver and passenger heated seats are controlled by the seat memory control module/seat heating control module located under the driver seat cushion. Both heated seats are controlled by separate heated seat switches located in the HVAC control module. When a heated seat switch is pressed, a serial data message is sent from the HVAC control module to the seat memory control module/seating heating control module indicating the heated seat command. In response to this signal, the control module applies battery positive voltage through the element supply voltage circuit to the appropriate seat heating elements. The seat memory control module/seating heating control module then sends a serial data message back to the HVAC control module to either illuminate or turn off the appropriate temperature indicator.

Temperature Regulation

When the engine ON, the heated seats will initialize in the OFF state. With each activation of the heated seat switch, the seat memory control module will cycle the temperature setting in the following manner: HIGH, MEDIUM, LOW, and OFF.

The seat memory control module monitors the seat temperature through the temperature sensor signal circuit and the temperature sensor (thermistor) located in the seat cushion with the heater element. The temperature sensor is a variable resistor, its resistance changes as the temperature of the seat changes. When the temperature sensor resistance indicates to the module that the seat has reached the desired temperature, the module opens the ground path of the seat heating elements through the heated seat element control circuit. The seat memory control module will then cycle the element control circuit open and closed in order to maintain the desired temperature.

Load Shed Management

The electrical power management function is designed to monitor the vehicle electrical load and determine when the battery is potentially in a high discharge condition. The heated seat system is one of the vehicle loads that is subject to reduction during a battery discharge condition. For more information on load management refer to [Electrical Power Management Description and Operation](#) .