

# ELECTRICALLY HEATED SYSTEMS

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## GENERAL INFORMATION

### INTRODUCTION

Individually controlled electrically heated front seats are available factory-installed optional equipment on this model. The seat heaters will only operate when the ignition switch is in the On position, and the surface temperature at the front seat heating element sensors is below the temperature set point (1-6) on the heated seat switch.

There is a rotating six-position switch located in the floor console that controls the temperature for each front seat. Six positions can be selected, the 0 position set point is off and the (1-6) positions provide various temperature control for each front seat, with position 6 being the warmest. When the switch is turned on Light-Emitting Diodes (LED) will illuminate the number on the switch to give a visual indication that the system is on. Each switch controls a Heated Seat Control Module (HSCM) mounted to the seat cushion frame under each front seat.

When a seat heater is turned on, a sensor located near the seat cushion electric heater element provides the HSCM with an input indicating the surface temperature of the seat cushion. If the surface temperature input is below the temperature set point for the selected switch position, a relay in the HSCM energizes the heating elements in the seat cushion

and back. When the sensor input indicates the correct temperature set point has been achieved, the HSCM de-energizes the relay. The HSCM will continue to cycle the relay as needed to maintain the temperature set point.

The control circuit operates on ignition switched power from a 10 amp fuse in cavity # 11 of the junction block and a 20 amp fused battery feed in cavity # 11 of the Power Distribution Center. The system is turned off automatically when the ignition switch is turned to the Off - Lock position, and returns automatically to the previously set heat setting when the ignition switch is turned back ON. The heating elements operate on power supplied through a 20 amp MAXI fuse located in the power distribution center in the engine compartment. The HSCM automatically disconnects power from the heating elements if it detects an open in the sensor circuit, but the LED's will remain on. If the heating element shorts, causing excessive current draw, the 20 amp MAXI fuse in the Power Distribution Center will blow and/or the HSCM will disconnect power from the heating elements, but the LED's will remain on.

Following are general descriptions of the major components in the heated seat system. Refer to 8W-63 - Power Seat With Heated Seats in Group 8W - Wiring Diagrams for complete circuit descriptions and diagrams.

## DESCRIPTION AND OPERATION

### HEATED SEAT SWITCH

The heated seat switch is located in the floor console. The two six-position rotating-type switches, one switch for each front seat, provide a voltage signal to their respective Heated Seat Control Module (HSCM). Each switch has 0 – 6 positions so that both the driver and front seat passenger can select a preferred heat setting.

There are three Light-Emitting Diodes (LED's) in the heated seat switch. The first LED illuminates the heated seat symbol on the switch any time the ignition switch is turned on and the remaining LED's illuminate the numbers on each switch to indicate the system is turned on. The heated seat switch and their LED's cannot be repaired. If faulty, the switch unit must be replaced.

### HEATED SEAT CONTROL MODULE

The Heated Seat Control Module (HSCM) is an electronic thermostatic module designed to operate the electric seat heater elements. Two modules are used in the vehicle, one for each front seat. The HSCM for each seat is mounted to the seat cushion frame.

Inputs to the module include the rheostat heated seat switch, the seat cushion temperature sensors, an ignition-switched battery feed, an unswitched battery feed, and a ground. The only HSCM output is the feed for the seat heating elements.

The HSCM cannot be repaired and, if faulty, must be replaced.

### HEATED SEAT ELEMENTS AND SENSOR

Three seat heating elements are used in each front seat, two for the seat cushion and one for the seat back. The three elements for each seat are connected in series with the HSCM.

The temperature sensor is a negative temperature coefficient thermistor. One temperature sensor is used for each seat, and it is integrated into the seat cushion heating element.

The heating elements are sewn into the seat cushion cover and seat back cover assemblies, which are serviced individually. The heating elements and temperature sensor cannot be repaired and, if faulty, the affected seat cover assembly must be replaced. Refer to Group 23 - Body Components for the seat cover service procedures.

## DIAGNOSIS AND TESTING

### HEATED SEAT SYSTEM

For circuit descriptions and diagrams, refer to 8W-63 - Power Seat With Heated Seats in Group 8W - Wiring Diagrams.

Before testing the individual components in the heated seat system check the following:

- If the heated seat switch LED's do not light with the ignition switch in the On position and the heated seat switch in 1– 6 positions, check the 10 amp fuse in cavity #11 located in the junction block. If the fuse is OK, test the heated seat switch as described in this group.

- If the heated seat switch LED's light, but the heating elements do not heat, check the 20 amp MAXI fuse located in cavity # 11 of the Power Distribution Center in the engine compartment. If the fuse is OK, remove the front seat and test the heating elements for continuity.

### HEATED SEAT SWITCH

For circuit descriptions and diagrams, refer to 8W-63 - Power Seat With Heated Seats in Group 8W - Wiring Diagrams.

(1) Remove the heated seat switch as described in this group and inspect connector for damage. Unplug the 7-way connector from the switch and check the harness terminals for ignition voltage and ground.

(2) Check the drivers switch for resistance between pin terminals PB and 86B. Resistance should vary from 0–500 ohms as the switch is rotated (Fig. 1). If OK, go to Step 3. If not OK, replace the heated seat switch.

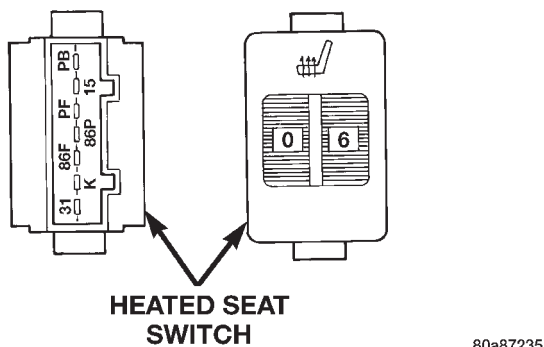
(3) Check the passenger switch for resistance between pin terminals PF and 86F. Resistance should vary from 0–500 ohms as the switch is rotated (Fig. 1). If OK, test heated seat control module as described in this group. If not OK, replace the heated seat switch.

### HEATED SEAT CONTROL MODULE

For circuit descriptions and diagrams refer to 8W-63 - Power Seats With Heated Seats in Group 8W - Wiring Diagrams. Before testing the heated seat control module, test the heated seat switch 6–way connector located under each front seat for voltage and ground. If testing of the heated seat elements, and switch reveals no problems, remove the module as described in this group. Turn the ignition switch on.

(1) Check for battery voltage at the red wire of the heated seat control module connector. If OK go to Step 2. If not OK check the 20 amp MAXI fuse located in the Power Distribution Center.

DIAGNOSIS AND TESTING (Continued)



**Fig. 1 Heated Seat Switch**

(2) Turn ignition switch and heated seat switch on and check for 9 - 16.5 volts at the white/black wire of the heated seat control module connector. If OK go to Step 3. If not OK check the 10 amp fuse in cavity # 11 located in the Junction Block and the 20 amp fuse in cavity # 8 of the Power Distribution Center.

(3) Turn ignition switch and heated seat switch on and check for 7 - 16.5 volts at the purple wire of the heated seat control module connector. If OK go to Step 4. If not OK test heated seat switch and harness as described in this group.

(4) Turn ignition switch and heated seat switch on and check for 9 - 16.5 volts at the red/white wire of the heated seat control module connector. The surface temperature at the front seat heating element sensor must be below the temperature setting (1-6) on the heated seat switch, for the red/white wire to be at battery voltage. If OK go to Step 5. If not OK test heated seat switch and harness as described in this group.

(5) Check for continuity between a known good ground and the black wire of the heated seat control module connector. If OK replace the heated seat control module. If not OK inspect the harness for an open.

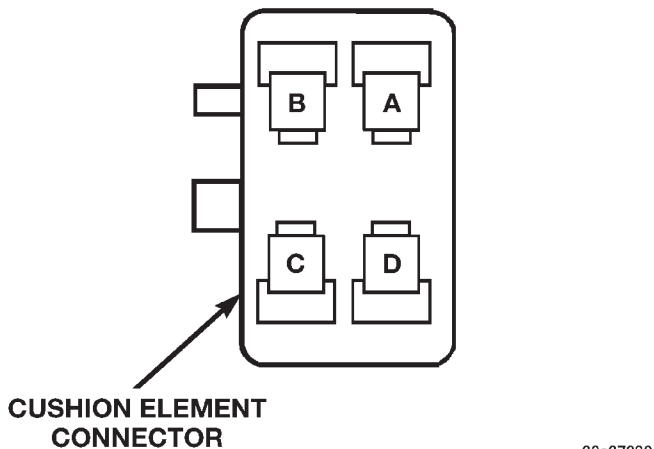
**HEATED SEAT ELEMENT**

The connectors for the seat cushion and seat back heating elements are located under the seat near the rear edge of the seat cushion frame. For circuit descriptions and diagrams, refer to 8W-63 - Power Seat With Heated Seats in Group 8W - Wiring Diagrams.

**SEAT CUSHION**

(1) Disconnect and isolate the battery negative cable and remove the seat from the vehicle, refer to Front Seats in Group 23.

(2) Disconnect the green 4-way heated seat cushion connector and check for continuity between pins A and B of the heated seat cushion connector. There should be continuity, if OK, test the heated seat back for continuity. If not OK, check the green 2-way seat cushion connector. If OK, replace the faulty seat cushion cover (Fig. 2).



**Fig. 2 Seat Cushion Element Connector**

**SEAT BACK**

(1) Disconnect and isolate the battery negative cable and remove the seat from the vehicle, refer to Front Seats in Group 23.

(2) Disconnect the green 2-way heated seat back connector and check for continuity between pins A and B of the heated seat back connector. There should be continuity, if OK, test the Heated Seat Control Module as described in this group. If not OK, replace the faulty seat back cover.

**REMOVAL AND INSTALLATION**

**HEATED SEAT SWITCH**

**REMOVAL**

- (1) Disconnect and isolate the battery negative cable.
- (2) Remove the center console. Refer to Group 23, Body for a procedure.
- (3) Depress both locking tabs and push switch out of center console.
- (4) Disconnect the electrical connector from the switch.

**INSTALLATION**

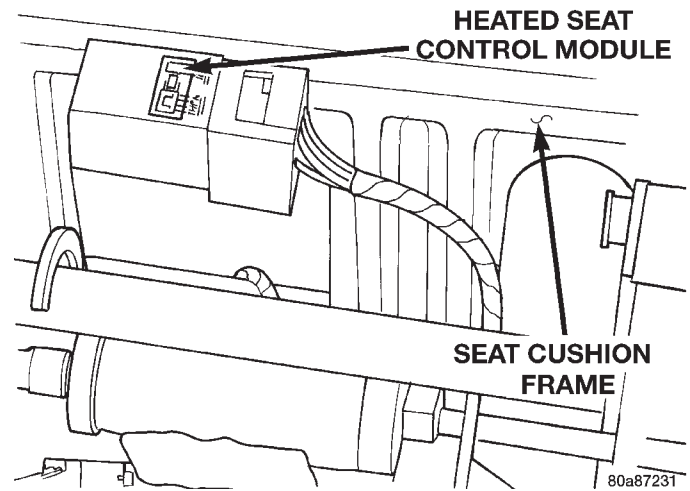
Reverse the removal procedure to install.

**CAUTION:** Be sure the "UP" labeling on the switch faces the proper position upon installation.

## REMOVAL AND INSTALLATION (Continued)

**HEATED SEAT CONTROL MODULE**

- (1) Move the power seat adjuster to its upper-most and rearward-most stop positions.
- (2) Disconnect and isolate the battery negative cable.
- (3) Reach under the front of the seat cushion and separate the heated seat control module from the seat cushion frame (Fig. 3).
- (4) Unplug the wiring connector and remove the module from under the seat.
- (5) Reverse the removal procedures to install.



*Fig. 3 Heated Seat Control Module*