

ELECTRICALLY HEATED SYSTEMS

HEATED SEATS

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GENERAL INFORMATION

INTRODUCTION

Heated seats only available with leather and memory. The seat heaters are controlled by the Memory Heated Seat and Mirror Module (MHSM). The heaters will only operate when the ignition switch is in the ON position, and the surface temperature at the from seat heating element sensors is below the designed temperature set points of the system.

The heater switch is a three position (HI, LO, and neutral position OFF) momentary rocker switch. Green LED's illuminate the switch for night visibility. Amber LED's are located in the switch adjacent to the HI and LO graphics, which indicate the selected operating mode of the seat heater, The LO heat position set point is about 98° F and the HI set point is about 107° F.

The heaters are solid high side driven, and are controlled by an NTC circuit. When either HI or LO is activated, the temperature in the seat rises the Negative Temperature Coefficient (NTC) resistance decreases, and the voltage reading detected by the MHSM increases. The seat heater output is deactivated once the voltage reading reaches its upper threshold for either of the settings, HI or LO.

As the temperature decreases the voltage reading decreases until the lower threshold is reached for either setting, HI or LO. At this point the seat heat output is activated once again. This cycle repeats itself as long as the seat heat request remains on. The thresholds for high and low settings are pre-programmed into the MHSM.

The system will automatically turn off when the ignition is turned to the OFF position. For complete circuit descriptions and diagrams, refer to Group 8W, Wiring Diagrams.

DESCRIPTION AND OPERATION

HEATED SEAT SWITCH

The heated seat switch is located in the outboard cushion side shield of the driver and passenger seats (Fig. 1). The switch is a three position (HI, LO, and OFF) momentary rocker switch. Green LED's illuminate the switch for night visibility. Amber LED's are located in the switch adjacent to the HI and LO graphics, which indicate whether low or high has been selected (Fig. 2). The heated seat switches and their LED's are not repairable. If either the switch or LED is faulty, the switch will have to be replaced.

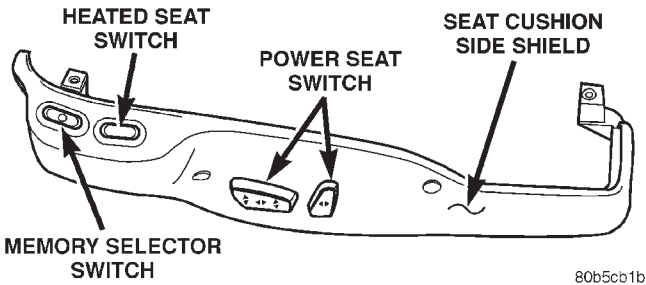


Fig. 1 Heated Seat Switch Location

DESCRIPTION AND OPERATION (Continued)

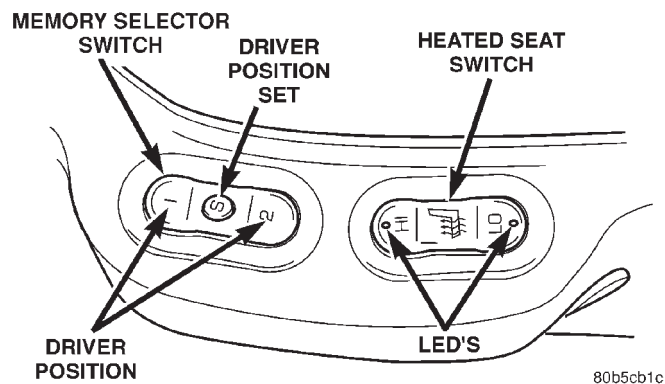


Fig. 2 Memory / Heated Seat Switch

MEMORY HEATED SEAT / MIRROR MODULE (MHSM)

The Memory Heated Seat and Mirror Module controls the seat heaters, and is mounted unto the bottom of the driver seat (Fig. 3). The module controls the seat heaters and is connected to the seat harness by four connectors. There is only one module per memory and heated system. The module cannot be repaired, and if faulty or damaged will have to be replaced.

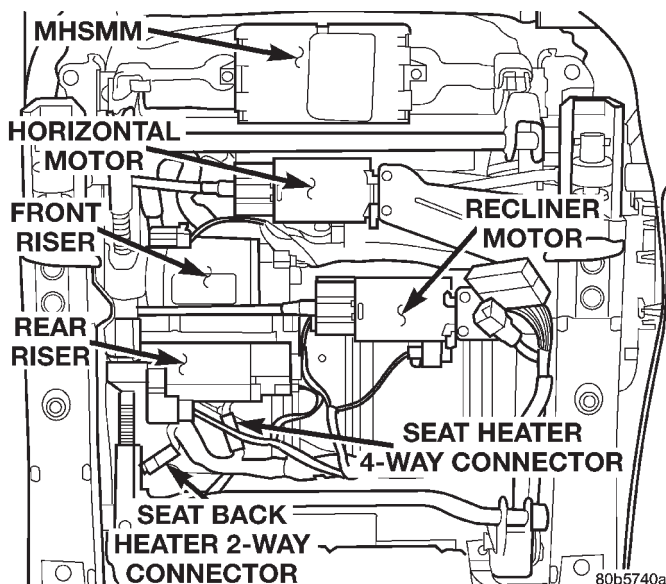


Fig. 3 Memory Heated Seat / Mirror Module (MHSM)

HEATED SEAT ELEMENT AND SENSOR

Two heated seat elements are used in both of the front seats, one for the seat cushion and the other for the seat back. The two elements for each seat are connected in series to the MHSM.

The temperature sensor is a Negative Temperature Coefficient (NTC) thermistor. One temperature sensor is used for each set, 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 or damaged, the affected seat cover must be replaced. Refer to Group 23 Body, for the Seat Cushion Cover and Seat Back Cover Removal and Installation.

DIAGNOSIS AND TESTING

HEATED SEAT SYSTEM

For circuit descriptions and diagrams, refer to Group 8W, Wiring Diagrams.

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

- If the heated seat switch LED doesn't light up with the ignition in the ON position, and the switch in the LO or HI position, check the battery voltage. If the battery is below 10 volts, recharge the battery. If the problem persists, then check the fuse in the junction block. If the fuse is OK, test the heated set switch as described in this group. If not OK, repair the shorted circuit or component failure and replace the faulty fuse.
- If the heated seat LED's light up, but the heating elements don't heat, check the circuit breaker in the junction block. If the circuit is OK, test the heated set elements as described in this group, otherwise replace the faulty circuit breaker.

HEATED SEAT SWITCH

For circuit description and diagrams, refer to Group 8W Wiring Diagrams.

Inspect the Heated Seat Switches for apparent damage or sticking/binding and replace as required. Refer to Heated Seat Switch Removal and Installation.

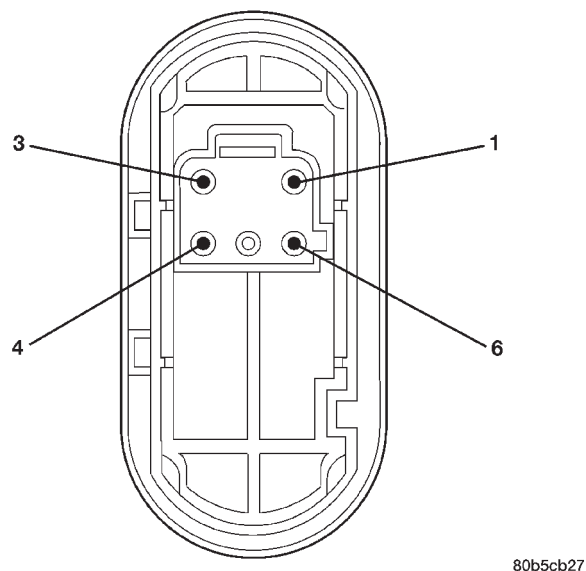
Inspect the continuity between pin 4 and pin 6 of the switch. Measure the resistance between the two pins. Refer to (Fig. 4) and the Heated Seat Switch Pin Call-Out table. If the readings don't correspond to those in the Heated Seat Switch Continuity table, replace the heated seat switch.

MEMORY HEATED SEAT / MIRROR MODULE (MHSM)

Before testing the Memory Heated Seat / Mirror Module (MHSM), test the heated seat switches, the heated seat elements, and the heated seat sensors. If there are no problems, proceed as follows:

- Replace the current MHSM with a known good module, and test the operation of the heated seats. If OK, discard the faulty MHSM. If the problem persists, proceed.

DIAGNOSIS AND TESTING (Continued)



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Fig. 4 Heated Seat Switch (Rear View)**HEATED SEAT SWITCH PIN CALL-OUT**

PIN	FUNCTION
1	LO LED
2	OPEN
3	GROUND
4	IGNITION FEED
5	HI LED
6	REQUEST LINE

HEATED SEAT SWITCH CONTINUITY

CONTINUITY BETWEEN	SWITCH POSITION	READING
PIN 4 AND 6	OFF	2200 OHMS
PIN 4 AND 6	LO	415 OHMS
PIN 4 AND 6	HI	33 OHMS

• Test each of the circuits from the heated seat switch, elements, and sensors to the MHSMM. Repair any shorts or open circuits as required.

HEATED SEAT ELEMENT

The wire harness connectors for the seat cushion and seat back heating elements are located under the seat, near the rear edge of the seat cushion frame.

SEAT CUSHION

(1) Unplug the 4-way heated seat cushion wire harness connector.

(2) Check the continuity between the two heated seat driver circuit cavities of the seat cushion cover half of the heated seat cushion wire harness connector.

tor. If there is continuity, go to Step 3, otherwise replace the faulty seat cushion cover.

(3) Check the continuity between one of the heated seat driver circuit cavities of the seat cushion cover half of the heated seat cushion wire harness connector and the seat cushion frame. If there isn't any continuity, go to the Seat Back test, otherwise replace the faulty seat cushion cover.

SEAT BACK

(1) Unplug the 2-way heated seat back wire harness connector.

(2) Check the continuity between the heated seat driver circuit cavity and the ground cavity of the seat back cover half of the heated seat cushion wire harness connector. If there is continuity go to Step 3, otherwise replace the faulty seat cushion cover.

(3) Check the continuity between the heated seat driver circuit cavity of the seat back cover half of the heated seat cushion wire harness connector and the seat back frame. If there isn't any continuity, test the heated seat sensor as described in this section, otherwise replace the faulty seat cushion cover.

HEATED SEAT SENSOR

The wire harness connector for the seat cushion heating element and sensor are located under the seat, near the rear edge of the seat cushion frame. For circuit descriptions and diagrams, refer to Group 8W, Wiring Diagrams.

(1) Unplug the 4-way heated seat cushion wire harness connector.

(2) Using an ohmmeter, measure the resistance between the heated seat switch output circuit cavity and the ground circuit cavity of the seat cushion cover half of the heated seat cushion wire harness connector. The sensor resistance should be between 2 Kohms and 200 Kohms. If OK, test the MHSMM as described in this section, otherwise replace the faulty seat cushion cover.

REMOVAL AND INSTALLATION**HEATED SEAT SWITCH****REMOVAL**

(1) Disconnect and isolate the negative battery cable remote terminal from the remote battery post (Fig. 5).

(2) Unscrew the side shield on the seat, either driver or passenger side (Fig. 6).

(3) From the bottom, disengage the switch and gently rock through the opening.

INSTALLATION

For installation, reverse the above procedures.

REMOVAL AND INSTALLATION (Continued)

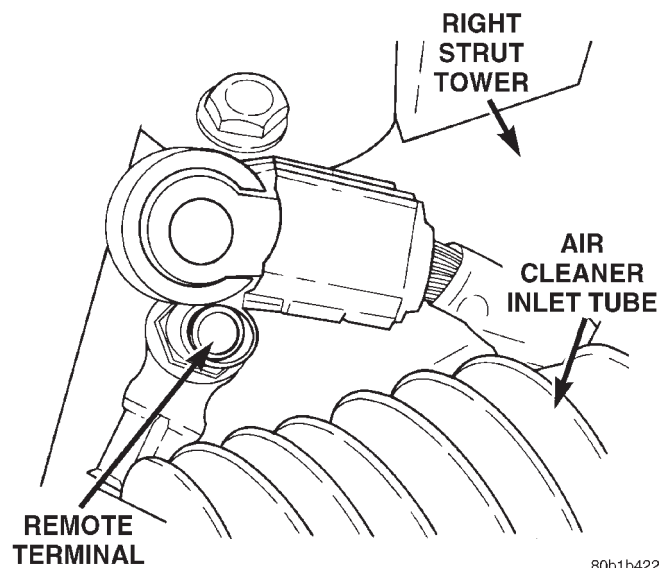


Fig. 5 Negative Battery Cable Remote Terminal

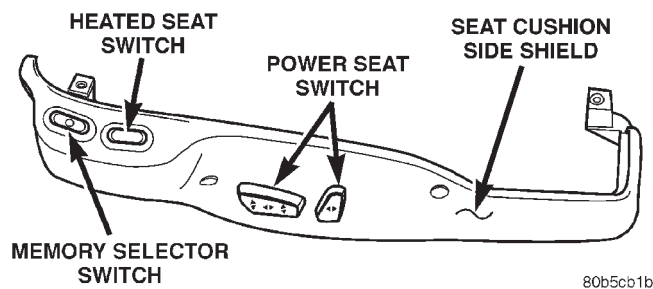


Fig. 6 Heated Seat Switch / Seat Cushion Side Shield Removal

MEMORY HEATED SEAT / MIRROR MODULE (MHSM)

Refer to Group 8R Power Seats, for Removal and Installation procedures.