HEATED SYSTEMS

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HEATED GLASS

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HEATED GLASS

DESCRIPTION

CAUTION: Grid lines can be damaged or scraped off with sharp instruments. Care should be taken in cleaning glass or removing foreign materials, decals or stickers. Normal glass cleaning solvents or hot water used with rags or toweling is recommended.

The rear window defogger system, also known as electrical backlight (EBL), consists of two vertical bus bars linked by a series of grid lines fired onto the inside surface of the rear window (Fig. 1).

The EBL system is turned ON or OFF by a control switch located on the A/C-heater control at the center of the instrument panel and by a rear window defogger relay timing circuit integral to the integrated power module (IPM) (Refer to 8 - ELECTRICAL/ HEATED GLASS/REAR WINDOW DEFOGGER SWITCH - DESCRIPTION).

Circuit protection is provided by a 40 amp fuse located in the IPM.

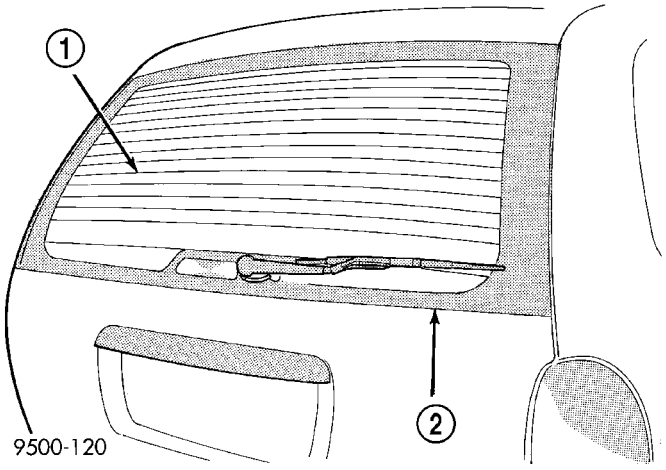

Fig. 1 Rear Window Defogger - Typical

1 - REAR DEFOGGER GRID
2 - REAR WINDOW

HEATED GLASS (Continued)

OPERATION

When the rear window defogger button is depressed to the On position, current is directed to the rear defogger grid lines and the heated power mirrors (if equipped). The heated grid lines heat the glass to help clear the rear window and side mirror surfaces of fog or frost.

The electric backlight (EBL) system is controlled by a momentary switch located in the A/C-heater control on the instrument panel. A yellow indicator in the switch will illuminate to indicate when the system is turned on. The integrated power module (IPM) contains the EBL system control circuitry.

NOTE: The rear window defogger turns off automatically after approximately 10 minutes of initial operation. Each following activation cycle of the defogger system will last approximately five minutes.

The EBL system will be automatically turned off after a programmed time interval of about ten minutes. After the initial time interval has expired, if the defogger switch is turned on again during the same ignition cycle, the defogger system will automatically turn off after about five minutes.

The EBL system will automatically shut off if the ignition switch is turned to the Off position, or it can be turned off manually by depressing the defogger switch a second time.

DIAGNOSIS AND TESTING

ELECTRIC BACKLIGHT (EBL) SYSTEM

NOTE: Illumination of the defogger switch indicator lamp means that there is electrical current available at the output of the rear window defogger logic circuitry, but does not confirm that the electrical current is reaching the rear glass heating grid lines.

NOTE: For circuit descriptions and diagrams of the rear window defogger system, refer to 8W - WIRING DIAGRAM INFORMATION.

Operation of the electrical backlight (EBL) system can be confirmed by the following:

(1) Turn the ignition switch to the On position. Set the defogger switch in the On position. The rear window defogger operation can be checked by feeling the rear window glass. A distinct difference in temperature between the grid lines and the adjacent clear glass can be detected within three to four minutes of operation.

(2) If a temperature difference is not detected, use a 12-volt DC voltmeter and contact the rear glass heating grid terminal B with the negative lead, and terminal A with the positive lead (Fig. 2). The voltmeter should read battery voltage. If the voltmeter does not read battery voltage, check the following:

- Confirm that the ignition switch is in the On position.
- Make sure that the rear glass heating grid feed wire and ground wire are connected to the terminals. Confirm that the ground wire has continuity to ground.
- Check that fuse 13 (40 amp) in the integrated power module (IPM) is OK. The fuse must be tight in it's receptacle and all electrical connections must be secure.

(3) When the above steps have been completed and the rear glass heating grid is still inoperative, one or more of the following is faulty. It may be necessary to connect a DRBIII® scan tool to perform further diagnostics. Refer to Body Diagnostic Procedures.

- Rear window defogger switch in the A/C-heater control.
- J1850 bus communication between the A/C-heater control and the front control module (FCM).
- Rear window defogger (EBL) relay in the IPM.
- Rear window defogger (EBL) relay control circuity in the IPM.
- Check for a loose wire connector or a wire pushed out of a connector.
- Rear window grid lines (all grid lines would have to be broken, or the power feed or ground wire not connected, for the entire heating grid to be inoperative).

(4) If the system operation has been verified but defogger switch LED indicator does not illuminate, replace the A/C-heater control.

HEATED GLASS (Continued)

(5) If broken defogger grid lines are suspected, use a 12-volt DC voltmeter and contact terminal B with the negative lead and each rear glass heating grid line at it's mid-point with the positive lead. The voltmeter should read approximately 6 volts at each grid line mid-point C. If the voltmeter does not read approximately 6 volts, repair the open grid line(s) (Refer to 8 - ELECTRICAL/HEATED GLASS/REAR WINDOW DEFOGGER GRID - STANDARD PROCEDURE).

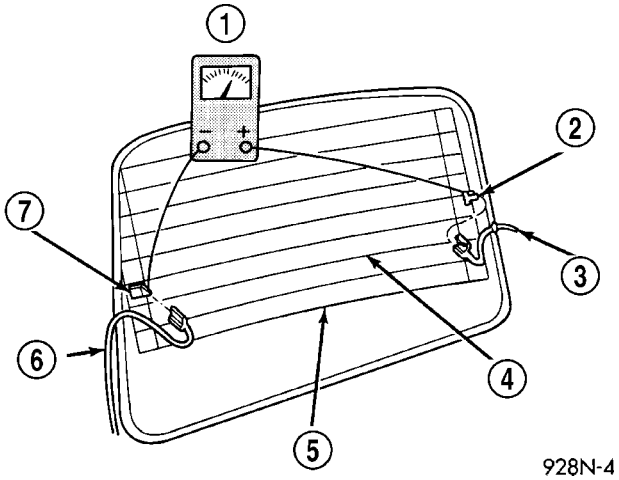

Fig. 2 Grid Line Test

1 - VOLTMETER
2 - VOLTAGE FEED (A)
3 - FEED WIRE
4 - MID-POINT (C)
5 - HEATED WINDOW GRID
6 - GROUND WIRE
7 - GROUND (B)

REAR WINDOW DEFOGGER RELAY

DESCRIPTION

The rear window defogger (EBL) relay (Fig. 3) is a International Standards Organization (ISO)-type relay. Relays conforming to the ISO specifications have common physical dimensions, current capacities, terminal patterns, and terminal functions. The rear window defogger relay is a electromechanical device that switches battery current through a fuse in the integrated power module (IPM) to the rear window defogger grid and switches battery current through a positive thermal coefficient (PTC) in the IPM to the outside mirror heating grids. The relay is energized when the relay coil is provided a ground path by the rear window defogger relay control in the front control module (FCM).

The rear window defogger (EBL) relay is located in the IPM in the engine compartment. See the fuse and relay layout map on the inner surface of the cover of the IPM for rear window defogger relay identification and location.

The rear window defogger (EBL) relay cannot be adjusted or repaired and, if damaged or faulty, it must be replaced.

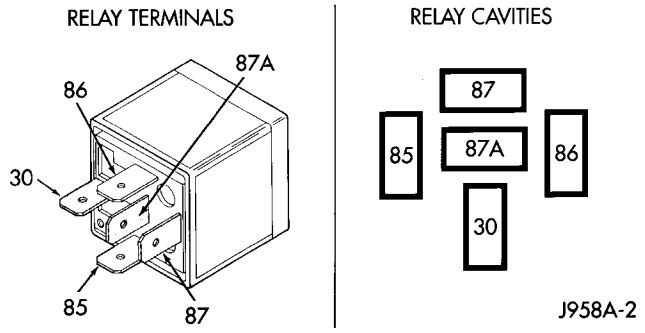

Fig. 3 Rear Window Defogger (EBL) Relay

OPERATION

The ISO-standard rear window defogger (EBL) relay consists of an electromagnetic coil, a resistor or diode, and three (two fixed and one movable) electrical contacts. The movable (common feed) relay contact is held against one of the fixed contacts (normally closed) by spring pressure. When the electromagnetic coil is energized, it draws the movable contact away from the normally closed fixed contact, and holds it against the other (normally open) fixed contact.

When the electromagnetic coil is de-energized, spring pressure returns the movable contact to the normally closed position. The resistor is connected in parallel with the electromagnetic coil in the relay, and helps to dissipate voltage spikes that are produced when the coil is de-energized.

Refer to the appropriate wiring information for diagnosis and testing of the EBL relay and for complete EBL system wiring diagrams.

REAR WINDOW DEFOGGER RELAY (Continued)

REMOVAL

(1) Disconnect and isolate the negative battery cable.

(2) Remove the cover from the integrated power module (IPM) (Fig. 4).

NOTE: Refer to the fuse and relay layout map on the inner surface of the cover of the IPM for rear window defogger (EBL) relay identification and location.

(3) Remove the EBL relay from the IPM.

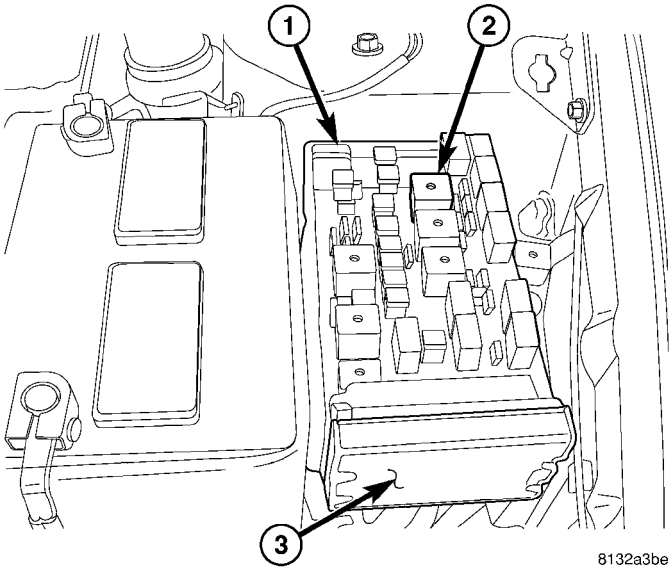

Fig. 4 Rear Window Defogger (EBL) Relay

1 - INTEGRATED POWER MODULE (IPM)
2 - REAR WINDOW DEFOGGER (EBL) RELAY
3 - FRONT CONTROL MODULE (FCM)

INSTALLATION

NOTE: Refer to the fuse and relay map on the inner surface of the cover of the integrated power module (IPM) for rear window defogger (EBL) relay identification and location.

(1) Position the EBL relay into the proper receptacle in the IPM.

(2) Align the EBL relay terminals with the terminal cavities in the IPM receptacle.

(3) Push down firmly on the EBL relay until the terminals are fully seated in the terminal cavities.

(4) Install the cover onto the IPM.

(5) Reconnect the negative battery cable.

REAR WINDOW DEFOGGER SWITCH

DESCRIPTION

The switch for the EBL system is integrated into the A/C-heater control located in the center of the instrument panel (Fig. 5).

When the rear window defogger switch is turned to the ON position, current is directed to the rear defogger grid lines and the heated power mirrors (if equipped). The heated grid lines heat the glass to help clear the surface of fog or frost.

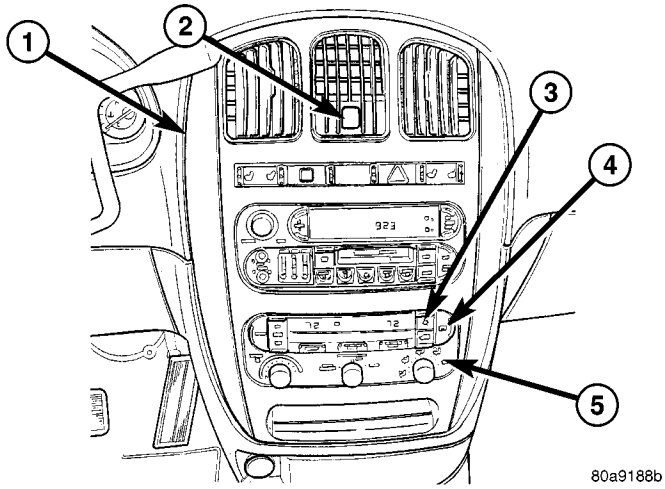

Fig. 5 A/C-Heater Control - Typical

1 - TRIM BEZEL
2 - INFRARED TEMPERATURE SENSOR
3 - A/C REQUEST SWITCH
4 - EBL/HEATED MIRROR SWITCH
5 - FRONT WINDOW DEFROSTER SELECTOR

OPERATION

Depressing the rear window defogger switch energizes the A/C-heater control module which then requests the front control module (FCM) to activate the rear window defogger (EBL) relay via the communication bus. The EBL relay controls the current to flow to the grids of the rear window defogger and the heated power side view mirrors. The EBL relay will be on for approximately 10 minutes or until the control switch or ignition is turned off. An amber indicator lamp in the defogger switch illuminates to indicate when the EBL system is On.

The rear window defogger switch and indicator lamp cannot be repaired and, if faulty or damaged, the entire A/C-heater control must be replaced.

REAR WINDOW DEFOGGER GRID

STANDARD PROCEDURE

GRID REPAIR PROCEDURE

WARNING: Materials contained in the Repair Kit (Part Number 04549275) may cause skin or eye irritation. The kit contains epoxy resin and amine type hardener, which are harmful if swallowed. Avoid contact with the skin and eyes. For skin contact, wash the affected areas with soap and water. For contact with the eyes, flush with plenty of water. Do not take internally. If taken internally, induce vomiting and call a physician immediately. Use with adequate ventilation. Do not use near fire or flame. Contains flammable solvents. Keep out of the reach of children. Failure to follow the warnings could result in possible personal injury or death.

Repair of the rear glass heating grid lines, bus bars or terminals can be accomplished using the Mopar® Rear Window Defogger Repair Kit (Part Number 04549275) or equivalent.

(1) Mask the repair area with masking tape so that the conductive epoxy can be applied neatly (Fig. 6). Extend the epoxy application onto the grid line or the bus bar on each side of the break.

(2) Follow the instructions in the repair kit for preparing the damaged area.

(3) Remove the package separator clamp and mix the two conductive epoxy components thoroughly within the packaging. Fold the package in half and cut the center corner to dispense the epoxy.

(4) For grid line repairs, mask the area to be repaired with masking tape or use a template.

(5) Apply the epoxy through the slit in the masking tape or template. Overlap both ends of the break by at least 19 millimeters (0.75 inch).

(6) For a terminal replacement, mask the adjacent areas so the epoxy can be extended onto the adjacent grid line as well as the bus bar. Apply a thin layer of epoxy to the area where the terminal was fastened and onto the adjacent grid line.

(7) Apply a thin layer of conductive epoxy to the terminal and place it in the proper location on the bus bar. To prevent the terminal from moving while the epoxy is curing, it must be wedged or clamped.

(8) Carefully remove the masking tape or template.

CAUTION: Do not allow the glass surface to exceed 204° C (400° F) when using a heat gun, or the glass may fracture.

(9) Allow the epoxy to cure 24 hours at room temperature, or carefully use a heat gun for fifteen minutes. When using a heat gun, hold it approximately 25.4 centimeters (10 inches) from the repair and do not allow the glass surface to exceed 204° C (400° F).

NOTE: Do not attach the wire harness connectors to the terminals until the curing process is complete.

(10) After the conductive epoxy is properly cured, remove the wedge or clamp from the terminal.

(11) Connect the wire harness leads to the grid terminals and verify EBL operation.

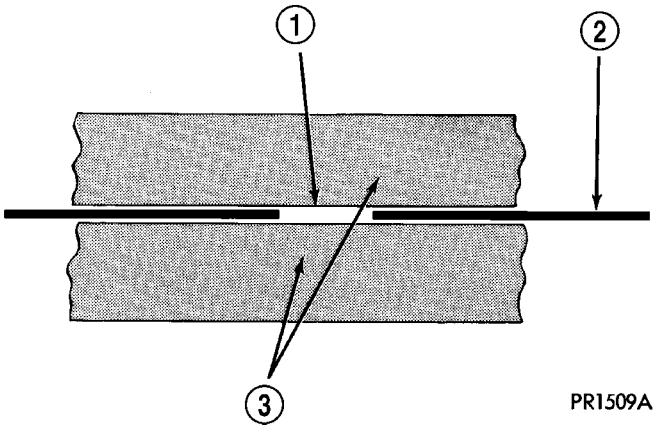

Fig. 6 Grid Line Repair

1 - BREAK
2 - GRID LINE
3 - MASKING TAPE

HEATED MIRRORS

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HEATED MIRRORS

DESCRIPTION

The optional heated mirror system is controlled by the momentary rear window defogger switch which is integral to the A/C-heater control (Fig. 1). An amber indicator lamp in the switch will illuminate to indicate when the rear window defogger (EBL) system is turned on.

The heated mirror system only operates in concert with the EBL system, and will be automatically shut off after a programmed time interval of about 10 minutes. After the initial time interval has expired, if the defogger switch is turned on again during the same ignition cycle, the heated mirror system will automatically shut off after about 5 minutes.

The heated mirror system will automatically shut off if the ignition switch is turned to the Off position, or it can be shut off manually by pressing the rear window defogger switch a second time.

OPERATION

When the rear window defogger switch is pressed, the rear window defogger (EBL) system becomes activated and an electric heater grid located behind the glass of each of the outside rear view mirrors is energized. When energized, each of these heater grids produce heat to help clear the outside rear view mirrors of ice, snow, or fog.

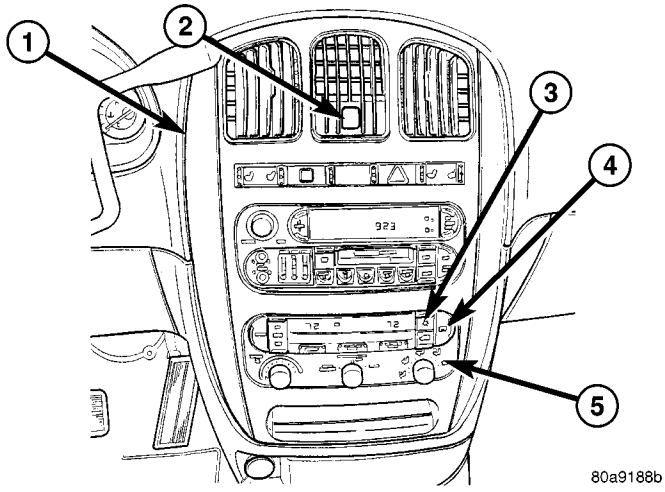

Fig. 1 A/C-Heater Control Panel

1 - TRIM BEZEL
2 - INFRARED TEMPERATURE SENSOR
3 - A/C REQUEST SWITCH
4 - EBL/HEATED MIRROR SWITCH
5 - FRONT WINDOW DEFROSTER SELECTOR

If the outside mirror heating grids are both inoperative, refer to DIAGNOSIS AND TESTING - REAR WINDOW DEFOGGER SYSTEM in his group. If only one of the outside mirror heating grids is inoperative, Refer to 8 - ELECTRICAL/POWER MIRRORS - DIAGNOSIS AND TESTING.

The heating grid behind each outside mirror glass cannot be repaired and, if faulty or damaged, the entire power mirror assembly must be replaced.

HEATED SEAT SYSTEM

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HEATED SEAT SYSTEM

DESCRIPTION

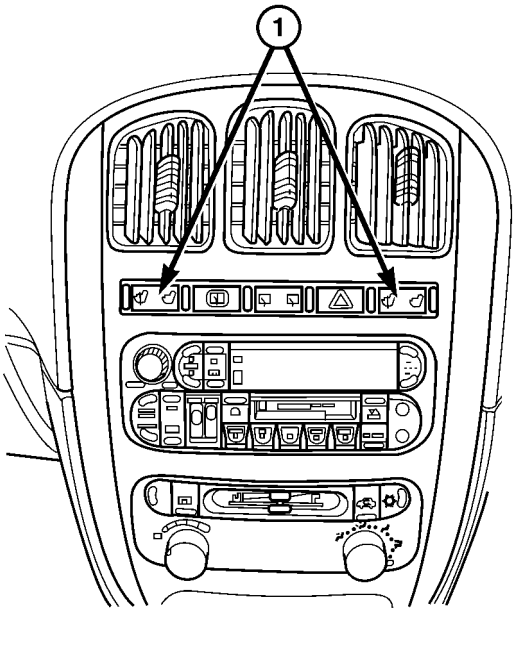

Fig. 1 HEATED SEAT SWITCH LOCATIONS

1 - HEATED SEAT SWITCHES

Vehicles with the heated seat option can be visually identified by the two separate heated seat switches located in the instrument panel center stack, just above the radio (Fig. 1). The heated seat system allows the front seat driver and passenger to select from two different levels of supplemental electrical seat heating (HI/LO), or no seat heating to suit their individual comfort requirements. The heated seat system for this vehicle includes the following major components:

- **Heated Seat Elements** - Four heated seat elements are used per vehicle, two for each front seat. One heated seat element is integral to each front seat trim cover, one in the seat back and one in the seat bottom (cushion). Service replacement heating elements are available, (Refer to 8 - ELECTRICAL/ HEATED SEATS/HEATED SEAT ELEMENT - DESCRIPTION) for additional information.
- **Heated Seat Modules** - Two heated seat modules are used per vehicle. One module is mounted to each of the seat cushion pans, located under the forward edge of each front seat. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/ MEMORY HEATED SEAT/MIRROR MODULE - DESCRIPTION) for additional information.
- **Heated Seat Sensors** - Two heated seat sensors are used per vehicle, one for each front seat. The heated seat sensors are integral to each of the heated seat bottoms (cushions).
- **Heated Seat Switch** - Two heated seat switches are used per vehicle, one for the driver and one for the passenger side front seats. The switches are mounted in the instrument panel center stack. (Refer to 8 - ELECTRICAL/HEATED SEATS/ DRIVER HEATED SEAT SWITCH - DESCRIPTION) for additional information.

HEATED SEAT SYSTEM (Continued)

Hard wired circuitry connects the heated seat system components to each other through the electrical system of the vehicle. These circuits may be connected to each other, to the vehicle electrical system and to the heated seat system components through the use of a combination of soldered splices and splice block connectors. Refer to the appropriate wiring information for complete circuit schematic or connector pin-out information.

OPERATION

The heated seat system components operate on battery current received through a fuse in the Integrated Power Module (IPM) on a fused ignition switch output (run) circuit from the Body Control Module (BCM). The system will only operate when the ignition switch is in the On position. The heated seat system will be turned Off automatically whenever the ignition switch is turned to any position except On. Also, the heated seat system will not operate when the surface temperature of the seat cushion cover at either heated seat sensor is above the designed temperature set points of the system.

DIAGNOSIS AND TESTING

HEATED SEAT SYSTEM

The most efficient means of diagnosing the heated seat system is by individual component. For diagnosis of a specific component refer to the following:

- Heated seat module, (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/MEMORY HEATED SEAT/MIRROR MODULE - DIAGNOSIS AND TESTING).
- Heated seat elements, (Refer to 8 - ELECTRICAL/HEATED SEATS/HEATED SEAT ELEMENT - DIAGNOSIS AND TESTING).
- Heated seat switch, (Refer to 8 - ELECTRICAL/HEATED SEATS/DRIVER HEATED SEAT SWITCH - DIAGNOSIS AND TESTING).
- Heated seat sensor, (Refer to 8 - ELECTRICAL/HEATED SEATS/HEATED SEAT SENSOR - DIAGNOSIS AND TESTING).

Refer to the appropriate wiring information for complete circuit schematic or connector pin-out information.

HEATED SEAT SWITCH

DESCRIPTION

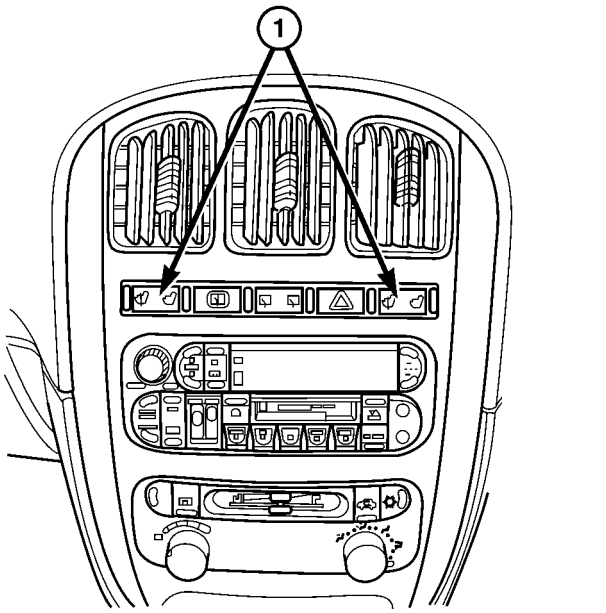

Fig. 2 HEATED SEAT SWITCH LOCATION

1 - HEATED SEAT SWITCHES

The heated seat switches are mounted in the instrument panel center bezel (Fig. 2). The two three-position rocker-type switches, one switch for each front seat, are incorporated into one large switch assembly that also includes the hazard, rear window wiper and washer switches. Each heated seat switch provides a resistor multiplexed signal to its respective Heated Seat Module (HSM) through separate hard wired circuits. Each switch has an Off, Low, and High position so that both the driver and the front seat passenger can select a preferred seat heating mode. Each switch has two Light-Emitting Diodes (LED) which light to indicate that the heater for the seat is turned on.

The heated seat switches and their LEDs cannot be repaired. If either switch or LED is faulty or damaged, the entire switch assembly must be replaced.

HEATED SEAT SWITCH (Continued)

OPERATION

There are three positions that can be selected with each of the heated seat switches: Off, Low, or High. When the left side of the switch rocker is fully depressed, the Low position is selected and the low position LED indicator illuminates. When the right side of the switch rocker is fully depressed, the High position is selected and the high position LED indicator illuminates. When the switch rocker is moved to its neutral position (middle), Off is selected and both LED indicators are extinguished.

Each switch provides separate resistor, hard wire inputs to its respective Heated Seat Module (HSM) to indicate the selected switch position. The heated seat module responds to the heated seat switch status messages by controlling the output to the seat heater elements of the selected seat. The Low heat position set point is about 36° C (97° F), and the High heat position set point is about 41° C (105° F).

DIAGNOSIS AND TESTING

DRIVER HEATED SEAT SWITCH

Refer to the appropriate wiring information for complete circuit schematic or connector pin-out information.

WARNING: REFER TO THE RESTRAINTS SECTION OF THIS MANUAL BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, SEAT OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIRBAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

CHECKING SWITCH SIGNAL AND WIRING AT THE MODULE

(1) Disconnect and isolate the battery negative cable.

(2) Access and disconnect the gray 4-way connector from the heated seat module. Visually inspect wiring terminals for damage that would prevent positive connection. If not OK, repair or replace the necessary components.

(3) Connect the battery negative cable. Place the heated seat switch in the LO position. Using an Ohmmeter, check the resistance between cavities 2 and 3 of the gray connector noted above. Resistance should be about 3.5 kilohms (3500 ohms). If not OK, check resistance directly at switch, as noted below. If OK, proceed to the next step. If not OK, replace the faulty switch.

(4) Place the heated seat switch in the HI position. Using an ohmmeter, check the resistance between cavities 2 and 3 of the gray connector noted above. Resistance should be about 1.4 kilohms (1400 ohms). If not OK, check resistance directly at the switch, as indicated in the Heated Seat Switch Test Table. If OK, proceed. If not OK replace the faulty switch.

(5) With the system ON in the HI position, check for battery voltage and ground at cavities 4 and 1. If OK, proceed with testing remaining components. If not OK, repair open or shorted wiring.

CHECKING SWITCH ONLY

(1) Disconnect and isolate the battery negative cable. Remove the center bezel from the instrument panel (Refer to 23 - BODY/INSTRUMENT PANEL/ INSTRUMENT PANEL CENTER BEZEL - REMOVAL). Check for continuity between the ground circuit cavity (#10) of the instrument panel center bezel switch electrical connector and a good ground. There should be continuity. If OK, go to Step 2. If not OK, repair the open ground circuit to ground as required.

(2) Connect the battery negative cable. Turn the ignition switch to the On position. Check for battery voltage at the fused ignition switch output (run) circuit cavity of the instrument panel center bezel switch electrical connector (#4). If OK, turn the ignition switch to the Off position, and go to Step 3. If not OK, repair the open fused ignition switch output (run) circuit as required.

(3) Test the heated seat switch as shown in the Heated Seat Switch Test chart and the connector pinout below (Fig. 3). If OK, go to Step 4. If not OK, replace the instrument panel center bezel switch assembly.

HEATED SEAT SWITCH (Continued)

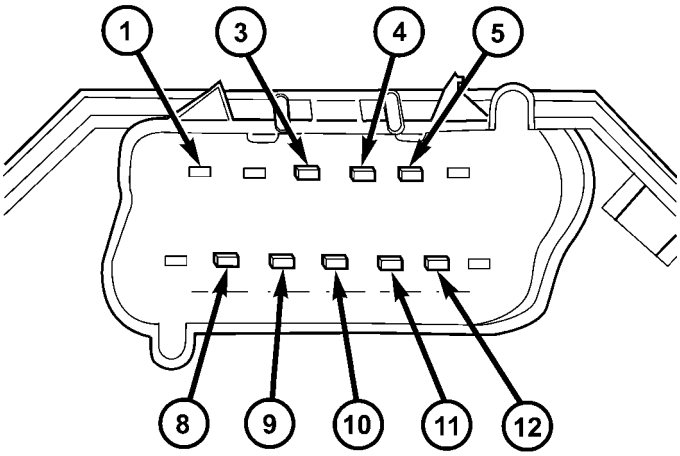

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Fig. 3 Instrument Panel Center Bezel Switch Connector

DRIVER HEATED SEAT SWITCH TEST		
SWITCH POSITION	RESISTANCE BETWEEN	RESISTANCE (OHMS)
Off	Pin 4 & 5	OPEN
Low	Pin 4 & 5	3570
High	Pin 4 & 5	1430
All resistance values are ±1%.		

PASSENGER HEATED SEAT SWITCH TEST		
SWITCH POSITION	RESISTANCE BETWEEN	RESISTANCE (OHMS)
Off	Pin 3 & 4	OPEN
Low	Pin 3 & 4	3570
High	Pin 3 & 4	1430
All resistance values are ±1%.		

(4) Connect the instrument panel center bezel switch and test the heated seat system for proper operation. If the system is still inoperative proceed with checking remaining components.

REMOVAL

WARNING: ON VEHICLES EQUIPPED WITH AIRBAGS, REFER TO THE RESTRAINTS SECTION OF THIS MANUAL BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, SEAT OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIRBAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

(1) Disconnect and isolate the battery negative cable.

(2) Remove the instrument panel center bezel, (Refer to 23 - BODY/INSTRUMENT PANEL/INSTRUMENT PANEL CENTER BEZEL - REMOVAL).

(3) Remove the three screws (Fig. 4) that secure the heated seat switch to the back of the instrument panel center bezel.

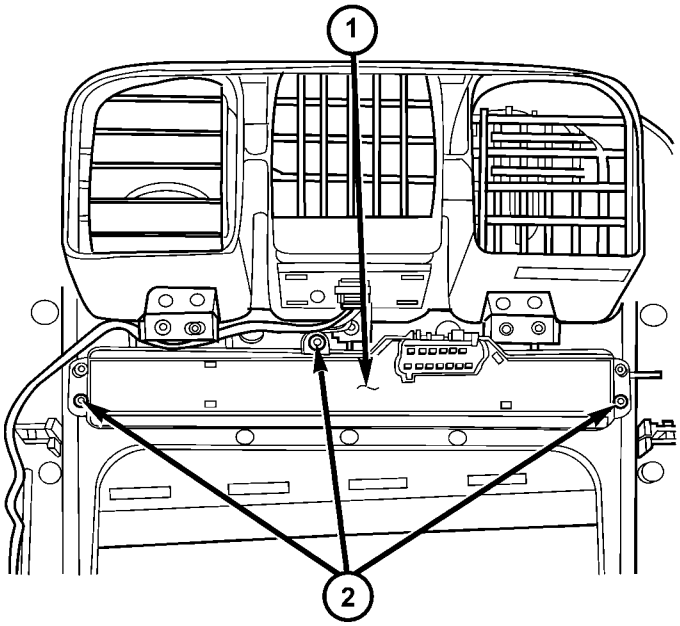

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Fig. 4 SWITCH RETAINING SCREWS

1 - HEATED SEAT SWITCH ASSEMBLY
2 - RETAINING SCREWS

(4) Remove the heated seat switch from the back of the instrument panel center bezel.

INSTALLATION

(1) Position the heated seat switch onto the back of the instrument panel center bezel.

(2) Install and tighten the three screws (Fig. 5) that secure the heated seat switch to the back of the instrument panel center bezel. Tighten the screws to 1.5 N·m (13 in. lbs.).

HEATED SEAT SWITCH (Continued)

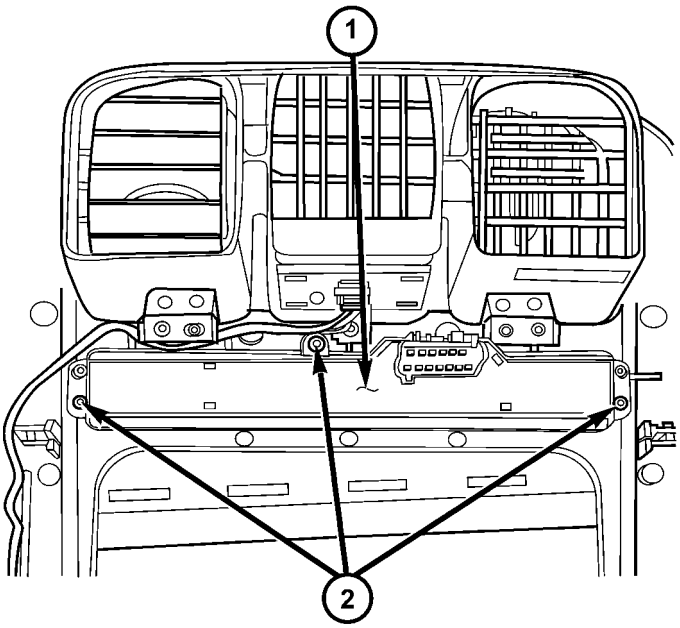

Fig. 5 SWITCH RETAINING SCREWS

1 - HEATED SEAT SWITCH ASSEMBLY
2 - RETAINING SCREWS

(3) Install the center bezel onto the instrument panel, (Refer to 23 - BODY/INSTRUMENT PANEL/ INSTRUMENT PANEL CENTER BEZEL - INSTALLATION).

(4) Connect the battery negative cable.

HEATED SEAT ELEMENTS

DESCRIPTION

The heated seat system includes two seat heating elements in each front seat, one for the seat cushion and the other for the seat back. The two elements for each seat that are connected in series with the Heated Seat Module (HSM). The temperature sensor is a Negative Temperature Coefficient (NTC) thermistor. One temperature sensor is used for each seat, and it is located on the seat cushion heating element for all models.

The seat heating elements are attached to the seat cushion cover trim and seat back cover trim units. The heated seat elements and the temperature sensor cannot be adjusted or repaired and, if faulty or damaged, the seat element assembly must be replaced, (Refer to 8 - ELECTRICAL/HEATED SEATS/HEATED SEAT ELEMENT - REMOVAL).

OPERATION

The heated seat elements resist the flow of electrical current. When battery current is passed through the elements, the resistance of the elements to the current flow is released in the form of heat. The temperature sensor is a Negative Temperature Coefficient (NTC) thermistor. When the temperature of the seat cushion cover rises, the resistance of the sensor decreases. The heated seat module supplies a five-volt signal to one side of each sensor, and monitors the voltage drop through the sensor on a return circuit. The heated seat module uses this temperature sensor input to monitor the temperature of the seat, and regulates the current flow to the seat heating elements accordingly.

DIAGNOSIS AND TESTING

HEATED SEAT ELEMENTS

The wire harness connectors for the seat cushion and seat back heating elements are located under the seat, at the heated seat module. Refer to the appropriate wiring information for complete circuit schematic or connector pin-out information.

In order to access and test the heated seat elements it will be necessary to remove the appropriate front seat retaining bolts and lay the seat rearward, up against one of the rear seats. It is not necessary to disconnect the seat electrical connectors, just use care not to damage the attached wire harnesses while testing.

NOTE: When checking heated seat elements for continuity, be certain to move the heating element being checked. Moving the element, such as sitting in the seat will eliminate the possibility of an intermittent open in the element which would only be evident if the element was in a certain position. Failure to check the element in various positions could result in an incomplete test.

SEAT CUSHION ELEMENT

(1) From under the vehicle, remove the appropriate seats four retaining nuts.

(2) From inside the vehicle, pull the seat up, off the mounting studs and lay it back, up against one of the rear seats.

(3) Locate the heated seat module, attached to the bottom of the seat cushion pan. Remove the heated seat module from the seat cushion pan. Do not disconnect the electrical connectors at this time.

(4) Locate and disconnect the green 4-way electrical connector, connected to the heated seat module.

(5) Check for continuity between the two outboard circuit cavities of the wire harness connector (Pins

HEATED SEAT ELEMENTS (Continued)

1&4). There should be continuity. If OK, (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/MEMORY HEATED SEAT/MIRROR MODULE - DIAGNOSIS AND TESTING) for complete system testing procedures. If not OK, install a replacement heated seat cushion element, (Refer to 8 - ELECTRICAL/HEATED SEATS/HEATED SEAT ELEMENT - INSTALLATION).

SEAT BACK ELEMENT

(1) From under the vehicle, remove the appropriate seats four retaining nuts.

(2) From inside the vehicle, pull the seat up and off the mounting studs and lay it back, up against one of the rear seats.

(3) Locate the heated seat module, attached to the bottom of the seat cushion pan. Remove the heated seat module from the seat cushion pan. Do not disconnect the electrical connectors at this time.

(4) Locate and disconnect the gray 2-way electrical connector, connected to the heated seat module.

(5) Check for continuity between the two circuit cavities of the 2-way wire harness connector. There should be continuity. If OK, (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/MEMORY HEATED SEAT/MIRROR MODULE - DIAGNOSIS AND TESTING) for complete system testing procedures. If not OK, install a replacement heated seat back element, (Refer to 8 - ELECTRICAL/HEATED SEATS/HEATED SEAT ELEMENT - INSTALLATION).

REMOVAL

NOTE: Do not remove the factory installed heating elements from the seat or seat back cushions. The original element is permanently attached and cannot be removed without permanent damage. The replacement heating element is designed to be applied directly on top of the factory installed heating element.

(1) Disconnect and isolate the battery negative cable.

(2) Remove the appropriate seat cushion or seat back trim cover.

(3) Disconnect the inoperative heated seat cushion or seat back element electrical connectors (Fig. 6).

(4) Locate the wires leading from the inoperative heating element and cut them off flush with the edge of the original heating element.

INSTALLATION

(1) Peel off the adhesive backing on the back of the replacement heating element and stick directly on top of the factory installed heating element (Fig. 7).

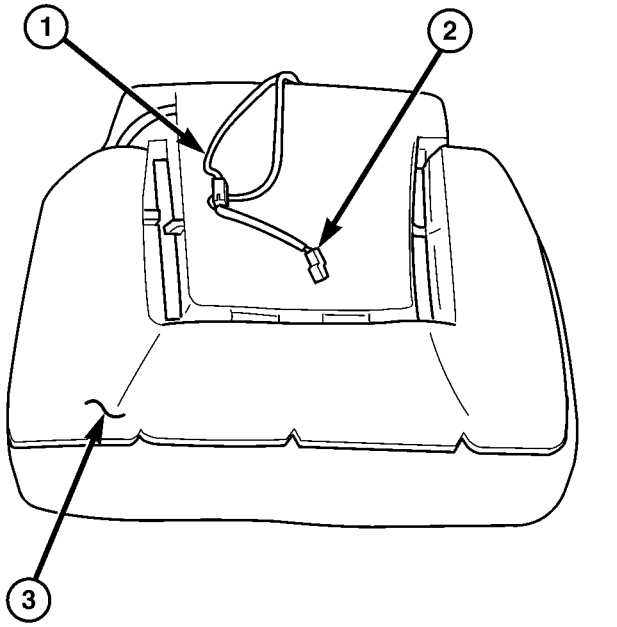

Fig. 6 HEATING ELEMENT INSTALLED - TYPICAL

1 - SEAT BACK WIRE HARNESS
2 - HEATED SEAT WIRE HARNESS CONNECTOR
3 - HEATED SEAT CUSHION ELEMENT

CAUTION: During the installation of the replacement heating element, be careful not to fold or crease the element assembly. Folds or creases will cause premature failure.

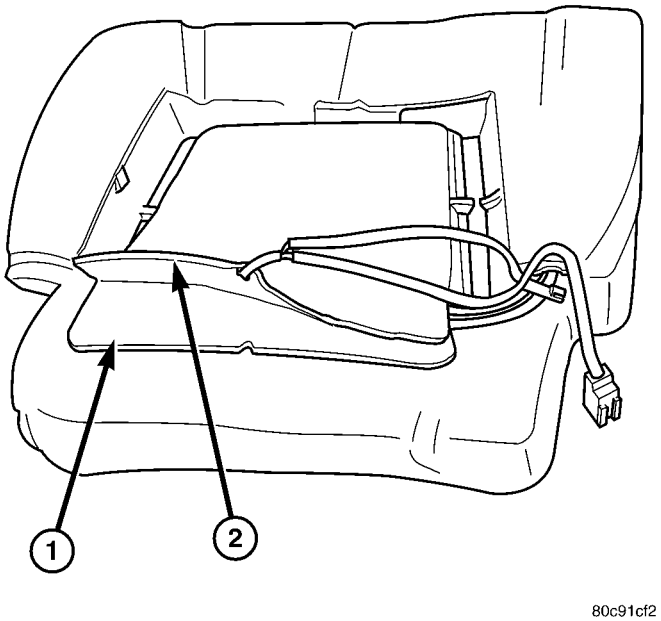

Fig. 7 HEATING ELEMENT INSTALLATION

1 - ORIGINAL (INOPERATIVE) HEATING ELEMENT
2 - REPLACEMENT HEATING ELEMENT

HEATED SEAT ELEMENTS (Continued)

(2) Connect the new heating element electrical connectors (Fig. 8). **Passenger seat shown, driver seat similar.**

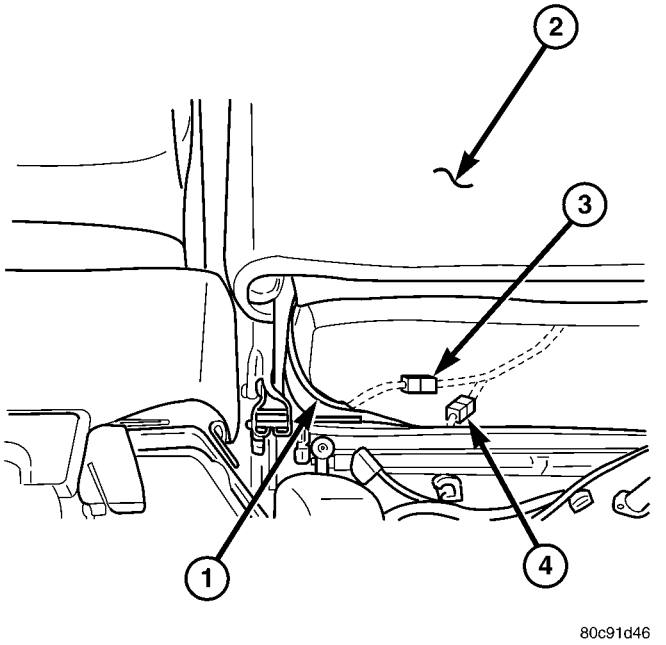

Fig. 8 HEATED SEAT WIRE HARNESS ROUTING

1 - SEAT BACK HEATED SEAT WIRE HARNESS
2 - PASSENGER SEAT BACK
3 - SEAT BACK ELEMENT CONNECTOR
4 - SEAT CUSHION ELEMENT CONNECTOR

(3) Connect the battery negative cable.

(4) Verify heated seat system operation.

(5) Install the appropriate seat cushion or seat back trim cover.

NOTE: Make certain the seat wire harness is correctly routed through the seat and seat back. The excess wire between the cushion and back elements should be securely tucked between the rear of the cushion foam and the rear carpet flap of the trim cover.

HEATED SEAT SENSOR

DESCRIPTION

Two heated seat sensors are used per vehicle, one in each front seat cushion heating element. The heated seat temperature sensor is a Negative Temperature Coefficient (NTC) thermistor.

The heated seat sensors cannot be repaired or adjusted and if found to be faulty, the complete heated seat cushion element must be replaced.

OPERATION

The temperature sensor is a Negative Temperature Coefficient (NTC) thermistor. When the temperature of the seat cushion cover rises, the resistance of the sensor decreases. The heated seat module supplies a five-volt current to one side of each sensor, and monitors the voltage drop through the sensor on a return circuit. The heated seat module uses this temperature sensor input to monitor the temperature of the seat, and regulates the current flow to the seat heating elements accordingly.

DIAGNOSIS AND TESTING

HEATED SEAT SENSOR

Refer to the appropriate wiring information for complete circuit schematic or connector pin-out information.

(1) Disconnect and isolate the battery negative cable. Disconnect the green 4-way heated seat module wire harness connector.

(2) Using an ohmmeter, check the resistance between cavities 2 and 3. The sensor resistance should be between 50 kilohms at 15° C (60° F) and 2 kilohms at 30° C (85° F). If not OK, replace the faulty seat element and sensor assembly.