ELECTRICALLY HEATED SYSTEMS

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REAR WINDOW DEFOGGER SYSTEM

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DESCRIPTION AND OPERATION

REAR WINDOW DEFOGGER SYSTEM

DESCRIPTION

An electrically heated rear window defogger is standard factory-installed equipment on this model. Electrically heated outside rear view mirrors are available facory-installed optional equipment. When the rear window defogger system is turned on, electric heater grids on the liftgate flip-up glass and behind both outside rear view mirror glasses are energized. These electric heater grids produce heat to help clear the rear window glass and the outside rear view mirrors of ice, snow, or fog. The rear window defogger system control circuit uses ignition switched battery current, so the system will only operate when the ignition switch is in the On position.

This group covers the following components of the rear window defogger system:

- Outside mirror heating grid
- Rear glass heating grid
- Rear window defogger relay
- Rear window defogger switch.

Certain functions and features of the rear window defogger system rely upon resources shared with other electronic modules in the vehicle over the Programmable Communications Interface (PCI) data bus network. The PCI data bus network allows the sharing of sensor information. This helps to reduce wire harness complexity, internal controller hardware, and component sensor current loads. At the same time, this system provides increased reliability, enhanced diagnostics, and allows the addition of many new feature capabilities. For diagnosis of these electronic modules or of the PCI data bus network, the use of a DRB scan tool and the proper Diagnostic Procedures manual are recommended.

The other electronic modules that may affect power lock system operation are as follows:

- **Body Control Module (BCM)** - Refer to **Body Control Module** in the Description and Operation section of Group 8E - Instrument Panel Systems for more information.
- **Driver Door Module (DDM)** - Refer to **Door Module** in the Power Lock System section of Group 8P - Power Lock Systems.
- **Passenger Door Module (PDM)** - Refer to **Door Module** in the Power Lock System section of Group 8P - Power Lock Systems.

Refer to **Rear Window Defogger** and **Power Mirrors** in the Contents of Group 8W - Wiring Diagrams for complete circuit diagrams. Following are general descriptions of the major components in the power lock system.

DESCRIPTION AND OPERATION (Continued)

OPERATION

The rear window defogger system is controlled by a momentary switch that is integral to the heating and air conditioning control unit located in the center stack area of the instrument panel. A Light-Emitting Diode (LED) in the switch button will light to indicate when the rear window defogger system is turned on. The BCM, which contains the rear window defogger system timer and control logic, monitors the status of the defogger switch through a hard-wired input. The BCM then sends control outputs through a hard wired circuit to energize or de-energize the defogger relay.

The electrically heated outside rear view mirror heating grids are also controlled by the rear window defogger switch. When the BCM receives an input from the switch, it also sends a defogger switch status message to the DDM and the PDM over the PCI data bus. The DDM and PDM respond to the defogger switch status messages by energizing or de-energizing the battery current feed to their respective outside rear view mirror heating grids.

The rear window defogger 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 defogger 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 rear window defogger switch again.

See the owner's manual in the vehicle glove box for more information on the features, use and operation of the rear window defogger system.

OUTSIDE MIRROR HEATING GRID

DESCRIPTION

Electrically heated outside rear view mirrors are standard equipment on this model. These mirrors feature an electric heating grid located behind the mirror glass of each power operated outside rear view mirror. These heating grids consist of a single resistor wire routed in a grid-like pattern and captured between two thin sheets of plastic. When electrical current is passed through the resistor wire, it produces enough heat energy to clear the outside mirror glass of ice, snow or fog. Battery current is directed to the outside mirror heating grid only when the rear window defogger switch is in the On position.

If the outside mirror heating grids and the rear window heating grid are all inoperative, refer to **Rear Window Defogger System** in the Diagnosis and Testing section of this group for diagnosis. If the outside mirror heating grids are inoperative, but the rear window heating grid is operating as designed, refer to **Power Mirror** in the Diagnosis and Testing section of Group 8T - Power Mirror Systems for diagnosis of the outside mirror heating grids.

The heating grid behind each outside mirror glass cannot be repaired and, if faulty or damaged, the entire power mirror unit must be replaced. Refer to **Power Mirror** in the Removal and Installation section of Group 8T - Power Mirror Systems for the service procedures.

OPERATION

The outside mirror heating grids are energized and de-energized by the Driver Door Module (DDM) and the Passenger Door Module (PDM) based upon the rear window defogger switch status. The Body Control Module (BCM) monitors the rear window defogger switch. When the BCM receives an input from the switch, it sends a defogger switch status message to the DDM and the PDM over the Programmable Communications Interface data bus. The DDM and PDM respond to the defogger switch status messages by energizing or de-energizing the battery current feed to their respective outside rear view mirror heating grids.

REAR GLASS HEATING GRID

DESCRIPTION

The electrically heated rear window glass is standard equipment on this model. The liftgate flip-up glass has two electrically conductive vertical bus bars and a series of horizontal grid lines made of a silver-ceramic material, which is baked on and bonded to the inside surface of the glass. These grid lines and the bus bars comprise a parallel electrical circuit. A spade type terminal near the top of each bus bar accept the connectors from the two coiled liftgate wire harness take outs.

The grid lines and bus bars are highly resistant to abrasion. However, it is possible for an open circuit to occur in an individual grid line, resulting in no current flow through the line. The grid lines can be damaged or scraped off with sharp instruments. Care should be taken when cleaning the glass or removing foreign materials, decals, or stickers from the glass. Normal glass cleaning solvents or hot water used with rags or toweling is recommended.

A repair kit is available to repair the grid lines and bus bars, or to reinstall the heated glass terminals. Refer to **Rear Glass Heating Grid Repair** in the Service Procedures section of this group for the repair procedures.

DESCRIPTION AND OPERATION (Continued)

OPERATION

The rear glass heating grid is energized and de-energized by the rear window defogger relay. The Body Control Module (BCM) monitors the rear window defogger switch. When the BCM receives an input from the switch, it energizes or de-energizes the rear window defogger relay through a hard wired control output. The rear defogger relay switches fused battery current to the rear window grid lines through the bus bars. The grid lines heat the rear window glass to clear the surface of ice, snow or fog. Protection for the rear glass heating grid circuit is provided by a fuse in the Power Distribution Center (PDC).

REAR WINDOW DEFOGGER SWITCH

DESCRIPTION

The rear window defogger switch is integral to the heating and air conditioning control unit, which is located in the instrument panel center stack below the radio receiver. This momentary switch provides a hard wired ground signal to the Body Control Module (BCM) each time it is depressed. A Light Emitting Diode (LED) in the push button for the rear window defogger switch illuminates to indicate when the rear window defogger system is turned on.

The rear window defogger switch and the rear window defogger switch LED indicator cannot be repaired and, if faulty or damaged, the entire heating and air conditioning control unit must be replaced. Refer to **Heater-A/C Control** in the Removal and Installation section of Group 24 - Heating and Air Conditioning for the service procedures.

OPERATION

When the rear window defogger switch push button is depressed, it momentarily closes the rear window defogger switch sense circuit for the BCM to ground. The BCM monitors the rear window defogger switch sense circuit. Each time the BCM rear window defogger timer and logic circuitry sees another input from the switch, it toggles a control output to the rear window defogger relay. Energizing the rear window defogger relay provides electrical current to the rear window defogger grid and to the LED indicator in the switch, which lights to indicate when the defogger system is turned on. A dedicated fuse in the junction block protects the rear window defogger relay output circuit to the LED indicator.

REAR WINDOW DEFOGGER RELAY

DESCRIPTION

The rear window defogger relay is an electromechanical device that switches fused battery current to the rear glass heating grid and the Light-Emitting Diode (LED) indicator of the rear window defogger switch, when the Body Control Module (BCM) rear window defogger timer and logic circuitry grounds the relay coil. The rear window defogger relay is located in the junction block, under the left end of the instrument panel in the passenger compartment.

The rear window defogger relay is a International Standards Organization (ISO) relay. Relays conforming to the ISO specifications have common physical dimensions, current capacities, terminal patterns, and terminal functions.

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

OPERATION

The ISO 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 or diode 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.

DIAGNOSIS AND TESTING

REAR WINDOW DEFOGGER SYSTEM

WARNING: ON VEHICLES EQUIPPED WITH AIRBAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIRBAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

For complete circuit diagrams, refer to **Rear Window Defogger** in the Contents of Group 8W - Wiring Diagrams. The operation of the electrically heated rear window defogger system can be confirmed in one of the following manners:

1. Turn the ignition switch to the On position. While monitoring the instrument panel voltmeter, depress the rear window defogger switch to the On position. When the rear window defogger switch is

DIAGNOSIS AND TESTING (Continued)

turned On, a distinct voltmeter needle deflection should be noted.

2. Turn the ignition switch to the On position. Depress the rear window defogger switch to the On position. The rear window defogger operation can be checked by feeling the rear window or outside rear view mirror glass. A distinct difference in temperature between the grid lines and the adjacent clear glass or the mirror glass can be detected within three to four minutes of operation.

3. Using a 12-volt DC voltmeter, contact the rear glass heating grid terminal A (right side) with the negative lead, and terminal B (left side) with the positive lead (Fig. 1). The voltmeter should read battery voltage.

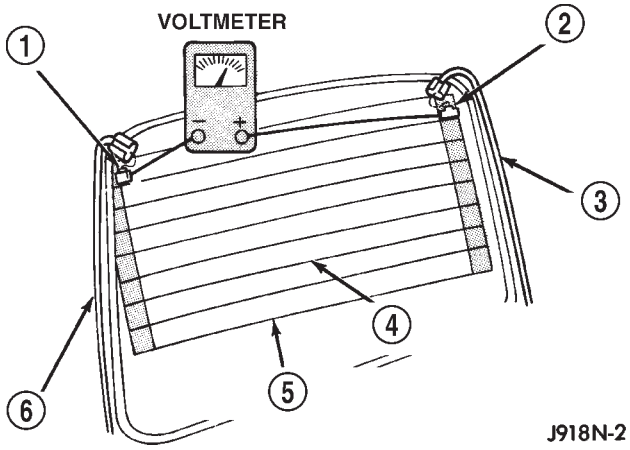


Fig. 1 Rear Window Glass Grid Test

1 – TERMINAL "A"
2 – TERMINAL "B"
3 – FEED WIRE
4 – MID-POINT "C" (TYPICAL)
5 – HEATED REAR WINDOW DEFOGGER GRID
6 – GROUND WIRE

The above checks will confirm rear window defogger system operation. Illumination of the rear window defogger switch LED indicator means that there is battery current available at the output of the rear window defogger relay, but does not confirm that battery current is reaching the rear glass heating grid lines.

If the rear window defogger system does not operate, the problem should be isolated in the following manner:

(1) Confirm that the ignition switch is in the On position.

(2) Ensure that the rear glass heating grid feed and ground terminals are connected to the glass. Confirm that the ground wire has continuity to ground.

(3) Check the fused B(+) fuse in the Power Distribution Center (PDC). The fuse must be tight in its receptacles and all electrical connections must be secure.

When the above steps have been completed and the rear glass heating grid is still inoperative, one or more of the following is faulty:

- Rear window defogger switch
- Rear window defogger relay
- Body Control Module (BCM)
- Rear window grid lines (all grid lines would have to be broken or one of the feed wires disconnected for the entire system to be inoperative).

When the above steps have been completed and the heated mirror glass heating grid is still inoperative, one or more of the following is faulty:

- Body Control Module (BCM)
- Programmable Communications Interface (PCI) data bus
- Driver Door Module (DDM) or Passenger Door Module (PDM)
- Outside rear view mirror heating grids.

If turning the rear window defogger system on produces a severe voltmeter deflection, check for a short circuit between the rear window defogger relay output and the rear glass heating grid.

REAR GLASS HEATING GRID

For complete circuit diagrams, refer to **Rear Window Defogger** in the Contents of Group 8W - Wiring Diagrams. To detect breaks in the rear glass heating grid lines, the following procedure is required:

(1) Turn the ignition switch to the On position. Turn the rear window defogger system on. The rear window defogger switch LED indicator should light. If OK, go to Step 2. If not OK, refer to **Rear Window Defogger Relay** in the Diagnosis and Testing section of this group.

(2) Using a 12-volt DC voltmeter, contact the rear glass heating grid vertical bus bar on the right side of the vehicle with the negative lead. With the positive lead, contact the rear glass heating grid vertical bus bar on the left side of the vehicle. The voltmeter should read battery voltage. If OK, go to Step 3. If not OK, repair the open rear window defogger relay output circuit to the rear window defogger relay as required.

(3) With the positive voltmeter lead still contacting the rear glass heating grid vertical bus bar on the left side of the vehicle, move the negative lead of the voltmeter to a good body ground point. The voltage reading should not change. If OK, go to Step 4. If not OK, repair the ground circuit to ground as required.

(4) Connect the negative lead of the voltmeter to the right side bus bar and touch each grid line at midpoint C with the positive lead. A reading of approximately six volts indicates a line is good. A

DIAGNOSIS AND TESTING (Continued)

reading of zero volts indicates a break in the grid line between midpoint C and the left side rear glass heating grid bus bar. A reading of ten to fourteen volts indicates a break between midpoint C and the right side rear heating grid bus bar. Move the positive lead on the grid line towards the break and the voltage reading will change as soon as the break is crossed.

REAR WINDOW DEFOGGER SWITCH

For complete circuit diagrams, refer to **Rear Window Defogger** in the Contents of Group 8W - Wiring Diagrams.

WARNING: ON VEHICLES EQUIPPED WITH AIRBAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, 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. Remove the heater and air conditioner control unit from the instrument panel and disconnect the 11-way (manual temperature control) or 16-way (automatic zone control) instrument panel wire harness connector from the heater and air conditioner control receptacle.

(2) Check for continuity between the ground circuit cavity of the 11-way or 16-way instrument panel wire harness connector for the heater and air conditioner control and a good ground. There should be continuity. If OK, go to Step 3. If not OK, repair the open ground circuit to ground as required.

(3) Connect two jumper wires to the heater and air conditioner control 11-way or 16-way connector receptacle. Connect one jumper from the ground circuit terminal in the 11-way or 16-way heater and air conditioner control connector receptacle to a good ground. Connect the other jumper from the fused rear window defogger relay output circuit terminal of the 11-way or 16-way connector receptacle to a 12-volt battery feed. The rear window defogger switch LED indicator should light. If OK, go to Step 4. If not OK, replace the faulty heater and air conditioner control unit.

(4) Check for continuity between the ground circuit and rear window defogger switch sense circuit terminals of the 11-way or 16-way heater and air conditioner control connector receptacle. There should be momentary continuity as the rear window defogger switch push button is depressed, and then no continuity. If OK, go to Step 5. If not OK, replace the faulty heater and air conditioner control unit.

(5) Disconnect the 22-way instrument panel wire harness connector from the Body Control Module (BCM) connector receptacle. Check for continuity between the rear window defogger switch sense circuit cavity of the 11-way or 16-way instrument panel wire harness connector for the heater and air conditioner control and a good ground. There should be no continuity. If OK, go to Step 6. If not OK, repair the shorted rear window defogger switch sense circuit as required.

(6) Check for continuity between the rear window defogger switch sense circuit cavities of the 11-way or 16-way instrument panel wire harness connector for the heater and air conditioner control and the 22-way instrument panel wire harness connector for the BCM. There should be continuity. If OK, refer to **Rear Window Defogger Relay** in the Diagnosis and Testing section of this group. If not OK, repair the open rear window defogger switch sense circuit as required.

REAR WINDOW DEFOGGER RELAY

WARNING: ON VEHICLES EQUIPPED WITH AIRBAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIRBAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

RELAY TEST

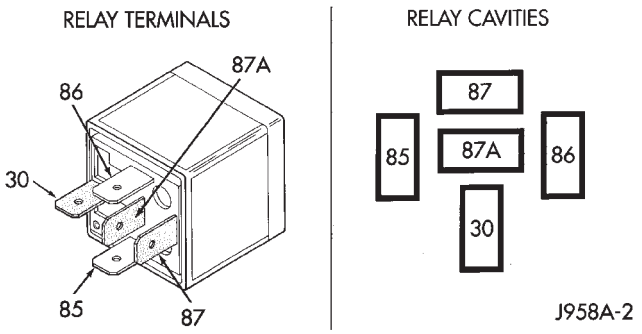
The rear window defogger relay (Fig. 2) is located in the junction block, under the left end of the instrument panel in the passenger compartment. Remove the rear window defogger relay from the junction block to perform the following tests:

(1) A relay in the de-energized position should have continuity between terminals 87A and 30, and no continuity between terminals 87 and 30. If OK, go to Step 2. If not OK, replace the faulty relay.

(2) Resistance between terminals 85 and 86 (electromagnet) should be 75 ± 10 ohms. If OK, go to Step 3. If not OK, replace the faulty relay.

(3) Connect a battery to terminals 85 and 86. There should now be continuity between terminals 30 and 87, and no continuity between terminals 87A and 30. If OK, refer to **Relay Circuit Test** in the Diagnosis and Testing section of this group. If not OK, replace the faulty relay.

DIAGNOSIS AND TESTING (Continued)



TERMINAL LEGEND	
NUMBER	IDENTIFICATION
30	COMMON FEED
85	COIL GROUND
86	COIL BATTERY
87	NORMALLY OPEN
87A	NORMALLY CLOSED

Fig. 2 Rear Window Defogger Relay

RELAY CIRCUIT TEST

(1) The relay common feed terminal cavity (30) is connected to battery voltage and should be hot at all times. If OK, go to Step 2. If not OK, repair the open fused B(+) circuit to the Power Distribution Center (PDC) fuse as required.

(2) The relay normally closed terminal (87A) is connected to terminal 30 in the de-energized position, but is not used for this application. Go to Step 3.

(3) The relay normally open terminal (87) is connected to the common feed terminal (30) in the energized position. This terminal supplies battery voltage to the rear glass heating grid and to the fuse in the junction block that feeds the rear window defogger switch LED indicator. There should be continuity between the cavity for relay terminal 87 and the rear glass heating grid and the rear window defogger switch LED indicator at all times. If OK, go to Step 4. If not OK, repair the open rear window defogger relay output circuit as required.

(4) The coil battery terminal (86) is connected to the electromagnet in the relay. It is connected to battery voltage and should be hot at all times. Check for battery voltage at the cavity for relay terminal 86. If OK, go to Step 5. If not OK, repair the open fused B(+) circuit to the PDC fuse as required.

(5) The coil ground terminal (85) is connected to the electromagnet in the relay. This terminal is provided with ground by the Body Control Module (BCM) rear window defogger timer and logic circuitry to energize the defogger relay. There should be continuity to the rear window defogger relay control circuit cavity of the 22-way instrument panel wire harness connector for the BCM. If OK, use a DRB scan tool and the proper Diagnostic Procedures manual to test the BCM. If not OK, repair the open rear window defogger relay control circuit as required.

SERVICE PROCEDURES

REAR GLASS HEATING GRID REPAIR

Repair of the rear glass heating grid lines, bus bars, and terminals can be accomplished using a Mopar Rear Window Defogger Repair Kit (Part Number 4267922) or equivalent.

WARNING: MATERIALS CONTAINED IN THE REPAIR KIT 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.

(1) Mask the repair area on the inside of the rear glass so that the conductive epoxy can be applied neatly. Extend the epoxy application onto the rear glass heating grid bus bar or grid line on each side of the break (Fig. 3).

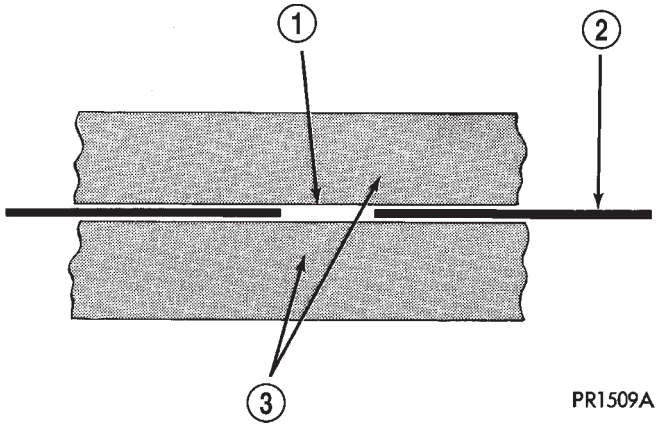


Fig. 3 Grid Line Repair - Typical

1 – BREAK
2 – GRID LINE
3 – MASKING TAPE

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

SERVICE PROCEDURES (Continued)

(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 rear glass heating grid line repairs, mask the area to be repaired with masking tape or 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 rear glass heating grid terminal replacement, mask the adjacent areas so the epoxy can be extended onto the adjacent grid line as well as onto the bus bar. Apply a thin layer of epoxy to the area where the terminal was previously 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 rear glass heating grid 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) or the glass may fracture.

(9) Allow the epoxy to cure for 24 hours at room temperature, or use a heat gun with a 260° to 371° C (500° to 700° F) range for fifteen minutes. Hold the heat gun approximately 25.4 centimeters (10 inches) from the repair.

(10) After the conductive epoxy is properly cured, remove the wedge or clamp from the terminal. Do not attach the wire harness connectors until the curing process is complete.

(11) Check the operation of the rear glass heating grid.

REMOVAL AND INSTALLATION

REAR WINDOW DEFOGGER RELAY

WARNING: ON VEHICLES EQUIPPED WITH AIRBAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIRBAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

REMOVAL

(1) Disconnect and isolate the battery negative cable.

(2) Remove the steering column opening cover from the instrument panel. Refer to **Steering Column Opening Cover** in the Removal and Installation section of Group 8E - Instrument Panel Systems for the procedures.

(3) The rear window defogger relay is located on the right side of the combination flasher in the junction block (Fig. 4).

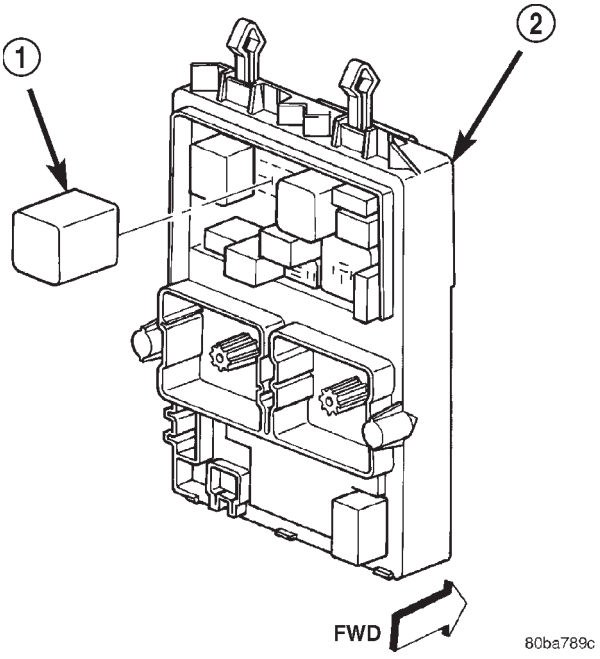


Fig. 4 Junction Block

1 – COMBINATION FLASHER
2 – JUNCTION BLOCK

(4) Remove the rear window defogger relay from the junction block.

INSTALLATION

(1) Position the rear window defogger relay in the proper receptacle in the junction block.

(2) Align the rear window defogger relay terminals with the terminal cavities in the junction block receptacle.

(3) Push in firmly on the rear window defogger relay until the terminals are fully seated in the terminal cavities in the junction block receptacle.

(4) Install the steering column opening cover onto the instrument panel. Refer to **Steering Column Opening Cover** in the Removal and Installation section of Group 8E - Instrument Panel Systems for the procedures.

(5) Reconnect the battery negative cable.

HEATED SEAT SYSTEM

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DESCRIPTION AND OPERATION

HEATED SEAT SYSTEM

DESCRIPTION

Individually controlled driver and passenger side electrically heated front seats are available factory-installed optional equipment on this model, when it is also equipped with the power seat option. The heated seat system allows both the driver and the front seat passenger the option to select one of two seat heating ranges, Low or High, or to turn the individual seat heaters Off using the heated seat switches located in the center lower bezel near the bottom of the instrument panel center stack. The heated seat switch circuit operates on ignition switched battery current supplied through a fuse in the junction block, only when the ignition switch is in the On position.

This group covers the following components of the heated seat system:

- Heated seat elements and sensors
- Heated seat module (or memory heated seat module)
- Heated seat switches.

The heated seat system also relies upon resources shared with other electronic modules in the vehicle over the Programmable Communications Interface (PCI) data bus network. The PCI data bus network allows the sharing of sensor information. This helps to reduce wire harness complexity, internal controller hardware, and component sensor current loads. At the same time, this system provides increased reliability, enhanced diagnostics, and allows the addition of many new feature capabilities. For diagnosis of these electronic modules or of the PCI data bus network, the use of a DRB scan tool and the proper Diagnostic Procedures manual are recommended.

The electronic modules that may affect heated seat system operation are as follows:

- **Body Control Module (BCM)** - Refer to **Body Control Module** in the Description and Operation section of Group 8E - Instrument Panel Systems for more information.
- **Heated Seat Module (HSM)** - Refer to **Heated Seat Module** in the Description and Operation section of this group for more information.
- **Memory Heated Seat Module (MHSM)** - If the vehicle is equipped with the Memory System, refer to **Memory Seat Module** in the Memory System section of Group 8R - Power Seat Systems for more information.

Refer to **Power Seats Premium I/III** in the Contents of Group 8W - Wiring Diagrams for complete circuit diagrams. Following are general descriptions of the major components in the heated seat system.

OPERATION

The heated seat system 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 designed temperature set points of the system. The heated seat system will not operate in ambient temperatures greater than about 41° C (105° F). The front seat heating elements and sensors are hard wired to the Heated Seat Module (HSM) or the Memory Heated Seat Module (MHSM).

The heated seat switches are hard wired to the Body Control Module (BCM). The BCM monitors the heated seat switch inputs, then sends heated seat switch status messages to the HSM or MHSM over the Programmable Communications Interface (PCI) data bus. The HSM or MHSM contains the control logic for the heated seat system. The HSM or MHSM responds to the heated seat switch status messages, ignition switch status messages, and the front seat heating element sensor inputs by controlling the output to the front seat heating elements through integral solid-state relays.

When a seat heater is turned on, the sensor located on the seat cushion electric heater element

DESCRIPTION AND OPERATION (Continued)

provides the HSM or MHSM 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 Low or High heated seat switch position, the HSM or MHSM energizes the integral solid-state relay, which supplies battery current to the heating elements in the seat cushion and back. When the sensor input indicates the correct temperature set point has been achieved, the HSM or MHSM de-energizes the solid-state relay. The HSM or MHSM will continue to cycle the solid-state relay as needed to maintain the temperature set point.

The HSM or MHSM and the seat heater elements operate on non-switched battery current supplied through the power seat circuit breaker in the junction block. However, the HSM or MHSM will automatically turn off the heating elements if it detects an open in the sensor circuit, a short in the heating element circuit causing an excessive current draw, or when the ignition switch is turned to the Off position.

See the owner's manual in the vehicle glove box for more information on the features, use and operation of the heated seat system.

HEATED SEAT SWITCH

DESCRIPTION

The heated seat switches are mounted in the center lower bezel, which is located near the bottom of the instrument panel center stack. The two three-position rocker-type switches, one switch for each front seat, provide a resistor multiplexed signal to the Body Control Module (BCM) 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), one each for the Low position and the High position, which light to indicate that the heater for the seat that the switch controls is turned on. Each switch is also back lit by a replaceable incandescent bulb.

The heated seat switches and their LEDs cannot be repaired. If either switch or LED is faulty or damaged, the entire switch unit must be replaced. The incandescent switch illumination bulb and bulb holder units are available for service replacement.

OPERATION

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

Both switches provide separate resistor multiplexed hard wire inputs to the BCM to indicate the selected switch position. The BCM monitors the switch inputs and sends heated seat switch status messages to the Heated Seat Module (HSM) or the Memory Heated Seat Module (MHSM) over the Programmable Communications Interface (PCI) data bus. The HSM or MHSM 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).

HEATED SEAT MODULE

DESCRIPTION

There are two different electronic modules that can be used in the optional heated seat system. The Heated Seat Module (HSM) is used on vehicles that are not equipped with the optional Memory System. The Memory Heated Seat Module (MHSM) is used on vehicles that are equipped with the optional Memory System and the optional heated seat system. A third electronic module, the Memory Seat Module (MSM), is used on vehicles equipped with the Memory System without the optional heated seat system. Refer to **Memory System** in the Memory System section of Group 8R - Power Seat Systems for more information on the memory system option.

All three modules are packaged in an identical molded plastic housing which is mounted on a bracket that is located between the power seat track and the seat cushion frame under the forward edge of the driver side front seat cushion. The HSM or MHSM is used to control all of the heated seat system functions for both front seats. The HSM or MHSM contains a central processing unit and interfaces with other electronic modules in the vehicle on the Programmable Communications Interface (PCI) data bus network.

For diagnosis of the HSM, MHSM or the PCI data bus, a DRB scan tool and the proper Diagnostic Procedures manual are recommended. The HSM or MHSM cannot be repaired and, if faulty or damaged, it must be replaced.

OPERATION

The HSM or MHSM receives message inputs from the BCM over the PCI data bus and hard wired inputs from the front seat heating element sensors through the element return circuits. The program-

DESCRIPTION AND OPERATION (Continued)

ming in the HSM or MHSM allows it to process the information from these inputs and send control outputs to the integral solid state relays to regulate the flow of battery current and the temperature of the front seat heating elements.

HEATED SEAT ELEMENT AND SENSOR

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. Two types of heated seat elements are offered. All Laredo models use two resistor wire heating elements for each seat that are connected in series with the Heated Seat Module (HSM). All Limited models use two carbon fiber mesh heating elements for each seat that are connected in parallel with the Memory Heated Seat Module (MHSM). 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 sewn into 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 cushion cover trim unit or seat back cover trim unit must be replaced. Refer to **Bucket Seat Cushion Cover** or **Bucket Seat Back Cover** in the Removal and Installation section of Group 23 - Body for the seat cushion cover trim and seat back cover trim service procedures.

OPERATION

The heated seat elements resist the flow of electrical current. When battery current is passed through the elements, the energy lost by the resistance of the elements to the current flow is released in the form of heat. The temperature sensor is a NTC thermistor. When the temperature of the seat cushion cover rises, the resistance of the sensor decreases. The HSM or MHSM supplies a five-volt current to one side of each sensor, and monitors the voltage drop through the sensor on a return circuit. The MSM or MHSM 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 SYSTEM

Following are tests that will help to diagnose the components and circuits that are hard wired inputs or outputs of the heated seat system. However, these tests may not prove conclusive in the diagnosis of this system. In order to obtain conclusive testing of the heated seat system, the Programmable Communications Interface (PCI) data bus network and all of the electronic modules that provide inputs to, or receive outputs from the heated seat system components must be checked.

The most reliable, efficient, and accurate means to diagnose the heated seat system requires the use of a DRB scan tool and the proper Diagnostic Procedures manual. The DRB scan tool can provide confirmation that the PCI data bus is functional, that all of the electronic modules are sending and receiving the proper messages on the PCI data bus, and that the Heated Seat Module (HSM) or Memory Heated Seat Module (MHSM) is receiving the proper hard wired inputs and relaying the proper hard wired outputs to perform its heated seat system functions.

For complete circuit diagrams, refer to **Power Seats Premium I/III** in the Contents of Group 8W - Wiring Diagrams.

WARNING: ON VEHICLES EQUIPPED WITH AIRBAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIRBAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

PRELIMINARY TEST

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

- If the heated seat switch LED indicators do not light with the ignition switch in the On position and the heated seat switch in the Low or High position, check the fused ignition switch output (run) fuse in the junction block. If OK, refer to **Heated Seat Switch** in the Diagnosis and Testing section of this group. If not OK, repair the shorted circuit or component as required and replace the faulty fuse.
- If the heated seat switch LED indicators light, but the heating elements do not heat, check the power seat circuit breaker in the junction block. If OK, refer to **Heated Seat Element** in the Diagnosis and Testing section of this group. If not OK, replace the faulty power seat circuit breaker.

HEATED SEAT SWITCH

For complete circuit diagrams, refer to **Power Seats Premium I/III** in the Contents of Group 8W - Wiring Diagrams.

DIAGNOSIS AND TESTING (Continued)

WARNING: ON VEHICLES EQUIPPED WITH AIRBAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIRBAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

(1) Check the fused ignition switch output (run) fuse in the junction block. If OK, go to Step 2. If not OK, repair the shorted circuit or component as required and replace the faulty fuse.

(2) Turn the ignition switch to the On position. Check for battery voltage at the fused ignition switch output (run) fuse in the junction block. If OK, go to Step 3. If not OK, repair the open fused ignition switch output (run) circuit to the ignition switch as required.

(3) Disconnect and isolate the battery negative cable. Remove the lower center bezel from the instrument panel and disconnect the instrument panel wire harness connectors from both heated seat switch connector receptacles. Check for continuity between the ground circuit cavity of the instrument panel wire harness connector for the inoperative heated seat switch(es) and a good ground. There should be continuity. If OK, go to Step 4. If not OK, repair the open ground circuit to ground as required.

(4) Reconnect 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 wire harness connector for the inoperative heated seat switch(es). If OK, turn the ignition switch to the Off position, disconnect and isolate the battery negative cable, and go to Step 5. If not OK, repair the open fused ignition switch output (run) circuit to the junction block fuse as required.

(5) Test the heated seat switch(es) (Fig. 1) as shown in the Heated Seat Switch Test chart. If OK, go to Step 6. If not OK, replace the faulty heated seat switch(es).

(6) Disconnect the 22-way instrument panel wire harness connector from the Body Control Module (BCM) connector receptacle. Check for continuity between the seat heater switch sensor ground circuit cavity of the instrument panel wire harness connector for the inoperative heated seat switch(es) and a good ground. There should be no continuity. If OK, go to Step 7. If not OK, repair the shorted seat heater switch sensor ground circuit as required.

(7) Check for continuity between the seat heater switch sensor ground circuit cavities of the instrument panel wire harness connector for the in operative heated seat switch(es) and the 22-way instrument panel wire harness connector for the BCM. There should be continuity. If OK, go to Step 8. If not OK, repair the open seat heater switch sensor ground circuit as required.

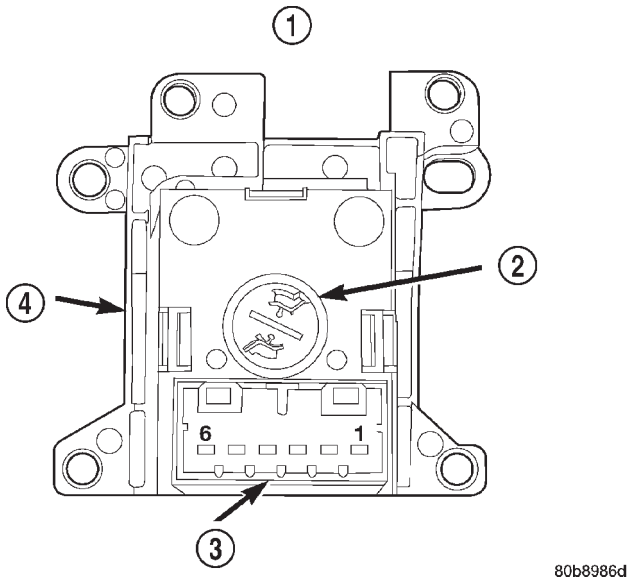

Fig. 1 Heated Seat Switch

1 – LEFT SHOWN (RIGHT TYPICAL)
2 – ILLUMINATION LAMP
3 – CONNECTOR RECEPTACLE
4 – HEATED SEAT SWITCH

HEATED SEAT SWITCH TEST		
SWITCH POSITION	RESISTANCE BETWEEN	RESISTANCE (OHMS)
Off	Pin 1 & 6	55
Low	Pin 1 & 6	1430
High	Pin 1 & 6	365
All resistance values are ±1%.		

(8) Check for continuity between the seat heater switch mux circuit cavity of the instrument panel wire harness connector for the inoperative heated seat switch and a good ground. There should be no continuity. If OK, go to Step 9. If not OK, repair the shorted seat heater switch mux circuit as required.

(9) Check for continuity between the seat heater switch mux circuit cavity of the instrument panel wire harness connector for the inoperative heated seat switch and the 22-way instrument panel wire harness connector for the BCM. There should be continuity. If OK, use a DRB scan tool and the proper Diagnostic Procedures manual to test the BCM. If not OK, repair the open seat heater switch mux circuit as required.

DIAGNOSIS AND TESTING (Continued)

HEATED SEAT MODULE

Before testing the heated seat module, test the heated seat switch, the heated seat elements, and the heated seat sensor. Refer to **Heated Seat Switch**, **Heated Seat Element** and **Heated Seat Sensor** in the Diagnosis and Testing section of this group. If testing of the heated seat switch, elements, and sensor reveals no problems, proceed as follows. For complete circuit diagrams, refer to **Power Seat Premium I/III** in the Contents of Group 8W - Wiring Diagrams.

(1) Disconnect and isolate the battery negative cable. Disconnect both power seat wire harness connectors from the Heated Seat Module (HSM) or Memory Heated Seat Module (MHSM). Check for continuity between each of the two Z1 ground circuit cavities of the C2 power seat wire harness connector for the HSM or MHSM 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) Check for continuity between the Z2 ground circuit cavity of the C1 power seat wire harness connector for the HSM or MHSM and a good ground. There should be continuity. If OK, go to Step 3. If not OK, repair the open ground circuit to ground as required.

(3) Reconnect the battery negative cable. Check for battery voltage at each of the two fused B(+) circuit cavities of the C2 power seat wire harness connector for the HSM or MHSM. If OK, use a DRB scan tool and the proper Diagnostic Procedures manual to test the HSM or MHSM. If not OK, repair the open fused B(+) circuit to the power seat circuit breaker in the junction block as required.

HEATED SEAT ELEMENT

Two types of heated seat elements are offered, which require two different testing methods. All Laredo models use resistor wire heating elements for each seat that are connected in series with the Heated Seat Module (HSM) or the Memory Heated Seat Module (MHSM). All Limited models use carbon fiber mesh heating elements for each seat that are connected in parallel with the HSM or the MHSM. For complete circuit diagrams, refer to **Power Seats Premium I/III** in the Contents of Group 8W - Wiring Diagrams.

RESISTOR WIRE ELEMENT

(1) Disconnect and isolate the battery negative cable. Disconnect the 4-way heated seat cushion element wire harness connector from the power seat wire harness. The power seat wire harness connectors for the seat cushion and seat back heating elements are secured to a bracket located under the rear edge of the seat cushion frame.

(2) Check for continuity between the seat heater B(+) driver circuit cavity of the 4-way heated seat cushion element wire harness connector and the seat cushion frame. There should be no continuity. If OK, go to Step 3. If not OK, replace the faulty seat cushion cover trim and element unit.

(3) Check for continuity between the seat heater B(+) driver circuit and the heated seat driver circuit cavities of the 4-way heated seat cushion element wire harness connector. There should be continuity. If OK, go to Step 4. If not OK, replace the faulty seat cushion cover trim and element unit.

(4) Disconnect the C2 connector of the power seat wire harness from the Heated Seat Module (HSM) or Memory Heated Seat Module (MHSM) connector receptacle. Check for continuity between the seat heater B(+) driver circuit cavity of the 4-way power seat wire harness connector for the heated seat cushion element and the seat cushion frame. There should be no continuity. If OK, go to Step 5. If not OK, repair the shorted seat heater B(+) driver circuit as required.

(5) Check for continuity between the seat heater B(+) driver circuit cavities of the 4-way power seat wire harness connector for the heated seat cushion element and the C2 power seat wire harness connector for the HSM or MHSM. There should be continuity. If OK, go to Step 6. If not OK, repair the open seat heater B(+) driver circuit as required.

(6) Disconnect the 2-way heated seat back element wire harness connector from the power seat wire harness. The power seat wire harness connectors for the seat cushion heating element and the seat back heating element are secured to a bracket located under the rear edge of the seat cushion frame.

(7) Check for continuity between the heated seat driver circuit cavity of the 2-way power seat wire harness connector for the heated seat back element and the seat cushion frame. There should be no continuity. If OK, go to Step 8. If not OK, repair the shorted heated seat driver circuit as required.

(8) Check for continuity between the heated seat driver circuit cavities of the 2-way power seat wire harness connector for the heated seat back element and the 4-way power seat wire harness connector for the heated seat cushion element. There should be continuity. If OK, go to Step 9. If not OK, repair the open heated seat driver circuit as required.

(9) Check for continuity between the heated seat driver circuit cavity of the 2-way heated seat back element wire harness connector and the seat cushion frame. There should be no continuity. If OK, go to Step 10. If not OK, replace the faulty seat back cover trim and element unit.

(10) Check for continuity between the driver seat heater ground circuit cavity of the 2-way power seat

DIAGNOSIS AND TESTING (Continued)

wire harness connector for the heated seat back element and the seat cushion frame. There should be no continuity. If OK, go to Step 11. If not OK, repair the shorted driver seat heater ground circuit as required.

(11) Check for continuity between the driver seat heater ground circuit cavities of the 2-way power seat wire harness connector for the heated seat back element and the C2 power seat wire harness connector for the HSM or MHSM. There should be continuity. If OK, refer to **Heated Seat Sensor** in the Diagnosis and Testing section of this group. If not OK, repair the open driver seat heater ground circuit as required.

CARBON FIBER ELEMENT

(1) If both the seat cushion and seat back elements fail to heat, go to Step 2. If only the seat back element fails to heat, go to Step 11. If only a portion of the heated seat cushion element fails to heat, replace the faulty seat cushion cover trim and element unit.

(2) Disconnect and isolate the battery negative cable. Disconnect the green 2-way heated seat jumper wire harness connector from the power seat wire harness. The power seat wire harness connector for the heated seat jumper is secured to a bracket located under the rear edge of the seat cushion frame. Check for continuity between the two cavities in the heated seat jumper half of the green wire harness connector. There should be continuity. If OK, to Step 3. If not OK, repair the open jumper circuit as required.

(3) Check for continuity between one cavity in the heated seat jumper half of the green wire harness connector and the seat back frame. There should be no continuity. If OK, go to Step 4. If not OK, repair the shorted jumper circuit as required.

(4) Disconnect the C2 connector of the power seat wire harness from the Heated Seat Module (HSM) or Memory Heated Seat Module (MHSM) connector receptacle. Check for continuity between the ground circuit cavities in the C2 connector and the power seat wire harness half of the 2-way green heated seat jumper wire harness connector. There should be continuity. If OK, go to Step 5. If not OK, repair the open ground circuit as required.

(5) Check for continuity between the ground circuit (Z1) cavities in the C2 connector and a good ground. There should be no continuity. If OK, go to Step 6. If not OK, repair the shorted ground circuit (Z1) as required.

(6) Disconnect the 4-way heated seat element wire harness connector from the power seat wire harness. The 4-way heated seat element wire harness connector is secured next to the 2-way green heated seat jumper wire harness connector on a bracket located under the rear edge of the seat cushion frame. Check for continuity between the heated seat driver circuit cavities in the power seat wire harness halves of the 2-way green heated seat jumper wire harness connector and the 4-way heated seat element wire harness connector. There should be continuity. If OK, go to Step 7. If not OK, repair the open heated seat driver circuit as required.

(7) Check for continuity between the heated seat driver circuit cavity in the power seat wire harness half of the 2-way green heated seat jumper wire harness connector and a good ground. There should be no continuity. If OK, go to Step 8. If not OK, repair the shorted heated seat driver circuit as required.

(8) Check for continuity between the seat heater B(+) driver circuit cavities in the power seat wire harness half of the 4-way heated seat element wire harness connector and the C2 HSM or MHSM wire harness connector. There should be continuity. If OK, go to Step 9. If not OK, repair the open seat heater B(+) driver circuit as required.

(9) Check for continuity between the seat heater B(+) driver circuit cavity in the power seat wire harness half of the 4-way heated seat element wire harness connector and a good ground. There should be no continuity. If OK, go to Step 10. If not OK, repair the shorted seat heater B(+) driver circuit as required.

(10) Check the total heated seat element resistance between the heated seat driver circuit and the seat heater B(+) driver circuit cavities in the heated seat element half of the 4-way heated seat element wire harness connector. The resistance should be about 2.20 ohms ± 10%. If OK, refer to **Heated Seat Sensor** in the Diagnosis and Testing section of this group. If not OK, go to Step 11.

(11) Disconnect the black 2-way heated seat back element wire harness connector from the heated seat cushion element wire harness. The black 2-way heated seat back element wire harness connector is tucked under the seat cushion trim cover located near the rear edge of the seat cushion frame. Check the resistance of the heated seat back element between the two cavities in the seat back half of the black 2-way heated seat back element wire harness connector. The resistance should be about 5.51 ohms ± 10%. If OK, go to Step 12. If not OK, replace the faulty seat back cover trim and element unit.

(12) With the black 2-way heated seat back element wire harness connector still disconnected from the heated seat cushion element wire harness connector, check the resistance of the heated seat cushion elements between the heated seat driver circuit and the seat heater B(+) driver circuit cavities in the heated seat element half of the 4-way heated seat element wire harness connector. The resistance should be about 3.67 ohms ± 10%. If OK, refer to

DIAGNOSIS AND TESTING (Continued)

Heated Seat Sensor in the Diagnosis and Testing section of this group. If not OK, replace the faulty seat cushion cover trim and element unit.

HEATED SEAT SENSOR

For complete circuit diagrams, refer to **Power Seats Premium I/III** in the Contents of Group 8W - Wiring Diagrams.

(1) Disconnect and isolate the battery negative cable. Disconnect the 4-way heated seat cushion element wire harness connector from the power seat wire harness. The power seat wire harness connectors for the seat cushion and seat back heating elements are secured to a bracket located under the rear edge of the seat cushion frame.

(2) Check for continuity between the seat sensor 5V supply circuit cavity of the 4-way heated seat cushion element wire harness connector and the seat cushion frame. There should be no continuity. If OK, go to Step 3. If not OK, replace the faulty seat cushion cover trim and element unit.

(3) Using an ohmmeter, check the resistance between the seat sensor 5V supply circuit and the seat temperature sensor input circuit cavities of the 4-way heated seat cushion element wire harness connector. The sensor resistance should be between 14 kilohms at 15° C (60° F) and 5 kilohms at 30° C (85° F). If OK, go to Step 4. If not OK, replace the faulty seat cushion cover trim and element unit.

(4) Disconnect the C1 connector of the power seat wire harness from the Heated Seat Module (HSM) or Memory Heated Seat Module (MHSM) connector receptacle. Check for continuity between the seat sensor 5V supply circuit cavity of the 4-way power seat wire harness connector for the heated seat cushion element and the seat cushion frame. There should be no continuity. If OK, go to Step 5. If not OK, repair the shorted seat sensor 5V supply circuit as required.

(5) Check for continuity between the seat sensor 5V supply circuit cavities of the 4-way power seat wire harness connector for the heated seat cushion element and the C1 power seat wire harness connector for the HSM or MHSM. There should be continuity. If OK, go to Step 6. If not OK, repair the open seat sensor 5V supply circuit as required.

(6) Check for continuity between the seat temperature sensor input circuit cavity of the 4-way power seat wire harness connector for the heated seat cushion element and the seat cushion frame. There should be no continuity. If OK, go to Step 7. If not OK, repair the shorted seat temperature sensor input circuit as required.

(7) Check for continuity between the seat temperature sensor input circuit cavities of the 4-way power seat wire harness connector for the heated seat cushion element and the C1 power seat wire harness connector for the HSM or MHSM. There should be continuity. If OK, refer to **Heated Seat Module** in the Diagnosis and Testing section of this group. If not OK, repair the open seat temperature sensor input circuit as required.

REMOVAL AND INSTALLATION

HEATED SEAT SWITCH

WARNING: ON VEHICLES EQUIPPED WITH AIRBAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIRBAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

REMOVAL

(1) Disconnect and isolate the battery negative cable.

(2) Remove the center lower bezel from the instrument panel. Refer to **Instrument Panel Center Lower Bezel** in the Removal and Installation section of Group 8E - Instrument Panel Systems for the procedures.

(3) Remove the four screws that secure the heated seat switch to the back of the instrument panel center lower bezel (Fig. 2).

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

INSTALLATION

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

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

(3) Install the center lower bezel onto the instrument panel. Refer to **Instrument Panel Center Lower Bezel** in the Removal and Installation section of Group 8E - Instrument Panel Systems for the procedures.

(4) Reconnect the battery negative cable.

HEATED SEAT MODULE

REMOVAL

(1) Disconnect and isolate the battery negative cable.

REMOVAL AND INSTALLATION (Continued)

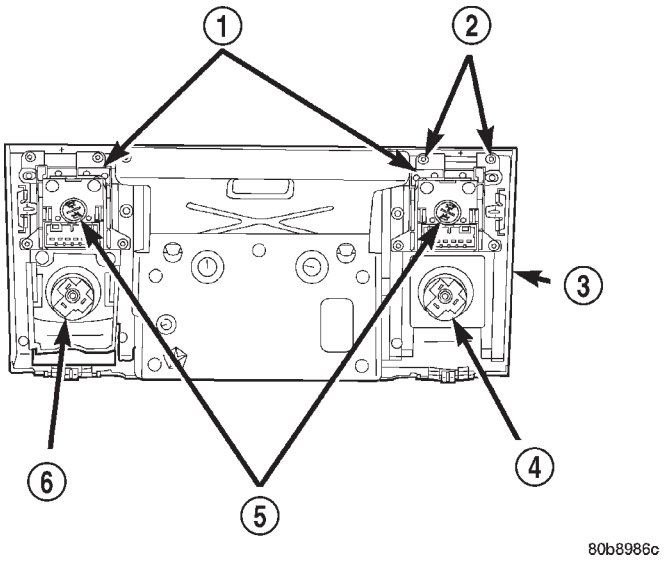

Fig. 2 Heated Seat Switch Remove/Install

1 – HEATED SEAT SWITCHES
2 – SCREWS (4)
3 – CENTER LOWER BEZEL
4 – CIGAR LIGHTER
5 – ILLUMINATION LAMPS
6 – POWER OUTLET

(2) Remove the driver side front bucket seat from the power seat track unit. Refer to **Bucket Seat Track Adjuster** in the Removal and Installation section of Group 23 - Body for the procedures.

(3) Lift the heated seat module and its mounting bracket off of the two forward studs on the upper mounting rails of the power seat track and move the unit away from the seat far enough to access the power seat wire harness connectors (Fig. 3).

(4) Disconnect the two power seat wire harness connectors from the heated seat module connector receptacles.

(5) There are two snap clips that are molded into the lower side of the heated seat module which help to secure the module to the riser portion of the stepped mounting bracket. Using a trim stick or another suitable wide flat-bladed tool, gently pry each of the two snap clips while pulling the module away from the mounting bracket.

(6) Slide the heated seat module off of the two mounting bracket slide tabs.

INSTALLATION

(1) Slide the heated seat module onto the two mounting bracket slide tabs. Be certain that the two snap clips that are molded into the lower side of the heated seat module are fully engaged in the holes in riser portion of the stepped mounting bracket.

(2) Position the heated seat module and mounting bracket unit to the front of the power seat track unit.

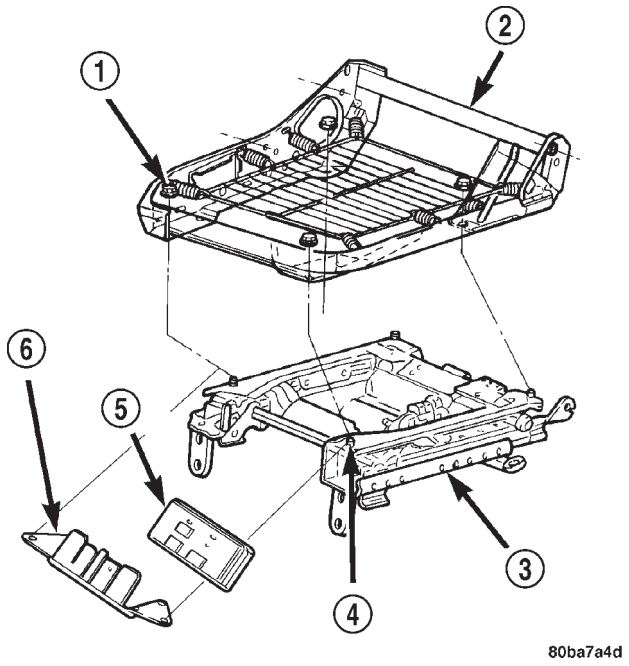

Fig. 3 Heated Seat Module Remove/Install

1 – NUT (4)
2 – SEAT CUSHION FRAME
3 – POWER SEAT TRACK
4 – STUD (4)
5 – MODULE
6 – BRACKET

(3) Reconnect the two power seat wire harness connectors to the heated seat module connector receptacles.

(4) Position the heated seat module mounting bracket over the two forward studs on the upper mounting rails of the power seat track.

(5) Install the driver side front bucket seat onto the power seat track unit. Refer to **Bucket Seat Track Adjuster** in the Removal and Installation section of Group 23 - Body for the procedures.

(6) Reconnect the battery negative cable.

NOTE: If the vehicle is equipped with the optional Memory System, following installation, it will be necessary to initialize the Memory Heated Seat Module (MHSM). In order to function properly, the MHSM must "learn" the sensor values of each of the power seat motor position transducers in each of the adjuster hard stop positions. This is done by performing the "Reset Guard Band" procedure using a DRB scan tool and the proper Diagnostic Procedures manual.

REMOVAL AND INSTALLATION (Continued)

WARNING: THE "RESET GUARD BAND" PROCEDURE WILL CAUSE THE DRIVER SIDE FRONT SEAT TO AUTOMATICALLY ADJUST TO EACH OF ITS TRAVEL LIMITS. BE CERTAIN THAT NO ONE IS SEATED IN THE VEHICLE AND THAT THERE IS NOTHING IN THE VEHICLE THAT WILL OBSTRUCT SEAT MOVEMENT. FAILURE TO OBSERVE THIS WARNING COULD RESULT IN PERSONAL INJURIES AND/OR VEHICLE DAMAGE.