

FRONT CONTROL MODULE (Continued)**DIAGNOSIS AND TESTING - FRONT CONTROL MODULE**

The front control module is a printed circuit board based module with a on-board micro-processor. The front control module interfaces with other electronic modules in the vehicle via the Programmable Communications Interface (PCI) data bus (J1850). In order to obtain conclusive testing the Programmable Communications Interface (PCI) data bus network and all of the electronic modules that provide inputs to, or receive outputs from the front control module must be checked. All PCI (J1850) communication faults must be resolved prior to further diagnosing any front control module related issues.

The front control module was designed to be diagnosed with an appropriate diagnostic scan tool, such as the DRB III®. The most reliable, efficient, and accurate means to diagnose the front control module requires the use of a DRB III® scan tool and the proper Body Diagnostic Procedures manual.

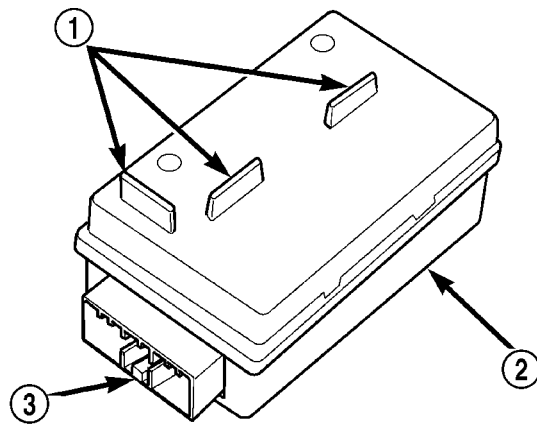
Before any testing of the front control module is attempted, the battery should be fully charged and all wire harness and ground connections inspected around the affected areas on the vehicle.

REMOVAL

- (1) Disconnect the positive and negative battery cables from the battery.
- (2) Partially remove the integrated power module from the engine compartment (Refer to 8 - ELECTRICAL POWER DISTRIBUTION INTEGRATED POWER MODULE - REMOVAL).
- (3) Remove the front control module retaining screws.
- (4) Using both hands, pull the front control module **straight** from the integrated power module assembly to disconnect the 49-way electrical connector and remove the front control module from the vehicle.

INSTALLATION

- (1) Install the front control module on the integrated power module assembly by pushing the 49-way electrical connector straight in.
- (2) Install the front control module retaining screws. Torque the screws to 7 in. lbs.
- (3) Install the integrated power module (Refer to 8 - ELECTRICAL POWER DISTRIBUTION INTEGRATED POWER MODULE - INSTALLATION).
- (4) Connect the positive and negative battery cables.

HEATED SEAT MODULE**DESCRIPTION**

80be465a

Fig. 4 Heated Seat Module

- 1 - MOUNTING TABS (NOT USED ON DR)
- 2 - HEATED SEAT MODULE
- 3 - ELECTRICAL CONNECTOR RECEPTACLE

The heated seat module is also known as the Seat Heat Interface Module. The heated seat module (Fig. 4) is located under the drivers front seat cushion, where it is secured to a mounting bracket. The heated seat module has a single connector receptacle that allows the module to be connected to all of the required inputs and outputs through the seat wire harness.

The heated seat module is an electronic microprocessor controlled device designed and programmed to use inputs from the battery, the two heated seat switches and the two heated seat sensors to operate and control the heated seat elements in both front seats and the two heated seat indicator lamp Light-Emitting Diodes (LEDs) in each heated seat switch. The heated seat module is also programmed to perform self-diagnosis of certain heated seat system functions and provide feedback of that diagnosis through the heated seat switch indicator lamps.

The heated seat module cannot be repaired. If the heated seat module is damaged or faulty, the entire module must be replaced.

OPERATION

The heated seat module operates on fused battery current received from the integrated power module. Inputs to the module include a resistor multiplexed heated seat switch request circuit for each of the two heated seat switches and the heated seat sensor inputs from the seat cushions of each front seat. In response to those inputs the heated seat module controls battery current feeds to the heated seat ele-

HEATED SEAT MODULE (Continued)

ments and sensors, and controls the ground for the heated seat switch indicator lamps.

When a heated seat switch (Driver or Passenger) is depressed a signal is received by the heated seat module, the module energizes the proper indicator LED (Low or High) in the switch by grounding the indicator lamp circuit to indicate that the heated seat system is operating. At the same time, the heated seat module energizes the selected heated seat sensor circuit and the sensor provides the module with an input indicating the surface temperature of the selected seat cushion.

The Low heat set point is about 36° C (96.8° F), and the High heat set point is about 42° C (107.6° F). If the seat cushion surface temperature input is below the temperature set point for the selected temperature setting, the heated seat module energizes an N-channel Field Effect Transistor (N-FET) within the module which energizes the heated seat elements in the selected seat cushion and back. When the sensor input to the module indicates the correct temperature set point has been achieved, the module de-energizes the N-FET which de-energizes the heated seat elements. The heated seat module will continue to cycle the N-FET as needed to maintain the selected temperature set point.

If the heated seat module detects a heated seat sensor value input that is out of range or a shorted or open heated seat element circuit, it will notify the vehicle operator or the repair technician of this condition by flashing the High and/or Low indicator lamps in the affected heated seat switch. Refer to **Diagnosis and Testing Heated Seat System** in Heated Systems for flashing LED diagnosis and testing procedures. Refer to **Diagnosis and Testing Heated Seat Module** in this section for heated seat module diagnosis and testing procedures.

DIAGNOSIS AND TESTING - HEATED SEAT MODULE

If a heated seat fails to heat and one or both of the indicator lamps on a heated seat switch flash, refer to **Diagnosis and Testing Heated Seat System** in Heated Seats for the location of flashing LED heated seat system diagnosis and testing procedures. If a heated seat heats but one or both indicator lamps on the heated seat switch fail to operate, test the heated seat switch. Refer to **Diagnosis and Testing Heated Seat Switch** in Heated Seats for heated seat switch diagnosis and testing procedures. If the heated seat switch checks OK, proceed as follows.

(1) Check the heated seat element (Refer to 8 - ELECTRICAL HEATED SEATS HEATED SEAT ELEMENT - DIAGNOSIS AND TESTING).

(2) Check the heated seat sensor (Refer to 8 - ELECTRICAL HEATED SEATS HEATED SEAT SENSOR - DIAGNOSIS AND TESTING).

(3) Check the heated seat switch (Refer to 8 - ELECTRICAL HEATED SEATS DRIVER HEATED SEAT SWITCH - DIAGNOSIS AND TESTING).

NOTE: Refer to Wiring for the location of complete heated seat system wiring diagrams and connector pin-out information.

(4) Using a voltmeter, backprobe the appropriate heated seat module connector, do not disconnect. Check for voltage at the appropriate pin cavities. 12v should be present. If OK go to Step 5, if Not, Repair the open or shorted voltage supply circuit as required.

(5) Using a ohmmeter, backprobe the appropriate heated seat module connector, do not disconnect. Check for proper continuity to ground on the ground pin cavities. Continuity should be present. If OK replace the heated seat module with a known good unit and retest system, if Not OK, Repair the open or shorted ground circuit as required.

REMOVAL

(1) Position the driver seat to the full rearward and inclined position.

(2) Working under the driver front seat, remove the two heated seat module retaining screws. Due to the fact that the retaining screws are installed with the seat cushion pan removed, a small right angle screwdriver will be required to access and remove the screws.

(3) Disconnect the seat wire harness connector from the connector receptacle on the back of the heated seat module. Depress the connector retaining tab and pull straight apart.

(4) Remove the heated seat module from under the front seat.

INSTALLATION

(1) Position the heated seat module under the front seat.

(2) Connect the seat wire harness connector on the connector receptacle on the back of the heated seat module.

(3) Working under the driver front seat, install the heated seat module retaining screws.

(4) Re-position the driver seat.