B0184 or B0189 unload sensor circuit

Circuit Description

• B0184 is for the lefts unload sensor circuit.
• B0189 is for the rights unload sensor circuit.

The sunload sensor is a 2-wire photo diode. The vehicle uses left and right sunload sensors. The two sensors are integrated into the s unload sensor assembly along with the ambient light sensor. Low reference and signal circuits enable the sensor to operate. As the s unload increases, the sensor signal decreases. The sensor operates within an intensity range between completely dark and bright. The sensor signal varies between 0–5 volts. The HVAC control module converts the signal to a range between 0–255 counts. The sunload sensor provides the HVAC control module a measurement of the amount of light shining on the vehicle. Bright, or high intensity, light causes the vehicles inside temperature to increase. The HVAC system compensates for the increased temperature by diverting additional cool air into the vehicle.

Conditions for Running the DTC

The ignition is turned ON.

Conditions for Setting the DTC

The HVAC control module detects the signal circuit is less than 0.09 volt (5 counts) or more than 4.90 volts (250 counts).

Action Taken When the DTC Sets

• If the DTC sets due to a low voltage condition, the HVAC control module will operate the system as if a minimum sunload condition exists.
• If the DTC sets due to a high voltage condition, the HVAC control module will operate the system as if a minimum sunload condition exists.

Conditions for Clearing the DTC

- The DTC will become history if the HVAC control module no longer detects a failure.
- The history DTC will clear after 50 fault free ignition cycles.
- The DTC can be cleared with a scan tool.

Test Description

The numbers below refer to the step numbers on the diagnostic table.

3. Tests for the proper operation of the circuit in the high voltage range.
4. Tests for the proper operation of the circuit in the low voltage range. If the fuse in the jumper opens when you perform this test, the signal circuit is shorted to voltage.

DTC B0184 or B0189

Step	Action	Values	Yes	No
Schematic Reference: HVAC Schematics Connector End View Reference: HVAC Connector End Views				
1	Did you perform the HVAC Diagnostic System Check?	—	Go to Step 2	Go to Diagnostic System Check - HVAC Systems - Automatic
2	1. Install a scan tool. 2. Turn ON the ignition, with the engine OFF. 3. With a scan tool, observe the Driver or Passenger Solar Sensor parameter in the Climate Control Panel Open/Short Data list. Does the scan tool indicate that the Solar Sensor parameter is with in the specified range?	0.09–4.90 V	Go to Testing for Intermittent and Poor Connections in Wiring Systems	Go to Step 3

Step	Action	Values	Yes	No
3	1. Turn OFF the ignition. 2. Disconnect the sunload sensor assembly. 3. Turn ON the ignition, with the engine OFF. 4. With a scan tool, observe the Driver or Passenger Solar Sensor parameter in the Climate Control Panel Open/Short Data list. Does the scan tool indicate that the Solar Sensor parameters are greater than the specified value?	4.90 V	Go to Step 4	Go to Step 5
4	1. Turn OFF the ignition. 2. Connect a 3-amp fused jumper wire between the driver or passenger signal circuit of the sunload sensor assembly and the low reference circuit of the sunload sensor assembly. 3. Turn ON the ignition, with the engine OFF. 4. With a scan tool, observe the Driver or Passenger Solar Sensor parameter in the Climate Control Panel Open/Short Data list. Does the scan tool indicate that the Solar Sensor parameter is less than the specified value?	0.09 V	Go to Step 9	Go to Step 6
5	Test the driver or passenger signal circuit of the sunload sensor assembly for a short to ground. Refer to Circuit Testing on page 8-1184 and Wiring Repairs on page 8-1189 in Wiring Systems. Did you find and correct the condition?	—	Go to Step 13	Go to Step 10

Step	Action	Values	Yes	No
6	Test the driver or passenger signal circuit of the sunload sensor assembly for a short to voltage, a high resistance, or an open. Refer to Circuit Testing and Wiring Repairs in Wiring Systems. Did you find and correct the condition?	—	Go to Step 13	Go to Step 7
7	Test the low reference circuit of the sunload sensor assembly for a high resistance or an open. Refer to Circuit Testing and Wiring Repairs in Wiring Systems. Did you find and correct the condition?	—	Go to Step 13	Go to Step 8
8	Test the following signal circuits for a short to voltage: • Evaporator temperature sensor • Ambient air temperature sensor • Inside air temperature sensor • Left or Right sunload sensor • Ambient light sensor Refer to Circuit Testing and Wiring Repairs in Wiring Systems. Did you find and correct the condition?	—	Go to Step 13	Go to Step 10
9	Inspect for poor connections at the harness connector of the sunload sensor assembly. Refer to Testing for Intermittent and Poor Connections and Connector Repairs in Wiring Systems. Did you find and correct the condition?	—	Go to Step 13	Go to Step 11

Step	Action	Values	Yes	No
10	Inspect for poor connections at the harness connector of the HVAC control module. Refer to Testing for Intermittent and Poor Connections and Connector Repairs in Wiring Systems. Did you find and correct the condition?	—	Go to Step 13	Go to Step 12
11	Replace the sunload sensor assembly. Refer to Sun Load Sensor Replacement. Did you complete the replacement?	—	Go to Step 13	—
12	Replace the HVAC control module. Refer to HVAC Control Module Replacement. Did you complete the replacement?	—	Go to Step 13	—
13	1. Use the scan tool in order to clear the DTCs. 2. Operate the vehicle within the Conditions for Running the DTC as specified in the supporting text. Does the DTC reset?	—	Go to Step 2	System OK