

DTC B0174, B0179, B0510, or B0515

Circuit Description

The following DTCs are for the air temperature sensors located in the discharge air ducts:

- DTC B0174 is for the upper left air temperature sensor.
- DTC B0179 is for the lower left air temperature sensor.
- DTC B0510 is for the upper right air temperature sensor.
- DTC B0515 is for the lower right air temperature sensor.

Air temperature sensors allow the HVAC control module to monitor the temperature of the discharge air in the HVAC ducts. The module applies 5 volts to internal input resistors that are connected to the signal circuits of the air temperature sensors. The module provides ground to the air temperature sensors through the low reference circuit. The HVAC control module monitors the voltage drops across the air temperature sensors and uses the inputs for automatic control calculations. When the duct air temperatures are cold, the resistances of the sensors are high and the voltage signals are high. When the duct air temperatures are hot, the resistances of the sensors are low and the voltage signals are low. The HVAC control module converts the voltage values to count values where 1 volt is approximately equal to 51 counts.

Conditions for Running the DTC

- Battery voltage is within 8.7–16.5 volts.
- The ignition is ON.

Conditions for Setting the DTC

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

Action Taken When the DTC Sets

The HVAC control module uses a default air temperature value for further automatic control calculations. The default values are not displayed on the scan tool.

Conditions for Clearing the DTC

- The DTC will become history if the HVAC control module no longer detects a fault.
- The history DTC will clear after 100 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.

2. Verifies that the temperature displayed is not within the calibrated range.
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

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Step	Action	Value(s)	Yes	No
Schematic Reference: HVAC Schematics on page 1-4				
1	Did you perform the Diagnostic System Check – Vehicle?	—	Go to Step 2	Go to Diagnostic System Check –Vehicle in Vehicle DTC Information
2	1).Install a scan tool. 2).Turn ON the ignition, with the engine OFF. 3).With a scan tool, observe the appropriate Duct Temp. Sensor parameter in the HVAC Systems Automatic data list. Does the scan tool indicate that the appropriate Duct Temp. Sensor is within the specified range?	5–250 counts (0.09–4.90 V)	Go to Testing for Intermittent and Poor Connections	Go to Step 3

Step	Action	Value(s)	Yes	No
3	1).Turn OFF the ignition. 2).Disconnect the air temperature sensor. 3).Turn ON the ignition, with the engine OFF. 4).With a scan tool, observe the appropriate Duct Temp. Sensor Data parameter. Does the scan tool indicate that the appropriate Duct Temp. Sensor is greater than the specified value?	250 counts (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 signal circuit of the air temperature sensor and the low reference circuit of the air temperature sensor. 3).Turn ON the ignition, with the engine OFF. 4).With a scan tool, observe the appropriate Duct Temp. Sensor Data parameter. Does the scan tool indicate that the appropriate Duct Temp. Sensor data parameter is less than the specified value?	5 counts (0.09 V)	Go to Step 8	Go to Step 6
5	Test the appropriate signal circuit of the air temperature sensor for a short to ground.. Did you find and correct the condition?	—	Go to Step 12	Go to Step 9

Step	Action	Value(s)	Yes	No
6	Test the appropriate signal circuit of the air temperature sensor for a short to voltage, a high resistance, or an open. Did you find and correct the condition?	—	Go to Step 12	Go to Step 7
7	Test the low reference circuit of the air temperature sensor for a high resistance or an open. Did you find and correct the condition?	—	Go to Step 12	Go to Step 9
8	Inspect for poor connections at the harness connector of the appropriate air temperature sensor. Did you find and correct the condition?	—	Go to Step 12	Go to Step 10
9	Inspect for poor connections at the harness connector of the HVAC control module. Did you find and correct the condition?	—	Go to Step 12	Go to Step 11
10	<p>Replace the air temperature sensor. Refer to the appropriate replacement procedure:</p> <ul style="list-style-type: none"> ● Air Temperature Sensor Replacement -Upper Right on page 1-69 ● Air Temperature Sensor Replacement -Upper Left on page 1-69 ● Air Temperature Sensor Replacement -Lower Left on page 1-70 ● Air Temperature Sensor Replacement -Lower Right <p>Did you complete the replacement?</p>	—	Go to Step 12	—

Step	Action	Value(s)	Yes	No
11	Important: Perform the calibration procedure for the HVAC control module. Replace the HVAC control module. Did you complete the replacement?	—	Go to Step 12	—
12	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