DTC B0158 (DISPLAYS AND GAUGE...

DTC B0158 (DISPLAYS AND GAUGES) Document ID# 3620897

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Diagnostic Instructions

- Perform the Diagnostic System Check prior to using this diagnostic procedure: Diagnostic System Check - Vehicle
- Review the description of Strategy Based Diagnosis: Strategy Based Diagnosis
- An overview of each diagnostic category can be found here: Diagnostic Procedure Instructions

DTC Descriptor

DTC B0158 : Ambient Air Temperature Sensor Circuit

- Symptom Byte: 02 – Short to Ground
- Symptom Byte: 05 – Circuit High Voltage / open

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Signal	B0158 02	B0158 05	B0158 05	—
Low Reference	—	B0158 05	—	—

Circuit/System Description

For an overview of the component/system, refer to: Instrument Cluster Description and Operation

Circuit	Description
Signal	The control module input circuit has an internal resistance connected to 5 V.
Low Reference	Grounded through the control module.

Component	Description
B9 Ambient Air Temperature Sensor	The temperature sensor is a negative temperature coefficient thermistor, a resistor which changes based on temperature.
P16 Instrument Cluster	The P16 control module monitors the B9 ambient air temperature sensor. The control module converts the analog voltage signal input to a temperature value.

Conditions for Running the DTC

Ignition » On / Vehicle » In Service Mode

Conditions for Setting the DTC

B0158 02

Outside Ambient Air Temperature Sensor Signal = Greater than 88°C (190°F)

B0158 02

Outside Ambient Air Temperature Sensor Signal = Less than -40°C (-40°F)

Actions Taken When the DTC Sets

P17 Info Display Module or P16 Instrument Cluster Displays ––°C (––°F)

Air Conditioning Compressor Clutch = Disabled

Conditions for Clearing the DTC

The conditions for setting the DTC no longer exist.

Diagnostic Aids

The displayed temperature is a filtered value that updates periodically while driving. The value rarely changes when the vehicle is parked.

For an overview of the component/system, refer to: Instrument Cluster Description and Operation

Reference Information

Schematic Reference

Instrument Cluster Schematics

Connector End View Reference

Component Connector End Views

Electrical Information Reference

- Circuit Testing
- Connector Repairs
- Testing for Intermittent Conditions and Poor Connections
- Wiring Repairs

DTC Type Reference

Powertrain Diagnostic Trouble Code (DTC) Type Definitions

Scan Tool Reference

Control Module References

Circuit/System Verification

1. Ignition » On / Vehicle » In Service Mode
2. Verify the scan tool parameter: Ambient Air Temperature = -40 to 88°C (-40 to 190°F) and changes

⇒ **If not between -40 and 88°C (-40 and 190°F) or does not change**

Refer to: Circuit/System Testing

⇓ **If between -40 and 88°C (-40 and 190°F) and changes**

3. Perform the special tool function: Ambient Air Temperature Instant Update
4. Verify the following parameter is within 5°C (8°F) of the actual ambient air temperature: Ambient Air Temperature

⇒ **If not within 5°C (8°F) of the actual ambient air temperature**

Refer to: Circuit/System Testing

⇓ **If within 5°C (8°F) of the actual ambient air temperature**

5. All OK.

Circuit/System Testing

Note : It may take up to 2 min for all vehicle systems to power down before an accurate ground or low reference circuit continuity test can be performed.

1. Ignition/Vehicle & All vehicle systems » Off
2. Disconnect the electrical connector: B9 Ambient Air Temperature Sensor
3. Test for less than 10 Ω between the test points: Low Reference circuit terminal B (or 2) or 2 & Ground

⇒ **If 10 Ω or greater**

3.1. Disconnect the electrical connector: P16 Instrument Cluster

3.2. Test for less than 2 Ω between the test points: Low Reference circuit terminal B or 2 @ Component harness & The other end of the circuit

⇒ If 2 Ω or greater » Repair the open/high resistance in the circuit.

⇒ If less than 2 Ω » Replace the component: P16 Instrument Cluster

⇓ **If less than 10 Ω**

4. Ignition » On / Vehicle » In Service Mode
5. Verify the scan tool parameter: Ambient Air Temperature = If 98% or greater

⇒ **If less than 98%**

5.1. Ignition/Vehicle » Off

5.2. Disconnect the electrical connector: P16 Instrument Cluster

5.3. Test for infinite resistance between the test points: Signal circuit terminal A or 1 @ Component harness & Ground

⇒ If less than infinite resistance » Repair the short to ground on the circuit.

⇒ If infinite resistance » Replace the component: P16 Instrument Cluster

⇓ **If 98% or greater**

6. Connect a 3 A fused jumper wire between the test points: Signal circuit terminal A or 1 & Low Reference circuit terminal B or 2
7. Verify the scan tool parameter: Ambient Air Temperature = Less than 8%

⇒ **If 8% or greater**

7.1. Ignition/Vehicle » Off & Remove » Jumper wire(s)

7.2. Disconnect the electrical connector: P16 Instrument Cluster

7.3. Ignition » On / Vehicle » In Service Mode

7.4. Test for less than 1 V between the test points: Signal circuit @ Component harness & Ground

⇒ If 1 V or greater » Repair the short to voltage on the circuit.

⇓ If less than 1 V

7.5. Ignition/Vehicle » Off

7.6. Test for less than 2 Ω between the test points: Signal circuit @ Component harness & The other end of the circuit

⇒ If 2 Ω or greater » Repair the open/high resistance in the circuit.

⇒ If less than 2 Ω » Replace the component: P16 Instrument Cluster

⇓ **If less than 8%**

8. Test or replace the component: B9 Ambient Air Temperature Sensor

Repair Instructions

Perform the Diagnostic Repair Verification after completing the repair: Diagnostic Repair Verification

- Displays and Gauges Component Replacement Reference
- For control module replacement, programming, and setup refer to: Control Module References

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