

DTC C0035-C0050

Diagnostic Instructions

- Perform the [Diagnostic System Check - Vehicle](#) prior to using this diagnostic procedure.
- Review [Strategy Based Diagnosis](#) for an overview of the diagnostic approach.
- [Diagnostic Procedure Instructions](#) provides an overview of each diagnostic category.

DTC Descriptors

DTC C0035 00: Left Front Wheel Speed Sensor Circuit

DTC C0035 5A: Left Front Wheel Speed Sensor Circuit Plausibility Failure

DTC C0040 00: Right Front Wheel Speed Sensor Circuit

DTC C0040 5A: Right Front Wheel Speed Sensor Circuit Plausibility Failure

DTC C0045 00: Left Rear Wheel Speed Sensor Circuit

DTC C0045 5A: Left Rear Wheel Speed Sensor Circuit Plausibility Failure

DTC C0050 00: Right Rear Wheel Speed Sensor Circuit

DTC C0050 5A: Right Rear Wheel Speed Sensor Circuit Plausibility Failure

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Left Front Wheel Speed Sensor 12-Volt Reference	C0035 00	C0035 00	--	C0035 5A
Left Front Wheel Speed Sensor Signal	C0035 00	C0035 00	C0035 00	C0035 5A
Right Front Wheel Speed Sensor 12-Volt Reference	C0040 00	C0040 00	--	C0040 5A
Right Front Wheel Speed Sensor Signal	C0040 00	C0040 00	C0040 00	C0040 5A
Left Rear Wheel Speed Sensor 12-Volt Reference	C0045 00	C0045 00	--	C0045 5A
Left Rear Wheel Speed Sensor Signal	C0045 00	C0045 00	C0045 00	C0045 5A
Right Rear Wheel Speed Sensor 12 Volt Reference	C0050 00	C0050 00	--	C0050 5A
Right Rear Wheel Speed Sensor Signal	C0050 00	C0050 00	C0050 00	C0050 5A

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Component	Condition	DTCs
Left Front Wheel Speed Sensor	<ul style="list-style-type: none"> • Physical damage • Debris on the wheel speed sensor or the encoder ring • Loose or improperly mounted sensor • Loose or worn wheel bearing • Air gap between the wheel speed sensor and the encoder ring too large 	C0035 5A
Right Front Wheel Speed Sensor	<ul style="list-style-type: none"> • Physical damage • Debris on the wheel speed sensor or the encoder ring • Loose or improperly mounted sensor • Loose or worn wheel bearing • Air gap between the wheel speed sensor and the encoder ring too large 	C0040 5A
Left Rear Wheel Speed Sensor	<ul style="list-style-type: none"> • Physical damage • Debris on the wheel speed sensor or the encoder ring • Loose or improperly mounted sensor • Loose or worn wheel bearing • Air gap between the wheel speed sensor and the encoder ring too large 	C0045 5A
Right Rear Wheel Speed Sensor	<ul style="list-style-type: none"> • Physical damage • Debris on the wheel speed sensor or the encoder ring • Loose or improperly mounted sensor • Loose or worn wheel bearing • Air gap between the wheel speed sensor and the encoder ring too large 	C0050 5A

Circuit/System Description

The wheel speed sensor (WSS) receives ignition voltage from the electronic brake control module (EBCM) and provides a DC square wave signal back to the module. As the wheel spins, the EBCM uses the frequency of the square wave signal to calculate the wheel speed.

Conditions for Running the DTC

C0035 00-C0050 00

- Ignition ON.
- Ignition voltage is greater than 10 volts.

C0035 5A-C0050 5A

- Ignition ON.
- Ignition voltage is greater than 10 volts.
- The brake pedal is not pressed.
- A DTC is not set for the other wheel speed sensor on the same axle.

Conditions for Setting the DTC

C0035 00-C0050 00

- A short to ground, or an open/high resistance is detected on the wheel speed sensor 12-volt reference circuit.
- A short to voltage, short to ground or an open/high resistance is detected on the signal circuit.
- Wheel speed sensor power supply is less than 7.6 volts.
- A missing wheel speed sensor signal

C0035 5A-C0050 5A

An erratic signal output of the wheel speed sensor is detected.

Action Taken When the DTC Sets

- The EBCM disables the antilock brake system (ABS)/traction control system (TCS) and vehicle stability enhancement system (VSES) for the duration of the ignition cycle.
- A DIC message and/or a warning indicator may be displayed.

Conditions for Clearing the DTC

- A current DTC clears when the diagnostic runs and passes.
- Operate the vehicle at speeds greater than 15 km/h (10 mph) to complete the self test, and the EBCM will turn off the ABS indicator.
- A history DTC clears after 100 consecutive ignition cycles, if no failures are reported by this diagnostic.

Diagnostic Aids

If 2 or more wheel speed sensors are inoperative diagnose each wheel speed sensor individually.

If the customer comments that the ABS indicator is ON only during moist environmental conditions: rain, snow, vehicle wash, etc., inspect the wheel speed sensor wiring for signs of water intrusion. If the DTC is not current, clear all DTCs and simulate the effects of water intrusion by using the following procedure:

1. Spray the suspected area with a 5 percent saltwater solution. To create a 5 percent saltwater solution, add 2 teaspoons of salt to 8 fl oz of water (10 g of salt to 200 ml of water).

2. Test drive the vehicle over various road surfaces: bumps, turns, etc., above 40 km/h (25 mph) for at least 30 seconds.
3. Rinse the area thoroughly when completed.

Reference Information

Schematic Reference

[Antilock Brake System Schematics](#)

Connector End View Reference

[Component Connector End Views](#)

Description and Operation

[ABS Description and Operation](#)

Electrical Information Reference

- [Circuit Testing](#)
- [Connector Repairs](#)
- [Testing for Intermittent Conditions and Poor Connections](#)
- [Wiring Repairs](#)

Scan Tool Reference

[Control Module References](#) for scan tool information

Circuit/System Verification

Observe the scan tool Wheel Speed Sensor parameter. The reading should be the same speed on all sensors when driving in a straight line at a speed greater than 20 km/h (13 mph).

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the EBCM.
2. Ignition ON, test for less than 1 volt between the 12-volt reference circuit terminal of the appropriate sensor listed below and ground:
 - LF Sensor circuit terminal 26
 - RF Sensor circuit terminal 9
 - LR Sensor circuit terminal 6
 - RR Sensor circuit terminal 7

If greater than the specified range, test the 12-volt reference circuit for a short to voltage.
3. Test for less than 1 volt between the signal circuit terminal of the appropriate sensor listed below and ground:
 - LF Sensor circuit terminal 5

- RF Sensor circuit terminal 10
 - LR Sensor circuit terminal 27
 - RR Sensor circuit terminal 8
- If greater than the specified range, test the signal circuit for a short to voltage.
4. Ignition OFF, test for infinite resistance between the 12- volt reference terminal of the appropriate sensor circuit listed below and ground:
- LF Sensor circuit terminal 26
 - RF Sensor circuit terminal 9
 - LR Sensor circuit terminal 6
 - RR Sensor circuit terminal 7
- If less than the specified value, test the 12-volt reference circuit for a short to ground.
5. Test for infinite resistance between the following signal circuit terminal of the appropriate sensor circuit listed below and ground:
- LF Sensor circuit terminal 5
 - RF Sensor circuit terminal 10
 - LR Sensor circuit terminal 27
 - RR Sensor circuit terminal 8
- If less than the specified value, test the signal circuit for a short to ground.
6. Ignition OFF, disconnect the harness connector at the appropriate WSS.
7. Test for less than 2 ohms between the appropriate 12-volt reference circuit terminals listed below:
- LF Sensor circuit terminal 26 at the EBCM harness connector, and terminal 2 at the WSS harness connector
 - RF Sensor circuit terminal 9 at the EBCM harness connector, and terminal 2 at the WSS harness connector
 - LR Sensor circuit terminal 6 at the EBCM harness connector, and terminal 2 at the WSS harness connector
 - RR Sensor circuit terminal 7 at the EBCM harness connector, and terminal 2 at the WSS harness connector
- If greater than the specified range, test the 12-volt reference circuit for an open or high resistance.
8. Test for less than 2 ohms between the appropriate signal circuit terminals listed below:
- LF Sensor circuit terminal 5 at the EBCM harness connector, and terminal 1 at the WSS harness connector
 - RF Sensor circuit terminal 10 at the EBCM harness connector, and terminal 1 at the WSS harness connector
 - LR Sensor circuit terminal 27 at the EBCM harness connector, and terminal 1 at the WSS harness connector
 - RR Sensor circuit terminal 8 at the EBCM harness connector, and terminal 1 at the WSS harness connector
- If greater than the specified range, test the signal circuit for an open or high resistance.
9. If all circuits test normal, replace the appropriate wheel speed sensor. If the DTC resets replace the EBCM.

Repair Instructions

Perform the [Diagnostic Repair Verification](#) after completing the diagnostic procedure.

- [Front Wheel Speed Sensor Replacement](#)
- [Rear Wheel Speed Sensor Replacement](#)
- [Control Module References](#) for EBCM replacement, setup, and programming