DTC C0035-C0051

Circuit Description

As the wheel spins, the wheel speed sensor produces an AC signal. The electronic brake control module (EBCM) uses the frequency of the AC signal to calculate the wheel speed.

DTC Descriptors

This diagnostic procedure supports the following DTCs:

- DTC C0035 Left Front Wheel Speed Sensor Circuit
- DTC C0036 Left Front Wheel Speed Sensor Circuit Range Performance
- DTC C0040 Right Front Wheel Speed Sensor Circuit
- DTC C0041 Right Front Wheel Speed Sensor Circuit Range Performance
- DTC C0045 Left Rear Wheel Speed Sensor Circuit
- DTC C0046 Left Rear Wheel Speed Sensor Circuit Range Performance
- DTC C0050 Right Rear Wheel Speed Sensor Circuit
- DTC C0051 Right Rear Wheel Speed Sensor Circuit Range Performance

Conditions for Running the DTC

C0035 C0040 C0045 C0050

The ignition is ON.

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- Vehicle speed is over 40 km/h (25 mph).
- The brake pedal is not pressed.
- The ABS is not active.

Conditions for Setting the DTC

C0035 C0040 C0045 C0050

One of the following conditions exists for 0.02 second:

- A short to voltage in the wheel speed sensor signal circuit.
- An open in the wheel speed sensor signal circuit.

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All of the following conditions exists for 0.01 second:

- The suspect wheel speed equals zero.
- The other wheel speeds are greater than 40 km/h (25 mph) for 0.01 second.
- The suspect wheel equals zero during drive off, and the other wheels are greater than 18 km/h (11 mph).
- A short to ground the wheel speed sensor signal circuit is shorted to ground.
- A deviation of 2 wheel speeds at either side of the vehicle greater than 6 km/h (4 mph), or at the front axle greater than 10 km/h (6 mph) for a time period of 10-20 seconds.

Action Taken When the DTC Sets

If equipped, the following actions occur:

- The EBCM disables the ABS/traction control system (TCS) for the duration of the ignition cycle.
- A DTC malfunction will set.
- The ABS indicator turns ON.
- The Red BRAKE Warning indicator could turn ON.

Conditions for Clearing the DTC

- The condition for the DTC is no longer present and the DTC is cleared with a scan tool.
- The electronic brake control module (EBCM) automatically clears the history DTC when a current DTC is not detected in 100 consecutive drive cycles.

Diagnostic Aids

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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 354 ml (12 oz) 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. If the DTC returns, replace the suspected wheel speed sensor or repair the wheel speed sensor wiring.
4. Rinse the are thoroughly when completed.

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Under the following conditions, 2 Wheel Speed Sensor Input is 0 DTCs are set:

- The 2 suspect wheel speeds equal zero for 10-20 seconds.
- The other wheel speeds are greater than 16 km/h (10 mph).
- The other wheel speeds are within 11 km/h (7 mph) of each other.

Diagnose each wheel speed sensor individually.

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A possible cause of this DTC is electrical noise on the wheel speed sensor harness wiring. Electrical noise could result from the wheel speed sensor wires being routed to close to high energy ignition system components, such as spark plug wires.

Test Description

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

3. This step tests the wheel speed sensor for the proper resistance value.

4. This step ensures that the wheel speed sensor generates the proper voltage.

Step	Action	Value(s)	Yes	No
Schematic Reference: Antilock Brake System Schematics *Connector End View Reference:* Antilock Brake System Connector End Views				
1	Did you perform the Diagnostic System Check - Vehicle?	--	Go to Step 2	Go to Diagnostic System Check - Vehicle
2	1. Install a scan tool. 2. Turn ON the ignition. 3. Set up the scan tool snap shot feature to trigger for this DTC. 4. Drive the vehicle at a speed greater than the specified value. Does the scan tool indicate that this wheel speed DTC set?	40 km/h (25 mph)	Go to Step 3	Go to Diagnostic Aids
3	1. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle . 2. Disconnect the wheel speed sensor connector. 3. Measure the resistance across the wheel speed sensor. Does the resistance measure within the specified range?	Front Wheels 800-1600 ohms Rear Wheels 4500-5400 ohms	Go to Step 4	Go to Step 8
4	1. Spin the wheel. 2. Measure the A/C voltage across the wheel speed sensor. Does the AC voltage measure greater than the specified value?	100 mV	Go to Step 5	Go to Step 8
	Inspect for poor connections at the harness connector of the wheel speed sensor. Refer to Testing for Intermittent Conditions and			

5	Poor Connections and Connector Repairs . Did you find and correct the condition?	--	Go to Step 10	Go to Step 6
6	1. Disconnect the electronic brake control module (EBCM) harness connector. 2. Install the J 39700 100-Pin Breakout Box using J 39700-530 to the EBCM harness connector only. 3. Test the wheel speed sensor circuits for the following: • An open • A short to ground • A short to voltage • Shorted together Refer to Testing for Intermittent Conditions and Poor Connections and Wiring Repairs . Did you find and correct the condition?	--	Go to Step 10	Go to Step 7
7	Inspect for poor connections at the harness connector for the EBCM. Refer Testing for Intermittent Conditions and Poor Connections and Connector Repairs . Did you find and correct the condition?	--	Go to Step 10	Go to Step 9
8	Replace the wheel speed sensor. Refer to Front Wheel Speed Sensor Replacement or Rear Wheel Speed Sensor Replacement . Did you complete the replacement?	--	Go to Step 10	--
9	Replace the EBCM. Refer to Control Module References for replacement, setup, and programming. Did you complete the repair?	--	Go to Step 10	--
10	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