

# C0035-C0052 The EBCM uses the frequency of the AC signal to calculate the wheel speed

## Circuit Description

As the wheel spins, the wheel speed sensor produces an AC signal. The EBCM uses the frequency of the AC signal to calculate the wheel speed.

## Conditions for Running the DTC

**C0035, C0040, C0045, or C0050** The ignition is ON.

**C0036, C0037, C0041, C0042, C0046, C0047, C0051, or C0052**

- DTCs C0035, C0040, C0045, or C0050 are not set.
- The brake pedal is not pressed.
- The ABS is not active.

## Conditions for Setting the DTC

**C0035, C0040, C0045, or C0050**

One of the following conditions exists for 0.02 seconds:

- A short to voltage - the wheel speed sensor signal circuit and wheel speed sensor return circuit voltages are both greater than 4.25 volts.
- A short to ground - the wheel speed sensor signal circuit and wheel speed sensor return circuit voltages are both less than 0.75 volts.
- An open - the wheel speed sensor signal circuit voltage is greater than 4.25 volts and wheel speed sensor return circuit voltage is less than 0.75 volts.

**C0036, C0041, C0046, or C0051**

The EBCM detects a rapid variation in the wheel speed. The wheel speed changes by 16 km/h (10 mph) or more in 0.01 second. The change must occur 3 times with no more than 0.2 seconds between occurrences.

**C0037, C0042, C0047, or C0052**

All of the following conditions exists for 2.5 seconds:

- The suspect wheel speed equals zero.
- The other wheel speeds are greater than 8 km/h (5 mph).
- The other wheel speeds are within 11 km/h (7 mph) of each other.

## Action Taken When the DTC Sets

If equipped, the following actions occur:

- The EBCM disables the ABS/TCS/VSES for the duration of the ignition cycle.
- The DRP does not function optimally.
- The ABS indicator turns ON.
- The Traction Control indicator turns ON.
- The DIC displays the Service Stability System message.

## Conditions for Clearing the DTC

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

## Diagnostic Aids

### **C0035, C0040, C0045, or C0050**

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 (9.9 ml) 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 area thoroughly when completed.

### **C0036, C0041, C0046, or C0051**

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 too close to high energy ignition system components, such as spark plug wires.

### **C0037, C0042, C0047, or C0052**

One of the following conditions may exist:

- The wheel speed sensor inputs are shorted together.
- Internal malfunction of the wheel speed sensor.
- The other wheel speeds are within 11 km/h (7 mph) of each other. Diagnose each wheel speed sensor individually.

## Test Description

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

3. Measure the resistance of the wheel speed sensor in order to determine if the sensor has a valid resistance value.
4. Ensures that the wheel speed sensor is generating a valid AC voltage output.

Step	Action	Values	Yes	No
<b>Schematic Reference:ABS Schematics on page 5-155</b>				
1	Did you perform the Diagnostic System Check – ABS?	—	Go to Step 2	Go to Diagnostic System Check -ABS
2	<ol style="list-style-type: none"> <li>1. Install a scan tool.</li> <li>2. Turn ON the ignition.</li> <li>3. Set up the scan tool snap shot feature to trigger for this DTC.</li> <li>4. Drive the vehicle at a speed greater than the specified value.</li> </ol> Does the scan tool indicate that this wheel speed DTC set?	8 km/h (5 mph)	Go to Step 3	Go to Diagnostic Aids
3	<ol style="list-style-type: none"> <li>1. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle on page 0-34 in General Information.</li> <li>2. Disconnect the wheel speed sensor connector.</li> <li>3. Measure the resistance across the wheel speed sensor.</li> </ol> Does the resistance measure within the specified range?	850–1350 W	Go to Step 4	Go to Step 8

Step	Action	values	Yes	No
4	<p>1. Spin the wheel.</p> <p>2. Measure the AC voltage across the wheel speed sensor.</p> <p>Does the AC voltage measure greater than the specified value?</p>	100 mV	Go to Step 5	Go to Step 8
5	<p>Inspect for poor connections at the harness connector of the wheel speed sensor. Refer to Testing for Intermittent and Poor Connections in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	—	Go to Step 10	Go to Step 6
6	<p>1. Disconnect the EBCM harness connector.</p> <p>2. Install the J 39700 universal pinout box using the J 39700-300 cable adapter to the EBCM harness connector only.</p> <p>3. Test the wheel speed sensor circuits for the following:</p> <ul style="list-style-type: none"> <li>• An open</li> <li>• A short to ground</li> <li>• A short to voltage</li> <li>• Shorted together</li> </ul> <p>Did you find and correct the condition?</p>	—	Go to Step 10	Go to Step 7
7	<p>Inspect for poor connections at the harness connector for the EBCM. Refer to Testing for Intermittent and Poor Connections in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	—	Go to Step 10	Go to Step 9

Step	Action	values	Yes	No
8	<p>Replace the wheel speed sensor. Refer to the appropriate procedure:</p> <ul style="list-style-type: none"> <li>• Wheel Bearing/Hub Replacement -Front (AWD) in Front Suspension</li> <li>• Wheel Bearing/Hub Replacement - Rear Suspension</li> </ul> <p>Did you complete the repair?</p>	—	Go to Step 10	—
9	<p>Important: Perform the setup procedure for the EBCM. An unprogrammed EBCM will result in the following conditions:</p> <ul style="list-style-type: none"> <li>• Inoperative or poorly functioning system operations</li> <li>• The EBCM sets DTC C0281 and DTC C0550</li> </ul> <p>Replace the EBCM. Refer to Electronic Brake Control Module (EBCM) Replacement.</p> <p>Did you complete the repair?</p>	—	Go to Step 10	—
10	<ol style="list-style-type: none"> <li>1. Use the scan tool in order to clear the DTCs.</li> <li>2. Operate the vehicle within the Conditions for Running the DTC as specified in the supporting text.</li> </ol> <p>Does the DTC reset?</p>	—	Go to Step 2	System OK