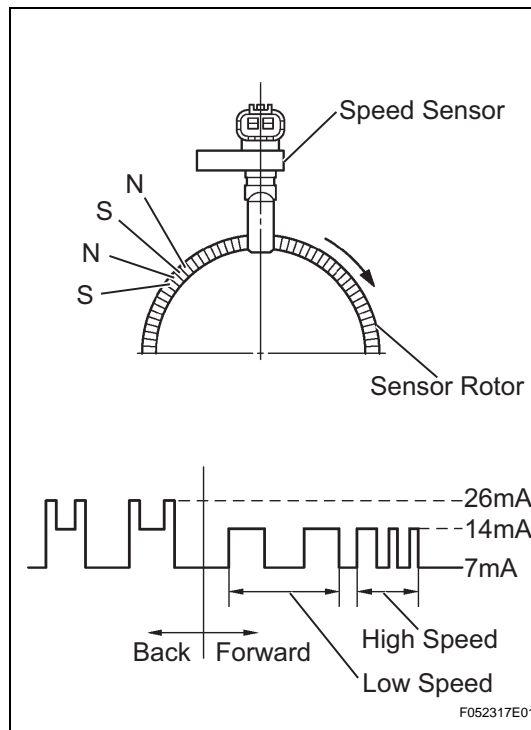


<b>DTC</b>	<b>C0200/31</b>	<b>Right Front Wheel Speed Sensor Signal Malfunction</b>
<b>DTC</b>	<b>C0205/32</b>	<b>Left Front Wheel Speed Sensor Signal Malfunction</b>
<b>DTC</b>	<b>C0210/33</b>	<b>Right Rear Wheel Speed Sensor Signal Malfunction</b>
<b>DTC</b>	<b>C0215/34</b>	<b>Left Rear Wheel Speed Sensor Signal Malfunction</b>

## DESCRIPTION

The speed sensor detects the wheel speeds and sends the appropriate signals to the skid control ECU. Speed sensor rotors have rows of alternating N and S magnetic poles, and their magnetic fields change when the rotors turn.

Each speed sensor detects that magnetic change and sends a pulse signal to the skid control ECU. The ECU monitors the wheel speeds according to the speed signals to control the ABS control system.



DTC No.	DTC Detecting Conditions	Trouble Areas
C0200/31 C0205/32 C0210/33 C0215/34	<ol style="list-style-type: none"> <li>1. At vehicle speed of 6 mph (10 km/h) or more, speed sensor signal circuit open or short for 1 second or more.</li> <li>2. Speed sensor signal open circuit occurs at least 255 times.</li> <li>3. Speed sensor signal circuit open for 0.5 seconds or more.</li> <li>4. With ignition switch ON and vehicle speed at 2 mph (3km/h) or more, 3 wheels output reverse rotation signal and 1 wheel outputs high-frequency pulse 75 times.</li> <li>5. At vehicle speed of 6 mph (10 km/h) or more, speed sensor output halves for 5 seconds.</li> <li>6. At vehicle speed of 6 mph (10 km/h) or more, changing of normal rotation signal and reverse rotation signal occurs 7 times within 0.006 seconds while ignition switch ON.</li> <li>7. Signal output of any one wheel different from signals of other 3 wheels for 1 second, at vehicle speed of 18 mph (30 km/h) or more.</li> <li>8. Reverse rotation signal produced for 1 second or more at vehicle speed of 62 mph (100 km/h) or more.</li> <li>9. At vehicle speed of 18 mph (30 km/h) or more, one speed sensor malfunctions and differs in signal direction from other 3 wheels.</li> <li>10. When voltage at IG1 terminal 9.5 V or more, voltage of sensor power supply decreases for 0.5 seconds or more.</li> </ol>	<ul style="list-style-type: none"> <li>• Speed sensor</li> <li>• Speed sensor circuit</li> <li>• Speed sensor installation</li> <li>• Brake actuator (skid control ECU)</li> </ul>

## HINT:

BC

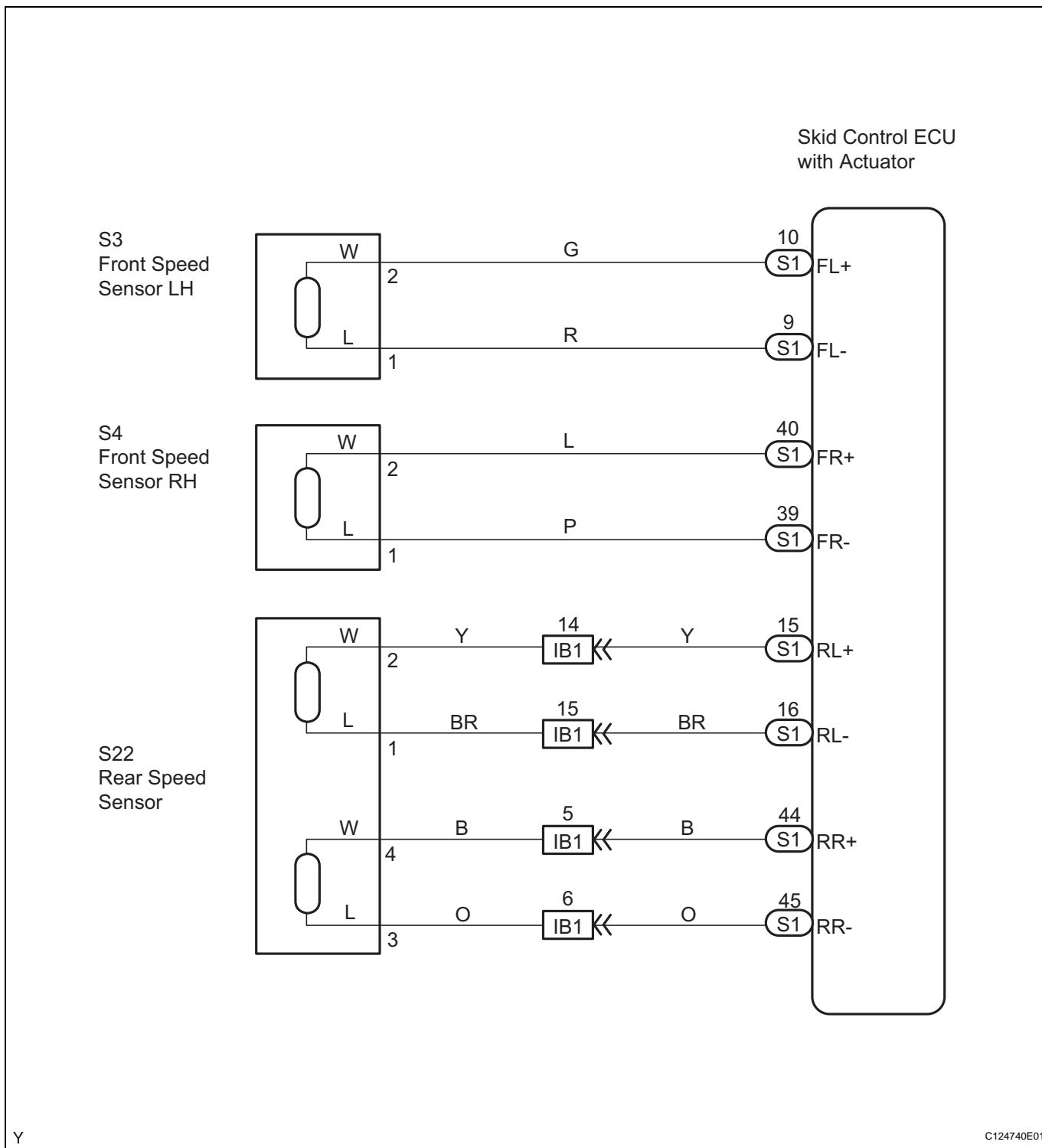
DTC C0200/31 relates to the front right speed sensor.

DTC C0205/32 relates to the front left speed sensor.

DTC C0210/33 relates to the rear right speed sensor.

DTC C0215/34 relates to the rear left speed sensor.

## WIRING DIAGRAM



BC

1

READ VALUE OF DATA LIST (SPEED SENSOR)

- Connect the intelligent tester to the DLC3.
- Start the engine.
- Select the DATA LIST mode on the intelligent tester.

Item	Measurement Item / Range (Display)	Normal Condition	Diagnostic Note
WHEEL SPD FR	Wheel speed sensor (FR) reading / min.: 0 MPH (0 km/h), max.: 202 MPH (326 km/h)	Actual wheel speed	Similar speed to that indicated on speedometer
WHEEL SPD FL	Wheel speed sensor (FR) reading / min.: 0 MPH (0 km/h), max.: 202 MPH (326 km/h)	Actual wheel speed	Similar speed to that indicated on speedometer
WHEEL SPD RR	Wheel speed sensor (FR) reading / min.: 0 MPH (0 km/h), max.: 202 MPH (326 km/h)	Actual wheel speed	Similar speed to that indicated on speedometer
WHEEL SPD RL	Wheel speed sensor (FR) reading / min.: 0 MPH (0 km/h), max.: 202 MPH (326 km/h)	Actual wheel speed	Similar speed to that indicated on speedometer

- (d) Check that there is no difference between the speed value output from each speed sensor displayed on the intelligent tester and the speed value displayed on the speedometer when driving the vehicle.

**OK:**

**There is almost no difference with the displayed speed value.**

**HINT:**

There is tolerance of +-10% in the speedometer indication.

**NG**

**Go to step 6**

**OK**

**2**

## PERFORM TEST MODE INSPECTION (SPEED SENSOR CHECK)

- (a) Check if test mode DTCs are detected (See page [BC-7](#)).

Result	Proceed to
Test mode DTC output	A
Test mode DTC not output	B

**B**

**Go to step 4**

**A**

**3**

## RECONFIRM DTC

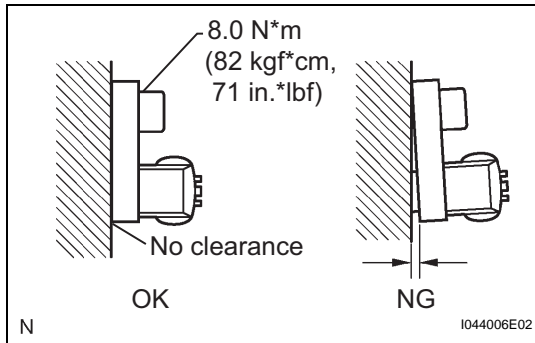
- (a) Clear the DTCs (See page [BC-16](#)).  
(b) Check if the same DTCs are recorded.

Result	Proceed to
DTC output	A
DTC not output	B

**B**

**CHECK FOR INTERMITTENT PROBLEMS**

**A**

**4 CHECK SPEED SENSOR INSTALLATION**

- (a) Check the speed sensor installation.

**OK:**

The installation bolt is tightened properly and there is no clearance between the sensor and front steering knuckle.

**Torque:**

8.0 N\*m (82 kgf\*cm, 71 in.\*lbf)

**NG**

**TIGHTEN BOLT PROPERLY**

**OK**

**5 INSPECT SPEED SENSOR**

- (a) Remove the speed sensor.

- (b) Check the sensor tip.

**OK:**

No scratches or foreign matter on the sensor tip.

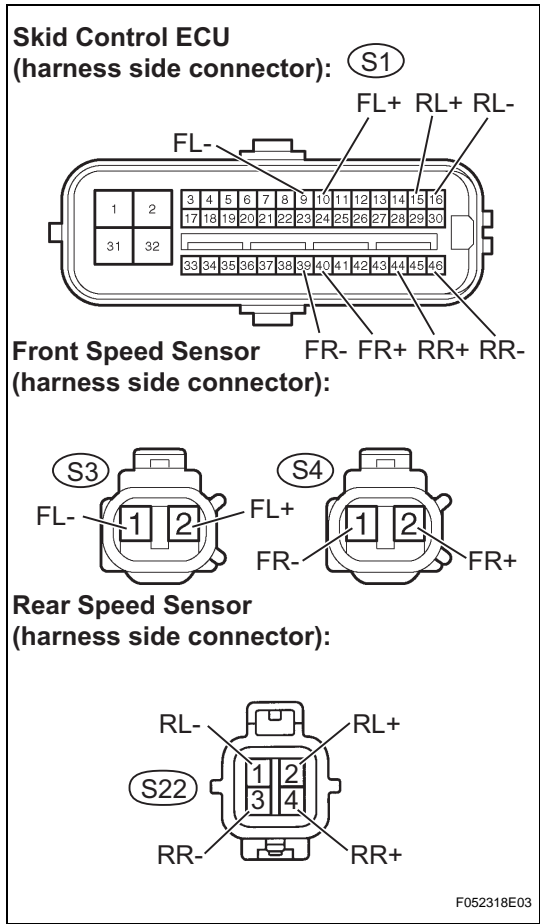
**NG**

**CLEAN OR REPLACE SPEED SENSOR**

**OK**

6

CHECK HARNESS AND CONNECTOR



- (a) Disconnect the skid control ECU connector.  
(b) Disconnect the speed sensor connectors.  
(c) Measure the resistance.

**Standard Resistance**

Tester Connection	Specified Condition
S1-10 (FL+) - S3-2 (FL+)	Below 1 Ω
S1-9 (FL-) - S3-1 (FL-)	Below 1 Ω
S1-40 (FR+) - S4-2 (FR+)	Below 1 Ω
S1-39 (FR-) - S4-1 (FR-)	Below 1 Ω
S1-15 (RL+) - S22-2 (RL+)	Below 1 Ω
S1-16 (RL-) - S22-1 (RL-)	Below 1 Ω
S1-44 (RR+) - S22-4 (RR+)	Below 1 Ω
S1-45 (RR-) - S22-3 (RR-)	Below 1 Ω

- (d) Measure the resistance.

**Standard Resistance**

Tester Connection	Specified Condition
S1-10 (FL+) - Body ground	10 kΩ or higher
S1-9 (FL-) - Body ground	10 kΩ or higher
S1-40 (FR+) - Body ground	10 kΩ or higher
S1-39 (FR-) - Body ground	10 kΩ or higher
S1-15 (RL+) - Body ground	10 kΩ or higher
S1-16 (RL-) - Body ground	10 kΩ or higher
S1-44 (RR+) - Body ground	10 kΩ or higher
S1-45 (RR-) - Body ground	10 kΩ or higher

- (e) Reconnect the speed sensor connectors.  
(f) Reconnect the skid control ECU connector.

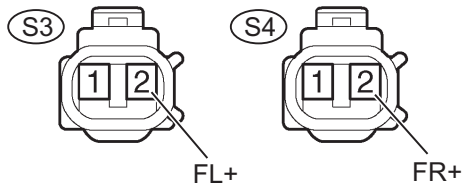
NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

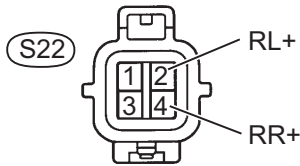
OK

# 7 INSPECT BRAKE ACTUATOR (TERMINAL VOLTAGE)

**Front Speed Sensor**  
**(harness side connector):**



**Rear Speed Sensor**  
**(harness side connector):**



F052319E02

- Disconnect the speed sensor connectors.
- Turn the ignition switch to the ON position.
- Measure the voltage.

## Standard voltage

Tester Connection	Specified Condition
S3-2 (FL+) - Body ground	7.5 to 12 V
S4-2 (FR+) - Body ground	7.5 to 12 V
S22-2 (RL+) - Body ground	7.5 to 12 V
S22-4 (RR+) - Body ground	7.5 to 12 V

- Turn the ignition switch to OFF.
- Reconnect the speed sensor connectors.

NG

REPLACE BRAKE ACTUATOR

OK

# 8 RECONFIRM DTC

BC

- Clear the DTCs (See page [BC-16](#)).
- Check if the same DTCs are recorded.

Result	Proceed to
DTC output	A
DTC not output	B

B

CHECK FOR INTERMITTENT PROBLEMS

A

REPLACE BRAKE ACTUATOR