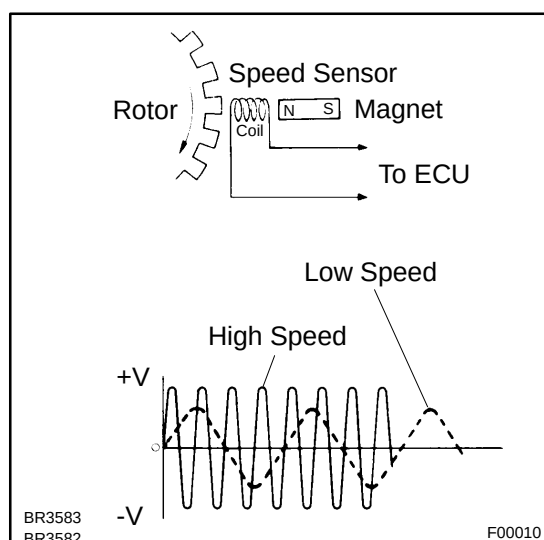


CIRCUIT INSPECTION

DTC	C0200 / 31 - C1331 / 36	Speed Sensor Circuit
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DTC	C1332 / 38, C1333 / 39	Speed Sensor Circuit
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CIRCUIT DESCRIPTION



The speed sensor detects a wheel speed and sends the appropriate signals to the ECU. These signals are used to control of the ABS and VSC system. Each of the front and rear rotors has 48 serrations.

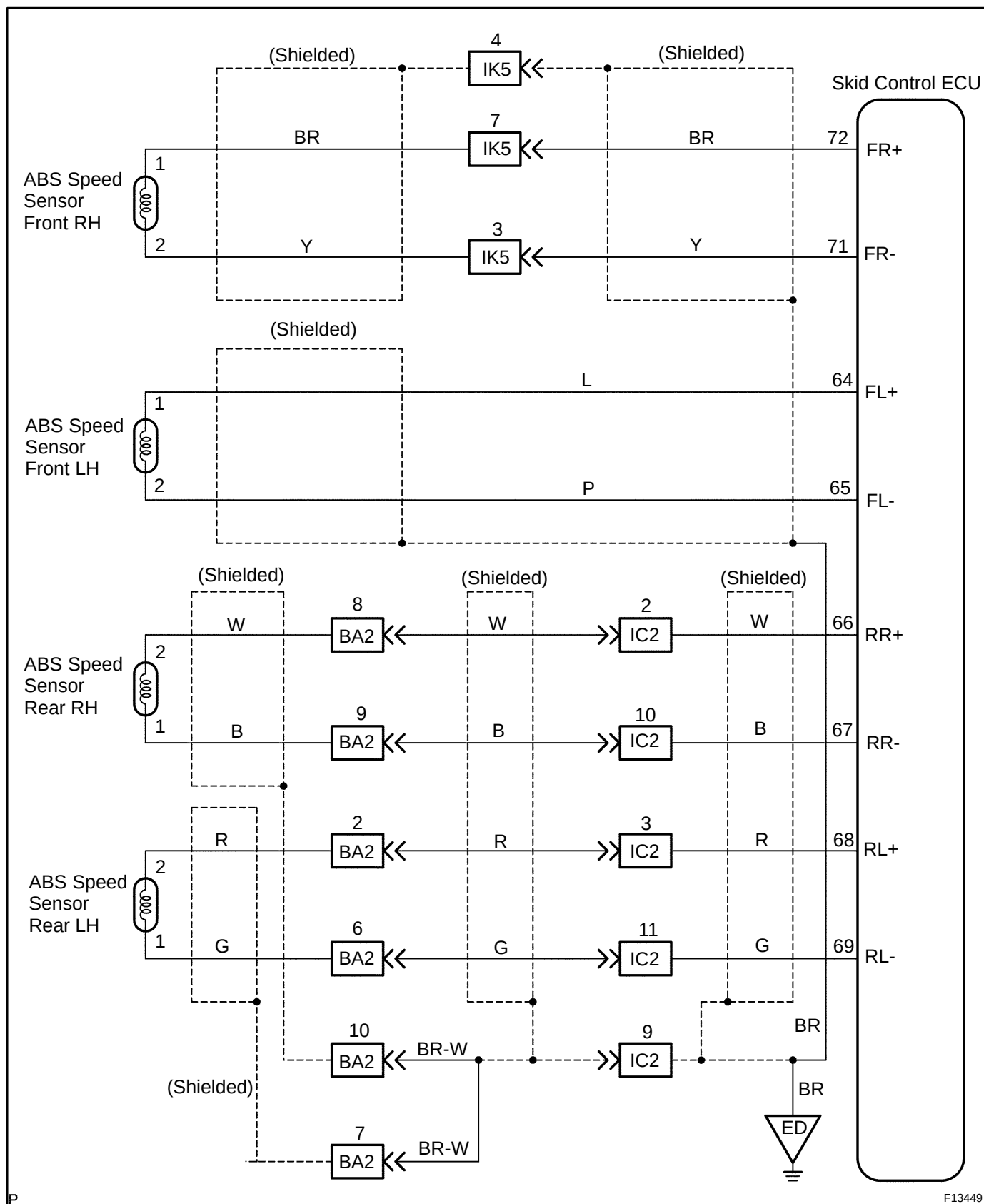
When the rotors rotate, a magnetic field emitted by a permanent magnet in the speed sensor generates an AC voltage. Since the frequency of this AC voltage changes in direct proportion to the speed of the rotor, the frequency is used by the ECU to detect the speed of each wheel.

DTC No.	DTC Detecting Condition	Trouble Area
C0200 / 31 C0205 / 32 C0210 / 33 C0215 / 34	When any of the following 1. to 3. is detected : 1. Vehicle speed is more than 40 km/h (25 mph), pulses are not input for 0.01 sec. 2. After the initial start or restart and when the vehicle speed has reached 12 km/h (7 mph), the wheel speed of 0 km/h (0 mph) is detected. 3. After the initial start or restart and when the vehicle speed has reached 18 km/h (11 mph), the front wheel speed of 0 km/h (0 mph) is detected.	• Right front, left front, right rear, left rear speed sensor • Each speed sensor circuit • Sensor installation • Speed sensor rotor
C1330 / 35 C1331 / 36 C1332 / 38 C1333 / 39	Detecting abnormality in the resistance value of each speed sensor.	• Right front, left front, right rear, left rear speed sensor • Each speed sensor circuit

HINT:

- DTC No. C0200 / 31 and C1330 / 35 are for the right front speed sensor.
- DTC No. C0205 / 32 and C1331 / 36 are for the left front speed sensor.
- DTC No. C0210 / 33 and C1332 / 38 are for the right rear speed sensor.
- DTC No. C0215 / 34 and C1333 / 39 are for the left rear speed sensor.

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:

Start the inspection from step 1 in case of using the TOYOTA hand-held tester and start from step 2 in case of not using the TOYOTA hand-held tester.

1	Check output value of speed sensor.
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PREPARATION:

- (a) Connect the TOYOTA hand-held tester to the DLC3.
- (b) Turn the ignition switch ON and push the TOYOTA hand-held tester main switch ON.
- (c) Select the DATALIST mode on the TOYOTA hand-held tester.

CHECK:

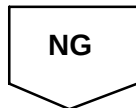
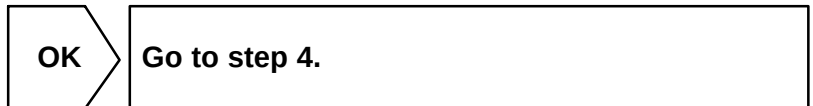
Check that there is no difference between the speed value output from the speed sensor displayed on the TOYOTA hand-held tester and the speed value displayed on the speedometer when driving the vehicle.

OK:

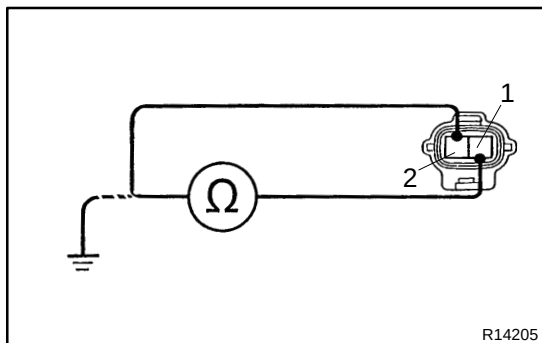
There is almost no difference from the displayed speed value.

HINT:

There is tolerance of $\pm 10\%$ in the speedometer indication.



2 Check speed sensor.



Front:

PREPARATION:

- Remove the front fender liner.
- Make sure that there is no looseness at the connector lock part and connecting part of the connector.
- Disconnect the speed sensor connector.

CHECK:

Measure the resistance between terminals 1 and 2 of speed sensor connector.

OK:

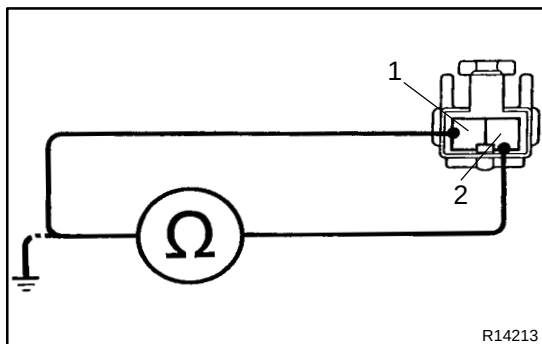
Resistance: 0.9 - 1.8 kΩ at 20 °C (68 °F)

CHECK:

Measure the resistance between terminals 1 and 2 of speed sensor connector and body ground.

OK:

Resistance: 1 MΩ or higher



Rear:

PREPARATION:

- Remove the seat cushion and seatback.
- Make sure that there is no looseness at the connector lock part and connecting part of the connector.
- Remove the lower center garnish, reardoor scuff plate and room partition trim.
- Disconnect the speed sensor connector.

CHECK:

Measure the resistance between terminals 1 and 2 of speed sensor connector.

OK:

Resistance: 0.9 - 1.3 kΩ at 20 °C (68 °F)

CHECK:

Measure the resistance between terminals 1 and 2 of speed sensor connector and body ground.

OK:

Resistance: 1 MΩ or higher

NG

Replace front speed sensor or rear axle hub.

NOTICE:

Check the speed sensor signal last (See page [DI-259](#)).

OK

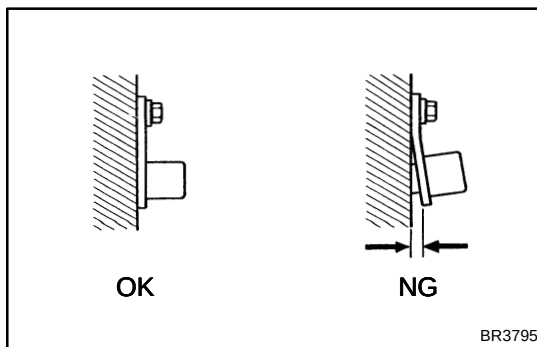
- 3** Check for open and short circuit in harness and connector between each speed sensor and skid control ECU (See page [IN-31](#)).

NG

Repair or replace harness or connector.

OK

- 4** Check front speed sensor installation.



CHECK:

Check the speed sensor installation.

OK:

The installation bolt is tightened properly and there is no clearance between the sensor and knucle.
Torque: 8.0 N·m (82 kgf·cm, 71 in·lbf)

NG

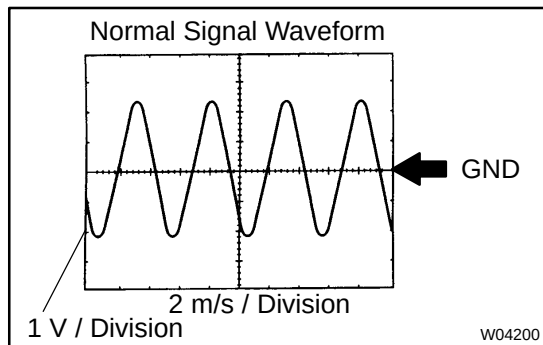
Replace front speed sensor.

NOTICE:

Check the speed sensor signal last (See page [DI-259](#)).

OK

5 Check rear speed sensor and sensor rotor serrations.



REFERENCE: INSPECTION USING OSCILLOSCOPE

PREPARATION:

- Disconnect the connector from the skid control ECU.
- Connect the oscilloscope to the each of terminals RR+ - RR- or RL+ - RL- of the ECU harness side connector.

CHECK:

Drive the vehicle at about 30 km/h (19 mph), and check the signal waveform.

HINT:

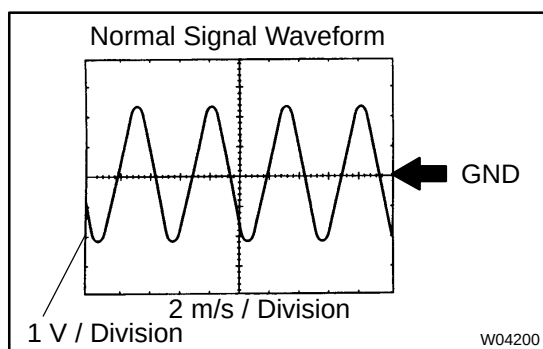
- As the vehicle speed (rpm of the wheels) increases, a cycle of the waveform becomes shorter and the fluctuation in the output voltage becomes greater.
- When noise is identified in the waveform on the oscilloscope, error signals are generated due to the speed sensor rotor's scratches, looseness or foreign matter deposited on it.

NG

Replace rear axle hub.

OK

6 Check front speed sensor and sensor rotor serrations.



REFERENCE: INSPECTION USING OSCILLOSCOPE

PREPARATION:

- Disconnect the connector from the skid control ECU.
- Connect the oscilloscope to the each of terminals FR+ - FR- or FL+ - FL- of the ECU harness side connector.

CHECK:

Drive the vehicle at about 30 km/h (19 mph), and check the signal waveform.

HINT:

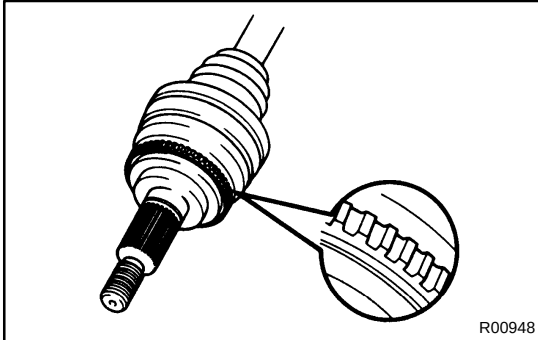
- As the vehicle speed (rpm of the wheels) increases, a cycle of the waveform becomes shorter and the fluctuation in the output voltage becomes greater.
- When noise is identified in the waveform on the oscilloscope, error signals are generated due to the speed sensor rotor's scratches, looseness or foreign matter deposited on it.

OK

Check and replace skid control ECU.

NG

7 Check front sensor rotor and sensor tip.

**PREPARATION:**

Remove the front drive shaft (See page [SA-16](#)).

CHECK:

Check the sensor rotor serrations.

OK:

No scratches, missing teeth or foreign objects.

PREPARATION:

Remove the front speed sensor (See page [BR-49](#)).

CHECK:

Check the sensor tip.

OK:

No scratches or foreign objects on the sensor tip.

HINT:

If foreign matter (including that on the sensor rotor side) is identified, remove it and after reassembling, check the output waveform.

NG

Replace sensor rotor or speed sensor.

NOTICE:

Check the speed sensor signal last (See page [DI-259](#)).

OK

Check and replace skid control ECU.