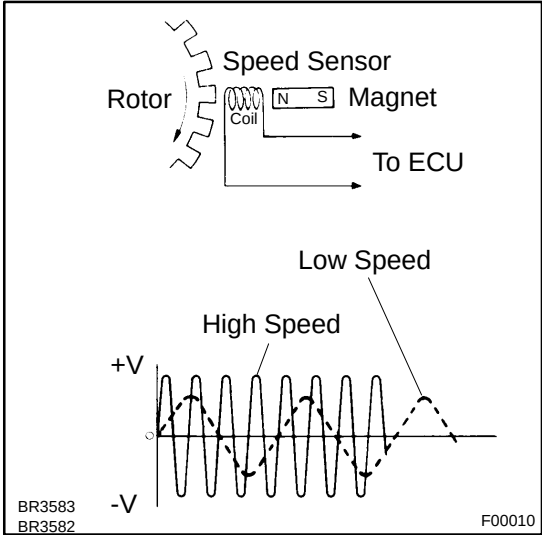


DTC	31 - 34	Speed Sensor Circuit
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CIRCUIT DESCRIPTION



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

When the rotors rotate, the magnetic field emitted by the 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
31, 32, 33, 34	Detection of any of conditions from 1. through 4.: 1. With vehicle speed at 10 km/h or more, sensor signal circuit of faulty wheel is open or short for 15 sec. or longer. 2. Momentary interruption of sensor signal of faulty wheel has occurred 7 times or more. 3. With vehicle speed at 20 km/h or more, sensor signal of faulty wheel generated noise for 5 sec. or longer. 4. Sensor signal circuit is open for 0.3 sec. or longer.	• Right front, left front, right rear, left rear speed sensor • Each speed sensor circuit • Sensor installation • Sensor rotor

HINT:

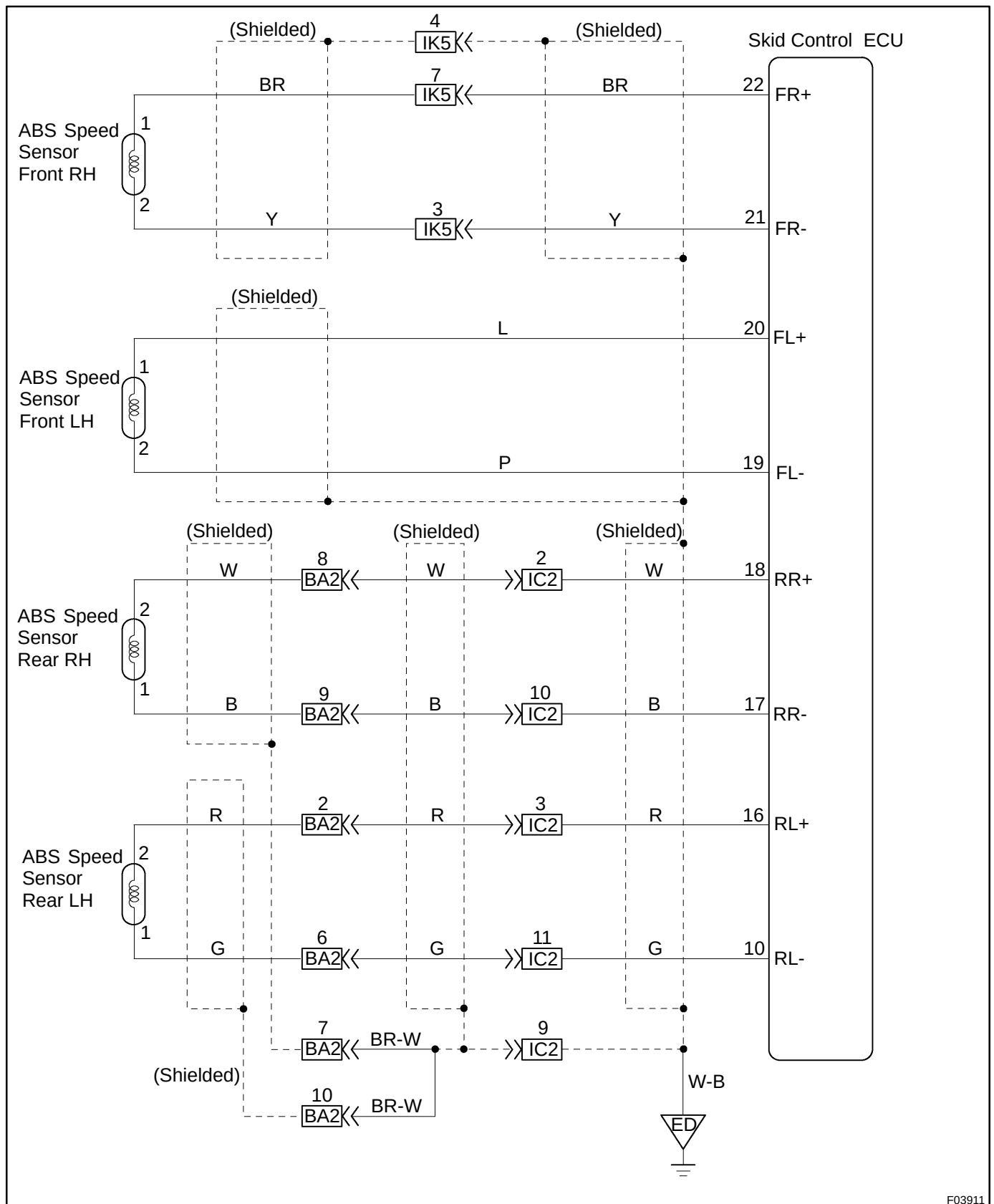
DTC No. 31 is for the right front speed sensor.

DTC No. 32 is for the left front speed sensor.

DTC No. 33 is for the right rear speed sensor.

DTC No. 34 is for the left rear speed sensor.

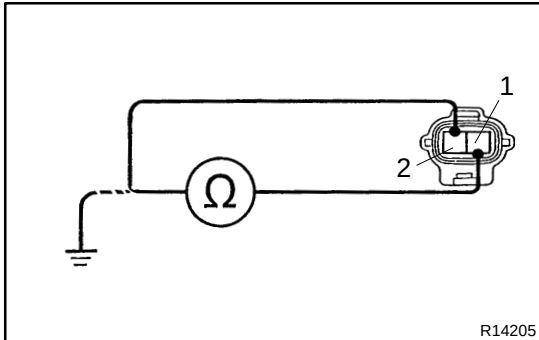
WIRING DIAGRAM



F03911

INSPECTION PROCEDURE

1 Check speed sensor.

**Front:****PREPARATION:**

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

CHECK:

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

OK:

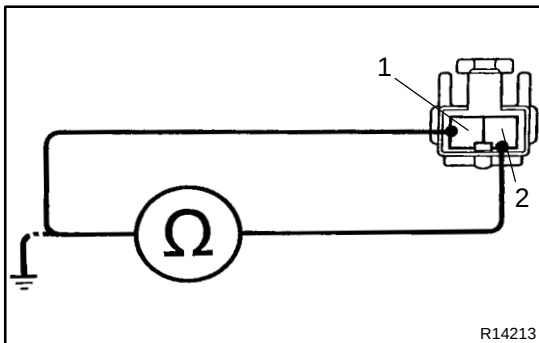
Resistance: 0.9 - 1.8 kΩ at 20 °C (68 °F)

CHECK:

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

OK:

Resistance: 1 MΩ or higher

**Rear:****PREPARATION:**

- (a) Remove the seat cushion and side seatback.
- (b) Make sure that there is no looseness at the connector lock part and connecting part of the connector.
- (c) Remove the lower center garnish, rear door scuff plate and room partition trim.
- (d) Disconnect the speed sensor connector.

CHECK:

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

OK:

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

CHECK:

Measure resistance between each of 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-220](#)).

OK

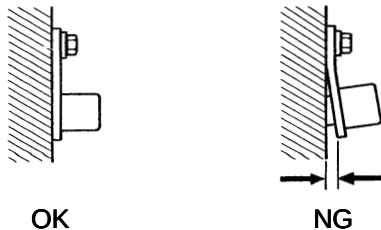
- 2** Check for open and short circuit in harness and connector between each speed sensor and ECU (See page [IN-31](#)).

NG

Repair or replace harness or connector.

OK

- 3** Check front speed sensor installation.



BR3795

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

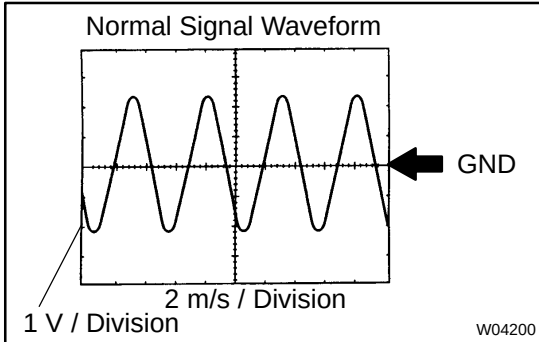
Replace front speed sensor.

OK

NOTICE:

Check the speed sensor signal last (See page [DI-220](#)).

4 Check rear speed sensor and sensor rotor serrations.



REFERENCE: INSPECTION USING OSCILLOSCOPE

PREPARATION:

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:

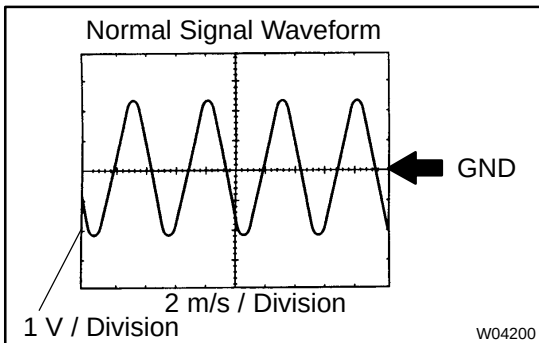
- As the vehicle speed (rpm of the wheels) increases, a cycle of the waveform becomes shorter and the fluctuation in the output voltage becomes greater.
- When noise is identified in the waveform on the oscilloscope, error signals are generated due to the speed sensor rotor's scratches, looseness or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

NG

Replace rear axle hub.

OK

5 Check front speed sensor and sensor rotor serrations.



REFERENCE: INSPECTION USING OSCILLOSCOPE

PREPARATION:

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.

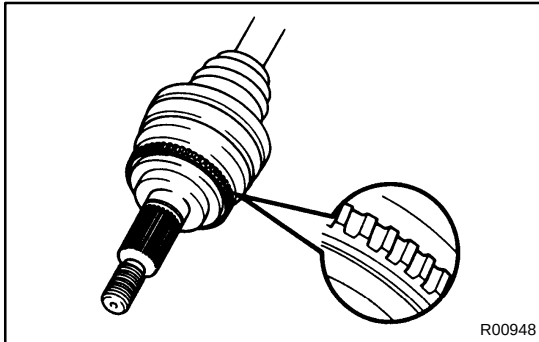
HINT:

- 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 ABS actuator assembly.

NG

6 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-220](#)).

OK**Check and replace ABS actuator assembly.**