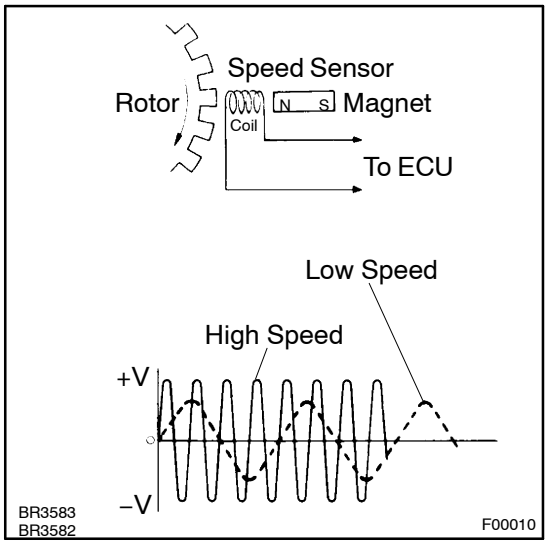
DTC	C0200/31	RIGHT FRONT SPEED SENSOR CIRCUIT

DTC	C0205/32	LEFT FRONT SPEED SENSOR CIRCUIT

DTC	C1235/35	FOREIGN MATTER IS ATTACHED ON TIP OF RIGHT FRONT SENSOR

DTC	C1236/36	FOREIGN MATTER IS ATTACHED ON TIP OF LEFT FRONT SENSOR

CIRCUIT DESCRIPTION

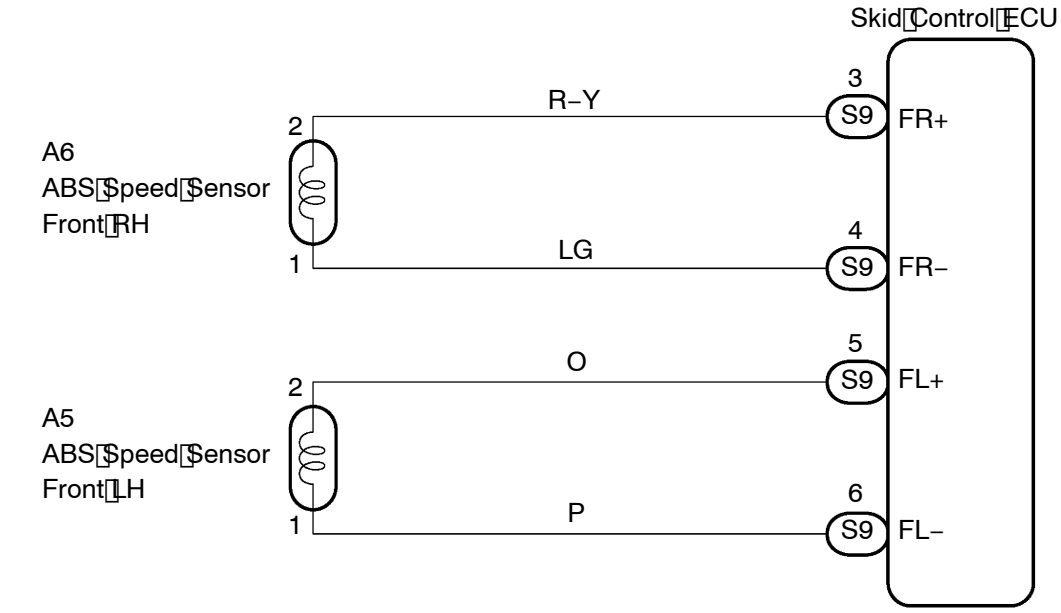


The speed sensor detects wheel speed and sends the appropriate signals to the ECU. These signals are used for control of the ABS control system. The front and rear rotors each have 48 serrations.

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
C0200/31 C0205/32 C1235/35 C1236/36	Detection of any of conditions from 1. through 4.: 1. With vehicle speed at 6 mph (10 km/h) or more, sensor signal circuit of faulty wheel is open or short for 1 sec. or longer. 2. Momentary interruption of sensor signal of faulty wheel has occurred 7 times or more. 3. With vehicle speed at 12 mph (20 km/h) or more, sensor signal of faulty wheel generated noise for 5 sec. or longer. 4. Sensor signal circuit is open for 0.5 sec. or longer.	• Right front speed sensor • Speed sensor circuit • Sensor installation • Sensor rotor

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:

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

1	READ VALUE OF HAND–HELD TESTER (SPEED SENSOR OUTPUT VALUE)

(a) Connect the hand–held tester to the DLC3.

(b) Start the engine.

(c) Select the item "WHEEL SPEED FL (FR)" in the DATA LIST and read the value displayed on the hand–held tester.

Item	Measurement Item / Range (Display)	Normal Condition
WHEEL SPD FR	Wheel speed sensor (FR) reading / min.: 0 km/h (0 MPH), max.: 326 km/h (202 MPH)	Actual wheel speed
WHEEL SPD FL	Wheel speed sensor (FL) reading / min.: 0 km/h (0 MPH), max.: 326 km/h (202 MPH)	Actual wheel speed

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

OK:

There is almost no difference in the displayed speed value.

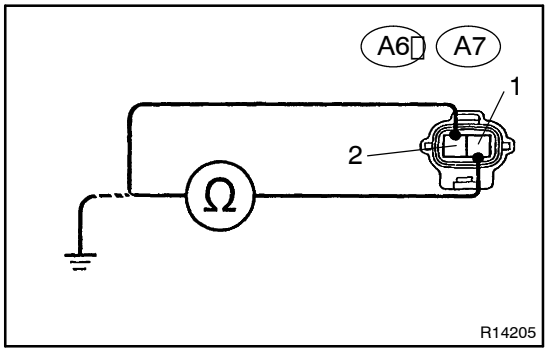
HINT:

There is tolerance of ±10 % in the speedometer indication.

OK → **REPLACE SKID CONTROL ECU ASSY (SEE PAGE 32–54)**

NG

2	INSPECT FRONT SPEED SENSOR



(a) Make sure that there is no looseness at the connector's locking part and connecting part of the connector (A6 or A7.

(b) Disconnect the speed sensor connector.

(c) Measure the resistance according to the value(s) in the table below.

Standard:

LH:

Tester Connection	Specified Condition
A6–2 (FL+) – A6–1 (FL–)	0.6 to 2.5 kΩ

RH:

Tester Connection	Specified Condition
A7–2 (FR+) – A7–1 (FR–)	0.6 to 2.5 kΩ

(d) Measure the resistance according to the value(s) in the table below.

Standard:

LH:

Tester Connection	Specified Condition
A6–2 (FL+) – Body ground	1 MΩ or higher
A6–1 (FL–) – Body ground	1 MΩ or higher

RH:

Tester Connection	Specified Condition
A7–2 (FR+) – Body ground	1 MΩ or higher
A7–1 (FR–) – Body ground	1 MΩ or higher

NOTICE:

Check the speed sensor signal last (See page 05–156).

NG → **REPLACE FRONT SPEED SENSOR (SEE PAGE 32–45)**

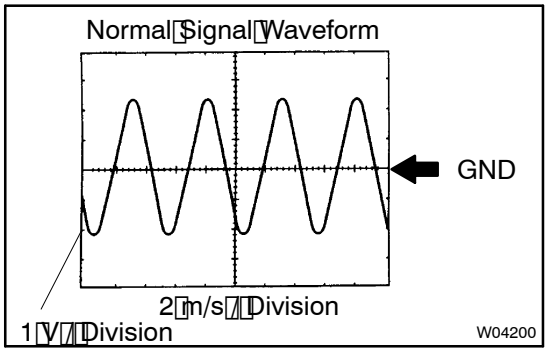
OK

3	CHECK HARNESS AND CONNECTOR(FRONT SPEED SENSOR – SKID CONTORL ECU ASSY) (SEE PAGE 01–33)

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

4 CHECK SPEED SENSOR AND SENSOR ROTOR SERRATIONS



INSPECTION USING OSCILLOSCOPE

(a) Connect the oscilloscope to terminals FR+ – FR– and FL+ – FL– of the skid control ECU.

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

OK:

A waveform as shown in a figure should be output.

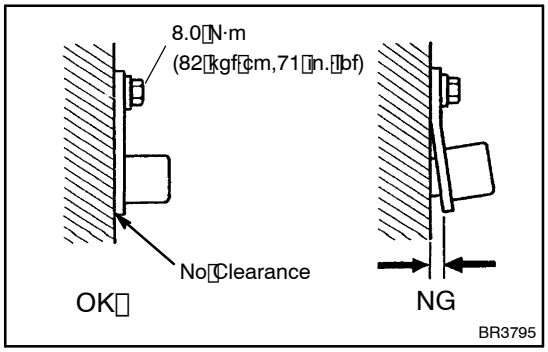
HINT:

- As vehicle speed (wheel revolution speed) increases, a cycle of the waveform narrows 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 attached to it.

OK	**REPLACE SKID CONTROL ECU ASSY (SEE PAGE 32–54)**

NG

5 CHECK FRONT SPEED SENSOR INSTALLATION



(a) Check the speed sensor installation.

OK:

There is no clearance between the sensor and front steering knuckle.

The installation bolt is tightened properly.

Torque: 8.0 N·m (82 kgf·cm, 71 in.·lbf)

NOTICE:

Check the speed sensor signal last (See page 05–156).

NG	**REPLACE FRONT SPEED SENSOR (SEE PAGE 32–45)**

OK

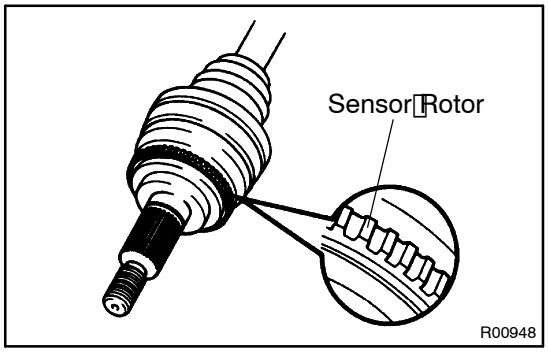
6	CHECK SPEED SENSOR ROTOR AND SENSOR TIP

(a) Remove the front speed sensor (See page 32–45).

(b) Check the sensor tip.

OK:

No scratches or foreign matter on the sensor tip.



(c) Remove the front drive shaft (See page 30–20).

(d) Check the sensor rotor serrations.

OK:

No scratches, missing teeth or foreign matter.

HINT:

If foreign matter is attached, remove it and after reassembling, check the output waveform.

NOTICE:

Check the speed sensor signal last (See page 05–156).

NG → **CLEAN OR REPLACE SPEED SENSOR AND SENSOR ROTOR SERRATIONS**

OK

REPLACE SKID CONTROL ECU ASSY (SEE PAGE 32–54)