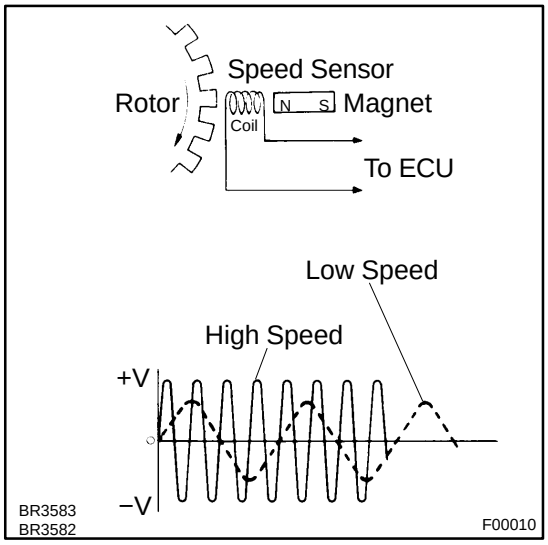
DTC	C0200/31	RIGHT FRONT SPEED SENSOR

DTC	C0205/32	LEFT FRONT SPEED SENSOR

DTC	C1330/35	FOREIGN MATTER IS ATTACHED ON TIP OF RIGHT FRONT WHEEL

DTC	C1331/36	FOREIGN MATTER IS ATTACHED ON TIP ON LEFT FRONT SENSOR

CIRCUIT DESCRIPTION



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

When the rotors rotate, the magnetic field generated by the permanent magnet in the speed sensor induces 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.

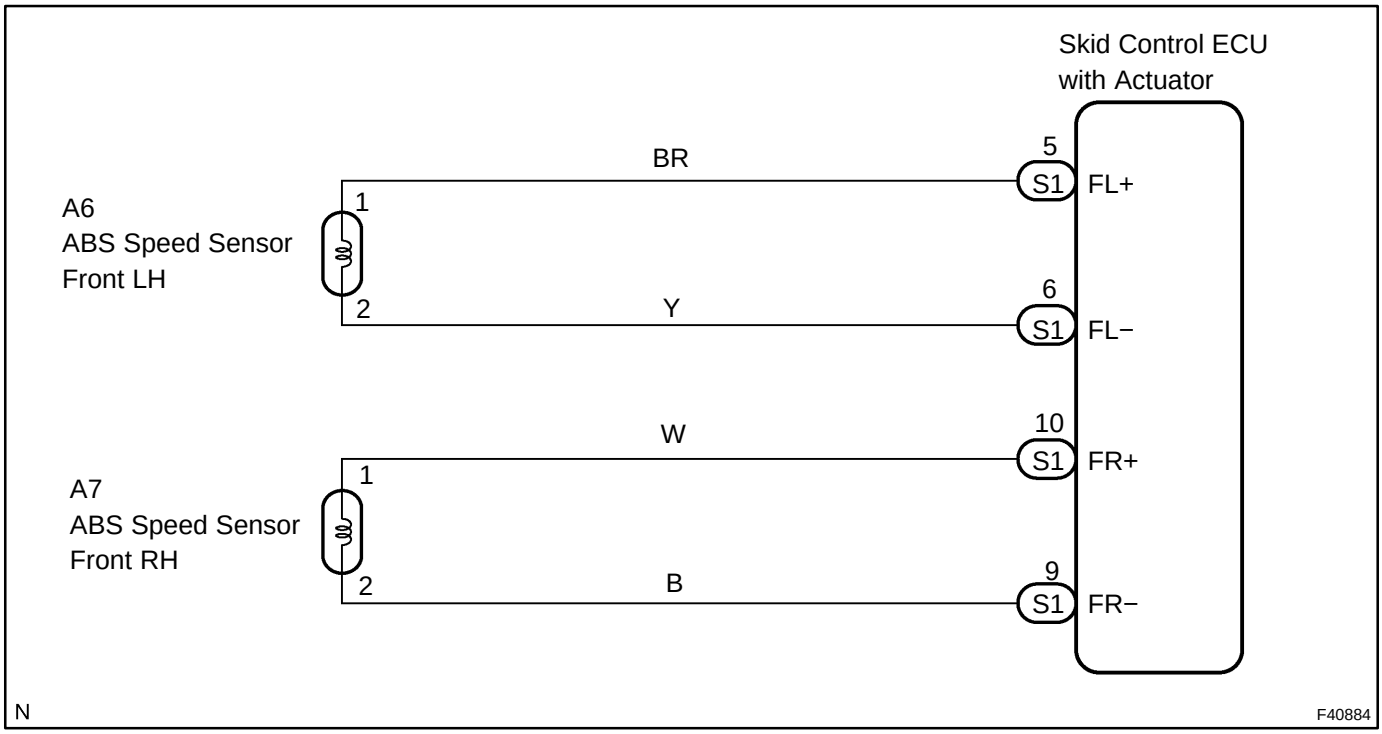
DTC No.	DTC Detecting Condition	Trouble Area
C0200/31 C0205/32	When any of the following 1. to 3. is detected : 1. Non−plausible high frequent signal, high wheel acceleration or high gradient for 20 sec. with the brake pedal applied or for 5 sec. when the brake pedal is not applied. 2. After the initial start or restart and when the vehicle speed has reached 7 mph (12 km/h), the wheel speed of 0 mph (0 km/h) is detected. 3. Deviation of 2 wheel speed.	• Right front and left front speed sensor • Speed sensor rotor • Sensor installation
C1330/35 C1331/36	Detecting abnormality in the resistance value of each speed sensor.	• Right front and left front speed sensor • Speed sensor circuit • Sensor Installation

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.

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:

Start the inspection from step 1 when using the hand−held tester and start from step 2 when not using the hand−held tester.

1	READ VALUE OF HAND−HELD TESTER(FRONT SPEED SENSOR)

(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.

Standard:

There is almost no difference in the displayed speed value.

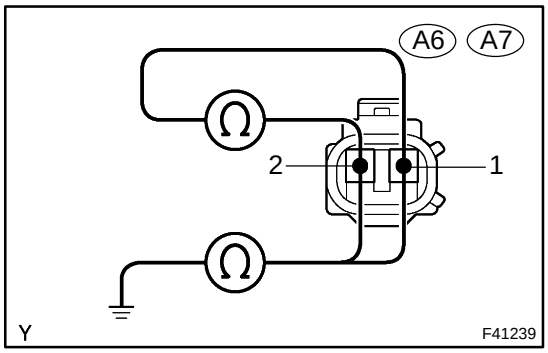
HINT:

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

OK → **Go to step 5**

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−)	0.92 to 1.22 kΩ

RH:

Tester Connection	Specified Condition
A7−2 (FR+) − A7−1 (FR−)	0.92 to 1.22 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	10 kΩ or higher
A6−1 (FL−) − Body ground	10 kΩ or higher

RH:

Tester Connection	Specified Condition
A7−2 (FR+) − Body ground	10 kΩ or higher
A7−1 (FR−) − Body ground	10 kΩ or higher

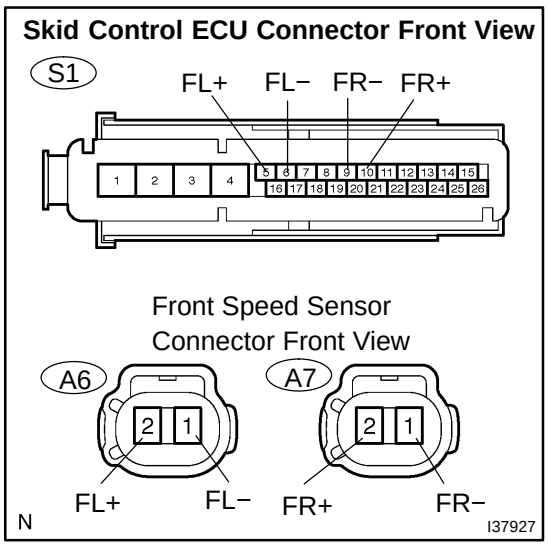
NOTICE:

Check the speed sensor signal after replacement (See page 05−873).

NG → **REPLACE FRONT SPEED SENSOR**

OK

3	CHECK HARNESS AND CONNECTOR(FRONT SPEED SENSOR − SKID CONTROL ECU)



(a) Disconnect the skid control ECU connector and the front speed sensor connectors.

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

Standard:

LH:

Tester Connection	Specified Condition
S1−5 (FL+) − A6−2 (FL+)	1 Ω or less
S1−6 (FL−) − A6−1 (FL−)	1 Ω or less

RH:

Tester Connection	Specified Condition
S1−10 (FR+) − A7−2 (FR+)	1 Ω or less
S1−9 (FR−) − A7−1 (FR−)	1 Ω or less

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

Standard:

LH:

Tester Connection	Specified Condition
A6−2 (FL+) − Body ground	10 kΩ or higher
A6−1 (FL−) − Body ground	10 kΩ or higher

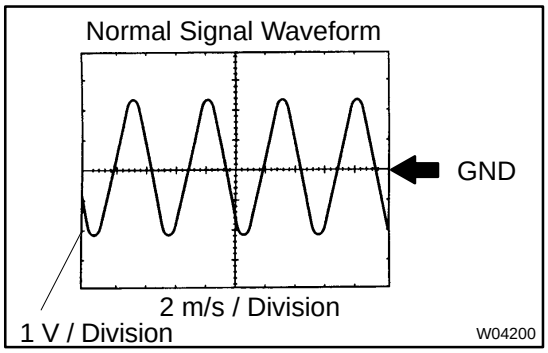
RH:

Tester Connection	Specified Condition
A7−2 (FR+) − Body ground	10 kΩ or higher
A7−1 (FR−) − Body ground	10 kΩ or higher

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

OK

4 INSPECT 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.

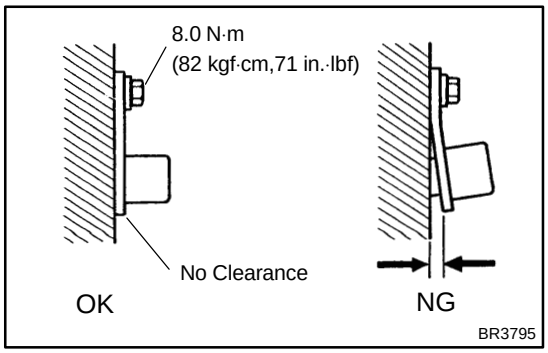
Standard:

- **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 BRAKE ACTUATOR ASSY (See page 32−58)**

NG

5 INSPECT FRONT SPEED SENSOR INSTALLATION



(a) Check the speed sensor installation.

Standard:

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 after replacement (See page 05−873).

NG	**REPLACE FRONT SPEED SENSOR**

OK

6	INSPECT SPEED SENSOR TIP

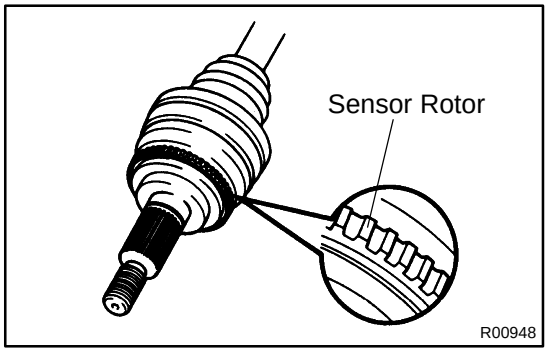
(a) Remove the front speed sensor (See page 32–66).
(b) Check the sensor tip.
Standard:
No scratches or foreign matter on the sensor tip.

NOTICE:
Check the speed sensor signal after cleaning (See page 05–873).

NG → **CLEAN OR REPLACE SPEED SENSOR**

OK

7	INSPECT SPEED SENSOR ROTOR



(a) Remove the front drive shaft (See page 30–8).
(b) Check the sensor rotor serrations.
Standard:
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 after cleaning (See page 05–873).

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

OK

REPLACE BRAKE ACTUATOR ASSY (See page 32–58)