DTC	C0210/33	RIGHT REAR SPEED SENSOR CIRCUIT

DTC	C0215/34	LEFT REAR SPEED SENSOR CIRCUIT

DTC	C1238/38	FOREIGN MATTER IS ATTACHED ON TIP OF RIGHT REAR SENSOR

DTC	C1239/39	FOREIGN MATTER IS ATTACHED ON TIP OF LEFT REAR SENSOR

CIRCUIT DESCRIPTION

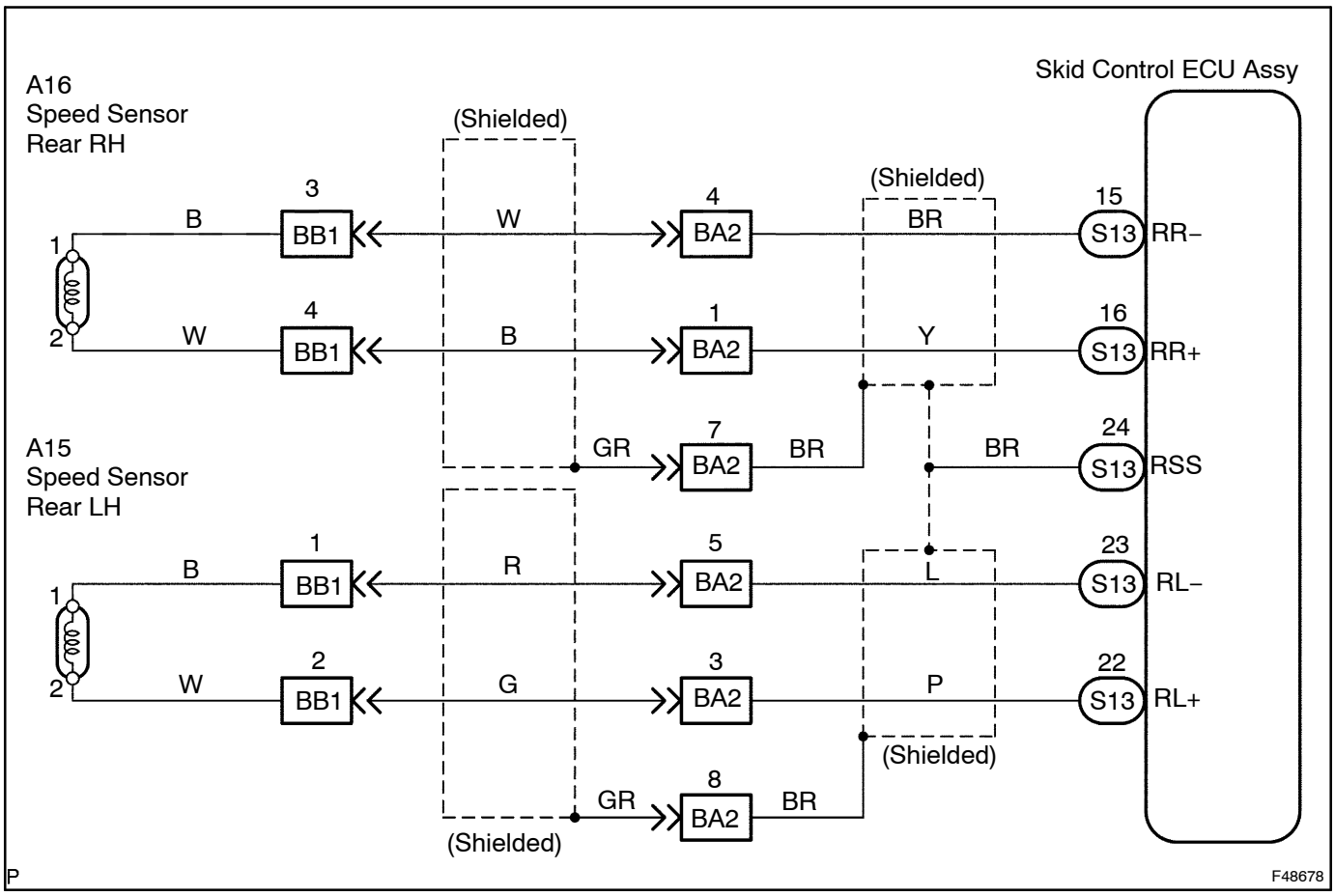
Refer to DTC C0200/31, C0205/32, C1235/35, C1236/36 on page 05–200.

DTC No.	DTC Detection Condition	Trouble Area
C0210/33 C0215/34	Detection of any of conditions 1 to 4: 1. Vehicle speed is 10km/h (6 mph) or more, and open or short circuit in the signal circuit of each vehicle speed sensor has continued for 15 sec. or more 2. Momentary interruption of each vehicle speed sensor signal has occurred more than 7 times 3. Vehicle speed is higher than 20 km/h (12 mph) and noise on the abnormal wheel sensor signal continues for 5 sec. or more 4. Open circuit condition of the vehicle speed sensor signal circuit has continued for more than 0.5 sec.	• Left rear speed sensor • Right rear speed sensor • Each speed sensor circuit • Speed sensor rotor • Sensor installation
C1238/38 C1239/39	Continuous noise occurs for 5 seconds or more in speed sensor signals with the vehicle speed at 20 km/h (12 mph) or more.	• Left rear speed sensor • Right rear speed sensor • Speed sensor rotor

HINT:

- DTC No. C0210/33 and C1238/38 are for the right rear speed sensor.
- DTC No. C0215/34 and C1239/39 are for the left rear speed sensor.
- Fail–safe function:
  If any trouble occurs in the speed sensor circuit, the ECU will prohibit ABS controls.
- For abnormality in 1 or 2 wheels, BRAKE ASSIST can be performed under the condition that the brake system is normal.
- For abnormality in 3 or 4 wheels, the ECU cuts off current to the solenoid relay and BRAKE ASSIST is prohibited. If the brake pedal is depressed firmly, the brake force may be lower than when BRAKE ASSIST was available.

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:
Start the inspection from step 1 if using the hand–held tester. If not start from step 2.

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

(a) Connect the hand–held tester (with 24 V VIM) to the DLC3.
(b) Start the engine.
(c) Select the DATA LIST mode on the hand–held tester.
(d) Check that there is no difference between the speed value output from the speed sensor displayed on the tester screen and the speed value displayed on the tester screen when driving the vehicle.
Skid control ECU assy:

Item	Measurement Item/ Range (Display)	Normal Condition	Diagnostic Note
WHEEL SPD RR	Wheel speed sensor (RR) reading/ Min.: 0 km/h (0 mph, Max.: 255 km/h (158 mph)	Actual wheel speed	Speed indicated on speed meter
WHEEL SPD RL	Wheel speed sensor (RL) reading/ Min.: 0 km/h (0 mph, Max.: 255 km/h (158 mph)	Actual wheel speed	Speed indicated on speed meter

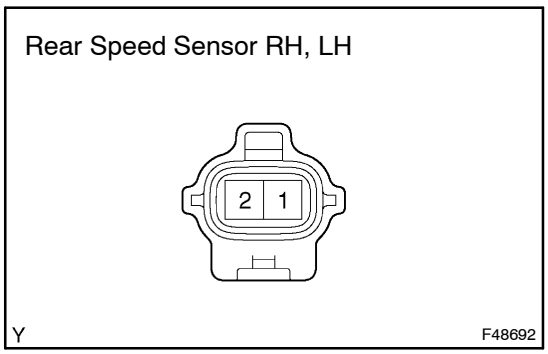
OK:
There is almost no difference in the speed value of the speed sensor and the speed meter.

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

NG → **Go to step 4**

OK

2 INSPECT REAR SPEED SENSOR



(a) Disconnect the sensor connector.
(b) Measure the resistance according to table below.
Standard:

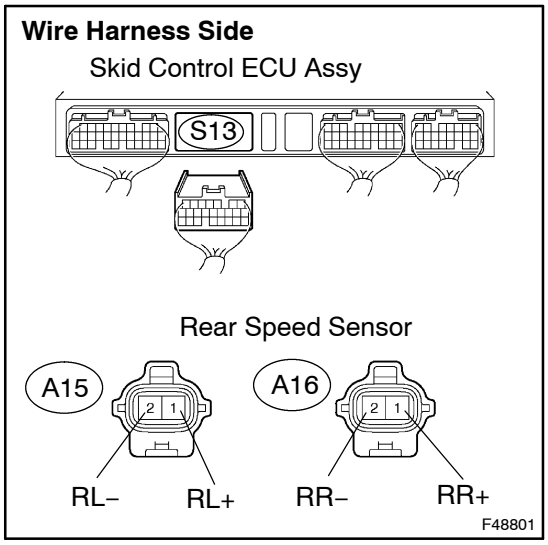
Tester Connection	Specified Condition
1 – 2	1.03 to 1.07 kΩ at 25°C (85°F)
1 – Body ground	10 kΩ or higher
2 – Body ground	10 kΩ or higher

NOTICE:
Check the speed sensor signal last (see page 05–181).

NG → **REPLACE REAR SPEED SENSOR**

OK

3 CHECK WIRE HARNESS (SKID CONTROL ECU ASSY – REAR SPEED SENSOR)



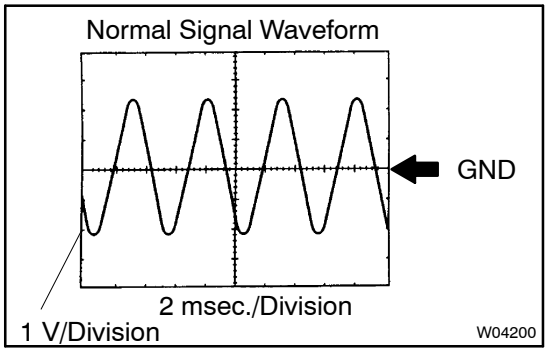
(a) Disconnect the S13 ECU connector.
(b) Disconnect the A15 and A16 sensor connectors.
(c) Measure the resistance according to the table below.
Standard:

Tester Connection	Specified Condition
S13–16 (RR+) – A16–1 (RR+)	Below 1 Ω
S13–22 (RL+) – A15–1 (RL+)	Below 1 Ω
S13–15 (RR–) – A16–2 (RR–)	Below 1 Ω
S13–23 (RL–) – A15–2 (RL–)	Below 1 Ω
A16–1 (RR+) – Body ground	10 kΩ or higher
A15–1 (RL+) – Body ground	10 kΩ or higher
A16–2 (RR–) – Body ground	10 kΩ or higher
A15–2 (RL–) – Body ground	10 kΩ or higher

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

OK

4 CHECK SPEED SENSOR AND SENSOR ROTOR SERRATIONS



(a) Connect an oscilloscope to terminals RR+, RL+ and GND of the skid control ECU.

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

OK:

The waveform shown in the illustration is output.

HINT:

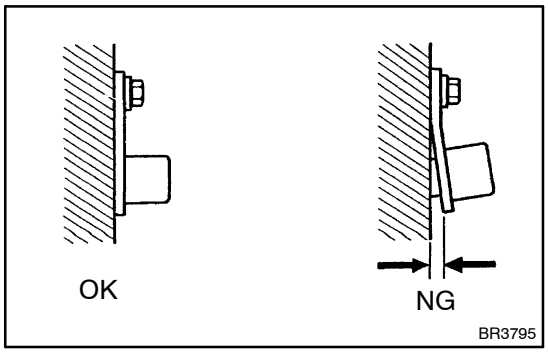
- As the vehicle speed (wheel revolution speed) increases, the signal's wavelength shortens and amplitude (output voltage) increases.
- When noise is present in the waveform, the speed sensor rotor may have scratches, be loose, have foreign objects or be broken. If so, error signals will be generated.
- When noise is present in the waveform, error signals are generated. The speed sensor rotor may have scratches, be loose or have foreign objects.

NG → **Go to step 5**

OK

REPLACE SKID CONTROL ECU ASSY (See page 01–27)

5 INSPECT REAR 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 rear axle carrier.

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

NOTICE:

Check the speed sensor signal last (see page 05–181).

NG → **REPLACE REAR SPEED SENSOR**

OK

6 INSPECT SPEED SENSOR ROTOR TIP

(a) Remove the speed sensor (see Pub. No. RM1008E, page 32–90).

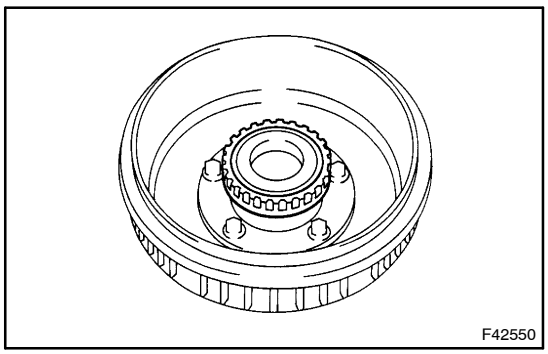
(b) Check the sensor tip.

OK: No scratches or foreign objects on the sensor tip.

NG → **CLEAN OR REPLACE SENSOR ROTOR**

OK

7	INSPECT SPEED SENSOR ROTOR


F42550

(a) Remove the rear axle hub (see Pub. No. RM1008E, page 30–62).

(b) Check the sensor rotor serrations.

OK:

No scratches, missing teeth or foreign objects.

HINT:

If a foreign object is present, remove it and check the output waveform after reassembling.

NOTICE:

Check the speed sensor signal last (see page 05–181)

NG → **CLEAN OR REPLACE SENSOR ROTOR**

OK

REPLACE SKID CONTROL ECU ASSY (See page 01–27)