DTC	C0210/33	RIGHT REAR SPEED SENSOR CIRCUIT

DTC	C0215/34	LEFT REAR SPEED SENSOR CIRCUIT

CIRCUIT DESCRIPTION

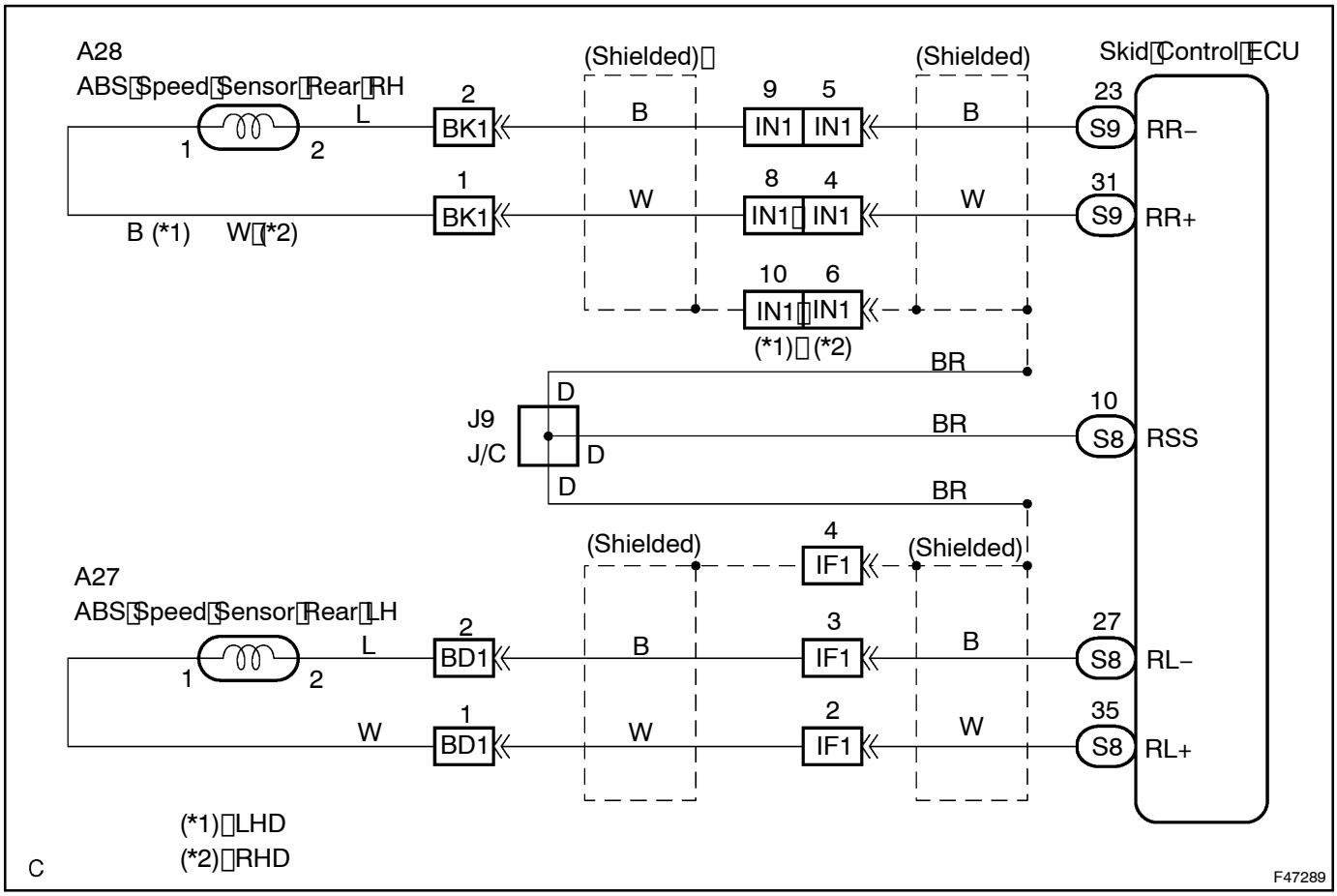
Refer to DTC C0200/31, C0205/32 on page 05–754.

DTC No.	DTC Detecting Condition	Trouble Area
C0210/33 C0215/34	• Speed of a malfunctioning wheel is 0 km/h (0 mph) for at least 15 sec. when vehicle speed is 10 km/h (6 mph) or more. • Speed of the slowest wheel is less than 1/7th of the 2nd slowest wheel for at least 15 sec. when vehicle speed is 10 km/h (6 mph) or more. • Abnormal high wheel speed pulse is input for at least 15 sec. • Abnormal high wheel speed pulse is input at least 7 times when ECU is on. • Speed sensor pulse signal is instantly cut 7 times or more. • Speed sensor signal line is open for at least 0.5 sec.	• Right rear and left rear speed sensor • Each speed sensor circuit • Sensor rotor • Sensor installation • Skid control ECU

HINT:

- DTC C0210/33 is for the right rear speed sensor.
- DTC C0215/34 is for the left rear speed sensor.
- The BRAKE warning light comes on when speed sensor malfunctions are detected in two or more wheels.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	CHECK HARNESS AND CONNECTOR(MOMENTARY INTERRUPTION)

(a) Using the intelligent tester II, check for any momentary interruption in the wire harness and connector corresponding to a DTC (see page 05–719).

Item	Measurement Item / Range (Display)	Normal Condition
RR Speed Open	RR speed sensor open detection / OPEN or NORMAL	NORMAL: Normal condition
RL Speed Open	RL speed sensor open detection / OPEN or NORMAL	NORMAL: Normal condition

OK:

There are no momentary interruption.

HINT:

Perform the above inspection before removing the sensor and connector.

NG → **Go to step 5**

OK

2	READ VALUE OF INTELLIGENT TESTER II(REAR SPEED SENSOR)

(a) Connect the intelligent tester II to the DLC3.

(b) Start the engine.

(c) Select the DATA LIST mode on the intelligent tester II.

Item	Measurement Item / Range (Display)	Normal Condition
RL Wheel Speed	Wheel speed sensor (RL) reading / min.: 0 km/h (0 MPH, max.: 326 km/h (202 MPH)	Actual wheel speed
RR Wheel Speed	Wheel speed sensor (RR) 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 by the intelligent tester II and the speed value displayed on the speedometer when driving the vehicle.

OK:

There is almost no difference in the displayed speed value.

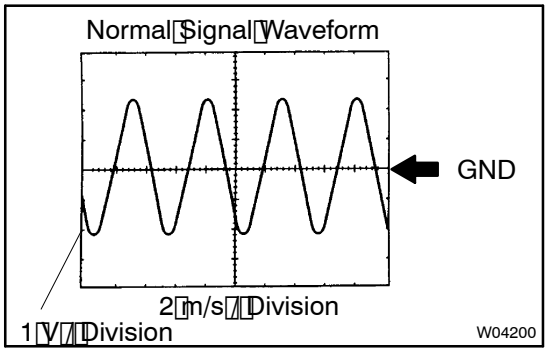
HINT:

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

NG → **Go to step 4**

OK

3	INSPECT SPEED SENSOR AND SENSOR ROTOR SERRATIONS



INSPECTION USING OSCILLOSCOPE

(a) Connect the oscilloscope to terminals RR+ – RR– or RL+ – RL– of the skid control ECU.

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

OK:

A waveform as shown in a figure should be output.

HINT:

- As the 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.

NG	Go to step 7

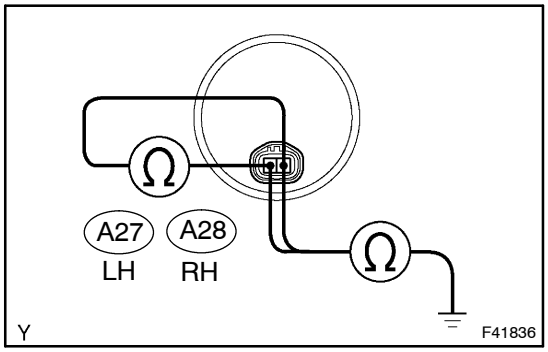
OK

REPLACE SKID CONTROL ECU ASSY (SEE PAGE 32–81 or 32–82)

NOTICE:

When replacing the skid control ECU assy, perform initialization of linear solenoid valve and calibration (see page 05–721).

4 INSPECT REAR SPEED SENSOR



(a) Disconnect the rear speed sensor connector.
(b) Measure the resistance according to the value(s) in the table below.

Standard:

Tester Connection	Specified Condition
1 – 2	1.04 to 1.30 kΩ

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

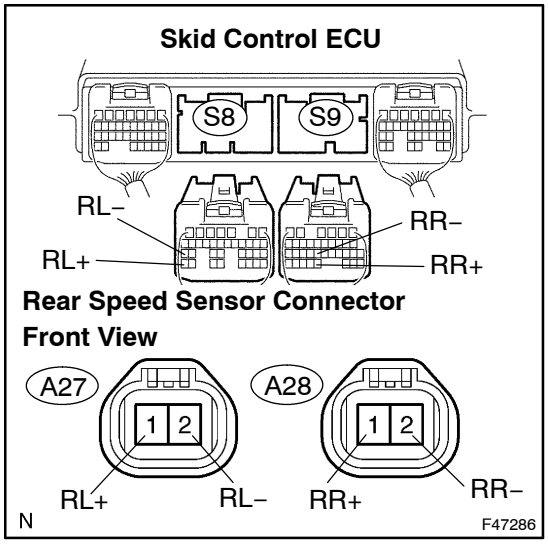
Standard:

Tester Connection	Specified Condition
1 – Body ground	10 kΩ or higher
2 – Body ground	10 kΩ or higher

NG → **REPLACE REAR SPEED SENSOR**

OK

5 CHECK HARNESS AND CONNECTOR(REAR SPEED SENSOR – SKID CONTORL ECU)



(a) Disconnect the skid control ECU connector and rear speed sensor connector.
(b) Measure the resistance according to the value(s) in the table below.

Standard:

LH:

Tester Connection	Specified Condition
A27–1 (RL+) – S8–35 (RL+)	Below 1 Ω
A27–2 (RL–) – S8–27 (RL–)	Below 1 Ω

RH:

Tester Connection	Specified Condition
A28–1 (RR+) – S9–31 (RR+)	Below 1 Ω
A28–2 (RR–) – S9–23 (RR–)	Below 1 Ω

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

Standard:

LH:

Tester Connection	Specified Condition
A27–1 (RL+) – Body ground	10 kΩ or higher
A27–2 (RL–) – Body ground	10 kΩ or higher

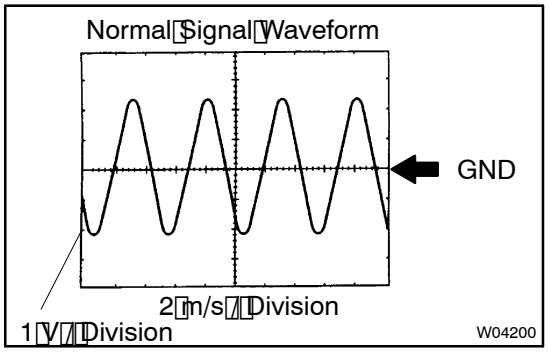
RH:

Tester Connection	Specified Condition
A28–1 (RR+) – Body ground	10 kΩ or higher
A28–2 (RR–) – Body ground	10 kΩ or higher

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

OK

6	INSPECT SPEED SENSOR AND SENSOR ROTOR SERRATIONS



INSPECTION USING OSCILLOSCOPE

(a) Connect the oscilloscope to terminals RR+ – RR– or RL+ – RL– of the skid control ECU.

(b) Drive the vehicle at approximately 30 km/h (19 mph), 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.

NG → **Go to step 7**

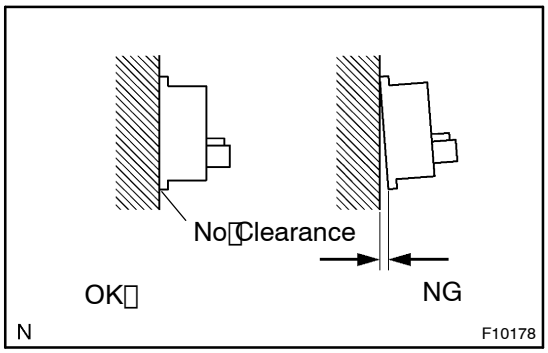
OK

REPLACE SKID CONTROL ECU ASSY (SEE PAGE 32–81 or 32–82)

NOTICE:

When replacing the skid control ECU assy, perform initialization of linear solenoid valve and calibration (see page 05–721).

7	INSPECT REAR SPEED SENSOR INSTALLATION



(a) Check the sensor installation.

OK:

There is no clearance between the sensor and rear axle carrier.

NOTICE:

Check the speed sensor signal after the replacement (see page 05–724).

NG → **REPLACE REAR SPEED SENSOR**

OK

REPLACE SKID CONTROL ECU ASSY (SEE PAGE 32–81 or 32–82)

NOTICE:

When replacing the skid control ECU assy, perform initialization of linear solenoid valve and calibration (see page 05–721).