DTC	C0210/33	Right Rear Wheel Speed Sensor Signal

DTC	C0215/34	Rear Speed Sensor LH Circuit

DTC	C1238/38	Foreign Object is Attached on Tip of Rear Speed Sensor RH

DTC	C1239/39	Foreign Object is Attached on Tip of Rear Speed Sensor LH

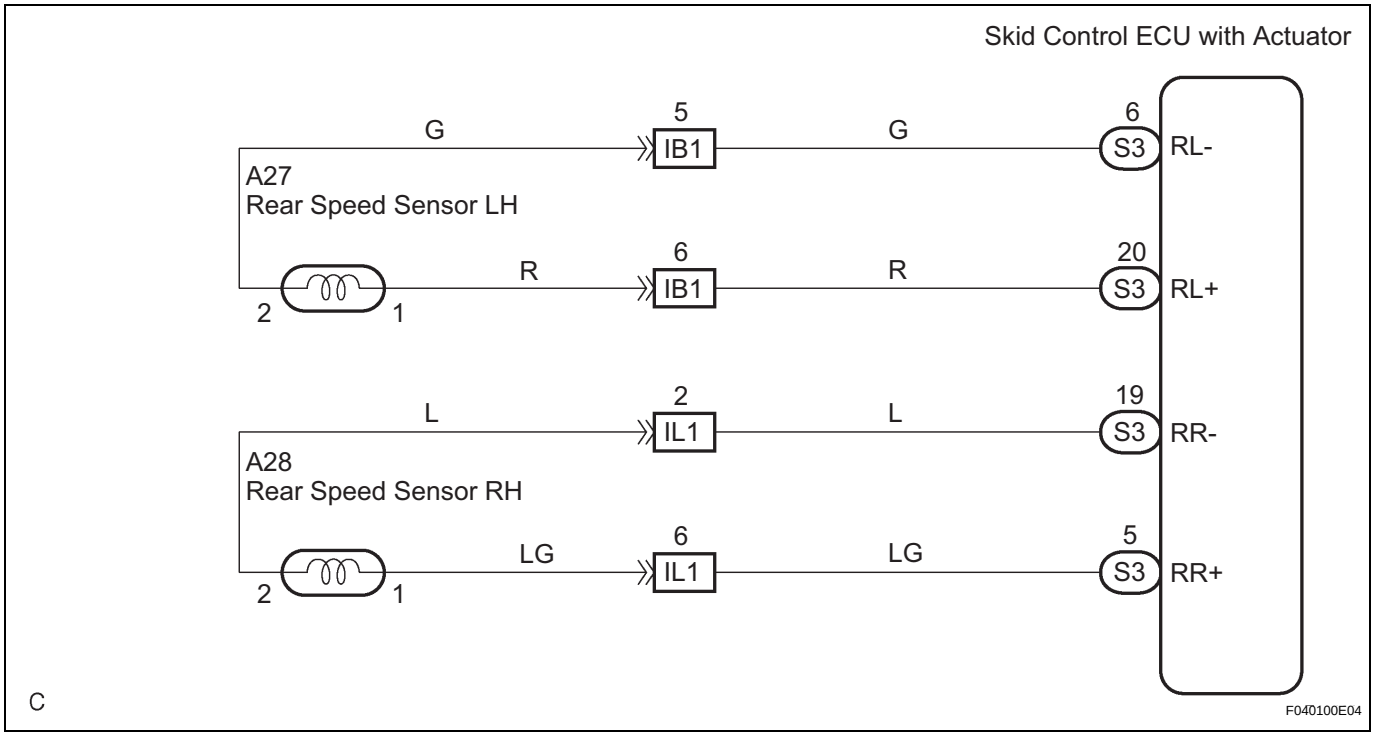
DESCRIPTION

Refer to DTCs C0200/31, C0205/32, C1235/35 and C1236/36 (See page BC-92).

DTC Code	DTC Detection Condition	Trouble Area
C0210/33 C0215/34	When any of the following is detected: 1. At a vehicle speed of 10 km/h (6 mph) or more, an open or short in the sensor signal circuit continues for 1 sec. or more. 2. Momentary interruption of sensor signal faulty wheel occurs 7 times or more. 3. Sensor signal circuit is open for 0.5 sec. or more.	• Right rear and left rear speed sensor • Each speed sensor circuit • Speed sensor rotor • Sensor installation
C1238/38 C1239/39	With vehicle speed at 20 km/h (12 mph) or more, sensor signal of faulty wheel generated noise for 5 sec. or more.	• Right rear and left rear speed sensor • Sensor installation

HINT:
- DTC C0210/33 and C1238/38 are for the right rear speed sensor.
- DTC C0215/34 and C1239/39 are for the left rear speed sensor.

WIRING DIAGRAM



BC

INSPECTION PROCEDURE

1	READ VALUE ON INTELLIGENT TESTER (REAR SPEED SENSOR)

(a) Connect the intelligent tester to the DLC3.
(b) Start the engine.
(c) Select the DATA LIST mode on the intelligent tester.

ABS / VSC:

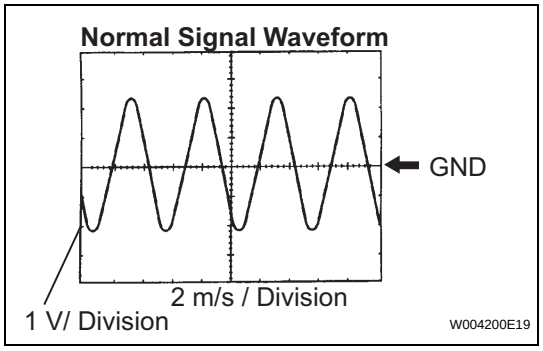
Tester Display	Measurement Item/Range	Normal Condition
WHEEL SPD RL	Wheel speed sensor (RL) reading / min.: 0 km/h (0 MPH, max.: 326 km/h (202 MPH)	Actual wheel speed
WHEEL SPD RR	Wheel speed sensor (RR) reading / min.: 0 km/h (0 MPH, max.: 326 km/h (202 MPH)	Actual wheel speed

(d) Check that there is no difference between the speed value output from the speed sensor displayed by the intelligent tester 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 3**

OK

2	CHECK SPEED SENSOR AND SENSOR ROTOR SERRATIONS



(a) INSPECTION USING OSCILLOSCOPE:
(1) Connect the oscilloscope to terminals RR+ - RR- or RL+ - RL- of the skid control ECU.
(2) Drive the vehicle at approximately 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) in creases, a cycle of the waveform narrows and the fluctuation in the output voltage becomes greater.
- hen 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.

NOTICE:
When replacing the brake actuator assembly, perform zero point calibration (See page BC-70).

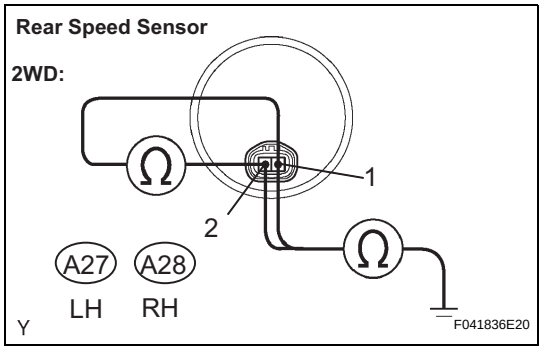
NG → **Go to step 6**

BC

OK

REPLACE BRAKE ACTUATOR ASSEMBLY

3	INSPECT REAR SPEED SENSOR



(a) 2WD

(1) Disconnect the skid control sensor connector.

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

Standard resistance:

LH

Tester Connection	Specified Condition
(A27-1) - (A27-2)	0.9 to 2.1 kΩ

RH

Tester Connection	Specified Condition
(A28-1) - (A28-2)	0.9 to 2.1 kΩ

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

Standard resistance:

LH

Tester Connection	Specified Condition
(A27-1) - Body ground	10 kΩ or higher
(A27-2) - Body ground	10 kΩ or higher

RH

Tester Connection	Specified Condition
(A28-1) - Body ground	10 kΩ or higher
(A28-2) - Body ground	10 kΩ or higher

NOTICE:

Check the speed sensor signal after replacement (See page BC-72).

(b) 4WD

(1) Remove the seat cushion seatback.

(2) Disconnect the speed sensor connector.

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

Standard resistance:

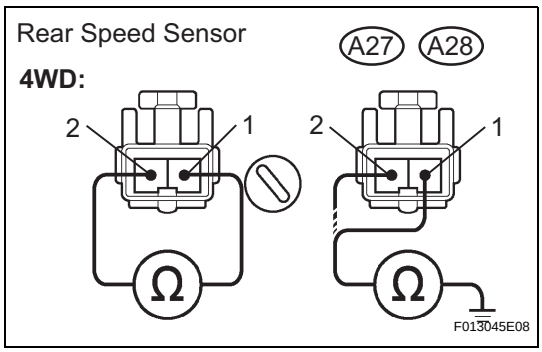
LH

Tester Connection	Specified Condition
A27-1 (RL+) - A27-2 (RL-)	0.9 to 1.3 Ω

RH

Tester Connection	Specified Condition
A28-1 (RR+) - A28-2 (RR-)	0.9 to 1.3 Ω

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



BC

Standard resistance:
LH

Tester Connection	Specified Condition
A27-1 (RL+) - Body ground	1 MΩ or higher
A27-2 (RL-) - Body ground	1 MΩ or higher

RH

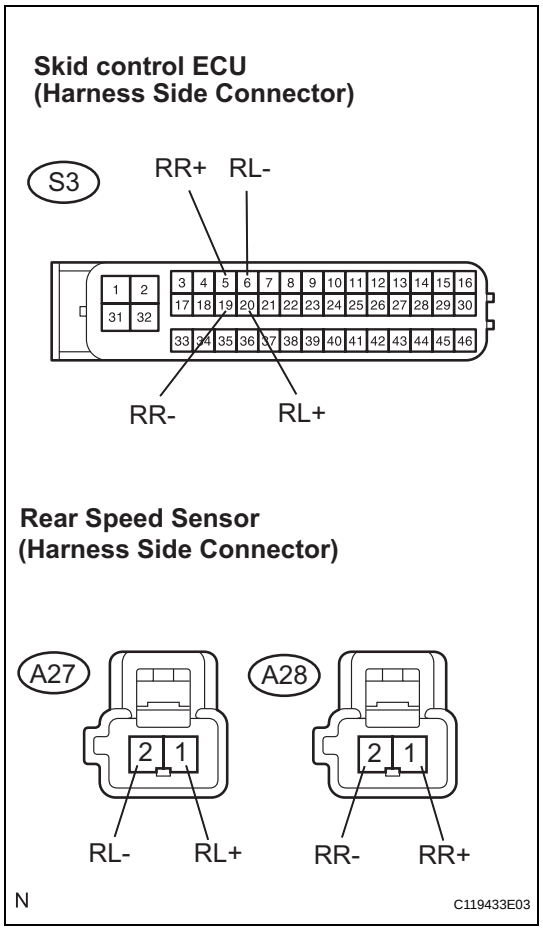
Tester Connection	Specified Condition
A28-1 (RR+) - Body ground	1 MΩ or higher
A28-2 (RR-) - Body ground	1 MΩ or higher

NOTICE:
Check the speed sensor signal after the replacement. (See page BC-72)

NG → **REPLACE REAR SPEED SENSOR**

OK

4 CHECK HARNESS AND CONNECTOR (REAR SPEED SENSOR - SKID CONTROL ECU)



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

Tester Connection	Specified Condition
S3-20 (RL+) - A27-1 (RL+)	Below 1 Ω
S3-6 (RL-) - A27-2 (RL-)	Below 1 Ω

RH

Tester Connection	Specified Condition
S3-5 (RR+) - A28-1 (RR+)	Below 1 Ω
S3-19 (RR-) - A28-2 (RR-)	Below 1 Ω

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

Tester Connection	Specified Condition
S3-20 (RL+) - Body ground	10 kΩ or higher
S3-6 (RL-) - Body ground	10 kΩ or higher

RH

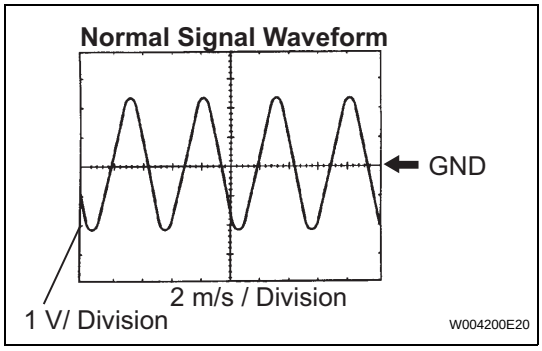
Tester Connection	Specified Condition
S3-5 (RR+) - Body ground	10 kΩ or higher
S3-19 (RR-) - Body ground	10 kΩ or higher

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

BC

OK

5	CHECK SPEED SENSOR AND SENSOR ROTOR SERRATIONS



(a) INSPECTION USING OSCILLOSCOPE:
(1) Connect the oscilloscope to terminals RR+ - RR- or RL+ - RL- of the skid control ECU.
(2) Drive the vehicle at approximately 19 mph (30 km/h), 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.

NOTICE:

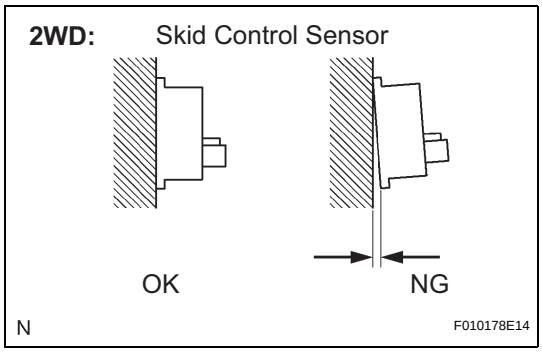
When replacing the brake actuator assembly, perform zero point calibration (See page BC-70).

NG → **Go to step 6**

OK

REPLACE BRAKE ACTUATOR ASSEMBLY

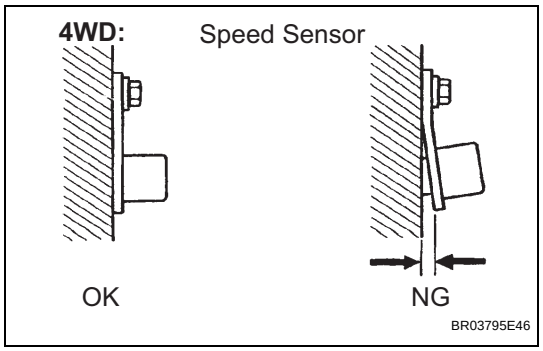
6	CHECK REAR SPEED SENSOR INSTALLATION



(a) 2WD
(1) Check the sensor installation.

OK:

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



(b) 4WD

(1) Check the sensor installation.

OK:

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

The installation bolt is tightened properly.

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

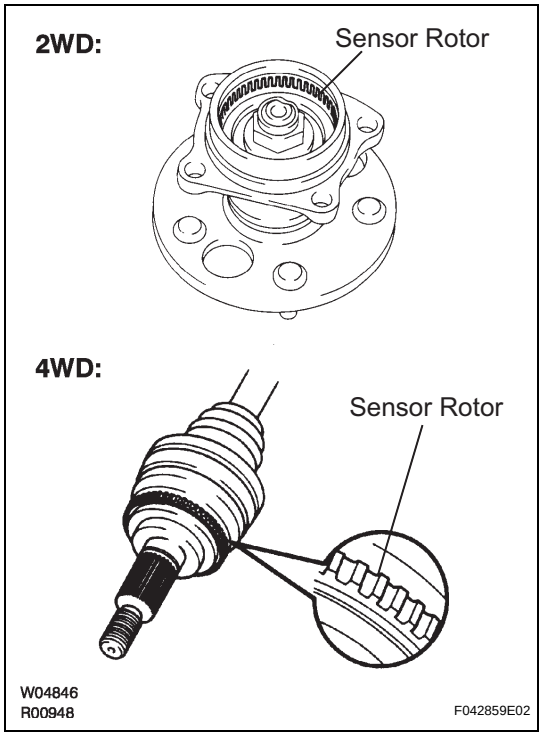
NOTICE:

Check the speed sensor signal after the replacement (See page BC-72).

NG	**INSTALL REAR SPEED SENSOR CORRECTLY**

OK

7	**CHECK SPEED SENSOR ROTOR**



(a) Remove the rear axle hub and bearing, or rear drive shaft (See page AH-16 for 2WD, or DS-21 for 4WD).

(b) Check the sensor rotor serrations.

OK:

No scratches, missing teeth or foreign objects.

Result

Result	Proceed to
OK	A
NG (for 2WD)	B
NG (for 4WD)	C

NOTICE:

Check the speed sensor signal after the replacement (See page BC-72).

B	**REPLACE REAR AXLE HUB AND BEARING ASSEMBLY (SPEED SENSOR ROTOR)**

BC

C → **REPLACE REAR DRIVE SHAFT ASSEMBLY (SPEED SENSOR ROTOR)**

A

8 CHECK REAR SPEED SENSOR TIP

(a) Remove the rear speed sensor (See page BC-190 for 2WD or BC-194 for 4WD).

(b) Check the sensor tip.

OK:

No scratches or foreign matter on the sensor tip.

NOTICE:

- **Check the speed sensor signal after the replacement (See page BC-72).**
- **When replacing the brake actuator assembly, perform zero point calibration (See page BC-70).**

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

OK

REPLACE BRAKE ACTUATOR ASSEMBLY