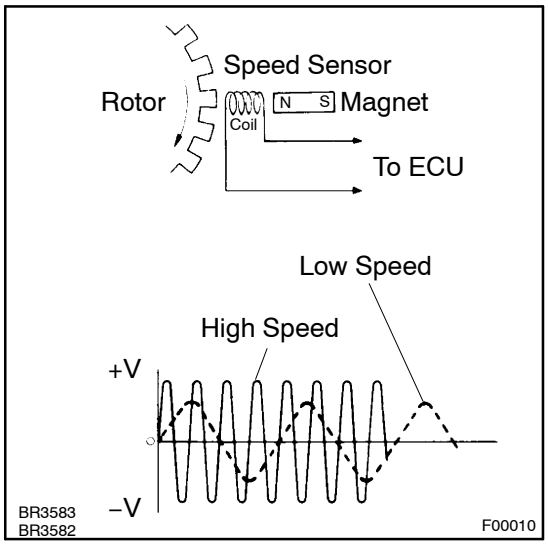
DI1GH–06

CIRCUIT INSPECTION

DTC	C0200 / 31 – C0215 / 34	Speed Sensor Circuit

CIRCUIT DESCRIPTION



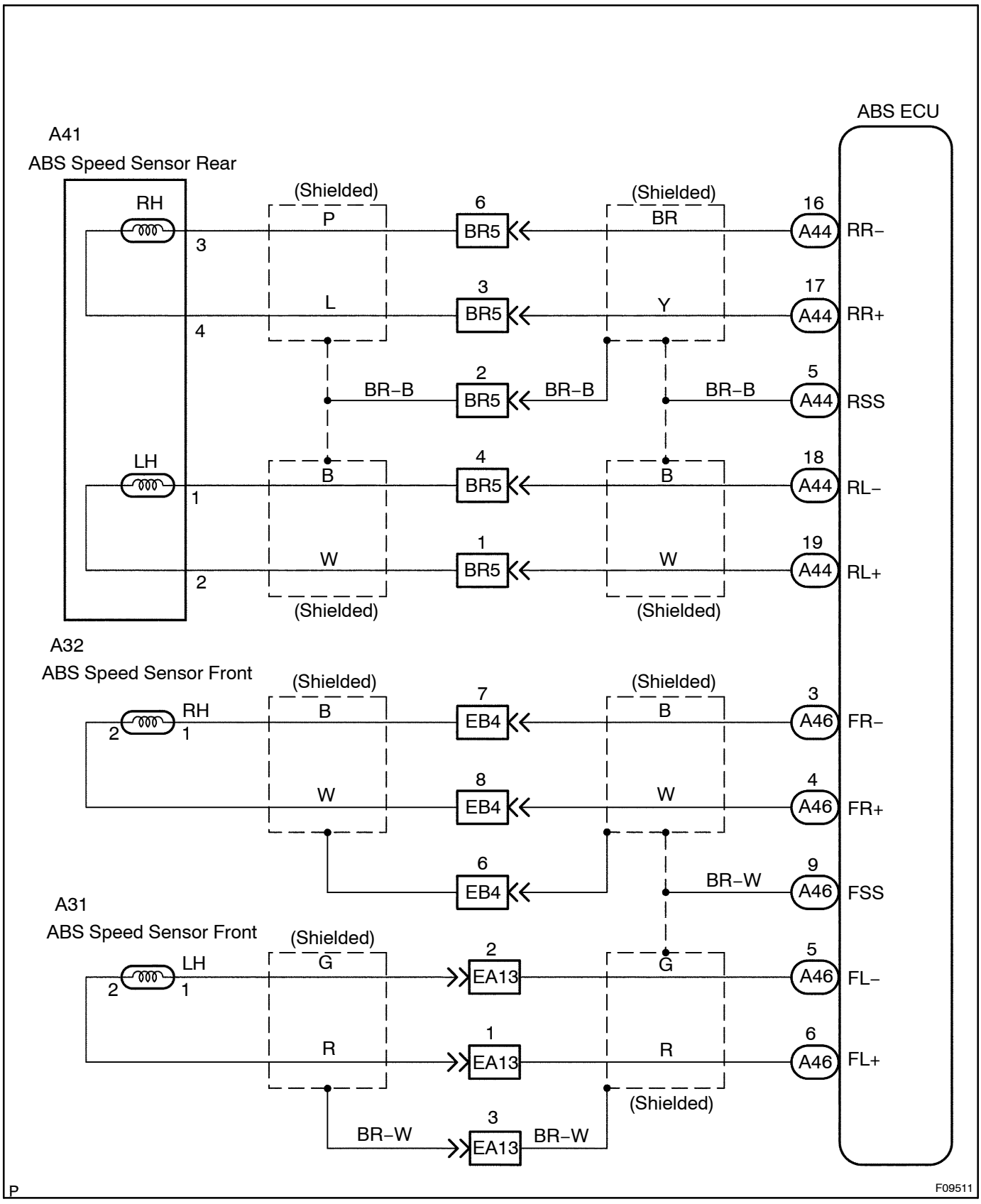
The speed sensor detects wheel speed and sends the appropriate signals to the ECU. These signals are used for control of both the ABS control system. The front and rear rotors each have 48 serrations.
When the rotors rotate, the magnetic field emitted by the permanent magnet in the speed sensor generates 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 C0210 / 33 C0215 / 34	Detection of any of conditions 1. through 4.: 1. At vehicle speed of 10 km/h (6 mph) or more, pulses are not input for 15 sec. 2. Momentary interruption of the speed sensor signal occurs at least 7 times in the time between switching the ignition switch ON and switching it OFF. 3. Continuous noise occurs in to the speed sensor signals with the vehicle speed at 20 km/h (12 mph) or more continues for 5 sec or more. 4. The speed sensor signal circuit is open circuit continues for 0.5 sec. or more.	• Right front, left front, right rear and left rear speed sensor • Each speed sensor circuit • Speed sensor rotor

HINT:
DTC No. C0200 / 31 is for the right front speed sensor.
DTC No. C0205 / 32 is for the left front speed sensor.
DTC No. C0210 / 33 is for the right rear speed sensor.
DTC No. C0215 / 34 is for the left rear speed sensor.
Fail safe function:
If any trouble occurs in the speed sensor circuit, the ECU prohibits ABS controls.
HINT:

- For abnormality in one or two wheels, BRAKE PRESSURE INCREASE FUNCTION can be performed under the condition that the brake system is normal.
- For abnormality in three or four wheels, the ECU cuts off current to the solenoid relay and BRAKE PRESSURE INCREASE FUNCTION is prohibited. When the brake pedal is depressed firmly, the brake force may be lowered.

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 the hand–held tester.

1	**Check output value of speed sensor.**

PREPARATION:
(a) Connect the hand–held tester to the DLC3.
(b) Turn the ignition switch ON and push the hand–held tester main switch ON.
(c) Select the DATALIST mode on the hand–held tester.

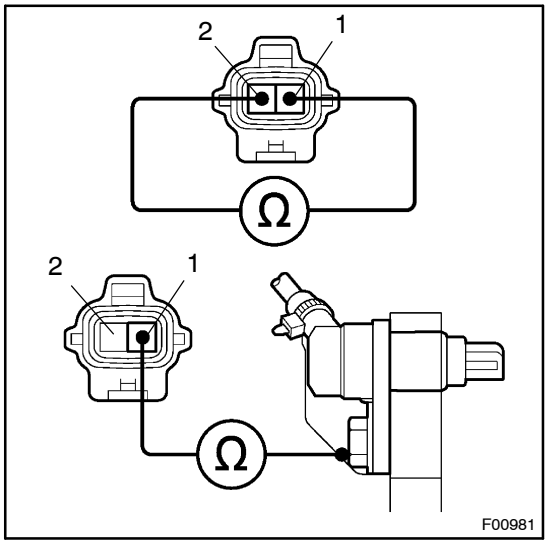
CHECK:
Check that there is no difference between the speed value output from the speed sensor displayed by the hand–held tester and the speed value displayed by the speedometer when driving the vehicle.

OK:
There is almost no difference from the displayed speed value.

OK → **Check and replace ABS ECU.**

NG

2	**Check speed sensor.**



Front:

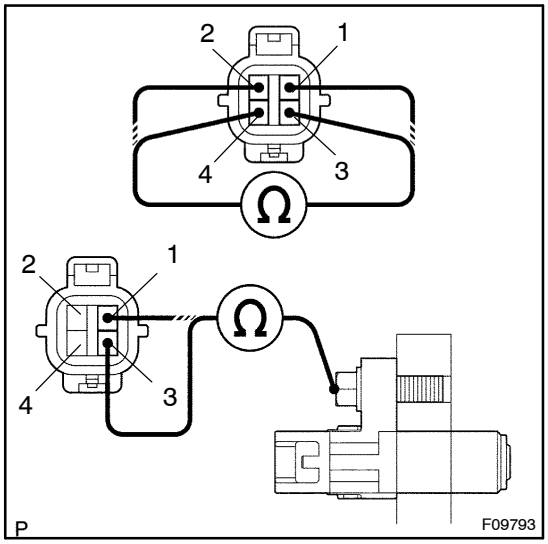
PREPARATION:
Disconnect speed sensor connector.

CHECK:
Measure resistance between terminals 1 and 2 of speed sensor connector.

OK:
Resistance: 0.92 – 1.22 kΩ (at 20 °C)

CHECK:
Measure resistance between terminals 1 and 2 of speed sensor connector and body ground.

OK:
Resistance: 1 MΩ or higher



Rear:

PREPARATION:

Disconnect speed sensor connector.

CHECK:

Measure resistance between terminals 1 and 2, 3 and 4 of speed sensor connector.

OK:

Resistance: 1.85 – 1.25 kΩ (at 20 °C)

CHECK:

Measure resistance between terminals 1 and 2 of speed sensor connector and body ground.

OK:

Resistance: 1 MΩ or higher

NG	**Replace speed sensor.**

NOTICE:

Check the speed sensor signal last (See page DI–3).

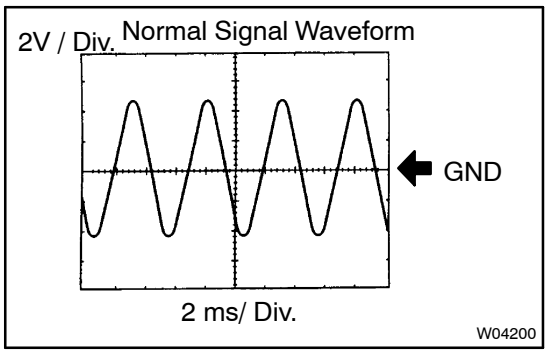
OK

3	**Check for open and short circuit in harness and connector between each speed sensor and ABS ECU (See page IN–21).**

NG	**Repair or replace harness or connector.**

OK

4	**Check speed sensor and sensor rotor serrations.**



REFERENCE: INSPECTION USING OSCILLOSCOPE

PREPARATION:

(a) Remove the ABS ECU with connector still connected.

(b) Connect the oscilloscope to the terminals FR+, FL+, RR+, or RL+ and GND of the ABS ECU.

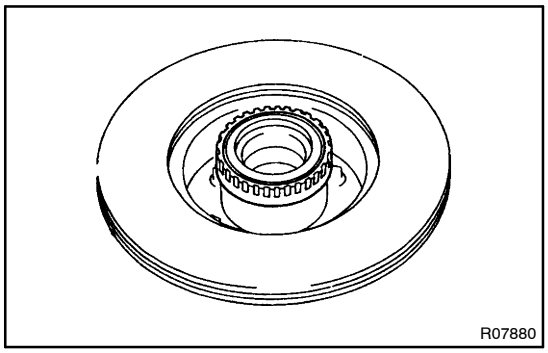
CHECK:

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

OK	**Replace speed sensor.**

NG

5	Check sensor rotor and sensor installation.


R07880

Front:

PREPARATION:

Remove axle hub (See page SA–4).

CHECK:

Check sensor rotor serrations.

OK:

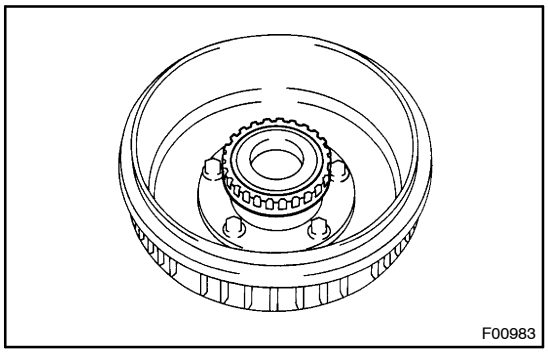
No scratches or missing teeth.

CHECK:

Check the sensor tip.

OK:

No scratches or foreign objects on the sensor tip.


F00983

Rear:

PREPARATION:

Remove the axle hub (See page SA–12).

CHECK:

Check the sensor rotor serrations.

OK:

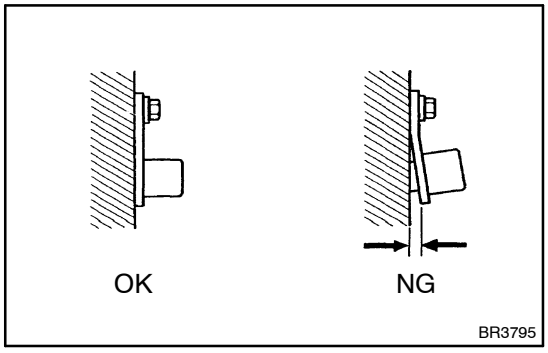
No scratches or missing teeth.

CHECK:

Check the sensor tip.

OK:

No scratches or foreign objects on the sensor tip.



BR3795

CHECK:

Check the speed sensor installation.

OK:

The installation bolt is tightened properly and there is no clearance between the sensor and steering knuckle or rear axle carrier.

NG	Replace speed sensor or rotor.

NOTICE:

Check the speed sensor signal last (See page DI–3).

OK

Check and replace ABS ECU.