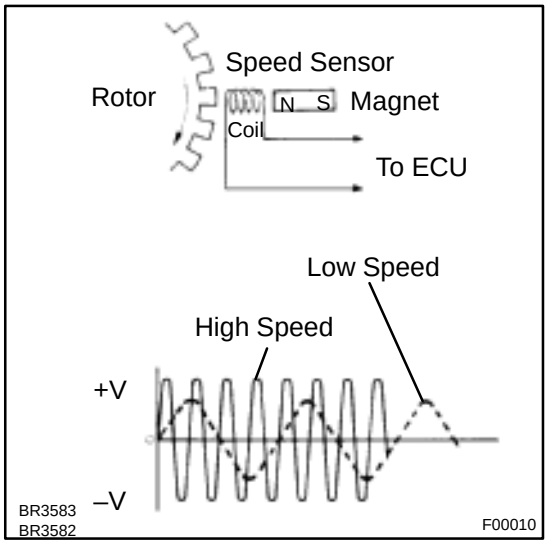
DI197–03

DTC	31, 32, 33, 34	Speed Sensor Circuit

CIRCUIT DESCRIPTION



The speed sensor detects wheel speed and sends the appropriate signals to the ECU. These signals are used to control the ABS 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
31, 32, 33, 34	Detection of any of conditions (1) through (3): (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) Abnormal fluctuation of speed sensor signals with the vehicle speed 20 km/h (12 mph) or more. (4) An open is detected in the speed sensor circuit for 0.6 sec.	• Right front, left front, right rear, left rear speed sensor • Open or short in each speed sensor circuit • ECU

HINT:

DTC No. 31 is for the right front speed sensor.

DTC No. 32 is for the left front speed sensor.

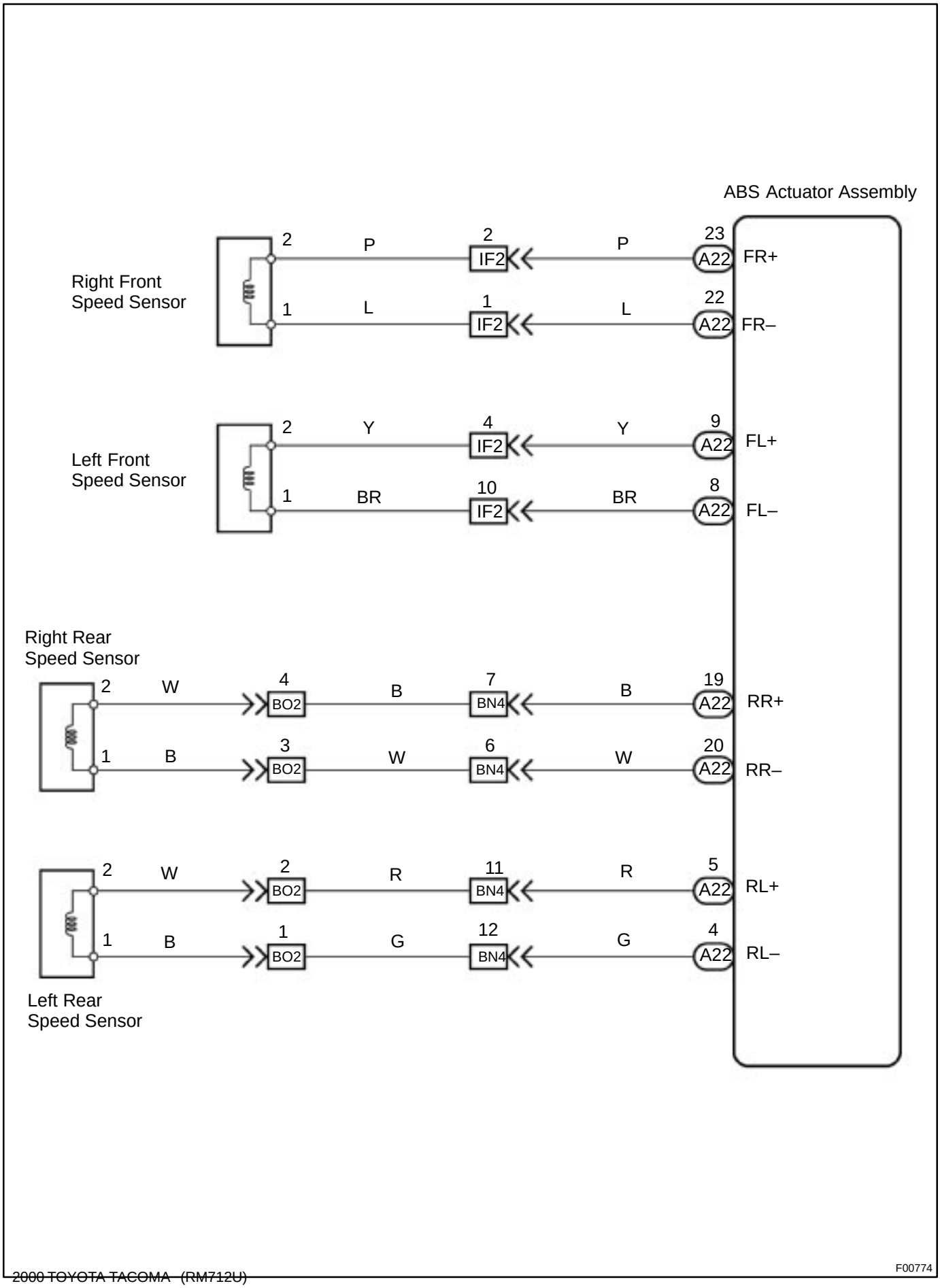
DTC No. 33 is for the right rear speed sensor.

DTC No. 34 is for the left rear speed sensor.

Fail safe function:

If trouble occurs in the speed sensor circuit, the ECU cuts off current to the ABS relay and prohibits ABS control.

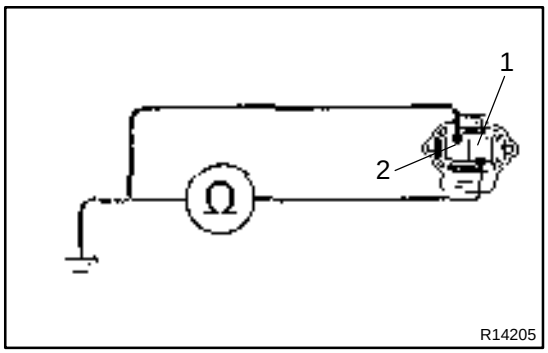
WIRING DIAGRAM



F00774

INSPECTION PROCEDURE

1	**Check speed sensor**



FRONT SPEED SENSOR

PREPARATION:

Disconnect speed sensor connector.

CHECK:

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

OK:

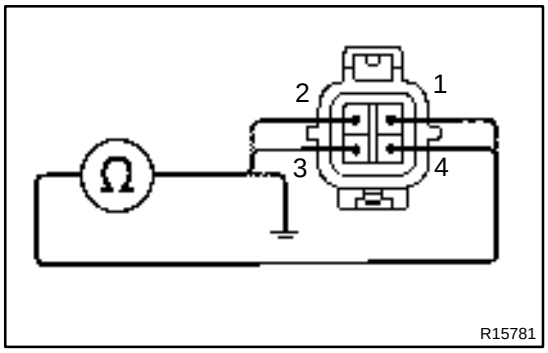
Resistance:
2WD: 0.9 – 1.3 kΩ
4WD: 1.4 – 1.8 kΩ

CHECK:

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

OK:

Resistance: 1 MΩ or higher



REAR SPEED SENSOR

PREPARATION:

Disconnect speed sensor connector.

CHECK:

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

OK:

Resistance: 0.9 – 1.3 kΩ

CHECK:

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

OK:

Resistance: 1 MΩ or higher

NG → **Replace the speed sensor.**

NOTICE:

Check the speed sensor signal last (See page DI–415).

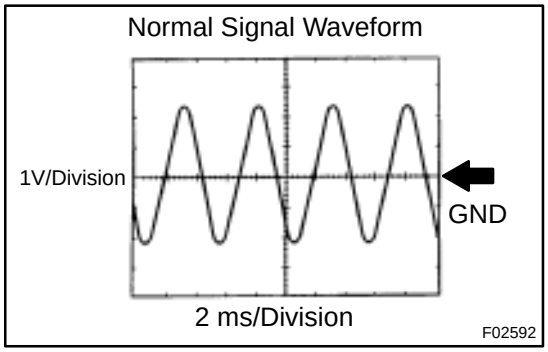
OK

2	**Check for open and short in harness and connector between each speed sensor and ECU (See page IN–28).**

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

OK

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



REFERENCE: INSPECTION USING OSCILLOSCOPE

PREPARATION:

(a) Disconnect ABS actuator connector.

(b) Connect the oscilloscope to the terminals FR+ and FR–, FL+ and FL–, RR+ and RR–, or RL+ and RL–.

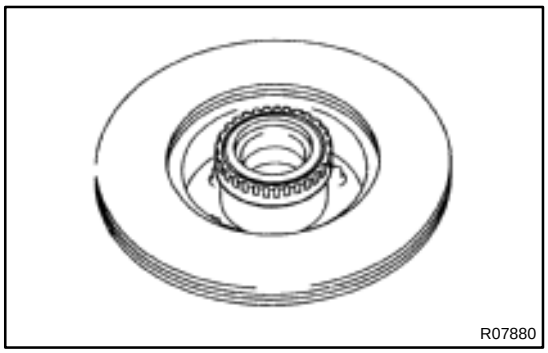
CHECK:

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

OK → **Replace speed sensor.**

NG

4	Check sensor rotor and sensor installation


R07880

FRONT SENSOR ROTOR

PREPARATION:

Remove axle hub (See page SA–15 or SA–24).

CHECK:

Check sensor rotor serrations.

OK:

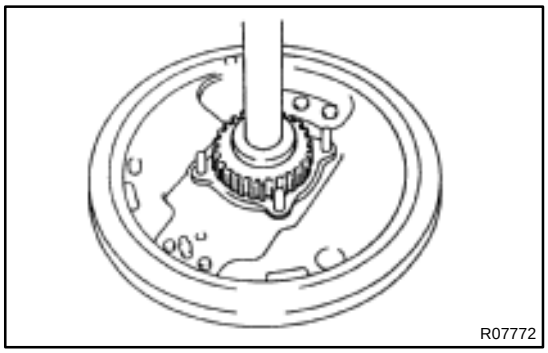
No scratches or missing teeth.

CHECK:

Check the sensor tip.

OK:

No scratches or foreign objects on the sensor tip.


R07772

REAR SENSOR ROTOR

PREPARATION:

Remove the axle shaft (See page SA–133).

CHECK:

Check the sensor rotor serrations.

OK:

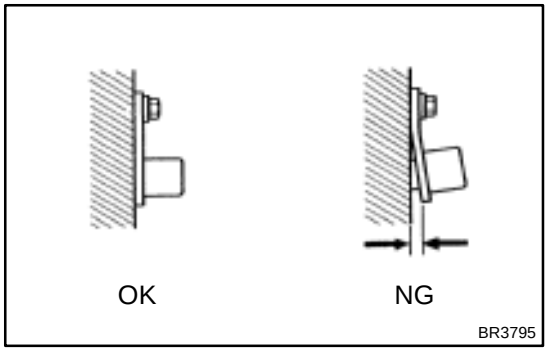
No scratches or missing teeth.

CHECK:

Check the sensor tip.

OK:

No scratches or foreign objects on the sensor tip.



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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–415).

OK

Check and replace ABS ECU.