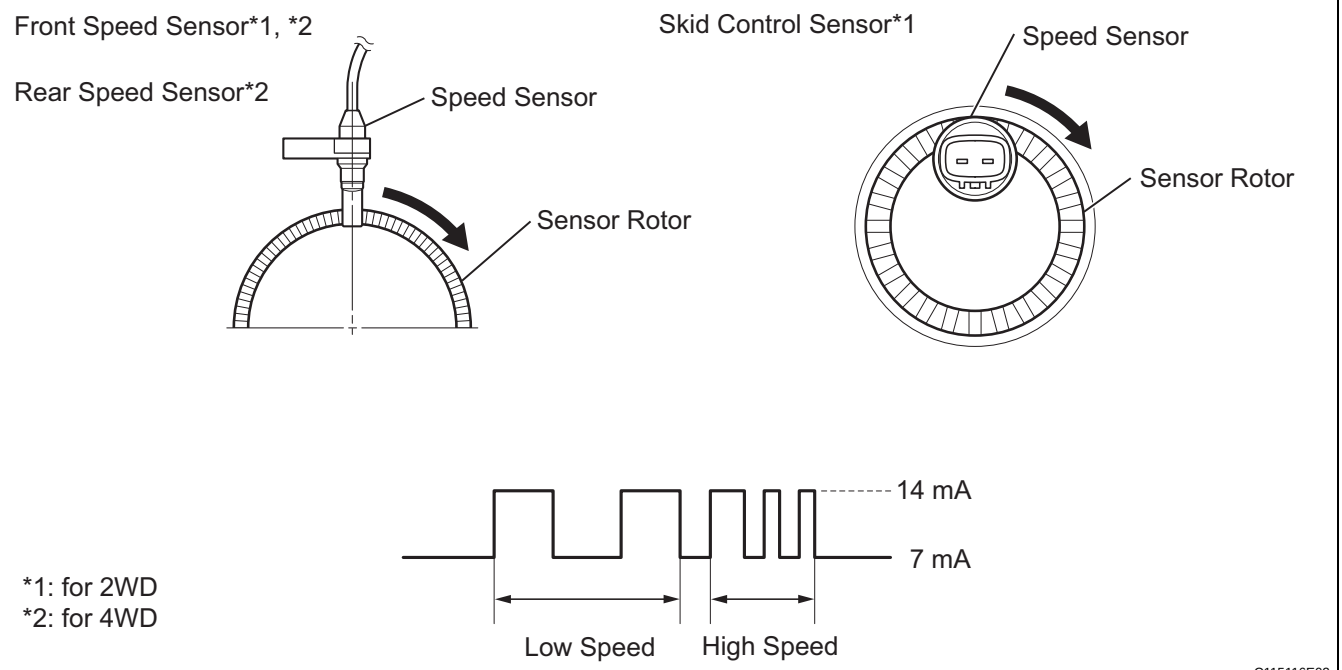
DTC	**C0200/31**	**Right Front Wheel Speed Sensor Signal**
DTC	**C0205/32**	**Left Front Wheel Speed Sensor Signal**
DTC	**C1235/35**	**Foreign Object is Attached on Tip of Front Speed Sensor RH**
DTC	**C1236/36**	**Foreign Object is Attached on Tip of Front Speed Sensor LH**
DTC	**C1271/71**	**Low Output Signal of Front Speed Sensor RH (Test Mode DTC)**
DTC	**C1272/72**	**Low Output Signal of Front Speed Sensor LH (Test Mode DTC)**
DTC	**C1275/75**	**Abnormal Change in Output Signal of Front Speed Sensor RH (Test Mode DTC)**
DTC	**C1276/76**	**Abnormal Change in Output Signal of Front Speed Sensor LH (Test Mode DTC)**

DESCRIPTION

The speed sensors detect the wheel speeds and send appropriate signals to the skid control ECU. Speed sensor rotors have rows of alternating N and S magnetic poles, and their magnetic fields change as the rotors turn.

The speed sensors detect those magnetic changes and send pulse signals to the skid control ECU. The ECU monitors the wheel speeds through these pulse signals to control the ABS control system.

DTCs C1271/71, C1272/72, C1275/75 and C1276/76 can be deleted when the speed sensor sends a vehicle speed signal or the test mode ends. DTCs C1271/71, C1272/72, C1275/75/75 and C1276/76 are output only in the test mode.



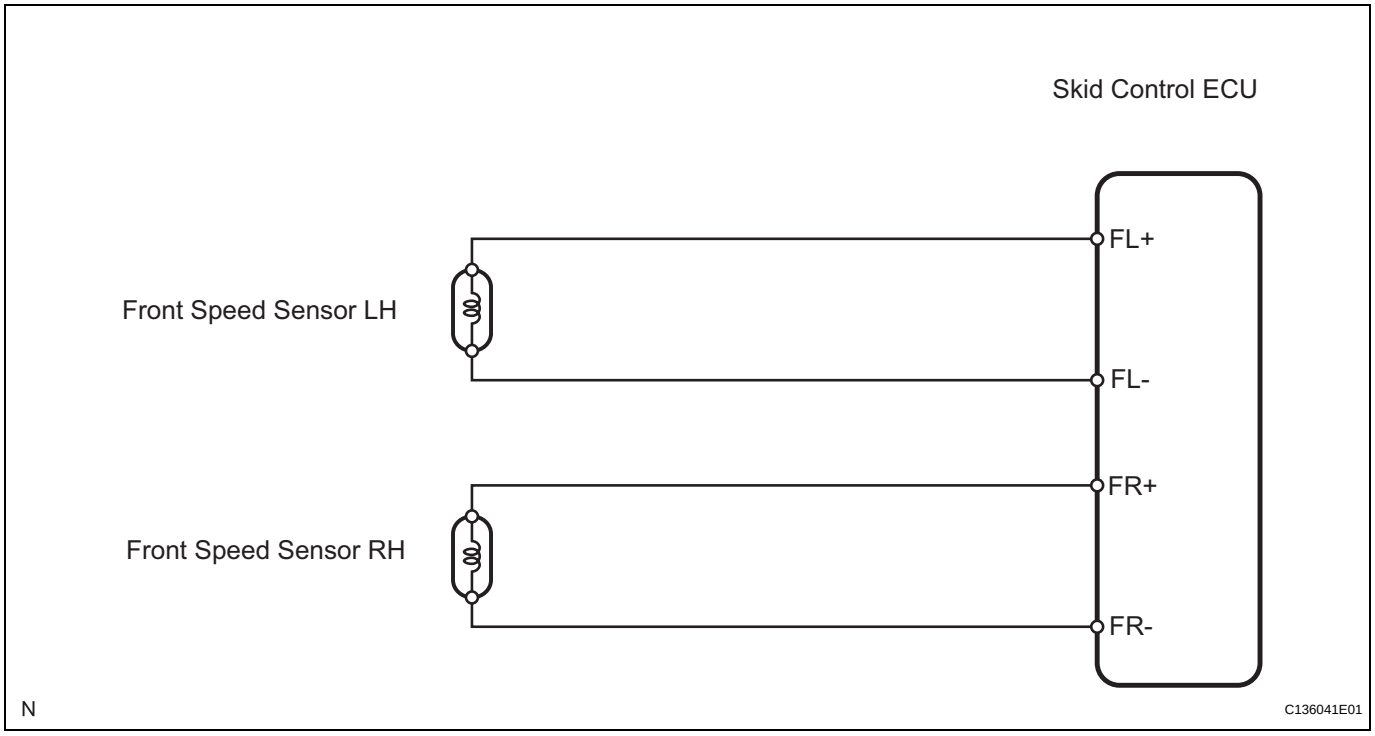
BC

DTC No.	DTC Detection Condition	Trouble Area
C0200/31 C0205/32	When one of following conditions is met: 1. At vehicle speed of 10 km/h (6 mph) or more, open or short in sensor signal circuit continues for 1 second or more. 2. Momentary interruption of sensor signal from abnormal wheel occurs 255 times or more. 3. Open in speed sensor signal circuit continues for 0.5 seconds or more. 4. With IG1 terminal voltage 9.5 V or more, sensor power supply voltage decreases for 0.5 seconds or more.	• Front speed sensor • Front speed sensor circuit • Sensor installation • Foreign matter on sensor rotor
C1235/35 C1236/36	When either of following is detected: 1. At vehicle speed of 20 km/h (12 mph) or more, noise in malfunctioning wheel sensor signal condition continues for 5 seconds or more. 2. At vehicle speed of 10 km/h (6 mph) or more, noise input occurs once per rotor rotation for 15 seconds or more.	• Front speed sensor • Front speed sensor circuit • Sensor installation
C1271/71 C1272/72	Detected only during test mode.	• Front speed sensor • Front speed sensor circuit • Sensor installation • Foreign matter on sensor rotor
C1275/75 C1276/76	Detected only during test mode.	• Front speed sensor • Front speed sensor circuit • Sensor installation

HINT:

- DTCs C0200/31 and C1235/35 relate to the front speed sensor RH.
- DTCs C0205/32 and C1236/36 relate to the front speed sensor LH.

WIRING DIAGRAM



BC

INSPECTION PROCEDURE

NOTICE:

Check the speed sensor signal in test mode after cleaning or replacement (see page BC-28).

1	CHECK HARNESS AND CONNECTOR (MOMENTARY INTERRUPTION)

(a) Using the DATA LIST of the intelligent tester, check for any momentary interruption in the wire harness and connector corresponding to a DTC (see page BC-23).

Skid control ECU

Item (Display)	Measurement Item / Range (Display)	Normal Condition	Diagnostic Note
FR SPD OPN	FR speed sensor open detection / ERROR or NORMAL	ERROR: Momentary interruption NORMAL: Normal	-
FL SPD OPN	FL speed sensor open detection / ERROR or NORMAL	ERROR: Momentary interruption NORMAL: Normal	-

OK:

There are no momentary interruptions.

HINT:

Perform the above inspection before removing the sensor and connector.

NG → **CHECK AND REPAIR HARNESS AND CONNECTOR (SPEED SENSOR CIRCUIT)**

OK

2	READ VALUE OF DATA LIST (FRONT SPEED SENSOR)

(a) Check the DATA LIST for proper functioning of the front speed sensor.

Skid control ECU

Item (Display)	Measurement Item / Range (Display)	Normal Condition
FR WHEEL SPD	Wheel speed sensor (FR) reading / min.: 0 km/h (0 mph), max.: 326 km/h (202.8 mph)	Similar to speed indicated on speedometer
FL WHEEL SPD	Wheel speed sensor (FL) reading / min.: 0 km/h (0 mph), max.: 326 km/h (202.8 mph)	Similar to speed indicated on speedometer

OK:

There is almost no difference between actual wheel speed and displayed speed value.

HINT:

There is a tolerance of +-10% in the speedometer indication.

NG → **Go to step 5**

OK

BC

3	PERFORM TEST MODE INSPECTION (SIGNAL CHECK)

(a) Perform a TEST MODE inspection and check for DTCs (see page BC-28).

OK:

No DTC output.

NG → **CHECK AND REPAIR HARNESS AND CONNECTOR (SPEED SENSOR CIRCUIT)**

OK

4	RECONFIRM DTC

(a) Clear the DTC(s) (see page BC-47).
(b) Start the engine.
(c) Drive the vehicle at a speed of 20 km/h (12 mph) or more for at least 60 seconds.
(d) Check if the same DTC(s) is output (see page BC-47).

Result

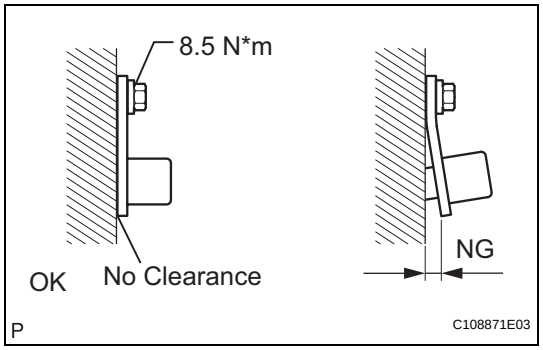
Result	Proceed to
DTC is not output	A
DTC is output	B

B → **Go to step 10**

A

END

5	INSPECT FRONT SPEED SENSOR (INSTALLATION)



(a) Check that the speed sensor installation bolt is tightened properly.
OK:
The installation bolt is tightened properly, and there is no clearance between the sensor and front steering knuckle.

Torque: 8.5 N*m (87 kgf*cm, 75 in.*lbf)

HINT:
If the installation portion of the sensor is dirty, clean it and reinstall the sensor.
Check the speed sensor after the speed sensor replacement (see page BC-28).

NG → **TIGHTEN BOLT PROPERLY OR REPLACE FRONT SPEED SENSOR**

OK

6	CHECK SPEED SENSOR (TIP)

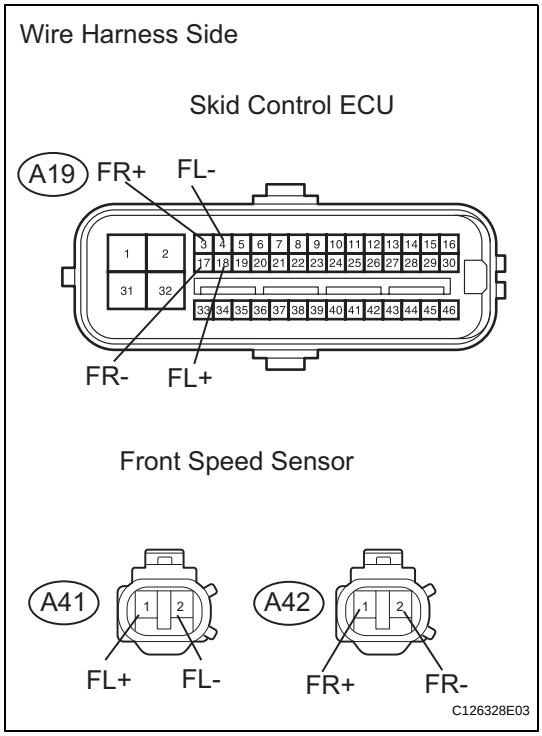
(a) Remove the front speed sensor.
(b) Check the sensor tip.
OK:
No scratches or foreign matter on the sensor tip.
HINT:
Check the speed sensor signal after the speed sensor clearing or replacement (see page BC-28).

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

OK

BC

7 CHECK WIRE HARNESS (SKID CONTROL ECU - FRONT SPEED SENSOR)



(a) Disconnect the A19 ECU connector.
(b) Disconnect the A41 and A42 sensor connectors.
(c) Measure the resistance of the wire harness side connectors.

Standard resistance:

for LH

Tester Connection	Specified Condition
A19-18 (FL+) - A41-1 (FL+)	Below 1 Ω
A19-4 (FL-) - A41-2 (FL-)	Below 1 Ω
A19-18 (FL+) - Body ground	10 kΩ or higher
A19-4 (FL-) - Body ground	10 kΩ or higher

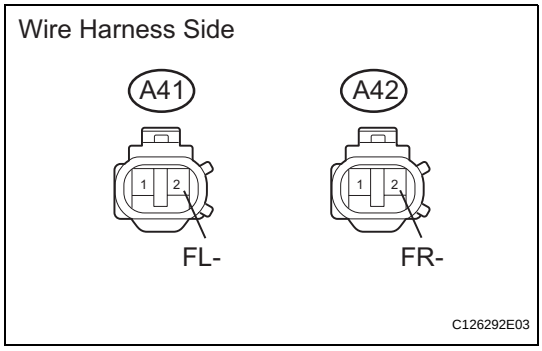
for RH

Tester Connection	Specified Condition
A19-3 (FR+) - A42-1 (FR+)	Below 1 Ω
A19-17 (FR-) - A42-2 (FR-)	Below 1 Ω
A19-3 (FR+) - Body ground	10 kΩ or higher
A19-17 (FR-) - Body ground	10 kΩ or higher

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

OK

8 CHECK SKID CONTROL ECU (SENSOR INPUT VOLTAGE)



(a) Disconnect the A41 and A42 sensor connectors.
(b) Measure the voltage of the wire harness side connector.

Standard voltage

Tester Connection	Condition	Specified Condition
A41-2 (FL-) - Body ground	Ignition switch ON	5.7 to 17.3 V
A42-2 (FR-) - Body ground	Ignition switch ON	5.7 to 17.3 V

NG → **REPLACE ABS AND TRACTION ACTUATOR ASSEMBLY**

OK

9 RECONFIRM DTC

(a) Clear the DTC(s) (see page BC-47).
(b) Start the engine.
(c) Drive the vehicle at a speed of 20 km/h (12 mph) or more for at least 60 seconds.

(d) Check if the same DTC(s) is output (see page BC-47).

Result

Result	Proceed to
DTC is output	A
DTC is not output	B

B → END

A

10 REPLACE FRONT SPEED SENSOR

(a) Replace the front speed sensor.

NEXT

11 RECONFIRM DTC

(a) Clear the DTC(s) (see page BC-47).
(b) Start the engine.
(c) Drive the vehicle at a speed of 20 km/h (12 mph) or more for at least 60 seconds.
(d) Check if the same DTC(s) is output (see page BC-47).

Result

Result	Proceed to
DTC is output	A
DTC is not output	B

B → END

A

REPLACE ABS AND TRACTION ACTUATOR ASSEMBLY