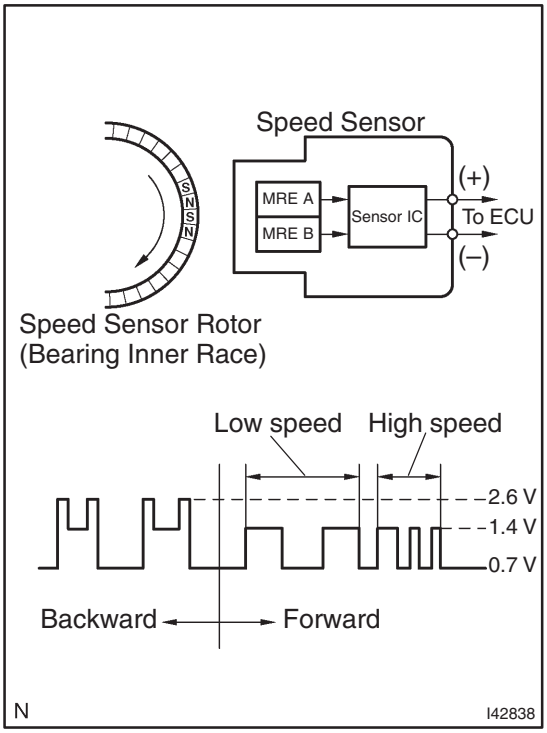
DTC	C0200/31	RIGHT FRONT WHEEL SPEED SENSOR SIGNAL MALFUNCTION

DTC	C0205/32	LEFT FRONT WHEEL SPEED SENSOR SIGNAL MALFUNCTION

DTC	C1235/35	METAL STICK TO SPEED SENSOR (FR)

DTC	C1236/36	METAL STICK TO SPEED SENSOR (FL)

CIRCUIT DESCRIPTION



The speed sensor detects wheel speed and sends the appropriate signals to the ECU. These signals are used to control the ABS, BA, TRC, A–TRC, VSC, DAC and HAC control systems. This speed sensor contains a sensor IC, which consists of two MREs (Magnetic Resistance Element). The speed sensor rotor, which consists of 48 sets of N and S poles that are arranged in a circle, is integrated with the inner race of the hub bearing.

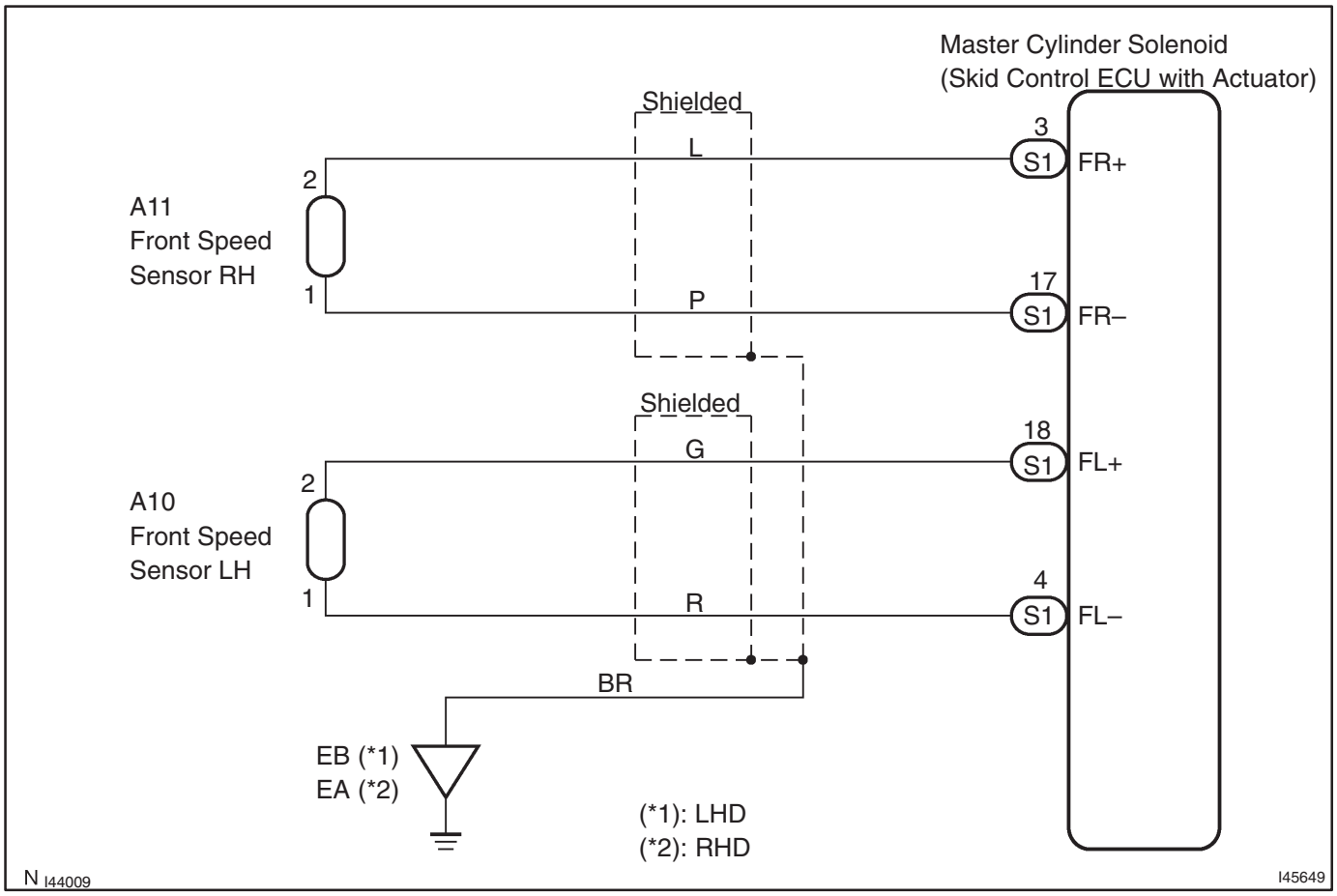
To detect the rotation direction, the output waves are used to determine the relationship of the pulses that are generated by 2 MREs. Upon receiving this signal, the sensor IC outputs a forward or backward wave to the ECU.

DTC No.	DTC Detection Condition	Trouble Area
C0200/31 C0205/32	When any of the following conditions is detected: 1. At a vehicle speed of 6 mph (10 km/h) or more, pulses are not input for 1 second. 2. Momentary interruption of the speed sensor signal occurs at least 255 times when switching the ignition switch ON and OFF. 3. Continuous noise occurs in speed sensor signals at a vehicle speed of 12 mph (20 km/h) or more. 4. Speed sensor signal circuit is open for 0.12 seconds or more.	• Right front and left front speed sensor • Each speed sensor circuit • Speed sensor rotor • Sensor installation • Master cylinder solenoid
C1235/35 C1236/36	Continuous noise occurs in speed sensor signals when vehicle speed is 12 mph (20 km/h) or more for 5 seconds or more.	• Right front and left front speed sensor • Speed sensor rotor • Sensor installation • Master cylinder solenoid

HINT:

- DTC C0200/31 and C1235/35 are for the right front speed sensor.
- DTC C0205/32 and C1236/36 are for the left front speed sensor.

WIRING DIAGRAM



INSPECTION PROCEDURE

NOTICE:

When replacing the master cylinder solenoid, perform zero point calibration (see page 05–744).

HINT:

Start the inspection from step 1 when using the intelligent tester II and start from step 3 when not using the intelligent tester II.

1	READ VALUE OF INTELLIGENT TESTER II (MOMENTARY INTERRUPTION OF FRONT SPEED SENSOR) (SEE PAGE 05–742)

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

(b) Turn the ignition switch to the ON position and push the intelligent tester II main switch ON.

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

Item	Measurement Item/Range (Display)	Normal Condition	Diagnostic Note
FR Speed Open	Speed sensor open detection (FR)/OPN DET or NORMAL	OPN DET: Momentary interruption NORMAL: Normal	–
FL Speed Open	Speed sensor open detection (FL)/OPN DET or NORMAL	OPN DET: Momentary interruption NORMAL: Normal	–

(d) Check for any momentary interruption in the wire harness and connector corresponding to a DTC.

OK:

There are no momentary interruptions.

HINT:

Perform the above inspection before removing the sensor and connector.

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

OK

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

Item	Measurement Item/Range (Display)	Normal Condition	Diagnostic Note
FR Wheel Speed	Wheel speed sensor (FR) reading /min.: 0 mph (0 km/h), max.: 202 mph (326 km/h)	Actual wheel speed	Similar speed as indicated on speedometer
FL Wheel speed	Wheel speed sensor (FL) reading/ min.: 0 mph (0 km/h), max.: 202 mph (326 km/h)	Actual wheel speed	Similar speed as indicated on speedometer

(a) Check that there is no difference between the speed value output from the speed sensor displayed on the intelligent tester II and the speed value displayed on the speedometer when driving the vehicle.

OK:

The speed value output from the speed sensor displayed on the intelligent tester II is the same as the actual vehicle speed.

NG → **Go to step 4**

OK

3	PERFORM TEST MODE (SIGNAL CHECK) (SEE PAGE 05–748)

(a) Check if test mode (signal check) DTCs are detected.

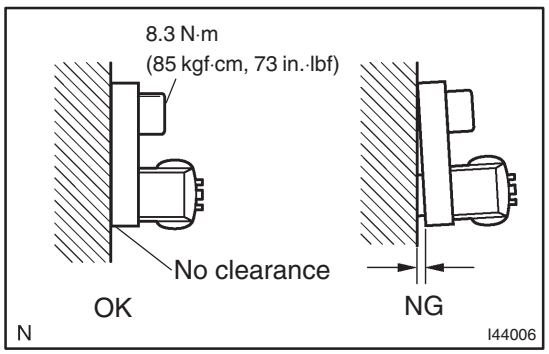
Result:

Test mode (signal check) DTC is output	A
Test mode (signal check) DTC is not output	B

B → **Go to step 9**

A

4	INSPECT FRONT SPEED SENSOR INSTALLATION



(a) Check the speed sensor installation.

OK:

• The installation bolt is tightened properly.
Torque: 8.3 N·m (85 kgf·cm, 73 in.·lbf)
• There is no clearance between the sensor and the front steering knuckle.

NG → **INSTALL FRONT SPEED SENSOR CORRECTLY OR REPLACE FRONT SPEED SENSOR (SEE PUB. NO. RM990E, PAGE 32–86)**

NOTICE:
Check the speed sensor signal after replacement (see page 05–748).

OK

5	INSPECT SPEED SENSOR TIP

(a) Remove the front speed sensor (see Pub. No. RM990E, page 32–86).
(b) Check the sensor tip.

OK:

No scratches or foreign matter on the sensor tip.

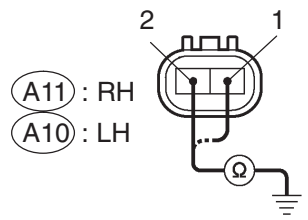
NG → **CLEAN OR REPLACE FRONT SPEED SENSOR (SEE PUB. NO. RM990E, PAGE 32–86)**

NOTICE:
Check the speed sensor signal after cleaning/replacement (see page 05–748).

OK

6 INSPECT FRONT SPEED SENSOR AND SKID CONTROL SENSOR WIRE

Front Speed Sensor:



I44002 I45651

(a) Install the front speed sensor.
(b) Turn the ignition switch off.
(c) Disconnect the front speed sensor connector.
(d) Measure the resistance according to the value(s) in the table below.

Standard:

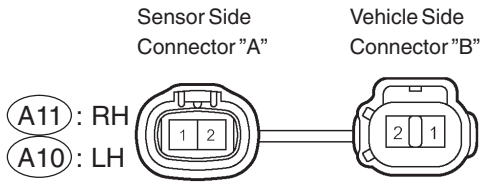
RH:

Tester Connection	Specified Condition
A11–2 (FR+) – Body ground	10 kΩ or higher
A11–1 (FR–) – Body ground	10 kΩ or higher

LH:

Tester Connection	Specified Condition
A10–2 (FL+) – Body ground	10 kΩ or higher
A10–1 (FL–) – Body ground	10 kΩ or higher

Skid Control Sensor Wire:



H I44003

(e) Disconnect the skid control sensor wire.
(f) Measure the resistance according to the value(s) in the table below.

Standard:

RH:

Tester Connection	Specified Condition
A11 ("A"–2) – A11 ("B"–2)	Below 1 Ω
A11 ("A"–2) – A11 ("B"–1)	10 kΩ or higher
A11 ("A"–2) – Body ground	10 kΩ or higher
A11 ("A"–1) – A11 ("B"–1)	Below 1 Ω
A11 ("A"–1) – A11 ("B"–2)	10 kΩ or higher
A11 ("A"–1) – Body ground	10 kΩ or higher

LH:

Tester Connection	Specified Condition
A10 ("A"–2) – A10 ("B"–2)	Below 1 Ω
A10 ("A"–2) – A10 ("B"–1)	10 kΩ or higher
A10 ("A"–2) – Body ground	10 kΩ or higher
A10 ("A"–1) – A10 ("B"–1)	Below 1 Ω
A10 ("A"–1) – A10 ("B"–2)	10 kΩ or higher
A10 ("A"–1) – Body ground	10 kΩ or higher

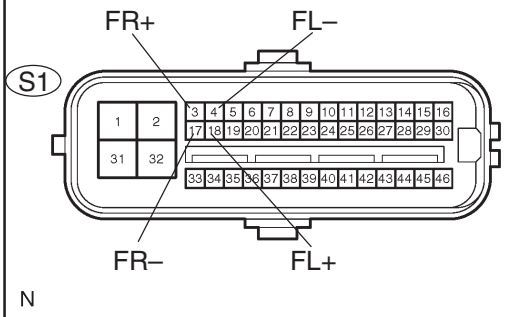
NG → **REPLACE FRONT SPEED SENSOR OR SKID CONTROL SENSOR WIRE**

NOTICE:
Check the speed sensor signal after replacement (see page 05–748).

OK

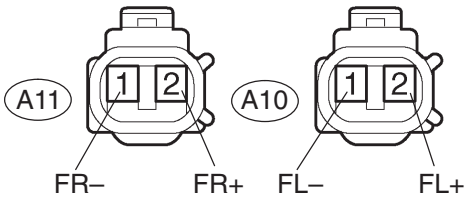
7 CHECK HARNESS AND CONNECTOR (BETWEEN SKID CONTROL ECU AND FRONT SPEED SENSOR) (SEE PAGE 01–26)

Skid Control ECU (Wire Harness Side)
Connector Front View:



N

Front Speed Sensor (Wire Harness Side)
Connector Front View:



I45084

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

Standard:

RH:

Tester Connection	Specified Condition
S1–3 (FR+) – A11–2 (FR+)	Below 1 Ω
S1–3 (FR+) – Body ground	10 kΩ or higher
S1–17 (FR–) – A11–1 (FR–)	Below 1 Ω
S1–17 (FR–) – Body ground	10 kΩ or higher

LH:

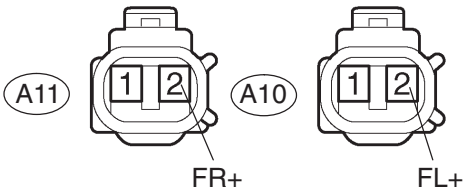
Tester Connection	Specified Condition
S1–18 (FL+) – A10–2 (FL+)	Below 1 Ω
S1–18 (FL+) – Body ground	10 kΩ or higher
S1–4 (FL–) – A10–1 (FL–)	Below 1 Ω
S1–4 (FL–) – Body ground	10 kΩ or higher

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

OK

8 INSPECT MASTER CYLINDER SOLENOID

Front Speed Sensor (Wire Harness Side)
Connector Front View:



I45852

(a) Reconnect the skid control ECU connector.
(b) Turn the ignition switch to the ON position.
(c) Measure the voltage according to the value(s) in the table below.

Standard:

RH:

Tester Connection	Specified Condition
A11–2 (FR+) – Body ground	7.5 to 12 V

LH:

Tester Connection	Specified Condition
A10–2 (FL+) – Body ground	7.5 to 12 V

NG → **REPLACE MASTER CYLINDER SOLENOID (SEE PAGE 32–12)**

OK

9	RECONFIRM DTC

(a) Clear the DTCs (see page 05–766).
(b) Drive the vehicle at a speed of approximately 20 mph (32 km/h) or more for 60 seconds or more.
(c) Check if the same pending DTCs are detected (see page 05–766).

HINT:
Reinstall the sensors, connectors, etc. and restore the previous vehicle conditions before rechecking for DTCs.

Result:

DTC is output	A
DTC is not output (When troubleshooting in accordance with the DTC CHART.)	B
DTC is not output (When troubleshooting in accordance with the PROBLEM SYMPTOMS TABLE.)	C

B → **END**

C → **PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE (SEE PAGE 05–759)**

A

10	REPLACE FRONT SPEED SENSOR

(a) Replace the front speed sensor (see Pub. No. RM990E, page 32–86).

NOTICE:
Check the speed sensor signal after replacement (see page 05–748).

NEXT

11	RECONFIRM DTC

(a) Clear the DTCs (see page 05–766).
(b) Drive the vehicle at a speed of approximately 20 mph (32 km/h) or more for 60 seconds or more.
(c) Check if the same pending DTCs are detected (see page 05–766).

HINT:
Reinstall the sensors, connectors, etc. and restore the previous vehicle conditions before rechecking for DTCs.

Result:

DTC is output	A
DTC is not output	B

B → **END**

A

12	INSPECT SPEED SENSOR ROTOR

(a) Remove the front axle w/ ABS rotor bearing assy.
(b) Check the sensor rotor.

OK:

No scratches, oil, or foreign matter on the rotors.

NG → **CLEAN OR REPLACE FRONT AXLE W/ ABS ROTOR BEARING ASSY (SPEED SENSOR ROTOR) (SEE PUB. NO. RM990E, PAGE 30–30)**

NOTICE:

Check the speed sensor signal after cleaning/replacement (see page 05–748).

OK →

REPLACE MASTER CYLINDER SOLENOID (SEE PAGE 32–12)