

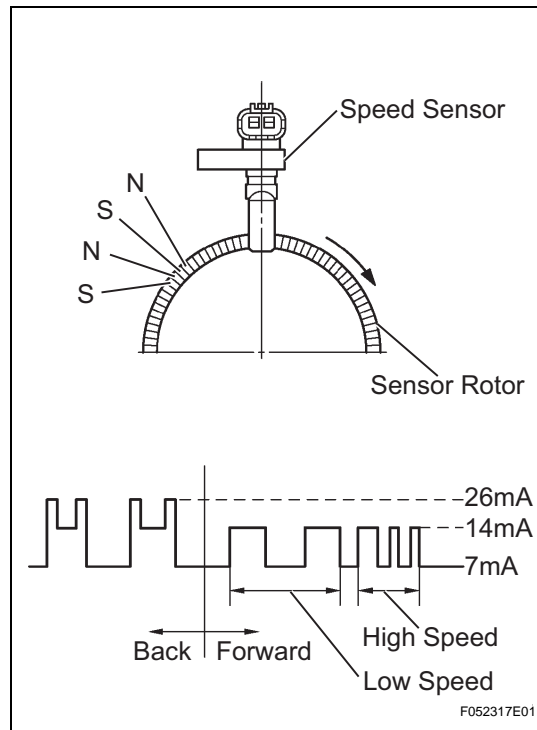
| | | |
|-----|----------|---|
| DTC | C0200/31 | Right Front Wheel Speed Sensor Signal Malfunction |
| DTC | C0205/32 | Left Front Wheel Speed Sensor Signal Malfunction |
| DTC | C0210/33 | Right Rear Wheel Speed Sensor Signal Malfunction |
| DTC | C0215/34 | Left Rear Wheel Speed Sensor Signal Malfunction |

DESCRIPTION

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

Each speed sensor detects that magnetic change and sends a pulse signal to the skid control ECU. The ECU monitors the wheel speeds according to the speed signals to control the ABS, BA, TRAC, A-TRAC, VSC, AUTO LSD, DAC and HAC systems.

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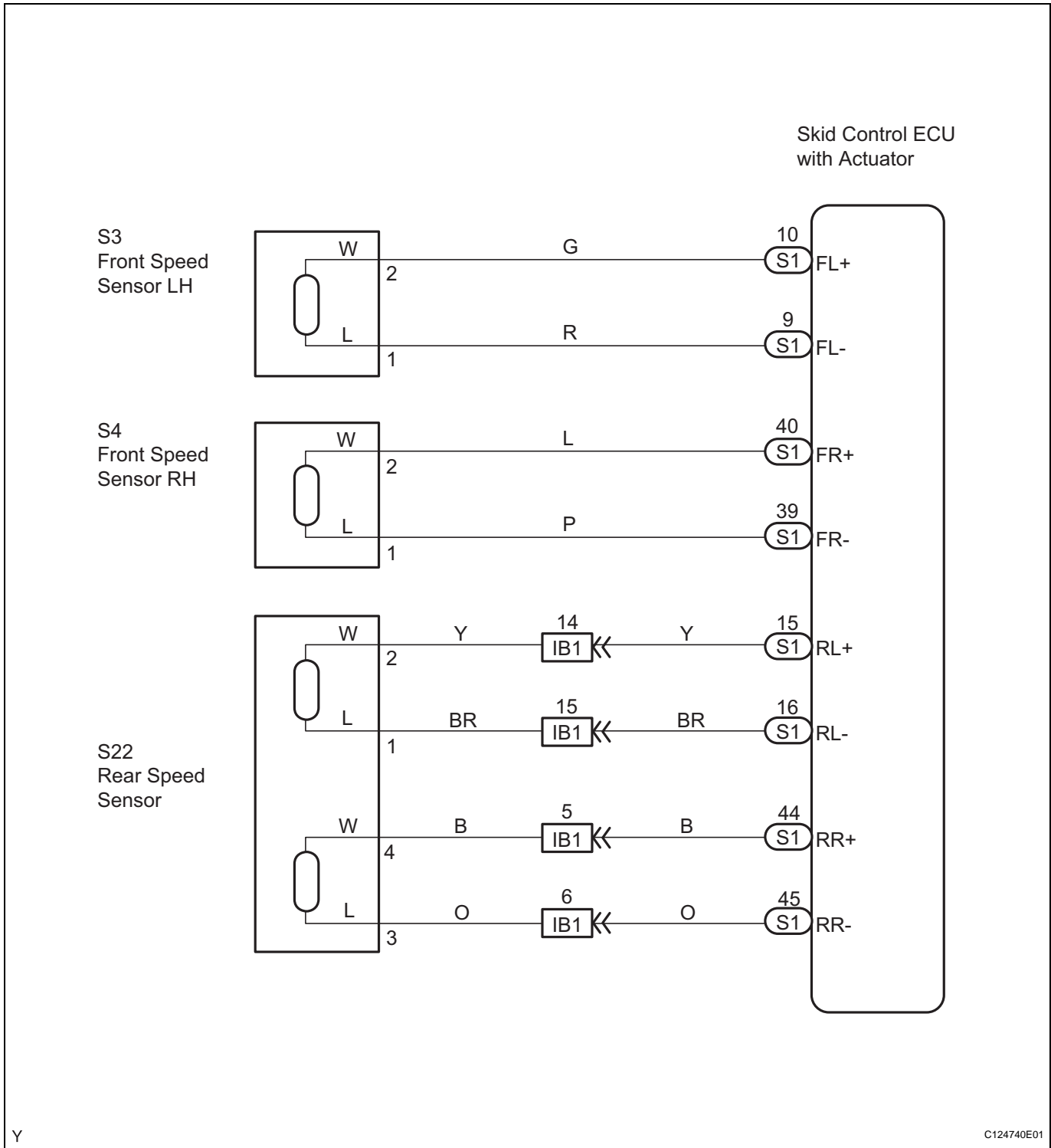


| DTC No. | DTC Detecting Conditions | Trouble Areas |
|--|--|---|
| <p>C0200/31 C0205/32 C0210/33 C0215/34</p> | <p>When any one of following conditions met:</p> <ol style="list-style-type: none"> 1. At vehicle speed of 6 mph (10 km/h) or more, speed sensor signal circuit open or short for 1 second or more. 2. Speed sensor signal open circuit occurs at least 255 times. 3. Speed sensor signal circuit open for 0.5 seconds or more. 4. With ignition switch ON and vehicle speed at 2 mph (3km/h) or more, 3 wheels output reverse rotation signal and 1 wheel outputs high-frequency pulse 75 times. 5. At vehicle speed of 6 mph (10 km/h) or more, speed sensor output halves for 5 seconds. 6. At vehicle speed of 6 mph (10 km/h) or more, changing of normal rotation signal and reverse rotation signal occur 7 times within 0.006 seconds while ignition switch ON. 7. Signal output of any one wheel different from signals of other 3 wheels for 1 second, at vehicle speed of 18 mph (30 km/h) or more. 8. Reverse rotation signal produced for 1 second or more at vehicle speed of 62 mph (100 km/h) or more. 9. At vehicle speed of 18 mph (30 km/h) or more, one speed sensor malfunctions and differs in signal direction from other 3 wheels. 10. When voltage at IG1 terminal 9.5 V or more, voltage of sensor power supply decreases for 0.5 seconds or more. | <ul style="list-style-type: none"> • Speed sensor • Speed sensor circuit • Master cylinder solenoid (skid control ECU) |

HINT:

- DTC C0200/31 relates to the front right speed sensor.
- DTC C0205/32 relates to the front left speed sensor.
- DTC C0210/33 relates to the rear right speed sensor.
- DTC C0215/34 relates to the rear left speed sensor.

WIRING DIAGRAM



HINT:

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

1 CHECK HARNESS AND CONNECTOR (MOMENTARY INTERRUPTION)

- (a) Using a intelligent tester, check for any momentary interruption in the wire harness and connector corresponding to a DTC (See page BC-98).

| Item | Measurement Item / Range (Display) | Normal Condition | Diagnostic Note |
|------------|---|------------------------------|-----------------|
| SPD SEN FR | FR speed sensor open detection / OPEN or NORMAL | OPEN: momentary interruption | - |
| SPD SEN FL | FL speed sensor open detection / OPEN or NORMAL | OPEN: momentary interruption | - |
| SPD SEN RR | RR speed sensor open detection / OPEN or NORMAL | OPEN: momentary interruption | - |
| SPD SEN RL | RL speed sensor open detection / OPEN or NORMAL | OPEN: momentary interruption | - |

OK:
There are no momentary interruptions.

NG **Go to step 7**

OK

2 READ VALUE OF DATA LIST (SPEED SENSOR)

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

| Item | Measurement Item / Range (Display) | Normal Condition | Diagnostic Note |
|--------------|--|--------------------|--|
| WHEEL SPD FR | Wheel speed sensor (FR) reading / min.: 0 MPH (0 km/h), max.: 202 MPH (326 km/h) | Actual wheel speed | Similar speed to that indicated on speedometer |
| WHEEL SPD FL | Wheel speed sensor (FR) reading / min.: 0 MPH (0 km/h), max.: 202 MPH (326 km/h) | Actual wheel speed | Similar speed to that indicated on speedometer |
| WHEEL SPD RR | Wheel speed sensor (FR) reading / min.: 0 MPH (0 km/h), max.: 202 MPH (326 km/h) | Actual wheel speed | Similar speed to that indicated on speedometer |
| WHEEL SPD RL | Wheel speed sensor (FR) reading / min.: 0 MPH (0 km/h), max.: 202 MPH (326 km/h) | Actual wheel speed | Similar speed to that indicated on speedometer |

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

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

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

NG **Go to step 5**

OK

3 PERFORM TEST MODE INSPECTION (SIGNAL CHECK)

- (a) Check if test mode DTCs are detected (See page BC-103).

| Result | Proceed to |
|--------------------------|------------|
| Test mode DTC output | A |
| Test mode DTC not output | B |

NG → **Go to step 5**

OK

4 RECONFIRM DTC

- (a) Clear the DTCs (See page BC-118).
- (b) Check if the same DTCs are recorded.

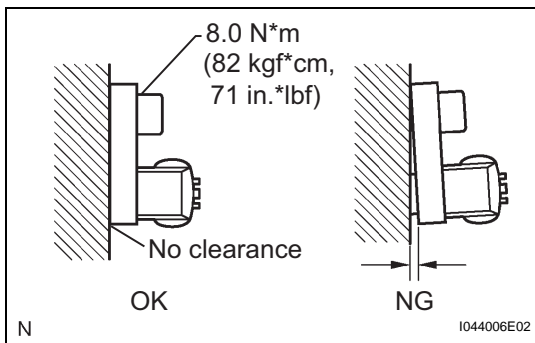
| Result | Proceed to |
|----------------|------------|
| DTC output | A |
| DTC not output | B |

B → **CHECK FOR INTERMITTENT PROBLEMS**

A

BC

5 CHECK SPEED SENSOR INSTALLATION



- (a) Check the speed sensor installation.

OK:

The installation bolt is tightened properly and there is no clearance between the sensor and front steering knuckle.

Torque:

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

NG → **TIGHTEN BOLT PROPERLY**

OK

6 CHECK SPEED SENSOR

- (a) Remove the speed sensor (See page BC-303 or BC-304).

- (b) Check the sensor tip.

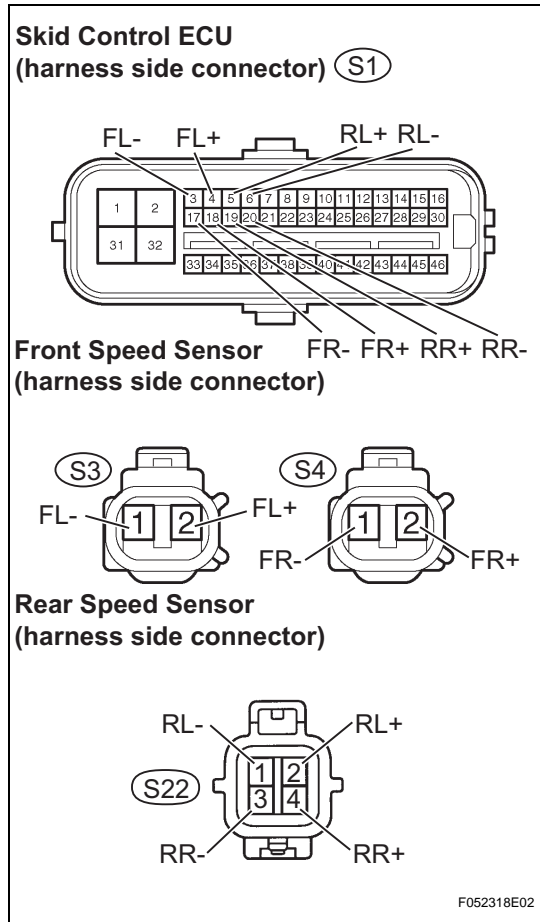
OK:

No scratches or foreign matter on the sensor tip.

NG → **CLEAN OR REPLACE SPEED SENSOR**

OK

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



- (a) Disconnect the skid control ECU connector.
- (b) Disconnect the speed sensor connectors.
- (c) Measure the resistance.

Standard Resistance

| Tester Connection | Specified Condition |
|---------------------------|---------------------|
| S1-18 (FL+) - S3-2 (FL+) | Below 1 Ω |
| S1-4 (FL-) - S3-1 (FL-) | Below 1 Ω |
| S1-3 (FR+) - S4-2 (FR+) | Below 1 Ω |
| S1-17 (FR-) - S4-1 (FR-) | Below 1 Ω |
| S1-20 (RL+) - S22-2 (RL+) | Below 1 Ω |
| S1-6 (RL-) - S22-1 (RL-) | Below 1 Ω |
| S1-5 (RR+) - S22-4 (RR+) | Below 1 Ω |
| S1-19 (RR-) - S22-3 (RR-) | Below 1 Ω |

- (d) Measure the resistance.

Standard Resistance

| Tester Connection | Specified Condition |
|---------------------------|---------------------|
| S1-18 (FL+) - Body ground | 10 kΩ or higher |
| S1-4 (FL-) - Body ground | 10 kΩ or higher |
| S1-3 (FR+) - Body ground | 10 kΩ or higher |
| S1-17 (FR-) - Body ground | 10 kΩ or higher |
| S1-20 (RL+) - Body ground | 10 kΩ or higher |
| S1-6 (RL-) - Body ground | 10 kΩ or higher |
| S1-5 (RR+) - Body ground | 10 kΩ or higher |
| S1-19 (RR-) - Body ground | 10 kΩ or higher |

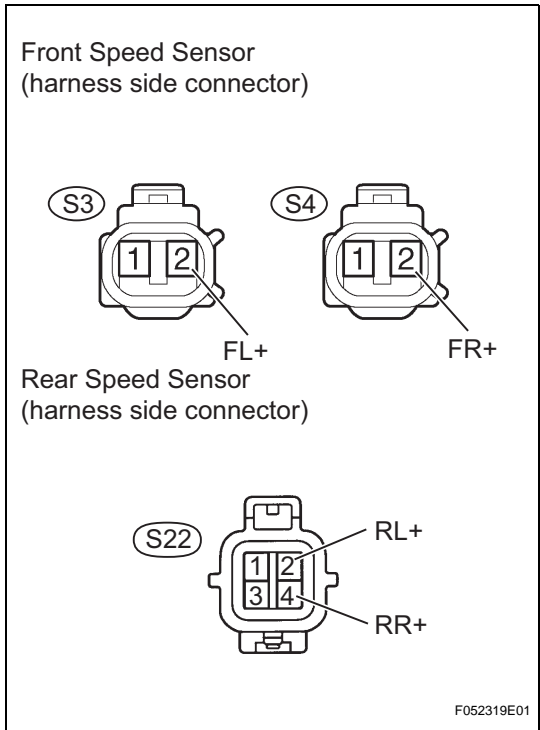
- (e) Reconnect the speed sensor connectors.
- (f) Reconnect the skid control ECU connector.

NG REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

BC

8 INSPECT MASTER CYLINDER SOLENOID (TERMINAL VOLTAGE)



- (a) Disconnect the speed sensor connectors.
- (b) Turn the ignition switch to the ON position.
- (c) Measure the voltage.

Standard Voltage

| Tester Connection | Specified Condition |
|---------------------------|---------------------|
| S3-2 (FL+) - Body ground | 7.5 to 12 V |
| S4-2(FR+) - Body ground | 7.5 to 12 V |
| S22-2 (RL+) - Body ground | 7.5 to 12 V |
| S22-4 (RR+) - Body ground | 7.5 to 12 V |

- (d) Turn the ignition switch to OFF.
- (e) Reconnect the speed sensor connectors.

NG → **REPLACE MASTER CYLINDER SOLENOID**

OK

BC 9 RECONFIRM DTC

- (a) Clear the DTCs (See page BC-118).
- (b) Check if the same DTCs are recorded.

| Result | Proceed to |
|----------------|------------|
| DTC output | A |
| DTC not output | B |

B → **CHECK FOR INTERMITTENT PROBLEMS**

A

REPLACE MASTER CYLINDER SOLENOID