

DTC	C1311/11	OPEN CIRCUIT IN MAIN RELAY 1
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DTC	C1312/12	SHORT CIRCUIT IN MAIN RELAY 1
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DTC	C1313/13	OPEN CIRCUIT IN MAIN RELAY 2
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DTC	C1314/14	SHORT CIRCUIT IN MAIN RELAY 2
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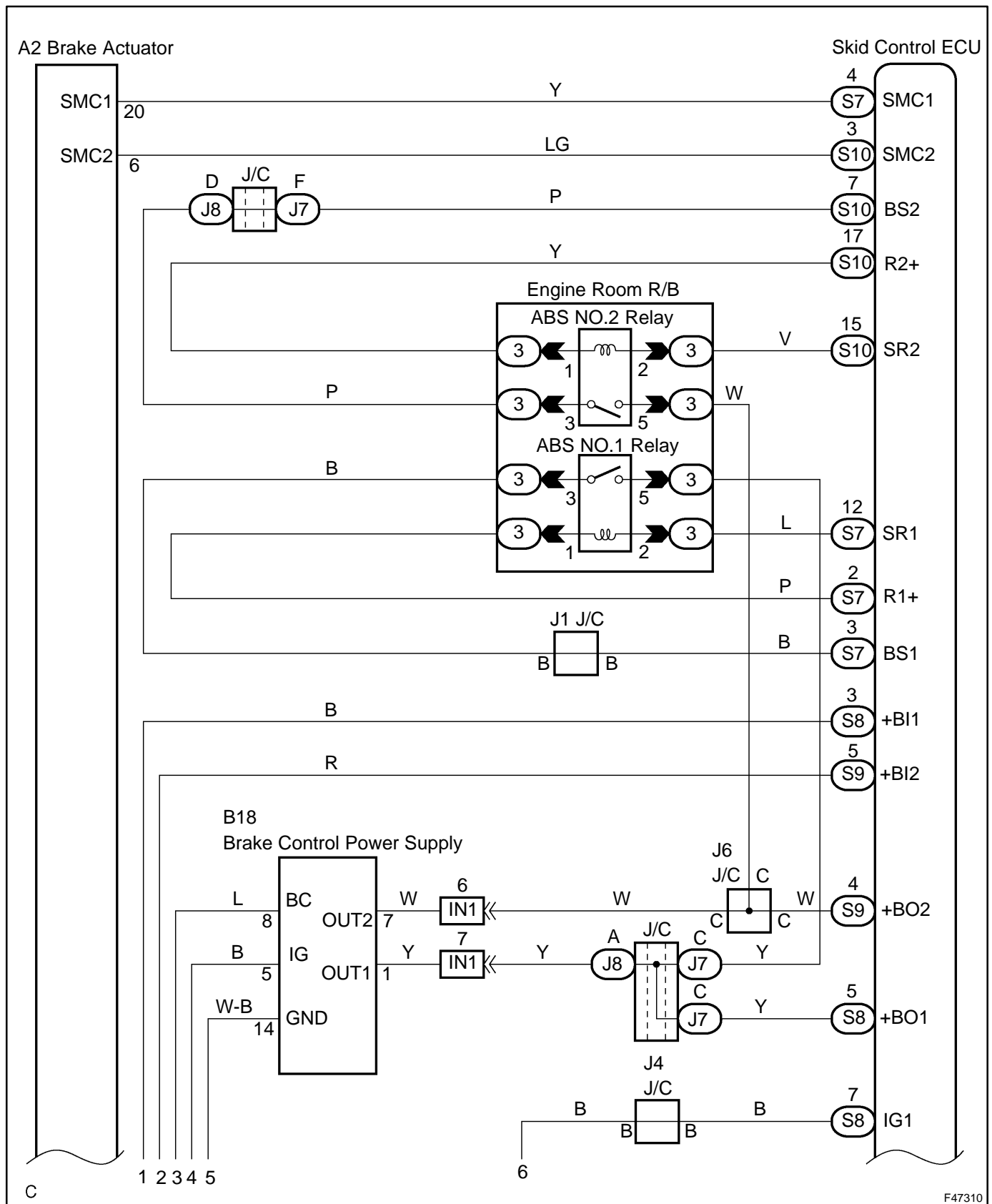
CIRCUIT DESCRIPTION

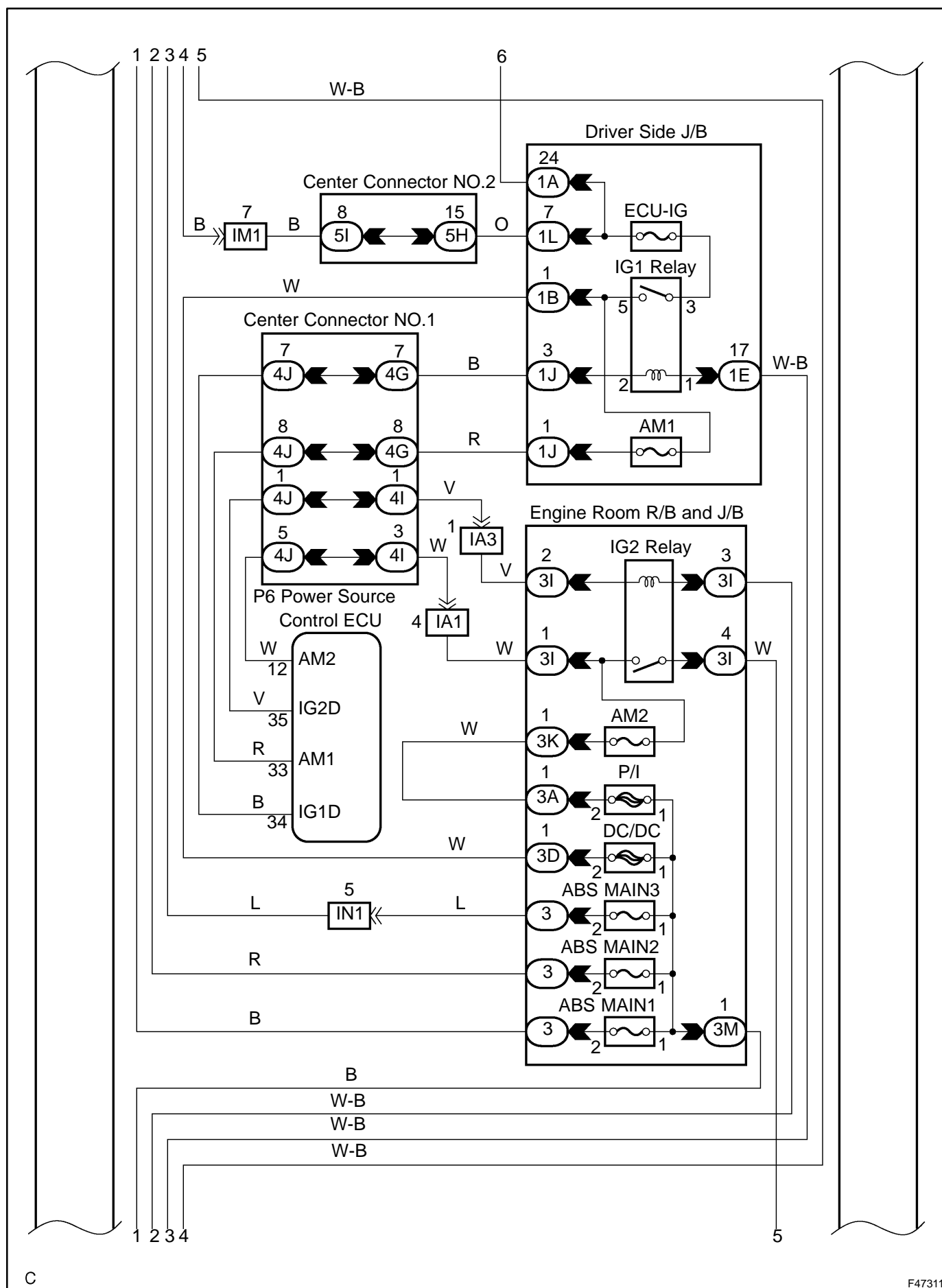
ABS main relay 1 (ABS No.1 relay) supplies power to the changeover solenoid and the linear solenoid.

ABS main relay 2 (ABS No.2 relay) goes on for approximately 5 seconds after the power switch is turned off and the braking effort signal input is terminated. ABS main relay 2 (ABS No.2 relay) supplies electricity and maintains operating condition for the brake system when the power switch is off.

DTC No.	Detailed Code	DTC Detecting Condition	Trouble Area
C1311/11	1	<ul style="list-style-type: none"> Relay contact is off (BS 1 terminal is less than 3.5 V) for at least 0.2 sec. when R1+ terminal voltage is 9.5 V or more and main relay 1 is on. R1+ terminal voltage is less than 9.5 V and main relay 1 cannot be on for at least 0.2 sec. when main relay 1 is turned on (BS 1 terminal is 3.5 V or more). 	<ul style="list-style-type: none"> ABS main relay 1 (ABS No.1 relay) Skid control ECU Harness and connector
C1312/12	3	Relay contact is on for at least 4 sec. when main relay 1 is off.	<ul style="list-style-type: none"> ABS main relay 1 (ABS No.1 relay) Skid control ECU Harness and connector
C1313/13	4	<ul style="list-style-type: none"> Relay contact is off (BS2 terminal is less than 3.5 V) for at least 0.2 sec. when R2+ terminal voltage is 9.5 V or more and main relay 2 is on. R2+ terminal voltage is less than 9.5 V and main relay 2 cannot be on for at least 2 sec. when main relay 2 is turned on (BS 1 terminal is 3.5 V or more). 	<ul style="list-style-type: none"> ABS main relay 2 (ABS No.2 relay) Skid control ECU Harness and connector
C1314/14	6	Relay contact is on for at least 4 sec. when main relay 2 is off.	<ul style="list-style-type: none"> ABS main relay 2 (ABS No.2 relay) Skid control ECU Harness and connector

WIRING DIAGRAM







INSPECTION PROCEDURE

1 PERFORM ACTIVE TEST BY HAND-HELD TESTER(ABS NO.1 RELAY, ABS NO.2 RELAY OPERATION)

- Connect the hand-held tester to the DLC3.
- Turn the power switch ON (READY).
- Select the ACTIVE TEST mode on the hand-held tester.
- Check the operation sound of the ABS No.1, ABS No.2 relay.

Item	Vehicle Condition / Test Details	Diagnostic Note
MAIN RELAY 2	Turns MAIN RELAY 1 ON / OFF	Operation of solenoid (clicking sound) can be heard
MAIN RELAY 1	Turns MAIN RELAY 2 ON / OFF	Operation of solenoid (clicking sound) can be heard

OK:

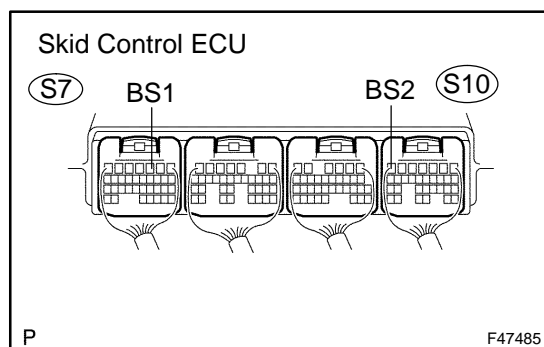
Operation sound of ABS No.1 relay and ABS No.2 relay should be heard.

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Go to step 3

OK

2 INSPECT SKID CONTROL ECU TERMINAL VOLTAGE(BS1, BS2 TERMINAL)



- Measure the voltage according to the value(s) in the table below.

HINT:

Measure the voltage from behind the connector with the connector connected to the skid control ECU.

Standard:

Tester Connection	Specified Condition
S7-3 (BS1) - Body ground	10 to 14 V
S10-7 (BS2) - Body ground	10 to 14 V

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REPAIR OR REPLACE HARNESS OR CONNECTOR

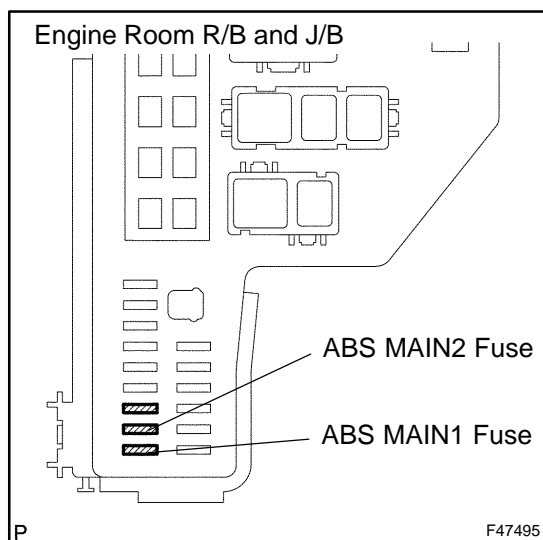
OK

REPLACE SKID CONTROL ECU ASSY (SEE PAGE 32-68)

NOTICE:

When replacing the skid control ECU assy, perform initialization of linear solenoid valve and calibration (see page 05-956).

3 INSPECT FUSE (ABS MAIN 1, ABS MAIN 2 FUSE)



- Remove the ABS MAIN 1 and ABS MAIN 2 fuse.
- Measure the resistance according to the value(s) in the table below.

Standard:

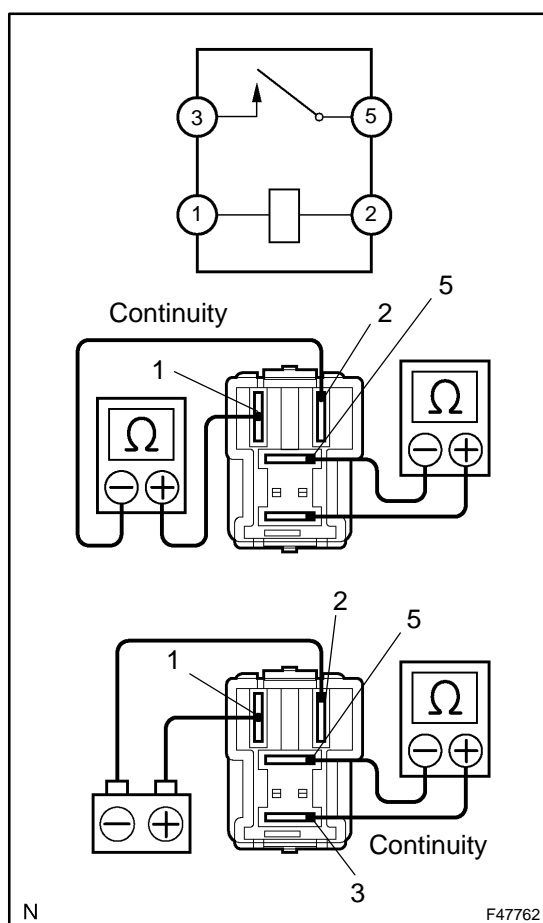
ABS MAIN 1 Fuse	Below 1 Ω (Continuity)
ABS MAIN 2 Fuse	Below 1 Ω (Continuity)

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CHECK FOR SHORT IN ALL HARNESS AND CONNECTOR CONNECTED TO FUSE AND REPLACE FUSE

OK

4 INSPECT ABS RELAY(ABS MAIN RELAY 1, ABS MAIN RELAY 2)



- Remove the ABS main relay 1 (ABS No.1 relay) and ABS main relay 2 (ABS No.2 relay).
- Measure the resistance according to the value(s) in the table below.

Standard:

Tester Connection	Specified Condition
Terminal 1 - Terminal 2	100 Ω
Terminal 3 - Terminal 5	10 k Ω or higher (No Continuity)

- Apply battery voltage between terminals 1 and 2.
- Measure the resistance according to the value(s) in the table below.

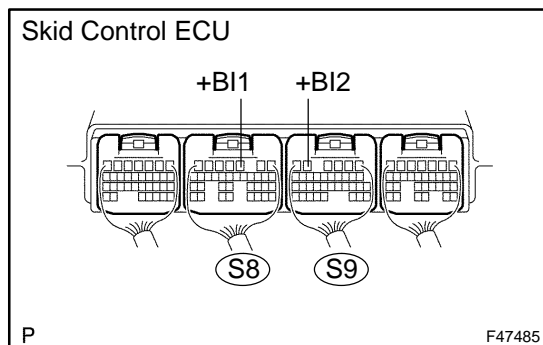
Standard:

Tester Connection	Specified Condition
Terminal 3 - Terminal 5	Below 1 Ω (Continuity)

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REPLACE ABS RELAY

OK

5 INSPECT SKID CONTROL ECU TERMINAL VOLTAGE(+BI1, +BI2 TERMINAL)

- (a) Measure the voltage according to the value(s) in the table below.

HINT:

Measure the voltage from behind the connector with the connector connected to the skid control ECU.

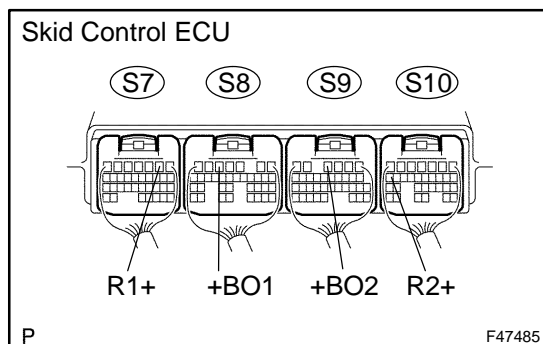
Standard:

Tester Connection	Specified Condition
S8-3 (+BI1) - Body ground	10 to 14 V
S9-5 (+BI2) - Body ground	10 to 14 V

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REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

6 INSPECT SKID CONTROL ECU TERMINAL VOLTAGE(+BO1, +BO2, R1+, R2+ TERMINAL)

- (a) Measure the voltage according to the value(s) in the table below.

HINT:

Measure the voltage from behind the connector with the connector connected to the skid control ECU.

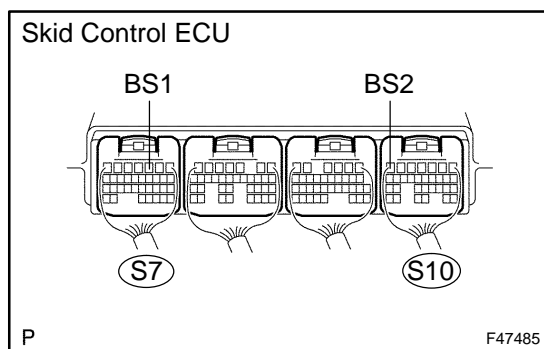
Standard:

Tester Connection	Specified Condition
S7-2 (R1+) - Body ground	10 to 14 V
S8-5 (+BO1) - Body ground	10 to 14 V
S9-4 (+BO2) - Body ground	10 to 14 V
S10-17 (R2+) - Body ground	10 to 14 V

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REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

7 INSPECT SKID CONTROL ECU TERMINAL VOLTAGE(BS1, BS2 TERMINAL)

- (a) Measure the voltage according to the value(s) in the table below.

HINT:

Measure the voltage from behind the connector with the connector connected to the skid control ECU.

Standard:

Tester Connection	Specified Condition
S7-3 (BS1) - Body ground	10 to 14 V
S10-7 (BS2) - Body ground	10 to 14 V

NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

REPLACE SKID CONTROL ECU ASSY (SEE PAGE 32-68)

NOTICE:

When replacing the skid control ECU assy, perform initialization of linear solenoid valve and calibration (see page 05-956).