

<b>DTC</b>	<b>C1315/31</b>	<b>CHANGEOVER SOLENOID MALFUNCTION (SMC1)</b>
<b>DTC</b>	<b>C1316/32</b>	<b>CHANGEOVER SOLENOID MALFUNCTION (SMC2)</b>
<b>DTC</b>	<b>C1352/21</b>	<b>INCREASING PRESSURE SOLENOID MALFUNCTION (FR)</b>
<b>DTC</b>	<b>C1353/23</b>	<b>INCREASING PRESSURE SOLENOID MALFUNCTION (FL)</b>
<b>DTC</b>	<b>C1354/25</b>	<b>INCREASING PRESSURE SOLENOID MALFUNCTION (RR)</b>
<b>DTC</b>	<b>C1355/27</b>	<b>INCREASING PRESSURE SOLENOID MALFUNCTION (RL)</b>
<b>DTC</b>	<b>C1356/22</b>	<b>DECREASING PRESSURE SOLENOID MALFUNCTION (FR)</b>
<b>DTC</b>	<b>C1357/24</b>	<b>DECREASING PRESSURE SOLENOID MALFUNCTION (FL)</b>
<b>DTC</b>	<b>C1358/26</b>	<b>DECREASING PRESSURE SOLENOID MALFUNCTION (RR)</b>
<b>DTC</b>	<b>C1359/28</b>	<b>DECREASING PRESSURE SOLENOID MALFUNCTION (RR)</b>

## CIRCUIT DESCRIPTION

Each solenoid adjusts pressure which affects each wheel cylinder according to signals from the skid control ECU and controls the vehicle.

The master cut solenoid (SMC 1/2) is closed and blocks the master cylinder pressure from the ECB control pressure when the system is normal. The master cut solenoid is open and sends the master cylinder fluid pressure to the non-assisted brake wheel cylinders during the fail safe due to system malfunction.

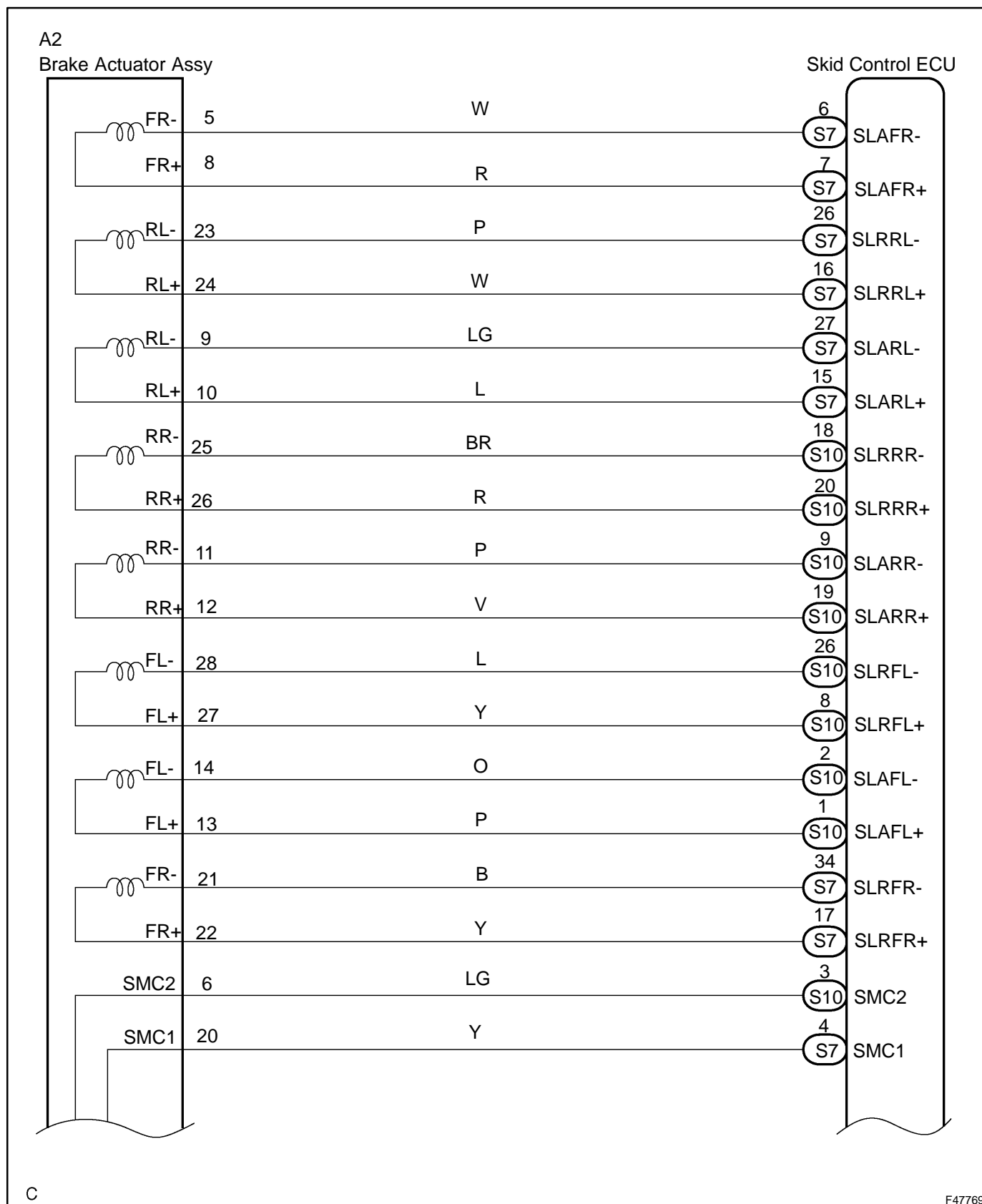
DTC No.	Detailed Code	DTC Detecting Condition	Trouble Area
C1315/31	61	<ul style="list-style-type: none"> <li>• SMC1 drive circuit is malfunctioning for 0.05 sec. or more.</li> <li>• Short to +B.</li> </ul>	<ul style="list-style-type: none"> <li>• Brake actuator assy (SMC1)</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> </ul>
C1315/31	62	Open circuit in SMC1 continues for 0.05 sec. or more when SMC1 is off	<ul style="list-style-type: none"> <li>• Brake actuator assy (SMC1)</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> </ul>
C1315/31	63	Open circuit in SMC1 continues for 0.05 sec. or more when SMC1 is off.	<ul style="list-style-type: none"> <li>• Brake actuator assy (SMC1)</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> </ul>
C1315/31	64	Over current in SMC1 continues for 0.05 sec. or more.	<ul style="list-style-type: none"> <li>• Brake actuator assy (SMC1)</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> </ul>
C1316/32	66	<ul style="list-style-type: none"> <li>• SMC1 driver circuit is malfunctioning for 0.05 sec. or more.</li> <li>• Short to +B.</li> </ul>	<ul style="list-style-type: none"> <li>• Brake acutator assy (SMC2)</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> </ul>
C1316/32	67	Open circuit in SMC2 continues for 0.05 sec. or more when SMC2 is off.	<ul style="list-style-type: none"> <li>• Brake acutator assy (SMC2)</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> </ul>
C1316/32	68	Open circuit in SMC2 continues for 0.05 sec. or more.	<ul style="list-style-type: none"> <li>• Brake acutator assy (SMC2)</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> </ul>
C1316/32	69	Over current in SMC2 continues for 0.05 sec. or more.	<ul style="list-style-type: none"> <li>• Brake acutator assy (SMC2)</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> </ul>
C1352/21	11	Open circuit in SLAFR continues for 0.05 sec. or more when SLAFR is off.	<ul style="list-style-type: none"> <li>• Brake actuator assy</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> </ul>
C1352/21	12	Open circuit in SLAFR continues for 0.05 sec. or more when SLAFR is on.	<ul style="list-style-type: none"> <li>• Brake actuator assy</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> </ul>
C1352/21	13	Short to +B or voltage leak in SLAFR continues for 0.05 sec. or more.	<ul style="list-style-type: none"> <li>• Brake actuator assy</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> </ul>
C1352/21	14	Over current in SLAFR continues for 0.05 sec. or more	<ul style="list-style-type: none"> <li>• Brake actuator assy</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> </ul>
C1353/23	21	Open circuit in SLAFL continues for 0.05 sec. or more when SLAFL is off.	<ul style="list-style-type: none"> <li>• Brake acutator assy</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> </ul>
C1353/23	22	Open circuit in SLAFL continues for 0.05 sec. or more when SLAFL is on.	<ul style="list-style-type: none"> <li>• Brake acutator assy</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> </ul>
C1353/23	23	Short to +B or voltage leak in SLAFL continues for 0.05 sec. or more.	<ul style="list-style-type: none"> <li>• Brake acutator assy</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> </ul>
C1353/23	24	Over current in SLAFL continues for 0.05 sec. or more.	<ul style="list-style-type: none"> <li>• Brake acutator assy</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> </ul>
C1354/25	31	Open circuit in SLARR continues for 0.05 sec. or more when SLARR is off	<ul style="list-style-type: none"> <li>• Brake actuator assy</li> <li>• Skid control ECU</li> <li>• Harness and connecotor</li> </ul>

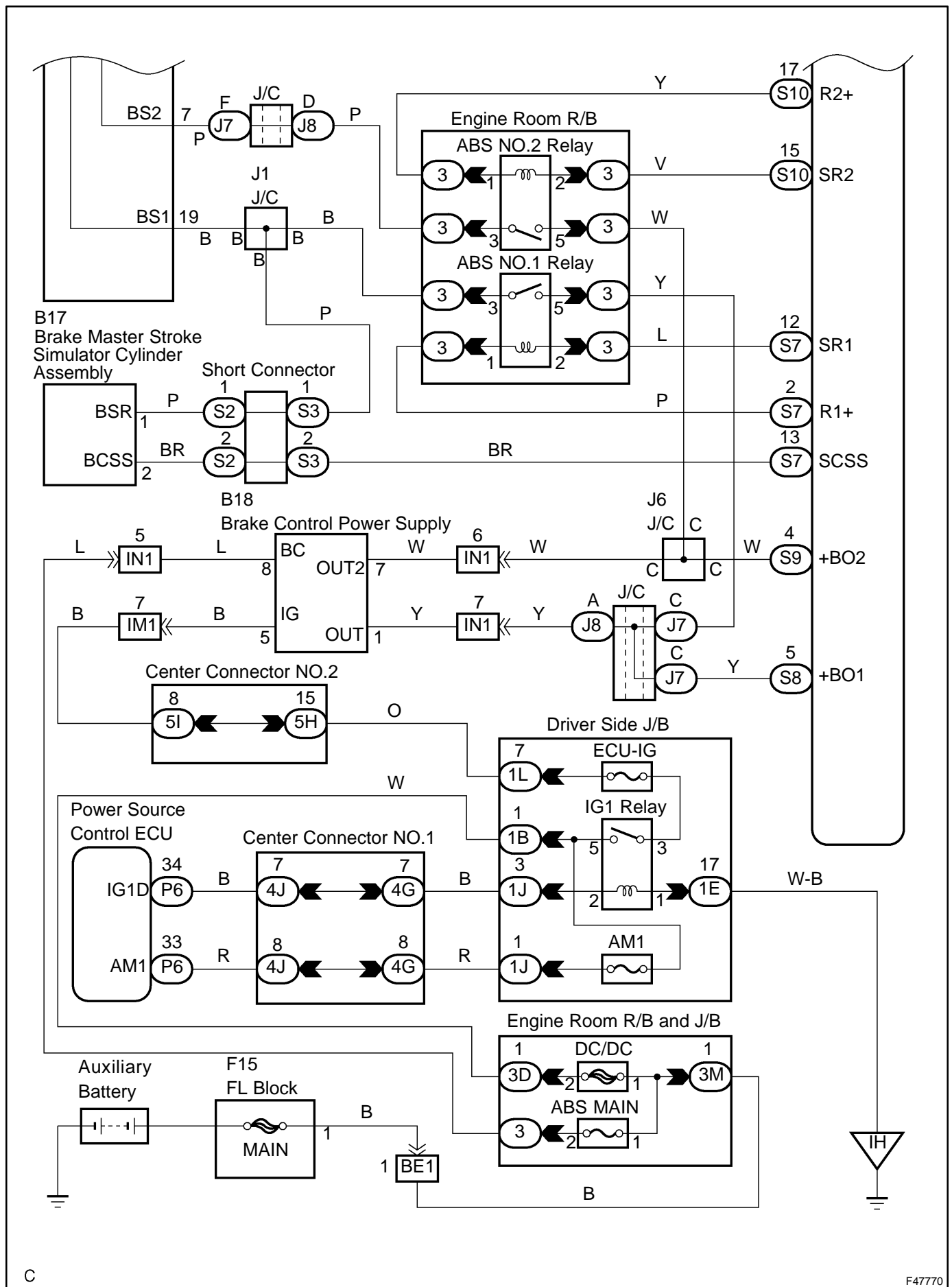
## DIAGNOSTICS - ELECTRONICALLY CONTROLLED BRAKE SYSTEM

DTC No.	Detailed Code	DTC Detecting Condition	Trouble Area
C1354/25	32	Open circuit in SLARR continues for 0.05 sec. or more when SLARR is on.	<ul style="list-style-type: none"> <li>• Brake actuator assy</li> <li>• Skid control ECU</li> <li>• Harness and connecotor</li> </ul>
C1354/25	33	Short to +B or voltage leak in SLARR continues for 0.05 sec. or more.	<ul style="list-style-type: none"> <li>• Brake actuator assy</li> <li>• Skid control ECU</li> <li>• Harness and connecotor</li> </ul>
C1354/25	34	Over current in SLARR continues for 0.05 sec. or more.	<ul style="list-style-type: none"> <li>• Brake actuator assy</li> <li>• Skid control ECU</li> <li>• Harness and connecotor</li> </ul>
C1355/27	41	Open circuit in SLARL continues for 0.05 sec. or more when SLARL is off.	<ul style="list-style-type: none"> <li>• Brake acuator assy</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> </ul>
C1355/27	42	Open circuit in SLARL continues for 0.05 sec. or more when SLARL is on.	<ul style="list-style-type: none"> <li>• Brake acuator assy</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> </ul>
C1355/27	43	Short to +B or voltage leak in SLARL continues for 0.05 sec. or more.	<ul style="list-style-type: none"> <li>• Brake acuator assy</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> </ul>
C1355/27	44	Over current in SLARL continues for 0.05 sec. or more.	<ul style="list-style-type: none"> <li>• Brake acuator assy</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> </ul>
C1356/22	16	Open circuit in SLRFR continues for 0.05 sec. or more when SLRFR is off.	<ul style="list-style-type: none"> <li>• Brake actuator assy</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> </ul>
C1356/22	17	Open circuit in SLRFR continues for 0.05 sec. or more when SKRFR is on.	<ul style="list-style-type: none"> <li>• Brake actuator assy</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> </ul>
C1356/22	18	Short to +B or voltage leak in SLRFR continues for 0.05 sec. or more.	<ul style="list-style-type: none"> <li>• Brake actuator assy</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> </ul>
C1356/22	19	Over current in SLRFR continues for 0.05 sec. or more.	<ul style="list-style-type: none"> <li>• Brake actuator assy</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> </ul>
C1357/24	26	Open circuit in SLRFL continues or 0.05 sec. or more when SLRFL is off.	<ul style="list-style-type: none"> <li>• Brake actuator assy</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> </ul>
C1357/24	27	Open circuit in SLRFL continues for 0.05 sec. or more when SLRFL is on.	<ul style="list-style-type: none"> <li>• Brake actuator assy</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> </ul>
C1357/24	28	Short to +B or voltage leak in SLRFL continues for 0.05 sec. or more.	<ul style="list-style-type: none"> <li>• Brake actuator assy</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> </ul>
C1357/24	29	Over current in SLRFL continues for 0.05 sec. or more.	<ul style="list-style-type: none"> <li>• Brake actuator assy</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> </ul>
C1358/26	36	Open circuit in SLRRR continues for 0.05 sec. or more when SLRRR is off.	<ul style="list-style-type: none"> <li>• Brake actuator assy</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> </ul>
C1358/26	37	Open circuit in SLRRR continues for 0.05 sec. or more when SLRRR is on.	<ul style="list-style-type: none"> <li>• Brake actuator assy</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> </ul>
C1358/26	38	Short to +B or voltage leak in SLRRR continues for 0.05 sec. or more.	<ul style="list-style-type: none"> <li>• Brake actuator assy</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> </ul>
C1358/26	39	Over current in SLRRR continues for 0.05 sec. or more.	<ul style="list-style-type: none"> <li>• Brake actuator assy</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> </ul>

DTC No.	Detailed Code	DTC Detecting Condition	Trouble Area
C1359/28	46	Open circuit in SLRRL continues for 0.05 sec. or more when SLRRL is off.	<ul style="list-style-type: none"> <li>• Brake actuator assy</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> </ul>
C1359/28	47	Open circuit in SLRRL continues for 0.05 sec. or more when SLRRL is on.	<ul style="list-style-type: none"> <li>• Brake actuator assy</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> </ul>
C1359/28	48	Short to +B or voltage leak in SLRRL continues for 0.05 sec. or more.	<ul style="list-style-type: none"> <li>• Brake actuator assy</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> </ul>
C1359/28	49	Over current in SLRRL continues for 0.05 sec. or more.	<ul style="list-style-type: none"> <li>• Brake actuator assy</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> </ul>

## WIRING DIAGRAM





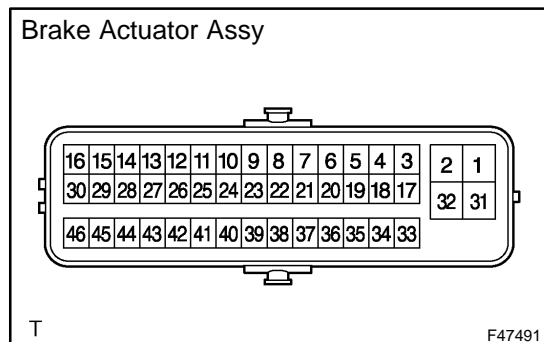
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## INSPECTION PROCEDURE

## 1 INSPECT BRAKE ACTUATOR ASSY

Brake Actuator Assy



- (a) Disconnect the brake actuator connector.
- (b) Measure the resistance according to the value(s) in the table below.

## HINT:

Check the brake actuator assy when it is cooled down.

## Standard:

Tester Connection	Specified Condition
20 (SMC1) - 7 (BS2)	14.6 to 24.6 $\Omega$
6 (SMC2) - 19 (BS1)	14.6 to 24.6 $\Omega$
8 (FR+) - 5 (FR-)	3.5 to 4.3 $\Omega$
22 (FR+) - 21 (FR-)	3.5 to 4.3 $\Omega$
13 (FL+) - 14 (FL-)	3.5 to 4.3 $\Omega$
27 (FL+) - 28 (FL-)	3.5 to 4.3 $\Omega$
12 (RR+) - 11 (RR-)	3.5 to 4.3 $\Omega$
10 (RL+) - 9 (RL-)	3.5 to 4.3 $\Omega$

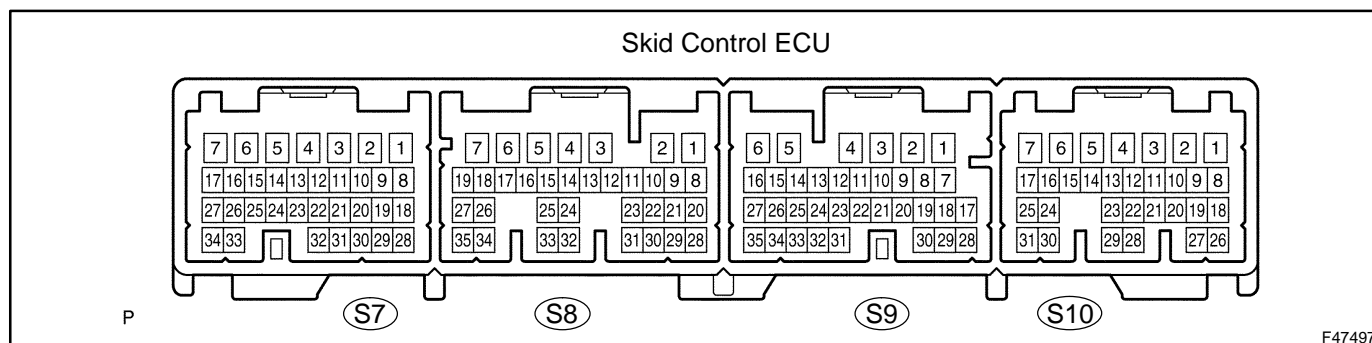
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REPLACE BRAKE ACTUATOR ASSY

OK

## 2 INSPECT SKID CONTROL ECU TERMINAL VOLTAGE

Skid Control ECU



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

## Standard:

Tester Connection	Condition	Specified Condition
S7-4 (SMC1) - Body ground	Power switch ON (READY) Brake pedal release	Below 10 to 14 V
S10-3 (SMC2) - Body ground	Power switch ON (READY) Brake pedal release	Below 10 to 14 V
S7-7 (SLAFR+) - Body ground	Power switch ON (READY) Brake pedal release	Pulse generation (see waveform 5) (see page 05-966)
S7-6 (SLAFR-) - Body ground	Power switch ON (READY) Brake pedal release	Pulse generation (see waveform 5) (see page 05-966)
S10-1 (SLAFL+) - Body ground	Power switch ON (READY) Brake pedal release	Pulse generation (see waveform 5) (see page 05-966)
S10-2 (SLAFL-) - Body ground	Power switch ON (READY) Brake pedal release	Pulse generation (see waveform 5) (see page 05-966)
S10-19 (SLARR+) - Body ground	Power switch ON (READY) Brake pedal release	Pulse generation (see waveform 5) (see page 05-966)

Tester Connection	Condition	Specified Condition
S10-9 (SLARR-) - Body ground	Power switch ON (READY) Brake pedal release	Pulse generation (see waveform 5) (see page 05-966)
S7-15 (SLARL+) - Body ground	Power switch ON (READY) Brake pedal release	Pulse generation (see waveform 5) (see page 05-966)
S7-27 (SLARL-) - Body ground	Power switch ON (READY) Brake pedal release	Pulse generation (see waveform 5) (see page 05-966)
S7-17 (SLRFR+) - Body ground	Power switch ON (READY) Brake pedal release	Below 1.5 V
S10-8 (SLRFL+) - Body ground	Power switch ON (READY) Brake pedal release	Below 1.5 V
S10-20 (SLRRR+) - Body ground	Power switch ON (READY) Brake pedal release	Below 1.5 V
S7-16 (SLRRL+) - Body ground	Power switch ON (READY) Brake pedal release	Below 1.5 V
S7-34 (SLRFR-) - Body ground	Power switch ON (READY)	Below 1.5 V
S10-26 (SLRFL-) - Body ground	Power switch ON (READY) Brake pedal release	Below 1.5 V
S10-18 (SLRRR-) - Body ground	Power switch ON (READY) Brake pedal release	Below 1.5 V
S7-26 (SLRRL-) - Body ground	Power switch ON (READY) Brake pedal release	Below 1.5 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 ).