DTC	C0273/13	OPEN CIRCUIT IN ABS MOTOR RELAY CIRCUIT

DTC	C0274/14	B+ SHORT CIRCUIT IN ABS MOTOR RELAY CIRCUIT

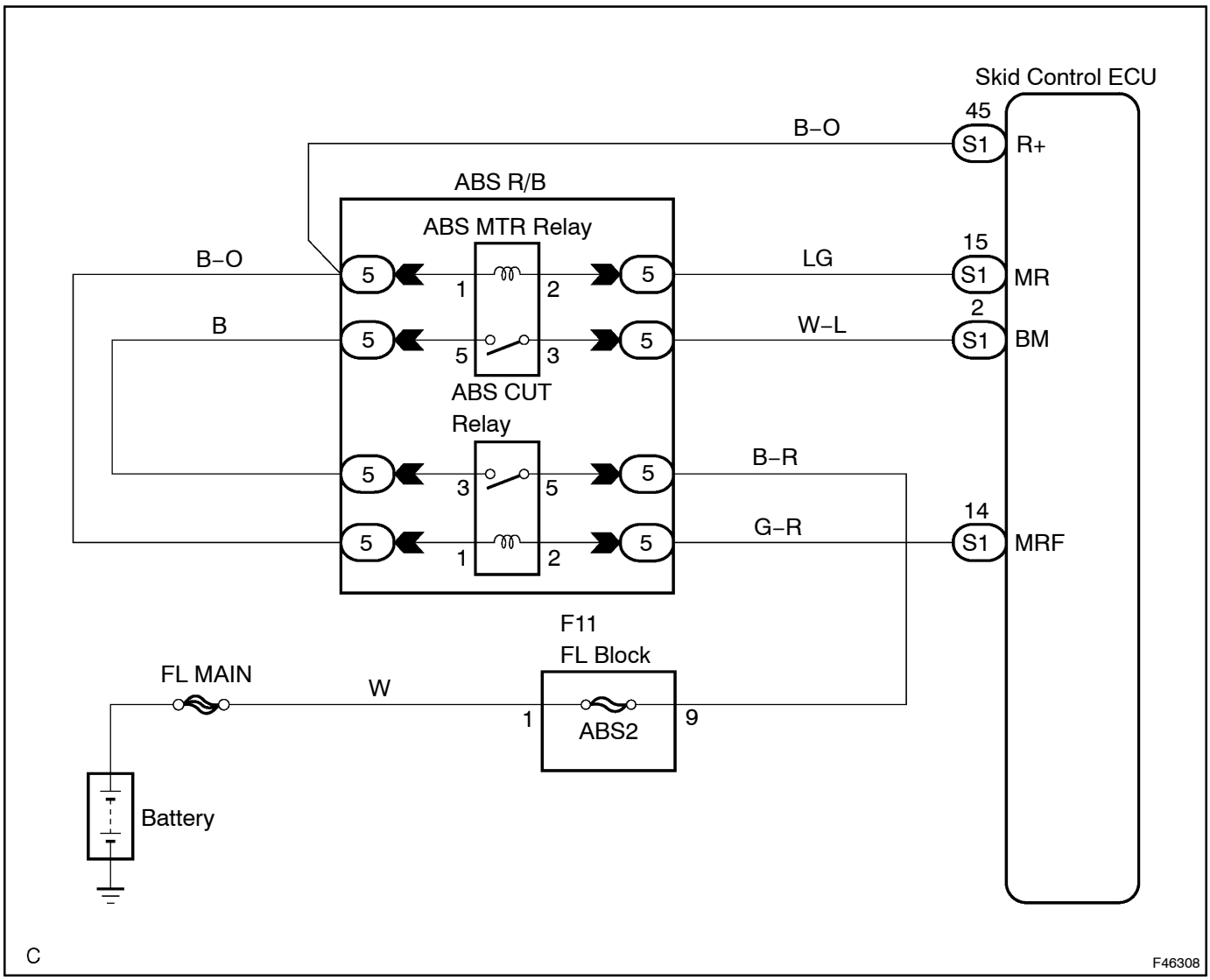
DTC	C1361/91	SHORT CIRCUIT IN ABS MOTOR FAIL SAFE RELAY CIRCUIT

CIRCUIT DESCRIPTION

- The VSC motor relays consist of 2 relays are included in the ABS R/B.
- The VSC cut relay is turned on after turning the ignition switch to the ON position. If the DTCs in the ABS pump motor circuit are memorized, the VSC cut relay cuts off the power supply to the VSC motor relay and performs the fail safe.
- While any of the ABS, BA, TRAC and VSC is operating, the skid control ECU (included in the actuator) turns the VSC motor relay on to operate the actuator pump motor.
- If the voltage applied to the VSC motor relays (+BM) drops below the condition that detects the DTCs due to the shortage of the battery or alternator output, the DTCs may be memorized.

DTC No.	DTC Detecting Condition	Trouble Area
C0273/13	When any of the following (1 to 2) is detected: (1) All the following conditions continues for at least 0.2 seconds. • IG1 voltage is between 9.5 and 17.2 V. • During initial check. • ABS, BA, TRAC, and VSC are in operation. • Relay contact is open when the relay is ON. (2) All the following conditions continues for at least 0.2 seconds. • IG1 voltage is less than 9.5 V. • Relay contact remains open when the relay is ON.	• ABS No.2 fuse • ABS MTR relay • ABS MTR relay circuit • ABS R/B • ABS cut relay • ABS cut relay circuit
C0274/14	The following condition continue for at least 4 seconds. • Relay contact is closed when the relay is OFF.	• ABS No.2 fuse • ABS MTR relay • ABS MTR relay circuit • ABS R/B • ABS cut relay • ABS cut relay circuit
C1361/91	All the following conditions continues for at least 4 seconds. • Immediately after turning IG switch to the ON position. • Relay contact is closed when fail–safe relay is OFF.	• ABS No.2 fuse • ABS MTR relay • ABS MTR relay circuit • ABS R/B • ABS cut relay • ABS cut relay circuit

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:
Start the inspection from step 1 in case of using the hand–held tester and start from step 2 in case of not using the hand–held tester.

1	PERFORM ACTIVE TEST BY HAND–HELD TESTER(ABS MOTOR RELAY OPERATION)

(a) Connect the hand–held tester to the DLC3.
(b) Start the engine.
(c) Select the ACTIVE TEST mode on the hand–held tester.
(d) Check the operation sound of the ABS motor individually when operating it with the hand–held tester.

Item	Vehicle Condition / Test Details	Vehicle Condition / Test Details
ABS MOT RELAY	ABS motor relay / ON or OFF	ON : Motor relay ON

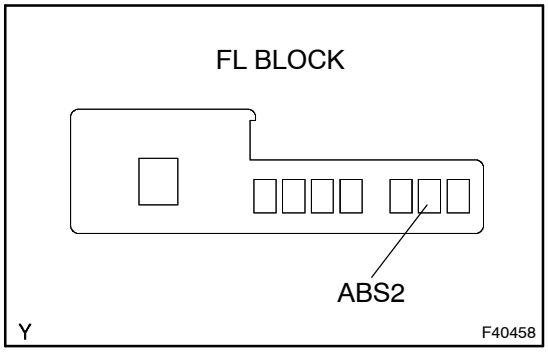
OK:
The operation sound of the ABS motor should be heard.

NG → **Go to step 2**

OK

REPLACE ABS & TRACTION ACTUATOR ASSY

2	INSPECT FUSE(ABS2 FUSE)



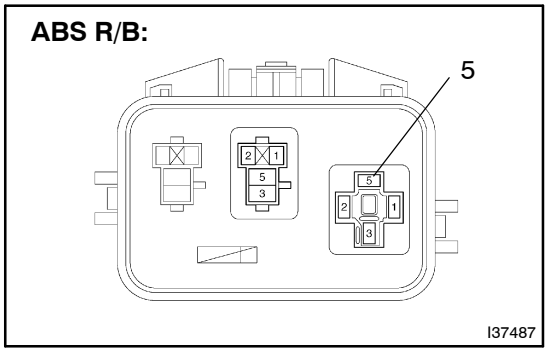
(a) Remove ABS2 fuse from the FL BLOCK.
(b) Check continuity of ABS2 fuse.
Standard:

ABS No.1 fuse	Below 1Ω (Continuity)

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

OK

3 CHECK TERMINAL VOLTAGE(VSC MOTOR RELAY 5 TERMINAL OF ABS R/B)



(a) Remove the VSC MTR relay from the ABS R/B.
(b) Turn the ignition switch to the ON position.
(c) Measure the voltage according to the value(s) in the table below.

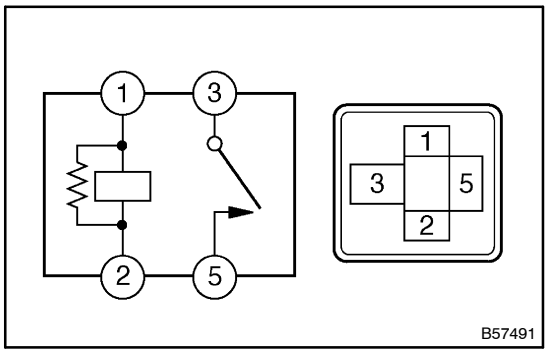
Standard:

Tester Connection	Specified Condition
Terminals 5 – Body ground	10 to 14 V

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

OK

4 INSPECT VSC MOTOR RELAY



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

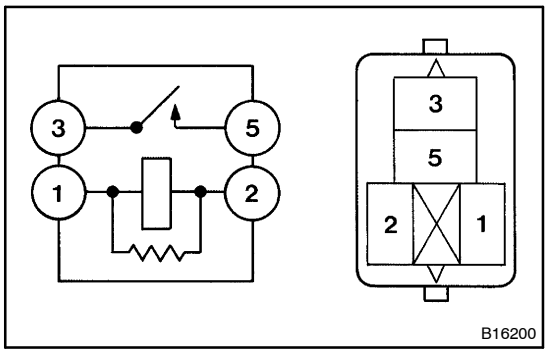
Standard:

Tester Connection	Connection	Specified resistance
3 – 5	Always	10 kΩ or higher (No continuity)
3 – 5	Apply B+ between terminal 1 and 2	Below 1 Ω

NG → **REPLACE VSC MOTOR RELAY**

OK

5 INSPECT VSC CUT RELAY



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

Standard:

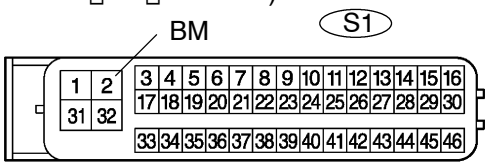
Tester Connection	Connection	Specified resistance
3 – 5	Always	10 kΩ or higher (No continuity)
3 – 5	Apply B+ between terminal 1 and 2	Below 1 Ω

NO → **REPLACE VSC CUT RELAY**

OK

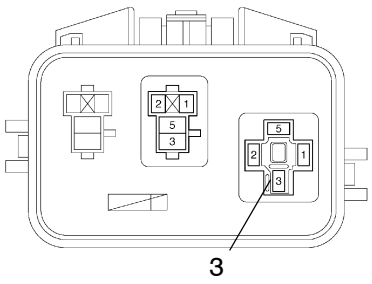
6 CHECK HARNESS AND CONNECTOR(VSC MOTOR RELAY – SKID CONTROL ECU)

Skid Control ECU
(harness side connector)



T

ABS R/B:



I37488

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

Standard:

Tester Connection	Specified Condition
S1–2 (BM) – 3 (ABS R/B)	Below 1 Ω

(c) Measure the resistance according to the value(s) in the table below.

Standard:

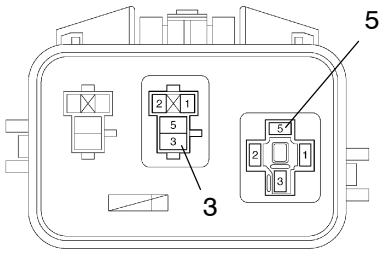
Tester Connection	Specified Condition
S1–2 BM – Body ground	10 kΩ or higher

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

OK

7 CHECK HARNESS AND CONNECTOR(VSC MOTOR RELAY – SKID CONTROL RELAY)

ABS R/B:



I37487

(a) Remove the ABS motor relay and skid control relay from ABS R/B.
(b) Measure the resistance according to the value(s) in the table below.

Standard:

Tester Connection	Specified Condition
5 (ABS MOTOR Relay) – 3 (Skid Control Relay)	Below 1 Ω

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

OK

REPLACE ABS & TRACTION ACTUATOR ASSY (SEE PAGE 32–43)