ABS WITH EBD SYSTEM (April, 2003)

HOW TO PROCEED WITH TROUBLESHOOTING

057U7–04

1	Vehicle Brought to Workshop

2	Customer Problem Analysis (See page 05–296)

3	Check and Clear DTCs and Freeze Frame Data (See page 05–297)

4	Problem Symptom Confirmation

- Symptom does not occur: Go to step 5
- Symptom occurs: Go to step 6

5	Symptom Simulation (See page 01–30)

6	DTC Check (See page 05–297)

- There is no output: Go to step 7
- There is output: Go to step 8

7	Problem Symptoms Table (See page 05–307)

- Check for fluid leakage and Go to step 10

8	DTC Chart (See page 05–303)

9	Circuit Inspection (See page 05–308 – 05–343)

HINT:
When 2 or more DTC's are recorded, and the problem is not identified, perform circuit inspection of the other DTC's.

10	Identification of Problem

11	Repair

12	Comfirmation Test

End

HINT:
Step 3, 6, 9, 12:
Diagnostic steps permitting the use of the hand–held tester.
Fail safe function:
When a failure occurs in the ABS system, the ABS warning light is lit and the ABS operation is prohibited. In addition to this, when the failure which disables the EBD operation occurs, the brake warning light is lit as well and the EBD operation is prohibited.

057U8–04

CUSTOMER PROBLEM ANALYSIS CHECK

ABS Check Sheet

Inspector's Name :

Customer's Name		**Registration No.**	
		Registration Date	/ /
		Frame No.	
Date Vehicle Brought In	/ /	**Odometer Reading**	km miles

Date Problem First Occurred	/ /
Frequency the Problem Occurs	☐ Continuously ☐ Intermittently (times a day)

Symptoms	☐ ABS does not operate.	
	☐ ABS does not operate efficiently.	
	ABS Warning Light Abnormal	☐ Remains ON ☐ Does not Light Up
	Brake Warning Light Abnormal	☐ Remains ON ☐ Does not Light Up

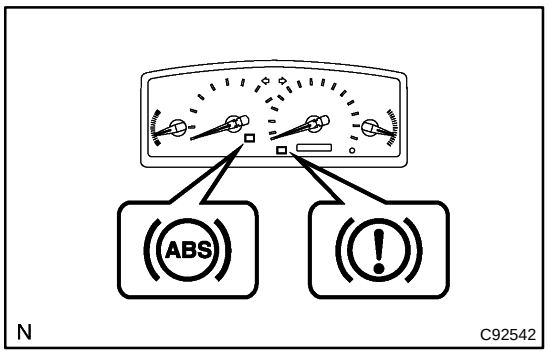
DTC Check	**1st Time**	☐ Normal Code ☐ Malfunction Code (Code)
	2nd Time	☐ Normal Code ☐ Malfunction Code (Code)

Freeze Frame Data	STOP LIGHT SW	☐ ON ☐ OFF
	SYSTEM	☐ NO SYS ☐ ABS ☐ FAIL SF
	#IG ON	
	VEHICLE SPD	MPH km/h

057U9–04

PRE–CHECK

1. DIAGNOSIS SYSTEM



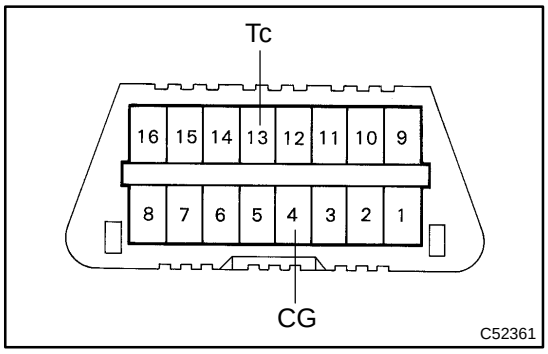
(a) Release the parking brake lever.

(b) Check the warning lights.

When the ignition switch is turned ON, check that the ABS warning light and brake warning light goes on for 3 sec.

HINT:

- When the parking brake is applied or the level of the brake fluid is low, the brake warning light is lit.
- If the indicator check result is not normal, proceed to troubleshooting for the ABS warning light circuit (See page 05–332 or 05–335) or brake warning light circuit (See page 05–338).



(c) In case of not using hand–held tester:

Check the DTC.

(1) Using SST, it connects terminal Tc and CG of DLC3.

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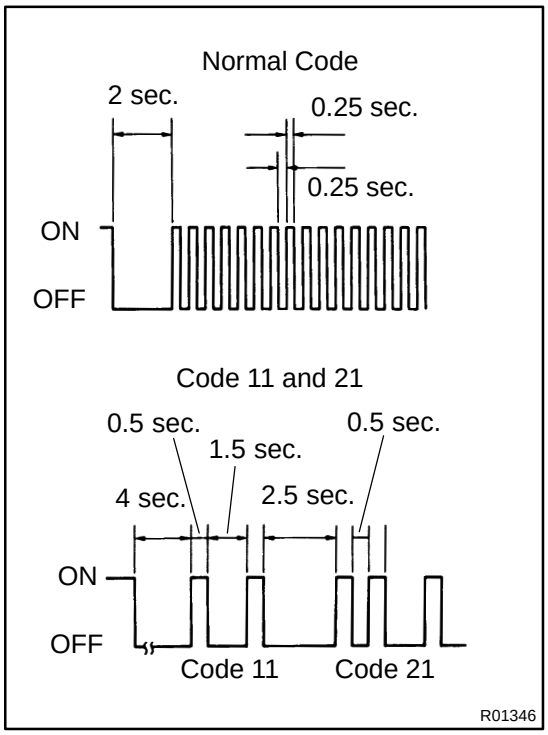
(2) Turn the ignition switch to ON.

(3) Read the DTC from the ABS warning light on the combination meter.

HINT:

- If not code appears, inspect the diagnostic circuit or ABS warning light circuit (See page 05–332 or 05–335).
- As an example, the blinking patterns for normal code and codes 11 and 21 are shown on the left.



(4) Codes are explained in the code table on page 05–303.

If 2 or more malfunctions are indicated at the same time, the lowest numbered DTC will be displayed 1st.

(5) After completing the check, remove the SST from the DLC3.

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(d) In case of using hand–held tester:

Check the DTC.

(1) Read the DTC by following the prompts on the tester screen.

HINT:

Please refer to the hand–held tester operator's manual for further details.

(e) In case of not using hand–held tester:

Clear DTC.

(1) Using SST, it connects the terminal Tc and CG of the DLC3.

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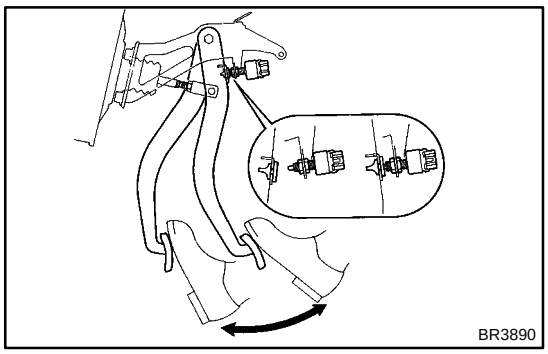
(2) Turn the ignition switch to ON.



(3) Clear DTC stored in ECU by depressing the brake pedal 8 or more times whitin 5 sec.
(4) Check that the ABS warning light shows the normal code.
(5) Remove the SST from the DLC3.
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HINT:
Disconnect the battey cable during repairs will not erase the DTC in the ECU.

(f) In case of using hand–held tester:
Clear the DTC.
(1) Turn the ignition switch to ON.
(2) Operate the hand–held tester to erase the codes.

HINT:
Please refer to the hand–held tester operator's manual for further details.

2. DATA LIST

HINT:
According to the DATA LIST displayed by the Hand–held tester, you can read the value of the switch, sensor, actuator and so on without parts removal. Reading the DATA LIST as a first step of troubleshooting is one of the method to shorten the labor time.

(a) Connect the Hand–held tester to the DLC3.
(b) Turn the ignition switch to ON.
(c) According to the display on tester, read the "DATA LIST".

Item	Measurement Item / Range (Display)	Normal Condition	Diagnostic Note
ABS MOT RELAY	ABS motor relay / ON or OFF		
SOL RELAY	Solenoid relay / ON or OFF		
STOP LIGHT SW	Stop light switch / ON or OFF	ON : Brake pedal depressed OFF : Brake pedal released	
PKB SW	Parking brake switch / ON or OFF	ON : Parking brake applied OFF : Parking brake released	
ABS OPERT FR	ABS operation (FR) / BEFORE or OPERATE	BEFORE : No ABS operation (FR) OPERATE : During ABS operation (FR)	
ABS OPERT FL	ABS operation (FL) / BEFORE or OPERATE	BEFORE : No ABS operation (FL) OPERATE : During ABS operation (FL)	
ABS OPERT RR	ABS operation (RR) / BEFORE or OPERATE	BEFORE : No ABS operation (RR) OPERATE : During ABS operation (RR)	
ABS OPERT RL	ABS operation (RL) / BEFORE or OPERATE	BEFORE : No ABS operation (RL) OPERATE : During ABS operation (RL)	

Item	Measurement Item / Range (Display)	Normal Condition	Diagnostic Note
WHEEL SPD FR	Wheel speed sensor (FR) reading / min.: 0 km/h (0 MPH, max.: 326 km/h (202 MPH)	Actual wheel speed	Speed indicated on speedometer
WHEEL SPD FL	Wheel speed sensor (FL) reading / min.: 0 km/h (0 MPH, max.: 326 km/h (202 MPH)	Actual wheel speed	Speed indicated on speedometer
WHEEL SPD RR	Wheel speed sensor (RR) reading / min.: 0 km/h (0 MPH, max.: 326 km/h (202 MPH)	Actual wheel speed	Speed indicated on speedometer
WHEEL SPD RL	Wheel speed sensor (RL) reading / min.: 0 km/h (0 MPH, max.: 326 km/h (202 MPH)	Actual wheel speed	Speed indicated on speedometer
IG VOLTAGE	ECU power supply voltage / NORMAL or TOO LOW	NORMAL : 9.5 V or over TOO LOW : Below 9.5 V	
SFRR	ABS solenoid (SFRR) ON / OFF		
SFRH	ABS solenoid (SFRH) ON / OFF		
SFLR	ABS solenoid (SFLR) ON / OFF		
SFLH	ABS solenoid (SFLH) ON / OFF		
SRRR	ABS solenoid (SRRR) ON / OFF		
SRRH	ABS solenoid (SRRH) ON / OFF		
SRLR	ABS solenoid (SRLR) ON / OFF		
SRLH	ABS solenoid (SRLH) ON / OFF		
AIR BLD SUPPORT	Air bleed support / SUPPORT or NOT SUP	Supported	
TEST MODE	Test mode / NORMAL or TEST	NORMAL : Normal mode TEST : During test mode	
#CODES	Number of DTC recorded / min.: 0, max.: 255	Min.: 0, max.: 19	

3. ACTIVE TEST

HINT:

Performing the ACTIVE TEST using the Hand–held tester allows the relay, actuator and so on to operate without parts removal. Performing the ACTIVE TEST as a first step of troubleshooting is one of the methods to shorten the labor time.

It is possible to display the DATA LIST during the ACTIVE TEST.

(a) Connect the Hand–held tester to the DLC3.

(b) Turn the ignition switch to ON.

(c) According to the display on tester, perform the ”ACTIVE TEST”.

Item	Vehicle Condition / Test Details	Diagnostic Note
SFRR	Turns ABS solenoid (SFRR) ON / OFF	Operation of solenoid (clicking sound) can be heard
SFRH	Turns ABS solenoid (SFRH) ON / OFF	Operation of solenoid (clicking sound) can be heard
SFLR	Turns ABS solenoid (SFLR) ON / OFF	Operation of solenoid (clicking sound) can be heard
SFLH	Turns ABS solenoid (SFLH) ON / OFF	Operation of solenoid (clicking sound) can be heard
SRRR	Turns ABS solenoid (SRRR) ON / OFF	Operation of solenoid (clicking sound) can be heard
SRRH	Turns ABS solenoid (SRRH) ON / OFF	Operation of solenoid (clicking sound) can be heard
SRLR	Turns ABS solenoid (SRLR) ON / OFF	Operation of solenoid (clicking sound) can be heard
SRLH	Turns ABS solenoid (SRLH) ON / OFF	Operation of solenoid (clicking sound) can be heard
SFRR & SFRH	Turns ABS solenoid SFRR & SFRH ON / OFF	Operation of solenoid (clicking sound) can be heard
SFLR & SFLH	Turns ABS solenoid SFLR & SFLH ON / OFF	Operation of solenoid (clicking sound) can be heard
SRRH & SRRR	Turns ABS solenoid SRH & SRR ON / OFF	Operation of solenoid (clicking sound) can be heard
SRLR & SRLH	Turns ABS solenoid SRLR & SRLH ON / OFF	Operation of solenoid (clicking sound) can be heard
SFRH & SFLH	Turns ABS solenoid SFRH & SFLH ON / OFF	Operation of solenoid (clicking sound) can be heard
SOL RELAY	Turns ABS solenoid relay ON / OFF	Operation of solenoid (clicking sound) can be heard
ABS MOT RELAY	Turns ABS motor relay ON / OFF	Operation of motor can be heard
ABS WARN LIGHT	Turns ABS warning light ON / OFF	Observe combination meter
BRAKE WRN LIGHT	Turns BRAKE warning light ON / OFF	Observe combination meter

4. FREEZE FRAME DATA

(a) The vehicle (sensor) status memorized during ABS operation or at the time of error code detection can be displayed using the hand–held tester.

(b) Only one record of freeze frame data is stored and the freeze frame data generated during ABS operation are constantly updated. Also, the number of the ignition switch's "ON" after the freeze frame data is stored can be memorized up to 31 and it can be displayed.

HINT:

If the ignition switch "ON" operation exceeds 31 times, "31" appears on the display.

(c) If the diagnosis code abnormality occurs, the freeze frame data at the occurrence of the abnormality is stored but the ABS actuation data is deleted.

Hand–held tester display	Measurement Item	Reference Value*
VEHICLE SPD	Vehicle speed	Speed indication of a meter
STOP LIGHT SW	Stop light switch signal	Stop light switch ON: ON, OFF: OFF
# IG ON	Numbers of operations of ignition switch ON after memorizing freeze frame data	0 – 31
SYSTEM	Operate system	ABS operate: ABS

*: If no conditions are specifically stated for "Idling", it means the shift lever is at N or P position, the A/C switch is OFF and all accessory switches are OFF.

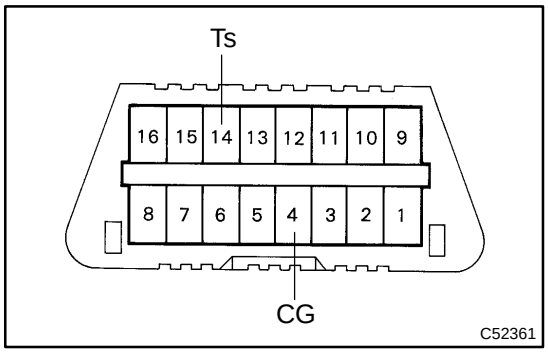
5. SPEED SENSOR SIGNAL CHECK

HINT:

If the ignition switch is turned from ON to ACC or LOCK during test mode, DTC will be erased.

(a) In case of not using hand–held tester:
Check the speed sensor signal.

(1) Turn the ignition switch to ON.



(2) Using SST, it connects the terminal Ts and CG of DLC3.

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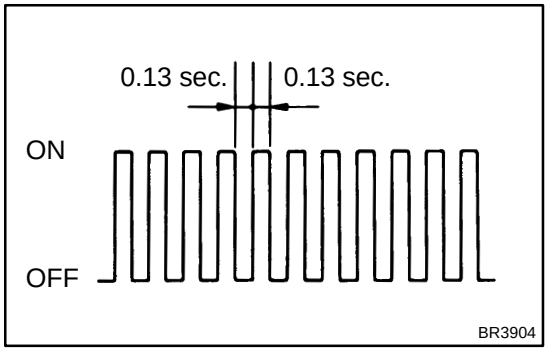
(3) Start the engine.



(4) Check that the ABS warning light blinks.

HINT:

If the ABS warning light does not blink, inspect the ABS warning light circuit and Ts circuit (See page 05–332 or 05–335).

(5) Drive the vehicle straight forward at the speed of 45 km/h (28 mph) or over for several seconds and check that the ABS warning light comes off.

HINT:

The sensor check may not be completed if the wheels spin or the steering wheels steered during check.

(6) Stop the vehicle.

(7) Using SST, it connects the terminal Tc and CG of the DLC3.

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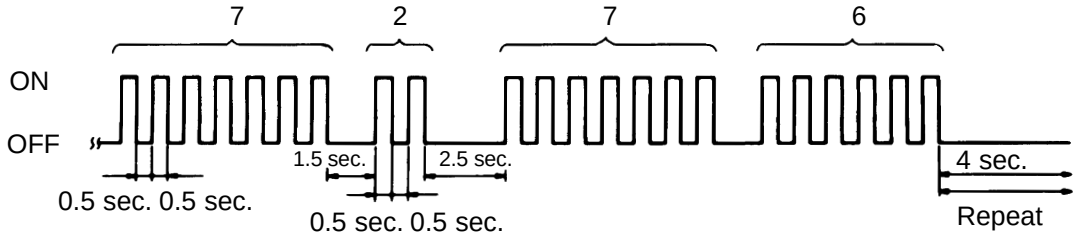
(8) Read the number of blinks of the ABS warning light.

HINT:

- See the list of DTC shown on the 05–303.
- If every sensor is normal, a normal code is output (A cycle of 0.25 sec. ON and 0.25 sec. OFF is repeated).
- If 2 or more malfunctions are indicated at the same time, the lowest numbered code will be displayed.

Malfunction Code (Example Code 72, 76)



(9) After performing the check, turn the ignition switch to OFF, and remove the SST from the DLC3.

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(b) In case of using hand–held tester:

Check the speed sensor signal.

(1) Do step (3) to (6) on the previous page.

(2) Read the DTC by following the prompts on the tester screen.

HINT:

Please refer to the hand–held tester operator's manual for further details.

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DIAGNOSTIC TROUBLE CODE CHART

NOTICE:

When removing the part, turn the ignition switch to OFF.

HINT:

- Using SST 09843–18040, it connect the terminal Tc and CG of DLC3.
- If any abnormality is not found when inspecting parts, inspect the ECU and ground points for poor contact.
- If a malfunction code is displayed during the DTC check, check the circuit listed that code. For details of each code, turn to the page referred to under the ”See page” for respective ”DTC No.” in the DTC chart.
- When 2 or more DTC’s are recorded, and the problem is not identified, perform circuit inspection of the other DTC’s.

DTC No. (See Page)	Detection Item	Trouble Area
C0200/31 (05–308)	Right front wheel speed sensor signal malfunction	• Right front speed sensor • Right front speed sensor circuit • Right front speed sensor rotor
C0205/32 (05–308)	Left front wheel speed sensor signal malfunction	• Left front speed sensor • Left front speed sensor circuit • Left front speed sensor rotor
C0210/33 (05–312)	Right rear wheel speed sensor signal malfunction	• Right rear speed sensor • Right rear speed sensor circuit • Right rear speed sensor rotor
C0215/34 (05–312)	Left rear wheel speed sensor signal malfunction	• Left rear speed sensor • Left rear speed sensor circuit • Left rear speed sensor rotor
C0226/21 (05–316)	Open or short circuit in ABS actuator solenoid (SFR) circuit	• Brake actuator • SFRR or SFRH circuit
C0236/22 (05–316)	Open or short circuit in ABS actuator solenoid (SFL) circuit	• Brake actuator • SFLR or SFLH circuit
C0246/23 (05–316)	Open or short circuit in ABS actuator solenoid (SRR) circuit	• Brake actuator • SRRR or SRRH circuit
C0256/24 (05–316)	Open or short circuit in ABS actuator solenoid (SRL) circuit	• Brake actuator • SRLR or SRLH circuit
C0273/13 (05–318)	Open circuit in ABS motor relay circuit	• ABS motor relay • ABS motor relay circuit
C0274/14 (05–318)	Short circuit in ABS motor relay circuit	
C0278/11 (05–321)	Open circuit in ABS solenoid relay circuit	• ABS solenoid relay • ABS solenoid relay circuit
C0279/12 (05–321)	Short circuit in ABS solenoid relay circuit	
C1235/35 (05–308)	Foreign matter is attached on the tip of right front sensor	• Right front speed sensor • Right front speed sensor rotor
C1236/36 (05–308)	Foreign matter is attached on the tip of left front sensor	• Left front speed sensor • Left front speed sensor rotor
C1238/38 (05–312)	Foreign matter is attached on the tip of right rear sensor	• Right rear speed sensor • Right rear speed sensor rotor
C1239/39 (05–312)	Foreign matter is attached on the tip of left rear sensor	• Left rear speed sensor • Left rear speed sensor rotor
C1241/41 (05–324)	Low battery voltage or abnormally high battery voltage	• Battery • Charging system • Power source circuit
C1249/49 (05–327)	Open circuit in stop light switch circuit	• Stop light switch • Stop light switch circuit

C1251/51 (05–330)	Pump motor is locked Open circuit in pump motor circuit	• ABS pump motor
Always ON (05–332)	Malfunction in skid control ECU	• Battery • Charging system • Power source circuit • Skid control ECU

DTC of speed sensor check function:

Code No.	Diagnosis	Trouble Area
C1271/71	Low output voltage of right front speed sensor	• Right front speed sensor • Sensor installation • Sensor rotor
C1272/72	Low output voltage of left front speed sensor	• Left front speed sensor • Sensor installation • Sensor rotor
C1273/73	Low output voltage of right rear speed sensor	• Right rear speed sensor • Sensor installation • Sensor rotor
C1274/74	Low output voltage of left rear speed sensor	• Left rear speed sensor • Sensor installation • Sensor rotor
C1275/75	Abnormal change in output voltage of right front speed sensor	Right front speed sensor rotor
C1276/76	Abnormal change in output voltage of left front speed sensor	Left front speed sensor rotor
C1277/77	Abnormal change in output voltage of right rear speed sensor	Right rear speed sensor rotor
C1278/78	Abnormal change in output voltage of left rear speed sensor	Left rear speed sensor rotor

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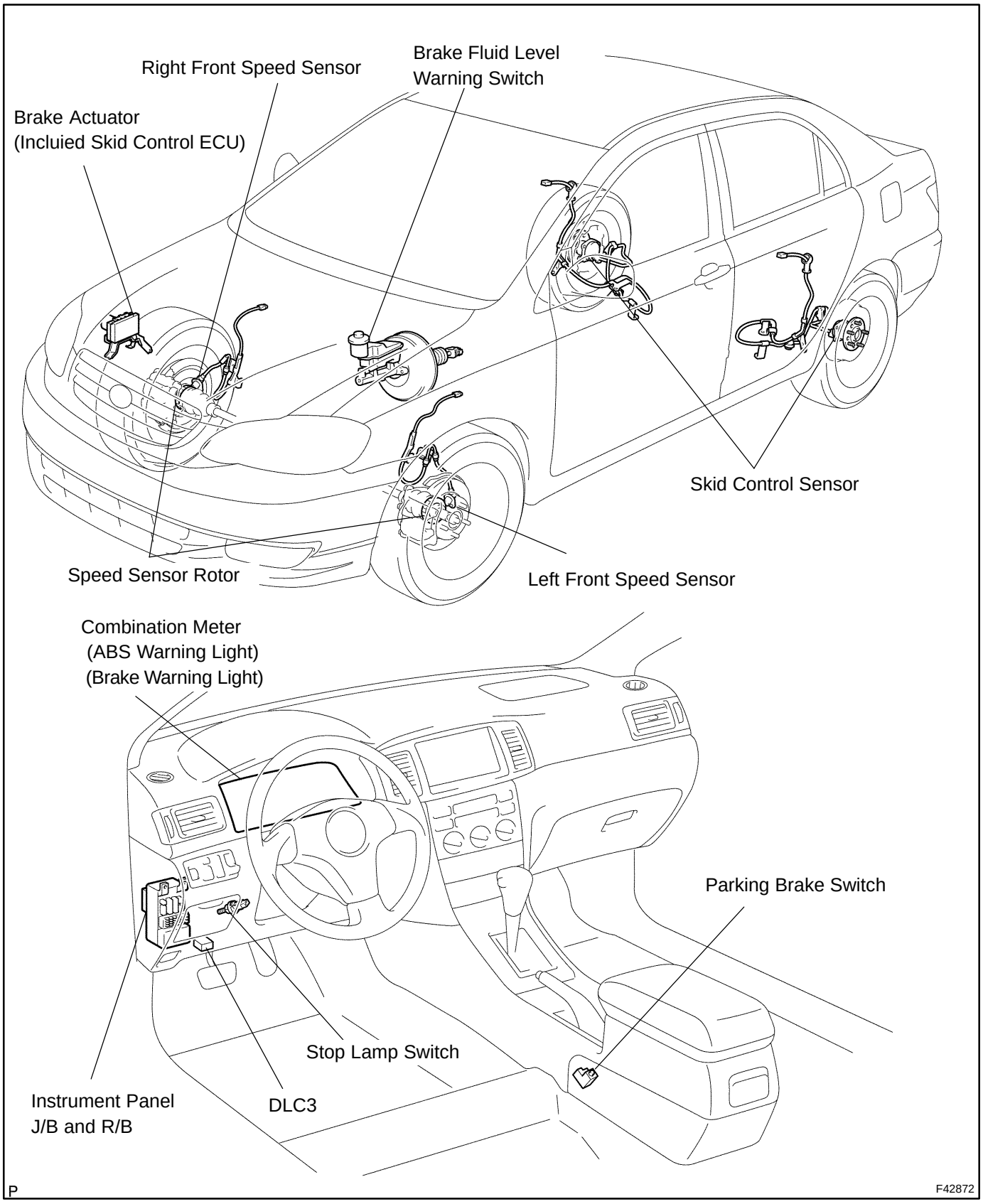
LOCATION



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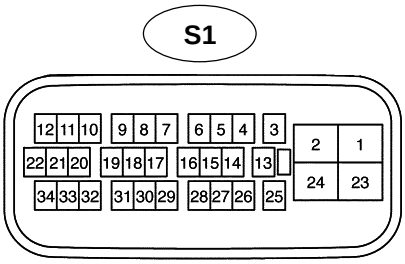
TERMINALS OF ECU



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Symbols (Terminal No.)	Wiring Color	Condition	STD Voltage (V)
+BS (2) – GND (1, 23)	R ⇔ W–B	Always	10 – 14
FL+ (13) – FL– (26)	R ⇔ G	IG switch ON, slowly turn left front wheel	AC generation
RL+ (7) – RL– (6)	B ⇔ Y	IG switch ON, slowly turn left rear wheel	AC generation
BRL (19) – GND (1, 23)	R ⇔ W–B	IG switch ON, brake warning light ON	8 – 14
D/G (11) – GND (1, 23)	L–R ⇔ W–B	IG switch ON	10 – 14
Ts (10) – GND (1,23)	GR ⇔ W–B	IG switch ON	10 – 14
Tc (8) – GND (1, 23)	P–B ⇔ W–B	IG switch ON	10 – 14
STP (16) – GND (1, 23)	G–W ⇔ W–B	Stop light switch ON	8 – 14
+BM (24) – GND (1, 23)	L ⇔ W–B	Always	10 – 14
IG1 (3) – GND (1, 23)	B–W ⇔ W–B	IG switch ON	10 – 14
WA (30) – GND (1, 23)	W–R ⇔ W–B	IG switch ON, ABS warning light ON	8 – 14
FR+ (27) – FR– (28)	B ⇔ W	IG switch ON, slowly turn right front wheel	AC generation
RR+ (5) – RR– (4)	R ⇔ W	IG switch ON, slowly turn right rear wheel	AC generation
SP1 (17) – GND (1, 23)	W–G ↔ W–B	Vehicle driving at about 20 km/h (12 mph)	AC generation
PKB (12) – GND (1, 23)	R–W ↔ W–B	IG switch ON, parking brake switch ON	Below 1.5
		IG switch ON, parking brake switch OFF	10 – 14

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PROBLEM SYMPTOMS TABLE

If a normal code is displayed during the DTC check but the problem still occurs, check the circuits for each problem symptom in the order given in the table below and proceed to the relevant troubleshooting page.

NOTICE:

When replacing Skid Control ECU, sensor or etc., turn the ignition switch to OFF.

Symptom	Suspect Area	See page
ABS does not operate	When the followings 1. to 4. are all normal and the problem is still occurring, replace the skid control ECU. 1. Check the DTC reconfirming that the normal code is output. 2. IG power source circuit 3. Speed sensor circuit 4. Check the brake actuator with a hand–held tester. If abnormal, check the hydraulic circuit for leakage.	 05–297 05–324 05–308 05–312 32–40
ABS does not operate efficiently	When the following 1. to 4. are all normal and the problem is still occurring, replace the skid control ECU. 1. Check the DTC reconfirming that the normal code is output. 2. Speed sensor circuit 3. Stop light switch circuit 4. Check the brake actuator with a hand–held tester. If abnormal, check the hydraulic circuit for leakage.	 05–297 05–308 05–312 05–327 32–40
ABS warning light abnormality	1. ABS warning light circuit 2. Skid control ECU	05–332 05–335 –
DTC check cannot be done	When the following 1. and 2. are all normal and the problem is still occurring, replace the skid control ECU. 1. ABS warning light circuit 2. Tc terminal circuit	 05–332 05–335 05–341
Speed sensor signal check cannot be done	1. Ts terminal circuit 2. Skid control ECU	05–343 –

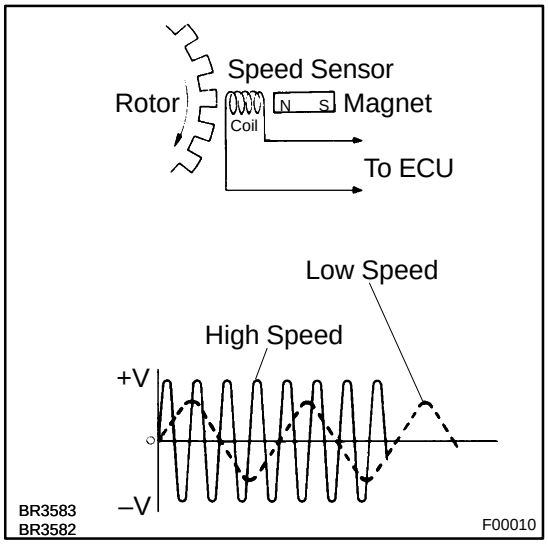
DTC	C0200/31	RIGHT FRONT SPEED SENSOR CIRCUIT

DTC	C0205/32	LEFT FRONT SPEED SENSOR CIRCUIT

DTC	C1235/35	FOREIGN MATTER IS ATTACHED ON TIP OF RIGHT FRONT SENSOR

DTC	C1236/36	FOREIGN MATTER IS ATTACHED ON TIP OF LEFT FRONT SENSOR

CIRCUIT DESCRIPTION



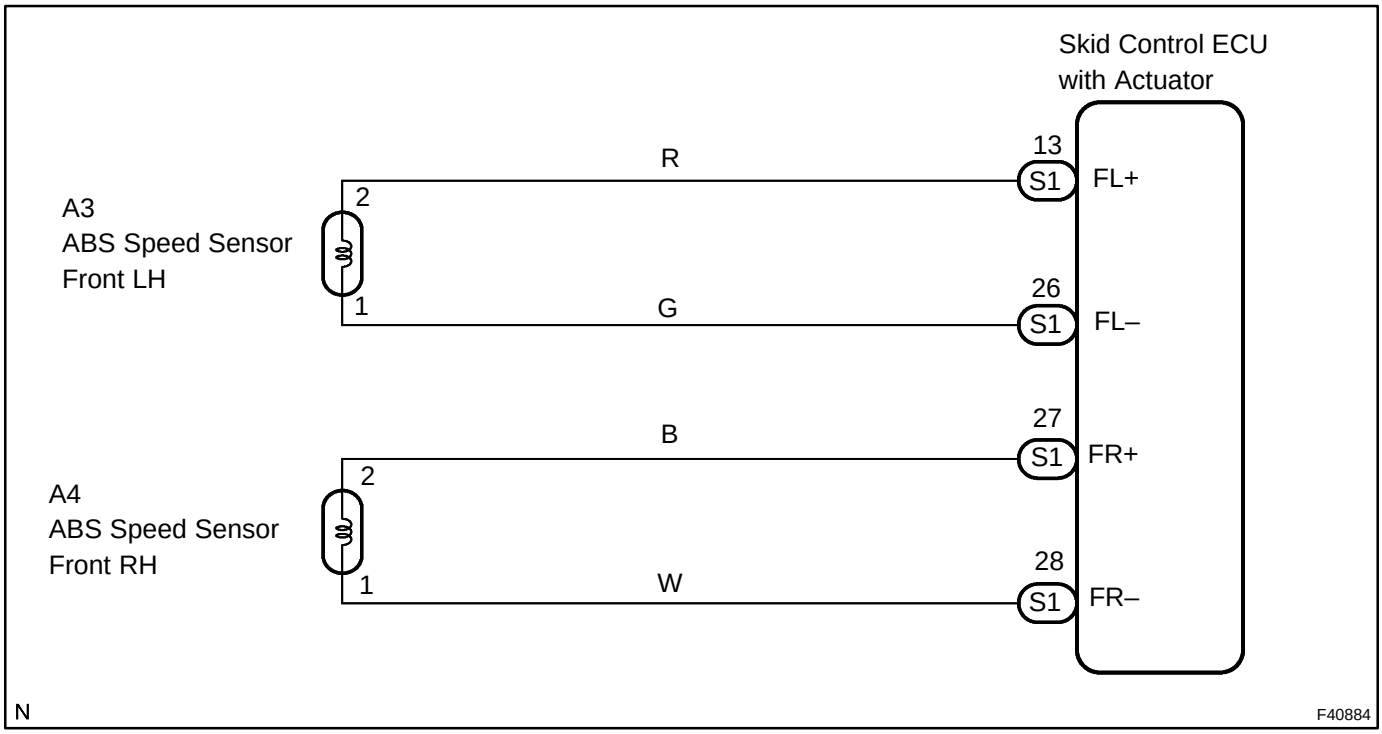
The speed sensor detects wheel speed and transmits the appropriate signals to the ECU. These signals are used for control of the ABS control system. Each of the front and rear rotors has 48 serrations.

When the rotors rotate, the magnetic field generated by the permanent magnet in the speed sensor induces an AC voltage. Since the frequency of this AC voltage changes in direct proportion to the speed of the rotor, the frequency is used by the ECU to detect the speed of each wheel.

DTC No.	DTC Detecting Condition	Trouble Area
C0200/31 C0205/32	Detection of any of conditions 1. through 3.: 1. At vehicle speed of 10 km/h (6 mph) or more, pulses are not input for 15 sec. 2. Momentary interruption of the speed sensor signal occurs at least 7 times in the time between switching the ignition switch ON and switching it OFF. 3. The condition that the speed sensor signal circuit is open continues for 0.5 sec. or more.	• Right front and left front speed sensor • Each speed sensor circuit • Speed sensor rotor
C1235/35 C1236/36	At the vehicle speed of 20 km/h (12 mph) or more, the condition that noise is included in the speed sensor signal continues for 5 sec. or more.	• Right front and left front speed sensor • Speed sensor rotor

HINT:
DTC No. C0200/31 and C1235/35 is the right front speed sensor.
DTC No. C0205/32 and C1236/36 is the left front speed sensor.

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	READ VALUE OF HAND–HELD TESTER(FRONT SPEED SENSOR)

(a) Select the DATALIST mode on the hand–held tester.

(b) Check that there is no difference between the speed value output from the speed sensor displayed by the hand–held tester and the speed value displayed by the speedometer when driving the vehicle.

OK:

There is almost no difference in the displayed speed value.

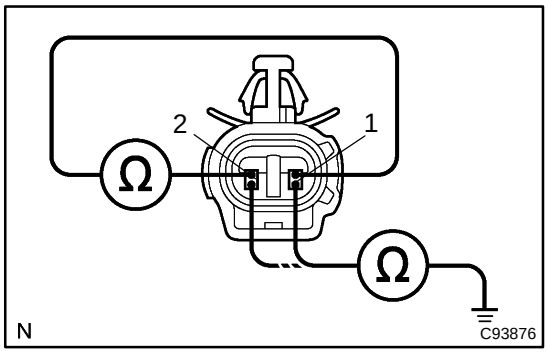
HINT:

There is tolerance of ±10 % in the speedometer indication.

OK	Go to step 5

NG

2 INSPECT FRONT SPEED SENSOR



(a) Remove the fender liner.
(b) Disconnect the speed sensor connector.
(c) Measure resistance between terminals 1 and 2 of the speed sensor connector.
OK: 0.6 – 2.5 kΩ or 0.9 – 1.8 kΩ at 20°C
(d) Measure resistance between each of terminals 1 and 2 of speed sensor connector and body ground.
OK:
Resistance: 1 MΩ or higher

NG	REPLACE SPEED SENSOR FRONT RH

NG	REPLACE SPEED SENSOR FRONT LH

NOTICE:
Check the speed sensor signal last (See page 05–297).

OK

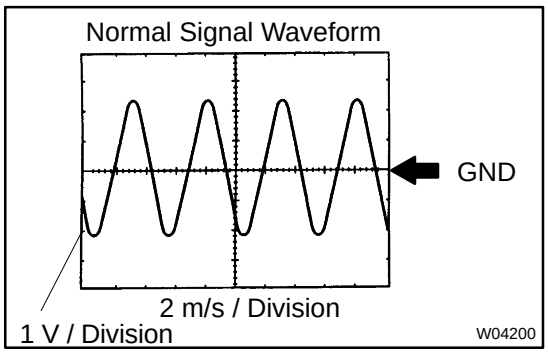
3 CHECK HARNESS AND CONNECTOR(FRONT SPEED SENSOR – SKID CONTROL ECU)

(a) Check for open and short circuit in harness and connector between each front speed sensor and skid control ECU (See page 01–30).

NG	REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

4 INSPECT SPEED SENSOR AND SENSOR ROTOR SERRATIONS



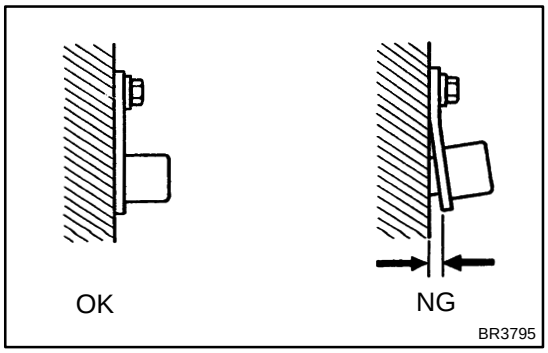
(REFERENCE) INSPECTION USING OSCILLOSCOPE
(a) Connect the oscilloscope to the terminal FR+ – FR– and FL+ – FL– of the skid control ECU.
(b) Drive the vehicle at about 30 km/h (19 mph), and check the signal waveform.

HINT:
- As the vehicle speed (wheel revolution speed) increases, a cycle of the waveform becomes shorter and the fluctuation in the output voltage becomes greater.
- When noise is identified in the waveform on the oscilloscope, error signals are generated due to the speed sensor rotor's scratches, looseness or foreign matter deposited on it.

OK	CHECK AND REPLACE BRAKE ACTUATOR ASSY

NG

5 INSPECT FRONT 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 → **REPLACE SPEED SENSOR FRONT RH**

NG → **REPLACE SPEED SENSOR FRONT LH**

NOTICE:
Check the speed sensor signal last (See page 05–297).

OK

6 INSPECT SPEED SENSOR TIP

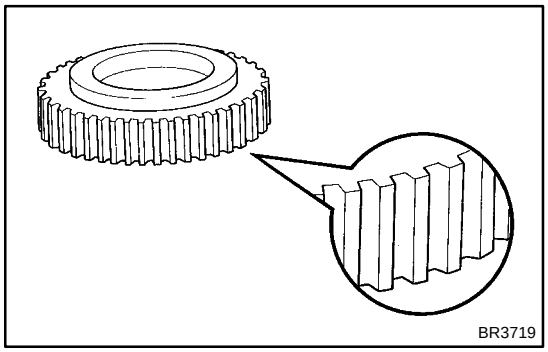
(a) Remove the front speed sensor (See page 32–44).
(b) Check the sensor tip.
OK:
No scratches or foreign objects on the sensor tip.

NG → **CLEAN OR REPAIR SPEED SENSOR**

NOTICE:
Check the speed sensor signal last (See page 05–297).

OK

7 INSPECT SPEED SENSOR ROTOR



(a) Remove the front speed sensor rotor (See page 30–6).
(b) Check the sensor rotor serrations.
OK:
No scratches, missing teeth or foreign objects.

HINT:
If foreign matter is attached, remove it and after reassembling, check the output waveform.

NG → **CLEAN OR REPAIR SPEED SENSOR ROTOR**

NOTICE:
Check the speed sensor signal last (See page 05–297).

OK

CHECK AND REPLACE BRAKE ACTUATOR ASSY (See page 05–306)

DTC	C0210/33	RIGHT REAR SPEED SENSOR CIRCUIT

DTC	C0215/34	LEFT REAR SPEED SENSOR CIRCUIT

DTC	C1238/38	FOREIGN MATTER IS ATTACHED ON TIP OF RIGHT REAR SENSOR

DTC	C1239/39	FOREIGN MATTER IS ATTACHED ON TIP OF LEFT REAR SENSOR

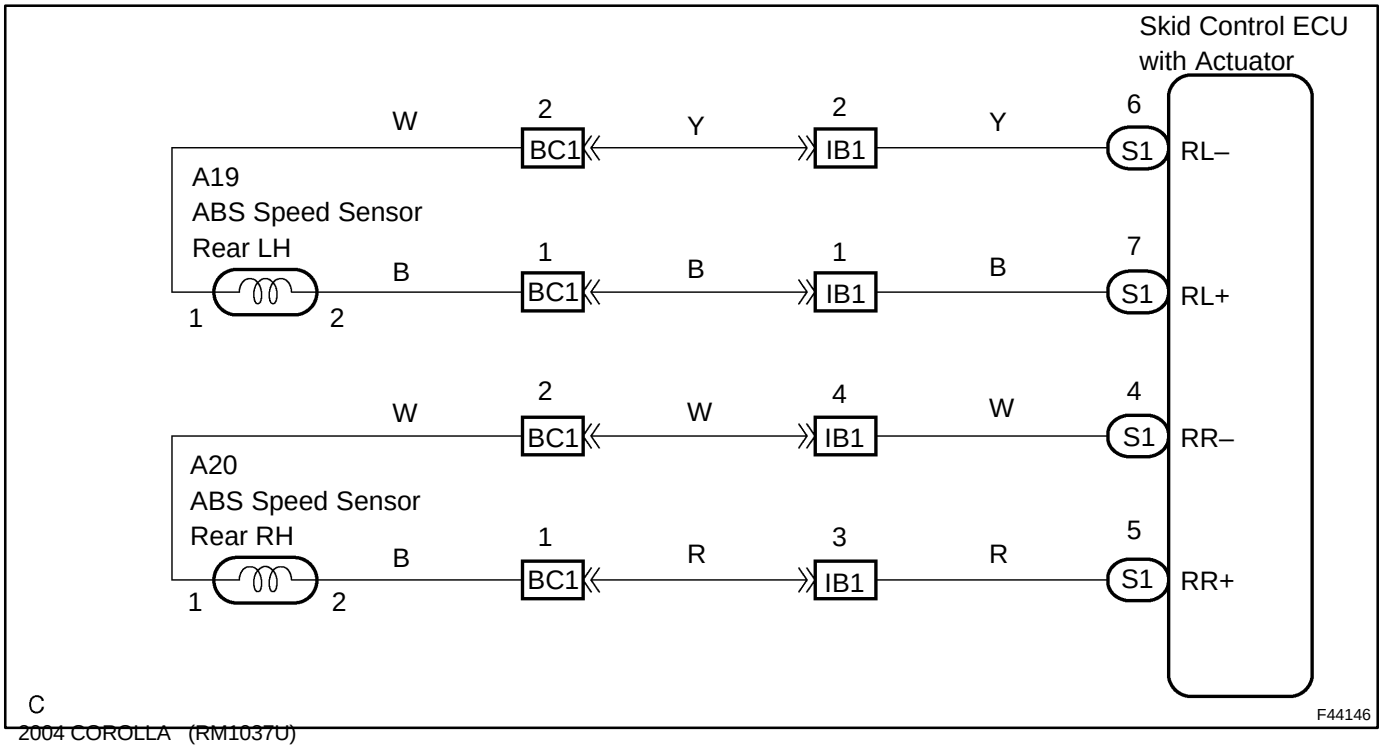
CIRCUIT DESCRIPTION

Refer to DTC C0200/31, C0205/32, C1235/35, C1236/36 on page 05–308.

DTC No.	DTC Detecting Condition	Trouble Area
C0210/33 C0215/34	Detection of any of conditions 1. through 3.: 1. At vehicle speed of 10 km/h (6 mph) or more, pulses are not input for 15 sec. 2. Momentary interruption of the speed sensor signal occurs at least 7 times in the time between switching the ignition switch ON and switching it OFF. 3. The condition that the speed sensor signal circuit is open continues for 0.5 sec. or more.	• Right rear and left rear speed sensor • Each speed sensor circuit • Speed sensor rotor
C1238/38 C1239/39	At the vehicle speed of 20 km/h (12 mph) or more, the condition that noise is included in the speed sensor signal continues for 5 sec. or more.	• Right rear and left rear speed sensor • Speed sensor rotor

HINT:
DTC No. C0210/33, C1238/38 is for the right rear speed sensor.
DTC No. C0215/34, C1239/39 is for the left rear speed sensor.

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	READ VALUE OF HAND–HELD TESTER(SKID CONTROL SENSOR)

(a) Check that there is no difference between the speed value output from the speed sensor displayed by the hand–held tester and the speed value displayed by the speedometer when driving the vehicle.

OK:

There is almost no difference in the displayed speed value.

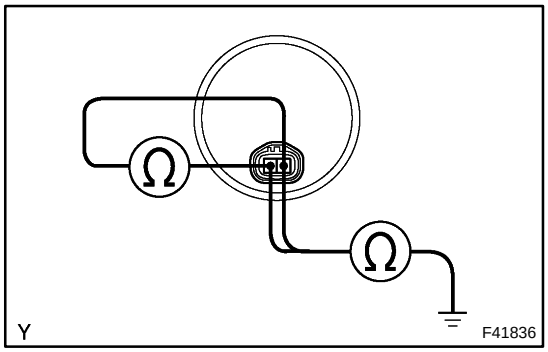
HINT:

There is tolerance of ± 10 % in the speedometer indication.

OK → **Go to step 5**

NG

2	INSPECT SKID CONTROL SENSOR



(a) Disconnect the skid control sensor connector.

(b) Measure resistance between terminals 1 and 2 of the skid control sensor connector.

OK:

Resistance: 2.2 kΩ or less

(c) Measure resistance between each of terminals 1 and 2 of skid control sensor connector and body ground.

OK:

Resistance: 1 MΩ or higher

NG → **REPLACE SKID CONTROL SENSOR**

NOTICE:

Check the speed sensor signal last (See page 05–297).

OK

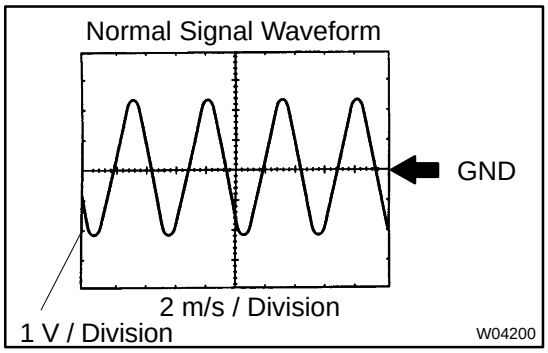
3	CHECK HARNESS AND CONNECTOR(SKID CONTROL SENSOR – SKID CONTROL ECU)

(a) Check for open and short circuit in harness and connector between each skid control sensor and skid control ECU (See page 01–30).

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

OK

4 INSPECT SENSOR AND SENSOR ROTOR SERRATIONS



(REFERENCE) INSPECTION USING OSCILLOSCOPE

(a) Connect the oscilloscope to the terminals RR+ – RR– and RL+ – RL– of the skid control ECU.

(b) Drive the vehicle at about 30 km/h (19 mph), and check the signal waveform.

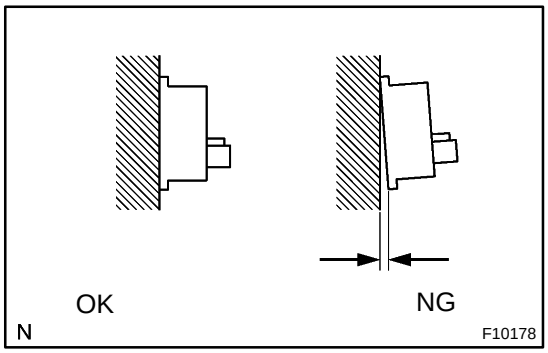
HINT:

- As the vehicle speed (wheel revolution speed) increases, a cycle of the waveform becomes shorter and the fluctuation in the output voltage becomes greater.
- When noise is identified in the waveform on the oscilloscope, error signals are generated due to the speed sensor rotor's scratches, looseness or foreign matter deposited on it.

OK → **CHECK AND REPLACE BRAKE ACTUATOR ASSY**

NG

5 INSPECT SENSOR INSTALLATION



(a) Check the sensor installation.

OK:

There is no clearance between the sensor and rear axle carrier.

NG → **REPLACE SKID CONTROL SENSOR**

NOTICE:

Check the speed sensor signal last (See page 05–297).

OK

6 INSPECT SKID CONTROL SENSOR TIP

(a) Remove the skid control sensor (See page 32–46).

(b) Check the sensor tip.

OK:

No scratches or foreign objects on the sensor tip.

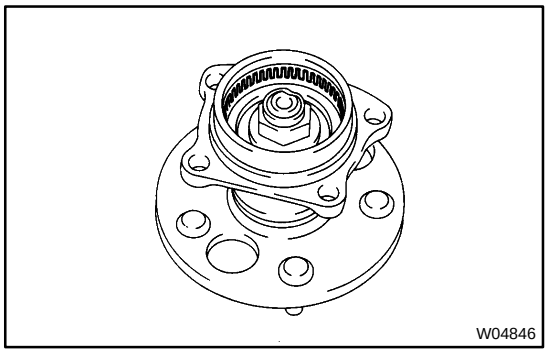
NG → **CLEAN OR REPAIR SKID CONTORL SENSOR**

NOTICE:

Check the speed sensor signal last (See page 05–297).

OK

7	INSPECT SENSOR ROTOR



(a) Check the sensor rotor serrations.
OK:
No scratches, missing teeth or foreign objects.

NG → **REPLACE REAR AXLE HUB & BEARING ASSY RH**

NG → **REPLACE REAR AXLE HUB & BEARING ASSY LH**

NOTICE:
Check the speed sensor signal last (See page 05–297).

OK

CHECK AND REPLACE BRAKE ACTUATOR ASSY (See page 05–306)

NOTICE:
Do not reuse skid control sensor.

DTC	C0226/21	SFR SOLENOID CIRCUIT

DTC	C0236/22	SFL SOLENOID CIRCUIT

DTC	C0246/23	SRR SOLENOID CIRCUIT

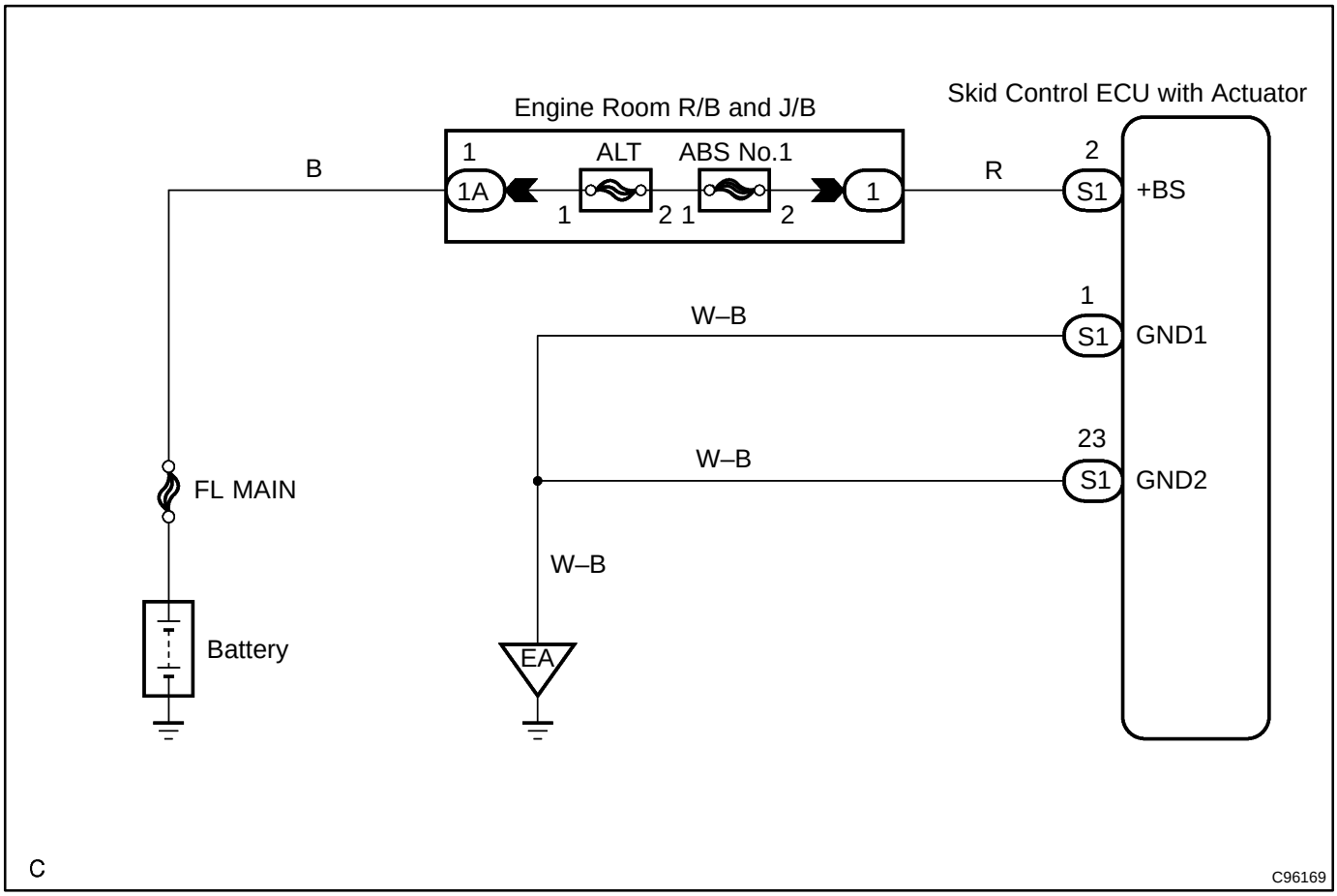
DTC	C0256/24	SRL SOLENOID CIRCUIT

CIRCUIT DESCRIPTION

This solenoid goes on when signals are received from the ECU and controls the pressure acting on the wheel cylinders thus controlling the braking force.

DTC No.	DTC Detecting Condition	Trouble Area
C0226/21 C0236/22 C0246/23 C0256/24	Detection of any condition in 1. and 2.: 1. With IG1 terminal voltage at 10V – 16V, solenoid circuit is open or short circuit for 0.05 sec. or longer. 2. With IG1 terminal voltage at 10V – 16V, during ABS control solenoid relay contact is OFF for 0.05 sec. or longer.	• Each solenoid circuit • Brake actuator

WIRING DIAGRAM



INSPECTION PROCEDURE

1	RECONFIRM DTC

(a) Check if the other DTCs are recorded (See page 05–297).

YES → REPAIR CIRCUIT INDICATED BY OUTPUT CODE

NO

REPLACE BRAKE ACTUATOR ASSY

DTC	C0273/13	OPEN CIRCUIT IN ABS MOTOR RELAY CIRCUIT

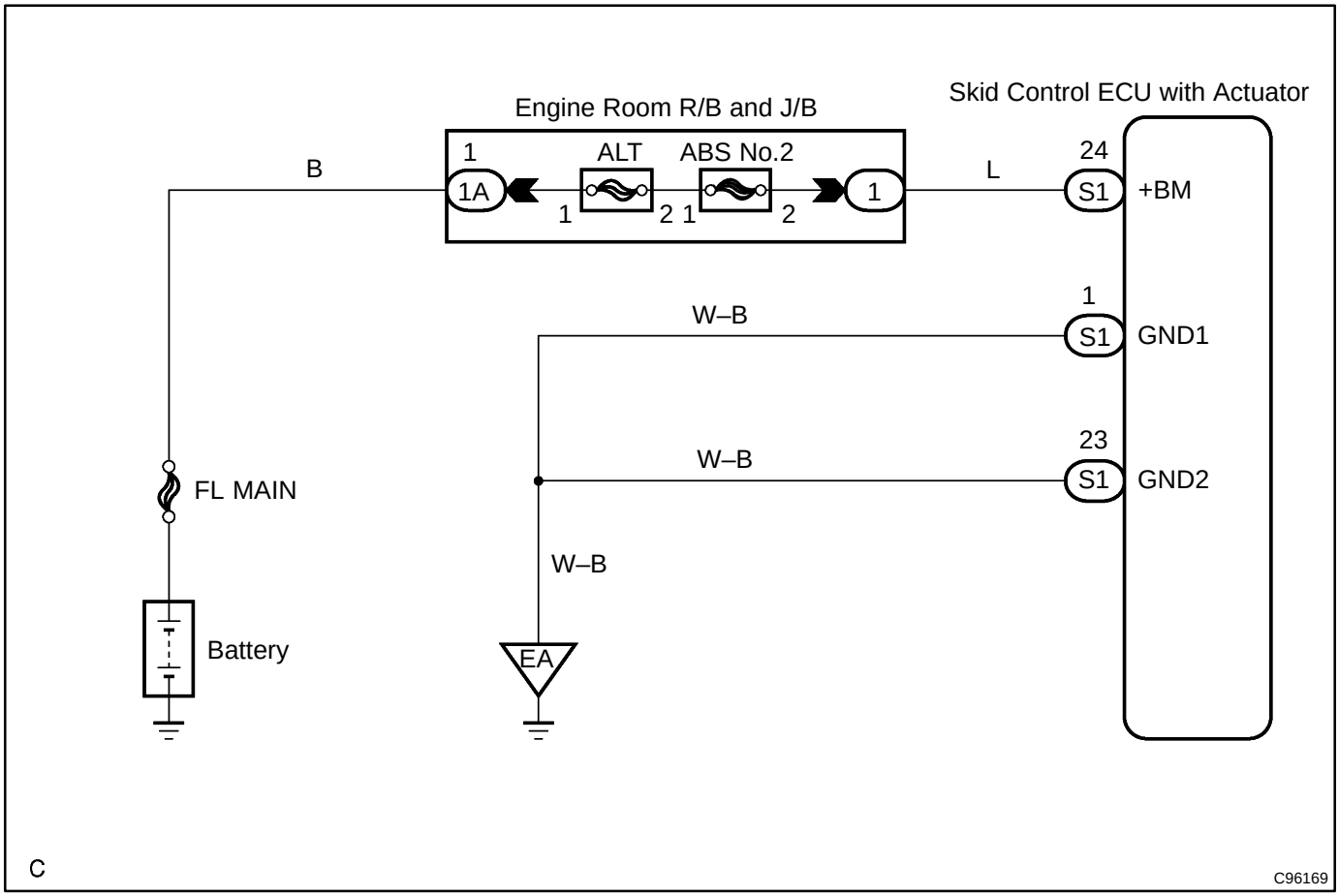
DTC	C0274/14	B+ SHORT CIRCUIT IN ABS MOTOR RELAY CIRCUIT

CIRCUIT DESCRIPTION

The ABS motor relay supplies power to the ABS pump motor. While the ABS is activated, the ECU switches the motor relay ON and operates the ABS pump motor.

DTC No.	DTC Detecting Condition	Trouble Area
C0273/13	With IG1 voltage 10V or below during initial check or ABS control, pump motor relay is turned ON, and relay contact is not ON for 0.2 sec. or longer.	• ABS motor relay • ABS motor relay circuit
C0274/14	When pump motor relay is turned OFF, relay contact is ON for 3 sec. or longer.	

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.

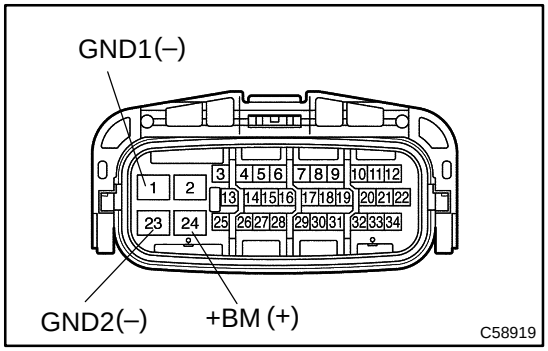
1	PERFORM ACTIVE TEST BY HAND–HELD TESTER(ABS MOTOR RELAY)

(a) Check the operation sound of the ABS motor individually when operaing it with the hand–held tester.
OK:
The operation sound of the ABS motor should be heard.

OK → **CHECK AND REPLACE BRAKE ACTUATOR ASSY**

NG

2	INSPECT SKID CONTROL ECU CONNECTOR(+BM TERMINAL VOLTAGE)

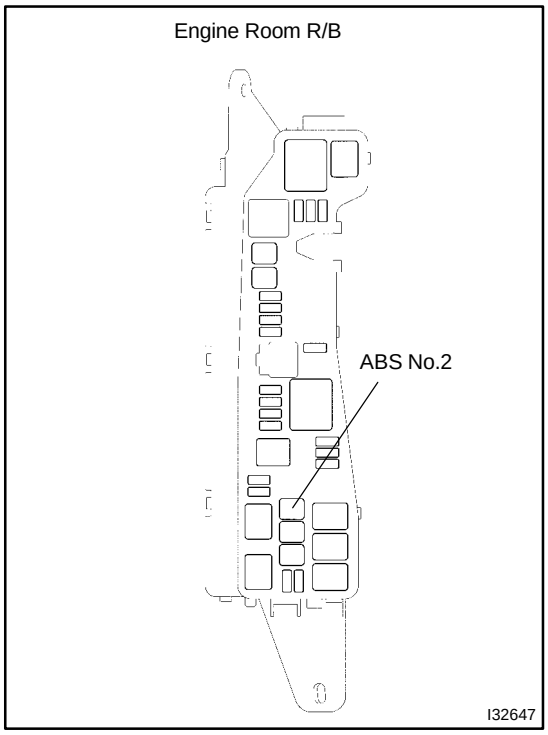


(a) Disconnect the skid control ECU connector.
(b) Measure the voltage between terminals +BM (24) and GND (1, 23) of skid control ECU harness side connector.
Voltage: 10 – 14 V

OK → **CHECK AND REPLACE BRAKE ACTUATOR ASSY**

NG

3	INSPECT FUSE(ABS No.2 FUSE)

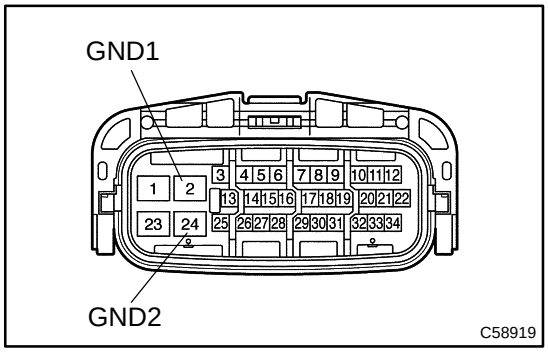


(a) Remove ABS No.2 fuse from the engine room R/B.
(b) Check continuity of ABS No.2 fuse.
OK:
Continuity

NG → **REPLACE INSPECT FOR SHORT CIRCUIT IN ALL HARNESS AND COMPONENTS CONNECTED TO ABS NO. 2 FUSE**

OK

4	INSPECT SKID CONTROL ECU CONNECTOR(GND TERMINAL CONTINUITY)



(a) Measure resistance between terminal GND (1,23) of skid control ECU harness side connector and body ground.
Resistance: 1 Ω or less

NG → **CHECK AND REPAIR HARNESS AND CONNECTOR**

OK

CHECK AND REPLACE BRAKE ACTUATOR ASSY (See page 05–306)

DTC	C0278/11	OPEN CIRCUIT IN ABS SOLENOID RELAY CIRCUIT

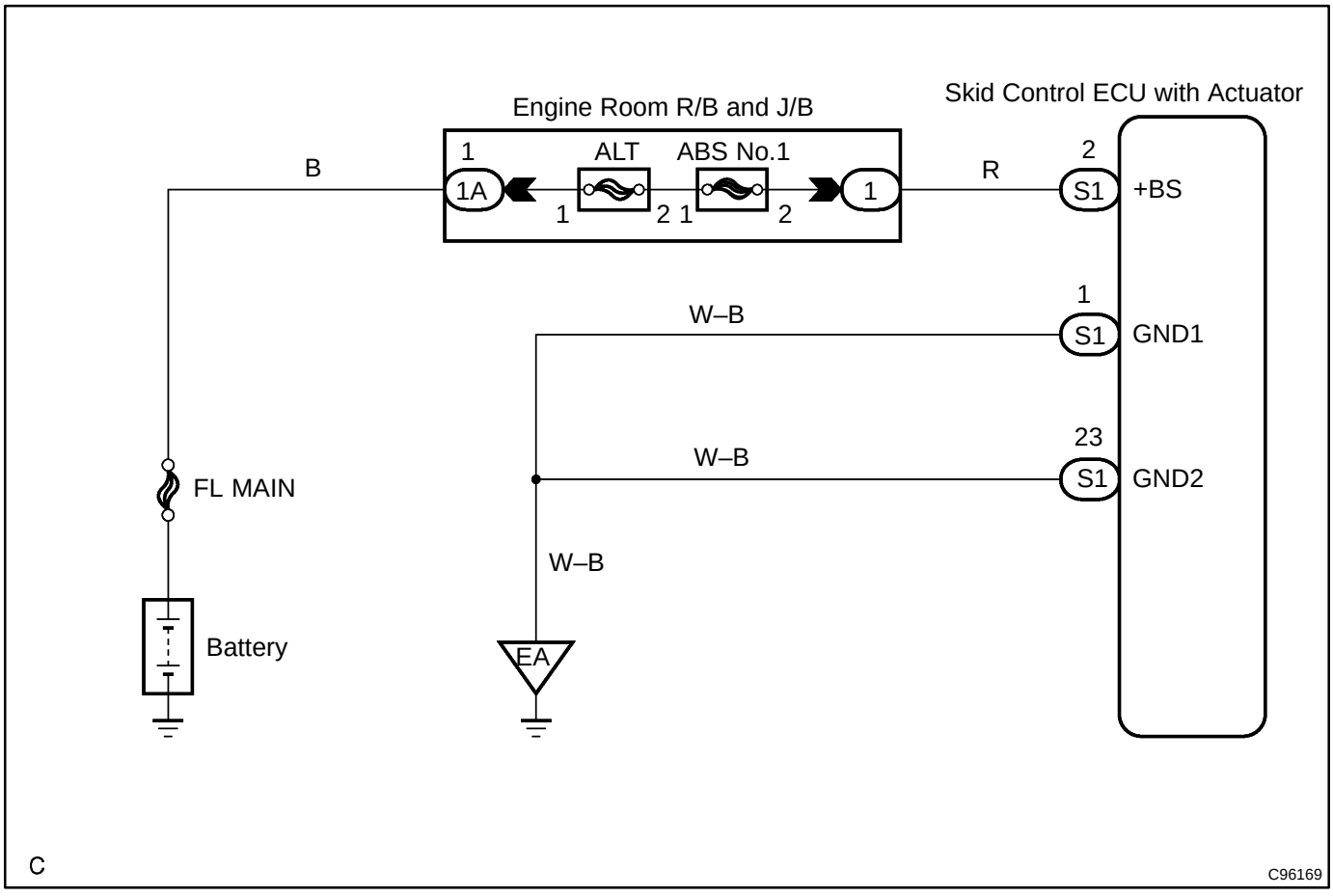
DTC	C0279/12	SHORT CIRCUIT IN ABS SOLENOID RELAY CIRCUIT

CIRCUIT DESCRIPTION

This relay supplies power to each ABS solenoid. After the ignition switch is turned ON, if the initial check is OK, the relay goes on.

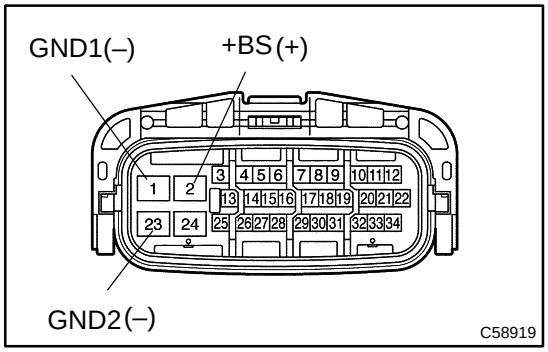
DTC No.	DTC Detecting Condition	Trouble Area
C0278/11	When solenoid relay is turned ON, relay contact is OFF for 0.2 sec. or longer.	• ABS solenoid relay • ABS solenoid relay circuit
C0279/12	Immediately after IG1 is turned ON, when solenoid relay is turned OFF, relay contact is ON for 0.2 sec. or longer.	

WIRING DIAGRAM



INSPECTION PROCEDURE

1	INSPECT SKID CONTROL ECU CONNECTOR(+BS TERMINAL VOLTAGE)



(a) Disconnect the skid control ECU connector.
(b) Measure the voltage between terminals +BS (2) and GND (1, 23) of skid control ECU harness side connector.
Voltage: 10 – 14 V

NG → **REPAIR OR REPLACE HARNESS AND CONNECTOR (+BM CIRCUIT)**

OK

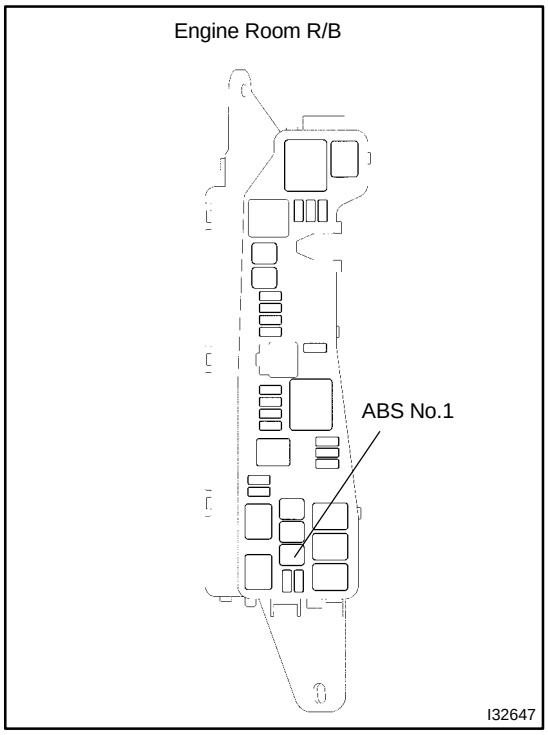
2	RECONFIRM DTC

(a) Check the DTC (See page 05–297).
OK :
Normal code

NG → **END**

OK

3	INSPECT CONTACT CONDITION



(a) Inspect the condition of the each connector from engine room R/B to skid control ECU.

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

OK →

CHECK AND REPLACE BRAKE ACTUATOR ASSY (See page 05–306)

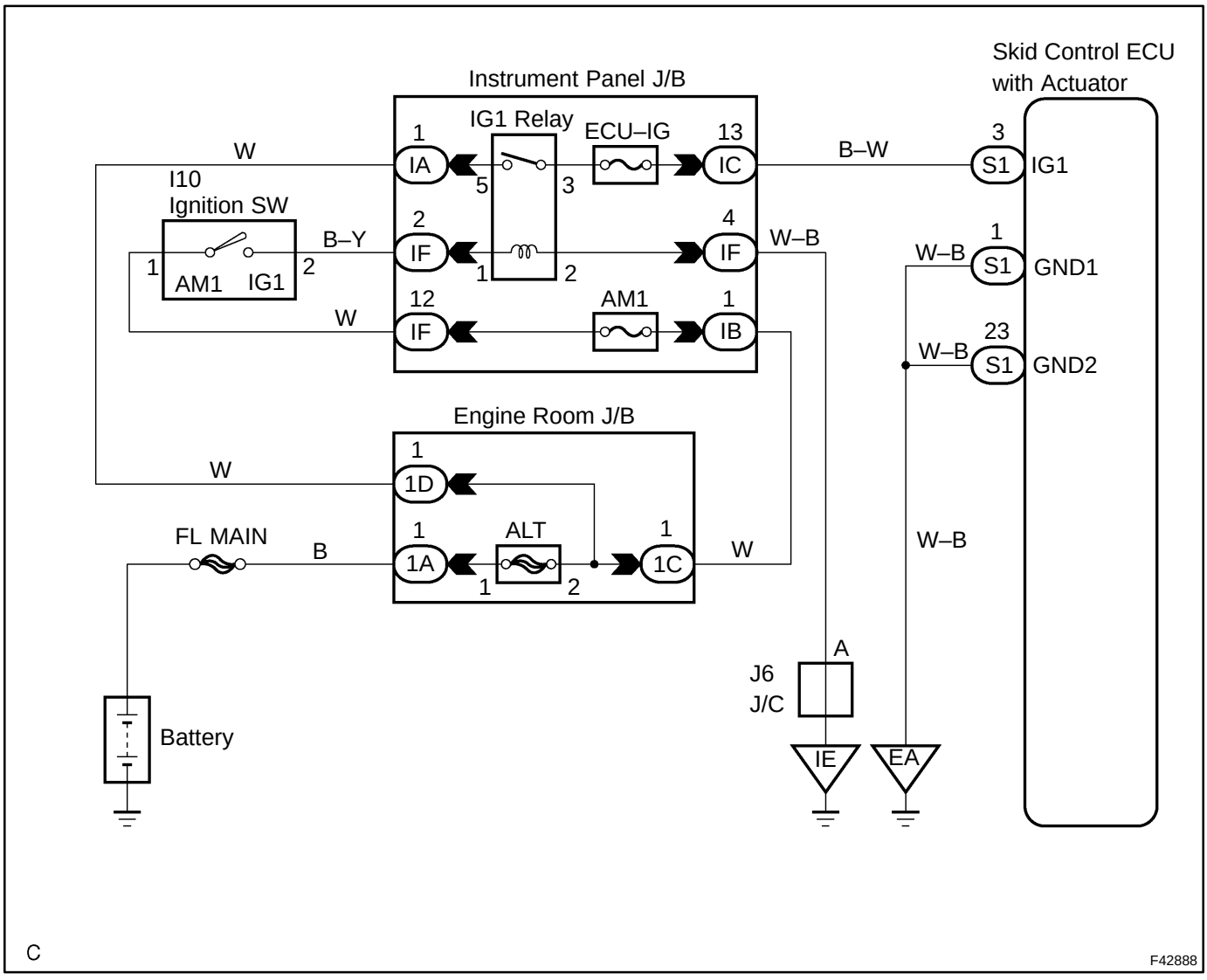
DTC	C1241/41	LOW BATTERY POSITIVE VOLTAGE OR ABNORMALLY HIGH BATTERY POSITIVE VOLTAGE

CIRCUIT DESCRIPTION

This is the power source of the ECU, hence the actuators.

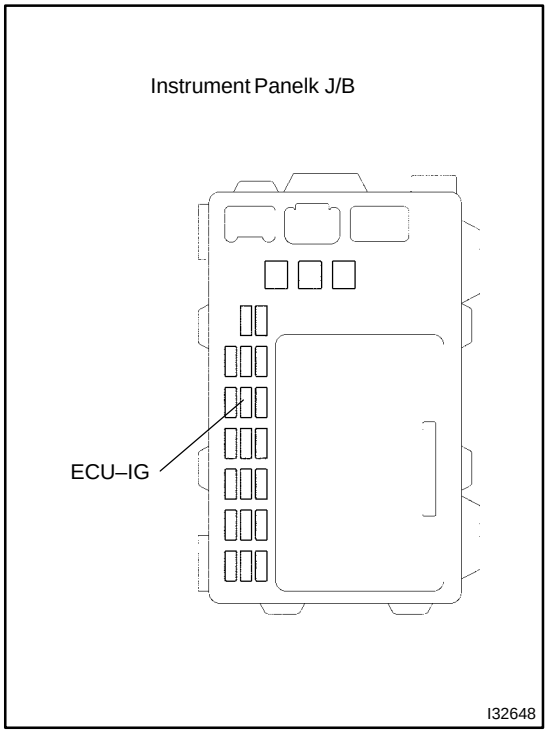
DTC No.	DTC Detecting Condition	Trouble Area
C1241/41	Detection of any of conditions 1. through 3. : 1. With vehicle speed at 3 km/h or more, IG1 terminal voltage is 10V or below for 10 sec. or longer. 2. With IG1 terminal voltage at 10V or below, solenoid relay open, pump motor relay open, solenoid fault detecting condition are established 3. Voltage of ECU terminal IG1 remains at more than 17V continues for 1.2 sec. or more.	• Battery • Charging system • Power source circuit

WIRING DIAGRAM



INSPECTION PROCEDURE

1	INSPECT FUSE(ECU–IG FUSE)



(a) Remove ECU–IG fuse from the instrument panel J/B.
(b) Check continuity of ECU–IG fuse.
OK:
Continuity

NG → **INSPECT FOR SHORT CIRCUIT IN ALL HARNESS AND COMPONENTS CONNECTED TO ECU–IG FUSE**

OK

2	INSPECT BATTERY

OK:
Voltage: 10 – 14 V

NG → **INSPECT CHARGING SYSTEM**

OK

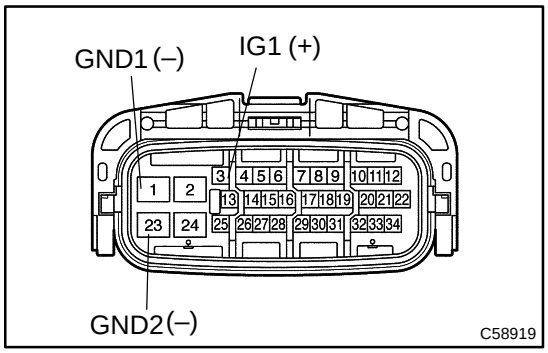
3	INSPECT SKID CONTROL ECU CONNECTOR(IG1 TERMINAL VOLTAGE)

IN CASE OF USING HAND–HELD TESTER:

(a) Check the voltage condition output from the ECU displayed on the hand–held tester.

OK:

”Normal” is displayed.



IN CASE OF NOT USING HAND–HELD TESTER:

(a) Disconnect the skid control ECU connector.

(b) Turn the ignition switch to ON.

(c) Measure voltage between terminals IG1 (3) and GND (1, 23) of skid control ECU harness side connector.

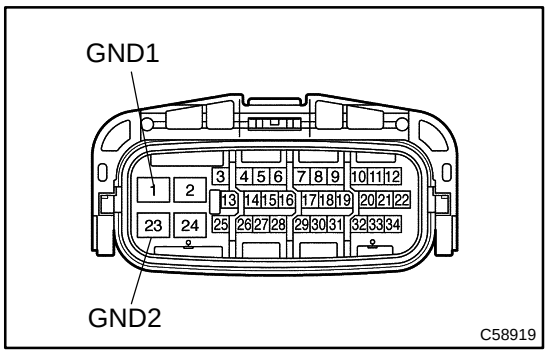
OK:

oltage: 10 – 14 V

OK	CHECK AND REPLACE BRAKE ACTUATOR ASSY

NG

4	INSPECT SKID CONTROL ECU CONNECTOR(GND TERMINAL CONTINUITY)



(a) Measure resistance between terminal GND (1, 23) of skid control ECU harness side connector and body ground.

OK:

Resistance: 1 Ω or less

NG	REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

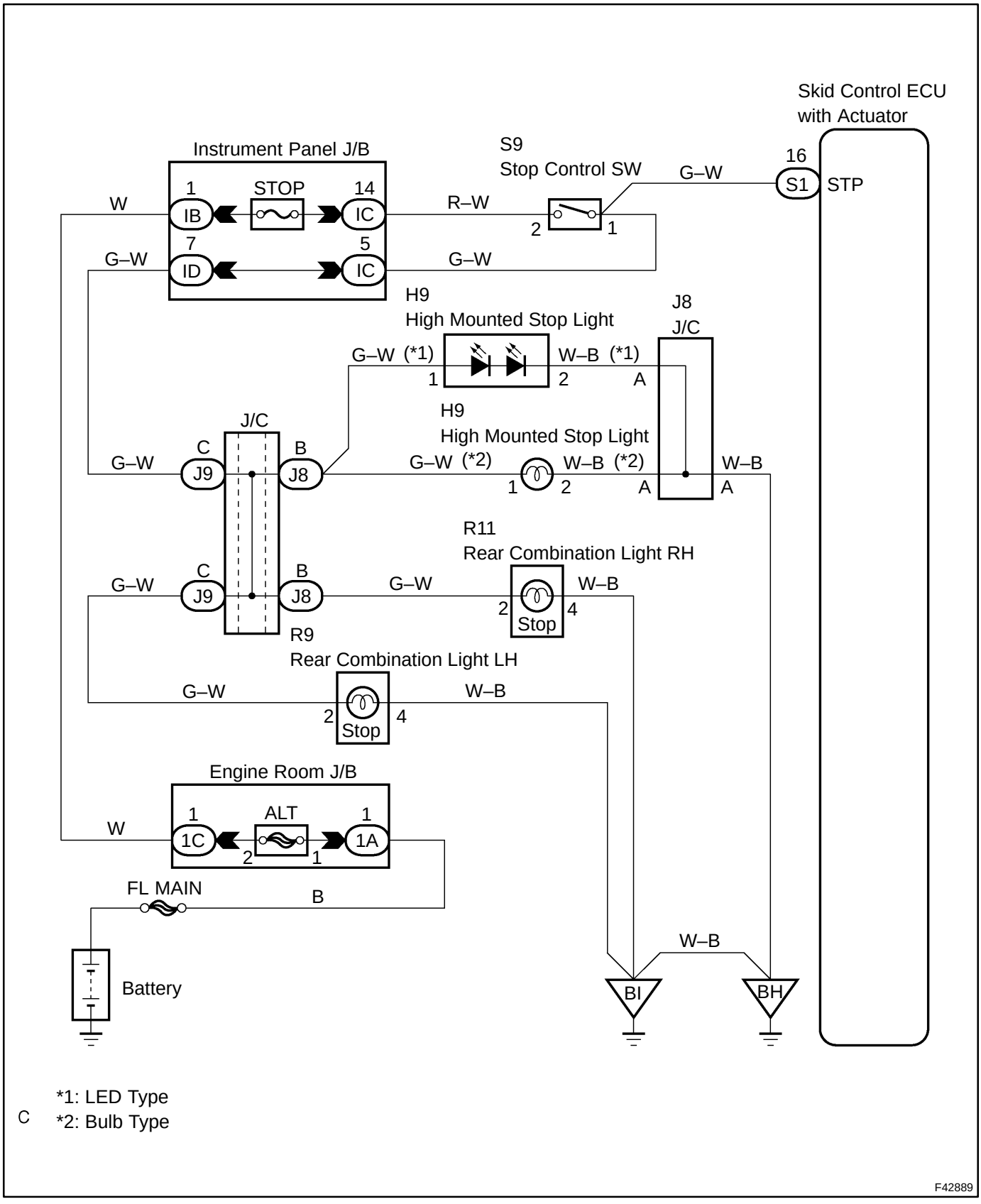
CHECK AND REPLACE BRAKE ACTUATOR ASSY (See page 05–306)

DTC	C1249/49	OPEN CIRCUIT IN STOP LIGHT SWITCH CIRCUIT

CIRCUIT DESCRIPTION

DTC No.	DTC Detecting Condition	Trouble Area
C1249/49	With IG1 terminal voltage at 10V – 16V, ABS not controlling stop light switch circuit is open for 1.0 sec. or longer.	• Stop light switch • Stop light switch circuit

WIRING DIAGRAM



INSPECTION PROCEDURE

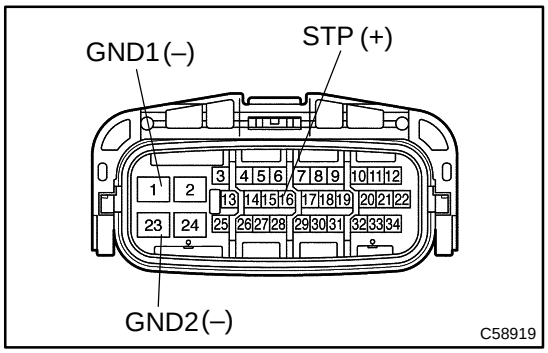
1	INSPECT STOP LAMP SWITCH ASSY

(a) Check that the stop light lights up when brake pedal is depressed and turns OFF when the brake pedal is released.

NG → **Go to step 4**

OK

2	INSPECT SKID CONTROL ECU TERMINAL VOLTAGE(STP TERMINAL)



(a) Disconnect skid control ECU connector.
(b) Measure voltage between terminal STP (16) and GND (1, 23) of skid control ECU harness side connector when the brake pedal is depressed.
Voltage: 10 – 14 V

OK → **CHECK AND REPLACE BRAKE ACTUATOR ASSY**

NG

3	CHECK HARNESS AND CONNECTOR(STOP LIGHT SWITCH – SKID CONTROL ECU)

(a) Check for open and short circuit in harness and connector between stop light switch and skid control ECU (See page 01–30).

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

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN ON PROBLEM SYMPTOMS TABLE

4	CHECK HARNESS AND CONNECTOR(STOP LIGHT CIRCUIT)

(a) Check for open and short circuit in harness and connector of the stop light circuit (See page 01–30).

OK → **REPLACE STOP LAMP SWITCH ASSY**

NG

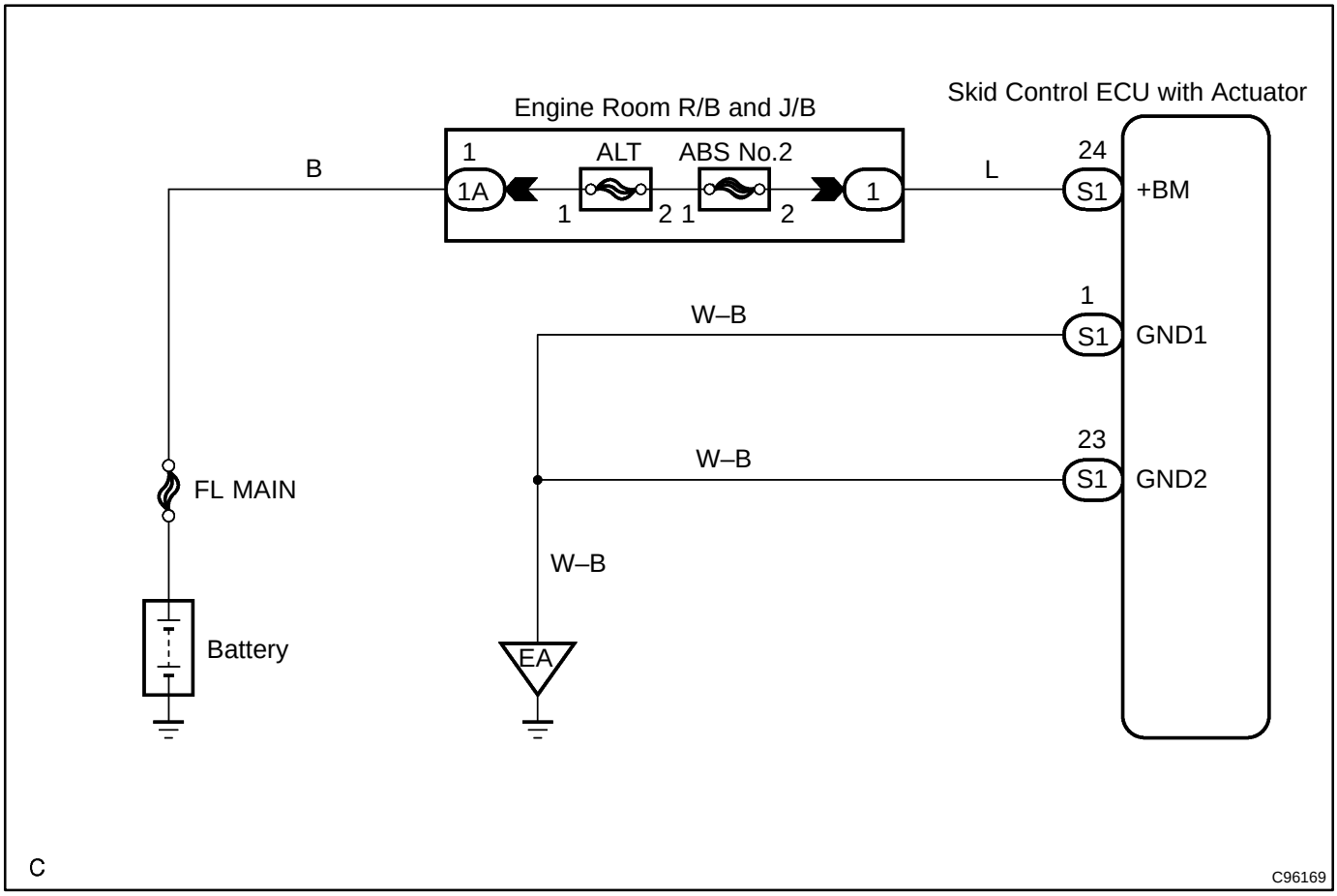
REPAIR OR REPLACE HARNESS OR CONNECTOR

DTC	C1251/51	PUMP MOTOR IS LOCKED/OPEN CIRCUIT IN PUMP MOTOR GROUND

CIRCUIT DESCRIPTION

DTC No.	DTC Detecting Condition	Trouble Area
C1251/51	ABS actuator pump motor is not operating normally during initial check.	ABS pump motor

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 hand–held tester.

1	INSPECT BRAKE ACTUATOR ASSY

(a) Select the DATALIST mode on the hand–held tester.

(b) Check the operation sound of the ABS pump motor when operating it with the hand–held tester.

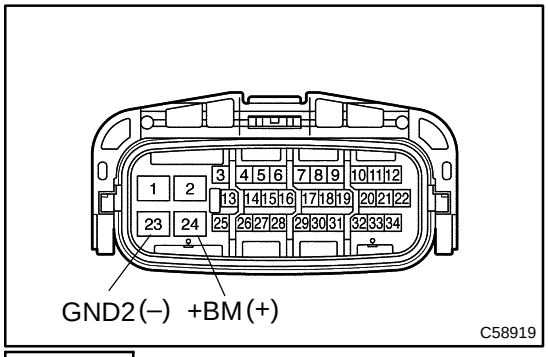
OK:

The operation sound of the ABS pump motor should be heard.

OK → **PROCEED TO NEXT CIRCUIT INSPECTION SHOWN ON PROBLEM SYMPTOMS TABLE**

NG

2	INSPECT SKID CONTROL ECU TERMINAL VOLTAGE(+BM TERMINAL VOLTAGE)



(a) Disconnect the skid control ECU connector.

(b) Measure the voltage between terminal +BM (24) and GND (23) of skid control ECU harness side connector.

OK:

The operation sound of the ABS pump motor should be heard.

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

OK

REPLACE BRAKE ACTUATOR ASSY

DTC AlwaysON MALFUNCTION IN ABS ECU

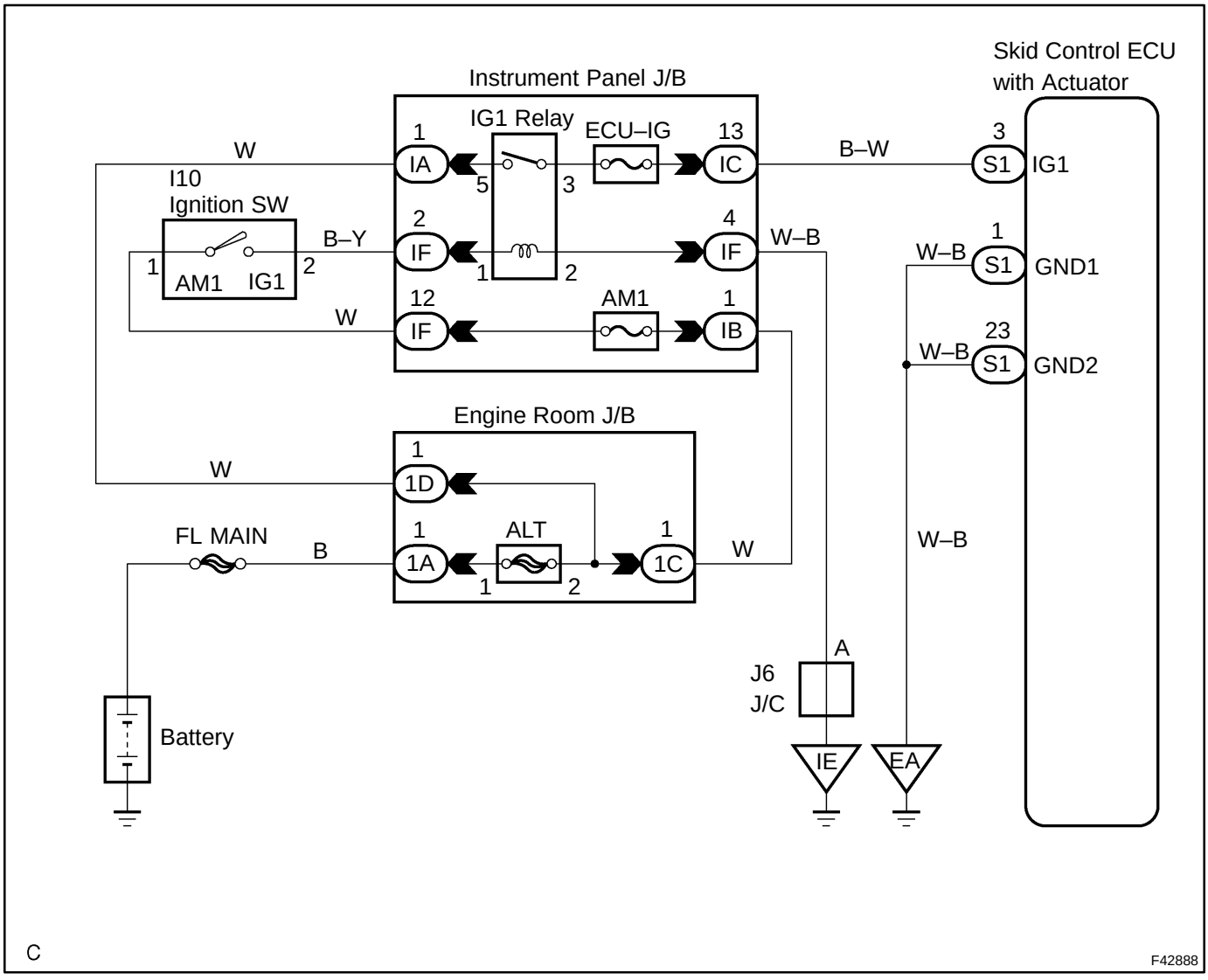
CIRCUIT DESCRIPTION

DTC No.	DTC Detecting Condition	Trouble Area
Always ON	Either of the following 1. or 2. is detected: 1. The ECU connectors are OFF from the ECU. 2. There is a malfunction in the ECU internal circuit.	• Battery • Charging system • Power source circuit • Skid control ECU

HINT:

There is a case that hand–held tester cannot be used when ECU is abnormal.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	RECONFIRM DTC

(a) Check the DTC (See page 05–297).

YES → REPAIR CIRCUIT INDICATED BY OUTPUT CODE

NO

2	INSPECT SKID CONTROL ECU CONNECTOR SECURELY CONNECTED

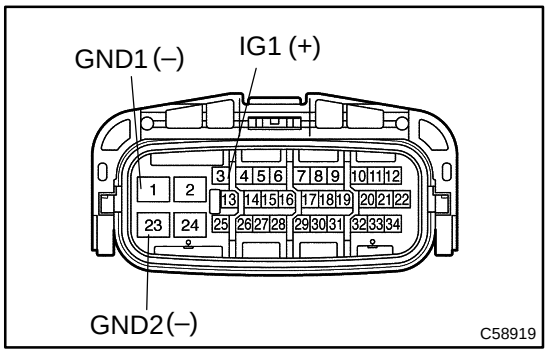
NO → CONNECT CONNECTOR TO ECU

YES

3	INSPECT SKID CONTROL ECU CONNECTOR(IG1 TERMINAL VOLTAGE)

IN CASE OF USING HAND–HELD TESTER:

(a) Check the voltage condition output from the ECU displayed on the hand–held tester.
OK:
"Normal" is displayed.



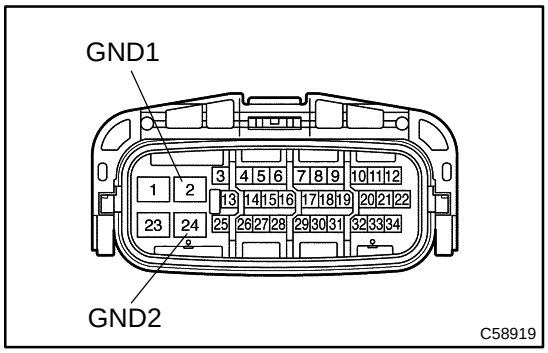
IN CASE OF NOT USING HAND–HELD TESTER:

(a) Disconnect the skid control ECU connector.
(b) Turn the ignition switch to ON.
(c) Measure voltage between terminals IG1 (3) and GND (1, 23) of skid control ECU harness side connector.
OK:
oltage: 10 – 14 V

OK → Go to step 5

NG

4	INSPECT SKID CONTROL ECU CONNECTOR(GND TERMINAL CONTINUITY)



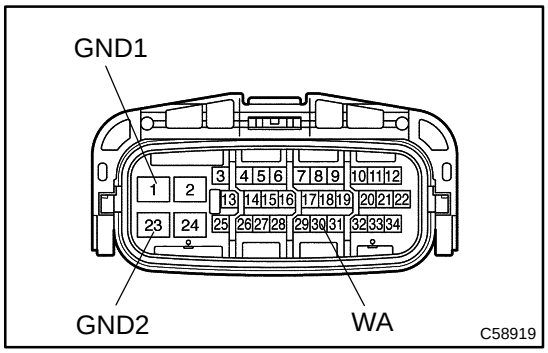
(a) Measure resistance between terminal GND (S1–2, 24) of skid control ECU harness side connector and body ground.
Resistance: 1 Ω or less

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

OK

CHECK AND REPAIR HARNESS AND CONNECTOR

5	GO TO COMBINATION METER SYSTEM(ABS WARNING LIGHT)



(a) Disconnect the skid control ECU connector.
(b) Using service wire, connect terminals WA (30) and GND (1, 23) of skid control ECU harness side connector.
(c) Turn the ignition switch to ON.
OK:
ABS warning light goes off.

NG → **REPAIR OR REPLACE COMBINATION METER ASSEMBLY**

OK

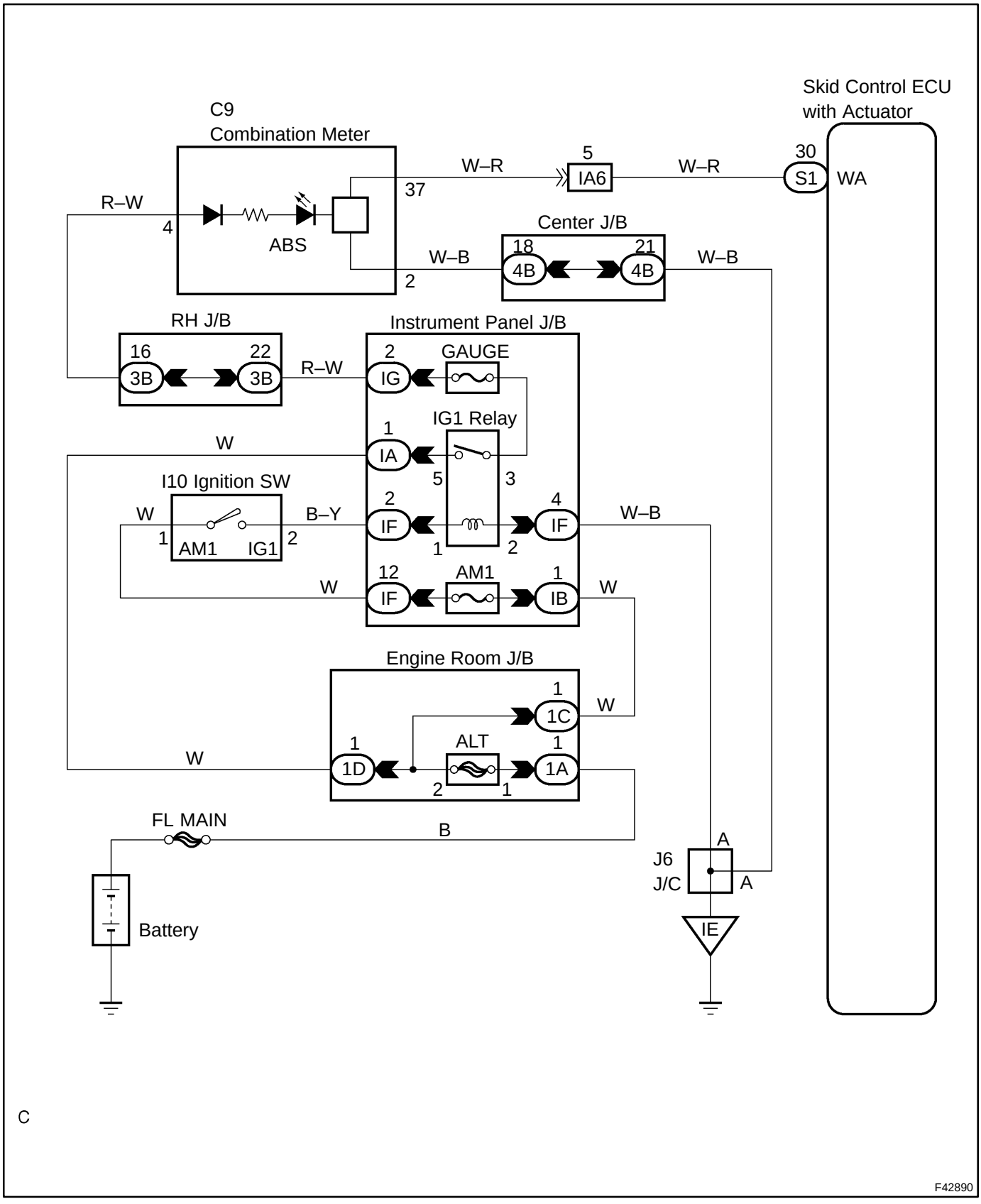
CHECK AND REPLACE BRAKE ACTUATOR ASSY(See page 05–306)

ABS WARNING LIGHT CIRCUIT (DOES NOT LIGHT UP)

CIRCUIT DESCRIPTION

If the ECU detect trouble, it will prohibit ABS control, turn on ABS warning light, and store the DTC.
Connect terminals Tc and CG of the DLC3 to make the ABS warning light blink and output the DTC.

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 WARNING LIGHT)

(a) Check that ”ON” and ”OFF” of the ABS warning light can be shown on the combination meter by the hand–held tester.

OK → **CHECK AND REPLACE BRAKE ACTUATOR ASSY (See page 05–306)**

NG

2	INSPECT COMBINATION METER ASSY(ABS WARNING LIGHT)

(a) Disconnect the connector from the skid control ECU.
(b) Turn the ignition switch to ON.
(c) Check the ABS warning light.

OK:

ABS warning light goes ON

NG → **REPAIR OR REPLACE COMBINATION METER ASSY**

OK

3	CHECK HARNESS AND CONNECTOR(WA CIRCUIT)

(a) Check for short circuit in harness and connector of the between terminal WA of skid control ECU and combination meter (See page 01–30).

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

OK

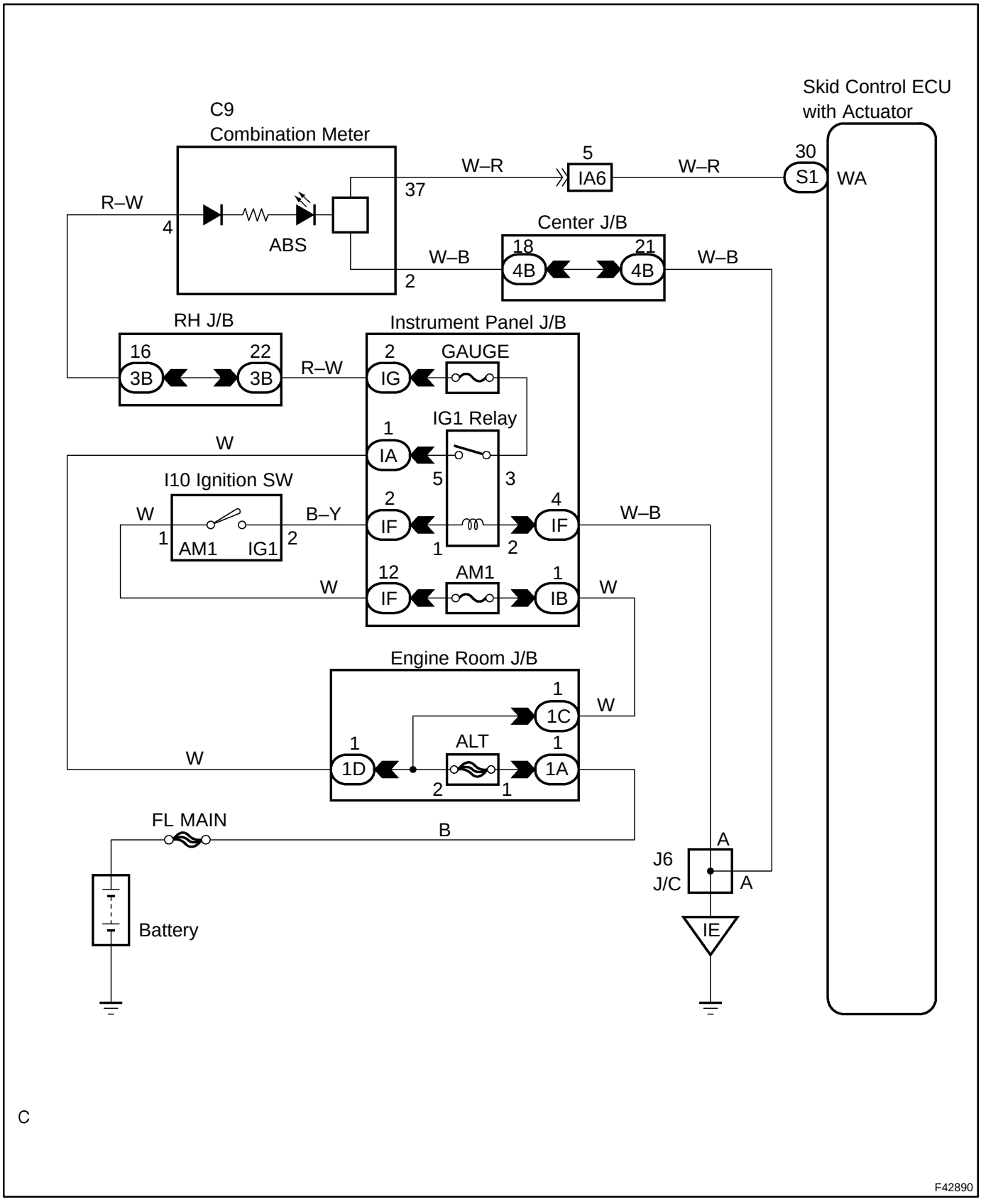
CHECK AND REPLACE BRAKE ACTUATOR ASSY (See page 05–306)

BRAKE WARNING LIGHT CIRCUIT

CIRCUIT DESCRIPTION

If the ECU detects trouble, it lights the brake warning light at the same time of prohibiting ABS control. At this time, the ECU records a DTC in memory.
Connect terminals Tc and CG of the DLC3 to make the brake warning light blink and output the DTC.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	INSPECT PARKING BRAKE SWITCH CIRCUIT

(a) Check for open and short circuit in parking brake switch circuit (See page 01–30).

NG → REPAIR OR REPLACE PARKING BRAKE SWITCH CIRCUIT

OK

2	INSPECT BRAKE FLUID LEVEL WARNING SWITCH CIRCUIT

(a) Check the brake fluid level in reservoir.
(b) Check for open and shot circuit in brake fluid level warning switch circuit (See page 01–30).

NG → REPAIR OR REPLACE BRAKE FLUID LEVEL WARNING SWITCH CIRCUIT

OK

3	CHECK DTC ONCE MORE

(a) Check for open and short circuit in harness and connector between vacuum warning switch and skid control ECU (See page 05–297).

NG → REPAIR CIRCUIT INDICATED BY OUTPUT CODE

OK

4	INSPECT COMBINATION METER ASSEMBLY(BRAKE WARNING LIGHT CIRCUIT)

(a) Check for open and short circuit in combination meter (See page 01–30).

NG → REPAIR OR REPLACE COMBINATION METER ASSEMBLY

OK

5	CHECK HARNESS AND CONNECTOR(BRAKE ACTUATOR – COMBINATION METER)

(a) Check for open and short circuit in harness and connector between brake actuator and combination meter (See page 01–30).

NG → REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

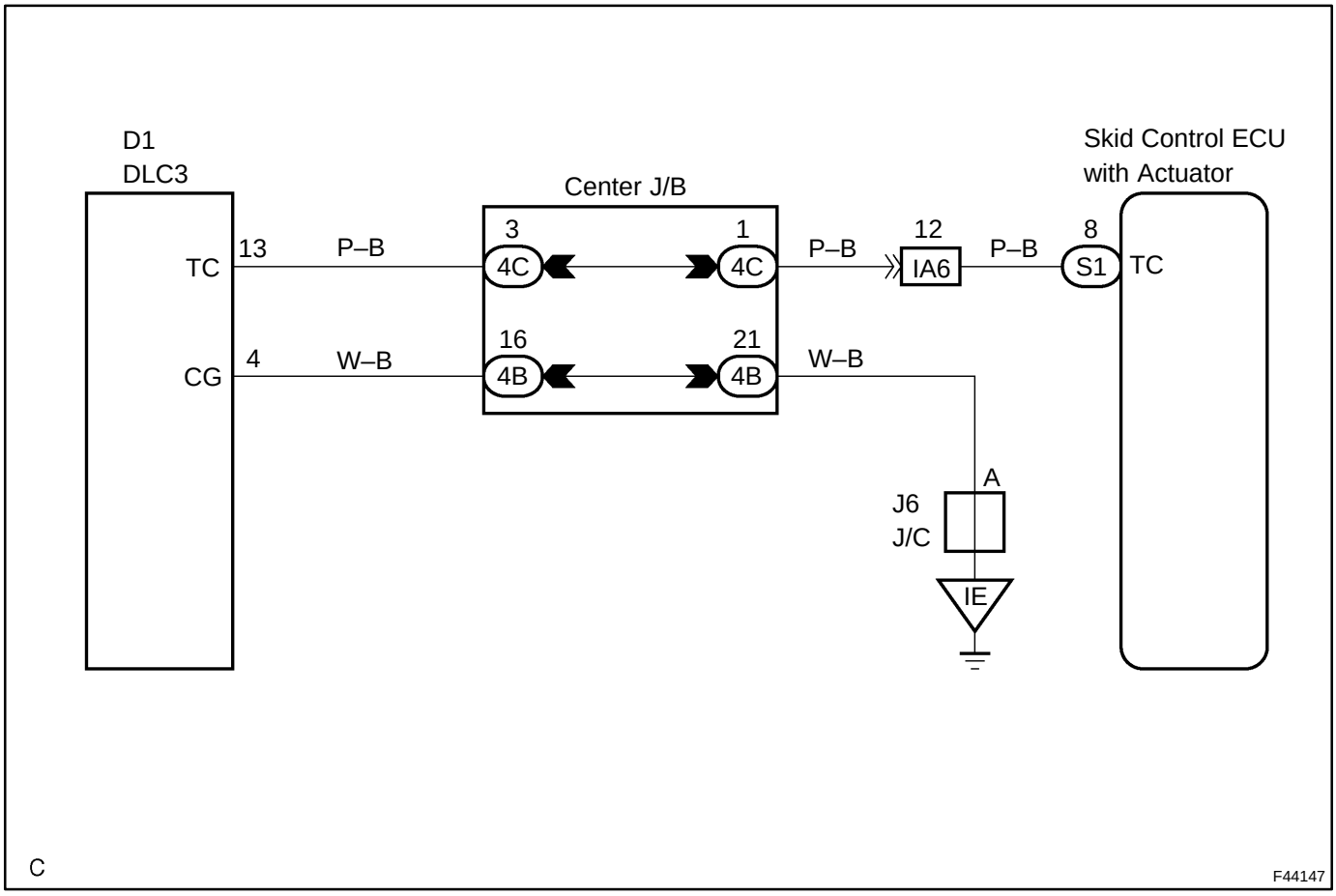
CHECK AND REPLACE BRAKE ACTUATOR ASSY

TC TERMINAL CIRCUIT

CIRCUIT DESCRIPTION

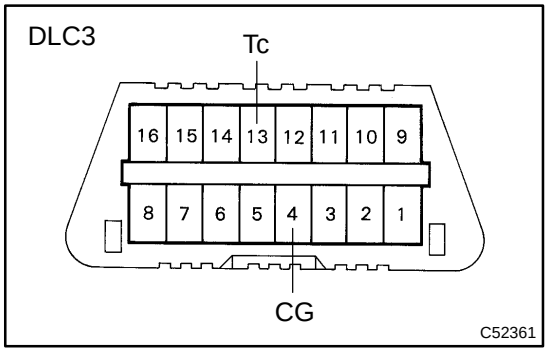
Connecting terminals Tc and CG of the DLC3 causes the ECU to display the DTC by flashing the ABS warning light.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	INSPECT DLC3 TERMINAL VOLTAGE(Tc TERMINAL)



(a) Turn the ignition switch to ON.
(b) Measure voltage between terminals Tc and CG of DLC3.
OK:
Voltage: 10 – 14 V

OK	Go to step 3

NG

2	CHECK HARNESS AND CONNECTOR(DLC3 – BODY GROUND)

(a) Check for open and short circuit in harness and connector between terminal CG of the DLC3 and body ground (See page 01–30).

NG	REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

3	CHECK HARNESS AND CONNECTOR(SKID CONTROL ECU – DLC3)

(a) Check for open and short circuit in harness and connector between terminal Tc of the skid control ECU and DLC3 (See page 01–30).

NG	REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

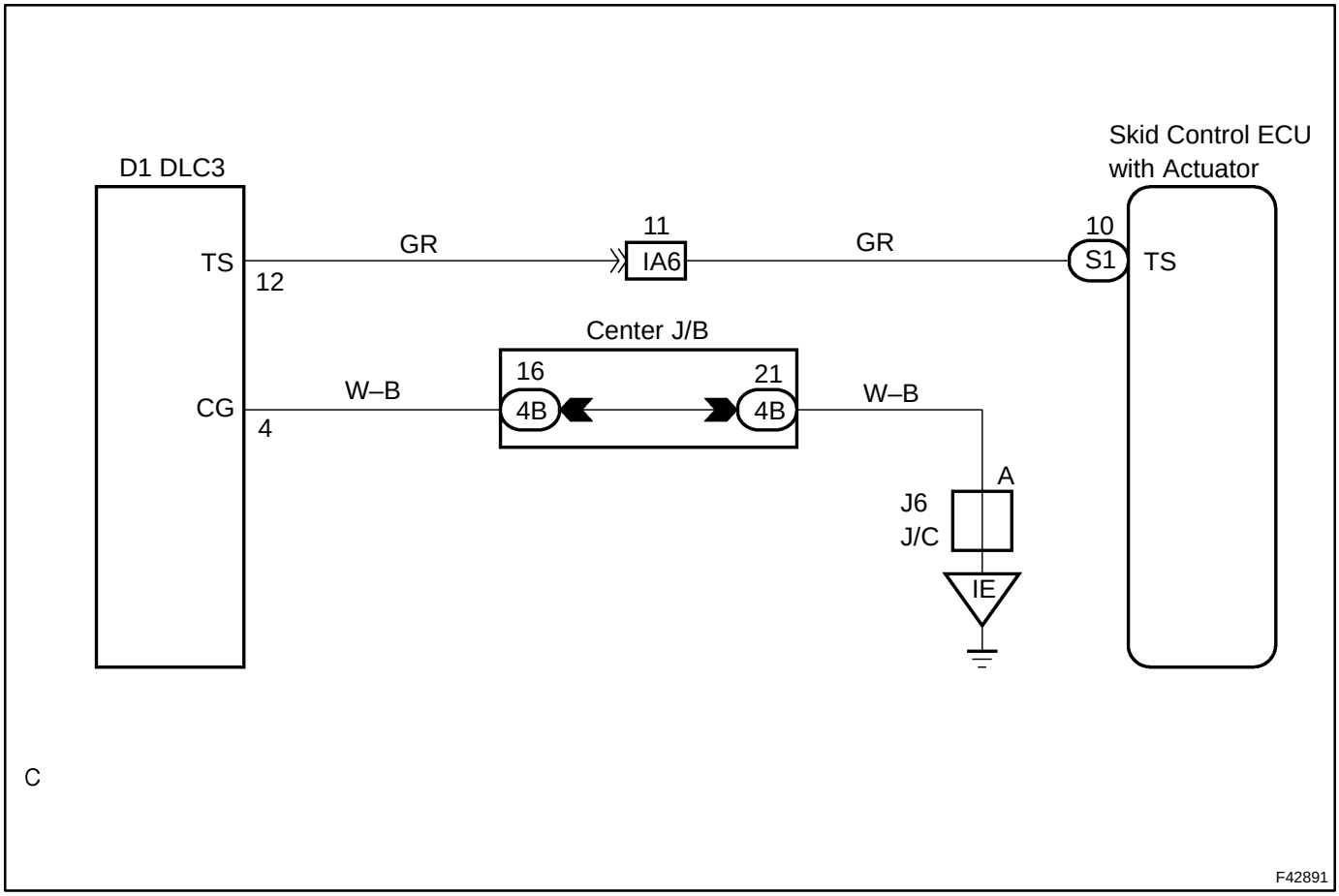
CHECK AND REPLACE BRAKE ACTUATOR ASSY (See page 05–306)

Ts Terminal Circuit

CIRCUIT DESCRIPTION

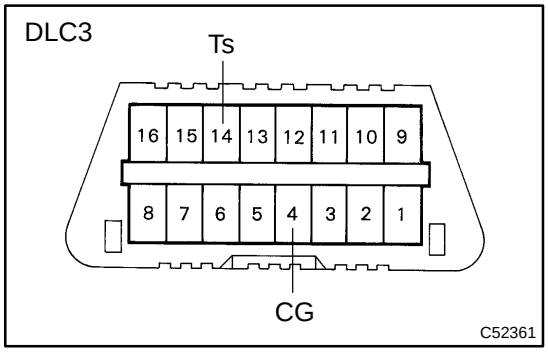
The sensor check circuit detects abnormalities in the speed sensor signal which cannot be detected with the DTC check.
Connecting terminals Ts and CG of the DLC3 starts the check.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	INSPECT DLC3 TERMINAL VOLTAGE(Ts TERMINAL)



(a) Turn the ignition switch to ON.
(b) Measure voltage between terminals Ts and CG of DLC3.
OK:
Voltage: 10 – 14 V

OK	Go to step 3

NG

2	CHECK HARNESS AND CONNECTOR(DLC3 – BODY GROUND)

(a) Check for open and short circuit in harness and connector between terminal CG of the DLC3 and body ground (See page 01–30).

NG	REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

3	CHECK HARNESS AND CONNECTOR(SKID CONTROL ECU – DLC3)

(a) Check for open and short circuit in harness and connector between terminal Ts of the DLC3 and skid control ECU (See page 01–30).

NG	REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

CHECK AND REPLACE BRAKE ACTUATOR ASSY (See page 05–306)