DI4EU-02

CIRCUIT INSPECTION

DTC	1 - 3	Door Position Out Range

CIRCUIT DESCRIPTION

This is to detects for a condition of cable breakage or loss of position detection by the controller. Power operation is inhibited until this code has been reset.

DTC No.	DTC Detecting Condition	Trouble Area
1 - 3	Controller detects a position count past the ends of travel limits.	• Power slide door unit • Power slide door ECU

INSPECTION PROCEDURE

1	**Check power slide door cable.**

NG → **Replace power slide door unit.**

OK

2	**Initialize power slide door control system (See page BE-78).**

NG → **Replace power slide door unit.**

OK

Nornal.

cardiagn.com

DI4EV-01

DTC	1 - 4	Motor Drive Circuit

CIRCUIT DESCRIPTION

If this code is detected, the power slide door stops. Power operation will be retried on the next command.

DTC No.	Detection Item	Trouble Area
1 - 4	Failure is detected in the motor drive circuit in the controller.	• Power slide door ECU

INSPECTION PROCEDURE

Check and replace power slide door ECU (See page IN-31).

cardiagn.com

DI4EW-01

DTC	2 - 2	No Optical Sensor Pulses

CIRCUIT DESCRIPTION

Power operation will be retried on each OPEN/CLOSE command.

DTC No.	DTC Detecting Condition	Trouble Area
2 - 2	Sensor pulses are not detected upon motor activation.	• Power slide door unit (Optical sensor)

INSPECTION PROCEDURE

1	**Check harness and connector between power slide door unit and ECU (See page IN-21).**

NG → **Repair or replace harness and connector.**

OK

Replace power slide door unit.

cardiagn.com

DI4EX-02

DTC	2 - 3	No Secondary Latch Input

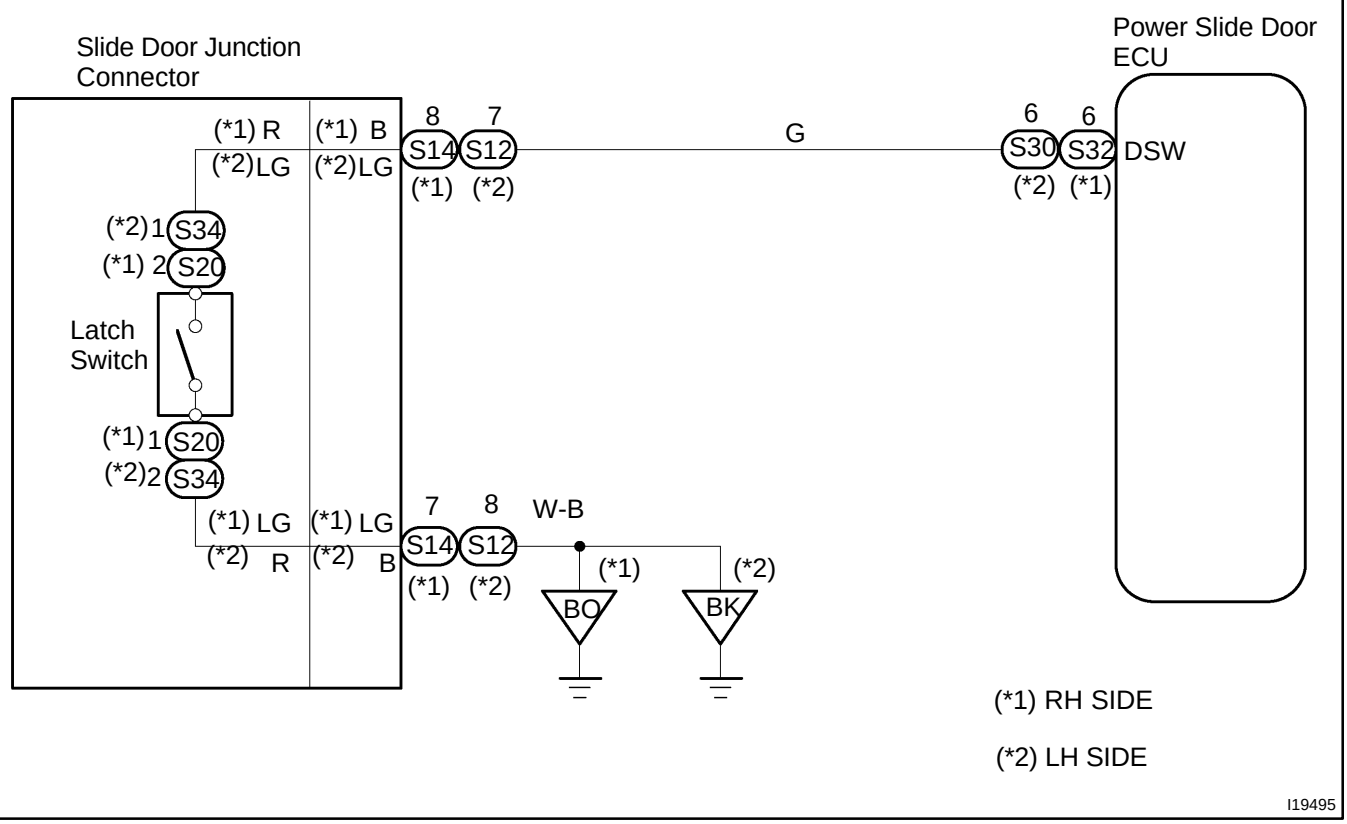
CIRCUIT DESCRIPTION

This code remains set until the door is detected to be fully closed. Power close operation is possible when this code is set.

DTC No.	DTC Detecting Condition	Trouble Area
2 - 3	Either of the following 1. or 2. is detected: 1. Door has traveled to the fully closed position and the secondary latch position has not been detected. 2. Power opening operation is requested but a latch signal is not detected.	• Latch SW

WIRING DIAGRAM

The circuit are on RH and LH SIDE individually



cardiagn.com

INSPECTION PROCEDURE

1	Check latch switch (See page BE-78).

NG → Replace the latch switch.

OK

2	Check wire harness and connector between latch switch and power slide door ECU, latch switch and body ground (See page IN-21).

NG → Repair or replace wire harness and connector.

OK

Replace the power slide door ECU.

cardiagn.com

DI045-14

DTC	41	IG Power Source Circuit

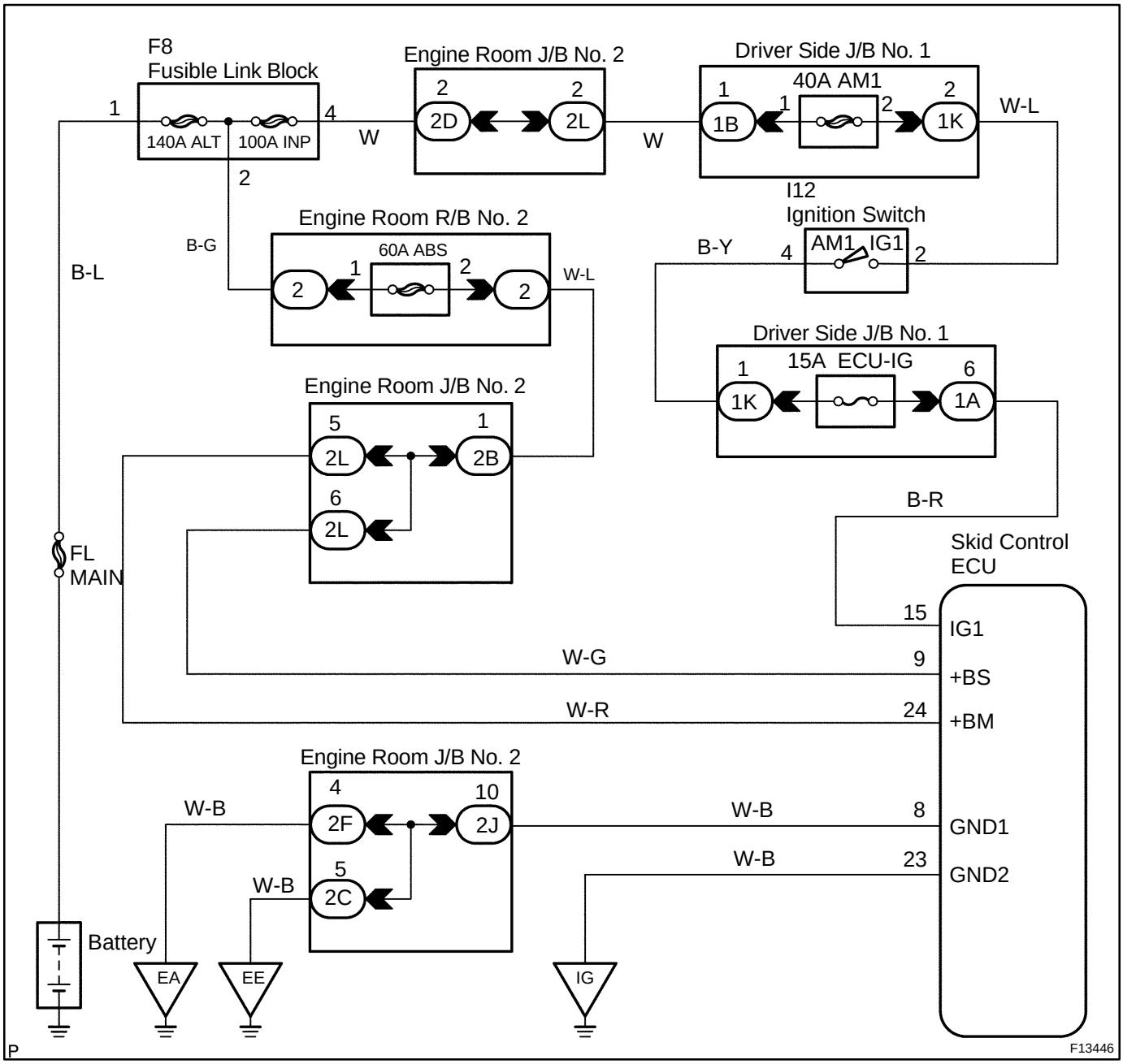
CIRCUIT DESCRIPTION

This is the power source for the ECU, hence for the CPU, and actuator.

DTC No.	DTC Detecting Condition	Trouble Area
41	Detection of any of conditions from 1. through 3. 1. With vehicle speed at 3 km/h or more, IG1 or +BS terminal voltage is 9.5V or below for 10 sec. or longer. 2. With IG1 terminal voltage at 9.5V or below, solenoid relay open, pump motor relay open, solenoid fault detecting condition are established. 3. +BS terminal voltage is 19 V or above for 1 sec. or longer	• Battery • Charging system • Power source circuit

cardiagn.com

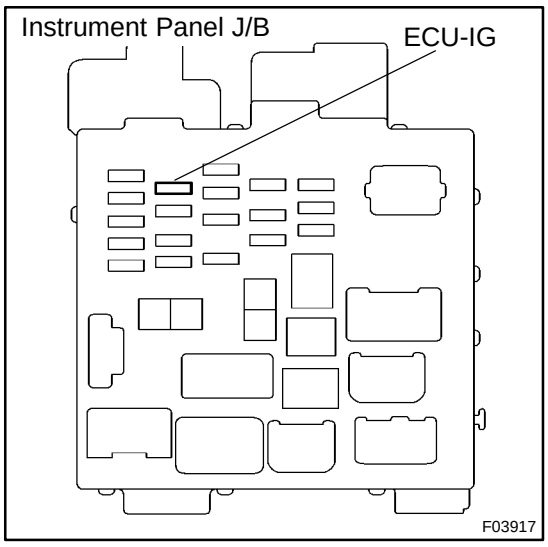
WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check ECU-IG fuse.**



PREPARATION:
Remove ECU-IG fuse from Instrument Panel J/B.
CHECK:
Check continuity of ECU-IG fuse.
OK:
Continuity

NG → **Check for short in circuit all the harness and components connected to ECU-IG fuse (See attached wiring diagram).**

OK

2	**Check battery positive voltage.**

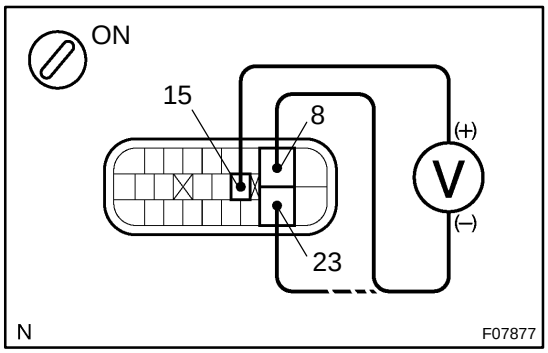
OK:
Voltage: 10 - 14 V

NG → **Check and repair the charging system (See page CH-2).**

OK

cardiagn.com

3	Check voltage between terminals IG1 and GND of ABS actuator connector.

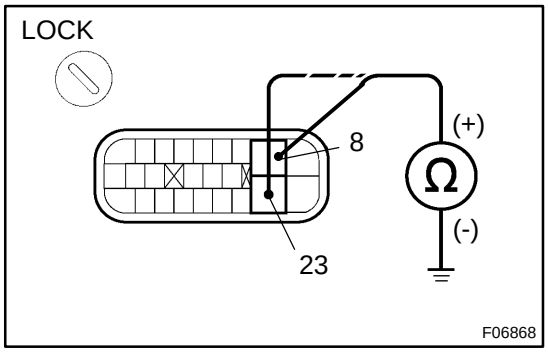


PREPARATION:
Disconnect ABS actuator connector.
CHECK:
(a) Turn the ignition switch ON.
(b) Measure voltage between terminals IG1(15) - GND(8, 23) of ABS actuator harness side connector.
OK:
Voltage: 10 - 14 V

OK	Check or replace ABS actuator assembly.

NG

4	Check continuity between terminals GND of ABS actuator connector and body ground.



CHECK:
Measure resistance between terminal GND (8, 23) of ABS actuator harness side connector and body ground.
OK:
Resistance: 1 Ω or less

NG	Repair or replace harness or connector.

OK

Check for open circuit in harness and connector between ABS actuator and ECU-IG fuse (See page IN-31).

cardiagn.com

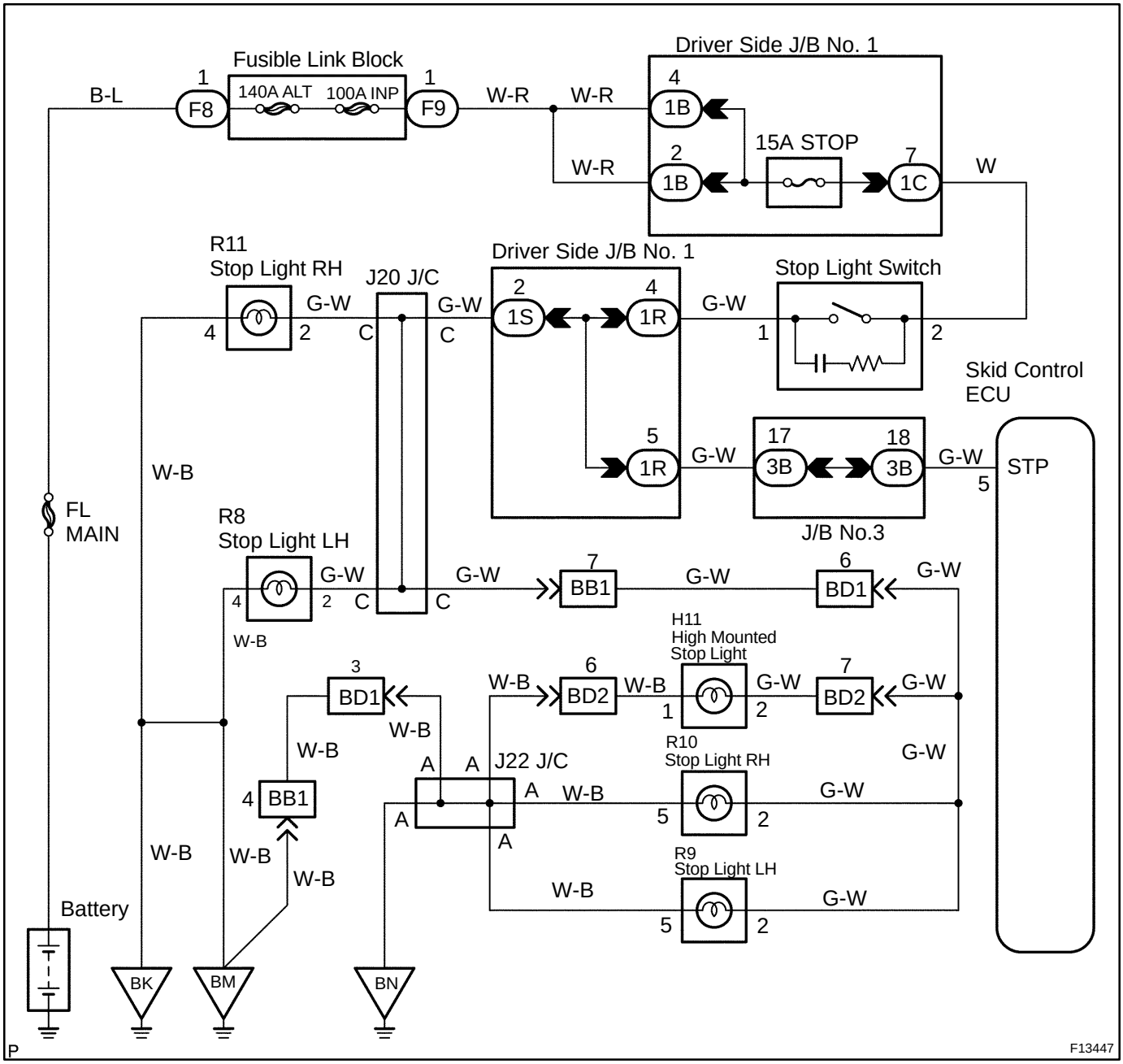
DI046-17

DTC	49	Stop Light Switch Circuit

CIRCUIT DESCRIPTION

DTC No.	DTC Detecting Condition	Trouble Area
49	With IG1 terminal voltage at 9.5V-18.5V, and when ABS is in non-operation stop light switch circuit is open for 0.3 sec. or longer.	• Stop light switch • Stop light switch circuit

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check operation of stop light.**

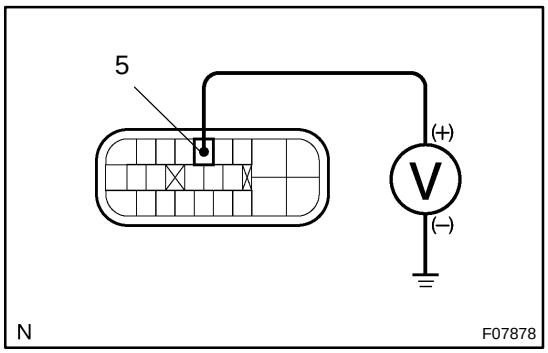
CHECK:

Check that stop light lights up when brake pedal is depressed and turns off when brake pedal is released.

NG → **Repair stop light circuit (See page BE-34).**

OK

2	**Check voltage between terminal STP of ABS actuator and body ground.**



PREPARATION:

Disconnect ABS actuator connector.

CHECK:

Measure the voltage between terminal STP(5) of ABS actuator harness side connector and body ground when brake pedal is depressed.

OK:

Voltage: 8 - 14 V

OK → **Check and replace ABS actuator assembly.**

NG

3	**Check for open circuit in harness and connector between ABS actuator and stop light switch (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI-226).

cardiagn.com

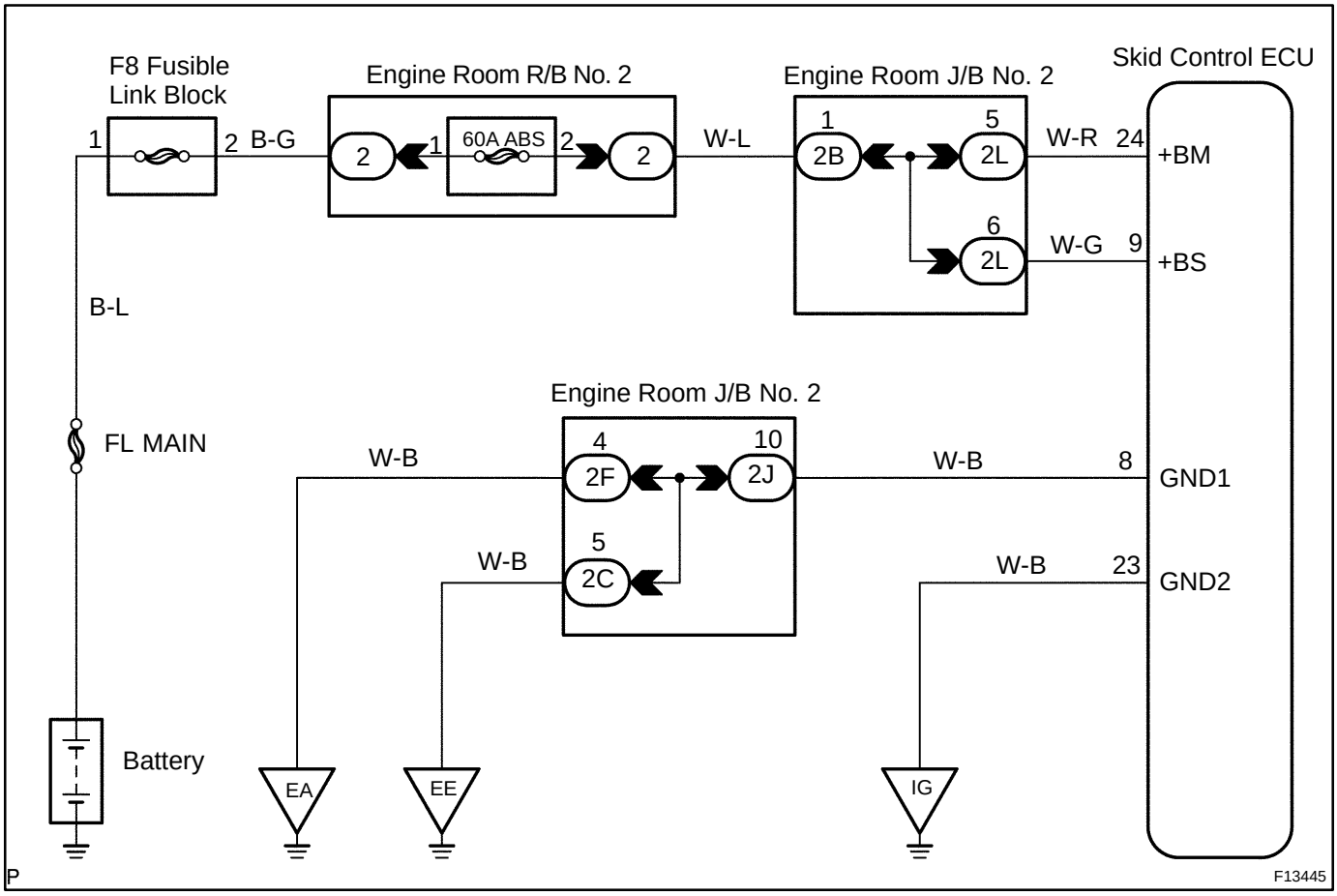
DI04R-11

DTC	51	ABS Pump Motor Lock

CIRCUIT DESCRIPTION

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

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check the DTC once more.**

PREPARATION:

(a) Clear the DTC (See page DI-220).

(b) Turn the ignition switch OFF.

CHECK:

Turn the ignition switch ON, and check if the same DTC is stored in the memory.

NO → **No problem.**

YES

Check and replace ABS actuator assembly.

cardiagn.com

DI040-12

CIRCUIT INSPECTION

DTC	11, 12	ABS Solenoid Relay Circuit

CIRCUIT DESCRIPTION

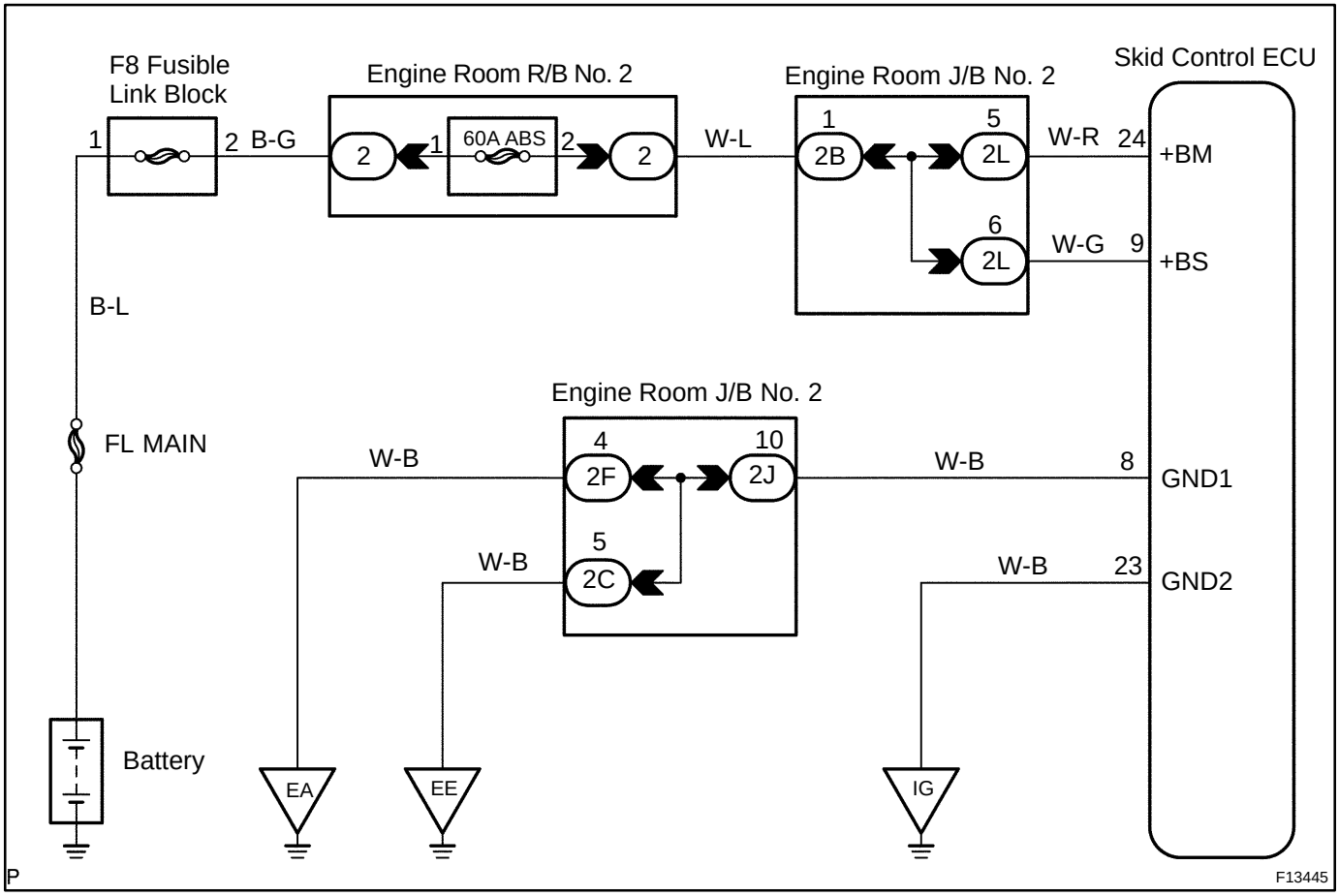
This relay supplies power to each ABS solenoid. After the ignition switch is turned ON, if the initial check is OK, the relay goes on.

DTC No.	DTC Detecting Condition	Trouble Area
11	With IG1 terminal voltage at 9.5V -18.5V, when solenoid relay is turned ON, relay contact is OFF*1 for 0.2 sec. or longer.	• ABS solenoid valve relay • Valve supply voltage
12	Immediately after IG1 is turned ON, when solenoid relay is turned OFF, relay contact is ON*2 for 0.2 sec. or longer.	

*1 Relay contact OFF condition:
When all solenoid supplied voltage are below 2.5 V.

*2 Relay contact ON condition:
Any of voltage supplied by solenoid is 6 V or more.

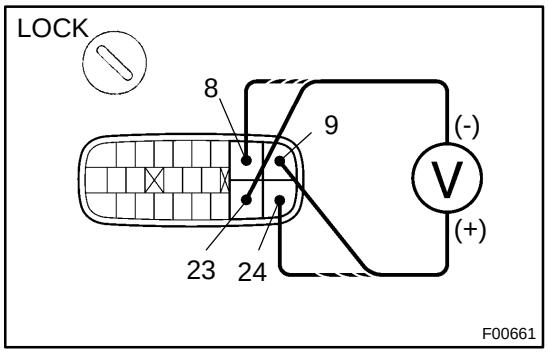
WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check voltage between terminals +BM and GND and terminals +BS and GND of ABS actuator.**



PREPARATION:
Disconnect the ABS actuator connector.

CHECK:
Measure the voltage between terminals +BM(24) - GND(8, 23) and terminals +BS(9) - GND(8, 23) ABS actuator harness side connector.

OK:

Voltage: 10 - 14 V

NG → **Check and replace fuses.**
Check and repair harness or connector.

OK

If the same code is still output after the DTC is deleted, check the contact condition of each connection. If the connection is normal, the ECU may be defective.

cardiagn.com

DI041-12

DTC	13, 14	ABS Motor Relay Circuit

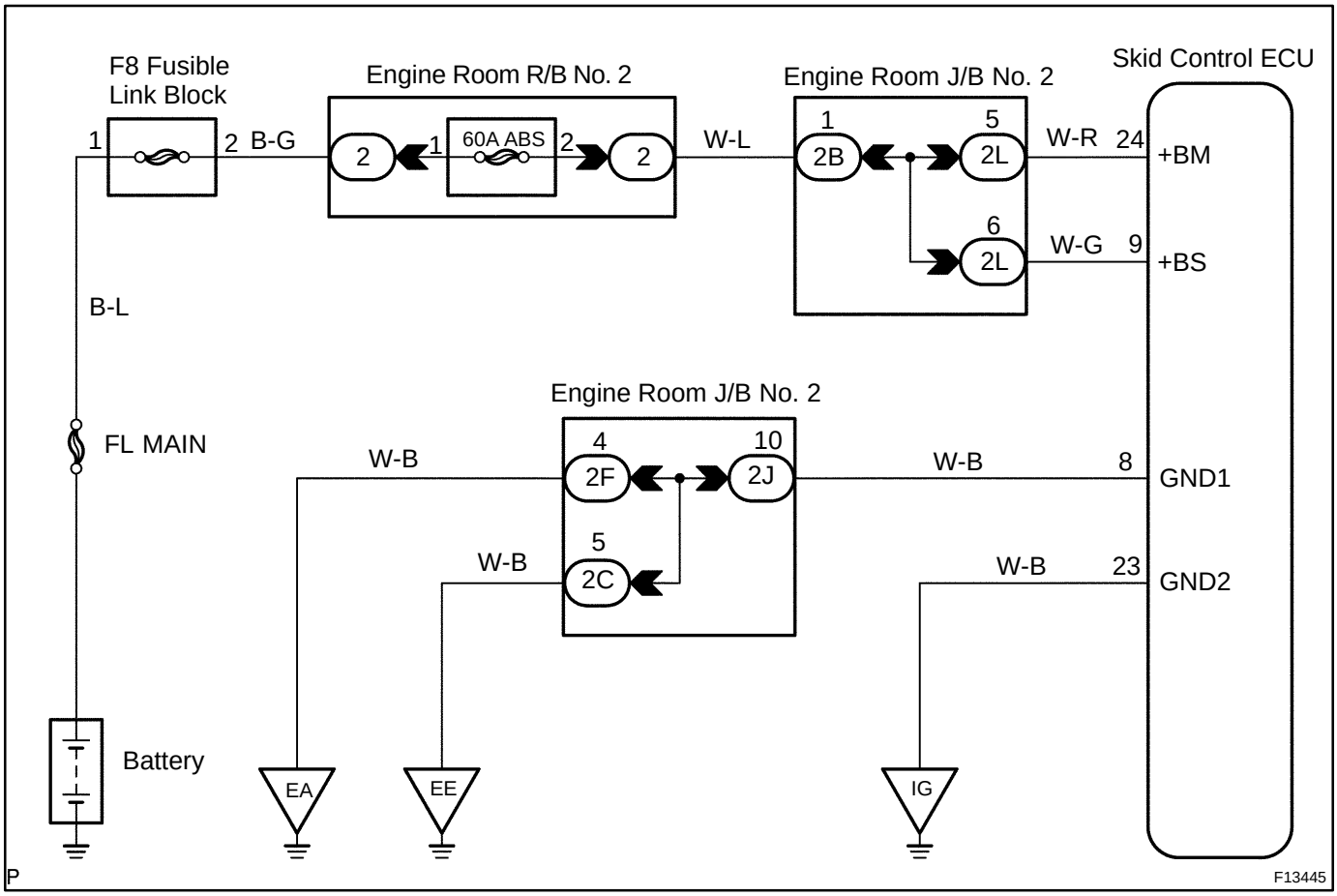
CIRCUIT DESCRIPTION

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

DTC No.	DTC Detecting Condition	Trouble Area
13	Detection of any conditions in 1. and 2.: 1. When pump motor relay is ON, relay contact is OFF*1 for 0.2 sec. or longer. 2. When pump motor relay is turned ON, relay contact is OFF*1 for 0.5 sec. or longer.	• ABS motor relay • Pump motor voltage • Pump motor lead disconnected
14	Detection of any conditions in 1. and 2.: 1. When pump motor relay is OFF, relay contact is ON*2 for 0.2 sec. or longer. 2. When pump motor relay is turned OFF, relay contact is ON*2 for 2 sec. or longer.	

*1 Relay contact OFF condition: BM terminal voltage is below 1.5 V.
*2 Relay contact ON condition: BM terminal voltage is 4.0 V or above.

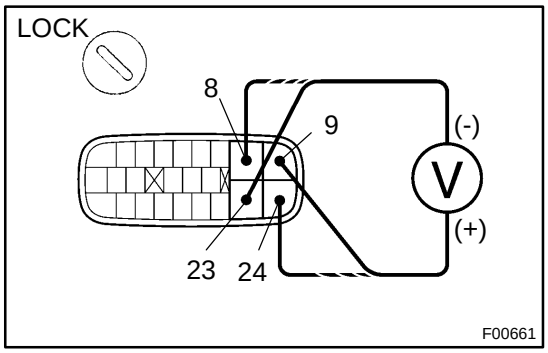
WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check voltage between terminals +BM and GND and terminals +BS and GND of ABS actuator.**



PREPARATION:
Disconnect the ABS actuator connector.

CHECK:
Measure the voltage between terminals +BM(24) - GND(8, 23) and terminals +BS(9) - GND(8, 23) ABS actuator harness side connector.

OK:

Voltage: 10 - 14 V

NG → **Check and replace fuses.**
Check and repair harness or connector.

OK

If the same code is still output after the DTC is deleted, check the contact condition of each connection. If the connection is normal, the ECU may be defective.

cardiagn.com

DI042-12

DTC	21 - 24	ABS Solenoid Valve Circuit

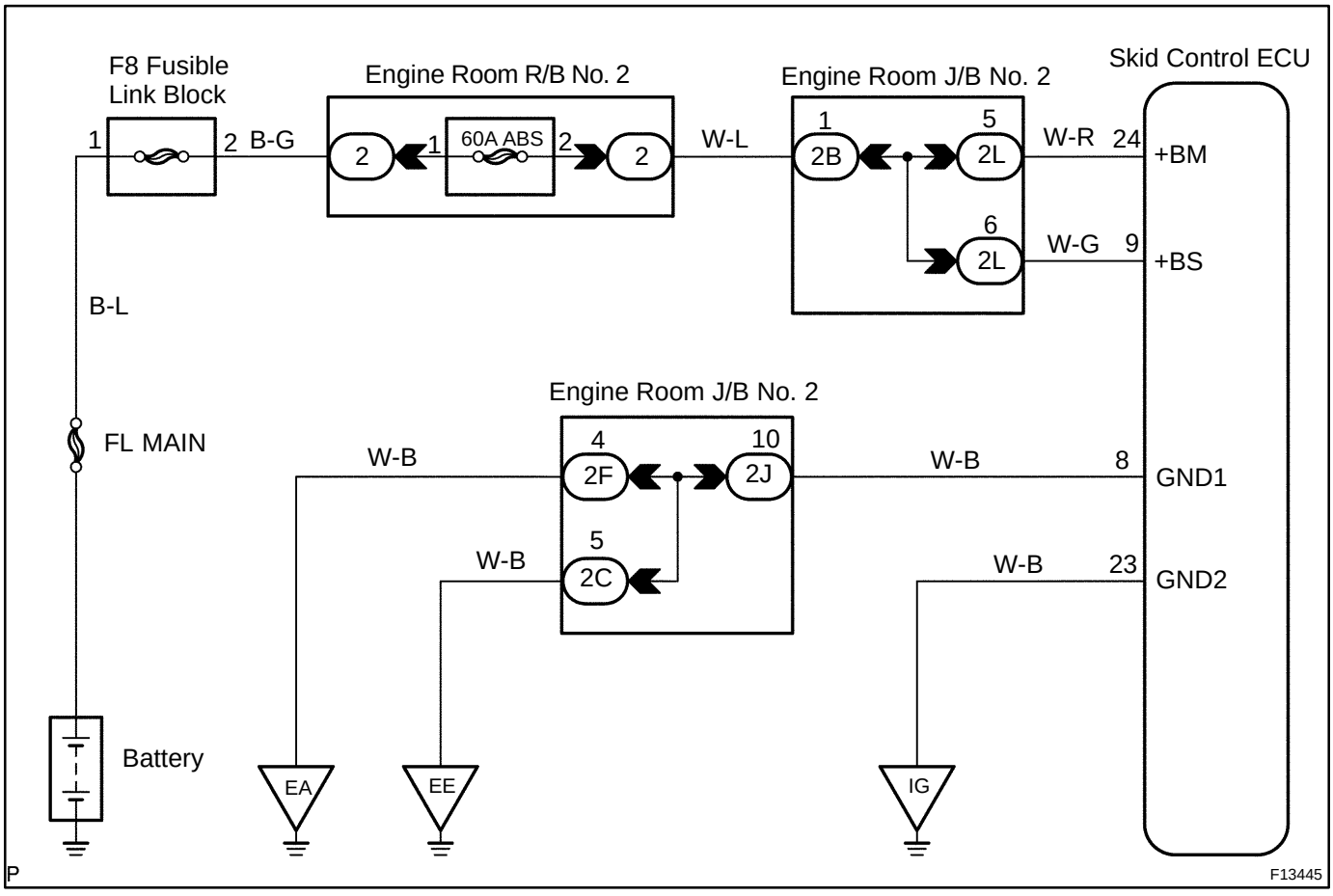
CIRCUIT DESCRIPTION

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
21, 22, 23, 24	With IG1 terminal voltage at 9.5V - 18.5V, solenoid circuit is open or short for 0.05 sec. or longer.	• Each solenoid valves circuit • ABS actuator

HINT:
DTC No. 21 is for right front solenoid valve.
DTC No. 22 is for left front solenoid valve.
DTC No. 23 is for right rear solenoid valve.
DTC No. 24 is for left rear solenoid valve.

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check the DTC once more.**

PREPARATION:

(a) Clear the DTC (See page DI-220).

(b) Turn the ignition switch OFF.

CHECK:

Turn the ignition switch ON, and check that the same DTC is stored in the memory.

NO → **No problem.**

YES

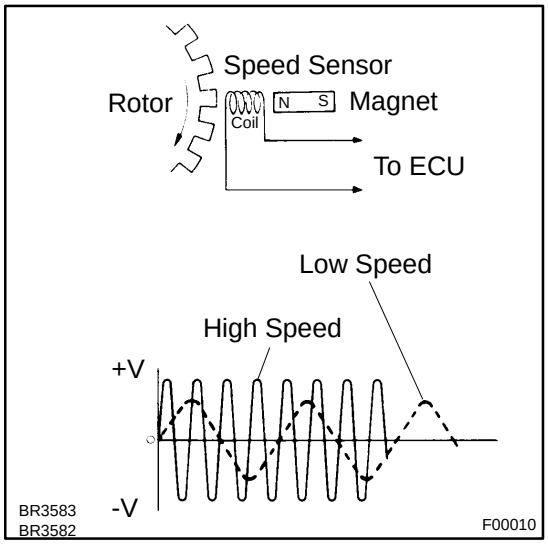
Replace ABS actuator assembly.

cardiagn.com

DI8AV-01

DTC	31 - 34	Speed Sensor Circuit

CIRCUIT DESCRIPTION



The speed sensor detects wheel speed and sends the appropriate signals to the ECU. These signals are used to control of the ABS system. The front and rear rotors each have 48 serrations.

When the rotors rotate, the magnetic field emitted by the permanent magnet in the speed sensor generates 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
31, 32, 33, 34	Detection of any of conditions from 1. through 4.: 1. With vehicle speed at 10 km/h or more, sensor signal circuit of faulty wheel is open or short for 15 sec. or longer. 2. Momentary interruption of sensor signal of faulty wheel has occurred 7 times or more. 3. With vehicle speed at 20 km/h or more, sensor signal of faulty wheel generated noise for 5 sec. or longer. 4. Sensor signal circuit is open for 0.3 sec. or longer.	• Right front, left front, right rear, left rear speed sensor • Each speed sensor circuit • Sensor installation • Sensor rotor

HINT:

DTC No. 31 is for the right front speed sensor.

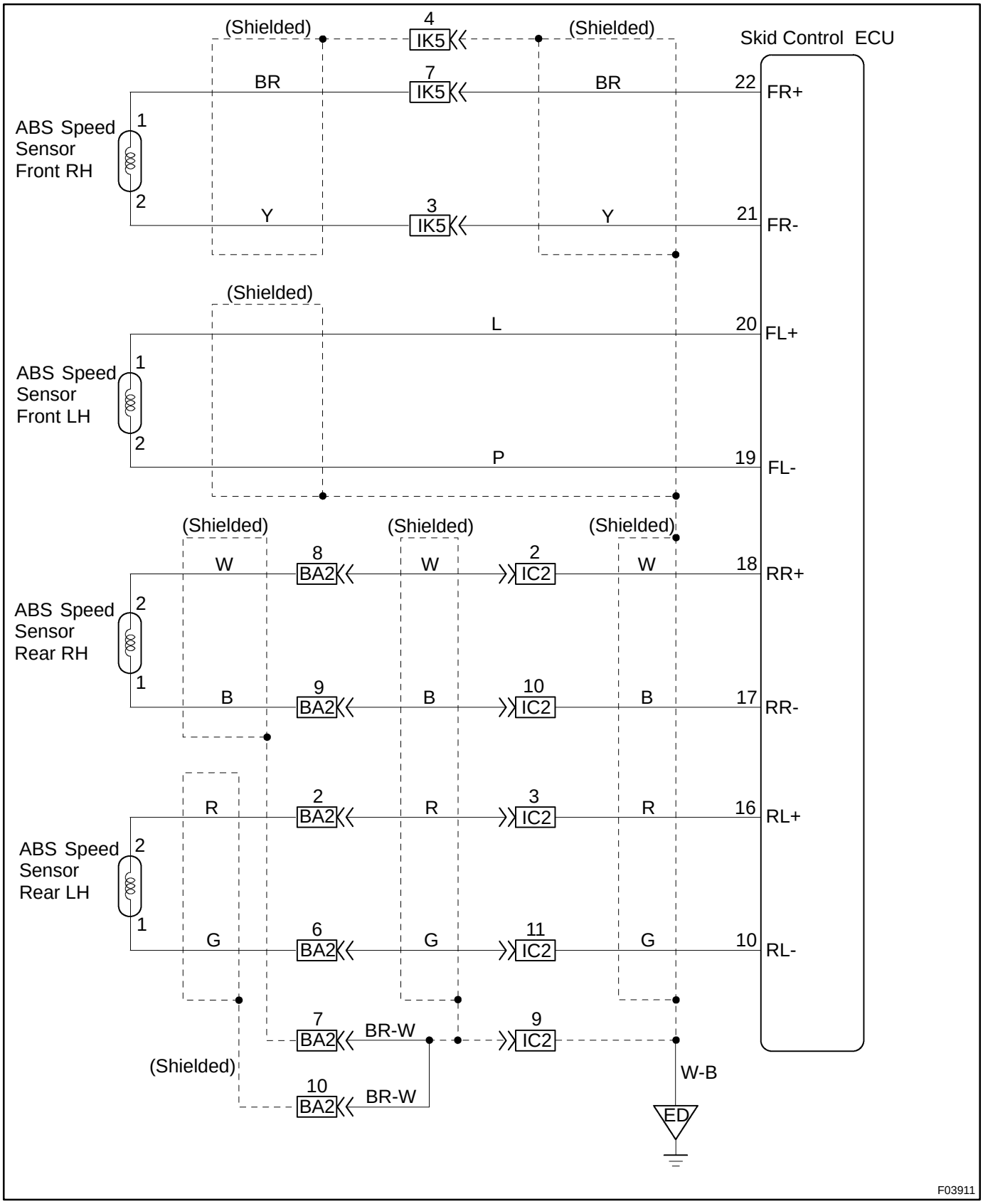
DTC No. 32 is for the left front speed sensor.

DTC No. 33 is for the right rear speed sensor.

DTC No. 34 is for the left rear speed sensor.

cardiagn.com

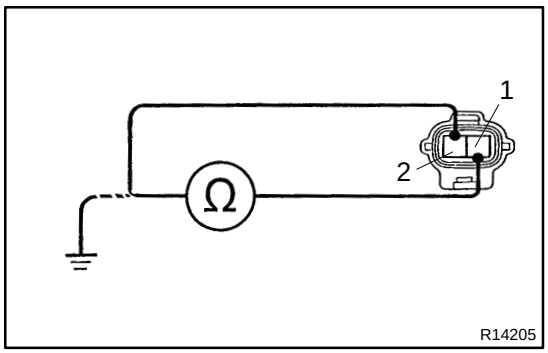
WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check speed sensor.**



Front:

PREPARATION:

(a) Remove the front fender liner.
(b) Make sure that there is no looseness at the connector lock part and connecting part of the connector.
(c) Disconnect the speed sensor connector.

CHECK:

Measure resistance between terminals 1 and 2 of speed sensor connector.

OK:

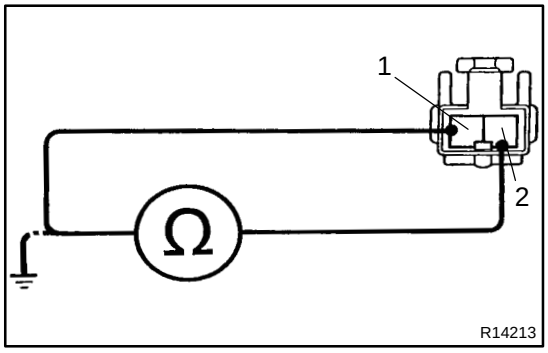
Resistance: 0.9 - 1.8 kΩ at 20 ˚C (68 ˚F)

CHECK:

Measure resistance between each of terminals 1 and 2 of speed sensor connector and body ground.

OK:

Resistance: 1 MΩ or higher



Rear:

PREPARATION:

(a) Remove the seat cushion and side seatback.
(b) Make sure that there is no looseness at the connector lock part and connecting part of the connector.
(c) Remove the lower center garnish, rear door scuff plate and room partition trim.
(d) Disconnect the speed sensor connector.

CHECK:

Measure resistance between terminals 1 and 2 of speed sensor connector.

OK:

Resistance: 0.9 - 1.3 kΩ at 20 ˚C (68 ˚F)

CHECK:

Measure resistance between each of terminals 1 and 2 of speed sensor connector and body ground.

OK:

Resistance: 1 MΩ or higher

NG → **Replace front speed sensor or rear axle hub.**

NOTICE:

Check the speed sensor signal last (See page DI-220).

OK

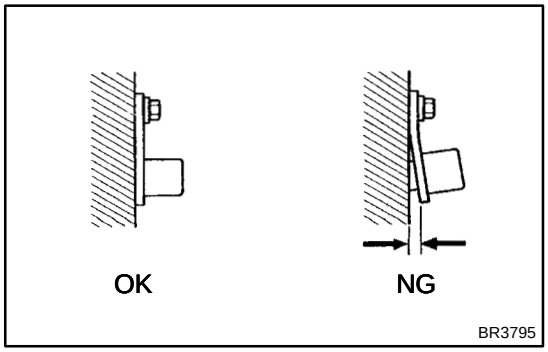
cardiagn.com

2	**Check for open and short circuit in harness and connector between each speed sensor and ECU (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

3	**Check front speed sensor installation.**



CHECK:
Check the speed sensor installation.
OK:

The installation bolt is tightened properly and there is no clearance between the sensor and knucle.
Torque: 8.0 N·m (82 kgf·cm, 71 in.·lbf)

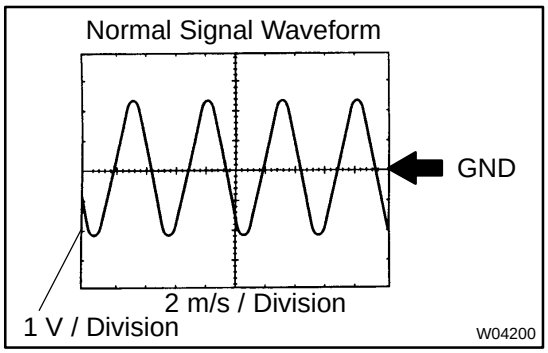
NG → **Replace front speed sensor.**

NOTICE:
Check the speed sensor signal last (See page DI-220).

OK

cardiagn.com

4	Check rear speed sensor and sensor rotor serrations.



REFERENCE: INSPECTION USING OSCILLOSCOPE

PREPARATION:

Connect the oscilloscope to the each of terminals RR+ - RR- or RL+ - RL- of the ECU harness side connector.

CHECK:

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

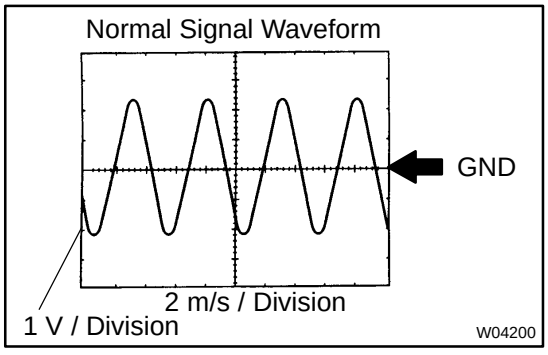
HINT:

- As the vehicle speed (rpm of the wheels) 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.

NG → **Replace rear axle hub.**

OK

5	Check front speed sensor and sensor rotor serrations.



REFERENCE: INSPECTION USING OSCILLOSCOPE

PREPARATION:

Connect the oscilloscope to the each of terminals FR+ - FR- or FL+ - FL- of the ECU harness side connector.

CHECK:

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

HINT:

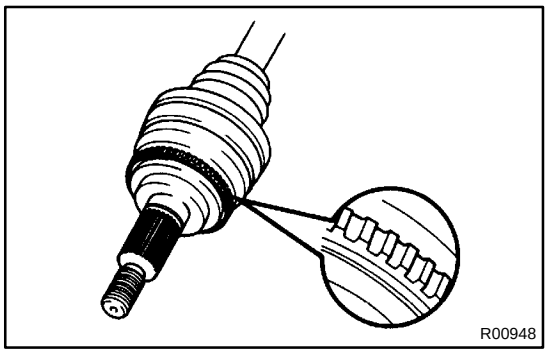
- As the vehicle speed (rpm of the wheels) increases, a cycle of the waveform becomes shorter and the fluctuation in the output voltage becomes greater.
- When noise is identified in the waveform on the oscilloscope, error signals are generated due to the speed sensor rotor's scratches, looseness or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

OK → **Check and replace ABS actuator assembly.**

NG

cardiagn.com

6	Check front sensor rotor and sensor tip.



PREPARATION:
Remove the front drive shaft (See page SA-16).
CHECK:
Check the sensor rotor serrations.
OK:
No scratches, missing teeth or foreign objects.
PREPARATION:
Remove the front speed sensor (See page BR-49).
CHECK:
Check the sensor tip.
OK:
No scratches or foreign objects on the sensor tip.
HINT:
If foreign matter (including that on the sensor rotor side) is identified, remove it and after reassembling, check the output waveform.

NG → **Replace sensor rotor or speed sensor.**

NOTICE:
Check the speed sensor signal last (See page DI-220).

OK →

Check and replace ABS actuator assembly.

cardiagn.com

DI77L-01

ABS Actuator Assembly and Speed Sensor

INSPECTION PROCEDURE

1	**Check ABS warning light goes on for about 3 seconds when the ignition switch is turned ON.**

NG → **Proceed to troubleshooting for the ABS warning light circuit (See page DI-250).**

OK

2	**Is ABS DTC output?**

Check ABS DTC on page DI-220 .

YES → **Repair circuit indicated by the code output (See page DI-223).**

NO

Proceed to next circuit inspection shown in problem symptoms table (See page DI-212).

cardiagn.com

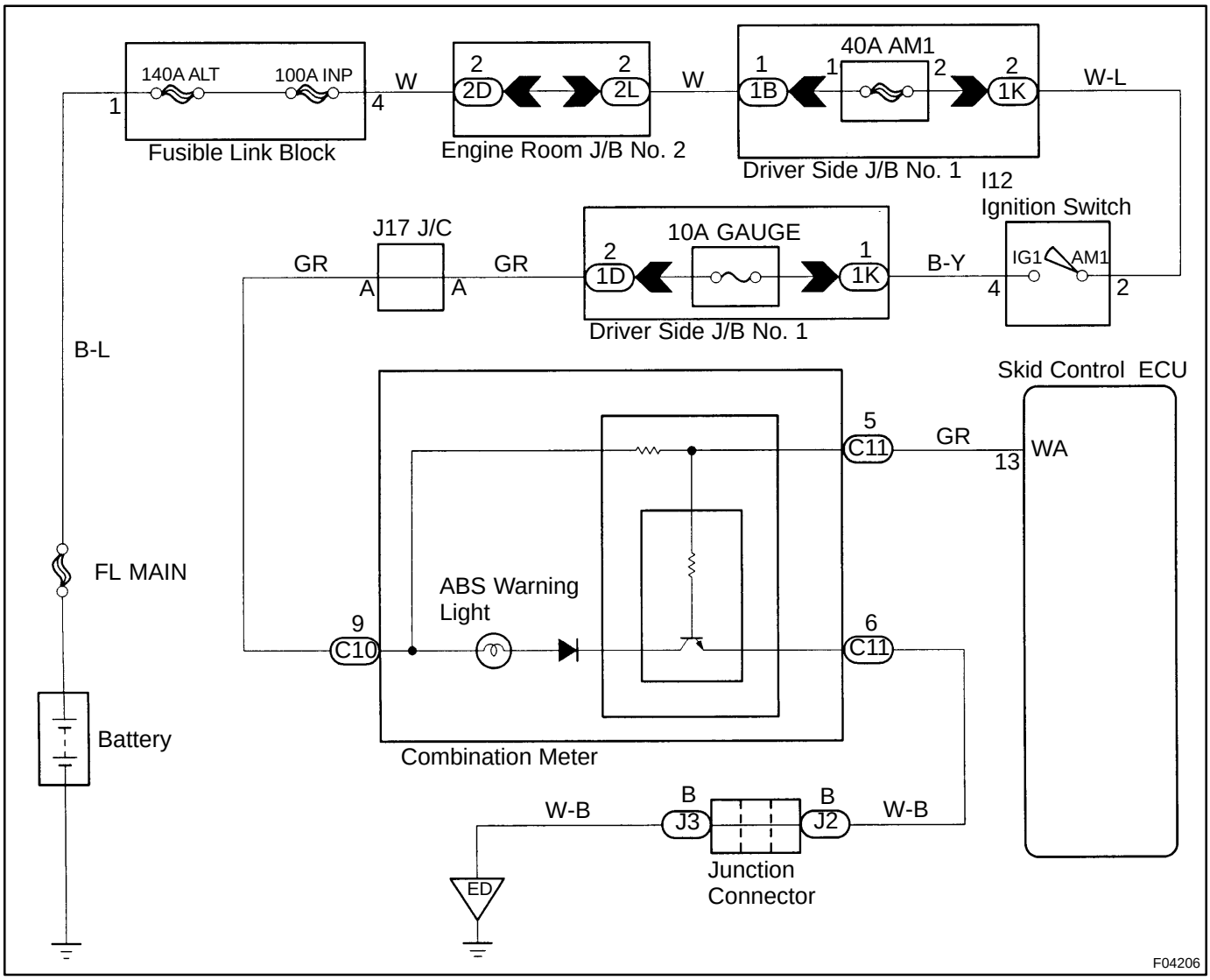
DI048-17

ABS Warning Light Circuit

CIRCUIT DESCRIPTION

If the ECU detects trouble, it lights the ABS warning light while at the same time prohibiting ABS control. At this time, the ECU records a DTC in memory.
Connect terminals Tc and E_1 of the DLC1 or Tc and CG of the DLC3 to make the ABS warning light blink and output the DTC.

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

Troubleshoot in accordance with the table below for each trouble symptom.

ABS warning light does not light up	See below
ABS warning light remains on	See page DI-247

1	**Check operation of the ABS warning light.**

PREPARATION:

(a) Turn the ignition switch OFF.
(b) Disconnect the connector from the ABS actuator.
(c) Turn the ignition switch ON.

CHECK:

Check the ABS warning light goes on.

OK → **Check and replace ABS actuator assembly.**

NG

2	**Check for short circuit in harness and connector between combination meter and ABS actuator (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

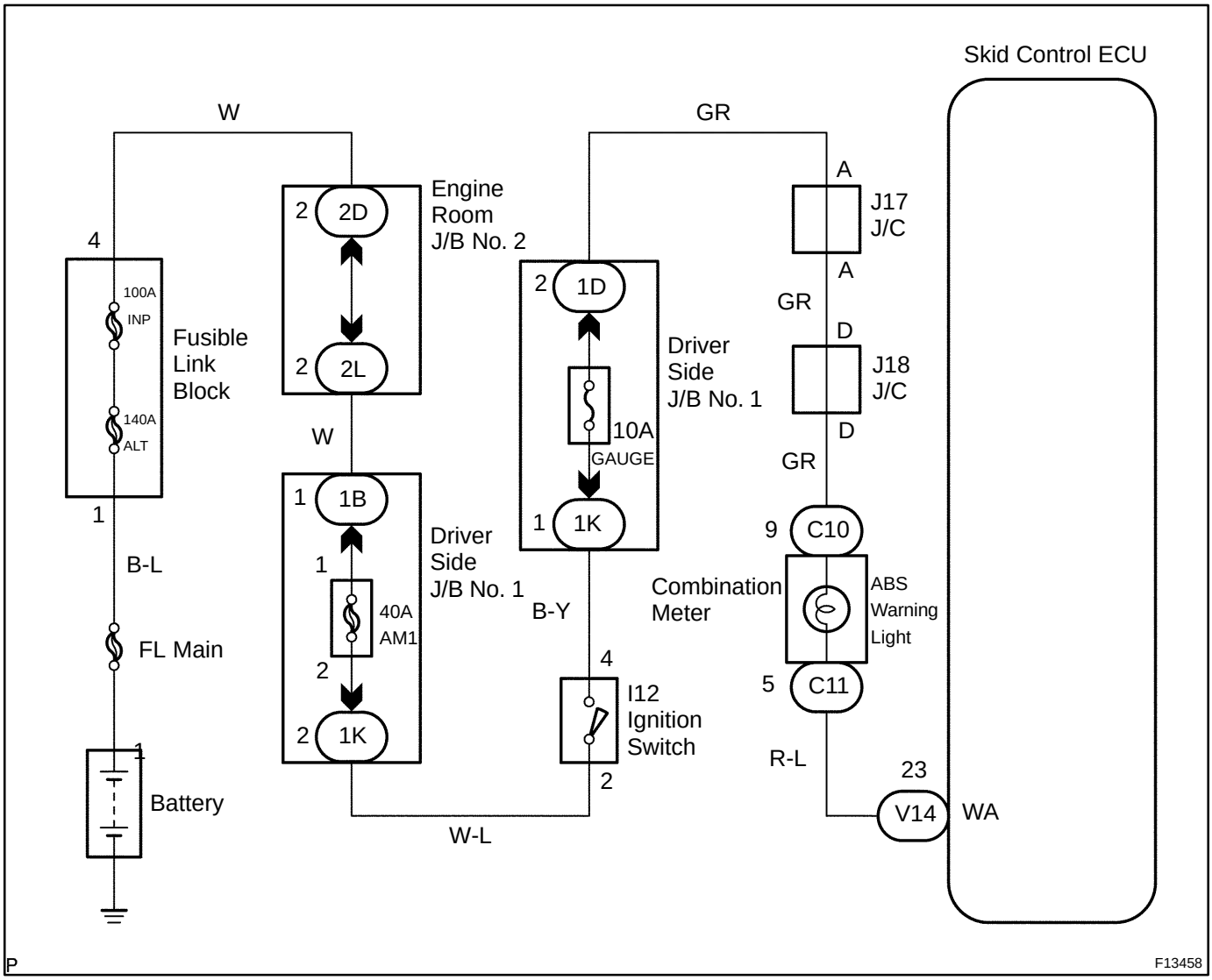
Replace or repair bulb or combination meter.

cardiagn.com

DI6OI-02

ABS Warning Light Circuit

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

HINT:

Troubleshoot in accordance with the chart below for each trouble symptom.

ABS warning light does not light up	See below
ABS warning light remains on	See page DI-334

1	**Check operation of the ABS warning light.**

PREPARATION:

(a) Turn the ignition switch OFF.
(b) Disconnect the connector from the skid control ECU.
(c) Turn the ignition switch ON.

CHECK:

Check the ABS warning light goes on.

OK → **Check and replace skid control ECU.**

NG

2	**Check for short circuit in harness and connector between combination meter and skid control ECU (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

Replace or repair bulb or combination meter.

cardiagn.com

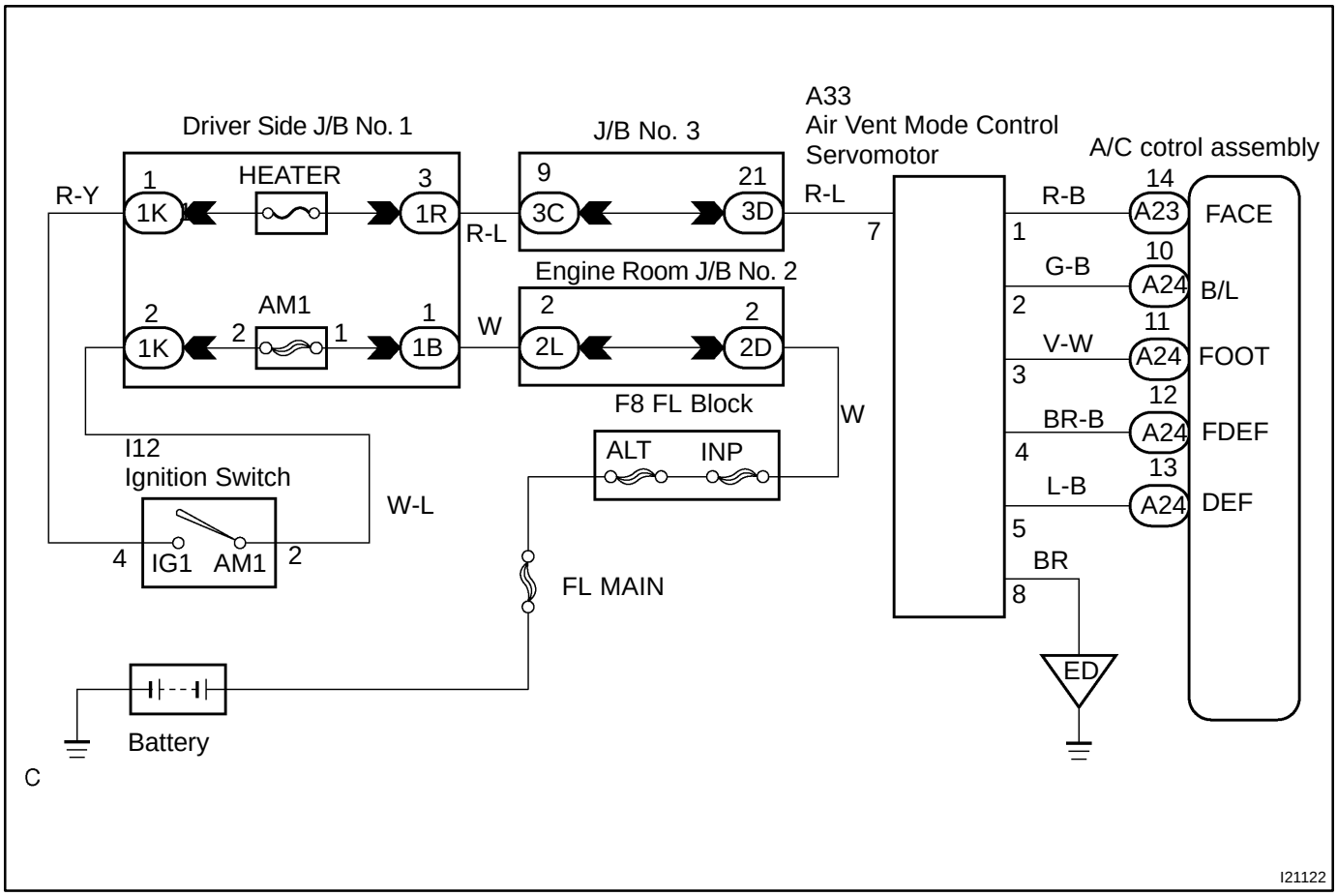
DI3W9-08

Air Outlet Control Servomotor Circuit

CIRCUIT DESCRIPTION

This circuit turns the servomotor and changes each mode damper position by signals from the A/C control assembly. When the AUTO switch is ON, the A/C control assembly changes the mode automatically between FACE, BI-LEVEL and FOOT according to the temperature setting.

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Actuator check.**

Display Code	Air Flow Mode
0 - 4	FACE
5	BI-LEVEL
6 - 7	FOOT
8	FOOT/DEF
9	DEF

PREPARATION:

(a) Set to the actuator check mode (See page DI-689).

(b) Press the DEF switch and change to step operation.

CHECK:

Press the DEF switch in order and check the condition of air flow mode.

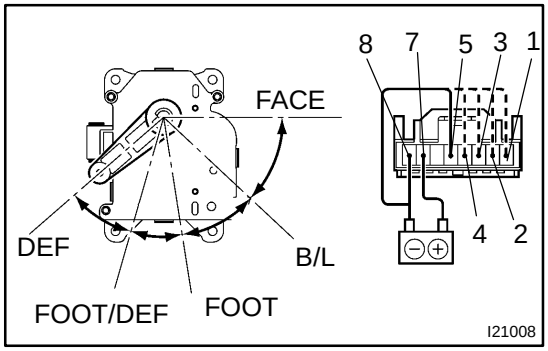
OK:

The mode changes with the change in the temperature display as shown in the table.

OK	**Proceed to next circuit inspection shown on problem symptoms table (See page DI-697).**

NG

2	**Check air outlet control servomotor.**



PREPARATION:

Remove air outlet control servomotor (See page AC-93).

CHECK:

(a) Connect positive (+) lead to terminal 7 and negative (-) lead to terminal 8.

(b) Check the lever operation when the negative (-) lead is connected to the terminals shown below.

OK:

The lever moves smoothly to the position for each mode.

Ground Terminals	Mode
5	DEF.
4	FOOT/DEF
3	FOOT
2	B/L
1	FACE

NG	**Replace air outlet control servomotor.**

OK

cardiagn.com

3	**Check harness and connector between A/C control assembly and air outlet control servomotor, air outlet control servomotor and battery, air outlet control servomotor and body ground (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

Repair or replace A/C control assembly.

cardiagn.com

DI6OH-02

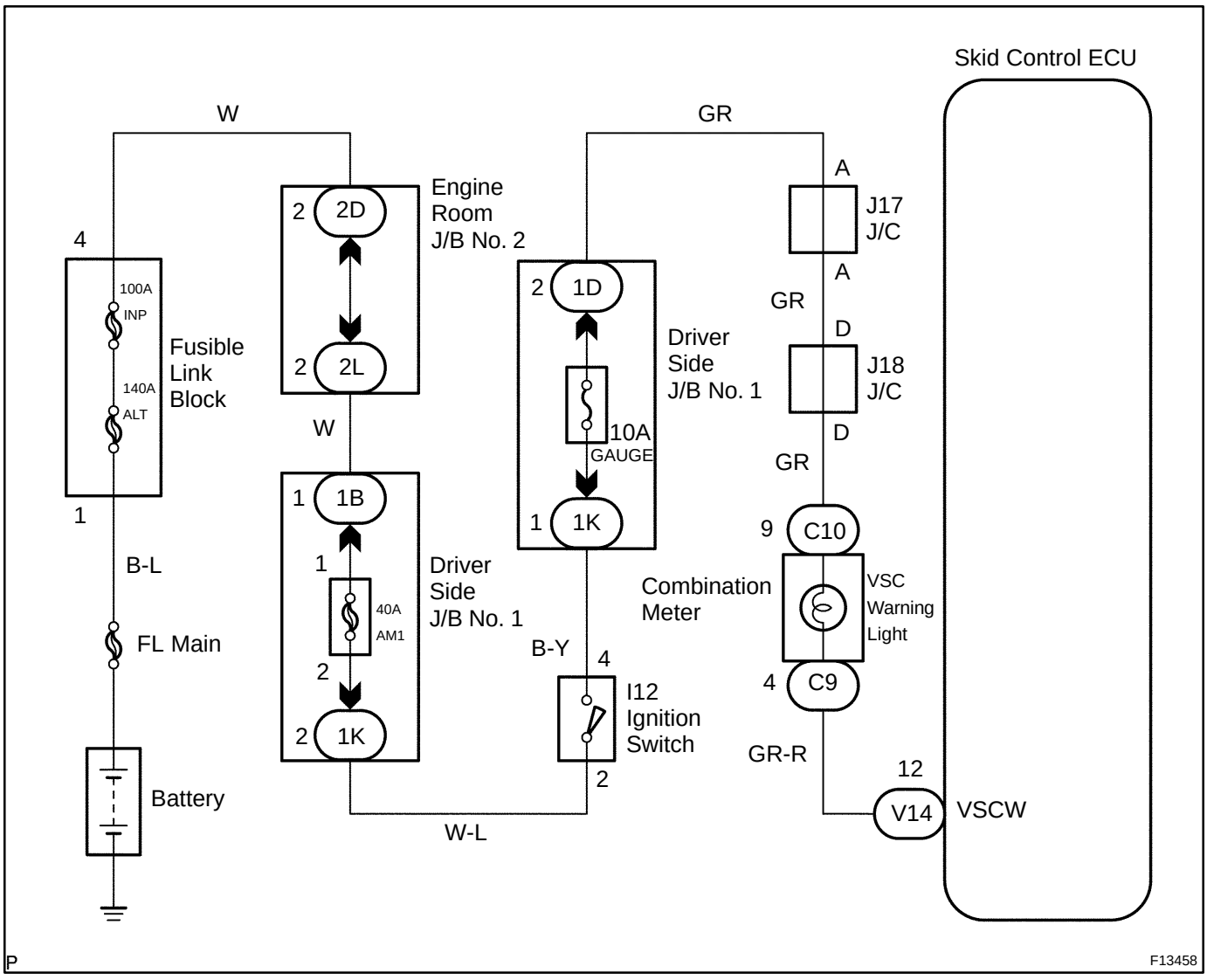
DTC	Always ON	Malfunction in ECU VSC Warning Light Circuit

CIRCUIT DESCRIPTION

DTC No.	DTC Detecting Condition	Trouble Area
Always ON	Either of the following 1. or 2. is detected: 1. There is a malfunction in the ECU internal circuit. 2. There is a malfunction in VSC warning light circuit.	• Charging system • VSC warning light circuit

HINT:
TOYOTA hand-held tester may not be able to be used when ECU is defective.

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Is DTC output?**

Check DTC on page DI-259 .

YES → **Repair circuit indicated by the output code .**

NO

2	**Check that the ECU connectors are securely connected to the ECU.**

NO → **Connect the connector to the ECU.**

YES

3	**Check battery positive voltage.**

CHECK:
Check the battery positive voltage.
OK:
Voltage: 10 - 14 V

NG → **Check and repair the charging system (See page CH-2).**

OK

4	**Check the Tc terminal circuit (See page DI-351).**

NG → **Repair or replace the Tc terminal circuit.**

OK

cardiagn.com

5	**Check operation of the VSC warning light.**

In case of using the TOYOTA hand-held tester:

PREPARATION:

(a) Connect the TOYOTA hand-held tester to the DLC3.
(b) Turn the ignition switch ON and push the TOYOTA hand-held tester main switch ON.
(c) Select the ACTIVE TEST mode on the TOYOTA hand-held tester.

CHECK:

Check that "ON" and "OFF" of the VSC warning light can be shown on the combination meter by the TOYOTA hand-held tester.

In case of not using the TOYOTA hand-held tester:

PREPARATION:

(a) Turn the ignition switch OFF.
(b) Disconnect the connector from the skid control ECU.
(c) Turn the ignition switch ON.

CHECK:

Check the VSC warning light goes off.

OK → **Check and replace skid control ECU.**

NG

6	**Check for short circuit in harness and connector between combination meter and skid control ECU (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

Check and replace combination meter.

cardiagn.com

DI231-07

DTC	Always ON	Skid Control ECU Malfunction IG Power Source Circuit

CIRCUIT DESCRIPTION

This is the power source for the ECU, hence for the CPU and the actuator.

DTC No.	DTC Detecting Condition	Trouble Area
Always ON	Detection of any conditions in 1., 2., 3. and 4.: 1. Skid control ECU internal malfunction is detected. 2. IG1 terminal voltage is 7 V or below. 3. ECU connector is not connected. 4. There is a malfunction in ABS warning light circuit	• Battery • Charging system • Power source circuit • ABS warning light circuit • Skid control ECU

INSPECTION PROCEDURE

1	**Is DTC output?**

Check DTC on page DI-220 .

YES → **Repair circuit indicated by the code output.**

NO

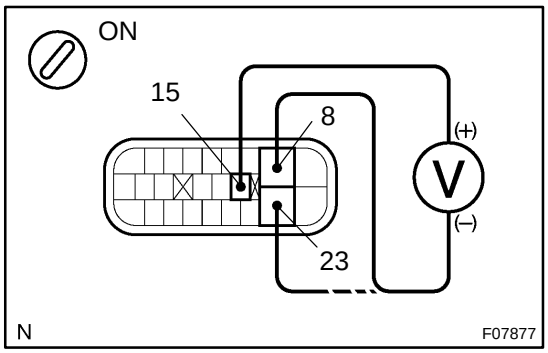
2	**Check that the ECU connectors are securely connected to the ECU.**

NO → **Connect the connector to the ECU.**

YES

cardiagn.com

3	Check voltage between terminals IG1 and GND of ABS actuator connector.



PREPARATION:
Disconnect ABS actuator connector.
CHECK:
(a) Turn the ignition switch ON.
(b) Measure voltage between terminals IG1(15) - GND(8, 23) of ABS actuator harness side connector.
OK:
Voltage: 10 - 14 V

NG	Check for open and short circuit in harness and connector between ECU-IG fuse and ABS actuator (See page IN-31).

OK

4	Check battery positive voltage.

OK:
Voltage: 10 - 14 V

NG	Check and repair the charging system (See page CH-2).

OK

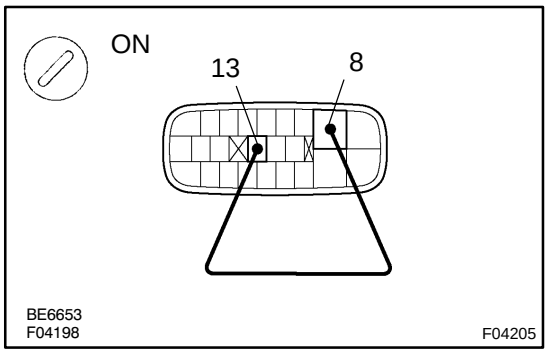
5	Check the Tc terminal circuit.

NG	Repair or replace the Tc terminal circuit.

OK

cardiagn.com

6	**Check operation of the ABS warning light.**



CHECK:

(a) Using service wire, connect terminal WA(13) and GND1(8) of ABS actuator connector.

(b) Turn the ignition switch ON.

OK:

ABS warning light goes off

OK	**Check and replace ABS actuator assembly.**

NG

7	**Check for open circuit in harness and connector between combination meter and ABS actuator (See page IN-31).**

OK	**Repair or replace combination meter assembly.**

NG

Repair or replace harness or connector.

cardiagn.com

DI8AY-01

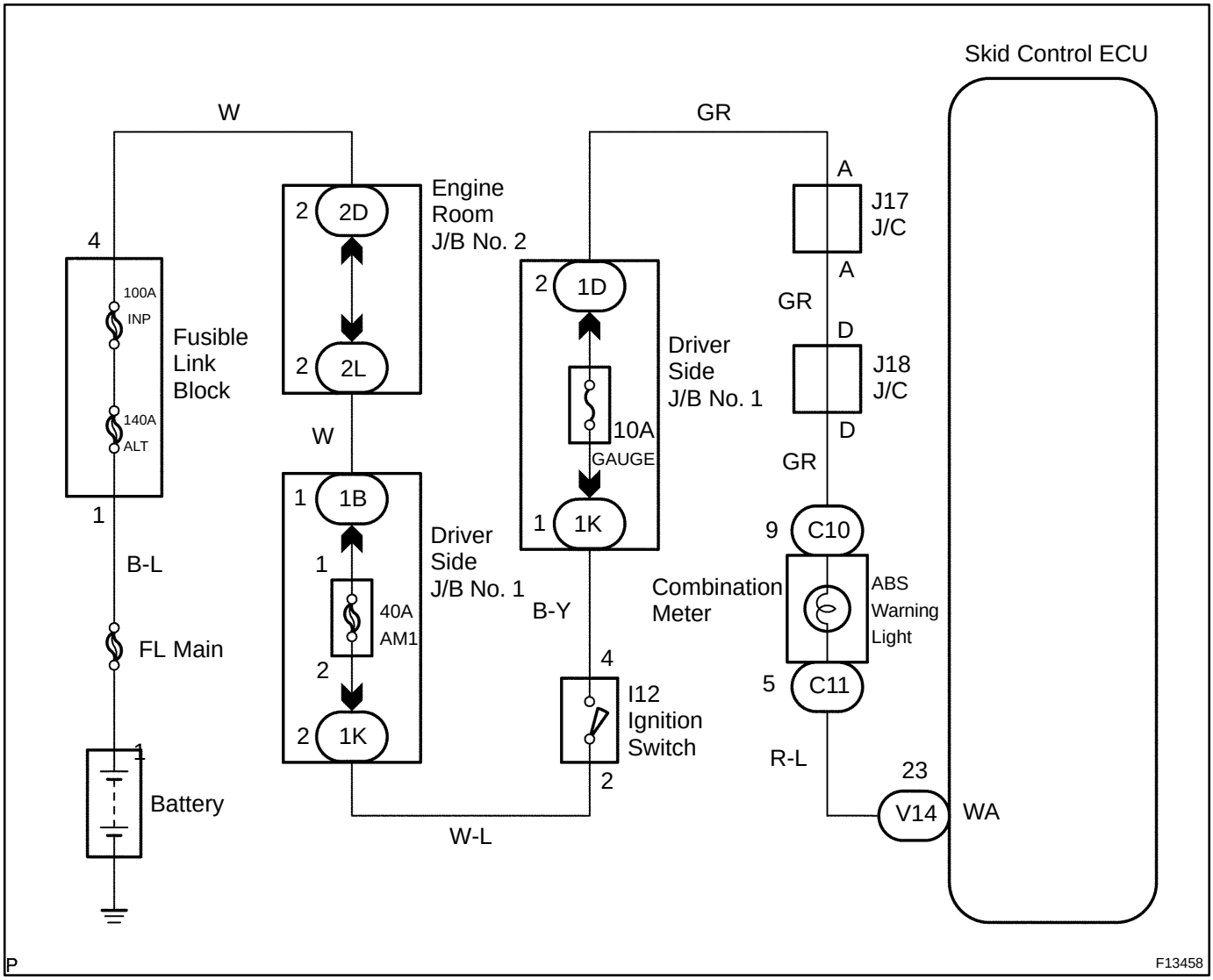
DTC	Always ON	Malfunction in ECU ABS Warning Light Circuit

CIRCUIT DESCRIPTION

DTC No.	DTC Detecting Condition	Trouble Area
Always ON	Either of the following 1., 2., 3. or 4. is detected: 1. The ECU connectors are OFF the ECU. 2. There is a malfunction in the ECU internal circuit. 3. There is a malfunction in ABS warning light circuit. 4. IG1 terminal voltage is 7 V or below.	• Battery • Power source circuit • Charging system • ABS warning light circuit

HINT:
TOYOTA hand-held tester may not be able to be used when the ECU is defective.

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Is DTC output?**

Check DTC on page DI-259 .

YES → **Repair circuit indicated by the output code .**

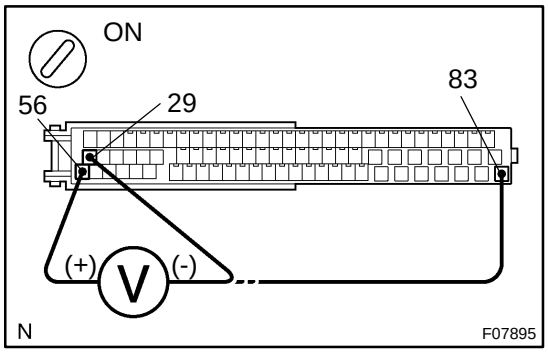
NO

2	**Check that the ECU connectors are securely connected to the ECU.**

NO → **Connect the connector to the ECU.**

YES

3	**Check voltage between terminals IG1 (56) and GND (29, 83) of skid control ECU.**



PREPARATION:
Disconnect the connector from the skid control ECU.
CHECK:
(a) Turn the ignition switch ON.
(b) Measure the voltage between terminals 56 and 29, 83 of skid control ECU harness side connector.
OK:
Voltage: 10 - 14 V

NG → **Check for open and short circuit in harness and connector between ECU-IG fuse and skid control ECU (See page IN-31).**

OK

cardiagn.com

4	**Check battery positive voltage.**

CHECK:
Check the battery positive voltage.
OK:
Voltage: 10 - 14 V

NG → **Check and repair the charging system (See page CH-2).**

OK

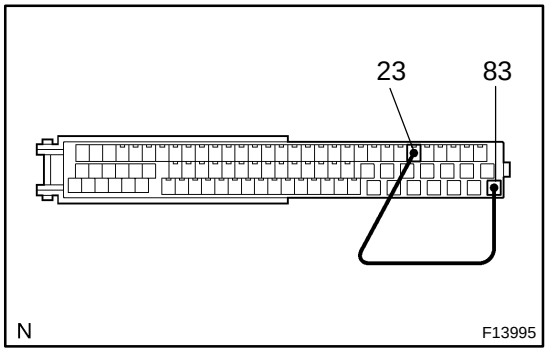
5	**Check the Tc terminal circuit (See page DI-351).**

NG → **Repair or replace the Tc terminal circuit.**

OK

6	**Check operation of the ABS warning light.**

In case of using the TOYOTA hand-held tester:
PREPARATION:
(a) Connect the TOYOTA hand-held tester to the DLC3.
(b) Turn the ignition switch ON and push the TOYOTA hand-held tester main switch ON.
(c) Select the ACTIVE TEST mode on the TOYOTA hand-held tester.
CHECK:
Check that "ON" and "OFF" of the ABS warning light can be shown on the combination meter by the TOYOTA hand-held tester.



In case of not using the TOYOTA hand-held tester:
PREPARATION:
(a) Disconnect skid control ECU connector.
(b) Using service wire, connect terminal WA (23) and GND1 (83) of skid control ECU connector.
(c) Turn the ignition switch ON.
CHECK:
Check the ABS warning light goes off.

OK → **Check and replace skid control ECU.**

NG

cardiagn.com

7	**Check ABS warning light.**

See the combination meter troubleshooting on page BE-2 .

NG → **Repair or replace bulb or combination meter.**

OK

8	**Check for open circuit in harness and connector between combination meter and skid control ECU (See page IN-31).**

NG → **Repeir or replace harness or connector.**

OK

Check and replace skid control ECU.

cardiagn.com

DI4CK-06

CIRCUIT INSPECTION

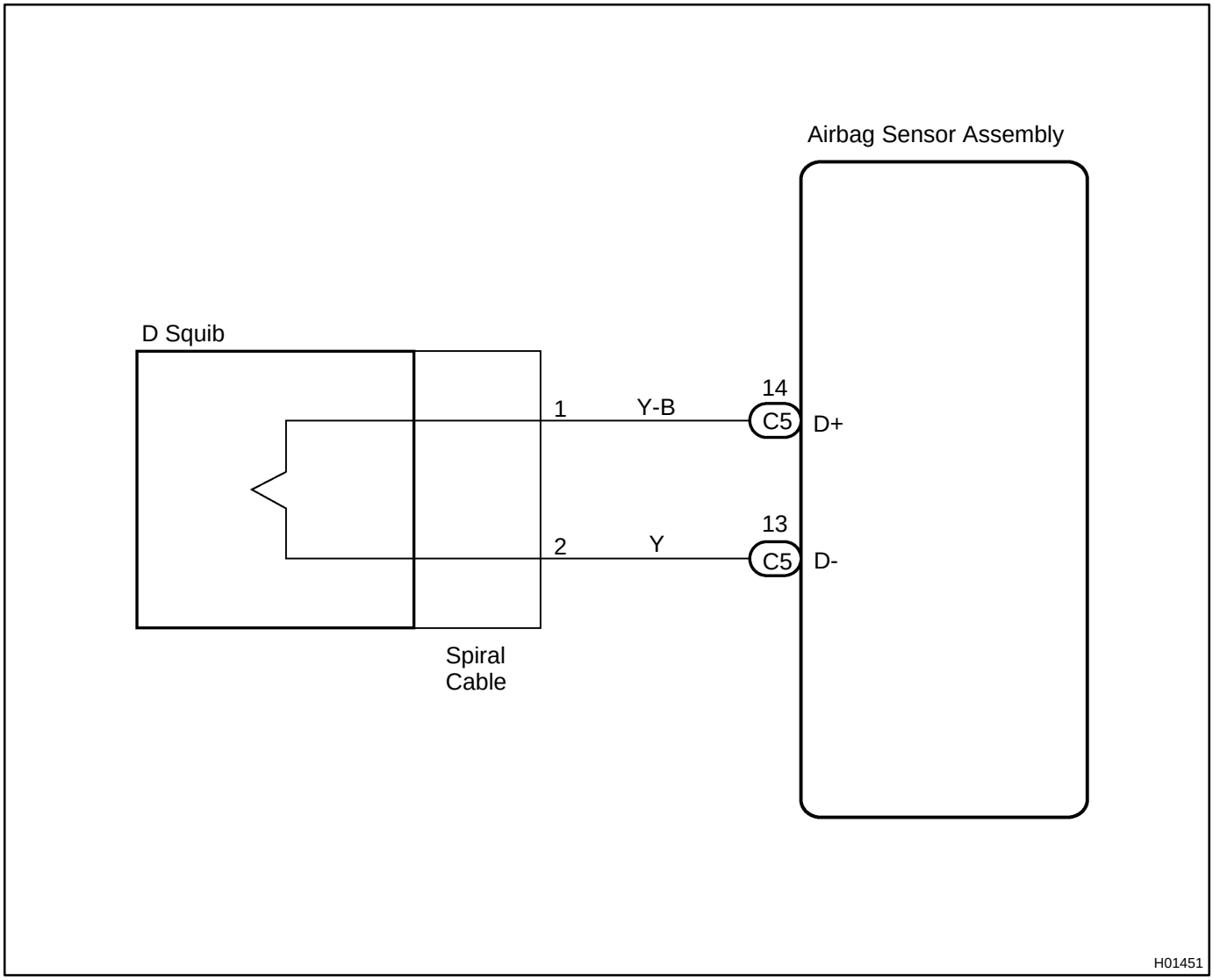
DTC	B0100/13	Short in D Squib Circuit

CIRCUIT DESCRIPTION

The D squib circuit consists of the airbag sensor assembly, spiral cable and steering wheel pad.
It causes the airbag to deploy when the airbag deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS-2 .
DTC B0100/13 is recorded when a short is detected in the D squib circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B0100/13	• Short circuit between D+ wire harness and D- wire harness of squib • D squib malfunction • Spiral cable malfunction • Airbag sensor assembly malfunction	• Steering wheel pad (D squib) • Spiral cable • Airbag sensor assembly • Wire harness

WIRING DIAGRAM

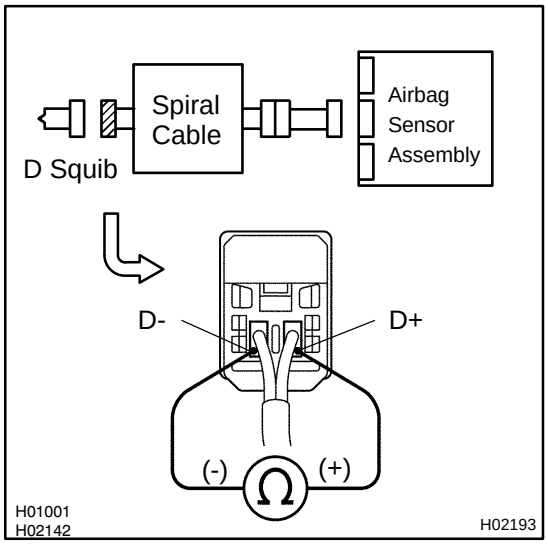


cardiagn.com

INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI-486).**

2	**Check D squib circuit.**



PREPARATION:

Release the airbag activation prevention mechanism of the connector (on the airbag sensor assembly side) between the airbag sensor assembly and the spiral cable (See page DI-358).

CHECK:

For the connector (on the spiral cable side) between the spiral cable and the steering wheel pad, measure the resistance between D+ and D-.

OK:

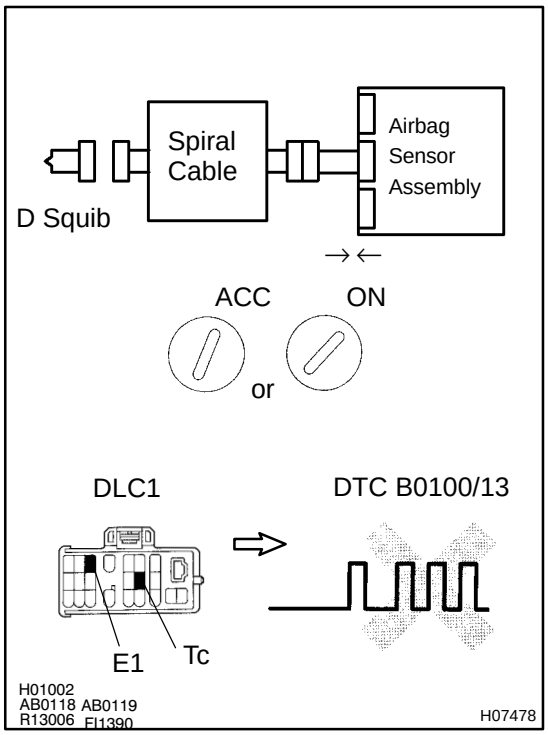
Resistance: 1 MΩ or Higher

NG	**Go to step 5.**

OK

cardiagn.com

3	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.
(b) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ACC or ON and wait at least for 20 seconds.
(b) Clear the DTC stored in memory (See page DI-358).
(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(e) Check the DTC (See page DI-358).

OK:

DTC B0100/13 is not output.

HINT:

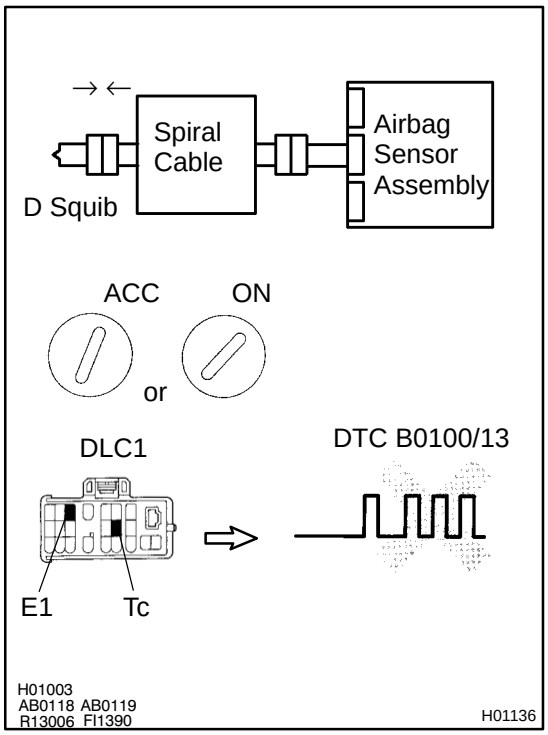
Codes other than code B0100/13 may be output at this time, but they are not relevant to this check.

NG → **Replace airbag sensor assembly.**

OK

cardiagn.com

4	Check D squib.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect negative (-) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the steering wheel pad connector.
(d) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(b) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(c) Clear the DTC stored in memory (See page DI-358).
(d) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(e) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(f) Check the DTC (See page DI-358).

OK:

DTC B0100/13 is not output.

HINT:

Codes other than code B0100/13 may be output at this time, but they are not relevant to this check.

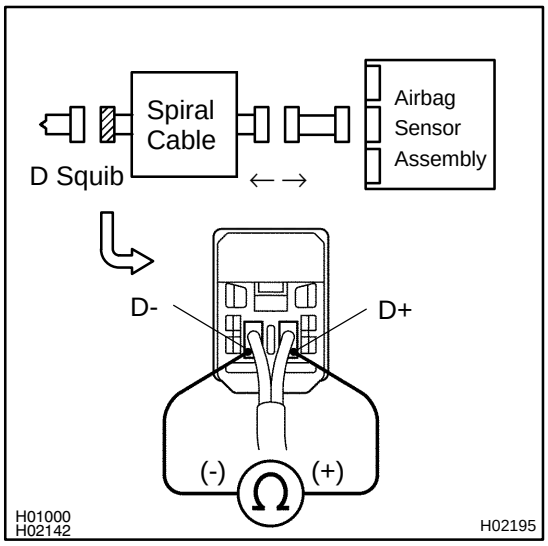
NG → **Replace steering wheel pad.**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

cardiagn.com

5	Check spiral cable.



PREPARATION:

(a) Disconnect the connector between the airbag sensor assembly and the spiral cable.

(b) Release the airbag activation prevention mechanism of the spiral cable connector on the airbag sensor assembly side (See page DI-358).

CHECK:

For the connector (on the spiral cable side) between the spiral cable and the steering wheel pad, measure the resistance between D+ and D-.

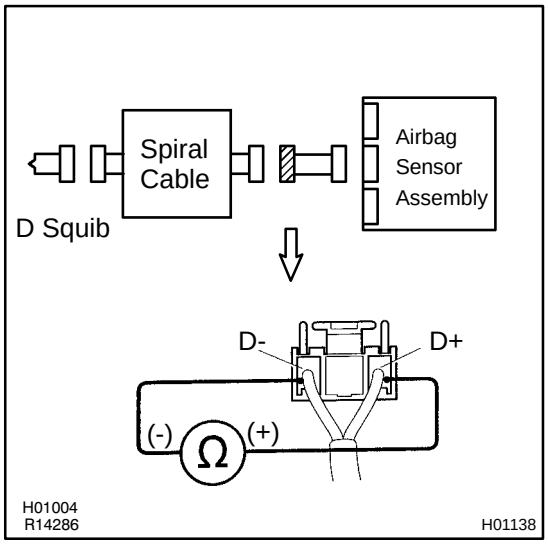
OK:

Resistance: 1 MΩ or Higher

NG	Repair or replace spiral cable.

OK

6	Check harness between airbag sensor assembly and spiral cable.



PREPARATION:

Release the airbag activation prevention mechanism of the connector (on the airbag sensor assembly side) between the airbag sensor assembly and the spiral cable
(See page DI-358).

CHECK:

For the connector (on the spiral cable side) between the airbag sensor assembly and the spiral cable, measure the resistance between D+ and D-.

OK:

Resistance: 1 MΩ or Higher

NG	Repair or replace harness or connector between airbag sensor assembly and spiral cable.

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

cardiagn.com

DI4CL-05

DTC	B0101/14	Open in D Squib Circuit

CIRCUIT DESCRIPTION

The D squib circuit consists of the airbag sensor assembly, spiral cable and steering wheel pad.
It causes the airbag to deploy when the airbag deployment conditions are satisfied.
For details of the function of each components, see OPERATION on page RS-2 .
DTC B0101/14 is recorded when an open is detected in the D squib circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B0101/14	• Open circuit in D+ wire harness or D- wire harness of squib • D squib malfunction • Spiral cable malfunction • Airbag sensor assembly malfunction	• Steering wheel pad (D squib) • Spiral cable • Airbag sensor assembly • Wire harness

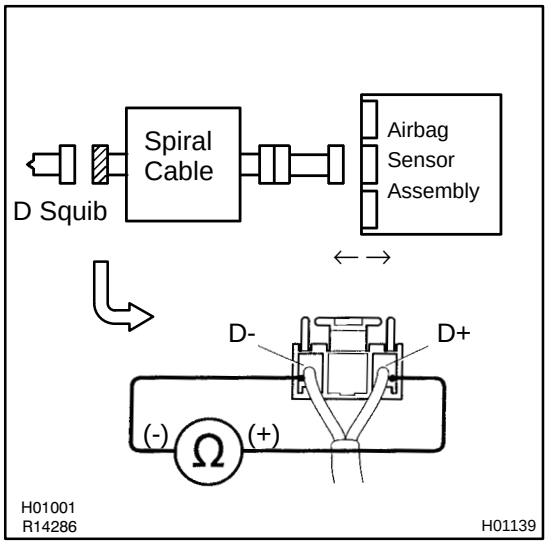
WIRING DIAGRAM

See page DI-371 .

INSPECTION PROCEDURE

1	**Prepare for inspection. (See step 1 on page DI-486)**

2	**Check D squib circuit.**



CHECK:

For the connector (on the spiral cable side) between the spiral cable and the steering wheel pad, measure the resistance between D+ and D-.

OK:

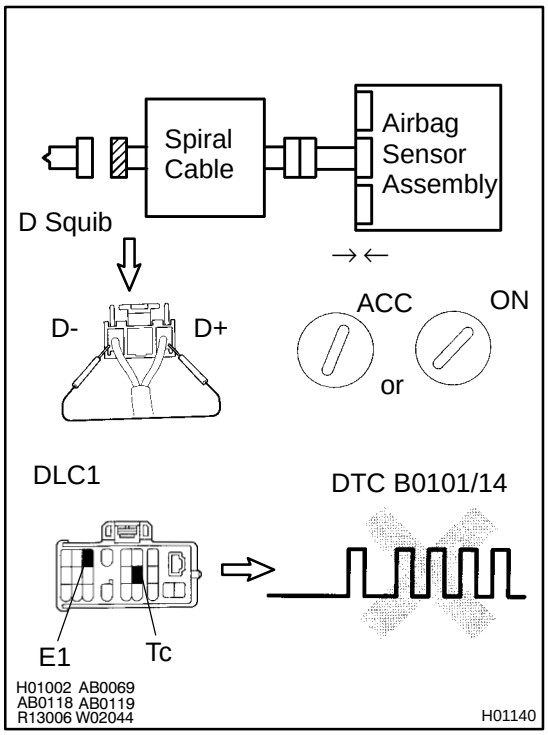
Resistance: Below 1 Ω

NG → **Go to step 5.**

OK

cardiagn.com

3	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.
(b) Using a service wire, connect D+ and D- of the connector (on the spiral cable side) between the spiral cable and the steering wheel pad.
(c) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn ignition switch to ACC or ON, and wait at least for 20 seconds.
(b) Clear DTC stored in memory.
(See page DI-358)
(c) Turn ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn ignition switch to ACC or ON, and wait at least for 20 seconds.
(e) Check DTC.
(See page DI-358)

OK:

DTC B0101/14 is not output.

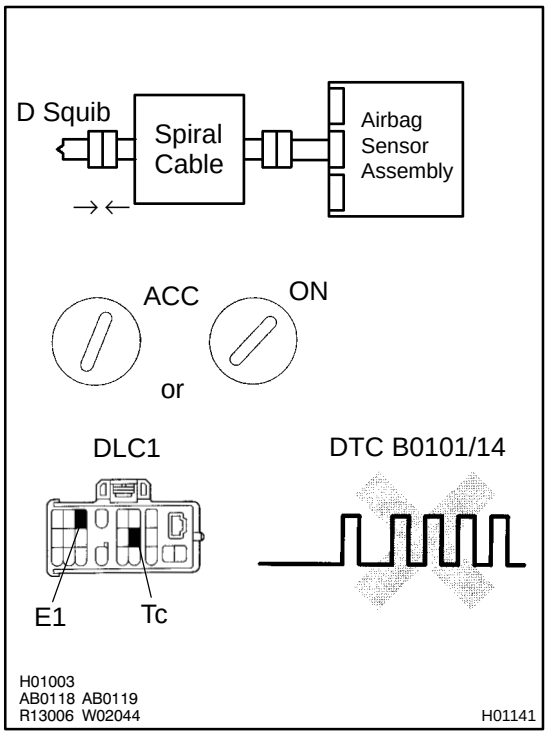
HINT:
Codes other than code B0101/14 may be output at this time, but they are not relevant to this check.

NG → **Replace airbag sensor assembly.**

OK

cardiagn.com

4	Check D squib.



PREPARATION:

(a) Turn ignition switch to LOCK.
(b) Disconnect negative (-) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the steering wheel pad connector.
(d) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn ignition switch to ACC or ON, and wait at least for 20 seconds.
(b) Clear DTC stored in memory.
(See page DI-358)
(c) Turn ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn ignition switch to ACC or ON, and wait at least for 20 seconds.
(e) Check DTC.
(See page DI-358)

OK:

DTC B0101/14 is not output.

HINT:
Codes other than code B0101/14 may be output at this time, but they are not relevant to this check.

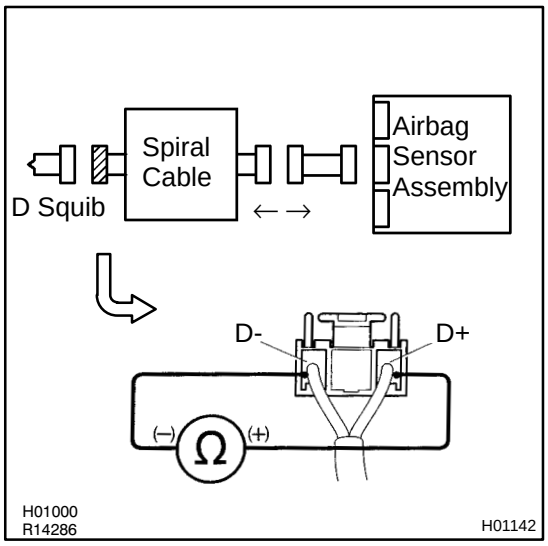
NG → **Replace steering wheel pad.**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

cardiagn.com

5	Check spiral cable.



PREPARATION:
Disconnect the connector between the airbag sensor assembly and the spiral cable.

CHECK:
For the connector (on the spiral cable side) between the spiral cable and the steering wheel pad, measure the resistance between D+ and D-.

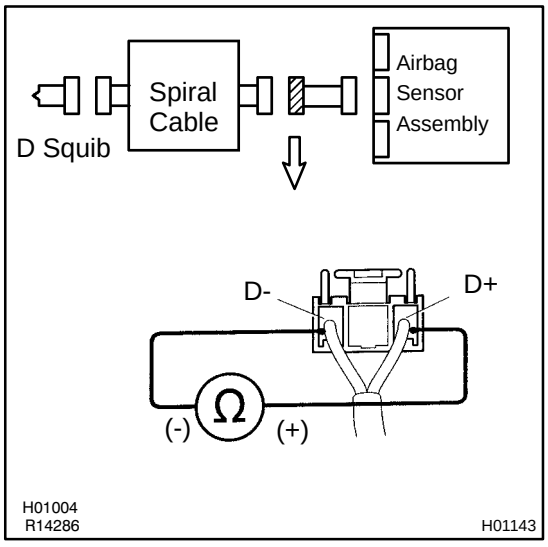
OK:

Resistance: Below 1 Ω

NG → **Repair or replace spiral cable.**

OK

6	Check harness between airbag sensor assembly and spiral cable.



CHECK:
For the connector (on the spiral cable side) between the airbag sensor assembly and the spiral cable, measure the resistance between D+ and D-.

OK:

Resistance: Below 1 Ω

NG → **Repair or replace harness or connector between airbag sensor assembly and spiral cable.**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

cardiagn.com

DI4DM-05

DTC	B0102/11	Short in D Squib Circuit (to Ground)

CIRCUIT DESCRIPTION

The D squib circuit consists of the airbag sensor assembly, spiral cable and steering wheel pad.
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS-2 .
DTC B0102/11 is recorded when a ground short is detected in the D squib circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B0102/11	• Short circuit in D squib wire harness (to ground) • D squib malfunction • Spiral cable malfunction • Airbag sensor assembly malfunction	• Steering wheel pad (D squib) • Spiral cable • Airbag sensor assembly • Wire harness

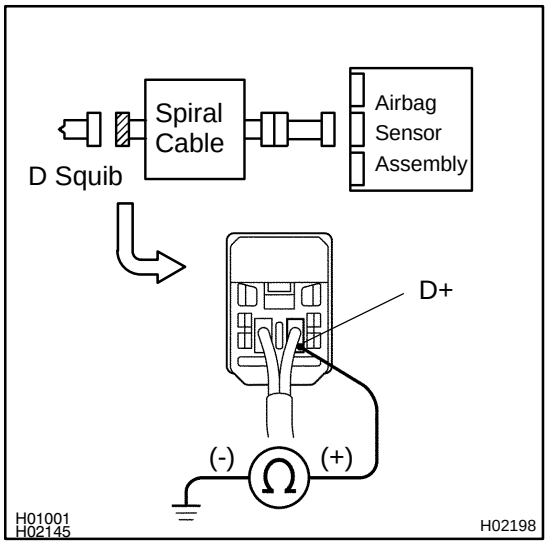
WIRING DIAGRAM

See page DI-371 .

INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI-486).**

2	**Check D squib circuit.**



CHECK:

For the connector (on the spiral cable side) between the spiral cable and the steering wheel pad, measure the resistance between D+ and body ground.

OK:

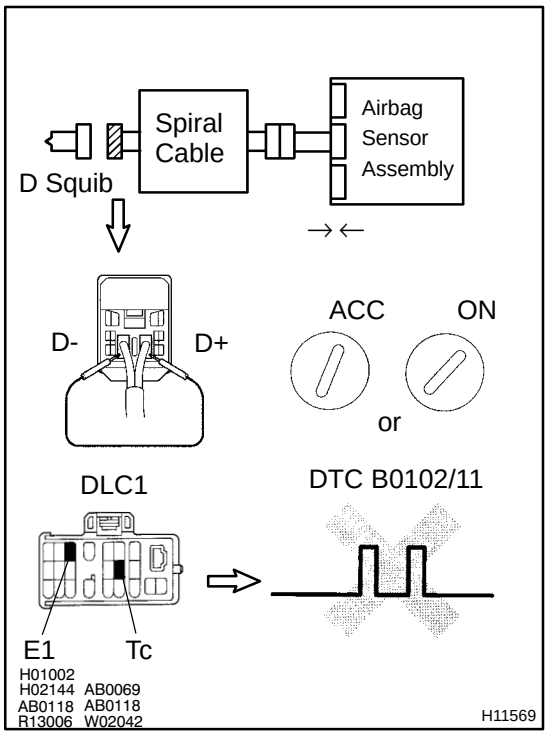
Resistance: 1 MΩ or Higher

NG → **Go to step 5.**

OK

cardiagn.com

3	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.

(b) Using a service wire, connect D+ and D- of the connector (on the spiral cable side) between the spiral cable and the steering wheel pad.

(c) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.

(b) Clear the DTC stored in memory
(See step 5 on page DI-358).

(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.

(d) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.

(e) Check the DTC (See page DI-358).

OK:

DTC B0102/11 is not output.

HINT:

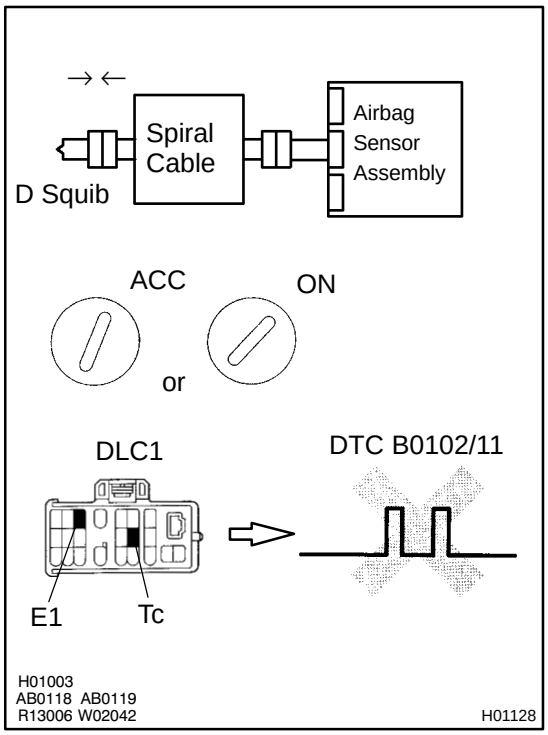
Codes other than code B0102/11 may be output at this time, but they are not relevant to this check.

NG	Replace airbag sensor assembly.

OK

cardiagn.com

4	Check D squib.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect negative (-) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the steering wheel pad connector.
(d) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(b) Clear the DTC stored in memory
(See step 5 on page DI-358).
(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(e) Check the DTC (See page DI-358).

OK:

DTC B0102/11 is not output.

HINT:
Codes other than code B0102/11 may be output at this time, but they are not relevant to this check.

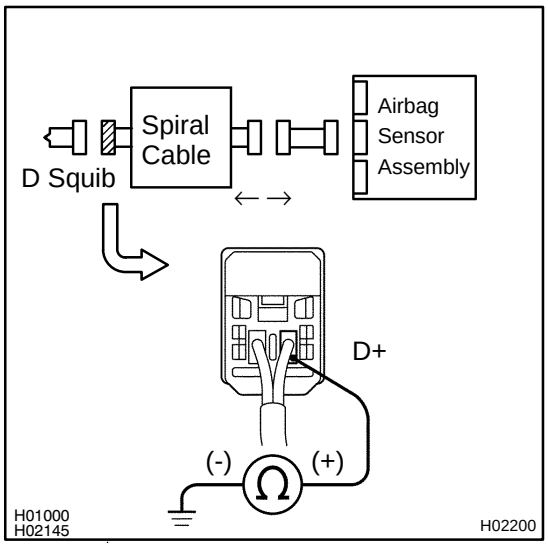
NG → **Replace steering wheel pad.**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check. If the malfunctioning part can not be detected by the simulation method, replace all SRS components including the wire harness.

cardiagn.com

5	Check spiral cable.



PREPARATION:
Disconnect the connector between the airbag sensor assembly and the spiral cable.

CHECK:
For the connector (on the spiral cable side) between the steering wheel pad and the spiral cable, measure the resistance between D+ and body ground.

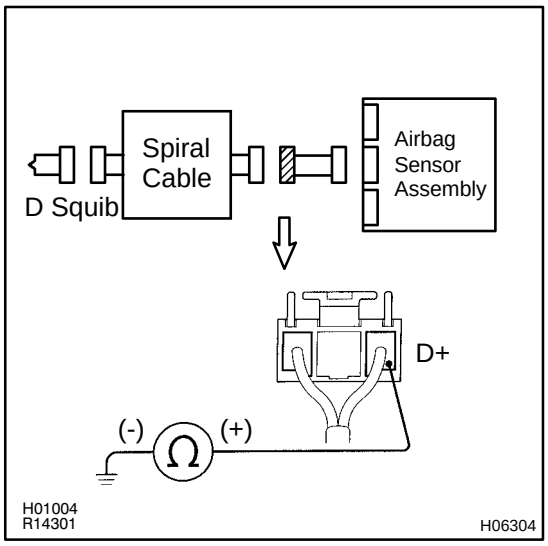
OK:

Resistance: 1 MΩ or Higher

NG → **Repair or replace spiral cable.**

OK

6	Check harness between airbag sensor assembly and spiral cable.



CHECK:
For the connector (on the spiral cable side) between the spiral cable and the airbag sensor assembly, measure the resistance between D+ and body ground.

OK:

Resistance: 1 MΩ or Higher

NG → **Repair or replace harness between airbag sensor assembly and spiral cable.**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check. If the malfunctioning part can not be detected by the simulation method, replace all SRS components including the wire harness.

cardiagn.com

DI4DN-05

DTC	B0103/12	Short in D Squib Circuit (to B+)

CIRCUIT DESCRIPTION

The D squib circuit consists of the airbag sensor assembly, spiral cable and steering wheel pad.
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS-2 .
DTC B0103/12 is recorded when a B+ short is detected in the D squib circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B0103/12	• Short circuit in D squib wire harness (to B+) • D squib malfunction • Spiral cable malfunction • Airbag sensor assembly malfunction	• Steering wheel pad (D squib) • Spiral cable • Airbag sensor assembly • Wire harness

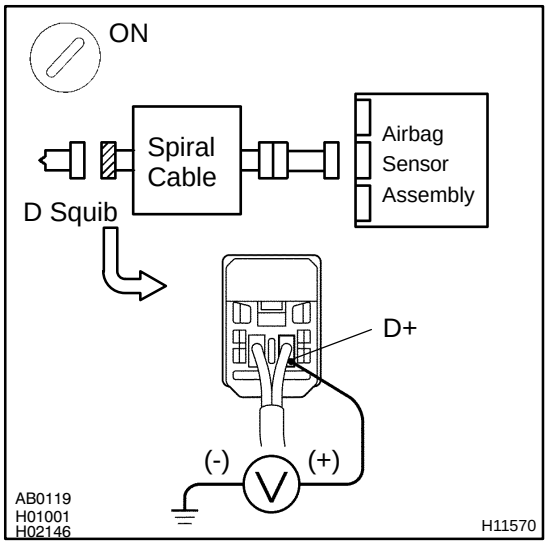
WIRING DIAGRAM

See page DI-371 .

INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI-486).**

2	**Check D squib circuit.**



CHECK:

(a) Turn ignition switch to ON.

(b) For the connector (on the spiral cable side) between the spiral cable and the steering wheel pad, measure the voltage between D+ and body ground.

OK:

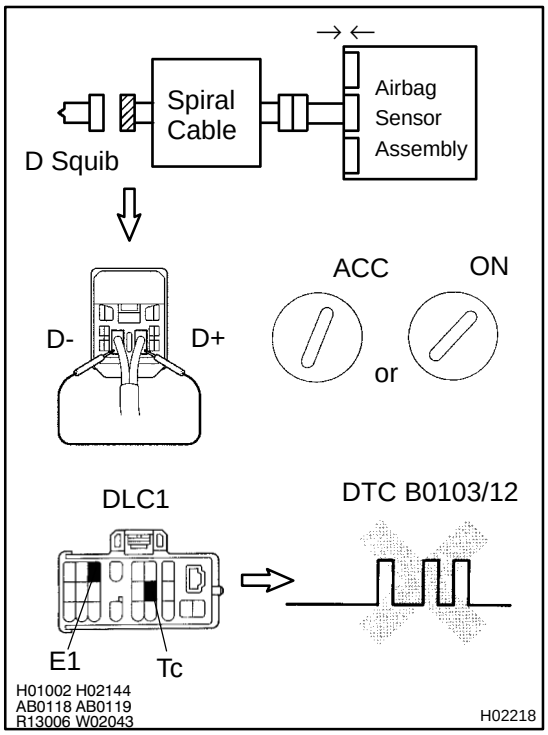
Voltage: 0 V

NG → **Go to step 5.**

OK

cardiagn.com

3	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.
(b) Using a service wire, connect D+ and D- of the connector (on the spiral cable side) between the spiral cable and the steering wheel pad.
(c) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(b) Clear the DTC stored in memory
(See step 5 on page DI-358).
(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(e) Check the DTC (See page DI-358).

OK:

DTC B0103/12 is not output.

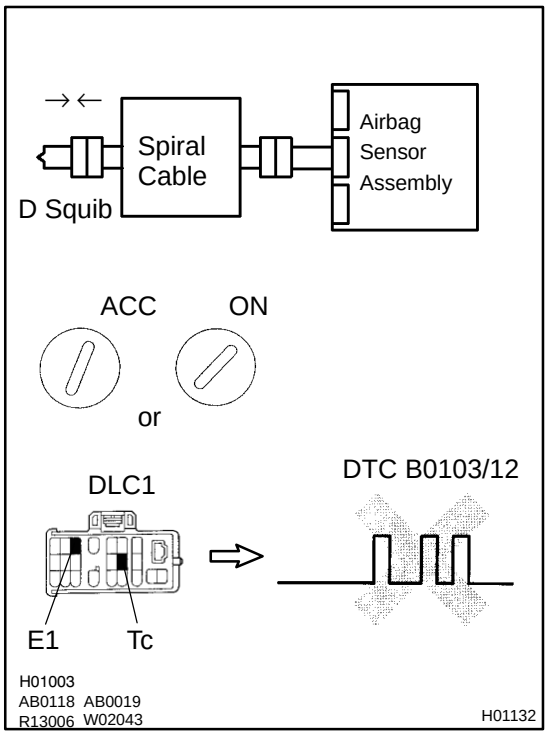
HINT:
Codes other than code B0103/12 may be output at this time, but they are not relevant to this check.

NG	Replace airbag sensor assembly.

OK

cardiagn.com

4	Check D squib.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect negative (-) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the steering wheel pad connector.
(d) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(b) Clear the DTC stored in memory
(See step 5 on page DI-358).
(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(e) Check the DTC (See page DI-358).

OK:

DTC B0103/12 is not output.

HINT:
Codes other than code B0103/12 may be output at this time, but they are not relevant to this check.

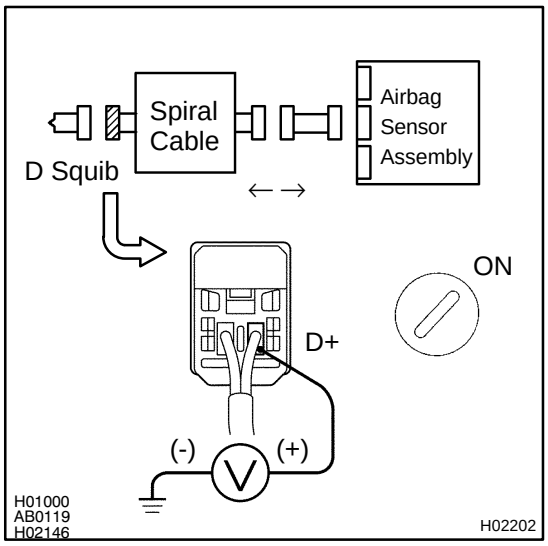
NG → **Replace steering wheel pad.**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check. If the malfunctioning part can not be detected by the simulation method, replace all SRS components including the wire harness.

cardiagn.com

5	**Check spiral cable.**



PREPARATION:

(a) Turn the ignition switch to LOCK.

(b) Disconnect the connector between the airbag sensor assembly and the spiral cable.

CHECK:

(a) Turn the ignition switch to ON.

(b) For the connector (on the spiral cable side) between the spiral cable and the steering wheel pad, measure the voltage between D+ and body ground.

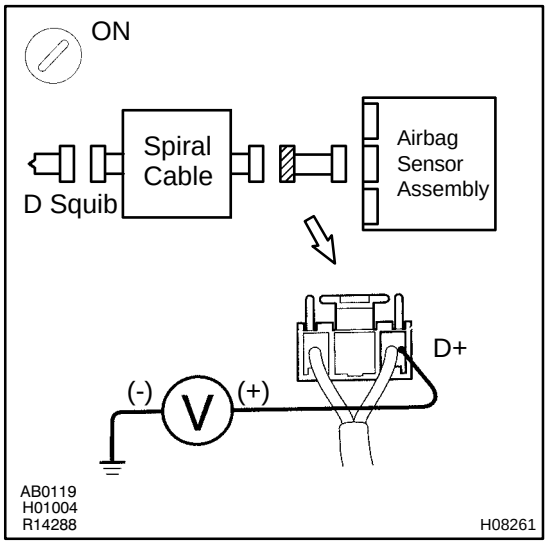
OK:

Voltage: 0 V

NG	**Repair or replace spiral cable.**

OK

6	**Check harness between airbag sensor assembly and spiral cable.**



CHECK:

(a) Turn the ignition switch to ON.

(b) For the connector (on the spiral cable side) between the spiral cable and airbag sensor assembly, measure the voltage between D+ and body ground.

OK:

Voltage: 0 V

NG	**Repair or replace harness between airbag sensor assembly and spiral cable.**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check. If the malfunctioning part can not be detected by the simulation method, replace all SRS components including the wire harness.

cardiagn.com

DI4CO-06

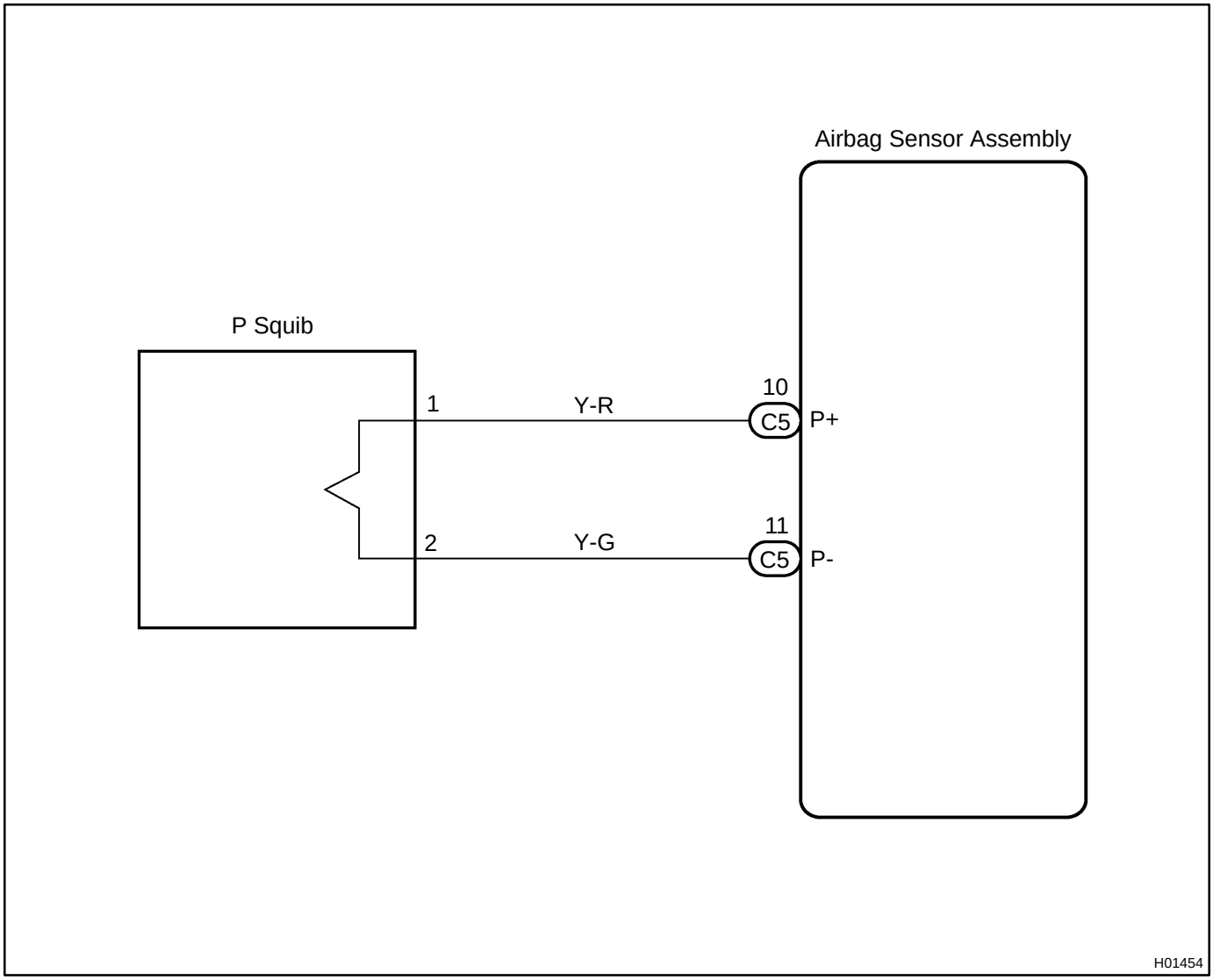
DTC	B0105/53	Short in P Squib Circuit

CIRCUIT DESCRIPTION

The P squib circuit consists of the airbag sensor assembly and front passenger airbag assembly.
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS-2 .
DTC B0105/53 is recorded when a short is detected in the P squib circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B0105/53	• Short circuit in P squib wire harness • P squib malfunction • Airbag sensor assembly malfunction	• Front passenger airbag assembly (P squib) • Airbag sensor assembly • Wire harness

WIRING DIAGRAM

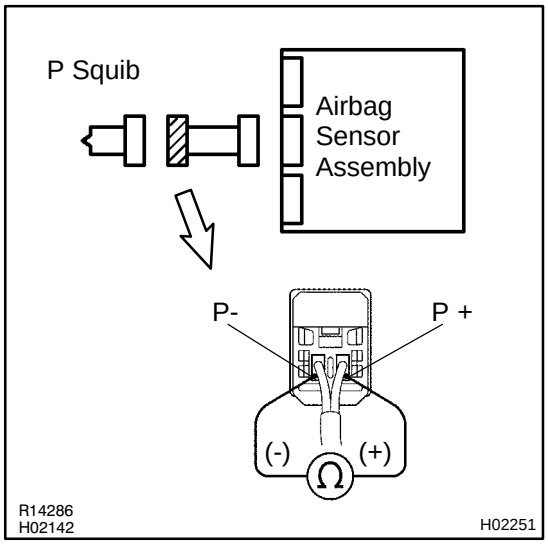


cardiagn.com

INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI-486).**

2	**Check P squib circuit.**



PREPARATION:

Release the airbag activation prevention mechanism of the connector (on the airbag sensor assembly side) between the front passenger airbag assembly and the airbag sensor assembly (See page DI-358).

CHECK:

For the connector (on the front passenger airbag assembly side) between the front passenger airbag assembly and the airbag sensor assembly, measure the resistance between P+ and P-.

OK:

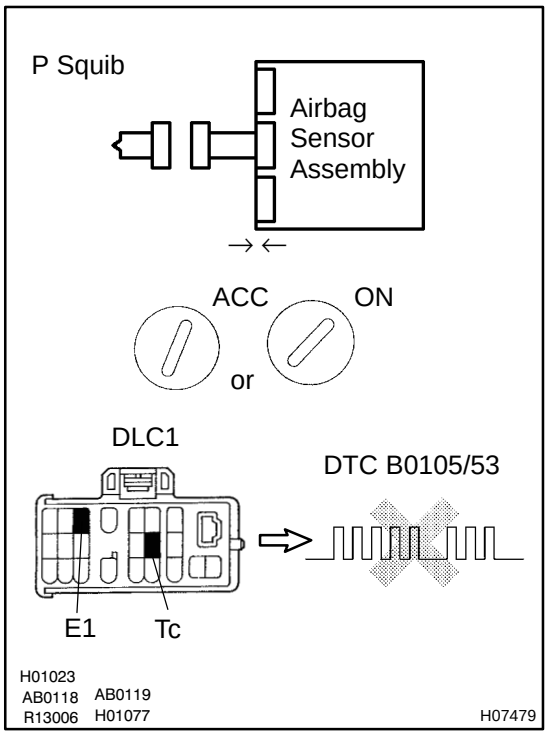
Resistance: 1 MΩ or Higher

NG → **Repair or replace harness or connector between front passenger airbag assembly and airbag sensor assembly.**

OK

cardiagn.com

3	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.
(b) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ACC or ON and wait at least for 20 seconds.
(b) Clear the DTC stored in memory (See page DI-358).
(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(e) Check the DTC (See page DI-358).

OK:

DTC B0105/53 is not output.

HINT:

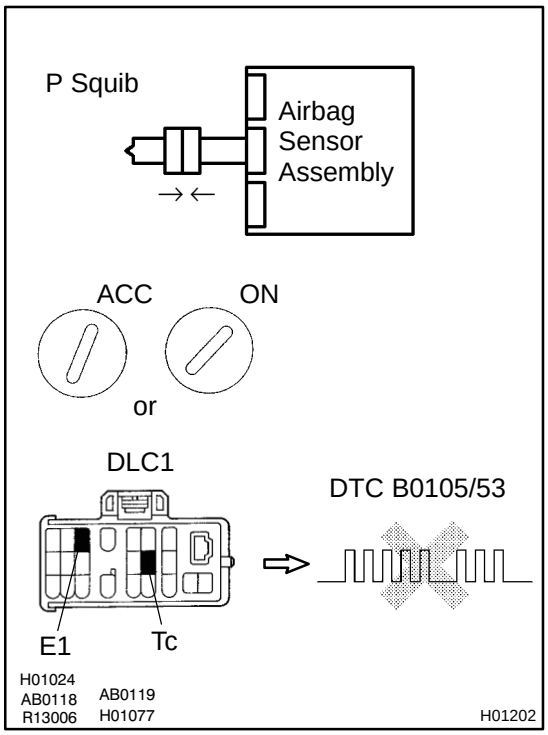
Codes other than code B0105/53 may be output at this time, but they are not relevant to this check.

NG	Replace airbag sensor assembly.

OK

cardiagn.com

4	Check P squib.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect negative (-) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the front passenger airbag assembly connector.
(d) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to LOOK, and wait at least for 20 seconds.
(b) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(c) Clear the DTC stored in memory (See page DI-358).
(d) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(e) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(f) Check the DTC (See page DI-358).

OK:

DTC B0105/53 is not output.

HINT:

Codes other than code B0105/53 may be output at this time, but they are not relevant to this check.

NG → **Replace front passenger airbag assembly.**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

cardiagn.com

DI4CP-06

DTC	B0106/54	Open in P Squib Circuit

CIRCUIT DESCRIPTION

The P squib circuit consists of the airbag sensor assembly and front passenger airbag assembly.
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS-2 .
DTC B0106/54 is recorded when an open is detected in the P squib circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B0106/54	• Open circuit in P+ wire harness or P- wire harness of squib • P squib malfunction • Airbag sensor assembly malfunction	• Front passenger airbag assembly (P squib) • Airbag sensor assembly • Wire harness

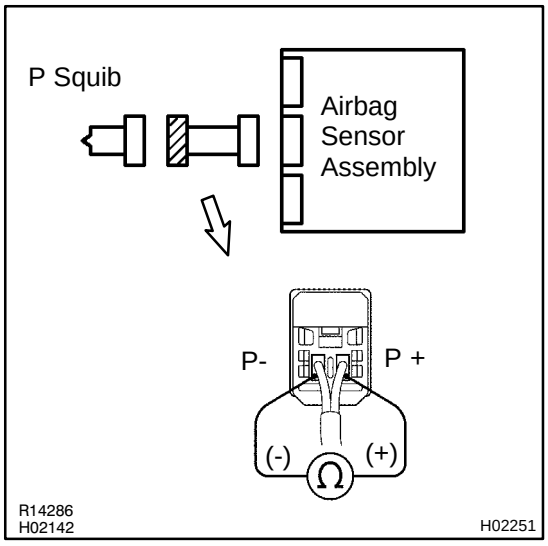
WIRING DIAGRAM

See page DI-388 .

INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI-486).**

2	**Check P squib circuit.**



CHECK:

For the connector (on the front passenger airbag assembly side) between the front passenger airbag assembly and the airbag sensor assembly, measure the resistance between P+ and P-.

OK:

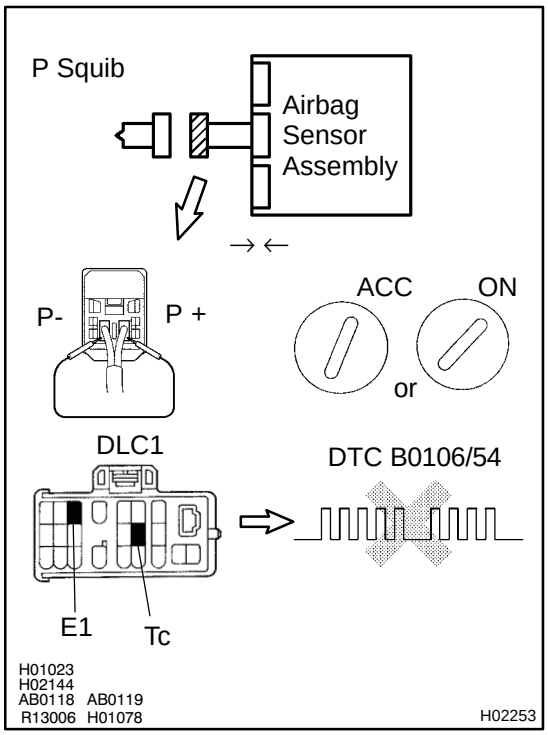
Resistance: Below 1 Ω

NG → **Repair or replace harness or connector between front passenger airbag assembly and airbag sensor assembly.**

OK

cardiagn.com

3	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.

(b) Using a service wire, connect P+ and P- of the connector (on the front passenger airbag assembly side) between the front passenger airbag assembly and the airbag sensor assembly.

(c) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ACC or ON and wait at least for 20 seconds.

(b) Clear the DTC stored in memory (See page DI-358).

(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.

(d) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.

(e) Check the DTC (See page DI-358).

OK:

DTC B0106/54 is not output.

HINT:

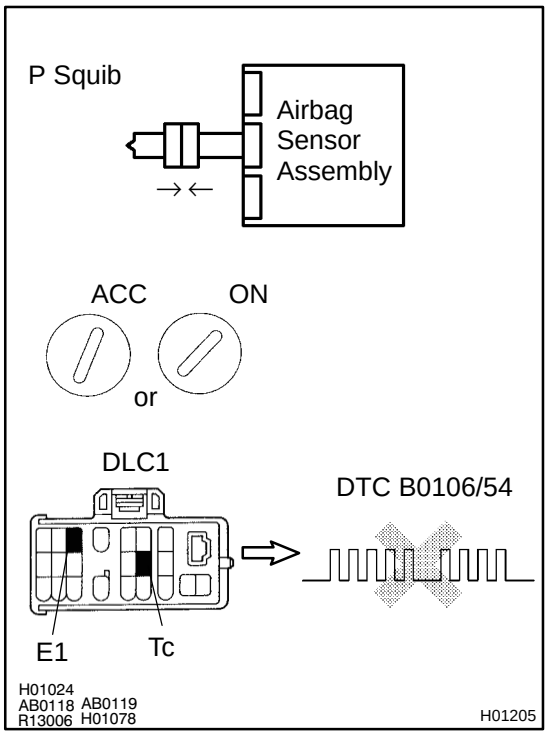
Codes other than code B0106/54 may be output at this time, but they are not relevant to this check.

NG	Replace airbag sensor assembly.

OK

cardiagn.com

4	Check P squib.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect negative (-) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the front passenger airbag assembly connector.
(d) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(b) Clear the DTC stored in memory (See page DI-358).
(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(e) Check the DTC (See page DI-358).

OK:

DTC B0106/54 is not output.

HINT:

Codes other than code B0106/54 may be output at this time, but they are not relevant to this check.

NG → **Replace front passenger airbag assembly.**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

cardiagn.com

DI4CQ-05

DTC	B0107/51	Short in P Squib Circuit (to Ground)

CIRCUIT DESCRIPTION

The P squib circuit consists of the airbag sensor assembly and front passenger airbag assembly.
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS-2 .
DTC B0107/51 is recorded when ground short is detected in the P squib circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B0107/51	• Short circuit in P squib wire harness (to ground) • P squib malfunction • Airbag sensor assembly malfunction	• Front passenger airbag assembly (P squib) • Airbag sensor assembly • Wire harness

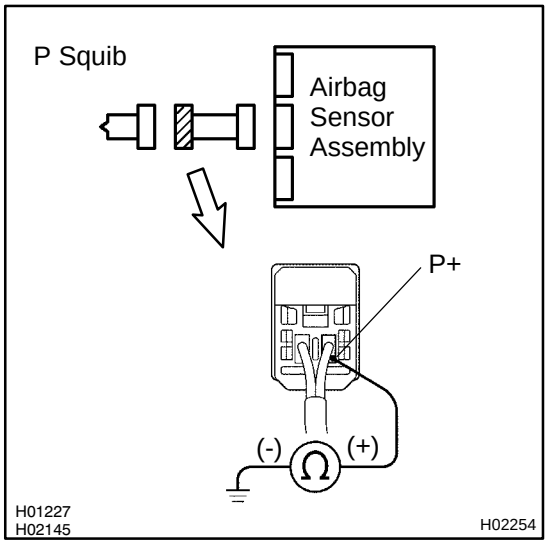
WIRING DIAGRAM

See page DI-388 .

INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI-486).**

2	**Check P squib circuit.**



CHECK:

For the connector (on the front passenger airbag assembly side) between the front passenger airbag assembly and the airbag sensor assembly, measure the resistance between P+ and body ground.

OK:

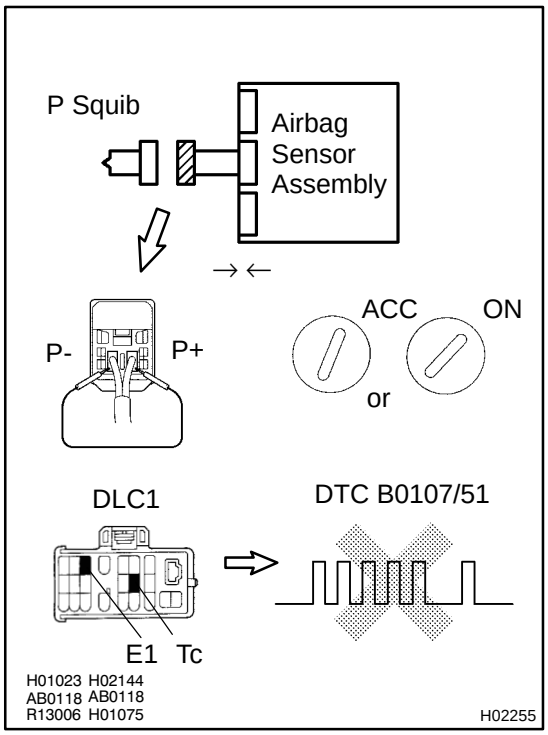
Resistance: 1 MΩ or Higher

NG → **Repair or replace harness or connector between front passenger airbag assembly and airbag sensor assembly.**

OK

cardiagn.com

3	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.

(b) Using a service wire, connect P+ and P- of the connector (on the front passenger airbag assembly side) between the front passenger airbag assembly and the airbag sensor assembly.

(c) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ACC or ON and wait at least for 20 seconds.

(b) Clear the DTC stored in memory (See step 5 on page DI-358).

(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.

(d) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.

(e) Check the DTC (See page DI-358).

OK:

DTC B0107/51 is not output.

HINT:

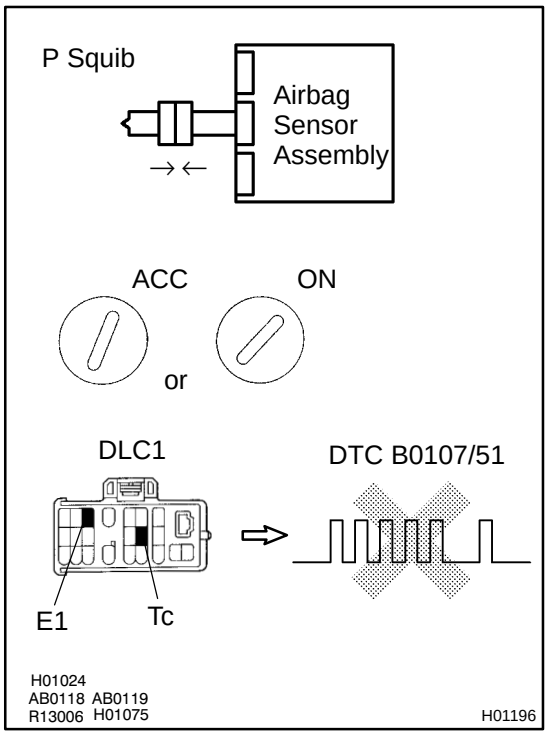
Codes other than code B0107/51 may be output at this time, but they are not relevant to this check.

NG	Replace airbag sensor assembly.

OK

cardiagn.com

4	**Check P squib.**



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect negative (-) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the front passenger airbag assembly connector.
(d) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(b) Clear the DTC stored in memory
(See step 5 on page DI-358).
(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(e) Check the DTC (See page DI-358).

OK:

DTC B0107/51 is not output.

HINT:
Codes other than code B0107/51 may be output at this time, but they are not relevant to this check.

NG → **Replace front passenger airbag assembly.**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check. If the malfunctioning part can not be detected by the simulation method, replace all SRS components including the wire harness.

cardiagn.com

DI4CR-05

DTC	B0108/52	Short in P Squib Circuit (to B+)

CIRCUIT DESCRIPTION

The P squib circuit consists of the airbag sensor assembly and front passenger airbag assembly.
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS-2 .
DTC B0108/52 is recorded when a B+ short is detected in the P squib circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B0108/52	• Short circuit in P squib wire harness (to B+) • P squib malfunction • Airbag sensor assembly malfunction	• Front passenger airbag assembly (P squib) • Airbag sensor assembly • Wire harness

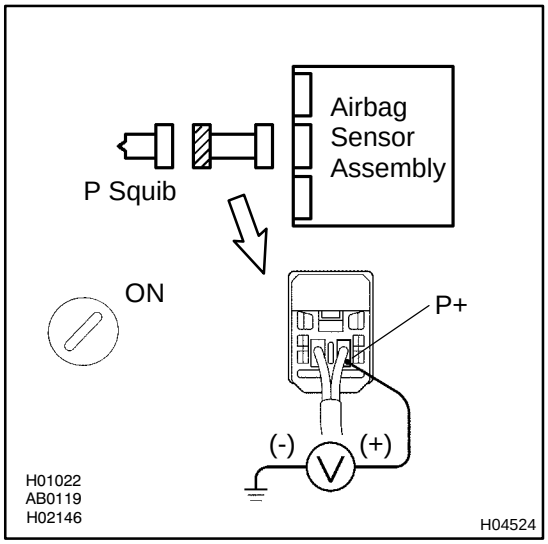
WIRING DIAGRAM

See page DI-388 .

INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI-486).**

2	**Check P squib circuit.**



CHECK:

(a) Turn the ignition switch to ON.

(b) For the connector (on the front passenger airbag assembly side) between the front passenger airbag assembly and the airbag sensor assembly, measure the voltage between the P+ and body ground.

OK:

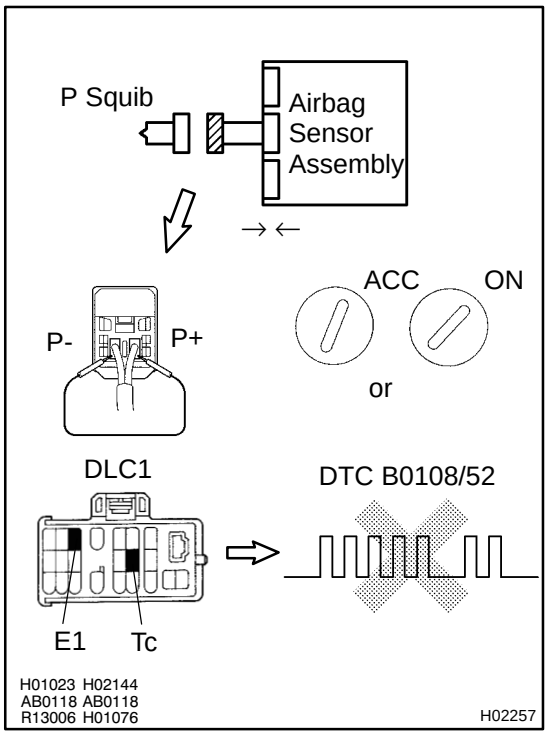
Voltage: 0 V

NG → **Repair or replace harness or connector between front passenger airbag assembly and airbag sensor assembly.**

OK

cardiagn.com

3	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.

(b) Using a service wire, connect P+ and P- of the connector (on the front passenger airbag assembly side) between the front passenger airbag assembly and the airbag sensor assembly.

(c) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ACC or ON and wait at least for 20 seconds.

(b) Clear the DTC stored in memory
(See step 5 on page DI-358).

(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.

(d) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.

(e) Check the DTC (See page DI-358).

OK:

DTC B0108/52 is not output.

HINT:

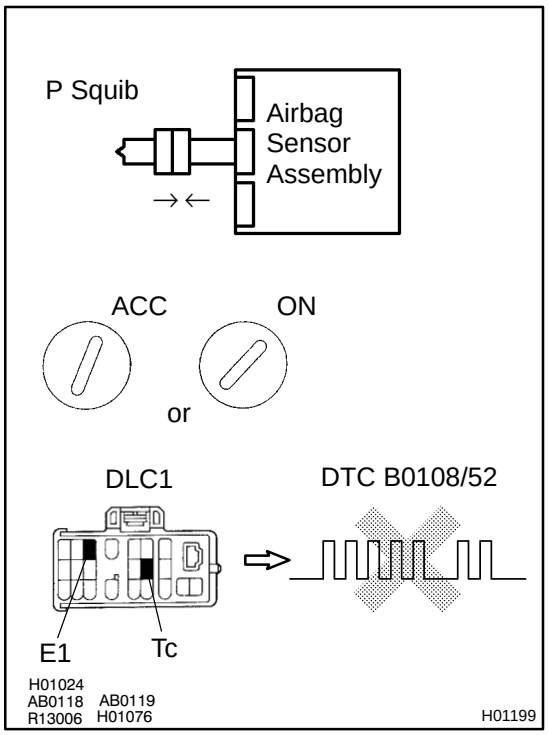
Codes other than code B0108/52 may be output at this time, but they are not relevant to this check.

NG	Replace airbag sensor assembly.

OK

cardiagn.com

4	Check P squib.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect negative (-) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the front passenger airbag assembly connector.
(d) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(b) Clear the DTC stored in memory
(See step 5 on page DI-358).
(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(e) Check the DTC (See page DI-358).

OK:

DTC B0108/52 is not output.

HINT:
Codes other than code B0108/52 may be output at this time, but they are not relevant to this check.

NG	Replace front passenger airbag assembly.

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check. If the malfunctioning part can not be detected by the simulation method, replace all SRS components including the wire harness.

cardiagn.com

DI6MS-03

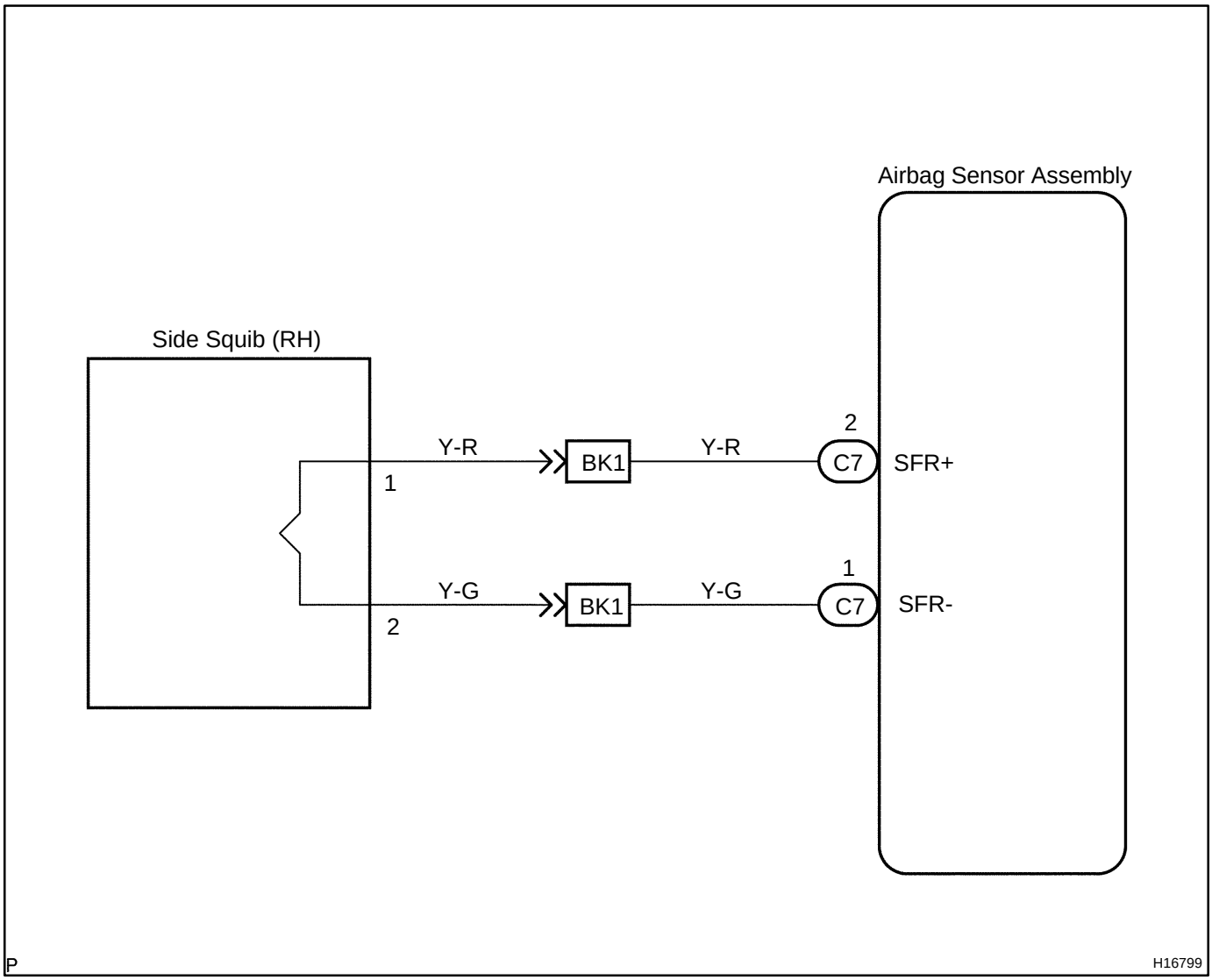
DTC	B0110/43	Short in Side Squib (RH) Circuit

CIRCUIT DESCRIPTION

The side squib (RH) circuit consists of the airbag sensor assembly and side airbag assembly (RH).
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS-2 .
DTC B0110/43 is recorded when a short is detected in the side squib (RH) circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B0110/43	• Short circuit between SFR+ wire harness and SFR- wire harness of squib • Side squib (RH) malfunction • Airbag sensor assembly malfunction	• Side airbag assembly (RH) • Airbag sensor assembly • Wire harness

WIRING DIAGRAM

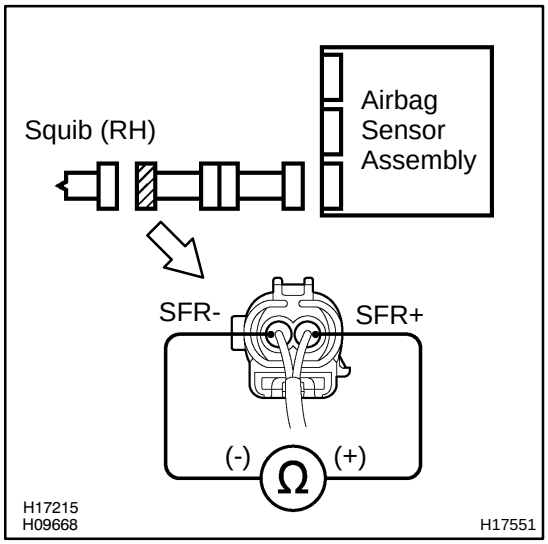


cardiagn.com

INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI-486).**

2	**Check side squib (RH) circuit.**



PREPARATION:

Release the airbag activation prevention mechanism of the connector (on the airbag sensor assembly side) between the airbag sensor assembly and the side airbag assembly (RH) (See page DI-358).

CHECK:

For the connector (on the side airbag assembly side) between the side airbag assembly (RH) and the airbag sensor assembly, measure the resistance between SFR+ and SFR-.

OK:

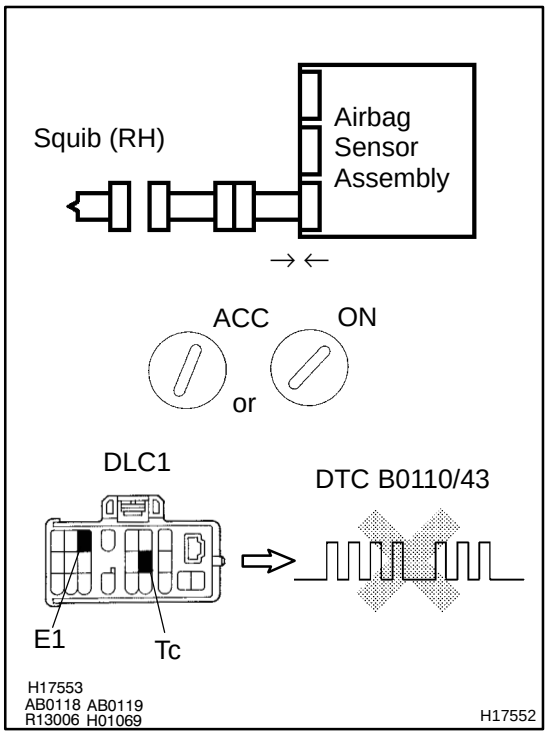
Resistance: 1 MΩ or Higher

NG → **Repair or replace harness or connector between side airbag assembly (RH) and airbag sensor assembly.**

OK

cardiagn.com

3	**Check airbag sensor assembly.**



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.
(b) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ACC or ON and wait at least for 20 seconds.
(b) Clear the DTC stored in memory (See page DI-358).
(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(e) Check the DTC (See page DI-358).

OK:

DTC B0110/43 is not output.

HINT:

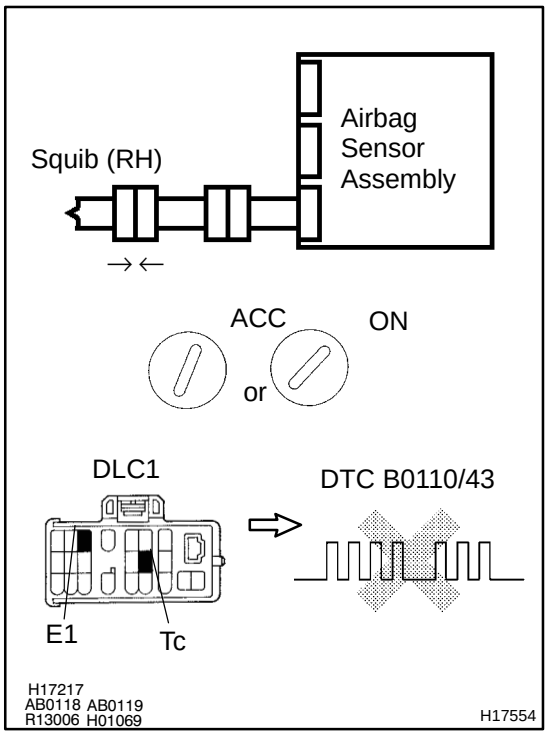
Codes other than code B0110/43 may be output at this time, but they are not relevant to this check.

NG → **Replace airbag sensor assembly.**

OK

cardiagn.com

4	Check side squib (RH).



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect negative (-) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the side airbag assembly (RH) connector.
(d) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to LOOK, and wait at least for 20 second.
(b) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(c) Clear the DTC stored in memory (See page DI-358).
(d) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(e) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(f) Check the DTC (See page DI-358).

OK:

DTC B0110/43 is not output.

HINT:

Codes other than code B0110/43 may be output at this time, but they are not relevant to this check.

NG → **Replace side airbag assembly (RH).**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

cardiagn.com

DI6MT-03

DTC	B0111/44	Open in Side Squib (RH) Circuit

CIRCUIT DESCRIPTION

The side squib (RH) circuit consists of the airbag sensor assembly and side airbag assembly (RH).
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS-2 .
DTC B0111/44 is recorded when an open is detected in the side squib (RH) circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B0111/44	• Open circuit in SFR+ wire harness or SFR- wire harness of squib • Side squib (RH) malfunction • Airbag sensor assembly malfunction	• Side airbag assembly (RH) • Airbag sensor assembly • Wire harness

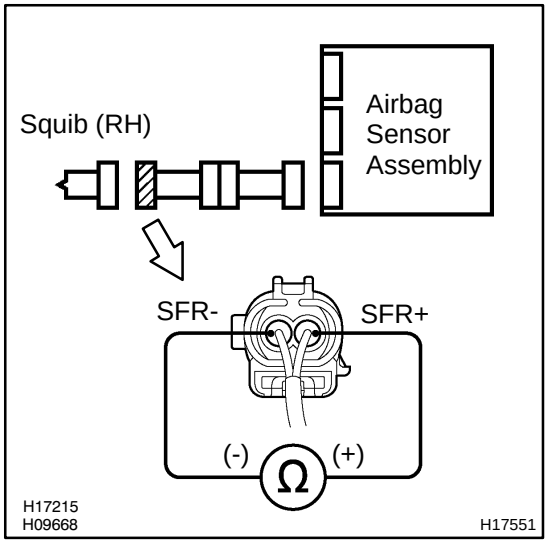
WIRING DIAGRAM

See page DI-401 .

INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI-486).**

2	**Check front side squib (RH) circuit.**



CHECK:

For the connector (on the front side airbag assembly side) between the front side airbag assembly (RH) and the airbag sensor assembly, measure the resistance between SFR+ and SFR-.

OK:

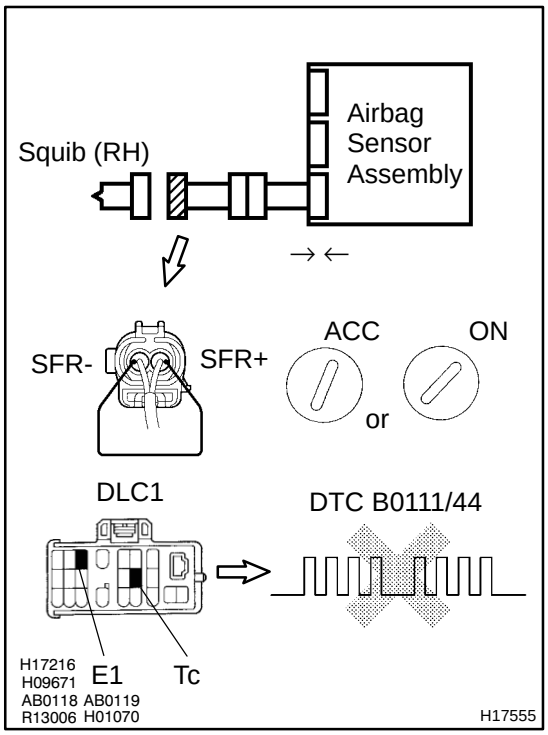
Resistance: Below 1 Ω

NG → **Repair or replace harness or connector between side airbag assembly (RH) and airbag sensor assembly.**

OK

cardiagn.com

3	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.

(b) Using a service wire, connect SFR+ and SFR- of the connector (on the side airbag assembly side) between the side airbag assembly (RH) and the airbag sensor assembly.

(c) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ACC or ON and wait at least for 20 seconds.

(b) Clear the DTC stored in memory (See page DI-358).

(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.

(d) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.

(e) Check the DTC (See page DI-358).

OK:

DTC B0111/44 is not output.

HINT:

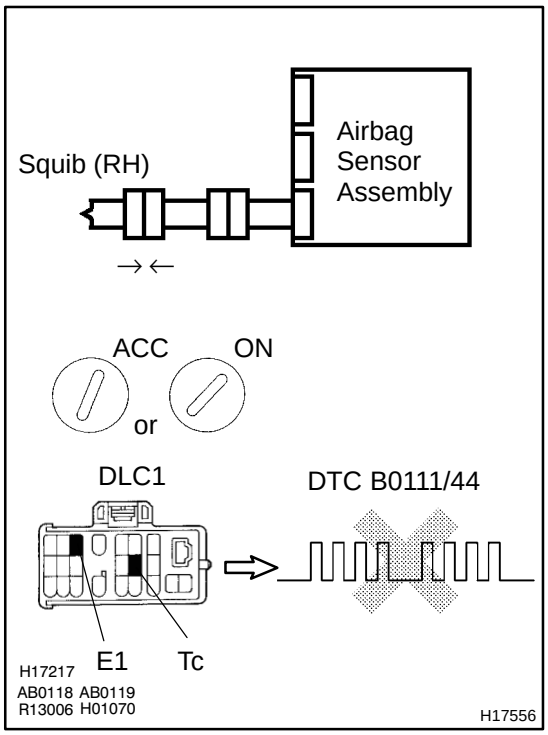
Codes other than code B0111/44 may be output at this time, but they are not relevant to this check.

NG	Replace airbag sensor assembly.

OK

cardiagn.com

4	Check side squib (RH).



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect negative (-) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the front side airbag assembly (RH) connector.
(d) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(b) Clear the DTC stored in memory (See page DI-358).
(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(e) Check the DTC (See page DI-358).

OK:

DTC B0111/44 is not output.

HINT:

Codes other than code B0111/44 may be output at this time, but they are not relevant to this check.

NG	Replace side airbag assembly (RH).

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

cardiagn.com

DTC	B0112/41	Short in Side Squib (RH) Circuit (to Ground)

CIRCUIT DESCRIPTION

The side squib (RH) circuit consists of the airbag sensor assembly and side airbag assembly (RH).
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS-2 .
DTC B0112/41 is recorded when ground short is detected in the side squib (RH) circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B0112/41	• Short circuit in side squib (RH) wire harness (to ground) • Side squib (RH) malfunction • Airbag sensor assembly malfunction	• Side airbag assembly (RH) • Airbag sensor assembly • Wire harness

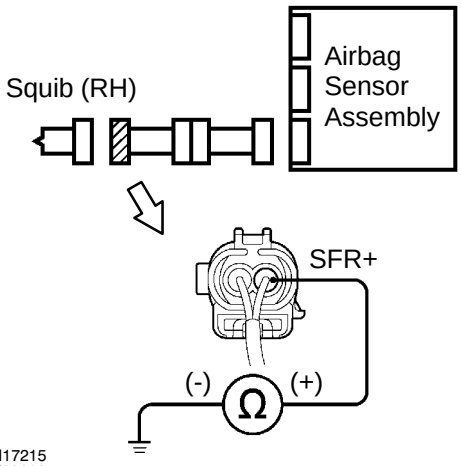
WIRING DIAGRAM

See page DI-401 .

INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI-486).**

2	**Check side squib (RH) circuit.**



CHECK:

For the connector (on the side airbag assembly side) between the side airbag assembly (RH) and the airbag sensor assembly, measure the resistance between SFR+ and body ground.

OK:

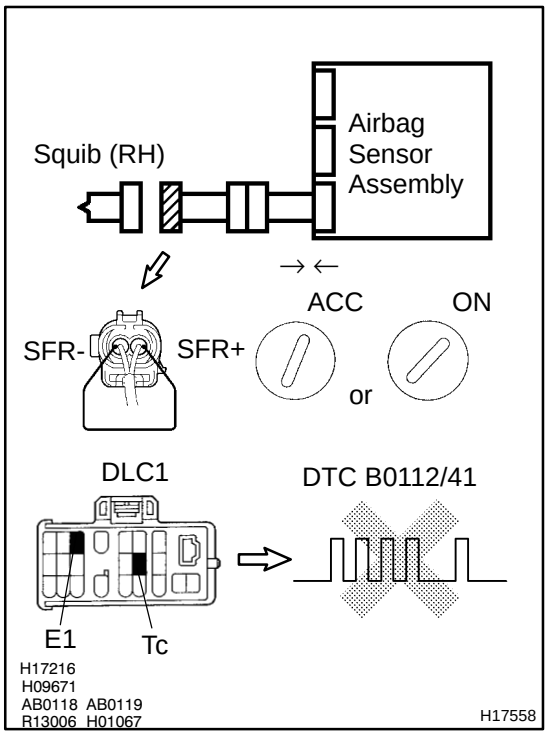
Resistance: 1 MΩ or Higher

NG → **Repair or replace harness or connector between side airbag assembly (RH) and airbag sensor assembly.**

OK

cardiagn.com

3	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.

(b) Using a service wire, connect SFR+ and SFR- of the connector (on the side airbag assembly side) between the side airbag assembly (RH) and the airbag sensor assembly.

(c) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ACC or ON and wait at least for 20 seconds.

(b) Clear the DTC stored in memory
(See step 5 on page DI-358).

(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.

(d) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.

(e) Check the DTC (See page DI-358).

OK:

DTC B0112/41 is not output.

HINT:

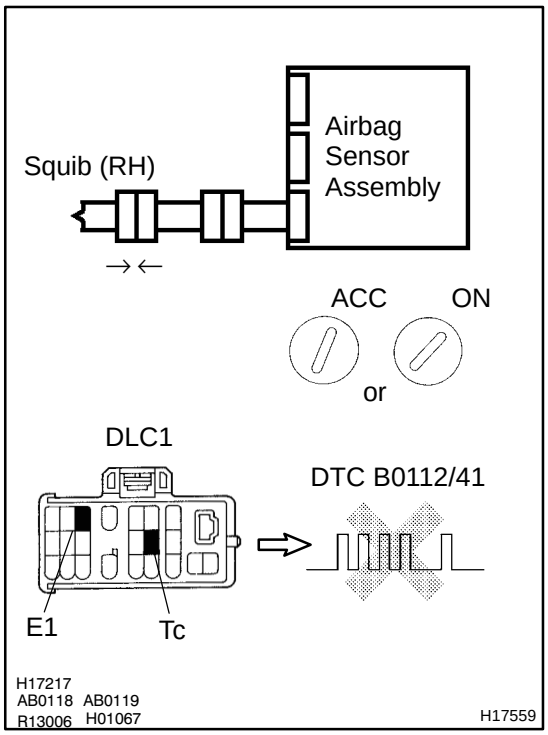
Codes other than code B0112/41 may be output at this time, but they are not relevant to this check.

NG → **Replace airbag sensor assembly.**

OK

cardiagn.com

4	Check side squib (RH).



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect negative (-) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the side airbag assembly (RH) connector.
(d) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(b) Clear the DTC stored in memory
(See step 5 on page DI-358).
(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(e) Check the DTC (See page DI-358).

OK:

DTC B0112/41 is not output.

HINT:
Codes other than code B0112/41 may be output at this time, but they are not relevant to this check.

NG	Replace side airbag assembly (RH).

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check. If the malfunctioning part can not be detected by the simulation method, replace all SRS components including the wire harness.

cardiagn.com

DI6MV-03

DTC	B0113/42	Short in Side Squib (RH) Circuit (to B+)

CIRCUIT DESCRIPTION

The side squib (RH) circuit consists of the airbag sensor assembly and side airbag assembly (RH).
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS-2 .
DTC B0113/42 is recorded when a B+ short is detected in the side squib (RH) circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B0113/42	• Short circuit in side squib (RH) wire harness (to B+) • Side squib (RH) malfunction • Airbag sensor assembly malfunction	• Side airbag assembly (RH) • Airbag sensor assembly • Wire harness

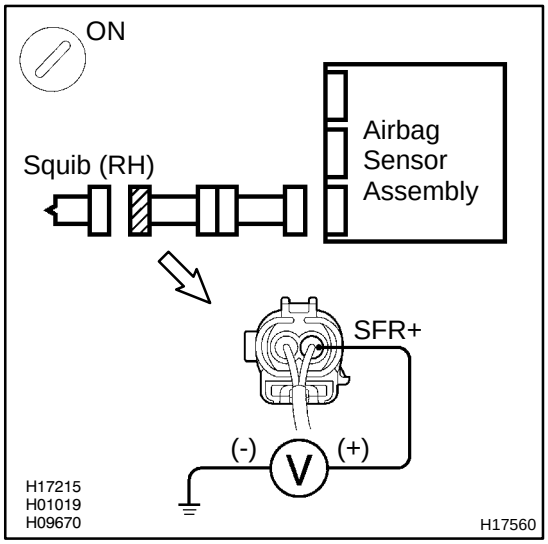
WIRING DIAGRAM

See page DI-401 .

INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI-358).**

2	**Check side squib (RH) circuit.**



CHECK:

(a) Turn the ignition switch to ON.

(b) For the connector (on the airbag sensor assembly side) between the side airbag assembly (RH) and the airbag sensor assembly, measure the voltage between SFR+ and body ground.

OK:

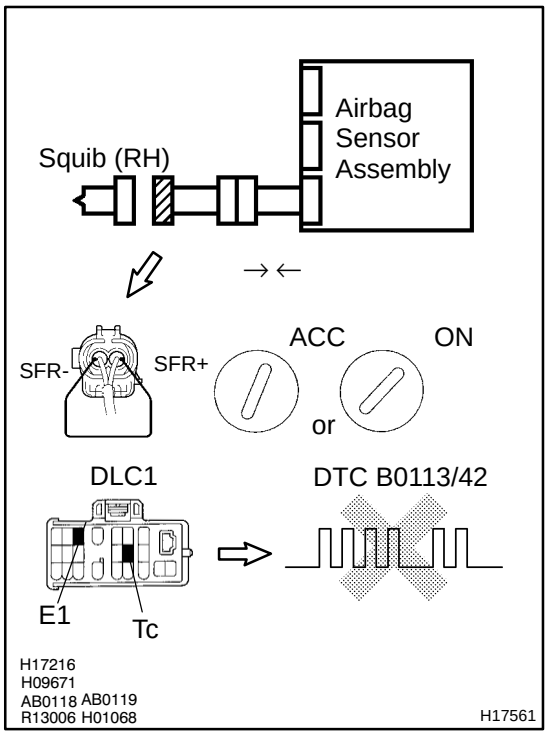
Voltage: 0 V

NG → **Repair or replace harness or connector between side airbag assembly (RH) and airbag sensor assembly.**

OK

cardiagn.com

3	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.

(b) Using a service wire, connect SFR+ and SFR- of the connector (on the front side airbag assembly side) between the front side airbag assembly (RH) and the airbag sensor assembly.

(c) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ACC or ON and wait at least for 20 seconds.

(b) Clear the DTC stored in memory
(See step 5 on page DI-358).

(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.

(d) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.

(e) Check the DTC (See page DI-358).

OK:

DTC B0113/42 is not output.

HINT:

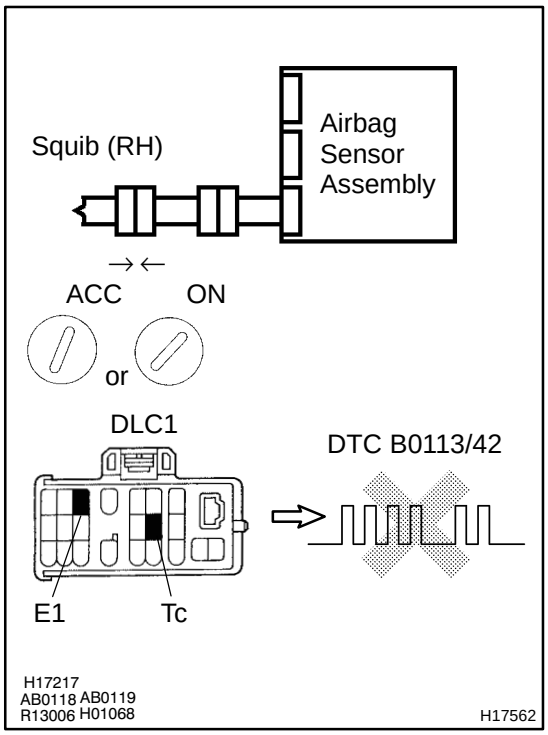
Codes other than code B0113/42 may be output at this time, but they are not relevant to this check.

NG → **Replace airbag sensor assembly.**

OK

cardiagn.com

4	Check side squib (RH).



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect negative (-) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the front side airbag assembly (RH) connector.
(d) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(b) Clear the DTC stored in memory
(See step 5 on page DI-358).
(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(e) Check the DTC (See page DI-358).

OK:

DTC B0113/42 is not output.

HINT:
Codes other than code B0113/42 may be output at this time, but they are not relevant to this check.

NG	Replace side airbag assembly (RH).

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check. If the malfunctioning part can not be detected by the simulation method, replace all SRS components including the wire harness.

cardiagn.com

DI6MW-03

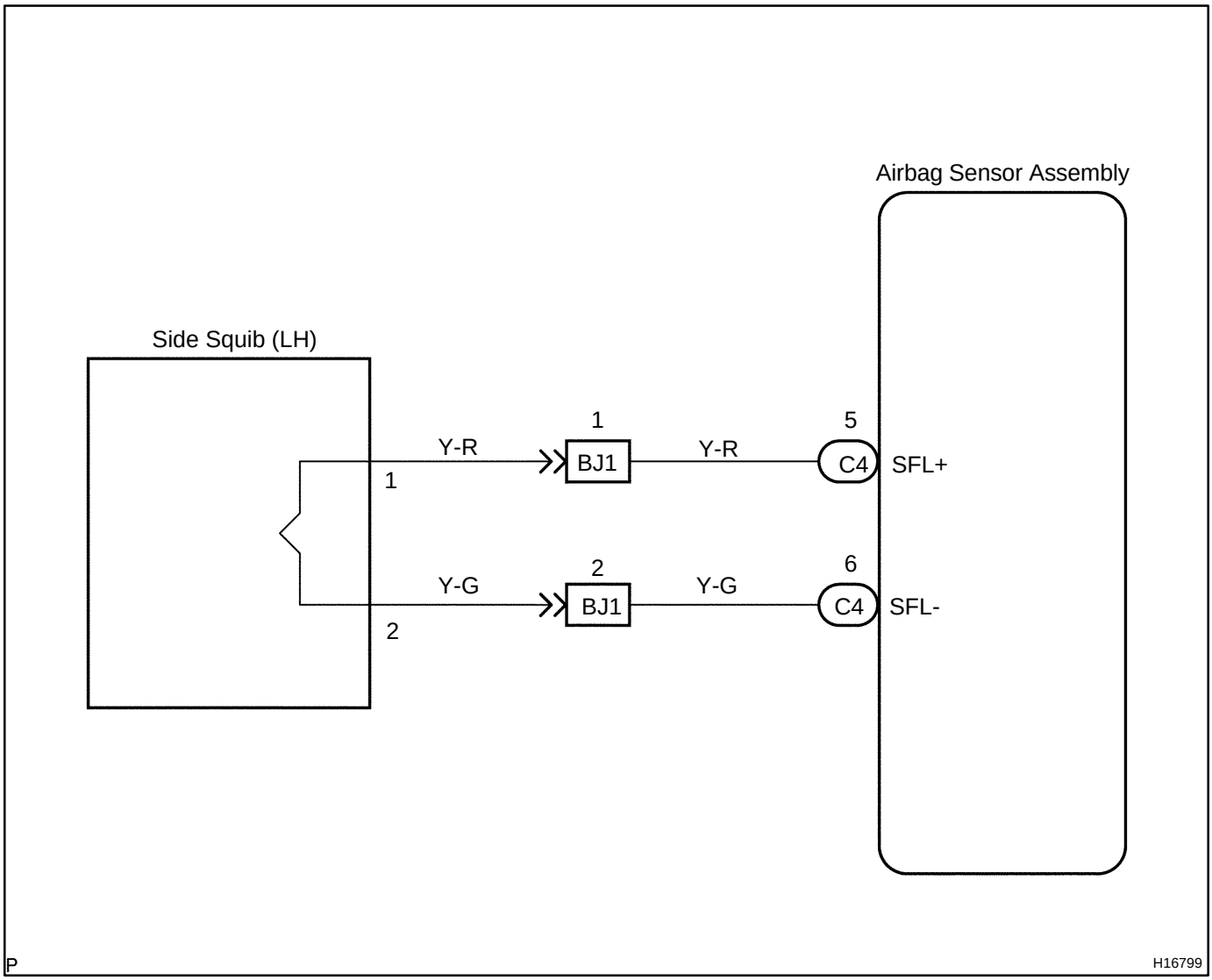
DTC	B0115/47	Short in Side Squib (LH) Circuit

CIRCUIT DESCRIPTION

The side squib (LH) circuit consists of the airbag sensor assembly and side airbag assembly (LH).
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS-2 .
DTC B0115/47 is recorded when a short is detected in the side squib (LH) circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B0115/47	• Short circuit between SFL+ wire harness and SFL- wire harness of squib • Side squib (LH) malfunction • Airbag sensor assembly malfunction	• Side airbag assembly (LH) • Airbag sensor assembly • Wire harness

WIRING DIAGRAM

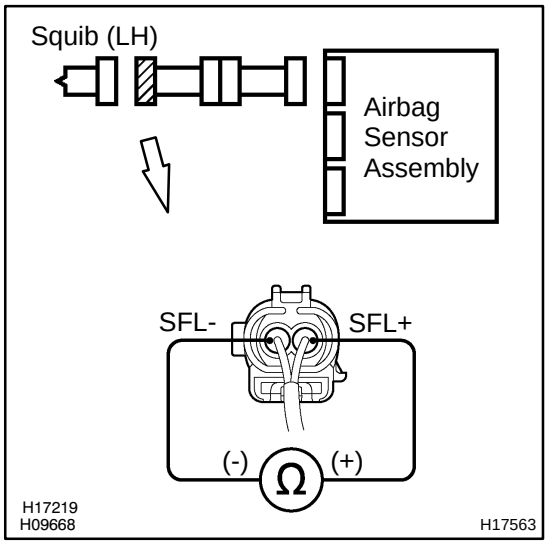


cardiagn.com

INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI-486).**

2	**Check side squib (LH) circuit.**



PREPARATION:

Release the airbag activation prevention mechanism of the connector (on the airbag sensor assembly side) between the airbag sensor assembly and the side airbag assembly (LH) (See page DI-358).

CHECK:

For the connector (on the side airbag assembly side) between the side airbag assembly (LH) and the airbag sensor assembly, measure the resistance between SFL+ and SFL-.

OK:

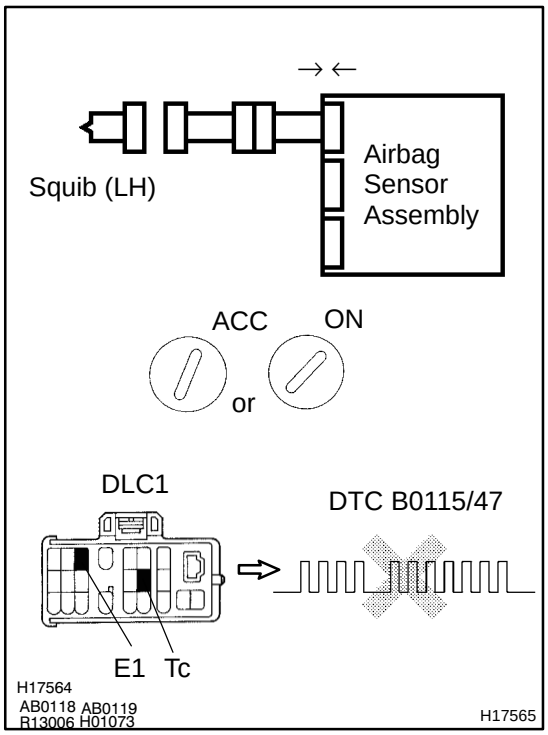
Resistance: 1 MΩ or Higher

NG → **Repair or replace harness or connector between side airbag assembly (LH) and airbag sensor assembly.**

OK

cardiagn.com

3	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.
(b) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ACC or ON and wait at least for 20 seconds.
(b) Clear the DTC stored in memory (See page DI-358).
(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(e) Check the DTC (See page DI-358).

OK:

DTC B0115/47 is not output.

HINT:

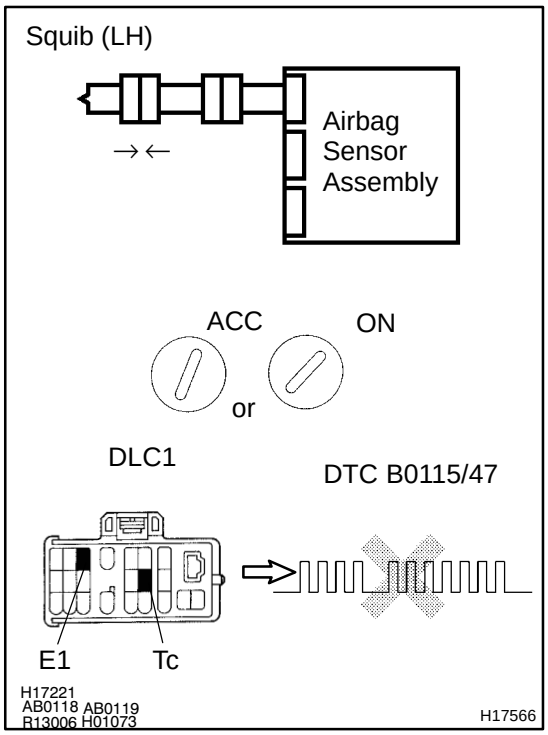
Codes other than code B0115/47 may be output at this time, but they are not relevant to this check.

NG → **Replace airbag sensor assembly.**

OK

cardiagn.com

4	Check side squib (LH).



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect negative (-) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the front side airbag assembly (LH) connector.
(d) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to LOOK, and wait at least for 20 second.
(b) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(c) Clear the DTC stored in memory (See page DI-358).
(d) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(e) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(f) Check the DTC (See page DI-358).

OK:

DTC B0115/47 is not output.

HINT:

Codes other than code B0115/47 may be output at this time, but they are not relevant to this check.

NG	Replace side airbag assembly (LH).

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

cardiagn.com

DI8AT-01

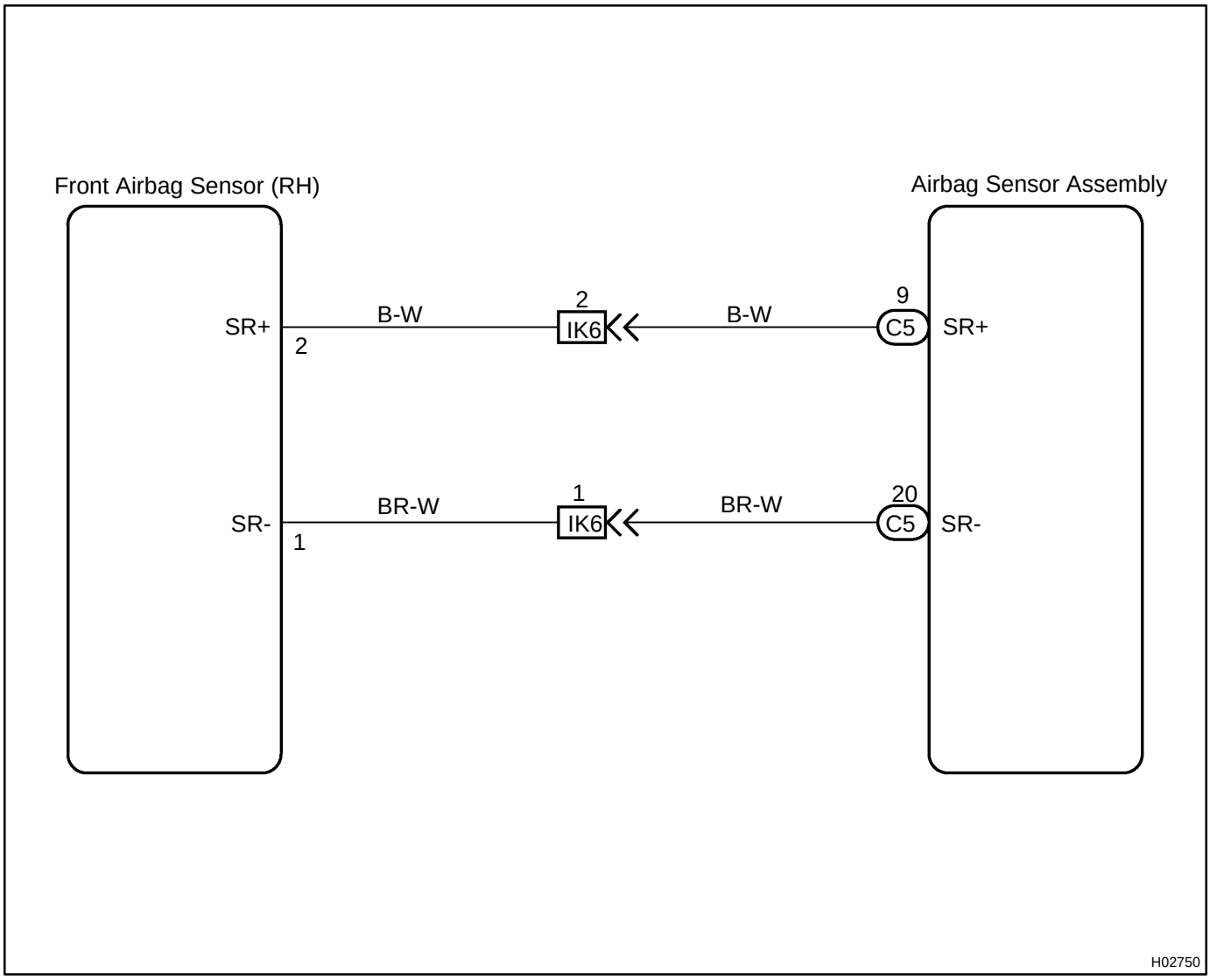
DTC	B1156/B1157/15	Front Airbag Sensor (RH) Malfunction

CIRCUIT DESCRIPTION

The front airbag sensor (RH) circuit consists of the airbag sensor assembly and front airbag sensor (RH).
For details of the function of each component, see OPERATION on page RS-2 .
DTC B1156/B1157/15 is recorded when malfunction is detected in the front airbag sensor (RH) circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B1156/B1157/15	• Front airbag sensor (RH) malfunction	• Front airbag sensor (RH) • Airbag sensor assembly • Wire harness

WIRING DIAGRAM

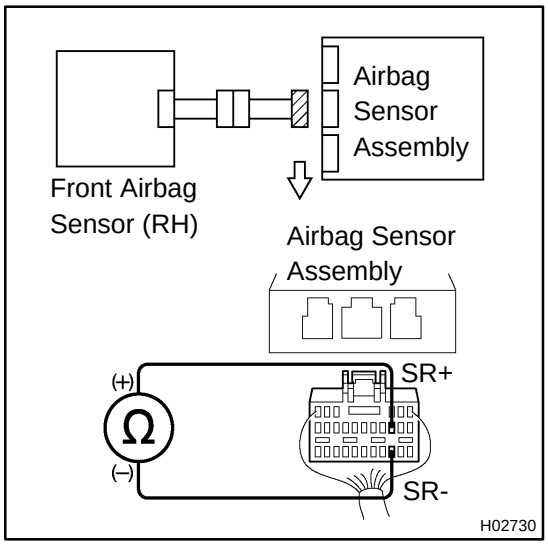


cardiagn.com

INSPECTION PROCEDURE

1	**Prepare for inspection. (See step 1 on page DI-486)**

2	**Check front airbag sensor (RH) circuit.**



CHECK:

For the connector (on the airbag sensor assembly side) between the front airbag sensor (RH) and the airbag sensor assembly, measure the resistance between SR+ and SR-.

OK:

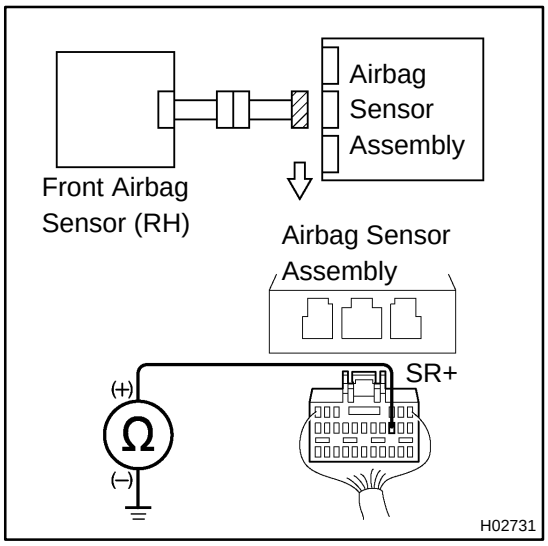
Resistance: 754 - 886 Ω

NG → **Go to step 6.**

OK

cardiagn.com

3	Check front airbag sensor (RH) circuit (to ground).



CHECK:

For the connector (on the airbag sensor assembly side) between the front airbag sensor (RH) and the airbag sensor assembly, measure the resistance between SR+ and body ground.

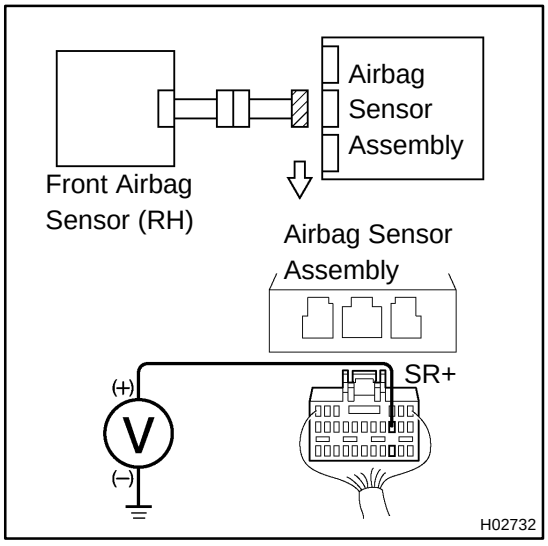
OK:

Resistance: 1 MΩ or Higher

NG → **Go to step 9.**

OK

4	Check front airbag sensor (RH) circuit (to B+).



PREPARATION:

Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

For the connector (on the airbag sensor assembly side) between the front airbag sensor (RH) and the airbag sensor assembly, measure the voltage between SR+ and body ground.

OK:

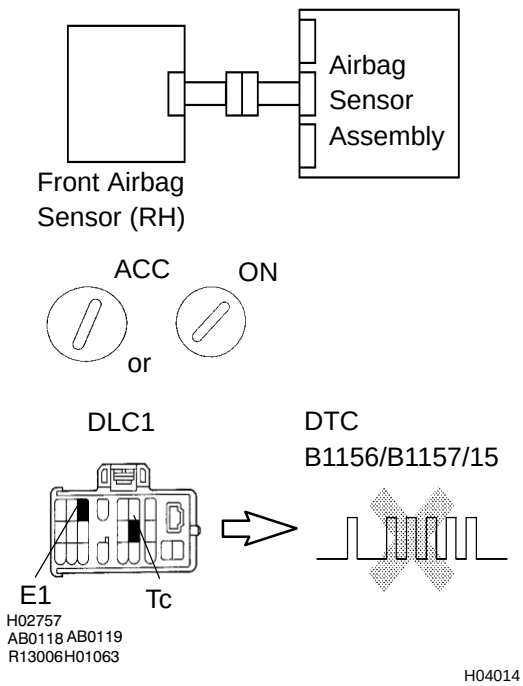
Voltage: Below 1 V

NG → **Go to step 11.**

OK

cardiagn.com

5	Check airbag sensor assembly.



PREPARATION:

(a) Turn ignition switch to LOCK.
(b) Disconnect negative (-) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the front airbag sensor (RH) connector and airbag sensor assembly connector.
(d) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn ignition switch to ACC or ON, and wait at least for 20 seconds.
(b) Clear DTC stored in memory (See page DI-358).
(c) Turn ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn ignition switch to ACC or ON, and wait at least for 20 seconds.
(e) Check DTC (See page DI-358).

OK:

DTC B1156/B1157/15 is not output.

HINT:

Codes other than DTC B1156/B1157/15 may be output at this time, but they are not relevant to this check.

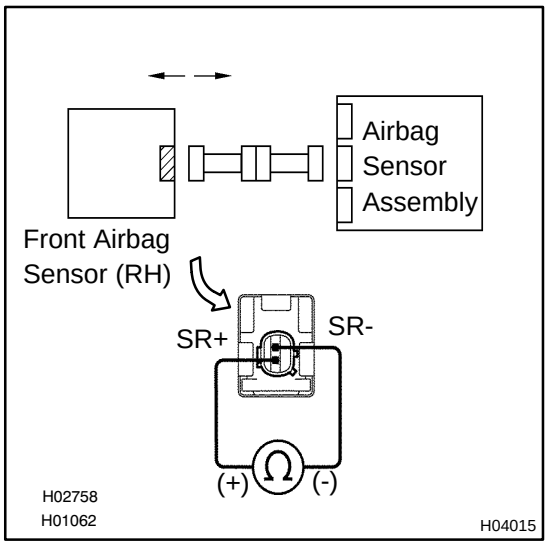
NG	Replace airbag sensor assembly.

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check. If the malfunctioning part can not be detected by the simulation method, replace all SRS components including the wire harness.

cardiagn.com

6	Check front airbag sensor (RH).

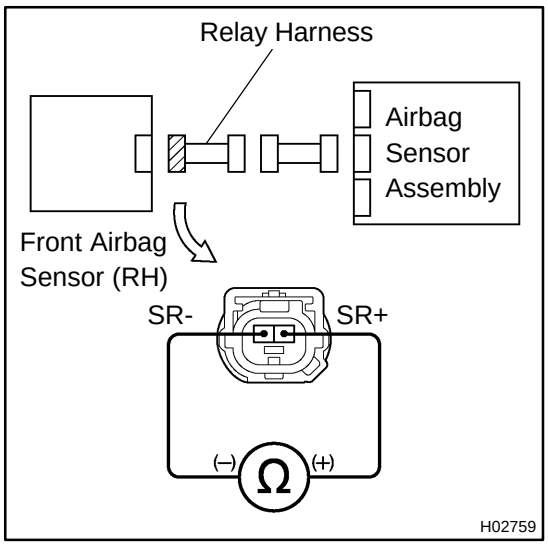


PREPARATION:
Disconnect the front airbag sensor connector (RH).
CHECK:
For the connector (on the front airbag sensor side), measure the resistance between SR+ and SR-.
OK:
Resistance: 754 - 886 Ω

NG → **Replace front airbag sensor (RH).**

OK

7	Check relay harness.



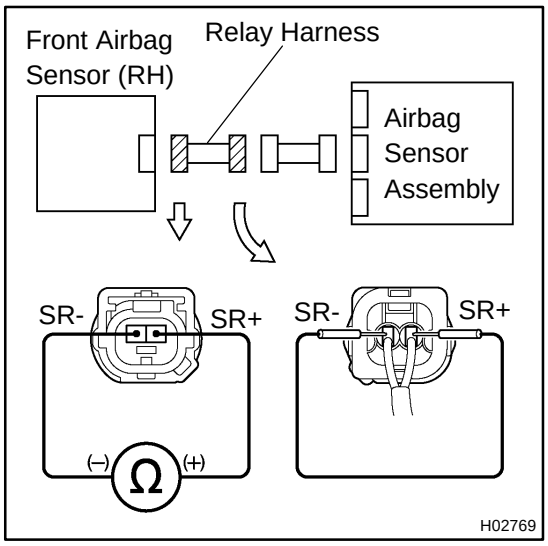
PREPARATION:
Disconnect the relay harness connector on the airbag sensor assembly side.
CHECK:
For the connector (on the relay harness side) between the front airbag sensor (RH) and the relay harness, measure the resistance between SR+ and SR-.
OK:
Resistance: 1 MΩ or Higher

NG → **Repair or replace relay harness.**

OK

cardiagn.com

8	Check relay harness.



PREPARATION:
Using service wire, connect SR+ and SR- of the connector (on the relay harness side), between the airbag sensor assembly and the relay harness.

CHECK:
For the connector (on the relay harness side) between the front airbag sensor (RH) and the relay harness, measure the resistance between SR+ and SR-.

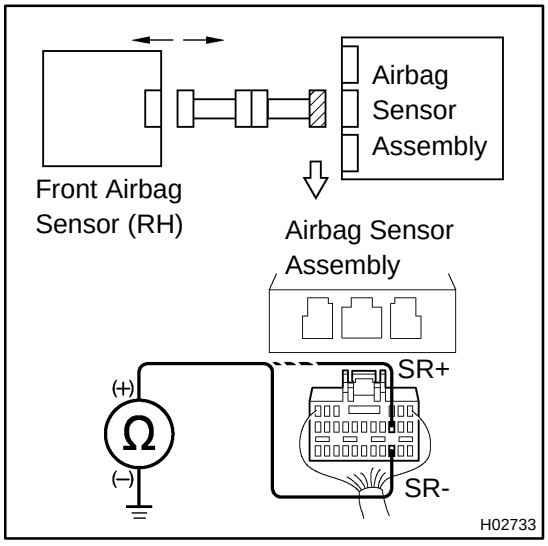
OK:
Resistance: Below 1 Ω

NG → **Repair or replace relay harness.**

OK

Repair or replace harness or connector between airbag sensor assembly and relay harness.

9	Check wire harness (to ground).



PREPARATION:
Disconnect the front airbag sensor connector (RH).

CHECK:
For the connector (on the airbag sensor assembly side) between the front airbag sensor (RH) and the airbag sensor assembly, measure the resistance between body ground and each of SR+ and SR-.

OK:
Resistance: 1 MΩ or Higher

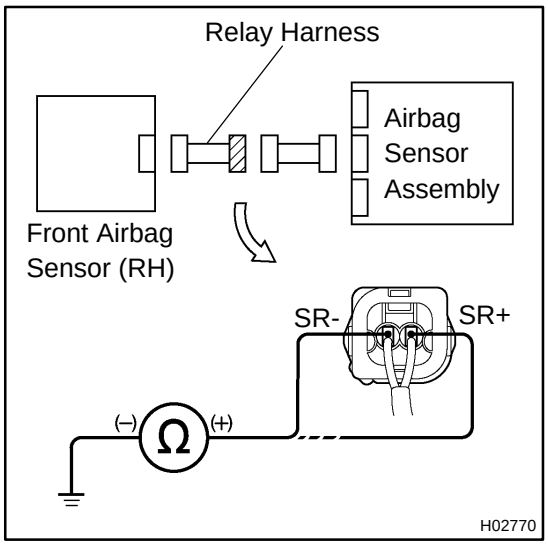
NG → **Go to step 9.**

OK

Replace front airbag sensor (RH).

cardiagn.com

10	Check relay harness (to ground).



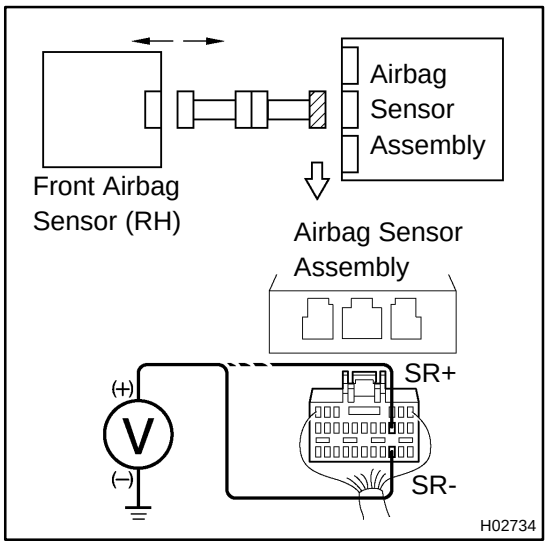
PREPARATION:
Disconnect the relay harness connector on the airbag sensor assembly side.
CHECK:
For the connector (on the relay harness side) between the front airbag sensor (RH) and the relay harness, measure the resistance between body ground and each of SR+ and SR-.
OK:
Resistance: Below 1 MΩ or Higher

NG → **Repair or replace relay harness.**

OK

Repair or replace harness or connector between airbag sensor assembly and relay harness.

11	Check wire harness (to B+).



PREPARATION:
Disconnect the front airbag sensor connector (RH).
CHECK:
For the connector (on the airbag sensor assembly side) between the front airbag sensor (RH) and the airbag sensor assembly, measure the voltage between body ground and each of SR+ and SR-.
OK:
Voltage: Below 1 V

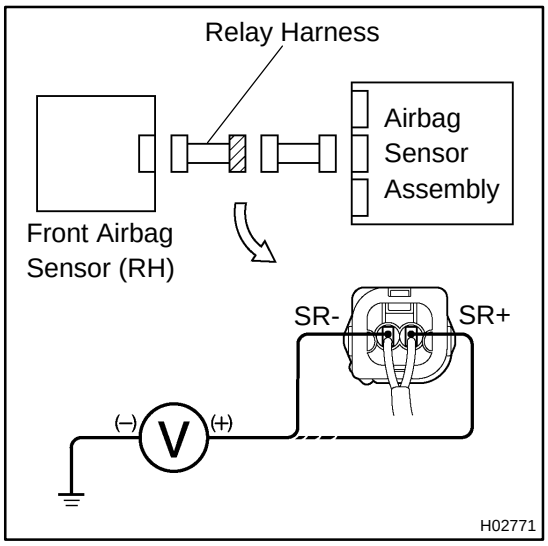
NG → **Go to step 11.**

OK

Replace front airbag sensor (RH).

cardiagn.com

12	Check relay harness (to B+).



PREPARATION:

Disconnect the relay harness connector on the airbag sensor assembly side.

CHECK:

For the connector (on the relay harness side) between the front airbag sensor (RH) and the relay harness, measure the voltage between body ground and each of SR+ and SR-.

OK:

Voltage: Below 1 V

NG → **Repair or replace relay harness.**

OK

Repair or replace harness or connector between airbag sensor assembly and relay harness.

cardiagn.com

DI8AU-01

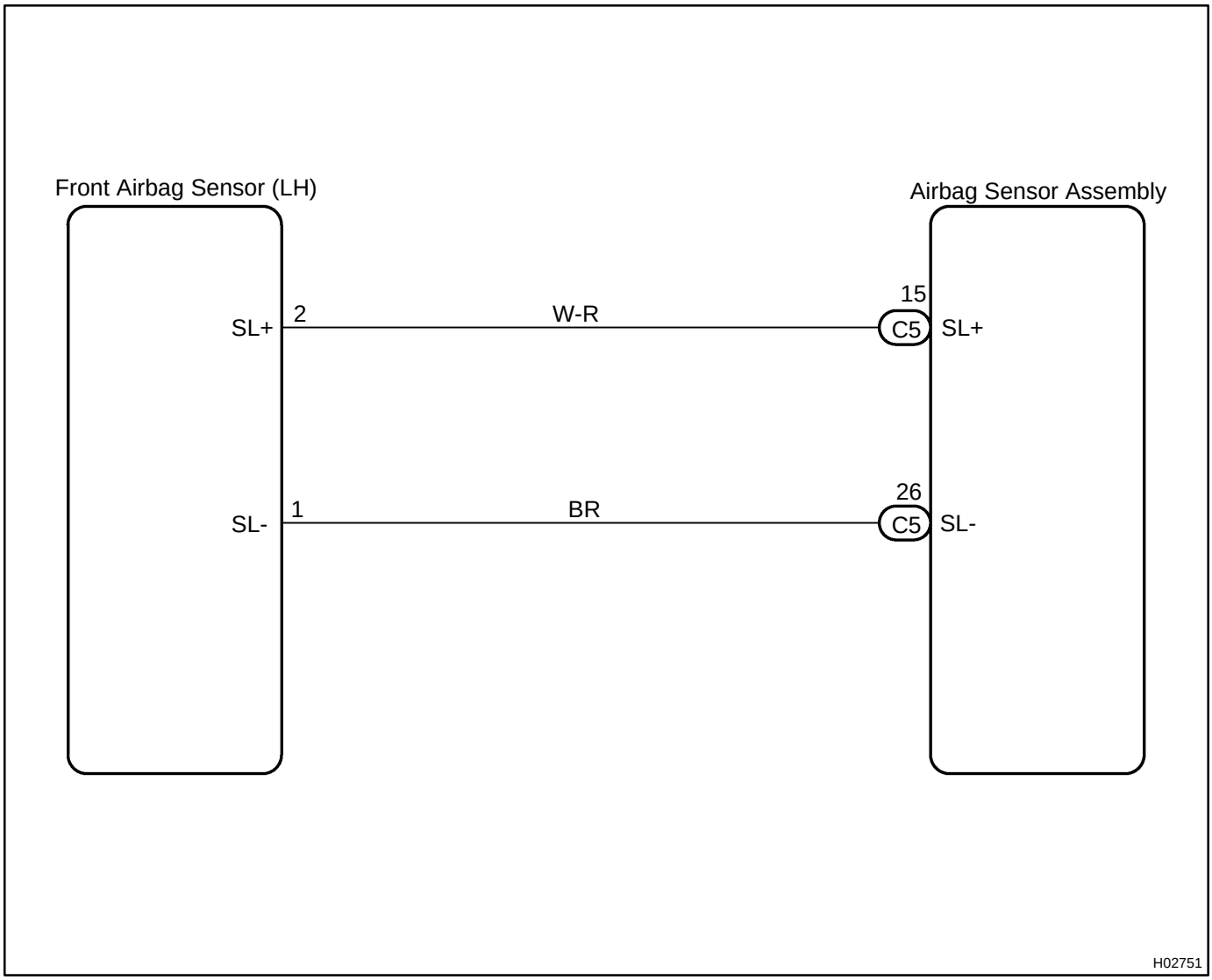
DTC	B1158/B1159/16	Front Airbag Sensor (LH) Malfunction

CIRCUIT DESCRIPTION

The front airbag sensor (LH) circuit consists of the airbag sensor assembly and front airbag sensor (LH).
For details of the function of each component, see OPERATION on page RS-2 .
DTC B1158/B1159/16 is recorded when malfunction is detected in the front airbag sensor (LH) circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B1158/B1159/16	• Front airbag sensor (LH) malfunction	• Front airbag sensor (LH) • Airbag sensor assembly • Wire harness

WIRING DIAGRAM

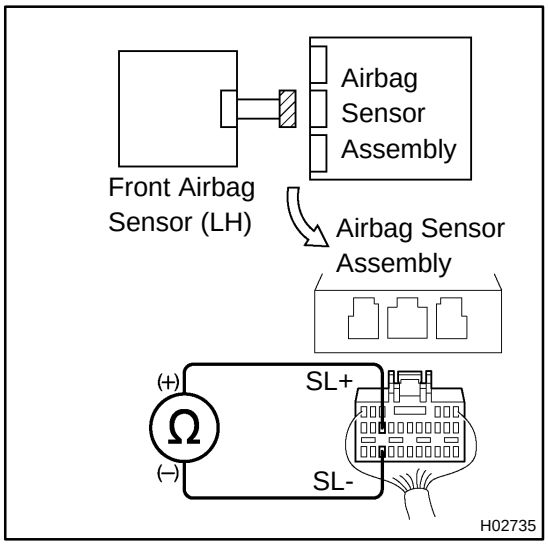


cardiagn.com

INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI-486).**

2	**Check front airbag sensor (LH) circuit.**



CHECK:

For the connector (on the airbag sensor assembly side) between the front airbag sensor (LH) and the airbag sensor assembly, measure the resistance between SL+ and SL-.

OK:

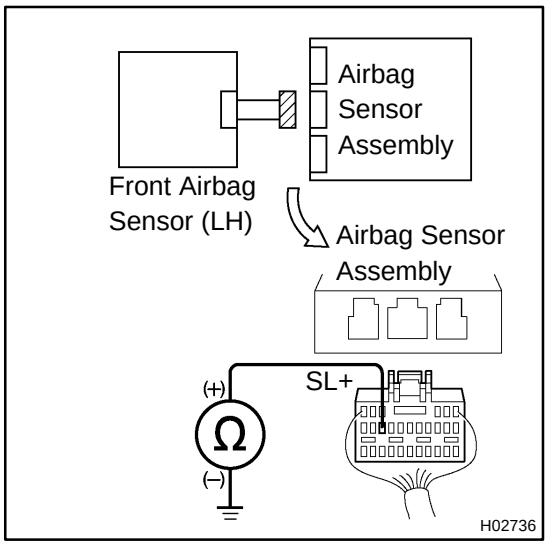
Resistance: 754 - 886 Ω

NG → **Go to step 6.**

OK

cardiagn.com

3	Check front airbag sensor (LH) circuit (to ground).



CHECK:

For the connector (on the airbag sensor assembly side) between the front airbag sensor (LH) and the airbag sensor assembly, measure the resistance between SL+ and body ground.

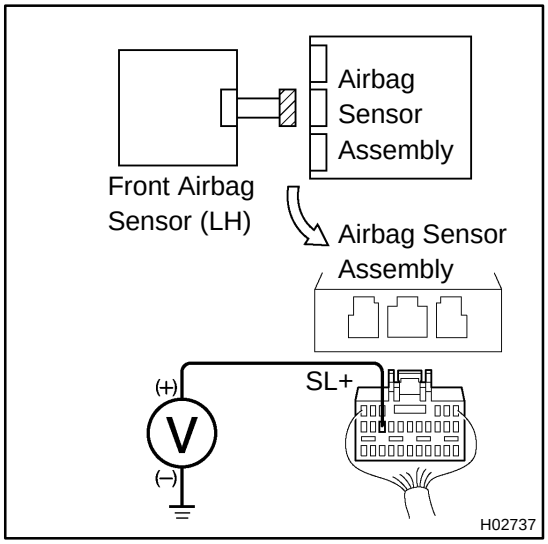
OK:

Resistance: 1 MΩ or Higher

NG → **Go to step 7.**

OK

4	Check front airbag sensor (LH) circuit (to B+).



PREPARATION:

Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

For the connector (on the airbag sensor assembly side) between the front airbag sensor (LH) and the airbag sensor assembly, measure the voltage between SL+ and body ground.

OK:

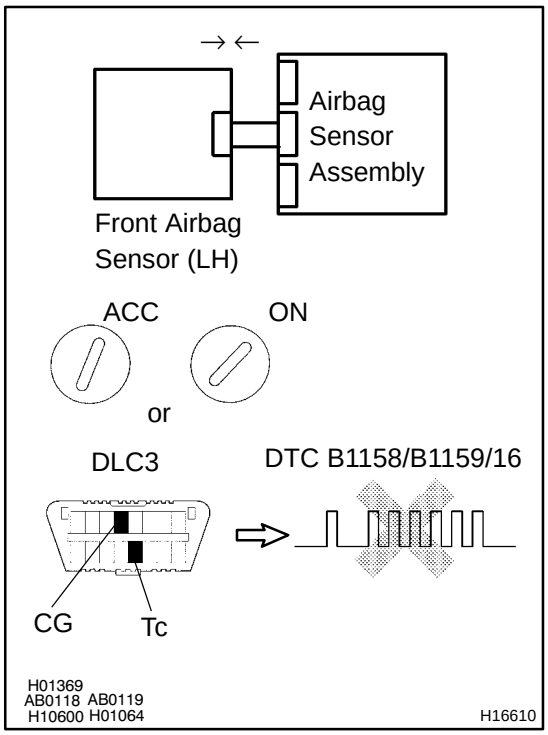
Voltage: Below 1 V

NG → **Go to step 8.**

OK

cardiagn.com

5	Check airbag sensor assembly.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect negative (-) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the front airbag sensor (LH) connector and airbag sensor assembly connector.
(d) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(b) Clear DTC stored in memory (See page DI-358).
(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(e) Check the DTC (See page DI-358).

OK:

DTC B1158/B1159/16 is not output.

HINT:

Codes other than DTC B1158/B1159/16 may be output at this time, but they are not relevant to this check.

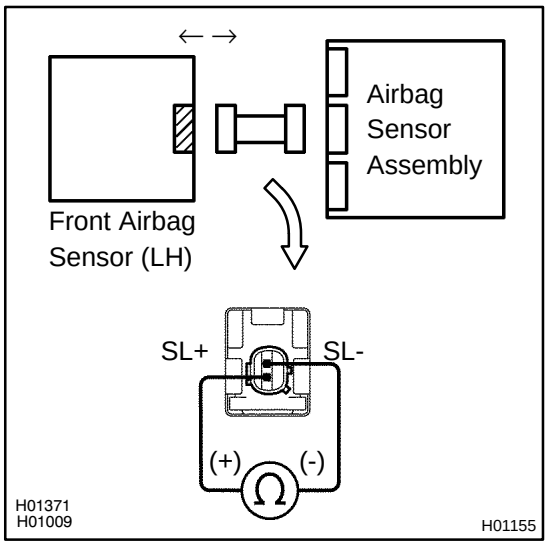
NG → **Replace airbag sensor assembly.**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check. If the malfunctioning part can not be detected by the simulation method, replace all SRS components including the wire harness.

cardiagn.com

6	Check front airbag sensor (LH).



PREPARATION:

Disconnect the front airbag sensor connector (LH).

CHECK:

For the connector (on the front airbag sensor side), measure the resistance between SL+ and SL-.

OK:

Resistance: 754 - 886 Ω

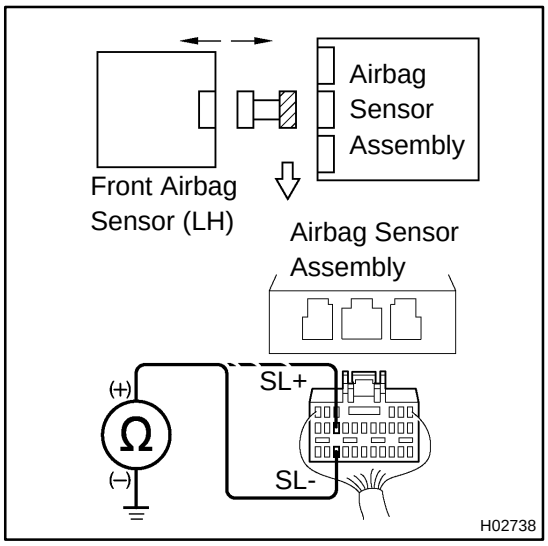
NG → **Replace front airbag sensor (LH).**

OK

Repair or replace harness or connector between the front airbag sensor (LH) and airbag sensor assembly.

cardiagn.com

7	Check wire harness (to ground).



PREPARATION:

Disconnect the front airbag sensor connector (LH).

CHECK:

For the connector (on the airbag sensor assembly side) between the front airbag sensor (LH) and the airbag sensor assembly, measure the resistance between body ground and each of SL+ and SL-.

OK:

Resistance: 1 MΩ or Higher

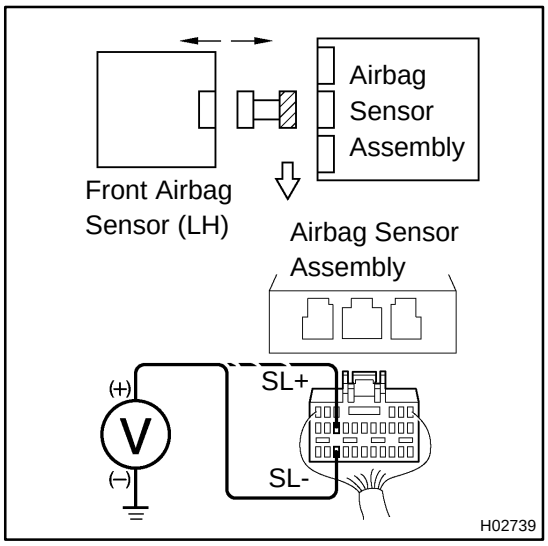
NG → **Repair or replace harness or connector between the front airbag sensor (LH) and airbag assembly.**

OK

Replace front airbag sensor (LH).

cardiagn.com

8	Check wire harness (to B+).



PREPARATION:

Disconnect the front airbag sensor connector (LH).

CHECK:

For the connector (on the airbag sensor assembly side) between the front airbag sensor (LH) and the airbag sensor assembly, measure the voltage between body ground and each of SL+ and SL-.

OK:

Voltage: Below 1 V

NG → **Repair or replace harness or connector between the front airbag sensor (LH) and airbag assembly.**

OK

Replace front airbag sensor (LH).

cardiagn.com

DI6MX-03

DTC	B0116/48	Open in Side Squib (LH) Circuit

CIRCUIT DESCRIPTION

The side squib (LH) circuit consists of the airbag sensor assembly and side airbag assembly (LH).
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS-2 .
DTC B0116/48 is recorded when an open is detected in the side squib (LH) circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B0116/48	• Open circuit in SFL+ wire harness or SFL- wire harness of squib • Side squib (LH) malfunction • Airbag sensor assembly malfunction	• Side airbag assembly (LH) • Airbag sensor assembly • Wire harness

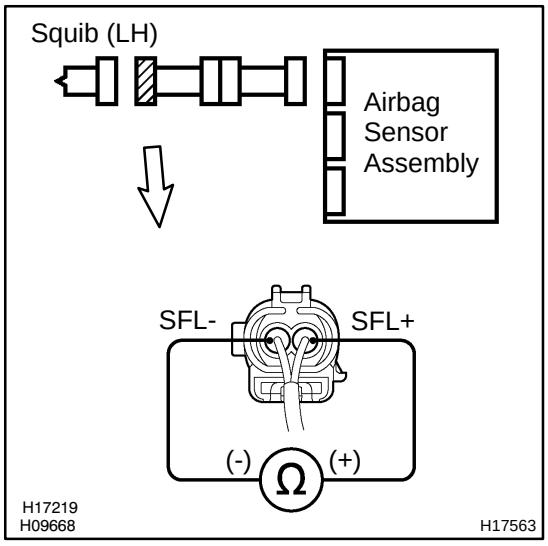
WIRING DIAGRAM

See page DI-414 .

INSPECTION PROCEDURE

1	**Prepare for inspection. (See step 1 on page DI-486)**

2	**Check side squib (LH) circuit.**



CHECK:

For the connector (on the front side airbag assembly side) between the front side airbag assembly (LH) and the airbag sensor assembly, measure the resistance between SFL+ and SFL-.

OK:

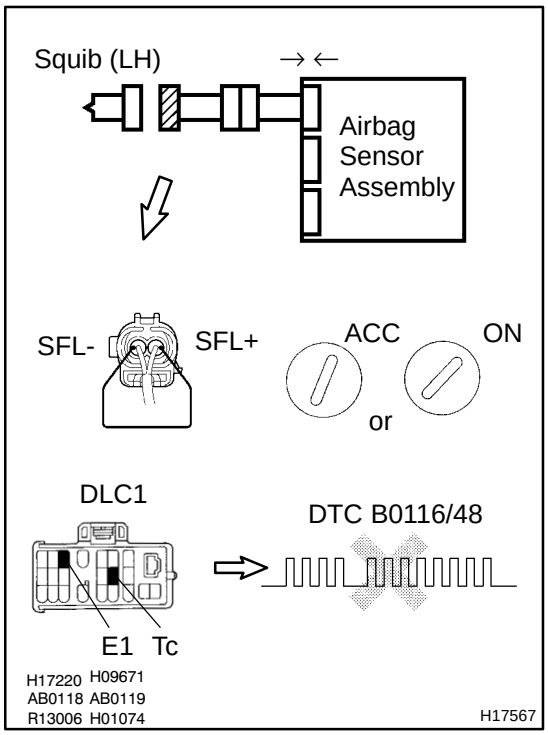
Resistance: Below 1 Ω

NG → **Repair or replace harness or connector between side airbag assembly (LH) and airbag sensor assembly.**

OK

cardiagn.com

3	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.

(b) Using a service wire, connect SFL+ and SFL- of the connector (on the side airbag assembly side) between the side airbag assembly (LH) and the airbag sensor assembly.

(c) Connect negative (-) terminal cable to the battery, and wait at least 2 seconds.

CHECK:

(a) Turn the ignition switch to ACC or ON and wait at least for 20 seconds.

(b) Clear the DTC stored in memory (See page DI-358).

(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.

(d) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.

(e) Check the DTC (See page DI-358).

OK:

DTC B0116/48 is not output.

HINT:

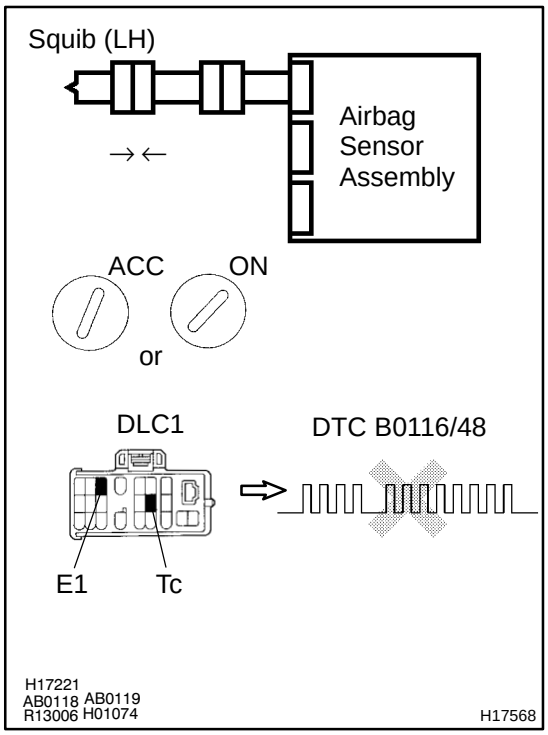
Codes other than code B0116/48 may be output at this time, but they are not relevant to this check.

NG	Replace side airbag sensor assembly.

OK

cardiagn.com

4	Check side squib (LH).



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect negative (-) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the side airbag assembly (LH) connector.
(d) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(b) Clear the DTC stored in memory (See page DI-358).
(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(e) Check the DTC (See page DI-358).

OK:

DTC B0116/48 is not output.

HINT:

Codes other than code B0116/48 may be output at this time, but they are not relevant to this check.

NG	Replace side airbag assembly (LH).

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

cardiagn.com

DTC	B0117/45	Short in Side Squib (LH) Circuit (to Ground)

CIRCUIT DESCRIPTION

The side squib (LH) circuit consists of the airbag sensor assembly and side airbag assembly (LH).
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS-2 .
DTC B0117/45 is recorded when ground short is detected in the side squib (LH) circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B0117/45	• Short circuit in side squib (LH) wire harness (to ground) • Side squib (LH) malfunction • Airbag sensor assembly malfunction	• Side airbag assembly (LH) • Airbag sensor assembly • Wire harness

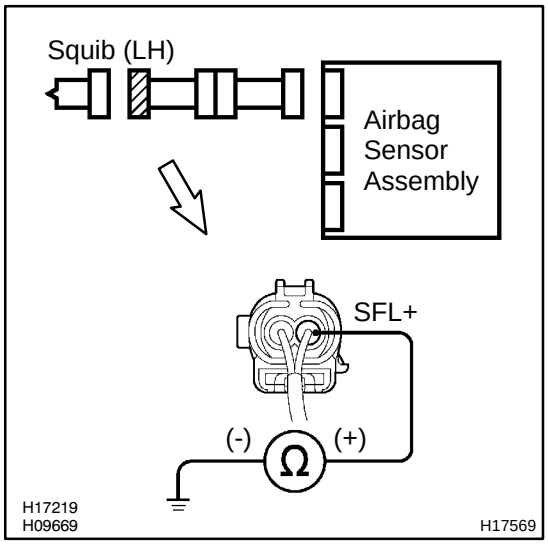
WIRING DIAGRAM

See page DI-414 .

INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI-486).**

2	**Check side squib (LH) circuit.**



CHECK:

For the connector (on the side airbag assembly side) between the side airbag assembly (LH) and the airbag sensor assembly, measure the resistance between SFL+ and body ground.

OK:

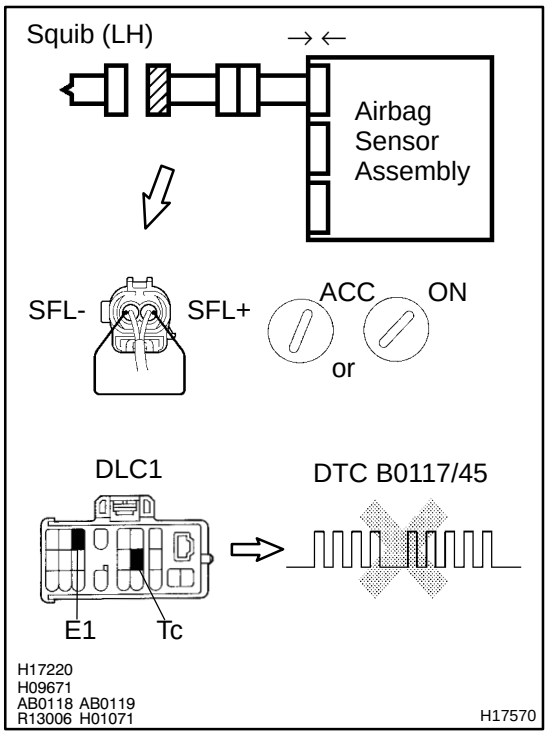
Resistance: 1 MΩ or Higher

NG	**Repair or replace harness or connector between side airbag assembly (LH) and airbag sensor assembly.**

OK

cardiagn.com

3	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.

(b) Using a service wire, connect SFL+ and SFL- of the connector (on the side airbag assembly side) between the side airbag assembly (LH) and the airbag sensor assembly.

(c) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ACC or ON and wait at least for 20 seconds.

(b) Clear the DTC stored in memory
(See step 5 on page DI-358).

(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.

(d) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.

(e) Check DTC (See page DI-358).

OK:

DTC B0117/45 is not output.

HINT:

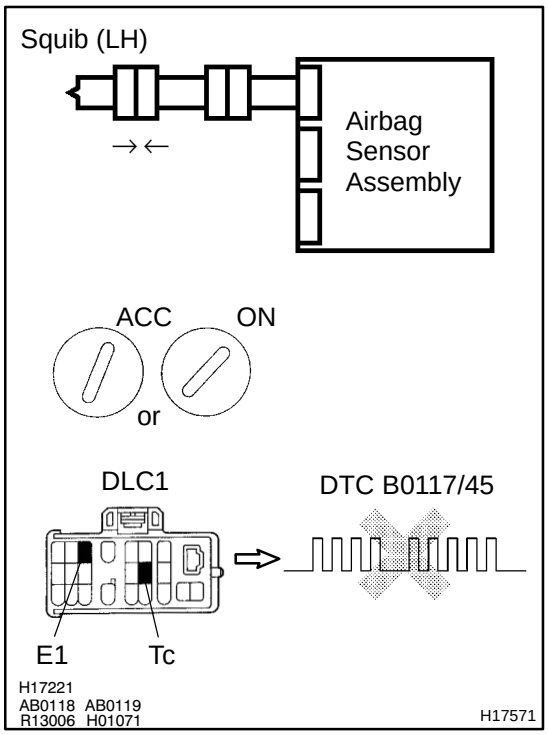
Codes other than code B0117/45 may be output at this time, but they are not relevant to this check.

NG	Replace airbag sensor assembly.

OK

cardiagn.com

4	Check side squib (LH).



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect negative (-) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the front side airbag assembly (LH) connector.
(d) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(b) Clear the DTC stored in memory
(See step 5 on page DI-358).
(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(e) Check the DTC (See page DI-358).

OK:

DTC B0117/45 is not output.

HINT:
Codes other than code B0117/45 may be output at this time, but they are not relevant to this check.

NG → **Replace front side airbag assembly (LH).**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check. If the malfunctioning part can not be detected by the simulation method, replace all SRS components including the wire harness.

cardiagn.com

DI6MZ-03

DTC	B0118/46	Short in Side Squib (LH) Circuit (to B)

CIRCUIT DESCRIPTION

The side squib (LH) circuit consists of the airbag sensor assembly and side airbag assembly (LH).
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS-2 .
DTC B0118/46 is recorded when a B+ short is detected in the side squib (LH) circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B0118/46	• Short circuit in side squib (LH) wire harness (to B+) • Side squib (LH) malfunction • Airbag sensor assembly malfunction	• Side airbag assembly (LH) • Airbag sensor assembly • Wire harness

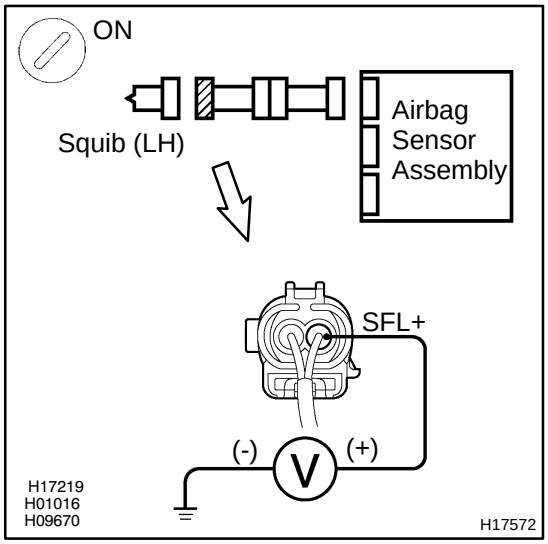
WIRING DIAGRAM

See page DI-414 .

INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI-486).**

2	**Check side squib (LH) circuit.**



CHECK:

(a) Turn the ignition switch to ON.

(b) For the connector (on the side airbag assembly side) between the side airbag assembly (LH) and the airbag sensor assembly, measure the voltage between SFL+ and body ground.

OK:

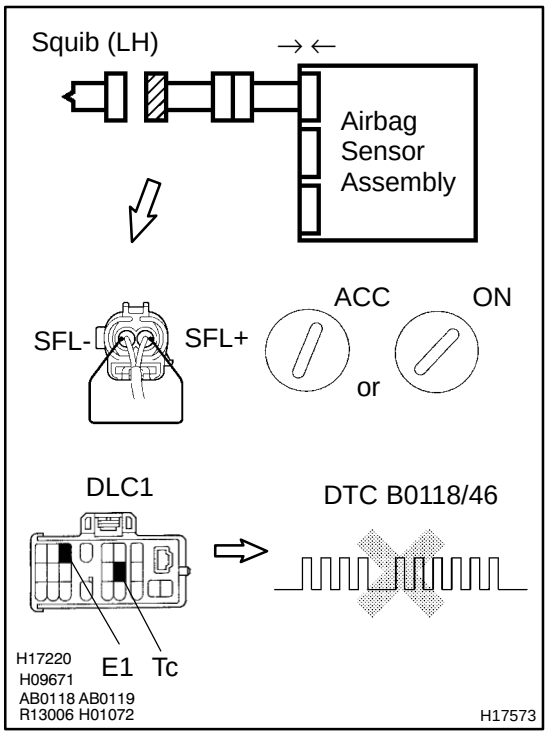
Voltage: 0 V

NG → **Repair or replace harness or connector between side airbag assembly (LH) and airbag sensor assembly.**

OK

cardiagn.com

3	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.

(b) Using a service wire, connect SFL+ and SFL- of the connector (on the side airbag assembly side) between the side airbag assembly (LH) and the airbag sensor assembly.

(c) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ACC or ON and wait at least for 20 seconds.

(b) Clear the DTC stored in memory
(See step 5 on page DI-358).

(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.

(d) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.

(e) Check the DTC (See page DI-358).

OK:

DTC B0118/46 is not output.

HINT:

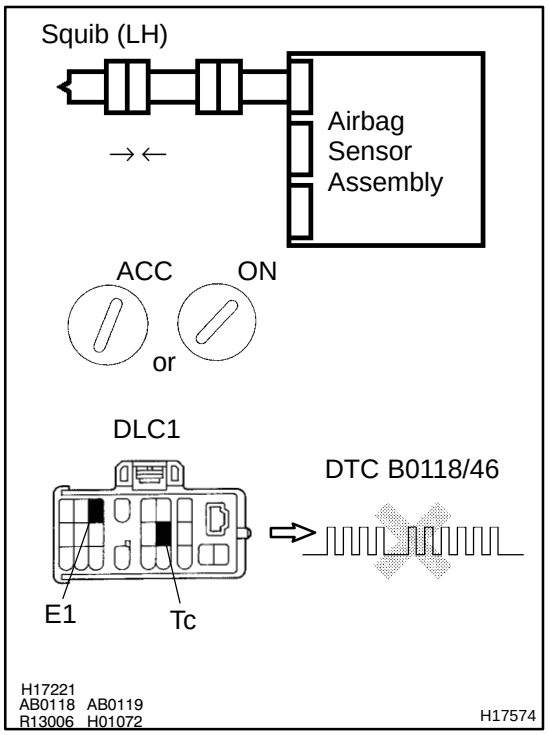
Codes other than code B0118/46 may be output at this time, but they are not relevant to this check.

NG	Replace airbag sensor assembly.

OK

cardiagn.com

4	Check side squib (LH).



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect negative (-) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the side airbag assembly (LH) connector.
(d) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(b) Clear the DTC stored in memory
(See step 5 on page DI-358).
(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(e) Check the DTC (See page DI-358).

OK:

DTC B0118/46 is not output.

HINT:
Codes other than code B0118/46 may be output at this time, but they are not relevant to this check.

NG	Replace side airbag assembly (LH).

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check. If the malfunctioning part can not be detected by the simulation method, replace all SRS components including the wire harness.

cardiagn.com

DI4D0-06

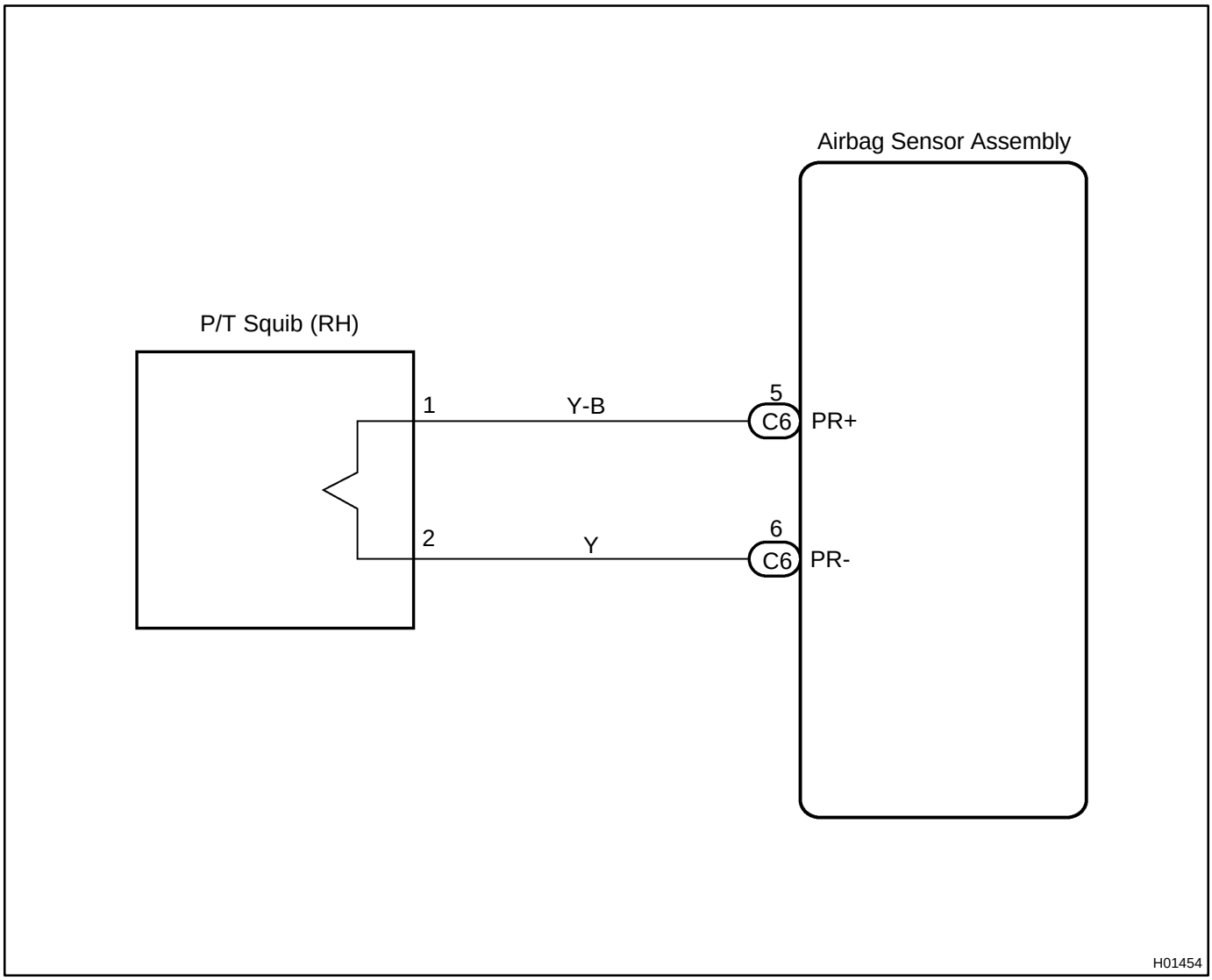
DTC	B0130/63	Short in P/T Squib (RH) Circuit

CIRCUIT DESCRIPTION

The P/T squib (RH) circuit consists of the airbag sensor assembly and seat belt pretensioner (RH).
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS-2 .
DTC B0130/63 is recorded when a short is detected in the P/T squib (RH) circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B0130/63	• Short circuit between PR+ wire harness and PR- wire harness of squib • P/T squib (RH) malfunction • Airbag sensor assembly malfunction	• Seat belt pretensioner (RH) • Airbag sensor assembly • Wire harness

WIRING DIAGRAM

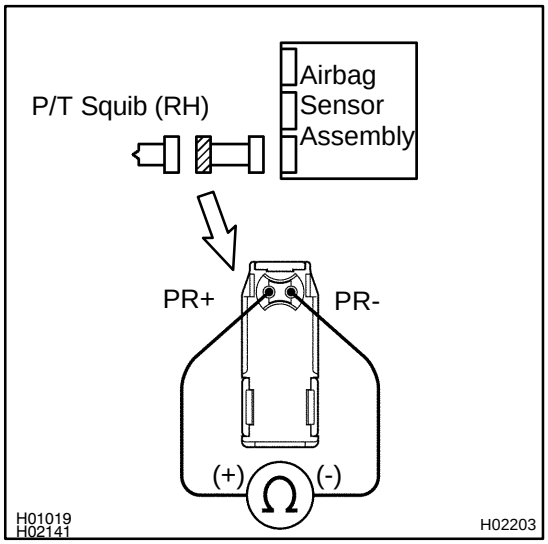


cardiagn.com

INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI-486).**

2	**Check P/T squib (RH) circuit.**



PREPARATION:

Release the airbag activation prevention mechanism of the connector (on the airbag sensor assembly side) between the airbag sensor assembly and the seat belt pretensioner (RH) (See page DI-358).

CHECK:

For the connector (on the seat belt pretensioner side) between the seat belt pretensioner (RH) and the airbag sensor assembly, measure the resistance between PR+ and PR-.

OK:

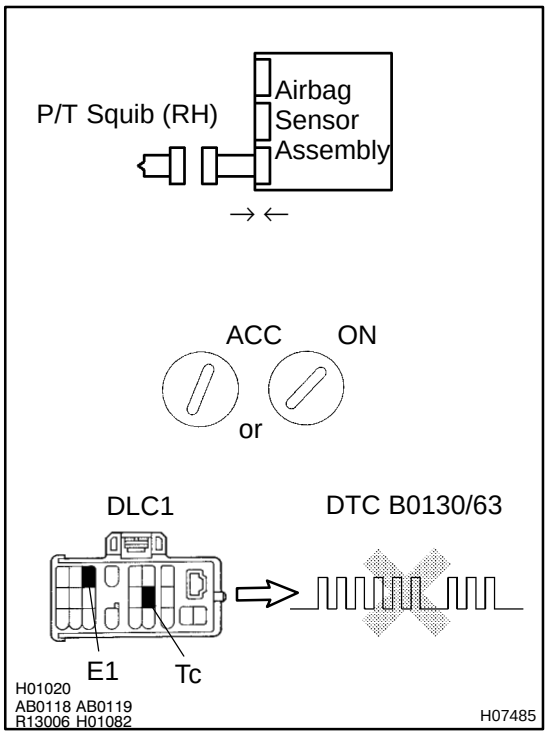
Resistance: 1 MΩ or Higher

NG → **Repair or replace harness or connector between seat belt pretensioner (RH) and airbag sensor assembly.**

OK

cardiagn.com

3	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.
(b) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ACC or ON and wait at least for 20 seconds.
(b) Clear the DTC stored in memory (See page DI-358).
(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(e) Check the DTC (See page DI-358).

OK:

DTC B0130/63 is not output.

HINT:

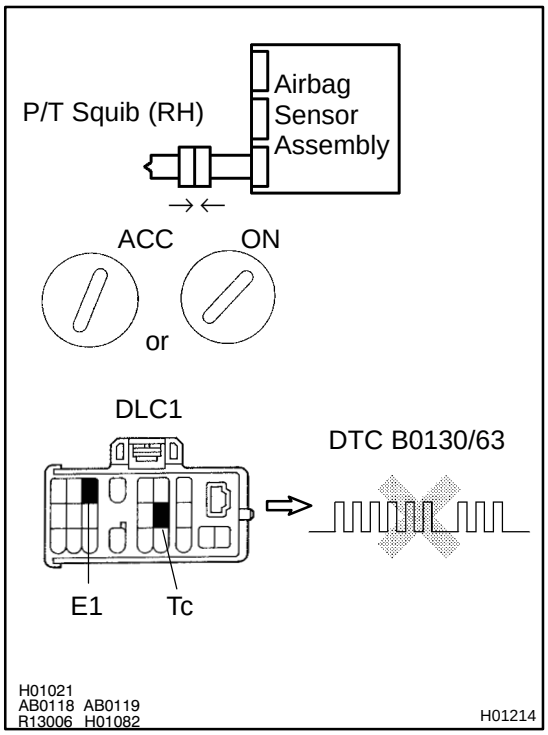
Codes other than code B0130/63 may be output at this time, but they are not relevant to this check.

NG → **Replace airbag sensor assembly.**

OK

cardiagn.com

4	Check P/T squib (RH).



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect negative (-) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the seat belt pretensioner (RH) connector.
(d) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to LOOK, and wait at least for 20 second.
(b) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(c) Clear the DTC stored in memory (See page DI-358).
(d) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(e) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(f) Check the DTC (See page DI-358).

OK:

DTC B0130/63 is not output.

HINT:

Codes other than code B0130/63 may be output at this time, but they are not relevant to this check.

NG → **Replace seat belt pretensioner (RH).**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

cardiagn.com

DI4D1-06

DTC	B0131/64	Open in P/T Squib (RH) Circuit

CIRCUIT DESCRIPTION

The P/T squib circuit (RH) consists of the airbag sensor assembly and seat belt pretensioner (RH).
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS-2 .
DTC B0131/64 is recorded when an open is detected in the P/T squib (RH) circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B0131/64	• Open circuit in PR+ wire harness or PR- wire harness of squib • P/T squib (RH) malfunction • Airbag sensor assembly malfunction	• Seat belt pretensioner (RH) • Airbag sensor assembly • Wire harness

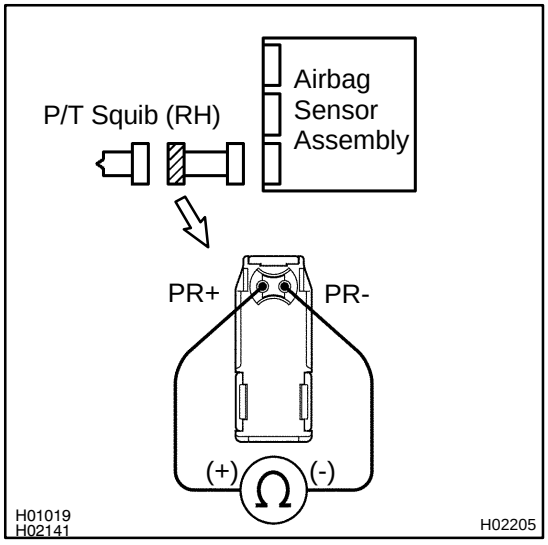
WIRING DIAGRAM

See page DI-427 .

INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI-486).**

2	**Check P/T squib (RH) circuit.**



CHECK:

For the connector (on the seat belt pretensioner side) between the seat belt pretensioner (RH) and the airbag sensor assembly, measure the resistance between PR+ and PR-.

OK:

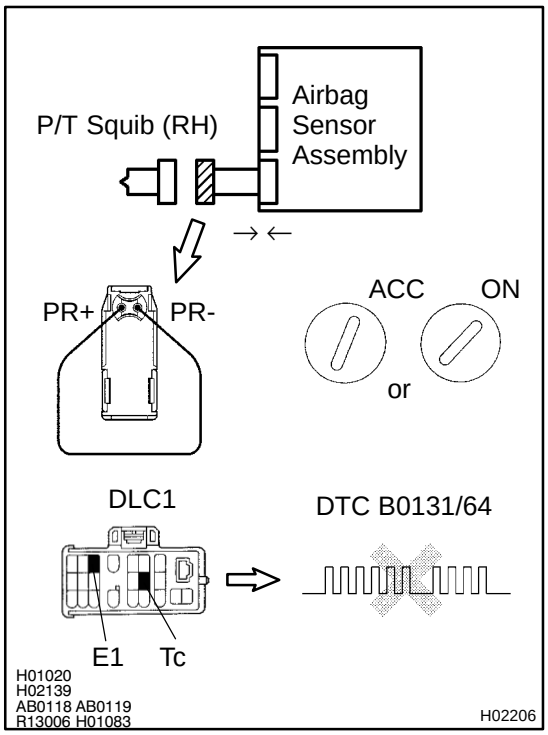
Resistance: Below 1 Ω

NG → **Repair or replace harness or connector between seat belt pretensioner (RH) and airbag sensor assembly.**

OK

cardiagn.com

3	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.

(b) Using a service wire, connect PR+ and PR- of the connector (on the seat belt pretensioner side) between the seat belt pretensioner (RH) and the airbag sensor assembly.

(c) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ACC or ON and wait at least for 20 seconds.

(b) Clear the DTC stored in memory (See page DI-358).

(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.

(d) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.

(e) Check the DTC (See page DI-358).

OK:

DTC B0131/64 is not output.

HINT:

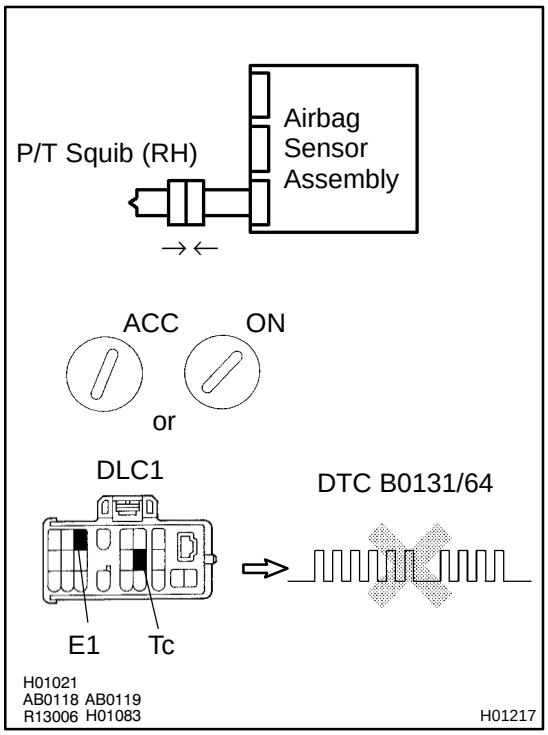
Codes other than code B0131/64 may be output at this time, but they are not relevant to this check.

NG → **Replace airbag sensor assembly.**

OK

cardiagn.com

4	Check P/T squib (RH).



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect negative (-) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the seat belt pretensioner (RH) connector.
(d) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(b) Clear the DTC stored in memory (See page DI-358).
(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(e) Check the DTC (See page DI-358).

OK:

DTC B0131/64 is not output.

HINT:

Codes other than code B0131/64 may be output at this time, but they are not relevant to this check.

NG → **Replace seat belt pretensioner (RH).**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

cardiagn.com

DI4D2-05

DTC	B0132/61	Short in P/T Squib (RH) Circuit (to Ground)

CIRCUIT DESCRIPTION

The P/T squib (RH) circuit consists of the airbag sensor assembly and seat belt pretensioner (RH).
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS-2 .
DTC B0132/61 is recorded when a ground short is detected in the P/T squib (RH) circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B0132/61	• Short circuit in P/T squib (RH) wire harness (to ground) • P/T squib (RH) malfunction • Airbag sensor assembly malfunction	• Seat belt pretensioner (RH) • Airbag sensor assembly • Wire harness

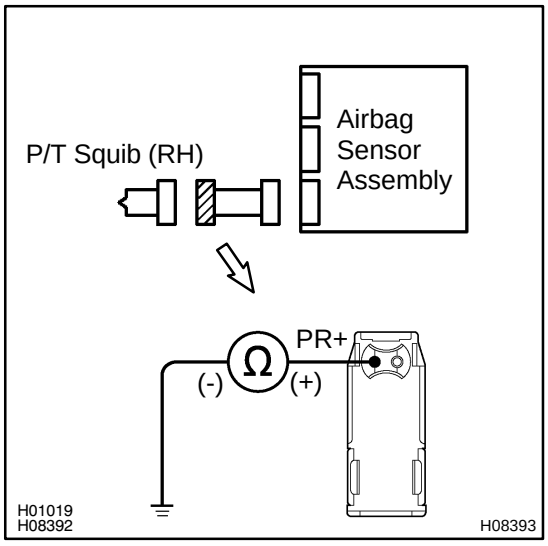
WIRING DIAGRAM

See page DI-427 .

INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI-486).**

2	**Check P/T squib (RH) circuit.**



CHECK:

For the connector (on the seat belt pretensioner side) between the seat belt pretensioner (RH) and the airbag sensor assembly, measure the resistance between PR+ and body ground.

OK:

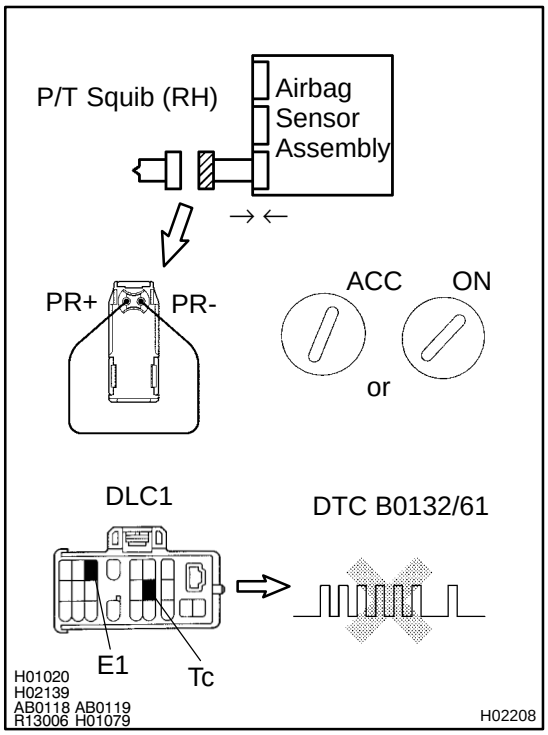
Resistance: 1 MΩ or Higher

NG → **Repair or replace harness or connector between seat belt pretensioner (RH) and airbag sensor assembly.**

OK

cardiagn.com

3	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.

(b) Using a service wire, connect PR+ and PR- of the connector (on the seat belt pretensioner side) between the seat belt pretensioner (RH) and the airbag sensor assembly.

(c) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ACC or ON and wait at least for 20 seconds.

(b) Clear the DTC stored in memory
(See step 5 on page DI-358).

(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.

(d) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.

(e) Check the DTC (See page DI-358).

OK:

DTC B0132/61 is not output.

HINT:

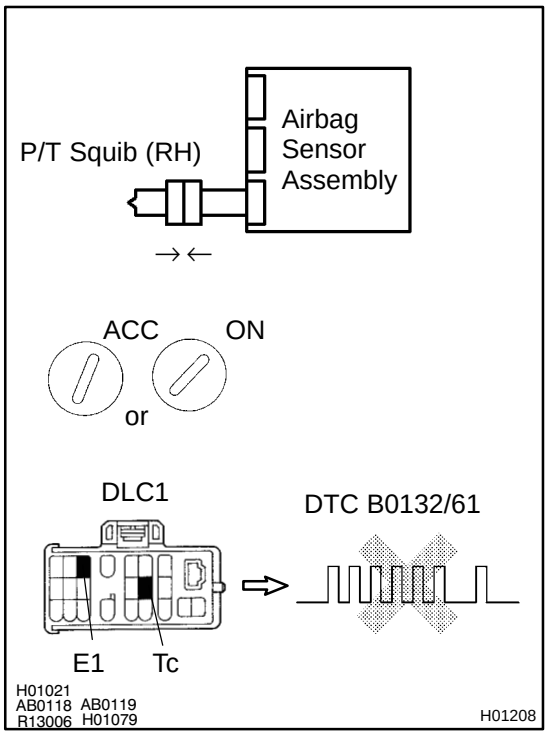
Codes other than code B0132/61 may be output at this time, but they are not relevant to this check.

NG	Replace airbag sensor assembly.

OK

cardiagn.com

4	Check P/T squib (RH).



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect negative (-) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the seat belt pretensioner (RH) connector.
(d) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(b) Clear the DTC stored in memory
(See step 5 on page DI-358).
(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(e) Check the DTC (See page DI-358).

OK:

DTC B0132/61 is not output.

HINT:
Codes other than code B0132/61 may be output at this time, but they are not relevant to this check.

NG → **Replace seat belt pretensioner (RH).**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check. If the malfunctioning part can not be detected by the simulation method, replace all SRS components including the wire harness.

cardiagn.com

DI4D3-05

DTC	B0132/62	Short in P/T Squib (RH) Circuit (to B+)

CIRCUIT DESCRIPTION

The P/T squib (RH) circuit consists of the airbag sensor assembly and seat belt pretensioner (RH).
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS-2 .
DTC B0133/62 is recorded when a B+ short is detected in the P/T squib (RH) circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B0133/62	• Short circuit in seat belt pretensioner (RH) wire harness (to B+) • P/T squib (RH) malfunction • Airbag sensor assembly malfunction	• Seat belt pretensioner (RH) • Airbag sensor assembly • Wire harness

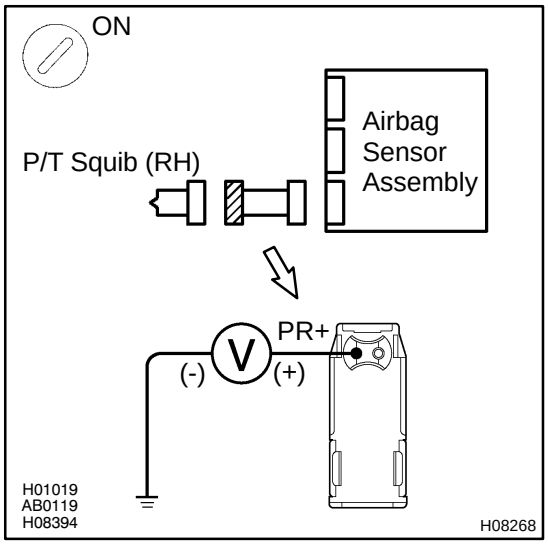
WIRING DIAGRAM

See page DI-427 .

INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI-486).**

2	**Check P/T squib (RH) circuit.**



CHECK:

(a) Turn the ignition switch to ON.

(b) For the connector (on the seat belt pretensioner side) between the seat belt pretensioner (RH) and the airbag sensor assembly, measure the voltage between PR+ and body ground.

OK:

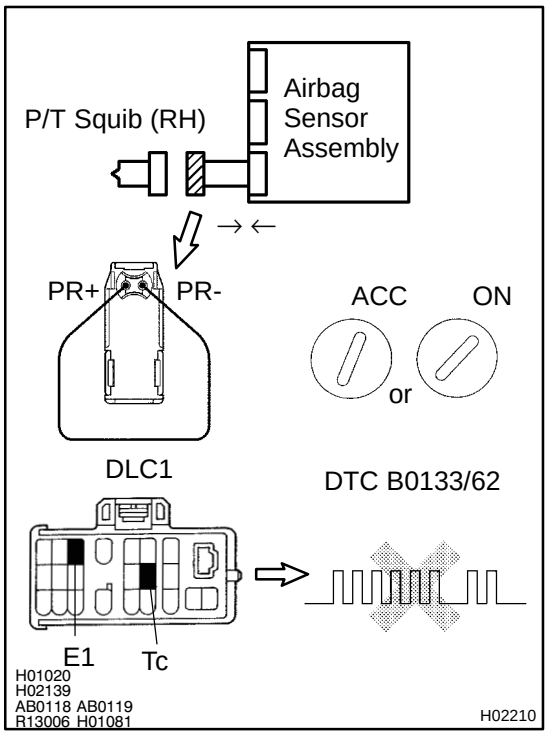
Voltage: 0 V

NG → **Repair or replace harness or connector between seat belt pretensioner (RH) and airbag sensor assembly.**

OK

cardiagn.com

3	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.

(b) Using a service wire, connect PR+ and PR- of the connector (on the seat belt pretensioner side) between the seat belt pretensioner (RH) and the airbag sensor assembly.

(c) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ACC or ON and wait at least for 20 seconds.

(b) Clear the DTC stored in memory (See step 5 on page DI-358).

(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.

(d) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.

(e) Check the DTC (See page DI-358).

OK:

DTC B0133/62 is not output.

HINT:

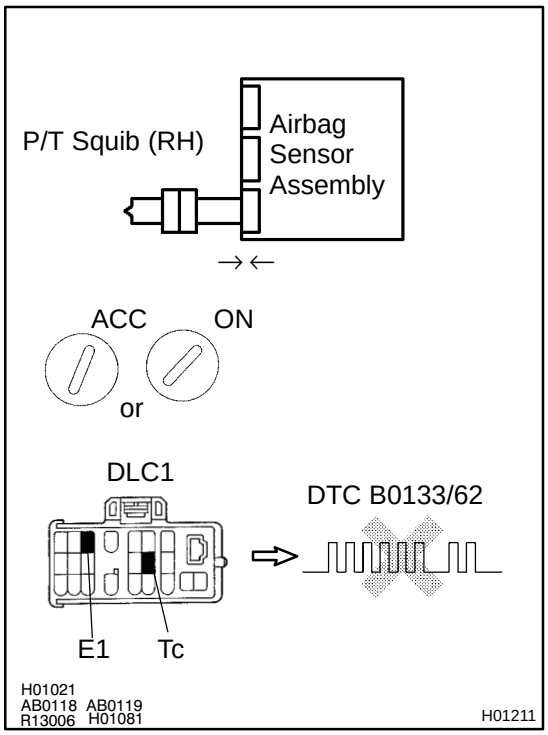
Codes other than code B0133/62 may be output at this time, but they are not relevant to this check.

NG	Replace airbag sensor assembly.

OK

cardiagn.com

4	Check P/T squib (RH).



PREPARATION:

(a) Turn ignition switch to LOCK.
(b) Disconnect negative (-) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the seat belt pretensioner (RH) connector.
(d) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(b) Clear the DTC stored in memory
(See step 5 on page DI-358).
(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(e) Check the DTC (See page DI-358).

OK:

DTC B0133/62 is not output.

HINT:
Codes other than code B0133/62 may be output at this time, but they are not relevant to this check.

NG → **Replace seat belt pretensioner (RH).**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check. If the malfunctioning part can not be detected by the simulation method, replace all SRS components including the wire harness.

cardiagn.com

DI4D4-06

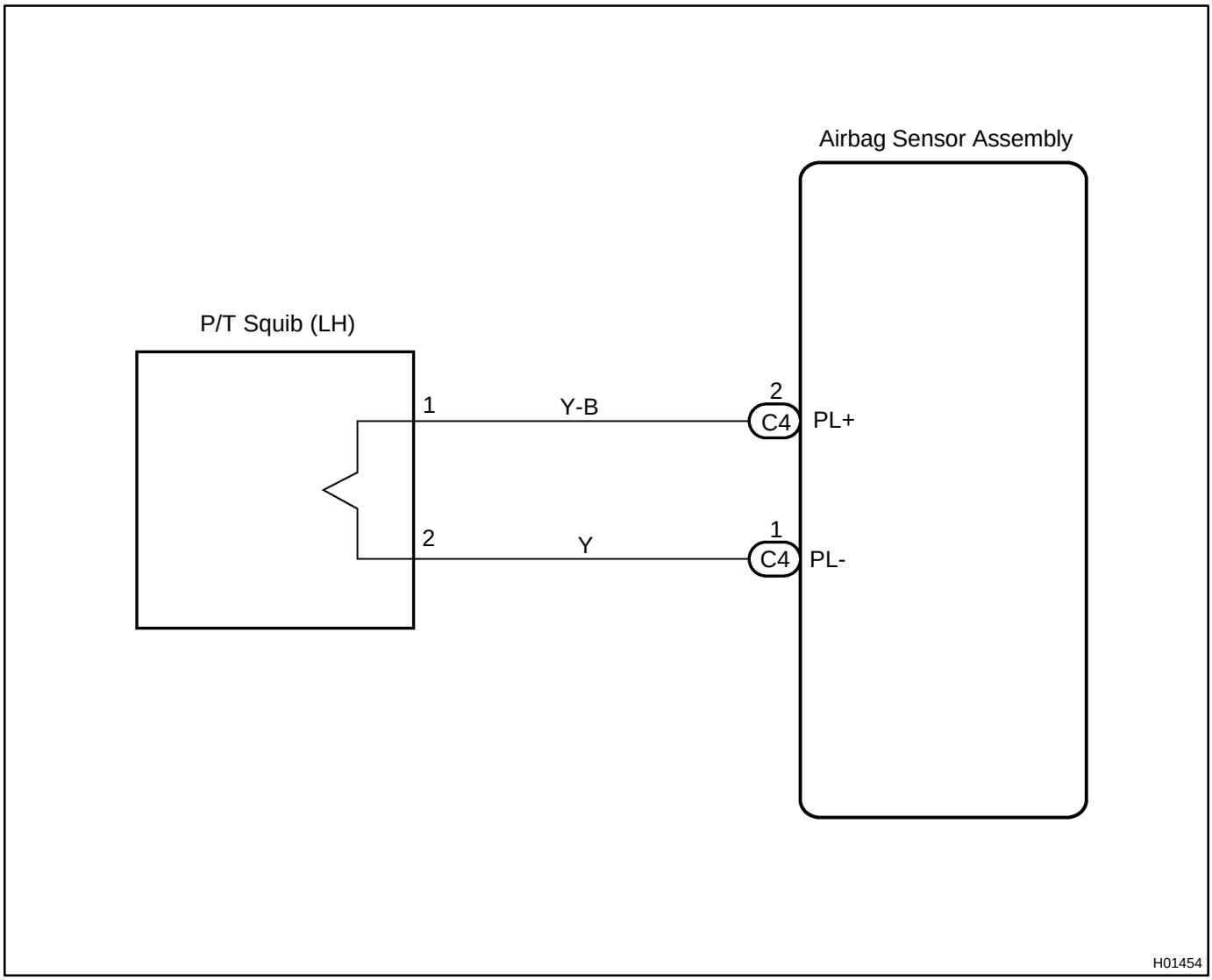
DTC	B0135/73	Short in P/T Squib (LH) Circuit

CIRCUIT DESCRIPTION

The P/T squib (LH) circuit consists of the airbag sensor assembly and seat belt pretensioner (LH).
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS-2 .
DTC B0135/73 is recorded when a short is detected in the P/T squib (LH) circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B0135/73	• Short circuit between PL+ wire harness and PL- wire harness of squib • P/T squib (LH) malfunction • Airbag sensor assembly malfunction	• Seat belt pretensioner (LH) • Airbag sensor assembly • Wire harness

WIRING DIAGRAM

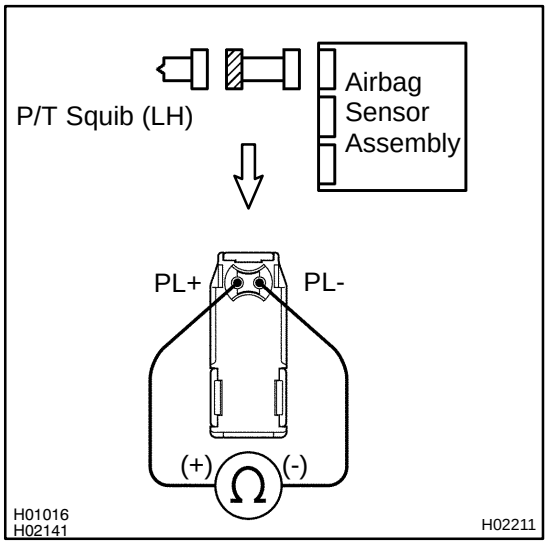


cardiagn.com

INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI-486).**

2	**Check P/T squib (LH) circuit.**



PREPARATION:

Release the airbag activation prevention mechanism of the connector (on the airbag sensor assembly side) between the airbag sensor assembly and the seat belt pretensioner (LH) (See page DI-358).

CHECK:

For the connector (on the seat belt pretensioner side) between the seat belt pretensioner (LH) and the airbag sensor assembly, measure the resistance between PL+ and PL-.

OK:

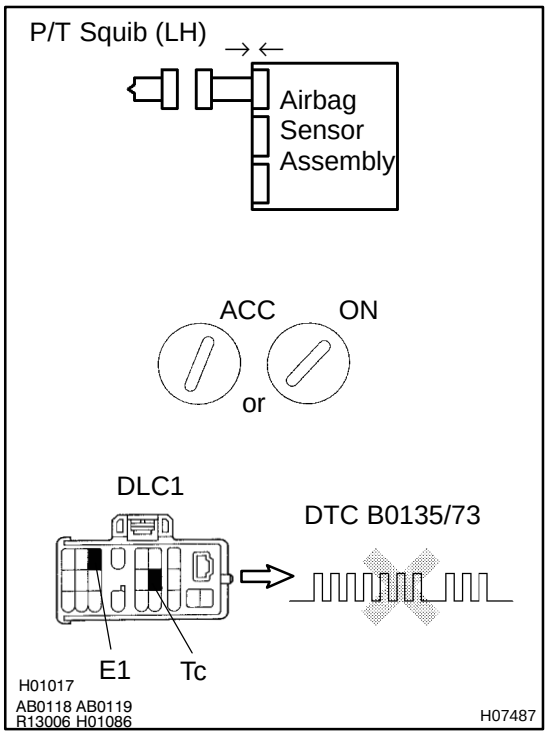
Resistance: 1 MΩ or Higher

NG → **Repair or replace harness or connector between seat belt pretensioner (LH) and airbag sensor assembly.**

OK

cardiagn.com

3	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.
(b) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ACC or ON and wait at least for 20 seconds.
(b) Clear the DTC stored in memory (See page DI-358).
(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(e) Check the DTC (See page DI-358).

OK:

DTC B0135/73 is not output.

HINT:

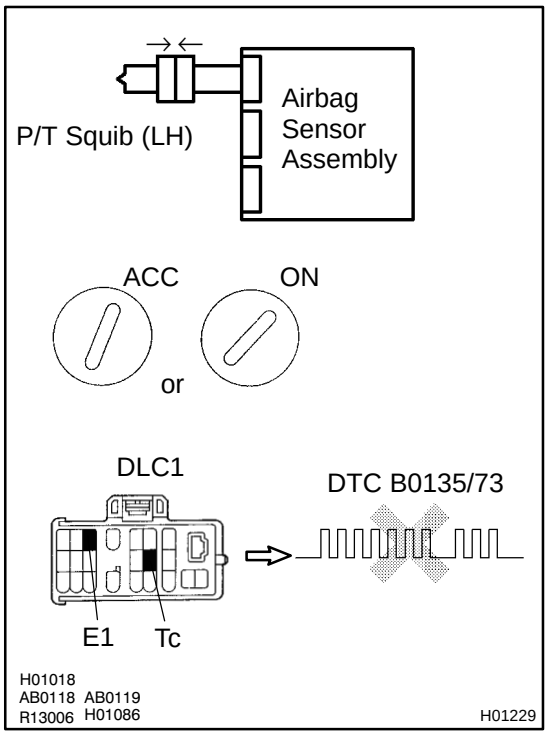
Codes other than code B0135/73 may be output at this time, but they are not relevant to this check.

NG → **Replace airbag sensor assembly.**

OK

cardiagn.com

4	Check P/T squib (LH).



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect negative (-) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the seat belt pretensioner (LH) connector.
(d) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to LOOK, and wait at least for 20 second.
(b) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(c) Clear the DTC stored in memory (See page DI-358).
(d) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(e) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(f) Check the DTC (See page DI-358).

OK:

DTC B0135/73 is not output.

HINT:

Codes other than code B0135/73 may be output at this time, but they are not relevant to this check.

NG	Replace seat belt pretensioner (LH).

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

cardiagn.com

DI4D5-06

DTC	B0136/74	Open in P/T Squib (LH) Circuit

CIRCUIT DESCRIPTION

The P/T squib circuit (LH) consists of the airbag sensor assembly and seat belt pretensioner (LH).
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS-2 .
DTC B0136/74 is recorded when an open is detected in the P/T squib (LH) circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B0136/74	• Open circuit in PL+ wire harness or PL- wire harness of squib • P/T squib (LH) malfunction • Airbag sensor assembly malfunction	• Seat belt pretensioner (LH) • Airbag sensor assembly • Wire harness

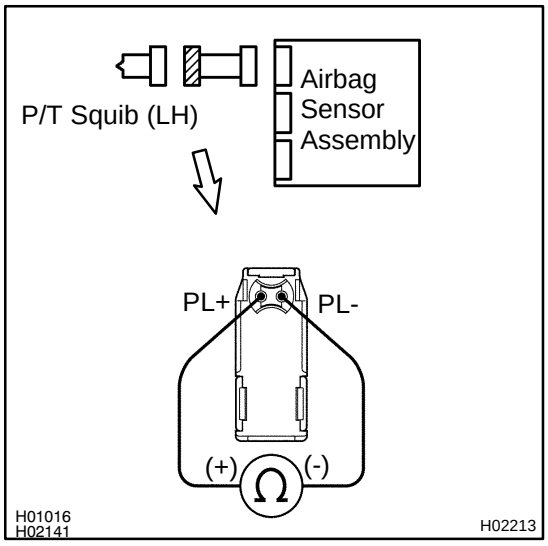
WIRING DIAGRAM

See page DI-440 .

INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI-486).**

2	**Check P/T squib (LH) circuit.**



CHECK:

For the connector (on the seat belt pretensioner side) between the seat belt pretensioner (LH) and the airbag sensor assembly, measure the resistance between PL+ and PL-.

OK:

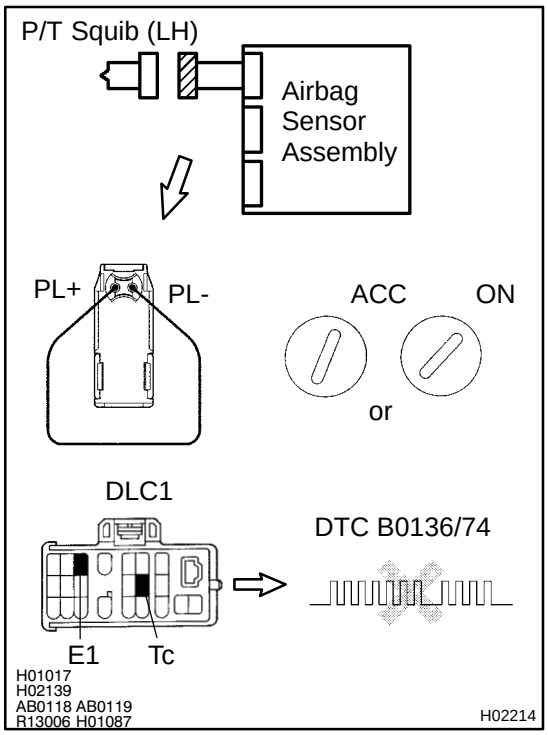
Resistance: Below 1 Ω

NG → **Repair or replace harness or connector between seat belt pretensioner (LH) and airbag sensor assembly.**

OK

cardiagn.com

3	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.

(b) Using a service wire, connect PL+ and PL- of the connector (on the seat belt pretensioner side) between the seat belt pretensioner (LH) and the airbag sensor assembly.

(c) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ACC or ON and wait at least for 20 seconds.

(b) Clear the DTC stored in memory (See page DI-358).

(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.

(d) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.

(e) Check the DTC (See page DI-358).

OK:

DTC B0136/74 is not output.

HINT:

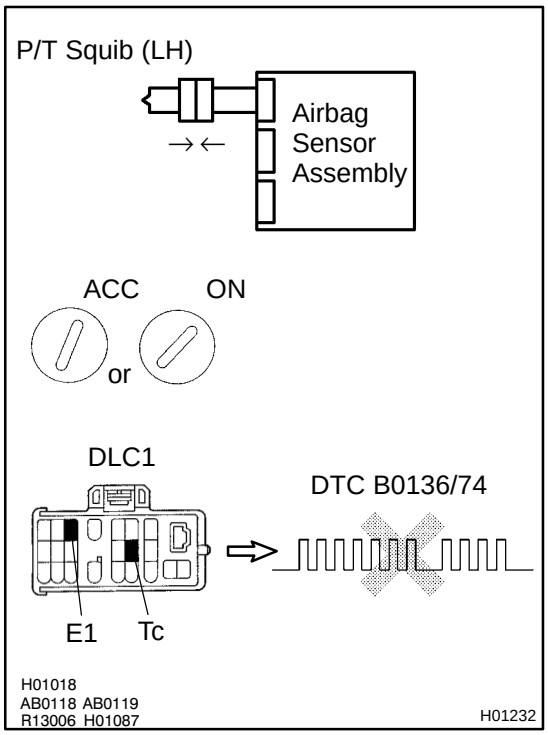
Codes other than code B0136/74 may be output at this time, but they are not relevant to this check.

NG	Replace airbag sensor assembly.

OK

cardiagn.com

4	Check P/T squib (LH).



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect negative (-) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the seat belt pretensioner (LH) connector.
(d) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(b) Clear the DTC stored in memory (See page DI-358).
(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(e) Check the DTC (See page DI-358).

OK:

DTC B0136/74 is not output.

HINT:

Codes other than code B0136/74 may be output at this time, but they are not relevant to this check.

NG	Replace seat belt pretensioner (LH).

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

cardiagn.com

DI4D6-05

DTC	B0137/71	Short in P/T Squib (LH) Circuit (to Ground)

CIRCUIT DESCRIPTION

The P/T squib (LH) circuit consists of the airbag sensor assembly and seat belt pretensioner (LH).
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS-2 .
DTC B0137/71 is recorded when a ground short is detected in the P/T squib (LH) circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B0137/71	• Short circuit in P/T squib (LH) wire harness (to ground) • P/T squib (LH) malfunction • Airbag sensor assembly malfunction	• Seat belt pretensioner (LH) • Airbag sensor assembly • Wire harness

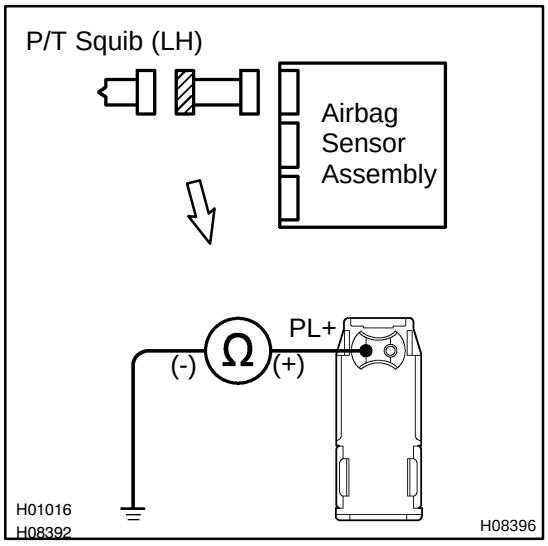
WIRING DIAGRAM

See page DI-440 .

INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI-486).**

2	**Check P/T squib (LH) circuit.**



CHECK:

For the connector (on the seat belt pretensioner side) between the seat belt pretensioner (LH) and the airbag sensor assembly, measure the resistance between PL+ and body ground.

OK:

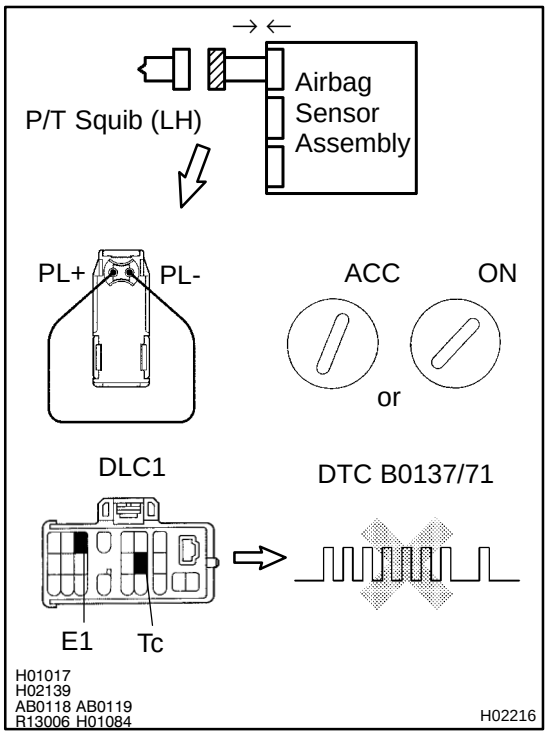
Resistance: 1 MΩ or Higher

NG → **Repair or replace harness or connector between seat belt pretensioner (LH) and airbag sensor assembly.**

OK

cardiagn.com

3	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.

(b) Using a service wire, connect PL+ and PL- of the connector (on the seat belt pretensioner side) between the seat belt pretensioner (LH) and the airbag sensor assembly.

(c) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ACC or ON and wait at least for 20 seconds.

(b) Clear the DTC stored in memory
(See step 5 on page DI-358).

(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.

(d) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.

(e) Check the DTC (See page DI-358).

OK:

DTC B0137/71 is not output.

HINT:

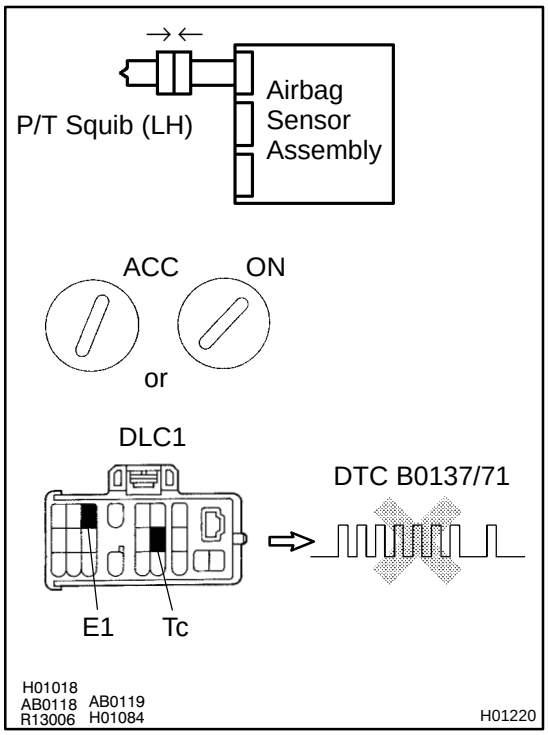
Codes other than code B0137/71 may be output at this time, but they are not relevant to this check.

NG	Replace airbag sensor assembly.

OK

cardiagn.com

4	Check P/T squib (LH).



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect negative (-) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the seat belt pretensioner (LH) connector.
(d) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(b) Clear the DTC stored in memory
(See step 5 on page DI-358).
(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(e) Check the DTC (See page DI-358).

OK:

DTC B0137/71 is not output.

HINT:
Codes other than code B0137/71 may be output at this time, but they are not relevant to this check.

NG → **Replace seat belt pretensioner (LH).**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check. If the malfunctioning part can not be detected by the simulation method, replace all SRS components including the wire harness.

cardiagn.com

DI4D7-05

DTC	B0138/72	Short in P/T Squib (LH) Circuit (to B+)

CIRCUIT DESCRIPTION

The P/T squib (LH) circuit consists of the airbag sensor assembly and seat belt pretensioner (LH).
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS-2 .
DTC B0138/72 is recorded when a B+ short is detected in the P/T squib (LH) circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B0138/72	• Short circuit in seat belt pretensioner (LH) wire harness (to B+) • P/T squib (LH) malfunction • Airbag sensor assembly malfunction	• Seat belt pretensioner (LH) • Airbag sensor assembly • Wire harness

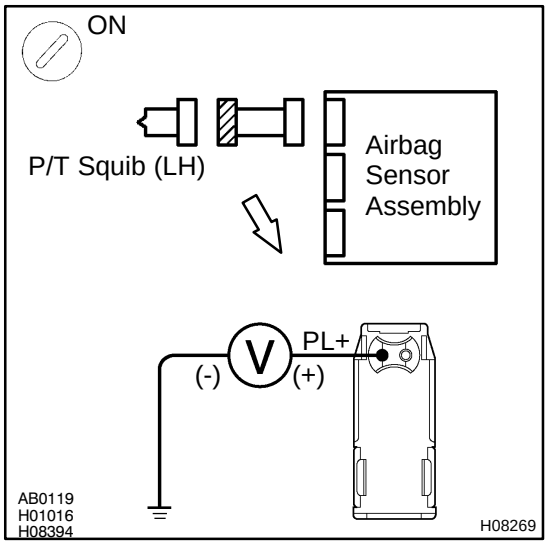
WIRING DIAGRAM

See page DI-440 .

INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI-486).**

2	**Check P/T squib (LH) circuit.**



CHECK:

(a) Turn the ignition switch to ON.

(b) For the connector (on the seat belt pretensioner side) between the seat belt pretensioner (LH) and the airbag sensor assembly, measure the voltage between PL+ and body ground.

OK:

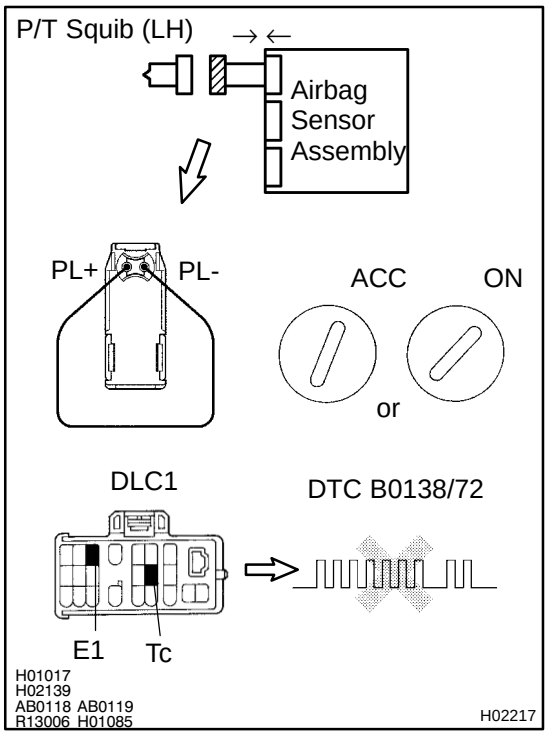
Voltage: 0 V

NG → **Repair or replace harness or connector between seat belt pretensioner (LH) and airbag sensor assembly.**

OK

cardiagn.com

3	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.

(b) Using a service wire, connect PL+ and PL- of the connector (on the seat belt pretensioner side) between the seat belt pretensioner (LH) and the airbag sensor assembly.

(c) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ACC or ON and wait at least for 20 seconds.

(b) Clear the DTC stored in memory
(See step 5 on page DI-358).

(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.

(d) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.

(e) Check the DTC (See page DI-358).

OK:

DTC B0138/72 is not output.

HINT:

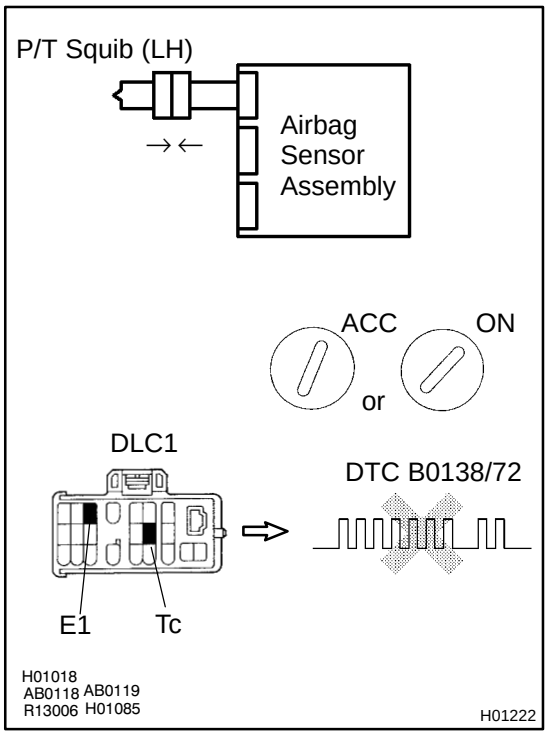
Codes other than code B0138/72 may be output at this time, but they are not relevant to this check.

NG	Replace airbag sensor assembly.

OK

cardiagn.com

4	Check P/T squib (LH).



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect negative (-) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the seat belt pretensioner (LH) connector.
(d) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(b) Clear the DTC stored in memory
(See step 5 on page DI-358).
(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(e) Check the DTC (See page DI-358).

OK:

DTC B0138/72 is not output.

HINT:
Codes other than code B0138/72 may be output at this time, but they are not relevant to this check.

NG → **Replace seat belt pretensioner (LH).**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check. If the malfunctioning part can not be detected by the simulation method, replace all SRS components including the wire harness.

cardiagn.com

DI4D8-06

DTC	B1100/31	Airbag Sensor Assembly Malfunction

CIRCUIT DESCRIPTION

The airbag sensor assembly consists of a airbag sensor, safing sensor, drive circuit, diagnosis circuit and ignition control, etc.
It receives signals from the airbag sensor, judges whether or not the SRS must be activated, and detects diagnosis system malfunction.
DTC B1100/31 is recorded when occurrence of a malfunction in the airbag sensor assembly is detected.

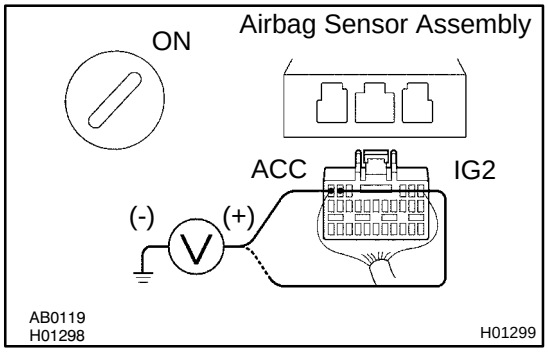
DTC No.	DTC Detecting Condition	Trouble Area
B1100/31	• Airbag sensor assembly malfunction	• Airbag sensor assembly

INSPECTION PROCEDURE

HINT:
When a malfunction code other than code B1100/31 is displayed at the same time, first repair the malfunction indicated by the malfunction code other than code B1100/31.

1	**Prepare for inspection (See step 1 on page DI-486).**

2	**Check voltage at IG2 and ACC of airbag sensor assembly.**



CHECK:

(a) Turn the ignition switch to ON.
(b) Measure the voltage between body ground and each of terminals IG2 and ACC of the airbag sensor assembly connector.

OK:

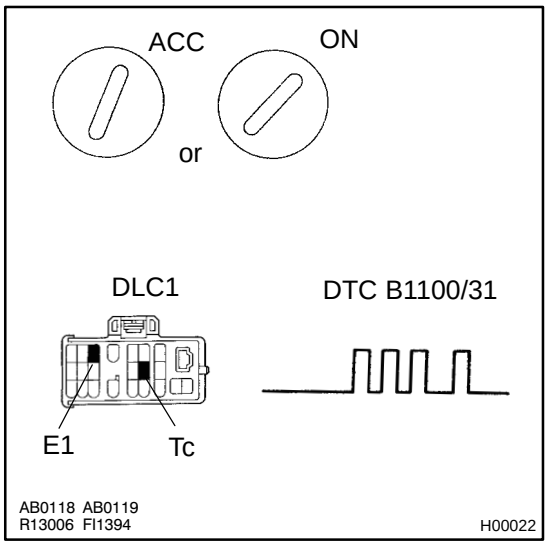
Voltage: 10 - 14 V

NG	**Check that an abnormality occurs on the battery and charging system.**

OK

cardiagn.com

3	Is DTC B1100/31 output again?



PREPARATION:

Clear the DTC (See step 5 on page DI-358).

CHECK:

(a) Turn the ignition switch to LOCK, and wait at least for 20 seconds.

(b) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.

(c) Repeat operation in step (a) and (b) at least 5 times.

(d) Check the DTC (See page DI-358).

HINT:

Codes other than code B1100/31 may be output at this time, but they are not relevant to this check.

NO → **Using simulation method, reproduce malfunction symptoms (See page IN-21).**

YES

Replace airbag sensor assembly.

cardiagn.com

DI6N0-03

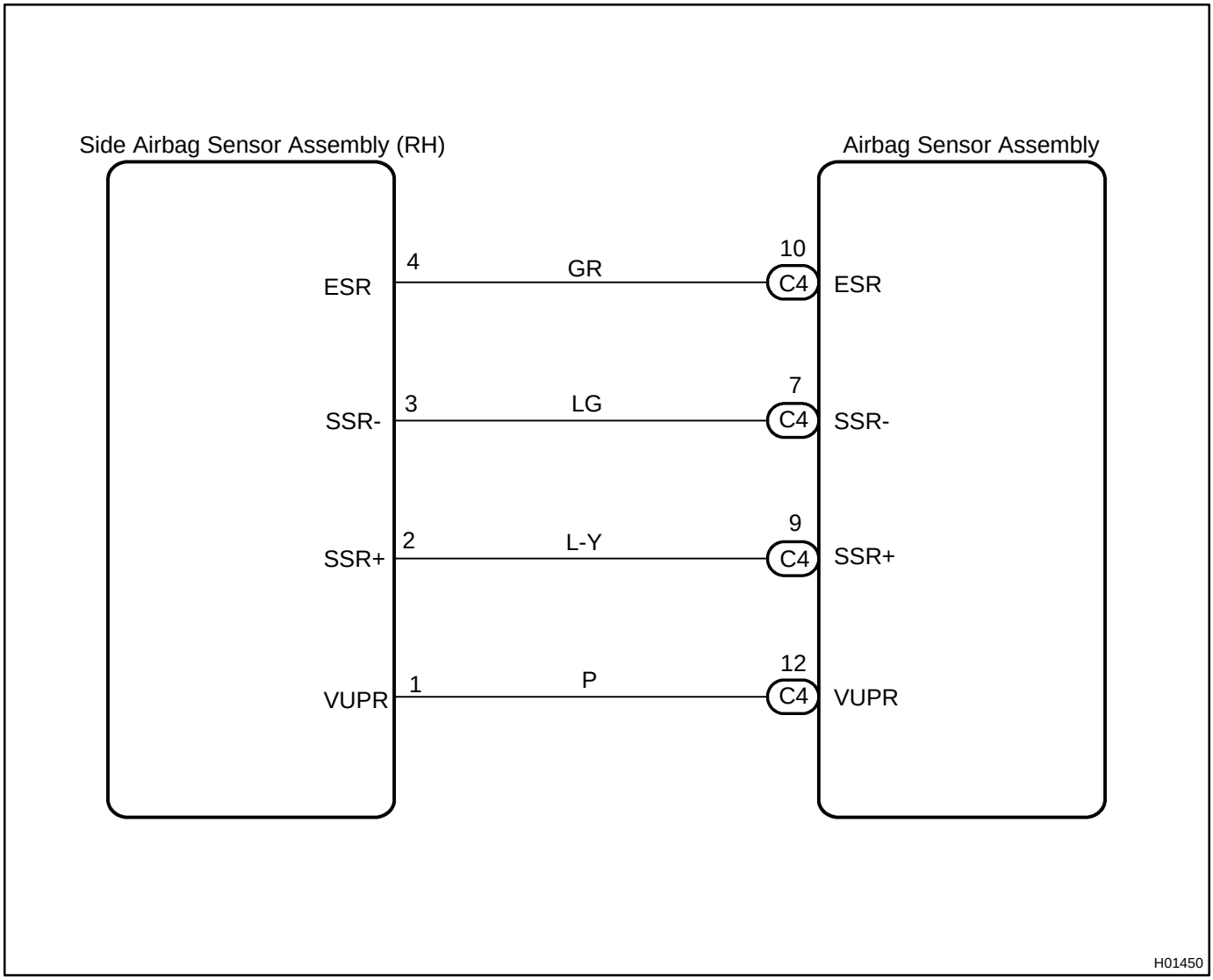
DTC	B1140/32	Side Airbag Sensor Assembly (RH) Malfunction

CIRCUIT DESCRIPTION

The side airbag sensor assembly (RH) consists of the safing sensor, diagnosis circuit and lateral deceleration sensor, etc.
It receives signals from the lateral deceleration sensor, judges whether or not the SRS must be activated, and detects diagnosis system malfunction.
DTC B1140/32 is recorded when occurrence of a malfunction in the side airbag sensor assembly (RH) is detected.

DTC No.	DTC Detecting Condition	Trouble Area
B1140/32	• Side airbag sensor assembly (RH) malfunction	• Side airbag sensor assembly (RH) • Airbag sensor assembly • Wire harness

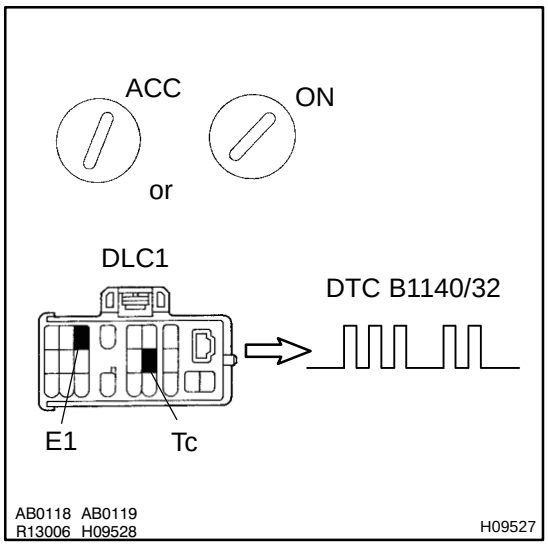
WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Is DTC B1140/32 out put?**



CHECK:

(a) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(b) Clear the DTC stored in memory (See page DI-358).
(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(e) Check the DTC (See page DI-358).

HINT:

Codes other than code B1140/32 may be output at this time, but they are not relevant to this check.

YES → **The malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.**

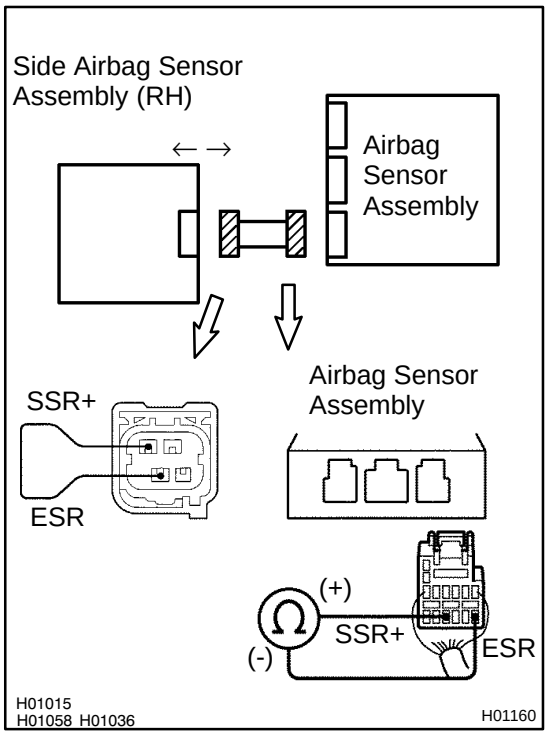
NO

2	**Is connector of side airbag sensor assembly (RH) properly connected?**

3	**Prepare for inspection (See step 1 on DI-486).**

cardiagn.com

4	**Check wire harness.**



PREPARATION:

(a) Disconnect the side airbag sensor assembly (RH) connector.

(b) Using a service wire, connect SSR+ and ESR of the connector (on the side airbag sensor assembly side) between the side airbag sensor assembly (RH) and airbag sensor assembly.

CHECK:

For the connector (on the airbag sensor assembly side) between the side airbag sensor assembly (RH) and the airbag sensor assembly, measure the resistance between SSR+ and ESR.

OK:

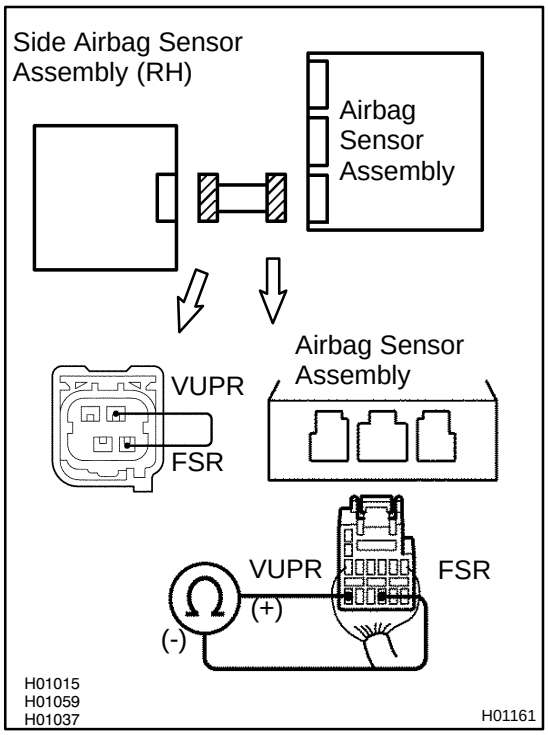
Resistance: Below 1 Ω

NG → **Repair or replace harness or connector between side airbag sensor assembly (RH) and airbag sensor assembly.**

OK

cardiagn.com

5	**Check wire harness.**



PREPARATION:

Using a service wire, connect VUPR and FSR of the connector (on the side airbag sensor assembly side) between the side airbag sensor assembly (RH) and airbag sensor assembly.

CHECK:

For the connector (on the airbag sensor assembly side) between the side airbag sensor assembly (RH) and the airbag sensor assembly, measure the resistance between VUPR and FSR.

OK:

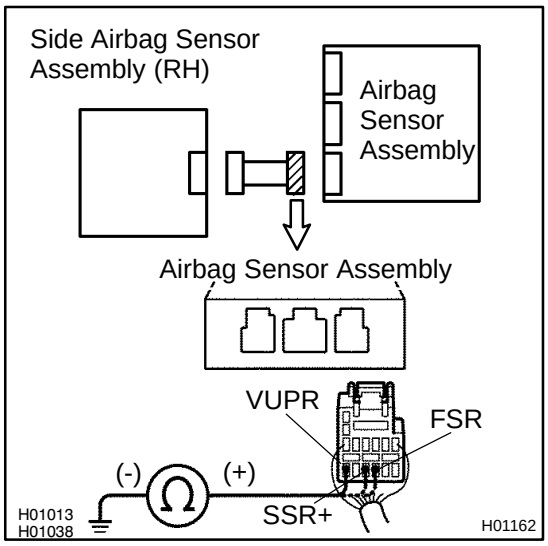
Resistance: Below 1 Ω

NG → **Repair or replace harness or connector between side airbag sensor assembly (RH) and airbag sensor assembly.**

OK

cardiagn.com

6	Check wire harness (to ground).



CHECK:

For the connector (on the airbag sensor assembly side) between the side airbag sensor assembly (RH) and the airbag sensor assembly, measure the resistance between body ground and each of SSR+, VUPR and FSR.

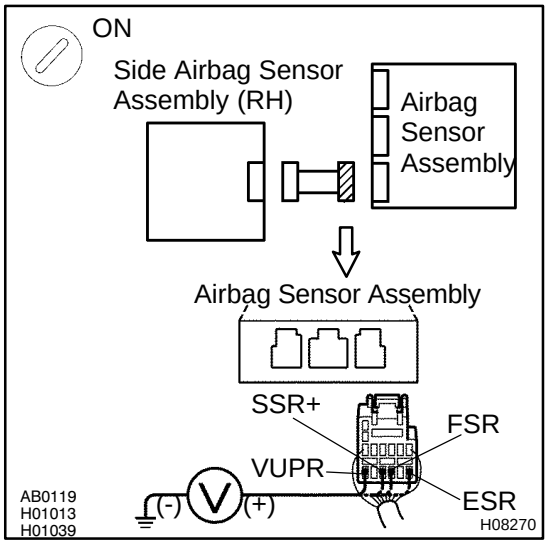
OK:

Resistance: Below 1 Ω

NG → **Repair or replace harness or connector between side airbag sensor assembly (RH) and airbag sensor assembly.**

OK

7	Check wire harness (to B+).



CHECK:

(a) Turn the ignition switch to ON.

(b) For the connector (on the airbag sensor assembly side) between the side airbag sensor assembly (RH) and the airbag sensor assembly, measure the voltage between the body ground and each of SSR+, VUPR, ESR and FSR.

OK:

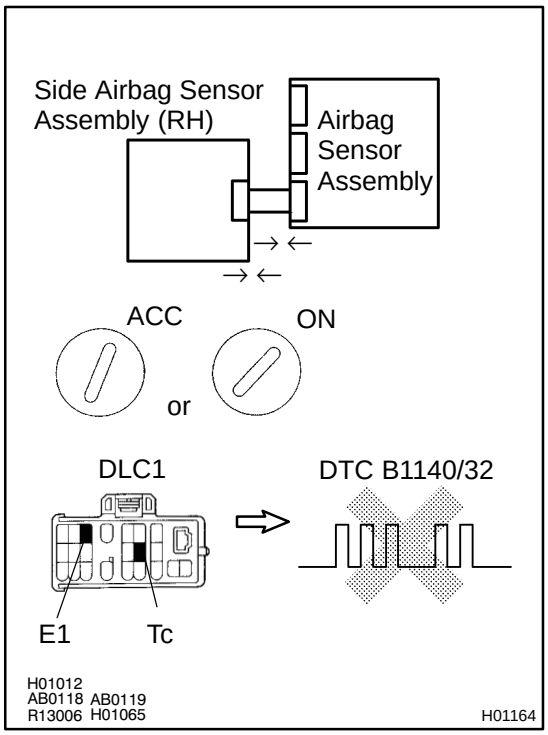
Voltage: 0 V

NG → **Repair or replace harness or connector between side airbag sensor assembly (RH) and airbag sensor assembly.**

OK

cardiagn.com

8	Is DTC B1140/32 out put again?



PREPARATION:

(a) Connect the connector to the side airbag sensor assembly (RH).
(b) Connect the connector to the airbag sensor assembly.
(c) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(b) Clear the DTC stored in memory (See step 5 on page DI-358).
(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(e) Check the DTC (See page DI-358).

OK:

DTC B1140/32 is not output.

HINT:

Codes other than code B1140/32 may be output at this time, but they are not relevant to this check.

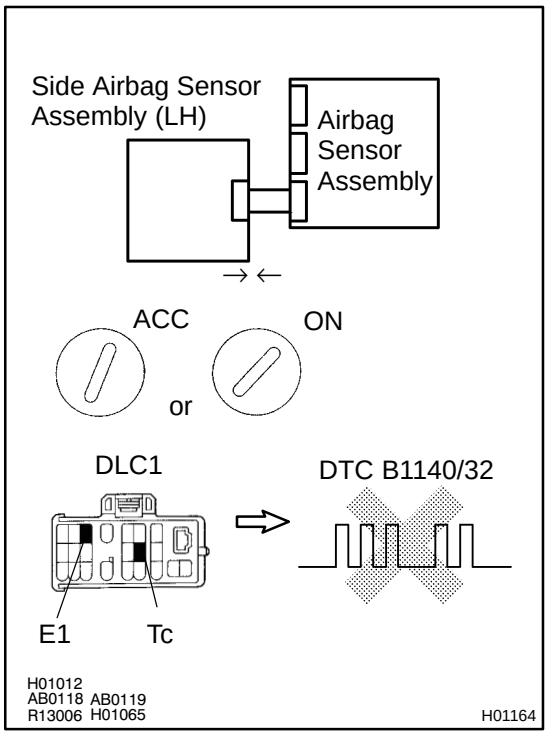
NG	Go to step 9.

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

cardiagn.com

9	Check airbag sensor assembly.



PREPARATION:

(a) Turn the ignition switch to LOCK.

(b) Disconnect negative (-) terminal cable from the battery, and wait at least for 90 seconds.

(c) Disconnect the side airbag sensor (RH) from the connector and connect the side airbag sensor (LH) to the connector.

(d) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.

(b) Clear the DTC stored in memory (See step 5 on page DI-358).

(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.

(d) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.

(e) Check the DTC (See page DI-358).

OK:

DTC B1140/32 is not output.

HINT:

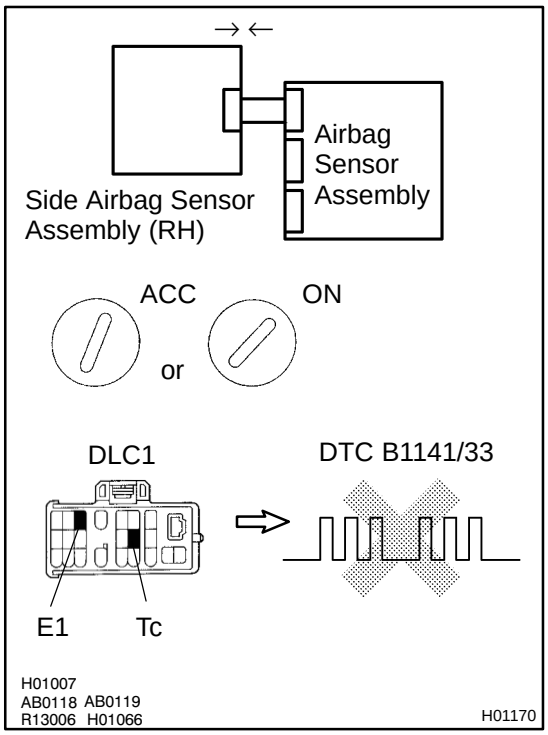
Codes other than code B1140/32 may be output at this time, but they are not relevant to this check.

NG	Replace airbag sensor assembly.

OK

cardiagn.com

10	Check side airbag sensor assembly (RH).



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect negative (-) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the side airbag sensor (RH) to the connector that the side airbag sensor (LH) was connected to.
(d) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(b) Clear the DTC stored in memory (See step 5 on page DI-358).
(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(e) Check the DTC (See page DI-358).

OK:

DTC B1141/33 is not output.

HINT:

Codes other than code B1141/33 may be output at this time, but they are not relevant to this check.

NG → **Replace side airbag sensor assembly (RH).**

OK →

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

cardiagn.com

DI6N1-03

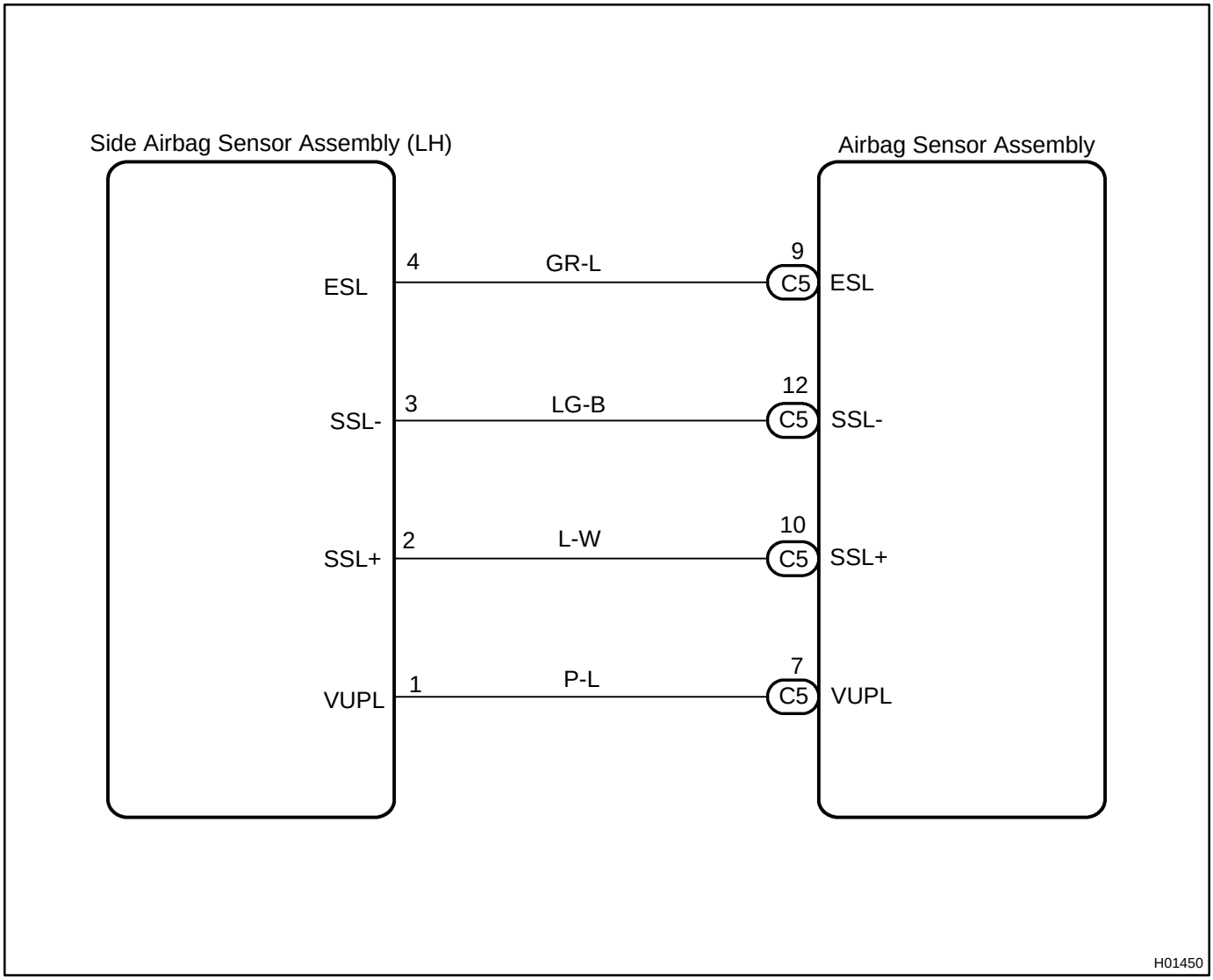
DTC	B1141/33	Side Airbag Sensor Assembly (LH) Malfunction

CIRCUIT DESCRIPTION

The side airbag sensor assembly (LH) consists of the safing sensor, diagnosis circuit and lateral deceleration sensor, etc.
It receives signals from the lateral deceleration sensor, judges whether or not the SRS must be activated, and detects diagnosis system malfunction.
DTC B1141/33 is recorded when occurrence of a malfunction in the side airbag sensor assembly (LH) is detected.

DTC No.	DTC Detecting Condition	Trouble Area
B1141/33	• Side airbag sensor assembly (LH) malfunction	• Side airbag sensor assembly (LH) • Airbag sensor assembly • Wire harness

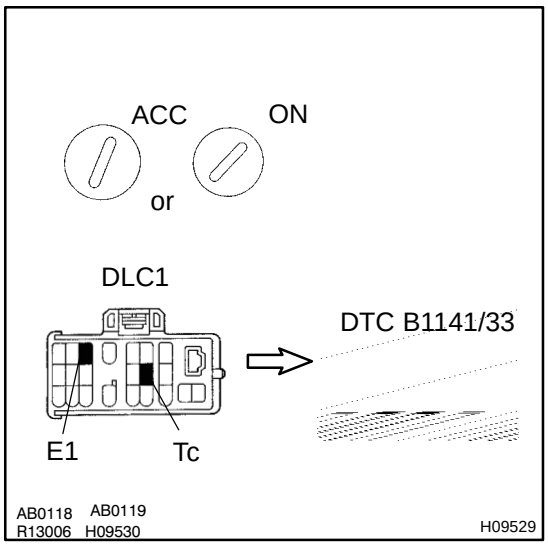
WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Is DTC B1141/33 out put?**



CHECK:

(a) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(b) Clear the DTC stored in memory (See step 5 on page DI-358).
(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(e) Check the DTC (See page DI-358).

HINT:
Codes other than code B1141/33 may be output at this time, but they are not relevant to this check.

YES → **The malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.**

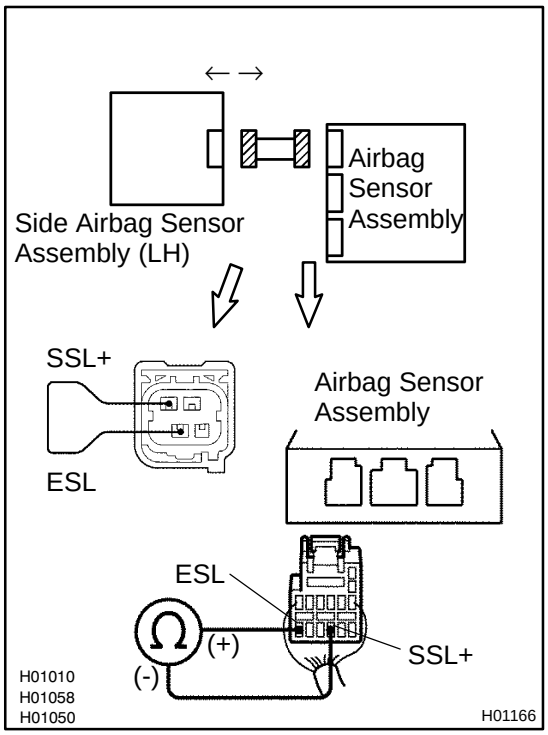
NO

2	**Is connector of side airbag sensor assembly (LH) properly connected?**

3	**Prepare for inspection (See step 1 on page DI-486).**

cardiagn.com

4	Check wire harness.



PREPARATION:

(a) Disconnect the side airbag sensor assembly (LH).

(b) Using a service wire, connect SSL+ and ESL of the connector (on the side airbag sensor assembly side) between the side airbag sensor assembly (LH) and the airbag sensor assembly.

CHECK:

For the connector (on the airbag sensor assembly side) between the side airbag sensor assembly (LH) and the airbag sensor assembly, measure the resistance between SSL+ and ESL.

OK:

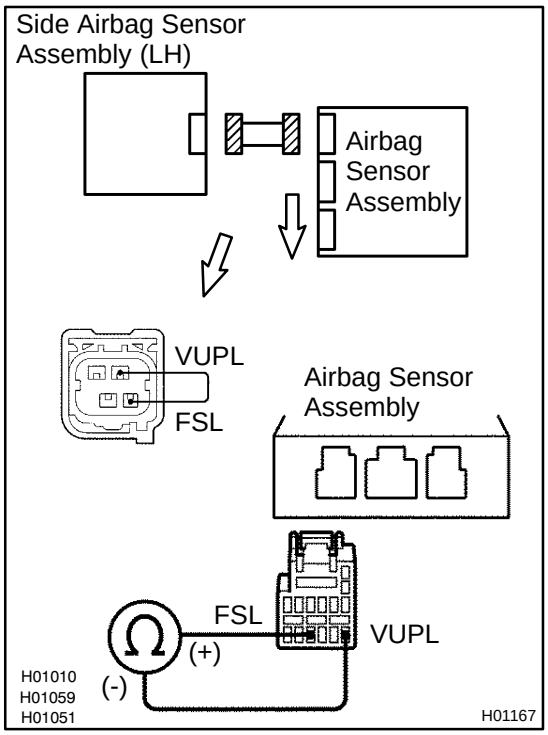
Resistance: Below 1 Ω

NG → **Repair or replace harness or connector between side airbag sensor assembly (LH) and airbag sensor assembly.**

OK

cardiagn.com

5	**Check wire harness.**



PREPARATION:

Using a service wire, connect VUPL and FSL of the connector (on the side airbag sensor assembly side) between the side airbag sensor assembly (LH) and the airbag sensor assembly.

CHECK:

For the connector (on the airbag sensor assembly side) between the side airbag sensor assembly (LH) and the airbag sensor assembly, measure the resistance between VUPL and FSL.

OK:

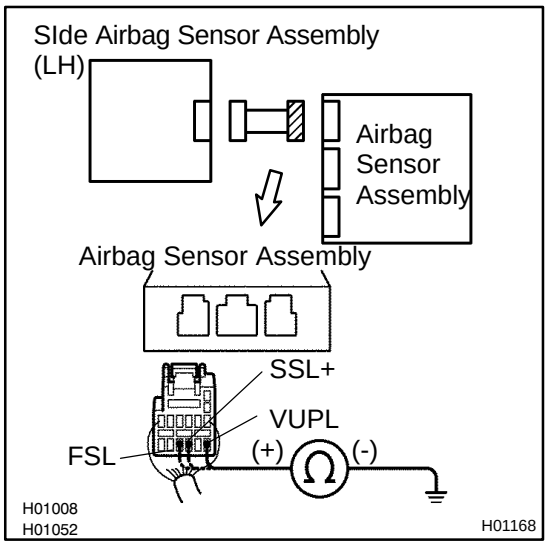
Resistance: Below 1 Ω

NG → **Repair or replace harness or connector between side airbag sensor assembly (LH) and airbag sensor assembly.**

OK

cardiagn.com

6	Check wire harness (to ground).



CHECK:

For the connector (on the airbag sensor assembly side) between the side airbag sensor assembly (LH) and the airbag sensor assembly, measure the resistance between body ground and each of SSL+, VUPL and FSL.

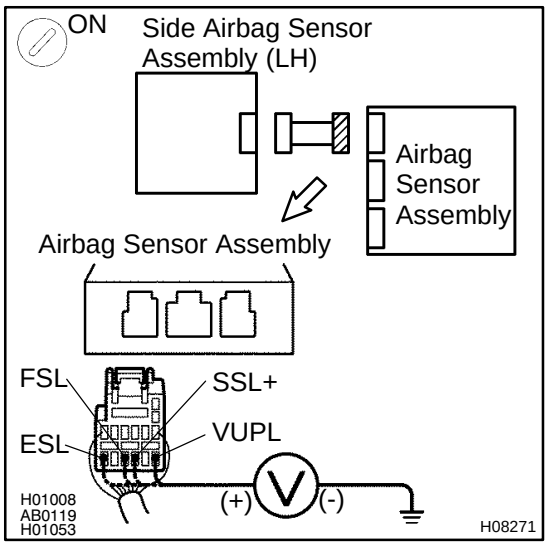
OK:

Resistance: 1 MΩ or Higher

NG → **Repair or replace harness or connector between side airbag sensor assembly (LH) and airbag sensor assembly.**

OK

7	Check wire harness (to B+).



CHECK:

(a) Turn the ignition switch to ON.

(b) For the connector (on the airbag sensor assembly side) between the side airbag sensor assembly (LH) and the airbag sensor assembly, measure the voltage between body ground and each of SSL+, ESL, VUPL and FSL.

OK:

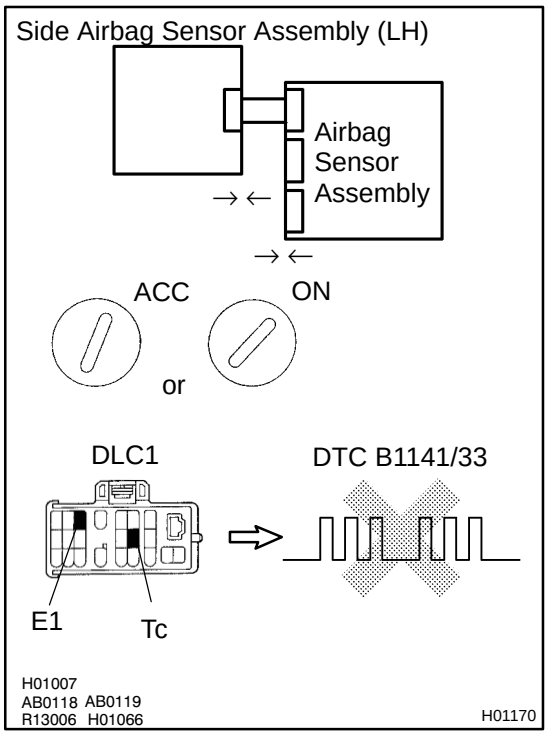
Voltage: 0 V

NG → **Repair or replace harness or connector between side airbag sensor assembly (LH) and airbag sensor assembly.**

OK

cardiagn.com

8	Is DTC B1141/33 out put again?



PREPARATION:

(a) Connect the connector to the side airbag sensor assembly (LH).
(b) Connect the connector to the airbag sensor assembly.
(c) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(b) Clear the DTC stored in memory
(See step 5 on page DI-358).
(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(e) Check the DTC (See page DI-358).

OK:

DTC B1141/33 is not output.

HINT:

Codes other than code B1141/33 may be output at this time, but they are not relevant to this check.

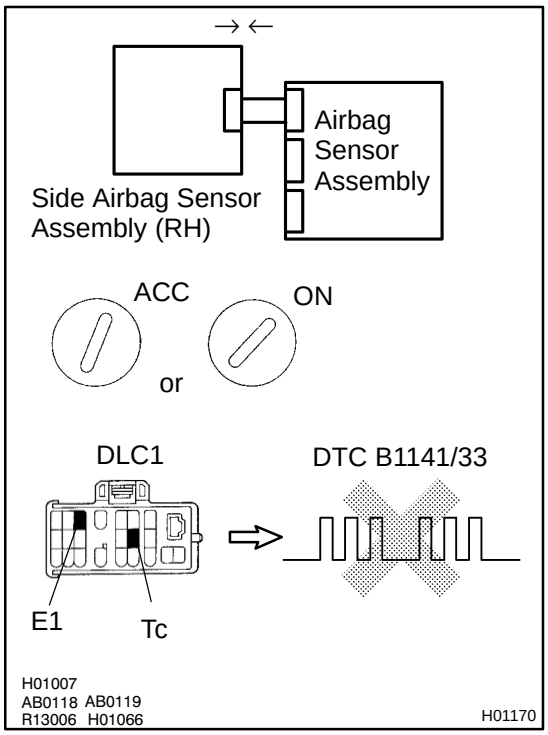
NO	Go to step 9.

YES

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

cardiagn.com

9	**Check airbag sensor assembly.**



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect negative (-) terminal cable from the battery, and wait at least for 90 seconds.
(c) Disconnect the side airbag sensor (LH) from the connector and connect the side airbag sensor (RH) to the connector.
(d) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(b) Clear the DTC stored in memory
(See step 5 on page DI-358).
(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(e) Check the DTC (See page DI-358).

OK:

DTC B1141/33 is not output.

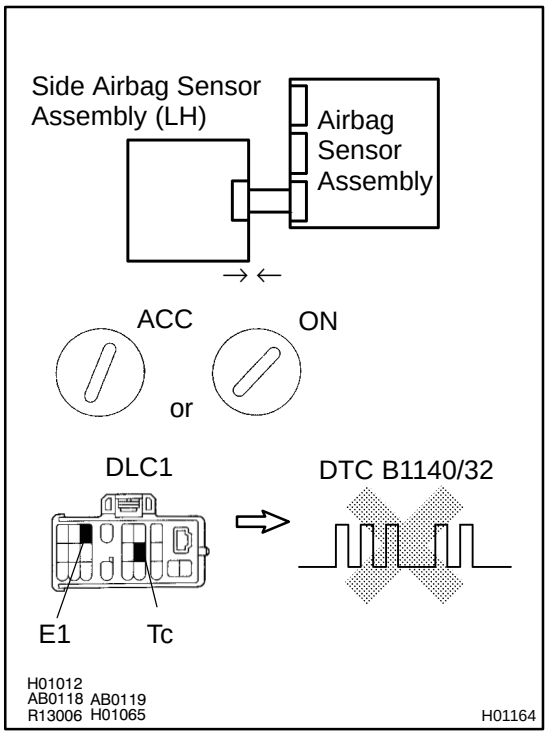
HINT:
Codes other than code B1141/33 may be output at this time, but they are not relevant to this check.

NG	**Replace airbag sensor assembly.**

OK

cardiagn.com

10	Check side airbag sensor assembly (LH).



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect negative (-) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the side airbag sensor (LH) to the connector that the side airbag sensor (RH) was connected to.
(d) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(b) Clear the DTC stored in memory
(See step 5 on page DI-358).
(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn the ignition switch to ACC or ON, and wait at least for 20 seconds.
(e) Check the DTC (See page DI-358).

OK:

DTC B1140/32 is not output.

HINT:
Codes other than code B1140/32 may be output at this time, but they are not relevant to this check.

NG	Replace side airbag sensor assembly (LH).

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

cardiagn.com

DI1KL-07

CIRCUIT INSPECTION

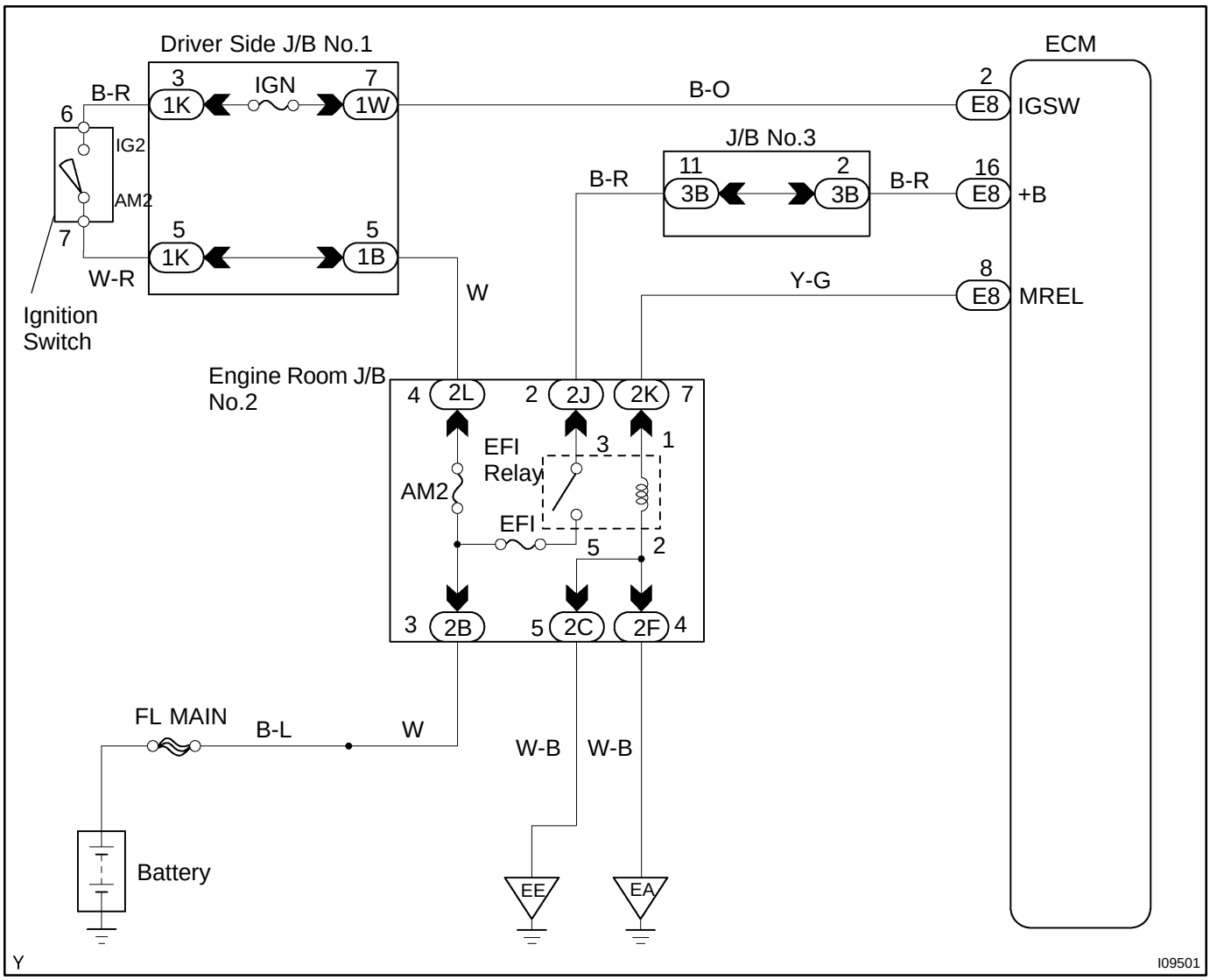
DTC	B2785/99	IG Switch ON Malfunction

DTC	B2786/99	IG Switch OFF Malfunction

CIRCUIT DESCRIPTION

DTC No.	DTC Detecting Condition	Trouble Area
B2785/99	• Short circuit in IG switch circuit • IG switch adheres to ON position	• IG switch • EFI Main Relay • Wireharness
B2786/99	• Open circuit in IG switch circuit • IG switch adheres to OFF position	

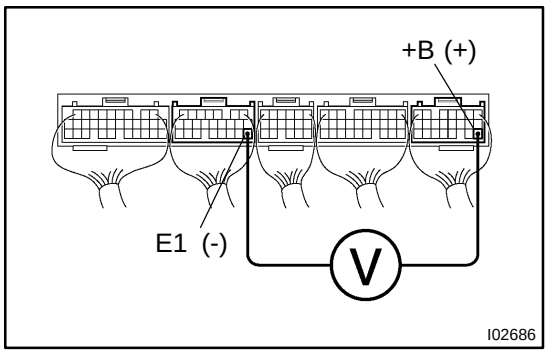
WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check voltage between terminals + B and E1 of ECM connectors.**



PREPARATION:

(a) Remove the glove compartment.

(b) Turn ignition switch ON.

CHECK:

Measure voltage between terminals + B and E1 of ECM connectors.

OK:

Voltage: 9 - 14 V

OK	**Proceed to next circuit inspection shown in problem symptoms (See page DI-614).**

NG

2	**Check for open in harness and connector between terminal E1 of ECM and body ground (See page IN-31).**

NG	**Repair or replace harness or connector.**

OK

3	**Check EFI main relay (See page SF-64).**

NG	**Replace EFI main relay.**

OK

cardiagn.com

4	**Check EFI fuse.**

NG → **Check for short in all the harness and components connected to EFI fuse.**

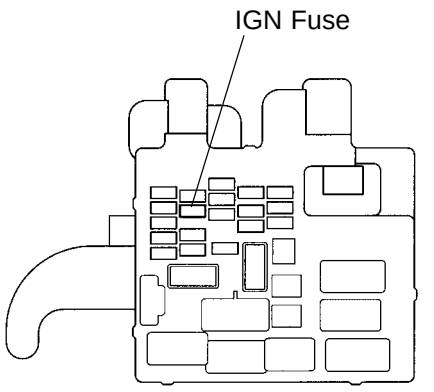
OK

5	**Check for open harness and connector between EFI main relay (Marking : EFI) and battery, EFI main relay (Marking : EFI) and ECM (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

6	**Check IGN fuse.**



PREPARATION:
Remove the IGN fuse from the instrument panel J/B.
CHECK:
Check continuity of IGN fuse.
OK:
Continuity

NG → **Check for short in all the harness and components connected to IGN fuse.**

OK

cardiagn.com

7	Check ignition switch (See page BE-15).

NG → Replace ignition switch.

OK

8	Check for open circuit in harness and connector between ignition switch and EFI main relay, EFI main relay and body ground (See page IN-31).

NG → Repair or replace wirharness and connector.

OK

Replace ECM.

cardiagn.com

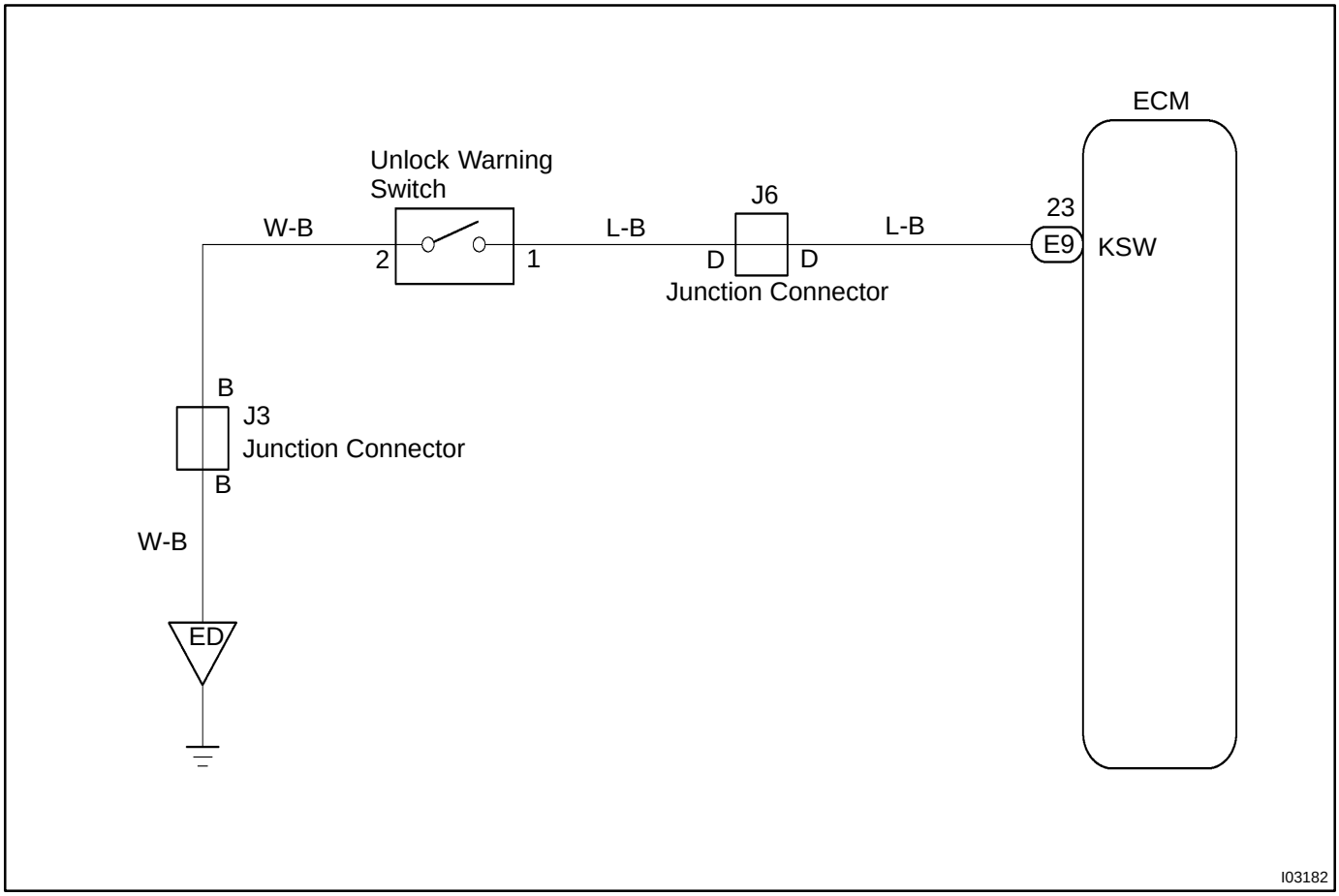
DI1KM-06

DTC	B2791/99	Key Unlock Warning SW OFF Malfunction

CIRCUIT DESCRIPTION

DTC No.	DTC Detecting Condition	Trouble Area
B2791/99	• Open circuit in key unlock warning switch circuit. • Key unlock warning switch adheres to OFF position.	• Key unlock warning switch • Wireharness

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	Check key unlock warning switch (See page BE-15).

NG → Replace key unlock warning switch.

OK

2	Check harness and connector between key unlock warning switch and ECM.

NG → Repair or replace the harness or connector.

OK

Replace ECM

cardiagn.com

DI1KN-01

DTC	B2795/99	Unmatched Key Code

This DTC is output when an unregistered key is inserted. When this DTC is output, delete DTC and insert the key that a customer keeps to check that B2795 is output.
When a key that outputs B2795 is found, register this key. When B2795 is not output, there is a possibility that the unregistered key has been inserted before. (ECM is normal.)
Inquire of a customer about the condition of using the system to find the cause of the trouble.
(Example: Another key has been inserted, etc.)

cardiagn.com

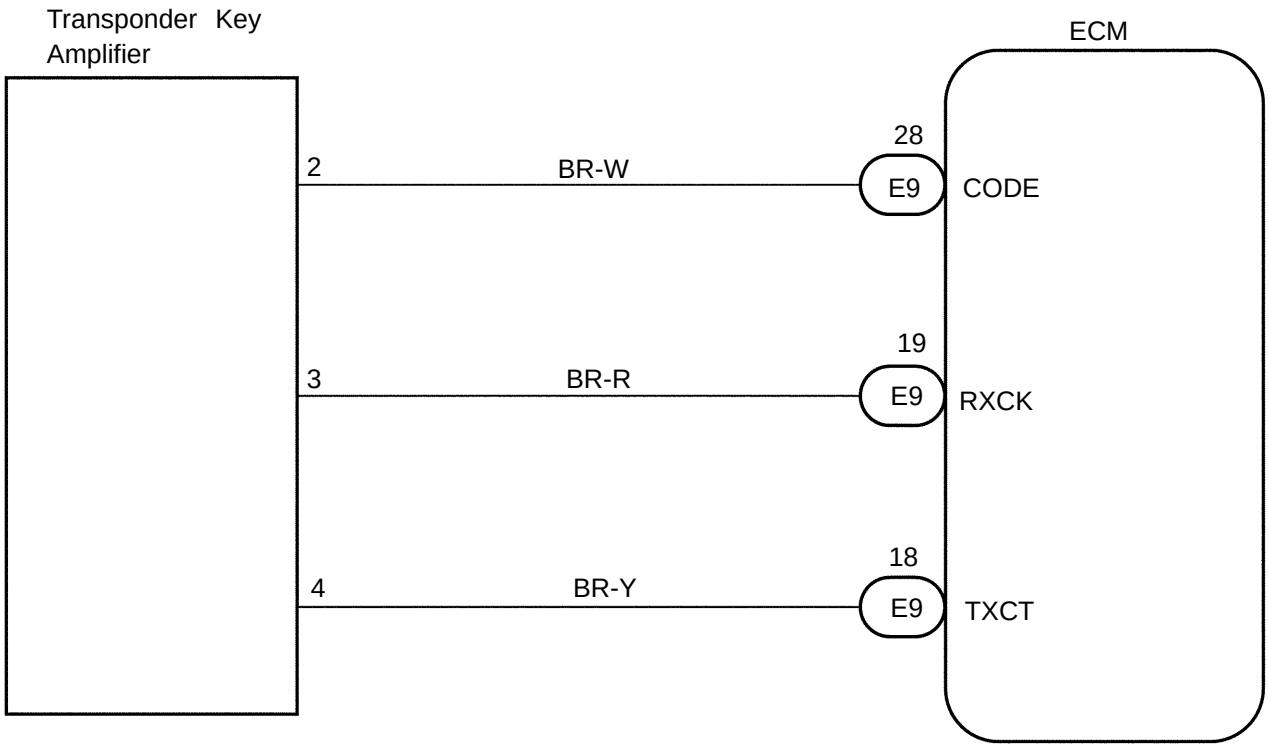
DI1KO-08

DTC	B2796/99	No Communication in Immobiliser system

CIRCUIT DESCRIPTION

DTC No.	DTC Detecting Condition	Trouble Area
B2796/99	No communication	• Key • Transponder Key Coil • Transponder Key Amplifier • Wireharness • ECM

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	Check transponder key coil (See page BE-159).

NG → Replace transponder key coil

OK →

2	Check harness and connector between transponder key amplifier and ECM.

NG → Repair or replace harness and connector

OK →

3	Does it operate normally after replacement of transponder key amplifier?

Yes → Replace transponder key amplifier.

No →

Replace ECM

cardiagn.com

DI1KP-07

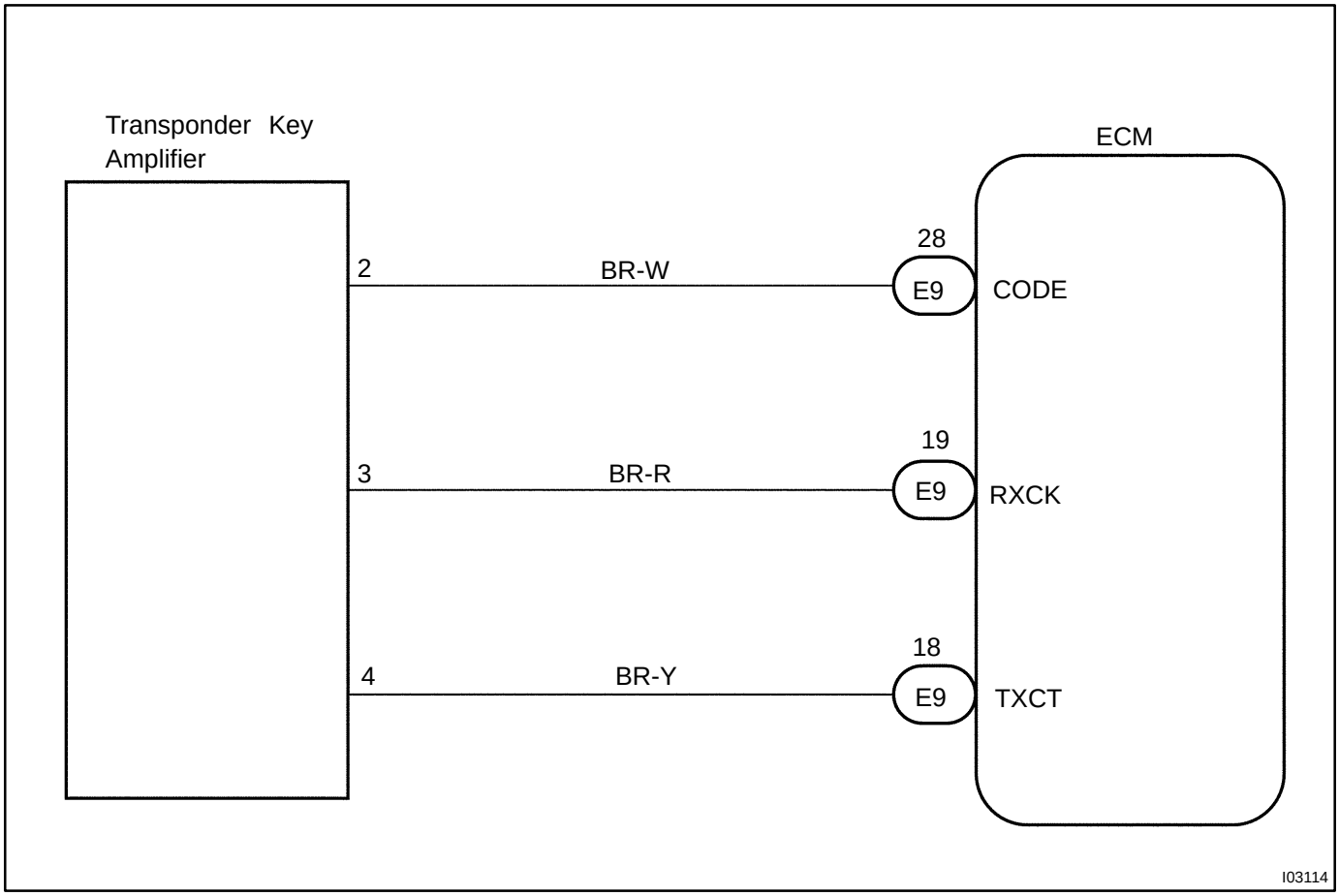
DTC	B2797/99	Communication Malfunction No.1

CIRCUIT DESCRIPTION

This code is detected when although the communication has been performed normally, an error occurs. (Example. Some noise is inclueded in communication line.)

DTC No.	DTC Detecting Condition	Trouble Area
B2797/99	Communication error	• Wire Harness • Transponder Key Amplifier • ECM

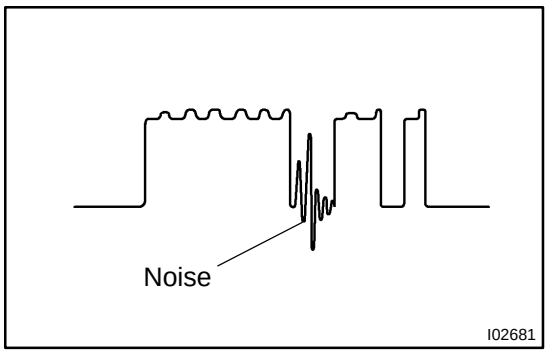
WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Noise check**



PREPARATION:
Insert already registered master key in the key cylinder.
CHECK:
Using an oscilloscope or TOYOTA hand-held tester, check that noise is included in the CODE terminal of ECM.
OK:
No noise is detected.

NG → **Try to find the cause of the noise and remove it.**

OK

2	**Does it operate normally after replacement of transponder key amplifier?**

Yes → **Replace transponder key amplifier.**

No

Replace ECM.

cardiagn.com

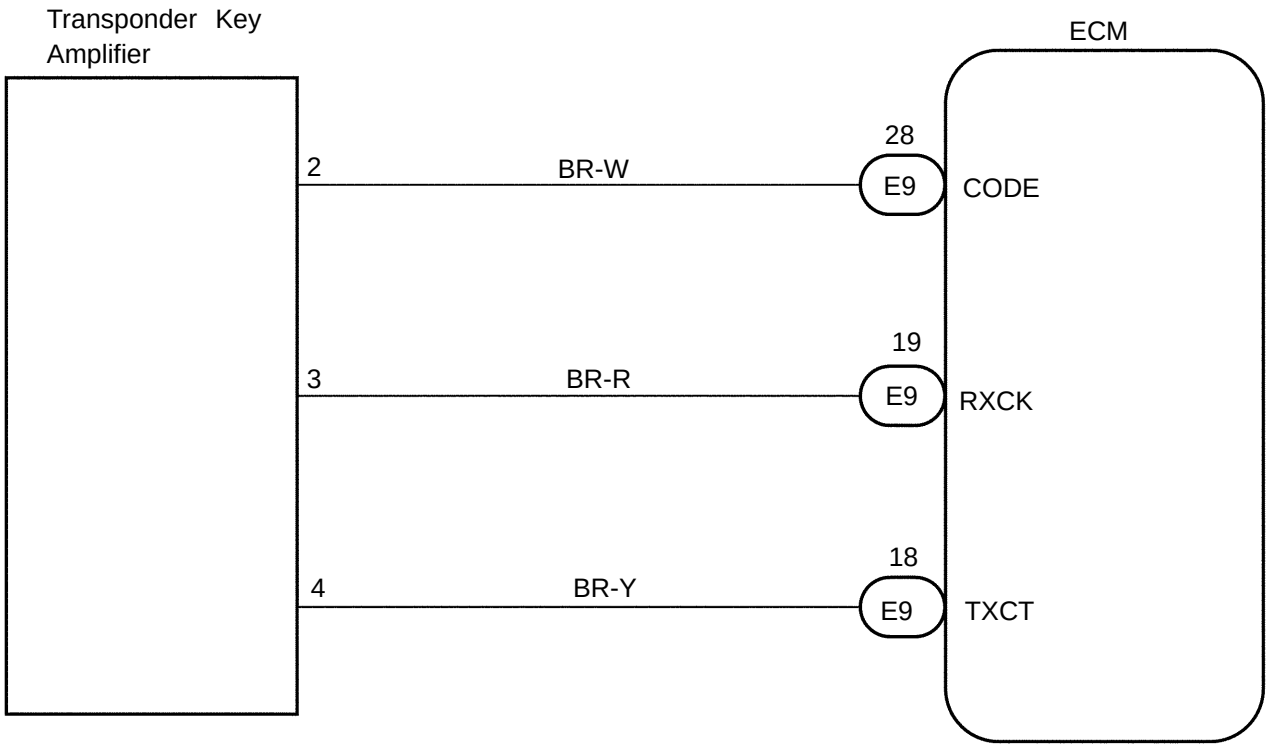
DI1KQ-07

DTC	B2798/99	Communication malfunction No.2

CIRCUIT DESCRIPTION

DTC No.	DTC Detecting Condition	Trouble Area
B2798/99	Communication error	• Key • Transponder Key Coil • Transponder Key Amplifier • Wireharness • ECM

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	Check transponder key coil (See page BE-159).

NG → Replace transponder key coil

OK

2	Check harness and connector between transponder key amplifier and ECM.

NG → Repair or replace harness and connector

OK

3	Does it operate normally after replacement of transponder key amplifier?

Yes → Replace transponder key amplifier.

No

Replace ECM

cardiagn.com

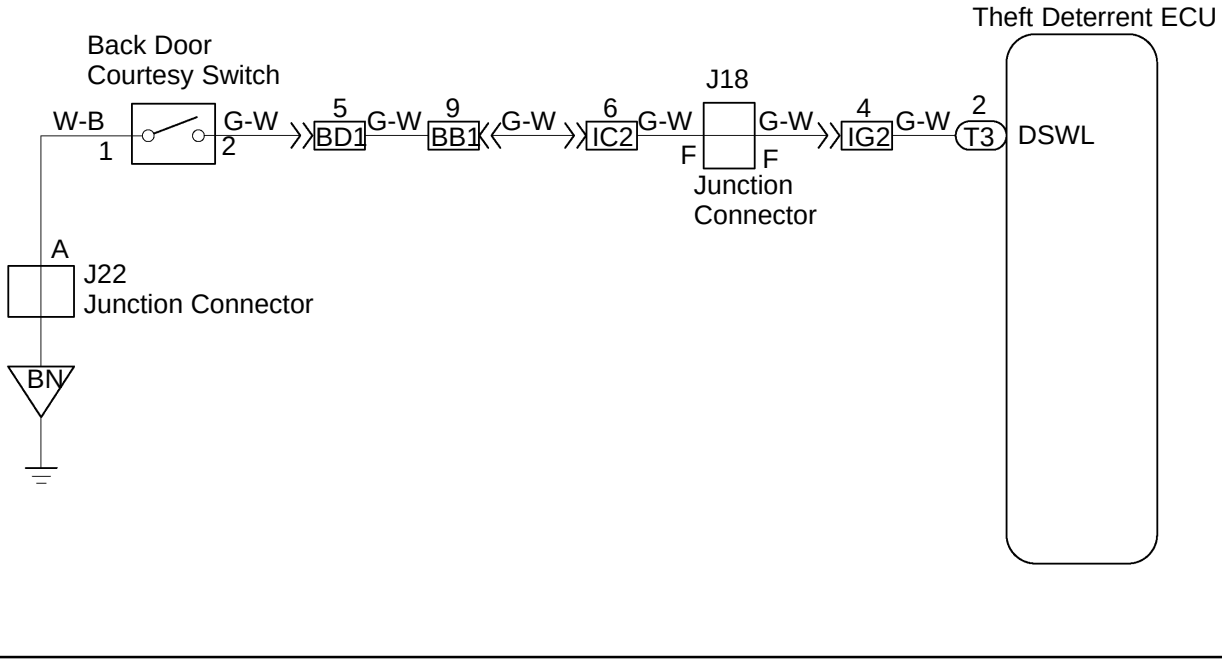
DI072-08

Back Door Key Lock and Unlock Switch Circuit

CIRCUIT DESCRIPTION

The back door courtesy switch goes ON when back door key cylinder is opened and goes OFF when the back door is closed.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	**Check operation of back door courtesy light.**

CHECK:

Check that back door courtesy light goes OFF when back door courtesy switch is pushed, and comes ON when switch is not pushed.

NG → **Check and repair back door courtesy light circuit (See page BE-31).**

OK

cardiagn.com

2	**Check for open in harness and connector between theft deterrent ECU and back door courtesy switch (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

Check and replace theft deterrent ECU. *1

*1: When there is a malfunction that prevents the theft deterrent system from being set, proceed to the next numbered circuit inspection shown on matrix chart (See page DI-532).

cardiagn.com

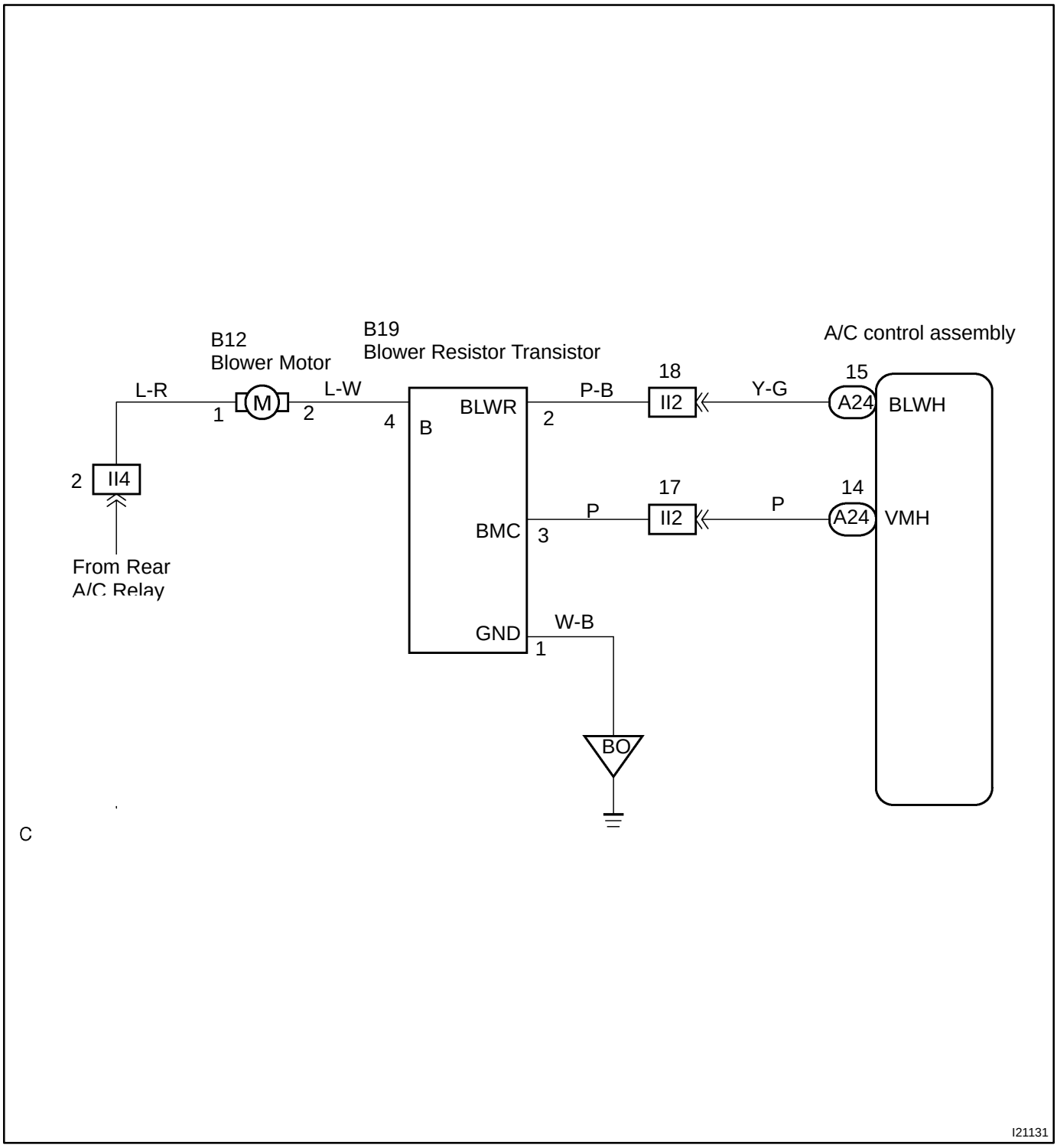
DI8AF-01

Blower Motor Circuit (Rear Heater)

CIRCUIT DESCRIPTION

This is the power source for blower motor.

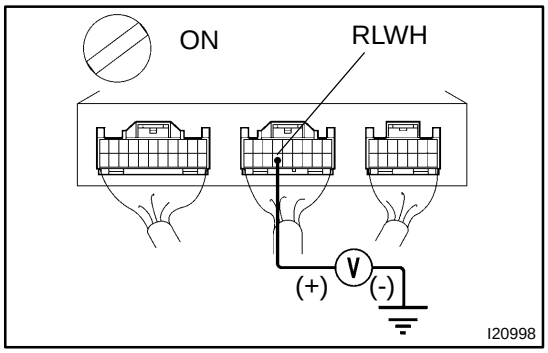
WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check voltage between terminal RLWH of A/C control assembly connector and body ground.**

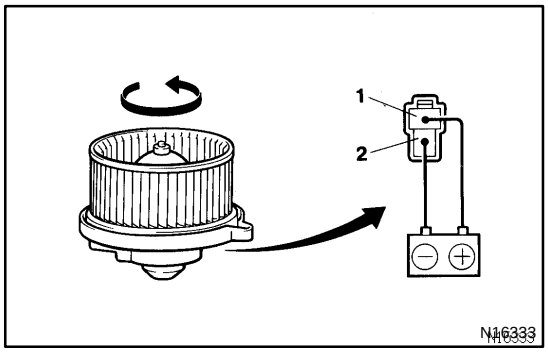


PREPARATION:
Remove the A/C control assembly with connector still connected.
CHECK:
(a) Turn ignition switch to ON.
(b) Operate blower motor.
(c) Measure voltage between terminal RLWH of A/C control assembly and body ground.
OK:
Voltage: 1 ± 3 V

OK	**Go to step 3**

NG

2	**Check blower motor.**



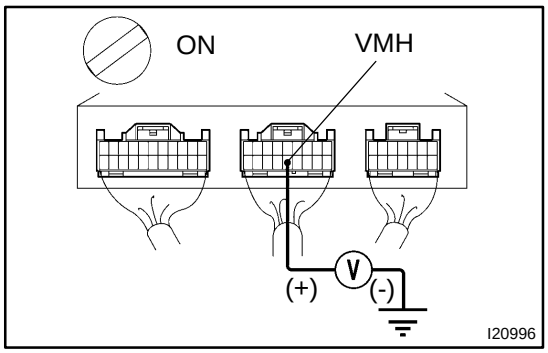
PREPARATION:
Remove blower motor.
CHECK:
Connect the positive (+) lead from the battery to terminal 2 of blower motor connector and the negative (-) lead to terminal 1.
OK:
Blower motor operates smoothly.

NG	**Replace blower motor.**

OK

cardiagn.com

3	Check voltage between terminal VMH of A/C control assembly and body ground.



PREPARATION:

Remove the A/C control assembly with connector still connected.

CHECK:

(a) Turn ignition switch to ON.

(b) Operate rear A/C blower motor.

(c) Measure voltage between terminal VMH of A/C control assembly and body ground, when blower switch is operated to following positions.

OK:

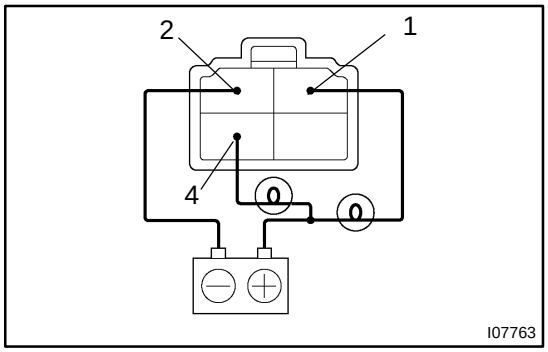
Blower speed	Voltage
LO	7.2 V
ME	4.2 V
HI	0.5 V

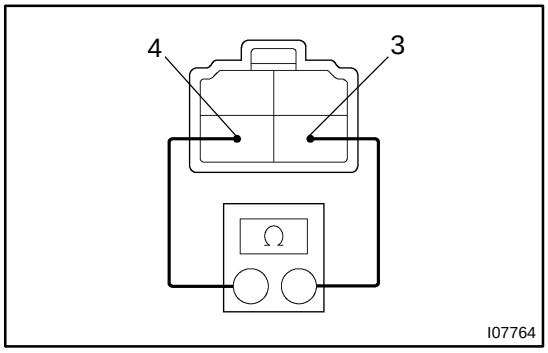
OK → **Proceed to next circuit inspection shown on problem symptoms table See page DI-697).**

NG

cardiagn.com

4	Check power transistor.





PREPARATION:

Remove power transistor (See page AC-89).

CHECK:

(a) Connect the positive (+) lead from the battery to terminal 1 through a 12 V - 3.4 W test bulb and negative (-) lead to terminal 2 .

(b) Check the test bulb lights up when another positive (+) lead is connected to terminal 4 through a 12 V - 3.4 W test bulb.

OK:

Test bulb lights up.

CHECK:

Measure resistance between terminals 2 and 4.

OK:

Resistance: 2.0 - 2.4 kΩ

NG → **Replace power transistor.**

OK

5	Check harness and connector between power transistor and A/C control assembly, power transistor and body ground (See page IN-31).

NG → **Repair or replace harness or connector.**

OK

Check and replace A/C control assembly (See page IN-31).

cardiagn.com

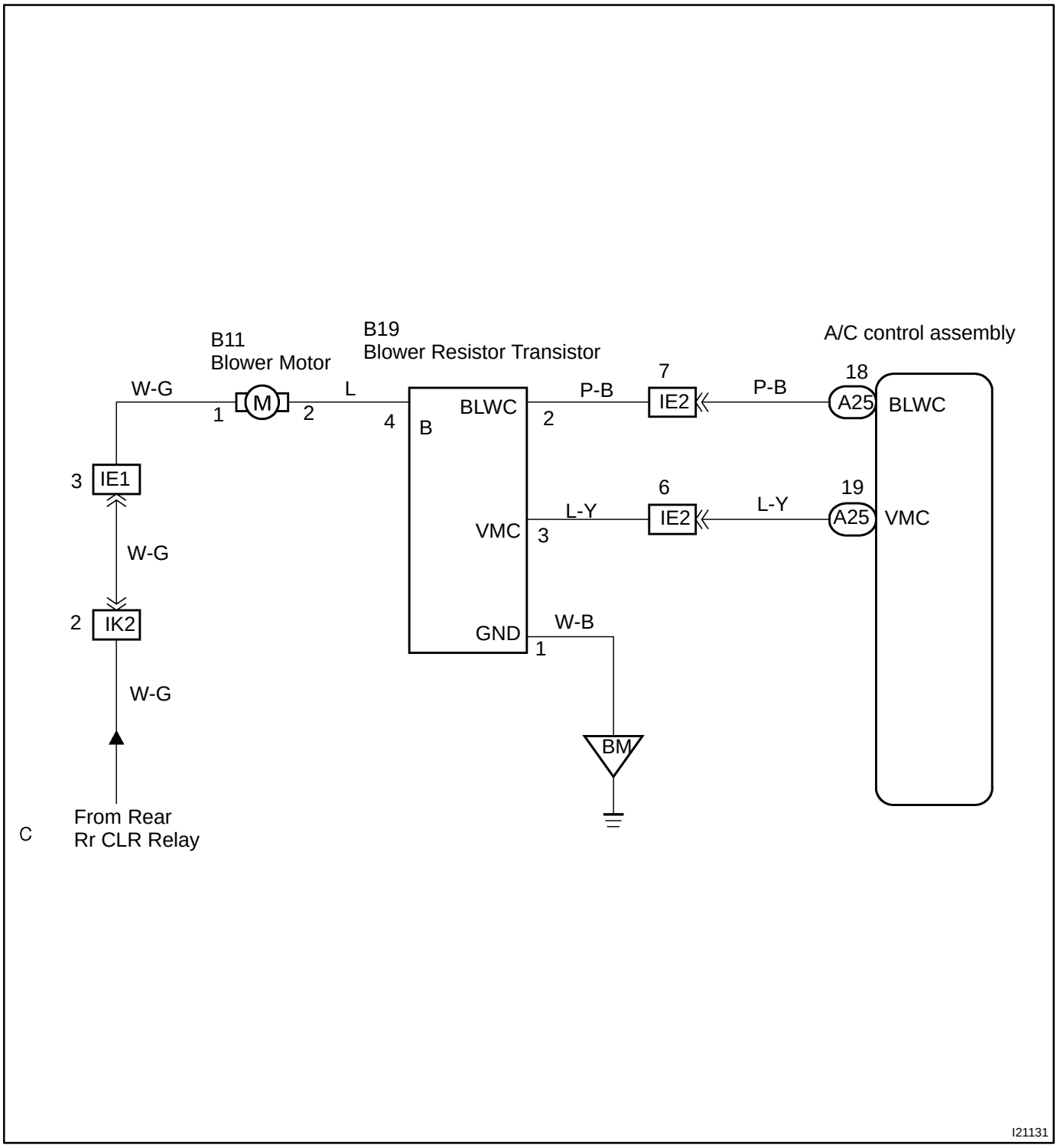
DI8AG-01

Blower Motor Circuit (Rear Cooling)

CIRCUIT DESCRIPTION

This is the power source for blower motor.

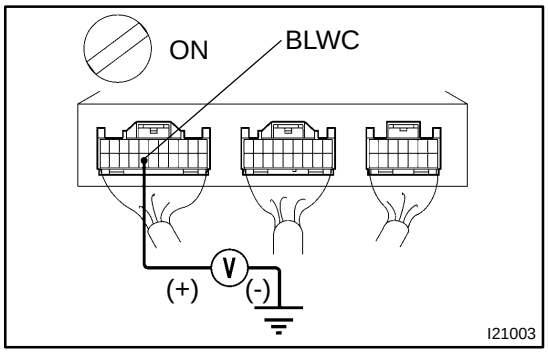
WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check voltage between terminal BLWC of A/C control assembly connector and body ground.**

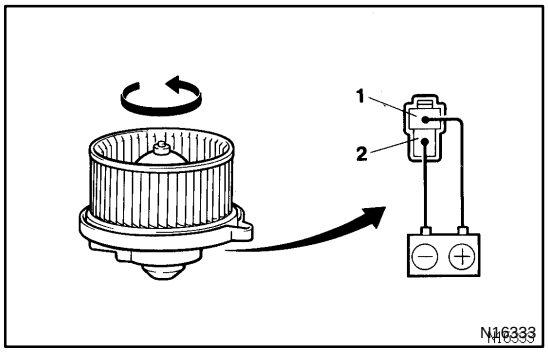


PREPARATION:
Remove the A/C control assembly with connector still connected.
CHECK:
(a) Turn ignition switch to ON.
(b) Operate blower motor.
(c) Measure voltage between terminal BLWC of A/C control assembly and body ground.
OK:
Voltage: 1 ± 3 V

OK	**Go to step 3.**

NG

2	**Check blower motor.**



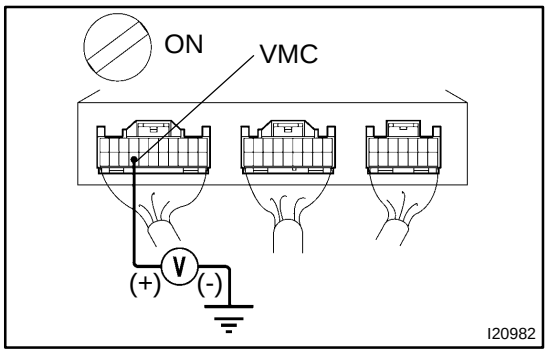
PREPARATION:
Remove blower motor.
CHECK:
Connect the positive (+) lead from the battery to terminal 2 of blower motor connector and the negative (-) lead to terminal 1.
OK:
Blower motor operates smoothly.

NG	**Replace blower motor.**

OK

cardiagn.com

3	Check voltage between terminal VMC of A/C control assembly and body ground.



PREPARATION:

Remove the A/C control assembly with connector still connected.

CHECK:

(a) Turn ignition switch to ON.

(b) Operate rear A/C blower motor.

(c) Measure voltage between terminal VMC of A/C control assembly and body ground, when blower switch is operated to following positions.

OK:

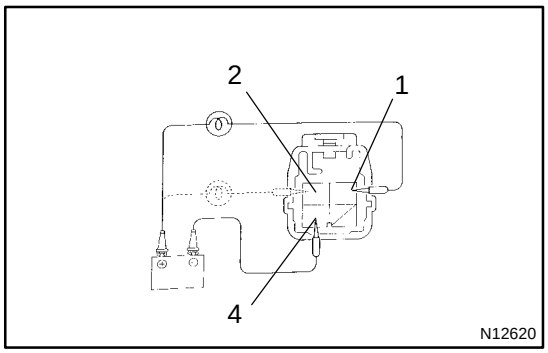
Blower speed	Voltage
LO	7.2 V
ME	4.2 V
HI	0.5 V

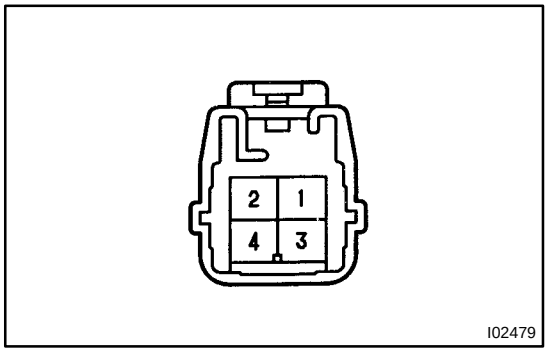
OK → **Proceed to next circuit inspection shown on problem symptoms table See page DI-697).**

NG

cardiagn.com

4	Check power transistor.





PREPARATION:

Remove power transistor (See page AC-88).

CHECK:

(a) Connect the positive (+) lead from the battery to terminal 1 through a 12 V - 3.4 W test bulb and negative (-) lead to terminal 2.

(b) Check the test bulb lights up when another positive (+) lead is connected to terminal 4 through a 12 V - 3.4 W test bulb.

OK:

Test bulb lights up.

CHECK:

Measure resistance between terminals 2 and 4.

OK:

Resistance: 2.0 - 2.4 kΩ

NG → **Replace power transistor.**

OK

5	Check harness and connector between power transistor and A/C control assembly, power transistor and body ground (See page IN-31).

NG → **Repair or replace harness or connector.**

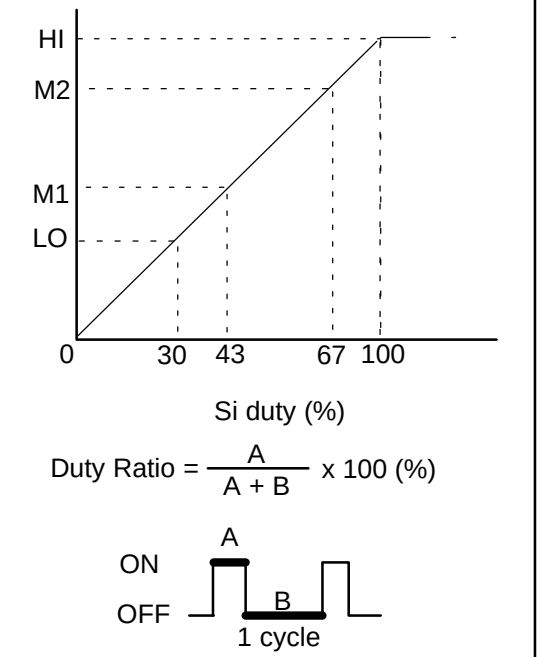
OK

Check and replace A/C control assembly (See page IN-31).

cardiagn.com

DI7SL-02

Blower Motor Circuit (Front A/C)



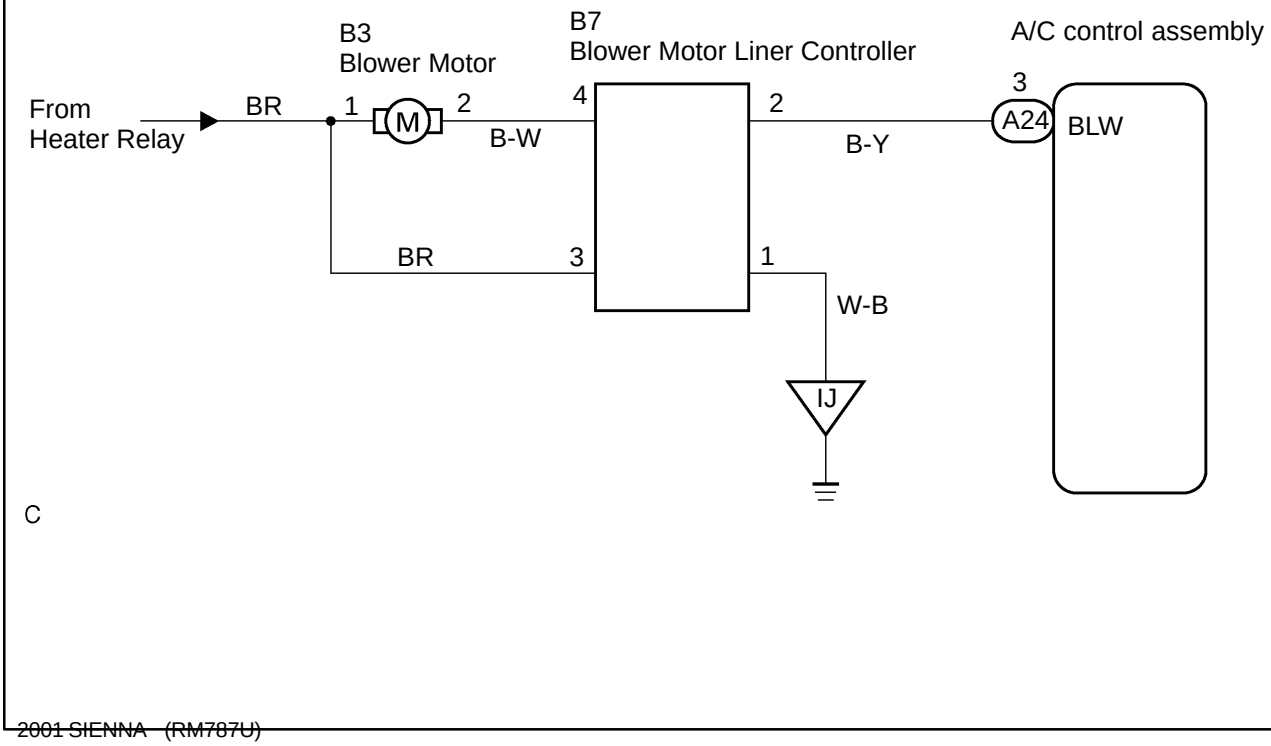
CIRCUIT DESCRIPTION

The blower motor is operated by signals from the A/C control assembly. Blower motor speed signals are transmitted by changes in the Duty Ratio.

Duty Ratio

The duty ratio is the ratio of the period of continuity in one cycle. For example, if A is the period of continuity in one cycle, and B is the period of non-continuity, then.

WIRING DIAGRAM

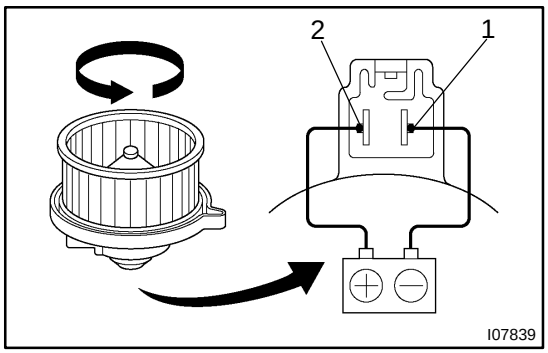


I21113

cardiagn.com

INSPECTION PROCEDURE

1	**Check blower motor.**



PREPARATION:
Remove blower motor (See page AC-56).
CHECK:
Connect positive (+) lead connected to terminal 2 of blower motor connector, negative (-) lead to terminal 1.
OK:
Blower motor operates smoothly.

NG → **Replace blower motor.**

OK

2	**Check harness and connector between battery and blower motor linear controller, blower motor and body ground (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

3	**Check harness and connector between blower motor linear controller and A/C control assembly (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

cardiagn.com

4	Check A/C control assembly (See page IN-31).

NG → Replace A/C control assembly.

OK →

Replace blower motor linear controller.

cardiagn.com

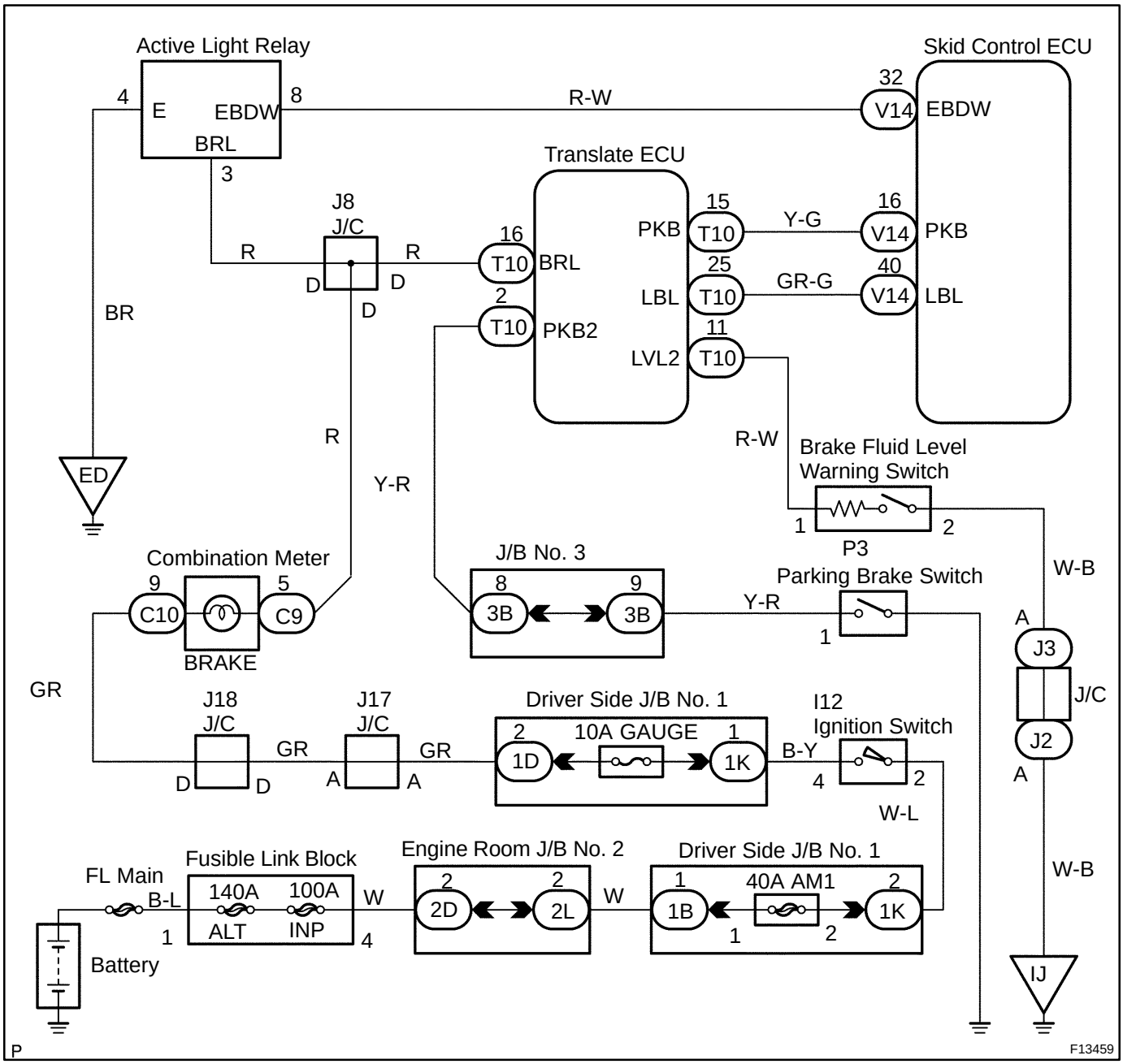
DI8AZ-01

BRAKE Warning Light Circuit

CIRCUIT DESCRIPTION

- The BRAKE warning light lights up when the brake fluid is insufficient, when the parking brake is applied or when the EBD is defective.
- If the translate ECU detects trouble, it makes VSC warning light lights up while prohibiting VSC & TRAC control. At this time, the ECU records a DTC in memory. Connect terminals Tc and E_1 of the DLC1 or Tc and CG of the DLC3 to make BRAKE warning light blink and output the DTC.

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	Check parking brake switch circuit (See page BE-48).

NG → Repair or replace parking brake switch circuit.

OK

2	Check brake fluid level warning switch circuit (See page BE-48).

NG → Repair or replace brake fluid level warning switch circuit.

OK

3	Is DTC output ?

YES → Repair circuit indicated by the output code.

No

4	Check BRAKE warning light.

See combination meter troubleshooting on page BE-2 .

NG → Repair or replace bulb or combination meter.

OK

cardiagn.com

5	**Check for open or short circuit in harness and connector between combination meter and active lamp relay (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

6	**Check for open or short circuit in harness and connector between active lamp relay and skid control ECU (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

7	**Check active lamp relay.**

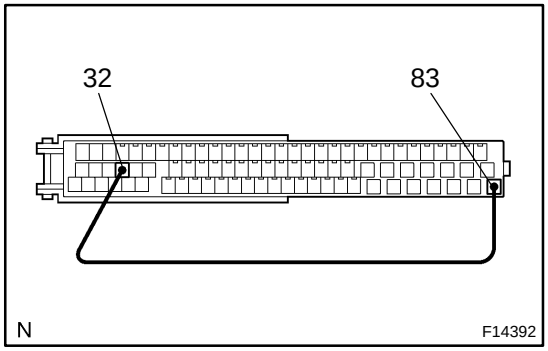
In case in which the BRAKE warning light does not light up:

PREPARATION:

(a) Turn the ignition switch OFF.
(b) Disconnect the connector from the skid control ECU.
(c) Turn the ignition switch ON.

CHECK:

Check the BRAKE warning light goes on.



In case in which the BRAKE warning light remains on:

PREPARATION:

(a) Turn the ignition switch OFF.
(b) Disconnect the connector from the skid control ECU.
(c) Using service wire, connect terminal EBDW (32) and GND (83) of skid control ECU.
(d) Turn the ignition switch ON.

CHECK:

Check the BRAKE warning light goes off.

NG → **Replace active lamp relay.**

OK

Check and replace skid control ECU.

cardiagn.com

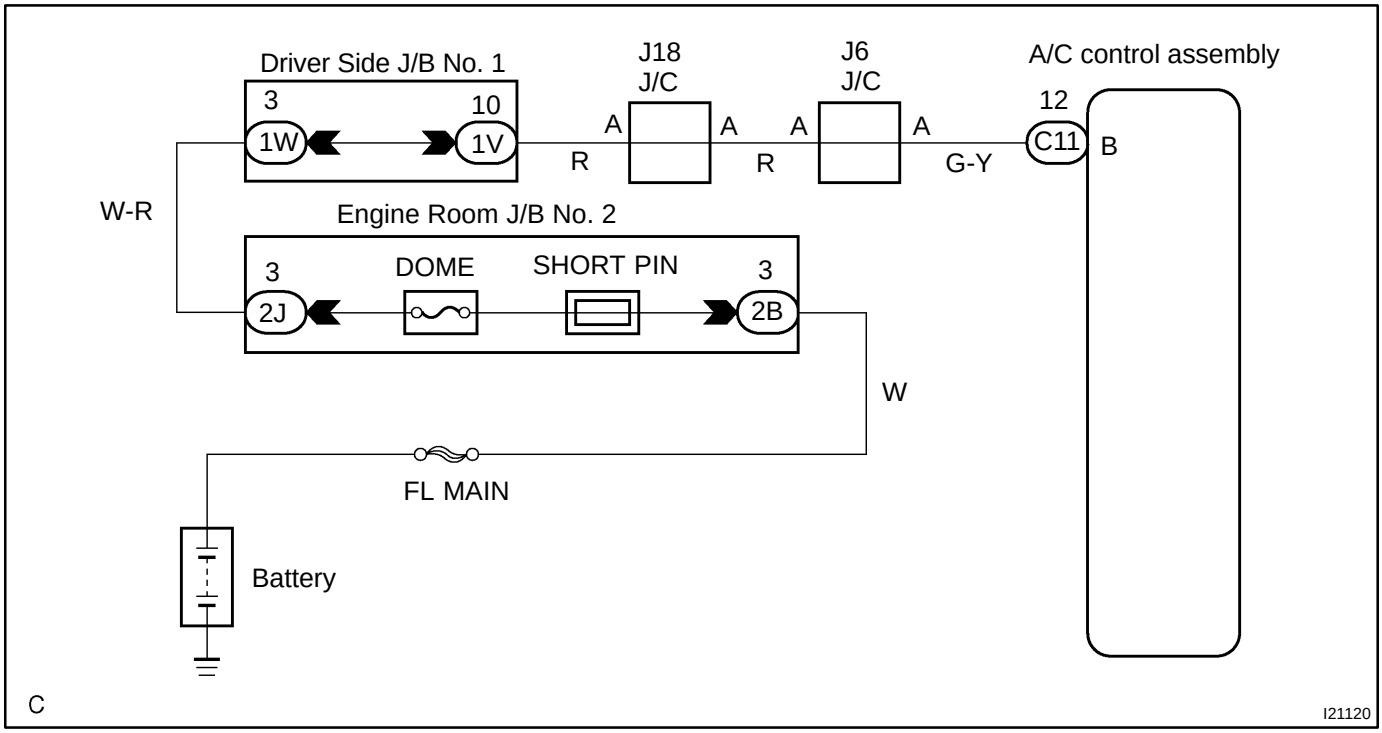
DI3FL-04

Back Up Power Source Circuit

CIRCUIT DESCRIPTION

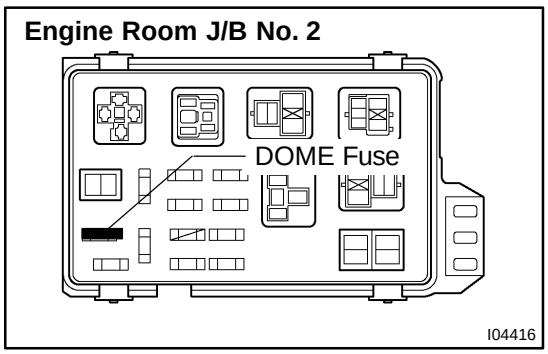
This is the back up power source for the A/C control assembly. Power is supplied even when the ignition switch is off and is used for diagnostic trouble code memory, etc.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	**Check DOME fuse.**



PREPARATION:
Remove DOME fuse from engine room J/B No.2.

CHECK:
Check continuity of DOME fuse.

OK:

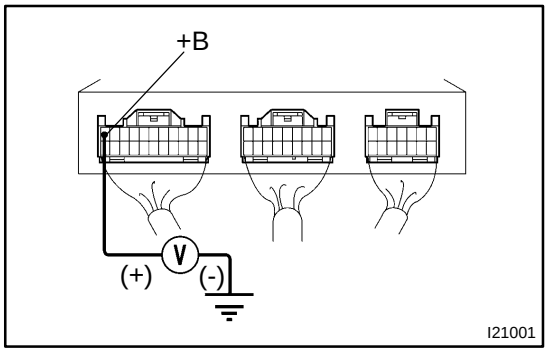
Continuity

NG → **Check for short in all the harness and components connected to the DOME fuse (See attached wiring diagram).**

OK

cardiagn.com

2	**Check voltage between terminal +B of A/C control assembly connector and body ground.**



PREPARATION:

Remove the A/C control assembly with connector still connected.

CHECK:

Measure voltage between terminal +B of A/C control assembly-connector and body ground.

OK:

Voltage : 10 - 14 V

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page DI-697).**

NG

Check and repair harness and connector between A/C control assembly.

cardiagn.com

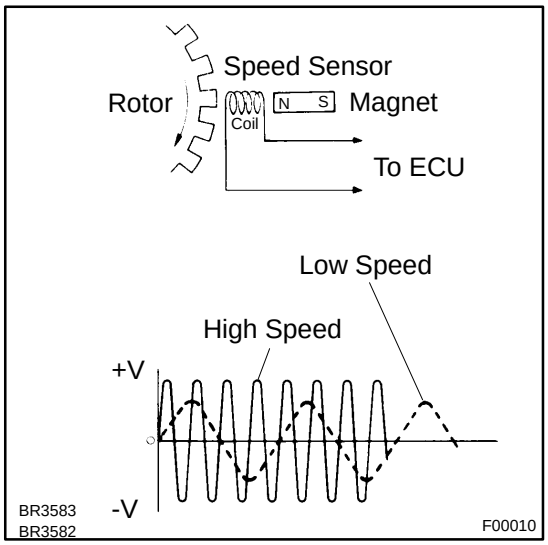
DI6NX-02

CIRCUIT INSPECTION

DTC	C0200 / 31 - C1331 / 36	Speed Sensor Circuit

DTC	C1332 / 38, C1333 / 39	Speed Sensor Circuit

CIRCUIT DESCRIPTION



The speed sensor detects a wheel speed and sends the appropriate signals to the ECU. These signals are used to control of the ABS and VSC system. Each of the front and rear rotors has 48 serrations.
When the rotors rotate, a magnetic field emitted by a permanent magnet in the speed sensor generates 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.

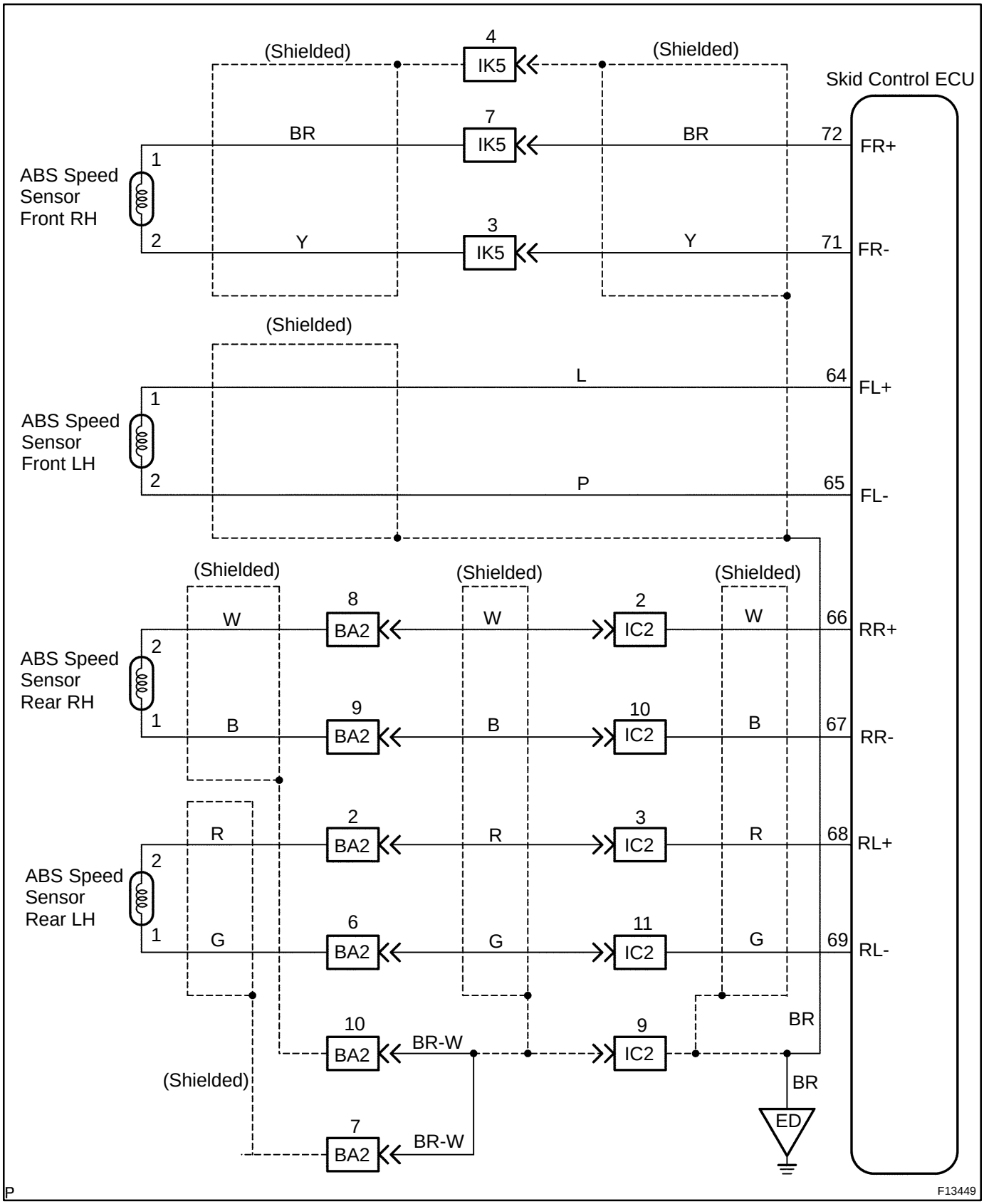
DTC No.	DTC Detecting Condition	Trouble Area
C0200 / 31 C0205 / 32 C0210 / 33 C0215 / 34	When any of the following 1. to 3. is detected : 1. Vehicle speed is more than 40 km/h (25 mph), pulses are not input for 0.01 sec. 2. After the initial start or restart and when the vehicle speed has reached 12 km/h (7 mph), the wheel speed of 0 km/h (0 mph) is detected. 3. After the initial start or restart and when the vehicle speed has reached 18 km/h (11 mph), the front wheel speed of 0 km/h (0 mph) is detected.	• Right front, left front, right rear, left rear speed sensor • Each speed sensor circuit • Sensor installation • Speed sensor rotor
C1330 / 35 C1331 / 36 C1332 / 38 C1333 / 39	Detecting abnormality in the resistance value of each speed sensor.	• Right front, left front, right rear, left rear speed sensor • Each speed sensor circuit

HINT:

- DTC No. C0200 / 31 and C1330 / 35 are for the right front speed sensor.
- DTC No. C0205 / 32 and C1331 / 36 are for the left front speed sensor.
- DTC No. C0210 / 33 and C1332 / 38 are for the right rear speed sensor.
- DTC No. C0215 / 34 and C1333 / 39 are for the left rear speed sensor.

cardiagn.com

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

HINT:

Start the inspection from step 1 in case of using the TOYOTA hand-held tester and start from step 2 in case of not using the TOYOTA hand-held tester.

1	**Check output value of speed sensor.**

PREPARATION:

(a) Connect the TOYOTA hand-held tester to the DLC3.
(b) Turn the ignition switch ON and push the TOYOTA hand-held tester main switch ON.
(c) Select the DATALIST mode on the TOYOTA hand-held tester.

CHECK:

Check that there is no difference between the speed value output from the speed sensor displayed on the TOYOTA hand-held tester and the speed value displayed on the speedometer when driving the vehicle.

OK:

There is almost no difference from the displayed speed value.

HINT:

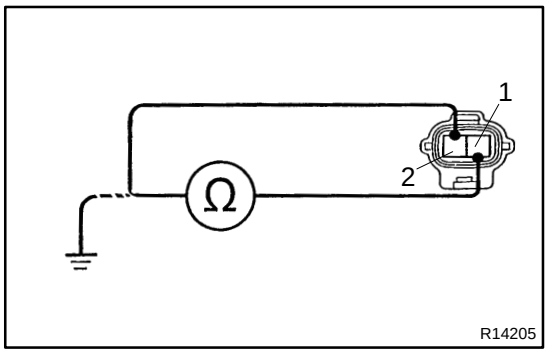
There is tolerance of ± 10 % in the speedometer indication.

OK → **Go to step 4.**

NG

cardiagn.com

2	Check speed sensor.



Front:

PREPARATION:

(a) Remove the front fender liner.

(b) Make sure that there is no looseness at the connector lock part and connecting part of the connector.

(c) Disconnect the speed sensor connector.

CHECK:

Measure the resistance between terminals 1 and 2 of speed sensor connector.

OK:

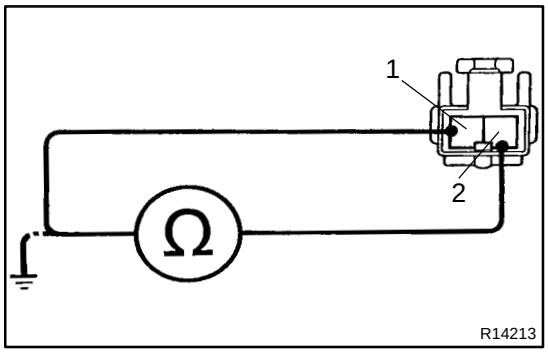
Resistance: 0.9 - 1.8 kΩ at 20 ˚C (68 ˚F)

CHECK:

Measure the resistance between terminals 1 and 2 of speed sensor connector and body ground.

OK:

Resistance: 1 MΩ or higher



Rear:

PREPARATION:

(a) Remove the seat cushion and seatback.

(b) Make sure that there is no looseness at the connector lock part and connecting part of the connector.

(c) Remove the lower center garnish, reardoor scuff plate and room partition trim.

(d) Disconnect the speed sensor connector.

CHECK:

Measure the resistance between terminals 1 and 2 of speed sensor connector.

OK:

Resistance: 0.9 - 1.3 kΩ at 20 ˚C (68 ˚F)

CHECK:

Measure the resistance between terminals 1 and 2 of speed sensor connector and body ground.

OK:

Resistance: 1 MΩ or higher

NG	Replace front speed sensor or rear axle hub.

NOTICE:

Check the speed sensor signal last (See page DI-259).

OK

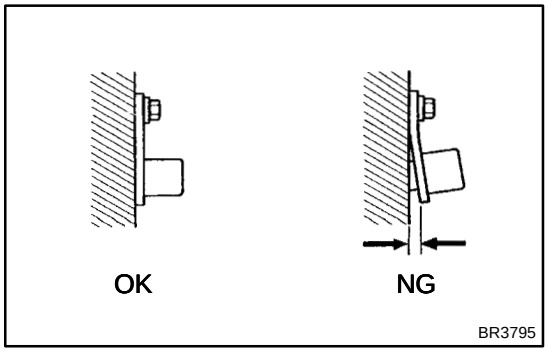
cardiagn.com

3	**Check for open and short circuit in harness and connector between each speed sensor and skid control ECU (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

4	**Check front speed sensor installation.**



CHECK:
Check the speed sensor installation.
OK:

The installation bolt is tightened properly and there is no clearance between the sensor and knucle.
Torque: 8.0 N·m (82 kgf·cm, 71 in.·lbf)

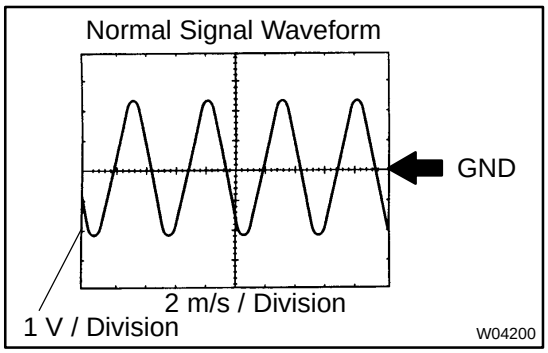
NG → **Replace front speed sensor.**

NOTICE:
Check the speed sensor signal last (See page DI-259).

OK

cardiagn.com

5	Check rear speed sensor and sensor rotor serrations.



REFERENCE: INSPECTION USING OSCILLOSCOPE

PREPARATION:

(a) Disconnect the connector from the skid control ECU.

(b) Connect the oscilloscope to the each of terminals RR+ - RR- or RL+ - RL- of the ECU harness side connector.

CHECK:

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

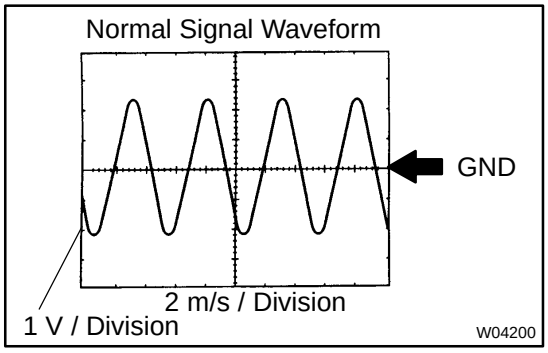
HINT:

- As the vehicle speed (rpm of the wheels) 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.

NG	Replace rear axle hub.

OK

6	Check front speed sensor and sensor rotor serrations.



REFERENCE: INSPECTION USING OSCILLOSCOPE

PREPARATION:

(a) Disconnect the connector from the skid control ECU.

(b) Connect the oscilloscope to the each of terminals FR+ - FR- or FL+ - FL- of the ECU harness side connector.

CHECK:

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

HINT:

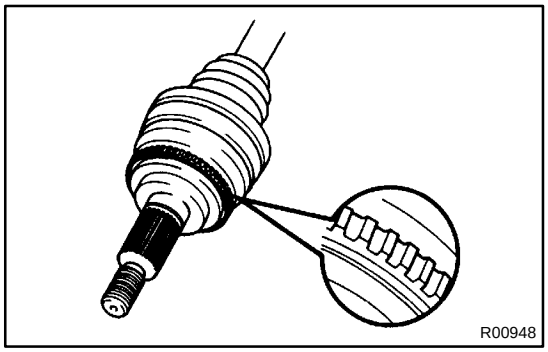
- As the vehicle speed (rpm of the wheels) increases, a cycle of the waveform becomes shorter and the fluctuation in the output voltage becomes greater.
- When noise is identified in the waveform on the oscilloscope, error signals are generated due to the speed sensor rotor's scratches, looseness or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

OK	Check and replace skid control ECU.

NG

cardiagn.com

7	Check front sensor rotor and sensor tip.



PREPARATION:
Remove the front drive shaft (See page SA-16).
CHECK:
Check the sensor rotor serrations.
OK:
No scratches, missing teeth or foreign objects.
PREPARATION:
Remove the front speed sensor (See page BR-49).
CHECK:
Check the sensor tip.
OK:
No scratches or foreign objects on the sensor tip.
HINT:
If foreign matter (including that on the sensor rotor side) is identified, remove it and after reassembling, check the output waveform.

NG → **Replace sensor rotor or speed sensor.**

NOTICE:
Check the speed sensor signal last (See page DI-259).

OK →

Check and replace skid control ECU.

cardiagn.com

DI6NY-02

DTC	C0226 / 21 - C1228 / 28	ABS & VSC Actuator Solenoid Circuit

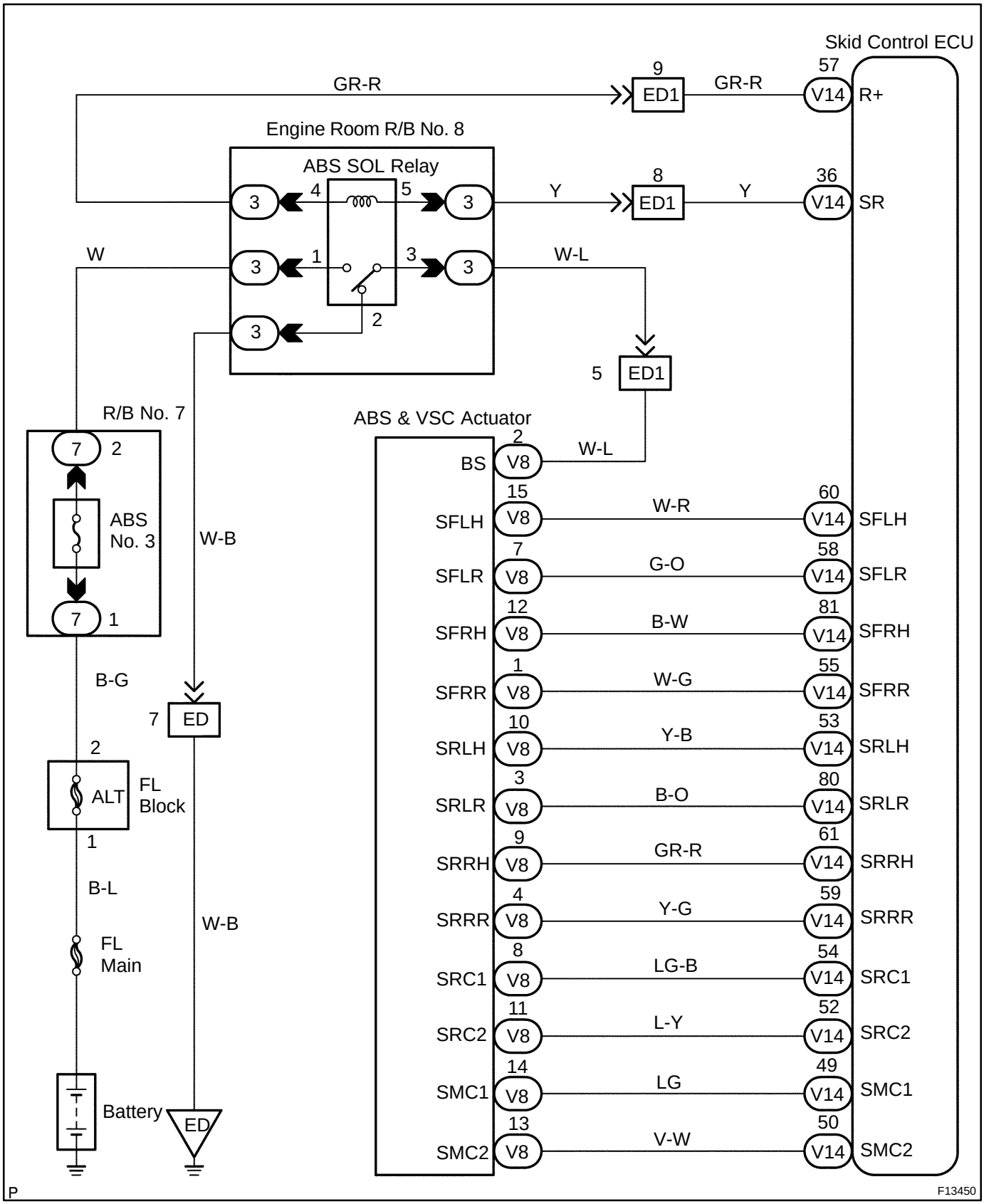
CIRCUIT DESCRIPTION

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	Open or short in SFRR or SFRH circuit.	• ABS & VSC actuator • SFRR or SFRH circuit
C0236 / 22	Open or short in SFLR or SFLH circuit.	• ABS & VSC actuator • SFLR or SFLH circuit
C0246 / 23	Open or short in SRRR or SRRH circuit.	• ABS & VSC actuator • SRRR or SRRH circuit
C0256 / 24	Open or short in SRLR or SRLH circuit.	• ABS & VSC actuator • SRLR or SRLH circuit
C1225 / 25	Open or short circuit for SMC1 circuit.	• ABS & VSC actuator • SMC1 circuit
C1226 / 26	Open or short circuit for SMC2 circuit.	• ABS & VSC actuator • SMC2 circuit
C1227 / 27	Open or short circuit for SRC1 circuit.	• ABS & VSC actuator • SRC1 circuit
C1228 / 28	Open or short circuit for SRC2 circuit.	• ABS & VSC actuator • SRC2 circuit

cardiagn.com

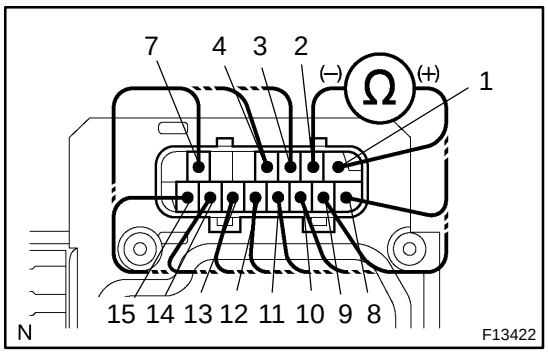
WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check ABS & VSC actuator solenoid.**



PREPARATION:
Disconnect the connector from ABS & VSC actuator.
CHECK:
Check continuity between terminals 2 and each of 1, 3, 4, 7, 8, 9, 10, 11, 12, 13, 14, 15 of ABS & VSC actuator.
OK:

Continuity

NG → **Replace ABS & VSC actuator.**

OK

2	**Check for open and short circuit in harness and connector between skid control ECU and ABS & VSC actuator (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

If the same code is still output after the DTC is deleted, check the contact condition of each connection. If the connections are normal, the ECU may be defective.

cardiagn.com

DI6NZ-02

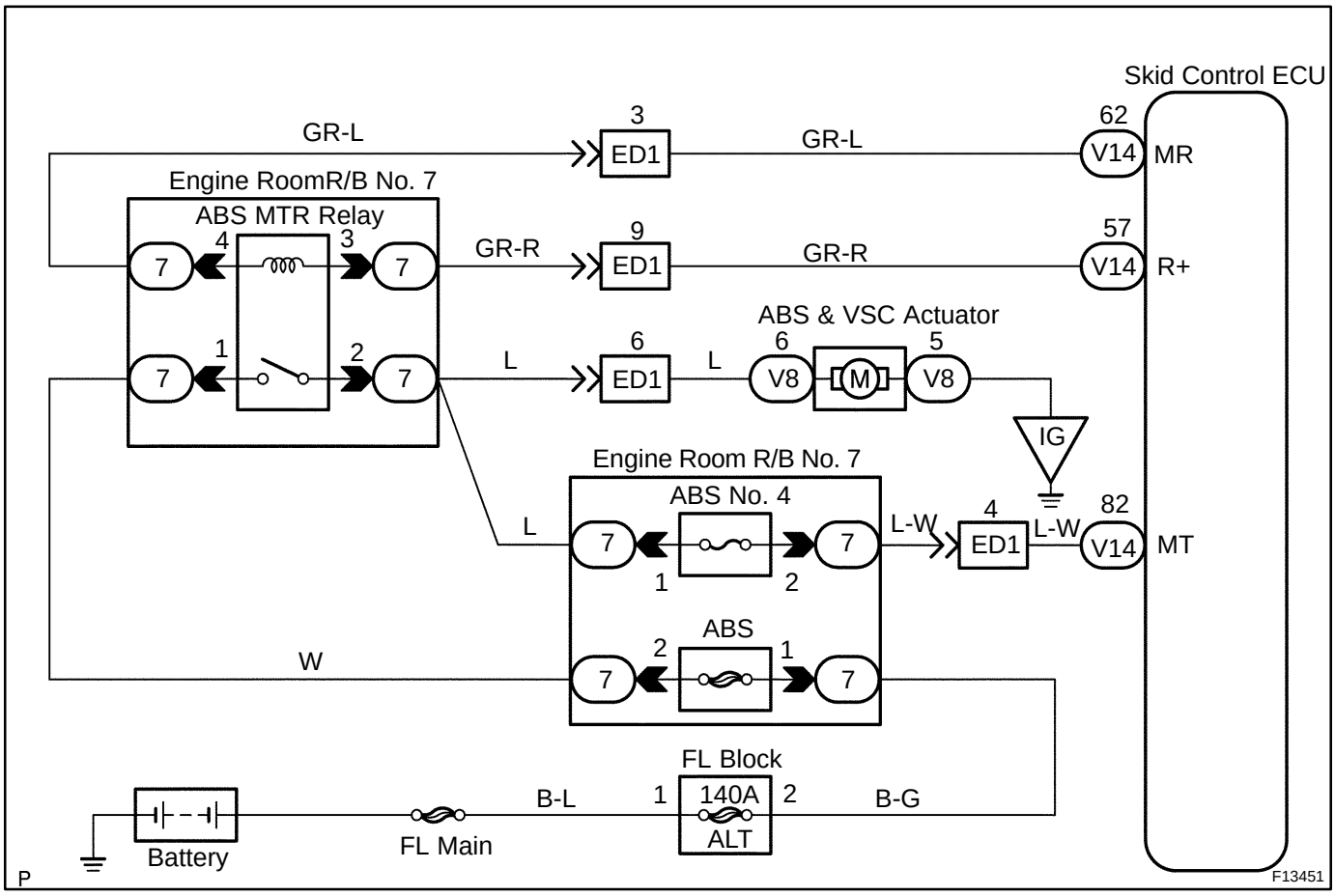
DTC	C0273 / 13	ABS MTR Relay Circuit

CIRCUIT DESCRIPTION

The ABS MTR relay supplies power to the ABS & VSC actuator pump motor. While the ABS & BA & TRAC & VSC are activated, the ECU switches the motor relay ON and operates the ABS & VSC actuator pump motor.

DTC No.	DTC Detecting Condition	Trouble Area
C0273 / 13	Open or short circuit is detected.	• ABS MTR relay • ABS MTR relay circuit • Battery

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

HINT:

Start the inspection from step 1 in case of using the TOYOTA hand-held tester and start from step 2 in case of not using the TOYOTA hand-held tester.

1	**Check ABS MTR relay operation.**

PREPARATION:

(a) Connect the TOYOTA hand-held tester to the DLC3.
(b) Turn the ignition switch ON and push the TOYOTA hand-held tester main switch ON.
(c) Select the ACTIVE TEST mode on the TOYOTA hand-held tester.

CHECK:

Check the operation sound of the ABS MTR relay individually when operating it with the TOYOTA hand-held tester.

OK:

The operation sound of the ABS MTR relay should be heard.

OK → **Go to step 4.**

NG

2	**Check battery positive voltage.**

OK:

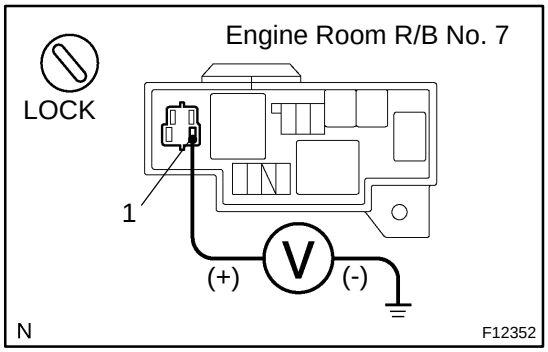
voltage: 10 - 14 V

NG → **Check and repair the charging system (See page CH-2).**

OK

cardiagn.com

3	**Check voltage between terminal 1 of engine room R/B No. 7 (for ABS MTR relay) and body ground.**



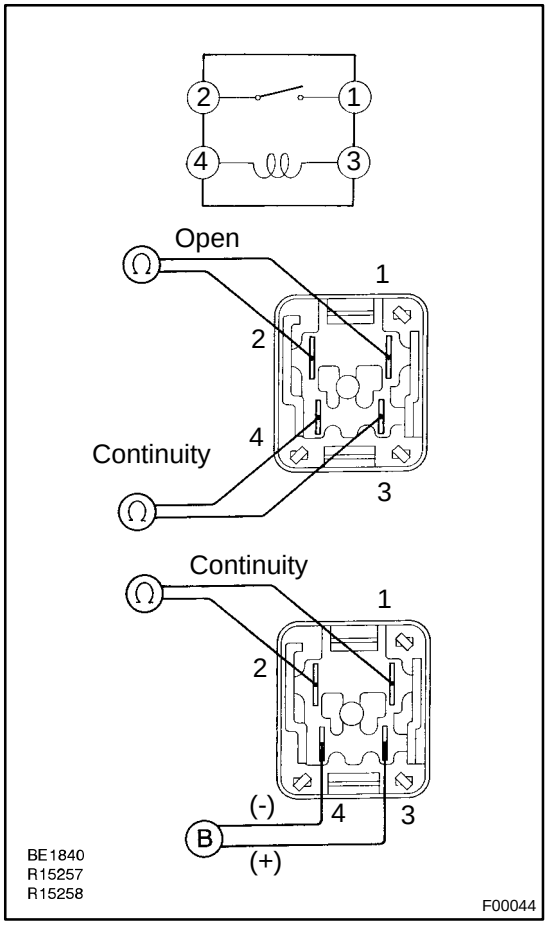
PREPARATION:
Remove the ABS MTR relay from engine room R/B No. 7.
CHECK:
Measure the voltage between terminal 1 of engine room R/B No. 7 (for ABS MTR relay) and body ground.
OK:

Voltage: 10 - 14 V

NG	**Check and repair harness or connector.**

OK

4	**Check ABS MTR relay.**



CHECK:
Check continuity between following terminals of MTR relay.
OK:

Terminals 3 and 4	Continuity (Reference value 62 Ω)
Terminals 1 and 2	Open

CHECK:
(a) Apply battery positive voltage between terminals 3 and 4.
(b) Check continuity between terminals.
OK:

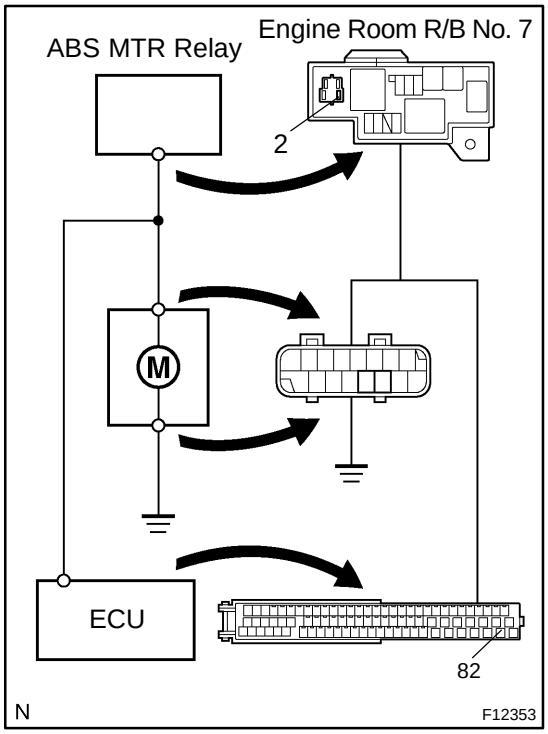
Terminals 1 and 2	Continuity

NG	**Replace ABS MTR relay.**

OK

cardiagn.com

5	**Check continuity between terminal BM (2) of engine room R/B No. 7 (for ABS MTR relay) and terminal MT (82) of skid control ECU.**



PREPARATION:
Disconnect the connector from the skid control ECU.
CHECK:
Check continuity between terminal BM (2) of engine room R/B No. 7 and terminal MT (82) of skid control ECU harness side connector.
OK:

Continuity

NG → **Repair or replace harness.**

OK

6	**Check for open and short circuit in harness and connector between ABS MTR relay and skid control ECU (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

If the same code is still output after the DTC is deleted, check the contact condition of each connection. If the connections are normal, the ECU may be defective.

cardiagn.com

DI6O0-02

DTC	C0278 / 11	ABS SOL Relay Circuit

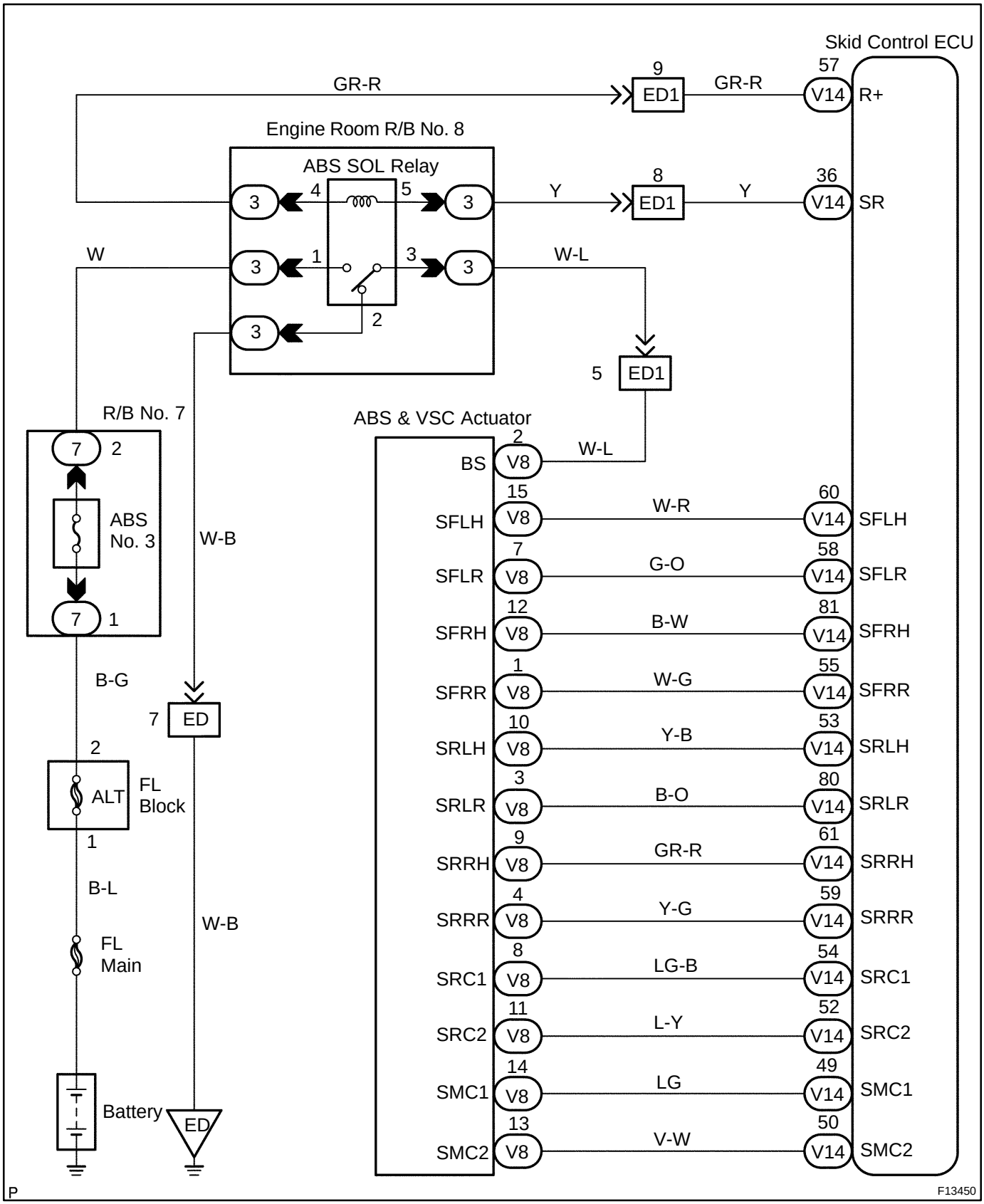
CIRCUIT DESCRIPTION

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	Detection of any conditions from 1. through 2.: 1. 3 or more solenoids are show faulty in response and simultaneously solenoid supply voltage is detected faulty. 2. SOL relay will not be switched OFF.	• ABS SOL relay • ABS SOL relay circuit • Battery

cardiagn.com

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check battery positive voltage.**

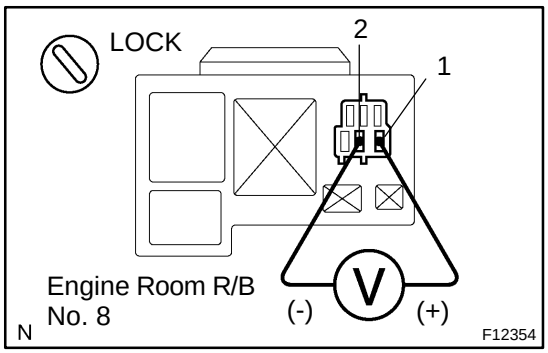
OK:

Voltage: 10 - 14 V

NG → **Check and repair the charging system (See page CH-2).**

OK

2	**Check voltage between terminals 1 and 2 of engine room R/B No. 8 (for ABS SOL relay).**



PREPARATION:

Remove the ABS SOL relay from engine room R/B No. 8.

CHECK:

Measure the voltage between terminals 1 and 2 of engine room R/B No. 8 (for ABS SOL relay).

OK:

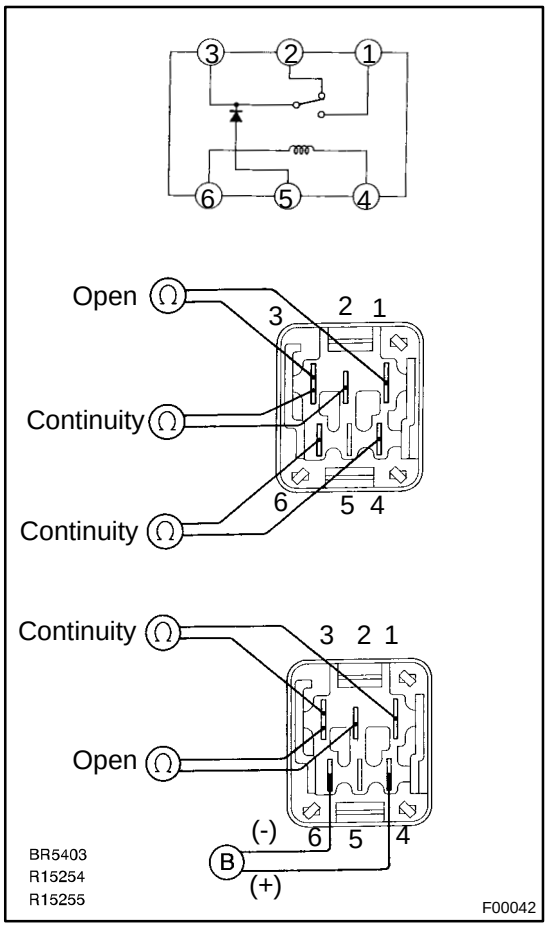
Voltage: 10 - 14 V

NG → **Check and repair harness or connector.**

OK

cardiagn.com

3	Check ABS SOL relay.



CHECK:

Check continuity between following terminals of ABS SOL relay.

OK:

Terminals 4 and 6	Continuity (Reference value 80 Ω)
Terminals 2 and 3	Continuity
Terminals 1 and 3	Open

CHECK:

(a) Apply battery positive voltage between terminals 4 and 6.

(b) Check continuity between following terminals of ABS SOL relay.

OK:

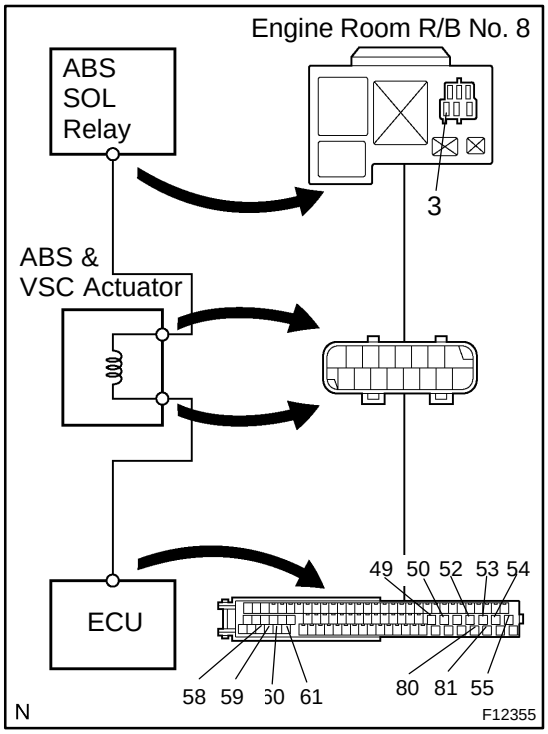
Terminals 2 and 3	Open
Terminals 1 and 3	Continuity

NG → **Replace ABS SOL relay.**

OK

cardiagn.com

4	**Check continuity between terminal 3 of engine room R/B No. 8 (for ABS SOL relay) and each solenoid terminal of skid control ECU.**



PREPARATION:

Disconnect the connector from the skid control ECU.

CHECK:

Check continuity between terminal 3 of engine room R/B No. 8 and each terminals 49, 50, 52, 53, 54, 55, 58, 59, 60, 61, 80 and 81 of ECU harness side connector.

OK:

Continuity

HINT:

Resistance of each solenoid coil.

SFLH (60), SRRH (61), SFRH (81), SMC1 (49), SMC2 (50), SRLH (53): 8 - 9.1 Ω at 20 °C (68 °F)

SFLR (58), SRRR (59), SRLR (80), SRC2 (52), SRC1 (54), SFRR (55): 4.0 - 4.6 Ω at 20 °C (68 °F)

NG → **Repair or replace harness or ABS & VSC actuator.**

OK

5	**Check for open and short circuit in harness and connector between ABS SOL relay and skid control ECU (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

If the same code is still output after the DTC is deleted, check the contact condition of each connection. If the connections are normal, the ECU may be defective.

cardiagn.com

DI6O1-02

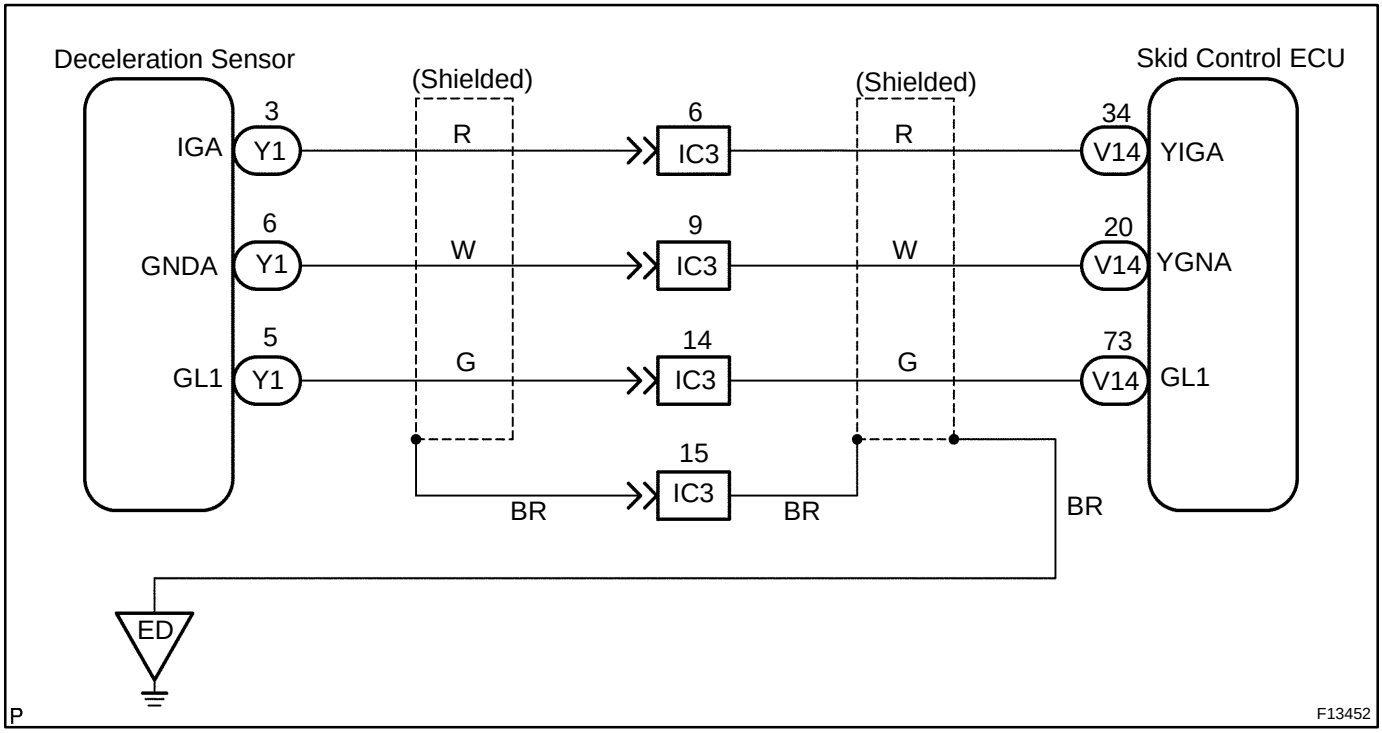
DTC	C0365 / 43	Deceleration Sensor Circuit

CIRCUIT DESCRIPTION

Deceleration sensor is combined with yaw rate sensor.

DTC No.	DTC Detecting Condition	Trouble Area
C0365 / 43	Detection of any of conditions from 1. through 4.: 1. The sensor signal is out of range, less than 0.25 V or more than 4.75 V. 2. Deceleration difference between sensor signal and reference value is large. 3. Offset value of sensor signal is higher than the standard value. 4. sensor signal change rapidly higher than the value at the normal condition.	• Deceleration sensor • Deceleration sensor circuit

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

HINT:
Start the inspection from step 1 in case of using the TOYOTA hand-held tester and start from step 3 in case of not using the TOYOTA hand-held tester.

1	**Check output value of the deceleration sensor.**

PREPARATION:
(a) Connect the TOYOTA hand-held tester to the DLC3.
(b) Turn the ignition switch ON and push the TOYOTA hand-held tester main switch ON.
(c) Select the DATALIST mode on the TOYOTA hand-held tester.

CHECK:
Check that the deceleration value of the deceleration sensor displayed on the TOYOTA hand-held tester is changing when tilting the vehicle.

OK:
Deceleration value must be changing.

OK → **Check and replace skid control ECU.**

NG

2	**Check the steering angle sensor zero point.**

PREPARATION:
(a) Connect the TOYOTA hand-held tester to the DLC3.
(b) Turn the ignition switch ON and push the TOYOTA hand-held tester main switch ON.
(c) Select the DATALIST mode on the TOYOTA hand-held tester.

CHECK:
Check whether steering angle sensor value is nearly equal to 0 degree when steering wheel is adjusted to neutral.

NG → **Calibrate the steering angle sensor zero point (See page DI-259).**

OK

3	**Check deceleration sensor (See page DI-259).**

NG → **Replace deceleration sensor.**

OK

cardiagn.com

4	**Check for open or short circuit in harness and connector between deceleration sensor and skid control ECU (See page IN-31).**

NG → **Repair or replace harness and connector.**

OK

Check and replace skid control ECU.

cardiagn.com

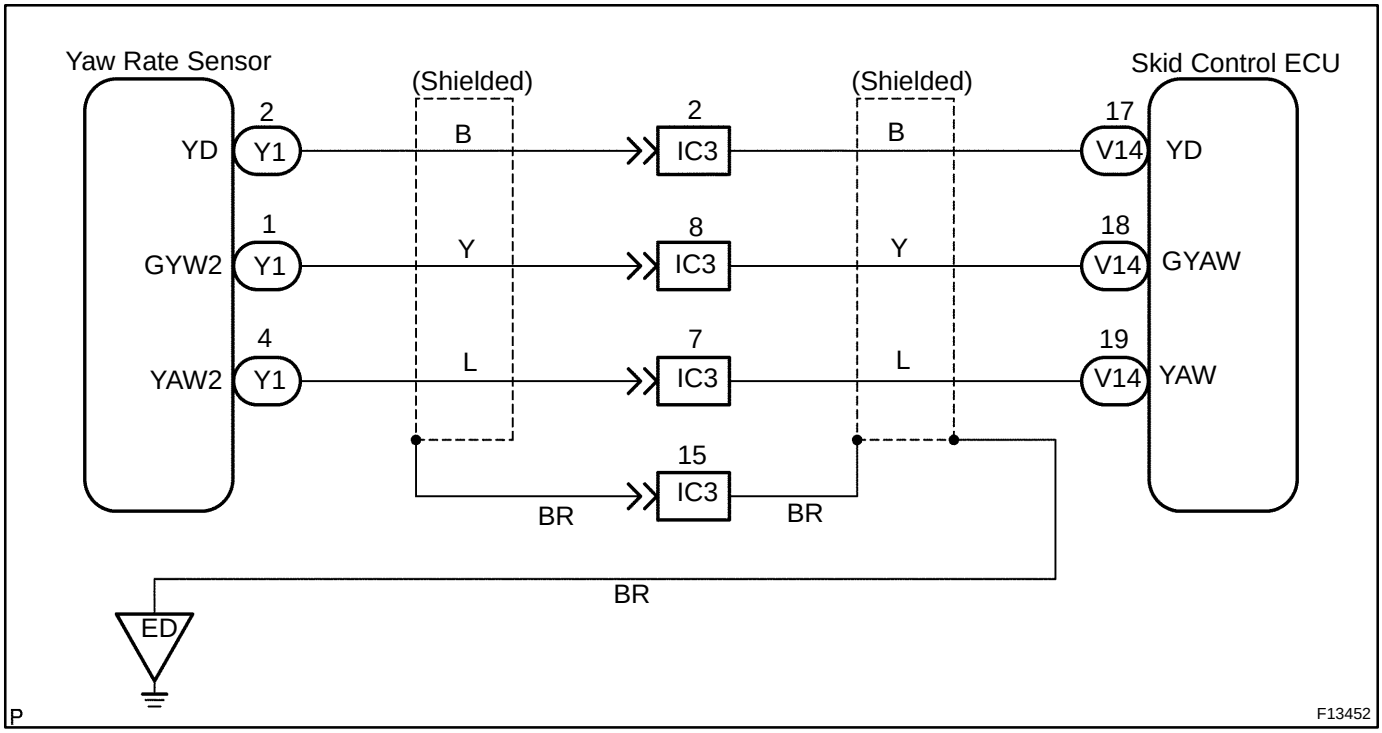
DI6O2-02

DTC	C0371 / 55	Yaw Rate Sensor Circuit

CIRCUIT DESCRIPTION

DTC No.	DTC Detecting Condition	Trouble Area
C0371 / 55	Detection of any of conditions from 1. through 4.: 1. The voltage of sensor signal is out of range. 2. The offset value of sensor signal is outside the plausible range. 3. Sensor signal change rapidly under normal driving. 4. Sensor is more or worse sensitivity than reference yaw rate during cornering.	• Yaw rate sensor • Yaw rate sensor circuit

WIRING DIAGRAM



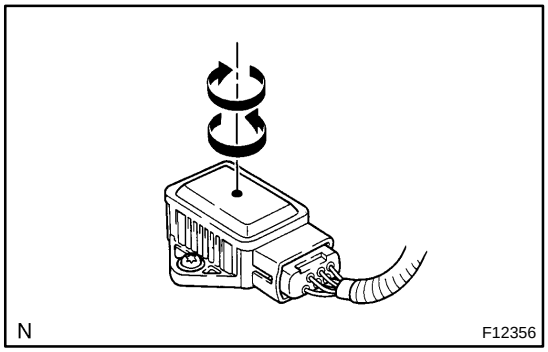
cardiagn.com

INSPECTION PROCEDURE

HINT:

Start the inspection from step 1 in case of using the TOYOTA hand-held tester and start from step 4 in case of not using the TOYOTA hand-held tester.

1	**Check output value of the yaw rate sensor.**



PREPARATION:

(a) Remove the 2 nuts and yaw rate sensor with connector still connected.
(b) Connect the TOYOTA hand-held tester to the DLC3.
(c) Turn the ignition switch ON and push the TOYOTA hand-held tester main switch ON.
(d) Select the DATALIST mode on the TOYOTA hand-held tester.

CHECK:

Check that the yaw rate value of the yaw rate sensor displayed on the TOYOTA hand-held tester is changing: Place the yaw rate sensor vertically to the ground and turn the sensor pivoted on its center.

OK:

Yaw rate value must be changing.

NG	**Go to step 4.**

OK

2	**Check the steering angle sensor zero point.**

PREPARATION:

(a) Connect the TOYOTA hand-held tester to the DLC3.
(b) Turn the ignition switch ON and push the TOYOTA hand-held tester main switch ON.
(c) Select the DATALIST mode on the TOYOTA hand-held tester.

CHECK:

Check whether steering angle sensor value is nearly equal to 0 degree when steering wheel is adjusted to neutral.

NG	**Calibrate the steering angle sensor zero point (See page DI-259).**

OK

cardiagn.com

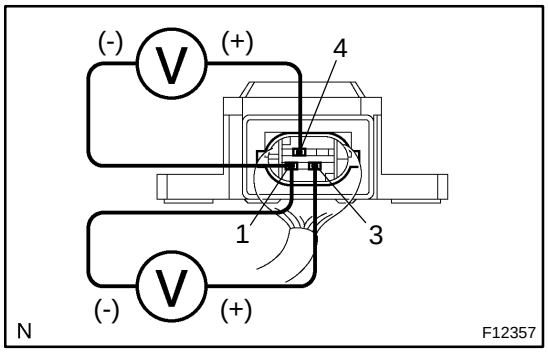
3	**Check whether continuity exists between terminal YD of yaw rate sensor and terminal YD of skid control ECU.**

NG → **Repair or replace harness or connector.**

OK

Check and replace skid control ECU.

4	**Check yaw rate sensor.**



CHECK:

(a) Turn the ignition switch ON.

(b) Measure the voltage between terminals IGA (3) and GYW2 (1), YAW2 (4) and GYW2 (1) of the yaw rate sensor with connector still connected.

OK:

Terminals 3 and 1 (IGA - GYW2)	Approx. 12 V
Terminals 4 and 1 (YAW2 - GYW2)	Approx. 2.5 V

NG → **Replace yaw rate sensor.**

OK

5	**Check for open and short circuit in harness and connector between yaw rate sensor and skid control ECU (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

Check and replace skid control ECU.

cardiagn.com

DTC	C1202 / 44	Brake Fluid Level Warning Switch Circuit

CIRCUIT DESCRIPTION

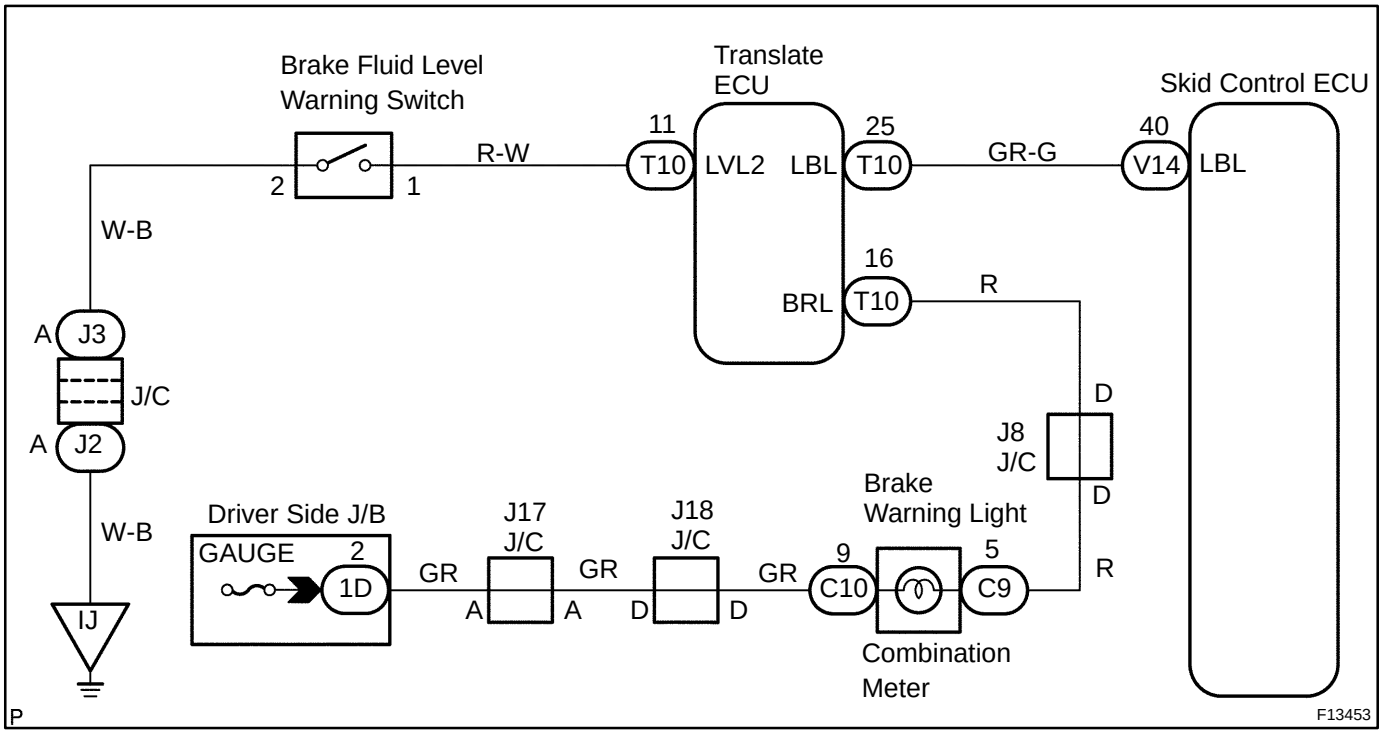
The brake fluid level warning switch sends appropriate signals to the ECU when the brake fluid level is lowered.

HINT:

Depressing the parking brake pedal turns on the brake warning light, but this DTC No. C1202/44 is not output.

DTC No.	DTC Detecting Condition	Trouble Area
C1202 / 44	Fluid level in the brake master cylinder reservoir tank remains low for 60 sec. or more. This means brake fluid warning switch likes on.	• Brake fluid level • Brake fluid level warning switch • Brake fluid level warning switch circuit

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check brake fluid level.**

CHECK:

Check the amount of brake fluid in the reservoir.

NG → **Check for fluid leakage, repair brake line and add fluid.**

OK ↓

2	**Check brake fluid level warning switch (See page BE-48).**

NG → **Replace brake fluid level warning switch.**

OK ↓

3	**Check for open circuit in all the harness and components connected to brake warning light (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK ↓

Check and replace translate ECU.

cardiagn.com

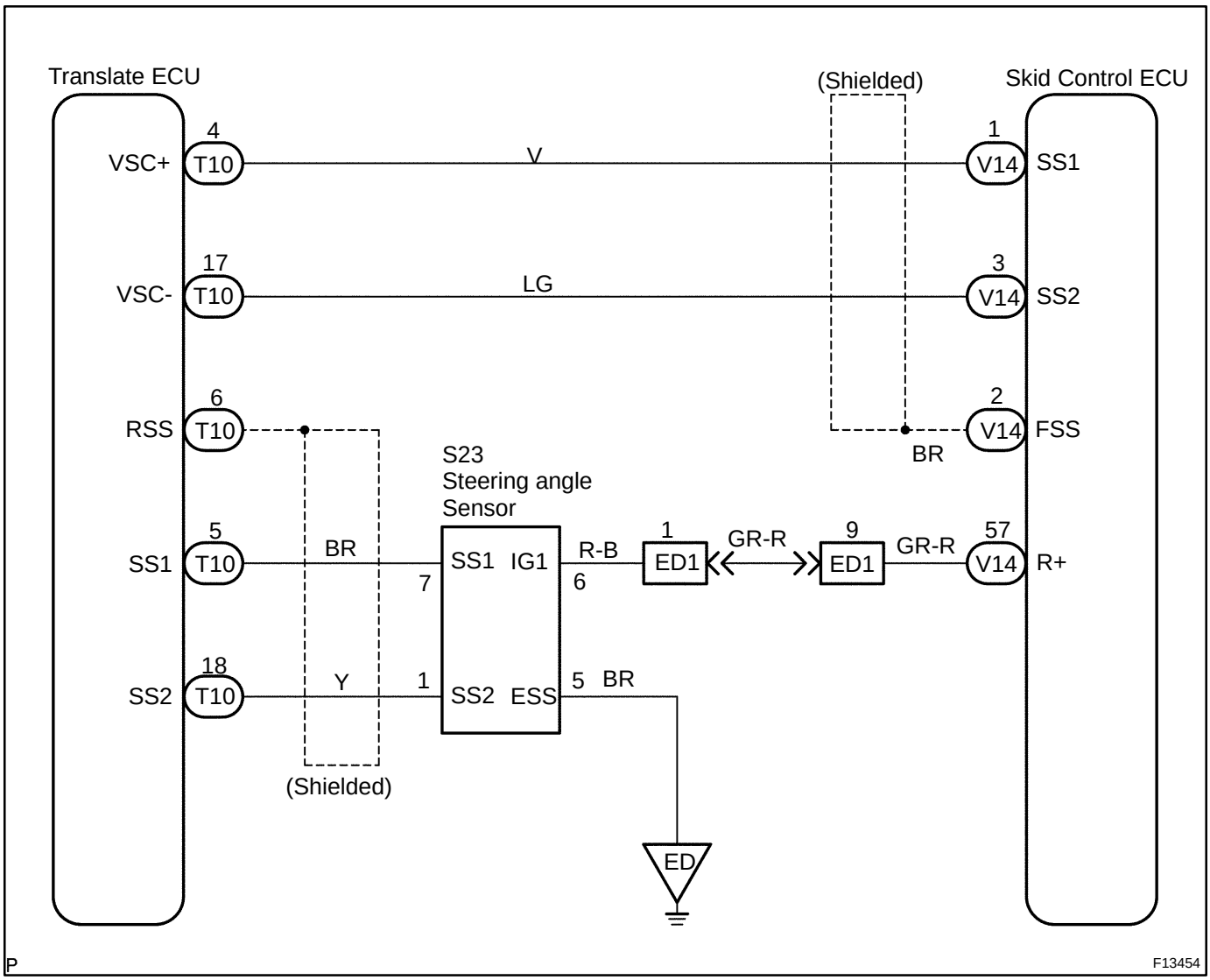
DI6O4-02

DTC	C1208 / 54	Steering Angle Sensor Circuit

CIRCUIT DESCRIPTION

DTC No.	DTC Detecting Condition	Trouble Area
C1208 / 54	Detection of any of conditions 1. through 7: 1. When the condition that ECU terminal IG1 voltage is 9.8 V or more, and does not receive data from steering angle sensor continues for 0.1 sec. or more. 2. Sensor internal failure. 3. The offset value is out of range. 4. Sensor signal change higher. 5. Steering angle value difference between measured and reference is out of range. 6. Steering angle sensor is not centered. 7. Steering angle sensor signal is out of range.	• Steering angle sensor • Steering angle sensor circuit

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

HINT:

Start the inspection from step 1 in case of using the TOYOTA hand-held tester and start from step 3 in case of not using the TOYOTA hand-held tester.

1	**Check output value of the steering angle sensor.**

PREPARATION:

(a) Connect the TOYOTA hand-held tester to the DLC3.
(b) Turn the ignition switch ON and push the TOYOTA hand-held tester main switch ON.
(c) Select the DATALIST mode on the TOYOTA hand-held tester.

CHECK:

Check that the steering wheel turning angle value of the steering angle sensor displayed on the TOYOTA hand-held tester is appropriate when turning the steering wheel.

OK:

Steering wheel turning angle value must be appropriate.

OK → **Go to step 5.**

NG

2	**Check the steering angle sensor zero point.**

PREPARATION:

(a) Connect the TOYOTA hand-held tester to the DLC3.
(b) Turn the ignition switch ON and push the TOYOTA hand-held tester main switch ON.
(c) Select the DATALIST mode on the TOYOTA hand-held tester.

CHECK:

Check whether steering angle sensor value is nearly equal to 0 degree when steering wheel is adjusted to neutral.

NG → **Calibrate the steering angle sensor zero point (See page DI-259).**

OK

cardiagn.com

3	**Check the installation condition of steering angle sensor.**

NG → **Repair or replace steering angle sensor (See page SR-1 1).**

OK

4	**Check for open and short circuit in harness and connector between steering angle sensor, translate ECU and skid control ECU (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

5	**Calibrate the steering angle sensor (See page DI-259).**

NG → **Replace steering angle sensor.**

OK

6	**Is DTC still output?**

Check DTC on page DI-259 .

NO → **No problem.**

YES

cardiagn.com

7	**Replace the ECU and check whether or not the trouble occurs again.**

YES → **Replace steering angle sensor.**

NO

Check and replace skid control ECU.

cardiagn.com

DI6O5-02

DTC	C1237 / 37	Wrong Number of Teeth at 1 of 4 Wheels

CIRCUIT DESCRIPTION

DTC No.	DTC Detecting Condition	Trouble Area
C1237 / 37	Detection of any of conditions from 1. through 4.: 1. When the ignition switch is ON, the speed difference between the rear right and rear left wheels is 5 km/h (3mph) or more (vehicle speed: 100 km/h (62 mph) or less). 2. When the ignition switch is ON, the slip difference between the reference wheel and any other wheels is 6 % or more (vehicle speed: 100 km/h (62 mph) or more). 3. Continuous ABS control for 60 sec. or more. 4. Interference on 1 or more wheels for 20 sec. with the brake pedal depressed, or for 5 sec. when the brake pedal is not depressed.	• Tire size • Speed sensor rotor

INSPECTION PROCEDURE

1	**Check tire size.**

NG → **Replace tires so that all 4 tires are the same in size.**

OK

2	**Check sensor rotor (See page DI-275).**

NG → **Replace speed sensor rotor.**

OK

3	**Check speed sensor (See page DI-275).**

NG → **Replace speed sensor.**

OK

cardiagn.com

4	**Check for open and short circuit in harness and connector between front speed sensors, rear speed sensors and skid control ECU (See page IN-31).**

NG → **Repair or replace harness and connector.**

OK

Check and replace skid control ECU.

cardiagn.com

DI6O6-02

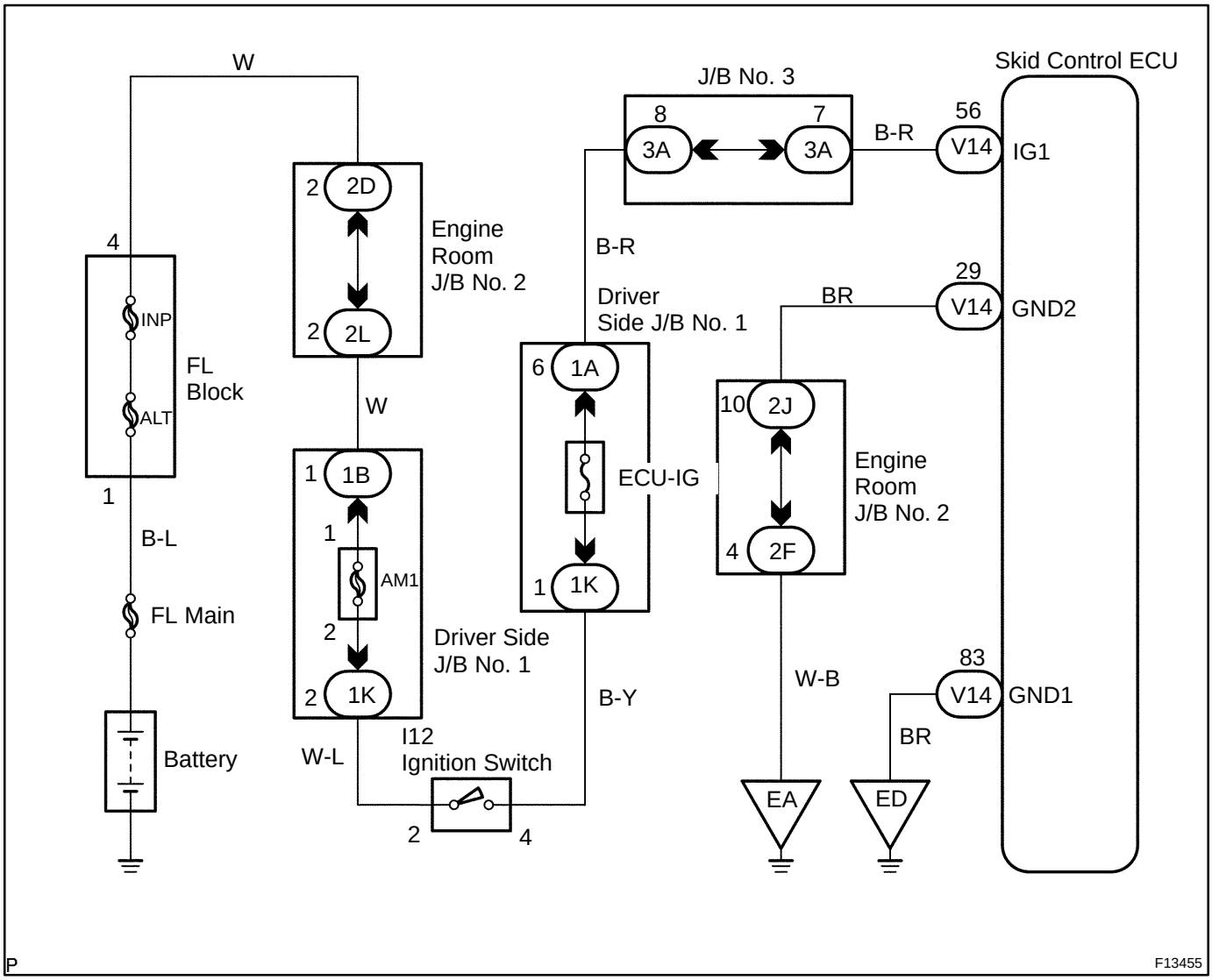
DTC	C1241 / 41	IG Power Source Circuit

CIRCUIT DESCRIPTION

This is the power source for the ECU, hence the brake actuators.

DTC No.	DTC Detecting Condition	Trouble Area
C1241 / 41	At a vehicle speed of 6 km/h (4 mph) or more, the condition that low battery voltage is 9.8 V or less (during non-operation of ABS control) or 9.4 V or less (during operation of ABS control) and high battery voltage is more than 17.4 V, continues for 0.5 sec. or more.	• Battery • Charging system • Power source circuit

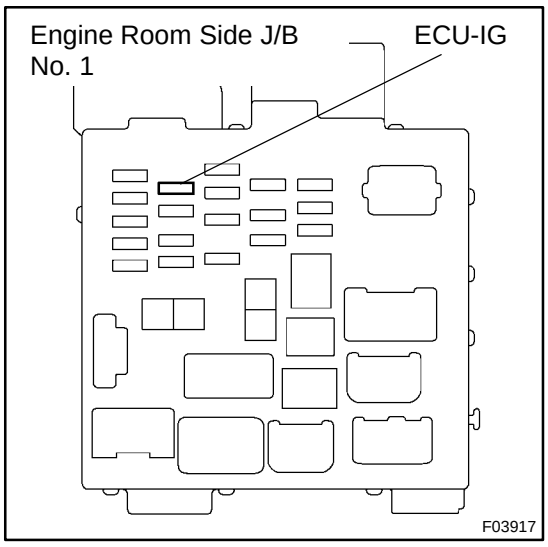
WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check ECU-IG fuse.**



PREPARATION:
Remove the ECU-IG fuse from the driver side J/B No. 1.
CHECK:
Check continuity of the ECU-IG fuse.
OK:
Continuity

NG → **Check for short circuit in all the harness and components connected to ECU-IG fuse (See attached wiring diagram).**

OK

2	**Check battery positive voltage.**

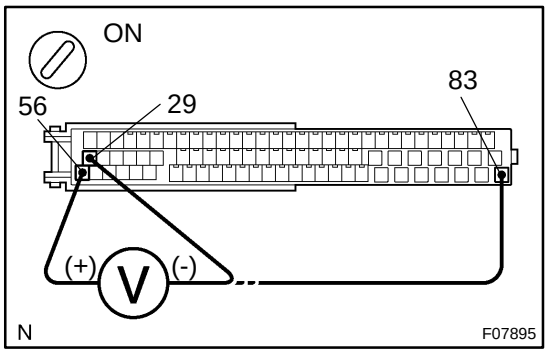
OK:
Voltage: 10 - 14 V

NG → **Check and repair the charging system (See page CH-2).**

OK

cardiagn.com

3	Check voltage between terminals IG1 (56) and GND (29, 83) of skid control ECU.



PREPARATION:

Disconnect the connector from the skid control ECU.

CHECK:

(a) Turn the ignition switch ON.

(b) Measure the voltage between terminals 56 and 29, 83 of skid control ECU harness side connector.

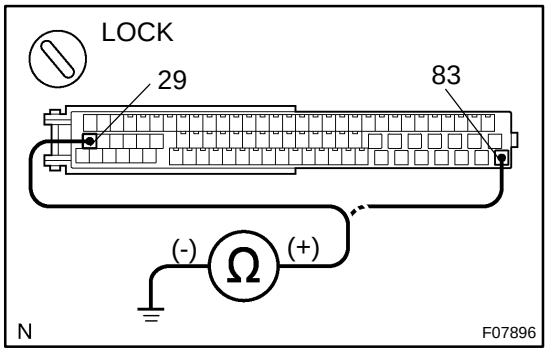
OK:

Voltage: 10 - 14 V

OK	Check and replace skid control ECU.

NG

4	Check continuity between terminals GND (29, 83) of skid control ECU and body ground.



CHECK:

Measure the resistance between terminal 29, 83 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 for open circuit in harness and connector between skid control ECU and ECU-IG fuse (See page IN-31).

cardiagn.com

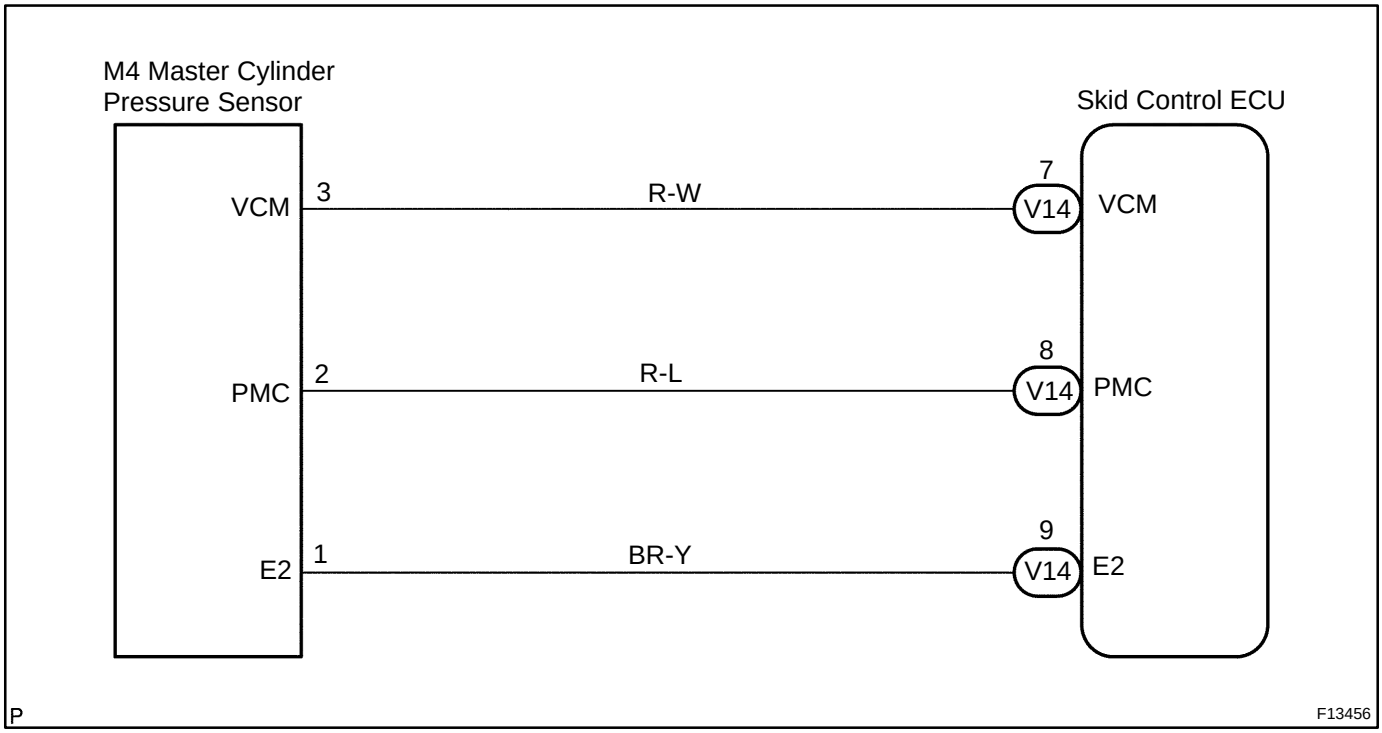
DI8AW-01

DTC	C1246 / 53	Master Cylinder Pressure Sensor Circuit

CIRCUIT DESCRIPTION

DTC No.	DTC Detecting Condition	Trouble Area
C1246 / 53	When any of the following 1. through 3. is detected: 1. The voltage of sensor signal is out of range (less than 0.25 V, more than 4.75 V). 2. The sensor supply voltage is out of range (above 5.6 V, below 4.4 V). 3. The sensor signal offset value is out of range.	• Master cylinder pressure sensor • Master cylinder pressure sensor circuit • Stop light switch circuit

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

HINT:

Start the inspection from step 1 in case of using the TOYOTA hand-held tester and start from step 2 in case of not using the TOYOTA hand-held tester.

1	**Check output value of the master cylinder pressure sensor.**

PREPARATION:

(a) Connect the TOYOTA hand-held tester to the DLC3.
(b) Turn the ignition switch ON and push the TOYOTA hand-held tester main switch ON.
(c) Select the DATALIST mode on the TOYOTA hand-held tester.

CHECK:

Check that the brake fluid pressure value of the master cylinder pressure sensor displayed on the TOYOTA hand-held tester is changing when depressing the brake pedal.

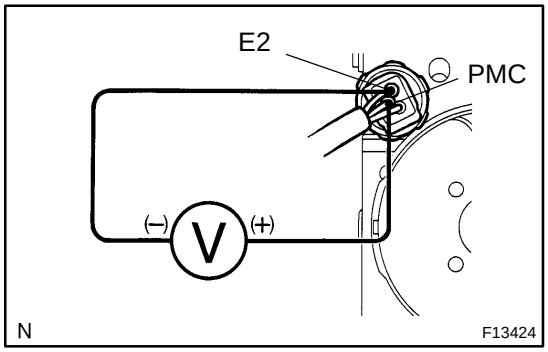
OK:

Brake fluid pressure value must be changing.
Voltage: 0.25 - 4.75 V

OK → **Go to step 4.**

NG

2	**Check master cylinder pressure sensor.**



PREPARATION:

Install LSPV gauge to the front caliper bleeder plug portion, and bleed the air from LSPV gauge.

SST 09709-29018

CHECK:

Start the engine and depress the brake pedal, then check the relation between the fluid pressure and voltage of PMC and E2 terminals of the master cylinder pressure sensor with connector still connected.

OK:

Front brake caliper fluid pressure	Voltage
0 kPa (0 Kgf/cm^2, 0 psi)	0.44 - 0.76 V
5,883 kPa (60 kgf/cm^2, 853 psi)	1.34 - 1.66 V
11,768 kPa (120 kgf/cm^2, 1,706 psi)	2.24 - 2.56 V

HINT:

Voltage between terminals VCM and E2: 4.7 - 5.3 V

NG → **Replace master cylinder pressure sensor.**

OK

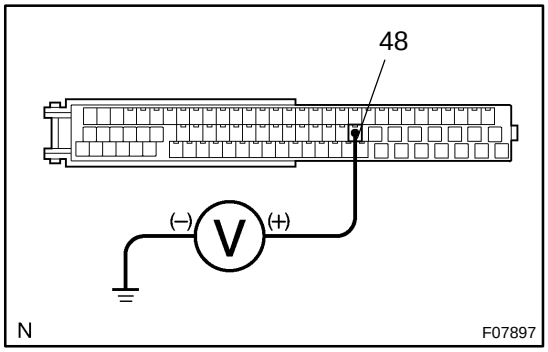
cardiagn.com

3	**Check for open and short circuit in harness and connector between master cylinder pressure sensor and skid control ECU (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

4	**Check voltage between terminal STP (48) of skid control ECU and body ground when the brake pedal is depressed and released.**



PREPARATION:

Disconnect the connector from the skid control ECU.

CHECK:

Measure the voltage between terminal 48 of skid control ECU harness side connector and body ground when the brake pedal is depressed and released.

OK:

Brake pedal	Voltage
depressed (Measure cylinder pressure valve ≧ 1.5 Mpa)	7.5 - 14 V
released	below 2.0 V

NG → **Check the stop light switch circuit (See page BE-35) and stop light switch.**

OK

Check and replace skid control ECU.

cardiagn.com

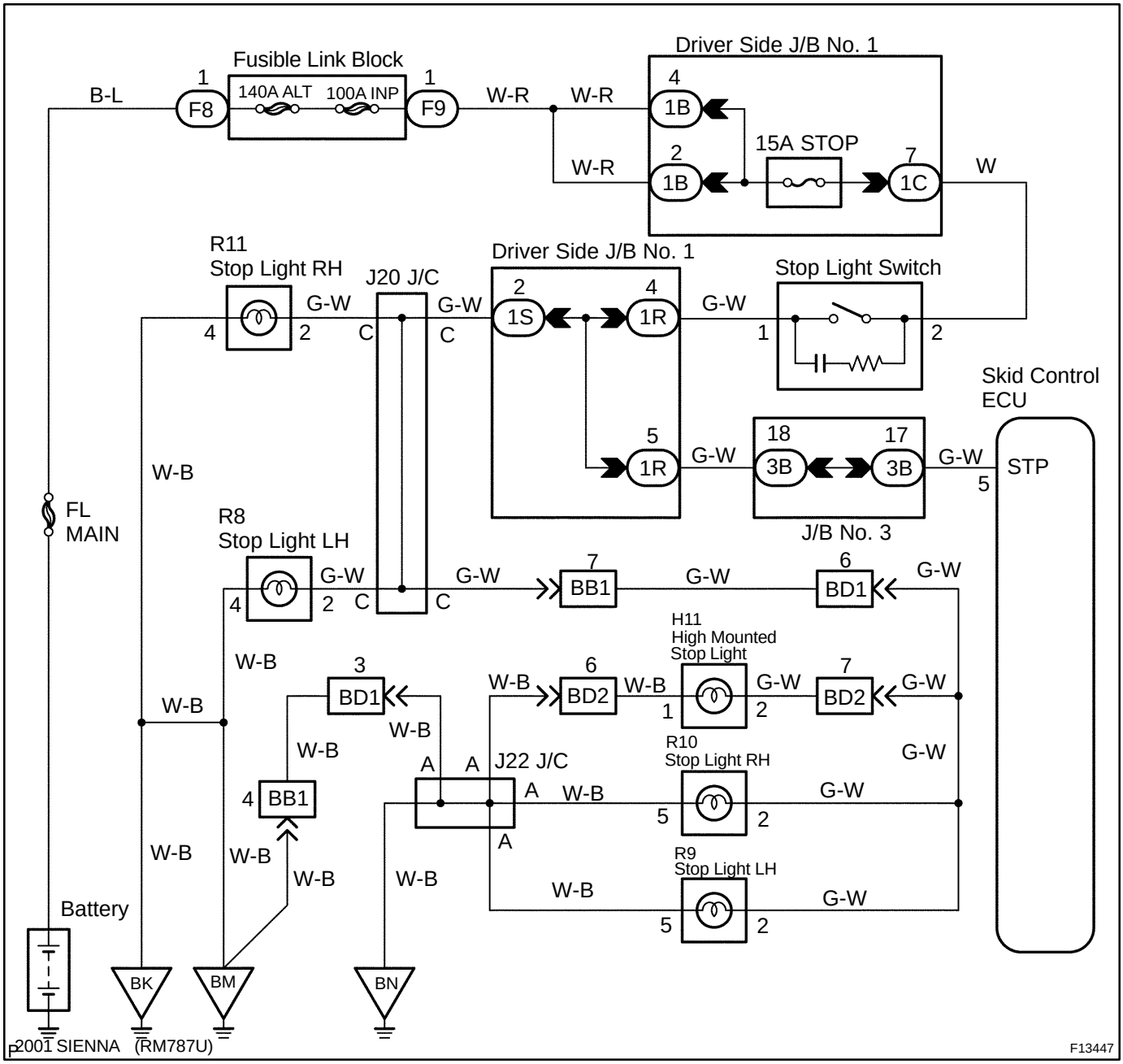
DI6O8-02

DTC	C1249 / 58	Stop Light Switch Circuit

CIRCUIT DESCRIPTION

DTC No.	DTC Detecting Condition	Trouble Area
C1249 / 58	When any of the following 1. through 3. is detected: 1. After the ignition switch is turned ON, the condition that the STP terminal voltage of ECU is 55 % to 75 % of supplied voltage, continues for 1 sec. or more. 2. Stop light lights up continuously for 60 seconds or more when vehicle speed is more than 10 km/h and master cylinder pressure is less than 0.5 Mpa. 3. Stop light doesn't light up for 2 seconds or more in spite of master cylinder pressure of 1 Mpa or more.	• Stop light switch • Stop light switch circuit • Stop light bulb

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check operation of stop light.**

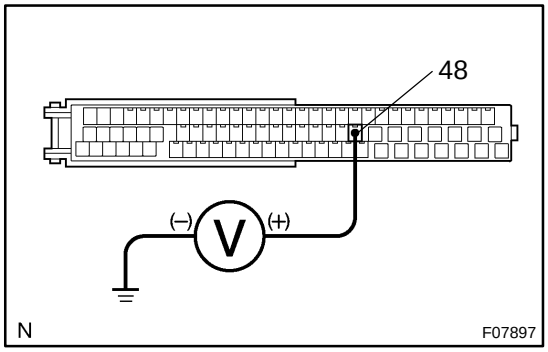
CHECK:

Check that the stop light lights up when the brake pedal is depressed and turns off when the brake pedal is released.

NG → **Check stop light circuit (See page BE-35).**

OK

2	**Check voltage between terminal STP (48) of skid control ECU and body ground.**



PREPARATION:

Disconnect the connector from the skid control ECU.

CHECK:

Measure the voltage between terminal 48 of skid control ECU harness side connector and body ground when the brake pedal is depressed.

OK:

Voltage: 7.5 - 14 V

OK → **Check and replace skid control ECU.**

NG

3	**Check for open circuit in harness and connector between terminal STP of skid control ECU and stop light switch (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

Proceed to next circuit inspection shown in problem symptoms table (See page DI-273).

cardiagn.com

DI6O9-02

DTC	C1300 / 62	Skid Control ECU Malfunction

CIRCUIT DESCRIPTION

DTC No.	DTC Detecting Condition	Trouble Area
C1300 / 62	Skid control ECU internal malfunction is detected.	• Skid control ECU

INSPECTION PROCEDURE

1	**Check the DTC for the ABS and VSC (See page DI-259).**

***1** → **Repair ABS and VSC control system according to the code output.**

***2**

Check if ECU is connected to malfunction indicator light.

*1: Output NG code
*2: Malfunction indicator light remains ON

cardiagn.com

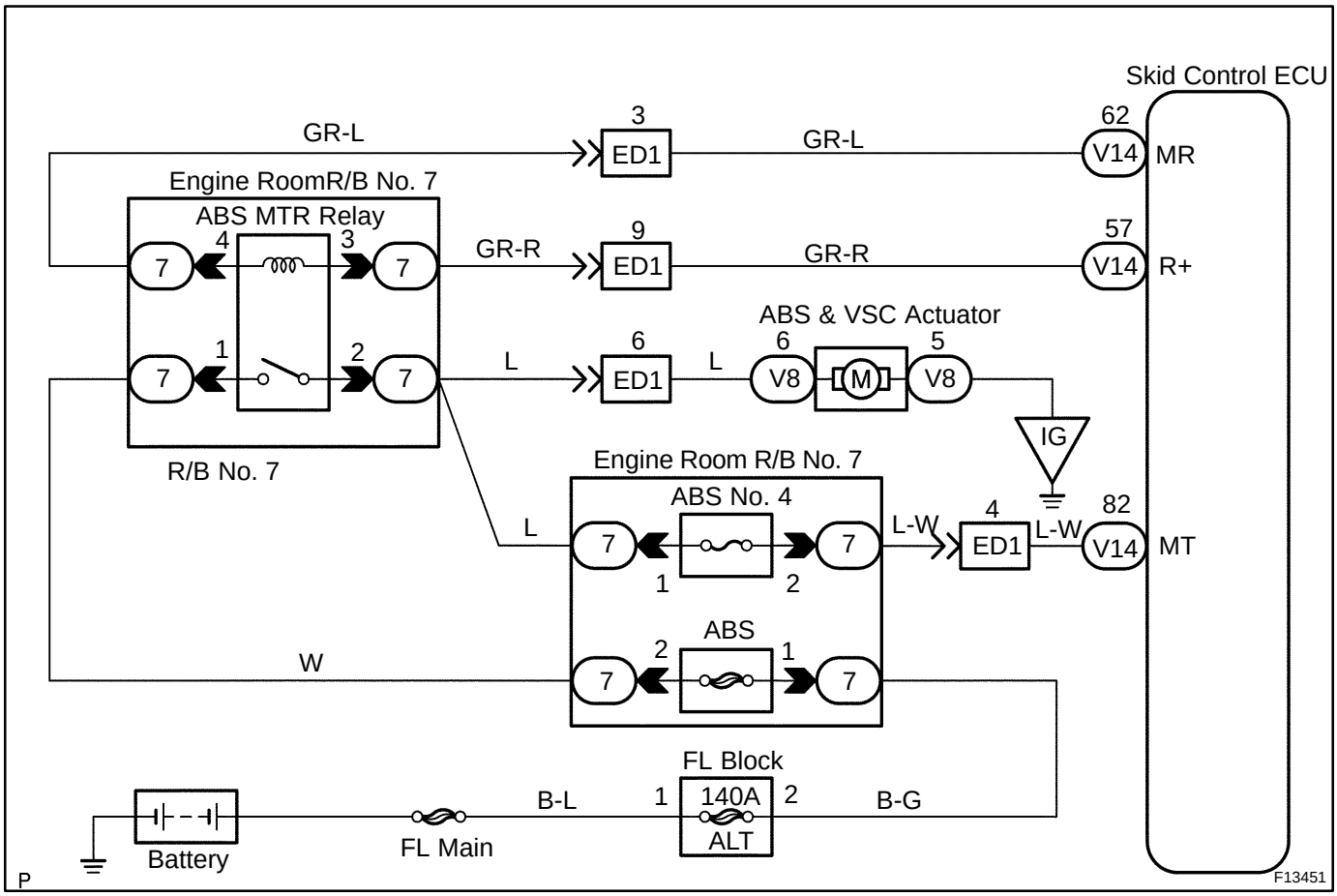
DI6OA-02

DTC	C1350 / 51	ABS & VSC Actuator Pump Motor Failure

CIRCUIT DESCRIPTION

DTC No.	DTC Detecting Condition	Trouble Area
C1350 / 51	When any of the following 1. through 3. is detected. 1. No motor voltage supply after actuation of the motor relay. 2. A high level of motor voltage with no actuation of the motor relay. 3. The pump motor voltage is high level for a certain time after the motor relay has elapsed.	• ABS & VSC actuator pump motor • ABS & VSC actuator pump motor circuit

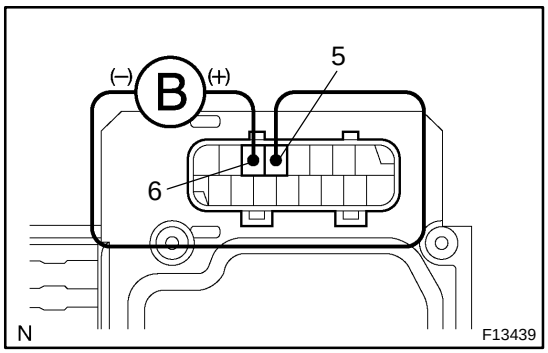
WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check operation of ABS & VSC actuator pump motor.**



PREPARATION:

Disconnect the connector from the ABS & VSC actuator.

CHECK:

Connect positive ⊕ lead to terminal 6 and negative ⊖ lead to terminal 5 of the ABS & VSC actuator, check that the pump motor is operated.

OK:

The running sound of the pump motor should be heard.

NG → **Replace ABS & VSC actuator.**

OK

2	**Check for open circuit in harness and connector between ABS MTR relay, ABS & VSC actuator and ECU (See page IN-31).**

OK → **Check and replace skid control ECU.**

NG

Repair or replace harness or connector.

cardiagn.com

DI6OC-02

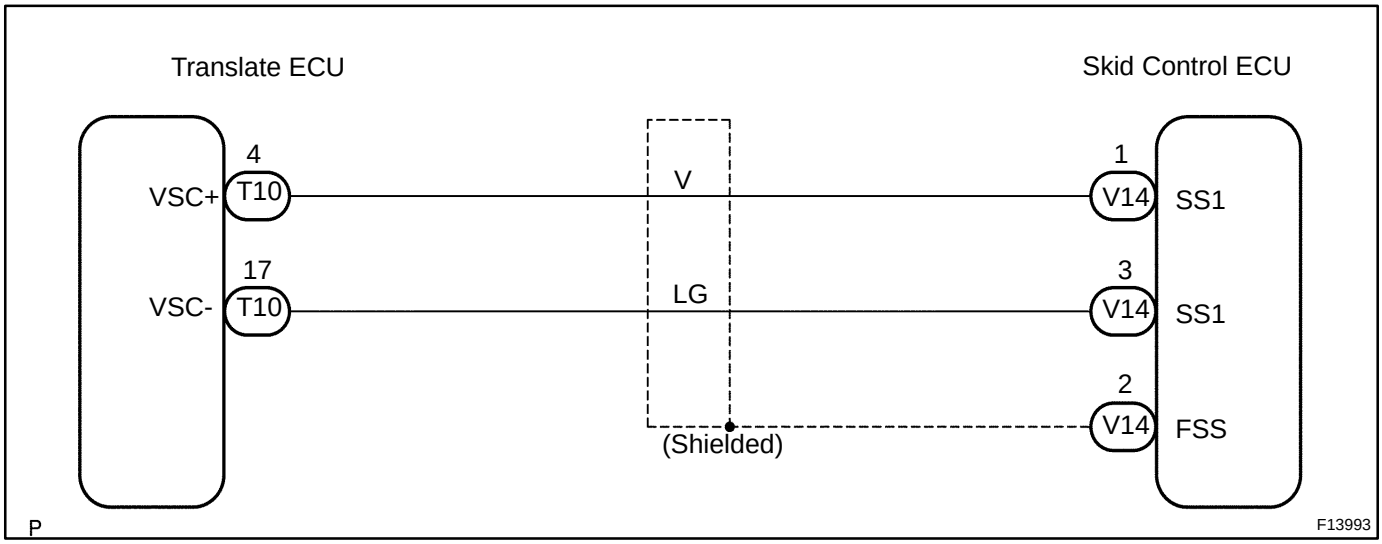
DTC	42	ECU Communication System Malfunction

CIRCUIT DESCRIPTION

The circuit is used to send TRAC & VSC control information from skid control ECU to the translate ECU (VSC+, VSC-), engine control information and steering angle information from translate ECU to skid control ECU

DTC No.	DTC Detecting Condition	Trouble Area
42	IG1 voltage is 9.5 V or more, and the condition that data from ECU can not be received continues for 5 sec. or more.	• VSC+ or VSC- circuit • Translate ECU • Brake fluid level • Steering angle sensor • Skid control ECU

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

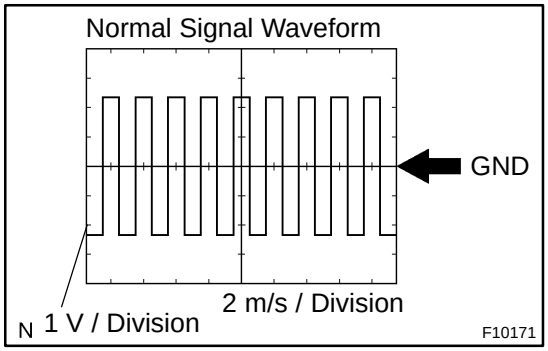
1	**Check DTC of translate ECU.**

Check DTC on page DI-259 **.**

YES → **Repair circuit indicated by the output code.**

NO

2	**Check translate ECU communication.**



REFERENCE: INSPECTION USING OSCILLOSCOPE

PREPARATION:

(a) Remove the translate ECU.

(b) Connect the oscilloscope to the terminal VSC+ (4) and GND (14) of the translate ECU harness side connector.

CHECK:

Start the engine, and check the signal waveform.

OK → **Check and replace skid control ECU.**

NG

3	**Check for open and short circuit in harness and connector between each of terminals VSC+ and VSC- of translate ECU and skid control ECU (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

Check and replace skid control ECU.

cardiagn.com

DI6OD-02

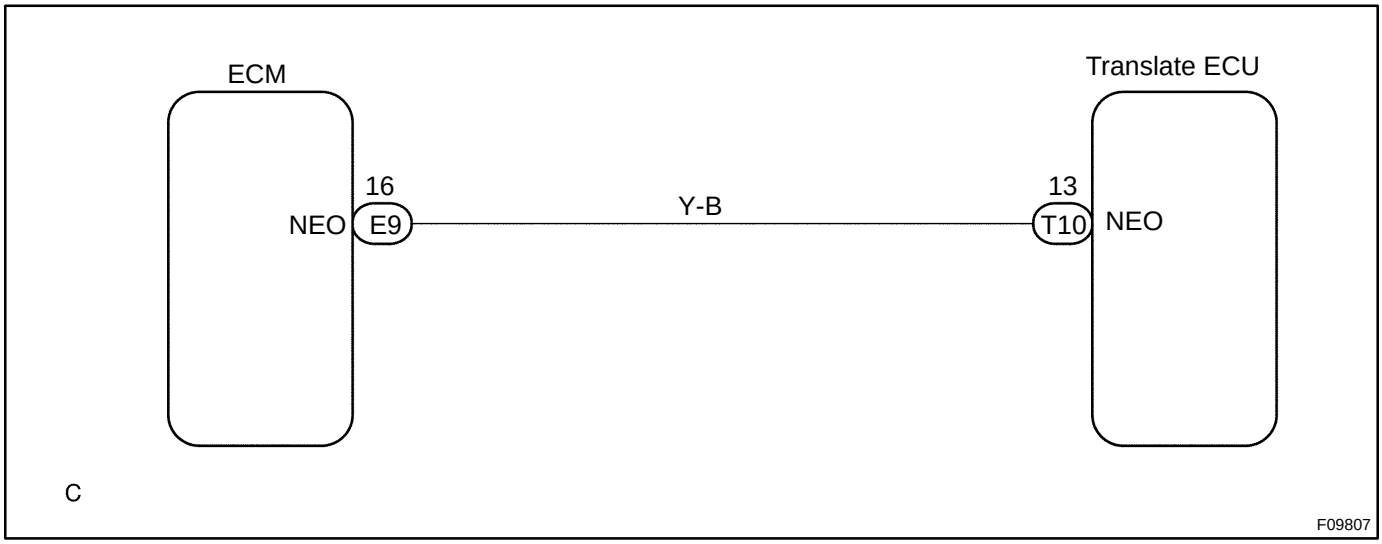
DTC	44	NEO Signal Circuit

CIRCUIT DESCRIPTION

The skid contol ECU receives engine revolution speed signals (NEO signal) from the ECM.

DTC No.	DTC Detecting Condition	Trouble Area
44	When either of the following 1. or 2. is detected: 1. The vehicle speed is 30 km/h (19 mph) or more, and open or short condition of the engine revolution signal under the normal communication condition with ECU continues for 10 sec. or more. 2. While cancel of cruise control is instructed from skid control ECU, open or short condition of the engine revolution signal continues for 0.24 sec. or more.	• NEO circuit • ECM • Translate ECU

WIRING DIAGRAM



cardiagn.com

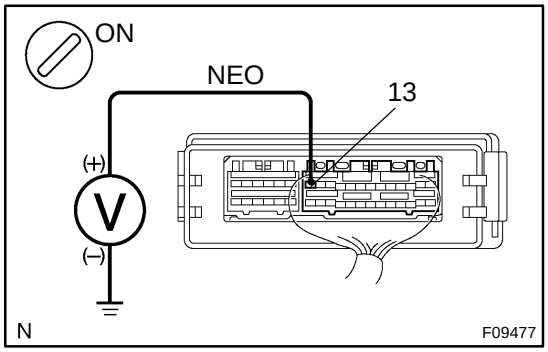
INSPECTION PROCEDURE

1	**Check for open and short circuit in harness and connector between terminal NEO of translate ECU and terminal NEO of ECM (See page IN-31).**

NG → **Repair or replace harness and connector.**

OK

2	**Check voltage between terminal NEO (13) of translate ECU and body ground.**



PREPARATION:

Remove the translate ECU with connectors still connected.

CHECK:

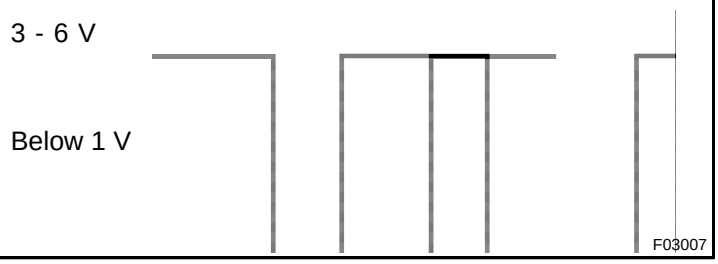
(a) Turn the ignition switch ON.

(b) Measure the voltage between terminal 13 of the translate ECU and body ground under the engine conditions below.

OK:

Engine condition	Voltage
OFF (IG ON)	3 - 6 V or below 1 V
ON (Idling)	3 - 6 V ↔ below 1 V (Pulse)

(Reference)



NG → **Check and replace ECM.**

OK

Check and replace transrate ECU.

If the same code is still output after the DTC is deleted, check the contact condition of each connection.

cardiagn.com

DI6OE-02

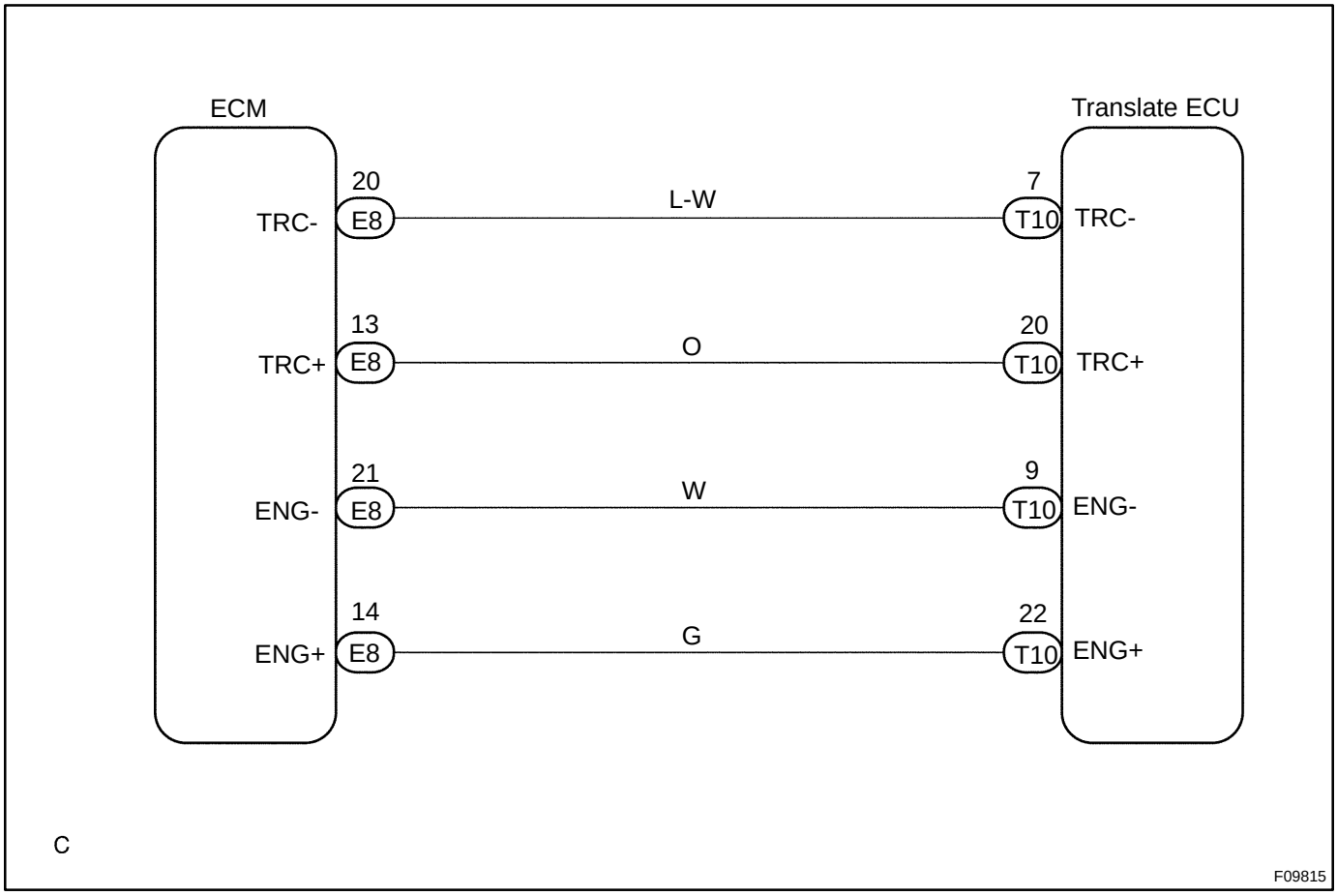
DTC	53	ECM Communication Circuit Malfunction

CIRCUIT DESCRIPTION

The circuit is used to send TRAC & VSC control information from the translate ECU to the ECM (TRC+, TRC-), and engine control information from the ECM to the translate ECU (ENG+, ENG-).

DTC No.	DTC Detecting Condition	Trouble Area
53	When any of the following 1. through 3. is detected : 1. IG1 voltage is 8.5 V or more, and the condition that data can not be sent to ECM continues for 5 sec. or more. 2. IG1 voltage is 8.5 V or more, engine speed is 500 r.p.m or more, and the condition that data can not be received from ECM continues for 5 sec. or more. 3. The condition that data can not be transmitted between the translate ECU and ECM occurs at least once within 5 sec. continues 10 consecutive times.	• TRC+ or TRC- circuit • ENG+ or ENG- circuit • ECM • Translate ECU

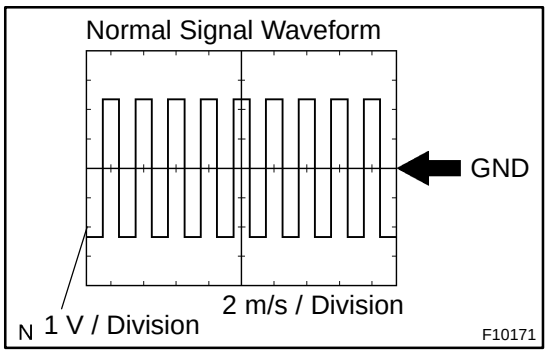
WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check translate ECU communication.**



REFERENCE: INSPECTION USING OSCILLOSCOPE

PREPARATION:

(a) Remove the translate ECU.

(b) Connect the oscilloscope to each of the terminals ENG+ or TRC+ and GND of the translate ECU harness side connector.

CHECK:

Start the engine, and check the signal waveform.

OK	**Check and replace translate ECU.**

NG

2	**Check for open and short circuit in harness and connector between each of terminals ENG+, ENG-, TRC+ and TRC- of translate ECU and ECM (See page IN-31).**

NG	**Repair or replace harness or connector.**

OK

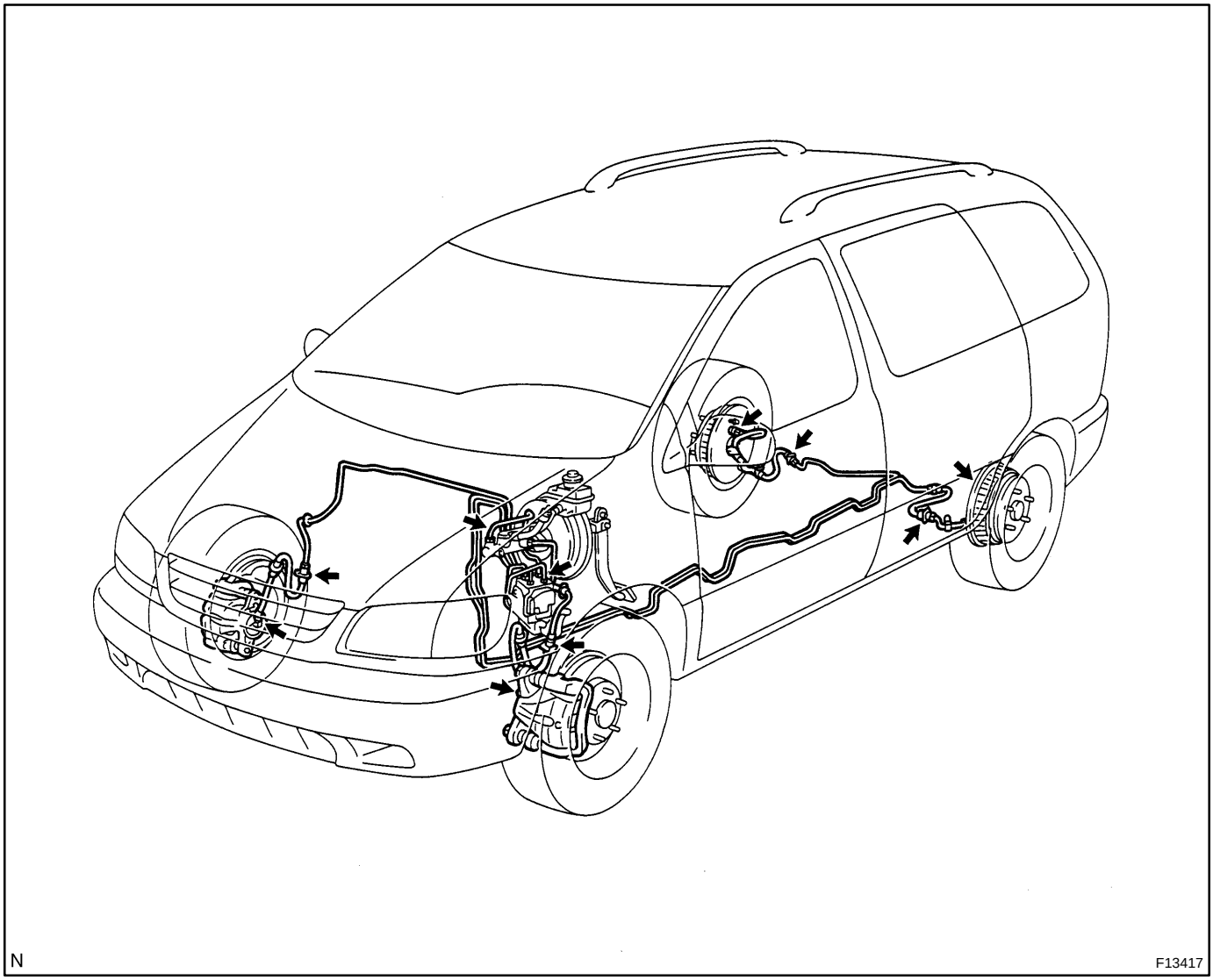
Check and replace ECM.

cardiagn.com

DI6OQ-02

Check for Fluid Leakage

Check for fluid leakage from actuator or hydraulic lines.



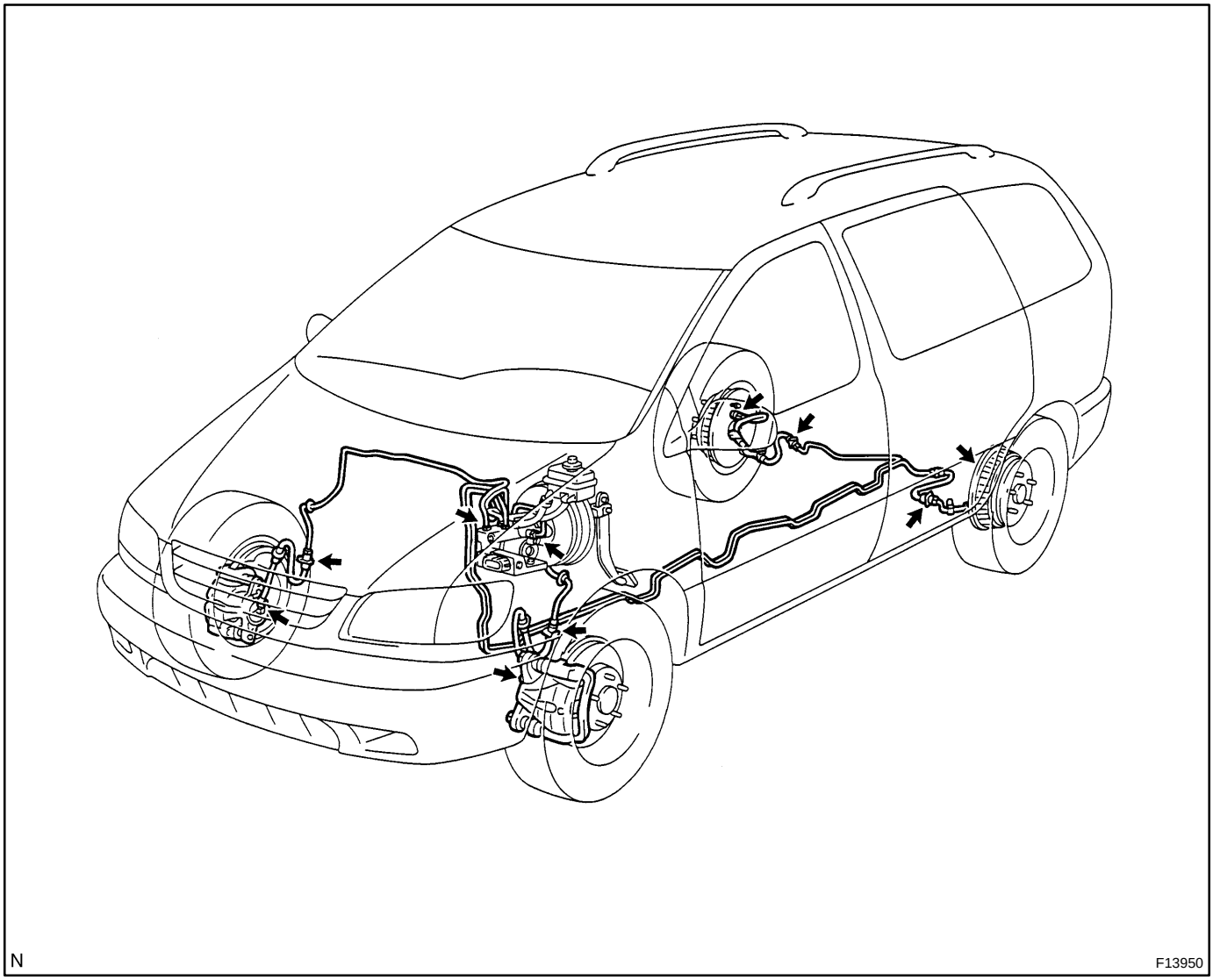
N F13417

cardiagn.com

DI04B-16

Check for Fluid Leakage

Check for fluid leakage from actuator or hydraulic lines.



N

F13950

cardiagn.com

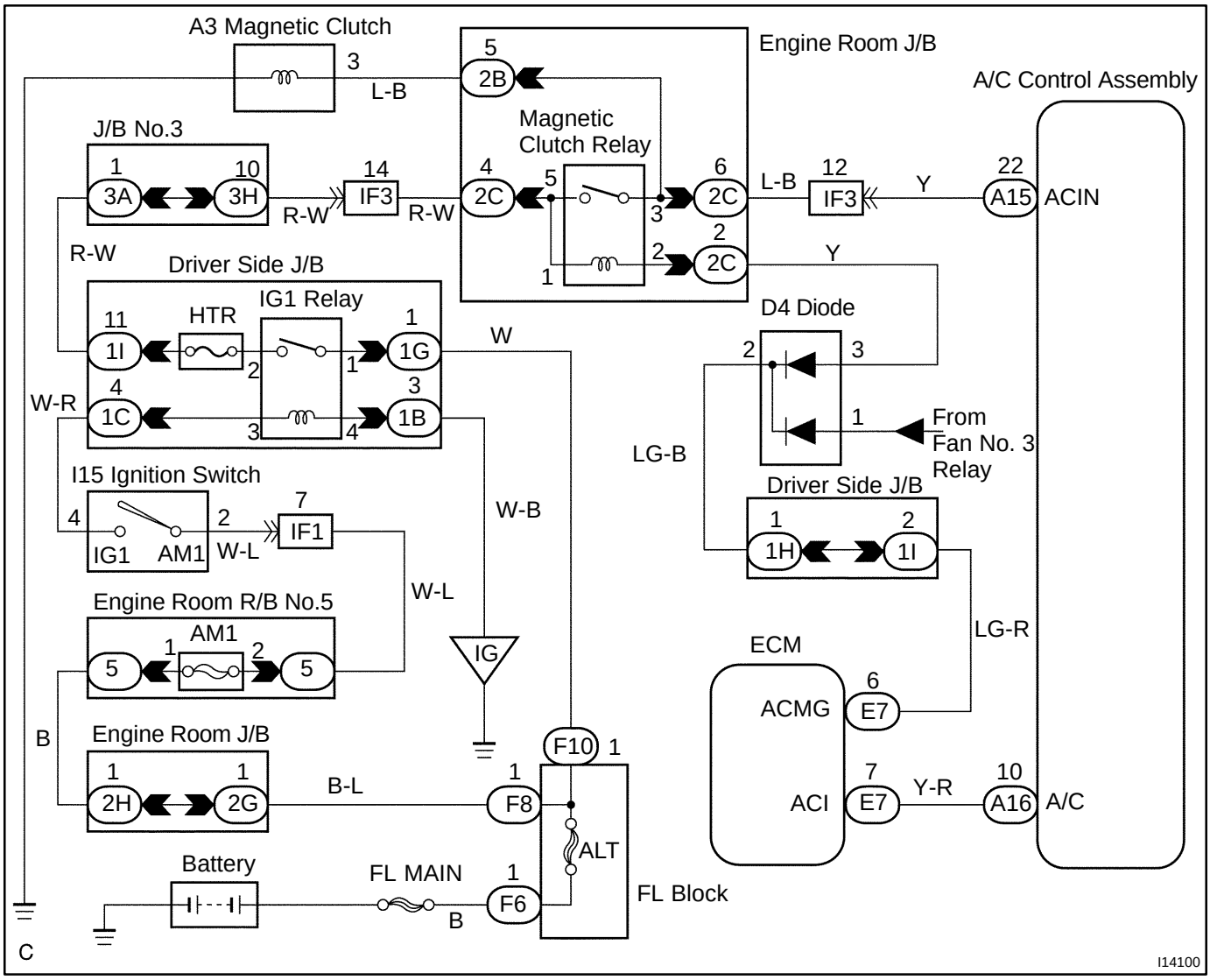
DI6RT-02

Compressor Circuit

CIRCUIT DESCRIPTION

The A/C control assembly outputs the magnetic clutch ON signal from terminal AC1 to the ECM. When the ECM receives this signal, it sends a signal from terminal ACON and switches the A/C magnetic clutch relay ON, thus turning on the A/C magnetic clutch.

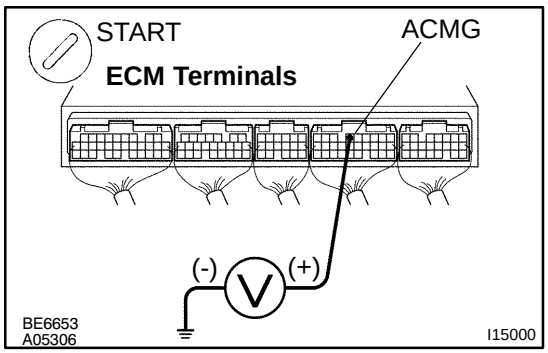
WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check voltage between terminal ACMG of ECM and body ground.**



CHECK:

(a) Start engine.
(b) Push AUTO SW.
(c) Measure voltage between terminal ACMG of ECM connector and body ground when A/C switch is On and OFF.

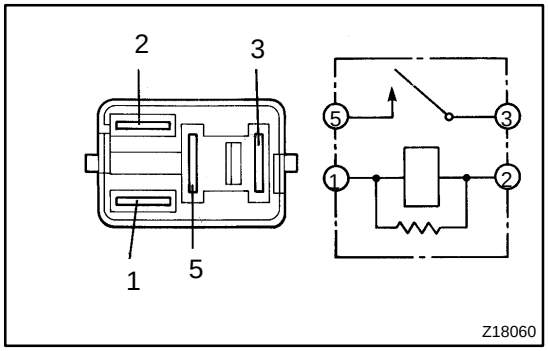
OK:

A/C switch	Voltage
ON	10 - 14 V
OFF	0 V

NG → **Go to step 5.**

OK

2	**Check magnetic clutch relay.**



PREPARATION:

Remove magnetic clutch relay from engine room J/B.

CHECK:

Check continuity between each pair of terminals shown below of magnetic clutch relay.

OK:

Tester connection	Specified condition
1 - 2	62.5 - 90.9 Ω
3 - 5	No continuity

PREPARATION:

Apply battery positive (+) voltage between terminals 1 and 2.

CHECK:

Check continuity between terminals 3 and 5.

OK:

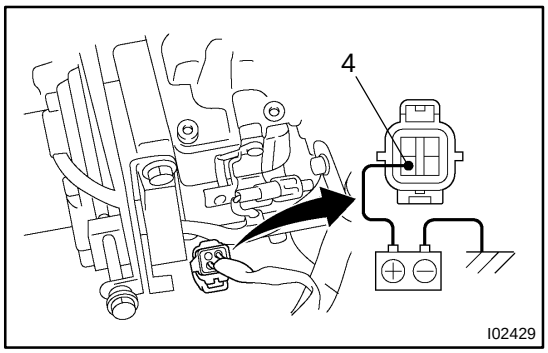
Continuity exists.

NG → **Replace magnetic clutch relay.**

OK

cardiagn.com

3	Check A/C magnetic clutch.



PREPARATION:
Disconnect magnetic clutch connector.
CHECK:
Connect positive (+) lead connected to battery to magnetic clutch connector terminal 3.
OK:
Magnetic clutch is energized.

NG → **Repair A/C magnetic clutch.**

OK

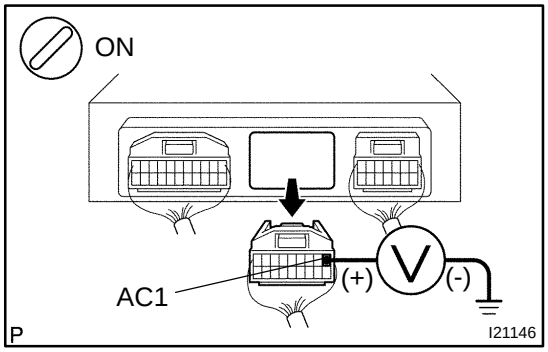
4	Check harness and connector between magnetic clutch relay and ECM, A/C compressor and body ground (See page IN-31).

NG → **Repair or replace harness or connector.**

OK

Proceed to next circuit inspection shown on problem symptons table (See page DI-697).

5	Check voltage between terminal AC1 of A/C control assembly connector side and body ground.



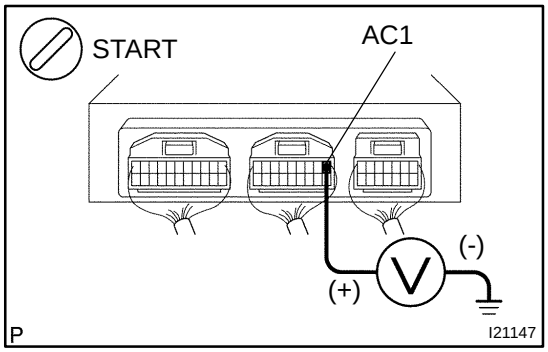
PREPARATION:
(a) Disconnect A/C control assembly connector.
(b) Turn ignition switch ON.
CHECK:
Check voltage between terminal AC1 of A/C control assembly harness side connector.
OK:
Voltage : 10 - 14 V

NG → **Check and replace ECM.**

OK

cardiagn.com

6	**Check voltage between terminal AC1 of A/C control assembly connector and body ground.**



PREPARATION:

(a) Remove A/C control assembly with connector still connected.

(b) Start the engine and push AUTO switch.

CHECK:

Check the voltage between terminal AC1 of A/C control assembly connector and body ground when magnetic clutch is ON and OFF by A/C switch.

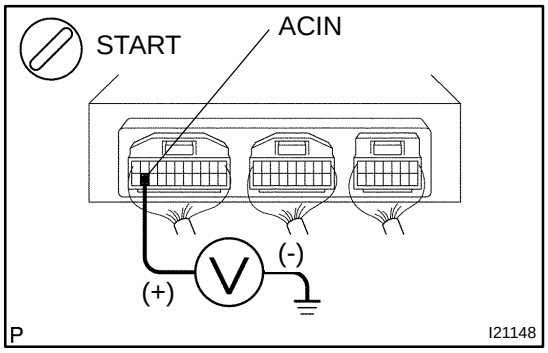
OK:

Magnetic clutch	Voltage
ON	Below 1 V
OFF	10 - 14 V

NG → **Check and replace A/C control assembly.**

OK

7	**Check voltage between terminal ACIN of A/C control assembly and body ground.**



PREPARATION:

(a) Remove A/C control assembly with connectors still connected.

(b) Start the engine and push AUTO switch.

CHECK:

Check the voltage between terminal ACIN of A/C control assembly and body ground.

OK:

Magnetic clutch	Voltage
ON	10 - 14 V
OFF	Below 1.5 V

NG → **Check and replace A/C control assembly.**

OK

cardiagn.com

8	**Check harness and connector between magnetic clutch relay and A/C control assembly, compressor and body ground (See page IN-21).**

NG → **Repair or replace harness or connector.**

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI-697).

cardiagn.com

DI092-04

Actuator Control Cable

INSPECTION PROCEDURE

1	**Actuator control cable inspection**

OK:

(a) Check that the actuator, control cable throttle link are properly installed and that the cable and link are connected correctly.

(b) Check that the actuator and bell crank are operating smoothly.

(c) Check that the cable is not loose or too tight.

OK:

Freeplay: less than 10 mm

HINT:

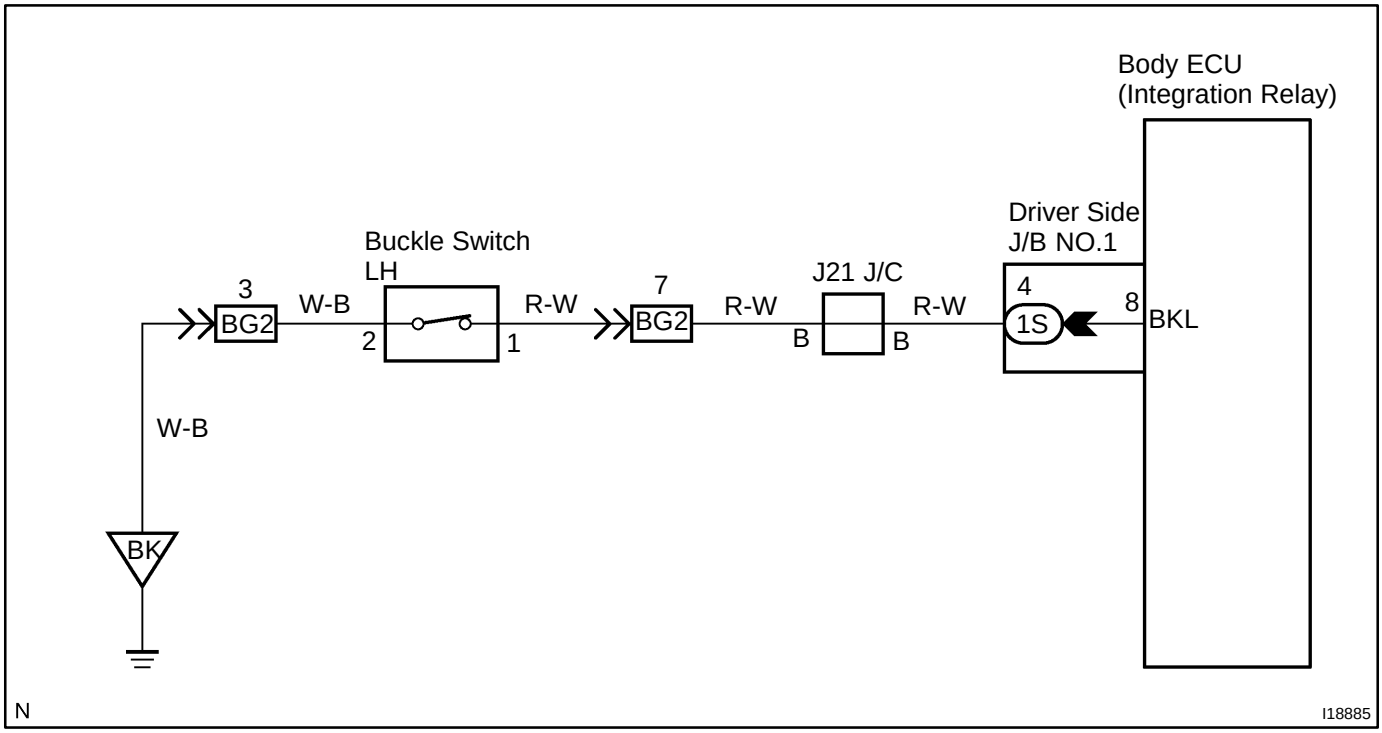
- If the control cable is very loose, the vehicle's loss of speed going uphill will be large.
- If the control cable is too tight, the idle RPM will become high.

cardiagn.com

DI6LY-03

Driver buckle switch circuit

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	Check driver buckle switch. (See page BE-43)

NG → Replace the driver buckle switch.

OK

2	Check wireharness and connector between driver buckle switch and body ground (See page IN-31).

NG → Repair or replace wireharness or connector.

OK

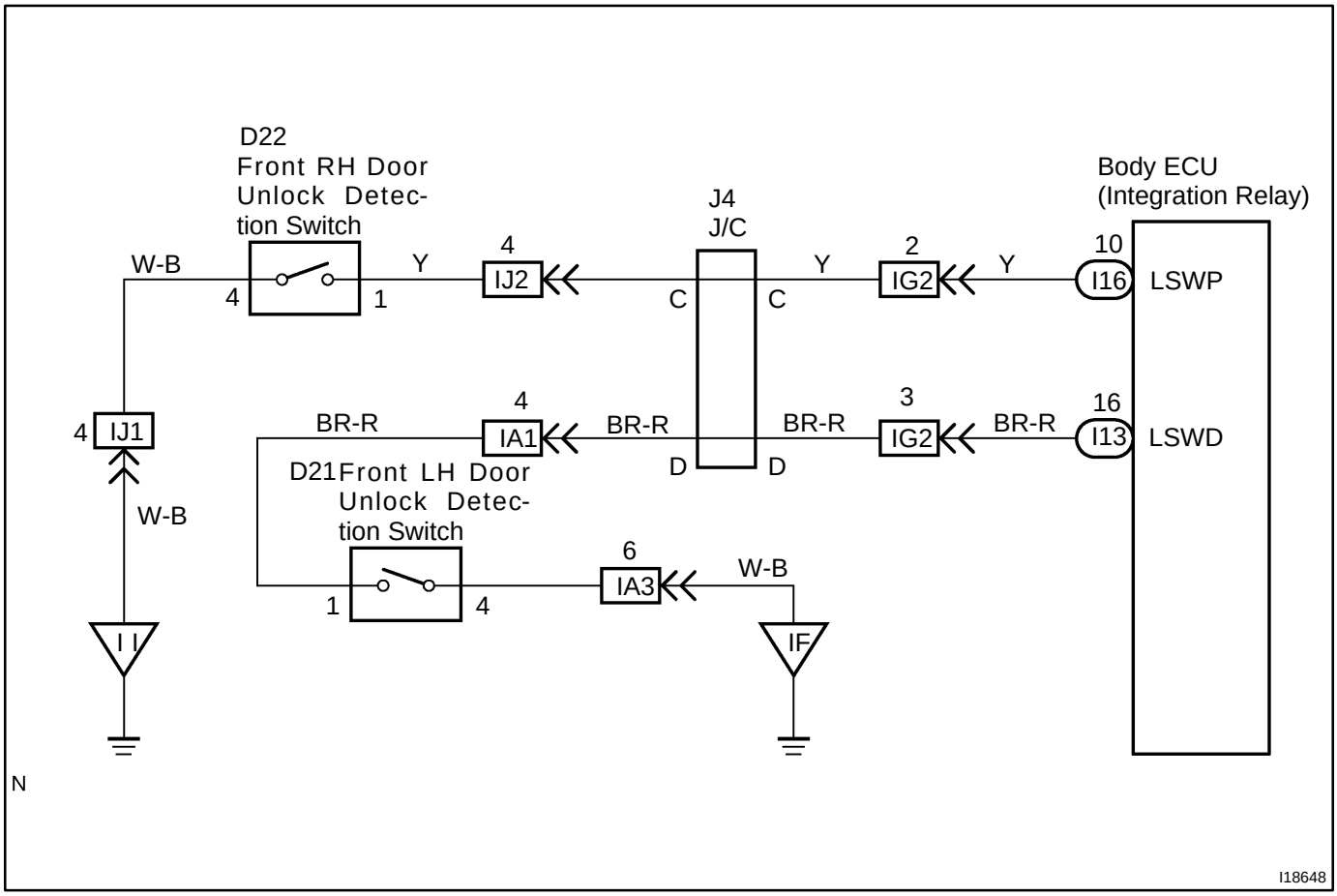
Proceed to next circuit inspection shown on problem symptoms table (See page DI-636).

cardiagn.com

DI8AJ-01

Unlock detection switch circuit

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	Check door unlock detection switch. (See page BE-73)

NG → Replace the door lock assembly.

OK

2	Check wireharness and connector between door unlock detection switch and body ground (See page IN-31).

NG → Repair or replace wireharness or connector.

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI-636).

cardiagn.com

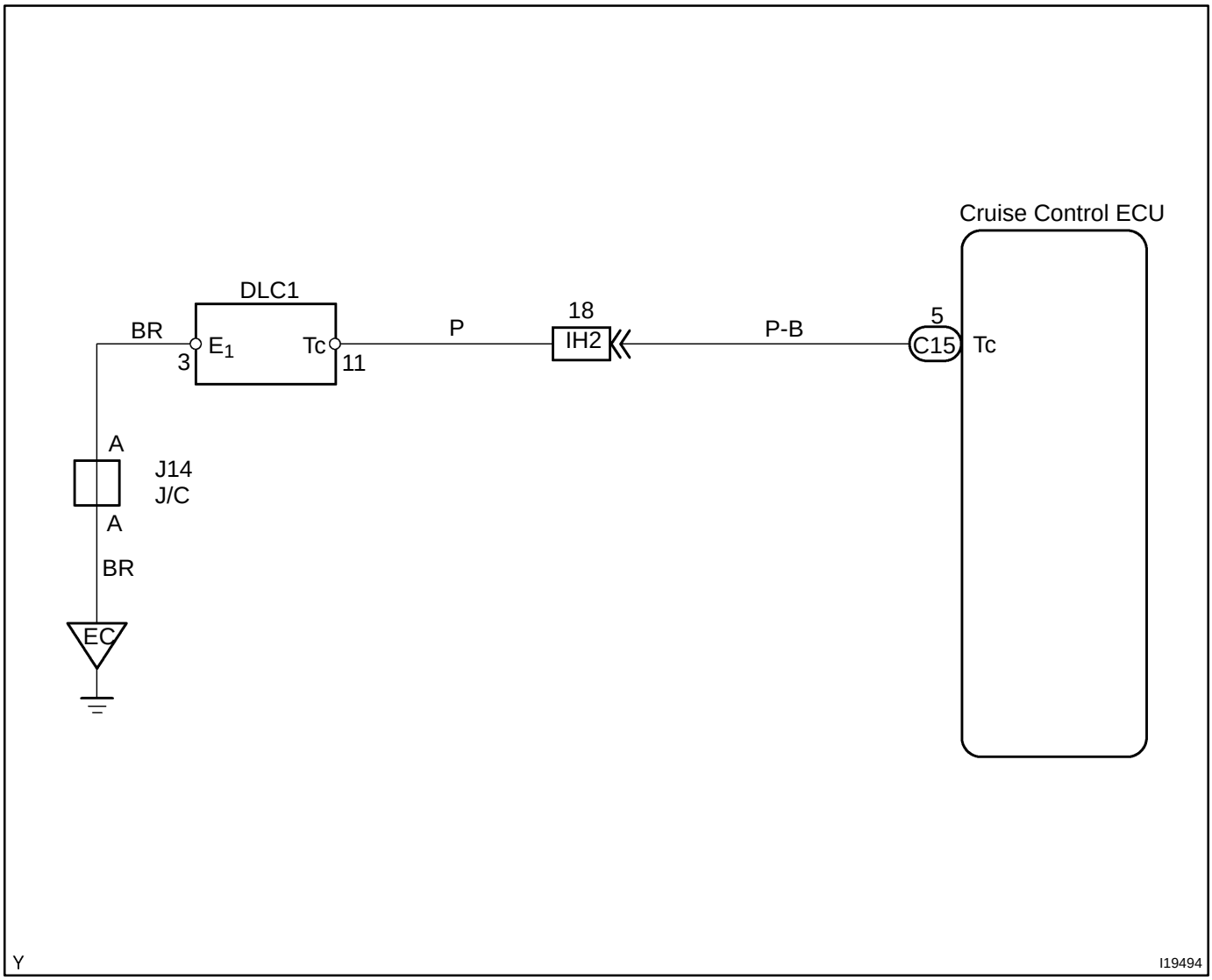
DI091-25

Diagnosis Circuit

CIRCUIT DESCRIPTION

This circuit sends a signal to the ECU that DTC output is required.

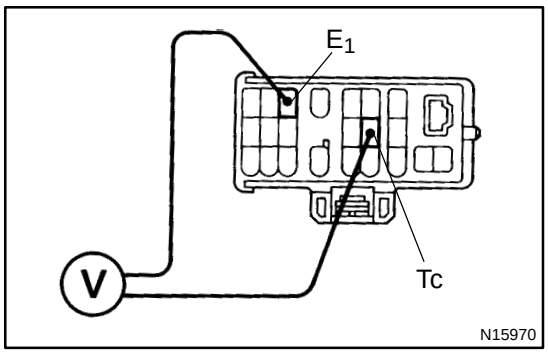
WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check voltage between terminals Tc and E_1 of DLC2.**



PREPARATION:
Turn ignition switch ON.
CHECK:
Measure voltage between terminals Tc and E_1 of DLC2.
OK:
Voltage: 10 - 14 V

OK → **Proceed to next circuit inspection shown on problem symptom table (See page DI-572).**

NG

2	**Check harness and connector between cruise control ECU and DLC2, DLC2 and body ground (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

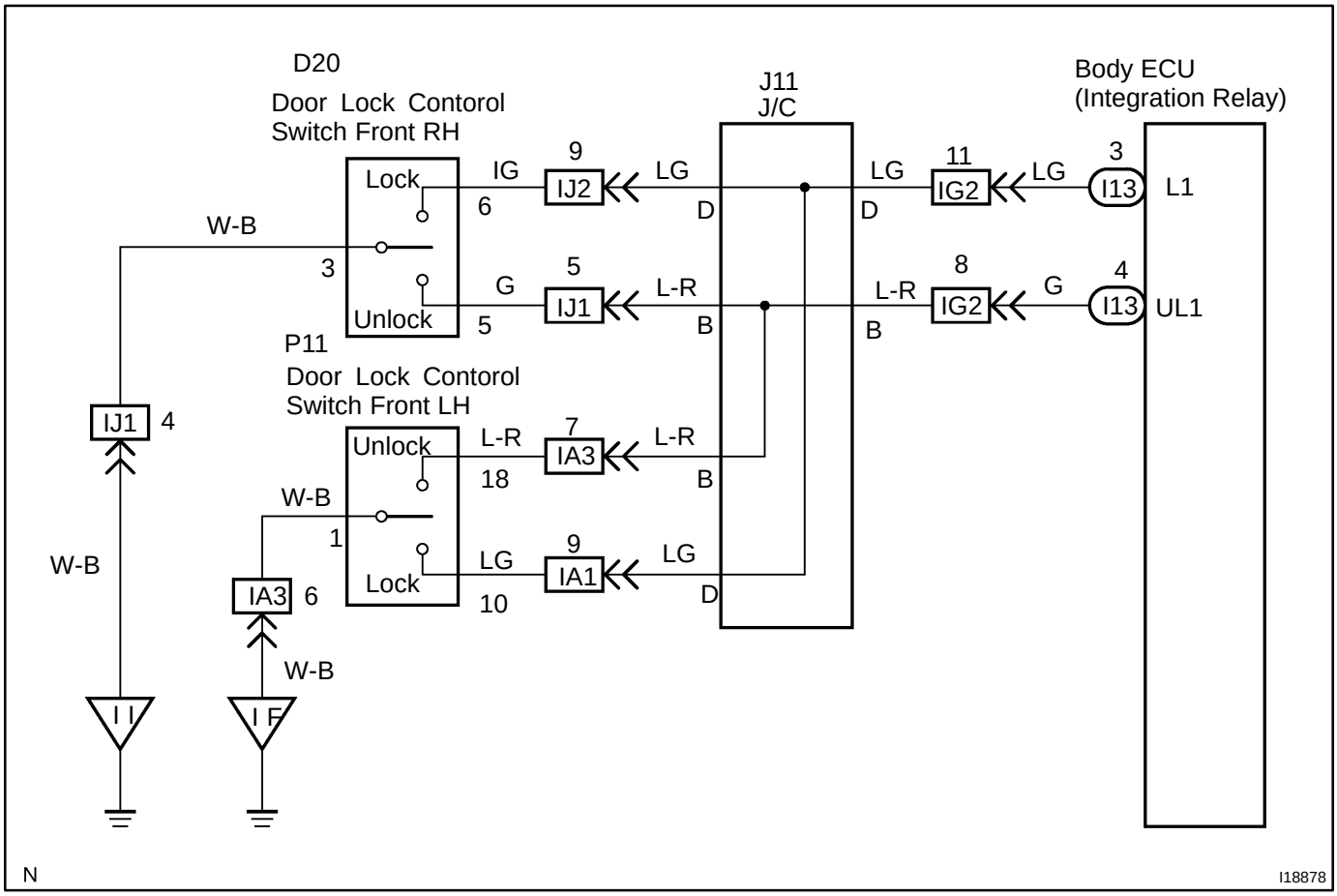
Check and replace cruise control ECU (See page IN-31).

cardiagn.com

DI8AH-01

Manual Door Lock Switch Circuit

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	Check door lock contorol switch. (See page BE-73)

NG → Replace the door lock contorol switch.

OK

2	Check wireharness and connector between door lock contorol switch and body ground (See page IN-31).

NG → Repair or replace wireharness or connector.

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI-636).

cardiagn.com

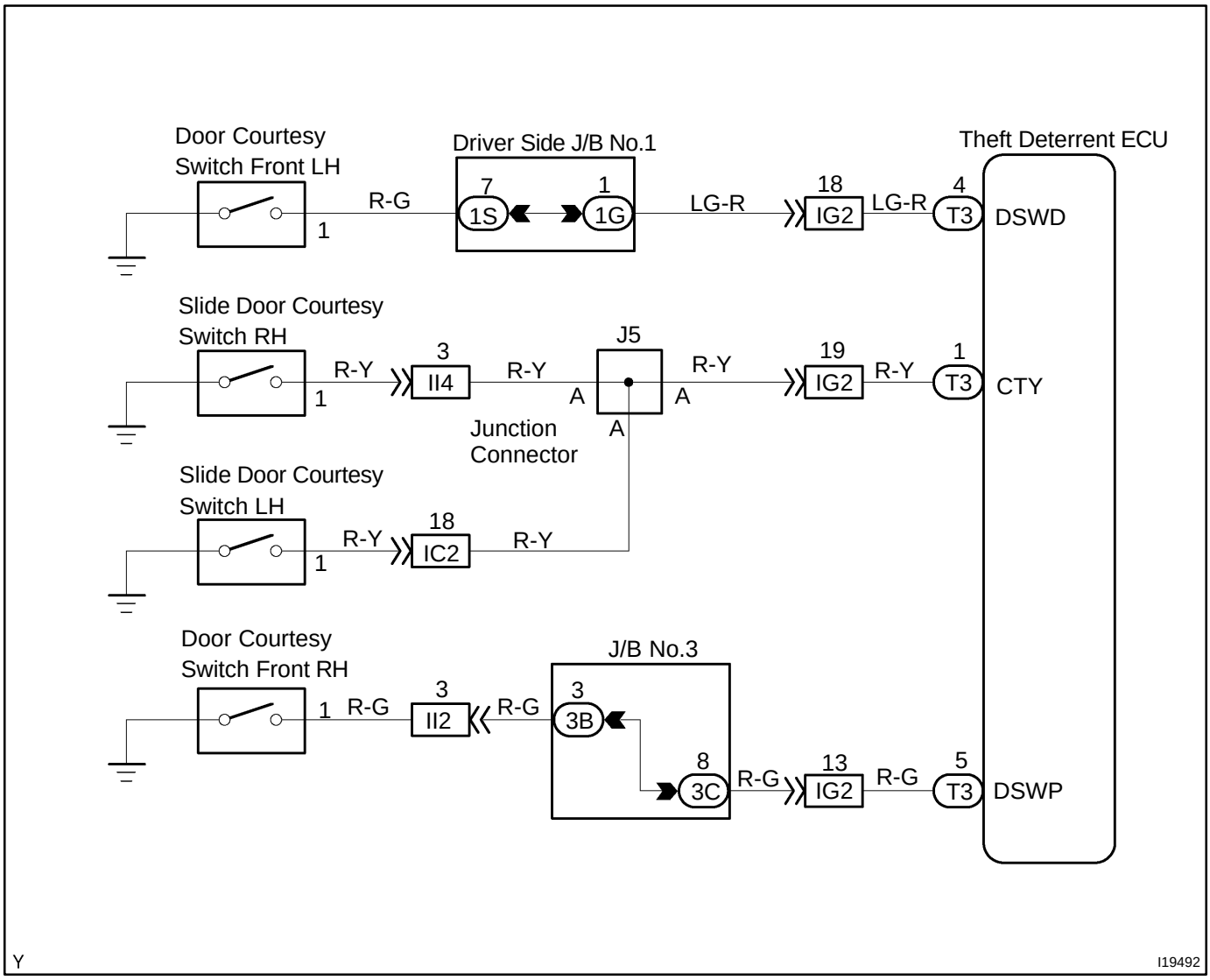
DI075-08

Door Courtesy Switch Circuit

CIRCUIT DESCRIPTION

The door courtesy switch goes ON when the door is opened and goes OFF when the door is closed.

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check operation of open door warning light.**

CHECK:

Check that open door warning light comes ON when each door is opened, and goes OFF when all doors are closed.

NG → **Check and repair open door warning light circuit.**

OK

2	**Check for open in harness and connector between theft deterrent ECU and door courtesy switch (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

Check and replace theft deterrent ECU.*1

*1: When there is a malfunction that prevents the theft deterrent system from being set, proceed to the next numbered circuit inspection shown in matrix chart (See page DI-532).

cardiagn.com

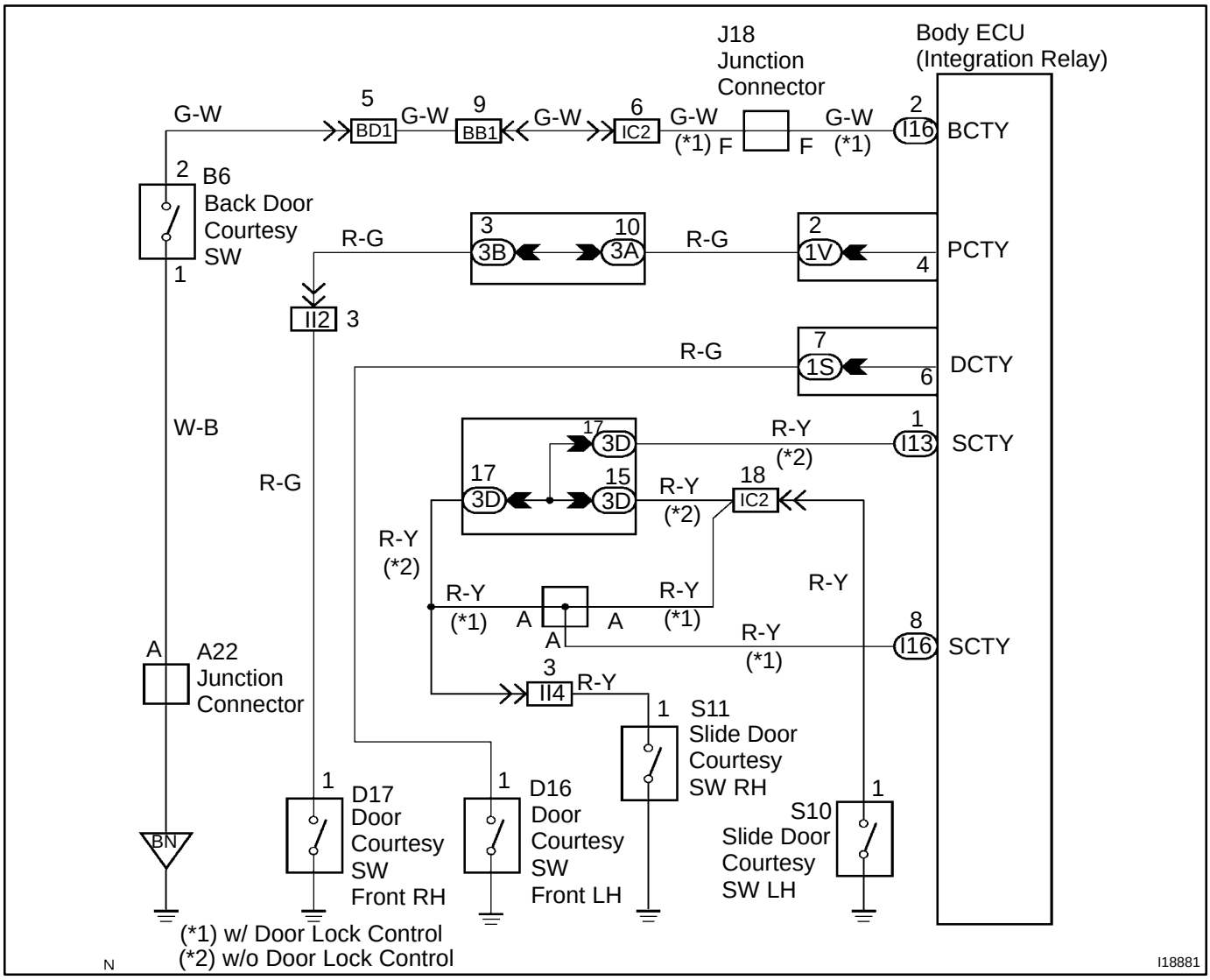
DI6LP-03

Door courtesy switch circuit

CIRCUIT DESCRIPTION

The door courtesy switch goes on when the door is opened and goes off when door is closed.

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check operation of door courtesy light.**

CHECK:

Check that door courtesy light comes on when door opened, and goes off when door is closed.

OK:

Must be operated normally.

OK → **Proceed to next circuit inspection shown on problem symptom table (See page DI-636).**

NG

2	**Check courtesy switch (See page BE-31).**

NG → **Replace the courtesy switch.**

OK

3	**Check wireharness and connector between courtesy light and body ECU, courtesy switch and body door ECU (See page IN-31).**

NG → **Repair or replace wireharness or connector.**

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI-636).

cardiagn.com

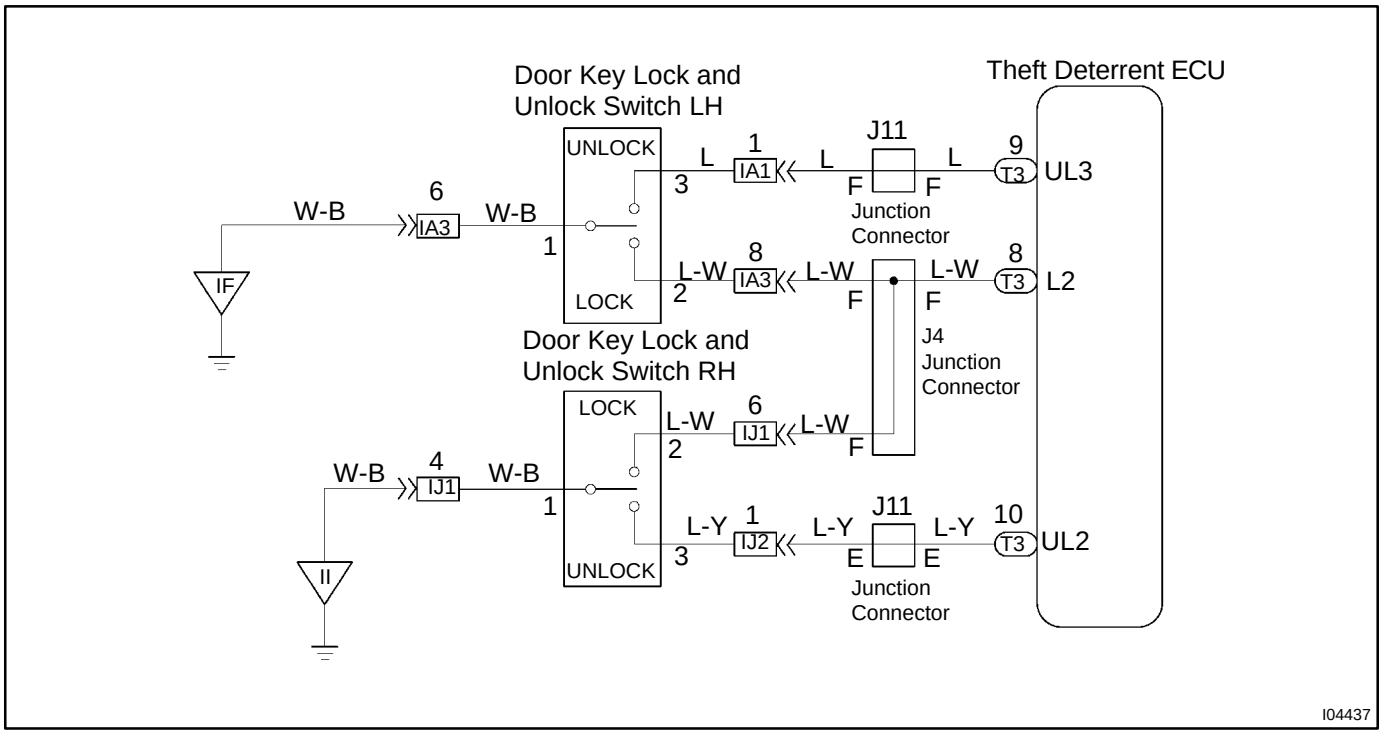
DI073-09

Door Key Lock and Unlock Switch Circuit

CIRCUIT DESCRIPTION

The door key lock and unlock switch is built in the door key cylinder. When the key is turned to the lock side, terminal 1 of the switch is grounded and when the key is turned to the unlock side, terminal 2 of the switch is grounded.

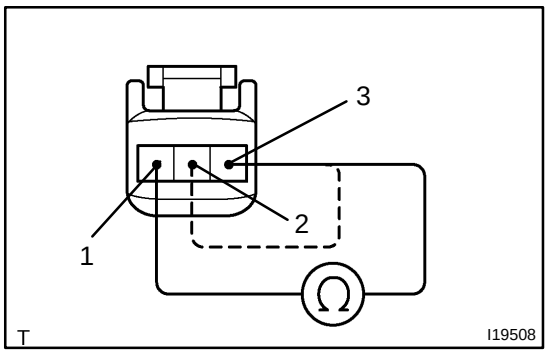
WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check door key lock and unlock switch.**



PREPARATION:

(a) Remove the door trim and service hole cover.

(b) Disconnect the door key lock and unlock switch connector.

CHECK:

Check continuity between terminals 1, 2 and 3 of door key lock and unlock switch connector, when each of door key lock and unlock switch is turned to the lock side, unlock side and not turned.

OK:

Switch position	Tester connection	Specified condition
Lock side	2 - 1	Continuity
Unlock side	3 - 1	Continuity
OFF	-	No continuity

NG → **Replace door key lock and unlock switch.**

OK ↓

2	**Check harness and connectors between ECU and switch, switch and body ground (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK ↓

Check and replace theft deterrent ECU.*1

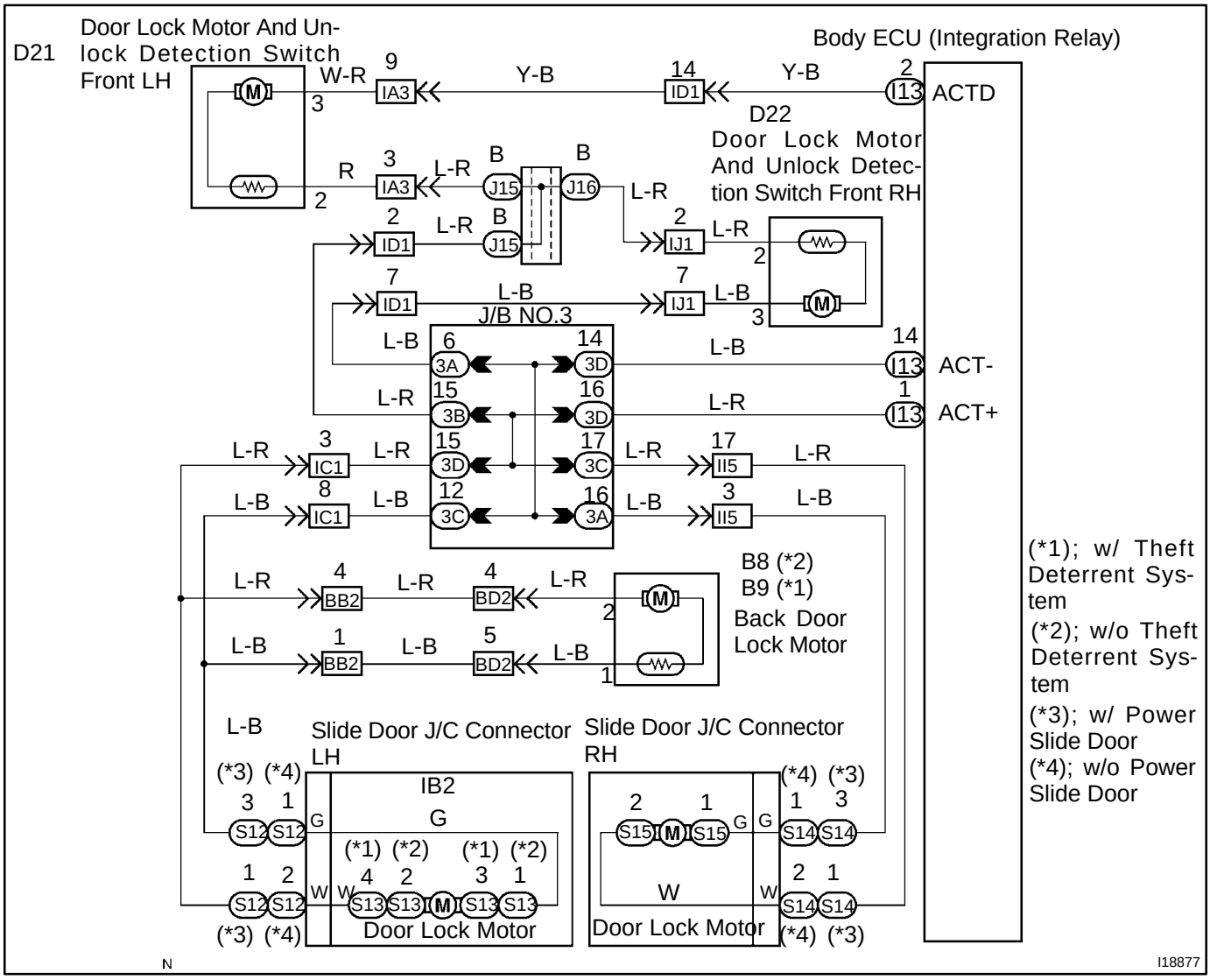
*1: When there is a malfunction that pjrevents the theft deterrent system from being set, proceed to the next numbered circuit inspection shown in matrix chart (See page DI-532).

cardiagn.com

DI6LQ-03

Door lock motor circuit

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	Check door lock motor. (See page BE-73)

NG → Replace the door lock motor.

OK

2	Check wireharness and connector between door lock motor and body ECU. (See page IN-31)

NG → Repair or replace wireharness or connector.

OK

Proceed to next circuit inspection shown on problem symptoms table. (See page DI-636)

cardiagn.com

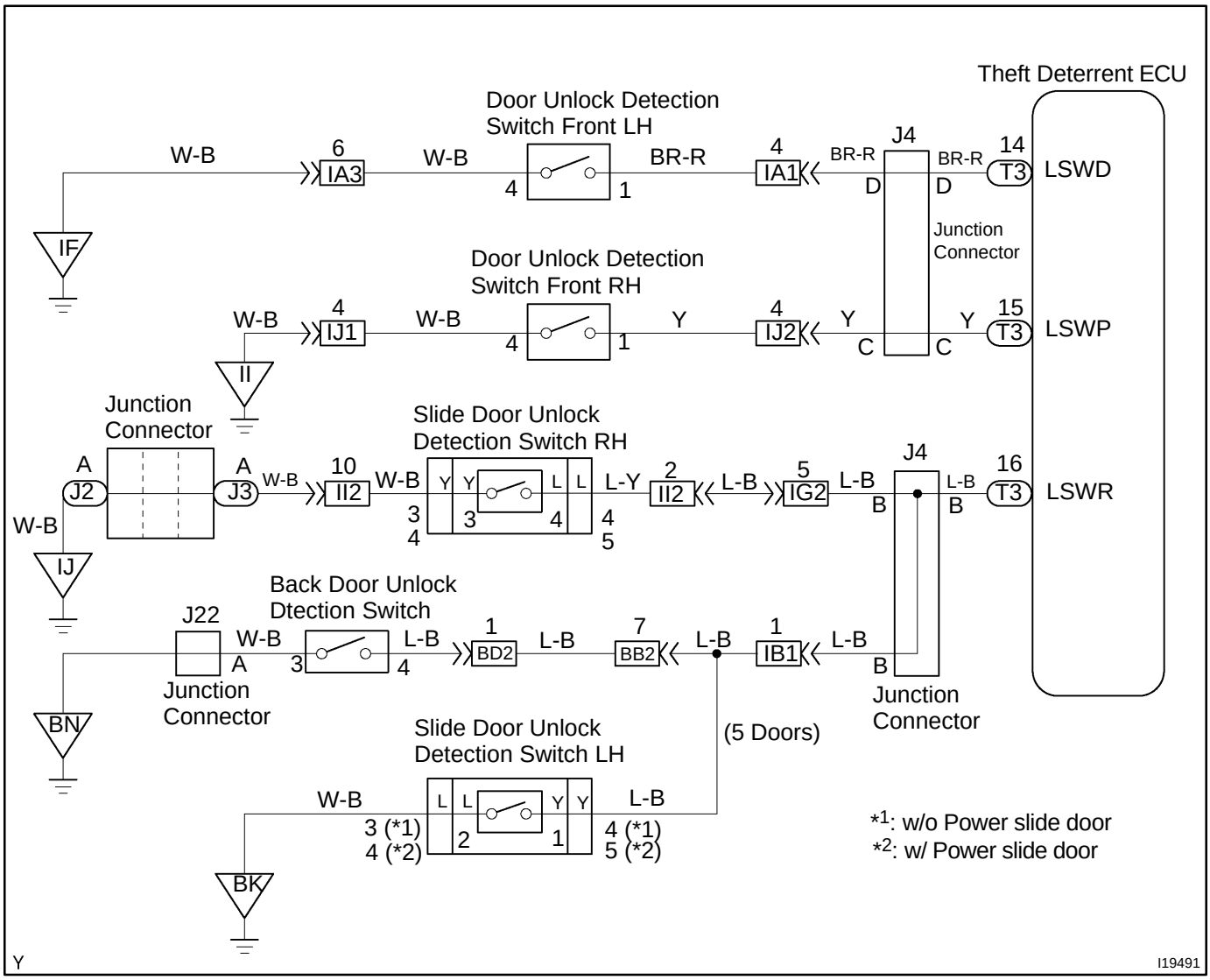
DI074-10

Door Unlock Detection Switch Circuit

CIRCUIT DESCRIPTION

The door unlock detection switch is built in the door lock motor assembly. This switch is ON when the door lock knob is in the unlock position and OFF when the lock knob is in the lock position. The ECU detects the door lock knob conditions in this circuit. It is used as one of the operating conditions for the key confinement prevention function.

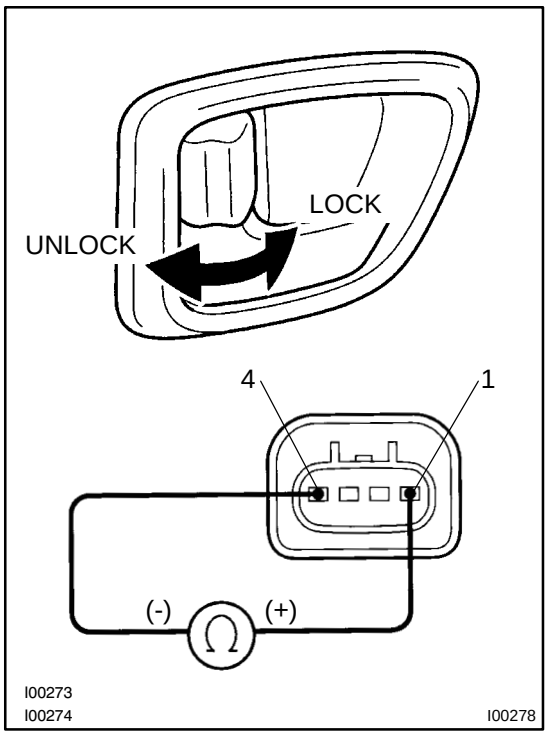
WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check Door Unlock Detection Switch.**



PREPARATION:

(a) Remove the door trim and service hole cover.

(b) Disconnect door unlock detection switch connector.

CHECK:

Check continuity between terminals 1 and 4 of door unlock detection switch connector, when the door lock knob is operated to the lock side and unlock side.

OK:

Switch Condition	Tester connection	Specified condition
Door unlock	1 - 4	Continuity
Door lock	-	No continuity

NG → **Replace door unlock detection switch.**

OK ↓

2	**Check harness and connectors between ECU and door unlock detection switch, door unlock detection switch and body ground (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK ↓

Check and replace theft deterrent ECU.*1

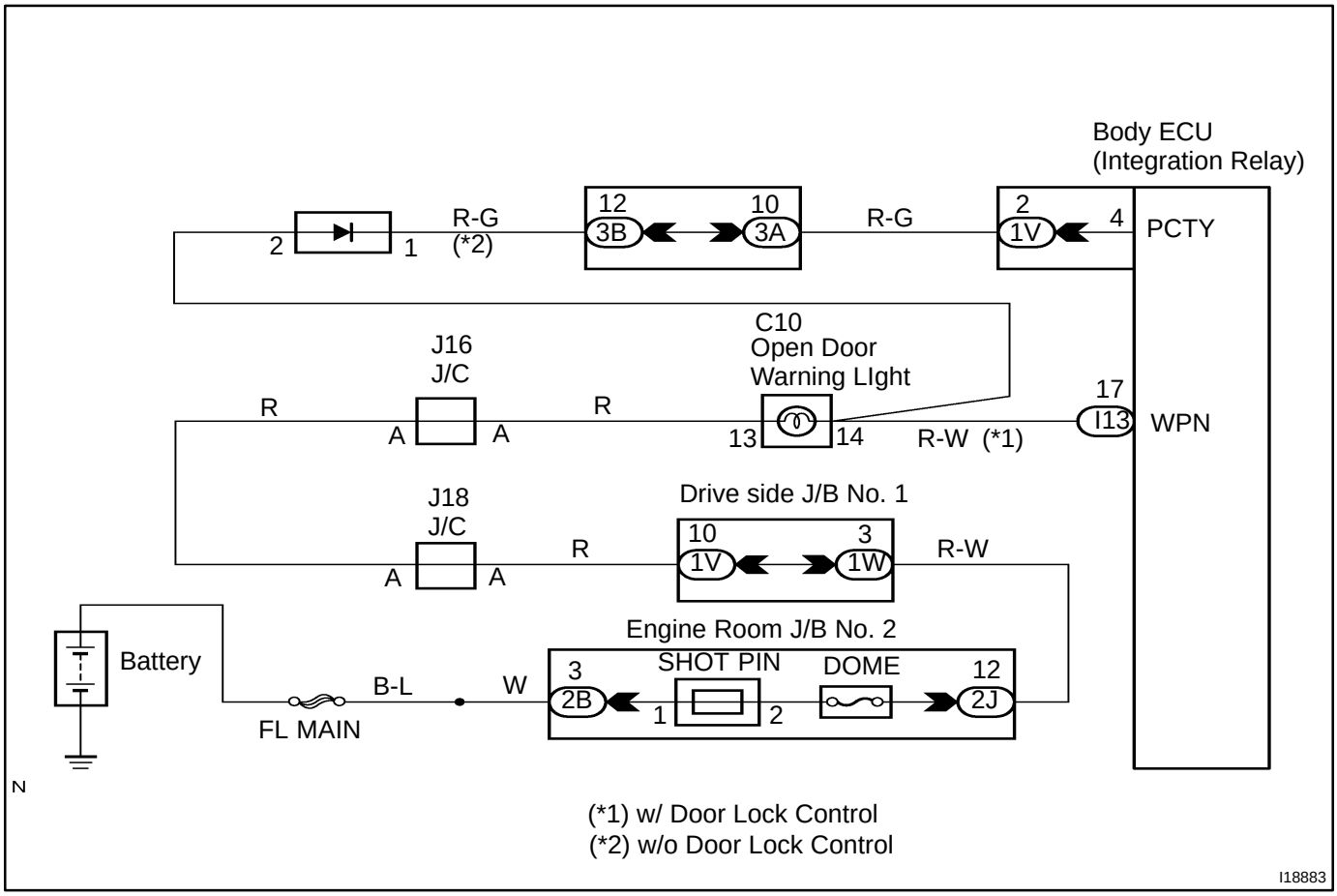
*1: When there is a malfunction that prevents the theft deterrent system from being set, proceed to the next numbered circuit inspection shown in matrix chart (See page DI-532).

cardiagn.com

DI8AL-01

Open door warnig light circuit

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check DOOR Fuse and open door warnig light.**

CHECK:

Check continuity of DOOR and open door warning light.

OK:

Continuity

NG → **Replace the failure fuse.**

OK

2	**Check wireharness and connector between Integration Relay and Battery.**

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page DI-636).**

NG

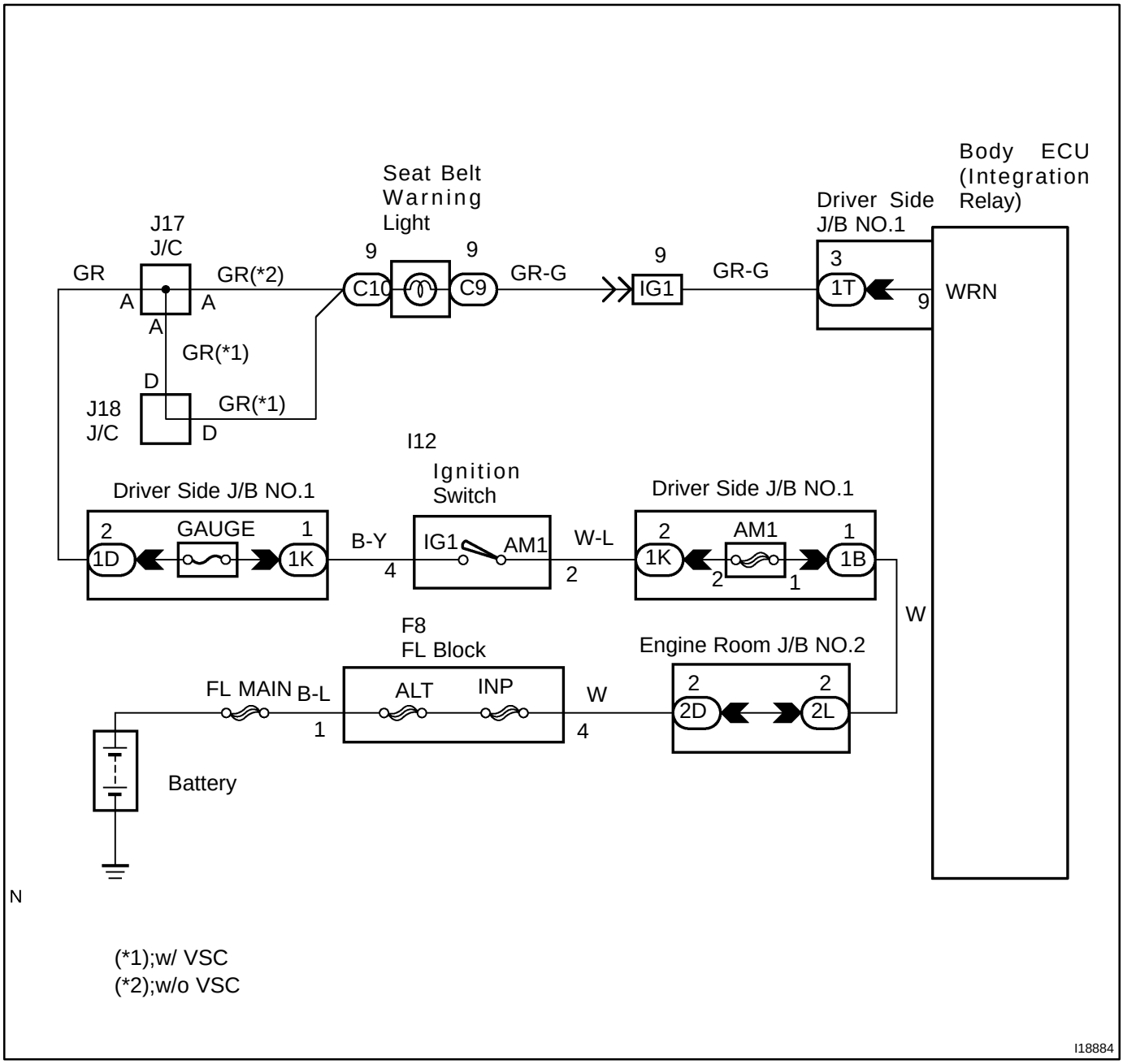
Repair or replace wireharness or connector.

cardiagn.com

DI8AM-01

Driver seat belt wanig light circuit

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check GAUGE fuse.**

CHECK:
Check continuity of GAUGE fuse.
OK:
Continuity

NG → **Replace the failure fuse.**

OK

2	**Check Wireharness and connector between Integration Relay and Battery.**

PREPARATION:
(a) Turn ignition switch ON.
(b) Disconnect the instrument panel integration ECU.
CHECK:
Measure voltage between terminals of instrument panel integration ECU connector.
OK:
Voltage: 10 - 14V

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page DI-636).**

NG

Repair or replace wireharness or connector.

cardiagn.com

DI3F4-05

CIRCUIT INSPECTION

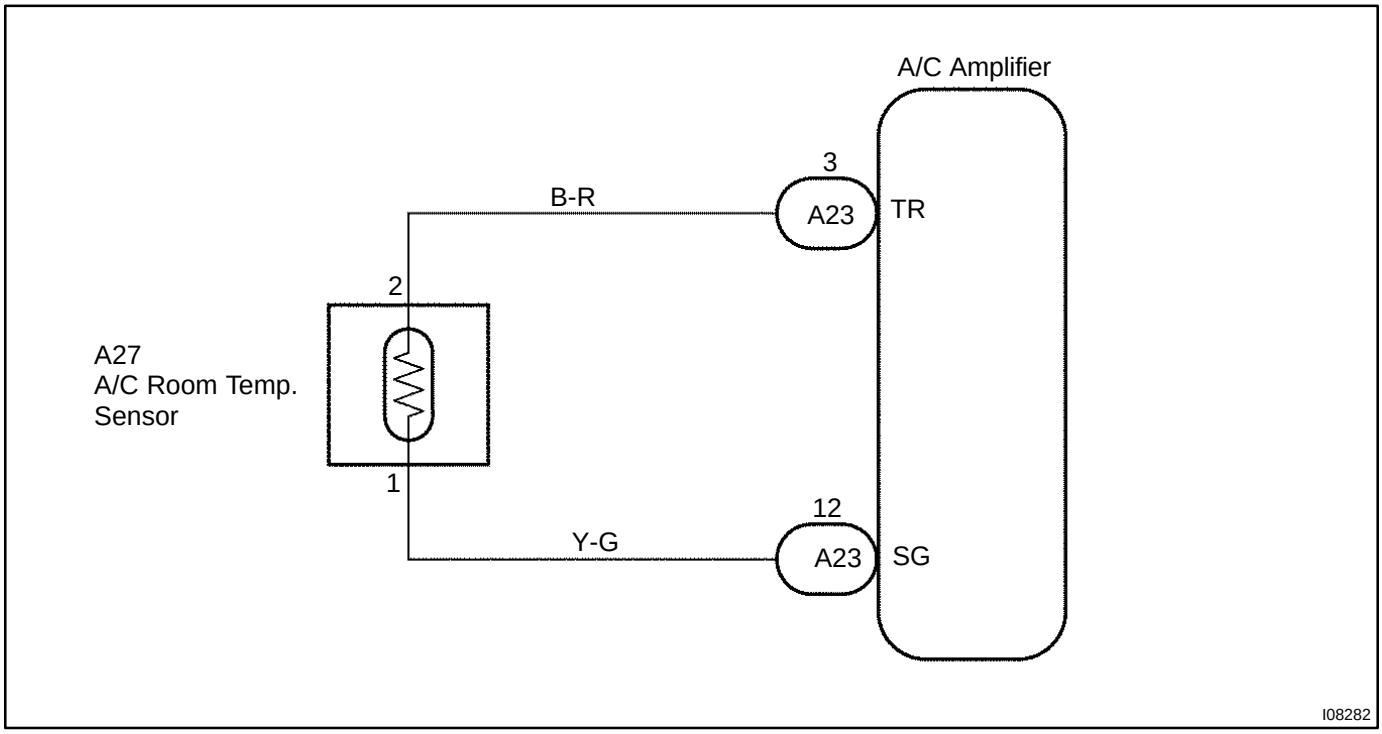
DTC	11	Front Room Temperature Sensor Circuit

CIRCUIT DESCRIPTION

This sensor detects the temperature inside the cabin and sends the appropriate signals to the A/C control assembly.

DTC No.	Detection Item	Trouble Area
11	Open or short in front room temperature sensor circuit.	• Front room temperature sensor • harness or connector between front room temperature sensor and A/C control assembly • A/C control assembly

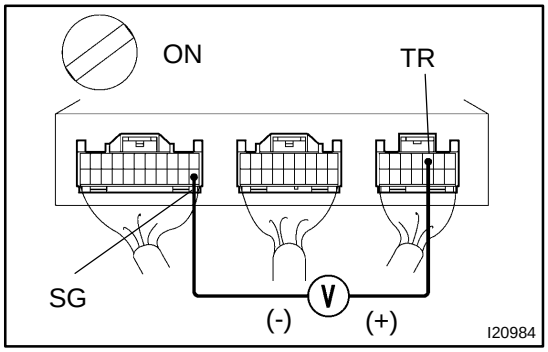
WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	Check voltage between terminals TR and SG of A/C control assembly connector.



PREPARATION:

Remove A/C control assembly with connectors still connected.

CHECK:

(a) Turn ignition switch ON.

(b) Measure voltage between terminals TR and SG of A/C control assembly connector at each temperature.

OK:

Voltage :
at 25˚C (77˚F) : 1.8 - 2.2 V
at 40˚C (104˚F) : 1.2 - 1.6 V

HINT:

As the temperature increases, the voltage decreases.

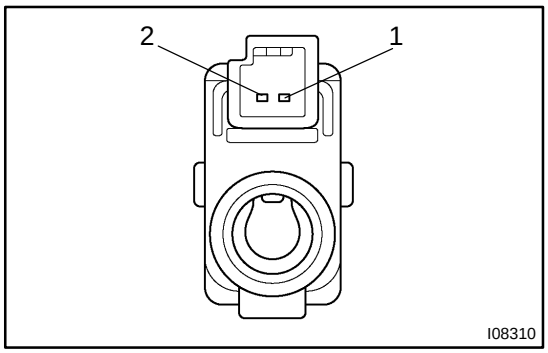
NG → **Go to step 3.**

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI-697). However, if DTC 11 is displayed, check and replace A/C control assembly.

cardiagn.com

2	Check front room temperature sensor.



PREPARATION:
Disconnect room temperature sensor connector.
CHECK:
Measure resistance between terminals 1 and 2 of room temperature sensor connector at each temperature.
OK:

Resistance :
at 25˚C (77˚F) : 1.65 - 1.75 kΩ
at 50˚C (122˚F) : 0.55 - 0.65 kΩ

HINT:
As the temperature increases, the resistance decreases.

NG → **Replace front room temperature sensor.**

OK ↓

3	Check harness and connector between A/C control assembly and front room temperature sensor (See page IN-31).

NG → **Repair or replace harness or connector.**

OK ↓

Check and replace A/C control assembly.

cardiagn.com

DI3F5-04

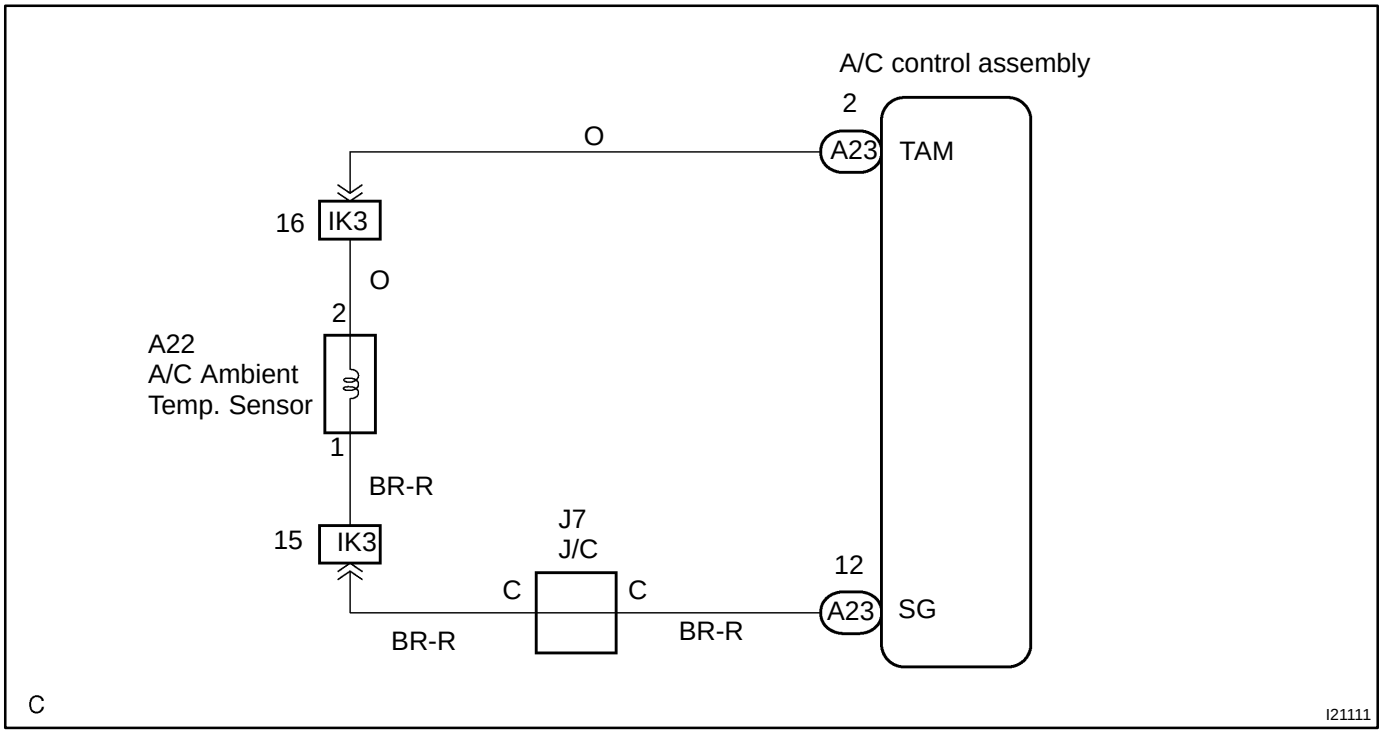
DTC	12	Ambient Temperature Sensor Circuit

CIRCUIT DESCRIPTION

This sensor detects the ambient temperature and sends the appropriate signals to the A/C control assembly.

DTC No.	Detection Item	Trouble Area
12	Open or short in ambient temperature sensor circuit.	• Ambient temperature sensor • Harness or connector between ambient temperature sensor and A/C control assembly • A/C control assembly

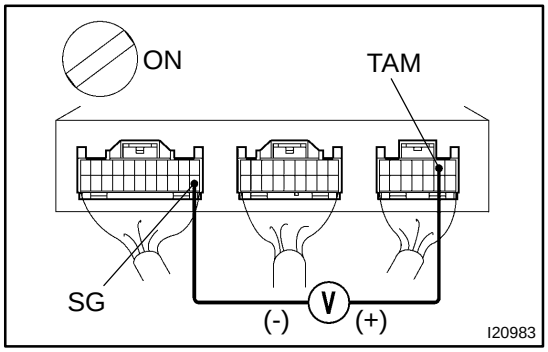
WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check voltage between terminals TAM and SG of A/C control assembly.**



PREPARATION:

Remove A/C control assembly with connectors still connected.

CHECK:

(a) Turn ignition switch to ON.

(b) Measure voltage between terminals TAM and SG of A/C control assembly connector at each temperature.

OK:

Voltage :
at 25˚C (77˚F) : 1.35 - 1.75 V
at 40˚C (104˚F) : 0.85 - 1.25 V

HINT:

As the temperature increases, the voltage decreases.

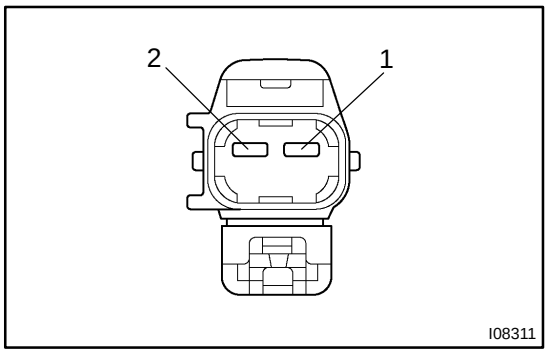
NG → **Go to step 2.**

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI-697). However, if DTC 12 is displayed, check and replace A/C control assembly.

cardiagn.com

2	Check ambient temperature sensor.



PREPARATION:
Disconnect ambient temperature sensor connector.
CHECK:
Measure resistance between terminals 1 and 2 of ambient temperature sensor connector at each temperature.
OK:

Resistance :
at 25˚C (77˚F) : 1.6 - 1.8 kΩ
at 50˚C (122˚F) : 0.5 - 0.7 kΩ

HINT:
As the temperature increases, the resistance decreases.
NOTICE:
When installing the ambient temperature sensor, be sure to connect the sensor connector before connecting the battery.

NG → **Replace ambient temperature sensor.**

OK

3	Check harness and connector between ambient temperature sensor and A/C control assembly (See page IN-31).

NG → **Repair or replace harness or connector.**

OK

Check and replace and A/C control assembly.

cardiagn.com

DI08N-23

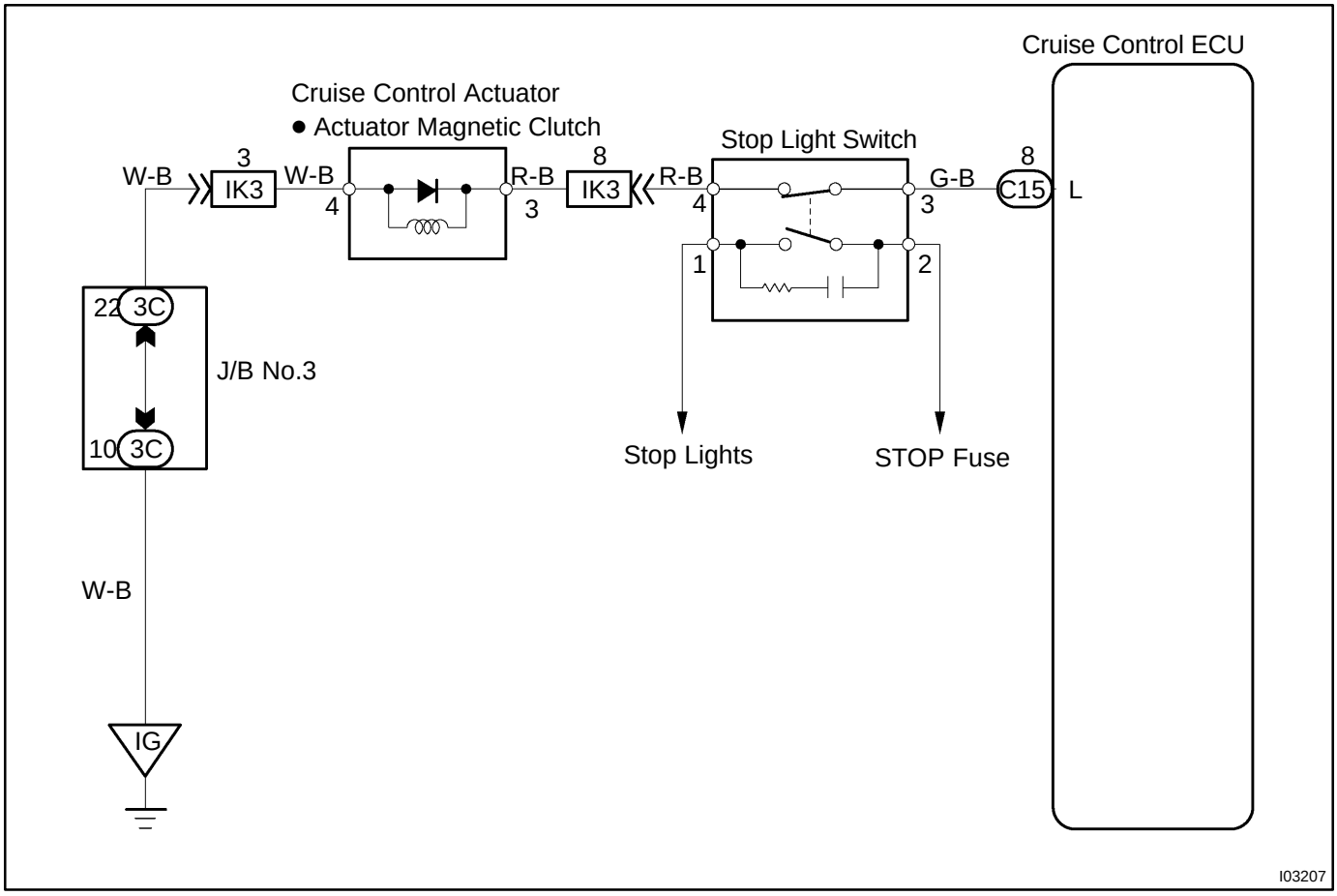
DTC	12	Actuator Magnetic Clutch Circuit

CIRCUIT DESCRIPTION

This circuit turns on the magnetic clutch inside the actuator during cruise control operation according to the signal from the ECU. If a malfunction occurs in the actuator or speed sensor, etc. during cruise control operation, the rotor shaft between the motor and control plate is released.
When the brake pedal is depressed, the stop light switch turns on, supplying electrical power to the stop light. Power supply to the magnetic clutch is mechanically cut and the magnetic clutch is turned OFF.
When driving downhill, if the vehicle speed exceeds the set speed by 15 km/h (9 mph), the ECU turns the safety magnet clutch OFF. If the vehicle speed later drops to within 10 km/h (6 mph) above the set speed, then cruise control at the set speed is resumed.

DTC No.	Detection Item	Trouble Area
12	Short in actuator magnetic clutch circuit. Open (0.8 sec.) in actuator magnetic clutch circuit.	• STOP Fuse • Stop light switch • Actuator magnetic clutch • Harness or connector between cruise control ECU and actuator magnetic clutch, actuator magnetic clutch and body ground • Cruise control ECU

WIRING DIAGRAM

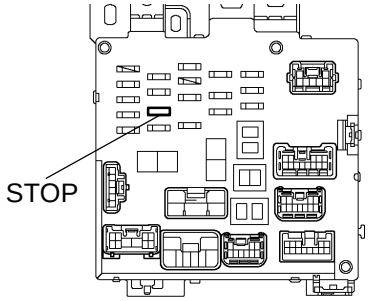


cardiagn.com

INSPECTION PROCEDURE

1	Check STOP fuse.

Instrument Panel Junction Block No.1



PREPARATION:

(a) Turn ignition switch OFF.

(b) Remove the STOP fuse from instrument panel junction block No.1.

CHECK:

Check fuse continuity.

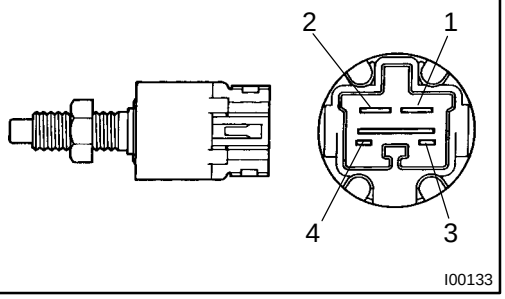
OK:

Continuity exists

NG → **Replace STOP fuse.**

OK

2	Check stop light switch.



PREPARATION:

Disconnect the stop light switch connector.

CHECK:

Check continuity between terminals.

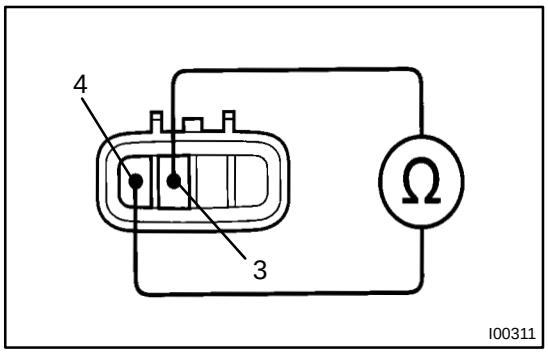
Switch position	Continuity
Switch pin free (Brake pedal depressed)	1 - 2
Switch pin pushed in (Brake pedal released)	3 - 4

NG → **Replace stop light switch.**

OK

cardiagn.com

3	**Check resistance between terminals L and GND of actuator magnetic clutch.**



PREPARATION:

(a) Turn ignition switch OFF.

(b) Disconnect the actuator connector.

CHECK:

Measure resistance between terminals 3 and 4.

OK:

Resistance: 34.65 - 42.35 Ω.

NG → **Replace cruise control actuator.**

OK

4	**Check for open and short in harness and connectors between cruise control ECU and actuator magnetic clutch, actuator magnetic clutch and body ground (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

Check and replace cruise control ECU (See page IN-31).

cardiagn.com

DI3F6-04

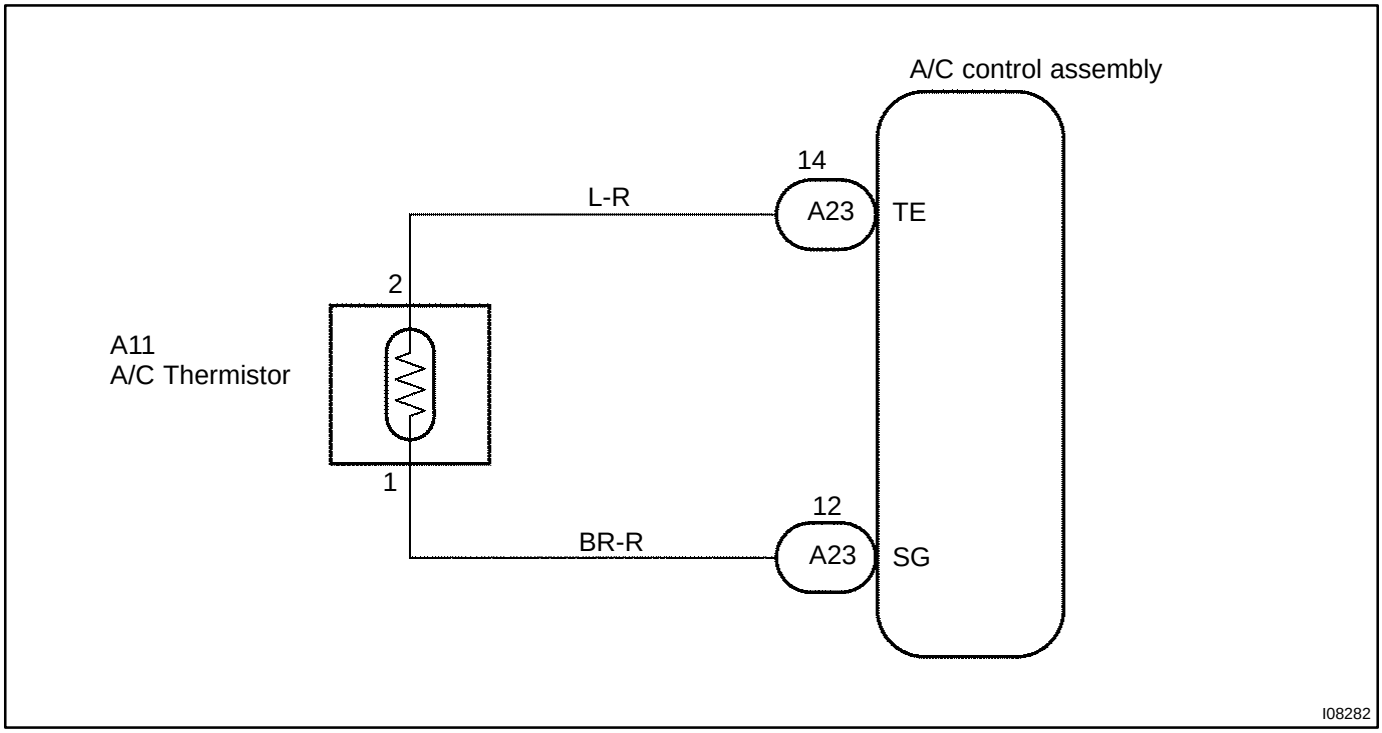
DTC	13	Front Evaporator Temperature Sensor circuit

CIRCUIT DESCRIPTION

This sensor detects the temperature inside the cooling unit and sends the appropriate signals to the A/C control assembly.

DTC No.	Detection Item	Trouble Area
13	Open or short in front evaporator temperature sensor circuit.	• Front evaporator temperature sensor. • Harness or connector between front evaporator temperature sensor and A/C control assembly. • A/C control assembly.

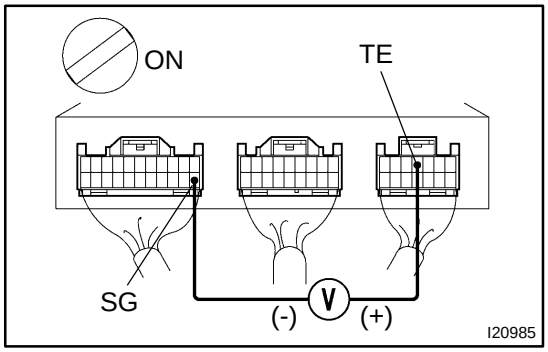
WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	Check voltage between terminals TE and SG of A/C control assembly connector.



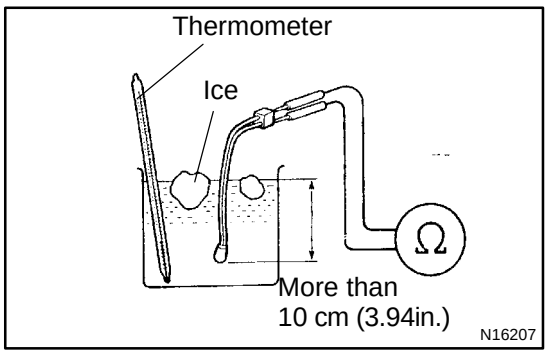
PREPARATION:
Remove A/C control assembly with connectors still connected.
CHECK:
(a) Turn ignition switch ON.
(b) Measure voltage between terminals TE and SG of A/C control assembly connector at each temperature.
OK:
Voltage :
at 0˚C (32˚F) : 2.0 - 2.4 V
at 15˚C (59˚F) : 1.4 - 1.8 V
HINT:
As the temperature increases, the voltage decreases.

NG → **Go to step 2.**

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI-697). However, if DTC 13 is displayed, check and replace A/C control assembly.

2	Check evaporator temperature sensor.



PREPARATION:
Remove front evaporator temperature sensor.
CHECK:
Measure resistance between terminals 1 and 2 of evaporator temperature sensor connector at each temperature.
OK:
Resistance :
at 0˚C (32˚F) : 4.5 - 5.2 kΩ
at 15˚C (59˚F) : 2.0 - 2.7 kΩ
HINT:
As the temperature increases, the resistance decreases.

NG → **Replace evaporator temperature sensor.**

OK

cardiagn.com

3	**Check harness and connector between A/C control assembly and front evaporator temperature sensor (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

Check and replace A/C control assembly.

cardiagn.com

DI08O-11

DTC	14	Actuator Mechanical Malfunction

CIRCUIT DESCRIPTION

The circuit detects the rotation position of the actuator control plate and sends a signal to the ECU.

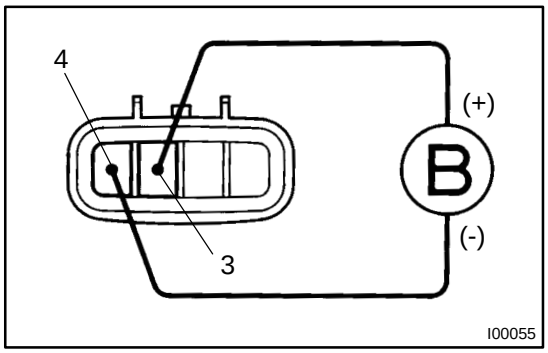
DTC No.	Detection Item	Trouble Area
14	Cruise control actuator mechanical malfunction.	• Actuator lock: (motor, arm) • Actuator motor • Cruise control ECU

WIRING DIAGRAM

See page DI-573 .

INSPECTION PROCEDURE

1	Check cruise control actuator arm locking operation



PREPARATION:

(a) Turn ignition switch OFF.

(b) Disconnect the actuator connector.

CHECK:

Connect the positive (+) lead from the battery to the terminal 3 of actuator and the negative (-) lead to terminal 4.

NOTICE:

Do not connect the high tension cables to the wrong battery terminal. You will damage the cruise control actuator.

Move the control plate by hand.

OK:

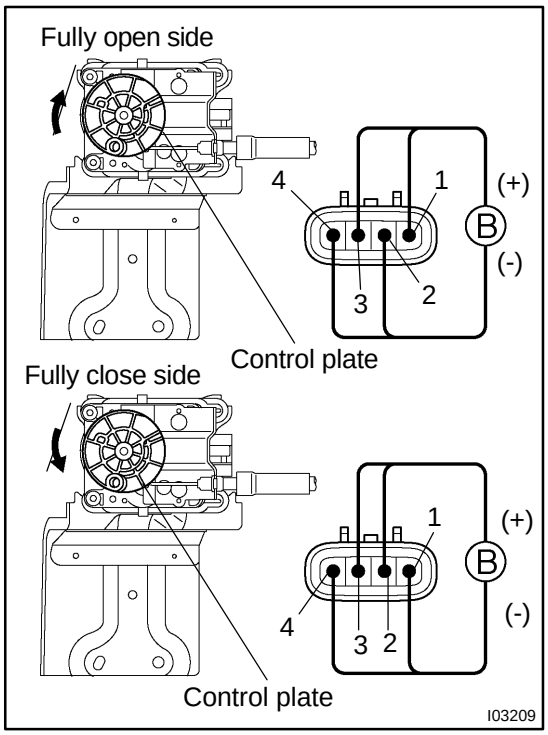
Control plate doesn't move.

NG → **Replace cruise control actuator.**

OK

cardiagn.com

2	Check cruise control actuator operation.



PREPARATION:

(a) Turn ignition switch OFF.

(b) Disconnect the actuator connector.

CHECK:

Connect the positive (+) lead from the battery to terminals 1 and 3 of actuator, connect the negative (-) lead to terminals 2 and 4 of actuator.

OK:

Control arm moves to fully open side

CHECK:

Connect the positive (+) lead from the battery to terminals 2 and 3 of actuator, connect the negative (-) lead to terminals 1 and 4 of actuator.

OK:

Control arm moves to fully close side

NG → **Replace cruise control actuator.**

OK

3	Check harness and connector between cruise control ECU and cruise control actuator (See page IN-31).

NG → **Repair or replace harness or connector.**

OK

Check and replace cruise control ECU (See page IN-31).

cardiagn.com

DI8AE-01

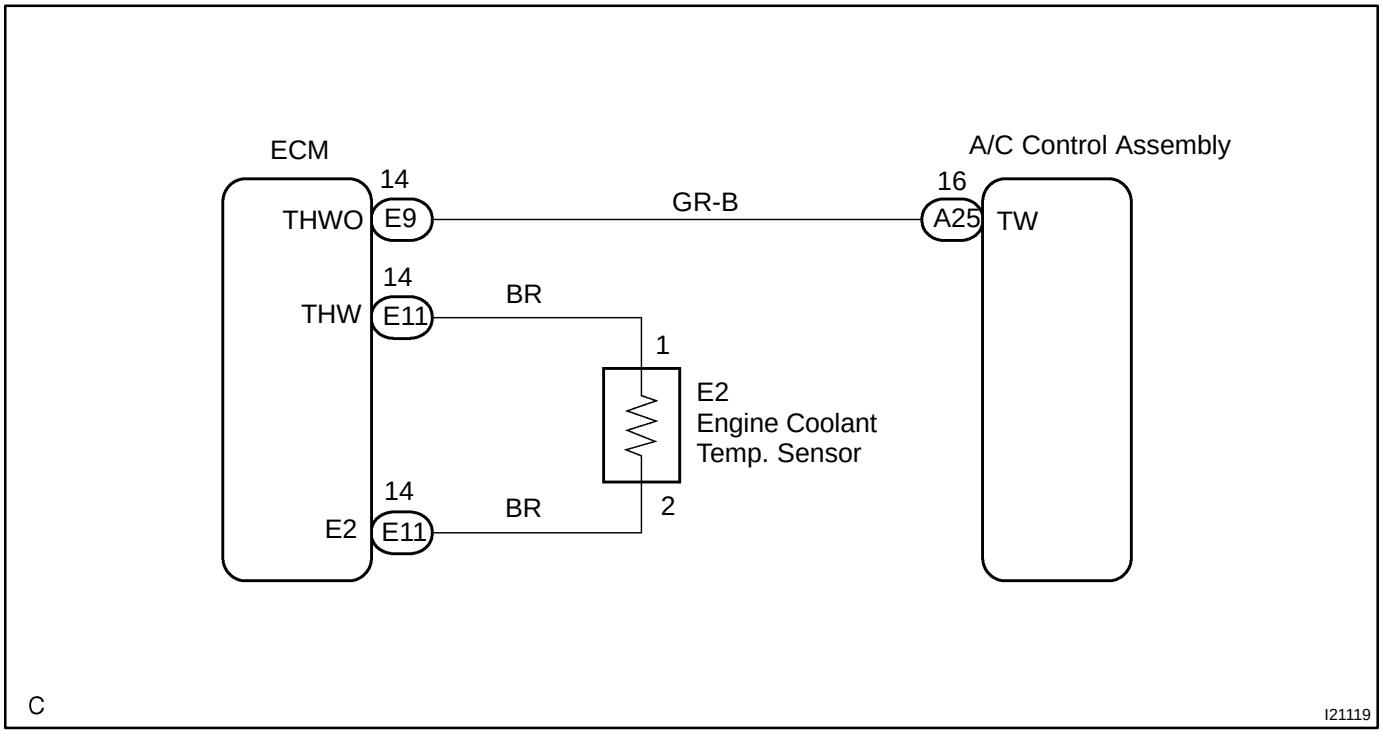
DTC	14	Engine Coolant Temperature Sensor Circuit

CIRCUIT DESCRIPTION

This sensor detects the engine coolant temperature and sends the appropriate signals to the A/C amplifier.

DTC No.	Detection Item	Trouble Area
14	Open or short in engine coolant temperature sensor circuit.	• Engine coolant temperature sensor. • Harness or connector between engine coolant temperature sensor and ECM. • Harness or connector between A/C amplifier and ECM. • A/C amplifier. • ECM

WIRING DIAGRAM



INSPECTION PROCEDURE

1	**Is DTC P0115 output?**

YES → **Check engine coolant temperature sensor circuit (See page DI-31).**

NO

cardiagn.com

2	**Check voltage between terminal TW and GND of A/C control assembly.**

REFERENCE: INSPECTION USING OSCILLOSCOPE

PREPARATION:

(a) Remove the A/C control assembly with connectors still connected.

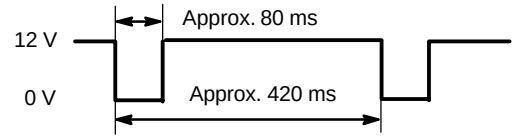
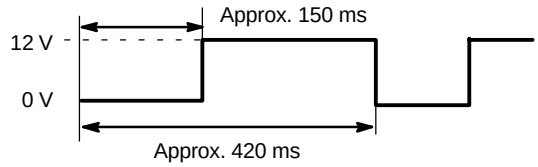
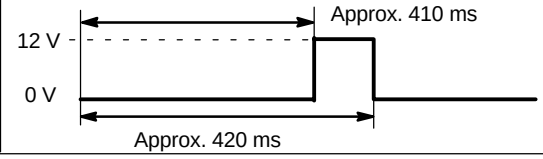
(b) Connect the oscilloscope to terminals TW and GND of A/C control assembly.

CHECK:

Measure signal between terminals TW and GND of A/C control assembly at each temperature, as shown in the chart.

OK:

Signal:

at less than 30 ˚C (86 ˚F)	
at 50 ˚C (122 ˚F)	
at more than 90 ˚C (194 ˚F)	

NG	**Go to step 3**

Proceed to next circuit inspection shown on problem symptoms table (See page DI-697). However, if DTC 14 is displayed, check and replace A/C amplifier.

cardiagn.com

3	**Check harness and connector between A/C control assembly and ECM (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

Check and replace A/C control assembly.

cardiagn.com

DI3FA-05

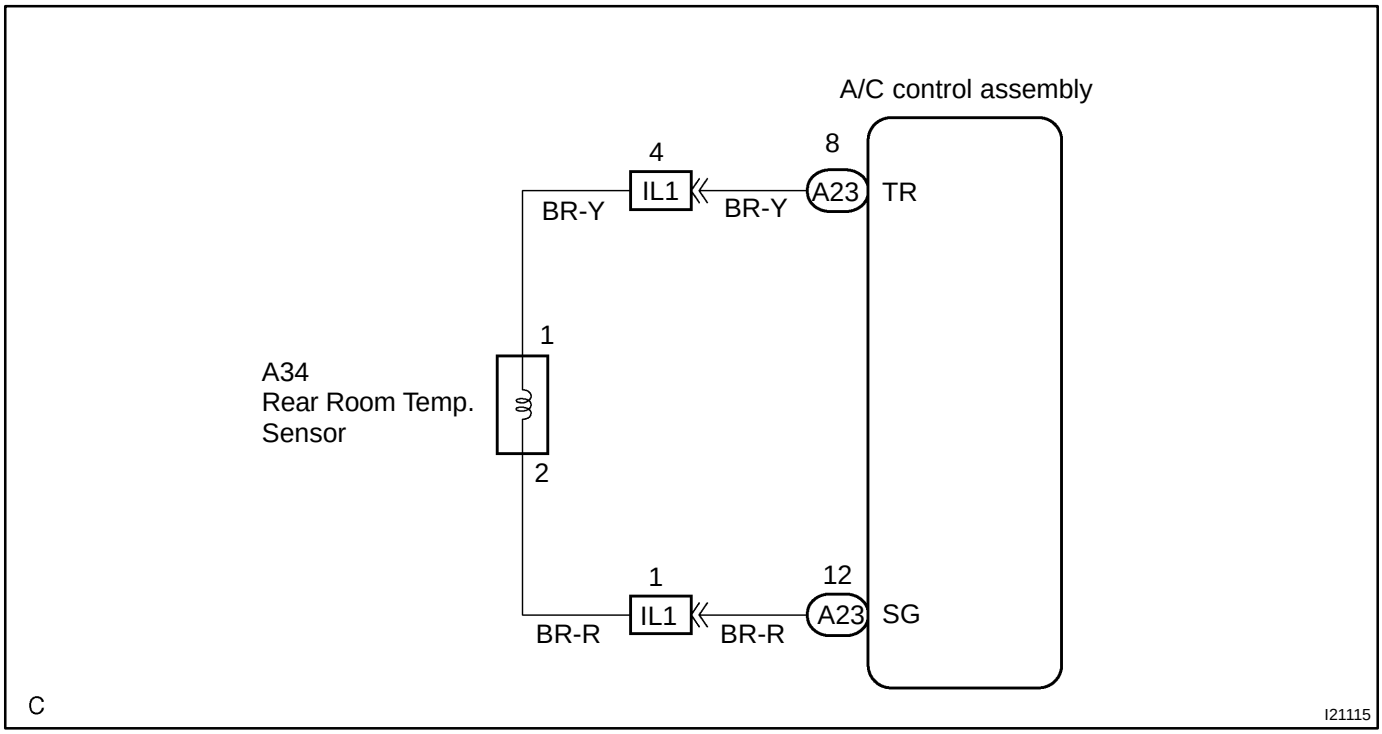
DTC	19	Rear Room Temperature Sensor Circuit

CIRCUIT DESCRIPTION

This sensor detects the temperature inside the cabin and sends the appropriate signals to the rear A/C control assembly.

DTC No.	Detection Item	Trouble Area
19	Open or short in rear room temperature sensor circuit.	• Rear room temperature sensor. • Harness or connector between rear room temperature sensor and A/C control assembly. • A/C control assembly.

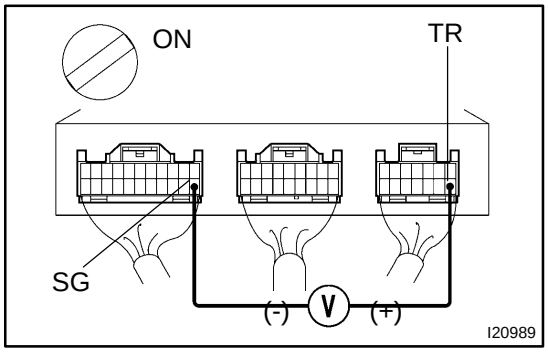
WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	Check voltage between terminals TR and SG of A/C control assembly connector.



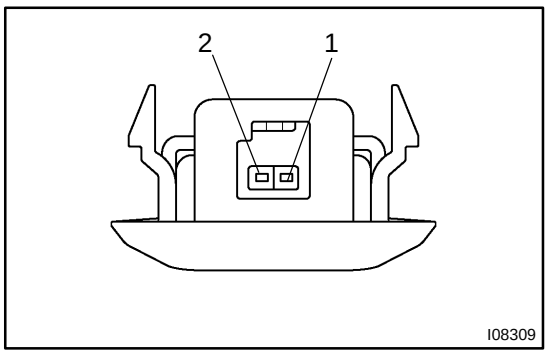
PREPARATION:
Remove A/C control assembly with connectors still connected.
CHECK:
(a) Turn ignition switch ON.
(b) Measure voltage between terminals TR and SG of A/C control assembly connector at each temperature.
OK:
Voltage :
at 25˚C (77˚F) : 1.8 - 2.2 V
at 40˚C (104˚F) : 1.2 - 1.6 V
HINT:
As the temperature increases, the voltage decreases.

NG	Go to step 3.

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI-697). However, if DTC19 is displayed, check and replace A/C control assembly.

2	Check rear room temperature sensor.



PREPARATION:
Disconnect rear room temperature sensor connector.
CHECK:
Measure resistance between terminals 1 and 2 of room temperature sensor connector at each temperature.
OK:
Resistance :
at 25˚C (77˚F) : 1.65 - 1.75 kΩ
at 50˚C (122˚F) : 0.55 - 0.65 kΩ
HINT:
As the temperature increases, the resistance decreases.

NG	Replace rear room temperature sensor.

OK

cardiagn.com

3	**Check harness and connector between A/C control assembly and rear room temperature sensor (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

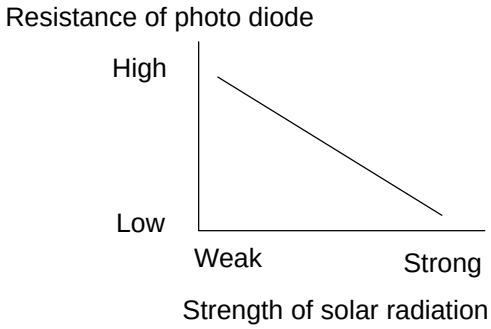
Check and replace A/C control assembly.

cardiagn.com

DI3FB-05

DTC	21	Solar Sensor Circuit

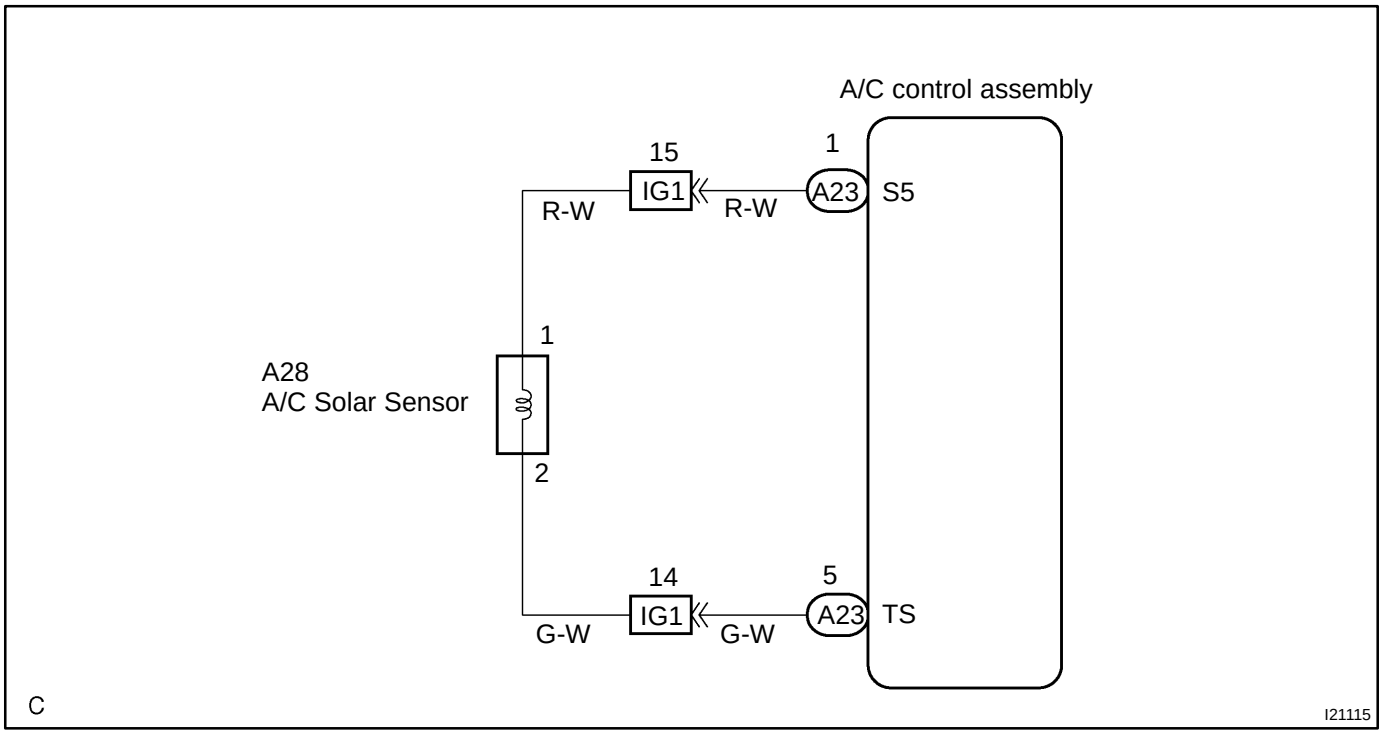
CIRCUIT DESCRIPTION



A photo diode in the solar sensor detects solar radiation and sends signals to the A/C control assembly.

DTC No	Detection Item	Trouble Area
21	Open or short in solar sensor circuit. Please note that display of diagnostic trouble code 21 is not abnormal when the sensor is not receiving solar radiation.	• Solar sensor • Harness or connector between solar sensor and A/C control assembly • A/C control assembly

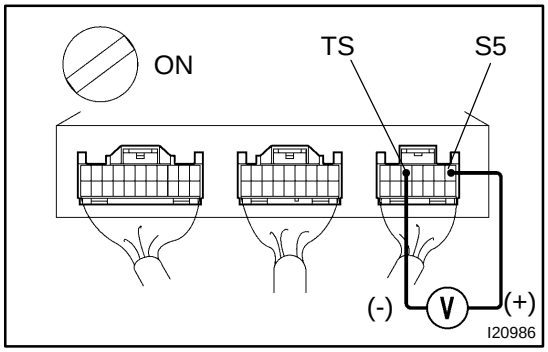
WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check voltage between terminals S5 and TS of A/C control assembly connector.**



PREPARATION:

Remove A/C control assembly with connectors still connected.

CHECK:

(a) Turn ignition switch to ON.

(b) Measure voltage between terminals S5 and TS of A/C control assembly connector when the solar sensor is subjected to an electric light, and when the sensor is covered by a cloth.

OK:

Condition	Voltage
Sensor subjected to electric light	0.8 - 4.3 V
Sensor covered by a cloth	Below 0.8 V

HINT:

As the inspection light is moved away from the sensor, the voltage increases.

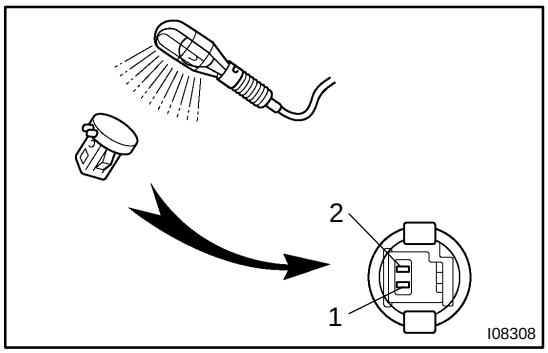
NG → **Go to step 2.**

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI-697). However, if DTC 21 is displayed, check and replace A/C control assembly.

cardiagn.com

2	Check solar sensor.



PREPARATION:
Remove solar sensor.
CHECK:
(a) Cover the sensor with a cloth.
(b) Measure resistance between terminals 1 and 2 of solar sensor connector.
HINT:
Connect positive (+) lead of ohmmeter to terminal 1 and negative (-) lead to terminal 2 of the solar sensor.
OK:
Resistance : ∞ Ω (no continuity)
PREPARATION:
(a) Remove the cloth from the solar sensor and subject the sensor to electric light.
(b) Measure resistance.
OK:
Resistance : Approx. 4 kΩ (continuity)
HINT:
As the electric light is moved away from the sensor, the resistance increases.

NG → **Replace solar sensor.**

OK ↓

3	Check harness and connector between A/C control assembly and solar sensor (See page IN-31).

NG → **Repair or replace harness or connector.**

OK ↓

Check and replace A/C control assembly.

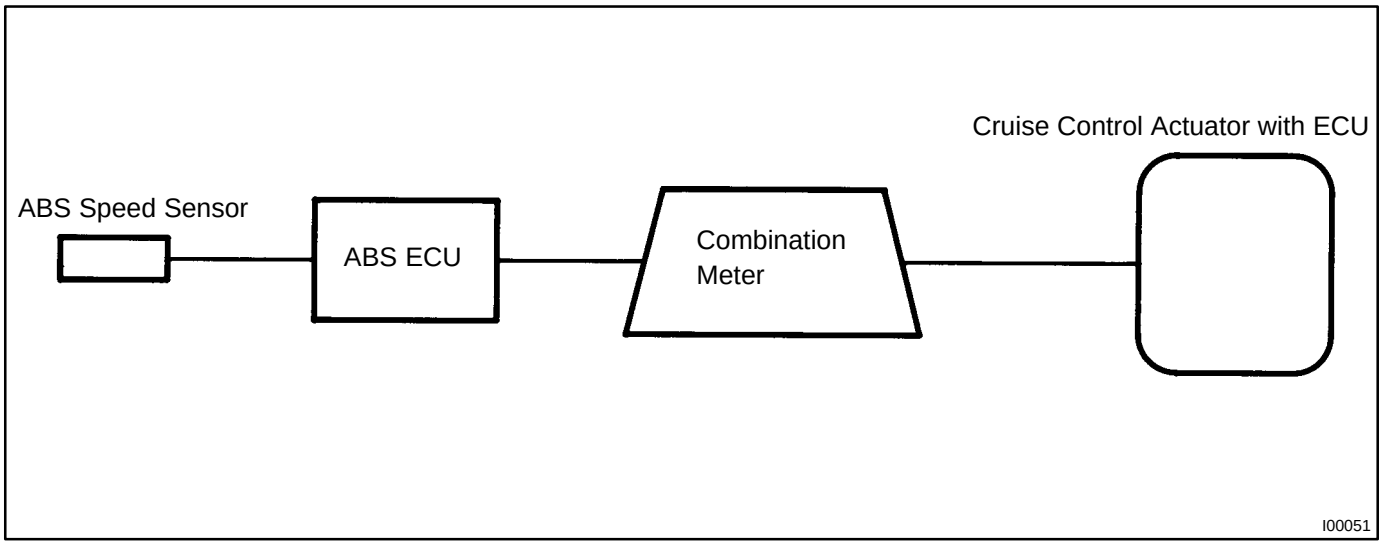
cardiagn.com

DI08P-26

DTC	21	Open in Vehicle Speed Sensor Circuit

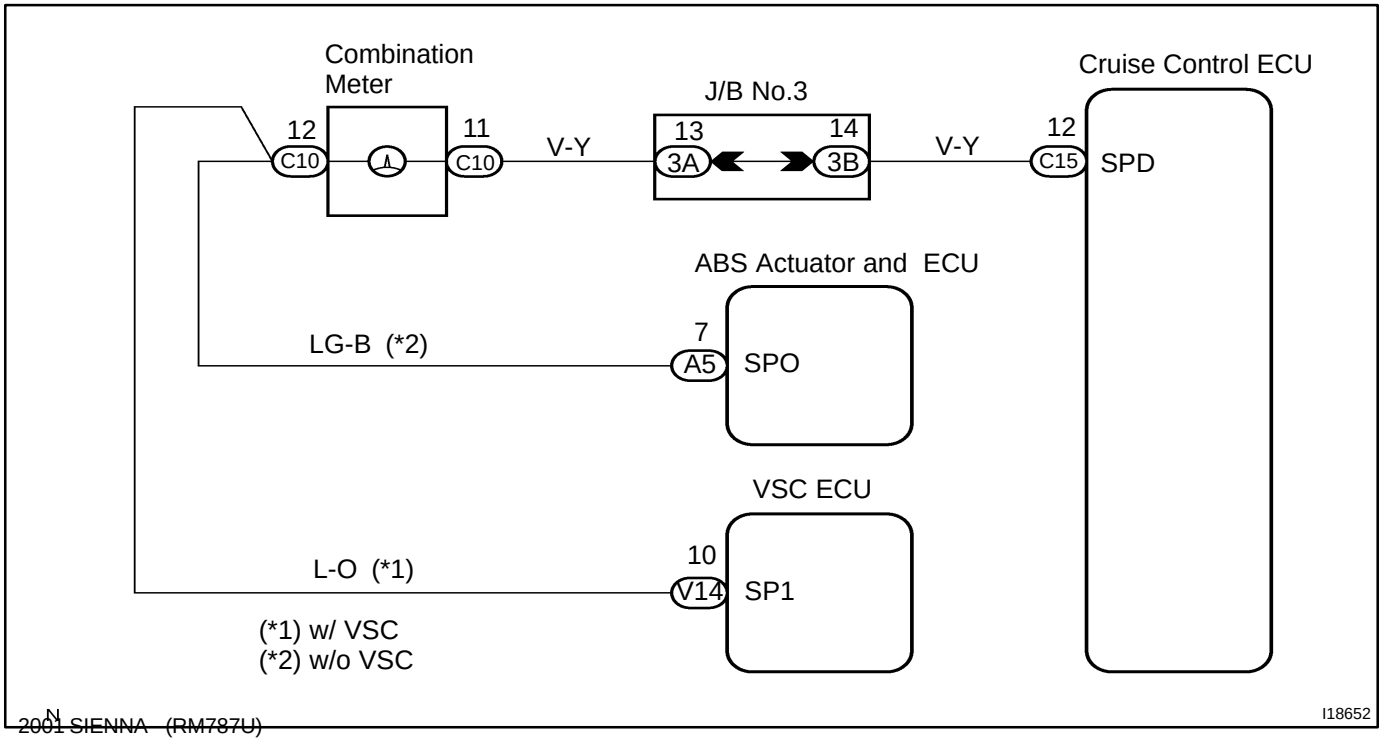
CIRCUIT DESCRIPTION

The vehicle speed sensor circuit send the vehicle speed signal to the cruise control ECU. For each rotation of the shaft, the vehicle speed sensor sends a signal through the combination meter to the cruise control ECU (See the following). The ECU calculates the vehicle speed from this pulse frequency.



DTC No.	Detection Item	Trouble Area
21	Speed signal is not input to the cruise control ECU while cruise control is set.	• Combination meter • Harness or connector between cruise control ECU and combination meter, combination meter and vehicle speed sensor • Vehicle speed sensor • Cruise control ECU

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Input signal check.**

Input Signal	Indicator Light Blinking Pattern
Drive at about 40 km/h (25 mph) or below	Light: ON — OFF
Drive at about 40 km/h (25 mph) or higher	Light: ON / OFF (blinking)

CHECK:

(a) See input signal check on page DI-563 .

(b) Check indicator light operation when driving with vehicle speed above 40 km/h (25 mph), and with vehicle speed below 40 km/h (25 mph).

OK:

Vehicle speed above 40 km/h (25 mph):
Indicator light blinks

Vehicle speed below 40 km/h (25 mph):
Indicator light stays on

OK → **Check and replace cruise control ECU (See page IN-31).**

NG

2	**Check speedometer circuit (See Combination meter troubleshooting on page BE-31).**

NG → **Repair or replace harness, connector or combination meter assembly.**

OK

3	**Check harness and connector between cruise control ECU and combination meter, combination meter and ABS ECU (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

Check and replace cruise control ECU (See page IN-31).

cardiagn.com

DI3FC-04

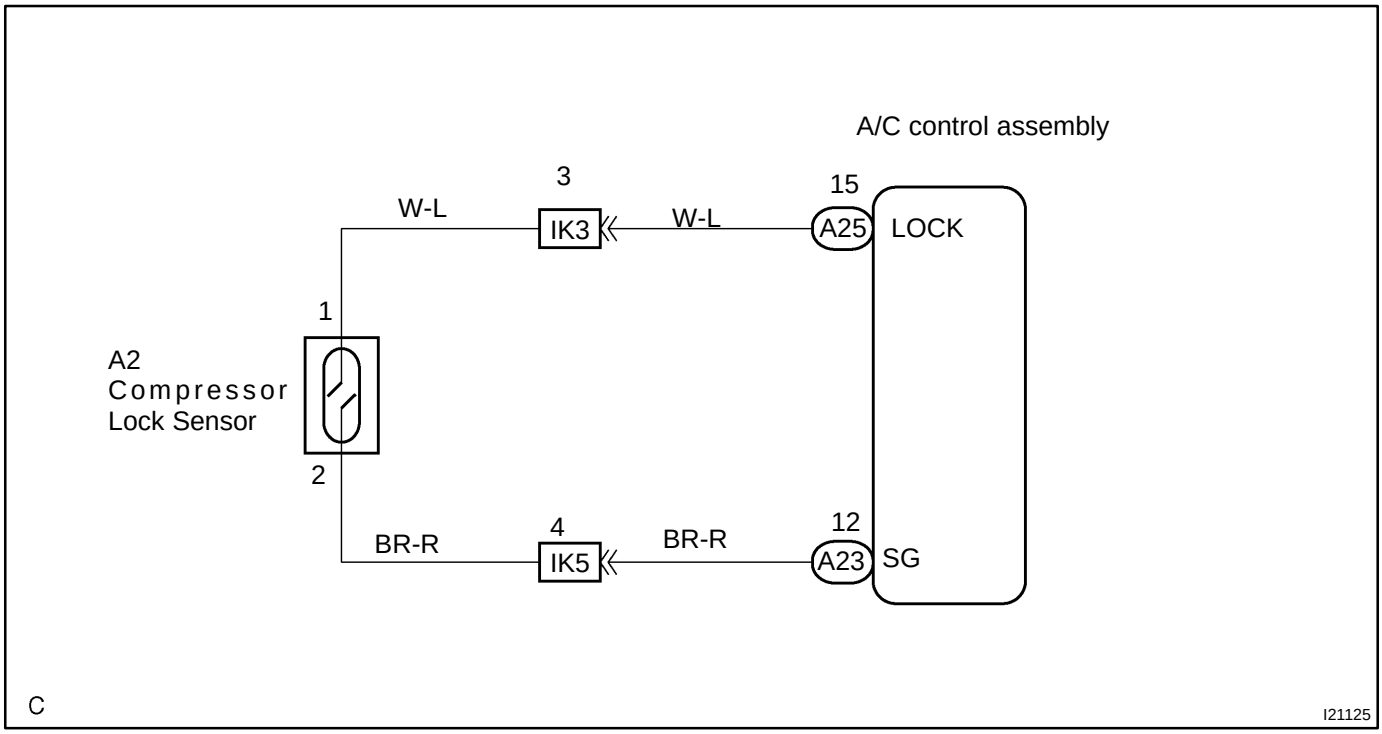
DTC	22	Compressor Lock Sensor Circuit

CIRCUIT DESCRIPTION

This sensor sends 1 pulse per engine revolution to the A/C control assembly.
If the number ratio of the compressor speed divided by the engine speed is smaller than a predetermined value, the A/C control assembly turns the compressor OFF. And, the indicator flashes at about 1 second intervals.

DTC No.	Detection Item	Trouble Area
22	All conditions below are detected for 3 secs. or more (a) Engine speed : 450 rpm or more (b) Ratio between engine and compressor speed deviates 20 % or more in comparison to normal operation.	• Compressor. • Compressor drive belt. • Compressor lock sensor. • Harness and connector between compressor lock sensor and A/C control assembly • A/C control assembly

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check compressor.**

PREPARATION:

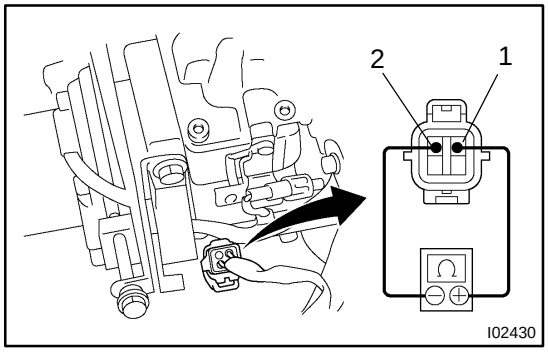
(a) Check compressor drive belt tension (See page AC-17).

(b) Check if the compressor does not lock during operation with engine started and blower switch and A/C switch ON.

NG → **Adjust drive belt tension or repair compressor.**

OK ↓

2	**Check compressor lock sensor.**



PREPARATION:

Disconnect compressor connector.

CHECK:

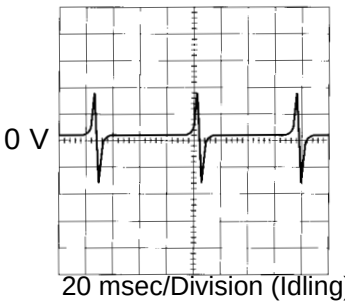
Measure resistance between terminals 1 and 2 of compressor lock sensor connector.

OK:

Resistance : 65 - 125 Ω at 20 ˚C (68 ˚F)

Reference : Inspection using oscilloscope

LOCK IN signal waveform



During cranking or idling, measure voltage between terminals LOCK and SG of A/C control assembly.

HINT:

The correct waveform appears as shown in the illustration on the left.

NG → **Replace compressor.**

OK ↓

cardiagn.com

3	**Check harness and connector between A/C control assembly and compressor lock sensor (See page IN-21).**

NG → **Repair or replace harness or connector.**

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI-697). However, if DTC 22 is displayed, check and replace A/C control assembly.

cardiagn.com

DI3FD-04

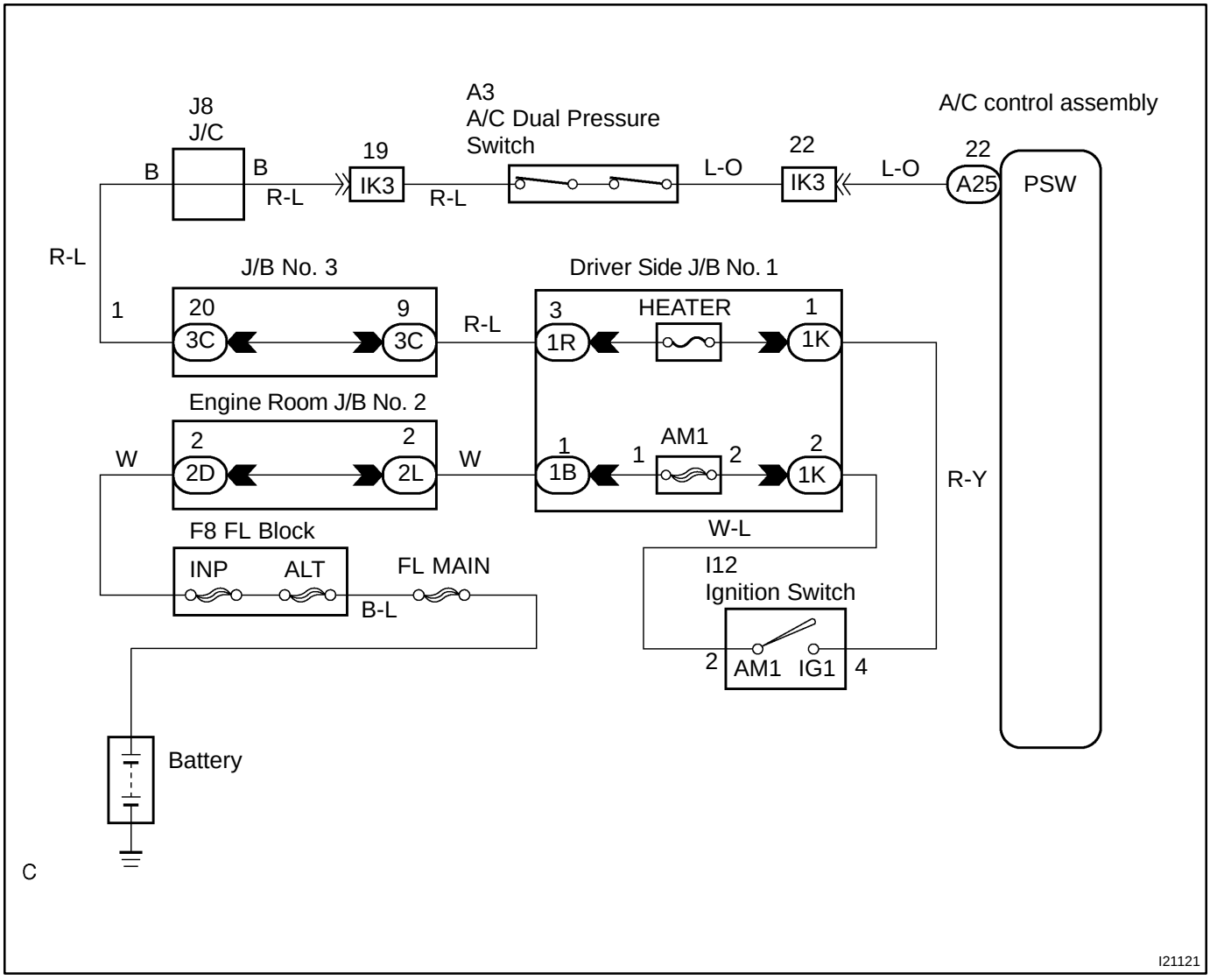
DTC	23	Pressure Switch Circuit

CIRCUIT DESCRIPTION

The pressure switch sends the appropriate signals to the A/C amprifier when the A/C refrigerant pressure drops too low or rises too high. When the A/C control assembly receives these signals, it outputs signals via the A/C control assembly to switch OFF the compressor relay and turns the magnetic clutch OFF.

DTC No.	Detection Item	Trouble Area
23	• Open in pressure sensor circuit. • Abnormal refrigerant pressure. below 196 kPa (2.0 kg/cm^2, 28 psi) over 3,140 kPa (32.0 kgf/cm^2, 455 psi)	• Pressure switch. • Harness or connector between pressure switch and A/C control assembly • Refrigerant pipe line. • A/C control assembly

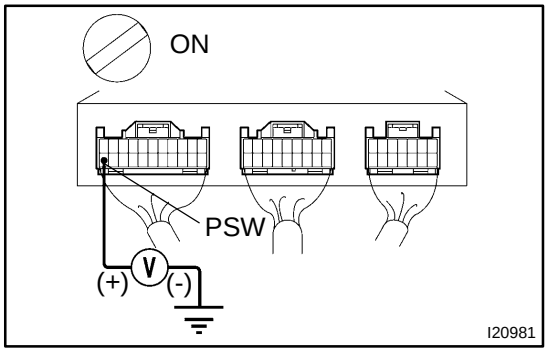
WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check voltage between terminal PSW and GND of A/C control assembly.**



PREPARATION:

Install the manifold gauge set.

CHECK:

(a) Turn ignition switch ON.

(b) Check voltage between terminal PSW of A/C control assembly connector and body ground when refrigerant pressure is changed.

OK:

The voltage changes with refrigerant pressure, as shown in the diagram below.

Low Pressure Cut Side	Reference : High Pressure Cut Side
ON (0V) 225 kPa 196 kPa OFF (12V)	ON (0V) 2,550 kPa 3,140 kPa OFF (12V)

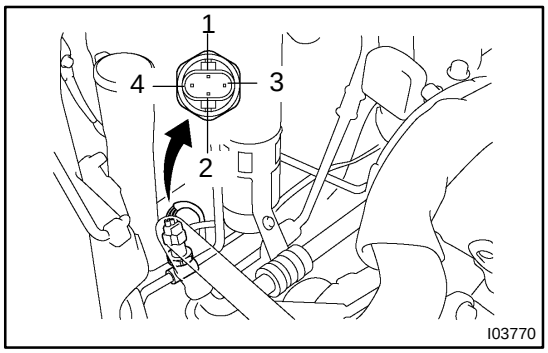
NG → **Go to step 2.**

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI-697). However, if DTC 23 is displayed, check and replace A/C control assembly.

cardiagn.com

2	**Check pressure switch.**



PREPARATION:

Disconnect pressure switch connector.

CHECK:

(a) Turn ignition switch ON.

(b) Check continuity between terminals 1 and 4 of pressure switch when refrigerant pressure is changed.

OK:

The continuity changes with refrigerant pressure as shown below.

Low Pressure Cut Side	Reference : High Pressure Cut Side
ON (continuity) 196 kPa ↑ 211 kPa OFF (continuity)	ON (continuity) 2,550 kPa ↓ 3,140 kPa OFF (continuity)

NG	**Replace pressure switch.**

OK

3	**Check harness and connector between A/C control assembly and pressure switch (See page IN-31).**

NG	**Repair or replace harness or connector.**

OK

Check and replace A/C control assembly.

cardiagn.com

DI08Q-12

DTC	23	Vehicle Speed Signal Abnormal

CIRCUIT DESCRIPTION

See page DI-580 .

DTC No.	Detection Item	Trouble Area
23	Vehicle speed sensor pulse is abnormal.	• Vehicle speed sensor • Cruise control ECU

WIRING DIAGRAM

See page DI-580 .

INSPECTION PROCEDURE

1	**Check speedometer circuit (See page BE-2).**

NG → **Repair or replace speed sensor or combination meter assembly.**

OK

Check and replace cruise control ECU (See page IN-31).

cardiagn.com

DI3FE-05

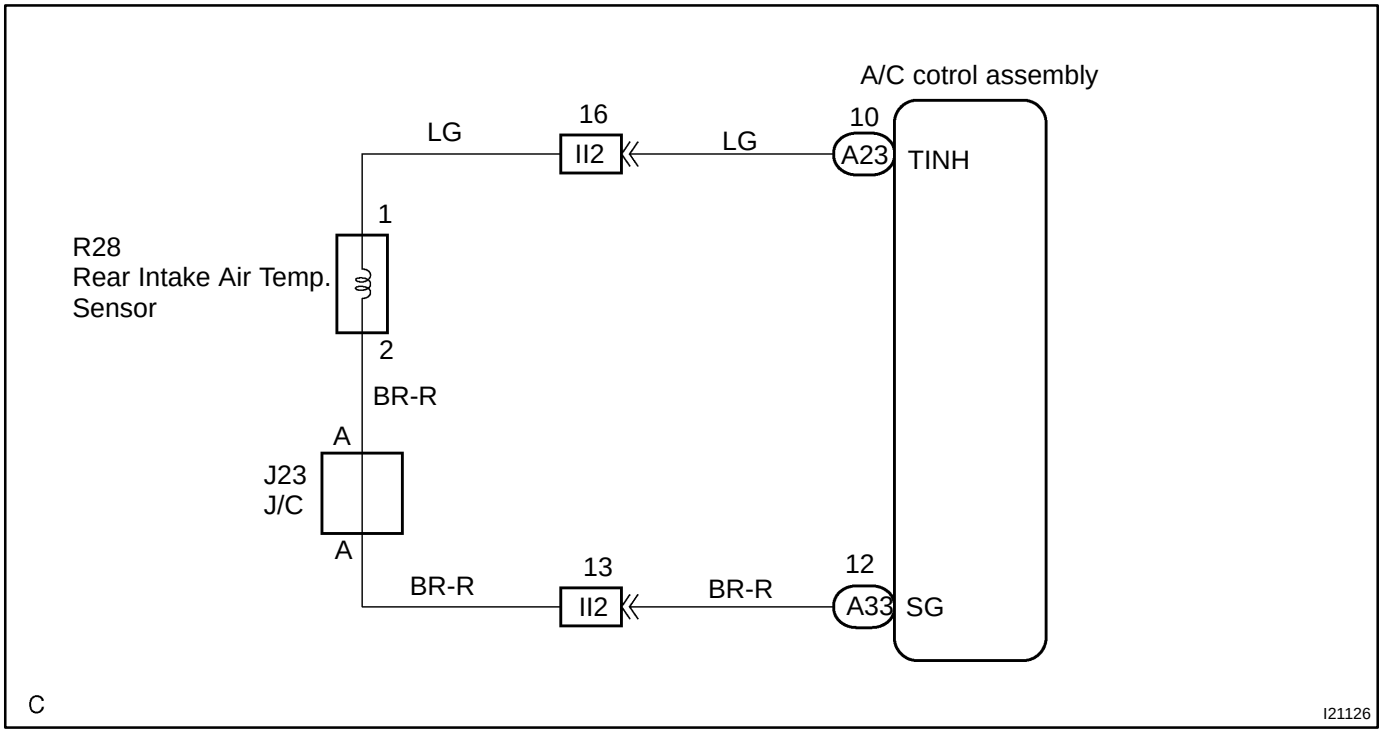
DTC	26	Rear Heater Intake Air Temperature Sensor Circuit

CIRCUIT DESCRIPTION

This sensor detects the rear heater intake air temperature and sends the appropriate signals to the A/C control assembly.

DTC No.	Detection Item	Trouble Area
26	Open or short in rear inlet air temperature sensor circuit.	• Rear heater intake air temperature sensor • Harness or connector between rear heater intake air temperature sensor and A/C cotrol assembly • A/C cotrol assembly

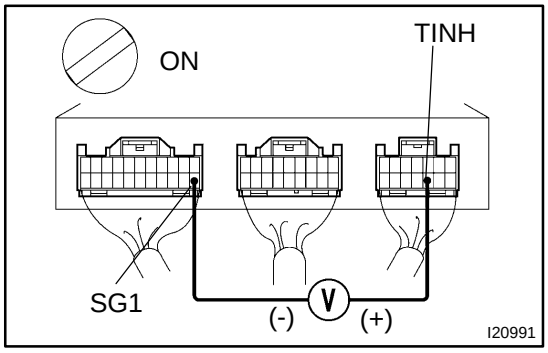
WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check voltage between terminals TINH and SG of A/C cotrol assembly connector.**



PREPARATION:

Remove A/C cotrol assembly with connectors still connected.

CHECK:

(a) Turn ignition switch to ON.

(b) Measure voltage between terminals TINH and SG of A/C cotrol assembly connector at each temperature.

OK:

Voltage :
at 25˚C (77˚F) : 1.8 - 2.2 V
at 40˚C (104˚F) : 1.2 - 1.6 V

HINT:

As the temperature increases, the voltage decreases.

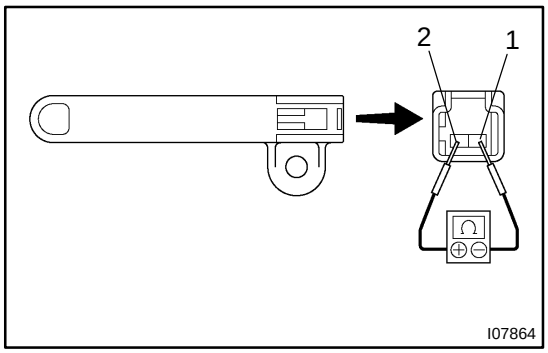
NG	**Go to step 2.**

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI-697). However, if DTC 26 is displayed, check and replace A/C cotrol assembly.

cardiagn.com

2	Check rear heater intake air temperature sensor.



PREPARATION:
Disconnect rear heater intake air temperature sensor connector.
CHECK:
Measure resistance between terminals 1 and 2 of rear heater intake air temperature sensor connector at each temperature.
OK:

Resistance :
at 25˚C (77˚F) : 1.65 - 1.75 kΩ
at 50˚C (122˚F) : 0.55 - 0.65 kΩ

HINT:
As the temperature increases, the resistance decreases.

NG → **Replace rear heater intake air temperature sensor.**

OK

3	Check harness and connector between A/C cotrol assembly and rear heater intake air temperature sensor (See page IN-31).

NG → **Repair or replace harness or connector.**

OK

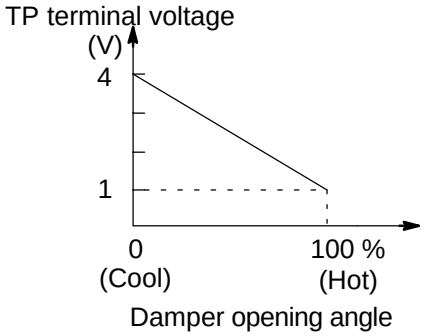
Check and replace A/C cotrol assembly.

cardiagn.com

DI3FF-05

DTC	31, 41	Front Air Mix Damper Position Sensor Circuit

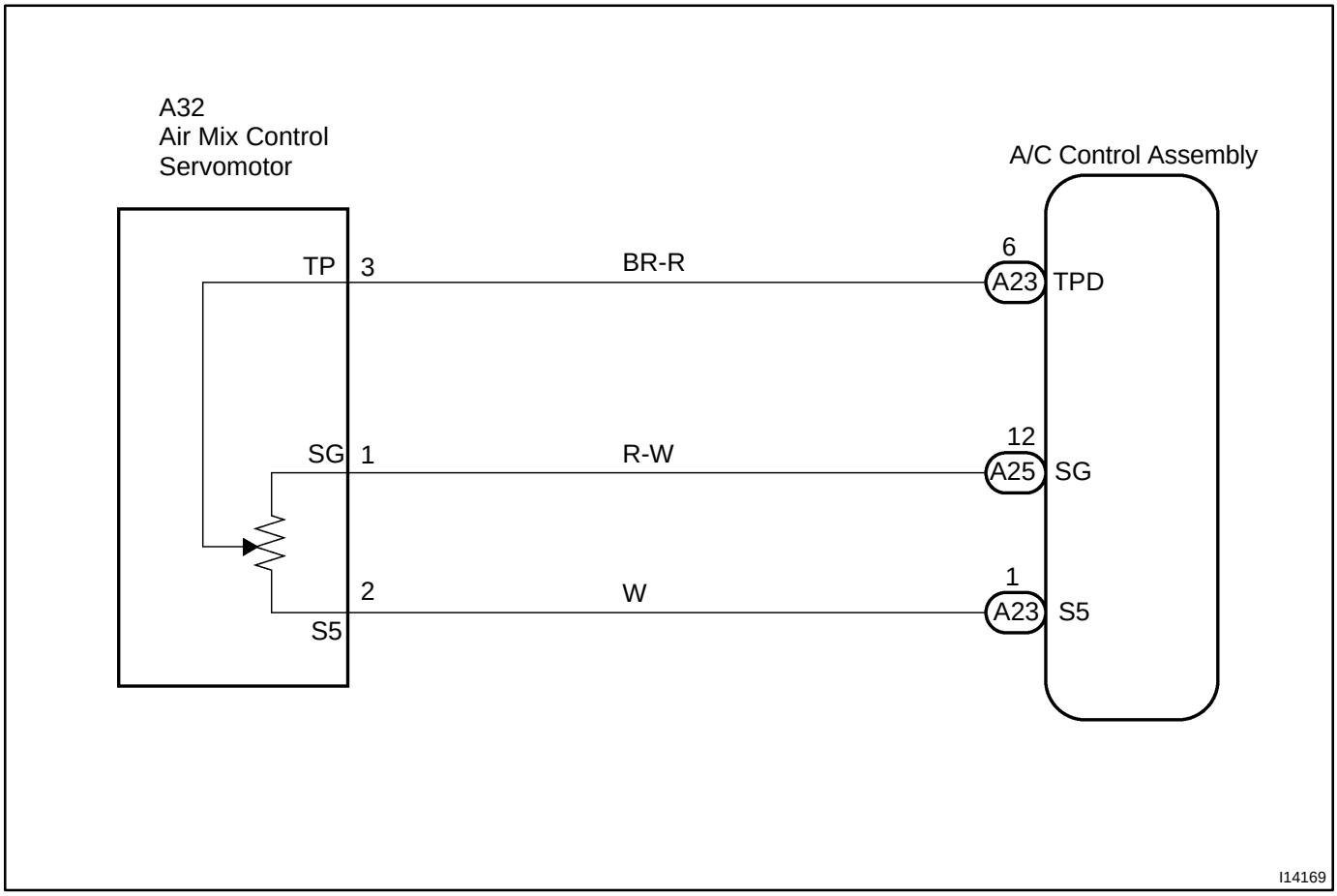
CIRCUIT DESCRIPTION



This sensor detects the position of the air mix damper and sends the appropriate signals to the A/C control assembly.
The position sensor is built into the air mix damper control servomotor assembly.

DTC No.	Detection Item	Trouble Area
31	Short to ground or power source circuit in front air mix damper position sensor circuit.	• Front air mix damper position sensor. • Harness or connector between front air mix damper control servomotor assembly and A/C control assembly. • A/C control assembly.
41	Front air mix damper position sensor value does not change even if A/C control assembly operates front air mix damper control servomotor.	

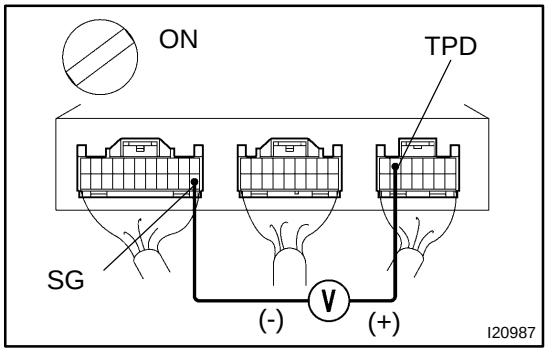
WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check voltage between terminals TPD and SG of A/C control assembly connector.**



PREPARATION:

Remove A/C control assembly with connectors still connected.

CHECK:

(a) Turn ignition switch to ON.

(b) Change the set temperature to activate the front air mix damper control servomotor, and measure the voltage between terminals TPD and SG of A/C control assembly connector each time when the set temperature is changed.

OK:

Set Temperature	Voltage
Max. cool	3.5 - 4.5 V
Max. hot	0.5 - 1.5 V

HINT:

As the set temperature increases, the voltage decreases.

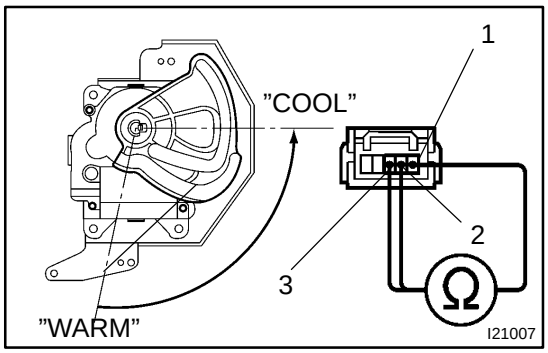
NG → **Go to step 2.**

Ok

Proceed to next circuit inspection shown on problem symptoms table (See page DI-697). However, if DTC 31 or 41 is displayed, check and replace A/C control assembly.

cardiagn.com

2	Check front air mix damper position sensor.



PREPARATION:

Remove air mix servomotor (See page AC-90).

CHECK:

Measure resistance between terminals 1 and 2 of front air mix damper control servomotor assembly connector.

OK:

Resistance : 4.2 - 7.8 kΩ

CHECK:

While operating front air mix damper control servomotor, following the procedure, measure resistance between terminals 1 and 3 of front air mix damper control servomotor assembly connector.

OK:

Position	Resistance
Max. cool	3.6 - 6.8 kΩ
Max. warm	0.5 - 1.1 kΩ

HINT:

As the front air mix damper control servomotor moves from cool side to warm side, the resistance decreases.

NG → **Replace front air mix damper control servomotor assembly.**

OK

3	Check harness and connector between A/C control assembly and front air mix damper control servomotor assembly (See page IN-31).

NG → **Repair or replace harness or connector.**

OK

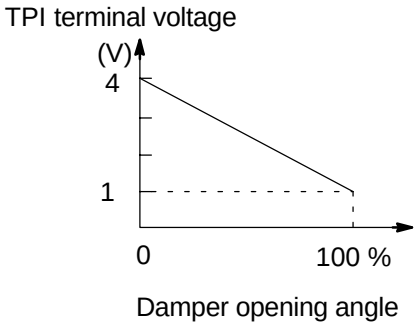
Check and replace A/C control assembly.

cardiagn.com

DI3FG-05

DTC	32, 42	Air Inlet Damper Position Sensor Circuit

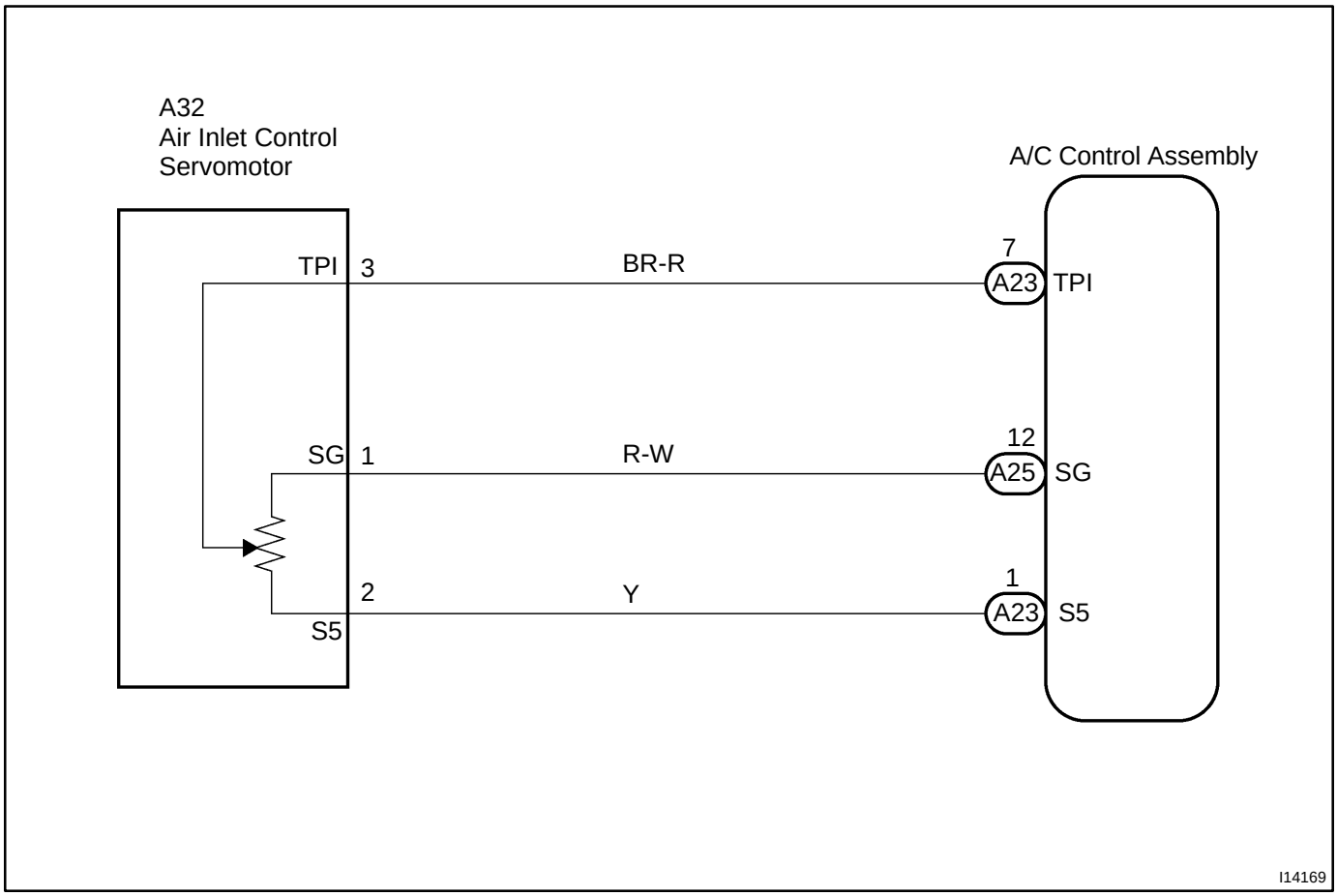
CIRCUIT DESCRIPTION



This sensor detects the position of the air inlet damper and sends the appropriate signals to the A/C control assembly. The position sensor is built into the air inlet damper control servomotor assembly.

DTC No.	Detection Item	Trouble Area
32	Short to ground or power source circuit in air inlet damper position sensor circuit.	• Air inlet damper position sensor • Harness or connector between air inlet damper control servomotor assembly and A/C control assembly • A/C control assembly.
42	Air inlet damper position sensor value does not change even if A/C control assembly operates air inlet damper control servomotor.	

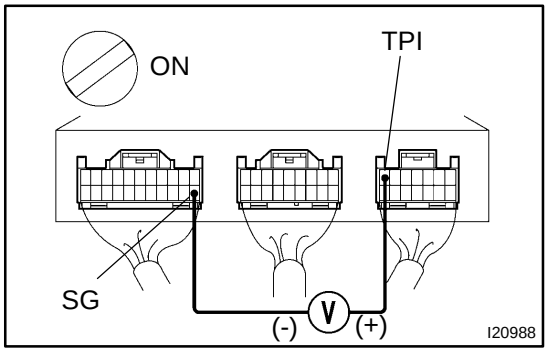
WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	Check voltage between terminals TPI and SG of A/C control assembly connector.



PREPARATION:

Remove A/C control assembly with connectors still connected.

CHECK:

(a) Turn ignition switch ON.

(b) Press R/F switch to change air inlet between fresh and re-circulation air, and measure voltage between terminals TPI and SG of A/C control assembly when the air inlet damper control servomotor operates.

OK:

FRS-REC Switch	Voltage
REC	3.5 - 4.5 V
FRS	0.5 - 1.5 V

HINT:

As the air inlet damper control servomotor is moved form ”RE-CIRCULATION” side to ”FRESH” side, the voltage decreases.

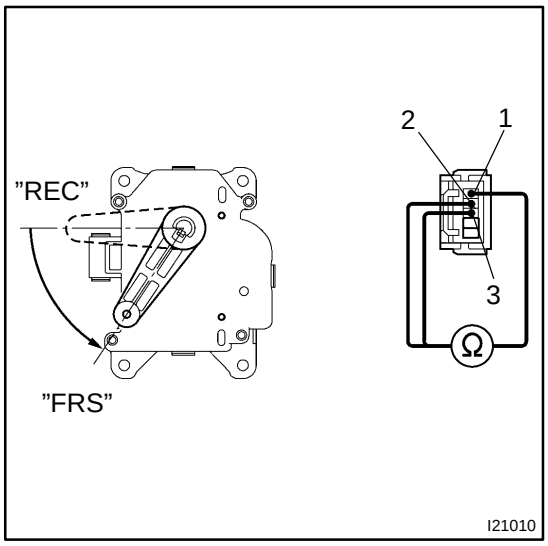
NG → **Go to step 2.**

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI-697). However, if DTC 32 or 42 is displayed, check and replace A/C control assembly.

cardiagn.com

2	Check air inlet damper position sensor.



PREPARATION:

Remove air inlet servomotor (See page AC-56).

CHECK:

Measure resistance between terminals 1 and 5 of air inlet damper control servomotor assembly connector.

OK:

Resistance : 4.2 - 7.8 kΩ

CHECK:

While operating air inlet damper control servomotor, following the procedure on page DI-739 , measure resistance between terminals 1 and 5 of air inlet damper control servomotor assembly connector.

OK:

Resistance

Damper Position	Resistance
REC side	3.1 - 5.8 kΩ
FRS side	0.8 - 1.6 kΩ

HINT:

As the air inlet damper control servomotor moves from "RECIRCULATION side to "FRESH" side, the resistance decreases.

NG → **Replace air inlet damper control servomotor assembly.**

OK

3	Check harness and connectors between A/C control assembly and air inlet damper control servomotor assembly (See page IN-31).

NG → **Repair or replace harness or connector.**

OK

Check and replace A/C control assembly.

cardiagn.com

DI08R-24

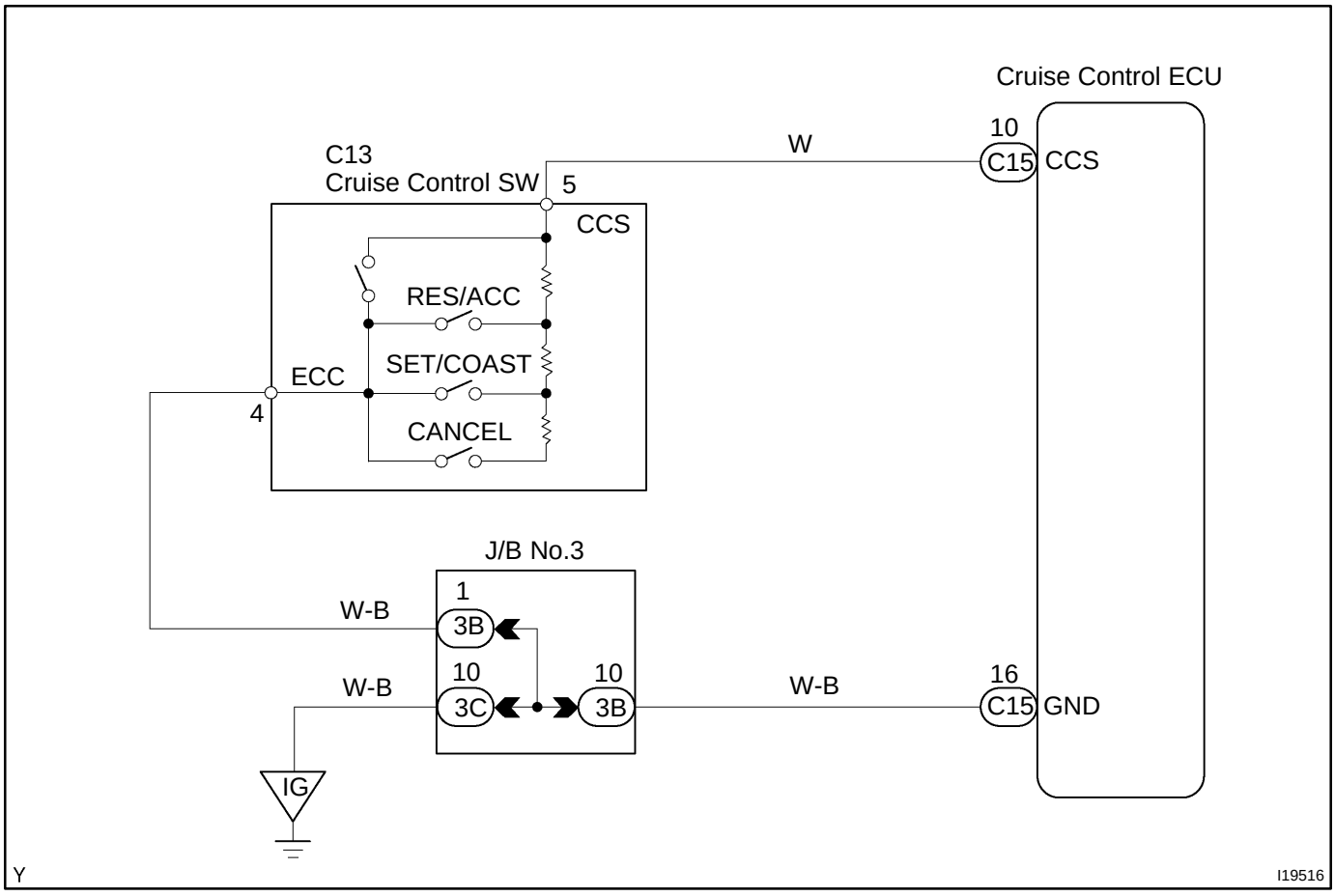
DTC	32	Control Switch Circuit (Cruise Control Switch)

CIRCUIT DESCRIPTION

This circuit carries the SET/COAST, RESUME/ACCEL and CANCEL signals (each voltage) to the ECU.

DTC No.	Detection Item	Trouble Area
32	Short in control switch circuit.	• Cruise control switch • Harness or connector between cruise control ECU and cruise control switch, cruise control switch and body ground • Cruise control ECU

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	Input signal check.

Input Signal	Indicator Light Blinking Pattern
SET/COAST switch	ON / OFF — 2 Pulses
RESUME/ACCEL switch	ON / OFF — 3 Pulses
CANCEL switch	ON / OFF — SW OFF, SW ON

PREPARATION:

See input signal check on page DI-563 .

CHECK:

Check the indicator light operation when each of the SET/COAST, RESUME/ACCEL and CANCEL is turned on.

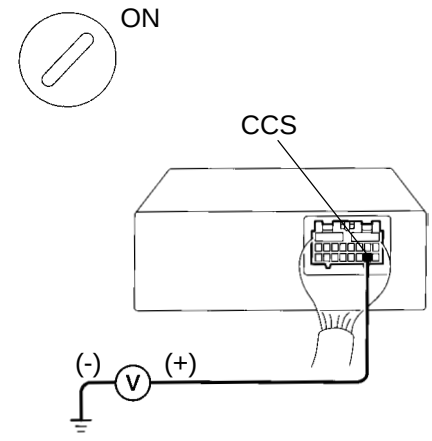
OK:

SET/COAST, RESUME/ACCEL switch
The signals shown in the table on the left should be output when each switch is ON. The signal should disappear when the switch is turned OFF.
CANCEL switch
The indicator light goes off when the cancel switch is turned ON.

OK	Wait and see.

NG

2	Check voltage between terminals CCS of cruise control ECU connector and body ground.



PREPARATION:

(a) Remove the ECU with connector still connected.
(b) Turn ignition switch ON.

CHECK:

Measure voltage between terminal 18 of ECU connector and body ground, when each of the SET/COAST, RESUME/ACCEL and CANCEL is turned ON.

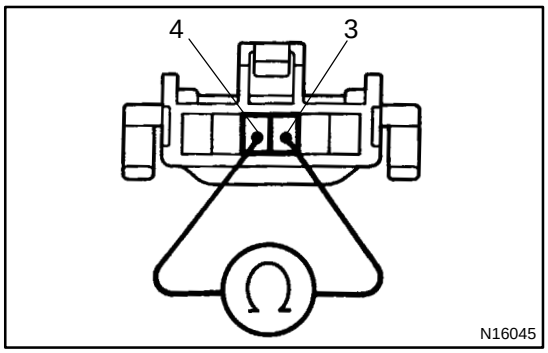
Switch position	Resistance (V)
Neutral	10 - 16 V
RES/ACC	0.8 - 3.7 V
SET/COAST	2.5 - 6.3 V
CANCEL	4.2 - 8.8 V

NG	Proceed to next circuit inspection shown on problem symptom table (See page DI-572)

OK

cardiagn.com

3	**Check control switch.**



PREPARATION:

(a) Remove steering wheel center pad.

(b) Disconnect the control switch connector.

CHECK:

Measure resistance between terminals 3 and 4 of control switch connector when control switch is operated.

Switch position	Resistance (Ω)
Neutral	∞ (No continuity)
RES/ACC	50 - 80
SET/COAST	180 - 220
CANCEL	400 - 440

NG → **Replace control switch.**

OK

4	**Check harness and connector between cruise control ECU and cruise control switch, cruise control switch and body ground (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

5	**Input signal check (See step 1).**

OK → **Wait and see.**

NG

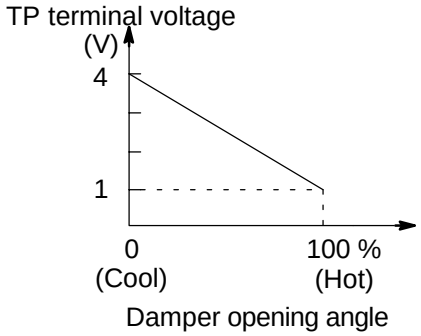
Check and replace cruise control ECU (See page IN-31).

cardiagn.com

DI3FH-05

DTC	37, 47	Rear Air Mix Damper Position Sensor Circuit

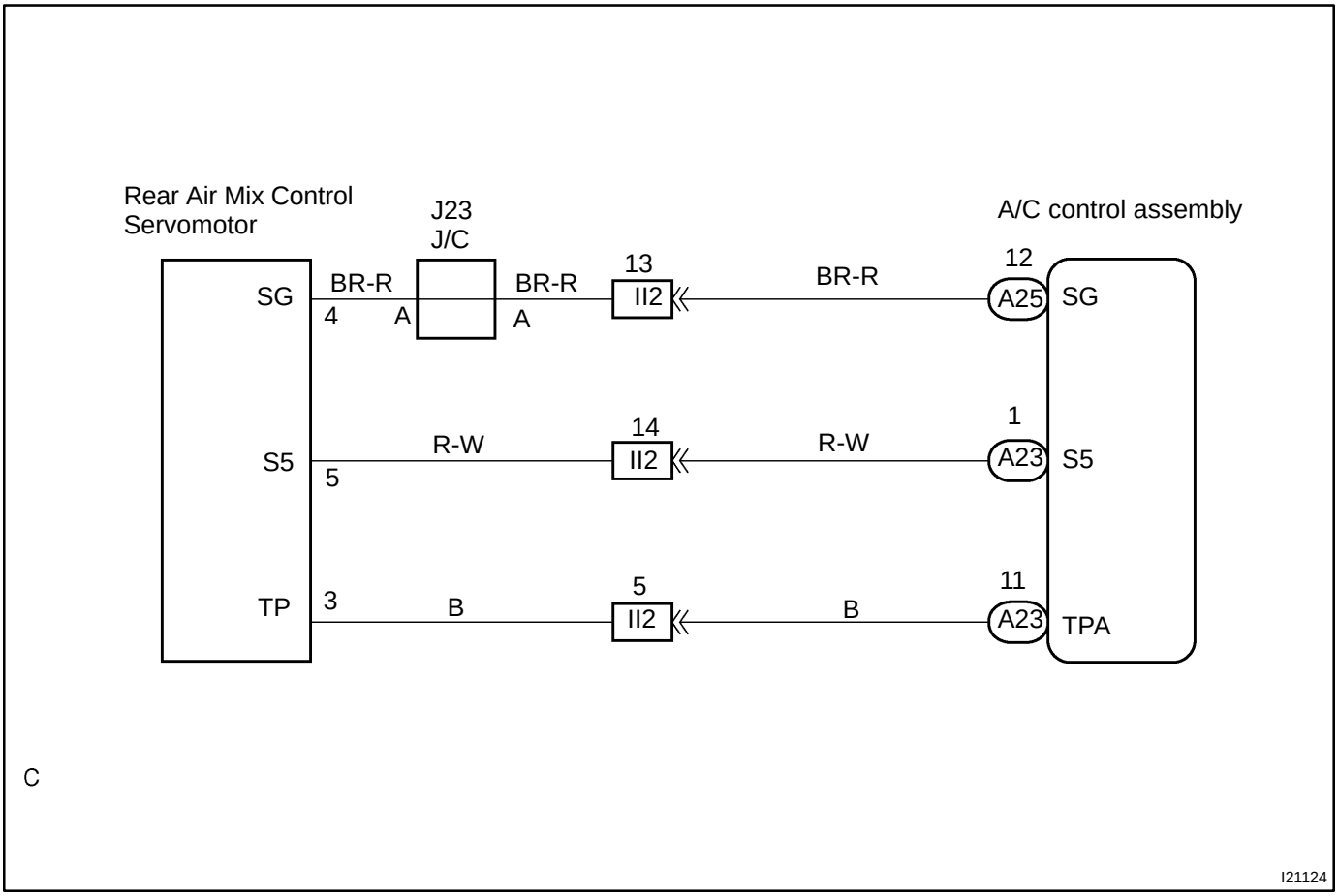
CIRCUIT DESCRIPTION



This sensor detects the position of the air mix damper and sends the appropriate signals to the rear A/C control assembly. The position sensor is built into the rear air mix damper control servomotor assembly.

DTC No.	Detection Item	Trouble Area
37	Short to ground or power source circuit in rear air mix damper position sensor circuit.	• Rear air mix damper position sensor. • Harness or connector between Rear air mix damper control servomotor assembly and A/C control assembly. • Rear A/C control assembly.
47	Rear air mix damper position sensor value does not change even if A/C control assembly operates rear air mix damper control servomotor.	

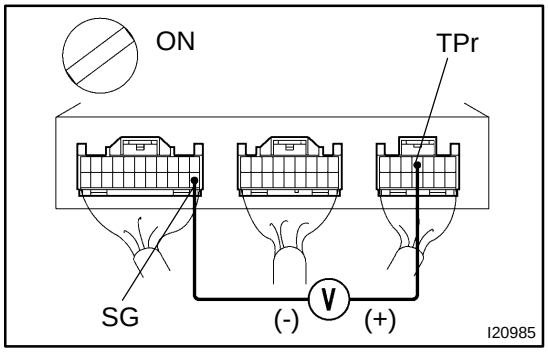
WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check voltage between terminals TPr and SG of A/C control assembly connector.**



PREPARATION:

Remove A/C control assembly with connectors still connected.

CHECK:

(a) Turn ignition switch ON.

(b) Change the set temperature to activate the rear air mix damper control servomotor, and measure the voltage between terminals TPr and SG of A/C control assembly connector each time when the set temperature is changed.

OK:

Set Temperature	Voltage
Max. cool	3.5 - 4.5 V
Max. hot	0.5 - 1.5 V

HINT:

As the set temperature increases, the voltage decreases.

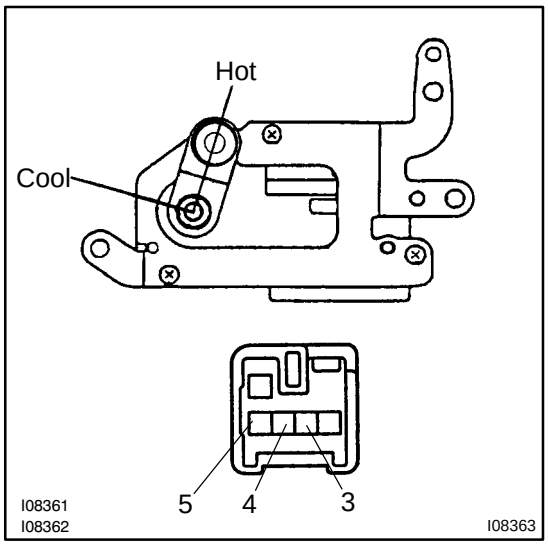
NG → **Go to step 2.**

Ok

Proceed to next circuit inspection shown on problem symptoms table (See page DI-697). However, if DTC 37 or 47 is displayed, check and replace A/C control assembly.

cardiagn.com

2	Check rear air mix damper position sensor.



PREPARATION:

Remove rear air mix servomotor (See page AC-50).

CHECK:

Measure resistance between terminals 4 and 5 of rear air mix damper control servomotor assembly connector.

OK:

Resistance : 4.2 - 7.8 kΩ

CHECK:

While operating rear air mix damper control servomotor, following the procedure, measure resistance between terminals 3 and 4 of rear air mix damper control servomotor assembly connector.

OK:

Position	Resistance
Max. ”COOL”	3.6 - 6.8 kΩ
Max. ”WARM”	0.5 - 1.1 kΩ

HINT:

As the rear air mix damper control servomotor moves from ”COOL” side to ”WARM” side, the resistance decreases.

NG → **Replace rear air mix damper control servomotor assembly.**

OK ↓

3	Check harness and connector between A/C control assembly and rear air mix damper control servomotor assembly (See page IN-31).

NG → **Repair or replace harness or connector.**

OK ↓

Check and replace A/C control assembly.

cardiagn.com

DI3FI-06

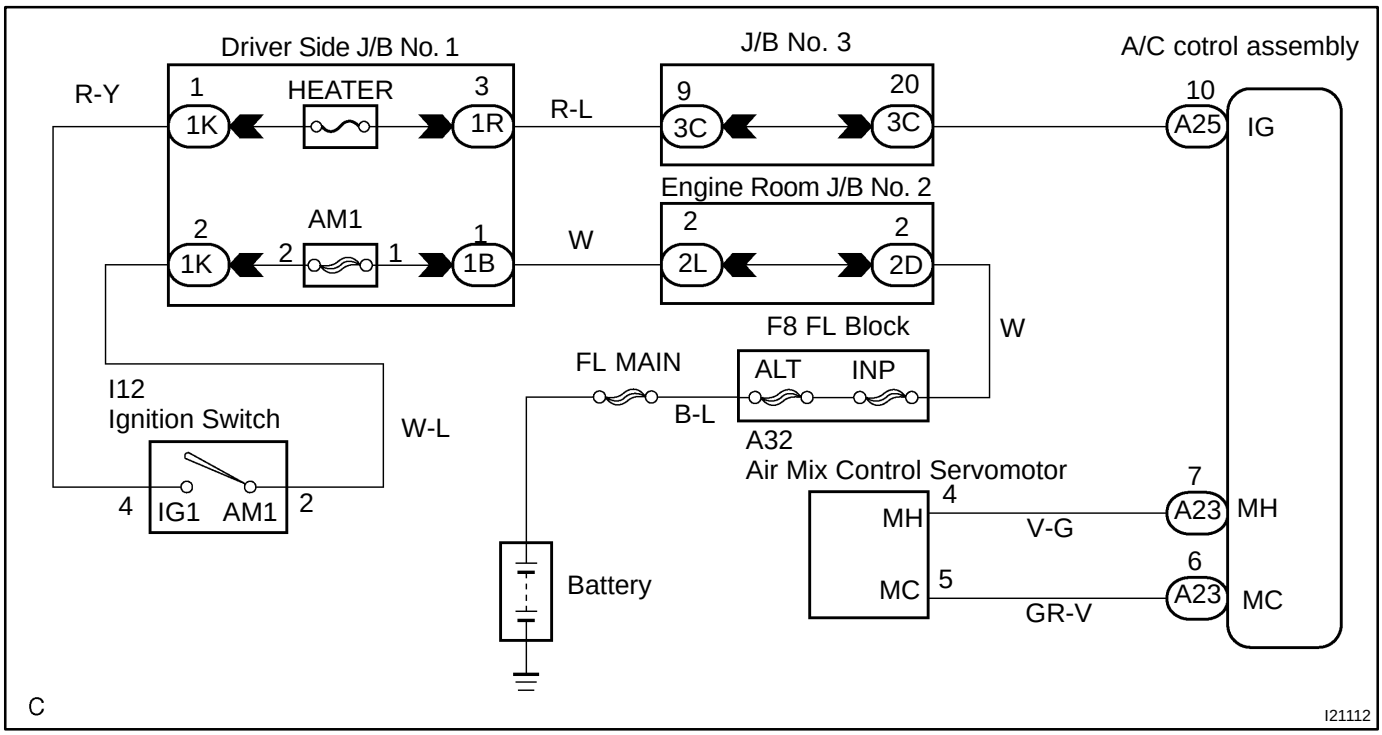
DTC	41	Front Air Mix Damper Control Servomotor Circuit

CIRCUIT DESCRIPTION

The front air mix damper control servomotor is controlled by the A/C control assembly and moves the air mix damper to the desired position.

DTC No.	Detection Item	Trouble Area
41	Air mix damper position sensor value does not change even if A/C control assembly operates air mix damper control servomotor.	• Front air mix damper control servomotor. • Front air mix damper position sensor. • Harness or connector between front air mix control servomotor and A/C cotrol assembly • A/C cotrol assembly

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Actuator check**

PREPARATION:

(a) Warm up the engine.

(b) Set to the actuator check mode (See page DI-689).

(c) Press the DEF switch and change it to step operation.

CHECK:

Press the DEF switch and check the operation of the air mix damper and the condition of the blower.

OK:

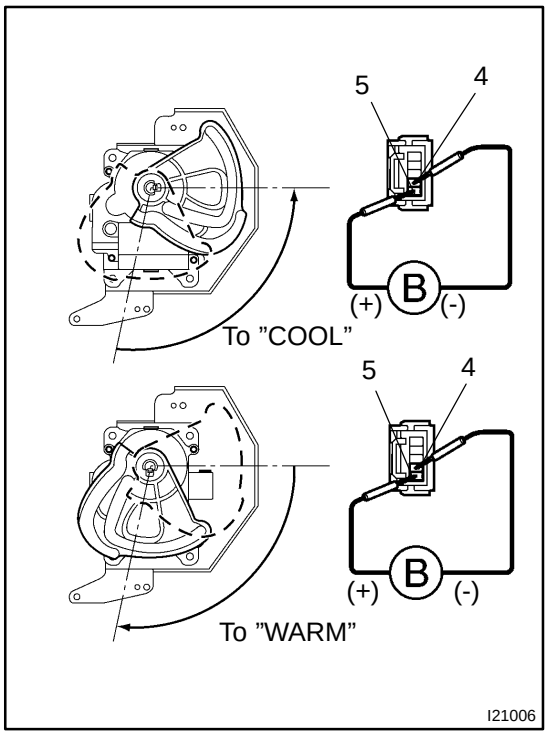
Display Code	Air Mix Damper	Condition
0 - 3	0 % (Fully closed)	Cool air comes out
4 - 5	50 %	
6 - 9	100 % (Fully opened)	Warm air comes out

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page DI-697).**

NG

cardiagn.com

2	Check front air mix damper control servomotor.



PREPARATION:
Remove front air mix damper control servomotor (See page AC-90).
CHECK:
Connect positive (+) lead to terminal 4 and negative (-) lead to terminal 5.
CHECK:
Connect positive (+) lead to terminal 5 and negative (-) lead to terminal 4.
OK:
The lever turns smoothly to "COOL" side.
OK:
The lever turns smoothly to "WARM" side.

NG → **Replace front air mix damper control servomotor assembly.**

OK ↓

3	Check harness and connector between A/C cotrol assembly and front air mix damper control servomotor assembly (See page IN-31).

NG → **Repair or replace harness or connector.**

OK ↓

Check and replace A/C cotrol assembly.

cardiagn.com

DI3FJ-06

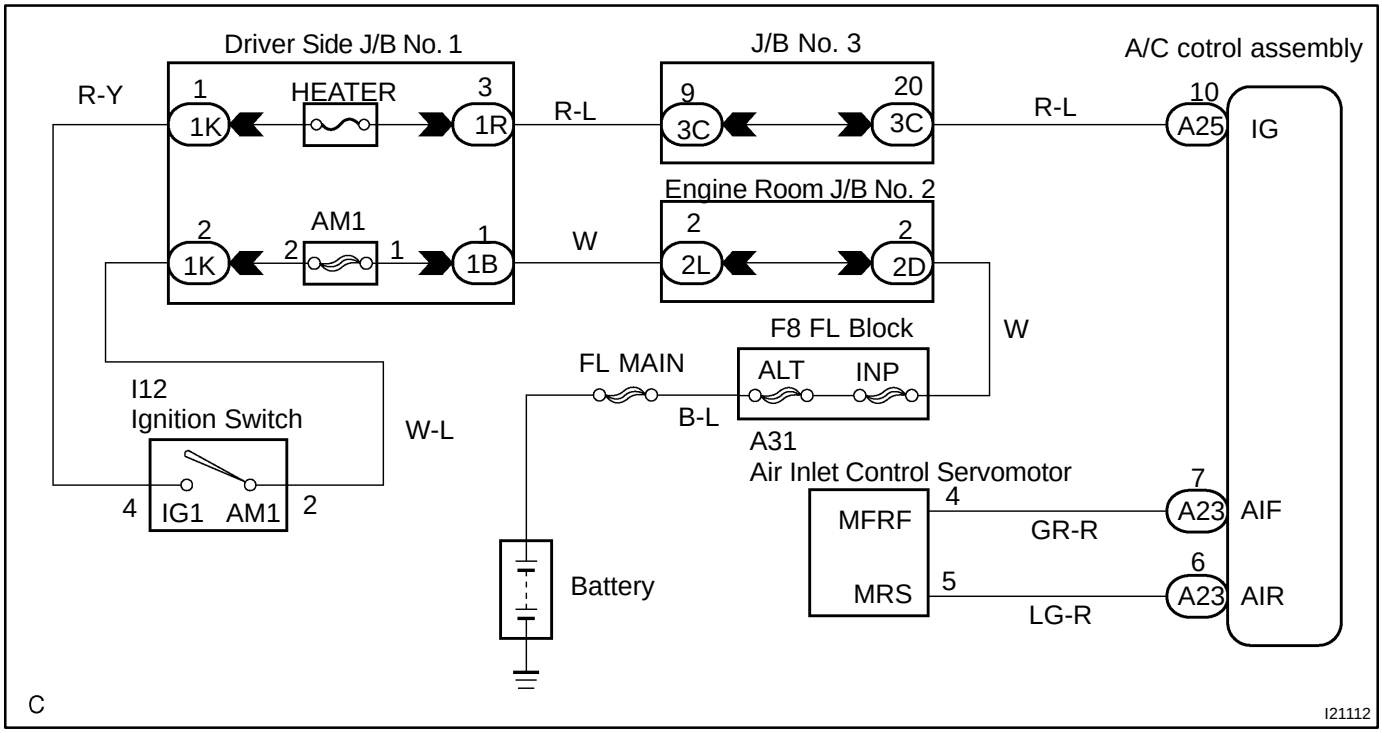
DTC	42	Air Inlet Damper Control Servomotor Circuit

CIRCUIT DESCRIPTION

The air inlet damper control servomotor is controlled by the A/C control assembly and moves the air inlet damper to the desired position.

DTC No.	Detection item	Trouble Area
42	Air inlet damper position sensor value does not change even if A/C control assembly operated air inlet damper control servomotor.	• Air inlet damper position sensor • Harness or connector between air inlet damper control servomotor assembly and A/C control assembly • A/C control assembly

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Actuator check.**

PREPARATION:

(a) Remove glove compartment to see and check the air inlet damper operation.

(b) Set to the actuator check mode (See page DI-689).

(c) Press the DEF switch and change it to step operation.

CHECK:

Press the DEF switch and check the operation air inlet damper.

OK:

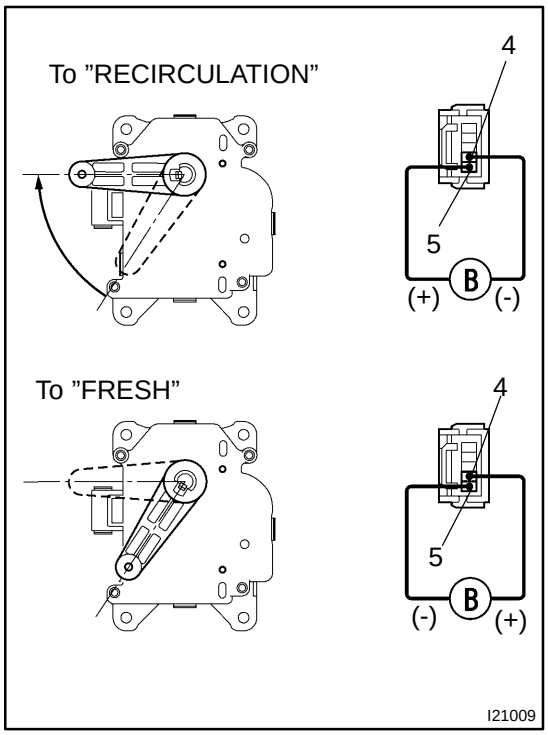
DIsplay Code	Air Inlet Damper
0 - 3	"FRESH"
4 - 9	"RECICULATION"

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page DI-697).**

NG

cardiagn.com

2	Check air inlet damper control servomotor.



PREPARATION:

Remove the air inlet damper control servomotor (See page AC-56).

CHECK:

Connect positive (+) lead to terminal 5 and negative (-) lead to terminal 4.

OK:

The lever moves smoothly to ”RECIRCULATION” position.

CHECK:

Connect positive (+) lead to terminal 4 and negative (-) lead to terminal 5.

OK:

The lever moves smoothly to ”FRESH” position.

NG → **Replace air inlet damper control servomotor assembly.**

OK

3	Check harness and connector between A/C control assembly and air inlet damper control servomotor (See page IN-31).

NG → **Repair or replace harness or connector.**

OK

Check and replace A/C control assembly.

cardiagn.com

DI3FK-05

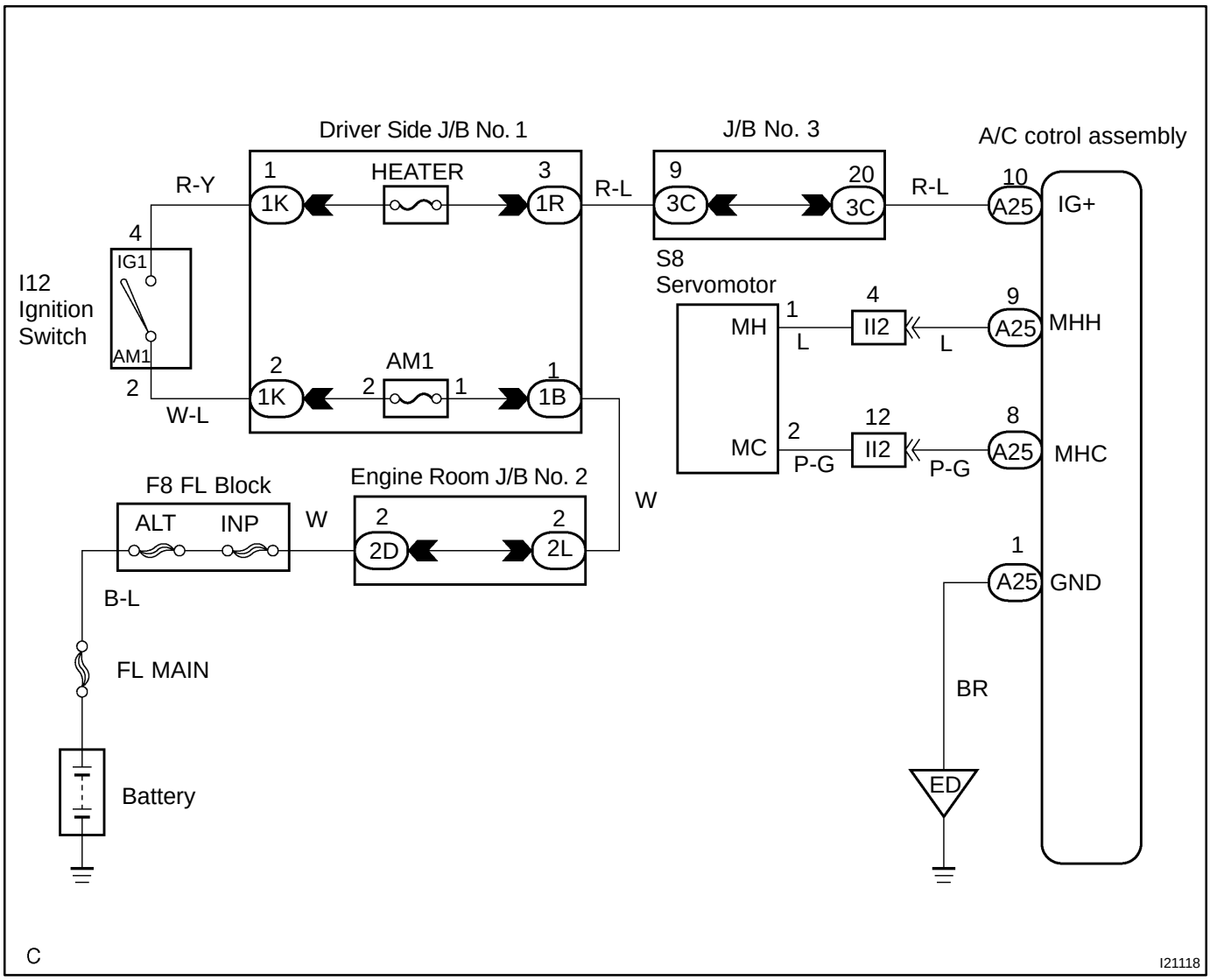
DTC	47	Rear Air Mix Damper Control Servomotor Circuit

CIRCUIT DESCRIPTION

The rear air mix damper control servomotor is controlled by the A/C control assembly and moves the air mix damper to the desired position.

DTC No.	Detection Item	Trouble Area
47	Air mix damper position sensor value does not change even if A/C control assembly operates air mix damper control servomotor.	• Rear air mix damper control servomotor • Rear air mix damper position sensor • Harness or connector between rear air mix control servomotor and A/C control assembly • A/C control assembly

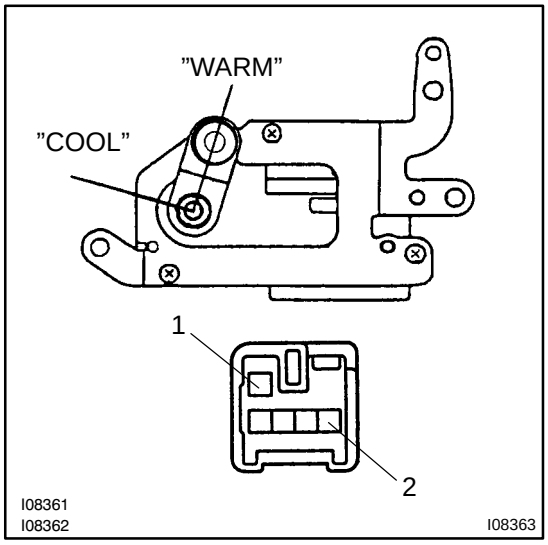
WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check rear air mix damper control servomotor.**



PREPARATION:
Remove the rear air mix damper control servomotor (See page AC-50).

CHECK:
Connect positive (+) lead to terminal 1 and negative (-) lead to terminal 2.

OK:

The lever turns smoothly to "WARM " side.

CHECK:
Connect positive (+) lead to terminal 2 and negative (-) lead to terminal 1.

OK:

The lever turns smoothly to "COOL" side.

NG → **Replace rear air mix damper control servomotor assembly.**

OK

2	**Check harness and connector between A/C control assembly and rear air mix damper control servomotor assembly (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

Check and replace A/C control assembly.

cardiagn.com

DI08S-15

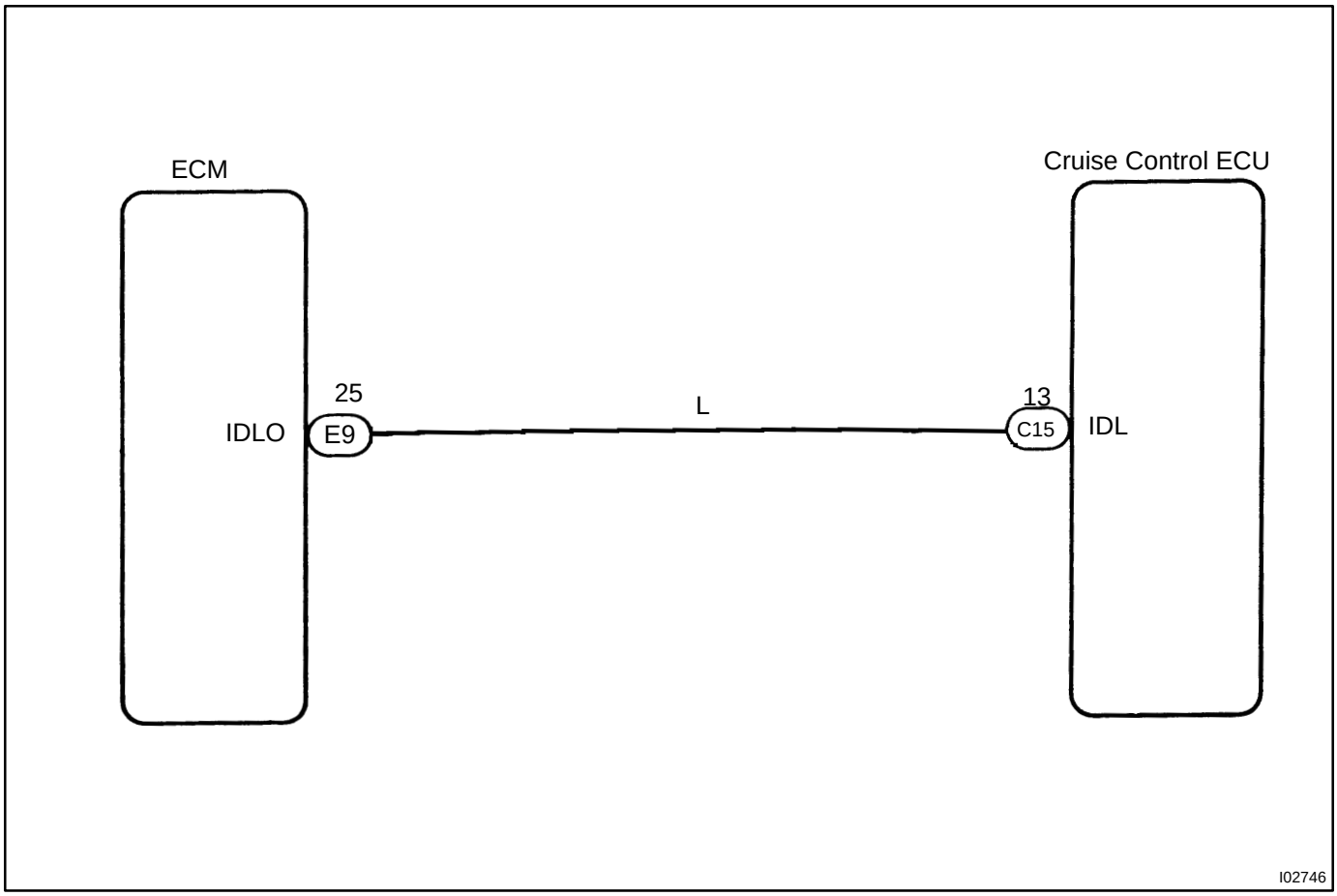
DTC	51	Idle Signal Circuit

CIRCUIT DESCRIPTION

When the idle switch is turned ON, a signal is sent to the ECU. The ECU uses this signal to correct the discrepancy between the throttle valve position and the actuator position sensor value to enable accurate cruise control at the set speed. If the idle switch is malfunctioning, problem symptoms also occur in the engine, so also inspect the engine.

DTC No.	Detection Item	Trouble Area
51	Short in idle signal circuit.	• Harness or connector between ECM and throttle position sensor • Throttle position sensor • Harness or connector between cruise control ECU and ECM • Cruise control ECU

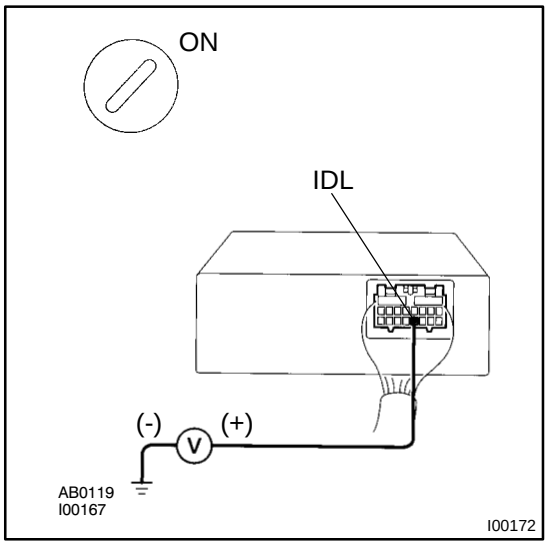
WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check voltage between terminal IDL of cruise control ECU connector and body ground.**



PREPARATION:

(a) Remove the ECU with connector still connected.
(b) Disconnect the ECM connector.
(c) Turn ignition switch ON.

CHECK:

Measure voltage between terminal IDL of ECU connector and body ground when the throttle valve is fully closed and fully opened.

OK:

Throttle valve position	Voltage
Fully opened	10 - 14 V
Fully closed	Below 2 V

OK → **Proceed to next circuit inspection shown on problem symptom table (See page DI-572).**

NG

2	**Check harness and connector between ECM and throttle position sensor (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

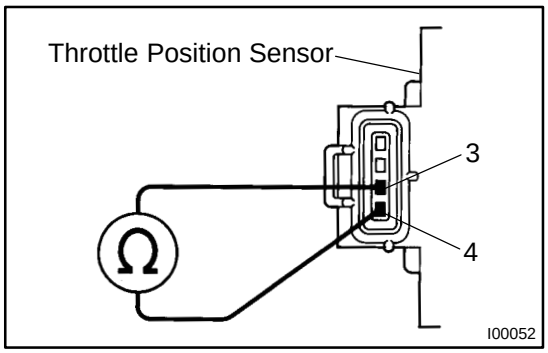
3	**Check throttle position sensor circuit (See page DI-41).**

NG → **Replace throttle position sensor.**

OK

cardiagn.com

4	Check throttle position sensor.



PREPARATION:
Disconnect the throttle position sensor connector.
CHECK:
Measure resistance between terminals 3 and 4 of throttle position sensor connector when the throttle valve is fully closed and fully opened.
OK:

Throttle valve position	Resistance
Fully opened	1 MΩ or higher
Fully closed	Below 2.3 kΩ

NG → **Replace throttle position sensor.**

OK

5	Check for open and short in harness and connector between cruise control ECU and ECM (See page IN-31).

NG → **Repair or replace harness or connector.**

OK

Check and replace cruise control ECU (See page IN-31).

cardiagn.com

DI08M-11

CIRCUIT INSPECTION

DTC	11, 15	Actuator Motor Circuit

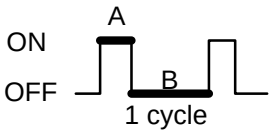
CIRCUIT DESCRIPTION

The actuator motor is operated by signals from the ECU. Acceleration and deceleration signals are transmitted by changes in the Duty Ratio (See note below).

Duty Ratio

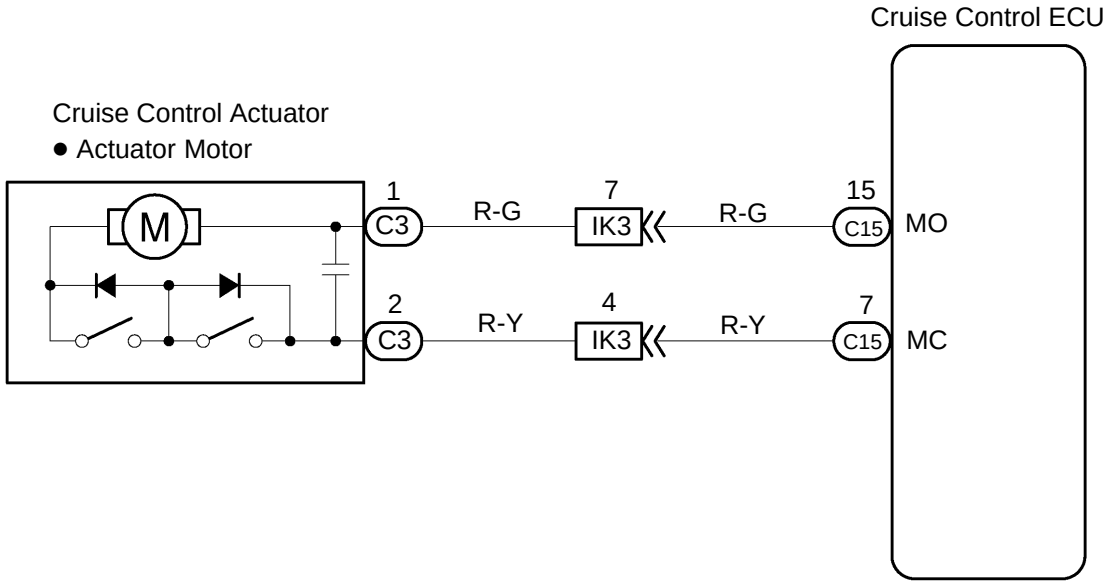
The duty ratio is the ratio of the period of continuity in one cycle. For example, if A is the period of continuity in one cycle, and B is the period of non-continuity, then.

$$\text{Duty Ratio} = \frac{A}{A + B} \times 100\ (\%)$$



DTC No.	Detection Item	Trouble Area
11	Short in actuator motor circuit.	• Actuator motor • Harness or connector between cruise control ECU and actuator motor • Cruise control ECU
15	Open in actuator motor circuit.	• Actuator motor

WIRING DIAGRAM

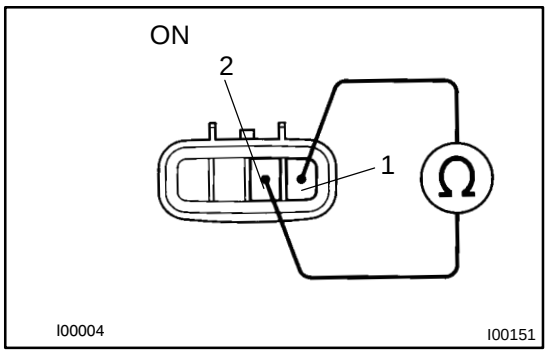


I03206

cardiagn.com

INSPECTION PROCEDURE

1	**Check resistance between terminals MO and MC of actuator motor.**



PREPARATION:

(a) Turn ignition switch OFF.

(b) Disconnect the actuator connector.

CHECK:

Measure resistance between terminals 1 and 2.

HINT:

If control plate position is fully opened or fully closed, resistance can not be measured.

OK:

Resistance: more than 4.2 Ω

NG → **Replace cruise control actuator.**

OK

2	**Check for open and short in harness and connectors between cruise control ECU and actuator motor (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

Check and replace cruise control ECU. (See page IN-31).

cardiagn.com

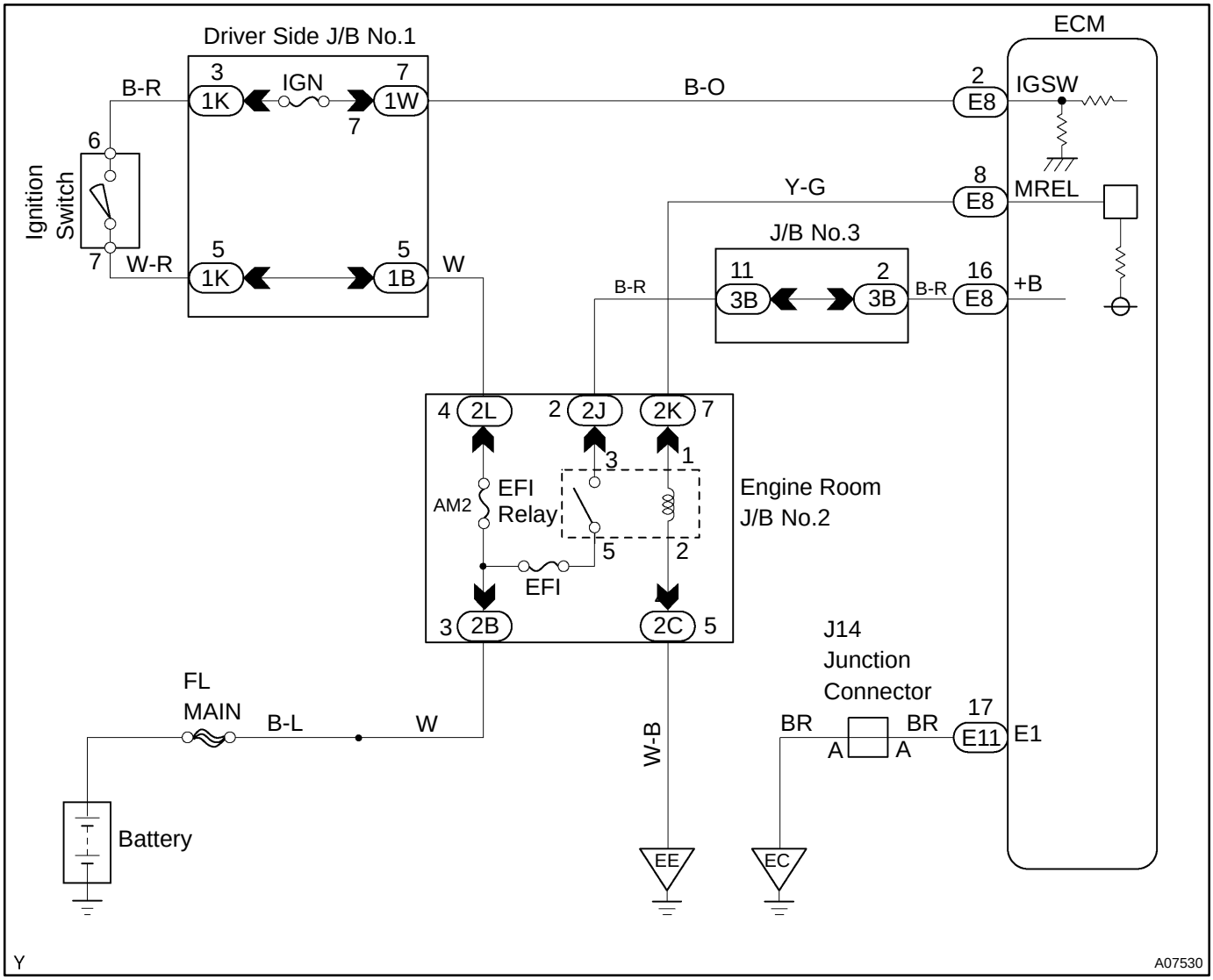
DI22L-03

ECM Power Source Circuit

CIRCUIT DESCRIPTION

When the ignition switch is turned ON, battery positive voltage is applied to the coil, closing the contacts of the EFI main relay (Marking: EFI) and supplying power to terminal +B of the ECM.

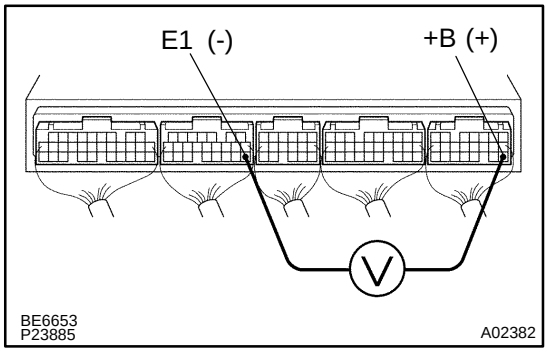
WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check voltage between terminals + B and E1 of ECM connectors.**



PREPARATION:

(a) Remove the glove compartment (See page SF-83).

(b) Turn the ignition switch ON.

CHECK:

Measure voltage between terminals + B and E1 of the ECM connectors.

OK:

Voltage: 9 - 14 V

OK	**Proceed to next circuit inspection shown on problem symptoms table (See page DI-21).**

NG

2	**Check for open in harness and connector between terminal E1 of ECM and body ground (See page IN-31).**

NG	**Repair or replace harness or connector.**

OK

3	**Check EFI main relay (Marking: EFI) (See page SF-64).**

NG	**Replace EFI main relay.**

OK

4	**Check EFI fuse (See page DI-135).**

NG	**Check for short in all the harness and components connected to EFI fuse.**

OK

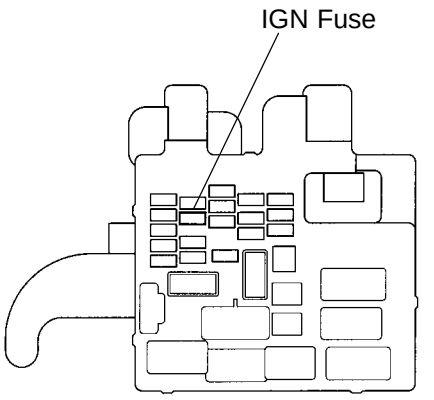
cardiagn.com

5	**Check for open harness and connector between EFI main relay (Marking: EFI) and battery, and EFI main relay (Marking: EFI) and ECM (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

6	**Check IGN fuse.**



PREPARATION:
Remove the IGN fuse from the instrument panel J/B.
CHECK:
Check continuity of the IGN fuse.
OK:
Continuity

NG → **Check for short in all the harness and components connected to IGN fuse.**

OK

7	**Check ignition switch (See page BE-15).**

NG → **Replace ignition switch.**

OK

Check for open in harness and connector between IG switch and EFI main relay, EFI main relay and body ground (See page IN-31).

cardiagn.com

DI08U-24

Electronically Controlled Transmission Communication Circuit

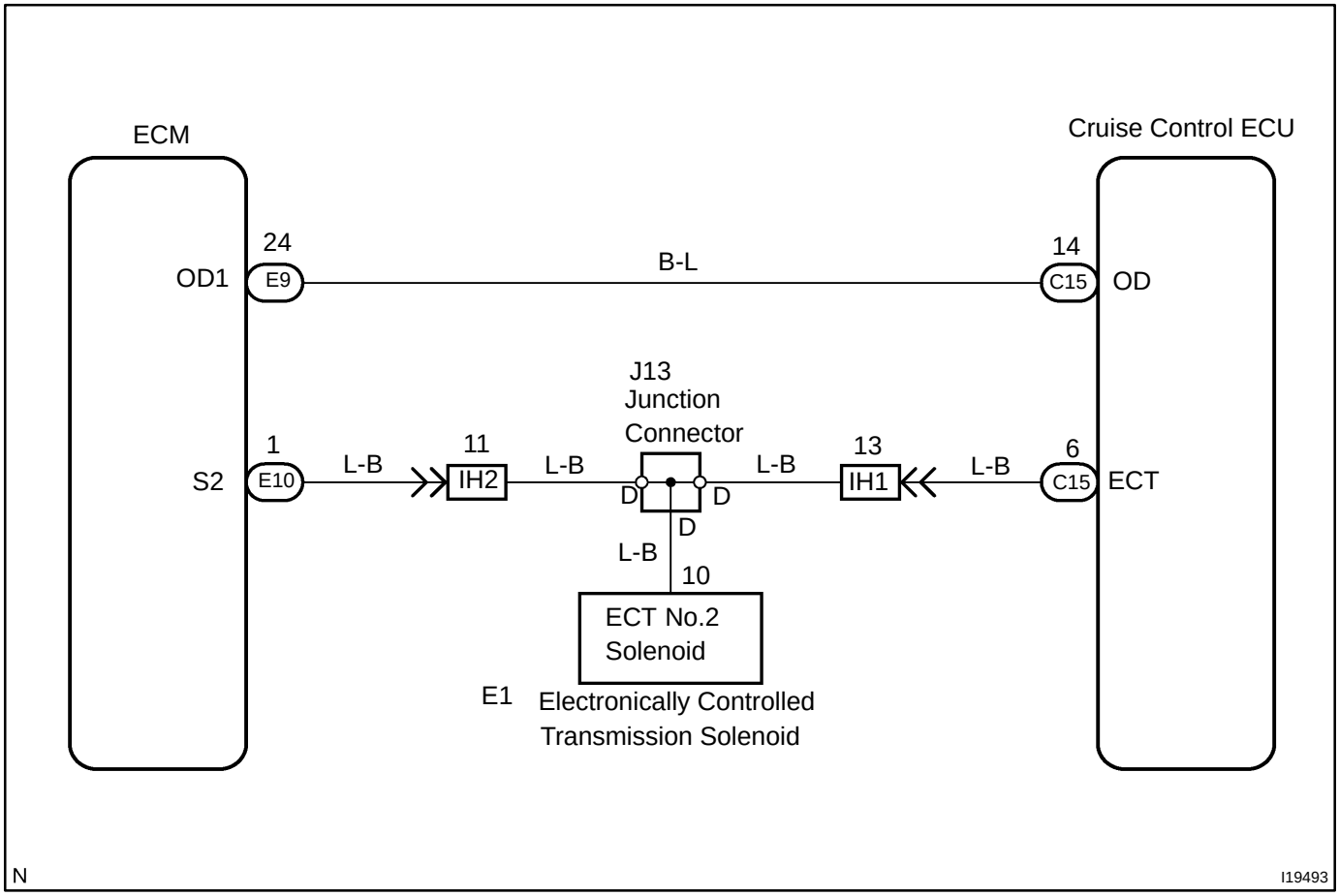
CIRCUIT DESCRIPTION

When driving uphill under cruise control, in order to reduce shifting due to ON-OFF overdrive operation and to provide smooth driving, when down shifting in the electronically controlled transmission occurs, a signal to prevent upshift until the end of the up hill slope is sent from the cruise control ECU to the electronically controlled transmission.

Terminal ECT of the cruise control ECU detects the shift change signal (output to electronically controlled transmission No. 2 solenoid) from the ECM.

If vehicle speed down, also when terminal ECT of the cruise control ECU receives down shifting signal, it sends a signal from terminal OD to ECM to cut overdrive until the end of the uphill slope, and the gear shifts are reduced and gear shift points in the electronically controlled transmission are changed.

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check operation of overdrive.**

PREPARATION:

Test drive after engine warms up.

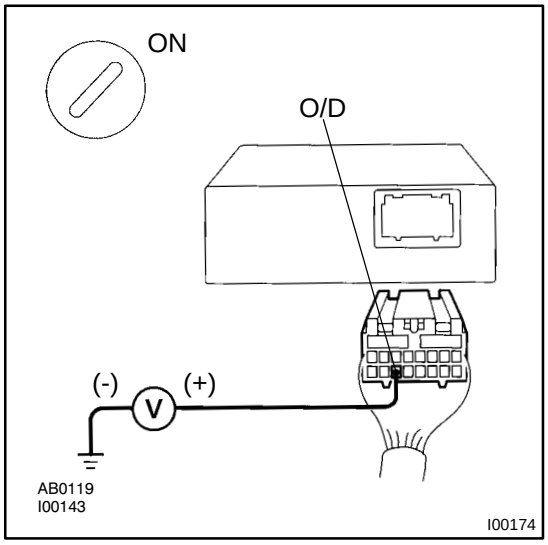
CHECK:

Check that overdrive ON ↔ OFF occurs with operation of OD switch ON-OFF.

NG → **Check and repair electronically controlled transmission (See page DI-204).**

OK

2	**Check voltage between terminal OD of harness side connector of cruise control ECU and body ground.**



PREPARATION:

(a) Remove the ECU with connector still connected.

(b) Turn ignition switch ON.

(c) Disconnect the ECU connector.

CHECK:

Measure voltage between terminal OD of harness side connector of ECU and body ground.

OK:

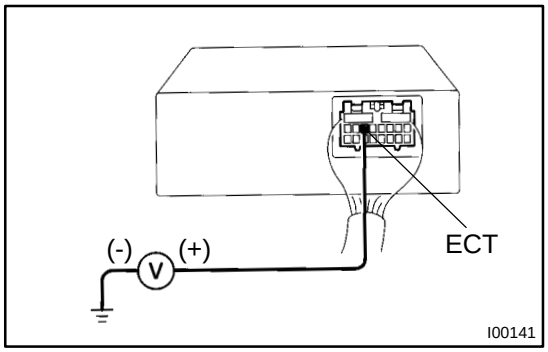
Voltage: 10 - 14 V

NG → **Go to step 5.**

OK

cardiagn.com

3	**Check voltage between terminal ECT of cruise control ECU connector and body ground (On test drive).**



PREPARATION:

(a) Connect the ECU connector.

(b) Test drive after engine warms up.

CHECK:

Check voltage between terminal ECT of ECU connector and body ground when OD switch is ON and OFF.

OK:

OD switch position	Voltage
ON	8 - 14 V
OFF	Below 0.5 V

OK → **Proceed to next circuit inspection shown on problem symptom table (See page DI-572).**

NG

4	**Check harness and connector between terminal ECT of cruise control ECU and electronically controlled transmission solenoid (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

Check and replace cruise control ECU.

5	**Check harness and connector between terminal OD of cruise control ECU and terminal OD1 of ECM (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

Check and replace cruise control ECU (See page IN-31).

cardiagn.com

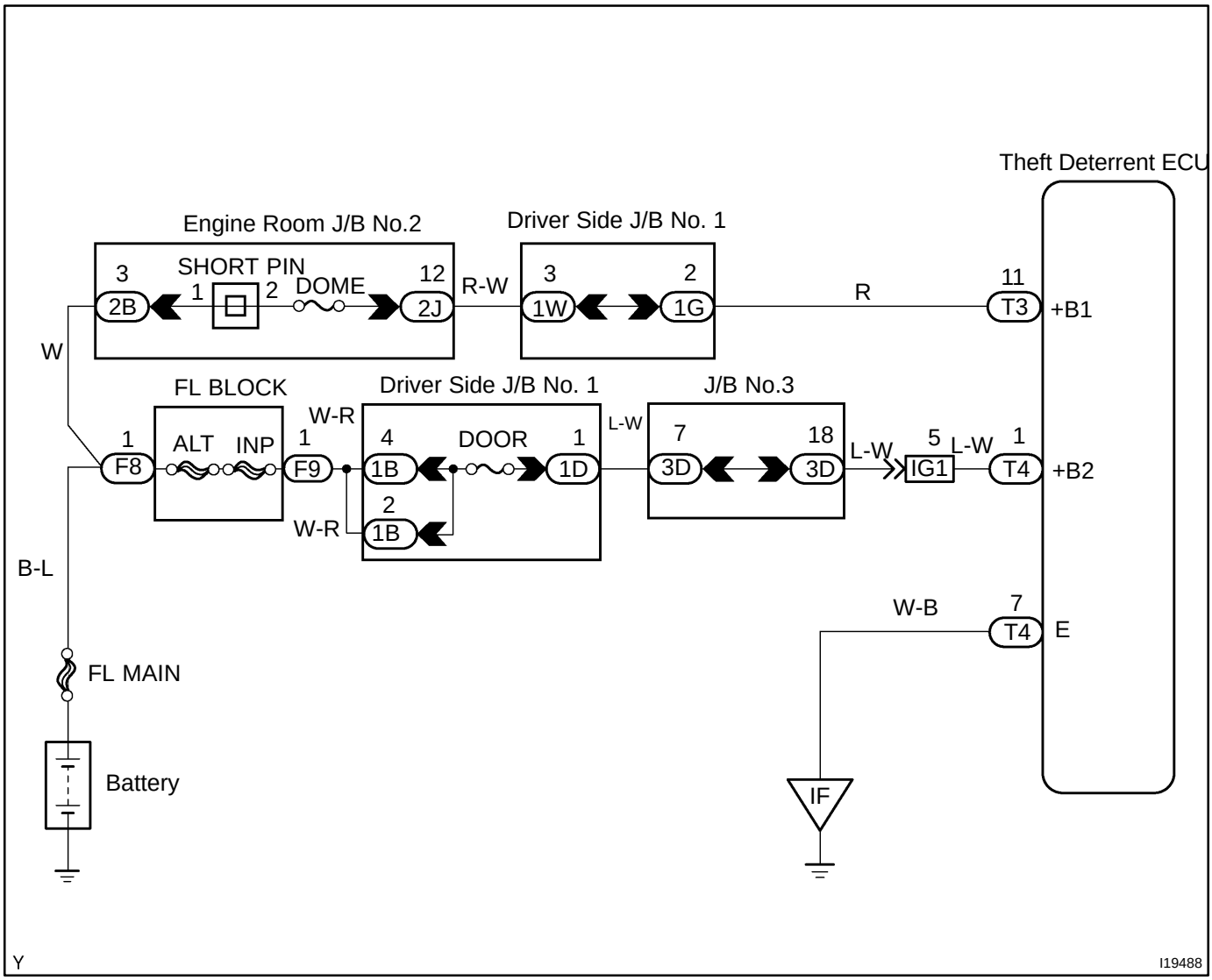
DI06T-10

ECU Power Source Circuit

CIRCUIT DESCRIPTION

This circuit provides power to operate the theft deterrent ECU.

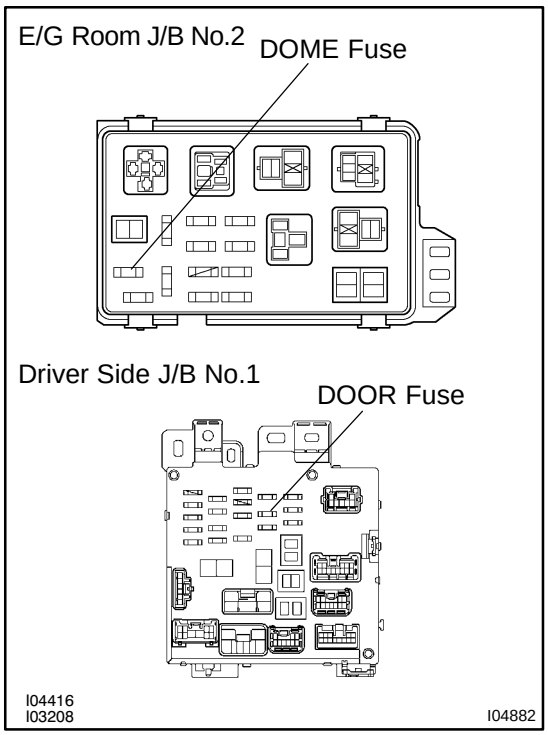
WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check DOME and DOOR fuses.**



PREPARATION:

(a) Remove DOME fuse from engine room J/B No.2.

(b) Remove DOOR fuse from driver side J/B No.1.

CHECK:

Check continuity of DOME and DOOR fuses.

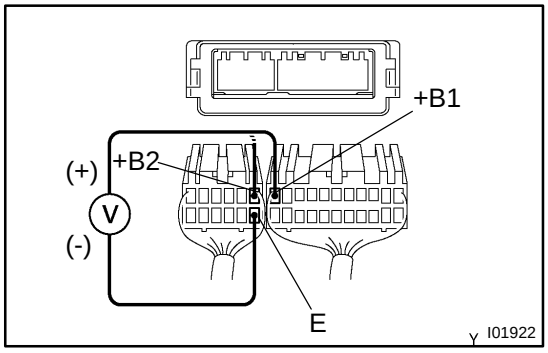
OK:

Continuity

NG → **Check for short in all the harness and components connected to the DOME and DOOR fuses (See attached wiring diagram).**

OK

2	**Check voltage between each of terminals +B1 and +B2 and E of theft deterrent ECU connector.**



PREPARATION:

Disconnect the theft deterrent ECU connector.

CHECK:

Measure voltage between each of terminals +B1 and +B2 and E of theft deterrent ECU connector.

OK:

Voltage: 10-14V

OK → **Proceed to next circuit inspection shown on matrix chart (See page DI-532).**

NG

cardiagn.com

3	**Check for open in harness and connector between ECU and body ground (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

Check and repair harness and connector between ECU and battery.

cardiagn.com

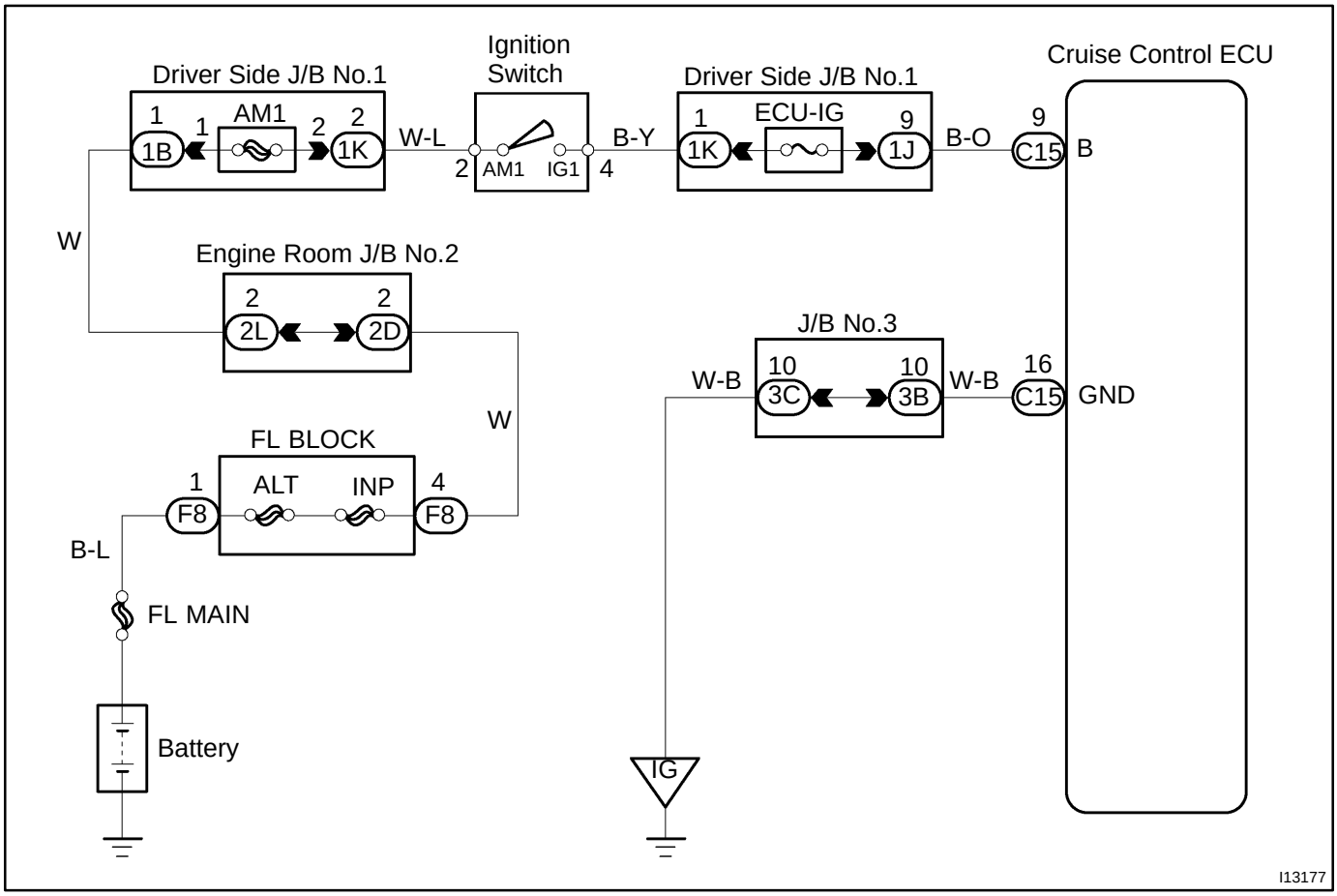
DI08X-24

ECU Power Source Circuit

CIRCUIT DESCRIPTION

The ECU power source supplies power to the actuator and sensors, etc.. When terminal GND and the cruise control ECU case are grounded.

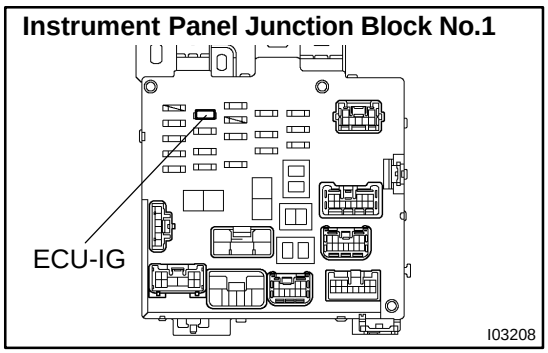
WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check ECU-IG fuse.**

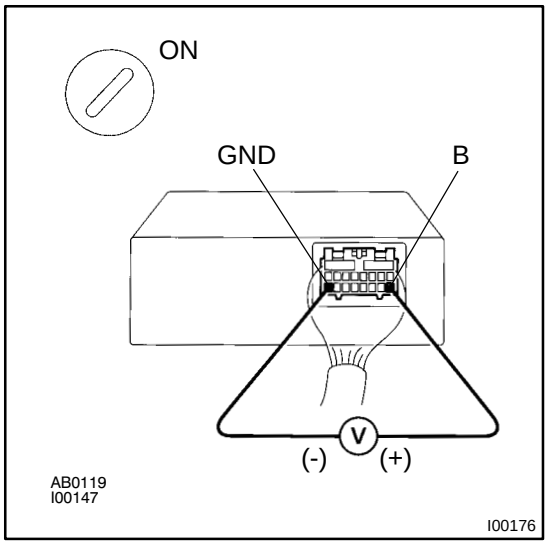


PREPARATION:
Remove the ECU-IG fuse from instrument panel junction block No.1.
CHECK:
Check continuity of ECU-IG fuse.
OK:
Continuity

NG → **Check for short in all the harness and components connected to ECU-IG fuse.**

OK

2	**Check voltage between terminals B and GND of cruise control ECU connector.**



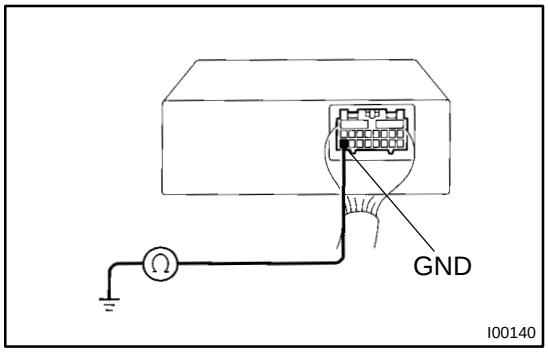
PREPARATION:
(a) Remove the ECU with connector still connected.
(b) Turn ignition switch ON.
CHECK:
Measure voltage between terminals B and GND of ECU connector.
OK:
10 - 14 V

OK → **Proceed to next circuit inspection shown on problem symptom table (See page DI-572).**

NG

cardiagn.com

3	**Check resistance between terminal GND of cruise control ECU connector and body ground.**



CHECK:

Measure resistance between terminal GND of ECU connector and body ground.

OK:

Resistance: Below 1 Ω

NG → **Repair or replace harness or connector.**

OK

Check and repair harness and connector between cruise control ECU and battery (See page IN-31).

cardiagn.com

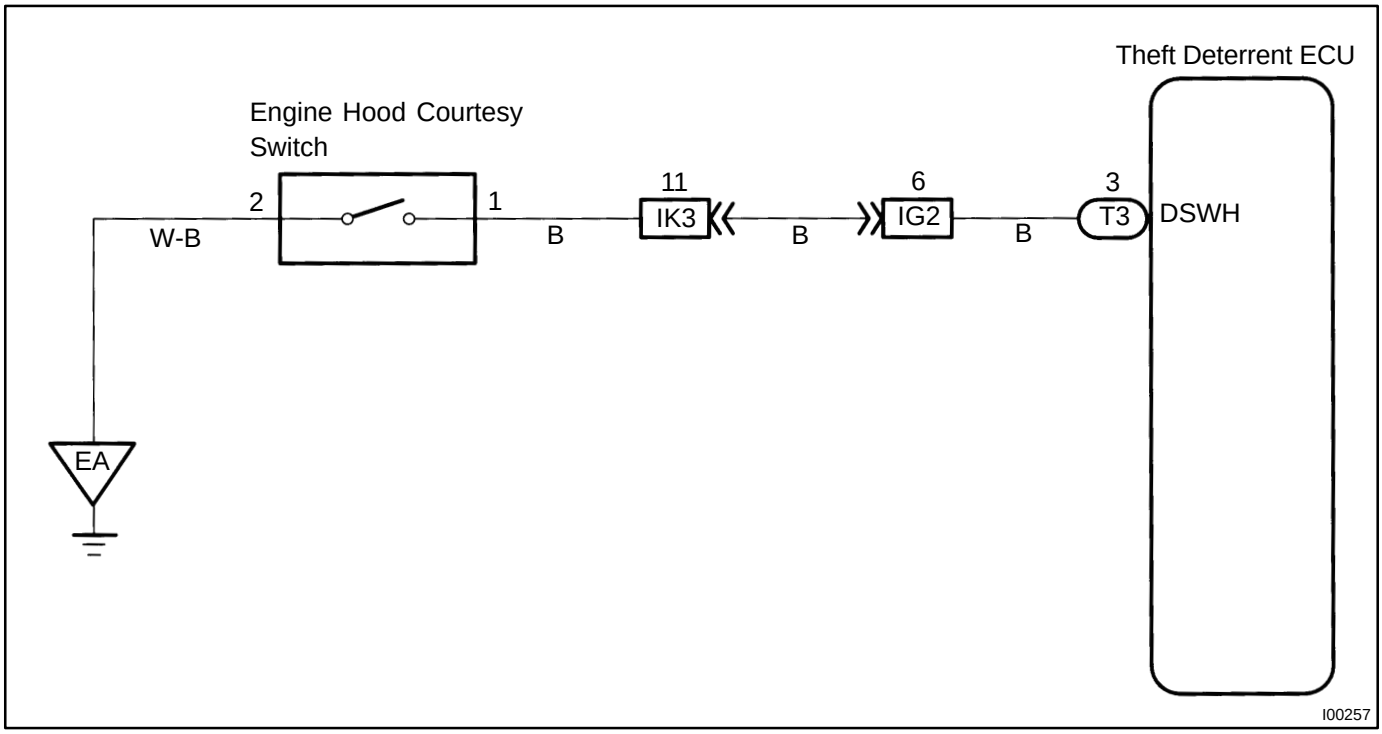
DI076-08

Engine Hood Courtesy Switch Circuit

CIRCUIT DESCRIPTION

The engine hood courtesy switch is built into the engine hood lock assembly and goes ON when the engine hood is opened and goes OFF when the engine hood is closed.

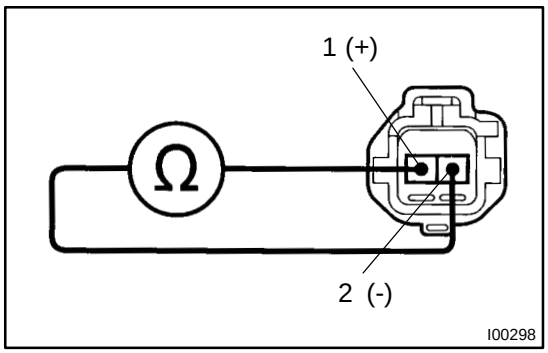
WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check engine hood courtesy switch.**



PREPARATION:

(a) Remove engine hood lock assembly.

(b) Disconnect engine hood courtesy switch connector.

CHECK:

Check continuity between terminals 1 and 2 when engine hood lock is locked and unlocked.

OK:

Engine hood lock	Tester connection	Specified condition
LOCK	-	No continuity
UNLOCK	1 - 2	Continuity

NG → **Replace engine hood courtesy switch.**

OK

2	**Check harness and connector between theft deterrent ECU and switch, switch and body ground (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

Check and replace theft deterrent ECU (See page IN-31).

cardiagn.com

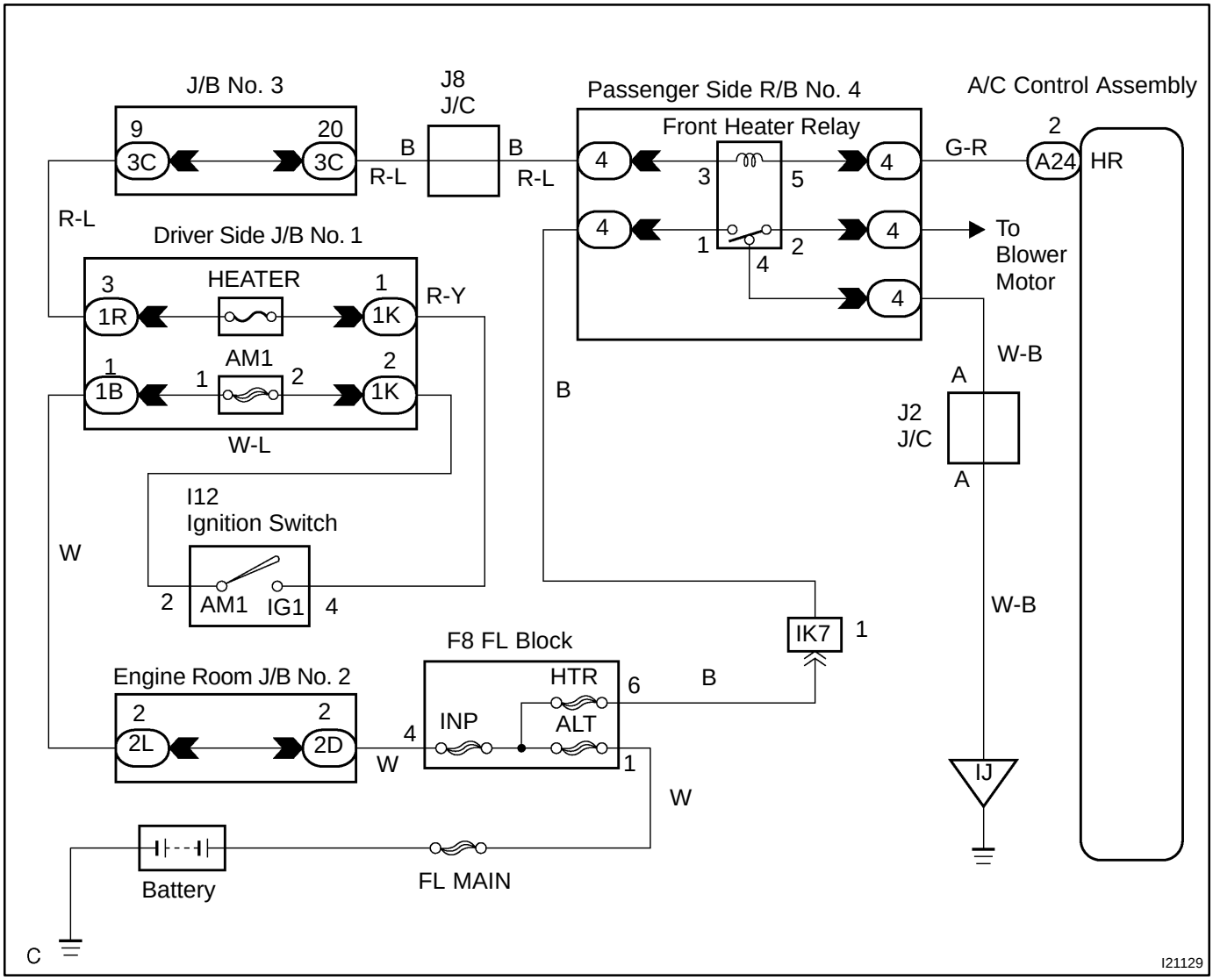
DI3WC-07

Heater Main Relay Circuit

CIRCUIT DESCRIPTION

The heater main relay is switched on by signals from the A/C control assembly. It supplies power to the blower motor.

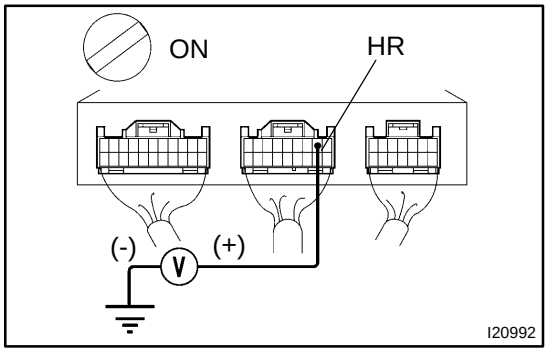
WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check voltage between terminal HR of A/C control assembly connector and body ground.**



PREPARATION:

Remove A/C control assembly with connectors still connected (See page AC-1 16).

CHECK:

Measure voltage between terminal HR of A/C control assembly and body ground when ignition switch is ON and OFF.

OK:

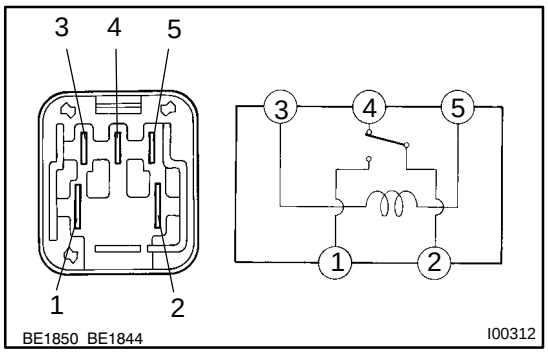
Ignition Switch	Voltage	
OFF	0 V	
ON	Blower ON	0 V
	Blower OFF	10 - 14 V

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page DI-697).**

NG

cardiagn.com

2	Check front heater relay.



PREPARATION:

Remove front heater relay from passenger side R/B No. 4.

CHECK:

Check continuity between each pair of terminals of front heater relay shown below.

OK:

Tester connection	Specified condition
1 - 4	No continuity
2 - 4	Continuity
3 - 5	62.5 - 90.9 Ω

PREPARATION:

Apply battery positive voltage between terminals 3 and 5.

CHECK:

Check continuity between each pair of terminal shown below.

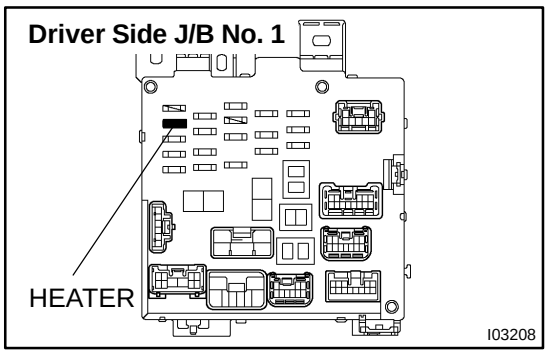
OK:

Tester connection	Specified condition
1 - 2	Continuity
2 - 4	No continuity

NG → **Replace front heater relay.**

OK

3	Check HEATER fuse



PREPARATION:

Remove HEATER fuse from driver side J/B No. 1.

CHECK:

Check continuity of HEATER fuse.

OK:

Continuity exists.

NG → **Check for short in all the harness and components connected to the HEATER fuse (See attached wiring diagram).**

OK

Check and repair harness and connector between A/C control assembly and battery.

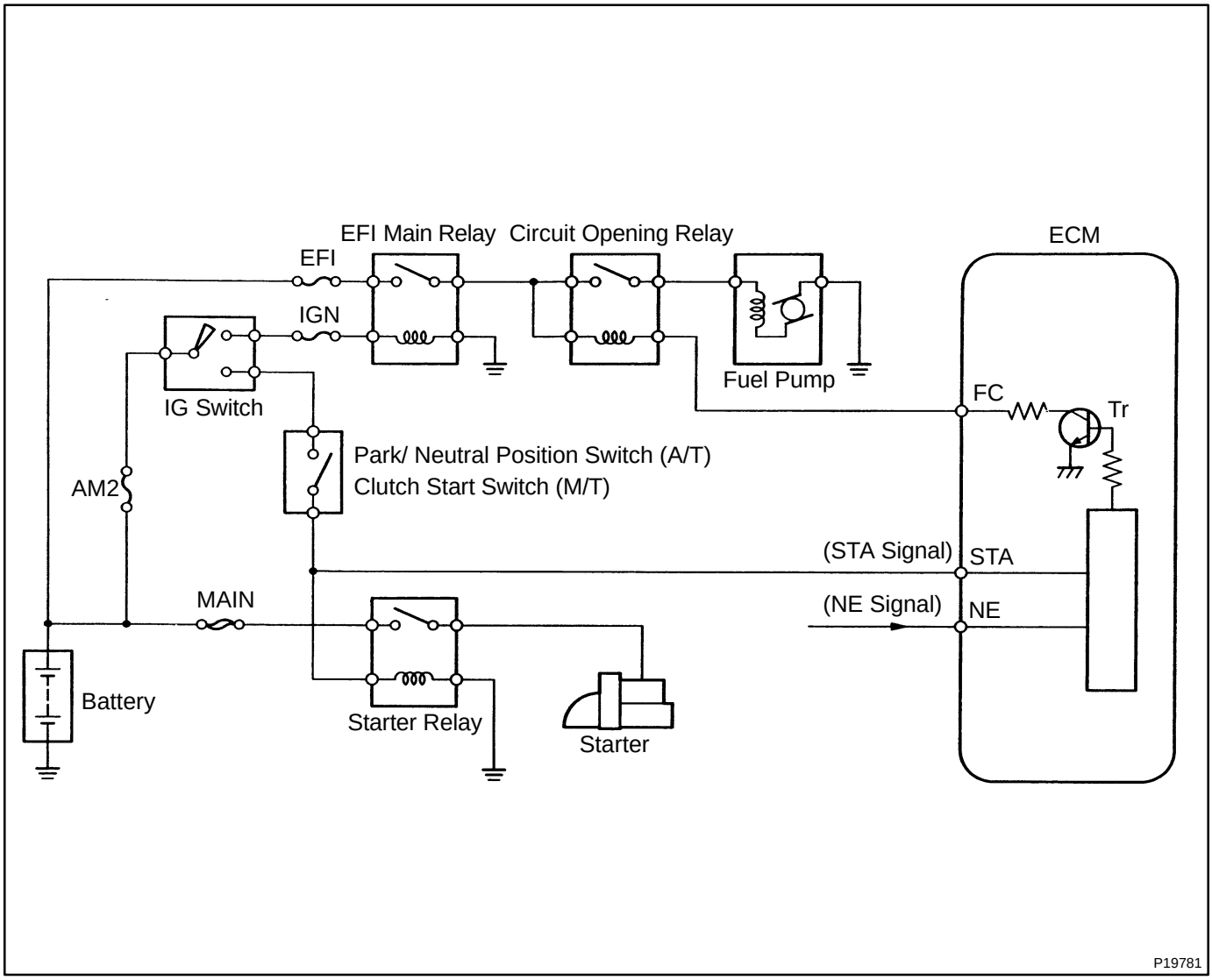
cardiagn.com

DI8B5-01

Fuel Pump Control Circuit

CIRCUIT DESCRIPTION

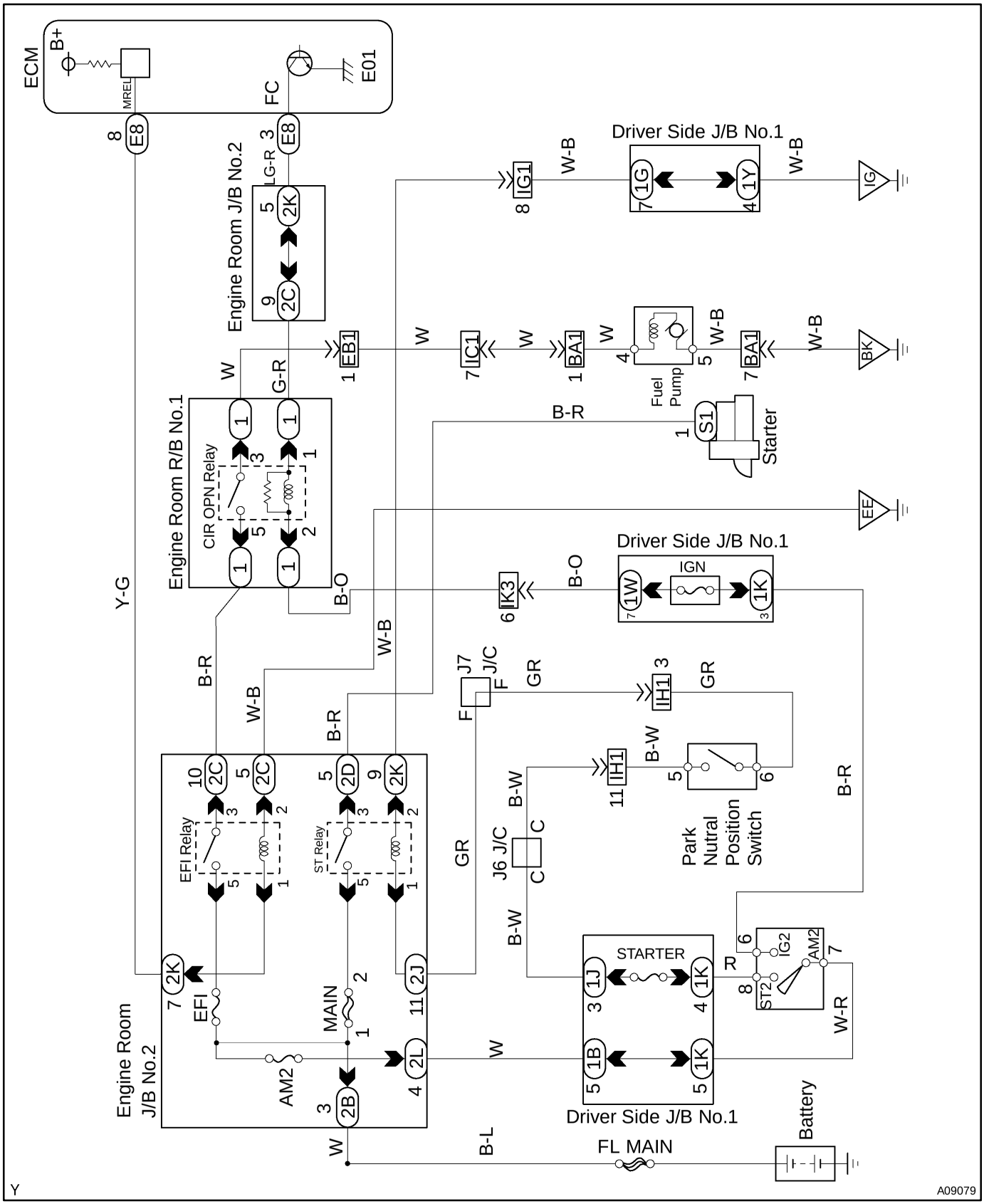
In the diagram below, when the engine is cranked, current flows from terminal ST of the ignition switch to the starter relay coil and also current flows to terminal STA of ECM (STA signal).
When the STA signal and NE signal are input to the ECM, Tr is turned ON, current flows to coil of the circuit opening relay, the relay switches on, power is supplied to the fuel pump and the fuel pump operates.
While the NE signal is generated (engine running), the ECM keeps Tr ON (circuit opening relay ON) and the fuel pump also keeps operating.



cardiagn.com

cardiagn.com

WIRING DIAGRAM



INSPECTION PROCEDURE

1	Check operation of fuel pump (See page SF-6).

OK → Check for starter signal circuit (See page DI-141).

NG

2	Check for ECM power source circuit (See page DI-144).

NG → Repair or replace.

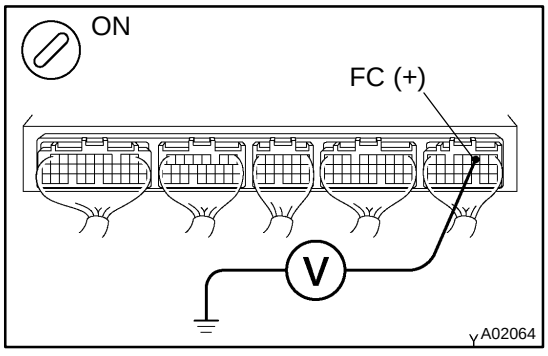
OK

3	Check circuit opening relay (See page SF-66).

NG → Replace circuit opening relay.

OK

4	Check voltage between terminal FC of ECM and body ground



PREPARATION:

(a) Remove the glove compartment (See page SF-83).

(b) Turn ignition switch ON.

CHECK:

Measure voltage between terminal FC of ECM and body ground.

OK:

Voltage 9 - 14 V

NG → **Check for open in harness and connector between EFI main relay (Marking: EFI) and circuit opening relay, circuit opening relay and ECM.**

OK

cardiagn.com

5	Check fuel pump (See page SF-6).

NG → Repair or replace fuel pump.

OK

6	Check for open in harness and connector between circuit opening relay and fuel pump, fuel pump and body ground (See page IN-31).

NG → Repair or replace harness or connector.

OK

Check and replace ECM (See page IN-31).

cardiagn.com

DI06X-11

Headlight Control Relay Circuit

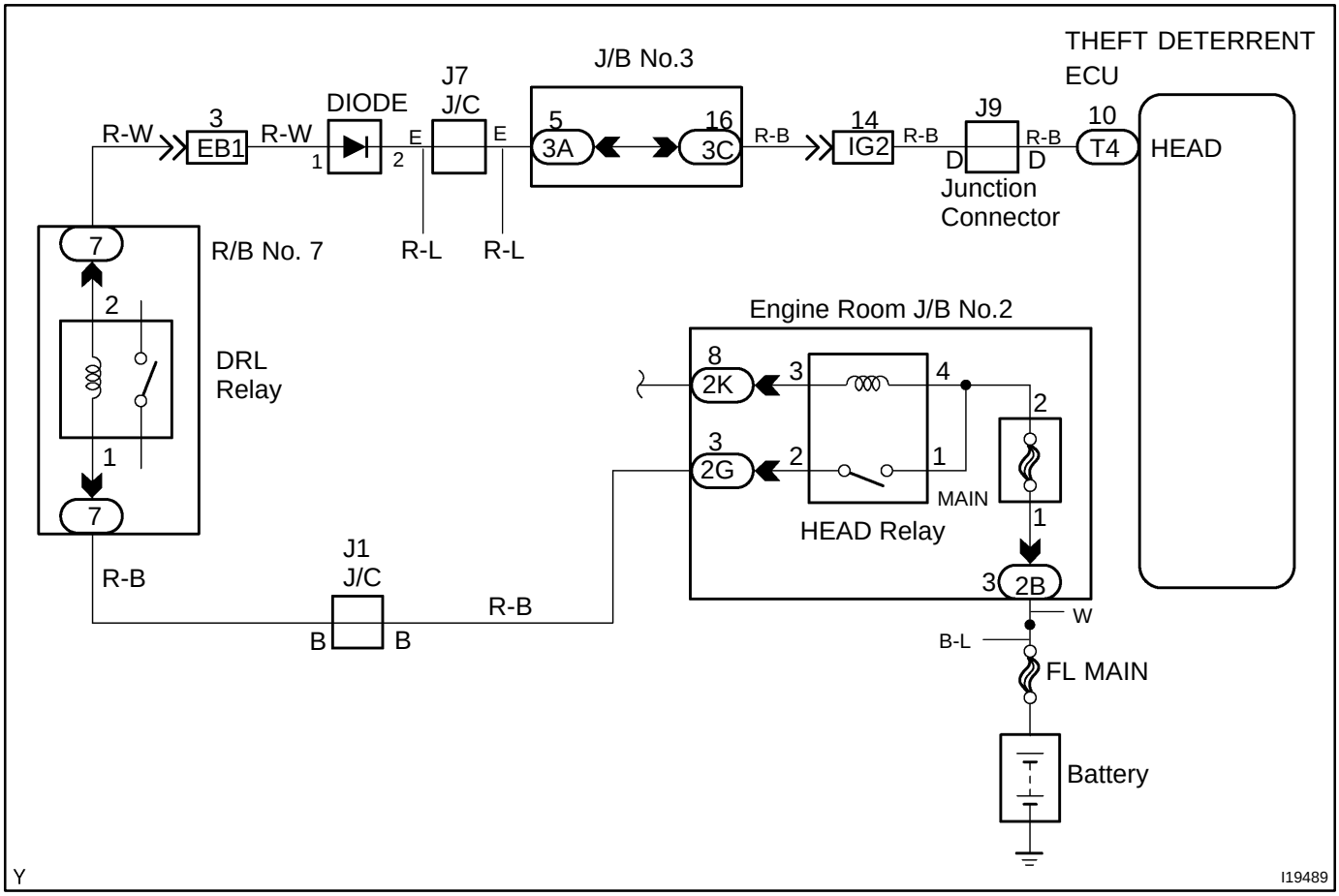
CIRCUIT DESCRIPTION

When the theft deterrent system is activated, it causes the Tr in the ECU to switch ON and OFF at intervals. This switches the headlight control relay ON and OFF, thus flashing the headlights (See the wiring diagram below).

In this condition, if any of the following operations is done, the Tr in the ECU goes OFF and the headlight control relay switches OFF, thus stopping the headlights flashing:

(1) Unlock the front LH or RH door with the key.
(2) Turn the ignition switch to ACC or ON position.
(3) Unlock the doors by the wireless door lock control system.
(4) Wait for approximately 60 seconds.
(5) Push the panic switch of the wireless door lock control system.

WIRING DIAGRAM



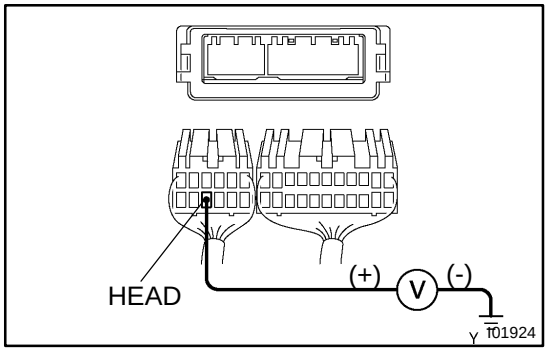
cardiagn.com

INSPECTION PROCEDURE

HINT:

The flow chart below is based on the premise that the headlights light up normally whenever the light control switch is operated. If headlight operation is not normal when the light control switch is operated, proceed to troubleshooting on page BE-2 .¿¿

1	**Check voltage between terminal HEAD of theft deterrent ECU connector and body ground.**



PREPARATION:

Disconnect the theft deterrent ECU connector.

CHECK:

Measure voltage between terminal HEAD of theft deterrent ECU connector and body ground.

OK:

Voltage: 10-14V

NG → **Check and repair harness and connector between theft deterrent ECU and headlight control relay (See page IN-31).**

OK →

Check and replace theft deterrent ECU.

cardiagn.com

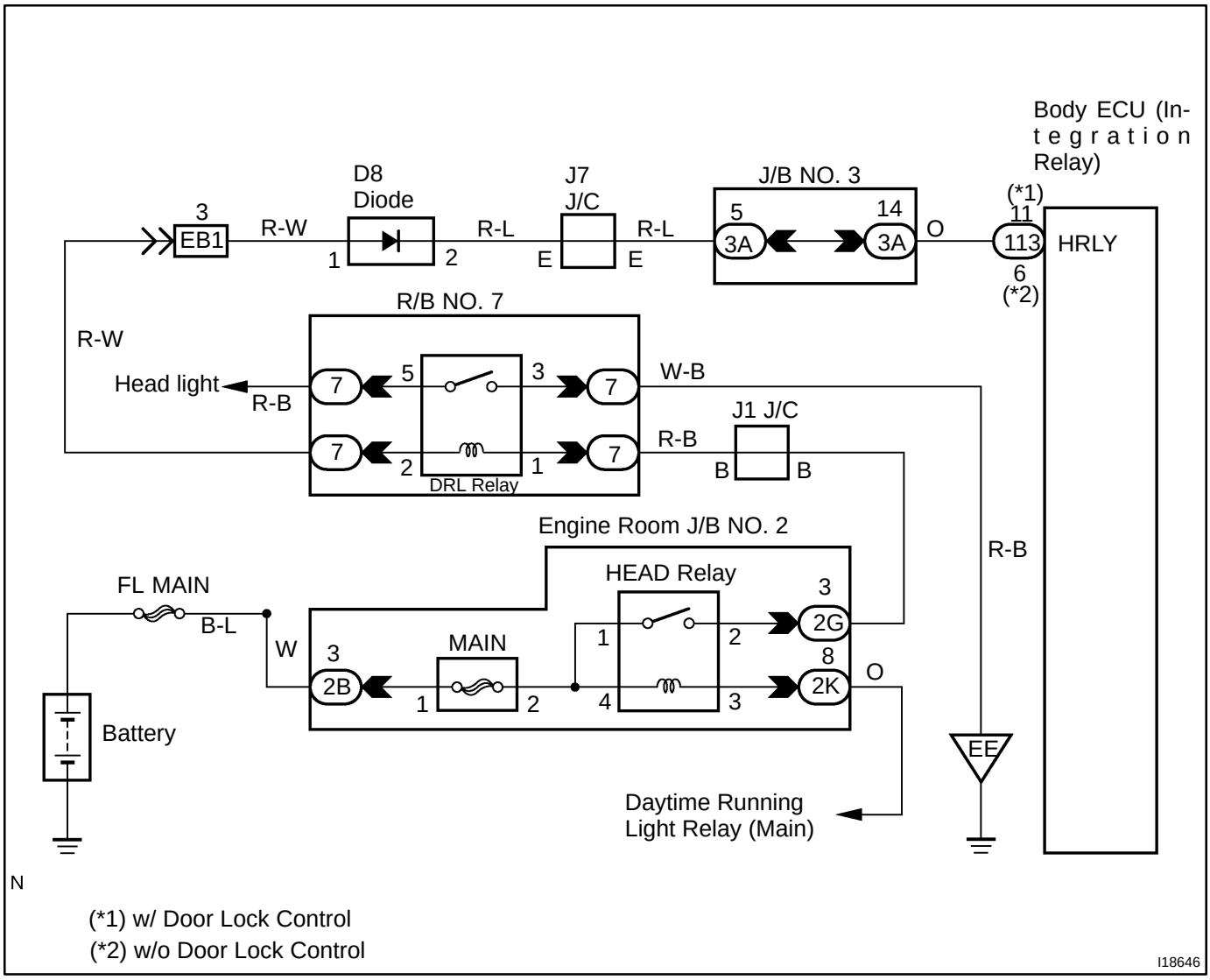
DI6LN-03

Headlight relay circuit

CIRCUIT DESCRIPTION

Head light relay will be ”ON” by operating the headlight switch. The transistor which activates the taillight relay has two sorts: one activates directly by the headlight switch for fail safe and the other activates by CPU. the one that activates by CPU has two systems and prevents the headlight from turning off at the time of one system trouble in the automatic operation circuit.

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	Check headlight relay (See page BE-17).

NG → Replace the headlight relay.

OK

2	Check wireharness and connector between headlight relay and Body ECU, battery and headlight relay (See page IN-31).

NG → Repair or replace wireharness or connector.

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI-636).

cardiagn.com

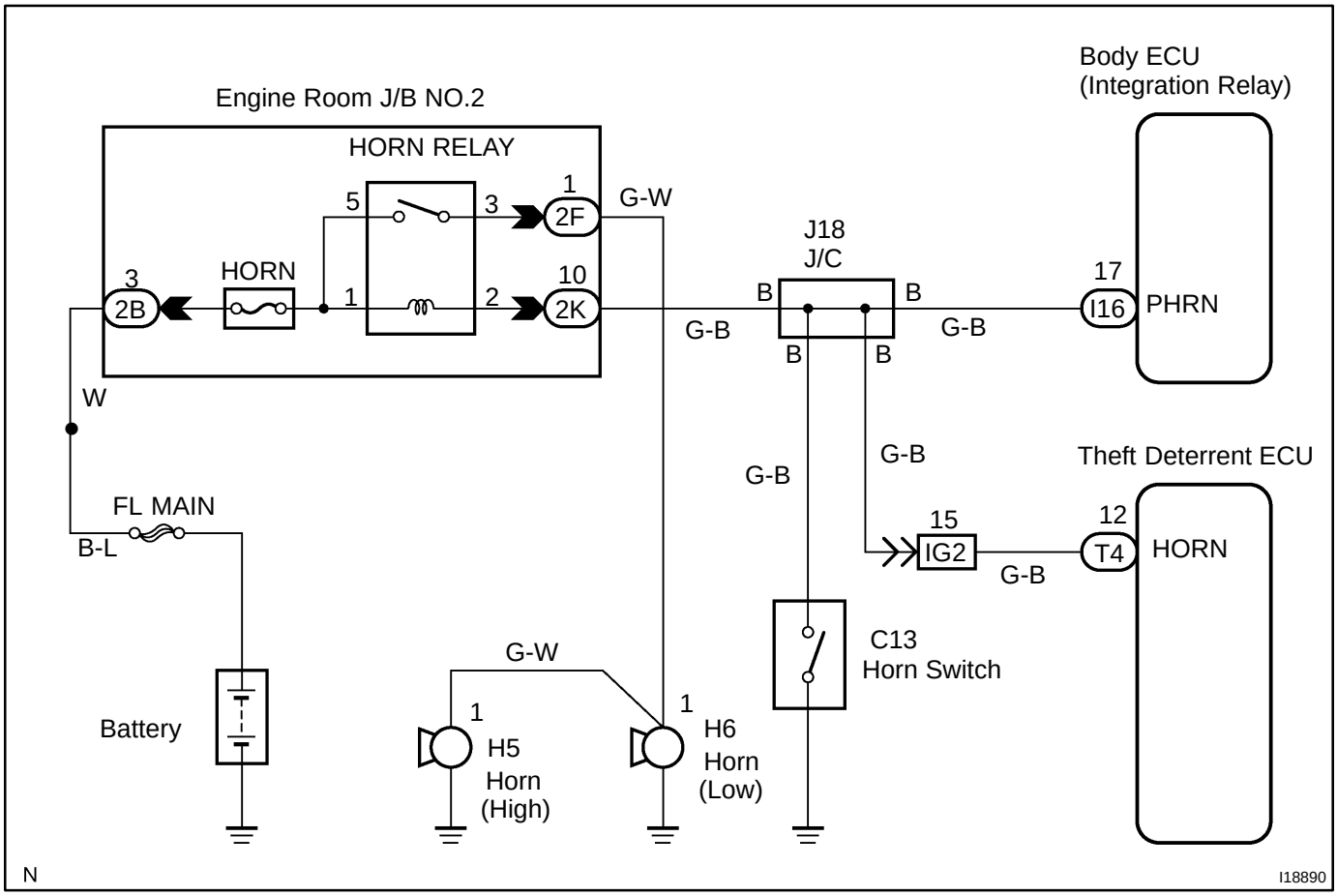
DI8AP-01

Horn circuit

CIRCUIT DESCRIPTION

When the theft deterrent system is in operation, the theft deterrent ECU also sounds the vehicle horn. When the wireless panic switch is pressed, the Body ECU sounds the vehicle horn.

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	Check horn.

NG → Replace the horn.

OK

2	Check wireharness and connector between horn relay and body ECU, battery and horn relay.

NG → Repair or replace wireharness or connector.

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI-636).

cardiagn.com

DI06W-11

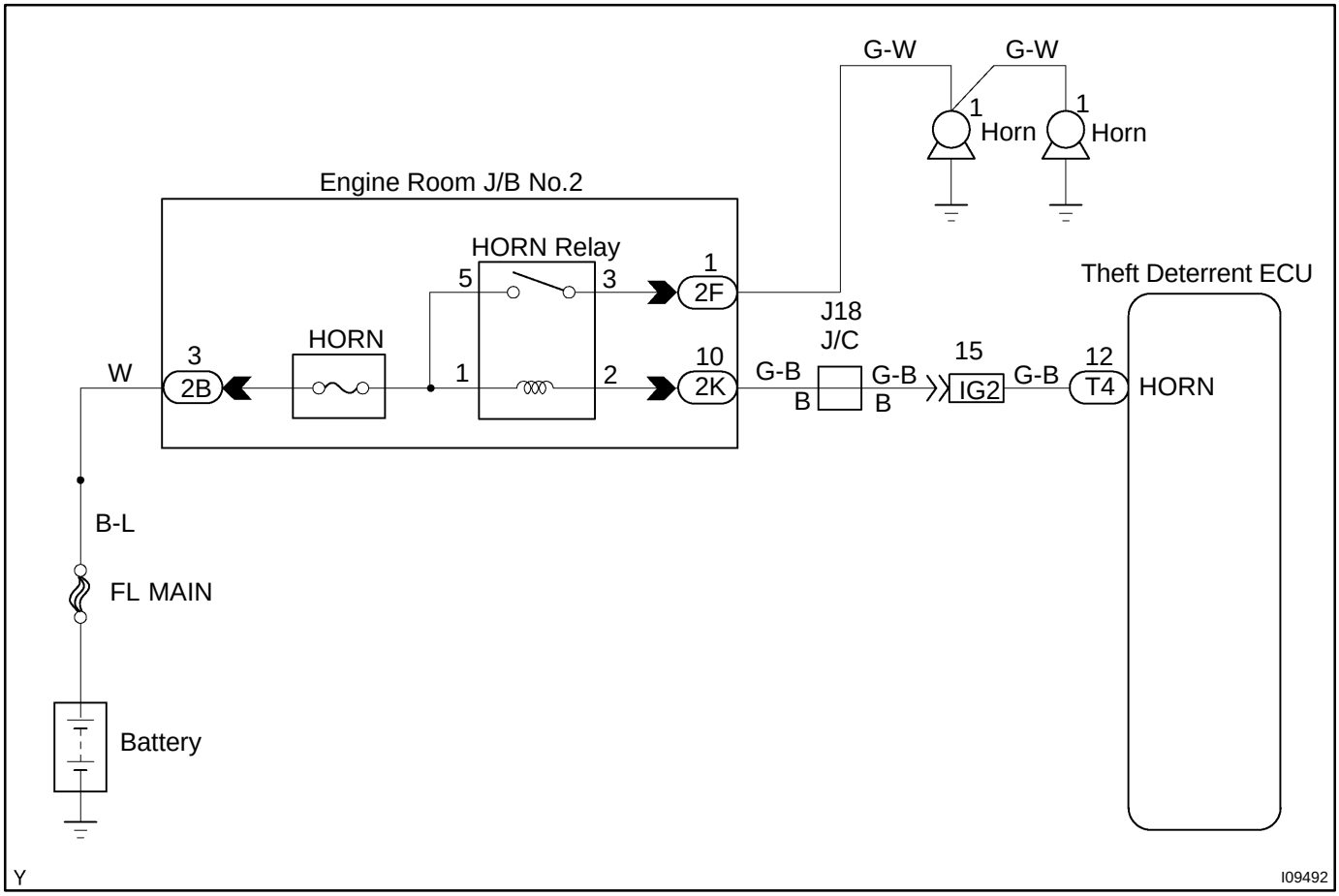
Horn Relay Circuit

CIRCUIT DESCRIPTION

When the theft deterrent system is activated, it causes the Tr in the ECU to switch ON and OFF in cycles. This switches the horn relay ON and OFF, thus the horns blow (See the wiring diagram below).
In this condition, if any of the following operations is done, the Tr in the ECU goes off and the horn relay switches off, thus stopping the horns from blowing:

(1) Unlock the front LH or RH door with key.
(2) Turn the ignition switch to ACC or ON position.
(3) Unlock the doors with the wireless door lock control system.
(4) Wait for approximately 60 seconds.
(5) Push the panic switch of the wireless door lock control system.

WIRING DIAGRAM



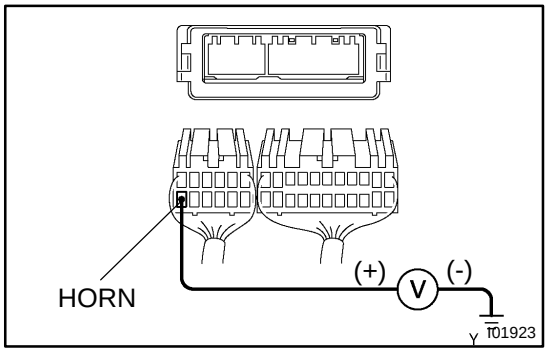
cardiagn.com

INSPECTION PROCEDURE

HINT:

The flow chart below is based on the premise that the horns blow normally whenever the horn switch is operated. If horn operation is not normal when the horn switch is operated, check the horn switch.

1	**Check voltage between terminal HORN of theft deterrent ECU connector and body ground.**



PREPARATION:

Disconnect the theft deterrent ECU connectors.

CHECK:

Measure voltage between terminal HORN of theft deterrent ECU connector and body ground.

OK:

Voltage: 10-14 V

NG → **Check and repair harness and connector between theft deterrent ECU and horn relay.**

OK

Check and replace theft deterrent ECU.

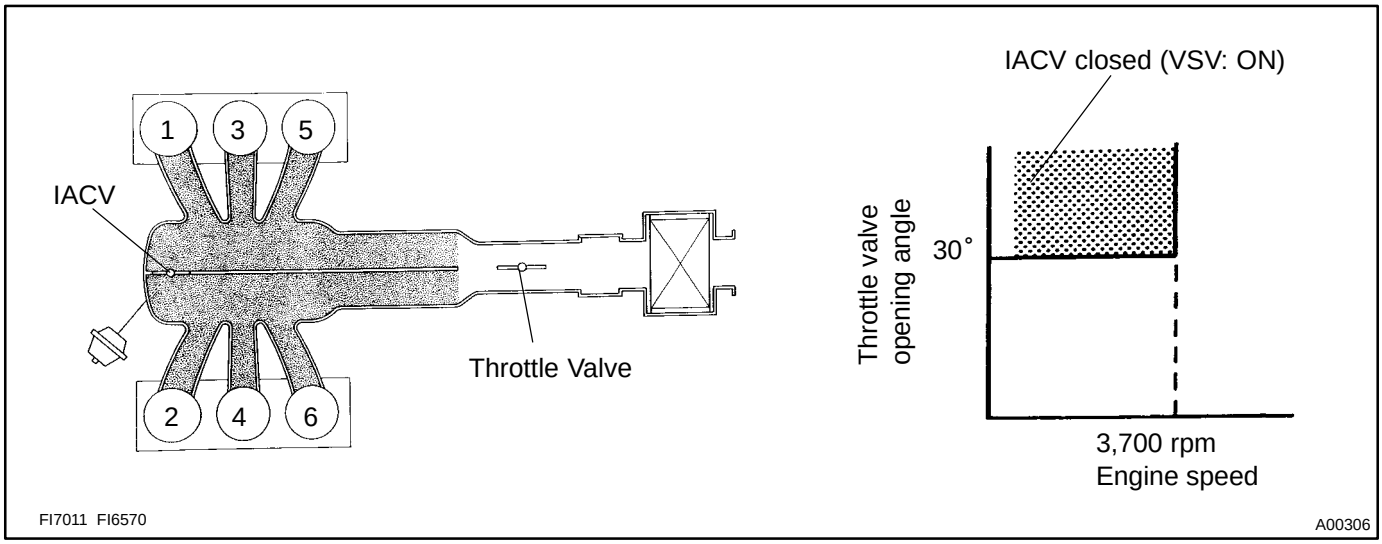
cardiagn.com

DI22N-03

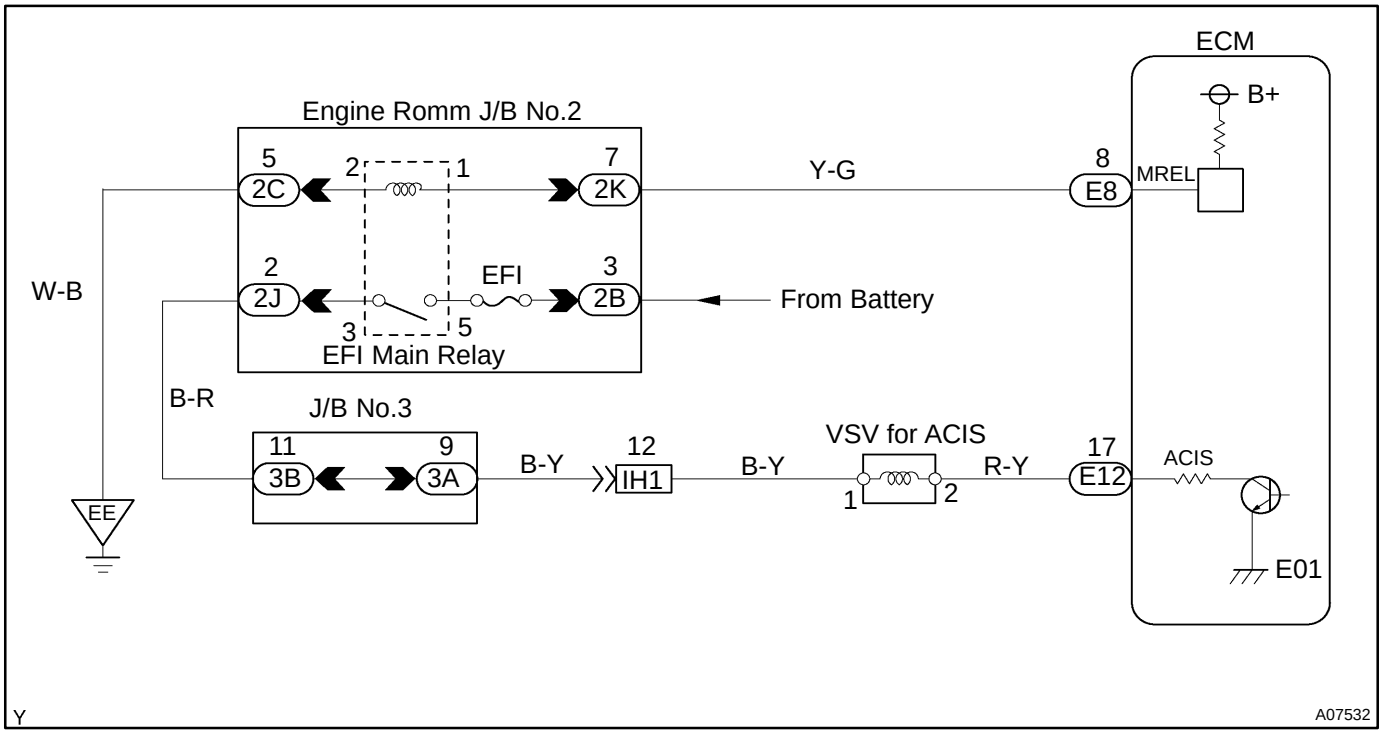
IACV Control VSV Circuit

CIRCUIT DESCRIPTION

This circuit opens and closes the IACV (Intake Air Control Valve) in response to the engine load in order to increase the intake efficiency (ACIS: Acoustic Control Induction System).
When the engine speed is 3,700 rpm or less and the throttle valve opening angle is 60° or more, the ECM turns the VSV ON and closes the IACV. At all other times, the VSV is OFF, so the IACV is open.



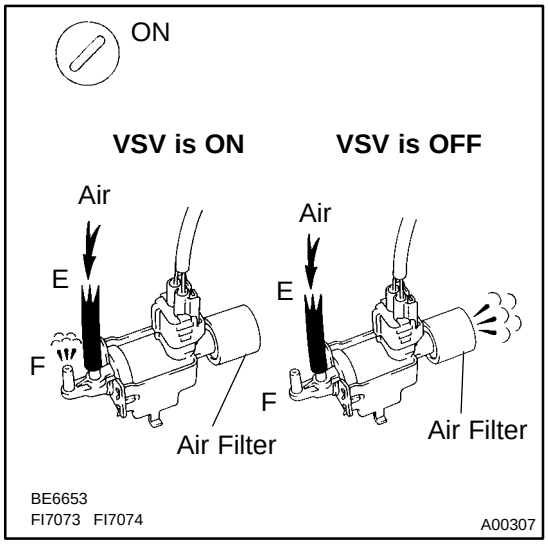
WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE
TOYOTA hand-held tester

1	**Connect TOYOTA hand-held tester and check operation of VSV for ACIS.**



PREPARATION:

(a) Remove the fuse cover on the instrument panel.
(b) Connect the TOYOTA hand-held tester to the DLC3.
(c) Turn the ignition switch ON and TOYOTA hand-held tester main switch ON.
(d) Select the ACTIVE TEST mode on the TOYOTA hand-held tester.

CHECK:

Check operation of VSV when VSV is operated by the TOYOTA hand-held tester.

OK:

VSV is ON:
Air from pipe E is flowing out through pipe F.
VSV is OFF:
Air from pipe E is flowing out through the air filter.

OK → **Check for vacuum tank (See page SF-62).**

NG

2	**Check VSV for ACIS (See page SF-71).**

NG → **Replace VSV for ACIS.**

OK

cardiagn.com

3	**Check for open and short in harness and connector between EFI main relay (Marking: EFI) and ECM (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

Check and replace ECM (See page IN-31).

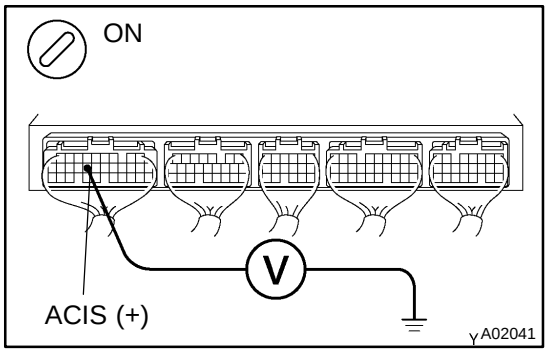
OBD II scan tool (excluding TOYOTA hand-held tester)

1	**Check VSV for ACIS (See page SF-71).**

NG → **Replace VSV for ACIS.**

OK

2	**Check voltage between terminal ACIS of ECM connector and body ground.**



PREPARATION:

(a) Remove the glove compartment (See page SF-83).

(b) Turn the ignition switch ON.

CHECK:

Measure voltage between terminal ACIS of the ECM connector and body ground.

OK:

Voltage: 9 - 14 V

NG → **Check for open and short in harness and connector between EFI main relay (Marking: EFI) and ECM (See page IN-31).**

OK

cardiagn.com

3	Check for vacuum tank (See page SF-62).

NG → Repair or replace.

OK →

Check and replace ECM (See page IN-31).

cardiagn.com

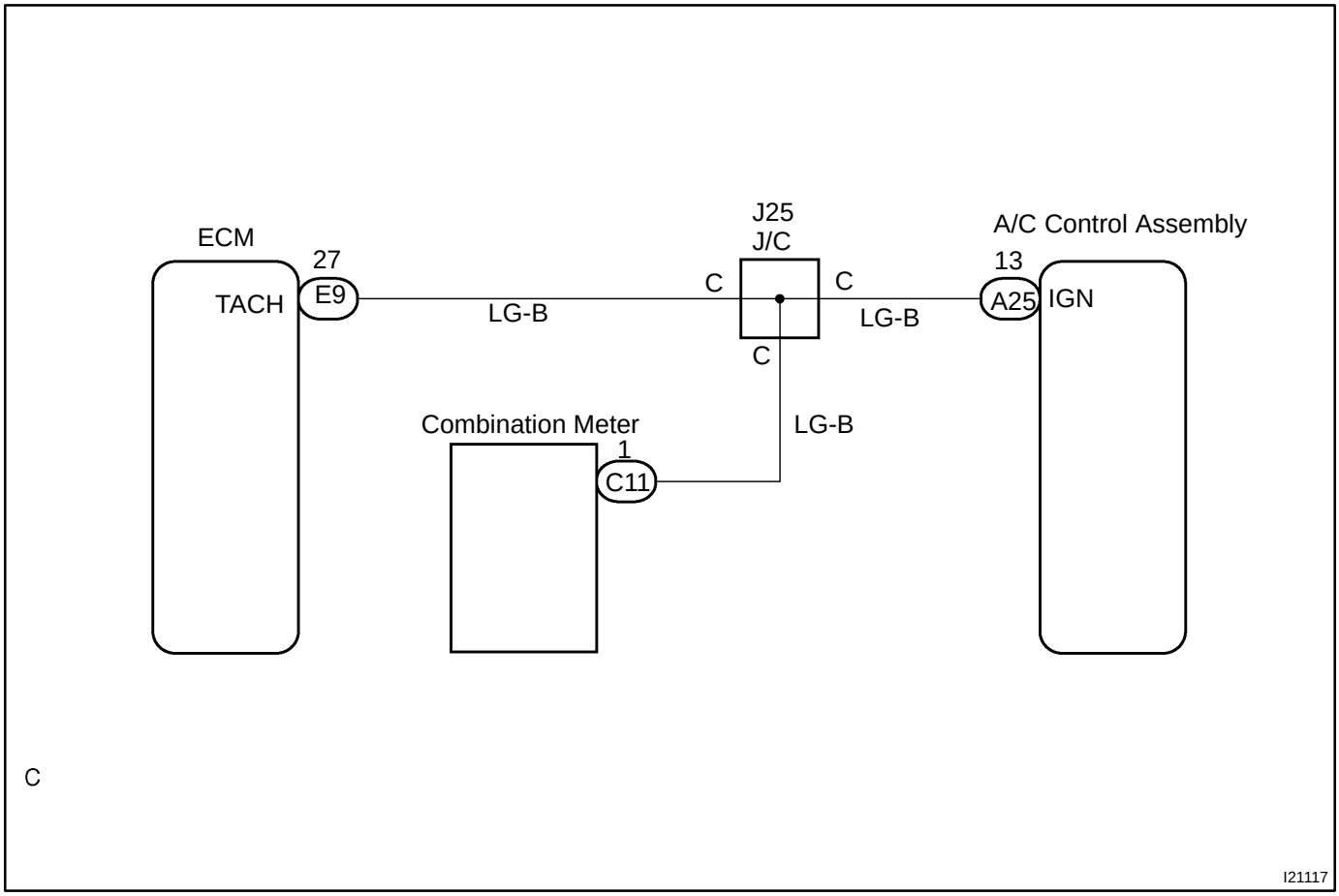
DI3WE-07

Igniter Circuit

CIRCUIT DESCRIPTION

This A/C control assembly monitors the engine speed through signals sent from the igniter. The A/C control assembly uses these signals and compressor speed signals to detect the compressor lock condition.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	**Check operation of tachometer.**

CHECK:

Check that the tachometer operates normally.

NG → **Proceed to combination meter troubleshooting (See page BE-2).**

NG

cardiagn.com

2	Check harness and connector between A/C control assembly and ECM (See page IN-31).

NG → Repair or replace harness or connector.

OK

3	Check harness and connector between A/C control assembly and combination meter (See page IN-31).

NG → Repair or replace harness or connector.

OK

Check and replace A/C control assembly.

cardiagn.com

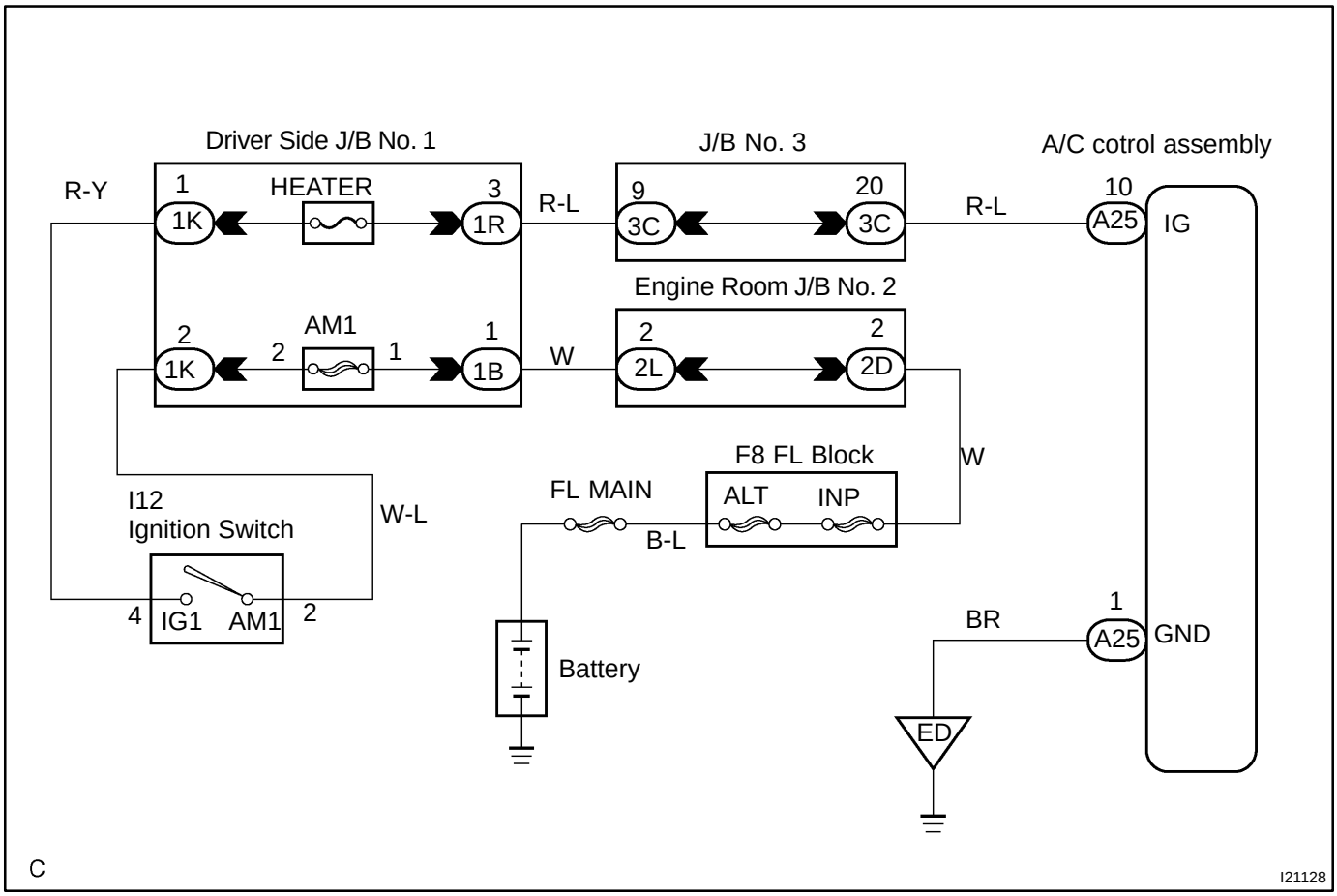
DI3WA-09

IG Power Source Circuit

CIRCUIT DESCRIPTION

This is the power source for the A/C control assembly (contains the ECU) and servomotors, etc.

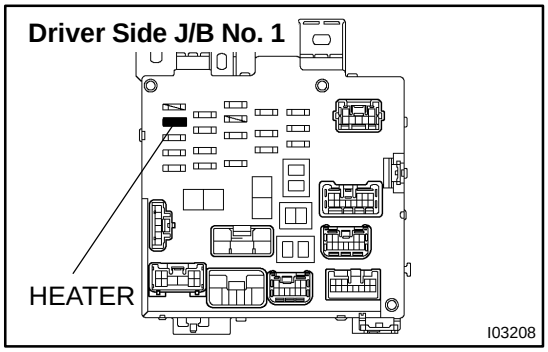
WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	Check HEATER fuse.

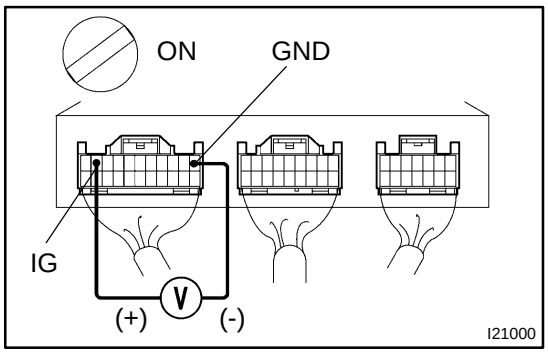


PREPARATION:
Remove HEATER fuse from Instrument Panel J/B No. 1.
CHECK:
Check continuity of HEATER fuse.
OK:
Continuity exists.

NG → **Check for shot in all the harness and components connected to the HEATER fuse (See page IN-31).**

OK →

2	Check voltage between terminals IG and GND of A/C control assembly connector.



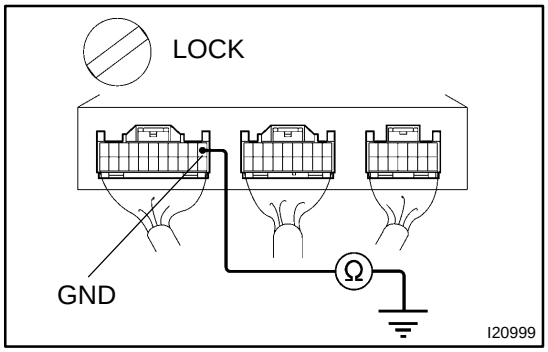
PREPARATION:
(a) Remove A/C control assembly with connectors still connected (See page AC-1 16).
(b) Turn ignition switch to ON.
CHECK:
Measure voltage between terminals IG and GND of A/C control assembly.
OK:
Voltage : 10 - 14 V

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page DI-697).**

NG →

cardiagn.com

3	**Check continuity between terminal GND of A/C control assembly and body ground.**



CHECK:

Measure resistance between terminal GND of A/C control assembly and body ground.

OK:

Resistance : Below 1 Ω

NG → **Repair or replace harness or connector.**

OK

Check and repair harness and connector between A/C control assembly and battery.

cardiagn.com

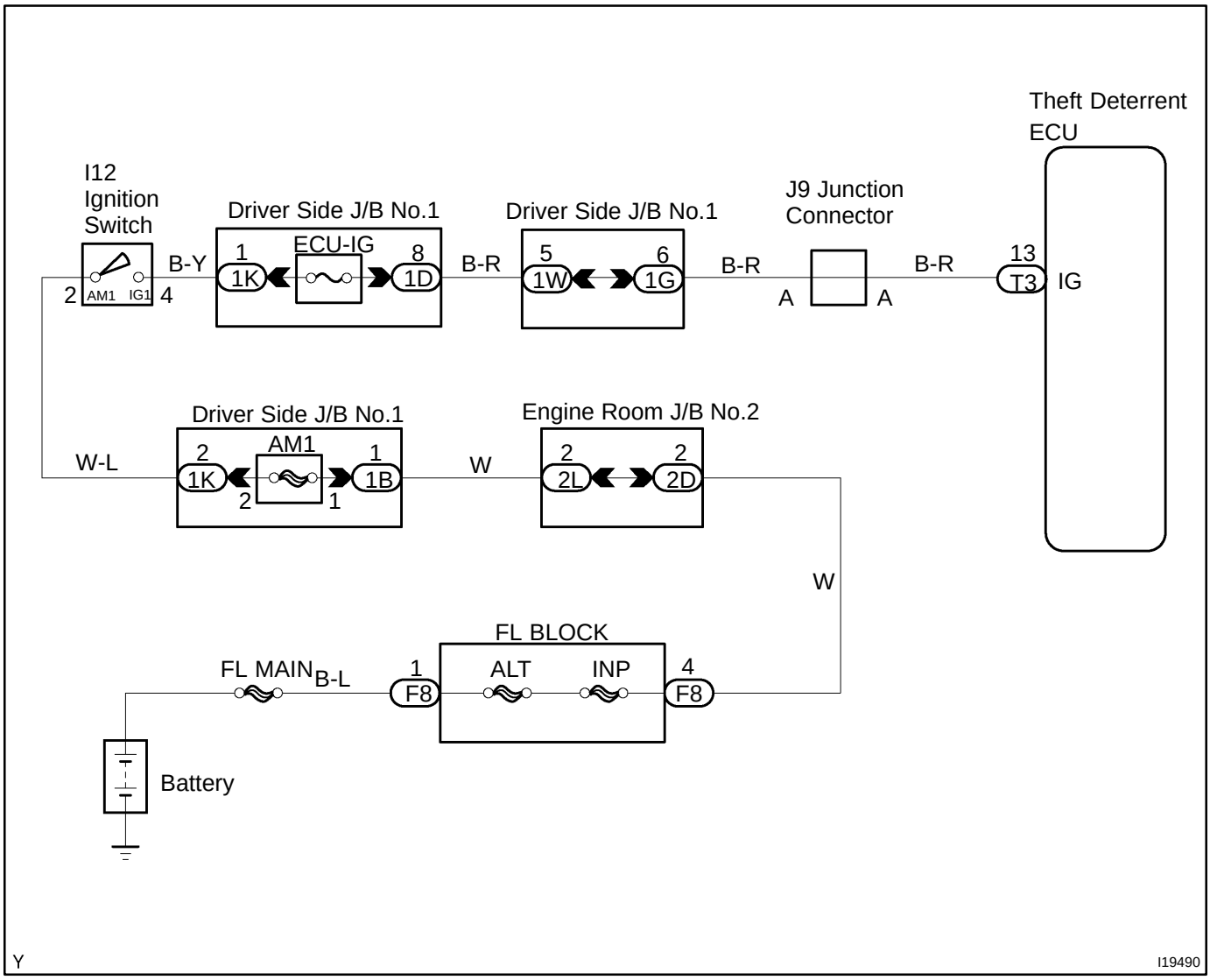
DI06Z-08

Ignition Switch Circuit

CIRCUIT DESCRIPTION

When the ignition switch is turned to the ACC position, battery positive voltage is applied to the terminal ACC of the ECU. Also, if the ignition switch is turned to the ON position, battery positive voltage is applied to the terminals ACC and IG of the ECU. When the battery positive voltage is applied to the terminal ACC of the ECU while the theft deterrent system is activated, the warning stops. Furthermore, power supplied from the terminals ACC and IG of the ECU is used as power for the door courtesy switch, and position switch, etc.

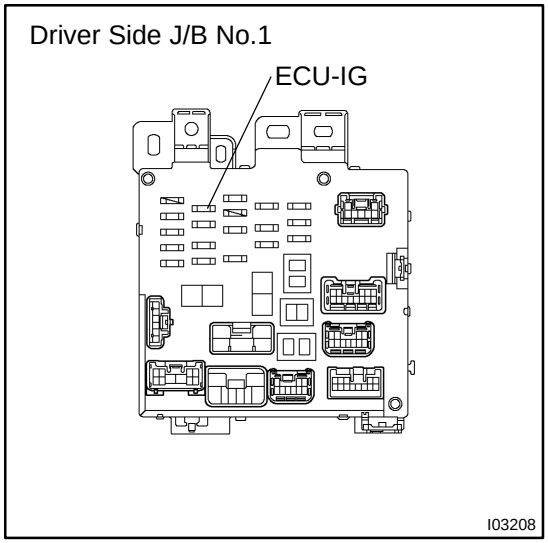
WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check CIG and ECU-IG fuses.**



PREPARATION:

(a) Remove the fuse box opening cover.

(b) Remove ECU-IG fuses from driver side J/B No.1.

CHECK:

Check continuity of ECU-IG fuses.

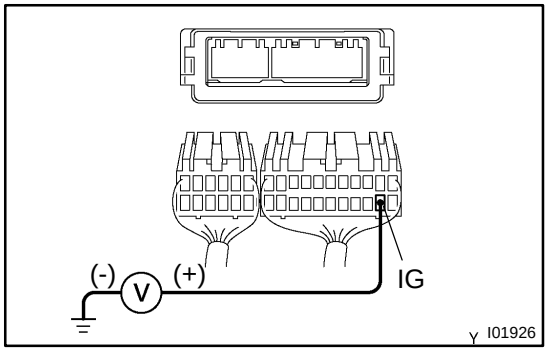
OK:

Continuity

NG → **Check for short in all the harness and components connected to the CIG and ECU-IG fuses (See attached wiring diagram).**

OK

2	**Check voltage between terminal IG and ACC of theft deterrent ECU and body ground.**



PREPARATION:

(a) Disconnect the theft deterrent ECU connectors.

(b) Turn ignition switch ON.

CHECK:

Measure voltage between terminal IG and ACC of theft deterrent ECU connector and body ground.

OK:

Voltage: 10-14V

NG → **Check and repair harness and connector between theft deterrent ECU and battery (See page IN-31).**

OK

Check and replace theft deterrent ECU.

cardiagn.com

DI8AK-01

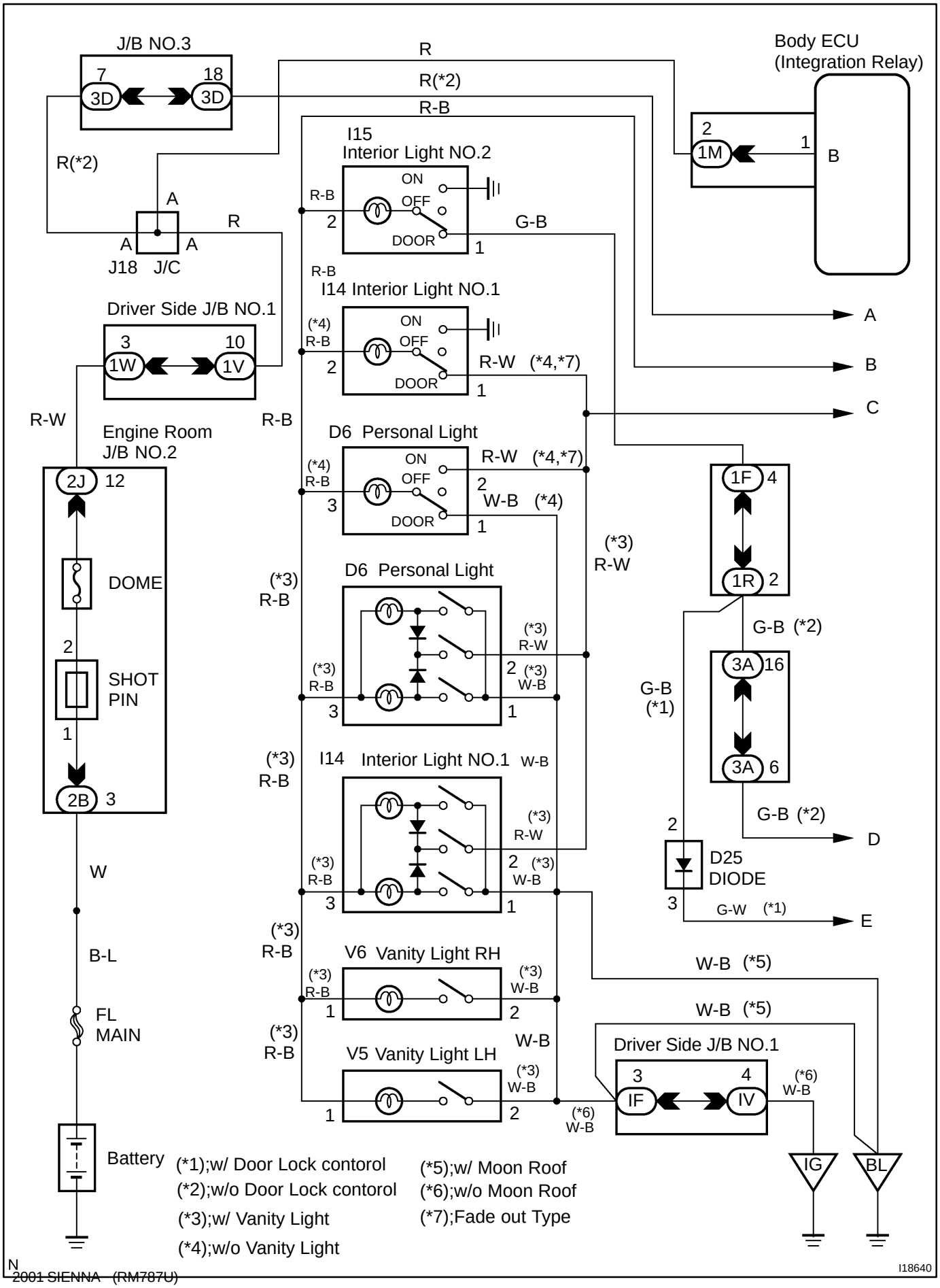
Illumination circuit

CIRCUIT DESCRIPTION

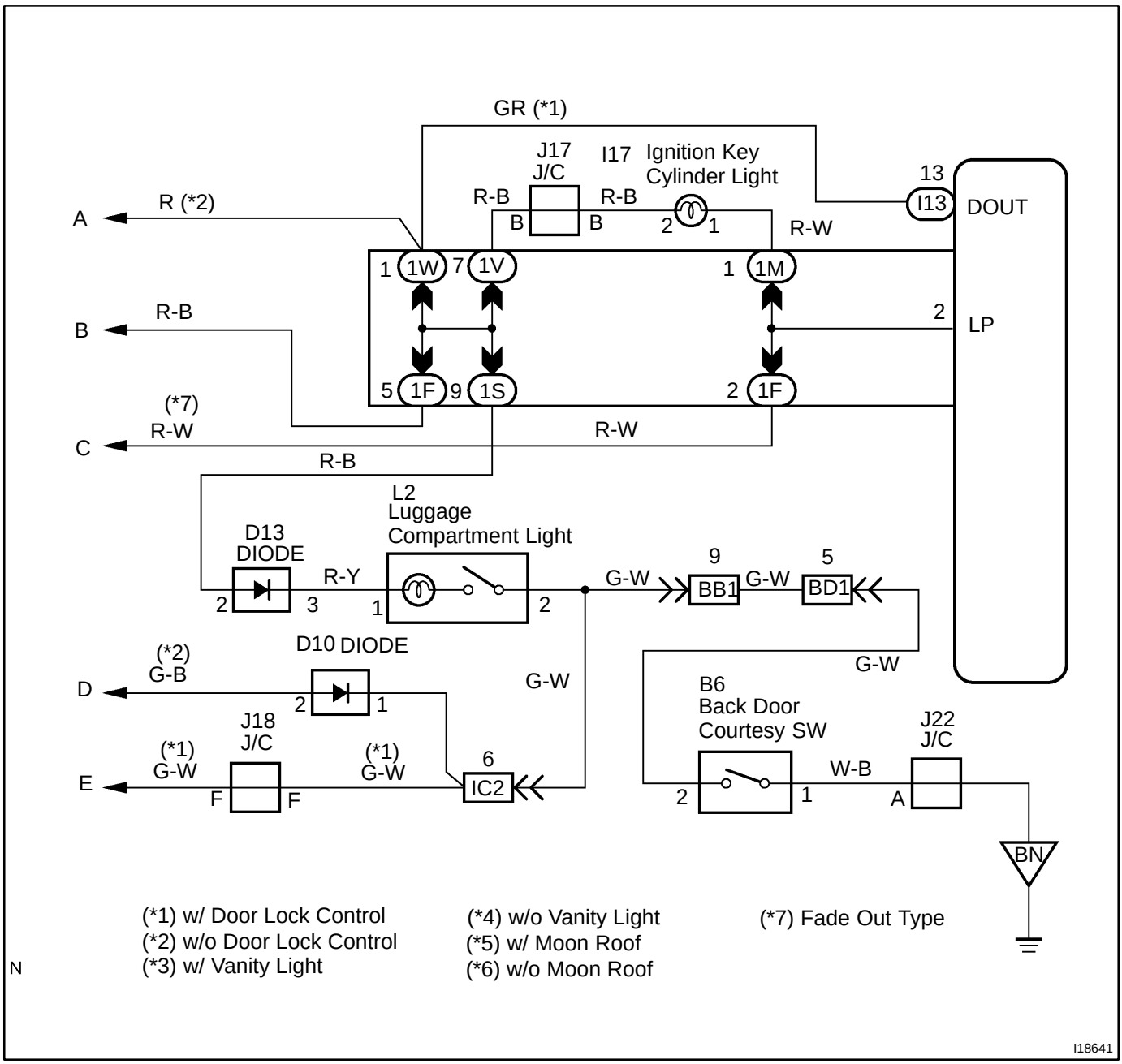
Receiving the courtesy signal from either of the door ECU, the Body ECU will make the interior light, ignition light, and foot light come on.

cardiagn.com

WIRING DIAGRAM



cardiagn.com



cardiagn.com

INSPECTION PROCEDURE

1	Check illumination light (Interior light system)(See page BE-31).

NG → Replace the failure light.

OK

2	Check wireharness and connector between each illumination light and Body ECU, battery and each illumination light (See page IN-31).

NG → Repair or replace wireharness or connector.

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI-636).

cardiagn.com

DI21H-04

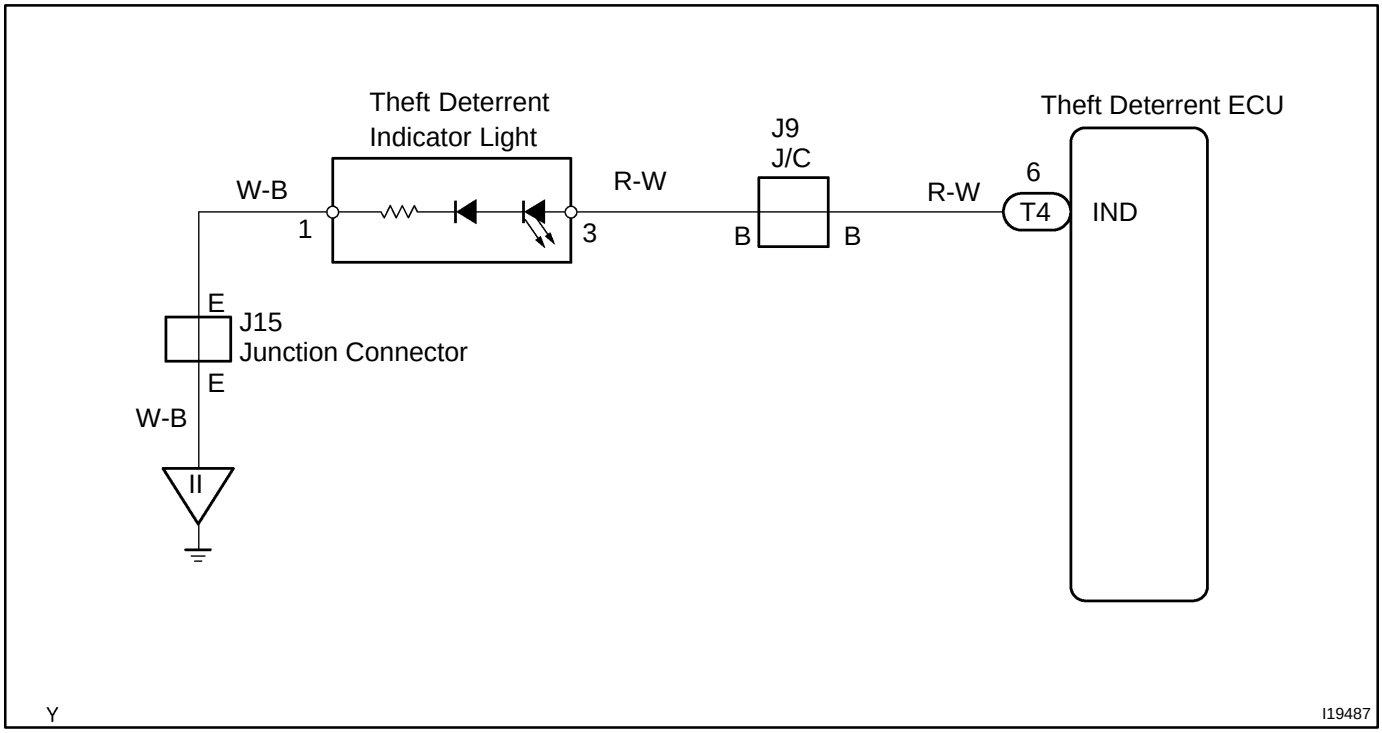
CIRCUIT INSPECTION

Indicator Light Circuit

CIRCUIT DESCRIPTION

When the theft deterrent system is preparing to set, this circuit lights up the indicator light. When the system has been set, it continuously turns the indicator light on for 1 second and turns it off for 1 second, thus blinking the indicator light.

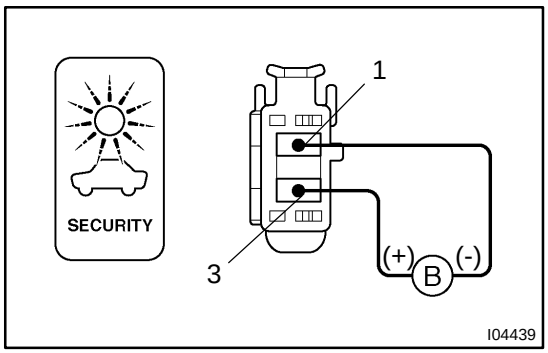
WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check indicator light.**



PREPARATION:
Disconnect the indicator connector.
CHECK:
Connect the positive (+) lead to terminal 3 and negative (-) lead to terminal 1 of the indicator light connector.
OK:
Indicator light comes on.

NG → **Replace combination meter.**

OK

2	**Check harness and connector between theft deterrent ECU and indicator light, indicator light and body ground (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

Check and replace theft deterrent ECU.*1

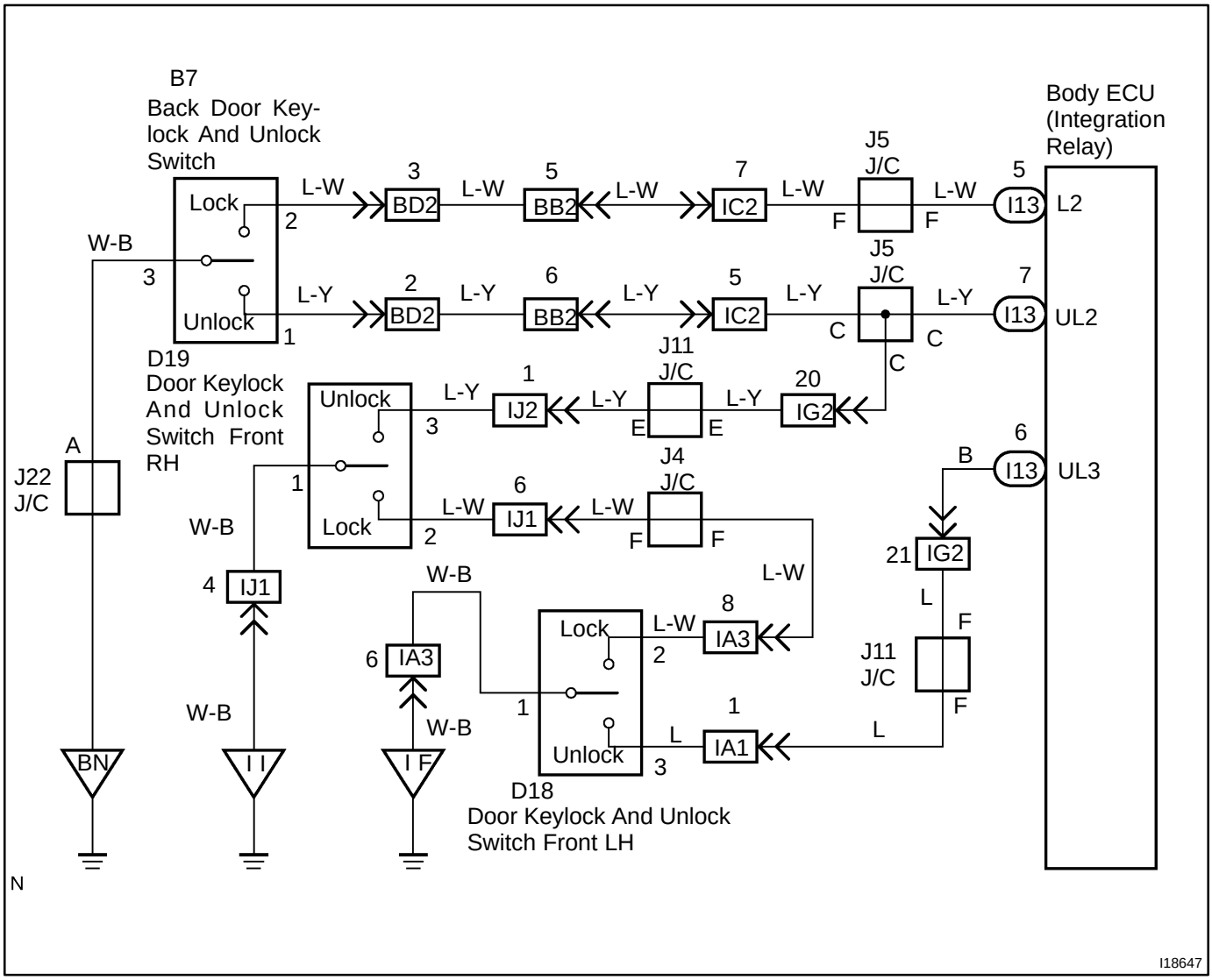
*1: When there is a malfunction that prevents the theft deterrent system from being set, proceed to the next numbered circuit inspection shown on matrix chart (See page DI-532).

cardiagn.com

DI8AI-01

Key lock and unlock switch circuit

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	Check key lock and unlock switch. (See page BE-73)

NG → Replace the key lock and unlock switch.

OK

2	Check wireharness and connector between key lock and unlock switch and body ground (See page IN-31).

NG → Repair or replace wireharness or connector.

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI-636).

cardiagn.com

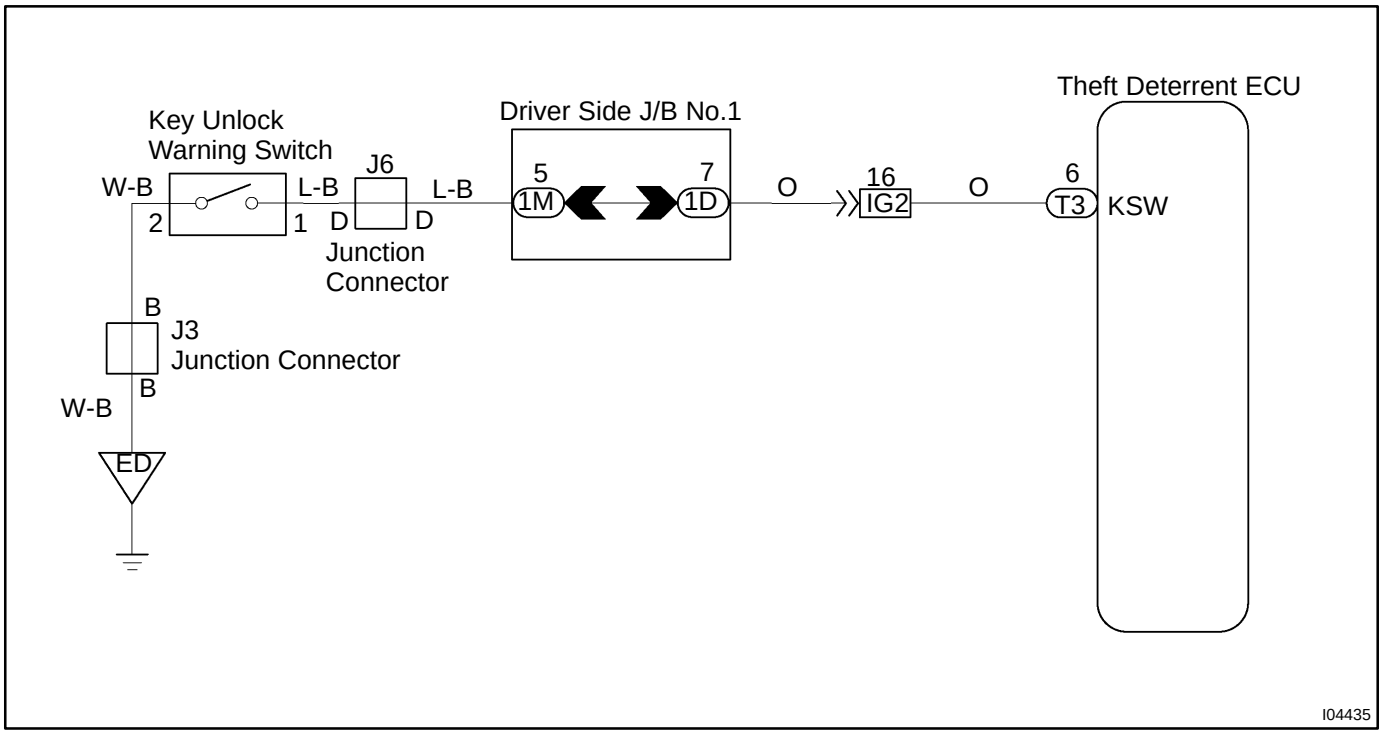
DI070-08

Key Unlock Warning Switch Circuit

CIRCUIT DESCRIPTION

The key unlock warning switch goes ON when the ignition key is inserted in the key cylinder and goes OFF when the ignition key is removed.
The ECU operates the key confinement prevention function while the key unlock warning switch is ON.

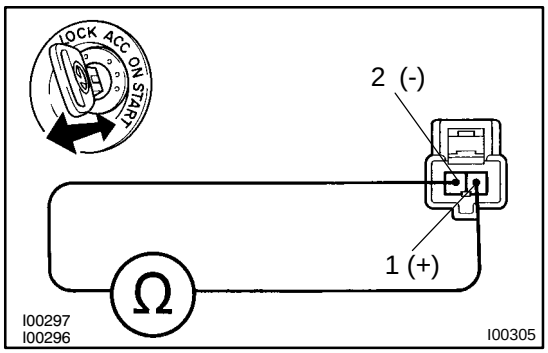
WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check key unlock warning switch.**



PREPARATION:
Disconnect key unlock warning switch connector.
CHECK:
Check continuity between terminal 1 and 2 of key unlock warning switch connector, when the key is inserted into the key cylinder or removed.
OK:

Switch position	Tester connection	Specified condition
ON (Key inserted)	1 - 2	Continuity
OFF (Key removed)	-	No continuity

NG → **Replace key unlock warning switch.**

OK

2	**Check harness and connectors between ECU and key unlock warning switch, key unlock warning switch and body ground (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

Check and replace theft deterrent ECU.*1

*1: When there is a malfunction that prevents the theft deterrent system from being set, proceed to the next numbered circuit inspection shown in matrix chart (See page DI-532).

cardiagn.com

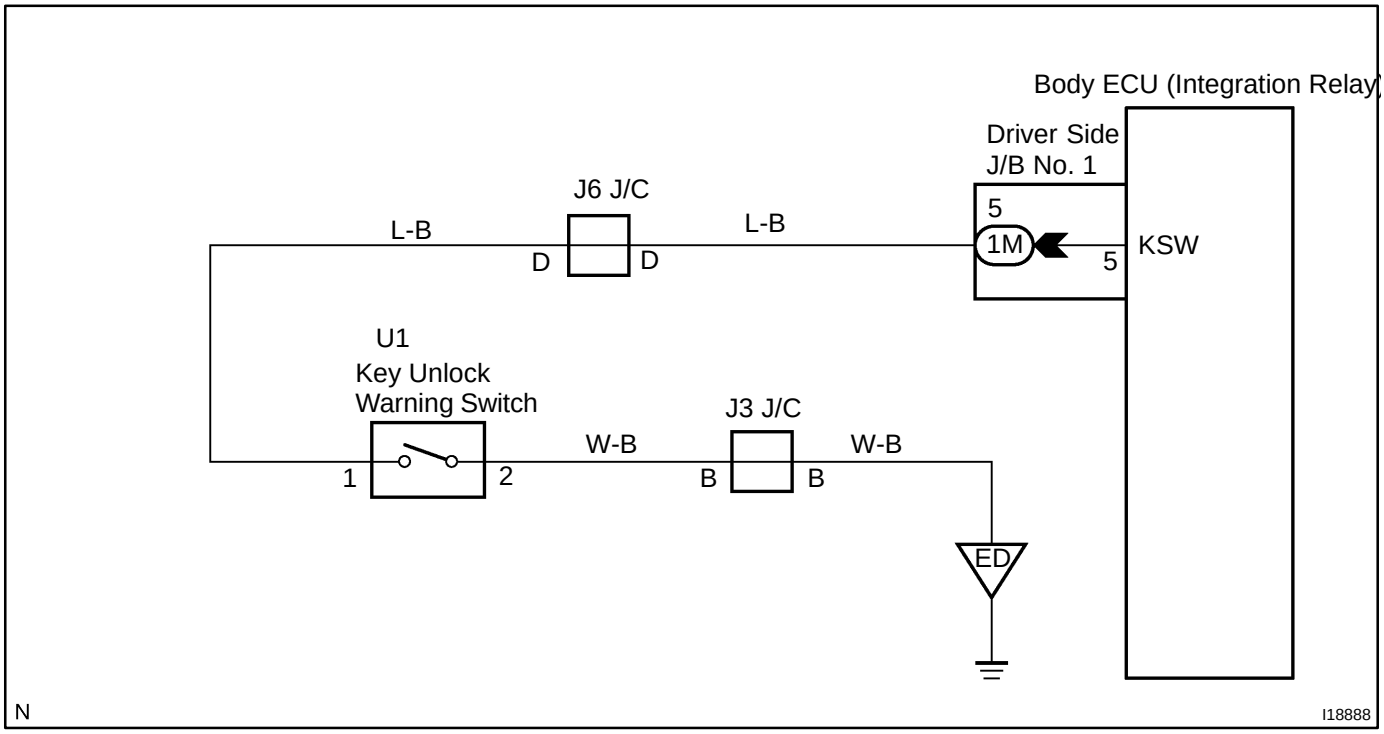
DI6LO-03

Key unlock warning switch circuit

CIRCUIT DESCRIPTION

The key unlock warning switch goes on when the ignition key is inserted in the key cylinder and goes off when the ignition key is removed.
The ECU operates the key confinement prevention function while the key unlock warning switch is on.

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	Check key unlock warning switch (See page BE-15).

NG → Replace the key unlock warning switch.

OK

2	Check wireharness and connector between key unlock warning switch and Body ECU (See page IN-31).

NG → Repair or replace wireharness or connector.

OK

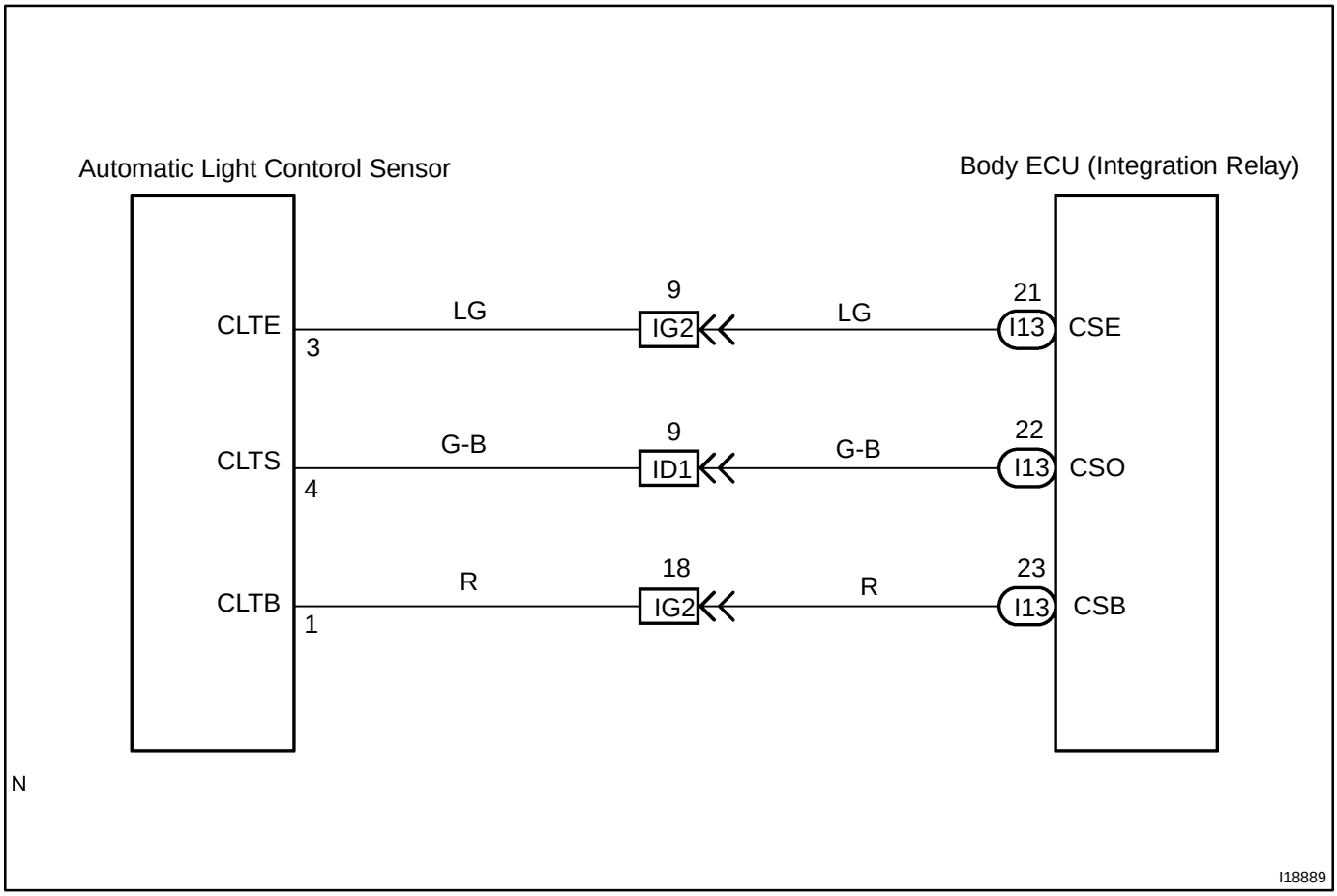
Proceed to next circuit inspection shown on problem symptoms table (See page DI-636).

cardiagn.com

DI8AO-01

Light contorol sensor circuit

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check wirehaness and connector between Automatic light contorol sensor assembly and Body ECU.**

NG → **Repair or replace wireharness or connector.**

OK

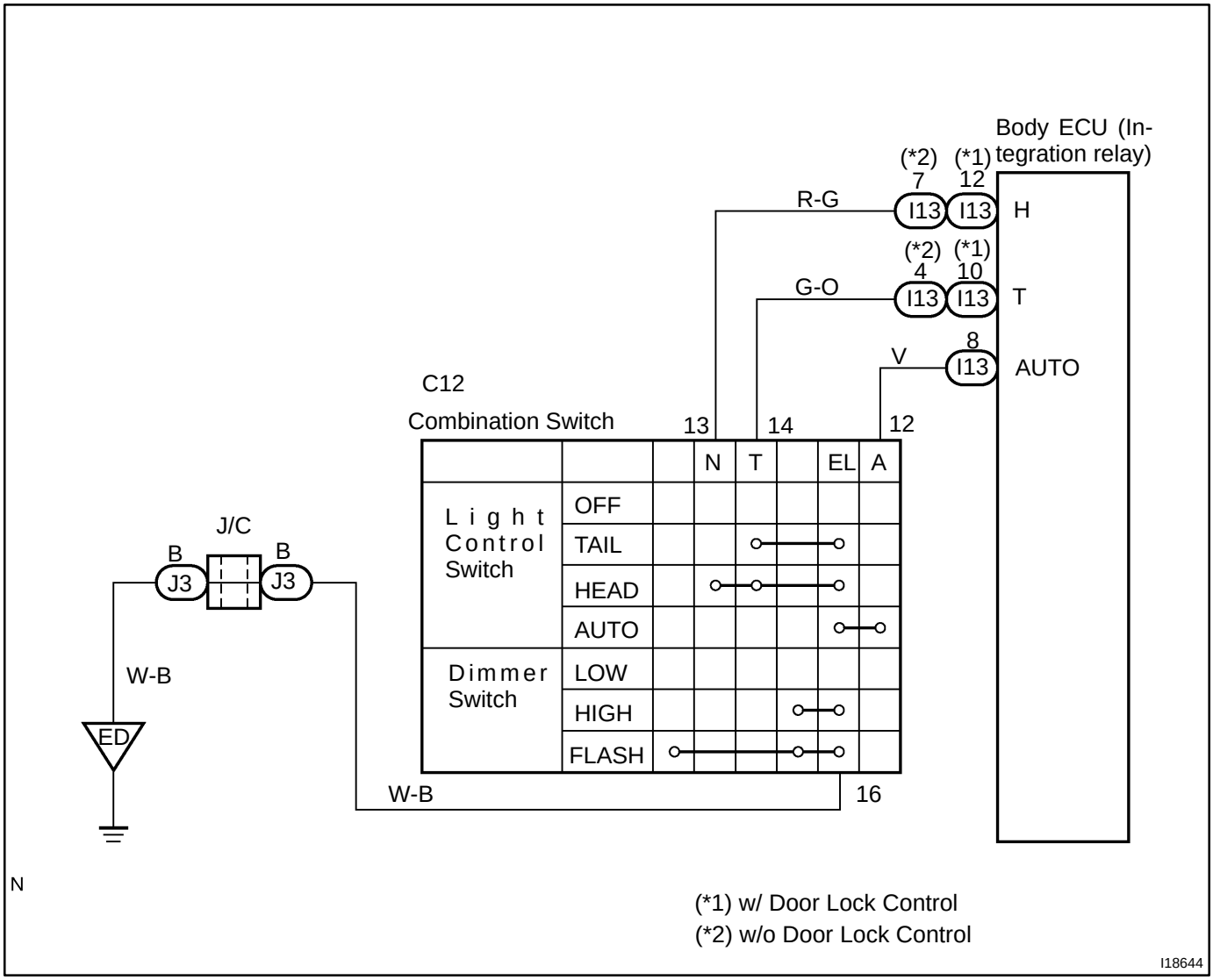
Proceed to next circuit inspection shown on problem symptoms table (See page DI-636).

cardiagn.com

DI6LL-03

Light control switch circuit

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	Check headlight control switch (See page BE-17).

NG → Replace the headlight control switch.

OK

2	Check wireharness and connector between headlight control switch and Body ECU (See page IN-31).

NG → Repair or replace wireharness or connector.

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI-636).

cardiagn.com

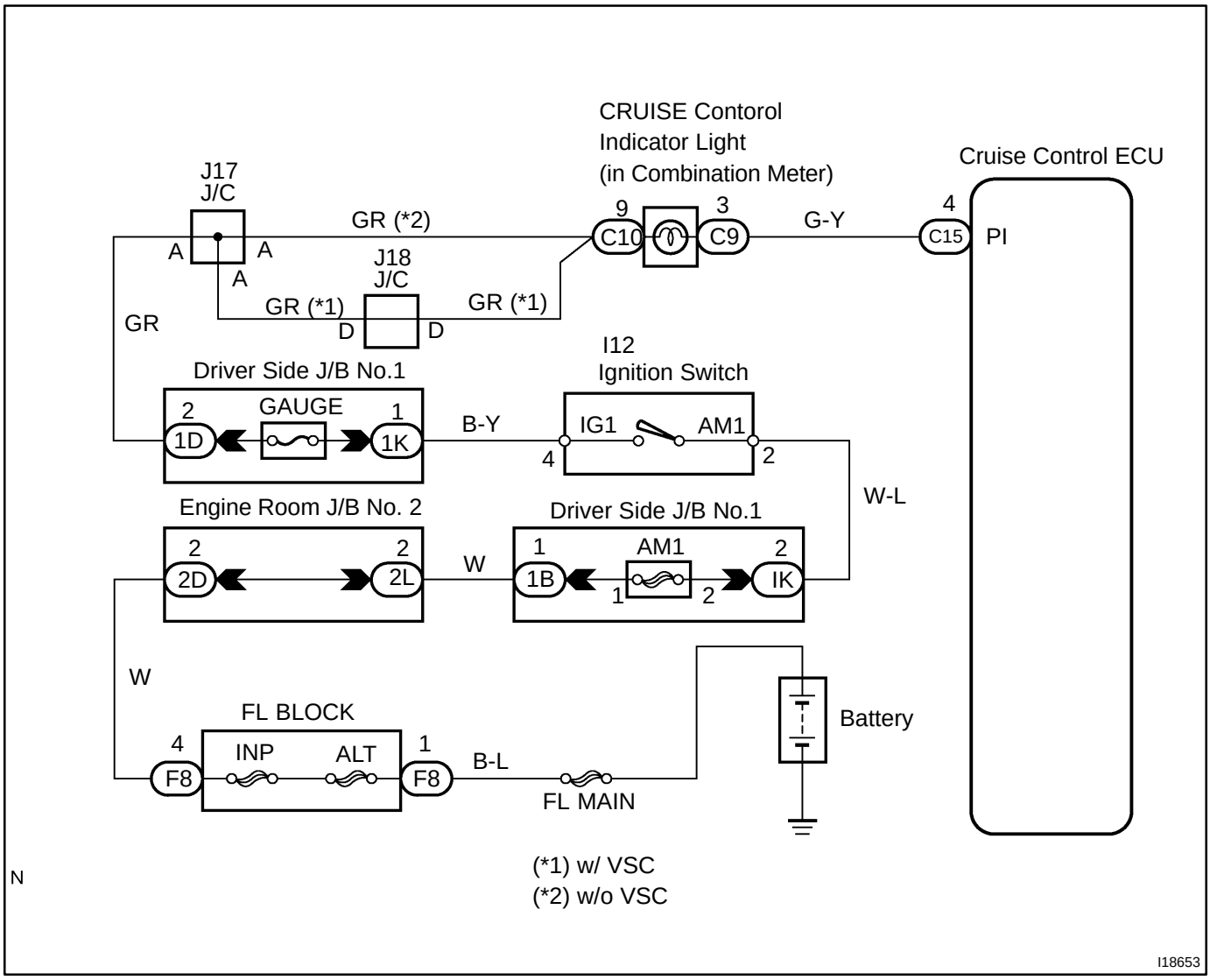
DI090-39

CRUISE MAIN Indicator Light Circuit

CIRCUIT DESCRIPTION

When the cruise control main switch is turned ON, CRUISE MAIN indicator light lights up.

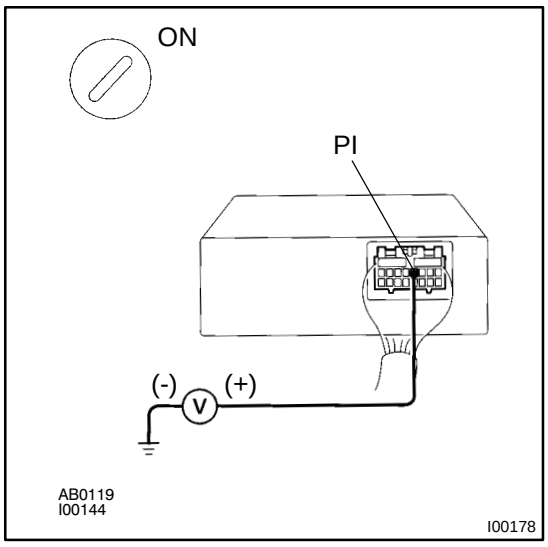
WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check voltage between terminals PI and GND of cruise control ECU connector.**



PREPARATION:

Tun ignition switch ON.

CHECK:

Measure voltage between terminals PI and GND of cruise control ECU connector when main switch is on and off.

OK:

Switch position	Voltage
OFF	10 - 16 V
ON	Below 1.2 V

OK → **Proceed to next circuit inspection shown on problem symptom table (See page DI-572).**

NG

2	**Check combination meter. (See page BE-2)**

NG → **Replace combination meter.**

OK

Check and replace cruise control ECU (See page IN-31).

cardiagn.com

DI6OF-02

DTC	Non Code	Translate ECU Malfunction

CIRCUIT DESCRIPTION

DTC No.	DTC Detecting Condition	Trouble Area
Non Code	Translate ECU internal malfunction is detected.	Translate ECU

INSPECTION PROCEDURE

1	**Check the BRAKE warning light circuit (See page DI-339).**

NG → **Repair or replace the BRAKE warning light circuit.**

OK

2	**Check the Tc terminal circuit (See page DI-351).**

NG → **Repair or replace the Tc terminal circuit.**

OK

Check and replace Translate ECU.

cardiagn.com

DI1NV-15

DTC	Normal	Source Voltage Drop

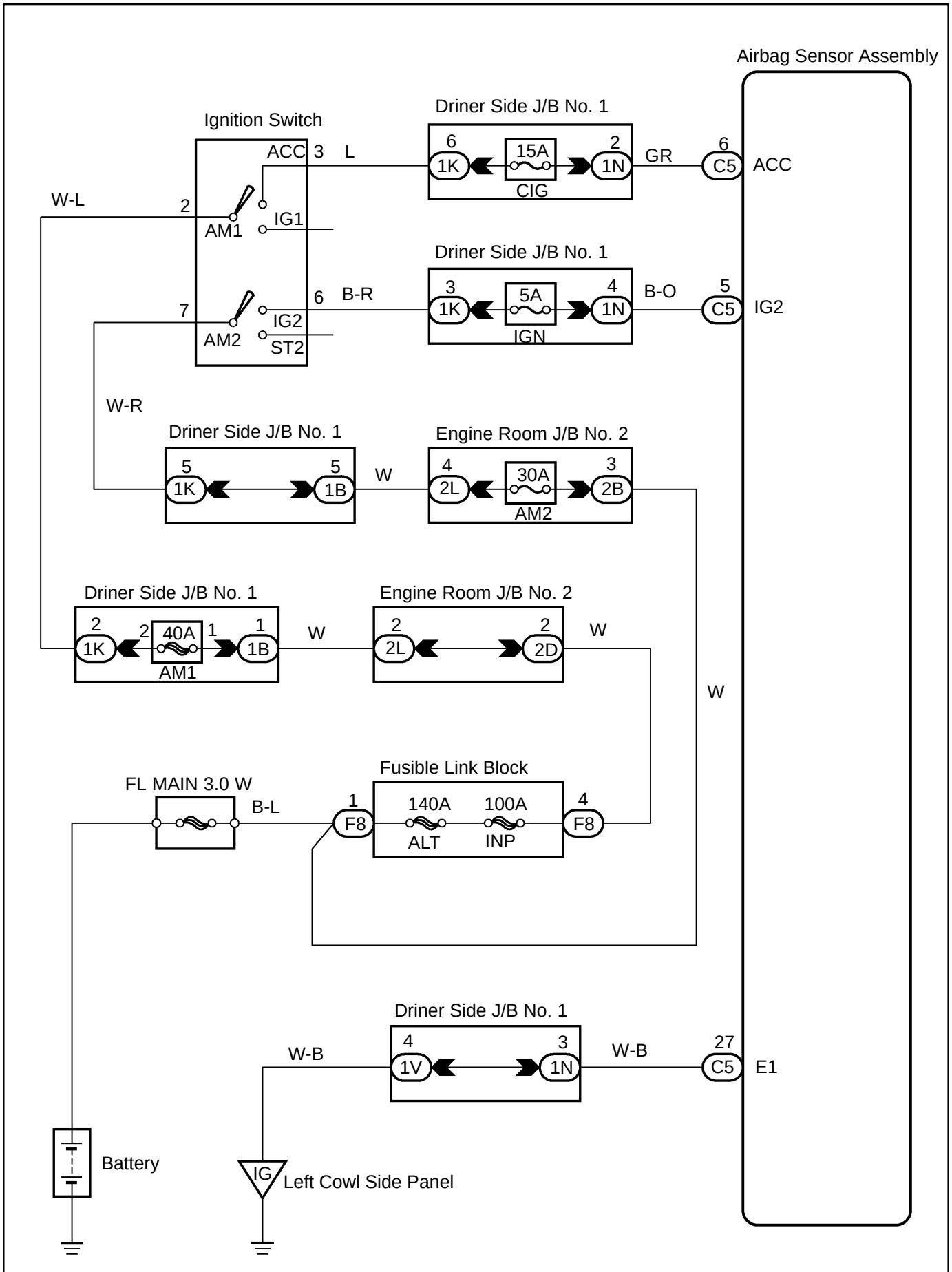
CIRCUIT DESCRIPTION

The SRS is equipped with a voltage-increase circuit (DC-DC converter) in the airbag sensor assembly in case the source voltage drops.
When the battery voltage drops, the voltage-increase circuit (DC-DC converter) functions to increase the voltage of the SRS to normal voltage.
The diagnosis system malfunction display for this circuit is different from other circuits that is when the SRS warning light remains lit up and the DTC is a normal code, source voltage drop is indicated.
Malfunction in this circuit is not recorded in the airbag sensor assembly, and the source voltage returns to normal, the SRS warning light automatically goes off.

DTC No.	Diagnosis
(Normal)	Source voltage drop

cardiagn.com

WIRING DIAGRAM

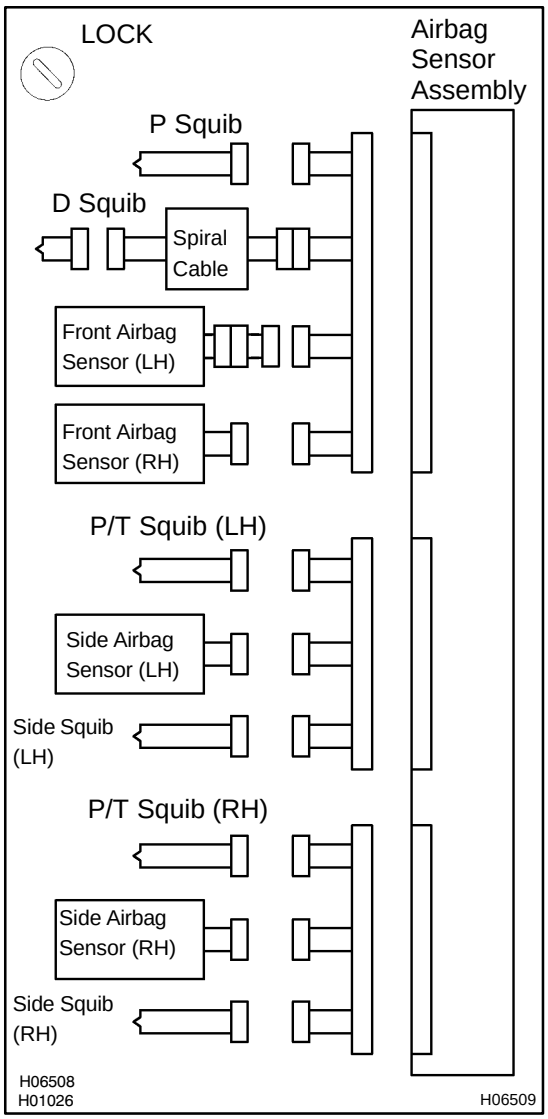


H02752

cardiagn.com

INSPECTION PROCEDURE

1	**Prepare for inspection.**



PREPARATION:

(a) Disconnect negative (-) terminal cable from the battery, and wait at least for 90 seconds.

(b) Remove the steering wheel pad (See page SR-1 1).

(c) Disconnect the connector of the front passenger airbag assembly (See page RS-27).

(d) Disconnect the connector of the side airbag assembly RH and LH (See page RS-39).

(e) Disconnect the connector of the seat belt pretensioner RH and LH (See page BO-154).

(f) Disconnect the connectors of the airbag sensor assembly (See page RS-52).

(g) Disconnect the connector of the front airbag sensor RH and LH (See page RS-57).

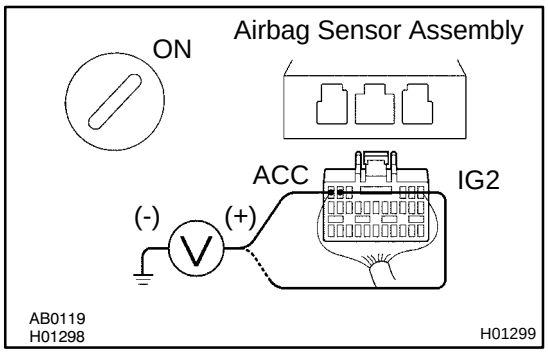
(h) Disconnect the connector of the side airbag sensor assembly RH and LH (See page RS-62).

CAUTION:

Store the steering wheel pad, front passenger airbag assembly and side airbag assemlby with the front surface facing upward.

cardiagn.com

2	Check source voltage.



PREPARATION:

Connect negative (-) terminal cable to the battery.

CHECK:

(a) Turn the ignition switch to ON.

(b) Measure the voltage between body ground and each of ACC and IG2 on the sensor and operate electric system (defogger, wiper, headlight, heater blower, etc.).

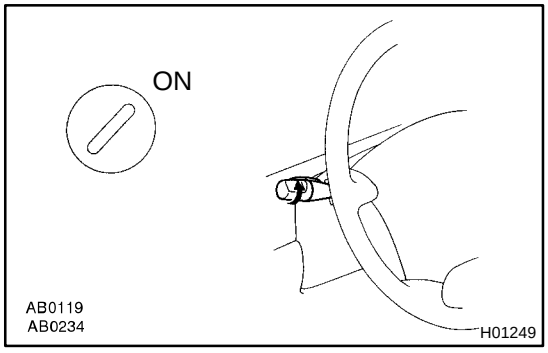
OK:

Voltage: 10 - 14 V

NG	Check harness between battery and airbag sensor assembly, and check battery and charging system.

OK

3	Does SRS warning light turn off?



PREPARATION:

(a) Turn the ignition switch to LOCK.

(b) Connect the steering wheel pad connector.

(c) Connect the front passenger airbag assembly connector.

(d) Connect the side airbag assembly connectors.

(e) Connect the seat belt pretensioner connectors.

(f) Connect the airbag sensor assembly connectors.

(g) Connect the front airbag sensor connectors.

(h) Connect the side airbag sensor assembly connectors.

(i) Turn the ignition switch to ON.

CHECK:

Operate electric system (defogger, wiper, headlight, heater blower, etc.) and check that SRS warning light goes off.

NO	Check for DTCs. If a DTC is output, perform troubleshooting for the DTC. If a normal code is output, replace airbag sensor assembly.

YES

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

cardiagn.com

DI8AX-01

DTC	Normal Code	Malfunction in ECM

CIRCUIT DESCRIPTION

If any trouble occurs in the ECM control system, the ECU prohibits ABS & VSC control.

DTC No.	DTC Detecting Condition	Trouble Area
Normal Code	Conditions 1., 2,. 3, or 4,continue for 5 sec. or more: 1. Engine malfunction signal is sent from ECM. 2. Shift malfunction signal is sent from ECM 3. The shift position is other than P and N range input voltage is 8 V or more. 4. The shift position is PN or rev and D range input voltage is 8 V or more.	• Brake fluid level • Brake fluid level warning switch circuit • Steering angle sensor • ECM circuit • ECM • Translate ECU

INSPECTION PROCEDURE

1	Is DTC out put for ECM?

Check DTC on page DI-3 .

YES → **Repair engine control system according to the output code.**

NO

2	Check the DTC for the ABS and VSC (See page DI-259).

*1 → **Repair ABS and VSC control system according to the code output.**

*2

Check and replace translate ECU.

*1: Output NG code except for DTC of VSC system 42
*2: Output NG code DTC of VSC system 42 only

cardiagn.com

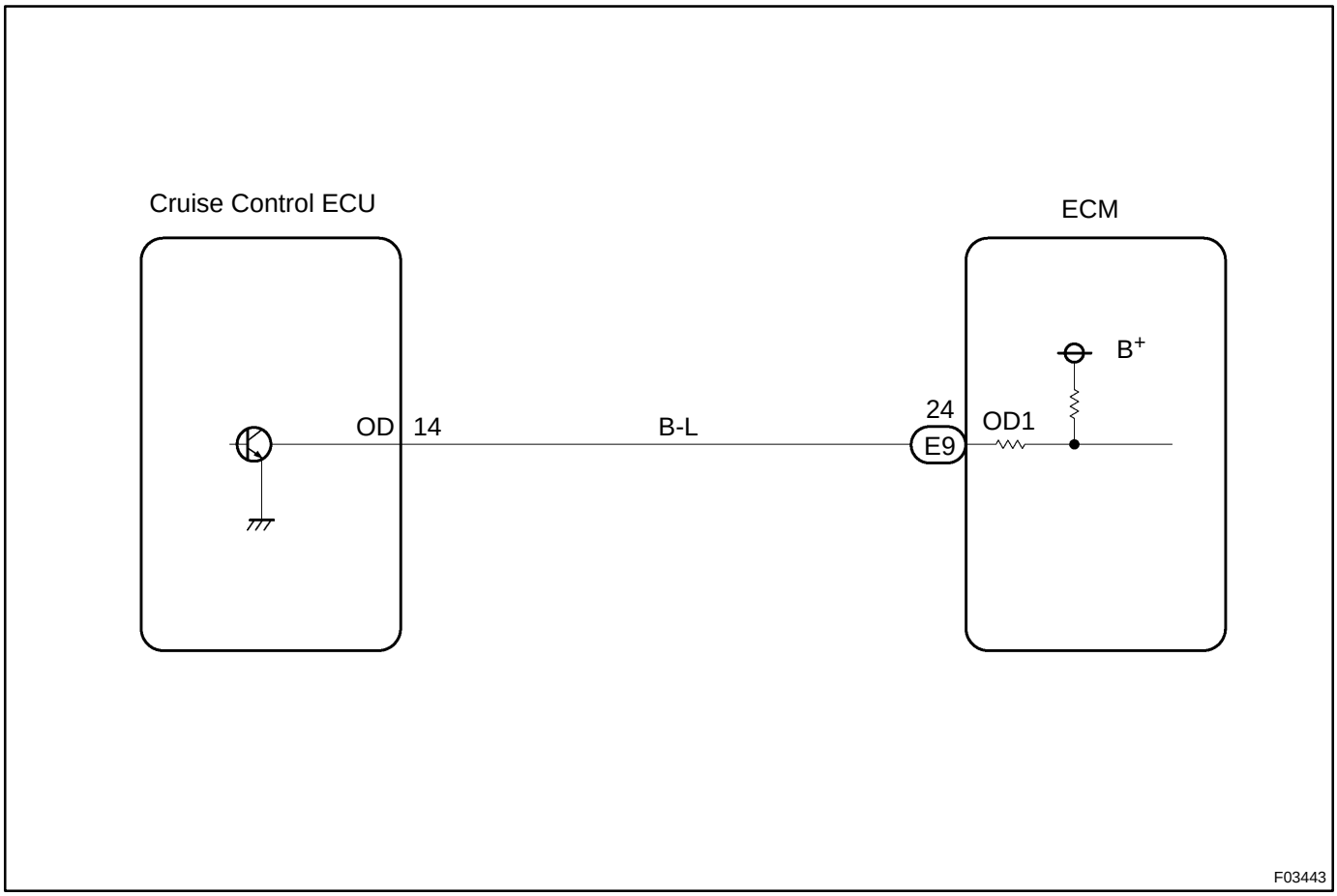
DI0D0-08

O/D Cancel Signal Circuit

CIRCUIT DESCRIPTION

While driving uphill with cruise control activated, in order to minimize gear shifting and provide smooth cruising overdrive may be prohibited temporarily under some condition.
The cruise control ECU sends O/D cut signals to the ECM as necessary and the ECM cancels overdrive shifting until these signals are discontinued.

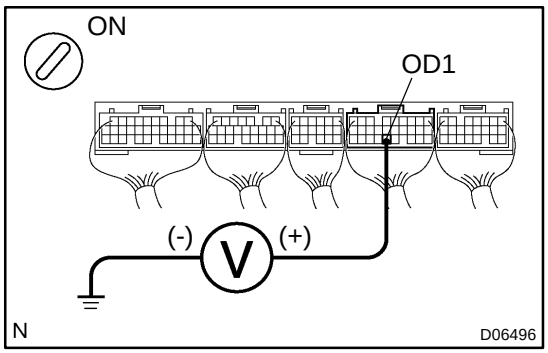
WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check voltage between terminal OD1 of ECM and body ground.**

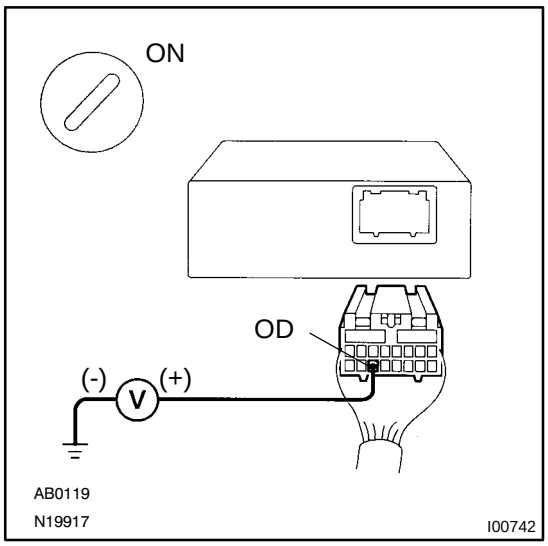


PREPARATION:
Turn the ignition switch ON.
CHECK:
Measure voltage between terminal OD1 of ECM and body ground.
OK:
Voltage: 10 - 14 V

OK	**Proceed to next circuit inspection shown in matrix chart (See page DI-171).**

NG

2	**Check voltage between terminal OD of cruise control ECU harness side connector and body ground.**



PREPARATION:
(a) Disconnect the cruise control ECU connector.
(b) Turn the ignition switch ON.
CHECK:
Measure voltage between terminal O/D of cruise control ECU harness side connector and body ground.
OK:
Voltage: 10 - 14 V

OK	**Check and replace the cruise control ECU.**

NG

cardiagn.com

3	**Check harness and connector between cruise control ECU and ECM (See page IN-31).**

NG → **Repair or replace the harness or connector.**

OK

Check and replace the ECM (See page IN-31).

cardiagn.com

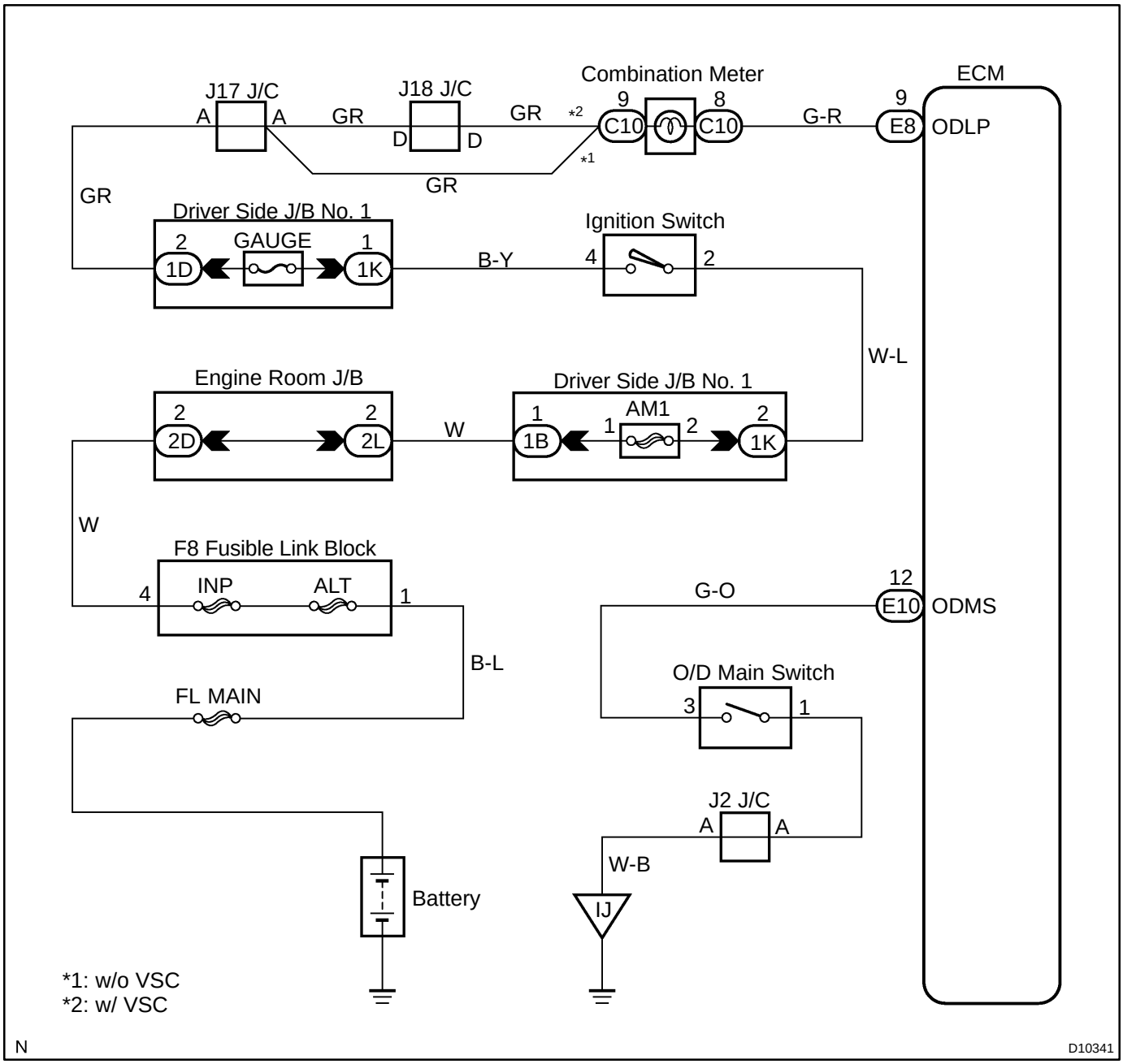
DI69O-04

O/D Main Switch & O/D OFF Indictor Light Circuit

CIRCUIT DESCRIPTION

The O/D main switch is a momentary type switch. When pressing the O/D main switch, the O/D OFF indicator light lights up and ECM prohibits shifting to O/D, and when pressing it again, the O/D OFF indicator light goes off and ECM allows shifting to O/D. Turning the IG switch OFF will reset the O/D OFF indicator light.

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check operation of O/D main switch**

PREPARATION:
Turn the ignition switch ON.
CHECK:
(a) Check O/D OFF indicator light when O/D main switch is pushed in to ON.
(b) Check O/D OFF indicator light when O/D main switch is pushed again.
OK:
(a) O/D OFF indicator light lights up.
(b) O/D OFF indicator light goes off.

OK	**Proceed to next inspection shown on problem symptoms tables (See page DI-171).**

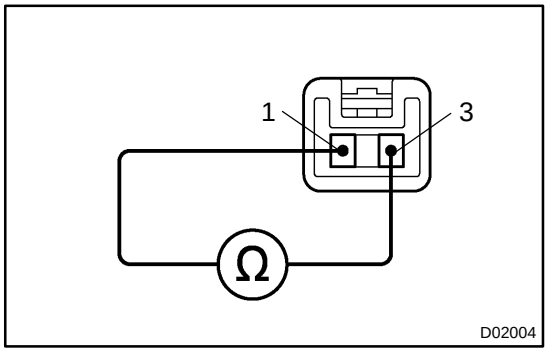
NG

2	**Check and replace the combination meter (See page BE-48).**

NG	**Replace the combination meter.**

OK

3	**Check O/D main switch.**



PREPARATION:
Disconnect the O/D main switch connector.
CHECK:
Check continuity between terminals 1 and 3 of O/D main switch connector.
OK:

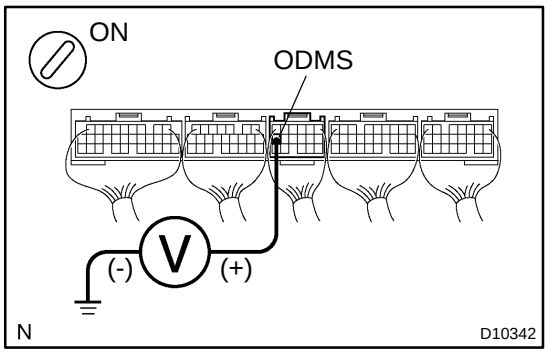
O/D main switch condition	Specified condition
Press continuously O/D main switch	Continuity
Release O/D main switch	No continuity

NG	**Replace and repair O/D main switch.**

OK

cardiagn.com

4	Check voltage between terminal ODMS of ECM and body ground.



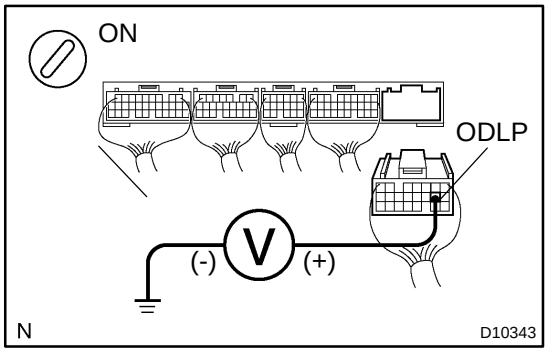
PREPARATION:
Turn the ignition switch ON.
CHECK:
Check voltage between terminal ODMS of ECM and body ground when O/D main switch is ON and OFF.
OK:

O/D main switch	Specified voltage
Press continuously O/D main switch	Below 1.0 V
Release O/D main switch	10 - 14 V

OK → **Check and replace the ECM (See page IN-21).**

NG

5	Check voltage between terminal ODLP of ECM and body ground.



PREPARATION:
(a) Disconnect the connector of ECM.
(b) Turn the ignition switch ON.
CHECK:
Check voltage between terminal ODLP of ECM and body ground.
OK:
Voltage: 7.5 - 14 V

OK → **Check and replace the ECM (See page IN-21).**

NG

Check and replace harness and connector between combination meter and ECM, O/D main switch and ECM, O/D main switch and body ground (See page IN-21).

cardiagn.com

DI21S-03

CIRCUIT INSPECTION

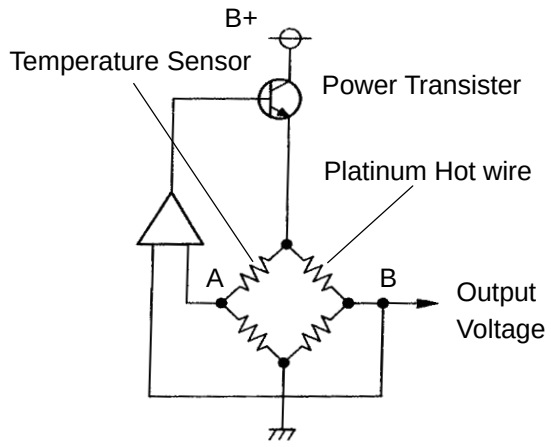
DTC	P0100	Mass Air Flow Circuit Malfunction

CIRCUIT DESCRIPTION

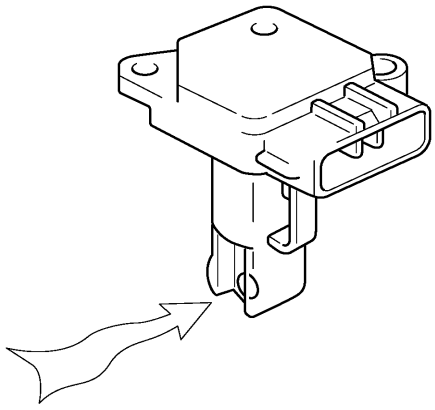
The mass air flow meter uses a platinum hot wire. The hot wire air flow meter consists of a platinum hot wire, temperature sensor and a control circuit installed in a plastic housing. The hot wire air flow meter works on the principle that the hot wire and temperature sensor located in the intake air bypass of the housing detect any changes in the intake air temperature.

The hot wire is maintained at the set temperature by controlling the current flow through the hot wire. This current flow is then measured as the output voltage of the mass air flow meter.

The circuit is constructed so that the platinum hot wire and temperature sensor provide a bridge circuit, with the power transistor controlled so that the potential of A and B remains equal to maintain the set temperature.



FI6929
S05741



A06106

DTC No.	DTC Detecting Condition	Trouble Area
P0100	Open or short in mass air flow meter circuit with more than 3 sec. engine speed 4,000 rpm or less	• Open or short in mass air flow meter circuit • Mass air flow meter • ECM

If the ECM detects DTC P0100 it operates the fail-safe function, keeping the ignition timing and injection volume constantly and making it possible to drive the vehicle.

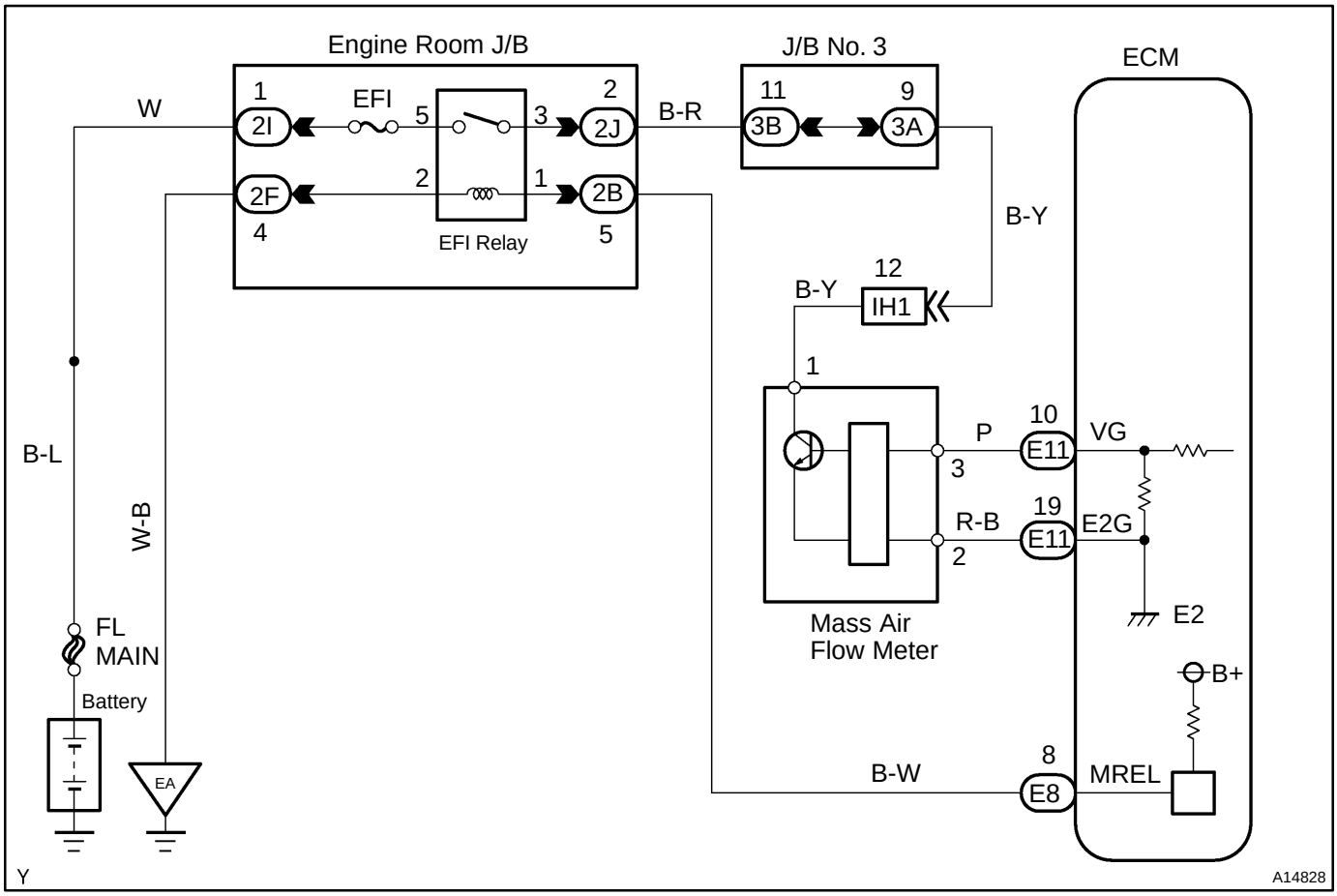
HINT:

After confirming DTC P0100, use the OBD II scan tool or TOYOTA hand-held tester to confirm the mass air flow ratio from the CURRENT DATA.

Mass Air Flow Value (gm/sec.)	Malfunction
0.0	• Mass air flow meter power source circuit open • VG circuit open or short
271.0 or more	• E2G circuit open

cardiagn.com

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:

Read freeze frame data using TOYOTA hand-held tester or OBD II scan tool. Because freeze frame records the engine conditions when the malfunction is detected. When troubleshooting, it is useful for determining whether the vehicle was running or stopped, the engine was warmed up or not, the air-fuel ratio was lean or rich, etc. at the time of the malfunction.

1	**Connect OBD II scan tool or TOYOTA hand-held tester, and read value of mass air flow rate.**

PREPARATION:

(a) Connect the OBD II scan tool or TOYOTA hand-held tester to the DLC3.
(b) Turn the ignition switch ON and push the OBD II scan tool or TOYOTA hand-held tester main switch ON.
(c) Start the engine.

CHECK:

Read the mass air flow rate on the OBD II scan tool or TOYOTA hand-held tester.

RESULT:

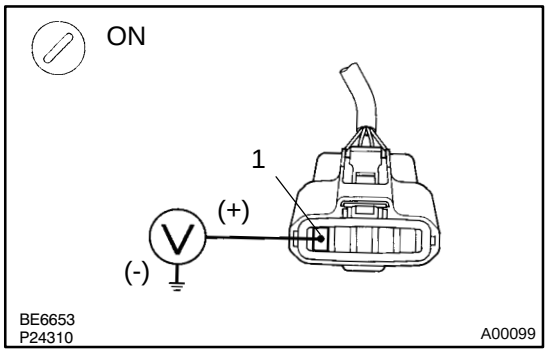
	Type I	Type II
Mass Air Flow Rate (gm/sec.)	0.0	271.0 or more

Type I	**Go to step 2.**

cardiagn.com

Type II	Go to step 5.

2	Check voltage of mass air flow meter power source.



PREPARATION:

(a) Disconnect the mass air flow meter connector.

(b) Turn the ignition switch ON.

CHECK:

Measure the voltage between terminal 1 of the mass air flow meter connector and body ground.

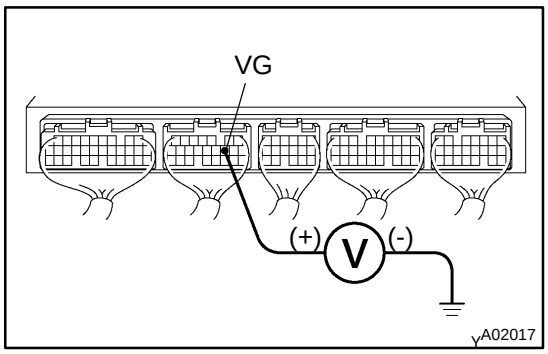
OK:

Voltage: 9 - 14 V

NG	Check for open in harness and connector between EFI main relay (Marking: EFI) and mass air flow meter (See page IN-31).

OK

3	Check voltage between terminal VG of ECM connector and body ground.



PREPARATION:

(a) Remove the glove compartment (See page SF-83).

(b) Start the engine.

CHECK:

Measure the voltage between terminal VG of the ECM connector and body ground while the engine is idling.

OK:

Voltage:

1.1 - 1.5 V (P or N position and A/C switch OFF)

OK	Check and replace ECM (See page IN-31).

NG

4	Check for open and short in harness and connector between mass air flow meter and ECM (See page IN-31).

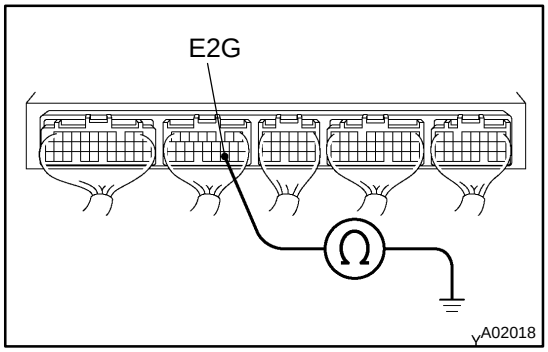
NG	Repair or replace harness or connector.

OK

cardiagn.com

Replace mass air flow meter.

5	**Check continuity between terminal E2G of ECM connector and body ground.**



PREPARATION:
Remove the glove compartment (See page SF-83).
CHECK:
Check the continuity between terminal E2G of the ECM connector and body ground.
OK:

Continuity (1 Ω or less)

NG → **Check and replace ECM (See page IN-31).**

OK

6	**Check for open in harness and connector between mass air flow meter and ECM (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

Replace mass air flow meter.

cardiagn.com

DI21T-03

DTC	P0101	Mass Air Flow Circuit Range/Performance Problem

CIRCUIT DESCRIPTION

Refer to DTC P0100 on page DI-22 .

DTC No.	DTC Detecting Condition	Trouble Area
P0101	Conditions (a), (b) and (c) continue 10 sec. or more with engine speed NE < 900 rpm: (2 trip detection logic) (a) Throttle valve fully closed (b) Mass air flow meter output > 2.2 V (c) THW 70°C	• Mass air flow meter
	Conditions (a) and (b) continue 10 sec. or more with engine speed 1,500 rpm or more: (2 trip detection logic) (a) VTA 0.63 V (b) Mass air flow meter output < 1.06 V	

WIRING DIAGRAM

Refer to DTC P0100 on page DI-22 .

INSPECTION PROCEDURE

HINT:
Read freeze frame data using TOYOTA hand-held tester or OBD II scan tool. Because freeze frame records the engine conditions when the malfunction is detected, when troubleshooting it is useful for determining whether the vehicle was running or stopped, the engine warmed up or not, the air-fuel ratio lean or rich, etc. at the time of the malfunction.

1	Are there any other codes (besides DTC P0101) being output ?

NO → Replace mass air flow meter.

YES →

Go to relevant DTC chart.

cardiagn.com

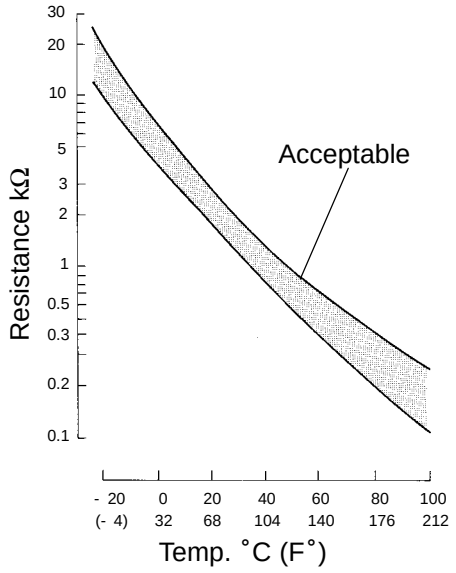
DI21U-03

DTC	P0110	Intake Air Temp. Circuit Malfunction

CIRCUIT DESCRIPTION

The intake air temp. sensor is built into the air flow meter and senses the intake air temperature.
A thermistor built in the sensor changes the resistance value according to the intake air temperature.
The lower the intake air temperature, the greater the thermistor resistance value, and the higher the intake air temperature, the lower the thermistor resistance value (See Fig. 1).
The intake air temperature sensor is connected to the ECM. The 5 V power source voltage in the ECM is applied to the intake air temperature sensor from the terminal THA via resistor R.
That is, the resistor R and the intake air temperature sensor are connected in series. When the resistance value of the intake air temperature sensor changes in accordance with changes in the intake air temperature, the potential at terminal THA also changes. Based on this signal, the ECM increases the fuel injection volume to improve driveability during cold engine operation.
If the ECM detects the DTC P0110, it operates the fail-safe function in which the intake air temperature is assumed to be 20˚C (68˚F).

(fig. 1)



<Reference>

Intake air temp. ˚C (˚F)	Resistance (kΩ)	Voltage (V)
-20 (-4)	16.0 ± 2.4	4.3
20 (68)	2.45 ± 0.24	2.4
60 (140)	0.58 ± 0.087	0.9

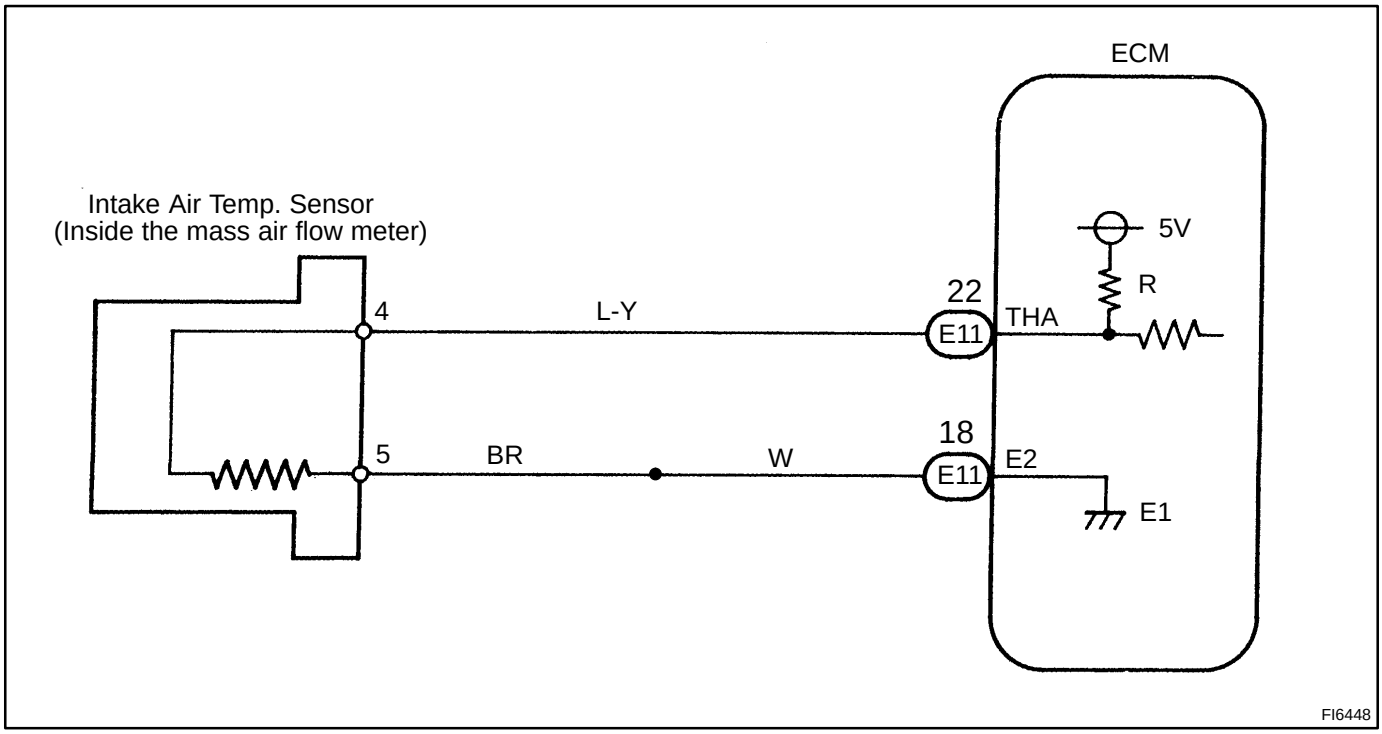
DTC No.	DTC Detecting Condition	Trouble Area
P0110	Open or short in intake air temp. sensor circuit	• Open or short in intake air temp. sensor circuit • Intake air temp. sensor (built into mass air flow meter) • ECM

HINT:
After confirming DTC P0110, use the OBD II scan tool or TOYOTA hand-held tester to confirm the intake air temp. from "CURRENT DATA".

Temp. Displayed	Malfunction
-40 ˚C (-40˚F)	Open circuit
140˚C (284˚F) or more	Short circuit

cardiagn.com

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:

- If DTCs P0110, P0115 and P0120 are output simultaneously, E2 (Sensor Ground) may be open.
- Read freeze frame data using TOYOTA hand-held tester or OBD II scan tool. Because freeze frame records the engine conditions when the malfunction is detected, when troubleshooting it is useful for determining whether the vehicle was running or stopped, the engine warmed up or not, the air-fuel ratio lean or rich, etc. at the time of the malfunction.

1	**Connect OBD II scan tool or TOYOTA hand-held tester, and read value of intake air temp.**

PREPARATION:

(a) Connect the OBD II scan tool or TOYOTA hand-held tester to the DLC3.
(b) Turn the ignition switch ON and push the OBD II scan tool or TOYOTA hand-held tester main switch ON.

CHECK:

Read temp. value on the OBD II scan tool or TOYOTA hand-held tester.

OK:

Same as actual intake air temp.

HINT:

- If there is open circuit, OBD II scan tool or TOYOTA hand-held tester indicates -40˚C (−40˚F).
- If there is short circuit, OBD II scan tool or TOYOTA hand-held tester indicates 140˚C (284˚F) or more.

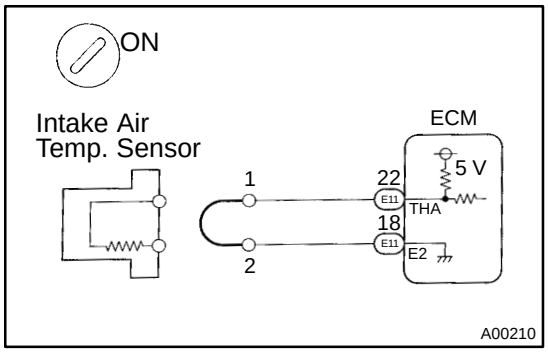
NG → **-40˚C (-40˚F) ... Go to step 2.**
140˚C (284˚F) or more ... Go to step 4.

OK

cardiagn.com

Check for intermittent problems (See page DI-3).

2	Check for open in harness or ECM.



PREPARATION:

(a) Disconnect the mass air flow meter connector.
(b) Connect sensor wire harness terminals together.
(c) Turn the ignition switch ON.

CHECK:

Read temp. value on the OBD II scan tool or TOYOTA hand-held tester.

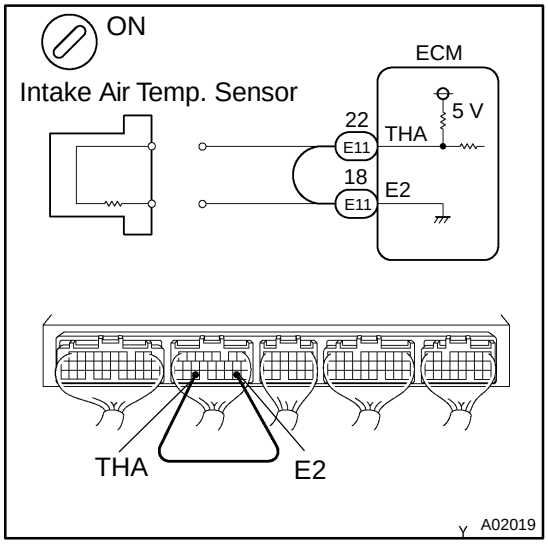
OK:

Temp. value: 140°C (284°F) or more

OK	Confirm good connection at sensor. If OK, replace mass air flow meter.

NG

3	Check for open in harness or ECM.



PREPARATION:

(a) Remove the glove compartment (See page SF-83).
(b) Connect between terminals THA and E2 of ECM connector.

HINT:

Mass air flow meter connector is disconnected.

Before checking, do a visual and contact pressure check for the ECM connector (See page IN-31).

CHECK:

Read temp. value on the OBD II scan tool or TOYOTA hand-held tester.

OK:

Temp. value: 140°C (284°F) or more

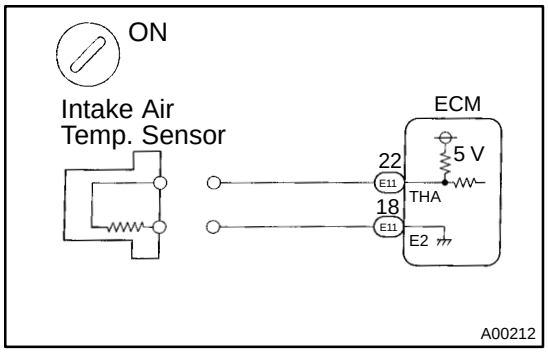
OK	Open in harness between terminal E2 or THA, repair or replace harness.

NG

cardiagn.com

**Confirm good connection at ECM.
If OK, check and replace ECM.**

4	**Check for short in harness and ECM.**

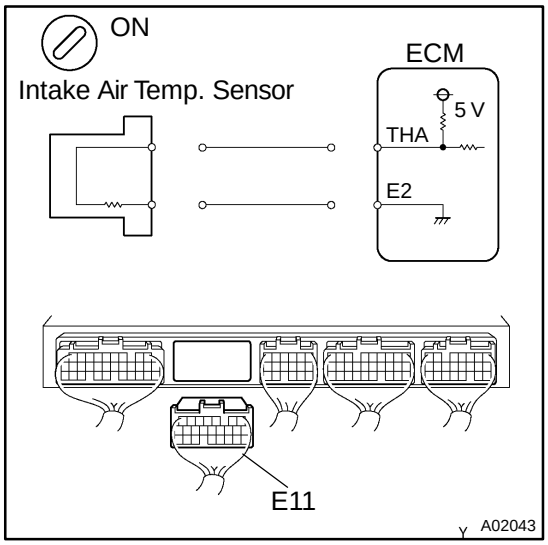


PREPARATION:
(a) Disconnect the mass air flow meter connector.
(b) Turn the ignition switch ON.
CHECK:
Read temp. value on the OBD II scan tool or TOYOTA hand-held tester.
OK:
Temp. value: -40°C (-40°F)

OK → **Replace mass air flow meter.**

NG

5	**Check for short in harness or ECM.**



PREPARATION:
(a) Remove the glove compartment (See page SF-83).
(b) Disconnect the E11 connector of ECM.
HINT:
Mass air flow meter connector is disconnected.
(c) Turn the ignition switch ON.
CHECK:
Read temp. value on the OBD II scan tool or TOYOTA hand-held tester.
OK:
Temp. value: - 40°C (- 40°F)

OK → **Repair or replace harness or connector.**

NG

Check and replace ECM (See page IN-31).

cardiagn.com

DI21V-03

DTC	P0115	Engine Coolant Temp. Circuit Malfunction

CIRCUIT DESCRIPTION

A thermistor built into the engine coolant temp. sensor changes the resistance value according to the engine coolant temp.

The structure of the sensor and connection to the ECM is the same as in the intake air temp. circuit malfunction shown on page DI-27 .

If the ECM detects the DTC P0115, it operates fail-safe function in which the engine coolant temperature is assumed to be 80˚C (176˚F).

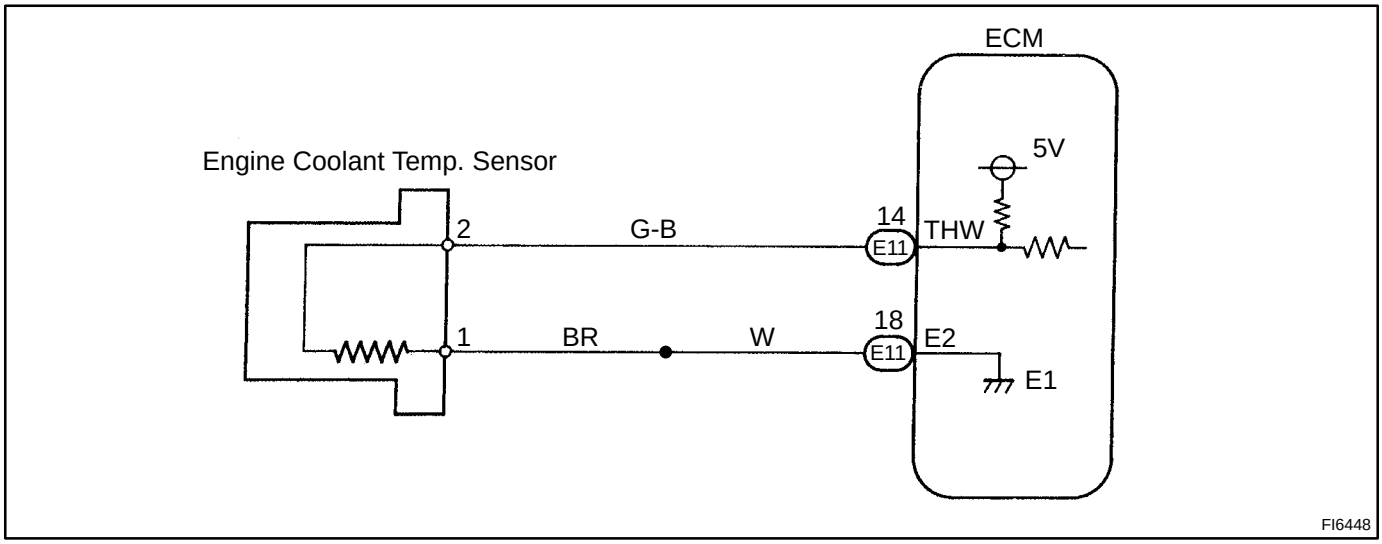
DTC No.	Detection Item	Trouble Area
P0115	Open or short in engine coolant temp. sensor circuit	• Open or short in engine coolant temp. sensor circuit • Engine coolant temp. sensor • ECM

HINT:

After confirming DTC P0115, use the OBD II scan tool or TOYOTA hand-held tester to confirm the engine coolant temp. from CURRENT DATA.

Temperature Displayed	Malfunction
-40 ˚C (-40˚F)	Open circuit
140˚C (284˚F) or more	Short circuit

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:

- If DTCs P0110, P0115 and P0120 are output simultaneously, E2 (Sensor Ground) may be open.
- Read freeze frame data using TOYOTA hand-held tester or OBD II scan tool. Because freeze frame records the engine conditions when the malfunction is detected, when troubleshooting it is useful for determining whether the vehicle was running or stopped, the engine warmed up or not, the air-fuel ratio lean or rich, etc. at the time of the malfunction.

cardiagn.com

1	**Connect OBD II scan tool or TOYOTA hand-held tester, and read value of engine coolant temperature.**

PREPARATION:

(a) Connect the OBD II scan tool or TOYOTA hand-held tester to the DLC3.

(b) Turn the ignition switch ON and push the OBD II scan tool or TOYOTA hand-held tester main switch ON.

CHECK:

Read temperature value on the OBD II scan tool or TOYOTA hand-held tester.

OK:

Same as actual engine coolant temperature.

HINT:

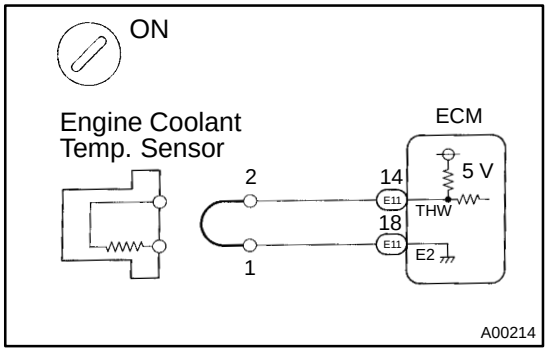
- If there is open circuit, OBD II scan tool or TOYOTA hand-held tester indicates -40˚C (-40˚F).
- If there is open circuit, OBD II scan tool or TOYOTA hand−held tester indicates 140˚C (284˚F) or more.

NG → **-40˚C (-40˚F) ... Go to step 2.**
140˚C (284˚F) or more ... Go to step 4.

OK

Check for intermittent problems (See page DI-3).

2	**Check for open in harness or ECM.**



PREPARATION:

(a) Disconnect the engine coolant temp. sensor connector.

(b) Connect the sensor wire harness terminals together.

(c) Turn the ignition switch ON.

CHECK:

Read temp. value on the OBD II scan tool or TOYOTA hand-held tester.

OK:

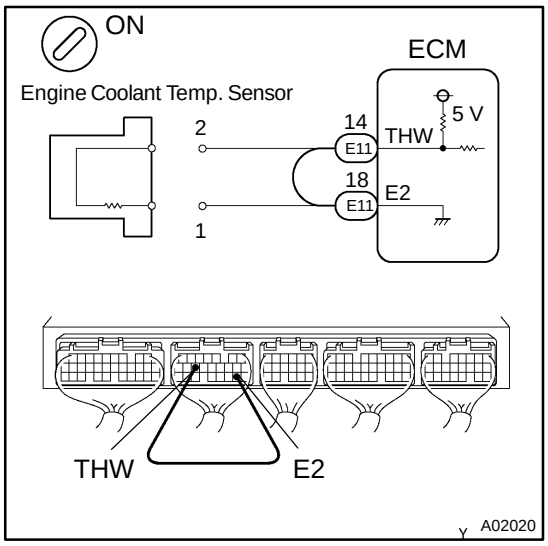
Temperature value: 140°C (284°F) or more

OK → **Confirm good connection at sensor.**
If OK, replace engine coolant temp. sensor.

NG

cardiagn.com

3	Check for open in harness or ECM.



PREPARATION:

(a) Remove the glove compartment (See page SF-83).

(b) Connect between terminals THW and E2 of the ECM connector.

HINT:

Engine coolant temp. sensor connector is disconnected. Before checking, do a visual and contact pressure check for the ECM connector (See page IN-31).

(c) Turn the ignition switch ON.

CHECK:

Read temperature. value on the OBD II scan tool or TOYOTA hand-held tester.

OK:

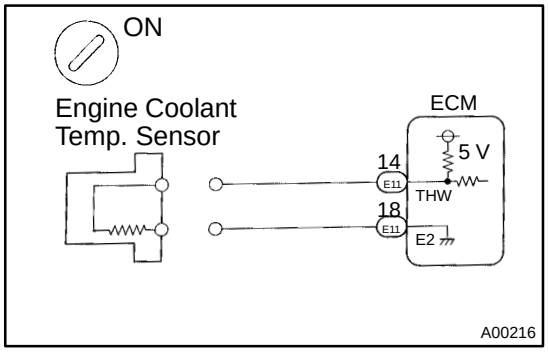
Temperature value: 140°C (284°F) or more

OK	Open in harness between terminal E2 or THW, repair or replace harness.

NG

Confirm good connection at ECM.
If OK, check and replace ECM.

4	Check for short in harness and ECM.



PREPARATION:

(a) Disconnect the engine coolant temp. sensor connector.

(b) Turn the ignition switch ON.

CHECK:

Read temperature value on the OBD II scan tool or TOYOTA hand-held tester.

OK:

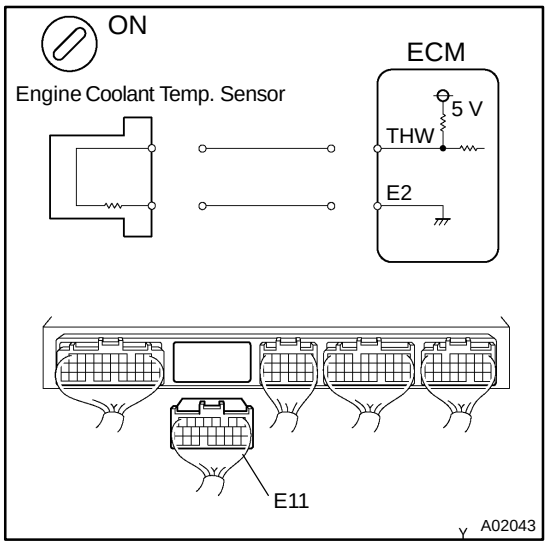
Temperature value: -40°C (-40°F)

OK	Replace engine coolant temp. sensor.

NG

cardiagn.com

5	Check for short in harness or ECM.



PREPARATION:

(a) Remove the glove compartment (See page SF-83).

(b) Disconnect the E11 connector of the ECM.

HINT:

Engine coolant temp. sensor connector is disconnected.

(c) Turn the ignition switch ON.

CHECK:

Read temperature value on the OBD II scan tool or TOYOTA hand-held tester.

OK:

Temperature value: -40°C (-40°F)

OK → **Repair or replace harness or connector.**

NG

Check and replace ECM (See page IN-31).

cardiagn.com

DI21W-03

DTC	P0116	Engine Coolant Temp. Circuit Range/ Performance Problem

CIRCUIT DESCRIPTION

Refer to DTC P0115 on page DI−31.

DTC No.	DTC Detecting Condition	Trouble Area
P0116	If THW ⍁ -7˚C (19.4˚F), 20 min. or more after starting engine, engine coolant temp. sensor value is 20˚C (68˚F) or less (2 trip detection logic)	• Engine coolant temp. sensor • Cooling system
	If THW ≧ -7˚C (19.4˚F) and ⍁ 10˚C (50˚F), 5 min. or more after starting engine, engine coolant temp. sensor value is 20˚C (68˚F) or less (2 trip detection logic)	
	If THW ≧ 10˚C (50 ˚F), 2 min. or more after starting engine, engine coolant temp. sensor value is 30˚C (86˚F) (2 trip detection logic)	
	When THW ≧ 35˚C (95˚F) or more and less than 60˚C (140˚F), THA ≧ - 6.7˚C (19.9˚F) or more, when starting engine , condition (a) and (b) continues: (a) Vehicle speed is changing (Not stable) (b) When starting engine, THW< 3˚C (37.4˚F) (2 trip detection logic)	

INSPECTION PROCEDURE

HINT:

- If DTCs P0115 and P0116 are output simultaneously, engine coolant temp. sensor circuit may be open. Perform troubleshooting of DTC P0115 first.
- Read freeze frame data using TOYOTA hand-held tester or OBD II scan tool. Because freeze frame records the engine conditions when the malfunction is detected, when troubleshooting it is useful for determining whether the vehicle was running or stopped, the engine warmed up or not, the air-fuel ratio lean or rich, etc. at the time of the malfunction.

1	Are there any other codes (besides DTC P0116) being output?

YES → Go to relevant DTC chart.

NO

cardiagn.com

2	Check thermostat (See page CO-12).

NG → Replace thermostat.

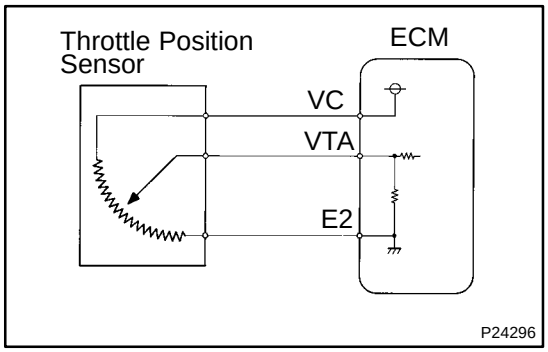
OK →

Replace engine coolant temp. sensor.

cardiagn.com

DTC	P0120	Throttle/Pedal Position Sensor/Switch "A" Circuit Malfunction

CIRCUIT DESCRIPTION



The throttle position sensor is mounted in the throttle body and detects the throttle valve opening angle. When the throttle valve is fully closed, a voltage of approximately 0.7 V is applied to terminal VTA of the ECM. The voltage applied to the terminals VTA of the ECM increases in proportion to the opening angle of the throttle valve and becomes approximately 2.7 ~ 5.2 V when the throttle valve is fully opened. the ECM judges the vehicle driving conditions from these signals input from terminals VTA and uses them as one of the conditions for deciding the air-fuel ratio correction, power increase correction and fuel-cut control etc.

DTC No.	DTC Detecting Condition	Trouble Area
P0120	Condition (a) or (b) continues: (a) VTA ⍁ 0.1 V (b) VTA ⍁ 4.9 V	• Open or short in throttle position sensor circuit • Throttle position sensor • ECM

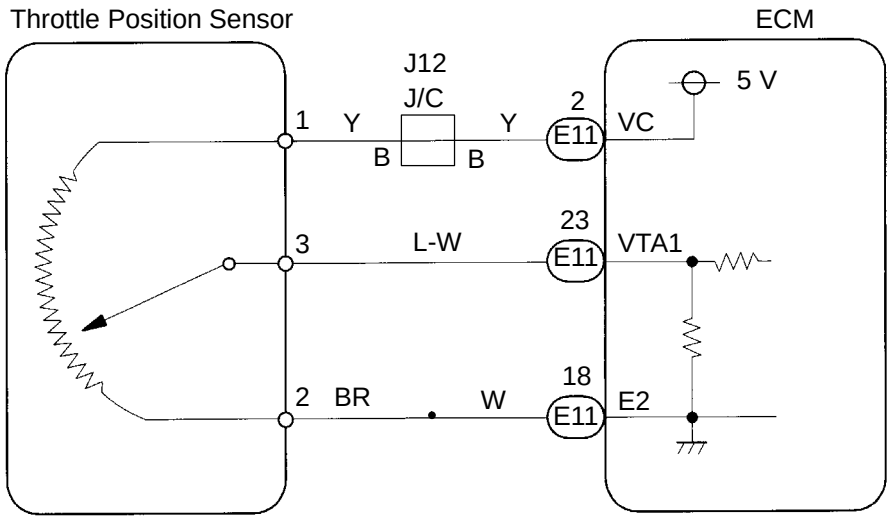
HINT:

After confirming DTC P0120, use the OBD II scan tool or TOYOTA hand-held tester to confirm the throttle valve opening percentage and closed throttle position switch condition.

Throttle valve opening position expressed as percentage		Trouble Area
Throttle valve fully closed	Throttle valve fully open	
0 %	0 %	VC line open VTA line open or short
Approx. 100 %	Approx. 100 %	E2 line open

cardiagn.com

WIRING DIAGRAM



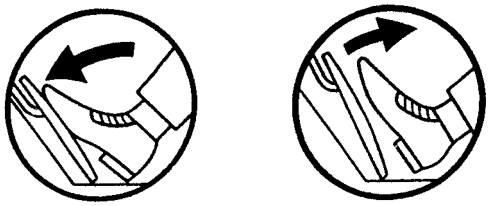
S05019

INSPECTION PROCEDURE

HINT:

- If DTCs P0110, P0115 and P0120 may be open.
- Read freeze frame data using TOYOTA hand-held tester or OBD II scan tool. Because freeze frame records the engine conditions when the malfunction is detected, when troubleshooting it is useful for determining whether the vehicle was running or stopped, the engine warmed up or not, the air-fuel ratio lean or rich, etc. at the time of the malfunction.

1	**Connect OBD II scan tool or TOYOTA hand-held tester, and read throttle valve opening percentage.**



FI7052

PREPARATION:

(a) Connect the OBD II scan tool or TOYOTA hand-held tester to DLC3.

(b) Turn the ignition switch ON and push the OBD II scan tool or TOYOTA hand-held tester main switch ON.

CHECK:

Read the throttle valve opening percentage.

OK:

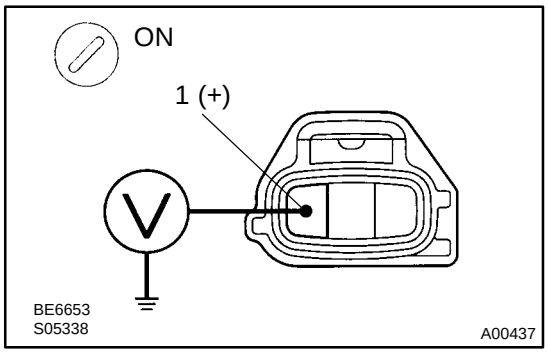
Throttle valve	Throttle valve opening position expressed as percentage
Fully open	Approx. 75 %
Fully closed	Approx. 10 %

OK	**Check for intermittent problems (See page DI-3).**

cardiagn.com

NG

2	Check voltage between terminal 1 of wire harness side connector and body ground.



PREPARATION:

(a) Disconnect the throttle position sensor connector.

(b) Turn the ignition switch ON.

CHECK:

Measure voltage between terminal 1 (VC) of wire harness side connector and body ground.

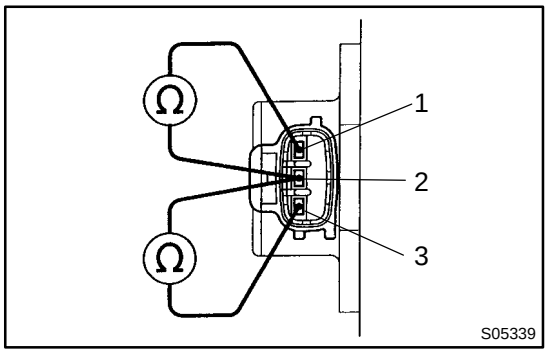
OK:

Voltage: 4.5 - 5.5 V

NG	Go to step 5.

OK

3	Check throttle position sensor.



PREPARATION:

Disconnect the throttle position sensor connector.

CHECK:

Measure voltage between terminals 1, 3 and 2 of throttle position sensor.

OK:

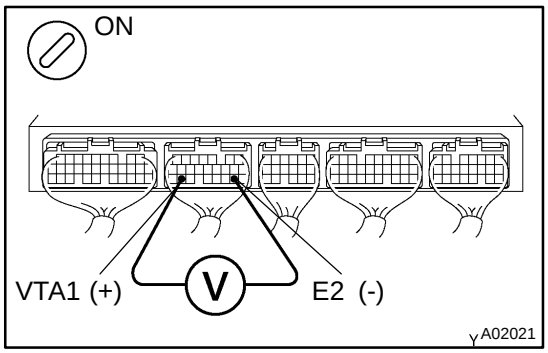
Terminals	Throttle valve	Resistance
1 ~ 2	—	2.5 - 5.9 kΩ
3 ~ 2	Fully closed	0.2 - 6.3 kΩ
3 ~ 2	Fully open	2.0 - 10.2 kΩ

NG	Replace throttle position sensor.

OK

cardiagn.com

4	Check voltage between terminals VTA1 and E2 of ECM.



PREPARATION:

(a) Remove the glove compartment (See page SF-83).

(b) Turn the ignition switch ON.

CHECK:

Measure voltage between terminals VTA1 and E2 of the ECM connector.

OK:

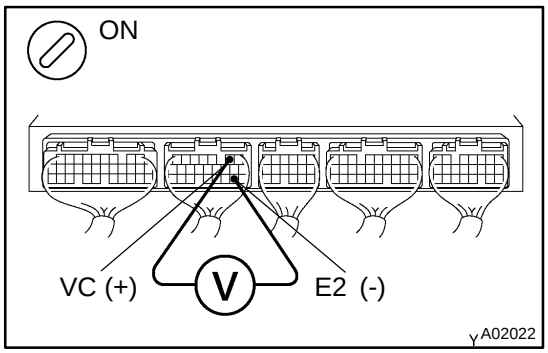
Throttle valve	Voltage
Fully closed	0.3 - 1.0 V
Fully open	2.7 - 5.2 V

NG → **Check for open and short in harness and connector between ECM and throttle position sensor (VTA line) (See page IN-31).**

OK →

Check and replace ECM (See page IN-31).

5	Check voltage between terminals VC and E2 of ECM.



PREPARATION:

(a) Remove the glove compartment (See page SF-83).

(b) Turn the ignition switch ON.

CHECK:

Measure voltage between terminals VC and E2 of the ECM connector.

OK:

Voltage: 4.5 - 5.5 V

NG → **Check and replace ECM (See page IN-31).**

OK →

Check for open in harness and connector between ECM and sensor (VC line) (See page IN-31).

cardiagn.com

DI21Y-03

DTC	P0121	Throttle/Pedal Position Sensor/Switch "A" Circuit Range/Performance Problem

CIRCUIT DESCRIPTION

Refer to DTC P0120 on page DI−37.

DTC No.	DTC Detecting Condition	Trouble Area
P0121	After vehicle speed has been exceeded 30 km/h (19 mph) even once, output value of throttle position sensor is out of applicable range while vehicle speed between 30 km/h (19 mph) and 0 km/h (0 mph) (2 trip detection logic)	• Throttle position sensor

INSPECTION PROCEDURE

HINT:

Read freeze frame data using TOYOTA hand-held tester or OBD II scan tool. Because freeze frame records the engine conditions when the malfunction is detected, when troubleshooting it is useful for determining whether the vehicle was running or stopped, the engine warmed up or not, the air-fuel ratio lean or rich, etc. at the time of the malfunction.

1	**Are there any other codes (besides DTC P0121) being output ?**

YES → **Go to relevant DTC chart.**

NO

Replace throttle position sensor.

cardiagn.com

DI4F0-02

DTC	P0125	Insufficient Coolant Temp. for Closed Loop Fuel Control

CIRCUIT DESCRIPTION

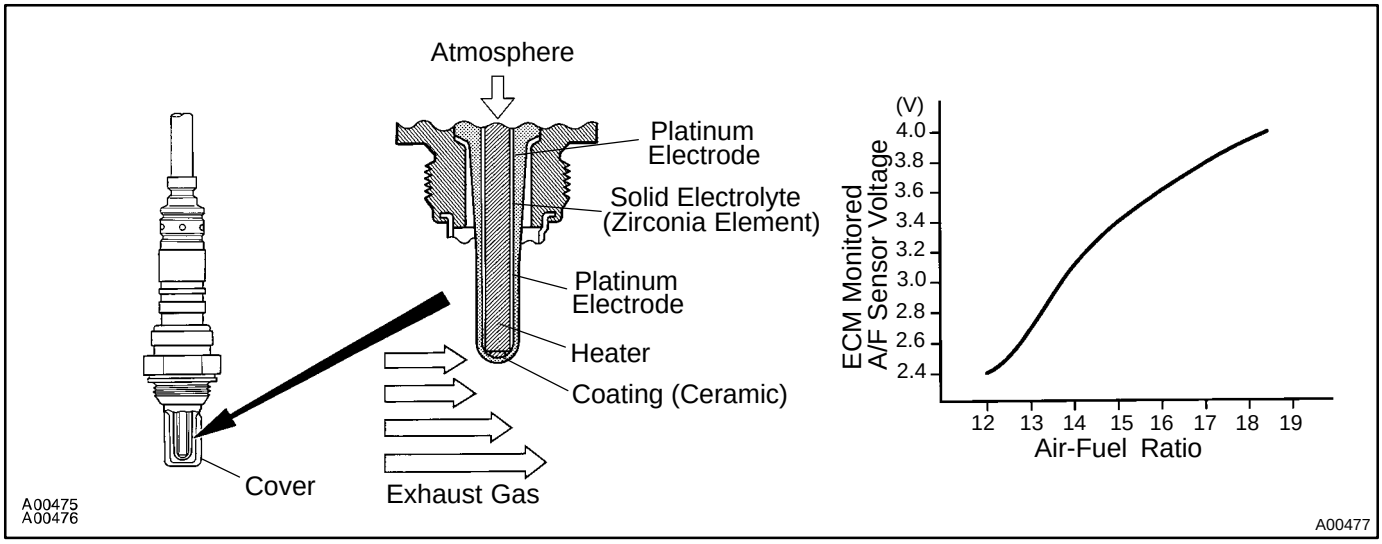
To obtain a high purification rate for the CO, HC and NOx components of the exhaust gas, a three-way catalytic converter is used, but for the most efficient use of the three-way catalytic converter, the air-fuel ratio must be precisely controlled so that it is always close to the stoichiometric air-fuel ratio.

The A/F sensor has the characteristic that provides output voltage* approximately proportional to the existing air-fuel ratio. The A/F sensor output voltage* is used to provide feedback for the ECM to control the air-fuel ratio.

By the A/F sensor output, the ECM can determine the deviation amount from the stoichiometric air-fuel ratio and control the proper injection time immediately. If the A/F sensor is malfunctioning, ECM is unable to perform accurate air-fuel ratio control.

The A/F sensor is equipped with a heater which heats the zirconia element. The heater is controlled by the ECM. When the intake air volume is low (the temp. of the exhaust gas is low), current flows to the heater to heat the sensor for accurate oxygen concentration detection.

*: The voltage value changes at the inside of the ECM only.



DTC No.	DTC Detecting Condition	Trouble Area
P0125	After engine is warmed up, A/F sensor output* does not change when conditions (a), (b) and (c) continue for at least 1.5 min. *: Output value changes at inside of ECM only. (a) Engine speed: 1,500 rpm or more (b) Vehicle speed: 40 - 100 km/h (25 - 62 mph) (c) Throttle valve does not fully closed (d) After starting engine ≧ 140 sec	• Fuel system • Injector • Ignition system • Gas leakage on exhaust system • Open or short in A/F sensor circuit (bank 1, 2 sensor 1) • A/F sensors (bank 1, 2 sensor 1) • ECM

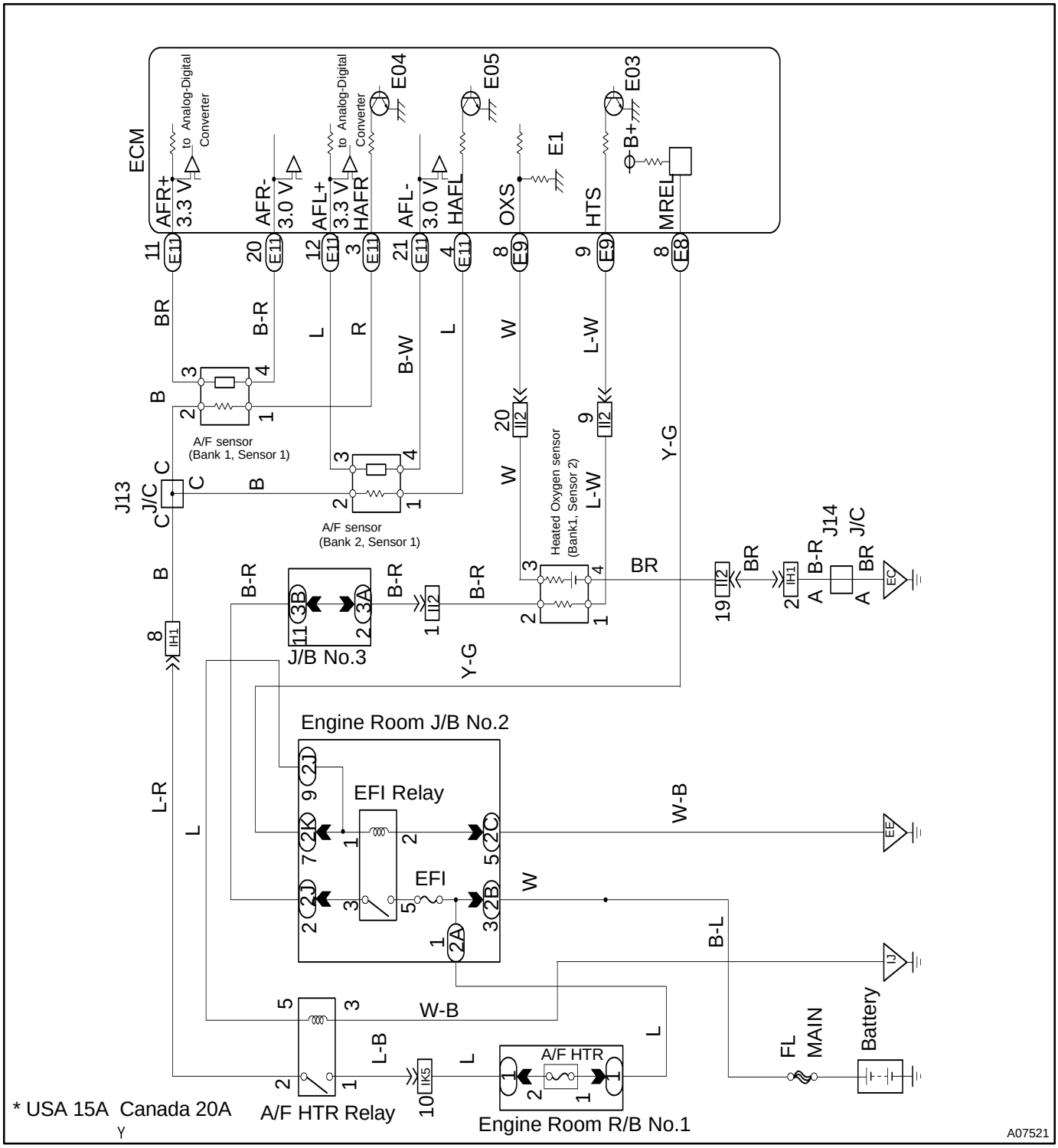
HINT:

- After confirming DTC P0125, use the OBD II scan tool or TOYOTA hand−held tester to confirm voltage output of heated oxygen sensors (bank 1, 2 sensor 1) from CURRENT DATA.
- The ECM controls the voltage of AF⊕ and AF⊖ terminals of ECM to the fixed voltage. Therefore, it is impossible to confirm the A/F sensor output voltage without OBD II scan tool or TOYOTA hand-held tester.

cardiagn.com

- OBD II scan tool (excluding TOYOTA hand-held tester) displays the one fifth of the A/F sensor output voltage which is displayed on the TOYOTA hand-held tester.

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:

Read freeze frame data using TOYOTA hand-held tester or OBD II scan tool. Because freeze frame records the engine conditions when the malfunction is detected, when troubleshooting it is useful for determining whether the vehicle was running or stopped, the engine warmed up or not, the air-fuel ratio lean or rich, etc. at the time of the malfunction.

cardiagn.com

1	**Are there any other codes (besides DTC P0125) being output ?**

YES → **Go to relevant DTC chart.**

NO

2	**Connect the OBD II scan tool or TOYOTA hand-held tester and read value for voltage output of A/F sensors (bank 1, 2 sensor 1).**

PREPARATION:

(a) Connect the OBD II scan tool or TOYOTA hand-held tester to the DLC3.

(b) Warm up the A/F sensors (bank 1, 2 sensor 1) with the engine at 2,500 rpm for approx. 90 sec.

CHECK:

Read voltage value of A/F sensors (bank 1, 2 sensor 1) on the screen of OBD II scan tool or TOYOTA hand-held tester when you perform all the following conditions.

HINT:

The voltage of AFR⊕,AFL⊕ terminal of ECM is 3.3 fixed and the AFR⊖,AFL⊖ terminal is 3.0 V fixed. Therefore, it is impossible to check the A/F sensor output voltage at the terminals (AFR⊕,AFL⊕/ AFR⊖,AFL⊖) of ECM.

OK:

Condition	A/F Sensor Voltage value
Engine idling	• Not remains at 3.3. V (*0.660 V) • Not remains at 3.8 V (*0.76 V) or more • Not remains at 2.8 V (*0.56 V) or less *: When you use the OBD II scan tool (excluding TOYOTA hand-held tester)
Engine idling	
Driving at engine speed 1,500 rpm or more and vehicle speed 40 km/h (25 mph) or move, and operate throttle valve open and close	

HINT:

- During fuel enrichment, there is a case that the output voltage of A/F sensors (bank 1, 2 sensor 1) is below 2.8 V (* 0.56 V), it is normal.
- During fuel cut, there is a case that the output voltage of A/F sensors (bank 1, 2 sensor 1) is above 3.8 V (* 0.76 V), it is normal.
- If output voltage of A/F sensors (bank 1, 2 sensor 1) remains at 3.30 V (* 0.660 V) even after performing all the above conditions, A/F sensors (bank 1, 2 sensor 1) circuit may be open.
- If output voltage of A/F sensor remains at 3.8 V (* 0.76 V) or more, or 2.8 V (* 0.56 V) or less even after performing all the above conditions, A/F sensors (bank 1, 2 sensor 1) circuit may be short.

*: When you use the OBD II scan tool (excluding TOYOTA hand-held tester).

OK → **Go to step 10.**

NG

cardiagn.com

3	Check for open and short in harness and connector between ECM and A/F sensors (bank1, 2 sensor1) (See page IN-31).

NG → Repair or replace harness or connector.

OK

4	Check resistance of A/F sensor heaters (bank1, 2 sensor1) (See page SF-81).

NG → Replace A/F sensor.

OK

5	Check air induction system (See page SF-1).

NG → Repair or replace.

OK

6	Check fuel pressure (See page SF-6).

NG → Check and repair fuel pump, fuel pipe line and filter (See page SF-1).

OK

7	Check injector injection (See page SF-26).

NG → Replace injector.

OK

cardiagn.com

8	Check gas leakage on exhaust system.

NG → Repair or replace

OK →

Replace A/F sensors (bank1, 2 sensor1).

9	Perform confirmation driving pattern (See page DI-104).

Go →

10	Is there DTC P0125 being output again ?

YES → Check and replace ECM (See page IN-31).

NO →

11	Did vehicle runs out of fuel in the past ?

NO → Check for intermittent problems (See page DI-3).

YES →

DTC P0125 is caused by running out of fuel.

cardiagn.com

DI6T2-01

DTC	P0128	Thermostat Malfunction

CIRCUIT DESCRIPTION

If the water temperature becomes 75˚C (167˚F) or more, it is abnormal.
If not due to the thermostat malfunction, it is abnormal.

DTC No.	DTC Detecting Condition	Trouble Area
P0128	Condition (a), (b) or (c): (a) After starting engine at 20˚C (68˚F) (b) After engine is warmed up (c) THW < 75˚C (167˚F)	• Thermostat • Cooling system • Engine coolant temp. sensor • ECM

INSPECTION PROCEDURE

HINT:
Read freeze frame data using TOYOTA hand-held tester or OBD II scan tool. Because freeze frame records the engine conditions when the malfunction is detected. When troubleshooting, it is useful for determining whether the vehicle was running or stopped, the engine was warmed up or not, the air-fuel ratio was lean or rich, etc. at the time of the malfunction.

1	**Check thermostat (See page CO-12).**

NG → **Replace thermostat.**

YES

2	**Are there any other codes (besides DTC P0128) being output?**

YES → **Go to relevant DTC chart (See page DI−13).**

NG

Check and replace ECM (See page IN-31).

cardiagn.com

DI223-03

DTC	P0136	Heated Oxygen Sensor Circuit Malfunction (Bank 1 Sensor 2)

CIRCUIT DESCRIPTION

Refer to DTC P0125 on page DI-42 .

DTC No.	DTC Detecting Condition	Trouble Area
P0136	Voltage output of heated oxygen sensor (bank 1 sensor 2) remains at 0.4 V or more or 0.6 V or less when vehicle is driven at 50 km/h (31 mph) or more after engine is warmed up (2 trip detection logic)	• Heated oxygen sensor

HINT:
Bank 1 refers to the bank that includes cylinder No.1. Sensor 2 refers to the sensor farther away from the engine body.

WIRING DIAGRAM

Refer to DTC P0125 on page DI-42 .

INSPECTION PROCEDURE

HINT:
Read freeze frame data using TOYOTA hand-held tester or OBD II scan tool. Because freeze frame records the engine conditions when the malfunction is detected, when troubleshooting it is useful for determining whether the vehicle was running or stopped, the engine warmed up or not, the air fuel ratio lean or rich, etc. at the time of the malfunction.

1	**Are there any other codes (besides DTC P0136) being output ?**

YES → **Go to relevant DTC chart.**

NO

2	**Check for open and short in harness and connector between ECM and heated oxygen sensor (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

cardiagn.com

3	**Check output voltage of heated oxygen sensor (bank 1 sensor 2).**

PREPARATION:

(a) Connect the OBD II scan tool or TOYOTA hand-held tester to the DLC3.

(b) Warm up the engine to normal operating temp.

CHECK:

Read voltage output of heated oxygen sensor (bank 1 sensor 2) when engine suddenly raced.

HINT:

Perform quick racing to 4,000 rpm 3 min. using accelerator pedal.

OK:

Heated oxygen sensor output voltage: Alternates from 0.4 V or less to 0.6 V or more.

OK → **Check that each connector is properly connected.**

NG

Replace heated oxygen sensor (bank 1 sensor 2).

cardiagn.com

DI222-03

DTC	P0141	Heated Oxygen Sensor Heater Circuit Malfunction (Bank 1 Sensor 2)

CIRCUIT DESCRIPTION

Refer to DTC P0125 on page DI-42 .

DTC No.	DTC Detecting Condition	Trouble Area
P0141	When heater operates, heater current exceeds 2.35 A (2 trip detection logic)	• Open or short in heater circuit of heated oxygen sensor • Heated oxygen sensor heater • ECM
	Heater current of 0.2 A or less when heater operates (2 trip detection logic)	

WIRING DIAGRAM

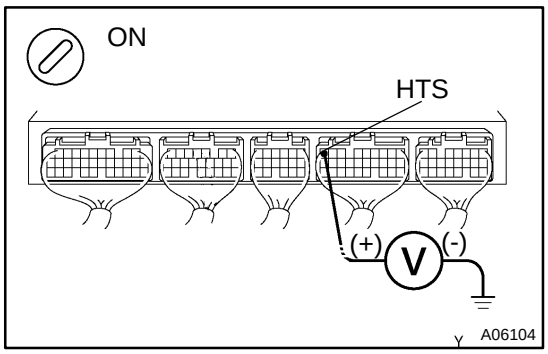
Refer to DTC P0125 on page DI-42 .

INSPECTION PROCEDURE

HINT:

Read freeze frame data using TOYOTA hand-held tester or OBD II scan tool. Because freeze frame records the engine conditions when the malfunction is detected, when troubleshooting it is useful for determining whether the vehicle was running or stopped, the engine warmed up or not, the air-fuel ratio lean or rich, etc. at the time of the malfunction.

1	Check voltage between terminals HTS of ECM connectors and body ground.



PREPARATION:

(a) Remove the glove compartment (See page SF-83).

(b) Turn the ignition switch ON.

CHECK:

Measure voltage between terminals HTS of the ECM connectors and body ground.

OK:

Voltage: 9 - 14 V

OK → **Check and replace ECM (See page IN-31).**

NG

cardiagn.com

2	Check resistance of heated oxygen sensor heater (See page SF-82).

NG → Replace heated oxygen sensor.

OK →

Check and repair harness or connector between EFI main relay (Marking: EFI), heated oxygen sensor and ECM (See page IN-31).

cardiagn.com

DI8B3-01

DTC	P0300	Random/Multiple Cylinder Misfire Detected

DTC	P0301	Cylinder 1 Misfire Detected

DTC	P0302	Cylinder 2 Misfire Detected

DTC	P0303	Cylinder 3 Misfire Detected

DTC	P0304	Cylinder 4 Misfire Detected

DTC	P0305	Cylinder 5 Misfire Detected

DTC	P0306	Cylinder 6 Misfire Detected

CIRCUIT DESCRIPTION

Misfire: The ECM uses the crankshaft position sensor and camshaft position sensor to monitor changes in the crankshaft rotation for each cylinder.

The ECM counts the number of times the engine speed change rate indicates that misfire has occurred. When the misfire rate equals or exceeds the count indicating that the engine condition has deteriorated, the MIL lights up.

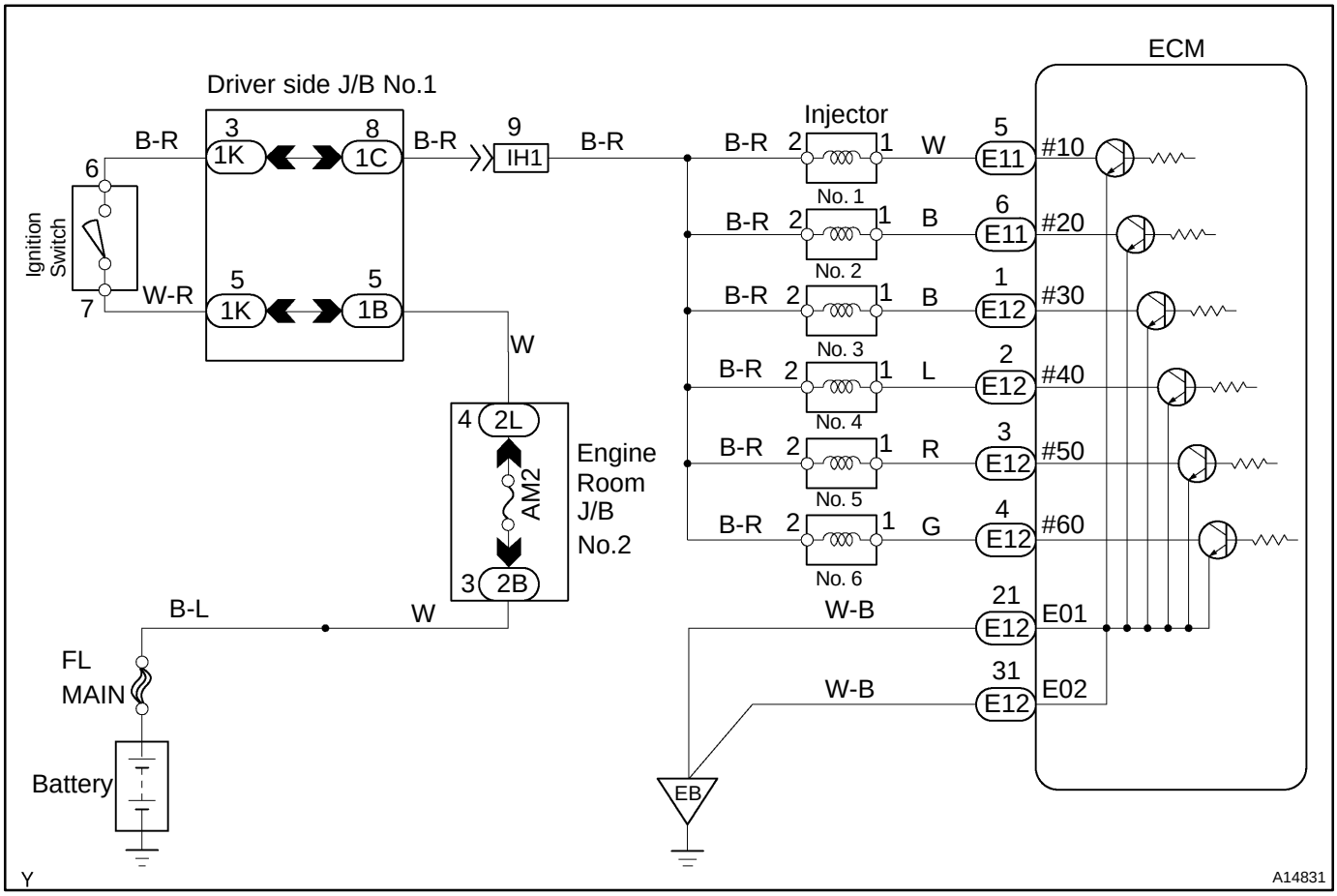
If the misfire rate is high enough and the driving conditions will cause catalyst overheating, the MIL blinks when misfiring occurs.

DTC No.	DTC Detecting Condition	Trouble Area
P0300	Misfiring of random cylinders is detected during any particular 200 or 1,000 revolutions	• Ignition system • Injector • Fuel line pressure • Compression pressure • Valve clearance not to specification • Valve timing • Mass air flow meter • Engine coolant temp. sensor • Open or short in engine wire • Connector connection • ECM
P0301 P0302 P0303 P0304 P0305 P0306	For any particular 200 revolutions for engine, misfiring is detected which can cause catalyst overheating (This causes MIL to blink)	
	For any particular 1,000 revolutions of engine, misfiring is detected which causes a deterioration in emission (2 trip detection logic)	

cardiagn.com

HINT:
When the 2 or more codes for a misfiring cylinder are recorded repeatedly but no Random Misfire code is recorded, it indicates that the misfires were detected and recorded at different times.

WIRING DIAGRAM



CONFIRMATION DRIVING PATTERN

(1) Connect the TOYOTA hand-held tester or OBD II scan tool.
(2) Record DTC and the freeze frame data.
(3) Use the TOYOTA hand-held tester to set to Check Mode. (See page DI-3)
(4) Drive the vehicle several times with the engine speed, load and its surrounding range shown with ENGINE SPD, CALC LOAD in the freeze frame data or MISFIRE RPM, MISFIRE LOAD in the data list. If you have no TOYOTA hand-held tester, turn the ignition switch OFF after the symptom is simulated the first time. Then repeat the simulation process again.

HINT:
In order to memorize DTC of misfire, it is necessary to drive around MISFIRE RPM, MISFIRE LOAD in the data list for the following period of time.

Engine Speed	Time
Idling	3 minutes 30 seconds or more
1000 rpm	3 minutes or more
2000 rpm	1 minute 30 seconds or more
3000 rpm	1 minute or more

(5) Check whether there is misfire or not by monitoring DTC and the freeze frame data. After that, record them.
(6) Turn ignition switch OFF and wait at least 5 seconds.

cardiagn.com

INSPECTION PROCEDURE

HINT:

- If is the case that DTC besides misfire is memorized simultaneously, first perform the troubleshooting for them.
- Read freeze frame data using TOYOTA hand-held tester or OBD II scan tool. Because freeze frame data records the engine conditions when the malfunction is detected, when troubleshooting it is useful for determining whether the vehicle was running or stopped, the engine warmed up or not, the air-fuel ratio lean or rich, etc. at the time of the malfunction.
- When the vehicle is brought to the workshop and the misfire is not occurred, misfire can be confirmed by reproducing the condition or freeze frame data. Also, after finishing the repair, confirm that there is no misfire. (See the confirmation driving pattern)
- When either of SHORT FT #1, LONG FT #1, SHORT FT #2 or LONG FT #2 in the freeze frame data is besides the range of ±20%, there is a possibility that the air-fuel ratio is inclining either to ”rich” (-20% or less) or ”lean” (+20% or more).
- When COOLANT TEMP in the freeze frame data is less than 80˚C (176˚F), there is a possibility or misfire only during warming up.
- In the case that misfire cannot be reproduced, the reason may be because of the driving with lack or fuel, the use of improper fuel, a stain of ignition plug, and etc.

1	**Check wire harness, connector and vacuum hose in engine room.**

CHECK:

(a) Check the connection conditions of wire harness and connector.

(b) Check the disconnection, piping and break of vacuum hose.

NG → **Repair or replace, then confirm that there is no misfire (See the confirmation driving pattern).**

OK

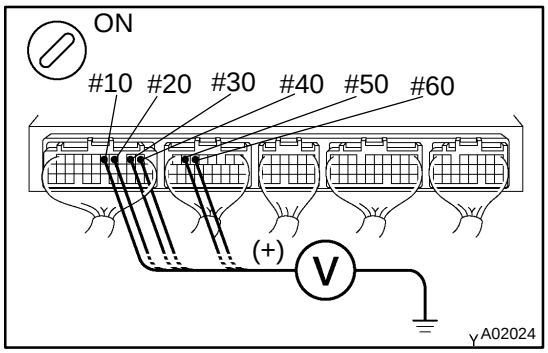
2	**Check spark plug and spark of misfiring cylinder (See page IG-1).**

NG → **Replace or check ignition system (See page IG-1).**

OK

cardiagn.com

3	Check voltage of ECM terminal for injector of failed cylinder.



PREPARATION:

(a) Remove the glove compartment (See page SF-83).

(b) Turn the ignition switch ON.

CHECK:

Measure voltage between applicable terminal of the ECM connector and body ground.

OK:

Voltage: 9 - 14 V

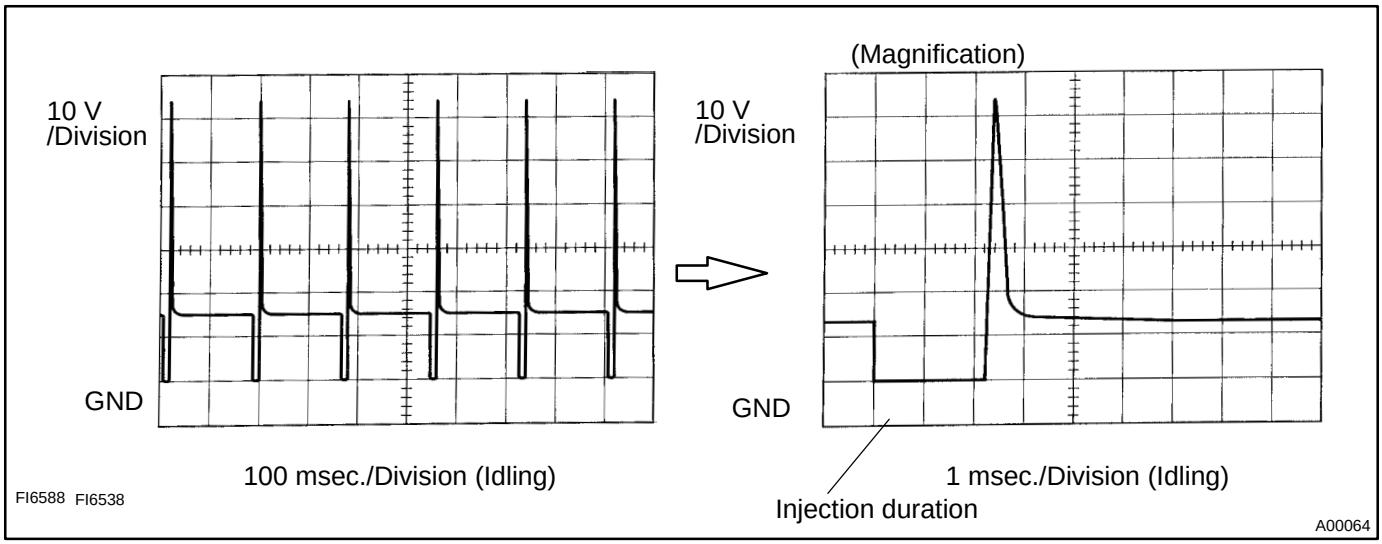
Reference INSPECTION USING OSCILLOSCOPE

INJECTOR SIGNAL WAVEFORM

With the engine idling, measure between terminals #10 - #60 and E01 of ECM.

HINT:

The correct waveform is as shown.



OK	Go to step 5.

NG

4	Check resistance of injector of misfiring cylinder (See page SF-21).

NG	Replace injector.

OK

cardiagn.com

Check for open and short in harness and connector between injector and ECM (See page IN-31).

5	Check fuel pressure (See page SF-1).

NG → Check and repair fuel pump, fuel pipe line and filter (See page SF-1).

OK

6	Check injector injection (See page SF-26).

NG → Replace injector.

OK

7	Check mass air flow meter and engine coolant temp. sensor (See pages SF-35 and SF-76).

NG → Repair or replace.

OK

Check compression pressure, valve clearance and valve timing.

cardiagn.com

DI226-03

DTC	P0325	Knock Sensor 1 Circuit Malfunction

DTC	P0330	Knock Sensor 2 Circuit Malfunction

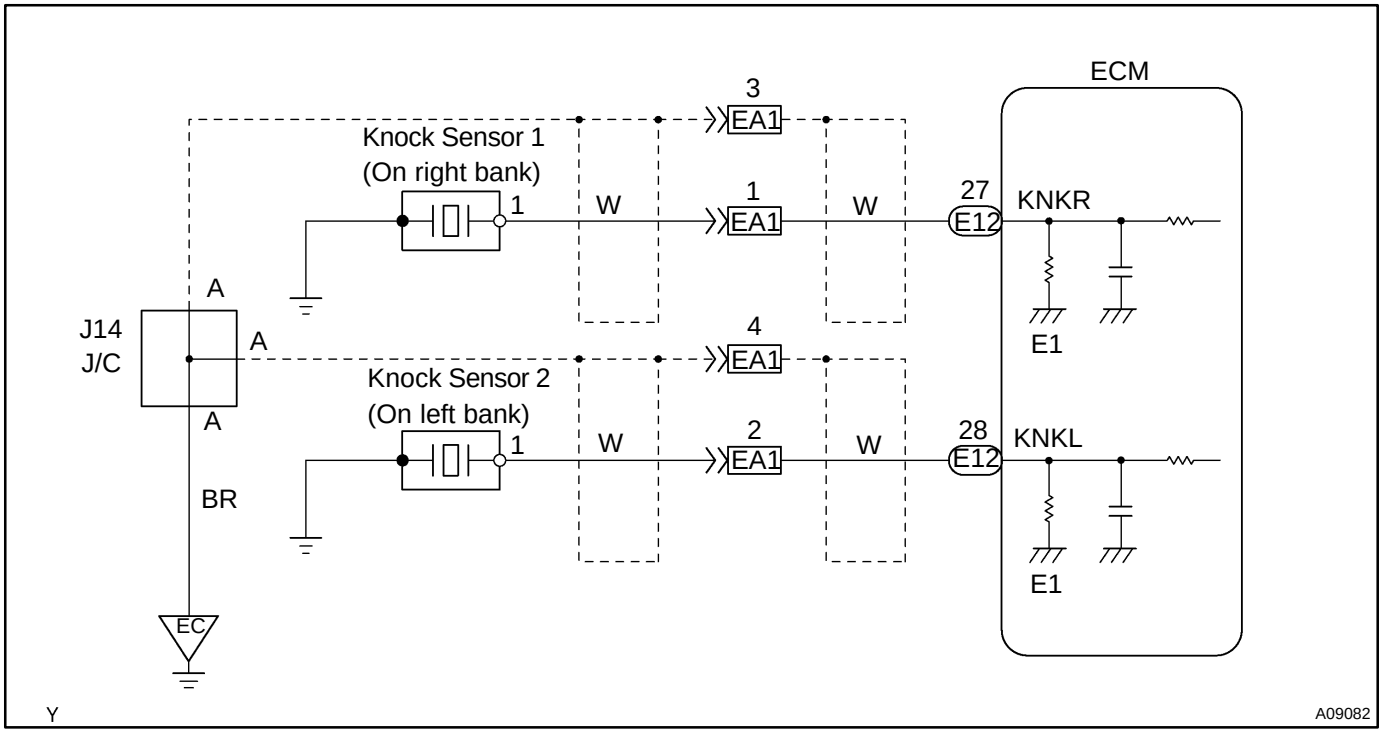
CIRCUIT DESCRIPTION

Knock sensors are fitted one to the right bank and left bank of the cylinder block to detect engine knocking. This sensor contains a piezoelectric element which generates a voltage when it becomes deformed, which occurs when the cylinder block vibrates due to knocking. If engine knocking occurs, ignition timing is retarded to suppress it.

DTC No.	DTC Detecting Condition	Trouble Area
P0325	No knock sensor 1 signal to ECM with engine speed between 2,000 rpm and 5,600 rpm.	• Open or short in knock sensor 1 circuit • Knock sensor 1 (looseness) • ECM
P0330	No knock sensor 2 signal to ECM with engine speed between 2,000 rpm and 5,600 rpm.	• Open or short in knock sensor 2 circuit • Knock sensor 2 (looseness) • ECM

If the ECM detects the above diagnosis conditions, it operates the fail-safe function in which the corrective retard angle value is set to the maximum value.

WIRING DIAGRAM



INSPECTION PROCEDURE

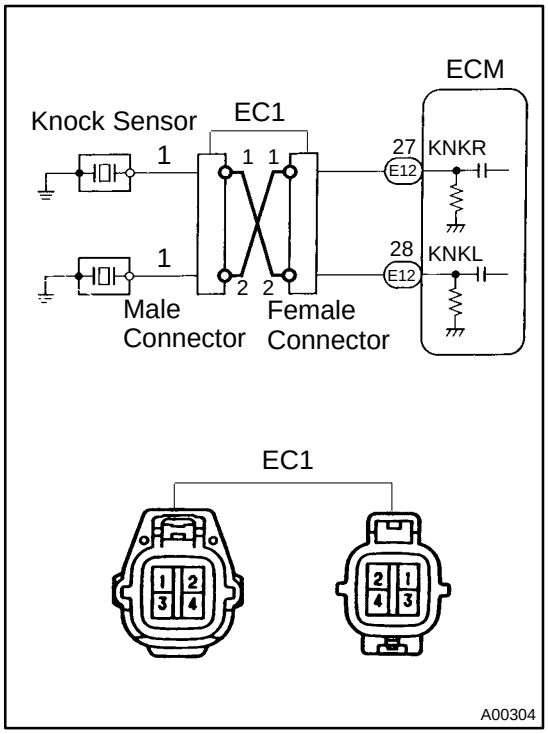
HINT:

- DTC P0325 is for the right bank knock sensor circuit. DTC P0330 is for the left bank knock sensor circuit.

cardiagn.com

- Read freeze frame data using TOYOTA hand-held tester or OBD II scan tool. Because freeze frame records the engine conditions when the malfunction is detected, when troubleshooting it is useful for determining whether the vehicle was running or stopped, the engine warmed up or not, the air-fuel ratio lean or rich, etc. at the time of the malfunction.

1	**Connect OBD II scan tool or TOYOTA hand-held tester, and check knock sensor circuit.**



PREPARATION:

(a) Connect the OBD II scan tool or TOYOTA hand-held tester to the DLC3.
(b) Disconnect the wire to wire connector EC1.
(c) Connect the terminals of the disconnected EC1 male connector and EC1 female as follows.

Male connector ↔ Female connector
Terminal 1 ↔ Terminal 2
Terminal 2 ↔ Terminal 1

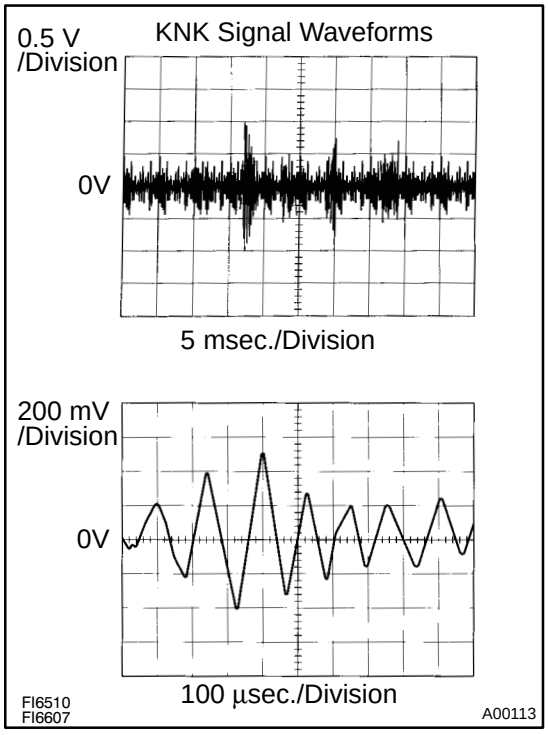
(d) Turn the ignition switch ON and push the OBD II scan tool or TOYOTA hand-held tester main switch ON.
(e) After the engine is warmed up, perform quick racing to 4,000 rpm three times.

CHECK:

Check the DTC.

RESULT:

Type I	DTC same as when vehicle brought in. P0325 → P0325 or P0330 → P0330
Type II	DTC different to when vehicle brought in. P0325 → P0330 or P0330 → P0325



Reference INSPECTION USING OSCILLOSCOPE

- With the engine racing (4,000 rpm), measure between terminals KNKR, KNKL of the ECM connector and body ground.

HINT:

The correct waveforms are as shown.

- Spread the time on the horizontal axis, and confirm that period of the wave is 141 µsec.
  (Normal mode vibration frequency of knock sensor: 7.1 kHz)

HINT:

If normal mode vibration frequency is not 7.1 kHz, the sensor is malfunctioning.

cardiagn.com

Type II	Go to step 3 .

Type I

2	Check for open and short in harness and connector between EC1 connector and ECM (See page IN-31).

NG	Repair or replace harness or connector.

OK

Check and replace ECM
(See page IN-31).

3	Check for open and short in harness and connector between EC1 connector and knock sensor (See page IN-31).

HINT:

- If DTC P0325 has changed to P0330, check the knock sensor circuit on the right bank side.
- If DTC P0330 has changed to P0325, check the knock sensor circuit on the left bank side.

NG	Repair or replace harness or connector.

OK

Replace knock sensor.

cardiagn.com

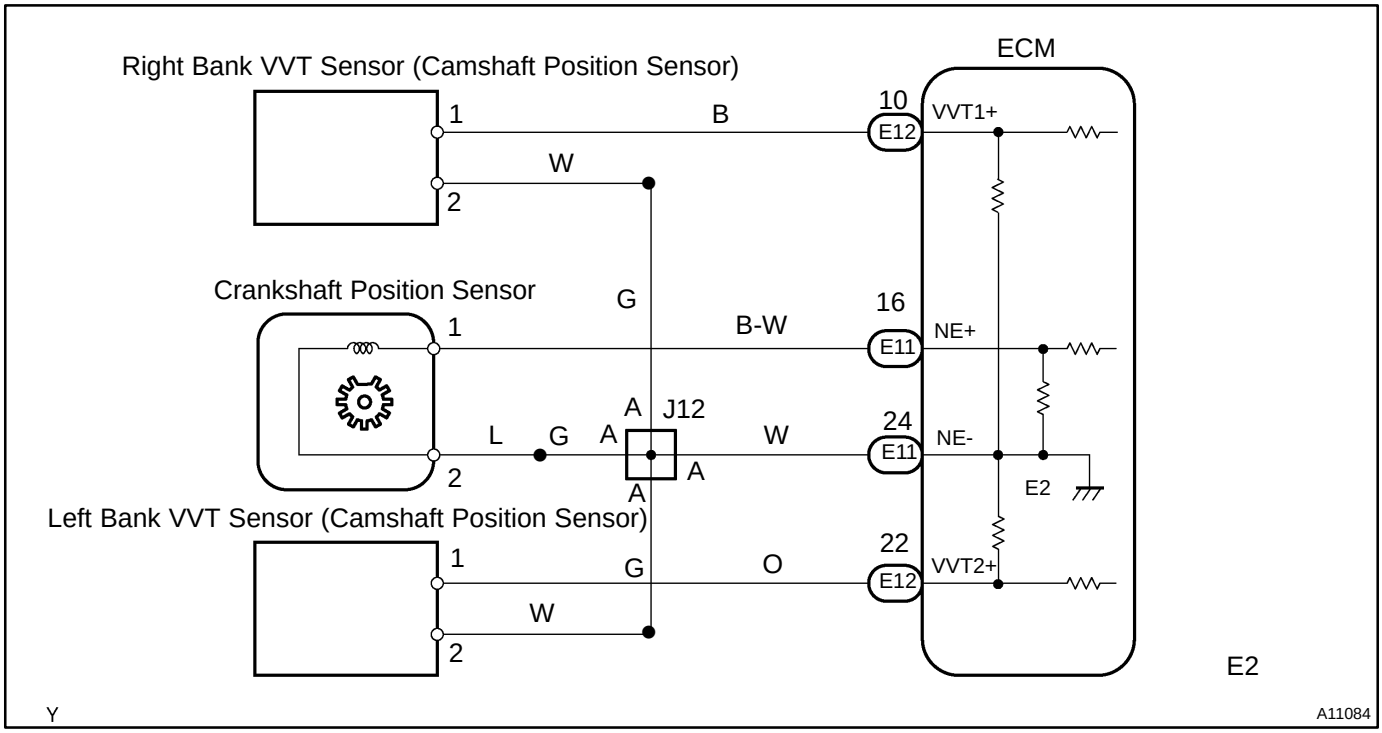
DTC	P0335	Crankshaft Position Sensor ”A” Circuit Malfunction

CIRCUIT DESCRIPTION

Crankshaft position sensor (NE signal) consists of a signal plate and pickup coil.
The NE signal plate has 34 teeth and is mounted on the crankshaft. The NE signal sensor generates 34 signals for every engine revolution. The ECM detects the standard crankshaft angle based on the G22 signals, and the actual crankshaft angle and the engine speed by the NE signals.

DTC No.	DTC Detecting Condition	Trouble Area
P0335	No crankshaft position sensor signal to ECM during cranking (2 trip detection logic)	• Open or short in crankshaft position sensor circuit • Crankshaft position sensor • Starter • ECM
	No crankshaft position sensor signal to ECM with engine speed 600 rpm or more (2 trip detection logic)	

WIRING DIAGRAM



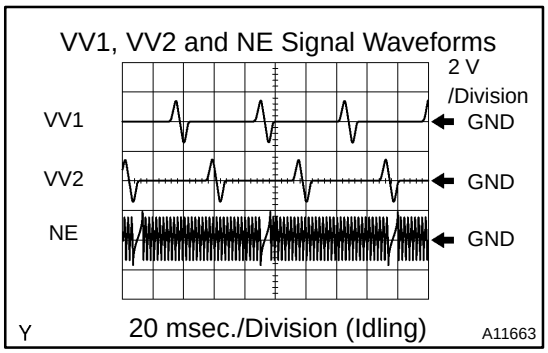
INSPECTION PROCEDURE

HINT:

- Perform troubleshooting of DTC P0335 first. If no trouble is found, troubleshoot the following mechanical systems.
- Read freeze frame data using TOYOTA hand-held tester or OBD II scan tool. because freeze frame records the engine conditions when the malfunction is detected, when troubleshooting it is useful for determining whether the vehicle was running or stopped, the engine warmed up or not, the air-fuel ratio lean or rich, etc. at the time of the malfunction.

cardiagn.com

1	**Check resistance of crankshaft position sensor (See page IG-1).**



Reference INSPECTION USING OSCILLOSCOPE

During cranking or idling, check between terminals G22+ and NE-, NE and NE- of the ECM connector.

HINT:

The correct waveforms are as shown.

NG → **Replace crankshaft position sensor.**

OK

2	**Check for open and short in harness and connector between ECM and crankshaft position sensor (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

3	**Inspect sensor installation and teeth of crankshaft timing pulley.**

NG → **Tighten the sensor.**
Replace crankshaft timing pulley.

OK

Check and replace ECM
(See page IN-31).

cardiagn.com

DI228-03

DTC	P0340	Camshaft Position Sensor Circuit Malfunction

CIRCUIT DESCRIPTION

Camshaft position sensor (G22 signal) consist of a signal plate and pickup coil.
The G22 signal plate has one tooth, on its outer circumference and is mounted on the left bank camshafts. When the camshafts rotate, the protrusion on the signal plate and the air gap on the pickup coil change, causing fluctuations in the magnetic field and generating an electromotive force in the pickup coil.
The NE signal plate has 34 teeth and is mounted on the crankshaft. The NE signal sensor generates 34 signals for every engine revolution. The ECM detects the standard crankshaft angle based on the G22 signal and the actual crankshaft angle and the engine speed by the NE signals.

DTC No.	DTC Detecting Condition	Trouble Area
P0340	No camshaft position sensor signal to ECM during cranking (2 trip detection logic)	• Open or short in camshaft position sensor circuit • Camshaft position sensor • Starter • ECM
	No camshaft position sensor signal to ECM with engine speed 600 rpm or more	

WIRING DIAGRAM

Refer to DTC P0335 on page DI-65 .

INSPECTION PROCEDURE

HINT:
Read freeze frame data using TOYOTA hand-held tester or OBD II scan tool. Because freeze frame records the engine conditions when the malfunction is detected, when troubleshooting it is useful for determining whether the vehicle was running or stopped, the engine warmed up or not, the air-fuel ratio lean or rich, etc. at the time of the malfunction.

1	**Check resistance of camshaft position sensor (See page IG-1).**

Reference INSPECTION USING OSCILLOSCOPE
Refer to DTC P0335 on page DI-65 .

NG → **Replace camshaft position sensor.**

OK

cardiagn.com

2	Check for open and short in harness and connector between ECM and camshaft position sensor (See page IN-31).

NG → Repair or replace harness or connector.

OK

3	Inspect sensor installation and tooth of left bank camshaft timing pulley.

NG → Tighten the sensor.
Replace left bank camshaft timing pulley.

OK

Check and replace ECM
(See page IN-31).

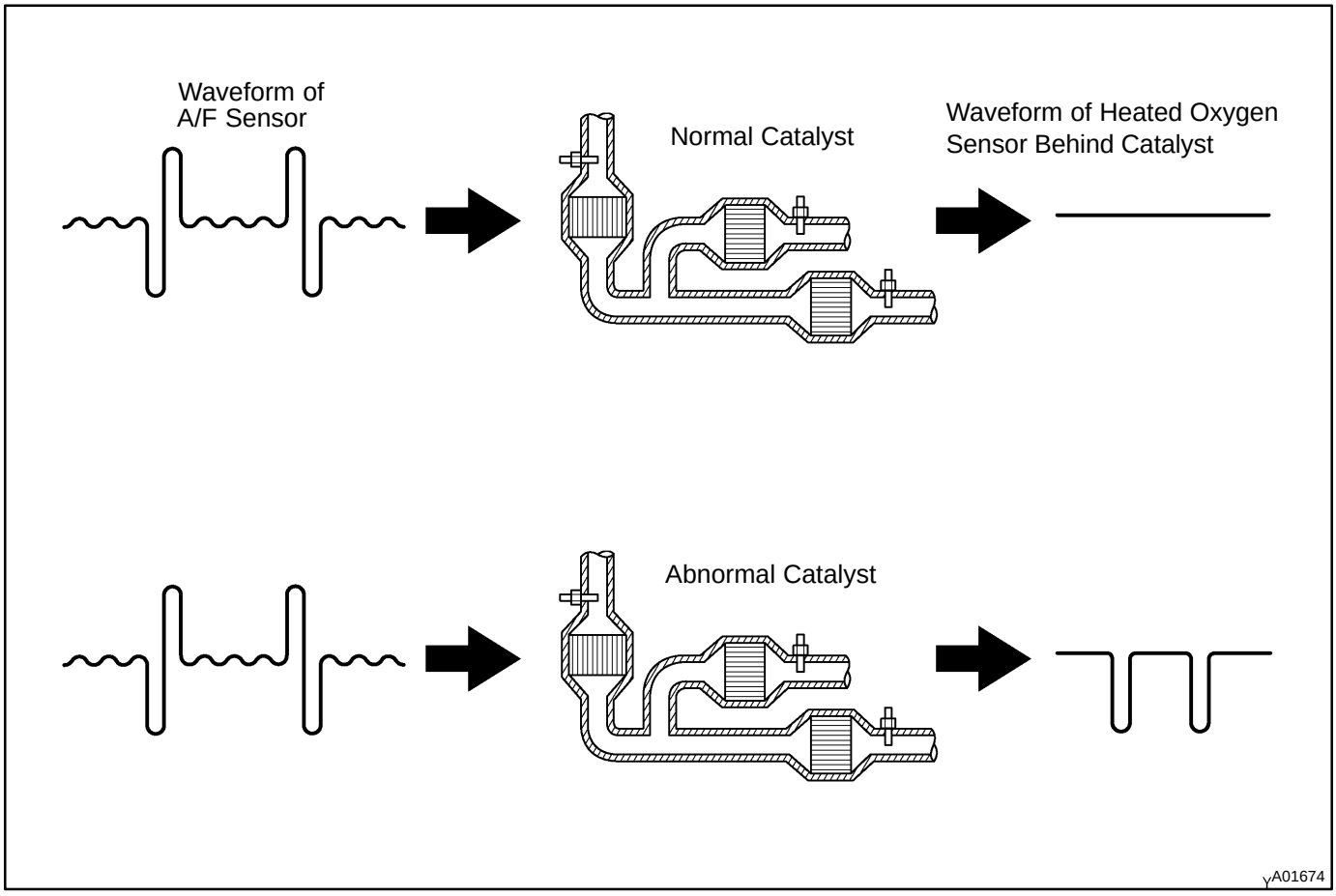
cardiagn.com

DI4F5-02

DTC	P0420	Catalyst System Efficiency Below Threshold

CIRCUIT DESCRIPTION

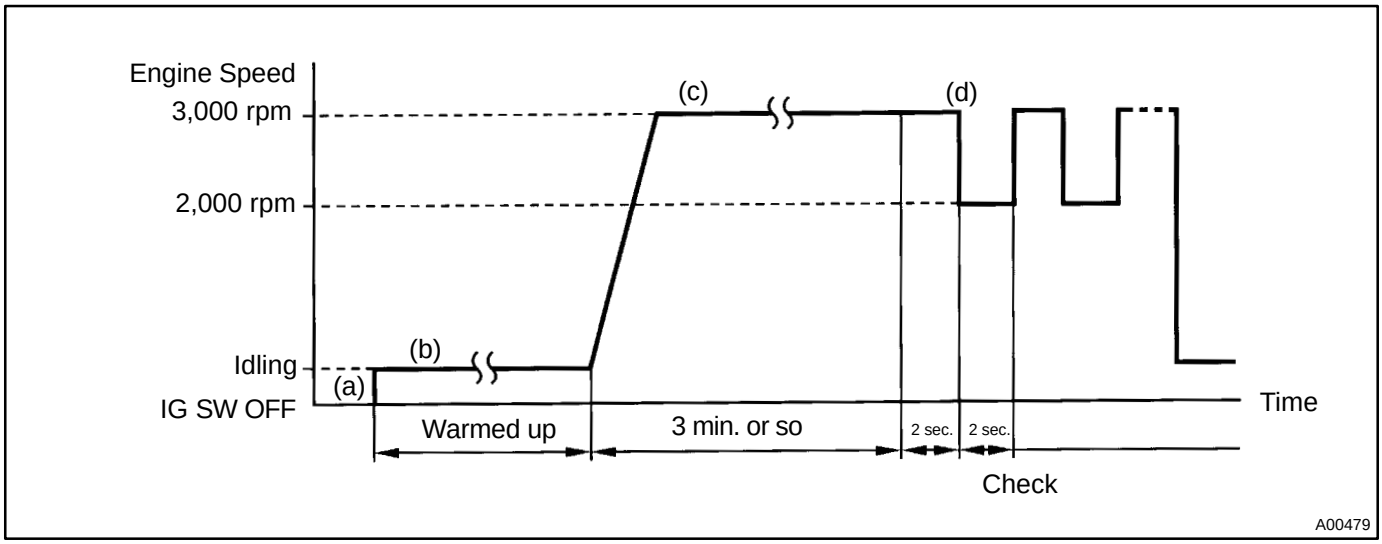
The ECM observes the waveform of the heated oxygen sensor located behind the catalyst to determine whether the catalyst is performance has deteriorated.
If the catalyst is functioning normally, the waveform of the heated oxygen sensor located behind the catalyst switches back and forth between rich and lean much more slowly.
When the waveform of the heated oxygen sensor located behind the catalyst alternates flatteringly between rich and lean, it indicates that catalyst performance has deteriorated.



DTC No.	DTC Detecting Condition	Trouble Area
P0420	After engine and catalyst are warmed up, and while vehicle is driven within set vehicle and engine speed range, waveform of heated oxygen sensor (bank 1, sensor 2) alternates flatteringly between rich and lean (2 trip detection logic)	• Three-way catalytic converter • Open or short in heated oxygen sensor (bank 1, sensor 2) circuit • Heated oxygen sensor (bank 1, sensor 2) • Open or short in A/F sensor (bank 1, 2 sensor 1) circuit • A/F sensors (bank 1, 2 sensor 1)

cardiagn.com

CONFIRMATION ENGINE RACING PATTERN



(a) Connect the OBD II scan tool or TOYOTA hand-held tester to the DLC3.
(b) Start engine and warm it up with all accessories switched OFF until water temp. is stable.
(c) Race the engine at 2,500 - 3,000 rpm for about 3 min.
(d) When racing the engine at 3,000 rpm for 2 sec. and 2,000 rpm for 2 sec. alternately, check the wave-form of the heated oxygen sensor (bank 1 sensor 2).

INSPECTION PROCEDURE

HINT:
Read freeze frame data using TOYOTA hand-held tester or OBD II scan tool. Because freeze frame records the engine conditions when the malfunction is detected, when troubleshooting it is useful for determining whether the vehicle was running or stopped, the engine warmed up or not, the air-fuel ratio lean or rich, etc. at the time of the malfunction.

1	**Are there any other codes (besides DTC P0420) being output?**

YES → **Go to relevant DTC chart.**

NO

2	**Check gas leakage on exhaust system.**

NG → **Repair or replace.**

OK

cardiagn.com

3	Check A/F sensors (bank 1, 2 sensor 1) (See page SF-81).

NG → Repair or replace.

OK

4	Check heated oxygen sensor (bank 1 sensor 2) (See page SF-82).

NG → Repair or replace.

OK

Replace three-way catalytic converter.

cardiagn.com

DI6T6-02

DTC	P0440	Evaporative Emission Control System Malfunction

DTC	P0442	Evaporative Emission Control System Leak Detected (Small Leak)

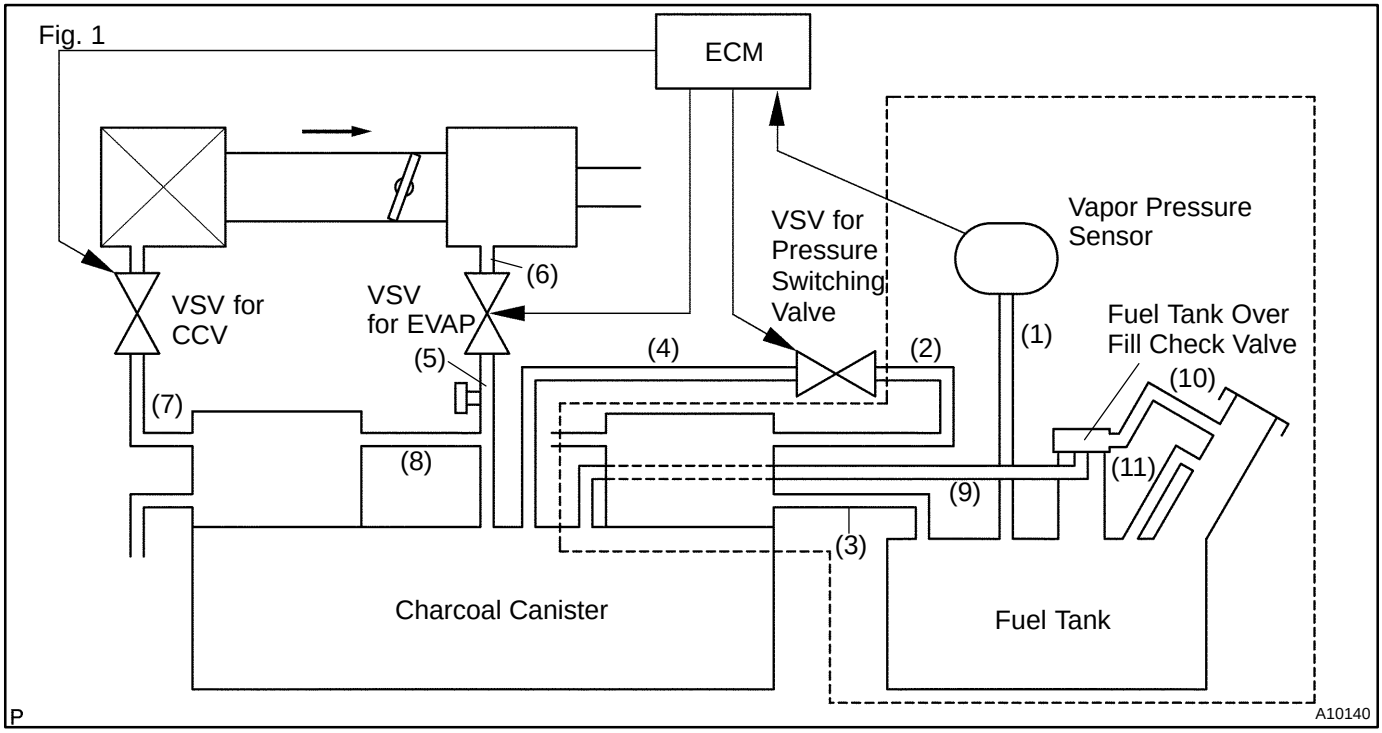
CIRCUIT DESCRIPTION

The vapor pressure sensor, VSV for canister closed valve (CCV) and VSV for pressure switching valve are used to detect abnormalities in the evaporative emission control system.

The ECM decides whether there is an abnormality in the evaporative emission control system based on the vapor pressure sensor signal.

DTC P0440 or P0442 is recorded by the ECM when evaporative emissions leak from the components within the dotted line in Fig. 1 below, or when the vapor pressure sensor malfunctions.

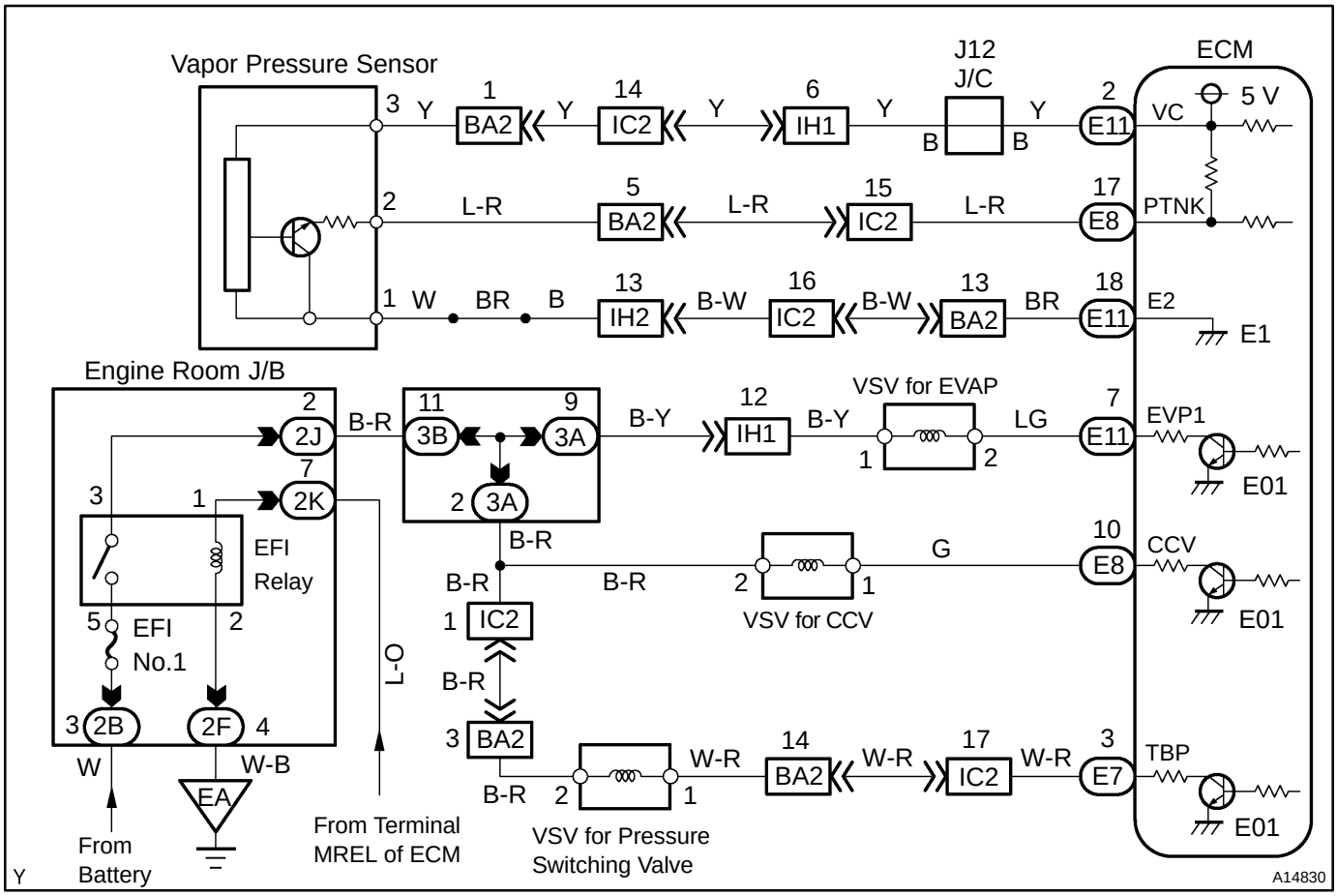
Fig. 1



DTC No.	DTC Detecting Condition	Trouble Area
P0440 P0442	After cold starting and when generating certain swift pressure value in fuel tank enabling not to hold that value (2 trip detection logic)	• Hose or tube cracked, hole, damaged or loose seal ((3) in Fig. 1) • Fuel tank cap incorrectly installed • Fuel tank cap cracked or damaged • Vacuum hose cracked, holed, blocked, damaged or disconnected ((1) or (2) in Fig. 1) • Fuel tank cracked, holed or damaged • Charcoal canister cracked, holed or damaged • Open or short in vapor pressure sensor circuit • Vapor pressure sensor • Fuel tank over fill check valve cracked or damaged • ECM

cardiagn.com

WIRING DIAGRAM



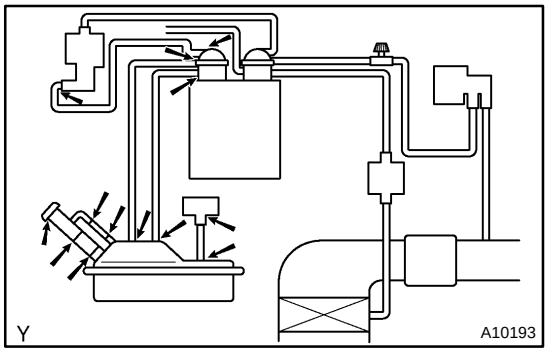
INSPECTION PROCEDURE

HINT:

- If DTC P0441, P0446, P0450 or P0451 is output after DTC P0440 or P0442, first troubleshoot DTC P0441, P0446, P0450 or P0451. If no malfunction is detected, troubleshoot DTC P0440 or P0442 next.
- Ask the customer whether, after the MIL came on, the customer found the fuel tank cap loose and tightened it. Also ask the customer whether the fuel tank cap was loose when refuelling. If the fuel tank cap was loose, it was the cause of the DTC. If the fuel tank cap was not loose or if the customer was not sure if it was loose, troubleshoot according to the following procedure.
- Read freeze frame data using TOYOTA hand-held tester or OBD II scan tool. Because freeze frame records the engine conditions when the malfunction is detected. When troubleshooting, it is useful for determining whether the vehicle was running or stopped, the engine was warmed up or not, the air-fuel ratio was lean or rich, etc. at the time of the malfunction.
- When the ENGINE RUN TIME in the freeze frame data is less than 200 seconds, carefully check the vapor pressure sensor.

cardiagn.com

1	**Check whether hose close to fuel tank have been modified, and check whether there are signs of any accident near fuel tank or charcoal canister.**



CHECK:

Check for cracks, deformation and loose connection of the following parts:

- Fuel tank
- Charcoal canister
- Fuel tank filler pipe
- Hoses and tubes around fuel tank and charcoal canister

NG → **Repair or replace.**

OK

2	**Check that fuel tank cap is TOYOTA genuine parts.**

NG → **Replace to TOYOTA genuine parts.**

OK

3	**Check that fuel tank cap is correctly installed.**

NG → **Correctly install fuel tank cap.**

OK

4	**Check fuel tank cap (See page EC-6).**

NG → **Replace fuel tank cap.**

OK

cardiagn.com

5	**Check filler neck for damage.**

PREPARATION:
Remove the fuel tank cap.
CHECK:
Visually inspect the filler neck for damage.

NG → **Replace filler pipe.**

OK

6	**Check vacuum hoses between vapor pressure sensor and fuel tank, charcoal canister and VSV for pressure switching valve, and VSV for pressure switching valve and charcoal canister.**

CHECK:
(a) Check that the vacuum hose is connected correctly.
(b) Check the vacuum hose for looseness and disconnection.
(c) Check the vacuum hose for cracks, hole and damage.

NG → **Repair or replace.**

OK

7	**Check hose and tube between fuel tank and charcoal canister.**

CHECK:
(a) Check for proper connection of the fuel tank and fuel evap pipe (See page EC-6), fuel evap pipe and fuel tube under the floor, fuel tube under the floor and charcoal canister.
(b) Check the hose and tube for cracks, hole and damage.

NG → **Repair or replace.**

OK

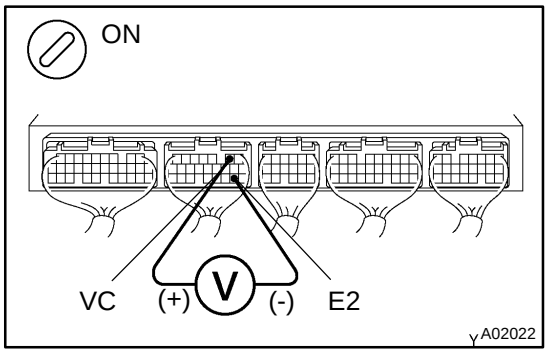
cardiagn.com

8	**Check charcoal canister for cracks, hole and damage (See page EC-6).**

NG → **Replace charcoal canister.**

OK

9	**Check voltage between terminals VC and E2 of ECM connector.**



CHECK:

(a) Remove the grove compartment (See page SF-83).

(b) Turn the ignition switch ON.

CHECK:

Measure the voltage between terminals VC and E2 of the ECM connector.

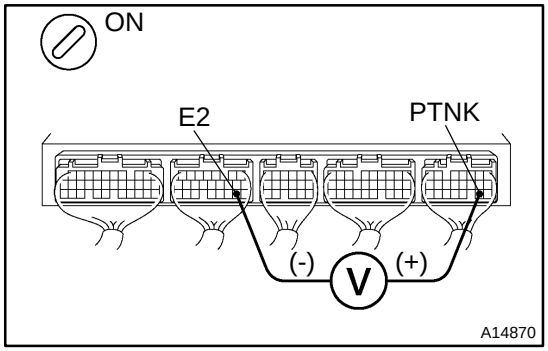
OK:

Voltage: 4.5 - 5.5 V

NG → **Check and replace ECM (See page IN-31).**

OK

10	**Check voltage between terminals PTNK and E2 of ECM connectors.**



PREPARATION:

(a) Remove the grove compartment (See page SF-83).

(b) Remove the fuel tank cap.

(c) Turn the ignition switch ON.

CHECK:

Measure the voltage between terminals PTNK and E2 of the ECM connectors.

OK:

Voltage: 3.3 V

OK → **Go to step 12.**

NG

cardiagn.com

11	Check for open and short in harness and connector between vapor pressure sensor and ECM (See page IN-31).

NG → Repair or replace harness or connector.

OK →

Replace vapor pressure sensor.

12	Check fuel tank and fuel tank over fill check valve for cracks and damage.

NG → Replace fuel tank or fuel tank over fill check valve.

OK →

It is likely that vehicle user did not properly close fuel tank cap. Please explain to customer how to properly install fuel tank cap.

cardiagn.com

DI6E7-02

DTC	P0441	Evaporative Emission Control System Incorrect Purge Flow

DTC	P0446	Evaporative Emission Control System Vent Control Malfunction

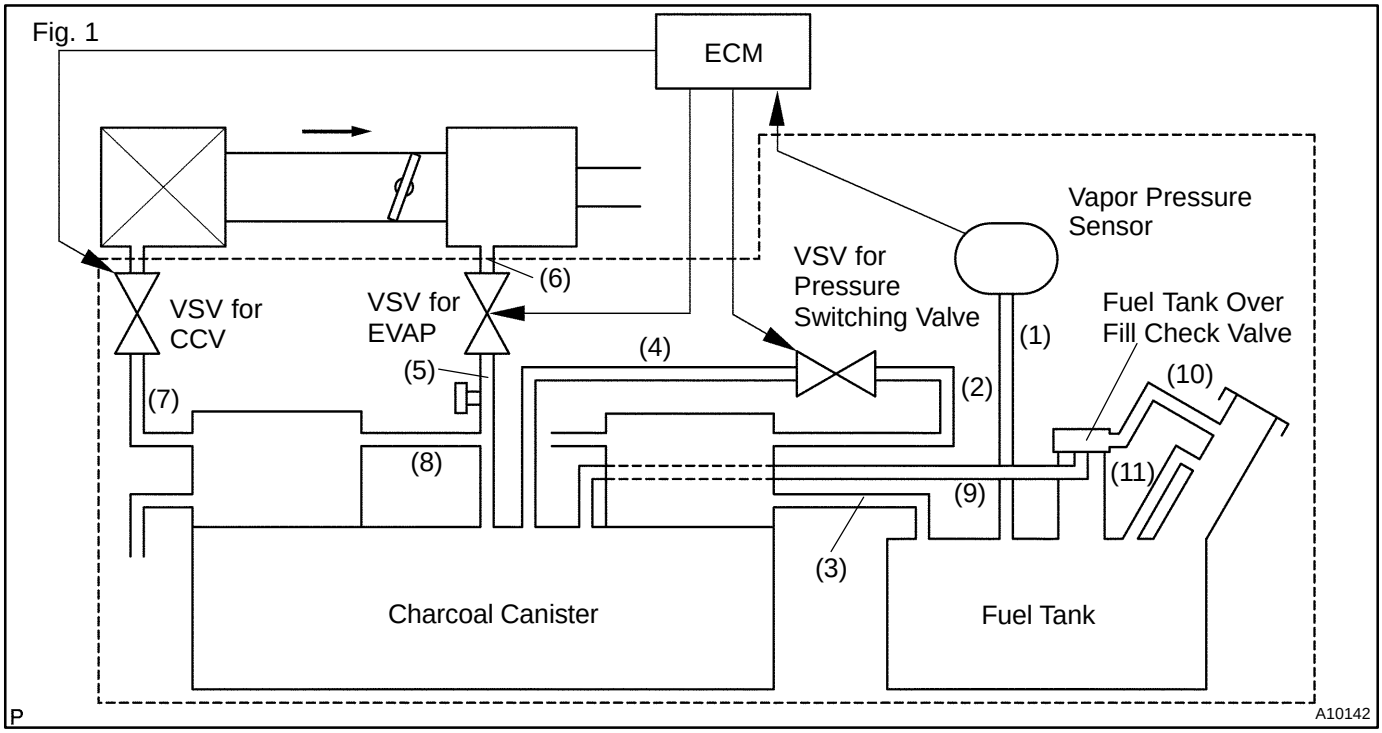
CIRCUIT DESCRIPTION

The vapor pressure sensor, VSV for canister closed valve (CCV), VSV for pressure switching valve are used to detect abnormalities in the evaporative emission control system.

The ECM decides whether there is an abnormality in the evaporative emission control system based on the vapor pressure sensor signal.

DTCs P0441 and P0446 are recorded by the ECM when evaporative emissions leak from the components within the dotted line in Fig. 1 below, or when there is a malfunction in either the VSV for EVAP, the VSV for pressure switching valve, or in the vapor pressure sensor itself.

Fig. 1



cardiagn.com

DTC No.	DTC Detecting Condition	Trouble Area
P0441	Pressure in charcoal canister and fuel tank does not drop during purge control (2 trip detection logic)	• Vacuum hose cracks, holed blocked, damaged or disconnected ((1), (2), (3), (4), (5), (6), (7), (8), (9), (10) and (11) in Fig. 1) • Fuel tank cap incorrectly installed • Fuel tank cap cracked or damaged • Open or short in vapor pressure sensor circuit • Vapor pressure sensor • Open or short in VSV circuit for EVAP • VSV for EVAP • Open or short in VSV circuit for CCV • VSV for CCV • Open or short in VSV circuit for pressure switching valve • VSV for pressure switching valve • Fuel tank cracked, holed or damaged • Charcoal canister cracked, holed or damaged • Fuel tank over fill check valve cracked damaged • ECM
P0446	When VSV for pressure switching valve is ON, ECM judges that there is no continuity between vapor pressure sensor, fuel tank and charcoal canister (2 trip detection logic)	
	When VSV for pressure switching valve is turned OFF, pressure in fuel tank is maintained at atmospheric pressure (2 trip detection logic)	
	When VSV for CCV is ON, pressure in charcoal canister and fuel tank is maintained at atmospheric pressure (2 trip detection logic)	

WIRING DIAGRAM

Refer to DTC P0440 on page DI-72 .

INSPECTION PROCEDURE

HINT:

- If DTC P0441, P0446, P0450 or P0451 is output after DTC P0440 first troubleshoot DTC P0441, P0446, P0450 or P0451. If no malfunction is detected, troubleshoot DTC P0440 next.
- Read freeze frame data using TOYOTA hand-held tester or OBD II scan tool. Because freeze frame records the engine conditions when the malfunction is detected. When troubleshooting, it is useful for determining whether the vehicle was running or stopped, the engine was warmed up or not, the air-fuel ratio was lean or rich, etc. at the time of the malfunction.
- When the ENGINE RUN TIME in the freeze frame data is less than 200 seconds, carefully check the vapor pressure sensor.

TOYOTA hand-held tester:

1	**Check whether hose close to fuel tank have been modified, and check whether there are signs of any accident near fuel tank or charcoal canister (See page DI-72).**

NG → **Repair or replace.**

OK

2	**Check that fuel tank cap is TOYOTA genuine parts (See page DI-72).**

NG → **Replace to TOYOTA genuine parts.**

cardiagn.com

OK

3	Check that fuel tank cap is correctly installed (See page DI-72).

NG → Correctly install fuel tank cap.

OK

4	Check fuel tank cap (See page DI-72).

NG → Replace fuel tank cap.

OK

5	Check filler neck for damage (See page DI-72).

NG → Replace filler pipe.

OK

6	Check vacuum hoses between vapor pressure sensor and fuel tank, charcoal canister and VSV for pressure switching valve, and VSV for pressure switching valve and charcoal canister (See page DI-72).

NG → Repair or connect VSV or sensor connector.

OK

7	Check hose and tube between fuel tank and charcoal canister (See page DI-72).

cardiagn.com

NG	Repair or replace.

OK

8	Check VSV connector for EVAP, VSV connector for CCV, VSV connector for pressure switching valve and vapor pressure sensor connector for looseness and disconnection.

NG	Repair or connect VSV or sensor connector.

OK

9	Check vacuum hoses ((8), (9), (10) and (11) in Fig. 1 in circuit description).

CHECK:

(a) Check that the vacuum hose is connected correctly.
(b) Check the vacuum hose for looseness and disconnection.
(c) Check the vacuum hose for cracks, hole, damage and blockage.

NG	Repair or replace.

OK

10	Check voltage between terminals VC and E2 of ECM connector (See page DI-72).

NG	Check and replace ECM (See page IN-31).

OK

11	Check voltage between terminals PTNK and E2 of ECM connectors (See page DI-72).

OK	Go to step 13.

cardiagn.com

NG

12	**Check for open and short in harness and connector between vapor pressure sensor and ECM (See page IN-31).**

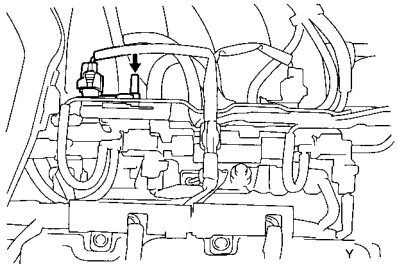
NG → **Repair or replace harness or connector.**

OK

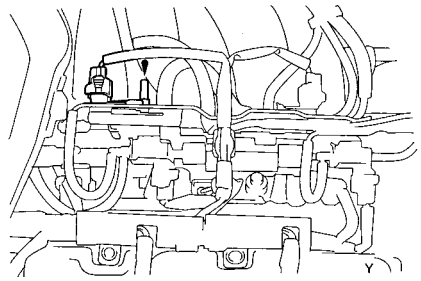
Replace vapor pressure sensor.

13	**Check purge flow.**

VSV is ON



VSV is OFF



A00230

PREPARATION:

(a) Connect the TOYOTA hand-held tester to the DLC3.
(b) Select the ACTIVE TEST mode on the TOYOTA hand-held tester.
(c) Disconnect the vacuum hose for the VSV for the EVAP from the charcoal canister.
(d) Start the engine.

CHECK:

When the VSV for the EVAP is operated by the TOYOTA hand-held tester, check whether the disconnected hose applies suction to your finger.

OK:

VSV is ON:
Disconnected hose applies suction to your finger.
VSV is OFF:
Disconnected hose applies no suction to your finger.

OK → **Go to step 17.**

NG

14	**Check vacuum hose between intake manifold and VSV for EVAP, and VSV for EVAP and charcoal canister.**

CHECK:

(a) Check that the vacuum hose is connected correctly.
(b) Check the vacuum hose for looseness and disconnection.

cardiagn.com

(c) Check the vacuum hose for cracks, hole, damage and blockage.

NG → **Repair or replace.**

OK

15	**Check operation of VSV for EVAP (See page SF-68).**

OK → **Go to step 16.**

NG

Replace VSV and charcoal canister, and then clean vacuum hoses between throttle body and VSV for EVAP, and VSV for EVAP and charcoal canister.

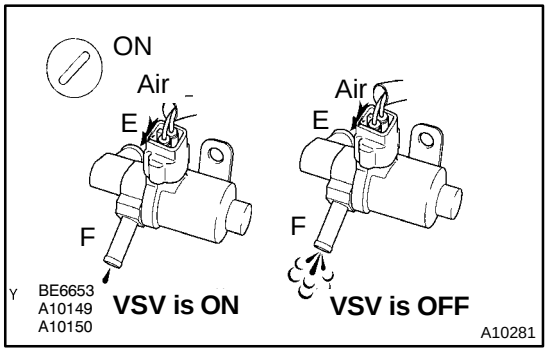
16	**Check for open and short in harness and connector between EFI main relay (Marking: EFI) and VSV for EVAP, and VSV for EVAP and ECM (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

Check and replace ECM (See page IN-31).

17	**Check VSV for CCV.**



PREPARATION:

(a) Connect the TOYOTA hand-held tester to the DLC3.
(b) Disconnect the vacuum hose for the VSV for the CCV from the charcoal canister.
(c) Turn the ignition switch ON and push the TOYOTA hand-held tester main switch ON.
(d) Select the ACTIVE TEST mode on the TOYOTA hand-held tester.

CHECK:

Check the VSV operation when it is operated by the TOYOTA hand-held tester.

cardiagn.com

OK:

VSV is ON:
Air does not flow from port E to port F.
VSV is OFF:
Air from port E flows out through port F.

OK	**Go to step 21.**

NG

18	**Check vacuum hose between VSV for CCV and charcoal canister.**

CHECK:

(a) Check that the vacuum hose is connected correctly.
(b) Check the vacuum hose for looseness and disconnection.
(c) Check the vacuum hose for cracks, hole damage and blockage.

NG	**Repair or replace.**

OK

19	**Check operation of VSV for CCV (See page SF-73).**

OK	**Go to step 20.**

NG

Replace VSV and charcoal canister, and then clean vacuum hose between charcoal canister and VSV for CCV.

20	**Check for open and short in harness and connector between EFI main relay (Marking: EFI) and VSV for CCV, and VSV for CCV and ECM (See page IN-31).**

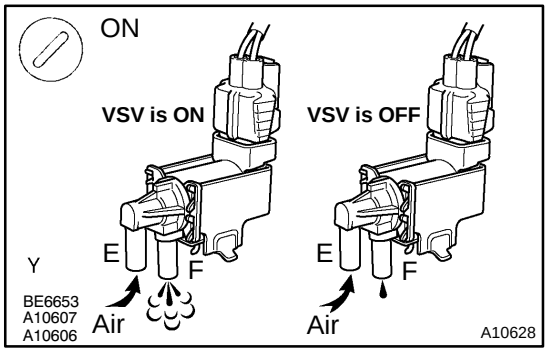
NG	**Repair or replace harness or connector.**

OK

cardiagn.com

Check and replace ECM (See page IN-31).

21	**Check VSV for pressure switching valve.**



PREPARATION:

(a) Connect the TOYOTA hand-held tester to the DLC3.

(b) Turn the ignition switch ON and push the TOYOTA hand-held tester main switch ON.

(c) Select the ACTIVE TEST mode on the TOYOTA hand-held tester.

CHECK:

Check the VSV operation when it is operated by the TOYOTA hand-held tester.

OK:

VSV is ON:
Air from port E flows out through port F.
VSV is OFF:
Air does not flow from port E to port F.

OK	**Go to step 24.**

NG

22	**Check operation of VSV for pressure switching valve (See page SF-75).**

OK	**Go to step 23.**

NG

Replace VSV and charcoal canister, and then clean vacuum hose between charcoal canister and VSV for pressure switching valve, and VSV for pressure switching valve and fuel tank.

23	**Check for open and short in harness and connector between EFI main relay (Marking: EFI) and VSV for pressure switching valve, and VSV for pressure switching valve and ECM (See page IN-31).**

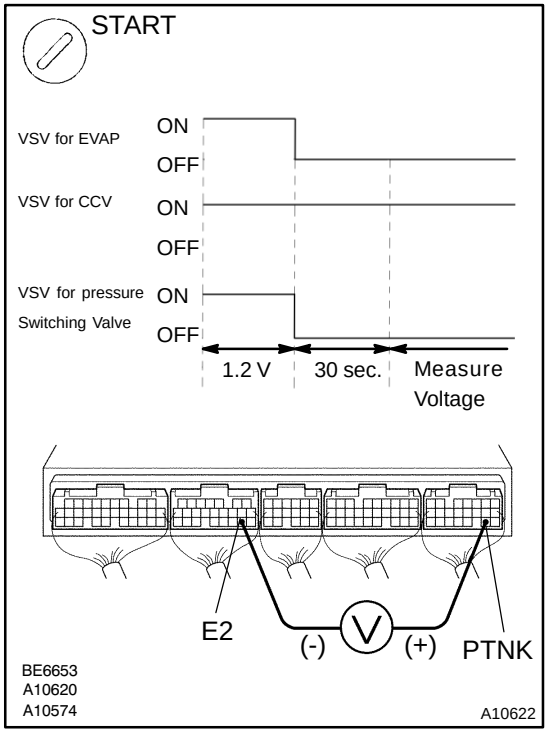
NG	**Repair or replace harness or connector.**

cardiagn.com

OK

Check and replace ECM (See page IN-31).

24	**Check fuel tank.**



PREPARATION:

(a) Remove the grove compartment (See page SF-83).
(b) Connect the TOYOTA hand-held tester to the DLC3.
(c) Select the ACTIVE TEST mode on the TOYOTA hand-held tester.
(d) Start the engine.
(e) The VSV for the CCV is ON by the TOYOTA hand-held tester.
(f) The VSV for the EVAP and the VSV for the pressure switching valve are ON by the TOYOTA hand-held tester and hold the VSV for the EVAP until voltage between terminals PTNK and E2 becomes 1.2 V.

CHECK:

Measure the voltage between terminals PTNK and E2 of the ECM connectors 30 sec. after switching the VSV for the EVAP and the VSV for the pressure switching valve from ON to OFF.

OK:

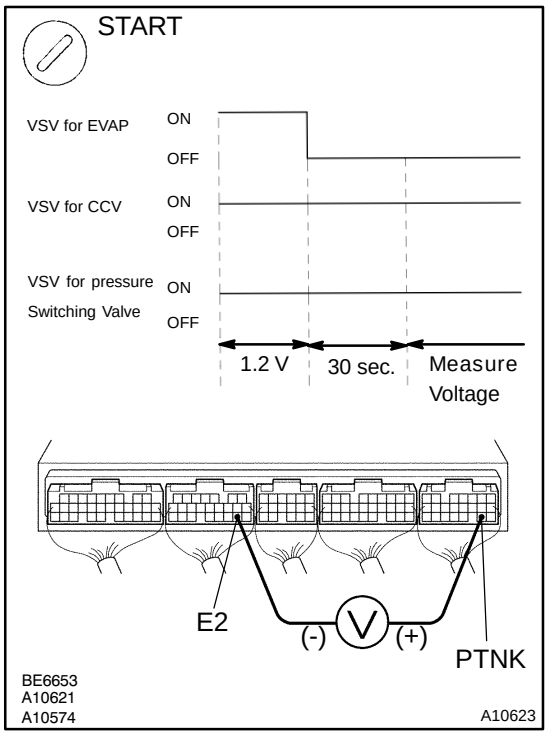
Voltage:
When there is no sharp change of the voltage with the voltage of more or less 1.2 V

NG → **Replace fuel tank.**

OK

cardiagn.com

25	Check charcoal canister.



PREPARATION:

(a) Remove the grove compartment (See page SF-83).
(b) Connect the TOYOTA hand-held tester to the DLC3.
(c) Select the ACTIVE TEST mode on the TOYOTA hand-held tester.
(d) Start the engine.
(e) The VSV for the CCV and the VSV for the pressure switching valve are ON by the TOYOTA hand-held tester.
(f) The VSV for the EVAP is ON by the TOYOTA hand-held tester and hold the VSV for the EVAP until voltage between terminals PTNK and E2 becomes 1.2 V.

CHECK:

Measure the voltage between terminals PTNK and E2 of the ECM connectors 30 sec. after switching the VSV for the EVAP from ON to OFF.

OK:

Voltage:
When there is no sharp change of the voltage with the voltage of more or less 1.2 V

NG	Replace charcoal canister.

OK

26	Remove charcoal canister and check it (See page EC-6).

NG	Replace charcoal canister.

OK

27	Check fuel tank over fill check valve (See page EC-6).

NG	Replace fuel tank over fill check valve or fuel tank.

OK

cardiagn.com

Check and replace charcoal canister (See page EC-6).

OBD II scan tool (excluding TOYOTA hand-held tester):

1	Check whether hose close to fuel tank have been modified, and check whether there are signs of any accident near fuel tank or charcoal canister (See page DI-72).

NG → Repair or replace.

OK

2	Check that fuel tank cap is TOYOTA genuine parts (See page DI-72).

NG → Replace to TOYOTA genuine parts.

OK

3	Check that fuel tank cap is correctly installed (See page DI-72).

NG → Correctly install fuel tank cap.

OK

4	Check fuel tank cap (See page DI-72).

NG → Replace fuel tank cap.

OK

5	Check filler neck for damage (See page DI-72).

cardiagn.com

NG → Replace filler pipe.

OK

6	**Check vacuum hoses between vapor pressure sensor and fuel tank, charcoal canister and VSV for pressure switching valve, and VSV for pressure switching valve and charcoal canister (See page DI-72).**

NG → Repair or connect VSV or sensor connector.

OK

7	**Check hose and tube between fuel tank and charcoal canister (See page DI-72).**

NG → Repair or replace.

OK

8	**Check VSV connector for EVAP, VSV connector for CCV, VSV connector for pressure switching valve and vapor pressure sensor connector for looseness and disconnection.**

NG → Repair or connect VSV or sensor connector.

OK

9	**Check vacuum hoses ((8), (9) , (10) and (11) in Fig. 1 in circuit description).**

CHECK:

(a) Check that the vacuum hose is connected correctly.
(b) Check the vacuum hose for looseness and disconnection.
(c) Check the vacuum hose for cracks, hole damage and blockage.

NG → Repair or replace.

cardiagn.com

OK

10	Check voltage between terminals VC and E2 of ECM connector (See page DI-72).

NG → Check and replace ECM (See page IN-31).

OK

11	Check voltage between terminals PTNK and E2 of ECM connectors (See page DI-72).

OK → Go to step 13.

NG

12	Check for open and short in harness and connector between vapor pressure sensor and ECM (See page IN-31).

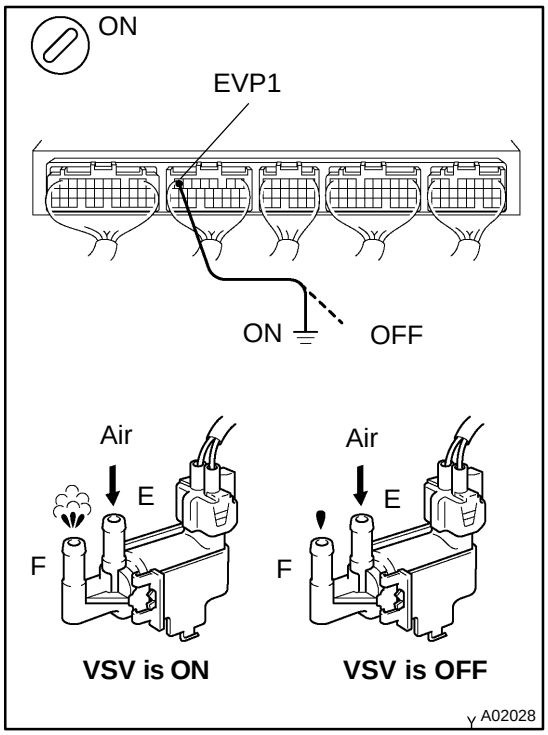
NG → Repair or replace harness or connector.

OK

Replace vapor pressure sensor.

cardiagn.com

13	Check VSV for EVAP.



PREPARATION:

(a) Remove the glove compartment (See page SF-83).

(b) Turn the ignition switch ON.

CHECK:

Check the VSV function.

(1) Connect between terminal EVP1 of the ECM connector and body ground (ON).

(2) Disconnect between terminal EVP1 of the ECM connector and body ground (OFF).

OK:

(1) VSV is ON:
Air from port E frows out through port F.
(2) VSV is OFF:
Air does not flow from port E to port F.

OK	Go to step 16.

NG

14	Check operation of VSV for EVAP (See page SF-68).

OK	Go to step 15.

NG

Replace VSV and clean vacuum hoses between throttle body and VSV for EVAP, and VSV for EVAP and charcoal canister, and then check charcoal canister.

15	Check for open and short in harness and connector between EFI main relay (Marking: EFI) and VSV for EVAP, and VSV for EVAP and ECM (See page IN-31)

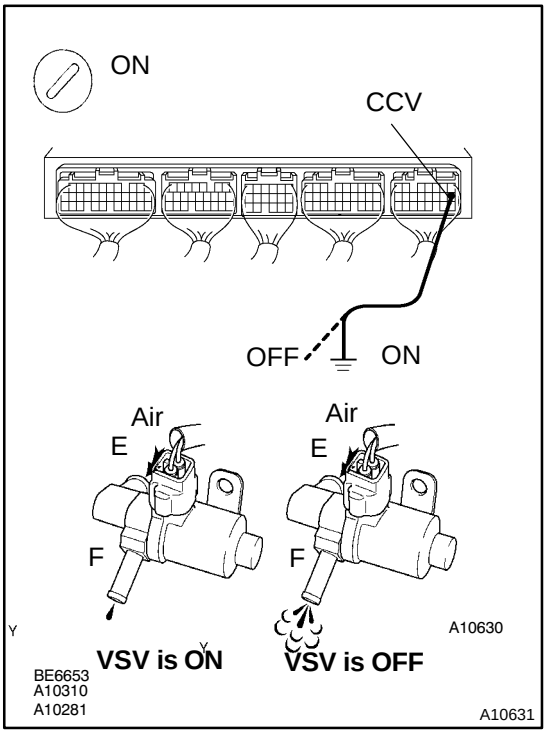
NG	Repair or replace harness or connector.

OK

cardiagn.com

Check and replace ECM (See page IN-31).

16	Check VSV for CCV.



PREPARATION:

(a) Remove the grove compartment (See page SF-83).

(b) Turn the ignition switch ON.

CHECK:

Check the VSV function.

(1) Connect between terminal CCV of the ECM connector and body ground (ON).

(2) Disconnect between terminal CCV of the ECM connector and body ground (OFF).

OK:

VSV is ON:
Air does not flow from port E to port F.
VSV is OFF:
Air from port E flows out through port F.

OK	Go to step 19.

NG

17	Check operation of VSV for CCV (See page SF-73).

OK	Go to step 18.

NG

Replace VSV and charcoal canister, and then clean vacuum hose between charcoal canister and VSV for CCV.

18	Check for open and short in harness and connector between EFI main relay (Marking: EFI) and VSV for CCV, and VSV for CCV and ECM (See page IN-31).

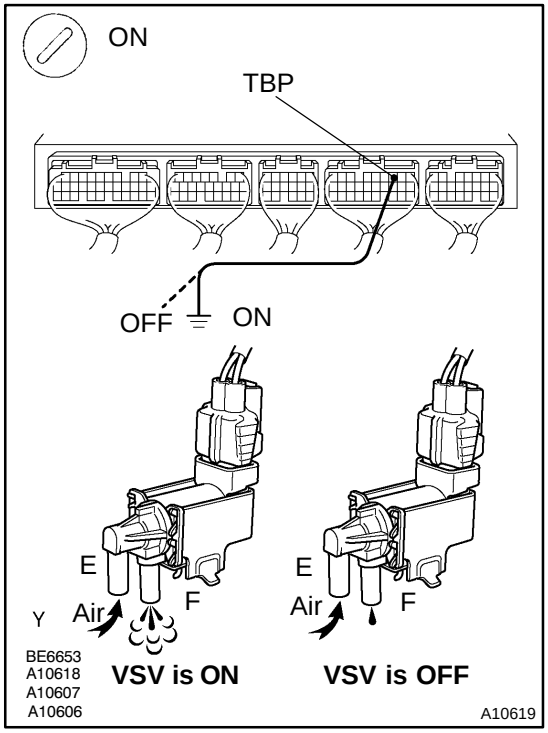
NG	Repair or replace harness or connector.

cardiagn.com

OK

Check and replace ECM (See page IN-31).

19	Check VSV for pressure switching valve.



PREPARATION:

(a) Remove the grove compartment (See page SF-83).

(b) Turn the ignition switch ON.

CHECK:

Check the VSV function.

(1) Connect between terminal TBP of the ECM connector and body ground (ON).

(2) Disconnect between terminal TBP of the ECM connector and body ground (OFF).

OK:

(1) VSV is ON:
Air from port E flows out through port F.
(2) VSV is OFF:
Air does not flow from port E to port F.

OK	Go to step 22

NG

20	Check operation of VSV for pressure switching valve (See page SF-75).

OK	Go to step 21.

NG

Replace VSV and charcoal canister, and then clean vacuum hoses between charcoal canister and VSV for pressure switching valve, and VSV for pressure switching valve and fuel tank.

21	Check for open and short in harness and connector between EFI main relay (Marking: EFI) and VSV for pressure switching valve, and VSV for pressure switching valve and ECM (See page IN-31).

cardiagn.com

NG	Repair or replace harness or connector.

OK

Check and replace ECM (See page IN-31).

22	Check fuel tank over fill check valve (See page EC-6).

NG	Replace fuel tank over fill check valve or fuel tank.

OK

Check and replace charcoal canister (See page EC-6).

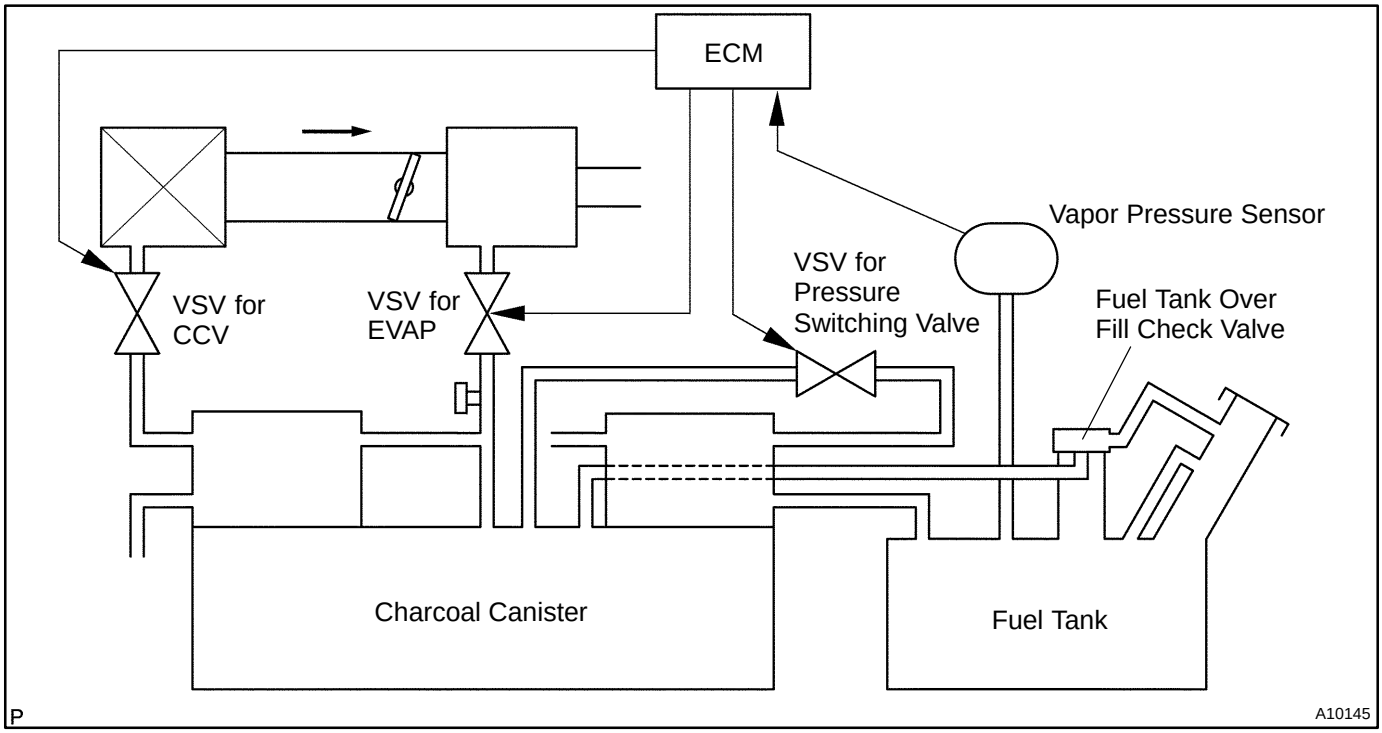
cardiagn.com

DTC	P0450	Evaporative Emission Control System Pressure Sensor Malfunction

DTC	P0451	Evaporative Emission Control System Pressure Sensor Range/Performance

CIRCUIT DESCRIPTION

The vapor pressure sensor, VSV for canister closed valve (CCV) and VSV for pressure switching valve are used to detect abnormalities in the evaporative emission control system.
The ECM decides whether there is an abnormality in the evaporative emission control system based on the vapor pressure sensor signal.
DTC P0450 or P0451 is recorded by the ECM when the vapor pressure sensor malfunction.



DTC No.	DTC Detecting Condition	Trouble Area
P0450	10 seconds or less after engine starting condition vapor pressure sensor fixed value continues for fixed value or more: (2 trip detection logic)	• Open or short in vapor pressure sensor circuit • Vapor pressure sensor • ECM
P0451	Vapor pressure sensor output extremely changes under conditions of (a) and (b): (2 trip detection logic) (a) Vehicle speed: 0 km/h (0mph), Engine speed: Idling and VSV for pressure switching valve is OFF (b) vavor pressure sensor value ≧ opening pressure valve of charcoal canister	

cardiagn.com

WIRING DIAGRAM

Refer to DTC P0440 P0442 on page DI-72 .

INSPECTION PROCEDURE

HINT:

- If DTC P0441, P0446, P0450 or P0451 is output after DTC P0440 or P0442, first trouble shoot DTC P0441, P0446 P0450 or P0451. If no malfunction is detected, troubleshoot DTC P0440 or P0442 next.
- Read freeze frame data using TOYOTA hand-held tester or OBD II scan tool. Because freeze frame records the engine conditions when the malfunction is detected. When troubleshooting, it is useful for determining whether the vehicle was running or stopped, the engine was warmed up or not, the air-fuel ratio was lean or rich, etc. at the time of the malfunction.
- When the ENGINE RUN TIME in the freeze frame data is less than 200 seconds, carefully check the VSV for EVAP, charcoal canister and vapor pressure sensor.

1	**Check voltage between terminals VC and E2 of ECM connector (See page DI-72).**

NG → **Check and replace ECM (See page IN-31).**

OK

2	**Check voltage between terminals PTNK and E2 of ECM connectors (See page DI-72).**

OK → **Check and replace ECM (See page IN-31).**

NG

3	**Check for open and short in harness and connector between vapor pressure sensor and ECM (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

Replace vapor pressure sensor.

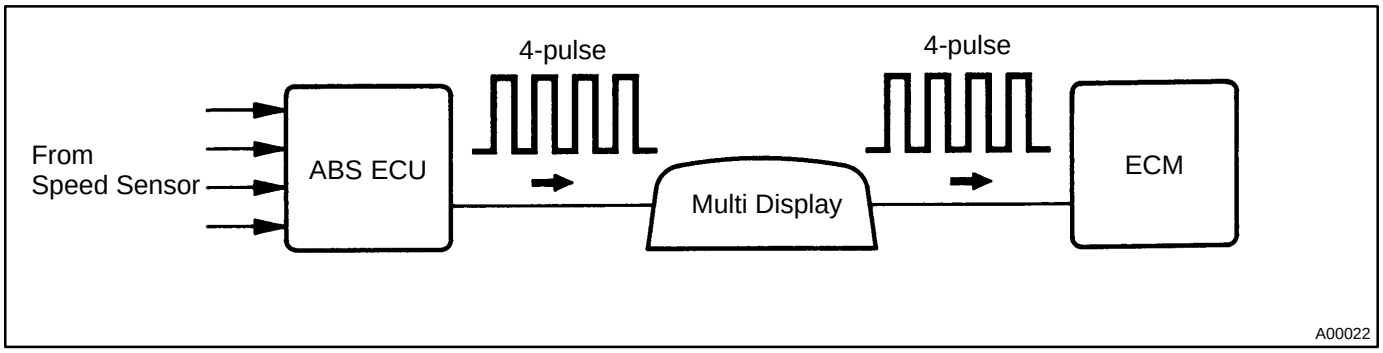
cardiagn.com

DI22D-03

DTC	P0500	Vehicle Speed Sensor Malfunction

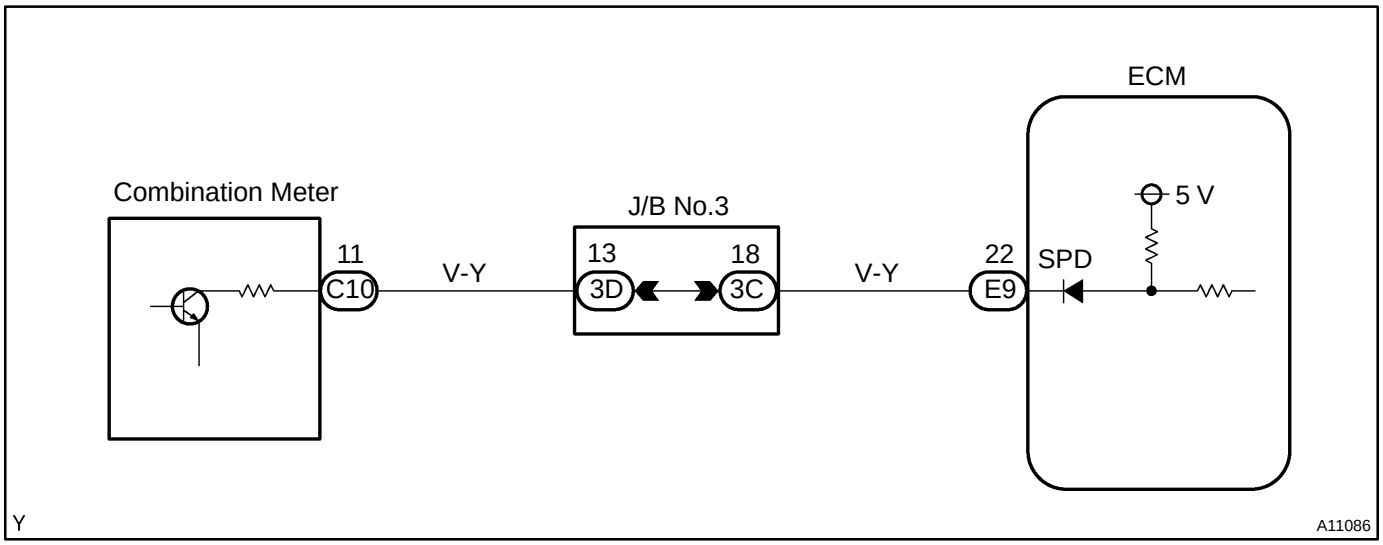
CIRCUIT DESCRIPTION

The speed sensor for ABS detects the wheel speed and sends the appropriate signals to the ABS ECU. The ECU converts these signals in to a 4-pulse signal and outputs it to the combination meter.
After this signal is converted into a more precise rectangular waveform by the waveform shaping circuit inside the combination meter, it is then transmitted to the ECM. The ECM determines the vehicle speed based on the frequency of these pulse signals.



DTC No.	DTC Detecting Condition	Trouble Area
P0500/61	No vehicle speed sensor signal to Engine & ECT ECU under the following conditions: (2 trip detection logic) Vehicle is being driven	• Combination meter • Open or short in speed sensor circuit • ECM

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

HINT:

Read freeze frame data using TOYOTA hand-held tester or OBD II scan tool. Because freeze frame records the engine conditions when the malfunction is detected, when troubleshooting it is useful for determining whether the vehicle was running or stopped, the engine warmed up or not, the air-fuel ratio lean or rich, etc. at the time of the malfunction.

1	**Check operation of speedometer.**

CHECK:

Drive the vehicle and check if the operation of the speedometer in the combination meter is normal.

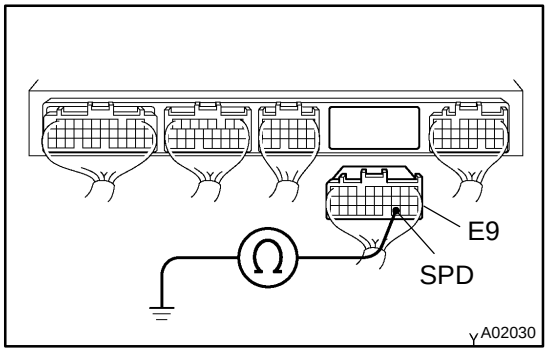
HINT:

The vehicle speed sensor is operating normally if the speedmeter display is normal.

NG → **Check speedmeter circuit.**

OK

2	**Check for short in harness and connector between terminal SPD of ECM and body ground.**



PREPARATION:

(a) Remove the glove compartment (See page SF-83).

(b) Disconnect the E9 connector of ECM.

CHECK:

Check continuity between terminal SPD of ECM and body ground.

OK:

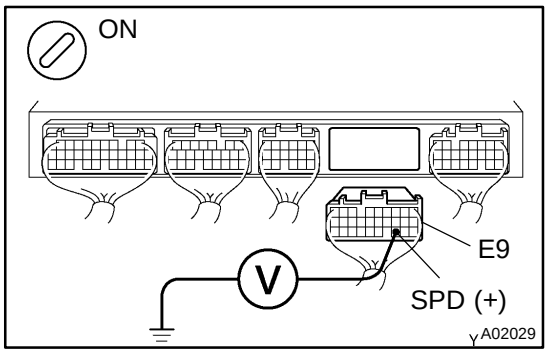
No continuity (1 MΩ or higher)

NG → **Repair or replace harness or connector.**

OK

cardiagn.com

3	**Check voltage between terminal SPD of ECM connector and body ground.**



PREPARATION:

(a) Turn the ignition switch ON.

(b) Disconnect the E9 connector of ECM.

CHECK:

Measure voltage between terminal SPD of the ECM connector and body ground.

OK:

Voltage: 9 - 14 V

NG → **Check for open in harness and connector between junction connector (J/B No.3) and ECM (See page IN-31).**

OK

4	**Check for open in harness and connector between J/B No.3 and combination meter (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

Check and replace ECM (See page IN-31).

cardiagn.com

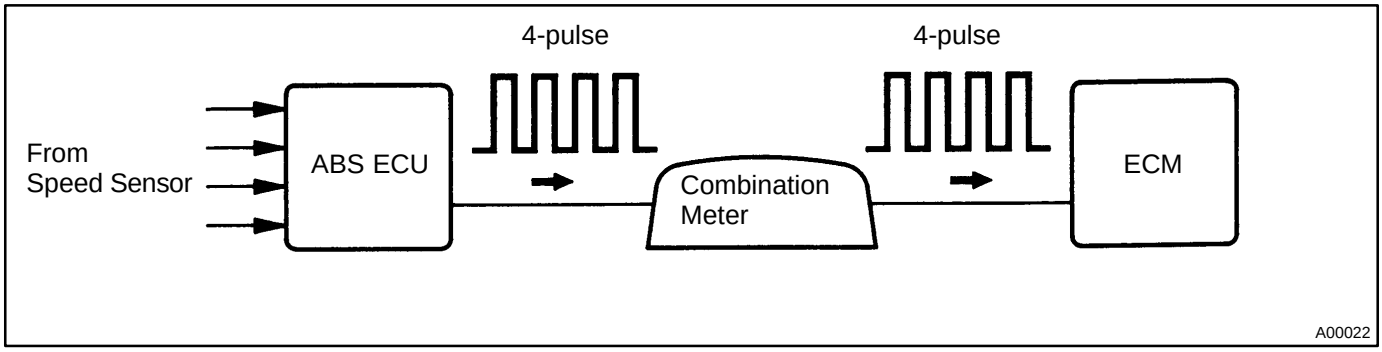
DI4FE-02

CIRCUIT INSPECTION

DTC	P0500	Vehicle Speed Sensor Malfunction

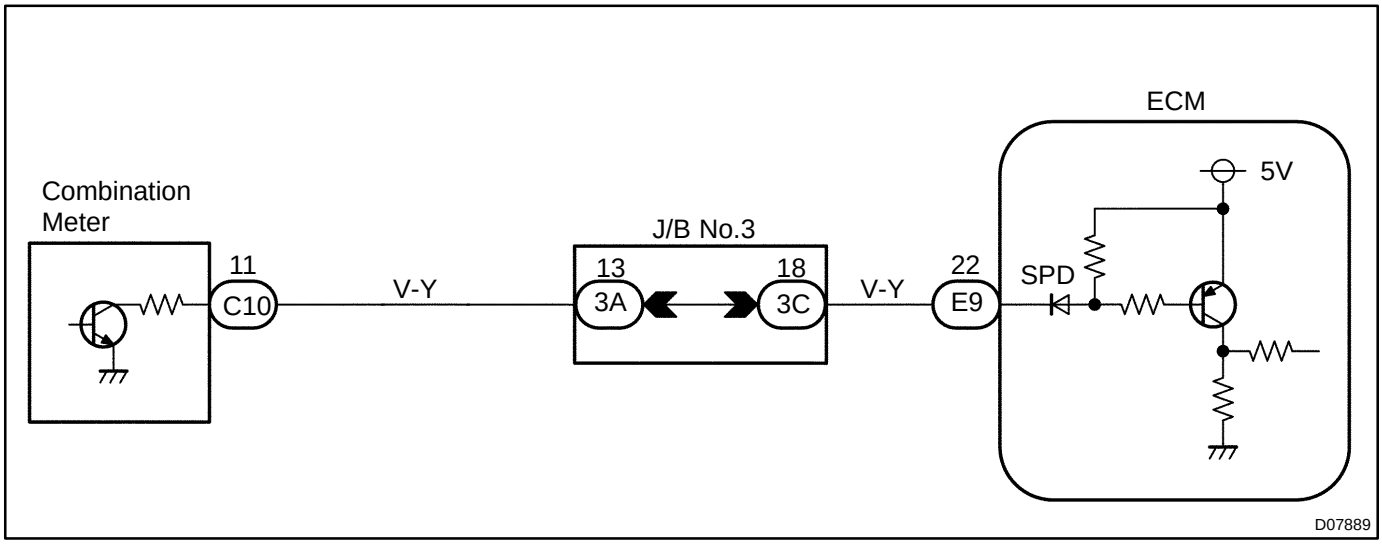
CIRCUIT DESCRIPTION

The speed sensor for ABS detects the wheel speed and sends the appropriate signals to the ABS ECU. The ECU converts these signals into a 4-pulse signal and outputs it to the combination meter.
After this signal is converted into a more precise rectangular waveform by the waveform shaping circuit inside the combination meter, it is then transmitted to the ECM. The ECM determines the vehicle speed based on the frequency of these pulse signals.



DTC No.	DTC Detection Condition	Trouble Area
P0500	• No speed sensor signal to ECM under conditions (a) and (b): (2-trip detection logic) (a) Park/neutral position switch is OFF. (b) Vehicle is being driven. • Clutch or brake slips or gear is broken. (2-trip detection logic)	• Open or short in speed signal circuit • ABS speed sensor • Combination meter • ECM • ABS ECU • Automatic transaxle (clutch, brake or gear etc.)

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

HINT:

Read freeze frame data using TOYOTA hand-held tester or OBD ll scan tool. Because freeze frame records the engine conditions when the malfunction is detected, when troubleshooting it is useful for determining whether the vehicle was running or stooped, the engine warmed up or not, the air-fuel ratio lean or rich, etc. at the time of the malfunction.

1	**Check operation of speedometer.**

CHECK:

Drive the vehicle and check if the operation of the speedometer in the combination meter is normal.

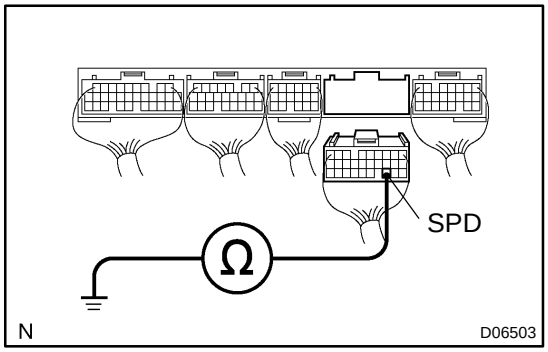
HINT:

The vehicle speed sensor is operating normally if the speedometer display is normal.

NG → **Check speedometer circuit.**

OK

2	**Check for short in harness and connector between terminal SPD of ECM and body ground.**



PREPARATION:

(a) Remove the glove compartment (See page BO-101).

(b) Disconnect the connector of ECM.

CHECK:

Check continuity between terminal SPD of ECM and body ground.

OK:

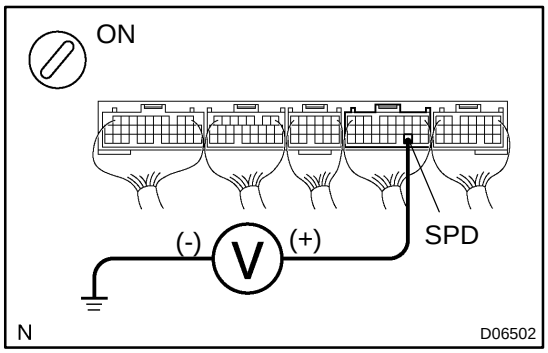
No continuity (1 MΩ or higher)

NG → **Repair of replace harness or connector.**

OK

cardiagn.com

3	**Check voltage between terminal SPD of ECM connector and body ground.**



PREPARATION:
Turn the ignition switch ON.
CHECK:
Measure voltage between terminal SPD of the ECM connector and body ground.
OK:
Voltage: 9 - 14 V

NG → **Check for open in harness and connector between junction connector (J15) and ECM (See page IN-31).**

OK

4	**Check for open in harness and connector between junction connector (J15) and combination meter (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

5	**Check ECM (See page IN-31).**

NG → **Replace ECM.**

OK

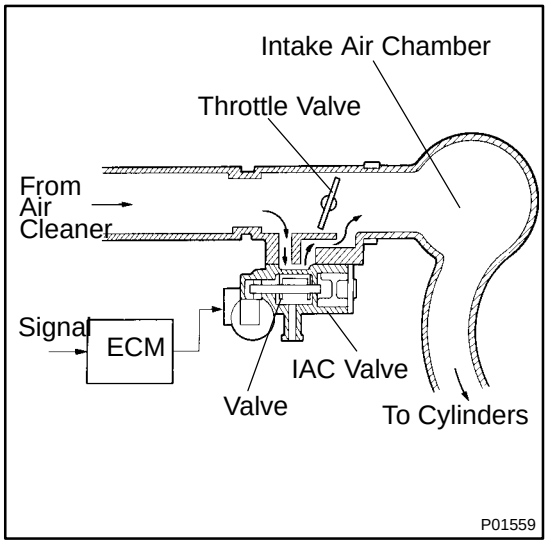
Check repair transaxle (clutch, brake or gear etc.).

cardiagn.com

DI22E-03

DTC	P0505	Idle Control System Malfunction

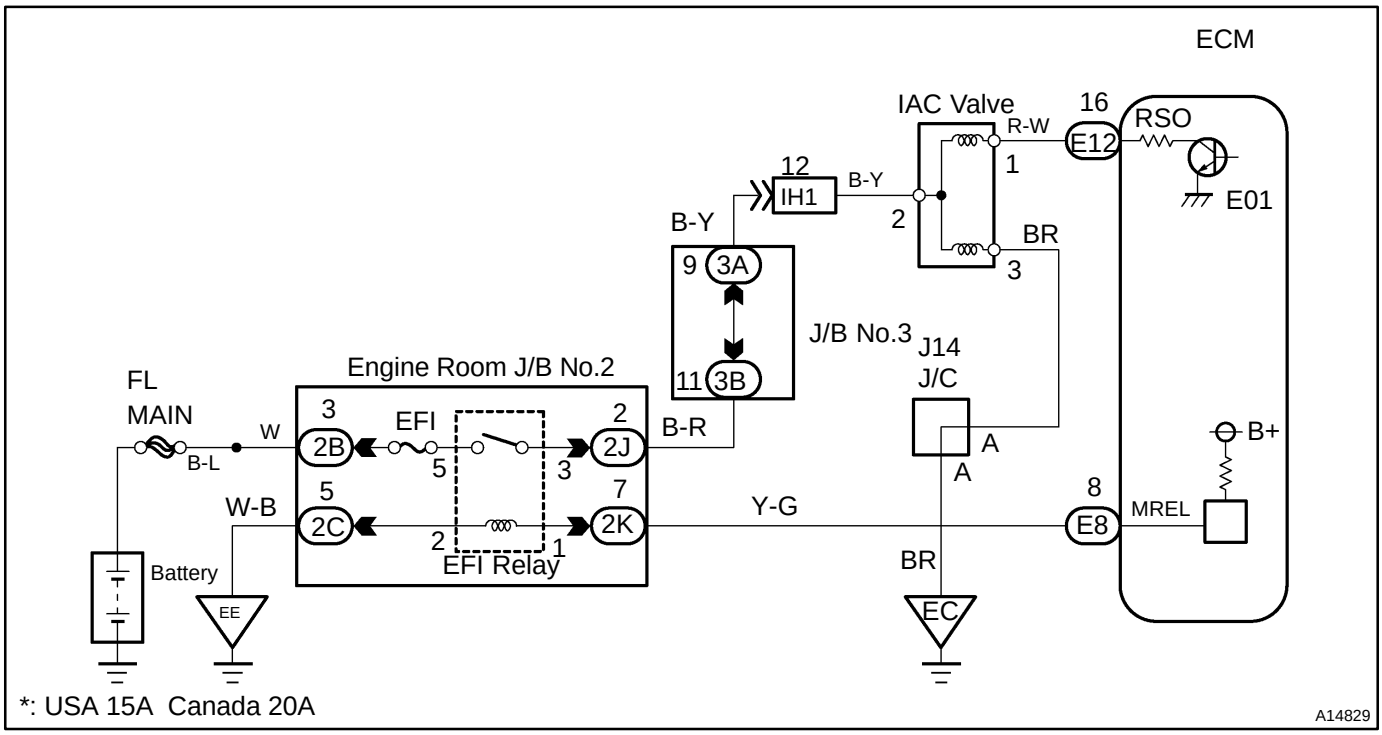
CIRCUIT DESCRIPTION



The rotary solenoid type IAC valve is located in front of the intake air chamber and intake air bypassing the throttle valve is directed to the IAC valve through a passage.
In this way the intake air volume bypassing the throttle valve is regulated, controlling the engine speed.
The ECM operates only the IAC valve to perform idle-up and provide feedback for the target idling speed.

DTC No.	DTC Detecting Condition	Trouble Area
P0505	Idle speed continues to vary greatly from target speed (2 trip detection logic)	• IAC valve is stuck or closed • Open or short in IAC valve circuit • Open or short in A/C signal circuit • Air intake (hose loose) • ECM

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

HINT:

Read freeze frame data using TOYOTA hand held tester or OBD II scan tool. Because freeze frame records the engine conditions when the malfunction is detected, when troubleshooting it is useful for determining whether the vehicle was running or stopped, the engine warmed up or not, the air-fuel ratio lean or rich, etc. at the time of the malfunction.

1	**Check engine idle speed.**

PREPARATION:

(a) Warm up engine to normal operating temperature.
(b) Switch off all accessories.
(c) Switch off air conditioning.
(d) Shift transmission into ”N” or neutral position.
(e) Connect the OBD II scan tool or TOYOTA hand-held tester to DLC3 on the vehicle.
(f) Using SST, connect terminals TE1 and E1 of the DLC3.

CHECK:

Check the difference of engine speed between the ones less than 5 sec. and more than 5 sec. after connecting terminals TE1 and E1 of the DLC1.

OK:

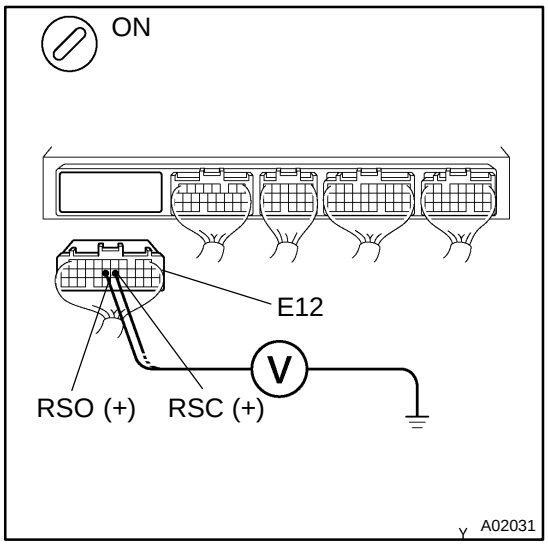
Difference of engine speed: More than 100 rpm

OK → **Go to step 6.**

NG

cardiagn.com

2	Check voltage between terminals RSO, RSC of ECM connector and body ground.



PREPARATION:

(a) Remove the glove compartment (See page SF-84).
(b) Disconnect the E12 connector of ECM.
(c) Turn the ignition switch ON.

CHECK:

Measure voltage between terminals RSO, RSC of the ECM connector and body ground.

OK:

Voltage: 9 - 14 V

OK	Go to step 4.

NG

3	Check IAC valve (See page SF-50).

NG	Replace IAC valve.

OK

Check for open and short in harness and connector between engine room J/B and IAC valve, IAC valve and ECM (See page IN-31).

4	Check operation of IAC valve (See page SF-47).

NG	Repair or replace IAC valve.

OK

cardiagn.com

5	Check the blockage of IAC valve and the passage to bypass the throttle valve.

NG → Repair or replace IAC valve.

OK →

Check and replace ECM (See page IN-31).

6	Check for A/C signal circuit (See page AC-133).

NG → Repair or replace.

OK →

Check air induction system (See page SF-1).

cardiagn.com

DI21F-03

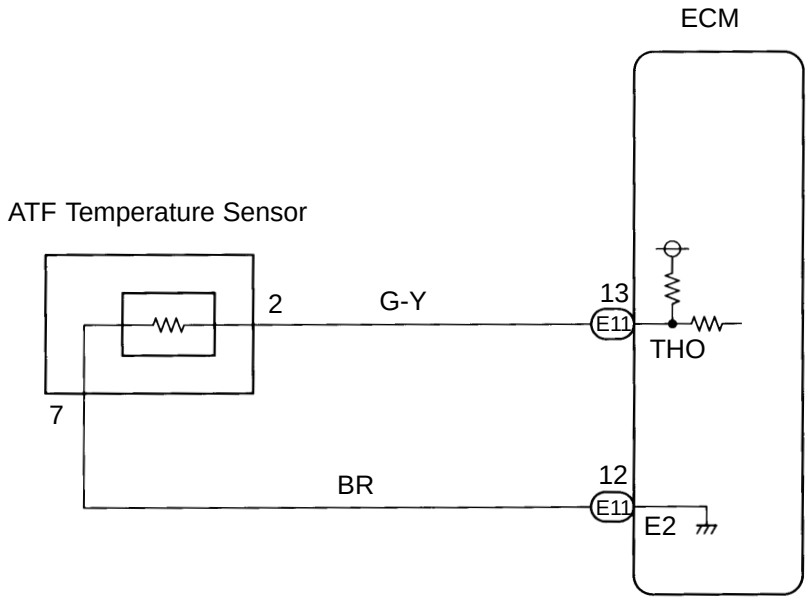
DTC	P0710	Transmission Fluid Temperature Sensor Circuit Malfunction (ATF temperature sensor)

CIRCUIT DESCRIPTION

The ATF temperature sensor converts fluid temp. into a resistance valve which is input into the ECM.

DTC No.	DTC Detecting Condition	Trouble Area
P0710	Either (a) or (b) is detected for 0.5 sec. or more (2-trip detection logic) (a) ATF temperature sensor resistance is less than 79 Ω. (b) After the engine has been operating for 15 minutes or more, the resistance at the temp. sensor is more than 156 kΩ.	• Open or short in ATF temperature sensor circuit • ATF temperature sensor • ECM

WIRING DIAGRAM



Q04346

cardiagn.com

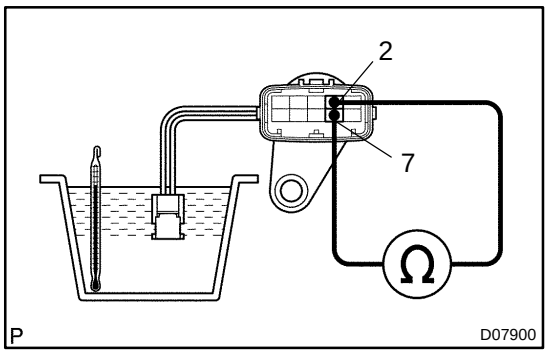
INSPECTION PROCEDURE

1	**Check harness and connector between ATF temperature sensor and ECM (See page IN-31).**

NG → **Repair or replace the harness or connector.**

OK

2	**Check ATF temperature sensor.**



PREPARATION:

(a) Remove the oil pan.

(b) Remove the solenoid wiring.

CHECK:

Measure resistance between terminals 2 and 7 of solenoid wiring connector at 10 ˚C (50 ˚F) and 110 ˚C (230 ˚F).

OK:

Resistance:

10 ˚C (50 ˚F): 6.4 kΩ

110 ˚C (230 ˚F): 219 Ω - 275 Ω

NG → **Replace solenoid wiring.**

OK

Check and replace ECM (See page IN-31).

cardiagn.com

DI0CS-12

DTC	P0750, P0755	Shift Solenoid A/B Malfunction (Shift Solenoid Valve No.1/No.2)

SYSTEM DESCRIPTION

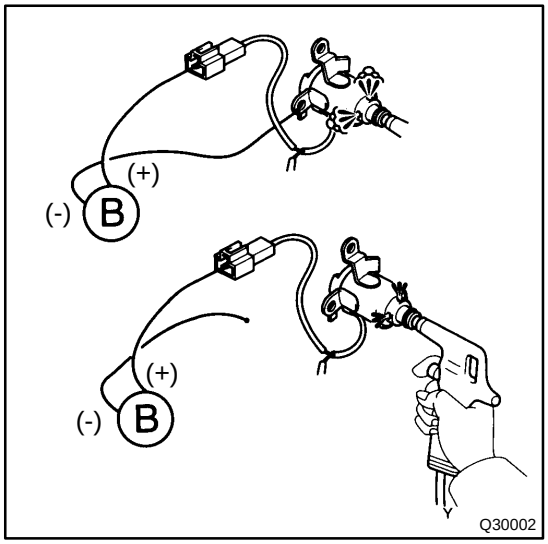
The ECM uses signals from the vehicle speed sensor and crankshaft position sensor to detect the actual gear position (1st, 2nd, 3rd or O/D gear).
Then the ECM compares the actual gear with the shift schedule in the ECM memory to detect mechanical trouble of the shift solenoid valves, valve body or automatic transaxle (clutch, brake or gear etc.).

DTC No.	DTC Detecting Condition	Trouble Area
P0750 P0755	During normal driving, the gear required by the ECM does not match the actual gear (2-trip detection logic)	• Shift solenoid valve No.1 and/or No.2 is stuck open or closed • Valve body is blocked up or stuck • Automatic transaxle (clutch, brake or gear etc.)

HINT:
Check the shift solenoid valve No.1 when DTC P0750 is output and check the shift solenoid valve No.2 when DTC P0755 is output.

INSPECTION PROCEDURE

1	**Check shift solenoid valve No.1 or No.2 operation.**



PREPARATION:
(a) Remove the oil pan.
(b) Remove the shift solenoid valve No.1 or No.2.

CHECK:
(a) Applying 490 kPa (5 kgf/cm^2, 71 psi) of compressed air, check that the solenoid valve does not leak air.
(b) When battery positive voltage is supplied to the shift solenoid valve, check that the valve opens.

OK:

(a) Solenoid valve does not leak air
(b) Solenoid valve opens.

NG → **Replace the shift solenoid valve No.1 or No.2.**

OK

cardiagn.com

2	Check the valve body (See page DI-171).

NG → Repair or replace valve body.

OK →

Repair the transaxle (See page AX-25).

cardiagn.com

DI0CT-06

DTC	P0753, P0758	Shift Solenoid A/B Electrical Malfunction (Shift Solenoid Valve No.1/No.2)

CIRCUIT DESCRIPTION

Shifting from 1st to O/D is performed in combination with ON and OFF of the shift solenoid valves No.1 and No.2 controlled by ECM. If an open or short circuit occurs in either of the shift solenoid valves, the ECM controls the remaining normal shift solenoid valve to allow the vehicle to be operated smoothly (Fail safe function).

Fail Safe Function:

If either of the shift solenoid valve circuits develops an open or short, the ECM turns the other shift solenoid ON and OFF to shift to the gear positions shown in the table below. The ECM also turns the shift solenoid valve SL OFF at the same time. If both solenoids are malfunctioning, hydraulic control cannot be performed electronically and must be done manually.

Manual shifting as shown in the following table must be done (In the case of a short circuit, the ECM stops sending current to the short circuited solenoid).

Position	NORMAL			SHIFT SOLENOID NO.1 MALFUNCTIONING			SHIFT SOLENOID NO.2 MALFUNCTIONING			BOTH SOLENOID MALFUNCTIONING
	Solenoid valve		Gear	Solenoid valve		Gear	Solenoid valve		Gear	Gear when shift selector is manually operated
	No.1	No.2		No.1	No.2		No.1	No.2		
D	ON	OFF	1st	X	ON	3rd	ON	X	1st	O/D
	ON	ON	2nd	X	ON	3rd	OFF	X	O/D	O/D
	OFF	ON	3rd	X	ON	3rd	OFF	X	O/D	O/D
	OFF	OFF	O/D	X	OFF	O/D	OFF	X	O/D	O/D
2	ON	OFF	1st	X	ON	3rd	ON	X	1st	O/D
	ON	ON	2nd	X	ON	3rd	OFF	X	O/D	O/D
	OFF	ON	3rd	X	ON	3rd	OFF	X	O/D	O/D
L	ON	OFF	1st	X	OFF	1st	ON	X	1st	1st
	ON	ON	2nd	X	ON	2nd	ON	X	1st	1st

X: Malfunctions

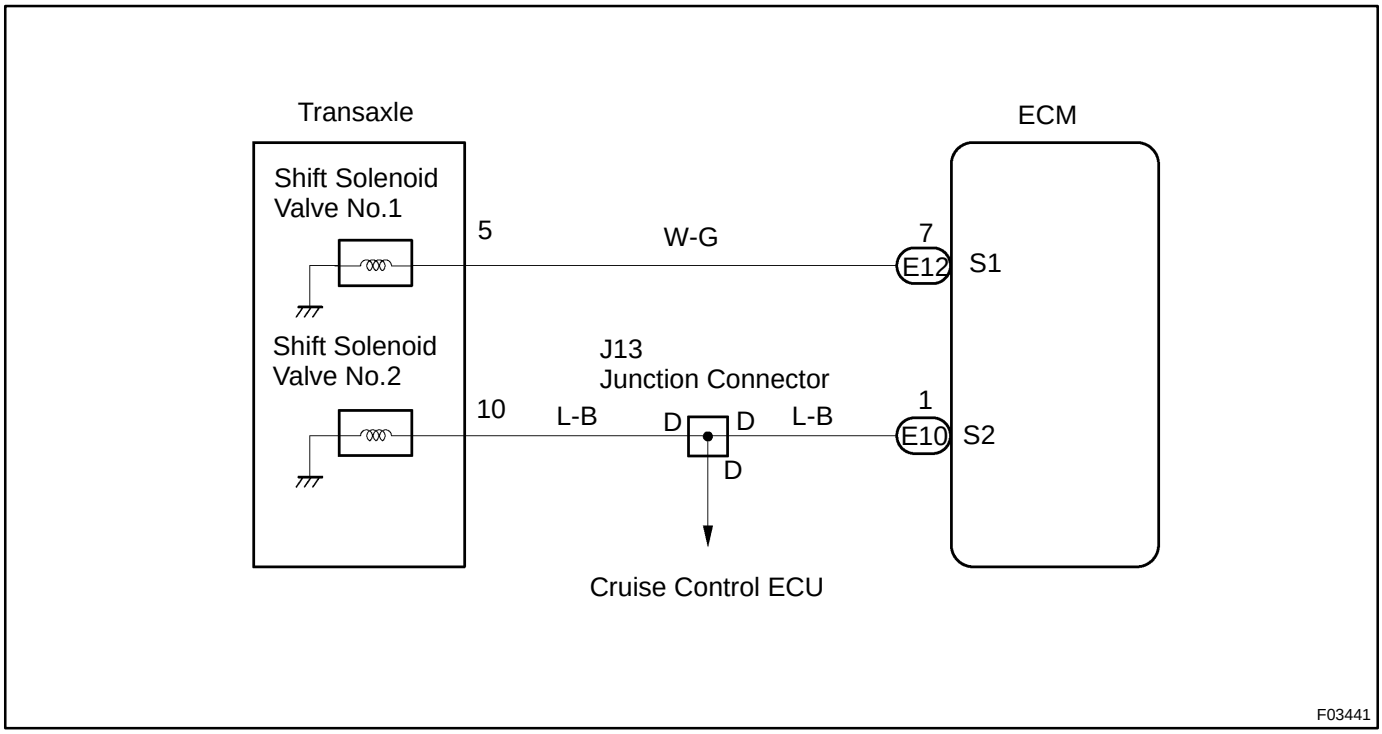
HINT:

Check the shift solenoid valve No.1 when DTC P0753 is output and check the shift solenoid valve No.2 when DTC P0758 is output.

DTC No.	DTC Detecting Condition	Trouble Area
P0753 P0758	The ECM checks for an open or short circuit in the shift solenoid valve No.1 and/or No.2 circuit when it changes. The ECM records DTC P0753 or P0758 if condition (a) or (b) is detected once, but it does not light up MIL. After ECM detects condition (a) or (b) continuously 8 times or more in a trip and the MIL lights up. (a) When the solenoid is energized, the solenoid resistance is 8 Ω or less and is counted. (b) When the solenoid is not energized, the solenoid resistance is 100 kΩ or more and is counted.	• Open or short in shift solenoid valve No.1/No.2 circuit • Shift solenoid valve No.1/No.2 • ECM

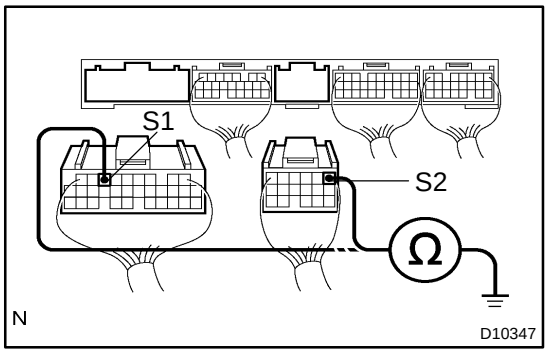
cardiagn.com

WIRING DIAGRAM



INSPECTION PROCEDURE

1	**Measure resistance between terminal S1 or S2 of ECM and body ground.**



PREPARATION:

Disconnect the connector from ECM.

CHECK:

Measure resistance between terminal S1 or S2 of ECM and body ground.

OK:

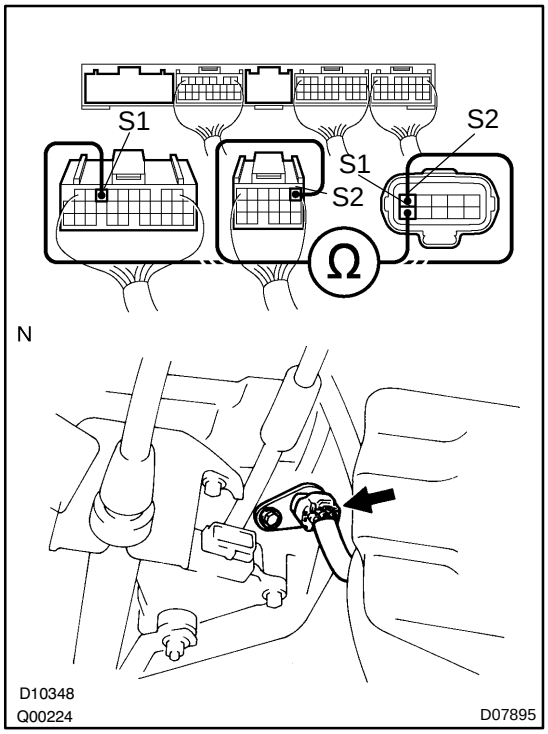
Resistance: 11 - 15 Ω

OK	**Check and replace the ECM (See page IN-31).**

NG

cardiagn.com

2	**Measure resistance of harness and connector between ECM and automatic transaxle solenoid connector.**



PREPARATION:

Disconnect the solenoid connector from the automatic transaxle.

CHECK:

Measure resistance of the harness and connector between terminal S1 or S2 of ECM and terminal S1 or S2 of solenoid connector.

OK:

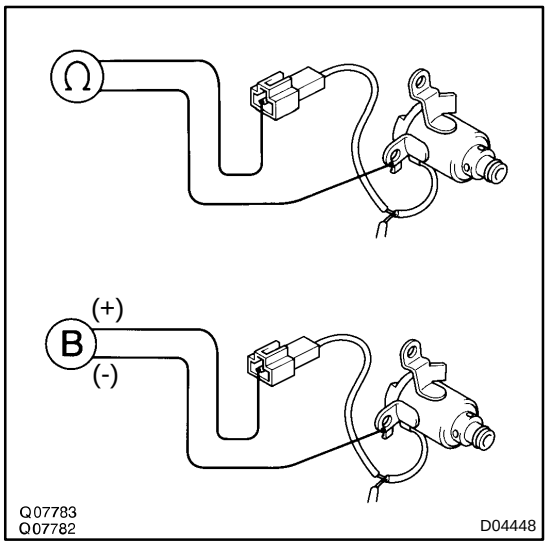
Resistance: 0 Ω

NG → **Repair or replace the harness or connector.**

OK

cardiagn.com

3	Check shift solenoid valve No.1 or No.2.



PREPARATION:

(a) Jack up the vehicle.
(b) Remove the oil pan.
(c) Disconnect the solenoid connector.
(d) Remove the shift solenoid valve No.1 or No.2.

CHECK:

(a) Measure resistance between solenoid connector and body ground.
(b) Connect the positive ⊕ lead to terminal of solenoid connector, negative ⊖ lead to solenoid body.

OK:

(a) Resistance: 11 - 15 Ω at 20 ˚C (68 ˚F)
(b) The solenoid makes an operating noise.

NG → **Replace the solenoid valve.**

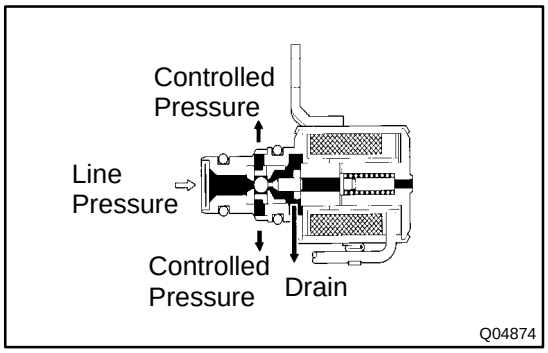
OK

Repair or replace the solenoid wire, harness and connector between ECM and automatic transaxle solenoid connector.

cardiagn.com

DI0CU-06

DTC	P0770	Shift Solenoid E Malfunction (Shift Solenoid Valve SL)



SYSTEM DESCRIPTION

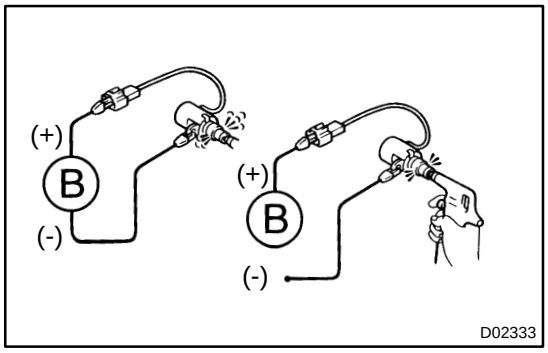
The ECM uses the signals from the throttle position sensor, air-flow meter and crankshaft position sensor to monitor the engagement condition of the lock-up clutch.

Then the ECM compares the engagement condition of the lock-up clutch with the lock-up schedule in the ECM memory to detect mechanical trouble of the shift solenoid valve SL, valve body and torque converter clutch or automatic transaxle (clutch, brake or gear etc.).

DTC No.	DTC Detecting Condition	Trouble Area
P0770	• Lock-up does not occur when driving in the lock-up range (normal driving at 80 km/h [50 mph]), or lock-up remains ON in the lock-up OFF range. (2-trip detection logic) • When lock-up is ON, clutch or brake slips or gear is broken. (2-trip detection logic)	• Shift solenoid valve SL is stuck open or closed • Valve body blocked up or stuck • Lock-up clutch • Automatic transaxle (clutch, brake or gear etc.)

INSPECTION PROCEDURE

1	Check solenoid valve SL operation.



PREPARATION:

(a) Remove the oil pan.

(b) Remove the shift solenoid valve SL.

CHECK:

(a) Applying 490 kPa (5 kgf/cm^2, 71 psi) of compressed air, check that the solenoid valve does not leak air.

(b) When battery positive voltage is supplied to the shift solenoid valve, check that the solenoid valve opens.

OK:

(a) Solenoid valve does leak air.

(b) Solenoid valve opens.

NG → **Replace the solenoid valve SL.**

OK

cardiagn.com

2	Check valve body (See page DI-171).

NG → Repair or replace the valve body.

OK

3	Check the torque converter clutch (See page AX-31).

NG → Repair the torque converter clutch.

OK

Repair the transaxle (See page AX-25).

cardiagn.com

DI0CV-14

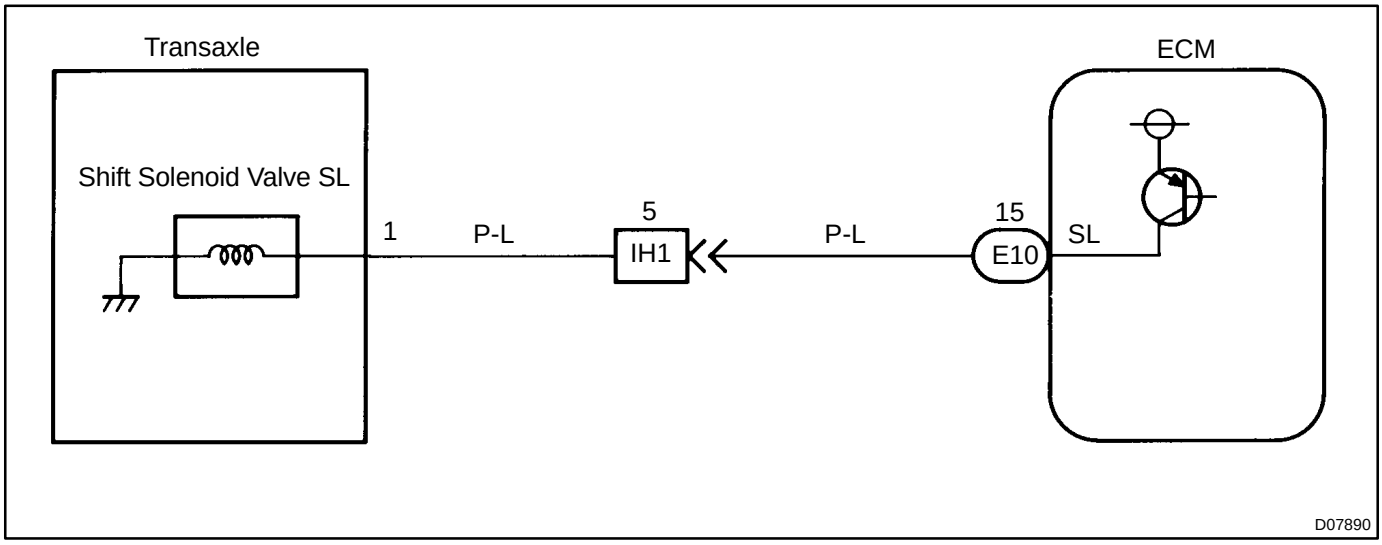
DTC	P0773	Shift Solenoid E Electrical Malfunction (Shift Solenoid Valve SL)

CIRCUIT DESCRIPTION

The shift solenoid valve SL is turned ON and OFF by signals from the ECM to control the hydraulic pressure acting on the lock-up relay valve, which then controls operation of the lock-up clutch.
Fail safe function:
If the ECM detects a malfunction, it turns the shift solenoid valve SL OFF.

DTC No.	DTC Detecting Condition	Trouble Area
P0773	Either (a) or (b) is detected for 1 time. (2-trip detection logic) (a) Solenoid resistance is 8 Ω or less when solenoid is energized. (b) Solenoid resistance is 100 kΩ or more when solenoid is not energized.	• Open or short in shift solenoid valve SL circuit • Shift solenoid valve SL • ECM

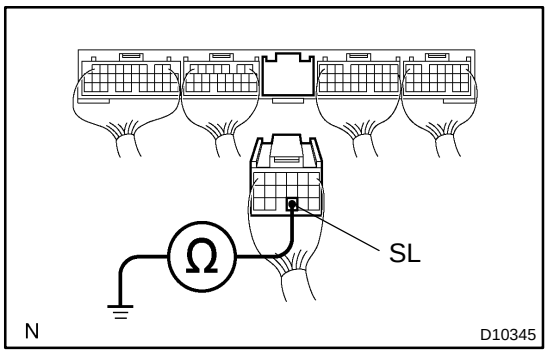
WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Measure resistance between terminal SL of ECM and body ground.**

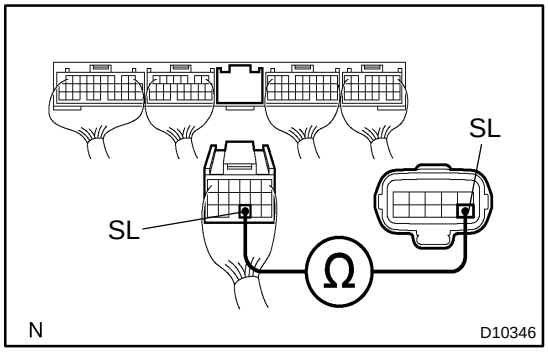


PREPARATION:
Disconnect the connector from ECM.
CHECK:
Measure resistance between terminal SL of ECM and body ground.
OK:
Resistance: 11 - 15 Ω at 20 ˚C (68 ˚F)

OK → **Check and replace the ECM (See page IN-31).**

NG

2	**Measure resistance of harness and connector between ECM and automatic transaxle solenoid connector.**



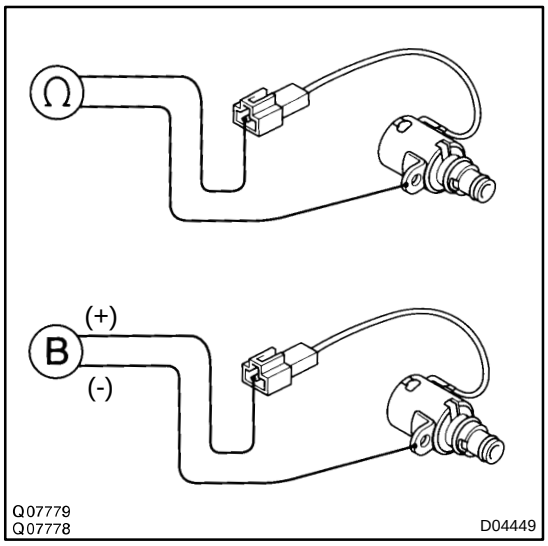
PREPARATION:
Disconnect the solenoid connector from the transaxle.
CHECK:
Measure resistance of the harness and connector between terminal SL of ECM and terminal SL of solenoid connector.
OK:
Resistance: 0 Ω

NG → **Repair or replace the harness or connector.**

OK

cardiagn.com

3	Check shift solenoid valve SL.



PREPARATION:

(a) Jack up the vehicle.
(b) Remove the oil pan.
(c) Disconnect the shift solenoid valve SL connector.
(d) Remove the shift solenoid valve SL.

CHECK:

(a) Measure resistance between terminal SL of shift solenoid valve and solenoid body.
(b) Connect positive ⊕ lead to terminal of solenoid connector, negative ⊖ lead to solenoid body.

OK:

(a) Resistance: 11 - 15 Ω at 20 ˚C (68 ˚F)
(b) The shift solenoid valve SL makes operation noise.

NG → **Replace the shift solenoid valve SL.**

OK

Replace or repair the solenoid wire, harness and connector between ECM and automatic transaxle solenoid connector.

cardiagn.com

DI4F6-02

DTC	P1130	A/F Sensor Circuit Range/Performance Malfunction

DTC	P1150	A/F Sensor Circuit Range/Performance Malfunction

CIRCUIT DESCRIPTION

Refer to DTC P0125 on Page DI-42 .

DTC No.	DTC Detecting Condition	Trouble Area
P1130 P1150	Voltage output* of A/F sensor remains at 3.8 V or more, or 2.8 V or less, during engine running after engine is warmed up (2 trip detection logic) *: Output value changes at inside of ECM only.	• Open or short in A/F sensors (bank 1, 2 sensor 1) circuit • A/F sensors (bank 1, 2 sensor 1) • ECM
	Voltage output* of A/F sensor does not change from 3.30 V, during engine running after engine is warmed up (2 trip detection logic) *: Output value changes at the inside of the ECM only.	
	Open or short in A/F sensor circuit (2 trip detection logic)	

HINT:

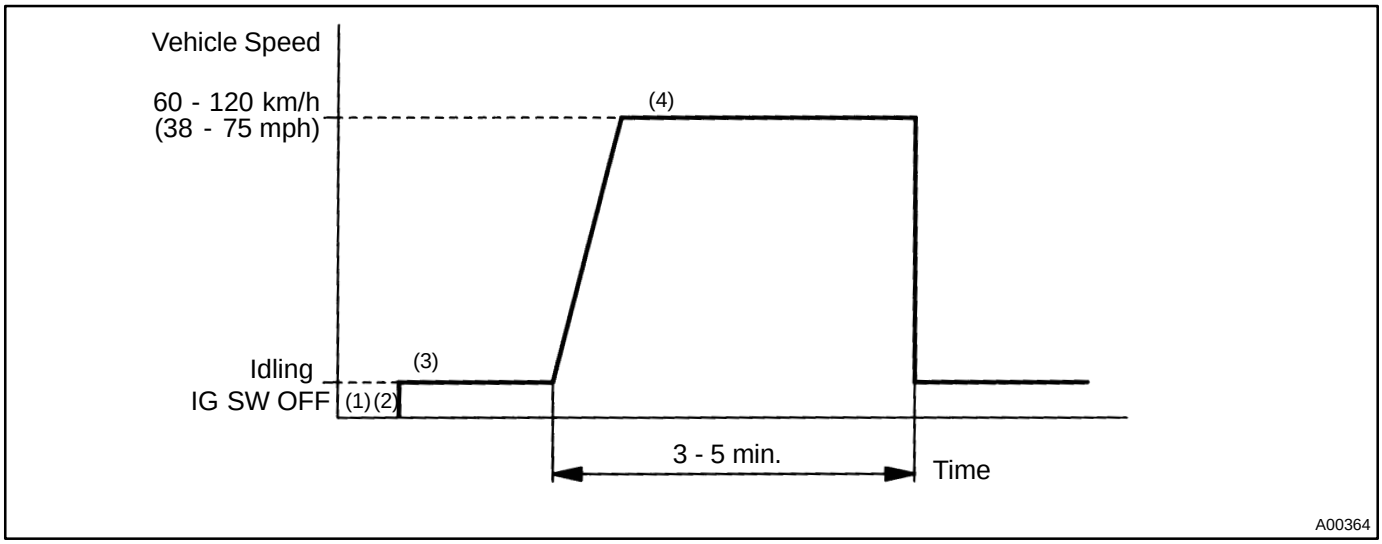
- After confirming DTCs P1130 or P01150, use the OBD II scan tool or TOYOTA hand-held tester to confirm voltage output of A/F sensor (AFS B1 S1/O2S B1 S1) from ”CURRENT DATA”.
- The A/F sensor’s output voltage and the short-term fuel value can be read using the OBD II scan tool or TOYOTA hand-held tester.
- The ECM controls the voltage of AFR/AFL⊕ and AFR/AFL⊖ terminals of ECM to the fixed voltage. Therefore, it is impossible to confirm the A/F sensor output voltage without OBD II scan tool or TOYOTA hand-held tester.
- OBD II scan tool (excluding TOYOTA hand-held tester) displays the one fifth of the A/F sensor output voltage which is displayed on the TOYOTA hand-held tester.

WIRING DIAGRAM

Refer to DTC P0125 on page DI-42 .

cardiagn.com

CONFIRMATION DRIVING PATTERN



(1) Connect the TOYOTA hand-held tester to the DLC3.
(2) Switch the TOYOTA hand-held tester from normal mode to check mode (See page DI-3).
(3) Start the engine and warm it up with all accessory switches OFF.
(4) Drive the vehicle at 60 - 120 km/h (38 - 75 mph) and engine speed at 1,600 - 3,200 rpm for 3 - 5 min.
HINT:
If a malfunction exists, the MIL will light up during step (4).
NOTICE:
If the conditions in this test are not strictly followed, detection of the malfunction will not be possible. If you do not have a TOYOTA hand-held tester, turn the ignition switch OFF after performing steps (3) and (4), then perform steps (3) and (4) again.

INSPECTION PROCEDURE

HINT:
- If DTC P1130 is displayed, check Bank 1 Sensor 1 circuit.
- If DTC P1150 is displayed, check Bank 2 Sensor 1 circuit.
- Read frame freeze data using TOYOTA hand-held tester or OBD II scan tool. Because freeze frame records the engine conditions when the malfunction is detected, when troubleshooting it is useful for determining whether the vehicle was running or stopped, the engine warmed up or not, the air-fuel ratio lean or rich, etc. at the time of the malfunction.

1	**Are there any other codes (besides DTC P1130, P1150) being output ?**

YES → **Go to relevant DTC chart.**

NO

cardiagn.com

2	**Connect the OBDII scan tool or TOYOTA hand-held tester and read value for voltage output of A/F sensors (bank1, 2 sensor1).**

PREPARATION:

(a) Connect the OBD II scan tool or TOYOTA hand-held tester to the DLC3.

(b) Warm up the A/F sensors (bank1, 2 sensor1) with the engine at 2,500 rpm for approx. 90 sec.

CHECK:

Read voltage of A/F sensors (bank 1, 2 sensor 1) on the screen of OBD II scan tool or TOYOTA hand-held tester when you perform all the following conditions.

HINT:

The voltage of AFR⊕ and AFL⊕ terminals of ECM is fixed at 3.3 V and the voltage of AFR⊖ and AFL⊖ terminals is fixed at 3.0 V. Therefore, it is impossible to check the A/F sensors (bank1, 2 sensor1) output voltage at the terminals (AFR⊕, AFL⊕/AFR⊖, AFL⊖) of ECM.

OK:

Condition	A/F Sensor Voltage value
Engine idling	• Not remains at 3.30 V (*0.660 V) • Not remains at 3.8 V (*0.76 V) or more • Not remains at 2.8 V (*0.56 V) or less *: When you use the OBD II scan tool (excluding TOYOTA hand-held tester)
Engine racing	
Driving at engine speed 1,500 rpm or more and vehicle speed 40 km/h (25 mph) or more, and operate throttle valve open and close.	

HINT:

- During fuel enrichment, there is a case that the output voltage of A/F sensors (bank1, 2 sensor1) is below 2.8 V (* 0.56 V), it is normal.
- During fuel cut, there is a case that the output voltage of A/F sensors (bank1, 2 sensor1) is above 3.8 V (* 0.76 V), it is normal.
- If output voltage of A/F sensors (bank1, 2 sensor1) remains at 3.30 V (* 0.660 V) even after performing all the above conditions, A/F sensors (bank1, 2 sensor1) circuit may be open.
- If output voltage of A/F sensors (bank1, 2 sensor1) remains at 3.8 V (* 0.76V) or more, or 2.8 V (*0.56 V) or less even after performing all the above conditions, A/F sensors (bank1, 2 sensor1) circuit may be short.

*: When you use the OBD II scan tool (excluding TOYOTA hand-held tester).

OK → **Go to step 9.**

NG

cardiagn.com

3	Check for open and short in harness and connector between ECM and A/F sensors (bank 1, 2 sensor 1) (See page IN-31).

NG → Repair or replace harness or connector.

OK

4	Check resistance of A/F sensor heater (See page SF-81).

NG → Replace A/F sensor.

OK

5	Check air induction system (See page SF-1).

NG → Repair or replace.

OK

6	Check fuel pressure (See page SF-21).

NG → Check and repair fuel pump, fuel pipe line and filter (See page SF-1).

OK

cardiagn.com

7	Check injector injection (See page SF-26).

NG → Replace injector.

OK →

Replace A/F sensors (bank1, 2 sensor1).

8	Perform confirmation driving pattern.

Go →

9	Are there DTC P1130 and/or P1150 being output again ?

YES → Check and replace ECM (See page IN-31).

NO →

10	Did vehicle runs out of fuel in the past ?

NO → Check for intermittent problems (See page DI-3).

YES →

DTC P1130 and /or P1150 is caused by running out of fuel.

cardiagn.com

DI4F7-02

DTC	P1133	A/F Sensor Circuit Response Malfunction (Bank 1 Sensor 1)

DTC	P1153	A/F Sensor Circuit Response Malfunction (Bank 2 Sensor 1)

CIRCUIT DESCRIPTION

Refer to DTC P0125 on page DI-42 .

DTC No.	DTC Detecting Condition	Trouble Area
P1133 P1155	After engine is warmed up and during vehicle driving at engine speed 1,400 rpm or more and vehicle speed 60 km/h (38 mph) or more, if response characteristic of A/F sensor becomes deteriorated (2 trip detection logic)	• A/F sensors (bank 1, 2 sensor 1)

INSPECTION PROCEDURE

HINT:

Read freeze frame data using TOYOTA hand-held tester or OBD II scan tool. Because freeze frame records the engine conditions when the malfunction is detected, when troubleshooting it is useful for determining whether the vehicle was running or stopped, the engine warmed up or not, the air-fuel ratio lean or rich, etc. at the time of the malfunction.

1	**Are there any other codes (besides DTC P1133, P1153) being output ?**

YES → **Go to relevant DTC chart.**

NO

cardiagn.com

2	**Connect the OBDII scan tool or TOYOTA hand-held tester and read value for voltage output of A/F sensors (bank1, 2 sensor1).**

PREPARATION:

(a) Connect the OBD II scan tool or TOYOTA hand-held tester to the DLC3.

(b) Warm up the A/F sensors (bank1, 2 sensor1) with the engine at 2,500 rpm for approx. 90 sec.

CHECK:

Read voltage of A/F sensors (bank 1, 2 sensor 1) on the screen of OBD II scan tool or TOYOTA hand-held tester when you perform all the following conditions.

HINT:

The voltage of AFR⊕ and AFL⊕ terminals of ECM is fixed at 3.3 V and the voltage of AFR⊖ and AFL⊖ terminals is fixed at 3.0 V. Therefore, it is impossible to check the A/F sensors (bank1, 2 sensor1) output voltage at the terminals (AFR⊕, AFL⊕/AFR⊖, AFL⊖) of ECM.

OK:

Condition	A/F Sensor Voltage value
Engine idling	• Not remains at 3.30 V (*0.660 V) • Not remains at 3.8 V (*0.76 V) or more • Not remains at 2.8 V (*0.56 V) or less *: When you use the OBD II scan tool (excluding TOYOTA hand-held tester)
Engine racing	
Driving at engine speed 1,500 rpm or more and vehicle speed 40 km/h (25 mph) or more, and operate throttle valve open and close.	

HINT:

- During fuel enrichment, there is a case that the output voltage of A/F sensors (bank1, 2 sensor1) is below 2.8 V (* 0.56 V), it is normal.
- During fuel cut, there is a case that the output voltage of A/F sensors (bank1, 2 sensor1) is above 3.8 V (* 0.76 V), it is normal.
- If output voltage of A/F sensors (bank1, 2 sensor1) remains at 3.30 V (* 0.660 V) even after performing all the above conditions, A/F sensors (bank1, 2 sensor1) circuit may be open.
- If output voltage of A/F sensors (bank1, 2 sensor1) remains at 3.8 V (* 0.76V) or more, or 2.8 V (*0.56 V) or less even after performing all the above conditions, A/F sensors (bank1, 2 sensor1) circuit may be short.

*: When you use the OBD II scan tool (excluding TOYOTA hand-held tester).

OK → **Go to step 9.**

NG

cardiagn.com

3	Check for open and short in harness and connector between ECM and A/F sensors (bank 1, 2 sensor 1) (See page IN-31).

NG → Repair or replace harness or connector.

OK

4	Check resistance of A/F sensor heater (See page SF-81).

NG → Replace A/F sensor.

OK

5	Check air induction system (See page SF-1).

NG → Repair or replace.

OK

6	Check fuel pressure (See page SF-6).

NG → Check and repair fuel pump, fuel pipe line and filter (See page SF-1).

OK

cardiagn.com

7	Check injector injection (See page SF-26).

NG → Replace injector.

OK →

Replace A/F sensors (bank1, 2 sensor1).

8	Perform confirmation driving pattern (See page DI-104).

Go →

9	Are there DTC P1133 and/or P1153 being output again ?

YES → Check and replace ECM (See page DI-3).

NO →

10	Did vehicle runs out of fuel in the past ?

NO → Check for intermittent problems (See page DI-3).

YES →

DTC P1133 and /or P1153 is caused by running out of fuel.

cardiagn.com

DTC	P1135	A/F Sensor Heater Circuit Malfunction (Bank 1 Sensor 1)

DTC	P1155	A/F Sensor Heater Circuit Malfunction (Bank 2 Sensor 1)

CIRCUIT DESCRIPTION

Refer to DTC P0125 on page DI-42 .

DTC No.	DTC Detecting Condition	Trouble Area
P1135 P1155	When heater operates, heater current exceeds 8 A (2 trip detection logic)	• Open or in heater circuit of A/F sensors (bank 1, 2 sensor 1) • A/F sensors (bank 1, 2 sensor 1) heater • ECM
	Heater current of 0.25 A or less when heater operates (2 trip detection logic)	

WIRING DIAGRAM

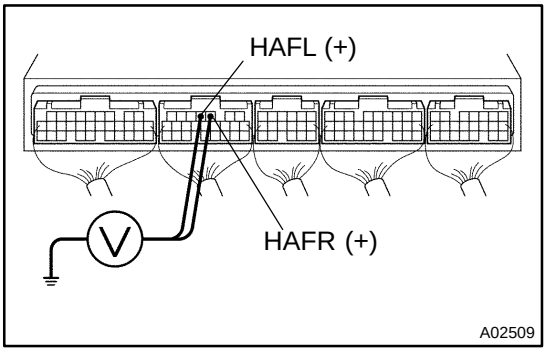
Refer to DTC P0125 on page DI-42 .

INSPECTION PROCEDURE

HINT:

Read freeze frame data using TOYOTA hand-held tester or OBD II scan tool. Because freeze frame records the engine conditions when the malfunction is detected, when troubleshooting it is useful for determining whether the vehicle was running or stopped, the engine warmed up or not, the air-fuel ratio lean or rich, etc. at the time of the malfunction.

1	**Check voltage between terminal HAFR, HAFL of ECM connector and body ground.**



PREPARATION:

(a) Remove glove compartment (See page SF-84).

(b) Turn the ignition switch ON.

CHECK:

Measure voltage between terminals HAFR, HAFL of the ECM connector and body ground.

OK:

Voltage: 9 - 14 V

OK	**Check and replace ECM (See page IN-31).**

NG

cardiagn.com

2	Check resistance of A/F sensor heaters (bank 1, 2 sensor 1) (See page SF-81).

NG → Replace A/F sensors (bank 1, 2 sensor 1).

OK

Check and repair harness or connector between EFI main relay (Marking: EFI) and A/F sensors (bank 1, 2 sensor 1) and ECM (See page IN-31).

cardiagn.com

DI8B4-01

DTC	P1300	Igniter Circuit Malfunction (No.1)

DTC	P1305	Igniter Circuit Malfunction (No.2)

DTC	P1310	Igniter Circuit Malfunction (No.3)

DTC	P1315	Igniter Circuit Malfunction (No.4)

DTC	P1320	Igniter Circuit Malfunction (No.5)

DTC	P1325	Igniter Circuit Malfunction (No.6)

CIRCUIT DESCRIPTION

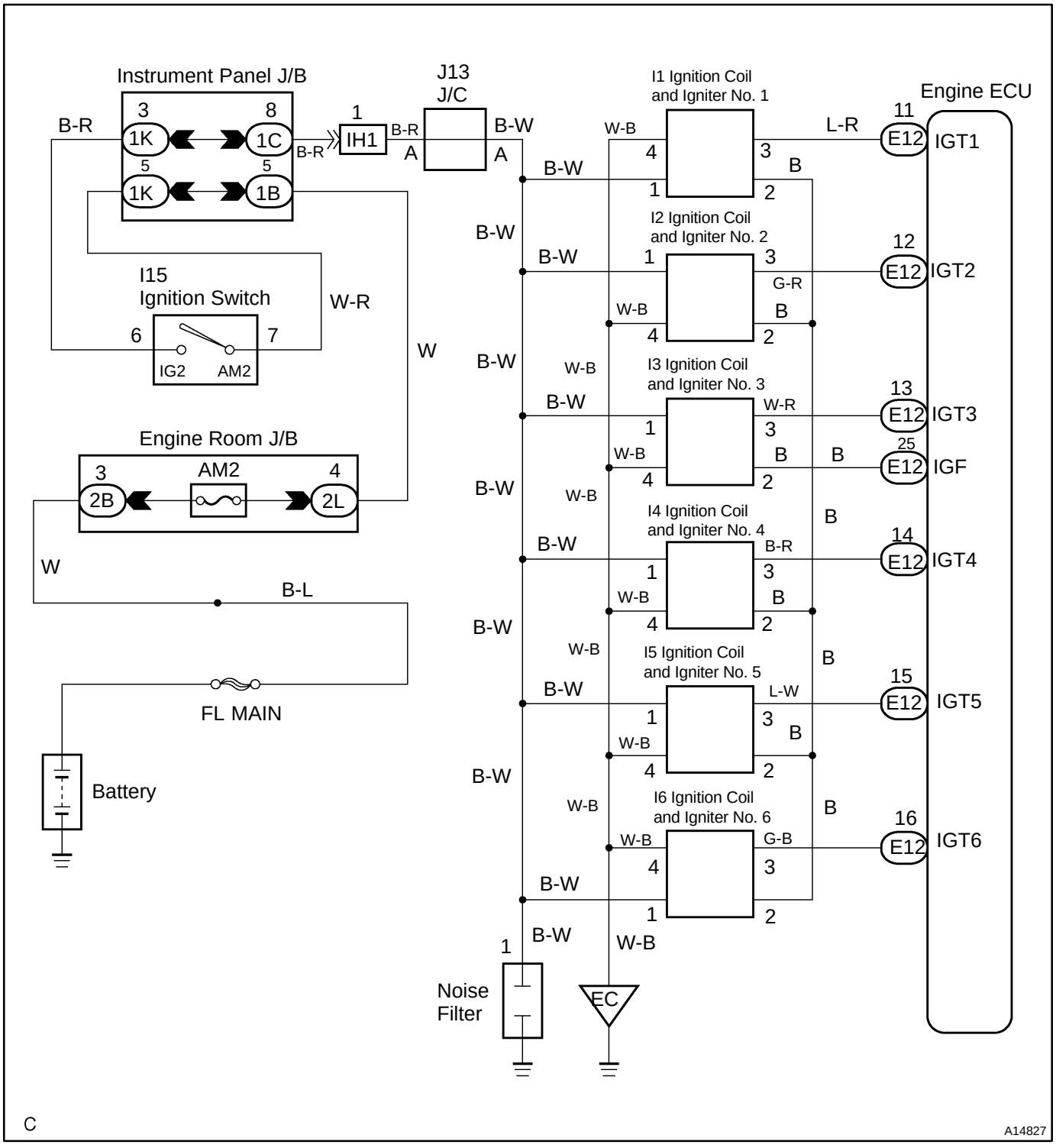
A Direct Ignition System (DIS) has been adopted. The DIS improves the ignition timing accuracy, reduces high-voltage loss, and enhances the the overall reliability of the ignition system by eliminating the distributor. The DIS is a 1-cylinder ignition system which ignites one cylinder with one ignition coil. In the 1-cylinder ignition system, the one spark plug is connected to the end of the secondary winding. High voltage generated in the secondary winding is applied directly to the spark plug. The spark of the spark plug pass from the center elecrtode to the ground electrode.

The ECM determines ignition timing and outputs the ignition signals (IGT) for each cylinder. Based on IGT signals, the power transistors in the igniter cuts off the current to the primary coil in the ignition coil is supplied to the spark plug that are connected to the end of the secondary coil. At the same time, the igniter also sends an ignition confirmation signal (IGF) as a fail-safe measure to the ECM.

DTC No.	DTC Detecting Condition	Trouble Area
P1300 P1305 P1310 P1315 P1320 P1325	Condition (a) is repeated 3 times consecutively during 6 consecutively IGT signals while engine is running (a) IGF signal is not input to ECM for 2 or more ignitions	• Ignition system • Open or short in IGF or IGT circuit from ignition coil with igniter • Ignition coil with igniter • ECM

cardiagn.com

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

HINT:

- If DTC P1300 is displayed, check No.1 ignition coil with igniter circuit.
- If DTC P1305 is displayed, check No.2 ignition coil with igniter circuit.
- If DTC P1310 is displayed, check No.3 ignition coil with igniter circuit.
- If DTC P1315 is displayed, check No.4 ignition coil with igniter circuit.
- If DTC P1320 is displayed, check No.5 ignition coil with igniter circuit.
- If DTC P1325 is displayed, check No.6 ignition coil with igniter circuit.
- If DTCs P1300, P1315 and P1325, are output simultaneously, IGF1 circuit may be open or short.
- If DTCs P1305, P1310 and P1320, are output simultaneously, IGF2 circuit may be open or short.
- Read freeze frame data using TOYOTA hand-held tester or OBD II scan tool. Because freeze frame records the engine conditions when the malfunction is detected. When troubleshooting, it is useful for determining whether the vehicle was running or stopped, the engine was warmed up or not, the air-fuel ratio was lean or rich, etc. at the time of the malfunction.

1	**Check spark plug and spark (See page DI-57).**

NG → **Go to step 4.**

OK

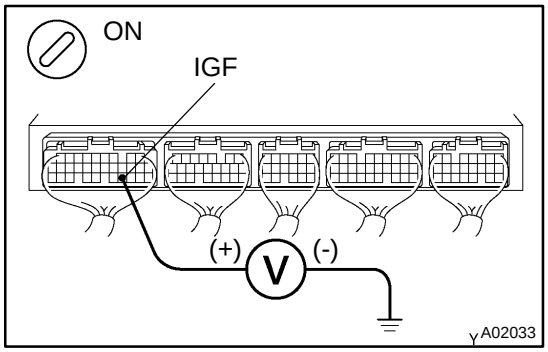
2	**Check for open and short in harness and connector in IGF and IGT signal circuits between ECM and ignition coil with igniter (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

cardiagn.com

3	**Disconnect ignition coil with igniter connector, and check voltage between terminals IGF of ECM connector and body ground.**



PREPARATION:

(a) Remove the glove compartment (See page SF-84).
(b) Disconnect the ignition coil with the igniter connector.
(c) Turn the ignition switch ON.

CHECK:

Measure the voltage between terminals IGF of the ECM connector and body ground.

OK:

Voltage: 4.5 - 5.5 V

OK	**Replace ignition coil with igniter.**

NG

Check and replace ECM (See page IN-31).

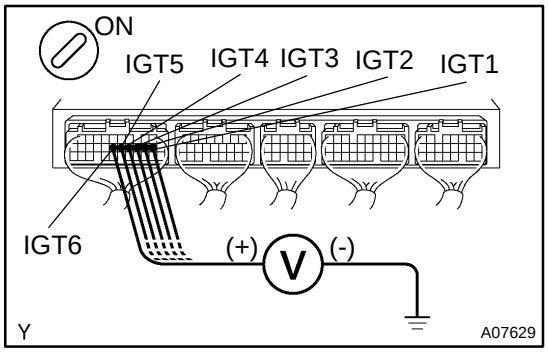
4	**Check for open and short in harness and connector in IGT signal circuit between ECM and ignition coil with igniter (See page IN-31).**

NG	**Repair or replace harness or connector.**

OK

cardiagn.com

5	Check voltage between terminals IGT1 - IGT6 of ECM connector and body ground.



PREPARATION:

(a) Remove the glove compartment (See page SF-84).

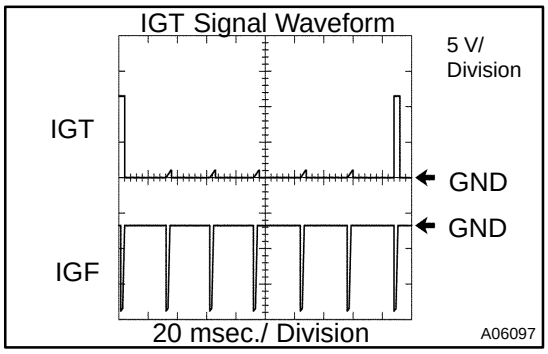
(b) Turn the ignition switch ON.

CHECK:

Measure the voltage between terminals IGT1 - IGT6 of the ECM connector and body ground when the engine is cranked.

OK:

Voltage: More than 0.1 V and less than 4.5 V



Reference: INSPECTION USING OSCILLOSCOPE

During cranking or idling, check the waveform between terminals IGT1 - IGT6 and E1 of the ECM connector.

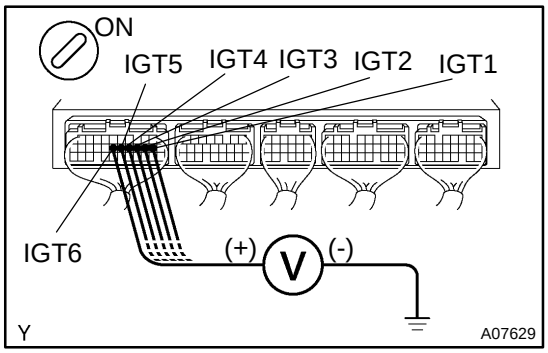
HINT:

Correct waveform appears as shown, with rectangle waves.

OK

NG → **Check and replace ECM (See page IN-31).**

6	Disconnect ignition coil with igniter connector, and check voltage between terminals IGT1 - IGT6 of ECM connector and body ground.



PREPARATION:

(a) Remove the glove compartment (See page SF-84).

(b) Disconnect the ignition coil with the igniter connector.

(c) Turn the ignition switch ON.

CHECK:

Measure the voltage between terminals IGT1 - IGT6 of the ECM connector and body ground when the engine is cranked.

OK:

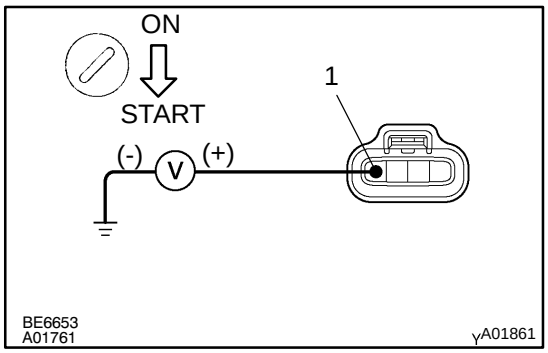
Voltage: More than 0.1 V and less than 4.5 V

NG → **Check and replace ECM (See page IN-31).**

OK

cardiagn.com

7	Check ignition coil with igniter power source circuit.



PREPARATION:
Disconnect the ignition coil with the igniter connector.
CHECK:
Measure the voltage between terminal 1 of the ignition coil with the igniter connector and body ground when the ignition switch is turned to ON and START position.
OK:
Voltage: 9 - 14 V

NG	Repair ignition coil with igniter power source circuit.

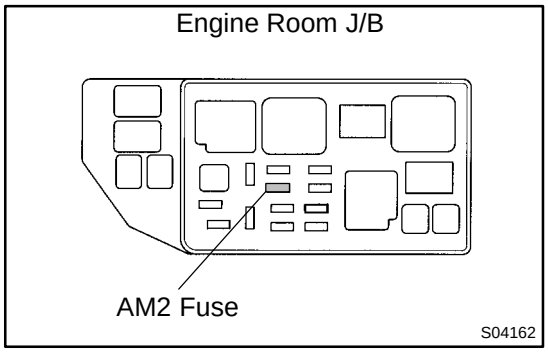
OK

8	Check for open and short in harness and connector between ignition switch and ignition coil with igniter (See page IN-31).

NG	Repair or replace harness or connector.

OK

9	Check AM2 fuse.



PREPARATION:
Remove the AM2 fuse from the engine room J/B.
CHECK:
Check the continuity of the AM2 fuse.
OK:
Continuity

NG	Check for short in all harness and components connected to AM2 fuse.

OK

Replace ignition coil with igniter.

cardiagn.com

DI4FA-02

DTC	P1335	Crankshaft Position Sensor Circuit Malfunction (during engine running)

CIRCUIT DESCRIPTION

Refer to DTC P0335 on page DI-65 .

DTC No.	DTC Detecting Condition	Trouble Area
P1335	No crankshaft position sensor signal to ECM with engine speed 1,000 rpm or more	• Open or short in crankshaft position sensor circuit • Crankshaft position sensor • Starter • ECM

WIRING DIAGRAM

Refer to DTC P0335 on page DI-65 .

INSPECTION PROCEDURE

Read freeze frame data using TOYOTA hand-held tester or OBD II scan tool. Because freeze frame records the engine conditions when the malfunction is detected, when troubleshooting it is useful for determining whether the vehicle was running or stopped, the engine warmed up or not, the air-fuel ratio lean or rich, etc. at the time of the malfunction.

Refer to DTC P0335 on page DI-65 .

cardiagn.com

DI6TA-02

DTC	P1346	VVT Sensor/Camshaft Position Sensor Circuit Range/Performance Problem (Bank 1)

DTC	P1351	VVT Sensor/Camshaft Position Sensor Circuit Range/Performance Problem (Bank 2)

CIRCUIT DESCRIPTION

Refer to DTC P1345, P1350 on page DI-130 .

DTC No.	DTC Detection Condition	Trouble Area
P1346	Deviation in crankshaft position sensor signal and VVT sensor (bank 1) signal (2 trip detection logic)	• Mechanical system malfunction (Jumping teeth of timing belt, belt stretched) • ECM
P1351	Deviation in crankshaft position sensor signal and VVT sensor (bank 2) signal (2 trip detection logic)	

WIRING DIAGRAM

Refer to DTC P335 on page DI-65 .

INSPECTION PROCEDURE

HINT:

Read freeze frame data using TOYOTA hand-held tester or OBD II scan tool. Because freeze frame records the engine conditions when the malfunction is detected. When troubleshooting, it is useful for determining whether the vehicle was running or stopped, the engine was warmed up or not, the air-fuel ratio was lean or rich, etc. at the time of the malfunction.

1	**Check valve timing (Check for loose and jumping teeth of timing belt) (See page EM-16).**

NG → **Adjust valve timing (Repair or replace timing belt).**

OK

Check and replace ECM (See page IN-31).

cardiagn.com

DI6TB-02

DTC	P1349	VVT System Malfunction (Bank 1)

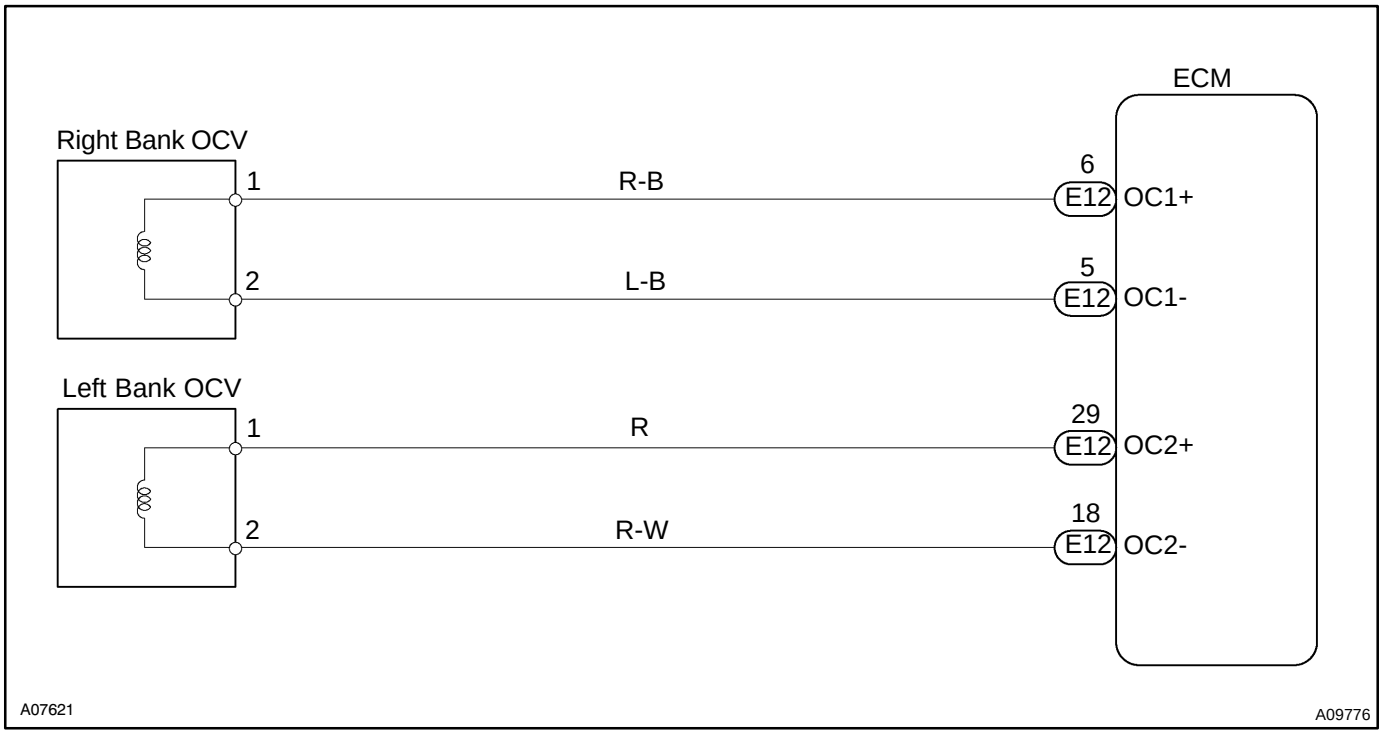
DTC	P1354	VVT System Malfunction (Bank 2)

CIRCUIT DESCRIPTION

The VVT system constantly adjusts intake valve timing based upon operating conditions. The ECM controls the Oil Control Valve (OCV) with a variable duty cycle. The Oil Control Valve then supplies oil to the advance or retard side of the VVT Controller. The oil applied to the VVT Controller will cause the intake cam to advance or retard depending on the position of the Oil Control Valve. The ECM verifies that the desired camshaft angle has been achieved by monitoring the camshaft position sensor.

DTC No.	DTC Detecting Condition	Trouble Area
P1349 P1354	Condition (a) or (b) continues for after the engine is warmed up and engine speed at 400 - 4,000 rpm: (a) Valve timing does not change from of current valve timing (b) Current valve timing is fixed	• Valve timing • OCV • VVT controller assembly • ECM

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:

- If DTC P1349 is displayed, check right bank VVT system circuit.
- If DTC P1354 is displayed, check left bank VVT system circuit.
- Read freeze frame data using TOYOTA hand-held tester or OBD II scan tool. Because freeze frame records the engine conditions when the malfunction is detected. When troubleshooting, it is useful for determining whether the vehicle was running or stopped, the engine was warmed up or not, the air-fuel ratio was lean or rich, etc. at the time of the malfunction.

cardiagn.com

TOYOTA hand-held tester:

1	**Check valve timing (See page EM-16).**

NG → **Repair valve timing.**

OK

2	**Check operation of OCV.**

PREPARATION:

(a) Start the engine and warmed it up.

(b) Connect the TOYOTA hand-held tester and select the VVT from the ACTIVE TEST menu.

CHECK:

Check the engine speed when operate the OCV by the TOYOTA hand-held tester.

OK:

OCV is OFF: Normal engine speed

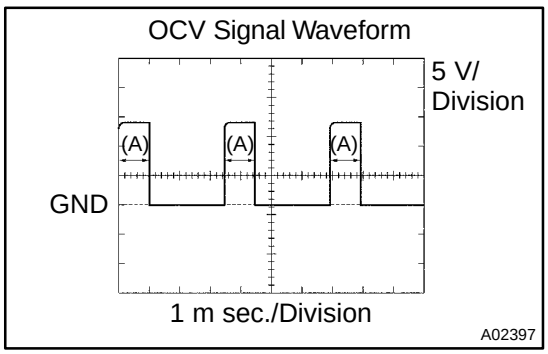
OCV is ON: Rough idle or engine stall

OK → **VVT system is OK.***

*: DTCs P1349 and P1354 are also output after the foreign object is caught in some part of the system in the engine oil and the system returns to normal in a short time. As ECM controls so that foreign objects are ejected, there is no problem about VVT. There is also no problem since the oil filter should get the foreign object in the engine oil.

NG

3	**Check voltage between terminals OCV+ and OCV- of ECM connector.**



Reference: INSPECTION USING OSCILLOSCOPE

Turn the ignition switch ON, and check the waveform between terminals OCV+ and OCV- of the ECM connector.

HINT:

- The correct waveform is as shown.
- The waveform frequency (A) is lengthened as the engine speed becomes higher.

NG → **Check and replace ECM (See page IN-31).**

cardiagn.com

OK

4	**Check VVT controller assembly.**

PREPARATION:

(a) Remove the timing belt (See page EM-16).
(b) Remove the cylinder head cover.
(c) Remove the OCV (See page EM-33).
(d) Drain oil into the VVT controller assembly (See page EM-33).

CHECK:

Check whether the oil into VVT controller assembly is drained or not.

OK:

The oil into VVT controller assembly is drained.

NG → **Replace VVT controller assembly, and then go to step 5.**

OK

5	**Check OCV (See page SF-51).**

NG → **Replace OCV, and then go to step 6.**

OK

6	**Check blockage of OCV, oil check valve and oil pipe No.1.**

NG → **Repair or replace.**

OK

cardiagn.com

7	**Check whether or not DTC P1349/P1354 is stored.**

PREPARATION:

(a) Clear the DTC (See page DI-3).

(b) Perform simulation test.

CHECK:

Check whether or not DTC P1349/P1354 is stored (See page DI-3).

OK:

DTC P1349/P1354 is not stored.

OK → **VVT system is OK.***

*: DTCs P1349 and P1354 are also output after the foreign object is caught in some part of the system in the engine oil and the system returns to normal in a short time. As ECM controls so that foreign objects are ejected, there is no problem about VVT. There is also no problem since the oil filter should get the foreign object in the engine oil.

NG

Replace ECM

OBD II scan tool (excluding TOYOTA hand-held tester):

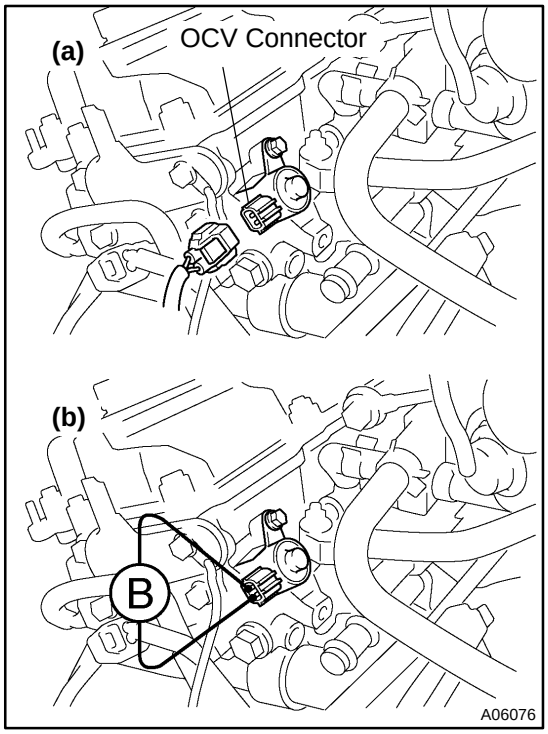
1	**Check valve timing (See page EM-16).**

NG → **Repair valve timing.**

OK

cardiagn.com

2	Check operation of OCV.



PREPARATION:

Start the engine.

CHECK:

(a) Check the engine speed when disconnecting the OCV connector.

(b) Check the engine speed when applying battery positive voltage between the terminals of the OCV.

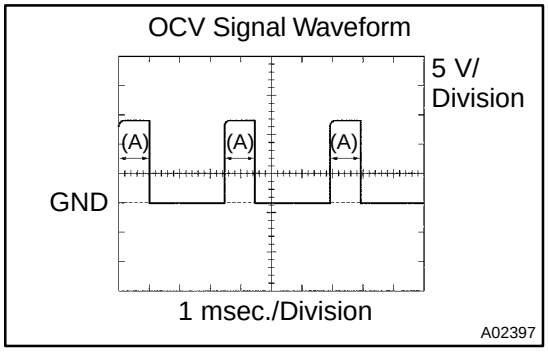
RESULT:

Result	Check (a)	Check (b)
1	Normal engine speed	Rough idle or engine stall
2	Except 1	

2	Go to step 4.

1

3	Check voltage between terminals OCV+ and OCV- of ECM connector.



Reference: INSPECTION USING OSCILLOSCOPE

Turn the ignition switch ON, check the waveform between terminals OCV+ and OCV- of the ECM connector.

HINT:

- The correct waveform is as shown.
- The waveform frequency (A) is lengthened as the engine speed becomes higher.

OK	VVT system is OK.*

*: DTCs P1349 and P1354 are also output after the foreign object is caught in some part of the system in the engine oil and the system returns to normal in a short time. As ECM controls so that foreign objects are ejected, there is no problem about VVT. There is also no problem since the oil filter should get the foreign object in the engine oil.

NG

cardiagn.com

Check and replace ECM (See page IN-31).

4	**Check VVT controller assembly.**

PREPARATION:

(a) Remove the timing belt (See page EM-16).
(b) Remove the cylinder head cover.
(c) Remove the OCV (See page EM-33).
(d) Drain oil into the VVT controller assembly (See page EM-33).

CHECK:

Check whether the oil into VVT controller assembly is drained or not.

OK:

The oil into VVT controller assembly is drained.

NG → **Replace VVT controller assembly, and then go to step 5.**

OK

5	**Check OCV (See page SF-51).**

NG → **Replace OCV, and then go to step 6.**

OK

6	**Check blockage of OCV, oil check valve and oil pipe No.1.**

NG → **Repair or replace.**

OK

cardiagn.com

7	**Check whether or not DTC P1349/P1354 is stored.**

PREPARATION:

(a) Clear the DTC (See page DI-3).

(b) Perform simulation test.

CHECK:

Check whether or not DTC P1349/P1354 is stored (See page DI-3).

OK:

DTC P1349/P1354 is not stored.

OK → **VVT system is OK.***

*: DTCs P1349 and P1354 are also output after the foreign object is caught in some part of the system in the engine oil and the system returns to normal in a short time. As ECM controls so that foreign objects are ejected, there is no problem about VVT. There is also no problem since the oil filter should get the foreign object in the engine oil.

NG

Replace ECM.

cardiagn.com

DI6T9-02

DTC	P1350	VVT Sensor/Camshaft Position Sensor Circuit Malfunction (Bank 2)

CIRCUIT DESCRIPTION

VVT sensor (VV signal) consists of a magnet, iron core and pickup coil.
The VV signal plate has 3 teeth on its outer circumference and is installed the camshaft timing gear.
When the camshafts rotate, the protrusion on the signal plate and the air gap on the pickup coil change, causing fluctuations in the magnetic field and generating an electromotive force in the pickup coil.
The actual camshaft angle is detected by the VVT sensor and it provides feedback to the ECM to control the intake valve timing in response to during condition.

DTC No.	DTC Detecting Condition	Trouble Area
P1345 P1350	No VVT sensor (Camshaft position sensor) signal to ECM during cranking at 4 sec. or more	• Open or short in VVT sensor (camshaft position sensor) circuit • VVT sensor (camshaft position sensor) • Camshaft timing gear • ECM
	No VVT sensor (Camshaft position sensor) signal to ECM with 5 sec. or more engine speed 600 rpm or more	
	While crankshaft rotates twice, VVT sensor (Camshaft position sensor) signal will be input to ECM 5 times.	

WIRING DIAGRAM

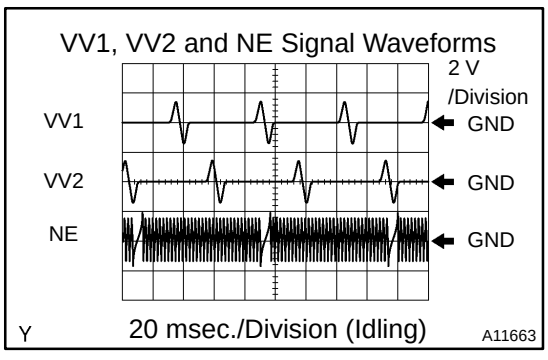
Refer to DTC P0335 on page DI-65 .

INSPECTION PROCEDURE

HINT:

- If DTC P1345 is displayed, check left bank VVT sensor (camshaft position sensor).
- If DTC P1350 is displayed, check right bank VVT sensor (camshaft position sensor).
- Read freeze frame data using TOYOTA hand-held tester or OBD II scan tool. Because freeze frame records the engine conditions when the malfunction is detected. When troubleshooting, it is useful for determining whether the vehicle was running or stopped, the engine was warmed up or not, the air-fuel ratio was lean or rich, etc. at the time of the malfunction.

1	**Check resistance of VVT sensor (See page IG-7).**



Reference: INSPECTION USING OSCILLOSCOPE
During idling, check the waveforms between terminals VV1 and NE+, and VV2 and NE- of the ECM connector.
HINT:

- The correct waveforms are as shown.
- The waveform frequency is shortened as the engine speed becomes higher.

NG → **Replace VVT sensor.**

OK

cardiagn.com

2	Check for open and short in harness and connector between ECM and VVT sensor (See page IN-31).

NG → Repair or replace harness or connector.

OK

3	Inspect sensor installation and signal plate teeth of camshaft timing gear.

NG → Tighten sensor. Replace camshaft timing gear.

OK

Check and replace ECM (See page IN-31).

cardiagn.com

DI4FB-02

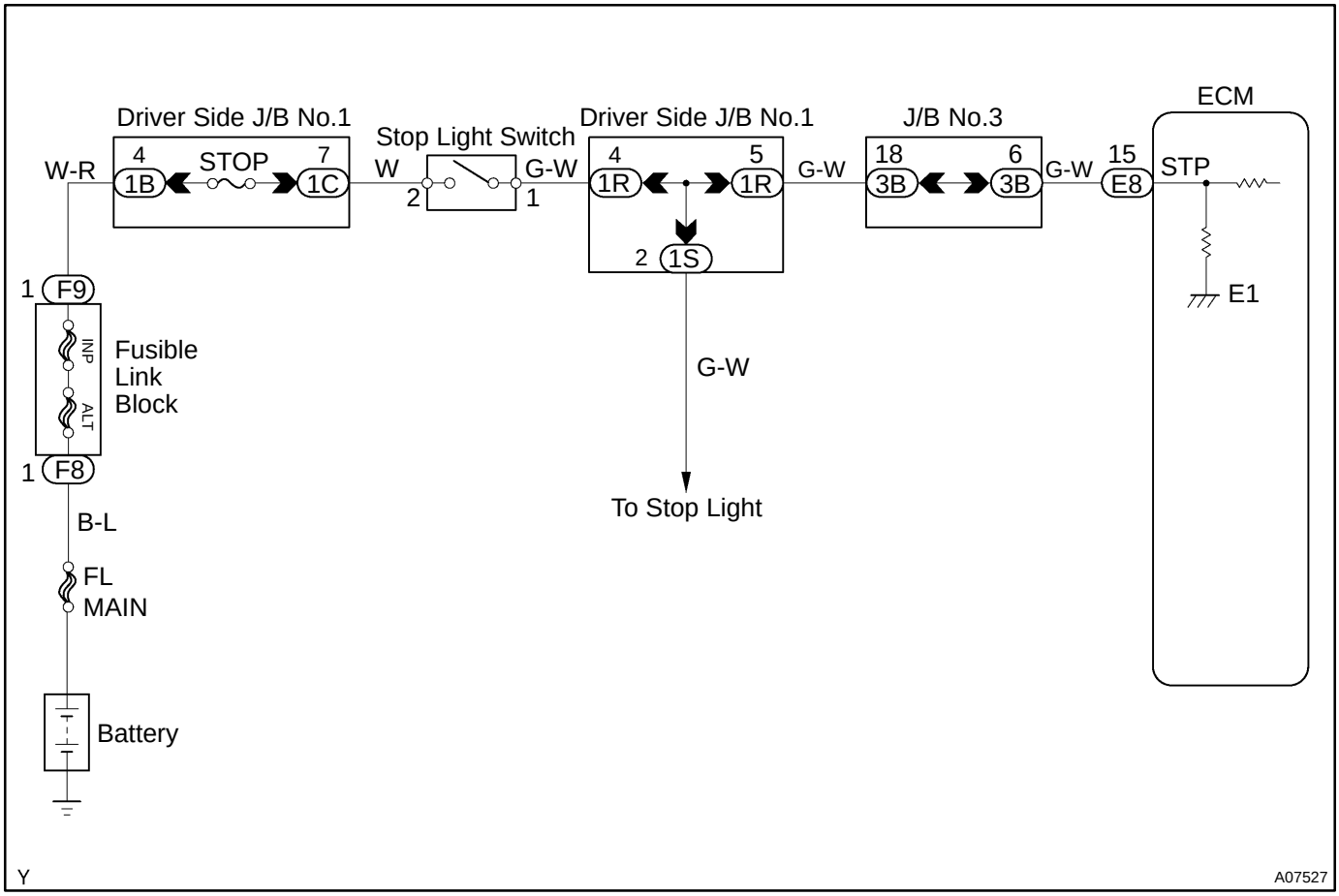
DTC	P1520	Stop Light Switch Signal Malfunction

CIRCUIT DESCRIPTION

This signal is used to detect when the brakes have been applied. The STP signal voltage is the same as the voltage supplied to the stop lights.
The STP signal is used mainly to control the fuel cut-off engine speed (The fuel cut-off engine speed is reduced slightly when the vehicle is braking.).

DTC No.	DTC Detecting Condition	Trouble Area
P1520	Stop light switch does not turn off when repeating the driving at 30 km or more 10 times or more after depressing brake (2 trip detection logic)	• Short in stop light switch signal circuit • Stop light switch • ECM

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

HINT:

Read freeze frame data using TOYOTA hand-held tester or OBD II scan tool. Because freeze frame records the engine conditions when the malfunction is detected, when troubleshooting it is useful for determining whether the vehicle was running or stopped, the engine warmed up or not, the air-fuel ratio lean or rich, etc. at the time of the malfunction.

1	**Check operation of stop light.**

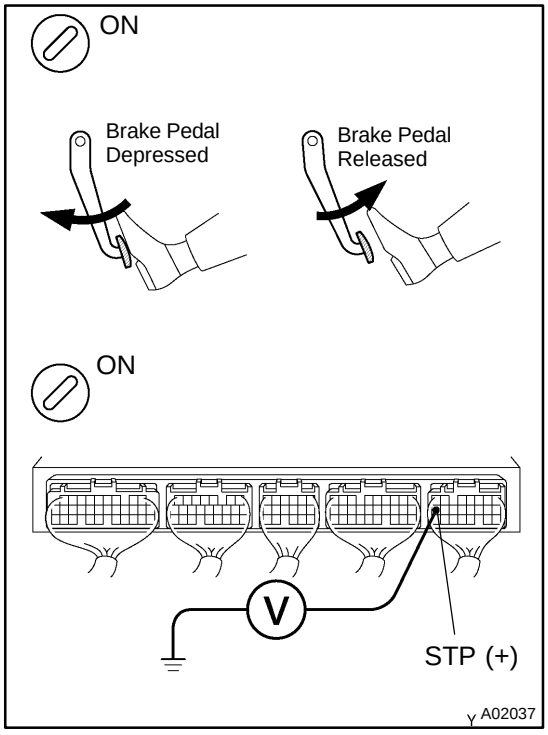
CHECK:

Check if the stop lights go on and off normally when the brake pedal is operated and released.

NG → **Check and repair stop light circuit.**

OK

2	**Check STP signal.**



When using TOYOTA hand-held tester:

PREPARATION:

(a) Connect the TOYOTA hand-held tester to the DLC3.

(b) Turn the ignition switch ON and push the TOYOTA hand-held tester main switch ON.

CHECK:

Read the STP signal on the TOYOTA hand-held tester.

OK:

Brake pedal is depressed: STP ..... ON

Brake pedal is released: STP ..... OFF

When not using TOYOTA hand-held tester:

PREPARATION:

Turn the ignition switch ON.

CHECK:

Check voltage between terminal STP of the ECM connector and body ground.

OK:

Brake pedal	Voltage
Depressed	7.5 ~ 14 V
Released	Below 1.5 V

OK → **Check for intermittent problems (See page DI-3).**

NG

cardiagn.com

3	**Check harness and connector between ECM and stop light switch (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

Check and replace ECM (See page IN-31).

cardiagn.com

DI0CW-02

DTC	P1520	Stop Light Switch Signal Malfunction

CIRCUIT DESCRIPTION

The purpose of this circuit is to prevent the engine from stalling, while driving in lock-up condition, when brakes are suddenly applied.
When the brake pedal is operated, this switch sends a signal to ECM. Then the ECM cancels operation of the lock-up clutch while braking is in progress.

DTC No.	DTC Detecting Condition	Trouble Area
P1520	No stop light switch signal to ECM during driving. (2-trip detection logic)	• Open or short in stop light switch circuit • Stop light switch • ECM

WIRING DIAGRAM

See page DI-132 .

INSPECTION PROCEDURE

See page DI-132 .

cardiagn.com

DI4FC-02

DTC	P1600	ECM BATT Malfunction

CIRCUIT DESCRIPTION

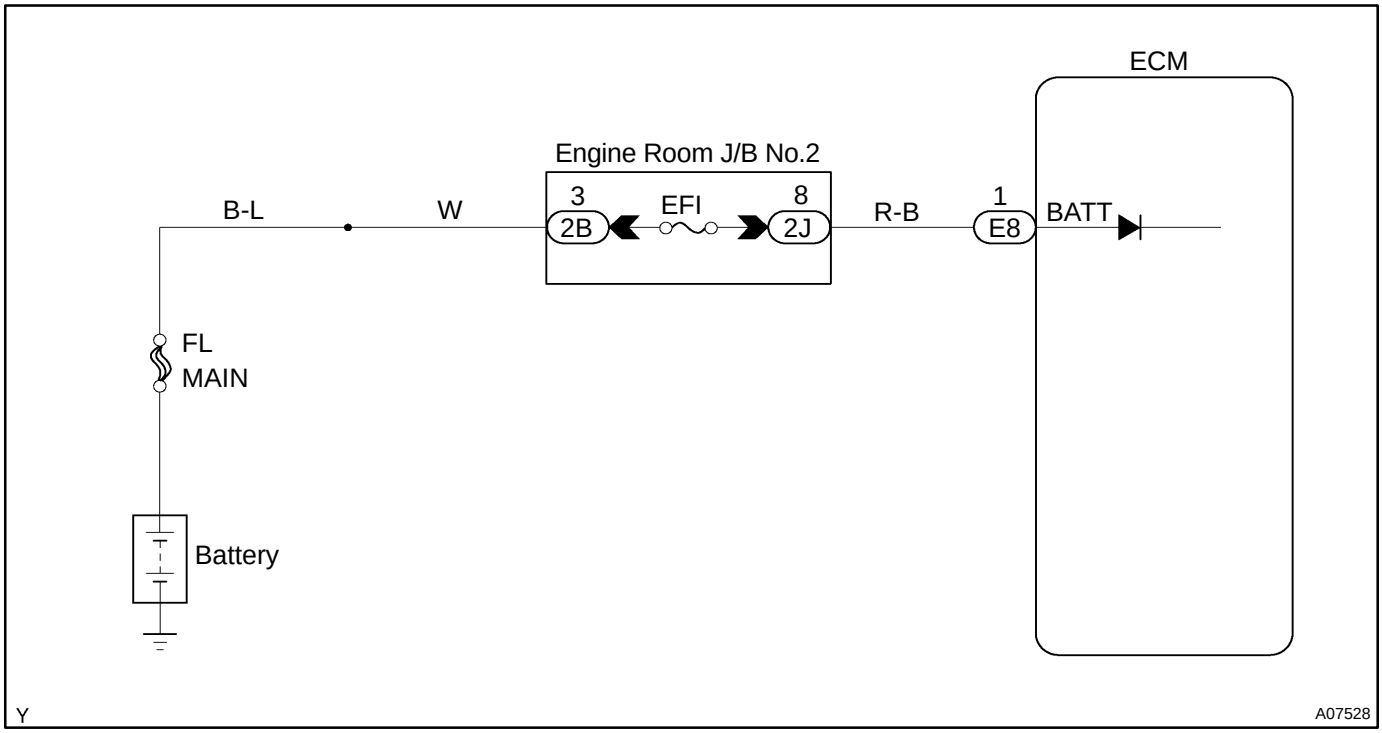
Battery positive voltage is supplied to terminal BATT of the ECM even when the ignition switch is OFF for use by the DTC memory and air-fuel ratio adaptive control value memory, etc.

DTC No.	DTC Detecting Condition	Trouble Area
P1600	Open in back up power source circuit	• Open in back up power source circuit • ECM

HINT:

If DTC P1600 appear, the ECM does not store another DTC.

WIRING DIAGRAM



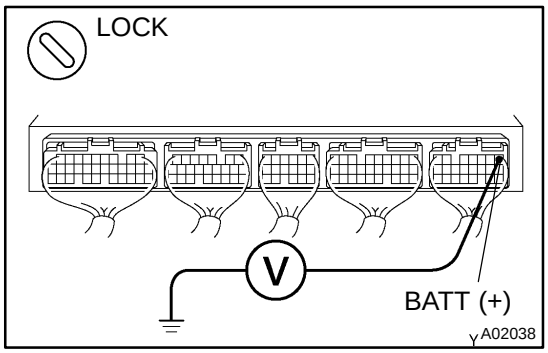
INSPECTION PROCEDURE

HINT:

Read freeze frame data using TOYOTA hand-held tester or OBD II scan tool. Because free frame records the engine conditions when the malfunction is detected, when troubleshooting it is useful for determining whether the vehicle was running or stopped, the engine warmed up or not, the air-fuel ratio lean or rich, etc. at the time of the malfunction.

cardiagn.com

1	Check voltage between terminal BATT of ECM connector and body ground.

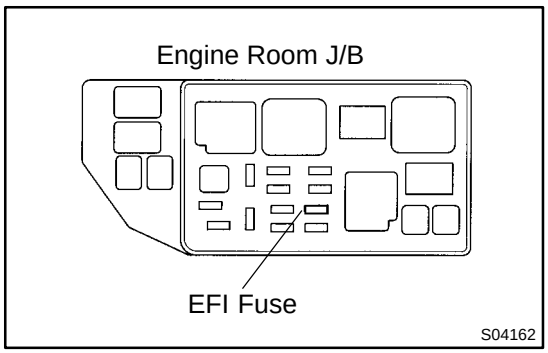


PREPARATION:
Remove the glove compartment (See page SF-83).
CHECK:
Measure voltage between terminal BATT of the ECM connector and body ground.
OK:
Voltage: 9 - 14 V

OK	Check and replace ECM (See page IN-31).

NG

2	Check EFI fuse.



PREPARATION:
Remove the EFI fuse from the engine room J/B.
CHECK:
Check continuity of EFI fuse.
OK:
Continuity

NG	Check for short in all harness and components connected to EFI fuse.

OK

Check and repair harness or connector between battery and EFI fuse, and EFI fuse and ECM.

cardiagn.com

DI6TC-03

DTC	P1656	OCV Circuit Malfunction (bank 1)

DTC	P1663	OCV Circuit Malfunction (bank 2)

CIRCUIT DESCRIPTION

Refer to DTC P1349, P1354 on page DI-123 .

DTC No.	DTC Detecting Condition	Trouble Area
P1656 P1663	Open or short in oil control valve circuit	• Open or short in OCV circuit • OCV • ECM

WIRING DIAGRAM

Refer to DTC P1349, P1354 on page DI-123 .

INSPECTION PROCEDURE

HINT:

- If DTC P1656 displayed, check right bank OCV circuit.
- If DTC P1663 displayed, check left bank OCV circuit.
- Read freeze frame data using TOYOTA hand-held tester or OBD II scan tool. Because freeze frame records the engine conditions when the malfunction is detected. When troubleshooting, it is useful for determining whether the vehicle was running or stopped, the engine was warmed up or not, the air-fuel ratio was lean or rich, etc. at the time of the malfunction.

TOYOTA hand-held tester:

1	**Check OCV circuit.**

PREPARATION:

(a) Start the engine and warm it up.

(b) Connect the TOYOTA hand-held tester and select the VVT from the ACTIVE TEST menu.

CHECK:

Check the engine speed when operate the OCV by the TOYOTA hand-held tester.

OK:

VVT system is OFF (OCV is OFF): Normal engine speed

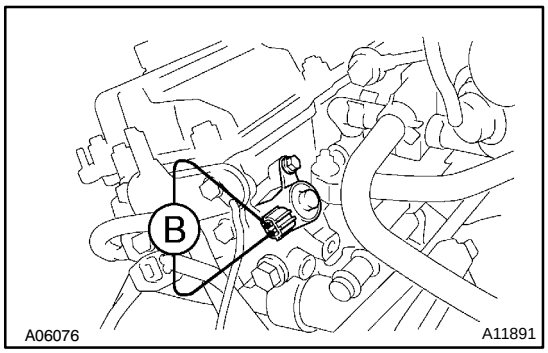
VVT system is ON (OCV is ON): Rough idle or engine stalled

OK → **Check for intermittent problems (See page DI-3).**

NG

cardiagn.com

2	**Check operation of OCV.**



PREPARATION:

(a) Start the engine and warmed it up.
(b) Disconnect the OCV connector.
(c) Apply battery positive voltage between terminals of the OCV.

CHECK:

Check the engine speed.

OK:

Rough idle or engine stalled.

NG → **Replace OCV.**

OK

3	**Check voltage between terminals OCV+ and OCV- of ECM connector (See page DI-123).**

NG → **Check and replace ECM (See page IN-31).**

OK

4	**Check for open and short in harness and connector between OCV and ECM (See page IN-31).**

NG → **Repair or replace.**

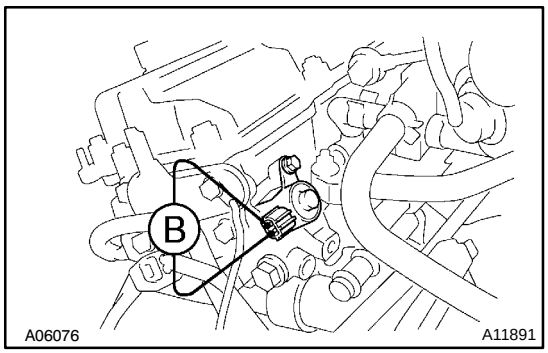
OK

Check for intermittent problems (See page DI-3).

cardiagn.com

OBD II scan tool (excluding TOYOTA hand-held tester):

1	**Check operation of OCV.**



PREPARATION:

(a) Start the engine and warmed it up.
(b) Disconnect the OCV connector.
(c) Apply battery positive voltage between terminals of the OCV.

CHECK:

Check the engine speed.

OK:

Rough idle or engine stalled

NG → **Replace OCV.**

OK ↓

2	**Check voltage between terminals OCV+ and OCV- of ECM connector (See page DI-123).**

NG → **Check and replace ECM (See page IN-31).**

OK ↓

3	**Check for open and short in harness and connector between OCV and ECM (See page IN-31).**

NG → **Repair or replace.**

OK ↓

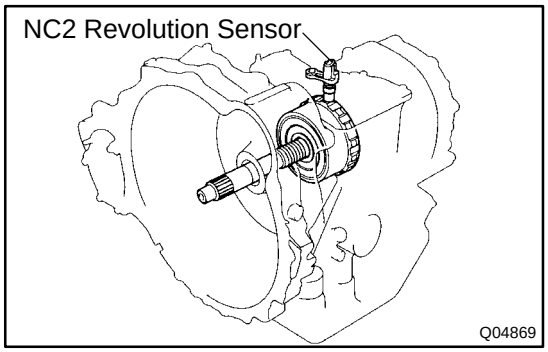
Check for intermittent problems (See page DI-3).

cardiagn.com

DI02P-08

DTC	P1705	NC2 Revolution Sensor Circuit Malfunction (Direct Clutch Speed Sensor)

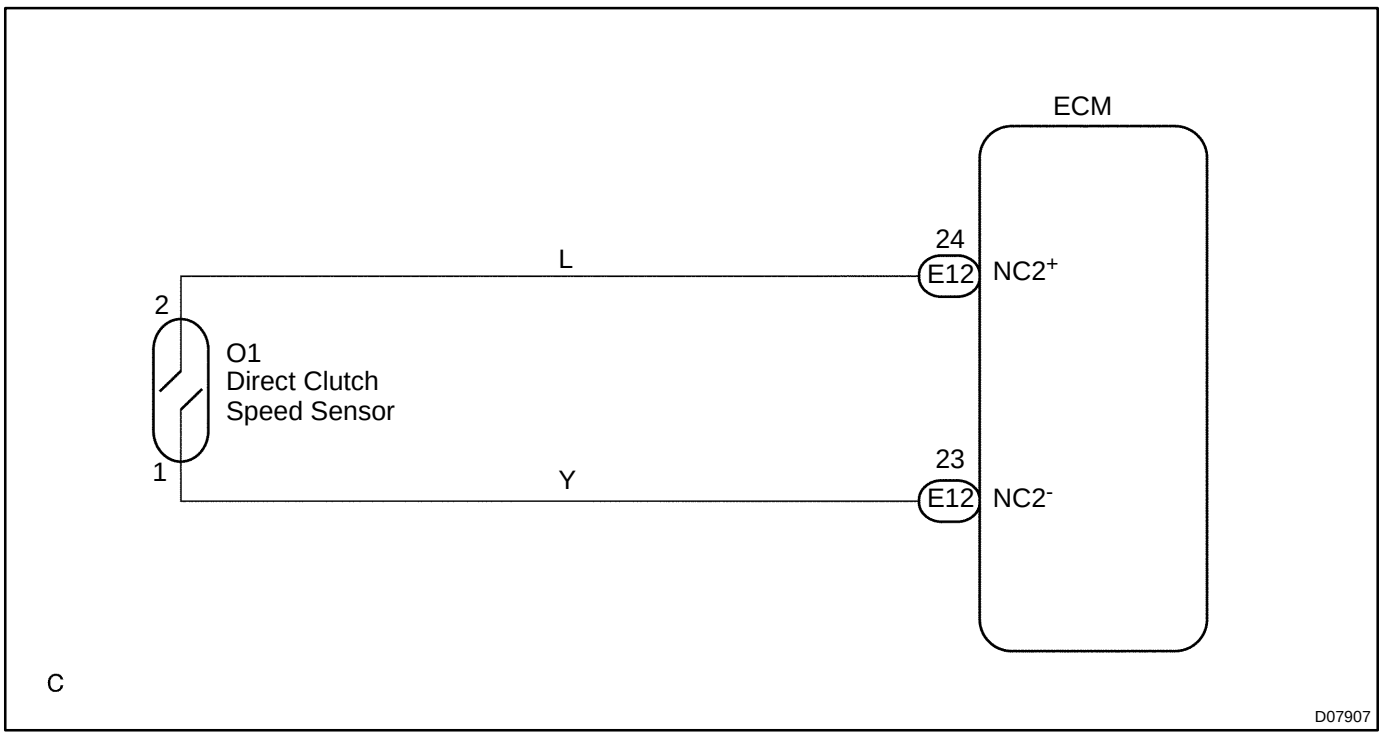
CIRCUIT DESCRIPTION



This sensor detects the rotation speed of the direct clutch drum. By comparing the direct clutch speed signal with the vehicle speed sensor signal, the ECM detects the shift timing of the gears and appropriately controls the engine torque and hydraulic pressure in response to various conditions, thus performing smooth gear shifting.

DTC No.	DTC Detecting Condition	Trouble Area
P1705	The ECM detects conditions (a), (b), (c), (d), (e) and (f) continuity for 4 secs. or more. (2-trip detection logic) (a) Gear change not being performed (b) Gear position: 1st, 2nd 3rd or O/D (c) T/M input shaft rpm: 300 rpm or less (d) T/M output shaft rpm: 1,000 rpm or more (e) Park/neutral position switch: OFF (f) Shift solenoid valves No. 1, No. 2, SL and vehicle speed sensor are in normal operation.	• Open or short in direct clutch speed sensor circuit • Direct clutch speed sensor • ECM

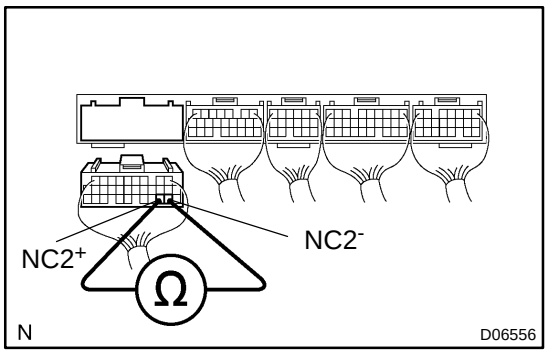
WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check resistance between terminals NC2+ and NC2- of ECM.**



PREPARATION:
(a) Remove the glove compartment.
(b) Disconnect the connector from ECM.

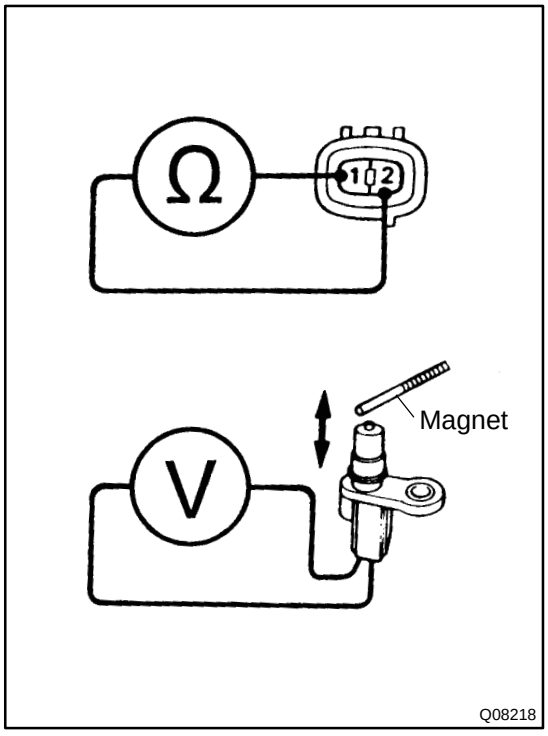
CHECK:
Check resistance between terminals NC2+ and NC2- of ECM.

OK:
Resistance: 560 - 680 Ω at 20 ˚C (68 ˚F)

OK	**Check and replace the ECM (See page IN-31).**

NG

2	**Check direct clutch speed sensor.**



PREPARATION:
Remove the Direct clutch speed sensor from transaxle.

CHECK:
(a) Measure resistance between terminals 1 and 2 of speed sensor.
(b) Check voltage between terminals 1 and 2 of the speed sensor when a magnet is put close to the front end of the speed sensor then taken away quickly.

OK:
(a) Resistance: 560 - 680 Ω at 20 ˚C (68 ˚F)
(b) Voltage is generated intermittently.

HINT:
The voltage generated is extremely low.

NG	**Replace the direct clutch speed sensor.**

OK

Check and repair the harness and connector between ECM and direct clutch speed sensor (See page IN-31).

cardiagn.com

DI4F3-03

DTC	P0171	System too Lean (Fuel Trim) (Bank 1)

DTC	P0172	System too Rich (Fuel Trim) (Bank 1)

DTC	P0174	System too Lean (Fuel Trim) (Bank 2)

DTC	P0175	System too Rich (Fuel Trim) (Bank 2)

CIRCUIT DESCRIPTION

Fuel trim refers to the feedback compensation value compared against the basic injection time. Fuel trim includes short-term fuel trim and long-term fuel trim.

Short-term fuel trim is the short-term fuel compensation used to maintain the air-fuel ratio at its ideal theoretical value.

The signal from the A/F sensor is approximately proportional to the existing air-fuel ratio, and ECM comparing it with the ideal theoretical value, the ECM reduces fuel volume immediately if the air-fuel ratio is rich and increases fuel volume if it is lean.

Long-term fuel trim compensates the deviation from the central value of the short-term fuel trim stored up by each engine tolerance, and the deviation from the central value due to the passage of time and changes of using environment.

If both the short-term fuel trim and long-term fuel trim exceed a certain value, it is detected as a malfunction and the MIL lights up.

DTC No.	DTC Detecting Condition	Trouble Area
P0171 P0174	When air fuel ratio feedback is stable after engine warming up, fuel trim is considerably in error on RICH side (2 trip detection logic)	• Gas leakage on exhaust system • Air intake (hose loose) • Fuel line pressure • Injector blockage • Mass air flow meter • Engine coolant temp. sensor • A/F sensors (bank 1, 2 sensor 1)
P0172 P0175	When air fuel ratio feedback is stable after engine warming up, fuel trim is considerably in error on LEAN side (2 trip detection logic)	• Gas leakage on exhaust system • Fuel line pressure • Injector leak, blockage • Mass air flow meter • Engine coolant temp. sensor • A/F sensors (bank 1, 2 sensor 1)

HINT:

- When the DTC P0171 or P0174 is recorded, the actual air-fuel ratio is on the lean side. When DTC P0172 or P0175 is recorded, the actual air-fuel ratio is on the rich side.
- If the vehicle runs out of fuel, the air-fuel ratio is lean and DTC P0171 or P0174 is recorded. The MIL then comes on.
- If the total of the short-term fuel trim value and long-term fuel trim value is within ± 35 % (80˚C (176˚F) or more), the system is functioning normally.

cardiagn.com

- The A/F sensors (bank 1, 2 sensor 1) output voltage and the short-term fuel trim value can be read using the OBD II scan tool or TOYOTA hand-held tester.
- The ECM controls the voltage of AF⊕ and AF⊖ terminals of ECM to the fixed voltage. Therefore, it is impossible to confirm the A/F sensor output voltage without OBD II scan tool or TOYOTA hand-held tester.
- OBD II scan tool (excluding TOYOTA hand-held tester) displays the one fifth of the A/F sensors (bank 1, 2 sensor 1) output voltage which is displayed on the TOYOTA hand-held tester.

INSPECTION PROCEDURE

HINT:

Read freeze frame data using TOYOTA hand-held tester or OBD II scan tool. Because freeze frame records the engine conditions when the malfunction is detected, when troubleshooting it is useful for determining whether the vehicle was running or stopped, the engine warmed up or not, the air-fuel ratio lean or rich, etc. at the time of the malfunction.

1	**Check air induction system (See page SF-1).**

NG → **Repair or replace.**

OK

2	**Check injector injection (See page SF-26).**

NG → **Replace injector.**

OK

3	**Check mass air flow meter and engine coolant temp. sensor (See pages SF-35 and SF-76).**

NG → **Repair or replace.**

OK

cardiagn.com

4	Check for spark and ignition (See page IG-1).

NG → Repair or replace.

OK

5	Check fuel pressure (See page SF-6).

NG → Check and repair fuel pump, pressure regulator, fuel pipe line and filter (See page SF-1).

OK

6	Check gas leakage on exhaust system.

NG → Repair or replace.

OK

cardiagn.com

7	Check the output voltage A/F sensors (bank1, 2 sensor1).

PREPARATION:

(a) Connect the OBDII scan tool or TOYOTA hand-held tester to the DLC3.

(b) Warm up the A/F sensors (bank1, 2 sensor1) with the engine at 2,500 rpm for approx. 90 sec.

CHECK:

Read voltage value of A/F sensors (bank1, 2 sensor1) on the screen of OBDII scan tool or TOYOTA hand-held tester when you perform all the following conditions.

HINT:

The voltage of AFR⊕, AFL⊕ terminal of ECM is 3.3 fixed AFR⊖, AFL⊖ terminal is 3.0 V fixed. Therefore, it is impossible to check the A/F sensors (bank1, 2 sensor1) output voltage at the terminals (AFR⊕, AFL⊕/ AFR⊖, AFL⊖) of ECM.

OK:

Condition	A/F Sensor Voltage value
Engine idling	• Not remains at 3.30 V (*0.660 V) • Not remains at 3.8 V (*0.76 V) or more • Not remains at 2.8 V (*0.56 V) or less *: When you use the OBDII scan tool (excluding TOYOTA hand-held tester)
Engine racing	
Driving at engine speed 1,500 rpm or more and vehicle speed 40 km/h (25mph) or more, and operate throttle valve open and close	

HINT:

- During fuel enrichment, there is a case that the output voltage of A/F sensors (bank1, 2 sensor1) is below 2.8 V (*0.56 V), it is normal.
- During fuel cut, there is case that the output voltage of A/F sensors (bank1, 2 sensor1) is above 3.8 V (*0.76 V), it is normal.
- If output voltage of A/F sensors (bank1, 2 sensor1) remains at 3.30 V (*0.660 V) even after performing all the above conditions, A/F sensors (bank1, 2 sensor1) circuit may be open.
- If output voltage of A/F sensors (bank1, 2 sensor1) remains at 3.8 V (*0.76 V) or more, or 2.8 V (*0.56 V) or less even after performing all the above conditions, A/F sensors (bank1, 2 sensor1) circuit may be short.

*: When you use the OBDII scan tool (excluding TOYOTA hand-held tester).

OK → **Go to step 9.**

NG

8	Check for open and short in harness and connector between ECM and A/F sensors (bank1, 2 sensor1) (See page IN-31).

NG → **Repair or replace harness or connector.**

OK

cardiagn.com

Replace A/F sensors (bank1, 2 sensor1).

9	perform confirmation driving pattern (See page DI-104).

Go

10	Is there DTC P0171, P0172, P0174 or P0175 being output again ?

YES → Check and replace ECM (See page IN-31).

NO

11	Did vehicle runs out of fuel in the past ?

NO → Check for intermittent problems (See page DI-3).

YES

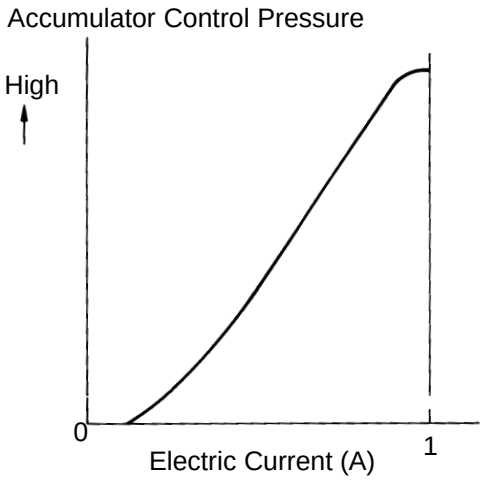
DTC P0171, P0172, P0174 or P0175 is caused by running out of fuel.

cardiagn.com

DI02Q-08

DTC	P1765	Linear Solenoid for Accumulator Pressure Control Circuit Malfunction (Shift Solenoid Valve SLN)

CIRCUIT DESCRIPTION

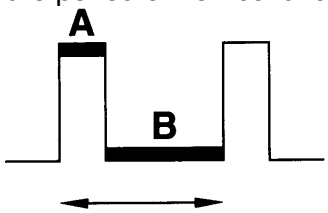


AT5608

The shift solenoid valve SLN controls the hydraulic pressure acting on the accumulator control valve when gears are shifted and performs smooth gear shifting.
The ECM determines optimum operating pressure according to the signals from the throttle position sensor, vehicle speed sensor and direct clutch speed sensor and controls the volume of current flow to the solenoid valve.
The amount of current to the solenoid is controlled by the (*) duty ratio of ECM output signals, causing a momentary change to the hydraulic pressure acting on the clutches during gear shifting.
When the duty ratio is high, the hydraulic pressure acting on the clutches is low.

(*) Duty Ratio
The duty ratio is the ratio of the period of continuity in one cycle.
For example, if A is the period of continuity in one cycle, and B is the period of non-continuity, then

$$\text{Duty Ratio} = \frac{A}{A+B} \times 100\ (\%)$$



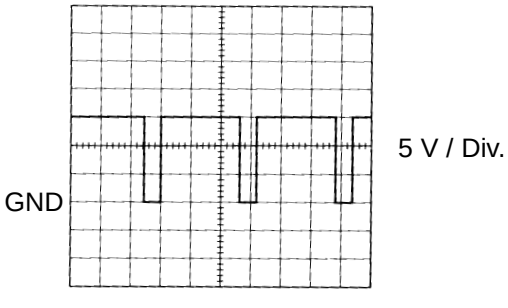
D00061 BE4056

D00060

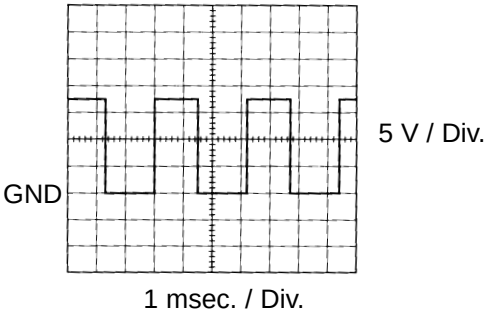
DTC No.	DTC Detecting Condition	Trouble Area
P1765	After the engine is warmed up, the current flows to the shift solenoid valve SLN for 1 sec or more under condition (a) or (b): (a) Engine speed: 500 rpm or more (b) Park/neutral position switch: ON (P or N position)	• Open or short in shift solenoid valve SLN circuit • Shift solenoid valve SLN • ECM

Reference

Waveform between terminals SLN^+ and SLN^- when engine is idling.



Waveform between terminals SLN^+ and SLN^- during shift change.

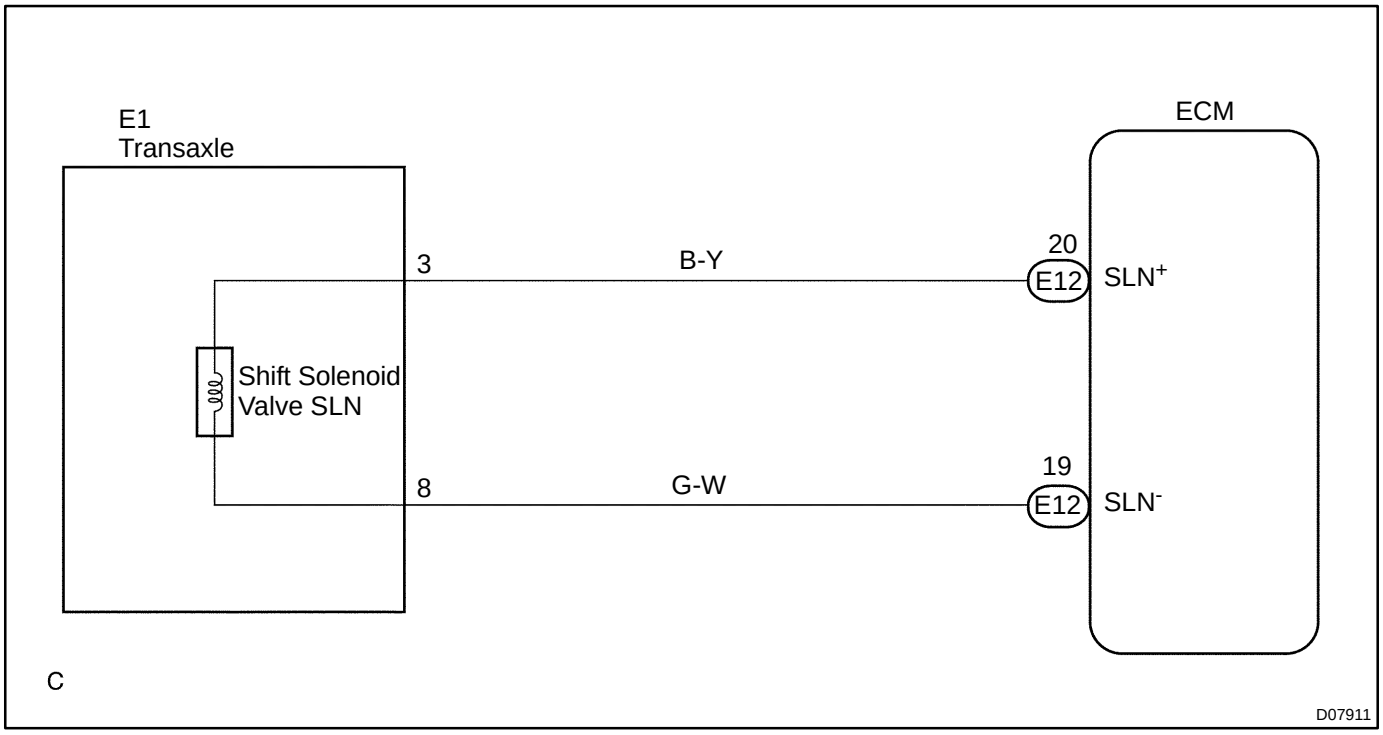


AT8764 AT8766

D00062

cardiagn.com

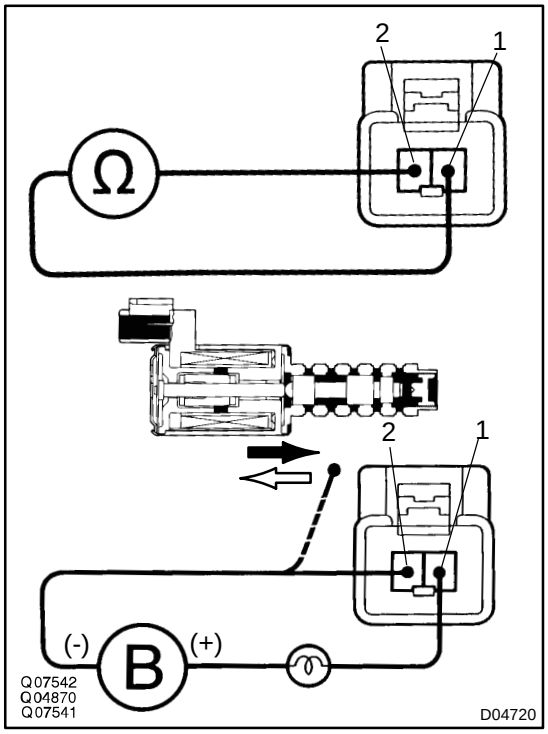
WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check shift solenoid valve SLN.**



Check solenoid resistance and operation:

PREPARATION:

Disconnect the shift solenoid valve SLN connector.

CHECK:

(a) Measure resistance between terminals 1 and 2 of solenoid connector.

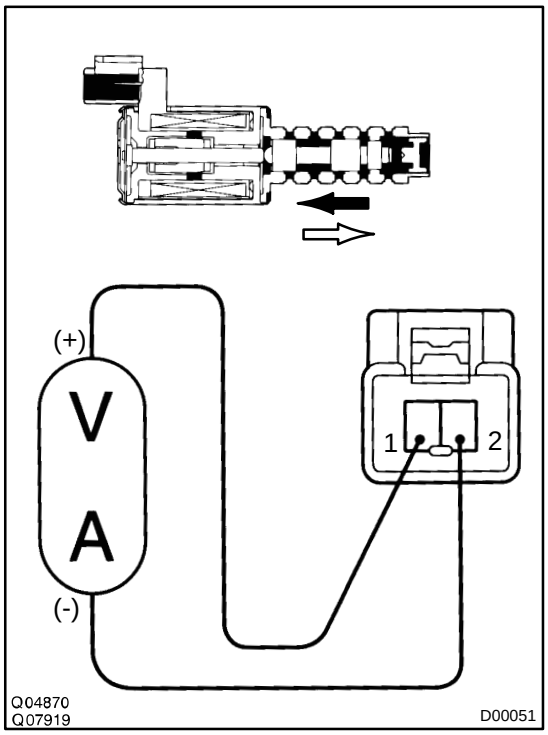
(b) Connect positive ⊕ lead with an 8 - 10 W bulb to terminal 1 of solenoid connector and negative ⊖ lead to terminal 2, then check the movement of the valve.

OK:

(a) Resistance: 5.1 - 5.5 Ω

(b)

When battery positive voltage is supplied.	Valve moves in direction shown in illustration. (on the left)
When battery positive voltage is cut off.	Valve moves in direction shown in illustration. (on the right)



Check solenoid operation:

PREPARATION:

Connect positive ⊕ lead of the variable power supply to terminal 1 of solenoid connector and negative ⊖ lead to terminal 2.

CHECK:

(a) Check the movement of the valve when the voltage is gradually increased.
(A current greater than 1A should not be supplied.)

(b) Check the movement of the valve when the voltage is cut off.

OK:

(a) As the voltage is increased, the valve should move slowly in the ⇐ direction.

(b) The valve should return in the ⇨ direction.

NG → **Replace the shift solenoid valve SLN.**

OK

cardiagn.com

2	**Check harness and connector between battery and shift solenoid valve SLN, shift solenoid valve SLN and ECM (See page IN-31).**

NG → **Repair or replace the harness or connector.**

OK

Check and replace the ECM (See page IN-31).

cardiagn.com

DI0CZ-19

DTC	P1780	Park/Neutral Position Switch Malfunction

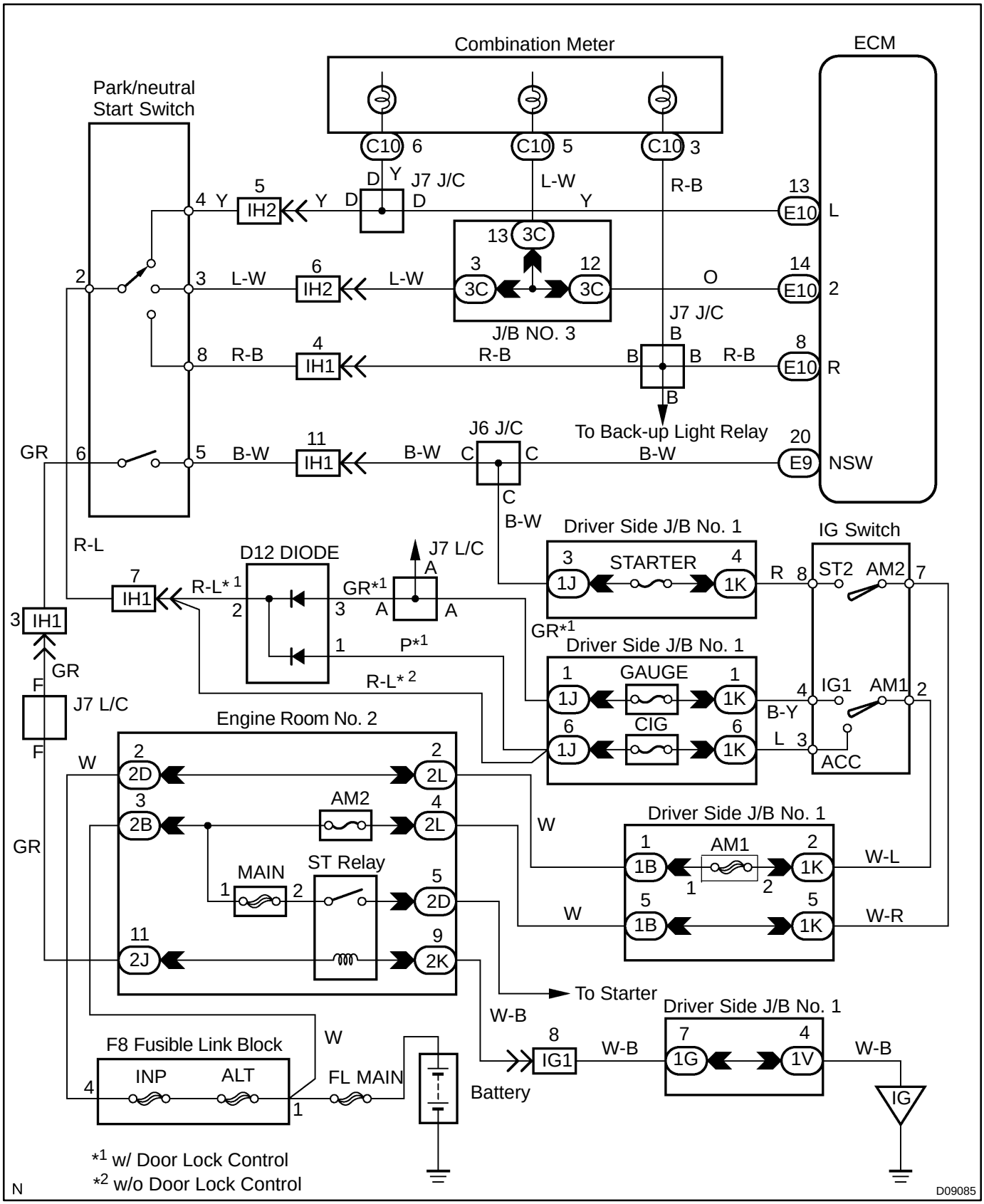
CIRCUIT DESCRIPTION

The park/neutral position switch detects the shift lever position and sends signals to the ECM.
The ECM receives signals (NSW, R, 2 and L) from the park/neutral position switch. When the signal is not sent to the ECM from the park/neutral position switch, the ECM judges that the shift lever is in D position.

DTC No.	DTC Detection Condition	Trouble Area
P1780	When driving under conditions (a) and (b) for 30 seconds or more, the park/neutral position switch is ON (N position). (2-trip detection logic) (a) Vehicle speed: 70 km/h (44 mph) or more (b) Engine speed: 1,500 - 2,500 rpm	• Short in park/neutral position switch circuit • Park/neutral position switch • ECM

cardiagn.com

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Read PNP, REVERSE, 2ND and LOW signals.**

When using TOYOTA hand-held tester.

PREPARATION:

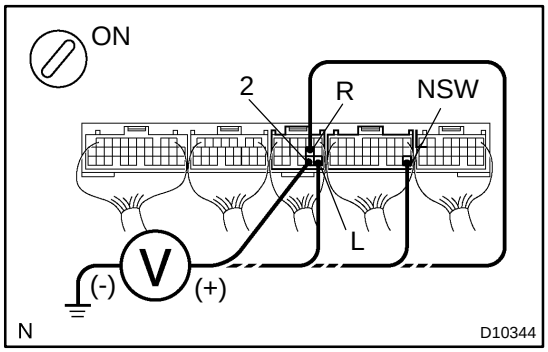
(a) Remove the DLC3 cover.
(b) Connect a TOYOTA hand-held tester to the DLC3.
(c) Turn the ignition switch ON and TOYOTA hand-held tester main switch ON.

CHECK:

Shift lever into the P, R, N, 2 and L positions, and read the PNP, REVERSE, 2ND and LOW signals on the TOYOTA hand-held tester.

OK:

Shift position	Signal
2	2ND OFF → ON
L	LOW OFF → ON
R	REVERSE OFF → ON
P, N	NSW OFF → ON



When not using TOYOTA hand-held tester.

PREPARATION:

Turn the ignition switch ON.

CHECK:

Measure voltage between each of terminals NSW, 2, L and R of ECM and body ground when the shift lever is shifted to the following positions.

OK:

Position	NSW-Body ground	R-Body ground	2-Body ground	L-Body ground
P, N	0 V	0 V	0 V	0 V
R	9 - 14 V*	9 - 14 V*	0 V	0 V
D	9 - 14 V	0 V	0 V	0 V
2	9 - 14 V	0 V	9 - 14 V	0 V
L	9 - 14 V	0 V	0 V	9 - 14 V

HINT:

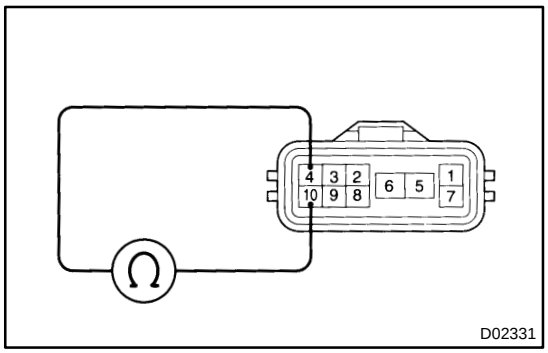
*: The voltage will drop slightly due to lighting up of the back up light.

OK	**Check and replace the ECM (See page IN-31).**

NG

cardiagn.com

2	Check park/neutral position switch.



PREPARATION:

(a) Jack up the vehicle.

(b) Remove the park/neutral position switch.

CHECK:

Check continuity between each terminal shown below when the shift lever is moved to each position.

Shift Position	Terminal No. to continuity	
P	2 - 7	5 - 6
R	2 - 8	-
N	2 - 9	5 - 6
D	2 - 10	-
2	2 - 3	-
L	2 - 4	-

OK:

There is continuity.

NG → **Replace the park/neutral position switch.**

OK

Repair or replace harness and connector between battery and park/neutral position switch, park/neutral position switch and ECM (See page IN-31).

cardiagn.com

DI22J-03

DTC	P1780	Park/Neutral Position Switch Malfunction

CIRCUIT DESCRIPTION

The park/neutral position switch go on when the shift lever is in the N or P shift position. When it goes on terminal NSW of the ECM is grounded to body ground via the starter relay, thus the terminal NSW voltage becomes 0V. When the shift lever is in the D, 2, L or R position, the park/neutral position switch goes off, so the voltage of ECM. Terminal NSW becomes battery voltage, the voltage of the ECM internal power source. If the shift lever is moved from the N position to the D position, this signal is used for air-fuel ratio correction and for idle speed control (estimated control), etc.

DTC No.	DTC Detecting Condition	Trouble Area
P1780	2 or more switches are ON simultaneously for ”N”, ”2”, ”L” and ”R” positions (2 trip detection logic)	• Short in park/neutral position switch circuit • Park/neutral position switch • ECM
	When driving under conditions (a) and (b) for 30 sec. or more the park/neutral position switch is ON (N position): (2 trip detection logic) (a) Vehicle speed: 70 km/h (44 mph) or more (b) Engine speed: 1,500 ≦ NE and 2,500 rpm	

HINT:

After confirming DTC P1780, use the TOYOTA hand-held tester to confirm the PNP switch signal from ”CURRENT DATA”.

WIRING DIAGRAM

Refer to DTC P1780 on page DI-197 .

INSPECTION PROCEDURE

Refer to DTC P1780 on page DI-197 .

HINT:

Read freeze frame data using TOYOTA hand-held tester or OBD II scan tool. because freeze frame records the engine conditions when the malfunction is detected, when troubleshooting it is useful for determining whether the vehicle was running or stopped, the engine warmed up or not, the air-fuel ratio lean or rich, etc. at the time of the malfunction.

cardiagn.com

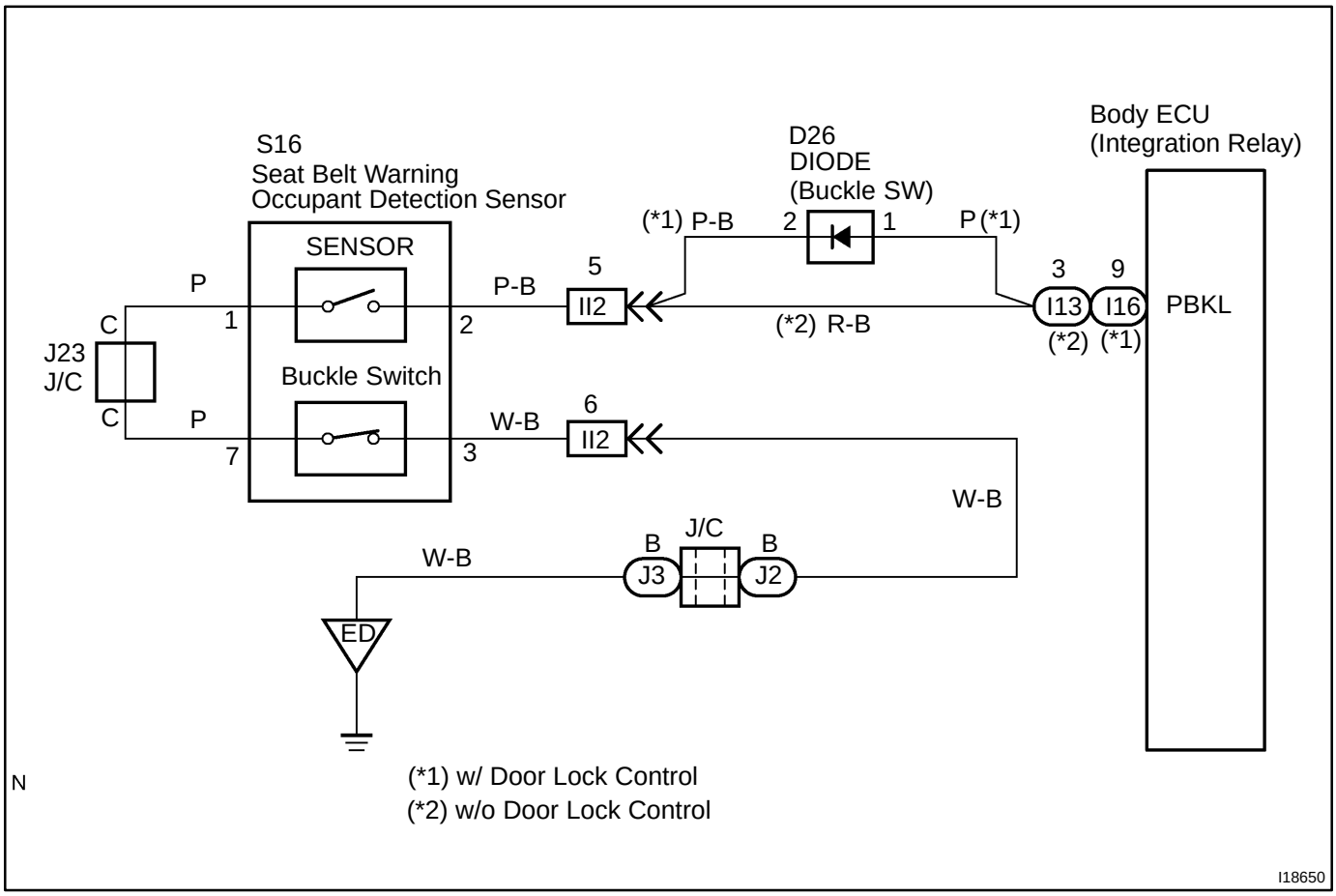
DI6LZ-03

Passenger buckle switch and seat belt warning occupant detection sensor

CIRCUIT DESCRIPTION

This circuit detects the conditions of the passenger buckle switch and the seat belt warning occupant detection sensor, and makes the passenger seat belt warning flash.

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	Check passenger buckle switch. (See page BE-43)

NG → Replace the passenger buckle switch.

OK

2	Check seat belt warning occupant Detection sensor. (See page BE-43)

NG → Replace the seat belt warning occupant Detection sensor.

OK

3	Check wireharness and connector between seat belt warning occupant Detection sensor and body ECU, passenger buckle switch and seat belt warning occupant Detection sensor, passenger buckle switch and body ground.

NG → Repair or replace wireharness or connector.

OK

Proceed to next circuit inspection shown on problem symptoms table.
(See page DI-636)

cardiagn.com

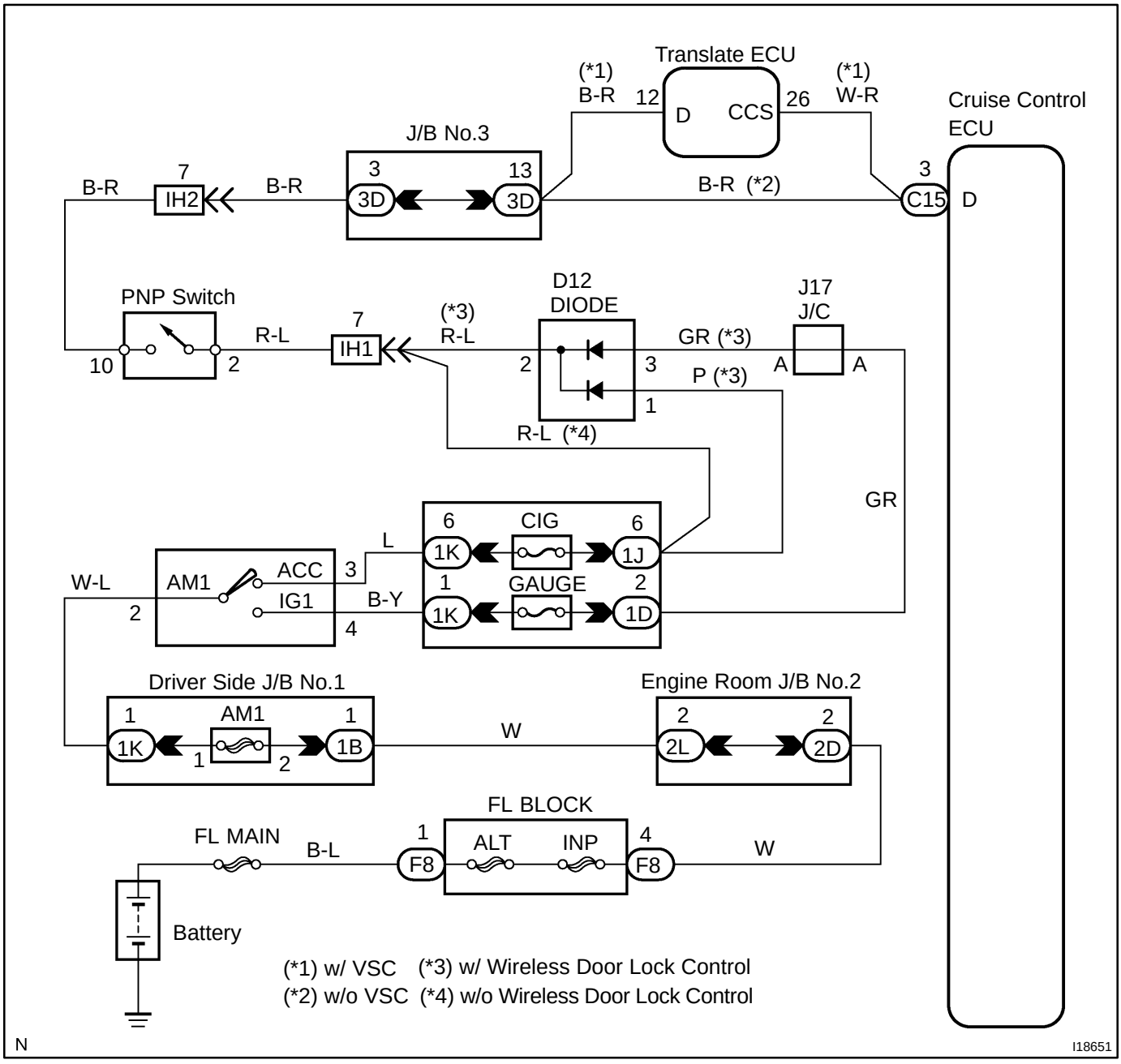
DI08V-24

Park/Neutral Position Switch Circuit

CIRCUIT DESCRIPTION

When the shift position is put in except D position, a signal is sent from the park/neutral position switch to the ECU. When this signal is input during cruise control driving, the ECU cancels the cruise control.

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check starter operation.**

CHECK:

Check that the starter operates normally and that the engine starts.

NG → **Proceed to engine troubleshooting (See page DI-1).**

OK

2	**Input signal check.**

Input Signal	Indicator Light Blinking Pattern
Turn PNP switch OFF (Shift to except D position)	Light: ON — SW ON; OFF - - - SW OFF

PREPARATION:

See input signal check on page DI-563 .

CHECK:

Check the indicator light when shifting into except D position.

OK:

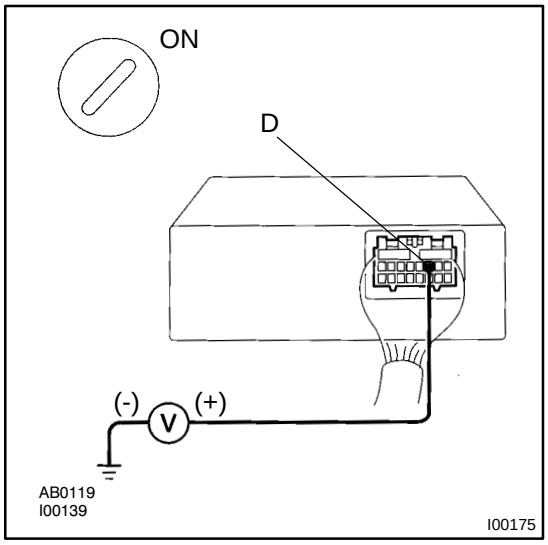
The indicator light goes off when shifting into except D position.

OK → **Proceed to next circuit inspection shown on problem symptom table (See page DI-572).**

NG

cardiagn.com

3	Check voltage between terminal D of cruise control ECU connector and body ground.



PREPARATION:

Turn ignition switch ON.

CHECK:

Measure voltage between terminal D of ECU connector and body ground when shifting into D position and other positions.

OK:

Shift Position	Voltage
D position	10 - 14 V
Other positions	Below 1 V

OK → Proceed to next circuit inspection shown on problem symptom table (See page DI-572).

NG

4	Check harness and connector between cruise control ECU and park/neutral position switch (See page IN-31).

NG → Repair or replace harness or connector.

OK

Check and replace cruise control ECU (See page IN-31).

cardiagn.com

DI6LK-03

CIRCUIT INSPECTION

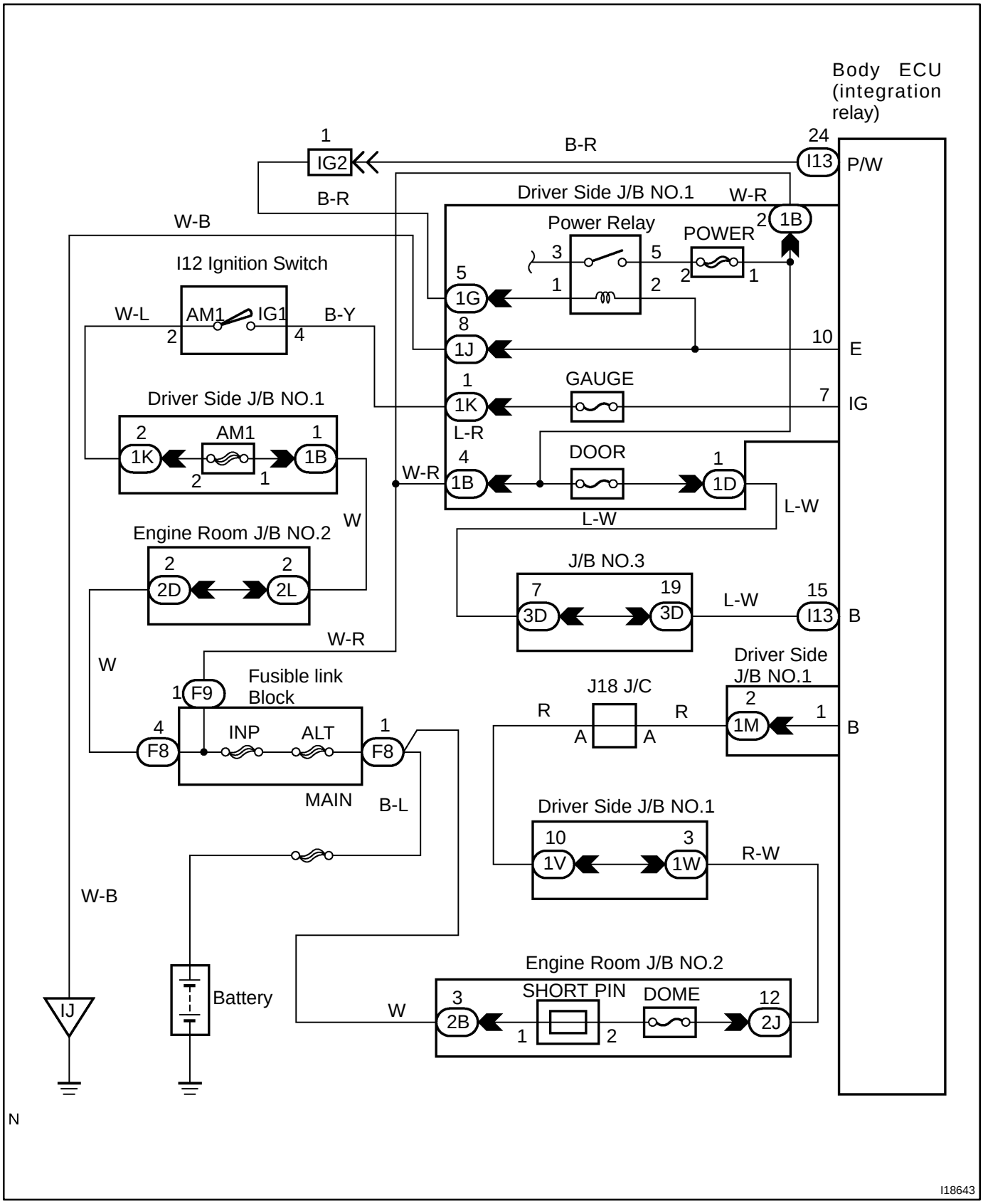
Power source circuit

CIRCUIT DESCRIPTION

This circuit provides power to operate the Body ECU.

cardiagn.com

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check POWER GAUGE DOOR DOME Fuse and POWER Relay.**

CHECK:
Check continuity of POWER GAUGE DOOR DOME Fuse and POWER Relay.
OK:
Continuity

NG → **Replace the failure fuse.**

OK

2	**Check voltage between terminals P/W IG B and E of Body ECU connector.**

PREPARATION:
Turn ignition switch ON.
CHECK:
Measure voltage between terminals IG and E.
OK:
Voltage: 10 - 14V
PREPARATION:
(a) Turn ignition switch OFF.
(b) Disconnect the Body ECU connector.
CHECK:
Measure voltage between terminals P/W B and E.
OK:
Voltage: 10 - 14V

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page DI-636).**

NG

cardiagn.com

3	**Check wireharness and connector between Body ECU and body ground (See page IN-31).**

NG → **Repair or replace wireharness or connector.**

OK

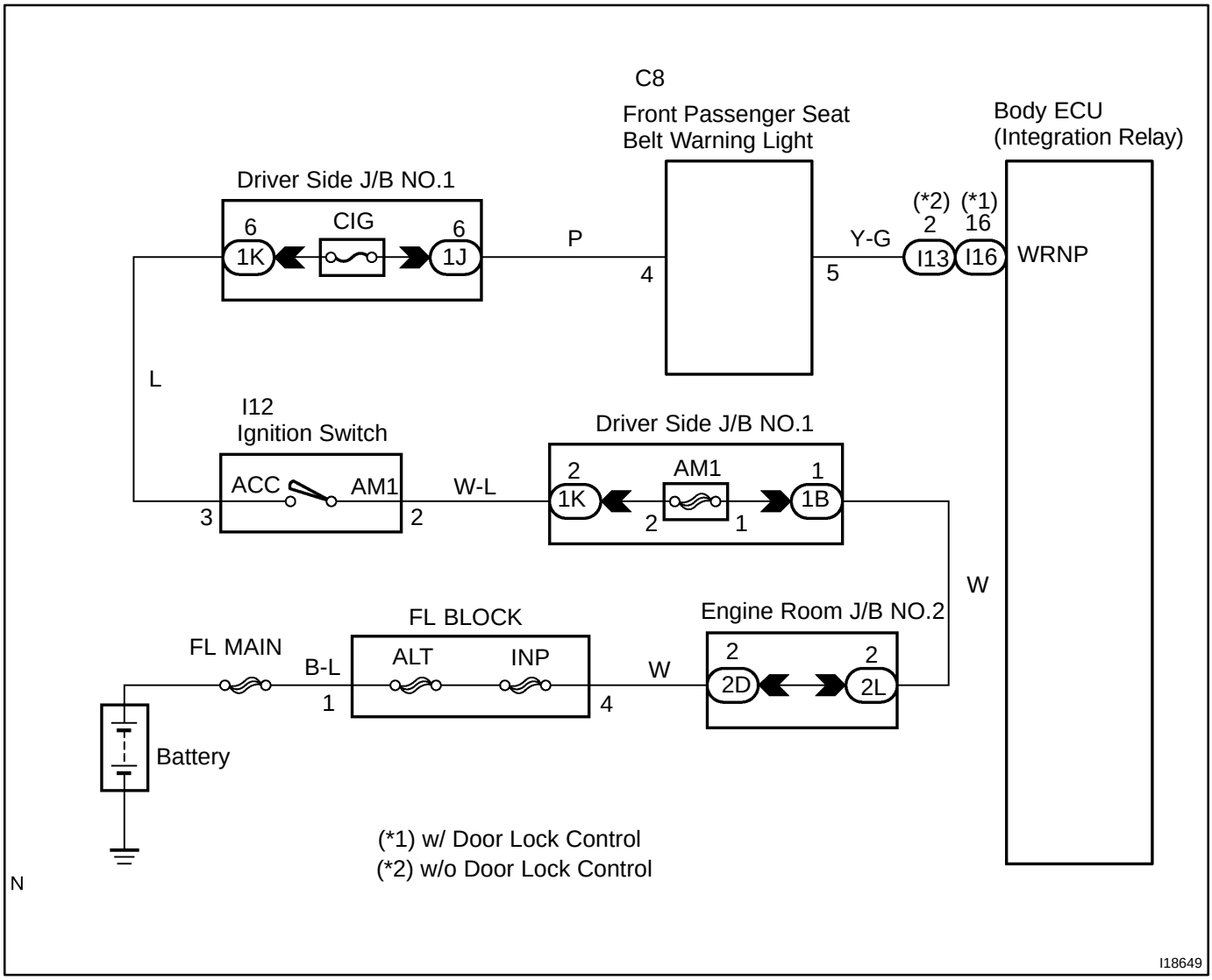
Check and repair wireharness and connector between Body ECU and battery (See page IN-31).

cardiagn.com

DI8AN-01

Passenger seat belt warning light circuit

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check CIG fuse.**

CHECK:

Check continuity of CIG fuse.

OK:

Continuity

NG → **Replace the failure fuse.**

OK

2	**Check Wireharness and connector between Integration Relay and Battery.**

PREPARATION:

(a) Turn ignition switch ON.

(b) Disconnect the instrument panel integration ECU.

CHECK:

Measure voltage between terminals LSDS instrument panel integration ECU connector .

OK:

Voltage: 10 - 14V

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page DI-636).**

NG

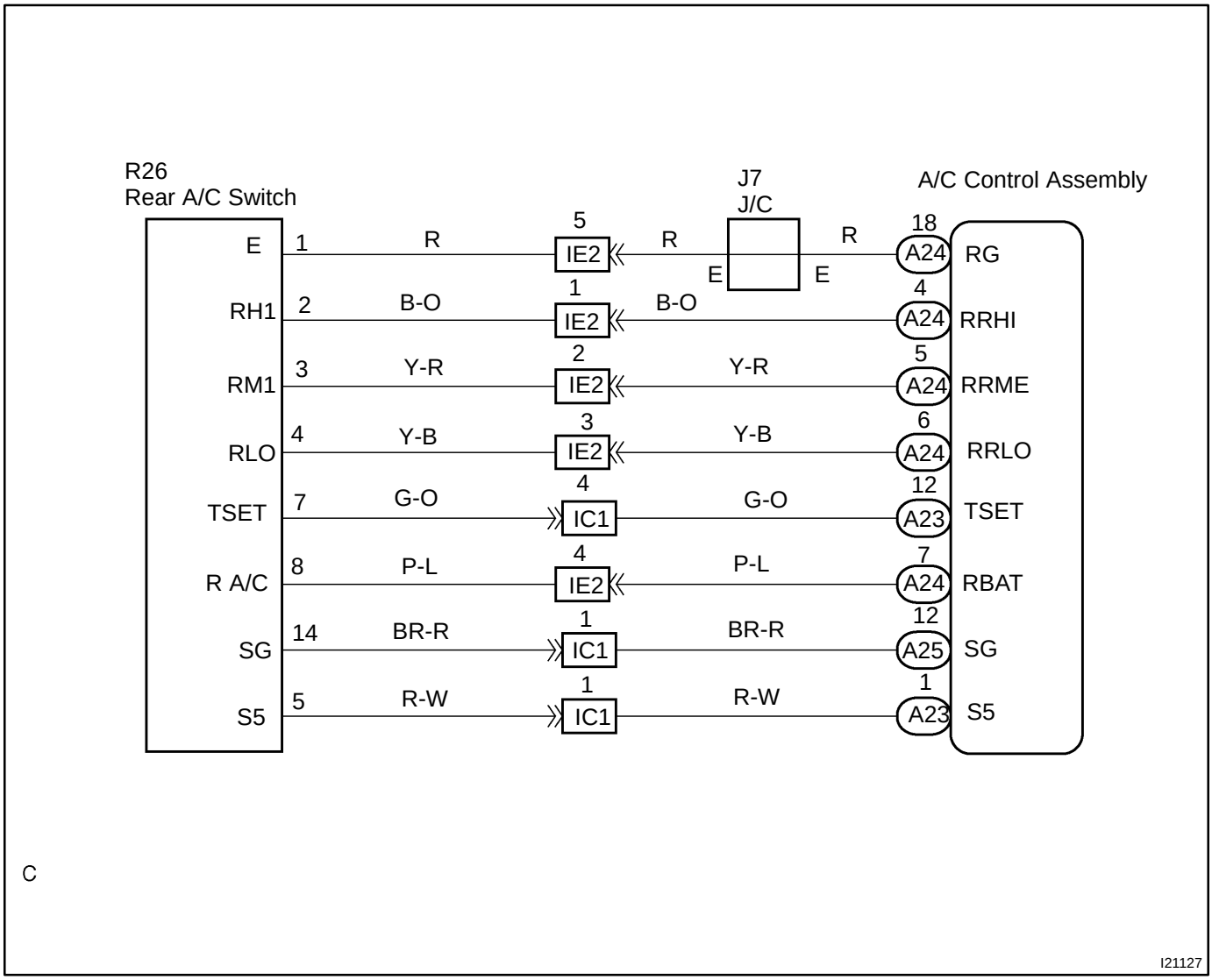
Repair or replace wireharness or connnector.

cardiagn.com

DI6ET-02

Rear Blower Switch Circuit (Rear Side)

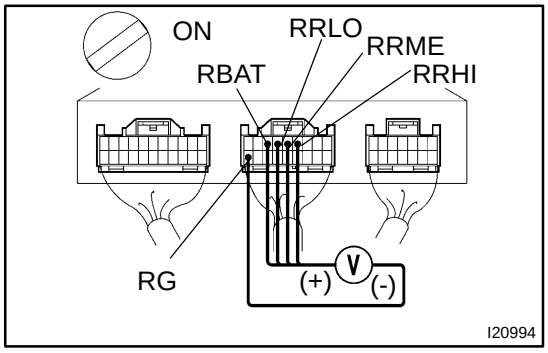
WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check voltage between terminals RBAT, RLO, RME, RHI and RG of A/C control assembly.**



PREPARATION:

Remove A/C control assembly with connectors with still connected.

CHECK:

(a) Turn ignition switch to ON.

(b) Push in rear A/C main switch.

(c) Measure voltage between terminals RRHI, RM1 and RRAT of A/C control assembly connector and body ground when the rear A/C blower switch is operated to following positions.

OK:

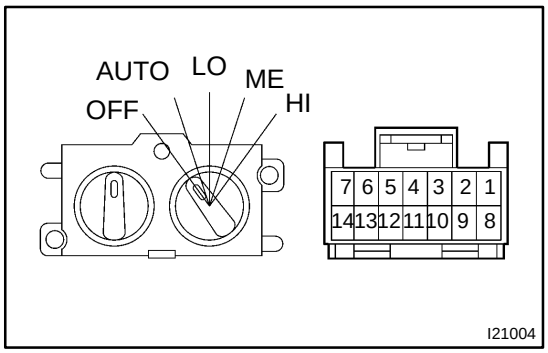
Terminal / Position	RRAT-RG	RLO-RG	RME-RG	RHI-RG
Auto	Below 1.0 V	10 - 14 V	10 - 14 V	10 - 14 V
LO	10 - 14 V	Below 1.0 V	10 - 14 V	10 - 14 V
ME	10 - 14 V	10 - 14 V	Below 1.0 V	10 - 14 V
HI	10 - 14V	10 - 14V	10 - 14V	Below 1.0 V

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page DI-697).**

NG

cardiagn.com

2	Check rear A/C control panel.



PREPARATION:

Remove rear A/C control panel.

CHECK:

Check continuity between terminals of rear A/C control panel when switch is operated as shown in the chart.

OK:

Switch position	Tester connection	Specified condition
OFF	-	No continuity
AUTO	1 - 8	Continuity
LO	1 - 4	Continuity
ME	1 - 3	Continuity
HI	1 - 2	Continuity

NG → **Replace rear blower switch.**

OK

3	Check harness and connector between A/C control assembly and rear blower switch (See page IN-31).

NG → **Repair or replace harness or connector.**

OK

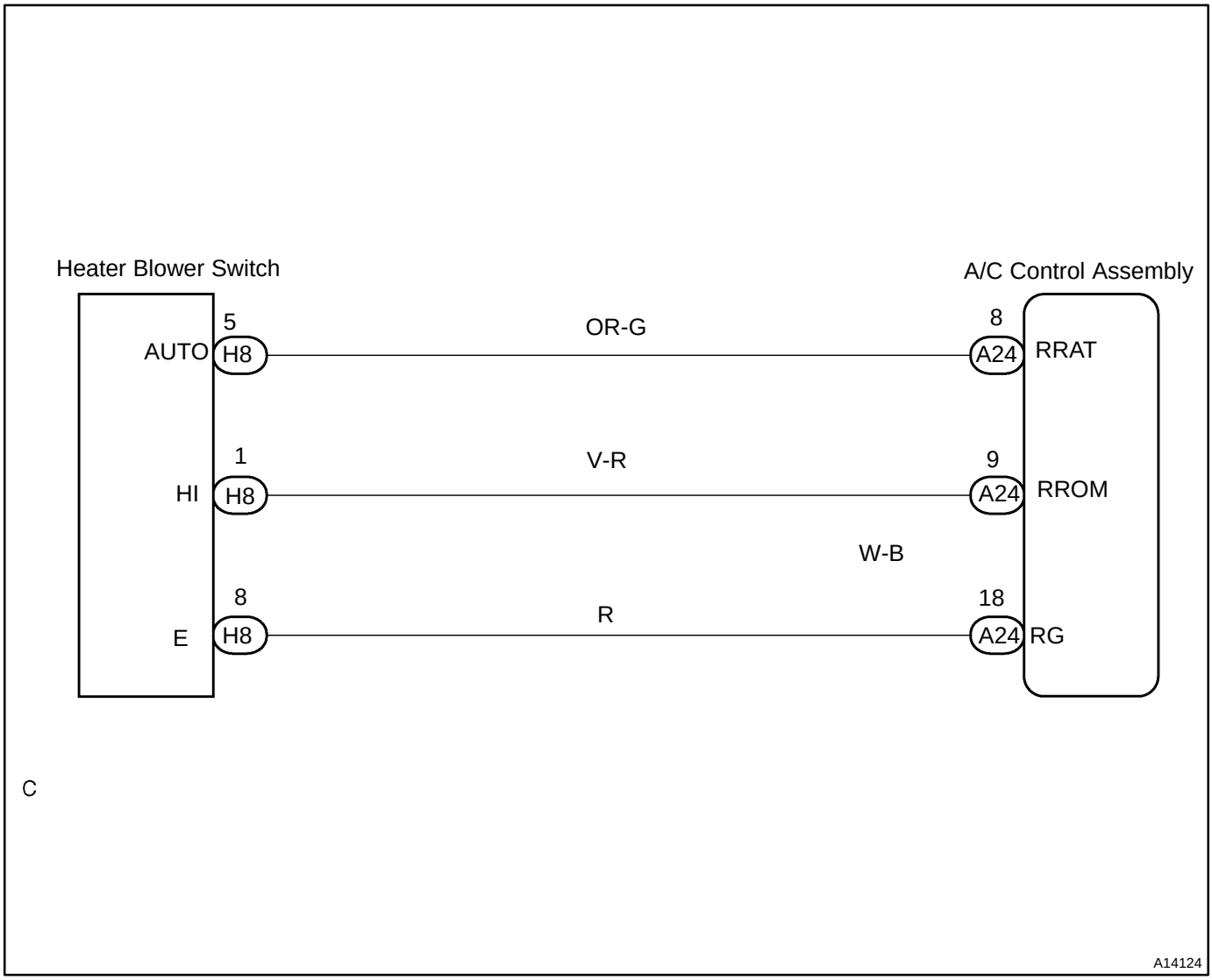
Check and replace A/C control assembly (See page IN-31).

cardiagn.com

DI6ES-02

Rear Blower Switch (Front Side) Circuit

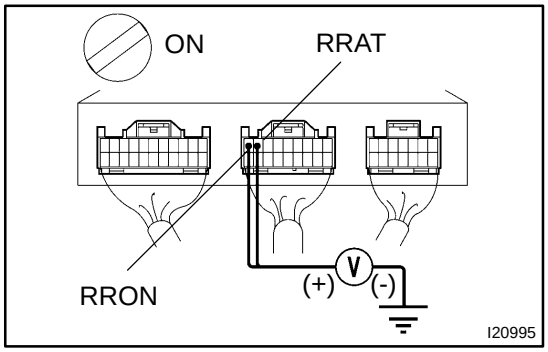
WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	Check voltage between terminals RRAT, RRON of A/C amplifier and body ground.



PREPARATION:

Remove A/C control assembly with connectors still connected.

CHECK:

(a) Turn ignition switch to ON.

(b) Measure voltage between terminal RRAT, RRON of A/C amplifier and body ground.

OK:

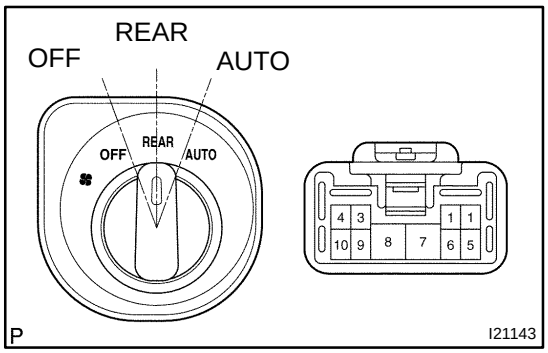
Terminal / Position	RRAT ↔ Body ground	RROM ↔ Body ground
OFF	Below 1.0 V	Below 1.0 V
AUTO	Below 1.0 V	10 - 14 V
REAR	10 - 14 V	Below 1.0 V

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page DI-697).**

NG

cardiagn.com

2	Check rear blower switch.



PREPARATION:

Remove rear blower switch.

CHECK:

Check continuity between terminals of rear A/C main switch when switch operation as shown in the chart.

OK:

Switch position	Tester connection	Specified condition
OFF	-	No continuity
REAR	1 - 6 - 8	Continuity
AUTO	5 - 6 - 8	Continuity

NG → **Replace rear blower switch.**

OK

3	Check harness and connector between A/C amplifier and rear A/C main switch (See page IN-31).

NG → **Repair or replace harness or connector.**

OK

Check and replace A/C control assembly. (See page IN-31)

cardiagn.com

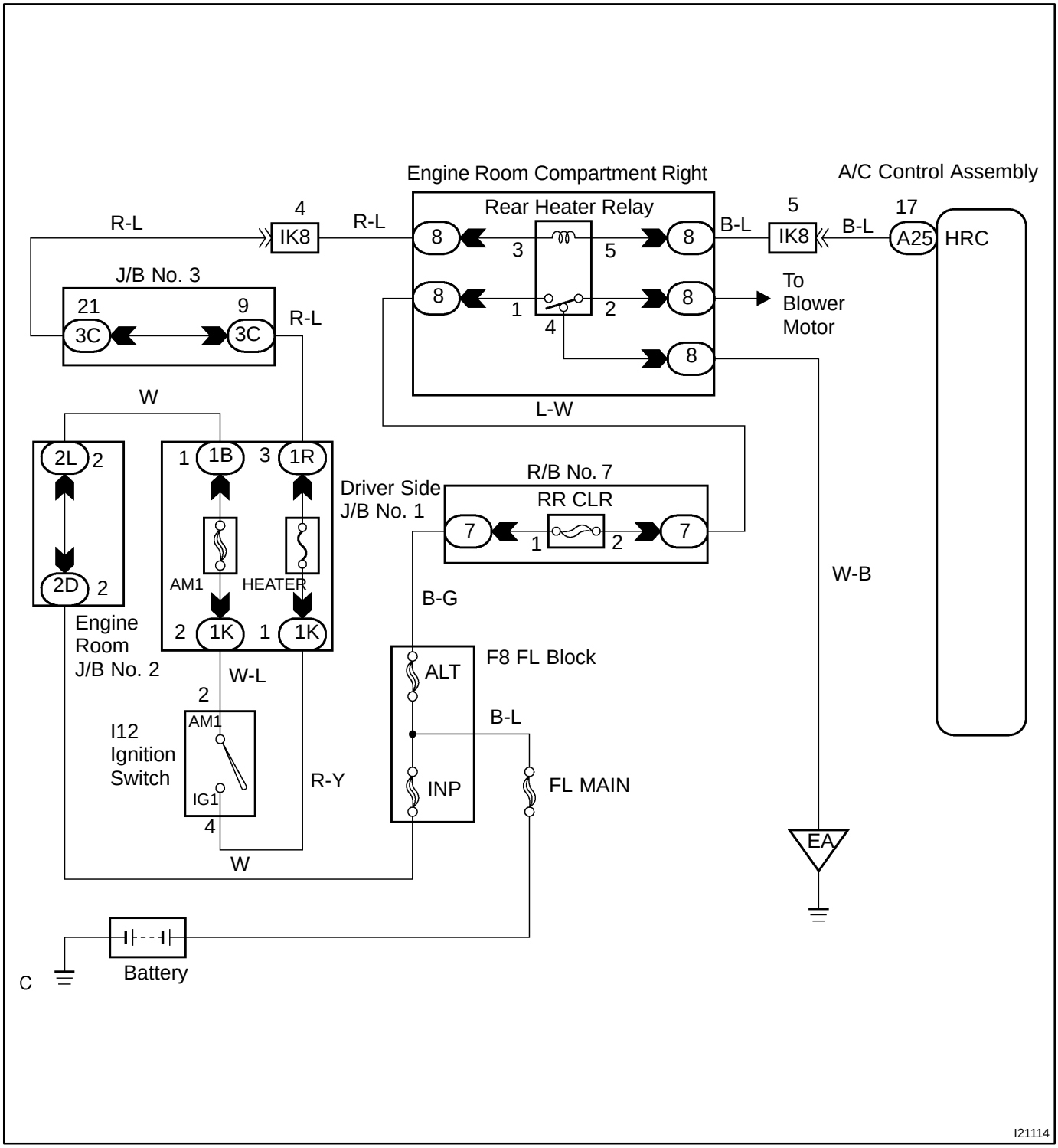
DI3WC-09

Rear CLR Relay Circuit

CIRCUIT DESCRIPTION

The rear CLR relay is switched on by signals from the A/C control assembly. It supplies power to the rear cooler blower motor.

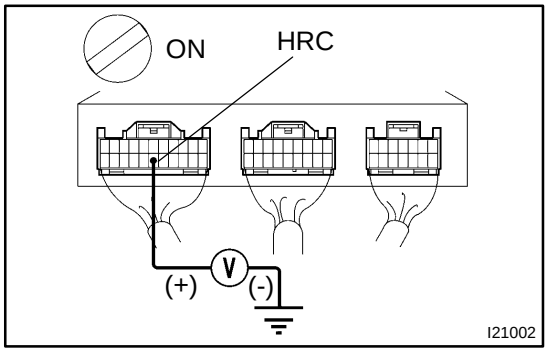
WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check voltage between terminal HRC of A/C control assembly connector and body ground.**



PREPARATION:

Remove A/C control assembly with connectors still connected (See page AC-1 16).

CHECK:

Measure voltage between terminal HRC of A/C control assembly and body ground when ignition switch is ON and OFF.

OK:

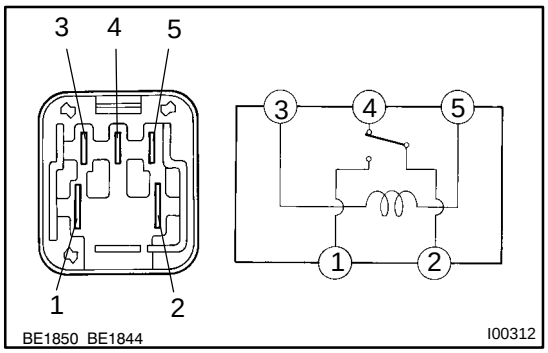
Ignition Switch	Voltage	
OFF	0 V	
ON	Blower ON	0 V
	Blower OFF	10 - 14 V

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page DI-697).**

NG

cardiagn.com

2	Check CLR relay.



PREPARATION:

Remove CLR relay from R/B No. 8.

CHECK:

Check continuity between each pair of terminals of CLR relay shown below.

OK:

Tester connection	Specified condition
1 - 4	No continuity
2 - 4	Continuity
3 - 5	62.5 - 90.9 Ω

PREPARATION:

Apply battery positive voltage between terminals 3 and 5.

CHECK:

Check continuity between each pair of terminal shown below.

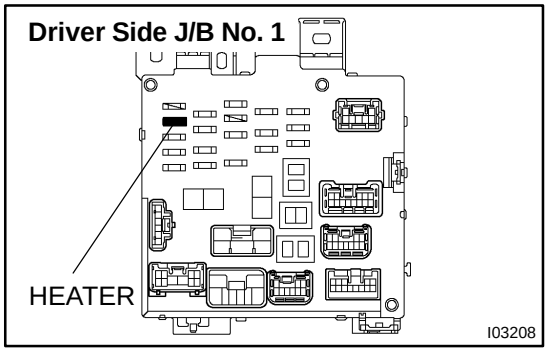
OK:

Tester connection	Specified condition
1 - 2	Continuity
2 - 4	No continuity

NG → **Replace CLR relay.**

OK

3	Check HEATER fuse



PREPARATION:

Remove HEATER fuse from driver side J/B No. 1.

CHECK:

Check continuity of HEATER fuse.

OK:

Continuity exists.

NG → **Check for short in all the harness and components connected to the HEATER fuse (See attached wiring diagram).**

OK

Check and repair harness and connector between A/C control assembly and battery.

cardiagn.com

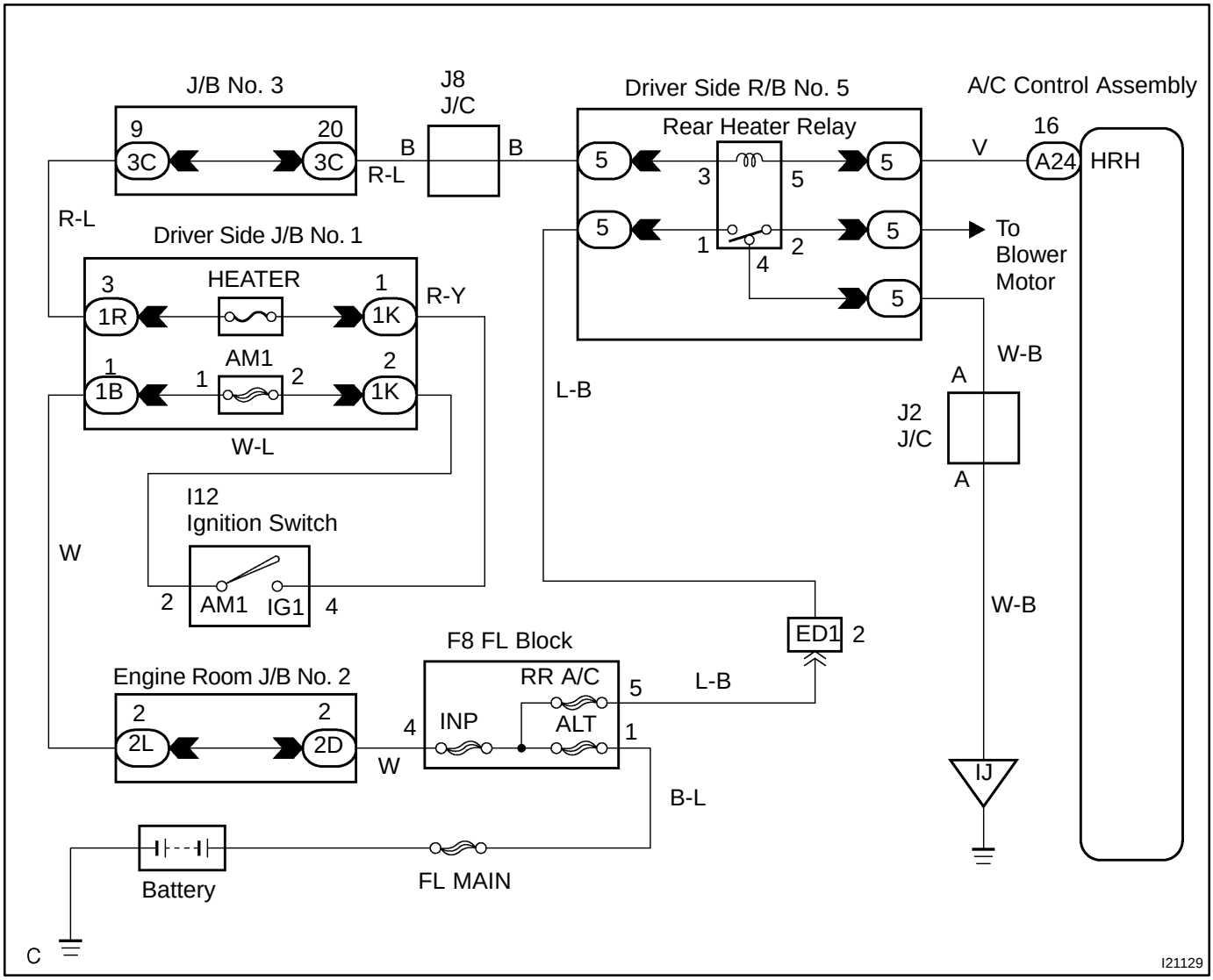
DI3WC-08

Rear Heater Relay Circuit

CIRCUIT DESCRIPTION

The rear heater relay is switched on by signals from the A/C controlassembly. it supplies power to rear heater blower motor.

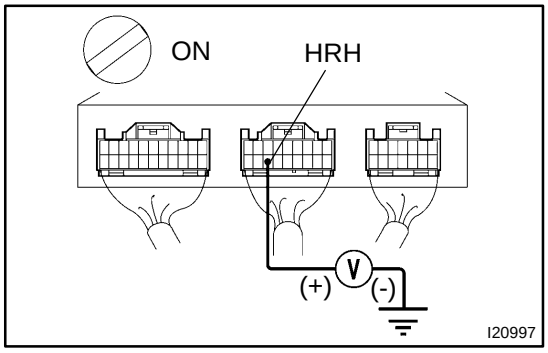
WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check voltage between terminal HRH of A/C control assembly connector and body ground.**



PREPARATION:

Remove A/C control assembly with connectors still connected (See page AC-1 16).

CHECK:

Measure voltage between terminal HRH of A/C control assembly and body ground when ignition switch is ON and OFF.

OK:

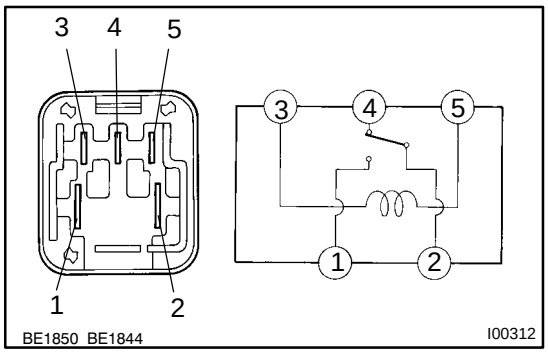
Ignition Switch	Voltage	
OFF	0 V	
ON	Blower ON	0 V
	Blower OFF	10 - 14 V

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page DI-697).**

NG

cardiagn.com

2	Check rear heater relay.



PREPARATION:

Remove rear heater ralay from driver side R/B No. 5.

CHECK:

Check continuity between each pair of terminals of heater main relay shown below.

OK:

Tester connection	Specified condition
1 - 4	No continuity
2 - 4	Continuity
3 - 5	62.5 - 90.9 Ω

PREPARATION:

Apply battery positive voltage between terminals 3 and 5.

CHECK:

Check continuity between each pair of terminal shown below.

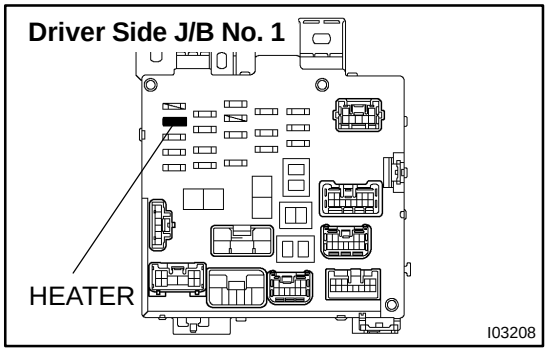
OK:

Tester connection	Specified condition
1 - 2	Continuity
2 - 4	No continuity

NG → **Replace rear hater relay.**

OK

3	Check HEATER fuse



PREPARATION:

Remove HEATER fuse from driver side J/B No. 1.

CHECK:

Check continuity of HEATER fuse.

OK:

Continuity exists.

NG → **Check for short in all the harness and components connected to the HEATER fuse (See attached wiring diagram).**

OK

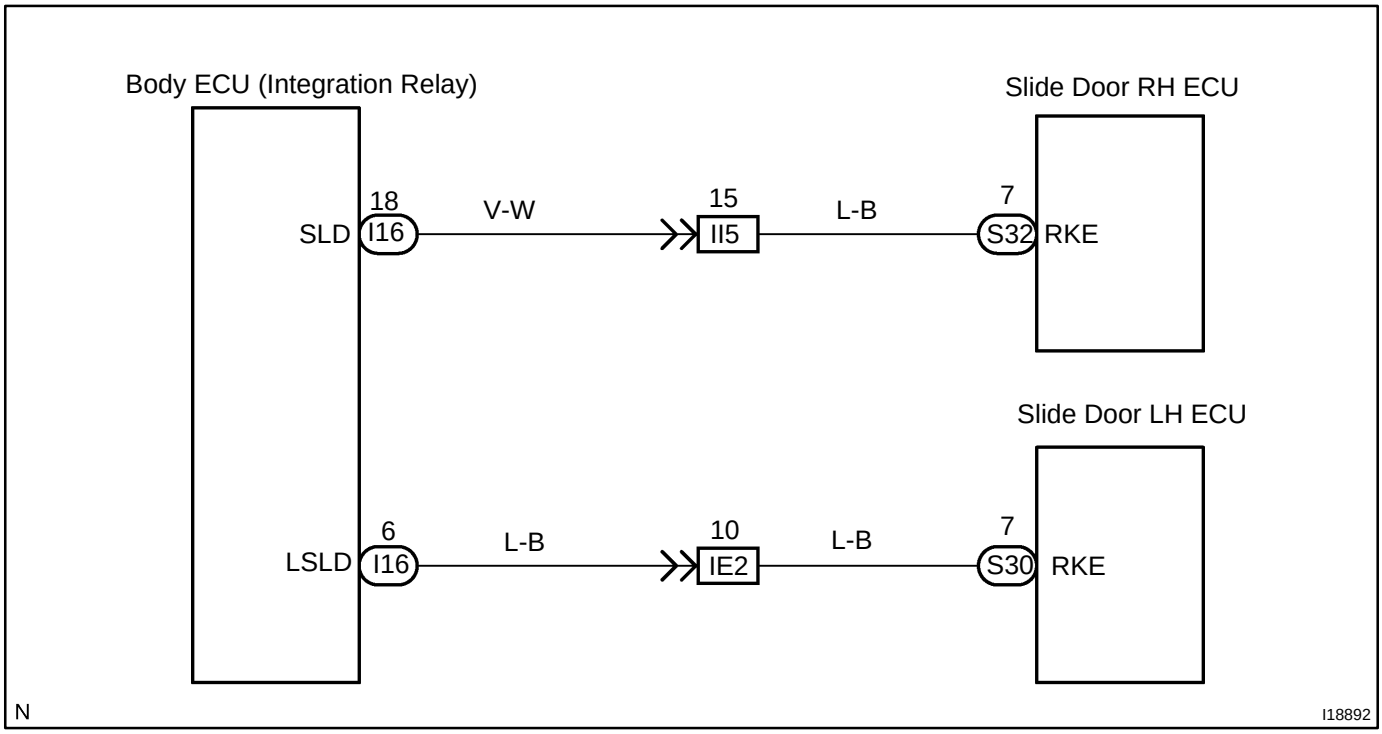
Check and repair harness and connector between A/C control assembly and battery.

cardiagn.com

DI8AQ-01

Slide door ECU communication circuit

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check wireharness and connector between integration Relay and slide door RH ECU and slide door LH ECU.**

NG → **Repair or replace wireharness or connector.**

OK

Proceed to next circuit incpection shown on problem symptoms table (See page DI-636).

cardiagn.com

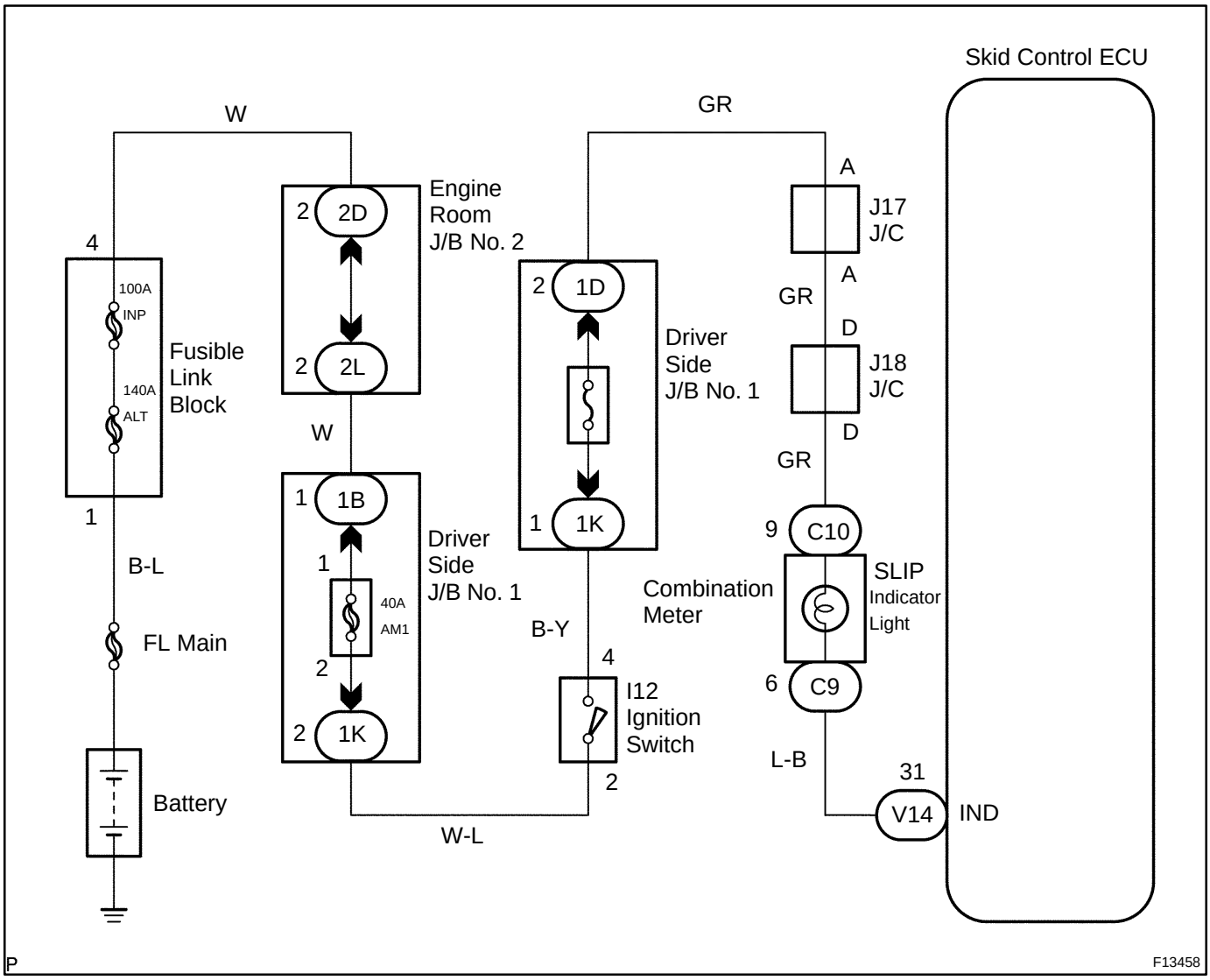
DI6OL-02

SLIP Indicator Light Circuit

CIRCUIT DESCRIPTION

The SLIP indicator light blinks during TRAC & VSC operation.

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

HINT:

Start the inspection from step 1 in case of using the TOYOTA hand-held tester and start from step 2 in case of not using the TOYOTA hand-held tester.

1	**Check operation of the SLIP indicator light.**

PREPARATION:

(a) Connect the TOYOTA hand-held tester to the DLC3.
(b) Turn the ignition switch ON and push the TOYOTA hand-held tester main switch ON.
(c) Select the ACTIVE TEST mode on the TOYOTA hand-held tester.

CHECK:

Check that "ON" and "OFF" of the SLIP indicator light can be shown on the combination meter with the TOYOTA hand-held tester.

OK → **Go to step 4.**

NG

2	**Check that the SLIP indicator light is ON for 3 seconds immediately after ignition switch is turned ON.**

OK → **No problem.**

NG

3	**Check SLIP indicator light.**

See combination meter troubleshooting on page BE-2 .

NG → **Repair or replace bulb or combination meter.**

OK

cardiagn.com

4	**Check for open and short circuit in harness and connector between skid control ECU and SLIP indicator light IG switch and SLIP indicator light (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

Check and replace skid controlECU.

cardiagn.com

DI5RJ-12

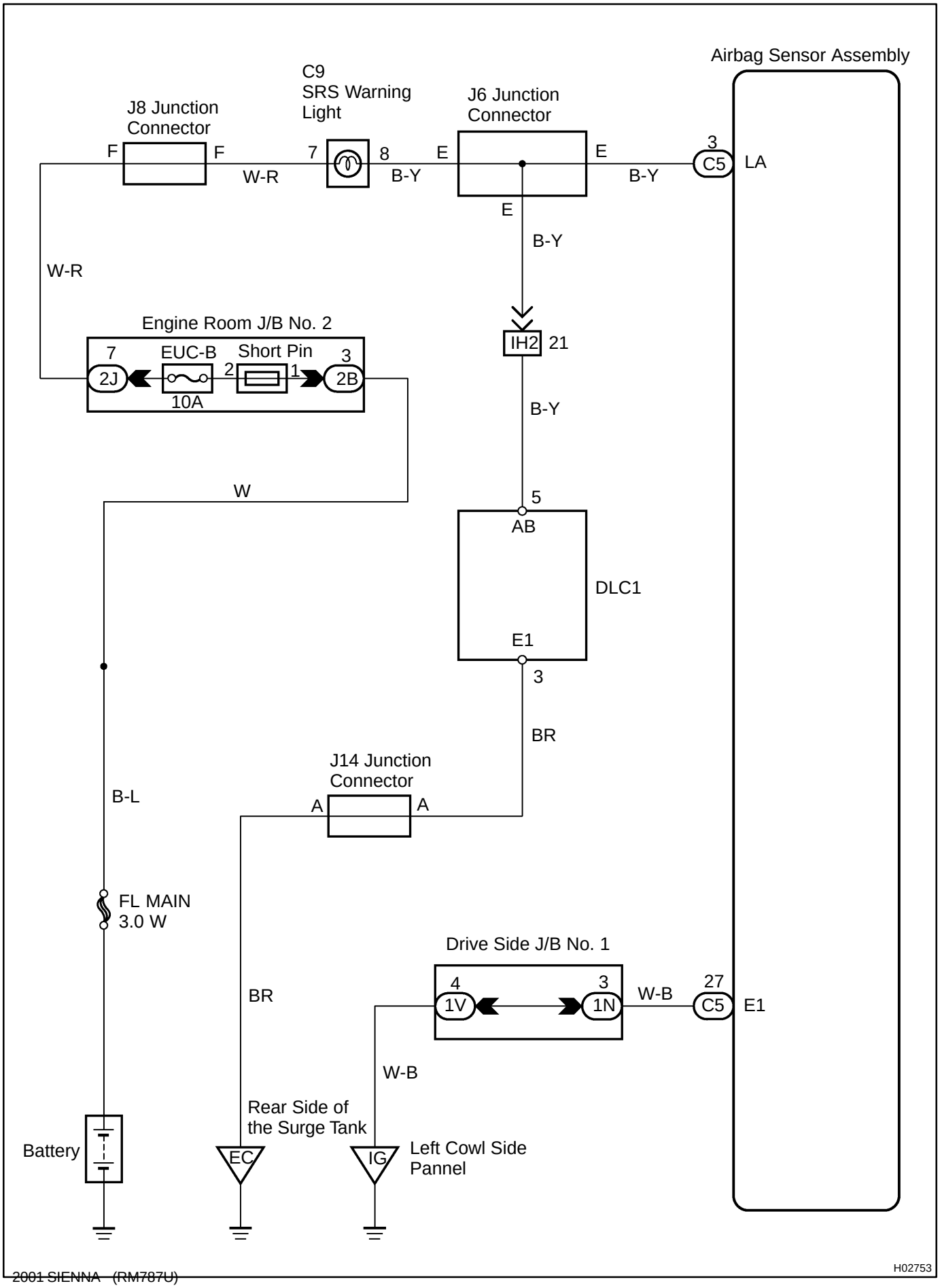
SRS Warning Light Circuit Malfunction

CIRCUIT DESCRIPTION

The SRS warning light is located on the combination meter.
When the SRS is normal, the SRS warning light lights up for approx. 6 seconds after the ignition switch is turned from the LOCK position to ACC or ON position, and then turns off automatically.
If there is a malfunction in the SRS, the SRS warning light lights up to inform the driver of the abnormality.
When terminals Tc and CG of the DLC3 are connected, the DTC is displayed by blinking the SRS warning light.

cardiagn.com

WIRING DIAGRAM



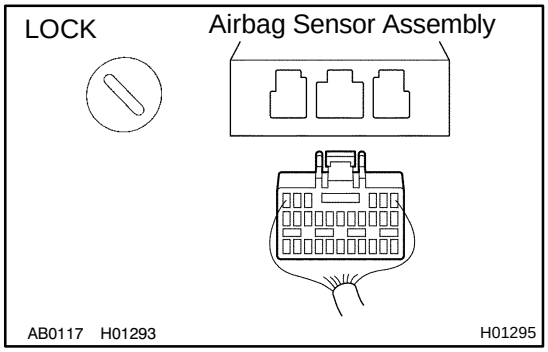
cardiagn.com

INSPECTION PROCEDURE

Always lights up, when ignition switch is in LOCK position

1	**Prepare for inspection (See step 1 on page DI-486).**

2	**Does SRS warning light turn off?**



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect negative (-) terminal cable from the battery, and wait at least for 90 seconds.
(c) Disconnect the airbag sensor assembly connector.
(d) Connect negative (-) terminal cable to the battery.

CHECK:

Check operation of SRS warning light.

NO → **Check SRS warning light circuit or terminal AB circuit of DLC3.**

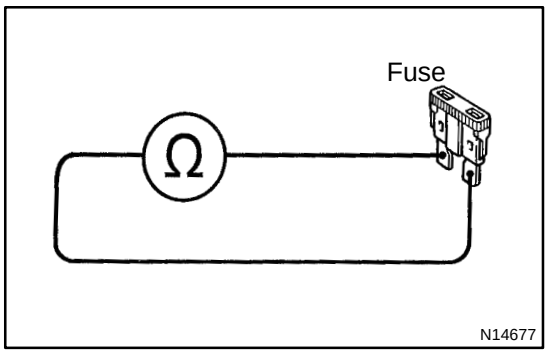
YES

Replace airbag sensor assembly.

cardiagn.com

Does not light up, when ignition switch is turned to ACC or ON

1	**Check SRS Fuse.**



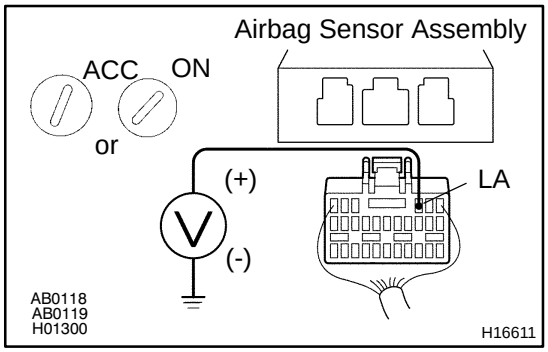
PREPARATION:
Remove the SRS fuse.
CHECK:
Check continuity of the SRS fuse.
OK:
Continuity
HINT:
- Fuse may be burnt out even if it appears to be OK during visual inspection.
- If fuse is OK, install it.

NG → **Go to step 5.**

OK

2	**Prepare for inspection (See step 1 on page DI-486).**

3	**Check SRS warning light circuit.**



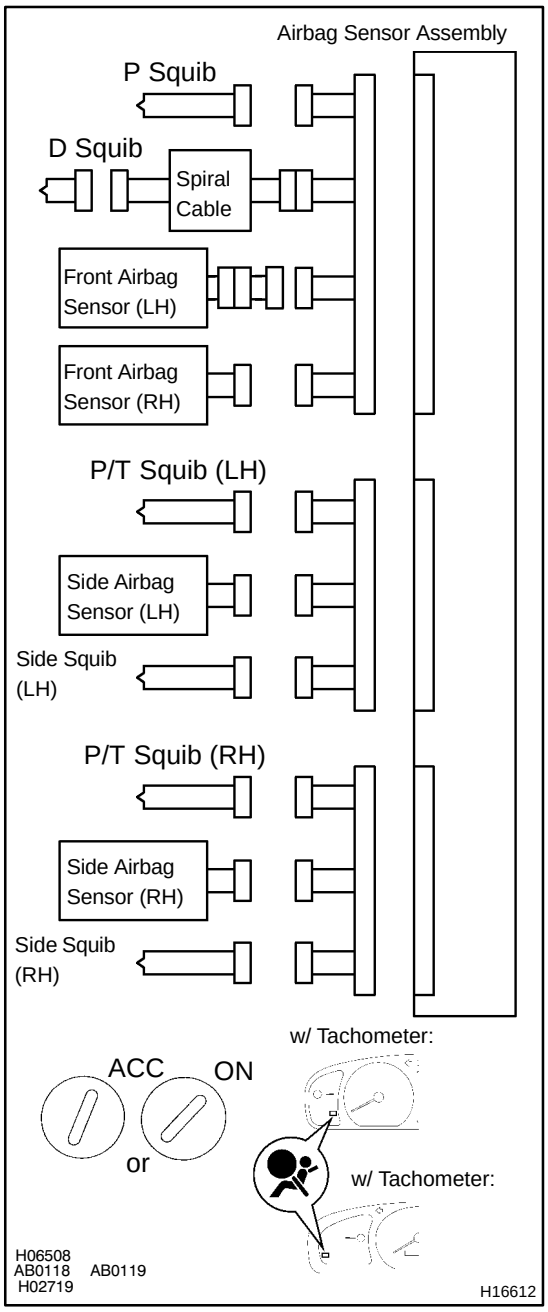
PREPARATION:
(a) Connect negative (-) terminal cable to the battery.
(b) Turn the ignition switch to ACC or ON.
CHECK:
Measure the voltage between body ground and LA terminal of the harness side connector of the airbag sensor assembly.
OK:
Voltage: 10 - 14 V

NG → **Check combination meter or repair SRS warning light circuit.**

OK

cardiagn.com

4	Does SRS warning light come on?



PREPARATION:

(a) Disconnect negative (-) terminal cable from the battery.
(b) Connect the airbag sensor assembly connector.
(c) Connect negative (-) terminal cable to the battery, and wait at least for 2 seconds.
(d) Turn the ignition switch to ACC or ON.

CHECK:

Check operation of the SRS warning light.

NO → **Check terminal LA of airbag sensor assembly. If normal, replace airbag sensor assembly.**

YES

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use simulation method to check.

cardiagn.com

5	**Is new SRS fuse burnt out again?**

NO → **Using simulation method, reproduce malfunction symptoms (See page IN-21).**

YES

Check harness between SRS fuse and SRS warning light.

cardiagn.com

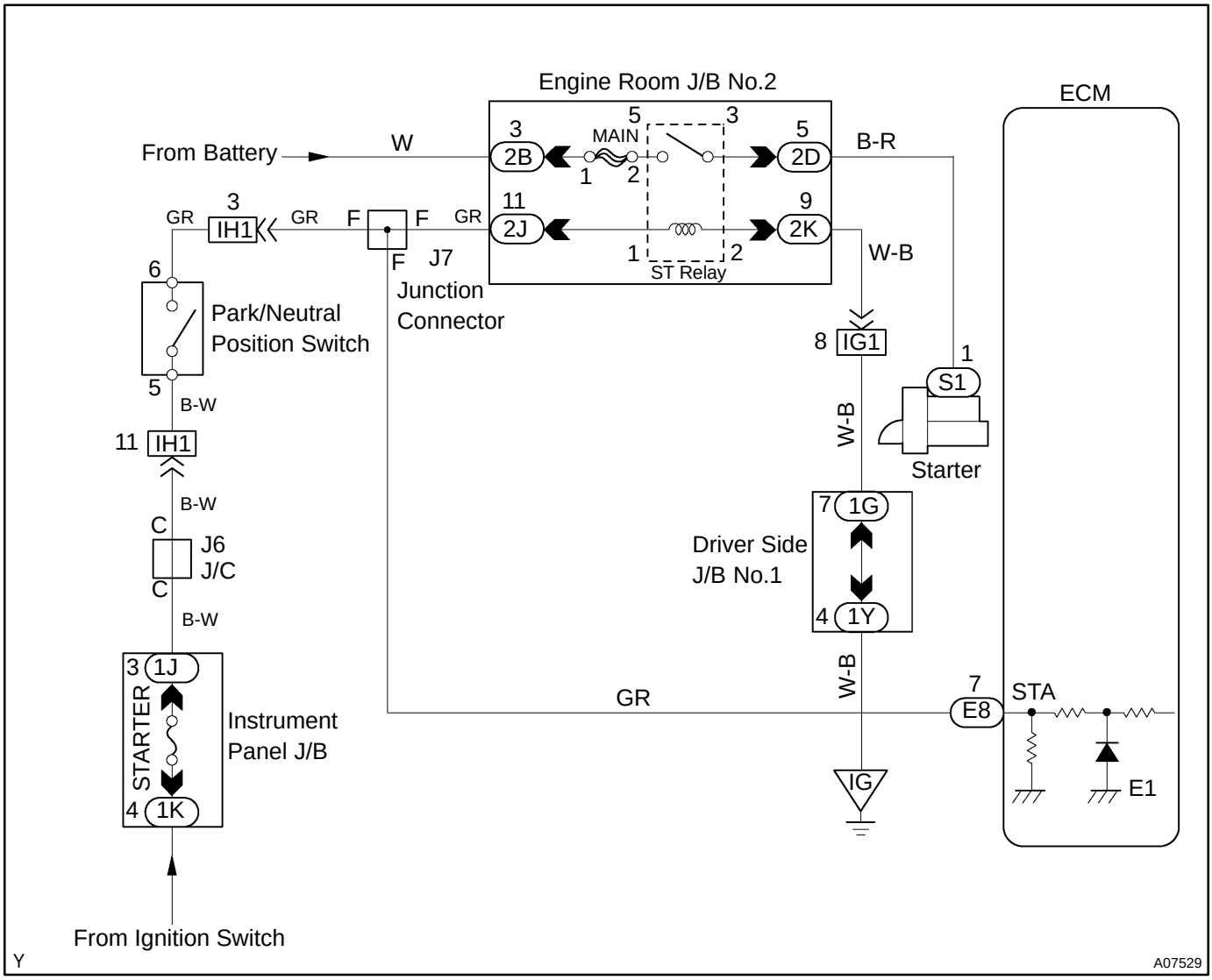
DI22K-03

Starter Signal Circuit

CIRCUIT DESCRIPTION

When the engine is cranked, the intake air flow is slow, so fuel vaporization is poor. A rich mixture is therefore necessary in order to achieve good startability. While the engine is being cranked, the battery positive voltage is applied to terminal STA of the ECM. The starter signal is mainly used to increase the fuel injection volume for the starting injection control and after-start injection control.

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

HINT:

This diagnostic chart is based on the premise that the engine is cranked normally. If the engine is not cranked, proceed to the problem symptoms table on page DI-21 .

TOYOTA hand-held tester

1	**Connect TOYOTA hand-held tester, and check STA signal.**

PREPARATION:

(a) Connect the TOYOTA hand-held tester to the DLC3.

(b) Turn the ignition switch ON and push the TOYOTA hand-held tester main switch ON.

CHECK:

Read STA signal on the TOYOTA hand-held tester while starter operates.

OK:

Ignition switch position	ON	START
STA signal	OFF	ON

OK → **Proceed to next circuit inspection shown on problem symptom table (See page DI-21).**

NG

2	**Check for open in harness and connector between ECM and starter relay (See page IN-31).**

NG → **Repair or replace or connector.**

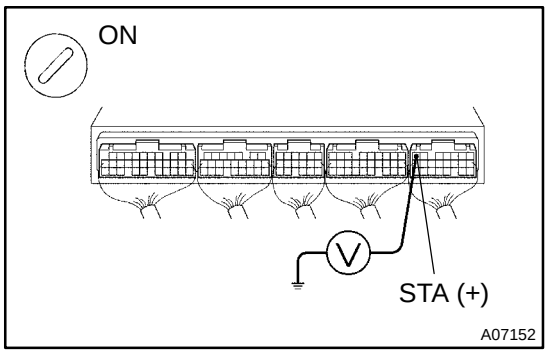
OK

Check and replace ECM (See page IN-31).

cardiagn.com

OBD II scan tool (excluding TOYOTA hand-held tester)

1	**Check voltage between terminal STA of ECM connector and body ground.**



PREPARATION:
Remove the glove compartment (See page SF-83).
CHECK:
Measure voltage between terminal STA of the ECM connector and body ground during engine cranking.
OK:
Voltage: 6 V or more

OK	**Proceed to next circuit inspection shown on problem symptom table (See page DI-21).**

NG

2	**Check for open in harness and connector between ECM and starter relay (See page IN-31).**

NG	**Repair or replace harness or connector.**

OK

Check and replace ECM (See page IN-31).

cardiagn.com

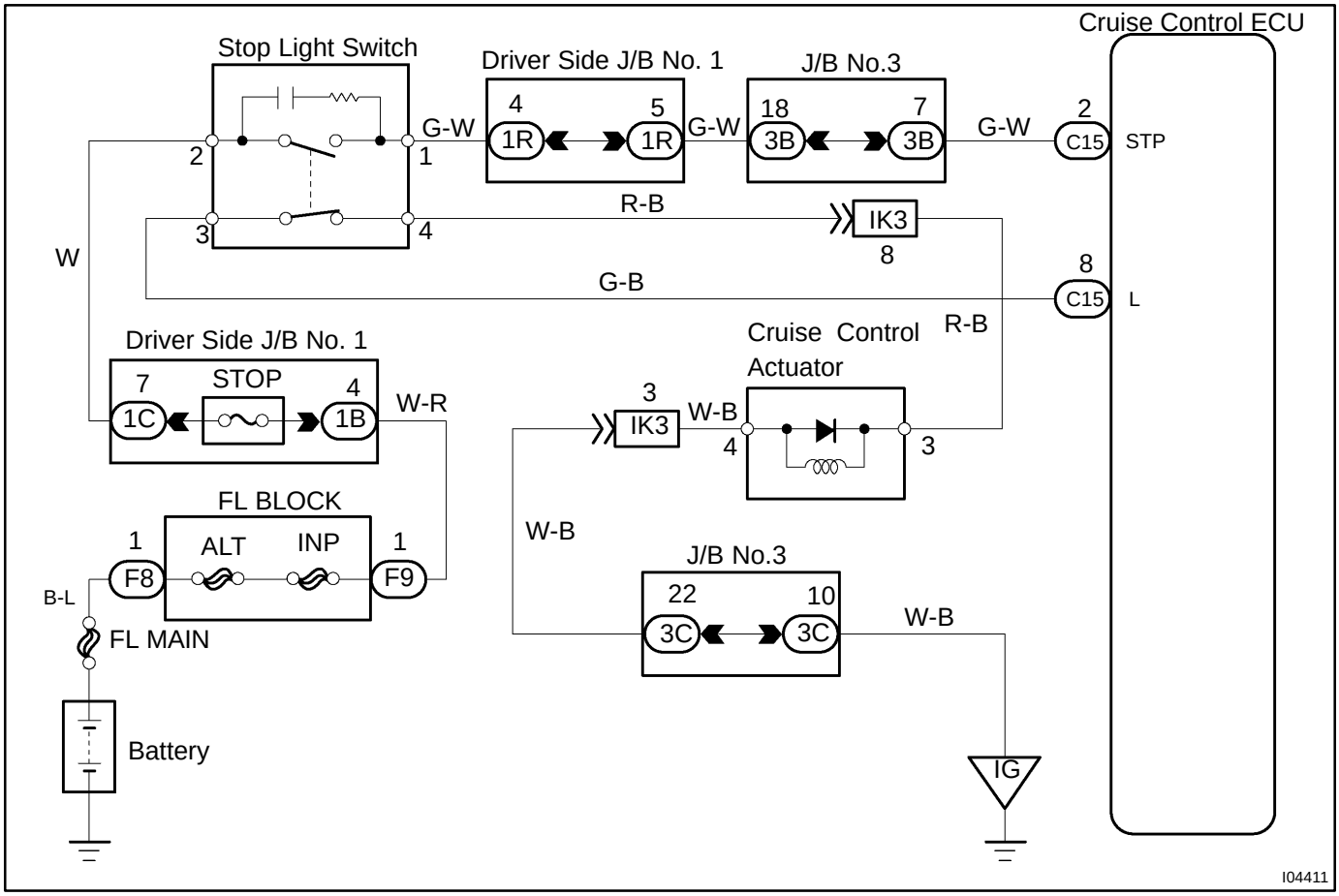
DI08T-24

Stop Light Switch Circuit

CIRCUIT DESCRIPTION

When the brake pedal is depressed, the stop light switch sends a signal to the ECU. When the ECU receives this signal, it cancels the cruise control.
A fail-safe function is provided so that the cancel functions normally, even if there is a malfunction in the stop light signal circuit.
The cancel conditions are: Battery positive voltage at terminal STP
When the brake is on, battery positive voltage normally is applied through the STOP fuse and stop light switch to terminal STP of the ECU, and the ECU turns the cruise control OFF.
If the harness connected to terminal STP has an open circuit, terminal STP will have battery positive voltage and the cruise control will be turned OFF.
Also, when the brake is on, the magnetic clutch circuit is cut mechanically by the stop light switch, turning the cruise control OFF. (See page DI-575 for operation of the magnetic clutch)

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check operation of stop light.**

CHECK:

Check that stop light comes on when brake pedal is depressed, and turns off when brake pedal is released.

NG → **Check stop light system (See page BE-2).**

OK

2	**Input signal check.**

Input Signal	Indicator Light Blinking Pattern
Stop Light switch ON	Light: OFF ↔ ON (SW OFF / SW ON)

CHECK:

(a) See input signal check on DI-563 .

(b) Check the indicator light when the brake pedal is depressed.

OK:

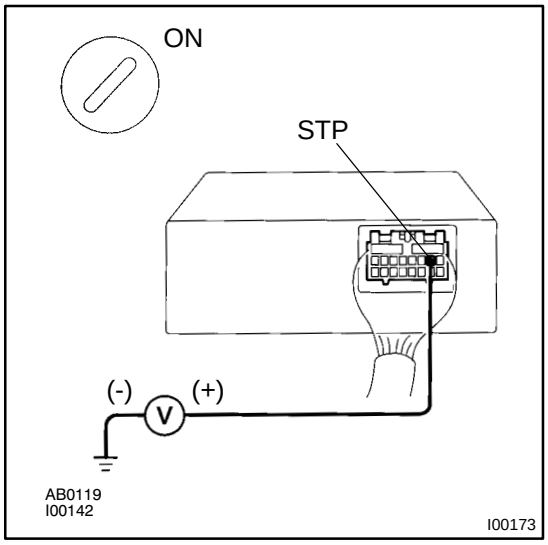
The indicator light goes off when the brake pedal is depressed.

OK → **Proceed to next circuit inspection shown on problem symptom table (See page DI-572).**

NG

cardiagn.com

3	Check voltage between terminal STP of cruise control ECU connector and body ground.



PREPARATION:

(a) Remove the ECU with connectors still connected.

(b) Turn ignition switch ON.

CHECK:

Measure voltage between terminal STP of cruise control ECU connector and body ground, when the brake pedal is depressed and released.

OK:

Depressed	10 - 14 V
Released	Below 1 V

OK → **Proceed to next circuit inspection shown on problem symptom table (See page DI-572).**

NG

4	Check for open in harness and connectors between terminal STP of cruise control ECU and stop light switch (See page IN-31).

NG → **Repair or replace harness or connector.**

OK

Check and replace cruise control ECU (See page IN-31).

cardiagn.com

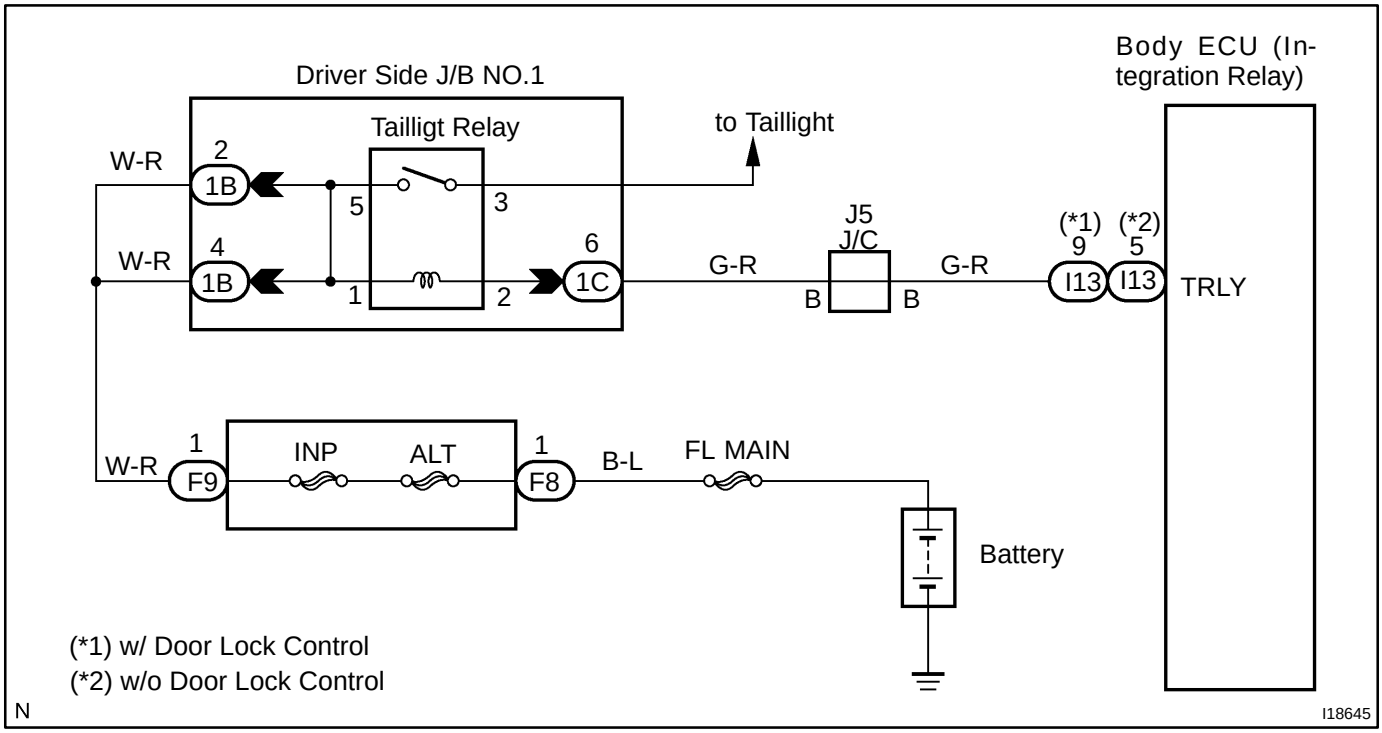
DI6LM-03

Taillight relay circuit

CIRCUIT DESCRIPTION

Taillight relay will be ”ON” by operating the taillight switch. The transistor which activates the tail light relay has two sorts: one activates by the tail light switch for fail safe and the other activates by CPU.

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	Check taillight relay (See page BE-17).

NG → Replace the taillight relay.

OK

2	Check wireharness and connector between taillight relay and Body ECU, battery and taillight relay (See page IN-31).

NG → Repair or replace wireharness or connector.

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI-636).

cardiagn.com

DI06Y-10

Taillight Control Relay Circuit

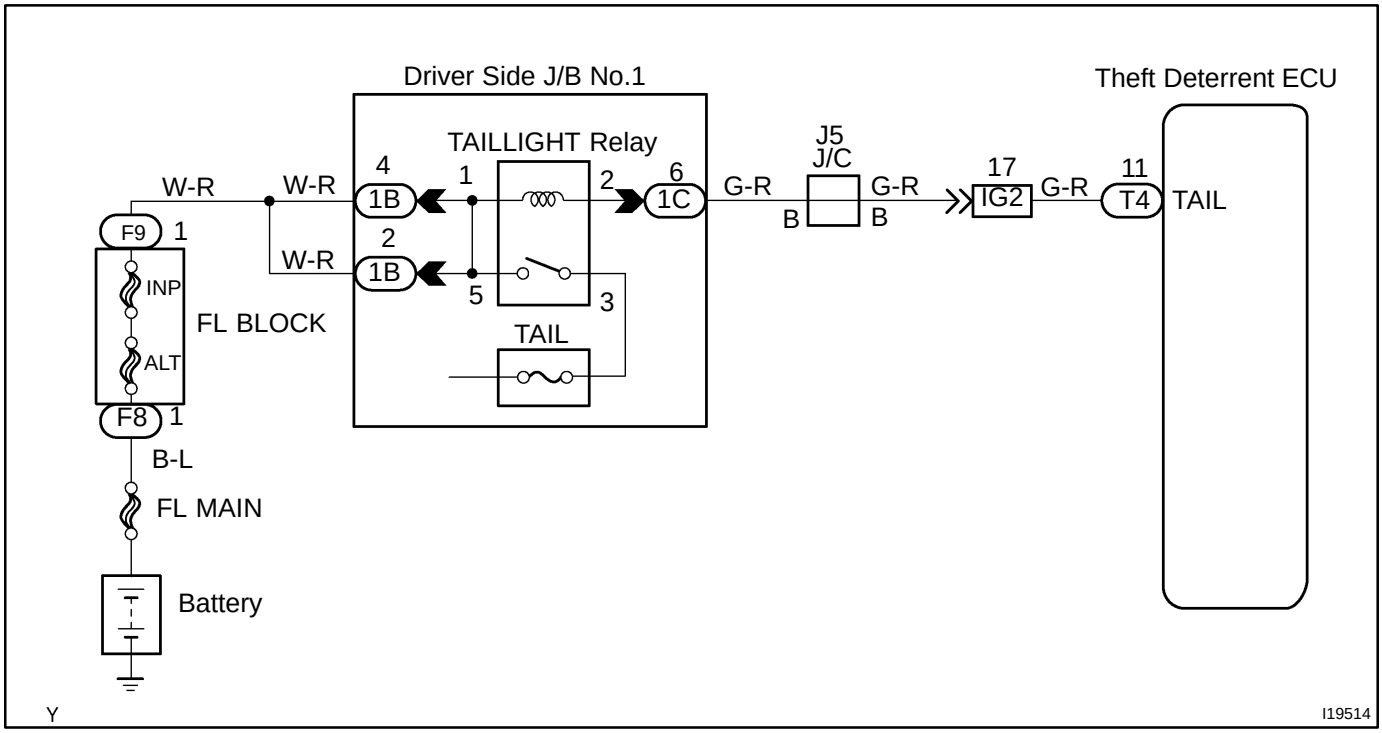
CIRCUIT DESCRIPTION

When the theft deterrent system is activated, it causes the Tr in the ECU to switch ON and OFF at intervals. This switches the taillight control relay ON and OFF, thus flashing the taillights (See the wiring diagram below).

In this condition, if any of the following operations is done, the Tr in the ECU goes OFF and the taillight control relay switches OFF, thus stopping the taillights flashing:

(1) Unlock the front LH or RH door with the key.
(2) Turn the ignition switch to ACC or ON position.
(3) Unlock the doors by the wireless door lock control system.
(4) Wait for approximately 60 seconds.
(5) Push the panic switch of the wireless door lock control system.

WIRING DIAGRAM



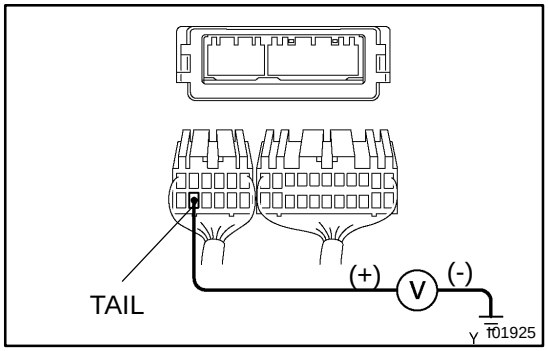
cardiagn.com

INSPECTION PROCEDURE

HINT:

The flow chart below is based on the premise that the taillights light up normally whenever the light control switch is operated. If taillight operation is not normal when the light control switch is operated, proceed to troubleshooting on page BE-2 .

1	**Check voltage between terminal TAIL of theft deterrent ECU connector and body ground.**



PREPARATION:

Disconnect the theft deterrent ECU connector.

CHECK:

Measure voltage between terminal TAIL of theft deterrent ECU connector and body ground.

OK:

Voltage: 10-14V

NG → **Check and repair harness and connector between theft deterrent ECU and taillight control relay (See page IN-31).**

OK →

Check and replace theft deterrent ECU.

cardiagn.com

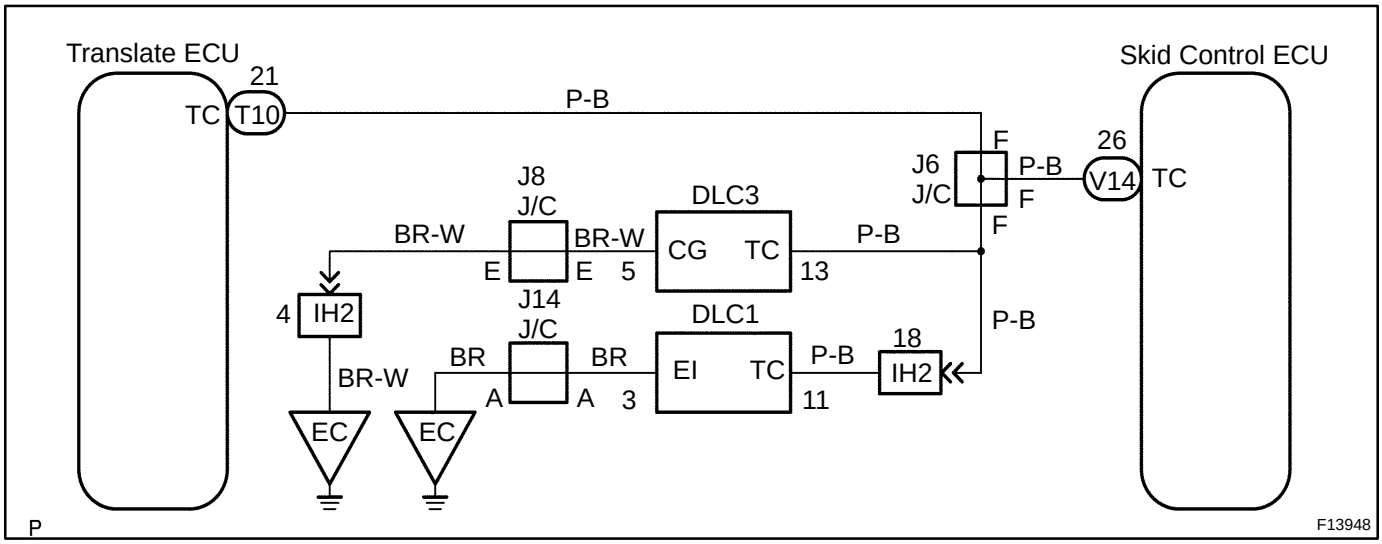
DI6OO-02

Tc Terminal Circuit

CIRCUIT DESCRIPTION

Connecting terminals Tc and E_1 of DLC1 or Tc and CG of DLC3 causes the ECU to display DTC by blinking the ABS warning light, VSC warning light and BRAKE warning light.

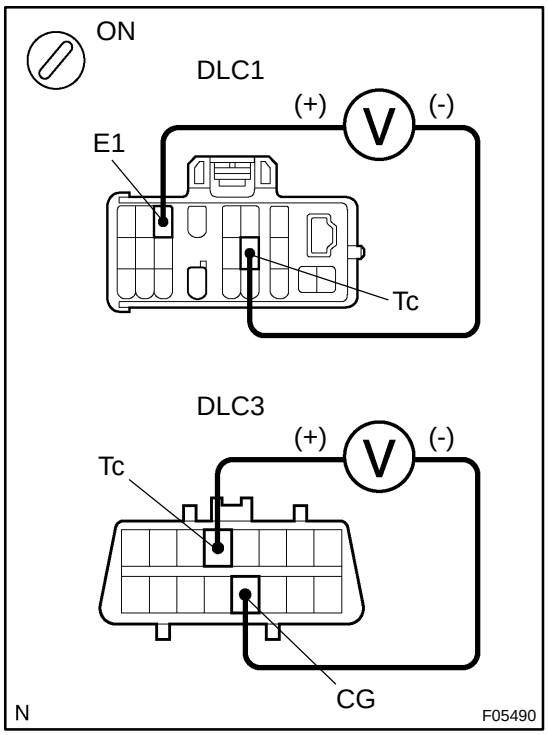
WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check voltage between terminals Tc and E1 of DLC1 or Tc and CG of DLC3.**



CHECK:

(a) Turn the ignition switch ON.

(b) Measure voltage between terminals Tc and E_1 of DLC1 or Tc and CG of DLC3.

OK:

Voltage: 10 - 14 V

OK	**If each warning light does not blink even after Tc and E_1 or Tc and CG are connected, the ECU may be defective.**

NG

2	**Check for open and short circuit in harness and connector between ECU and DLC1 or DLC3, DLC1 or DLC3 and body ground (See page IN-31).**

NG	**Repair or replace harness or connector.**

OK

Check and replace skid control ECU.

cardiagn.com

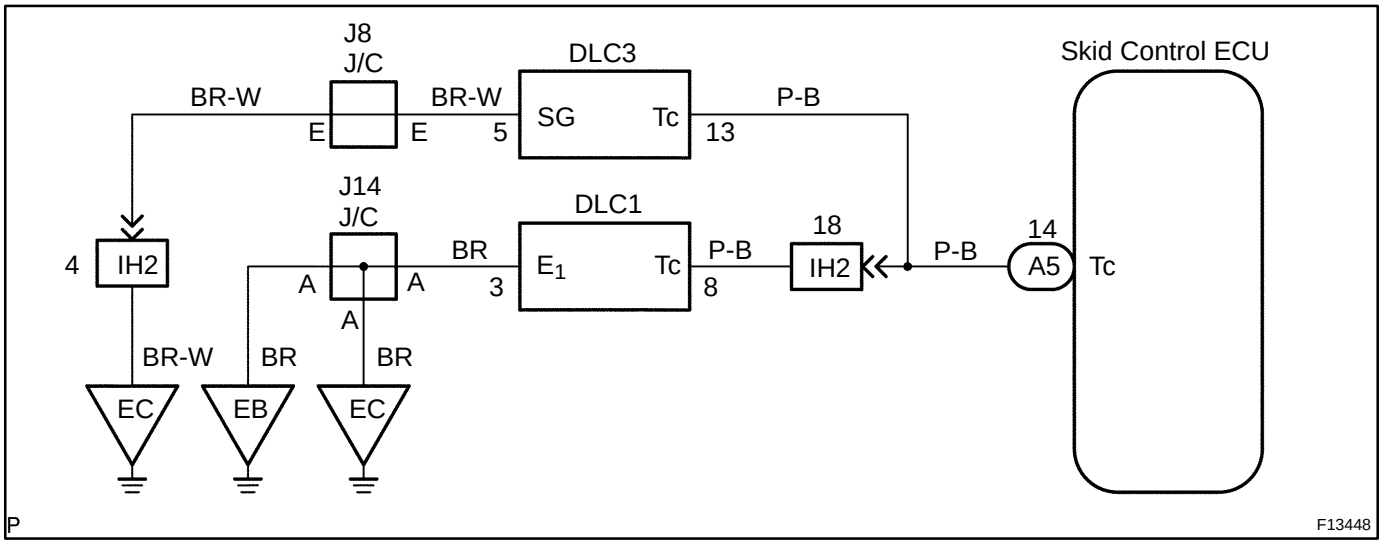
DI049-17

Tc Terminal Circuit

CIRCUIT DESCRIPTION

Connecting terminals Tc and E_1 of DLC1 or Tc and CG of DLC3 causes the ECU to display the DTC by flashing the ABS warning light.

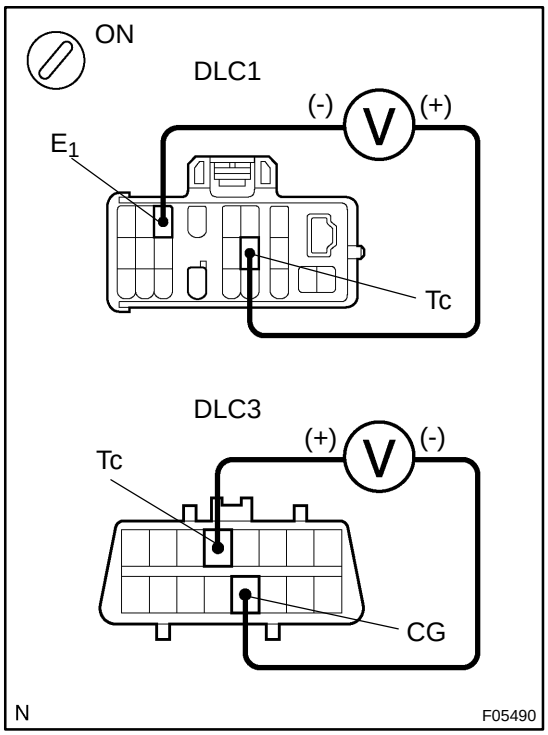
WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check voltage between terminals Tc and E_1 of DLC1, Tc and CG of DLC3.**



CHECK:

(a) Turn the ignition switch ON.

(b) Measure voltage between terminals Tc and E_1 of DLC1, Tc and CG of DLC3.

OK:

Voltage: 10 - 14 V

OK	**If ABS warning light does not blink even after Tc and E_1 or Tc and CG are connected, the ECU may be defective.**

NG

2	**Check for open and short circuit in harness and connector between ABS actuator and DLC1 or DLC3, DLC1 or DLC3 and body ground (See page IN-31).**

NG	**Repair or replace harness or connector.**

OK

Check and replace ABS actuator assembly.

cardiagn.com

DI1BQ-30

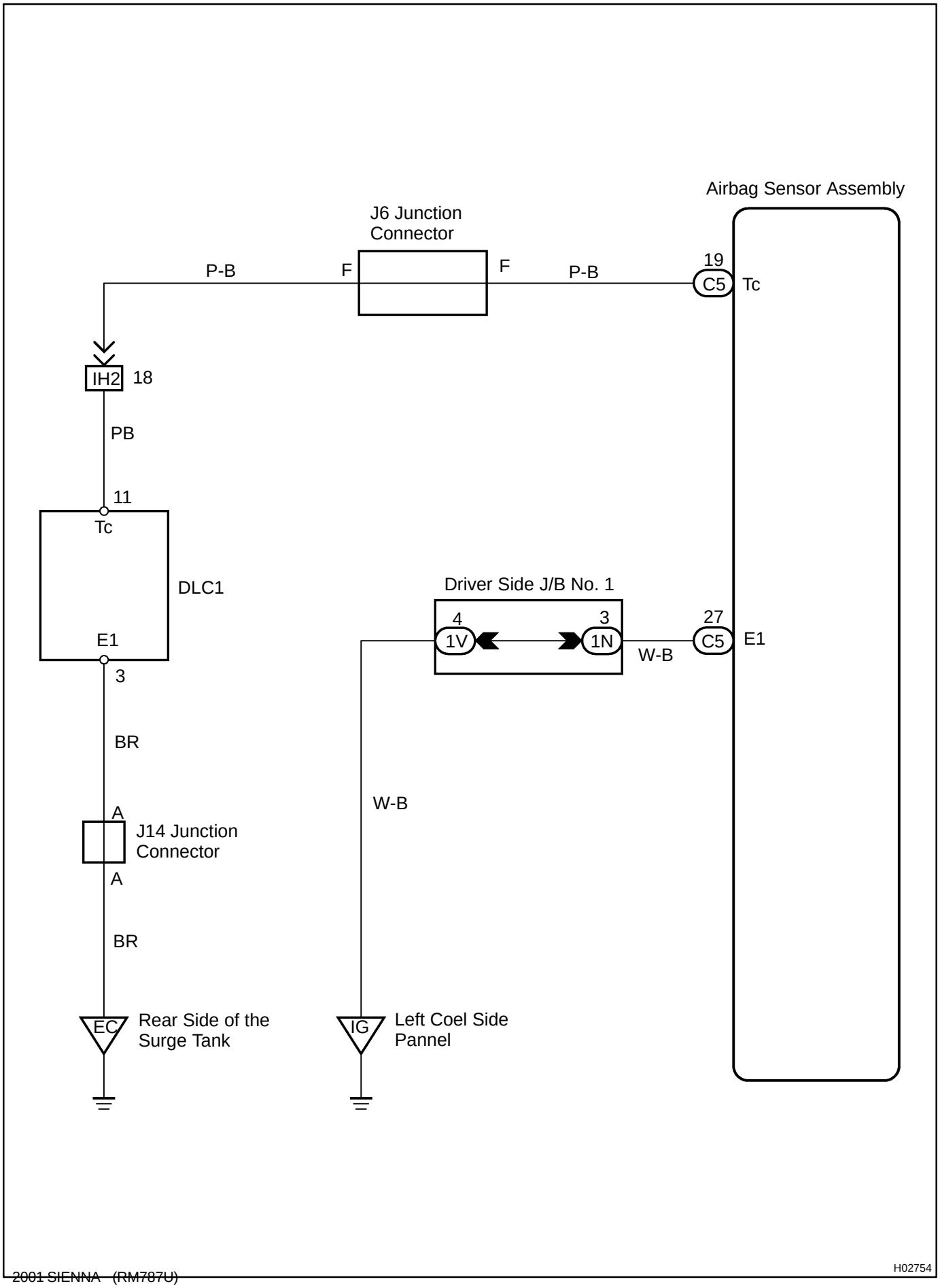
Tc Terminal Circuit

CIRCUIT DESCRIPTION

By connecting terminals Tc and CG of the DLC3 the airbag sensor assembly is set in the DTC output mode. The DTCs are displayed by blinking the SRS warning light.

cardiagn.com

WIRING DIAGRAM

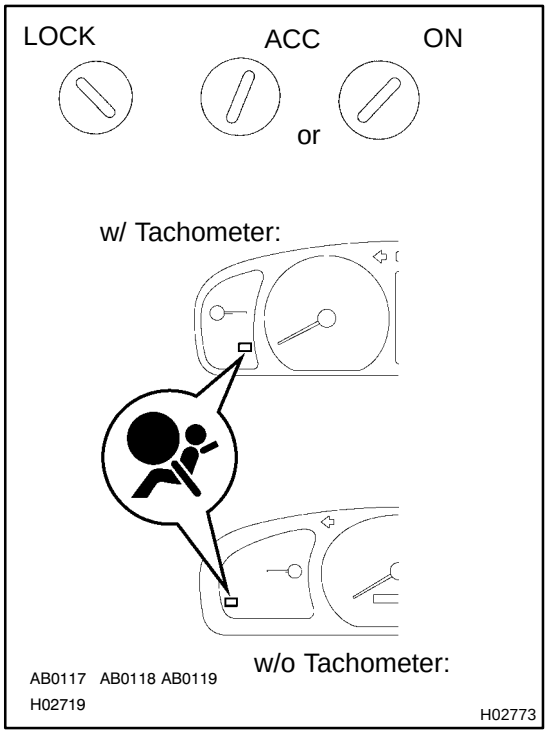


cardiagn.com

INSPECTION PROCEDURE

If the DTC is not displayed, do the following troubleshooting.

1	**Does SRS warning light light up for approx. 6 seconds?**



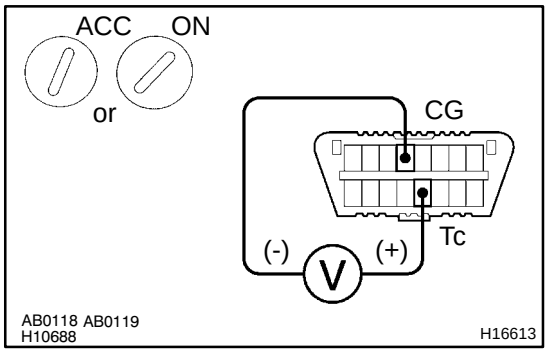
PREPARATION:

Check operation of the SRS warning light after ignition switch is turned from LOCK position to ACC or ON position.

NO → **Check SRS warning light system (See page DI-490).**

YES

2	**Check voltage between terminals Tc and CG of DLC3.**



PREPARATION:

Turn the ignition switch to ACC or ON.

CHECK:

Measure the voltage between terminals Tc and CG of DLC3.

OK:

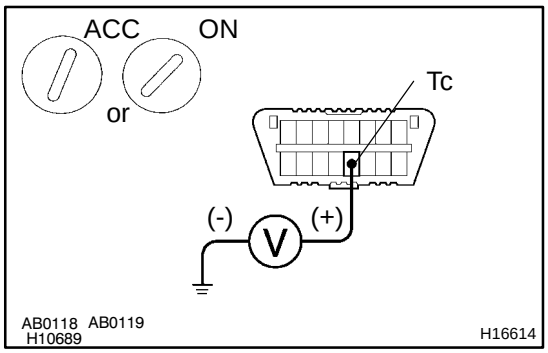
Voltage: 10 - 14 V

OK → **Go to step 4.**

NG

cardiagn.com

3	Check voltage between terminal Tc of DLC3 and body ground.



CHECK:

Measure the voltage between terminal Tc of DLC3 and body ground.

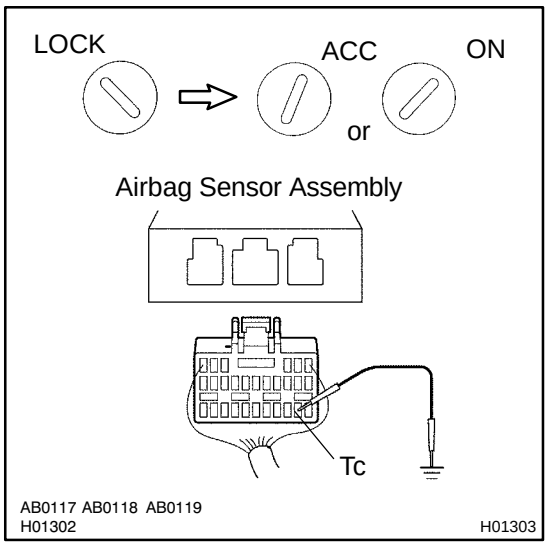
OK:

Voltage: 10 - 14 V

OK	Check harness between terminal CG of DLC3 and body ground.

NG

4	Check airbag sensor assembly.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect negative (-) terminal cable from the battery, and wait at least for 90 seconds.
(c) Disconnect the airbag sensor assembly connector.
(d) Insert service wire into terminal Tc from back side as shown in the illustration.
(e) Connect the airbag sensor assembly connector with service wire.
(f) Connect negative (-) terminal cable to the battery.
(g) Turn the ignition switch to ACC or ON and wait at least for 20 seconds.
(h) Connect service wire of terminal Tc to body ground.

CHECK:

Check operation of the SRS warning light.

OK:

SRS waning light comes on.

NOTICE:

Pay due attention to the terminal connecting position to avoid a malfunction.

OK	Check harness between the airbag sensor assembly and DLC3.

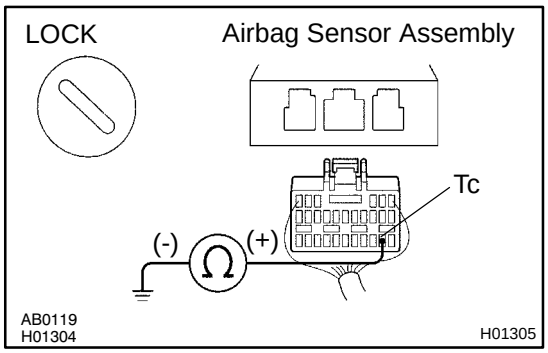
NG

Replace airbag sensor assembly.

cardiagn.com

If the DTC is displayed without a DTC check procedure, perform the following troubleshooting.

1	**Check resistance between terminal Tc of airbag sensor assembly and body ground.**



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect negative (-) terminal cable from the battery, and wait at least for 90 seconds.
(c) Disconnect the airbag sensor assembly connector.

CHECK:

Check resistance between terminal Tc of the airbag sensor assembly connector and body ground.

OK:

Resistance: 1 MΩ or Higher

NG → **Repair or replace harness or connector.**

OK

Replace airbag sensor assembly.

cardiagn.com

DI06V-11

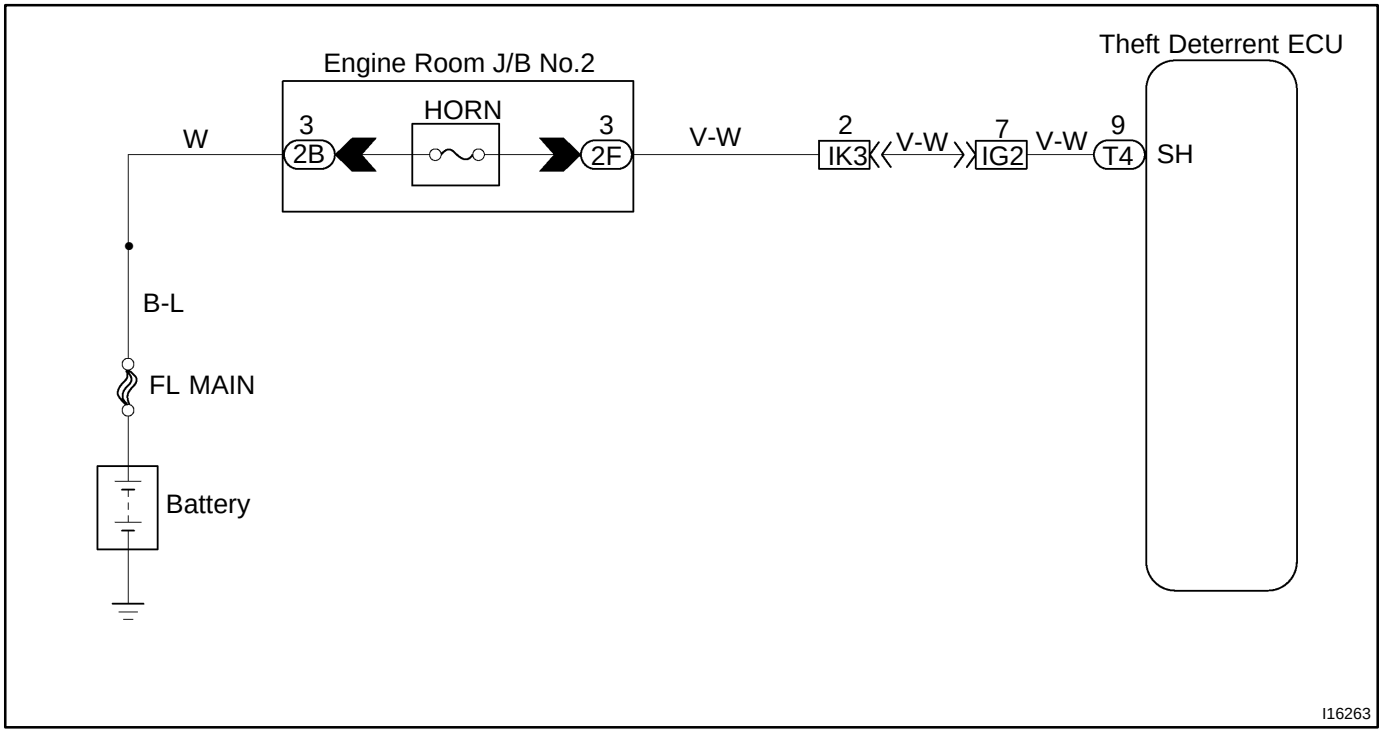
Theft Deterrent Horn Circuit

CIRCUIT DESCRIPTION

When the theft deterrent system is activated, contact (a) and contact (b) in the ECU close alternately, causing the theft deterrent horn to blow (See the wiring diagram below).
In this condition, if any of the following operations is done, the contact (a) in the ECU opens, thus stopping the theft deterrent horn from blowing:

(1) Unlock the front LH or RH door with the key.
(2) Turn the ignition switch to ACC or ON position.
(3) Unlock the doors by the wireless door lock control system.
(4) Wait for approximately 60 seconds.
(5) Push the panic switch of the wireless door lock control system.

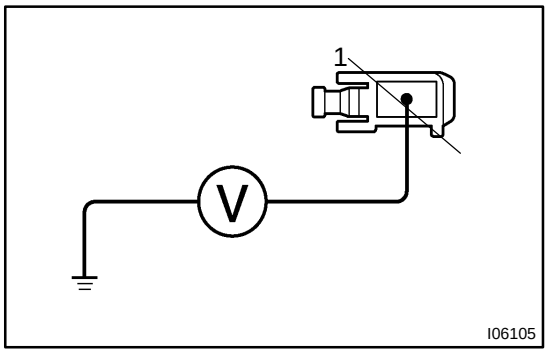
WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check voltage between terminal 1 of theft deterrent horn connector and body ground.**



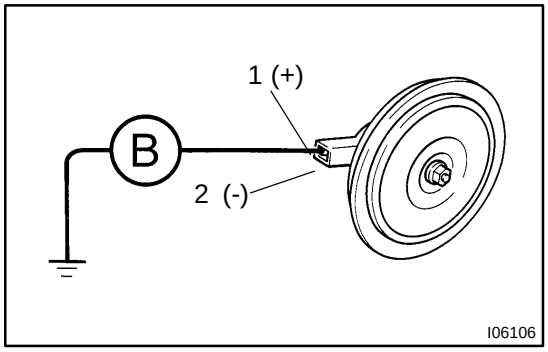
PREPARATION:
Remove the theft deterrent horn and disconnect the connector.
CHECK:
Measure voltage between terminal 1 of theft deterrent horn connector and body ground.
OK:

Voltage: 10-14V

NG	**Check and repair harness and connector between HORN fuse and theft deterrent horn.**

OK

2	**Check theft deterrent horn.**



CHECK:
Connect positive (+) lead from the battery to terminal 1 and negative (-) lead to body ground of theft deterrent horn connector.
OK:

Theft deterrent horn blows.

NG	**Replace theft deterrent horn.**

OK

cardiagn.com

3	**Check harness and connector between theft deterrent ECU and theft deterrent horn (See page IN-31).**

NG → **Check and repair harness or connector.**

OK

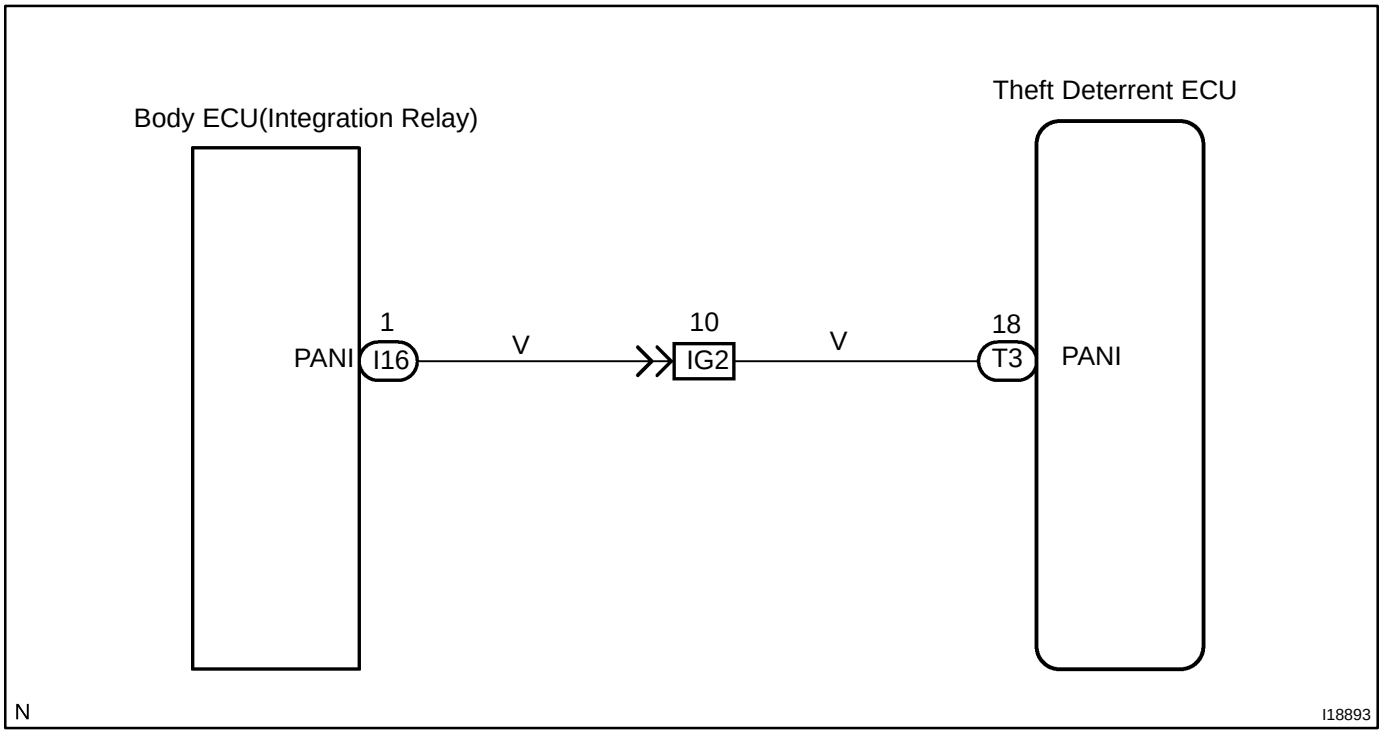
Check and replace theft deterrent ECU.

cardiagn.com

DI8AR-01

Theft deterrent ECU communication circuit

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check wireharness and connector between theft deterrent ECU and integration Relay .**

NG → **Repair or replace wireharness or connector.**

OK

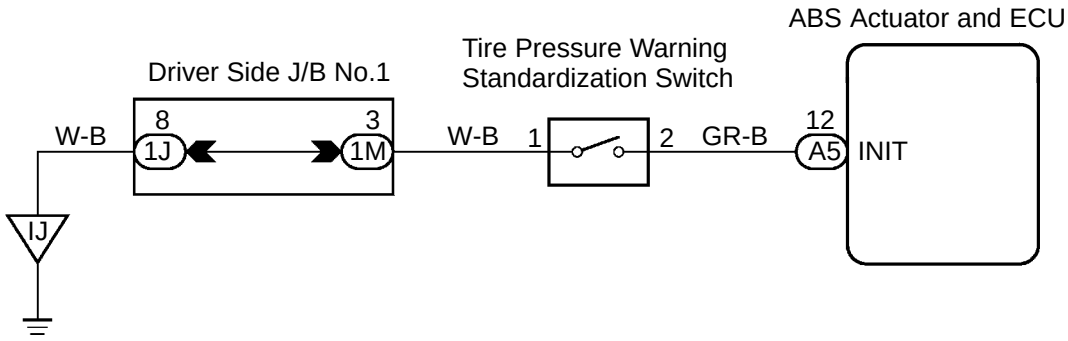
Proceed to next circuit inspection shown on problem symptoms table (See page DI-636).

cardiagn.com

DI235-01

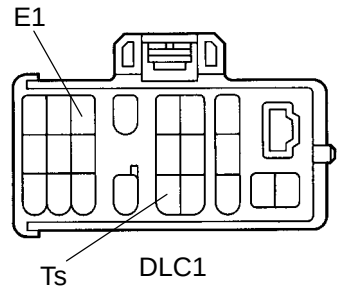
Tire Pressure Warning Standardization Switch

WIRING DIAGRAM



F04213

INSPECTION PROCEDURE



F02201

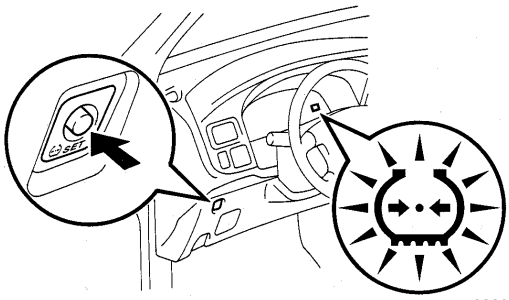
PREPARATION:

(a) Turn the ignition switch OFF.

(b) Using SST, connect terminals Ts and E1 of DLC1.
SST 09843-18020

(c) Start the engine.

1	**Check operation of tire pressure warning standardization switch.**



F03261

CHECK:

When press the tire pressure warning standardization switch and check that the tire pressure warning light flashes 3 times then it goes off.

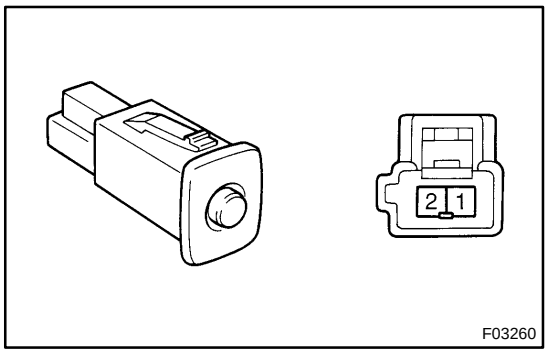
OK

Check the air pressure of the tire and adjust it to the specified pressure, after then initialize this system (See page DI-209).

NG

cardiagn.com

2	Check tire pressure warning standardization switch.



PREPARATION:

(a) Remove the tire pressure warning standardization switch.

(b) Remove the connector.

CHECK:

Check continuity between terminals 1 and 2 of tire pressure warning standardization switch when the switch is ON and OFF.

OK:

Switch position	Condition
ON (pushed)	Continuity
OFF (released)	No continuity (1MΩ or higher)

NG → **Replace the tire pressure warning standardization switch.**

OK ↓

3	Check for open circuit in harness and connector between ABS ECU and tire pressure warning standardization switch, tire pressure warning standardization switch and body ground (See page IN-31).

NG → **Repair or replace harness or connector.**

OK ↓

Check and replace ABS actuator assembly.

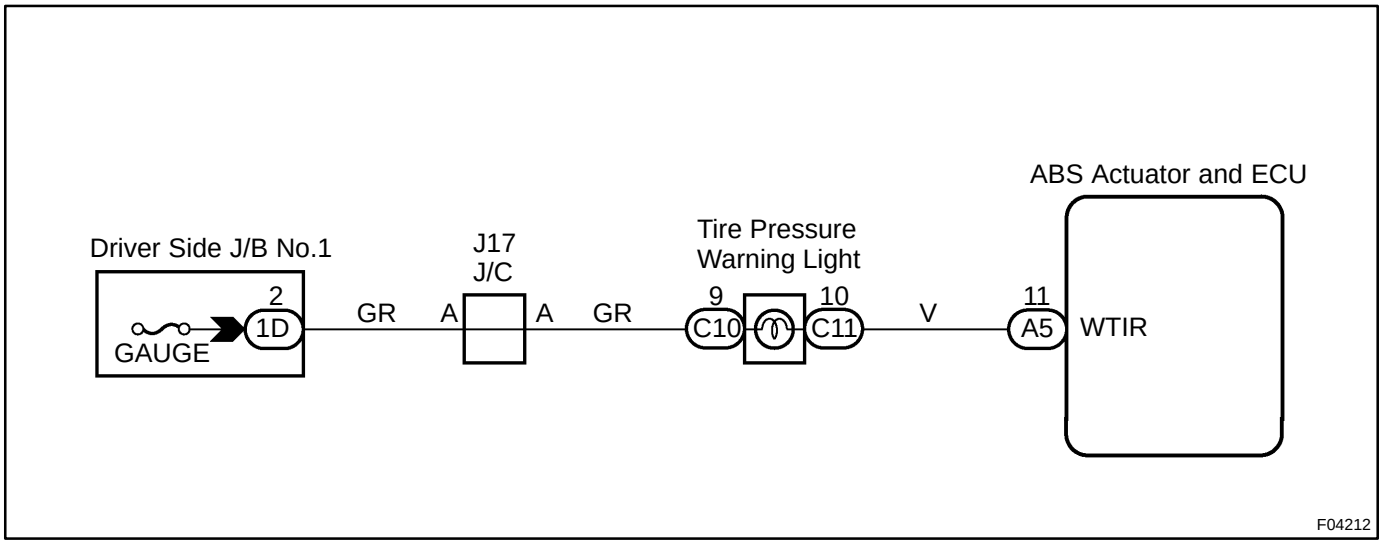
cardiagn.com

DI234-03

CIRCUIT INSPECTION

Tire Pressure Warning Light Circuit

WIRING DIAGRAM



INSPECTION PROCEDURE

1	**Check tire pressure warning light goes on for about 3 seconds when the ignition switch is turned on.**

OK → **Proceed to next circuit inspection shown in problem symptoms table (See page DI-212).**

NG

Troubleshoot in accordance with the chart below for each trouble symptom.

Tire pressure warning light does not light up	Go to step 2
Tire pressure warning light remains on	Go to step 5

2	**Check tire pressure warning light.**

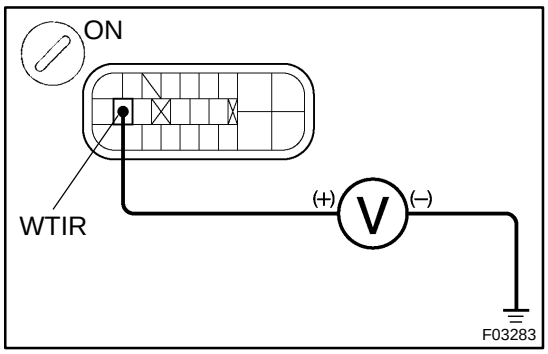
See combination meter troubleshooting on page BE-2 .

NG → **Repair bulb or combination meter assembly.**

OK

cardiagn.com

3	**Check voltage between terminal WTIR of ABS ECU and body ground.**



PREPARATION:
Disconnect the connector from the ABS ECU.
CHECK:
(a) Turn the ignition switch ON.
(b) Measure voltage between terminal WTIR of the connector on the wire harness side and body ground.
OK:
Voltage: 10 - 14 V

OK → **Proceed to next circuit inspection shown in problem symptoms table (See page DI-212).**

NG

4	**Check for open circuit in harness and connector between tire pressure warning light and ABS ECU (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

Check and replace ABS actuator assembly.

5	**Check tire pressure warning light goes off when disconnect the ABS ECU connector.**

NG → **Repair or replace harness or connector or combination meter assembly.**

OK

Check and replace ABS actuator assembly.

cardiagn.com

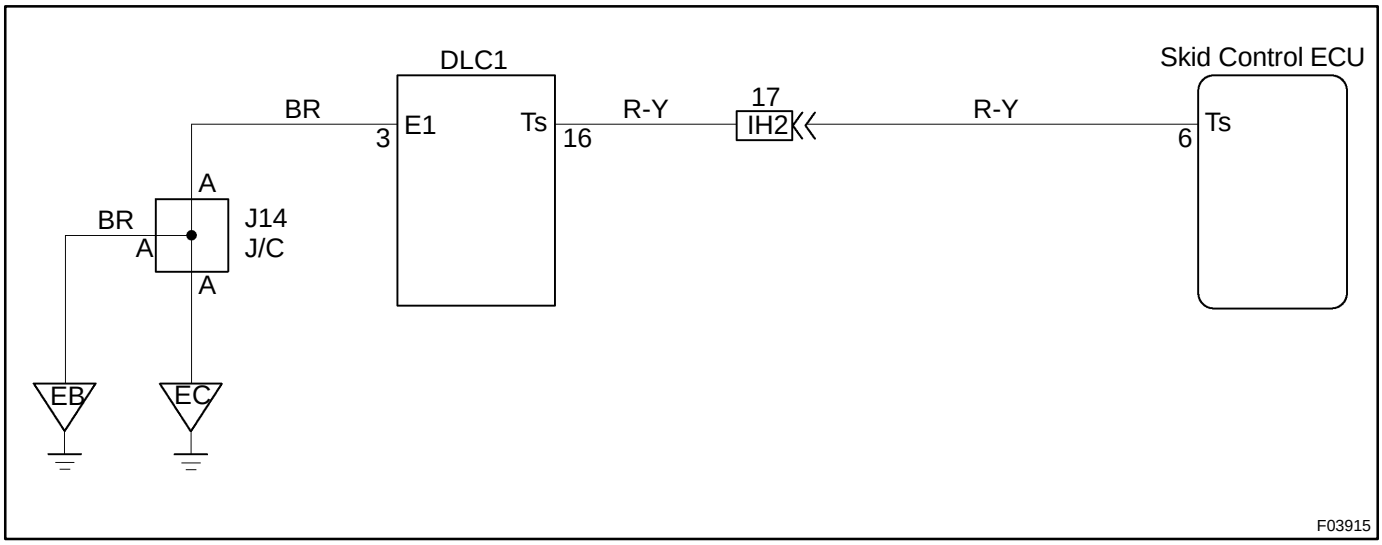
DI04A-14

Ts Terminal Circuit

CIRCUIT DESCRIPTION

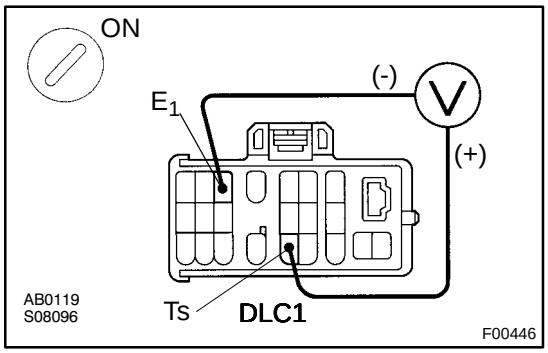
The sensor check circuit detects abnormalities which cannot be detected with the DTC check in the speed sensor signal.
Connecting terminals Ts and E_1 of the DLC1 in the engine compartment starts the check.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	**Check voltage between terminals Ts and E_1 of DLC1.**



CHECK:

(a) Turn the ignition switch ON.
(b) Measure voltage between terminals Ts and E_1 of DLC1.

OK:

Voltage: 10 - 14 V

OK	**If ABS warning light does not blink even after Ts and E_1 are connected, the ECU may be defective.**

NG

cardiagn.com

2	**Check for open and short circuit in harness and connector between ABS actuator and DLC1, DLC1 and body ground (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

Check and replace ABS actuator assembly.

cardiagn.com

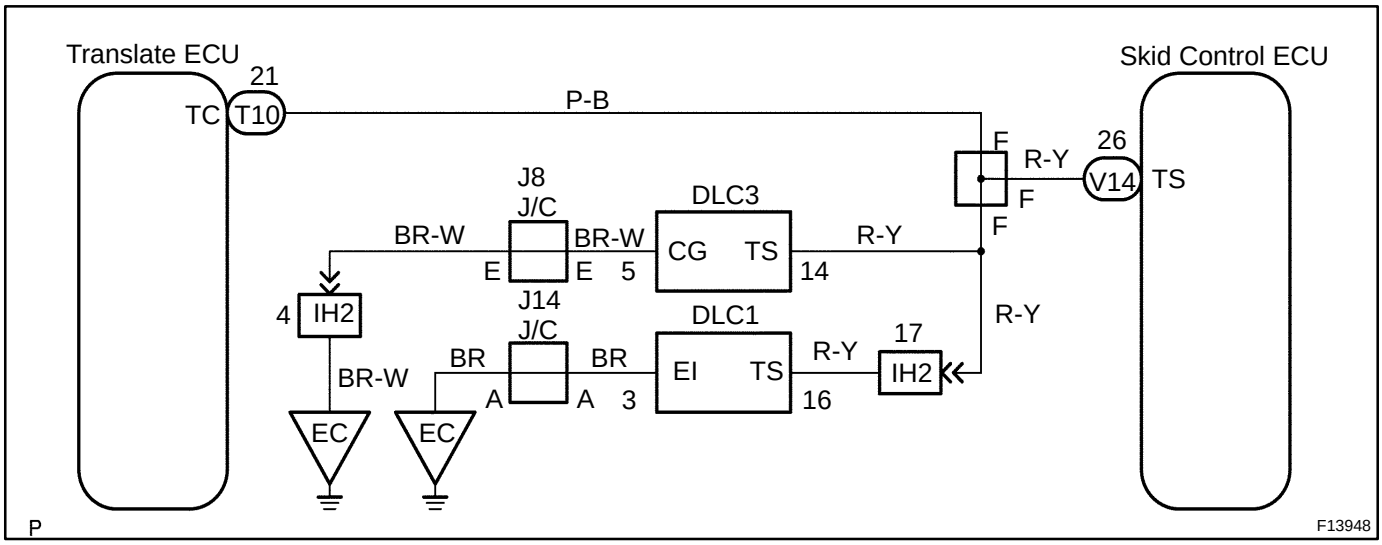
DI6OP-02

Ts Terminal Circuit

CIRCUIT DESCRIPTION

The sensor check circuit detects abnormality in the speed sensor signal which cannot be detected with the DTC check.
Connecting terminals Ts and E_1 of the DLC1 or Ts and CG of DLC3 starts the check.

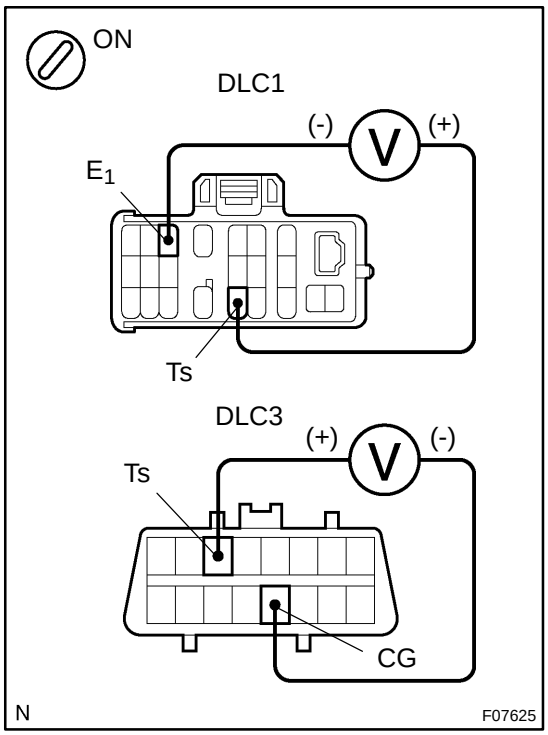
WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check voltage between terminals Ts and E_1 of DLC1.**



CHECK:

(a) Turn the ignition switch ON.

(b) Measure the voltage between terminals Ts and E_1 of DLC1 or Ts and CG of DLC3.

OK:

Voltage: 10 - 14 V

OK → **If ABS warning light does not blink even after Ts and E_1 or Ts and CG are connected, the ECU may be defective.**

NG

2	**Check for open and short circuit in harness and connector between skid control ECU and DLC1 or DLC3, DLC1or DLC3 and body ground (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

Check and replace skid control ECU.

cardiagn.com

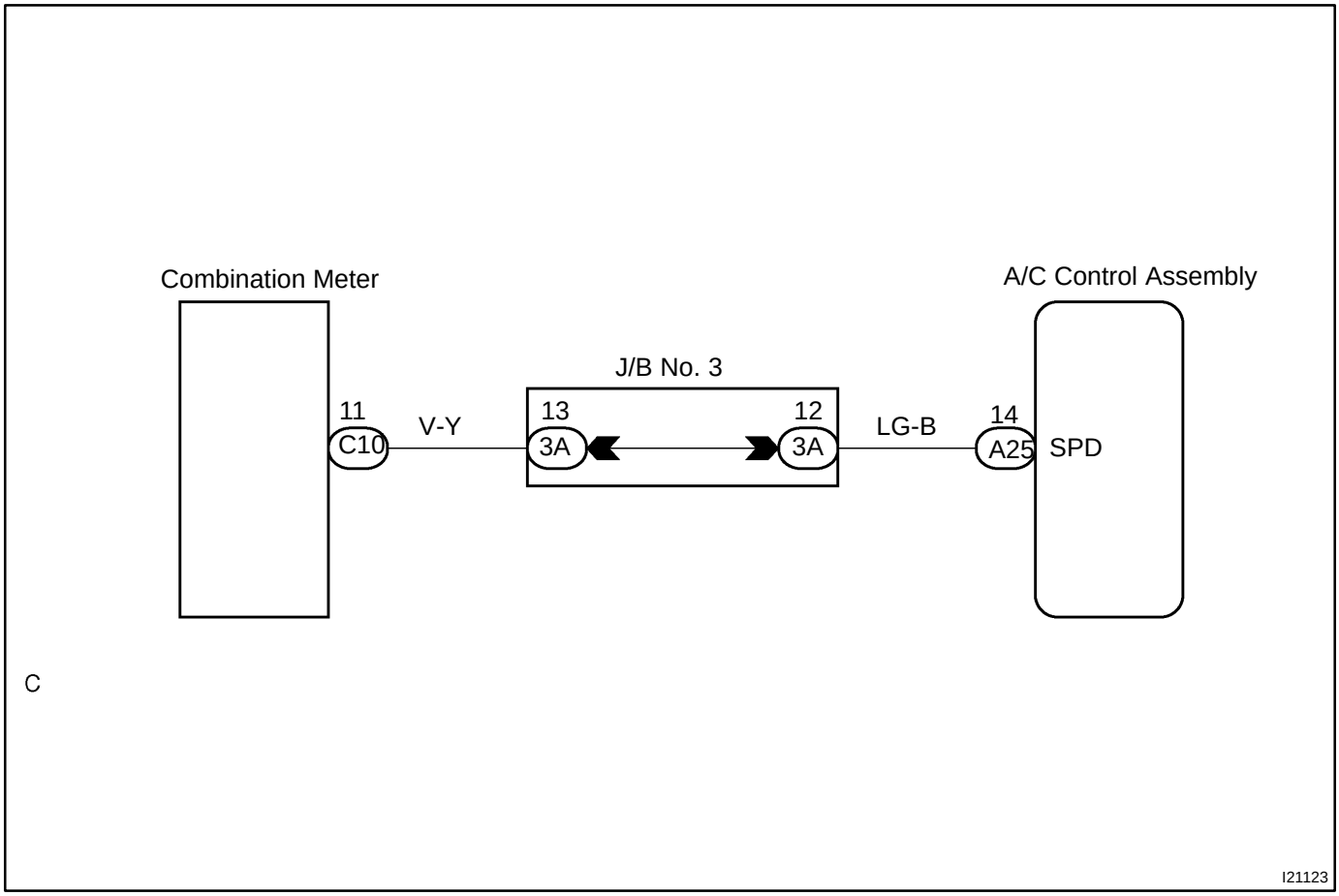
DI3WE-06

Vehicle Speed Signal Circuit

CIRCUIT DESCRIPTION

This A/C control assembly monitors the vehicle speed through signals sent from the speed sensor. The A/C control assembly uses these signals to revice the ambient temperature sensor signal.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	**Check operation of speedometer.**

CHECK:

Check that the tachometer operates normally.

NG	**Proceed to combination meter troubleshooting (See page BE-2).**

NG

cardiagn.com

2	**Check harness and connector between A/C control assembly and combination meter (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

Check and replace A/C control assembly.

cardiagn.com

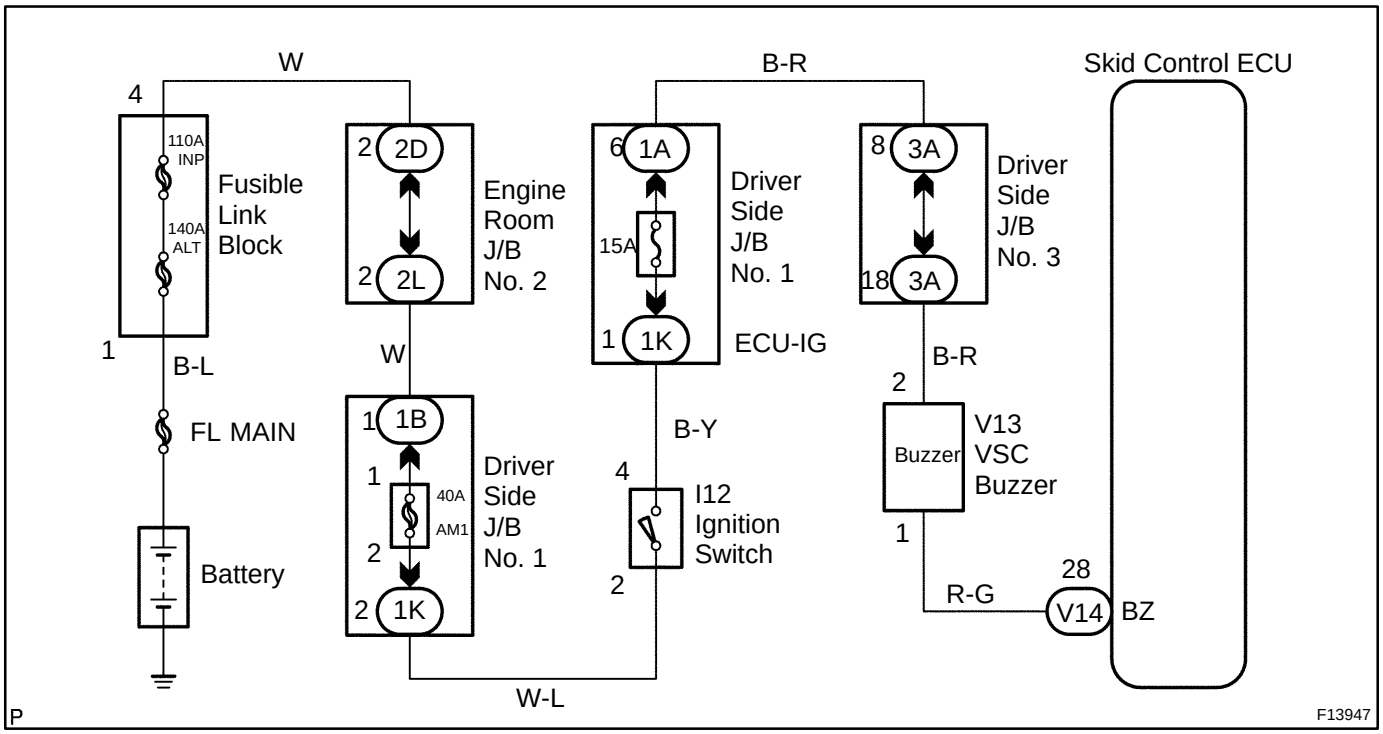
DI6ON-02

VSC Buzzer Circuit

CIRCUIT DESCRIPTION

The VSC buzzer sounds during VSC operation.

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:

Start the inspection from step 1 in case of using the TOYOTA hand-held tester and start from step 2 in case of not using the TOYOTA hand-held tester.

1	**Check operation of the VSC buzzer.**

PREPARATION:

(a) Connect the TOYOTA hand-held tester to the DLC3.
(b) Turn the ignition switch ON and push the TOYOTA hand-held tester main switch ON.
(c) Select the ACTIVE TEST mode on the TOYOTA hand-held tester.

CHECK:

Check "ON-OFF" function of the VSC buzzer with the TOYOTA hand-held tester.

OK	**Go to step 5.**

NG

cardiagn.com

2	**Check that the VSC buzzer connector is surely connected to the buzzer.**

NG → **Connect the connector to the bozzer.**

OK

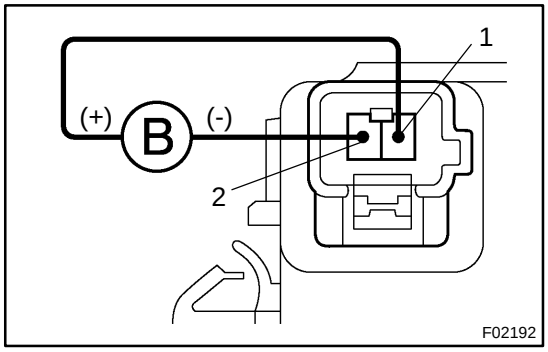
3	**Check voltage between terminal 1 of VSC buzzer and body ground.**

PREPARATION:
Remove the VSC buzzer with connectors still connected.
CHECK:
(a) Turn the ignition switch ON.
(b) Measure voltage between terminal (1) of VSC buzzer and body ground.
OK:
Voltage: 10 - 14 V

NG → **Repair or replace harness or connector from voltage supply to VSC buzzer.**

OK

4	**Check VSC buzzer.**



PREPARATION:
Disconnect the VSC buzzer connector.
CHECK:
Apply battery positive voltage to the terminals 1 and 2 of VSC buzzer connector, and check that the VSC buzzer sounds.

NG → **Replace VSC buzzer.**

OK

cardiagn.com

5	**Check for open and short circuit in harness and connector between skid control ECU and VSC buzzer (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

Check and replace skid control ECU.

cardiagn.com

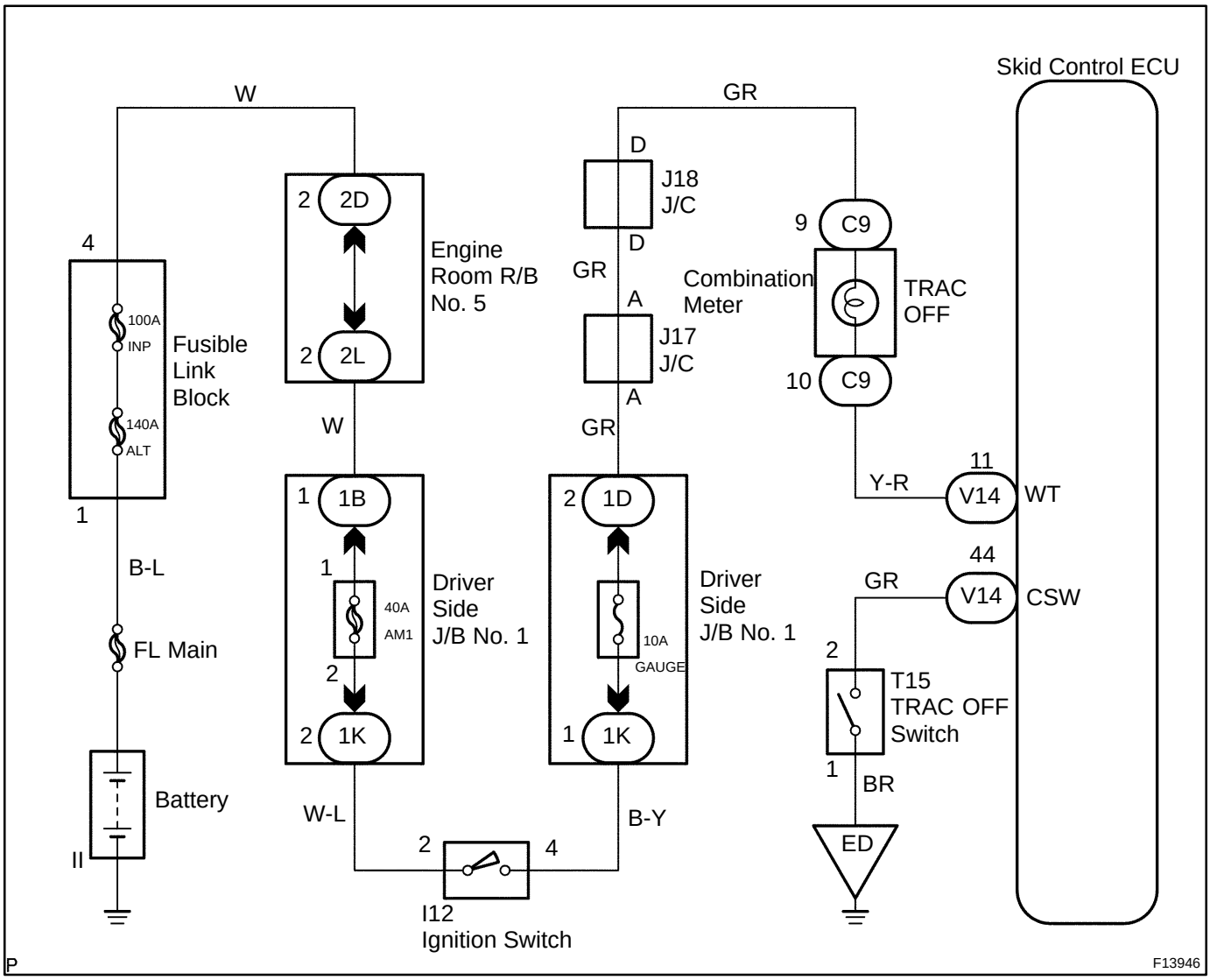
DI6OM-02

TRAC OFF Indicator Light, TRAC OFF Switch Circuit

CIRCUIT DESCRIPTION

This is the TRAC control main switch. When the TRAC OFF switch is pressed, TRAC control is deactivated and the TRAC OFF indicator light lights up. By turning off the ignition switch, TRAC control is surely activated when the ignition switch turns ON next time. Also, the TRAC OFF indicator light truns ”ON” when the ECU prohibit TRAC controls.

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

HINT:

Start the inspection from step 1 in case of using the TOYOTA hand-held tester and start from step 2 in case of not using the TOYOTA hand-held tester.

1	**Check operation of the TRAC OFF indicator light.**

PREPARATION:

(a) Connect the TOYOTA hand-held tester to the DLC3.
(b) Turn the ignition switch ON and push the TOYOTA hand-held tester main switch ON.
(c) Select the ACTIVE TEST mode on the TOYOTA hand-held tester.

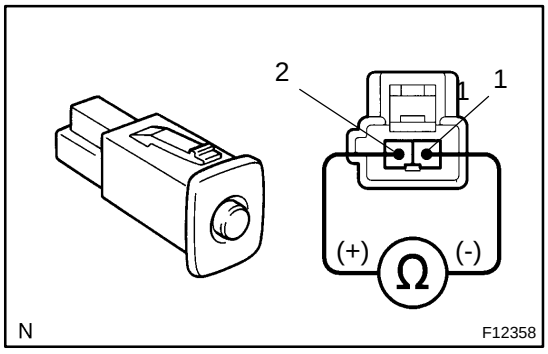
CHECK:

Check that "ON" and "OFF" of the TRAC OFF indicator light can be shown on the combination meter with the TOYOTA hand-held tester.

OK → **Check and replace skid control ECU.**

NG

2	**Check TRAC OFF switch.**



PREPARATION:

(a) Remove the TRAC OFF switch.
(b) Disconnect the TRAC OFF switch connector.

CHECK:

Measure the resistance between terminals 1 and 2 of the TRAC OFF switch when the TRAC OFF switch is ON and OFF.

OK:

TRAC OFF switch	Resistance
Pressed	Continuity
Released	1MΩ or higher

NG → **Replace TRAC OFF switch.**

OK

cardiagn.com

3	**Check for open and short circuit in harness and connector between terminal CSW of skid control ECU and TRAC OFF switch and body ground (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

4	**Check TRAC OFF indicator light.**

See combination meter troubleshooting on page BE-2 .

NG → **Repair or replace bulb or combination meter.**

OK

5	**Check for open and short circuit in harness and connector between terminal WT of skid control ECU and TRAC OFF indicator light, IG switch and TRAC OFF indicator light (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

Check and replace skid controlECU.

cardiagn.com

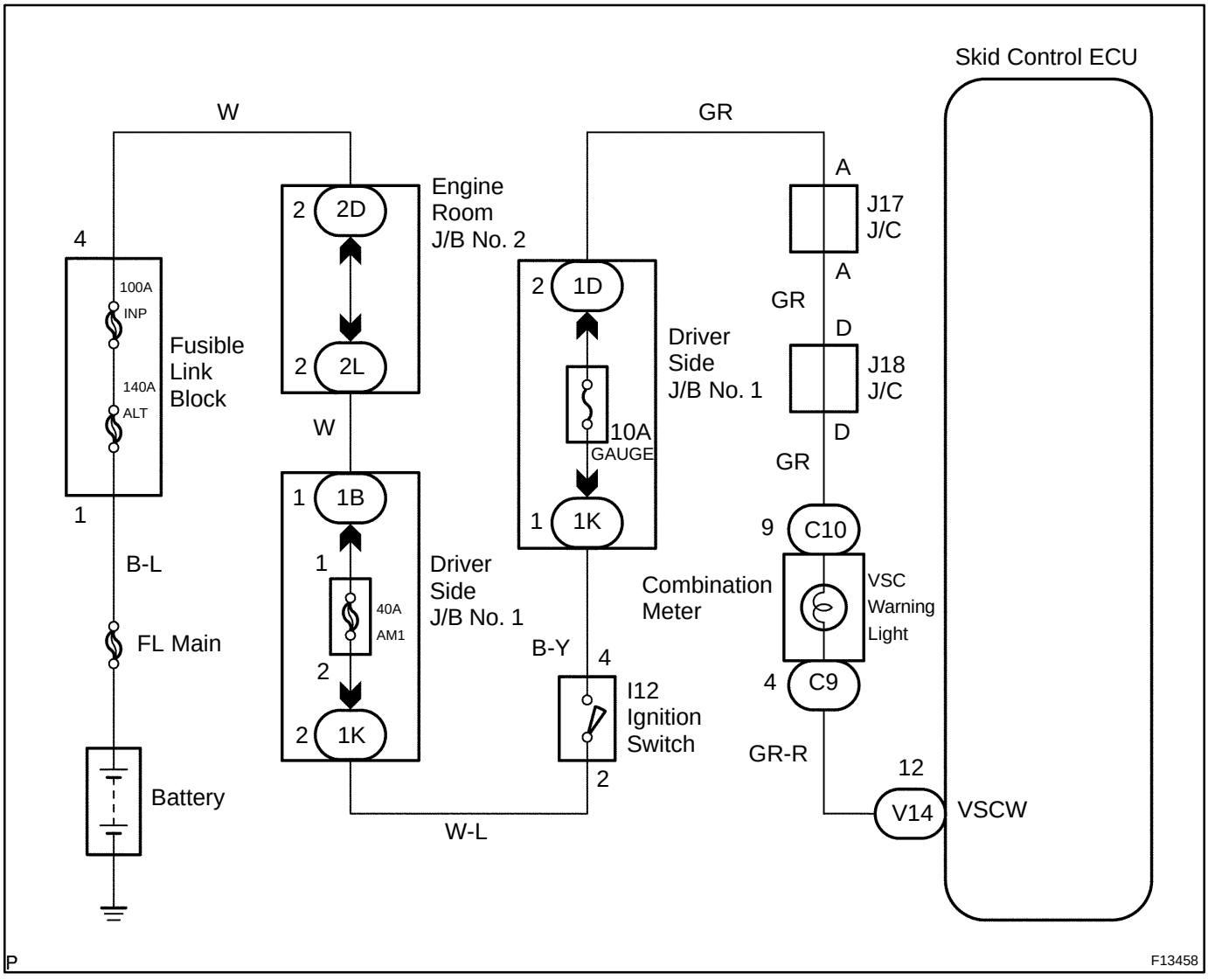
DI6OJ-02

VSC Warning Light Circuit

CIRCUIT DESCRIPTION

If the ECU stores DTC to be necessary to shut down VSC operation, the VSC warning light lights on the combination meter.

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

HINT:

Start the inspection from step 1 in case of using the TOYOTA hand-held tester and start from step 2 in case of not using the TOYOTA hand-held tester.

1	**Check operation of the VSC warning light.**

PREPARATION:

(a) Connect the TOYOTA hand-held tester to the DLC3.
(b) Turn the ignition switch ON and push the TOYOTA hand-held tester main switch ON.
(c) Select the ACTIVE TEST mode on the TOYOTA hand-held tester.

CHECK:

Check that "ON" and "OFF" of the VSC warning light can be shown on the combination meter with the TOYOTA hand-held tester.

OK → **Go to step 4.**

NG

2	**Is DTC output?**

YES → **Repair circuit indicated by the output code.**

NO

3	**Check VSC warning light.**

See the combination meter troubleshooting on page BE-2 .

NG → **Repair or replace bulb or combination meter.**

OK

cardiagn.com

4	**Check for open and short circuit in harness and connector between skid control ECU and VSC warning light, IG switch and VSC warning light (See page IN-31).**

NG → **Repair or replace harness or connector.**

OK

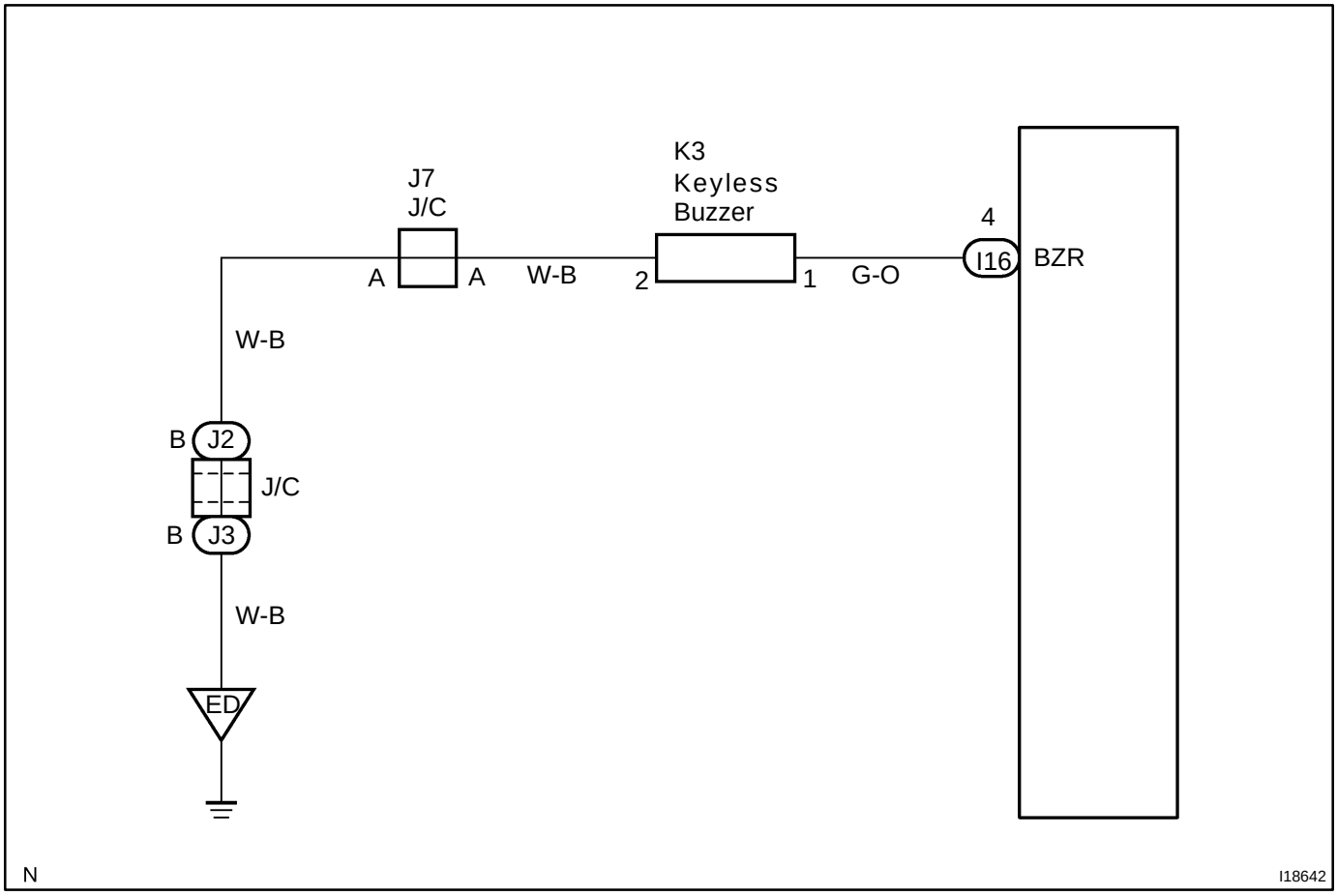
Check and replace skid control ECU.

cardiagn.com

DI6LW-03

Wireless door lock buzzer circuit

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	Check wireless door lock buzzer. (See page BE-81)

NG → Replace the wireless door lock buzzer.

OK

2	Check wireharness and connector between wireless door lock buzzer and Body ECU, Body ECU and wireless door lock buzzer (See page IN-31).

NG → Repair or replace wireharness or connector.

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI-636).

cardiagn.com

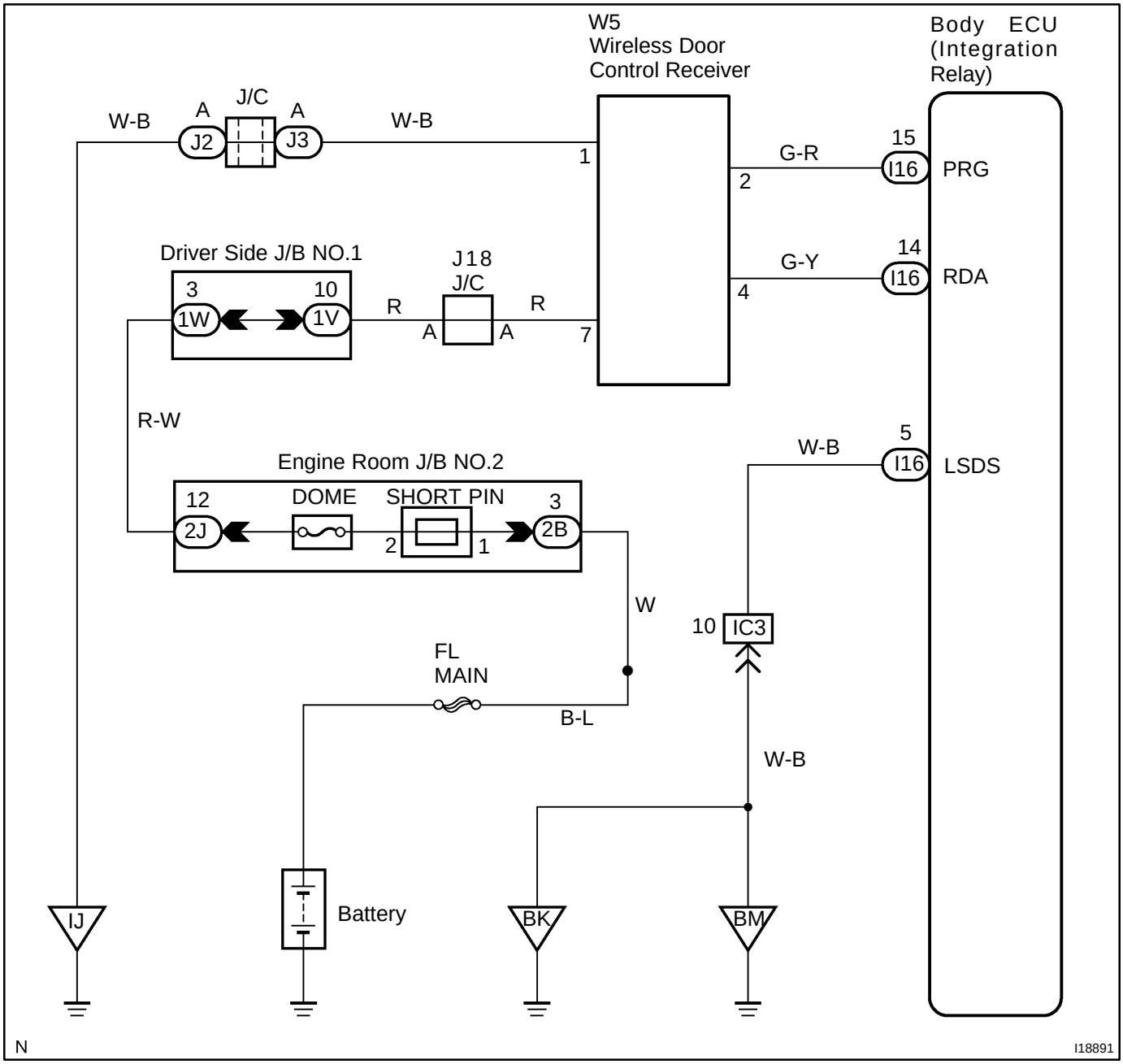
DI6LV-03

Wireless door lock tuner circuit

CIRCUIT DESCRIPTION

The signal from the transmitter will be input to the body ECU through RDA line. RDA line is diagnosed by the Body ECU, so check DTC also in case of the failure of the wireless function.

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1	**Check that DTC 42 is not output.**

NG → **Check the RDA line.**

OK ↓

2	**Check wireharness.**

PREPARATION:
Disconnect connectors of wireless door lock tuner and Body ECU.
CHECK:
Check continuity between terminals PRG of wireless door lock tuner and PRG of Body ECU.
OK:
Continuity

NG → **Repair or replace wireharness.**

OK ↓

3	**Check the wireless door lock tuner.**

CHECK:
Replace the wireless door lock tuner and check if it recovers normally.
OK:
Must be recovered normally.

NG → **Proceed to next circuit inspection shown on problem symptoms table (See page DI-636).**

OK ↓

Failure of the original wireless door lock tuner.

cardiagn.com

DI1KF-03

CUSTOMER PROBLEM ANALYSIS CHECK

ENGINE IMMOBLISER Check Sheet

Inspector's Name :

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

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

Symptoms	☐ Immobiliser is not set. (Engine starts with key codes other than the registered key code.)
	☐ Engine does not start.

Check Item	**Malfunction Indicator Light**	☐ Normal ☐ Remains ON ☐ Does not Light Up

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

cardiagn.com

DI15Z-10

CUSTOMER PROBLEM ANALYSIS CHECK

Supplemental Restraint System Check Sheet

Inspector's Name _____

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

Date Problem Occurred	/ /
Weather	☐ Fine ☐ Cloudy ☐ Rainy ☐ Snowy ☐ Other
Temperature	Approx.

Vehicle Operation	☐ Starting ☐ Idling ☐ Driving [☐ Constant speed ☐ Acceleration ☐ Deceleration ☐ Other]
Road Conditions	
Details Of Problem	

Vehicle Inspection and Repair History Prior to Occurrence of Malfunction (Including Supplemental Restraint System)	

Diagnosis System Inspection

SRS Warning Light Inspection	**1st Time**	☐ Remains ON ☐ Sometimes Lights Up ☐ Does Not Light Up
	2nd Time	☐ Remains ON ☐ Sometimes Lights Up ☐ Does Not Light Up
DTC Inspection	**1st Time**	☐ Normal Code ☐ Malfunction Code [Code.]
	2nd Time	☐ Normal Code ☐ Malfunction Code [Code.]

cardiagn.com

DI06N-03

CUSTOMER PROBLEM ANALYSIS CHECK

THEFT DETERRENT SYSTEM Check Sheet

Inspector's name: _____

Customer's Name		**Registration No.**	
		Registration Year	
		Frame No.	
Date of Vehicle Brought in	/ /	**Odometer Reading**	**km Mile**

Date Problem First Occurred		/ /
Frequency Problem Occurs		☐ Constant ☐ Sometimes (Times per day, month) ☐ Once only
Weather Conditions When Problem Occurred	**Weather**	☐ Fine ☐ Cloudy ☐ Rainy ☐ Snowy ☐ Various/Others
	Outdoor temperature	☐ Hot ☐ Warm ☐ Cool ☐ Cold (Approx. °F (°C))

Problem Symptom

☐ Theft deterrent system cannot be set.		
☐ Indicator light does not flash when the theft deterrent system is set. (It stays on or does not light at all.)		
☐ Theft deterrent system does not operate.	☐ When unlocked using the door lock knob. ☐ When the engine hood is opened.	Malfunction ☐ Horns only ☐ Theft deterrent horn only ☐ Headlights only ☐ Taillights only ☐ Starter cut only ☐ Door lock operation only
☐ System cannot be canceled once set.	☐ When door is unlocked using key or wireless door lock control system. ☐ When the key is inserted in the ignition key cylinder and turned to ACC or ON position. (However, only when the system has never operated) ☐ When the back door is opened with the key.	
☐ System cannot be canceled during warning operation.	☐ When door is unlocked using key or wireless door lock control system. ☐ When the key is inserted in the ignition key cylinder and turned to ACC or ON position.	
☐ Warning operation starts when the system is set and the door or back door is opened with the key.		
☐ Others.		

cardiagn.com

DI6NR-02

CUSTOMER PROBLEM ANALYSIS CHECK

ABS & BA & TRAC & VSC 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 Problem Occurs	☐ Continuous ☐ Intermittent (times a day)

Symptoms	☐ ABS does not operate.	
	☐ ABS does not operate efficiently.	
	☐ TRAC does not operate. (Wheels spin when starting rapidly.)	
	☐ VSC does not operate. (Wheels sideslip at the time of sharp turning.)	
	☐ BA does not operate.	
	ABS Warning Light Abnormal	☐ Remains ON ☐ Does not Light Up
	TRAC OFF Indicator Light Abnormal	☐ Remains ON ☐ Does not Light Up
	VSC Warning Light Abnormal	☐ Remains ON ☐ Does not Light Up
	SLIP Indicator Light Abnormal	☐ Remains ON ☐ Does not Light Up
	BRAKE Warning Light Abnormal	☐ Remains ON ☐ Does not Light Up

Check Item	**Malfunction Indicator Light**	☐ Normal ☐ Does not Light Up

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

cardiagn.com

DI22Y-01

CUSTOMER PROBLEM ANALYSIS CHECK

Tire Pressure Warning System Check Sheet

Inspector's Name :

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

Date Problem First Occurred	/ /
Frequency Problem Occurs	☐ Continuous ☐ Intermittent (times a day)

Symptoms	☐ **In spite of abnormally low pressure of the tire inflation pressure, the warning light does not light.**	
	☐ **The warning light was lighted and the tire was filled up air, but the warning light does not go off.**	
	Tire Pressure Warning Light Abnormal	☐ Remains ON ☐ Does not Light Up

Check Item	**ABS Warning Light**	☐ Normal ☐ Malfunction Code (Code)
	Tire	☐ Tire Pressure FR ( ) FL ( ) RR ( ) RL ( ) ☐ Tire Size FR ( ) FL ( ) RR ( ) RL ( ) ☐ Tire Type FR ( ) FL ( ) RR ( ) RL ( ) ☐ Tire Wear Condition FR ( ) FL ( ) RR ( ) RL ( ) ☐ History of changing tires or wheels When ( ) ☐ History of rotating tires When ( )

cardiagn.com

DI4EO-01

CUSTOMER PROBLEM ANALYSIS CHECK

POWER SLID DOOR CONTROL Check Sheet

Inspector's Name :

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

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

Problem Symptom	☐ Sliding roof control system does not operate.
	☐ Sliding roof operates abnormally or stops half way.
	☐ Jam protection system does not operate.

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

cardiagn.com

DI21C-02

CUSTOMER PROBLEM ANALYSIS CHECK

Transaxle Control System Check Sheet	Inspector's Name :

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

Date Problem Occurred	/ /
Frequency Problem Occurs	☐ Continuous ☐ Intermittent (times a day)

Symptoms	☐ Vehicle does not move (☐ Any position ☐ Particular position)
	☐ No up-shift (☐ 1st → 2nd ☐ 2nd → 3rd ☐ 3rd → O/D)
	☐ No down-shift (☐ O/D → 3rd ☐ 3rd → 2nd ☐ 2nd → 1st)
	☐ Lock-up malfunction
	☐ Shift point too high or too low
	☐ Harsh engagement (☐ N → D ☐ Lock-up ☐ Any drive position)
	☐ Slip or shudder
	☐ No kick-down
	☐ Others ( )

Check Item	Malfunction Indicator Lamp	☐ Normal	☐ Remains ON

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

cardiagn.com

DI21M-01

CUSTOMER PROBLEM ANALYSIS CHECK

ENGINE CONTROL SYSTEM Check Sheet

Inspector's Name _____

Customer's Name		Model and Model Year	
Driver's Name		Frame No.	
Date Vehicle Brought in		Engine Model	
License No.		Odometer Reading	km miles

Problem Symptoms	☐ Engine does not Start	☐ Engine does not crank ☐ No initial combustion ☐ No complete combustion
	☐ Difficult to Start	☐ Engine cranks slowly ☐ Other _____
	☐ Poor Idling	☐ Incorrect first idle ☐ Idling rpm is abnormal ☐ High (rpm) ☐ Low (rpm) ☐ Rough idling ☐ Other _____
	☐ Poor Driveability	☐ Hesitation ☐ Back fire ☐ Muffler explosion (after-fire) ☐ Surging ☐ Knocking ☐ Other _____
	☐ Engine Stall	☐ Soon after starting ☐ After accelerator pedal depressed ☐ After accelerator pedal released ☐ During A/C operation ☐ Shifting from N to D ☐ Other _____
	☐ Others	

Dates Problem Occurred		
Problem Frequency		☐ Constant ☐ Sometimes (times per day/month) ☐ Once only ☐ Other _____
Condition When Problem Occurs	Weather	☐ Fine ☐ Cloudy ☐ Rainy ☐ Snowy ☐ Various/Other _____
	Outdoor Temperature	☐ Hot ☐ Warm ☐ Cool ☐ Cold (approx. ____°F/____°C)
	Place	☐ Highway ☐ Suburbs ☐ Inner city ☐ Uphill ☐ Downhill ☐ Rough road ☐ Other _____
	Engine Temperature	☐ Cold ☐ Warming up ☐ After warming up ☐ Any temperature ☐ Other _____
	Engine Operation	☐ Starting ☐ Just after starting (min.) ☐ Idling ☐ Racing ☐ Driving ☐ Constant speed ☐ Acceleration ☐ Deceleration ☐ A/C switch ON/OFF ☐ Other _____

Condition of MIL		☐ Remains on	☐ Sometimes light up ☐ Does not light up
DTC Inspection	Normal Mode (Precheck)	☐ Normal	☐ Malfunction code(s) (code) ☐ Freezed frame data ( )
	Check Mode	☐ Normal	☐ Malfunction code(s) (code) ☐ Freezed frame data ( )

cardiagn.com

DI05M-03

CUSTOMER PROBLEM ANALYSIS CHECK

CRUISE CONTROL SYSTEM Check Sheet

Inspector's name: _____

Customer's Name		**Registration No.**	
		Registration Year	
		Frame No.	
Date of Vehicle Brought in	/ /	**Odometer Reading**	**km Mile**

Condition of Problem Occurrence	**Date of Problem Occurrence**	/ /
	Frequency Problem Occurs?	☑ Continuous ☑ Intermittent (Times a day)
	Vehicle Speed when Problem Occurred	**km Mile**

Symptoms	☑ Auto cancel occurs	● Driving condition ☐ City driving ☐ Freeway ☐ Up hill ☐ Down hill ● After cancel occurred, did the driver activate cruise control again? ☐ Yes ☐ No
	☐ Cancel does not occur	☐ With brake ON ☐ Except D position shift ☐ When control SW turns to CANCEL position
	☐ Cruise control malfunction	☐ Slip to acceleration side ☐ Slip to deceleration side ☐ Hunting occurs ☐ O/D cut off does not occur ☐ O/D does not return
	☐ Switch malfunction	☐ SET ☐ ACCEL ☐ COAST ☐ RESUME ☐ CANCEL
	☐ Cruise MAIN indicator light	☐ Remains ON ☐ Does not light up ☐ Blinks

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

cardiagn.com

DI3EZ-01

CUSTOMER PROBLEM ANALYSIS CHECK

AIR CONDITIONING SYSTEM Check Sheet

Inspector's name:

Customer's Name		**Registration No.**	
		Registration Year	
		Frame No.	
Date vehicle Brought In	/ /	**Odometer Reading**	**km Miles**

Date of Problem Occurrence	/ /
How Often does Problem Occur?	☐ Continuous ☐ Intermittent (times a day)
Weather	☐ Fine ☐ Cloudy ☐ Snowy ☐ Various / Other
Outdoor Temperature	☐ Hot ☐ Warm ☐ Cool ☐ Cold (Approx. °F °C)

Symptoms	**Air Flow Control is Faulty**	☐ Blower motor does not operation ☐ Blower motor speed does not change (Always Hi, Always Med, Always Lo)
	Temperature Control is Faulty	☐ Cabin temperature does not go down ☐ Cabin temperature does not rise ☐ Response is slow
	Air Inlet Control is Faulty	☐ Cannot change between FRS and REC (Always Fresh or always Recirculating)
	Vent Control is Faulty	☐ Mode will not chage ☐ Will not enter the desired mode

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

cardiagn.com

DI03U-07

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 Problem Occurs	☐ Continuous ☐ Intermittent (times a day)

Symptoms	☐ ABS does not operate.	
	☐ ABS does not operate intermittently.	
	ABS 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)

cardiagn.com

DI6LG-02

CUSTOMER PROBLEM ANALYSIS CHECK

BODY CONTROL SYSTEM Check Sheet

Inspector's name: _____

Customer's Name		**Registration No.**	
		Registration Year	
		Frame No.	
Date Vehicle Brought in	/ /	**Odometer Reading**	**km Mile**

Date Problem First Occurred		/ /
Frequency Problem Occurs		☐ Constant ☐ Sometimes (times per day, month) ☐ Once only
Weather Conditions When Problem Occurred	**Weather**	☐ Fine ☐ Cloudy ☐ Rainy ☐ Snowy ☐ Various/ Others
	Outdoor Temperature	☐ Hot ☐ Warm ☐ Cool ☐ Cold (Approx. °F (°C))

Malfunction System	☐ Key Unlock Warning System
	☐ Headlight and Taillight System (Light Auto Turn-of f system Daytime Running Light System)
	☐ Slide Door system
	☐ Auto Lock/Unlock System
	☐ Automatic Light Control System
	☐ Illuminated Entry System
	☐ Theft Deterrent System
	☐ Seat Belt Warning
	☐ Wireless Door Lock Control System
	☐ Power Door Lock Control System
	☐ Others (Buzzer etc.)

cardiagn.com

DI4EQ-01

DIAGNOSTIC TROUBLE CODE CHART

DTC No. (See Page)	Detection Item	Trouble Area
1 - 2	Normal	
1 - 3 (DI-511)	Door position out of range	• Drive Unit
1 - 4 (DI-512)	Motor drive circuit	• ECU
2 - 2 (DI-513)	No optical sensor pulses	• Optical Sensor
2 - 3 (DI-514)	No secondary latch input	• Latch Switch

cardiagn.com

DI03W-16

DIAGNOSTIC TROUBLE CODE CHART

NOTICE:

Before replacing or removing the part, turn the ignition switch OFF.

HINT:

- Using SST 09843-18020 or 09843-18040, connect the terminals Tc and E_1 of DLC1 or Tc and CG of DLC3.
- If any abnormality is not found when inspecting each inspection part, inspect ECU.
- If a malfunction code is displayed during the DTC check, check the circuit listed for 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.

DTC No. (See Page)	Detection Item	Trouble Area
11 (DI-227)	Open circuit in ABS solenoid valve relay circuit	• ABS solenoid valve relay • Valve supply voltage
12 (DI-227)	Short circuit in ABS solenoid valve relay circuit	
13 (DI-229)	Open circuit in ABS motor relay circuit	• ABS motor relay • Pump motor voltage • Pump motor lead disconnected
14 (DI-229)	Short circuit in ABS motor relay circuit	
21 (DI-231)	Right front solenoid valve faulty	• Right front circuit • ABS actuator
22 (DI-231)	Left front solenoid valve faulty	• Left front circuit • ABS actuator
23 (DI-231)	Right rear solenoid valve faulty	• Right rear circuit • ABS actuator
24 (DI-231)	Left rear solenoid valve faulty	• Left rear circuit • ABS actuator
31* (DI-233)	Right front wheel speed sensor signal malfunction	• Right front, left front speed sensor • Right rear, left rear axle hub • Each speed sensor circuit • Sensor installation • Sensor rotor
32* (DI-233)	Left front wheel speed sensor signal malfunction	
33* (DI-233)	Right rear wheel speed sensor signal malfunction	
34* (DI-233)	Left rear wheel speed sensor signal malfunction	
41 (DI-239)	Low battery positive voltage or abnormally high battery positive voltage	• Battery • Charging system • Power source circuit
49 (DI-243)	Open circuit in stop light switch circuit	• Stop light switch • Stop light switch circuit
51* (DI-245)	Pump motor is locked	ABS pump motor
Always ON (DI-247)	Malfunction in ECU IG power source circuit	• Battery • Charging system • Power source circuit • ABS waring light circuit • Skid control ECU

* : As the DTC cannot be erased by replacing parts alone, do either of the following operations.

(1) Clear the DTC (See page DI-220).

(2) At the vehicle speed of 20 km/h (12 mph), drive the vehicle for 30 sec. or more.

cardiagn.com

DI21O-03

DIAGNOSTIC TROUBLE CODE CHART

SAE CONTROLLED

HINT:

Parameters listed in the chart may not be exactly the same as your reading due to the type of instrument or other factors.

If a malfunction code is displayed during the DTC check in check mode, check the circuit for that code listed in the table below. For details of each code, turn to the page referred to under the "See page " for the respective "DTC No." in the DTC chart.

DTC No. (See Page)	Detection Item	Trouble Area	MIL*	Memory
P0100 (DI-22)	Mass Air Flow Circuit Malfunction	●Open or short in mass air flow meter circuit ●Mass air flow meter ●ECM	○	○
P0101 (DI-26)	Mass Air Flow Circuit Range/Performance Problem	●Mass air flow meter	○	○
P0110 (DI-27)	Intake Air Temp. Circuit Malfunction	●Open or short in intake air temp. sensor circuit ●Intake air temp. sensor (built into mass air flow meter) ●ECM	○	○
P0115 (DI-31)	Engine Coolant Temp. Circuit Malfunction	●Open or short in engine coolant temp. sensor circuit ●Engine coolant temp. sensor ●ECM	○	○
P0116 (DI-35)	Engine Coolant Temp. Circuit Range/Performance Problem	●Engine coolant temp. sensor ●Cooling system	○	○
P0120 (DI-37)	Throttle/Pedal Position Sensor/Switch "A" Circuit Malfunction	●Open or short in throttle position sensor circuit ●Throttle position sensor ●ECM	○	○
P0121 (DI-41)	Throttle/Pedal Position Sensor/Switch "A" Circuit Range/Performance Problem	●Throttle position sensor	○	○
P0128 (DI-47)	Thermostat Malfunction	●Thermostat		
P0125 (DI-42)	Insufficient Coolant Temp. for Closed Loop Fuel Control	●Fuel system ●Injector ●Ignition system ●Gas leakage on exhaust system ●Open or short in A/F sensor circuit (bank 1, 2 sensor 1) ●A/F sensors (bank 1, 2 sensor 1) ●ECM	○	○
P0136 (DI-48)	Heated Oxygen Sensor Circuit Malfunction (Bank 1 Sensor 2)	●Heated oxygen sensor	○	○
P0141 (DI-50)	Heated Oxygen Sensor Heater Circuit Malfunction (Bank 1 Sensor 2)	●Same as DTC No. P0135	○*1	○
P0171 (DI-52)	System too Lean (Fuel Trim)	●Air intake (hose loose) ●Fuel line pressure ●Injector blockage ●Mass air flow meter ●Engine coolant temp. sensor ●A/F sensors (bank 1, 2 sensor 1) ●Gas leakage on exhaust system	○*1	○

cardiagn.com

P0172 (DI-52)	System too rich (Fuel Trim)	●Fuel line pressure ●Injector leak, blockage ●Heated oxygen sensor malfunction ●Mass air flow meter ●Engine coolant temp. sensor ●A/F sensors (bank 1, 2 sensor 1) ●Gas leakage on exhaust system	○*1	○
P0174 (DI-52)	System too Lean (A/F Lean Malfunction)	●Same as DTC P0171	○	○
P0175 (DI-52)	System too Rich (A/F Rich Malfunction)	●Same as DTC P0172	○	○
P0300 (DI-57)	Random/Multiple Cylinder Misfire Detected	●Ignition system ●Injector ●Fuel line pressure ●Compression pressure ●Valve clearance not to specification ●Valve timing ●Mass air flow meter ●Engine coolant temp. sensor ●Open or short engine wire ●Connector connection ●ECM	○*2	○
P0301 P0302 P0303 P0304 P0305 P0306 (DI-57)	Misfire Detected - Cylinder 1 - Cylinder 2 - Cylinder 3 - Cylinder 4 - Cylinder 5 - Cylinder 6			
P0325 (DI-62)	Knock Sensor 1 Circuit Malfunction	●Open or short in knock sensor 1 circuit ●Knock sensor 1 (looseness) ●ECM	○*1	○
P0330 (DI-62)	Knock Sensor 2 Circuit Malfunction	●Open or short in knock sensor 2 circuit ●Knock sensor 2 (looseness) ●ECM	○*1	○
P0335 (DI-65)	Crankshaft Position Sensor ”A” Circuit Malfunction	●Open or short in crankshaft position sensor circuit ●Crankshaft position sensor ●Starter ●ECM	○*1	○
P0340 (DI-67)	Camshaft Position Sensor Circuit Malfunction	●Open or short in camshaft position sensor circuit ●Camshaft position sensor ●Starter ●ECM	○*1	○
P0420 (DI-69)	Catalyst System Efficiency Below Threshold	●Three-way catalytic converter ●Open or short in heated oxygen sensors (bank 1, sensor 2) circuit ●Heated oxygen sensors (bank 1, sensor 2) ●Open or short in A/F sensors (bank 1, 2 sensor 1) circuit ●A/F sensors (bank 1, 2 sensor 1)	○*2	○
P0440 (DI-72)	Evaporative Emission Control System Malfunction	●Vapor pressure sensor ●Fuel tank cap incorrectly installed ●Fuel tank cap cracked or damaged ●Vacuum hose cracked, holed, blocked, damaged or disconnected ((1) or (2) in fig. 1) ●Hose or tube cracked, holed, damaged or loose seal ((3) in fig. 1) ●Fuel tank cracked, holed or damaged ●Charcoal canister cracked, holed or damaged	○*1	○

cardiagn.com

P0441 (DI-78)	Evaporative Emission Control System Incorrect Purge Flow	●Open or short in VSV circuit for EVAP ●Open or short in VSV circuit for vapor pressure sensor ●Open or short in vapor pressure sensor circuit ●VSV for EVAP ●VSV for vapor pressure sensor ●Vapor pressure sensor ●Vacuum hose cracks, holed blocked, damaged or disconnected ((1), (4), (5), (6) and (7) in fig.1) ●Charcoal canister cracks, holed or damaged	○	○
P0442 (DI-72)	Evaporative Emission Control System Leak Detected (Small Leak)	●Same as DTC P0440	○	○
P0446 (DI-78)	Evaporative Emission Control System Vent Control Malfunction	●Same as DTC P0441	○	○
P0450 (DI-95)	Evaporative Emission Control System Pressure Sensor Malfunction	●Open or short in vapor pressure sensor circuit ●Vapor pressure sensor ●ECM	○	○
P0451 (DI-95)	Evaporative Emission Control System Pressure Sensor Range/Performance	●Open or short in vapor pressure sensor circuit ●Vapor pressure sensor ●ECM	○	○
P0500 (DI-97)	Vehicle Speed Sensor Malfunction	●Open or short in speed sensor circuit ●Vehicle speed sensor ●Combination meter ●ECM	○	○
P0505 (DI-100)	Idle Control System Malfunction	●IAC valve is stuck or closed ●Open or short in IAC valve circuit ●Open or short in A/C signal circuit ●Air intake (hose loose)	○	○

*: ○ · · · MIL lights up, - · · · MIL does not light up

MANUFACTURER CONTROLLED

DTC No. (See Page)	Detection Item	Trouble Area	MIL*	Memory
P1130 (DI-104)	A/F Sensor Circuit Range/Performance Malfunction (Bank 1 Sensor 1)	●Open or short in A/F sensor circuit ●A/F sensor (bank 1, sensor 1) ●ECM	○	○
P1133 (DI-109)	A/F Sensor Circuit Response Malfunction (Bank 1 Sensor 1)	●A/F sensor (bank 1, sensor 1)	○	○
P1135 (DI-113)	A/F Sensor Heater Circuit Malfunction (Bank1 Sensor 1)	●Open or short in A/F sensor (bank 1, sensor 1) ●A/F sensor (bank 1, sensor 1) heater ●ECM	○	○
P1150 (DI-104)	A/F Sensor Circuit Range/Performance Malfunction (Bank2 Sensor 1)	●Same as DTC No. P1130	○	○
P1153 (DI-109)	A/F Sensor Circuit Response Malfunction (Bank 2 Sensor 1)	●Same as DTC No. P1133	○	○
P1155 (DI-113)	A/F Sensor Heater Circuit Malfunction (Bank 2 Sensor 1)	●Same as DTC No. P1135	○	○
P1300 (DI-115)	Igniter Circuit Malfunction	●Open or short in IGF or IGT circuit from igniter to ECM ●Igniter ●ECM	○	○

cardiagn.com

P1305 (DI-115)	Igniter Circuit Malfunction (No.2)	●Ignition system ●Open or short in IGF2 or IGT2 circuit from No.2 ignition coil with igniter to ECM ●No.2 ignition coil with igniter ●ECM	○	○
P1310 (DI-115)	Igniter Circuit Malfunction (No.3)	●Ignition system ●Open or short in IGF2 or IGT3 circuit from No.3 ignition coil with igniter to ECM ●No.3 ignition coil with igniter ●ECM	○	○
P1315 (DI-115)	Igniter Circuit Malfunction (No.4)	●Ignition system ●Open or short in IGF1 or IGT4 circuit from No.4 ignition coil with igniter to ECM ●No.4 ignition coil with igniter ●ECM	○	○
P1320 (DI-115)	Igniter Circuit Malfunction (No.5)	●Ignition system ●Open or short in IGF2 or IGT5 circuit from No.5 ignition coil with igniter to ECM ●No.5 ignition coil with igniter ●ECM	○	○
P1325 (DI-115)	Igniter Circuit Malfunction (No.6)	●Ignition system ●Open or short in IGF1 or IGT6 circuit from No.6 ignition coil with igniter to ECM ●No.6 ignition coil with igniter ●ECM	○	○
P1335 (DI-121)	Crankshaft Position Sensor Circuit Malfunction (during engine running)	●Open or short in crankshaft position sensor circuit ●Crankshaft position sensor ●Starter ●ECM	-	○
P1346 (DI-122)	VVT Sensor/Camshaft position Sensor Circuit Range/Performance Problem (Bank 1)	●Mechanical system (Jumping teeth of timing belt, belt stretched) ●ECM	○	○
P1349 (DI-123)	VVT System Malfunction (Bank 1)	●Valve timing ●OCV ●VVT controller assembly ●ECM	○	○
P1350 (DI-130)	VVT Sensor/Camshaft position Sensor Circuit Malfunction (Bank 2)	●Same as DTC No. P1345	○	○
P1351 (DI-122)	VVT Sensor/Camshaft position Sensor Circuit Range/Performance Problem (Bank 2)	●Same as DTC No. P1346	○	○
P1354 (DI-123)	VVT System Malfunction (Bank 2)	●Same as DTC No. P1349	○	○
P1520 (DI-132)	Stop Light Switch Signal Malfunction	●Short in stop light switch signal circuit ●Stop light switch ●ECM	○	○
P1600 (DI-135)	ECM BATT Malfunction	●Open in back up power source circuit ●ECM	○	○
P1656 (DI-137)	OCV Circuit Malfunction (Bank 1)	●Open or short in OCV circuit ●OCV ●ECM	○	○
P1663 (DI-137)	OCV Circuit Malfunction (Bank 2)			

cardiagn.com

P1780 (DI-140)	Park/Neutral Position Switch Malfunction	●Short in park/neutral position switch circuit ●Park/neutral position switch ●ECM	○	○
B2795 (DI-621)	Unmatched key Code	●Immobiliser system	-	○
B2796 (DI-622)	No Communication in Immobiliser System	●Immobiliser system	-	○
B2797 (DI-624)	Communication Malfunction No.1	●Immobiliser system	-	○
B2798 (DI-626)	Communication Malfunction No.2	●Immobiliser system	-	○

*: ○ · · · MIL lights up, - · · · MIL does not light up

cardiagn.com

DI1KH-02

DIAGNOSTIC TROUBLE CODE CHART

DTC No. (See page)	Detection Item	Trouble Area
B2785/99 (DI-615)	Ignition switch ON malfunction	• Ignition Switch • Main Relay • Wireharness
B2786/99 (DI-619)	Ignition switch OFF malfunction	
B2791/99 (DI-619)	Key unlock warning switch OFF malfunction	• Key unlock warning switch • Main Relay • Wireharness
B2795/99 (DI-621)	Unmatched key code	• Key • Unregistered key inserted before
B2796/99 (DI-622)	No communication in immobiliser system	• Key • Transponder key coil • Amplifier • Wirehaness • ECM
B2797/99 (DI-624)	Communication malfunction No.1	• Communication contests • Unregistered key inserted before
B2798/99 (DI-626)	Communication malfunction No.2	• Key • Transponder key coil • Amplifier • Wirehaness • ECM

HINT:

To reduce the unnecessary exchange of ECM, check that a trouble occurs with the original ECM at the time of exchanging ECM and the trouble will disappear with a new ECM.

cardiagn.com

DI161-31

DIAGNOSTIC TROUBLE CODE CHART

If a malfunction code is displayed during the DTC check, check the circuit listed for that code in the table below (Proceed to the page given for that circuit.).

DTC No. (See Page)	Detection Item	Trouble Area	SRS Warning Light
B0100/13 (DI-371)	• Short in D squib circuit	• Steering wheel pad (squib) • Spiral cable • Airbag sensor assembly • Wire harness	ON
B0101/14 (DI-376)	• Open in D squib circuit	• Steering wheel pad (squib) • Spiral cable • Airbag sensor assembly • Wire harness	ON
B0102/11 (DI-380)	• Short in D squib circuit (to ground)	• Steering wheel pad (squib) • Spiral cable • Airbag sensor assembly • Wire harness	ON
B0103/12 (DI-384)	• Short in D squib circuit (to B+)	• Steering wheel pad (squib) • Spiral cable • Airbag sensor assembly • Wire harness	ON
B0105/53 (DI-388)	• Short in P squib circuit	• Front passenger airbag assembly (squib) • Airbag sensor assembly • Wire harness	ON
B0106/54 (DI-392)	• Open in P squib circuit	• Front passenger airbag assembly (squib) • Airbag sensor assembly • Wire harness	ON
B0107/51 (DI-395)	• Short in P squib circuit (to ground)	• Front passenger airbag assembly (squib) • Airbag sensor assembly • Wire harness	ON
B0108/52 (DI-398)	• Short in P squib circuit (to B+)	• Front passenger airbag assembly (squib) • Airbag sensor assembly • Wire harness	ON
B0110/43 (DI-401)	• Short in side squib (RH) circuit	• Side airbag assembly RH (squib) • Airbag sensor assembly • Wire harness	Blink
B0111/44 (DI-405)	• Open in side squib (RH) circuit	• Side airbag assembly RH (squib) • Airbag sensor assembly • Wire harness	Blink
B0112/41 (DI-411)	• Short in side squib (RH) circuit (to ground)	• Side airbag assembly RH (squib) • Airbag sensor assembly • Wire harness	Blink
B0113/42 (DI-411)	• Short in side squib (RH) circuit (to B+)	• Side airbag assembly RH (squib) • Airbag sensor assembly • Wire harness	Blink
B0115/47 (DI-414)	• Short in side squib (LH) circuit	• Side airbag assembly LH (squib) • Airbag sensor assembly • Wire harness	Blink
B0116/48 (DI-418)	• Open in side squib (LH) circuit	• Side airbag assembly LH (squib) • Airbag sensor assembly • Wire harness	Blink

cardiagn.com

DTC No. (See Page)	Detection Item	Trouble Area	SRS Warning Light
B0117/45 (DI-421)	• Short in side squib (LH) circuit (to ground)	• Side airbag assembly LH (squib) • Airbag sensor assembly • Wire harness	Blink
B0118/46 (DI-424)	• Short in side squib (LH) circuit (to B+)	• Side airbag assembly LH (squib) • Airbag sensor assembly • Wire harness	Blink
B0130/63 (DI-427)	• Short in P/T squib (RH) circuit	• Seat belt pretensioner RH (squib) • Airbag sensor assembly • Wire harness	Blink
B0131/64 (DI-431)	• Open in P/T squib (RH) circuit	• Seat belt pretensioner RH (squib) • Airbag sensor assembly • Wire harness	Blink
B0132/61 (DI-434)	• Short in P/T squib (RH) circuit (to ground)	• Seat belt pretensioner RH (squib) • Airbag sensor assembly • Wire harness	Blink
B0133/62 (DI-437)	• Short in P/T squib (RH) circuit (to B+)	• Seat belt pretensioner RH (squib) • Airbag sensor assembly • Wire harness	Blink
B0135/73 (DI-440)	• Short in P/T squib (LH) circuit	• Seat belt pretensioner LH (squib) • Airbag sensor assembly • Wire harness	Blink
B0136/74 (DI-444)	• Open in P/T squib (LH) circuit	• Seat belt pretensioner LH (squib) • Airbag sensor assembly • Wire harness	Blink
B0137/71 (DI-447)	• Short in P/T squib (LH) circuit (to ground)	• Seat belt pretensioner LH (squib) • Airbag sensor assembly • Wire harness	Blink
B0138/72 (DI-450)	• Short in P/T squib (LH) circuit (to B+)	• Seat belt pretensioner LH (squib) • Airbag sensor assembly • Wire harness	Blink
B1100/31 (DI-453)	• Airbag sensor assembly malfunction	• Airbag sensor assembly	ON
B1140/32 (DI-455)	• Side airbag sensor assembly (RH) malfunction	• Side airbag sensor assembly (RH) • Airbag sensor assembly • Wire harness	Blink
B1141/33 (DI-463)	• Side airbag sensor assembly (LH) malfunction	• Side airbag sensor assembly (LH) • Airbag sensor assembly • Wire harness	Blink
B1156/B1157/15 (DI-471)	• Front airbag sensor (RH) malfunction	• Front airbag sensor (RH) • Airbag sensor assembly • Wire harness	ON
B1158/B1159/16 (DI-479)	• Front airbag sensor (LH) malfunction	• Front airbag sensor (LH) • Airbag sensor assembly • Instrument panel wire harness • Engine room main wire harness	ON
Normal (DI-486)	• System normal	-	OFF
	• Voltage source drop	• Battery • Airbag sensor assembly	ON

cardiagn.com

HINT:

- When the SRS warning light remains lit up and the DTC is the normal code, this means a voltage source drops.
  This malfunction is not stored in memory by the airbag sensor assembly and if the power source voltage returns to normal, the SRS warning light will automatically go out.
- When 2 or more codes are indicated, the codes will be displayed in numeral order starting from the lowest numbered code.
- If a code not listed on the chart is displayed, the airbag sensor assembly is faulty.

cardiagn.com

DI3F1-04

DIAGNOSTIC TROUBLE CODE CHART

If malfunction code is displayed during the DTC check, check the circuit listed for that code in the table below (Proceed to the page given for that circuit.)

DTC No. (See page)	Detection Item	Trouble Area	Memory
00	Normal	-	-
11 *1 (DI-700)	Front room temperature sensor circuit	• Front room temp. sensor • Harness or connector between front room temp. sensor and A/C control assembly • A/C control assembly	● (8.5 min. or more)
12 *2 (DI-703)	Ambient temperature sensor circuit	• Ambient temp. sensor • Harness or connector between ambient temp. sensor and A/C control assembly • A/C control assembly	● (8.5 min. or more)
13 (DI-706)	Front evaporator temperature sensor circuit	• Front evaporator temp. sensor • Harness or connector between front evaporator temp. sensor and A/C control assembly • A/C control assembly	● (8.5 min. or more)
14 (DI-709)	Engine coolant temperature sensor circuit	• Engine coolant temp. sensor • Harness or connector between engine coolant temp. sensor and A/C control assembly • A/C control assembly	-
19 *1 (DI-712)	Rear room temperature sensor circuit	• Rear room temp. sensor • Harness or connector between rear room temp. sensor and A/C control assembly • A/C control assembly	● (8.5 min. or more)
21 *3 (DI-715)	Solar sensor circuit (Open)	• Solar sensor • Harness or connector between solar sensor and A/C control assembly • A/C amplifier	-
	Solar sensor circuit (Short)		● (8.5 min. or more)
22 *4 (DI-718)	All conditions below are detected for 3 sec. or more (a) Engine speed: 450 rpm or more (b) Ratio between engine and compressor rpm deviates 20% or more in comparison to normal operation.	• Compressor drive belt • Compressor lock sensor • Compressor • Harness and connector between A/C control assembly and compressor, compressor lock sensor • A/C control assembly	-
23 (DI-721)	Open in pressure sensor circuit Abnormal refrigerant pressure [below 196 kPa (2.0 kgf/cm^2, 28 psi) over 3,140 kPa (32.0 kgf/cm^2, 455 psi)]	• Pressure switch • Harness or connector between pressure switch and A/C control assembly • Refrigerant pipe line • A/C control assembly	-
26 (DI-724)	Rear lntake air temperature sensor circuit	• Rear intake air temp. sensor • Harness or connector between rear inlet air temp. sensor and A/C control assembly • A/C control assembly	● (8.5 min. or more)
31 (DI-727)	Front air mix damper position sensor circuit	• Front air mix damper position sensor • A/C control assembly • Harness or connector between front air mix damper position sensor and A/C control assembly	● (1 min. or more)
32 (DI-730)	Air inlet damper position sensor circuit	• Air inlet damper position sensor circuit • A/C control assembly • Harness or connector between air inlet damper position sensor and A/C control assembly	● (1 min. or more)

cardiagn.com

37 (DI-733)	Rear air mix damper position sensor circuit	• Rear air mix damper position sensor • A/C control assembly • Harness or connector between rear air mix damper position sensor and A/C control assembly	-
41 (DI-736)	Front air mix damper control servomotor circuit	• Front air mix damper control servomotor • Front air mix damper position sensor • Harness and connector between A/C control assembly front and air mix position sensor • Harness and connector between A/C control assembly and front air mix damper control servomotor • A/C control assembly	● (15 secs. or more)
42 (DI-739)	Air inlet damper control servomotor circuit	• Air mix damper control servomotor • Air mix damper position sensor • Harness and connector between A/C control assembly and air mix position sensor • Harness and connector between A/C control assembly and mix damper control servomotor • A/C control assembly	● (15 secs. or more)
47 (DI-742)	Rear Air mix damper control servomotor circuit	• Air mix damper control servomotor • Air mix damper position sensor • Harness and connector between A/C control assembly and air mix position sensor • Harness and connector between A/C control assembly and mix damper control servomotor • A/C control assembly	-

HINT:

- *1 If the room temp. is approx. -20˚C (-4˚F) or lower, DTC 11 may be light up even though the system is normal.
- *2 If the ambient temperature is approx. -50˚C (-58˚F) or lower, a DTC may be output even though the system is normal.
- *3 If the check is being performed in a dark place, DTC 11 (solar sensor circuit abnormal) could be displayed. In this case, perform DTC check again while shining a light, such as an inspection light, on the solar sensor. If DTC 11 is still displayed, there could be trouble in the solar sensor circuit.
- *4 Compressor lock (DTC 22) is indicated only for a current malfunction (See page DI-718).

To confirm DTC 22, preform the following steps.

(1) With the engine ON, enter the DTC check mode.
(2) Press the R/F switch to enter actuator check mode, and set the operation to Step No. 3.
(3) Press the AUTO switch to return to DTC check mode.
(4) The DTC is displayed after approx. 3 secs.

cardiagn.com

DI08I-07

DIAGNOSTIC TROUBLE CODE CHART

If a malfunction code is displayed during the DTC check, check the circuit listed for that code in the table below and proceed to the appropriate page.

DTC No. (See Page)	Circuit Inspection	Trouble Area
11, 15 (DI-573)	Actuator Motor Circuit	• Actuator motor • Harness or connector between cruise control ECU and actuator motor • Cruise control ECU
12 (DI-575)	Actuator Magnetic Clutch Circuit	• STOP Fuse • Stop light switch • Actuator magnetic clutch • Harness or connector between cruise control ECU and actuator magnetic clutch, actuator magnetic clutch and body ground • Cruise control ECU
14 (DI-578)	Actuator Mechanical Malfunction	• Actuator motor (actuator lock: motor, arm) • Cruise control ECU
21 (DI-580)	Open in Vehicle Speed Sensor Circuit	• Combination meter • Harness or connector between cruise control ECU and combination meter, combination meter and vehicle speed sensor • Vehicle speed sensor • Cruise control ECU
23 (DI-582)	Vehicle Speed Signal Abnormal	• Vehicle speed sensor • Cruise control ECU
32 (DI-583)	Control Switch Circuit	• Cruise control switch • Harness or connector between cruise control ECU and cruise control switch, cruise control switch and body ground • Cruise control ECU
41	Cruise control ECU	• Cruise control ECU
42	Source voltage drop	• Power source
51 (DI-586)	Idle Signal Circuit	• Throttle position sensor • Harness or connector between ECM and throttle position sensor • Harness or connector between cruise control ECU and ECM • Cruise control ECU

cardiagn.com

DI6NT-02

DIAGNOSTIC TROUBLE CODE CHART

NOTICE:

- **When removing the part, turn the ignition switch OFF.**
- **When replacing the steering angle sensor or ECU, make sure to perform steering angle sensor zero point calibration.**

HINT:

- Using SST 09843-18020 or 09843-18040, connect the terminals Tc and E_1 of DLC1 or Tc and CG of DLC3.
- If any abnormality is not found when inspecting parts, inspect the ECU.
- If a malfunction code is displayed during the DTC check, check the circuit corresponding the code. For details of each code, refer to the page under respective "DTC No." in the DTC chart.

DTC chart of ABS system:

DTC No. (See Page)	Detection Item	Trouble Area
C0200 / 31* (DI-275)	Right front wheel speed sensor signal malfunction	• Right front, left front, right rear and left rear speed sensor • Each speed sensor circuit • Speed sensor rotor • Sensor installation
C0205 / 32* (DI-275)	Left front wheel speed sensor signal malfunction	
C0210 / 33* (DI-275)	Right rear wheel speed sensor signal malfunction	
C0215 / 34* (DI-275)	Left rear wheel speed sensor signal malfunction	
C0226 / 21 (DI-282)	Open or short circuit in ABS & VSC actuator solenoid circuit (SFR circuit)	• ABS & VSC actuator • SFRR or SFRH circuit
C0236 / 22 (DI-282)	Open or short circuit in ABS & VSC actuator solenoid circuit (SFL circuit)	• ABS & VSC actuator • SFLR or SFLH circuit
C0246 / 23 (DI-282)	Open or short circuit in ABS & VSC actuator solenoid circuit (SRR circuit)	• ABS & VSC actuator • SRRR or SRRH circuit
C0256 / 24 (DI-282)	Open or short circuit in ABS & VSC actuator solenoid circuit (SRL circuit)	• ABS & VSC actuator • SRLR or SRLH circuit
C0273 / 13 (DI-285)	Open or short circuit in ABS MTR relay circuit	• Battery • ABS MTR relay • ABS MTR relay circuit
C0278 / 11 (DI-289)	Open or short circuit in ABS SOL relay circuit	• Battery • ABS SOL relay • ABS SOL relay circuit
C1237 / 37 (DI-306)	Front tires are different from rear in size.	• Tire size • Speed sensor rotor
C1241 / 41 (DI-308)	Low battery positive voltage or abnormally high battery positive voltage	• Battery • Charging system • Power source circuit
C1249 / 58 (DI-314)	Open circuit in stop light switch circuit	• Stop light switch • Stop light switch circuit • Stop light bulb
C1300 / 62 (DI-316)	Malfunction in skid control ECU	Skid control ECU
C1330 / 35* (DI-275)	Open circuit in right front speed sensor circuit	• Right front speed sensor • Right front speed sensor circuit
C1331 / 36* (DI-275)	Open circuit in left front speed sensor circuit	• Left front speed sensor • Left front speed sensor circuit

cardiagn.com

C1332 / 38* (DI-275)	Open circuit in right rear speed sensor circuit	• Right rear speed sensor • Right rear speed sensor circuit
C1333 / 39* (DI-275)	Open circuit in left rear speed sensor circuit	• Left rear speed sensor • Left rear speed sensor circuit
Always ON (DI-327)	Malfunction in skid control ECU Open circuit in ABS warning light circuit	• Battery • Charging system • ABS warning light circuit • Power source circuit

*: As the DTC cannot be erased only by replacing parts, do either of the following operations.

(1) Clear DTC (See page DI-259).

(2) At a vehicle speed of 20 km/h (12 mph), drive the vehicle for 30 sec. or more.

DTC chart of VSC system:

DTC No. (See Page)	Detection Item	Trouble Area
C0365 / 43 (DI-294)	Malfunction in deceleration sensor (combined in yaw rate sensor)	• Deceleration sensor • Deceleration sensor circuit • Steering angle sensor
C0371 / 55 (DI-297)	Malfunction in yaw rate sensor circuit	• Yaw rate sensor • Yaw rate sensor circuit • Steering angle sensor
C1202 / 44 (DI-300)	Brake fluid level low Open circuit in brake fluid level warning switch circuit	• Brake fluid level • Brake fluid level warning switch • Brake fluid level warning switch circuit
C1208 / 54 (DI-302)	Malfunction in steering angle sensor	• Steering angle sensor • Steering angle sensor circuit • Translate ECU
C1225 / 25 (DI-282)	Open or short circuit in ABS & VSC actuator solenoid circuit (SMC1 circuit)	• ABS & VSC actuator • SMC1 circuit
C1226 / 26 (DI-282)	Open or short circuit in ABS & VSC actuator solenoid circuit (SMC2 circuit)	• ABS & VSC actuator • SMC2 circuit
C1227 / 27 (DI-282)	Open or short circuit in ABS & VSC actuator solenoid circuit (SRC1 circuit)	• ABS & VSC actuator • SRC1 circuit
C1228 / 28 (DI-282)	Open or short circuit in ABS & VSC actuator solenoid circuit (SRC2 circuit)	• ABS & VSC actuator • SRC2 circuit
C1246 / 53 (DI-311)	Malfunction in master cylinder pressure sensor	• Master cylinder pressure sensor • Master cylinder pressure sensor circuit • Stop light switch circuit
C1301 / 42*	Malfunction in communication with the translate ECU	• Brake fluid level • Brake fluid level warning switch circuit • Translate ECU • Translate ECU circuit • ECM • ECM circuit • Steering angle sensor
C1350 / 51 (DI-317)	Pump motor is locked Open circuit in pump motor ground	• ABS & VSC actuator pump motor • ABS & VSC actuator pump motor circuit
Always ON (DI-331)	Malfunction in skid control ECU Open circuit in VSC warning light circuit	• Charging system • VSC warning light circuit

*: Troubleshoot according to the DTC chart of the translate ECU.

cardiagn.com

DTC chart of translate ECU:

DTC No. (See Page)	Detection Item	Trouble Area
Normal code (DI-325)	Malfunction in ECM control system	• ECM circuit • ECM • Brake fluid level • Brake fluid level warning switch circuit • Steering angle sensor
42 (DI-319)	Malfunction in communication with the skid control ECU	• VSC+ or VSC- circuit • Translate ECU • Skid control ECU
44 (DI-321)	Open or short circuit in NEO circuit	• NEO circuit • ECM • Translate ECU
53 (DI-323)	Malfunction in communication with the ECM	• TRC+ or TRC- circuit • ENG+ or ENG- circuit • ECM • Translate ECU
Non code (DI-326)	Malfunction in translate ECU	• Translate ECU • BRAKE warning light circuit • Tc terminal circuit

HINT:

The BRAKE warning light does not turn on due to an error in VSC.

If it is on, check that the parking brake pedal is released, the brake fluid level is normal and no malfunction is identified in the fluid level warning switch system.

cardiagn.com

DI0CH-11

DIAGNOSTIC TROUBLE CODE CHART

If a DTC is displayed during the DTC check, check the circuit listed for that code in the table below and proceed to the page given.

DTC No. (See Page)	Detection Item	Trouble Area	MIL *	Memory
P0500 (DI-174)	Vehicle Speed Sensor Malfunction (Vehicle Speed Sensor)	• Open or short in speed signal circuit • ABS speed sensor • Combination meter • ECM • ABS ECU • Automatic transaxle (clutch, brake or gear etc.)	●	○
P0710 (DI-177)	Transmission Fluid Temperature Sensor Malfunction	• Open or short in ATF temperature sensor circuit • ATF temperature sensor • ECM	●	○
P0750 (DI-179)	Shift Solenoid A Malfunction (Shift Solenoid Valve No.1)	• Shift solenoid valve No.1 is stuck open or closed • Valve body is blocked up or stuck • Automatic transaxle (clutch, brake or gear etc.)	●	○
P0753 (DI-181)	Shift Solenoid A Electrical Malfunction (Shift Solenoid Valve No.1)	• Open or short in shift solenoid valve No.1 circuit • Shift solenoid valve No.1 • ECM	●	○
P0755 (DI-179)	Shift Solenoid B Malfunction (Shift Solenoid Valve No.2)	• Shift solenoid valve No.2 is stuck open or closed • Valve body is blocked up or stuck • Automatic transaxle (clutch, brake or gear etc.)	●	○
P0758 (DI-181)	Shift Solenoid B Electrical Malfunction (Shift Solenoid Valve No.2)	• Open or short in shift solenoid valve No.2 circuit • Shift solenoid valve No.2 • ECM	●	○
P0770 (DI-185)	Shift Solenoid E Malfunction (Shift Solenoid Valve SL)	• Shift solenoid valve SL is stuck open or closed • Valve body is blocked up or stuck • Lock-up clutch • Automatic transaxle (clutch, brake or gear etc.)	●	○
P0773 (DI-187)	Shift Solenoid E Electrical Malfunction (Shift Solenoid Valve SL)	• Open or short in shift solenoid valve SL circuit • Shift solenoid valve SL • ECM	●	○
P1520 (DI-190)	Stop Light Switch Signal Malfunction	• Open or short in stop light switch circuit • Stop light switch • ECM	●	○
P1705 (DI-191)	NC2 Revolution Sensor Circuit Malfunction (Direct Clutch Speed Sensor)	• Open or short in direct clutch speed sensor circuit • Direct clutch speed sensor • ECM	●	○
P1765 (DI-193)	Linear Solenoid for Accumulator Pressure Control Circuit Malfunction (Shift Solenoid Valve SLN)	• Open or short in shift solenoid valve SLN circuit • Shift solenoid valve SLN • ECM	●	○
P1780 (DI-197)	Park/Neutral Position Switch Malfunction	• Short in park/neutral position switch circuit • Park/neutral position switch • ECM	●	○

*: ●... MIL lights up

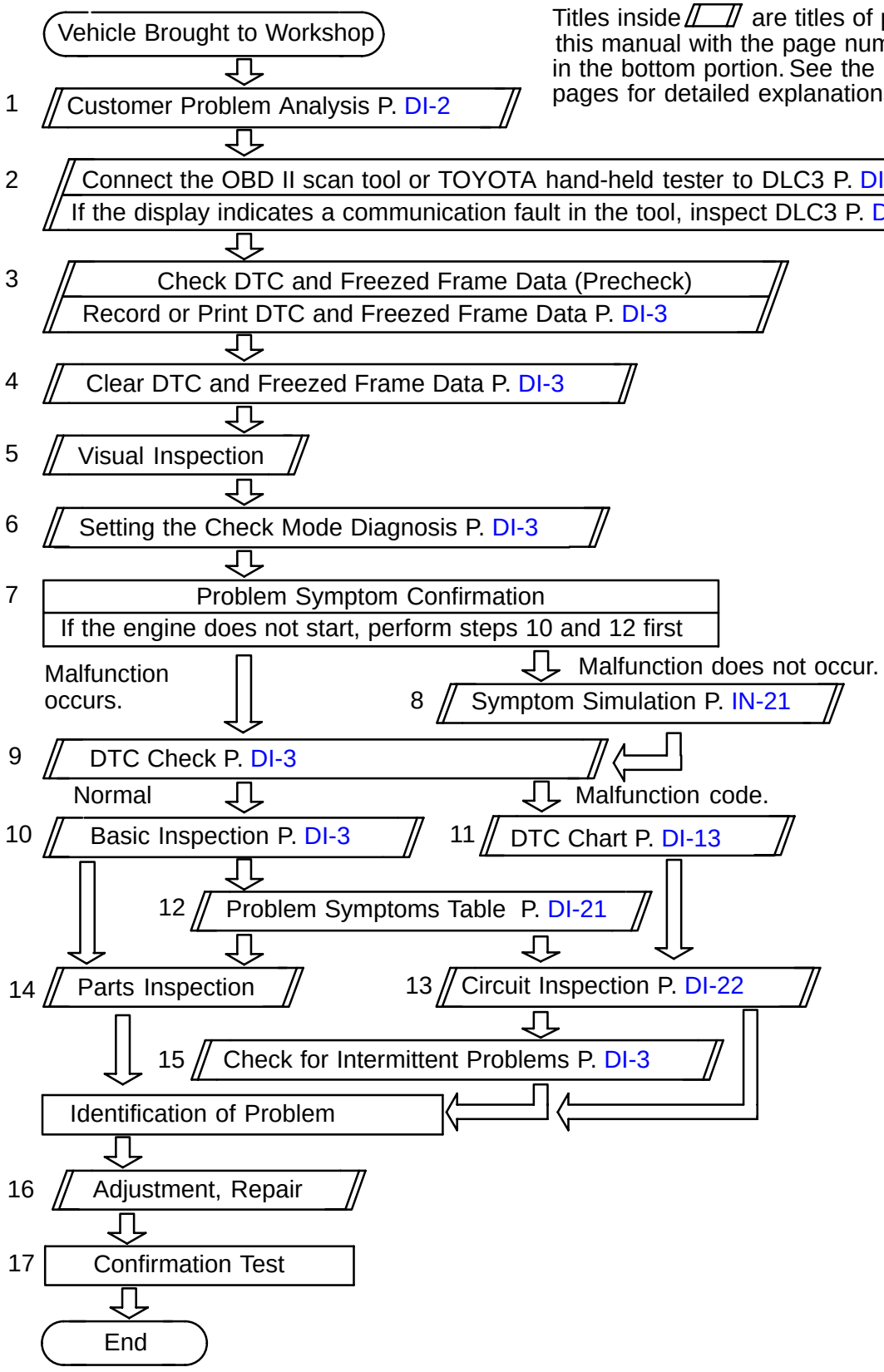
cardiagn.com

ENGINE

DI21L-02

HOW TO PROCEED WITH TROUBLESHOOTING

Troubleshoot in accordance with the procedure on the following page.



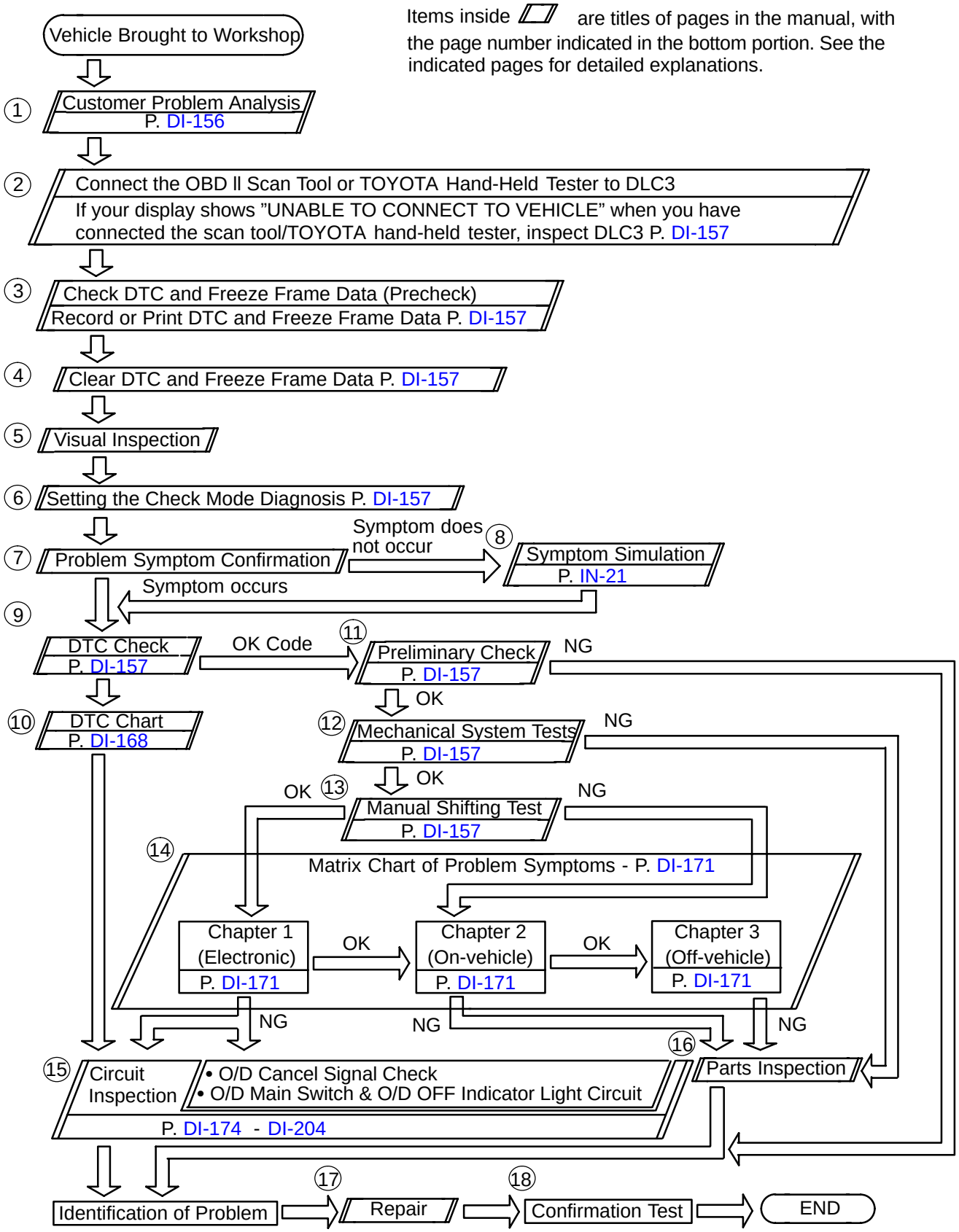
Titles inside ▱ are titles of pages in this manual with the page number indicated in the bottom portion. See the indicated pages for detailed explanations.

cardiagn.com

AUTOMATIC TRANSAXLE

DI21B-02

HOW TO PROCEED WITH TROUBLESHOOTING



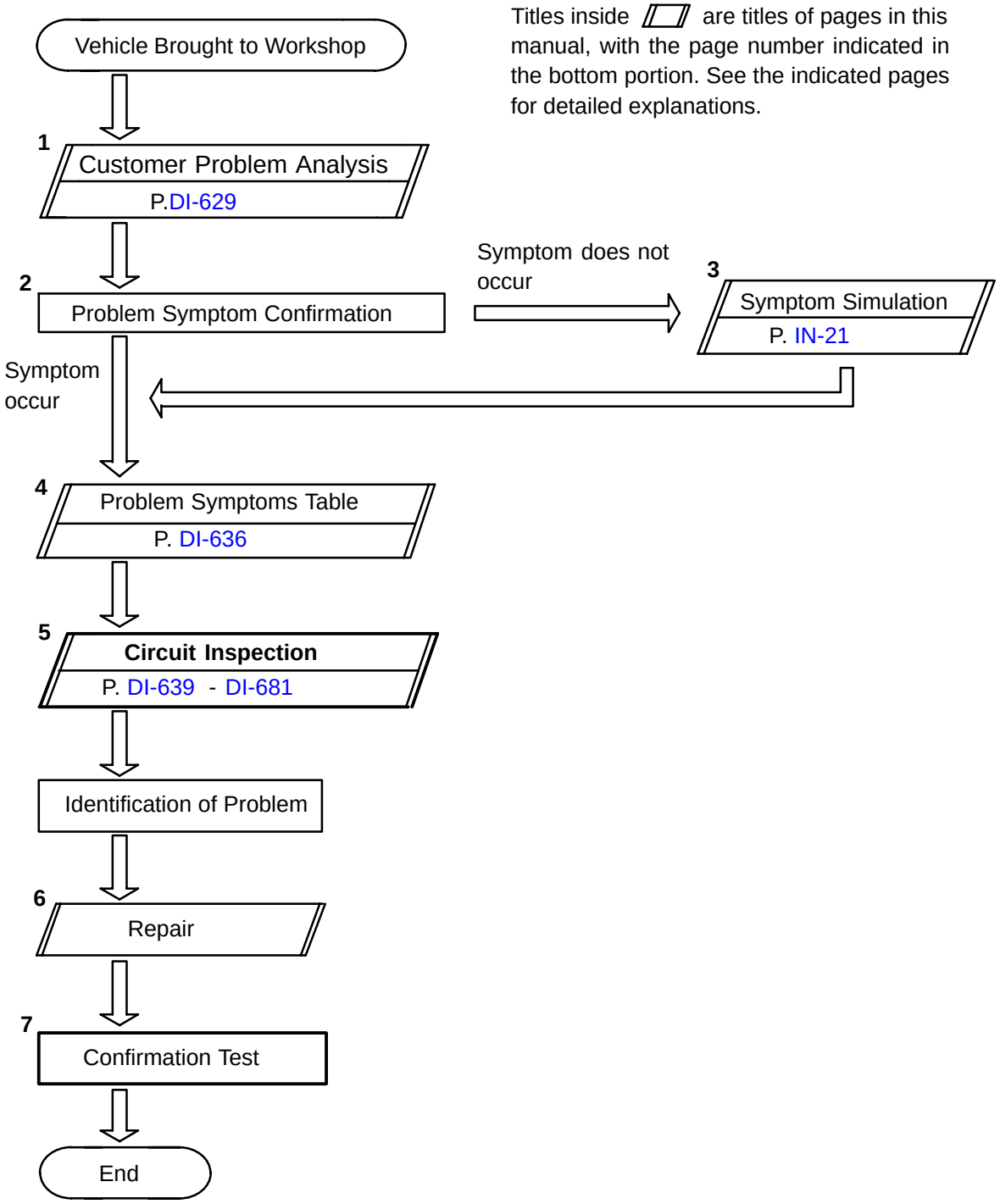
cardiagn.com

BODY CONTROL SYSTEM

HOW TO PROCEED WITH TROUBLESHOOTING

DI6LF-02

Troubleshoot in accordance with the procedure on the following page.



Titles inside ▱ are titles of pages in this manual, with the page number indicated in the bottom portion. See the indicated pages for detailed explanations.

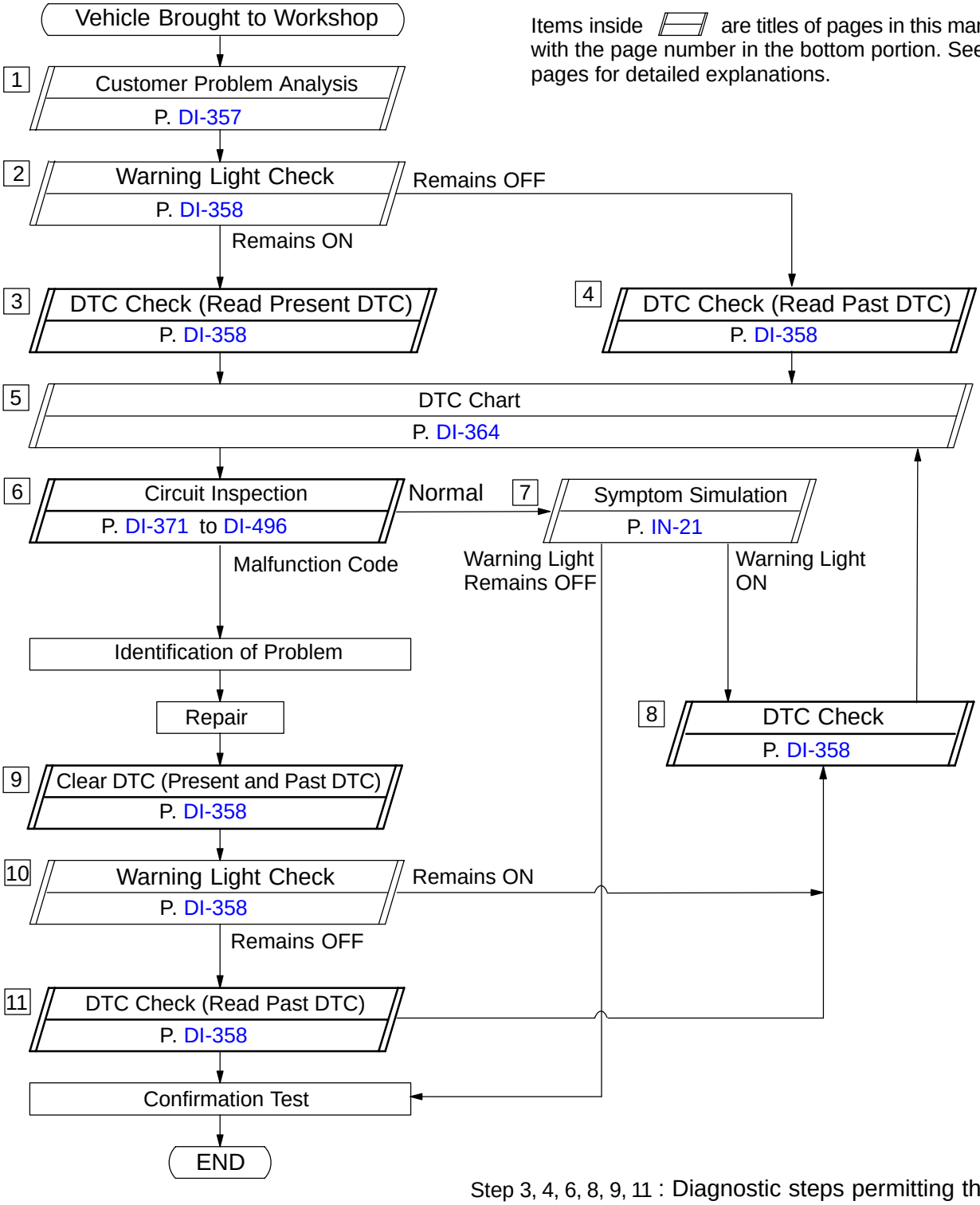
Step 6, 8 : Diagnostic steps permitting the use of the hand-held tester .

cardiagn.com

SUPPLEMENTAL RESTRAINT SYSTEM

HOW TO PROCEED WITH TROUBLESHOOTING

DI1MX-12



Step 3, 4, 6, 8, 9, 11 : Diagnostic steps permitting the use of the TOYOTA hand-held tester.

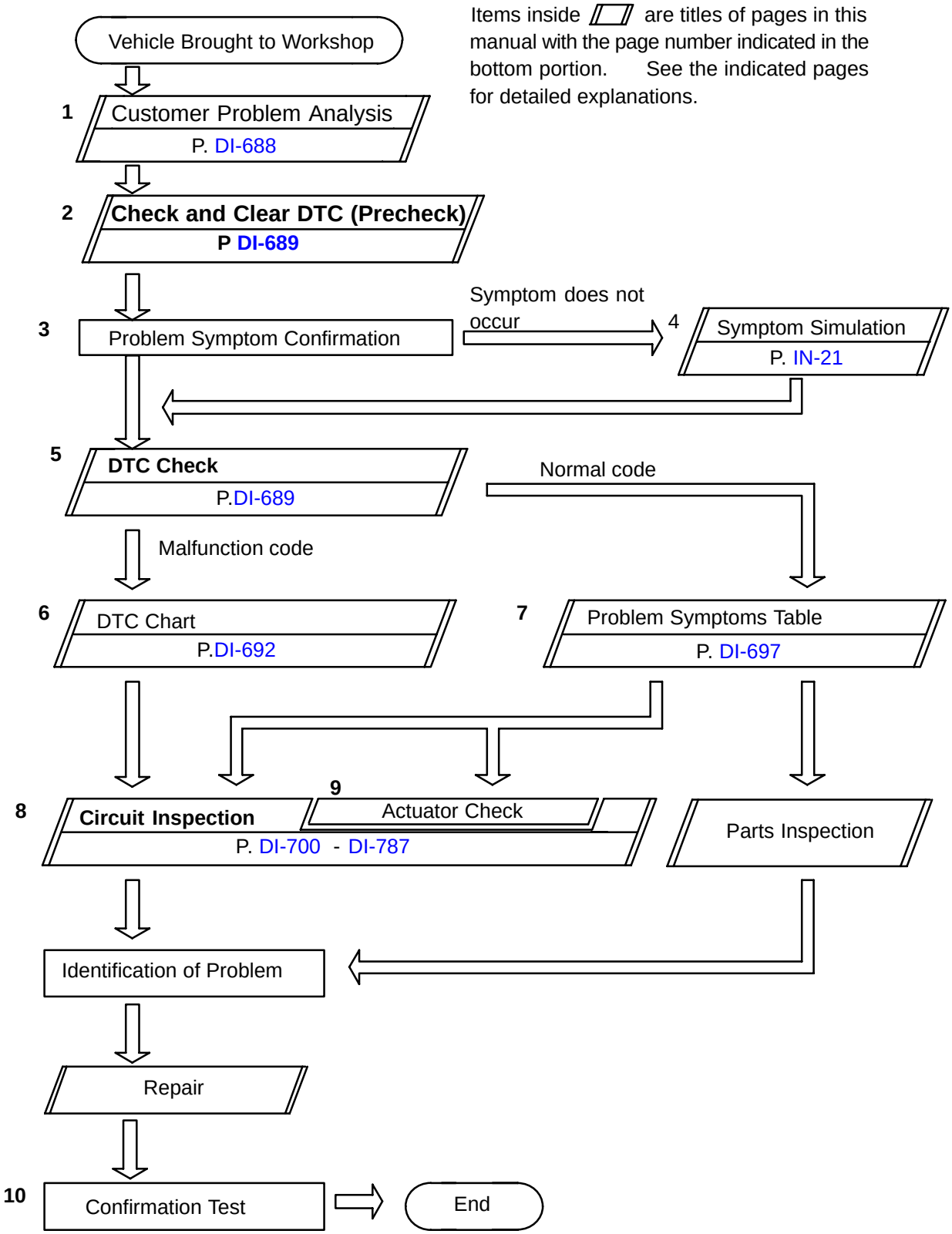
cardiagn.com

AIR CONDITIONING SYSTEM

DI3EY-03

HOW TO PROCEED WITH TROUBLESHOOTING

Perform troubleshooting in accordance with the procedure on the following page.



cardiagn.com

THEFT DETERRENT SYSTEM

HOW TO PROCEED WITH TROUBLESHOOTING

DI06M-05

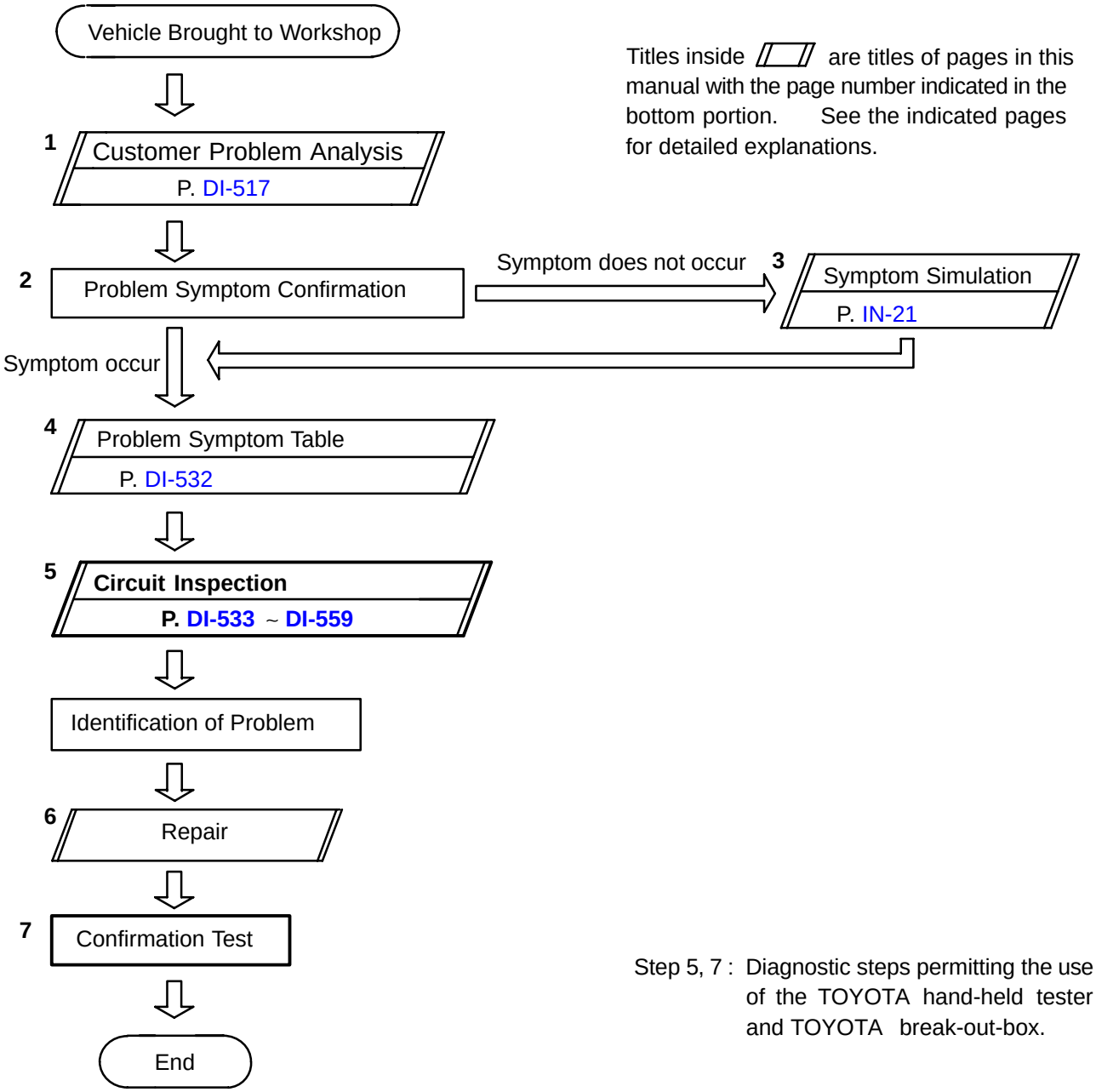
HINT:

Troubleshooting of the theft deterrent system is based on the premise that the door lock control system is operating normally. Accordingly, before troubleshooting the theft deterrent system, first make certain that the door lock control system is operating normally.

For troubleshooting use a volt/ohm meter.

Be sure to use troubleshooting procedure appropriate to the diagnostic tool being used.

Perform troubleshooting in accordance with the procedure on the following page.



Titles inside ▱ are titles of pages in this manual with the page number indicated in the bottom portion. See the indicated pages for detailed explanations.

Step 5, 7 : Diagnostic steps permitting the use of the TOYOTA hand-held tester and TOYOTA break-out-box.

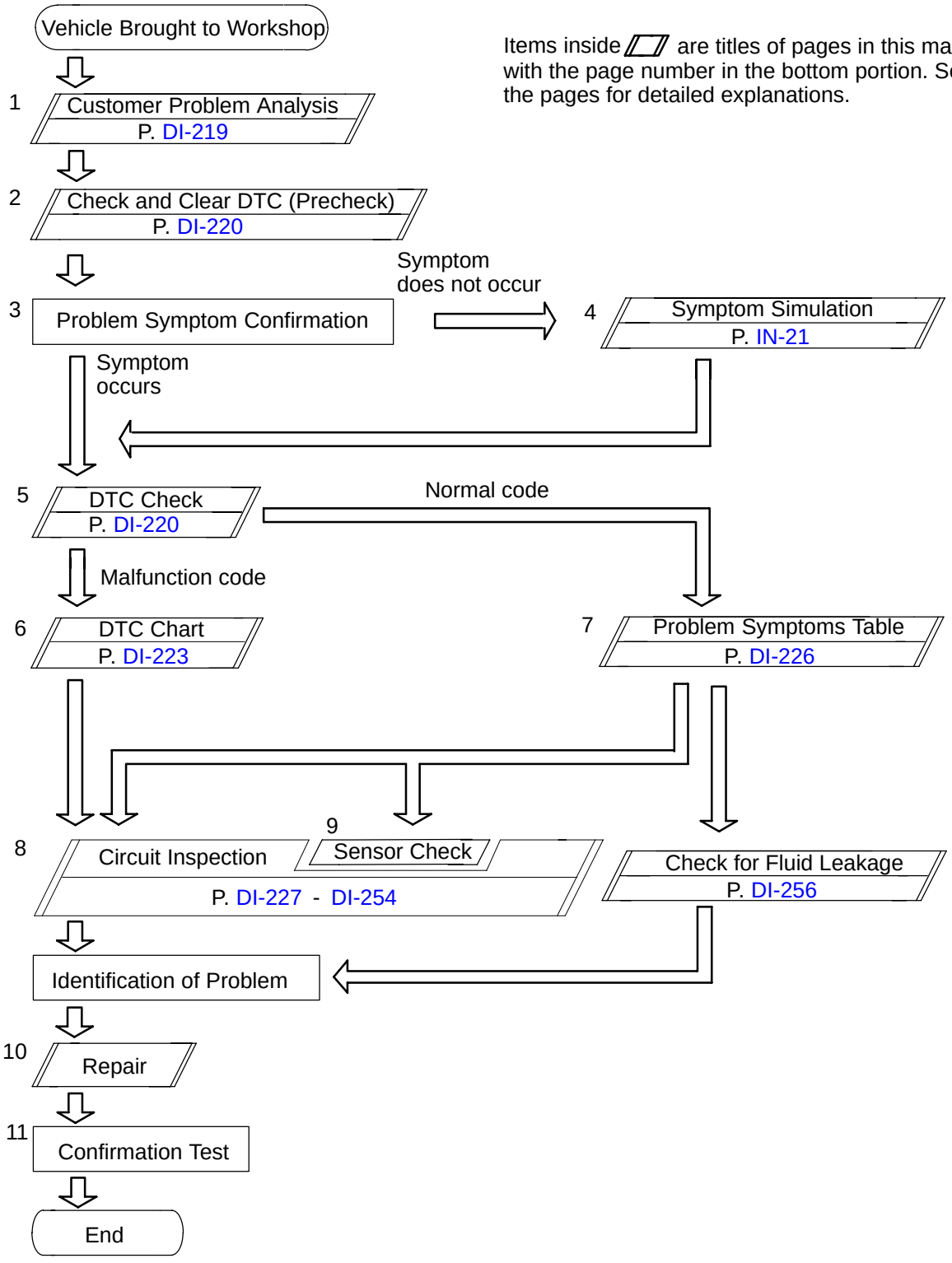
cardiagn.com

ANTI-LOCK BRAKE SYSTEM

HOW TO PROCEED WITH TROUBLESHOOTING

DI051-16

Troubleshooting in accordance with the procedure on the following pages.



Fail safe function:
In the event of a malfunction in the ABS system, the ABS ECU turns on the ABS warning light and prohibits the ABS control.

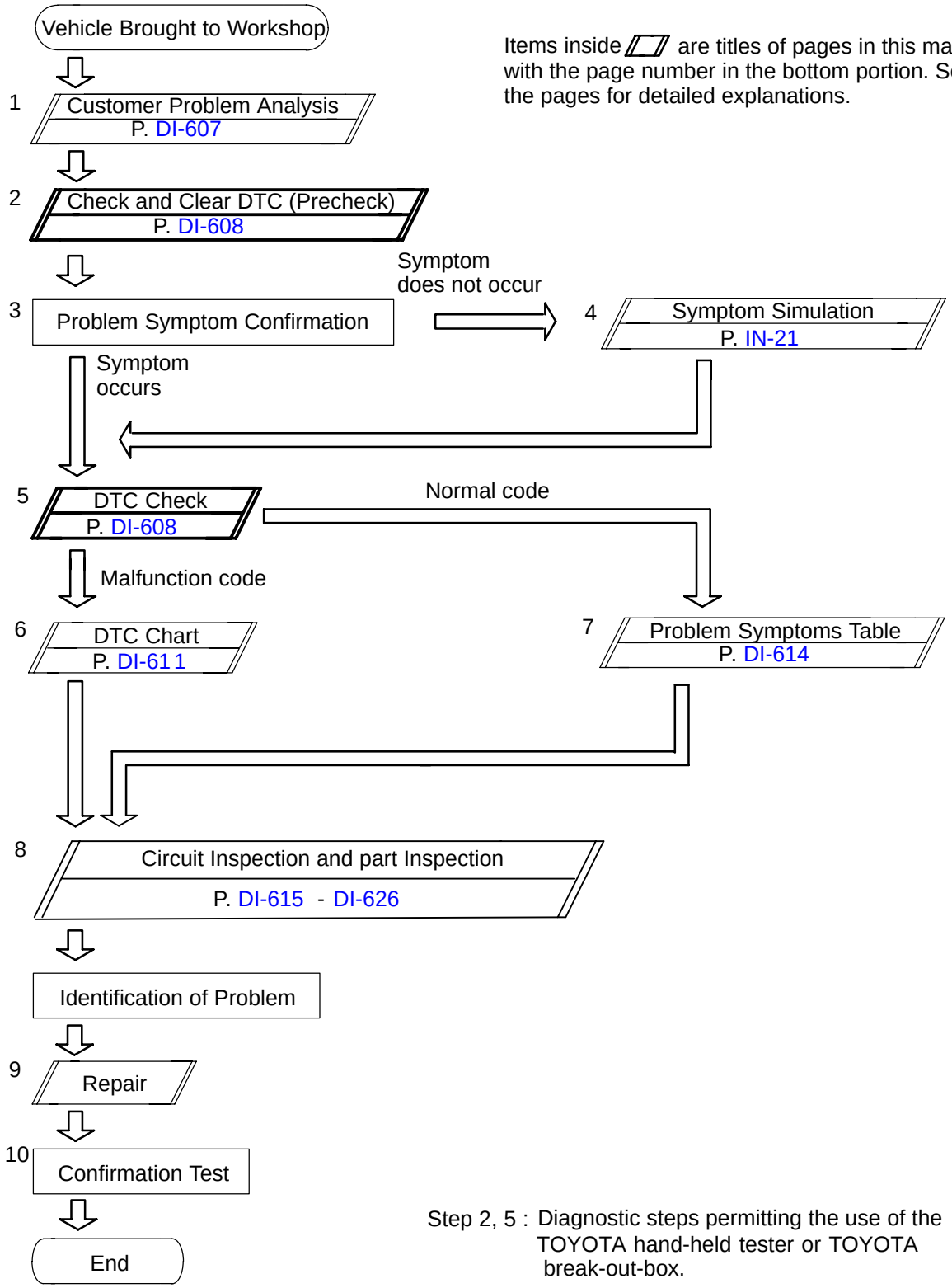
cardiagn.com

ENGINE IMMOBILISER SYSTEM

DI1KE-03

HOW TO PROCEED WITH TROUBLESHOOTING

Troubleshooting in accordance with the procedure on the following pages.



Items inside ▱ are titles of pages in this manual, with the page number in the bottom portion. See the pages for detailed explanations.

Step 2, 5 : Diagnostic steps permitting the use of the TOYOTA hand-held tester or TOYOTA break-out-box.

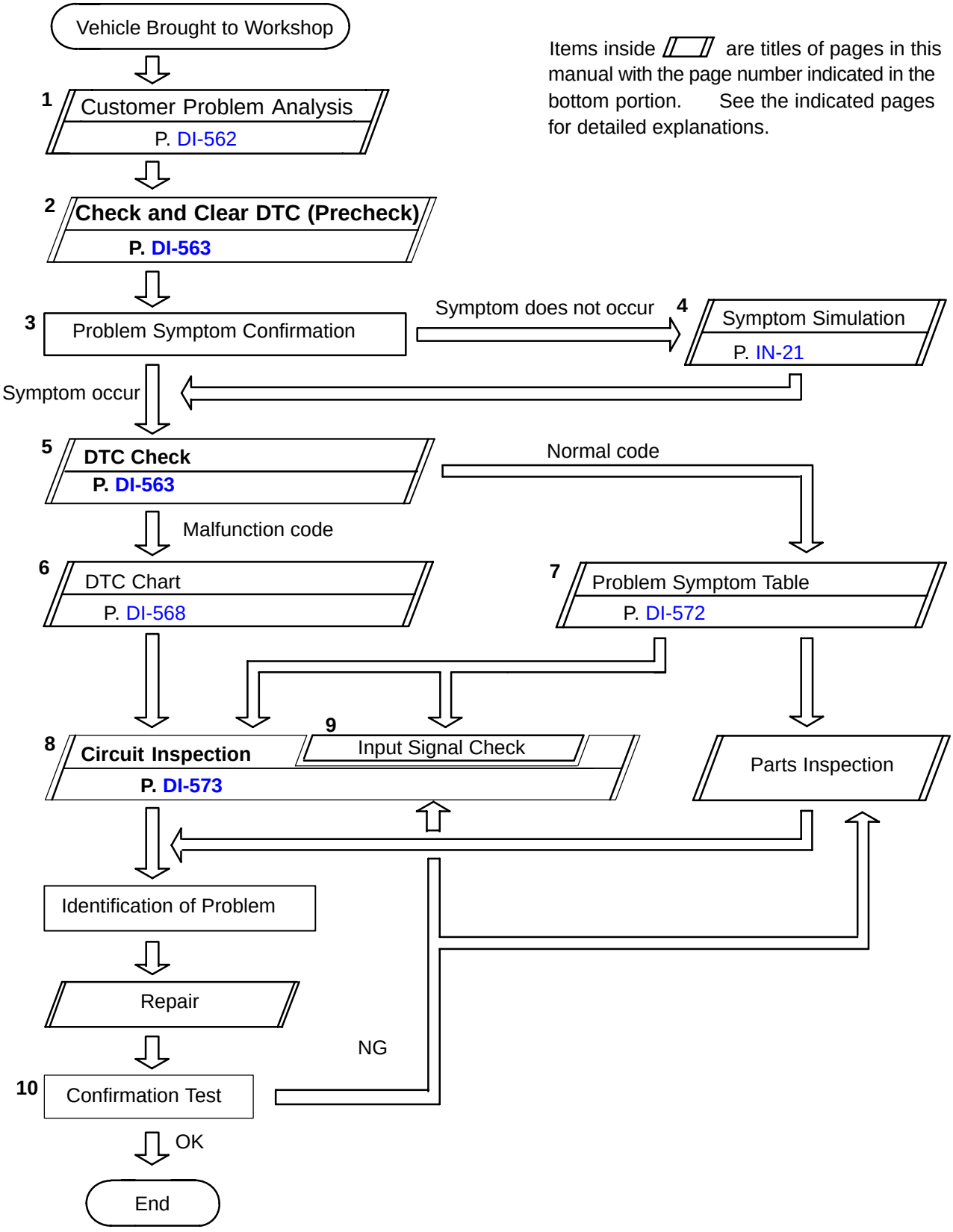
cardiagn.com

CRUISE CONTROL SYSTEM

DI08F-04

HOW TO PROCEED WITH TROUBLESHOOTING

Troubleshoot in accordance with the procedure on the following page.



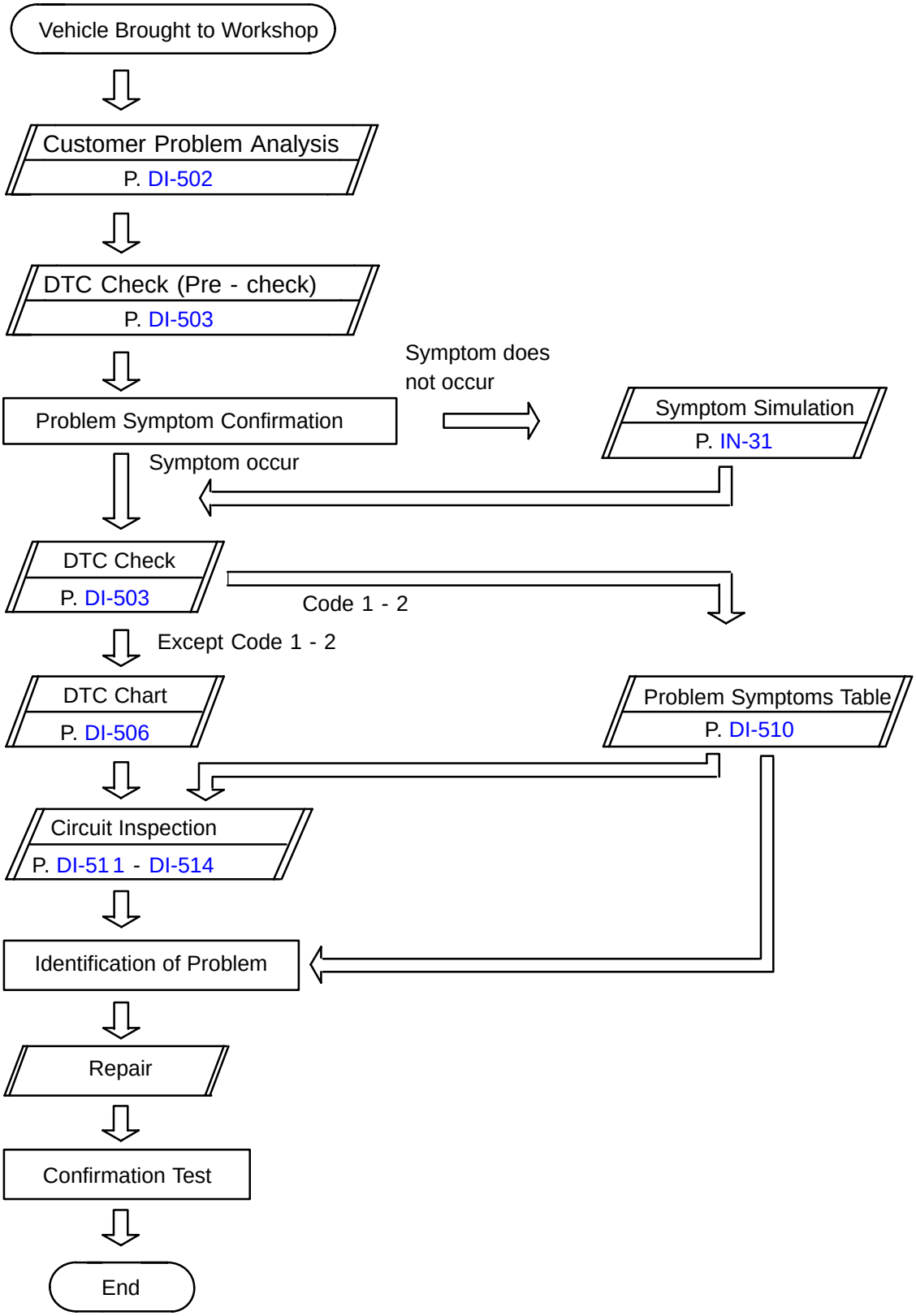
cardiagn.com

POWER SLIDE DOOR CONTROL SYSTEM

DI4EN-01

HOW TO PROCEED WITH TROUBLESHOOTING

Troubleshoot in accordance with the procedure on the following pages.



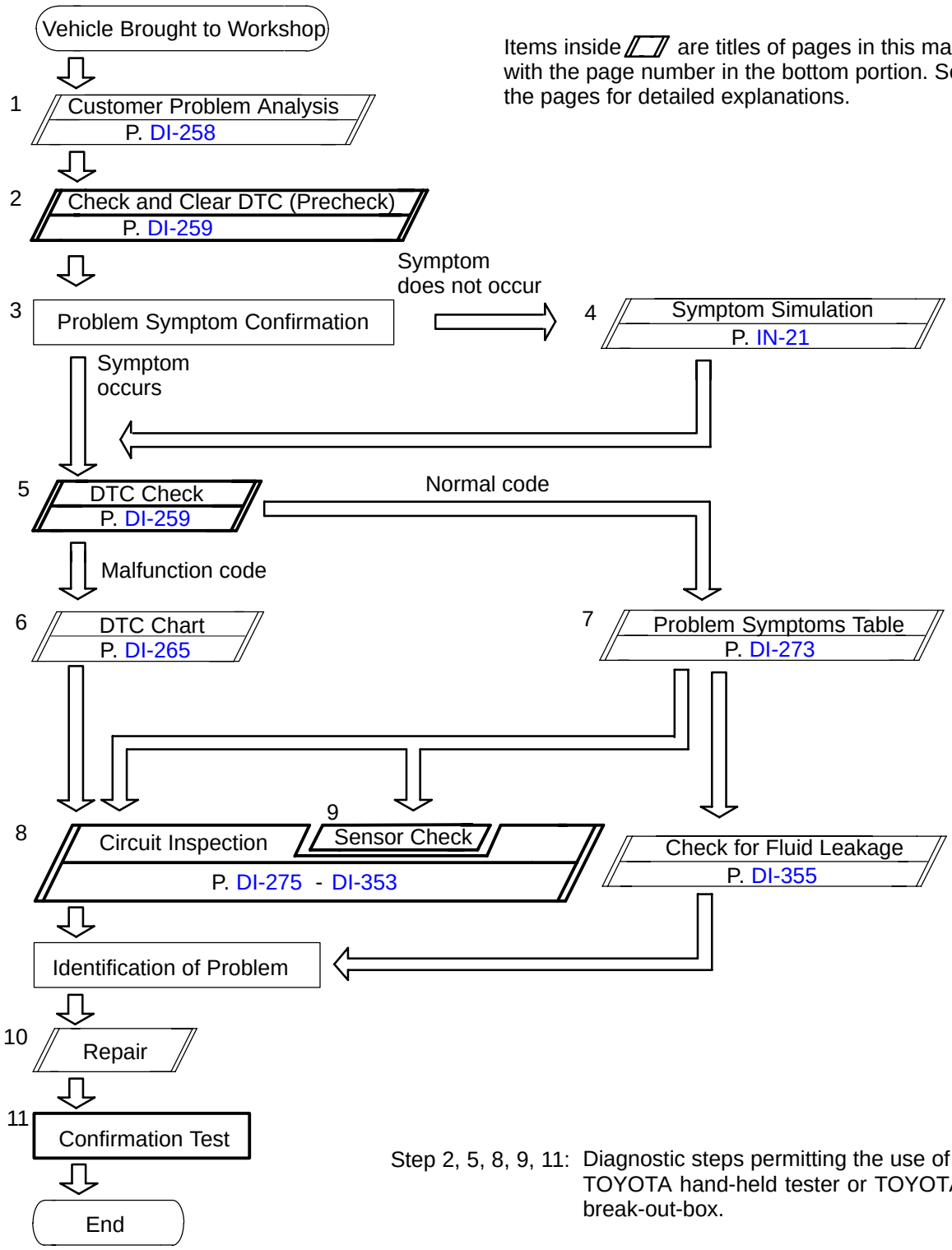
cardiagn.com

ABS WITH EBD & BA & TRAC & VSC SYSTEM

DI6NQ-02

HOW TO PROCEED WITH TROUBLESHOOTING

Troubleshooting in accordance with the procedure on the following pages.



Items inside ▱ are titles of pages in this manual, with the page number in the bottom portion. See the pages for detailed explanations.

Step 2, 5, 8, 9, 11: Diagnostic steps permitting the use of the TOYOTA hand-held tester or TOYOTA break-out-box.

Fail safe function:
When a failure occurs in the ABS & BA & TRAC & VSC system, the respective warning light (ABS, VSC) is lit and the operation of ABS & BA & TRAC & VSC 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.

cardiagn.com

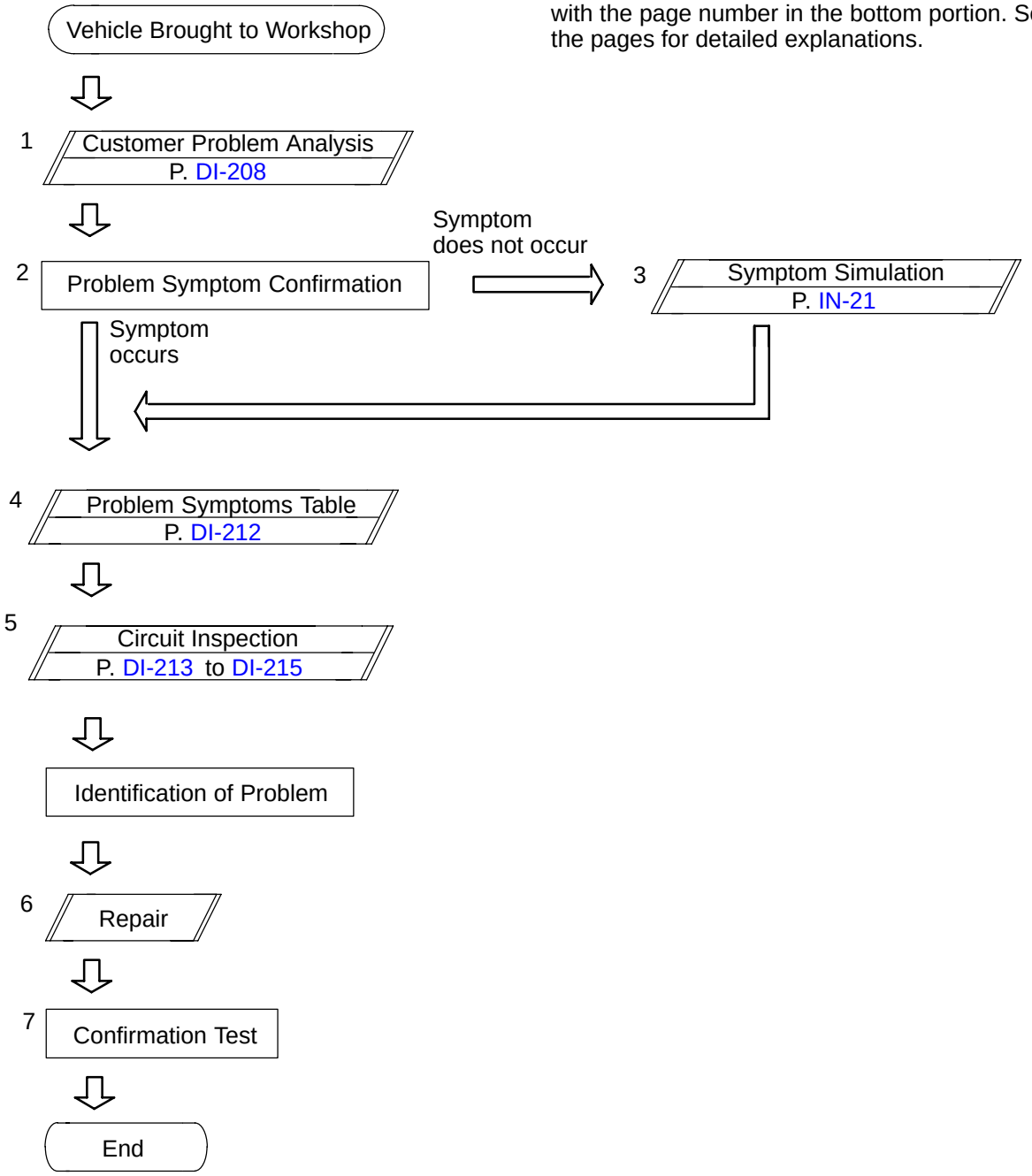
TIRE PRESSURE WARNING SYSTEM

DI22X-01

HOW TO PROCEED WITH TROUBLESHOOTING

Troubleshooot in accordance with the procedure on the following pages.

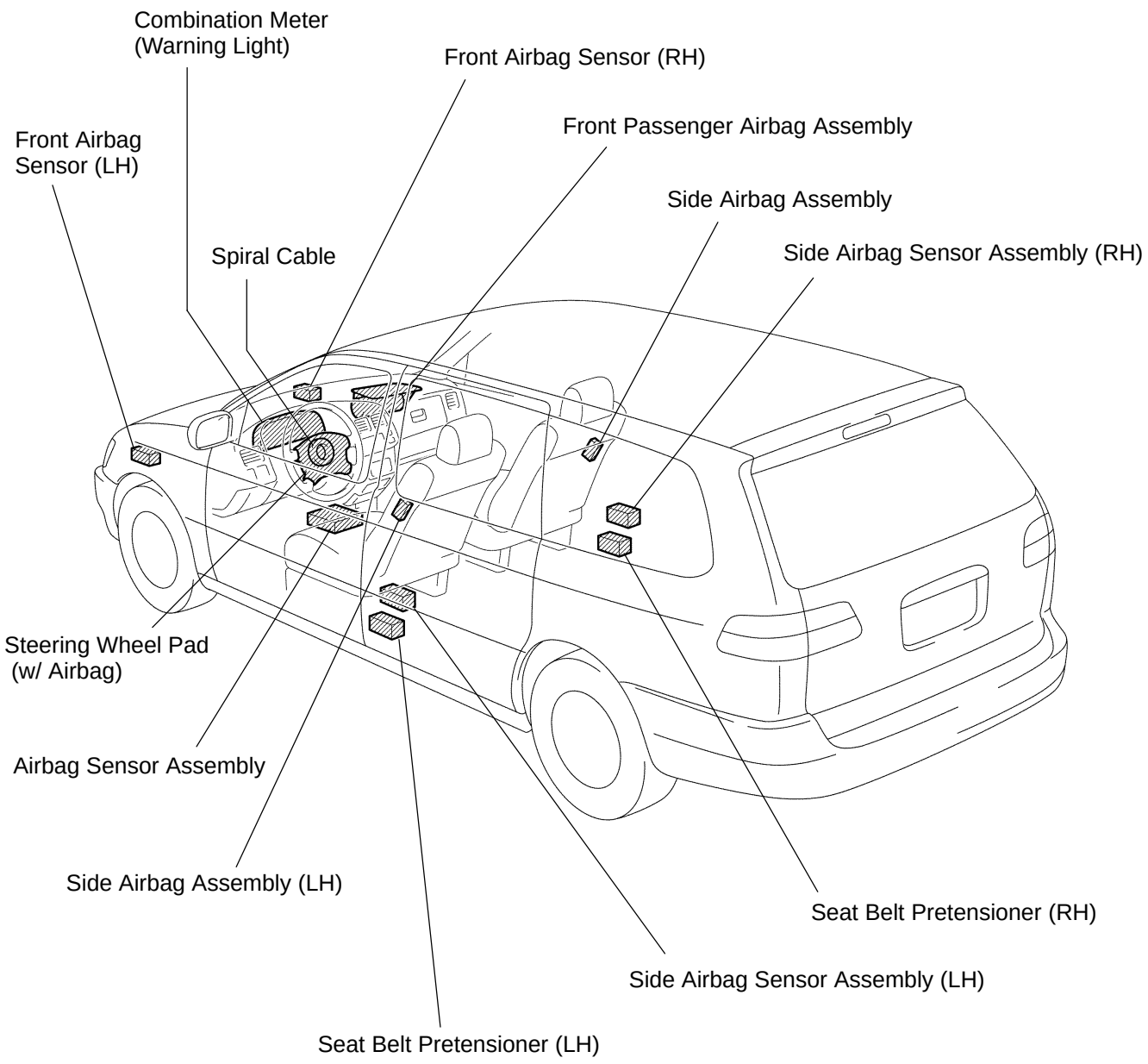
Items inside ▱ are titles of pages in this manual, with the page number in the bottom portion. See the pages for detailed explanations.



cardiagn.com

DI1N1-14

PARTS LOCATION



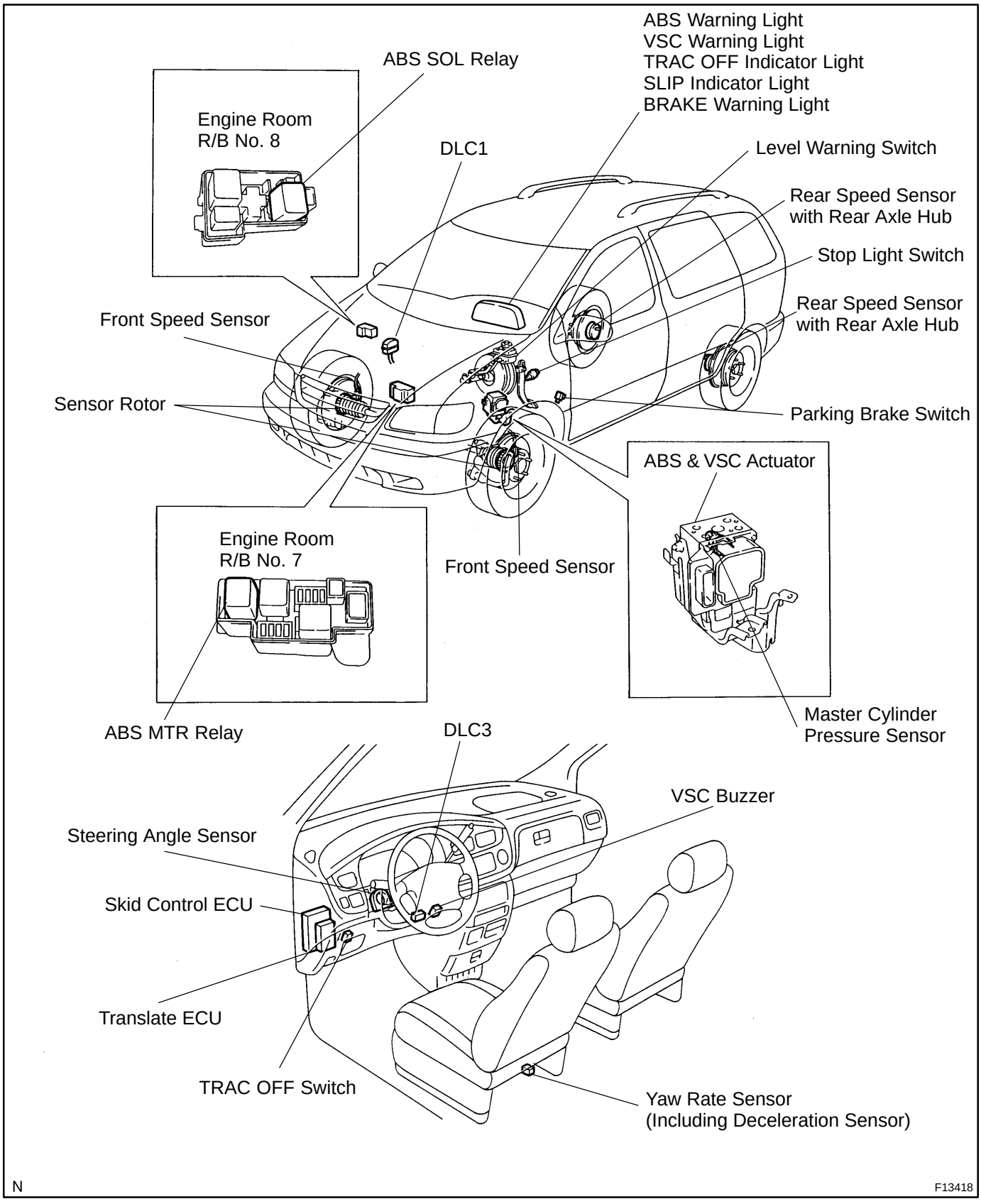
P

H16886

cardiagn.com

DI6NU-02

PARTS LOCATION



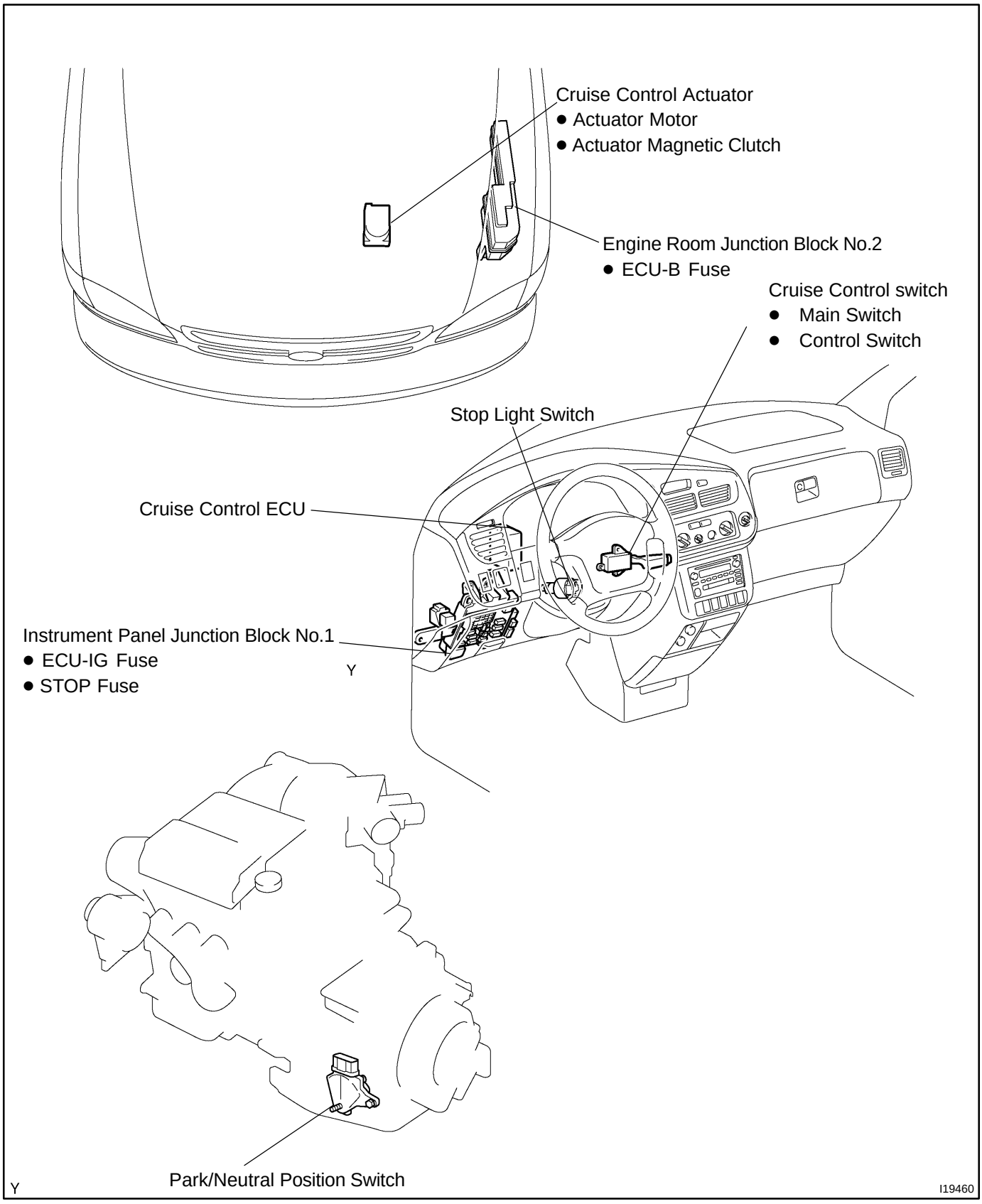
N

F13418

cardiagn.com

DI08J-12

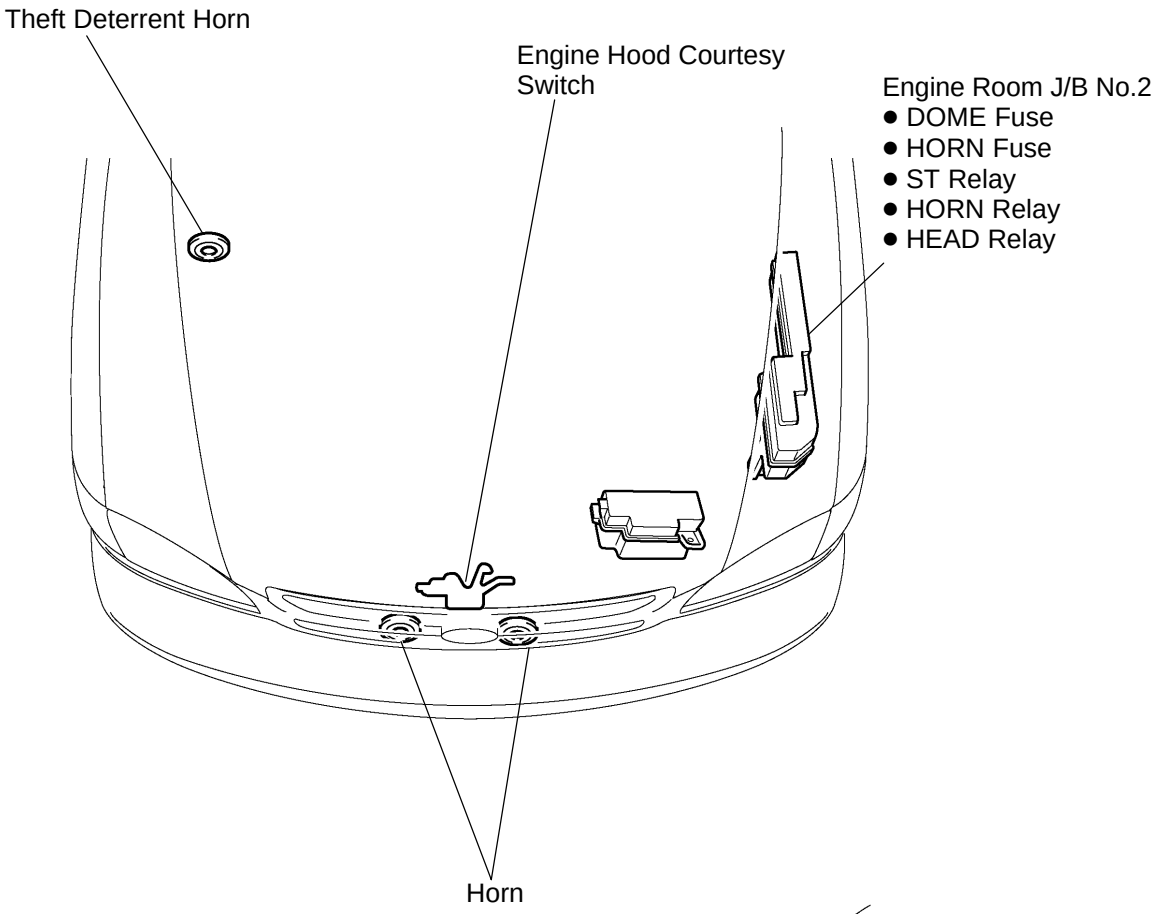
PARTS LOCATION

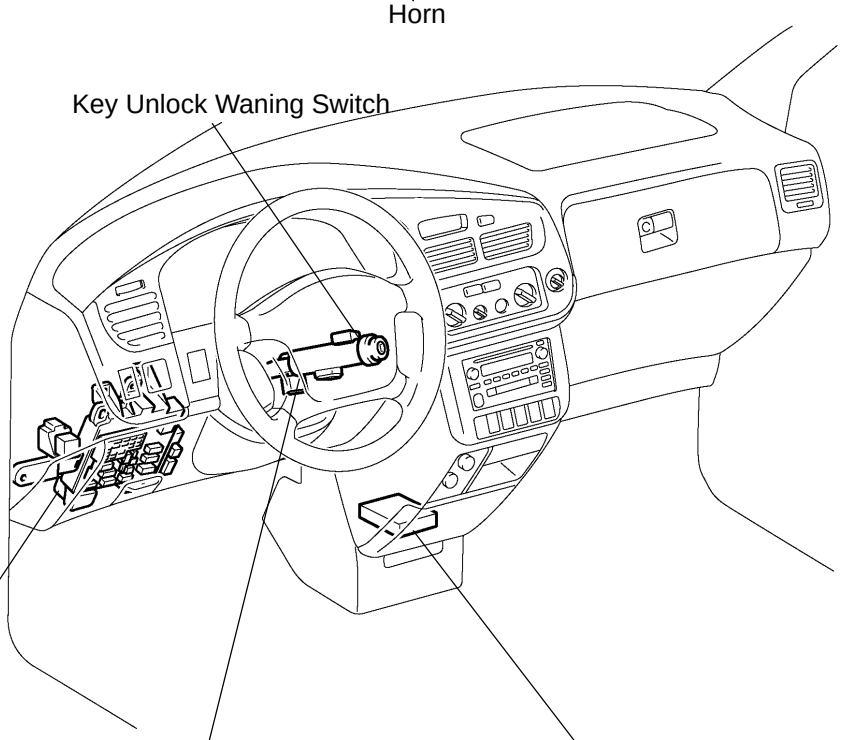


cardiagn.com

DI06P-06

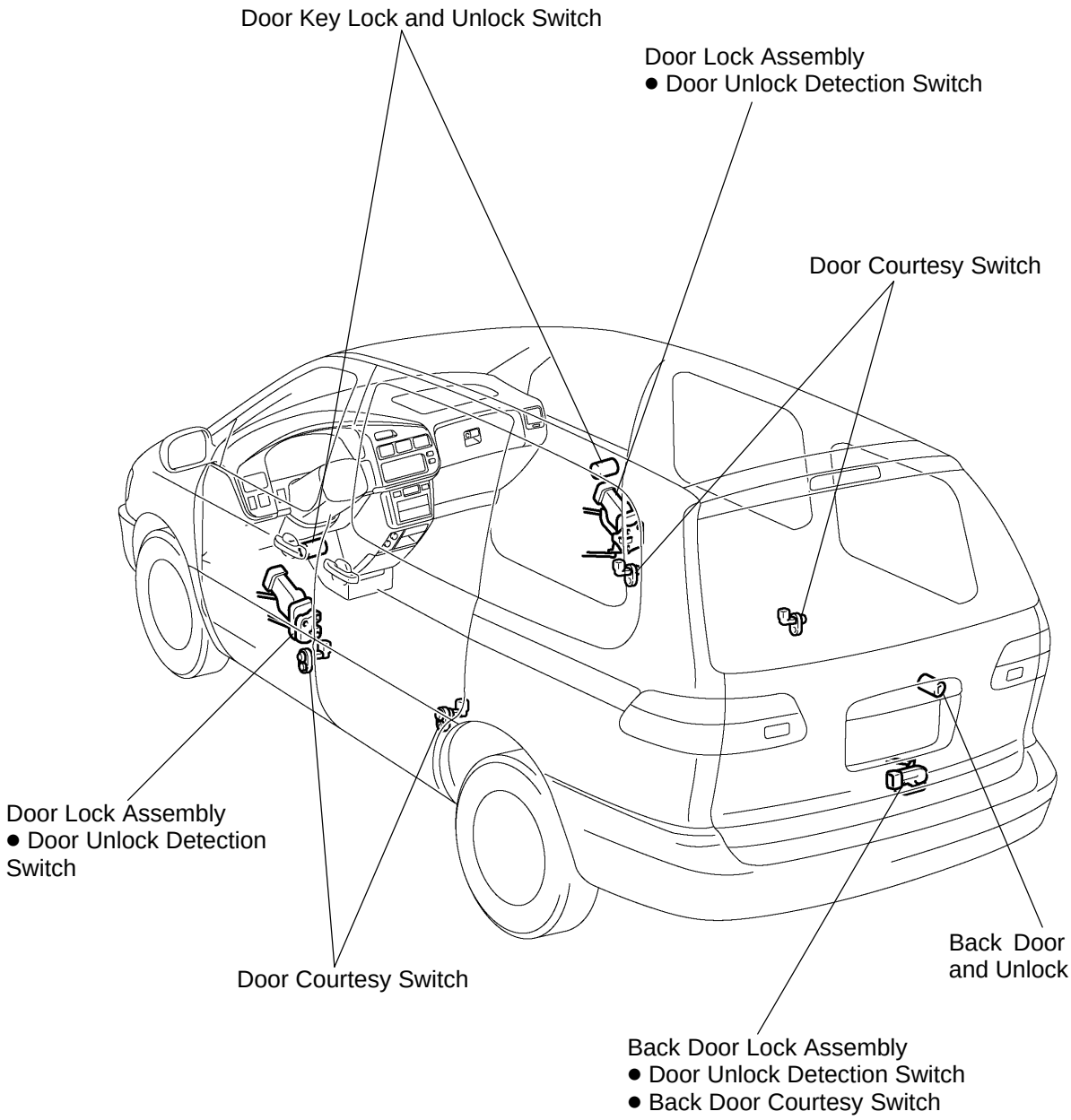
PARTS LOCATION





I19461

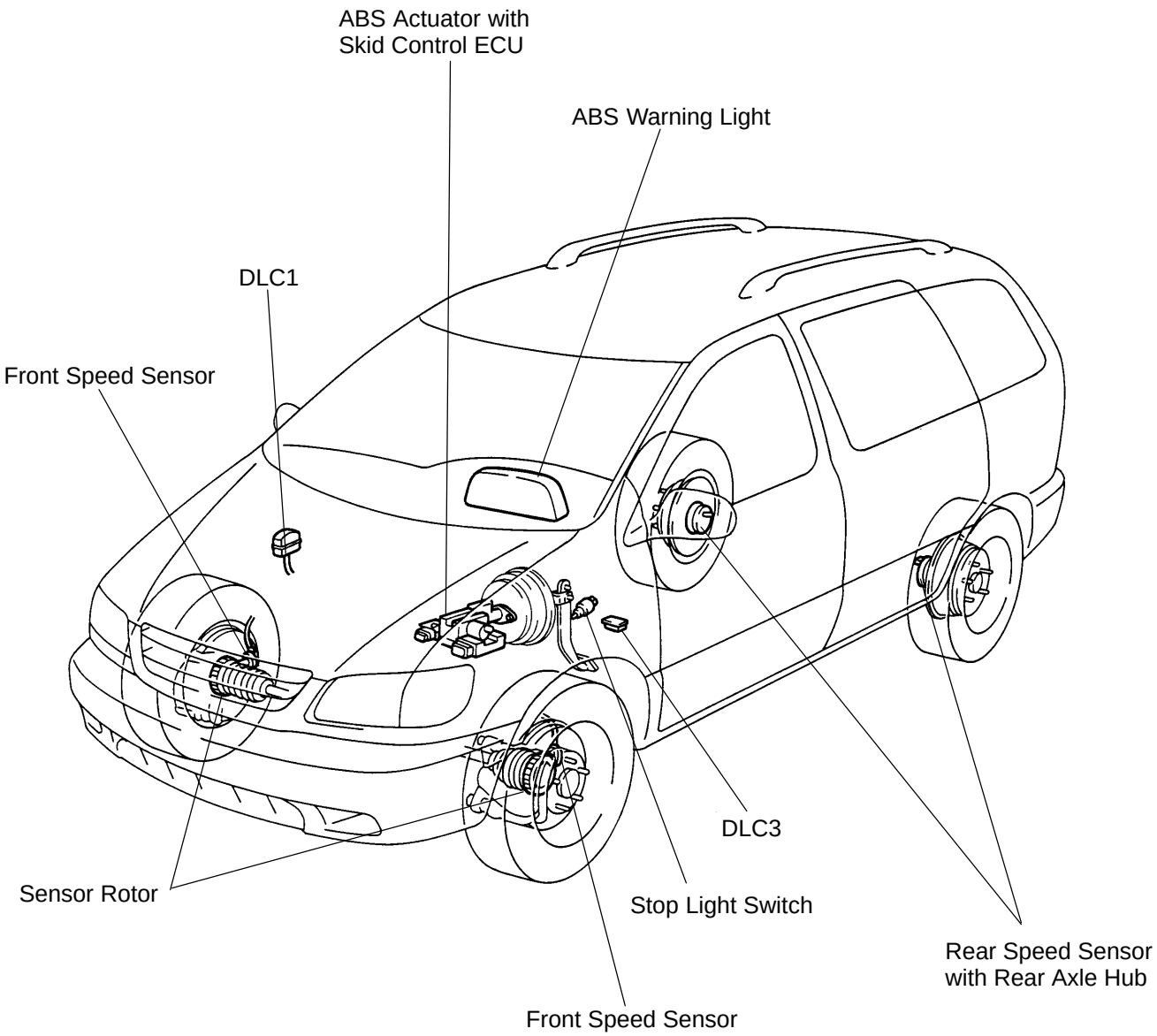
cardiagn.com



cardiagn.com

DI1G4-08

PARTS LOCATION



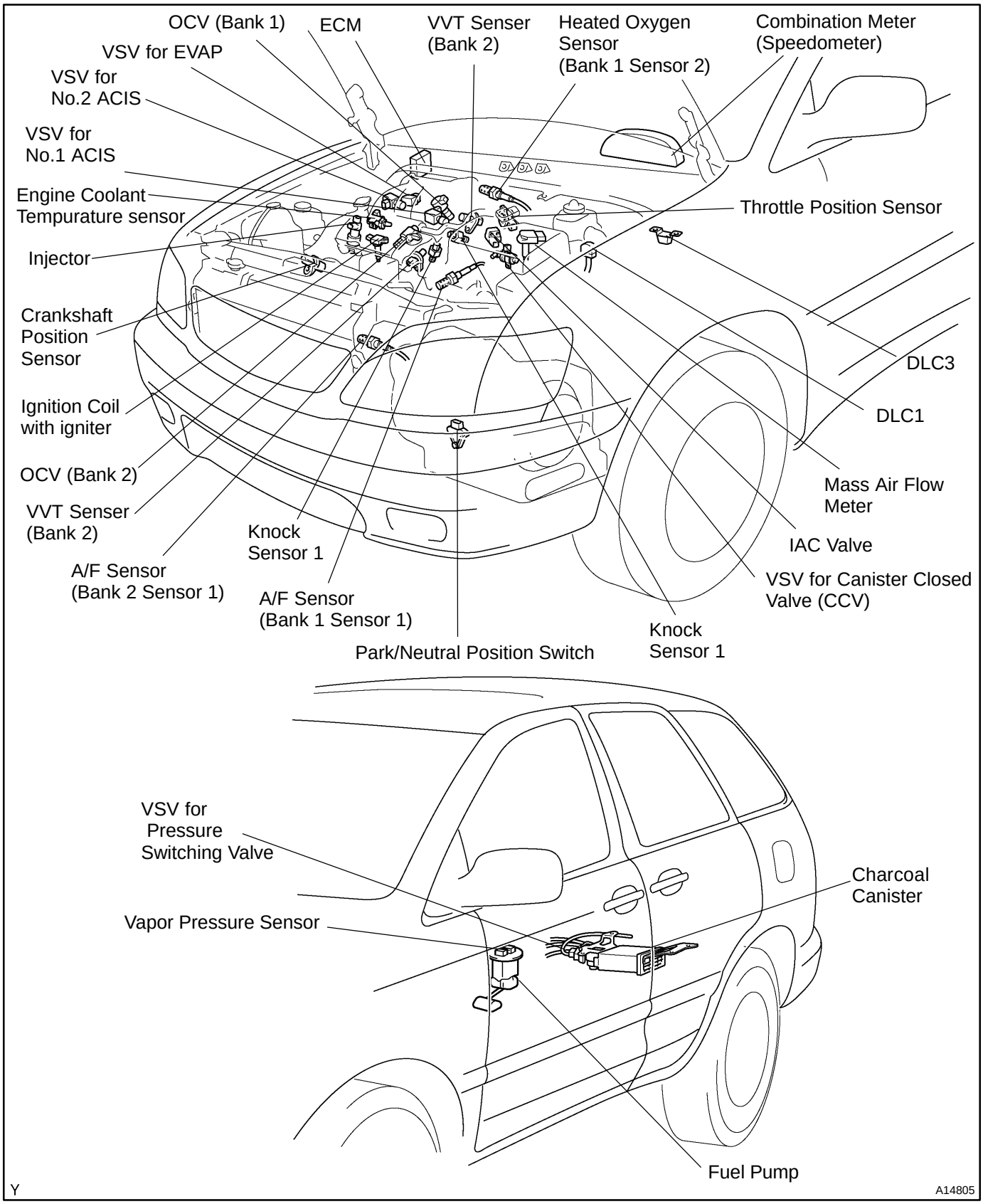
N

F13951

cardiagn.com

DI21P-03

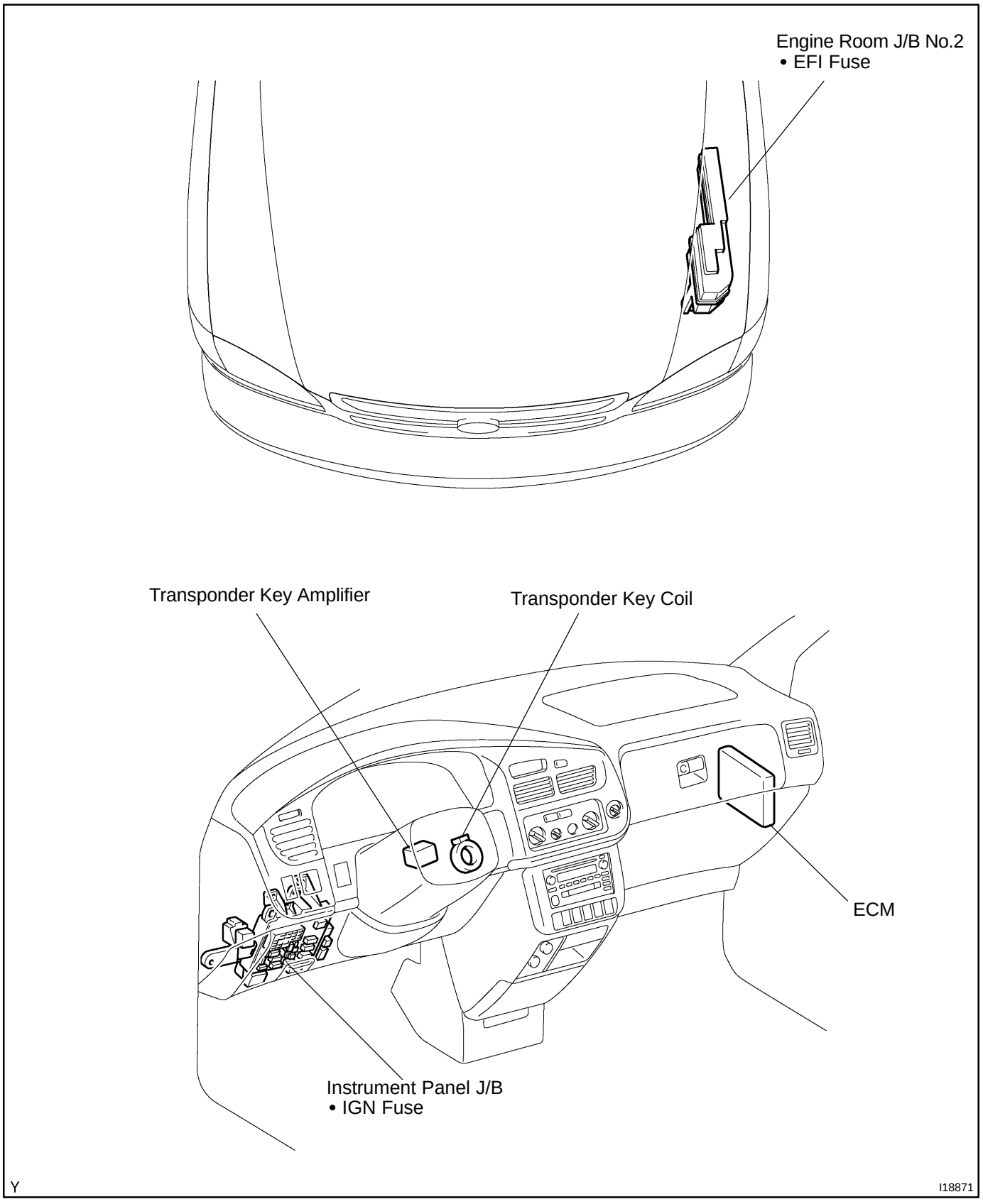
PARTS LOCATION



cardiagn.com

DI1KI-07

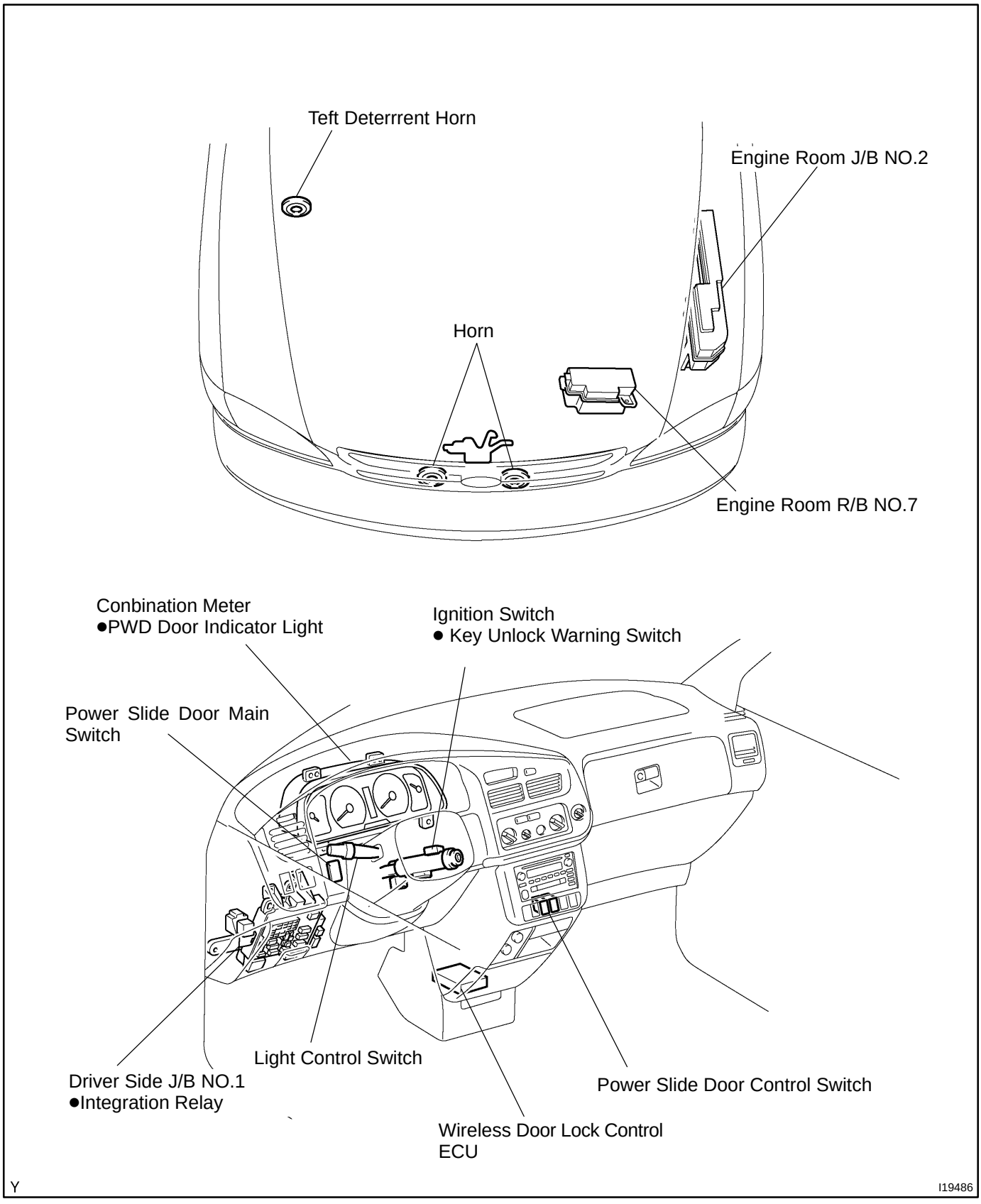
PARTS LOCATION



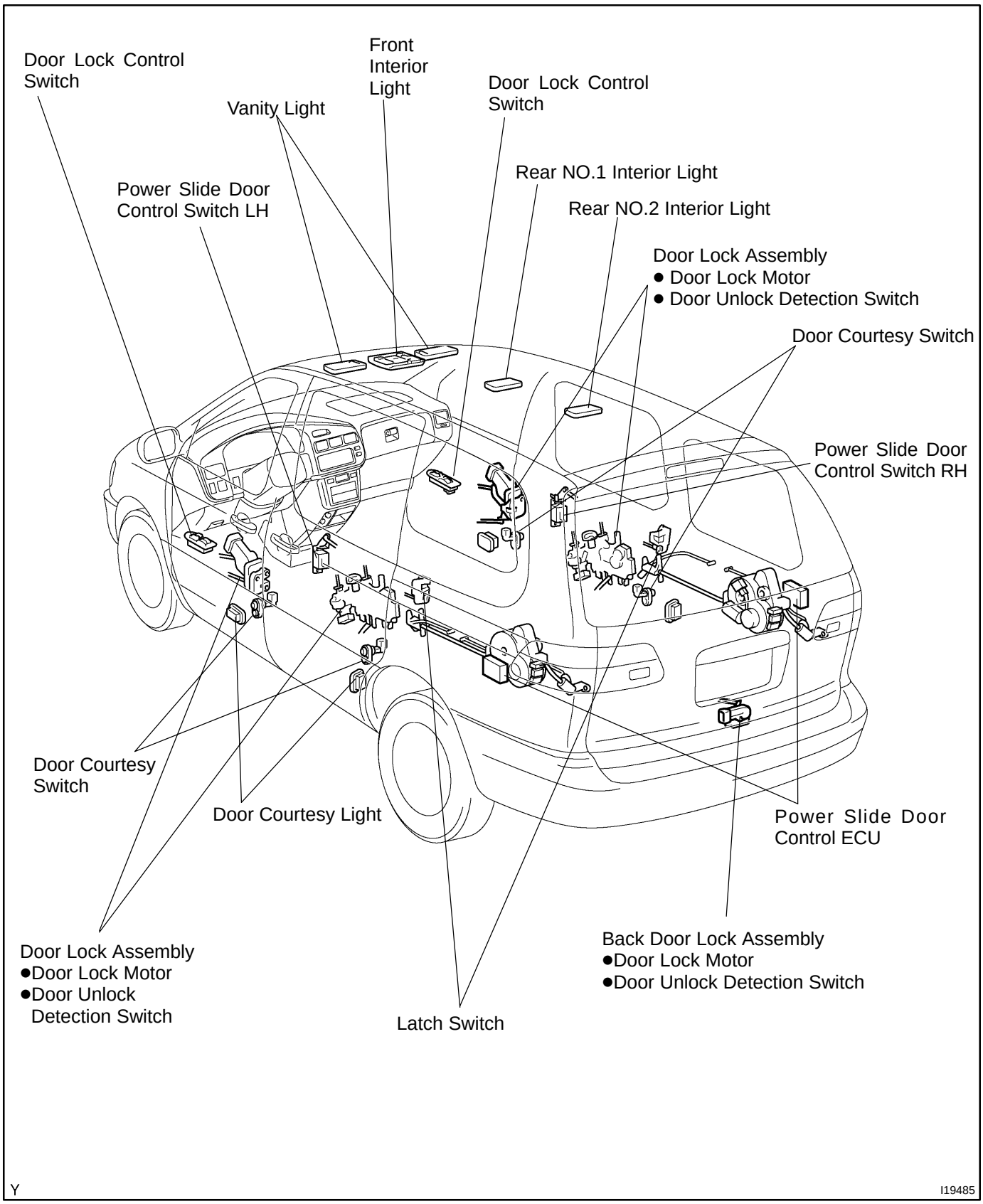
cardiagn.com

DI6LH-03

PARTS LOCATION



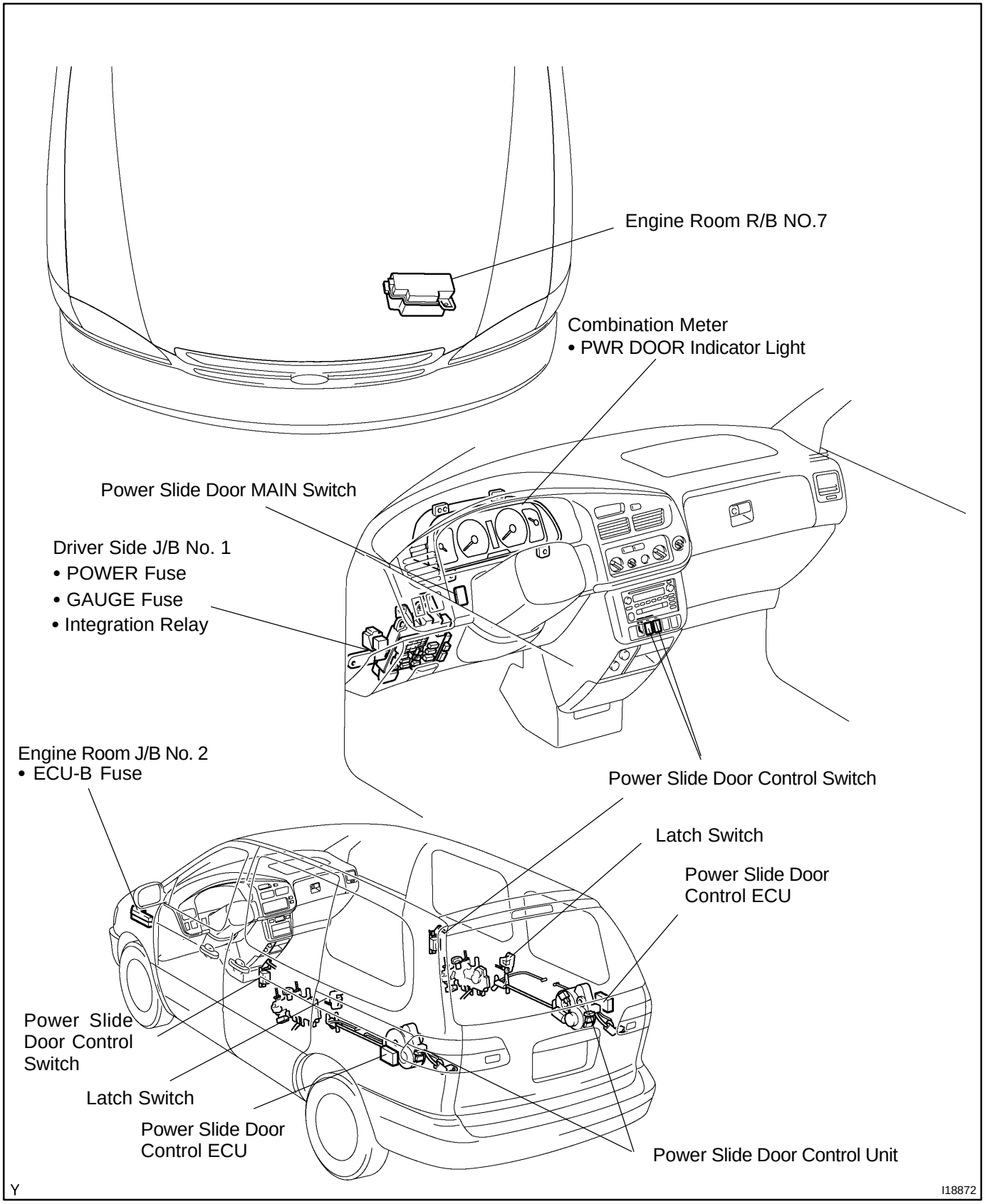
cardiagn.com



cardiagn.com

DI4ER-02

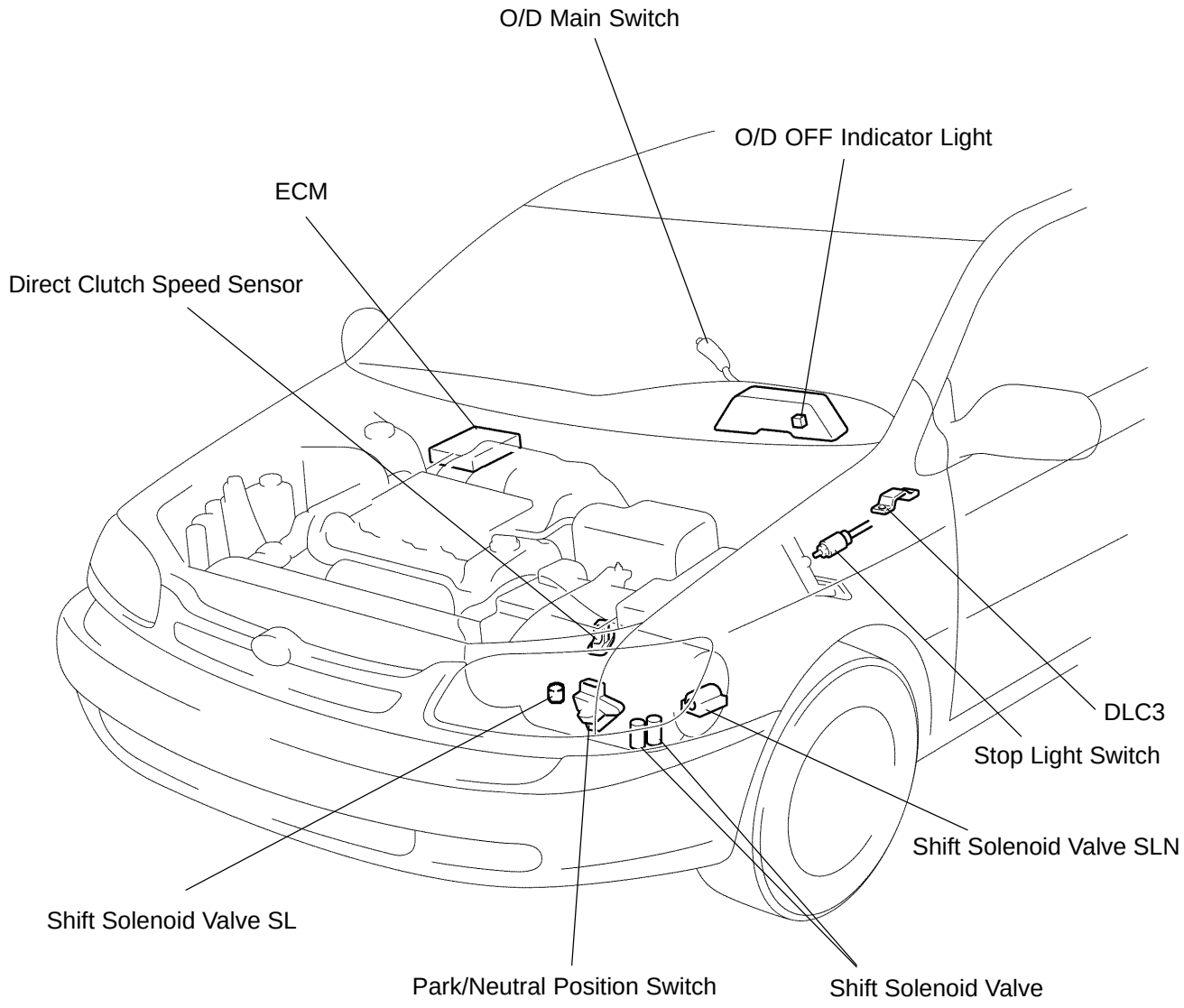
PARTS LOCATION



cardiagn.com

DI21D-02

PARTS LOCATION



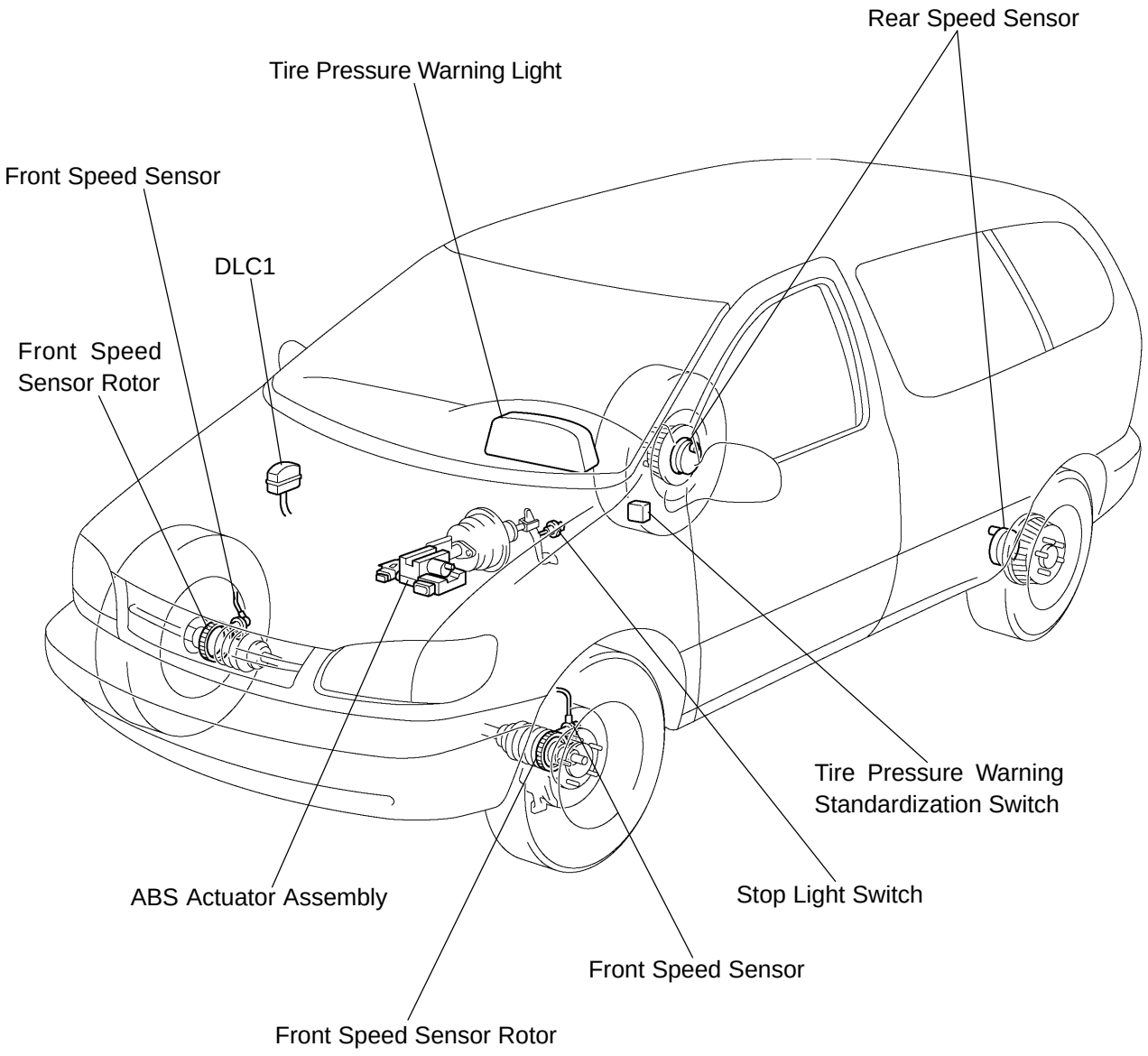
P

D07899

cardiagn.com

DI22Z-02

PARTS LOCATION

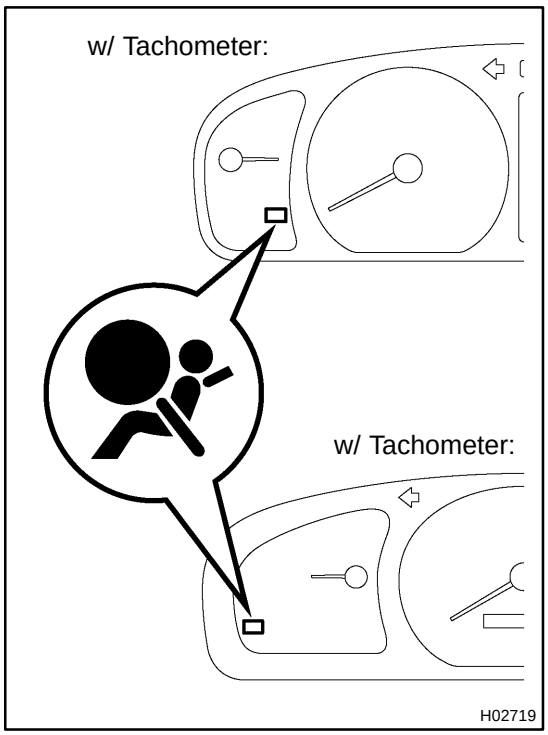


F04211

cardiagn.com

DI1MZ-15

PRE-CHECK



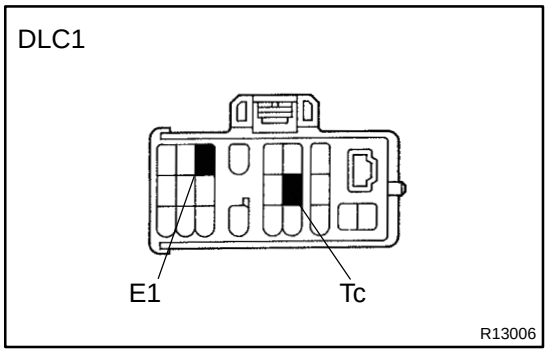
1. SRS WARNING LIGHT CHECK

(a) Turn the ignition switch to the ACC or ON position and check that the SRS warning light lights up.

(b) Check that the SRS warning light goes out after approx. 6 seconds.

HINT:

- When the ignition switch is at ACC or ON and the SRS warning light remains on or flashes, the airbag sensor assembly has detected a malfunction code.
- If, after approx. 6 seconds have elapsed, the SRS warning light sometimes lights up or the SRS warning light lights up even when the ignition switch is OFF, a short in the SRS warning light circuit can be considered likely. Proceed to "SRS warning light circuit malfunction" on page DI-490 .



2. DTC CHECK (Using diagnosis check wire)

(a) Present troubles codes:

Output the DTC.

(1) Turn the ignition switch to the ACC or ON position and wait for approx. 20 seconds.

(2) Using SST, connect terminals Tc and E1 of the DLC1.

SST 09843-18020

NOTICE:

Pay due attention to the terminal connecting position to avoid a malfunction.

(b) Past troubles codes:

Output the DTC.

(1) Using service wire, connect terminals Tc and E1 of the DLC1.

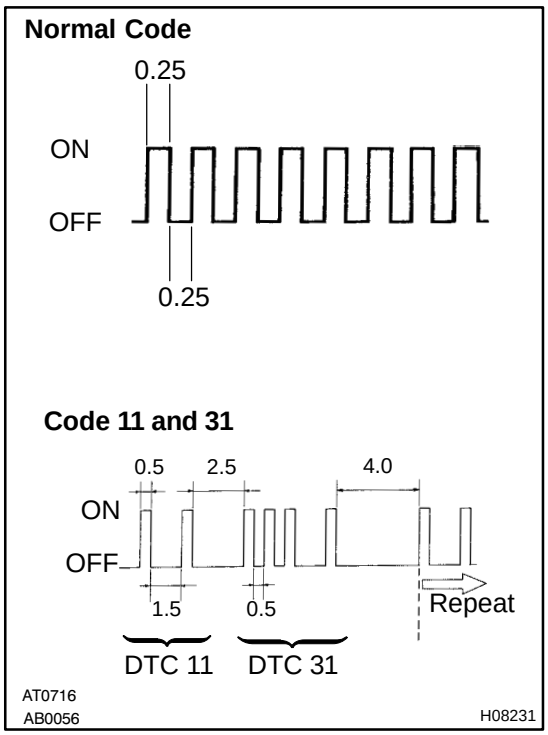
SST 09843-18020

(2) Turn the ignition switch to the ACC or ON position and wait for approx. 20 seconds.

NOTICE:

Pay due attention to the terminal connecting position to avoid a malfunction.

cardiagn.com

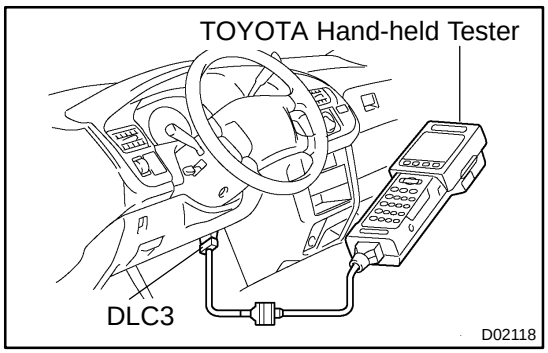


(c) Read the DTC.
Read the 2-digit DTC as indicated by the number of times the SRS warning light blinks. As an example, the blinking patterns, normal, 11 and 31 are shown in the illustration.

- Normal code indication
  The light will blink 2 times per second.
- Malfunction code indication
  The first blinking output indicates the first digit of a 2-digit DTC. After a 1.5-second pause, the second blinking output will indicate the second digit.

If there are 2 or more codes, there will be a 2.5-second pause between each code. After all the codes have been output, there will be a 4.0-second pause and they will all be repeated.
HINT:

- In the event of a number of trouble codes, indication will start from the smallest numbered code.
- If a DTC is not output or a DTC is output without terminal connection, proceed to the Tc terminal circuit inspection on page DI-496 .



3. DTC CHECK (Using TOYOTA hand-held tester)

(a) Hook up the TOYOTA hand-held tester to the DLC3.
(b) Read the DTCs by following the prompts on the tester screen.

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

4. DTC CLEARANCE (Not using service wire)

When the ignition switch is turned off, the diagnostic trouble code is cleared.
HINT:
DTC might not be cleared by turning the ignition switch OFF. In this case, proceed to the next step.

5. DTC CLEARANCE (Using service wire)

(a) Connect the 2 service wires to terminals Tc and AB of check connector.
(b) Turn the ignition switch to ACC or ON and wait for approx. 6 seconds.

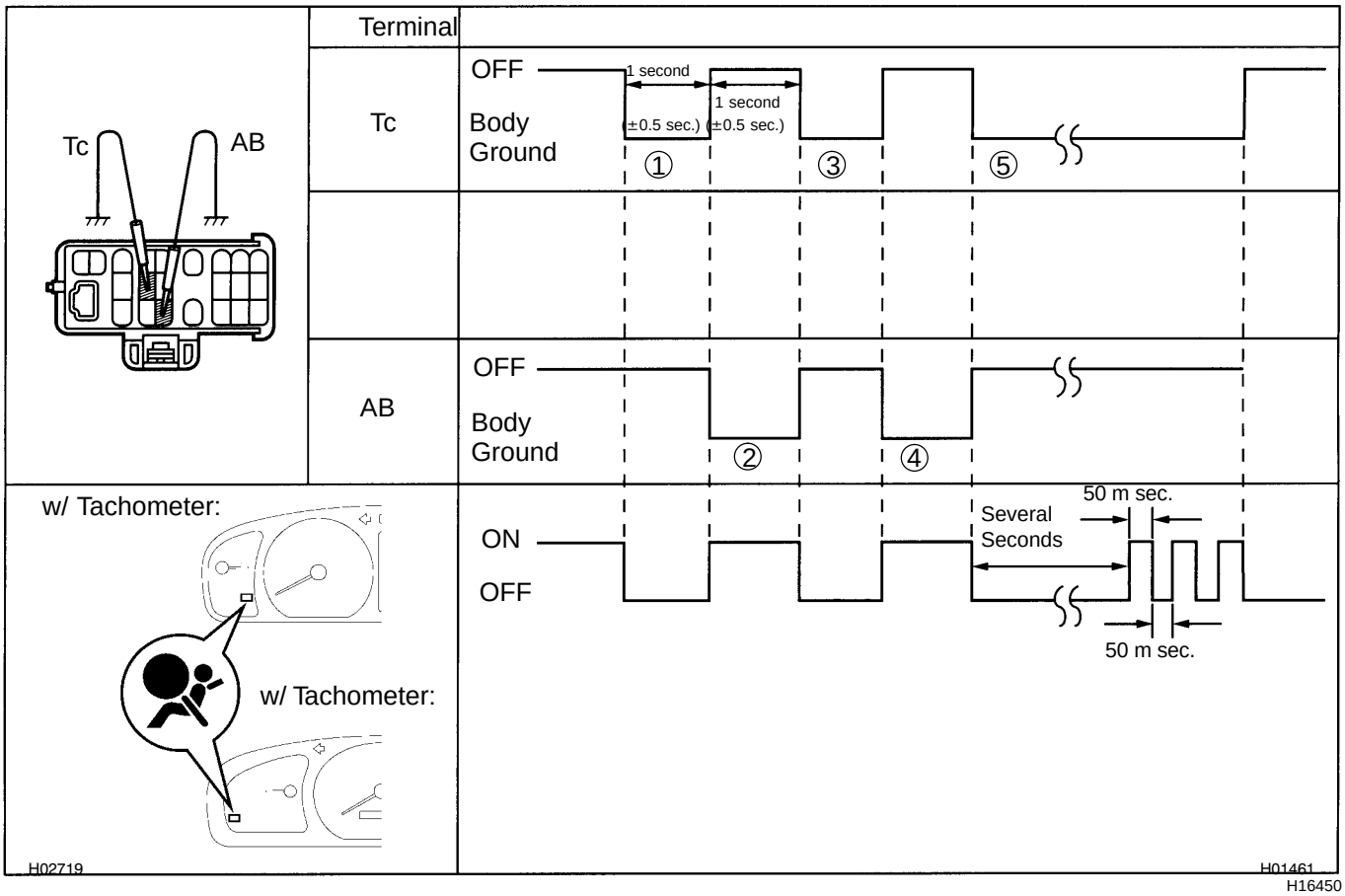
cardiagn.com

(c) Starting with the Tc terminal, ground alternately terminal Tc and terminal AB twice each in cycles of 1.0 second. Make sure that the terminals are grounded. Ensure the terminal Tc remain grounded.

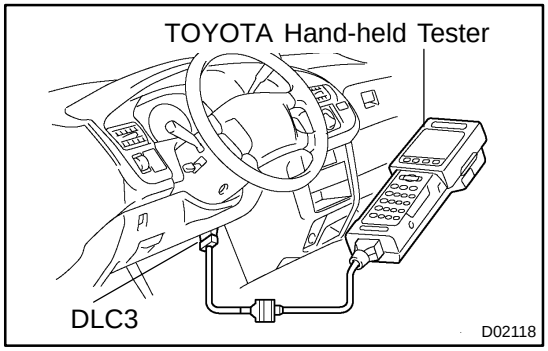
HINT:

When alternately grounding terminals Tc and AB, release ground from one terminal and immediately ground the other terminal within an interval of 0.2 seconds.

If DTCs are not cleared, repeat the above procedure until the codes are cleared.



(d) Several seconds after doing the clearing procedure, the SRS warning light will blink in a 50 - m sec. cycle to indicate the codes which have been cleared.



6. DTC CLEARANCE (Using TOYOTA hand-held tester)

(a) Hook up the TOYOTA hand-held tester to the DLC3.

(b) Clear the DTCs by following the prompts on the tester screen.

HINT:

Please refer to the TOYOTA hand-held tester operation's manual for further details.

cardiagn.com

7. RELEASE METHOD OF AIRBAG ACTIVATION PREVENTION MECHANISM

An airbag activation prevention mechanism is built into the connector for the squib circuit of the SRS.

When release of the airbag activation prevention mechanism is directed in the troubleshooting procedure, as shown in the illustration of the connectors on the next pages, insert paper which has the same thickness as the male terminal between the terminal and the short spring.

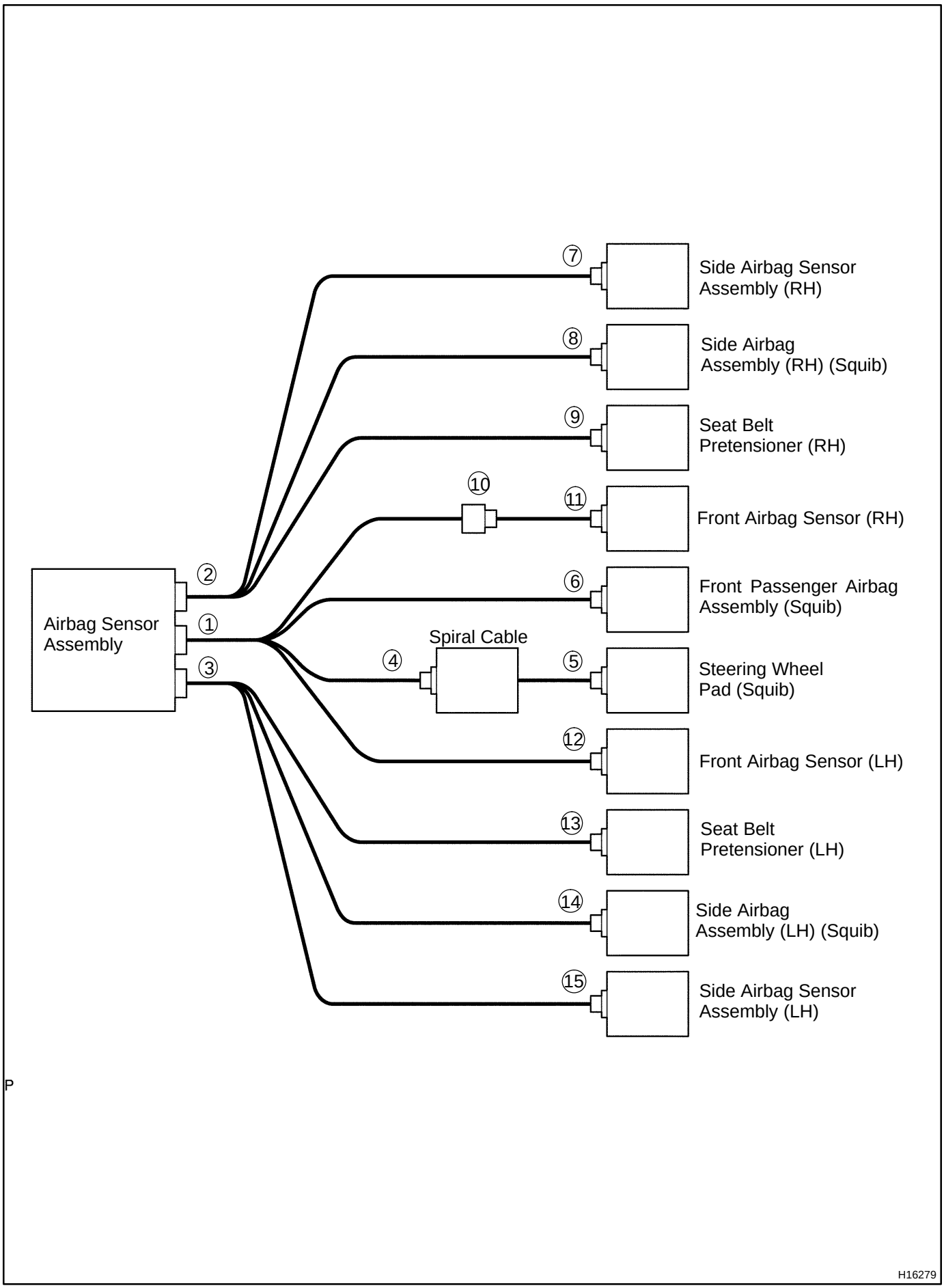
CAUTION:

Never release the airbag activation prevention mechanism on the squib connector.

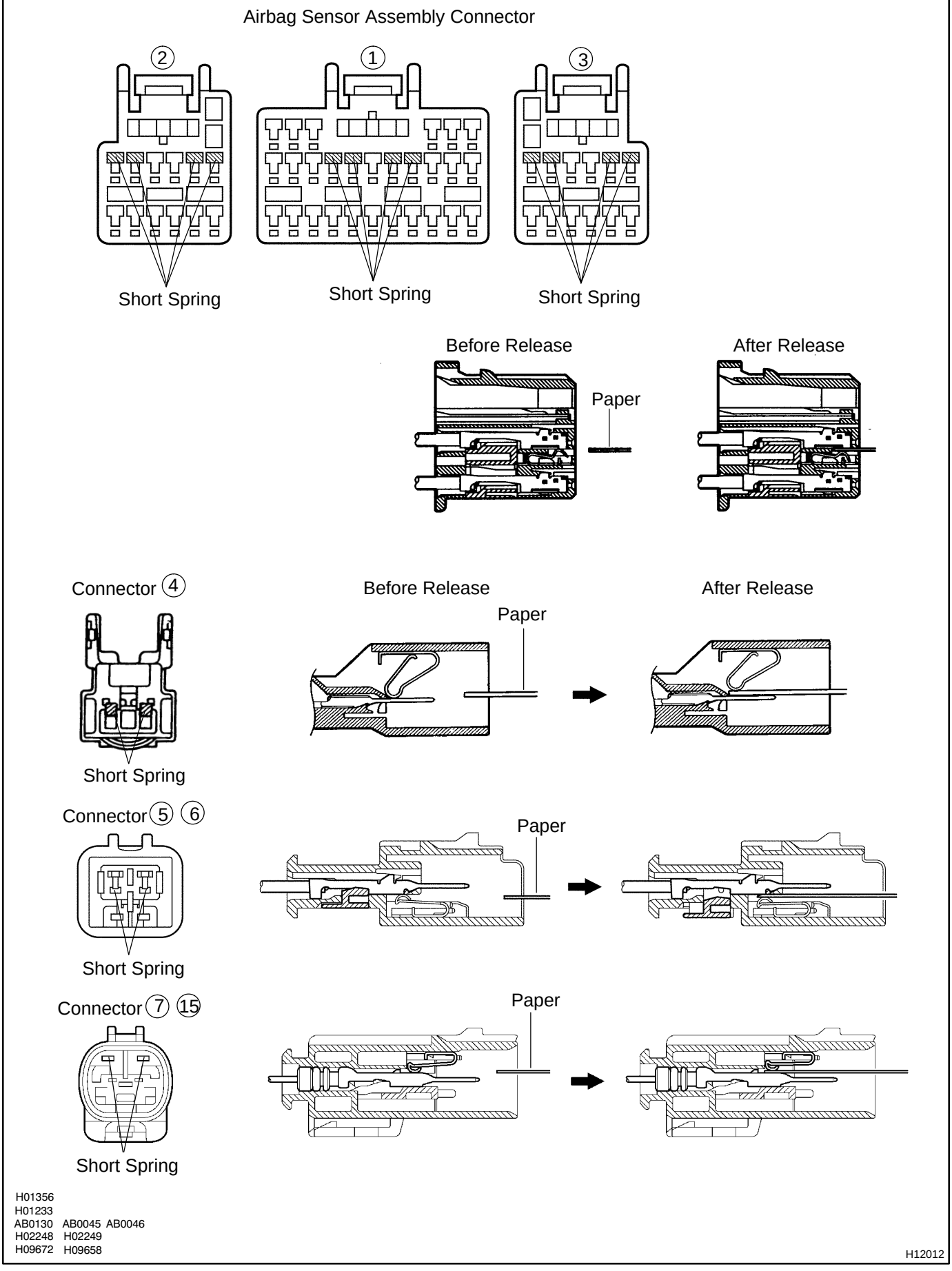
NOTICE:

- **Do not release the airbag activation prevention mechanism unless specifically directed by the troubleshooting procedure.**
- **If the inserted paper is too thick the terminal and short spring may be damaged, so always use paper with the same thickness as the male terminal.**

cardiagn.com



cardiagn.com

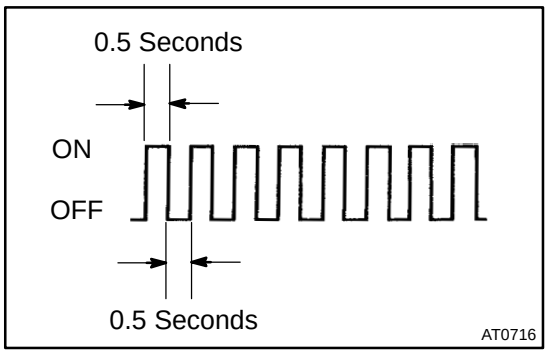


H01356
H01233
AB0130 AB0045 AB0046
H02248 H02249
H09672 H09658

H12012

cardiagn.com

DI8AC-01



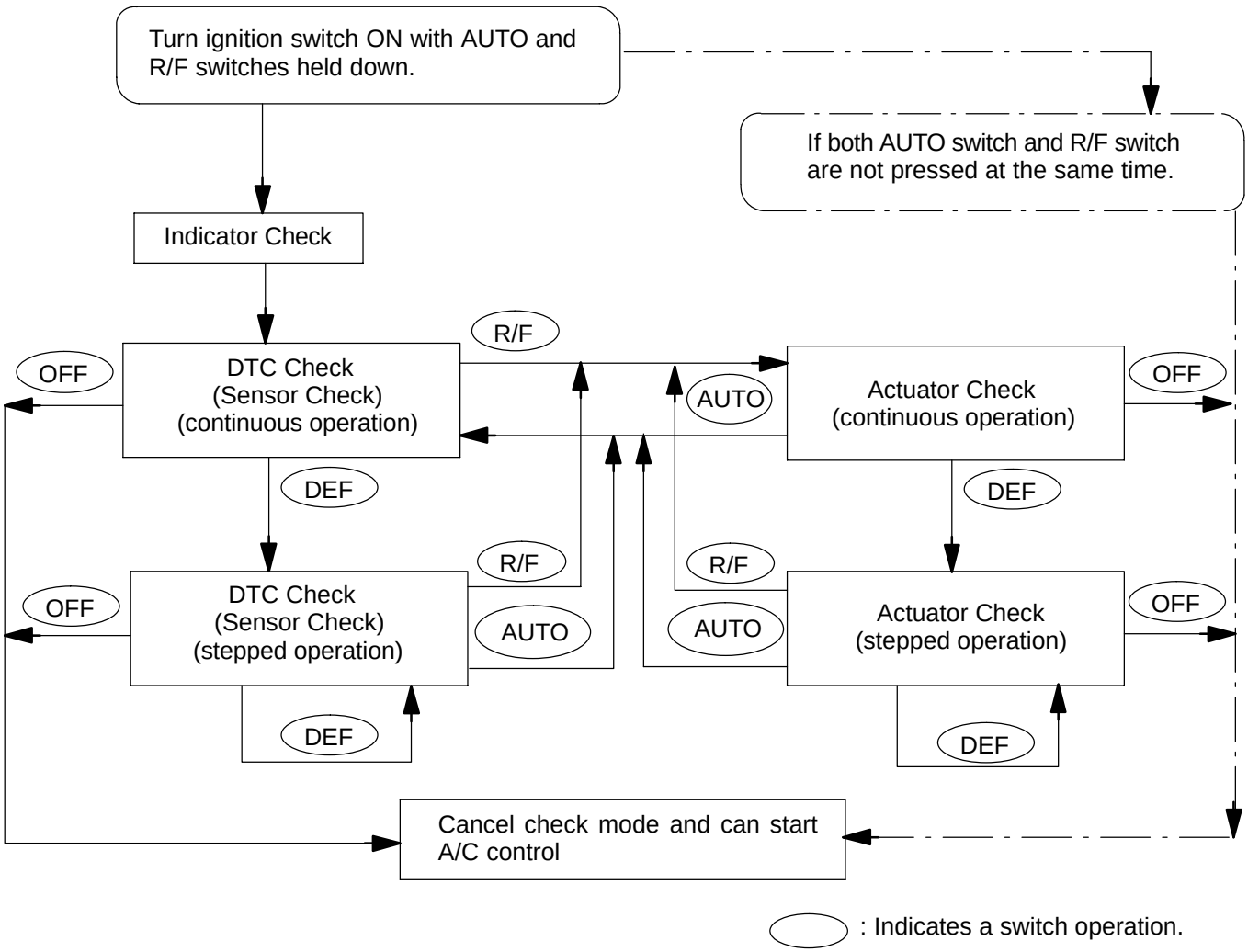
PRE-CHECK

1. WARNING FOR A/C COMPRESSOR LOCK

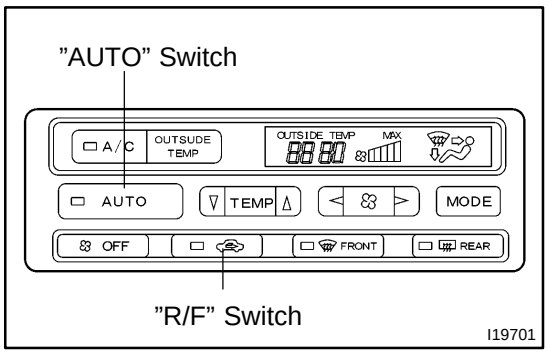
If compressor lock occurs during A/C operation, the A/C switch indicator on the A/C control assembly starts blinking.
When this occurs, check for compressor lock (DTC 22) using diagnosis trouble code check then proceed to inspect the circuit or the component.
Compressor lock sensor circuit. → (See page DI-718)

2. LIST OF OPERATION METHODS

By operating each of the A/C control switches as shown in the diagram below, it is possible to enter the diagnosis check mode.

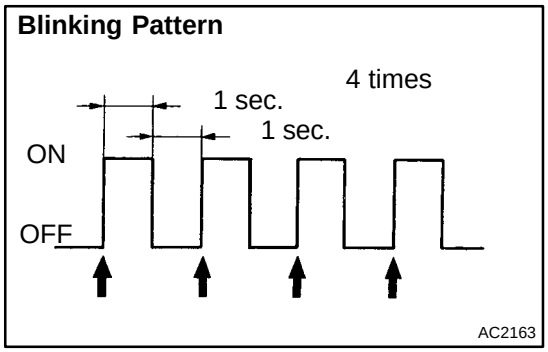


cardiagn.com



3. INDICATOR CHECK

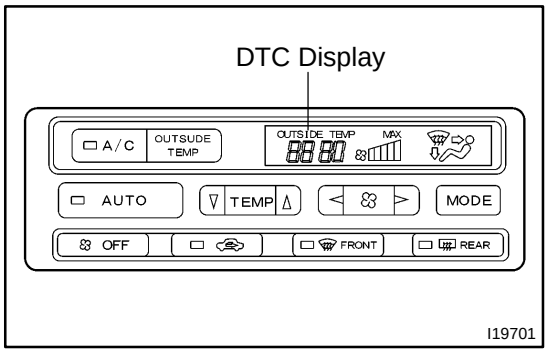
(a) Turn the ignition switch to on while pressing the A/C control AUTO switch and R/F switch simultaneously.



(b) Check that all the indicators light up and go off at 1 second intervals 4 times in succession.

HINT:

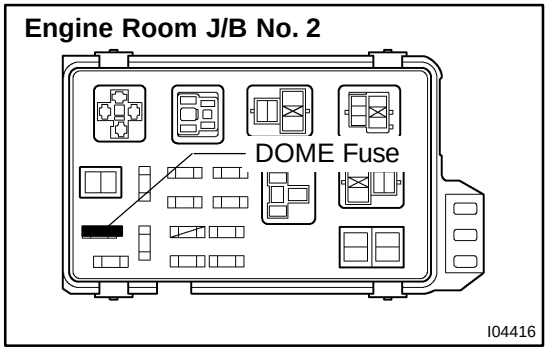
- After the indicator check is ended, the diagnostic trouble code check begins automatically.
- Press the OFF switch when desiring to cancel the check mode.



4. DTC CHECK (SENSOR CHECK)

(a) Perform an indicator check. After the indicator check is completed, the system enters the DTC check mode automatically.

(b) Read the DTC displayed on the panel. Refer to the list of DTCs on page DI-692 when reading the DTCs.
(DTCs are out put at the temperature display.)
If the slower display is desired, press the Temp. Control Switch and change it to step operation. Each time the Temp. Control switch is pressed, the display changes by 1 step.

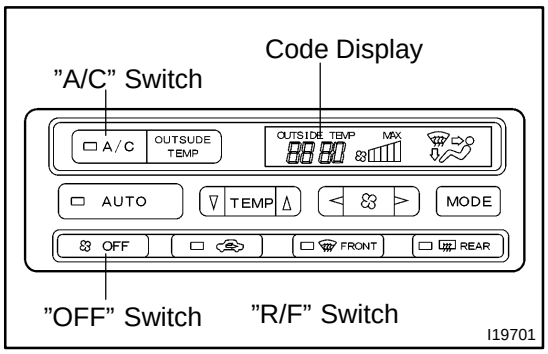


5. CLEARING DTC

(a) Pull out the DOME fuse in engine room J/B No. 2 for 10 sec. or longer to clear diagnostic the DTC's memory.

(b) After reinserting the fuse, check that the normal code is output.

cardiagn.com



6. ACTUATOR CHECK

(a) After entering the sensor check mode, press the R/F switch.

(b) Since each damper, motor and relay automatically operates at 1 second intervals beginning in order from 20 in the temperature display, check the temperature and air flow visually and by hand.
If a slower display is desired, press the A/C switch and change it to step operation. Each time the A/C switch is pressed, the display changes by 1 step.

HINT:

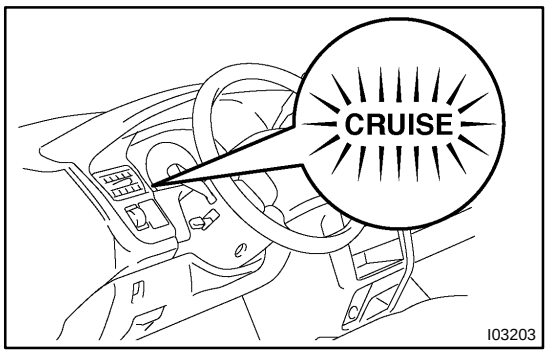
- The buzzer sounds when the display trouble code changes.
- Code are displayed in order from the smaller to the larger numbers.
- To cancel the check mode, press the OFF switch.

Step No.	Display code	Conditions				
		Blower motor	Air flow vent	Air inlet damper	Magnetic clutch	Air mix damper
1	0	OFF	FACE	FRESH	OFF	Cool side (-10% open)
2	1	LO	↑	↑	↑	↑
3	2	MED	↑	R/F (54.5% open)	ON	↑
4	3	↑	↑	↑	↑	↑
5	4	↑	↑	(RECIRC)	↑	Cool / Hot (50% open)
6	5	↑	BI-LEVEL*1 (52.0% open)	↑	↑	↑
7	6	↑	FOOT*2 (31.0% open)	↑	↑	Hot side (110% open)
8	7	↑	↑	↑	↑	↑
9	8	↑	FOOT/DEF	↑	↑	↑
10	9	HI	DEF	↑	↑	↑

*1: There is air leakage from defroster.
*2: There is no air leakage from defroster.

cardiagn.com

DI219-03



PRE-CHECK

1. DIAGNOSIS SYSTEM

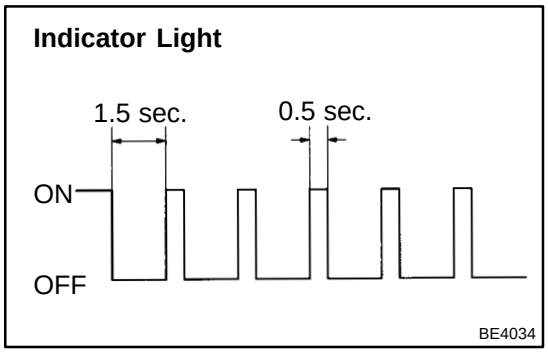
(a) Check the indicator.

(1) Turn the ignition switch to ON.

(2) Check that the CRUISE MAIN indicator light comes on when the cruise control main switch is turned on, and that the indicator light goes off when the main switch is turned OFF.

HINT:

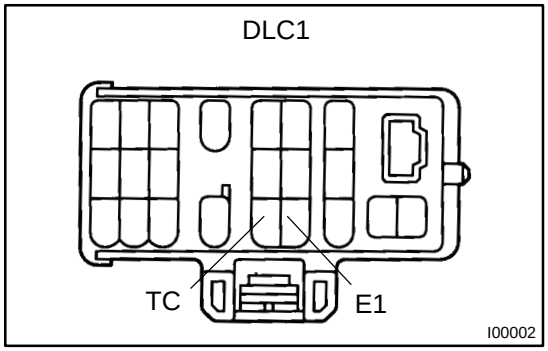
If the indicator check result is not normal, proceed to trouble-shooting (See page BE-2) for the combination meter section.



(b) Check the DTC.

HINT:

If a malfunction occurs in the No. 1 vehicle speed sensors or actuator, etc. during cruise control driving, the ECU actuates AUTO CANCEL of the cruise control and turns on and off the CRUISE MAIN indicator light to inform the driver of a malfunction. At the same time, the malfunction is stored in memory as a diagnostic trouble code.



(c) Output of DTC using diagnosis check wire.

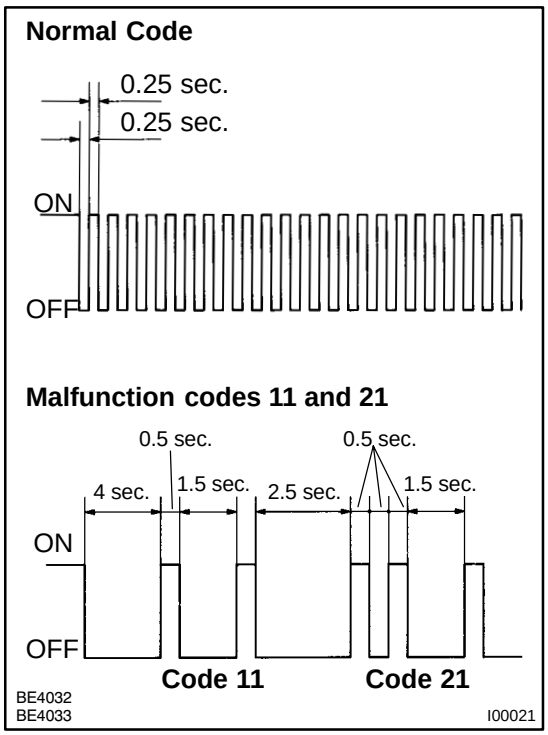
(1) Turn the ignition switch ON.

(2) Using SST, connect terminals Tc and E_1 of DLC1.

SST 09843-18020

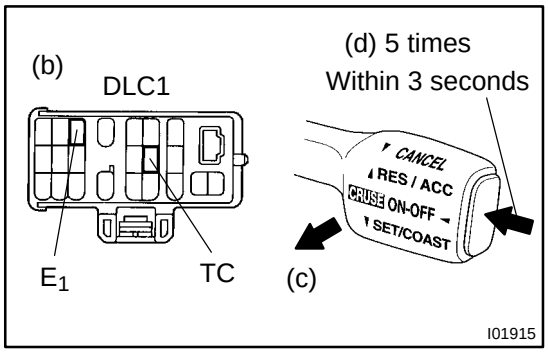
(3) Read the DTC on the CRUISE MAIN indicator light.

cardiagn.com



HINT:

- If the DTC is not output, inspect the diagnosis circuit (See page DI-603).
- As an example, the blinking patterns for codes; normal, 11 and 21 are shown in the illustration.



2. DTC CLEARANCE (ERASE MODE)

HINT:

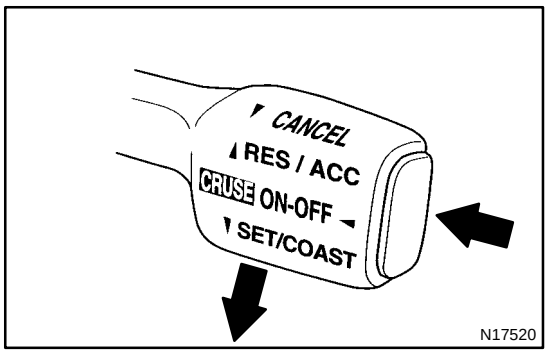
Under the erase mode, diag detection does not work.

(a) Drive at about 15 km/h or below.

(b) Using SST, connect terminals Tc and E_1 of DLC1.
SST 09843-18020

(c) Pull the cruise control switch to CANCEL.

(d) On the above metioned condition, turn on the cruise control main switch 5 times within 3 seconds.



3. PROBLEM SYMPTOM CONFIRMATION (ROAD TEST)

(a) Inspect the SET switch.

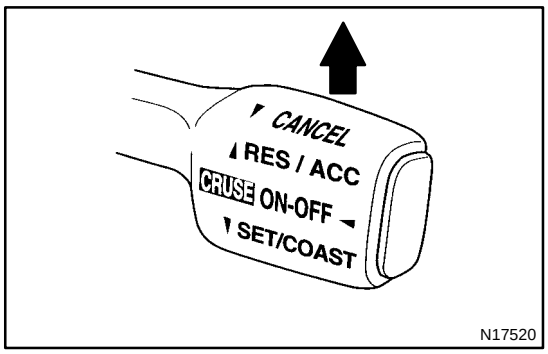
(1) Push the main switch ON.

(2) Drive at a desired speed (40 km/h (25 mph) or higher).

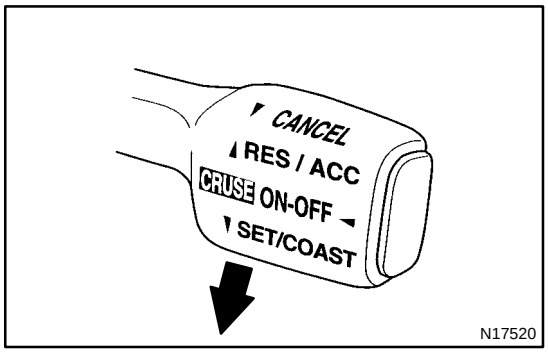
(3) Pull the control switch to the SET/COAST.

(4) After releasing the switch, check that the vehicle cruises at the desired speed.

cardiagn.com

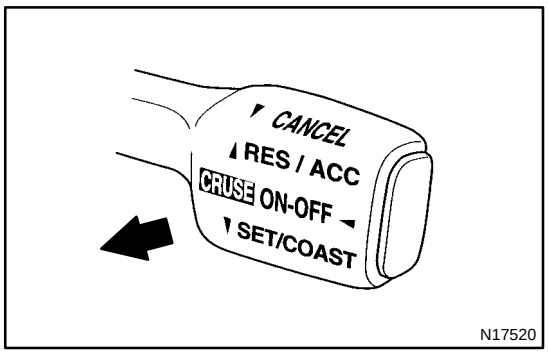


(b) Inspect the ACCEL switch.
(1) Push the main switch ON.
(2) Drive at a desired speed (40 km/h (25 mph) or higher).
(3) Check that the vehicle speed increases while the control switch is turned to RES/ACC, and that the vehicle cruises at the set speed when the switch is released.
(4) Momentarily pull the control switch upward to RES/ACC and then immediately release it. Check that the vehicle speed increases by about 1.5 km/h (Tap-up function).

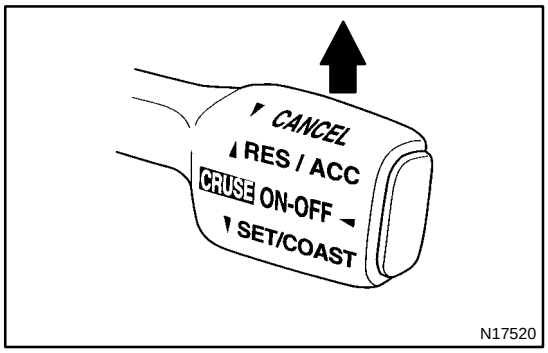


(c) Inspect the COAST switch.
(1) Push the main switch ON.
(2) Drive at a desired speed (40 km/h (25 mph) or higher).
(3) Check that the vehicle speed decreases while the control switch is turned to SET/COAST, and the vehicle cruises at the set speed when the switch is released.
(4) Momentarily pull the control switch downward to SET/COAST, and then immediately release it. Check that the vehicle speed decreases by about 1.5 km/h (Tap-down function).

cardiagn.com



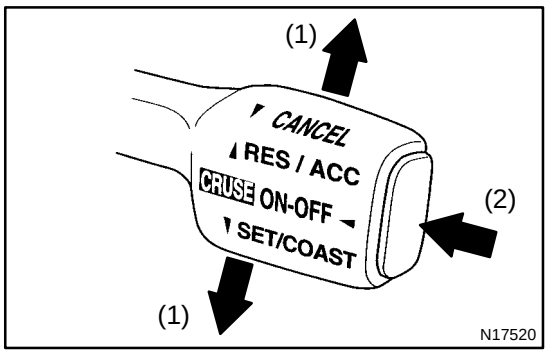
(d) Inspect the CANCEL switch.
(1) Push the main switch ON.
(2) Drive at a desired speed (40 km/h (25 mph) or higher).
(3) When operating one of the followings, check that the cruise control system is cancelled and that the normal driving mode is reset.
- Depress the brake pedal
- Depress the clutch pedal (M/T)
- Shift to except D position (A/T)
- Push the main switch OFF
- Pull the cruise control switch to CANCEL



(e) Inspect the RESUME switch.
(1) Push the main switch ON.
(2) Drive at a desired speed (40 km/h (25 mph) or higher).
(3) When operating one of the followings, check that the cruise control system is cancelled and that the normal driving mode is reset.
- Depress the brake pedal
- Depress the clutch pedal (M/T)
- Shift to except D position (A/T)
- Push the main switch OFF
- Pull the cruise control switch to CANCEL

(4) After the control switch is turned to RES/ACC at the driving speed of more than 40 km/h (25 mph), check that the vehicle restores the speed prior to the cancellation.

cardiagn.com



4. INPUT SIGNAL CHECK

HINT:

(1) For check No.1 ~ No.3
- Turn ignition switch ON.

(2) For check No.4
- Jack up the vehicle.
- Start the engine.
- Shift to D position.

(a) Pull the control switch to SET/COAST or RES/ACC position and hold it down or hold it up "(1)".

(b) Push the main switch ON "(2)".

(c) Check that the CRUISE MAIN indicator light blinks twice or 3 times repeatedly after 3 seconds.

(d) Turn the SET/COAST or RES/ACC switch OFF.

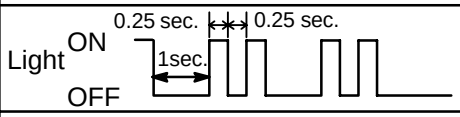
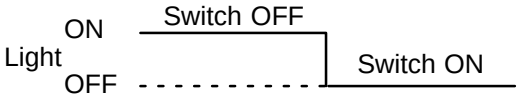
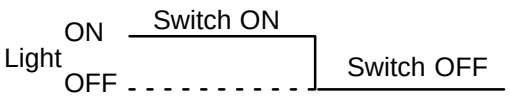
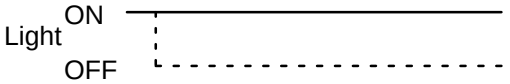
(e) Operate each switch as listed in the table below.

(f) Read the blinking pattern of the CRUISE MAIN indicator light.

(g) After performing the check, turn the main switch OFF.

HINT:

When 2 or more signals are input to the ECU, the lowest numbered code will be displayed first.

No.	Operation Method	CRUISE MAIN Indicator LIght Blinking Pattern	Diagnosis
1	Turn SET/COAST switch ON		SET/COAST switch circuit is normal
2	Turn RES/ACC switch ON		RES/ACC switch circuit is normal
3	Turn CANCEL switch ON		CANCEL switch circuit is normal
	Turn stop light switch ON Depress brake pedal		Stop light switch circuit is normal
	Turn PNP switch OFF (Shift to except D position)		PNP switch circuit is normal
	Turn clutch switch OFF (Depress clutch pedal)		Clutch switch circuit is normal
4	Drive at about 40 km/h (25 mph)or higher		Vehicle Speed Sensor is normal
	Drive at about 40 km/h (25 mph) or below		

cardiagn.com

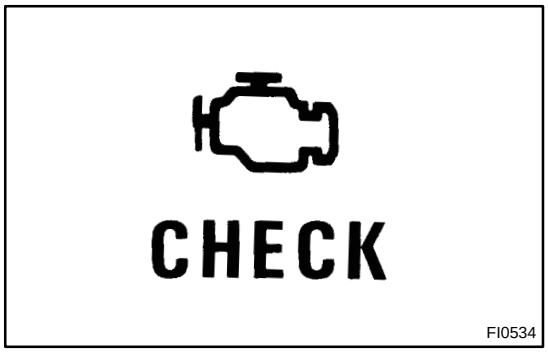
DI8B2-01

PRE-CHECK

1. DIAGNOSIS SYSTEM

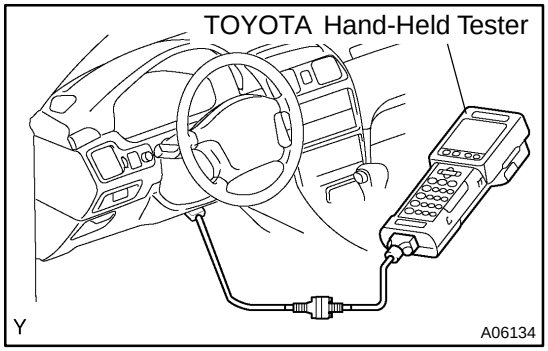
(a) Description

- When troubleshooting OBD II vehicles, the only difference from the usual troubleshooting procedure is that you connect to the vehicle the OBD II scan tool complying with SAE J1978 or TOYOTA hand-held tester, and read off various data output from the vehicle's ECM.



- OBD II regulations require that the vehicle's on-board computer lights up the Malfunction Indicator Lamp (MIL) on the instrument panel when the computer detects a malfunction in the emission control system/components or in the powertrain control components which affect vehicle emissions, or a malfunction in the computer. In addition to the MIL lighting up when a malfunction is detected, the applicable Diagnostic Trouble Codes (DTC) prescribed by SAE J2012 are recorded in the ECM memory (See page DI-13).

If the malfunction does not reoccur in 3 consecutive trips, the MIL goes off but the DTCs remain recorded in the ECM memory.



- To check the DTC, connect the OBD II scan tool or TOYOTA hand-held tester to Data Link Connector 3 (DLC3) on the vehicle. The OBD II scan tool or TOYOTA hand-held tester also enables you to erase the DTC and check freezed frame data and various forms of engine data (For operating instructions, see the OBD II scan tool's instruction book.). DTC include SAE controlled codes and manufacturer controlled codes. SAE controlled codes must be set as prescribed by the SAE, while manufacturer controlled codes can be set freely by the manufacturer within the prescribed limits (See DTC chart on page DI-13).

cardiagn.com

- The diagnosis system operates in normal mode during normal vehicle use. It also has a check mode for technicians to simulate malfunction symptoms and troubleshoot. Most DTC use 2 trip detection logic* to prevent erroneous detection, and ensure thorough malfunction detection. By switching the ECM to check mode when troubleshooting, the technician can cause the MIL to light up for a malfunction that is only detected once or momentarily (TOYOTA hand- held tester only) (See page DI-13).
- *2 trip detection logic:
  When a malfunction is first detected, the malfunction is temporarily stored in the ECM memory (1st trip).

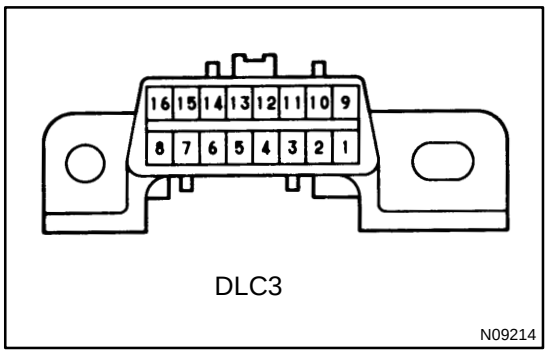
If the same malfunction is detected again during the second drive test, this second detection causes the MIL to light up. (2nd trip) (However, the IG switch must be turned OFF between the 1st trip and the 2nd trip.).

- Freeze frame data:
  Freeze frame data records the engine condition when a misfire (DTCs P0300 - P0306) or fuel trim malfunction (DTCs P0171, P0172, P0174, P0175) or other malfunction (first malfunction only), is detected.
  Because freeze frame data records the engine conditions (fuel system, calculated load, engine coolant temperature, fuel trim, engine speed, vehicle speed, etc.) when the malfunction is detected, when troubleshooting it is useful for determining whether the vehicle was running or stopped, the engine warmed up or not, the air-fuel ratio lean or rich, etc. at the time of the malfunction.

Priorities for troubleshooting:
If troubleshooting priorities for multiple DTC are given in the applicable DTC chart, these should be followed.
If no instructions are given troubleshoot DTC according to the following priorities.

(1) DTC other than fuel trim malfunction (DTCs P0171, P0172, P0174, P0175) and misfire (DTCs P0300 -P0306).
(2) Fuel trim malfunction (DTCs P0171, P0172, P0174, P0175).
(3) Misfire (DTCs P0300 - P0306).

cardiagn.com



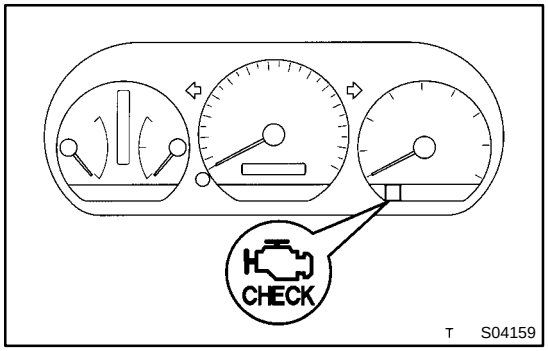
DLC3
N09214

(b) Check the DLC3.
The vehicle's ECM uses ISO 9141-2 for communication. The terminal arrangement of DLC3 complies with SAE J1962 and matches the ISO 9141-2 format.

Terminal No.	Connection / Voltage or Resistance	Condition
7	Bus ⊕ Line / Pulse generation	During transmission
4	Chassis Ground ↔ Body Ground /1 Ω or less	Always
5	Signal Ground ↔ Body Ground /1 Ω or less	Always
16	Battery Positive ↔ Body Ground /9 ~ 14 V	Always

HINT:
If your display shows "UNABLE TO CONNECT TO VEHICLE" when you have connected the cable of the OBD II scan tool or TOYOTA hand-held tester to DLC3, turned the ignition switch ON and operated the scan tool, there is a problem on the vehicle side or tool side.

- If communication is normal when the tool is connected to another vehicle, inspect DLC3 on the original vehicle.
- If communication is still not possible when the tool is connected to another vehicle, the problem is probably in the tool itself, so consult the Service Department listed in the tool's instruction manual.



T S04159

2. INSPECT DIAGNOSIS (Normal Mode)

(a) Check the MIL.

(1) The MIL comes on when the ignition switch is turned ON and the engine is not running.

HINT:
If the MIL does not light up, troubleshoot the combination meter (See page BE-43).

(2) When the engine started, the MIL should go off. If the lamp remains on, the diagnosis system has detected a malfunction or abnormality in the system.

(b) Check the DTC.

NOTICE:
TOYOTA hand-held tester only: When the diagnosis system is switched from normal mode to check mode, it erases all DTC and freezed frame data recorded in normal mode. So before switching modes, always check the DTC and freezed frame data, and note them down.

(1) Prepare the OBD II scan tool (complying with SAE J1978) or TOYOTA hand-held tester.

cardiagn.com

(2) Connect the OBD II scan tool or TOYOTA hand-held tester to DLC3 at the lower center of the instrument panel.
(3) Turn the ignition switch ON and push the OBD II scan tool or TOYOTA hand-held tester switch ON.
(4) Use the OBD II scan tool or TOYOTA hand-held tester to check the DTC and freezed frame data and note them down (For operating instructions, see the OBD II scan tool's instruction book.).
(5) See page DI-3 to confirm the details of the DTC.

NOTICE:

- **When simulating symptoms with an OBD II scan tool (excluding TOYOTA hand-held tester) to check the DTC, use normal mode. For code on the DTC chart subject to "2 trip detection logic", performe the following either action.**
- **Turn the ignition switch OFF after the symptom is simulated the first time. Then repeat the simulation process again. When the problem has been simulated twice, the MIL lights up and the DTCs are recorded in the ECM.**
- **Check the 1st trip DTC using Mode 7 (Continuous Test Results) for SAE J1979.**

(c) Clear the DTC.
The DTCs and freezed frame data will be erased by either action.

- Operating the OBD II scan tool (complying with SAE J1978) or TOYOTA hand-held tester to erase the codes. (See the OBD II scan tool's instruction book for operating instructions.)
- Disconnecting the battery terminals or EFI fuse.

NOTICE:

If the TOYOTA hand-held tester switches the ECM from normal mode to check mode or vice-versa, or if the ignition switch is turned from ON to ACC or OFF during check mode, the DTCs and freezed frame data will be erased.

3. INSPECT DIAGNOSIS (Check Mode)

HINT:

TOYOTA hand-held tester only:

Compared to the normal mode, the check mode has an increased sensitivity to detect malfunctions.

Furthermore, the same diagnostic items which are detected in the normal mode can also be detected in the check mode.

cardiagn.com

(a) Check the DTC.

(1) Initial conditions.

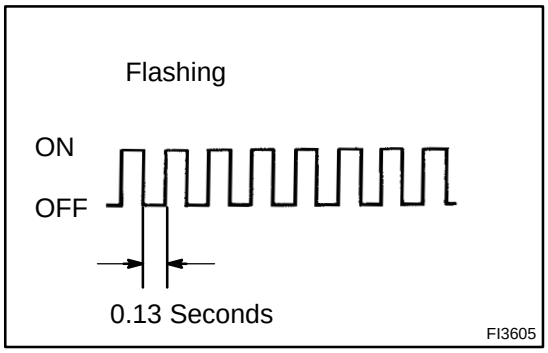
- Battery positive voltage 11 V or more
- Throttle valve fully closed
- Transmission in ”P” or ”N” position
- Air conditioning switched OFF

(2) Turn ignition switch OFF.

(3) Prepare the TOYOTA hand-held tester.

(4) Connect the TOYOTA hand- held tester to the DLC3 at the lower center of the instrument panel.

(5) Turn the ignition switch ON and push the TOYOTA hand-held tester switch ON.



(6) Switch the TOYOTA hand-held tester normal mode to check mode (Check that the MIL flashes.).

NOTICE:

If the TOYOTA hand-held tester switches the ECM from normal mode to check mode or vice-versa, or if the ignition switch is turned from ON to ACC or OFF during check mode, the DTC and freezed frame data will be erased.

(7) Start the engine (The MIL goes out after the engine start.).

(8) Simulate the conditions of the malfunction described by the customer.

NOTICE:

Leave the ignition switch ON until you have checked the DTC, etc.

(9) After simulating the malfunction conditions, use the TOYOTA hand-held tester diagnosis selector to check the DTC and freezed frame data, etc.

HINT:

Take care not to turn the ignition switch OFF. Turning the ignition switch OFF switches the diagnosis system from check mode to normal mode. So all DTC, etc. are erased.

(10) After checking the DTC, inspect the applicable circuit.

cardiagn.com

4. FAIL-SAFE CHART

If any of the following codes is recorded, the ECM enters fail-safe mode.

DTC No.	Fail-Safe Operation	Fail-Safe Deactivation Conditions
P0100	Ignition timing fixed at 10˚ BTDC	Returned to normal condition
P0110	Intake air temperature is fixed at 20˚C (68˚F)	Returned to normal condition
P0115	Engine coolant temperature is fixed at 80˚C (176˚F)	Returned to normal condition
P0120	VTA is fixed at 0˚	The following condition must be repeated at least 2 times consecutively (a) Vehicle speed: 0 km/h (0 mph) (b) VTA ≧ 0.1 V and 0.95 V
P0135 P0141 P0155	The heater circuit in which an abnormality is detected is turned off	Ignition switch OFF
P0325 P0330	Max. timing retardation	Ignition switch OFF
P1300	Fuel cut	IGF signal is detected for 6 consecutive ignitions

5. CHECK FOR INTERMITTENT PROBLEMS

TOYOTA HAND-HELD TESTER only:

By putting the vehicle's ECM in check mode, 1 trip detection logic is possible instead of 2 trip detection logic and sensitivity to detect open circuits is increased. This makes it easier to detect intermittent problems.

(1) Clear the DTC (See step 2).
(2) Set the check mode (See step 3).
(3) Perform a simulation test (See page IN-21).
(4) Check the connector and terminal (See page IN-31).
(5) Handle the connector (See page IN-31).

6. BASIC INSPECTION

When the malfunction code is not confirmed in the DTC check, troubleshooting should be performed in the order for all possible circuits to be considered as the causes of the problems. In many cases, by carrying out the basic engine check shown in the following flow chart, the location causing the problem can be found quickly and efficiently. Therefore, use of this check is essential in engine troubleshooting.

1	**Is battery positive voltage 11 V or more when engine is stopped ?**

NO → **Charge or replace battery.**

YES

cardiagn.com

2	**Is engine cranked?**

NO → **Proceed to page ST-19 and continue to trouble-shoot.**

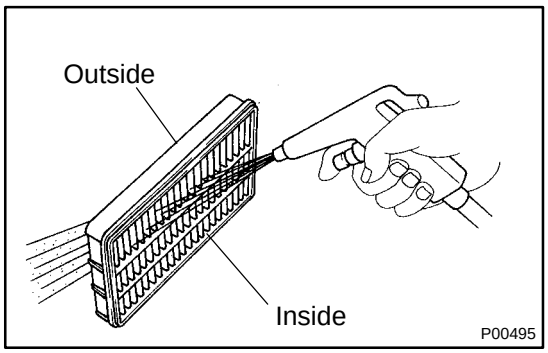
YES

3	**Does engine start?**

NO → **Go to step 7.**

YES

4	**Check air filter.**



PREPARATION:
Remove the air filter.
CHECK:
Visually check that the air filter is not dirty or excessive oily.
HINT:
If necessary, clean the filter with compressed air. First blow from inside thoroughly, then blow from outside of the filter.

NG → **Repair or replace.**

OK

cardiagn.com

5	Check idle speed (See page EM-12).

NG → Proceed to problem symptoms table on page DI-21 .

OK

6	Check ignition timing (See page EM-10).

NG → Proceed to page IG-1 and continue to trouble-shoot.

OK

Proceed to problem symptoms table on page DI-21 .

7	Check fuel pressure (See page SF-6).

NG → Proceed to page SF-6 and continue to trouble-shoot.

OK

8	Check for spark (See page IG-1).

NG → Proceed to page IG-1 and continue to trouble-shoot.

OK

Proceed to problem symptoms table on page DI-21 .

cardiagn.com

7. ENGINE OPERATING CONDITION

NOTICE:

The values given below for "Normal Condition" are representative values, so a vehicle may still be normal even if its value varies from those listed here. So do not decide whether a part is faulty or not solely according to the "Normal Condition" here.

(a) CARB mandated signals.

LEXUS hand-held tester display	Measurement Item	Normal Condition*
FUEL SYS #1	Fuel System Bank 1 OPEN: Air-fuel ratio feedback stopped CLOSED: Air-fuel ratio feedback operating	Idling after warming up: CLOSED
FUEL SYS #2	Fuel System Bank 2 OPEN: Air-fuel ratio feedback stopped CLOSED: Air-fuel ratio feedback operating	Idling after warming up: CLOSED
CALC LOAD	Calculator Load: Current intake air volume as a proportion of max. intake air volume	Idling: 13.1 - 18.7 % Racing without load (2,500rpm): 11.7 - 17.3 %
COOLANT TEMP	Engine Coolant Temp. Sensor Value	After warming up: 80 - 95˚C (176 - 203˚F)
SHORT FT #1	Short-term Fuel Trim Bank 1	0 ± 20%
LONG FT #1	Long-term Fuel Trim Bank 1	0 ± 20%
SHORT FT #2	Short-term Fuel Trim Bank 2	0 ± 20%
LONG FT #2	Long-term Fuel Trim Bank 2	0 ± 20 %
ENGINE SPD	Engine Speed	Idling: 650 - 750 rpm
VEHICLE SPD	Vehicle Speed	Vehicle stopped: 0 km/h (0 mph)
IGN ADVANCE	Ignition Advance: Ignition Timing of Cylinder No.1	Idling: BTDC 8 - 12˚
INTAKE AIR	Intake Air Temp. Sensor Value	Equivalent to Ambient Temp.
MAF	Air Flow Rate Through Mass Air Flow Meter	Idling: 3.3 - 4.7 gm/sec. Racing without load (2,500 rpm): 10.4 - 15.4 gm/sec.
THROTTLE POS	Voltage Output of Throttle Position Sensor Calculated as a percentage: 0 V → 0 %, 5 V → 100 %	Throttle valve fully closed: 7 - 11 % Throttle valve fully open: 65 - 75 %
O2S B1 S2	Voltage Output of Oxygen Sensor Bank 1, Sensor 2	Driving 50 km/h (31 mph): 0.05 - 0.95 V
A/FS B1 S1	Voltage Output of A/F Sensor Bank 1 Sensor 1	Idling: 2.8 - 3.8 V
A/FS B2 S1	Voltage Output of A/F Sensor Bank 2 Sensor 1	Idling: 2.8 - 3.8 V
A/FFT B1 S1	A/F Sensor Fuel Trim Bank 1, Sensor 1 (Same as SHORT FT #1)	0 ± 20 %
A/FFT B2 S1	A/F Sensor Fuel Trim Bank 2, Sensor 1 (Same as SHORT FT #1)	0 ± 20 %

*: 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.

(b) TOYOTA Enhanced Signals.

TOYOTA hand-held tester display	Measurement Item	Normal Condition*
MISFIRE RPM	Engine RPM for first misfire range	Misfire 0: 0 rpm
MISFIRE LOAD	Engine load for first misfire range	Misfire 0: 0 g/r
INJECTOR	Fuel injection time for cylinder No.1	Idling: 1.6 - 2.9 ms
IAC DUTY RATIO	Intake Air Control Valve Duty Ratio Opening ratio rotary solenoid type IAC valve	Idling: 27 - 47 %
STARTER SIG	Starter Signal	Cranking: ON
CTP SIG	Closed Throttle Position Signal	Throttle fully closed: ON

cardiagn.com

A/C SIG	A/C Switch Signal	A/C ON: ON
PNP SW	Park/Neutral Position Switch Signal	P or N position: ON
ELCTRCL LOAD SIG	Electrical Load Signal	Defogger switch ON: ON
STOP LIGHT SW	Stop Light Switch Signal	Stop light switch ON: ON
PS OIL PRESS SW	Power Steering Oil Pressure Switch Signal	Turn steering wheel: ON
FC IDL	Fuel Cut Idle: Fuel cut when throttle valve fully closed, during deceleration	Fuel cut operating: ON
FC TAU	Fuel Cut TAU: Fuel cut during very light load	Fuel cut operating: ON
CYL#1 - CYL#6	Abnormal revolution variation for each cylinder	0 %
IGNITION	Total number of ignition for every 1,000 revolutions	0 - 3,000
INTAKE CTRL VSV	Intake Air Control Valve VSV Signal	VSV operating: ON
A/C CUT SIG	A/C Cut Signal	A/C S/W OFF: ON
FUEL PUMP	Fuel Pump Signal	Idling: ON
EVAP (PURGE) VSV	EVAP VSV Signal	VSV operating: Above 30 %
VAPOR PRESS VSV	Vapor Pressure VSV Signal	VSV operating: ON
TOTAL FT B1	Total Fuel Trim Bank 1: Average value for fuel trim system of bank 1	Idling: 0.8 - 1.2
TOTAL FT B2	Total Fuel Trim Bank 1: Average value for fuel trim system of bank 2	Idling: 0.8 - 1.2

*: 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.

cardiagn.com

DI1G3-09

PRE-CHECK

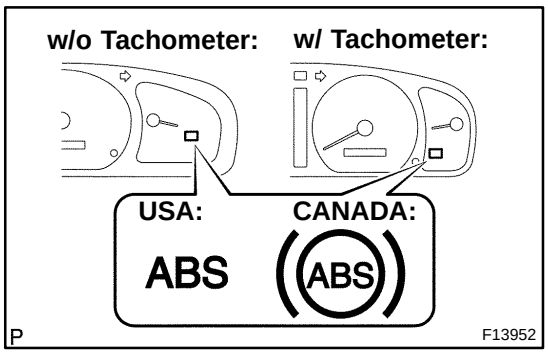
1. DIAGNOSIS SYSTEM

(a) Check the indicator.

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

HINT:

If the indicator check result is not normal, proceed to trouble-shooting for the ABS warning light circuit (See page DI-250).



(b) Check the DTC.

(1) Using SST, connect terminals Tc and E_1 of DLC1 or Tc and CG of DLC3.

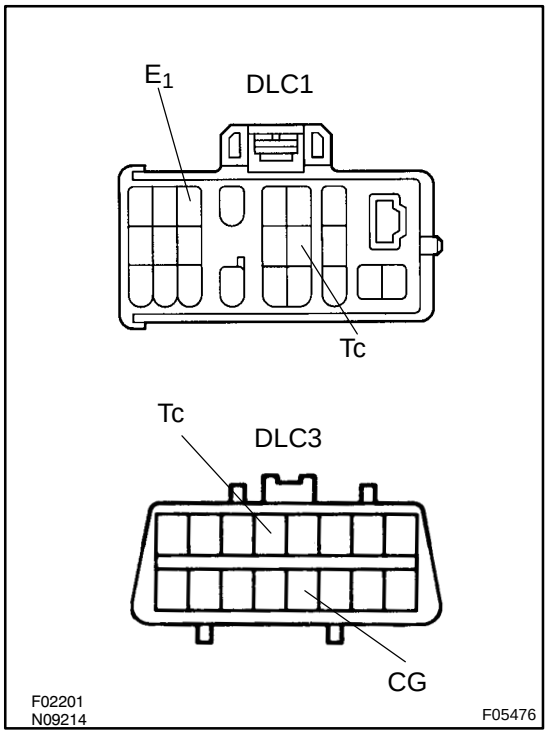
SST 09843-18020 or 09843-18040

(2) Turn the ignition switch ON.

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

HINT:

- If no code appears, inspect the diagnostic circuit or ABS warning light circuit (See page DI-252 or DI-250).

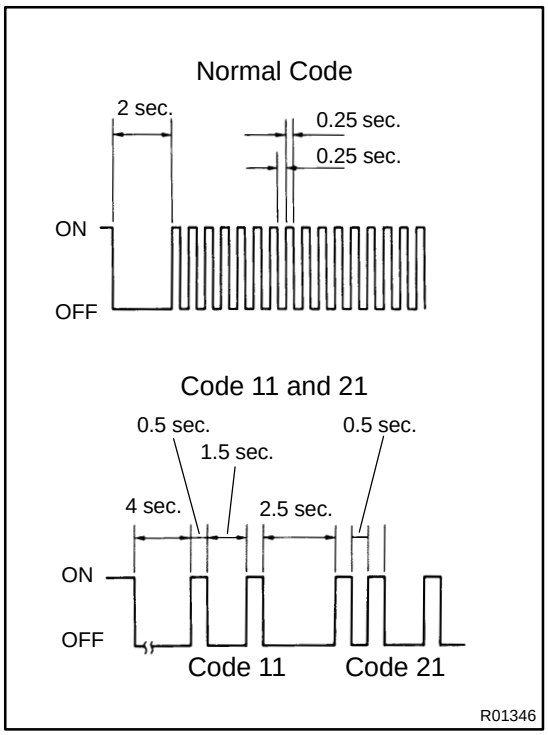


- As an example, the blinking patterns for normal code and codes 11 and 21 are shown on the left.

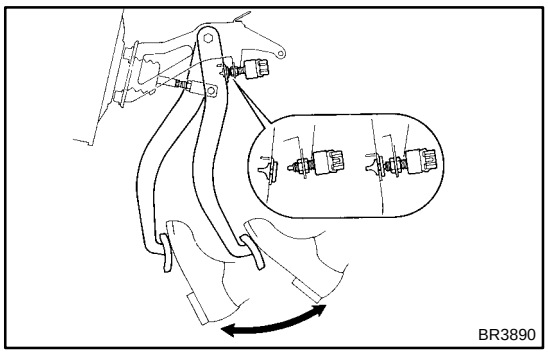
(4) Codes are explained in the code table on page DI-223 .

(5) After completing the check, disconnect terminals Tc and E_1 of DLC1 or Tc and CG of DLC3, and turn off the display.

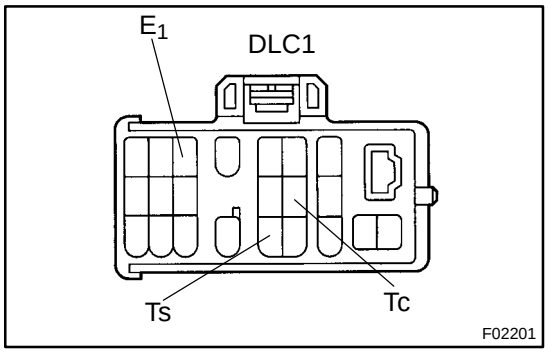
If 2 or more malfunctions are indicated at the same time the lowest numbered DTC will be displayed 1st.



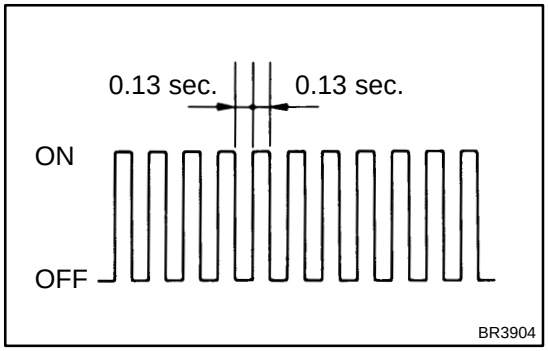
cardiagn.com



(c) Clear the DTC.
(1) Using SST, connect terminals Tc and E_1 of DLC1 or Tc and CG of DLC3.
SST 09843-18020 or 09843-18040
(2) Turn the ignition switch ON.
(3) Clear the DTC stored in ECU by depressing the brake pedal 8 or more times within 5 seconds.
(4) Check that the warning light shows the normal code.
(5) Remove the SST from the terminals of DLC1 or DLC3.
SST 09843-18020 or 09843-18040

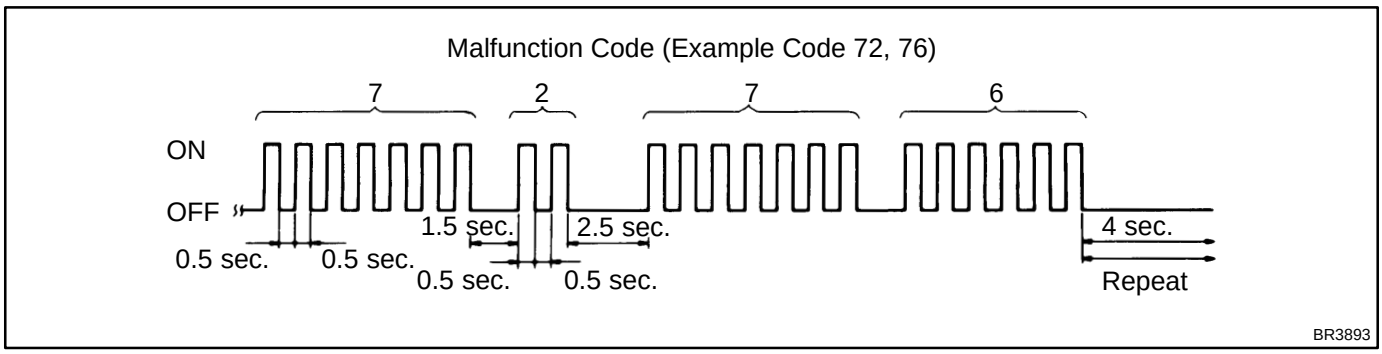


2. SPEED SENSOR SIGNAL CHECK
(a) Turn the ignition switch OFF.
(b) Using SST, connect terminals Ts and E_1 of DLC1.
SST 09843-18020
(c) Start the engine.



(d) Check that the ABS warning light blinks.
HINT:
If the ABS warning light does not blink, inspect the ABS warning light circuit (See page DI-250).
(e) Drive vehicle straight forward.
Drive vehicle faster than 45 km/h (28 mph) for several seconds.
(f) Stop the vehicle.
(g) Using SST, connect terminals Tc and E_1 of DLC1 or Tc and CG of DLC3.
SST 09843-18020 or 09843-18040
(h) Read the number of blinks of the ABS warning light.
HINT:
See the list of DTC on next page.
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 1st.

cardiagn.com



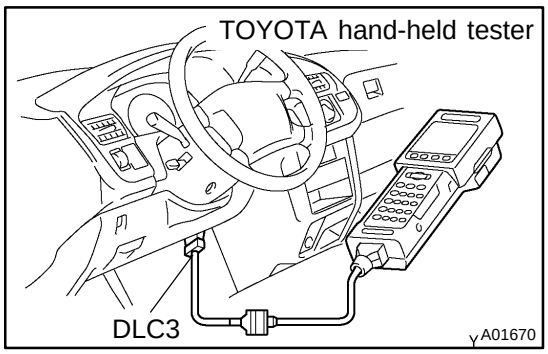
(i) After checking, disconnect terminals of DLC1 or terminals of DLC1 and DLC3, and turn the ignition switch OFF.

DTC of speed sensor check function:

Code No.	Diagnosis	Trouble Area
71	Low output voltage of right front speed sensor	• Right front speed sensor • Right front speed sensor rotor • Sensor installation
72	Low output voltage of left front speed sensor	• Left front speed sensor • Left front speed sensor rotor • Sensor installation
73	Low output voltage of right rear speed sensor	Right rear axle hub
74	Low output voltage of left rear speed sensor	Left rear axle hub
75	Abnormal change in output voltage of right front speed sensor	Right front speed sensor rotor
76	Abnormal change in output voltage of left front speed sensor	Left front speed sensor rotor
77	Abnormal change in output voltage of right rear speed sensor	Right rear axle hub
78	Abnormal change in output voltage of left rear speed sensor	Left rear axle hub

cardiagn.com

DI1KG-03



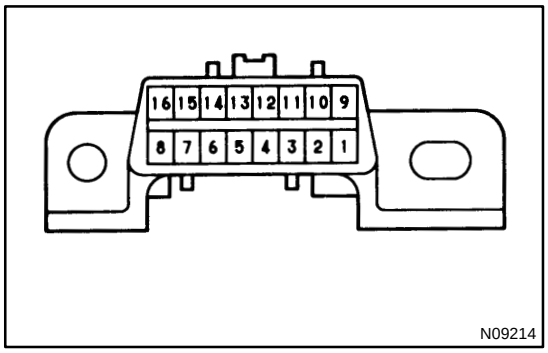
PRE-CHECK

1. DIAGNOSIS SYSTEM

(a) Description

ECM controls the function of immobiliser on this vehicle. Data of the immobiliser or DTC can be read form DLC3 of the vehicle. When a trouble occurs in immobiliser, MIL does not light ON but DTC inspection is performed.

Therefore when there seems to be a trouble with immobiliser, use TOYOTA hand-held tester or SST to check and troubleshoot it.



(b) Inspect the DLC3.

The vehicle's ECM uses ISO 9141-2 for communication. The terminal arrangement of DLC3 complies with SAEJ1962 and matches the ISO 9141-2 format.

Tester connection	condition	Specified condition
7 (Bus ⊕ Line) - 5 (Signal ground)	During communication	Pulse generation
4 (chassis Ground) - Body	Always	1 Ω or less
5 (Signal Ground) - Body	Always	1 Ω or less
16 (B+) - Body	Always	9 - 14 V

HINT:

If your display shows "UNABLE TO CONNECT TO VEHICLE" when you have connected the cable of OBD ll scan tool or TOYOTA hand-held tester to DLC3, turned the ignition switch ON and operated the scan tool, there is a problem on the vehicle side or tool side.

- If communication is normal when the tool is connected to another vehicle, inspect DLC3 on the original vehicle.
- If communication is still impossible when the tool is connected to another vehicle, the problem is probably in the tool itself, so consult the Service Department listed in the tool's instruction manual.

cardiagn.com

2. INSPECT DIAGNOSIS

(a) Check the DTC (Using TOYOTA hand-held tester)

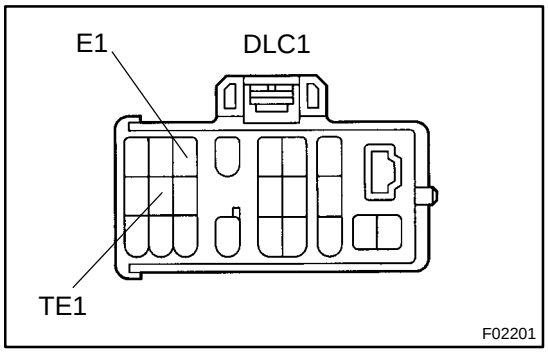
(1) Prepare the OBD ll scan tool (complying with SAEJ 1978) or TOYOTA hand-held tester.

(2) Connect the OBD ll scan tool or TOYOTA hand-held tester to DLC3 under the instrument panel lower pad.

(3) Turn the ignition switch ON and turn the OBD ll scan tool or TOYOTA hand-held tester switch ON.

(4) Use the OBD ll scan tool or TOYOTA hand-held tester to check the DTCs and freeze frame data, note them down (For operating instructions, see the OBD ll scan tool's instruction book.).

(5) See page DI-61 1 to confirm the details of the DTCs.



(b) Check the DTC (Using diagnosis check wire).

(1) Turn ignition switch ON.

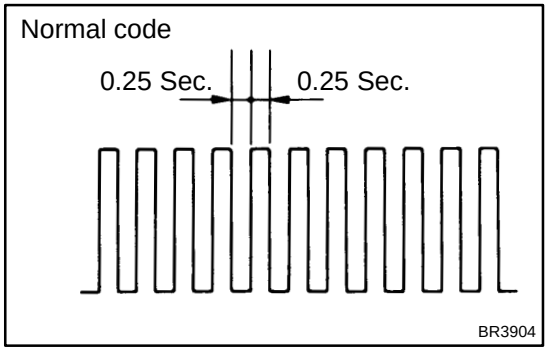
(2) Using SST, connect between terminals 8 (TE1) and 3 (E1) of DLC1.

SST 09843-18040

(3) Read the diagnostic trouble code from malfunction indicator lamp.

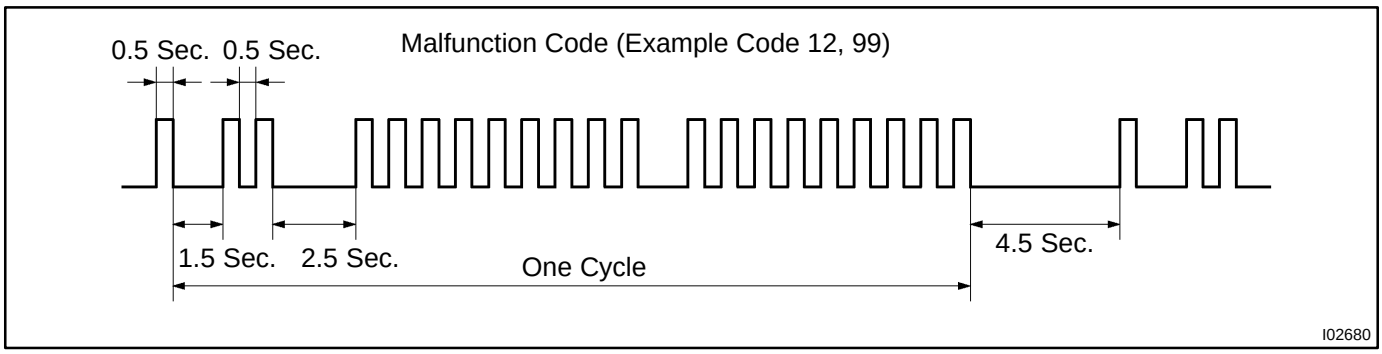
HINT:

- If a diagnostic trouble code is not output, check the Tc terminal circuit .
- ECM controls the immobiliser function on this vehicle, DTC is out put with DTC of engine.



- As an example, the blinking patterns for codes; normal, 12 and 99 are shown in the illustration.

cardiagn.com



(4) When DTC ”99” is output, there is a trouble with immobiliser. Start troubleshooting referring to PROBLEM SYMPTOM TABLE.

(5) After completing the check, disconnect terminals 13 (TC) and 4 (CG) and turn OFF the display.

HINT:

In the event of 2 or more malfunction codes, indication will begin from the smaller numbered code and continue in order to the larger.

(c) Clear the DTC.

The following procedures will erase the DTCs and freeze frame data.

(1) Operating the OBD ll scan tool (complying with SAEJ1978) or TOYOTA hand-held tester to erase the codes. (See the OBD ll scan tool’s instruction book for operating instructions.)

(2) Disconnecting the battery terminals or EFI fuse.

cardiagn.com

DI8AS-01

PRE-CHECK

1. THEFT DETERRENT SYSTEM

When the system is set to the theft deterrent mode and any of the following conditions are met, the system sounds the horns and flashes the headlights and the taillights for approx. 1 minute.

At the same time the system locks all doors (If all door are not locked at once, the system repeats door locking operation every 6.38 seconds during the one minute alarm time).

There are 2 modes in this system, which are active mode and passive mode.

All initial setting are performed in active mode. It can be switched to passive mode by specified operation. (See step 4. CHANGING METHOD OF PASSIVE MODE)

Condition:

- Any of the doors (Including the engine hood and luggage compartment door) is unlocked or opened without the key. *1
- The battery terminal is disconnected and reconnected.
- The system receives panic signal from remote keyless entry. *2

*1: Only active arming mode.

*2: When the ignition key is not inserted in the key cylinder.

There are 4 conditions in this system which are disarming condition, disarming preparation condition, arming condition and alarming condition.

(a) Disarmed state
  (1) When a user is near the vehicle.
  (2) When the alarming function does not operate.
  (3) When theft deterrent function is not performed.

(b) Arming preparation
  (1) Time from a user locks a door to be leaves the vehicle.
  (2) Time until transferring to armed state.
  (3) Theft deterrent function is not performed.

(c) Armed state
  (1) When a user leaves the vehicle completely.
  (2) When theft deterrent function is possible.

cardiagn.com

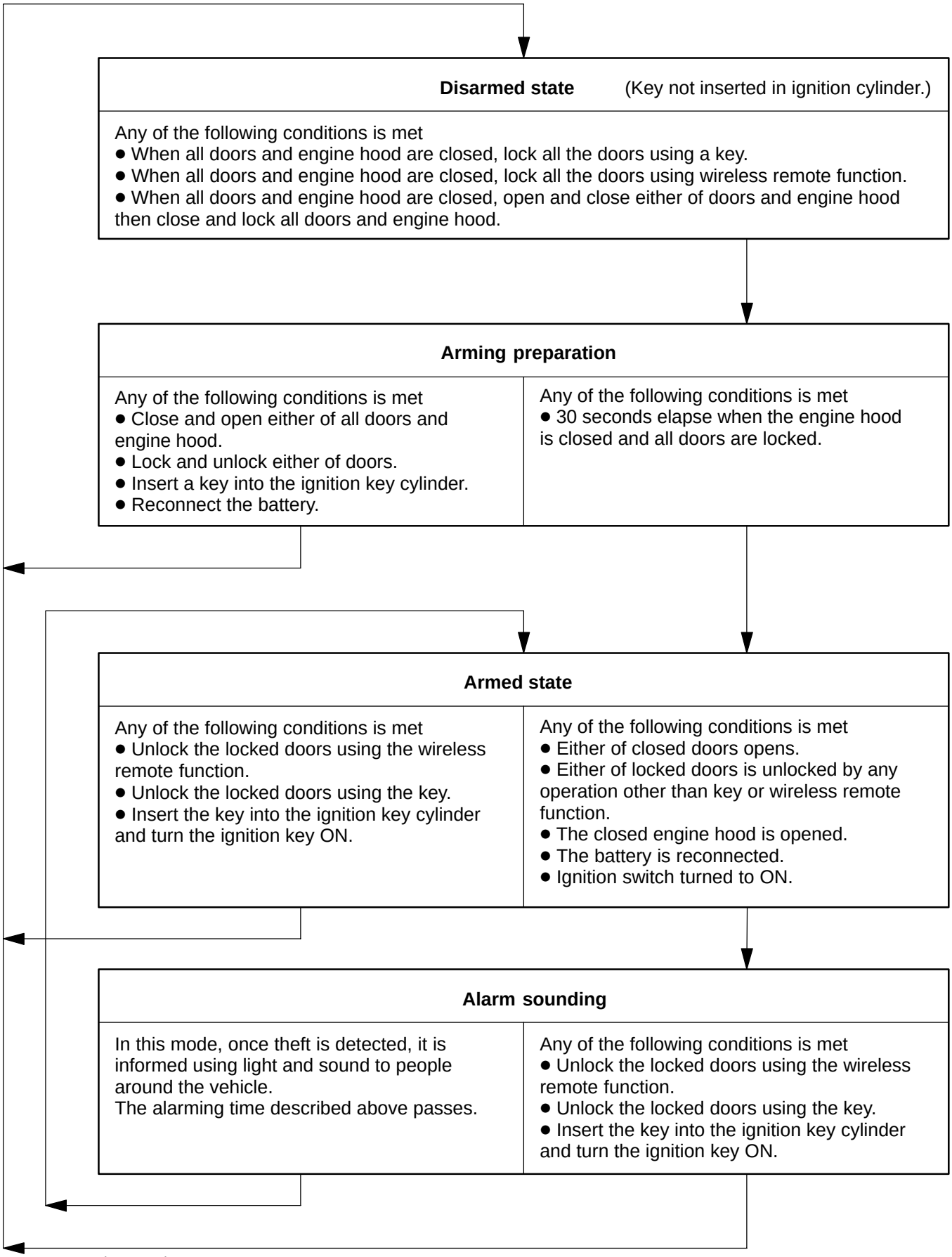
(d) Alarm sounding
Is this condition, once theft is detected, it is informed using light and sound to people around the vehicle.
Refer to the table for alarming method or time.

Alarming method	Horn
	Security horn
	Headlight
	Taillight
Alarming time	60 seconds
Alarming output	Continuous 0.40 secs. (ON) 0.40 secs. (OFF)

In the arming condition when either of doors is unlocked and with not key in the key cylinder, force lock signal is output.

cardiagn.com

2. ACTIVE ARMING MODE



cardiagn.com

Indicator light output:

Condition	Indicator light
Disarming condition	OFF
Arming preparation condition	ON
Arming condition	OFF
Alarming condition	ON

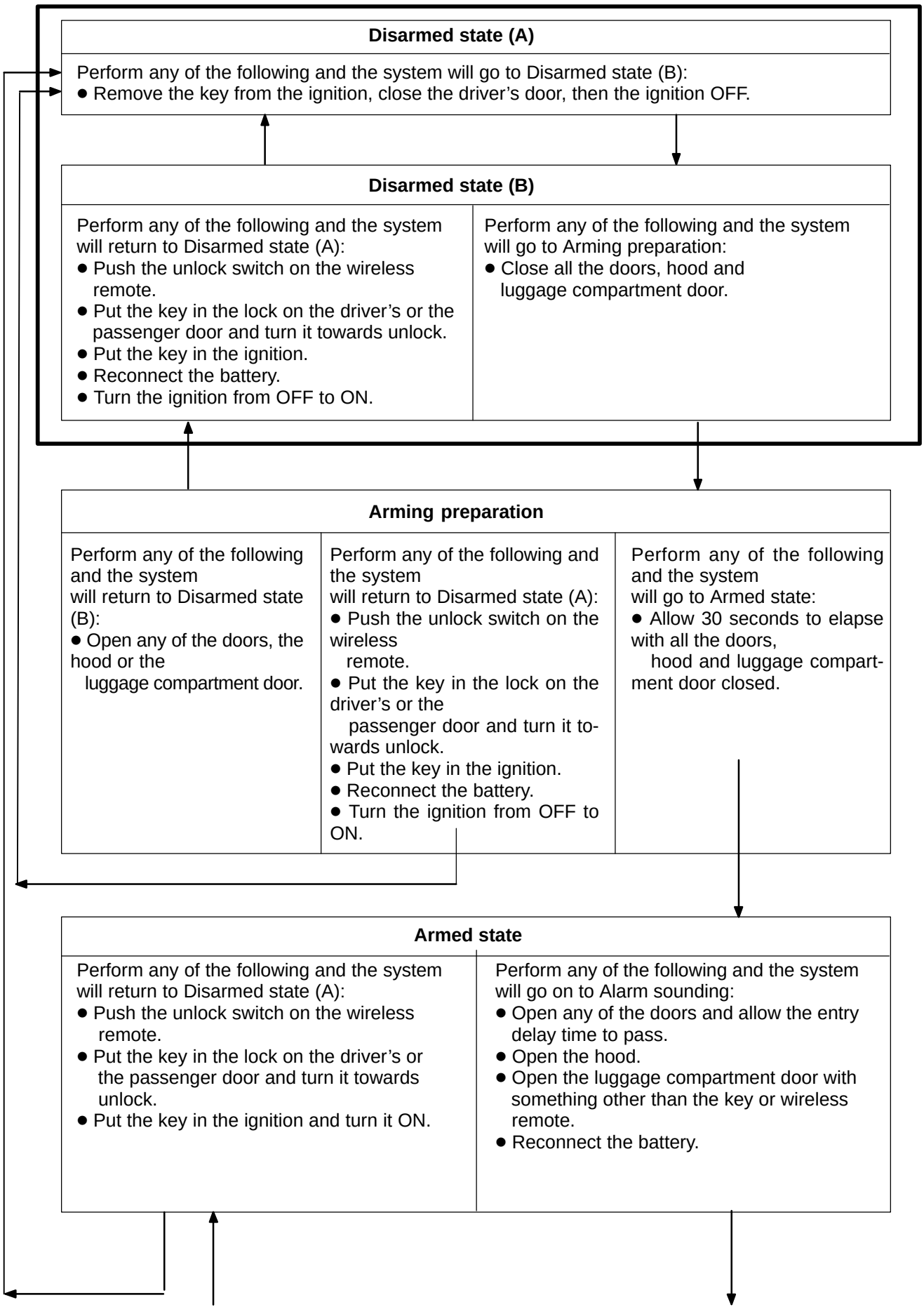
HINT:
Even in disarming condition, the indicator light flash. (Due to the signal output form immobilizer system). The indicator always flashes receiving the signal from the immobilizer system at any time in the arming condition.

Flashing frequency:
0.2 seconds (ON)
1.8 seconds (OFF)

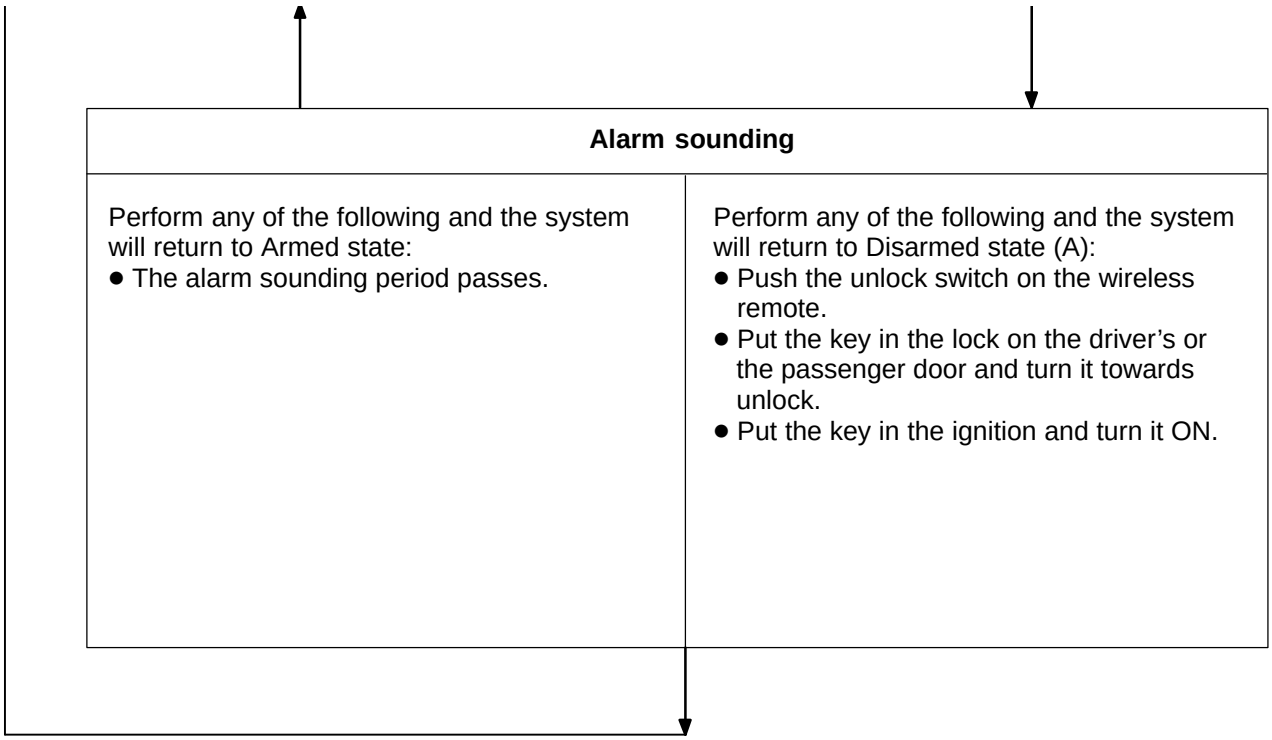
3. PASSIVE ARMING MODE

- This mode can be switched according to the specified operation.
- All initially set modes (when shipped from factory) are active mode. (No passive mode)

cardiagn.com

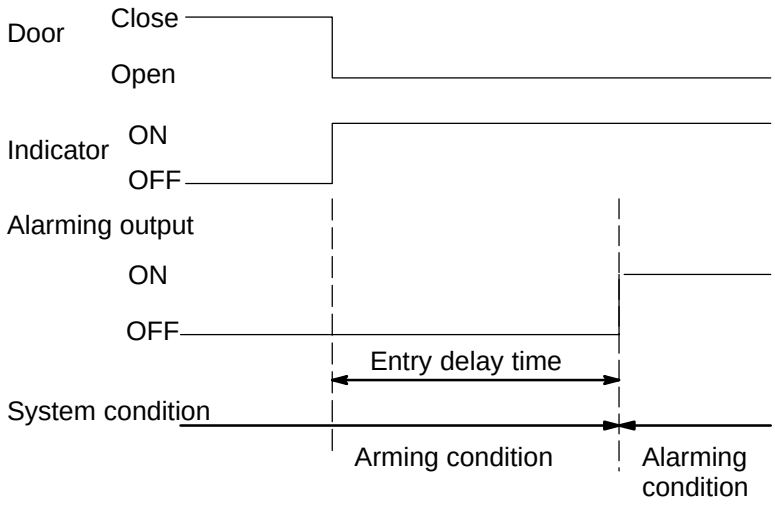


cardiagn.com



cardiagn.com

HINT:
In arming condition either closed door is opened, entry delay occurs. (14 secs.)
During this time, the mode transfers to disarming condition when the condition described above * is met.
When the condition is not met, the system judges theft occurs, the mode transfers to alarming condition.



Indicator light output:

Condition	Indicator light
Disarming condition	OFF
Arming preparation condition	ON
Arming condition (Entry delay time)	OFF (ON)
Alarming condition	ON

HINT:
Even in disarming condition, the indicator light flash. (Due to the signal output form immobilizer system). The indicator always flashes receiving the signal from the immobilizer system at any time in the arming condition.

Flashing frequency:
0.2 seconds (ON)
1.8 seconds (OFF)

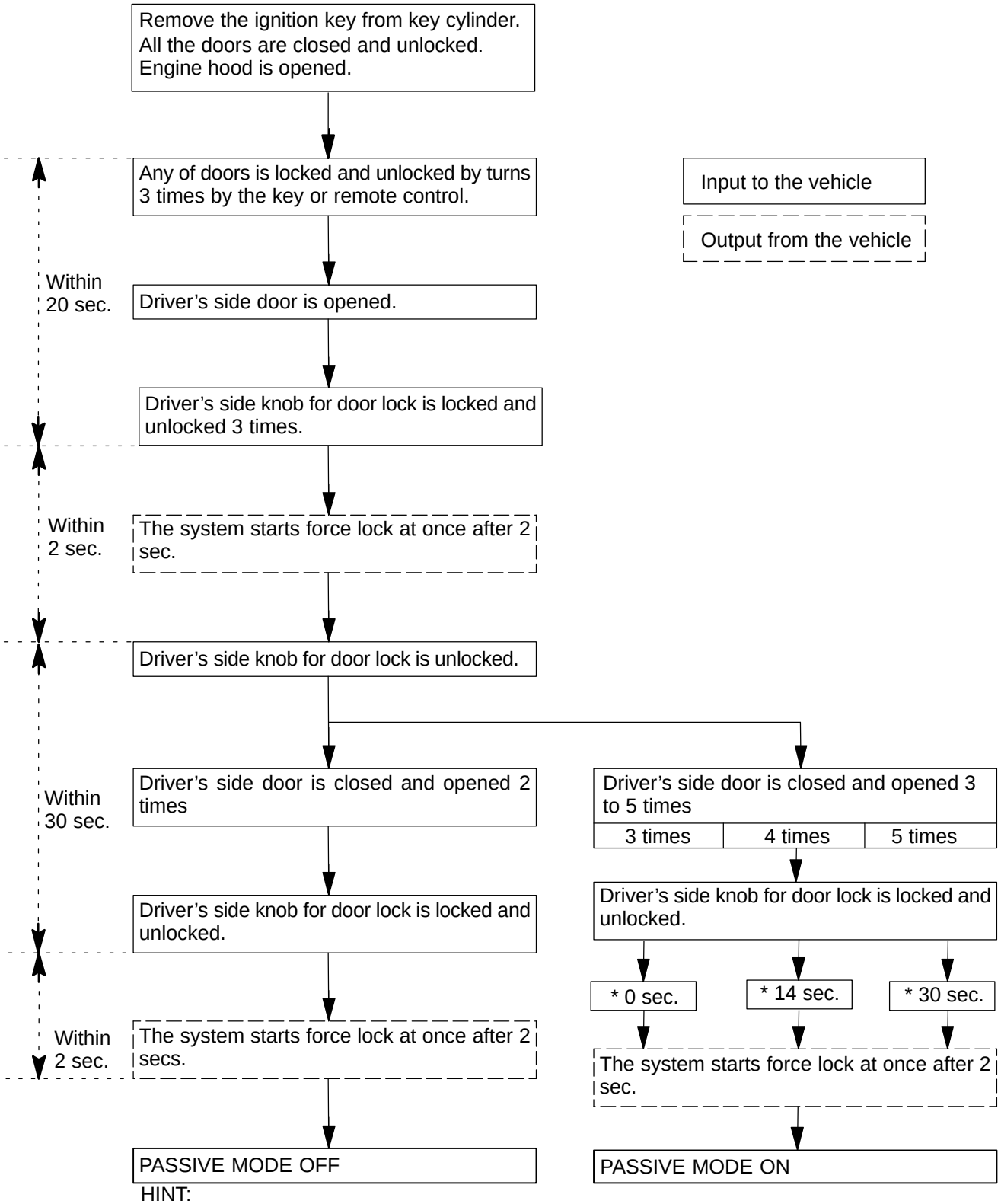
cardiagn.com

- Transfer to active mode:
  In each passive mode, when ”disarming condition of active mode → arming preparation transfer condition” is met, the active mode transfers to each condition. In this case, active mode continues till disarming condition.

Passive mode when transfer condition is met.	Active mode transfer condition
Disarming condition	Arming preparation condition
Arming preparation condition	Arming preparation condition
Arming condition (During entry delay time)	Arming condition (After alarming time has elapsed, arming condition)
Alarming condition	After alarming time has elapsed, arming condition

cardiagn.com

4. CHANGING METHOD OF PASSIVE MODE (ON or OFF)

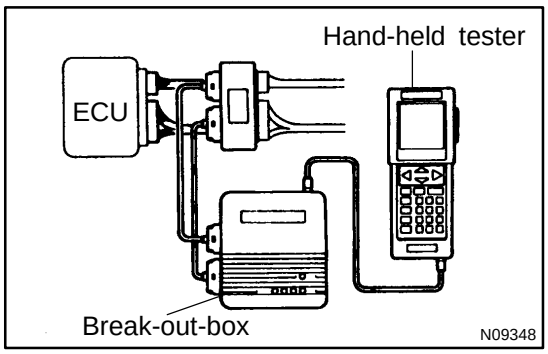


HINT:

- Initial mode is PASSIVE MODE OFF.
- If there is a different signal in the middle of changing. It is invalid.

*: Entry delay time

cardiagn.com



5. ECU TERMINAL VALUES MEASUREMENT BY USING BREAK-OUT-BOX AND HAND-HELD TESTER

(a) Hook up the break-out-box and hand-held tester to the vehicle.

(b) Read the ECU input/ output values by following the prompts on the tester screen.

HINT:

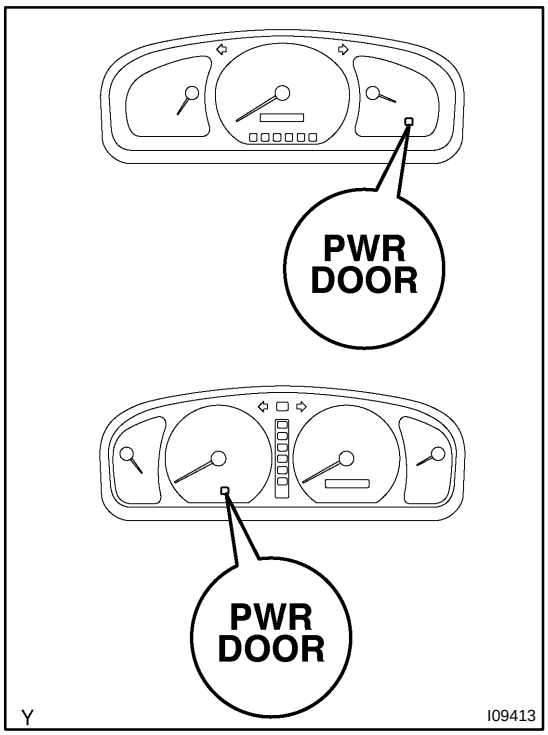
Hand-held tester has a ”Snapshot” function.

This records the measured values and is effective in the diagnosis of intermittent problems.

Please refer to the hand-held tester / break-out-box operator’s manual for further details.

cardiagn.com

DI4EP-03



PRE-CHECK

1. DIAGNOSIS SYSTEM

(a) Check the indicator.

(1) Turn the ignition switch ON.

(2) Check that the PWR DOOR indicator light comes on when the RH or LH slide door is open, and that the indicator light goes off when the RH or LH slide door is closed.

HINT:

- If the indicator light does not light up, troubleshoot the combination meter (See page BE-2).
- Even if RH or LH slide door is closed, when the PWR DOOR indicator light does not go OFF , initialize the power slide door control system.

(b) Check the mode 1.

HINT:

In this mode, DTC can be read.

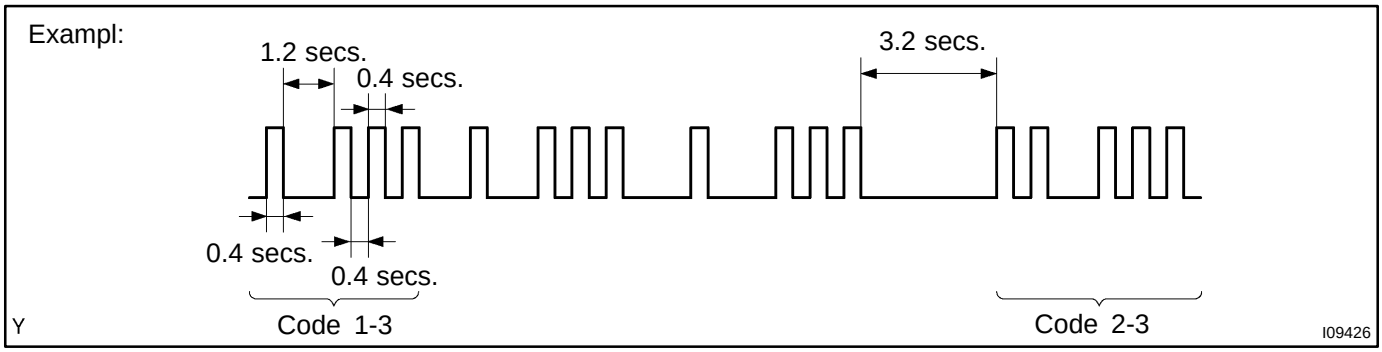
(1) Shift to the P position, turn the ignition switch ON and power slide door MAIN switch OFF.

(2) Under (1) condition, push the RH or LH power slide door control switch ON more than 10 times within 10 secs.

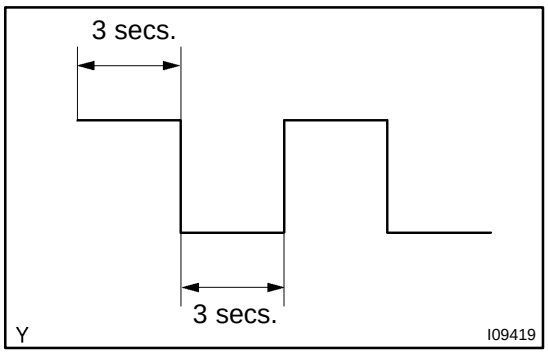
(3) After the PWR DOOR indicator light lights up for 3 secs., DTC is indicated by flashing the indicator light.

HINT:

- When more than 2 codes are indicated, the same code is indicated repeatedly 3 times and after 3.2 secs., the next code will be indicated.
- As an example, codes 1 - 3 and 2 - 3 are shown below.



cardiagn.com



(c) Check the mode 2.

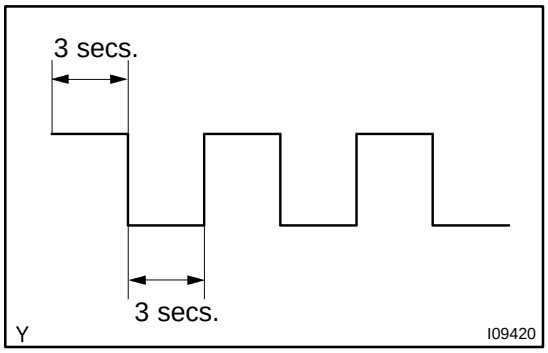
HINT:

In this mode, the switch operation check can be performed.

(1) Under mode 1, push the power slide door control switch for more than 4 secs.

(2) PWR DOOR indicator light flushes 2 times for 3 secs., and the mode transferred to mode 2.

(3) Check that the indicator light lights up when operating the power slide door MAIN switch, power slide door control switch, wireless transmitter, RH or LH slide door latch switch, and shift lever in P position.



(d) Check the mode 3.

HINT:

In this mode, the door lock release actuator operation check can be performed.

(1) Under mode 2, shift the shift lever to P position and push the power slide door control switch for more than 4 secs.

(2) PWR DOOR indicator flushes 3 times for 3 secs., and the mode is transferred to mode 3.

(3) When pushing the control switch ON with the RH or LH side door closed, release actuator repeats ON for 0.4 secs. and OFF for 1.2 secs.

(e) Completion of diagnostic mode.

Push the power slide door MAIN switch ON and shift the shift lever to any position other than P position.

HINT:

- Diagnosis mode can be finished from any mode.
- When finishing the diagnosis mode, ECU memory is erased. Accordingly initializing is necessary.

2. INITIALIZE POWER SLIDE DOOR CONTROL SYSTEM.

(a) Disconnect the battery negative (-) terminal for more than 1 min., and connect it.

(b) Close the RH slide door manually.

(c) Push the power slide door MAIN switch ON and wait for 5 secs.

(d) Fully open the slide door by the power slide door control switch and wait for 3 secs.

(e) Fully close the slide door by the power slide door control switch and wait for 3 secs.

cardiagn.com

(f) Repeat the step (d) and (e).

cardiagn.com

DI6NS-02

PRE-CHECK

1. DIAGNOSIS SYSTEM

(a) Check the warning lights.

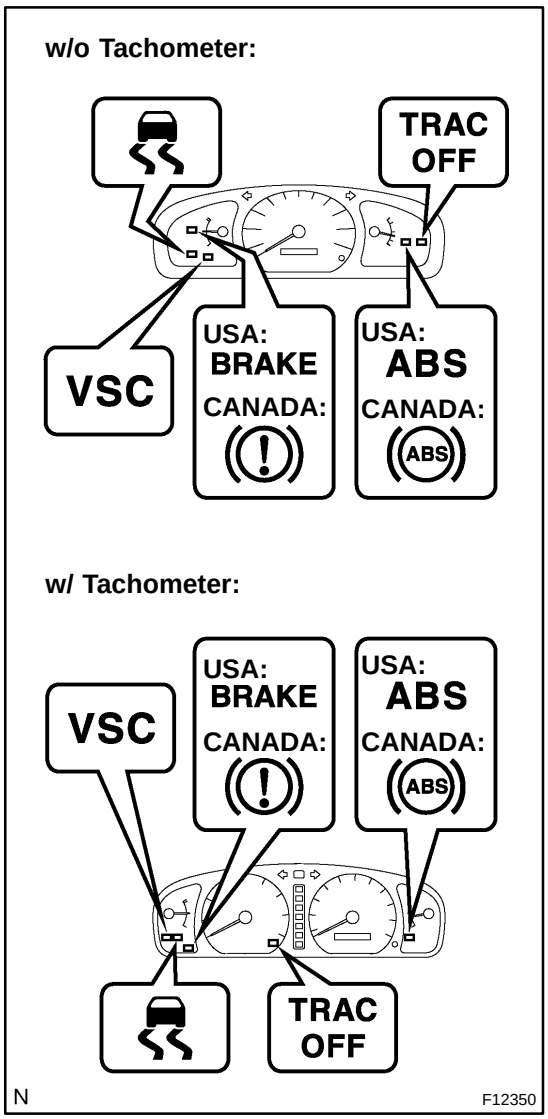
(1) Release the parking brake pedal.

(2) When the ignition switch is turned ON, check that the ABS warning light, VSC warning light, TRAC OFF indicator light, BRAKE warning light and SLIP indicator light go on for approx. 3 seconds.

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, VSC warning light circuit, TRAC OFF indicator light circuit, BRAKE warning light circuit or SLIP indicator light circuit.

Trouble Area	See page
ABS warning light circuit	DI-334
VSC warning light circuit	DI-336
TRAC OFF indicator light circuit	DI-345
BRAKE warning light circuit	DI-339
SLIP indicator light circuit	DI-342



(b) In case of not using TOYOTA hand-held tester:
Check the DTC of skid control ECU.

(1) Using SST, connect terminals Tc and E_1 of DLC1 or Tc and CG of DLC3.

SST 09843-18020 or 09843-18040

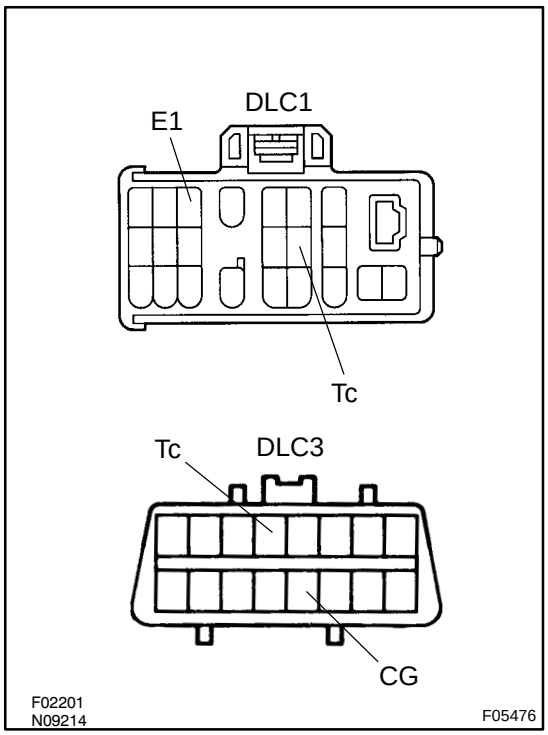
(2) Turn the ignition switch ON.

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

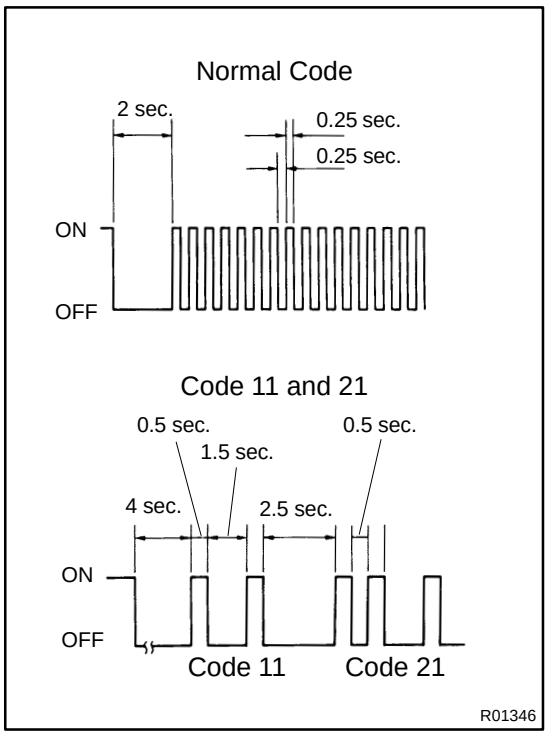
HINT:

- If no code appears, inspect the diagnostic circuit, ABS warning light circuit or VSC waning light circuit.

Trouble Area	See page
Tc terminal circuit	DI-351
ABS warning light circuit	DI-334
VSC warning light circuit	DI-336

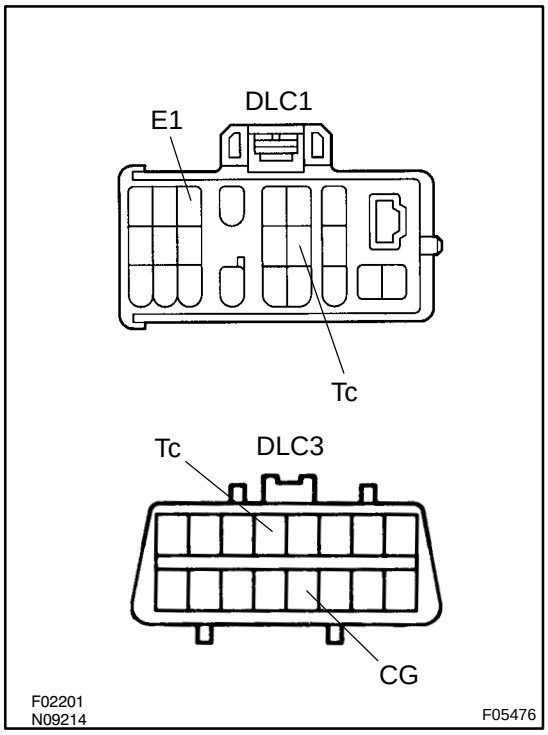


cardiagn.com



- 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 DI-265 .
  (5) After completing the check, disconnect terminals Tc and E_1 of DLC1 or Tc and CG of DLC3, and turn off the display.

If 2 or more malfunction codes are identified at the same time, the lowest numbered DTC will be displayed 1st.



(c) In case of not using TOYOTA hand-held tester:
Check the DTC of translate ECU.
(1) Release the parking brake pedal.
(2) Check the brake fluid level.
(3) Using SST, connect terminals Tc and E_1 of DLC1 or Tc and CG of DLC3.
SST 09843-18020 or 09843-18040
(4) Turn the ignition switch ON.
(5) Read the DTC from the BRAKE warning light.

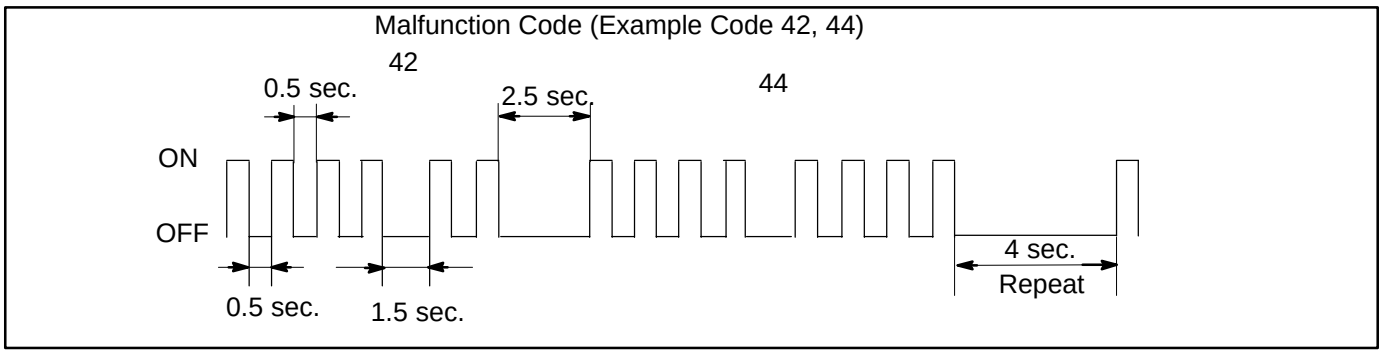
HINT:

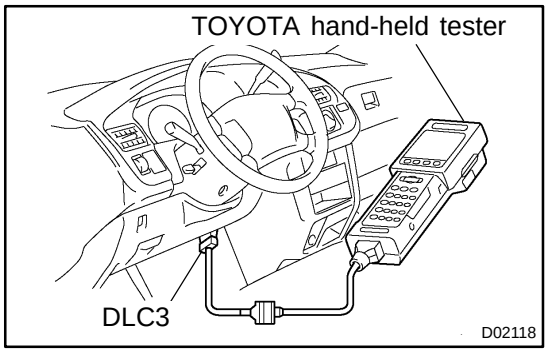
- If no code appears, inspect the diagnostic circuit, and BRAKE warning light circuit.

Trouble Area	See page
Tc terminal circuit	DI-351
BRAKE warning light circuit	DI-339

- When the parking brake is applied or the level of the brake fluid is low, the BRAKE warning light is lit.
- 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 malfunction codes are identified at the same time, the lowest numbered code will be displayed 1st.

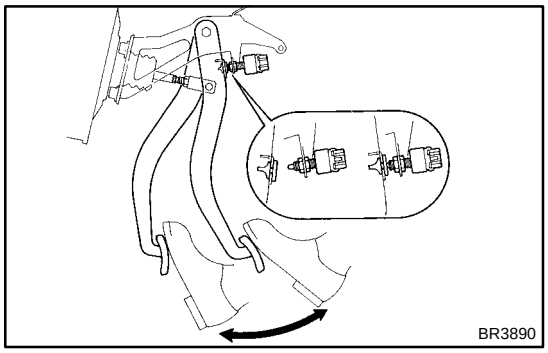
cardiagn.com





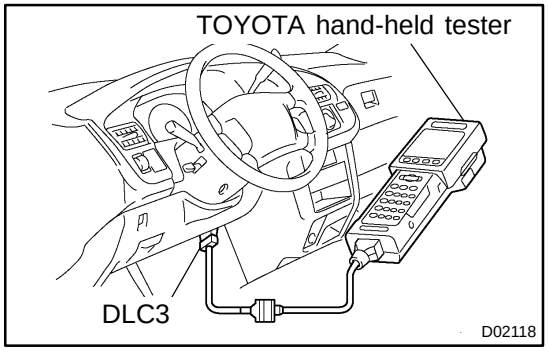
(d) In case of using TOYOTA hand-held tester:
Check the DTC.
(1) Hook up the TOYOTA hand- held tester to the DLC3.
(2) Turn the ignition switch ON.
(3) Read the DTC by following the prompts on the tester screen.

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



(e) In case of not using TOYOTA hand-held tester:
Clear the DTC.
(1) Using SST, connect terminals Tc and E_1 of DLC1 or Tc and CG of DLC3.
SST 09843-18020 or 09843-18040
(2) Turn the ignition switch ON.
(3) Clear the DTC stored in ECU by depressing the brake pedal 8 times or more within 5 seconds.
(4) Check that the warning light shows the normal code.
(5) Remove the SST from the terminals of DLC1 or DLC3.
SST 09843-18020 or 09843-18040

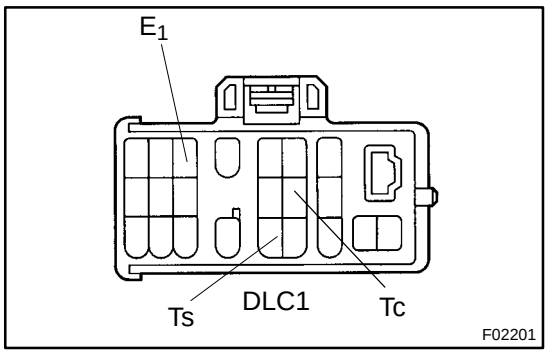
HINT:
Cancellation cannot be done by removing the battery cable or ECU-IG fuse.



(f) In case of using TOYOTA hand-held tester:
Clear the DTC.
(1) Hook up the TOYOTA hand- held tester to the DLC3.
(2) Turn the ignition switch ON.
(3) Operate the TOYOTA hand-held tester to erase the codes.

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

cardiagn.com



2. SPEED SENSOR SIGNAL CHECK (TEST MODE)

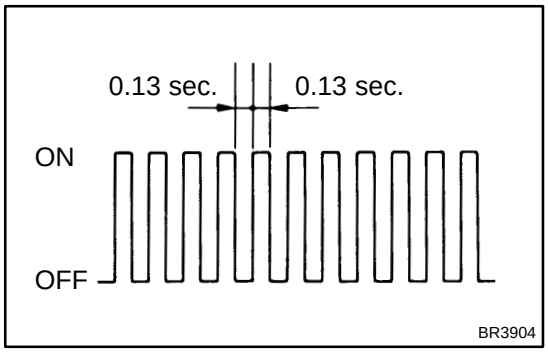
(a) In case of not using TOYOTA hand-held tester:
Check the sensor signal.

(1) Turn the ignition switch OFF.

(2) Using SST, connect terminals Ts and E_1 of DLC1.

SST 09843-18020

(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 (See page DI-334).

(5) Drive vehicle straight forward.
Drive vehicle at a speed faster than 45 km/h (28 mph) for several seconds check that the ABS warning light comes off.

HINT:

The sensor check may not be completed if the front wheels are spun or the steering wheel is steered during this check.

(6) Stop the vehicle.

(7) Turn the ignition switch OFF, and then disconnect the SST from terminals Ts and E_1 of DLC1.

SST 09843-18020

(8) Using SST, connect terminals Tc and E_1 of DLC1 or Tc and CG of DLC3.

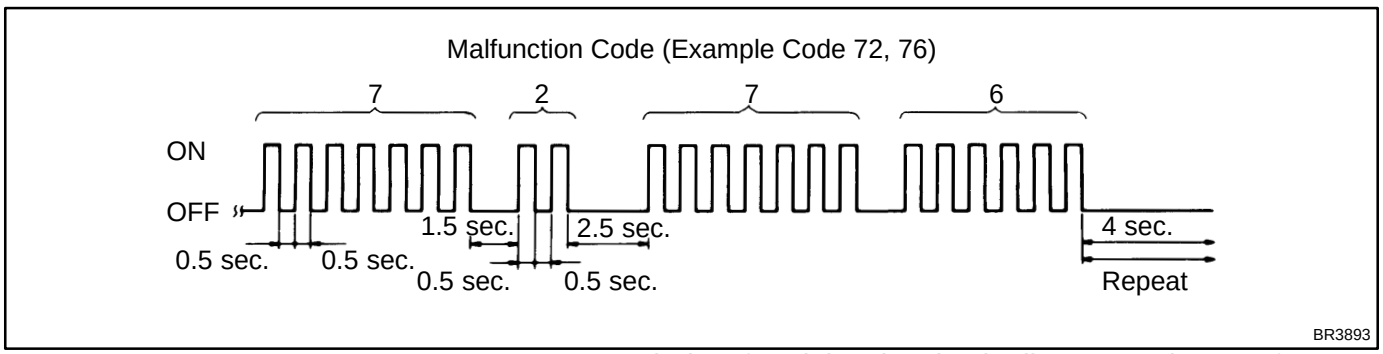
SST 09843-18020 or 09843-18040

(9) Turn the ignition switch ON.

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

HINT:

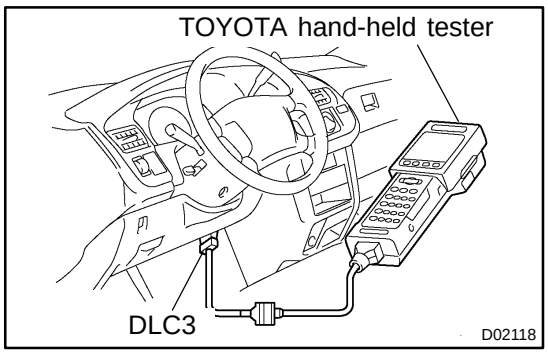
- See the list of DTC shown on the next page.
- If every sensor is normal, a normal code is output (A cycle of 0.25 sec. ON and 0.25 sec. OFF is repeated).
- If 2 or more malfunction codes are identified at the same time, the lowest numbered code will be displayed 1st.



(11) After doing the check, disconnect the SST from terminals of DLC1 or DLC3, and turn the ignition switch OFF.

SST 09843-18020 or 09843-18040

cardiagn.com



(b) In case of using TOYOTA hand-held tester:
Check the sensor signal.
(1) Hook up the TOYOTA hand- held tester to the DLC3.
(2) Do step (3) - (6) on the previous page.
(3) Read the DTC by following the prompts on the tester screen.

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

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 • Right front speed sensor rotor
C1272 / 72	Low output voltage of left front speed sensor	• Left front speed sensor • Sensor installation • Left front speed sensor rotor
C1273 / 73	Low output voltage of right rear speed sensor	• Right rear speed sensor • Sensor installation • Right rear speed sensor rotor
C1274 / 74	Low output voltage of left rear speed sensor	• Left rear speed sensor • Sensor installation • Left rear speed sensor rotor
C1275 / 75	Abnormal change in output signal of right front speed sensor	Right front speed sensor rotor
C1276 / 76	Abnormal change in output signal of left front speed sensor	Left front speed sensor rotor
C1277 / 77	Abnormal change in output signal of right rear speed sensor	Right rear speed sensor rotor
C1278 / 78	Abnormal change in output signal of left rear speed sensor	Left rear speed sensor rotor

3. STEERING ANGLE SENSOR ZERO POINT CALIBRATION

NOTICE:

When replacing the steering angle sensor or ECU, or when adjusting the front wheel alignment or steering wheel center point in accordance with the removing and installing or replacing the suspension, axle or steering parts, make sure to perform steering angle sensor zero point calibration.

(a) Make sure the steering off center angle is < ±3° when assembling of steering wheels (Smaller value is desirable).
(b) Turn the ignition switch ON.
(c) Using SST, connect terminals Ts and E_1 of DLC1.
SST 09843-18020
(d) Shift the shift lever to P range.
(e) Press the TRAC OFF switch and hold it.

HINT:
Press and hold the TRAC OFF switch until VSC buzzer sounds. When it starts sounding, turn off the switch.

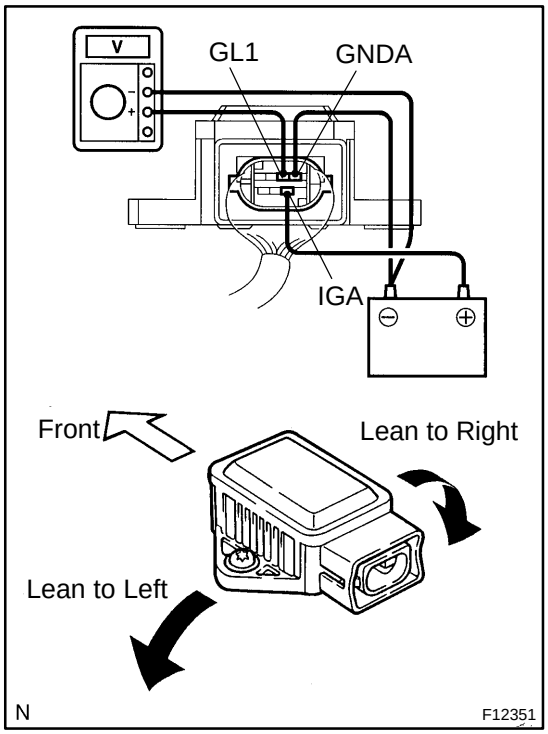
cardiagn.com

(f) Depress the brake pedal 3 times or more within 2 seconds.

(g) Check that the VSC buzzer sounds for 3 seconds.

HINT:

- If the VSC buzzer sounds, the sensor calibration is in normal completion.
- If the VSC buzzer does not sound, do the sensor calibration again.
- If the VSC buzzer still will not sound, there is malfunction in the steering angle sensor, TRAC OFF switch circuit, VSC buzzer circuit or skid control ECU, so check the DTC and repair or replace them.



4. DECELERATION SENSOR CHECK

(a) Connect IGA terminal to the battery positive (+) terminal, and GND terminal to the battery negative (-) terminal, and apply about 12 V between IGA and GND terminals.

(b) Check the output voltage of GL1 terminal.

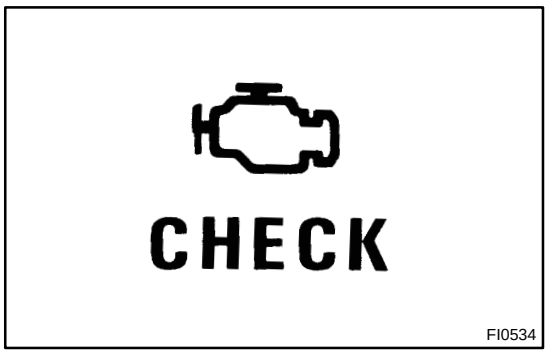
Symbols	Condition	Standard Value
GL1	Horizontal	About 2.5 V
GL1	Lean to right	About 2.5 V - 4 V
GL1	Lean to left	1 V - About 2.5 V

HINT:

- If the sensor is tilted too much, it may show the wrong value.
- If dropped, the sensor should be replaced with a new one.
- The sensor removed from the vehicle should not be placed upside down.

cardiagn.com

DI0CF-06

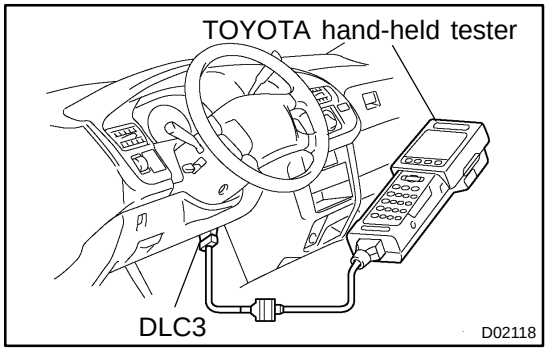


PRE-CHECK

1. DIAGNOSIS SYSTEM

(a) Description

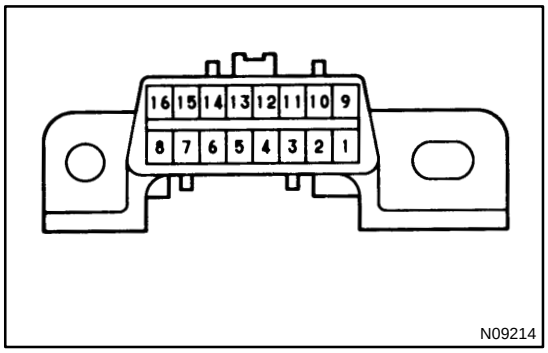
- When troubleshooting OBD II vehicles, the only difference from the usual troubleshooting procedure is that you connect to the vehicle an OBD II scan tool complying with SAE J1987 or TOYOTA hand-held tester, and read off various data output from the vehicle's ECM.
  OBD II regulations require that the vehicle's on-board computer lights up the Malfunction Indicator Lamp (MIL) on the instrument panel when the computer detects a malfunction in the computer itself or in drive system components which affect vehicle emissions. In addition to the MIL lighting up when a malfunction is detected, the applicable DTCs prescribed by SAE J2012 are recorded in the ECM memory (See page DI-13).
  If the malfunction only occurs in 3-trip, the MIL goes off but the DTCs remain recorded in the ECM memory.



- To check the DTCs, connect an OBD II scan tool or TOYOTA hand-held tester to DLC3 on the vehicle. The OBD II scan tool or TOYOTA hand-held tester also enables you to erase the DTCs and check freeze frame data and various forms of engine data (For instruction book).
- DTCs include SAE controlled codes and Manufacturer controlled codes.
  SAE controlled codes must be set as prescribed by the SAE, while Manufacturer controlled codes can be set freely by the manufacturer within the prescribed limits (See DTC chart on page DI-168).

cardiagn.com

- The diagnosis system operates in normal mode during normal vehicle use, and also has a check mode for technicians to simulate malfunction symptoms and perform troubleshooting. Most DTCs use 2-trip detection logic(*) to prevent erroneous detection. By switching the ECM to check mode when troubleshooting, the technician can cause the MIL to light up and for a malfunction that is only detected once or momentarily (TOYOTA hand-held tester) (See page DI-157).
- *2-trip detection logic:
  When a logic malfunction is first detected, the malfunction is temporarily stored in the ECM memory. If the same malfunction is detected again during the 2nd test drive, this 2nd detection causes the MIL to light up.



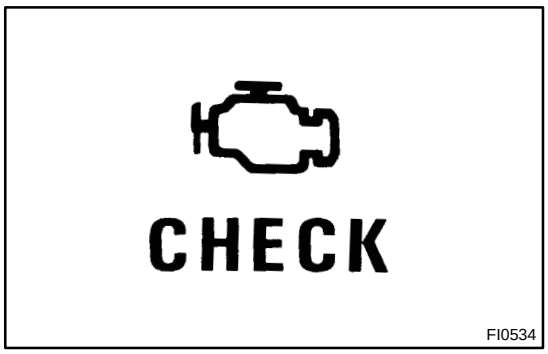
(b) Inspect the DLC3.
The vehicle's ECM uses ISO 9141-2 for communication. The terminal arrangement of DLC3 complies with SAE J1962 and matches the ISO 9141-2 format.

Terminal No.	Connection/ Voltage or Resistance	Condition
7	Bus ⊕ Line/ Pulse generation	During communication
4	Chassis Ground ↔ Body/ 1 Ω or less	Always
5	Signal Ground ↔ Body/ 1 Ω or less	Always
16	Battery Positive ↔ Body/ 9 - 14 V	Always

HINT:
If your display shows "UNABLE TO CONNECT TO VEHICLE" when you have connected the cable of OBD II scan tool or TOYOTA hand-held tester to DLC3, turned the ignition switch ON and operated the scan tool, there is a problem on the vehicle side or tool side.

- If communication is normal when the tool is connected to another vehicle, inspect DLC3 on the original vehicle.
- If communication is still not possible when the tool is connected to another vehicle, the problem is probably in the tool itself, so consult the Service Department listed in the tool's instruction manual.

cardiagn.com



2. INSPECT DIAGNOSIS (NORMAL MODE)

(a) Check the MIL.

(1) The MIL comes on when the ignition switch is turned ON and the engine is not running.

HINT:

If the MIL does not light up, troubleshoot the combination meter (See page BE-2).

(2) When the engine is started, the MIL should go off. If the lamp remains on, the diagnosis system has detected a malfunction or abnormality in the system.

(b) Check the DTC.

NOTICE:

TOYOTA hand-held tester only: When the diagnostic system is switched from normal mode to check mode, it erases all DTCs and freeze frame data recorded in normal mode. So before switching modes, always check the DTCs and freeze frame data, and note them down.

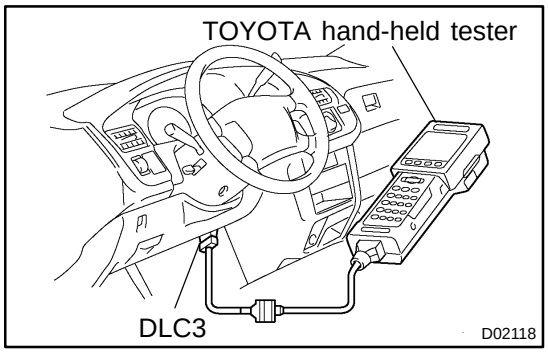
(1) Prepare an OBD II scan tool (complying with SAE J1978) or TOYOTA hand-held tester.

(2) Connect the OBD II scan tool or TOYOTA hand-held tester to DLC3 at the lower of the instrument panel.

(3) Turn the ignition switch ON and turn the OBD II scan tool or TOYOTA hand-held tester switch ON.

(4) Use the OBD II scan tool or TOYOTA hand-held tester to check the DTCs and freeze frame data and note them down (For operating instructions, see the OBD II scan tool's instruction book).

(5) See page DI-168 to confirm the details of the DTCs.



NOTICE:

When simulating symptoms with an OBD II scan tool (excluding TOYOTA hand-held tester) to check the DTCs, use normal mode. For codes on the DTCs chart subject to "2-trip detection logic", turn the ignition switch OFF after the symptoms have been simulated the 1st time. Then repeat the simulation process again. When the program has DTCs they are recorded in the ECM.

cardiagn.com

3. INSPECT DIAGNOSIS (CHECK MODE)

HINT:

TOYOTA hand- held tester only: Compared to the normal mode, the check mode has high sensing ability to detect malfunctions. Furthermore, the same diagnostic items which are detected in Normal mode can also be detected in Check mode.

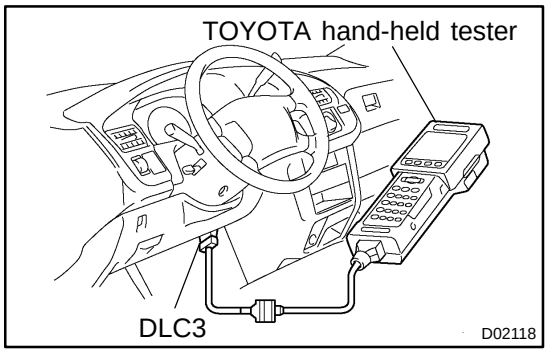
(a) Check the DTC.

(1) Check the initial conditions.

- Battery positive voltage 11 V or more.
- Throttle valve fully closed.
- Transaxle in P position.
- Air conditioning switched OFF.

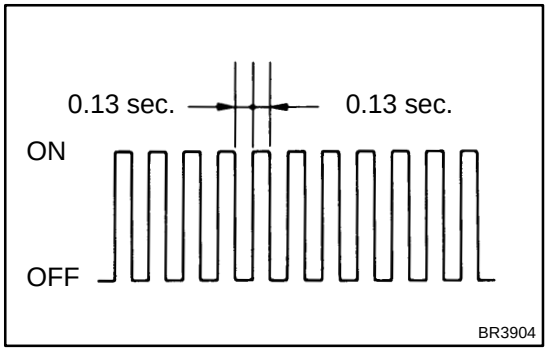
(2) Turn the ignition switch OFF.

(3) Prepare a TOYOTA hand-held tester.



(4) Connect the TOYOTA hand-held tester to DLC3 at the lower of the instrument panel.

(5) Turn the ignition switch ON and switch the TOYOTA hand-held tester ON.



(6) Switch the TOYOTA hand-held tester from Normal mode to Check mode (Check that the MIL flashes).

(7) Start the engine (MIL goes out after the engine starts).

(8) Simulate the conditions of the malfunction described by the customer.

NOTICE:

Leave the ignition switch ON until you have checked the DTCs, etc.

(9) After simulating the malfunction conditions, use the TOYOTA hand-held tester diagnosis selector to check the DTCs and freeze frame data, etc.

HINT:

Take care not to turn the ignition switch OFF, as turning it off switches the diagnosis system from Check mode to Normal mode, so all DTCs, etc. are erased.

(10) After checking the DTC, inspect the applicable circuit.

cardiagn.com

(b) Clear the DTC.
The following operation will erase the DTC and freeze frame data. Operating an OBD II scan tool (complying with SAE J1978) or TOYOTA hand-held tester to erase the codes (See the OBD II scan tool's instruction book for operating instructions.).

4. ROAD TEST

NOTICE:

Perform the test at normal operating ATF temperature 50 - 80 °C (122 - 176 °F).

(a) D position test:
Shift into the D position and fully depress the accelerator pedal and check the following points:

(1) Check up-shift operation.
Check to see that 1 → 2, 2 → 3 and 3 → O/D up-shift takes place and that the shift points conform to the automatic shift schedule (See page SS-25).

HINT:

- O/D Gear Up-shift Prohibition Control (1. Coolant temp. is 60 °C (140 °F) or less. 2. If there is a 10 km/h (6 mph) difference between the set cruise control speed and vehicle speed.)
- O/D Gear Lock-up Prohibition Control (1. Brake pedal is depressed. 2. Coolant temp. is 60 °C (140 °F) or less.)

(2) Check for shift shock and slip.
Check for shock and slip at the 1 → 2, 2 → 3 and 3 → O/D up-shifts.

(3) Check for abnormal noises and vibration.
Run at the D position lock-up or O/D gear and check for abnormal noises and vibration.

HINT:

The check for the cause of abnormal noises and vibration must be done very thoroughly as it could also be due to loss of balance in the differential torque converter clutch, etc.

(4) Check kick-down operation.
While running in the D position, 2nd, 3rd and O/D gears, check to see that the possible kick-down vehicle speed limits for 2 → 1, 3 → 2 and O/D → 3 kick-downs conform to those indicated in the automatic shift schedule (See page SS-25).

(5) Check abnormal shock and slip at kick-down.

(6) Check the lock-up mechanism.

- Drive in D position, O/D gear, at a steady speed (lock-up ON) of about 60 km/h (37 mph).
- Lightly depress the accelerator pedal and check that the engine speed does not change abruptly.

If there is a big jump in engine speed, there is no lock-up.

(b) 2 position test:
Shift into the 2 position and fully depress the accelerator pedal and check the following points:

(1) Check up-shift operation.
Check to see that the 1 → 2 up-shift takes place and that the shift point conforms to the automatic shift schedule (See page SS-25).

HINT:

There is no O/D up-shift and lock-up in the 2 position.

(2) Check engine braking.
While running in the 2 position and 2nd gear, release the accelerator pedal and check the engine braking effect.

(3) Check for abnormal noises during acceleration and deceleration, and for shock at up-shift and down-shift.

cardiagn.com

(c) L position test:
Shift into the 2 position and fully depress the accelerator pedal and check the following points:
(1) Check no up-shift.
While running in the L position, check that there is no up-shift to 2nd gear.
(2) Check engine braking.
While running in the L position, release the accelerator pedal and check the engine braking effect.
(3) Check for abnormal noises during acceleration and deceleration.

(d) R position test:
Shift into the R position and fully depress the accelerator pedal and check for slipping.

CAUTION:
Before conducting this test ensure that the test area is free from people and obstruction.

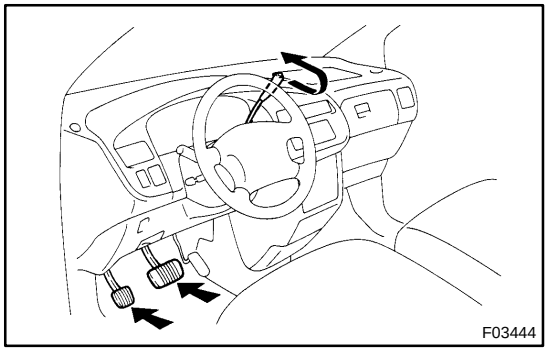
(e) P position test:
Stop the vehicle on a grade (more than 5°) and after shifting into the P position, release the parking brake. Then, check to see that the parking lock pawl holds the vehicle in place.

5. BASIC INSPECTION

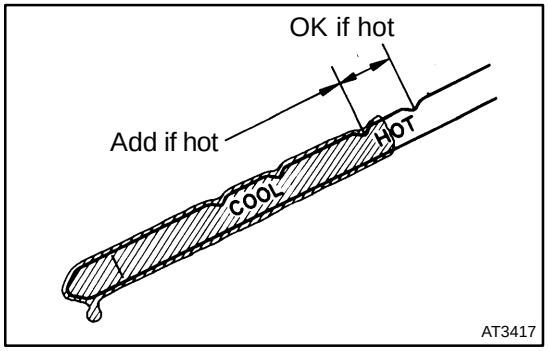
(a) Check the fluid level.

HINT:

- Drive the vehicle so that the engine and transaxle are at normal operating temperature.
Fluid temp.: 70 - 80 °C (158 - 176 °F)
- Only use the COOL range on the dipstick as a rough reference when the fluid is replaced or the engine does not run.



(1) Park the vehicle on a level surface and set the parking brake.
(2) With the engine idling and the brake pedal depressed, shift the shift lever into all positions from P to L position and return to P position.
(3) Pull out the dipstick and wipe it clean.
(4) Push it back fully into the pipe.



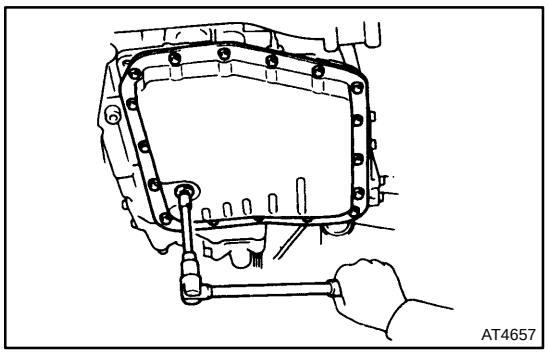
(5) Pull it out and check that the fluid level is in the HOT range.

If the level is not within the range, add new fluid.
Fluid type: ATF D-II or DEXRON®III (DEXRON®II)

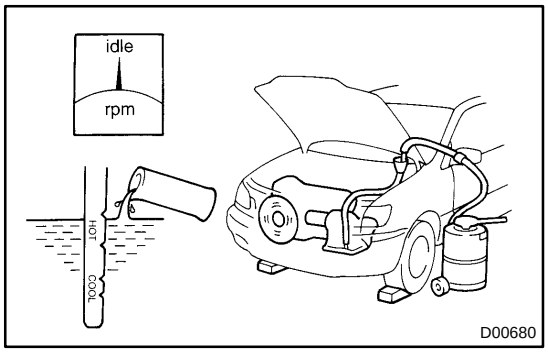
NOTICE:
Do not overfill.

(b) Check the fluid condition.
If the fluid smells burnt or is black, replace it.

cardiagn.com



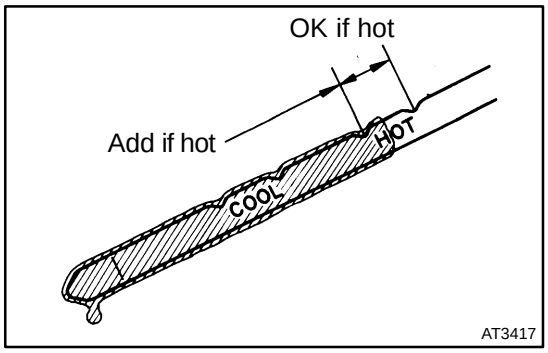
(c) Replace the ATF.
(1) Remove the drain plug and drain the fluid.
(2) Reinstall the drain plug securely.



(3) With the engine OFF add new fluid through the oil filler pipe.

Fluid type: ATF D-II or DEXRON®III (DEXRON®II)
Capacity: 4.75 liters (5.0 US qts, 4.2 Imp. qts)

(4) Start the engine and shift the shift lever into all positions from P to L position and then shift into P position.

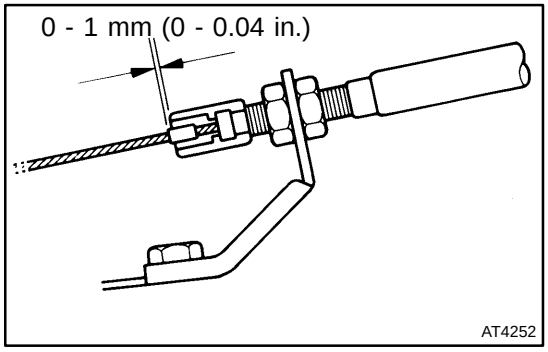


(5) With the engine idling, check the fluid level. Add fluid up to the COOL level on the dipstick.
(6) Check the fluid level at the normal operating temperature, 70 - 80 °C (158 - 176 °F), and add as necessary.

NOTICE:
Do not overfill.

(d) Check the fluid leaks.
Check for leaks in the transaxle.

If there are leaks, it is necessary to repair or replace O-rings, gasket, oil seals, plugs or other parts.

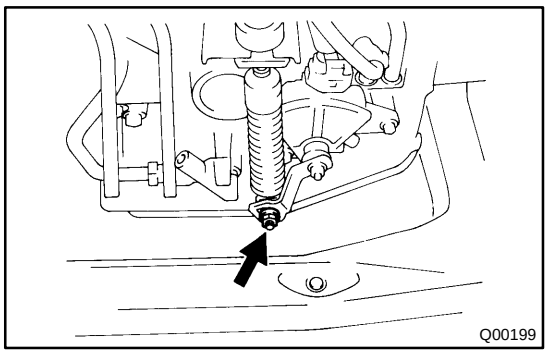


(e) Inspect and adjust the throttle cable.
(1) Check that the accelerator pedal is fully released.
(2) Check that the inner cable is not slack.
(3) Measure the distance between the outer cable end and stopper on the cable.

Standard distance: 0 - 1 mm (0 - 0.04 in.)

If the distance is not the standard, adjust the cable by the adjusting nuts.

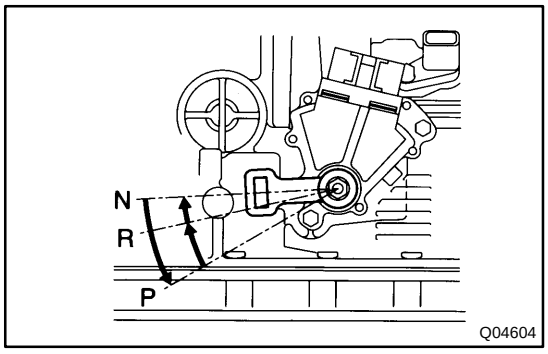
cardiagn.com


Q00199

(f) Inspect and adjust the shift lever position.
When shifting the shift lever from the N position to other positions, check that the lever can be shifted smoothly and accurately to each position and that the position indicator is aligned with the correct position.

If the indicator is not aligned with the correct position, carry out the following adjustment procedures.

(1) Loosen the nut on the shift lever.

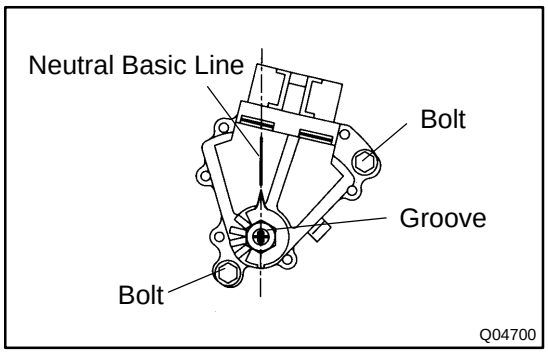


Q04604

(2) Push the control shaft fully downward.
(3) Return the control shaft lever 2 notches to N position.
(4) Set the shift lever to N position.
(5) While holding the shift lever lightly toward the R position side, tighten the shift lever nut.

Torque: 13 N·m (130 kgf·cm, 9 ft·lbf)

(6) Start the engine and make sure that the vehicle moves forward when shifting the lever from the N to D position and reverses when shifting it to the R position.



Q04700

(g) Inspect and adjust the park/neutral position.
Check that the engine can be started with the shift lever only in the N or P position, but not in other positions.

If it is not as stated above, carry out the following adjustment procedures.

(1) Loosen the park/neutral position switch bolt and set the shift lever to the N position.
(2) Align the groove and neutral basic line.
(3) Hold in position and tighten the bolt.

Torque: 5.4 N·m (55 kgf·cm, 48 in·lbf)

For continuity inspection of the park/neutral position switch, see page DI-197 .

(h) Check the idle speed.

Idle speed: 700 ± 50 rpm
(In N position and air conditioner OFF)

cardiagn.com

6. MECHANICAL SYSTEM TESTS

(a) Measure the stall speed.

The object of this test is to check the overall performance of the transaxle and engine by measuring the stall speeds in the D position.

NOTICE:

- **Do the test at normal operating fluid temperature 50 - 80 ˚C (122 - 176 ˚F).**
- **Do not continuously run this test longer than 5 seconds.**
- **To ensure safety, conduct this test in a wide, clear level area which provides good traction.**
- **The stall test should always be carried out in pairs. One technician should observe the conditions of wheels or wheel stoppers outside the vehicle while the other is doing the test.**

(1) Check the 4 wheels.
(2) Connect an OBD II scan tool or TOYOTA hand-held tester to DLC3.
(3) Fully apply the parking brake.
(4) Keep your left foot pressing firmly on the brake pedal.
(5) Start the engine.
(6) Shift into the D position. Press all the way down on the accelerator pedal with your right foot. Quickly read the stall speed at this time.

Stall speed: 2,350 - 2,800 rpm

Evaluation:

Problem	Possible cause
(a) Stall speed low in D position	• Engine output may be insufficient • Stator one-way clutch is operating properly HINT: If more than 600 rpm below the specified value, the torque converter clutch could be faulty.
(b) Stall speed high in D position	• Line pressure too low • Forward clutch slipping • No.2 one-way clutch not operating properly • O/D clutch slipping • Improper fluid level • O/D one-way clutch not operating properly

(b) Measure the time lag.

When the shift lever is shifted while the engine is idling, there will be a certain time lapse or lag before the shock can be felt. This is used for checking the conditions of the O/D direct clutch, forward clutch, and 1st & reverse brake.

NOTICE:

- **Do the test at normal operating fluid temperature 50 - 80 ˚C (122 - 176 ˚F).**
- **Be sure to allow 1 minute interval between tests.**
- **Take 3 measurements and take the average value.**

(1) Connect an OBD II scan tool or TOYOTA hand-held tester to DLC3.
(2) Fully apply the parking brake.
(3) Start the engine and check idle speed.

Idle speed: 700 ± 50 rpm (In N position and air conditioner OFF)

(4) Shift the shift lever from N to D position. Using a stop watch, measure the time from when the lever is shifted until the shock is felt.

Time lag: N → D Less than 1.2 seconds

(5) In the same manner, measure the time lag for N → R.

Time lag: N → R Less than 1.5 seconds

cardiagn.com

Evaluation (If N → D time or N → R time lag is longer than the specified):

Problem	Possible cause
N → D time lag is longer	• Line pressure too low • Forward clutch worn • O/D one-way clutch not operating
N → R time lag is longer	• Line pressure too low • Direct clutch worn • 1st & reverse brake worn • O/D one-way clutch not operating properly

7. HYDRAULIC TEST

Measure the line pressure.

NOTICE:

- **Do the test at normal operation fluid temperature 50 - 80 ˚C (122 - 176 ˚F)**
- **The line pressure test should always be carried out in pairs. One technician should observe the conditions of wheels or wheel stoppers outside the vehicle while the other is doing the test.**
- **Be careful to prevent SST's hose from interfering with the exhaust pipe.**

(1) Warm up the ATF.

(2) Remove the test plug on the front left side of transaxle case and connect SST (See page AX-22 for the location to connect SST).

SST 09992-00095 (09992-00231, 09992-00271)

(3) Fully apply the parking brake and check the 4 wheels.

(4) Connect an OBD II scan tool or TOYOTA hand-held tester to DLC3.

(5) Start the engine and check idling speed.

(6) Keep your left foot pressing firmly on the brake pedal and shift into D position.

(7) Measure the line pressure when the engine is idling.

(8) Depress the accelerator pedal all the way down. Quickly read the highest line pressure when engine speed reaches stall speed.

(9) In the same manner, do the test in R position.

Specified line pressure:

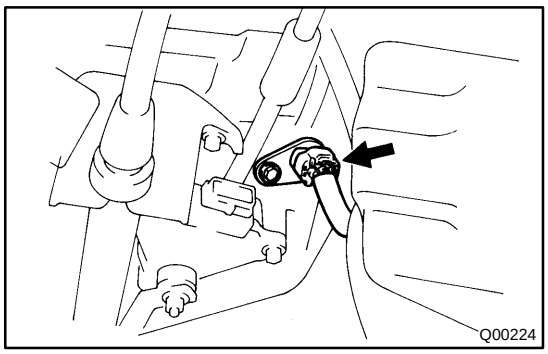
Condition	D position kPa (kgf/cm^2, psi)	R position kPa (kgf/cm^2, psi)
Idling	401 - 461 (4.1 - 4.7, 58 - 66)	804 - 882 (8.2 - 9.0, 117 - 128)
Stall	1,138 - 1,236 (11.6 - 12.6, 165 - 179)	1,716 - 1,854 (17.5 - 18.9, 249 - 269)

If the measured pressure is not up to the specified value, recheck the throttle cable adjustment and retest.

Evaluation

Problem	Possible cause
If the measured values at all positions are higher	• Throttle cable out of adjustment • Throttle valve defective • Regulator valve defective
If the measured values at all positions are lower	• Throttle cable out of adjustment • Throttle valve defective • Regulator valve defective • Oil pump defective • O/D direct clutch defective
If pressure is low in the D position only	• D position circuit fluid leakage • Forward clutch defective
If pressure is low in the R position only	• R position circuit fluid leakage • Direct clutch defective • 1st & reverse brake defective

cardiagn.com



8. MANUAL SHIFTING TEST

HINT:

With this test, it can be determined whether the trouble is within the electrical circuit or is a mechanical problem in the transaxle.

(a) Disconnect the solenoid wire.

(b) Inspect the manual driving operation.

Check that the shift and gear positions correspond with the table below.

While driving, shift through the L, 2 and D positions. Check that the gear change corresponds to the shift position.

Shift Position	Gear Position
D	O/D
2	O/D
L	1st
R	Reverse
P	Pawl Lock

HINT:

If the L, 2 and D position gear positions are difficult to positions are difficult to distinguish, do the above read test.

If any abnormality is found in the above test, the problem is in the transaxle itself.

(c) Connect the solenoid wire.

(d) Cancel out the DTC (See page DI-157).

cardiagn.com

DI232-01

PRE-CHECK

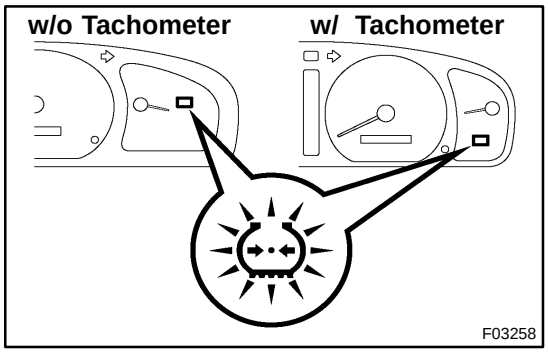
HINT:

When the warning light lights up, immediately check the air pressure of the tire and adjust it to the specified pressure. If the vehicle is driven at more 18 mph (30 km/h) after adjustment, the warning light goes off.

This system needs initializing after changing tires or wheels and rotating tires.

In the following cases, system might not operate normally.

- When the tire out of specification and tires with different size or type are used all together.
- When extremely worn tire is found among 4 tires.
- When the compact spare tire or snow tire is used and tire chains are wound.
- When using the tire with the air pressure extremely higher than the specified and the air pressure becomes acutely low due to burst during driving.
- When the vehicle is driven on the extremely rough or slippery frozen road.



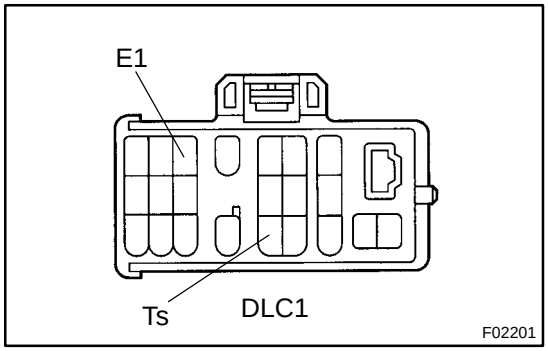
1. INSPECT TIRE PRESSURE WARNING LIGHT OPERATION

When the ignition switch is turned ON, check that the tire pressure warning light goes on for 3 seconds.

HINT:

If the indicator check result is not normal, proceed to troubleshooting for the tire pressure warning light circuit (See page DI-213).

2. INSPECT ABS SPEED SENSOR (See page DI-233)

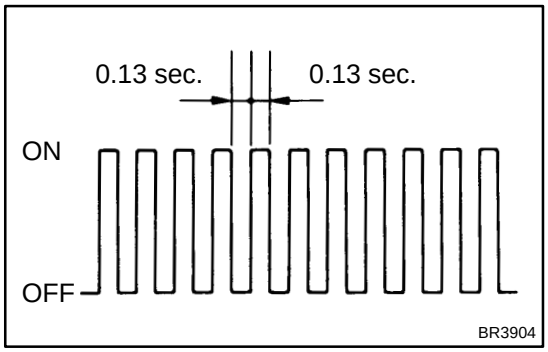


3. INSPECT TIRE PRESSURE WARNING STANDARDIZATION SWITCH OPERATION (CHECK MODE)

(a) Turn the ignition switch OFF.

(b) Using SST, connect terminals Ts and E1 of DLC1.
SST 09843-18020

(c) Start the engine.

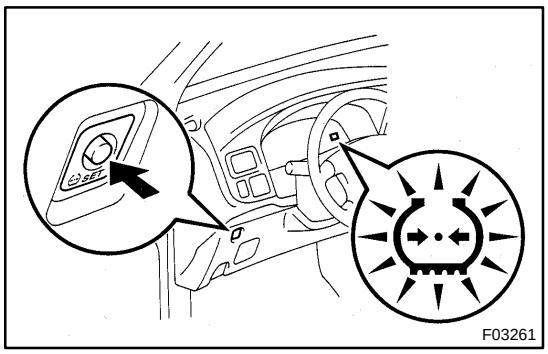


(d) Check that the ABS warning light blinks.

HINT:

If the ABS warning light does not blink, inspect the ABS warning light circuit (See page DI-250).

cardiagn.com



(e) When press the tire pressure warning standardization switch and check that the tire pressure warning light flashes 3 times then it goes off.

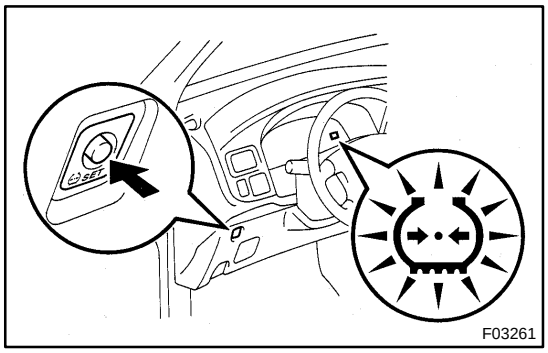
HINT:

If the tire pressure warning light does not light, inspect the tire pressure warning light circuit (See page DI-213) and tire pressure warning standardization switch circuit (See page DI-215).

4. INSPECT TIRE PRESSURE WARNING STANDARDIZATION SWITCH (See page DI-215)

5. INSPECT STOP LIGHT SWITCH (See page DI-243)

6. INSPECT ABS ECU (See page DI-225)



7. SYSTEM INITIALIZATION

HINT:

It is necessary to perform the initial setting of system when tire and wheel have been replaced or tire rotation has been done.

(a) Adjust the air pressure of 4 tires to the specified pressure (See page SA-2).

(b) With the ignition switch ON and the vehicle stopped, press the tire pressure warning standardization switch until the warning light flashes 3 times.

cardiagn.com

DI08L-12

PROBLEM SYMPTOMS TABLE

Symptom	Suspect Area	See page
SET not occurring or CANCEL occurring. (DTC is Normal)	3. Vehicle Speed Sensor 4. Control Switch Circuit (Cruise control switch) 5. Stop Light Switch Circuit 6. Park/Neutral Position Switch Circuit 7. Actuator Motor Circuit 8. Cruise Control Cable 9. Cruise Control ECU	DI-580 DI-583 DI-589 DI-595 DI-573 DI-605 IN-31
SET not occurring or CANCEL occurring. (DTC dose not output)	1. ECU Power Source Circuit 2. Cruise Control ECU	DI-598 IN-31
Actual vehicle speed deviates above or below the set speed.	1. Cruise Control Cable 2. Vehicle Speed Signal Abnormal 3. Electronically Controlled Transmission Communication Circuit 4. Actuator Motor Circuit 5. Idle Signal Circuit (Main throttle position sensor) 6. Cruise Control ECU	DI-605 DI-580 DI-592 DI-573 DI-586 IN-31
Gear shifting frequent between 3rd O/D when driving on uphill road. (Hurting)	1. Electronically Controlled Transmission Communication Circuit 2. Cruise Control ECU	DI-592 IN-31
Cruise control not cancelled, even when brake pedal is depressed.	1. Cruise Control Cable 2. Stop Light Switch Circuit 3. Actuator Motor Circuit 4. Cruise Control ECU	DI-605 DI-589 DI-573 IN-31
Cruise control not cancelled, even when transmission is shifted to ”N” position.	1. Cruise Control Cable 2. Park/Neutral Position Switch Circuit 3. Actuator Motor Circuit 4. Cruise Control ECU	DI-605 DI-595 DI-573 IN-31
Cruise control not cancelled, even when clutch pedal is depressed.	1. Cruise Control Cable 2. Actuator Motor Circuit 3. Cruise Control ECU	DI-605 DI-573 IN-31
Control switch does not operate. (SET/COAST, ACC/RES, CANCEL not possible)	1. Cruise Control Cable 2. Control Switch Circuit 3. Actuator Motor Circuit 4. Cruise Control ECU	DI-605 - DI-573 IN-31
SET possible at 40 km/h (25 mph) or less, or CANCEL does not operate at 40 km/h (25 mph) or less.	1. Cruise Control Cable 2. Vehicle Speed Signal Abnormal 3. Actuator Motor Circuit 4. Cruise Control ECU	DI-605 DI-580 DI-573 IN-31
Poor response in ACCEL and RESUME modes.	1. Cruise Control Cable 2. Electronically Controlled Transmission Communication Circuit 3. Actuator Motor Circuit 4. Cruise Control ECU	DI-605 DI-592 DI-573 IN-31
O/D does not RESUME, even though the road is not uphill.	1. Electronically Controlled Transmission Communication Circuit 2. Cruise Control ECU	DI-592 IN-31
DTC memory is erased.	1. Cruise Control ECU	IN-31
DTC is not output, or is output when should not be.	1. Diagnosis Circuit 2. Cruise Control ECU	DI-603 IN-31
Cruise MAIN indicator light remains ON or falls to light up.	1. Cruise MAIN Indicator Light Switch Circuit	DI-601

cardiagn.com

DI0CO-13

PROBLEM SYMPTOMS TABLE

If a normal code is displayed during the diagnostic trouble code check but the trouble still occurs, check the circuits for each symptom in the order given in the charts on the following pages and proceed to the page given for troubleshooting.

The Matrix Chart is divided into 3 chapters.

Chapter 1: Electronic circuit matrix chart

Chapter 2: On-vehicle repair matrix chart

Chapter 3: Off-vehicle repair matrix chart

- If the instruction ”Proceed to next circuit inspection shown in matrix chart” is given in the flow chart for each circuit, proceed to the circuit with the next highest number in the table to continue the check.
- If the trouble still occurs even though there are no abnormalities in any of the other circuits, then check and replace the ECM.

Chapter 1: Electronic circuit matrix chart

Symptom	Suspect Area	See page
No up-shift (A particular gear, from 1st to 3rd gear, is not up-shift)	ECM	IN-31
No up-shift (3rd → O/D)	3. O/D main switch & O/D OFF indicator light circuit 4. O/D cancel signal circuit 5. ECM	DI-204 DI-201 IN-31
No down-shift (O/D → 3rd)	ECM	IN-31
No down-shift (A particular gear, from 1st to 3rd gear, is not up-shift)	ECM	IN-31
No lock-up or No lock-up off	ECM	IN-31
Shift point too high or too low	ECM	IN-31
Up-shift to 2nd while in L position	ECM	IN-31
Up-shift to 3rd while in 2 position	ECM	IN-31
Up-shift to O/D from 3rd	1. O/D main switch & O/D OFF indicator light circuit 2. ECM	DI-204 IN-31
Up-shift to O/D from 3rd while engine is cold	ECM	IN-31
Harsh engagement (N → D)	ECM	IN-31
Harsh engagement (Any driving position)	ECM	IN-31
Poor acceleration	ECM	IN-31
Engine stalls when starting off or stopping	ECM	IN-31
No kick-down	ECM	IN-31

cardiagn.com

Chapter 2: On-vehicle repair
(★: A541E automatic transaxle repair manual Pub. No. RM326U)

Symptom	Suspect Area	See page
Vehicle does not move in any forward position and reverse position	1. Manual valve 2. Throttle valve 3. Primary regulator valve 4. Off-vehicle repair matrix chart	★ ★ ★ -
Vehicle does not move in R position	Off-vehicle repair matrix chart	-
No up-shift (1st → 2nd)	1. 1-2 shift valve 2. Off-vehicle repair matrix chart	★ -
No up-shift (2nd → 3rd)	1. 2-3 shift valve 2. Off-vehicle repair matrix chart	★ -
No up-shift (3rd → O/D)	1. 3-4 shift valve 2. Off-vehicle repair matrix chart	★ -
No down-shift (O/D → 3rd)	3-4 shift valve	★
No down-shift (3rd → 2nd)	2-3 shift valve	★
No down-shift (2nd → 1st)	1-2 shift valve	★
No lock-up or No lock-up off	1. Lock-up relay valve 2. Off-vehicle repair matrix chart	★ -
Harsh engagement (N → D)	1. C_1 accumulator 2. Off-vehicle repair matrix chart	★ -
Harsh engagement (N → R)	1. C_2 accumulator 2. No.1 accumulator control valve 3. Off-vehicle repair matrix chart	★ ★ -
Harsh engagement (N → L)	Low coast modulator valve	★
Harsh engagement (Lock-up)	1. Lock-up relay valve 2. Off-vehicle repair matrix chart	★ -
Harsh engagement (1st → 2nd → 3rd → O/D)	1. Throttle modulator valve 2. Cut back valve 3. Throttle valve	★ ★ ★
Harsh engagement (2nd → 3rd)	C_2 accumulator	★
Harsh engagement (3rd → O/D)	B_0 accumulator	★
Harsh engagement (O/D → 3rd)	1. C_0 accumulator 2. B_0 accumulator	★ ★
Slip or shudder (Forward and reverse)	1. Throttle valve 2. Oil strainer 3. Off-vehicle repair matrix chart	★ ★ -
No engine braking (1st: L position)	1. Low coast modulator valve 2. Off-vehicle repair matrix chart	★ -
No engine braking (2nd: 2 position)	1. 2nd coast modulator valve 2. Off-vehicle repair matrix chart	★ -
No kick-down	1. 1-2 shift valve 2. 2-3 shift valve 3. 3-4 shift valve	★ ★ ★

cardiagn.com

Chapter 3: Off-vehicle repair
(★: A541E automatic transaxle repair manual Pub. No. RM326U)

Symptom	Suspect Area	See page
Vehicle does not move in any forward position and reverse position	1. Front and rear planetary gear 2. O/D planetary gear 3. O/D one-way clutch (F_0) 4. O/D direct clutch (C_0) 5. Forward clutch (C_1) 6. O/D brake (B_0)	★ ★ ★ ★ ★ ★
Vehicle does not move in R position	1. Front and rear planetary gear unit 2. Direct clutch (C_2) 3. O/D direct clutch (C_0) 4. 1st & reverse brake (B_3)	★ ★ ★ ★
No up-shift (1st → 2nd)	1. No. 1 one-way clutch (F_1) 2. 2nd brake (B_2)	★ ★
No up-shift (2nd → 3rd)	Direct clutch (C_2)	★
No up-shift (3rd → O/D)	O/D brake (B_0)	★
No lock-up or No lock-up off	Torque converter clutch	★
Harsh engagement (N → D)	1. Forward clutch (C_1) 2. O/D one-way clutch (F_0) 3. No. 2 one-way clutch (F_2)	★ ★ ★
Harsh engagement (N → R)	1. Direct clutch (C_2) 2. 1st & reverse brake (B_3)	★ ★
Harsh engagement (Lock-up)	Torque converter clutch	★
Slip or shudder (Forward position: After warm-up)	1. Torque converter clutch 2. O/D direct clutch (C_0) 3. Forward clutch (C_1) 4. O/D one-way clutch (F_0)	★ ★ ★ ★
Slip or shudder (R position)	1. Direct clutch (C_2) 2. 1st & reverse brake (B_3) 3. O/D direct clutch (C_0)	★ ★ ★
Slip or shudder (1st)	No. 2 one-way clutch (F_2)	★
Slip or shudder (2nd)	1. No. 1 one-way clutch (F_1) 2. 2nd brake (B_2)	★ ★
Slip or shudder (3rd)	Direct clutch (C_2)	★
Slip or shudder (O/D)	O/D brake (B_0)	★
No engine braking (1st ~ 3rd: D position)	2nd brake (B_2)	★
No engine braking (1st: L position)	1st & reverse brake (B_3)	★
No engine braking (2nd: 2 position)	2nd coast brake (B_1)	★
Poor acceleration (All position)	1. Torque converter clutch 2. O/D planetary gear	★ ★
Poor acceleration (O/D)	1. O/D direct clutch (C_0) 2. O/D planetary gear	★ ★
Large shift shock or engine stalls when starting off or stopping	Torque converter clutch	★

cardiagn.com

DI1KK-02

PROBLEM SYMPTOMS TABLE

Symptom	Suspect Area	See page
Immobiliser is not set. (Engine starts with key codes other than the registered key code.)	2. ECM	IN-31
Engine does not start.	1. Key 2. Wire harness 3. Transponder key coil 4. Amplifier 5. ECM	*1 IN-31 BE-159 - IN-31
Security indicator is always ON.	1. Security indicator 2. Wire harness 3. ECM	*2 IN-31 IN-31
Security indicator is always ON. (Although code has been registered in the automatic registration mode, indicator is not OFF.)	1. Wire harness 2. Transponder key coil 3. Amplifier 4. ECM	IN-31 BE-159 - IN-31
Security indicator is OFF (When DTC of immobiliser is output)	1. Wire harness 2. Transponder key coil 3. Amplifier 4. ECM	IN-31 BE-159 - IN-31
Security indicator is OFF. (When DTC of immobiliser is not output)	1. Wire harness 2. ECM	IN-31 IN-31
Security indicator is abnormally brinking.	1. Wire harness 2. ECM	IN-31 IN-31

*1 : Check that the key which did not start the engine has been registered and that it is possible to start with other already registered key codes.

*2 : Finish the automatic registration mode because the mode might still remain.

cardiagn.com

DI06R-05

PROBLEM SYMPTOMS TABLE

Proceed to the reference page shown in the matrix chart below for each malfunction symptom and trouble-shoot for each circuit.

HINT:

Troubleshooting of the theft deterrent system is based on the premise that the door lock control system is operating normally. Accordingly, before troubleshooting the theft deterrent system, first make certain that the door lock control system is operating normally.

Details of Problem			Inspecting Circuit*1	See page
The theft deterrent system cannot be set			1. Indicator light circuit	DI-533
			2. ECU power source circuit	DI-535
			3. Key unlock warning switch circuit	DI-549
			4. Back door key lock and unlock switch circuit	DI-553
			5. Back door courtesy switch circuit	DI-551
			6. Door key lock and unlock switch circuit	DI-553
			7. Door courtesy switch circuit	DI-557
			8. Door unlock detection switch circuit	DI-555
			9. Engine hood courtesy switch circuit	DI-559
The indicator light does not blink when system is set			Indicator light circuit	DI-533
When the system is set	When the side doors are unlocked	The system does not operate	Door unlock detection switch circuit	DI-555
	When the back door is opened by a method other than the key		Back door courtesy switch circuit	DI-551
	When the engine hood is opened		Engine hood courtesy switch circuit	DI-559
While the system is in warning operation	Horns do not sound		Horn relay circuit	DI-541
	Theft deterrent horn does not sound		Theft deterrent horn circuit	DI-538
	Headlights do not flash		Headlight control relay circuit	DI-543
	Taillights do not flash		Taillight control relay circuit	DI-545
	The door is not locked in unlock condition		Door unlock detection switch circuit	DI-555
When the system is set	It is not canceled when the ignition key is turned to ACC or ON position		Ignition switch circuit	DI-547
	It still operates when the back door is opened with the key		Back door key lock and unlock switch circuit	DI-553
System is still set even when a side door is open			Door courtesy switch circuit	DI-557
Even when the system is not set	Horns sound		Horn relay circuit	DI-541
	Theft deterrent horn sounds		Theft deterrent horn circuit	DI-538
	Headlights stay on		Headlight control relay circuit	DI-543
	Taillights stay on		Taillight control relay circuit	DI-545

*1: If numbers are given to the circuit proceed with troubleshooting in the order indicated by those numbers.

cardiagn.com

DI6LJ-03

PROBLEM SYMPTOMS TABLE

IGNITION SWITCH AND KEY UNLOCK WARNING SWITCH:

Symptom	Suspect Area	See page
Ignition switch is not set to each position.	1. Ignition switch 2. Power source circuit	BE-15 DI-639
Key unlock warning system does not operate. (The buzzer does not sound when the driver's door is opened with the ignition OFF and key inserted)	1. Power source circuit 2. Key unlock warning switch circuit 3. Door courtesy switch circuit 4. Body ECU (Integration relay)	DI-639 DI-673 DI-657 DI-632
Key unlock warning system does not operate. (The buzzer sounds when the ignition key is ACC or ON)	1. Ignition switch 2. Power source circuit	BE-15 DI-639

HEADLIGHT AND TAILLIGHT SYSTEM :

Symptom	Suspect Area	See page
Automatic light control system does not operate .	1. Light control senser circuit 2. Body ECU	DI-675 DI-632
Headlight does not light.	1. Headlight bulb 2. Headlight control relay circuit 3. Light control switch circuit 4. Body ECU (Integration Relay)	- DI-647 DI-643 DI-632
"Lo-Beam" does not light.	1. Headlight bulb 2. Headlight control relay circuit 3. Headlight dimmer switch 4. Body ECU (Integration relay)	- DI-647 DI-643 DI-632
"Hi-Beam" does not light.	1. Headlight bulb 2. Headlight relay circuit 3. Headlight dimmer switch 4. Body ECU (Integration relay)	- DI-647 DI-643 DI-632
"Flash" does not light.	1. Headlight bulb 2. Headlight relay circuit 3. Headlight dimmer switch 4. Body ECU (Integration relay)	- DI-647 DI-643 DI-632
Headlight does not light with engine running and light control SW OFF.	1. Generator 2. Body ECU (Integration relay)	CH-10 DI-632
Taillight does not light.	1. Taillight control relay circuit 2. Light control switch circuit 3. Body ECU (Integration relay)	DI-645 DI-643 DI-632

AUTO TURN OFF SYSTEM:

Symptom	Suspect Area	See page
"Auto turn-off system" does not operate.	1. Drivers door courtesy switch circuit 2. Key unlock warning switch 3. Body ECU (Integration relay)	DI-657 DI-673 DI-632

INTERIOR LIGHT SYSTEM:

Symptom	Suspect Area	See page
Only one light does not light up.	1. Bulb 2. Illumination circuit 3. Body ECU (Integration relay)	- DI-659 DI-632
Room light does not light up (All).	1. Illumination circuit 2. Body ECU (Integration relay)	DI-659 DI-632

cardiagn.com

Room light does not light up (Room light only).	1. Bulb 2. Room light assembly 3. Illumination circuit 4. Body ECU (Integration relay)	- BE-31 DI-659 DI-632
”Illuminated Entry System” does not operate.	1. Illumination circuit 2. Door courtesy switch circuit 3. Unlock detection switch circuit 4. Body ECU (Integration relay)	DI-659 DI-657 DI-655 DI-632
Front personal light does not light up.	1. Bulb 2. Front personal light 3. Illumination circuit 4. Body ECU (Integration relay)	- BE-31 DI-659 DI-632
Interior light NO.1 does not light up.	1. Bulb 2. Interior light NO.1 3. Illumination circuit	- BE-31 DI-659
Vanity light does not light up.	1. Bulb 2. Vanity light 3. Body ECU (Integration relay)	- BE-31 DI-632
Interior light NO.2 does not light up.	1. Bulb 2. Interior light NO.2 3. Illumination circuit 4. Body ECU (Integration relay)	- BE-31 DI-659 DI-632

COMBINATION METER:

Symptom	Suspect Area	See page
Seat Belt warning light does not light up.	1. Warning light circuit 2. Buckle switch circuit 3. Meter circuit plate 4. Body ECU (Integration relay)	DI-665 DI-667 BE-43 DI-632
Open Door warning light does not light up.	1. Warning light circuit 2. Door courtesy switch circuit 3. Illumination circuit 4. Meter circuit plate 5. Body ECU (Integration relay)	DI-663 DI-657 DI-659 BE-43 DI-632

POWER DOOR LOCK CONTROL SYSTEM:

Symptom	Suspect Area	See page
”Door lock system” does not operate at all.	1. GAUGE Fuse 2. DOOR Fuse 3. Body ECU (Integration relay) 4. Wire harness	- - DI-632 -
Door lock system does not operate by manual switch.	5. Body ECU (Integration relay) 6. Wire harness	DI-632 -
Door lock system does not operate by door key.	1. Door Key Lock and Unlock Switch circuit 2. Body ECU (Integration relay) 3. Door Lock Link Disconnected	DI-653 DI-632 -
Fault in 2-Operation unlock function of Driver’s side door key lock and unlock switch.	1. Door Key Lock and Unlock Switch circuit 2. Body ECU (Integration relay) 3. Wire harness	DI-653 DI-632 -
Only one door lock does not operate.	1. Door Lock Motor circuit 2. Body ECU (Integration relay)	DI-649 DI-632
Key confinement prevention function does not operate.	1. Key unlock warning switch circuit 2. Body ECU (Integration relay)	DI-653 DI-632
Auto lock/unlock system does not operate.	1. Door lock motor circuit 2. Body ECU (Integration relay)	DI-649 DI-632

cardiagn.com

WIRELESS DOOR LOCK CONTROL SYSTEM:

Symptom	Suspect Area	See page
All functions of wireless door lock control system do not operate.	1. Wireless door lock tuner circuit 2. Key unlock warning switch circuit 3. Body ECU (Integration relay)	DI-679 DI-673 DI-632
Lock or unlock function does not operate.	1. Door key lock and unlock switch circuit 2. Door unlock detection switch circuit 3. Body ECU (Integration relay)	DI-653 DI-673 DI-632
Automatic lock function operates even if any door is opened within 30 seconds after all doors are unlocked by wireless door lock control system.	1. Door courtesy switch circuit 2. Body ECU (Integration relay)	DI-657 DI-632
Wireless door lock operates, but the buzzer does not sound.	1. Wireless door lock buzzer circuit 2. Wireless door lock tuner circuit 3. Body ECU (Integration relay)	DI-681 DI-679 DI-632
Buzzer sound, but wireless door lock function does not operate.	1. Wireless door lock tuner circuit 2. Body ECU (Integration relay)	DI-679 DI-632

HORN SYSTEM:

Symptom	Suspect Area	See page
Horn system does not operate.	1. Horn circuit 2. Body ECU (Integration relay)	DI-677 DI-632
Horns blow all the time.	1. Horn circuit 2. Body ECU (Integration relay)	DI-677 DI-632
One horn operates but the other horn does not operate.	1. Horn circuit 2. Body ECU (Integration relay)	DI-677 DI-632
Horns operate abnormally.	1. Horn circuit 2. Body ECU (Integration relay)	DI-677 DI-632

cardiagn.com

DI03Z-13

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.

Symptom	Suspect Area	See page
ABS does not operate	Only when 1. - 4. are all normal and the problem is still occurring, replace the skid control ECU. 3. Check the DTC reconfirming that the normal code is output. 4. Power source circuit 5. Speed sensor circuit 6. Hydraulic circuit for leakage.	 DI-220 DI-239 DI-233 DI-256
ABS does not operate efficiently	Only when 1. - 5. 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. Power source circuit 5. Hydraulic circuit for leakage	 DI-220 DI-233 DI-243 DI-239 DI-256
ABS warning light abnormal	1. ABS warning light circuit 2. Skid control ECU	DI-250 DI-247
DTC check cannot be done	Only when 1. and 2. are all normal and the problem is still occurring, replace the ABS actuator assembly. 1. ABS warning light circuit 2. Tc terminal circuit	 DI-250 DI-252
Speed sensor signal check cannot be done	1. Ts terminal circuit 2. Skid control ECU	DI-254 DI-247

cardiagn.com

DI164-28

PROBLEM SYMPTOMS TABLE

Proceed with troubleshooting of each circuit in the table below.

Symptom	Suspect Area	See page
• With the ignition switch in ACC or ON position, the SRS warning light sometimes lights up after approx. 6 seconds have elapsed.	• SRS warning light circuit	DI-490
• SRS warning light is always lit up even when ignition switch is in the LOCK position.		
• With the ignition switch in ACC or ON position, the SRS warning light does not light up.		
• DTC is not displayed.	• Tc terminal circuit	DI-496
• SRS warning light is always lit up at the time of DTC check procedure.		
• DTC is displayed without Tc and E1 terminal connection.		

cardiagn.com

DI3F3-05

PROBLEM SYMPTOMS TABLE

Front A/C

Symptom	Suspect Area	See page
Whole functions of the A/C system does not operate	3. A/C control assembly 4. IG power source circuit	IN-31 DI-749
Air Flow Control: No blower operation	1. IG power source circuit 2. Front heater relay circuit 3. Blower motor circuit 4. A/C control assembly	DI-749 DI-756 DI-765 IN-31
Air Flow Control: No blower control	1. Blower motor circuit 2. A/C control assembly 3. Solar sensor circuit	DI-765 IN-31 DI-715
Air Flow Control: Insufficient air flow	Blower motor circuit	DI-765
Temperature Control: No cool air comes out	1. Refrigerant volume 2. Drive belt tension 3. Refrigeration system inspection with manifold gauge set 4. Compressor circuit 5. Pressure switch circuit 6. Front air mix damper position sensor circuit 7. Front air mix damper control servomotor circuit 8. Front room temp. sensor circuit 9. Ambient temp. sensor circuit 10.A/C control assembly	AC-3 AC-17 AC-3 DI-776 DI-721 DI-727 DI-736 DI-712 DI-703 IN-31
Temperature Control: No warm air comes out	1. Front air mix damper position sensor circuit 2. Front air mix damper control servomotor circuit 3. Front room temp. sensor circuit 4. Ambient temp. sensor circuit 5. Front evaporator temp. sensor circuit 6. A/C control assembly	DI-727 DI-736 DI-712 DI-703 DI-706 IN-31
Temperature Control: Output air is warmer or cooler that the set temperature or response is slow	1. Refrigerant volume 2. Drive belt tension 3. Refrigeration system inspection with manifold gauge set 4. Cooling fan system 5. Solar sensor circuit 6. Front room temp. sensor circuit 7. Ambient temp. sensor circuit 8. Front Evaporator temp. sensor circuit 9. Front air mix damper position sensor circuit 10.Front air mix damper control servomotor circuit 11.Front air inlet damper position sensor circuit 12.Front air inlet damper control servomotor circuit 13.Condenser 14.Evaporator 15.Heater radiator 16.Expansion valve 17.A/C control assembly	AC-3 AC-17 AC-3 AC-109 DI-715 DI-712 DI-703 DI-706 DI-727 DI-736 DI-730 DI-739 AC-72 AC-30 AC-77 AC-25 IN-31

cardiagn.com

Symptom	Suspect Area	See page
Temperature Control: No temperature control (only Max. cool or Max. warm)	1. Front room temp. sensor circuit 2. Ambient temp. sensor circuit 3. Front air mix damper position sensor circuit 4. Front air mix damper control servomotor circuit 5. A/C control assembly	DI-712 DI-703 DI-727 DI-736 IN-31
No air inlet control	1. Front air inlet damper position sensor circuit 2. Front air inlet damper control servomotor circuit 3. A/C control assembly	DI-730 DI-739 IN-31
No air flow control	1. Air outlet damper control servomotor circuit 2. A/C control assembly	DI-744 IN-31
Engine idle up does not occur, or is continuous	1. Compressor circuit 2. ECM	DI-776 DI-19
A/C indicator blinking	1. Igniter circuit 2. Compressor lock sensor circuit 3. A/C control assembly	DI-754 DI-718 DI-19

cardiagn.com

Rear A/C

Symptom	Suspect Area	See page
Whole functions of the rear A/C system does not operate	1. IG power source circuit 2. A/C control assembly	DI-749 IN-31
Air Flow Control: No blower operation (for rear cooling)	1. IG power source circuit 2. Rear CLR relay circuit 3. Rear blower motor circuit 4. A/C control assembly	DI-749 DI-762 DI-768 IN-31
Air Flow Control: No blower operation (for rear heater)	1. IG power source circuit 2. Rear heater relay circuit 3. Rear blower motor circuit 4. A/C control assembly	DI-749 DI-759 DI-772 IN-31
Air Flow Control: No blower control (for rear cooling)	1. Rear blower motor circuit 2. A/C control assembly 3. Solar sensor circuit	DI-772 IN-31 DI-715
Air Flow Control: No blower control (for rear heater)	1. Rear blower motor circuit 2. A/C control assembly 3. Solar sensor circuit	DI-768 IN-31 DI-715
Air Flow Control: Insufficient air flow (for rear cooling)	1. Rear blower motor circuit	DI-768
Air Flow Control: Insufficient air flow (for rear heater)	1. Rear blower motor circuit	DI-768
Temperature Control: No cool air comes out	1. Refrigerant volume 2. Drive belt tension 3. Refrigeration system inspection with manifold gauge set 4. Expansion valve 5. Evaporator 6. Compressor circuit 7. Rear air mix damper position sensor circuit 8. Rear air mix damper control servomotor circuit 9. Rear room temp. sensor circuit 10.A/C control assembly	AC-3 AC-17 AC-3 AC-33 AC-38 DI-776 DI-733 DI-742 DI-712 IN-31
Temperature Control: No warm air comes out	1. Rear air mix damper position sensor circuit 2. Rear air mix damper control servomotor circuit 3. Rear room temp. sensor circuit 4. Rear air intake temp. sensor circuit 5. A/C control assembly	DI-733 DI-742 DI-712 DI-724 IN-31
Temperature Control: Output air is warmer or cooler that the set temperature or response is slow	1. Refrigerant volume 2. Drive belt tension 3. Refrigeration system inspection with manifold gauge set 4. Cooling fan system 5. Solar sensor circuit 6. Rear room temp. sensor circuit 7. Rear air intake temp. sensor circuit 8. Rear air mix damper position sensor circuit 9. Rear air mix damper control servomotor circuit 10.Condenser 11.Evaporator 12.Heater radiator 13.Expansion valve 14.A/C control assembly	AC-3 AC-17 AC-3 AC-109 DI-715 DI-712 DI-724 DI-733 DI-742 AC-72 AC-33 AC-51 AC-33 IN-31
Temperature Control: No temperature control (only Max. cool or Max. warm)	1. Rear room temp. sensor circuit 2. Rear air mix damper position sensor circuit 3. Rear air mix damper control servomotor circuit 4. A/C control assembly	DI-712 DI-733 DI-742 IN-31

cardiagn.com

DI21R-03

PROBLEM SYMPTOMS TABLE

Symptom	Suspect Area	See page
Engine does not crank (Does not start)	13.Starter 14.Starter relay	ST-19 ST-21
No initial combustion (Does not start)	1. ECM power source circuit 2. Fuel pump control circuit 3. Engine control module (ECM)	DI-144 DI-147 IN-31
No complete combustion (Does not start)	1. Fuel pump control circuit	DI-147
Engine cranks normally (Difficult to start)	1. Starter signal circuit 2. Fuel pump control circuit 3. Compression	DI-141 DI-147 EM-3
Cold engine (Difficult to start)	1. Starter signal circuit 2. Fuel pump control circuit	DI-141 DI-147
Hot engine (Difficult to start)	1. Starter signal circuit 2. Fuel pump control circuit	DI-141 DI-147
High engine idle speed (Poor idling)	1. A/C signal circuit (Compressor Circuit) Manual A/C Auto A/C 2. ECM power source circuit	AC-133 DI-776 DI-144
Low engine idle speed (Poor idling)	1. A/C signal circuit (Compressor Circuit) Manual A/C Auto A/C 2. Fuel pump control circuit	AC-133 DI-776 DI-147
Rough idling (Poor idling)	1. Compression 2. Fuel pump control circuit	EM-3 DI-147
Hunting (Poor idling)	1. ECM power source circuit 2. Fuel pump control circuit	DI-144 DI-147
Hesitation/Poor acceleration (Poor driveability)	1. Fuel pump control circuit 2. A/T faulty	DI-147 DI-171
Surging (Poor driveability)	1. Fuel pump control circuit	DI-147
Soon after starting (Engine stall)	1. Fuel pump control circuit	DI-147
During A/C operation (Engine stall)	1. A/C signal circuit (Compressor Circuit) Manual A/C Auto A/C 2. Engine control module (ECM)	AC-133 DI-776 IN-31

cardiagn.com

DI4ET-02

PROBLEM SYMPTOMS TABLE

Symptom	Suspect Area	See page
Power slide door does not operate.	1. Power slide door MAIN switch 2. Power slide door unit 3. Fuel lid courtesy (LH side only) 4. Wire harness 5. Power slide door ECU	BE-78 - BE-78 - IN-31
Only auto open function does not operate.	1. Park/Neutral position switch 2. Wire harness	DI-197 -

cardiagn.com

DI6NW-02

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, etc., turn the IG switch OFF.

Symptom	Suspect Area	See page
ABS does not operate	If the symptoms still occur even after the following circuits in suspect areas are inspected and proved to be normal, replace the skid control ECU. 5. Check the DTC, reconfirming that the normal code is output. 6. IG power source circuit 7. Speed sensor circuit 8. Check the ABS & VSC actuator with a TOYOTA hand-held tester. If abnormal, check the hydraulic circuit for leakage (See page DI-355).	 DI-259 DI-308 DI-275 BR-43
ABS does not operate efficiently	If the symptoms still occur even after the following circuits in suspect areas are inspected and proved to be normal, 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 ABS & VSC actuator with a TOYOTA hand-held tester. If abnormal, check the hydraulic circuit for leakage (See page DI-355).	 DI-259 DI-275 DI-314 BR-43
ABS warning light abnormal	1. ABS warning light circuit 2. Skid control ECU	DI-334
DTC check cannot be done	If the symptoms still occur even after the following circuits in suspect areas are inspected and proved to be normal, replace the skid control ECU. 1. ABS warning light circuit 2. VSC warning light circuit 3. Tc terminal circuit	 DI-334 DI-336 DI-351
Speed sensor signal check cannot be done	1. Ts terminal circuit 2. Skid control ECU	DI-353
VSC does not operate	If the symptoms still occur even after the following circuits in suspect areas are inspected and proved to be normal, replace the skid control ECU. 1. Check the DTC, reconfirming that the normal code is output. 2. IG power source circuit 3. Hydraulic circuit for leakage 4. Speed sensor circuit	 DI-259 DI-308 DI-355 DI-275
BA does not operate	Stop light switch circuit	DI-314
SLIP indicator light abnormal	SLIP indicator light circuit	DI-342

cardiagn.com

BRAKE warning light abnormal	1. BRAKE warning light circuit 2. Skid control ECU	DI-339
TRAC OFF indicator light abnormal	If the symptoms still occur even after the following circuits in suspect areas are inspected and proved to be normal, replace the skid control ECU. 1. TRAC OFF indicator light circuit 2. TRAC OFF switch circuit	 DI-345 DI-345

cardiagn.com

DI233-01

PROBLEM SYMPTOMS TABLE

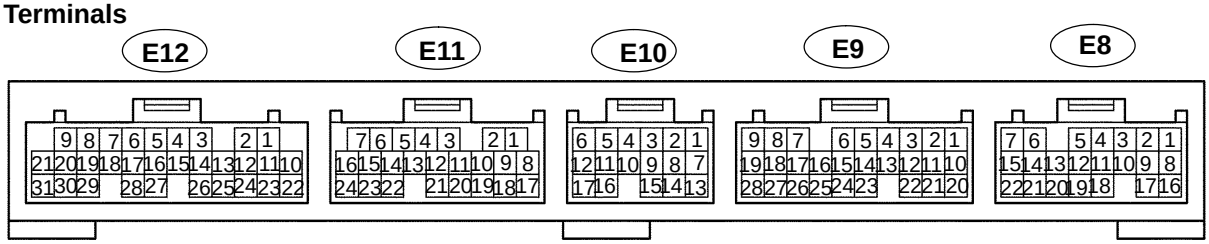
Symptom	Suspect Area	See page
• Tire pressure warning system does not operate. • Tire pressure warning light abnormal.	3. ABS actuator assembly and speed sensor 4. Tire pressure warning light circuit 5. Tire pressure warning standardization switch	DI-217 DI-213 DI-215
Tire pressure warning system cannot be initialized.	1. Tire pressure warning standardization switch 2. ABS actuator assembly	DI-215 DI-217

cardiagn.com

DI0CL-11

TERMINALS OF ECM

ECM Terminals



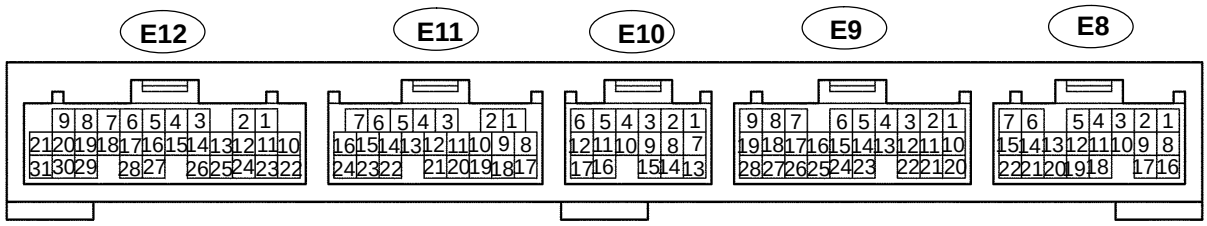
A02508

Symbols (Terminals No.)	Wiring Color	Condition	STD Voltage (V)
S1 (E12-7) - E1 (E11-17)	W-G ↔ BR	IG ON	10 - 14
		1st or 2nd gear	10 - 14
		3rd or O/D gear	Below 1
S2 (E10-1) - E1 (E11-17)	L-B ↔ BR	IG ON	Below 1
		2nd or 3rd	10 - 14
		1st or O/D gear	Below 1
SL (E10-15) - E1 (E11-17)	P-L ↔ BR	IG ON	Below 1
		Vehicle driving under lock-up position	10 - 14
$NC2^+$ (E12-24) - $NC2^-$ (E12-23)	L ↔ Y	Engine is running (Except 2nd gear)	Pulse signal is output Below 1 ↔ 4 - 5
SLN^+ (E12-20) - SLN^- (E12-19)	B-Y ↔ G-W	IG ON	10 - 14
OD1 (E9-24) - E1 (E11-17)	B-L ↔ BR	IG ON	5 - 6
L (E10-13) - E1 (E11-17)	Y ↔ BR	IG ON and Shift lever L position	10 - 14
		IG ON and Shift lever other than L position	Below 1
2 (E10-14) - E1 (E11-17)	O ↔ BR	IG ON and Shift lever 2 position	10 - 14
		IG ON and Shift lever other than 2 position	Below 1
R (E10-8) - E1 (E11-17)	R-B ↔ BR	IG ON and Shift lever R position	10 - 14
		IG ON and Shift lever other than R position	Below 1
NSW (E9-20) - E1 (E11-17)	B-W ↔ BR	IG ON and Shift lever P or N position	10 - 14
STP (E8-15) - E1 (E11-17)	G-W ↔ BR	IG ON and Brake pedal is depressed	7.5 - 14
		IG ON and Brake pedal is released	Below 1
SPD (E9-22) - E1 (E11-17)	V-Y ↔ BR	IG ON and Vehicle stationary	Below 1
SPD (E9-22) - E1 (E11-17)	V-Y ↔ BR	IG ON and one rear wheel is turned slowly	Pulse signal is out put Below 1 ↔ 5
ODMS (E10-12) - E1 (E11-17)	G-O ↔ BR	IG ON	10 - 14
		IG ON and Press continuously O/D main switch	Below 1
ODLP (E8-9) - E1 (E11-17)	G-R ↔ BR	IG ON and O/D OFF indicator light lights up	Below 1
		IG ON and O/D OFF indicator light goes off	10 - 14

cardiagn.com

DI21Q-04

TERMINALS OF ECM



A02508

Symbols (Terminal No.)	Wiring Color	Condition	STD Voltage (V)
BATT (E8-1) - E1 (E11-17)	R-B ↔ BR	Always	9 - 14
+B (E8-16) - E1 (E11-17)	B-R ↔ BR	IG switch ON	9 - 14
VC (E11-2) - E2 (E11-18)	Y ↔ W	IG switch ON	4.5 - 5.5
VTA1 (E11-23) - E2 (E11-18)	L-W ↔ W	IG switch ON, Throttle valve fully closed	0.3 - 1.0
		IG switch ON, Throttle valve fully open	2.7 - 5.2
VG (E11-10) - E2G (E11-19)	P ↔ R-B	Idling, A/C switch OFF	1.1 - 1.5
VV1+ (E12-10) - NE- (E11-24)	B ↔ W	Idling	Pulse generation (See page DI-130)
VV2+ (E12-22) - NE- (E11-24)	O ↔ W		
NE+ (E11-16) - NE- (E11-24)	B-W ↔ W	Idling	Pulse generation (See page DI-130)
OC1+ (E12-6) - OC1- (E12-5)	R-B ↔ L-B	IG switch ON	Pulse generation (See page DI-123)
OC2+ (E12-29) - OC2- (E12-18)	R ↔ B-W		
THA (E11-22) - E2 (E11-18)	L-Y ↔ W	Idling, Intake air temp. 20˚C (68˚F)	0.5 - 3.4
THW (E11-14) - E2 (E11-18)	G-B ↔ W	Idling, Engine coolant temp. 80˚C (176˚F)	0.2 - 1.0
STA (E8-7) - E1 (E11-17)	GR ↔ BR	Cranking	6.0 or more
#10 (E11-5) - E01 (E12-21)	W ↔ W-B	IG switch ON	9 - 14
#20 (E11-6) - E01 (E12-21)	B ↔ W-B		
#30 (E12-1) - E01 (E12-21)	B ↔ W-B	Idling	Pulse generation (See page DI-57)
#40 (E12-2) - E01 (E12-21)	L ↔ W-B		
#50 (E12-3) - E01 (E12-21)	R ↔ W-B		
#60 (E12-4) - E01 (E12-21)	G ↔ W-B		
IGT1 (E12-11) - E1 (E11-17)	L-R ↔ BR	Idling	Pulse generation (See page DI-115)
IGT2 (E12-12) - E1 (E11-17)	G-R ↔ BR		
IGT3 (E12-13) - E1 (E11-17)	W-R ↔ BR		
IGT4 (E12-14) - E1 (E11-17)	B-R ↔ BR		
IGT5 (E12-15) - E1 (E11-17)	L-W ↔ BR		
IGT6 (E12-16) - E1 (E11-17)	G-B ↔ BR		
IGF (E12-25) - E1 (E11-17)	B ↔ BR	IG switch ON	4.5 - 5.5
		Idling	Pulse generation (See page DI-115)
ACIS (E12-17) - E01 (E12-21)	R-Y ↔ W-B	IG switch ON	9 - 14
FC (E8-3) - E01 (E12-21)	LG-R ↔ W-B	IG switch ON	9 - 14
		Idling	0 - 3.0
RSO (E12-26) - E01 (E12-21)	R-W ↔ W-B	IG switch ON, Disconnect E12 connector from ECM	9 - 14

cardiagn.com

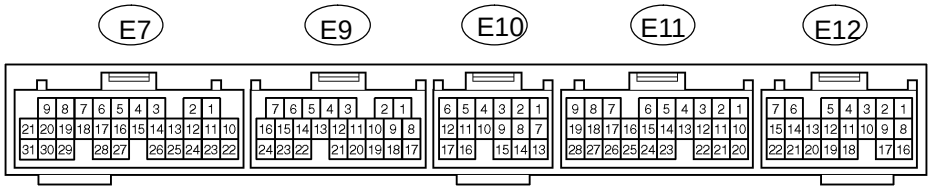
OXS (E9-8) - E1 (E11-17)	W ↔ BR	Maintain engine speed at 2,500 rpm for 3 min. after warming up	Pulse generation (See page DI-48)
HTS (E9-9) - E03 (E12-30)	L-W ↔ W-B	Idling	Below 3.0
		IG switch ON	9 - 14
KNKR (E12-27) - E1 (E11-17)	W ↔ BR	Idling	Pulse generation (See page DI-62)
KNKL (E12-28) - E1 (E11-17)	W ↔ BR		
NSW (E9-20) -E1 (E11-17)	B-W ↔ BR	IG switch ON, Other shift position in P, N	9 - 14
		IG switch ON, shift position in P, N	0 - 3.0
SPD (E9-22) - E1 (E11-17)	V-Y ↔ BR	IG switch ON, Rotate driving wheel slowly	0 - 5
TC (E8-5) - E1 (E11-17)	P-B ↔ BR	IG switch ON	9 - 14
W (E9-6) - E1 (E11-17)	B-L ↔ BR	IG switch ON	Below 3.0
EVP1 (E11-7) - E01 (E12-21)	LG ↔ W-B	IG switch ON	9 - 14
CCV (E8-10) - E01 (E12-21)	BR-R *1 BR-B *2 ↔ W-B	IG switch ON	9 - 14
PS (E11-9) - E1 (E11-17)	B-L ↔ BR	IG switch ON	9 -14
CF (E9-26) - E1 (E11-17)	G-W ↔ BR	Electric cooling fan is operating on high speed	9 - 14
		Electric cooling fan is operating on low speed or OFF	0 - 2
TACH (E9-27) - E1 (E11-17)	LG-B ↔ BR	Idling	Pulse generation
TBP (E9-3) - E01 (E12-21)	W-R ↔ W-B	IG switch ON, Disconnect vacuum hose from VSV for pressure switching valve	9 - 14
PTNK (E8-17) - E1 (E11-17)	L-R ↔ BR	IG switch ON	2.9 - 3.7
		IG switch ON, Apply vacuum 4.0 kPa (30 mmHg, 1.18 in.Hg)	0.5 or less
SIL (E8-4) - E1 (E8-17)	R ↔ BR	During transmission	Pulse generation
STP (E8-15) - E1 (E11-17)	G-W ↔ BR	IG switch ON, Brake pedal depressed	7.5 - 14
		IG switch ON, Brake pedal released	Below 1.5
AFR+ (E11-11) - E1 (E11-17)	BR ↔ BR	IG switch ON	3.0 - 3.6
AFL+ (E8-12) - E1 (E11-17)	L ↔ BR		
AFR- (E11-20) - E1 (E11-17)	B-R ↔ BR	IG switch ON	2.7 - 3.3
AFL- (E11-21) - E1 (E11-17)	B-W ↔ BR		
HAFR (E11-3) - E04 (E11-1)	R ↔ W-B	Idling	Below 3.0
HAFL (E11-4) - E05 (E11-8)	L ↔ W-B	IG switch ON	9 - 14
KSW (E9-23) - E1 (E11-17)	L-B ↔ BR	At time of inserting key	Below 1.5
		In condition without key inserted	4 - 5
RXCK (E9-19) - E1 (E11-17)	BR-R ↔ BR	At time of inserting key	Pulse generation
CODE (E9-28) - E1 (E11-17)	BR-W ↔ BR	At the time of inserting the key	Pulse generation
IGSW (E8-2) - E1 (E11-17)	B-O ↔ BR	IG switch ON	9 - 14
TXCT (E9-18) - E1 (E11-17)	BR-Y ↔ BR	At time of inserting key	Pulse generation
IMLD (E8-22) - E1 (E11-17)	R-W ↔ BR	In condition without key inserted	Pulse generation
MREL (E8-8) - E1 (E11-17)	Y-G ↔ BR	IG switch ON	9 - 14

*1 : w/o VSC
*2 : w/ VSC

cardiagn.com

DI1KJ-08

TERMINALS OF ECM



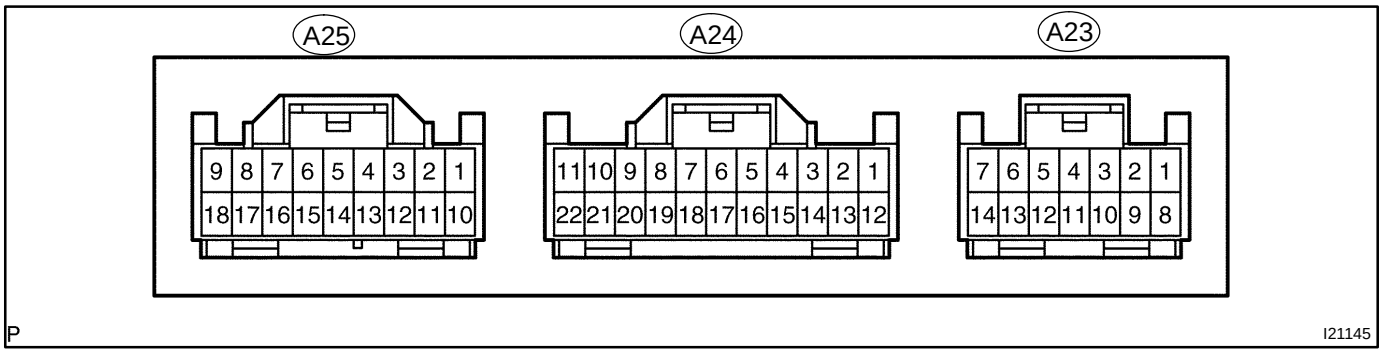
D01054

Symbols (Terminals No.)	Wiring Color	Condition	STD Voltage (V)
CODE - E1 (E9-28 ↔ E11-17)	BR-W ↔ BR	Ignition Switch ON	10 - 14
TXCT - E1 (E9-18 ↔ E11-17)	BR-Y ↔ BR	Ignition Switch ON	10 - 14
KSW - E1 (E9-23 ↔ E11-17)	L-B ↔ BR	Ignition Switch ON	10 - 14
RXCK - E1 (E9-19 ↔ E11-17)	BR-R ↔ BR	Ignition Switch ON	10 - 14

cardiagn.com

DI8AD-01

TERMINALS OF ECU



Symbols (Terminals No.)	Wiring Color	Condition	STD Voltage (V)
S5 ↔ SG (A23-1 ↔ A25-12)	R-W ↔ BR-R	IG ON.	4.5 - 5.5 V
TAM ↔ SG (A23-2 ↔ A25-12)	O ↔ BR-R	IG ON. Ambient temp.: 25 ˚C (77 ˚F)	1.8 - 2.2 V
		IG ON. Ambient temp.: 40 ˚C (104 ˚F)	0.8 - 1.3 V
TR ↔ SG (A23-3 ↔ A25-12)	O ↔ BR-R	IG ON. Cabin. temp.: 25 ˚C (77 ˚F)	1.8 - 2.2 V
		IG ON. Cabin. temp.: 40 ˚C (104 ˚F)	1.2 - 1.6 V
TE ↔ SG (A23-4 ↔ A25-12)	L-R ↔ BR-R	IG ON. Evaporator temp.: 0 ˚C (32 ˚F)	2.0 - 2.4 V
		IG ON. Evaporator temp.: 15 ˚C (59 ˚F)	1.4 - 1.8 V
TS ↔ S5 (A23-5 ↔ A23-1)	G-W ↔ R-W	IG ON. Solar sensor subject to electric light	10 V or more
		IG ON. Solar sensor is covered by a cloth	Below 1.0 V
TPD ↔ SG (A23-6 ↔ A5-12)	W ↔ BR-R	IG ON. Set temp.: Max. COOL	3.5 - 4.5V
		IG ON. Set temp.: Max. WARM	0.5 - 1.5 V
TPI ↔ SG (A23-7 ↔ A23-12)	Y ↔ BR-R	IG ON. Set rear A/C temp.: Max. COOL	10 V or more
		IG ON. Set rear A/C temp.: Max. WARM	Below 1.0 V
TINH ↔ SG (A23-10 ↔ A23-12)	G-W ↔ BR-R	IG ON. Set rear heater intake air temp.: 25 ˚C (77 ˚F)	1.5 - 1.9 V
		IG ON. Set rear heater intake air temp.: 40 ˚C (104 ˚F)	1.2 - 1.6 V
TSET ↔ SG (A23-12 ↔ A24-18)	G-O ↔ BR-R	IG ON. Set rear A/C temp.: Max. COOL	5.0 V
		IG ON. Set rear A/C temp.: Max. WARM	Below 1.0V
FACE ↔ GND (A23-14 ↔ A25-1)	R-B ↔ BR	IG ON. Air flow selector: FACE	Below 1.0 V
		IG ON. Air flow selector: Except FACE	10 - 14 V
AC1 ↔ GND (A24-1 ↔ A25-12)	B-Y ↔ BR	Start engine. Push AUTO switch. A/C magnetic clutch is engaged.	Below 1.0 V
AC1 ↔ GND (A24-1 ↔ A25-12)	B-Y ↔ BR	Start engine. Push AUTO switch. A/C magnetic clutch is not engaged.	10 - 14 V
HR ↔ GND (A24-2 ↔ A25-12)	G-R ↔ BR	IG ON. Front A/C blower motor: Operate	Below 1.0 V
		IG ON. Front A/C blower motor: Not operate	10 - 14 V
BLW ↔ GND (A24-3 ↔ A25-1)	B-Y ↔ BR	IG ON. Front A/C blower motor is operating.	Pulse generation
RRHI ↔ RG (A24-4 ↔ A24-18)	B-O ↔ R	IG ON. Rear blower switch (Rear side): HI	Below 1..0 V
		IG ON. Rear blower switch (Rear side): Except HI	10 - 14 V
RRME ↔ RG (A24-5 ↔ A24-18)	Y-R ↔ R	IG ON. Rear blower switch (Rear side): ME	Below 1..0 V
		IG ON. Rear blower switch (Rear side): Except ME	10 - 14 V
RRLO ↔ RG (A24-6 ↔ A24-18)	Y-B ↔ R	IG ON. Rear blower switch (Rear side): ME	Below 1..0 V
		IG ON. Rear blower switch (Rear side): Except ME	10 - 14 V
RBAT ↔ RG (A24-7 ↔ A24-18)	Y-B ↔ R	IG ON. Rear blower switch (Rear side): AUTO	Below 1..0 V
		IG ON. Rear blower switch (Rear side): Except AUTO	10 - 14 V

cardiagn.com

RRAT ↔ RG (A24-8 ↔ A24-18)	B-Y ↔ R	IG ON. Heater blower switch (Front side): AUTO	Below 1.0 V
		IG ON. Heater blower switch (Front side): Except AUTO	10 - 14 V
RRON ↔ RG (A24-9 ↔ A24-18)	B-Y ↔ R	IG ON. Heater blower switch (Front side): HI	Below 1.0 V
		IG ON. Heater blower switch (Front side): Except HI	10 - 14 V
B/L ↔ GND (A24-10 ↔ A25-1)	G-B ↔ BR	IG ON. Air flow selector: B/L	Below 1.0 V
		IG ON. Air flow selector: Except B/L	10 - 14 V
FOOT ↔ GND (A24-11 ↔ A25-1)	V-W ↔ BR	IG ON. Air flow selector: FOOT	Below 1.0 V
		IG ON. Air flow selector: Except FOOT	10 - 14 V
FDEF ↔ GND (A24-12 ↔ A25-1)	BR-R ↔ BR	IG ON. Air flow selector: FOOT/DEF	Below 1.0 V
		IG ON. Air flow selector: Except FOOT/DEF	10 - 14 V
DEF ↔ GND (A24-13 ↔ A25-1)	L-B ↔ BR	IG ON. Air flow selector: FOOT/DEF	Below 1.0 V
		IG ON. Air flow selector: Except FOOT/DEF	10 - 14 V
WMH ↔ GND (A24-14 ↔ A25-1)	P ↔ BR	IG ON. Set rear A/C temp.: Max WARM Rear blower switch: LO	7.2 V
		IG ON. Set rear A/C temp.: Max WARM Rear blower switch: ME	4.2 V
		IG ON. Set rear A/C temp.: Max WARM Rear blower switch: HI	1.0 V
BLWH ↔ GND (A24-15 ↔ A25-1)	Y-G ↔ BR	IG ON. Set rear A/C temp.: Max COOL Rear blower blower motor: Operate	Below 1.0 V
		IG ON. Set rear A/C temp.: Max COOL Rear blower blower motor: Not operate	10 - 14 V
BLWH ↔ GND (A24-15 ↔ A25-1)	Y-G ↔ BR	IG ON. Set rear A/C temp.: Max COOL Rear blower blower motor: Operate	Below 1.0 V
		IG ON. Set rear A/C temp.: Max COOL Rear blower blower motor: Not operate	10 - 14 V
HRH ↔ GND (A24-16 ↔ A25-1)	V ↔ BR	IG ON. Set rear A/C temp.: Max WARM Rear blower blower motor: Operate	Below 1.0 V
		IG ON. Set rear A/C temp.: Max WARM Rear blower blower motor: Not operate	10 - 14 V
GND ↔ Body ground (A25-1 ↔ Body ground)	BR ↔ Body ground	Always	1.0 Ω or less
D ↔ GND (A25-2 ↔ A25-1)	Y-G ↔ BR	IG ON. Rear window defogger switch: ON	Below 1.0 V
		IG ON. Rear window defogger switch: OFF	10 - 14 V
AIF ↔ GND (A25-4 ↔ A25-1)	GR-R ↔ BR	IG ON. Air intake selector: FRESH	Below 1.0 V
		IG ON. Air intake selector: RECIRCULATE	10 - 14 V
AIR ↔ GND (A25-5 ↔ A25-1)	LG-R ↔ BR	IG ON. Air intake selector: FRESH	10 - 14 V
		IG ON. Air intake selector: RECIRCULATE	Below 1.0 V
MC ↔ GND (A25-6 ↔ A25-1)	GR-R ↔ BR	IG ON. Set rear A/C temp.: Max. COOL	10 - 14 V
		IG ON. Set rear A/C temp.: Max. WARM	Below 1.0 V
MH ↔ GND (A25-7 ↔ A25-1)	V-G ↔ BR	IG ON. Set rear A/C temp.: Max. COOL	10 - 14 V
		IG ON. Set rear A/C temp.: Max. WARM	Below 1.0 V
MHC ↔ GND (A25-8 ↔ A25-1)	P-G ↔ BR	IG ON. Set front A/C temp.: Max. COOL	10 - 14 V
		IG ON. Set front A/C temp.: Max. WARM	Below 1.0 V
MHH ↔ GND (A25-9 ↔ A25-1)	L ↔ BR	IG ON. Set front A/C temp.: Max. COOL	Below 1.0 V
		IG ON. Set front A/C temp.: Max. WARM	10 - 14 V
IG ↔ GND (A25-10 ↔ A25-1)	R-L ↔ BR	IG ON.	10 - 14

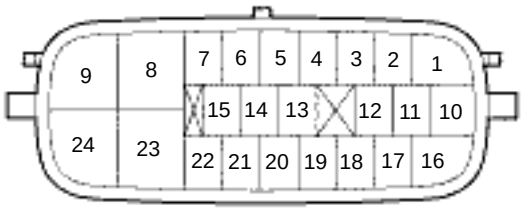
cardiagn.com

B ↔ GND (A25-11 ↔ A25-1)	G-Y ↔ BR	Always	10 - 14
TACO ↔ GND (A25-13 ↔ A25-1)	LG-B ↔ BR	Start engine	Pulse generation
SPD ↔ GND (A25-14 ↔ A25-1)	LG-B ↔ BR	IG ON. Turn front wheel slowly	Pulse generation
TW ↔ GND (A25-16 ↔ A25-1)	GR-B ↔ BR	Start engien	Pulse generation
LOCK ↔ GND (A25-15 ↔ A25-1)	W-L ↔ BR	Start engien. Push AUTO switch. A/C magnetic clutch is engaged	Pulse generation
HRC ↔ GND (A25-17↔ A25-1)	B-L ↔ BR	IG ON. Set front A/C temp.: Max. COOL Rear A/C blower switch: ON	Below 1.0 V
		IG ON. Set front A/C temp.: Max. COOL Rear A/C blower switch: ON	10 - 14 V
BLWC ↔ GND (A25-18↔ A25-1)	P-B ↔ BR	IG ON. Set front A/C temp.: Max. COOL Rear A/C blower switch: ON	Below 1.0 V
		IG ON. Set front A/C temp.: Max. COOL Rear A/C blower switch: ON	10 - 14 V
VMC ↔ GND (A25-19 ↔ A25-1)	L-Y ↔ BR	IG ON. Set rear A/C temp.: Max WARM Rear blower switch: LO	7.2 V
		IG ON. Set rear A/C temp.: Max WARM Rear blower switch: ME	4.2 V
		IG ON. Set rear A/C temp.: Max WARM Rear blower switch: HI	1.0 V
ACON ↔ GND (A25-21 ↔ A25-1)	GR ↔ BR	IG ON. Push AUTO switch. A/C magnetic clutch is engaged.	Below 1.0 V
		IG ON. Push AUTO switch. A/C magnetic clutch is not engaged.	10 - 14 V
PSW ↔ GND (A25-22 ↔ A25-1)	L-O ↔ BR	Refrigerant pressure: less than 0.19 MPa (2.0 kgf/cm^2) or more than 3.14 MPa (32 kgf/cm^2)	Below 1.0 V
		Refrigerant pressure: 0.19 MPa (2.0 kgf//cm^2) - 3.14 MPa (32 kgf/cm^2)	10 - 14 V

cardiagn.com

DI1G5-09

TERMINALS OF ECU



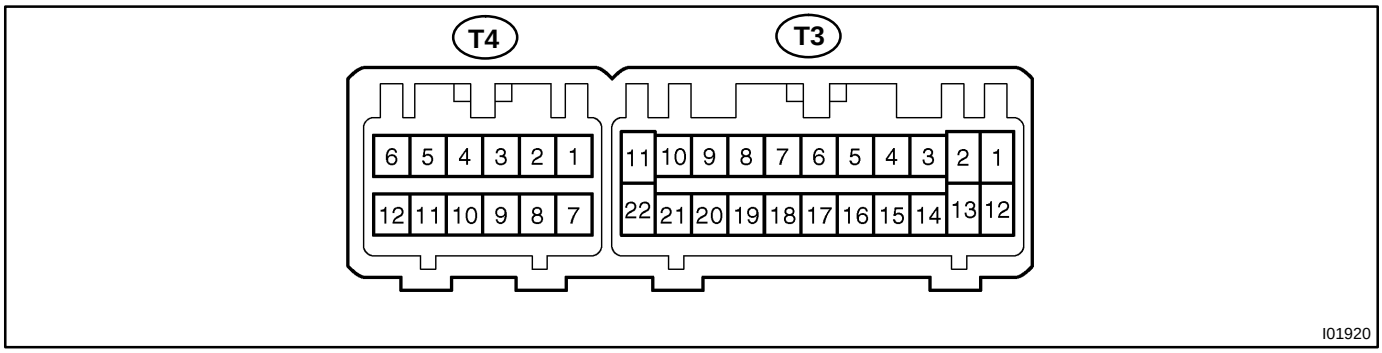
F04207

Symbols (Terminals No.)	Wiring Color	Condition	STD Voltage (V)
+BS (9) - GND (8, 23)	W-G ↔ W-B	Always	10 - 14
+BM (24) - GND (8, 23)	W-R ↔ W-B	Always	10 - 14
IG1 (15) - GND (8, 23)	B-R ↔ W-B	IG switch ON	10 - 14
WA (13) - GND (8, 23)	GR ↔ W-B	IG switch ON, ABS warning light ON	3 - 5
STP (5) - GND (8, 23)	G-W ↔ W-B	Stop light switch OFF	Below 1.0
		Stop light switch ON	10 - 14
FR + (22) - FR - (21)	BR ↔ Y	IG switch ON Slowly turn right front wheel	AC generation
FL + (20) - FL - (19)	L ↔ P	IG switch ON Slowly turn left front wheel	AC generation
RR + (18) - RR - (17)	W ↔ B	IG switch ON Slowly turn right rear wheel	AC generation
RL + (16) - RL - (10)	R ↔ G	IG switch ON Slowly turn left rear wheel	AC generation

cardiagn.com

DI21G-05

TERMINALS OF ECU



HINT:
Disconnect the connector from the theft deterrent ECU.

Symbols (Terminals No.)	Wiring Color	Condition	STD Value
CTY ↔ E (T3-1 ↔ T4-7)	R-Y ↔ W-B	Door courtesy switch "ON" (Rear door opened)	Below 1 Ω
		Door courtesy switch "OFF" (Rear door closed)	1 MΩ or higher
DSWL ↔ E (T3-2 ↔ T4-7)	G-W ↔ W-B	Back door courtesy switch "ON" (Back door opened)	Below 1 Ω
		Back door courtesy switch "OFF" (Back door closed)	1 MΩ or higher
DSWH ↔ E (T3-3 ↔ T4-7)	B ↔ W-B	Engine hood courtesy switch "ON" (Engine hood opened)	Below 1 Ω
		Engine hood courtesy switch "OFF" (Engine hood closed)	1 MΩ or higher
DSWD ↔ E (T3-4 ↔ T4-7)	LG-R ↔ W-B	Door courtesy switch "ON" (Driver's door opened)	Below 1 Ω
		Door courtesy switch "OFF" (Driver's door Closed)	1 MΩ or higher
DSWP ↔ E (T3-5 ↔ T4-7)	R-G ↔ W-B	Door courtesy switch "ON" (Passenger's door opened)	Below 1 Ω
		Door courtesy switch "OFF" (Passenger's door closed)	1 MΩ or higher
KSW ↔ E (T3-6 ↔ T4-7)	O ↔ W-B	Key unlock warning switch "ON" (Key inserted)	Below 1 Ω
		Key unlock warning switch "OFF" (Key removed)	1 MΩ or higher
L2 ↔ E (T3-8 ↔ T4-7)	L-W ↔ W-B	Door key lock and unlock switch "LOCK" (Driver's and passenger's door)	Below 1 Ω
		Door key lock and unlock switch "UNLOCK" (Driver's and passenger's door)	1 MΩ or higher
UL3 ↔ E (T3-9 ↔ T4-7)	L ↔ W-B	Door key lock and unlock switch "UNLOCK" (Driver's door)	Below 1 Ω
		Door key lock and unlock switch "LOCK" (Driver's door)	1 MΩ or higher
UL2 ↔ E (T3-10 ↔ T4-7)	L-Y ↔ W-B	Door key lock and unlock switch "UNLOCK" (Passenger's door)	Below 1 Ω
		Door key lock and unlock switch "LOCK" (Passenger's door)	1 MΩ or higher

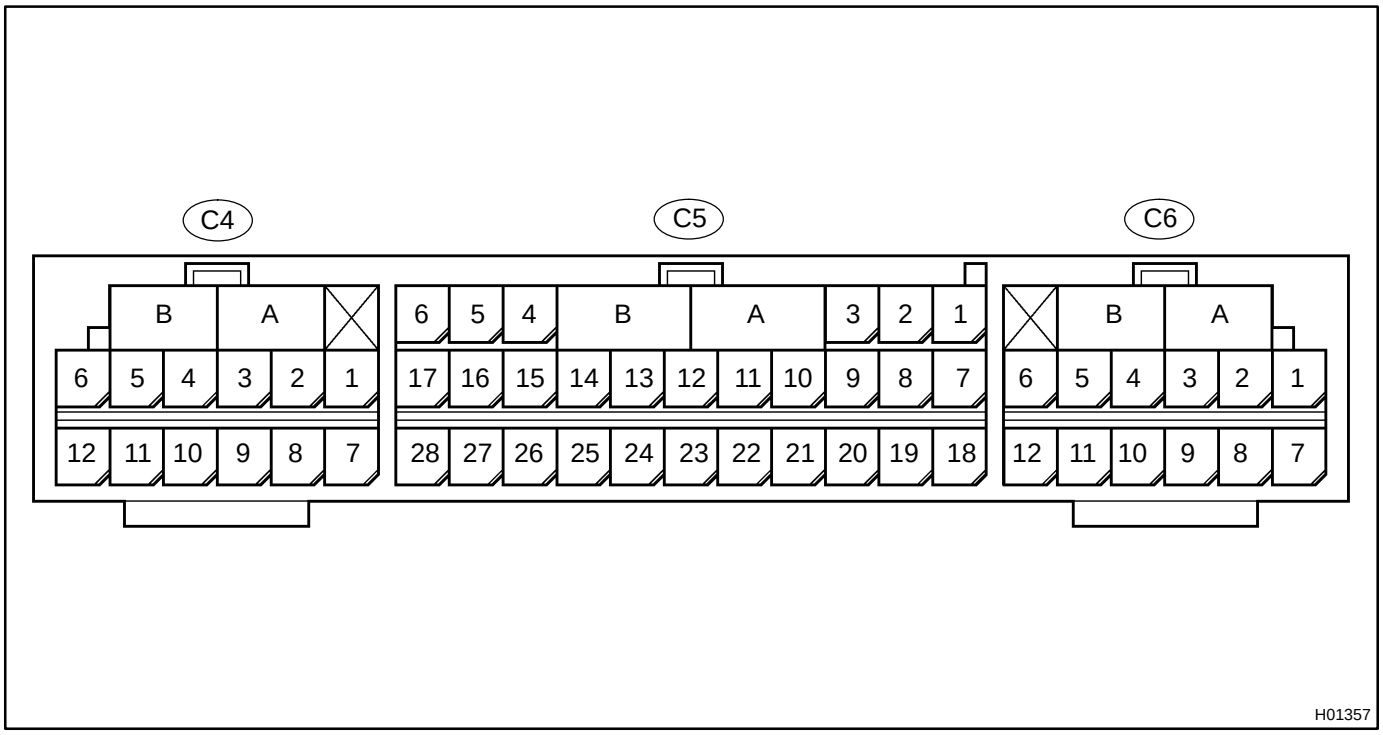
cardiagn.com

+B1 ↔ E (T3-11 ↔ T4-7)	R ↔ W-B	Always	10 - 14 V
IG ↔ E (T3-13 ↔ T4-7)	B-R ↔ W-B	Ignition switch is turned to "ON" position	10 - 14 V
LSWD ↔ E (T3-14 ↔ T4-7)	BR-R ↔ W-B	Door unlock detection switch "ON" (Driver's door)	Below 1 Ω
		Door unlock detection switch "OFF" (Driver's door)	1 MΩ or higher
LSWP ↔ E (T3-15 ↔ T4-7)	Y ↔ W-B	Door unlock detection switch "ON" (Passenger's door)	Below 1 Ω
		Door unlock detection switch "OFF" (Passenger's door)	1 MΩ or higher
LSWR ↔ E (T3-16 ↔ T4-7)	L-B ↔ W-B	Door unlock detection switch "ON" (Rear door)	Below 1 Ω
		Door unlock detection switch "OFF" (Rear door)	1 MΩ or higher
+B2 ↔ E (T4-1 ↔ T4-7)	L-W ↔ W-B	Always	10 - 14 V
IND ↔ E (T4-6 ↔ T4-7)	R-W ↔ W-B	During set preparation	3 - 5 V
E ↔ Body ground (T4-7 ↔ Body ground)	W-B ↔ Body ground	Always	10 - 14 V
SH ↔ E (T4-9 ↔ T4-7)	V-W ↔ W-B	Always	10 - 14 V
HEAD ↔ E (T4-10 ↔ T4-7)	R-B ↔ W-B	Light control switch "HEAD"	10 - 14 V
TAIL ↔ E (T4-11 ↔ T4-7)	G-R ↔ W-B	Light control switch "TAIL" or "HEAD"	10 - 14 V
HORN ↔ E (T4-12 ↔ T4-7)	G-B ↔ W-B	Horn switch "OFF"	10 - 14 V
SH - ↔ E (T4-2 ↔ T4-7)	BR-W ↔ W-B	Always	Below 1 Ω
PANI ↔ E (T3-18 ↔ T4-7)	V ↔ W-B	PANIC switch "ON" (at 300 ms only)	Below 1 Ω
		PANIC switch "OFF"	1 MΩ or higher

cardiagn.com

DI1N2-12

TERMINALS OF ECU



No.	Symbol	Terminal Name
A	-	Electrical Connector Check Mechanism
B	-	Electrical Connector Check Mechanism
C5 - 3	LA	SRS Warning Light
C5 - 5	IG2	Power Source
C5 - 6	ACC	Power Source
C5 - 9	SR+	Front Airbag Sensor (RH)
C5 - 10	P+	Squib (Passenger)
C5 - 11	P-	Squib (Passenger)
C5 - 12	SIL	Diagnosis
C5 - 13	D-	Squib (Driver)
C5 - 14	D+	Squib (Driver)
C5 - 15	SL+	Front Airbag Sensor (LH)
C5 - 19	Tc	Diagnosis
C5 - 20	SR-	Front Airbag Sensor (RH)
C5 - 23	GSW2	ECM
C5 - 26	SL-	Front Airbag Sensor (LH)
C5 - 27	E1	Ground
C5 - 28	E2	Ground
C4 - 1	PL-	Squib (Seat Belt Pretensioner, LH)
C4 - 2	PL+	Squib (Seat Belt Pretensioner, LH)
C4 - 5	SFL-	Squib (Side, LH)
C4 - 6	SFL+	Squib (Side, LH)
C4 - 7	VUPL	Side Airbag Sensor (LH)
C4 - 9	ESL	Side Airbag Sensor (LH)
C4 - 10	SSL+	Side Airbag Sensor (LH)

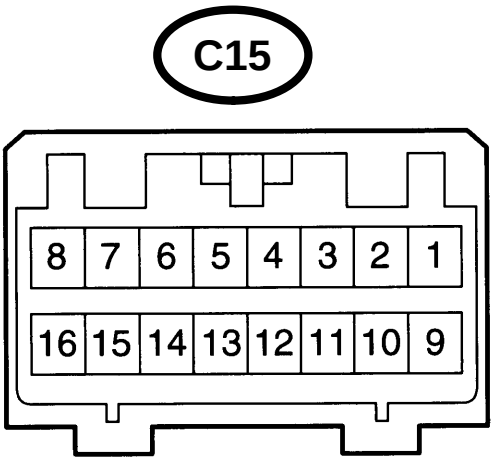
cardiagn.com

C4 - 11	LBE+	Seat Belt Buckle Switch (LH)
C4 - 12	SSL-	Side Airbag Sensor (LH)
C6 - 1	SFR+	Squib (Side, RH)
C6 - 2	SFR-	Squib (Side, RH)
C6 - 5	PR+	Squib (Pretensioner, RH)
C6 - 6	PR-	Squib (Pretensioner, RH)
C6 - 7	SSR-	Side Airbag Sensor (RH)
C6 - 9	SSR+	Side Airbag Sensor (RH)
C6 - 10	ESR	Side Airbag Sensor (RH)
C6 - 12	VUPR	Side Airbag Sensor (RH)
C6 - 8	RBE+	Seat Belt Buckle Switch (RH)

cardiagn.com

DI21A-03

TERMINALS OF ECU



I00293

Symbols (Terminals No.)	Wiring Color	Condition	STD Voltage (V)
STP ↔ GND (C15-2 ↔ C15-16)	G-W ↔ W-B	Depress brake pedal	10 - 16 V
		Release brake pedal	Below 1 V
D ↔ GND (C15-3 ↔ C15-16)	W-R (*1) ↔ W-B B-R (*2)	Shift to except D position	Below 1 V
		Shift to D position	10 - 16 V
PI ↔ GND (C15-4 ↔ C15-16)	G-Y ↔ W-B	Ignition switch ON Cruise control main switch ON	Below 1.2 V
		Ignition switch ON Cruise control main switch OFF	10 - 16 V
TC ↔ GND (C15-5 ↔ C15-16)	P-B ↔ W-B	Ignition switch ON	10 - 16 V
		Ignition switch ON Connect terminals TC and E1 of diagnostic check connector	Below 1 V
ECT ↔ GND (C15-6 ↔ C15-16)	L-B ↔ W-B	During driving Gear position 3rd	10 - 16 V
		During driving Gear position O/D	Below 1 V
MC ↔ GND (C15-7 ↔ C15-16)	R-Y ↔ W-B	During cruise control driving COAST switch hold ON	9 - 15 V
		During cruise control driving ACC switch hold ON	Below 1 V
L ↔ GND (C15-8 ↔ C15-16)	G-B ↔ W-B	During cruise control driving	9 - 15 V
		Except during cruise control driving	Below 1 V
B ↔ GND (C15-9 ↔ C15-16)	B-O ↔ W-B	Ignition switch ON	10 - 16 V
CCS ↔ GND (C15-10 ↔ C15-16)	W ↔ W-B	Ignition switch ON	10 - 16 V
		Ignition switch ON CANCEL switch hold ON	4.2 - 8.8 V
		Ignition switch ON SET/COAST switch hold ON	2.5 - 6.3 V
		Ignition switch ON RES/ACC switch hold ON	0.8 - 3.7 V

cardiagn.com

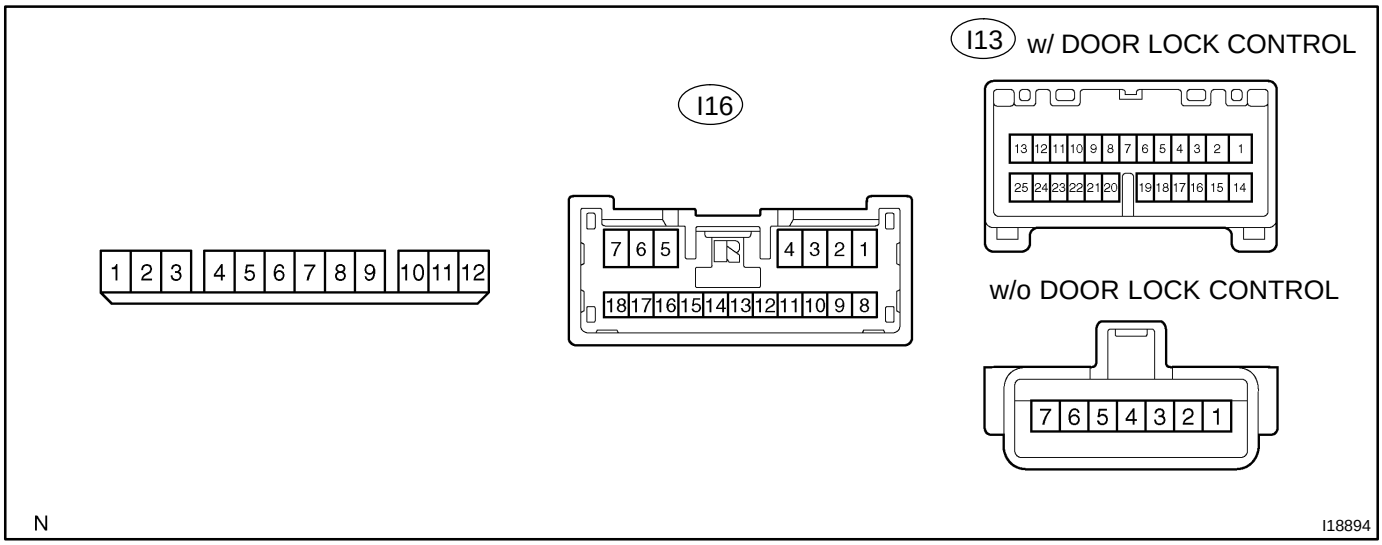
SPD ↔ GND (C15-12 ↔ C15-16)	V-Y ↔ W-B	Engine start Stoppage of a vehicle.	Below 1.5 V or 4.7 - 16 V
		During driving (Pulse generated).	3 - 7 V
IDL ↔ GND (C15-13 ↔ C15-16)	L ↔ W-B	Ignition switch ON Throttle valve fully opened.	10 - 16 V
		Ignition switch ON Throttle valve fully closed.	Below 1.5 V
OD ↔ GND (C15-14 ↔ C15-16)	B-L ↔ W-B	During cruise control driving OD switch ON.	10 - 16 V
		During cruise control driving OD switch OFF (3rd driving)	Below 1 V
MO ↔ GND (C15-15 ↔ C15-16)	R-G ↔ W-B	During cruise control driving ACC switch hold ON	9 - 15 V
		During cruise control driving COAST switch hold ON	Below 1 V
GND ↔ Body Ground (C15-16 ↔ Body Ground)	W-B ↔ Body Ground	Constant	Below 1 V

(*1) : w/ VSC
(*2) : w/o VSC

cardiagn.com

DI6LI-03

TERMINALS OF ECU



w/ DOOR LOCK CONTROL

Terminal No. (Symbols)	Wring Color	Condition	STD Voltage (V)
1 ↔ I16-7 (B ↔ GND)	- ↔ W-B	Constant	10 - 14 V
2 ↔ I16-7 (LP ↔ GND)	- ↔ W-B	Each door are opened	Below 1 V
		All doors closed	10 - 14 V
4 ↔ I16-7 (PCTY ↔ GND)	- ↔ W-B	Passenger door are opened	Below 1 V
		Passenger doors closed	-
5 ↔ I16-7 (KSW ↔ GND)	- ↔ W-B	Key is inserted	Below 1 V
		Key is not inserted	10 - 14 V
6 ↔ I16-7 (DCTY ↔ GND)	- ↔ W-B	Driver door closed	10 - 14 V
		Driver door opened	Below 1 V
7 ↔ I16-7 (IG ↔ GND)	- ↔ W-B	Ignition switch OFF or ACC	Below 1 V
		Ignition switch ON	10 - 14 V
8 ↔ I16-7 (BKL ↔ GND)	- ↔ W-B	Driver seat belt unfastened	Below 1 V
9 ↔ I16-7 (WRND ↔ GND)	- ↔ W-B	Driver seat belt buckle switch ON (belt Fastened)	Below 1 V
		Driver seat belt buckle switch OFF (belt Fastened)	Approx. 5.0V
10 ↔ Body Ground (E ↔ Body Ground)	- ↔ W-B	Constant	Continuity
11 ↔ I16-7 (ACC ↔ GND)	- ↔ W-B	Ignition switch OFF	Below 1 V
		Ignition switch ON or ACC	10 - 14 V
I13-1 ↔ I13-14 (ACT+ ↔ ACT-)	L-R ↔ L-B	Door lock operating	10 - 14 V
I13-2 ↔ I13-14 (ACTD ↔ ACT-)	Y-B ↔ L-B	Driver door lock operating	10 - 14 V
I13-3 ↔ I16-7 (L1 ↔ GND)	LG ↔ W-B	Door lock manual switch OFF or UNLOCK	Below 1 V
		Door lock manual switch LOCK	Approx.5.0V
I13-4 ↔ I16-7 (UL1 ↔ GND)	G ↔ W-B	Door lock manual switch UNLOCK	Below 1 V
		Door lock manual switch LOCK or OFF	10 - 14 V
I13-5 ↔ I16-7 (L2 ↔ GND)	L-W ↔ W-B	Door key lock and unlock switch LOCK	Below 1 V
		Door key lock unlock switch OFF or UNLOCK	10 - 14 V

cardiagn.com

I13-6 ↔ I16-7 (UL3 ↔ GND)	B ↔ W-B	Driver door key lock and unlock switch UNLOCK	Below 1 V
		Driver door key lock and unlock switch OFF or LOCK	10 - 14 V
I13-7 ↔ I16-7 (UL2 ↔ GND)	L-Y ↔ W-B	Except power slide door key lock and unlock switch UN-LOCK	Below 1 V
		Except power slide door key lock and unlock switch OFF or LOCK	10 - 14 V
I13-8 ↔ I16-7 (AUTO ↔ GND)	V ↔ W-B	Light control switch except AUTO	10 - 14 V
		Light control switch AUTO	Below 1 V
I13-9 ↔ I16-7 (TRLY ↔ GND)	G-R ↔ W-B	Light control switch TAIL or HEAD (*1)	Below 1 V
		Light control switch OFF (*1)	10 - 14 V
I13-10 ↔ I16-7 (T ↔ GND)	G-O ↔ W-B	Light control switch TAIL or HEAD	Below 1 V
		Light control switch OFF	10 - 14 V
I13-11 ↔ I16-7 (HRLY ↔ GND)	O ↔ W-B	Light control switch HEAD (*1)	Below 1 V
		Light control switch OFF or TAIL (*1)	10 - 14 V
I13-12 ↔ I16-7 (H ↔ GND)	R-G ↔ W-B	Light control switch HEAD	Below 1 V
		Light control switch except HEAD	10 - 14 V
I13-13 ↔ I16-7 (DOUT ↔ GND)	GR ↔ W-B	Constant	10 - 14 V
I13-15 ↔ I16-7 (B ↔ GND)	L-W ↔ W-B	Constant	10 - 14 V
I13-16 ↔ I16-7 (LSWD ↔ GND)	BR-R ↔ W-B	Driver door is unlocked	Below 1 V
		Driver door is locked	10 - 14 V
I13-17 ↔ I16-7 (WRN ↔ GND)	R-W ↔ W-B	Any door opened	Below 1 V
		All doors closed	10 - 14 V
I13-21 ↔ I16-7 (CSE ↔ GND)	LG ↔ W-B	Automatic light control sensor communication circuit	Below 1 V
I13-22 ↔ I16-7 (CSO ↔ GND)	G-B ↔ W-B	Automatic light control sensor communication circuit	-
I13-23 ↔ I16-7 (CSB ↔ GND)	R ↔ W-B	Automatic light control sensor communication circuit	10 - 14 V
I13-24 ↔ I16-7 (P/W ↔ GND)	B-R ↔ W-B	Key - OFF power window operation	10 - 14 V
I16-1 ↔ I16-7 (PANI ↔ GND)	V ↔ W-B	Panic signal output	-
I16-2 ↔ I16-7 (BCTY ↔ GND)	G-W ↔ W-B	Back door opened	Below 1 V
		Back door closed	-
I16-4 ↔ I16-7 (BZR ↔ GND)	G-O ↔ W-B	Buzzer sound	10 - 14 V
		Buzzer does not sound	Below 1 V
I16-5 ↔ Body Ground (LSDS ↔ Body Ground)	W-B ↔ Body Ground	Constant	Continuity
I16-6 ↔ I16-7 (LSLD ↔ GND)	L-B ↔ W-B	Slide door LH ECU communication circuit	-
I16-8 ↔ I16-7 (SCTY ↔ GND)	R-Y ↔ W-B	Any slide door opened	10 - 14 V
		Both slide door closed	Below 1 V
I16-9 ↔ I16-7 (PBKL ↔ GND)	P ↔ W-B	Passenger seat belt buckle switch ON (belt unfastened)	Below 1 V
		Passenger seat belt buckle switch OFF (belt fastened)	Approx.5.0V
I16-10 ↔ I16-7 (LSWP ↔ GND)	Y ↔ W-B	Passenger door is locked	Below 1 V
		Passenger door is unlocked	Approx. 5.7 V

cardiagn.com

I16-14 ↔ I16-7 (RDA ↔ GND)	G-Y ↔ W-B	Wireless door lock control receiver communication circuit	-
I16-15 ↔ I16-7 (PRG ↔ GND)	G-R ↔ W-B	Wireless door lock control receiver communication circuit	-
I16-16 ↔ I16-7 (WRNP ↔ GND)	Y-G ↔ W-B	Ignition switch position ACC and front passenger seat belt warning light ON	Below 1 V
		Ignition switch position ACC and front passenger seat belt warning light OFF	10 - 14 V
I16-17 ↔ I16-7 (PHRN ↔ GND)	G-B ↔ W-B	Horn switch position is OFF (*2)	10 - 14 V
		Horn switch position is ON (*2)	Below 1 V
I16-18 ↔ I16-7 (SLD ↔ GND)	V-W ↔ W-B	Slide door RH ECU communication circuit	-

(*1): The terminal voltage also changes due to the effects of the operations of the theft deterrent ECU and the DRL Relay.
(*2): The signal is also output when the panic switch is pressed.

cardiagn.com

w/o DOOR LOCK CONTROL

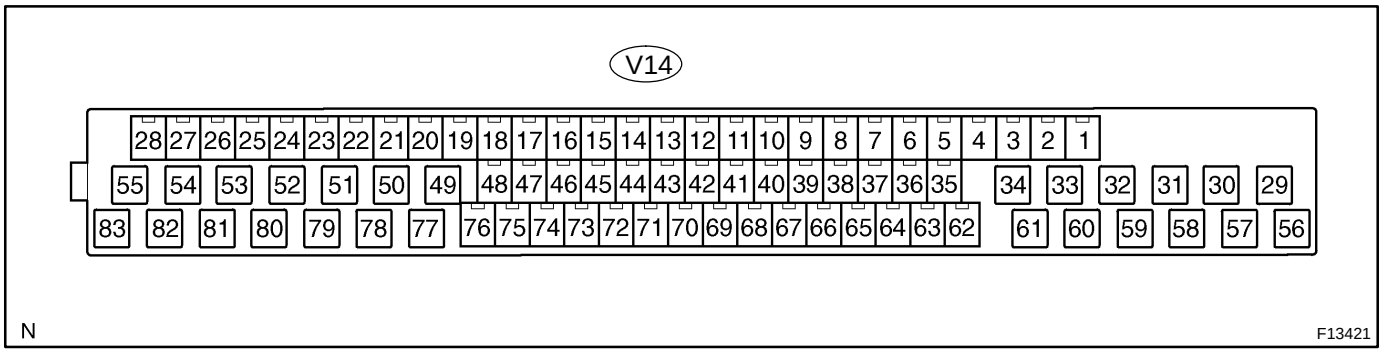
Terminal No. (Symbols)	Wring Color	Condition	STD Voltage (V)
1 ↔ 10 (B ↔ E)	- ↔ W-B	Constant	10 - 14 V
2 ↔ 10 (LP ↔ E)	- ↔ W-B	Each door are opened	Below 1 V
		All doors closed	10 - 14 V
4 ↔ 10 (PCTY ↔ E)	- ↔ W-B	Passenger door are opened	Below 1 V
		Passenger doors closed	-
5 ↔ 10 (KSW ↔ E)	- ↔ W-B	Key is inserted	Below 1 V
		Key is not inserted	10 - 14 V
6 ↔ 10 (DCTY ↔ E)	- ↔ W-B	Driver door closed	10 - 14 V
		Driver door opened	Below 1 V
7 ↔ 10 (IG ↔ E)	- ↔ W-B	Ignition switch OFF or ACC	Below 1 V
		Ignition switch ON	10 - 14 V
8 ↔ 10 (BKL ↔ E)	- ↔ W-B	Driver seat belt unfastened	Below 1 V
9 ↔ 10 (WRN ↔ E)	- ↔ W-B	Driver seat belt buckle switch ON (belt Fastened)	Below 1 V
		Driver seat belt buckle switch OFF (belt Fastened)	Approx. 5.0V
I13-1 ↔ 10 (SCTY ↔ E)	R-Y ↔ W-B	RH slide door opened	Below 1 V
		RH slide door closed	-
I13-2 ↔ 10 (WRNP ↔ E)	Y-G ↔ W-B	Ignition switch position ACC and front passenger seat belt warning light ON	10 - 14V
I13-3 ↔ 10 (PBKL ↔ E)	P-B ↔ W-B	Passenger seat belt buckle switch ON (belt fastened)	Below 1 V
		Passenger seat belt buckle switch OFF (belt unfastened)	10 - 14V
I13-4 ↔ 10 (T ↔ E)	G-O ↔ W-B	Light control switch TAIL or HEAD	Below 1 V
		Light control switch OFF	10 - 14V
I13-5 ↔ 10 (TRLY ↔ E)	G-R ↔ W-B	Light control switch TAIL or HEAD	Below 1 V
		Light control switch OFF	10 - 14V
I13-6 ↔ 10 (HRLY ↔ E)	O ↔ W-B	Light control switch HEAD	Below 1 V
		Light control switch OFF or TAIL	10 - 14V
I13-7 ↔ 10 (H ↔ E)	R-G ↔ W-B	Light control switch HEAD	Below 1 V
		Light control switch OFF or TAIL	Approx.5.7V

cardiagn.com

DI6NV-02

TERMINALS OF ECU

Skid Control ECU:



Symbols (Terminals No.)	Wiring Color	Condition	STD Voltage (V)
SS1 (V14 - 1) - GND (V14 - 83, 29)	V ↔ BR	IG switch ON	Pulse generation
FSS (V14 - 2) - GND (V14 - 83, 29)	Shielded ↔ BR	IG switch OFF	Continuity
SS2 (V14 - 3) - GND (V14 - 83, 29)	LG ↔ BR	IG switch ON	Pulse generation
VCM (V14 - 7) - GND (V14 - 83, 29)	R-W ↔ BR	IG switch ON	4.5 - 5.5
PMC (V14 - 8) - GND (V14 - 83, 29)	R-L ↔ BR	IG switch ON, brake pedal released	0.3 - 0.8
E_2 (V14 - 9) - GND (V14 - 83, 29)	BR-Y ↔ BR	IG switch OFF	Continuity
SP1 (V14 - 10) - GND (V14 - 83, 29)	L-O ↔ BR	Vehicle driveing at about 20 km/h (12 mph)	Pulse generation
WT (V14 - 11) - GND (V14 - 83, 29)	Y-R ↔ BR	IG switch ON, TRAC OFF indicator light ON	Below 2.0
		IG switch ON, TRAC OFF indicator light OFF	10 - 14
VSCW (V14 - 12) - GND (V14 - 83, 29)	GR-R ↔ BR	IG switch ON, VSC warning light ON	Below 2.0
		IG switch ON, VSC warning light OFF	10 - 14
PKB (V14 - 16) - GND (V14 - 83, 29)	Y-G ↔ BR	IG switch ON, parking brake switch ON	Below 2.0
		IG switch ON, parking brake switch OFF	10 - 14
YD (V14 - 17) - GND (V14 - 83, 29)	B ↔ BR	IG switch ON, VSC warning light OFF	4.5 - 5.5
GYAW (V14 - 18) - GND (V14 - 83, 29)	Y ↔ BR	IG switch OFF	Continuity
YAW (V14 - 19) - GND (V14 - 83, 29)	L ↔ BR	IG switch ON, vehicle stationaly condition	2 - 3
WA (V14 - 23) - GND (V14 - 83, 29)	R-L ↔ BR	IG switch ON, ABS warning light ON	10 - 14
		IG switch ON, ABS warning light OFF	Below 2.0
Tc (V14 - 26) - GND (V14 - 83, 29)	P-B ↔ BR	IG switch ON	10 - 14
Bz (V14 - 28) - GND (V14 - 83, 29)	R-G ↔ BR	IG switch ON, VSC buzzer sounds	Below 1.0 ↔ 10 - 14
		IG switch ON, VSC buzzer does not sound	10 - 14
IND (V14 - 31) - GND (V14 - 83, 29)	L-B ↔ BR	IG switch ON, SLIP indicator light ON	Below 2.0
		IG switch ON, SLIP indicator light OFF	10 - 14

cardiagn.com

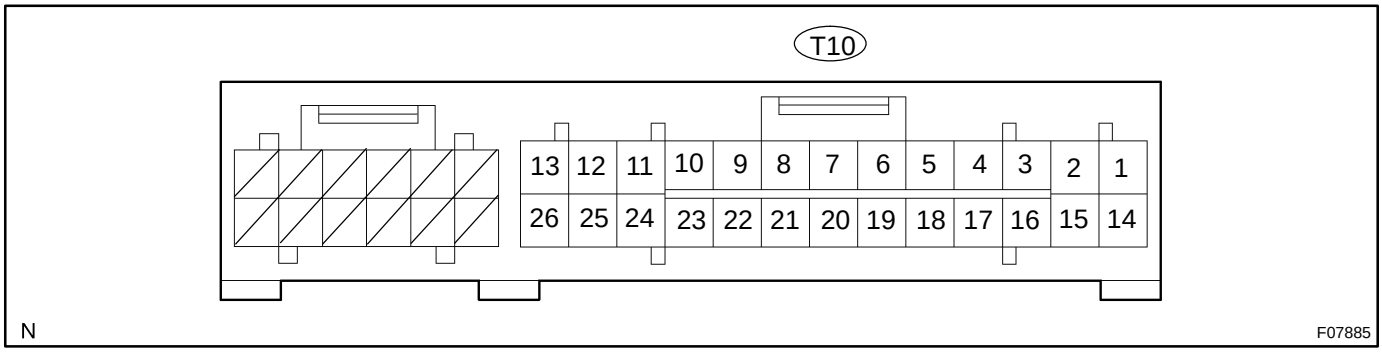
EBDW (V14 - 32) - GND (V14 - 83, 29)	R-W ↔ BR	IG switch ON, BRAKE warning light OFF	Below 1.5
		IG switch ON, BRAKE warning light ON	10 - 14
YIGA (V14 - 34) - YGND (V14 - 20)	R ↔ W	IG switch ON	10 - 14
LBL (V14 - 40) - GND (V14 - 83, 29)	GR-G ↔ BR	IG switch ON, fluid level switch ON	Below 1.0
Ts (V14 - 42) - GND (V14 - 83, 29)	R-Y ↔ BR	IG switch ON	10 - 14
CSW (V14 - 44) - GND (V14 - 83, 29)	GR ↔ BR	IG switch ON, TRAC OFF switch ON	Below 1.5
		IG switch ON, TRAC OFF switch OFF	8 - 14
D/G (V14 - 46) - GND (V14 - 83, 29)	R ↔ BR	IG switch ON	10 - 14
STP (V14 - 48) - GND (V14 - 83, 29)	G-W ↔ BR	Stop light switch ON (Brake pedal pushed)	8 - 14
		Stop light switch OFF (Brake pedal released)	Below 1.5
SMC1 (V14 - 49) - GND (V14 - 83, 29)	LG ↔ BR	IG switch ON, ABS warning light OFF	10 - 14
SMC2 (V14 - 50) - GND (V14 - 83, 29)	V-W ↔ BR	IG switch ON, ABS warning light OFF	10 - 14
BATT (V14 - 51) - GND (V14 - 83, 29)	W-G ↔ BR	IG switch OFF	10 - 14
SRC2 (V14 - 52) - GND (V14 - 83, 29)	L-Y ↔ BR	IG switch ON, ABS warning light OFF	10 - 14
SRLH (V14 - 53) - GND (V14 - 83, 29)	Y-B ↔ BR	IG switch ON, ABS warning light OFF	10 - 14
SRC1 (V14 - 54) - GND (V14 - 83, 29)	LG-B ↔ BR	IG switch ON, ABS warning light OFF	10 - 14
SFRR (V14 - 55) - GND (V14 - 83, 29)	W-G ↔ BR	IG switch ON, ABS warning light OFF	10 - 14
IG1 (V14 - 56) - GND (V14 - 83, 29)	B-R ↔ BR	IG switch ON	10 - 14
R+ (V14 - 57) - SR (V14 - 36)	GR-R ↔ Y	IG switch ON, ABS warning light OFF	10 - 14
R+ (V14 - 57) - MR (V14 - 62)	GR-R ↔ GR-L	IG switch ON	Below 1.0
SFLR (V14 - 58) - GND (V14 - 83, 29)	G-O ↔ BR	IG switch ON, ABS warning light OFF	10 - 14
SRRR (V14 - 59) - GND (V14 - 83, 29)	Y-G ↔ BR	IG switch ON, ABS warning light OFF	10 - 14
SFLH (V14 - 60) - GND (V14 - 83, 29)	W-R ↔ BR	IG switch ON, ABS warning light OFF	10 - 14
SRRH (V14 - 61) - GND (V14 - 83, 29)	GR-R ↔ BR	IG switch ON, ABS warning light OFF	10 - 14
FL+ (V14 - 64) - FL- (V14 - 65)	L ↔ P	IG switch ON, slowly turn left front wheel	AC generation
RR+ (V14 - 66) - RR- (V14 - 67)	W ↔ B	IG switch ON, slowly turn right rear wheel	AC generation
RL+ (V14 - 68) - RL- (V14 - 69)	R ↔ G	IG switch ON, slowly turn left rear wheel	AC generation
FR+ (V14 - 72) - FR- (V14 - 71)	BR ↔ Y	IG switch ON, slowly turn right front wheel	AC generation
GL1 (V14 - 73) - GND (V14 - 83, 29)	G ↔ BR	IG switch ON	0.5 - 4.5

cardiagn.com

SRLR (V14 - 80) - GND (V14 - 83, 29)	B-O ↔ BR	IG switch ON, ABS warning light OFF	10 - 14
SFRH (V14 - 81) - GND (V14 - 83, 29)	B-W ↔ BR	IG switch ON, ABS warning light OFF	10 - 14
MT (V14 - 82) - GND (V14 - 83, 29)	L-W ↔ BR	IG switch ON, ABS warning light OFF	Below 1.5

cardiagn.com

Translate ECU:

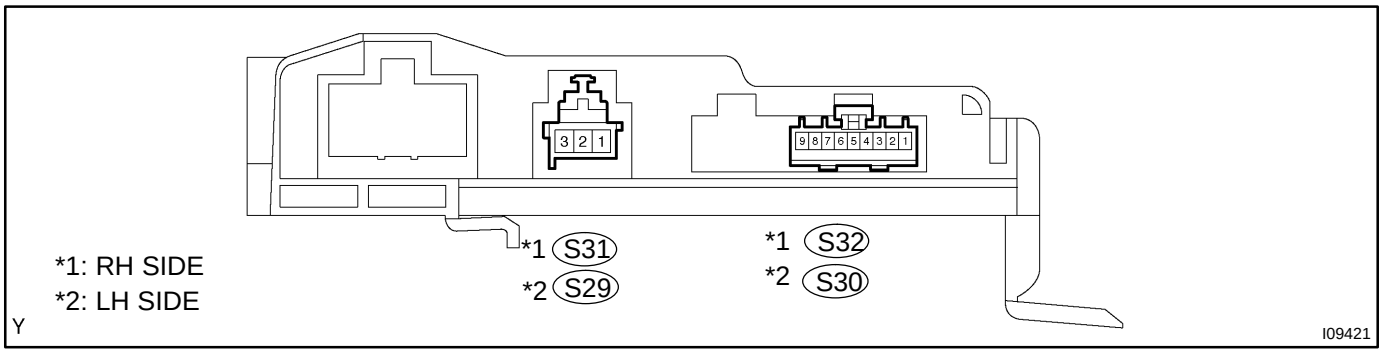


Symbols (Terminals No.)	Wiring Color	Condition	STD Voltage (V)
IG1(T10 - 1) - GND (T10 - 14)	B-R ↔ BR	IG switch ON	10 - 14
PKB2 (T10 - 2) - GND (T10 - 14)	Y-R ↔ BR	IG switch ON, paking brake switch ON	Below 2.0
		IG switch ON, paking brake switch OFF	10 - 14
VSC+ (T10 - 4) - VSC- (T10 - 17)	V ↔ LG	Engine idling	Pulse generation
SS1 (T10 - 5) - SS2 (T10 - 18)	BR ↔ Y	Engine idling	Pulse generation
RSS (T10 - 6) - GND (T10 - 14)	Shielded ↔ BR	IG switch OFF	Continuity
P (T10 - 10) - GND (T10 - 14)	G-W ↔ BR	IG switch ON, shift lever is in P range	8 - 14
		IG switch ON, shift lever is in other than P range	Below 1.5
LVL2 (T10 - 11) - GND (T10 - 14)	R-W ↔ BR	IG switch ON, fluid level switch ON	Below 1.5
		IG switch ON, fluid level switch OFF	4 - 8
D (T10 - 12) - GND (T10 - 14)	B-R ↔ BR	IG switch ON, shift lever is in D range	8 - 14
		IG switch ON, shift lever is in other than D range	Below 1.5
NEO (T10 - 13) - GND (T10 - 14)	Y-B ↔ BR	Engine idling	Pulse generation
PKB (T10 - 15) - GND (T10 - 14)	Y-G ↔ BR	IG switch OFF, parking brake switch ON	Below 2.0
		IG switch OFF, parking brake switch OFF	10 - 14
BRL (T10 - 16) - GND (T10 - 14)	R ↔ BR	IG switch ON, BRAKE warning light ON	Below 2.0
		IG switch ON, BRAKE warning light OFF	10 - 14
TRC+ (T10 - 20) - TRC- (T10 - 7)	O ↔ L-W	Engine idling	Pulse generation
Tc (T10 - 21) - GND (T10 - 14)	P-B ↔ BR	IG switch ON	10 - 14
ENG+ (T10 - 22) - ENG- (T10 - 9)	G ↔ W	Engine idling	Pulse generation
Ts (T10 - 24) - GND (T10 - 14)	R-Y ↔ BR	IG switch ON	10 - 14
LBL (T10 - 25) - GND (T10 - 14)	GR-G ↔ BR	IG switch ON, fluid level switch ON	Below 1.0
		IG switch ON, fluid level switch OFF	8 - 14
CCS (T10 - 26) - GND (T10 - 14)	W-R ↔ BR	IG switch ON, shift lever is in D range	5 - 14

cardiagn.com

DI4ES-03

TERMINALS OF ECU



RH SIDE

Symbols (Terminals No.)	Wiring Color	Condition	STD Voltage (V)
GND ↔ Body Ground (S31 - 1 ↔ Body Ground)	W - B	Constant	Below 1.0
B ↔ GND (S31 - 3 ↔ S31 - 1)	L - W ↔ W - B	Constant	10 - 14
RACT ↔ GND (S31 - 2 ↔ S31 - 1)	G - B ↔ W - B	Power slide door control switch OFF	Below 1.0
		Power slide door control switch ON	10 - 14
IND ↔ GND (S32 - 1 ↔ S31 - 1)	L - W ↔ W - B	Ignition switch ON, PWR DOOR indicator light OFF	Below 2.0
		Ignition switch ON, PWR DOOR indicator light ON	10 - 14
IG ↔ GND (S32 - 2 ↔ S31 - 1)	R - L ↔ W - B	Ignition switch OFF or ACC	0
		Ignition switch ON	10 - 14
P ↔ GND (S32 - 3 ↔ S31 - 1)	G - W ↔ W - B	Ignition switch ACC or ON and shift lever P position	10 - 14
		Ignition switch ACC or ON and shift lever except P position	Below 1.0
CSW ↔ GND (S32 - 5 ↔ S31 - 1)	G - Y ↔ W - B	Power slide door control switch ON	10 - 14
		Power slide door control switch OFF	Below 2.0
DSW ↔ GND (S32 - 6 ↔ S31 - 1)	G ↔ W - B	Latch switch ON (*1)	Below 2.0
		Constant	10 - 14
MSW ↔ GND (S32 - 8 ↔ S31 - 1)	BR - Y ↔ W-B	Power slide door MAIN switch OFF	Below 2.0
		Power slide door MAIN switch ON	10 - 14
ECUB ↔ GND (S32 - 9 ↔ S31 - 1)	W - R ↔ W - B	Constant	10 - 14
RKE ↔ GND (S32 - 7 ↔ S31 - 1)	L - B ↔ W-B	Power slide door contorol switch ON	10 - 14
		Power slide doorcontorol switch OFF	Below 2.0
SPD↔ GND (S32 - 4 ↔ S31 - 1)	V - Y ↔ W - B	IG ON and Vehicle stationary	Below 1.5
		IG ON and ONE front wheel is turned slowly	Pulse signal is output Below 1.5 ↔ 4.5

LH SIDE

Symbols (Terminals No.)	Wiring Color	Condition	STD Voltage (V)
GND ↔ Body Ground (S29 - 1 ↔ Body Ground)	W - B	Constant	Below 1.0
B ↔ GND (S29 - 3 ↔ S29 - 1)	L - W ↔ W - B	Constant	10 - 14
RACT ↔ GND (S29 - 2 ↔ S29 - 1)	G - B ↔ W - B	Power slide door control switch OFF	Below 1.0
		Power slide door control switch ON	10 - 14

cardiagn.com

IND ↔ GND (S30 - 1 ↔ S29 - 1)	V - R ↔ W - B	Ignition switch ON, PWR DOOR indicator light OFF	Below 2.0
		Ignition switch ON, PWR DOOR indicator light ON	10 - 14
IG ↔ GND (S30 - 2 ↔ S29 - 1)	GR ↔ W - B	Ignition switch OFF or ACC	0
		Ignition switch ON	10 - 14
P ↔ GND (S30 - 3 ↔ S29 - 1)	G - W ↔ W - B	Ignition switch ACC or ON and shift lever P position	10 - 14
		Ignition switch ACC or ON and shift lever except P position	Below 1.0
CSW ↔ GND (S30 - 5 ↔ S29 - 1)	G - B ↔ W - B	Power slide door control switch ON	10 - 14
		Power slide door control switch OFF	Below 2.0
DSW ↔ GND (S30 - 6 ↔ S29 - 1)	G ↔ W - B	Latch switch ON (*1)	Below 2.0
		Constant	10 - 14
MSW ↔ GND (S30 - 8 ↔ S29 - 1)	BR - B ↔ W-B	Power slide door MAIN switch OFF and fuellid coutesy switch OFF	Below 2.0
		Power slide door MAIN switch ON and fuellid coutesy switch ON	10 - 14
ECUB ↔ GND (S30 - 9 ↔ S29 - 1)	W - R ↔ W - B	Constant	10 - 14
RKE ↔ GND (S30 - 7 ↔ S29 - 1)	L - B ↔ W-B	Power slide door contorol switch ON	10 - 14
		Power slide doorcontorol switch OFF	Below 2.0
SPD ↔ GND (S30 - 4 ↔ S29 - 1)	V - Y ↔ W - B	IG ON and Vehicle stationary	Below 1.5
		IG ON and ONE front wheel is turned slowly	Pulse signal is output Below 1.5 ↔ 4.5

(*1): Immediately after fully closed.
Immediately after half latch.

cardiagn.com