DIAGNOSTICS

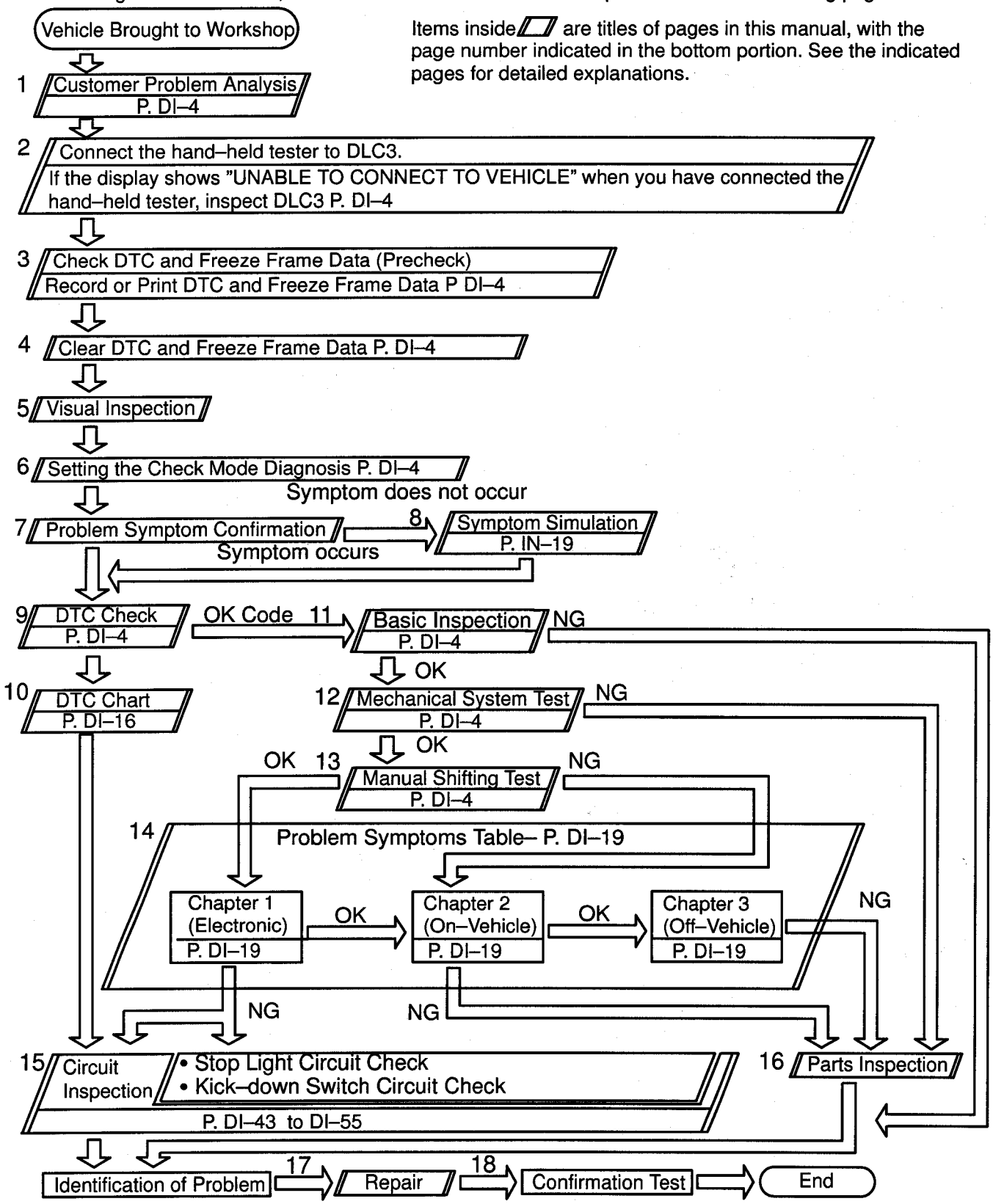
AUTOMATIC TRANSAXLE

HOW TO PROCEED WITH TROUBLESHOOTING

DI2L4-05

When using hand–held tester, troubleshoot in accordance with the procedure on the following pages.

Items inside ▱ are titles of pages in this manual, with the page number indicated in the bottom portion. See the indicated pages for detailed explanations.



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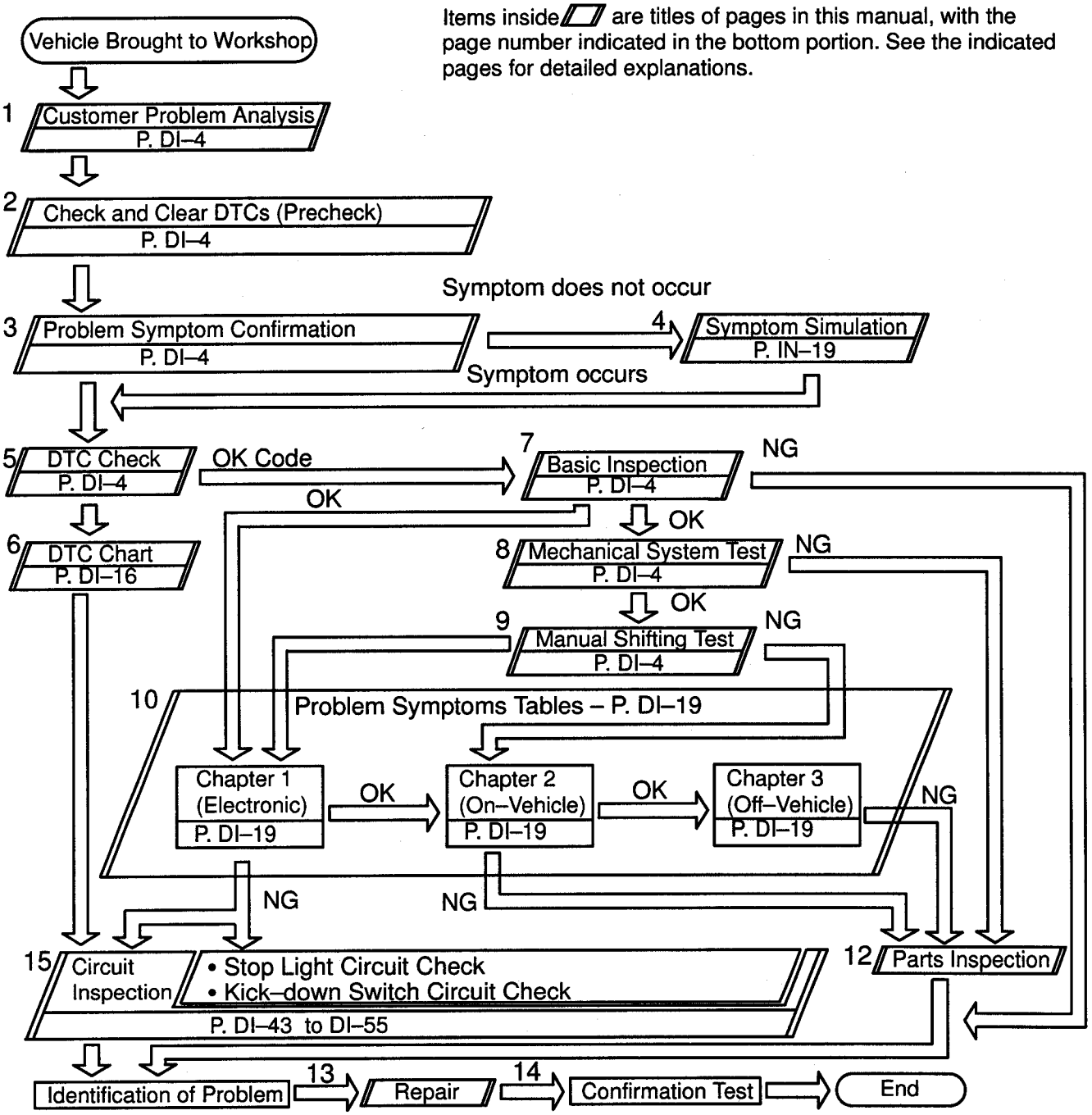
When not using hand–held tester, troubleshoot in accordance with the procedure on the following pages.

Items inside ▱ are titles of pages in this manual, with the page number indicated in the bottom portion. See the indicated pages for detailed explanations.



DI2LS-05

CUSTOMER PROBLEM ANALYSIS CHECK

Automatic Transaxle 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	/ /
How Often Does Problem Occur?	☐ Continuous ☐ Intermittent (times a day)

Symptoms	☐ Vehicle does not move (☐ Any rangen ☐ Particular range)
	☐ 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 range)
	☐ Slip or shudder
	☐ No kick–down
	☐ Others ( )

Check Item	Malfunction Indicator Lamp	☐ Normal ☐ Remains ON

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

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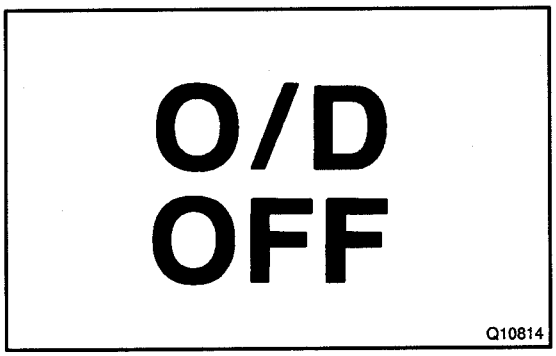
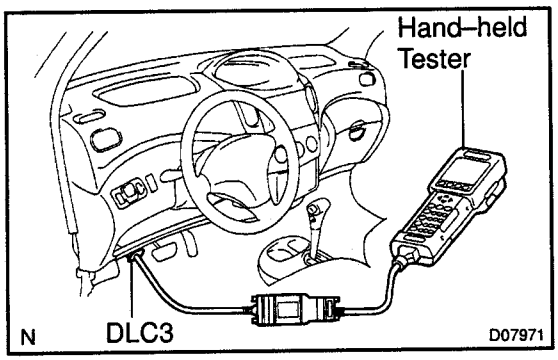


PRE–CHECK

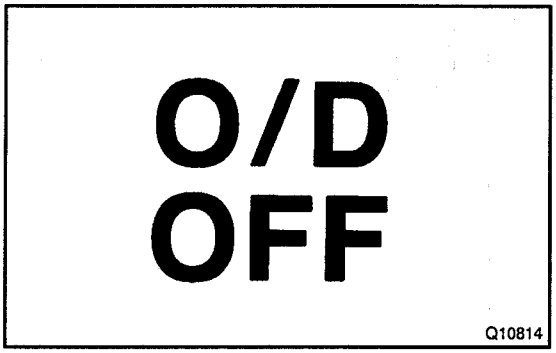
1. DIAGNOSIS SYSTEM

Description

- When troubleshooting Multiplex (M–OBD) vehicles, the only difference from the usual troubleshooting procedure is that you connect the hand–held tester to the vehicle, and read off various data output from the vehicle's Engine and ECT ECU.
  The vehicle's on–board computer lights up the O/D OFF Indicator Light on the instrument panel when the computer detects a malfunction in the computer itself or in drive system components. In addition to the O/D OFF indicator light lighting up when a malfunction is detected, the applicable DTCs are recorded in the Engine and ECT ECU memory.
  If the malfunction only occurs in 3–trip, the O/D OFF indicator light goes off but the DTCs remain recorded in the Engine and ECT ECU memory.



- To check the DTCs, connect a hand–held tester to DLC3 on the vehicle or read the number of blinks of the O/D OFF indicator light when TC and CG terminals on the DLC3 are connected. The hand–held tester also enables you to erase the DTCs and activate the several actuators and check freeze frame data and various forms of engine data (For instruction book).
- The diagnosis system operates in normal mode during normal vehicle use, and also has a check (test) mode for technicians to simulate malfunction symptoms and perform troubleshooting. Most DTCs use 2–trip detection logic (*) to prevent erroneous detection and ensure thorough malfunction detection. By switching the Engine and ECT ECU to check (test) mode using hand–held tester when troubleshooting, the technician can cause the O/D OFF indicator light to light up for a malfunction that is only detected once or momentarily.
- *2–trip detection logic:
  When a logic malfunction is first detected, the malfunction is temporarily stored in the Engine and ECT ECU memory.
  If the same malfunction is detected again during the 2nd test drive, this 2nd detection causes the O/D OFF indicator light to light up.



2. INSPECT DIAGNOSIS (NORMAL MODE)

(a) Check the O/D OFF indicator light.

(1) Turn the ignition switch to ON.

(2) Check that the O/D OFF indicator light light up when the O/D main switch is pushed out to OFF and goes off when the O/D main switch is pushed in to ON.

HINT:

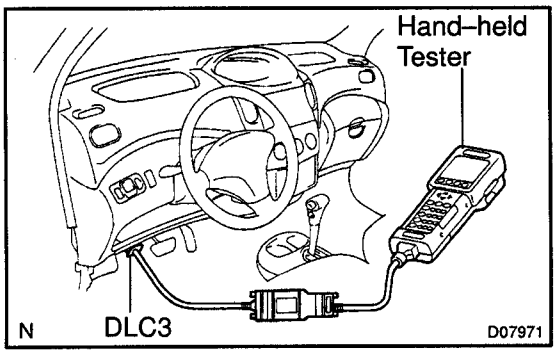
- If the O/D OFF indicator light does not light up or stays on all the time, carry out the check for "O/D OFF Indicator Light Circuit" on page DI–51.
- If the O/D OFF indicator light blinks, a malfunction code is stored in the ECU memory.

DI

(b) Check the DTC (Using hand–held tester).

NOTICE:

When the diagnostic system is switched from normal mode to check (test) 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.



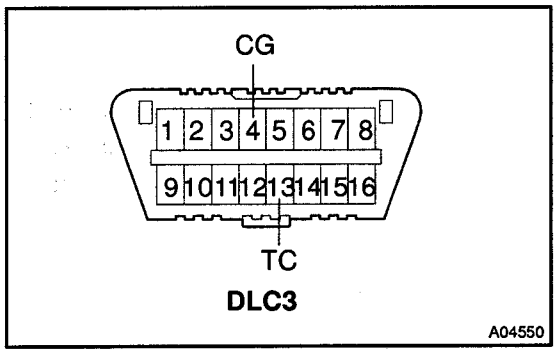
(1) Prepare the hand–held tester.

(2) Connect the hand–held tester to DLC3 at the lower of the instrument panel.

(3) Turn the ignition switch ON and turn the hand–held tester switch ON.

(4) Use the hand–held tester to check the DTCs and instructions, see the hand–held tester instruction book.

(5) See page DI–16 to confirm the details of the DTCs.



(c) Check the DTC (Not using hand–held tester).

(1) Turn the ignition switch ON, but do not start the engine.

(2) Push in the O/D main switch to ON.

HINT:

Warning and DTCs can be read only when the O/D main switch is ON. If it is OFF, the O/D OFF indicator light will light up continuously and will not blink.

(3) Using SST, connect terminals 13 (TC) and 4 (CG) of DLC3.

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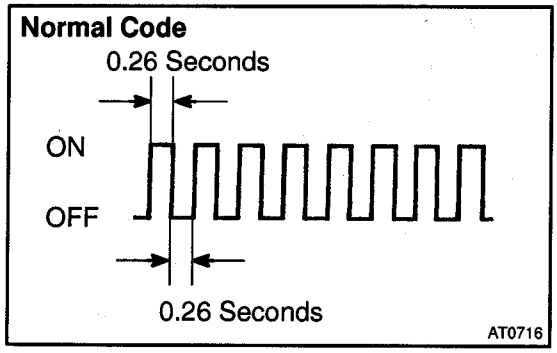

(4) Read the DTC indicated by the number of times the O/D OFF indicator light blinks.

HINT:
If the system is operating normally, the light will blink 2 times per second.

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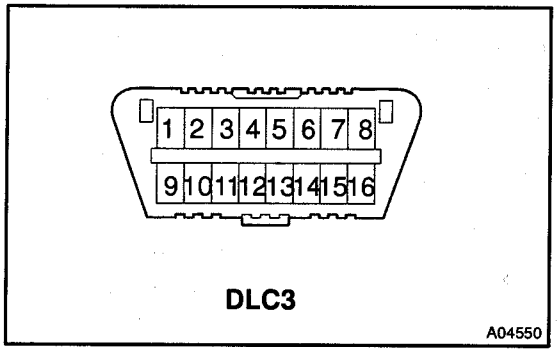
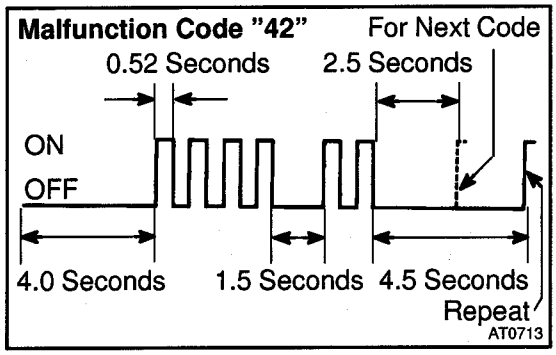


(d) Inspect the DLC3.
(1) The vehicle's Engine and ECT ECU uses ISO 14230 for communication. The terminal arrangement of DLC3 complies with SAE J1962 and matches the ISO 14230 format.

Terminal No.	Connection	Voltage or Resistance	Condition
7	Bus ⊕ Line	Pulse generation	During transaxle
4	Chassis 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 hand–held tester to DLC3, turned the ignition switch ON and operated the hand–held tester, 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.



(2) The malfunction code is indicated, as shown in the chart on the left (DTC "42" is shown as an example).

HINT:
When 2 or more malfunction codes are stored in memory, the lower–numbered code is displayed first.

3. INSPECT DIAGNOSIS (CHECK MODE)

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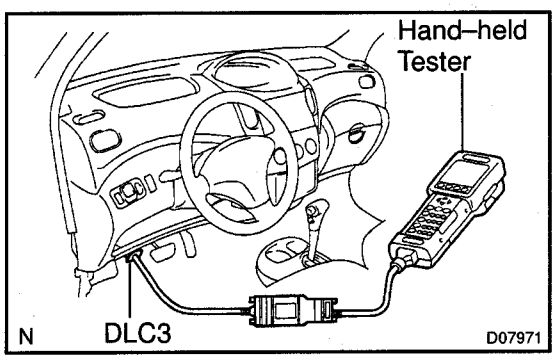
HINT:
Hand–held tester only: Compared to the normal mode, the check mode has high sensing ability to detect malfunctions. Furthermore, the same diagnostic items which are detected in Normal mode can also be detected in Check mode.

(a) Check the DTC.

(1) Check the initial conditions.
- Battery positive voltage 11 V or more
- Throttle valve fully closed
- Shift lever in P range
- Air conditioning switched OFF

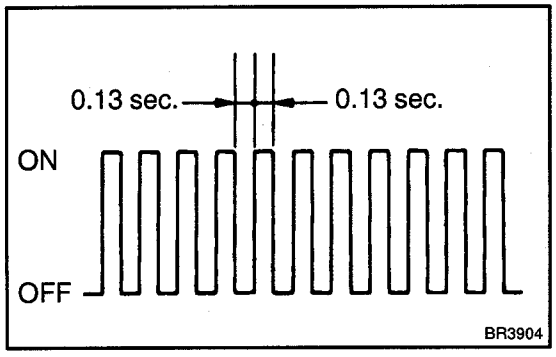
(2) Turn the ignition switch OFF.

(3) Prepare a hand–held tester.



(4) Connect the hand–held tester to DLC3 at the lower part of the instrument panel.

(5) Turn the ignition switch ON and switch the hand–held tester ON.



(6) Switch the hand–held tester from Normal mode to Check mode (Check that the O/D OFF indicator light flashes).

(7) Start the engine (O/D OFF indicator light 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.

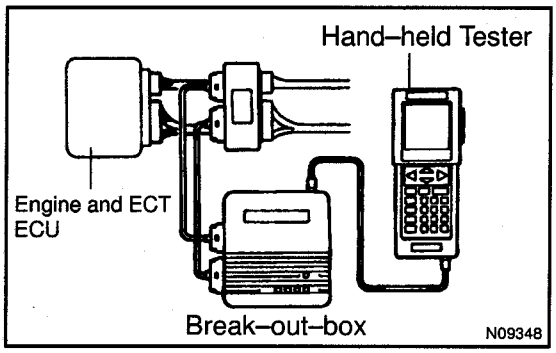
(9) After simulating the malfunction conditions, use the hand–held tester diagnosis selector to check the DTCs and freeze frame data, etc.

HINT:
Take care not to turn the ignition switch OFF, as turning it off switches the diagnosis system from Check mode to Normal mode, all DTCs etc. are erased.

(10) After checking the DTC, inspect the applicable circuit.

(b) When using hand–held tester:
Clear the DTC.
The following operation will erase the DTC and freeze frame data. Operate a hand–held tester to erase the codes.

(c) When not using hand–held tester:
Clear the DTC.
Remove the EFI fuse from engine room R/B No. 1 for 10 seconds or more.



4. ENGINE and ECT ECU STANDARD VALUES MEASUREMENT 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 Engine and ECT ECU input/output values by following the prompts on the tester screen.

HINT:
Hand–held tester has "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.

5. PROBLEM SYMPTOM CONFIRMATION

Taking into consideration the results of the customer problem analysis, try to reproduce the symptoms of the trouble. If the problem is that the transaxle does not shift up, shift down, or the shift point is too high or too low conduct the following road test referring to the automatic shift schedule and simulate the problem symptoms.

6. ROAD TEST

NOTICE:

Conduct the test at normal operating ATF temperature 50 – 80 °C (122 – 176 °F).

(a) D range test

Shift into the D range 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–9).

HINT:

- O/D Gear Up–shift Prohibition Control (1. Water 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. Water temp. is 60 °C (140 °F) or lower)

(2) Check for shift shock and slip.

Check for shock and slip at the 1 → 2, 2 → 3 and 3 → O/D up–shift.

(3) Check for abnormal noises and vibration.

Run in D range 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 sure to loss of balance in the differential, torque converter, etc.

(4) Check kick–down operation.

While running in the D range, 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–9).

(5) Check for abnormal shock and slip at kick–down.

(6) Check the lock–up mechanism.

- Drive in D range 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 range test

Shift into the 2 range 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–9).

HINT:

There is no O/D up–shift and lock–up in the 2 range.

(2) Check engine braking.

While running in the 2 range 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.

(c) L range test
Shift into the L range and fully depress the accelerator pedal and check the following points:
(1) Check no up–shift.
While running in the L range, check that there is no up–shift to 2nd gear.
(2) Check engine braking.
While running in the L range, release the accelerator pedal and check the engine braking effect.
(3) Check for abnormal noises during acceleration and deceleration.

(d) R range test
Shift into the R range 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.

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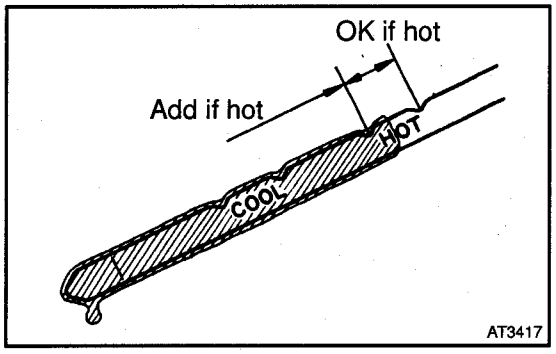
(e) P range test
Stop the vehicle on a grade (more than 5°) and after shifting into the P range, release the parking brake. Then, check to see that the parking lock pawl holds the vehicle in place.

7. BASIC INSPECTION

(a) Check the fluid level.
HINT:
Drive the vehicle so that the engine and transaxle are at normal operating temperature.
Fluid temperature: 70 – 80 °C (158 – 176 °F)

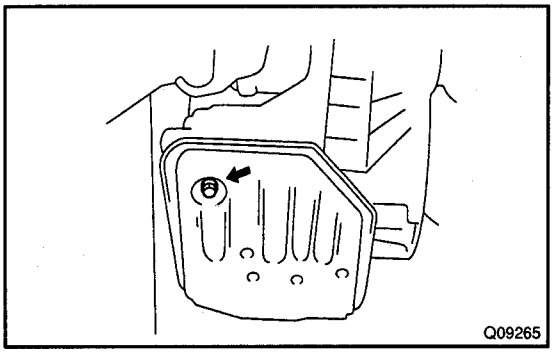


(1) Park the vehicle on a level surface and set the parking brake.
(2) With the engine idling and the brake pedal depressed, shift the shift lever into all ranges from P to L range and return to P range.
(3) Pull out the dipstick and wipe it clean.
(4) Push it back fully into the pipe.
(5) Pull it out and check that the fluid level is in the HOT range.

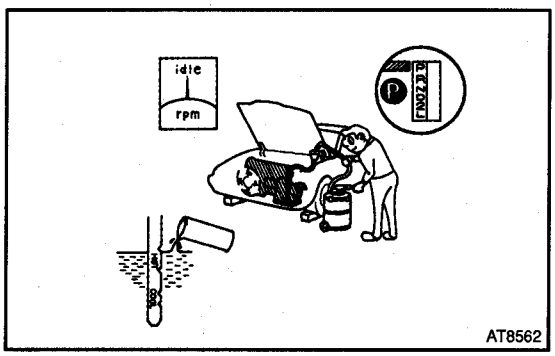
If the level is not within the range, add new fluid.
Fluid type: ATF Type T–IV

NOTICE:
Do not overfill.

(b) Check the fluid condition.
If the fluid smells burnt or is black, replace it.



(c) Replace the ATF.
(1) Remove the drain plug and drain the fluid.
(2) Reinstall the drain plug securely.

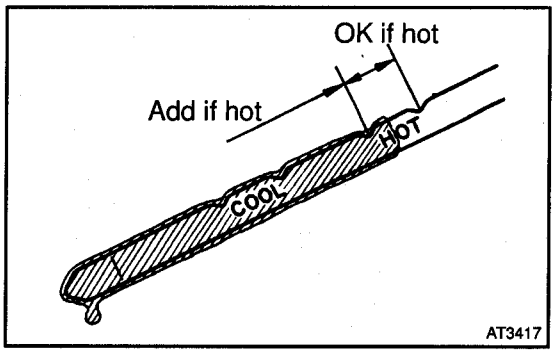


(3) With the engine OFF add new fluid through the oil filler pipe.

Fluid type: ATF Type T–IV

Capacity: 2.0 liters (2.1 US qts, 1.8 Imp.qts)

(4) Start the engine and shift the shift lever into all ranges from P to L range and then shift into P range.



(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.

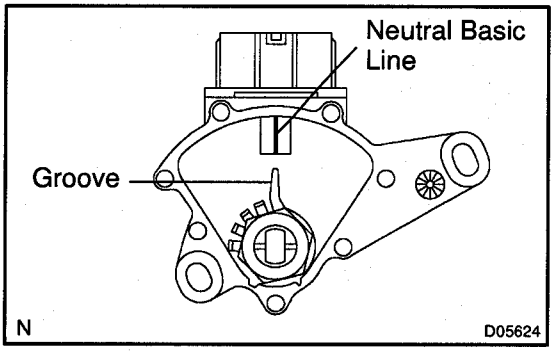
NOTICE:

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, FIPGs, oil seals, plugs or other parts.



(e) Inspect and adjust the neutral start switch.

Check that the engine can be started with the shift lever only in the N or P range, but not in other ranges.

If it is not as stated above, carry out the following adjustment procedures.

- Loosen the neutral start switch bolt and set the shift lever to the N range.
- Align the groove and neutral basic line.
- Hold the switch in position and tighten the bolt.
- For continuity inspection of the neutral start switch, see page DI–47.

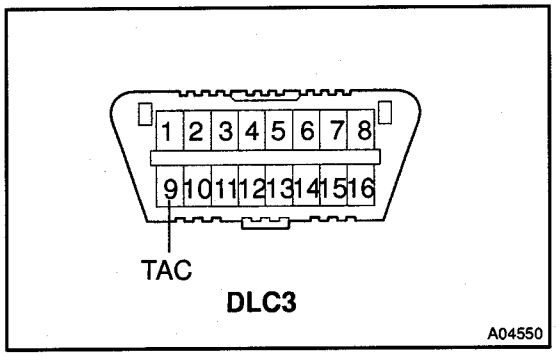
8. MECHANICAL SYSTEM TESTS

(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 and R ranges.

NOTICE:

- **Do the test at normal operating ATF temperature 50 – 80 °C (122 – 176 °F).**
- **Do not continuously run this test for longer than 5 seconds.**
- **To ensure safety, do 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.**



- Chock the 2 wheels.
- Connect a hand–held tester to DLC3 or tachometer to terminal TAC of DLC3 with SST.

SST 09843–18030

- Fully apply the parking brake.
- Keep your left foot pressing firmly on the brake pedal.
- Start the engine.
- Shift into the D range. Press all the way down on the accelerator pedal with your right foot.
- Quickly read the stall speed at this time.

Stall speed: 2,280 ± 200 rpm

- Do the same test in the R range.

Stall speed: 2,280 ± 200 rpm

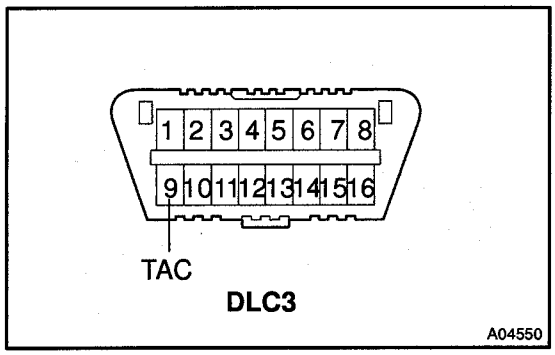
Evaluation:

Problem	Possible cause
(a) Stall speed low in D and R ranges	• Engine output may be insufficient • Stator one–way clutch not operating properly HINT: If more than 600 rpm below the specified value, the torque converter could be faulty.
(b) Stall speed high in D range	• Line pressure too low • Forward clutch slipping • One–way clutch No.2 not operating properly
(c) Stall speed high in R range	• Line pressure too low • Reverse clutch slipping • 1st & reverse brake slipping
(d) Stall speed high in D and R ranges	• Line pressure too low • Improper fluid level

(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 condition of the O/D direct clutch, forward clutch, and 1st & reverse brake.

NOTICE:

- **Do the test at normal operating ATF temperature 50 – 80 °C (122 – 176 °F).**
- **Be sure to allow 1 minute interval between tests.**
- **Take 3 measurements and take the average value.**



- Chock the 4 wheels.
- Connect a hand–held tester to DLC3 or tachometer to terminal TAC of DLC3 with SST.

SST 09843–18030

- Start engine and check idle speed.

Idle speed: 700 ± 50 rpm (In N range and A/C OFF)

- Shift the lever from N to D range. 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

- In the same way, measure the time lag for N → R.

Time lag: N → R less than 1.5 seconds

Evaluation (If N → D 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 • One–way clutch No. 2 not operating properly
N → R time lag is longer	• Line pressure too low • Reverse clutch worn • 1st & reverse brake worn

9. HYDRAULIC TEST

Measure the line pressure.

NOTICE:

- **Do the test at normal operation ATF 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 stopper 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 rear side of the transaxle case and connect SST.
(See page AX–23 for the location to connect SST)

SST 09992–00095 (09992– 00231, 09992–00271)

(3) Fully apply the parking brake and chock the 4 wheels.

(4) Connect a 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 range.

(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.

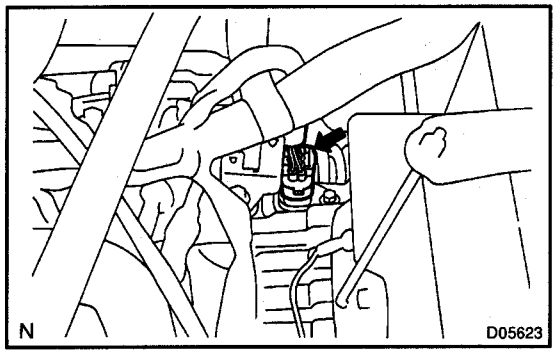
(9) In the same way, do the test in R range.

Specified line pressure:

Condition	D range kPa (kgf / cm^2, psi)	R range kPa (kgf / cm^2, psi)
Idling	372 – 407 (3.8 – 4.2, 54 – 60)	588 – 683 (6.0 – 7.0, 85 – 100)
Stall	1,,067 – 1,187 (10.9 – 12.1, 155 – 172)	1,420 – 1,675 (14.5 – 17.1, 206 – 243)

Evaluation:

Problem	Possible cause
If the measured values at all ranges are higher	• SLT solenoid valve defective • Regulator valve detective
If the measured values at all ranges are lower	• SLT solenoid valve defective • Regulator valve defective • Oil pump defective
If pressure is low in the D range only	• D range circuit fluid leakage • Forward clutch defective
If pressure is low in the R range only	• R range circuit fluid leakage • Reverse clutch defective • 1st & reverse brake defective



10. MANUAL SHIFTING TEST

HINT:

By 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 to the table below.

While driving, shift through the L, 2 and D ranges.

Check that the gear change corresponds to the shift range.

Shift range	Gear position
D	3rd
2	3rd
L	3rd
R	Reverse
P	Pawl Lock

HINT:

If the L, 2 and D range gear 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.

DI67Q–02

DIAGNOSTIC TROUBLE CODE CHART

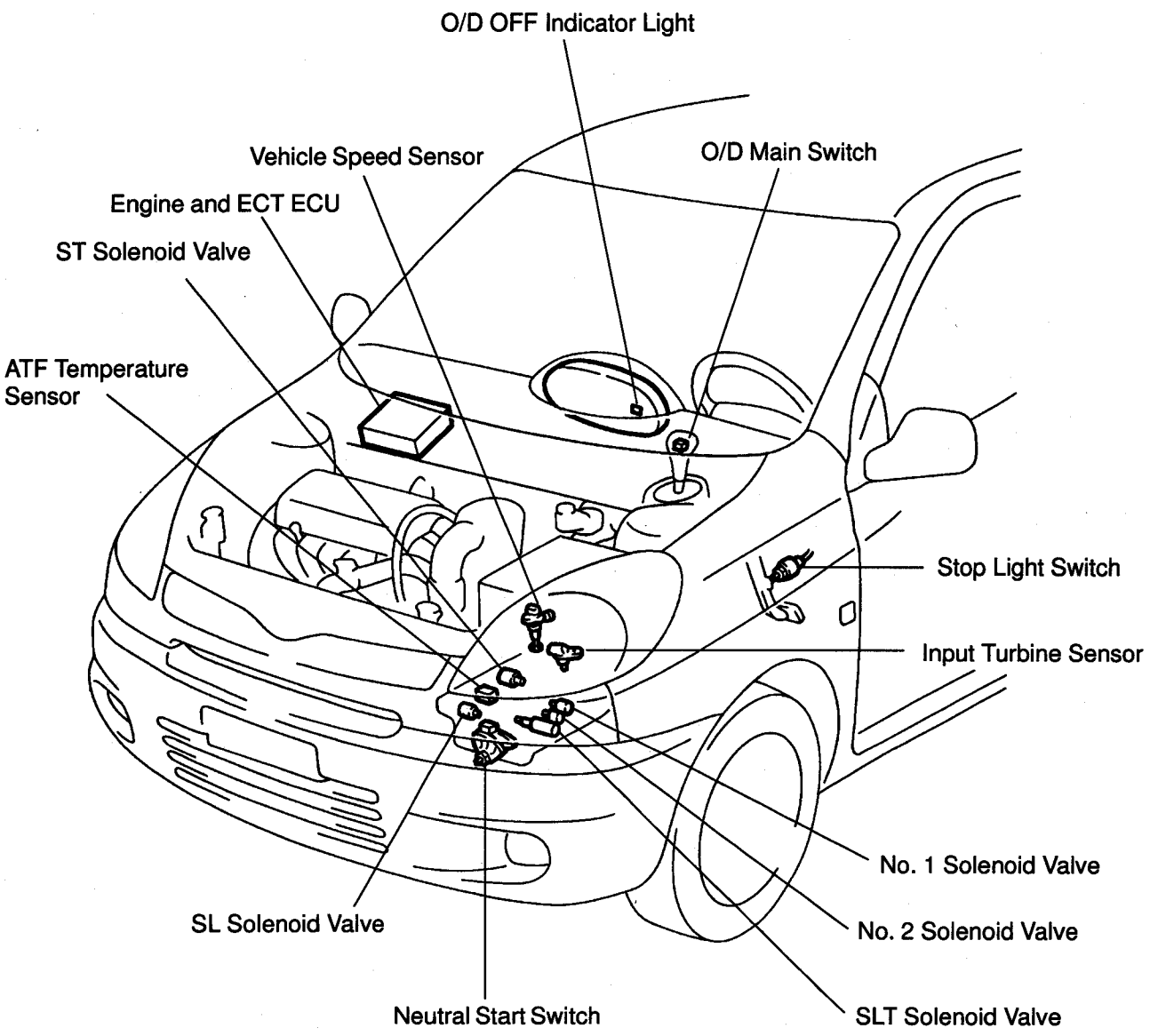
If a DTC is displayed during the DTC check, check the circuit listed in the table below and proceed to the page given.

DTC No. (See Page)	Detection Item	Trouble Area	*1O/D OFF Indicator Light Blink	*2Memory
P0500/42 (DI–22)	Vehicle Speed Sensor Malfunction	• Open or short in vehicle speed sensor circuit • Vehicle speed sensor • Combination meter • Engine and ECT ECU • Automatic Transaxle Assembly	X	○
P0710/38 (DI–25)	Transmission Fluid Temperature Sensor Circuit Malfunction (ATF Temperature Sensor)	• Open or short in ATF temperature sensor circuit • ATF temperature sensor • Engine and ECT ECU	X	○
P0753/62 (DI–27)	Shift Solenoid "A" Electrical Malfunction (No. 1 Solenoid Valve)	• Open or short in No. 1 solenoid valve circuit • No. 1 solenoid valve • Engine and ECT ECU	X	○
P0758/63 (DI–27)	Shift Solenoid "B" Electrical Malfunction (No. 2 Solenoid Valve)	• Open or short in No. 2 solenoid valve circuit • No. 2 solenoid valve • Engine and ECT ECU	X	○
P0773/64 (DI–31)	Shift Solenoid E Electrical Malfunction (SL Solenoid Valve)	• Open or short in SL solenoid valve circuit • SL solenoid valve • Engine and ECT ECU	X	○
P1725/37 (DI–34)	Input / Turbine Speed Sensor Circuit Malfunction (Direct Clutch Speed Sensor)	• Open or short in direct clutch speed sensor circuit • Direct clutch speed sensor • Engine and ECT ECU • Automatic Transaxle Assembly	X	○
P1760/77 (DI–36)	Linear Solenoid for Line Pressure Control Circuit Malfunction (SLT Solenoid Valve)	• Open or short in SLT solenoid valve circuit • SLT solenoid valve • Engine and ECT ECU	X	○
P1790/65 (DI–39)	ST Solenoid Valve Circuit Malfunction	• Open or short in ST solenoid valve circuit • ST solenoid valve • Engine and ECT ECU	X	○

*1: "○" mark means O/D OFF indicator light blinks once every 2 seconds.
· "X" mark means O/D OFF indicator light never blinks.
*2: "○" mark means Engine and ECT ECU memorizes the malfunction code if the Engine and ECT ECU detects the DTC detection condition.
HINT:
This DTC may be output when the clutch, brake and gear components etc. inside the automatic transmission are damaged.

DI67R-02

PARTS LOCATION



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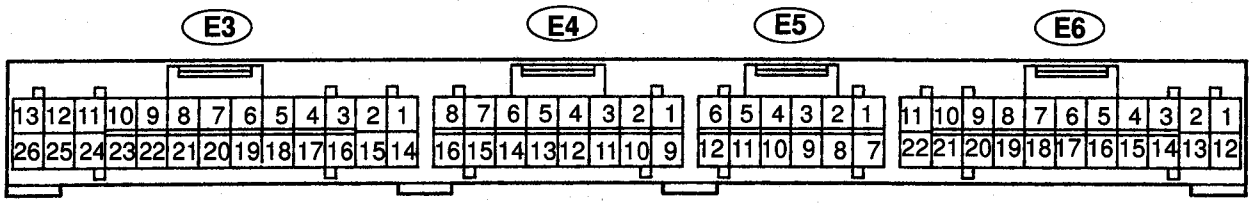
DI67S-02

TERMINALS OF ECU

Engine and ECT ECU



FI6526

Symbols (Terminals No.)	Wiring Color	Condition	STD Voltage (V)
S1 (E5,3) ↔ E1 (E3,14)	W – G ↔ BR	IG ON	9 – 14
		IG ON and 1st or 2nd gear	9 – 14
		IG ON and 3rd or O/D gear	Below 1.5
S2 (E5,9) ↔ E1 (E3,14)	W – R ↔ BR	IG ON	9 – 14
		IG ON and 1st or O/D gear	9 – 14
		IG ON and 2nd or 3rd gear	Below 1.5
ST (E5,2) ↔ E1 (E3,14)	B – W ↔ BR	IG ON	Below 1.5
		IG ON and R gear	9 – 14
SL (E5,6) ↔E1 (E3,14)	G ↔ W	IG ON	9 – 14
SLT^+ (E5,1) ↔ SLT^- (E5,7)	W – L ↔ W	IG ON	9 – 14
OIL (E5,10) ↔ E2 (E4,9)	Y ↔ BR	IG ON	9 – 14
OD2 (E5,4) ↔ E1 (E3,14)	G – O ↔ BR	IG ON and O/D main switch ON	9 – 14
		IG ON and O/D main switch OFF	Below 1.5
STP (E3,6) ↔ E1 (E3,14)	G – W ↔ BR	IG ON and brake pedal depressed	9 – 14
		IG ON and brake pedal released	Below 1.5
NT^+ (E5,5) ↔ NT^- (E5,11)	R ↔ B	IG ON	Pulse generation
D (E3,5) ↔ E1 (E3,14)	R – Y ↔ BR	IG ON and shift lever D range	9 – 14
		IG ON and shift lever other than D range	Below 1.5
L (E6,19) ↔ E1 (E3,14)	G – B ↔ BR	IG ON and shift lever L range	9 – 14
		IG ON and shift lever other than L range	Below 1.5
2 (E6,18) ↔ E1 (E3,14)	Y – G ↔ BR	IG ON and shift lever 2 range	9 – 14
		IG ON and shift lever other than 2 range	Below 1.5
R (E6,17) ↔ E1 (E3,14)	R – W ↔ BR	IG ON and shift lever R range	9 – 14
		IG ON and shift lever other than R range	Below 1.5
SPD (E6,9) ↔ E1 (E3,14)	LG – R ↔ BR	IG ON and rotate driving wheel slowly	Pulse generation
KD (E5,12) ↔ E1 (E3,14)	G – W ↔ BR	IG ON and accelerator pedal is fully depressed	Below 1.5
		IG ON and accelerator pedal is released	9 – 14
NSW (E6, 22) ↔ E1 (E3, 14)	B ↔ BR	IG ON and shift lever P, N range	9 – 14
		IG ON and shift lever other than P, N range	Below 1.5

DI67T-02

PROBLEM SYMPTOMS TABLE

HINT:

If a normal code is displayed during the DTC 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 trouble-shooting.

The Matrix Chart is divided into 3 chapters.

If the instruction "Proceed to next circuit inspection shown on 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 Engine and ECT ECU.

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–shifted)	Engine and ECT ECU	–
No up–shift (3rd → O/D)	1. O/D main switch and O/D OFF indicator light circuit 2. Engine and ECT ECU	DI–51 –
No down–shift (A particular gear, from 1st to 3rd gear, is not down–shifted)	Engine and ECT ECU	–
No down–shift (O/D → 3rd)	1. O/D main switch and O/D OFF indicator light circuit 2. Engine and ECT ECU	DI–51 –
No lock–up	1. Stop light switch circuit 2. Engine and ECT ECU	DI–43 –
No lock–up OFF	Engine and ECT ECU	–
Shift point too high or too low	Engine and ECT ECU	–
Up–shift to O/D from 3rd while O/D main switch is OFF	1. O/D main switch & O/D OFF indicator light circuit 2. Engine and ECT ECU	DI–51 –
Up–shift to O/D from 3rd while engine is cold	Engine and ECT ECU	–
No kick–down	1. Kick–down switch circuit 2. Engine and ECT ECU	DI–55 –
Engine stalls when starting off or stopping	Engine and ECT ECU	–

CHAPTER 2: ON–VEHICLE REPAIR
(★: U440E, U441E AUTOMATIC TRANSAXLE Repair Manual Pub. No. RM689E)

Symptom	Suspect Area	See page
Vehicle does not move in any forward range and reverse range	1. Manual valve 2. Primary regulator valve 3. Secondary regulator valve 4. Off–vehicle repair matrix chart	★ ★ ★ –
Vehicle does not move in R range	1. Manual valve 2. 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. Lock–up control valve 3. Off–vehicle repair matrix chart	★ ★ –
Harsh engagement (N → D)	1. C_1 accumulator 2. C–1 orifice control valve 3. Clutch apply control valve 4. Off–vehicle repair matrix chart	★ ★ ★ –
Harsh engagement (N → R)	1. C_3 accumulator 2. Reverse control valve 3. Off–vehicle repair matrix chart	★ ★ –
Harsh engagement (Lock–up)	1. Lock–up relay valve 2. Lock–up control valve 3. Off–vehicle repair matrix chart	★ ★ –
Harsh engagement (1st → 2nd)	B_2 accumulator	★
Harsh engagement (2nd → 3rd)	C_2 accumulator	★
Harsh engagement (3rd → O/D)	B_1 accumulator	★
Slip or shudder (Forward and reverse)	1. Oil strainer 2. Off–vehicle repair matrix chart	AX–6 –
No engine braking (1st: L range)	1. Reverse control valve 2. Off–vehicle repair matrix chart	★ –
No engine braking (2nd: 2 range)	3–4 shift valve	★
No kick–down	1. 1–2 shift valve 2. 2–3 shift valve 3. 3–4 shift valve	★ ★ ★

CHAPTER 3: OFF–VEHICLE REPAIR
(★: U440E, U441E AUTOMATIC TRANSAXLE Repair Manual Pub. No. RM689E)

Symptom	Suspect Area	See page
Vehicle does not move in any forward range and reverse range	1. Planetary gear unit 2. Forward clutch 3. One–way clutch No. 2 4. Reverse Clutch 5. 1st and reverse brake	★ ★ ★ ★ ★
Vehicle does not move in R range	1. Planetary gear unit 2. Reverse Clutch 3. 1st and reverse brake	★ ★ ★
No up–shift (1st → 2nd)	1. 2nd brake 2. One–way clutch No. 1	★ ★
No up–shift (2nd → 3rd)	Direct clutch	★
No up–shift (3rd → O/D)	O/D and 2nd brake	★
No lock–up or No lock–up off	Torque converter	AX–31
Harsh engagement (N → D)	1. Forward clutch 2. One–way clutch No. 2	★ ★
Harsh engagement (N → R)	1. Reverse clutch 2. 1st and reverse brake	★ ★
Harsh engagement (Lock–up)	Torque converter	AX–31
Harsh engagement (1st → 2nd)	1. 2nd brake 2. One–way clutch No. 1	★ ★
Harsh engagement (2nd → 3rd)	Direct clutch	★
Harsh engagement (3rd → O/D)	O/D and 2nd brake	★
Slip or shudder (Forward range)	1. Torque converter 2. Forward clutch 3. Direct clutch 4. O/D and 2nd brake 5. 2nd brake 6. One–way clutch No. 1 7. One–way clutch No. 2	AX–31 ★ ★ ★ ★ ★ ★
Slip or shudder (Reverse range)	1. Reverse clutch 2. 1st and reverse brake	★ ★
Slip or shudder (1st)	One–way clutch No. 2	★
Slip or shudder (2nd)	1. 2nd brake 2. One–way clutch No. 1	★ ★
Slip or shudder (3rd)	Direct clutch	★
Slip or shudder (O/D)	O/D and 2nd brake	★
No engine braking (1st: L range)	1st and reverse brake	★
No engine braking (2nd: 2 range)	O/D and 2nd brake	★
Poor acceleration (All range)	Torque converter	AX–31
Large shift shock or engine stalls when starting off or stopping	Torque converter	AX–31

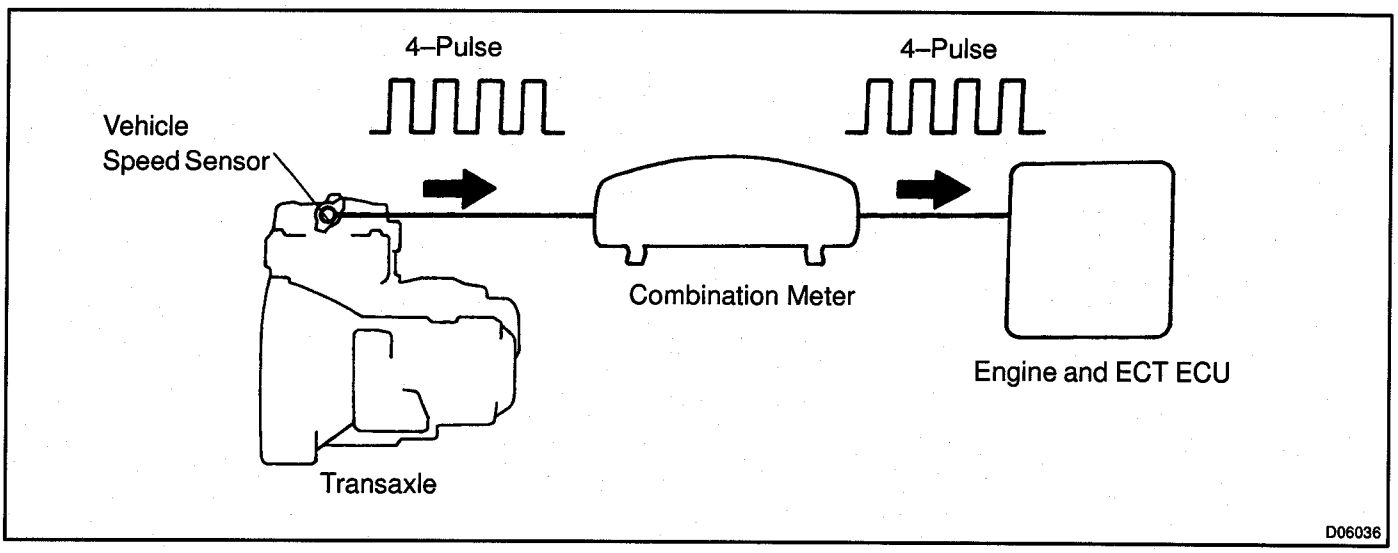
DI67U–02

CIRCUIT INSPECTION

DTC	P0500/42	Speed Sensor Malfunction

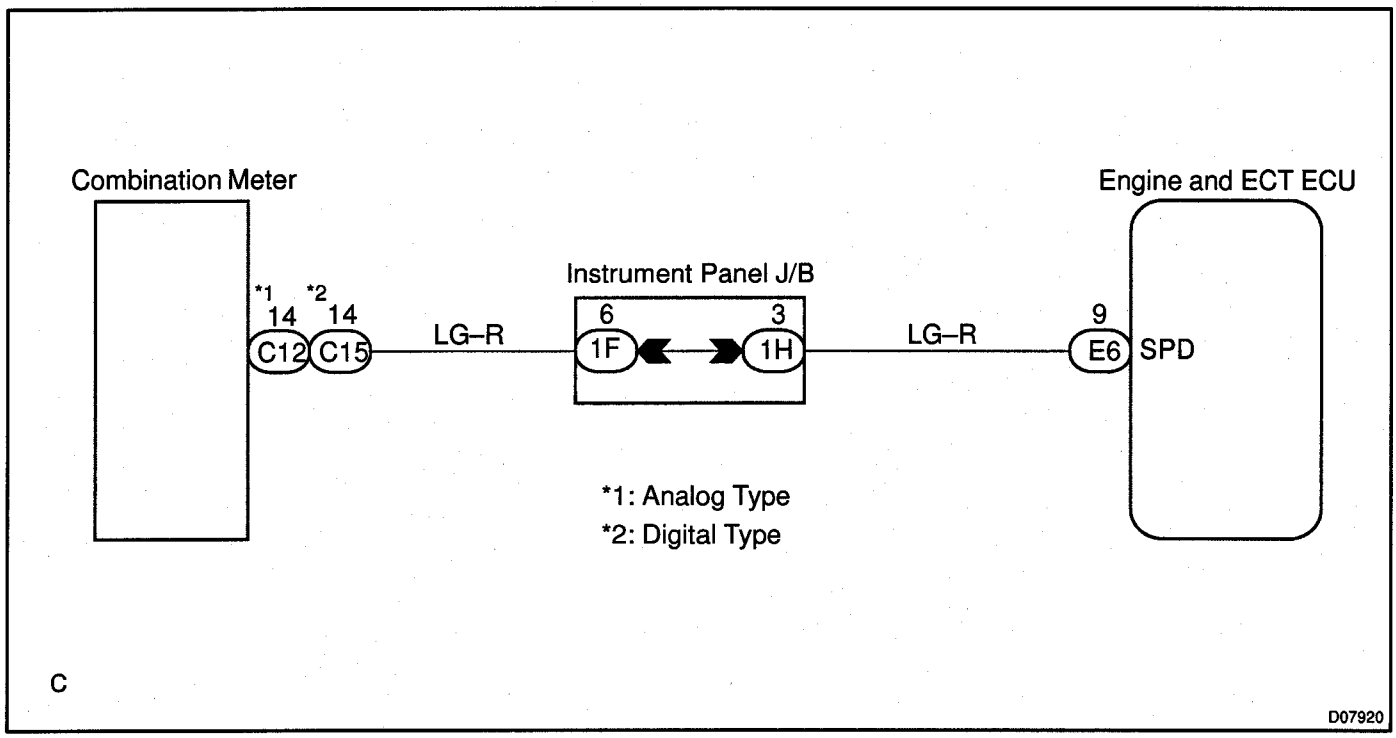
CIRCUIT DESCRIPTION

The No.1 speed sensor outputs a 4–pulse signal for every revolution of the transaxle output shaft. After this signal is converted into a more precise rectangular wave form by the wave form shaping circuit inside the combination meter, it is then transmitted to the Engine and ECT ECU.



DTC No.	DTC Detecting Condition	Trouble Area
P0500/42	No vehicle speed sensor signal to Engine and ECT ECU under conditions (1) and (2); (2–trip detection logic) 1. Neutral start switch is OFF 2. Vehicle is being driven	• Combination meter • Open or short in vehicle speed sensor circuit • Vehicle speed sensor • Engine and ECT ECU • Automatic transaxle (clutch, brake or gear etc,)
	Clutch or brake slips or gear is broken	

WIRING DIAGRAM



INSPECTION PROCEDURE

1	**Check operation of speedometer.**

CHECK:

Drive the vehicle and check if the operation of the speedometer in the combination meter is normal.

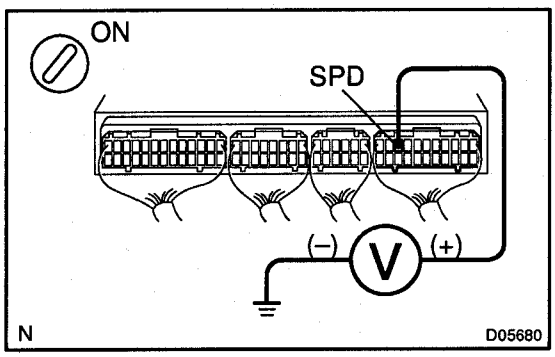
HINT:

The vehicle speed sensor is operating normally if the speedometer display is normal.

NG → **Check speedometer (See page BE–2).**

OK

2	Check voltage between terminal SPD of Engine and ECT ECU connector and body ground.



PREPARATION:

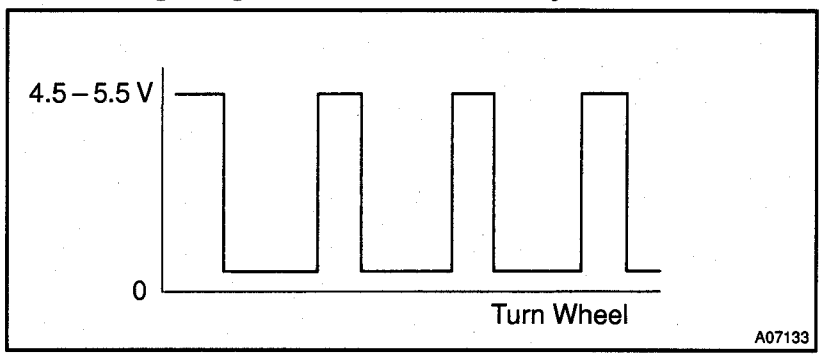
(a) Shift the shift lever to neutral.
(b) Lift up the vehicle.
(c) Turn the ignition switch ON.

CHECK:

Measure voltage between terminal SPD of the Engine and ECT ECU connector and body ground when the wheel is turned slowly.

OK:

Voltage is generated intermittently.



NG → **Check and repair harness and connector between combination meter and Engine and ECT ECU.**

OK ↓

3	Check Engine and ECT ECU (See page IN–19).

NG → **Replace Engine and ECT ECU.**

OK ↓

Check and repair transaxle (clutch, brake or gear etc,).

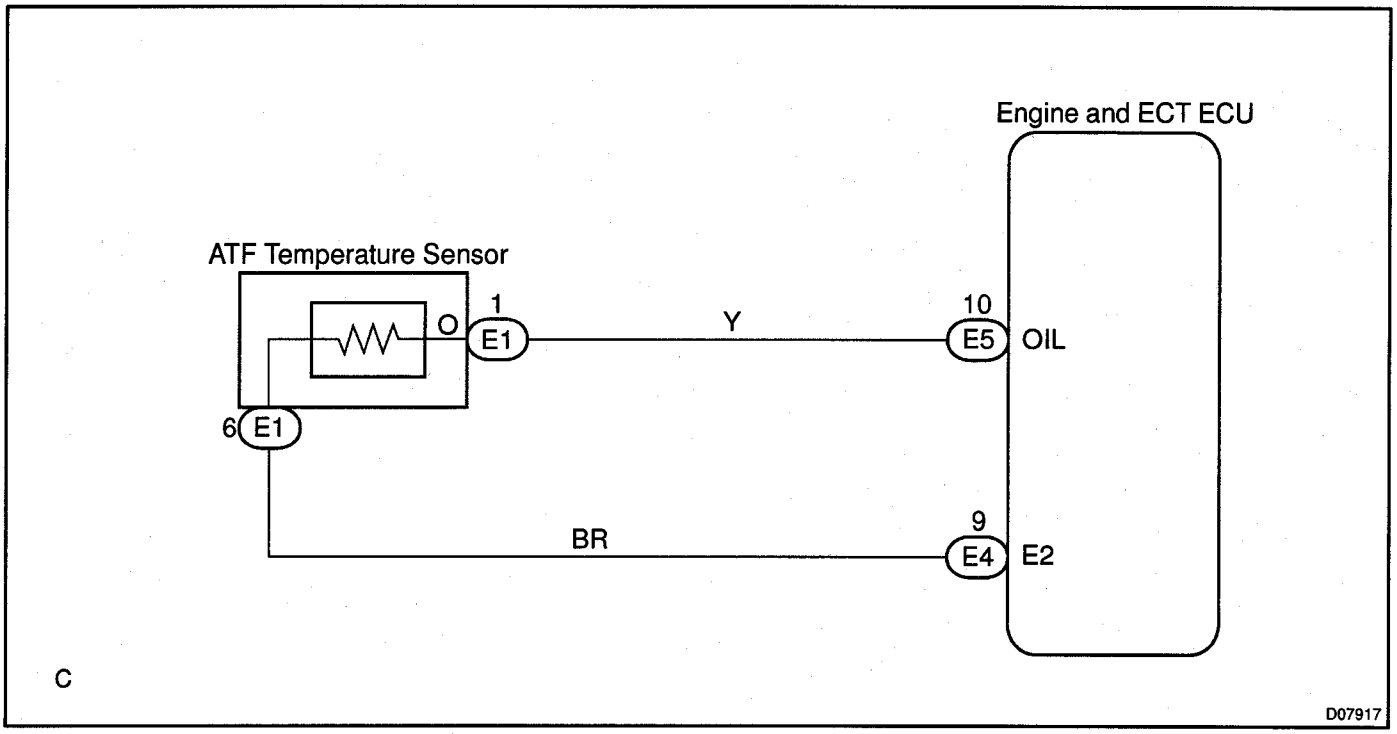
DTC	P0710/38	Transmission Fluid Temperature Sensor Malfunction (ATF Temperature Sensor)

CIRCUIT DESCRIPTION

The ATF temperature sensor converts fluid temperature into a resistance value which is input into the Engine and ECT ECU.

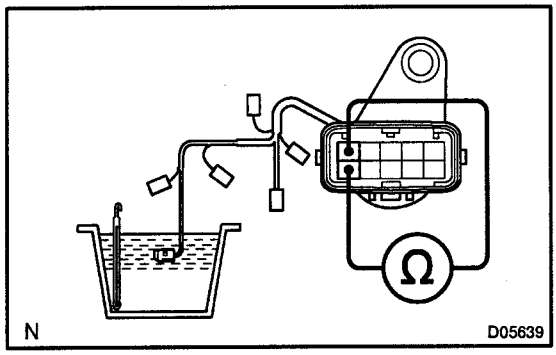
DTC No.	DTC Detecting Condition	Trouble Area
P0710/38	Either (a) or (b) is detected for 0.5 sec. or more. (2–trip detection logic) (a) Temperature sensor resistance is less than 79 Ω (b) After the engine has been operating for 15 minutes or more, the resistance at the temp. sensor is more than 156 kΩ	• Open or short in ATF temperature sensor • ATF temperature sensor • Engine and ECT ECU

WIRING DIAGRAM



INSPECTION PROCEDURE

1	Check ATF temperature sensor.



PREPARATION:
Remove the solenoid wiring (See page AX–6).
CHECK:
Measure resistance between terminals of ATF temperature sensor at 25 °C (77 °F) and 110 °C (230 °F).
OK:
Resistance (Approx.):
25 °C (77 °F): 3.5 kΩ
110 °C (230 °F): 247 Ω

NG → **Replace the solenoid wiring.**

OK

2	Check harness and connector between solenoid wiring and Engine and ECT ECU (See page IN–19).

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

OK

Check and replace the Engine and ECT ECU (See page IN–29).

DTC	P0753/62,P0758/63	Shift Solenoid A/B Electrical Malfunction (No. 1/No. 2 Solenoid Valve)

CIRCUIT DESCRIPTION

Shifting from 1st to O/D is performed in combination with ON and OFF of the No. 1 and No. 2 solenoid valves controlled by Engine and ECT ECU. If an open or short circuit occurs in either of the solenoid valves, the Engine and ECT ECU controls the remaining normal solenoid valve to allow the vehicle to be operated smoothly (Fail safe function).

Range	NORMAL			NO. 1 SOLENOID MALFUNCTIONING			NO. 2 SOLENOID MALFUNCTIONING			BOTH SOLENOIDS 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	ON	1st	X	ON	3rd	ON	X	1st	O/D
	ON	OFF	2nd	X	OFF	3rd	OFF	X	O/D	O/D
	OFF	OFF	3rd	X	OFF	3rd	OFF	X	O/D	O/D
	OFF	ON	O/D	X	ON	O/D	OFF	X	O/D	O/D
2	ON	ON	1st	X	ON	3rd	ON	X	1st	3rd
	ON	OFF	2nd	X	OFF	3rd	OFF	X	3rd	3rd
	OFF	OFF	3rd	X	OFF	3rd	OFF	X	3rd	3rd
L	ON	ON	1st	X	ON	1st	ON	X	1st	1st
	ON	OFF	2nd	X	OFF	2nd	ON	X	1st	1st

X: Malfunctions

HINT:

Check the No. 1 solenoid valve when DTC P0753/62 is output and check the No. 2 solenoid valve when DTC P0758/63 is output.

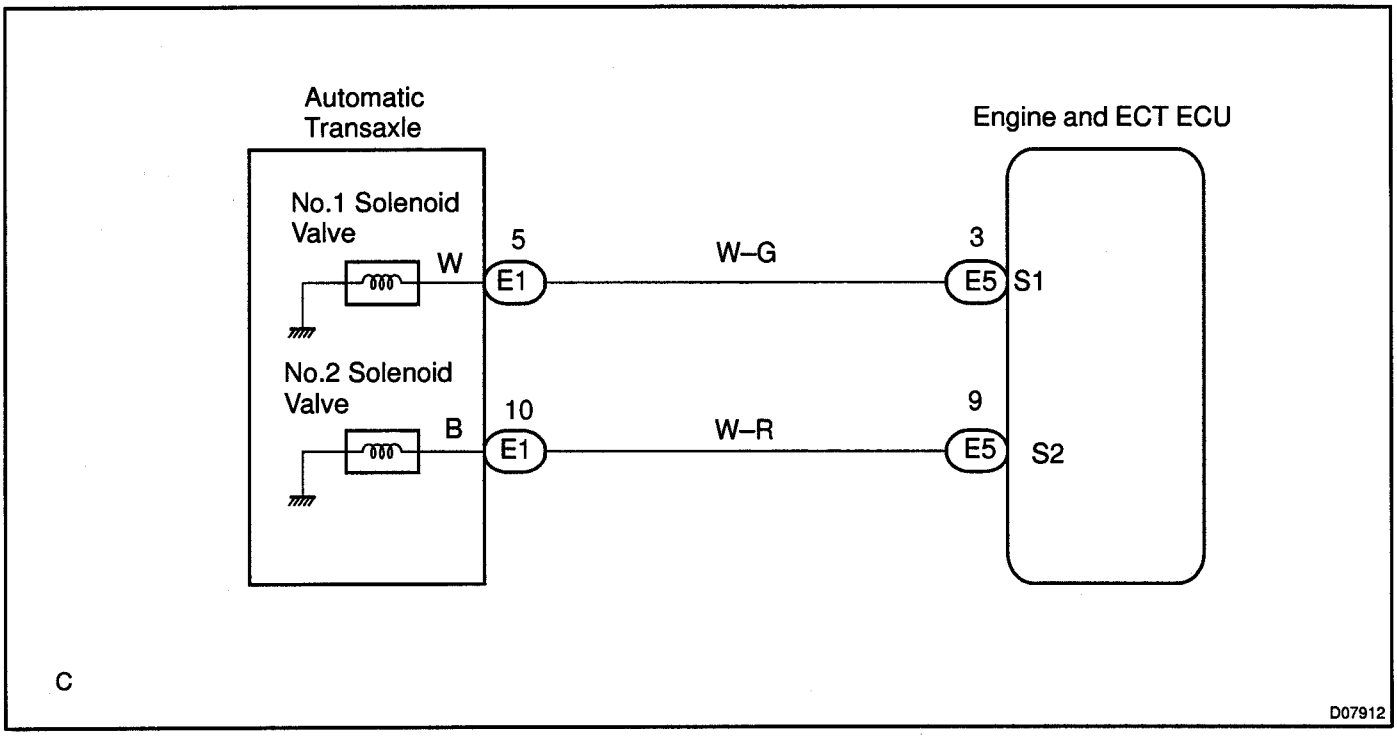
DTC No.	DTC Detecting Condition	Trouble Area
P0753/62 P0758/63	The Engine and ECT ECU checks for an open or short circuit in the No. 1 or No. 2 solenoid valve circuit when it changes. The Engine and ECT ECU records DTC P0753/62 or P0758/63 if condition (a) or (b) is detected once, but it does not blink the O/D OFF indicator light. After Engine and ECT ECU detects condition (a) or (b) continuously 8 times or more in one–trip, it causes the O/D OFF indicator light to light up until condition (a) or (b) disappears. After that, if the Engine and ECT ECU detects condition (a) or (b) once, it starts lighting up O/D OFF indicator light again. (a) Solenoid resistance is 8 Ω or less (short circuit) when the solenoid is energized. (b) Solenoid resistance is 100 kΩ or more (open circuit) when the solenoid is not energized.	• Open or short in No. 1/No. 2 solenoid valve circuit • No. 1/No. 2 solenoid valve • Engine and ECT ECU

Fail safe function:

If either of the solenoid valve circuits develops an open or short, the Engine and ECT ECU turns the other solenoid valve ON and OFF to shift to the gear positions shown in the table above. The Engine and ECT ECU also turns the ST solenoid valve OFF at the same time. If both solenoids malfunction, hydraulic control cannot be performed electronically and must be done manually.

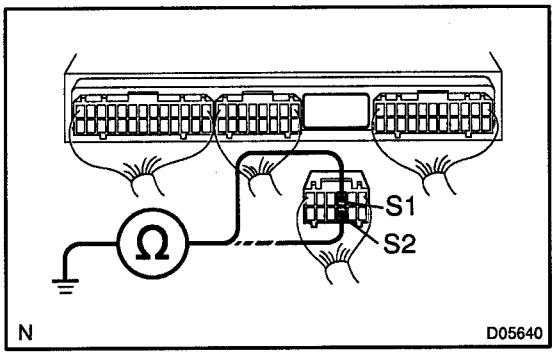
Manual shifting as shown in the above table must be done (In the case of a short circuit, the Engine and ECT ECU stops sending current to the short circuited solenoid).

WIRING DIAGRAM



INSPECTION PROCEDURE

1	**Measure resistance between terminal S1 or S2 of Engine and ECT ECU and body ground.**

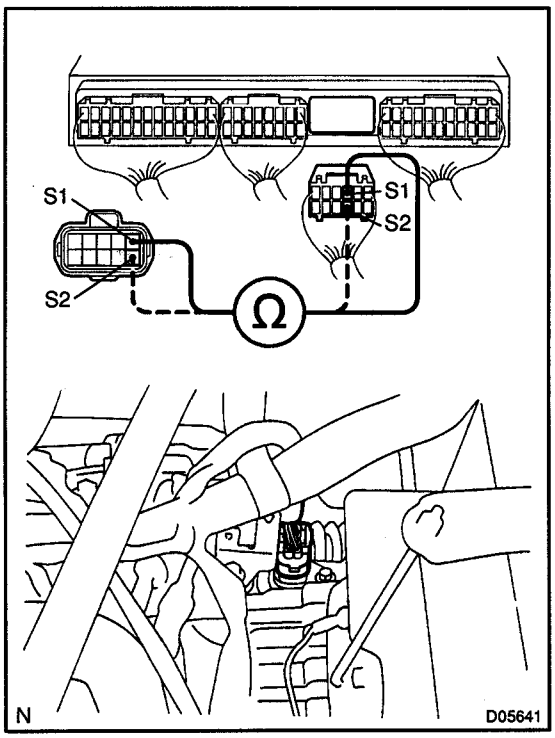


PREPARATION:
Disconnect the connector from Engine and ECT ECU.
CHECK:
Measure resistance between terminal S1 or S2 of Engine and ECT ECU and body ground.
OK:
Resistance: 11 – 15 Ω at 20 °C (68 °F)

OK → **Check and replace the Engine and ECT ECU (See page IN–29).**

NG

2	Measure harness and connector between Engine and ECT ECU and automatic transmission solenoid connector.



PREPARATION:

Disconnect the solenoid connector from the automatic transaxle.

CHECK:

Measure the harness and connector between terminal S1 or S2 of Engine and ECT ECU and terminal S1 or S2 of solenoid connector.

OK:

Resistance: 0 Ω

NG → **Repair or replace the harness or connector (See page IN–29).**

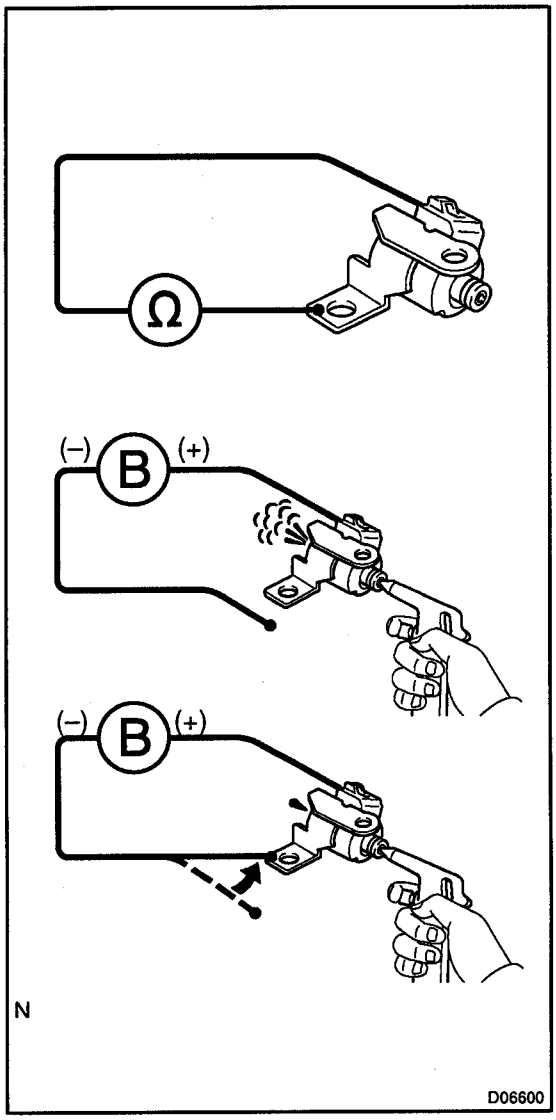
OK

3	Check connection of the connectors.

NG → **Connect the connectors correctly.**

OK

4	Check No. 1 or No. 2 solenoid valve.



Electrical check:

PREPARATION:

(a) Jack up the vehicle.
(b) Remove the oil pan.
(c) Disconnect the solenoid connector.
(d) Remove the No. 1 or No. 2 solenoid valve.

CHECK:

Measure resistance between solenoid connector and body ground.

OK:

Resistance: 11 – 15 Ω at 20 °C (68 °F)

Mechanical check:

PREPARATION:

(a) Jack up the vehicle.
(b) Remove the oil pan.
(c) Disconnect the solenoid connector.
(d) Remove the No.1 or No.2 solenoid valve.

CHECK:

(a) When battery positive voltage is supplied to the solenoid valve, check that the valve opens.
(b) Applying 490 kPa (5 kgf/cm^2, 71 psi) of compressed air, check that the solenoid valve does not leak air.

OK:

(a) Solenoid valve opens
(b) Solenoid valve does not leak air

NG → **Replace the solenoid valve.**

OK

Repair or replace the solenoid wire.

DTC	P0773/64	Shift Solenoid E Electrical Malfunction (SL Solenoid Valve)

CIRCUIT DESCRIPTION

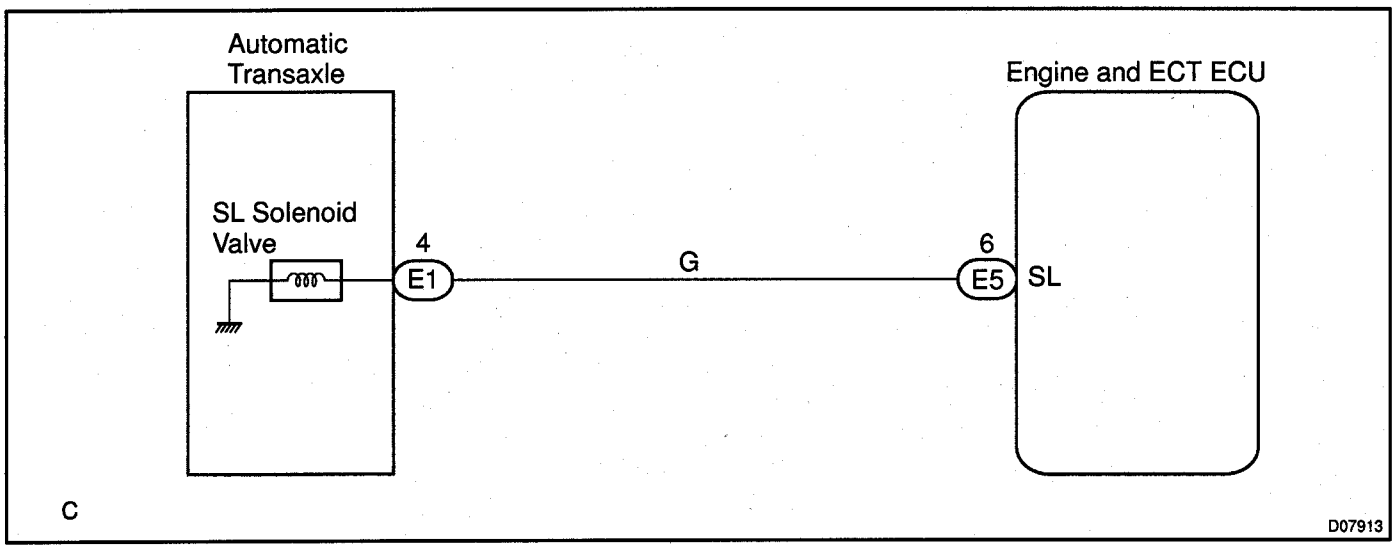
The SL solenoid valve is turned ON and OFF by signals from the Engine and ECT ECU to control the hydraulic pressure acting on the lock–up relay valve, which then controls operation of the lock–up clutch.

DTC No.	DTC Detecting Condition	Trouble Area
P0773/64	Either (a) or (b) is detected 1 time. (a) Solenoid resistance is 8 Ω or less (short circuit) when the solenoid is energized. (b) Solenoid resistance is 100 kΩ or more (open circuit) when the solenoid is not energized.	• Open or short in SL solenoid valve circuit • SL solenoid valve • Engine and ECT ECU

Fail safe function

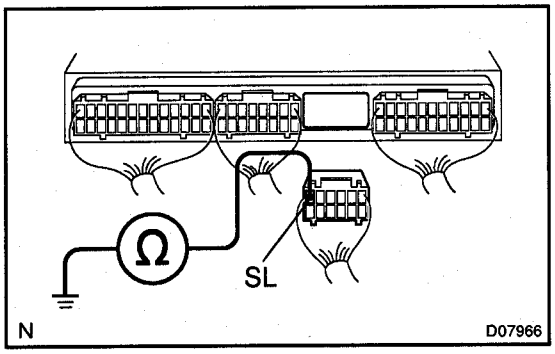
If the Engine and ECT ECU detects a malfunction, it turns the SL solenoid valve OFF.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	**Measure resistance between terminal SL of Engine and ECT ECU and body ground.**

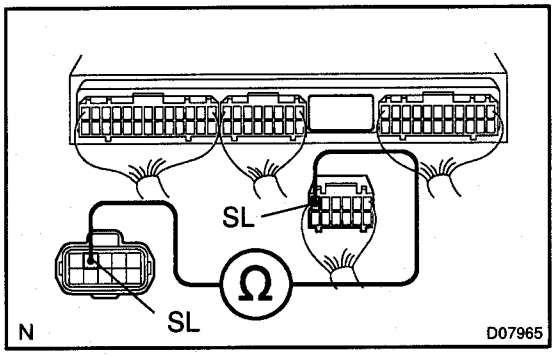


PREPARATION:
Disconnect the connector from Engine and ECT ECU.
CHECK:
Measure resistance between terminal SL of Engine and ECT ECU and body ground.
OK:
Resistance: 11 – 15 Ω at 20 °C (68 °F)

OK	**Check and replace the Engine and ECT ECU (See page IN–29).**

NG

2	**Check harness and connector between Engine and ECT ECU and automatic transmission solenoid connector.**

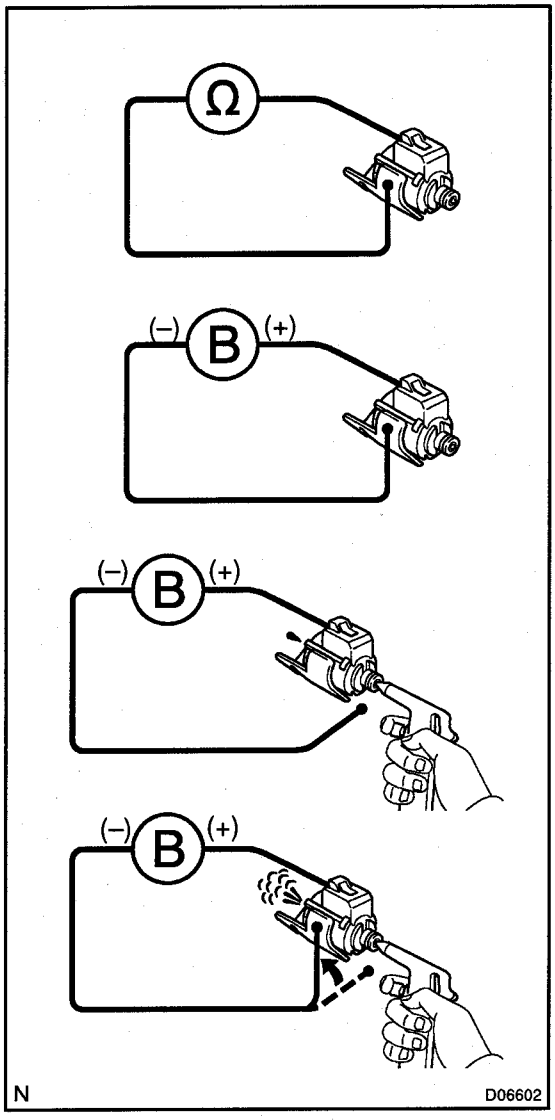


PREPARATION:
Disconnect the solenoid connector from the transmission.
CHECK:
Check the harness between terminal SL of Engine and ECT ECU and terminal SL of transmission solenoid connector.
OK:
There is no open or short circuit.

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

OK

3	Check SL solenoid valve.



Electrical Check:

PREPARATION:

(a) Jack up the vehicle.
(b) Remove the oil pan.
(c) Disconnect the solenoid connector.
(d) Remove the SL solenoid valve.

CHECK:

(a) Measure resistance between terminal SL of solenoid valve and solenoid body.
(b) Connect positive ⊕ lead of the battery to terminal of solenoid connector, negative ⊖ lead of the battery to solenoid body.

OK:

(a) Resistance: 11 – 15 Ω at 20 °C (68 °F)
(b) The SL solenoid valve makes operating noise.

Mechanical Check:

PREPARATION:

(a) Jack up the vehicle.
(b) Remove the oil pan.
(c) Disconnect the solenoid connector.
(d) Remove the SL solenoid valve.

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 solenoid valve, check that the solenoid valve opens.

OK:

(a) Solenoid valve does not leak air.
(b) Solenoid valve opens

NG → **Replace the SL solenoid valve.**

OK

Repair or replace the solenoid wire.

D167V-02

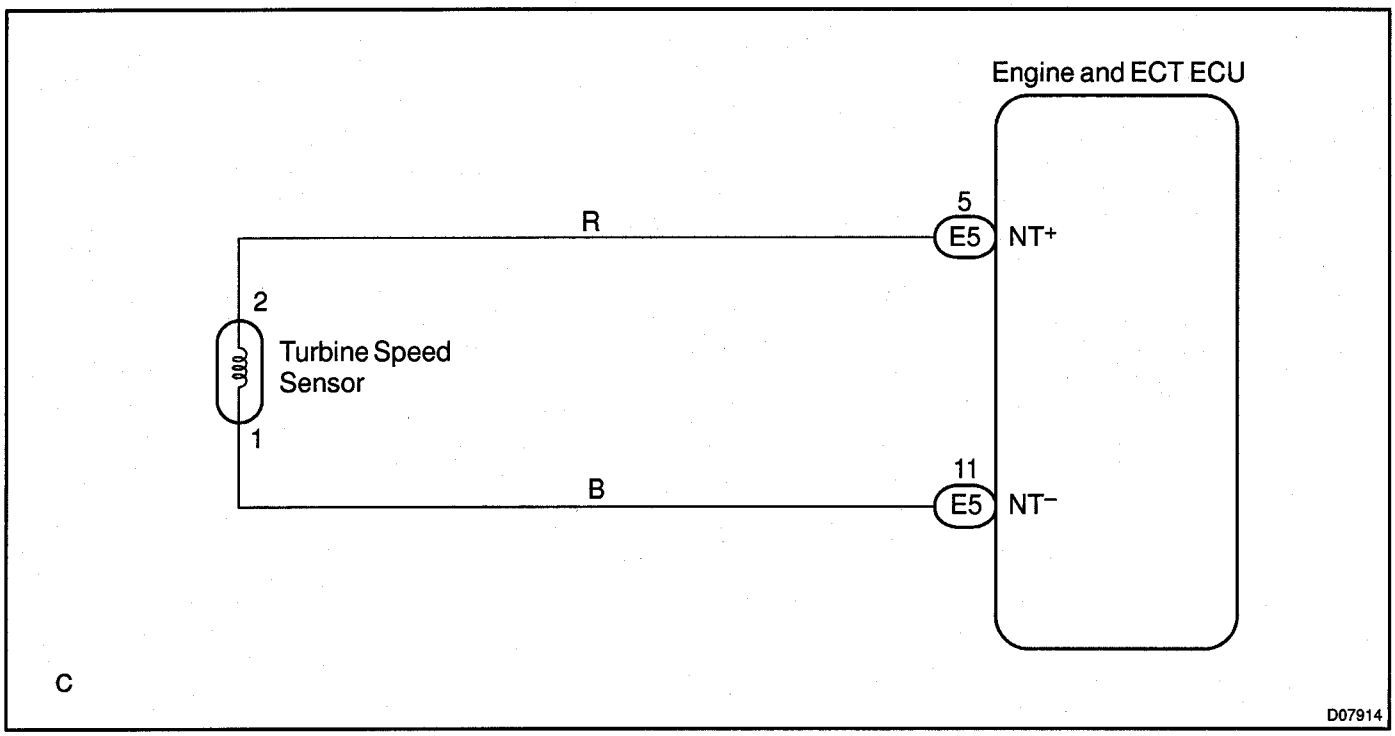
DTC	P1725/37	NT Revolution Sensor Circuit Malfunction (Input Turbine Speed Sensor)

CIRCUIT DESCRIPTION

This sensor detects the rotation speed of the input turbine. By comparing the input turbine speed signal (NT) and the counter gear speed sensor signal (NC), the Engine and ECT ECU 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.

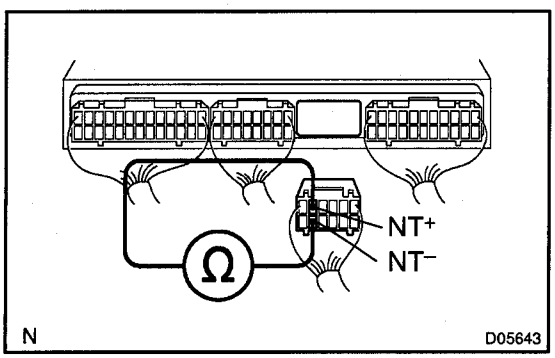
DTC No.	DTC Detecting Condition	Trouble Area
P1725/37	The Engine and ECT ECU detects conditions (a), (b), (c) and (d) continuity for 5 secs or more. (1–trip detection logic) (a) Vehicle speed : 50 km/h (20 mph) or more (b) 2nd, 3rd or O/D gear (c) Solenoid valves and neutral start switch are normal (d) NT < 300 rpm	• Open or short in input turbine (NT) speed sensor circuit • Input turbine (NT) speed sensor • Engine and ECT ECU

WIRING DIAGRAM



INSPECTION PROCEDURE

1	Check resistance between terminals NT+ and NT– of Engine and ECT ECU.

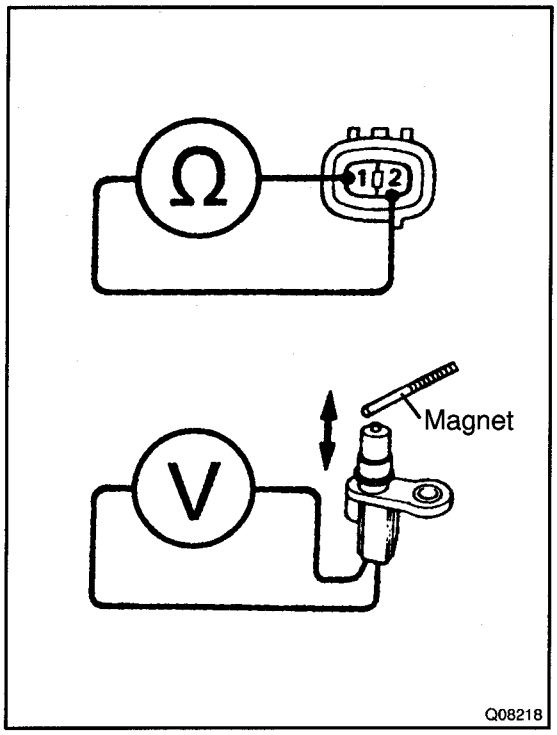


PREPARATION:
Disconnect the connector from Engine and ECT ECU.
CHECK:
Check resistance between terminals NT^+ and NT^- of Engine and ECT ECU.
OK:
Resistance: 620 ± 60 Ω

OK → **Check and replace the Engine and ECT ECU.**

NG

2	Check NT revolution sensor.



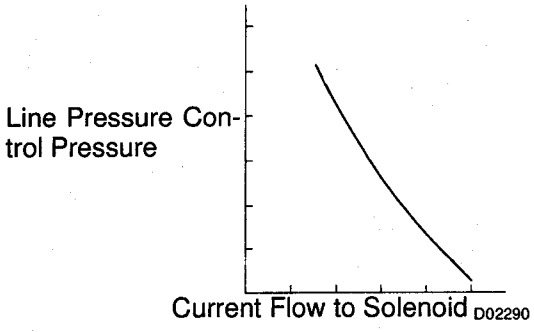
PREPARATION:
Remove the NT revolution speed sensor from transaxle.
CHECK:
(a) Measure resistance between terminals 1 and 2 of speed sensor.
(b) Check voltage between terminals 1 and 2 of the speed sensor when a magnet is put close to the front end of the speed sensor then taken away quickly.
OK:
(a) Resistance: 620 ± 60 Ω at 20 °C (68 °F)
(b) Voltage is generated intermittently.
HINT:
The generated voltage is extremely low.

NG → **Replace the NT input shaft speed sensor.**

OK

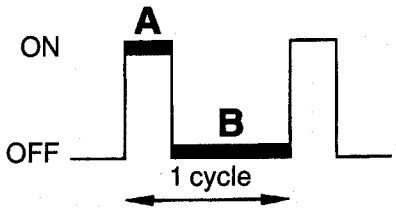
Check and repair the harness and connector between Engine and ECT ECU and Turbine speed sensor (See page IN–29).

DTC	P1760/77	Linear Solenoid for Line Pressure Control Circuit Malfunction (SLT solenoid valve)



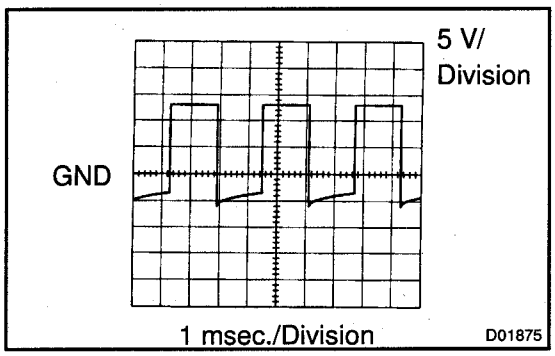
CIRCUIT DESCRIPTION

The throttle pressure that is applied to the primary regulator valve (which modulates line pressure) causes the SLT solenoid valve, under electronic control, to precisely and minutely modulate and generate line pressure according to the accelerator pedal effort, or engine power output detected.
This reduces the function of line pressure and provides smooth shifting characteristics.
Upon receiving the throttle valve opening angle signal, Engine and ECT ECU controls the line pressure by sending a predetermined (*) duty ratio to the solenoid valve, modulating the line pressure, generating throttle pressure.
(*) 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



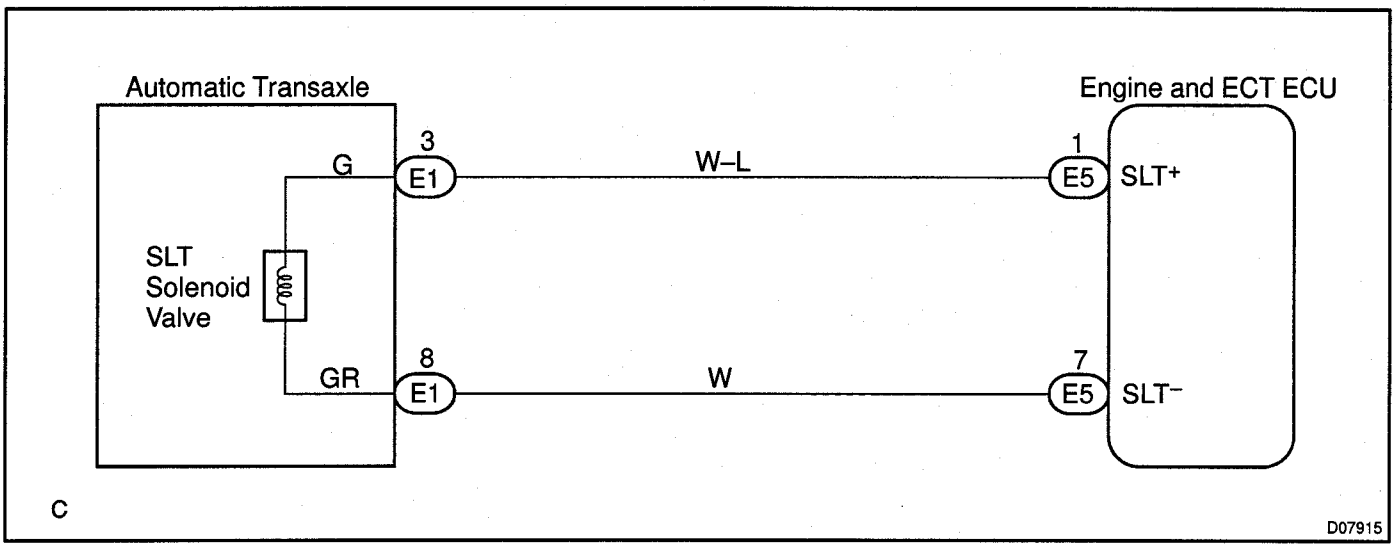
$$\text{Duty Ratio} = \frac{A}{A+B} \times 100\ (\%)$$

DTC No.	DTC Detecting Condition	Trouble Area
P1760/77	(a) or (b) condition below is detected 1 second or more. (a) SLT⁻ terminal: 0V (b) SLT⁻ terminal: 12V	• Open or short in SLT solenoid valve circuit • SLT solenoid valve • Engine and ECT ECU



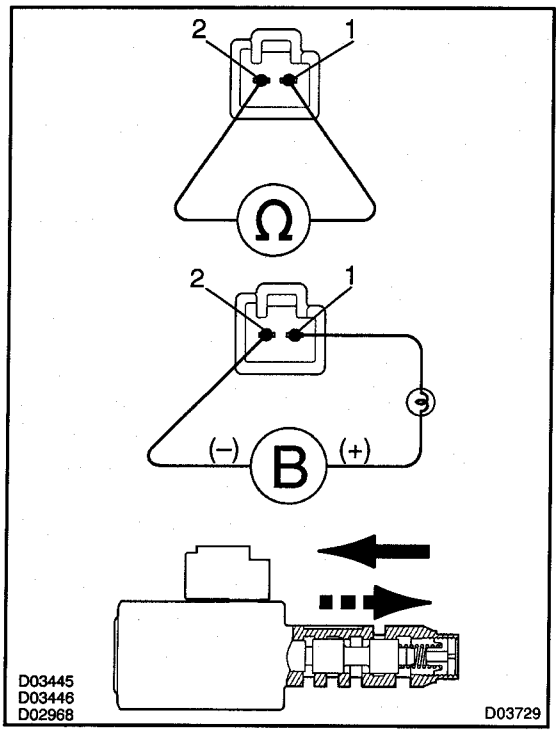
HINT:
Refer to the chart for the wave form between terminals SLT+ and SLT⁻ during engine idling.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	Check SLT solenoid valve.



PREPARATION:

(a) Jack up the vehicle.
(b) Remove the oil pan.
(c) Disconnect the solenoid connector.

Check solenoid resistance

CHECK:

Measure resistance between terminals 1 and 2 of solenoid connector.

OK:

Resistance: 5.0 – 5.6 Ω at 20 °C (68 °F)

Check solenoid operation

CHECK:

Connect positive (+) lead with an 5 – 6W bulb to terminal 1 of solenoid connector and negative (–) lead to terminal 2, then check the movement of the valve.

HINT:

The solenoid valve operates with the current of 0.9 – 1.0 A.

OK:

When battery positive voltage is applied.	Valve moves in ■■► direction in illustration.
When battery positive voltage is cut off.	Valve moves in ◄■■ direction in illustration.

NG → **Replace SLT solenoid valve.**

OK ↓

2	Check harness and connector between SLT solenoid valve and Engine and ECT ECU (See page IN–29).

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

OK ↓

Replace Engine and ECT ECU (See page IN–29).

DI67X-02

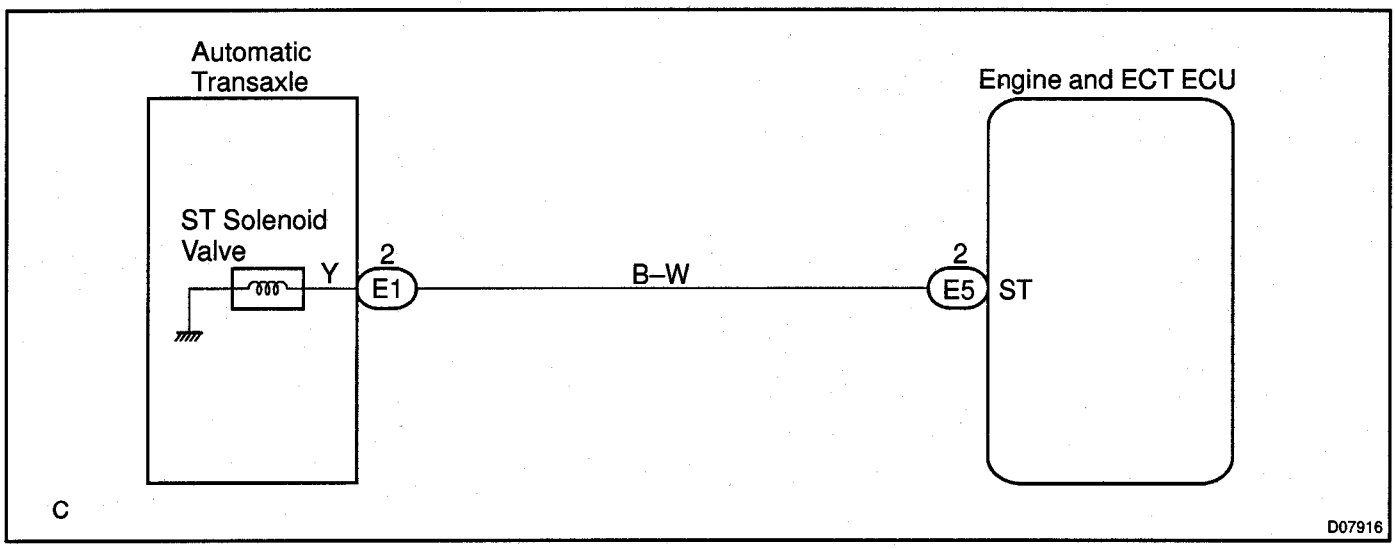
DTC	P1790/65	ST Solenoid Valve Circuit Malfunction

CIRCUIT DESCRIPTION

ST solenoid valve is switched ON–OFF by a signal from Engine and ECT ECU so that let in or out timing of 2nd brake is adjusted by operating orifice control valve. Therefore, ST solenoid operates when letting in or out 2nd brake.
If it is broken, the shift shock becomes big.

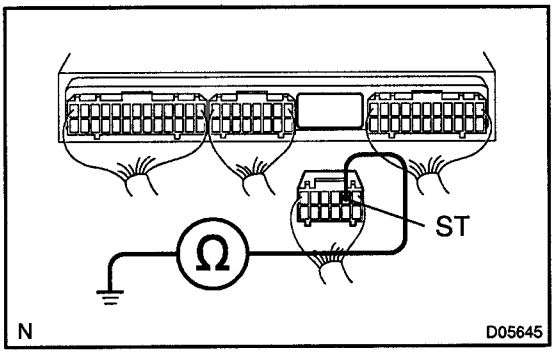
DTC No.	DTC Detecting Condition	Trouble Area
P1790/65	ECU memorizes DTC P1790/65 if (a) or (b) condition below is detected once or more, but ECU does not start O/D OFF indicator light blinking. (a) Solenoid resistance is 30 Ω or lower (short circuit) when solenoid energized. (b) Solenoid resistance is 100 kΩ or higher (open circuit) when solenoid is not energized.	• Open or short in ST solenoid valve circuit • ST solenoid valve • Engine and ECT ECU

WIRING DIAGRAM



INSPECTION PROCEDURE

1	**Measure resistance between terminal ST of Engine and ECT ECU and body ground.**

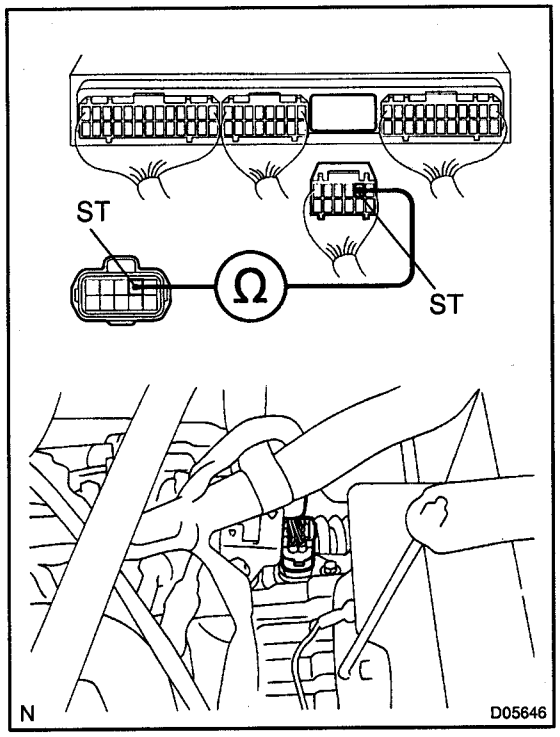


PREPARATION:
Disconnect the connector from Engine and ECT ECU.
CHECK:
Measure resistance between terminal ST of Engine and ECT ECU and body ground.
OK:
Resistance: 11 – 15 Ω at 20 °C (68 °F)

OK	**Check and replace the Engine and ECT ECU (See page IN–29).**

NG

2	**Measure harness and connector between Engine and ECT ECU and automatic transaxle solenoid connector.**



PREPARATION:
Disconnect the solenoid connector from the automatic transaxle.
CHECK:
Measure the harness and connector between terminal ST of Engine and ECT ECU and terminal ST of solenoid connector.
OK:
Resistance: 0 Ω

NG → Repair or replace the harness or connector.

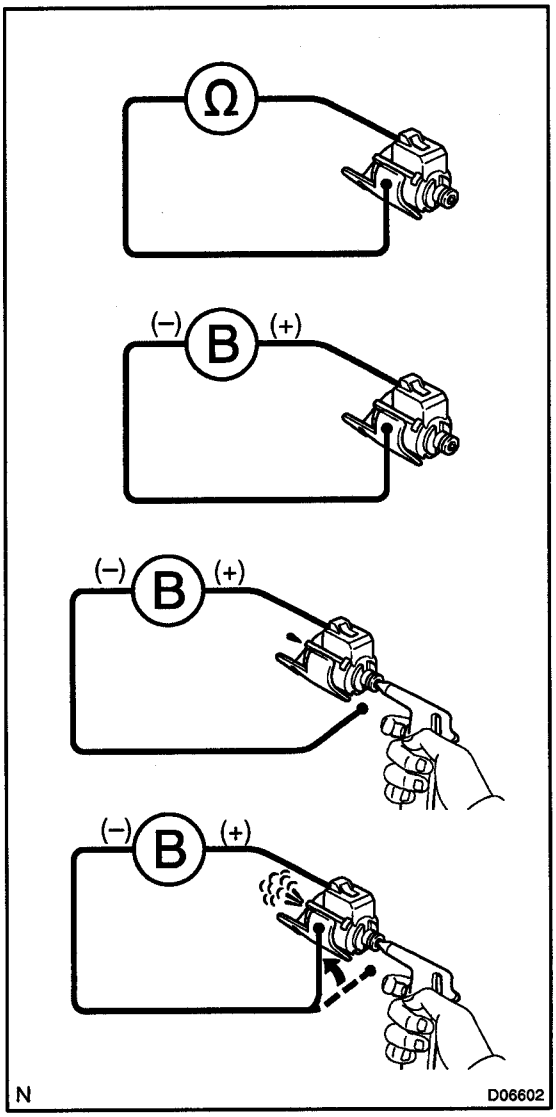
OK

3	Check connection of the connectors.

NG → Connect the connectors correctly.

OK

4	Check ST solenoid valve.



Electrical check:

PREPARATION:

(a) Jack up the vehicle.
(b) Remove the oil pan.
(c) Disconnect the solenoid connector.
(d) Remove the ST solenoid valve.

CHECK:

(a) Measure resistance between solenoid connector and body ground.
(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 solenoid makes an operating noise.

Mechanical check:

PREPARATION:

(a) Jack up the vehicle.
(b) Remove the oil pan.
(c) Disconnect the solenoid connector.
(d) Remove the ST solenoid valve.

CHECK:

(a) Applying 490 kPa (5 kgf/cm^2, 71 psi) of compressed air, check that the solenoid valves do not leak air.
(b) When battery positive voltage is supplied to the shift solenoid valves, check that the solenoid valve opens.

OK:

(b) Solenoid valve does not leak air.
(a) Solenoid valve opens.

NG → **Replace the solenoid valve.**

OK

Repair or replace the solenoid wire.

DI2LN-04

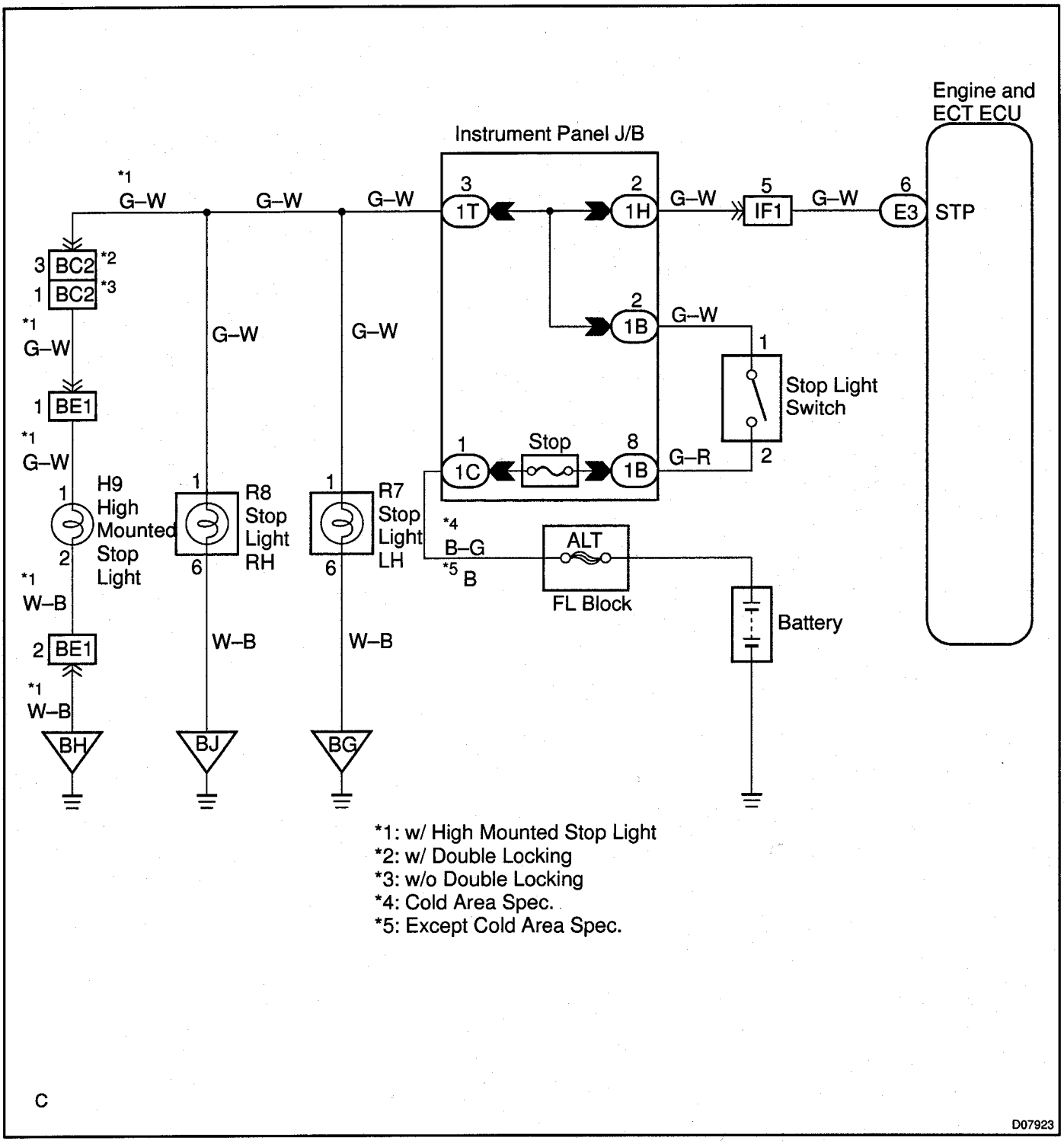
Stop Light Switch Signal Circuit

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 depressed, this switch sends a signal to Engine and ECT ECU. Then the Engine and ECT ECU cancels operation of the lock–up clutch while braking is in progress.

WIRING DIAGRAM



INSPECTION PROCEDURE

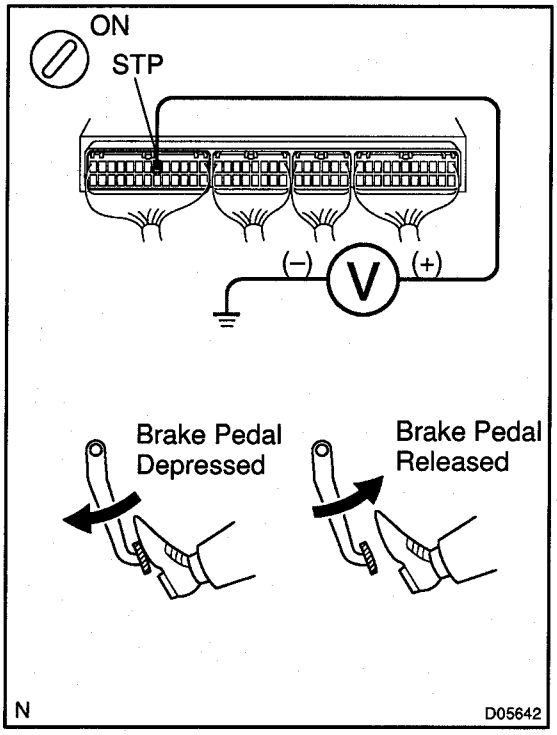
1	**Check operation of stop light.**

CHECK:
Check if the stop lights go on and off normally when the brake pedal is depressed and released.

NG → **Check and repair stop light circuit.**

OK

2	**Check STP signal.**



When using hand–held tester:

PREPARATION:

(a) Connect the hand–held tester to the DLC3.
(b) Turn the ignition switch ON and hand–held tester main switch ON.

CHECK:

Read the STP signal on the hand–held tester.

OK:

Brake pedal is depressed: STP...ON
Brake pedal is released: STP...OFF

When not using hand–held tester:

PREPARATION:

(a) Remove the glove compartment door.
(b) Turn the ignition switch ON.

CHECK:

Check voltage between terminal STP of the Engine and ECT ECU and body ground.

OK:

Brake pedal	Voltage
Depressed	9.0 – 14 V
Released	Below 1.5 V

OK → **Check for intermittent problems.**

NG

3	**Check harness and connector between Engine and ECT ECU and stop light switch (See page IN–29).**

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

OK

Check and replace Engine and ECT ECU (See page IN–29).

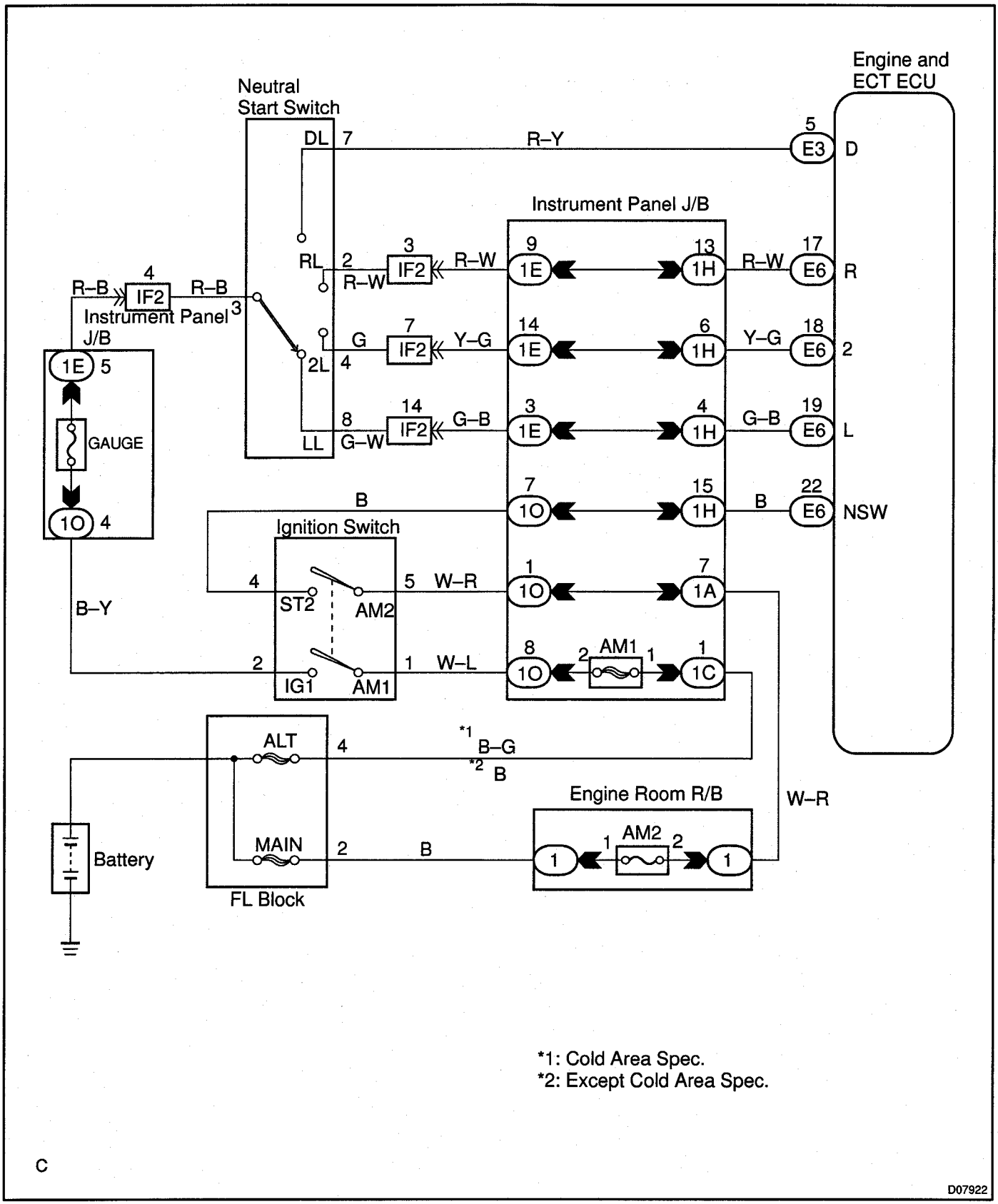
DI0CZ-08

Neutral Start Switch Malfunction

CIRCUIT DESCRIPTION

The neutral start switch detects the shift lever range and sends signals to the Engine and ECT ECU. The Engine and ECT ECU receives signals (NSW, R, D, 2 and L) from the neutral start switch.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	**Read PNP, REVERSE, 2ND and LOW signals.**

When using hand–held tester:

PREPARATION:

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

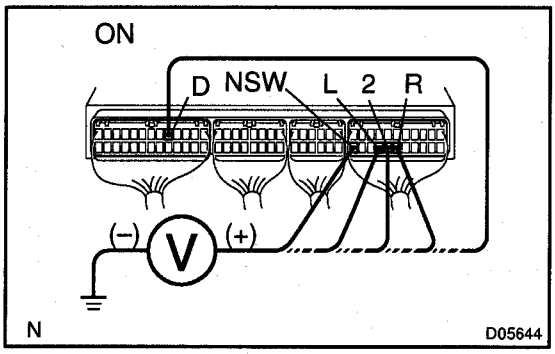
(b) Turn the ignition switch ON and hand–held tester main switch ON.

CHECK:

Shift lever into the P, R, N, 2 and L ranges, and read the NSW, REVERSE, 2ND and LOW signals on the hand–held tester.

OK:

Shift range	Signal
2	2ND OFF → ON
L	LOW OFF → ON
R	REVERSE OFF → ON
P, N	NSW OFF → ON



When not using hand–held tester:

PREPARATION:

Turn the ignition switch ON.

CHECK:

Measure voltage between each of terminals NSW, 2, L and R of Engine and ECT ECU and body ground when the shift lever is shifted to the following ranges.

OK:

Range	Tester connection	Specified value
P, N	NSW – Body ground	Battery positive voltage
R	R – Body ground	*Battery positive voltage
D	D – Body ground	Battery positive voltage
2	2 – Body ground	Battery positive voltage
L	L– Body ground	Battery positive voltage

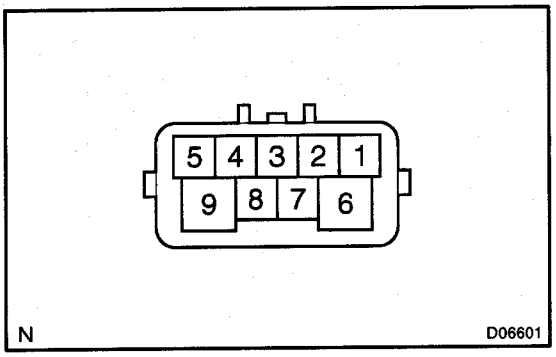
HINT:

*: The voltage will drop slightly due to lighting up of the back up light.

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page DI–19).**

NG

2	Check neutral start switch.



PREPARATION:
Remove the neutral start switch.

CHECK:
Check continuity between each terminal shown below when the shift lever is moved to each range.

Shift range	Terminal No. to continuity	
P	1 – 3	6 – 9
R	2 – 3	–
N	3 – 5	6 – 9
D	3 – 7	–
2	3 – 4	–
L	3 – 8	–

OK:
There is continuity.

NG → **Replace the neutral start switch.**

OK

3	Check harness and connector between battery and neutral start switch, neutral start switch and Engine and ECT ECU (See page IN–29).

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

OK

Check and replace the Engine and ECT ECU (See page IN–29).

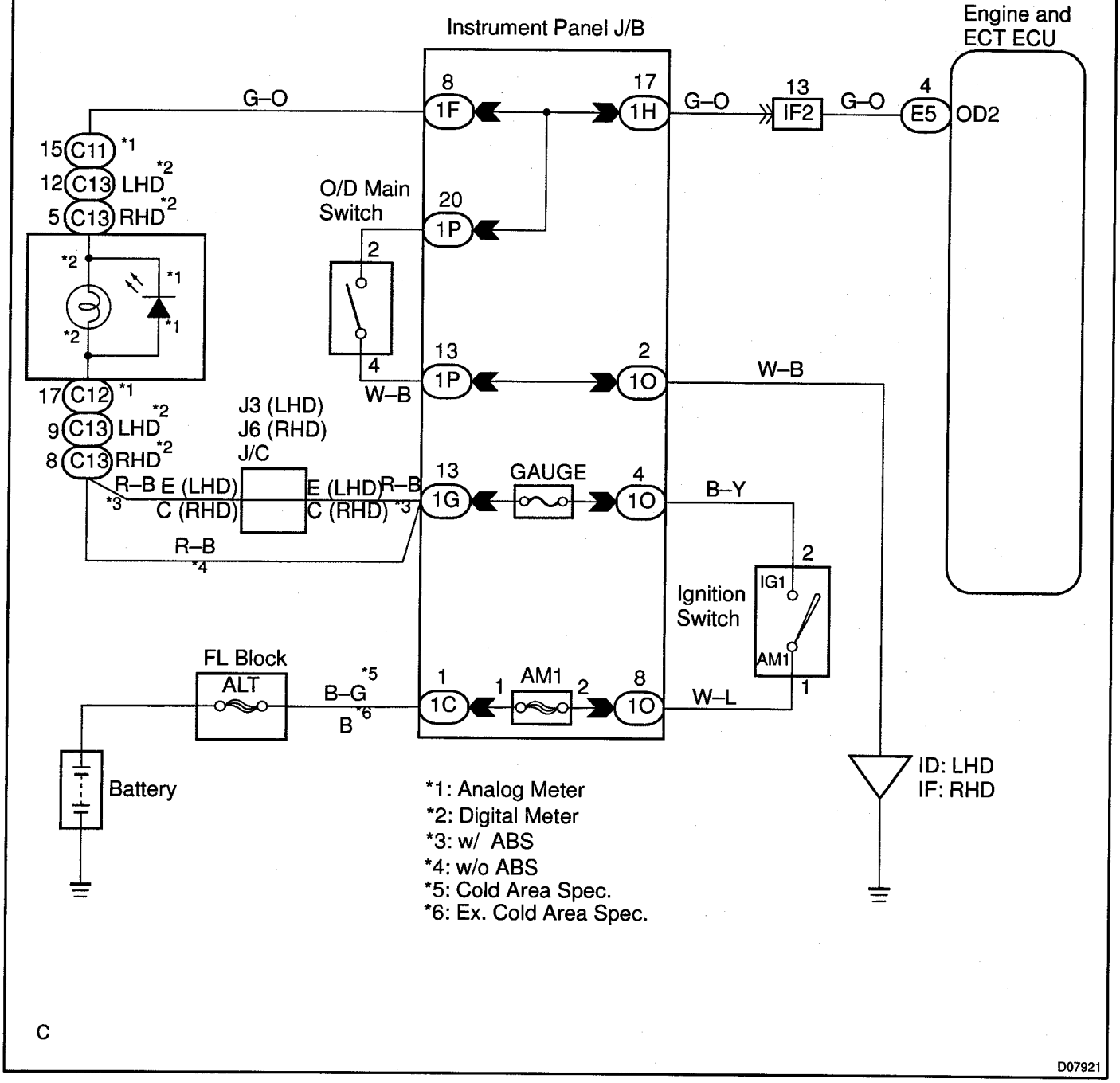
DI67Y–02

O/D Main Switch & O/D OFF Indicator Light Circuit

CIRCUIT INSPECTION

The O/D main switch contacts go open when the switch is pushed in and go closed when it is pushed out. If O/D main switch is at OFF position, the O/D OFF indicator light lights up, and the Engine and ECT ECU prohibits shifting overdrive.

WIRING DIAGRAM



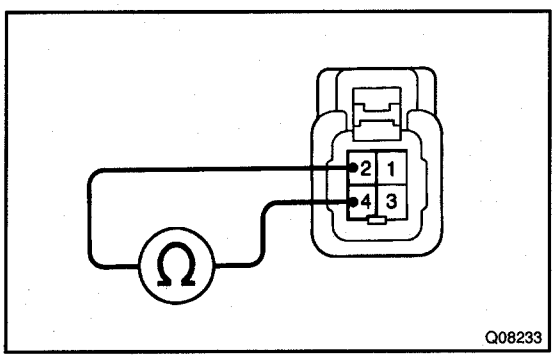
C

D07921

INSPECTION PROCEDURE

O/D OFF indicator light does not light up

1	**Check O/D main switch.**



PREPARATION:
Disconnect the O/D main switch connector.
CHECK:
Check continuity between terminals 2 and 4 of O/D main switch connector.
OK:

O/D main switch	Specified condition
ON	No continuity
OFF	Continuity

NG → **Replace the O/D main switch.**

OK

2	**Check and replace combination meter (See page BE–2).**

NG → **Replace the combination meter.**

OK

3	Check OVRDRIVE CUT SW2 signal.

When using hand–held tester:

PREPARATION:

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

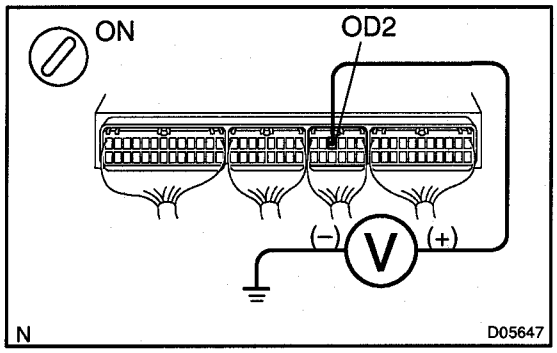
(b) Turn the ignition switch ON and hand–held tester main switch ON.

CHECK:

Read the OVRDRIVE CUT SW2 signal on the hand–held tester.

OK:

O/D main switch condition	OVRDRIVE CUT SW2 signal
O/D ON (Pushed in)	OFF
O/D OFF (Pushed once again)	ON



When not using hand–held tester:

PREPARATION:

Turn the ignition switch ON.

CHECK:

Check voltage between terminal OD2 of Engine and ECT ECU and body ground.

OK:

O/D main switch condition	Voltage
O/D ON (Pushed in)	9.0 – 14 V
O/D (Pushed once again)	Below 1.5 V

OK → **Proceed to next circuit inspection shown in symptom problems table (See page DI–19).**

NG

4	Check harness and connector between O/D OFF indicator light and Engine and ECT ECU (See page IN–29).

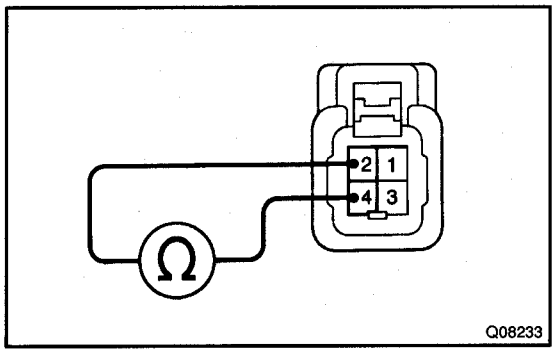
NG → **Repair or replace the harness or connector.**

OK

Check and replace the Engine and ECT ECU (See page IN–29).

O/D OFF indicator light remains ON

1	**Check O/D main switch.**



PREPARATION:
Disconnect the O/D main switch connector.
CHECK:
Check continuity between terminals 2 and 4 of O/D main switch connector.
OK:

O/D main switch	Specified condition
ON	No continuity
OFF	Continuity

NG → **Replace the O/D main switch.**

OK →

2	**Check harness and connector between O/D OFF indicator light and O/D main switch, O/D OFF indicator light and Engine and ECT ECU (See page IN–29).**

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

OK →

Check and replace the Engine and ECT ECU (See page IN–29).

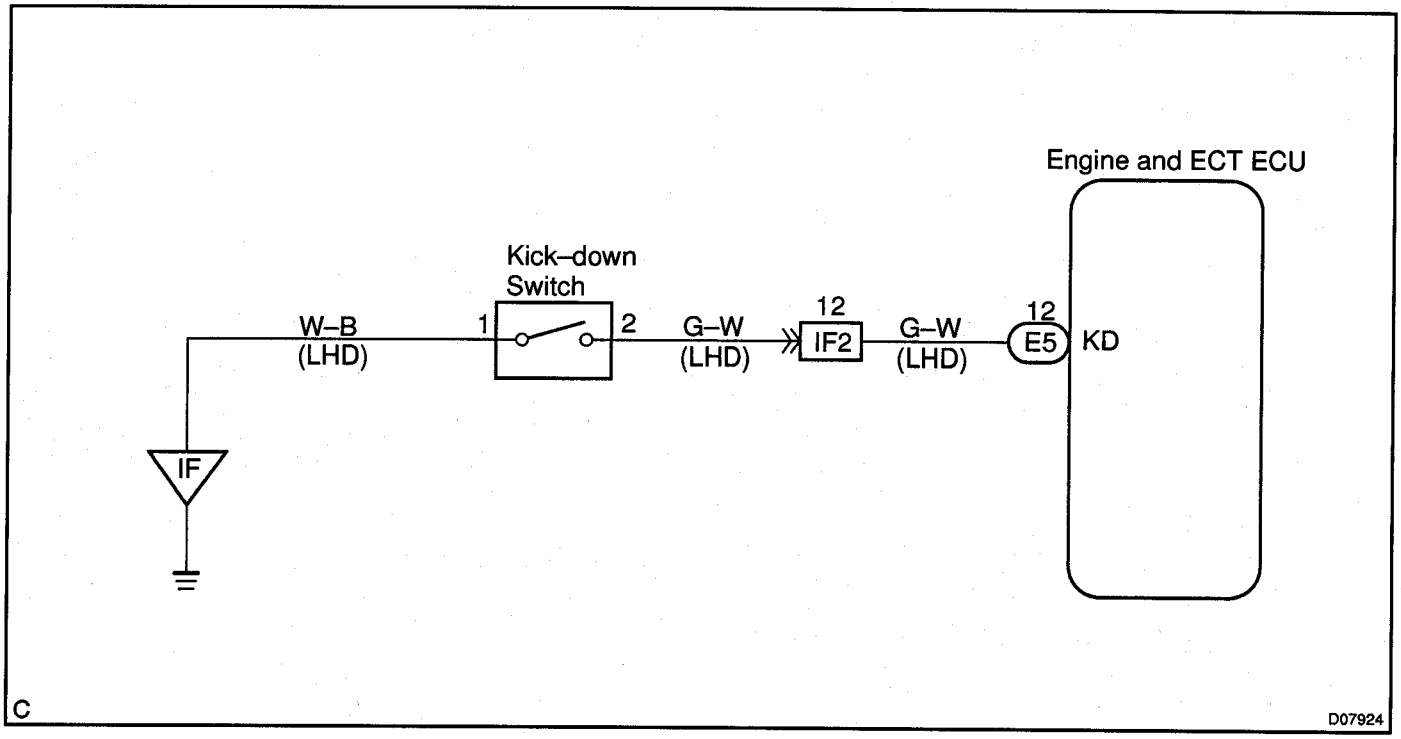
DI333-02

Kick–down Switch Circuit

CIRCUIT DESCRIPTION

The kick–down switch is turned ON when the accelerator pedal is depressed beyond the full throttle opening and sends signals to Engine and ECT ECU.
When the kick–down switch is turned ON, the Engine and ECT ECU controls gear shifting according to the programmed shift diagrams.
If a short circuit develops in the kick–down switch, the Engine and ECT ECU disregards the kick–down signals and controls shifting at the normal shift points.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	**Check KICK DOWN SW signal.**

When using hand–held tester:

PREPARATION:

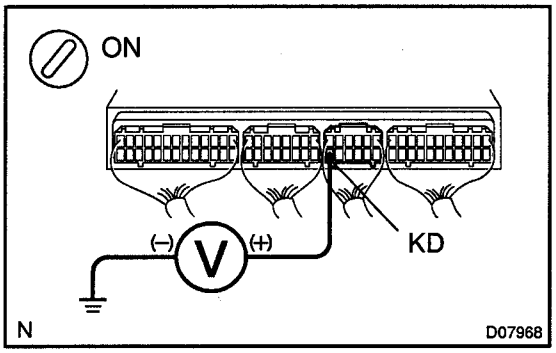
(a) Remove the DLC3 cover.
(b) Connect a hand–held tester to the DLC3.
(c) Turn the ignition switch ON and hand–held tester main switch ON.

CHECK:

Read the KICK DOWN SW signal on the hand–held tester.

OK:

Accelerator Pedal	KICK DOWN SW signal
Fully depressed (kick–down SW is ON)	ON
Released (kick–down SW is OFF)	OFF



When not using hand–held tester:

PREPARATION:

Turn the ignition switch ON.

CHECK:

Measure voltage between terminal KD of Engine and ECT ECU connector and body ground when accelerator pedal is fully depressed or not.

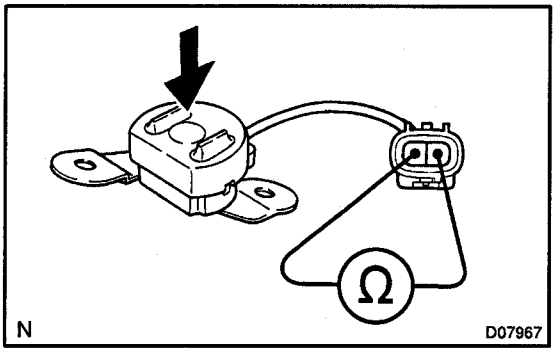
OK:

Accelerator Pedal	Voltage
Fully depressed (kick–down SW is on)	Below 1 V
Released (kick–down SW is OFF)	10 – 14 V

OK → **Proceed to next circuit inspection shown in problem symptoms table (See page DI–19).**

NG

2	Check kick–down switch.



PREPARATION:
Disconnect the kick–down switch connector.
CHECK:
Check continuity at each terminal of kick–down switch connector.
OK:

Kick–down Switch	Specified continuity
ON	Continuity
OFF	No continuity

NG → **Replace kick–down switch.**

OK

3	Check harness and connector between Engine and ECT ECU and kick–down switch, kick–down switch and body ground (See page IN–29).

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

OK

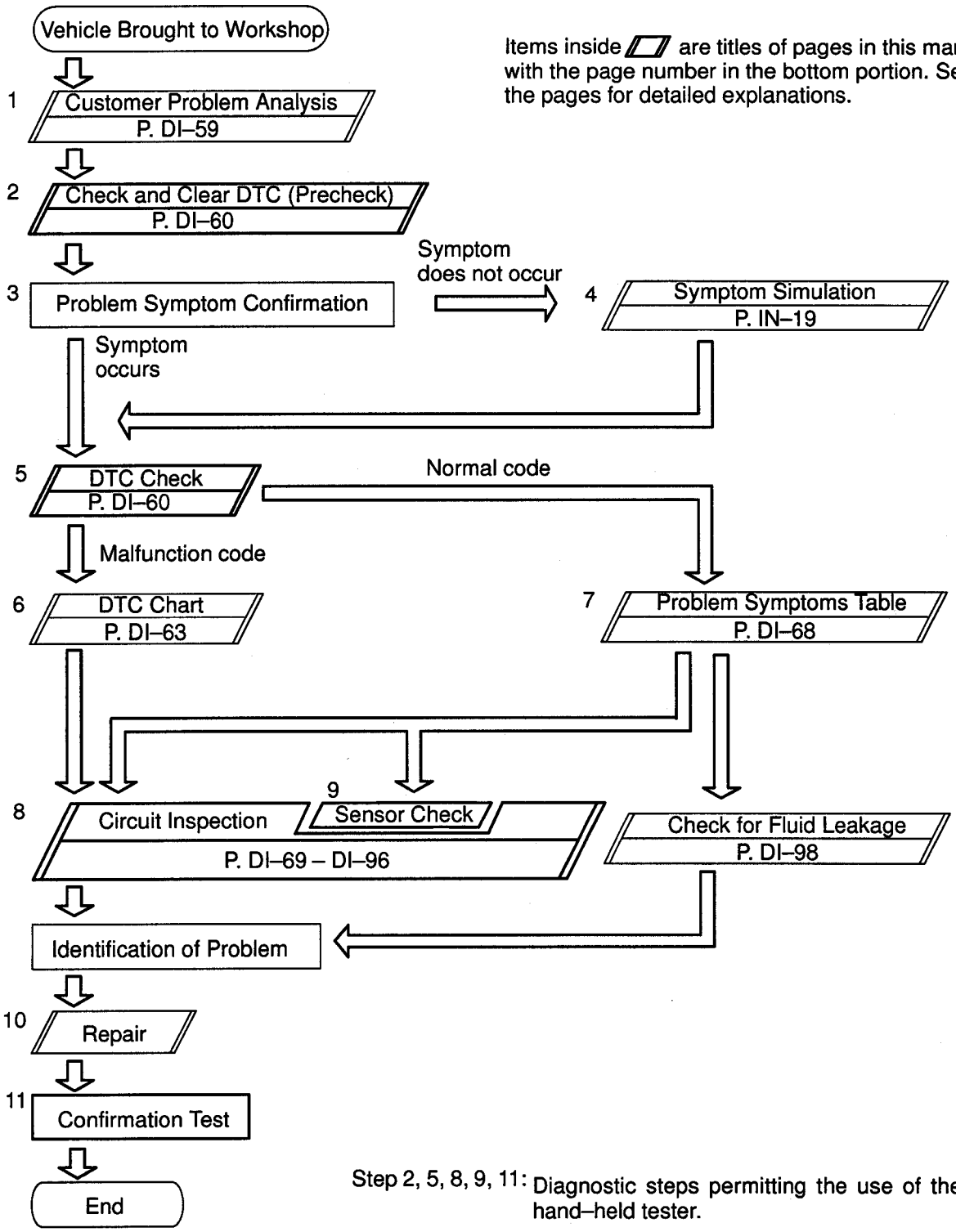
Check and replace Engine and ECT ECU (See page IN–29).

ANTI–LOCK BRAKE SYSTEM WITH ELECTRONIC BRAKE FORCE DISTRIBUTION (EBD)

HOW TO PROCEED WITH TROUBLESHOOTING

DI6SE–01

Troubleshoot 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 hand–held tester.

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. In the case of the malfunction that the EBD control can not be carried out, the ECU also turns on the brake warning light and prohibits the EBD control.

DI6SF-01

CUSTOMER PROBLEM ANALYSIS CHECK

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

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

DI6SG–01

PRE–CHECK

1. DIAGNOSIS SYSTEM

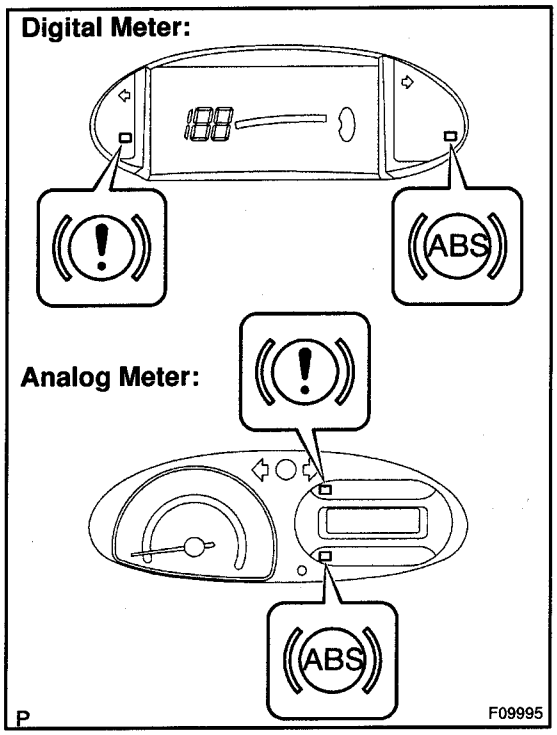
(a) Release parking brake lever.

(b) Check the indicator.

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

HINT:

- When the parking brake is applied or the level of the brake fluid is low, brake warning light is lit.
- If the indicator check result is not normal, proceed to troubleshooting for the ABS warning light circuit or brake warning light circuit (See page DI–91 or DI–94).



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

Check the DTC.

(1) Using SST, connect terminals Tc and CG of DLC3.

SST 09843–18040

(2) Turn the ignition switch ON.

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

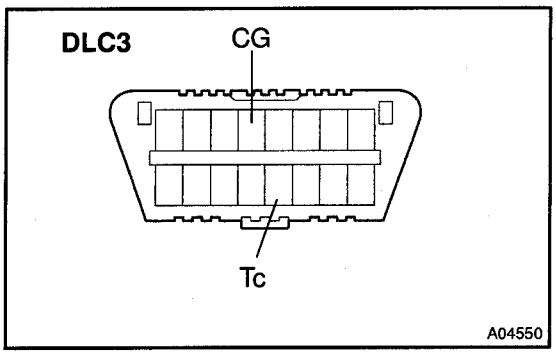
HINT:

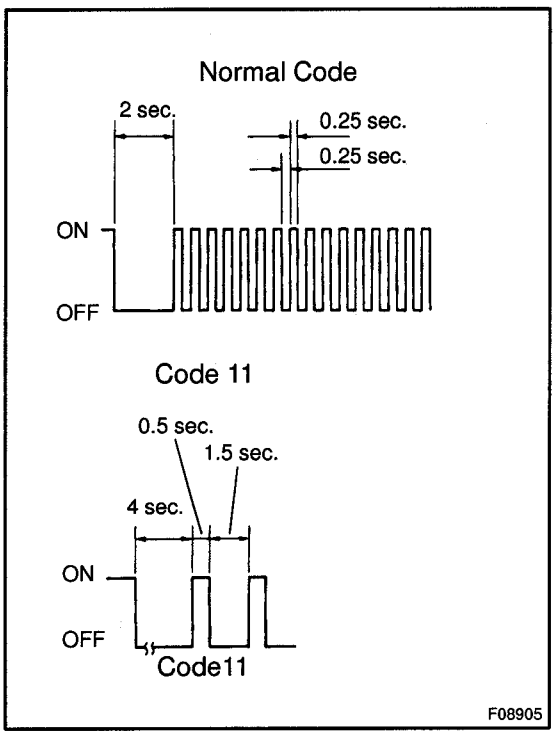
- If no code appears, inspect the diagnostic circuit or ABS warning light circuit (See page DI–96 or DI–91).
- As an example, the blinking patterns for normal code and codes 11 are shown on the left.

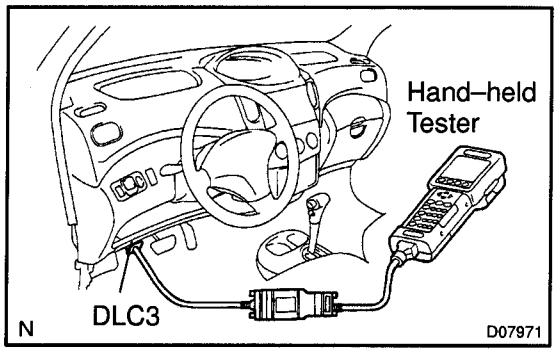
(4) Codes are explained in the code table on page DI–63.

(5) After completing the check, disconnect terminals Tc and CG, and turn off the ignition switch.

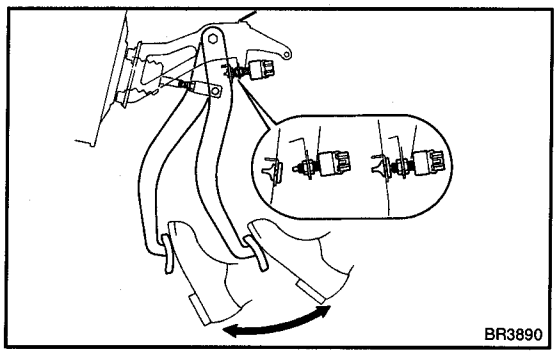
Even if 2 or more malfunctions are detected, the lowest numbered DTC will be displayed.



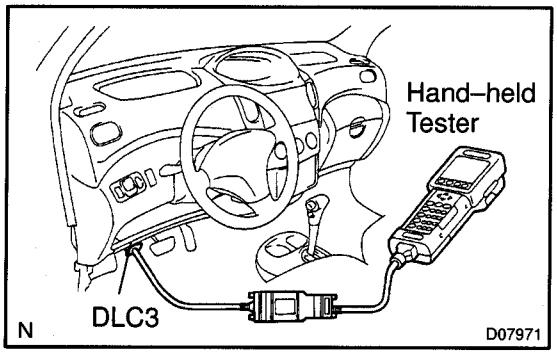




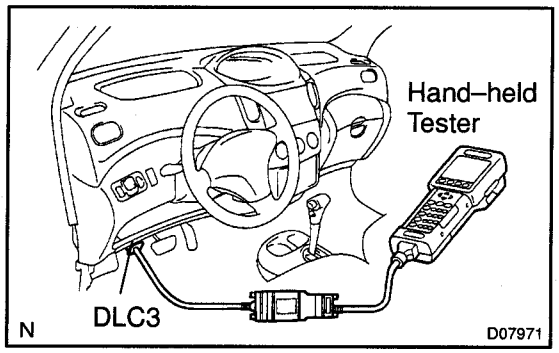
(d) In case of using hand–held tester:
Check the DTC.
(1) Hook up the hand–held tester to the DLC3.
(2) Turn the ignition switch ON.
(3) Read the DTC by following the prompts on the tester screen.
Please refer to the hand–held tester operator's manual for further details.



(e) In case of not using hand–held tester:
Clear the DTC.
(1) Using SST, connect terminals Tc and CG of DLC3.
SST 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 DLC3.
SST 09843–18040



(f) In case of using hand–held tester:
Clear the DTC.
(1) Hook up the hand–held tester to the DLC3.
(2) Turn the ignition switch ON.
(3) Operate the hand–held tester to erase code.
(See hand–held tester operator's manual.)



2. SPEED SENSOR SIGNAL CHECK (TEST MODE)

(a) Hook up the hand–held tester to the DLC3.
(b) Start the engine.
(c) Drive vehicle faster than 45 km/h (28 mph) for several seconds.

HINT:
There is a case that the sensor check is not completed if the vehicle has its wheels spined or its steering wheel steered during this check.

(d) Read the DTC, from hand–held tester screen.

HINT:

See the list of DTC the bottom in this page.

Please refer to the 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 • Right front speed sensor rotor • Sensor installation
C1272 / 72	Low output voltage of left front speed sensor	• Left front speed sensor • Left front speed sensor rotor • Sensor installation
C1273 / 73	Low output voltage of right rear speed sensor	• Right rear speed sensor • Right rear speed sensor rotor • Sensor installation
C1274 / 74	Low output voltage of left rear speed sensor	• Left rear speed sensor • Left rear speed sensor rotor • Sensor installation
C1275 / 75	Abnormal change in output voltage of right front speed sensor	Right front speed sensor rotor
C1276 / 76	Abnormal change in output voltage of left front speed sensor	Left front speed sensor rotor
C1277 / 77	Abnormal change in output voltage of right rear speed sensor	Right rear speed sensor rotor
C1278 / 78	Abnormal change in output voltage of left rear speed sensor	Left rear speed sensor rotor

DI6SH–01

DIAGNOSTIC TROUBLE CODE CHART

NOTICE:

When removing the part, turn the ignition switch OFF.

HINT:

- Using SST 09843–18040, connect the terminals 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.
- EBD shall be checked according to the ABS trouble code chart.

DTC No. (See Page)	Detection Item	Trouble Area
C0278 / 11 (DI–80)	Open circuit in ABS solenoid valve relay circuit	• ABS solenoid valve relay (Included ABS ECU) • ABS solenoid valve relay circuit • Valve supply voltage
C0279 / 12 (DI–80)	Short circuit in ABS solenoid valve relay circuit	
C0273 / 13 (DI–78)	Open circuit in ABS motor relay circuit	• ABS motor relay (Included ABS ECU) • ABS motor relay circuit • ABS motor voltage
C0274 / 14 (DI–78)	Short circuit in ABS motor relay circuit	
C0226 / 21 (DI–76)	Right front solenoid valve faulty	• Right front solenoid valve circuit • ABS actuator
C0236 / 22 (DI–76)	Left front solenoid valve faulty	• Left front solenoid valve circuit • ABS actuator
C0246 / 23 (DI–76)	Right rear solenoid valve faulty	• Right rear solenoid valve circuit • ABS actuator
C0256 / 24 (DI–76)	Left rear solenoid valve faulty	• Left rear solenoid valve circuit • ABS actuator
C0200 / 31* (DI–69)	Right front wheel speed sensor signal malfunction	• Right front, left front, right rear, left rear speed sensor • Each speed sensor circuit • Sensor installation • Sensor rotor
C0205 / 32* (DI–69)	Left front wheel speed sensor signal malfunction	
C0210 / 33* (DI–69)	Right rear wheel speed sensor signal malfunction	
C0215 / 34* (DI–69)	Left rear wheel speed sensor signal malfunction	
C1241 / 41 (DI–82)	Low battery voltage or abnormally high battery voltage	• Battery • Charging system • Power source circuit
C1249 / 49 (DI–85)	Open circuit in stop light switch circuit	• Stop light bulb • Stop light switch • Stop light switch circuit
C1251 / 51* (DI–87)	Pump motor is locked	ABS pump motor
Always ON (DI–89)	Malfunction in ECU IG power source circuit	• Battery • Charging system • Power source circuit • ABS ECU • ABS waring light circuit

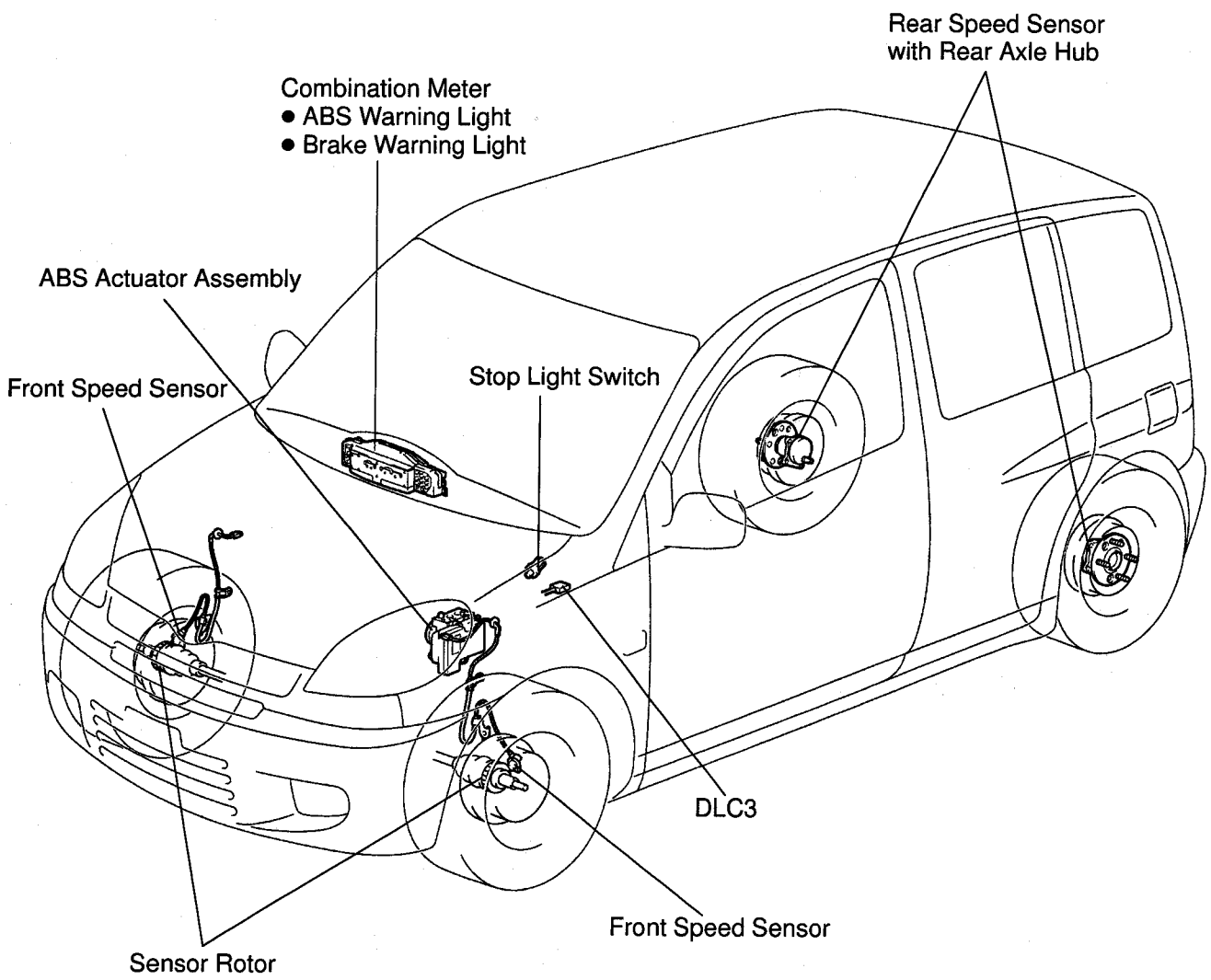
* : As the DTC cannot be erased by replacing parts alone, do either of the following operations.

- Clear the DTC (See page DI–60).
- At the vehicle speed of 20 km/h (12 mph), drive the vehicle for 30 sec. or more.

DI6SI–01

PARTS LOCATION

LHD models:



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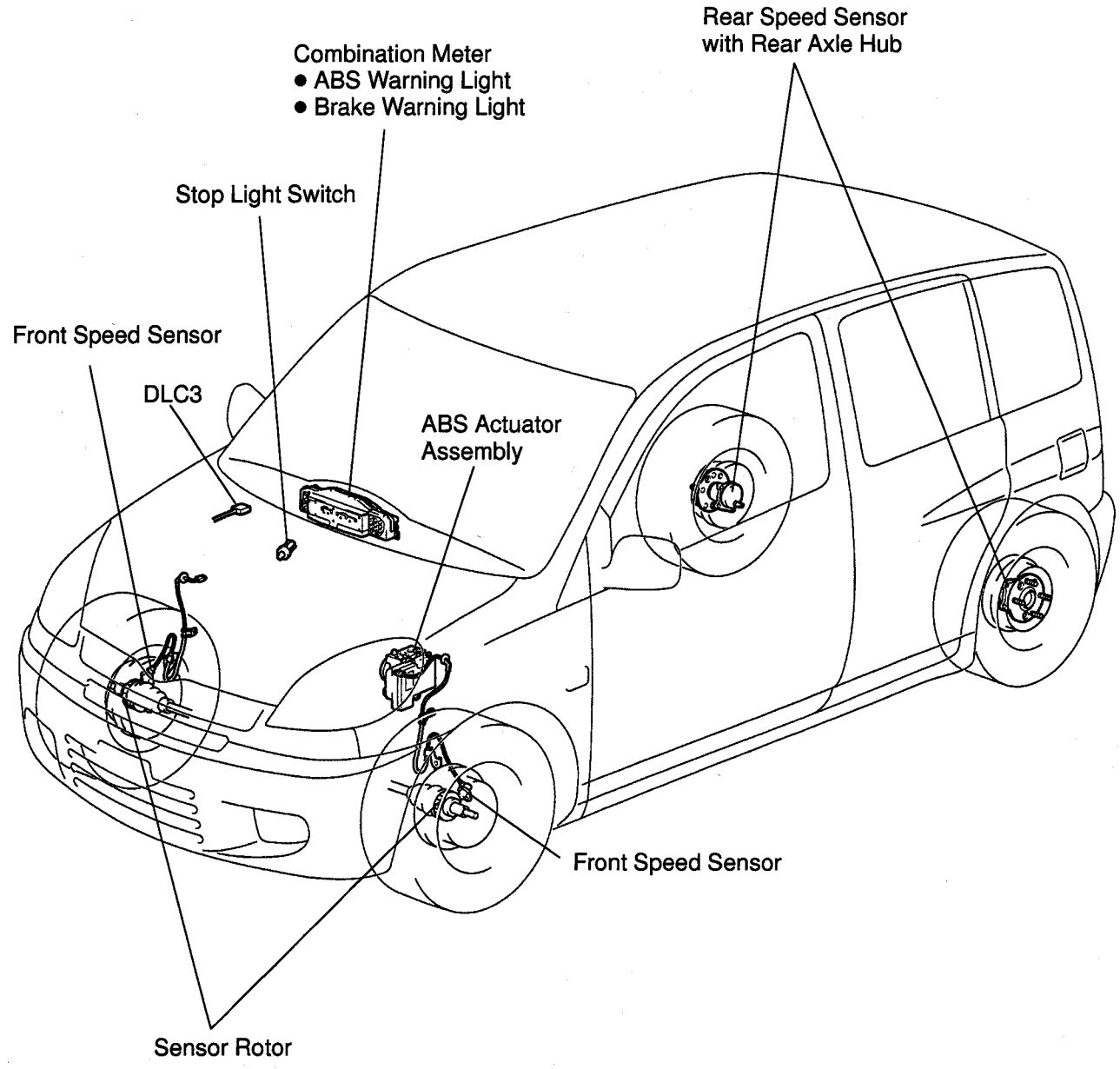
F09980

RHD models:



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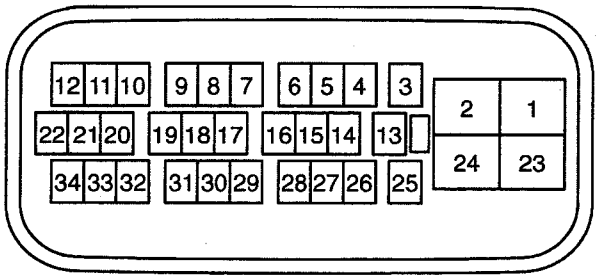
DI6SJ-01

TERMINALS OF ECU



F07812

Symbols (Terminals No.)	Wiring Color	Condition	STD Voltage (V)
IG (3) – GND (1, 23)	P–L ↔ W–B	IG switch ON	10 – 14
+BS (2) – GND (1, 23)	B ↔ W–B	Always	10 – 14
RR+ (5) – RR– (4)	L–R ↔ R	IG switch ON Slowly turn right rear wheel	AC generation
RL+ (7) – RL– (6)	Y–B ↔ L–W	IG switch ON Slowly turn left rear wheel	AC generation
Tc (8) – GND (1, 23)	P–B ↔ W–B	IG switch ON	10 – 14
FL+ (13) – FL– (26)	Y ↔ G	IG switch ON Slowly turn left front wheel	AC generation
STP (16) – GND (1, 23)	G–W ↔ W–B	Stop light switch ON	10 – 14
	G–W ↔ W–B	Stop light switch OFF	Below 1.0
EBD (19) – GND (1, 23)	B–W ↔ W–B	Release parking brake lever, IG switch ON, brake warning light ON	7 – 10
		Release parking brake lever, IG switch ON, brake warning light OFF	Below 2.0
+BM (24) – GND (1, 23)	B ↔ W–B	Always	10 – 14
FR+ (27) – FR– (28)	B–R ↔ W	IG switch ON Slowly turn right front wheel	Below 1.0
WA (30) – GND (1, 23)	P ↔ W–B	IG switch ON, ABS warning light ON	7 – 10
		IG switch ON, ABS warning light OFF	Below 2.0

DI6SK–01

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.

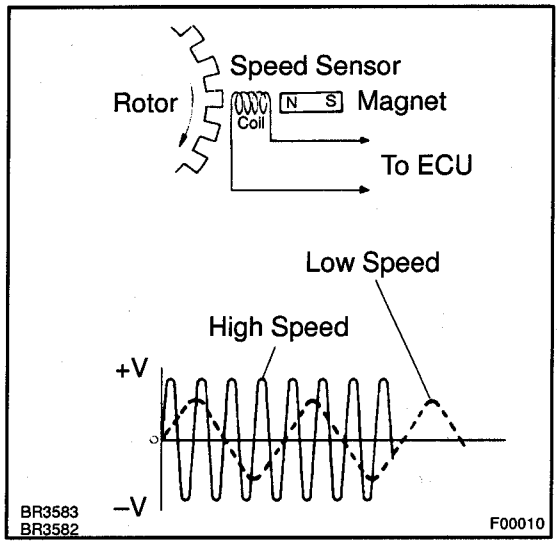
Symptom	Suspect Area	See page
ABS does not operate.	Only when 1. – 4. are all normal and the problem is still occurring, replace the ABS actuator assembly. 1. Check the DTC reconfirming that the normal code is output. 2. Power source circuit 3. Speed sensor circuit 4. Check the ABS actuator with a hand–held tester. If abnormal, check the hydraulic circuit for leakage (See page DI–98).	 DI–60 DI–82 DI–69 BR–53
ABS does not operate efficiently.	Only when 1. – 5. are all normal and the problem is still occurring, replace the ABS actuator assembly. 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. Check the ABS actuator with a hand–held tester. If abnormal, check the hydraulic circuit for leakage (See page DI–98).	 DI–60 DI–69 DI–85 DI–82 BR–53
ABS warning light abnormal.	1. ABS warning light circuit 2. ABS ECU	DI–91 IN–29
Brake warning light abnormal.	1. Brake warning light circuit 2. ABS ECU	DI–94 IN–29
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–91 DI–96
Speed sensor signal check cannot be done.	ABS ECU	IN–29

DI6SL-01

CIRCUIT INSPECTION

DTC	C0200 / 31 to C0215 / 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.

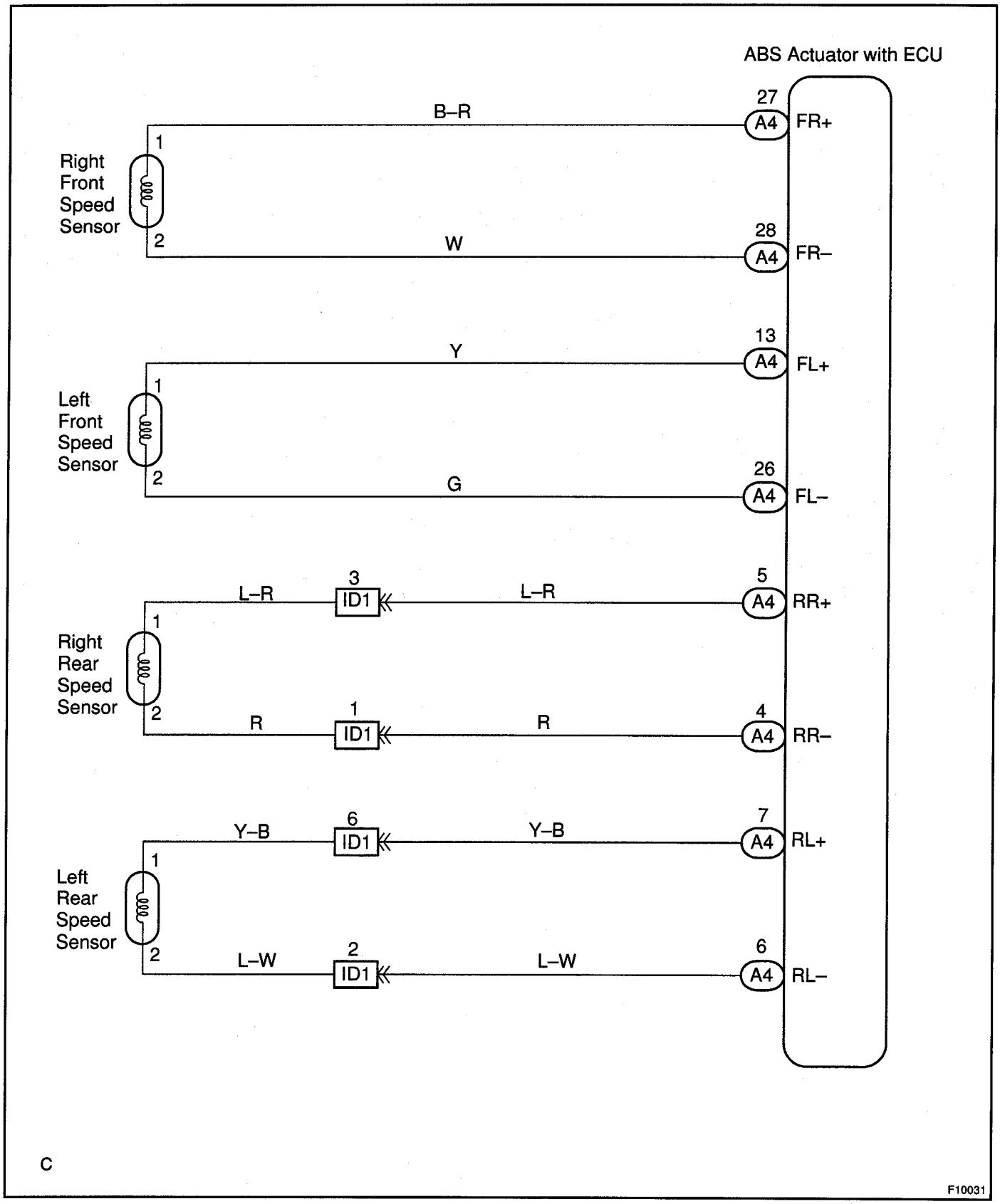
When the rotors rotate, the magnetic field emitted by the permanent magnet in the speed sensor generates an AC voltage. Since the frequency of this AC voltage changes in direct proportion to the speed of the rotor, the frequency is used by the ECU to detect the speed of each wheel.

DTC No.	DTC Detecting Condition	Trouble Area
C0200 / 31 C0205 / 32 C0210 / 33 C0215 / 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 30 sec. or longer. 2. Momentary interruption of sensor signal of faulty wheel has occurred 7 times or more. 3. Sensor signal circuit is open for 0.2 sec. or longer.	• Right front, left front, right rear, left rear speed sensor • Each speed sensor circuit • Sensor installation • Sensor rotor

HINT:

- DTC No. C0200 / 31 is for the right front speed sensor.
- DTC No. C0205 / 32 is for the left front speed sensor.
- DTC No. C0210 / 33 is for the right rear speed sensor.
- DTC No. C0215 / 34 is for the left rear speed sensor.

WIRING DIAGRAM



INSPECTION PROCEDURE

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

1	**Check output value of speed sensor.**

PREPARATION:
(a) Connect the hand–held tester to the DLC3.
(b) Turn the ignition switch ON and push the hand–held tester main switch ON.
(c) Select the DATALIST mode on the hand–held tester.

CHECK:
Check that there is no difference between the speed value output from the speed sensor displayed on the hand–held tester and the speed value displayed on the speedometer when driving the vehicle.

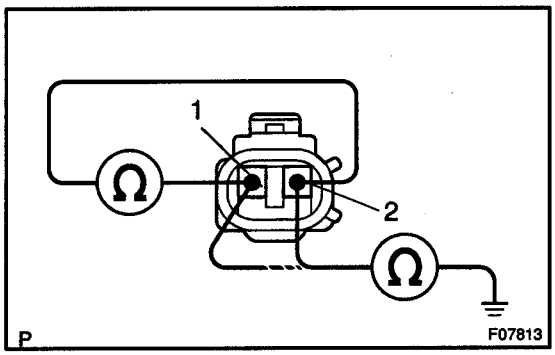
OK:
There is almost no difference from the displayed speed value.

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

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

NG

2	**Check speed sensor.**



Front:

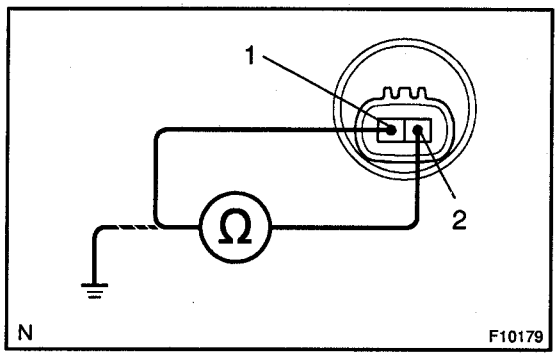
PREPARATION:
Disconnect the speed sensor connector.

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

OK:
Resistance: 1.4 – 1.8 kΩ

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

OK:
Resistance: 1 MΩ or higher



Rear speed sensor:

PREPARATION:

(a) Make sure that there is no looseness at the connector lock part and connecting part of the connector.

(b) Disconnect the speed sensor connector at hub bearing .

CHECK:

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

OK:

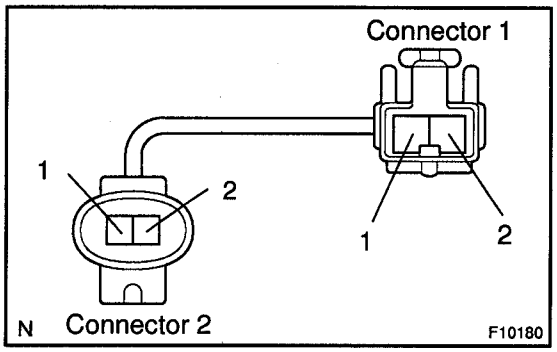
Resistance: 0.9 – 1.3 kΩ at 25 ± 5 °C

CHECK:

Measure resistance between terminals 1 and 2 of speed sensor connector at hub bearing and body ground.

OK:

Resistance: 1 MΩ or higher



Rear speed sensor sub–wire harness:

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) Disconnect the speed sensor connector inside vehicle.

CHECK:

(a) Measure resistance between terminal 1 of connector 1 and terninal 2 of connector 2.

(b) Measure resistance between terminal 2 of connector 1 and terninal 1 of connector 2.

OK:

Resistance: below 1 Ω

CHECK:

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

OK:

Resistance: 1 MΩ or higher

NG → **Replace speed sensor or sub–wire harness.**

NOTICE:

Check the speed sensor signal last (See page DI–60).

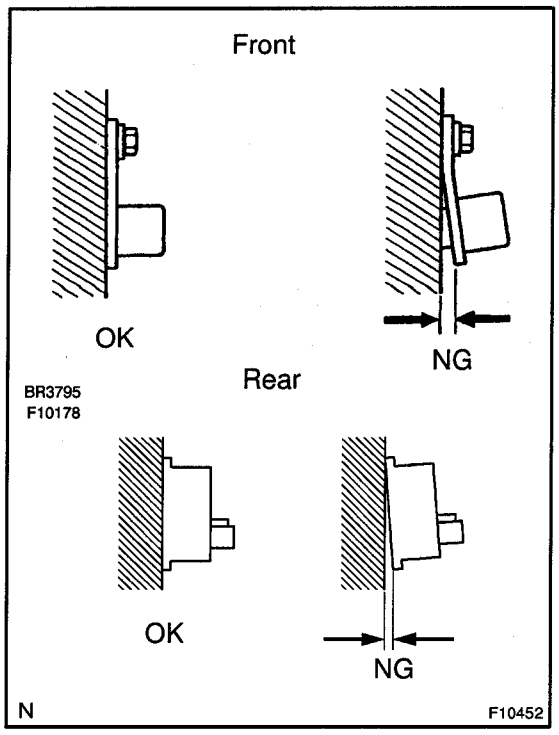
OK

3	**Check for open and short circuit in harness and connector between each speed sensor and ABS ECU (See page IN–29).**

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

OK

4	**Check speed sensor installation.**



CHECK:
Check the speed sensor installation.

OK:

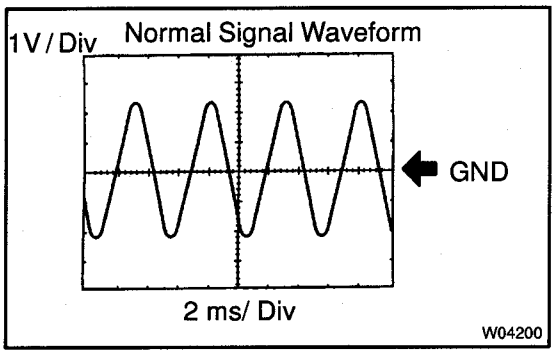
The installation bolt is tightened properly and there is no clearance between the sensor and steering knuckle or rear axle hub.

NG → **Replace speed sensor.**

NOTICE:
Check the speed sensor signal last (See page DI–60).

OK

5	Check speed sensor and sensor rotor serrations.



(REFERENCE) INSPECTION USING OSCILLOSCOPE

PREPARATION:

Connect the oscilloscope to the terminals FR+, FL+, RR+, or RL+ and GND of the ABS actuator assembly.

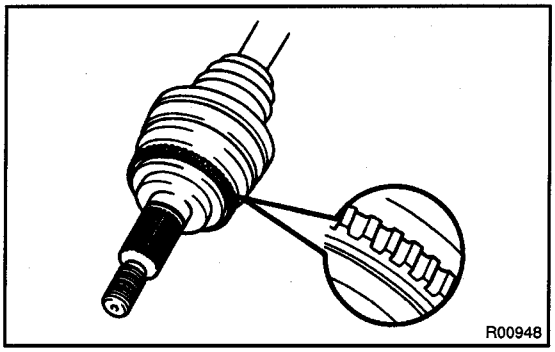
CHECK:

Drive the vehicle at 20 km/h (12 mph), and check the signal waveform.

OK	Check and replace ABS actuator.

NG

6	Check sensor rotor and sensor tip.



Front:

PREPARATION:

Remove the front drive shaft (See page SA–17).

CHECK:

Check the sensor rotor serrations.

OK:

No scratches, missing teeth or foreign objects.

PREPARATION:

Remove the front speed sensor (See page BR–59).

CHECK:

Check the sensor tip.

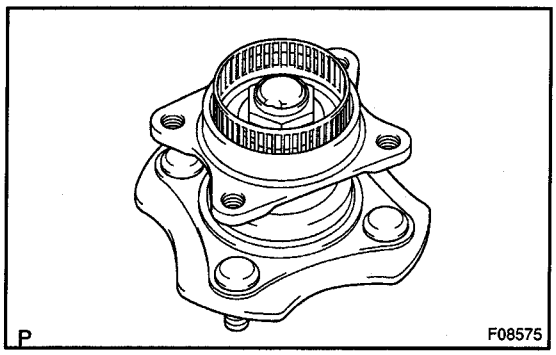
OK:

No scratches or foreign objects on the sensor tip.

NG	Replace sensor rotor or speed sensor.

NOTICE:

Check the speed sensor signal last (See page DI–60).



Rear:

PREPARATION:

Remove the axle hub and disconnect the rear speed sensor (See page BR–62).

CHECK:

Check the sensor rotor serrations.

OK:

No scratches or missing teeth or foreign objects.

CHECK:

Check the sensor tip.

OK:

No scratches or foreign objects on the sensor tip.

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

NOTICE:

Check the speed sensor signal last (See page DI–60).

OK

Check and replace ABS actuator assembly.

DI6SM–01

DTC	C0226 / 21 to C0256 / 24	ABS Solenoid Valve Circuit

CIRCUIT DESCRIPTION

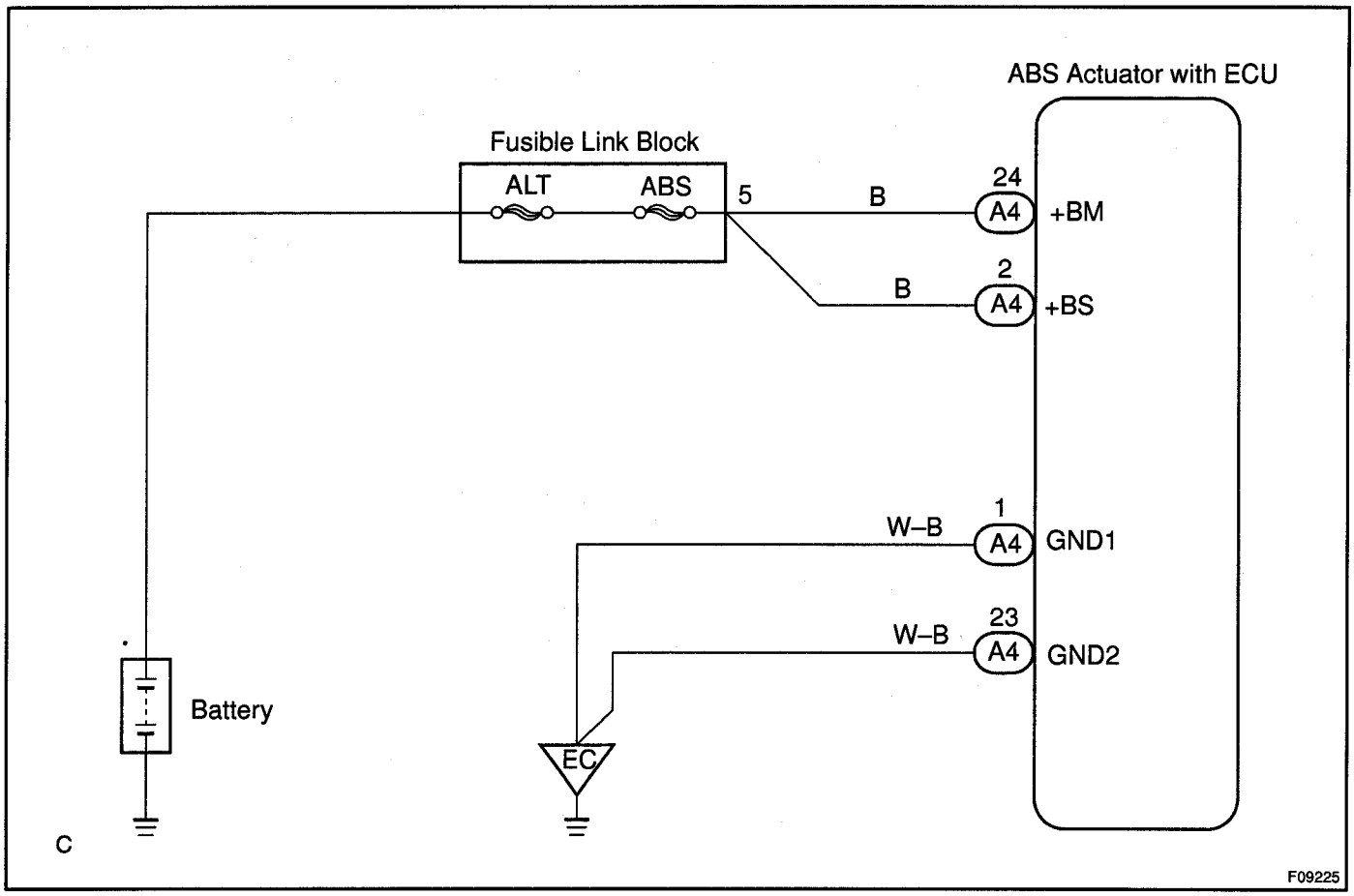
This solenoid goes on when signals are received from the ECU and controls the pressure acting on the wheel cylinders thus controlling the braking force.

DTC No.	DTC Detecting Condition	Trouble Area
C0226 / 21 C0236 / 22 C0246 / 23 C0256 / 24	With IG1 terminal voltage at 8.5 V – 19 V, solenoid circuit is open or short for 0.05 sec. or longer.	• Each solenoid valves circuit • ABS actuator

HINT:

- DTC No. C0226 / 21 is for right front solenoid valve.
- DTC No. C0236 / 22 is for left front solenoid valve.
- DTC No. C0246 / 23 is for right rear solenoid valve.
- DTC No. C0256 / 24 is for left rear solenoid valve.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	**Check the DTC once more.**

PREPARATION:

(a) Clear the DTC (See page DI–60).

(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.

DI6SN–01

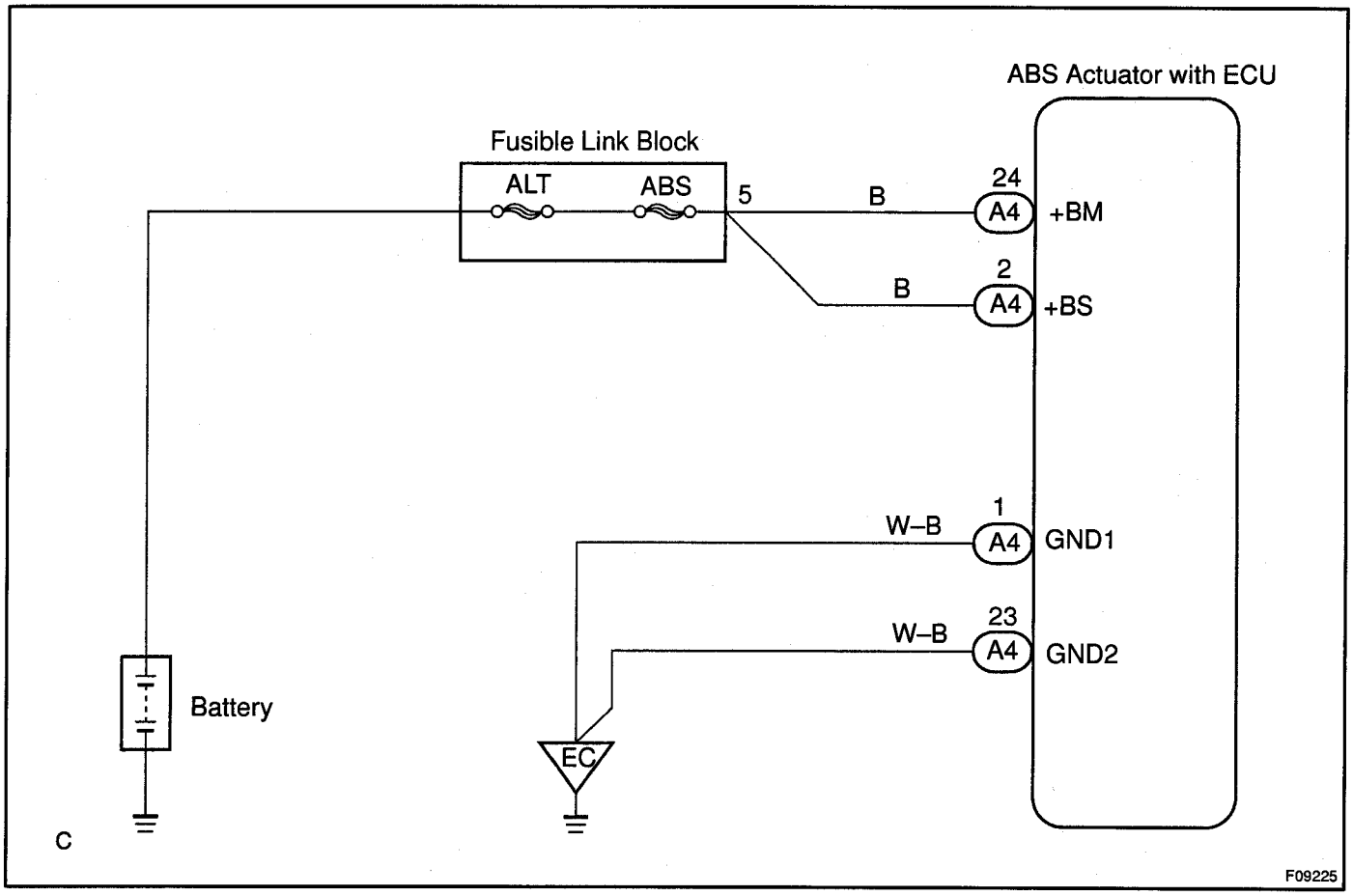
DTC	C0273 / 13, C0274 / 14	ABS Motor Relay Circuit

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
C0273 / 13	Detection of any conditions in 1. and 2.: 1. When ABS motor relay is ON, relay contact is OFF for 0.2 sec. or longer. 2. When ABS motor relay is turned ON, relay contact is OFF for 0.5 sec. or longer.	• ABS motor relay • ABS motor relay circuit • ABS motor voltage
C0274 / 14	Detection of any conditions in 1. and 2.: 1. When ABS motor relay is OFF, relay contact is ON for 0.2 sec. or longer. 2. When ABS motor relay is turned OFF, relay contact is ON for 2 sec. or longer.	

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:

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

1	**Check ABS motor relay operation.**

PREPARATION:

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

(b) Turn the ignition switch ON and push the hand–held tester main switch ON.

(c) Select the ACTIVE TEST mode on the hand–held tester.

CHECK:

Check the operation sound of the ABS motor individually when operating it with the hand–held tester.

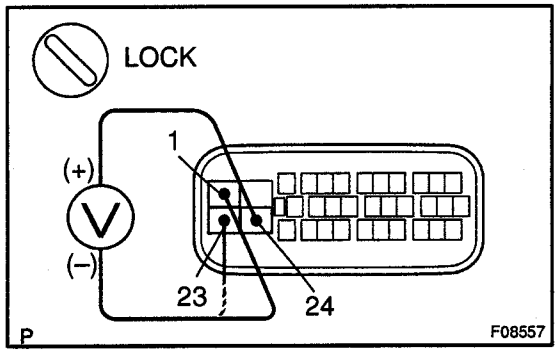
OK:

The operation sound of the ABS motor should be heard.

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

OK

2	**Check voltage between terminals +BM (24) and GND (1, 23) of ABS ECU connector.**



PREPARATION:

Disconnect the ABS ECU connector.

CHECK:

Measure the voltage between terminals 24 and 1, 23 of ABS ECU harness side connector.

OK:

Voltage: 10 – 14 V

NG → **Check and replace ABS fuse.**
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.

DI6SO–01

DTC	C0278 / 11, C0279 / 12	ABS Solenoid Relay Circuit

CIRCUIT DESCRIPTION

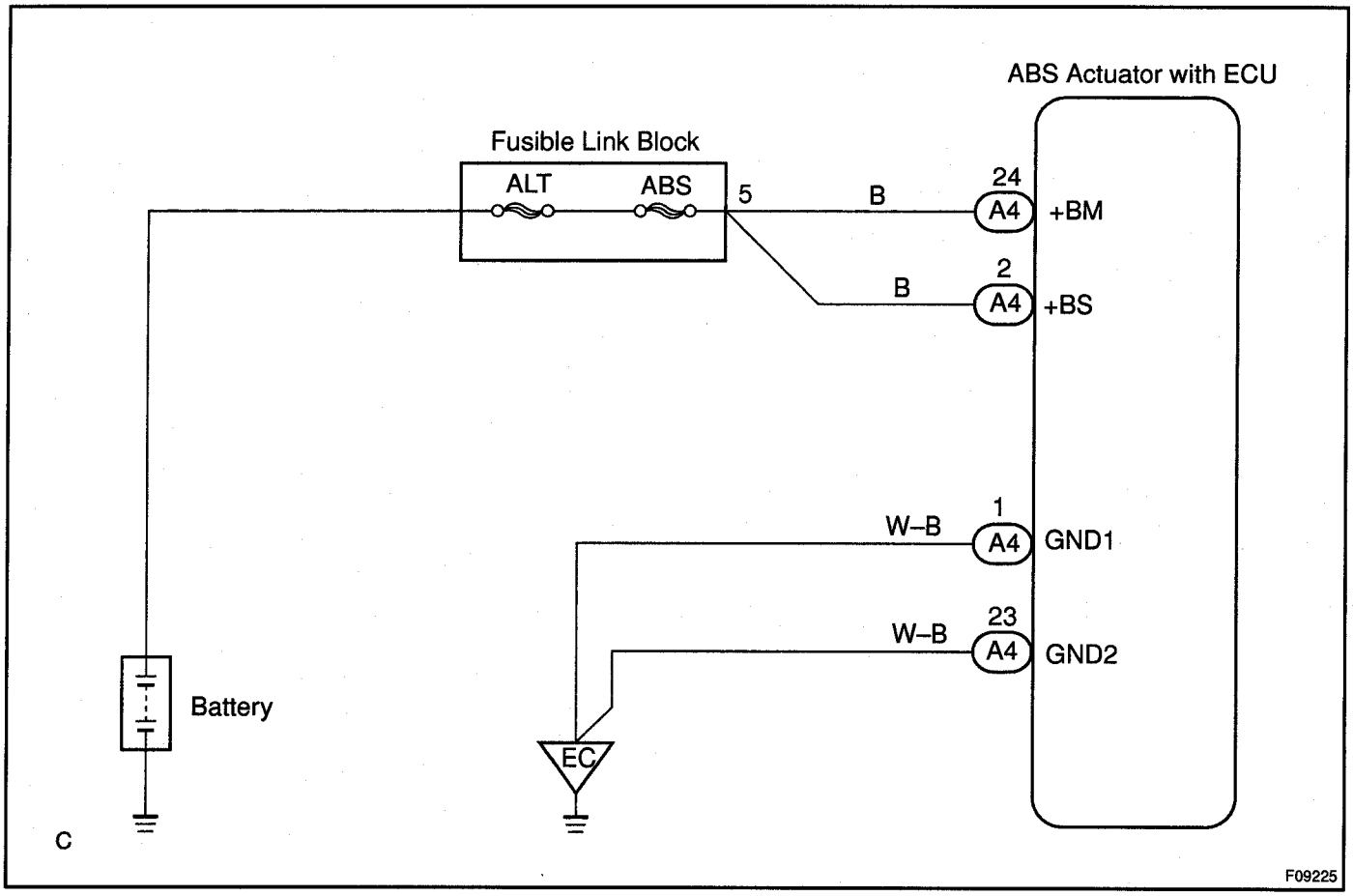
This relay supplies power to each ABS solenoid. After the ignition switch is turned ON, if the initial check is OK, the relay goes on.

DTC No.	DTC Detecting Condition	Trouble Area
C0278 / 11	With IG1 terminal voltage at 8.5 V –19 V, when solenoid relay is turned ON, relay contact is OFF*1 for 0.2 sec. or longer.	• ABS solenoid valve relay • ABS solenoid valve relay circuit • Valve supply voltage
C0279 / 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



INSPECTION PROCEDURE

HINT:

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

1	**Check ABS solenoid relay operation.**

PREPARATION:

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

CHECK:

Check the operation sound of the ABS solenoid relay when operating it with the hand–held tester.

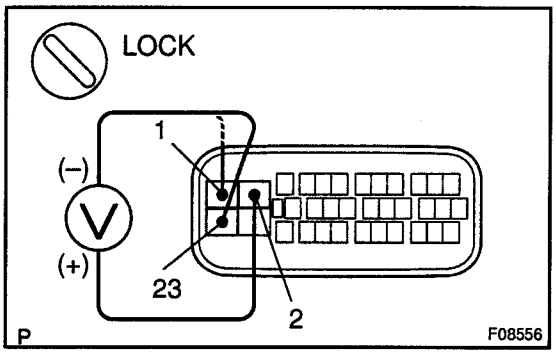
OK:

The operation sound of the ABS solenoid relay should be heard.

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

OK

2	**Check voltage between terminals +BS (2) and GND (1, 23) of ABS ECU.**



PREPARATION:

Disconnect the ABS ECU connector.

CHECK:

Measure the voltage between terminals 2 and 1, 23 of ABS ECU harness side connector.

OK:

Voltage: 10 – 14 V

NG → **Check and replace ECU–IG fuse.**
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.

DI6SP–01

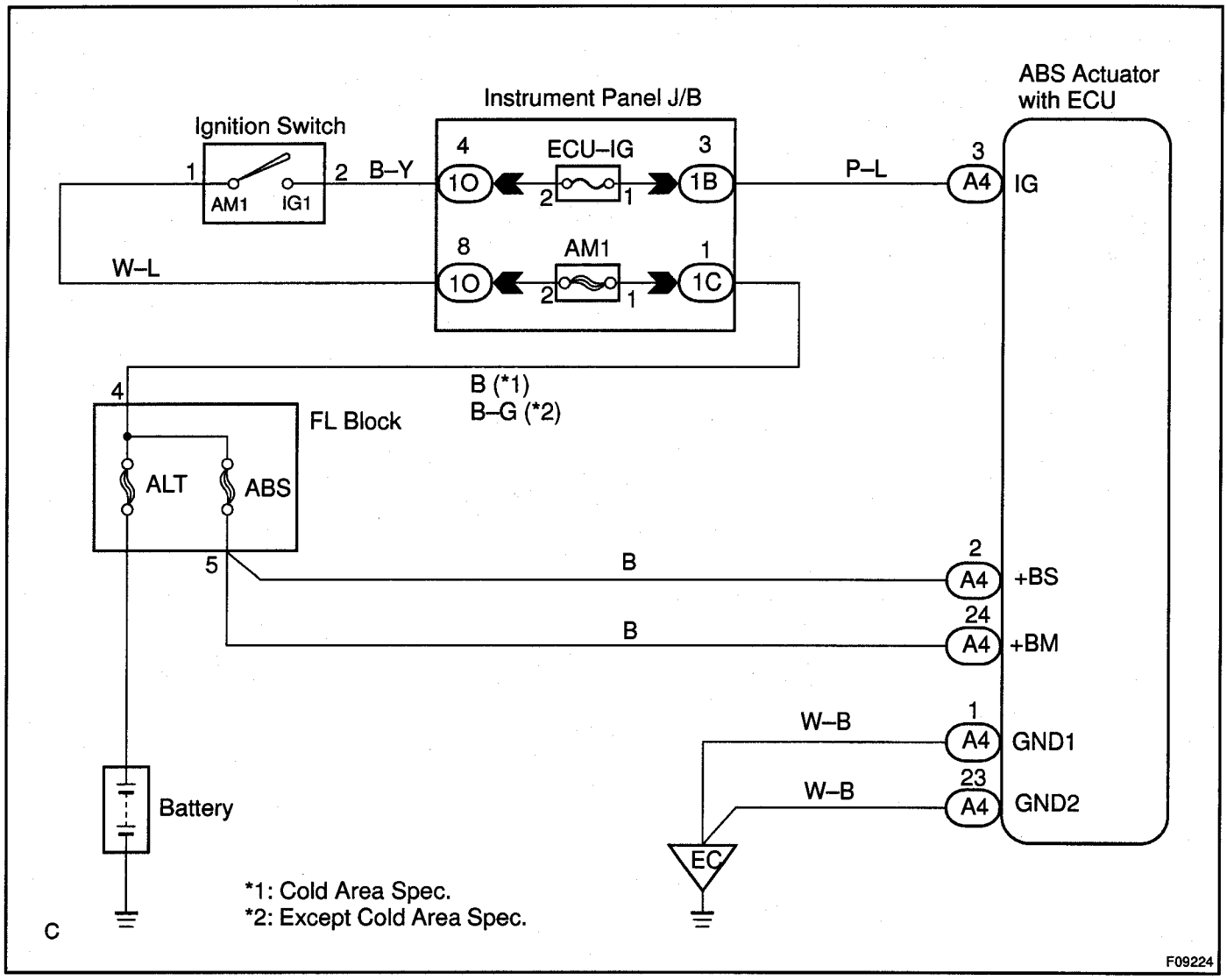
DTC	C1241 / 41	IG Power Source Circuit

CIRCUIT DESCRIPTION

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

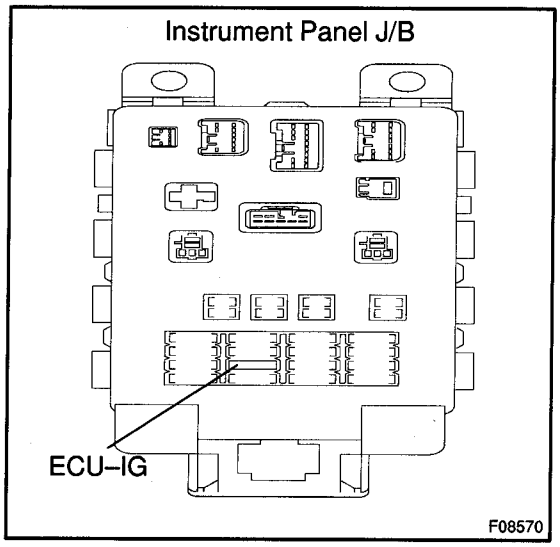
DTC No.	DTC Detecting Condition	Trouble Area
C1241 / 41	Detection of any of conditions from 1. through 3. 1. With vehicle speed at 3 km/h or more, IG1 or +BS terminal voltage is 8.5 V or below for 10 sec. or longer. 2. With IG1 terminal voltage at 8.5 V or below, ABS solenoid relay open, ABS motor relay 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

WIRING DIAGRAM



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 circuit in all the harness and components connected to ECU–IG fuse (See attached wiring diagram).**

OK ↓

2	Check battery voltage.

OK:
Voltage: 10 – 14 V

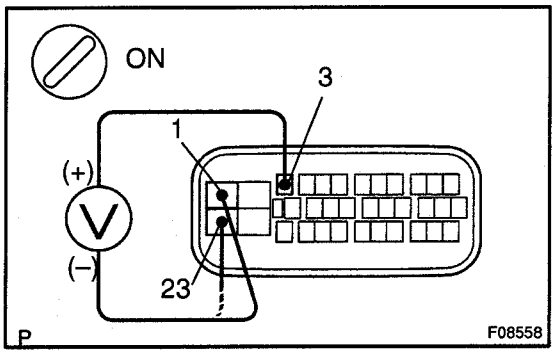
NG → **Check and repair the charging system (See page IN–29).**

OK ↓

3	Check voltage of the ECU IG power source.

In case of using the hand–held tester:
PREPARATION:
(a) Connect the hand–held tester to the DLC3.
(b) Turn the ignition switch ON and push the hand–held tester main switch ON.
(c) Select the DATALIST mode on the hand–held tester.
CHECK:
Check the voltage condition output from the ECU displayed on the hand–held tester.
OK:
"Normal" is displayed.

In case of not using the hand–held tester:



PREPARATION:

Disconnect ABS ECU connector.

CHECK:

(a) Turn the ignition switch ON.

(b) Measure voltage between terminals 3 and 1, 23 of ABS ECU harness side connector.

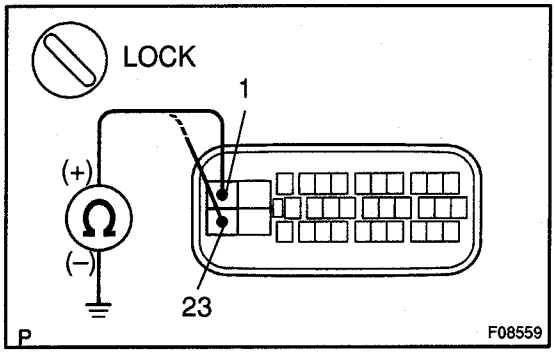
OK:

Voltage: 10 – 14 V

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

NG

4	**Check continuity between terminals GND (1, 23) of ABS ECU connector and body ground.**



CHECK:

Measure resistance between terminals 1 and 23 of ABS 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 ABS ECU and ECU–IG fuse (See page IN–29).

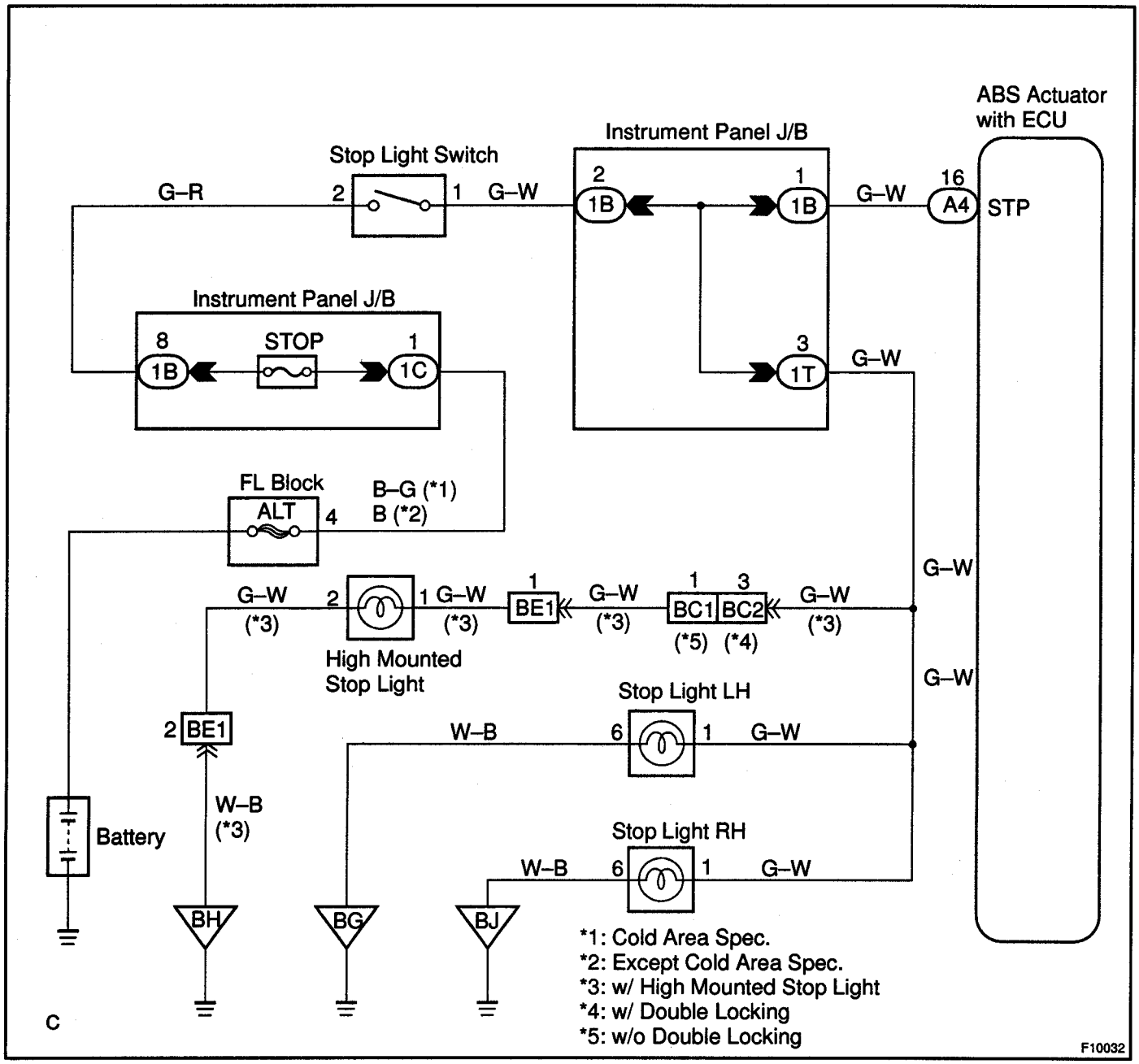
DI6SQ–01

DTC	C1249 / 49	Stop Light Switch Circuit

CIRCUIT DESCRIPTION

DTC No.	DTC Detecting Condition	Trouble Area
C1249 / 49	With IG1 terminal voltage at 8.5 V – 19 V, and when ABS is in non–operation stop light switch circuit is open for 0.3 sec. or longer.	• Stop light bulb • Stop light switch • Stop light switch circuit

WIRING DIAGRAM



INSPECTION PROCEDURE

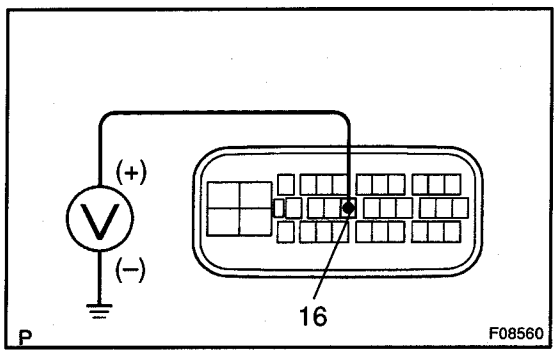
1	**Check operation of stop light.**

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–42).**

OK

2	**Check voltage between terminal STP (16) of ABS ECU and body ground.**



PREPARATION:
Disconnect ABS ECU connector.
CHECK:
Measure the voltage between terminal 16 of ABS ECU harness side connector and body ground when brake pedal is depressed.
OK:
Voltage: 10 – 14 V

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

NG

3	**Check for open circuit in harness and connector between ABS ECU and stop light switch (See page IN–29).**

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

OK

Check and replace ABS ECU.

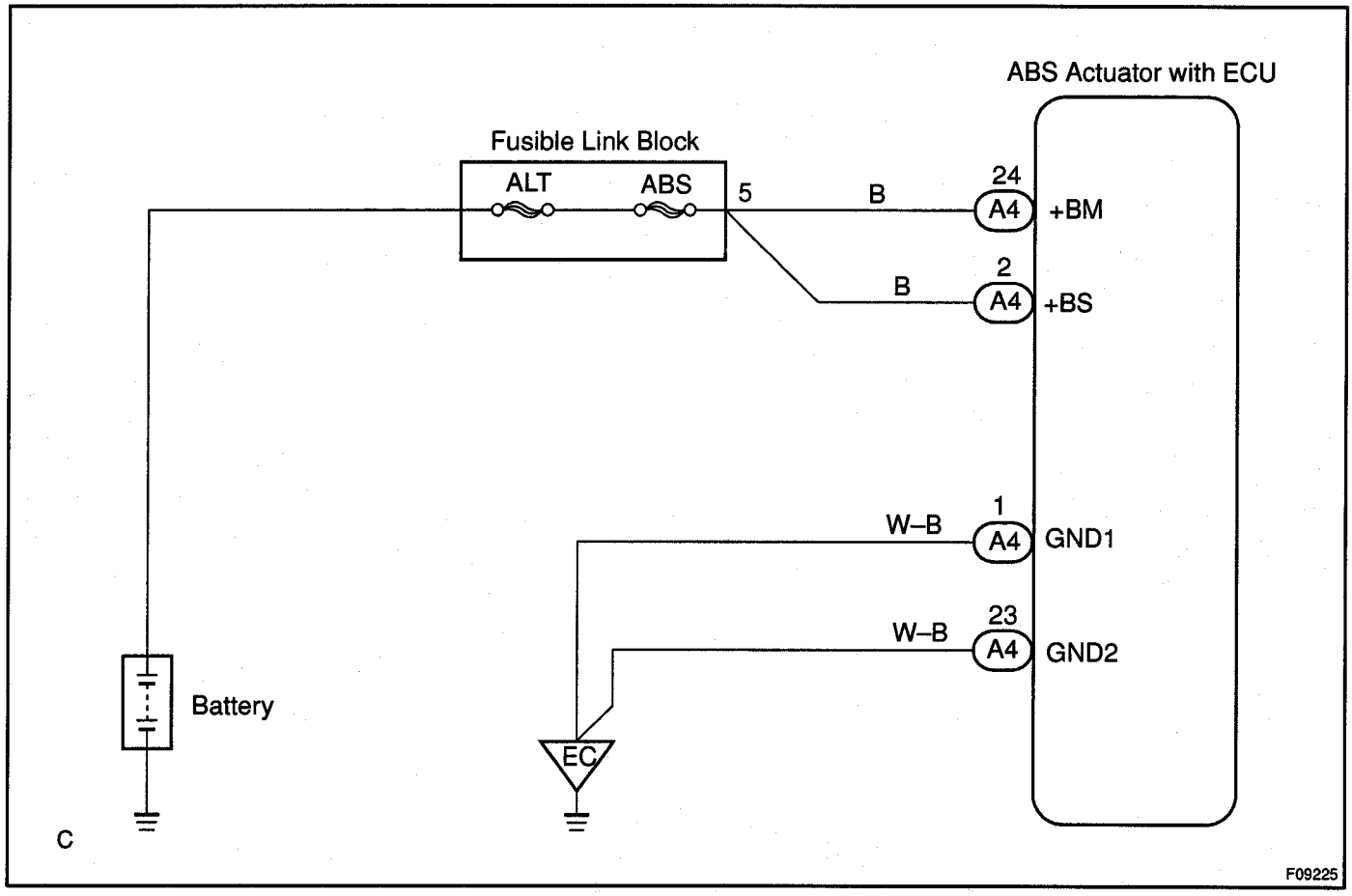
DI6SR–01

DTC	C1251 / 51	ABS Pump Motor Lock

CIRCUIT DESCRIPTION

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

WIRING DIAGRAM



INSPECTION PROCEDURE

1	**Check ABS pump motor operation.**

PREPARATION:

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

CHECK:

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

OK:

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

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

OK

Proceed to next circuit inspection shown in problem symptoms chart (See page DI–68).

DI6SS-01

DTC	Always ON	ABS ECU Malfunction

CIRCUIT DESCRIPTION

DTC No.	DTC Detecting Condition	Trouble Area
Always ON	There is a malfunction in the ECU internal circuit	• Battery • Charging system • Power source circuit • ABS ECU • ABS warning light circuit

INSPECTION PROCEDURE

1	Check that the ABS ECU connectors are securely connected to the ABS ECU.

NO → Connect the connector to the ABS ECU.

YES

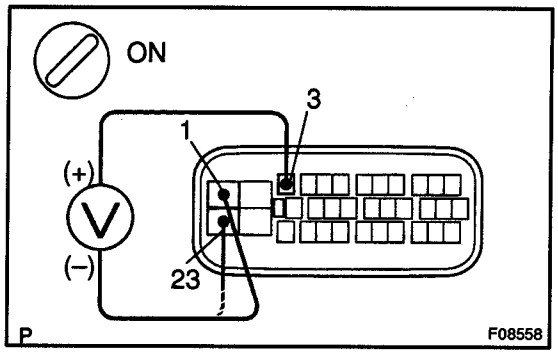
2	Is DTC output?

Check DTC on page DI–60.

YES → Repair circuit indicated by the code output.

NO

3	Check voltage between terminals IG1 (3) and GND (1, 23) of ABS ECU connector.



PREPARATION:
Disconnect ABS ECU connector.

CHECK:
(a) Turn the ignition switch ON.
(b) Measure voltage between terminals 3 and 1, 23 of ABS 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 ABS ECU (See page IN–29).

OK

4	Check ABS warning light.

In case of using the hand–held tester:

PREPARATION:

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

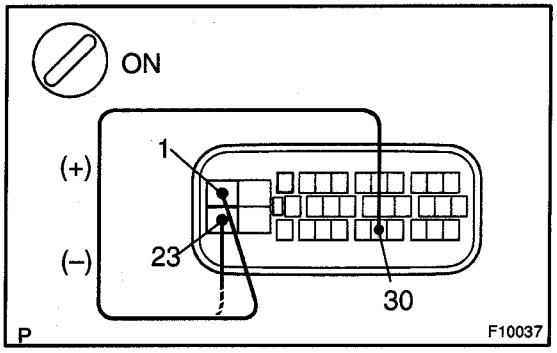
(b) Turn the ignition switch ON and push the hand–held tester main switch ON.

(c) Select the ACTIVE TEST mode on the hand–held tester.

CHECK:

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

In case of not using the hand–held tester:



PREPARATION:

Disconnect ABS ECU connector.

CHECK:

(a) Using service wire, connect terminal WA (30) and GND (1, 23) of ABS ECU harness side connector.

(b) Turn the ignition switch ON.

OK:

ABS warning light go off

OK	Check and replace ABS actuator assembly.

NG

Check for open or short circuit in harness and connector between ABS warning light, DLC3 and ABS ECU (See page IN–29).

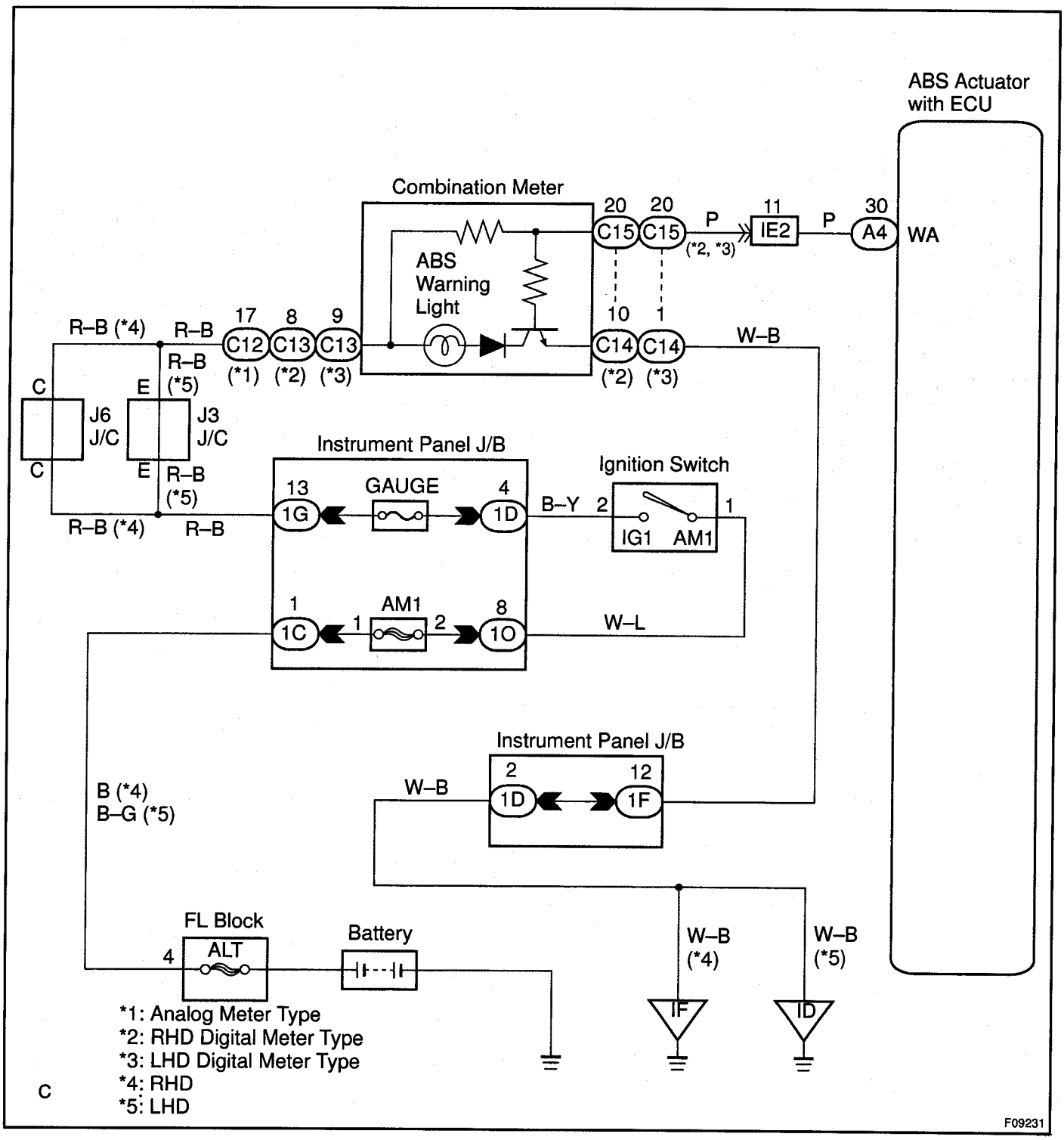
DI6ST-01

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 CG of the DLC3 make the ABS warning light blink and output the DTC.

WIRING DIAGRAM



INSPECTION PROCEDURE

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

ABS warning light does not light up	*1
ABS warning light remains on	*2

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

*2: After inspection with step 3, start the inspection from step 4 in case of using the hand–held tester and start from step 5 in case of not using hand–held tester.

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

PREPARATION:

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

CHECK:

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

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

NG

2	**Check ABS warning light.**

See combination meter troubleshooting on page BE–2.

NG → **Replace bulb or combination meter assembly.**

OK

Check for open circuit in harness and connector between GAUGE fuse and ABS warning light. (See page IN–29).

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

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

YES

4	**Check operation of the ABS warning light (See step 1).**

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

NG

5	**Is DTC output?**

Check DTC on page DI–60.

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

NO

Check for short circuit in harness and connector between ABS warning light, DLC3 and ABS ECU (See page IN–29).

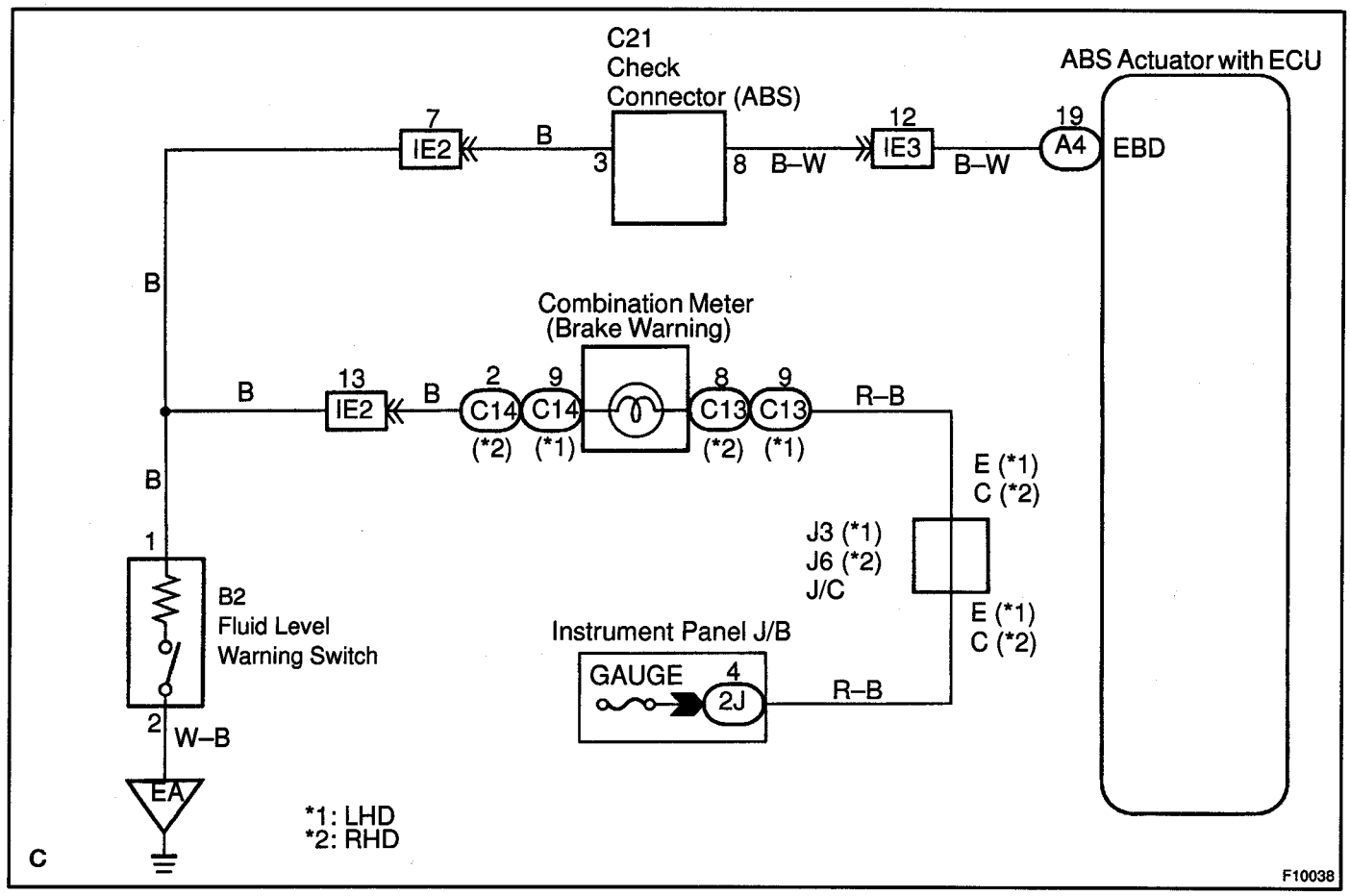
DI6SU–01

Brake Warning Light Circuit

CIRCUIT DESCRIPTION

The brake warning light lights up when the brake fluid is insufficient, the EBD is abnormally, or the parking brake is applied.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	**Check parking brake switch circuit (See page BE–2).**

NG → **Repair or replace parking brake switch circuit.**

OK

2	**Check brake fluid level warning switch circuit (See page BE–2).**

NG → **Repair or replace brake fluid level warning switch circuit.**

OK

3	**Is DTC output for ABS?**

Check DTC on page DI–60.

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 combination meter.**

OK

Check and replace ABS actuator assembly.

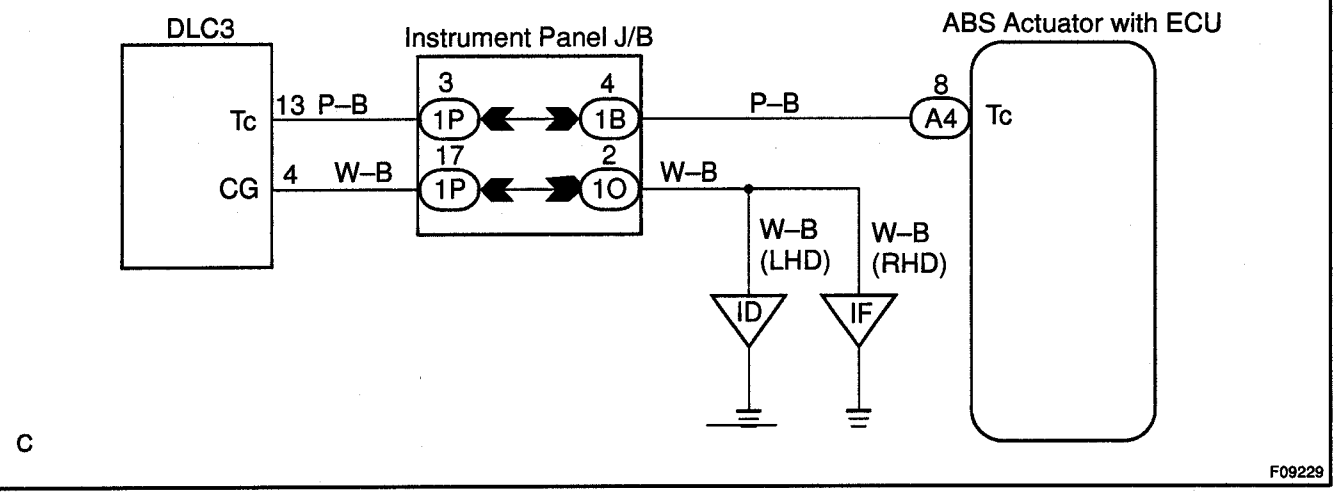
DI6SV–01

Tc Terminal Circuit

CIRCUIT DESCRIPTION

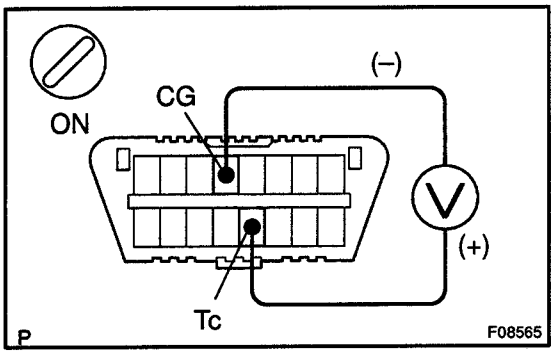
Connecting between terminals Tc and CG of the DLC3 causes the ECU to display the DTC by flashing the ABS warning light.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	**Check voltage between terminals Tc and CG of DLC3.**



CHECK:

(a) Turn the ignition switch ON.

(b) Measure voltage between terminals Tc and CG of DLC3.

OK:

Voltage: 10 – 14 V

OK	**If ABS warning light does not blink even after Tc and CG are connected, the ECU may be defective.**

NG

2	**Check for open and short circuit in harness and connector between ABS ECU and DLC3, DLC3 and body ground (See page IN–29).**

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

OK

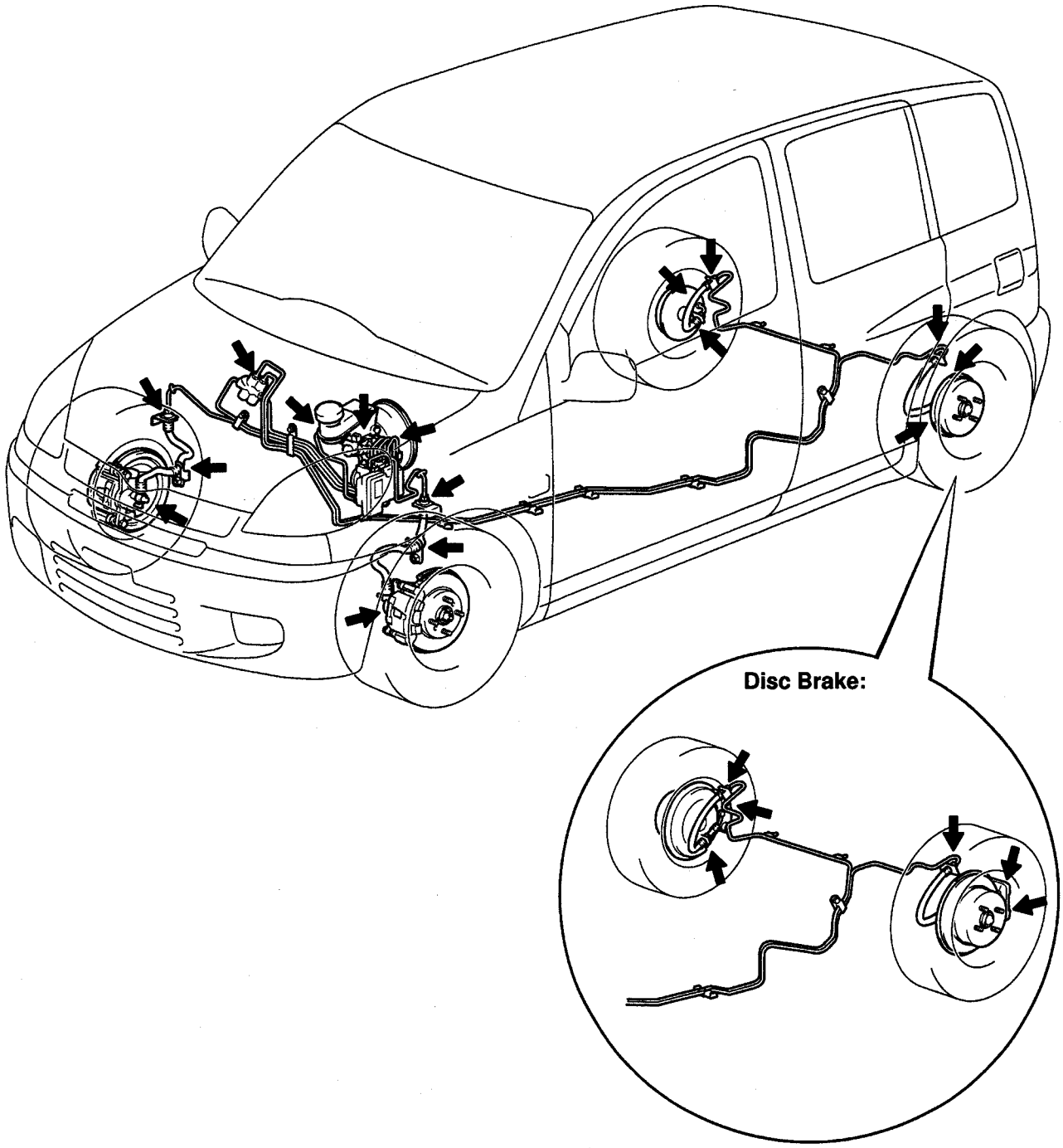
Check and replace ABS actuator assembly.

DI6SW–01

Check for Fluid Leakage

Check for fluid leakage from actuator or hydraulic lines.

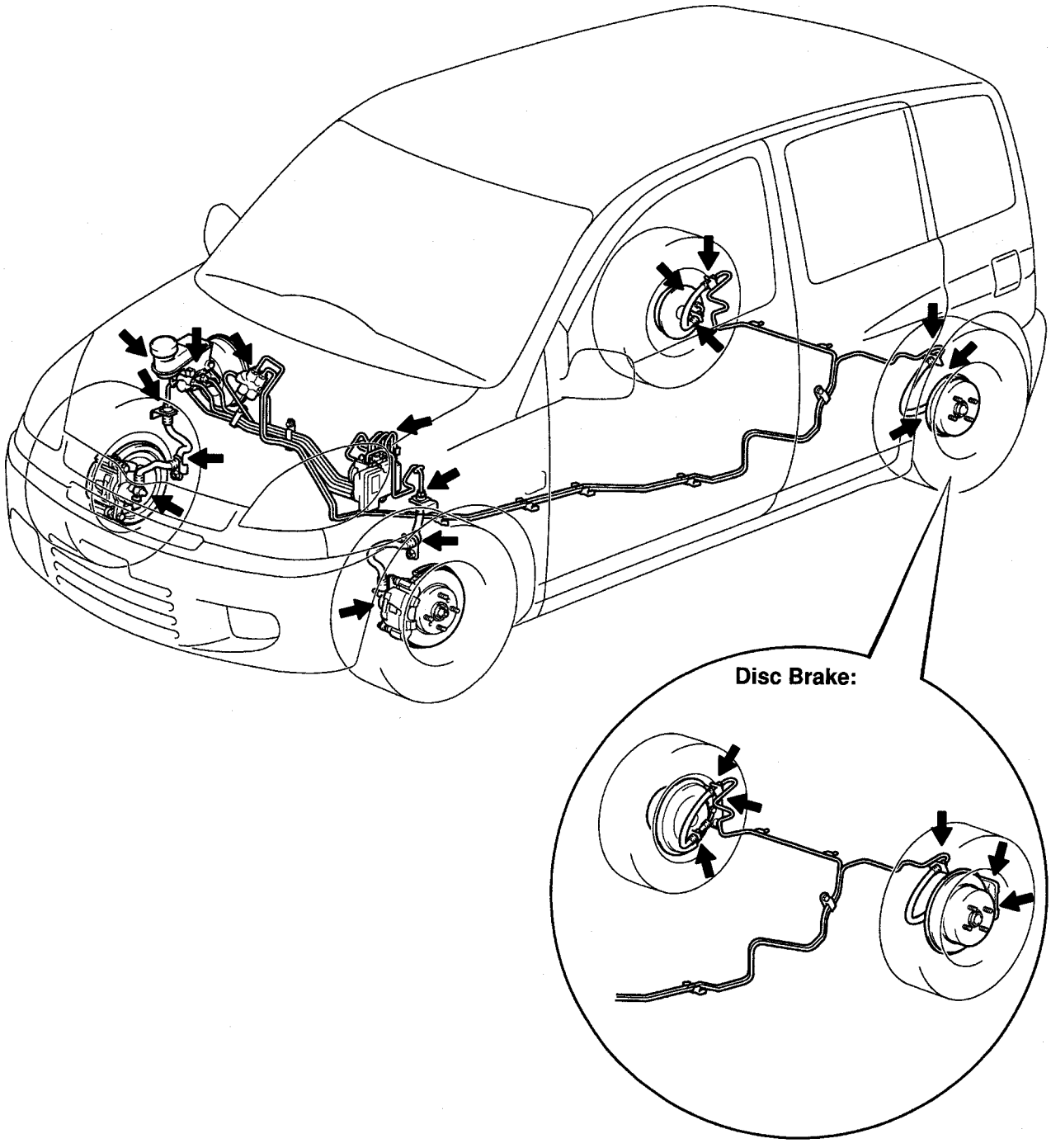
LHD models:



P

F09978

RHD models:



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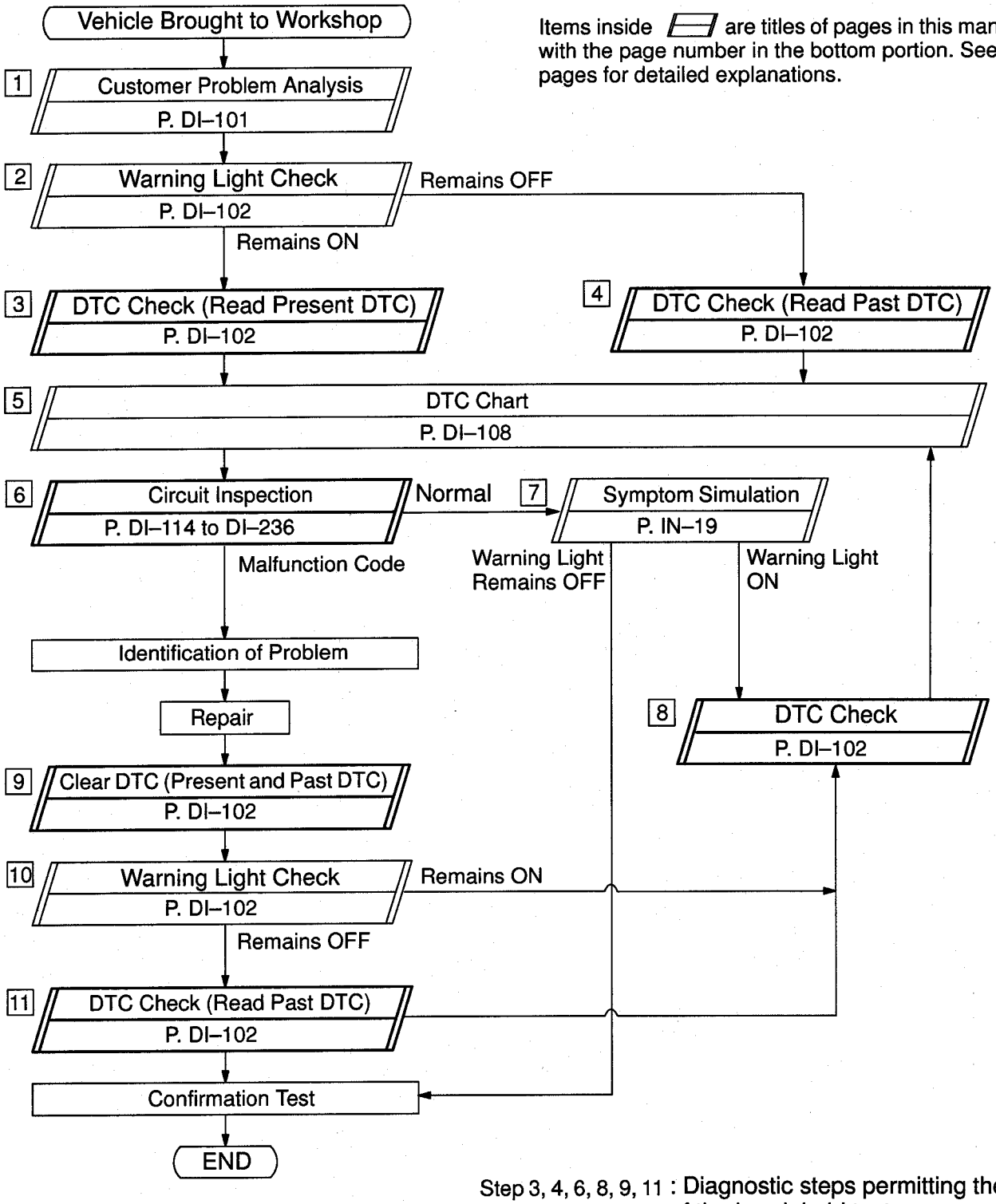
F09979

SUPPLEMENTAL RESTRAINT SYSTEM

HOW TO PROCEED WITH TROUBLESHOOTING

DI1AX–11



Items inside ▭ are titles of pages in this manual, with the page number in the bottom portion. See the pages for detailed explanations.

Step 3, 4, 6, 8, 9, 11 : Diagnostic steps permitting the use of the hand–held tester.

DI15Z-07

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, Repair History Prior to Occurrence of Malfunction (Including Supplemental Restraint System)	

Diagnosis System Inspection

SRS Warning Light Inspection	1st Time	☐ Remains ON ☐ Sometimes Light Up ☐ Does Not Light Up
	2nd Time	☐ Remains ON ☐ Sometimes Light Up ☐ Does Not Light Up
DTC Inspection	1st Time	☐ Normal Code ☐ Malfunction Code [Code.]
	2nd Time	☐ Normal Code ☐ Malfunction Code [Code.]

DI4L1-09

PRE–CHECK

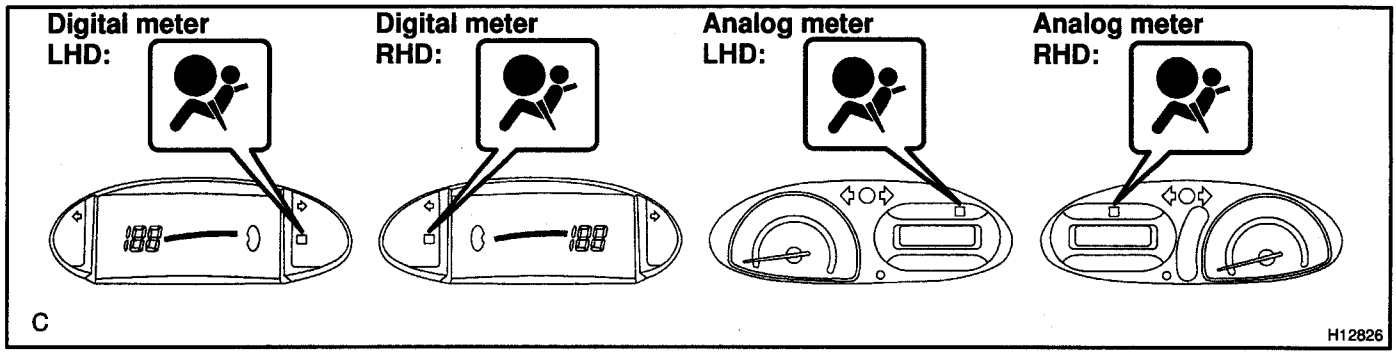
1. SRS WARNING LIGHT CHECK

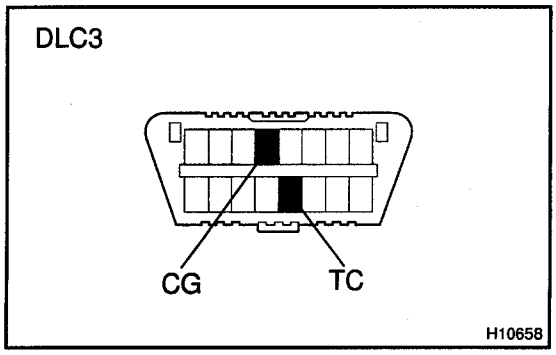
(a) Turn the ignition switch to the ON position and check that the SRS warning light lights up.

(b) Check that the SRS warning light goes out after approx. 6 seconds.

HINT:

- When the ignition switch is at 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–231.





2. DTC CHECK (Using diagnosis check wire)

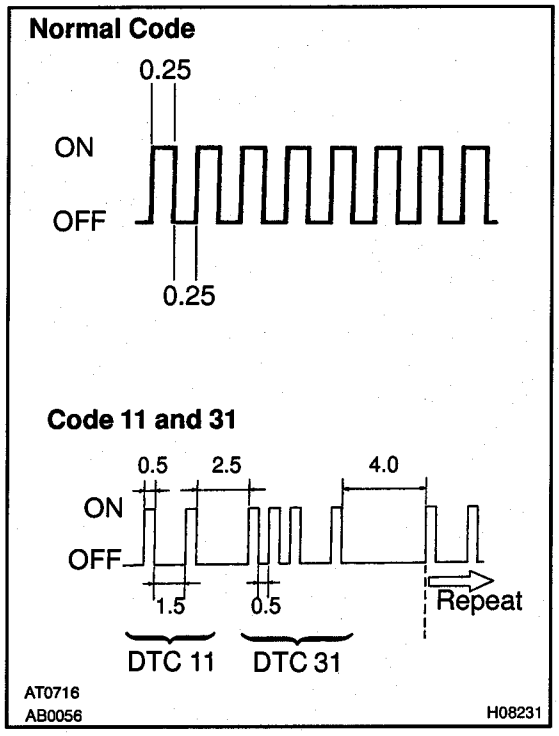
(a) Present troubles codes:
Output the DTC.
(1) Turn the ignition switch to the ON position and wait for approx. 20 seconds.
(2) Using SST, connect terminals Tc and CG of the DLC3.
SST 09843–18040

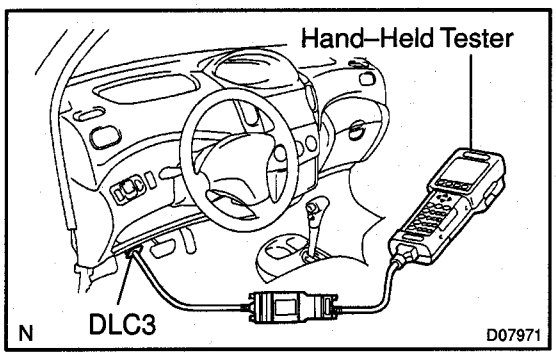
NOTICE:

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 CG of the DLC3.
SST 09843–18040
(2) Turn the ignition switch to the ON position and wait for approx. 20 seconds.

NOTICE:
Pay due attention to the terminal connecting position to avoid a malfunction.





(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–236.

3. DTC CHECK (Using hand–held tester)
(a) Hook up the hand–held tester to the DLC3.
(b) Read the DTCs by following the prompts on the tester screen.
HINT:
Please refer to the 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.

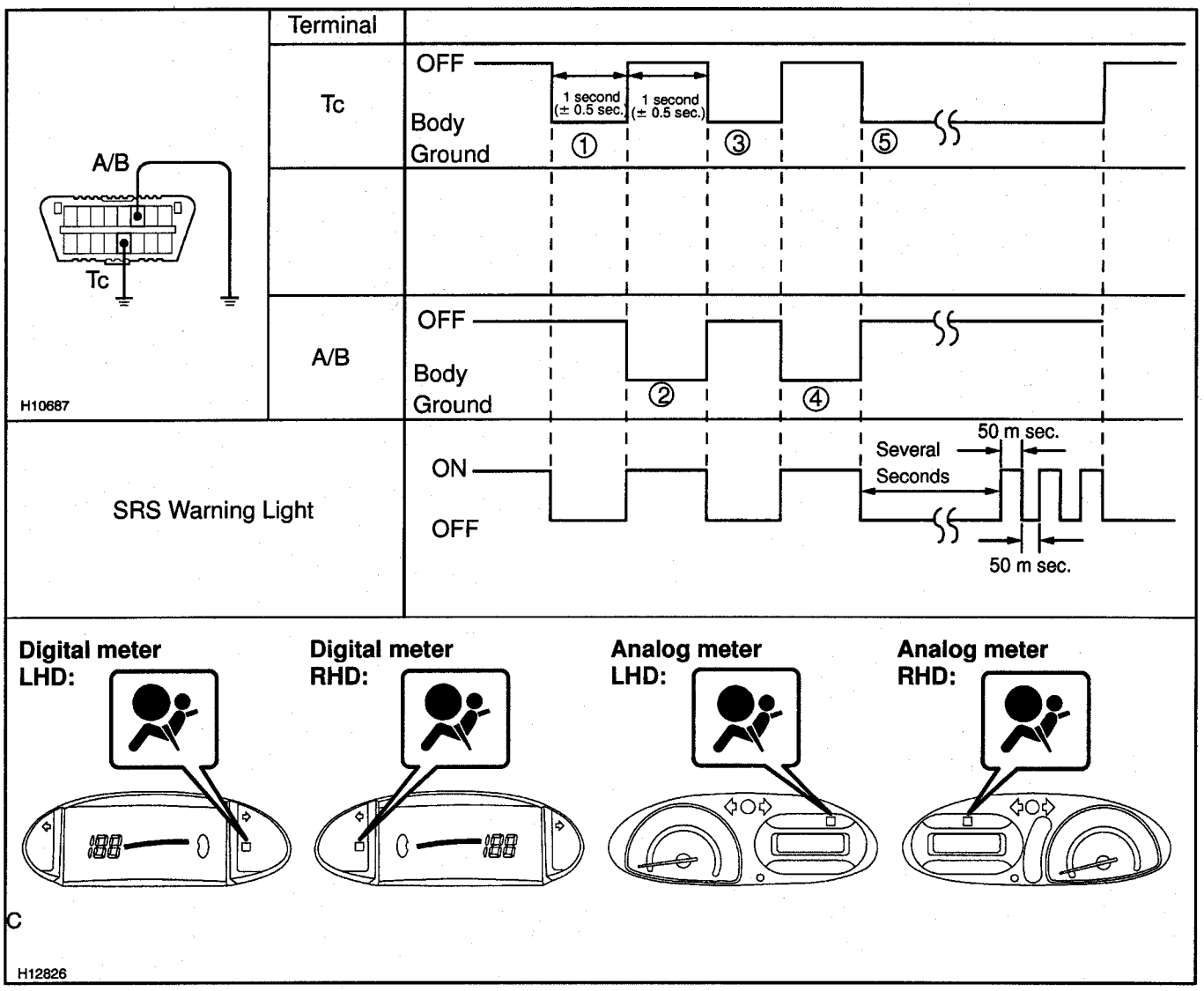
5. DTC CLEARANCE (Using service wire)
(a) Connect the 2 service wires to terminals Tc and A/B of DLC3.
(b) Turn the ignition switch to ON and wait for approx. 6 seconds.

(c) Starting with the Tc terminal, ground alternately terminal Tc and terminal A/B 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 A/B, release ground from one terminal and immediately ground the other terminal within an interval of 0.2 seconds.

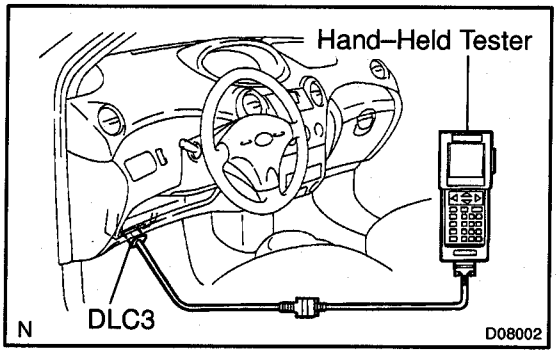
If DTCs are not cleared, repeat the above procedure until the codes are cleared.



H00934

H12905

(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 hand–held tester)

(a) Hook up the hand–held tester to the DLC3.

(b) Clear the DTCs by following the prompts on the tester screen.

HINT:

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

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.

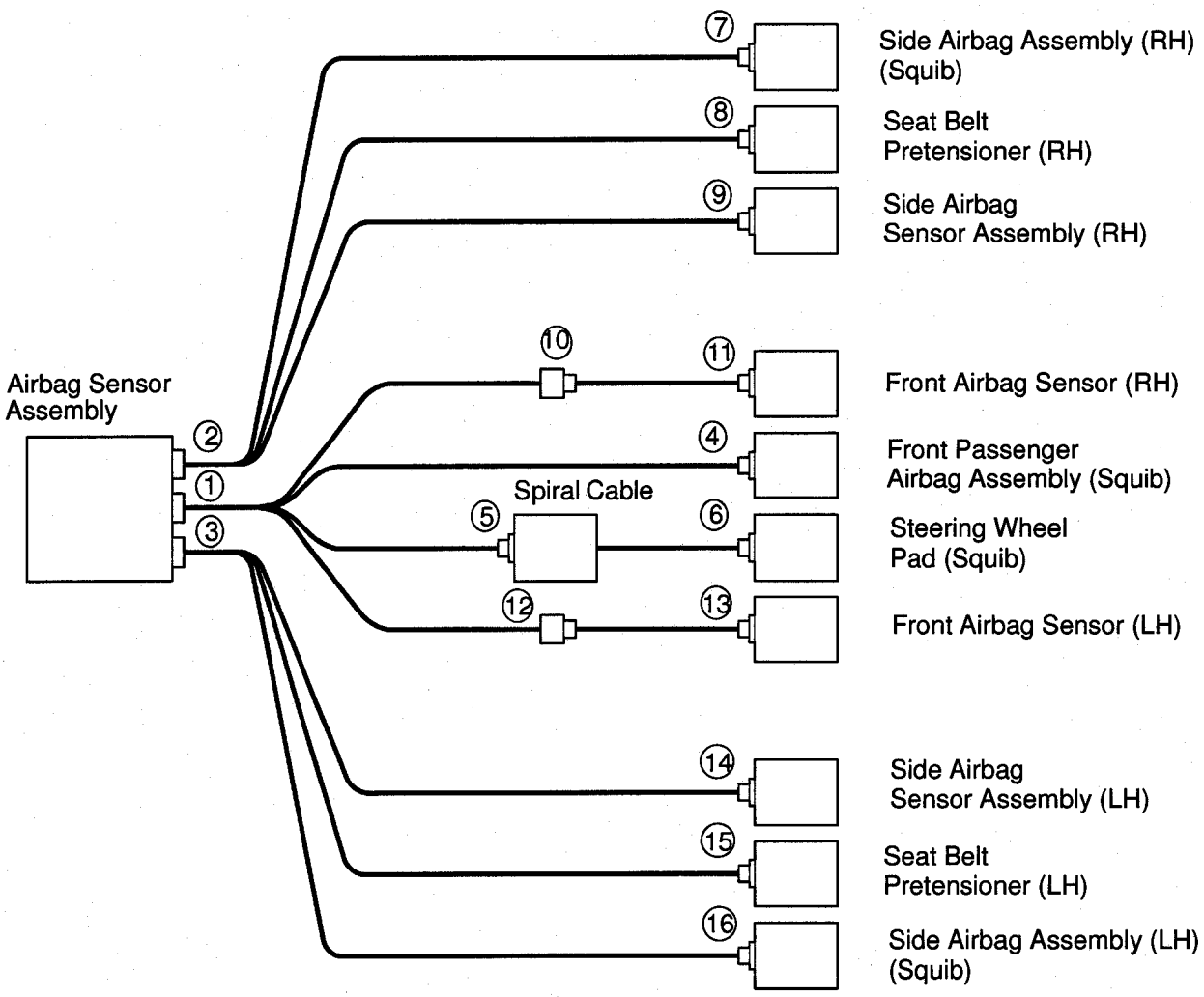
When release of the airbag activation prevention mechanism is directed in the troubleshooting procedure, as shown in the illustration of the connectors on the next pages, insert paper which has the same thickness as the male terminal between the terminal and the short spring.

CAUTION:

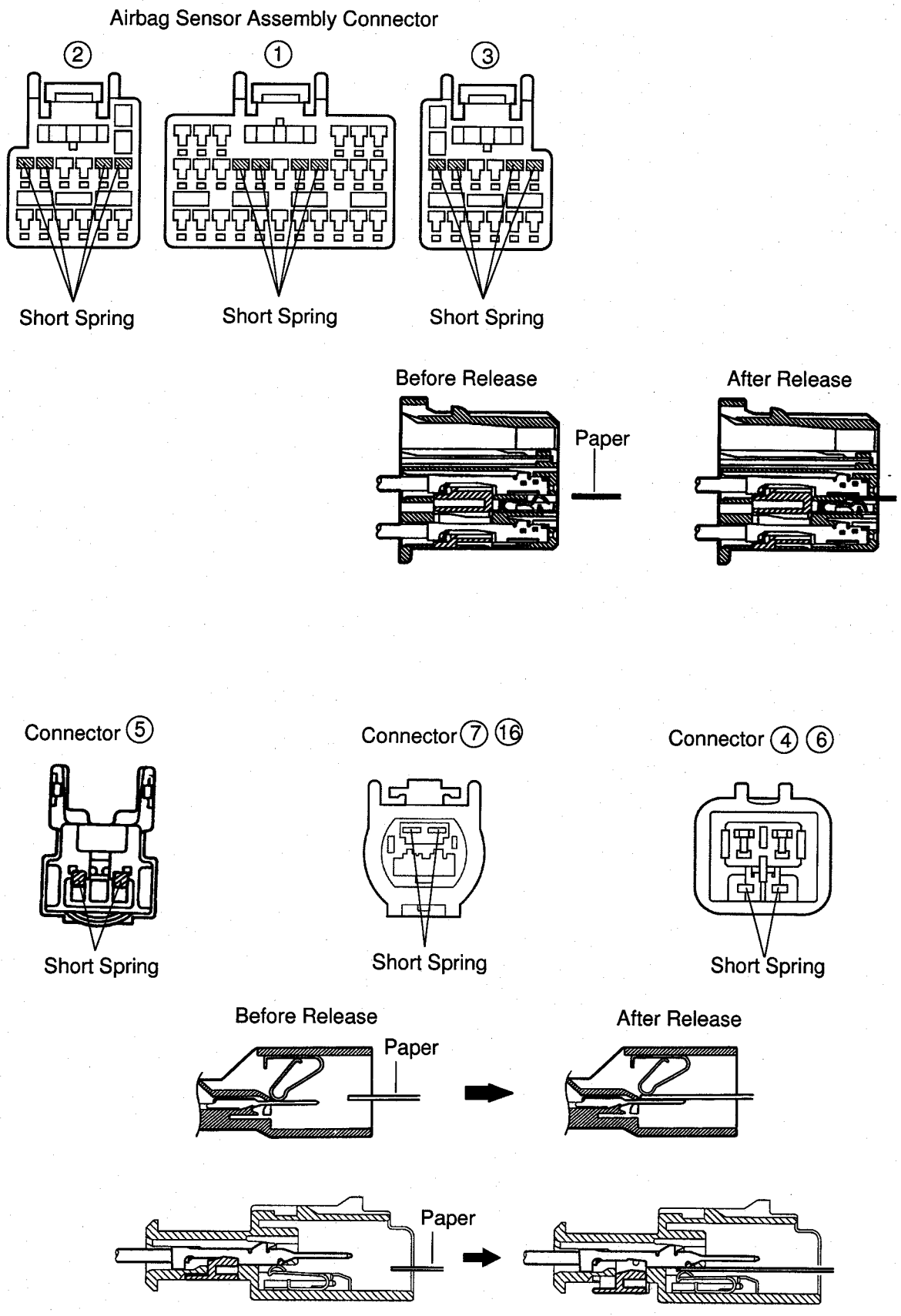
Never release the airbag activation prevention mechanism on the steering wheel pad connector.

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.**


Airbag Sensor Assembly
Spiral Cable
⑦
Side Airbag Assembly (RH) (Squib)
⑧
Seat Belt Pretensioner (RH)
⑨
Side Airbag Sensor Assembly (RH)
⑩
⑪
Front Airbag Sensor (RH)
②
④
Front Passenger Airbag Assembly (Squib)
①
⑤
⑥
Steering Wheel Pad (Squib)
③
⑫
⑬
Front Airbag Sensor (LH)
⑭
Side Airbag Sensor Assembly (LH)
⑮
Seat Belt Pretensioner (LH)
⑯
Side Airbag Assembly (LH) (Squib)

H13449



H01356
H01233
AB0130 H00992
AB0045 AB0046
H02249 H02248

H01358

DI1AZ-13

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–114)	• Short in D squib circuit	• Steering wheel pad (squib) • Spiral cable • Airbag sensor assembly • Wire harness	ON
B0101/14 (DI–119)	• Open in D squib circuit	• Steering wheel pad (squib) • Spiral cable • Airbag sensor assembly • Wire harness	ON
B0102/11 (DI–123)	• Short in D and P squib circuits (to Ground)	• Steering wheel pad (squib) • Front passenger airbag assembly (squib) • Spiral cable • Airbag sensor assembly • Wire harness	ON
B0103/12 (DI–130)	• Short in D and P squib circuits (to B+)	• Steering wheel pad (squib) • Front passenger airbag assembly (squib) • Spiral cable • Airbag sensor assembly • Wire harness	ON
B0105/53 (DI–136)	• Short in P squib circuit	• Front passenger airbag assembly (squib) • Airbag sensor assembly • Wire harness	ON
B0106/54 (DI–140)	• Open in P squib circuit	• Front passenger airbag assembly (squib) • Airbag sensor assembly • Wire harness	ON
B0110/43 (DI–143)	• Short in side squib (RH) circuit	• Side airbag assembly RH (squib) • Airbag sensor assembly • Wire harness	Blink
B0111/44 (DI–147)	• Open in side squib (RH) circuit	• Side airbag assembly RH (squib) • Airbag sensor assembly • Wire harness	Blink
B0112/41 (DI–150)	• Short in side squib (RH) circuit (to Ground)	• Side airbag assembly RH (squib) • Airbag sensor assembly • Wire harness	Blink
B0113/42 (DI–153)	• Short in side squib (RH) circuit (to B+)	• Side airbag assembly RH (squib) • Airbag sensor assembly • Wire harness	Blink
B0115/47 (DI–156)	• Short in side squib (LH) circuit	• Side airbag assembly LH (squib) • Airbag sensor assembly • Wire harness	Blink
B0116/48 (DI–160)	• Open in side squib (LH) circuit	• Side airbag assembly LH (squib) • Airbag sensor assembly • Wire harness	Blink
B0117/45 (DI–163)	• Short in side squib (LH) circuit (to Ground)	• Side airbag assembly LH (squib) • Airbag sensor assembly • Wire harness	Blink

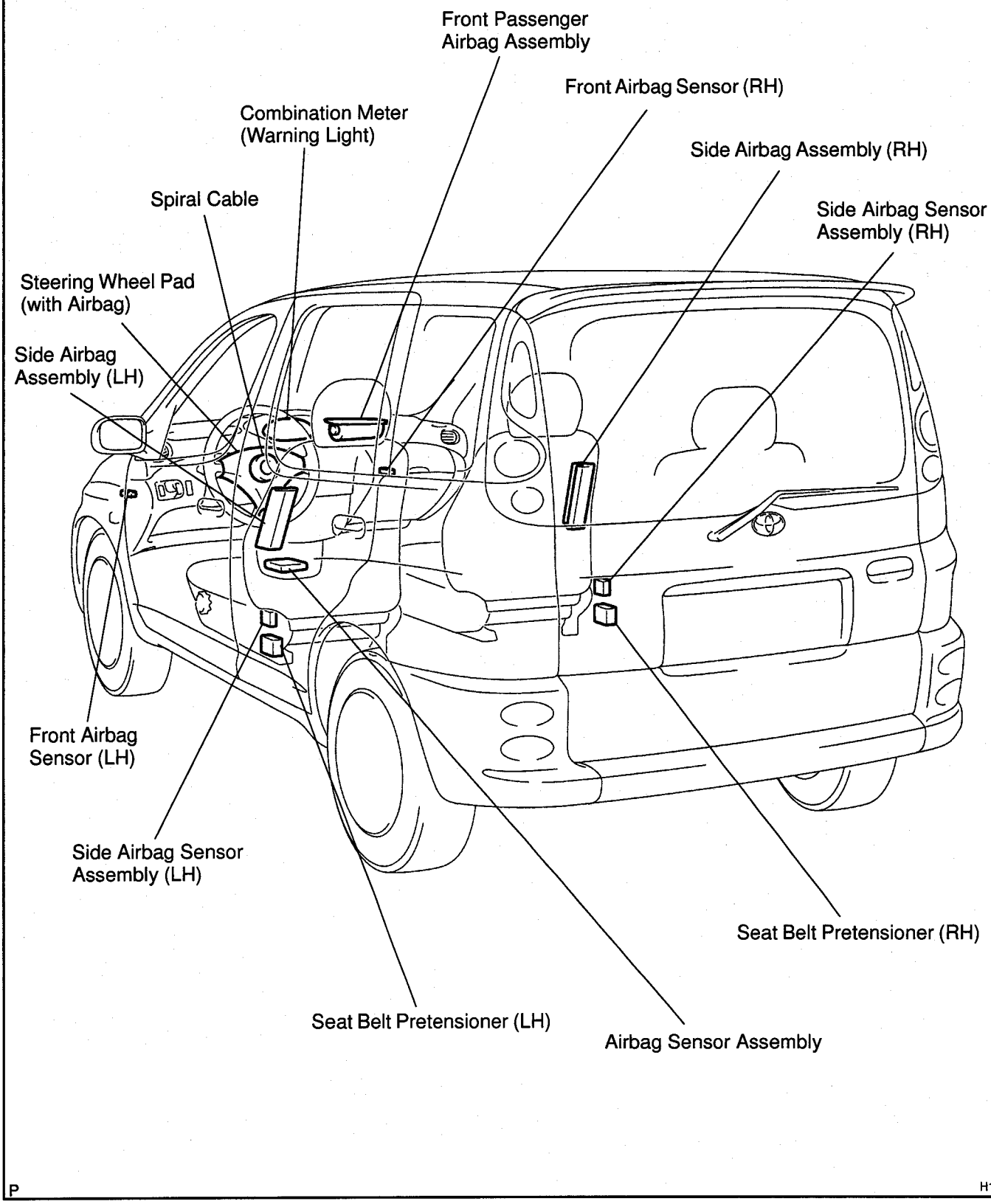
DTC No. (See Page)	Detection Item	Trouble Area	SRS Warning Light
B0118/46 (DI–166)	• Short in side squib (LH) circuit (to B+)	• Side airbag assembly LH (squib) • Airbag sensor assembly • Wire harness	Blink
B0130/63 (DI–169)	• Short in P/T squib (RH) circuit	• Seat belt pretensioner RH (squib) • Airbag sensor assembly • Wire harness	Blink
B0131/64 (DI–173)	• Open in P/T squib (RH) circuit	• Seat belt pretensioner RH (squib) • Airbag sensor assembly • Wire harness	Blink
B0132/61 (DI–176)	• Short in P/T squib circuits (to Ground)	• Seat belt pretensioner (squib) • Airbag sensor assembly • Wire harness	Blink
B0133/62 (DI–182)	• Short in D, P, side and P/T squib (RH) circuits (to B+)	• Steering wheel pad (squib) • Front passenger airbag assembly (squib) • Side airbag assembly (squib) • Seat belt pretensioner (squib) • Airbag sensor assembly • Wire harness	Blink
B0135/73 (DI–187)	• Short in P/T squib (LH) circuit	• Seat belt pretensioner LH (squib) • Airbag sensor assembly • Wire harness	Blink
B0136/74 (DI–191)	• Open in P/T squib (LH) circuit	• Seat belt pretensioner LH (squib) • Airbag sensor assembly • Wire harness	Blink
B1100/31 (DI–194)	• Airbag sensor assembly malfunction	• Airbag sensor assembly	ON
B1140/32 (DI–196)	• Side airbag sensor assembly (RH) malfunction	• Side airbag sensor assembly (RH) • Airbag sensor assembly • Wire harness	Blink
B1141/33 (DI–204)	• Side airbag sensor assembly (LH) malfunction	• Side airbag sensor assembly (LH) • Airbag sensor assembly • Wire harness	Blink
B1156/B1157/15 (DI–212)	• Front airbag sensor (RH) malfunction	• Front airbag sensor (RH) • Airbag sensor assembly • Wire harness • Engine room main wire haness	ON
B1158/B1159/16 (DI–220)	• Front airbag sensor (LH) malfunction	• Front airbag sensor (LH) • Airbag sensor assembly • Wire harness • Engine room main wire harness	ON
Normal (DI–228)	• System normal	–	OFF
	• Voltage source drop	• Battery • Airbag sensor assembly	ON

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.

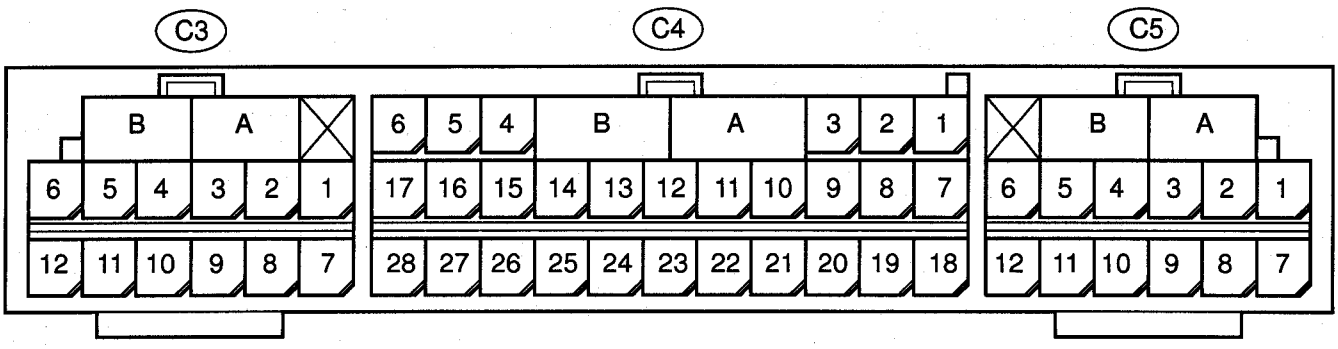
DI1B0-14

PARTS LOCATION



DI1HE-21

TERMINALS OF ECU



H01357

No.	Symbol	Terminal Name
A	–	Electrical Connector Check Mechanism
B	–	Electrical Connector Check Mechanism
C4 – 3	LA	SRS Warning Light
C4 – 5	IG2	Power Source (IGN Fuse)
C4 – 6	IG1	Power Source (CIG Fuse)
C4 – 9	+SR	Front Airbag Sensor (RH)
C4 – 10	P+	Squib (Passenger)
C4 – 11	P–	Squib (Passenger)
C4 – 12	SIL	Diagnosis
C4 – 13	D–	Squib (Driver)
C4 – 14	D+	Squib (Driver)
C4 – 15	+SL	Front Airbag Sensor (LH)
C4 – 19	Tc	Diagnosis
C4 – 20	–SR	Front Airbag Sensor (RH)
C4 – 26	–SL	Front Airbag Sensor (LH)
C4 – 27	E1	Ground
C4 – 28	E2	Ground
C3 – 1	PL–	Squib (Seat Belt Pretensioner, LH)
C3 – 2	PL+	Squib (Seat Belt Pretensioner, LH)
C3 – 5	SFL+	Squib (Side, LH)
C3 – 6	SFL–	Squib (Side, LH)
C3 – 7	VUPL	Side Airbag Sensor Assembly (LH)
C3 – 9	SSL	Side Airbag Sensor Assembly (LH)
C3 – 10	FSL	Side Airbag Sensor Assembly (LH)
C3 – 12	ESL	Side Airbag Sensor Assembly (LH)

No.	Symbol	Terminal Name
C5 – 1	SFR–	Squib (Side, RH)
C5 – 2	SFR+	Squib (Side, RH)
C5 – 5	PR+	Squib (Pretensioner, RH)
C5 – 6	PR–	Squib (Pretensioner, RH)
C5 – 7	ESR	Side Airbag Sensor Assembly (RH)
C5 – 9	FSR	Side Airbag Sensor Assembly (RH)
C5 – 10	SSR	Side Airbag Sensor Assembly (RH)
C5 – 12	VUPR	Side Airbag Sensor Assembly (RH)

DI164-26

PROBLEM SYMPTOMS TABLE

Proceed with troubleshooting of each circuit in the table below.

Symptom	Suspect Area	See page
• With the ignition switch in ON position, the SRS warning light sometimes lights up after approx. 6 seconds have elapsed.	• SRS warning light circuit	DI–231
• SRS warning light is always lit up even when ignition switch is in the LOCK position.		
• With the ignition switch in ON position, the SRS warning light does not light up.		
• DTC is not displayed.	• Tc terminal circuit	DI–236
• SRS warning light is always lit up at the time of DTC check procedure.		
• DTC is displayed without Tc and CG terminal connection.		

DI18Q-21

CIRCUIT INSPECTION

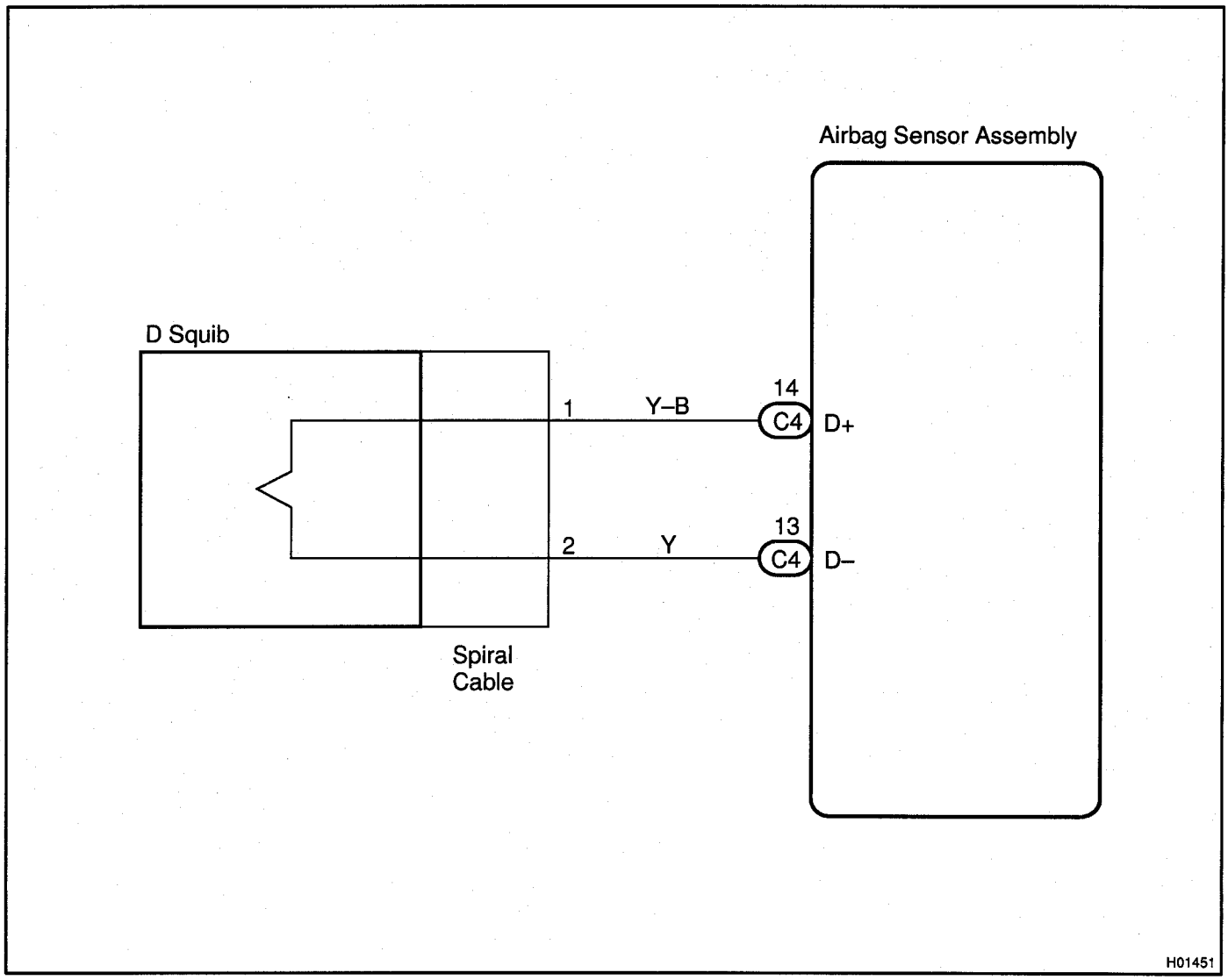
DTC	B0100/13	Short in D Squib Circuit

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

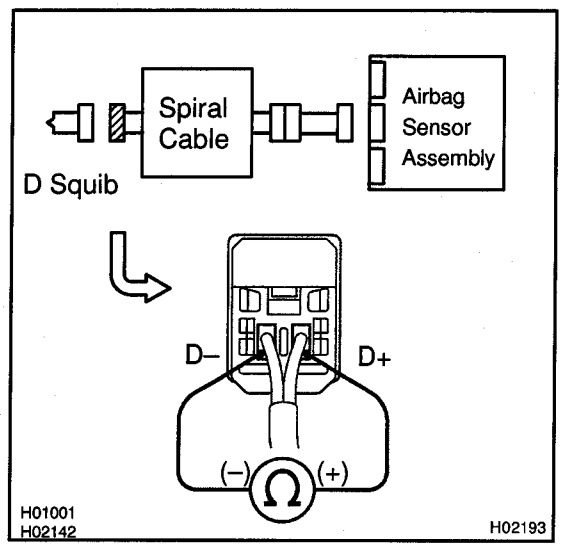
WIRING DIAGRAM



INSPECTION PROCEDURE

1	**Prepare for inspection. (See step 1 on page DI–228)**

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–102)

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–.

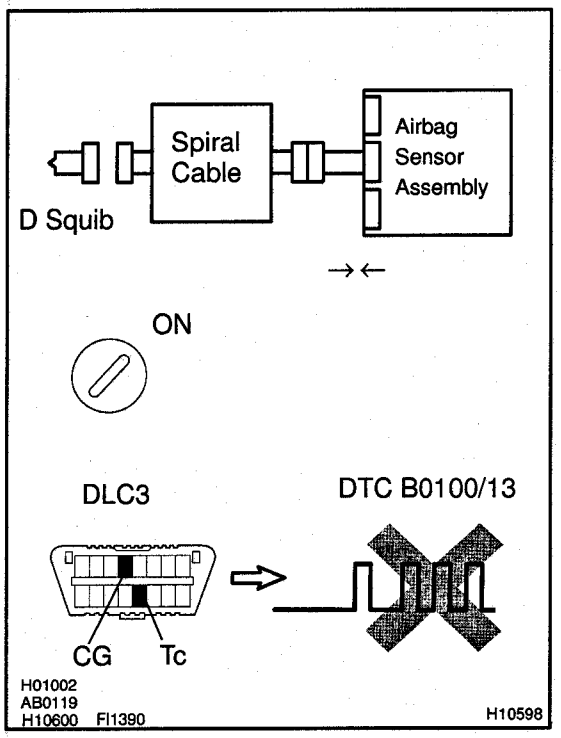
OK:

Resistance: 1 MΩ or Higher

NG	**Go to step 5.**

OK

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 ON and wait at least for 20 seconds.
(b) Clear DTC stored in memory. (See page DI–102)
(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn the ignition switch to ON, and wait at least for 20 seconds.
(e) Check DTC. (See page DI–102)

OK:

DTC B0100/13 is not output.

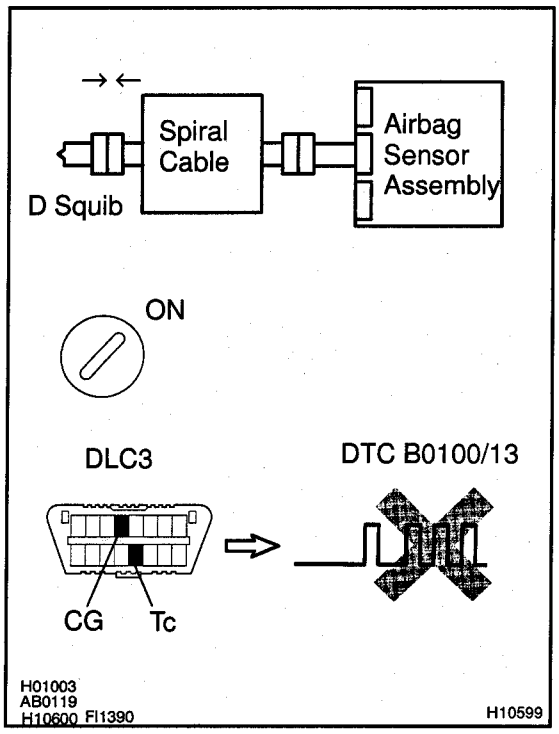
HINT:

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

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 ON, and wait at least for 20 seconds.
(c) Clear DTC stored in memory. (See page DI–102)
(d) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(e) Turn the ignition switch to ON, and wait at least for 20 seconds.
(f) Check DTC. (See page DI–102)

OK:

DTC B0100/13 is not output.

HINT:

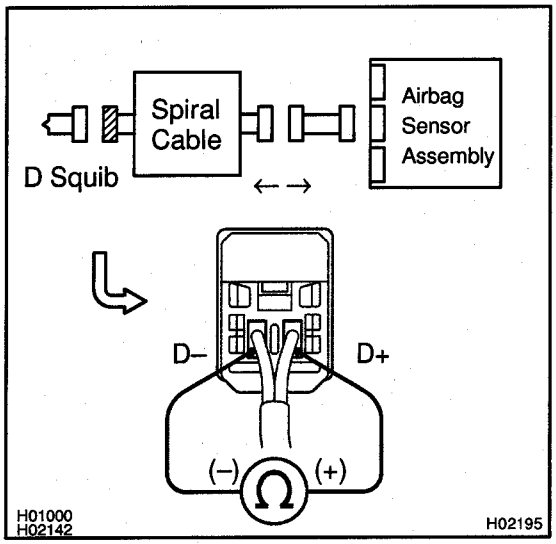
Codes other than code B0100/13 may be output at this time, but they are not relevant to this check.

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.

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–102)

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–.

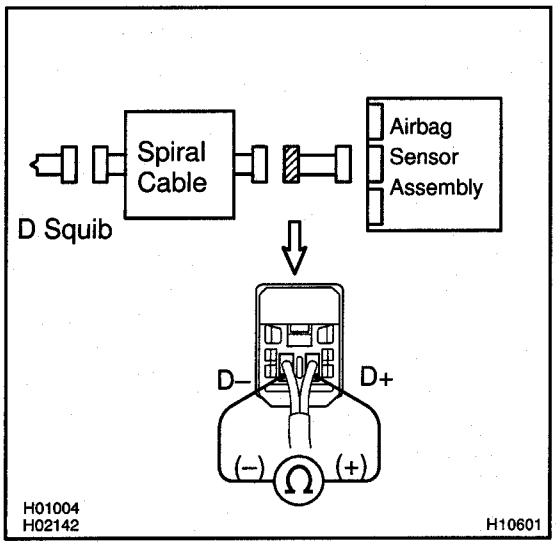
OK:

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–102)

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.

DI16R-30

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 component, 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

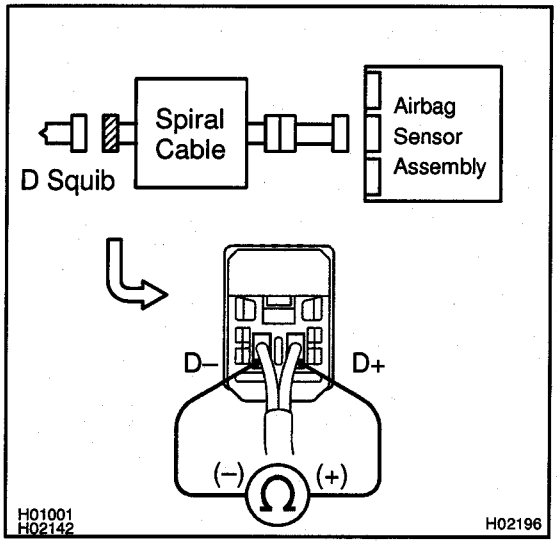
WIRING DIAGRAM

See page DI–114.

INSPECTION PROCEDURE

1	Prepare for inspection. (See step 1 on page DI–228)

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–.

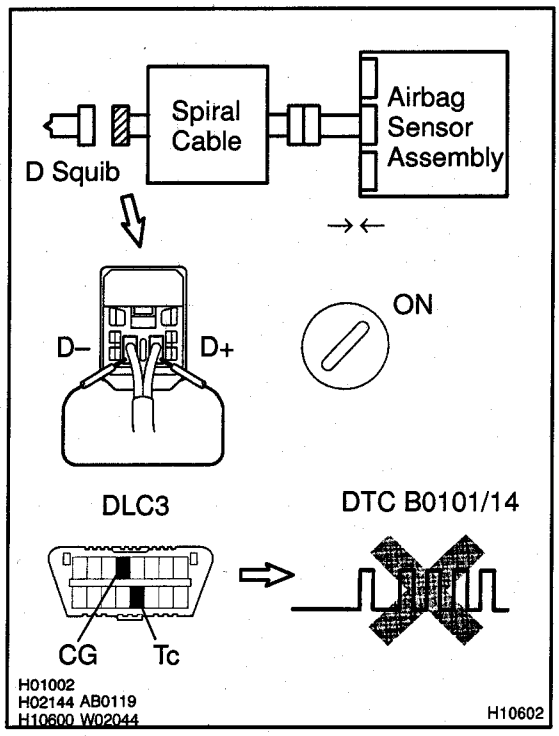
OK:

Resistance: Below 1 Ω

NG → **Go to step 5.**

OK

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 ON, and wait at least for 20 seconds.
(b) Clear DTC stored in memory. (See page DI–102)
(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn the ignition switch to ON, and wait at least for 20 seconds.
(e) Check DTC. (See page DI–102)

OK:

DTC B0101/14 is not output.

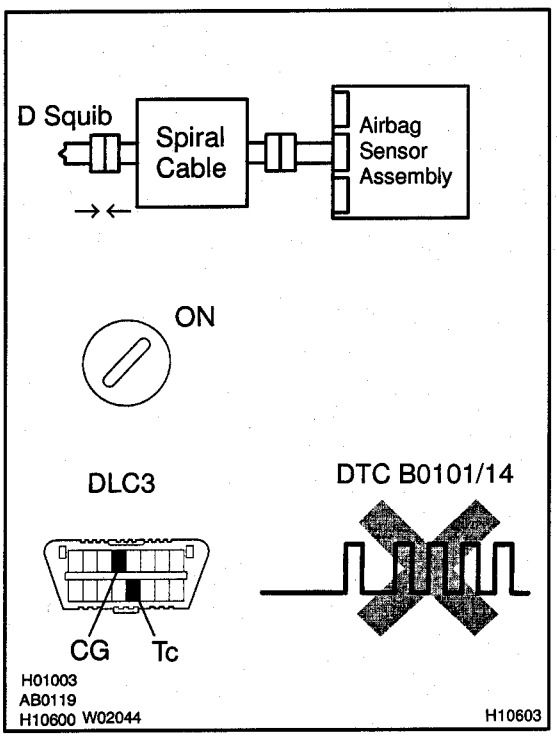
HINT:

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

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 ON, and wait at least for 20 seconds.
(b) Clear DTC stored in memory. (See page DI–102)
(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn the ignition switch to ON, and wait at least for 20 seconds.
(e) Check DTC. (See page DI–102)

OK:

DTC B0101/14 is not output.

HINT:

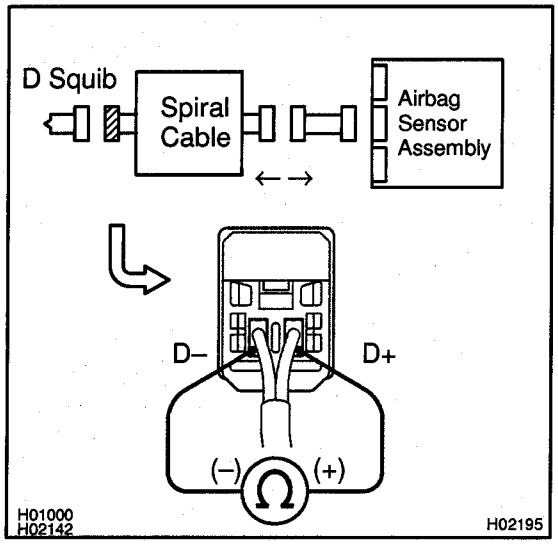
Codes other than code B0101/14 may be output at this time, but they are not relevant to this check.

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.

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–.

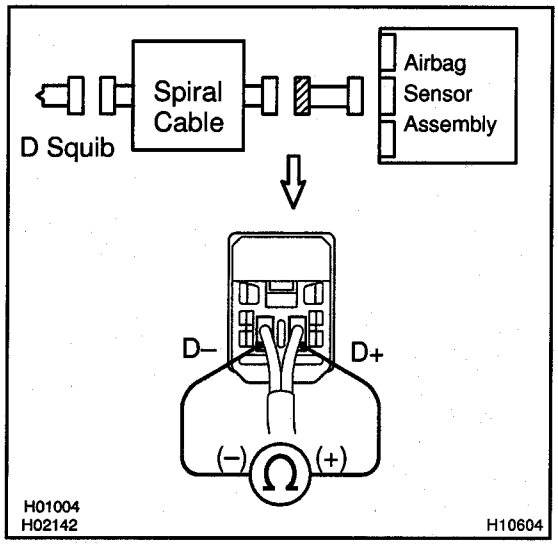
OK:

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.

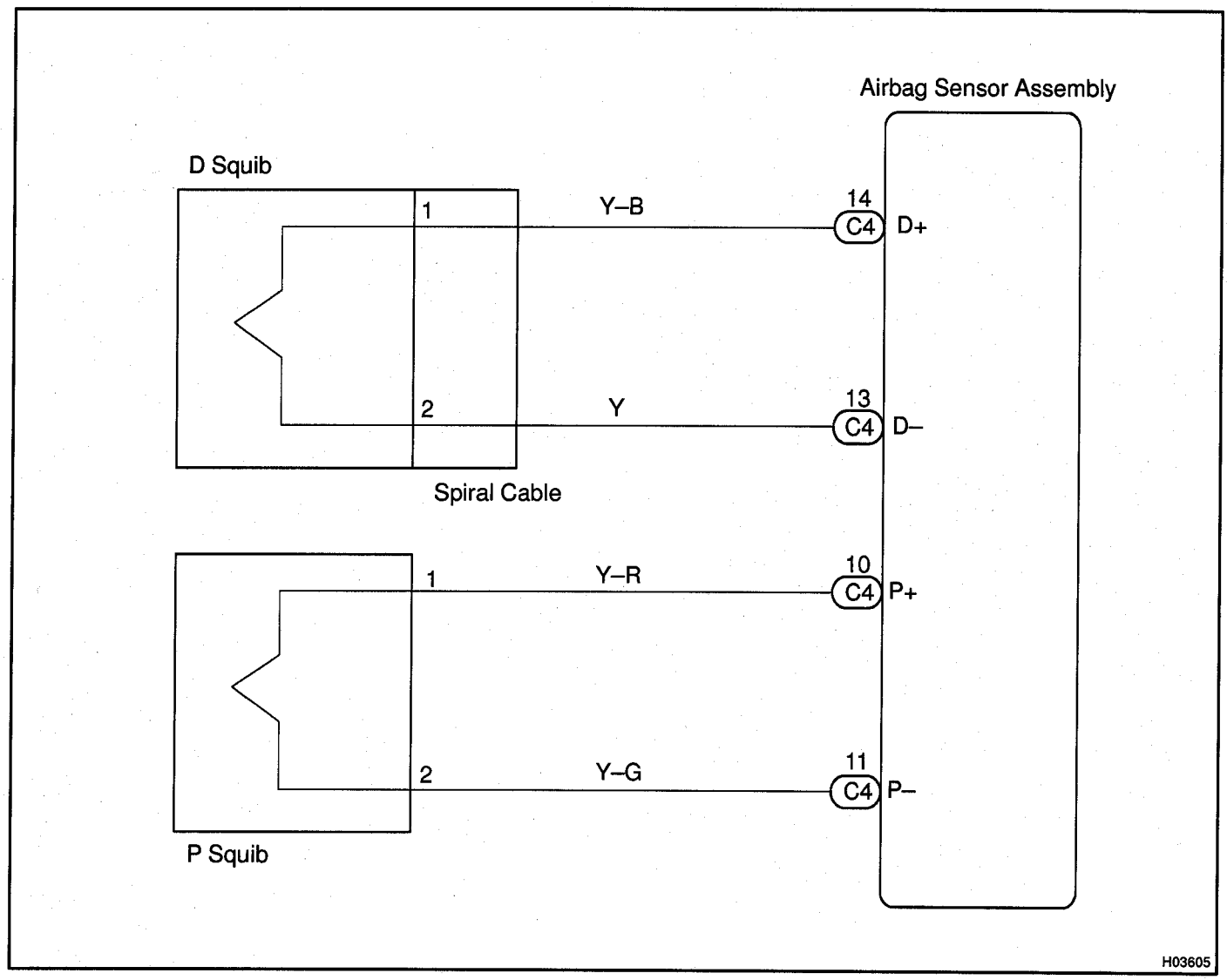
DTC	B0102/11	Short in D Squib Circuit (to Ground) (possible for P squib)

CIRCUIT DESCRIPTION

The D and P squib circuits consist of the airbag sensor assembly, spiral cable, steering wheel pad 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 B0102/11 is recorded when ground short is detected in the D and P squib circuits.

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

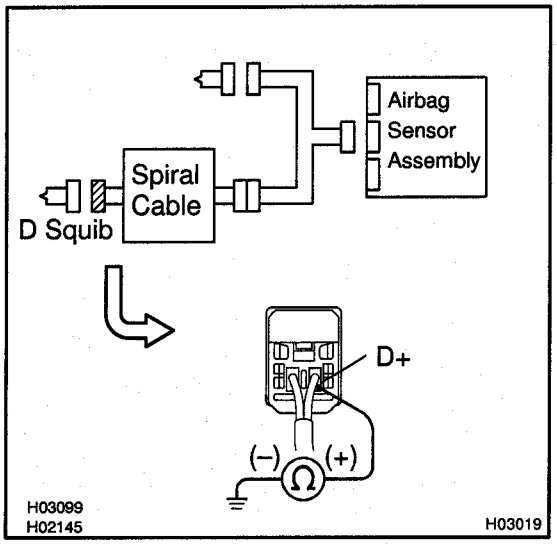
WIRING DIAGRAM



INSPECTION PROCEDURE

1	**Prepare for inspection. (See step 1 on page DI–228)**

2	Check D squib circuit.



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

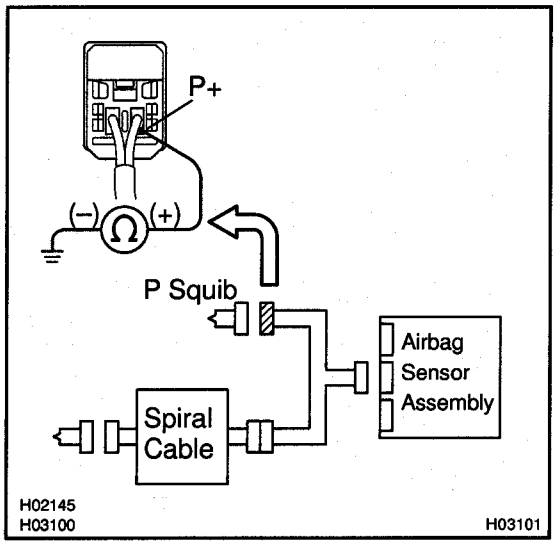
OK:

Resistance: 1 MΩ or Higher

NG → **Go to step 7.**

OK

3	Check P squib circuit.



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

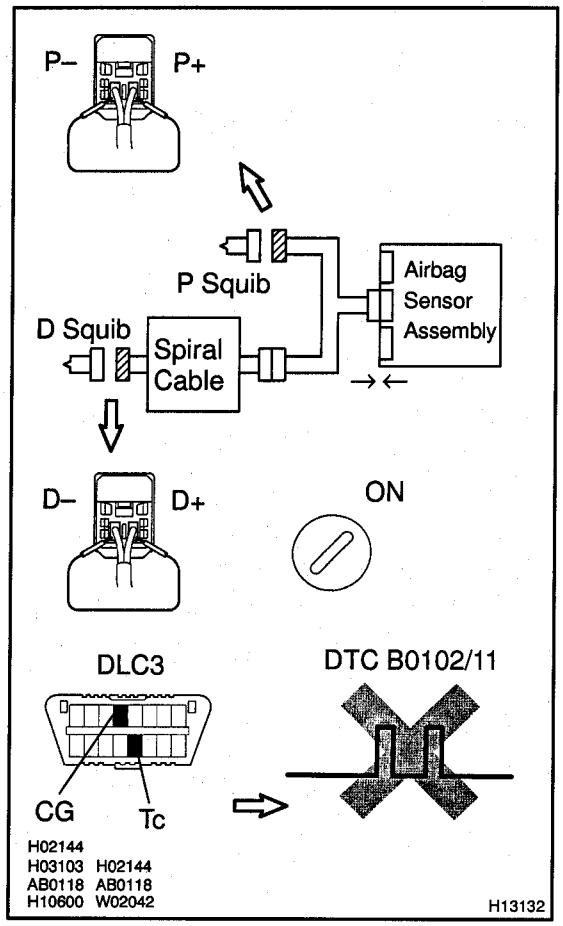
OK:

Resistance: 1 MΩ or Higher

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

OK

4	**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 steering wheel pad.
(c) 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 airbag sensor assembly.
(d) Connect negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn ignition switch to ON and wait at least 20 seconds.
(b) Clear DTC stored in memory.
(See step 5 on page DI–102)
(c) Turn ignition switch to LOCK, and wait at least 20 seconds.
(d) Turn ignition switch to ON, and wait at least 20 seconds.
(e) Check DTC. (See page DI–102)

OK:

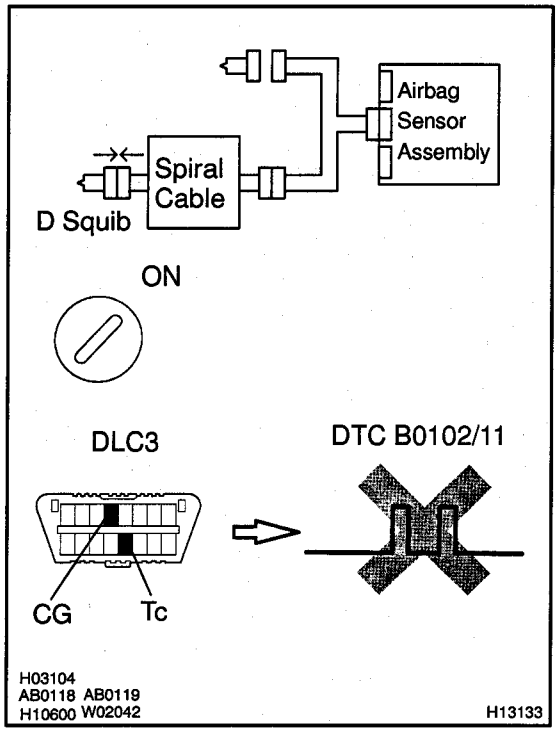
DTC B0102/11 is not output.

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

NG → **Replace airbag sensor assembly.**

OK

5	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 ON, and wait at least for 20 seconds.
(b) Clear DTC stored in memory.
(See step 5 on page DI–102)
(c) Turn ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn ignition switch to ON, and wait at least for 20 seconds.
(e) Check DTC. (See page DI–102)

OK:

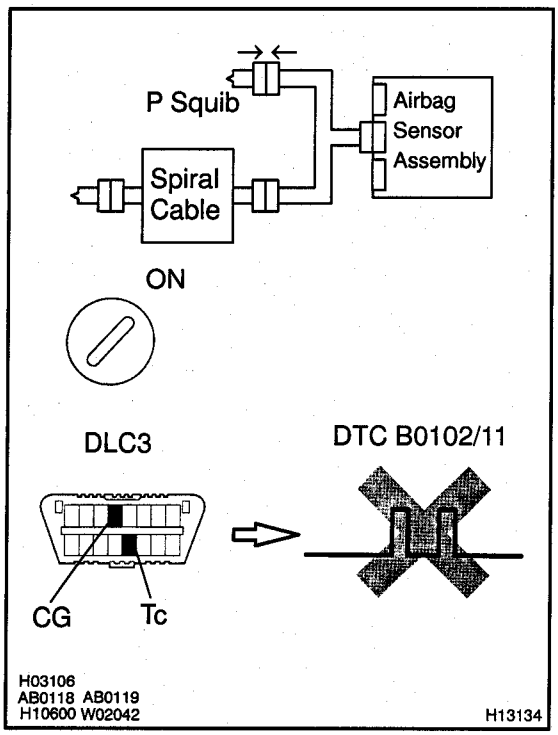
DTC B0102/11 is not output.

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

NG → **Replace steering wheel pad.**

OK

6	Check P 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 front passenger airbag assembly connector.
(d) Connect negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn ignition switch to ON, and wait at least for 20 seconds.
(b) Clear DTC stored in memory.
(See step 5 on page DI–102)
(c) Turn ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn ignition switch to ON, and wait at least for 20 seconds.
(e) Check DTC. (See page DI–102)

OK:

DTC B0102/11 is not output.

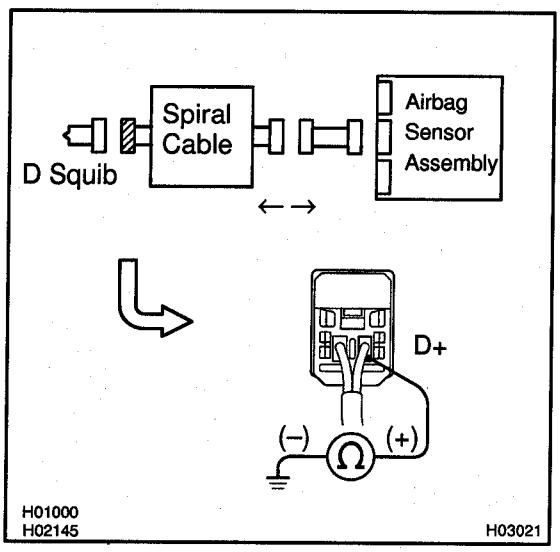
HINT:
Codes other than DTC B0102/11 may be output at this time, but they are not relevant to this check.

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.

7	Check spiral cable.



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

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

OK:

Resistance: 1 MΩ or Higher

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

OK

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

DTC	B0103/12	Short in D Squib Circuit (to B+) (possible for P squib)

CIRCUIT DESCRIPTION

The D and P squib circuits consist of the airbag sensor assembly, spiral cable, steering wheel pad 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 page OPERATION on page RS–2.
DTC B0103/12 is recorded when B+ short is detected in the D and P squib circuits.

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

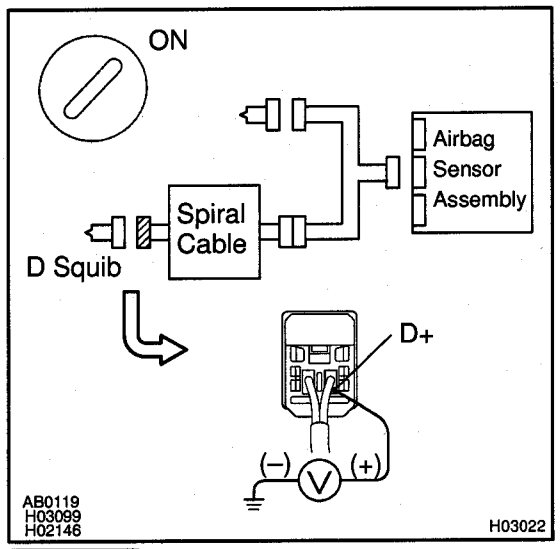
WIRING DIAGRAM

See page DI–123.

INSPECTION PROCEDURE

1	Prepare for inspection. (See step 1 on page DI–228)

2	Check D squib circuit.

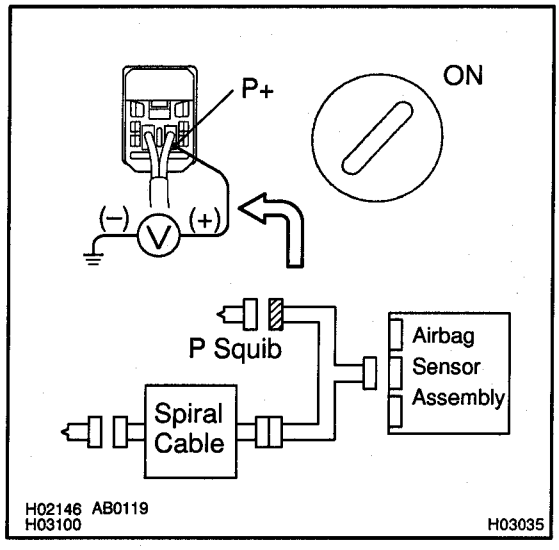


PREPARATION:
Turn ignition switch ON
CHECK:
For the connector (on the spiral cable side) between the spiral cable and steering wheel pad, measure the voltage between D+ and body ground.
OK:
Voltage: Below 1 V

NG → **Go to step 7.**

OK

3	Check P squib circuit.



CHECK:

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

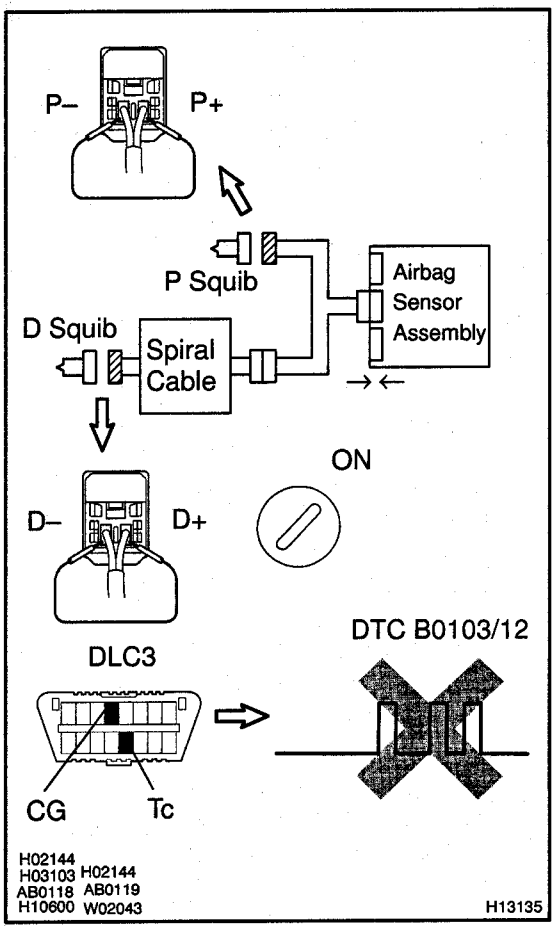
OK:

Voltage: Below 1 V

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

OK →

4	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 steering wheel pad.
(c) 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 airbag sensor.
(d) Connect negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn ignition switch to ON and wait at least for 20 seconds.
(b) Clear DTC stored in memory.
(See step 5 on page DI–102)
(c) Turn ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn ignition switch to ON, and wait at least for 20 seconds.
(e) Check DTC. (See page DI–102)

OK:

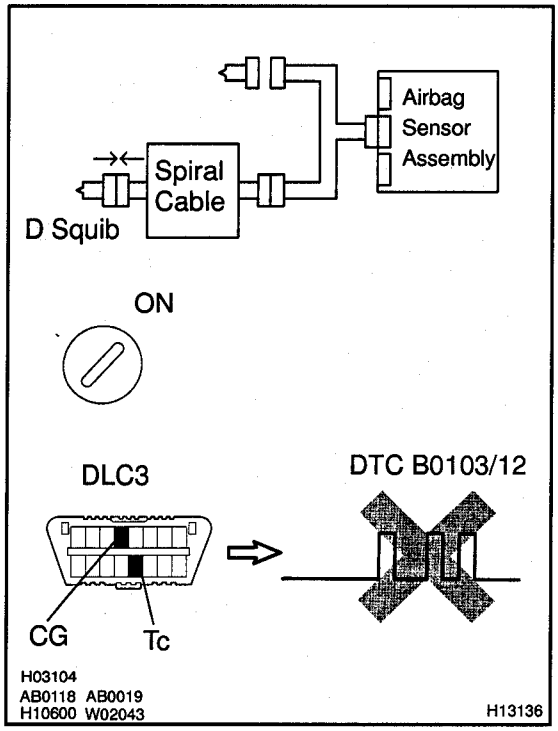
DTC B0103/12 is not output.

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

NG	Replace airbag sensor assembly.

OK

5	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 ON, and wait at least for 20 seconds.
(b) Clear DTC stored in memory.
(See step 5 on page DI–102)
(c) Turn ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn ignition switch to ON, and wait at least for 20 seconds.
(e) Check DTC. (See page DI–102)

OK:

DTC B0103/12 is not output.

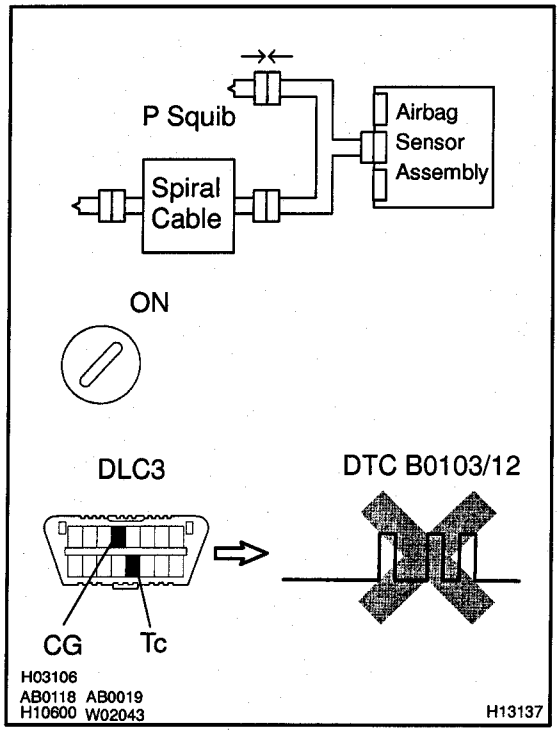
HINT:

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

NG → **Replace steering wheel pad.**

OK

6	Check P 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 front passenger airbag connector.
(d) Connect negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn ignition switch to ON, and wait at least for 20 seconds.
(b) Clear DTC stored in memory.
(See step 5 on page DI–102)
(c) Turn ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn ignition switch to ON, and wait at least for 20 seconds.
(e) Check DTC. (See page DI–102)

OK:

DTC B0103/12 is not output.

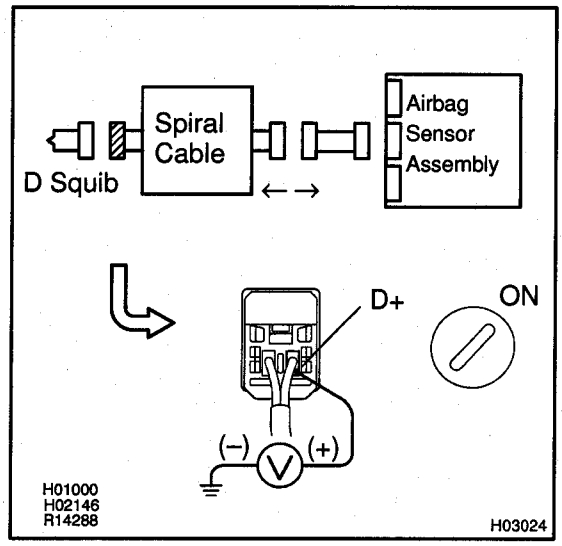
HINT:
Codes other than DTC B0103/12 may be output at this time, but they are not relevant to this check.

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.

7	Check spiral cable.



PREPARATION:

(a) Turn ignition switch to LOCK.
(b) Disconnect the connector between the airbag sensor assembly and spiral cable.
(c) Turn ignition switch ON.

CHECK:

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

OK:

Voltage: Below 1 V

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

OK →

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

DI1B6-22

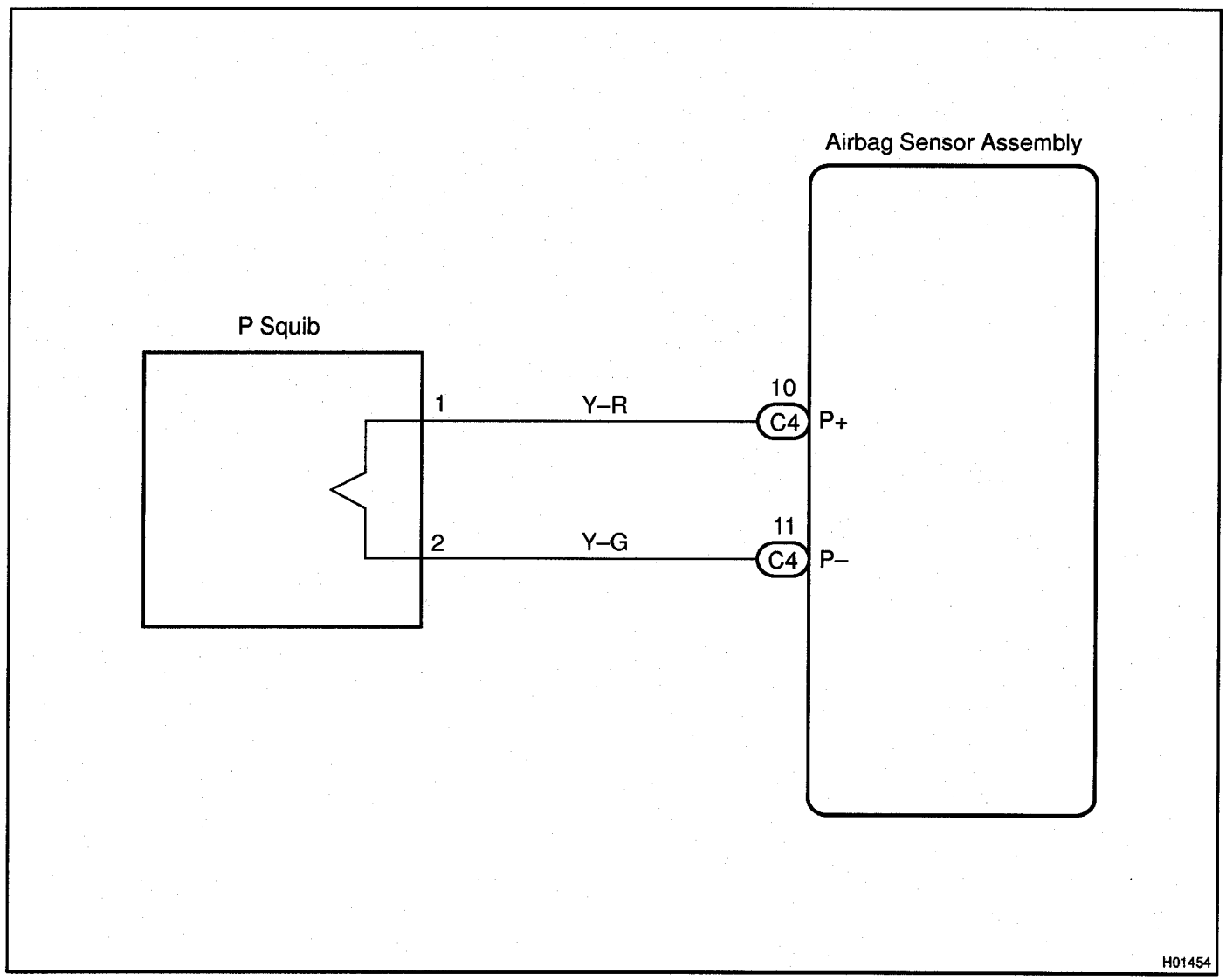
DTC	B0105/53	Short in P Squib Circuit

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

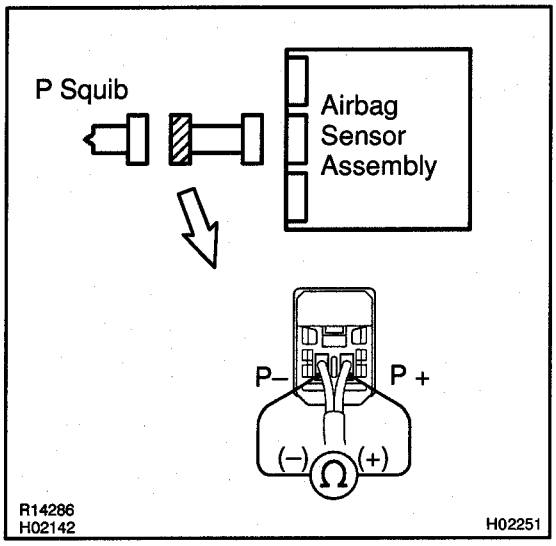
WIRING DIAGRAM



INSPECTION PROCEDURE

1	**Prepare for inspection. (See step 1 on page DI–228)**

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–102)

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–.

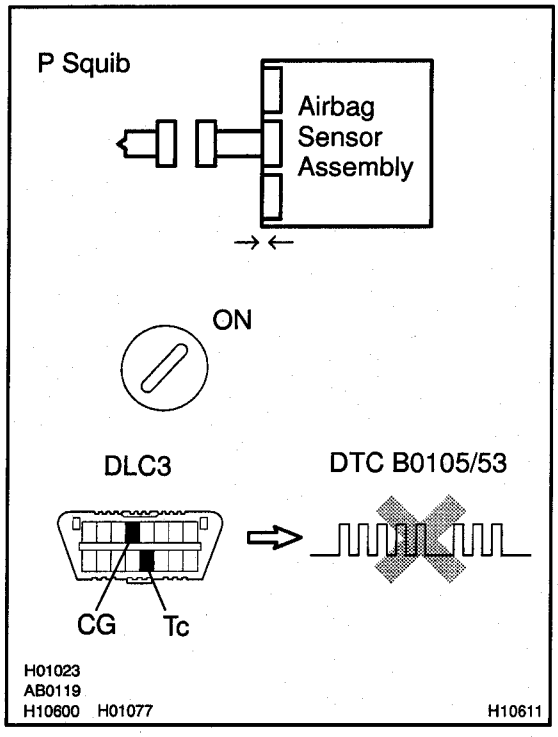
OK:

Resistance: 1 MΩ or Higher

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

OK

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 ON and wait at least for 20 seconds.
(b) Clear DTC stored in memory. (See page DI–102)
(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn the ignition switch to ON, and wait at least for 20 seconds.
(e) Check DTC. (See page DI–102)

OK:

DTC B0105/53 is not output.

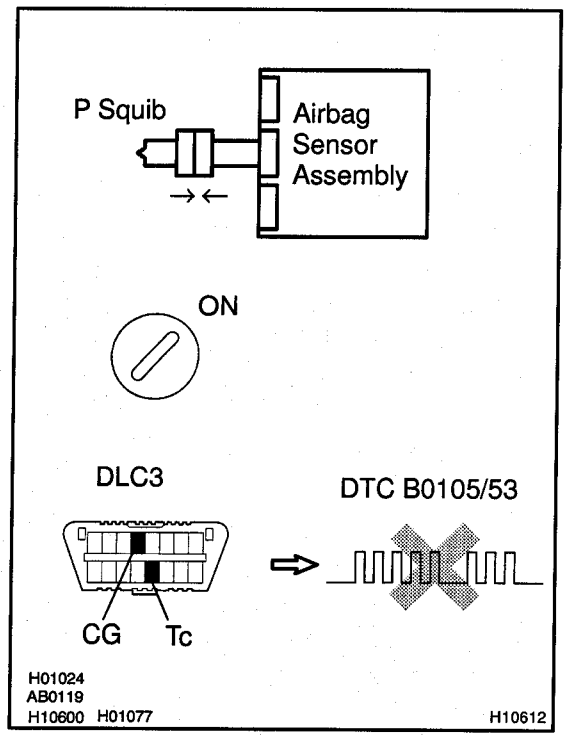
HINT:

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

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 ON, and wait at least for 20 seconds.
(c) Clear DTC stored in memory. (See page DI–102)
(d) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(e) Turn the ignition switch to ON, and wait at least for 20 seconds.
(f) Check DTC. (See page DI–102)

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.

DI1B7-28

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

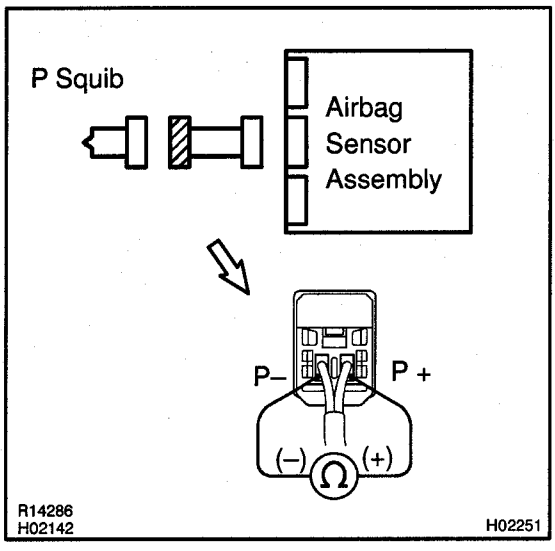
WIRING DIAGRAM

See page DI–136.

INSPECTION PROCEDURE

1	**Prepare for inspection. (See step 1 on page DI–228)**

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–.

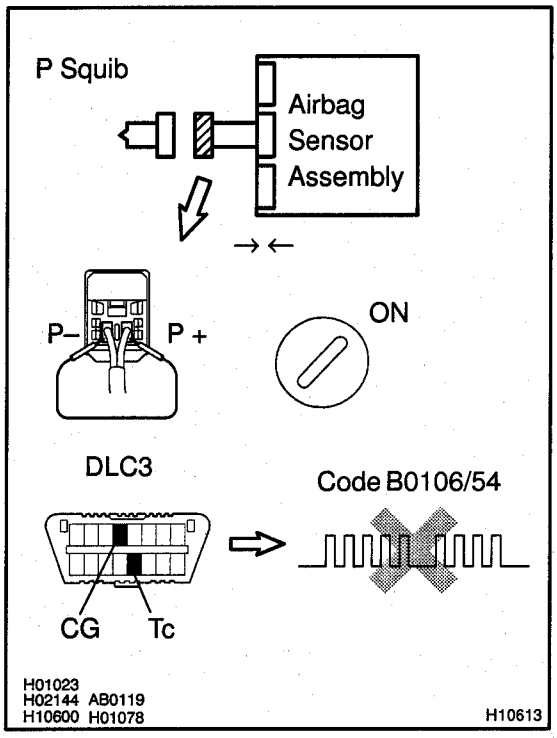
OK:

Resistance: Below 1 Ω

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

OK

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 ON and wait at least for 20 seconds.
(b) Clear DTC stored in memory. (See page DI–102)
(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn the ignition switch to ON, and wait at least for 20 seconds.
(e) Check DTC. (See page DI–102)

OK:

DTC B0106/54 is not output.

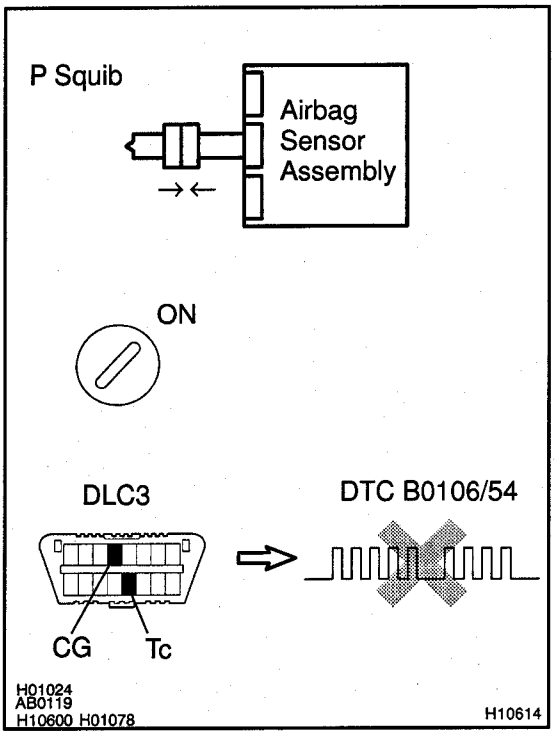
HINT:

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

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 ON, and wait at least for 20 seconds.
(b) Clear DTC stored in memory. (See page DI–102)
(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn the ignition switch to ON, and wait at least for 20 seconds.
(e) Check DTC. (See page DI–102)

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.

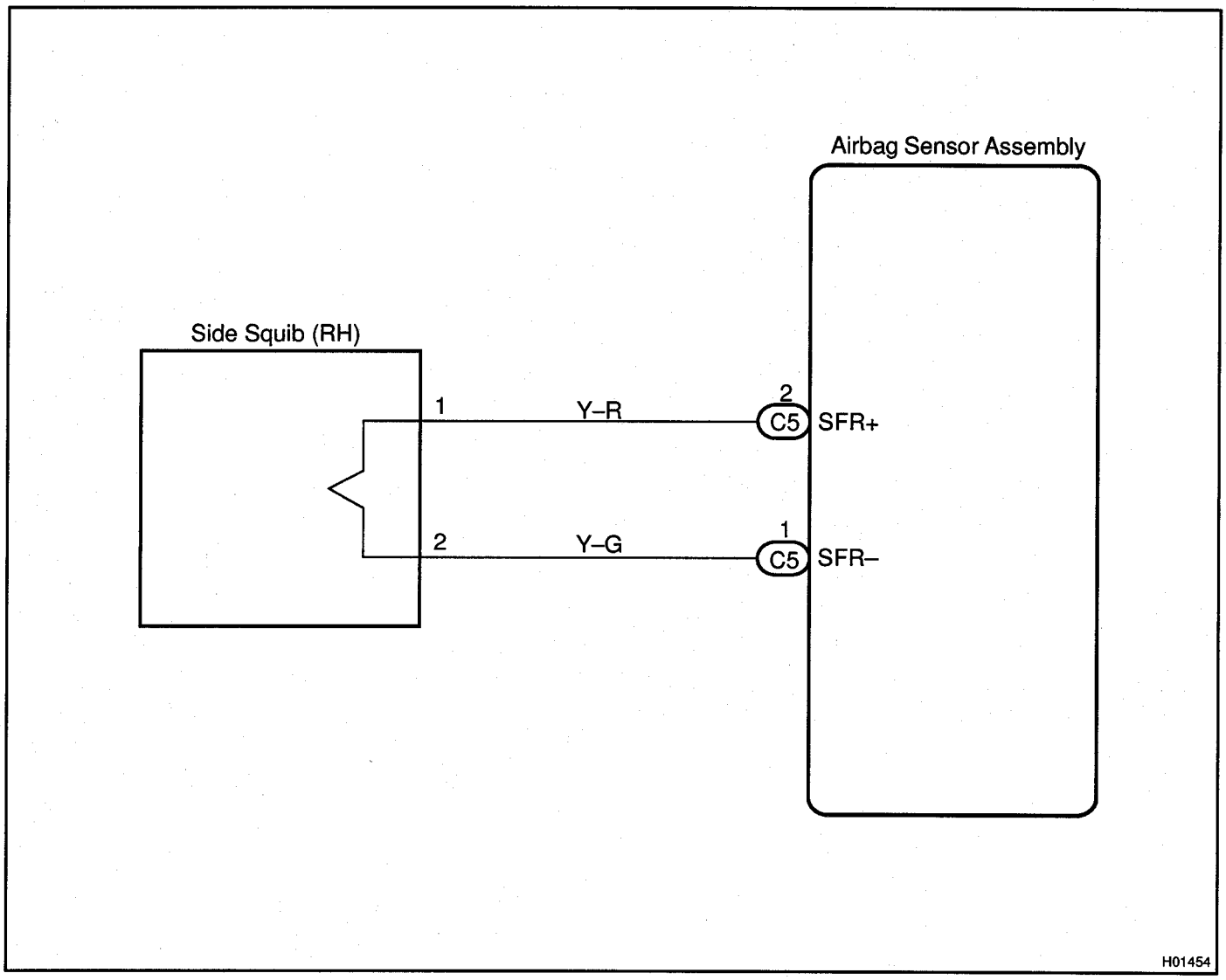
DTC	B0110/43	Short in Side Squib (RH) Circuit

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

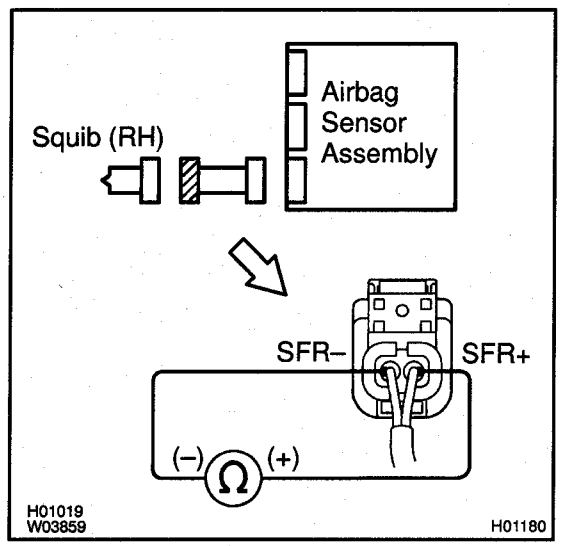
WIRING DIAGRAM



INSPECTION PROCEDURE

1	**Prepare for inspection. (See step 1 on page DI–228)**

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–102)

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–.

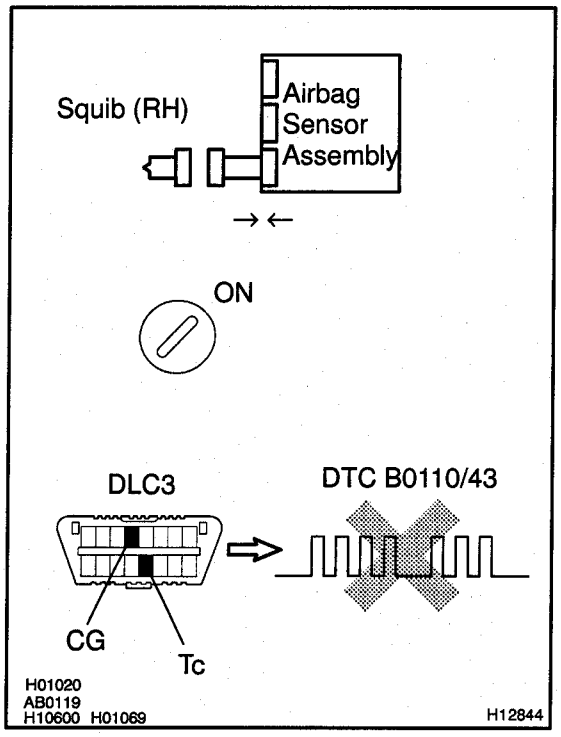
OK:

Resistance: 1 MΩ or Higher

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

OK

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 ignition switch to ON and wait at least for 20 seconds.
(b) Clear DTC stored in memory. (See page DI–102)
(c) Turn ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn ignition switch to ON and wait at least for 20 seconds.
(e) Check DTC. (See page DI–102)

OK:

DTC B0110/43 is not output.

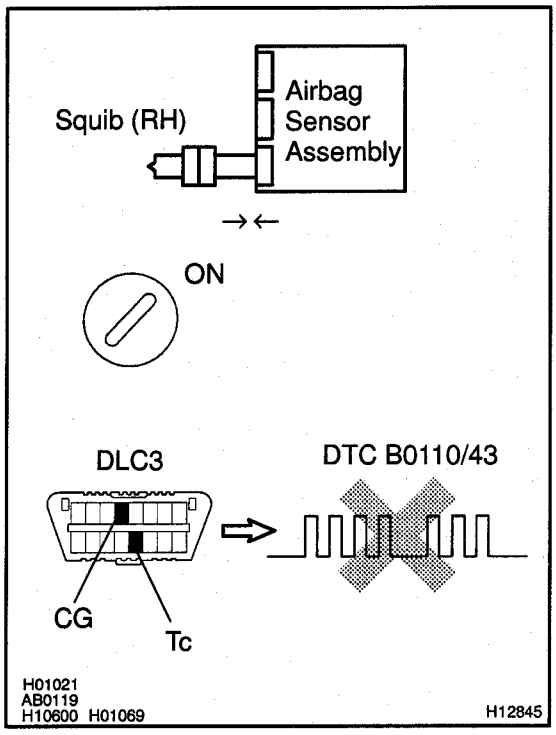
HINT:

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

4	Check side 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 side airbag assembly (RH) connector.
(d) Connect negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn ignition switch to LOOK, and wait at least for 20 second.
(b) Turn ignition switch to ON and wait at least for 20 seconds.
(c) Clear DTC stored in memory. (See page DI–102)
(d) Turn ignition switch to LOCK, and wait at least for 20 seconds.
(e) Turn ignition switch to ON and wait at least for 20 seconds.
(f) Check DTC. (See page DI–102)

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.

DI1ND-10

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

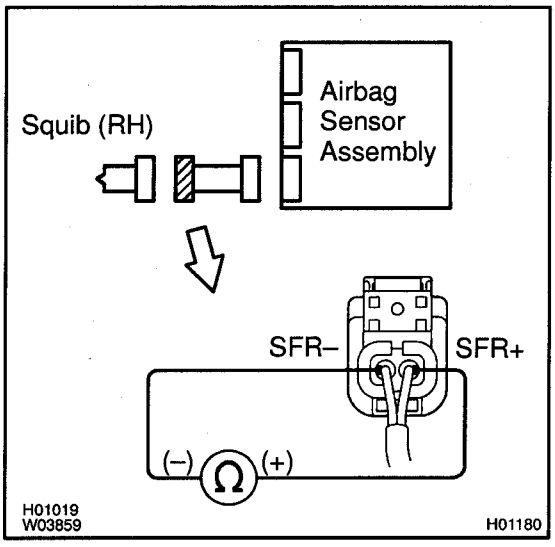
WIRING DIAGRAM

See page DI–143.

INSPECTION PROCEDURE

1	**Prepare for inspection. (See step 1 on page DI–228)**

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 SFR–.

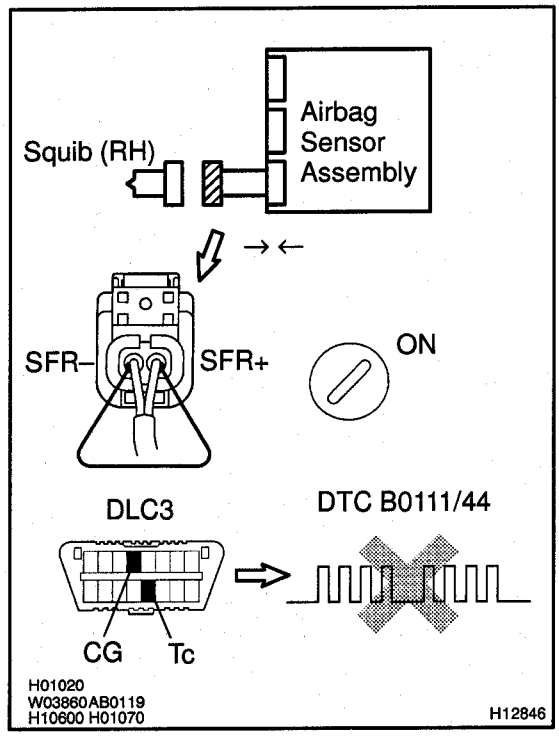
OK:

Resistance: Below 1 Ω

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

OK

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 ignition switch to ON and wait at least for 20 seconds.

(b) Clear DTC stored in memory. (See page DI–102)

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

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

(e) Check DTC. (See page DI–102)

OK:

DTC B0111/44 is not output.

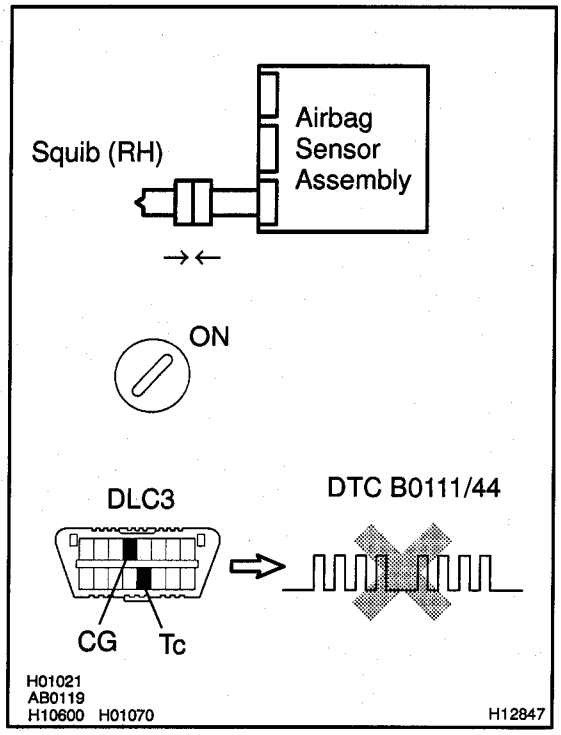
HINT:

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

4	Check side 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 side airbag assembly (RH) connector.
(d) Connect negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn ignition switch to ON and wait at least for 20 seconds.
(b) Clear DTC stored in memory. (See page DI–102)
(c) Turn ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn ignition switch to ON and wait at least for 20 seconds.
(e) Check DTC. (See page DI–102)

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.

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 a 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

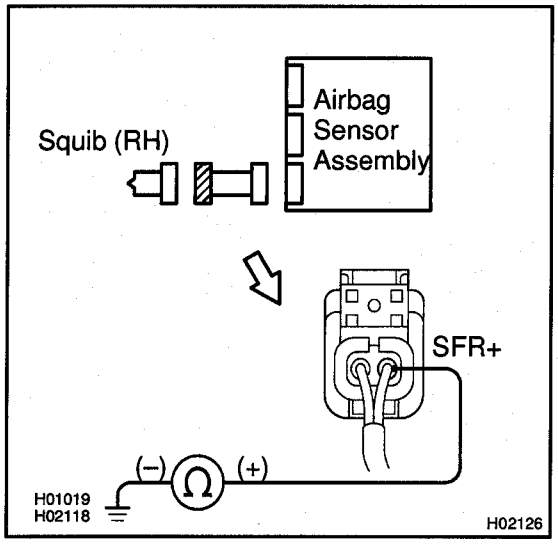
WIRING DIAGRAM

See page DI–143.

INSPECTION PROCEDURE

1	**Prepare for inspection. (See step 1 on page DI–228)**

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.

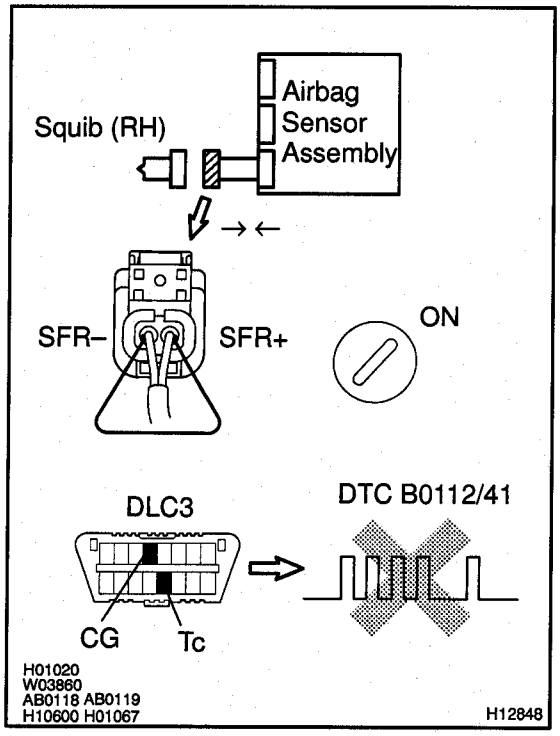
OK:

Resistance: 1 MΩ or Higher

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

OK

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 ignition switch to ON and wait at least for 20 seconds.

(b) Clear DTC stored in memory.
(See step 5 on page DI–102)

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

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

(e) Check DTC. (See page DI–102)

OK:

DTC B0112/41 is not output.

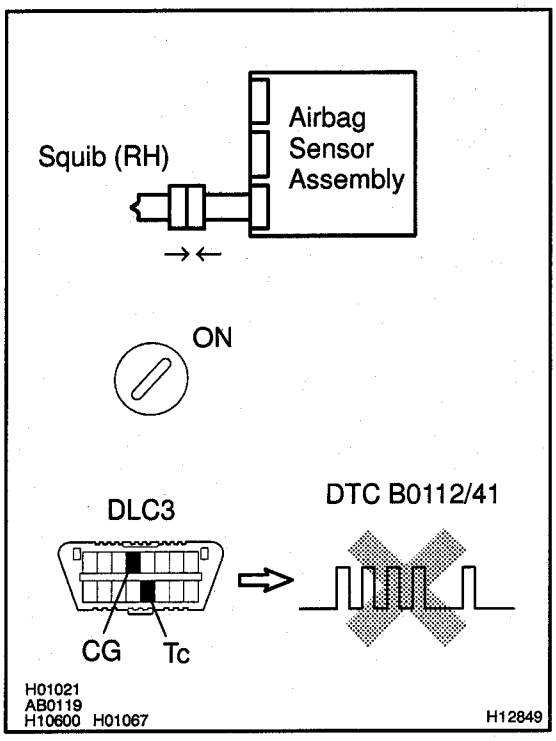
HINT:

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

4	Check side 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 side airbag assembly (RH) connector.
(d) Connect negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn ignition switch to ON and wait at least for 20 seconds.
(b) Clear DTC stored in memory.
(See step 5 on page DI–102)
(c) Turn ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn ignition switch to ON and wait at least for 20 seconds.
(e) Check DTC. (See page DI–102)

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.

DI1NF-11

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

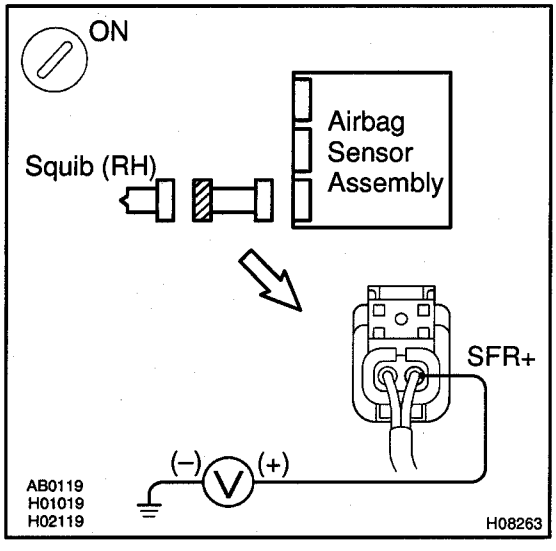
WIRING DIAGRAM

See page DI–143.

INSPECTION PROCEDURE

1	Prepare for inspection. (See step 1 on page DI–228)

2	Check side squib (RH) circuit.



CHECK:

(a) Turn 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.

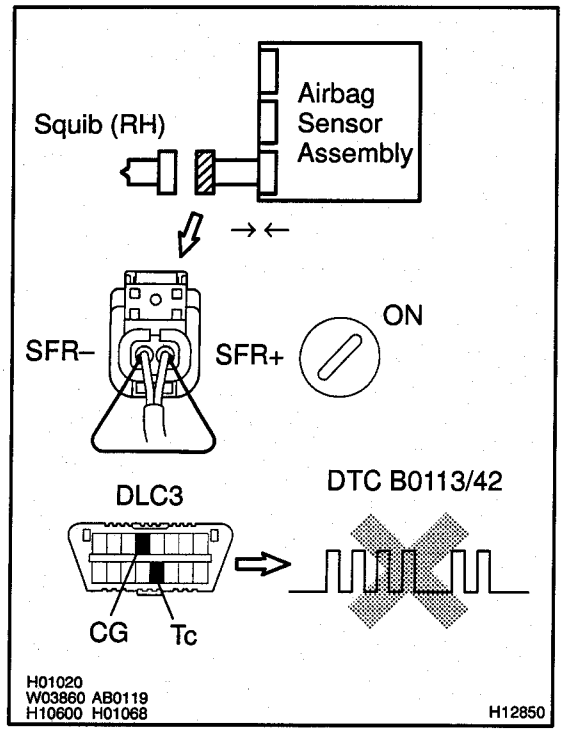
OK:

Voltage: 0 V

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

OK

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 ignition switch to ON and wait at least for 20 seconds.

(b) Clear DTC stored in memory.
(See step 5 on page DI–102)

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

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

(e) Check DTC. (See page DI–102)

OK:

DTC B0113/42 is not output.

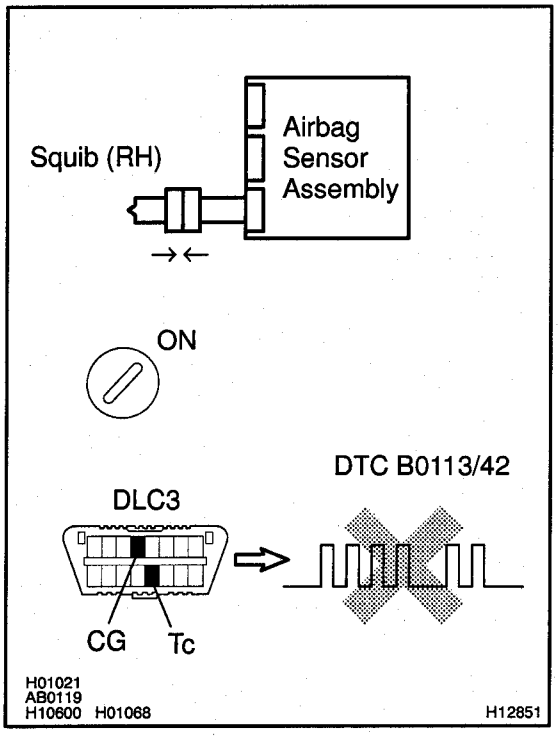
HINT:

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

4	**Check side 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 side airbag assembly (RH) connector.
(d) Connect negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn ignition switch to ON and wait at least for 20 seconds.
(b) Clear DTC stored in memory.
(See step 5 on page DI–102)
(c) Turn ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn ignition switch to ON and wait at least for 20 seconds.
(e) Check DTC. (See page DI–102)

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.

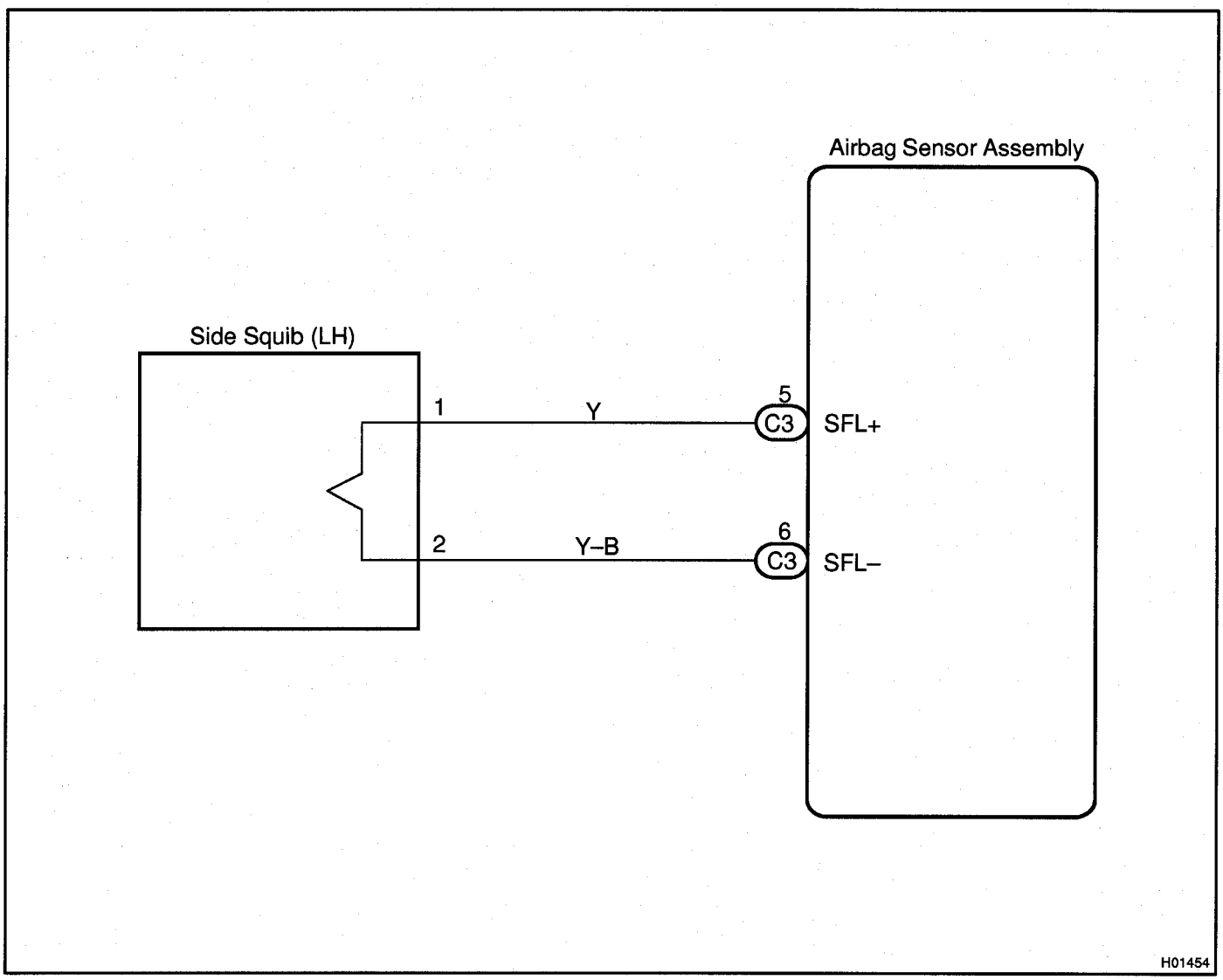
DTC	B0115/47	Short in Side Squib (LH) Circuit

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

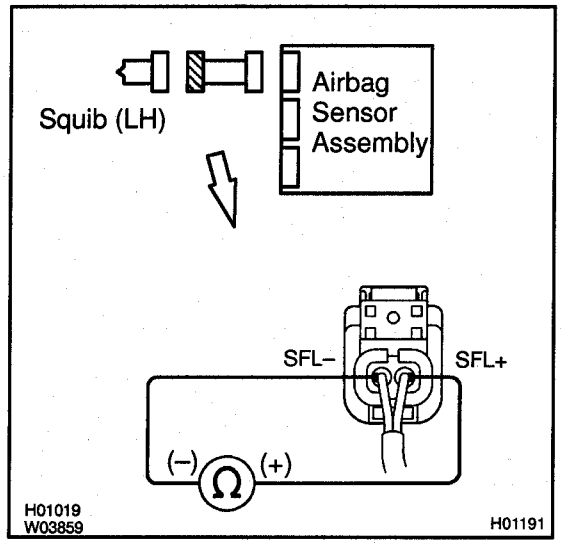
WIRING DIAGRAM



INSPECTION PROCEDURE

1	**Prepare for inspection. (See step 1 on page DI–228)**

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–102)

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–.

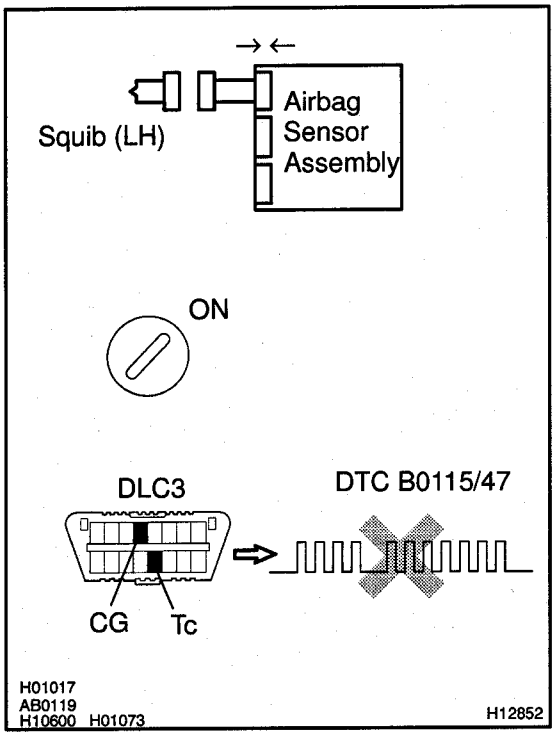
OK:

Resistance: 1 MΩ or Higher

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

OK

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 ignition switch to ON and wait at least for 20 seconds.
(b) Clear DTC stored in memory. (See page DI–102)
(c) Turn ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn ignition switch to ON and wait at least for 20 seconds.
(e) Check DTC. (See page DI–102)

OK:

DTC B0115/47 is not output.

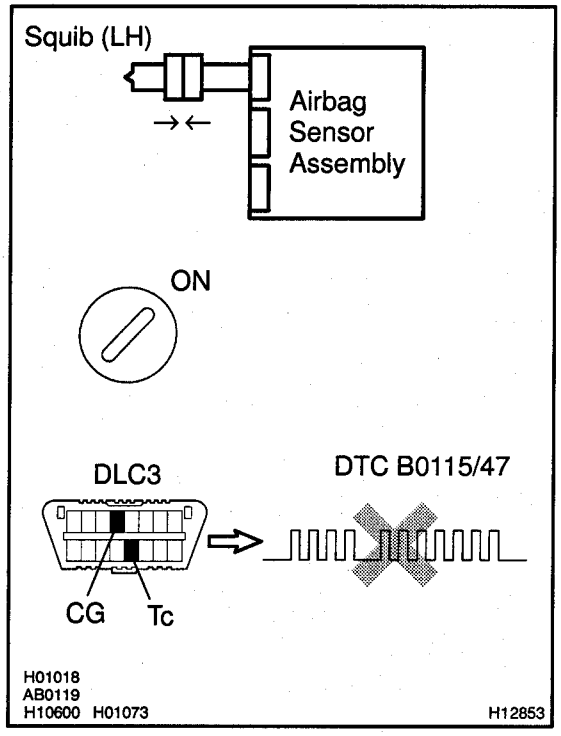
HINT:

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

4	**Check side squib (LH).**



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 side airbag assembly (LH) connector.
(d) Connect negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn ignition switch to LOOK, and wait at least for 20 second.
(b) Turn ignition switch to ON and wait at least for 20 seconds.
(c) Clear DTC stored in memory. (See page DI–102)
(d) Turn ignition switch to LOCK, and wait at least for 20 seconds.
(e) Turn ignition switch to ON and wait at least for 20 seconds.
(f) Check DTC. (See page DI–102)

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.

DI1NH–11

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

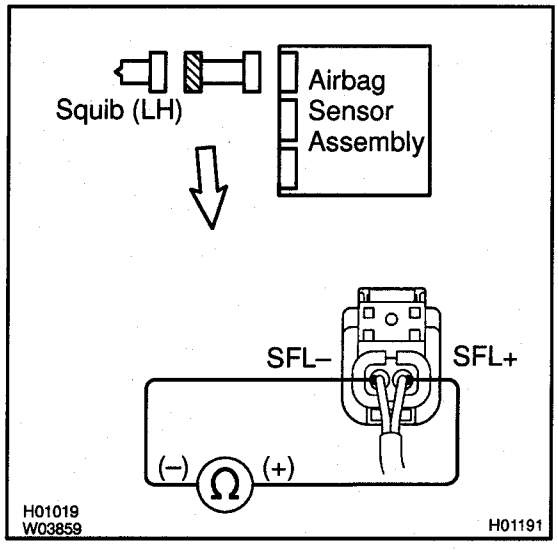
WIRING DIAGRAM

See page DI–156.

INSPECTION PROCEDURE

1	**Prepare for inspection. (See step 1 on page DI–228)**

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 SFL–.

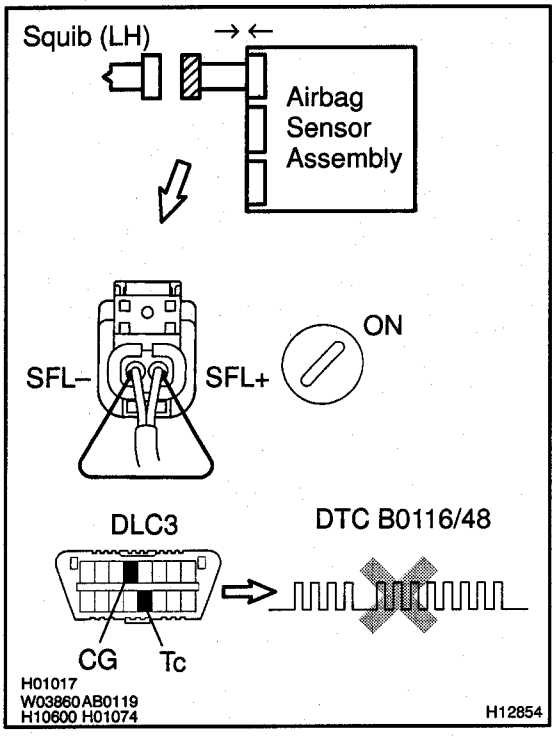
OK:

Resistance: Below 1 Ω

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

OK

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 ignition switch to ON and wait at least for 20 seconds.
(b) Clear DTC stored in memory. (See page DI–102)
(c) Turn ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn ignition switch to ON and wait at least for 20 seconds.
(e) Check DTC. (See page DI–102)

OK:

DTC B0116/48 is not output.

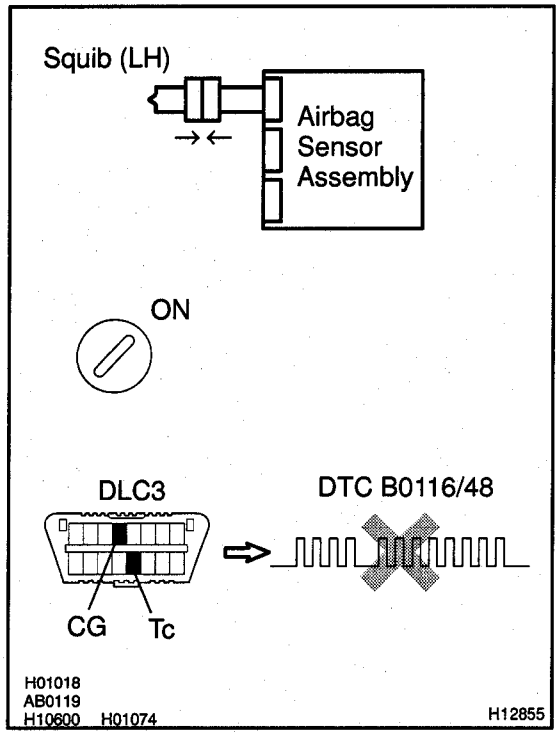
HINT:

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

NG	Replace airbag sensor assembly.

OK

4	Check side squib (LH).



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 side airbag assembly (LH) connector.
(d) Connect negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn ignition switch to ON and wait at least for 20 seconds.
(b) Clear DTC stored in memory. (See page DI–102)
(c) Turn ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn ignition switch to ON and wait at least for 20 seconds.
(e) Check DTC. (See page DI–102)

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.

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 a 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

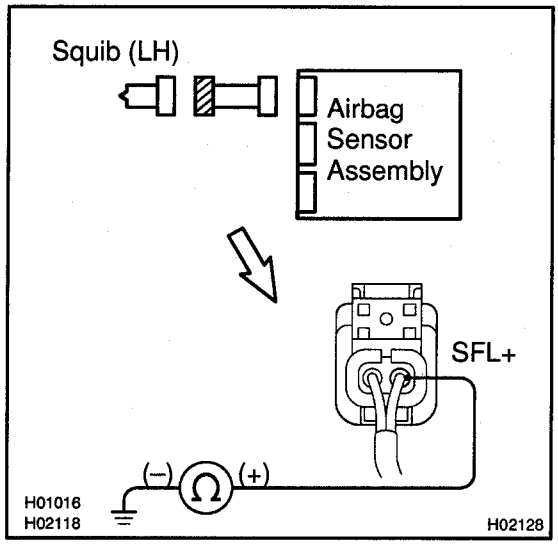
WIRING DIAGRAM

See page DI–156.

INSPECTION PROCEDURE

1	**Prepare for inspection. (See step 1 on page DI–228)**

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.

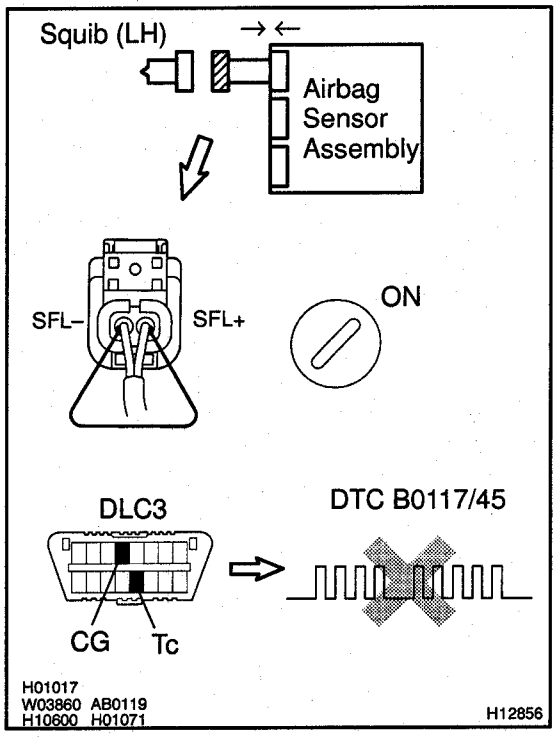
OK:

Resistance: 1 MΩ or Higher

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

OK

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 ignition switch to ON and wait at least for 20 seconds.
(b) Clear DTC stored in memory.
(See step 5 on page DI–102)
(c) Turn ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn ignition switch to ON and wait at least for 20 seconds.
(e) Check DTC. (See page DI–102)

OK:

DTC B0117/45 is not output.

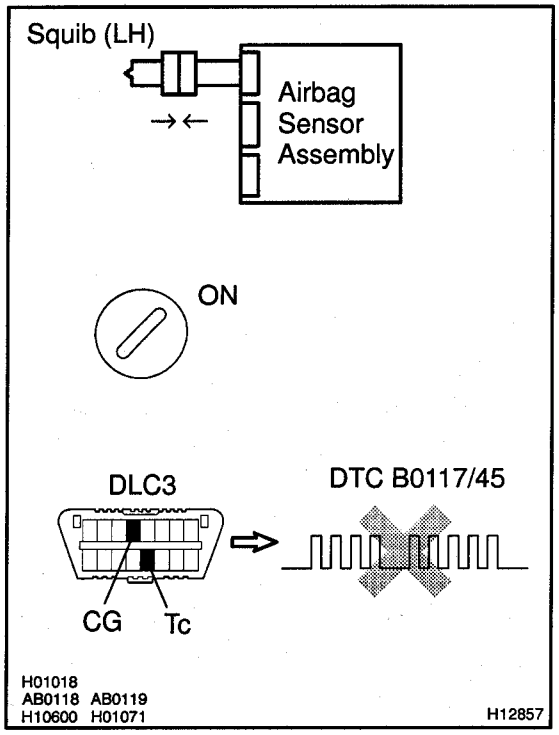
HINT:

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

4	**Check side squib (LH).**



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 side airbag assembly (LH) connector.
(d) Connect negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn ignition switch to ON and wait at least for 20 seconds.
(b) Clear DTC stored in memory.
(See step 5 on page DI–102)
(c) Turn ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn ignition switch to ON and wait at least for 20 seconds.
(e) Check DTC. (See page DI–102)

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 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.

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

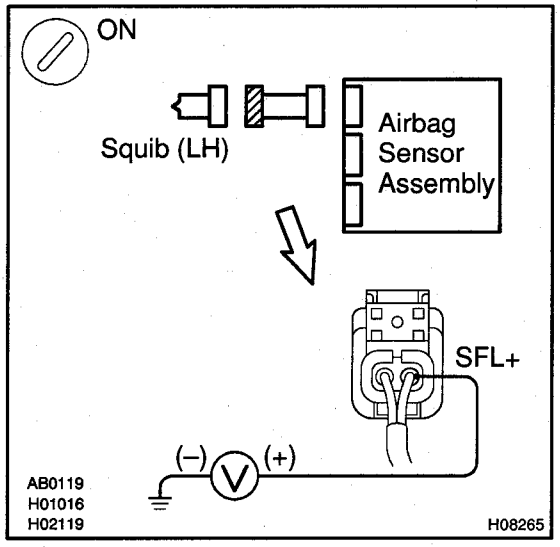
WIRING DIAGRAM

See page DI–156.

INSPECTION PROCEDURE

1	**Prepare for inspection. (See step 1 on page DI–228)**

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



CHECK:

(a) Turn 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.

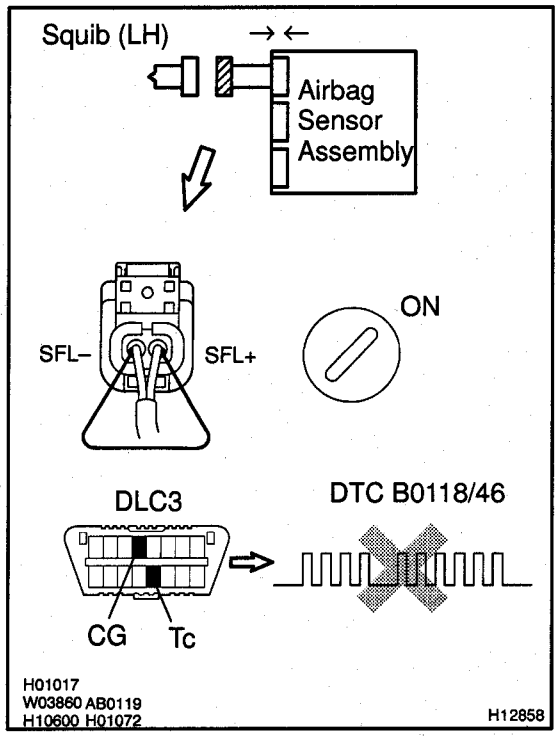
OK:

Voltage: 0 V

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

OK

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 ignition switch to ON and wait at least for 20 seconds.

(b) Clear DTC stored in memory.
(See step 5 on page DI–102)

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

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

(e) Check DTC. (See page DI–102)

OK:

DTC B0118/46 is not output.

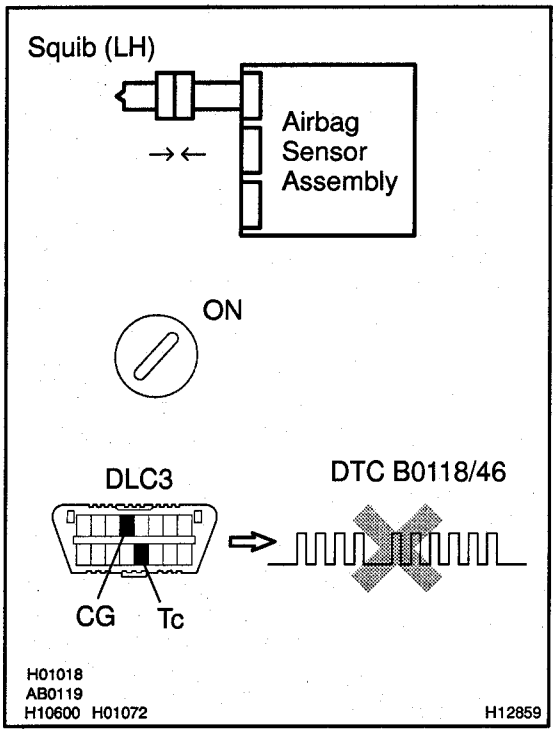
HINT:

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

4	Check side squib (LH).



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 side airbag assembly (LH) connector.
(d) Connect negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn ignition switch to ON and wait at least for 20 seconds.
(b) Clear DTC stored in memory.
(See step 5 on page DI–102)
(c) Turn ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn ignition switch to ON and wait at least for 20 seconds.
(e) Check DTC. (See page DI–102)

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.

DI16S–29

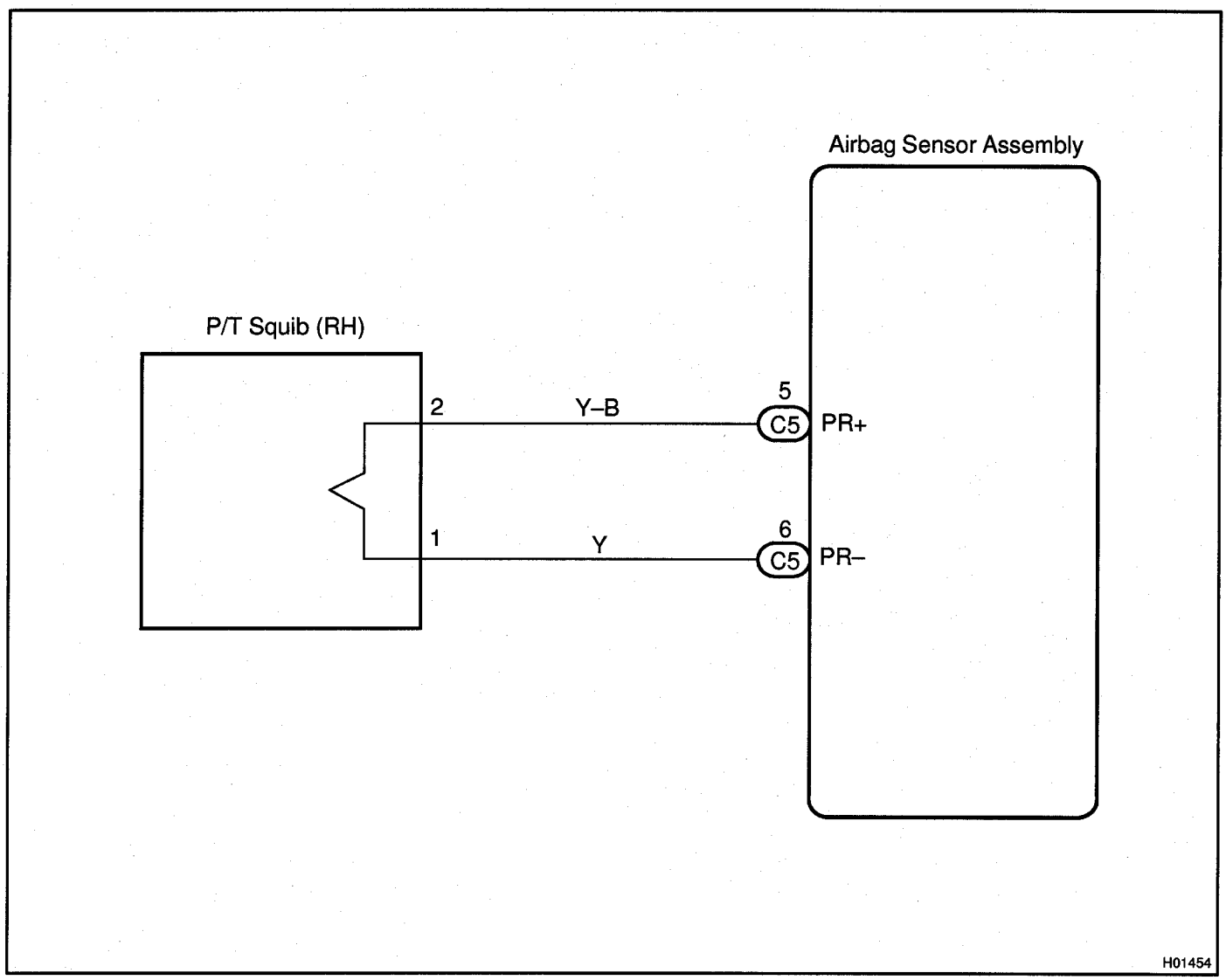
DTC	B0130/63	Short in P/T Squib (RH) Circuit

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

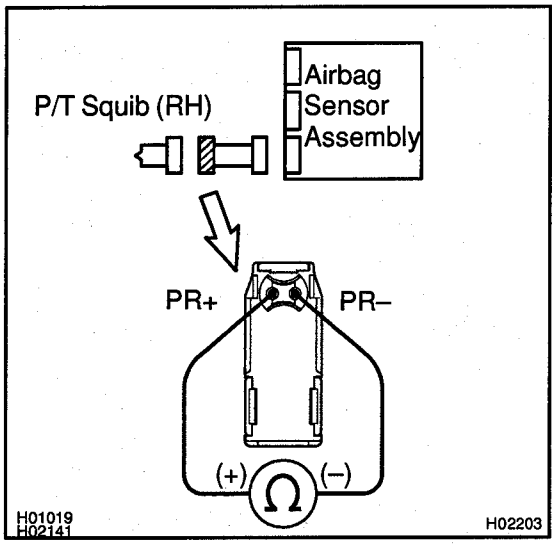
WIRING DIAGRAM



INSPECTION PROCEDURE

1	**Prepare for inspection. (See step 1 on page DI–228)**

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–102)

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–.

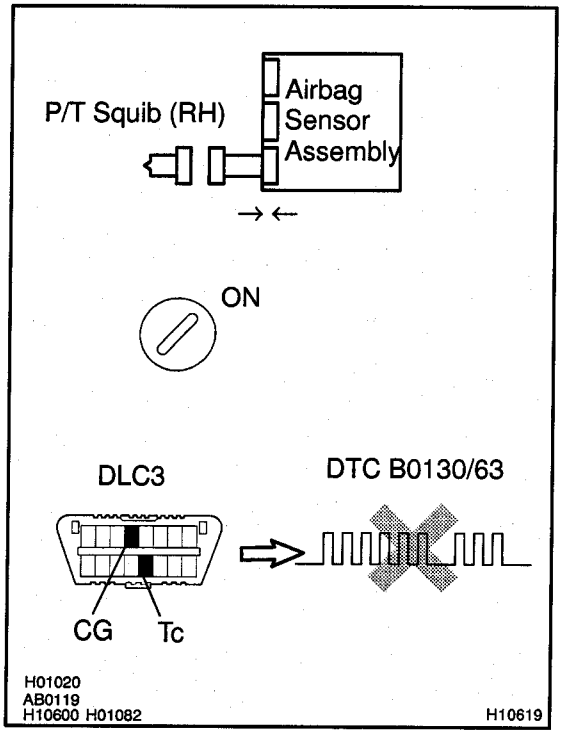
OK:

Resistance: 1 MΩ or Higher

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

OK

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 ON and wait at least for 20 seconds.
(b) Clear DTC stored in memory. (See page DI–102)
(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn the ignition switch to ON, and wait at least for 20 seconds.
(e) Check DTC. (See page DI–102)

OK:

DTC B0130/63 is not output.

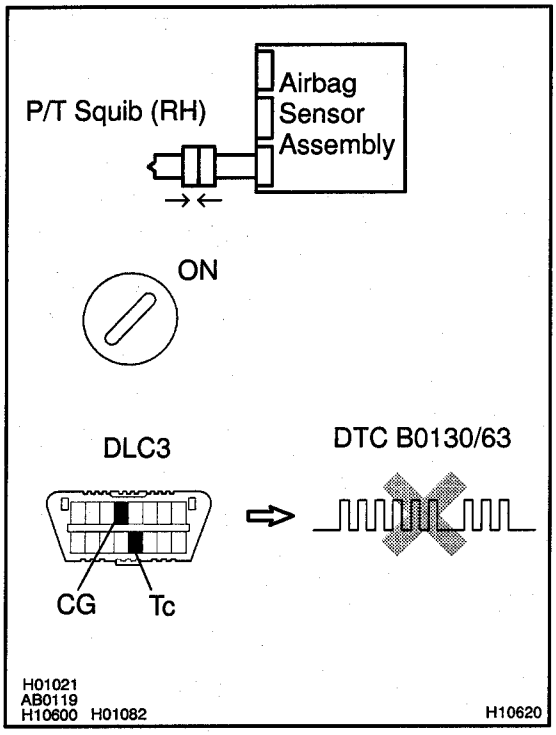
HINT:

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

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 ON, and wait at least for 20 seconds.
(c) Clear DTC stored in memory. (See page DI–102)
(d) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(e) Turn the ignition switch to ON, and wait at least for 20 seconds.
(f) Check DTC. (See page DI–102)

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.

DI1BG-24

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

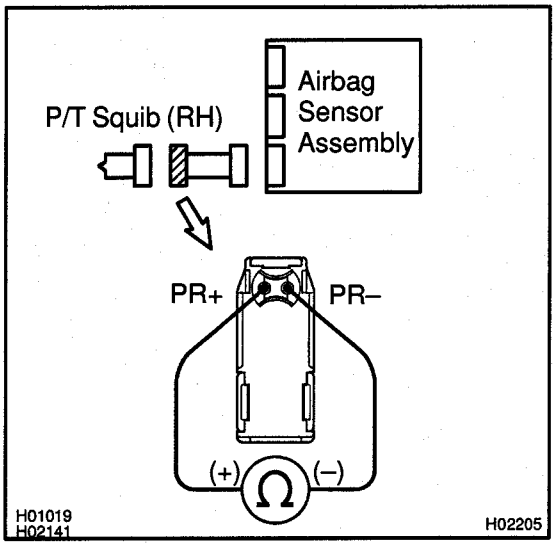
WIRING DIAGRAM

See page DI–169.

INSPECTION PROCEDURE

1	**Prepare for inspection. (See step 1 on page DI–228)**

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–.

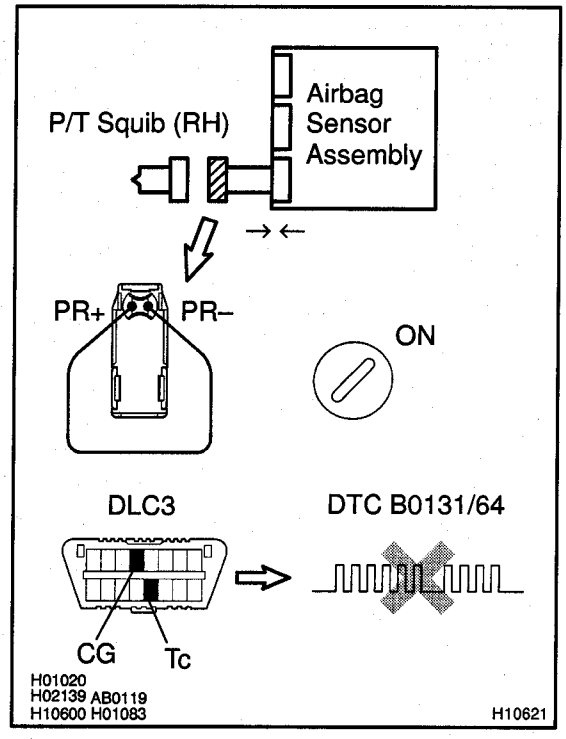
OK:

Resistance: Below 1 Ω

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

OK

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 ON and wait at least for 20 seconds.
(b) Clear DTC stored in memory. (See page DI–102)
(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn the ignition switch to ON, and wait at least for 20 seconds.
(e) Check DTC. (See page DI–102)

OK:

DTC B0131/64 is not output.

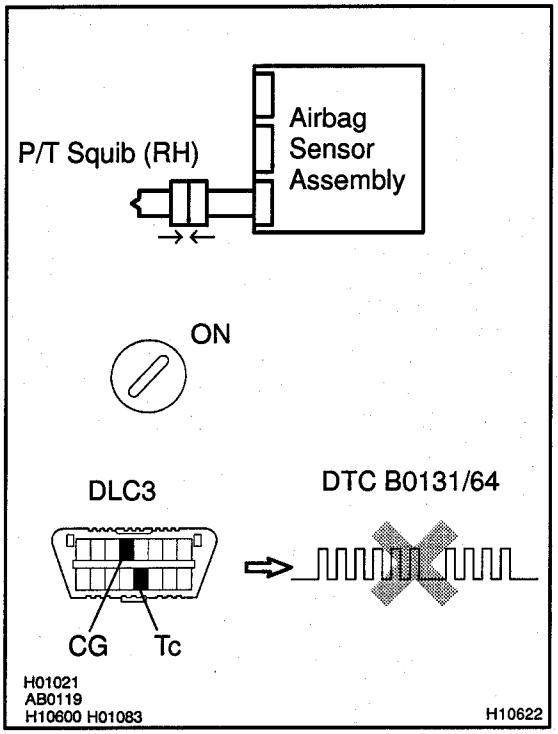
HINT:

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

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 ON, and wait at least for 20 seconds.
(b) Clear DTC stored in memory. (See page DI–102)
(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn the ignition switch to ON, and wait at least for 20 seconds.
(e) Check DTC. (See page DI–102)

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.

DI244-05

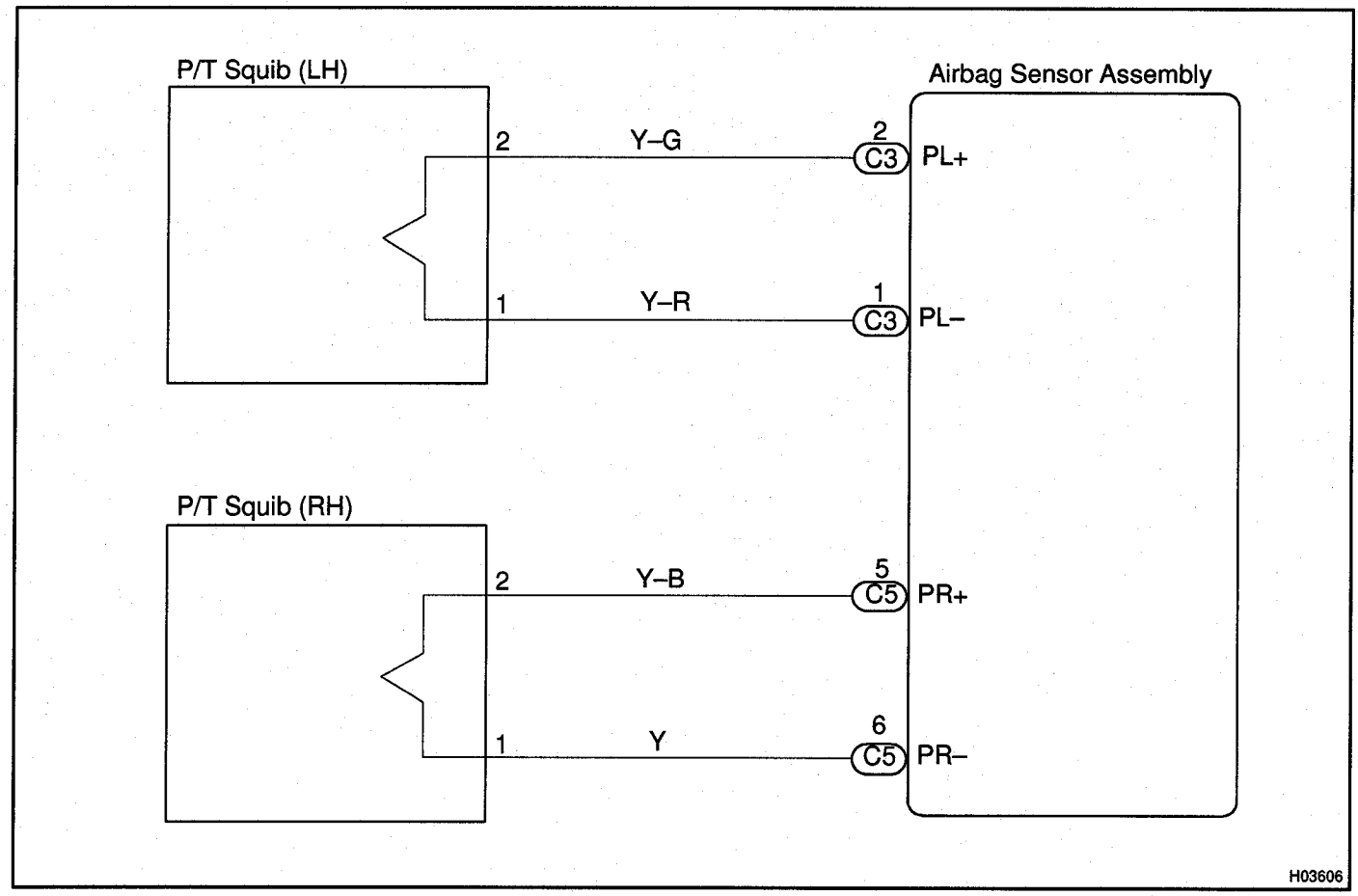
DTC	B0132/61	Short in P/T Squib (RH) Circuit (to Ground) (possible for P/T squib (LH))

CIRCUIT DESCRIPTION

The LH and RH P/T squib circuits consist of the airbag sensor assembly and LH and RH seat belt pretensioners.
It causes the pretensioner to activate when the pretensioner activation conditions are satisfied.
For details of the function of each component, see OPERATION on page RS–2.
DTC B0132/61 is recorded when ground short is detected in the LH and RH P/T squib circuits.

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

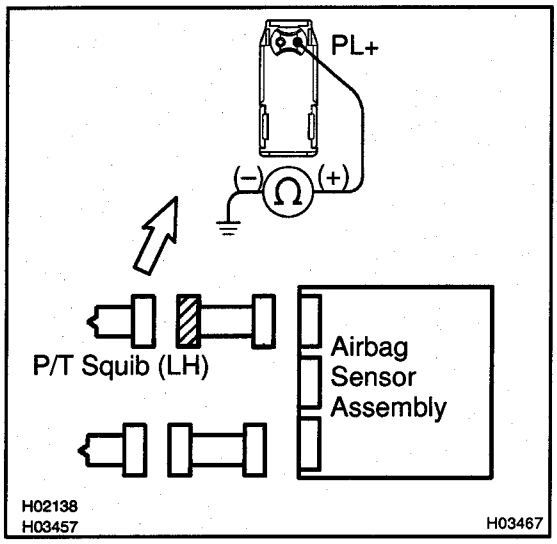
WIRING DIAGRAM



INSPECTION PROCEDURE

1	**Prepare for inspection. (See step 1 on page DI–228)**

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



CHECK:

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

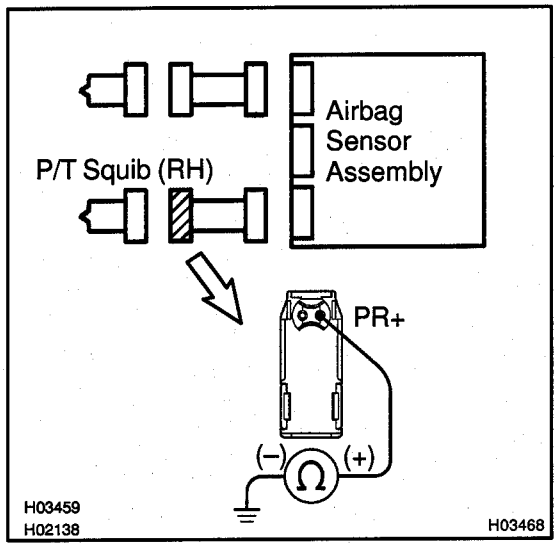
OK:

Resistance: 1 MΩ or Higher

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

OK

3	Check P/T squib (RH) circuit.



CHECK:

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

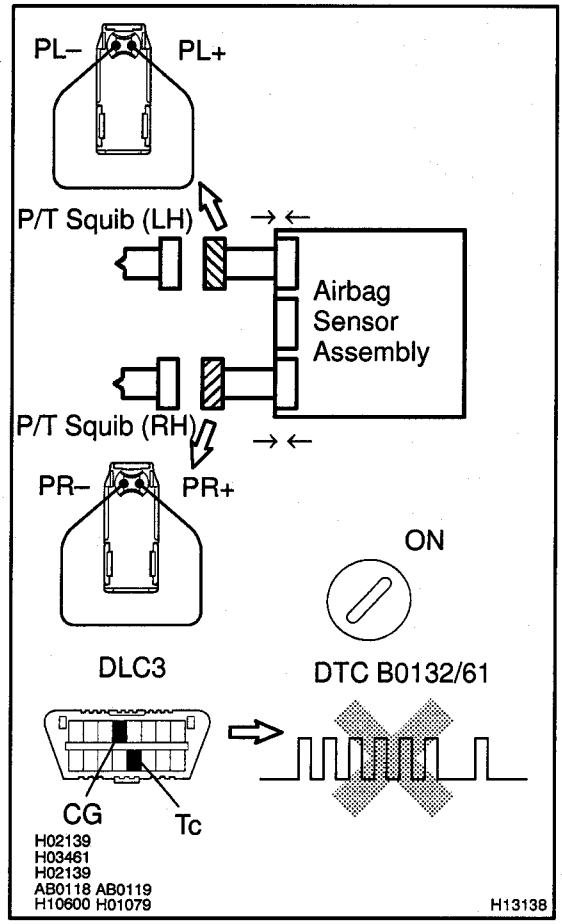
OK:

Resistance: 1 MΩ or Higher

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

OK

4	**Check airbag sensor assembly.**



PREPARATION:

(a) Connect the connectors 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 airbag sensor assembly.

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

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

CHECK:

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

(b) Clear DTC stored in memory.
(See step 5 on page DI–102)

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

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

(e) Check DTC. (See page DI–102)

OK:

DTC B0132/61 is not output.

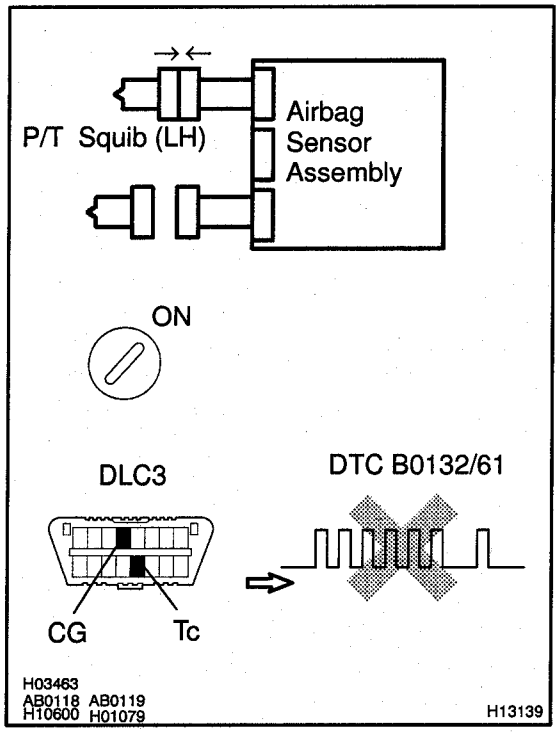
HINT:

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

NG → **Replace airbag sensor assembly.**

OK

5	Check P/T squib (LH).



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

CHECK:

(a) Turn ignition switch to ON, and wait at least for 20 seconds.
(b) Clear DTC stored in memory.
(See step 5 on page DI–102)
(c) Turn ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn ignition switch to ON, and wait at least for 20 seconds.
(e) Check DTC. (See page DI–102)

OK:

DTC B0132/61 is not output.

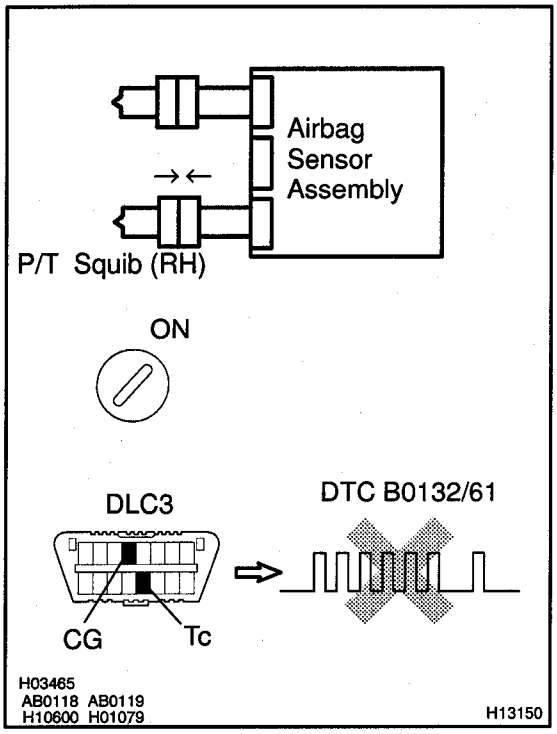
HINT:

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

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

OK

6	Check P/T squib (LH).



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 ignition switch to ON, and wait at least for 20 seconds.
(b) Clear DTC stored in memory.
(See step 5 on page DI–102)
(c) Turn ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn ignition switch to ON, and wait at least for 20 seconds.
(e) Check DTC. (See page DI–102)

OK:

DTC B0132/61 is not output.

HINT:
Codes other than DTC 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.

DI242-05

DTC	B0133/62	Short in P/T Squib Circuit (to B+) (possible for D, P, side and P/T squib (LH))

CIRCUIT DESCRIPTION

The LH and RH P/T squib circuits consist of the airbag sensor assembly and LH and RH seat belt pretensioners.
It causes the pretensioner to activate when the pretensioner activation conditions are satisfied.
For details of the function of each component, see OPERATION on page RS–2.
DTC B0133/62 is recorded when B+ is detected in the LH and RH P/T squib circuits.

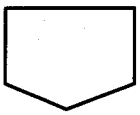
DTC No.	DTC Detecting Condition	Trouble Area
B0133/62	• Short circuit in D squib wire harness (to B+) • Short circuit in P squib wire harness (to B+) • Short circuit in side squib (LH) wire harness (to B+) • Short circuit in side squib (RH) wire harness (to B+) • Short circuit in seat belt pretensioner (LH) wire harness (to B+) • Short circuit in seat belt pretensioner (RH) wire harness (to B+) • D squib malfunction • P squib malfunction • Spiral cable malfunction • Side squib (LH) malfunction • Side squib (RH) malfunction • P/T squib (LH) malfunction • P/T squib (RH) malfunction • Airbag sensor assembly malfunction	• Steering wheel pad (D squib) • Front passenger airbag assembly (P squib) • Spiral cable • Side airbag assembly (LH) • Side airbag assembly (RH) • Seat belt pretensioner (LH) • Seat belt pretensioner (RH) • Airbag sensor assembly • Wire harness

WIRING DIAGRAM

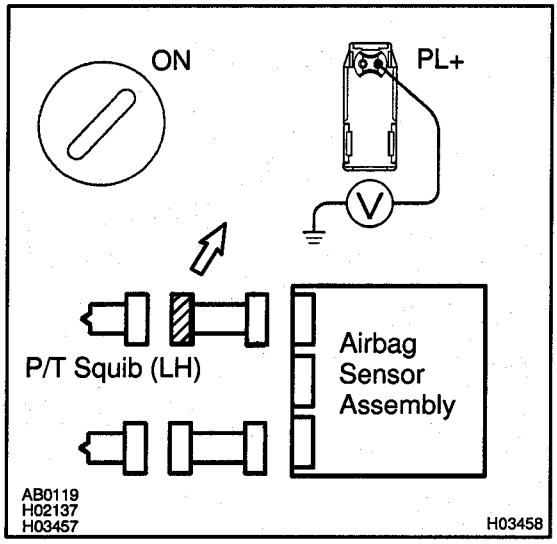
See page DI–176.

INSPECTION PROCEDURE

1	**Prepare for inspection. (See step 1 on page DI–228)**



2	Check P/T squib (LH) circuit.

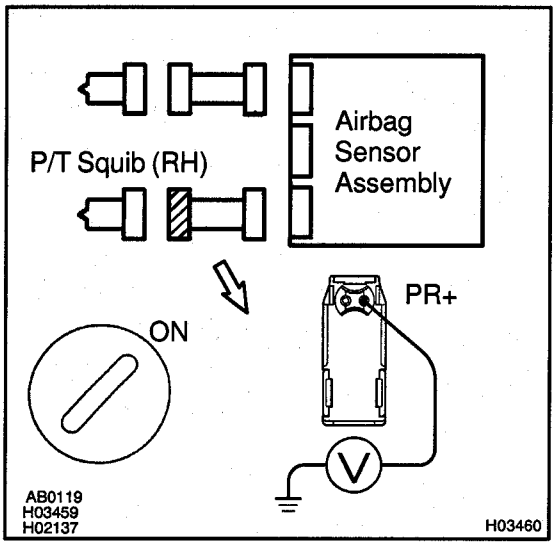


PREPARATION:
Turn ignition switch ON.
CHECK:
For the connector (on the airbag sensor assembly side) between the seat belt pretensioner (LH) and airbag sensor assembly, measure the voltage between PL+ and body ground.
OK:
Voltage: Below 1 V

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

OK

3	Check P/T squib (RH) circuit.

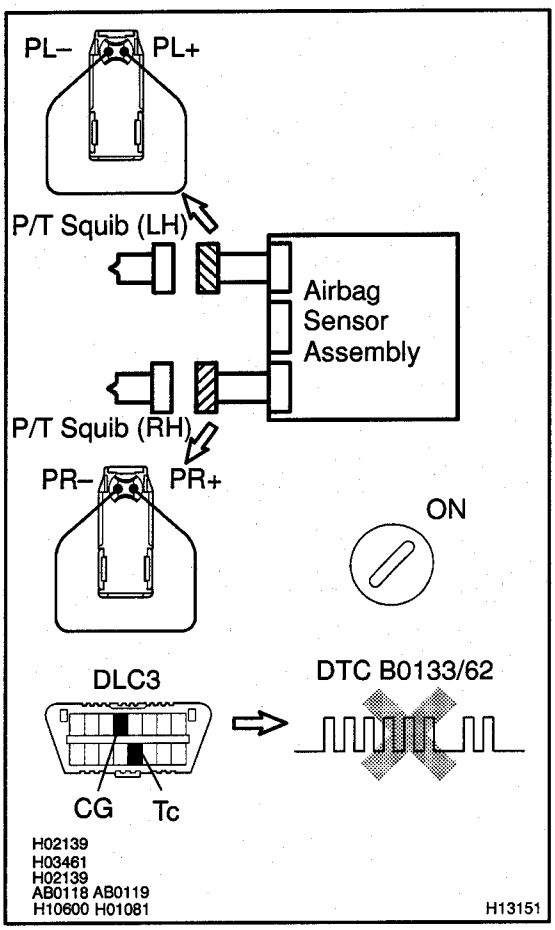


PREPARATION:
Turn ignition switch ON.
CHECK:
For the connector (on the airbag sensor assembly side) between the seat belt pretensioner (RH) and airbag sensor assembly, measure the voltage between PR+ and body ground.
OK:
Voltage: Below 1 V

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

OK

4	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 pretensioner side) between the seat belt pretensioner (LH) and airbag sensor assembly.

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

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

CHECK:

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

(b) Clear DTC stored in memory.
(See step 5 on page DI–102)

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

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

(e) Check DTC. (See page DI–102)

OK:

DTC B0133/62 is not output.

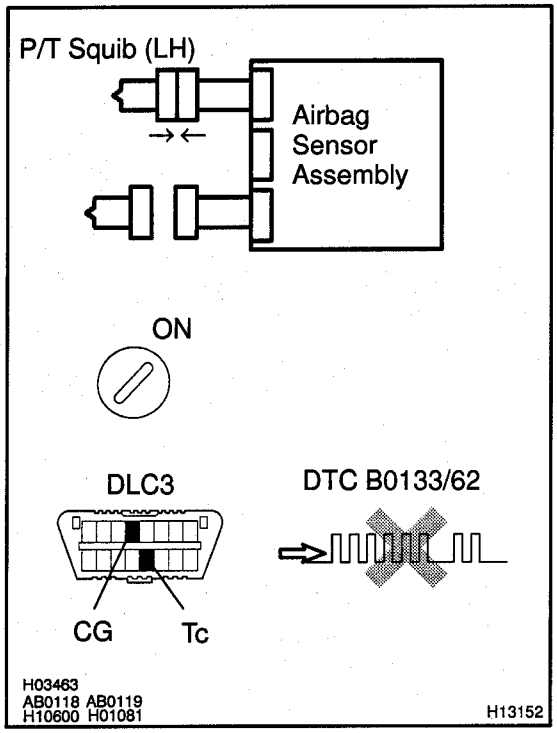
HINT:

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

NG	Replace airbag sensor assembly.

OK

5	Check P/T squib (LH).



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

CHECK:

(a) Turn ignition switch to ON, and wait at least for 20 seconds.
(b) Clear DTC stored in memory.
(See step 5 on page DI–102)
(c) Turn ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn ignition switch to ON, and wait at least for 20 seconds.
(e) Check DTC. (See page DI–102)

OK:

DTC B0133/62 is not output.

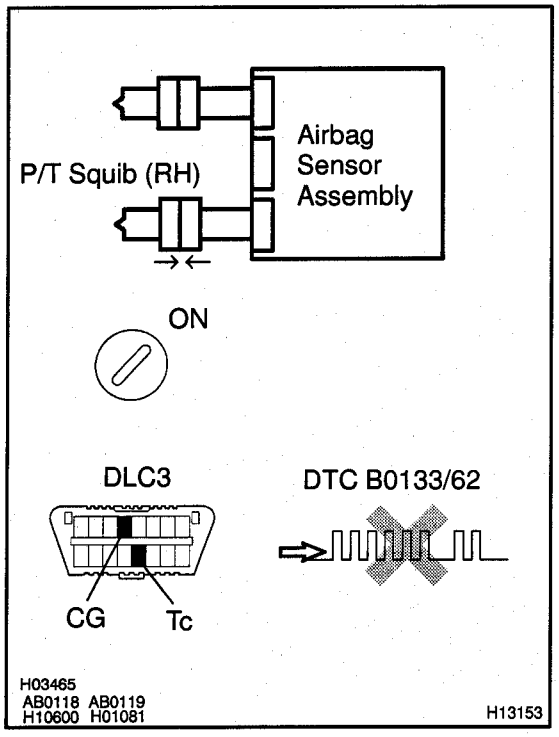
HINT:

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

NG → **There is possibility that D, P and side airbags except for pretensioner are damaged, so check DTC B0103/12, B0113/42 and B0118/46.**

OK

6	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 ignition switch to ON, and wait at least for 20 seconds.
(b) Clear DTC stored in memory.
(See step 5 on page DI–102)
(c) Turn ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn ignition switch to ON, and wait at least for 20 seconds.
(e) Check DTC. (See page DI–102)

OK:

DTC B0133/62 is not output.

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

NG → **There is possibility that D, P and side airbags except for pretensioner are damaged, so check DTC B0103/12, B0113/42 and B0118/46.**

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.

DI16W–29

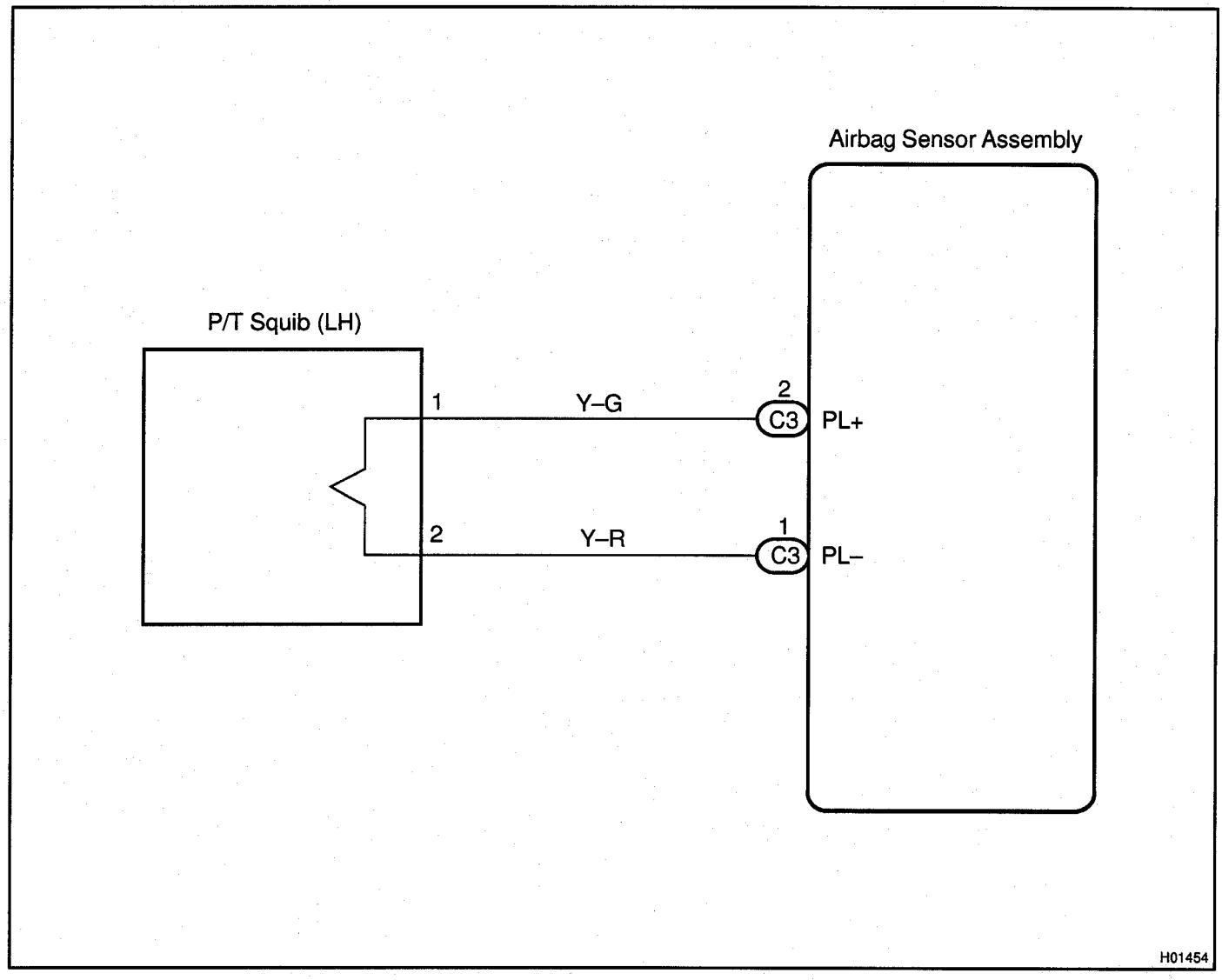
DTC	B0135/73	Short in P/T Squib (LH) Circuit

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

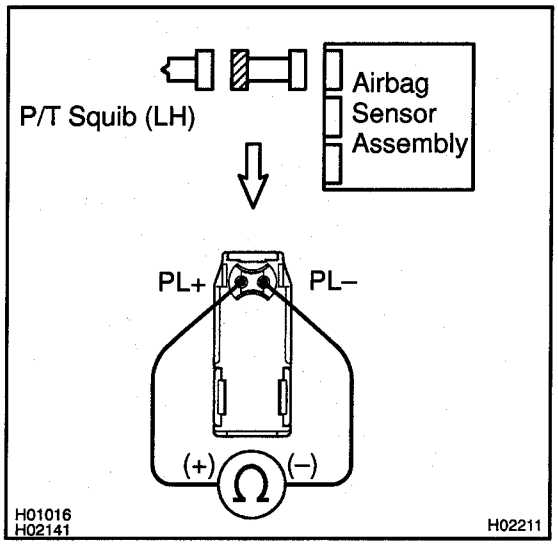
WIRING DIAGRAM



INSPECTION PROCEDURE

1	**Prepare for inspection. (See step 1 on page DI–228)**

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–102)

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–.

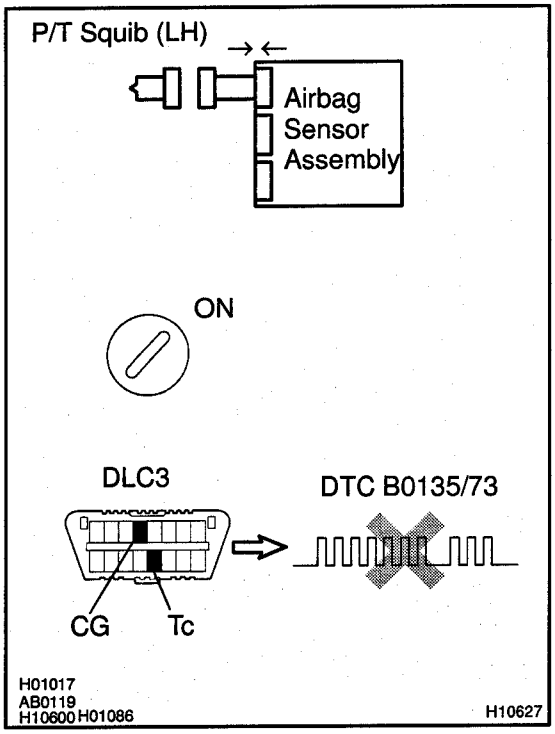
OK:

Resistance: 1 MΩ or Higher

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

OK

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 ON and wait at least for 20 seconds.
(b) Clear DTC stored in memory. (See page DI–102)
(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn the ignition switch to ON, and wait at least for 20 seconds.
(e) Check DTC. (See page DI–102)

OK:

DTC B0135/73 is not output.

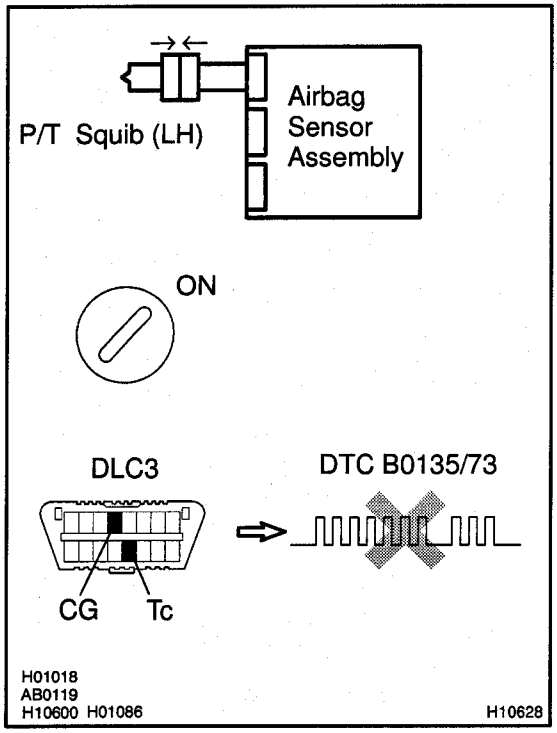
HINT:

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

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 ON, and wait at least for 20 seconds.
(c) Clear DTC stored in memory. (See page DI–102)
(d) Turn ignition switch to LOCK, and wait at least for 20 seconds.
(e) Turn the ignition switch to ON, and wait at least for 20 seconds.
(f) Check DTC. (See page DI–102)

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.

DI1BJ-25

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

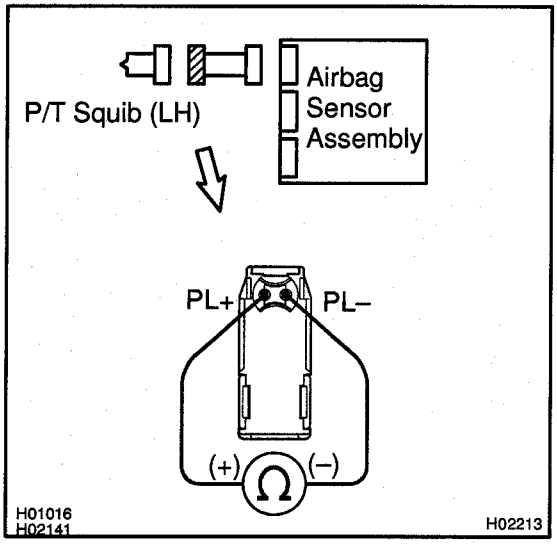
WIRING DIAGRAM

See page DI–187.

INSPECTION PROCEDURE

1	Prepare for inspection. (See step 1 on page DI–228)

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–.

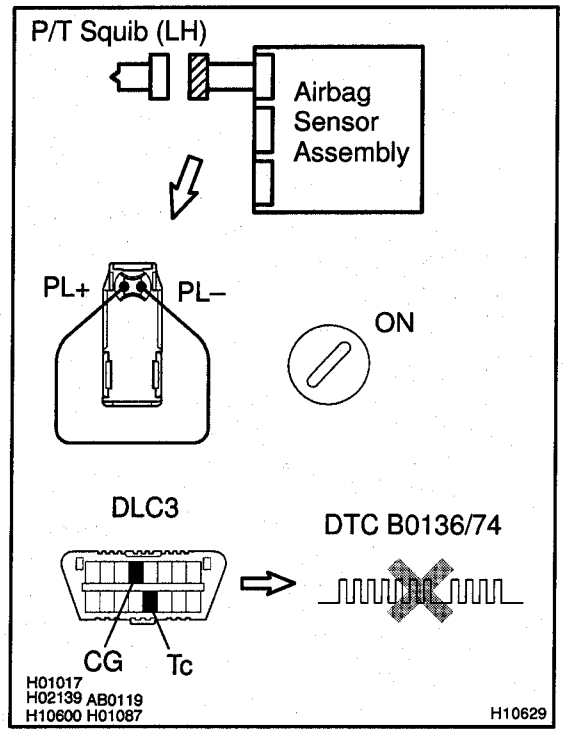
OK:

Resistance: Below 1 Ω

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

OK

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 ON and wait at least for 20 seconds.
(b) Clear DTC stored in memory. (See page DI–102)
(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn the ignition switch to ON, and wait at least for 20 seconds.
(e) Check DTC. (See page DI–102)

OK:

DTC B0136/74 is not output.

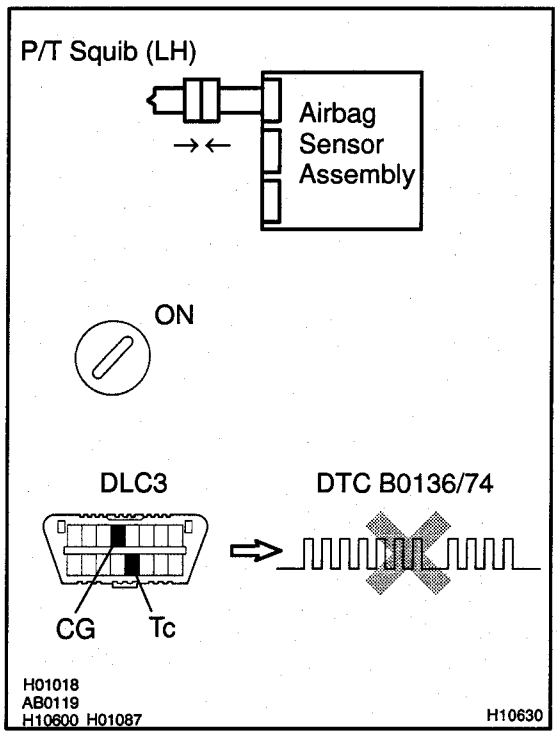
HINT:

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

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 ON, and wait at least for 20 seconds.
(b) Clear DTC stored in memory. (See page DI–102)
(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn the ignition switch to ON, and wait at least for 20 seconds.
(e) Check DTC. (See page DI–102)

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.

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.

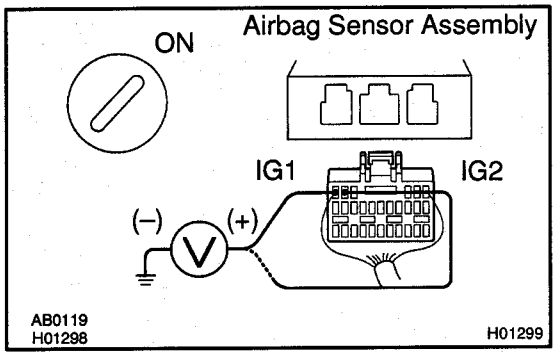
DTC No.	DTC Detecting Condition	Trouble Area
B1100/31	• Airbag sensor assembly malfunction	• Airbag sensor assembly

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–228)**

2	**Check voltage at IG1 and IG2 of airbag sensor assembly.**



CHECK:

(a) Turn the ignition switch to ON.
(b) Measure the voltage between body ground and each of terminals IG1 and IG2 of the airbag sensor assembly connector.

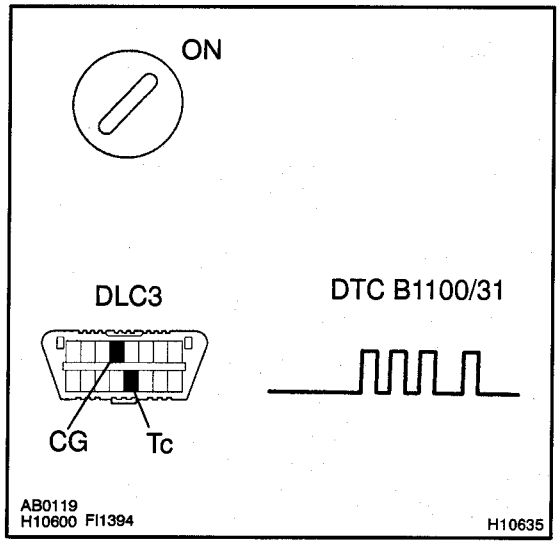
OK:

Voltage: 10 – 14 V

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

OK

3	Is DTC B1100/31 output again?



PREPARATION:

Clear DTC. (See step 5 on page DI–102)

CHECK:

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

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

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

(d) Check DTC. (See page DI–102)

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–19)**

YES

Replace airbag sensor assembly.

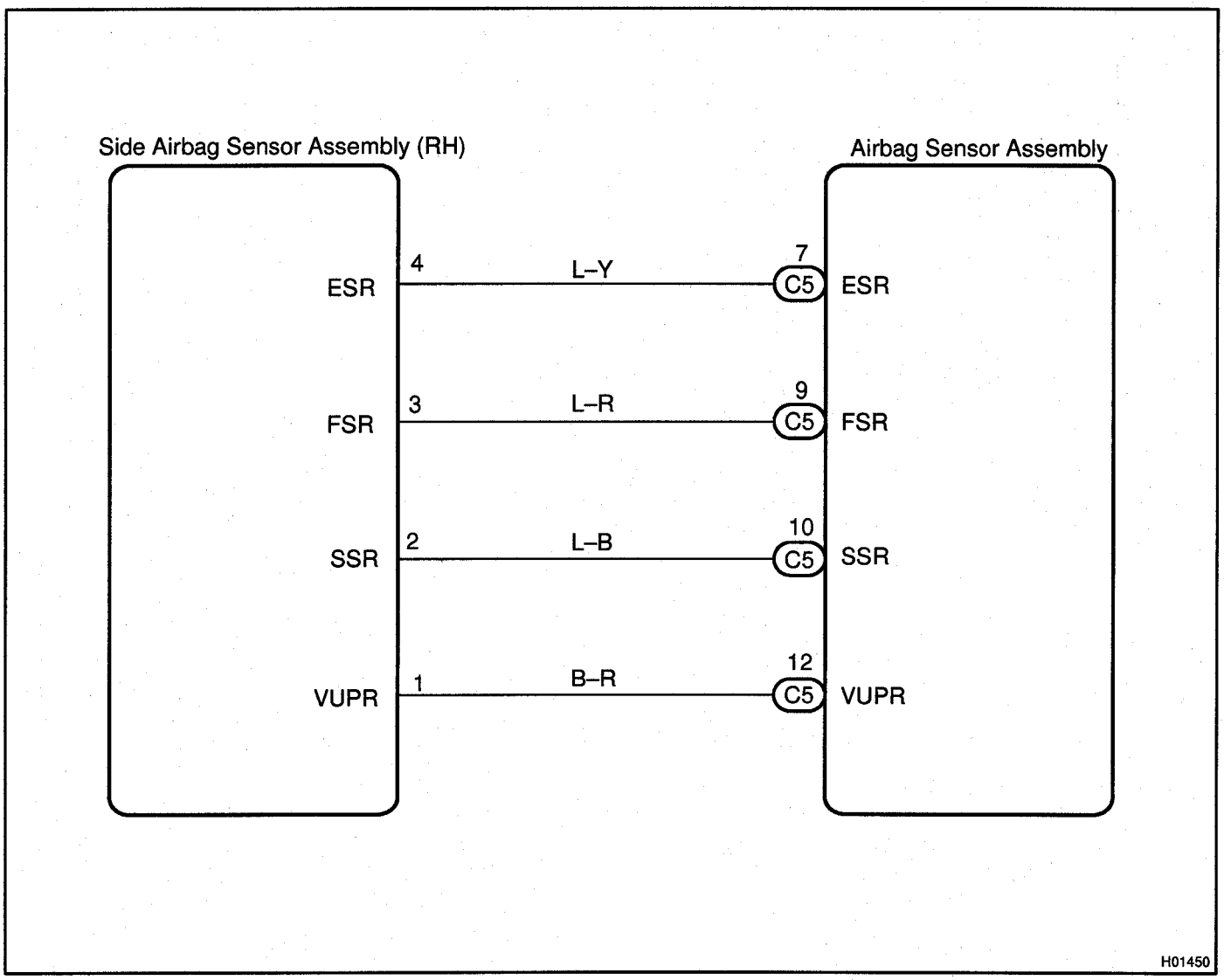
DTC	B1140/32	Side Airbag Sensor Assembly (RH) Malfunction

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 diagnosis system malfunction.
DTC B1140/32 is recorded when occurrence of a malfunction in the side airbag sensor assembly (RH) is detected.

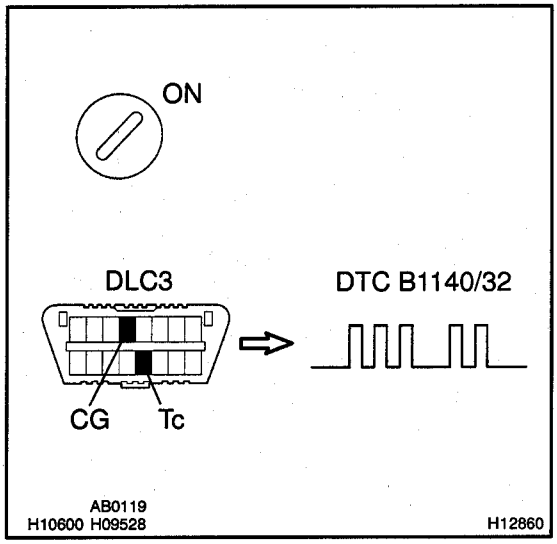
DTC No.	DTC Detecting Condition	Trouble Area
B1140/32	• Side airbag sensor assembly (RH) malfunction	• Side airbag sensor assembly (RH) • Wire harness • Airbag sensor assembly

WIRING DIAGRAM



INSPECTION PROCEDURE

1	Is DTC B1140/32 output?



CHECK:

(a) Turn ignition switch to ON and wait at least for 20 seconds.
(b) Clear DTC stored in memory.
(See step 5 on page DI–102)
(c) Turn ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn ignition switch to ON and wait at least for 20 seconds.
(e) Check DTC. (See page DI–102)

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

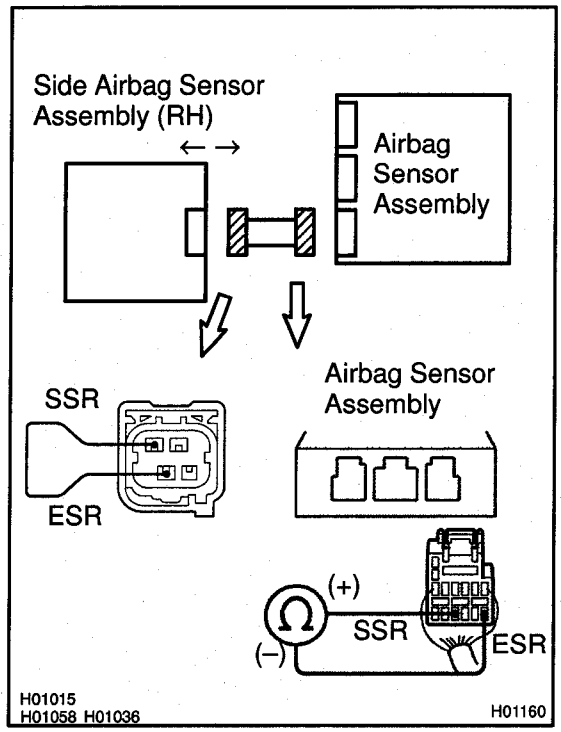
YES → **The malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.**

NO

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

3	Prepare for inspection. (See step 1 on DI–228)

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.

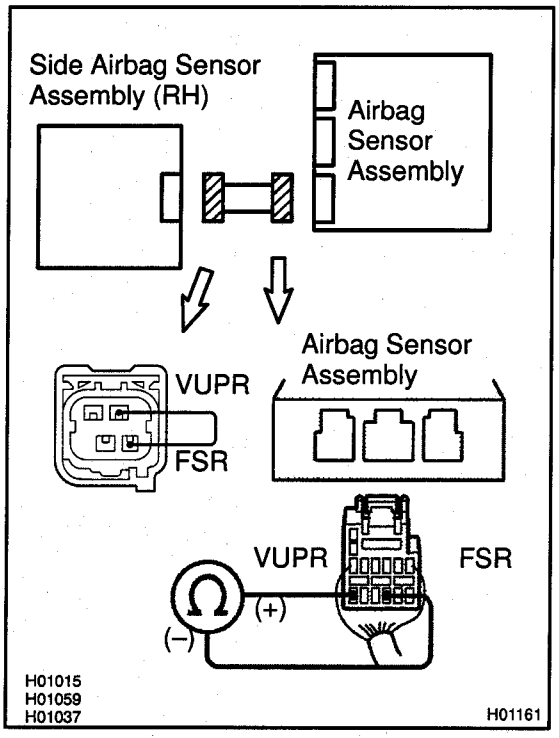
OK:

Resistance: Below 1 Ω

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

OK

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.

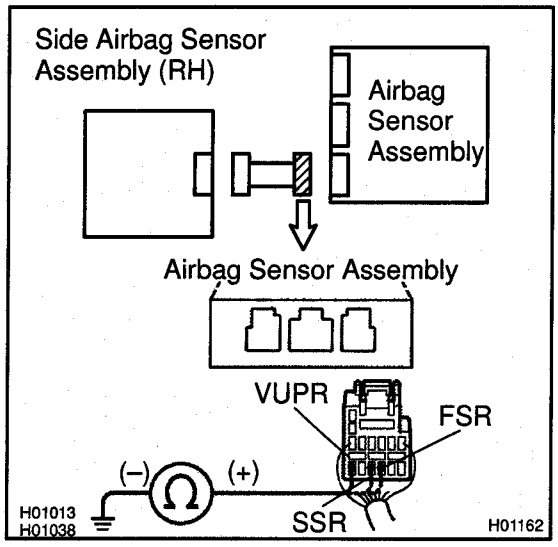
OK:

Resistance: Below 1 Ω

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

OK

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.

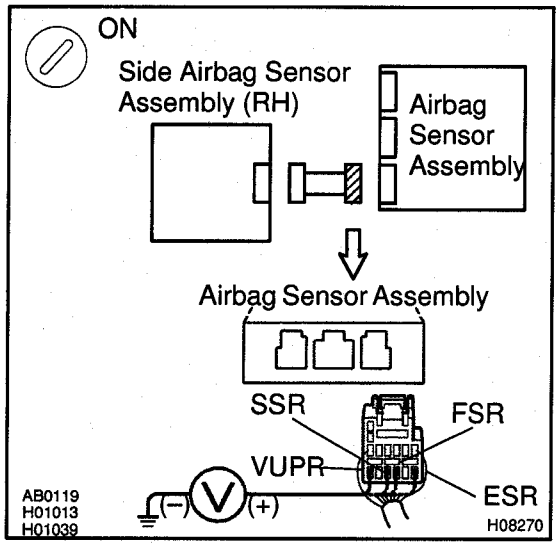
OK:

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 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.

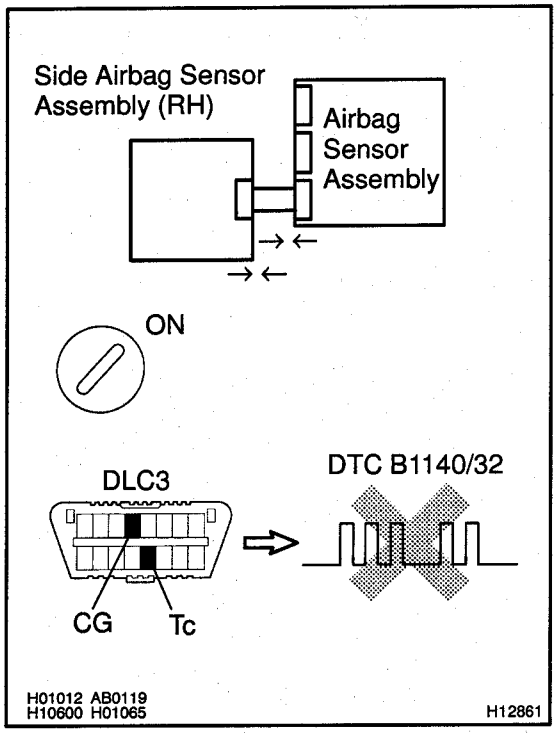
OK:

Voltage: 0 V

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

OK

8	Is DTC B1140/32 output 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 ignition switch to ON and wait at least for 20 seconds.
(b) Clear DTC stored in memory.
(See step 5 on page DI–102)
(c) Turn ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn ignition switch to ON and wait at least for 20 seconds.
(e) Check DTC. (See page DI–102)

OK:

DTC B1140/32 is not output.

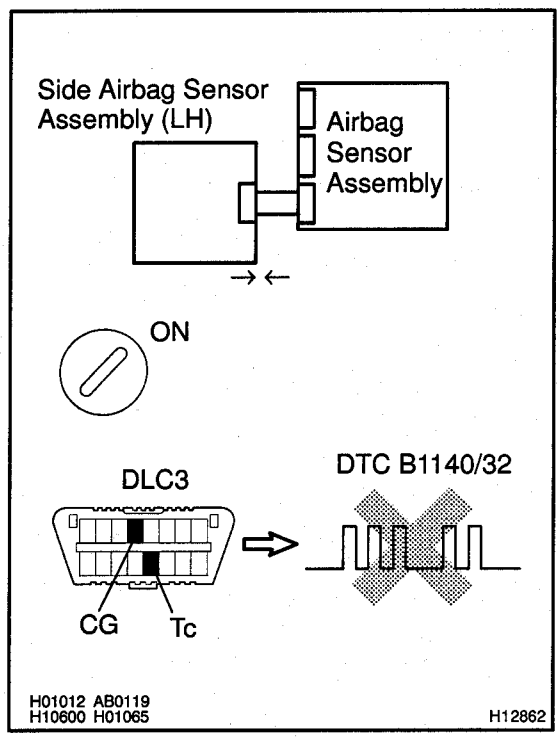
HINT:
Codes other than code B1140/32 may be output at this time, but they are not relevant to this check.

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.

9	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) 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 ignition switch to ON and wait at least for 20 seconds.
(b) Clear DTC stored in memory.
(See step 5 on page DI–102)
(c) Turn ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn ignition switch to ON and wait at least for 20 seconds.
(e) Check DTC. (See page DI–102)

OK:

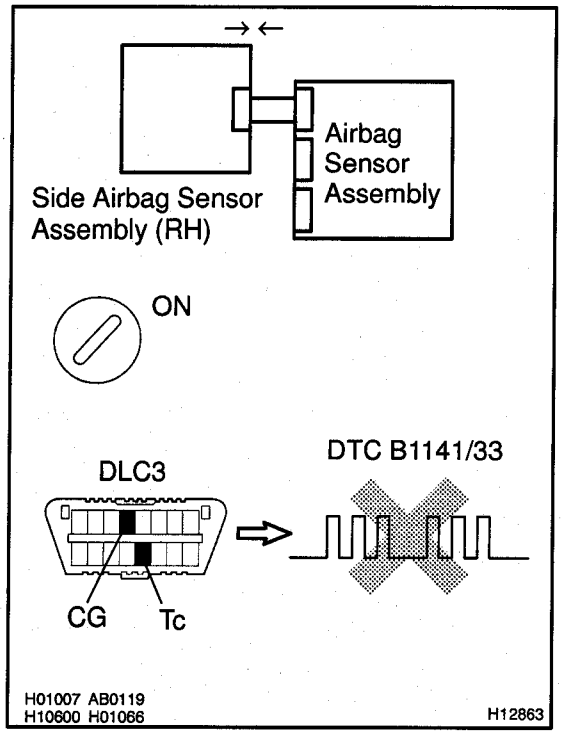
DTC B1140/32 is not output.

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

10	**Check side airbag sensor assembly (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 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 ignition switch to ON and wait at least for 20 seconds.
(b) Clear DTC stored in memory.
(See page DI–102)
(c) Turn ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn ignition switch to ON and wait at least for 20 seconds.
(e) Check DTC. (See page DI–102)

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.

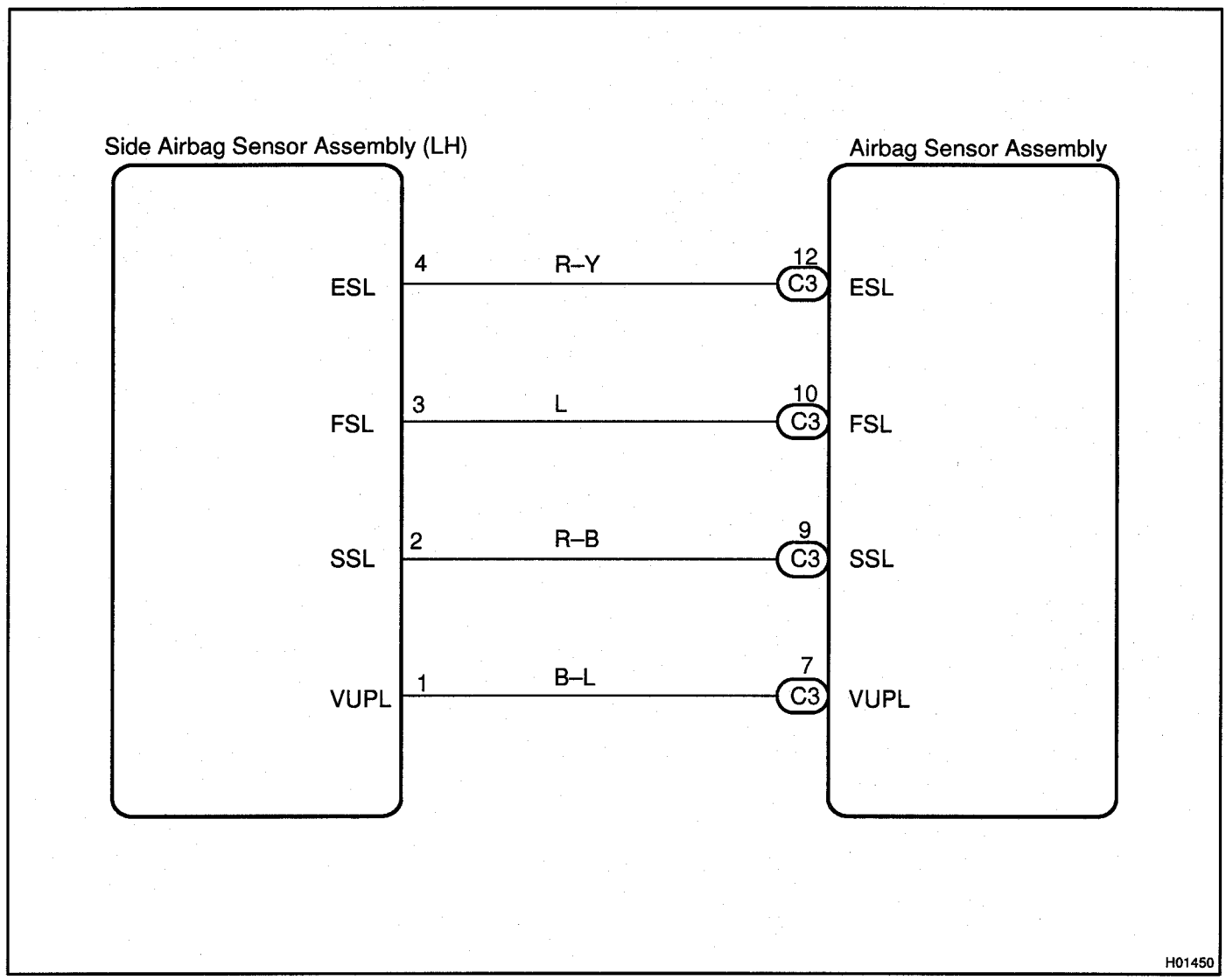
DTC	B1141/33	Side Airbag Sensor Assembly (LH) Malfunction

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.

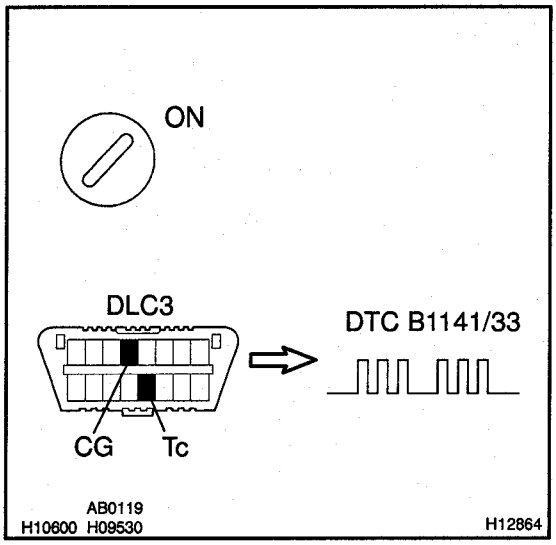
DTC No.	DTC Detecting Condition	Trouble Area
B1141/33	• Side airbag sensor assembly (LH) malfunction	• Side airbag sensor assembly (LH) • Wire harness • Airbag sensor assembly

WIRING DIAGRAM



INSPECTION PROCEDURE

1	Is DTC B1141/33 output?



CHECK:

(a) Turn ignition switch to ON and wait at least for 20 seconds.
(b) Clear DTC stored in memory.
(See step 5 on page DI–102)
(c) Turn ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn ignition switch to ON and wait at least for 20 seconds.
(e) Check DTC. (See page DI–102)

HINT:

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

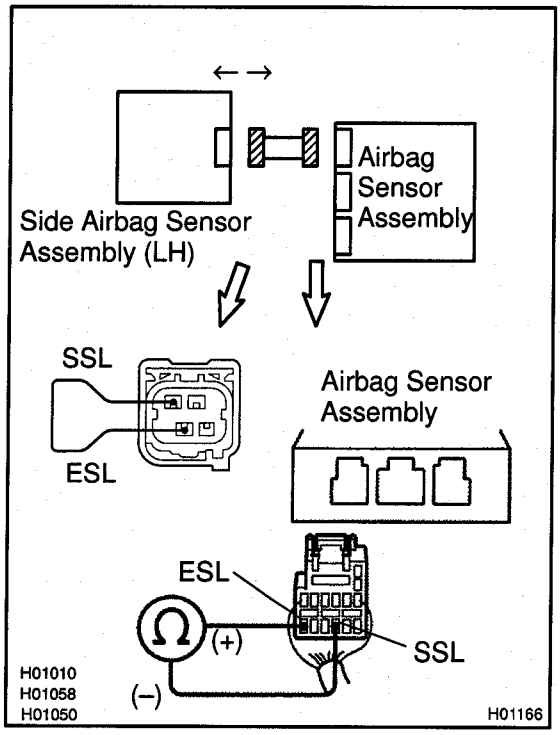
YES → **The malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.**

NO

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

3	Prepare for inspection. (See step 1 on page DI–228)

4	Check wire harness.



PREPARATION:

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

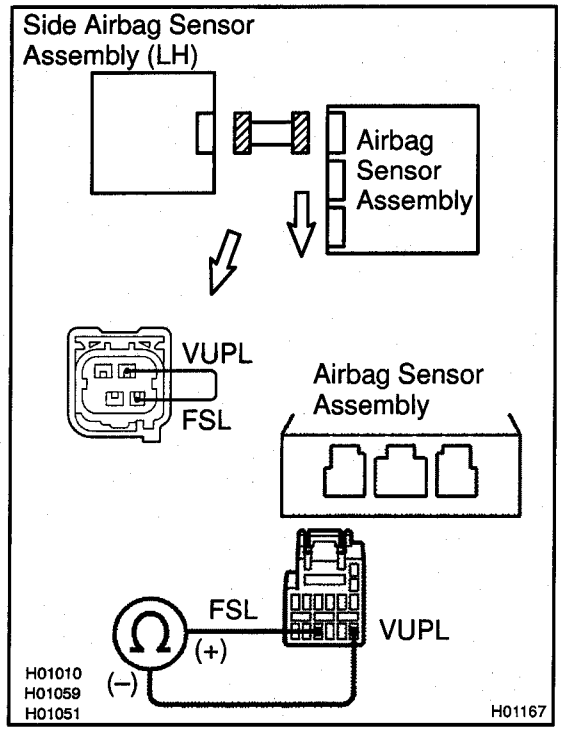
OK:

Resistance: Below 1 Ω

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

OK

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.

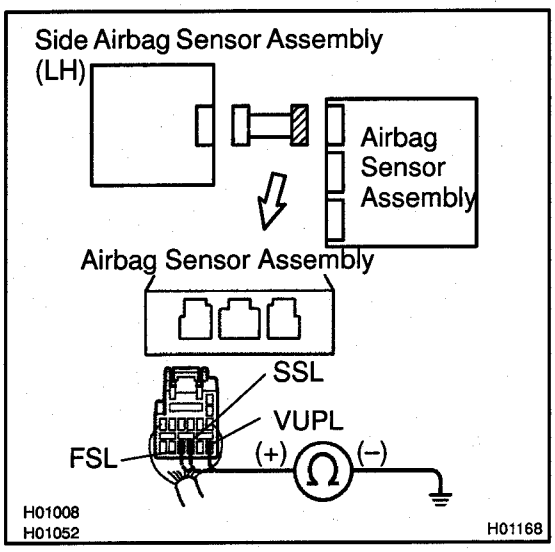
OK:

Resistance: Below 1 Ω

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

OK

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.

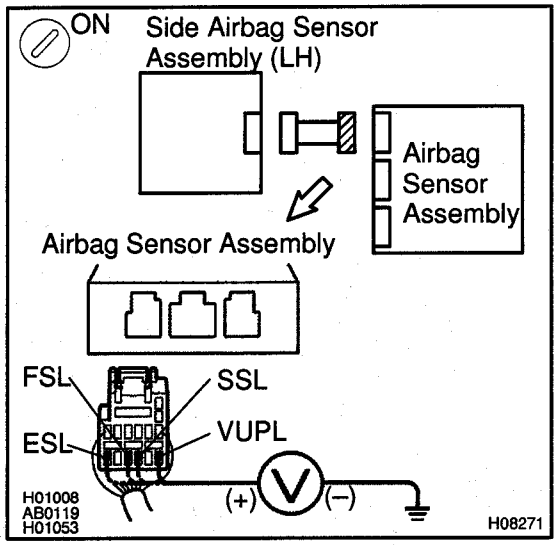
OK:

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 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.

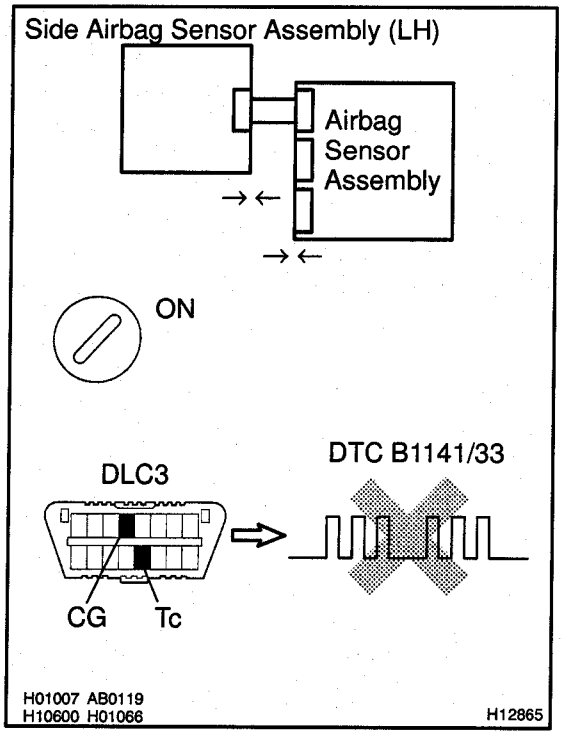
OK:

Voltage: 0 V

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

OK

8	Is DTC B1141/33 output 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 ignition switch to ON and wait at least for 20 seconds.
(b) Clear DTC stored in memory.
(See step 5 on page DI–102)
(c) Turn ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn ignition switch to ON and wait at least for 20 seconds.
(e) Check DTC. (See page DI–102)

OK:

DTC B1141/33 is not output.

HINT:

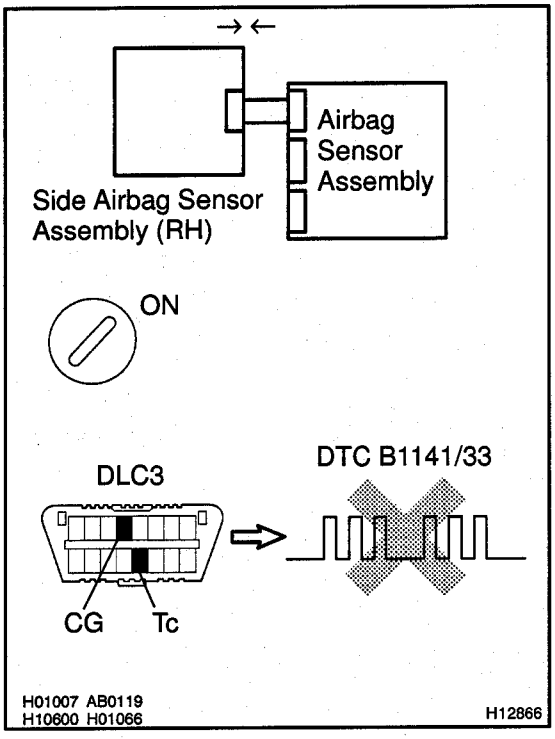
Codes other than code B1141/33 may be output at this time, but they are not relevant to this check.

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.

9	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) 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 ignition switch to ON and wait at least for 20 seconds.
(b) Clear DTC stored in memory.
(See step 5 on page DI–102)
(c) Turn ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn ignition switch to ON and wait at least for 20 seconds.
(e) Check DTC. (See page DI–102)

OK:

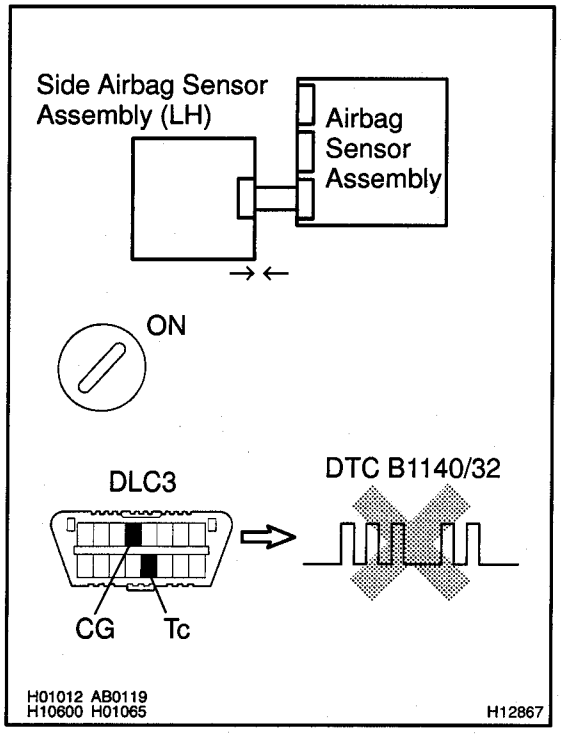
DTC B1141/33 is not output.

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

10	Check side airbag sensor assembly (LH).



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 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 ignition switch to ON and wait at least for 20 seconds.
(b) Clear DTC stored in memory.
(See step 5 on page DI–102)
(c) Turn ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn ignition switch to ON and wait at least for 20 seconds.
(e) Check DTC. (See page DI–102)

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.

DI4LA-07

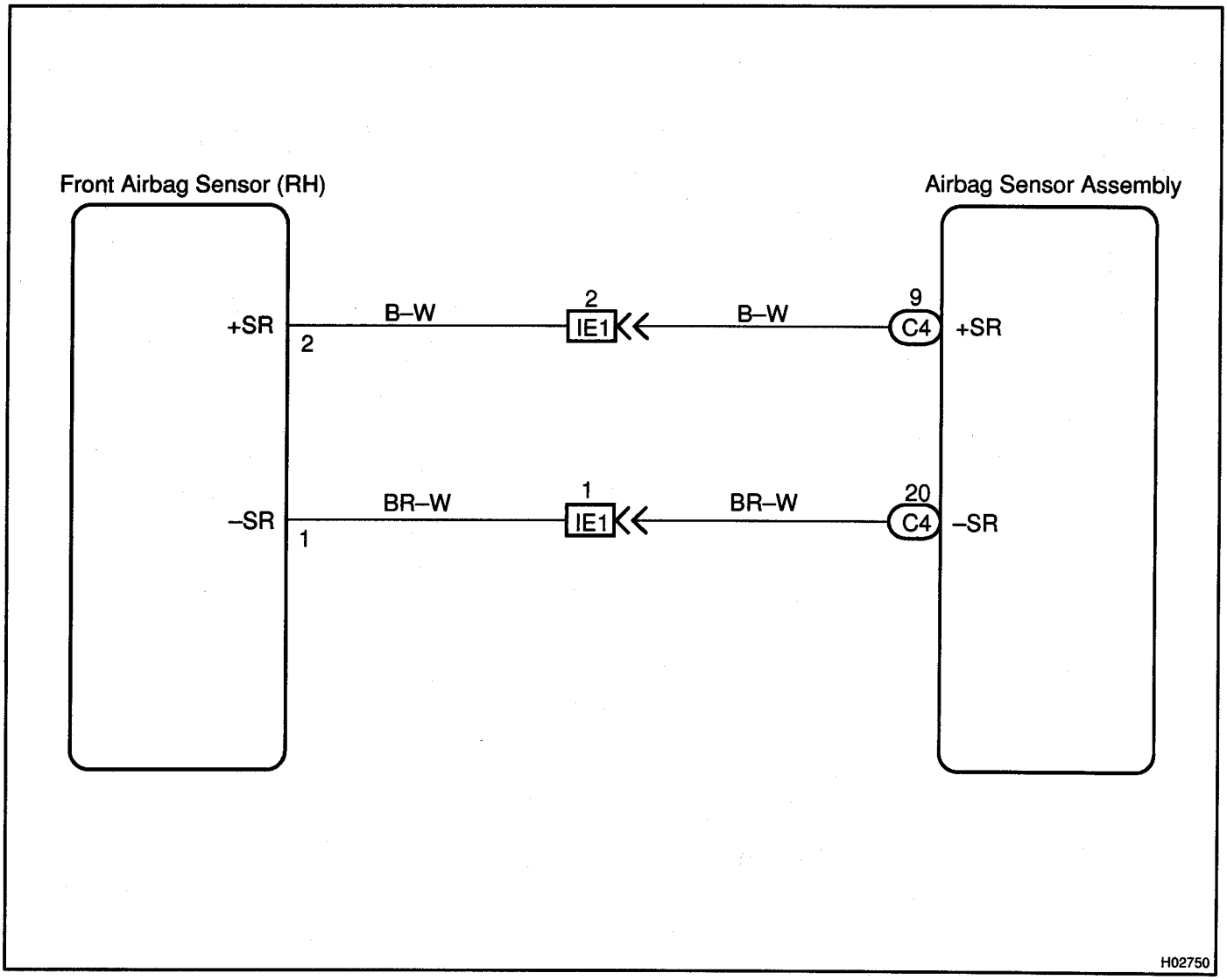
DTC	B1156/B1157/15	Front Airbag Sensor (RH) Malfunction

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 a 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) • Wire harness • Engine room main wire harness • Airbag sensor assembly

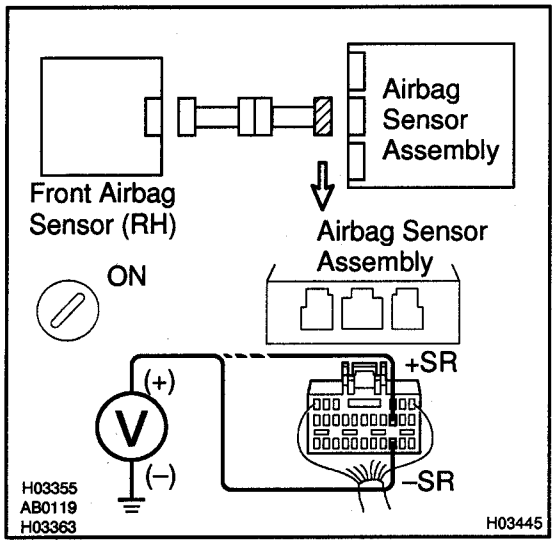
WIRING DIAGRAM



INSPECTION PROCEDURE

1	**Prepare for inspection. (See step 1 on page DI–228)**

2	**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 front airbag sensor (RH) and the airbag sensor assembly, measure the voltage between body ground and each of +SR and –SR.

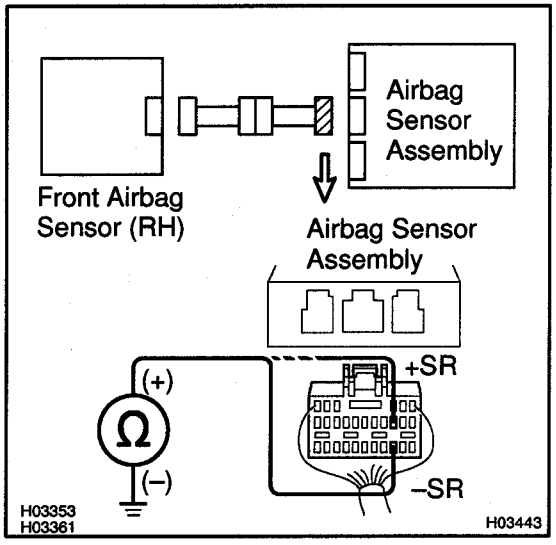
OK:

Voltage: Below 1 V

NG → **Go to step 8.**

OK

3	**Check wire harness (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 body ground and each of +SR and –SR.

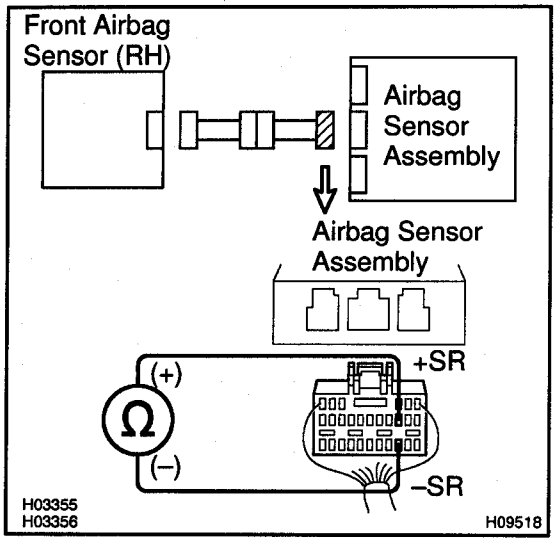
OK:

Resistance: 1 MΩ or Higher

NG → **Go to step 9.**

OK

4	Check wire harness.



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.

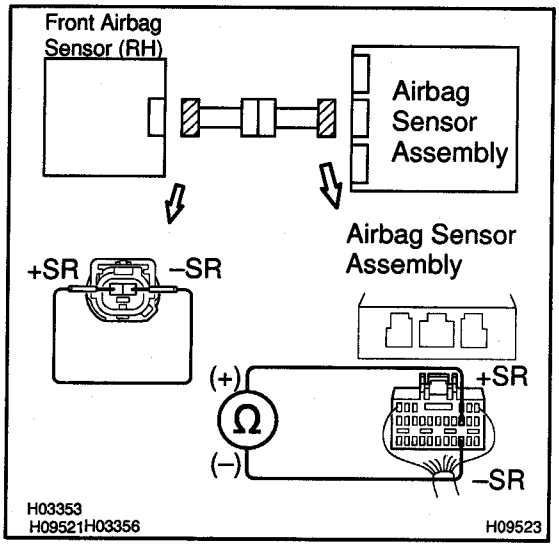
OK:

Resistance: 1 MΩ or Higher

NG → **Go to step 10.**

OK

5	Check wire harness.



PREPARATION:

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

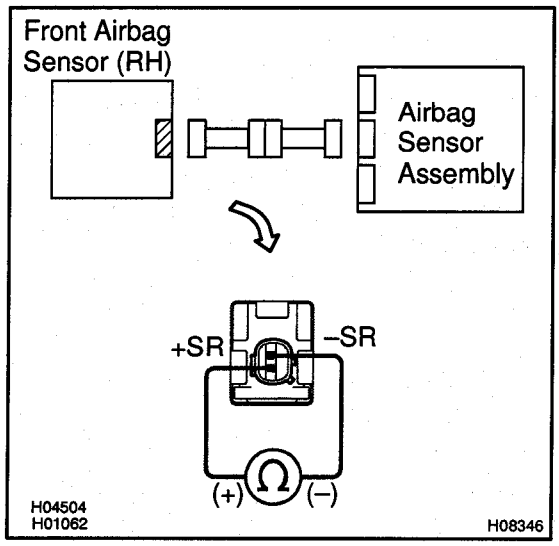
OK:

Resistance: Below 1 Ω

NG → **Go to step 11.**

OK

6	**Check front airbag sensor (RH).**



CHECK:

For the connector of the front airbag sensor (RH), measure the resistance between +SR and –SR.

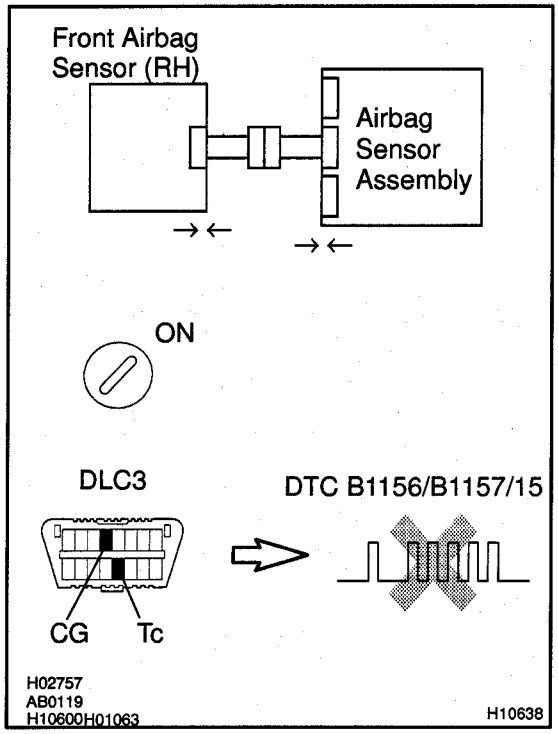
OK:

Resistance: 300 – 1500 Ω

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

OK

7	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 (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 the ignition switch to ON, and wait at least for 20 seconds.
(b) Clear DTC stored in memory.
(See step 5 on page DI–102)
(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn the ignition switch to ON, and wait at least for 20 seconds.
(e) Check DTC. (See page DI–102)

OK:

DTC B1156/B1157/15 is not output.

HINT:

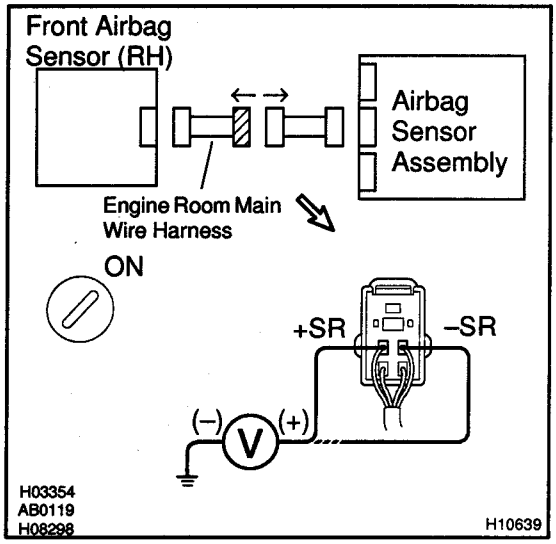
Codes other than code B1156/B1157/15 may be output at this time, but they are not relevant to this check.

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.

8	Check engine room main wire harness (to B+).



PREPARATION:
Disconnect the engine room main wire harness connector on the airbag sensor assembly side.

CHECK:
(a) Turn the ignition switch to ON.
(b) For the connector (on the engine room main wire harness side) between the airbag sensor assembly and the engine room main wire harness, measure the voltage between body ground and each of +SR and –SR.

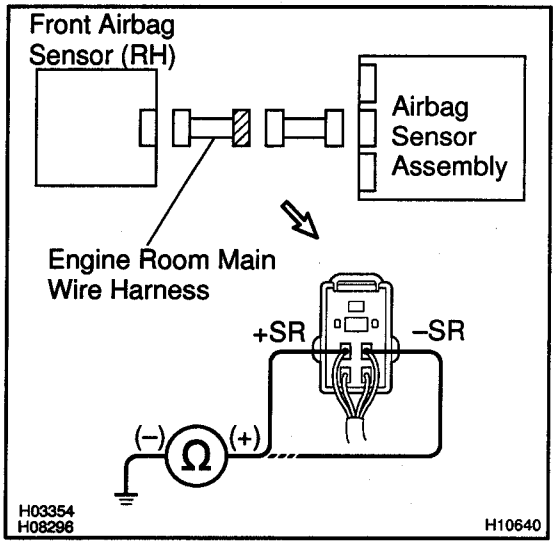
OK:
Voltage: Below 1 V

NG	Repair or replace engine room main wire harness.

OK

Repair or replace harness or connector between airbag sensor assembly and engine room main wire harness.

9	Check engine room main wire harness (to ground).



PREPARATION:
Disconnect the engine room main wire harness connector on the airbag sensor assembly side.

CHECK:
For the connector (on the engine room main wire harness side) between the airbag sensor assembly and the engine room main wire harness, measure the resistance between body ground and each of +SR and –SR.

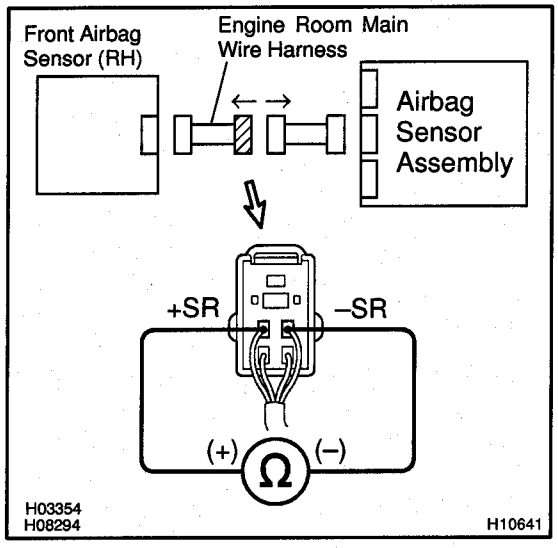
OK:
Resistance: 1 MΩ or Higher

NG	Repair or replace engine room main wire harness.

OK

Repair or replace harness or connector between airbag sensor assembly and engine room main wire harness.

10	Check engine room main wire harness.



PREPARATION:
Disconnect the engine room main wire harness connector on the airbag sensor assembly side.

CHECK:
For the connector (on the engine room main wire harness side) between the airbag sensor assembly and the engine room main wire harness, measure the resistance between +SR and –SR.

OK:

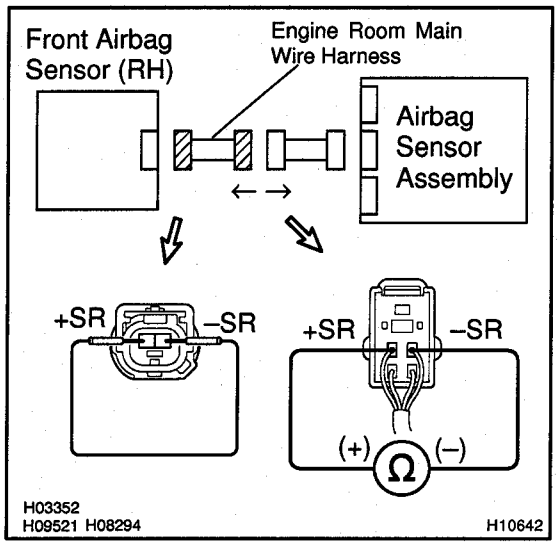
Resistance: 1 MΩ or Higher

NG → **Repair or replace engine room main wire harness.**

OK

Repair or replace harness or connector between airbag sensor assembly and engine room main wire harness.

11	Check engine room main wire harness.



PREPARATION:

(a) Disconnect the engine room main wire harness connector on the airbag sensor assembly side.

(b) Using a service wire, connect +SR and –SR of the connector (on the engine room main wire harness side) between the engine room main wire harness and the front airbag sensor (RH).

CHECK:

For the connector (on the engine room main wire harness side) between the airbag sensor assembly and the engine room main wire harness, measure the resistance between +SR and –SR.

OK:

Resistance: Below 1 Ω

NG → **Repair or replace engine room main wire harness.**

OK →

Repair or replace harness or connector between airbag sensor assembly and engine room main wire harness.

DI4LA-08

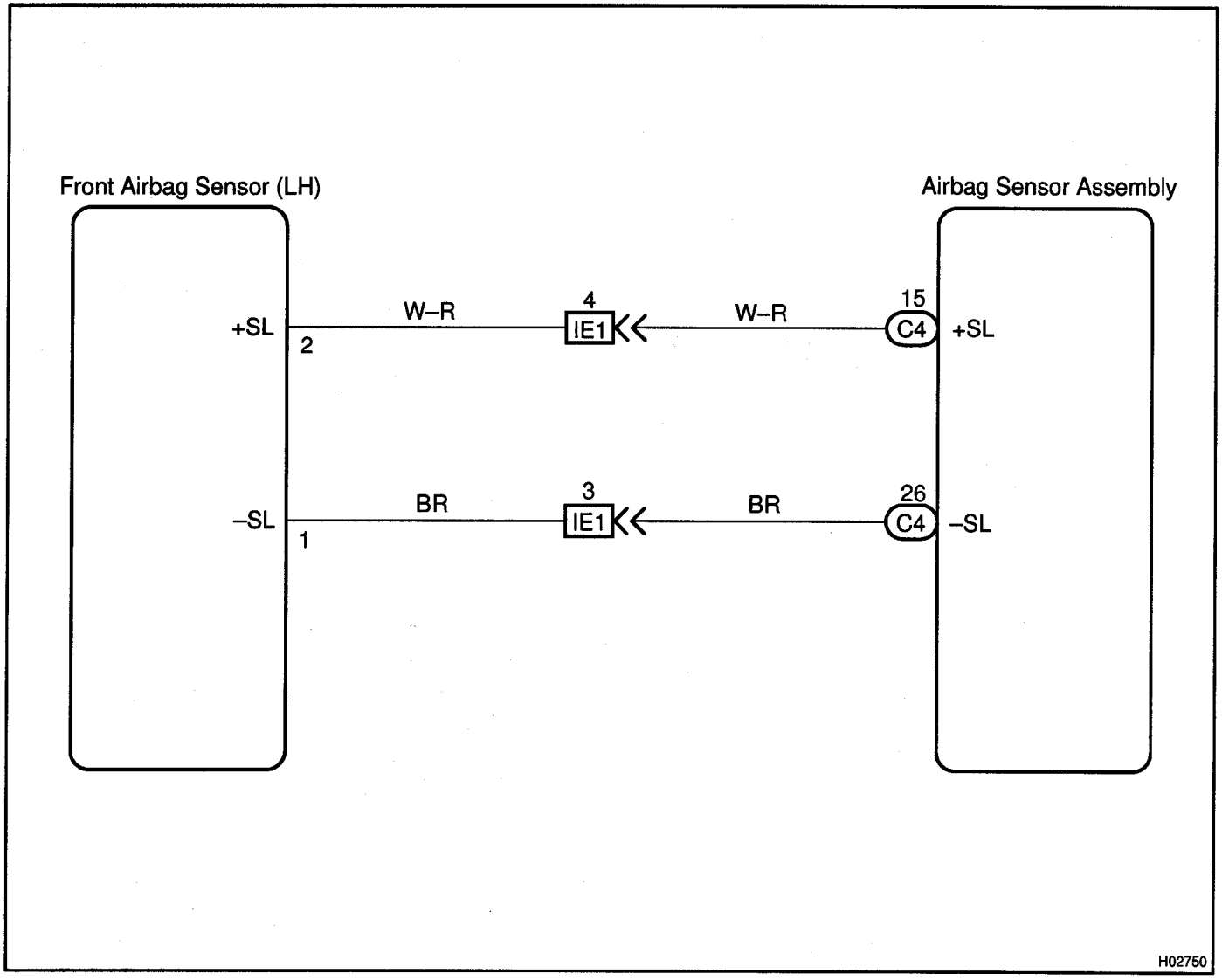
DTC	B1158/B1159/16	Front Airbag Sensor (LH) Malfunction

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) • Wire harness • Engine room main wire harness • Airbag sensor assembly

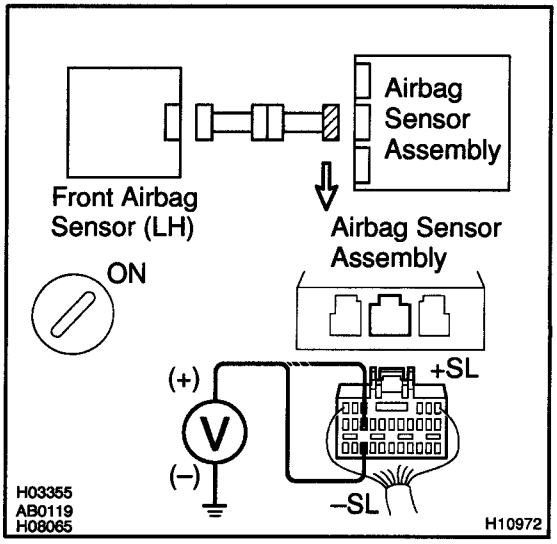
WIRING DIAGRAM



INSPECTION PROCEDURE

1	**Prepare for inspection. (See step 1 on page DI–228)**

2	**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 front airbag sensor (LH) and the airbag sensor assembly, measure the voltage between body ground and each of +SL and –SL.

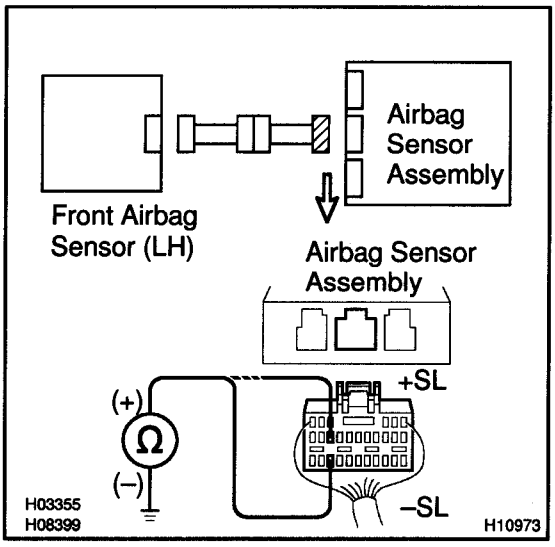
OK:

Voltage: Below 1 V

NG → **Go to step 8.**

OK

3	**Check wire harness (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 body ground and each of +SL and –SL.

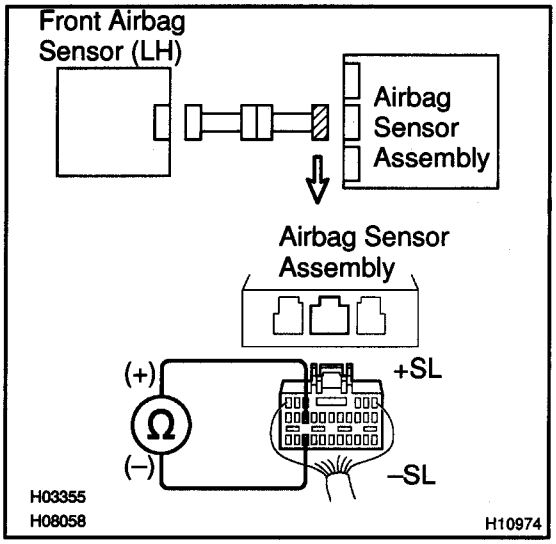
OK:

Resistance: 1 MΩ or Higher

NG → **Go to step 9.**

OK

4	Check wire harness.

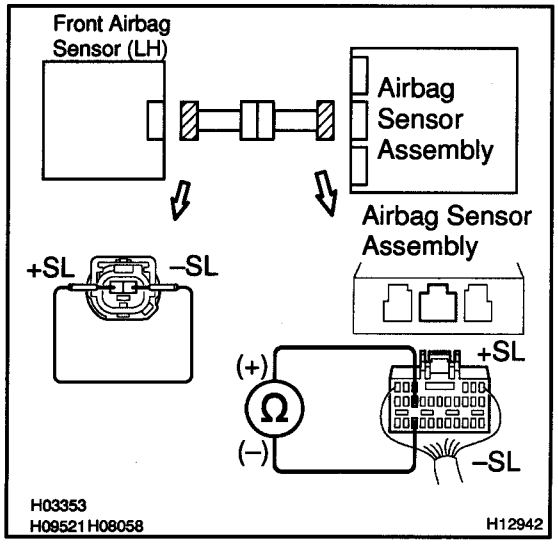


CHECK:
For the connector (on the airbag sensor assembly side) between the front airbag sensor (LH) and the airbag sensor assembly, measure the resistance between +SL and –SL.
OK:
Resistance: 1 MΩ or Higher¥

NG → **Go to step 10.**

OK

5	Check wire harness.

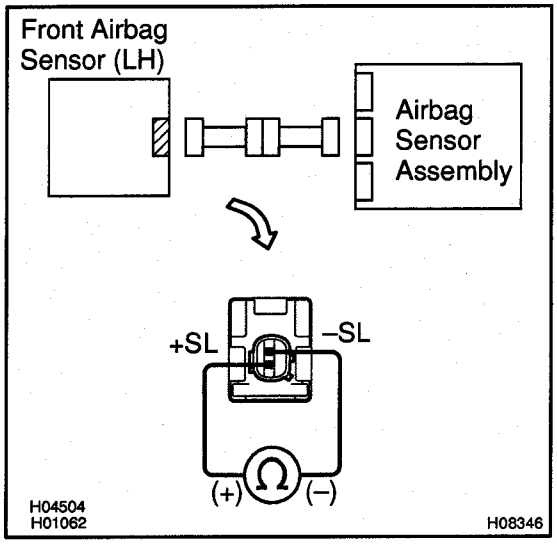


PREPARATION:
Using a service wire, connect +SL and –SL of the connector (on the front airbag sensor (LH) side) between the airbag sensor assembly and the front airbag sensor (LH).
CHECK:
For the connector (on the airbag sensor assembly side) between the front airbag sensor (LH) and the airbag sensor assembly, measure the resistance between +SL and –SL.
OK:
Resistance: Below 1 Ω

NG → **Go to step 11.**

OK

6	Check front airbag sensor (LH).



CHECK:

For the connector of the front airbag sensor (LH), measure the resistance between +SL and –SL.

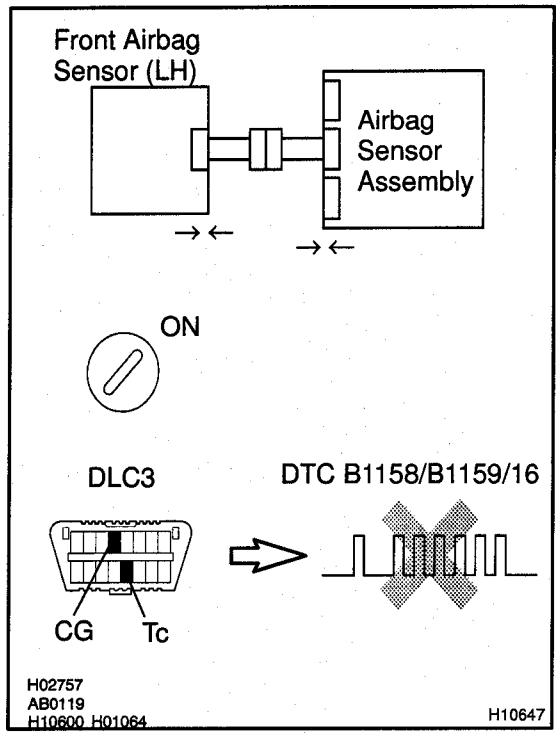
OK:

Resistance: 300 – 1500 Ω

OK

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

7	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 ON, and wait at least for 20 seconds.
(b) Clear DTC stored in memory.
(See step 5 on page DI–102)
(c) Turn the ignition switch to LOCK, and wait at least for 20 seconds.
(d) Turn the ignition switch to ON, and wait at least for 20 seconds.
(e) Check DTC. (See page DI–102)

OK:

DTC B1158/B1159/16 is not output.

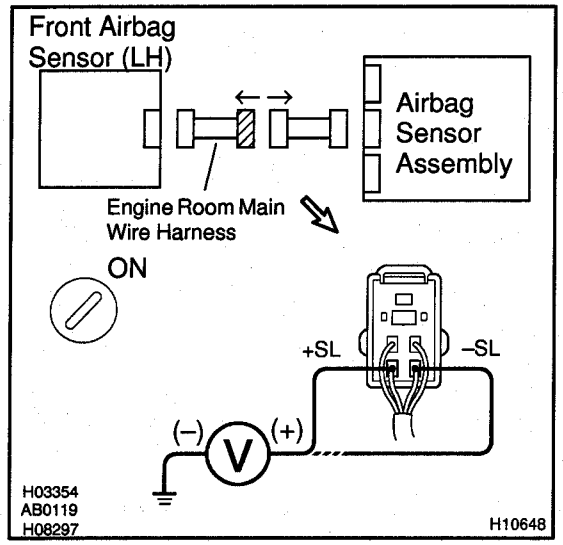
HINT:
Codes other than code B1156/B1157/15 may be output at this time, but they are not relevant to this check.

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.

8	Check engine room main wire harness (to B+).



PREPARATION:
Disconnect the engine room main wire harness connector on the airbag sensor assembly side.

CHECK:
(a) Turn the ignition switch to ON.
(b) For the connector (on the engine room main wire harness side) between the airbag sensor assembly and the engine room main wire harness, measure the voltage between body ground and each of +SL and –SL.

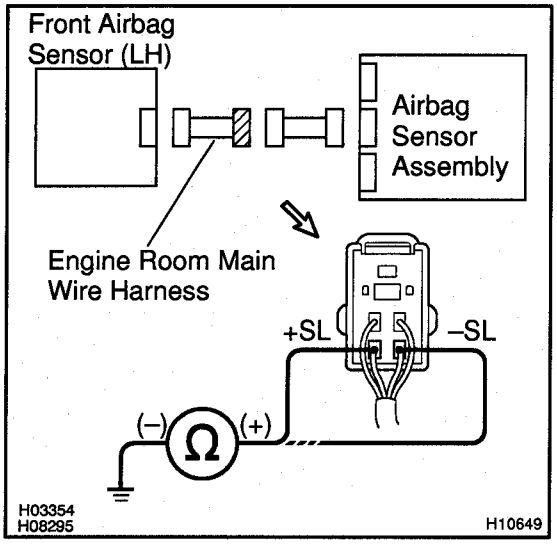
OK:
Voltage: Below 1 V

NG → **Repair or replace engine room main wire harness.**

OK

Repair or replace harness or connector between airbag sensor assembly and engine room main wire harness.

9	Check engine room main wire harness (to ground).



PREPARATION:
Disconnect the engine room main wire harness connector on the airbag sensor assembly side.

CHECK:
For the connector (on the engine room main wire harness side) between the airbag sensor assembly and the engine room main wire harness, measure the resistance between body ground and each of +SL and –SL.

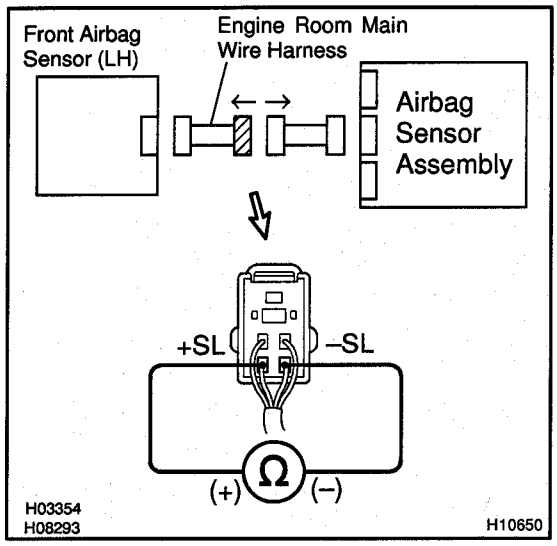
OK:
Resistance: 1 MΩ or Higher

NG → **Repair or replace engine room main wire harness.**

OK

Repair or replace harness or connector between airbag sensor assembly and engine room main wire harness.

10	Check engine room main wire harness.



PREPARATION:
Disconnect the engine room main wire harness connector on the airbag sensor assembly side.

CHECK:
For the connector (on the engine room main wire harness side) between the airbag sensor assembly and the engine room main wire harness, measure the resistance between +SL and –SL.

OK:

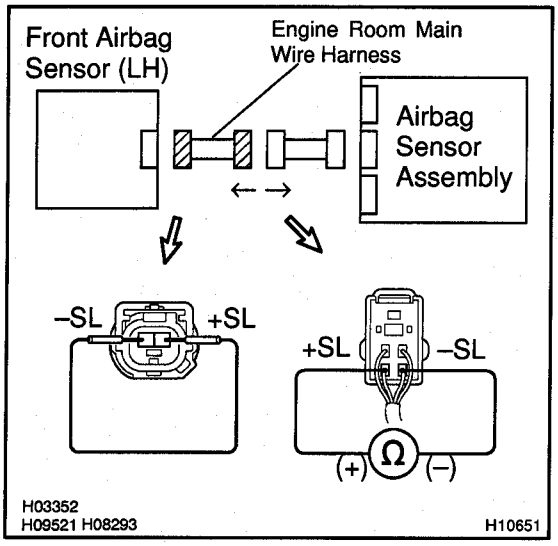
Resistance: 1 MΩ or Higher

NG → **Repair or replace engine room main wire harness.**

OK

Repair or replace harness or connector between airbag sensor assembly and engine room main wire harness.

11	Check engine room main wire harness.



PREPARATION:

(a) Disconnect the engine room main wire harness connector on the airbag sensor assembly side.

(b) Using a service wire, connect +SL and –SL of the connector (on the engine room main wire harness side) between the engine room main wire harness and the front airbag sensor (LH).

CHECK:

For the connector (on the engine room main wire harness side) between the airbag sensor assembly and the engine room main wire harness, measure the resistance between +SL and –SL.

OK:

Resistance: Below 1 Ω

NG → **Repair or replace engine room main wire harness.**

OK →

Repair or replace harness or connector between airbag sensor assembly and engine room main wire harness.

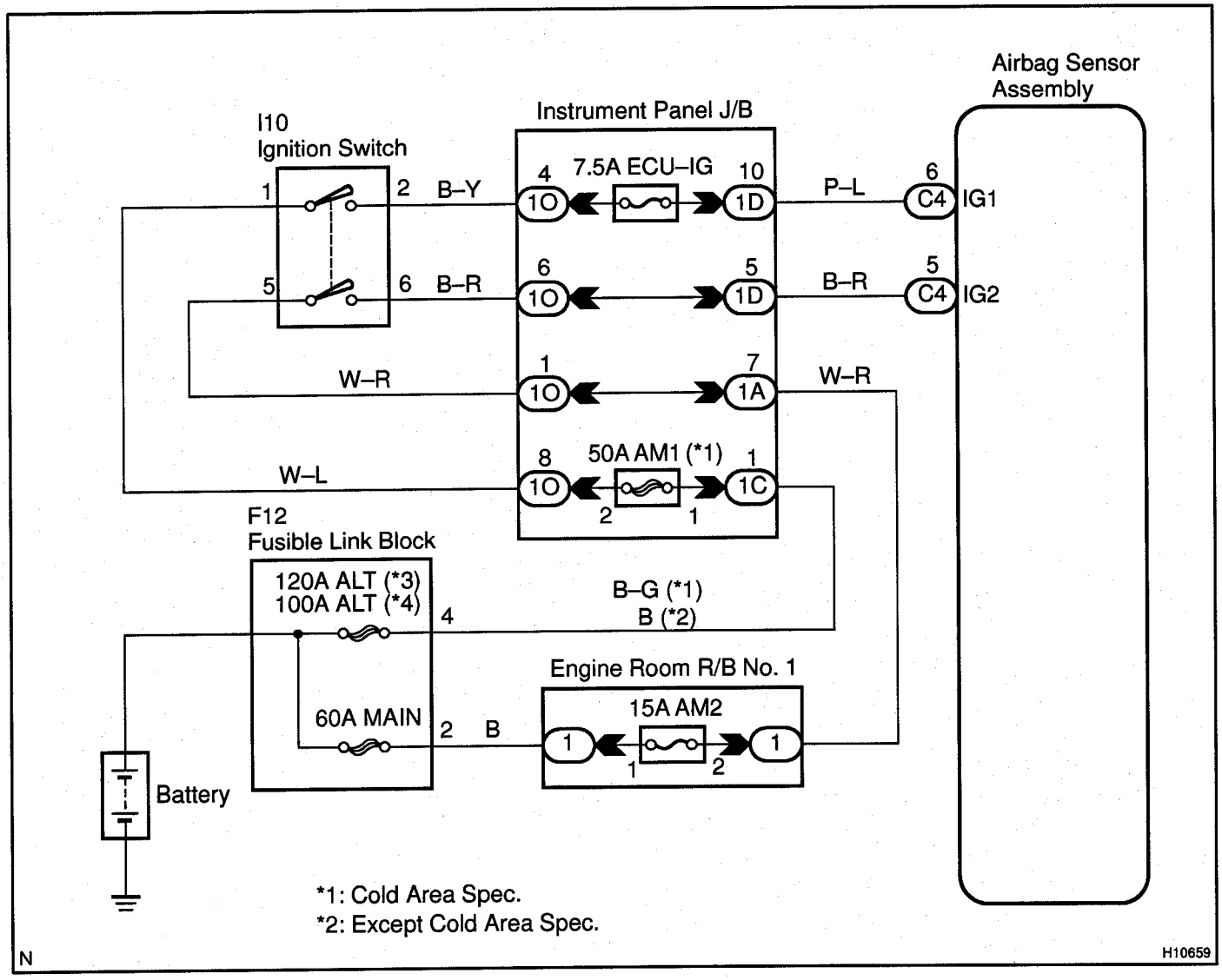
DTC	Normal	Source Voltage Drop

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.

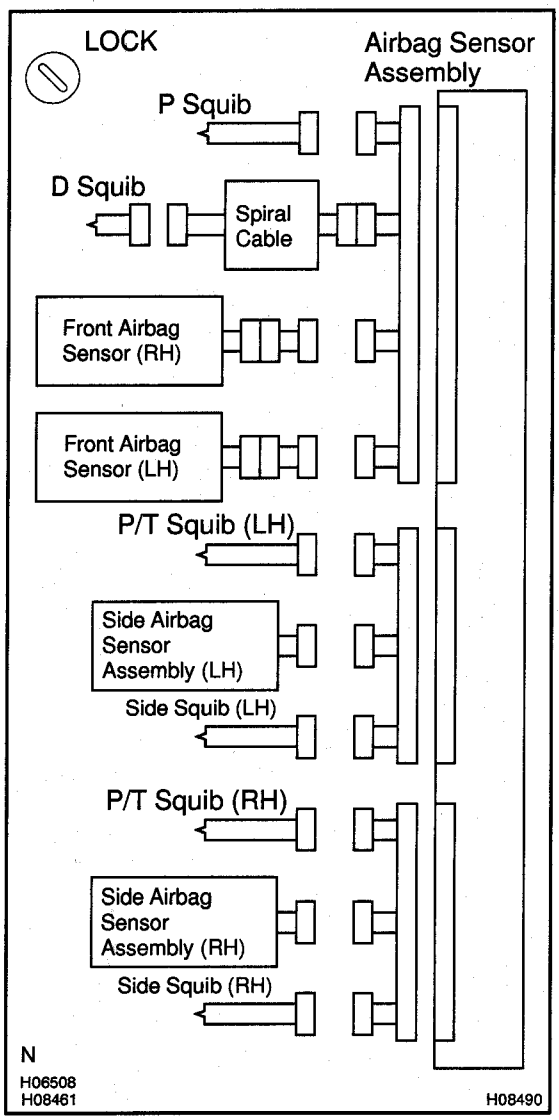
DTC No.	Diagnosis
(Normal)	Source voltage drop

WIRING DIAGRAM



INSPECTION PROCEDURE

1	**Prepare for inspection.**



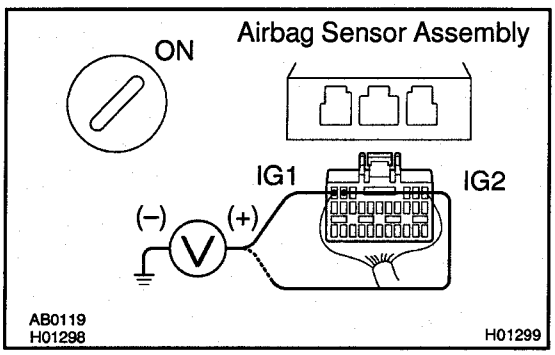
PREPARATION:

(a) Disconnect negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(b) Remove the steering wheel pad. (See page SR–12)
(c) Disconnect the connector of the front passenger airbag assembly. (See page RS–29)
(d) Disconnect the connectors of the side airbag assembly RH and LH. (See page RS–40)
(e) Disconnect the connectors of the seat belt pretensioner RH and LH. (See page BO–124)
(f) Disconnect the connectors of the airbag sensor assembly. (See page RS–53)
(g) Disconnect the connectors of the front airbag sensor RH and LH. (See page RS–58)
(h) Disconnect the connectors of the side airbag sensor assembly RH and LH. (See page RS–64)

CAUTION:

Store the steering wheel pad, front passenger airbag assembly and seatback assembly (with side airbag assembly) with the front surface facing upward.

2	Check source voltage.

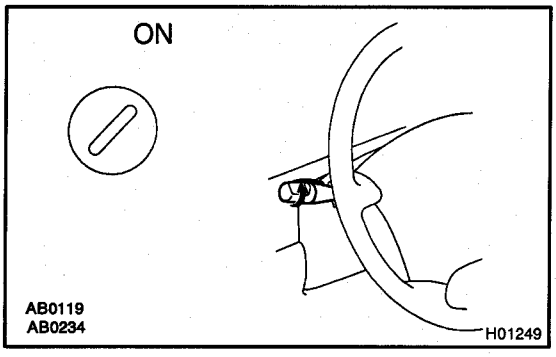


PREPARATION:
Connect negative (–) terminal cable to the battery.
CHECK:
(a) Turn the ignition switch ON.
(b) Measure the voltage between body ground and each of terminals IG1 and IG2 and operate electric system. (defogger, wiper, headlight, heater blower, etc.)
OK:
Voltage: 10 – 14 V

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 ignition switch to LOCK.
(b) Connect the steering wheel pad connector.
(c) Connect the front passenger airbag assembly connector.
(d) Connect the airbag sensor assembly connectors.
(e) Connect the side airbag assembly connectors.
(f) Connect the seat belt pretensioner connectors.
(g) Connect the side airbag sensor assembly connectors.
(h) Connect the front airbag sensor connectors.
(i) Turn 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.

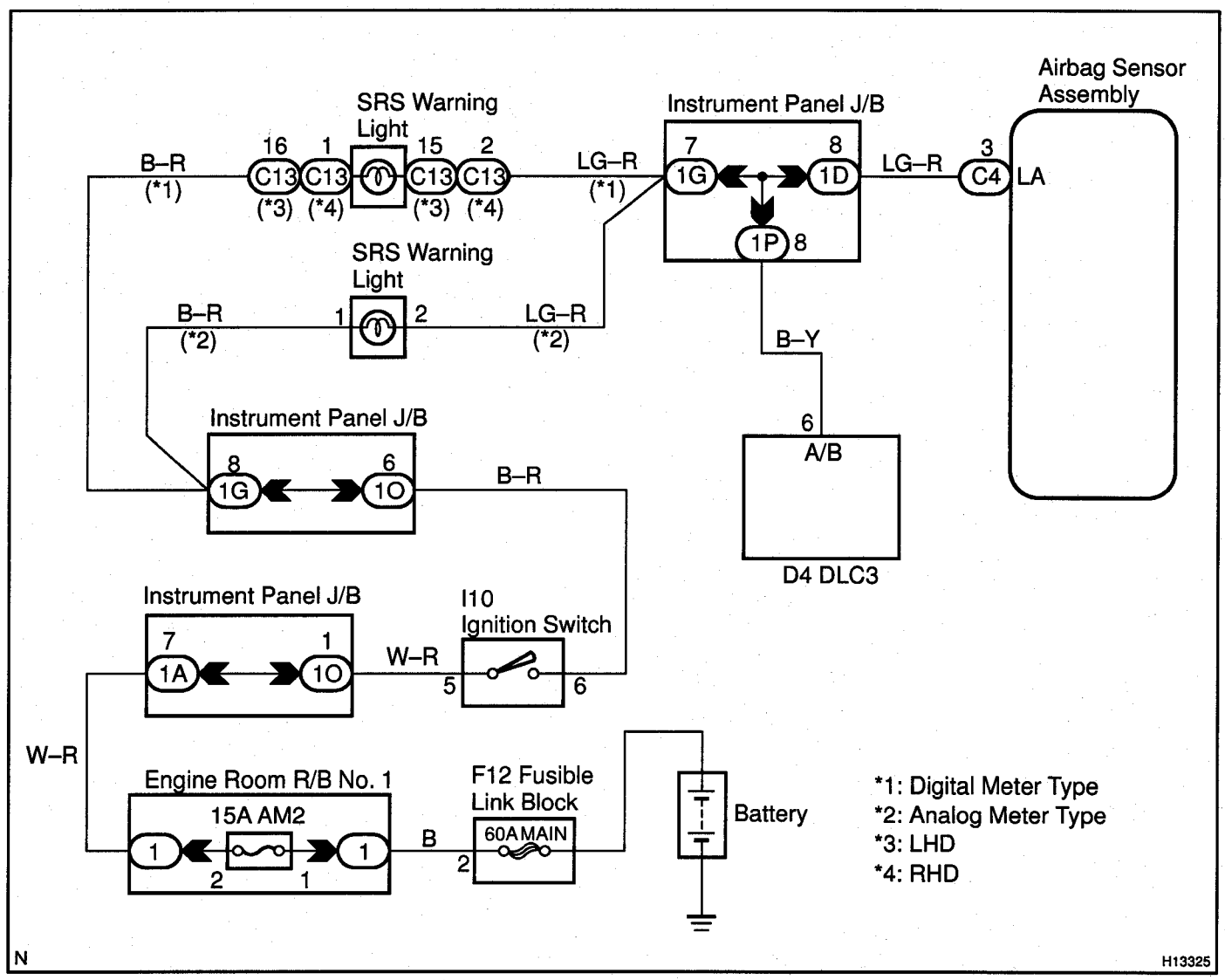
DI5RJ-05

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 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.

WIRING DIAGRAM

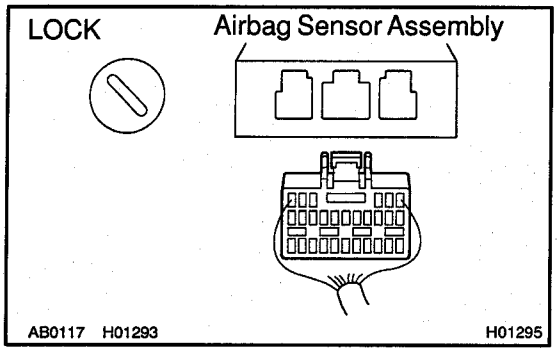


INSPECTION PROCEDURE

Always lights up, when ignition switch is in LOCK position

1	**Prepare for inspection. (See step 1 on page DI–228)**

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.

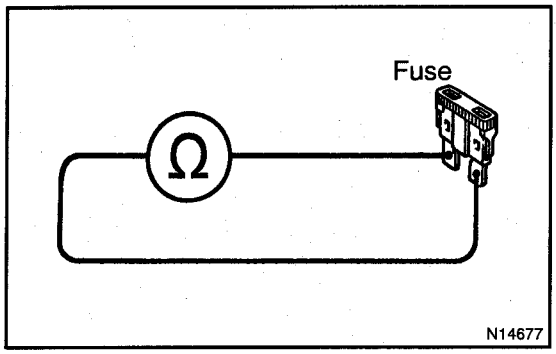
NO → **Check SRS warning light circuit or terminal A/B circuit of DLC3.**

YES

Replace airbag sensor assembly.

Does not light up, when ignition switch is turned to ON

1	Check AM2 Fuse.

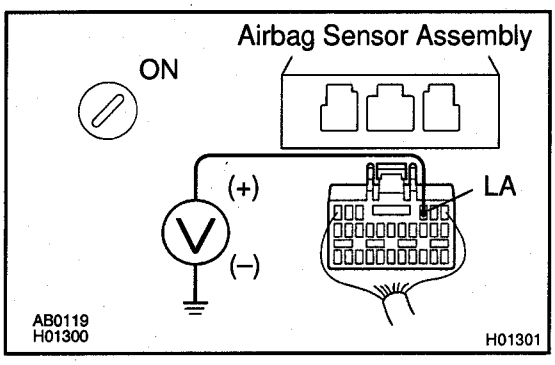


PREPARATION:
Remove AM2 fuse.
CHECK:
Check continuity of AM2 fuse.
OK:
Continuity
HINT:
- Fuse may be burnt out even if it appears to be OK during visual inspection.
- If fuse is OK, install it.

NG	Go to step 5.

OK

2	Prepare for inspection. (See step 1 on page DI–228)



PREPARATION:
(a) Connect negative (–) terminal cable to the battery.
(b) Turn the ignition switch to 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 SRS warning light bulb or repair SRS warning light circuit.

OK

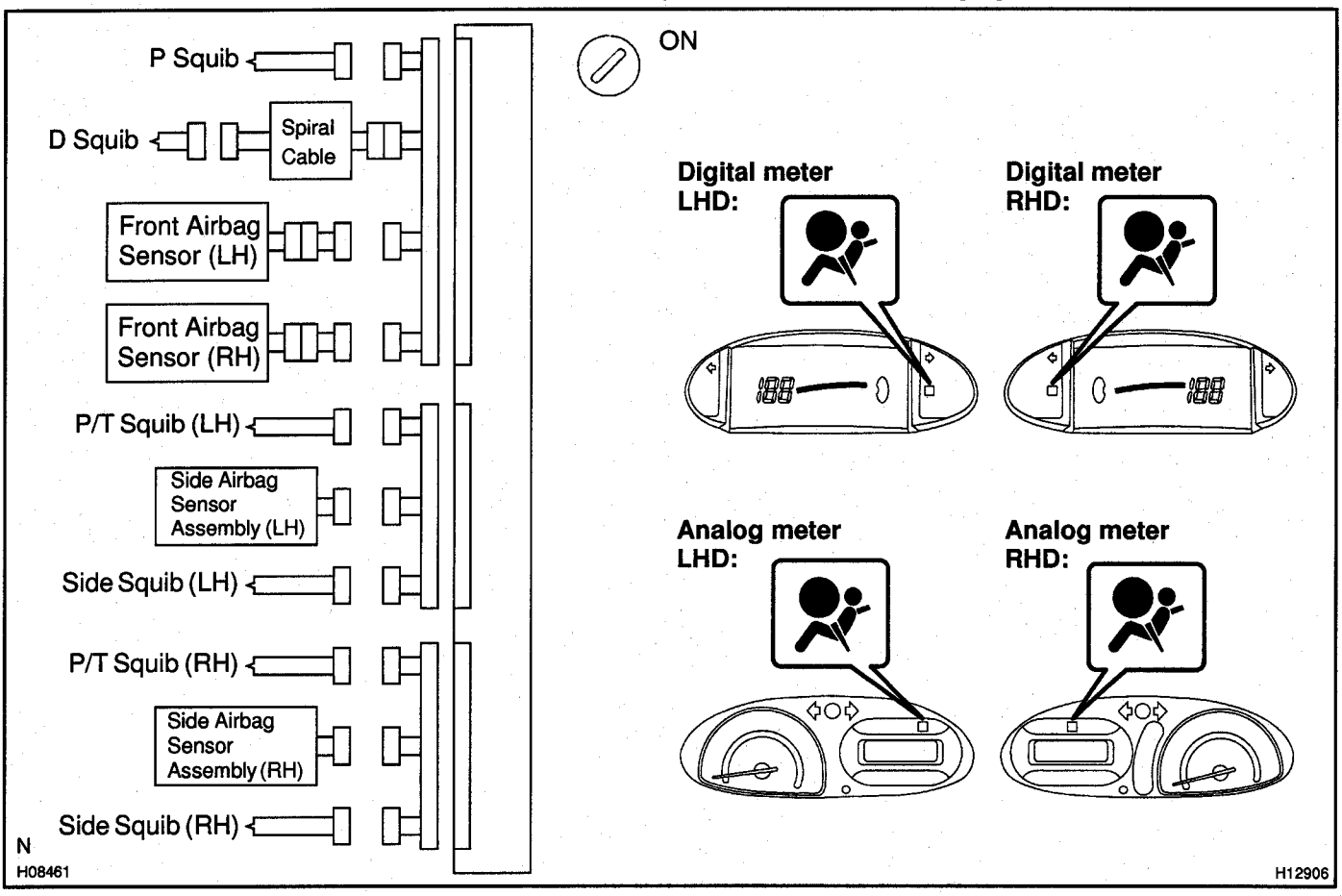
4	Does SRS warning light come on?

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 ignition switch to ON.

CHECK:

Check operation of 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.

5	**Is new AM2 fuse burnt out again?**

NO → **Using simulation method, reproduce malfunction symptoms. (See page IN–19)**

YES

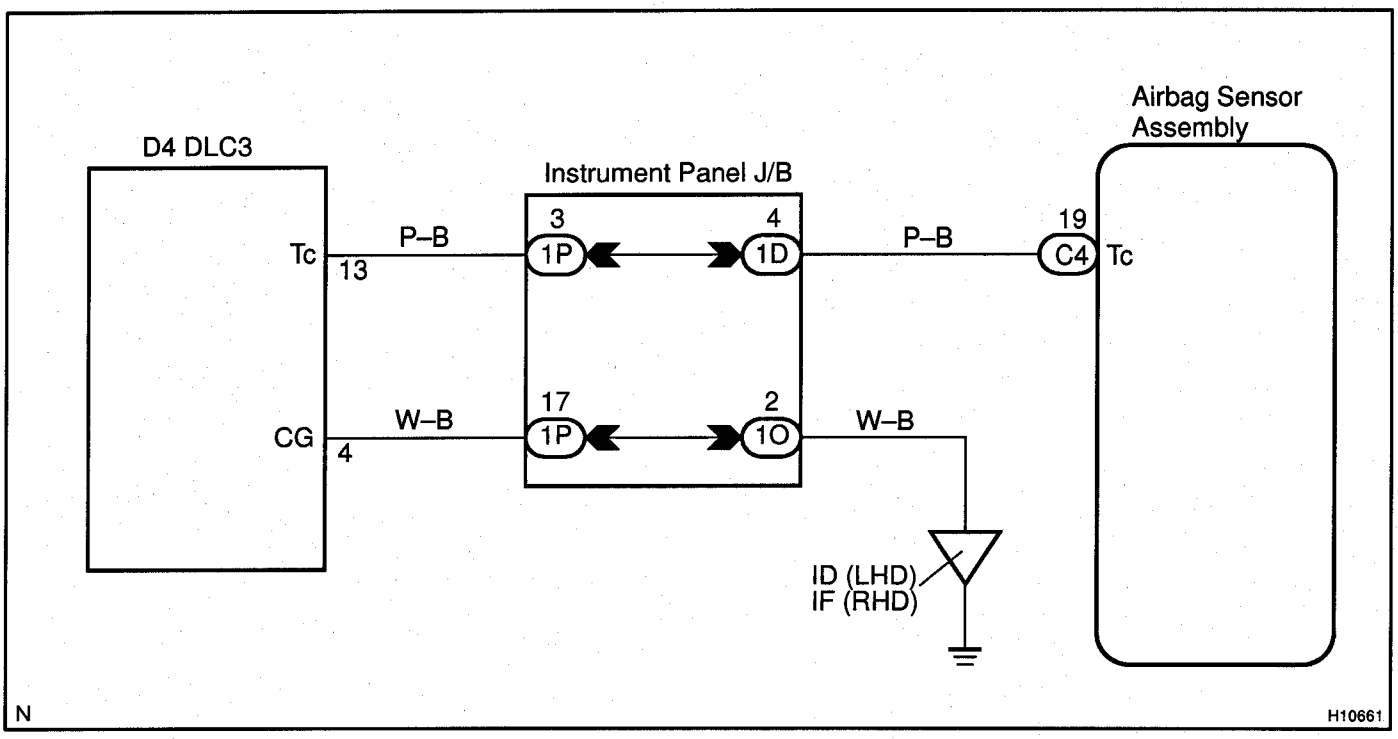
Check harness between AM2 fuse and SRS warning light.

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.

WIRING DIAGRAM



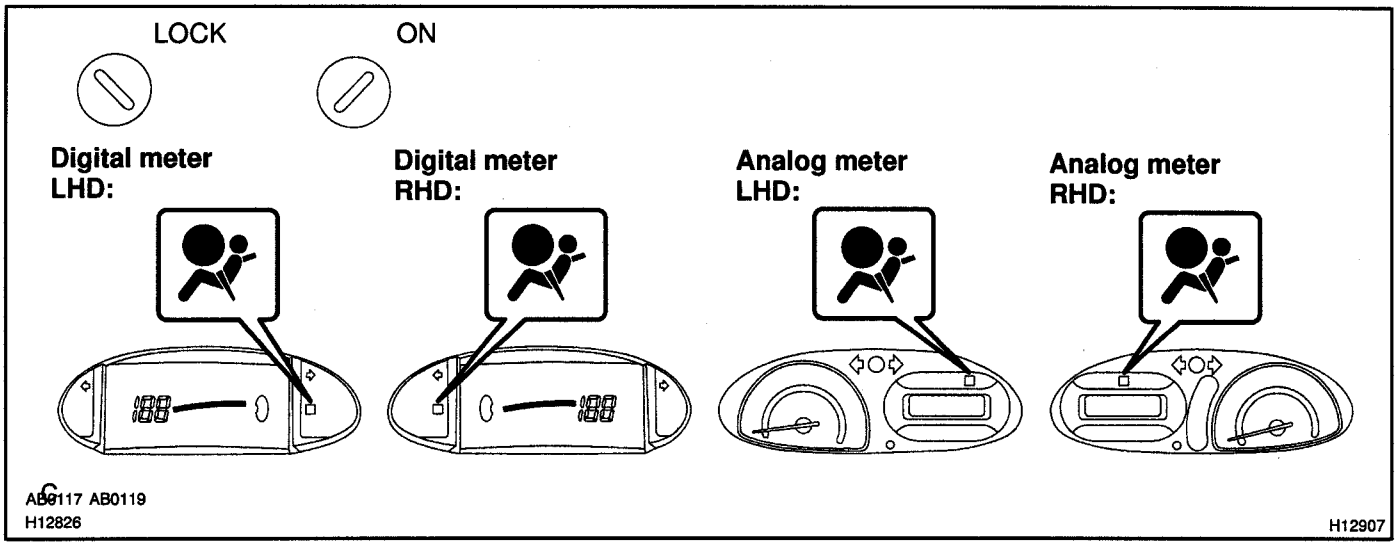
INSPECTION PROCEDURE

If the DTC is not displayed, do the following troubleshooting.

1	**Does SRS warning light light up for approx. 6 seconds?**

PREPARATION:

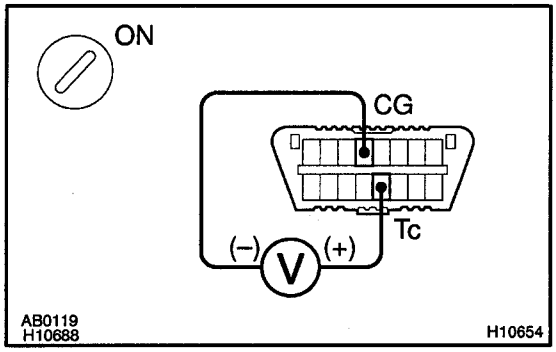
Check operation of the SRS warning light after ignition switch is turned from LOCK position to ON position.



NO → **Check SRS warning light system (See page DI–231).**

YES

2	Check voltage between terminals Tc and CG of DLC3.

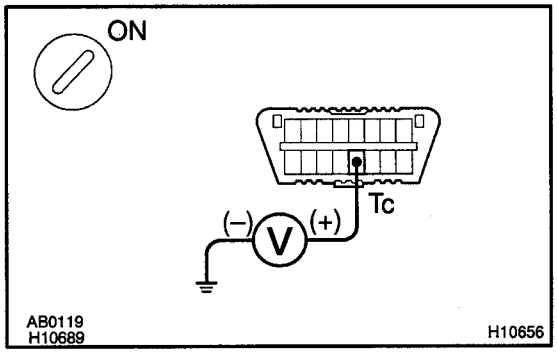


PREPARATION:
Turn ignition switch to ON.
CHECK:
Measure the voltage between terminals Tc and CG of DLC3.
OK:
Voltage: 4 – 14 V

OK	Go to step 4.

NG

3	Check voltage between terminal Tc of DLC3 and body ground.

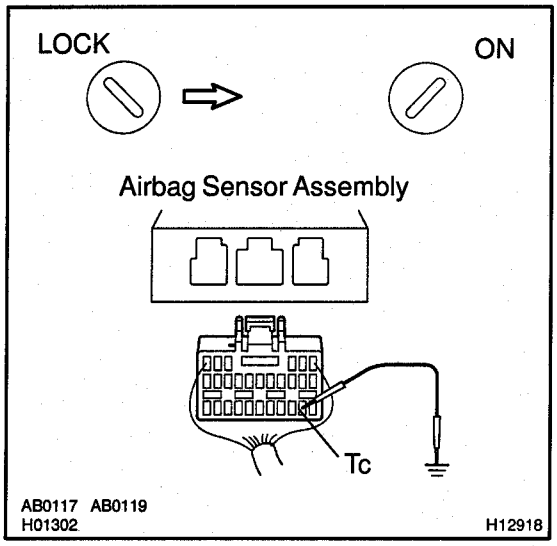


CHECK:
Measure the voltage between terminal Tc of DLC3 and body ground.
OK:
Voltage: 4 – 14 V

OK	Check harness between terminal CG of DLC3 and body ground.

NG

4	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) 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 ignition switch to ON and wait at least for 20 seconds.
(h) Connect service wire of terminal Tc to body ground.

CHECK:

Check operation of SRS warning light.

OK:

SRS waning light comes on.

NOTICE:

Pay due attention to the terminal connecting position to avoid a malfunction.

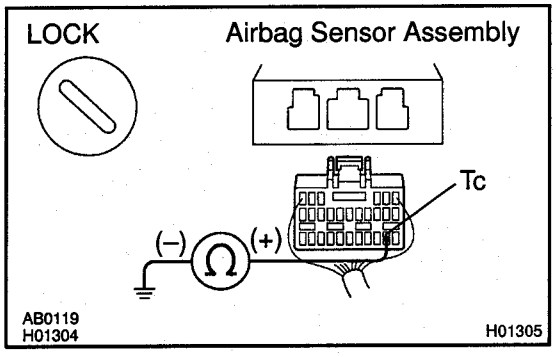
OK → **Check harness between the airbag sensor assembly and DLC3.**

NG

Replace airbag sensor assembly.

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

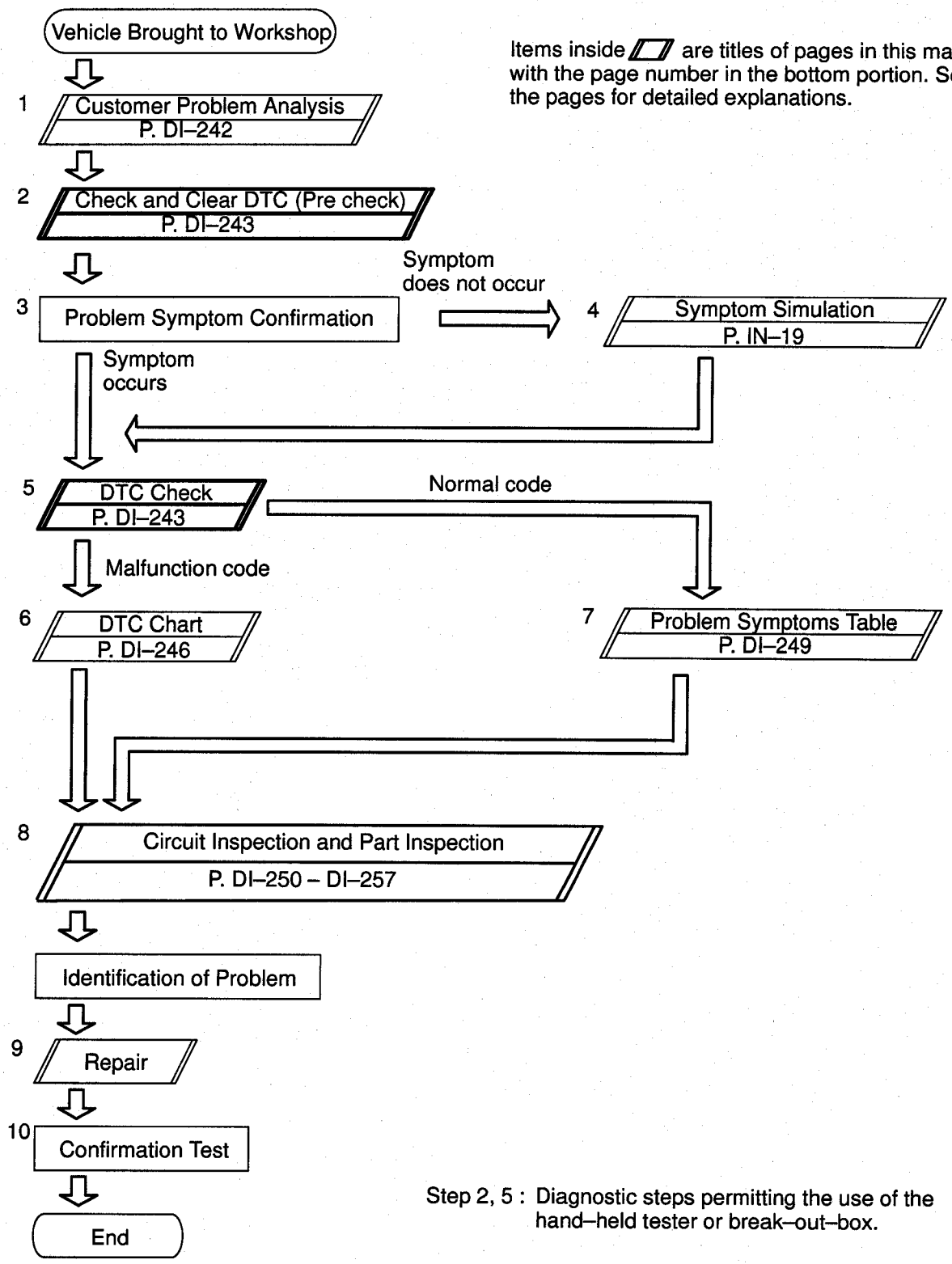
Replace airbag sensor assembly.

ENGINE IMMOBILISER SYSTEM

HOW TO PROCEED WITH TROUBLESHOOTING

DI67Z-01

Troubleshoot 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 hand–held tester or break–out–box.

DI680-01

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	☐ Continuous ☐ Intermittent (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 Lamp**	☐ Normal ☐ Remains ON ☐ Does not Light Up

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

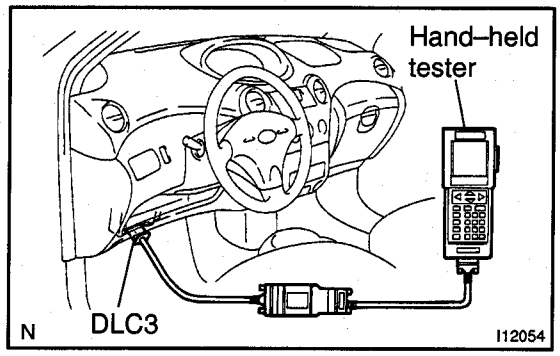
DI681-01

PRE–CHECK

1. DIAGNOSIS SYSTEM

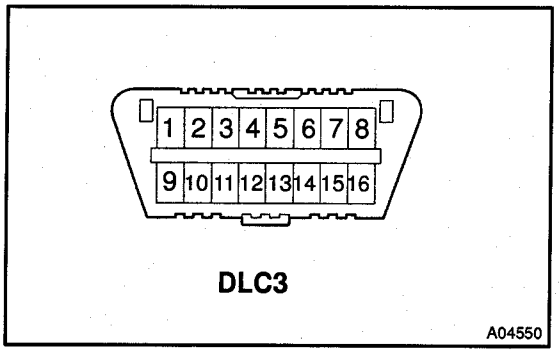
(a) Description

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 on immobiliser, MIL does not light up but DTC inspection is performed. Therefore when there seems to be a trouble on immobiliser, use hand–held tester or SST to check and troubleshoot it.



(b) Check the DLC3.

The vehicle's engine & ECT ECU uses ISO 14230 for communication. The terminal arrangement of DLC3 complies with SAE J1962 and matches the ISO 14230 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
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 hand–held tester to DLC3, turned the ignition switch ON and operated the hand–held tester, 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.

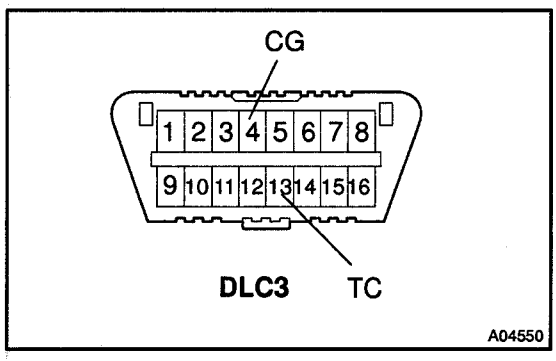
2. INSPECT DIAGNOSIS (Normal Mode)

(a) Check the DTC using hand–held tester.

NOTICE:

Hand–held tester only: When the diagnosis system is switched from normal mode to check mode, it erases all DTCs and freezed frame data recorded in normal mode. So before switching modes, always check the DTCs and freezed frame data, and note them down.

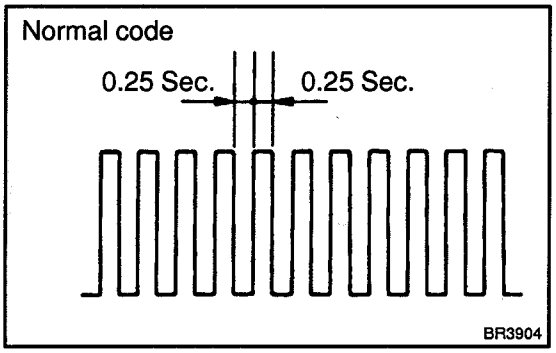
(1) Prepare the hand–held tester.
(2) Connect the hand–held tester to DLC3.
(3) Turn the ignition switch ON and push the hand–held tester main switch ON.
(4) Use the hand–held tester to check the DTCs and freezed frame data, note them down. (For operating instructions, see the hand–held tester instruction book.)
(5) See page DI–246 to confirm the details of the DTCs.



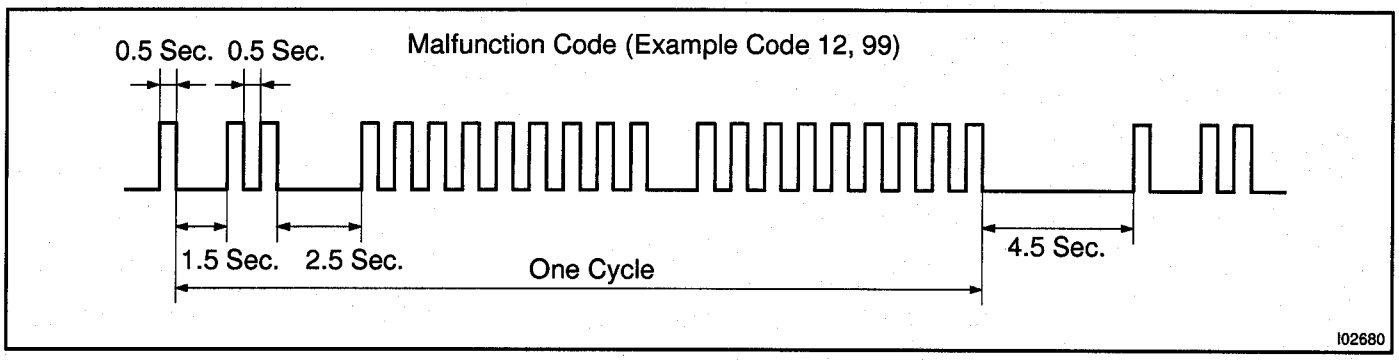
(b) Check the DTC (Using diagnosis check wire)
(1) Turn ignition switch ON.
(2) Using SST, connect between terminals 4 (CG) and 13 (TC) of DLC3.
SST 09843–18040
(3) Read the diagnostic trouble code from malfunction indicator lamp.

HINT:

- If a diagnostic trouble code is not output, check the TC terminal circuit.
- Engine & ECT ECU controls the immobiliser function on this vehicle, DTC is out put with engine data.



- As an example, the blinking patterns for codes; normal, 12 and 99 are shown in the charts.



(4) When DTC "99" is output, there is a trouble of immobiliser. Start troubleshooting referring to PROBLEM SYMPTOMS 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 operations will erase the DTCs and freeze frame data.

(1) Operating the OBD II scam tool (complying with SAEJ1978) or hand–held tester to erase the codes. (See the OBD II scan tool's instruction book for operating instructions.)

(2) Disconnecting the battery terminals or EFI fuse.

DI682-01

DIAGNOSTIC TROUBLE CODE CHART

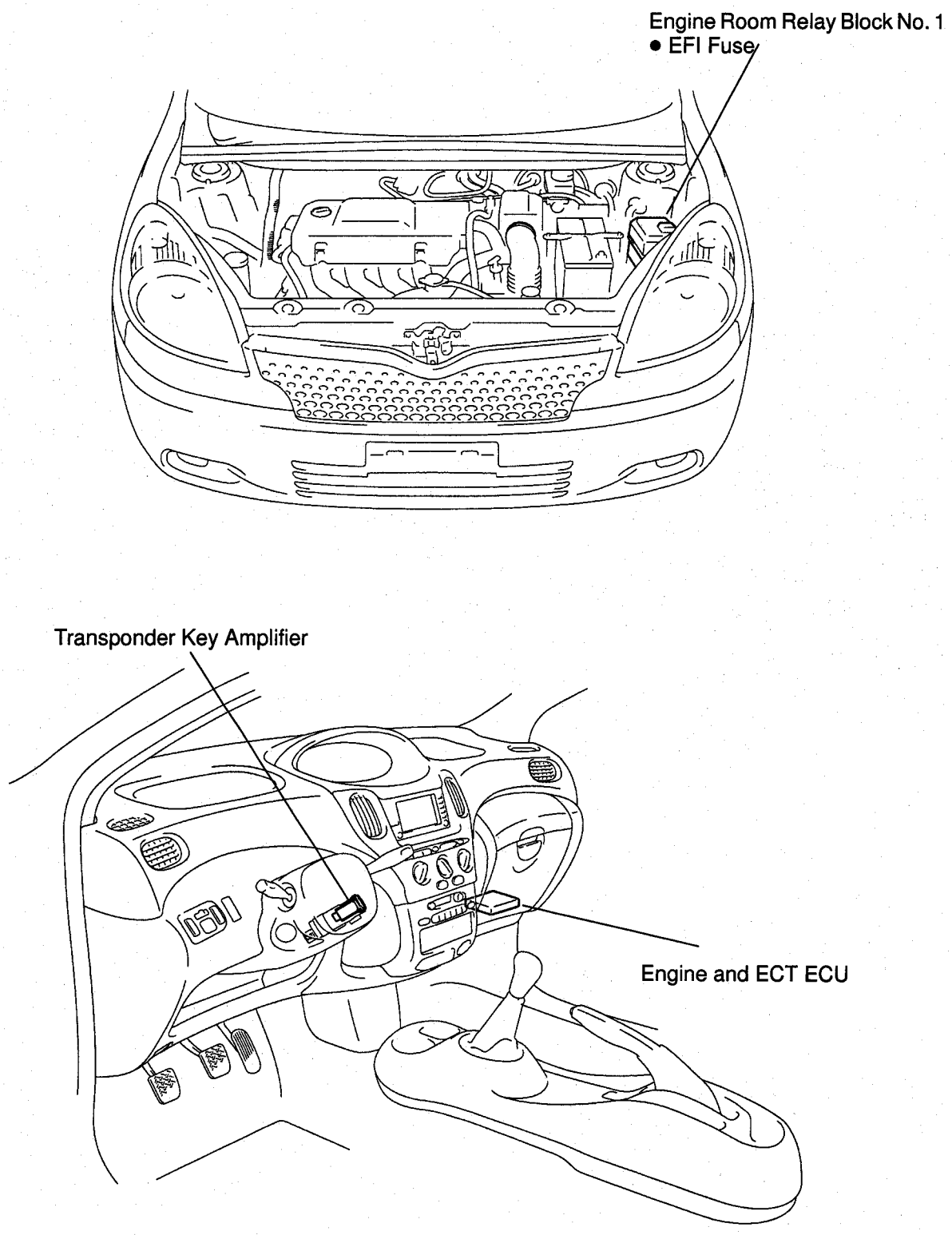
DTC No. (See Page)	Detection Item	Trouble Area
B2795 (DI–250)	Unmatched key code	• Key • Unregistered key inserted before
B2796 (DI–251)	No communication in immobiliser system	• Key • Transponder key amplifier • Wirehaness • Engine & ECT ECU
B2797 (DI–253)	Communication malfunction No.1	• Communication contents • Unregistered key inserted before
B2798 (DI–255)	Communication malfunction No.2	• Key • Transponder key amplifier • Wire haness • Engine & ECT ECU

HINT:

To reduce the unnecessary exchange of Engine & ECT ECU, check that a trouble occurs with the original Engine & ECT ECU at the time of excanging Engine & ECT ECU and the trouble will disappear with a new Engine & ECT ECU.

DI683-02

PARTS LOCATION



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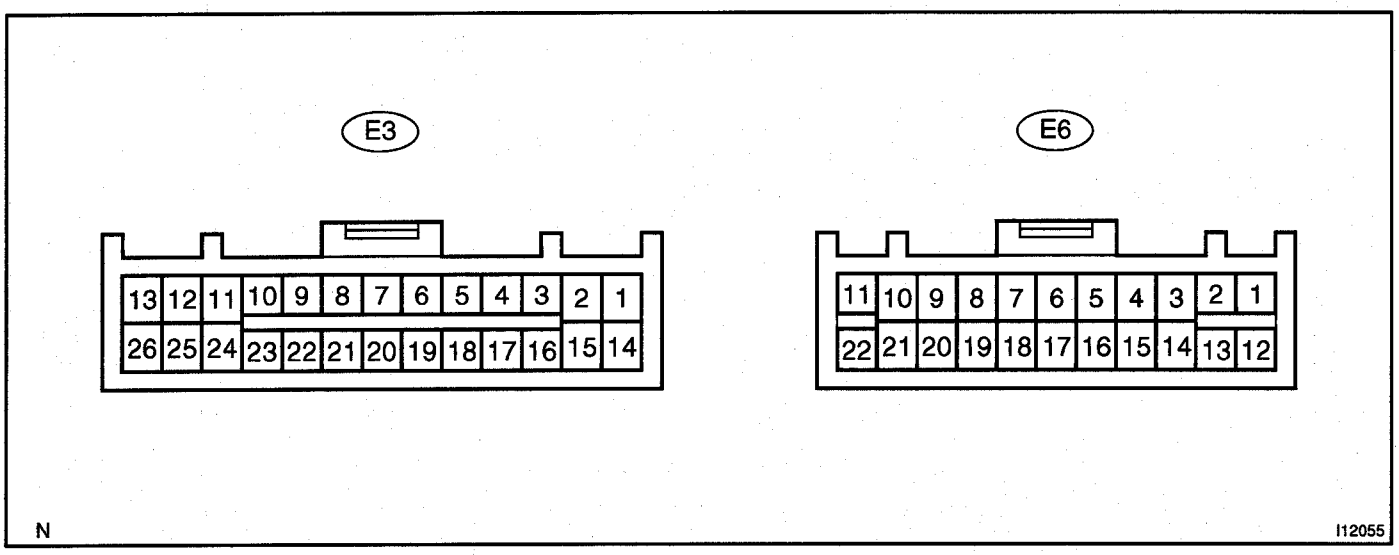
I13513

DI684-01

TERMINALS OF ECU



Symbols (Terminals No.)	Wiring Color	Condition	STD Voltage (V)
TXCT – E1 (E6 – 3 ↔ E3 – 14)	L–B ↔ BR	Ignition Switch ON	10 – 14
CODE – E1 (E6 – 15 ↔ E3 – 14)	Y ↔ BR	Ignition Switch ON	10 – 14
RXCK – E1 (E6 – 4 ↔ E3 – 14)	Y–B ↔ BR	Ignition Switch ON	10 – 14

DI685-01

PROBLEM SYMPTOMS TABLE

Symptom	Suspect Area	See page
Immobiliser is not set. (Engine starts with key codes other than the registered key code.)	1. Engine and ECT ECU	IN–29
Engine does not start.	1. Key 2. Wire harness 3. Transponder key amplifier 4. Engine and ECT ECU	*1 IN–29 – IN–29
Security indicator is always ON.	1. Security indicator 2. Wire harness 3. Engine and ECT ECU	*2 IN–29 IN–29
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 amplifier 3. Engine and ECT ECU	IN–29 – IN–29
Security indicator is OFF. (When DTC of immobiliser is output)	1. Wire harness 2. Transponder key amplifier 3. Engine and ECT ECU	IN–29 – IN–29
Security indicator is OFF. (When DTC of immobiliser is not output)	1. Wire harness 2. Engine and ECT ECU	IN–29 IN–29
Security indicator is abnormally blinking.	1. Wire harness 2. Engine and ECT ECU	IN–29 IN–29

*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.

*2 : Finish the automatic registration mode because the mode might still remain.

DI686-01

CIRCUIT INSPECTION

DTC	B2795/99	Unmatched Key Code

CIRCUIT DESCRIPTION

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. (Engine and ECT ECU is normal.)
Inquire a customer the condition of using the system to find the cause of the trouble.
(Example: Another key has been inserted, etc..)

DTC No.	DTC Detecting Condition	Trouble Area
B2795/99	No communication	• Key

INSPECTION PROCEDURE

1	**Delete DTC and insert all the presently available keys to check whether the engine starts or not.**

HINT:
When inserting the key that does not start the engine, DTC (B 2795) is stored in memory.

RESULT:

OK	All keys starts the engine.
NG	A specific key does not start the engine.

OK → **No problem.**

HINT:
If the result is "OK", please confirm whether or not customers have ever inserted the unregistered key or the immobiliser key (with transponder chip) of other vehicle in the ignition key cylinder, and find out the cause of detecting DTC.

NG

Register the key that does not start the engine.

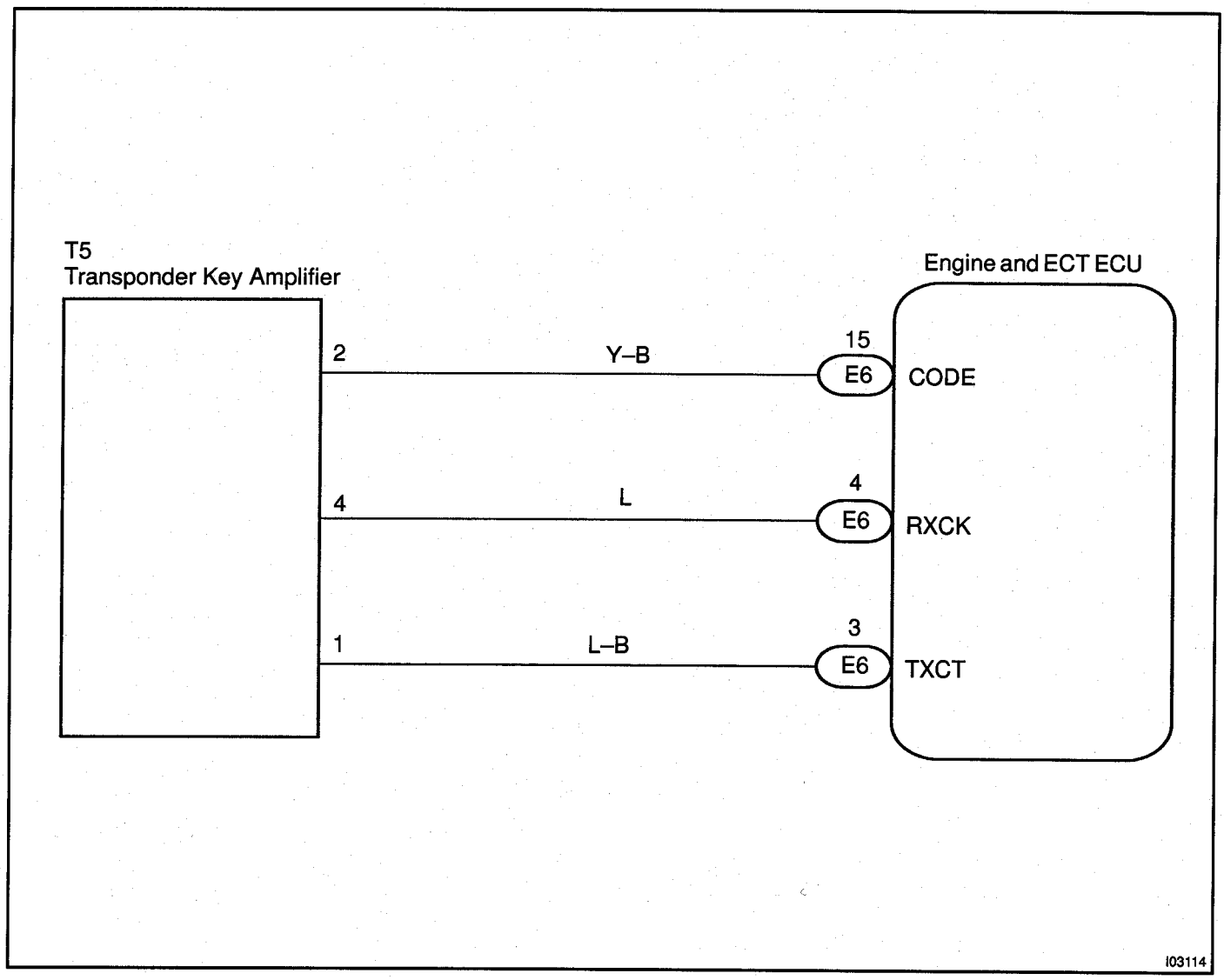
DI687-02

DTC	B2796/99	No Communication in Immobiliser system

CIRCUIT DESCRIPTION

DTC No.	DTC Detecting Condition	Trouble Area
B2796/99	No communication	• Key • Transponder Key Amplifier • Wire Harness • Engine and ECT ECU

WIRING DIAGRAM



INSPECTION PROCEDURE

1	**Delete DTC and insert all the presently available keys to check whether the engine starts or not.**

RESULT:

A	All keys start the engine.
B	A specific key does not start the engine. In this case, DTC (B 2796) is stored in memory.
C	All keys do not start the engine. In this case, DTC (B 2796) is stored in memory.

A → **No problem at this time.**

HINT:
If the result is "A", please confirm whether or not customers have ever inserted the key (without transponder chip) of other vehicle in the ignition key cylinder, and find out the cause of detecting DTC.

B → **The transponder chip of a specific key is defective. Replace the key.**

C

2	**Check harness and connector between transponder key amplifier and Engine and ECT ECU.**

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 Engine and ECT ECU.

DI688-02

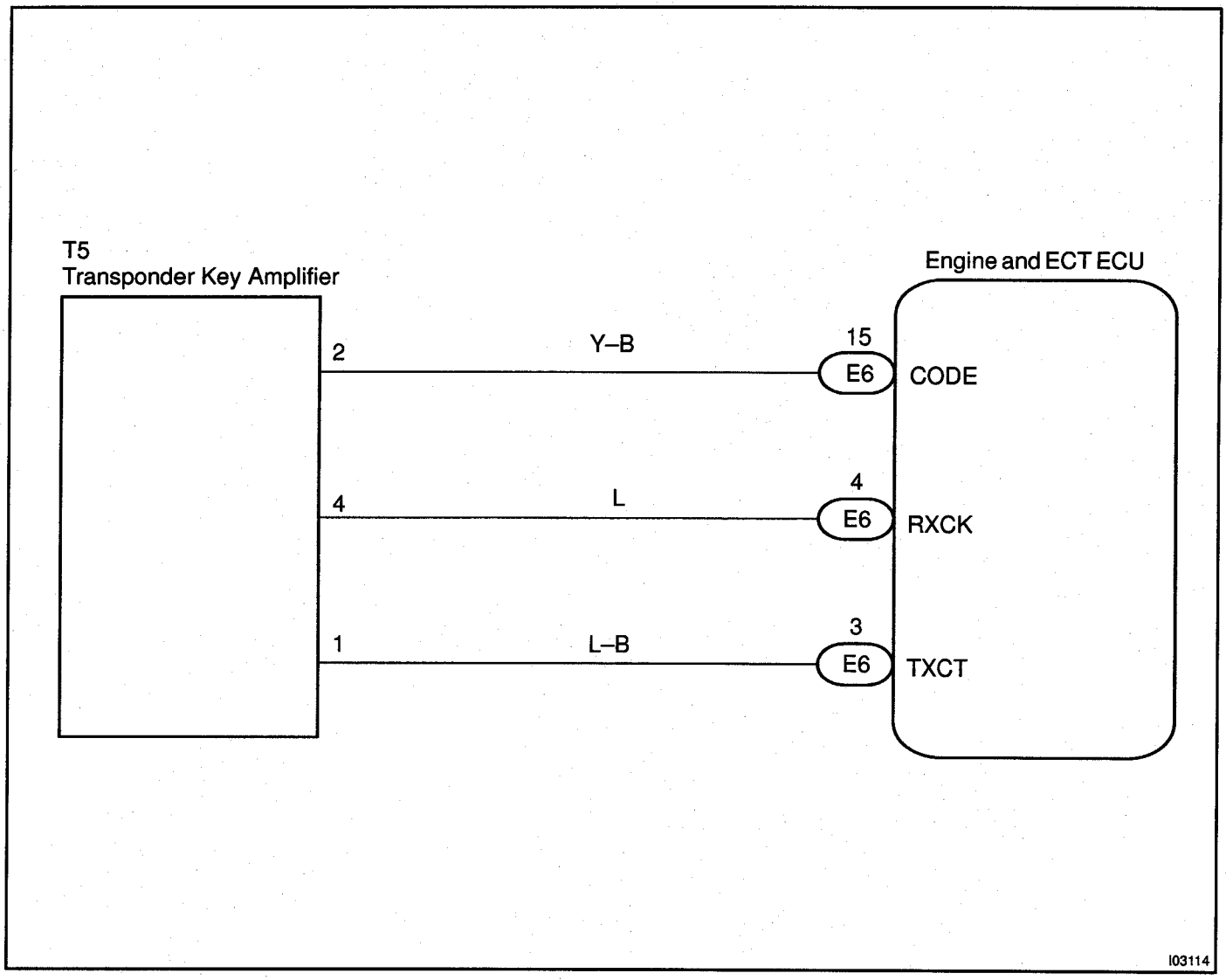
DTC	B2797/99	Communication Malfunction No.1

CIRCUIT DESCRIPTION

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

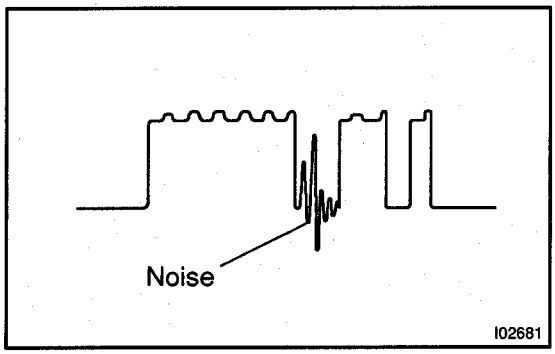
DTC No.	DTC Detecting Condition	Trouble Area
B2797/99	Communication error	• Wire Harness • Transponder Key Amplifier • Engine and ECT ECU

WIRING DIAGRAM



INSPECTION PROCEDURE

1	Noise check



PREPARATION:
Insert the already registered master key in the key cylinder.
CHECK:
Using an oscilloscope or hand–held tester, check that noise is included in the signals sent to the CODE terminal of Engine and ECT ECU.
OK:
No noise is detected.

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

OK ↓

2	Does the system operate normally after replacement of transponder key amplifier?

Yes → **Replace transponder key amplifier.**

No ↓

Replace Engine and ECT ECU.

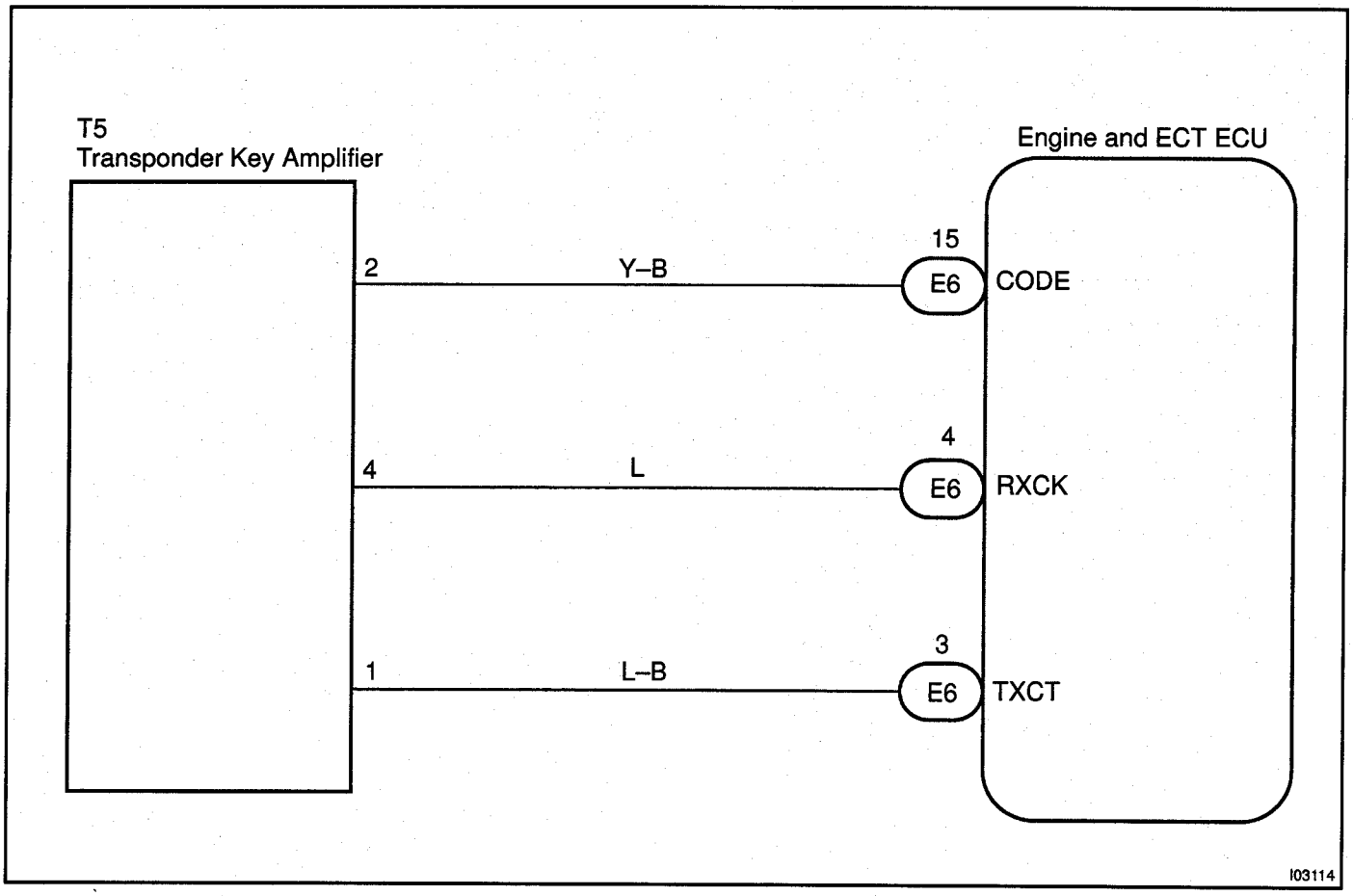
DI689–02

DTC	B2798/99	Communication malfunction No.2

CIRCUIT DESCRIPTION

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

WIRING DIAGRAM



INSPECTION PROCEDURE

1	Check harness and connector between transponder key amplifier and Engine and ECT ECU.

NG → Repair or replace harness and connector.

OK ↓

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

Yes → Replace transponder key amplifier.

No ↓

Replace Engine and ECT ECU.

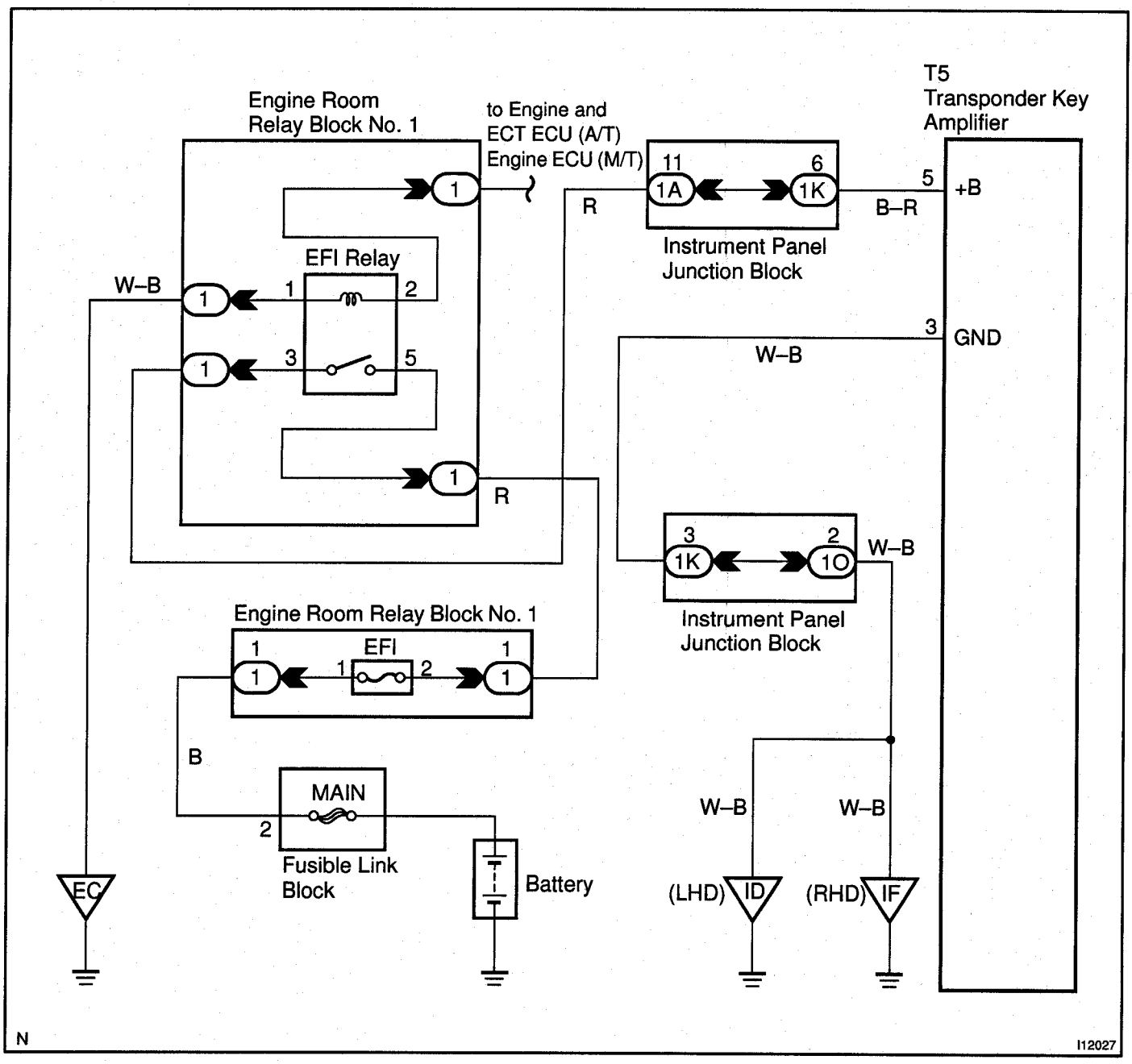
DI68A-02

Power source circuit

CIRCUIT DESCRIPTION

This circuit provides power to operate the Transponder Key Amplifier.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	**Check EFI fuse.**

CHECK:
Check continuity of EFI fuse.
OK:
Continuity

NG → **Replace the failure fuse.**

OK ↓

2	**Check voltage between terminals EFI and GND of Transponder Key Amplifier connector.**

PREPARATION:
(a) Turn ignition switch OFF.
(b) Disconnect the Transponder Key Amplifier connector.
CHECK:
Measure voltage between terminals +B and GND.
OK:
Voltage: 10 – 14 V

OK → **Proceed to next circuit inspection shown on problem symptoms table. (See page DI–249)**

NG ↓

3	**Check wire harness and connector between Transponder Key Amplifier and body ground.**

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

OK ↓

Check and repair wire harness and connector between Transponder Key Amplifier and Battery.