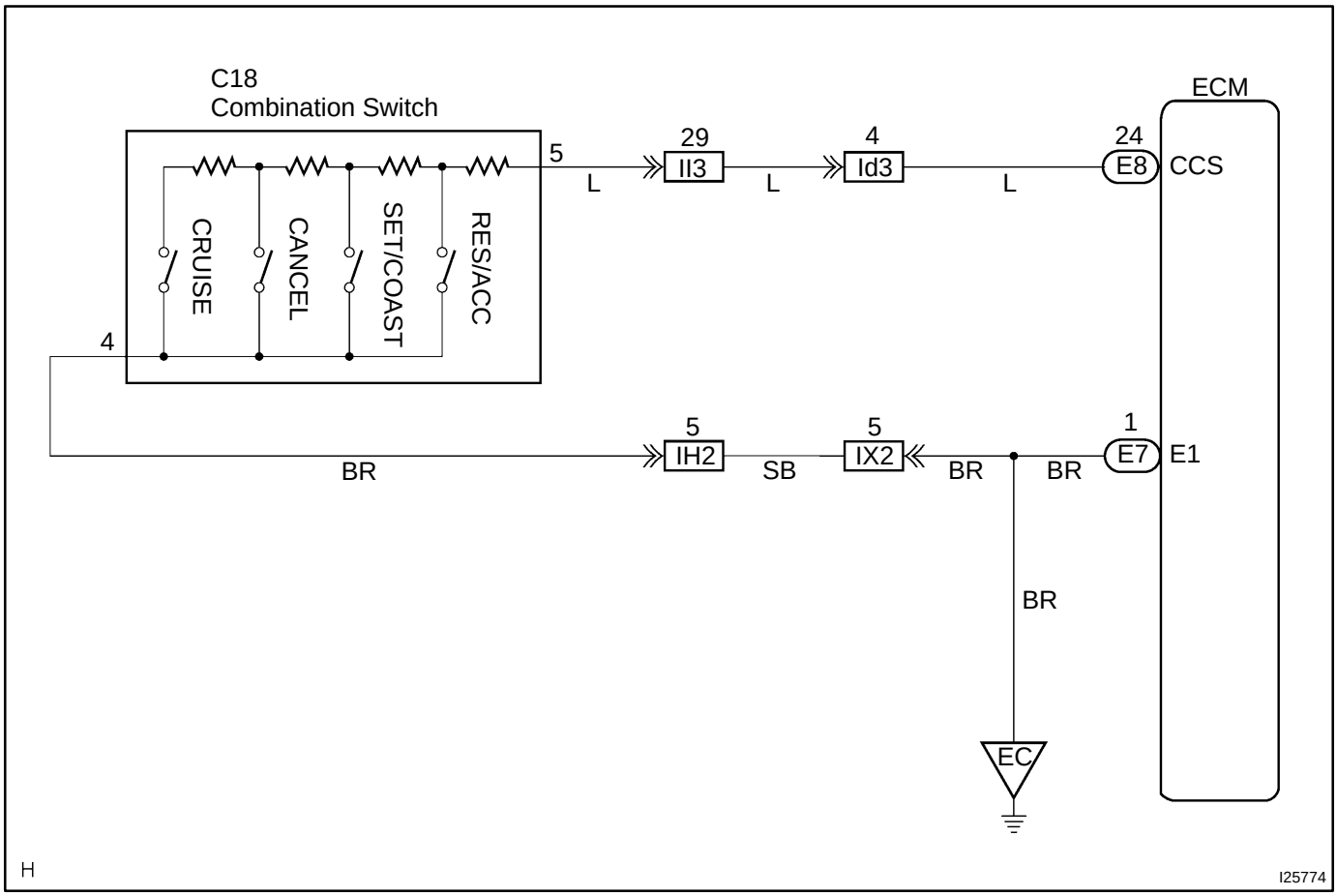
DIB6C-01

Main Switch Circuit (Cruise Control Switch)

CIRCUIT DESCRIPTION

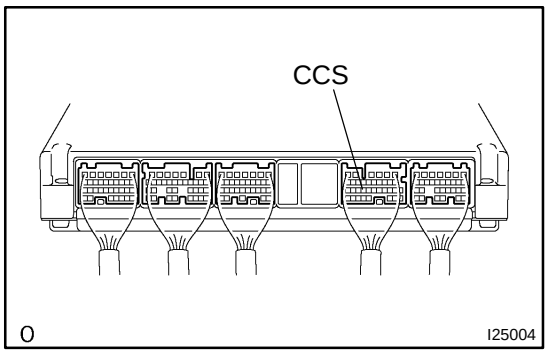
This circuit carries the -/SET, +/RESUME and Cancel signals (each voltage) to the ECM.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	Check voltage between terminal CCS of ECM connector and body ground.



PREPARATION:

(a) Remove the ECM with connector still connected.

(b) Turn ignition switch ON.

CHECK:

Measure voltage between terminal CCS of ECM connector and body ground, when each of the -/SET, +RES and CANCEL is turned ON.

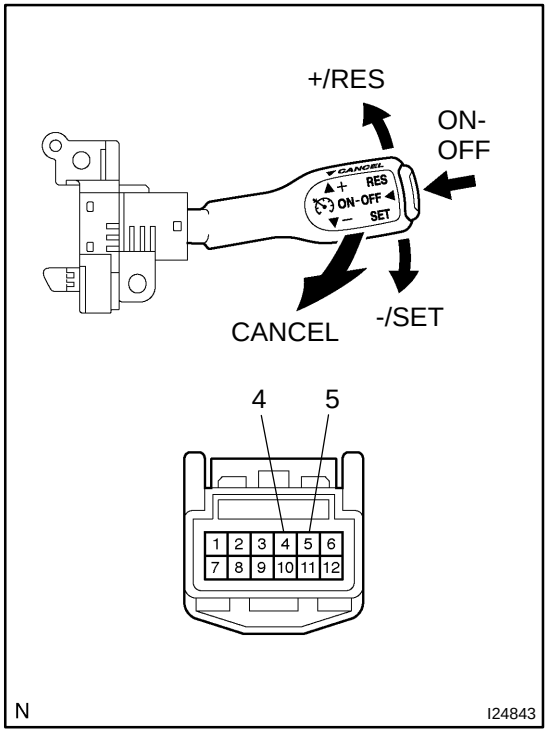
OK:

Switch Position	Voltage
Neutral	9 - 14 V
+/RES	2.1 - 4 V
-/SET	4 - 7.1 V
CANCEL	6 - 10.1 V

OK	Proceed to next circuit inspection shown on problem symptom table (See page DI-991).

NG

2	Check main switch continuity.



PREPARATION:

(a) Remove steering wheel center pad (See page SR-9).

(b) Disconnect the control switch connector.

CHECK:

(a) Measure resistance between terminals 4 and 5 of cruise control switch connector when control switch is operated.

Switch position	Resistance (Ω)
Neutral	∞ (No continuity)
+/RES	210 - 270
-/SET	560 - 700
CANCEL	1380 - 1700

(b) Check continuity between terminals 4 and 5 of control switch connector when main switch is held on and off.

OK:

Switch position	Tester connection	Specified condition
OFF	4 - 5	No continuity
ON	4 - 5	Continuity

NG	Replace control switch.

OK

3	Check harness and connector between ECM and cruise control switch, cruise control switch and body ground (See page IN-26).

NG	Repair or replace harness or connector.

OK

4	Check cruise control indicator light (See combination meter.)

NG	Replace combination meter.

OK

Check and replace ECM (See page IN-36).

DI3CI-14

CIRCUIT INSPECTION

DTC	P0500/21	Vehicle Speed Sensor ”A”

DTC	P0503/23	Vehicle Speed Sensor ”A” Intermittent/Erratic/High

CIRCUIT DESCRIPTION

See page .DI-274

DTC No.	DTC Detection Condition	Trouble Area
P0500/21 P0503/23	No vehicle speed sensor signal to ECM under following conditions (a) and (b): (2 trip detection logic) (a) Park/neutral position switch is OFF (b) Vehicle is being driven	★Combination meter ★Open or short in vehicle speed sensor circuit ★Vehicle speed sensor ★ECM

WIRING DIAGRAM

See page .DI-274

INSPECTION PROCEDURE

See page .DI-274

DIB6A-01

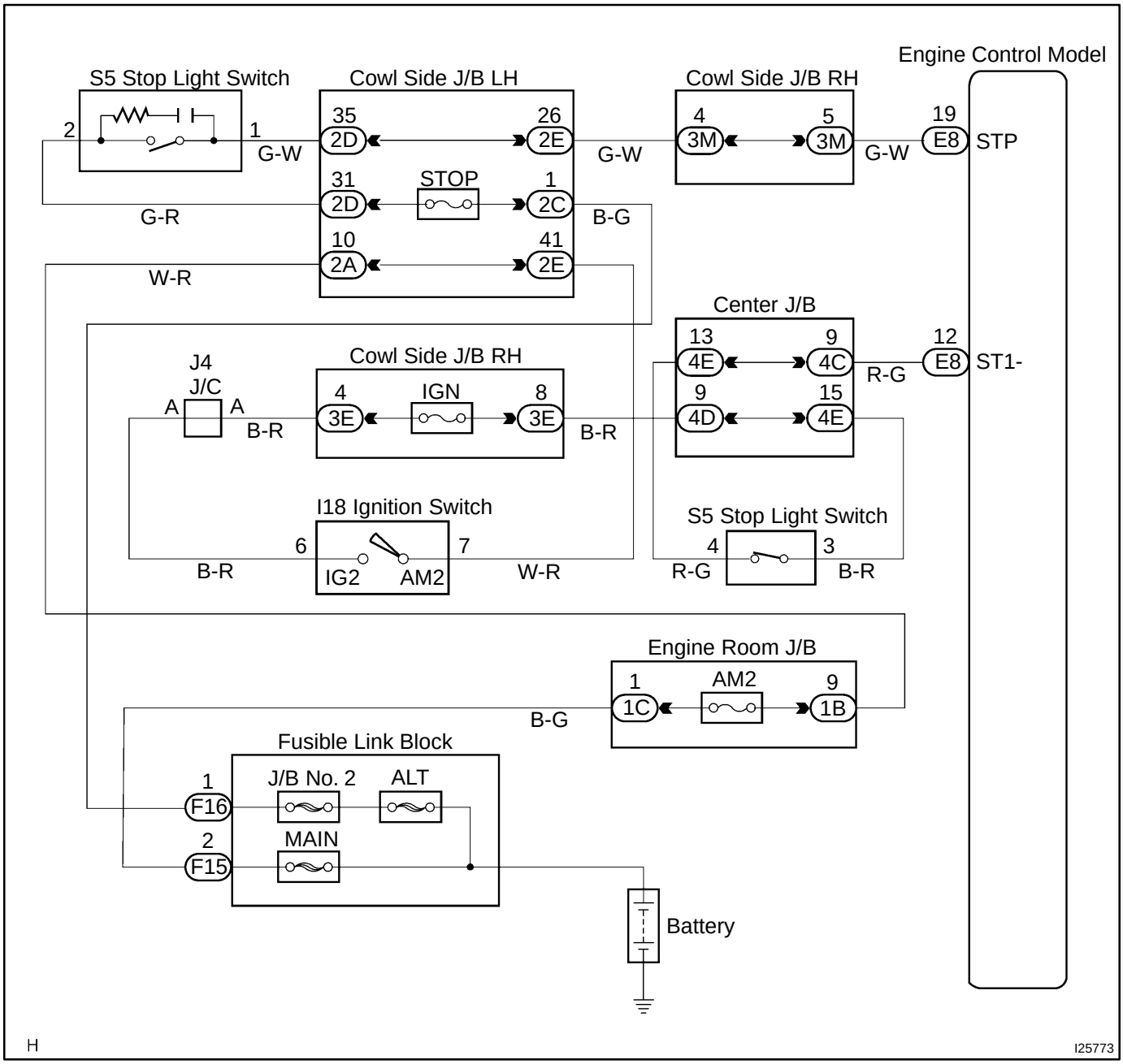
DTC	P0571/52	Brake Switch ”A” Circuit

CIRCUIT DESCRIPTION

When the brake pedal is depressed, the stop light switch sends a signal to the ECM. When the ECM receives this signal, it cancels the cruise control.
A fail-safe function is provided so that the cancel functions normally, even if there is a malfunction in the stop light signal circuit.
The cancel condition is that battery positive voltage is supplied to terminal STP.
When the brake is on, battery positive voltage is normally applied through the STOP fuse and stop light switch to terminal STP of the ECM, and the ECM turns the cruise control OFF.
If the harness connected to terminal STP has an open circuit, terminal STP will have battery positive voltage and the cruise control will be turned OFF.

DTC No.	Detection Item	Trouble Area
P0571/52	Stop light switch circuit.	★Stop light switch ★Harness or connector between ECM and stop light switch circuit ★ECM

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:

In case of using the hand-held tester, start the inspection from step 1 and in case of not using the hand-held tester, start from step 2.

1	**Check stop light switch using hand-held tester.**

PREPARATION:

Connect the hand-held tester to the DLC3.

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

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

CHECK:

Select the item ”STOP LIGHT SW” in the DATA LIST and read its valve displayed.

OK:

Brake pedal depressed: ON

Brake pedal released: OFF

OK → **Proceed to next circuit inspection shown in problem symptom table (See page DI-991).**

NG

2	**Check operation of stop light.**

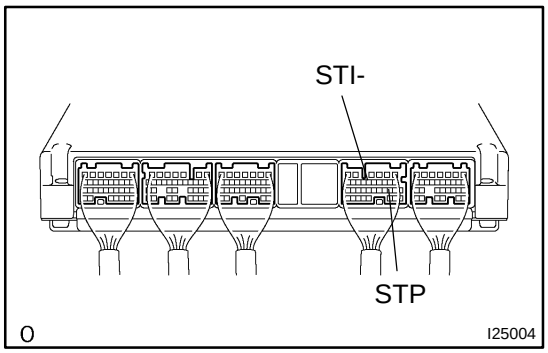
CHECK:

Check that stop light comes on when brake pedal is depressed, and turns off when brake pedal is released.

NG → **Check stop light system (See page BE-49).**

OK

3	Check voltage between terminal STP/STI- of ECM connector and body ground.



PREPARATION:

(a) Remove the ECM with connectors still connected.

(b) Turn ignition switch ON.

CHECK:

Measure voltage between terminal STP/STI- of ECM connector and body ground when the brake pedal is depressed and released.

OK:

Depressed	10 - 14 V
Released	Below 1 V

OK → **Proceed to next circuit inspection shown in problem symptom table (See page DI-991).**

NG

4	Check wire harness and connector between terminal STP of ECM and stop light switch, and terminal STI- of ECM and stop light switch (See page IN-36).

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

OK

Check and replace ECM (See page IN-36).

DIB6B-01

DTC	P0607/54	Control Module Performance

CIRCUIT INSPECTION

This DTC expresses the internal abnormalities of ECM.

DTC No.	Detection Item	Trouble Area
P0607/54	★Cruise control input signal abnormal. ★Stop light switch input signal abnormal.	★ECM

INSPECTION PROCEDURE

Check and replace ECM (See page IN-36).

DIB6D-01

CRUISE MAIN Indicator Light Circuit

CIRCUIT DESCRIPTION

When the cruise control main switch is turned ON, CRUISE MAIN indicator light lights up.

INSPECTION PROCEDURE

1	**Perform Active Test of hand-held tester.**

PREPARATION:

Connect the hand-held tester to the DLC3.

CHECK:

Check the cruise indicator of the combination meter using Active Test.

OK:

Description	Tester display	Check condition
CRUISE Indicator light	CRUISE INDIC	ON/OFF

OK → **Proceed to next circuit inspection shown on problem symptom table (See page DI-991).**

NG

Check and replace combination meter. (See page IN-36).

DI26S-20

CUSTOMER PROBLEM ANALYSIS CHECK

CRUISE CONTROL SYSTEM Check Sheet

Inspector's name: _____

Customer's Name		**Registration No.**	
		Registration Year	
		Frame No.	
Date of Vehicle Brought in	/ /	**Odometer Reading**	**km Mile**

Condition of Problem Occurrence	**Date of Problem Occurrence**	/ /
	Frequency Problem Occurs?	☑ Continuous ☑ Intermittent (Times a day)
	Vehicle Speed when Problem Occurred	**km Mile**

Symptoms	☑ Auto cancel occurs	★Driving condition ☐ City driving ☐ Freeway ☐ Up hill ☐ Down hill ★After cancel occurred, did the driver activate cruise control again? ☐ Yes ☐ No
	☐ Cancel does not occur	☐ With brake ON ☐ Except D position shift ☐ When control SW turns to CANCEL position
	☐ Cruise control malfunction	☐ Slip to acceleration side ☐ Slip to deceleration side ☐ Hunting occurs ☐ O/D cut off does not occur ☐ O/D does not return
	☐ Switch malfunction	☐ SET ☐ ACCEL ☐ COAST ☐ RESUME ☐ CANCEL
	☐ Cruise main indicator light	☐ Remains ON ☐ Does not light up ☐ Blinks

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

DI26U-32

DIAGNOSTIC TROUBLE CODE CHART

If a malfunction code is displayed during the DTC check, check the circuit listed for that code in the table below and proceed to the appropriate page.

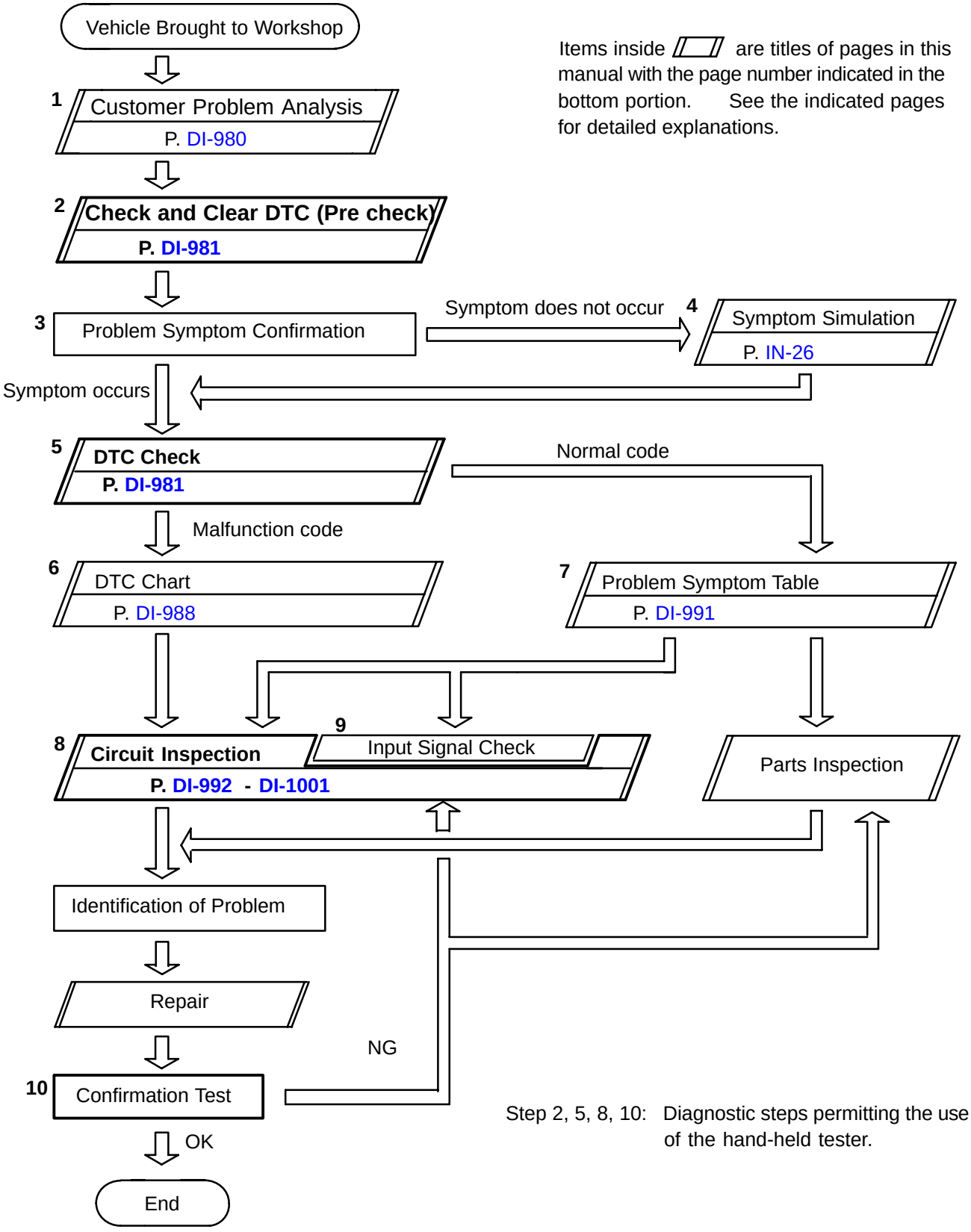
DTC No. (See Page)	Circuit Inspection	Trouble Area
P0500/21 (DI-992)	Vehicle Speed Sensor ”A”	★Combination meter ★Open or short in vehicle speed sensor circuit ★Vehicle speed sensor ★ECM
P0503/23 (DI-992)	Vehicle Speed Sensor ”A” Intermittent/Erratic/High	
P0571/52 (DI-993)	Brake Switch ”A” Circuit	★Short in stop light switch circuit ★Stop light switch ★ECM
P0607/54 (DI-997)	Control Module Performance	★ECM

CRUISE CONTROL SYSTEM

DI26R-35

HOW TO PROCEED WITH TROUBLESHOOTING

Troubleshoot in accordance with the procedure on the following page.

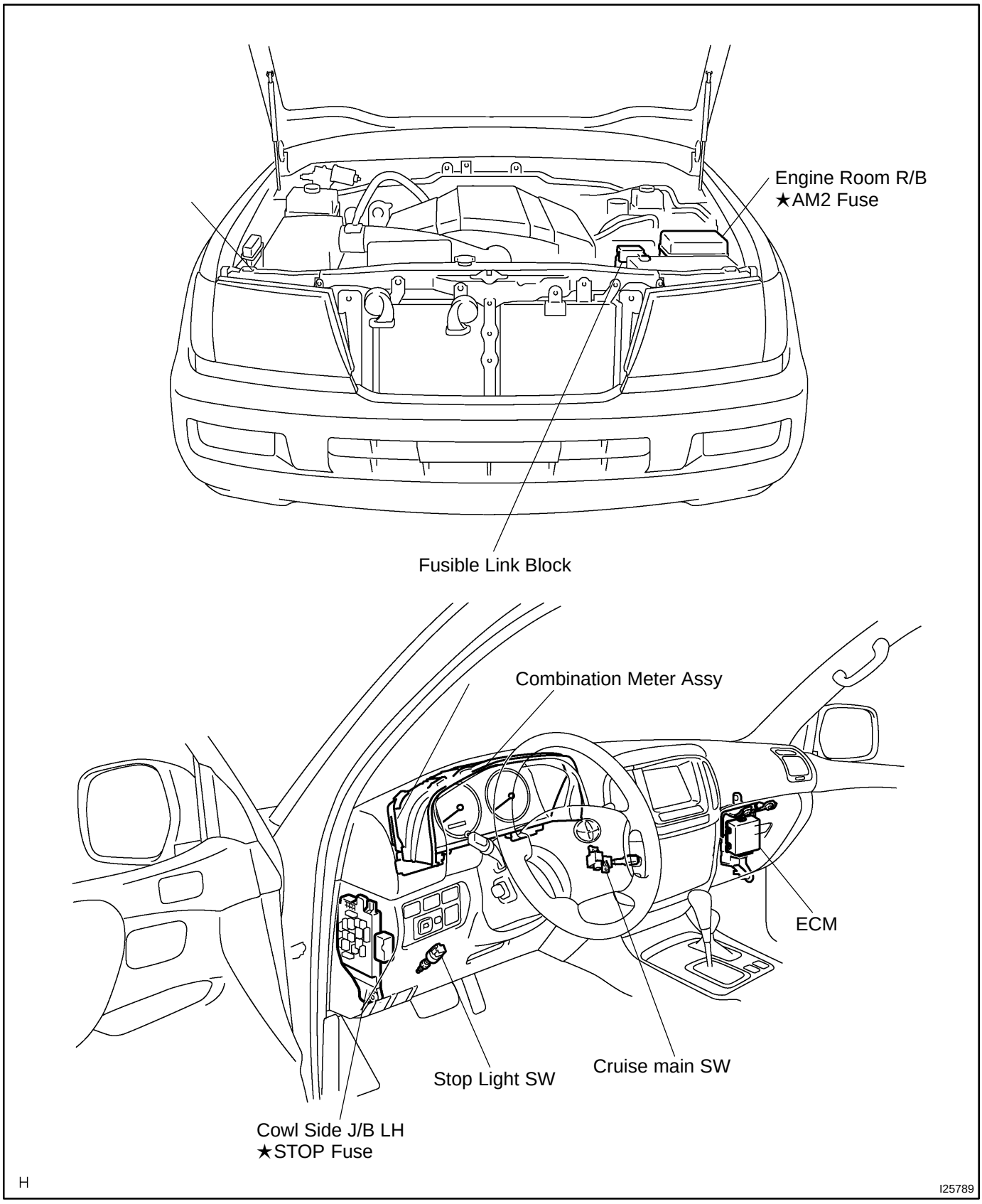


Items inside ▱ are titles of pages in this manual with the page number indicated in the bottom portion. See the indicated pages for detailed explanations.

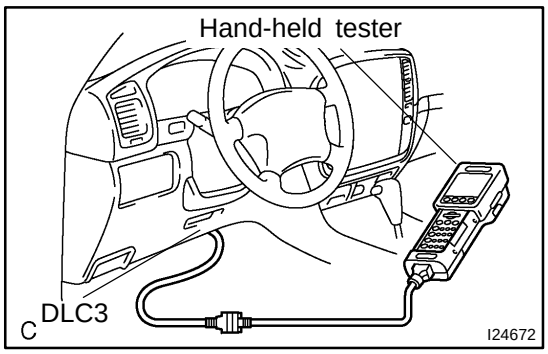
Step 2, 5, 8, 10: Diagnostic steps permitting the use of the hand-held tester.

DI3CG-08

PARTS LOCATION



DIB69-01



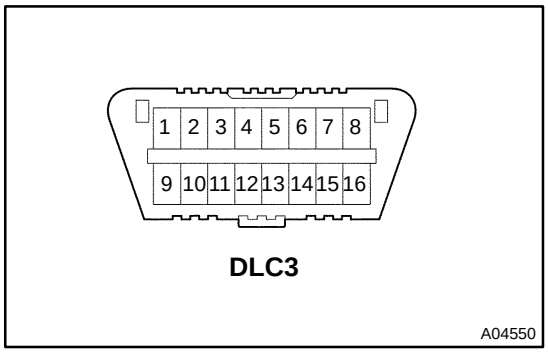
PRE-CHECK

1. DIAGNOSIS SYSTEM

(a) Description

ECM controls the function of cruise control on this vehicle. Data of the cruise control or DTC can be read from DLC3 of the vehicle. When a trouble occurs on cruise control, Check CRUISE MAIN indicator does not light up but DTC inspection is performed.

Therefore when there seems to be a trouble on cruise control, use hand-held tester or SST to check and troubleshoot it.



(b) Check the DLC3.

The vehicle's ECM uses ISO 9141-2 for communication. The terminal arrangement of DLC3 complies with SAE J1962 and matches the ISO 9141-2 format.

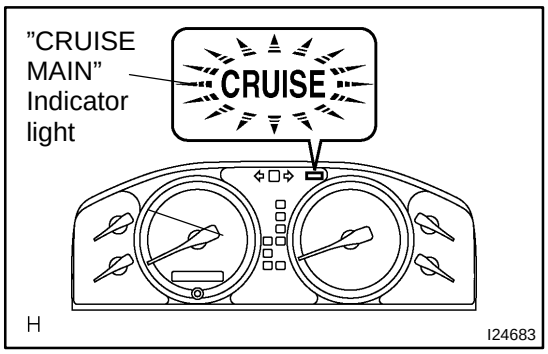
Terminal No.	Connection/Specified Condition	Condition
4	Chassis Ground ↔ Body Ground/1 or less	Always
13	TC ↔ Body Ground/9 - 14 V	Always

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.

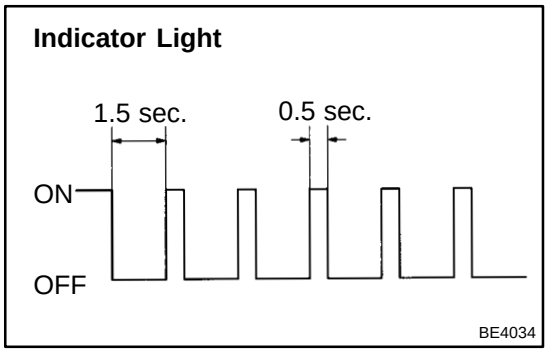
★ If communication is normal when the tool is connected to another vehicle, inspect DLC3 on the original vehicle.

★ 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.



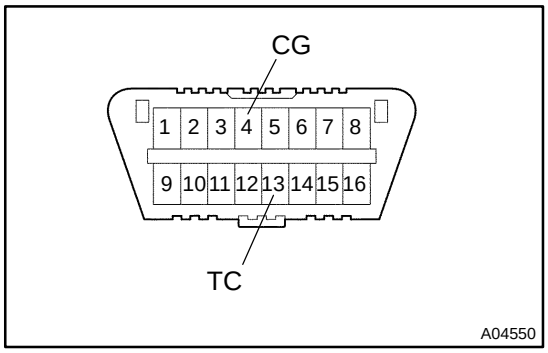
(c) Check the indicator.
(1) Turn the ignition switch to ON.
(2) Check that the CRUISE MAIN indicator light comes on when the cruise control main switch is turned ON, and that the indicator light goes off when the main switch is turned OFF.

HINT:
If the indicator check result is not normal, proceed to trouble-shooting (See page BE-2) for the combination meter section.

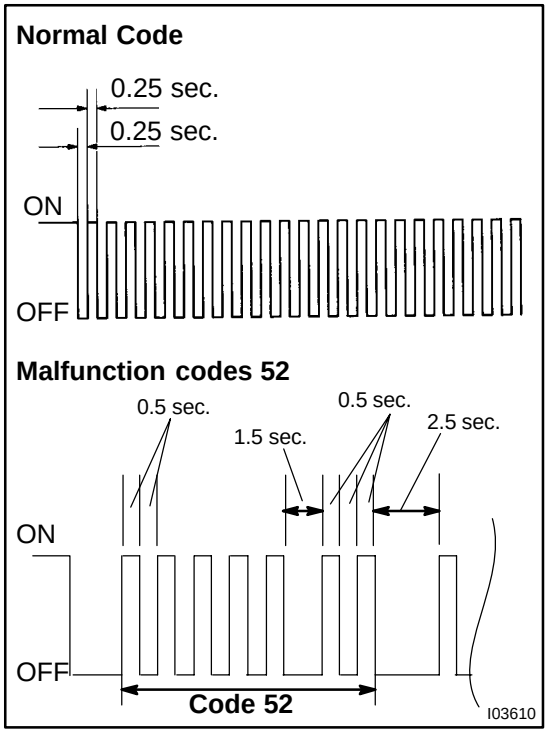


(d) Check the DTC.

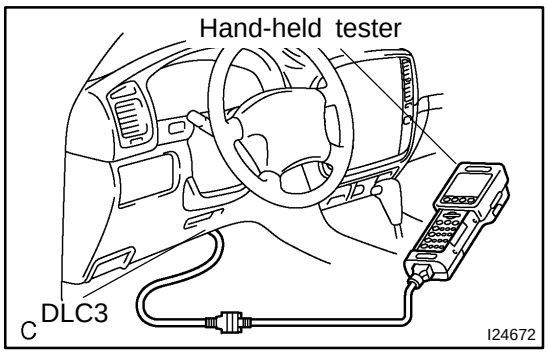
HINT:
If a malfunction occurs in the speed sensor or stop light switch, etc. during cruise control driving, the ECM actuates AUTO CANCEL of the cruise control and turns ON and OFF the CRUISE MAIN indicator light to inform the driver of a malfunction. At the same time, the malfunction is stored in memory as a diagnostic trouble code.



(e) Output DTC using diagnosis check wire.
(1) Turn the ignition switch ON.
(2) Using SST, connect terminals Tc and CG of DLC3.
SST 09843-18040
(3) Read the DTC on the CRUISE MAIN indicator light.



HINT:
★ If the DTC is not output, inspect the diagnosis circuit.
★ As an example, the blinking patterns for codes; normal 52 are shown in the illustration.



2. USING HAND-HELD TESTER

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

(b) Monitor the ECU data by following the prompts on the tester screen.

HINT:

Hand-held tester has a "Snapshot" function which records the monitored data.

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

3. DTC CLEARANCE

(a) The following actions will erase the DTCs and freeze frame data.

(1) Operating the hand-held tester to erase the codes (See the hand-held tester instruction book for operating instructions.).

(2) Disconnecting the battery terminals or EFI fuse.

(b) After completing repairs, the DTC retained in memory can be cleared by removing the EFI fuse for 10 seconds or more with the ignition switch off.

(c) Check that the normal code is displayed after connecting the fuse.

4. DATA LIST

HINT:

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

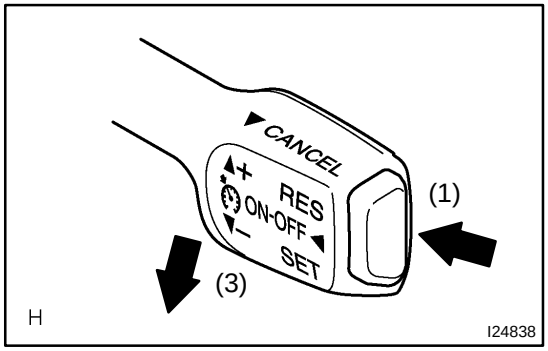
(a) Connect the hand-held tester to the DLC3.

(b) Turn the ignition switch ON.

(c) According to the display on tester, read the "DATA LIST".

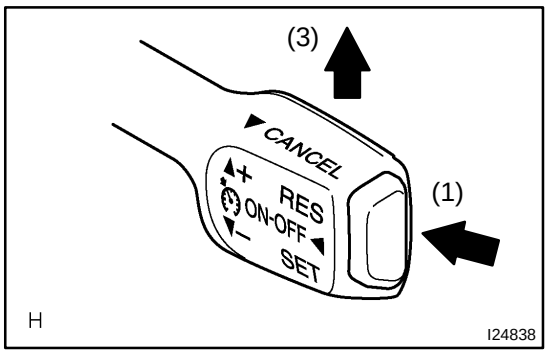
Item	Measurement Item/Display (Range)	Normal Condition	Diagnostic Note
VEHICLE SPD	Vehicle speed/ min.: 0 km/h (0 mph)max.: 255 km/h (158 mph)	Actual vehicle speed	-
MEMORY SPD	Vehicle speed/ min.: 0 km/h (0 mph)max.: 255 km/h (158 mph)	Actual vehicle speed	-
THROTTLE	Throttle operating angle/ min.: 0 km/h (0 mph)max.: 125 km/h (mph)	Actual vehicle speed	-
CRUISE CONTROL	Cruise control	ON: Cruise control is SET OFF: Cruise control is UNSET	-
MAIN SW (MAIN)	Main switch (Main CPU)	ON: Main switch (Main CPU) is SET OFF: Main switch (Main CPU) is UNSET	-

MAIN SW (SUB)	Main switch (Sub CPU)	ON: Main switch (Sub CPU) is SET OFF: Main switch (Sub CPU) is UNSET	-
CCS READY M	Switch ready (Main CPU)	ON: Switch ready (Main CPU) is SET OFF: Switch ready (Main CPU) is UNSET	-
CCS READY S	Switch ready (Sub CPU)	ON: Switch ready (Sub CPU) is SET OFF: Switch ready (Sub CPU) is UNSET	-
CCS INDICATOR M	Switch indicator (Main CPU)	ON: Switch indicator (Main CPU) is ON OFF: Switch indicator (Main CPU) is OFF	-
CCS INDICATOR S	Switch indicator (Sub CPU)	ON: Switch indicator (Sub CPU) is ON OFF: Switch indicator (Sub CPU) is OFF	-
CANCEL SW	CANCEL switch	ON: CANCEL switch is SET OFF: CANCEL switch is UNSET	-
SET/COAST SW	SET/COAST switch	ON: SET/COAST switch is SET OFF: SET/COAST switch is UNSET	-
RES/ACC SW	RES/ACC switch	ON: RES/ACC switch is SET OFF: RES/ACC switch is UNSET	-
STP LIGHT SW2-M	Stop light SW signal (Main CPU)	ON: Brake pedal depressed OFF: Brake pedal released	-
STP LIGHT SW2-S	Stop light SW signal (Sub CPU)	ON: Brake pedal depressed OFF: Brake pedal released	-
STP LIGHT SW1-M	Stop light SW signal (Sub CPU)	ON: Brake pedal depressed OFF: Brake pedal released	-
SHIFT D POS	Shift D position	ON: Shift is D position OFF: Shift is except D position	-

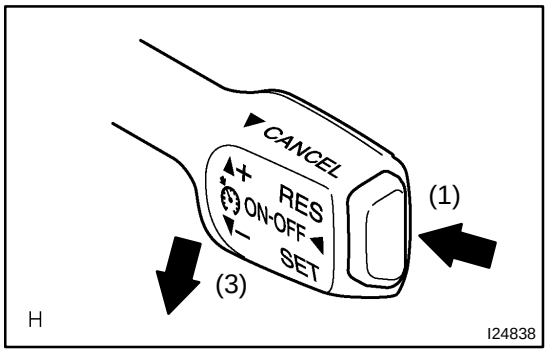


5. PROBLEM SYMPTOM CONFIRMATION (ROAD TEST)

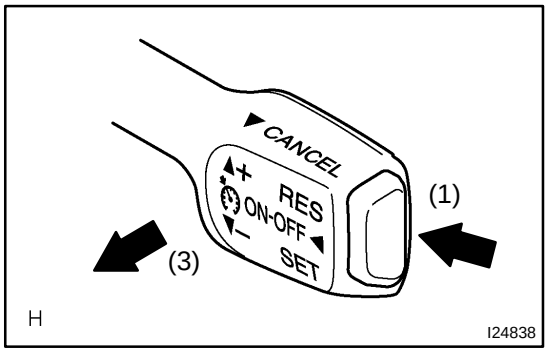
(a) Inspect the SET switch.
  (1) Push the main switch ON.
  (2) Drive at a desired speed [40 km/h (25 mph) or higher].
  (3) Press the control switch to the -/SET.
  (4) After releasing the switch, check that the vehicle cruises at the desired speed.



(b) Inspect the ACCEL switch.
(1) Push the main switch button to ON.
(2) Drive at a desired speed [40 km/h (25 mph) or higher].
(3) Check that the vehicle speed increases while the control switch is pulled up to +/RES, and that the vehicle cruises at the set speed when the switch is released.
(4) Momentarily press the control switch upward to the +/RES and then immediately release it. Check that the vehicle speed increases by about 1.5 km/h (Tap-up function).

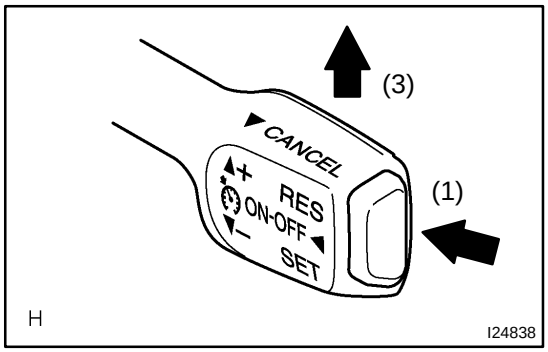


(c) Inspect the COAST switch.
(1) Push the main switch button to ON.
(2) Drive at a desired speed [40 km/h (25 mph) or higher].
(3) Check that the vehicle speed decreases while the control switch is push down to -/SET, and the vehicle cruises at the set speed when the switch is released.
(4) Momentarily press the control switch downward to -/SET , and then immediately release it. Check that the vehicle speed decreases by about 1.5 km/h (Tap-down function).

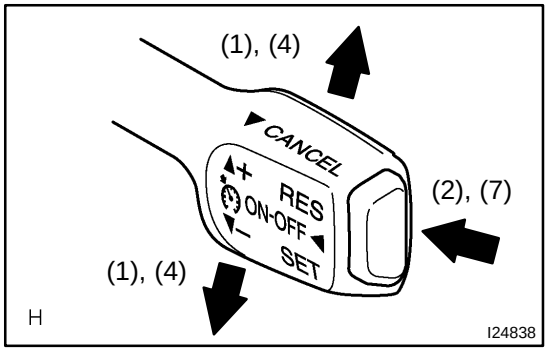


(d) Inspect the CANCEL switch.
(1) Push the main button to ON.
(2) Drive at a desired speed [40 km/h (25 mph) or higher].
(3) When operating one of the followings, check that the cruise control system is cancelled and that the normal driving mode is reset.
★ Depress the brake pedal
★ Shift to except D position
★ Push the main switch button to OFF

★ Pull the cruise control switch to CANCEL



(e) Inspect the RESUME switch.
(1) Push the main switch button to ON.
(2) Drive at a desired speed [40 km/h (25 mph) or higher].
(3) When operating one of the followings, check that the cruise control system is cancelled and that the normal driving mode is reset.
★ Depress the brake pedal
★ Shift to except D position
★ Press the main switch button to OFF
(4) After the control switch is pulled up to +/RES at the driving speed of more than 40 km/h (25 mph), check that the vehicle restores the speed before the cancellation.



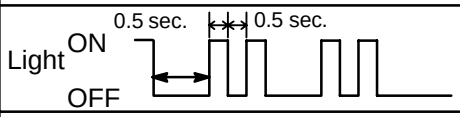
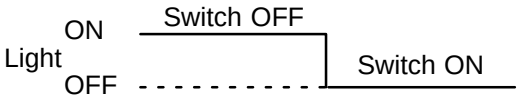
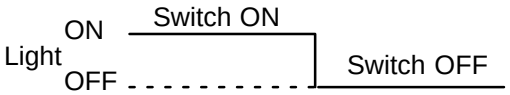
6. INPUT SIGNAL CHECK

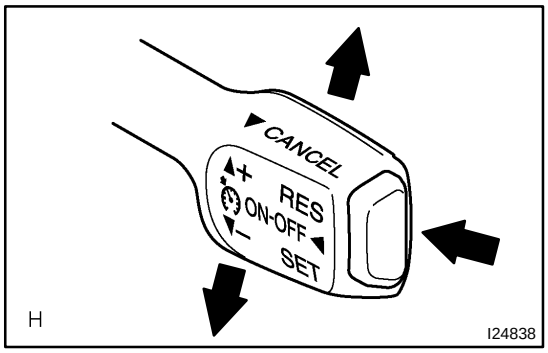
HINT:

★ For check No.1 - No. 3
Turn the ignition switch to ON.
★ For check No. 4
Jack up the vehicle.
Start the engine.
Shift to D position

(a) Check the input signal
(1) Keep the main switch to -/SET or +/RES position and hold it down or hold it up.
(2) Press the switch button to ON.
(3) Check that the CRUISE mainindicator light blinks twice or 3 times repeatedly after 3 seconds.
(4) Turn the -/SET or +/RES switch to OFF.
(5) Operate each switch as listed in the table below.
(6) Read the blinking pattern of the CRUISE main indicator light.
(7) After performing the check, turn the main switch button to OFF.

HINT:
When 2 or more signals are input to the ECM, the lowest numbered code will be displayed first.

No.	Operation Method	CRUISE Main Indicator Light Blinking Pattern	Diagnosis
1	Turn -/SET switch ON		-/SET switch circuit is normal
2	Turn +/RES switch ON		+/RES switch circuit is normal
3	Turn CANCEL switch ON		CANCEL switch circuit is normal
	Depress brake pedal (Turn stop lamp switch assy ON)		Stop light switch circuit is normal
	Shift to except D position (Turn PNP switch OFF)		PNP switch circuit is normal



7. INPUT SIGNAL CHECK
(Using hand-held tester)

(a) Connect the hand-held tester to DLC3.
(b) Check the control switch (MAIN, CANCEL, SET/COAST, RES/ACC).

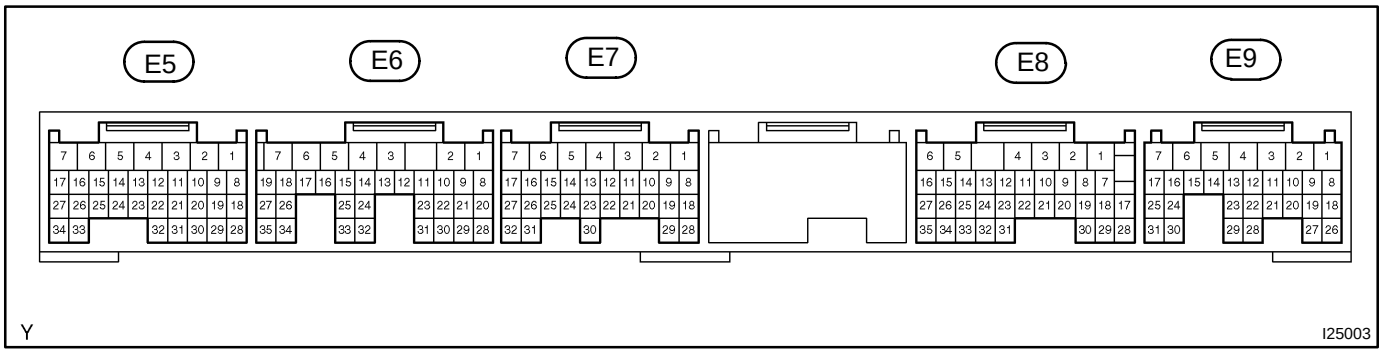
DI26X-37

PROBLEM SYMPTOMS TABLE

Symptom	Suspect Area	See page
SET not occurring or CANCEL occurring. (DTC is Normal)	1. Input Signal Circuit 2. Vehicle Speed Sensor Circuit 3. Stop Light Switch Circuit 4. Park/Neutral Position Switch Circuit 5. ECM	DI-997 DI-992 DI-993 IN-36
SET not occurring or CANCEL occurring. (DTC is not output)	1. ECM	IN-36
Actual vehicle speed deviates above or below the set speed.	1. Input Signal Circuit 2. ECM	DI-997 IN-36
Gear shifting occurs frequently between 3rd and O/D when driving on uphill road. (Hurting)	1. ECM	IN-36
Cruise control not cancelled, even when brake pedal is de-pressed.	1. Stop Light Switch Circuit 2. ECM	DI-993 IN-36
Cruise control not cancelled, even when transmission is shifted to ”N” position.	1. Park/Neutral Position Switch Circuit 2. ECM	 IN-36
Control switch does not operate. (+/SET, +/RES, CANCEL not possible)	1. Cruise Control Switch Circuit 2. ECM	DI-998 IN-36
SET possible at 40 km/h (25 mph) or less, or CANCEL does not operate at 40 km/h (25 mph) or less.	1. Input Signal Circuit 2. ECM	DI-997 IN-36
Poor response is ACCEL and RESUME modes.	1. ECM	IN-36
O/D does not resume, even though the road is not uphill.	1. ECM	IN-36
DTC memory is erased.	1. ECM	IN-36
DTC is not output, or is output when should not be.	1. Diagnosis Circuit 2. ECM	- IN-36
Cruise MAIN indicator light remains ON or falls to light up.	1. Input Signal Circuit 2. ECM	DI-997 IN-36
Cruise MAIN indicator light does not light up.	1. Cruise MAIN indicator Light Circuit	DI-1001

DI3CH-17

TERMINALS OF ECM



Symbols (Terminals No.)	Wiring Color	Condition	Specified condition
STP ↔ E1 (E8-19 ↔ E7-1)	G-W ↔ BR	Depress brake pedal	10 - 16 V
		Release brake pedal	Below 1 V
CCS ↔ E1 (E8-24 ↔ E7-1)	L ↔ BR	Ignition switch ON	10 - 16 V
		Ignition switch ON CANCEL switch hold ON	3.6 - 7.2 V
		Ignition switch ON -/SET switch hold ON	2.1 - 4.9 V
		Ignition switch ON +/RES switch hold ON	0.7 - 2.6 V
		Ignition switch ON Main switch OFF	Below 1 V
		Ignition switch ON Main switch ON	10 - 14 V
ST1- ↔ E1 (E8-12 ↔ E7-1)	R-G ↔ BR	Depress brake pedal	Below 1 V
		Release brake pedal	10 - 14 V