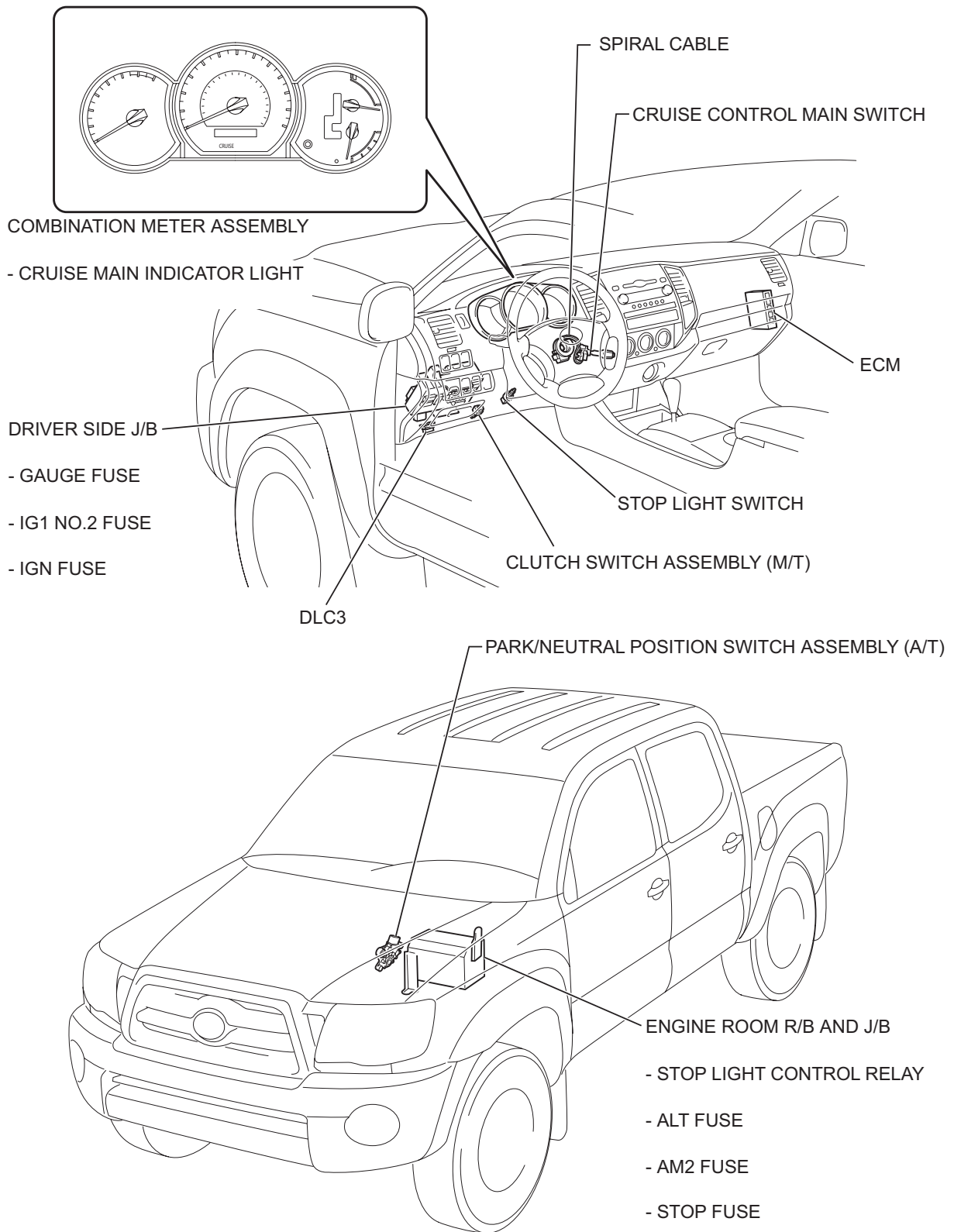
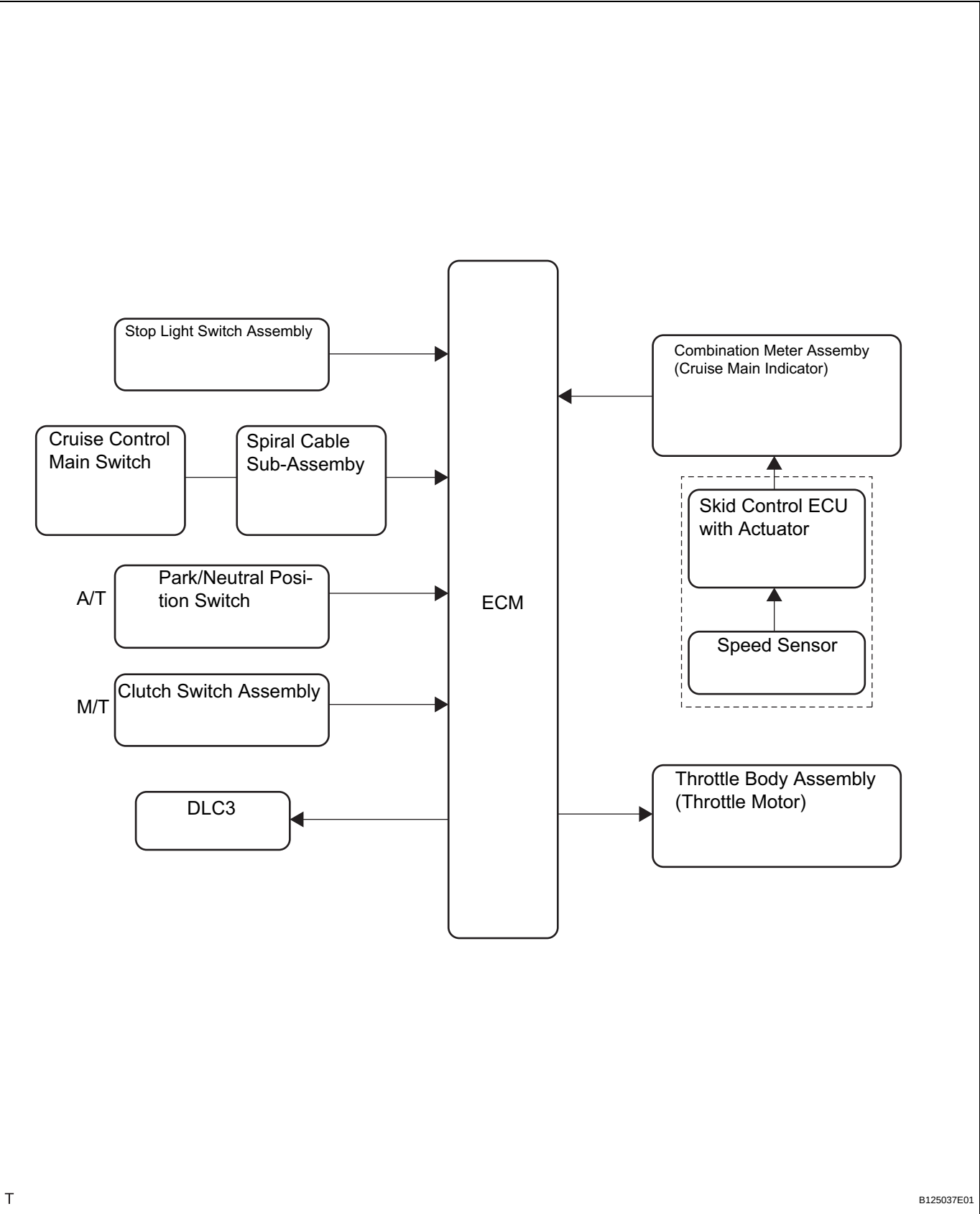


CRUISE CONTROL SYSTEM

PARTS LOCATION



SYSTEM DIAGRAM



SYSTEM DESCRIPTION

1. CRUISE CONTROL SYSTEM

The cruise control system makes it possible to drive at a desired speed without using the accelerator pedal. ECM controls the throttle opening angle based on signals from switches and sensors.

The microcomputer which controls the cruise control system is built into the ECM, and the actuator is the throttle position sensor and motor.

Constant speed control gets ready when the cruise control main switch ON-OFF button is pushed (the CRUISE MAIN indicator light comes on).

Operating the cruise control main switch, the driver can control the following functions.

HINT:

- The cruise control main switch is an automatic return type switch which operates only while it is pushed in one direction and turns off after it is released.
- "SET" and "-", "RES" and "+", "ON" and "OFF" operations are all controlled by using the same switch.

(a) 'SET' function

When the cruise control main switch is pushed down to "-/SET", the ECM stores the set speed and compares it with the actual vehicle speed. If the actual driving speed is greater than the set speed, the ECM sends a signal to the throttle position sensor and motor to close the throttle valve. If lower, it opens the throttle valve. The cruise control operative speed range is between the low and high speed limits.

(b) '+' function

The cruise set speed increases while the cruise control main switch lever is pushed up to "+/RES". The vehicle begins to cruise at the newly set speed when the cruise control main switch lever is released.

(c) Tap-up function

When the cruise control main switch lever is tapped up to "+/RES" (approximately 0.6 seconds), the ECM increases the stored set speed by 1 mph (1.6 km/h) at a time. However, when the difference between the driving and the stored vehicle speeds is more than 3.1 mph (approximately 5 km/h), the stored vehicle speed will not change.

(d) '-' function

The cruise set speed decreases while the cruise control main switch lever is pushed down to "-/SET". The vehicle begins to cruise at the newly set speed when the cruise control main switch lever is released.

- (e) Tap-down function
When the cruise control main switch lever is tapped down to "-/SET" (approximately 0.6 seconds), the ECM decreases the stored set speed by 1 mph (1.6 km/h) at a time. However, when the difference between the driving and the stored vehicle speeds is more than 3.1 mph (approximately 5 km/h), the vehicle speed, when the cruise control main switch lever is released from "-/SET", will be stored and constant speed control is maintained.
- (f) Low speed limit
The lowest possible limit of the speed setting range is approximately 25 mph (40 km/h). The cruise control system cannot be set when the vehicle speed is below the speed limit. Cruise control operation is automatically canceled when the vehicle speed decreases to below the low speed limit while the cruise control is in operation.
- (g) High speed limit
The highest possible limit of the speed setting range is approximately 125 mph (200 km/h). The cruise control system cannot be set when the vehicle speed is over the high speed limit. The speed cannot be increased using "+/RES" with the cruise control main switch assembly to beyond the high speed limit.
- (h) 'RES' function
If the cruise control operation was canceled under the manual cancel condition (other than by turning cruise control main switch ON-OFF button off), and if the driving speed is within the limit range, pushing the cruise control main switch to "+/RES" restores the vehicle speed stored at the time of cancellation, and maintains constant speed control. Even when cruise control is canceled automatically due to the vehicle speed decreasing below the low speed limit, cruise control can be resumed when the vehicle speed returns to over the low speed limit, since the stored vehicle speed remains in the memory.
- (i) MANUAL CANCEL function
The ECM cancels the cruise control while driving under the following conditions:
- The cruise control main switch is pulled to "CANCEL".
 - The brake pedal is depressed.
 - The clutch pedal is depressed (M/T ONLY).
 - The cruise control main switch ON-OFF button is pushed off.

- The D position circuit in the neutral start switch is turned from ON to OFF. Models with the 1GR-FE engine (5AT): Shift the gear from the D or 4th position to any of the N, 3rd, 2nd and 1st positions. Models with the 2TR-FE engine (4AT): Shift the gear from the D or 3rd position to any of the N, 2nd and 1st positions.
- (j) AUTO CANCEL function
- (1) When any of the following malfunctions occurs, the ECM clears the set vehicle speed and deactivates the cruise control.
In this case, the power indicator continues blinking until the cruise control main switch is turned OFF and the ECM allows the cruise control to be reactivated when the main switch is next turned ON again.
- Open or short malfunctions in the stop light switch.
 - Abnormalities in the vehicle speed signal.
 - Malfunctions in the throttle body.
- (2) When any of the following malfunctions occurs, the ECM clears the set vehicle speed and deactivates the cruise control.
In this case, the power indicator continues blinking until the cruise control main switch is turned OFF and the ECM allows the cruise control to be reactivated when the ignition switch is next turned ON again.
- Malfunctions in the stop light switch input circuit.
 - Malfunctions in the cancel circuit.
- (3) When the vehicle is in one of the following conditions, the ECM deactivates the cruise control (the cruise control can be reset).
- Actual vehicle speed is below the lower vehicle speed limit (the set vehicle speed is retained).
 - Actual vehicle speed decreases by 10 mph (16 km/h) from the set vehicle speed (the set vehicle speed is cleared).

HOW TO PROCEED WITH TROUBLESHOOTING

HINT:
*: Use the intelligent tester.

1

VEHICLE BROUGHT TO WORKSHOP

NEXT

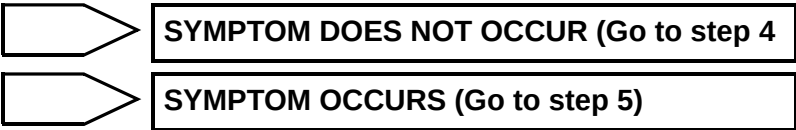
2

CUSTOMER PROBLEM ANALYSIS

NEXT

3

PROBLEM SYMPTOM CONFIRMATION



4

SYMPTOM SIMULATION

NEXT

5

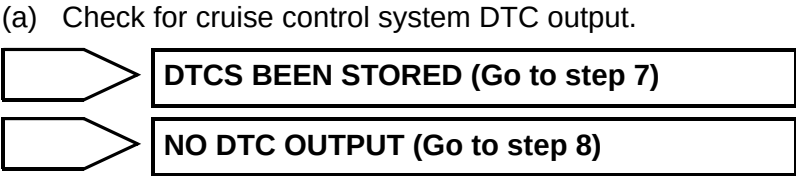
CHECK CAN COMMUNICATION SYSTEM

(a) Check the battery voltage.
Standard Voltage:
11 to 14 V

NEXT

6

DTC CHECK*



7

DTC CHART

NEXT

8 PROBLEM SYMPTOM TABLE

NEXT

9 CIRCUIT INSPECTION*

NEXT

10 TERMINALS OF ECU

NEXT

11 IDENTIFICATION OF PROBLEM

NEXT

12 REPAIR OR REPLACE

NEXT

13 CONFIRMATION TEST*

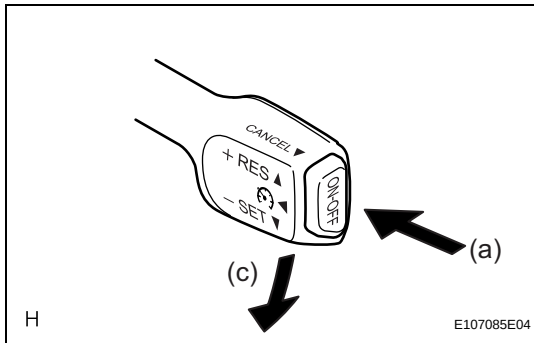
NEXT

END

ROAD TEST

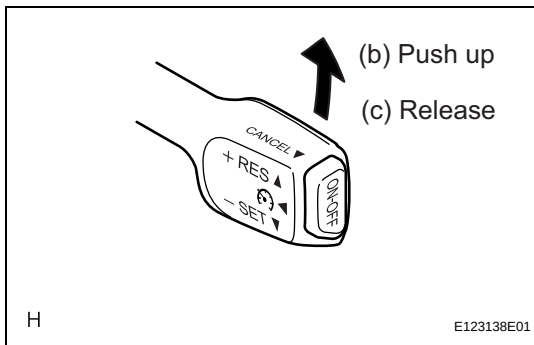
HINT:

'SET' and '-', 'RES' and '+', 'ON-OFF' functions share the same switch. Operate the cruise control main switch according to the directions indicated on the switch.



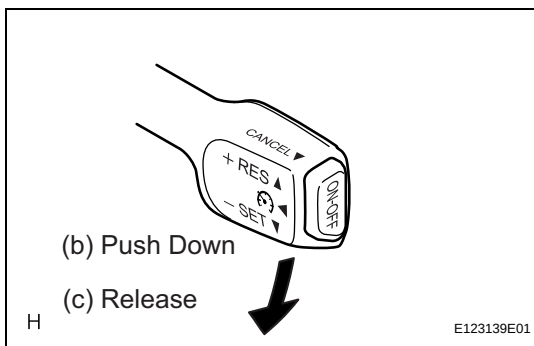
1. INSPECT 'SET' FUNCTION

- Push the ON-OFF button on.
- Drive the vehicle at a desired speed 25 mph (40 km/h) or higher.
- Push down the control switch lever to "-/SET" to set the cruising speed.
- After releasing the lever, check that the vehicle cruises at the set speed.



2. INSPECT '+' FUNCTION

- Set a desired speed as in step 1.
- Check that the vehicle speed increases while the control switch lever is pushed up to "+/RES".
- Check that the vehicle cruises at the newly set speed when the switch is released.
- Momentarily (approximately 0.6 seconds) push up the control switch lever to the "+/RES", and then release it. Check that the vehicle speed increases by approximately 1 mph (1.6 km/h) with each lever operation (Tap-up function).



3. INSPECT '-' FUNCTION

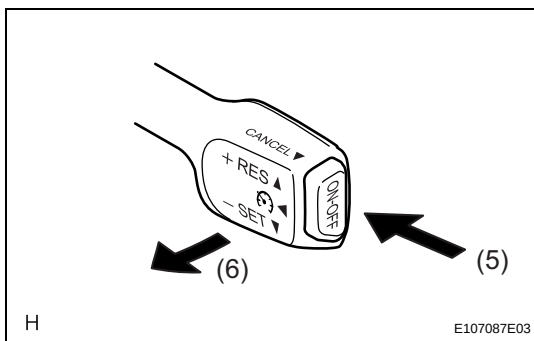
- Set a desired speed as in step 1.
- Check that the vehicle speed decreases while the control switch lever is pushed down to "-/SET".
- Check that the vehicle cruises at the newly set speed when the switch is released.
- Momentarily (approximately 0.6 seconds) push down the control switch to "-/SET", and then release it. Check that the vehicle speed decreases by approximately 1 mph (1.6 km/h) with each lever operation (Tap-down function).

HINT:

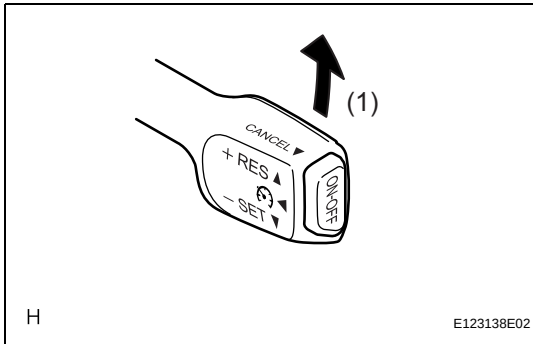
- The cruise control system automatically cancels when the vehicle speed decreases to below 25 mph (40 km/h).

4. INSPECT 'CANCEL' FUNCTION

- Set a desired speed as in step 1.
- Check that the system cancels cruise control when one of the following is conducted:
 - Depressing the brake pedal
 - Depressing the clutch pedal (M/T)
 - Shifting into any position except D and 3 while driving (A/T: 2TR-FE)
 - Shifting into any position except D and 4 while driving (A/T: 1GR-FE)



- (5) Pushing the cruise control main switch ON-OFF button off
- (6) Pulling the cruise control switch lever to "CANCEL"



5. INSPECT ' RES (RESUME)' FUNCTION

- (a) Set a desired speed as in step 1.
 - (1) After cancelling the cruise control according to any of the above operations except (5), push up the switch lever to "+/RES" at a speed of 25 mph (40 km/h) or higher.
 - (2) Check that the vehicle resumes the previously set speed.

HINT:

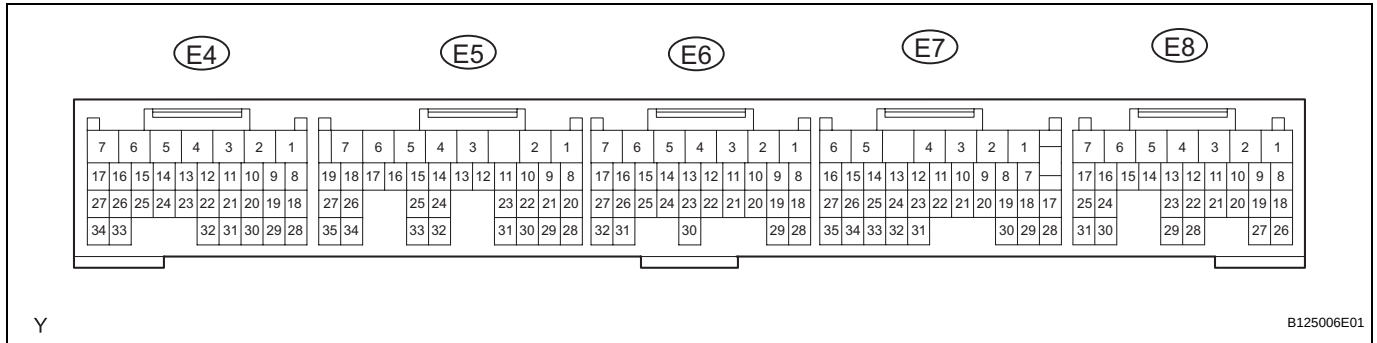
The 'RES' function does not resume the set speed when the vehicle speed decreases to below 25 mph (40 km/h).

PROBLEM SYMPTOMS TABLE

Symptom	Suspected area	See page
Main switch cannot be turned ON (Indicator light on the combination meter does not come on)	1. Cruise control switch circuit	CC-24
	2. CRUISE MAIN indicator light circuit	CC-28
	3. ECM (1GR-FE)	ES-428
	3. ECM (2TR-FE)	ES-467
Desired speed cannot be set (Indicator light on the combination meter comes on when the main switch is turned ON, but goes off when operating the "SET" function)	1. Cruise control switch circuit	CC-24
	2. ECM (1GR-FE)	ES-428
	2. ECM (2TR-FE)	ES-467
Desired speed cannot be set (Indicator light on the combination comes on when the main switch is turned ON and it remains ON, while operating the "SET" function)	1. Cruise control switch circuit	CC-24
	2. Stop light switch circuit	CC-16
	3. Clutch switch circuit (M/T)	CC-21
	3. Park/neutral position switch circuit (A/T: 1GR-FE)	AT-43
	3. Park/neutral position switch circuit (A/T: 2TR-FE)	AT-34
	4. Combination meter system	ME-20
	5. ECM (1GR-FE)	ES-428
	5. ECM (2TR-FE)	ES-467
While cruise control driving, the set speed is canceled (Indicator light remains ON)	1. Cruise control switch circuit	CC-24
	2. Vehicle speed sensor circuit (1GR-FE)	ES-238
	2. Vehicle speed sensor circuit (2TR-FE)	ES-243
	3. Stop light switch circuit	CC-16
	4. CRUISE MAIN indicator light circuit	CC-28
	5. Clutch switch circuit (M/T)	CC-21
	5. Park/neutral position switch circuit (A/T: 1GR-FE)	AT-43
	5. Park/neutral position switch circuit (A/T: 2TG-FE)	AT-34
	6. ECM (1GR-FE)	ES-428
	6. ECM (2TR-FE)	ES-467
Hunting occurs (Speed is not constant)	1. Vehicle speed sensor circuit (1GR-FE)	ES-238
	1. Vehicle speed sensor circuit (2TR-FE)	ES-243
	2. ECM (1GR-FE)	ES-428
	2. ECM (2TR-FE)	ES-467
Speed setting cannot be canceled ("CANCEL" function failure only)	1. Cruise control switch circuit	CC-24
	2. ECM (1GR-FE)	ES-428
	2. ECM (2TR-FE)	ES-467
DTC is not output, or is output when should not be	1. DLC3 circuit	CC-32
	2. ECM (1GR-FE)	ES-428
	3. ECM (2TR-FE)	ES-467
CRUISE MAIN indicator light does not come on	1. Cruise control switch circuit	CC-24
	2. CRUISE MAIN indicator light circuit	CC-28
	3. ECM (1GR-FE)	ES-428
	3. ECM (2TR-FE)	ES-428
	4. Combination meter assembly	ME-20

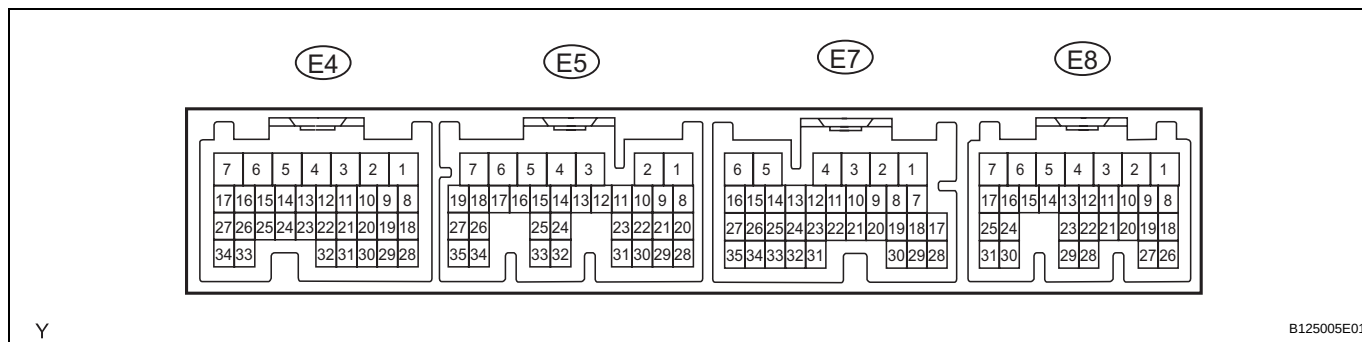
TERMINALS OF ECU

1. ECM (1GR-FE)



Symbols (Terminals No.)	Wiring Color	Terminal Description	Condition	Specified Condition
TC (E8-23) - E1 (E6-1)	P-B - BR	DTC output signal	Ignition switch ON	10 to 14 V
TC (E8-23) - E1 (E6-1)	P-B - BR	DTC output signal	Ignition switch ON Connect terminals TC and CG of DLC3	Below 2 V
ST1 (E8-16) - E1 (E6-1)	V-W - BR	Cruise cancel input signal	Ignition switch ON Depress brake pedal	Below 1 V
ST1 (E8-16) - E1 (E6-1)	V-W - BR	Cruise cancel input signal	Ignition switch ON Release brake pedal	10 to 14 V
STP (E8-15) - E1 (E6-1)	L - BR	Stop light switch input signal	Depress brake pedal	10 to 14 V
STP (E8-15) - E1 (E6-1)	L - BR	Stop light switch input signal	release brake pedal	Below 1 V
CSS (E7-2) - E1 (E6-1)	BR-W - BR	Cruise control main switch output signal	Ignition switch ON	10 to 14 V
CSS (E7-2) - E1 (E6-1)	BR-W - BR	Cruise control main switch output signal	Ignition switch ON CANCEL switch hold ON	6.6 to 10.1 V
CSS (E7-2) - E1 (E6-1)	BR-W - BR	Cruise control main switch output signal	Ignition switch ON -/SET switch hold ON	4.5 to 7.1 V
CSS (E7-2) - E1 (E6-1)	BR-W - BR	Cruise control main switch output signal	Ignition switch ON +/RES switch hold ON	2.3 to 4 V
CSS (E7-2) - E1 (E6-1)	BR-W - BR	Cruise control main switch output signal	Ignition switch ON MAIN switch hold ON	Below 1 V
E1 (E6-1) - Body ground	BR - Body ground	Ground	Always	Below 1 V
PI (E7-18) - E1 (E6-1)	LG - BR	Cruise main indicator light input signal	Ignition switch ON Cruise control main switch hold ON	0 to 3 V
PI (E7-18) - E1 (E6-1)	LG - BR	Cruise main indicator light input signal	Ignition switch ON Cruise control main switch hold OFF	10 to 14 V
D (E7-21) - E1 (E6-1)	L-B - BR	Clutch switch input signal	Ignition switch ON Depress clutch pedal	Below 1 V
D (E7-21) - E1 (E6-1)	L-B - BR	Clutch switch input signal	Ignition switch ON Release clutch pedal	10 to 14 V

2. ECM (2TR-FE)



Symbols (Terminals No.)	Wiring Color	Terminal Description	Condition	Specified Condition
TC (E7-17) - E1 (E4-3)	P-B - BR	DTC output signal	Ignition switch ON	10 to 14 V
TC (E7-17) - E1 (E4-3)	P-B - BR	DTC output signal	Ignition switch ON Connect terminals TC and CG of DLC3	Below 2 V
ST1 (E8-16) - E1 (E4-3)	V-W - BR	Cruise cancel input signal	Ignition switch ON Depress brake pedal	Below 1 V
ST1 (E8-16) - E1 (E4-3)	V-W - BR	Cruise cancel input signal	Ignition switch ON Release brake pedal	10 to 14 V
STP (E7-4) - E1 (E4-3)	L - BR	Stop light switch input signal	Depress brake pedal	10 to 14 V
STP (E7-4) - E1 (E4-3)	L - BR	Stop light switch input signal	release brake pedal	Below 1 V
CSS (E7-31) - E1 (E4-3)	BR-W - BR	Cruise control main switch output signal	Ignition switch ON	10 to 14 V
CSS (E7-31) - E1 (E4-3)	BR-W - BR	Cruise control main switch output signal	Ignition switch ON CANCEL switch hold ON	6.6 to 10.1 V
CSS (E7-31) - E1 (E4-3)	BR-W - BR	Cruise control main switch output signal	Ignition switch ON -/SET switch hold ON	4.5 to 7.1 V
CSS (E7-31) - E1 (E4-3)	BR-W - BR	Cruise control main switch output signal	Ignition switch ON +/RES switch hold ON	2.3 to 4 V
CSS (E7-31) - E1 (E4-3)	BR-W - BR	Cruise control main switch output signal	Ignition switch ON MAIN switch hold ON	Below 1 V
E1 (E4-3) - Body ground	BR - Body ground	Ground	Always	Below 1 V
PI (E7-18) - E1 (E4-3)	LG - BR	Cruise main indicator light input signal	Ignition switch ON Cruise control main switch hold ON	0 to 3 V
PI (E7-18) - E1 (E4-3)	LG - BR	Cruise main indicator light input signal	Ignition switch ON Cruise control main switch hold OFF	10 to 14 V
D (E7-21) - E1 (E4-3)	L-B - BR	Clutch switch input signal	Ignition switch ON Depress clutch pedal	Below 1 V
D (E7-21) - E1 (E4-3)	L-B - BR	Clutch switch input signal	Ignition switch ON Release clutch pedal	10 to 14 V

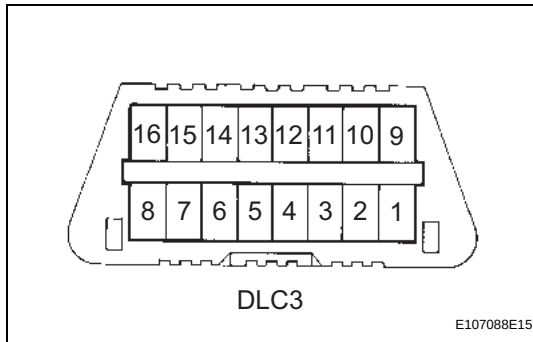
DIAGNOSIS SYSTEM

1. DESCRIPTION

The ECM stores DTCs (Diagnostic Trouble Codes) when trouble occurs on the vehicle. The diagnosis system allows reading of DTCs stored in the ECM when a intelligent tester is connected to the DLC3 (Data Link Connector 3). If the CRUISE MAIN indicator light does not come on after a DTC check, it means that a malfunction has occurred in the cruise control system. Use a intelligent tester or SST to check for DTCs.

2. CHECK DLC3

- (a) The ECM uses ISO 9141-2 for data communication. The terminal arrangement of the DLC3 complies with SAE J1962 and matches the ISO 9141-2 format.

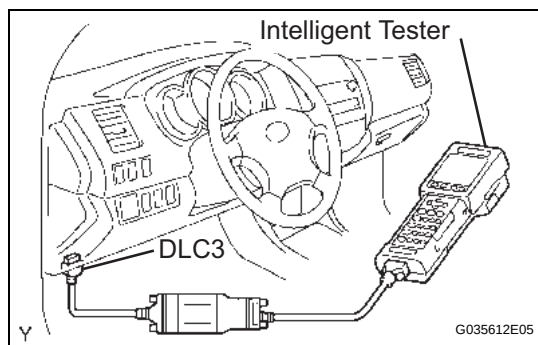
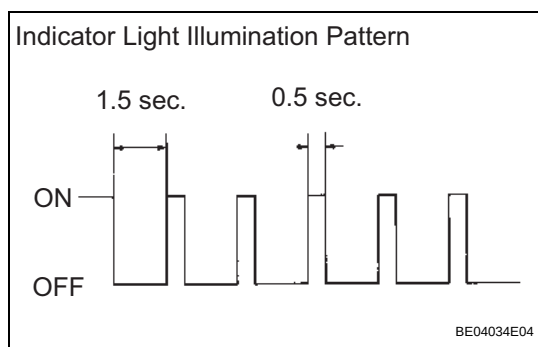
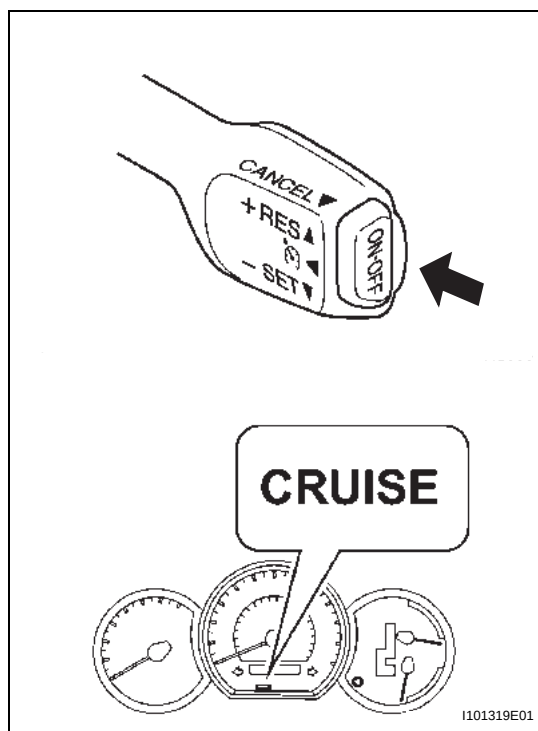


Terminal No.	Tester connection	Condition	Specification
4	Chassis ground - Body Ground	Always	Below 1 Ω
16	Battery positive - Body Ground	Always	9 to 14 V

HINT:

If the intelligent tester display shows "UNABLE TO CONNECT TO VEHICLE" after connecting the tester to the DLC3 and turning the ignition to the ON position, there is a problem in either the vehicle or the tester itself.

- If communication is normal when connecting the tester to another vehicle, inspect the DLC3 on the original vehicle.
- If communication is still not possible when connecting the tester to another vehicle, it suggests the problem exists in the tester. In this case, consult the Service Department listed in the tester's instruction manual.



3. CHECK INDICATOR

- (a) Turn the ignition switch to the ON position.

- (b) Check that the CRUISE MAIN indicator light comes on when the cruise control main switch ON-OFF button is pushed on, and that the indicator light goes off when the ON-OFF button is pushed off.

HINT:

If there is a problem with the ON/OFF illumination of the indicator light, inspect the cruise main indicator light circuit (See page [CC-28](#)).

HINT:

If a malfunction occurs in the vehicle speed sensor, stop light switch assembly or other related parts while cruise control driving, the ECM actuates AUTO CANCEL of the cruise control. Then the CRUISE MAIN indicator light starts to blink, to inform the driver of the malfunction. At the same time, data of the malfunction is stored as a diagnostic trouble code (DTC).

DTC CHECK / CLEAR

1. DTC CHECK/CLEAR

- (a) Check DTCs using the intelligent tester.
 - (1) Turn the ignition switch off.
 - (2) Connect the intelligent tester to the DLC3.
 - (3) Turn the ignition switch to the ON position.
 - (4) Read DTCs on the tester screen.
- (b) Clear the DTCs using the intelligent tester.
 - (1) Turn the ignition switch off.
 - (2) Turn the ignition switch to the ON position.
 - (3) Clear the DTCs by following the prompts on the tester screen.

HINT:

- The intelligent tester has a "Snapshot" function which records the monitored data.

- Refer to the intelligent tester operator's manual for further details.

DATA LIST / ACTIVE TEST

1. READ DATA LIST

- (a) While the intelligent tester is connected to the DLC3 with the ignition switch in the ON position, the CRUISE CONTROL data list can be displayed. Follow the prompts on the tester screen to access the data list.

ECM (Cruise control):

Item	Measurement Item / Display (Range)	Normal Condition	Diagnostic Note
VEHICLE SPD	Vehicle speed / min.: 0 mph(0 km/h), max.: 158 mph (255 km/h)	Actual vehicle speed	-
MEMORY SPD	Cruise control memorized speed / min.: 22.5 mph (36 km/h), max.: 125 mph(200 km/h)	Actual stored vehicle speed	-
CRUISE CONTROL	Cruise control system active condition / ON or OFF	ON: Cruise control activated OFF: Cruise control inactivated	-
MAIN SW (MAIN)	Main switch signal (Main CPU) / ON or OFF	ON: Main switch ON (Pushed on) OFF: Main switch OFF (Pushed off)	"3"
MAIN SW (SUB)	Main switch signal (Sub CPU) / ON or OFF	ON: Main switch ON (Pushed on) OFF: Main switch OFF (Pushed off)	"3"
CCS READY M	Cruise control system standby condition (Main CPU) / ON or OFF	ON/OFF: Change ON/OFF each main switch is pushed in	"1"
CCS READY S	Cruise control system standby condition (Sub CPU) / ON or OFF	ON/OFF: Change ON/OFF each main switch is pushed in	"1"
CCS INDICATOR M	Cruise indicator signal (Main CPU) / ON or OFF	ON: "CCS READY" ON OFF: "CCS READY" OFF	"2"
CANCEL SW	CANCEL switch signal / ON or OFF	ON: CANCEL switch ON OFF: CANCEL switch OFF	-
-/SET SW	-/SET switch signal / ON or OFF	ON: SET / COAST switch ON OFF: SET / COAST switch OFF	-
+ /SET SW	+ /SET switch signal / ON or OFF	ON: RES / ACC switch ON OFF: RES / ACC switch OFF	-
STP LIGHT SW M	Stop light switch signal (Main CPU) / ON or OFF	ON: Brake pedal depressed OFF: Brake pedal released	-
STP LIGHT SW S2	Stop light switch-2 signal (Sub CPU) / ON or OFF	ON: Brake pedal depressed OFF: Brake pedal released	-
STP LIGHT SW S1	Stop light switch-1 signal (Sub CPU) / ON or OFF	ON: Brake pedal depressed OFF: Brake pedal released	-
SHIFT D POS	PNP switch signal (D position) / ON or OFF	ON: Shift lever on D OFF: Shift lever not on D	-

HINT:

- "3" is OK but "1" is NG → ECM failure
- "1" is OK but "2" is NG → DTC output or ECM failure
- "3" is OK but CRUISE indicator does not come on → CRUISE main indicator, wire harness or ECM failure

DIAGNOSTIC TROUBLE CODE CHART

If a trouble code is indicated while checking DTCs, inspect the circuit listed for that code in the table below, and proceed to the applicable page.

DTC No.	Detection Item	Trouble Area	See page
P0500	Vehicle Speed Sensor Circuit Malfunction	Combination meter assembly Vehicle speed sensor Vehicle speed sensor circuit ECM	CC-15
P0503	Vehicle Speed Sensor Circuit Malfunction	Combination meter assembly Vehicle speed sensor Vehicle speed sensor circuit ECM	CC-15
P0571	Stop Light Switch Circuit Malfunction	Stop light switch assembly Stop light switch assembly circuit ECM	CC-16
P0607	Input Signal Circuit Malfunction	ECM	CC-20

DTC	P0500	Vehicle Speed Sensor Circuit Malfunction
DTC	P0503	Vehicle Speed Sensor Circuit Malfunction

DESCRIPTION1GR-FE: (See page [ES-238](#))2TR-FE: (See page [ES-243](#))

DTC No.	DTC Detection Conditions	Trouble Areas
P0500	This trouble code is output when the vehicle speed signal from the vehicle speed sensor is cut for 0.14 seconds or more while the cruise control is in operation.	• Combination meter assembly • Vehicle speed sensor • Vehicle speed sensor signal circuit • ECM
P0503	Momentary interruption and noise are detected when a rapid change of vehicle speed occurs while the cruise control is in operation.	• Combination meter assembly • Vehicle speed sensor • Vehicle speed sensor signal circuit • ECM

WIRING DIAGRAM1GR-FE: (See page [ES-238](#))2TR-FE: (See page [ES-243](#))1GR-FE: (See page [ES-238](#))2TR-FE: (See page [ES-243](#))

DTC**P0571****Stop Light Switch Circuit Malfunction****DESCRIPTION**

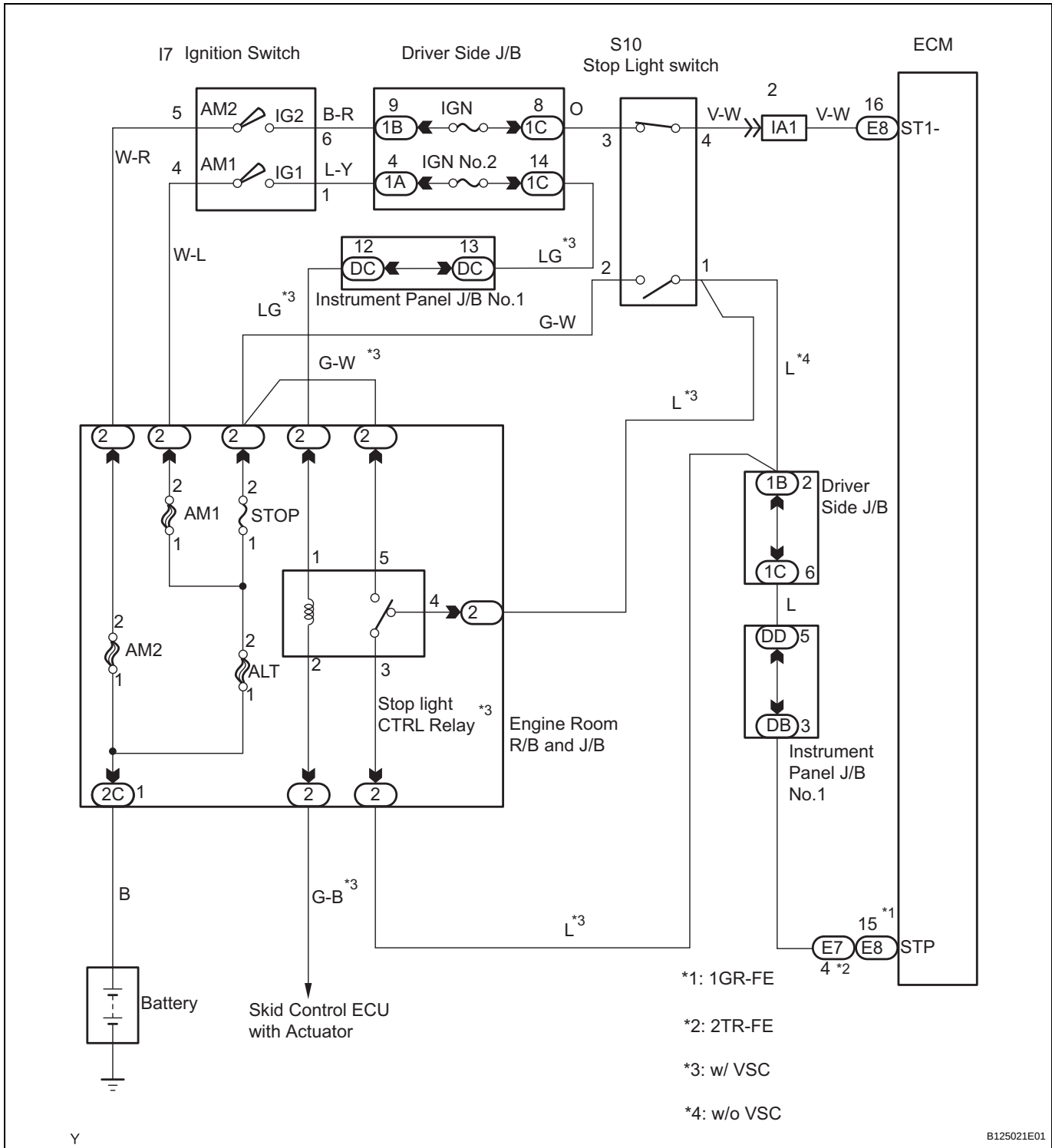
The cruise control system cancels cruising when the ECM detects that the brake pedal is depressed while cruise control driving. The stop light switch assembly sends signals to the ECM according to the brake pedal conditions. When the brake pedal is free, terminal ST1- is the positive (+) battery voltage, and terminal STP voltage is below 1 V. While depressing the brake pedal, terminal ST1- is below 1 V, and STP is positive (+) battery voltage. Under braking, the ECM cancels cruise control as one of the manual cancel functions.

The ECM outputs this trouble code when the voltage of terminals ST1- and STP are both below 1 V for 0.5 seconds or more at the same moment.

The fail-safe function operates to enable normal driving even if there is a malfunction in the stop light signal circuit.

DTC No.	DTC Detected Conditions	Trouble Areas
P0571	ECM detects a malfunction of the stop light switch circuit under both of the following conditions. • Voltage of terminal STP is below 1 V for 0.5 seconds or more. • Voltage of terminal ST1- is below 1 V for 0.5 seconds or more.	• Stop light switch assembly • Stop light switch assembly circuit • ECM

WIRING DIAGRAM



B125021E01

1

INSPECT STOP LIGHT SWITCH OPERATION (FOR STOP LIGHT)

- (a) Check that the stop lights come on while the brake pedal is depressed, and go off when the brake pedal is released.

OK

Brake pedal condition	Stop light condition
Depressed	ON
Released	OFF

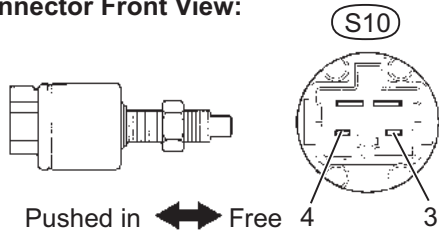
NG

INSPECT STOP LIGHT SWITCH CIRCUIT

OK

2 INSPECT STOP LIGHT SWITCH OPERATION (FOR BACK-UP SIGNAL)

Stop Light Switch
Connector Front View:



I038520E03

- Turn the ignition switch off.
- Disconnect the stop light switch assembly connector.
- Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester connection	Switch condition	Stop light condition
S10-3 - S10-4	Switch pin free (Brake pedal depressed)	10 kΩ or higher
S10-3 - S10-4	Switch pin pushed in (Brake pedal released)	Below 1Ω

- Reconnect the stop light switch assembly connector.

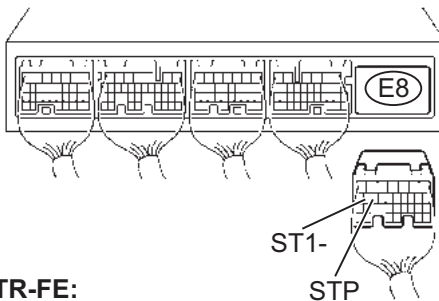
NG

REPLACE STOP LIGHT SWITCH ASSEMBLY

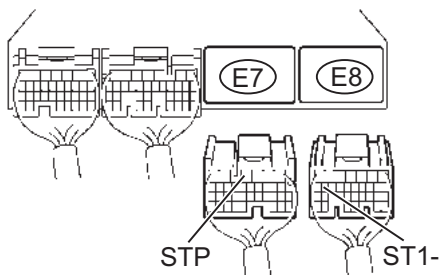
OK

3 INSPECT ECM (STP SIGNAL)

1GR-FE:



2TR-FE:



I101320E01

- Reconnect the stop light switch assembly connector.
- 1GR-FE: Disconnect the E8 ECM connector.
- 2TR-FE: Disconnect the E7 and E8 ECM connectors.
- Turn the ignition switch to the ON position.
- Measure the voltage according to the value(s) in the table below.

Standard Voltage(1GR-FE)

Tester connection	Brake pedal condition	Specification
STP (E8-15) - Body ground	Depressed	10 to 14 V
STP (E8-15) - Body ground	Released	Below 1V

Standard Voltage(2TR-FE)

Tester connection	Brake pedal condition	Specification
STP (E7-4) - Body ground	Depressed	10 to 14 V
STP (E7-4) - Body ground	Released	Below 1V

- Measure the voltage according to the value(s) in the table below.

CC

Standard Voltage(1GR-FE)

Tester connection	Brake pedal condition	Specification
ST1 (E8-16) - Body ground	Depressed	Below 1V
ST1 (E8-16) - Body ground	Released	10 to 14 V

Standard Voltage(2TR-FE)

Tester connection	Brake pedal condition	Specification
ST1 (E8-16) - Body ground	Depressed	Below 1V
STP (E8-16) - Body ground	Released	10 to 14 V

(g) Reconnect the ECM connector.

NG

REPAIR OR REPLACE HARNESS OR CONNECTOR (STOP LIGHT SWITCH ASSEMBLY - ECM)

OK

REPLACE ECM

DTC**P0607****Input Signal Circuit Malfunction****DESCRIPTION**

This DTC indicates the internal abnormalities of the ECM.

DTC No.	DTC Detection condition	Trouble Area
P0607	The ECM has a supervisory CPU and a control ECU inside. When each input STP signal is different for 0.15 seconds or more, this trouble code is output. This trouble code is output after 0.4 seconds has passed from the time the cruise cancel input signal (STP input) is input into the ECM.	ECM

HINT:

When a trouble code is detected, fail-safe continues until the ignition switch is turned off.

1**REPLACE ECM****NEXT****END**

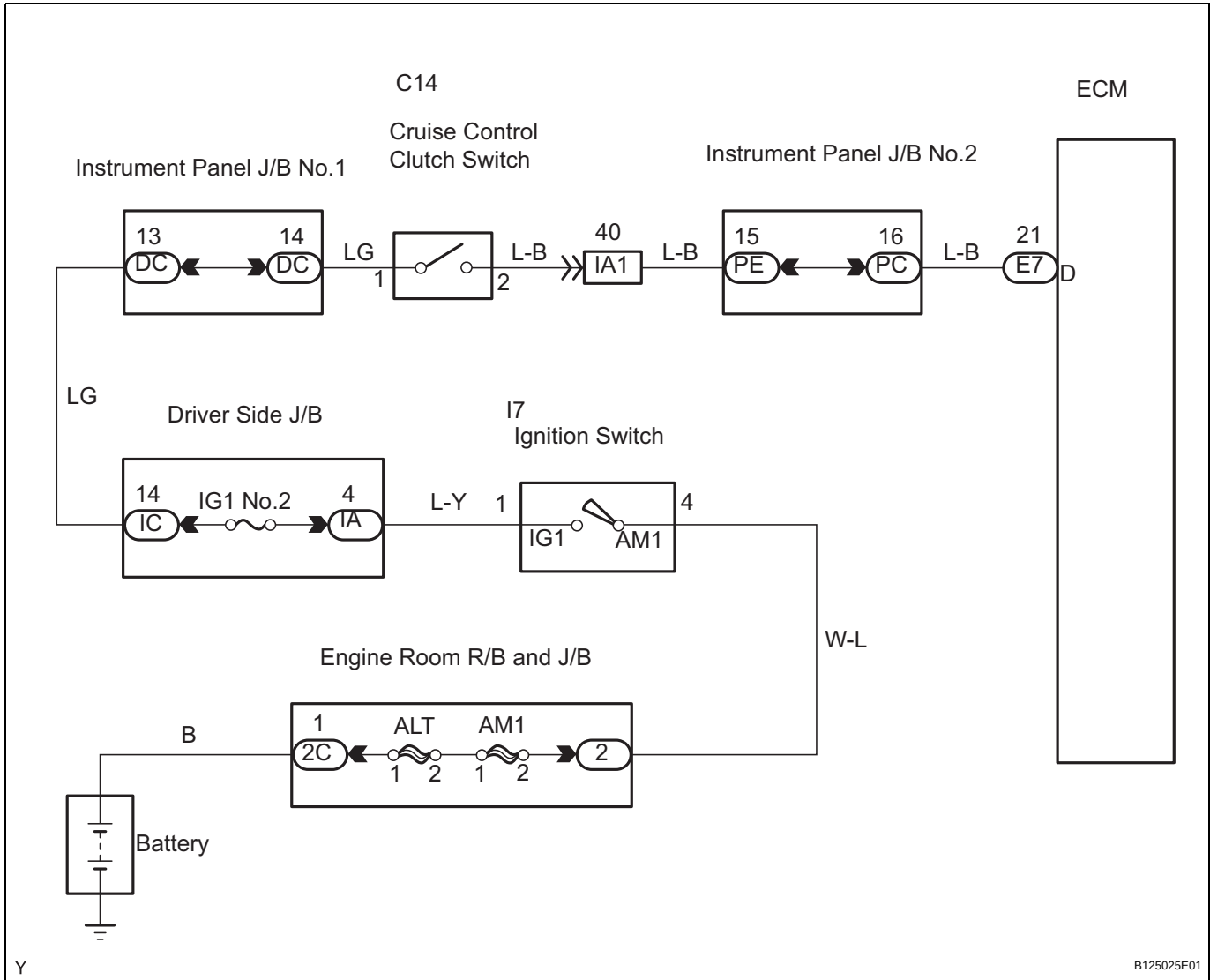
Clutch Switch Circuit

DESCRIPTION

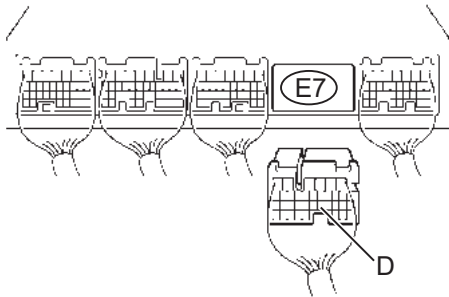
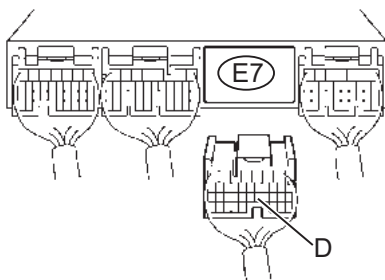
Clutch switch circuit inspection is necessary for M/T vehicles.

When the clutch pedal is released, the ECM receives the positive (+) battery voltage through the IG1 No.2 fuse and ignition switch. While the clutch pedal is depressed, the clutch switch assembly sends a signal to terminal D of the ECM. The ECM cancels cruise control when terminal D receives the signal (voltage of below 1 V).

WIRING DIAGRAM



B125025E01

1 CHECK HARNESS AND CONNECTOR (ECM - BATTERY)**1GR-FE:****2TR-FE:**

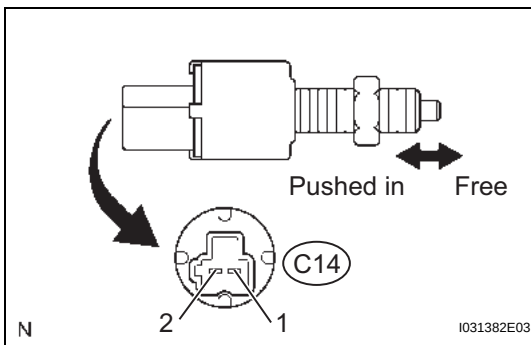
I101322E02

- Turn the ignition switch OFF.
- Disconnect the E7 ECM connector.
- Turn the ignition switch to the ON position.
- Measure the voltage according to the value(s) in the table below.

Standard Voltage

Tester connection	Clutch Pedal condition	Specification
D(E7-21) - Body ground	Depressed	Below 1 V
D(E7-21) - Body ground	Released	10 to 14 V

- Reconnect the ECM connector.

OK**PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE****NG****2 INSPECT CLUTCH SWITCH ASSEMBLY**

I031382E03

- Turn the ignition switch off.
- Disconnect the clutch switch C14 connector.
- Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester connection	Clutch Pedal condition	Specification
C14-1 - C14-2	Switch pin free (Clutch pedal depressed)	10 k Ω or higher
C14-1 - C14-2	Switch pin pushed in (Clutch pedal released)	Below 1 Ω

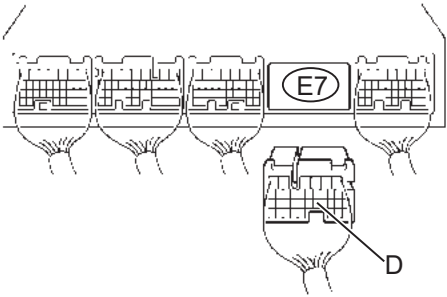
- Reconnect the clutch switch connector.

NG**REPLACE CLUTCH SWITCH ASSEMBLY****OK****CC**

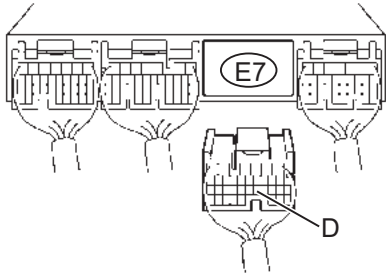
3

CHECK HARNESS AND CONNECTOR (CLUTCH SWITCH ASSEMBLY - BODY GROUND)

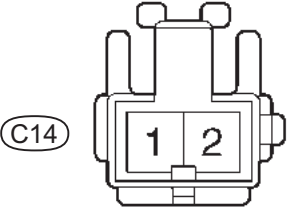
1GR-FE:



2TR-FE:



Clutch Switch Connector Front View on Wire Harness Side:



I101323E01

- (a) Disconnect the E7 ECM connector.
- (b) Disconnect the C14 clutch switch connector.
- (c) Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester connection	Clutch Pedal condition	Specification
C14-2 - Body ground	Always	10 kΩ or higher
C14-2 - D (E7-21)	Always	Below 1 Ω

- (d) Reconnect the clutch switch connector.
- (e) Reconnect the ECM connector.

NG

REPAIR OR REPLACE HARNESS OR CONNECTOR (CLUTCH SWITCH ASSEMBLY - ECM)

OK

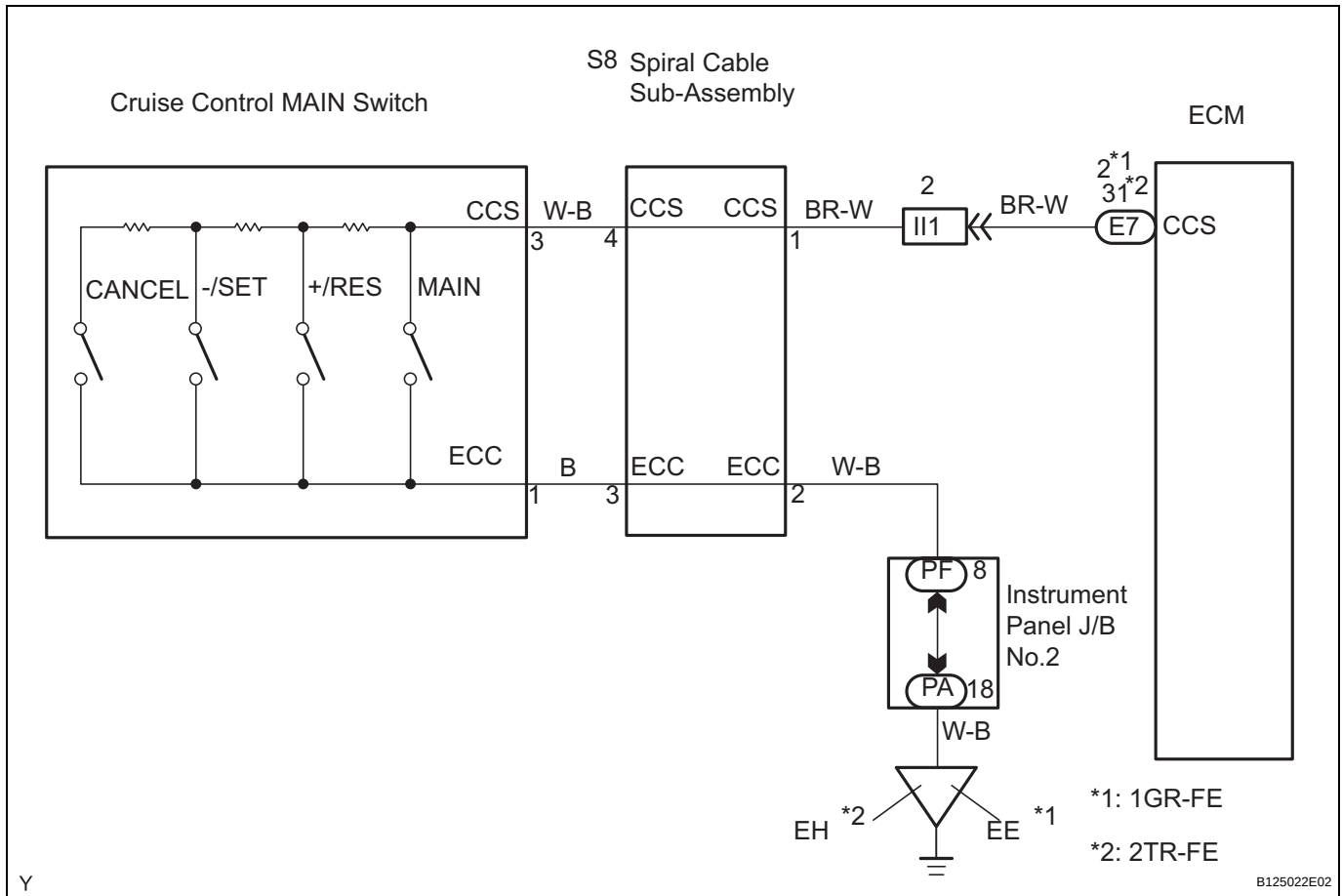
CHECK AND REPAIR HARNESS OR CONNECTOR (CLUTCH SWITCH ASSEMBLY - BATTERY)

Cruise Control Switch Circuit

DESCRIPTION

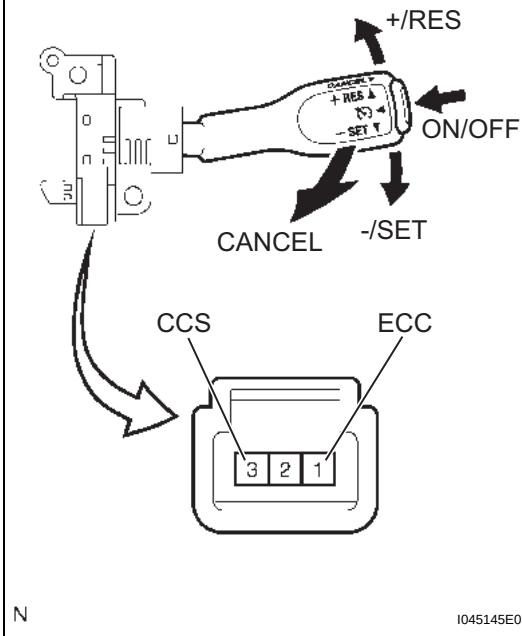
This circuit sends signals to the ECM depending on the cruise control main switch condition. The battery supplies the positive (+) battery voltage to the cruise control main switch. Then terminal CCS of the ECM receives the voltage as the signal according to the switch condition.

WIRING DIAGRAM



1 INSPECT CRUISE CONTROL MAIN SWITCH

Cruise Control Main Switch
Connector Front View:



- Turn the ignition switch off.
- Disconnect the cruise control main switch connector.
- Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
1 - 3	+ / RES	235 to 245 Ω
1 - 3	- / SET	617 to 643 Ω
1 - 3	CANCEL	1,509 to 1,571 Ω
1 - 3	Main Switch OFF	10 k Ω or higher
1 - 3	Main Switch ON	Below 1 Ω

- Reconnect the cruise control main switch connector.

NG

REPLACE CRUISE CONTROL MAIN SWITCH

OK

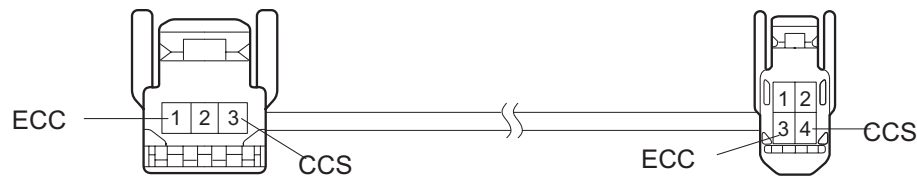
2 CHECK HARNESS AND CONNECTOR (CRUISE CONTROL MAIN SWITCH - SPIRAL CABLE SUB-ASSEMBLY)

- Disconnect the spiral cable side connector.

Connector Front View:

Cruise Control Main Switch Side Connector

Spiral Cable Sub-Assembly
Side Connector



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

Standard Resistance

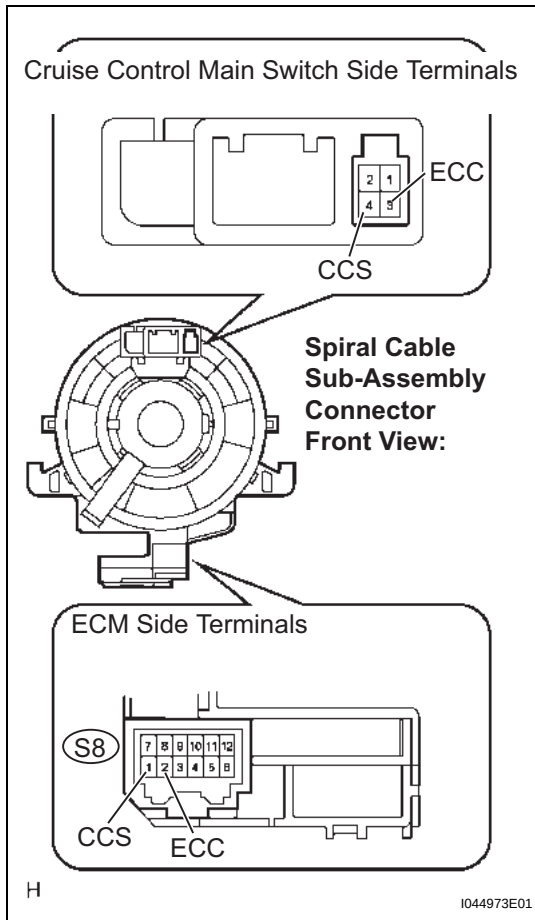
Tester Connection	Condition	Specified Condition
Terminal 1 (ECC) main switch side - Terminal 3 (ECC) spiral cable side	Always	Below 1 Ω
Terminal 3 (ECC) main switch side - Terminal 4 (ECC) spiral cable side	Always	Below 1 Ω

- Reconnect the spiral cable side connector.

NG

REPAIR OR REPLACE HARNESS OR
CONNECTOR

OK

3 INSPECT SPIRAL CABLE SUB-ASSEMBLY

- (a) Disconnect the spiral cable connector on the ECM side.
 (b) Measure the resistance according to the value(s) in the table below.

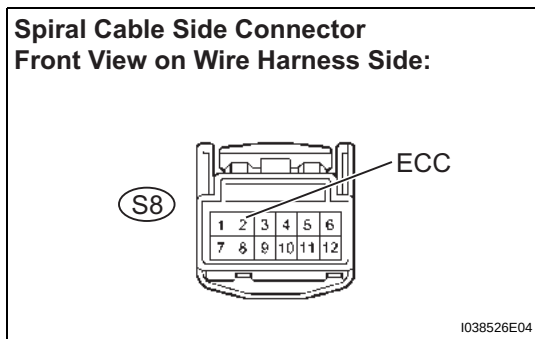
Standard Resistance

Tester Connection	Condition	Specified Condition
Terminal 4 (ECC) main switch side - CCS (S8-1)	Always	Below 1 Ω
Terminal 3 (ECC) main switch side - ECC (S8-2)	Always	Below 1 Ω

NG

REPLACE SPIRAL CABLE SUB-ASSEMBLY

OK

4 CHECK HARNESS AND CONNECTOR (SPIRAL CABLE SUB-ASSEMBLY - BODY GROUND)

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

Standard Resistance

Tester Connection	Condition	Specified Condition
ECC (S8-2) - Body ground	Always	Below 1 Ω

NG

REPAIR OR REPLACE HARNESS OR
CONNECTOR (SPIRAL CABLE SUB-
ASSEMBLY - BODY GROUND)

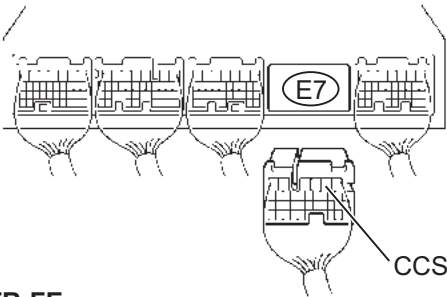
OK

CC

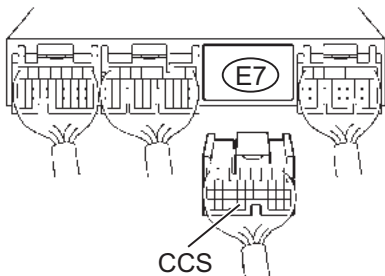
5

CHECK HARNESS AND CONNECTOR (SPIRAL CABLE SUB-ASSEMBLY - ECM)

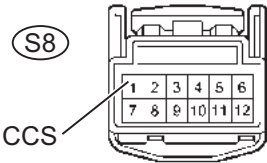
1GR-FE:



2TR-FE:



Spiral Cable Side Connector
Front View on Wire Harness Side:



I101321E01

- (a) Disconnect the E7 ECM connector.
- (b) Measure the resistance according to the value(s) in the table below.

Standard Resistance (1GR-FE)

Tester Connection	Condition	Specified Condition
CCS (E7-2) - CCS (S8-1)	Always	Below 1 Ω
CCS (E7-2) - Body ground	Always	10 kΩ or higher

Standard Resistance (2TR-FE)

Tester Connection	Condition	Specified Condition
CCS (E7-31) - CCS (S8-1)	Always	Below 1 Ω
CCS (E7-31) - Body ground	Always	10 kΩ or higher

- (c) Reconnect the ECM connector.

NG

REPAIR OR REPLACE HARNESS OR CONNECTOR (SPIRAL CABLE SUB-ASSEMBLY - ECM)

OK

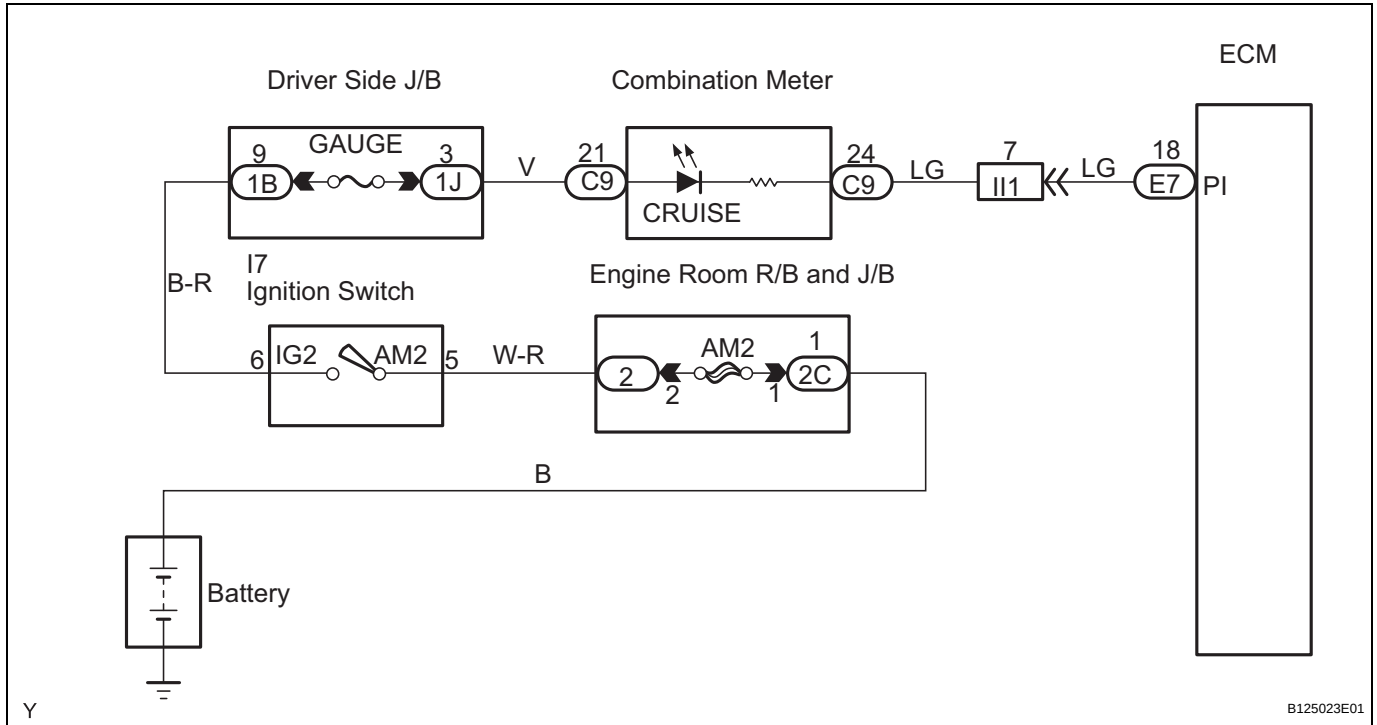
PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

Cruise Main Indicator Light Circuit

DESCRIPTION

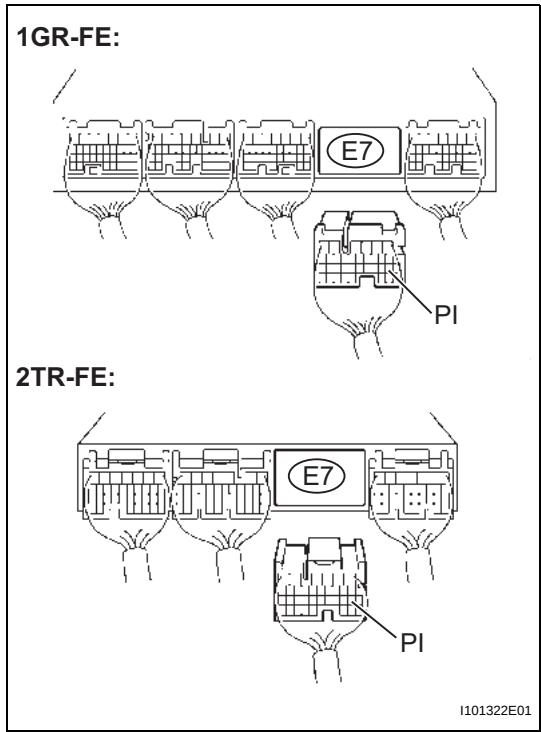
When the CRUISE CONTROL MAIN switch is turned off, cruise control does not operate.

WIRING DIAGRAM



1

CHECK HARNESS AND CONNECTOR (ECM - BATTERY)



- (a) Turn the ignition switch off.
- (b) Disconnect the E7 ECM connector.
- (c) Measure the voltage according to the value(s) in the table below.

Standard Voltage (1GR-FE)

Tester connection	Condition	Specification
PI (E7-18) - Body ground	Ignition ON	10 to 14 V

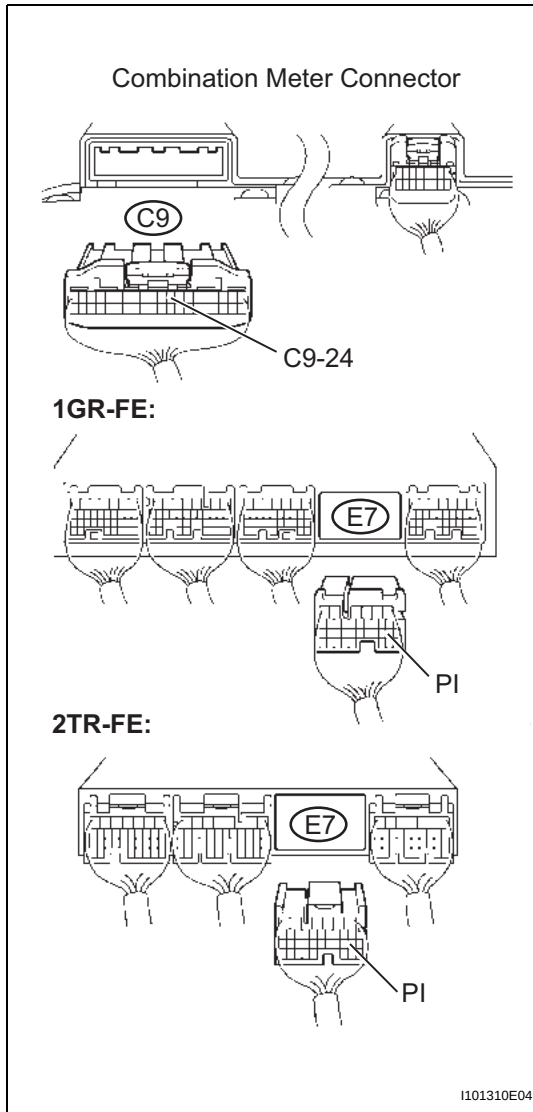
Standard Voltage (2TR-FE)

Tester connection	Condition	Specification
PI (E7-18) - Body ground	Ignition ON	10 to 14 V

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

NG

2**CHECK HARNESS AND CONNECTOR (COMBINATION METER ASSEMBLY - ECM)****OK**

- Turn the ignition switch off.
- Disconnect the E7 ECM connector.
- Disconnect the combination meter C9 connector.
- Measure the resistance according to the value(s) in the table below.

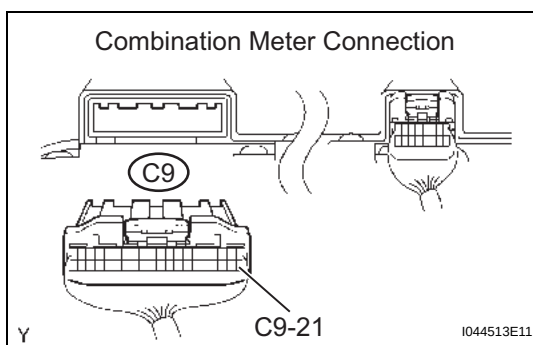
Standard Resistance

Tester connection	Condition	Specification
C9-24 - PI (E7-18)	Always	Below 1Ω
C9-24 - Body ground	Always	10 kΩ or higher

- Reconnect the combination meter connector.
- Reconnect the ECM connector.

NG

REPAIR OR REPLACE HARNESS OR CONNECTOR (COMBINATION METER ASSEMBLY - ECM)

3**CHECK HARNESS AND CONNECTOR (COMBINATION METER ASSEMBLY - BATTERY)**

- Disconnect the C9 combination meter connector.
- Measure the voltage according to the value(s) in the table below.

Standard Voltage

Tester connection	Condition	Specification
C9-21 - Body ground	Ignition ON	10 to 14 V

- Reconnect the combination meter connector.

NG

REPAIR OR REPLACE HARNESS OR CONNECTOR (COMBINATION METER - BATTERY)

CC

OK

REPLACE COMBINATION METER ASSEMBLY

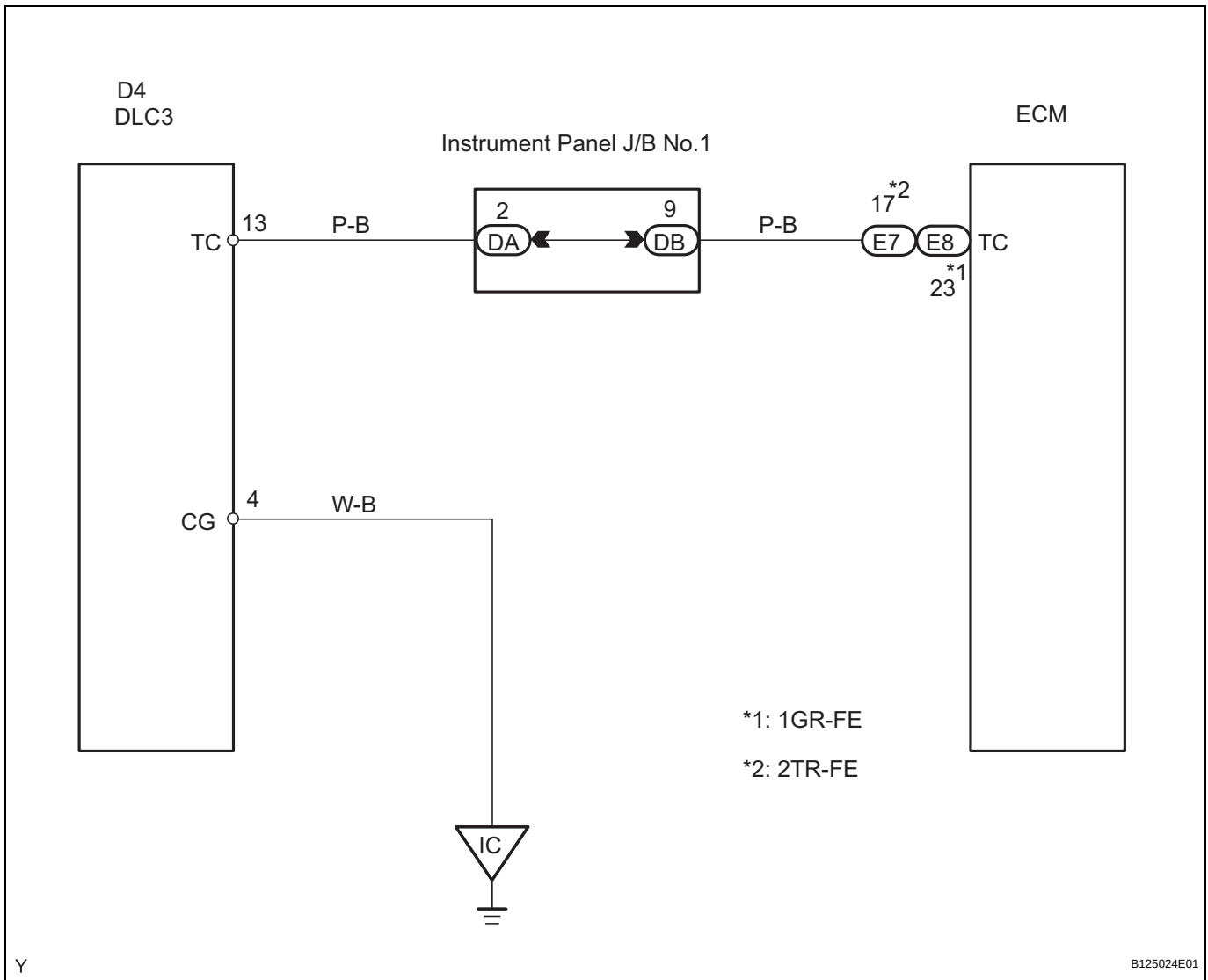
TC and CG Terminal Circuit

DESCRIPTION

The DLC3 circuit enables reading of Diagnostic Trouble Codes (DTCs) with no intelligent testers by connecting terminals TC and CG of the DLC3 connector.

Stored DTCs are displayed in blinking patterns of the CRUISE MAIN indicator light located on the combination meter.

WIRING DIAGRAM

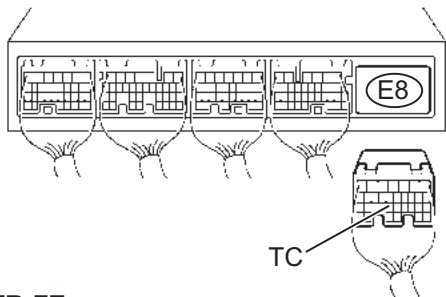


HINT:

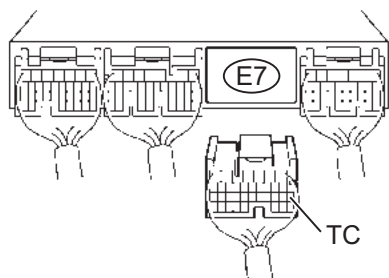
When a particular warning light blinks continuously, a ground short in the wiring of terminal TC of the DLC3 or an internal ground short in the relevant ECU is suspected.

1 CHECK HARNESS AND CONNECTOR (TC of DLC3 - ECM)

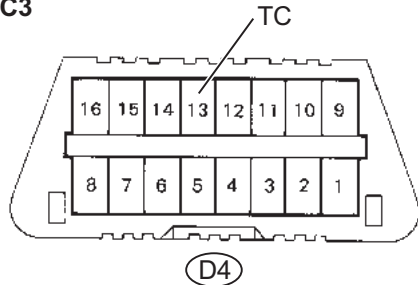
1GR-FE:



2TR-FE:



DLC3



I101324E01

OK

(a) Turn the ignition switch off.

(b) 1GR-FE:

Disconnect the E8 connector of the ECM.

(c) 2TR-FE:

Disconnect the E7 connector of the ECM.

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

Standard Resistance (1GR-FE)

Tester connection	Condition	Specification
TC (D4-13) - TC (E8-23)	Always	Below 1 Ω

Standard Resistance (2TR-FE)

Tester connection	Condition	Specification
TC (D4-13) - TC (E7-17)	Always	Below 1 Ω

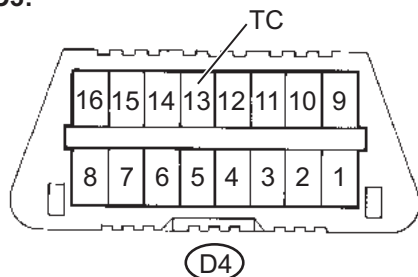
(e) Reconnect the ECM connector.

NG

REPAIR OR REPLACE HARNESS OR CONNECTOR (TC of DLC3 - ECM)

2 CHECK HARNESS AND CONNECTOR (TC of DLC3 - BODY GROUND)

DLC3:



E107088E23

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

Standard Resistance

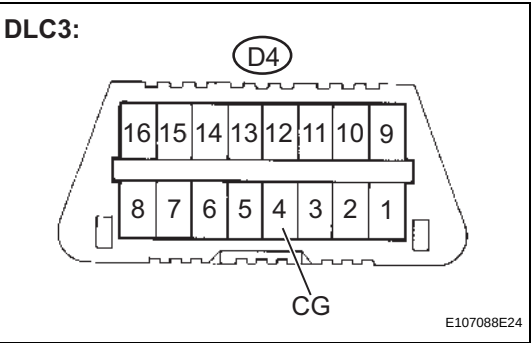
Tester connection	Condition	Specification
TC (D4-13) - Body ground	Always	10 k Ω or higher

NG

REPAIR OR REPLACE HARNESS OR CONNECTOR (TC CIRCUIT)

OK

3 CHECK HARNESS AND CONNECTOR (CG of DLC3 - BODY GROUND)



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

Standard Resistance

Tester connection	Condition	Specification
CG (D4-4) - Body ground	Always	Below 1 Ω

NG

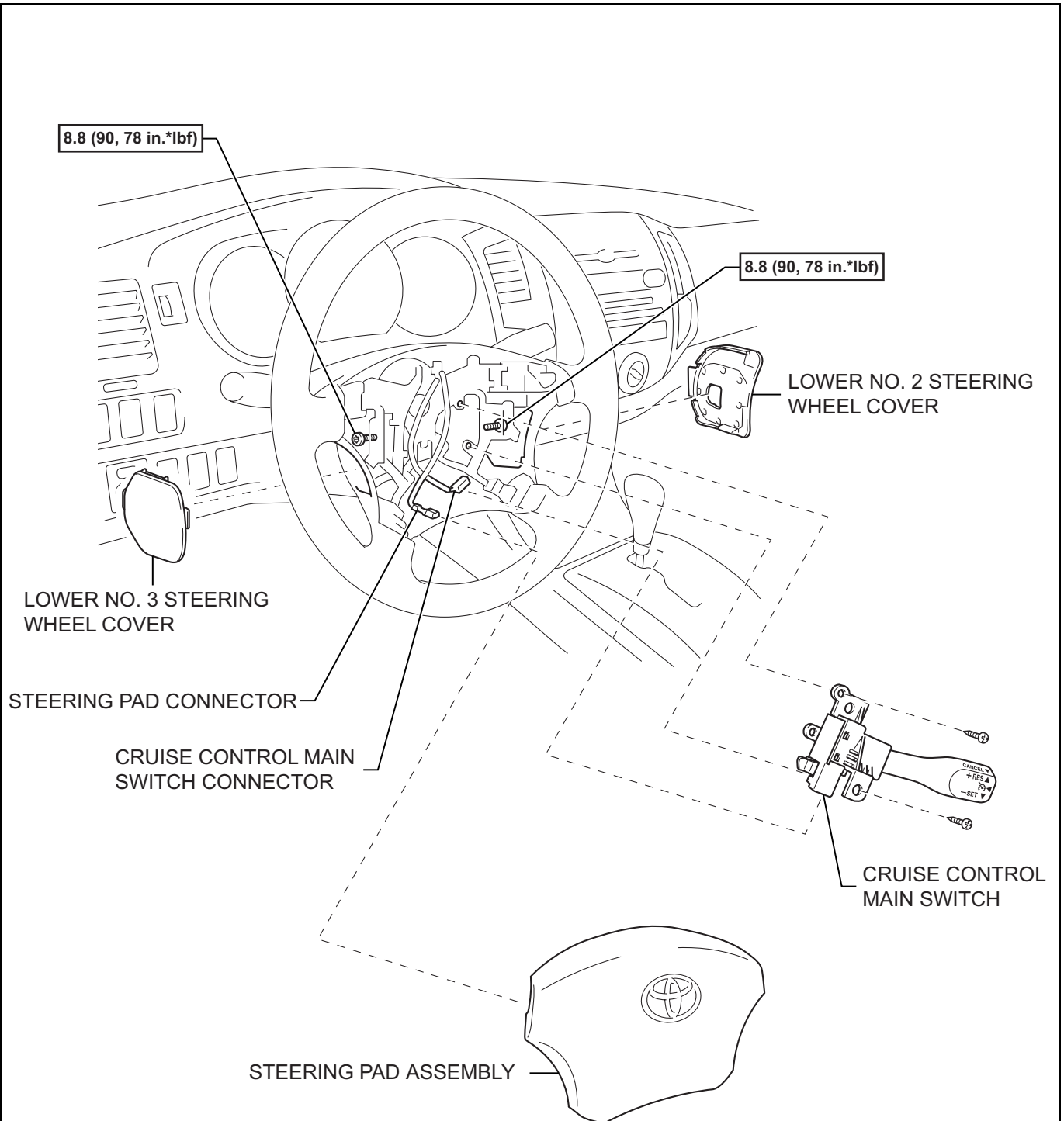
REPAIR OR REPLACE HARNESS OR CONNECTOR (CG of DLC3 - BODY GROUND)

OK

REPLACE ECM

CRUISE CONTROL MAIN SWITCH

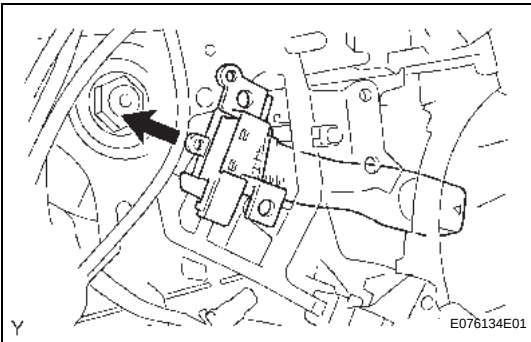
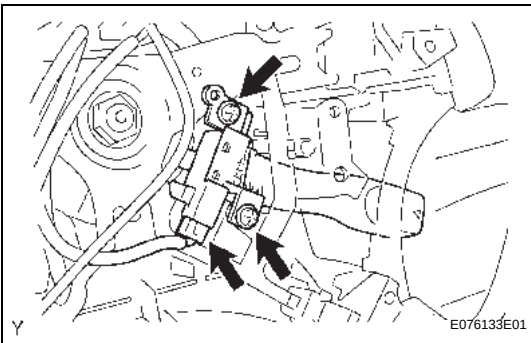
COMPONENTS



N*m (kgf*cm, ft.*lbf) : Specified torque

REMOVAL

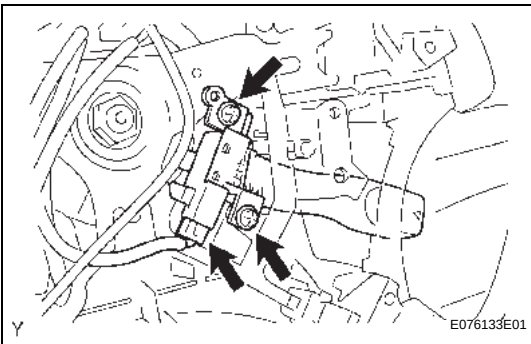
1. **PRECAUTION**
RS-1
2. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
Wait at least for 90 seconds after disconnecting the cable to prevent the airbag from working.
3. **REMOVE LOWER NO. 2 STEERING WHEEL COVER**
(See page RS-558)
4. **REMOVE LOWER NO. 3 STEERING WHEEL COVER**
(See page RS-558)
5. **REMOVE STEERING PAD ASSEMBLY** (See page RS-558)
6. **REMOVE CRUISE CONTROL MAIN SWITCH**
 - (a) Disconnect the connector and remove the 2 screws.



- (b) Remove the cruise control main switch from the steering wheel.

INSTALLATION

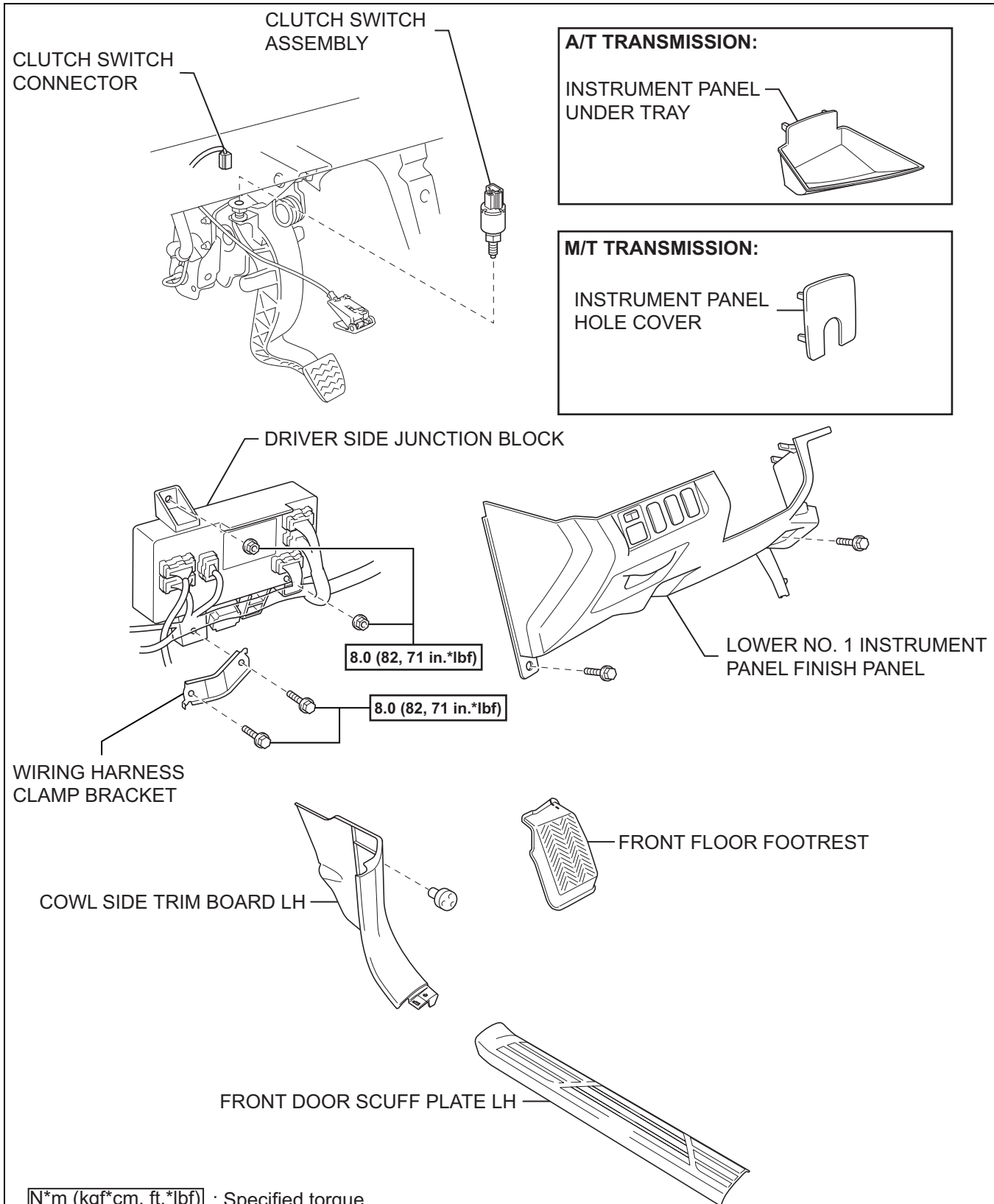
1. **INSTALL CRUISE CONTROL MAIN SWITCH**
 - (a) Install the cruise control main switch with the 2 screws and connect the connector.
2. **INSTALL STEERING PAD ASSEMBLY** (See page RS-558)
3. **INSTALL LOWER NO. 3 STEERING WHEEL COVER**
(See page RS-559)
4. **INSTALL LOWER NO. 2 STEERING WHEEL COVER**
(See page RS-559)
5. **CONNECT CABLE TO NEGATIVE BATTERY TERMINAL**
Torque: 3.9 N*m (40 kgf*cm, 35 in.*lbf)
6. **INSPECT STEERING PAD ASSEMBLY**



7. **INSPECT SRS WARNING LIGHT**
[RS-28](#)

CLUTCH SWITCH

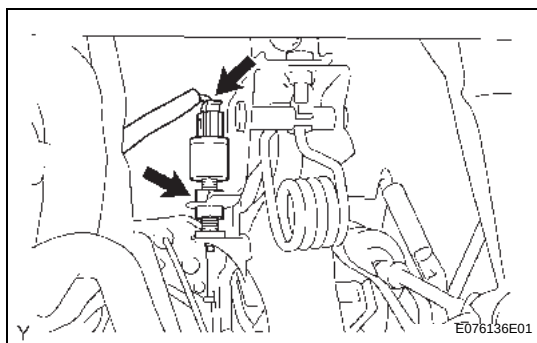
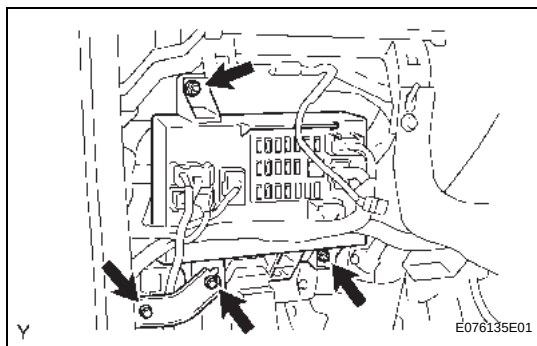
COMPONENTS



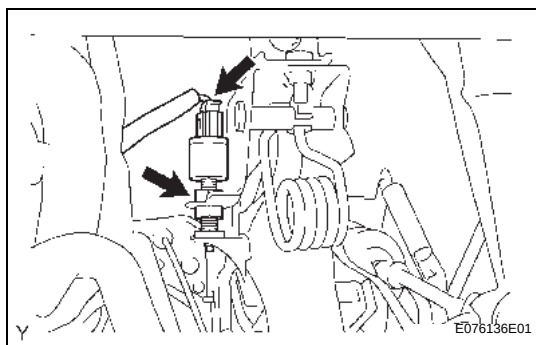
N*m (kgf*cm, ft.*lbf) : Specified torque

REMOVAL

1. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL
2. REMOVE FRONT FLOOR FOOTREST (See page [IR-1](#))
3. REMOVE FRONT DOOR SCUFF PLATE LH (for Regular Cab) (See page [IR-40](#))
4. REMOVE FRONT DOOR SCUFF PLATE LH (for Access Cab) (See page [IR-61](#))
5. REMOVE FRONT DOOR SCUFF PLATE LH (for Double Cab) (See page [IR-12](#))
6. REMOVE COWL SIDE TRIM BOARD LH (for Regular Cab) (See page [IR-40](#))
7. REMOVE COWL SIDE TRIM BOARD LH (for Access Cab) (See page [IR-61](#))
8. REMOVE COWL SIDE TRIM BOARD LH (for Double Cab) (See page [IR-12](#))
9. REMOVE INSTRUMENT PANEL UNDER TRAY (for Pedal Type Parking Brake) (See page [IP-9](#))
10. REMOVE INSTRUMENT PANEL HOLE COVER (for Lever Type Parking Brake) (See page [IP-9](#))
11. SEPARATE HOOD LOCK CONTROL LEVER SUB-ASSEMBLY (See page [ED-3](#))
12. REMOVE LOWER NO. 1 INSTRUMENT PANEL FINISH PANEL (See page [IP-12](#))
13. SEPARATE DRIVER SIDE JUNCTION BLOCK
 - (a) Remove the 2 bolts and bracket.
 - (b) Remove the 2 nuts and separate the driver side junction block assembly.



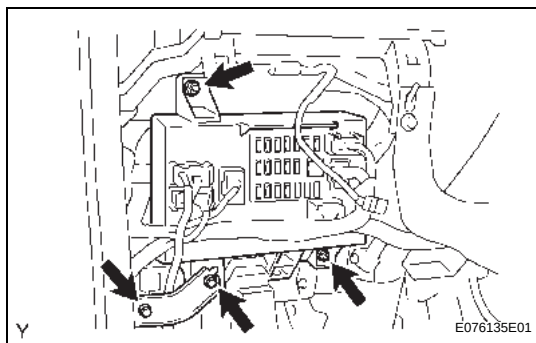
14. REMOVE CLUTCH SWITCH ASSEMBLY
 - (a) Disconnect the connector.
 - (b) Loosen the nut and remove the clutch switch assembly.



INSTALLATION

1. INSTALL CLUTCH SWITCH ASSEMBLY

- (a) Install the clutch switch assembly and tighten the nut.
- (b) Connect the connector.



2. INSTALL DRIVER SIDE JUNCTION BLOCK

- (a) Install the driver side junction block assembly with the 2 nuts.

Torque: 8.0 N*m (82 kgf*cm, 71 in.*lbf)

- (b) Install the bracket with the 2 bolts.

Torque: 8.0 N*m (82 kgf*cm, 71 in.*lbf)

3. INSTALL LOWER NO. 1 INSTRUMENT PANEL FINISH PANEL (See page [IP-22](#))

4. CONNECT HOOD LOCK CONTROL LEVER SUB-ASSEMBLY (See page [ED-8](#))

5. INSTALL INSTRUMENT PANEL HOLE COVER (for Lever Type Parking Brake) (See page [IP-25](#))

6. INSTALL INSTRUMENT PANEL UNDER TRAY (for Pedal Type Parking Brake) (See page [IP-25](#))

7. INSTALL COWL SIDE TRIM BOARD LH (for Regular Cab) (See page [IR-52](#))

8. INSTALL COWL SIDE TRIM BOARD LH (for Access Cab) (See page [IR-75](#))

9. INSTALL COWL SIDE TRIM BOARD LH (for Double Cab) (See page [IR-12](#))

10. INSTALL FRONT DOOR SCUFF PLATE LH (for Regular Cab) (See page [IR-52](#))

11. INSTALL FRONT DOOR SCUFF PLATE LH (for Access Cab) (See page [IR-75](#))

12. INSTALL FRONT DOOR SCUFF PLATE LH (for Double Cab) (See page [IR-29](#))

13. INSTALL FRONT FLOOR FOOTREST (See page [IR-1](#))

14. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL

Torque: 3.9 N*m (40 kgf*cm, 35 in.*lbf)