CRUISE CONTROL SYSTEM

0526X–05

HOW TO PROCEED WITH TROUBLESHOOTING

1	VEHICLE BROUGHT TO WORKSHOP

2	CUSTOMER PROBLEM ANALYSIS (See page 05–744)

3	CHECK AND CLEAR DTC (See page 05–745)

4	PROBLEM SYMPTOM CONFIRMATION

- SYMPTOM DOES NOT OCCUR (GO TO STEP 5)
- SYMPTOM OCCUR (GO TO STEP 6)

5	SYMPTOM SIMULATION (See page 01–20)

6	DTC CHECK (See page 05–745)

- MALFUNCTION CODE (GO TO STEP 7)
- NORMAL CODE (GO TO STEP 8)

7	DTC CHART (See page 05–750)

- GO TO STEP 9

8	PROBLEM SYMPTOMS TABLE (See page 05–754)

9	CIRCUIT INSPECTION (See page 05–755 – 05–788)

10	IDENTIFICATION OF PROBLEM

11	PARTS INSPECTION

12	REPAIR

13	CONFIRMATION TEST

END

057SB–01

CUSTOMER PROBLEM ANALYSIS CHECK

CRUISE CONTROL SYSTEM Check Sheet

Inspector's name:_____

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

Condition of Problem Occurrence	**Date of Problem Occurrence**	/ /
	How Often does Problem Occur?	☐ 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	☐ Brake pedal depressed ☐ Except D position shift (A/T) ☐ Clutch pedal depressed (M/T) ☐ At 40km/h (25 mph) or less ☐ When control main switch 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 ☐ Blinking

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

057SC–02

PRE–CHECK

1. PRE–CHECK

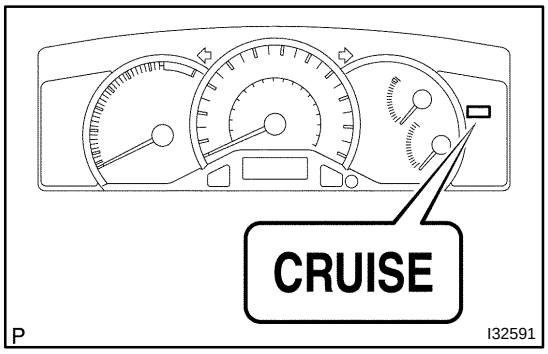
(a) Check that the cruise control actuator assy, acceleration wire, accelerator auto drive cable assy, and link assy are installed correctly and that the wire and link are securely connected.

(b) Check that the operating movement of the acceleration pedal, cruise control actuator assy, acceleration wire, accelerator auto drive cable assy and link is smooth.

(c) Adjust the acceleration auto drive cable assy and link system not to allow any play or excessive tension.

(d) Check that the cruise control ECU assy, cruise control actuator assy, cruise control main switch assy and connectors of each cancel switch are connected securely.

(e) When turning on the main switch of the cruise control main switch assy by pressing the button with the ignition switch to ON, check that the CRUISE main indicator light in the accessory meter assy lights up.



2. DIAGNOSIS SYSTEM

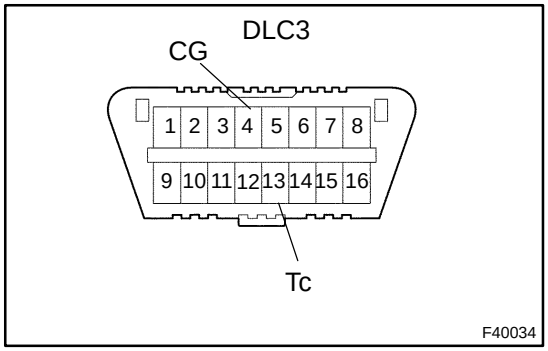
(a) Check the indicator.

(1) Turn the ignition switch to ON.

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

HINT:

If the indicator check result is not normal, proceed to troubleshooting (See page 05–638) for the combination meter section.



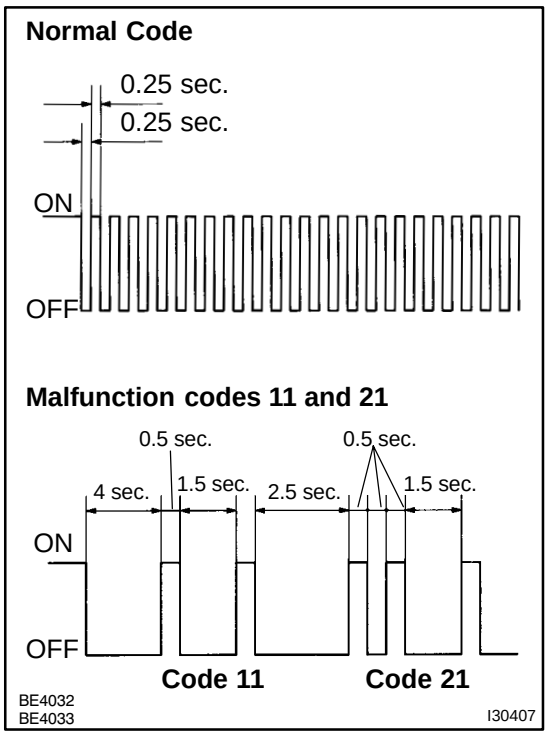
(b) Check the DTC using diagnosis check wire.

(1) Turn the ignition switch to ON.

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

SST 09843–18040

(3) Read the DTC on the CRUISE main indicator light.

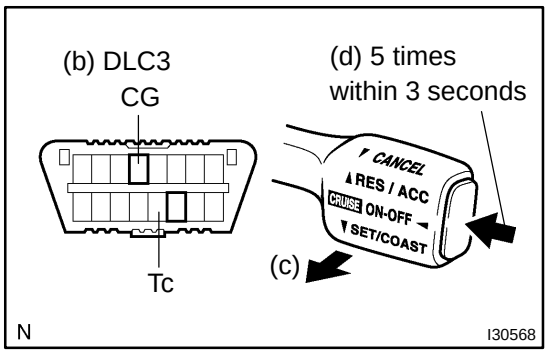


HINT:
If the DTC is not output, inspect the diagnosis circuit (See page 05–788).
As an example, the blinking patterns for codes are shown in the illustration; normal, 11 and 21.

3. 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.

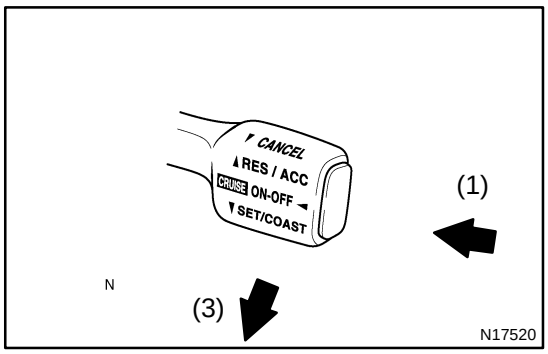
HINT:
The hand–held tester has a ”Snapshot” function which records the monitored data.
Please refer to the hand–held tester operator’s manual for further details.



4. DTC CLEARANCE (ERASE MODE)

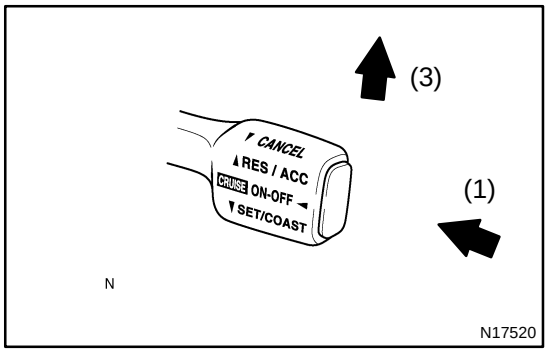
HINT:
During in the erase mode, diag detection does not work.

(a) Drive at about 15 km/h or below.
(b) Using SST, connect terminals Tc and CG of DLC3.
SST 09843–18040
(c) Pull the cruise control main switch assy to CANCEL.
(d) On the above mentioned condition, press on the cruise control main switch button 5 times within 3 seconds.

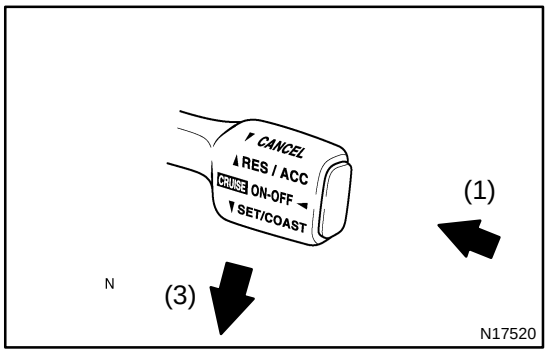


5. PROBLEM SYMPTOM CONFIRMATION (ROAD TEST)

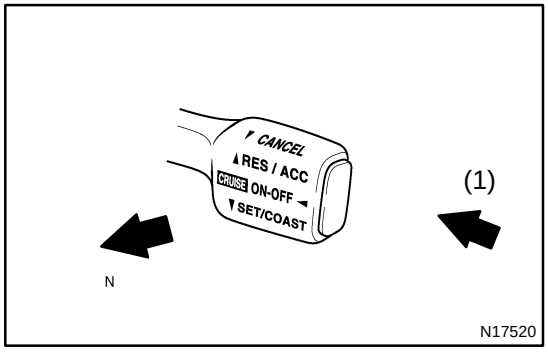
(a) Inspect the SET switch.
- (1) Press the cruise control main switch button to ON.
- (2) Drive at a desired speed (40 km/h (25 mph) or higher).
- (3) Push down the cruise control main switch assy to the SET/COAST.
- (4) After releasing the switch, check that the vehicle cruises at the desired speed.



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

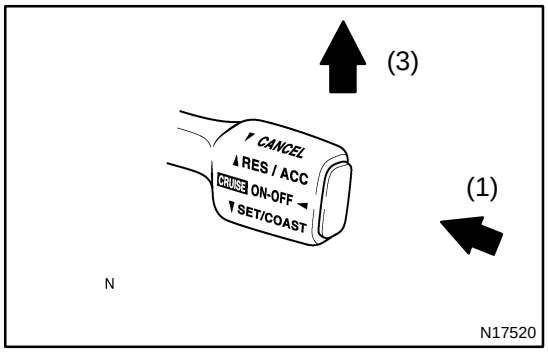


(c) Inspect the COAST switch.
- (1) Press the cruise control main switch button to ON.
- (2) Drive at a desired speed (40 km/h (25 mph) or higher).
- (3) Check that the vehicle speed is decreases while the cruise control main switch assy is push down to SET/COAST, and the vehicle cruises at the set speed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



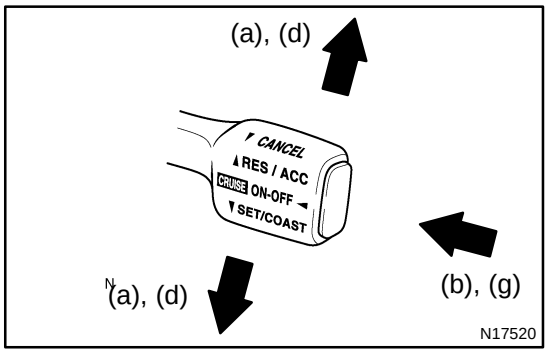
(d) Inspect the CANCEL switch.
- (1) Press the cruise control main switch button to ON.
- (2) Drive at a desired speed (40 km/h (25 mph) or higher).

(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.
- Depress the clutch pedal (M/T).
- Shift to except D position (A/T).
- Press the cruise control main switch button to OFF.
- Pull the cruise control main switch assy to CANCEL.



(e) Inspect the RESUME switch.
(1) Press the cruise control 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.
- Depress the clutch pedal (M/T).
- Shift to except D position (A/T).
- Pull the cruise control main switch assy to CANCEL.

(4) After the cruise control main switch assy is pull up to RES/ACC at the driving speed of more than 40 km/h (25 mph), check that the vehicle restores the speed before the cancellation.

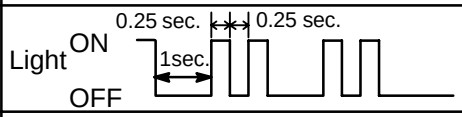
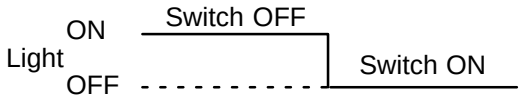
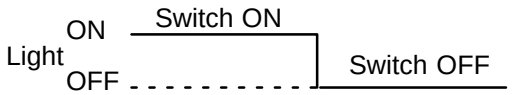
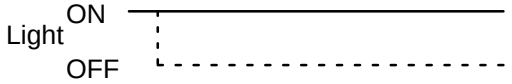


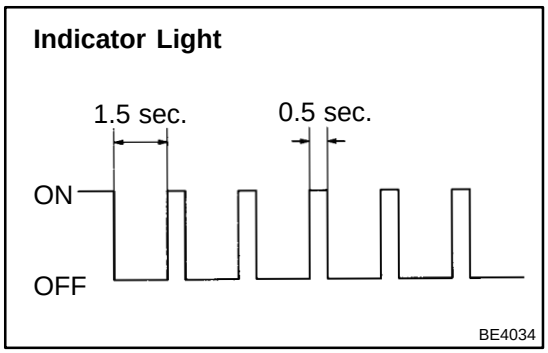
6. INPUT SIGNAL CHECK

HINT:
- For check No.1 ~ No.3
  Turn the ignition switch to ON.
- For check No.4
  Jack up the vehicle.
  Start the engine.
  Release the clutch pedal (M/T).
  Shift to D position (A/T).

(a) Keep the cruise control main switch assy to SET/COAST or RES/ACC position and hold it down or hold it up.
(b) Press the cruise control main switch button to ON.
(c) Check that the CRUISE main indicator light blinks twice or 3 times repeatedly after 3 seconds.
(d) Turn the SET/COAST or RES/ACC switch to OFF.
(e) Operate each switch as listed in the table below.
(f) Read the blinking pattern of the CRUISE main indicator light.
(g) After performing the check, turn the cruise control main switch button to OFF.

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

No.	Operation Method	CRUISE main Indicator Light Blinking Pattern	Diagnosis
1	Turn SET/COAST switch ON		SET/COAST switch circuit is normal
2	Turn RES/ACC switch ON		RES/ACC switch circuit is normal
3	Turn CANCEL switch ON		CANCEL switch circuit is normal
	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
	Depress clutch pedal (Turn clutch switch assy OFF)		Clutch switch circuit is normal
4	Drive at about 40 km/h (25 mph) or higher		Vehicle speed sensor is normal
	Drive at about 40 km/h (25 mph) or below		



7. AUTO CANCEL FUNCTION

(a) If a malfunction occurs in the No.1 vehicle speed sensors or actuator, etc. during cruise control driving, the ECU actuates AUTO CANCEL of the cruise control and turns ON and OFF the CRUISE main indicator light to inform the driver of a malfunction. At the same time, the malfunction is stored in memory as a diagnostic trouble code.

05270–05

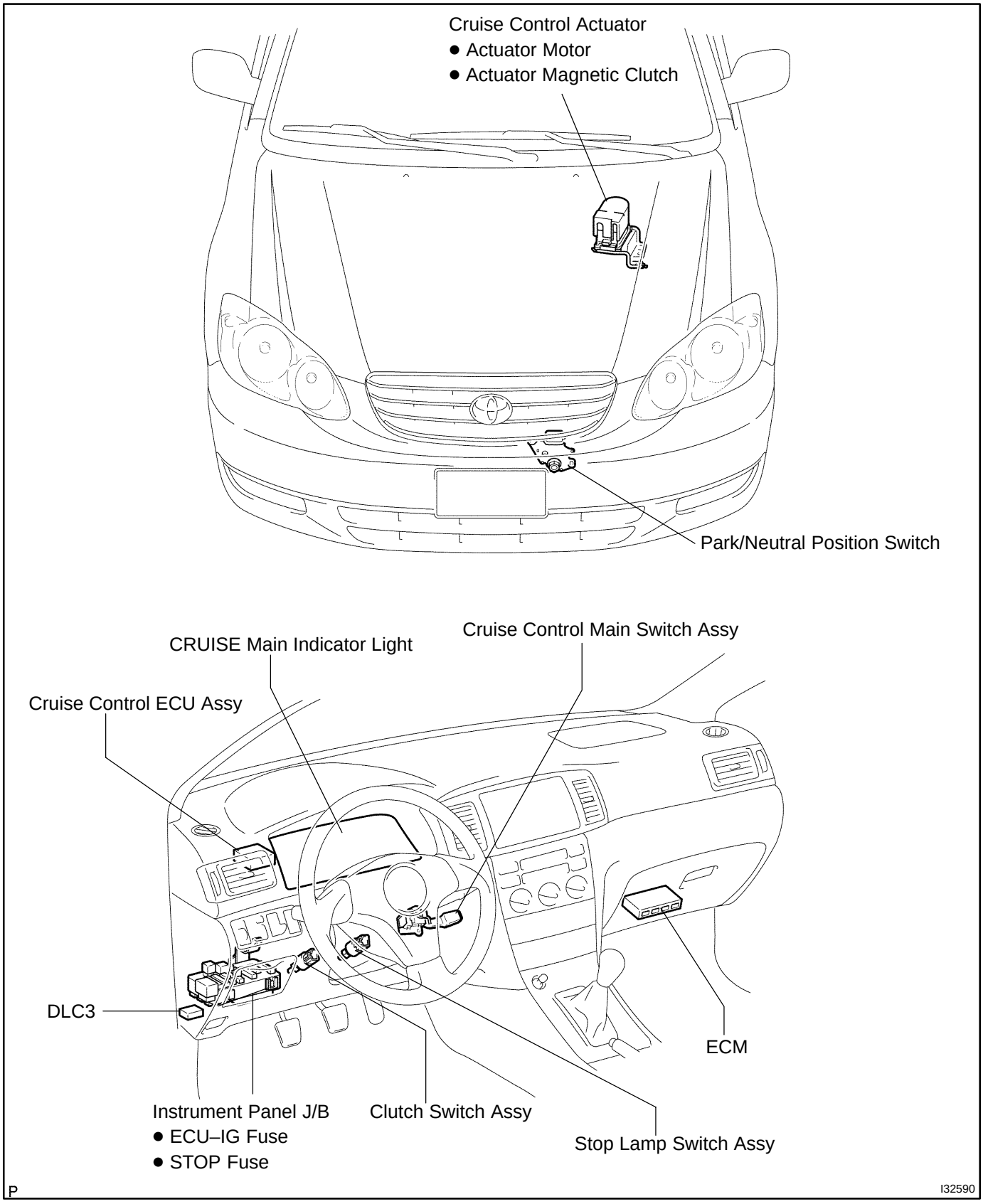
DIAGNOSTIC TROUBLE CODE CHART

If a malfunction code is displayed during the DTC check, check the circuit listed for the code. For details of each code, turn to the page referred to under the "See page" for respective "DTC No." in the DTC chart.

DTC No. (See Page)	Detection Item	Trouble Area
11 (05–755)	• Short in actuator motor circuit.	• Cruise control actuator assy (Actuator motor) • Actuator motor circuit • Cruise control ECU assy
12 (05–757)	• Short in actuator magnetic clutch circuit. • Open (0.8 sec.) in actuator magnetic clutch circuit.	• STOP Fuse • Stop lamp switch assy • Cruise control actuator assy (Actuator magnetic clutch) • Actuator magnetic clutch circuit • Cruise control ECU assy
15 (05–755)	• Open in actuator motor circuit.	• Cruise control actuator assy (Actuator motor)
14 (05–760)	• Cruise control actuator assy mechanical malfunction.	• Cruise control actuator assy (Actuator motor) (Actuator lock: motor, arm) • Cruise control ECU assy
21 (05–763)	• Speed signal is not input to the cruise control ECU assy while cruise control is set.	• Combination meter assembly • Vehicle speed sensor • Vehicle speed sensor circuit • Cruise control ECU assy
23 (05–763)	• Vehicle speed sensor pulse is abnormal.	• Vehicle speed sensor • Cruise control ECU assy
41	• Cruise control ECU	• Cruise control ECU assy
42	• Source voltage drop	• Power source
51 (05–765)	• Short in idle signal circuit.	• Throttle position sensor • Idle signal circuit • ECM • Cruise control ECU assy

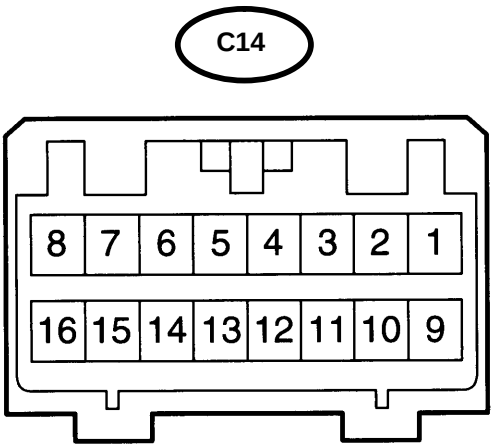
05271–05

LOCATION



057SD–02

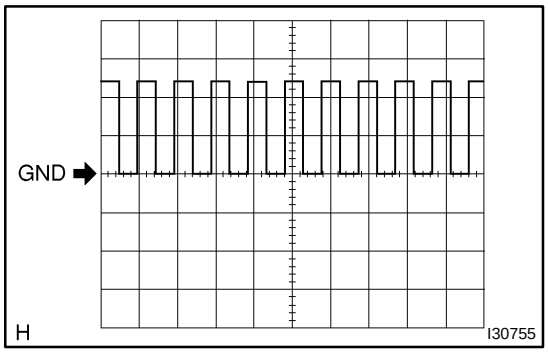
TERMINALS OF ECU



I30419

Symbols (Terminals No.)	Wiring Color	Condition	STD Voltage (V)
+B ↔ GND (C14–2 ↔ C14–16)	B–W ↔ W–B	Ignition switch ON	10 – 16
STP– ↔ GND (C14–3 ↔ C14–16)	G–W ↔ W–B	Depress brake pedal	10 – 16
		Release brake pedal	Below 1
D ↔ GND (C14–4 ↔ C14–16)	L ↔ W–B	• Depress clutch pedal (M/T) • Shift to except D position (A/T)	Below 1
		• Release clutch pedal (M/T) • Shift to D position (A/T)	10 – 16
PI ↔ GND (C14–5 ↔ C14–16)	G–R ↔ W–B	Ignition switch ON Cruise control main switch button ON	Below 1.2
		Ignition switch ON Cruise control main switch button OFF	10 – 16
ECT (A/T) ↔ GND (C14–6 ↔ C14–16)	L ↔ W–B	During driving Gear position 3rd	Below 1
		During driving Gear position O/D	8 – 16
MC ↔ GND (C14–7 ↔ C14–16)	R–L ↔ W–B	During cruise control driving COAST switch held ON	9 – 15
		During cruise control driving ACC switch held ON	Below 1
L ↔ GND (C14–8 ↔ C14–16)	G–O ↔ W–B	During cruise control driving	9 – 15
		Except during cruise control driving	Below 1
TC ↔ GND (C14–10 ↔ C14–16)	P–B ↔ W–B	Ignition switch ON	10 – 16
		Ignition switch ON Connect terminals Tc and CG of DLC3	Below 2
CCS ↔ GND (C14–11 ↔ C14–16)	G–Y ↔ W–B	Ignition switch ON	10 – 16
		Ignition switch ON Cruise control main switch button held ON	Below 0.5
		Ignition switch ON CANCEL switch held ON	6.6 – 11.4
		Ignition switch ON SET/COAST switch held ON	4.5 – 8.1
		Ignition switch ON RES/ACC switch held ON	2.3 – 4.5

SPD ↔ GND (C14–12 ↔ C14–16)	V–W ↔ W–B	Engine start → Car stoppage.	Below 1.5 → 4.7 – 16
		During driving (Pulse generated).	3 – 7
IDL ↔ GND (C14–13 ↔ C14–16)	L–W ↔ W–B	Ignition switch ON Throttle valve fully opened.	10 – 16
		Ignition switch ON Throttle valve fully closed.	Below 1.5
OD (A/T) ↔ GND (C14–14 ↔ C14–16)	R–Y ↔ W–B	During cruise control driving O/D switch ON.	0 – 16 (*1)
		During cruise control driving O/D switch OFF (3rd driving)	Below 1
MO ↔ GND (C14–15 ↔ C14–16)	R–G ↔ W–B	During cruise control driving ACC switch held ON	9 – 15
		During cruise control driving COAST switch held ON	Below 1
GND ↔ Body Ground (C14–16 ↔ Body Ground)	W–B ↔ Body Ground	Constant	Below 1



Oscilloscope wave (*1)
HINT:

- Terminal: OD – GND
- Gauge set: 5 V / DIV, 50 ms / DIV
- Condition: During cruise control driving O/D switch ON.

05273–06

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
SET not occurring or CANCEL occurring. (DTC is Normal)	1. Cruise control main switch circuit (Cruise control switch) 2. Vehicle speed sensor circuit 3. Stop lamp switch circuit 4. Park/neutral position switch circuit (A/T) Clutch switch circuit (M/T) 5. Actuator motor circuit 6. Cruise control cable 7. Cruise control ECU assy	05–786 05–763 05–767 05–773 05–776 82–1 01–30
SET not occurring or CANCEL occurring. (DTC dose not output)	1. ECU power source circuit 2. Cruise control ECU assy	05–779 01–30
Actual vehicle speed deviates above or below the set speed.	1. Cruise control cable 2. Vehicle speed signal abnormal 3. Electronically controlled transmission communication circuit (A/T) 4. Actuator motor circuit 5. Idle signal circuit (Main throttle position sensor) 6. Cruise control ECU assy	82–1 05–763 05–770 05–755 05–765 01–30
A/T: Gear shifting frequent between 3rd and O/D when driving on uphill road. (Hurting)	1. Electronically controlled transmission communication circuit 2. Cruise control ECU assy	05–770 01–30
Cruise control not cancelled, even when brake pedal is de-pressed.	1. Cruise control cable 2. Stop lamp switch circuit 3. Actuator motor circuit 4. Cruise control ECU assy	82–1 05–767 05–755 01–30
A/T: Cruise control not cancelled, even when transmission is shifted to ”N” position.	1. Cruise control cable 2. Park/neutral position switch circuit 3. Actuator motor circuit 4. Cruise control ECU assy	82–1 05–773 05–755 01–30
Control switch does not operate. (SET/COAST, ACC/RES, CANCEL not possible)	1. Cruise control cable 2. Actuator motor circuit 3. Cruise control ECU assy	82–1 05–755 01–30
SET possible at 40 km/h (25 mph) or less, or CANCEL does not operate at 40 km/h (25 mph) or less.	1. Cruise control cable 2. Vehicle speed signal abnormal 3. Actuator motor circuit 4. Cruise control ECU assy	82–1 05–763 05–755 01–30
Poor response is ACCEL and RESUME modes.	1. Cruise control cable 2. Electronically controlled transmission communication circuit (A/T) 3. Actuator motor circuit 4. Cruise control ECU assy	82–1 05–770 05–755 01–30
A/T: O/D does not RESUME, even though the road is not uphill.	1. Electronically controlled transmission communication circuit 2. Cruise control ECU assy	05–770 01–30
DTC memory is erased.	1. Cruise control ECU assy	01–30
DTC is not output, or is output when it should not be.	1. Diagnosis circuit 2. Cruise control ECU assy	05–788 01–30
Cruise main indicator light remains ON or falls to light up.	1. Cruise main indicator light circuit 2. Cruise control ECU assy	05–786 01–30

DTC	11	ACTUATOR MOTOR CIRCUIT

DTC	15	ACTUATOR MOTOR CIRCUIT

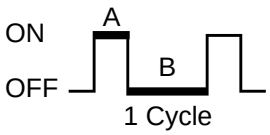
CIRCUIT DESCRIPTION

The actuator motor is operated by signals from the cruise control ECU assy. Acceleration and deceleration signals are transmitted by changes in the Duty Ratio (See below).

Duty Ratio:

The duty ratio is the ratio of the period of continuity in one cycle. For example, if A is the period of continuity in one cycle, and B is the period of non–continuity, then.

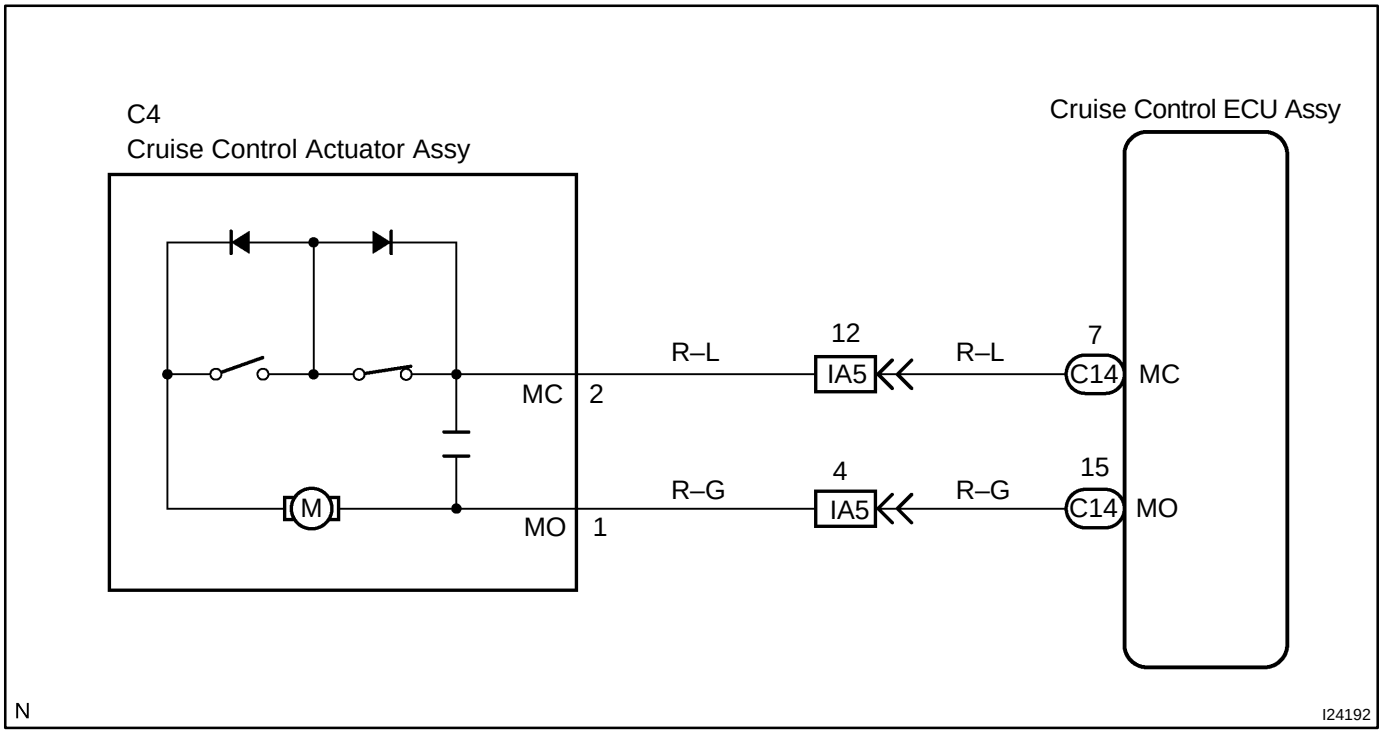
$$\text{Duty Ratio} = \frac{A}{A + B} \times 100\ (\%)$$



I32640

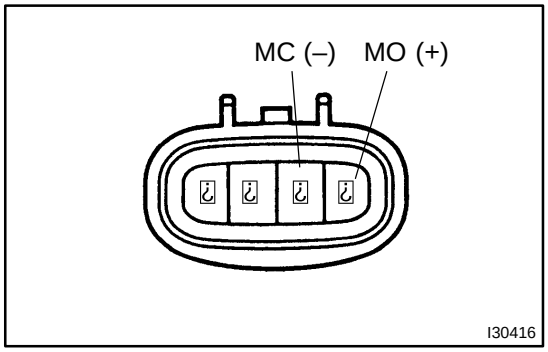
DTC No.	DTC Detecting Condition	Trouble Area
11	• Short in actuator motor circuit.	• Cruise control actuator assy (Actuator motor) • Actuator motor circuit • Cruise control ECU assy
15	• Open in actuator motor circuit.	• Cruise control actuator assy (Actuator motor)

WIRING DIAGRAM



INSPECTION PROCEDURE

1	INSPECT CRUISE CONTROL ACTUATOR ASSY



(a) Turn the ignition switch to OFF.
(b) Disconnect the cruise control actuator assy connector.
(c) Measure the resistance between terminals 1 (MO) and 2 (MC) of cruise control actuator assy.

HINT:
If control plate position is fully opened or fully closed, resistance cannot be measured.

OK:
Resistance: More than 4.2 Ω

NG → **REPLACE CRUISE CONTROL ACTUATOR ASSY**

OK

2	CHECK HARNESS AND CONNECTOR(BETWEEN CRUISE CONTROL ECU ASSY AND CRUISE CONTROL ACTUATOR ASSY)

(a) Check for open and short circuit in harness and connector between cruise control ECU assy and cruise control actuator assy (actuator motor) (See page 01–30).

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

OK

CHECK AND REPLACE CRUISE CONTROL ECU ASSY (See page 01–30)

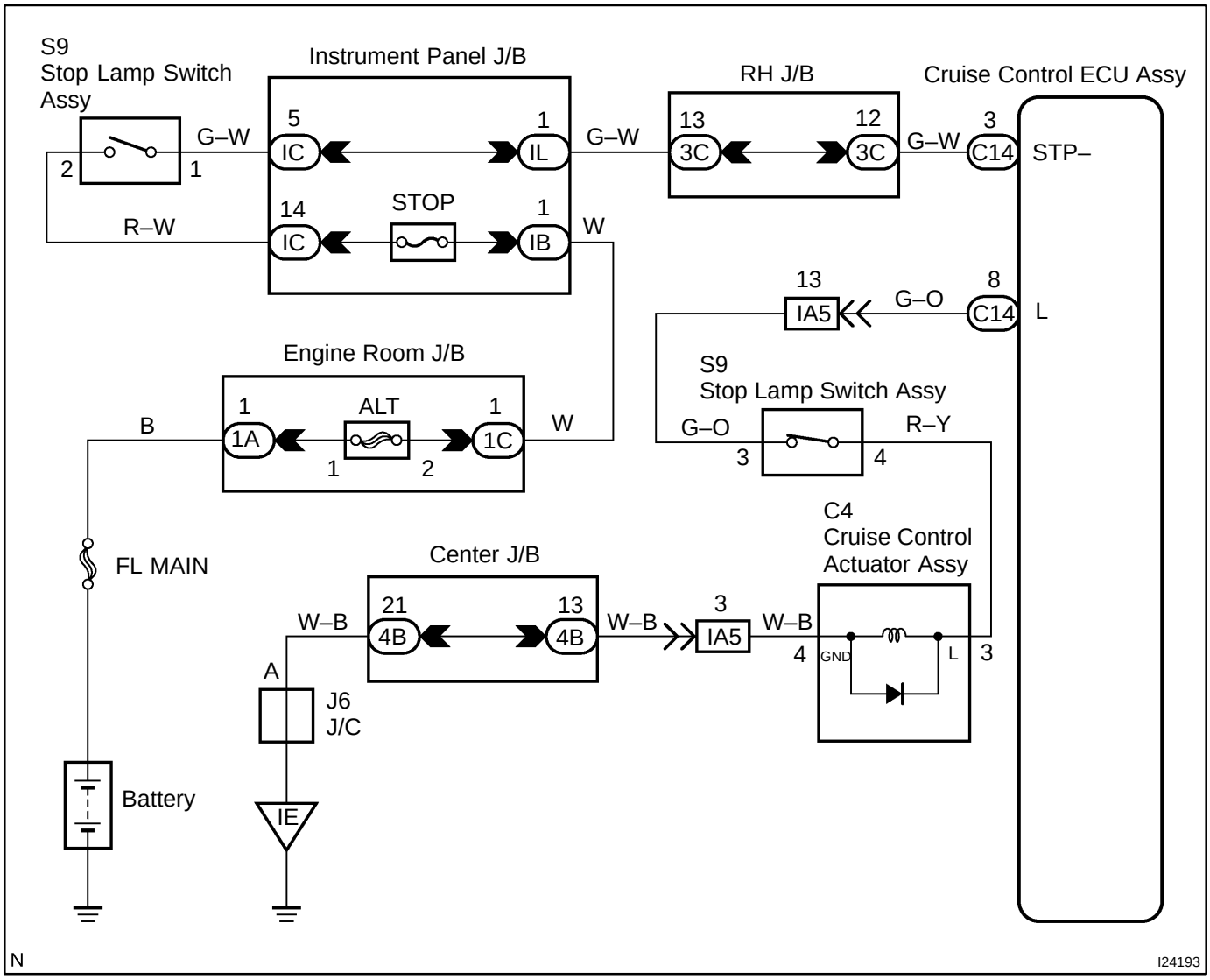
DTC 12 ACTUATOR MAGNETIC CLUTCH CIRCUIT

CIRCUIT DESCRIPTION

This circuit turns on the magnetic clutch inside the actuator during cruise control operation according to the signal from the ECU. If a malfunction occurs in the actuator or speed sensor, etc. during cruise control operation, the rotor shaft between the motor and control plate is released.
When the brake pedal is depressed, the stop lamp switch assy turns ON, supplying electrical power to the stop light. Power supply to the magnetic clutch is mechanically cut and the magnetic clutch is turned OFF.
When driving downhill, if the vehicle speed exceeds the set speed by 8 km/h (5 mph), the ECU turns the safety magnet clutch OFF. If the vehicle speed later drops to within 5 km/h (3 mph) above the set speed, then cruise control at the set speed is resumed.

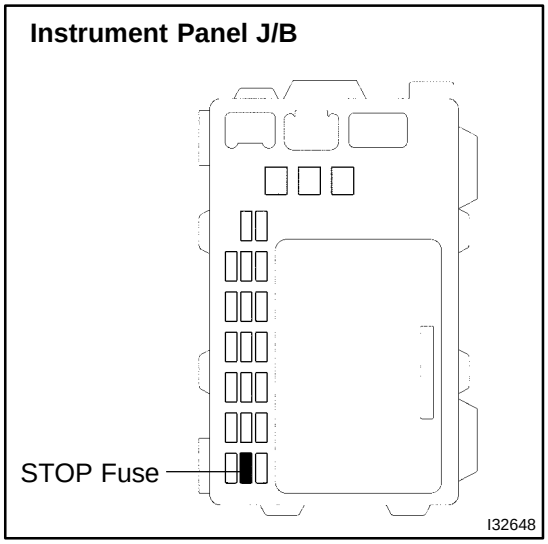
DTC No.	DTC Detecting Condition	Trouble Area
12	• Short in actuator magnetic clutch circuit. • Open (0.8 sec.) in actuator magnetic clutch circuit.	• STOP Fuse • Stop lamp switch assy • Cruise control actuator assy (Actuator magnetic clutch) • Actuator magnetic clutch circuit • Cruise control ECU assy

WIRING DIAGRAM



INSPECTION PROCEDURE

1 INSPECT FUSE(STOP)

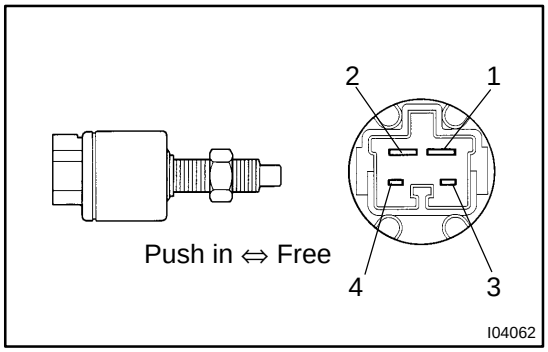


(a) Turn the ignition switch to OFF.
(b) Remove the STOP fuse from the instrument panel J/B.
(c) Check continuity of the STOP fuse.
OK: Continuity

NG → **REPLACE FUSE**

OK

2 INSPECT STOP LAMP SWITCH ASSY



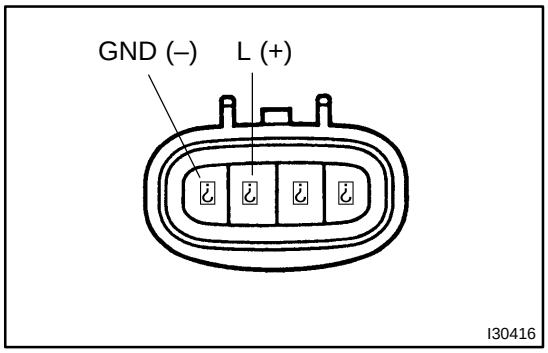
(a) Disconnect the stop lamp switch assy connector.
(b) Check continuity between each terminal of stop lamp switch assy.
OK:

Stop Lamp Switch Assy	Terminal	Specification
Brake pedal depressed (Switch pin free)	1 – 2	Continuity
	3 – 4	No continuity
Brake pedal released (Switch pin pushed in)	1 – 2	No continuity
	3 – 4	Continuity

NG → **REPLACE STOP LAMP SWITCH ASSY**

OK

3	INSPECT CRUISE CONTROL ACTUATOR ASSY

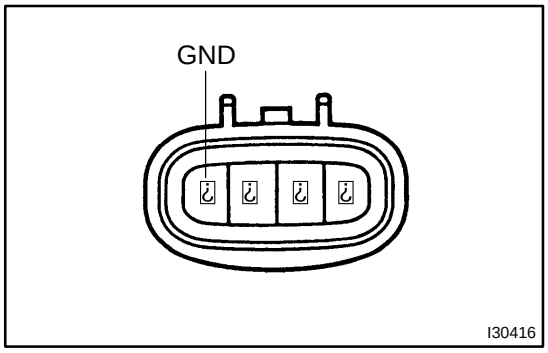


(a) Turn the ignition switch to OFF.
(b) Disconnect the cruise control actuator assy connector.
(c) Measure resistance between terminals 3 (L) and 4 (GND) of the cruise control actuator assy.
OK:
Resistance: 34.65 – 42.35 Ω

NG → **REPLACE CRUISE CONTROL ACTUATOR ASSY**

OK

4	CHECK HARNESS AND CONNECTOR(BETWEEN CRUISE CONTROL ACTUATOR ASSY AND BODY GROUND)



(a) Check continuity between the terminal 4 (GND) of the cruise control actuator assy and body ground.
OK: Continuity

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

OK

5	CHECK HARNESS AND CONNECTOR(BETWEEN CRUISE CONTROL ECU ASSY AND CRUISE CONTROL ACTUATOR ASSY)

(a) Check for open and short circuit in harness and connector between cruise control ECU assy and cruise control actuator assy (actuator magnetic clutch) (See page 01–30).

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

OK

CHECK AND REPLACE CRUISE CONTROL ECU ASSY (See page 01–30)

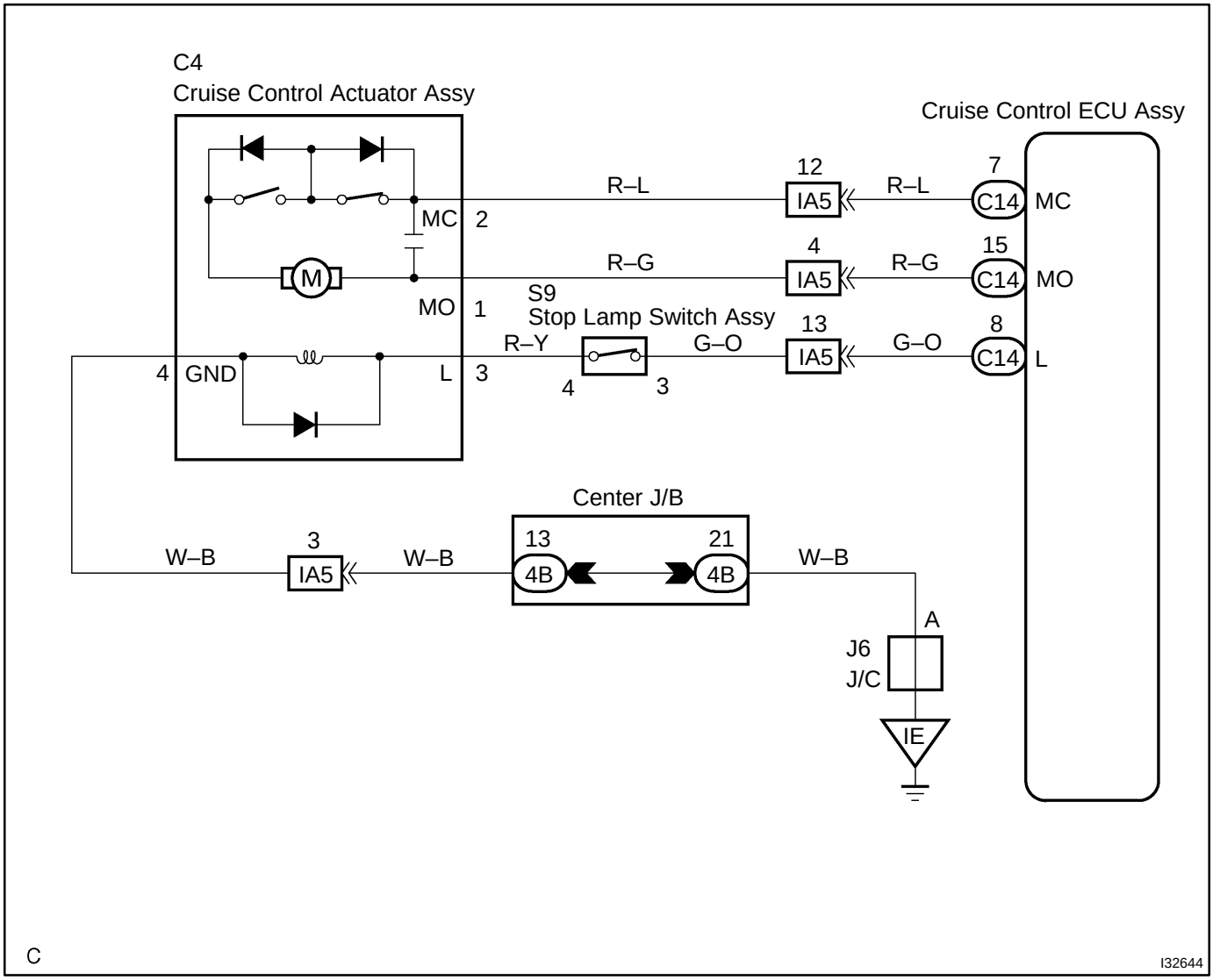
DTC	14	ACTUATOR MECHANICAL MALFUNCTION

CIRCUIT DESCRIPTION

The circuit detects the rotation position of the actuator control plate and sends a signal to the cruise control ECU assy.

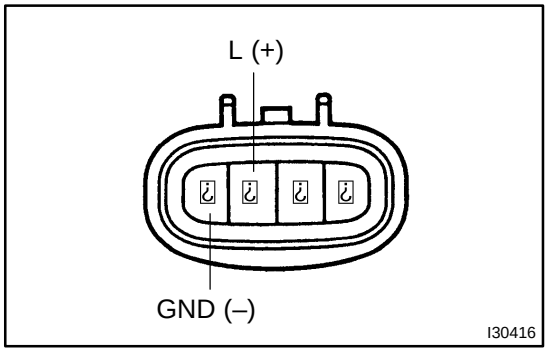
DTC No.	DTC Detecting Condition	Trouble Area
14	• Cruise control actuator assy mechanical malfunction.	• Cruise control actuator assy (Actuator motor) (Actuator lock: motor, arm) • Cruise control ECU assy

WIRING DIAGRAM



INSPECTION PROCEDURE

1	INSPECT CRUISE CONTROL ACTUATOR ASSY



(a) Inspect the cruise control actuator arm locking operation.
  (1) Turn the ignition switch to OFF.
  (2) Disconnect the cruise control actuator assy connector.
  (3) Connect the positive (+) lead from the battery to the terminal 3 (L) of cruise control actuator assy and the negative (–) lead to terminal 4 (GND).

NOTICE:
Do not connect the high tension cables to the wrong battery terminal. You will damage the cruise control actuator assy.

  (4) Move the control plate by hand.

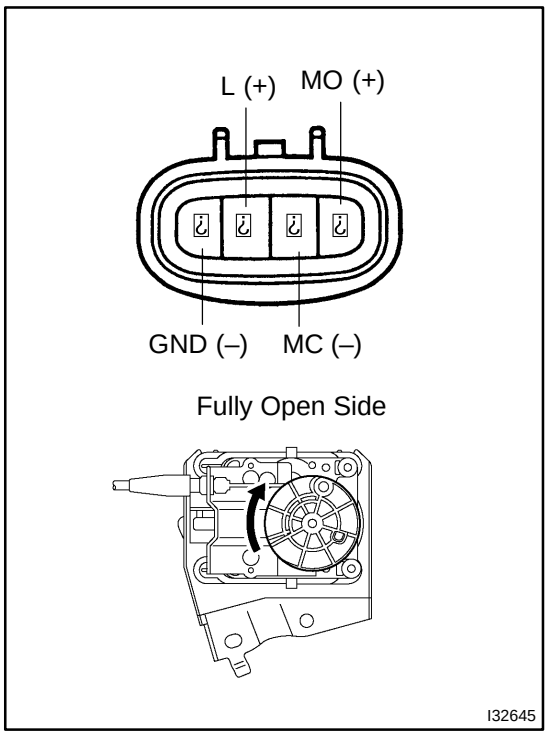
  OK:

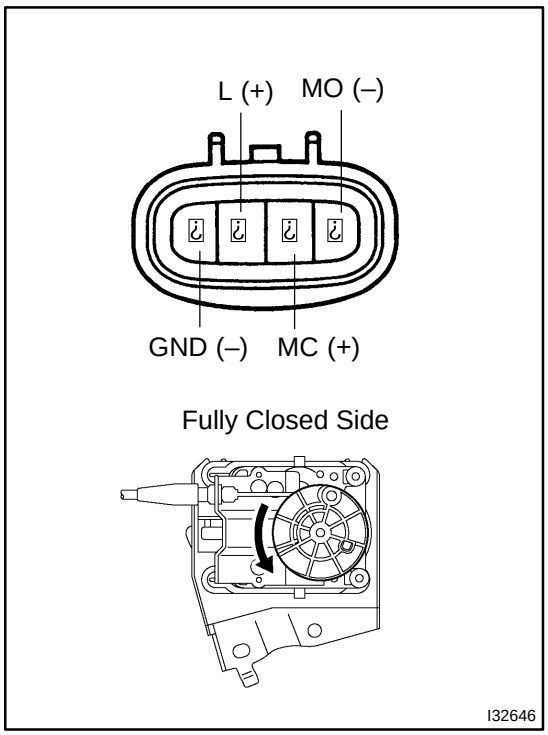
  Control plate does not move.

(b) Inspect the cruise control actuator assy operation.
  (1) Turn the ignition switch to OFF.
  (2) Disconnect the cruise control actuator assy connector.
  (3) Connect the positive (+) lead from the battery to terminals 1 (MO) and 3 (L) of cruise control actuator assy, connect the negative (–) lead to terminals 2 (MC) and 4 (GND) of cruise control actuator assy.

  OK:

  Control arm moves to full open side.





(4) Connect the positive (+) lead from the battery to terminals 2 (MC) and 3 (L) of cruise control actuator assy, connect the negative (–) lead to terminals 1 (MO) and 4 (GND) of cruise control actuator assy.

OK:

Control arm moves to full close side.

NG	**REPLACE CRUISE CONTROL ACTUATOR ASSY**

OK

2	**CHECK HARNESS AND CONNECTOR(BETWEEN CRUISE CONTROL ECU ASSY AND CRUISE CONTROL ACTUATOR ASSY)**

(a) Check for open and short circuit in harness and connector between cruise control ECU assy and cruise control actuator assy (actuator motor) (See page 01–30).

NG	**REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

CHECK AND REPLACE CRUISE CONTROL ECU ASSY (See page 01–30)

DTC	21	OPEN VEHICLE SPEED SENSOR CIRCUIT

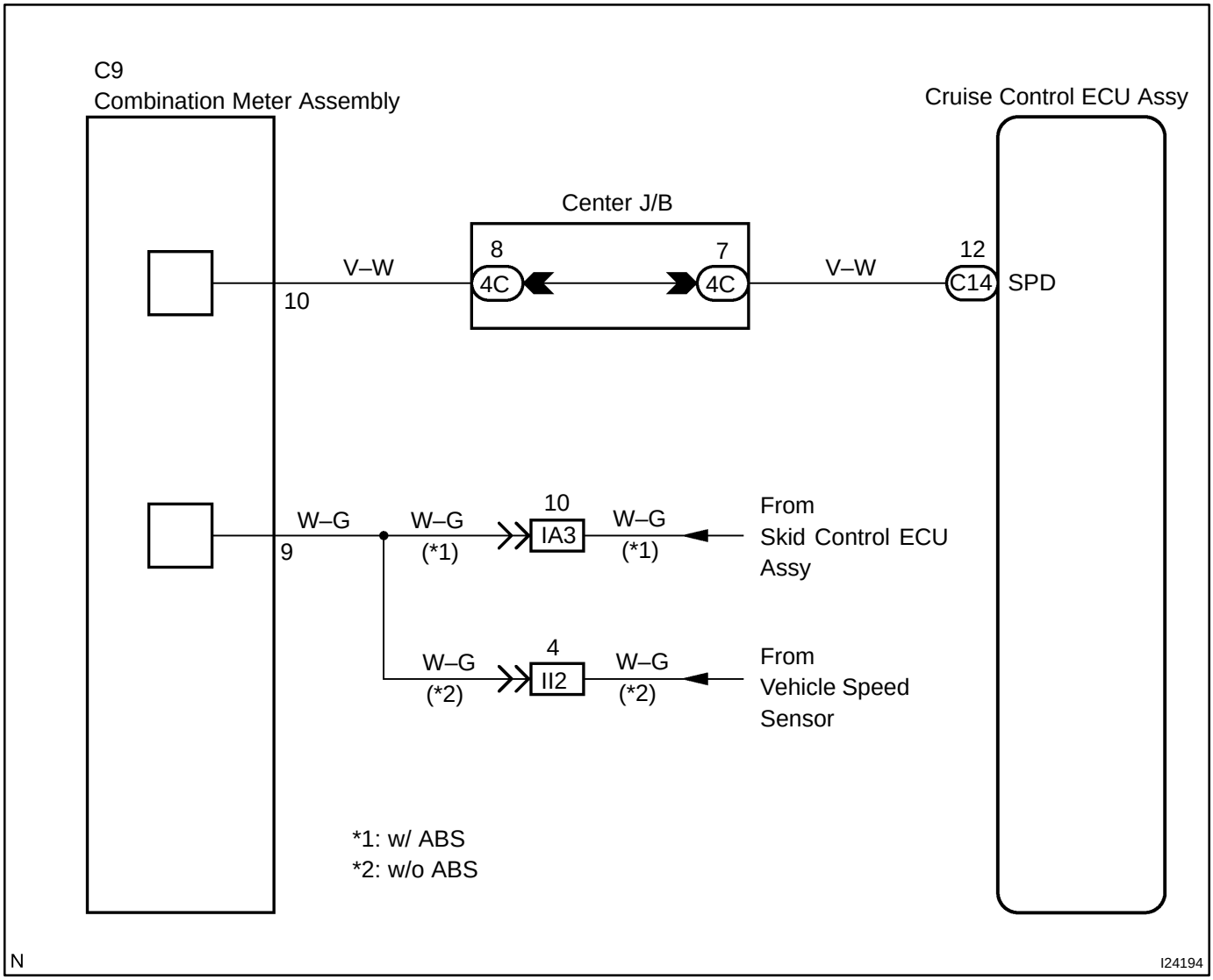
DTC	23	VEHICLE SPEED SIGNAL ABNORMAL

CIRCUIT DESCRIPTION

The vehicle speed sensor circuit is sent to cruise control ECU assy as a vehicle speed signal. For each rotation of the shaft, the vehicle speed sensor sends a signal through the combination meter assembly to the cruise control ECU assy (See the following chart). The cruise control ECU assy calculates the vehicle speed from this pulse frequency.

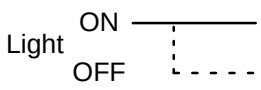
DTC No.	DTC Detecting Condition	Trouble Area
21	• Speed signal is not input to the cruise control ECU assy while cruise control is set.	• Combination meter assembly • Vehicle speed sensor • Vehicle speed sensor circuit • Cruise control ECU assy
23	• Vehicle speed sensor pulse is abnormal.	• Vehicle speed sensor • Cruise control ECU assy

WIRING DIAGRAM



INSPECTION PROCEDURE

1	INPUT SIGNAL CHECK

Input Signal	Indicator Light Blinking Pattern
Drive at about 40 km/h (25 mph) or below	
Drive at about 40 km/h (25 mph) or over	

(a) See input signal check on page 05–745.

(b) Check indicator light operation when driving with vehicle speed above 40 km/h (25 mph), and with vehicle speed below 40 km/h (25 mph).

OK:

Vehicle speed above 40 km/h (25 mph):
Indicator light blinks
Vehicle speed below 40 km/h (25 mph):
Indicator light stays ON

OK → **PROCEED TO NEXT CIRCUIT INSPECTION SHOWN ON PROBLEM SYMPTOMS TABLE (See page 05–754)**

NG

2	CHECK SPEEDOMETER CIRCUIT (See page 05–645)

NG → **REPAIR OR REPLACE HARNESS, CONNECTOR OR COMBINATION METER ASSEMBLY**

OK

3	CHECK HARNESS AND CONNECTOR(BETWEEN CRUISE CONTROL ECU ASSY AND COMBINATION METER ASSEMBLY)

(a) Check for open and short circuit in harness and connector between cruise control ECU assy and combination meter assembly (See page 01–30).

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

OK

CHECK AND REPLACE CRUISE CONTROL ECU ASSY (See page 01–30)

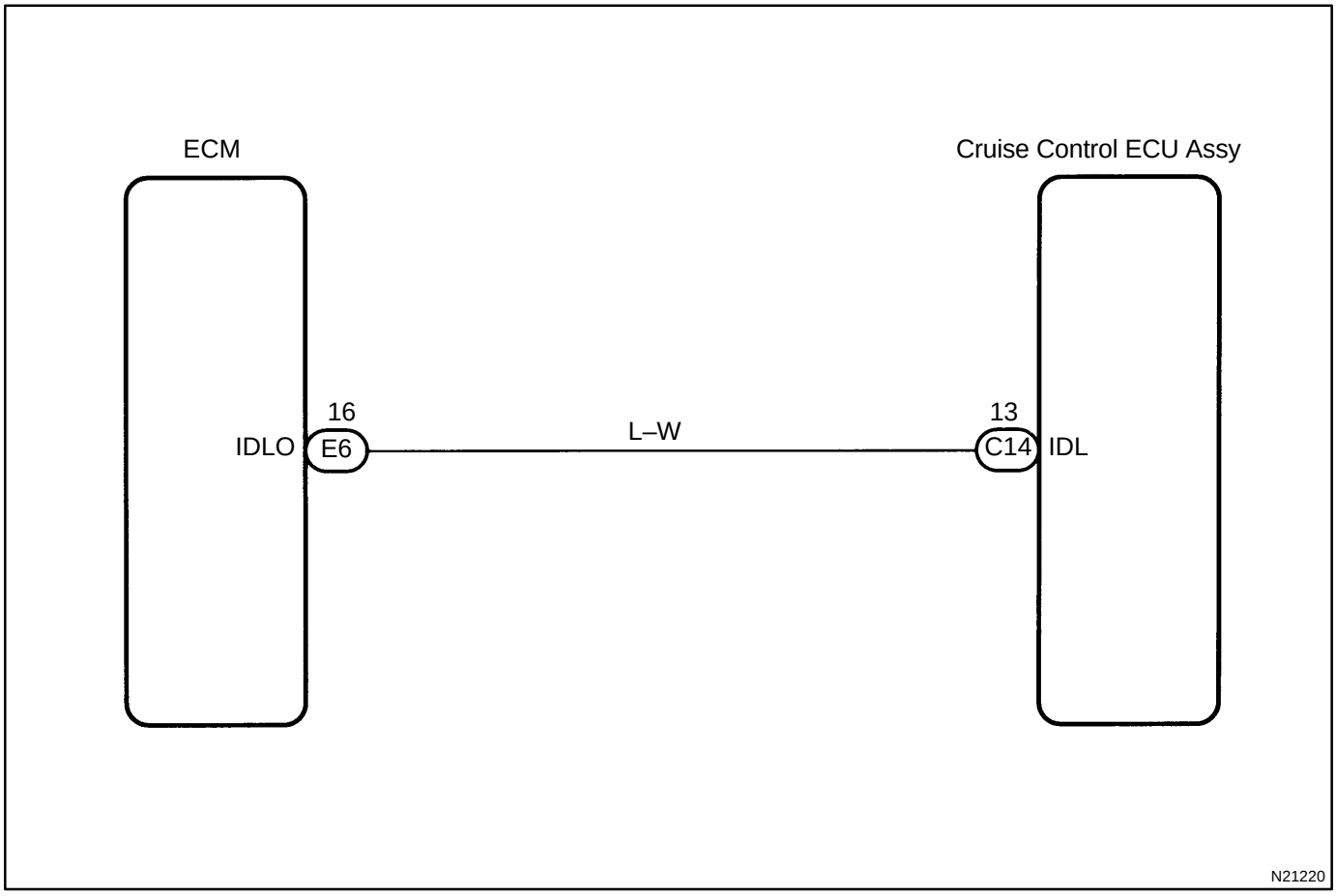
DTC	51	IDLE SIGNAL CIRCUIT

CIRCUIT DESCRIPTION

When the idle switch is turned ON, a signal is sent to the cruise control ECU assy. The cruise control ECU assy uses this signal to correct the discrepancy between the throttle valve position and the actuator position sensor values to enable accurate cruise control at the set speed. If the idle switch is malfunctioning, problem symptoms also occur in the engine, so also inspect the engine.

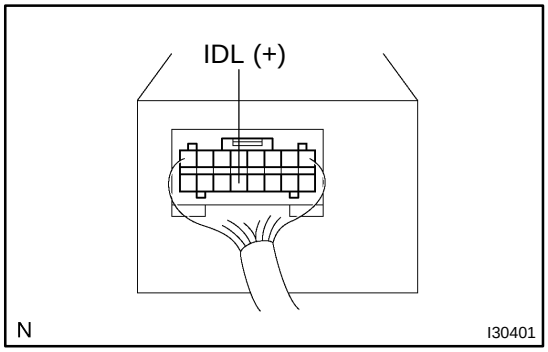
DTC No.	DTC Detecting Condition	Trouble Area
51	• Short in idle signal circuit.	• Throttle position sensor • Idle signal circuit • ECM • Cruise control ECU assy

WIRING DIAGRAM



INSPECTION PROCEDURE

1	INSPECT TERMINAL VOLTAGE(IDL)



(a) Remove the cruise control ECU assy with connector still connected.
(b) Disconnect the ECM connector.
(c) Turn the ignition switch to ON.
(d) Measure voltage between terminal 13 (IDL) of cruise control ECU assy connector and body ground when the throttle valve is fully closed and fully opened.

OK:

Throttle Valve Position	Voltage
Fully opened	10 – 16 V
Fully closed	Below 1.5 V

OK → **PROCEED TO NEXT CIRCUIT INSPECTION SHOWN ON PROBLEM SYMPTOMS TABLE (See page 01–20)**

NG

2	CHECK HARNESS AND CONNECTOR(BETWEEN CRUISE CONTROL ECU ASSY AND ECM)

(a) Check for open and short circuit in harness and connector between cruise control ECU assy and ECM (See page 05–638).

OK → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

NG

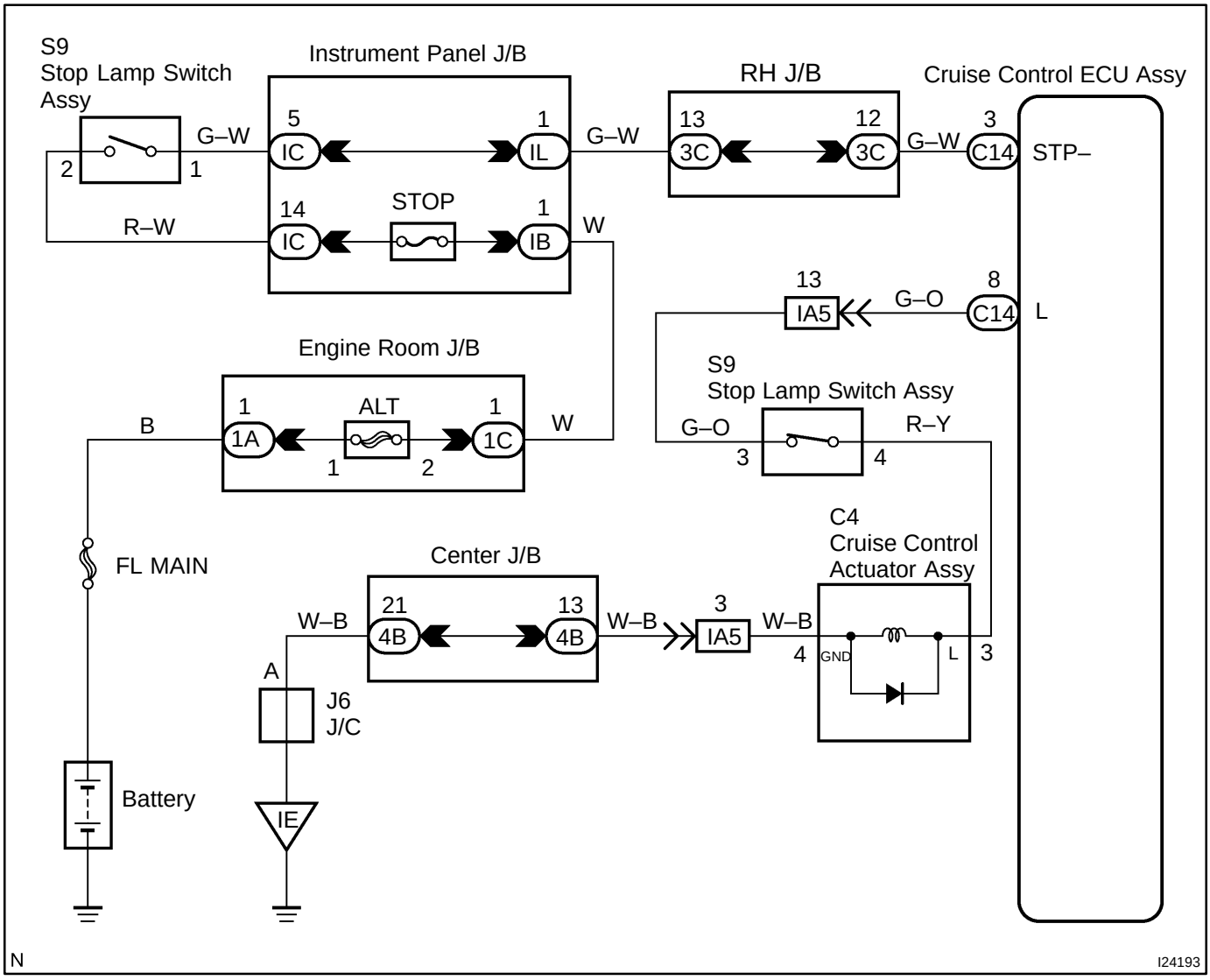
CHECK AND REPLACE CRUISE CONTROL ECU ASSY (See page 05–638)

STOP LIGHT SWITCH CIRCUIT

CIRCUIT DESCRIPTION

When the brake pedal is depressed, the stop lamp switch assy sends a signal to the cruise control ECU assy. When the cruise control ECU assy receives this signal, it cancels the cruise control.
A fail–safe function is provided so that CANCEL functions normally, even if there is a malfunction in the stop light switch circuit.
The cancel conditions are: Battery positive voltage at terminal STP–.
When the brake pedal is depressed, normal battery positive voltage normally is applied through the STOP fuse and stop lamp switch assy to terminal STP– of the cruise control ECU assy, and the cruise control ECU assy turns the cruise control to off.
If the harness connected to terminal STP– has an open circuit, terminal STP– will have battery positive voltage and the cruise control will be turned off.
Also, when the brake pedal is depressed, the magnetic clutch circuit is cut mechanically by the stop lamp switch assy, turning the cruise control OFF.

WIRING DIAGRAM



INSPECTION PROCEDURE

1 CHECK OPERATION(STOP LAMP SWTICH ASSY)

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

NO → **INSPECT STOP LAMP CIRCUIT**

YES

2 INPUT SIGNAL CHECK

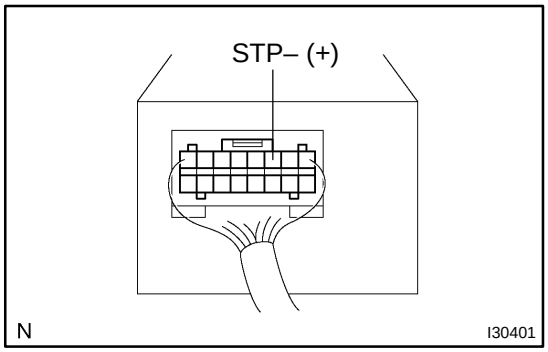
Input Signal	Indicator Light Blinking Pattern
Stop Lamp Switch ON	Light: ON / OFF; SW OFF → SW ON

(a) See input signal check on page 05–745.
(b) Check the indicator light when the brake pedal is depressed.
OK:
The indicator light goes off when the brake pedal is depressed.

OK → **PROCEED TO NEXT CIRCUIT INSPECTION SHOWN ON PROBLEM SYMPTOMS TABLE (See page 05–754)**

NG

3 INSPECT TERMINAL VOLTAGE(STP–)



(a) Remove the cruise control ECU assy with connectors still connected.
(b) Turn the ignition switch to ON.
(c) Measure voltage between terminal 3 (STP–) of cruise control ECU assy connector and body ground, when the brake pedal is depressed and released.
OK:

Brake Pedal	Voltage
Depressed	10 – 16 V
Released	Below 1 V

NG → **PROCEED TO NEXT CIRCUIT INSPECTION SHOWN ON PROBLEM SYMPTOMS TABLE (See page 05–754)**

OK

4	CHECK HARNESS AND CONNECTOR(BETWEEN CRUISE CONTROL ECU ASSY AND STOP LAMP SWITCH ASSY)

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

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

OK

CHECK AND REPLACE CRUISE CONTROL ECU ASSY (See page 01–30)

ELECTRONICALLY CONTROLLED TRANSMISSION COMMUNICATION CIRCUIT

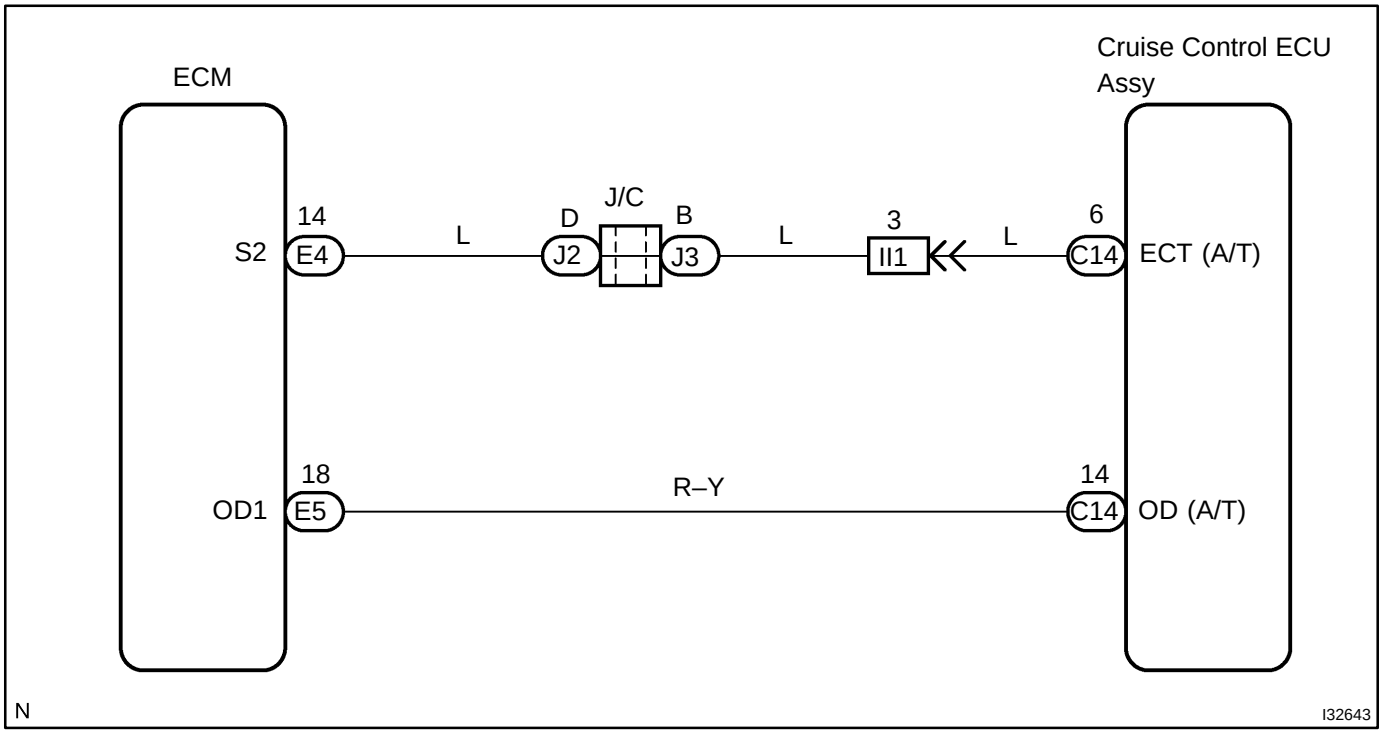
CIRCUIT DESCRIPTION

When driving uphill under cruise control, in order to reduce the number of shifting due to ON–OFF overdrive operation and to provide smooth driving, when down shifting in the electronically controlled transmission occurs, a signal to prevent upshift until the end of the uphill slope is sent from the cruise control ECU assy to the electronically controlled transmission.

Terminal ECT of the cruise control ECU assy detects the shift change signal (output to electronically controlled transmission No.2 solenoid) from the ECM.

If the vehicle slows down, also when terminal ECT of the cruise control ECU assy receives down shifting signal, it sends a signal from terminal OD to ECM to cut overdrive until the end of the uphill slope, and the number of gear shifts are reduced and gear shift points in the electronically controlled transmission are changed.

WIRING DIAGRAM



INSPECTION PROCEDURE

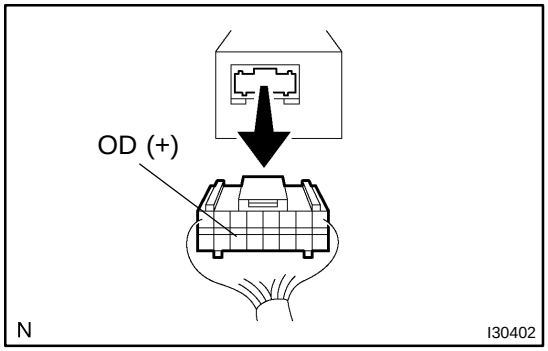
1 CHECK OPERATION(OVERDRIVE)

(a) Drive the vehicle after the engine warms up.
(b) Check that overdrive ON ↔ OFF occurs by an operation of the O/D switch ON–OFF.

NO → **GO TO ELECTRONIC CONTROLLED AUTOMATIC TRANSMISSION[ECT]**

YES

2 INSPECT TERMINAL VOLTAGE(OD)

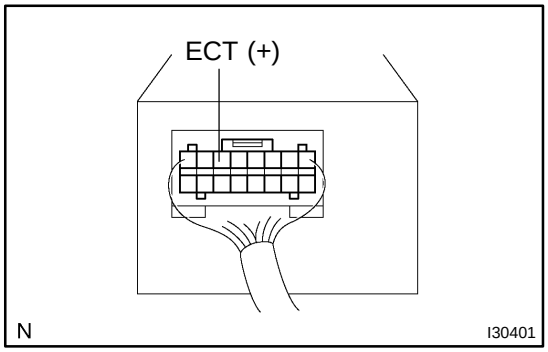


(a) Remove the cruise control ECU assy with the connector still connected.
(b) Turn the ignition switch to ON.
(c) Disconnect the cruise control ECU assy connector.
(d) Measure voltage between terminal 14 (OD) of harness side connector of cruise control ECU assy and body ground.
OK:
Voltage: 10 – 14 V

NG → **Go to step 5**

OK

3 INSPECT TERMINAL VOLTAGE(ECT)



(a) Connect the cruise control ECU assy connector.
(b) Perform the test drive after engine warms up.
(c) Check voltage between terminal 6 (ECT) of cruise control ECU assy connector and body ground when O/D switch is ON and OFF.
OK:

O/D Switch Position	Voltage
ON	Below 0.5 V
OFF	8 – 16 V

OK → **PROCEED TO NEXT CIRCUIT INSPECTION SHOWN ON PROBLEM SYMPTOMS TABLE (See page 05–754)**

NG

4	CHECK HARNESS AND CONNECTOR(BETWEEN CRUISE CONTROL ECU ASSY AND ELECTRONICALLY CONTROLLED TRANSMISSION SOLENOID)

(a) Check for open and short circuit in harness and connector between cruise control ECU assy and electronically controlled transmission solenoid (See page 01–30).

NG → REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

CHECK AND REPLACE CRUISE CONTROL ECU ASSY (See page 01–30)

5	CHECK HARNESS AND CONNECTOR(BETWEEN CRUISE CONTROL ECU ASSY AND ECM)

(a) Check for open and short circuit in harness and connector between cruise control ECU assy and ECM (See page 01–30).

NG → REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

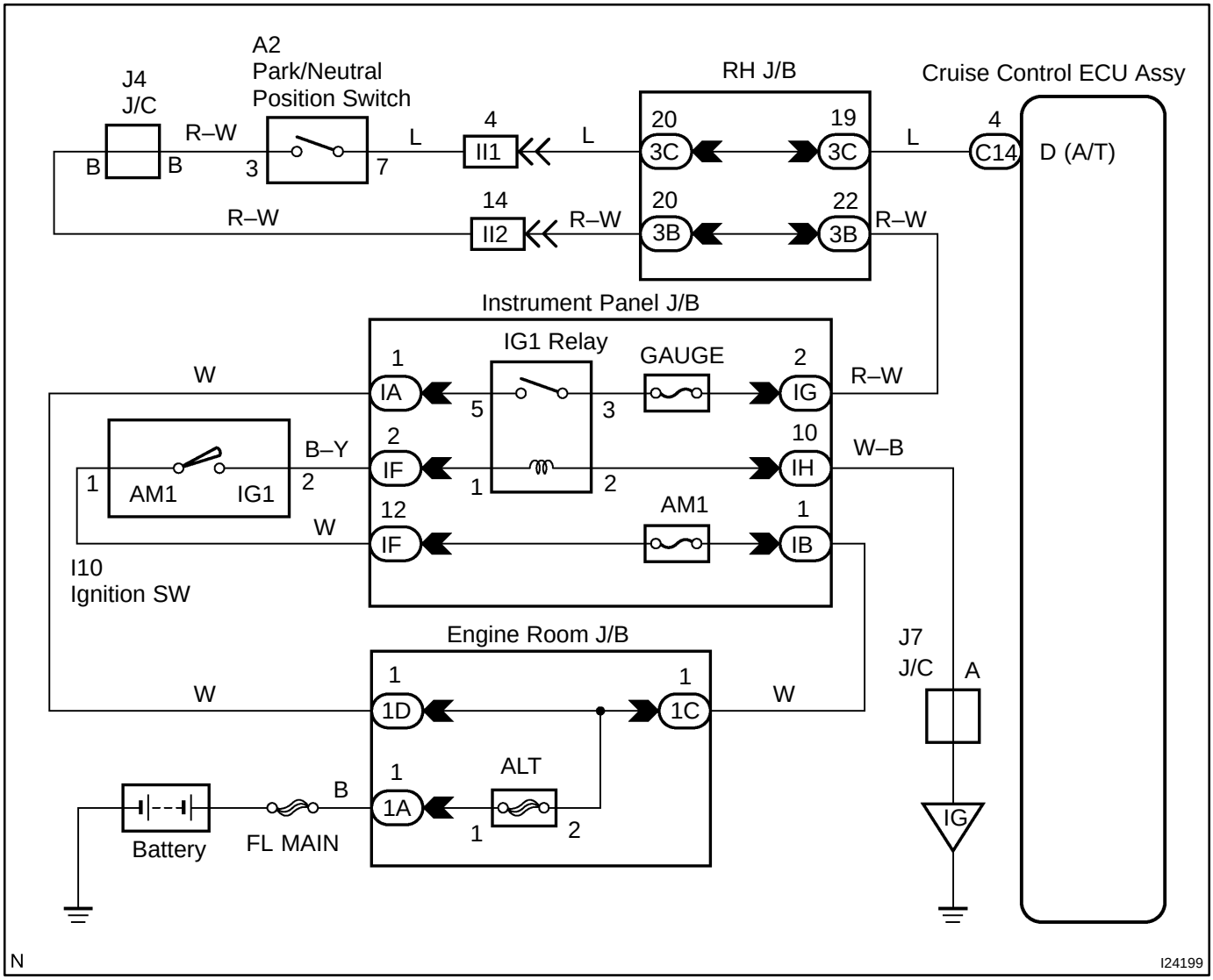
CHECK AND REPLACE CRUISE CONTROL ECU ASSY (See page 01–30)

PARK/NEUTRAL POSITION SWITCH CIRCUIT

CIRCUIT DESCRIPTION

When the shift position is put in except D position, a signal is sent from the park/neutral position switch to the cruise control ECU assy. When this signal is input during cruise control driving, the ECU cancels the cruise control.

WIRING DIAGRAM



INSPECTION PROCEDURE

1 CHECK OPERATION(STARTER)

(a) Check that the starter operates normally and that the engine starts.

NO → **GO TO ENGINE TROUBLESHOOTING**

YES

2 INPUT SIGNAL CHECK

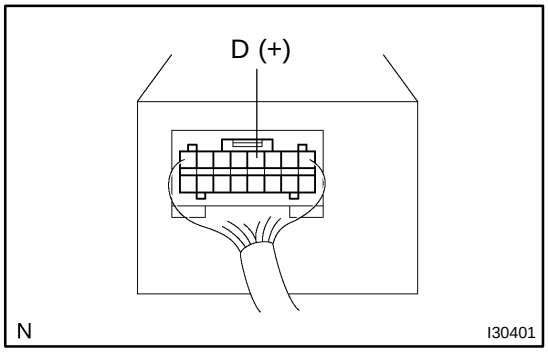
Input Signal	Indicator Light Blinking Pattern
Turn PNP Switch OFF (Shift to positions except D)	Light: ON — SW ON; OFF — SW OFF

(a) See input signal check on page 05–745.
(b) Check the indicator light when shifting into except D position.
OK:
The indicator light goes off when shifting into except D position.

OK → **PROCEED TO NEXT CIRCUIT INSPECTION SHOWN ON PROBLEM SYMPTOMS TABLE (See page 05–754)**

NG

3 INSPECT TERMINAL VOLTAGE(D)



(a) Turn the ignition switch to ON.
(b) Measure voltage between terminal 4 (D) of cruise control ECU assy connector and body ground when shifting into D position and other positions.
OK:

Shift Position	Voltage
D position	10 – 16 V
Other positions	Below 1 V

OK → **PROCEED TO NEXT CIRCUIT INSPECTION SHOWN ON PROBLEM SYMPTOMS TABLE (See page 05–754)**

NG

4	CHECK HARNESS AND CONNECTOR(BETWEEN CRUISE CONTROL ECU ASSY AND PARK/NEUTRAL POSITION SWITCH)

(a) Check for open and short circuit in harness and connector between cruise control ECU assy and park/neutral position switch (See page 01–30).

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

OK

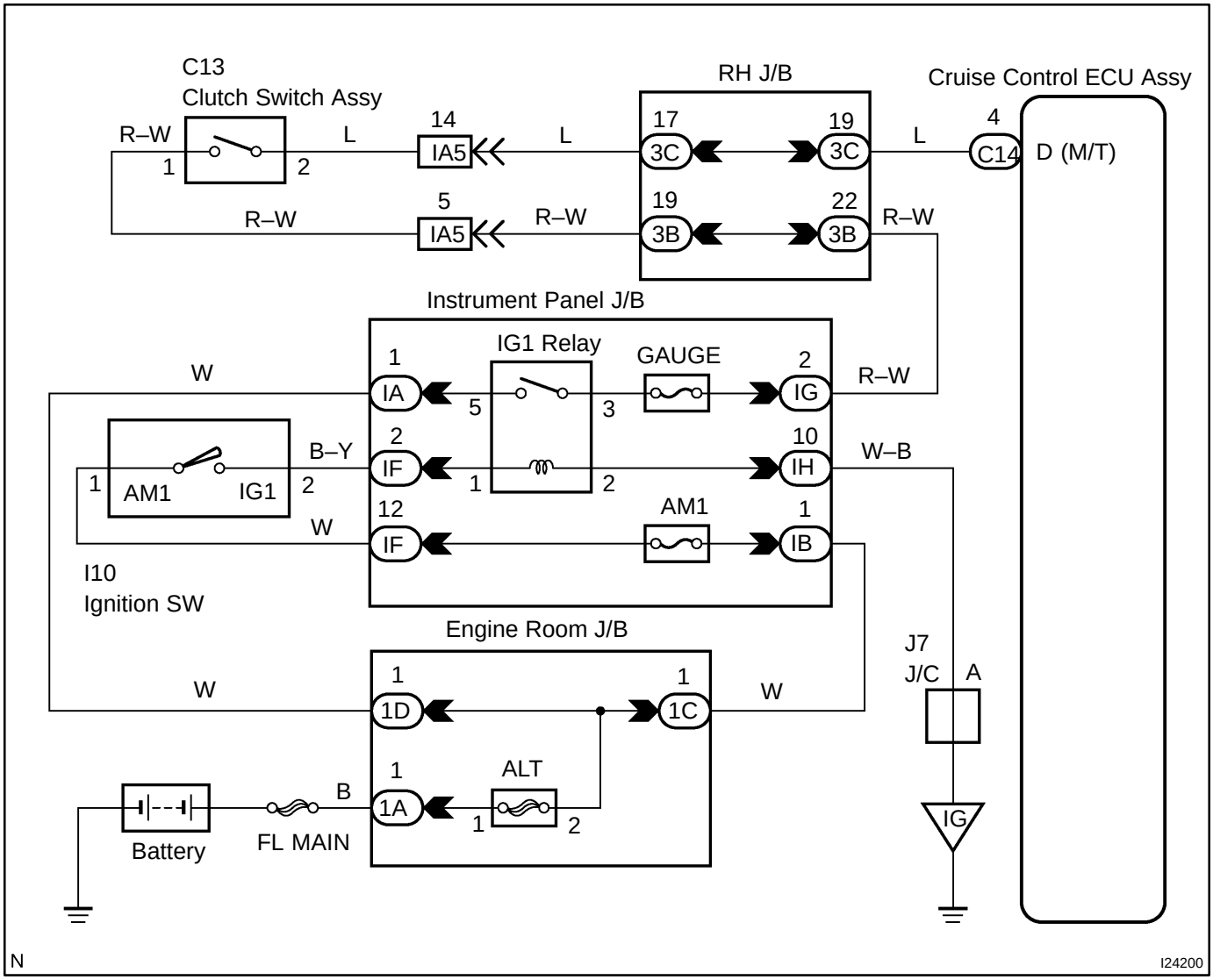
CHECK AND REPLACE CRUISE CONTROL ECU ASSY (See page 01–30)

CLUTCH SWITCH CIRCUIT

CIRCUIT DESCRIPTION

When the clutch pedal is depressed, the clutch switch sends a signal to the cruise control ECU assy. When the signal is input to the cruise control ECU assy during cruise control driving, the cruise control ECU assy cancels the cruise control.

WIRING DIAGRAM



1 INPUT SIGNAL CHECK

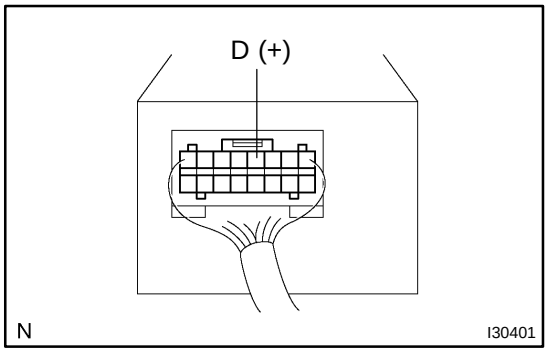
Input Signal	Indicator Light Blinking Pattern
Clutch Switch OFF (Depress clutch pedal)	Light ON / OFF, SW ON / SW OFF

(a) See the input signal check on page 05–745.
(b) Check the indicator light when the clutch pedal is depressed.
OK:
The indicator light goes off when the clutch pedal is depressed.

OK → **PROCEED TO NEXT CIRCUIT INSPECTION SHOWN ON PROBLEM SYMPTOMS TABLE (See page 05–754)**

NG

2 INSPECT TERMINAL VOLTAGE(D)



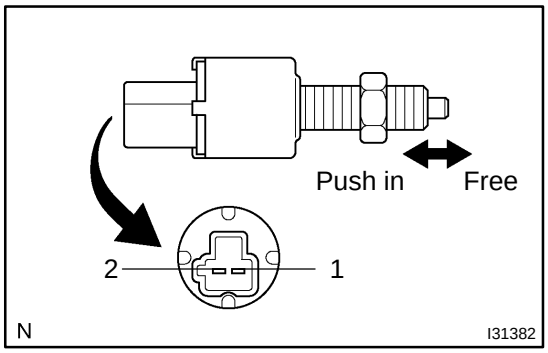
(a) Turn the ignition switch to ON.
(b) Measure the voltage between terminal 4 (D) of the cruise control ECU assy connector and the body ground when the clutch pedal is depressed and released.
OK:

Clutch Pedal	Voltage
Clutch pedal depressed	Below 1 V
Clutch pedal released	10 – 16 V

OK → **PROCEED TO NEXT CIRCUIT INSPECTION SHOWN ON PROBLEM SYMPTOMS TABLE (See page 05–754)**

NG

3	INSPECT CLUTCH SWITCH ASSY



(a) Disconnect the clutch switch assy connector.

(b) Check continuity between terminal 1 and 2 of clutch switch assy.

OK:

Clutch Switch Assy Position	Specification
Switch pin free	No continuity
Switch pin pushed in	Continuity

NG → **REPLACE CLUTCH SWITCH ASSY**

OK

4	CHECK HARNESS AND CONNECTOR(BETWEEN CRUISE CONTROL ECU ASSY AND GAUGE FUSE)

(a) Check for open and short circuit in harness and connector between cruise control ECU assy and gauge fuse (See page 01–30).

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

OK

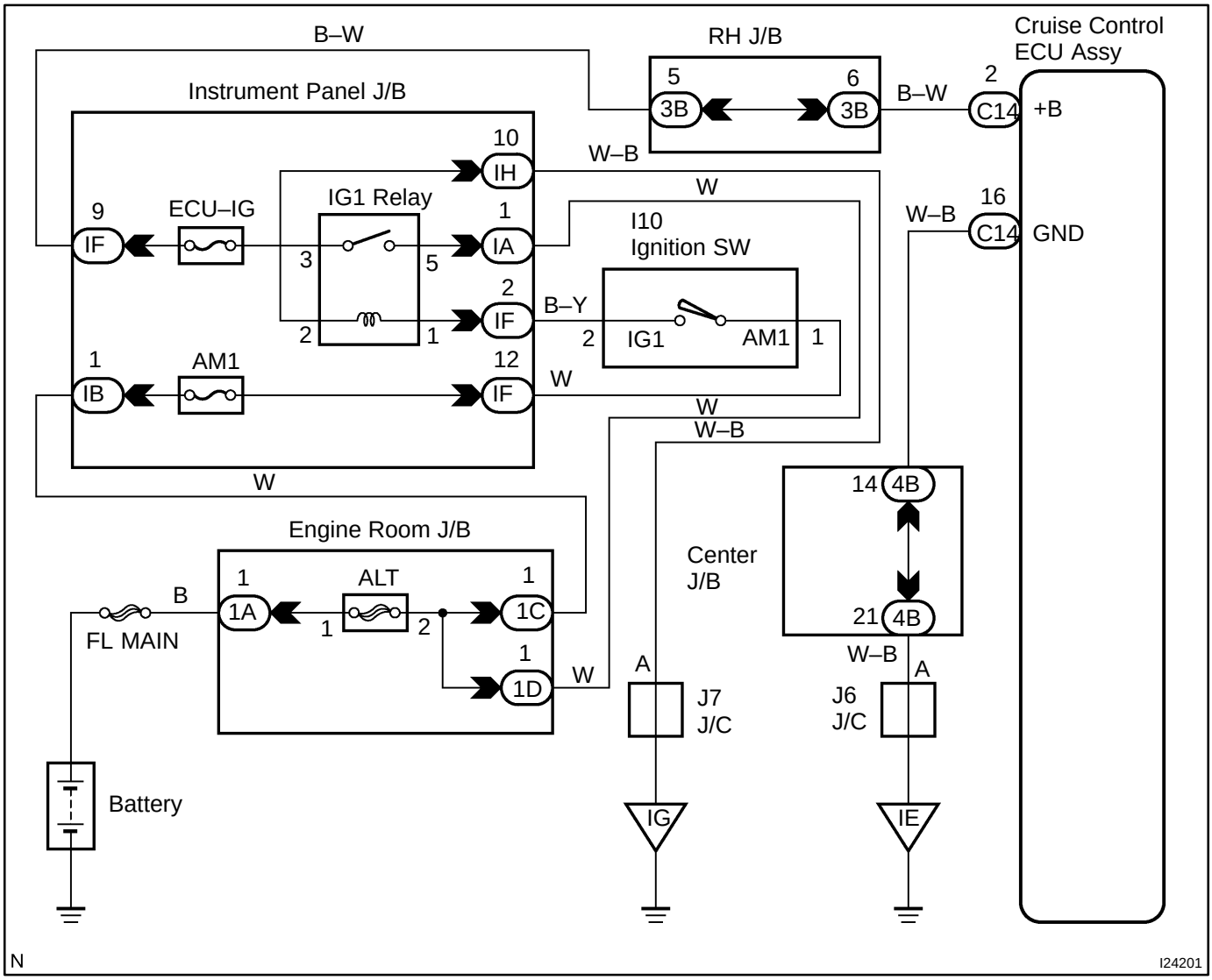
CHECK AND REPLACE CRUISE CONTROL ECU ASSY (See page 01–30)

ECU POWER SOURCE CIRCUIT

CIRCUIT DESCRIPTION

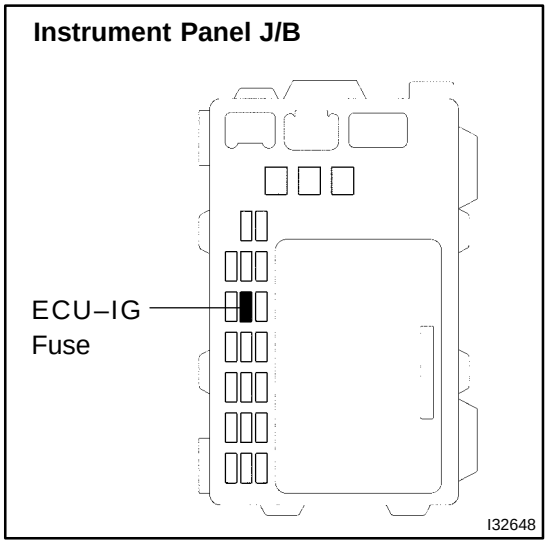
The cruise control ECU assy power source supplies power to the actuator and sensors, etc., when terminal GND and the case of the cruise control ECU assy are grounded.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	CHECK FUSE(ECU–IG)

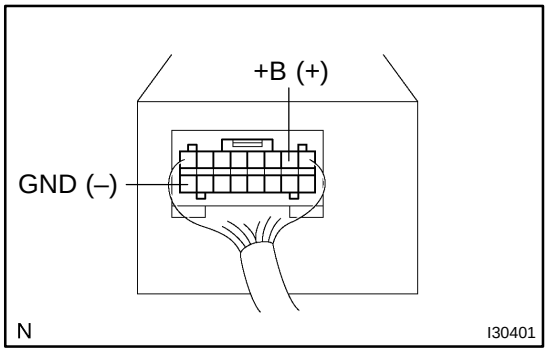


(a) Remove the ECU–IG fuse from the instrument panel J/B.
(b) Check the continuity of the ECU–IG fuse.
OK: Continuity

NG → **REPLACE FUSE**

OK

2	INSPECT TERMINAL VOLTAGE(B)

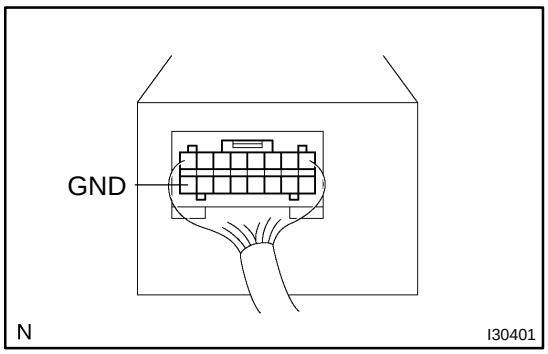


(a) Remove the cruise control ECU assy with connector still connected.
(b) Turn the ignition switch to ON.
(c) Measure voltage between terminals 2 (B) and 16 (GND) of the cruise control ECU assy connector.
OK:
Voltage: 10 – 16 V

OK → **PROCEED TO NEXT CIRCUIT INSPECTION SHOWN ON PROBLEM SYMPTOMS TABLE (See page 05–754)**

NG

3	CHECK HARNESS AND CONNECTOR(BETWEEN CRUISE CONTROL ECU ASSY AND BODY GROUND)



(a) Measure resistance between terminal 16 (GND) of the cruise control ECU assy connector and body ground.
OK:
Resistance: Below 1 Ω

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

OK

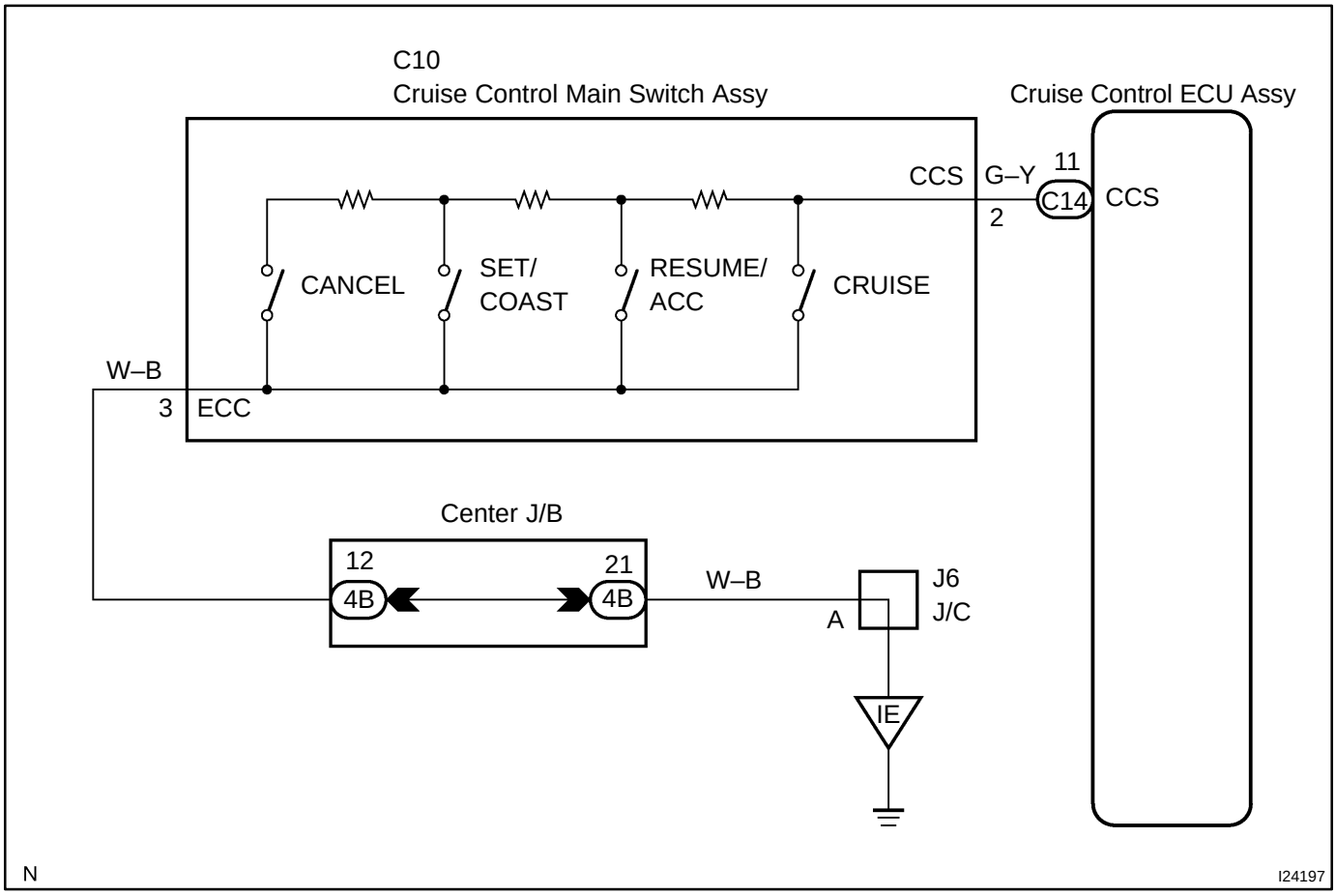
CHECK AND REPAIR HARNESS AND CONNECTOR BETWEEN CRUISE CONTROL ECU ASSY AND BATTERY

CRUISE CONTROL SWITCH CIRCUIT

CIRCUIT DESCRIPTION

This circuit carries the SET/COAST, RES/ACC and CANCEL signals (each voltage) to the cruise control ECU assy.

WIRING DIAGRAM



INSPECTION PROCEDURE

1 INPUT SIGNAL CHECK

Input Signal	Indicator Light Blinking Pattern
SET/COAST Switch	2 Pulses: ON / OFF
RES/ACC Switch	3 Pulses: ON / OFF
CANCEL Switch	SW OFF: ON / OFF; SW ON

(a) See input signal check on page 05–745.

(b) Check the indicator light operation when each of the SET/COAST, RESUME/ACCEL and CANCEL is turned on.

OK:

SET/COAST, RESUME/ACCEL switch:

The signals shown in the table on the left should be output when each switch is ON. The signal should disappear when the switch is turned OFF.

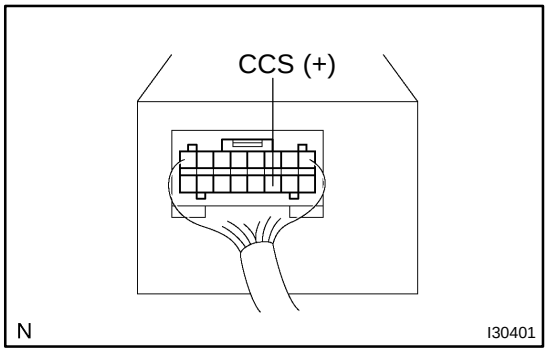
CANCEL switch:

The indicator light goes off when the cancel switch is turned ON.

OK → **WAIT AND SEE**

NG

2 INSPECT TERMINAL VOLTAGE(CCS)



(a) Remove the cruise control ECU assy with the connector being connected.

(b) Turn the ignition switch to ON.

(c) Measure the voltage between terminals 11 (CCS) of the cruise control ECU assy connector and the body ground when each control switch is operated.

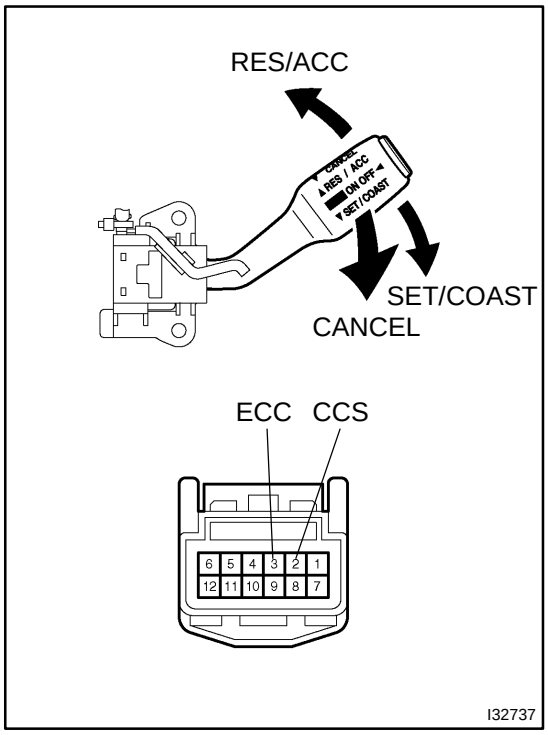
OK:

Switch Position	Voltage
Neutral	10 – 16 V
CRUISE ON–OFF	Below 0.5 V
RES/ACC	2.3 – 4.5 V
SET/COAST	4.5 – 8.1 V
CANCEL	6.6 – 11.4 V

NG → **PROCEED TO NEXT CIRCUIT INSPECTION SHOWN ON PROBLEM SYMPTOMS TABLE (See page 05–754)**

OK

3 INSPECT CRUISE CONTROL MAIN SWITCH ASSY



(a) Remove the steering wheel center pad (See page 50–8).

(b) Disconnect the control switch assy connector.

(c) Check continuity between terminals 2 (CCS) and 3 (ECC) of control switch assy connector when cruise control main switch assy is held ON and OFF.

OK:

Switch Position	Resistance
Neutral	∞ (No continuity)
CRUISE ON–OFF	0 Ω (Continuity)
RES/ACC	210 – 270 Ω
SET/COAST	560 – 700 Ω
CANCEL	1,380 – 1,700 Ω

NG → **REPLACE CRUISE CONTROL MAIN SWITCH ASSY**

OK

4 CHECK HARNESS AND CONNECTOR(BETWEEN CRUISE CONTROL MAIN SWITCH ASSY AND BODY GROUND)

(a) Check for open and short circuit in harness and connector between cruise control main switch assy and body ground (See page 01–30).

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

OK

5 CHECK HARNESS AND CONNECTOR(BETWEEN CRUISE CONTROL ECU ASSY AND CRUISE CONTROL MAIN SWITCH ASSY)

(a) Check for open and short circuit in harness and connector between cruise control ECU assy and cruise control main switch assy (See page 01–30).

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

OK

6	INPUT SIGNAL CHECK(See step 1)

OK → WAIT AND SEE

NG

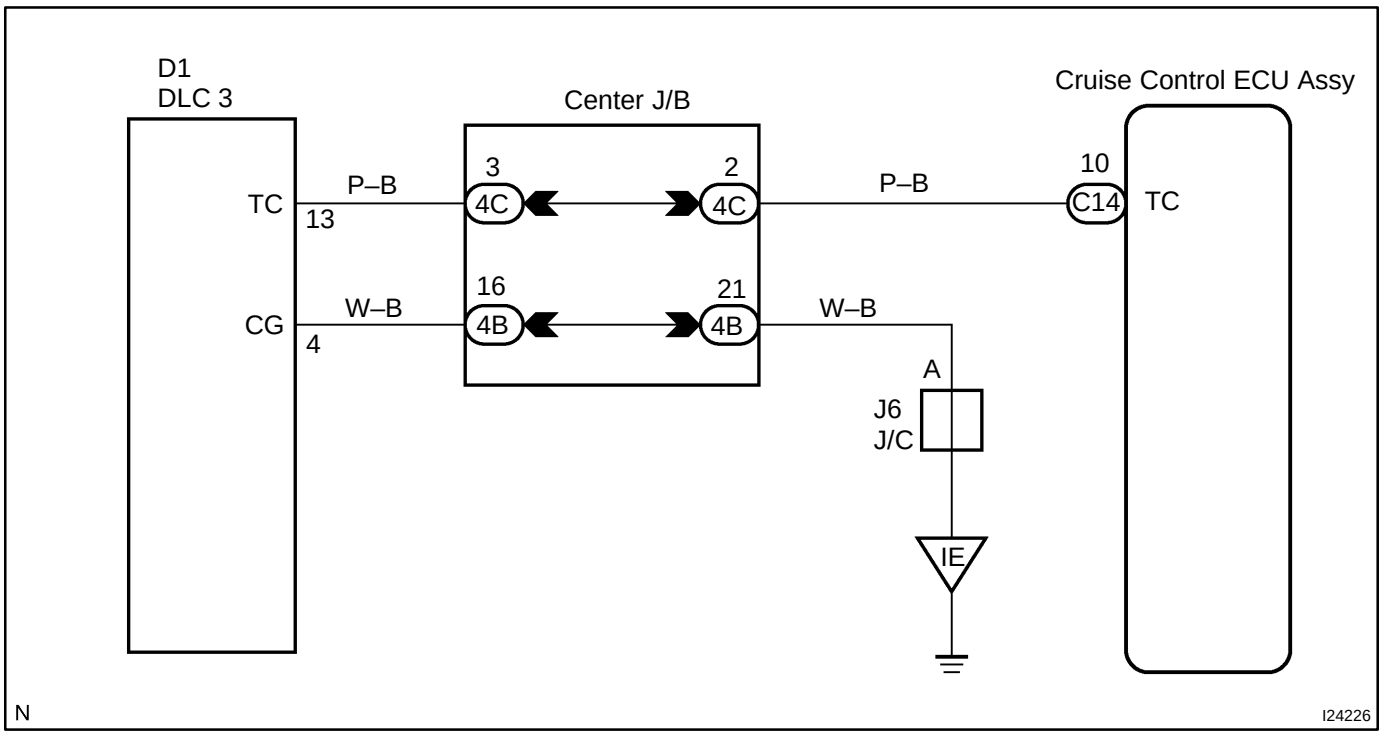
CHECK AND REPLACE CRUISE CONTROL ECU ASSY (See page 01–30)

DIAGNOSIS CIRCUIT

CIRCUIT DESCRIPTION

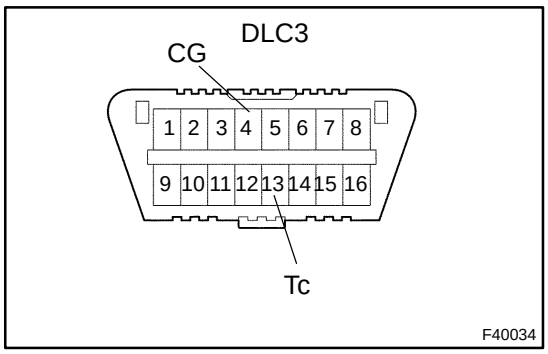
This circuit sends a signal to the cruise control ECU assy that DTC output is required.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	INSPECT DLC3 TERMINAL VOLTAGE



(a) Turn the ignition switch to ON.

(b) Measure voltage between terminals 13 (Tc) and 4 (CG) of DLC3.

OK:

Voltage: 10 – 16 V

OK → **PROCEED TO NEXT CIRCUIT INSPECTION SHOWN ON PROBLEM SYMPTOMS TABLE (See page 05–754)**

NG

2	CHECK HARNESS AND CONNECTOR(BETWEEN CRUISE CONTROL ECU ASSY AND DLC3)

(a) Check for open and short circuit in harness and connector between cruise control ECU assy and DLC3 (See page 01–30).

NG → REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

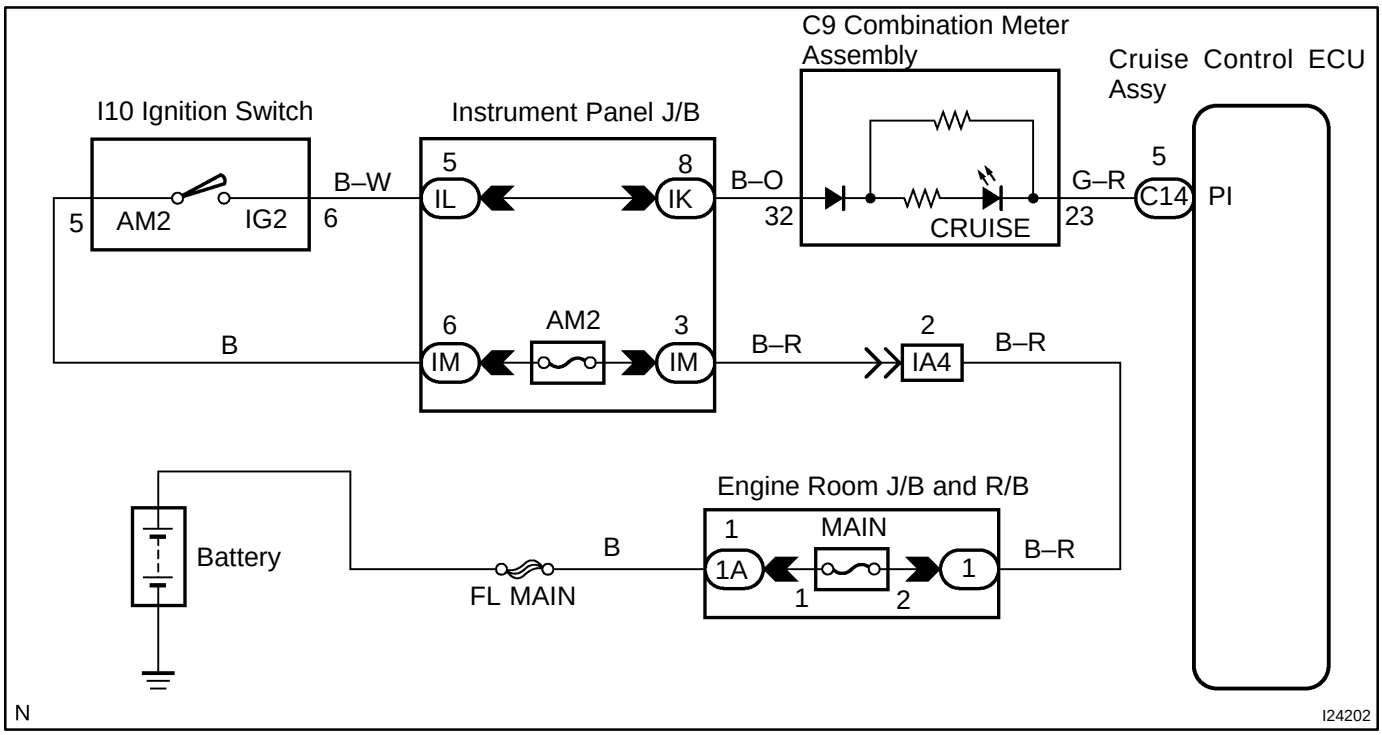
CHECK AND REPLACE CRUISE CONTROL ECU ASSY (See page 01–30)

CRUISE MAIN INDICATOR LIGHT CIRCUIT

CIRCUIT DESCRIPTION

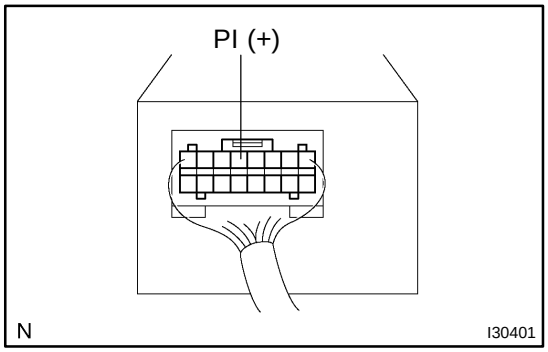
When the cruise control main switch assy button is turned to ON, CRUISE main indicator light comes on.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	INSPECT TERMINAL VOLTAGE(PI)



(a) Turn the ignition switch to ON.

(b) Measure voltage between terminal 5 (PI) of cruise control ECU assy and body ground, when the cruise control main switch button is ON and OFF.

OK:

Cruise Control Switch Button Position	Voltage
OFF	10 – 16 V
ON	Below 1.2 V

OK → **PROCEED TO NEXT CIRCUIT INSPECTION SHOWN ON PROBLEM SYMPTOMS TABLE (See page 05–754)**

NG

2	INSPECT COMBINATION METER ASSY (See page 05–638)

NG → REPLACE COMBINATION METER ASSY

OK

3	CHECK HARNESS AND CONNECTOR(BETWEEN CRUISE CONTROL ECU ASSY AND COMBINATION METER ASSEMBLY)

(a) Check for open and short circuit in harness and connector between cruise control ECU assy and combination meter assembly (See page 01–30).

NG → REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

CHECK AND REPLACE CRUISE CONTROL ECU ASSY (See page 01–30)