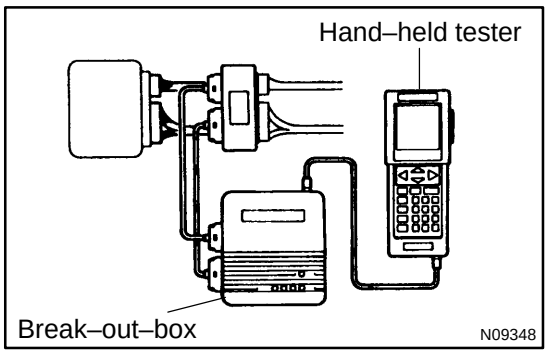
DI7NG–01



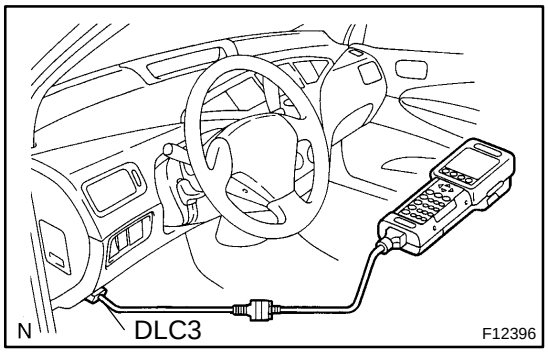

# PRE–CHECK

**1. ECU TERMINAL VALUES MEASUREMENT BY USING BREAK–OUT–BOX AND HAND–HELD TESTER**

(a) Hook up the break–out–box and hand–held tester to the vehicle.

(b) Read the ECU input/output values by following the prompts on the tester screen.

(c) Please refer to the hand–held tester has a ”Snapshot” function. This records the measured data and is effective in the diagnosis of intermittent problems.




**2. USING HAND–HELD TESTER**

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

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

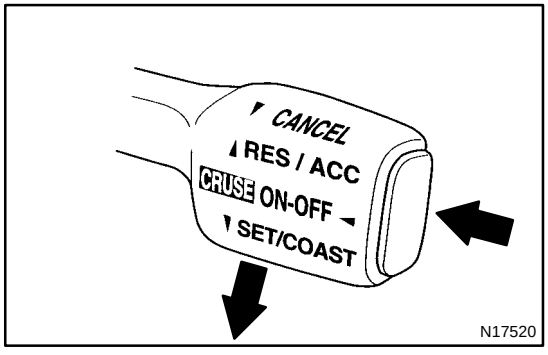
HINT:

Hand–held tester has a ”Snapshot” function which records the monitored data.

Please refer to the hand–held tester operator’s manual for further details.

**3. DTC CLEARANCE**

DTC can be deleted using a hand–held tester. If there is no hand–held tester or it cannot be used, disconnect the auxiliary battery for 1 min. or more and connect it again.




**4. PROBLEM SYMPTOM CONFIRMATION (ROAD TEST)**

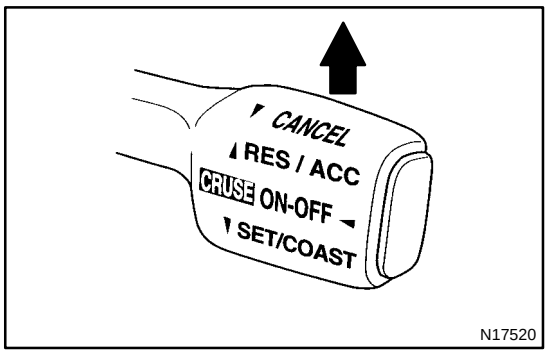
(a) Inspect the SET switch.

(1) Push the main switch ON.

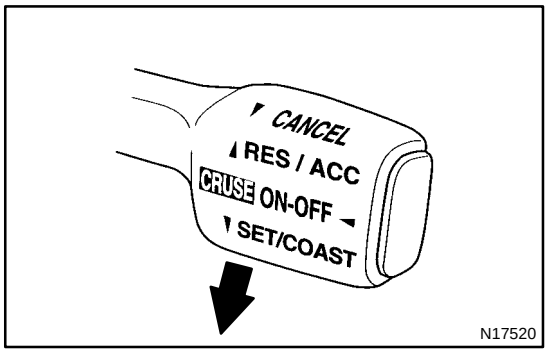
(2) Drive at a desired speed (40 km/h (25 mph) or higher).

(3) Press the control switch to the SET/COAST.

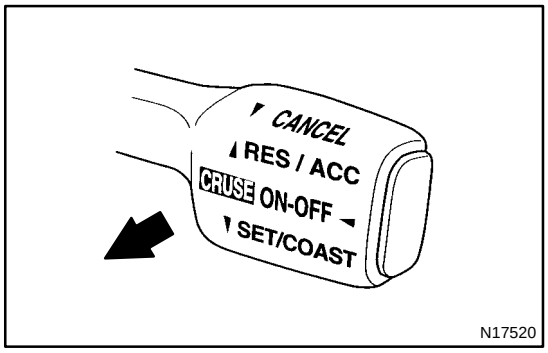
(4) After releasing the switch, check that the vehicle cruises at the desired speed.




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

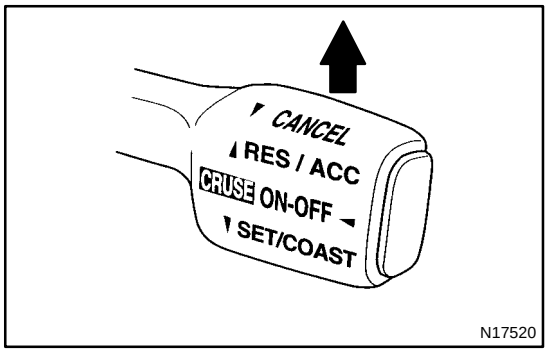



(c) Inspect the COAST switch.
(1) Push the main switch ON.
(2) Drive at a desired speed (40 km/h (25 mph) or higher).
(3) Check that the vehicle speed decreases while the control switch is turned to SET/COAST, and the vehicle cruises at the set speed when the switch is released.
(4) Momentarily press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

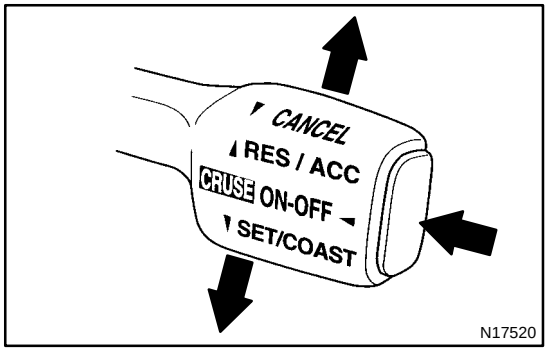



(d) Inspect the CANCEL switch.
(1) Push the main switch ON.
(2) Drive at a desired speed (40 km/h (25 mph) or higher).
(3) When operating one of the followings, check that the cruise control system is cancelled and that the normal driving mode is reset.
- Depress the brake pedal
- Shift to except D range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

- Pull the cruise control switch to CANCEL




(e) Inspect the RESUME switch.
  (1) Push the main switch ON.
  (2) Drive at a desired speed (40 km/h (25 mph) or higher).
  (3) When operating one of the followings, check that the cruise control system is cancelled and that the normal driving mode is reset.
    - Depress the brake pedal
    - Shift to except D range (A/T)
    - Pull the cruise control switch to CANCEL
  (4) After the control switch is turned to RES/ACC at the driving speed of more than 40 km/h (25 mph), check that the vehicle restores the speed prior to the cancellation.




**5. INPUT SIGNAL CHECK**
**(Using hand–held tester)**

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

## CIRCUIT INSPECTION

DI7NI–01

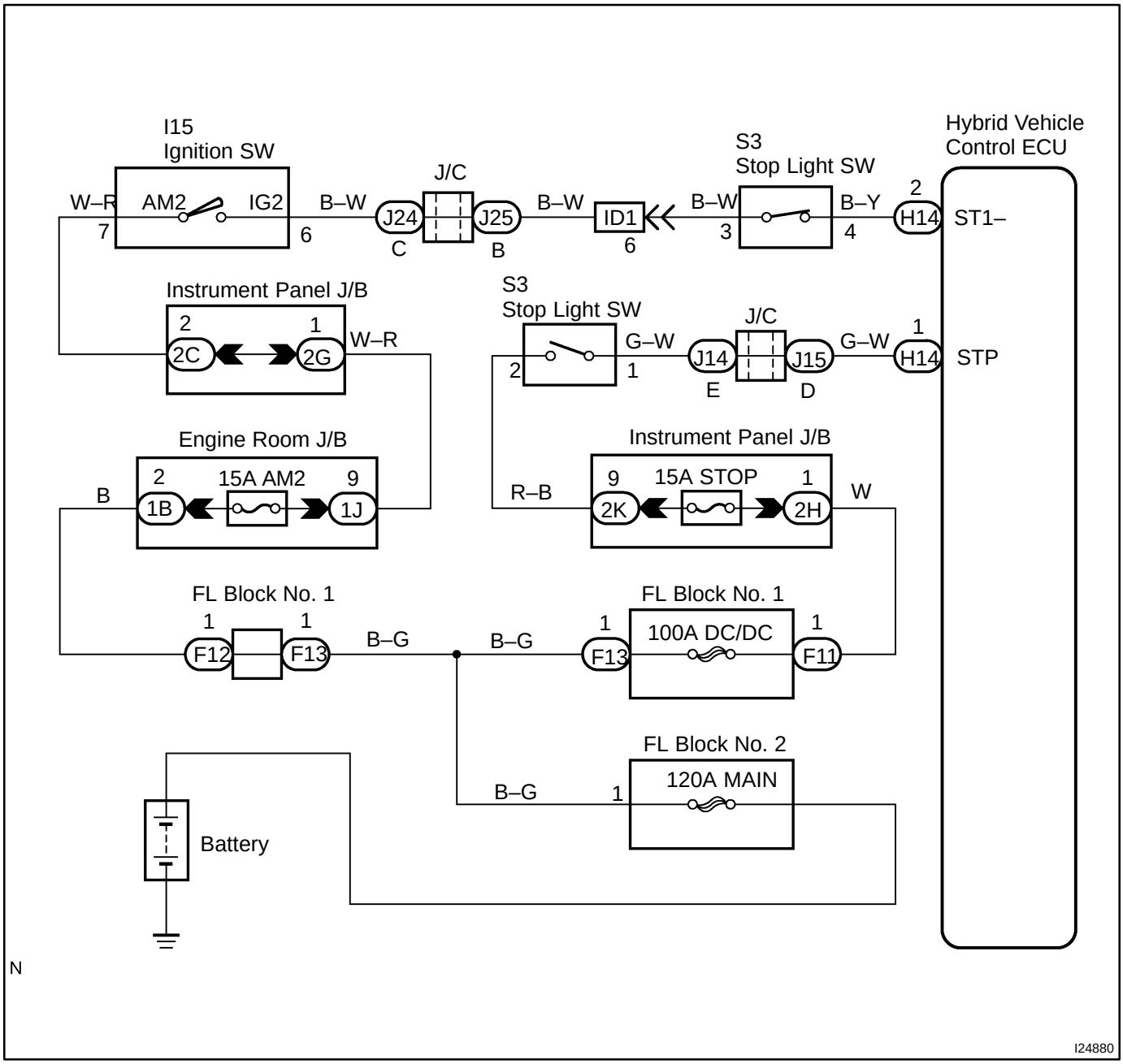
| DTC | P1520 | Stop light switch circuit |
|---|---|---|

## CIRCUIT DESCRIPTION

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

| DTC No. | Detection Item | Trouble Area |
|---|---|---|
| P1520 | Stop light switch circuit. | • Stop light switch<br>• Harness or connector between hybrid vehicle control ECU and stop light switch circuit<br>• Hybrid vehicle control ECU |

## WIRING DIAGRAM



## INSPECTION PROCEDURE

| | |
|---|---|
| 1 | **Check operation of stop light.** |

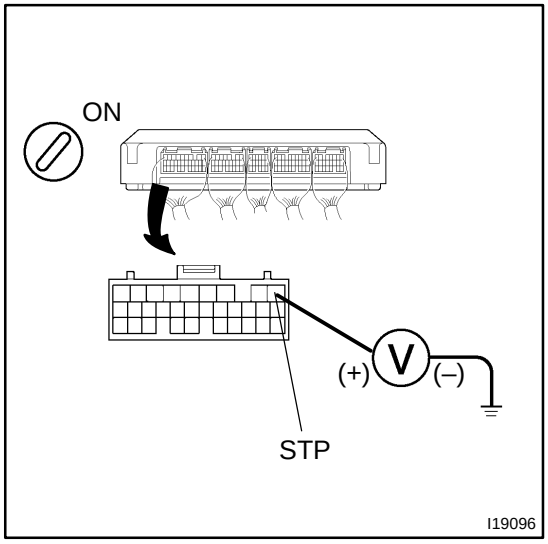
**CHECK:**

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

**NG** → **Check stop light system (See page BE–2).**

**OK**

| | |
|---|---|
| 2 | **Check voltage between terminal STP of hybrid vehicle control ECU connector and body ground.** |




**PREPARATION:**

(a) Remove the hybrid vehicle control ECU with connectors still connected.

(b) Turn ignition switch ON.

**CHECK:**

Measure voltage between terminal STP of hybrid vehicle control ECU connector and body ground, when the brake pedal is depressed and released.

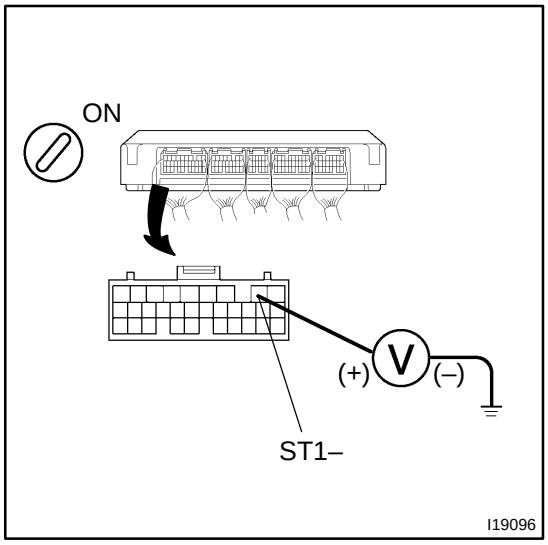
**OK:**

| | |
|---|---|
| Depressed | 10 – 14 V |
| Released | Below 1 V |

**OK** → **Proceed to next circuit inspection shown in problem symptom table (See page DI–661).**

**NG**

| | |
|---|---|
| 3 | **Check voltage between terminal ST1– of hybrid vehicle control ECU connector and body ground.** |




**PREPARATION:**

(a) Remove the hybrid vehicle control ECU with connectors still connected.

(b) Turn ignition switch ON.

**CHECK:**

Measure voltage between terminal ST1– of hybrid vehicle control ECU connector and body ground, when the brake pedal is depressed and released.

**OK:**

| | |
|---|---|
| Depressed | Below 1 V |
| Released | 10 – 14 V |

**OK** → **Proceed to next circuit inspection shown in problem symptoms table (See page DI–661).**

**NG**

| | |
|---|---|
| 4 | **Check wire harness and connector between terminal STP of hybrid vehicle control ECU and stop light switch, and terminal ST1– of hybrid vehicle control ECU and stop light switch (See page IN–41).** |

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

**OK**

**Check and replace hybrid vehicle control ECU (See page DI–179).**

DI7NJ–01

# Power source circuit

## CIRCUIT DESCRIPTION

This circuit provides power to operate the hybrid vehicle control ECU.

## WIRING DIAGRAM

See page DI–161.

## INSPECTION PROCEDURE

| | |
|---|---|
| 1 | **Check IGN and EFI fuse.** |

**CHECK:**

Check continuity of IGN and EFI fuse.

**OK:**

**Continuity**

**NG** → **Replace the failure fuse.**

**OK**

| | |
|---|---|
| 2 | **Check voltage between terminals IGSW, BATT and GND of hybrid vehicle control ECU connector (See page IN–41).** |

**PREPARATION:**

(a) Turn ignition switch OFF.

(b) Disconnect the hybrid vehicle control ECU connector.

**CHECK:**

Measure voltage between terminals IGSW, BATT and GND

**OK:**

**Voltage: 10 – 14 V**

**OK** → **Proceed to next circuit inspection shown in problem symptoms table (See page DI–661).**

**NG**

| | |
|---|---|
| 3 | **Check wireharness and connector between hybrid vehicle control ECU and body ground (See page IN–41).** |

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

**OK**

**Check and repair wireharness and connector between hybrid vehicle control ECU and battery (See page IN–41).**

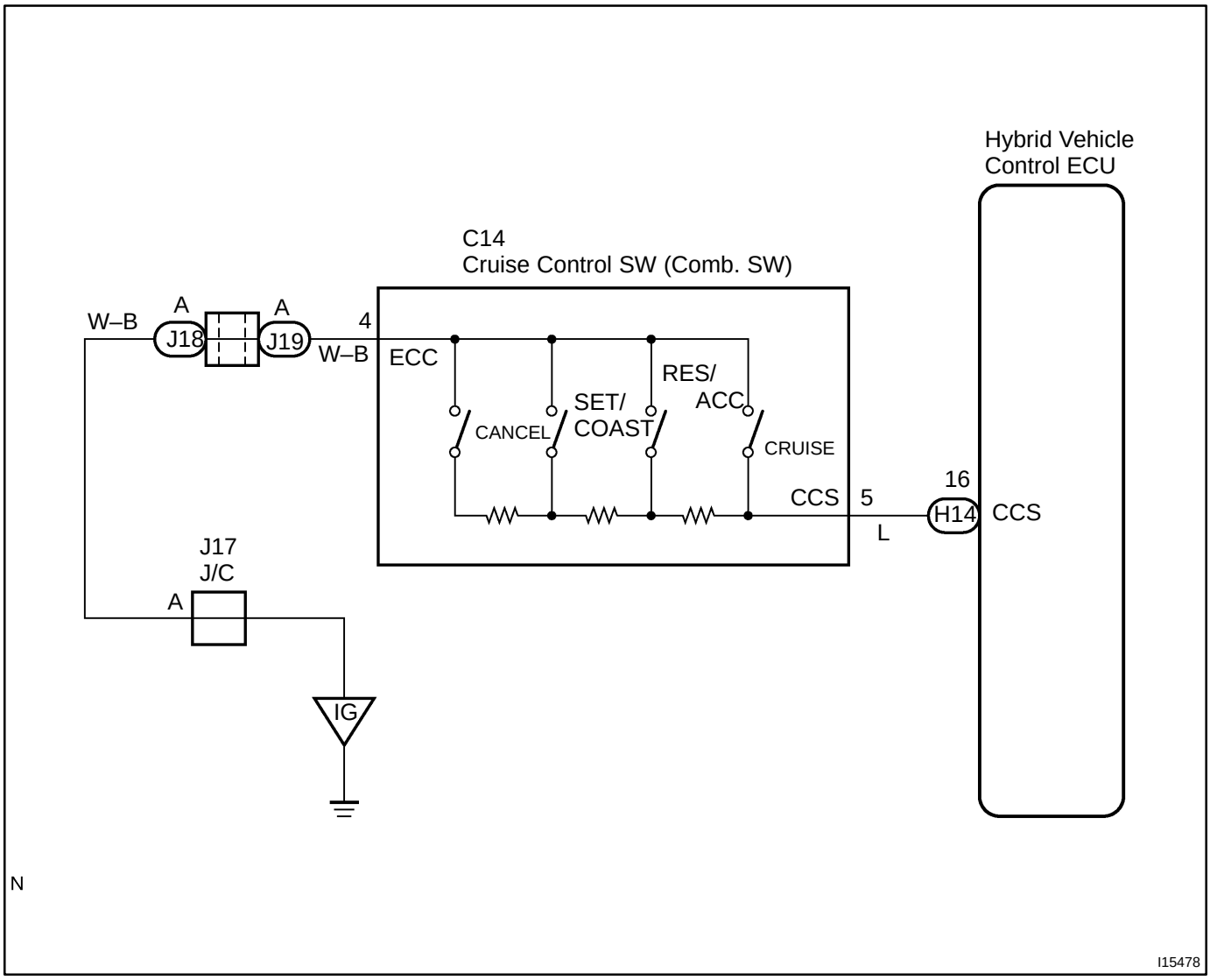
DI7NK–01

# Cruise Control Switch Circuit

## CIRCUIT DESCRIPTION

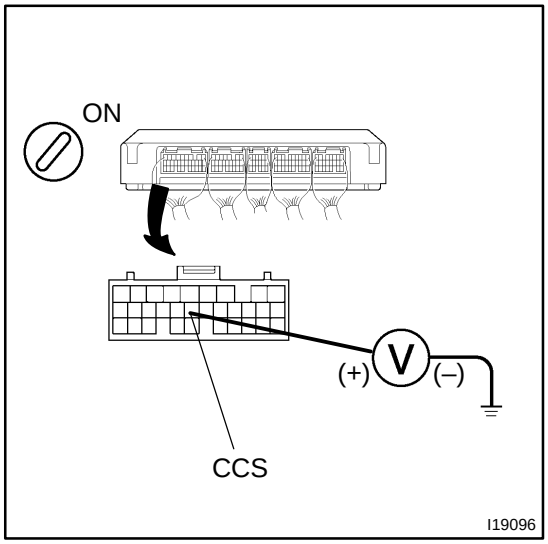
This circuit carries the SET/COAST, RESUME/ACCEL and CANCEL signal (each voltage) to the ECU.

## WIRING DIAGRAM



# INSPECTION PROCEDURE

| | |
|---|---|
| 1 | **Check voltage between terminals CCS of hybrid vehicle control ECU connector and body ground.** |




**PREPARATION:**

(a) Remove the hybrid vehicle control ECU with connector still connected.

(b) Turn ignition switch ON.

**CHECK:**

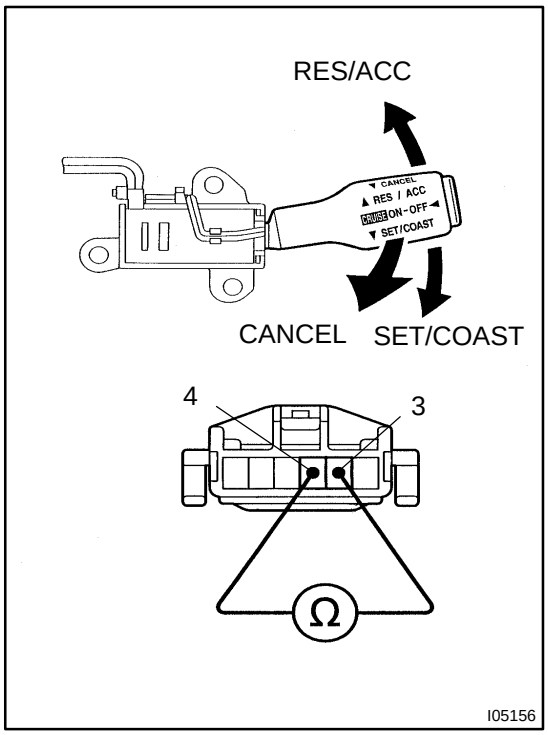
Measure voltage between terminals CCS of hybrid vehicle control ECU connector and body ground, when each of the SET/COAST, RESUME/ACCEL and CANCEL is turned ON.

| Switch position | Resistance (V) |
|---|---|
| Neutral | 10 –16 V |
| RES/ACC | 2.4 – 3.8 V |
| SET/COAST | 4.7 – 6.9 V |
| CANCEL | 6.9 – 9.8 V |

**NG** → **Proceed to next circuit inspection shown in problem symptoms table (See page DI–661).**

**OK**

| 2 | Check control switch continuity. |
|---|---|




**PREPARATION:**

(a) Remove steering wheel center pad.

(b) Disconnect the control switch connector.

**CHECK:**

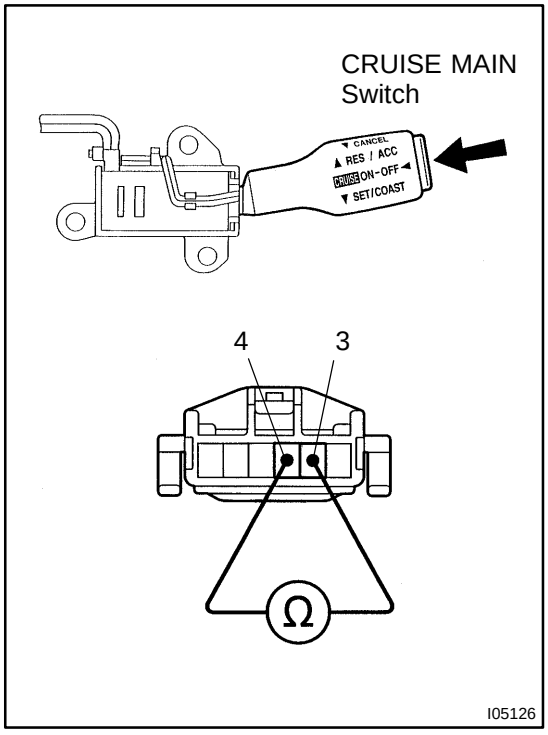
Measure resistance between terminals 4 and 5 of control switch connector when control switch is operated.

| Switch position | Resistance (Ω) |
|---|---|
| Neutral | ∞ (No continuity) |
| RES/ACC | 220 – 260 |
| SET/COAST | 600 – 660 |
| CANCEL | 1,500 – 1,600 |

NG → **Replace control switch.**

OK

| 3 | Check main switch continuity. |
|---|---|




**PREPARATION:**

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

(b) Disconnect the control switch connector.

**CHECK:**

Check continuity between terminals 4 and 5 of control switch connector when main switch is held ON and OFF.

**OK:**

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

NG → **Replace control switch.**

OK

| | |
|---|---|
| 4 | Check harness and connector between hybrid vehicle control ECU and cruise control switch, cruise control switch and body ground (See page IN–41). |

NG → Repair or replace harness or connector.

OK

Check and replace hybrid vehicle control ECU (See page IN–41).

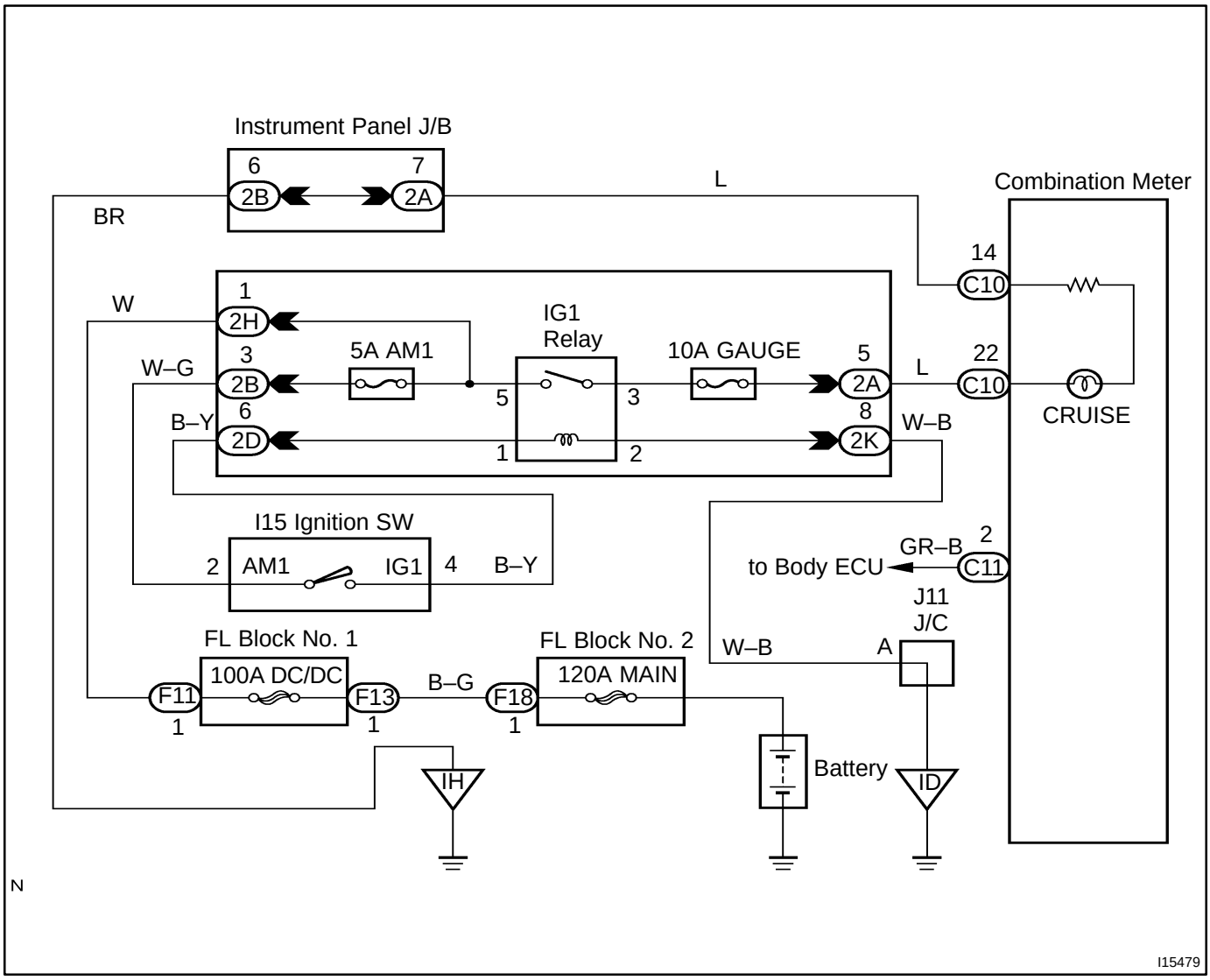
DI7NL–03

# CRUISE MAIN Indicator Light Circuit

## CIRCUIT DESCRIPTION

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

## WIRING DIAGRAM



## INSPECTION PROCEDURE

| | |
|---|---|
| 1 | Check combination meter (See page BE–2). |

NG → Replace combination meter.

OK →

Check and replace hybrid vehicle control ECU (See page DI–179).