SMART KEY SYSTEM

PRECAUTION

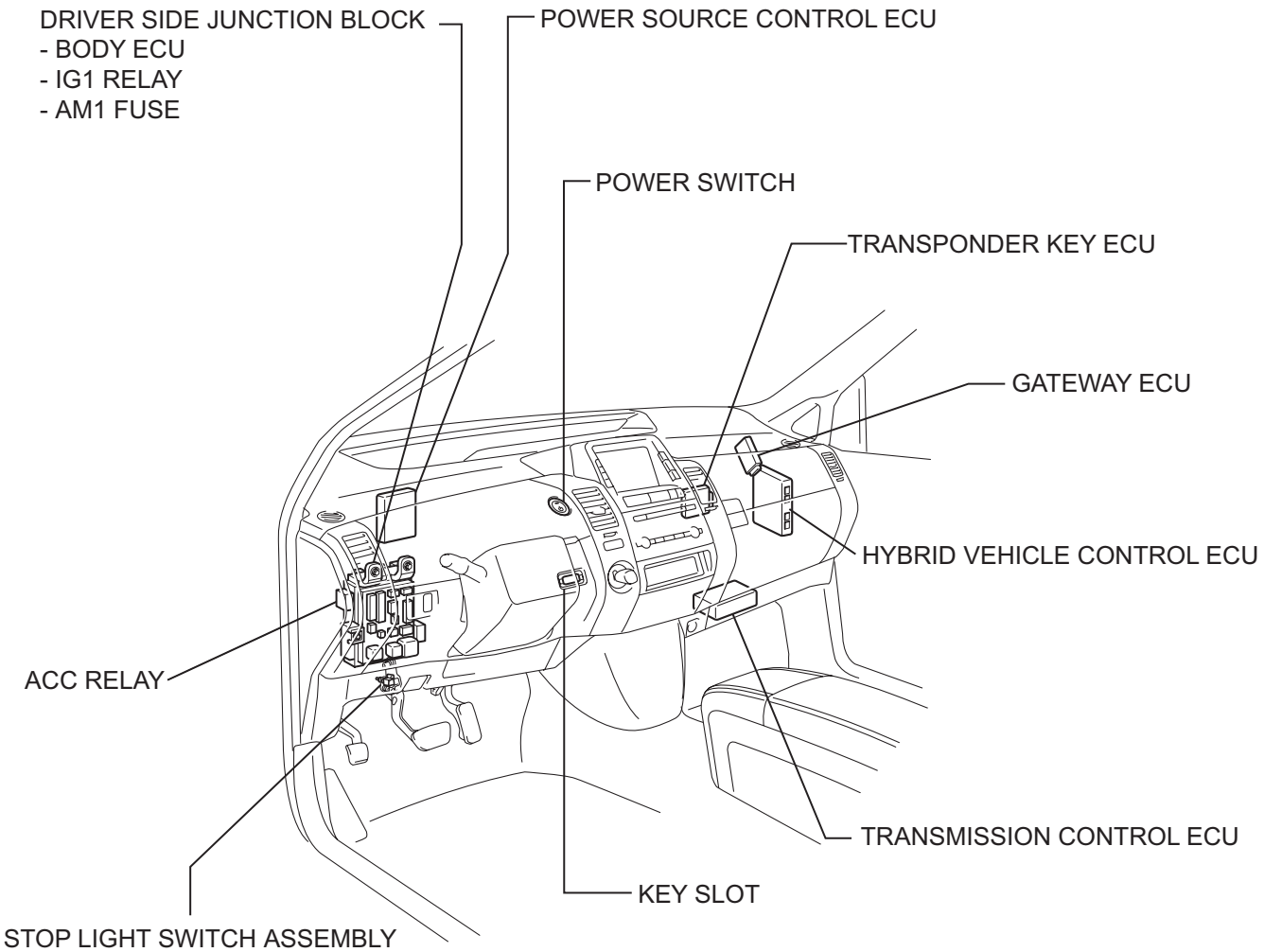
NOTICE:

- **When disconnecting the cable from the negative (-) battery terminal, initialize the following system(s) after the cable is reconnected.**

System Name	See Procedure
Power Window Control System	IN-32

- **When the warning light is illuminated or the battery has been disconnected and reconnected, pressing the power switch may not start the system on the first try. If so, press the power switch again.**
- **When the power source control ECU is replaced with a new ECU and the battery's negative (-) terminal is reconnected, the power switch automatically turns ON (IG). However, when the power source control ECU is removed and then reinstalled, the power switch remains in the same mode as when the ECU was removed.**

PARTS LOCATION



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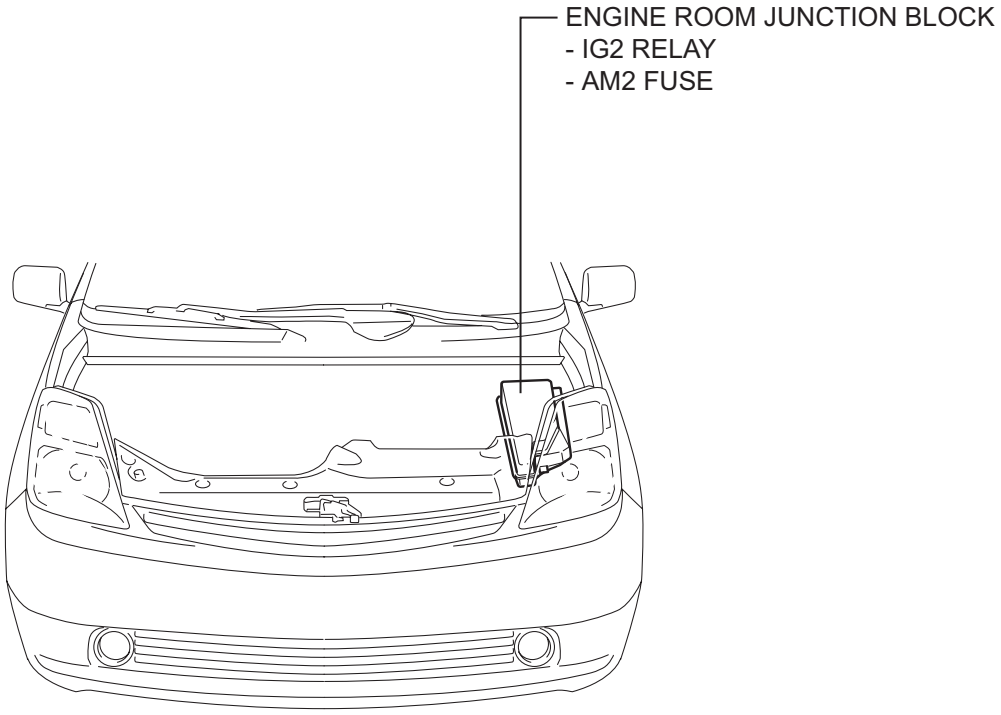

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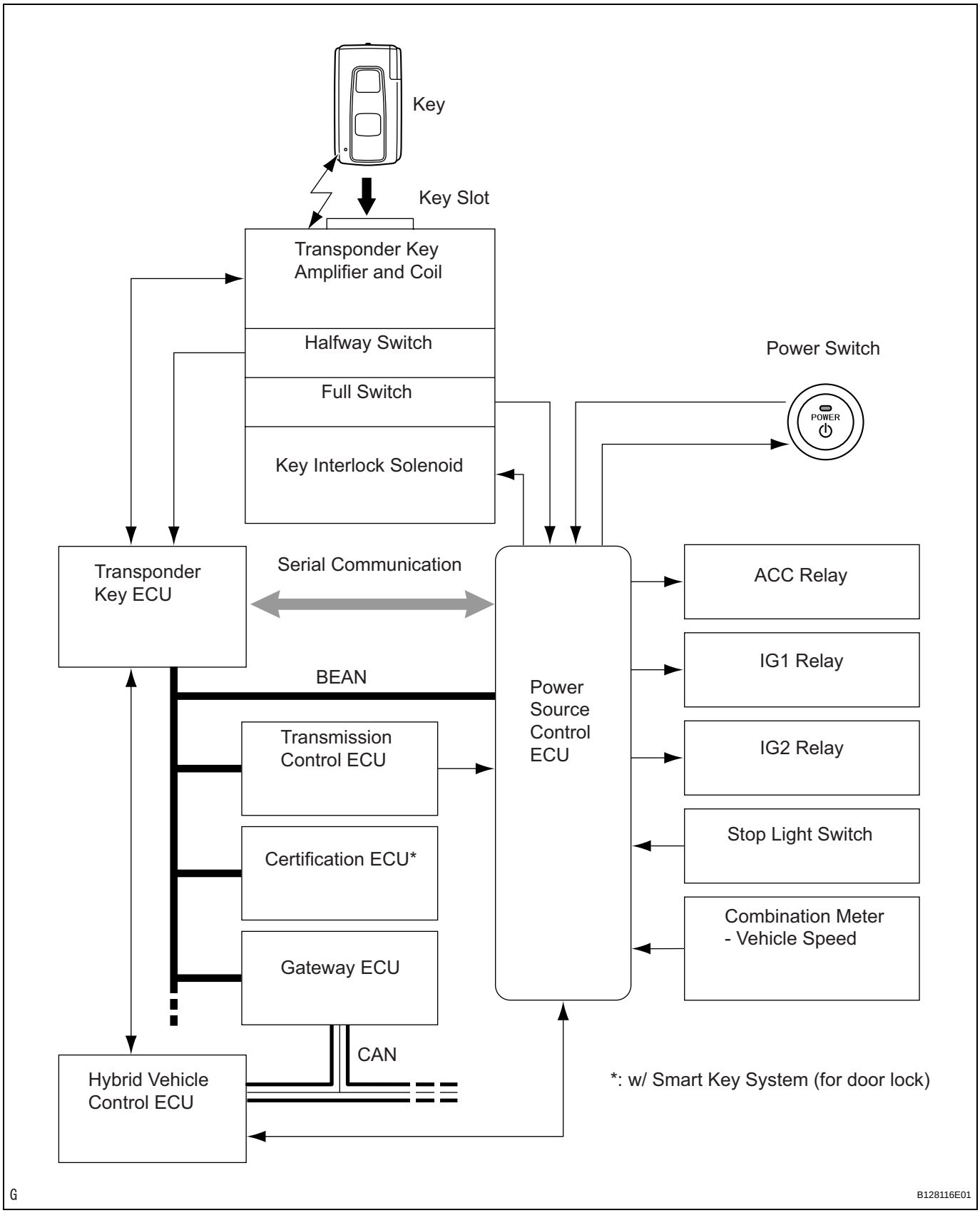
SYSTEM DIAGRAM



ST

Sender	Receiver	Signal	Line
Hybrid vehicle control ECU	Power source control ECU	• Shift position signal (power source control) • Drive OK signal (power stop control) • Stop switch signal (power source control)	BEAN
Meter	Power source control ECU	Vehicle speed signal (power source control)	BEAN
Body ECU	Power source control ECU	• Diagnosis erasure • Diagnostic tool request • Door lock position signal (driver, passenger and rear doors) (power switch illumination control) • Courtesy switch signal (driver, passenger and rear doors) (power switch illumination control) • Vehicle model signal (power source control switch) • IG switch signal (power source control) • ACC switch signal (power source control) • Key switch signal (key lock control) • Fading dome light illumination request signal (power switch illumination control) • Taillight illumination signal (power switch illumination control) • All doors courtesy switch signal (power switch illumination control)	BEAN
Steering lock ECU	Power source control ECU	Immobiliser information signal (power source control)	BEAN
Power source control ECU	Body ECU	Power switch signal (for security cancel)	BEAN
Power source control ECU	Steering lock ECU	• Immobiliser ID match request signal (ID match start at power ON) • Key insertion status signal (for immobiliser control)	BEAN
Transmission control ECU	Power source control ECU	• P status signal (key interlock control) • P control ECU malfunctioning status signal (power source control, key lock control) • Auto P cancel signal (power source control, key lock control) • NP status signal (power source control, key lock control) • Auto P OK signal (power source control, key lock control)	BEAN
Certification ECU	Power source control ECU	• Immobiliser ID match request signal (smart ignition control) • Key insertion status signal (smart ignition control) • Key code confirmation signal (wireless control)	BEAN
Theft warning ECU	Power source control ECU	Power switch signal (for security set and cancel)	BEAN

ST

Sender	Receiver	Signal	Line
Power source control ECU	Transmission control ECU	Power source OFF ready signal (power source AUTO OFF control)	BEAN

SYSTEM DESCRIPTION

1. SMART KEY SYSTEM DESCRIPTION

(a) The smart key system uses a push-type power switch, which the driver operates by inserting a key into the key slot or by merely carrying the key*. This system consists of a power source control ECU, power switch, key slot, key, ACC relay, IG1 relay, IG2 relay and transponder key ECU. The power source control ECU controls the system. This system operates in conjunction with the engine immobiliser system and the smart key system*. The table below shows the transition of the power switch, which depends on whether the brake pedal is depressed or released.
HINT:
*: w/ Smart key system (for door lock)

Brake Pedal Operation	Power Switch Operation
Released	Power mode changes between OFF, ON (ACC) and ON (IG) power switch is pressed
Depressed	Power mode changes to ON (READY) from any power mode

2. FUNCTION OF COMPONENT

Components	Function
Key	• When driver inserts key into key slot, built-in transponder chip transmits ID code signal to transponder key amplifier which is provided in key slot. • For a vehicle with smart entry system (for door lock), if driver operates power switch with key in driver's possession, key receives signals from oscillators and transmits ID code to door control receiver.
Key slot	• Halfway switch: Detects whether key is inserted and outputs signal to transponder key ECU. • Full switch: Detects whether key is inserted and outputs signal to power source control ECU. • Transponder key amplifier and coil: Receives ID code signal from transponder chip which is built into key, and outputs it to transponder key ECU. • Key interlock solenoid: Power source control ECU operates this solenoid in accordance with power switch mode and shift position to keep key locked in key slot.
Power switch	• In accordance with shift position and stop light switch's condition, changes power modes in 4 stages as follows: OFF, ON (ACC), ON (IG) and ON (READY). • Power mode can be determined by illumination / flash / color of power switch indicator. Push button start system malfunctions can also be determined.
• IG1 relay • IG2 relay • ACC relay	Operates in accordance with power source control ECU to supply power to respective system.
Stop light switch	Outputs brake pedal's status to power source control ECU.
Parking lock actuator	• Operates in accordance with signals from transmission control ECU to actuate parking lock mechanism. • Detects actuation status of parking lock (whether shift position is P or other position) and outputs it to transmission control ECU.
Power source control ECU	Controls push button start system in accordance with signals received from switches and ECUs.

ST

Components	Function
Transponder key ECU	• Controls engine immobiliser system by recognizing key ID code transmitted by transponder key amplifier. • Receives ID code check results from certification ECU*. • Transmits key ID code check results to power source control ECU. • Transmits hybrid control system start authorization signal to hybrid vehicle control ECU.
Transmission control ECU	• Actuates parking lock actuator upon receiving power switch OFF signal from power source control ECU. • Transmits actuation status of parking lock (whether shift position is P or other position) to power source control ECU.
Hybrid vehicle control ECU	• Starts hybrid control system in accordance with system start signal received from power source control ECU. • Receives hybrid control system start authorization signal from transponder key ECU.
Certification ECU*	Checks ID code received from door control receiver and transmits check results to transponder key ECU.

HINT:
*: w/ Smart key system (for door lock)

3. SYSTEM FUNCTION

The electric controls of the smart key system are described below:

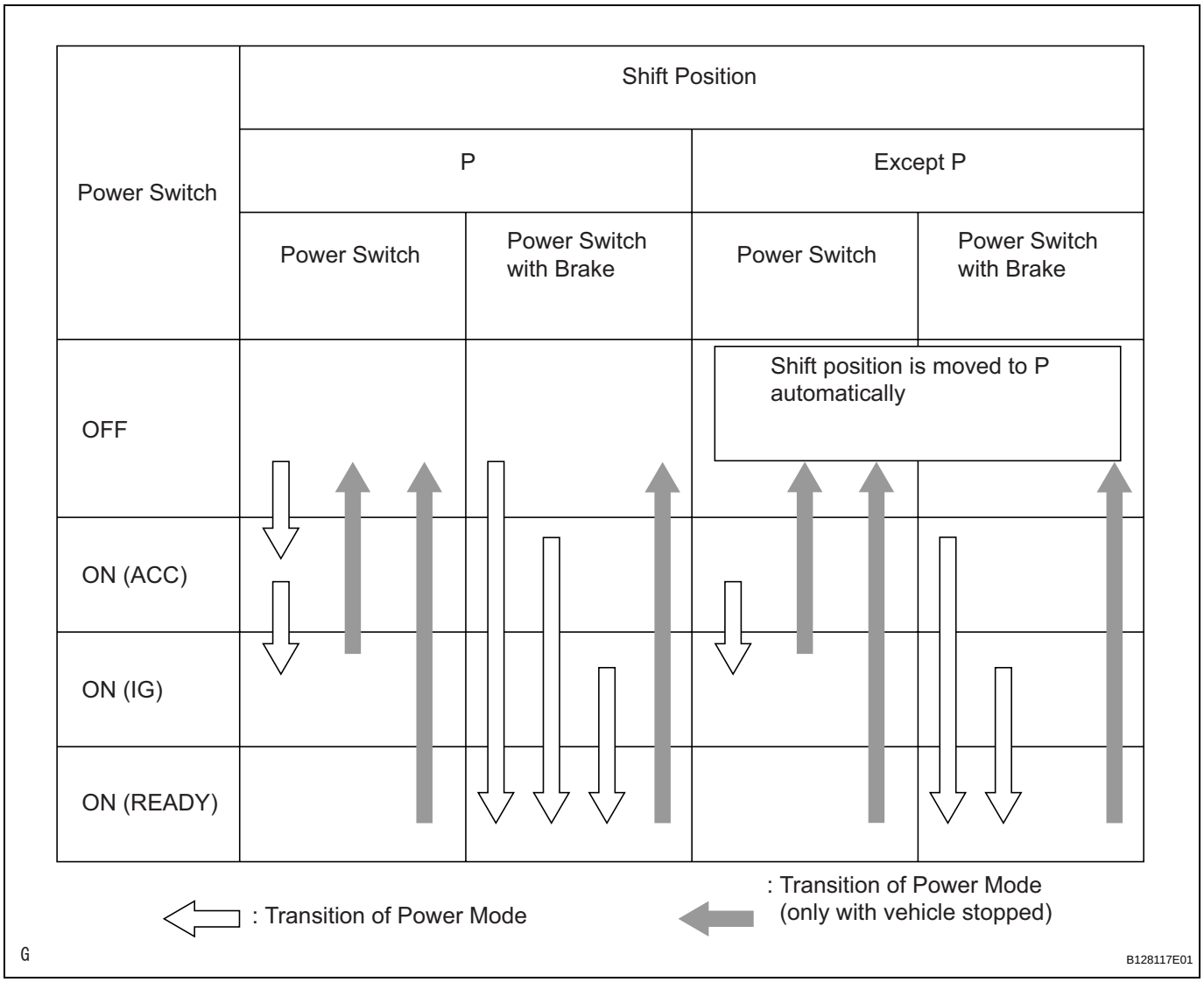
Control	Outline
Power switch control (w/o smart key system (for door lock))	Transponder key ECU checks ID code when key is inserted into key slot. Power source control ECU verifies check results and authorizes operation of switch.
Power switch control (w/ smart key system (for door lock))	• When driver operates power switch with key in driver's possession, power source control ECU starts indoor electrical key oscillator, which transmits request signal to key. Upon receiving this signal, key transmits ID code signal to certification ECU. • Transponder key ECU verifies check results received from certification ECU via BEAN and sends them to power source control ECU. Based on these results, power source control ECU authorizes operation of power switch.
Auto P control	While shift position is not P, if power switch is turned OFF, hybrid vehicle control ECU commands transmission control ECU to activate parking lock actuator and change shift position to P.
Diagnosis	When power source control ECU detects malfunction, power source control ECU diagnoses and memorizes malfunction.

ST

4. POWER SWITCH CONTROL (WITH KEY)

- When a key is inserted into the key slot and the transponder key ECU recognizes the ID code of the key, the power source control ECU authorizes operation of the power switch.
- A power mode (OFF, ON (ACC) and ON (IG)) can be selected by pressing the power switch. Press, release and press the power switch until the desired power mode is selected (the power mode cycle in the order shown above). If the driver pushes the power switch while depressing the brake pedal (the stop light switch turns ON), the power mode will change to ON (READY) regardless of the previous power mode.
- After approximately 1 hour has passed with the power switch ON (ACC) and the shift position in P, the power source control ECU will automatically turns OFF the power (the power mode changes to OFF).

- The illustration below shows the transition of power modes.



HINT:
While the vehicle is being driven normally, operation of the power switch is disabled. However, if the hybrid control system must be stopped in an emergency while the vehicle is being driven, pressing the power switch for at least 3 seconds can stop the hybrid control system. Power mode changes from ON (READY) to ON (ACC).

5. DIAGNOSIS

If a malfunction occurs in the IG circuit, the power source control ECU will perform the controls listed in the table below and record a DTC.

IG Circuit Malfunction	Details
Malfunction occurs during ON (IG) mode	• Hold circuit in power source control ECU continues to supply power to IG1 and IG2 relays. At this time, power source control ECU begins flashing amber-colored indicator on power switch. • After power switch is set to OFF, power source control ECU continues flashing indicator on power switch for 15 seconds. • Hybrid system cannot be restarted.

ST

IG Circuit Malfunction	Details
Malfunction occurs during ON (ACC) or OFF mode	• When power switch is set to ON (IG) and malfunction is detected, power switch automatically turns OFF. • If same malfunction as above is detected continuously 3 times, power source control ECU begins flashing amber-colored indicator on power switch for 15 seconds. • Hybrid system cannot be restarted.

HOW TO PROCEED WITH TROUBLESHOOTING

HINT:
- Use this procedure to troubleshoot the smart key system.
- *: Use the intelligent tester.

1 **VEHICLE BROUGHT TO WORKSHOP**

NEXT

2 **INSPECT COMMUNICATION FUNCTION OF LARGE-SCALE MULTIPLEX COMMUNICATION SYSTEM (BEAN)***

(a) Use the intelligent tester to check if Multiplex Communication System (MPX) is functioning normally.

Result

Result	Proceed to
MPX DTC is not output	A
MPX DTC is output	B

B → **GO TO MULTIPLEX COMMUNICATION SYSTEM**

A

3 **CHECK FOR DTC***

(a) Check for DTC and note any codes that are output.
(b) Delete the DTC.
(c) Recheck for DTCs. Try to prompt the DTC by simulating the original activity that the DTC suggests.

Result

Result	Proceed to
The DTC does not reoccur	A
The DTC reoccurs	B

B → **Go to step 6**

A

4 **PROBLEM SYMPTOMS TABLE**

Result

Result	Proceed to
Fault is not listed in problem symptoms table	A
Fault is listed in problem symptoms table	B

B → **Go to step 6**

ST

A

5	OVERALL ANALYSIS AND TROUBLESHOOTING*

(a) DATA LIST / ACTIVE TEST (see page ST-16)
  (1) Inspection with the intelligent tester (DATA LIST)
  (2) Inspection with the intelligent tester (ACTIVE TEST)
(b) On-vehicle Inspection (see page ST-18)
(c) Terminal of ECU (see page ST-11)

NEXT

6	ADJUST, REPAIR OR REPLACE

NEXT

7	CONFIRMATION TEST

NEXT

END

PROBLEM SYMPTOMS TABLE

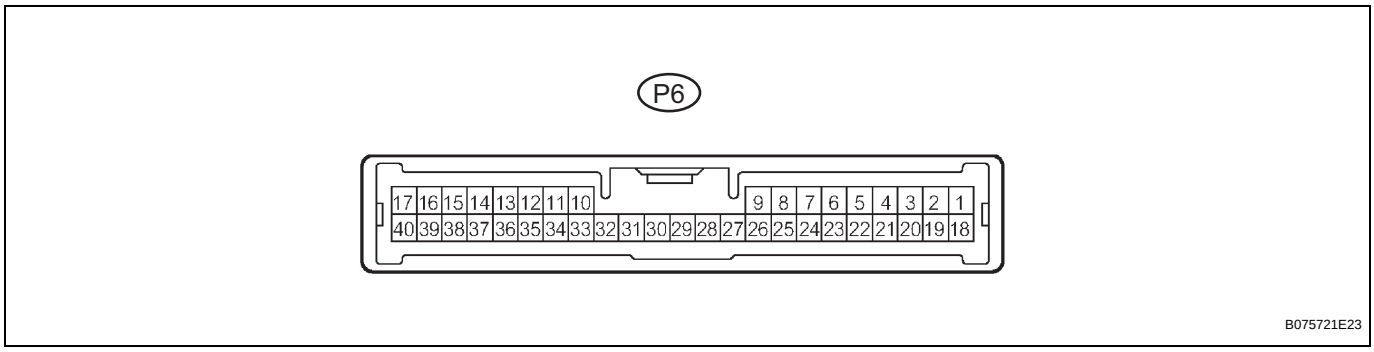
HINT:
Use the table below to help determine the cause of the problem symptom. The potential causes of the symptoms are listed in order of probability in the "Suspected Area" column of the table. Check each symptom by checking the suspected areas in the order they are listed. Replace parts as necessary.

Smart key system

Symptom	Suspected area	See page
Power mode does not change to ON (IG and ACC)	1. Power source control ECU	-
	2. AM1 fuse	-
	3. AM2 fuse	-
	4. Power switch	ST-74
	5. Key slot	ST-77
	6. Wire harness	ST-47
Power mode does not change to ON (ACC)	1. Power source control ECU	-
	2. AM1 fuse	-
	3. AM2 fuse	-
	4. ACC relay	-
	5. Wire harness	ST-61
Power mode does not change to ON (IG)	1. Power source control ECU	-
	2. AM1 fuse	-
	3. AM2 fuse	-
	4. IG1 relay	-
	5. IG2 relay	-
	6. Wire harness	ST-54
Power mode does not change to ON (READY)	1. Power source control ECU	-
	2. Stop light switch	LI-111
	3. Wire harness	ST-66

TERMINALS OF ECU

1. CHECK POWER SOURCE CONTROL ECU



(a) Disconnect the P6 ECU connector.
(b) Measure the resistance and voltage of the wire harness side connector.

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
AM1 (P6-33) - Body ground	R - Body ground	+B power supply	Always	10 to 14 V
AM2 (P6-12) - Body ground	W - Body ground	+B power supply	Always	10 to 14 V
CDSW (P6-25) - Body ground	L - Body ground	Key condition	No key in key slot	Below 1 Ω
CDSW (P6-25) - Body ground	L - Body ground	Key condition	Key inserted	10 kΩ or higher
SSW1 (P6-14) - Body ground	B - Body ground	Power switch signal	Power switch pushed	Below 1 Ω
SSW1 (P6-14) - Body ground	B - Body ground	Power switch signal	Power switch not pushed	10 kΩ or higher
SSW2 (P6-37) - Body ground	Y - Body ground	Power switch signal	Power switch pushed	Below 1 Ω
SSW2 (P6-37) - Body ground	Y - Body ground	Power switch signal	Power switch not pushed	10 kΩ or higher
GND2 (P6-6) - Body ground	W-B - Body ground	Ground	Always	Below 1 Ω

If the result is not as specified, there may be a malfunction on the wire harness side.
(c) Reconnect the P6 ECU connector.
(d) Measure the resistance and voltage of the connector.

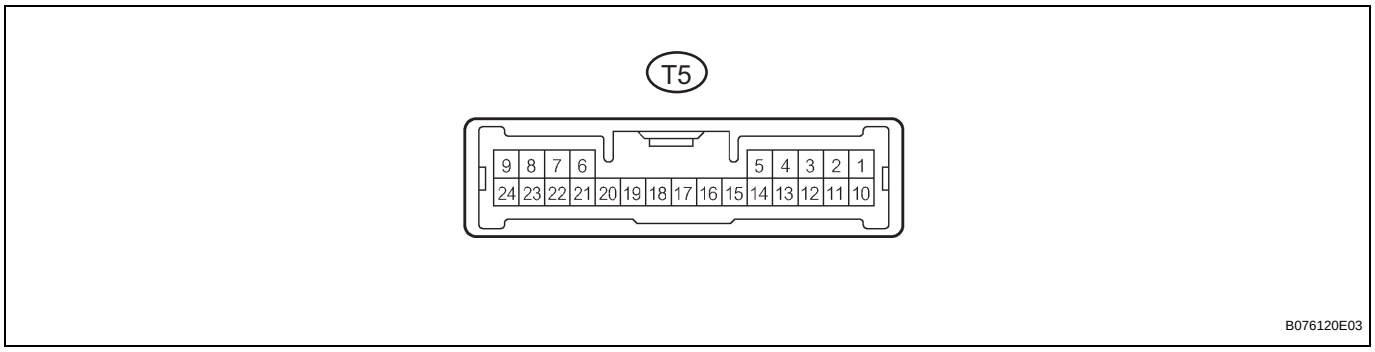
Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
SOL1 (P6-3) - GND2 (P6-6)	P - W-B	Power switch signal	Brake pedal is not depressed, power switch ON (ACC)	0 V
SOL1 (P6-3) - GND2 (P6-6)	P - W-B	Power switch signal	Brake pedal is not depressed, power switch ON (IG)	10 to 14 V
SOL2 (P6-20) - GND2 (P6-6)	GR - W-B	Power switch signal	Always	Below 1 Ω
ACCD (P6-11) - GND2 (P6-6)	G - W-B	ACC signal	Power switch OFF	0 V
ACCD (P6-11) - GND2 (P6-6)	G - W-B	ACC signal	Power switch ON (ACC)	10 to 14 V
IG1D (P6-34) - GND2 (P6-6)	B - W-B	IG1 signal	Power switch ON (ACC)	0 V

ST

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
IG1D (P6-34) - GND2 (P6-6)	B - W-B	IG1 signal	Power switch ON (IG)	10 to 14 V
IG2D (P6-35) - GND2 (P6-6)	V - W-B	IG2 signal	Power switch ON (ACC)	0 V
IG2D (P6-35) - GND2 (P6-6)	V - W-B	IG2 signal	Power switch ON (IG)	10 to 14 V
STP (P6-1) - GND2 (P6-6)	L - W-B	Stop light signal	Brake pedal depressed	10 to 14 V
STP (P6-1) - GND2 (P6-6)	L - W-B	Stop light signal	Brake pedal released	0 V

If the result is not as specified, the ECU may have a malfunction.

2. CHECK TRANSPONDER KEY ECU



(a) Disconnect the T5 ECU connector.
(b) Measure the resistance and voltage of the wire harness side connector.

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
CPUB (T5-3) - GND (T5-22)	L - W-B	Battery	Always	10 to 14 V
IG (T5-4) - GND (T5-22)	O - W-B	Power switch (IG)	Power switch OFF	0 V
IG (T5-4) - GND (T5-22)	O - W-B	Power switch (IG)	Power switch ON (IG)	10 to 14 V
ACC (T5-12) - GND (T5-22)	P - W-B	Power switch (ACC)	Power switch OFF	0 V
ACC (T5-12) - GND (T5-22)	P - W-B	Power switch (ACC)	Power switch ON (ACC)	10 to 14 V
CUWS (T5-5) - GND (T5-22)	B - W-B	Halfway switch	No key in key slot	10 kΩ or higher
CUWS (T5-5) - GND (T5-22)	B - W-B	Halfway switch	Key inserted	Below 1 Ω
AGND (T5-7) - GND (T5-22)	P - W-B	Ground	Always	Below 1 Ω
GND (T5-22) - Body ground	W-B - Body ground	Ground	Always	Below 1 Ω

If the result is not as specified, there may be a malfunction on the wire harness side.

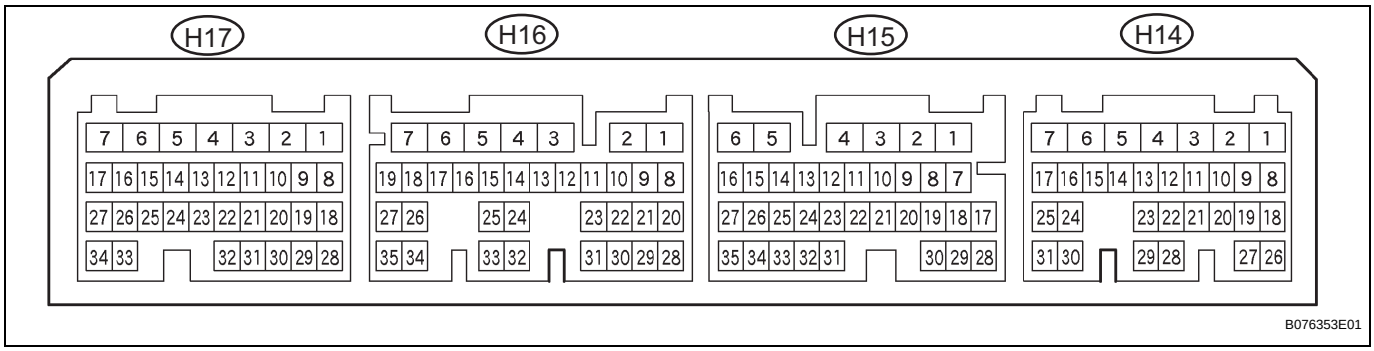
(c) Reconnect the T5 ECU connector.
(d) Measure the voltage of the connector.

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
CUWS (T5-5) - GND (T5-22)	B - W-B	Halfway switch	No key in key slot	10 to 14 V
CUWS (T5-5) - GND (T5-22)	B - W-B	Halfway switch	Key inserted	Below 1 V
VC5 (T5-20) - GND (T5-22)	Y - W-B	Power source	No key in key slot	0 V

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
VC5 (T5-20) - GND (T5-22)	Y - W-B	Power source	Key inserted	4.6 to 5.4 V

If the result is not as specified, the ECU may have a malfunction.

3. CHECK HYBRID VEHICLE CONTROL ECU



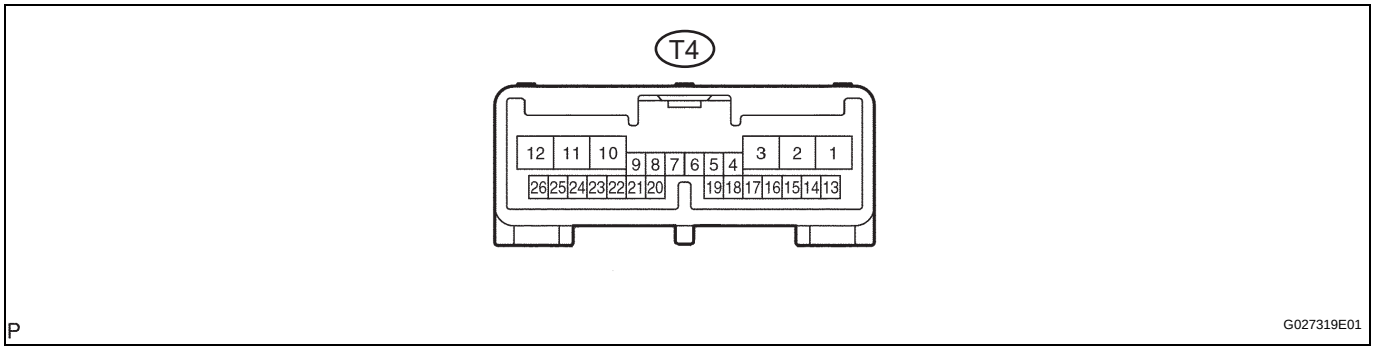
(a) Disconnect the H14, H15, H16 and H17 ECU connectors.
(b) Measure the resistance and voltage of the connectors.

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
ST2 (H14-5) - GND1 (H14-1)	Y - W-B	Ignition start control signal input	Power switch ON (READY)	10 to 14 V
IGSW (H14-7) - GND1 (H14-1)	O - W-B	Ignition ready control signal input	Power switch ON (IG)	10 to 14 V
BATT (H15-6) - GND1 (H14-1)	Y - W-B	Battery	Always	10 to 14 V
+B1 (H16-7) - GND1 (H14-1)	L - W-B	Ignition power supply	Power switch ON (IG)	10 to 14 V
+B2 (H16-6) - GND1 (H14-1)	L - W-B	Ignition power supply	Power switch ON (IG)	10 to 14 V
GND1 (H14-1) - Body ground	W-B - Body ground	Ground	Always	Below 1 Ω
GND2 (H14-4) - Body ground	W-B - Body ground	Ground	Always	Below 1 Ω

ST

If the result is not as specified, the ECU may have a malfunction.

4. CHECK TRANSMISSION CONTROL ECU



(a) Disconnect the T4 ECU connector.

(b) Measure the resistance and voltage of the wire harness side connector.

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
BATT (T4-13) - Body ground	L - Body ground	+B power supply	Always	10 to 14 V
+B (T4-1) - Body ground	L - Body ground	Ignition power supply	Power switch ON (IG)	10 to 14 V
E1 (T4-15) - Body ground	W-B - Body ground	Ground	Always	Below 1 Ω
E01 (T4-3) - Body ground	W-B - Body ground	Ground	Always	Below 1 Ω
E02 (T4-2) - Body ground	W-B - Body ground	Ground	Always	Below 1 Ω

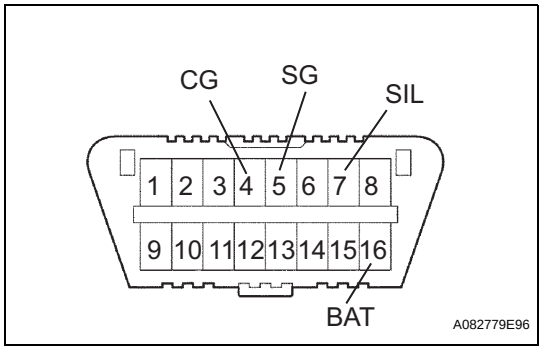
If the result is not as specified, the ECU may have a malfunction.

DIAGNOSIS SYSTEM

1. DESCRIPTION

(a) Smart key system data and its Diagnosis Trouble Codes (DTCs) can be read through the Data Link Connector 3 (DLC3). When the system seems to be malfunctioning, use the intelligent tester to check for malfunctions and perform repairs.

2. CHECK DLC3



HINT:

The vehicle uses the ISO 15765-4 communication protocol. The terminal arrangement of the DLC3 complies with SAE J1962 and matches the ISO 15765-4 format.

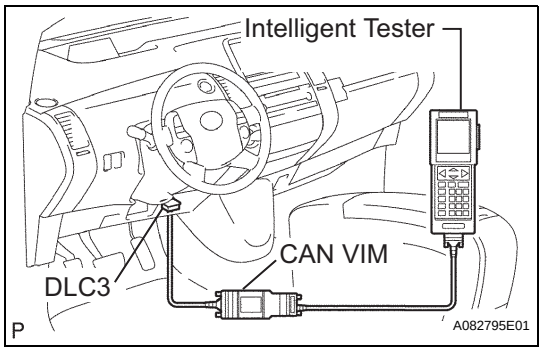
Symbol	Terminal No.	Name	Reference terminal	Result	Condition
SIL	7	Bus "+" line	5 - Signal ground	Pulse generation	During transmission
CG	4	Chassis ground	Body ground	Below 1 Ω	Always
SG	5	Signal ground	Body ground	Below 1 Ω	Always
BAT	16	Battery positive	Body ground	11 to 14 V	Always

If the result is not as specified, the DLC3 may have a malfunction. Repair or replace the harness and connector.

HINT:

Connect the cable of the intelligent tester (with CAN VIM) to the DLC3, turn the power switch ON (IG) and attempt to use the intelligent tester. If the display informs that a communication error has occurred, there is a problem either with the vehicle or with the tester.

- If communication is normal when the tester is connected to another vehicle, inspect the DLC3 of the original vehicle.
- If communication is still not possible when the tester is connected to another vehicle, the problem is probably in the tester itself. Consult the Service Department listed in the tester's instruction manual.

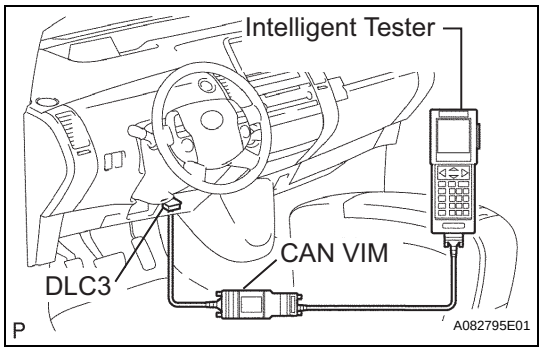


3. INSPECT BATTERY VOLTAGE

Standard voltage:

11 to 14 V

If the voltage is below 11 V, replace the battery before proceeding.



DTC CHECK / CLEAR

1. CHECK DTC

(a) Connect the intelligent tester to the Controller Area Network Vehicle Interface Module (CAN VIM). Then connect the CAN VIM to the DLC3.

(b) Turn the power switch ON (IG).

(c) Read the DTCs by following the directions on the tester screen.
HINT:
Refer to the intelligent tester operator's manual for further details.

2. CLEAR DTC

(a) Connect the intelligent tester (with CAN VIM) to the DLC3.

(b) Turn the power switch ON (IG).

(c) Erase the DTCs by following the directions on the tester screen.
HINT:
Refer to the intelligent tester operator's manual for further details.

DATA LIST / ACTIVE TEST

1. READ DATA LIST

HINT:

Using the intelligent tester's DATA LIST allows switch, sensor, actuator and other item values to be read without removing any parts. Reading the DATA LIST early in troubleshooting is one way to save time.

(a) Connect the intelligent tester (with CAN VIM) to the DLC3.

(b) Turn the power switch ON (IG).

(c) Read the DATA LIST according to the display on the tester.

Power source control ECU

Item	Measurement Item / Range (Display)	Normal Condition	Diagnostic Note
STR UNLK SW	Steering unlock switch / ON or OFF	ON: Key is in key slot OFF: No key is in key slot	-
READY SIG	Ready signal / ON or OFF	ON: Power switch ON (READY) OFF: Power switch OFF or ON (IG) or ON (ACC)	-
VEHICLE SPD SIG	Vehicle speed signal / ON or OFF	Stop: Vehicle is stopped Run: Vehicle is running	-
SHIFT P SIG	Shift P signal / ON or OFF	ON: Shift P signal ON (shift position is P) OFF: Shift P signal OFF (shift position is not P)	-
ST READY MON	Starter relay monitor / ON or OFF	ON: Starter relay signal ON OFF: Starter relay signal OFF	-
ACC CUT SIG	Relay monitor / ON or OFF	ON: ACC relay signal ON OFF: ACC relay signal OFF	-
E/G COND	Engine condition / Stop or Run	Stop: Engine is stopped Run: Engine is not running	-
SHIFT P PULSE	Shift P signal pulse / Unknown, Error2, Normal2, Error1, Normal3, Error3 or Normal1	Unknown: Other Error2: Signal is abnormal and shift position is P Normal2: Signal is normal and shift position is P Error1: Signal is abnormal and shift position cannot be determined Normal3: Signal is normal and shift position in not P Error3: Signal is abnormal and shift position in not P Normal1: Signal is normal and shift position cannot be determined	-
CARD H-INS SW	Halfway switch / ON or OFF	ON: Key is half-inserted OFF: Key is not half-inserted	-
CARD F-INS SW	Full switch / ON or OFF	ON: Key is fully inserted OFF: Key is not fully inserted	-
STOP LAMP SW1	Stop light switch 1 / ON or OFF	ON: Brake pedal depressed OFF: Brake pedal released	-
STOP LAMP SW2	Stop light switch 2 / ON or OFF	ON: Brake pedal released OFF: Brake pedal depressed	-
ST SW1	Start switch 1 / ON or OFF	ON: Power switch ON (IG) OFF: Power switch OFF	-
ST SW2	Start switch 2 / ON or OFF	ON: Power switch ON (IG) OFF: Power switch OFF	-

Item	Measurement Item / Range (Display)	Normal Condition	Diagnostic Note
RATCH CIRCUIT	Ratch circuit / ON or OFF	ON: Power switch ON (IG) OFF: Power switch OFF or ON (ACC) or ON (READY)	-
IG1 RELAY MON 1	IG1 outer relay monitor / ON or OFF	ON: Power switch ON (IG) OFF: Power switch OFF	-
IG1 RELAY MON 2	IG1 inner relay monitor / ON or OFF	ON: Power switch ON (IG) OFF: Power switch OFF	-
IG2 RELAY MON 1	States of the IG2 outer relay monitor / ON or OFF	ON: Power switch ON (IG) OFF: Power switch OFF	-
IG2 RELAY MON 2	IG2 Inner relay monitor / ON or OFF	ON: Power switch ON (IG) OFF: Power switch OFF	-
ACC RELAY MON	ACC relay monitor / ON or OFF	ON: Power switch ON (ACC) OFF: Power switch OFF	-
PWR COND	Power supply condition / IG2 ON, ST ON, All OFF, IG1 ON or ACC ON	IG2 ON: IG2 relay ON ST ON: ST relay ON All OFF: All relay OFF IG1 ON: IG1 relay ON ACC ON: ACC relay ON	-

2. PERFORM ACTIVE TEST

HINT:

Performing the intelligent tester's ACTIVE TEST allows relay, VSV, actuator and other items to be operated without removing any parts. Performing the ACTIVE TEST early in troubleshooting is one way to save time. The DATA LIST can be displayed during the ACTIVE TEST.

(a) Connect the intelligent tester (with CAN VIM) to the DLC3.

(b) Turn the power switch ON (IG).

(c) Perform the ACTIVE TEST according to the display on the tester.

ST

Power source control ECU

Item	Test Details	Diagnostic Note
KEY LOCK	Key lock (turn power switch OFF during test; turn power switch ON (IG)) ON / OFF	-
LIGHTING IND	Indicator for lighting ON / OFF	-
IND CONDITION	Indicator Green / Red / No Sig	-

DIAGNOSTIC TROUBLE CODE CHART

1. DTC CHECK

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

Smart key system

DTC No.	Detection Item	Trouble Area	See page
B2271	Ignition Hold Monitor Malfunction	- Power source control ECU - AM1 fuse - AM2 fuse - Wire harness	ST-20
B2272	Ignition 1 Monitor Malfunction	- Power source control ECU - IG1 relay - Wire harness	ST-22
B2273	Ignition 2 Monitor Malfunction	- Power source control ECU - Wire harness	ST-26
B2274	ACC Monitor Malfunction	- Power source control ECU - ACC relay - Wire harness	ST-28
B2275	STSW Monitor Malfunction	- Power source control ECU - Wire harness	ST-30
B2277	Detecting Vehicle Submersion	- Power source control ECU	ST-32
B2278	Engine Switch Circuit Malfunction	- Power source control ECU - Power switch - Wire harness	ST-33
B2281	"P" Signal Malfunction	- Power source control ECU - Transmission control ECU - Wire Harness	ST-36
B2282	Vehicle Speed Signal Malfunction	- Power source control ECU - Combination meter - Wire Harness	ST-38
B2284	Brake Signal Malfunction	- Power source control ECU - Stop light switch - Wire Harness	ST-40
B2286	Ready Signal Malfunction	- Power source control ECU - Hybrid vehicle control ECU - Wire harness	ST-43
B2287	LIN Communication Master Malfunction	- Power source control ECU - Transponder key ECU - Wire harness	ST-45
B2289	Key Collation Waiting Time Over	- Power source control ECU - Engine immobiliser system - Wire harness	ST-45

ON-VEHICLE INSPECTION

1. CHECK POWER SWITCH MODE CHANGE FUNCTION

(a) Check the function of the power switch.

(1) Check that power switch mode changes in accordance with the conditions of the shift position and brake pedal.

HINT:

For the vehicles with the smart key system (for door lock), the power switch functions not only when the key is inserted into the key slot but also when the driver carries the key.

Shift Position	Brake Pedal	Change of power switch mode (Arrow "→" means 1 press of power switch)
P	Released	OFF → ON (ACC) → ON (IG) → OFF (Repeated)
P	Depressed	OFF → Hybrid system starts
P	Depressed	ON (ACC) → Hybrid system starts
P	Depressed	ON (IG) → Hybrid system starts
P	Depressed	Hybrid system operating → OFF
P	Released	Hybrid system operating → OFF
Any position other than P	Released	ON (ACC) → ON (IG)
Any position other than P	Depressed	ON (ACC) → ON (IG)
Any position other than P	Released	ON (IG) → OFF after shift position switched to P (shift-linked OFF function)
Any position other than P	Released	Hybrid system operating → OFF after shift position switched to P (auto P control function)
Any position other than P	Depressed	Hybrid system operating → OFF after shift position switched to P (auto P control function)

(b) Check if power switch mode changes without pressing the power switch.

(1) With power switch mode ON (ACC) and the shift position in P, pull out the key. Check that power switch mode changes from ON (ACC) to OFF automatically.

(2) With power switch mode ON (ACC) and the shift position in P, wait for at least 1 hour. Check that power switch mode changes from ON (ACC) to OFF automatically.

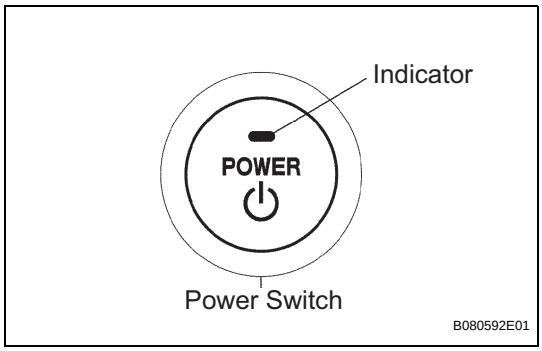
2. CHECK KEY INTERLOCK FUNCTION

(a) Insert the key into key slot, and change power switch modes and shift position according to the table below. Check whether or not the key is locked in the key slot.

Power Switch Mode	Shift Position	Key Status
OFF	P	Not locked in
OFF	Any position except P	-
ON (ACC)	P	Not locked in
ON (ACC)	Any position except P	Locked in
ON (IG)	P	Locked in
ON (IG)	Any position except P	Locked in

ST

Power Switch Mode	Shift Position	Key Status
READY (hybrid system ON)	P	Locked in
READY (hybrid system ON)	Any position except P	Locked in



3. CHECK INDICATOR CONDITION

(a) Check the power indicator on the power switch.

(1) Check that the power indicator illuminates and changes its color according to the table below.

Power Switch Mode	Indicator Status
OFF	OFF
ON (ACC)	Green illumination
ON (IG)	Amber illumination
Hybrid System ON	OFF
Push button start system malfunctioning	Flashes continuously in amber

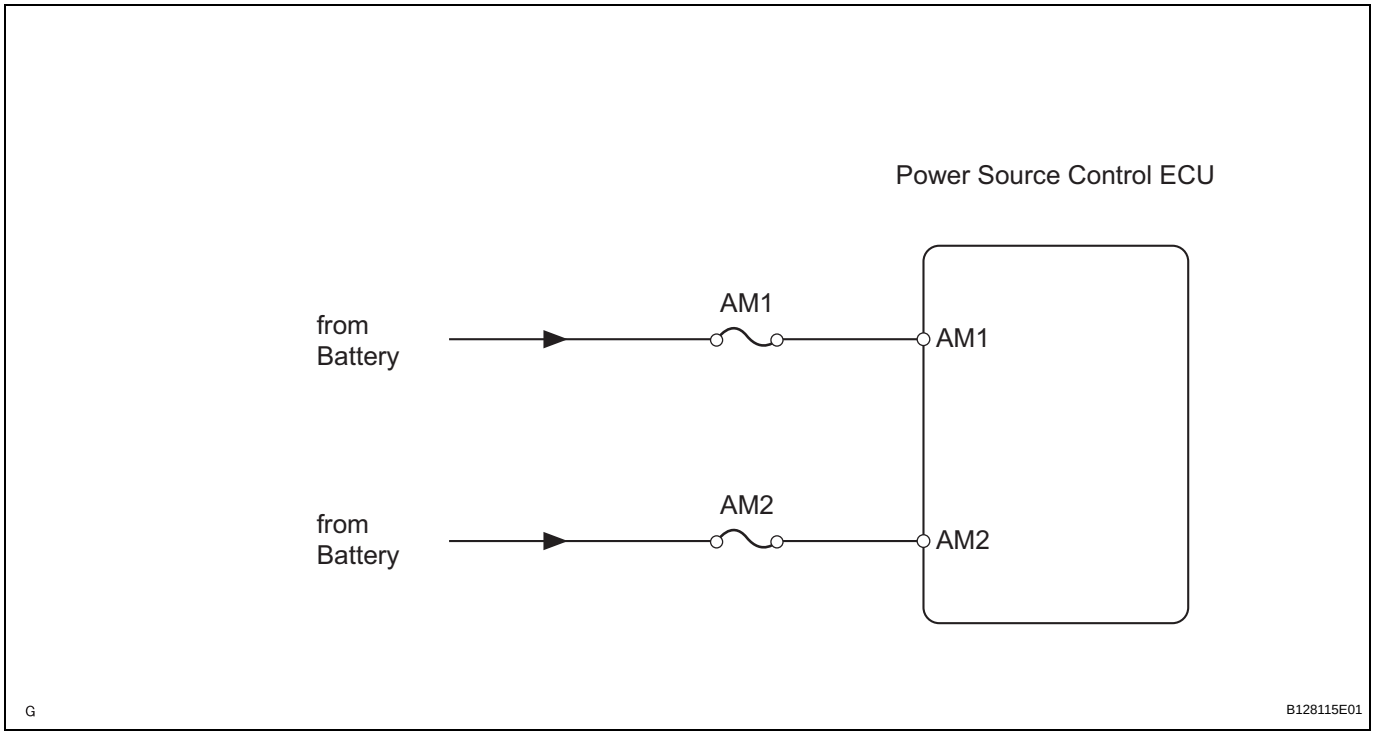
DTC	B2271	Ignition Hold Monitor Malfunction

DESCRIPTION

This DTC is output when the IG output circuits inside the power source control ECU are open or short.

DTC No.	DTC Detection Condition	Trouble Area
B2271	Hold circuit, IG1 relay actuation circuit or IG2 relay actuation circuit inside power source control ECU is open or short	• Power source control ECU • AM1 fuse • AM2 fuse • Wire harness

WIRING DIAGRAM



INSPECTION PROCEDURE

1	CHECK FOR DTC

(a) Delete the DTC (see page ST-15).
(b) Check for DTCs again.
OK:
No DTC is output.

OK → **END**

NG

2	INSPECT FUSE (AM1, AM2)

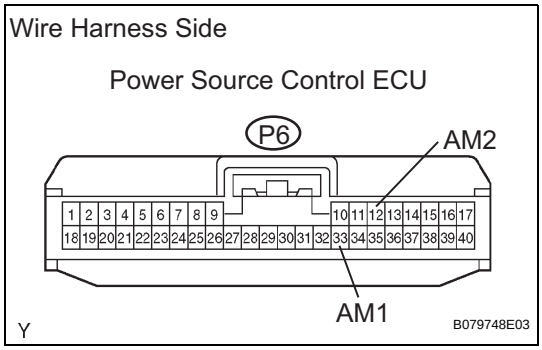
(a) Remove the AM1 fuse from the driver side junction block.

(b) Remove the AM2 fuse from the engine room junction block.
(c) Measure the resistance of the fuses.
Standard resistance:
Below 1 Ω

NG → **REPLACE FUSE**

OK

3 CHECK WIRE HARNESS (POWER SOURCE CONTROL ECU - BATTERY)



(a) Disconnect the P6 ECU connector.
(b) Measure the voltage of the wire harness side connector.
Standard voltage

Tester Connection	Specified Condition
P6-33 (AM1) - Body ground	10 to 14 V
P6-12 (AM2) - Body ground	10 to 14 V

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

OK

REPLACE POWER SOURCE CONTROL ECU

ST

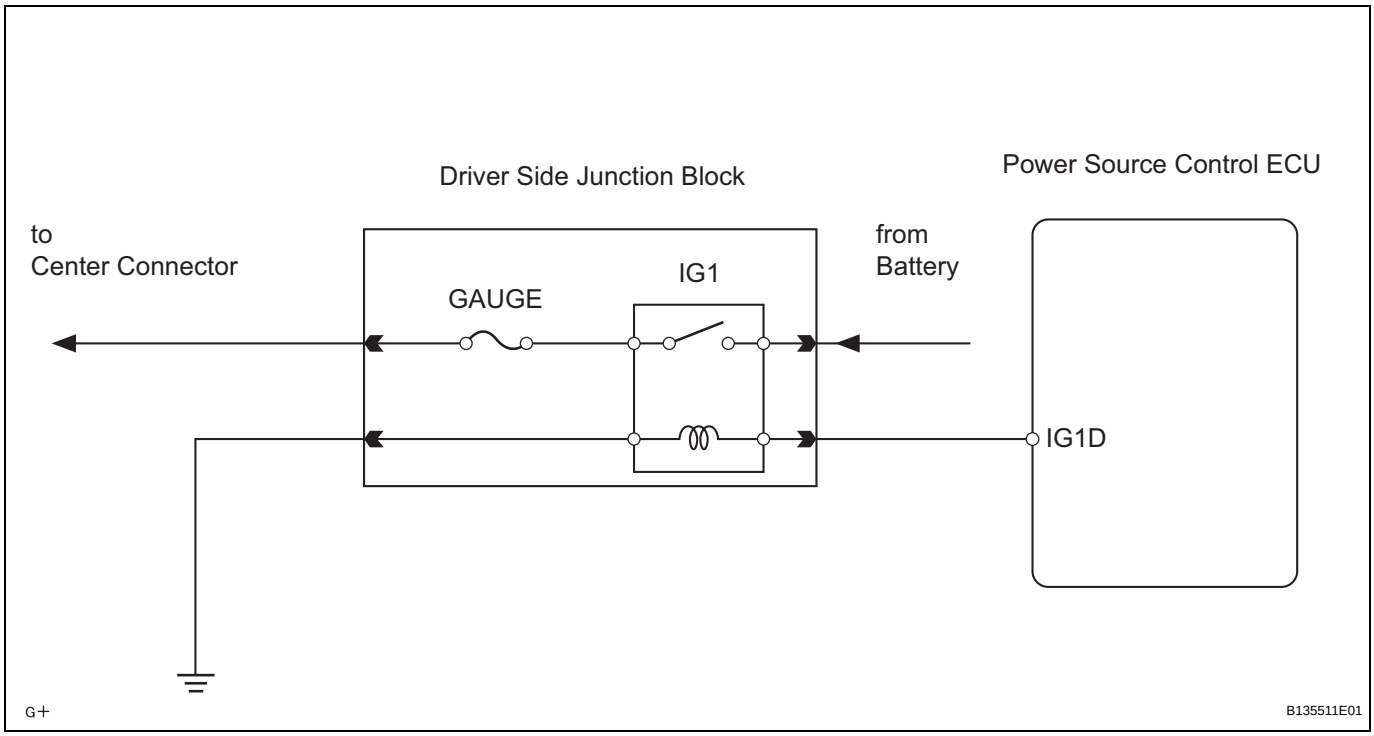
DTC	B2272	Ignition 1 Monitor Malfunction

DESCRIPTION

This DTC is output when a malfunction is occurring in the IG output circuit, which is from the IG1 relay actuation circuit inside the power source control ECU to the IG1 relay.

DTC No.	DTC Detection Condition	Trouble Area
B2272	IG1 relay actuation circuit inside power source control ECU or other related circuit is malfunctioning	• Power source control ECU • IG1 relay • Wire harness

WIRING DIAGRAM



INSPECTION PROCEDURE

1	READ VALUE OF DATA LIST (IG1 RELAY)

(a) Connect the intelligent tester (with CAN VIM) to the DLC3.
(b) Turn the power switch ON (IG) and press the intelligent tester main switch ON.
(c) Select the items below in the DATA LIST and read the displays on the intelligent tester.

Power source control ECU

Item	Measurement Item / Range (Display)	Normal Condition	Diagnostic Note
IG1 RELAY MON 1	IG1 outer relay monitor / ON or OFF	ON: Power switch ON (IG) OFF: Power switch OFF	-

OK:

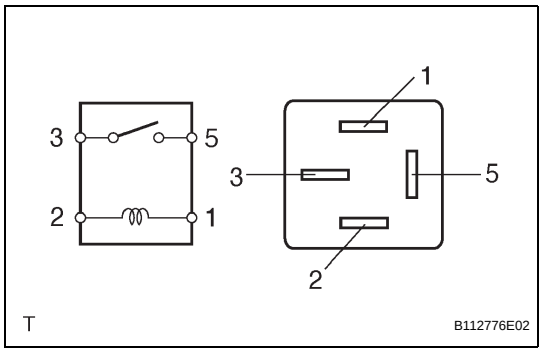
ON (power switch ON (IG)) appears on the screen.

ST

OK → REPLACE POWER SOURCE CONTROL ECU

NG

2 INSPECT IG1 RELAY



(a) Remove the IG1 relay from the driver side junction block.
(b) Measure the resistance of the relay.

Standard resistance

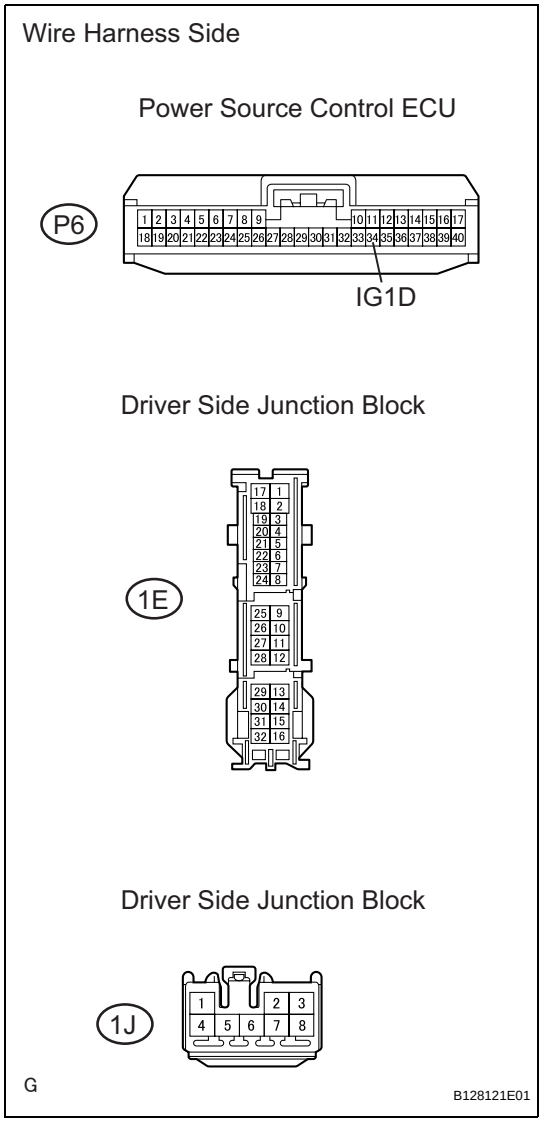
Tester Connection	Specified Condition
3 - 5	10 kΩ or higher
3 - 5	Below 1 Ω (when battery voltage is applied to terminals 1 and 2)

NG → REPLACE IG1 RELAY

OK

ST

3	CHECK WIRE HARNESS (DRIVER SIDE JUNCTION BLOCK - ECU AND BODY GROUND)



(a) Disconnect the 1J and 1E driver side junction block connectors.
(b) Disconnect the P6 ECU connector.
(c) Measure the resistance of the wire harness side connectors.

Standard resistance

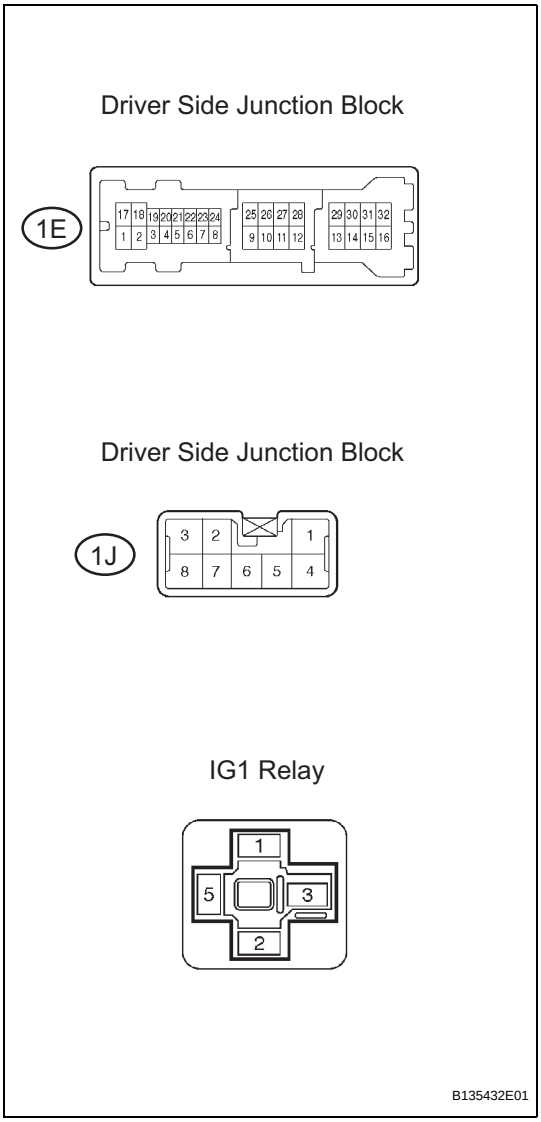
Tester Connection	Specified Condition
1J-3 - P6-34 (IG1D)	Below 1 Ω
1J-3 or P6-34 (IG1D) - Body ground	10 kΩ or higher
1E-17 - Body ground	Below 1 Ω

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

OK

ST

4	CHECK DRIVER SIDE JUNCTION BLOCK



(a) Remove the IG1 relay from the driver side junction block.
(b) Disconnect the 1J and 1E driver side junction block connectors.
(c) Measure the resistance of the driver side junction block.

Standard resistance

Tester Connection	Specified Condition
1J-3 - Driver side junction block IG1 relay terminal 2	Below 1 Ω
1E-17 - Driver side junction block IG1 relay terminal 1	Below 1 Ω

NG → **REPLACE DRIVER SIDE JUNCTION BLOCK ASSEMBLY**

OK

REPLACE POWER SOURCE CONTROL ECU

ST

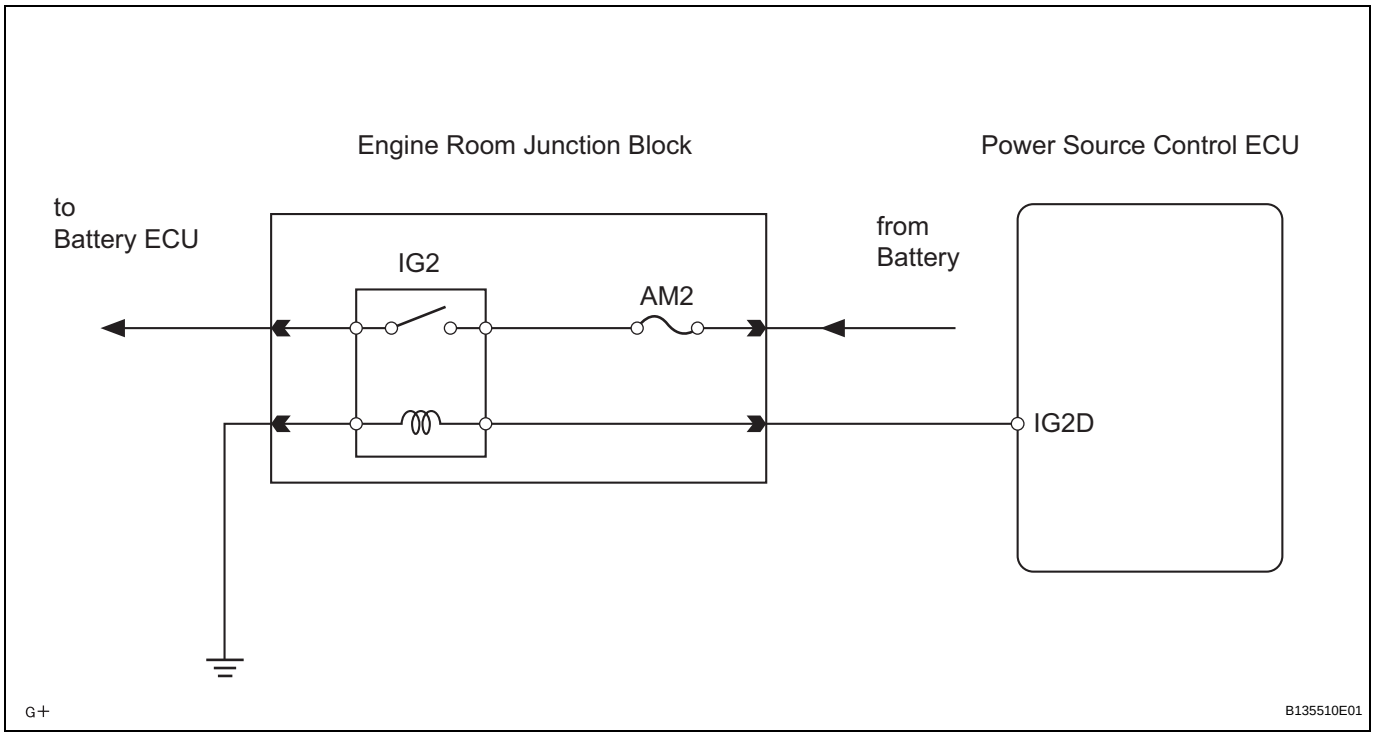
DTC	B2273	Ignition 2 Monitor Malfunction

DESCRIPTION

This DTC is output when a malfunction is occurring in the IG output circuit, which is from the IG2 relay actuation circuit inside the power source control ECU to the IG2 relay.

DTC No.	DTC Detection Condition	Trouble Area
B2273	IG2 relay actuation circuit inside power source control ECU or other related circuit is malfunctioning	• Power source control ECU • Wire harness

WIRING DIAGRAM



INSPECTION PROCEDURE

1	READ VALUE OF DATA LIST (IG2 RELAY)

(a) Connect the intelligent tester (with CAN VIM) to the DLC3.
(b) Turn the power switch ON (IG) and press the intelligent tester main switch ON.
(c) Read the DATA LIST according to the displays on the tester.

Power source control ECU

Item	Measurement Item / Range (Display)	Normal Condition	Diagnostic Note
IG2 RELAY MON 2	IG2 inner relay monitor / ON or OFF	ON: Power switch ON (IG) OFF: Power switch OFF	-

OK:

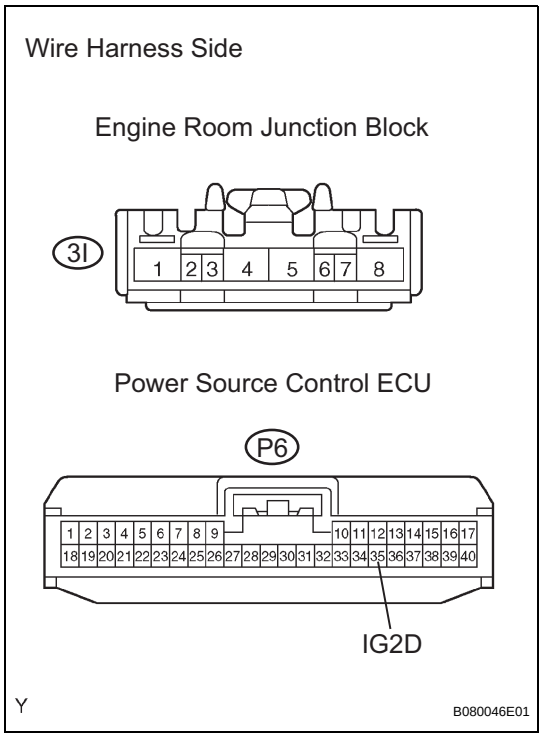
ON (power switch ON (IG)) appears on the screen.

ST

OK → REPLACE POWER SOURCE CONTROL ECU

NG

2 CHECK WIRE HARNESS (ENGINE ROOM JUNCTION BLOCK - ECU AND BODY GROUND)



(a) Disconnect the 3I junction block connector.
(b) Disconnect the P6 ECU connector.
(c) Measure the resistance of the wire harness side connectors.

Standard resistance

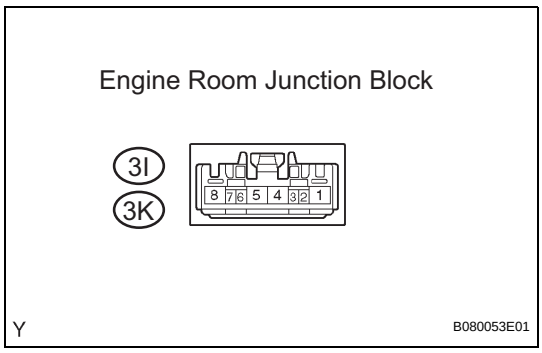
Tester Connection	Specified Condition
3I-2 - P6-35 (IG2D)	Below 1 Ω
3I-3 - Body ground	Below 1 Ω

NG → REPAIR OR REPLACE HARNESS AND CONNECTOR

ST

OK

3 CHECK ENGINE ROOM RELAY BLOCK



(a) Disconnect the 3I and 3K junction block connectors.
(b) Measure the resistance of the junction block connectors.

Standard resistance

Tester Connection	Condition	Specified Condition
3K-1 - 3I-4	When battery voltage is not applied to terminals 3I-2 and 3I-3	10 kΩ or higher
3K-1 - 3I-4	When battery voltage is applied to terminals 3I-2 and 3I-3	Below 1 Ω

NG → REPLACE ENGINE ROOM RELAY BLOCK

OK

REPLACE POWER SOURCE CONTROL ECU

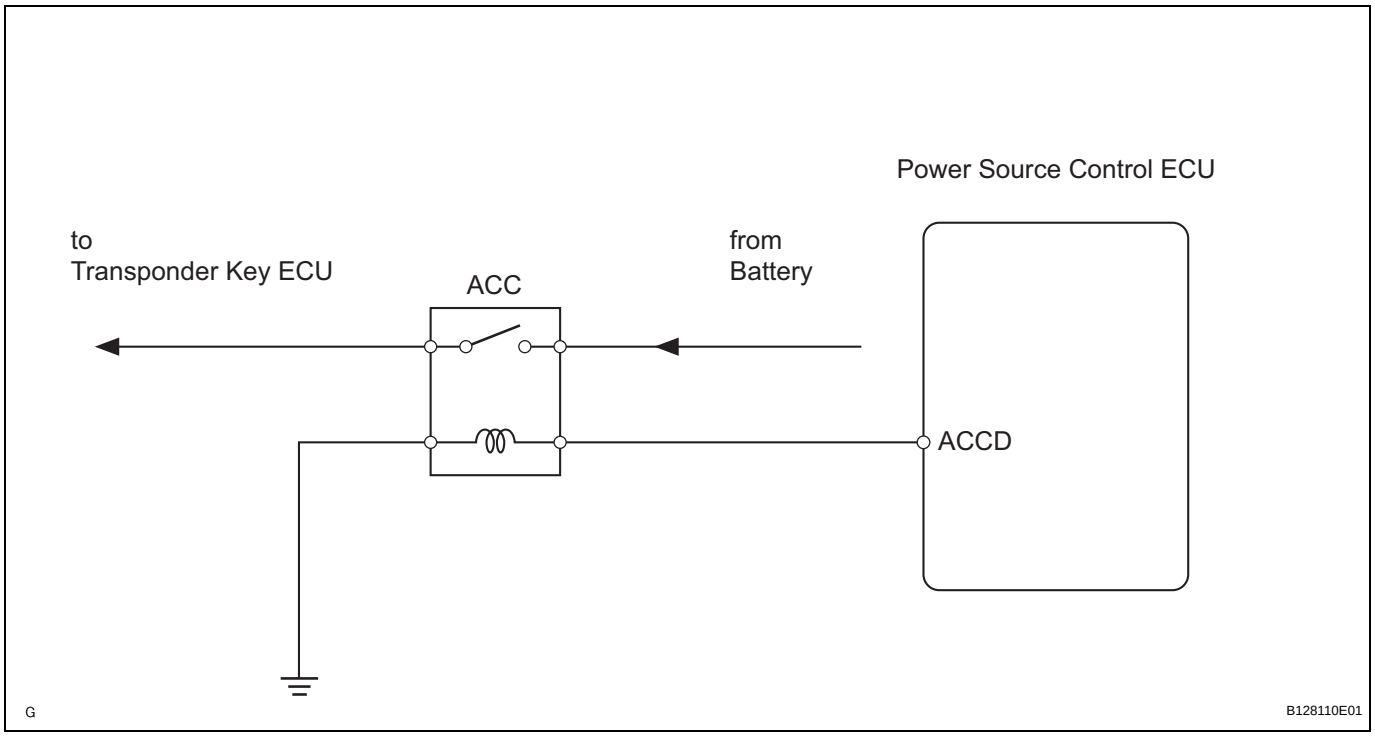
DTC	B2274	ACC Monitor Malfunction

DESCRIPTION

This DTC is output when a malfunction is occurring in the ACC output circuit, which is from the ACC relay actuation circuit inside the power source control ECU to the ACC relay.

DTC No.	DTC Detection Condition	Trouble Area
B2274	ACC relay actuation circuit inside power source control ECU or other related circuit is malfunctioning	• Power source control ECU • ACC relay • Wire harness

WIRING DIAGRAM



INSPECTION PROCEDURE

1	READ VALUE OF DATA LIST (ACC RELAY)

(a) Connect the intelligent tester (with CAN VIM) to the DLC3.
(b) Turn the power switch ON (IG) and press the intelligent tester main switch ON.
(c) Read the DATA LIST according to the displays on the tester.

Power source control ECU

Item	Measurement Item / Range (Display)	Normal Condition	Diagnostic Note
ACC RELAY MON	ACC relay monitor / ON or OFF	ON: Power switch ON (ACC) OFF: Power switch OFF	-

OK:

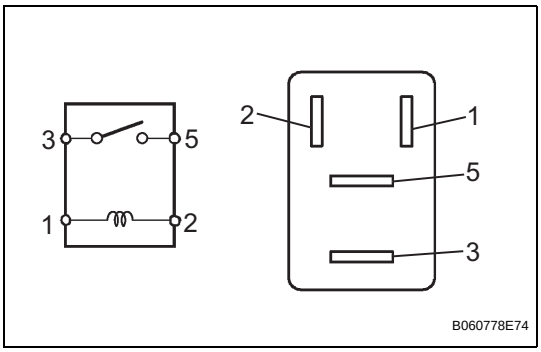
ON (power switch ON (ACC)) appears on the screen.

ST

OK → REPLACE POWER SOURCE CONTROL ECU

NG

2 INSPECT ACC RELAY



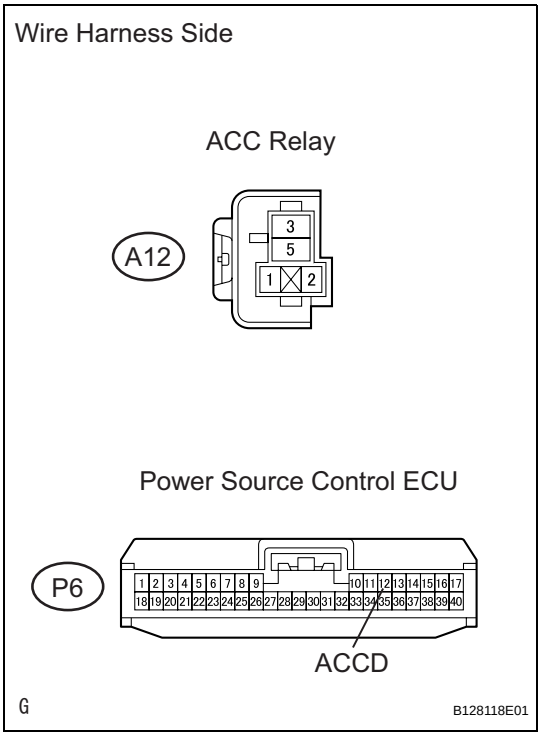
(a) Remove the ACC relay.
(b) Measure the resistance of the relay.
Standard resistance

Tester Connection	Specified Condition
3 - 5	10 kΩ or higher
3 - 5	Below 1 Ω (when battery voltage is applied to terminals 1 and 2)

NG → REPLACE ACC RELAY

OK

3 CHECK WIRE HARNESS (ACC RELAY - POWER SOURCE CONTROL ECU AND BODY GROUND)



(a) Remove the ACC relay.
(b) Disconnect the P6 connector.
(c) Measure the resistance of the wire harness side connectors.
Standard resistance

Tester Connection	Specified Condition
A12-1 - P6-11 (ACCD)	Below 1 Ω
A12-2 - Body ground	Below 1 Ω
A12-1 or P6-11 (ACCD) - Body ground	10 kΩ or higher

NG → REPAIR OR REPLACE HARNESS AND CONNECTOR

OK

REPLACE POWER SOURCE CONTROL ECU

ST

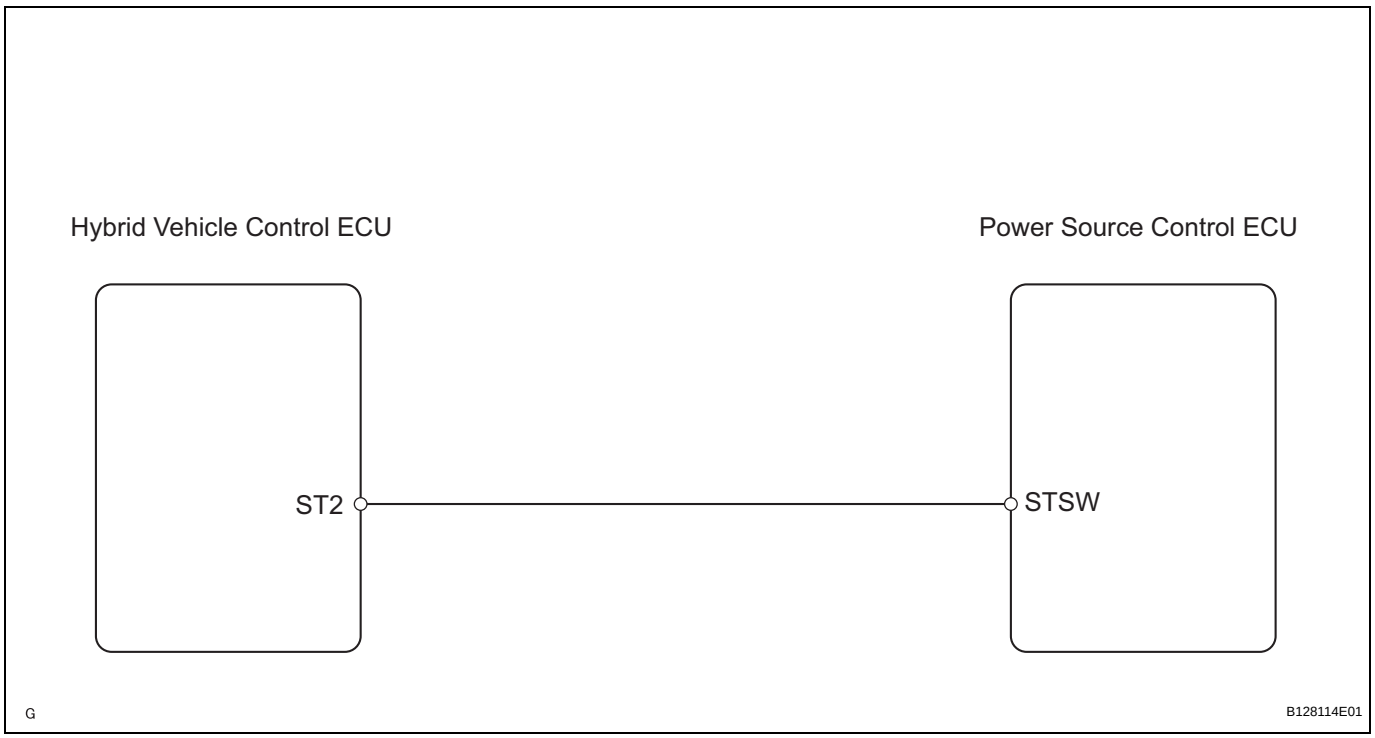
DTC	B2275	STSW Monitor Malfunction

DESCRIPTION

This DTC is output when the ST output circuits inside the power source control ECU is open or short.

DTC No.	DTC Detection Condition	Trouble Area
B2275	ST output circuit inside power source control ECU or other related circuit is malfunctioning	• Power source control ECU • Hybrid vehicle control ECU • Wire harness

WIRING DIAGRAM



INSPECTION PROCEDURE

1	CHECK FOR DTC

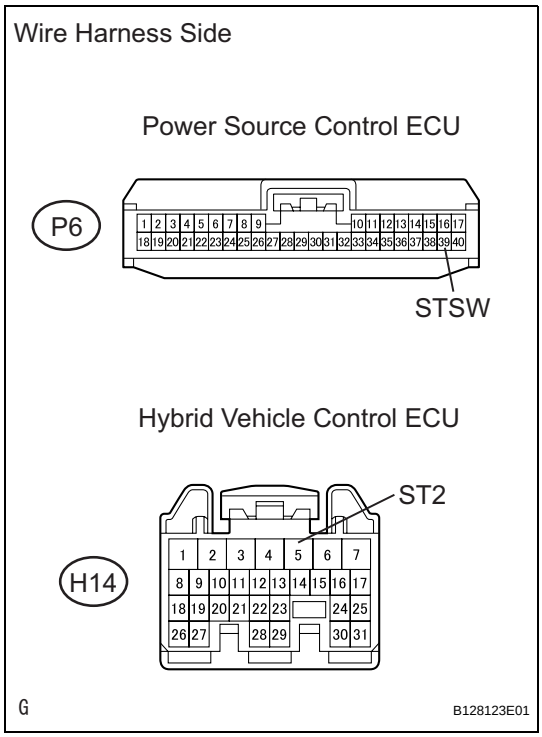
(a) Delete the DTC (see page ST-15).
(b) Check for DTCs again.
OK:
No DTC is output.

OK → **END**

NG

ST

2	CHECK WIRE HARNESS (POWER SOURCE CONTROL ECU - HYBRID VEHICLE CONTROL ECU)



(a) Disconnect the P6 and H14 ECU connectors.
(b) Measure the resistance of the wire harness side connectors.
Standard resistance

Tester Connection	Specified Condition
P6-39 (STSW) - H14-5 (ST2)	Below 1 Ω
P6-39 (STSW) or H14-5 (ST2) - Body ground	10 kΩ or higher

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

OK

3	CHECK OPERATION OF POWER SOURCE CONTROL ECU

(a) After replacing the power source control ECU with a normally functioning ECU, check that the hybrid control system can start normally.
OK:
Hybrid control system can start normally.

NG → **GO TO HYBRID CONTROL SYSTEM**

OK

NORMAL (POWER SOURCE CONTROL ECU DEFECTIVE)

DTC	B2277	Detecting Vehicle Submersion

DESCRIPTION

This DTC is output when the submersion circuit monitor inside the power source control ECU detects that the vehicle is submerged in water.

DTC No.	DTC Detection Condition	Trouble Area
B2277	Submersion circuit monitor inside power source control ECU detects that vehicle is submerged in water	Power source control ECU

INSPECTION PROCEDURE

1	CHECK FOR DTC

(a) Delete the DTC (see page ST-15).
(b) Check for DTCs again.
OK:
No DTC is output.

NG → **REPLACE POWER SOURCE CONTROL ECU**

OK

END

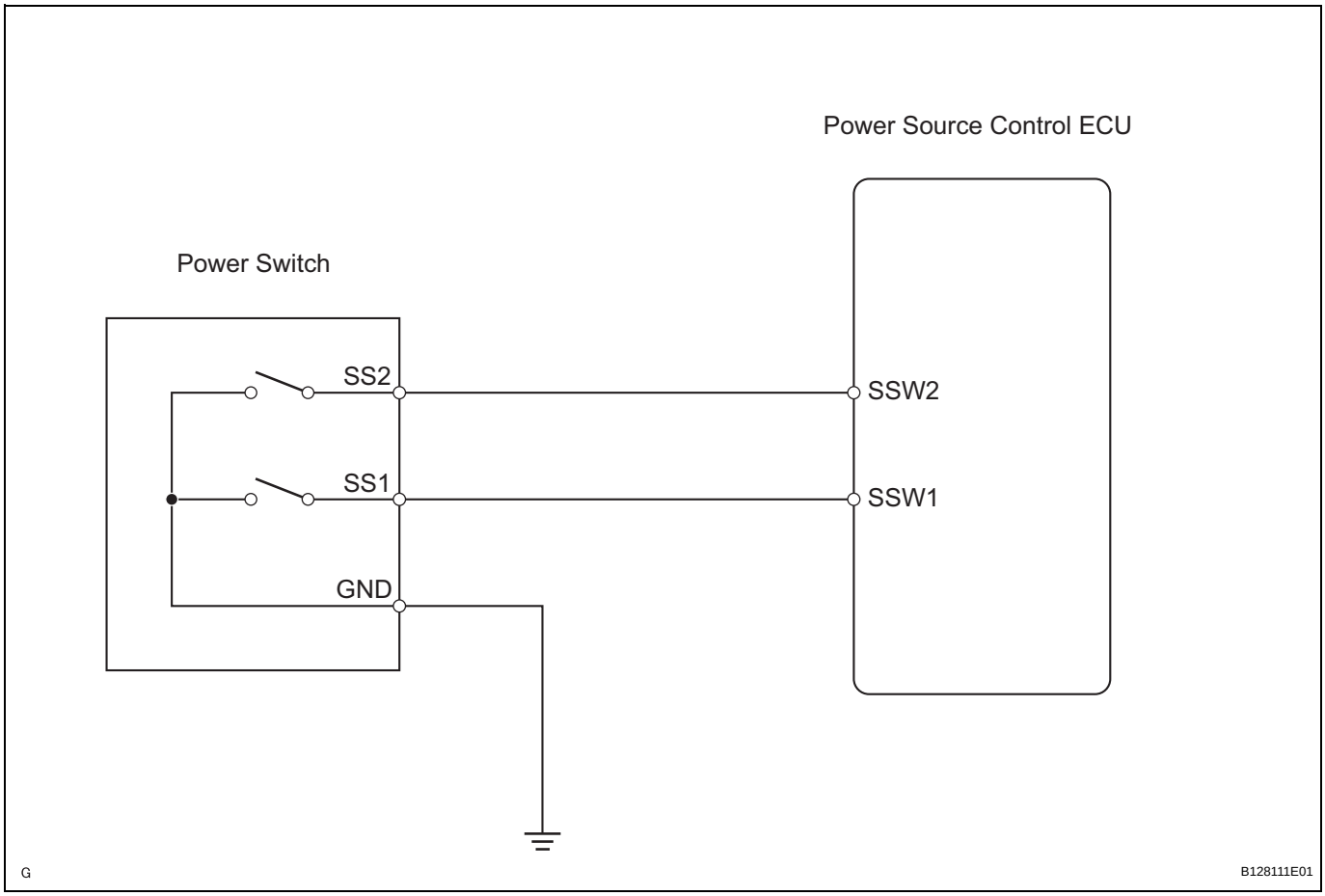
DTC	B2278	Engine Switch Circuit Malfunction

DESCRIPTION

This DTC is output when 1) a malfunction is detected between the power source control ECU and the power switch; or 2) either of the switches inside the power switch is malfunctioning.

DTC No.	DTC Detection Condition	Trouble Area
B2278	Communication is abnormal between power source control ECU and power switch; or power switch is defective	• Power source control ECU • Power switch • Wire harness

WIRING DIAGRAM



INSPECTION PROCEDURE

1	READ VALUE OF DATA LIST (START SWITCH 1 and 2)

(a) Connect the intelligent tester (with CAN VIM) to the DLC3.
(b) Turn the power switch ON (IG) and press the intelligent tester main switch ON.

(c) Read the DATA LIST according to the displays on the tester.

Power source control ECU

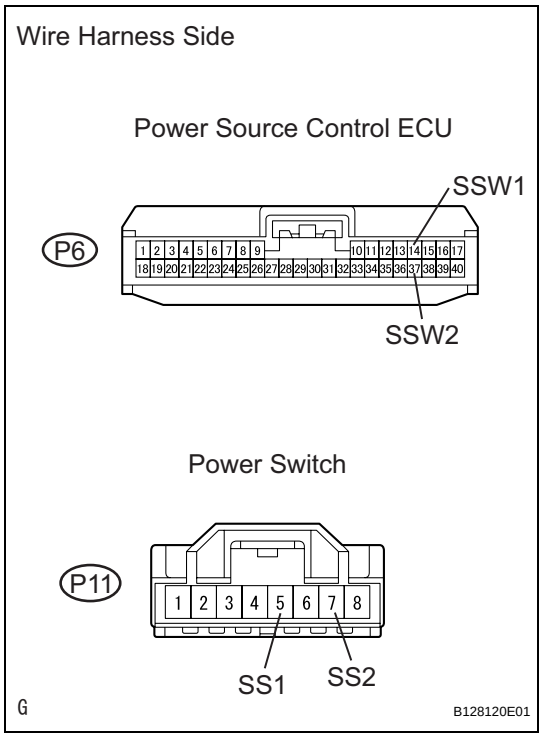
Item	Measurement Item / Range (Display)	Normal Condition	Diagnostic Note
ST SW1	Start Switch 1 / ON or OFF	ON: Power switch ON (IG) OFF: Power switch OFF	-
ST SW2	Start Switch 2 / ON or OFF	ON: Power switch ON (IG) OFF: Power switch OFF	-

OK:
ON (power switches 1 and 2 are ON (IG)) appears on the screen

OK → **REPLACE POWER SOURCE CONTROL ECU**

NG

2 CHECK WIRE HARNESS (POWER SWITCH - POWER SOURCE CONTROL ECU AND BODY GROUND)



(a) Disconnect the P11 power switch connector.
(b) Disconnect the P6 ECU connector.
(c) Measure the resistance of the wire harness side connectors.

Standard resistance

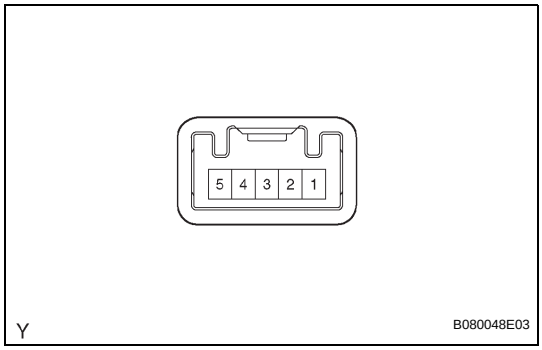
Tester Connection	Specified Condition
P11-5 (SS1) - P6-14 (SSW1)	Below 1 Ω
P11-7 (SS2) - P6-37 (SSW2)	Below 1 Ω
P11-6 - Body ground	Below 1 Ω
P11-5 (SS2) or P6-14 (SSW1) - Body ground	10 kΩ or higher
P11-7 (SS2) or P6-37 (SSW2) - Body ground	10 kΩ or higher

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

OK

ST

3	INSPECT POWER SWITCH



(a) Remove the power switch.
(b) Measure the resistance of the switch.
Standard resistance

Tester Connection	Switch Condition	Specified Condition
7 (SS2) - 6 (GND)	Pushed	Below 1 Ω
5 (SS1) - 6 (GND)	Pushed	Below 1 Ω
7 (SS2) - 6 (GND)	Released	10 kΩ or higher
5 (SS1) - 6 (GND)	Released	10 kΩ or higher

NG → **REPLACE POWER SWITCH**

OK

REPLACE POWER SOURCE CONTROL ECU

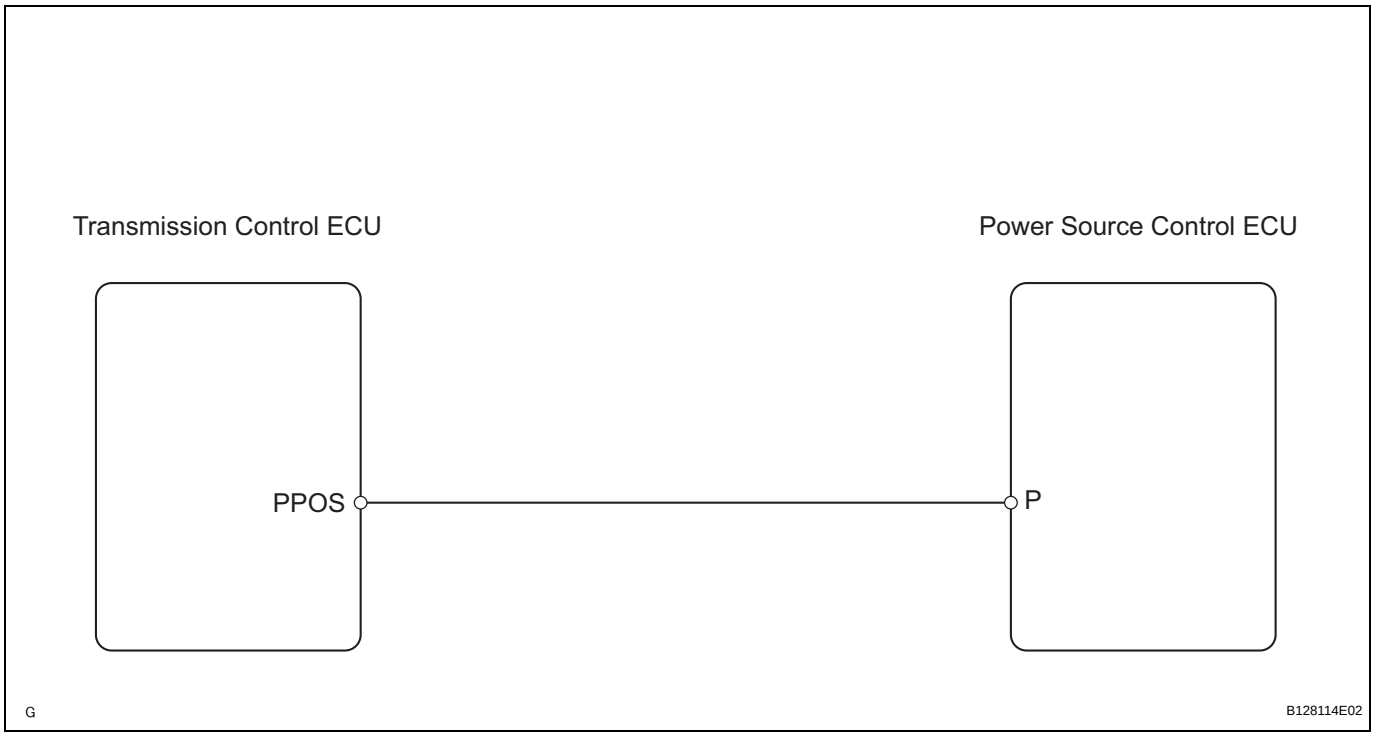
DTC	B2281	"P" Signal Malfunction

DESCRIPTION

The power source control ECU and the transmission control ECU are connected by a cable and the BEAN. If the cable information and BEAN information are inconsistent, this DTC will be output.

DTC No.	DTC Detection Condition	Trouble Area
B2281	Cable and BEAN between power source control ECU and transmission control ECU are inconsistent	• Power source control ECU • Transmission control ECU • Wire harness

WIRING DIAGRAM



INSPECTION PROCEDURE

1	READ VALUE OF DATA LIST (SHIFT P SIGNAL)

(a) Connect the intelligent tester (with CAN VIM) to the DLC3.
(b) Turn the power switch ON (IG) and press the intelligent tester main switch ON.
(c) Read the DATA LIST according to the displays on the tester.

Power source control ECU

Item	Measurement Item / Range (Display)	Normal Condition	Diagnostic Note
SHIFT P SIG	Shift P Signal / ON or OFF	ON: Shift P signal ON (Shift position is P) OFF: Shift P signal OFF (Shift position is not P)	-

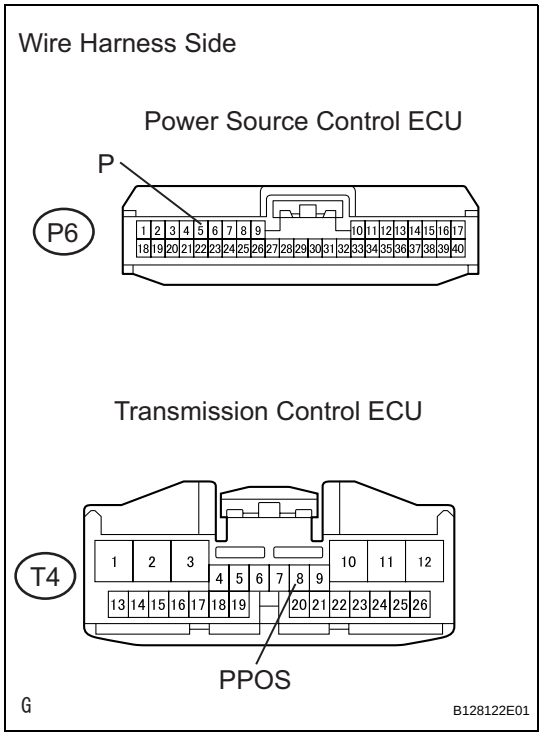
ST

OK:
"ON" (P signal is ON) appears on the screen.

OK → **REPLACE POWER SOURCE CONTROL ECU**

NG

2 CHECK WIRE HARNESS (POWER SOURCE CONTROL ECU - TRANSMISSION CONTROL ECU)



(a) Disconnect the P6 and T4 ECU connectors.
(b) Measure the resistance of the wire harness side connectors.
Standard resistance

Tester Connection	Specified Condition
P6-5 (P) - T4-8 (PPOS)	Below 1 Ω
P6-5 (P) or T4-8 (PPOS) - Body ground	10 kΩ or higher

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

OK

3 CHECK OPERATION OF POWER SOURCE CONTROL ECU

(a) After replacing the power source control ECU with a normally functioning ECU, check that the hybrid control system can start normally.
OK:
Hybrid control system can start normally.

NG → **GO TO SHIFT CONTROL SYSTEM**

OK

NORMAL (POWER SOURCE CONTROL ECU DEFECTIVE)

ST

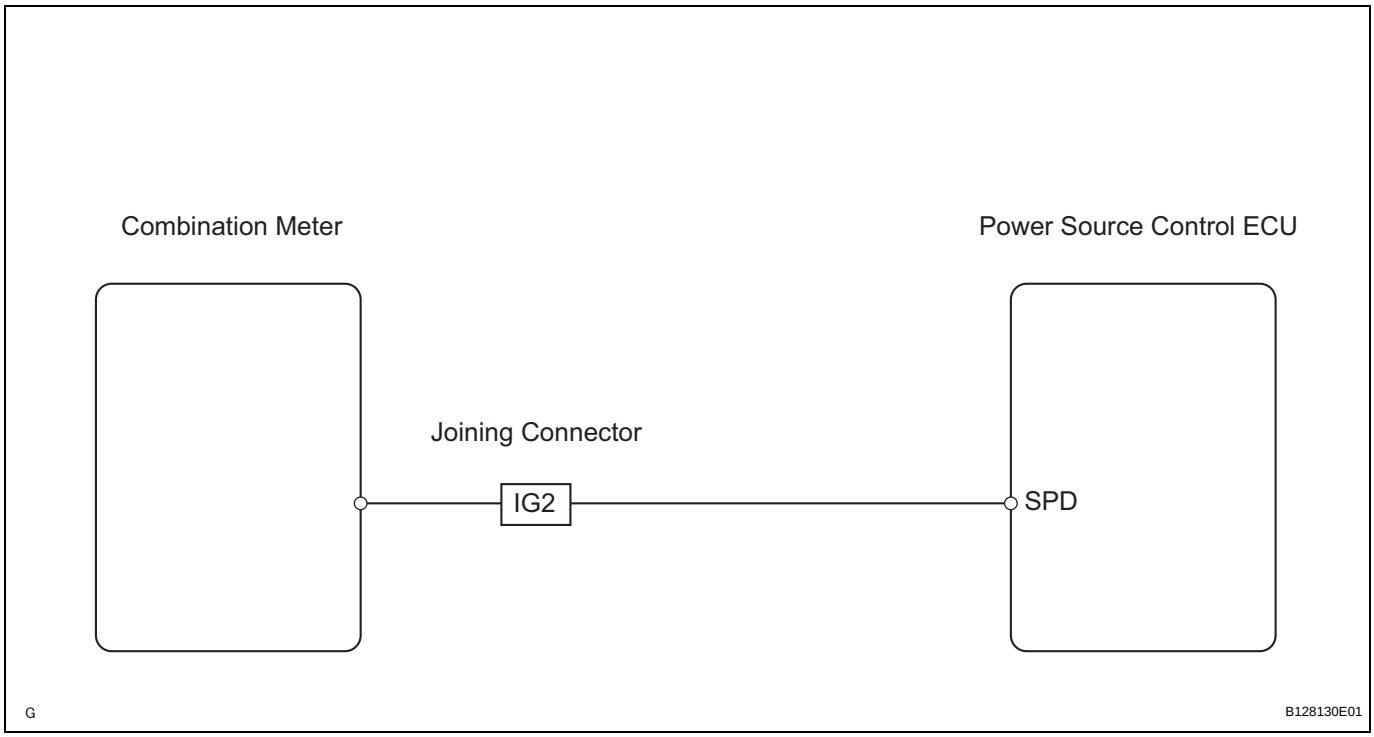
DTC	B2282	Vehicle Speed Signal Malfunction

DESCRIPTION

The power source control ECU and the combination meter are connected by a cable and the BEAN. This DTC is output when: 1) the cable information and BEAN information are inconsistent; and 2) a malfunction is detected between the vehicle speed sensor and combination meter.

DTC No.	DTC Detection Condition	Trouble Area
B2282	Both conditions below are met: • Cable for BEAN information between power source control ECU and combination meter are inconsistent • Malfunction is detected between vehicle speed sensor and combination meter	• Power source control ECU • Combination meter • Wire harness

WIRING DIAGRAM



INSPECTION PROCEDURE

1	READ VALUE OF DATA LIST (VEHICLE SPEED SIGNAL)

(a) Connect the intelligent tester (with CAN VIM) to the DLC3.
(b) Turn the power switch ON (IG) and press the intelligent tester main switch ON.
(c) Read the DATA LIST according to the displays on the tester.

Power source control ECU

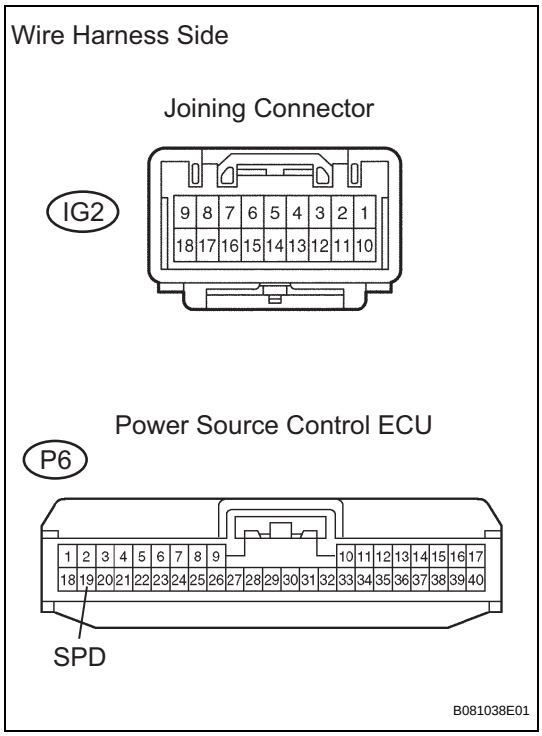
Item	Measurement Item / Range (Display)	Normal Condition	Diagnostic Note
VEHICLE SPD SIG	Vehicle speed signal / Stop or Run	Stop: Vehicle is stopped Run: Vehicle is running	-

OK:
STOP (vehicle is stopped) appears on the screen.

OK → **REPLACE POWER SOURCE CONTROL ECU**

NG

2 CHECK WIRE HARNESS (POWER SOURCE CONTROL ECU - IG2 JOINING CONNECTOR)



(a) Disconnect the P6 connector.
(b) Disconnect the IG2 connector.
(c) Measure the resistance of the wire harness side connectors.
Standard resistance

Tester Connection	Specified Condition
P6-19 (SPD) - IG2-16	Below 1 Ω
P6-19 (SPD) or IG2-16 - Body ground	10 kΩ or higher

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

OK

3 CHECK OPERATION OF POWER SOURCE CONTROL ECU

(a) After replacing the power source control ECU with a normally functioning ECU, check that the hybrid control system can start normally.
OK:
Hybrid control system can start normally.

NG → **GO TO METER / GAUGE SYSTEM**

OK

NORMAL (POWER SOURCE CONTROL ECU DEFECTIVE)

ST

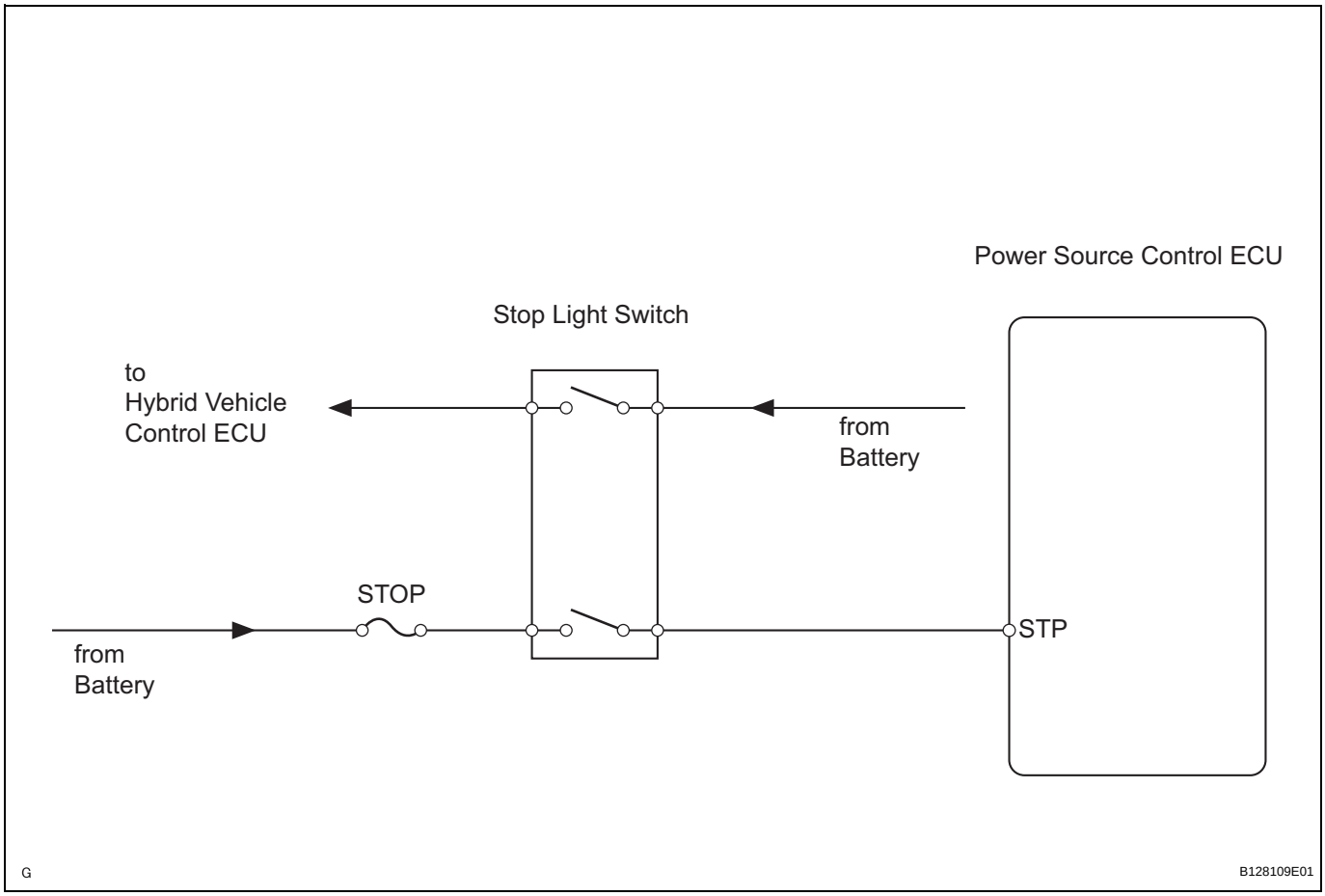
DTC	B2284	Brake Signal Malfunction

DESCRIPTION

This DTC is output when: 1) the brake signal circuit between the power source control ECU and the stop light switch is malfunctioning, and 2) the BEAN information is inconsistent.

DTC No.	DTC Detection Condition	Trouble Area
B2284	Communication or communication line is abnormal between power source control ECU and stop light switch	• Power source control ECU • Stop light switch • Wire harness

WIRING DIAGRAM



INSPECTION PROCEDURE

1	READ VALUE OF DATA LIST (STOP LIGHT SWITCH)

(a) Connect the intelligent tester (with CAN VIM) to the DLC3.
(b) Turn the power switch ON (IG) and press the intelligent tester main switch ON.

(c) Read the DATA LIST according to the displays on the tester.

Power source control ECU

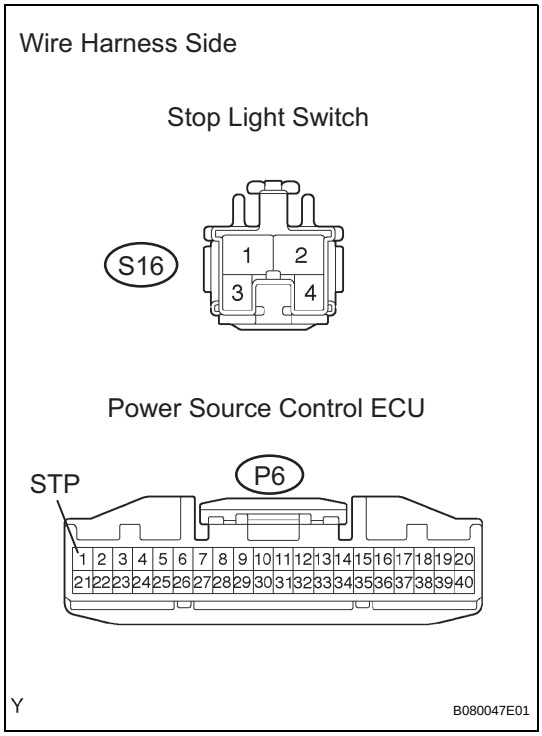
Item	Measurement Item / Range (Display)	Normal Condition	Diagnostic Note
STOP LAMP SW1	Stop light switch 1 / ON or OFF	ON: Brake pedal depressed OFF: Brake pedal released	-

OK:
ON (brake pedal depressed) appears on the screen.

OK → **REPLACE POWER SOURCE CONTROL ECU**

NG

2 CHECK WIRE HARNESS (STOP LIGHT SWITCH - POWER SOURCE CONTROL ECU AND BATTERY)



(a) Disconnect the S16 switch connector.
(b) Disconnect the P6 ECU connector.
(c) Measure the resistance and voltage of the wire harness side connectors.

Standard resistance

Tester Connection	Specified Condition
S16-1 - P6-1 (STP)	Below 1 Ω

Standard voltage

Tester Connection	Specified Condition
S16-2 - Body ground	10 to 14 V

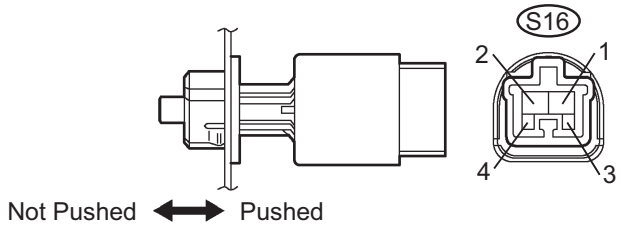
NG → **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK

3 INSPECT STOP LIGHT SWITCH ASSEMBLY

(a) Remove the stop light switch.

ST



E130045E01

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

Standard resistance

Tester Connection	Condition	Specified Condition
1 - 2	Switch pin not pushed	Below 1 Ω
3 - 4	Switch pin not pushed	10 kΩ or higher
1 - 2	Switch pin pushed	10 kΩ or higher
3 - 4	Switch pin pushed	Below 1 Ω

NG → **REPLACE STOP LIGHT SWITCH ASSEMBLY**

OK

REPLACE POWER SOURCE CONTROL ECU

ST

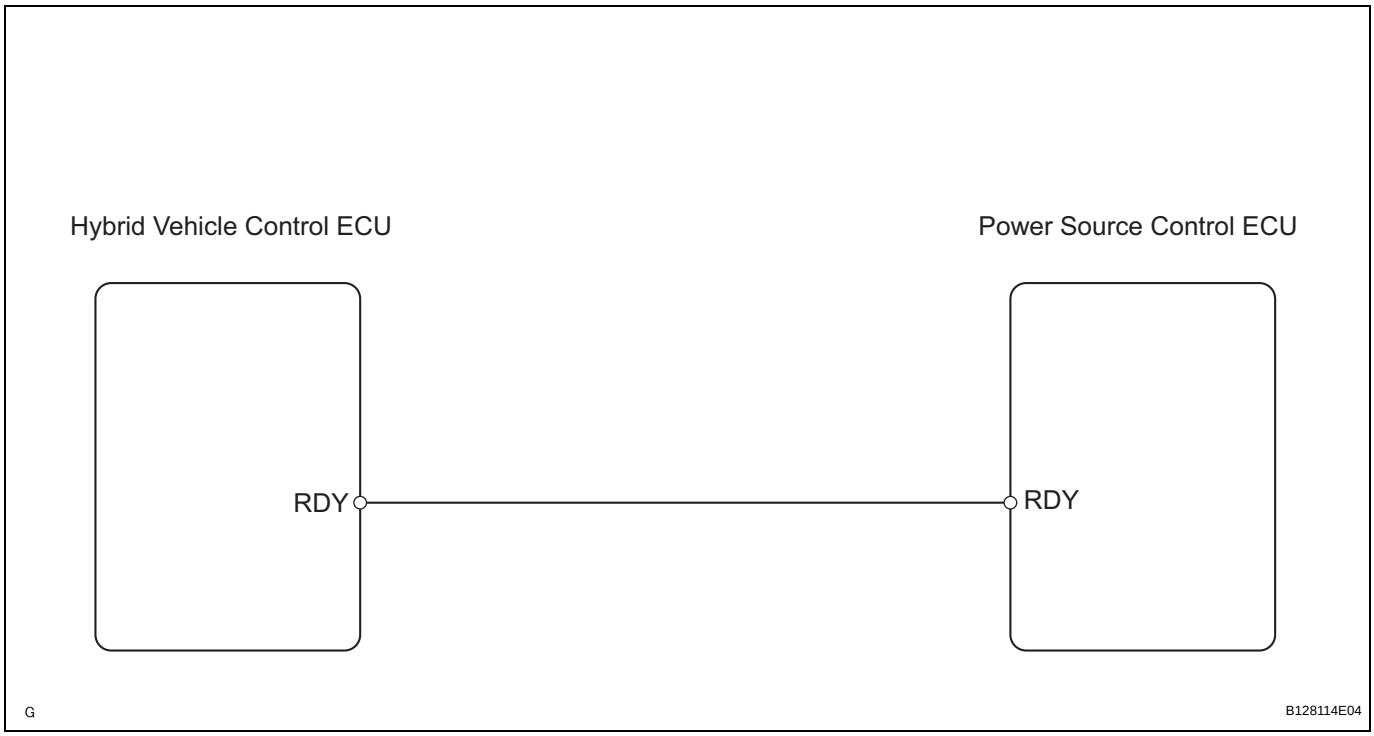
DTC	B2286	Ready Signal Malfunction

DESCRIPTION

The power source control ECU and the hybrid vehicle control ECU are connected by a cable and the BEAN. If the cable information and BEAN information are inconsistent, this DTC will be output.

DTC No.	DTC Detection Condition	Trouble Area
B2286	Cable and BEAN information between power source control ECU and hybrid vehicle control ECU are inconsistent	• Power source control ECU • Hybrid vehicle control ECU • Wire harness

WIRING DIAGRAM



INSPECTION PROCEDURE

1	READ VALUE OF DATA LIST (READY SIGNAL)

(a) Connect the intelligent tester (with CAN VIM) to the DLC3.
(b) Turn the power switch ON (IG) and press the intelligent tester main switch ON.
(c) Read the DATA LIST according to the displays on the tester.

Power source control ECU

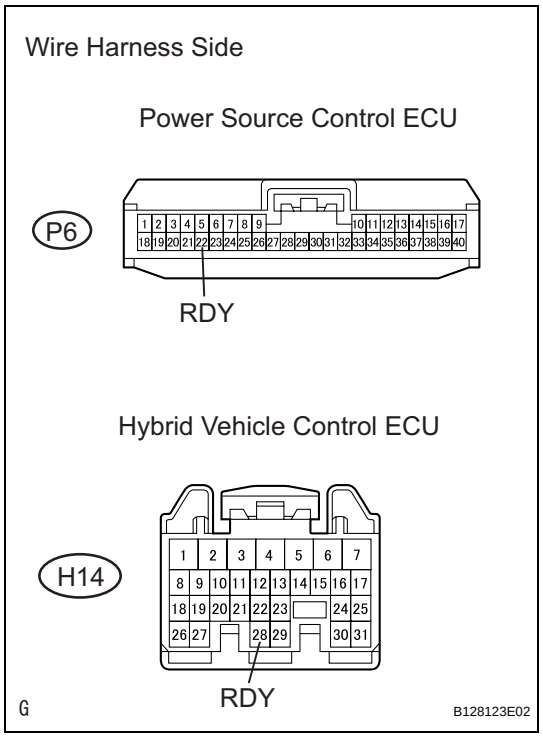
Item	Measurement Item / Range (Display)	Normal Condition	Diagnostic Note
READY SIG	Ready signal / ON or OFF	ON: Power switch ON (READY) OFF: Power switch OFF or ON (IG) or ON (ACC)	-

OK:
ON (power switch is ON (READY)) appears on the screen.

OK → **REPLACE POWER SOURCE CONTROL ECU**

NG

2 CHECK WIRE HARNESS (POWER SOURCE CONTROL ECU - HYBRID VEHICLE CONTROL ECU)



(a) Disconnect the P6 and H14 ECU connectors.
(b) Measure the resistance of the wire harness side connectors.

Standard resistance

Tester Connection	Specified Condition
P6-22 (RDY) - H14-28 (RDY)	Below 1 Ω
P6-22 (RDY) or H14-28 (RDY) - Body ground	10 kΩ or higher

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

OK

3 CHECK OPERATION OF POWER SOURCE CONTROL ECU

(a) After replacing the power source control ECU with a normally functioning ECU, check that the hybrid vehicle control system can start normally.

OK:
Hybrid vehicle control system can start normally.

NG → **GO TO HYBRID CONTROL SYSTEM**

OK

NORMAL (POWER SOURCE CONTROL ECU DEFECTIVE)

ST

DTC	B2287	LIN Communication Master Malfunction

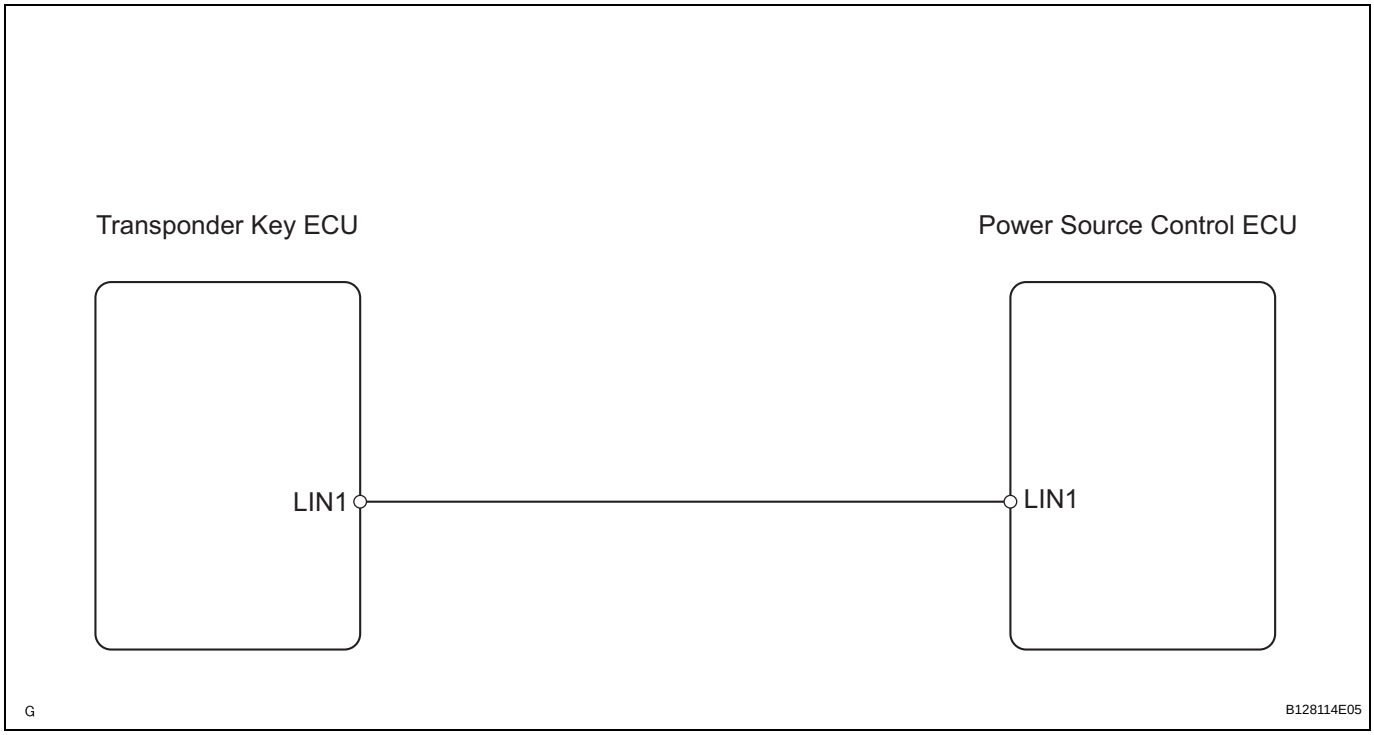
DTC	B2289	Key Collation Waiting Time Over

DESCRIPTION

This DTC is output when: 1) any other DTC is set in the power source control ECU; or 2) the wire harness between the power source control ECU and the transponder key ECU is open or short.

DTC No.	DTC Detection Condition	Trouble Area
B2287	Communication or communication line is abnormal between power source control ECU and transponder key ECU	• Power source control ECU • Transponder key ECU • Wire harness
B2289	Either condition below is met: • Cable and BEAN are abnormal between power source control ECU and immobiliser system • Immobiliser system is malfunctioning	• Power source control ECU • Engine immobiliser system • Wire harness

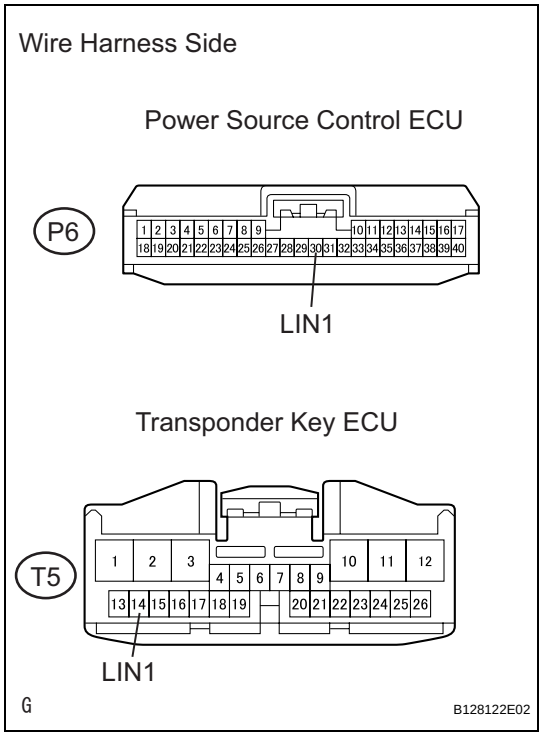
WIRING DIAGRAM



ST

INSPECTION PROCEDURE

1 CHECK WIRE HARNESS (POWER SOURCE CONTROL ECU - TRANSPONDER KEY ECU)



(a) Disconnect the P6 and T5 ECU connectors.
(b) Measure the resistance of the wire harness side connectors.

Standard resistance

Tester Connection	Specified Condition
P6-30 (LIN1) - T5-14 (LIN1)	Below 1 Ω
P6-30 (LIN1) or T5-14 (LIN1) - Body ground	10 kΩ or higher

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

OK

2 CHECK OPERATION OF POWER SOURCE CONTROL ECU

(a) After replacing power source control ECU with a normally functioning ECU, check that the hybrid control system can start normally.

Result

Result	Proceed to
Hybrid system can start normally	A
Hybrid system cannot start (w/ smart key system (for door lock))	B
Hybrid system cannot start (w/o smart key system (for door lock))	C

B → **GO TO ENGINE IMMOBILISER SYSTEM (w/ SMART KEY SYSTEM)**

C → **GO TO ENGINE IMMOBILISER SYSTEM (w/o SMART KEY SYSTEM)**

A

NORMAL (POWER SOURCE CONTROL ECU DEFECTIVE)

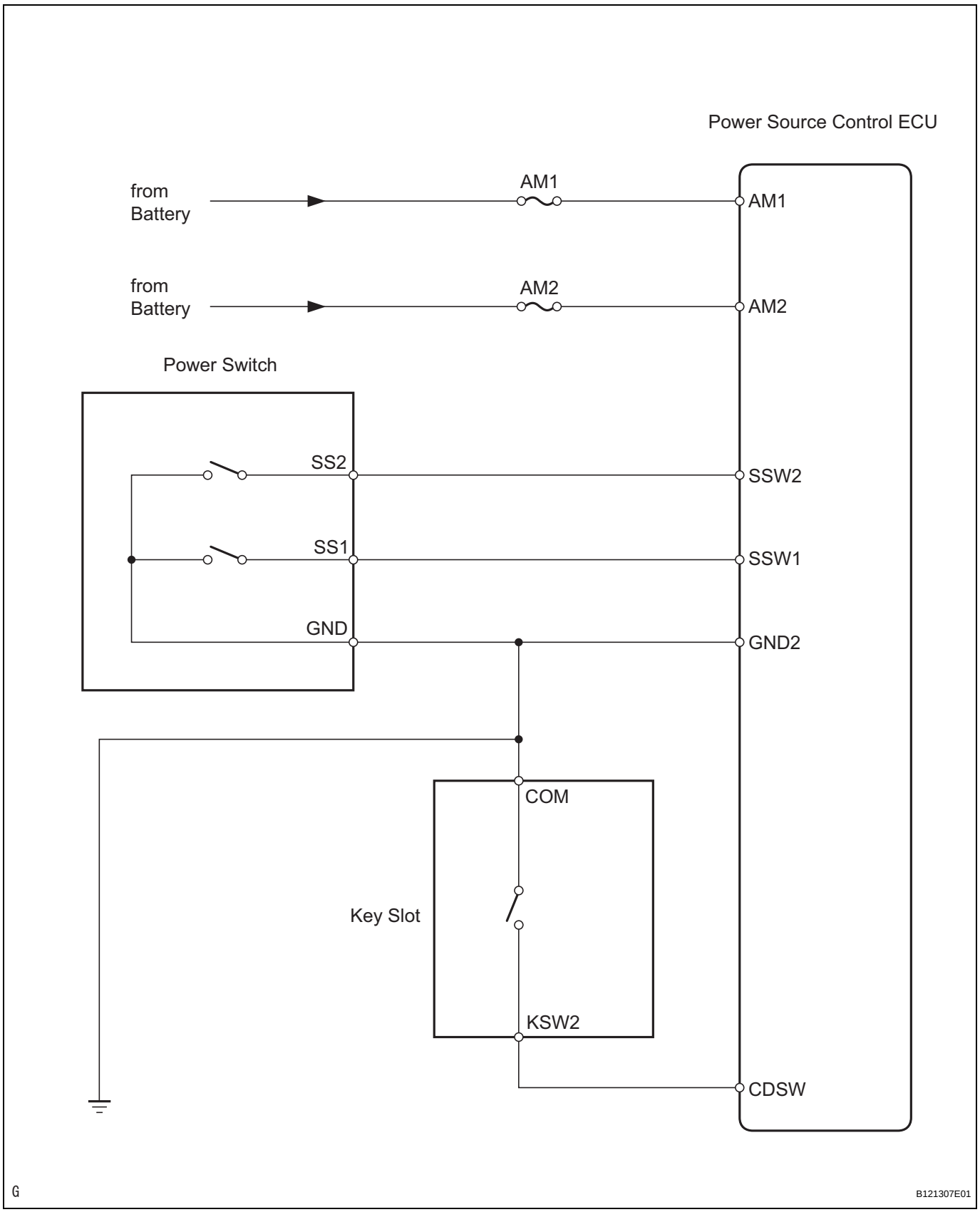
ST

Power Mode does not Change to ON (IG and ACC)

DESCRIPTION

When the key is inserted into the key slot and the power switch is pressed, signals are input to the power source control ECU. Selection of the power mode, which cycles between OFF, ON (ACC) and ON (IG), is performed by pressing and releasing the power switch until the desired power mode is selected (the power modes cycle in the order shown above).

WIRING DIAGRAM



ST

INSPECTION PROCEDURE

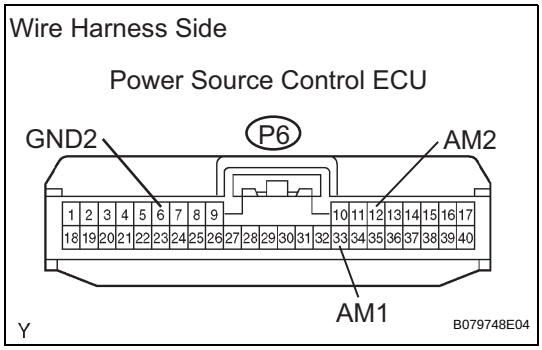
1	INSPECT FUSE (AM1, AM2)

(a) Remove the AM1 fuse from the driver side junction block.
(b) Remove the AM2 fuse from the engine room junction block.
(c) Measure the resistance of the fuses.
Standard resistance:
Below 1 Ω

NG → **REPLACE FUSE**

OK

2	CHECK WIRE HARNESS (POWER SOURCE CONTROL ECU - BATTERY AND BODY GROUND)



(a) Disconnect the P6 ECU connector.
(b) Measure the resistance and voltage of the wire harness side connector.
Standard resistance

Tester Connection	Specified Condition
P6-6 (GND2) - Body ground	Below 1 Ω

Standard voltage

Tester Connection	Specified Condition
P6-33 (AM1) - Body ground	10 to 14 V
P6-12 (AM2) - Body ground	10 to 14 V

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

OK

3	CHECK FOR DTC (POWER SOURCE CONTROL ECU)

(a) Check for DTCs of the power source control ECU.
OK:
DTCs of the power source control ECU are not output.

NG → **GO TO DTC CHART**

OK

ST

4	CHECK FOR DTC (TRANSPONDER KEY ECU)

(a) Check for DTCs of the transponder key ECU.

Result

Result	Proceed to
DTCs of transponder key ECU are not output	A
DTCs of transponder key ECU are output (w/ smart key system (for door lock))	B
DTCs of transponder key ECU are output (w/o smart key system (for door lock))	C

B → **GO TO ENGINE IMMOBILISER SYSTEM (w/ SMART KEY SYSTEM)**

C → **GO TO ENGINE IMMOBILISER SYSTEM (w/o SMART KEY SYSTEM)**

A

5	READ VALUE OF DATA LIST (STEERING UNLOCK SWITCH)

(a) Connect the intelligent tester (with CAN VIM) to the DLC3.
(b) Press the intelligent tester main switch ON.
(c) Read the DATA LIST according to the displays on the tester.

ST

Power source control ECU

Item	Measurement Item / Range (Display)	Normal Condition	Diagnostic Note
STR UNLK SW	Steering unlock switch / ON or OFF	ON: Key is in key slot OFF: No key is in key slot	-

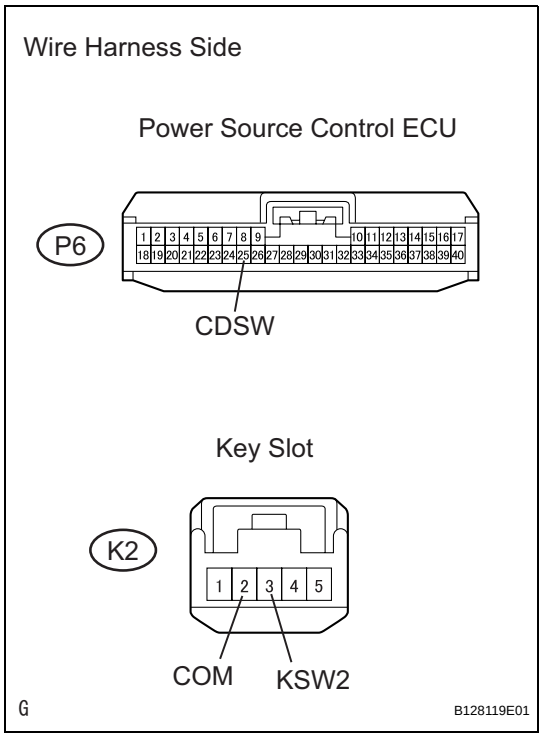
OK:

ON (key is in key slot) appears on the screen.

OK → **Go to step 8**

NG

6	CHECK WIRE HARNESS (KEY SLOT - POWER SOURCE CONTROL ECU AND BODY GROUND)



(a) Disconnect the K2 key slot connector.
(b) Disconnect the P6 ECU connector.
(c) Measure the resistance of the wire harness side connectors.

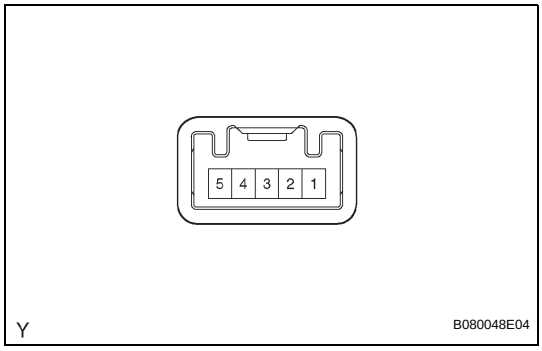
Standard resistance

Tester Connection	Specified Condition
K2-3 (KSW2) - P6-25 (CDSW)	Below 1 Ω
K2-2 (COM) - Body ground	Below 1 Ω
K2-3 (KSW2) or P6-25 (CDSW) - Body ground	10 kΩ or higher

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

OK

7	INSPECT KEY SLOT



(a) Remove the key slot.
(b) Measure the resistance of the key slot.

Standard resistance

Tester Connection	Condition	Specified Condition
K2-3 (KSW2) - K2-2 (COM)	Key is in key slot	10 kΩ or higher

NG → **REPLACE KEY SLOT**

OK

REPLACE POWER SOURCE CONTROL ECU

8	READ VALUE OF DATA LIST (START SWITCH 1 and 2)

(a) Connect the intelligent tester (with CAN VIM) to the DLC3.
(b) Press the intelligent tester main switch ON.

(c) Read the DATA LIST according to the displays on the tester.

Power source control ECU

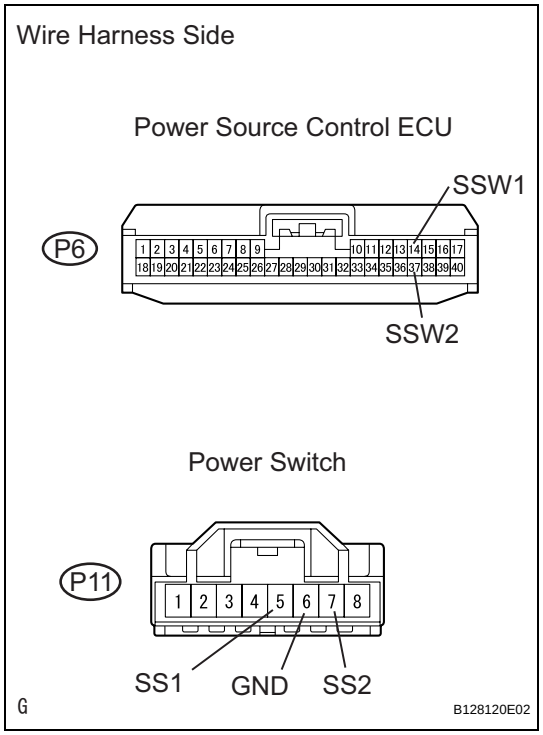
Item	Measurement Item / Display (Range)	Normal Condition	Diagnostic Note
ST SW1	Start switch 1 / ON or OFF	ON: Power switch ON (IG) (push power switch) OFF: Power switch OFF (release power switch)	-
ST SW2	Start switch 2 / ON or OFF	ON: Power switch ON (IG) (push power switch) OFF: Power switch OFF (release power switch)	-

OK:
"ON" (power switch ON (IG)) appears on the screen.

OK → **REPLACE POWER SOURCE CONTROL ECU**

NG

9	CHECK WIRE HARNESS (POWER SWITCH - POWER SOURCE CONTROL ECU AND BODY GROUND)



(a) Disconnect the P11 power switch connector.
(b) Disconnect the P6 ECU connector.
(c) Measure the resistance of the wire harness side connectors.

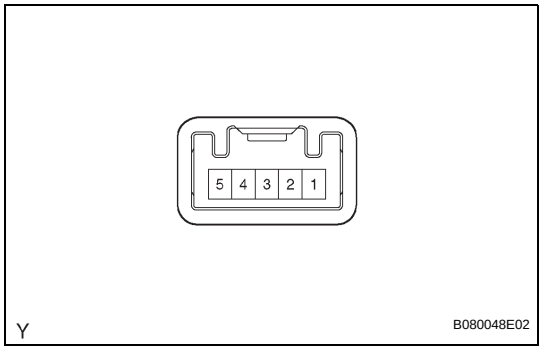
Tester Connection	Specified Condition
5 (SS1) - 14 (SSW1)	Below 1 Ω
7 (SS2) - 37 (SSW2)	Below 1 Ω
6 (GND) - Body ground	Below 1 Ω
5 (SS1) or 14 (SSW1) - Body ground	10 kΩ or higher
7 (SS2) or 37 (SSW2) - Body ground	10 kΩ or higher

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

OK

ST

10	INSPECT POWER SWITCH



(a) Remove the power switch.
(b) Measure the resistance of the switch.
Standard resistance

Tester Connection	Switch Condition	Specified Condition
7 (SS2) - 6 (GND)	Pushed	Below 1 Ω
5 (SS1) - 6 (GND)	Pushed	Below 1 Ω
7 (SS2) - 6 (GND)	Released	10 kΩ or higher
5 (SS1) - -6 (GND)	Released	10 kΩ or higher

NG → **REPLACE POWER SWITCH**

OK

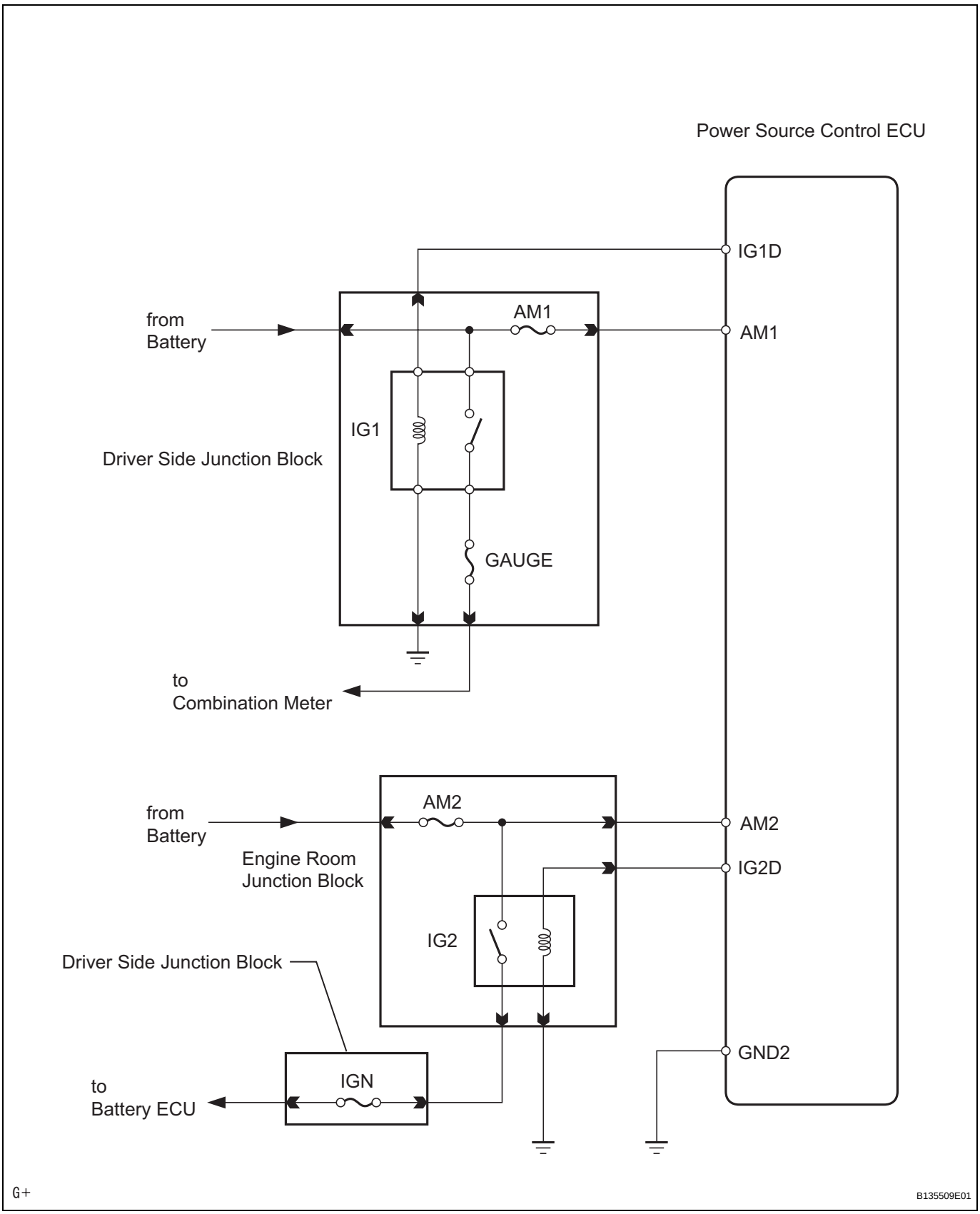
REPLACE POWER SOURCE CONTROL ECU

Power Mode does not Change to ON (IG)

DESCRIPTION

When the key is inserted into the key slot and the power switch is pressed, signals are input to the power source control ECU. Selection of the power mode, which cycles between OFF, ON (ACC) and ON (IG), is performed by pressing and releasing the power switch until the desired power mode is selected (the power modes cycle in the order shown above).

WIRING DIAGRAM



INSPECTION PROCEDURE

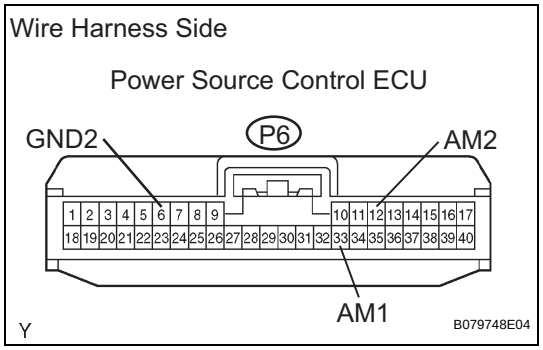
1	INSPECT FUSE (AM1, AM2)

(a) Remove the AM1 fuse from the driver side junction block.
(b) Remove the AM2 fuse from the engine room junction block.
(c) Measure the resistance of the fuses.
Standard resistance:
Below 1 Ω

NG → **REPLACE FUSE**

OK

2	CHECK WIRE HARNESS (POWER SOURCE CONTROL ECU - BATTERY AND BODY GROUND)



(a) Disconnect the P6 ECU connector.
(b) Measure the resistance and voltage of the wire harness side connector.
Standard resistance

Tester Connection	Specified Condition
P6-6 (GND2) - Body ground	Below 1 Ω

Standard voltage

Tester Connection	Specified Condition
P6-33 (AM1) - Body ground	10 to 14 V
P6-12 (AM2) - Body ground	10 to 14 V

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

OK

3	CHECK FOR DTC

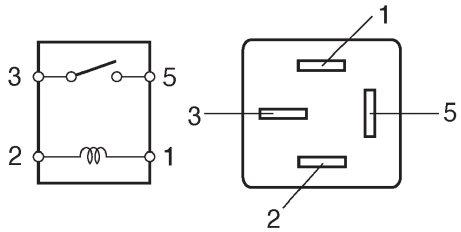
(a) Check for DTCs of the power source control ECU.
OK:
DTCs of the power source control ECU are not output.

NG → **GO TO DTC CHART**

OK

ST

4 INSPECT IG1 RELAY



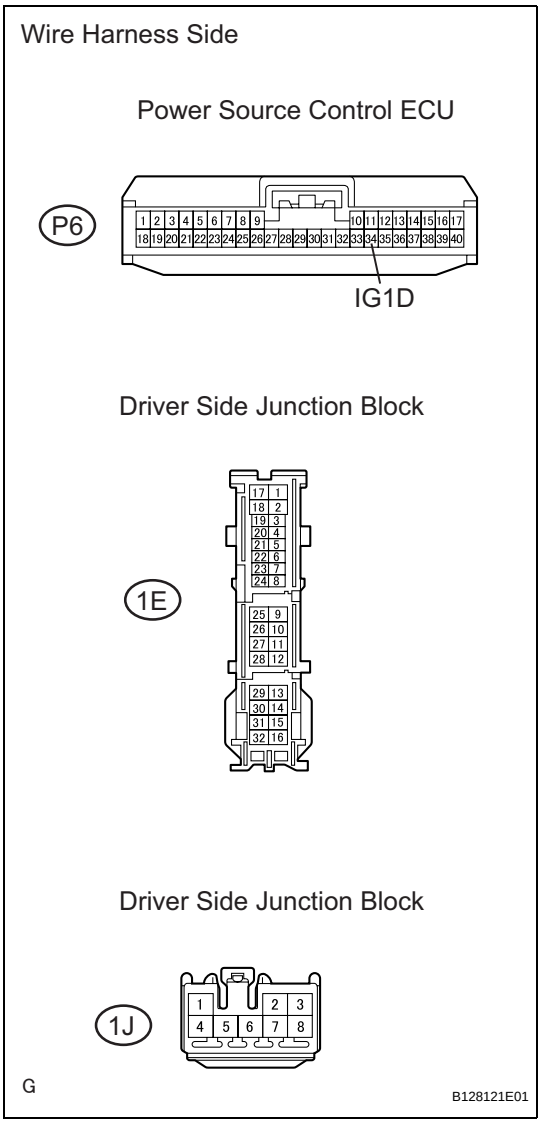
(a) Remove the IG1 relay from the driver side junction block.
(b) Measure the resistance of the relay.
Standard resistance

Tester Connection	Specified Condition
3 - 5	10 kΩ or higher
3 - 5	Below 1 Ω (when battery voltage is applied to terminals 1 and 2)

NG → **REPLACE IG1 RELAY**

OK

5 CHECK WIRE HARNESS (DRIVER SIDE JUNCTION BLOCK - ECU AND BODY GROUND)



(a) Disconnect the 1J and 1E junction block connectors.
(b) Disconnect the P6 ECU connector.
(c) Measure the resistance of the wire harness side connectors.
Standard resistance

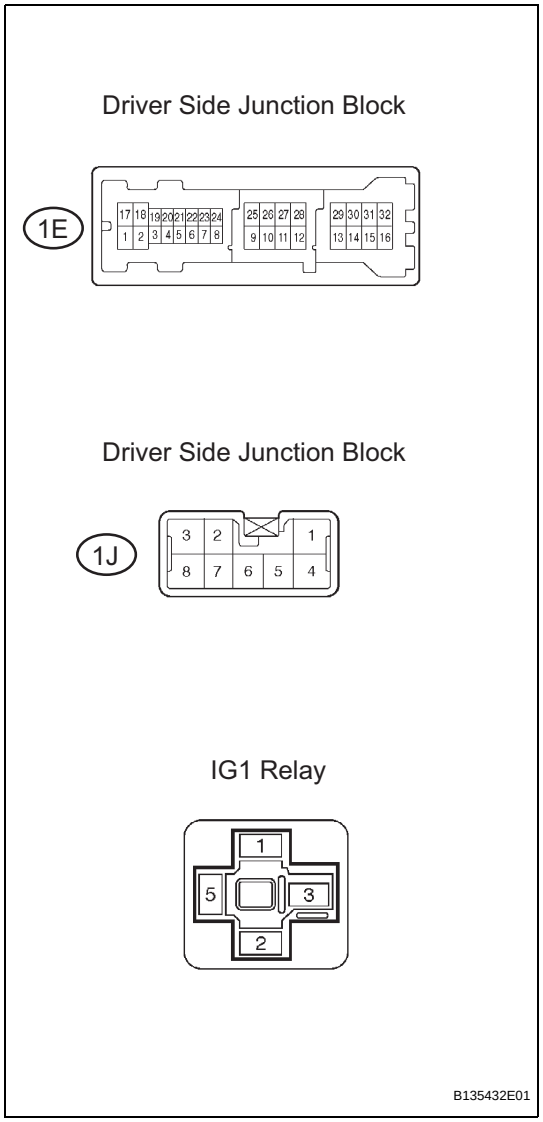
Tester Connection	Specified Condition
1J-3 - P6-34 (IG1D)	Below 1 Ω
1E-17 - Body ground	Below 1 Ω
1J-3 or P6-34 (IG1D) - Body ground	10 kΩ or higher

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

OK

ST

6	INSPECT DRIVER SIDE JUNCTION BLOCK



(a) Disconnect the 1J and 1E junction block connectors.
(b) Remove the IG1 relay from the driver side junction block.
(c) Measure the resistance of the wire harness side connectors.

Standard resistance

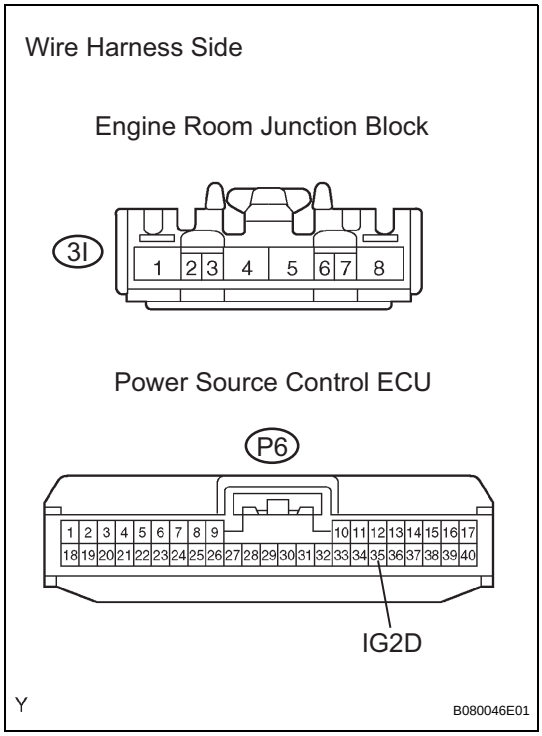
Tester Connection	Specified Condition
1J-3 - Driver side junction block IG1 relay terminal 2	Below 1 Ω
1E-17 - Driver side junction block IG1 relay terminal 1	Below 1 Ω

NG → **REPLACE DRIVER SIDE JUNCTION BLOCK ASSEMBLY**

OK

ST

7 CHECK WIRE HARNESS (ENGINE ROOM JUNCTION BLOCK - ECU AND BODY GROUND)



(a) Disconnect the 3I junction block connector.
(b) Disconnect the P6 ECU connector.
(c) Measure the resistance of the wire harness side connectors.

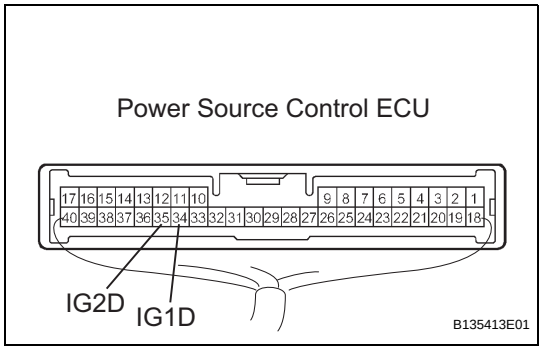
Standard resistance

Tester Connection	Specified Condition
3I-2 - P6-35 (IG2D)	Below 1 Ω
3I-3 - Body ground	Below 1 Ω
3I-2 or P6-35 (IG2D) - Body ground	10 kΩ or higher

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

OK

8 CHECK POWER SOURCE CONTROL ECU (IG1D, IG2D VOLTAGE)



(a) Measure the voltage of the connector.

Standard voltage

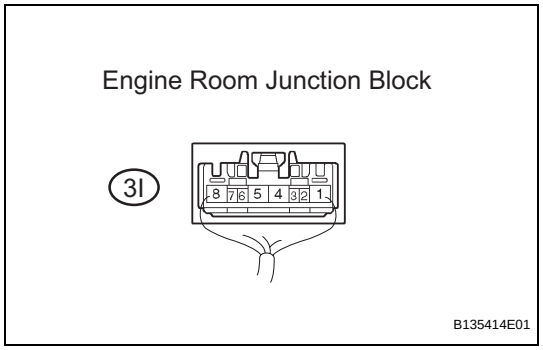
Tester Connection	Condition	Specified Condition
P6-34 (IG1D) - Body ground	Power switch ON (ACC)	Below 1 V
P6-35 (IG2D) - Body ground	Power switch ON (ACC)	Below 1 V
P6-34 (IG1D) - Body ground	Power switch ON (IG)	10 to 14 V
P6-35 (IG2D) - Body ground	Power switch ON (IG)	10 to 14 V

NG → **REPLACE POWER SOURCE CONTROL ECU**

OK

ST

9	CHECK ENGINE ROOM RELAY BLOCK



(a) Measure the voltage of the connector.
Standard voltage

Tester Connection	Condition	Specified Condition
3I-4 - Body ground	Power switch ON (IG)	10 to 14 V

NG → **REPLACE ENGINE ROOM RELAY BLOCK**

OK

10	CHECK OPERATION OF POWER SOURCE CONTROL ECU

(a) After replacing the power source control ECU with a normally functioning ECU, check that the power switch can be set to ON (IG).

Result

Result	Proceed to
Power switch can be set to ON (IG)	A
Power switch cannot be set to ON (IG) (w/ smart key system (for door lock))	B
Power switch cannot be set to ON (IG) (w/o smart key system (for door lock))	C

B → **GO TO ENGINE IMMOBILISER SYSTEM (w/ SMART KEY SYSTEM)**

C → **GO TO ENGINE IMMOBILISER SYSTEM (w/o SMART KEY SYSTEM)**

A

NORMAL (POWER SOURCE CONTROL ECU DEFECTIVE)

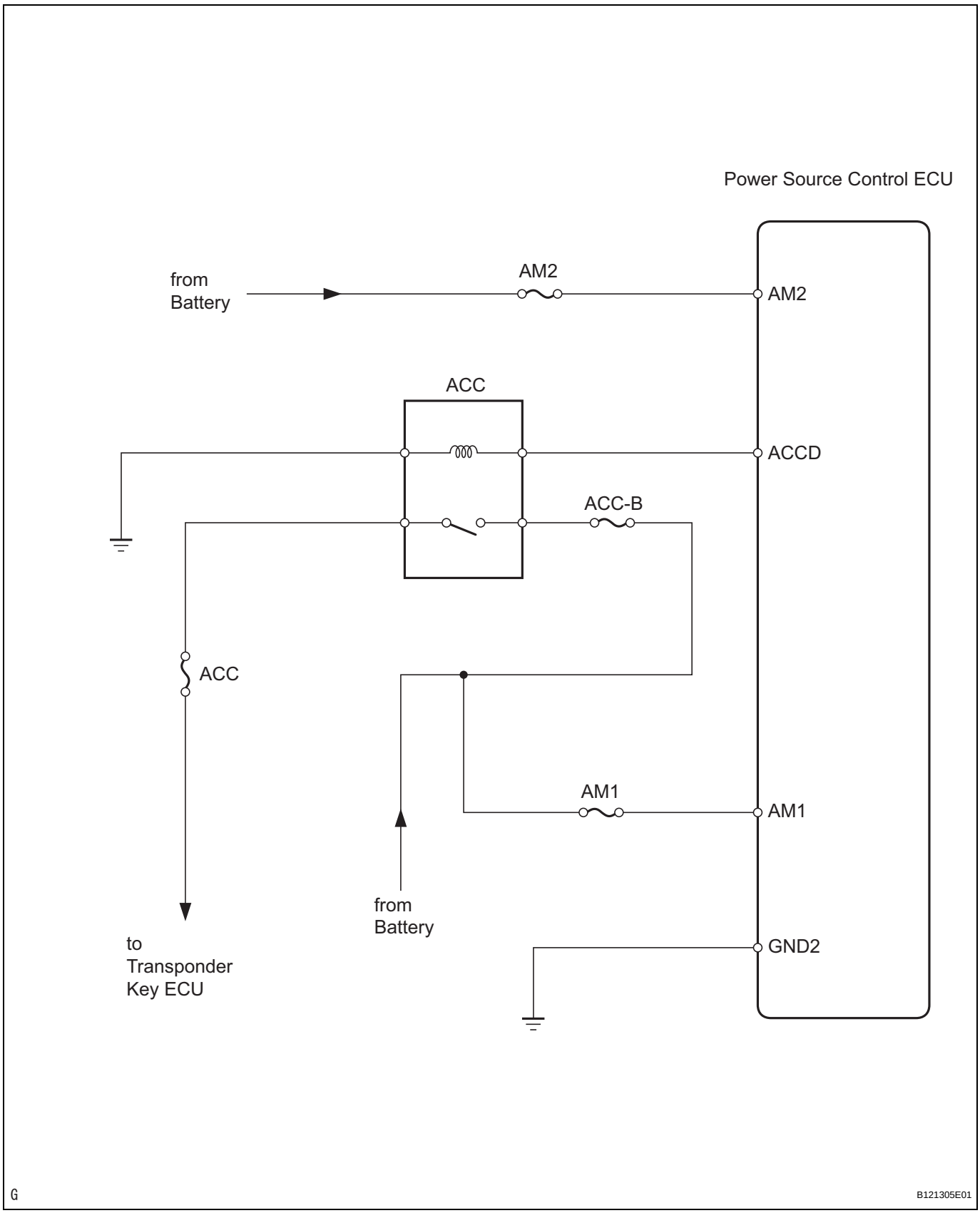
ST

Power Mode does not Change to ON (ACC)

DESCRIPTION

When the key is inserted into the key slot and the power switch is pressed, signals are input to the power source control ECU. Selection of the power mode, which cycles between OFF, ON (ACC) and ON (IG), is performed by pressing and releasing the power switch until the desired power mode is selected (the power modes cycle in the order shown above).

WIRING DIAGRAM



ST

INSPECTION PROCEDURE

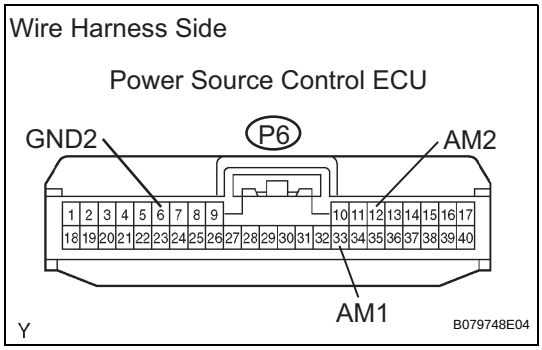
1	INSPECT FUSE (AM1, AM2)

(a) Remove the AM1 fuse from the driver side junction block.
(b) Remove the AM2 fuse from the engine room junction block.
(c) Measure the resistance of the fuses.
Standard resistance:
Below 1 Ω

NG → **REPLACE FUSE**

OK

2	CHECK WIRE HARNESS (POWER SOURCE CONTROL ECU - BATTERY AND BODY GROUND)



(a) Disconnect the P6 ECU connector.
(b) Measure the resistance and voltage of the wire harness side connector.
Standard resistance

Tester Connection	Specified Condition
P6-6 (GND2) - Body ground	Below 1 Ω

Standard voltage

Tester Connection	Specified Condition
P6-33 (AM1) - Body ground	10 to 14 V
P6-12 (AM2) - Body ground	10 to 14 V

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

OK

3	CHECK FOR DTC

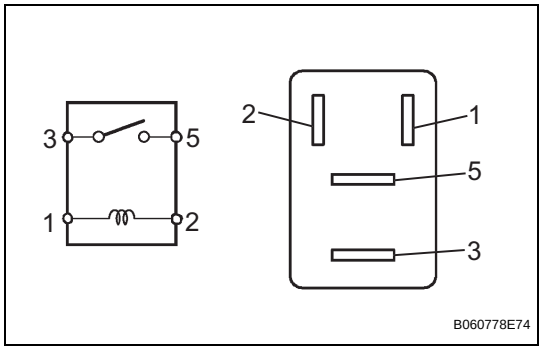
(a) Check for DTCs of the power source control ECU.
OK:
DTCs of the power source control ECU are not output.

NG → **GO TO DTC CHART**

OK

ST

4 INSPECT ACC RELAY



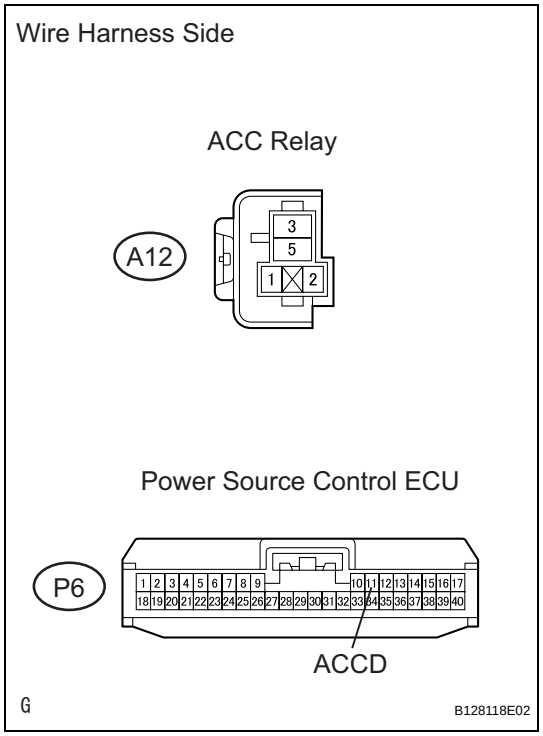
(a) Remove the ACC relay.
(b) Measure the resistance of the relay.
Standard resistance

Tester Connection	Specified Condition
3 - 5	10 kΩ or higher
3 - 5	Below 1 Ω (when battery voltage is applied to terminals 1 and 2)

NG → **REPLACE ACC RELAY**

OK

5 CHECK WIRE HARNESS (ACC RELAY - POWER SOURCE CONTROL ECU AND BODY GROUND)



(a) Remove the ACC relay.
(b) Disconnect the P6 ECU connector.
(c) Measure the resistance of the wire harness side connectors.
Standard resistance

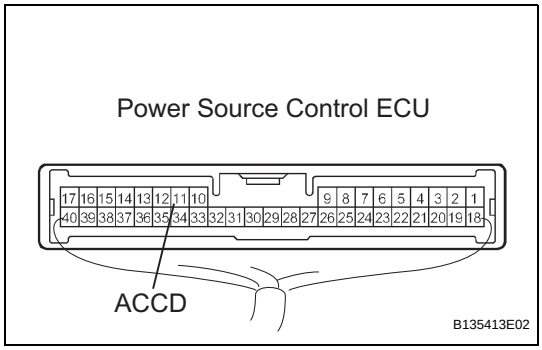
Tester Connection	Specified Condition
A12-1 - P6-11 (ACCD)	Below 1 Ω
A12-2 - Body ground	Below 1 Ω
A12-1 - Body ground	10 kΩ or higher

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

OK

ST

6	CHECK POWER SOURCE CONTROL ECU (ACCD VOLTAGE)



(a) Measure the voltage of the connector.
Standard voltage

Tester Connection	Condition	Specified Condition
P6-11 (ACCD) - Body ground	Power switch ON (ACC)	10 to 14 V
P6-11 (ACCD) - Body ground	Power switch OFF	Below 1 V

NG → **REPLACE POWER SOURCE CONTROL ECU**

OK

7	CHECK OPERATION OF POWER SOURCE CONTROL ECU

(a) After replacing the power source control ECU with a normally functioning ECU, check that the power switch can be set to ON (ACC).

Result

Result	Proceed to
Power switch can be set to ON (ACC)	A
Power switch cannot be set to ON (ACC) (w/ smart key system (for door lock))	B
Power switch cannot be set to ON (ACC) (w/o smart key system (for door lock))	C

B → **GO TO ENGINE IMMOBILISER SYSTEM (w/ SMART KEY SYSTEM)**

C → **GO TO ENGINE IMMOBILISER SYSTEM (w/o SMART KEY SYSTEM)**

A

NORMAL (POWER SOURCE CONTROL ECU DEFECTIVE)

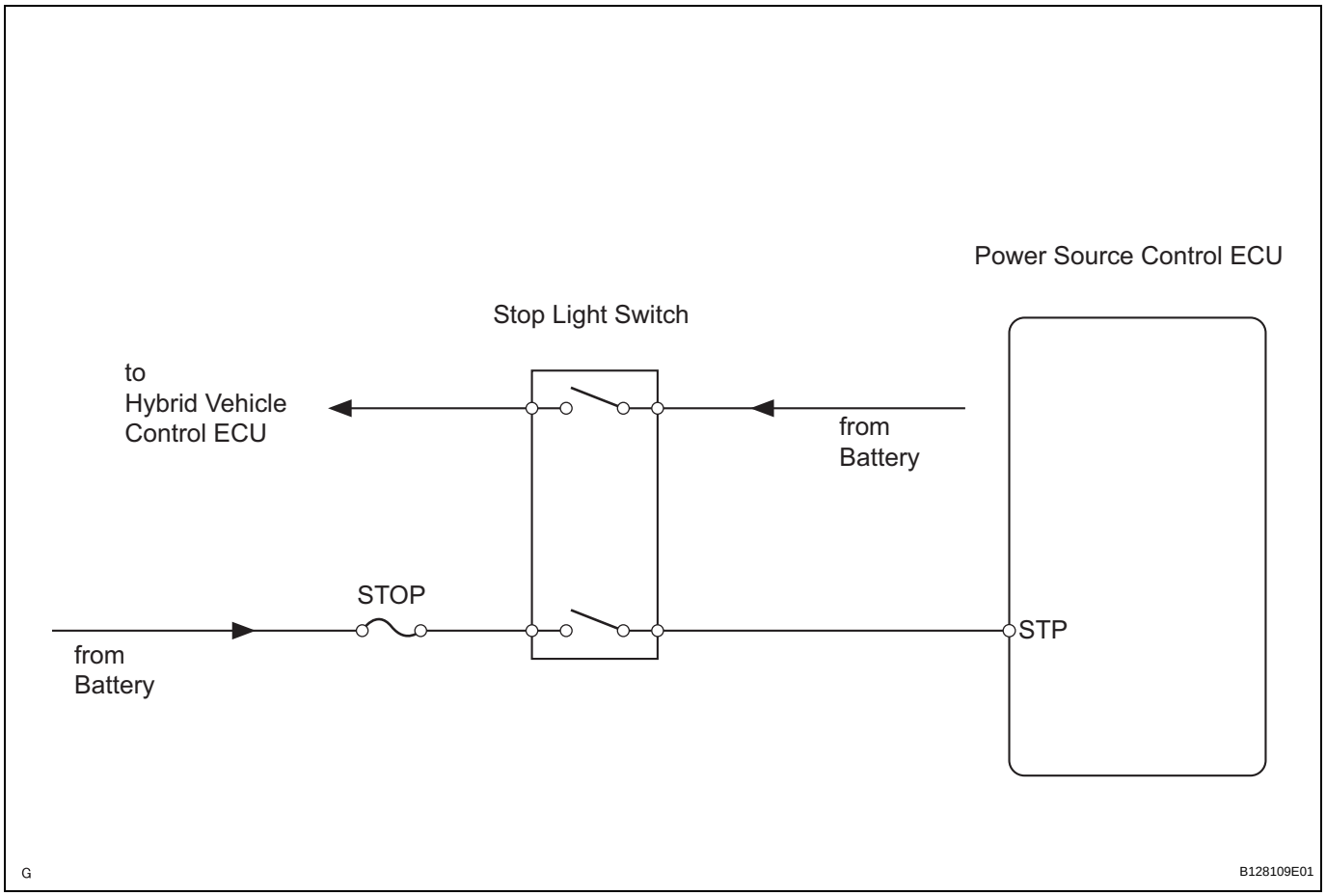
ST

Power Mode does not Change to ON (Ready)

DESCRIPTION

When the key is inserted into the key slot and the power switch is pressed, signals are input to the power source control ECU. Selection of the power mode, which cycles between OFF, ON (ACC) and ON (IG), is performed by pressing and releasing the power switch until the desired power mode is selected (the power modes cycle in the order shown above). When the shift position is P, the brake pedal is depressed and held and the power switch is pressed, the power switch mode changes to ON (READY), signifying that the hybrid system has started operating.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	BASIC INSPECTION

(a) Check that the P position switch is ON.
(b) Turn the power switch ON (READY) and check that the hybrid control system starts normally. Make sure the brake pedal is depressed at this time.
OK:
Hybrid control system starts normally (power switch can be set to ON (READY)).

OK	END

NG

2	CHECK OPERATION OF POWER SWITCH

(a) Check that the power mode can be changed by pushing the power switch.
HINT:
With the power switch OFF, do not depress the brake pedal and push the power switch repeatedly. The power mode should change as follows:
ON (ACC), ON (IG), OFF.
With the power switch OFF, depress the brake pedal and push the power switch repeatedly. The power mode should change as follows:
ON (READY), OFF.
OK:
Power switch operates normally.

NG → **OTHER PROBLEM**

OK

3	CHECK FOR DTC

(a) Check for DTCs of the power source control ECU.
OK:
DTCs of the power source control ECU are not output

NG → **GO TO DTC CHART**

OK

4	READ VALUE OF DATA LIST (STOP LIGHT SWITCH 1 and 2)

(a) Connect the intelligent tester (with CAN VIM) to the DLC3.
(b) Turn the power switch ON (IG) and push the intelligent tester main switch ON.
(c) Read the DATA LIST according to the display on the tester.

Power source control ECU

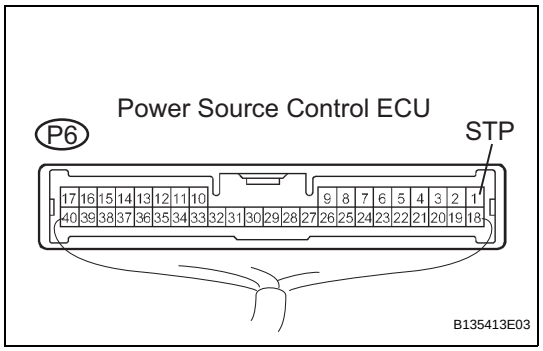
Item	Measurement Item / Range (Display)	Normal Condition	Diagnostic Note
STOP LAMP SW1	Stop light switch 1 / ON or OFF	ON: Brake pedal depressed OFF: Brake pedal released	-
STOP LAMP SW2	Stop light switch 2 / ON or OFF	ON: Brake pedal depressed OFF: Brake pedal released	-

OK:
ON (stop light switch ON) appears on the screen.

OK → **Go to step 8**

NG

5 CHECK POWER SOURCE CONTROL ECU (STP VOLTAGE)



(a) Measure the voltage when the brake pedal is operated.

Standard voltage

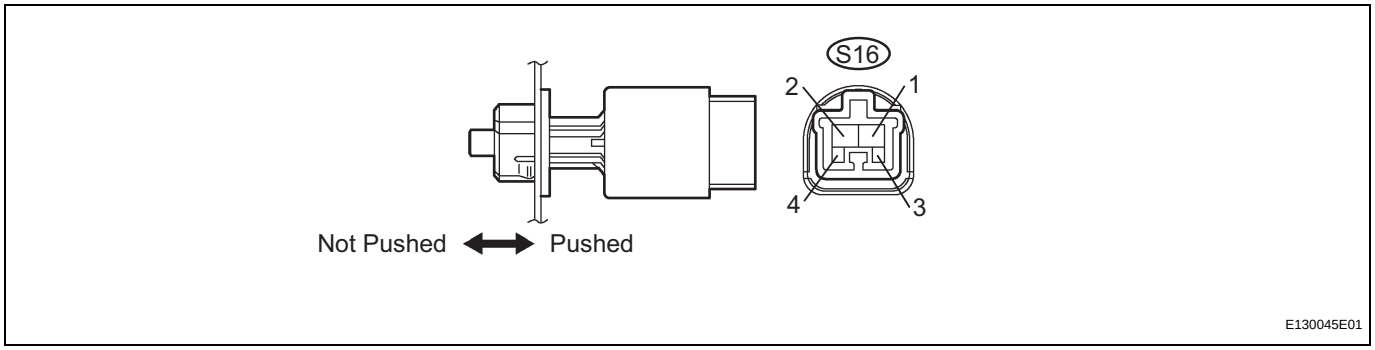
Tester Connection	Condition	Specified Condition
P6-1 (STP) - Body ground	Brake pedal released	10 to 14 V
P6-1 (STP) - Body ground	Brake pedal depressed	Below 1 V

OK → REPLACE POWER SOURCE CONTROL ECU

NG

6 INSPECT STOP LIGHT SWITCH ASSEMBLY

(a) Remove the stop light switch.



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

Standard resistance

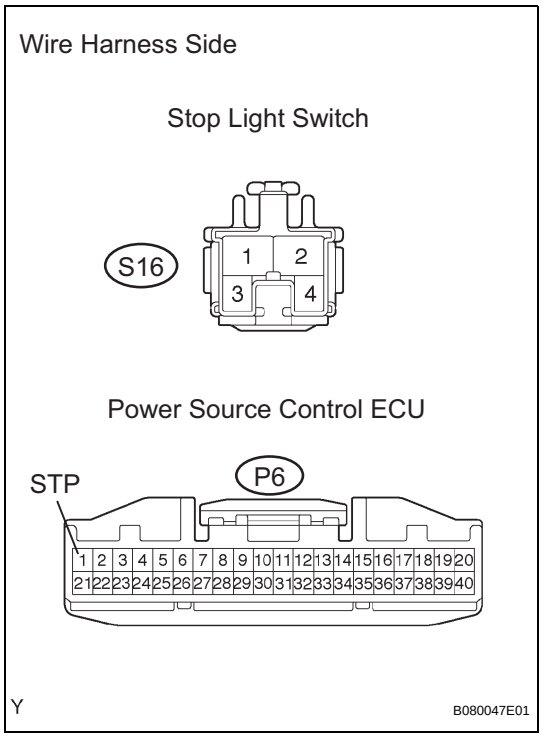
Tester Connection	Condition	Specified Condition
1 - 2	Switch pin not pushed	Below 1 Ω
3 - 4	Switch pin not pushed	10 kΩ or higher
1 - 2	Switch pin pushed	10 kΩ or higher
3 - 4	Switch pin pushed	Below 1 Ω

NG → REPLACE STOP LIGHT SWITCH ASSEMBLY

OK

ST

7	CHECK WIRE HARNESS (STOP LIGHT SWITCH - POWER SOURCE CONTROL ECU AND BATTERY)



(a) Disconnect the S16 switch connector.
(b) Disconnect the P6 ECU connector.
(c) Measure the resistance and voltage of the wire harness side connectors.

Standard resistance

Tester Connection	Specified Condition
S16-1 - P6-1 (STP)	Below 1 Ω

Standard voltage

Tester Connection	Specified Condition
S16-2 - Body ground	10 to 14 V

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

OK

REPLACE POWER SOURCE CONTROL ECU

8	CHECK FOR DTC

(a) Check for DTCs of the hybrid vehicle control ECU.

OK:

DTCs of the hybrid vehicle control ECU are not output

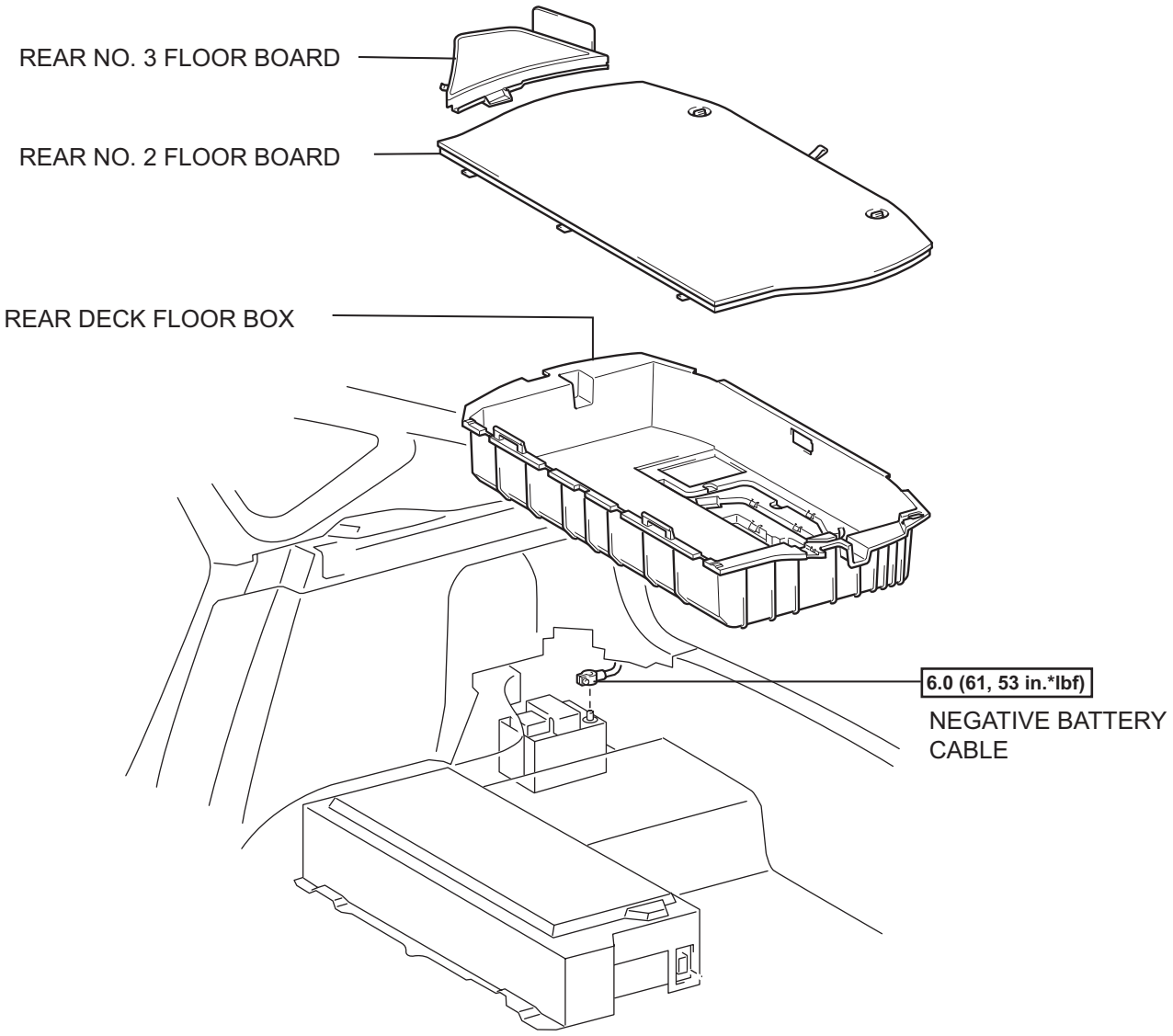
NG → **GO TO HYBRID CONTROL SYSTEM**

OK

REPLACE POWER SOURCE CONTROL ECU

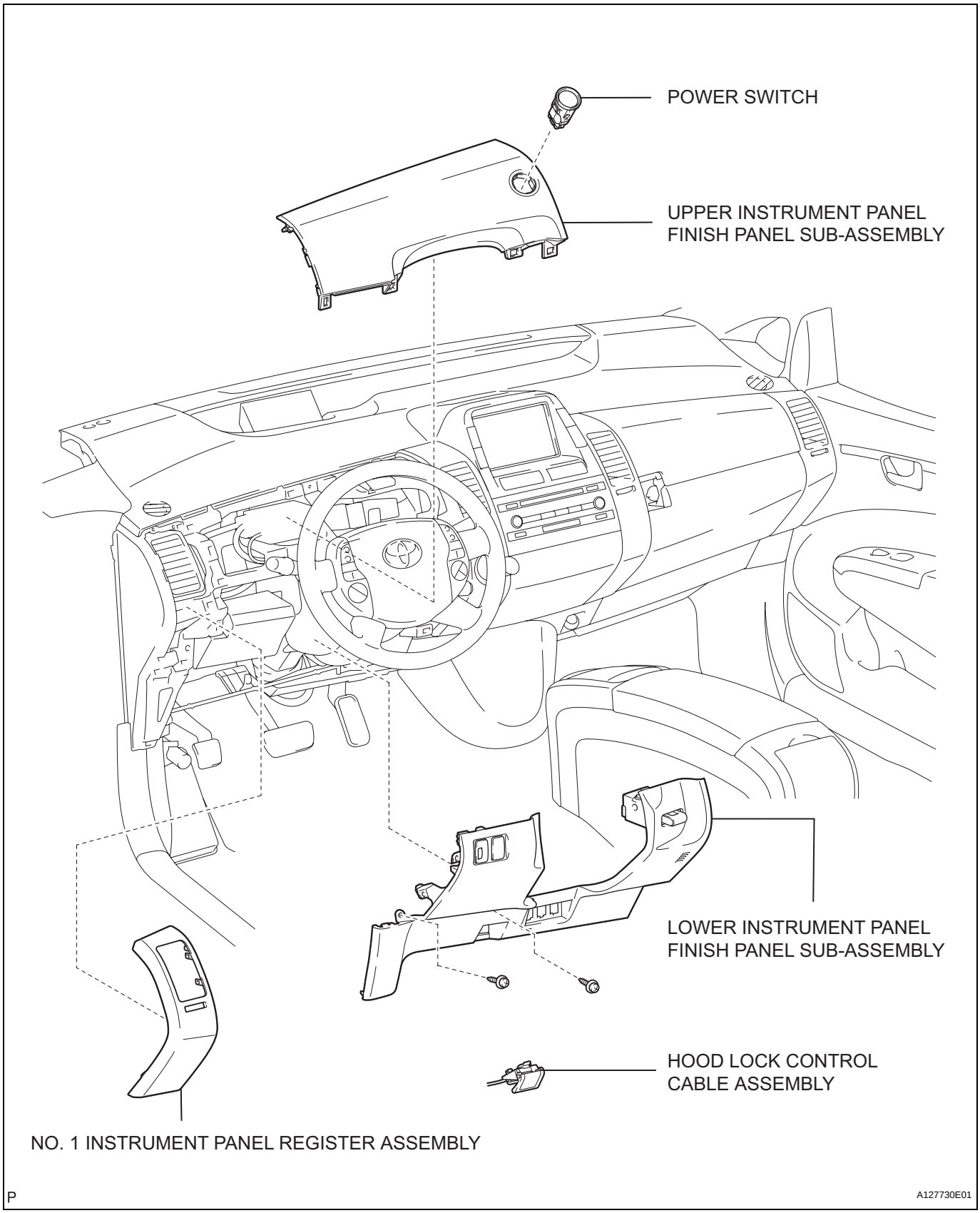
POWER SWITCH

COMPONENTS



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

A124443E07


POWER SWITCH
UPPER INSTRUMENT PANEL FINISH PANEL SUB-ASSEMBLY
LOWER INSTRUMENT PANEL FINISH PANEL SUB-ASSEMBLY
HOOD LOCK CONTROL CABLE ASSEMBLY
NO. 1 INSTRUMENT PANEL REGISTER ASSEMBLY
P
A127730E01

ST

ON-VEHICLE INSPECTION

1. CHECK POWER SWITCH MODE CHANGE FUNCTION

(a) Check the function of the power switch.

(1) Check that power switch mode changes in accordance with the conditions of the shift position and brake pedal.

HINT:

For vehicles with the smart entry system, the power switch functions not only when the key is inserted into the key slot but also when the driver carries the key.

Specified condition

Shift Position	Brake Pedal	Change of power switch mode (Arrow "→" means 1 press of power switch)
P	Released	OFF → ON (ACC) → ON (IG) → OFF (Repeated)
P	Depressed	OFF → Hybrid system starts
P	Depressed	ON (ACC) → Hybrid system starts
P	Depressed	ON (IG) → Hybrid system starts
P	Depressed	Hybrid system operating → OFF
P	Released	Hybrid system operating → OFF
Any position other than P	Released	ON (ACC) → ON (IG)
Any position other than P	Depressed	ON (ACC) → ON (IG)
Any position other than P	Released	ON (IG) → OFF after shift position switched to P (shift-linked OFF function)
Any position other than P	Released	Hybrid system operating → OFF after shift position switched to P (auto P control function)
Any position other than P	Depressed	Hybrid system operating → OFF after shift position switched to P (auto P control function)

(b) Check if power switch mode changes without pressing the power switch.

(1) With power switch mode ON (ACC) and the shift position in P, pull out the key. Check that power switch mode changes from ON (ACC) to OFF automatically.

(2) With power switch mode ON (ACC) and the shift position in P, wait for at least 1 hour. Check that power switch mode changes from ON (ACC) to OFF automatically.

2. CHECK INTERLOCK FUNCTION

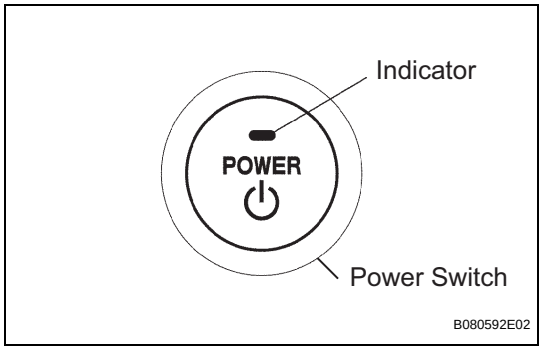
(a) Insert the key into the key slot, and change power switch modes and shift position according to the table below. Check whether or not the key is locked in the key slot.

Specified condition

Power Switch Mode	Shift Position	Key Status
OFF	P	Not locked in
OFF	Any position except P	-
ON (ACC)	P	Not locked in
ON (ACC)	Any position except P	Locked in
ON (IG)	P	Locked in
ON (IG)	Any position except P	Locked in
READY (hybrid system ON)	P	Locked in

ST

Power Switch Mode	Shift Position	Key Status
READY (hybrid system ON)	Any position except P	Locked in



3. CHECK INDICATOR CONDITION

(a) Check the power indicator on the power switch.

(1) Check that the power indicator illuminates and changes colors according to the table below.

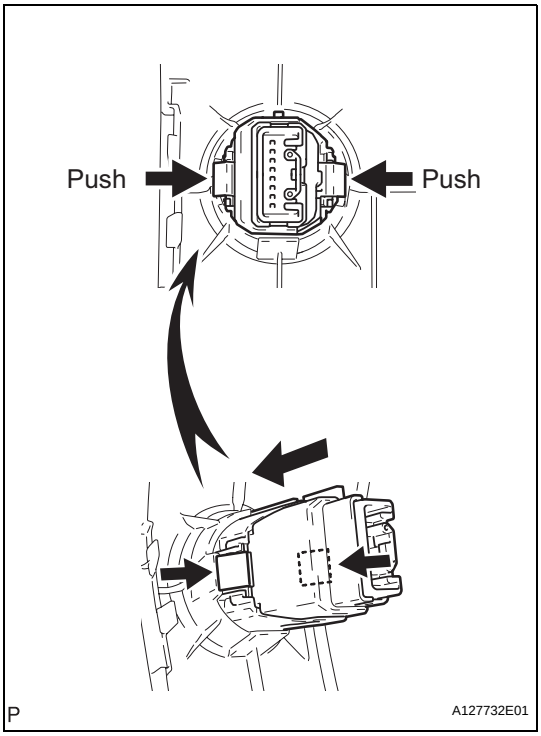
Specified condition

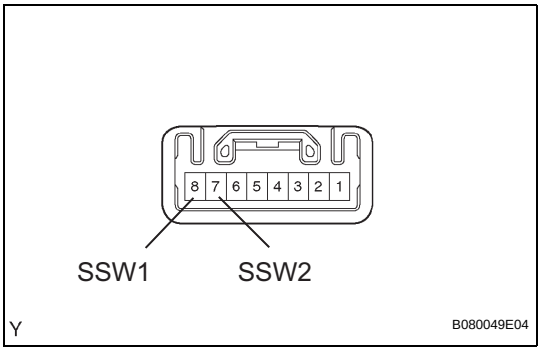
Power Switch Mode	Indicator Status
OFF	OFF
ON (ACC)	Green illumination
ON (IG)	Amber illumination
Hybrid system ON	OFF
Push button start system malfunctioning	Flashes continuously in amber

ST

REMOVAL

1. **REMOVE REAR NO. 2 FLOOR BOARD (See page CH-4)**
2. **REMOVE REAR DECK FLOOR BOX (See page CH-4)**
3. **REMOVE REAR NO. 3 FLOOR BOARD (See page CH-4)**
4. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
   CAUTION:
   Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to prevent airbag and seat belt pretensioner activation.
5. **REMOVE NO. 1 INSTRUMENT PANEL REGISTER ASSEMBLY (See page IP-5)**
6. **REMOVE LOWER INSTRUMENT PANEL FINISH PANEL SUB-ASSEMBLY (See page IP-6)**
7. **REMOVE UPPER INSTRUMENT PANEL FINISH PANEL SUB-ASSEMBLY (See page IP-6)**
8. **REMOVE POWER SWITCH**
   (a) Push the 2 claws and then remove the power switch.





INSPECTION

1. **INSPECT POWER SWITCH**
   (a) Measure the resistance of the switch.
   Standard resistance

Tester Connection	Switch Condition	Specified Condition
7 (SS2) - 6 (GND)	Pushed	Below 1 Ω
5 (SS1) - 6 (GND)	Pushed	Below 1 Ω
7 (SS2) - 6 (GND)	Released	10 kΩ or higher
5 (SS1) - 6 (GND)	Released	10 kΩ or higher

If the resistance is not as specified, replace the power switch.

INSTALLATION

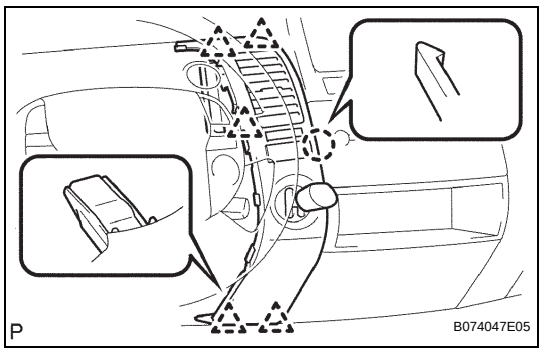
1. **INSTALL POWER SWITCH**
   (a) Install the power switch to the upper finish panel.
2. **INSTALL UPPER INSTRUMENT PANEL FINISH PANEL SUB-ASSEMBLY (See page IP-13)**
3. **INSTALL LOWER INSTRUMENT PANEL FINISH PANEL SUB-ASSEMBLY (See page IP-13)**
4. **INSTALL NO. 1 INSTRUMENT PANEL REGISTER ASSEMBLY (See page IP-13)**
5. **CONNECT CABLE TO NEGATIVE BATTERY TERMINAL (See page CH-7)**
6. **INSTALL REAR NO. 3 FLOOR BOARD (See page CH-8)**
7. **INSTALL REAR DECK FLOOR BOX (See page CH-8)**
8. **INSTALL REAR NO. 2 FLOOR BOARD (See page CH-8)**
9. **PERFORM INITIALIZATION**
   (a) Perform initialization (see page IN-32).
   NOTICE:
   Certain systems need to be initialized after disconnecting and reconnecting the cable from the negative (-) battery terminal.

KEY SLOT

COMPONENTS

REMOVAL

1. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
   CAUTION:
   Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to prevent airbag and seat belt pretensioner activation.

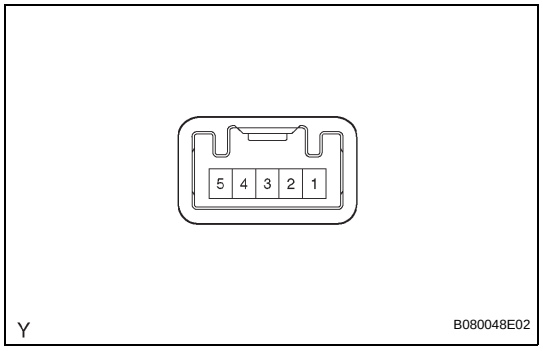


2. **REMOVE NO. 3 INSTRUMENT PANEL REGISTER ASSEMBLY**
   (a) Detach the claw and 5 clips.
   (b) Disconnect the connector and remove the instrument panel register.

3. **REMOVE KEY SLOT**
   (a) Remove the 2 screws and key slot.

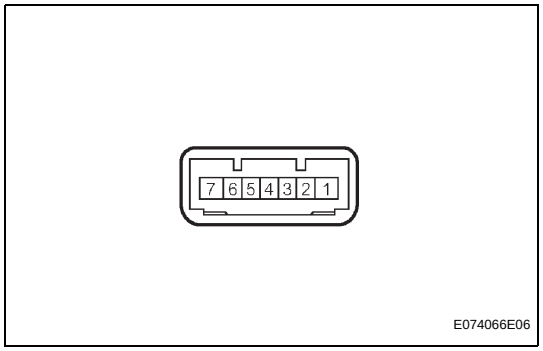
INSPECTION

1. **INSPECT KEY SLOT**
   (a) Remove the key slot (see page ST-77).
   (b) Measure the resistance of the key slot.
   Standard resistance



Tester Connection	Condition	Specified Condition
3 (KSW2) - 2 (COM)	Key is in key slot	10 kΩ or higher

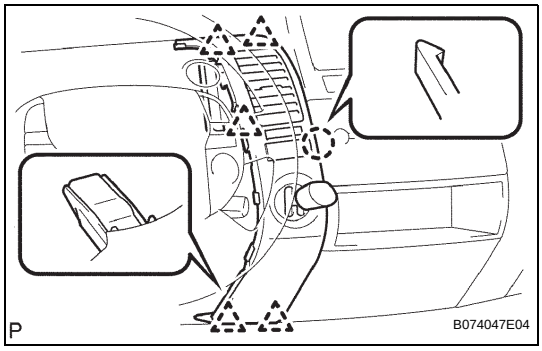
If the result is not as specified, replace the key slot.



   (c) Inspect the key slot illumination.
      (1) Connect the battery positive (+) lead from the battery to terminal 2 and the battery negative (-) lead to terminal 6, then check that the illumination comes on.
      OK:
      Illumination comes on.

ST

INSTALLATION



1. INSTALL KEY SLOT

(a) Install the key slot with the 2 screws.

2. INSTALL NO. 3 INSTRUMENT PANEL REGISTER ASSEMBLY

(a) Connect the connector.

(b) Attach the claw and 5 clips to install the instrument panel register.

3. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL

4. PERFORM INITIALIZATION

(a) Perform initialization (see page IN-32).

NOTICE:

Certain systems need to be initialized after disconnecting and reconnecting the cable from the negative (-) battery terminal.