

# THEFT DETERRENT SYSTEM

## PRECAUTION

### NOTICE:

For initialization:

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

System Name	See procedure
Power Window Control System	<a href="#">IN-32</a>

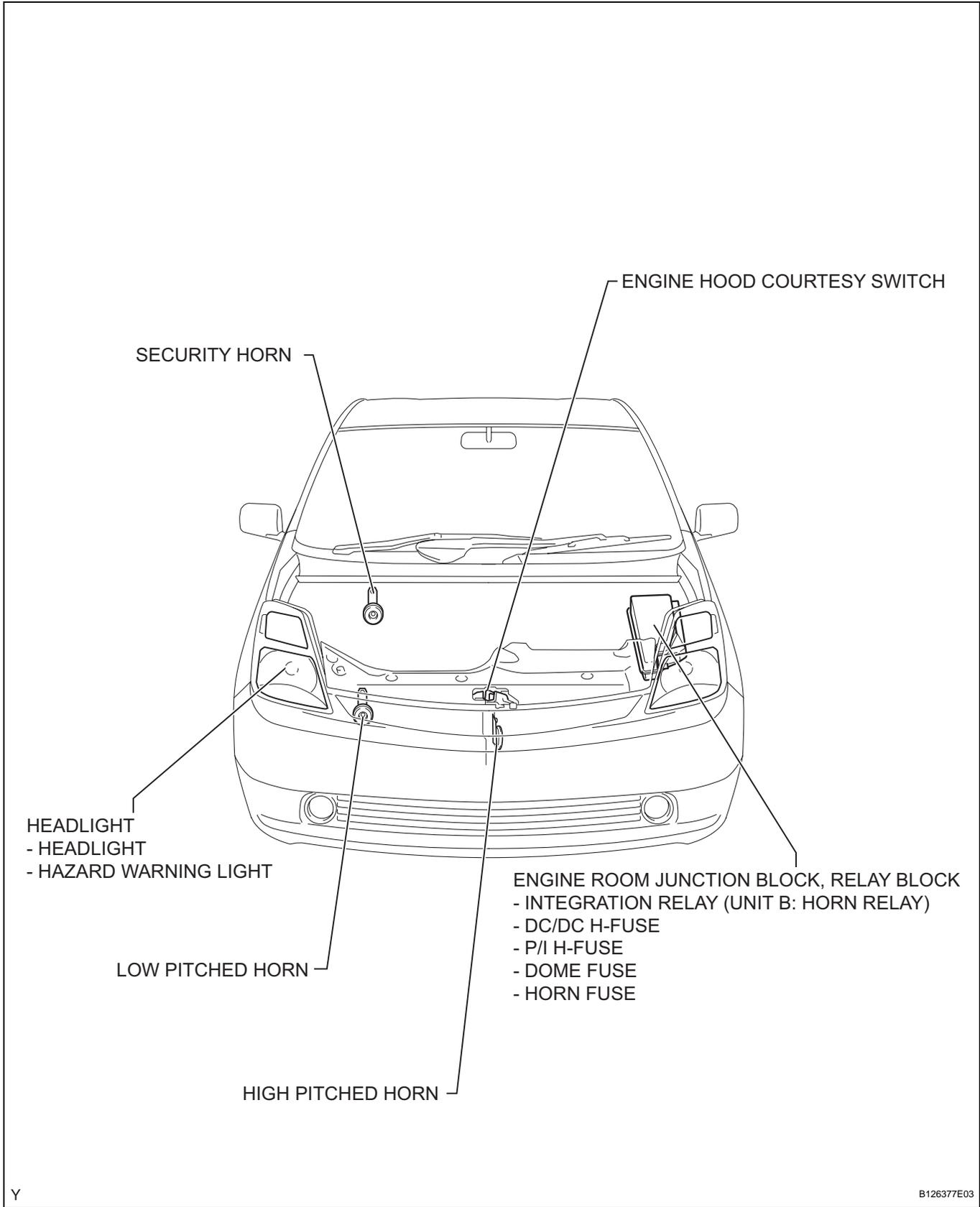
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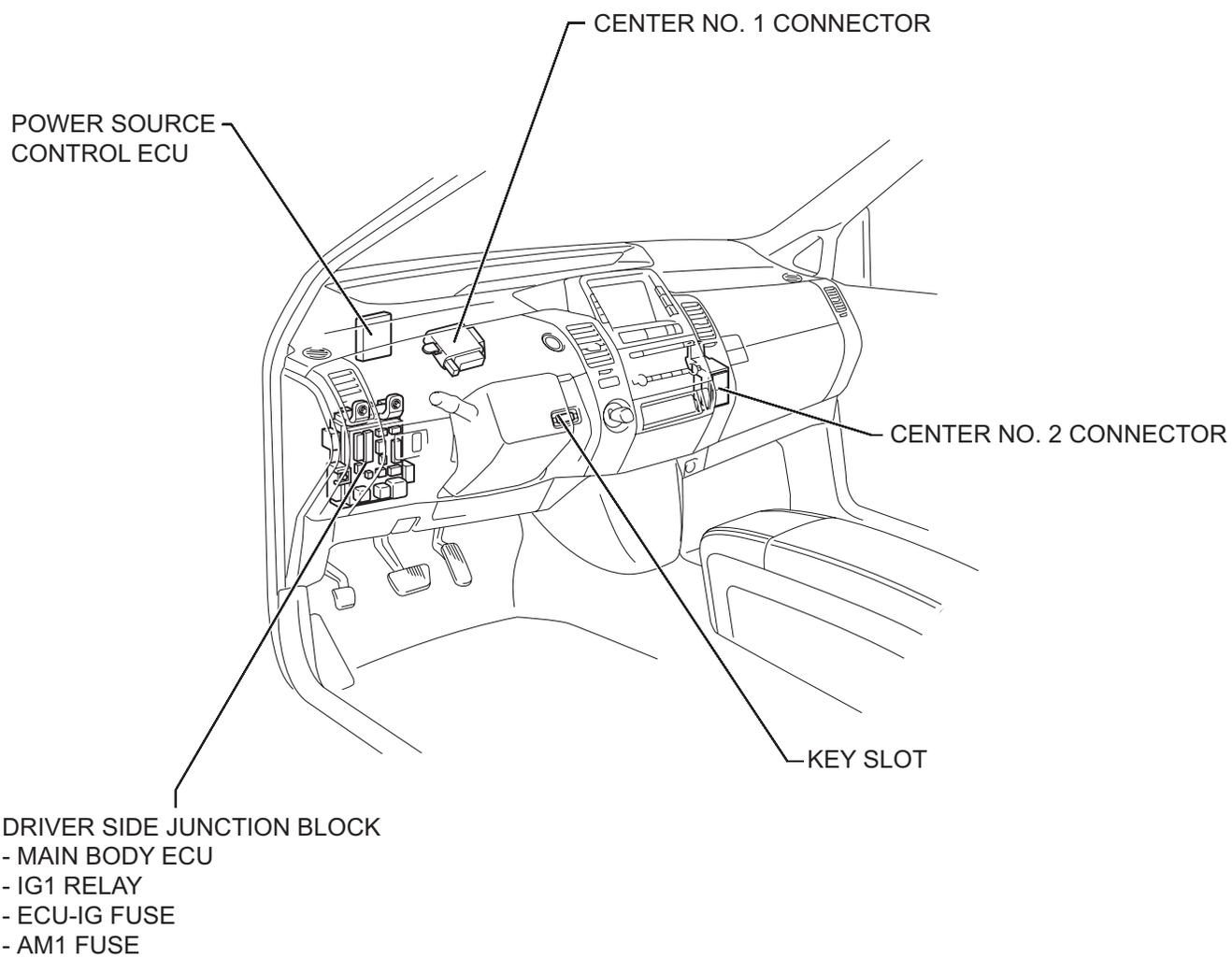
For hybrid control system activation:

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.

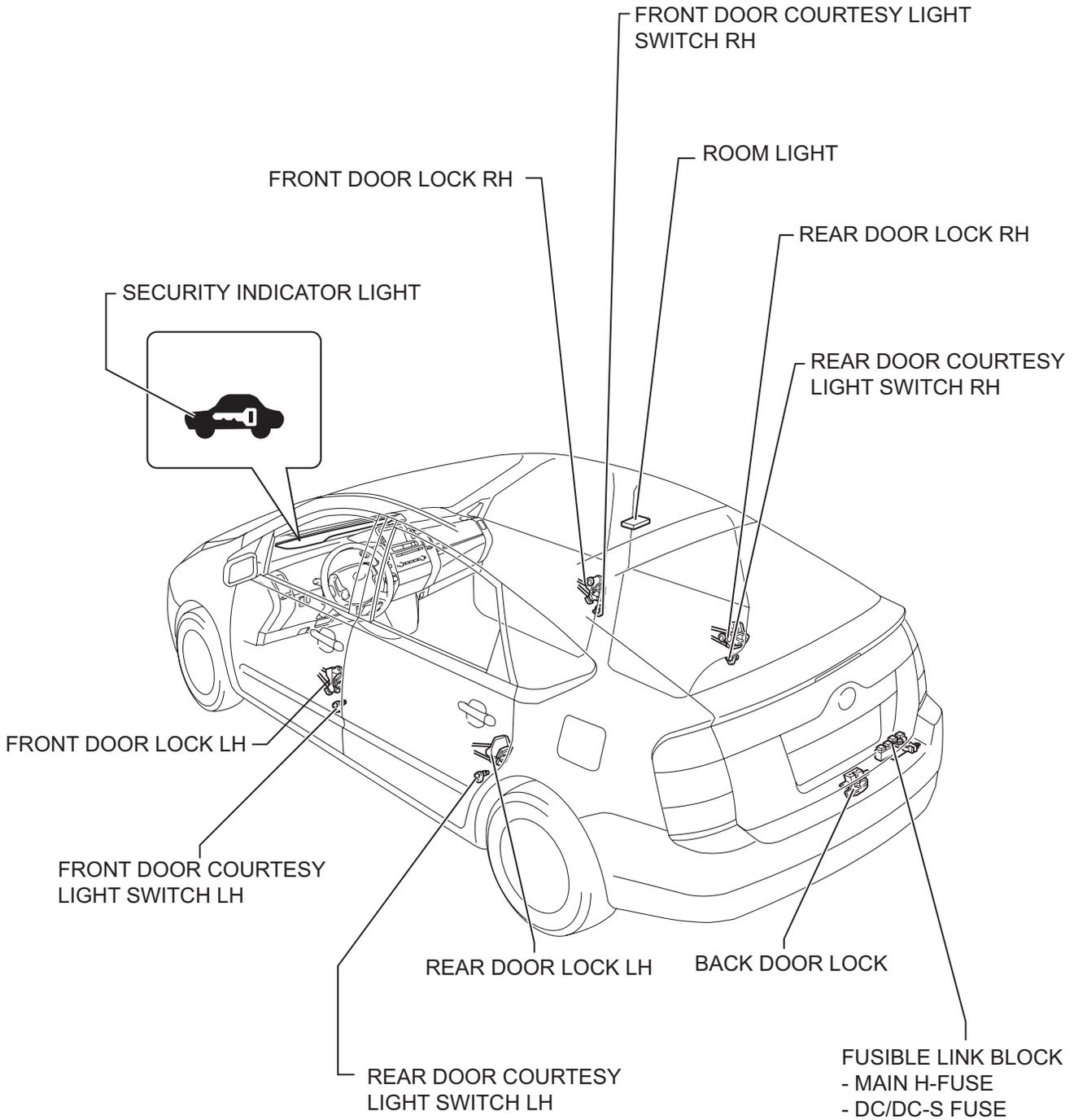
# PARTS LOCATION

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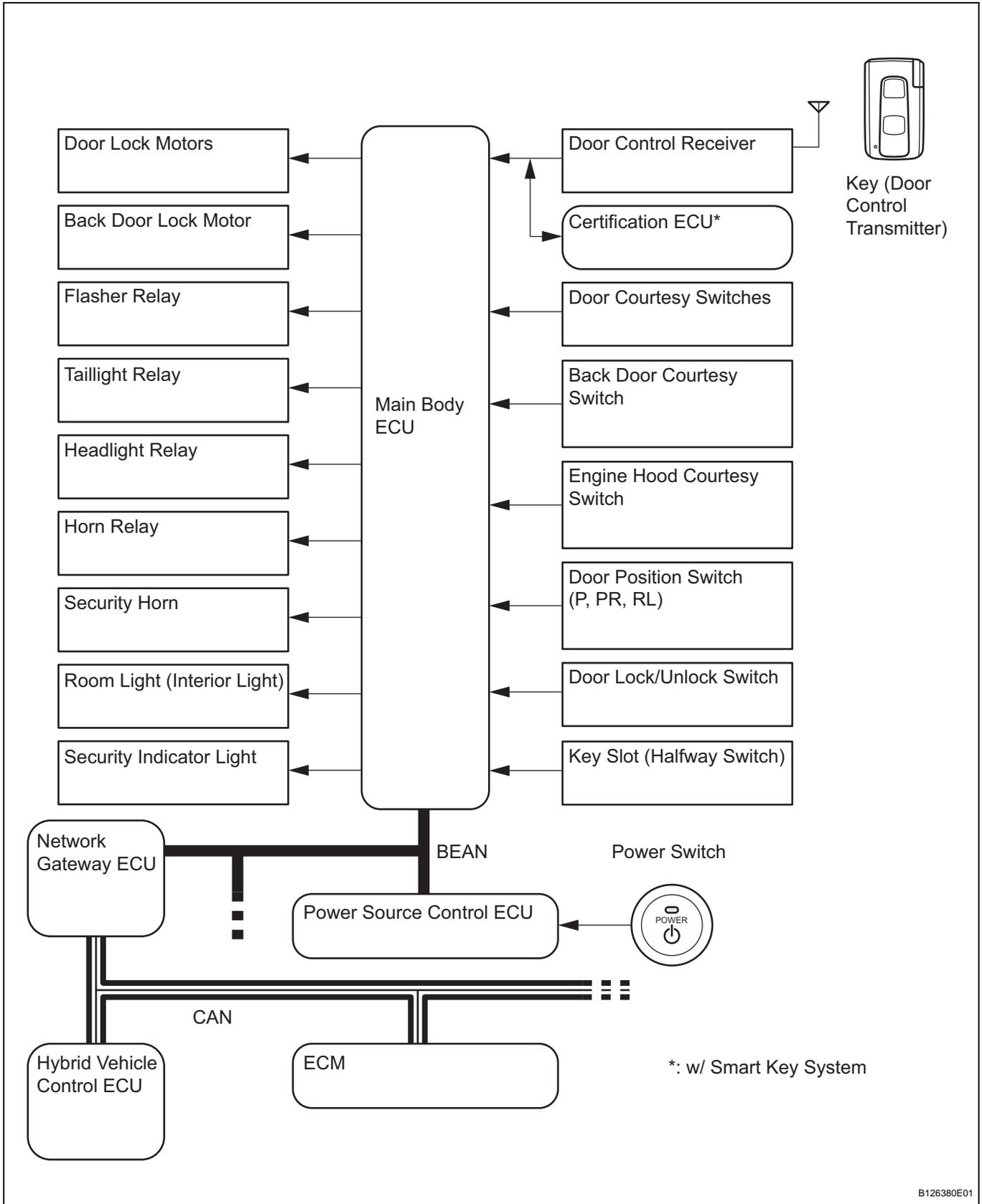




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# SYSTEM DIAGRAM



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Sender	Receiver	Signal	Line
Hybrid vehicle control ECU	Main body ECU	<ul style="list-style-type: none"> <li>• Drive OK signal</li> <li>• READY signal</li> </ul>	BEAN/CAN
ECM		<ul style="list-style-type: none"> <li>• Engine revolution signal</li> <li>• Engine speed signal</li> </ul>	
Power source control ECU		Power switch signal	BEAN

## SYSTEM DESCRIPTION

### 1. THEFT DETERRENT SYSTEM DESCRIPTION

- (a) The theft deterrent system is designed to deter break-in and theft. If an attempted break-in or theft is detected, a vehicle horns and security horn will sound; room light will light up; and hazard warning lights, taillights and headlights will flash continuously. The system uses the following cues to detect an attempted break-in or theft: 1) vehicle is forcibly entered, 2) engine hood is forcibly opened, 3) doors are unlocked without the use of a key, or 4) the battery cables are disconnected and then reconnected.

The system has 2 modes: active arming mode and passive arming mode (see page TD-8). Passive arming mode can be toggled ON and OFF (see page TD-8).

Each mode has 4 states; disarmed state, arming preparation state, armed state and alarm sounding state.

(1) Disarmed state:

- The alarm function is not operating.
- The theft deterrent system is not operating.

(2) Arming preparation state:

The theft deterrent system is not operating.

(3) Armed state:

The theft deterrent system is operating (60 +-5 seconds).

(4) Alarm sounding state:

The alarm function is operating.

## HOW TO PROCEED WITH TROUBLESHOOTING

HINT:

- Use these procedures to troubleshoot the theft deterrent system.
- \*: Use the intelligent tester.

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**1 VEHICLE BROUGHT TO WORKSHOP**

NEXT

**2 INSPECT BATTERY VOLTAGE**

**Standard voltage:**

**11 to 14 V**

If the result is not as specified, recharge or replace the battery before proceeding.

NEXT

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

(a) Use the intelligent tester, check for normal function of the multiplex communication system (see page [TD-21](#)).

**Result:**

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

**B**

**Go to MULTIPLEX COMMUNICATION SYSTEM**

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**

A

**5 OVERALL ANALYSIS AND TROUBLESHOOTING\***

- (a) Operation Check (see page [TD-8](#))
- (b) DATA LIST/ ACTIVE TEST (see page [TD-21](#))
- (c) Terminals of ECU (see page [TD-18](#))
- (d) Inspection
  - (1) Engine hood courtesy switch (see page [TD-42](#))
  - (2) Security horn (see page [TD-43](#))

**NEXT****6 ADJUST, REPAIR OR REPLACE****NEXT****7 CONFIRMATION TEST****NEXT****END****TD**

# OPERATION CHECK

## 1. OUTLINE OF THEFT DETERRENT SYSTEM

- (a) When the theft deterrent system detects that the vehicle is being tampered with, the vehicle horns and security horn will sound and hazard warning lights will flash continuously.
- (b) The system has 2 modes: active arming mode (refer to "ACTIVE ARMING MODE") and passive arming mode (refer to "PASSIVE ARMING MODE"). Passive arming mode can be turned on and off.
- (c) Each mode has 4 states: disarmed state, arming preparation state, armed state and alarm sounding state.
  - (1) Disarmed state:
    - The alarm function is not operating.
    - The theft deterrent system is not operating.
  - (2) Arming preparation state:  
The theft deterrent system is not operating.
  - (3) Armed state:  
The theft deterrent system is operating.
  - (4) Alarm sounding state:  
The theft deterrent system is operating (60 +-5 seconds).

Refer to table below for alarm method and time:

Alarm Method	Hazard Warning Light	Blinking (cycle of flasher relay)
	Vehicle Horn	Sounding (cycle of 0.4 seconds)
	Security Horn	
	Headlight	Blinking (cycle of 0.4 seconds)
	Taillight	
Room Light	Illuminating	
Alarm Time	60 +-5 seconds	

**HINT:**

If, during the alarm sounding state, one of the doors is unlocked and no key is in the key slot, a forced door lock signal will be output (refer to "FORCED DOOR LOCK CONTROL").

## 2. ACTIVE ARMING MODE

**HINT:**

Active arming mode starts the alarm control immediately after the doors are locked.

System State	State Switching Condition	Switches to
Disarmed state	Performing any of following will cause system to go into "Arming preparation state" <ul style="list-style-type: none"> <li>• With all doors and engine hood closed, lock all doors by key operation</li> <li>• With all doors and engine hood closed, lock all doors by wireless operation</li> <li>• With any door or engine hood open, lock all doors and close all doors and engine hood</li> </ul>	Arming preparation state

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System State	State Switching Condition	Switches to
Arming preparation state	Performing any of following will cause system to go into "Disarmed state" <ul style="list-style-type: none"> <li>• Unlock all doors by wireless operation</li> <li>• Unlock all doors by key operation</li> <li>• Unlock any door</li> <li>• Open any door</li> <li>• Open engine hood</li> <li>• Insert key into key slot</li> <li>• Reconnect battery</li> <li>• Turn power switch from OFF to ON (IG)</li> </ul>	Disarmed state
	Performing following will cause system to go into "Armed state" With all doors and engine hood closed, lock all doors. Allow 30 (+-1.5) seconds to elapse.	Armed state
Armed State	Performing any of following will cause system to return to "Disarmed state" <ul style="list-style-type: none"> <li>• Insert key into key slot, turn power switch ON (IG). Run engine over 550 rpm for 10 to 12 seconds.</li> <li>• Unlock any door by wireless operation</li> <li>• Unlock any door by key operation</li> <li>• Insert key into key slot and turn power switch from OFF to ON (IG)</li> </ul>	Disarmed state
	Performing any of following will cause system to start "Alarm sounding state" <ul style="list-style-type: none"> <li>• Open engine hood</li> <li>• Reconnect battery</li> <li>• Open any door</li> <li>• Unlock any door without key and wireless operation</li> <li>• Directly connect power switch without key (or turn power switch ON (IG) without key)</li> </ul>	Alarm sounding state
Alarm sounding state	Performing any of following will cause system to return to "Disarmed state" <ul style="list-style-type: none"> <li>• Unlock any door by wireless operation</li> <li>• Unlock any door by key operation</li> <li>• Insert key into key slot and turn power switch from OFF to ON (IG)</li> </ul>	Disarmed state (alarm operation is canceled)
	When system detects tampering, horns sound and lights illuminate or blink. After 60 (+-5) seconds, alarm stops and system return to "Armed state".	Armed state (alarm stops sounding)

### 3. PASSIVE ARMING MODE

#### HINT:

- Passive arming mode can be turned on and off (refer to "METHOD FOR CHANGING OF PASSIVE MODE (ON OR OFF)).
- The vehicle's initial alarm setting is active arming mode.
- During passive arming mode, the theft deterrent system enters the armed state even if the doors are not locked.
- Passive arming mode starts the alarm control after the doors are closed.
- Detecting that the doors are unlocked does not set off the alarm during passive arming mode.
- A forced door lock signal is not output during passive arming mode (refer to "FORCED DOOR LOCK CONTROL").

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- When the theft deterrent system detects that the doors are opened during passive arming mode, the alarm is not set off immediately depending on the entry delay time setting.
- If one of the following conditions is fulfilled during passive arming mode, the theft deterrent system will be changed to active arming mode.
  - With all doors and engine hood closed, lock all doors by wireless operation.
  - With all doors and engine hood closed, lock all doors by key operation.
  - With any doors or engine hood open, lock all doors and close all doors and engine hood.

System State	State Switching Condition	Switches to
Disarmed state (1)*1 (no key in key slot and smart key system is canceled)	Performing any of following will cause system to go into "Disarmed state (2)" <ul style="list-style-type: none"> <li>• With power switch OFF, open any door engine hood, and pull out key from key slot</li> <li>• With power switch OFF, pull out key from key slot, and open any door or engine hood</li> </ul>	Disarmed state (2)
Disarmed state (2)*2	Performing following will cause system to go into "Arming preparation state" Close all doors and engine hood	Arming preparation state
	Performing any of following will cause system to return to "Disarmed state (1)" <ul style="list-style-type: none"> <li>• Unlock all doors by wireless operation</li> <li>• Unlock all doors by key operation</li> <li>• Reconnect battery</li> <li>• Turn power switch from OFF to ON (IG)</li> <li>• Insert key into key slot</li> </ul>	Disarmed state (1)
Arming preparation state	Performing any of following will cause system to return to "Disarmed state (1)" <ul style="list-style-type: none"> <li>• Unlock all doors by wireless operation</li> <li>• Unlock all doors by key operation</li> <li>• Reconnect battery</li> <li>• Turn power switch from OFF to ON (IG)</li> <li>• Insert key into key slot</li> </ul>	Disarmed state (1)
	Performing following will cause system to go into "Armed state" With all doors and engine hood closed, allow 30 (+-1.5) seconds to elapse	Armed state
	Performing any of following will cause system to return to "Disarmed state (2)"	Disarmed state (2)
Armed state	Performing any of following will cause system to return to "Disarmed state (1)" <ul style="list-style-type: none"> <li>• Unlock all doors by wireless operation</li> <li>• Unlock all doors by key operation</li> <li>• Insert key into key slot and turn power switch from OFF to ON (IG)</li> </ul>	Disarmed state (1)
	Performing any of following will cause system to "Alarm sounding state" <ul style="list-style-type: none"> <li>• Open any door and allow entry delay time*3 to elapse</li> <li>• Open engine hood</li> <li>• Reconnect battery</li> <li>• Directly connect power switch without key (or push power switch ON without key)</li> </ul>	Alarm sounding state (tampering is detected)

System State	State Switching Condition	Switches to
Alarm sounding state	Performing any of following will cause system to return to "Disarmed state (1)" <ul style="list-style-type: none"> <li>• Unlock all doors by wireless operation</li> <li>• Unlock all doors by key operation</li> <li>• Insert key into key slot and turn power switch from OFF to ON (IG)</li> </ul>	Disarmed state (1)
	When system detects tampering, horns sounds and lights illuminate or blink. After 60 (+5) seconds, alarm stops and system return to "Armed state"	Armed state (alarm stops)

**HINT:**

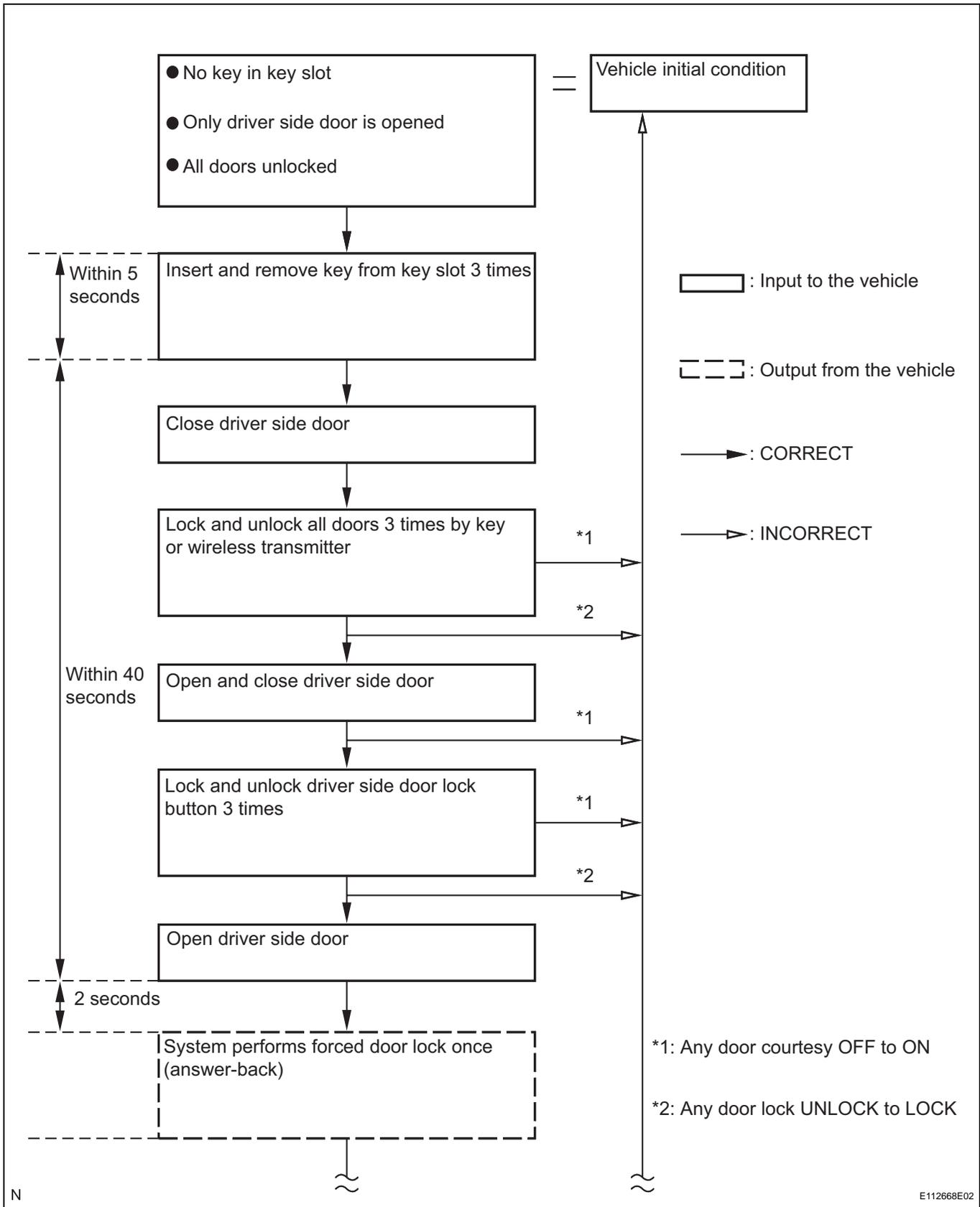
\*1: "Disarmed state (1)" is the normal disarmed state.

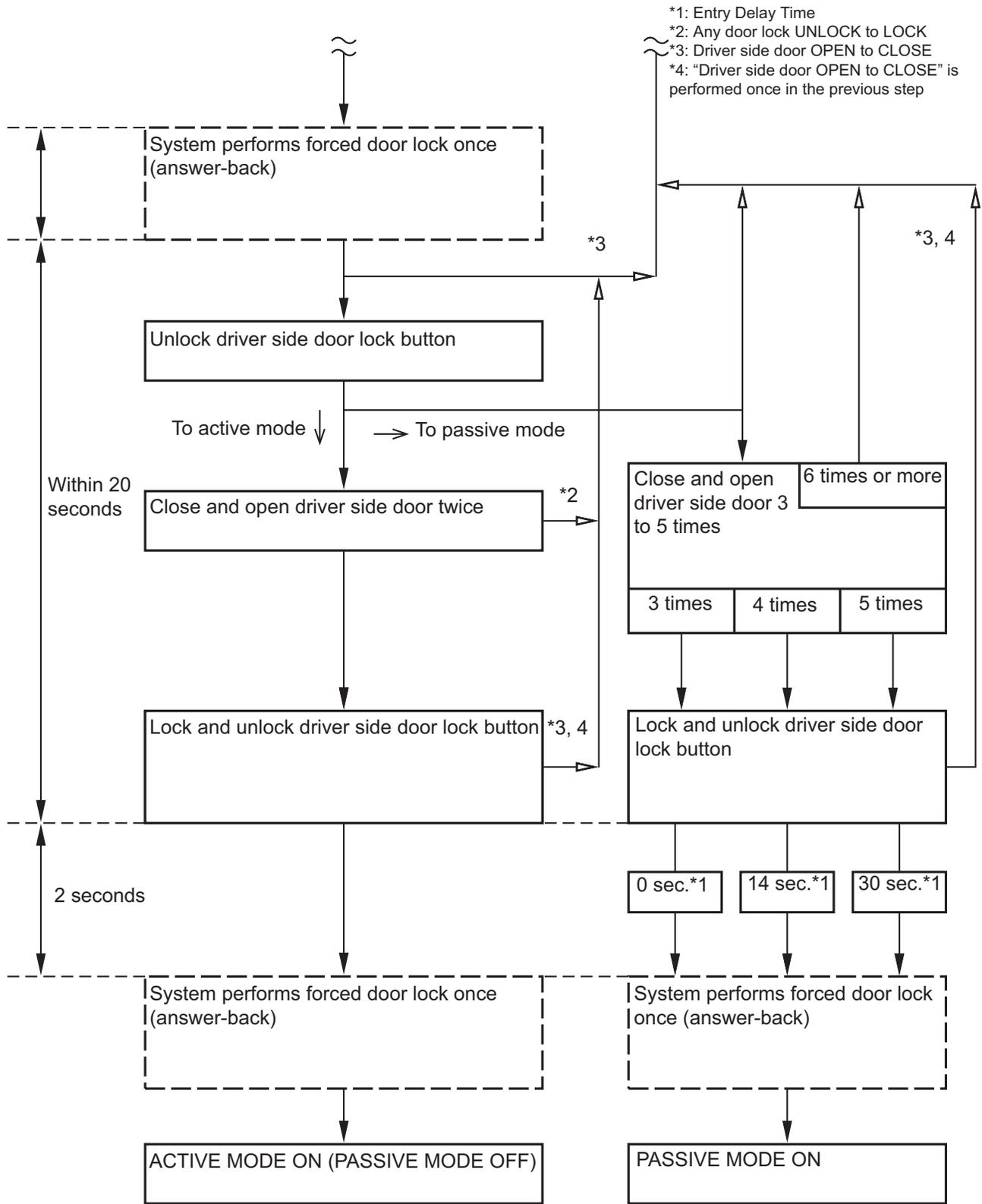
\*2: "Disarmed state (2)" is set from either the "Disarmed state (1)" or the "Arming preparation state".

\*3: When a door is opened while all doors are closed during passive arming mode, the entry delay time starts. If the state switching condition [from armed state to disarmed state (1)] is fulfilled during the entry delay time, the theft deterrent system will return to disarmed state (1). However, if the state switching condition is not fulfilled, the theft deterrent system will assume that a break-in or theft is occurring and sound the alarm. The entry delay time can be selected among the following: 0, 14 or 30 seconds.

4. METHOD FOR CHANGING OF PASSIVE MODE (ON OR OFF)

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## 5. FORCED DOOR LOCK CONTROL

(a) The forced door lock control also helps to prevent the vehicle from being tampered with. When a door is unlocked and the alarm starts, the door is forced to lock by a forced door lock signal.

(1) Conditions that force the doors to lock:

- No key is in the key slot.
- 0.4 seconds have elapsed after the previous output of a forced door lock signal.
- The theft deterrent system is in the alarm sounding state of active arming mode.
- Any door is unlocked.

## 6. ALARM MEMORY FUNCTION

(a) If the alarm is set off (tampering is detected) while the theft deterrent system is in the armed state, the alarm memory function will record it. Whenever the theft deterrent system is canceled, the alarm memory function causes the taillights to illuminate for 2 seconds in order to inform you that the alarm has been set off.

(1) Conditions of the alarm memory function that cause the taillights to illuminate:

When the theft deterrent system has entered into the alarm sounding state (tampering has been detected) even once, the taillights will illuminate for 2 seconds if any of the following conditions is fulfilled:

- Switched to the disarmed state from the armed state during active arming mode.
- Switched to the disarmed state (1) from the armed state during passive arming mode.

HINT:

For mode information about the active arming mode, refer to "ACTIVE ARMING MODE". For more information about the passive arming mode, refer to "PASSIVE ARMING MODE".

## 7. PANIC ALARM CONTROL

(a) The panic alarm control activates the panic alarm when the wireless transmitter PANIC switch is pressed. The panic alarm control operates independently from the theft deterrent system's alarm control's change from the armed state to the alarm sounding state.

(1) Conditions that cause the panic alarm control to set off the panic alarm:

The panic alarm control sets off the panic alarm when the PANIC switch on the wireless transmitter is pressed for over 2.4 seconds under the following conditions.

- The power switch is OFF or ON (ACC).
- The theft deterrent system is not in the alarm sounding state (same for active arming mode and passive arming mode).

- The panic alarm control is not operating (the alarm is not set OFF).
- (2) Conditions that cause the panic alarm control to shut the alarm:
- Turn the power switch ON (IG).
  - Any of the wireless transmitter switches are pressed.
  - 60 +- 5 seconds have passed and the panic alarm has ended.
  - The theft deterrent system switches to the alarm sounding state (same for active arming mode and passive arming mode). However, the alarm is still sounding, because the theft deterrent system has switched to the alarm sounding state. Conditions for canceling the panic alarm are the same as for the alarm control.

**HINT:**

For mode information about the active arming mode, refer to "ACTIVE ARMING MODE". For more information about the passive arming mode, refer to "PASSIVE ARMING MODE".

**8. SECURITY INDICATOR LIGHT OUTPUT**

- (a) The security indicator light turns on and off based on output signals from the main body ECU. However, in some cases the actual status of the security indicator light is different from the output signals of the main body ECU.

**Output:**

State of Theft Deterrent System*	Security Indicator Light	
	Output Signals from Main Body ECU	Actual Lighting Condition
Disarmed state (1), (2)	OFF	OFF (immobiliser system is not set) BLINKING (immobiliser system is set)
Arming preparation state	ON	ON
Armed state	OFF	BLINKING
Alarm sounding state	ON	ON

**Flashing cycle:**

Time	Security Indicator Light
0.2 seconds	ON
1.8 seconds	OFF

**HINT:**

- \*: Same for active arming mode and passive arming mode.
- When the immobiliser system is set, the security indicator blinks during the disarmed state and the armed state due to the output signals from the immobiliser system.

## CUSTOMIZE PARAMETERS

### HINT:

The following items can be customized.

### NOTICE:

- **When the customer requests a change in a function, first make sure that customization of the function is possible.**
- **Be sure to make a note of the current settings before customizing.**
- **When troubleshooting a function, first make sure that the function is set to the default setting.**

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### Theft deterrent system:

Display (Item)	Default	Contents	Setting
PASSIVE MODE (Passive arming mode)	OFF	<p>PASSIVE MODE is a function that switches theft deterrent system from arming preparation state to armed state 30 seconds after key is removed from key slot and all doors is closed, even if doors are not locked by wireless or door key lock operation.</p> <p>In PASSIVE MODE, theft deterrent system will judge that a theft is taking place and switch to alarm sounding state if one of the following operations are not performed within 14 seconds (see ENTRY DELAY below) after door is opened:</p> <ul style="list-style-type: none"> <li>• Unlock any door by key or wireless operation</li> <li>• Reconnect battery</li> <li>• Insert key into key slot and turn power switch ON (IG)</li> </ul>	ON / OFF
WARN BY HORN (Warning by horn)	ON	Function that allows vehicle horn and theft deterrent horn to be able to be used and a warning device	ON / OFF
ENTRY DELAY (Entry delay time)	14 s	Function that changes entry delay time (time before warning states)	0 s/14 s/ 30 s
WARN BY GLS SEN (Warning by glass broken sensor)	ON	Function that turns glass broken sensor ON/OFF	ON / OFF

## 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.
- Inspect the fuses and relays related to this system before inspecting the suspected areas below.

### Theft deterrent system:

Symptom	Suspected area	See page
Theft deterrent system cannot be set	1. Security indicator light circuit	<a href="#">TD-36</a>
	2. ECU power source circuit	<a href="#">TD-40</a>
	3. Unlock warning switch circuit	<a href="#">DL-209</a>
	4. Door key and unlock switch	<a href="#">DL-8</a>
	5. Door courtesy switch circuit	<a href="#">LI-54</a>
	6. Back door courtesy switch circuit	<a href="#">LI-54</a>
	7. Engine hood courtesy switch circuit	<a href="#">TD-23</a>
Security indicator light does not flash continuously when power switch is changed from ON (IG) to OFF 10 times within 15 seconds	Security indicator light circuit	<a href="#">TD-36</a>
Alarm sounding state cannot be canceled even when key is inserted into key slot, hybrid control system is started and accelerator pedal is depressed for 10 seconds	1. Ignition switch circuit	<a href="#">TD-33</a>
	2. Unlock warning switch circuit	<a href="#">DL-204</a>
Theft deterrent system can be set even when door is open	Door courtesy switch circuit	<a href="#">TD-26</a>
Horns (low pitched, high pitched) do not sound while theft deterrent system is in warning operation	Horn circuit	<a href="#">TD-26</a>
Headlights do not flash while theft deterrent system is in warning operation	Headlight circuit	<a href="#">LI-38</a>
Taillights do not flash while theft deterrent system is in warning operation	Taillight circuit	<a href="#">LI-58</a>
Hazard warning lights do not flash while theft deterrent system is in warning operation	Warning light circuit	<a href="#">LI-69</a>
Room light does not illuminate while theft deterrent system is in warning operation	Room light circuit	<a href="#">LI-45</a>
Security horn does not sounds while theft deterrent system is in warning operation	Security horn circuit	<a href="#">TD-31</a>
Headlights flash even when theft deterrent system is not set	Headlight circuit	<a href="#">LI-38</a>
Taillight flash even when theft deterrent system is not set	Taillight circuit	<a href="#">LI-58</a>
Hazard warning lights flash even when theft deterrent system is not set	Hazard warning switch circuit	<a href="#">LI-69</a>
Room light illuminates even when theft deterrent system is not set	Room light circuit	<a href="#">LI-45</a>

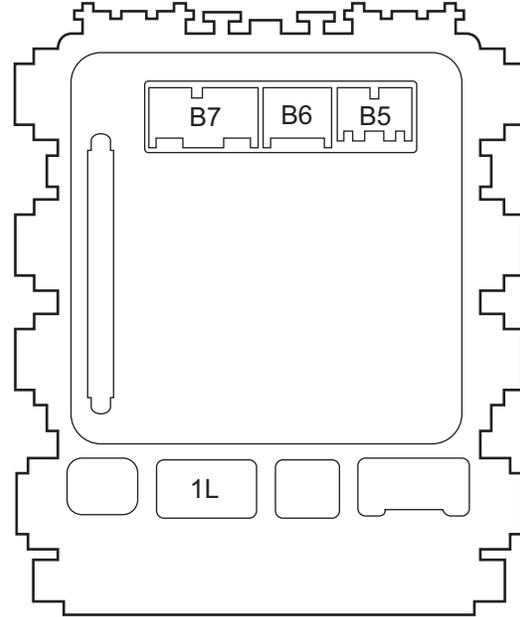
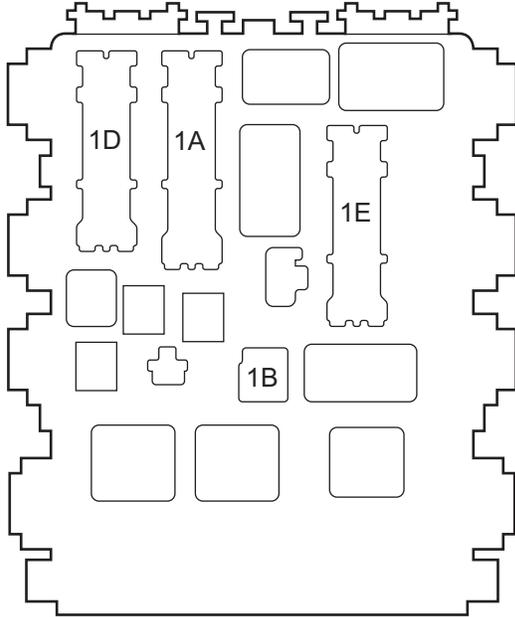
# TERMINALS OF ECU

## 1. CHECK DRIVER SIDE JUNCTION BLOCK (MAIN BODY ECU)

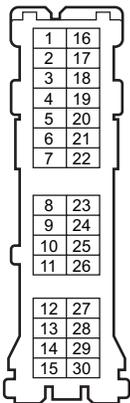
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Vehicle Rear Side

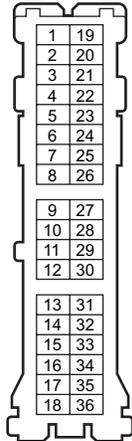
Vehicle Front Side



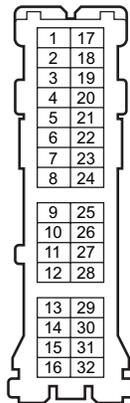
1D



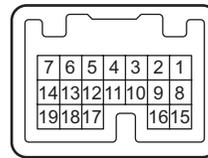
1A



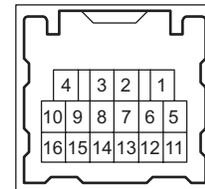
1E



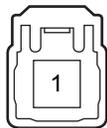
B5



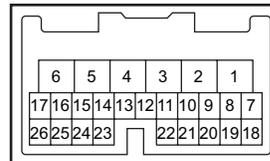
B6



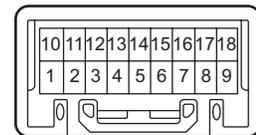
1B



B7



1L



(a) Disconnect the B6 ECU connector.

- (b) Disconnect the 1A, 1B, 1D and 1E junction block connectors.
- (c) Measure the resistance and voltage of wire harness side connectors.

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
GND (1E-17) - Body ground	W-B - Body ground	Ground	Always	Below 1 $\Omega$
ECUB (1A-30) - Body ground	R - Body ground	+B (ECUB) power supply	Always	10 to 14 V
ALTB (1B-1) - Body ground	W - Body ground	+B (power system, generator system) power supply	Always	10 to 14 V
KSW (1E-36) - Body ground	Y - Body ground	Key unlock warning switch input	No key is in key slot	10 k $\Omega$ or higher
			Key inserted	Below 1 $\Omega$
HCTY (B6-5) - Body ground	P - Body ground	Engine hood courtesy switch	Engine hood closed	10 k $\Omega$ or higher
			Engine hood open	Below 1 $\Omega$
DCTY (1D-21) - Body ground	V - Body ground	Driver side courtesy switch input	Driver side door closed	10 k $\Omega$ or higher
			Driver side door open	Below 1 $\Omega$
PCTY (1D-24) - Body ground	BR - Body ground	Passenger side courtesy switch input	Passenger side door closed	10 k $\Omega$ or higher
			Passenger side door open	Below 1 $\Omega$
RCTY (1D-5) - Body ground	R - Body ground	Rear LH side courtesy switch input	Rear LH side door closed	10 k $\Omega$ or higher
			Rear LH side door open	Below 1 $\Omega$
RCTY (1D-20) - Body ground	R - Body ground	Rear RH side courtesy switch input	Rear RH side door closed	10 k $\Omega$ or higher
			Rear RH side door open	Below 1 $\Omega$
BCTY (1D-7) - Body ground	R - Body ground	Back door courtesy switch	Back door closed	10 k $\Omega$ or higher
			Back door open	Below 1 $\Omega$

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

- (d) Reconnect the B6 ECU connector.
- (e) Reconnect the 1A, 1B, 1D and 1E junction block connectors.
- (f) Measure the voltage of the connectors.

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
SIND (B5-8) - Body ground	R - Body ground	Security indicator light	Security indicator light illuminates (illuminates for 30 sec. in alarm sounding state and flashes when immobiliser system is operating)	3 to 6 V
SEC (B6-1) - Body ground	Y - Body ground	Security horn	Security horn is sounding (theft deterrent system is in alarm sounding state)	Pulse generation → Below 1 V
HAZ (1L-17) - Body ground	Y - Body ground	Hazard light drive	Answer-back OFF → Answer-back ON	Pulse generation
HORN (1A-28) - Body ground	Y - Body ground	Vehicle horn (low pitched and high pitched)	Vehicle horn is sounding (theft deterrent system is in alarm sounding state)	Pulse generation → Below 1 V
TRLY (1D-29) - Body ground	BR - Body ground	Taillights	Taillights are flashing (theft deterrent system is in alarm sounding state)	Pulse generation → Below 1 V
HRLY (B7-20) - Body ground	G - Body ground	Headlights	Headlights are flashing (theft deterrent system is in alarm sounding state)	Pulse generation → Below 1 V

If the result is not as specified, the junction block (body ECU) may have a malfunction.

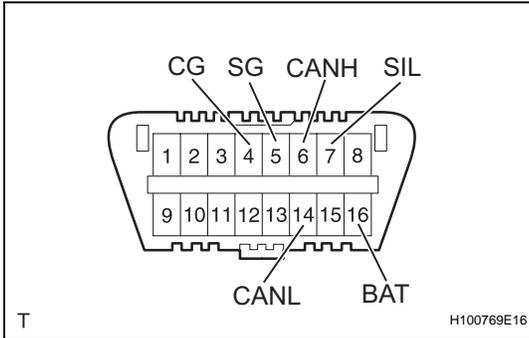
## DIAGNOSIS SYSTEM

### 1. DESCRIPTION

- (a) Theft deterrent system data and the Diagnostic Trouble Codes (DTCs) can be read through the vehicle's 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

- (a) 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.



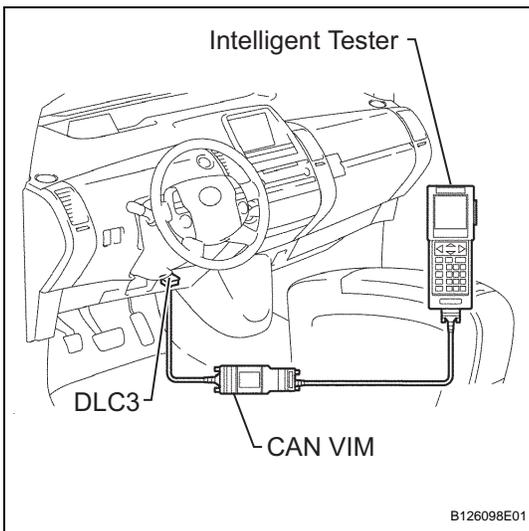
Symbols (Terminal No.)	Terminal Description	Condition	Specified Condition
SIL (7) - SG (5)	Bus "+" line	During transmission	Pulse generation
CG (4) - Body ground	Chassis ground	Always	Below 1 $\Omega$
SG (5) - Body ground	Signal ground		11 to 14 V
BAT (16) - Body ground	Battery positive		
CANH (6) - CANL (14)	HIGH-level CAN bus line	Power switch OFF	54 to 69 $\Omega$
CANH (6) - Battery positive			1 k $\Omega$ or higher
CANH (6) - CG (4)			1 k $\Omega$ or higher
CANL (14) - Battery positive	LOW-level CAN bus line		1 M $\Omega$ or higher
CANL (14) - CG (4)			1 M $\Omega$ or higher

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 tester. If the display indicates the message UNABLE TO CONNECT TO VEHICLE, 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.



## 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.

#### Main body ECU:

Item	Measurement Item / Display (Range)	Normal Condition	Diagnostic Note
KEY UNLK WRN SW	Key unlock warning switch signal / ON or OFF	ON: Key is in key slot OFF: No key is in key slot	-
D DOR CTY SW	Driver door courtesy switch signal / ON or OFF	ON: Driver side door is open OFF: Driver side door is closed	-
P DOR CTY SW	Passenger door courtesy switch signal / ON or OFF	ON: Passenger side door is open OFF: Passenger side door is closed	-
RR DOR OPEN SW	Rear door courtesy switch signal / ON or OFF	ON: Either rear right or left door is open OFF: Both rear right and left doors are closed	-
B DOR OPEN SW	Back door open switch	ON: Back door is open OFF: Back door is closed	-
RR LOCK POS SW	Rear door lock position switch signal / ON or OFF	ON: Rear door lock is in unlock position OFF: Rear door lock is in lock position	-
P LOCK POS SW	Passenger door lock position switch signal / ON or OFF	ON: Passenger side door lock is in unlock position OFF: Passenger side door lock is in lock position	-
D LOCK POS SW	Driver door lock position switch signal / ON or OFF	ON: Driver side door is in unlock position OFF: Driver side door is in lock position	-
HOOD COURTSY SW	Engine hood courtesy switch signal / ON or OFF	ON: Engine hood is open OFF: Engine hood is closed	-
IG SW	Power switch signal / ON or OFF	ON: Power switch is pushed OFF: Power switch is not pushed	-

### 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.

**Main body ECU:**

Item	Test Detail	Diagnostic Note
SECURITY INDIC	Turn security indicator light ON / OFF	-
SECURITY HORN	Sound security horn ON / OFF	-
VEHICLE HORN	Sound vehicle horn ON / OFF	-

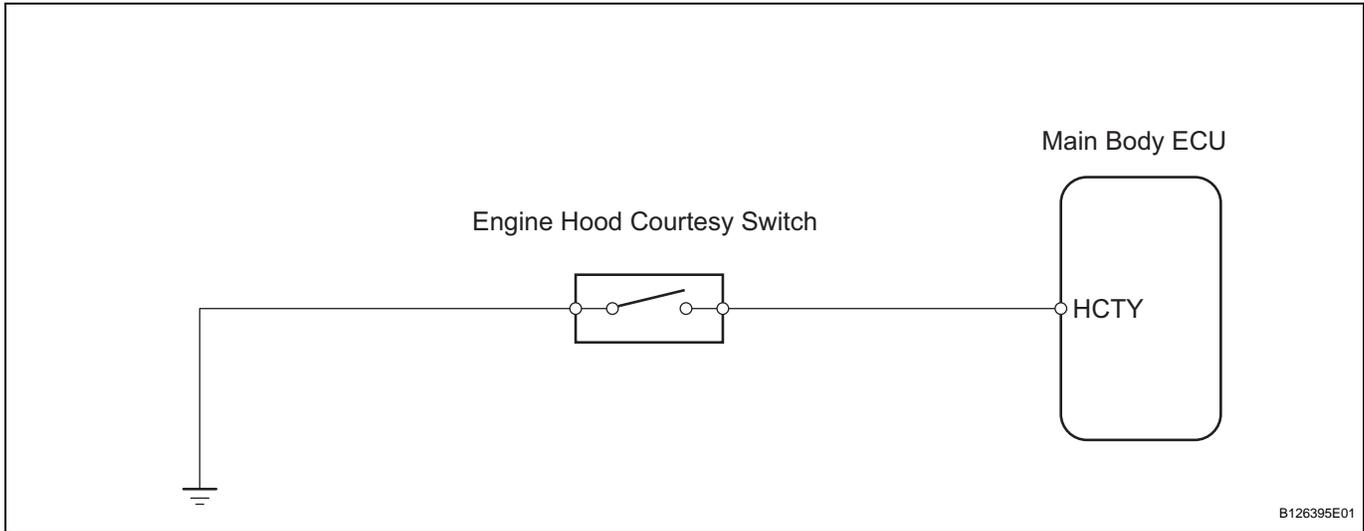
## Engine Hood Courtesy Switch Circuit

### DESCRIPTION

The engine hood courtesy switch is installed into the hood lock. This switch turns ON when the engine hood is opened and turns OFF when the engine hood is closed.

### WIRING DIAGRAM

TD



### INSPECTION PROCEDURE

#### 1 READ VALUE OF INTELLIGENT TESTER (ENGINE HOOD COURTESY SWITCH)

- (a) Check the DATA LIST for proper functioning of the engine hood courtesy switch.

#### Main body ECU:

Item	Measurement Item / Display (Range)	Normal Condition	Diagnostic Note
HOOD COURTESY SW	Engine hood courtesy switch signal / ON or OFF	ON: Engine hood is open OFF: Engine hood is closed	-

#### OK:

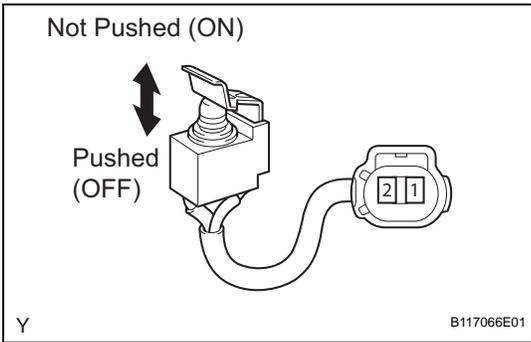
On tester screen, item changes between ON and OFF according to above chart.

OK

**REPLACE DRIVER SIDE JUNCTION BLOCK ASSEMBLY (MAIN BODY ECU)**

NG

**2 INSPECT ENGINE HOOD COURTESY SWITCH**



- (a) Remove the courtesy switch from the hood lock.
- (b) Measure the resistance of the switch.

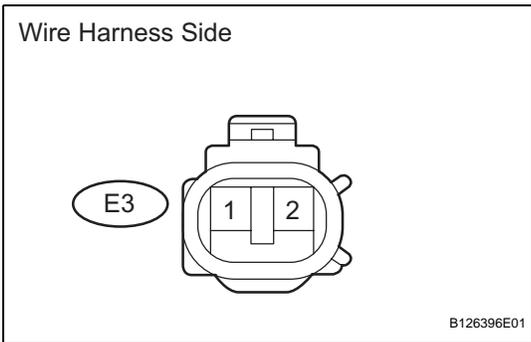
**Standard resistance**

Tester Connection	Condition	Specified Condition
1 - 2	Pushed (OFF)	10 kΩ or higher
	Not pushed (ON)	Below 1 Ω

**NG** → **REPLACE ENGINE HOOD COURTESY SWITCH**

**OK**

**3 CHECK WIRE HARNESS (ENGINE HOOD COURTESY SWITCH - BODY GROUND)**



- (a) Disconnect the E3 switch connector.
- (b) Measure the resistance of the wire harness side connector.

**Standard resistance**

Tester Connection	Specified Condition
E3-2 - Body ground	Below 1 Ω

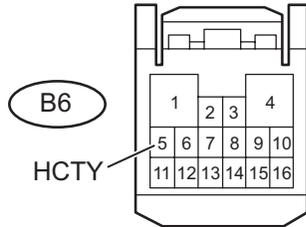
**NG** → **REPAIR OR REPLACE HARNESS AND CONNECTOR**

**OK**

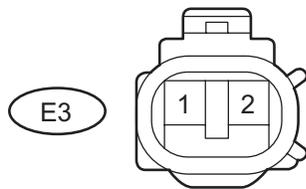
**4 CHECK WIRE HARNESS (MAIN BODY ECU - ENGINE HOOD COURTESY SWITCH)**

Wire Harness Side

Main Body ECU



Engine Hood Courtesy Switch



B126397E01

- (a) Disconnect the B6 ECU connector.
- (b) Disconnect the E3 switch connector.
- (c) Measure the resistance of the wire harness side connectors.

**Standard resistance**

Tester Connection	Specified Condition
B6-5 (HCTY) - E3-1	Below 1 $\Omega$
B6-5 (HCTY) or E3-1 - Body ground	10 k $\Omega$ or higher

**NG**

**REPAIR OR REPLACE HARNESS AND CONNECTOR**

**OK**

**PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE**

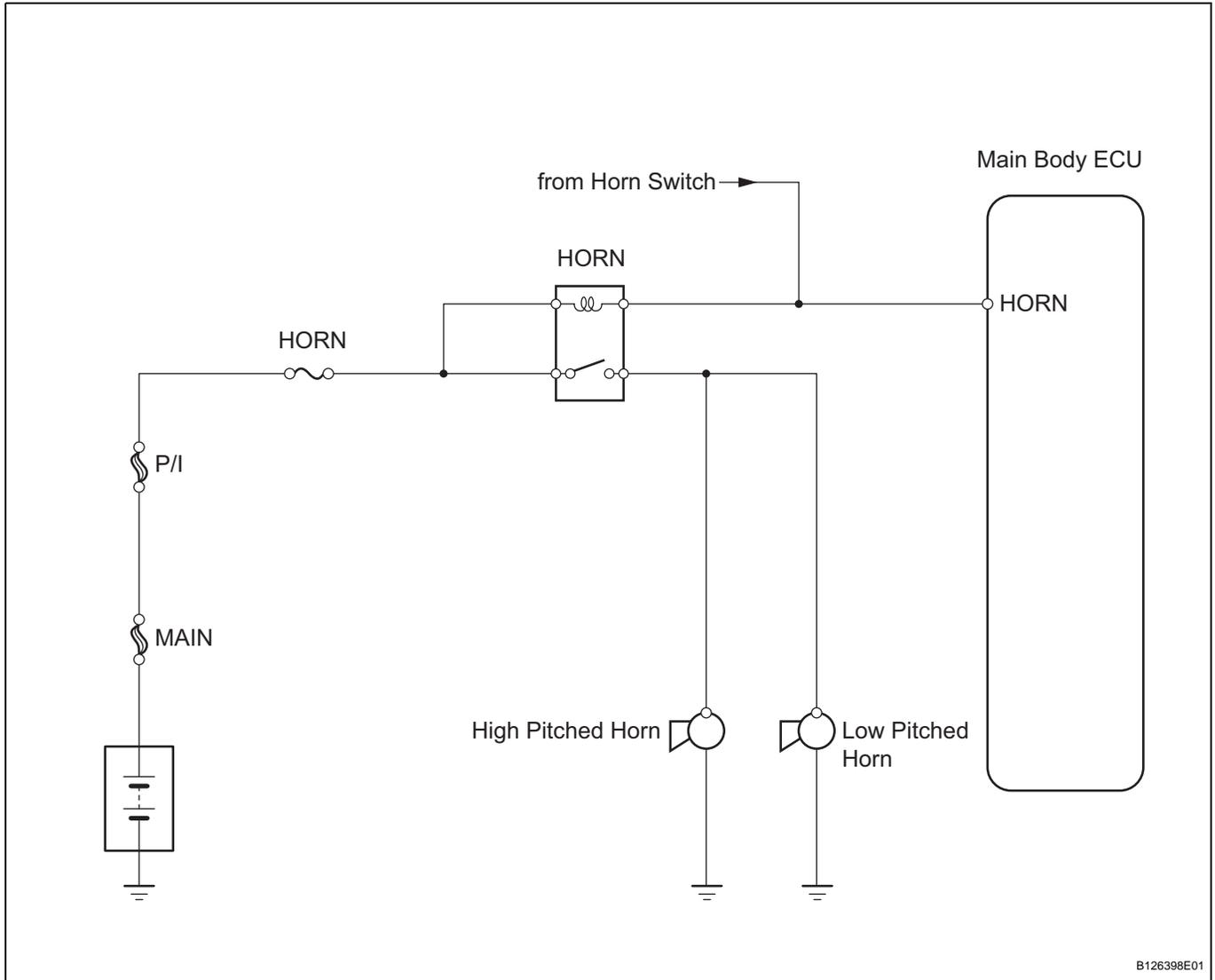
TD

## Horn Circuit

### DESCRIPTION

When the theft deterrent system is switched from the armed state to the alarm sounding state, the main body ECU turns on the HORN relay, causing the horns to sound at intervals of 0.4 seconds.

### WIRING DIAGRAM



### INSPECTION PROCEDURE

#### 1 PERFORM ACTIVE TEST BY INTELLIGENT TESTER (VEHICLE HORN)

- (a) Select the ACTIVE TEST, use the intelligent tester (with CAN VIM) to generate a command, and then check the vehicle horns operation.

#### Main body ECU:

Item	Tester Detail	Diagnostic Note
VEHICLE HORN	Vehicle horns ON / sOFF	-

**OK:**  
Vehicle horns sound and stop.

**OK** → **REPLACE DRIVER SIDE JUNCTION BLOCK ASSEMBLY (MAIN BODY ECU)**

**NG**

**2 CHECK HORN**

**TD**

(a) Press the horn switch and check if the vehicle horns sound.

**OK:**  
Vehicle horns sound.

**OK** → **REPLACE DRIVER SIDE JUNCTION BLOCK ASSEMBLY (MAIN BODY ECU)**

**NG**

**3 INSPECT FUSE (HORN)**

(a) Remove the HORN fuse from the engine room junction block.

(b) Measure the resistance of the fuse.

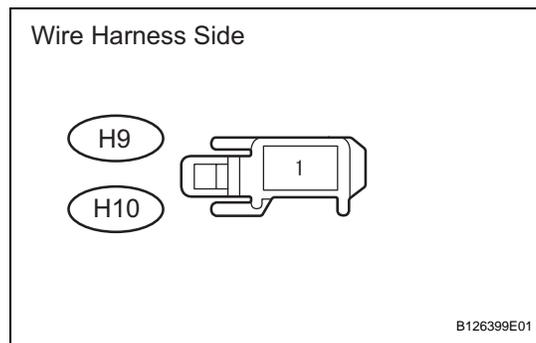
**Standard resistance:**

**Below 1 Ω**

**NG** → **REPLACE FUSE**

**OK**

**4 CHECK HORN (HORN BATTERY VOLTAGE)**



(a) Disconnect the H9 and H10 horn connectors.

(b) Measure the voltage of the wire harness side connectors.

**Standard voltage**

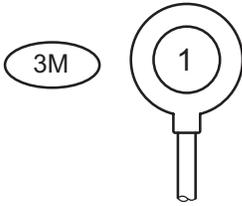
Tester Connection	Condition	Specified Condition
H9-1 - Body ground	Horn switch pushed	10 to 14 V
H10-1 - Body ground		

**OK** → **REPLACE HORN**

**NG**

**5 CHECK WIRE HARNESS (ENGINE ROOM JUNCTION BLOCK - BATTERY)**

Wire Harness Side



B126400E01

- (a) Disconnect the 3M junction block connector.
- (b) Measure the voltage of the wire harness side connector.

**Standard voltage**

Tester Connection	Specified Condition
3M-1 - Body ground	10 to 14 V

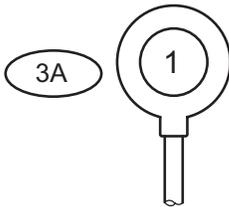
**NG** REPAIR OR REPLACE HARNESS AND CONNECTOR

**OK**

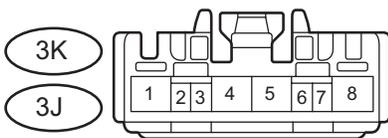
**6 CHECK WIRE HARNESS (ENGINE ROOM JUNCTION BLOCK - HORN AND BODY GROUND)**

Wire Harness Side

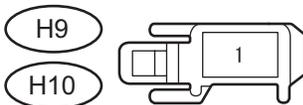
Engine Room Junction Block



Engine Room Junction Block



Horn



B126662E01

- (a) Disconnect the 3A, 3K and 3J junction block connectors.
- (b) Disconnect the H9 and H10 horn connectors.
- (c) Measure the resistance of the wire harness side connectors.

**Standard resistance**

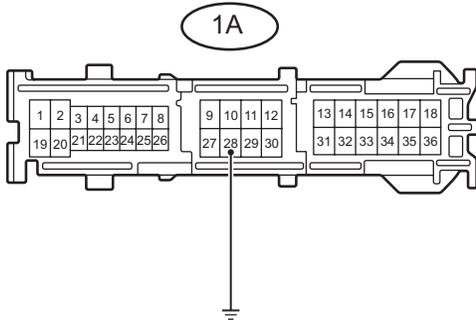
Tester Connection	Specified Condition
3A-1 - 3K-1	Below 1 Ω
3J-8 - H9-1	
3J-8 - H10-1	
3A-1 or 3K-1 - Body ground	10 kΩ or higher
3J-8 or H9-1 - Body ground	
3J-8 or H10-1 - Body ground	

**NG** REPAIR OR REPLACE HARNESS AND CONNECTOR

**OK**

**7 CHECK DRIVER SIDE JUNCTION BLOCK ASSEMBLY (OPERATION)**

Wire Harness Side



B137725E01

- (a) Reconnect the 1A junction block connector.
- (b) Check that the horns sound.

**OK**

Connection	Specified Condition
Junction block terminal 1A-28 and Body ground connected	Horns sound
	Horns do not sound

**OK**

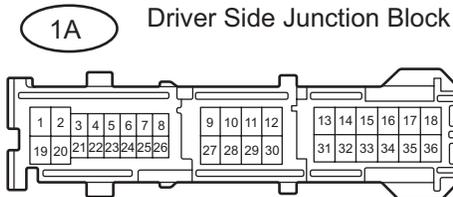
**REPLACE DRIVER SIDE JUNCTION BLOCK ASSEMBLY (MAIN BODY ECU)**

TD

**NG**

**8 CHECK WIRE HARNESS (DRIVER SIDE JUNCTION BLOCK - ENGINE ROOM JUNCTION BLOCK AND BODY GROUND)**

Wire Harness Side



B126665E01

- (a) Disconnect the 1A and 3A junction block connectors.
- (b) Measure the resistance of the wire harness side connectors.

**Standard resistance**

Tester Connection	Specified Condition
1A-28 - 3J-7	Below 1 $\Omega$
1A-28 or 3J-7 - Body ground	10 k $\Omega$ or higher

**NG**

**REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK

REPLACE ENGINE ROOM RELAY BLOCK

TD

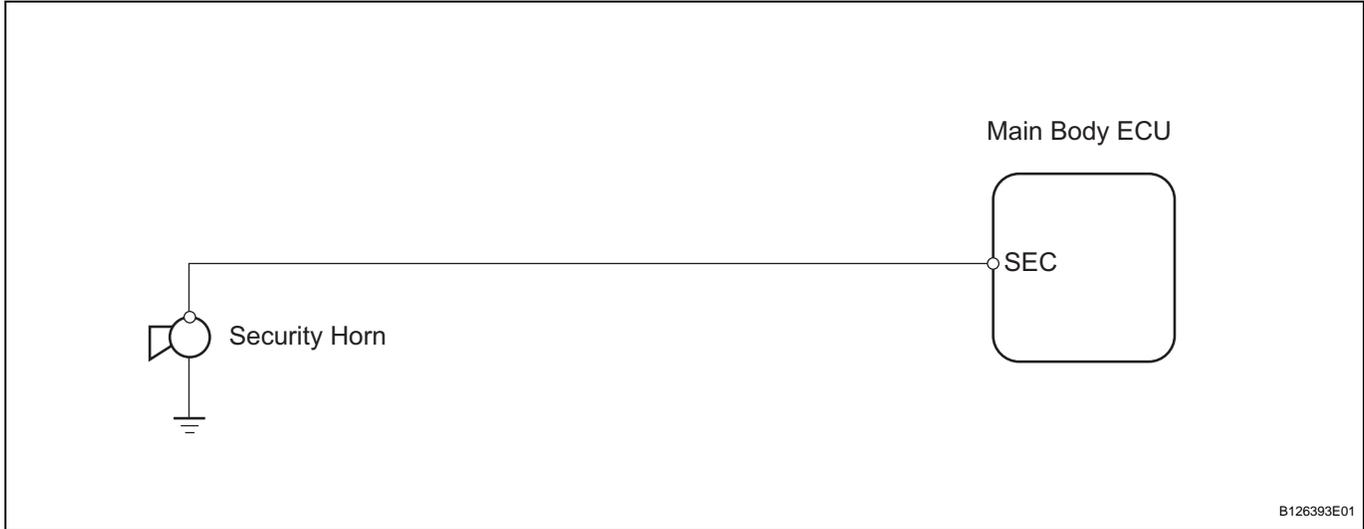
## Security Horn Circuit

### DESCRIPTION

When the theft deterrent system is switched from the armed state to the alarm sounding state, the main body ECU turns on the relay, causing the horns to sound at intervals of 0.4 seconds.

### WIRING DIAGRAM

TD



### INSPECTION PROCEDURE

#### 1 PERFORM ACTIVE TEST BY INTELLIGENT TESTER (SECURITY HORN)

- (a) Select the ACTIVE TEST, use the intelligent tester (with CAN VIM) to generate a command, and then check the security horn operation.

#### Main body ECU:

Item	Tester Details	Diagnostic Note
SECURITY HORN	Security horn ON/OFF	-

**OK:**

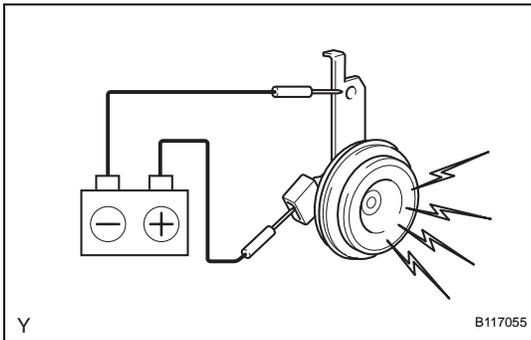
Security horn sounds and stops.

OK

**REPLACE DRIVER SIDE JUNCTION BLOCK ASSEMBLY (MAIN BODY ECU)**

NG

**2 INSPECT SECURITY HORN**



- (a) Remove the security horn.
- (b) Apply battery voltage to the horn and check operation of the horn.

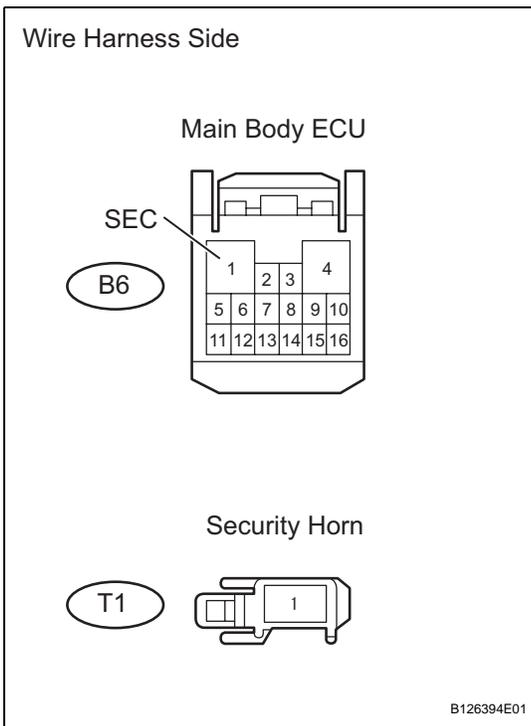
**OK**

Tester Connection	Specified Condition
Battery positive (+) → Terminal 1 Battery positive (-) → Horn bracket	Horn sounds

**NG** → **REPLACE SECURITY HORN**

**OK**

**3 CHECK WIRE HARNESS (MAIN BODY ECU - SECURITY HORN)**



- (a) Disconnect the B6 ECU connector.
- (b) Disconnect the T1 horn connector.
- (c) Measure the resistance of the wire harness side connectors.

**Standard resistance**

Tester Connection	Specified Condition
B6-1 (SH-) - T1-1	Below 1 Ω
B6-1 (SH-) or T1-1 - Body ground	10 kΩ or higher

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

**OK**

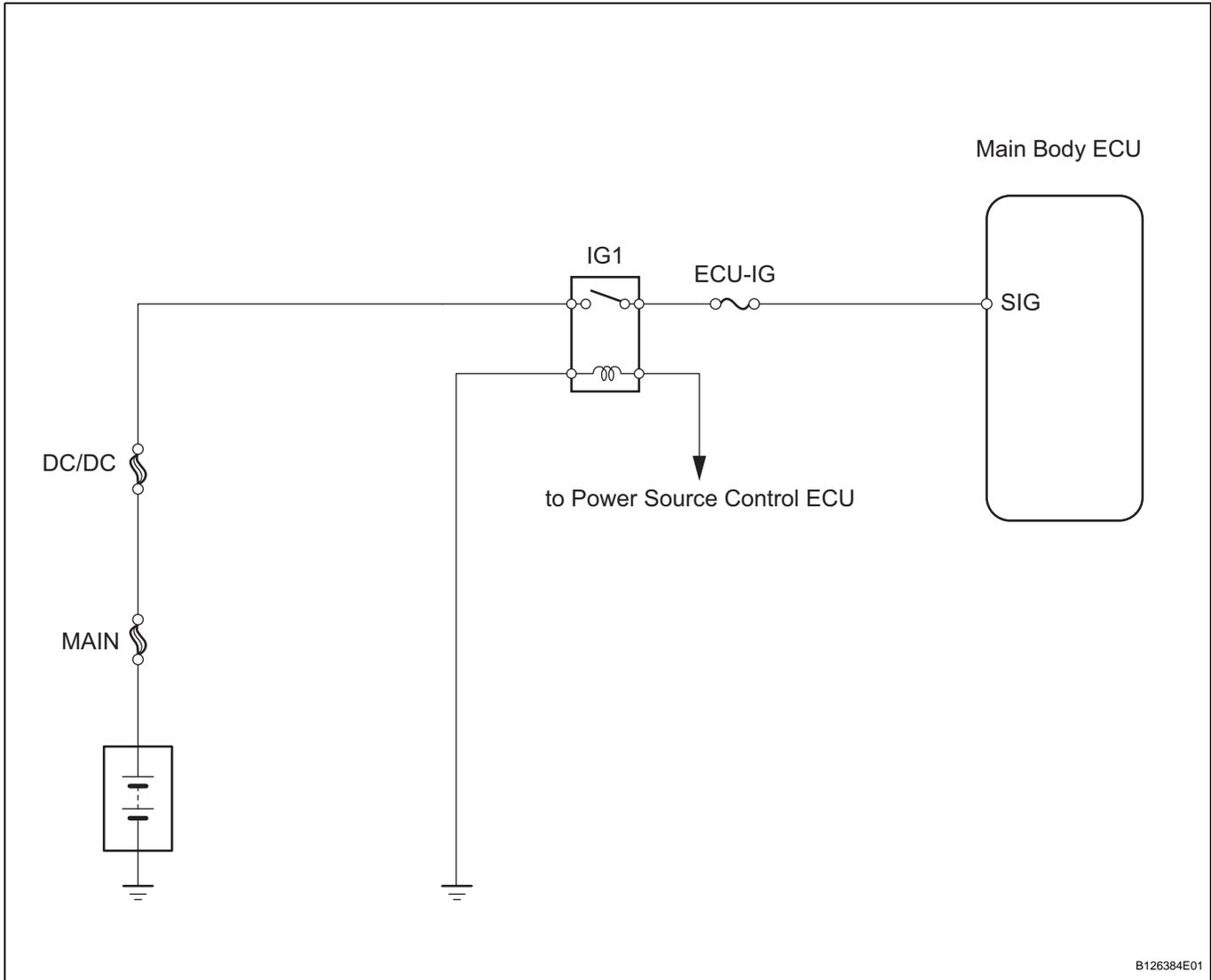
**REPLACE DRIVER SIDE JUNCTION BLOCK ASSEMBLY (MAIN BODY ECU)**

## Ignition Switch Circuit

### DESCRIPTION

When turning the power switch ON (IG), battery positive voltage is applied to terminal SIG of the main body ECU.

### WIRING DIAGRAM



### INSPECTION PROCEDURE

#### 1 INSPECT FUSE (ECU-IG)

- Remove the ECU-IG fuse from the driver side junction block.
- Measure the resistance of the fuse.

**Standard resistance:**

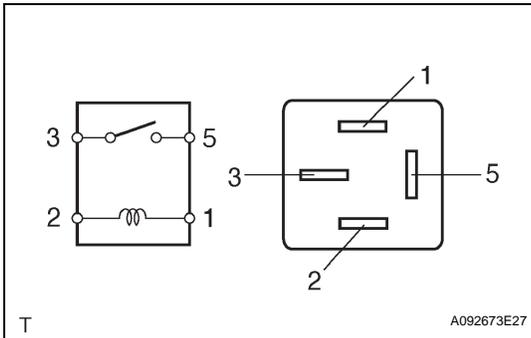
**Below 1  $\Omega$**

**NG**

**REPLACE FUSE**

OK

**2 INSPECT IG1 RELAY**



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

**Standard resistance**

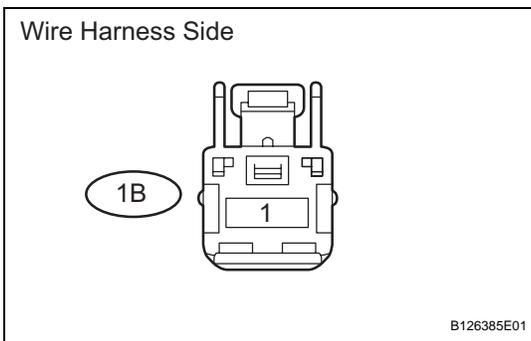
Tester Connection	Specified Condition
3 - 5	10 kΩ or higher
	Below 1 Ω (when battery voltage is applied to terminals 1 and 2)

TD

**NG** → **REPLACE IG1 RELAY**

OK

**3 CHECK WIRE HARNESS (DRIVER SIDE JUNCTION BLOCK - BATTERY)**



- (a) Disconnect the 1B junction block connector.
- (b) Measure the voltage of the wire harness side connector.

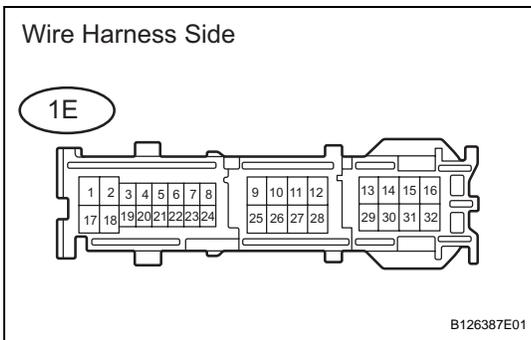
**Standard voltage**

Tester Connection	Specified Condition
1B-1 - Body ground	10 to 14 V

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

OK

**4 CHECK WIRE HARNESS (DRIVER SIDE JUNCTION BLOCK - BODY GROUND)**



- (a) Disconnect the 1E junction block connector.
- (b) Measure the resistance of the wire harness side connector.

**Standard resistance**

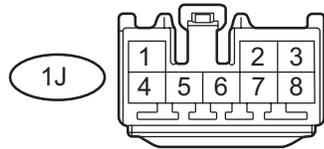
Tester Connection	Specified Condition
1E-17 - Body ground	Below 1 Ω

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

OK

**5 CHECK POWER SOURCE CONTROL ECU (IG1D VOLTAGE)**

Wire Harness Side



B126388E01

- (a) Disconnect the 1J junction block connector.
- (b) Measure the voltage of the wire harness side connector.

**Standard voltage**

Tester Connection	Condition	Specified Condition
1J-3 - Body ground	Power switch OFF	Below 1 V
	Power switch ON (IG)	10 to 14 V

OK

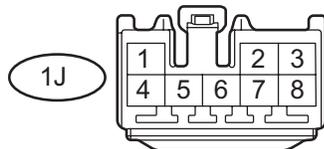
**PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE**

NG

**6 CHECK WIRE HARNESS (DRIVER SIDE JUNCTION BLOCK - POWER SOURCE CONTROL ECU AND BODY GROUND)**

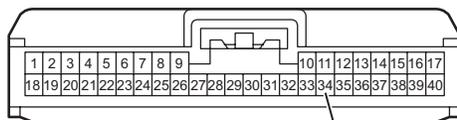
Wire Harness Side

Driver Side Junction Block



Power Source Control ECU

P6



IG1D

B126389E01

- (a) Disconnect the 1J 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
1J-3 - P6-34 (IG1D)	Below 1 $\Omega$
1J-3 or P6-34 (IG1D) - Body ground	10 k $\Omega$ or higher

NG

**REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK

**GO TO SMART KEY SYSTEM (for Starting)**

TD

## Security Indicator Light Circuit

### DESCRIPTION

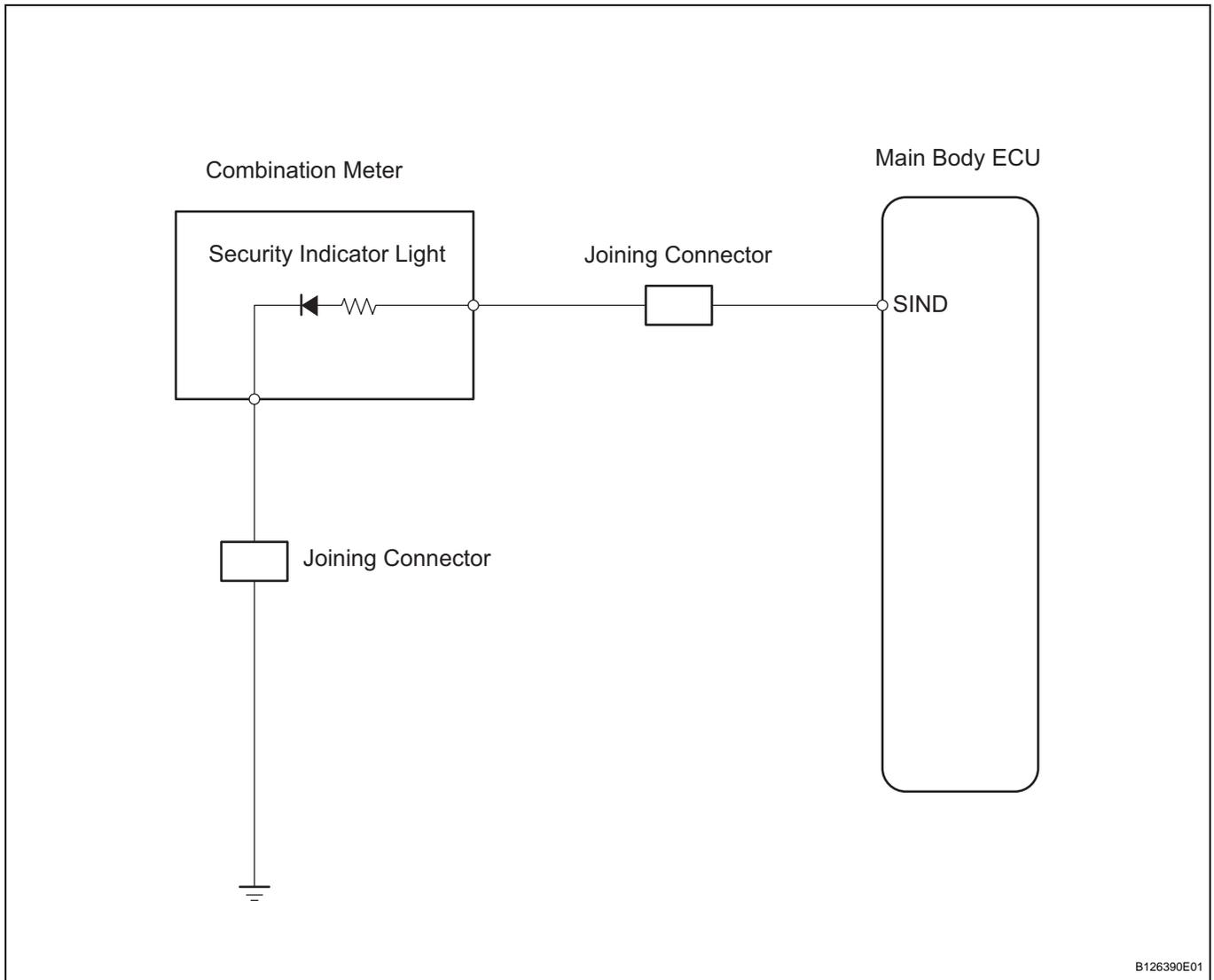
When the theft deterrent system is in the disarmed state, the security indicator light will flash continuously if the immobiliser system is set, or not illuminate if the immobiliser system is not set.

When the theft deterrent system is in the armed state, the immobiliser system is automatically set and the security indicator light will flash continuously.

When the theft deterrent system is in the arming preparation state and alarm sounding state, the main body ECU causes the security indicator light to be illuminated.

TD

### WIRING DIAGRAM



**INSPECTION PROCEDURE**

**1 PERFORM ACTIVE TEST BY INTELLIGENT TESTER (SECURITY INDICATOR LIGHT)**

- (a) Select the ACTIVE TEST, use the intelligent tester (with CAN VIM) to generate a command, and then check the security indicator light operation.

Main body ECU:

TD

Item	Tester Detail	Diagnostic Note
SECURITY INDIC	Security indicator light ON/OFF	-

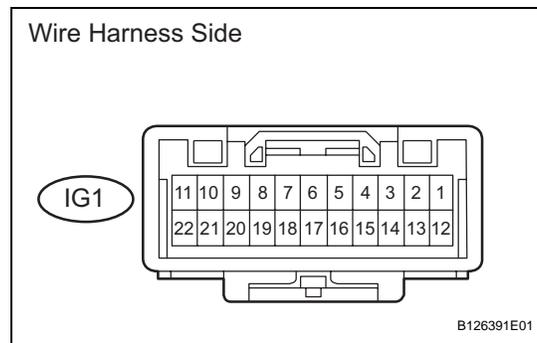
**OK:**

Security indicator light turns on and off.

**OK** → **INSPECT COMBINATION METER ECU (SECURITY INDICATOR LIGHT)**

**NG**

**2 CHECK WIRE HARNESS (JOINING CONNECTOR - MAIN BODY ECU)**



- (a) Disconnect the IG1 joining connector.
- (b) Measure the resistance of the wire harness side connector.

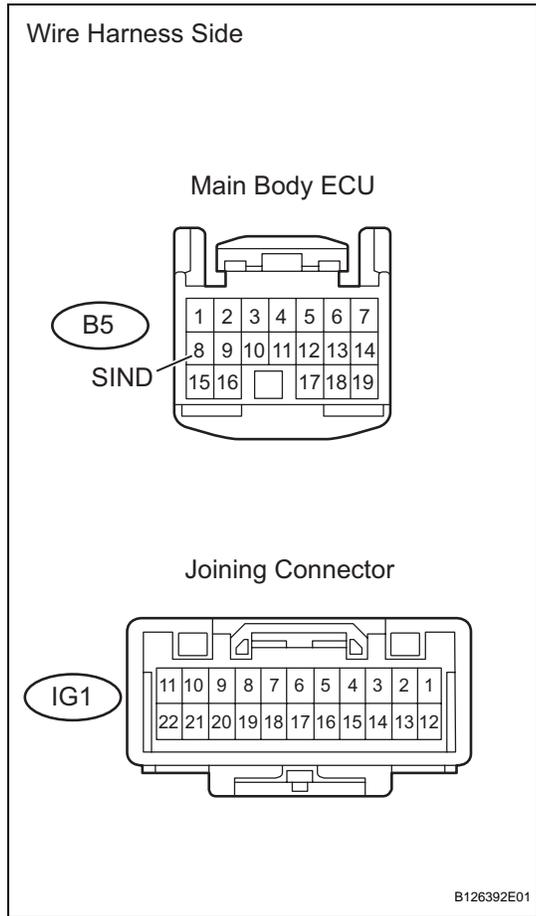
**Standard resistance**

Tester Connection	Specified Condition
IG1-4 - Body ground	Below 1 Ω

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

**OK**

**3 CHECK WIRE HARNESS (MAIN BODY ECU - JOINING CONNECTOR)**



- (a) Disconnect the B5 ECU connector.
- (b) Disconnect the IG1 joining connector.
- (c) Measure the resistance of the wire harness side connectors.

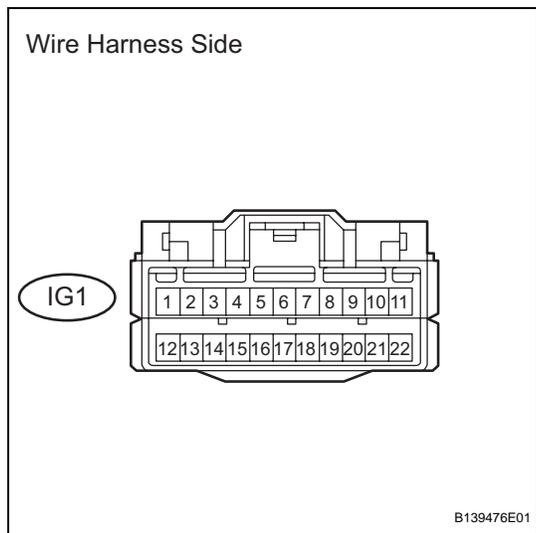
**Standard resistance**

Tester Connection	Specified Condition
B5-8 (SIND) - IG1-1	Below 1 Ω
B5-8 (SIND) or IG1-1 - Body ground	10 kΩ or higher

**NG** REPAIR OR REPLACE HARNESS AND CONNECTOR

**OK**

**4 INSPECT COMBINATION METER ECU (SECURITY INDICATOR LIGHT)**



- (a) Disconnect the IG1 joining connector.
- (b) Apply 12 V positive voltage to the terminals of the combination meter.
- (c) Check that the security indicator light illuminates.

**OK**

Tester Connection	Specified Condition
Body positive (+) → Terminal 1 Body negative (-) → Terminal 4	Illuminates

**NOTICE:**

- If the positive (+) lead and the negative (-) lead are incorrectly connected, the security indicator light will not illuminate.
- Applying a voltage of more than 12 V will damage the security indicator light.
- If the voltage is too low, the security indicator will not illuminate.

**NG** GO TO METER / GAUGE SYSTEM

OK

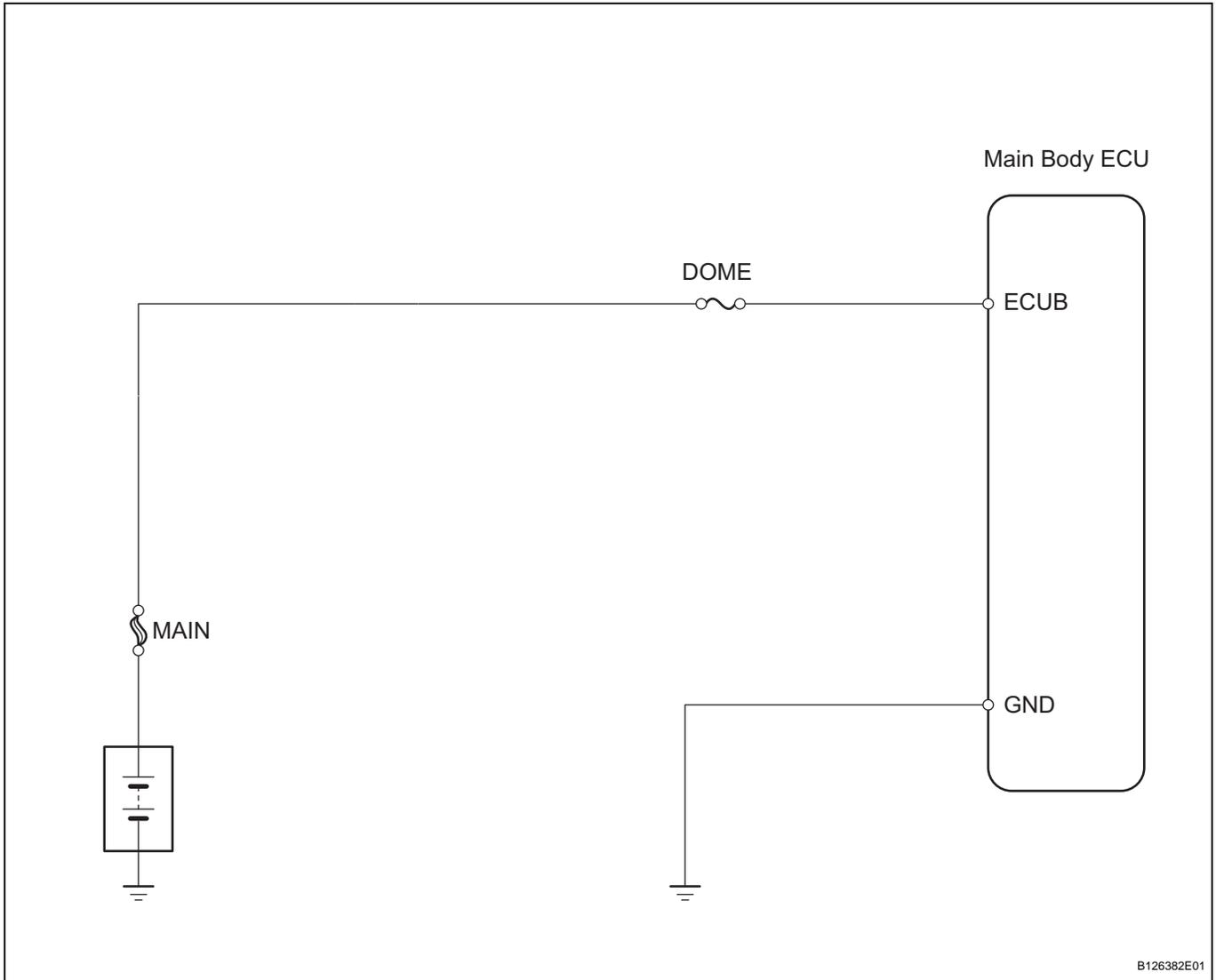
PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

## ECU Power Source Circuit

### DESCRIPTION

This circuit provides power to operate the main body ECU.

### WIRING DIAGRAM



### INSPECTION PROCEDURE

#### 1 INSPECT FUSE (DOME)

- (a) Remove the DOME fuse from the engine room junction block and relay block.
- (b) Measure the resistance of the fuse.

**Standard resistance:**

**Below 1  $\Omega$**

NG

REPLACE FUSE

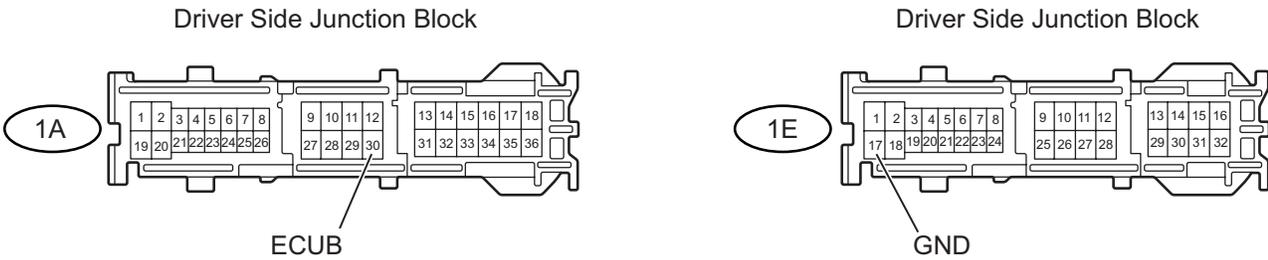
OK

**2 CHECK WIRE HARNESS (DRIVER SIDE JUNCTION BLOCK - BATTERY AND BODY GROUND)**

(a) Disconnect the 1A and 1E junction block connectors.

Wire Harness Side

TD



B126383E01

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

**Standard resistance**

Tester Connection	Specified Condition
1E-17 (GND) - Body ground	Below 1 Ω

**Standard voltage**

Tester Connection	Specified Condition
1A-30 (ECUB) - Body ground	10 to 14 V

**NG REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK

**PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE**

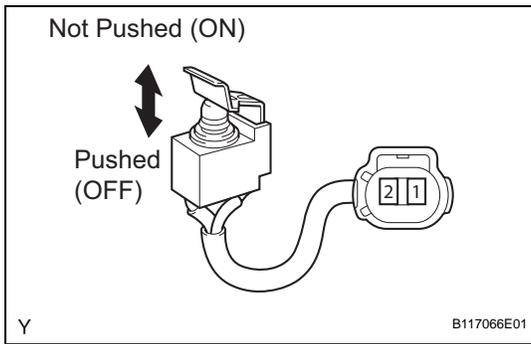
# ENGINE HOOD COURTESY SWITCH

## INSPECTION

### 1. INSPECT ENGINE HOOD COURTESY SWITCH

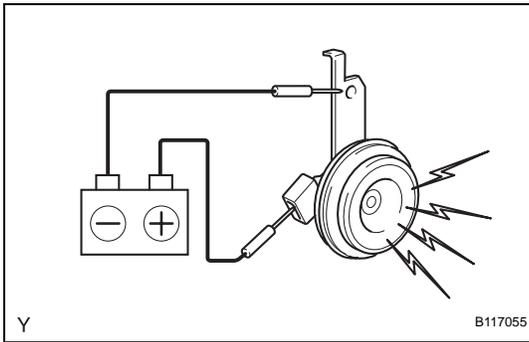
- (a) Measure the resistance of the switch.

**Standard resistance**



Tester Connection	Switch Condition	Specified Condition
1 - 2	Pushed (OFF)	10 k $\Omega$ or higher
	Not pushed (ON)	Below 1 $\Omega$

If the result is not as specified, replace the switch.



## SECURITY HORN ASSEMBLY

### INSPECTION

#### 1. INSPECT SECURITY HORN ASSEMBLY

- (a) Apply battery voltage to the horn and check the operation of the horn.

**OK**

Measurement Condition	Specified Condition
Battery positive (+) → Terminal 1 Battery negative (-) → Horn bracket	Horn sounds

If the result is not as specified, replace the horn assembly.

**TD**