

SECURITY INDICATOR CIRCUIT

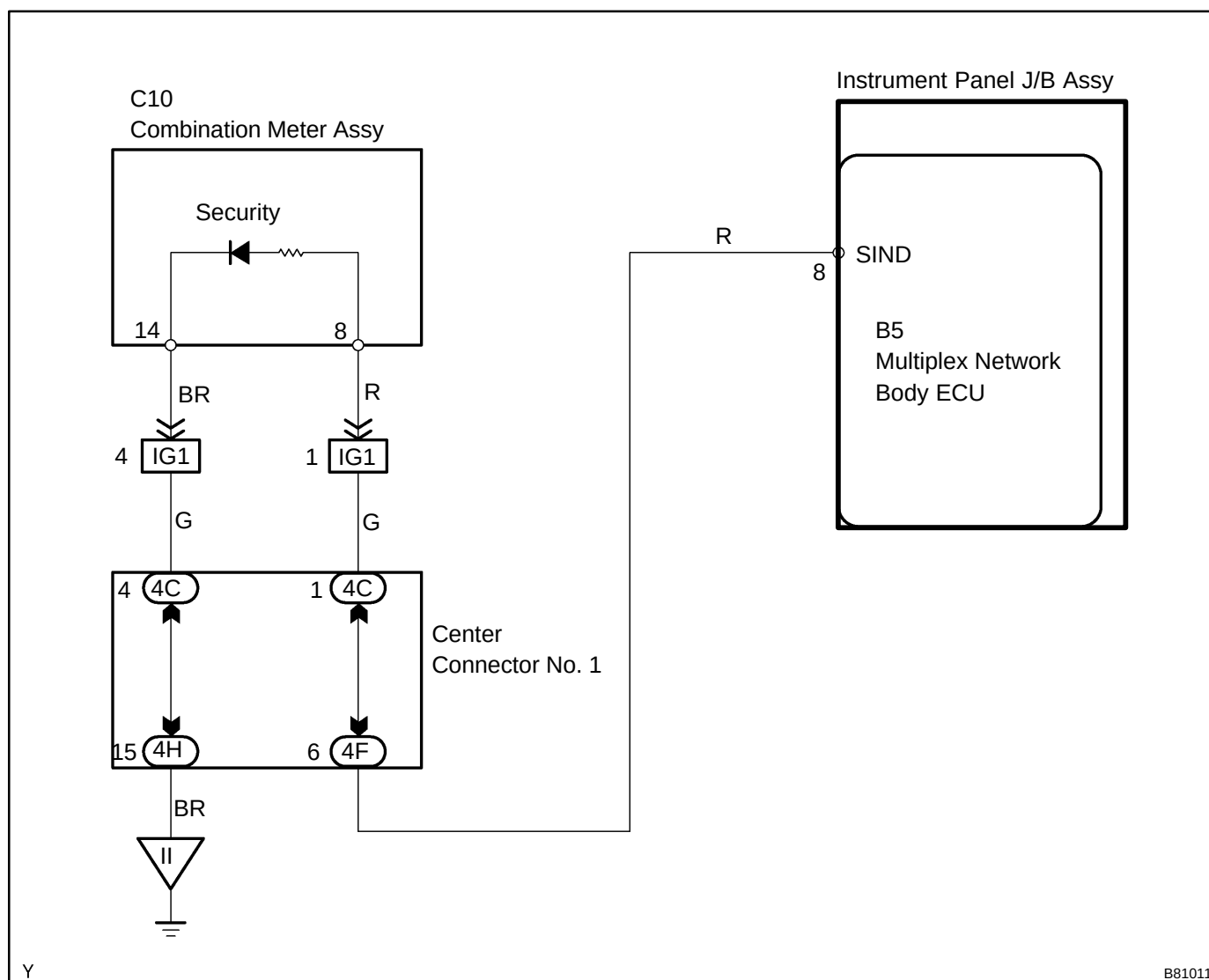
CIRCUIT DESCRIPTION

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

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

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

WIRING DIAGRAM



Y

B81011

INSPECTION PROCEDURE

1 PERFORM ACTIVE TEST USING HAND-HELD TESTER

- (a) Connect the hand-held tester (with CAN VIM) to the DLC3.
- (b) Turn the power switch ON (IG) and press the hand-held tester main switch ON.
- (c) Select the item below in the ACTIVE TEST and then check that the indicator operates.

Multiplex network body ECU:

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

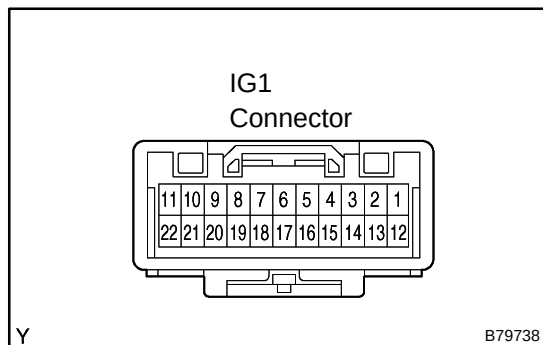
OK: "OFF"(theft deterrent system is "Disarmed state") appears on the screen.

NG

Go to step 2

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN ON PROBLEM SYMPTOMS TABLE
(See page [05-2508](#))

2 CHECK WIRE HARNESS (IG1 CONNECTOR – BODY GROUND)

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

Standard:

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

NG

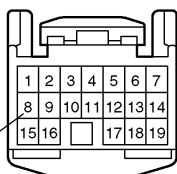
REPAIR OR REPLACE HARNESS AND CONNECTOR

OK

3 CHECK WIRE HARNESS (MULTIPLEX NETWORK BODY ECU – COMBINATION METER ASSY)

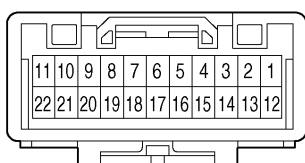
Wire Harness Side

B5
Multiplex Network Body ECU



SIND

IG1
Connector



Y

B81009

- Disconnect the B5 ECU connector.
- Disconnect the IG1 connector.
- Measure the resistance of the wire harness side connectors.

Standard:

Tester Connection	Specified Condition
B5-8 (SIND) – IG1-1	Below 1 Ω

NG

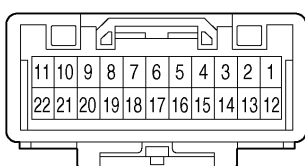
REPAIR OR REPLACE HARNESS AND CONNECTOR

OK

4 INSPECT COMBINATION METER ASSY (SECURITY INDICATOR OPERATION)

Wire Harness Side

IG1
Connector



Y

B79738

- Disconnect the IG1 connector.
- Apply 12 V positive voltage to the terminals of the combination meter. Check that the security indicator illuminates.

Standard:

Measurement Condition	Specified Condition
Body positive (+) → Terminal 1	Illuminates
Body negative(–) → Terminal 4	

NOTICE:

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

NG

REPLACE COMBINATION METER ASSY

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN ON PROBLEM SYMPTOMS TABLE
(See page 05-2508)

CUSTOMIZE PARAMETERS

HINT:

The following items can be customized.

Theft deterrent system:

DISPLAY (ITEM)	DEFAULT	CONTENTS	SETTING
PASSIVE MODE (Passive arming mode)	OFF	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 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: • Unlock any door by key or wireless operation • Reconnect battery • Insert key into key slot and turn power switch ON (IG).	ON/OFF
WARN BY HORN (Warning by horn)	ON	Function that allows vehicle horn and theft deterrent horn to be able to be used as a warning device	ON/OFF
ENTRY DELAY (Entry delay time)	14 s	Function that changes entry delay time (time before warning starts)	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

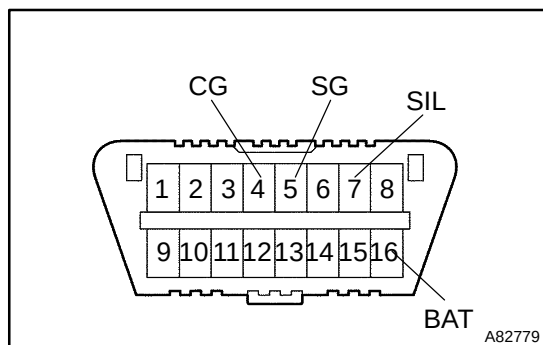
NOTICE:

- When the customer requests a change in a function, first make sure that customization of the function(s) 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 not set to OFF.

DIAGNOSIS SYSTEM

1. DESCRIPTION

- (a) Theft deterrent system data and the Diagnosis Trouble Codes (DTCs) can be read in the Data Link Connector 3 (DLC3) of the vehicle. When the system seems to be malfunctioning, use the hand-held tester to check for malfunctions and perform repairs.



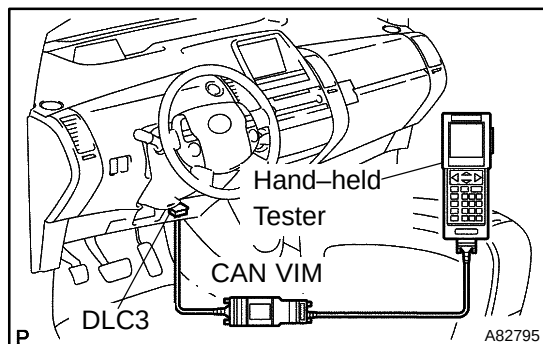
2. CHECK DLC3

HINT:

The vehicle uses the ISO 15765-4 for 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	Constant
SG	5	Signal ground	Body ground	Below 1 Ω	Constant
BAT	16	Battery positive	Body ground	11 to 14 V	Constant

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 hand-held tester (with CAN VIM) to the DLC3, turn the power switch ON (IG) and attempt to use the hand-held tester. If the screen displays UNABLE TO CONNECT TO VEHICLE, a problem exists in the vehicle side or tester side.

- If communication is normal when the tester is connected to another vehicle, inspect the DLC3 of the original vehicle.
- If communication is still impossible 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. CHECK BATTERY VOLTAGE

Standard: 11 to 14 V

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

DATA LIST/ACTIVE TEST

1. DATA LIST

HINT:

Using the hand-held tester DATA LIST allows switch, sensor, actuator and other item value to be read without removing any parts. Reading the DATA LIST early in troubleshooting is one way to shorten labor time.

- Connect the hand-held tester (with CAN VIM) to the DLC3.
- Turn the power switch ON (IG).
- Read the DATA LIST according to the display on the tester.

Multiplex network 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 CTY SW	Rear door courtesy switch signal / ON or OFF	ON: Either right or left rear door is open OFF: Both right or left rear doors are closed	–
B DOR OPEN SW	Back door open switch signal / ON or OFF	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 door lock is in unlock position OFF: Passenger door lock is in lock position	–
D LOCK POS SW	Driver door lock position switch signal / ON or OFF	ON: Driver door lock is in unlock position OFF: Driver door lock is in lock position	–
HOOD COURTDY SW	Engine hood courtesy switch signal / ON or OFF	ON: Engine hood is open OFF: Engine hood is close	–
IG SW	Power switch signal / ON or OFF	ON: Power switch is pushed OFF: Power switch is not pushed	–

2. ACTIVE TEST

HINT:

Performing the hand-held tester 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 shorten labor time. The DATA LIST can be displayed during the ACTIVE TEST.

- (a) Connect the hand-held 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.

Multiplex network body ECU:

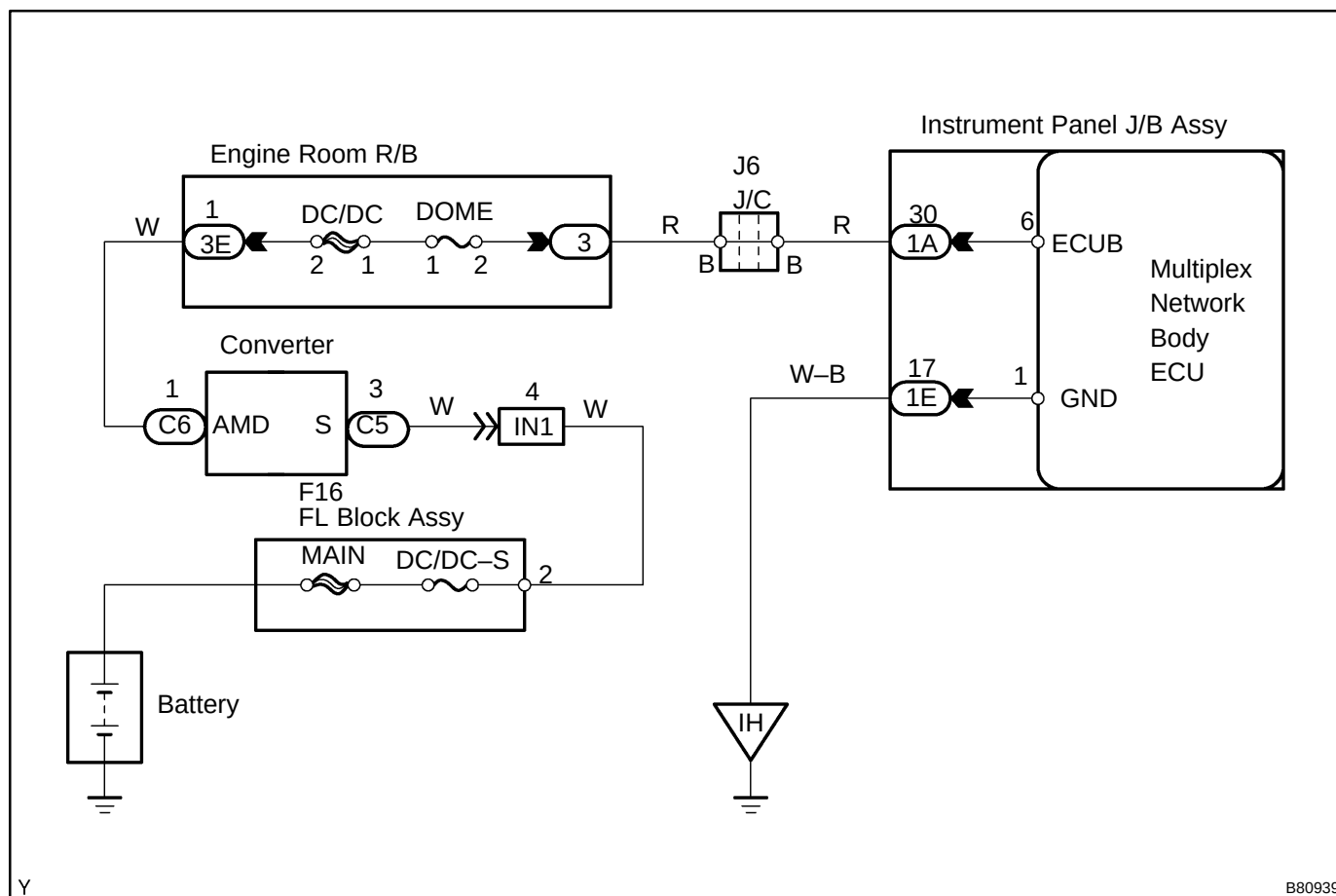
Item	Tester Detail	Diagnostic Note
SECURITY INDIC	Security indicator ON/OFF	–
SECURITY HORN	Security horn ON/OFF	–
VEHICLE HORN	Vehicle horn ON/OFF	–

ECU POWER SOURCE CIRCUIT

CIRCUIT DESCRIPTION

This circuit provides power to operate the multiplex network body ECU.

WIRING DIAGRAM



INSPECTION PROCEDURE

1 INSPECT FUSE (DOME, DC/DC)

- (a) Remove the DOME and DC/DC fuses from the engine room R/B.
 (b) Measure the resistance.

Standard: Below 1 Ω

NG

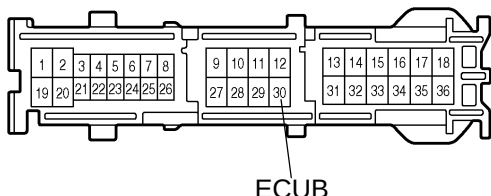
REPLACE FUSE

OK

2 CHECK WIRE HARNESS (INSTRUMENT PANEL JUNCTION BLOCK ASSY – BATTERY AND BODY GROUND)**Wire Harness Side**

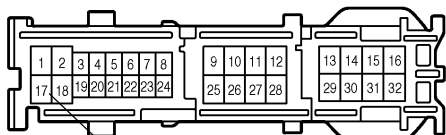
1A

Instrument Panel J/B Assy



1E

Instrument Panel J/B Assy



Y

GND

B75912

- (a) Disconnect the 1A and 1E J/B connectors.
 (b) Measure the voltage and resistance of the wire harness side connector.

Standard:

Tester Connection	Specified Condition
1A-30 (ECUB) – Body ground	10 to 14 V
1E-17 (GND) – Body ground	Below 1 Ω

NG

REPAIR OR REPLACE HARNESS AND CONNECTOR

OK

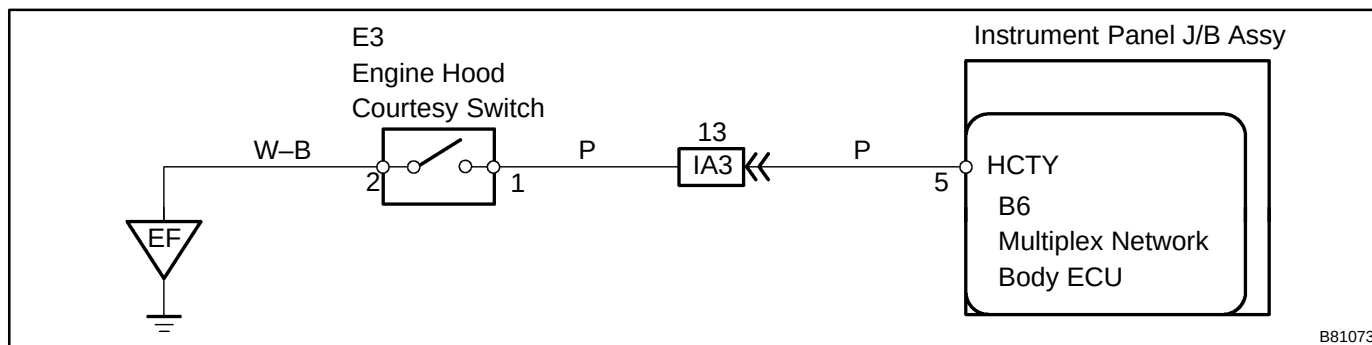
PROCEED TO NEXT CIRCUIT INSPECTION SHOWN ON PROBLEM SYMPTOMS TABLE (See page 05-2508)

ENGINE HOOD COURTESY SWITCH CIRCUIT

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



INSPECTION PROCEDURE

1 READ VALUE OF HAND-HELD TESTER

- Connect the hand-held tester (with CAN VIM) to the DLC3.
- Turn the power switch ON (IG) and press the hand-held tester main switch ON.
- Read the DATA LIST according to the displays on the tester.

Multiplex network body ECU:

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

OK: "ON" (engine hood is open) appears on the screen.

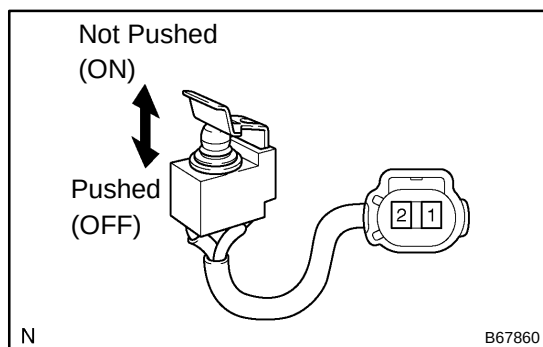
NG

Go to step 2

OK

REPLACE POWER SOURCE CONTROL ECU

2 INSPECT ENGINE HOOD COURTESY SWITCH



- Remove the courtesy switch from the hood lock.
- Measure the switch resistance.

Standard:

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

NG

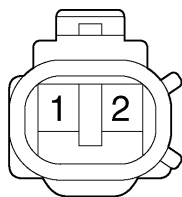
REPLACE ENGINE HOOD COURTESY SWITCH

OK

3 CHECK WIRE HARNESS (ENGINE HOOD COURTESY SWITCH – BODY GROUND)**Wire Harness Side**

E3

Engine Hood Courtesy Switch



Y

B67849

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

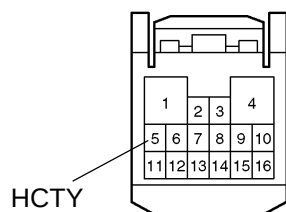
Standard:

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

NG**REPAIR OR REPLACE HARNESS AND CONNECTOR****OK****4 CHECK WIRE HARNESS (MULTIPLEX NETWORK BODY ECU – ENGINE HOOD COURTESY SWITCH)****Wire Harness Side**

B6

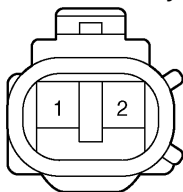
Multiplex Network Body ECU



HCTY

E3

Engine Hood Courtesy Switch



Y

B75921

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

Standard:

Tester Connection	Specified Condition
B6-5 (HCTY) – E3-1	Below 1 Ω
B6-5 (HCTY) – Body ground	10 k Ω or higher

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

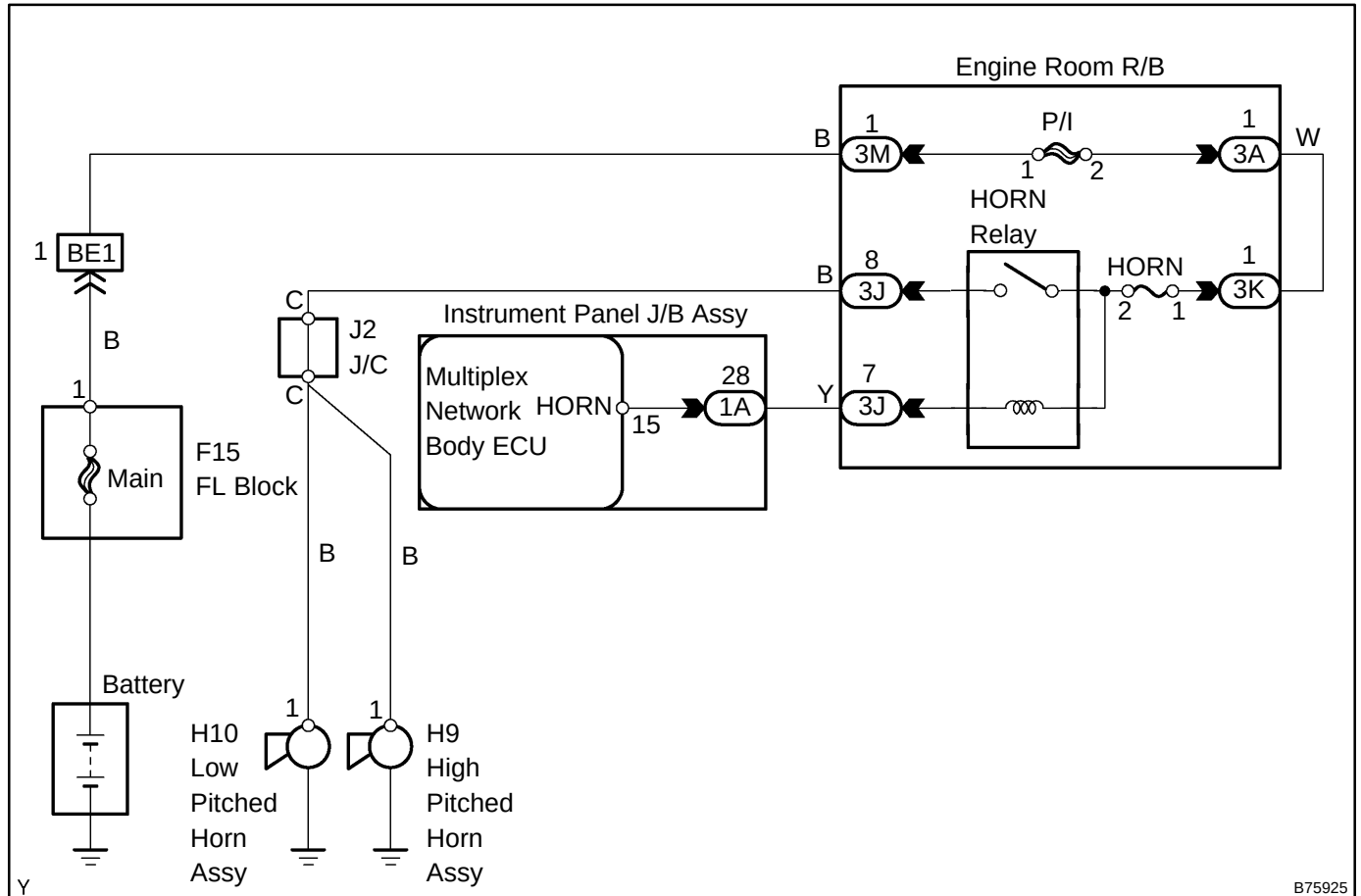
PROCEED TO NEXT CIRCUIT INSPECTION SHOWN ON PROBLEM SYMPTOMS TABLE
 (See page [05-2508](#))

HORN CIRCUIT

CIRCUIT DESCRIPTION

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

WIRING DIAGRAM



B75925

cardiagn.com

INSPECTION PROCEDURE

1 PERFORM ACTIVE TEST USING HAND-HELD TESTER

- (a) Connect the hand-held tester (with CAN VIM) to the DLC3.
- (b) Turn the power switch ON (IG) and press the hand-held tester main switch ON.
- (c) Select the item below in the ACTIVE TEST and then check that the horn operates.

Multiplex network body ECU:

Item	Tester Detail	Diagnostic Note
VEHICLE HORN	Vehicle horn ON/OFF	–

OK: Vehicle horn sounds normally.

NG

Go to step 2

OK

REPLACE MULTIPLEX NETWORK BODY ECU

2 INSPECT FUSE (HORN)

- (a) Remove the HORN fuse from the engine room R/B.
- (b) Measure the resistance.

Standard: Below 1 Ω

NG

REPLACE FUSE

OK

3 CHECK HORN ASSY

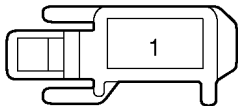
- (a) Press the horn switch and check if the horn sounds.
 - (1) If the horn sounds, proceed to A.
 - (2) If the horn does not sound, proceed to B.

B

Go to step 4

A

REPLACE INSTRUMENT PANEL JUNCTION BLOCK ASSY

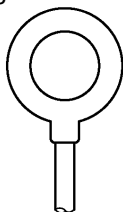
4 CHECK WIRE HARNESS**Wire Harness Side**H9, H10
Horn Assy

B75286

- (a) Disconnect the H9 and H10 connectors.
(b) Measure the voltage of the wire harness side connectors.

Standard:

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

NG**Go to step 5****OK****REPLACE HORN ASSY****5 CHECK WIRE HARNESS (ENGINE ROOM R/B – BATTERY)****Wire Harness Side**3M
Engine Room R/B

Y

B74501

- (a) Disconnect the 3M R/B connector.
(b) Measure the voltage of the wire harness side connector.

Standard:

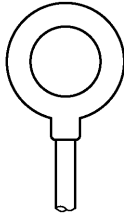
Tester Connection	Condition	Specified Condition
3M-1 – Body ground	Constant	10 to 14 V

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

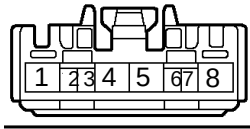
6 CHECK WIRE HARNESS (ENGINE ROOM R/B – HORN ASSY AND BODY GROUND)

Wire Harness Side

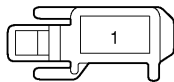
3A
Engine Room R/B



3K, 3J
Engine Room R/B



H9, H10
Horn Assy



B81027

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

Standard:

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

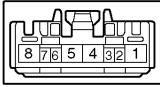
NG

REPAIR OR REPLACE HARNESS AND CONNECTOR

OK

7 INSPECT ENGINE ROOM R/B

3J
Engine Room R/B



Y

B80053

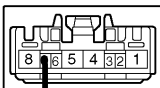
- (a) Disconnect the 3J R/B connector.
- (b) Measure the voltage of the terminal side connector.

Standard:

Tester Connection	Condition	Specified Condition
3J-7 – Body ground	Constant	10 to 14 V

NG**REPLACE ENGINE ROOM R/B****OK****8 INSPECT ENGINE ROOM R/B (OPERATION CHECK)**

3J
Engine Room R/B



Y

B81034

- (a) Reconnect the 3J J/B connector.
- (b) Check that the horn sounds.

Standard:

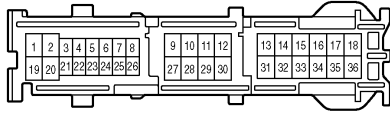
Connection	Specified Condition
When connect R/B terminal 3J-7 and Body ground	Horn sounds
When does not connect R/B terminal 3J-7 and Body ground	Horn not sounds

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

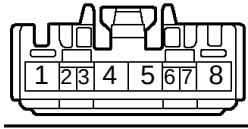
9 CHECK WIRE HARNESS (INSTRUMENT PANEL J/B – ENGINE ROOM R/B AND BODY GROUND)

Wire Harness Side

1A
Instrument Panel J/B



3J
Engine Room R/B



B81037

- (a) Disconnect the 1A J/B connector.
- (b) Disconnect the 3J R/B connector.
- (c) Measure the resistance of the wire harness side connectors.

Standard:

Tester Connection	Specified Condition
1A-28 (HORN) – 3J-7	Below 1 Ω
1A-28 (HORN) or 3J-7 – Body ground	10 k Ω or higher

NG

REPAIR OR REPLACE HARNESS AND CONNECTOR

OK

REPLACE INSTRUMENT PANEL J/B ASSY

INSPECTION PROCEDURE

1 INSPECT FUSE (ECU-IG, AM1)

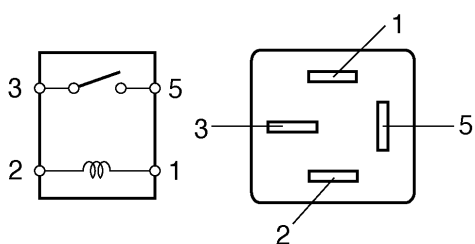
- (a) Remove the ECU-IG and AM1 fuses from the instrument panel J/B.
 (b) Measure the resistance.

Standard: Below 1 Ω

NG

REPLACE FUSE

OK

2 INSPECT RELAY (IG1)**IG1 RELAY**

T

A92673

- (a) Remove the IG1 relay from the instrument panel J/B.
 (b) Check operation of the IG1 relay.

Standard:

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

NG

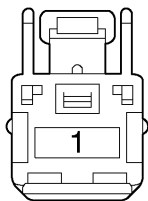
REPLACE RELAY

OK

3 CHECK WIRE HARNESS (INSTRUMENT PANEL J/B ASSY – BATTERY)**Wire Harness Side**

1B

Instrument Panel J/B Assy



Y

B67853

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

Standard:

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

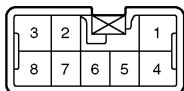
NG

REPAIR OR REPLACE HARNESS AND CONNECTOR

OK

4 CHECK INSTRUMENT PANEL JUNCTION BLOCK ASSY

1J
Instrument Panel J/B Assy



Y

B75916

- (a) Measure the voltage between terminal of the connector and body ground.

Standard:

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

NG

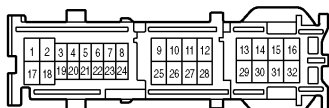
REPLACE INSTRUMENT PANEL J/B

OK

5 CHECK WIRE HARNESS (INSTRUMENT PANEL J/B ASSY – BODY GROUND)

Wire Harness Side

1E
Instrument Panel J/B Assy



Y

B75917

- (a) Disconnect the 1E J/B connector.
(b) Measure the resistance of the wire harness side connector.

Standard:

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

NG

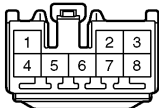
REPAIR OR REPLACE HARNESS AND CONNECTOR

OK

6 CHECK POWER SOURCE CONTROL ECU (AM1, IG1D VOLTAGE)

Wire Harness Side

1J
Instrument Panel J/B Assy



Y

B75918

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

Standard:

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

NG

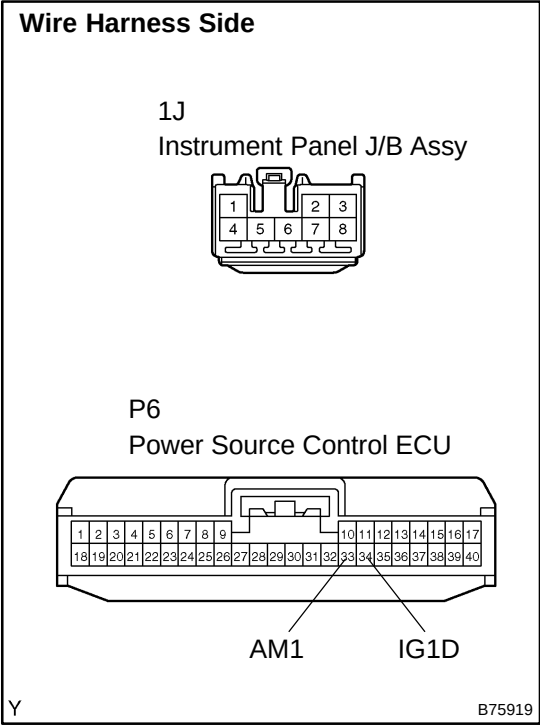
Go to step 7

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN ON PROBLEM SYMPTOMS TABLE (See page 05-2508)

7

CHECK WIRE HARNESS (POWER SOURCE CONTROL ECU – INSTRUMENT PANEL JUNCTION BLOCK ASSY)



- (a) Disconnect the 1J J/B connector.
- (b) Disconnect the P6 ECU connector.
- (c) Measure the resistance of the wire harness side connectors.

Standard:

Tester Connection	Specified Condition
1J-1 – P6-33 (AM1)	Below 1 Ω
1J-3 – P6-34 (IG1D)	Below 1 Ω
1J-1 – Body ground	10 kΩ or higher
1J-3 – Body ground	10 kΩ or higher

NG

REPAIR OR REPLACE HARNESS AND CONNECTOR

OK

PROCEED TO PUSH BUTTON START SYSTEM (See page 05-2429)

ON-VEHICLE INSPECTION

1. OUTLINE OF THEFT DETERRENT SYSTEM

- (a) When the theft deterrent system detects that the vehicle is being tampered with, the vehicle horn and security horn will sound; room lamps will light up; and hazard warning lamps, taillamps and headlamps will flash continuously.
- (b) The system has two modes: active arming mode (see step 2) and passive arming mode (see step 3). Passive arming mode can be toggled ON and OFF (see step 4).
- (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.

Alarm time: 60 ± 5 seconds

- (4) Alarm sounding state:
 - The alarm function is operating.

Refer to table below for alarm method and time:

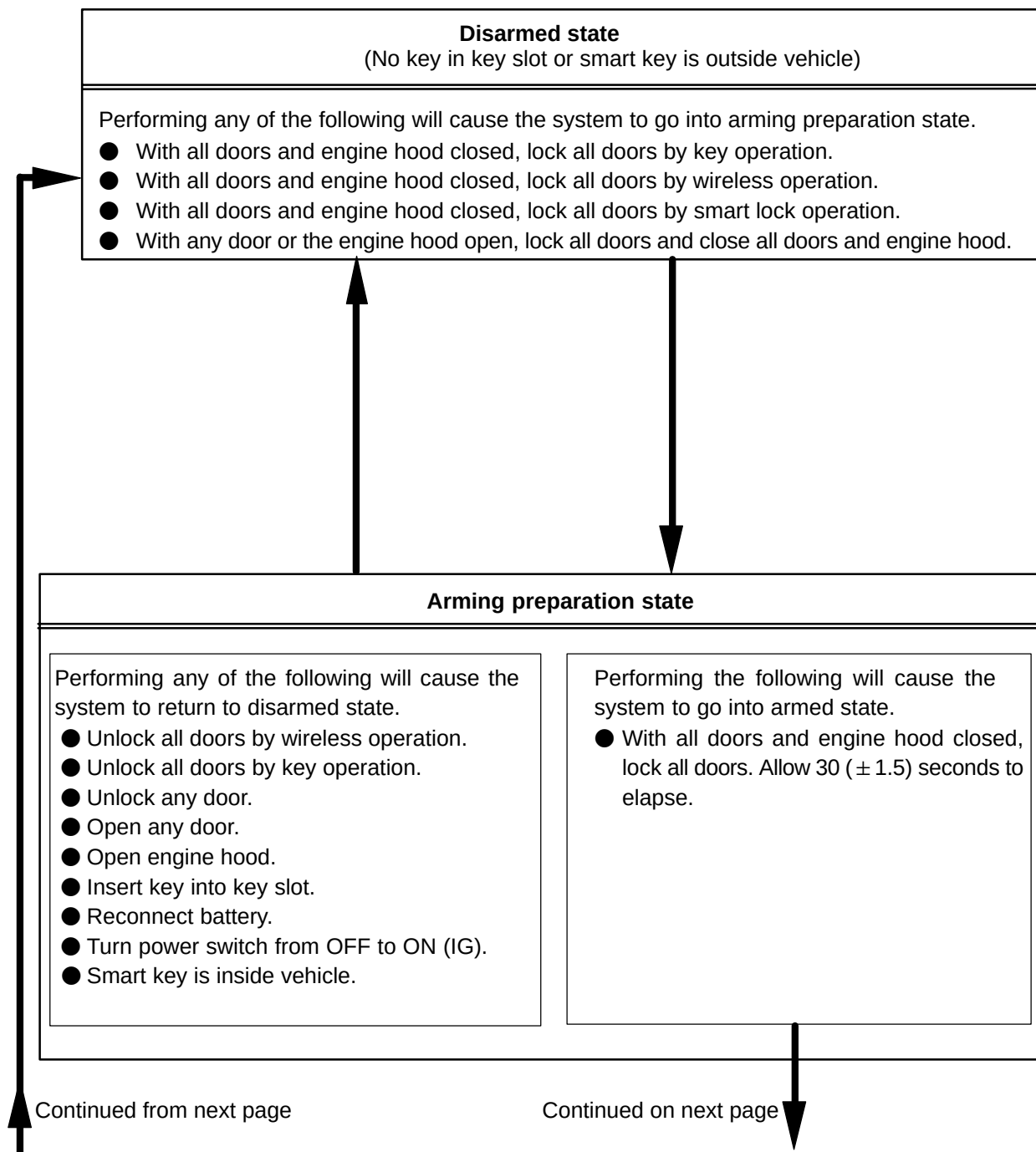
Alarm Method	Headlamp	Blinking (cycle of 0.4 seconds)
	Taillamp	Blinking (cycle of 0.4 seconds)
	Hazard Warning Lamp	Blinking (cycle of flasher relay)
	Room Lamp	Illuminated
	Vehicle Horn	Sounding (cycle of 0.4 seconds)
	Security Horn	Sounding (cycle of 0.4 seconds)
Alarm Time	60 ± 5 seconds	

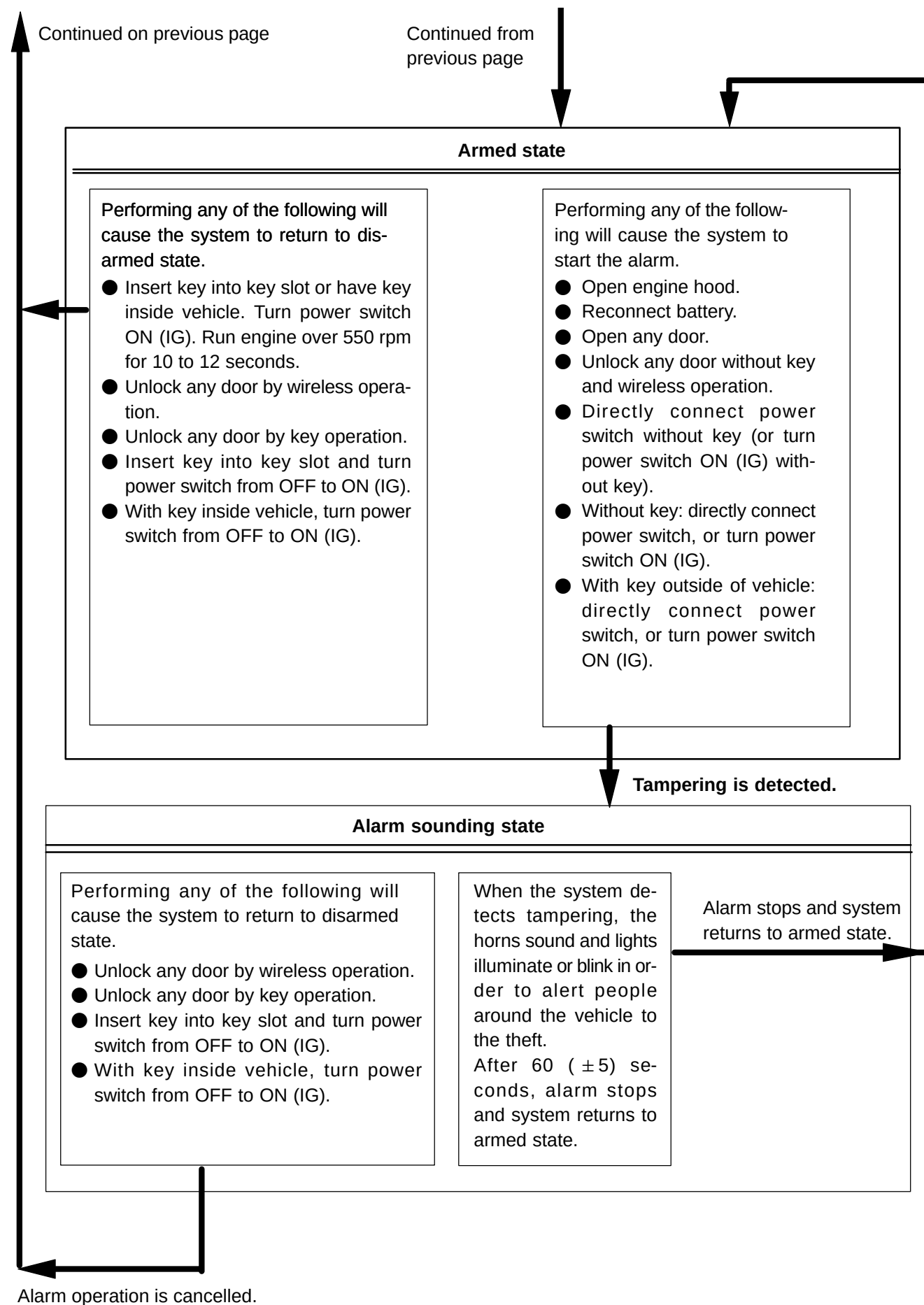
HINT:

During the alarm sounding state, a forced door lock signal (see step 5) will be output if: 1) one of the doors is unlocked and no key is in the key slot, or 2) the smart key is outside of the vehicle.

2. ACTIVE ARMING MODE

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





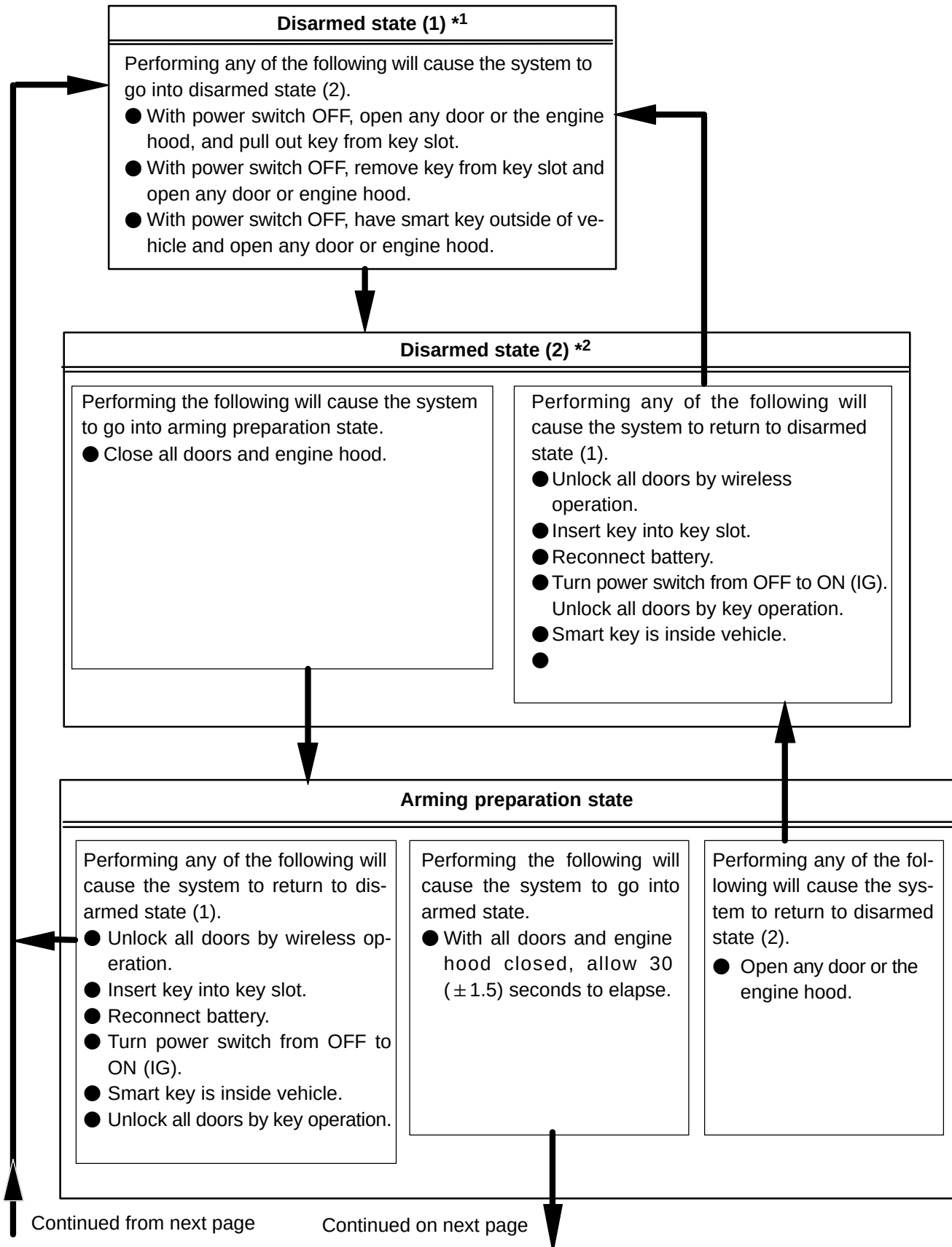
3. PASSIVE ARMING MODE

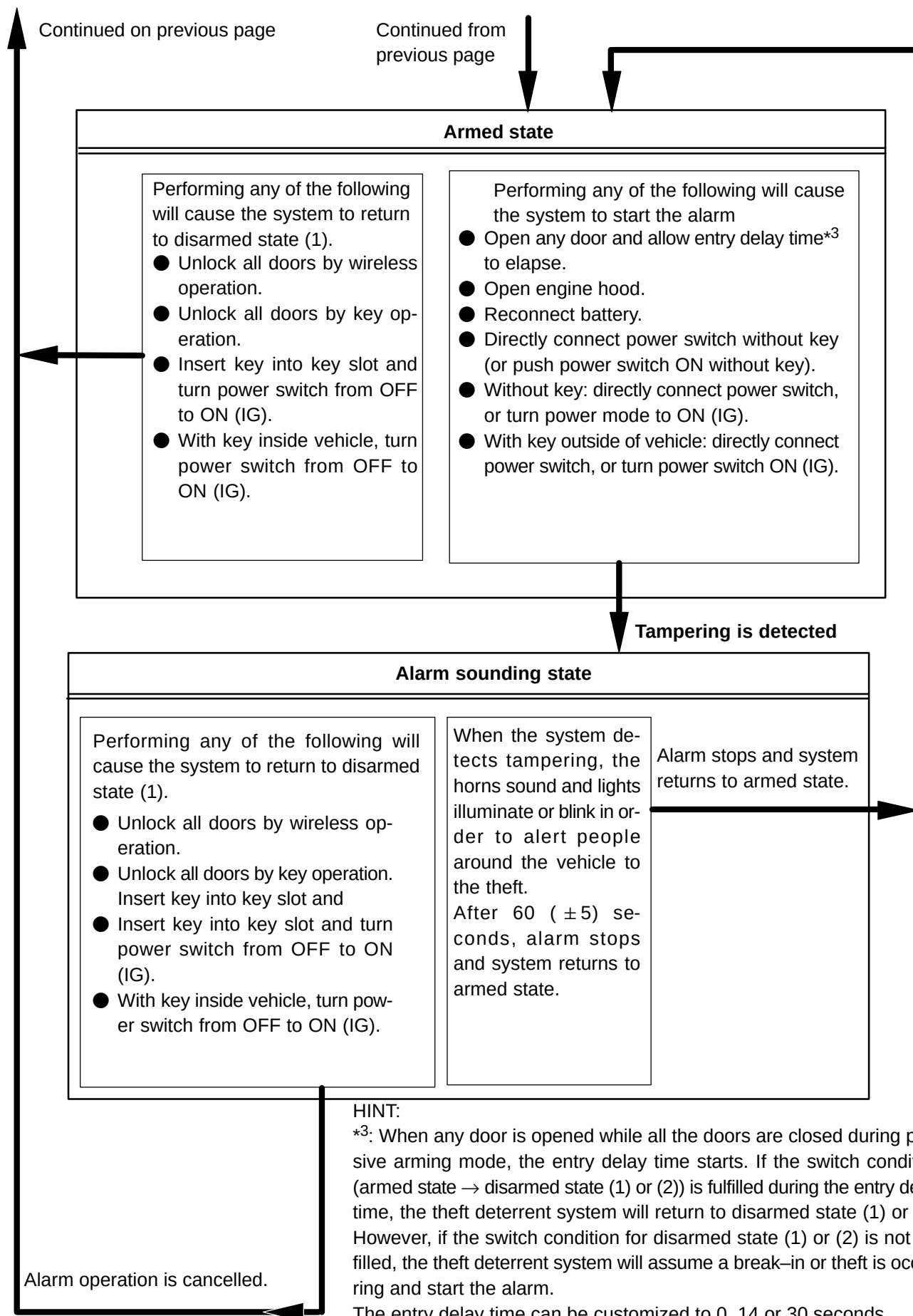
- Passive arming mode can be switched ON/OFF (see step 4).
- The vehicle's initial alarm setting is active arming mode.
- During passive arming mode, the theft deterrent system enters the armed state even if the doors are not locked.
- Passive arming mode starts the alarm control if: 1) the key is removed from the key slot and then all doors are closed, or 2) the smart key is outside of the vehicle and then all doors are closed.
- Detecting that the doors are unlocked does not set off the alarm during passive arming mode.
- A forced door lock signal (see step 5) is not output during passive arming mode.
- 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 any of the following conditions is fulfilled during passive arming mode, the theft deterrent system will switch to active arming mode.
 - With all doors and engine hood closed, lock all doors by key operation.
 - With all doors and engine hood closed, lock all doors by wireless operation.
 - With all doors and engine hood closed, lock all doors by smart lock operation.
 - With any door or the engine hood open, lock all doors and close all doors and engine hood.

HINT:

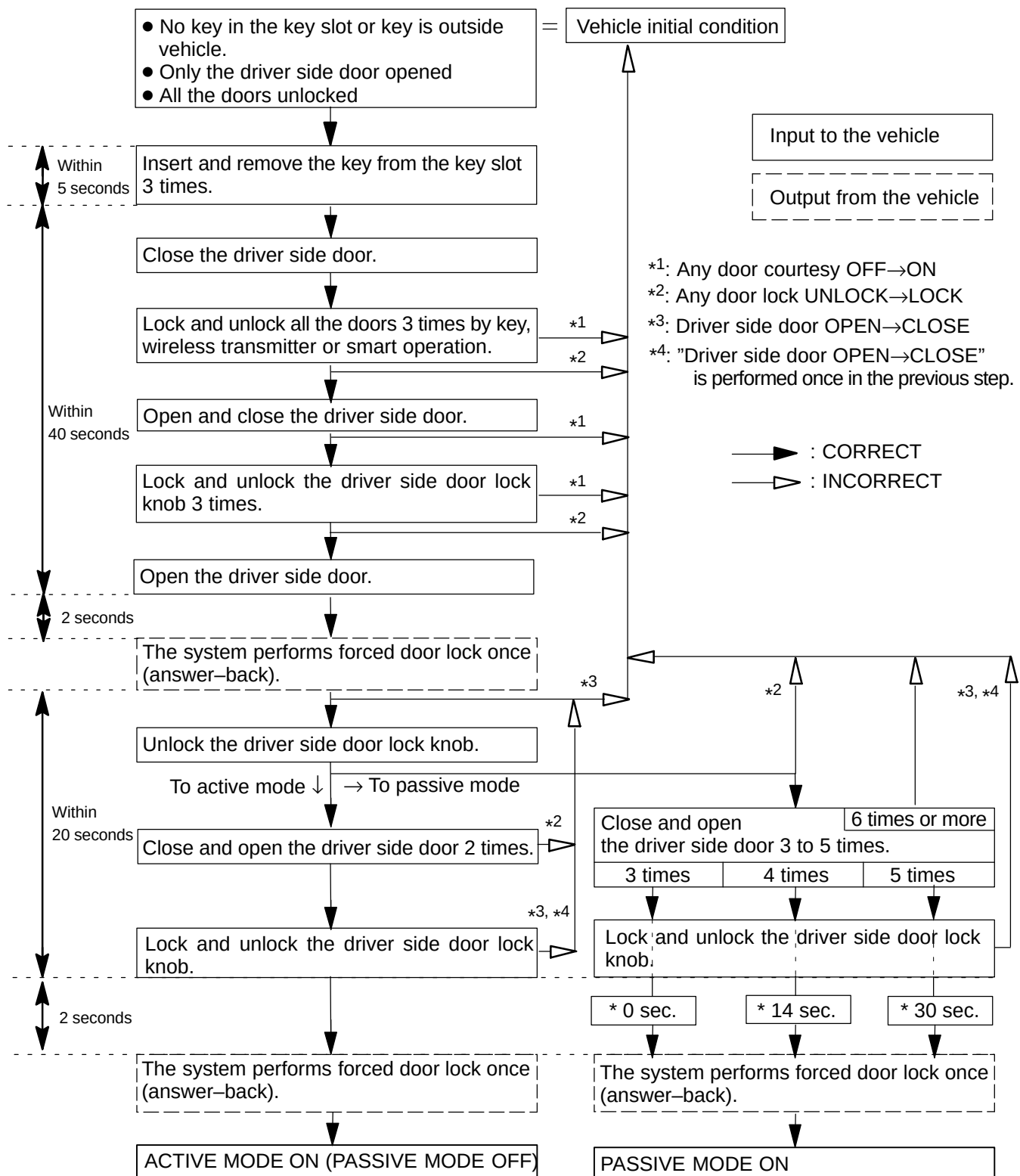
*1: Disarmed state (1) is the normal disarmed state.

*2: Disarmed state (2) is set from either the disarmed state (1) or the arming preparation state.





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



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 or key is outside vehicle.
- 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 armed, the alarm memory function will record it. Whenever the theft deterrent system is cancelled, the alarm memory function causes the taillamps to light up 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 taillamps to illuminate:

When the theft deterrent system has entered into the alarm sounding state (tampering has been detected) even once, the taillamps will light up for 2 seconds if any of the following conditions are 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 more information about the active arming mode, see step 2. For more information about the passive arming mode, see step 3.

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 by pressing the PANIC switch on the wireless transmitter 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 off the alarm:

The panic alarm control shuts off the panic alarm when any of the following conditions is fulfilled during panic alarm operation:

- 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 more information about the active arming mode, see step 2. For more information about the passive arming mode, see step 3.

8. SECURITY INDICATOR OUTPUT

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

Output:

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

Blinking cycle:

Time	Security Indicator
0.2 seconds	ON
1.8 seconds	OFF

HINT:

*: Same for active arming mode and passive arming mode

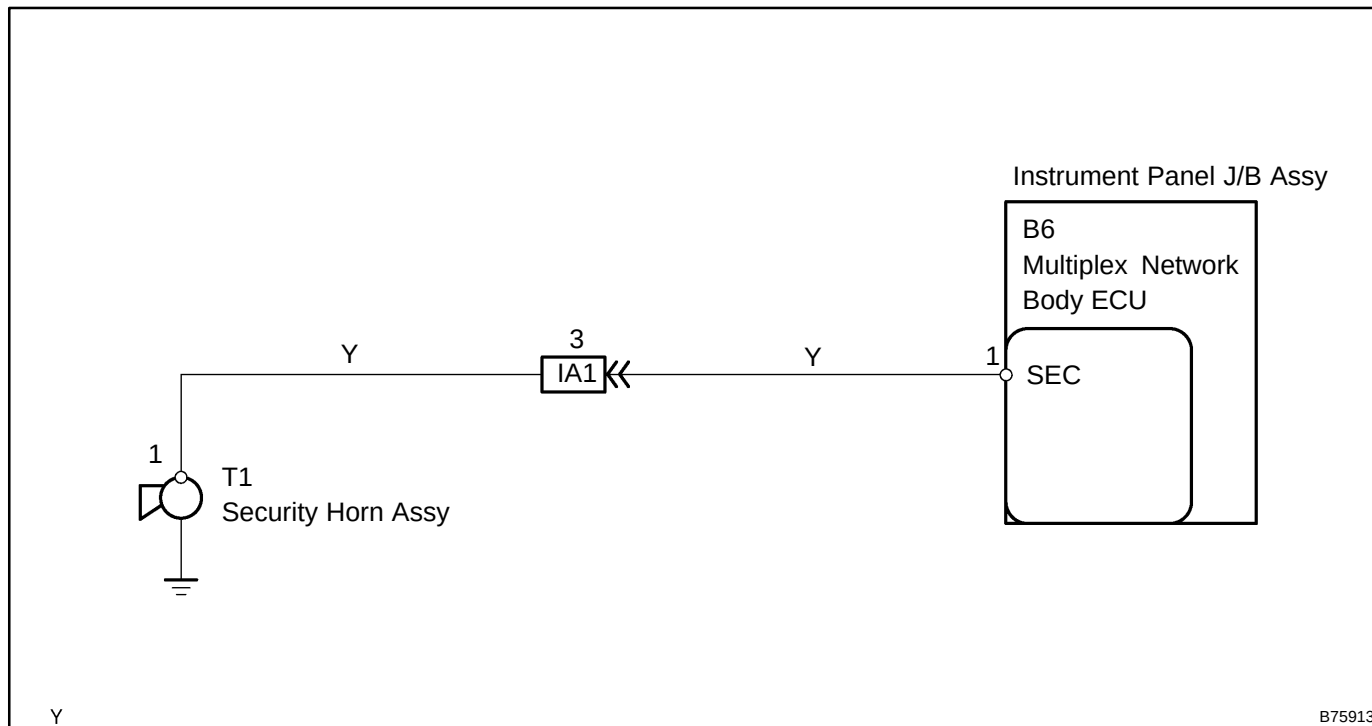
- When the immobilizer system is set, the security indicator blinks during the disarmed state and the armed state due to the output signals from the immobiliser system.

SECURITY HORN CIRCUIT

CIRCUIT DESCRIPTION

When the theft deterrent system is operating, a relay in the multiplex network body ECU turns ON and OFF continuously at 0.2 seconds intervals, causing the security horn to sound.

WIRING DIAGRAM



INSPECTION PROCEDURE

1 PERFORM ACTIVE TEST USING HAND-HELD TESTER

- Connect the hand-held tester (with CAN VIM) to the DLC3.
- Turn the power switch ON (IG) and press the hand-held tester main switch ON.
- Select the item below in the ACTIVE TEST and then check that the horn operates.

Multiplex network body ECU:

Item	Tester Detail	Diagnostic Note
SECURITY HORN	Security horn ON/OFF	–

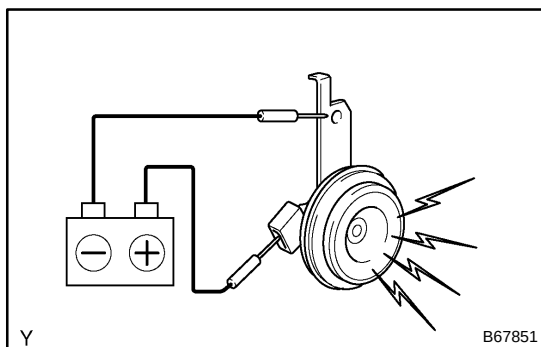
OK: Security horn sounds normally.

NG

Go to step 2

OK

REPLACE INSTRUMENT PANEL J/B ASSY

2 INSPECT SECURITY HORN ASSY

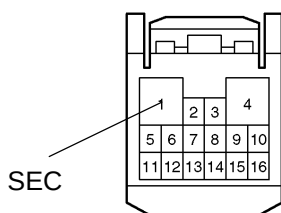
- (a) Check operation of the horn.

OK:

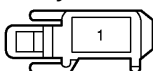
Measurement Condition	Specified Condition
Battery positive (+) → Terminal 1	Horn sounds
Battery negative (-) → Horn bracket	

NG**REPAIR OR REPLACE SECURITY HORN ASSY****OK****3 CHECK WIRE HARNESS (MULTIPLEX NETWORK BODY ECU – SECURITY HORN ASSY)****Wire Harness Side**

B6
Multiplex Network Body ECU



T1
Security Horn Assy



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

Standard:

Tester Connection	Specified Condition
B6-1 (SEC) – T1-1	Below 1 Ω
B6-1 (SEC) – Body ground	10 k Ω or higher

NG**REPAIR OR REPLACE HARNESS AND CONNECTOR****OK****REPLACE INSTRUMENT PANEL J/B ASSY**

SYSTEM DESCRIPTION

1. THEFT DETERRENT SYSTEM DESCRIPTION

The theft deterrent system is designed to deter break-in and theft. If an attempted break-in or theft is detected, a vehicle horn and security horn will sound; room lamps will light up; and hazard warning lamps, tail-lamps and headlamps will flash continuously. The system uses these 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 terminals are disconnected and then reconnected.

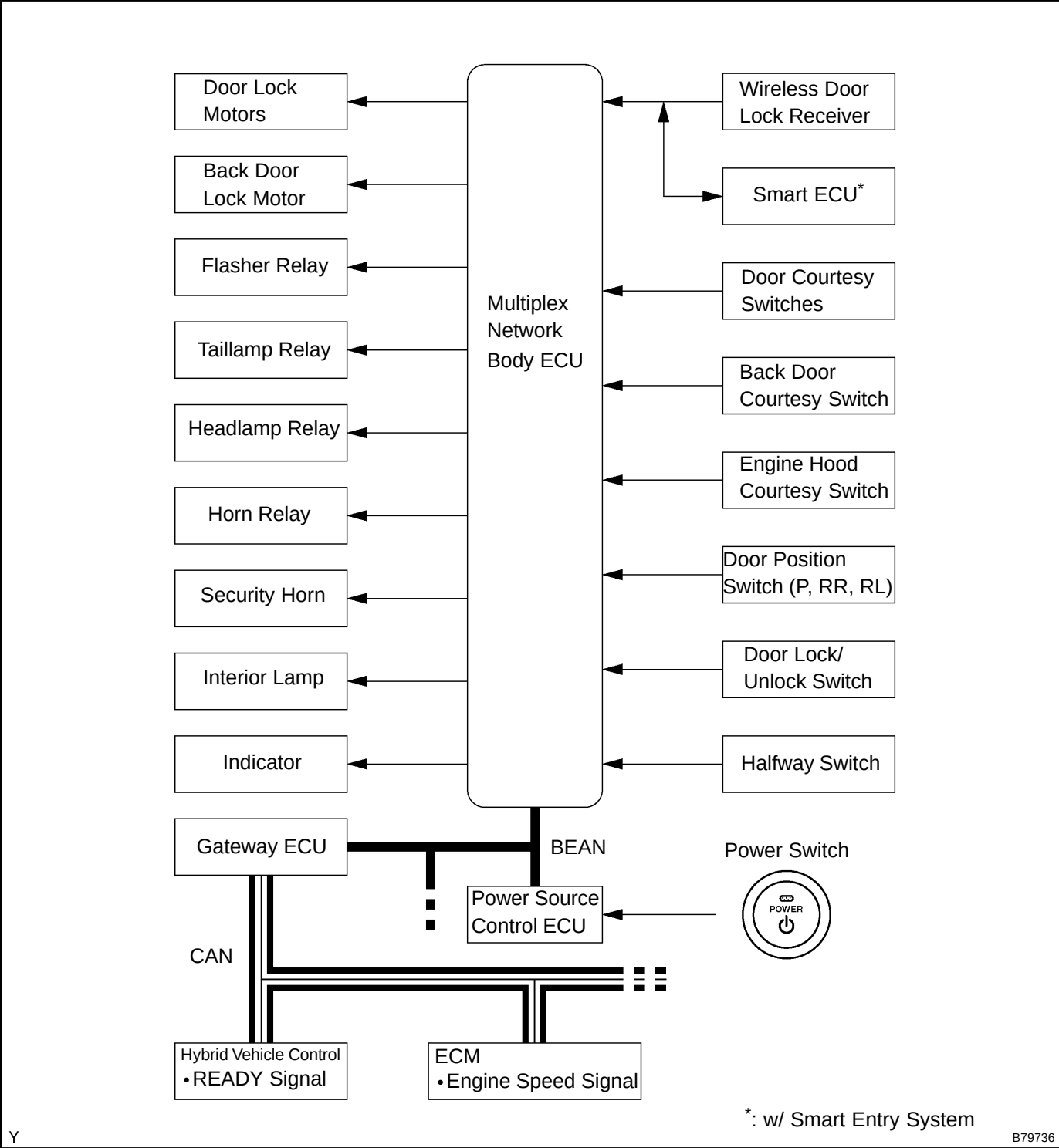
If the system enters the alarm sounding state, any unlocked doors will automatically lock.

The system has 2 modes: active arming mode (see On-Vehicle Inspection, step 2) and passive arming mode (see On-Vehicle Inspection, step 3). Passive arming mode can be toggled ON and OFF (see On-Vehicle Inspection, step 4).

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

- (a) Disarmed state:
 - The alarm function is not operating.
 - The theft deterrent system is not operating.
- (b) Arming preparation state:
 - The theft deterrent system is not operating.
- (c) Armed state:
 - The theft deterrent system is operating (60 ± 5 seconds).
- (d) Alarm sounding state:
 - The alarm function is operating.

SYSTEM DIAGRAM



Sender	Receiver	Signal	Line
Hybrid Vehicle Control ECU	Multiplex Network Body ECU	• Drive OK signal	BEAN/CAN
ECM	Multiplex Network Body ECU	• Engine revolution signal	BEAN/CAN
Power Source Control ECU	Multiplex Network Body ECU	• Power switch signal	BEAN

CUSTOMER PROBLEM ANALYSIS CHECK

THEFT DETERRENT SYSTEM Check Sheet

Inspector's name: _____

Customer's Name		VIN	
		Production Date	
		License Plate No.	
Date Vehicle Brought in	/ /	Odometer Reading	km miles

Date Problem First Occurred	/ /
Frequency Problem Occurs	☐ Constant ☐ Sometimes (times per day, month) ☐ Once only
Weather Conditions When Problem Occurred	Weather ☐ Fine ☐ Cloudy ☐ Rainy ☐ Snowy ☐ Various/Others
	Outdoor Temperature ☐ Hot ☐ Warm ☐ Cool ☐ Cold (Approx. °C (°F))

Problem Symptom

☐ Theft deterrent system cannot be set		
☐ Security indicator does not flash when theft deterrent system is set (It stays ON or does not light up at all)		
☐ Theft deterrent system does not operate	☐ When door is opened ☐ When engine hood is opened	<u>Malfunction</u> (check all that apply) ☐ Horns ☐ Theft deterrent horn ☐ Headlamps ☐ Taillamps ☐ Door lock operation ☐ Hazard warning lamp ☐ Room lamp
☐ Theft deterrent system cannot be canceled once set	☐ When door is unlocked using wireless door lock control system	
☐ Theft deterrent system cannot be canceled during warning operation	☐ When door is unlocked using wireless door lock control system ☐ When key is inserted in key slot and power switch is turned from ON (IG) to OFF 10 times within 15 seconds	
☐ Warning operation does not start when theft deterrent system is set and door is opened with key		
☐ Other		

HOW TO PROCEED WITH TROUBLESHOOTING

HINT:

- Use these procedures to troubleshoot the theft deterrent system.
- The hand-held tester should be used in steps 3 and 5.

1 VEHICLE BROUGHT TO WORKSHOP

2 CUSTOMER PROBLEM ANALYSIS CHECK AND SYMPTOM CHECK (See page 05-2501)

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

- (a) Use the hand-held tester to check for normal function of the multiplex communication system.
- (1) (ECU unconnected, communication stop, communication line malfunctioning)
Without code outputs, proceed to A.
 - (2) (ECU unconnected, communication stop, communication line malfunctioning)
With code outputs, proceed to B.

B

Go to MULTIPLEX COMMUNICATION
SECTION (See page 05-2558)

A

4 PROBLEM SYMPTOMS TABLE (See page 05-2508)

- (a) If the fault is not listed on the problem symptoms table, proceed to A.
- (b) If the fault is listed on the problem symptoms table, proceed to B.

B

Go to step 6

A

5 OVERALL ANALYSIS AND TROUBLESHOOTING

- (a) DATA LIST/ACTIVE TEST (see page 05-2503)
- (1) Inspection with the hand-held tester (DATA LIST).
 - (2) Inspection with the hand-held tester (ACTIVE TEST).
- (b) Terminals of ECU (see page 05-2505)
- (c) On-vehicle inspection (see page 05-2528)

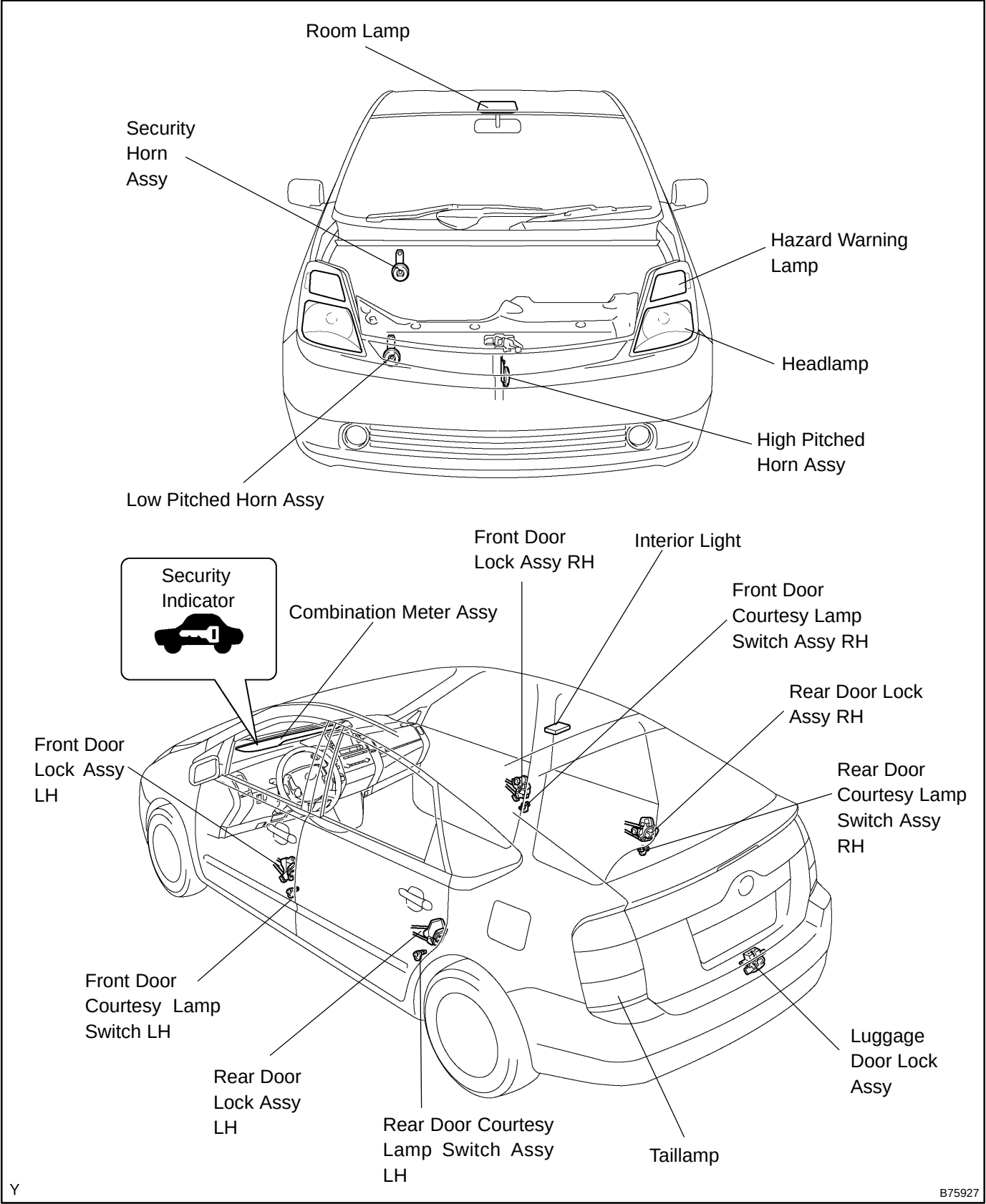
6 ADJUST, REPAIR OR REPLACE

7 CONFIRMATION TEST



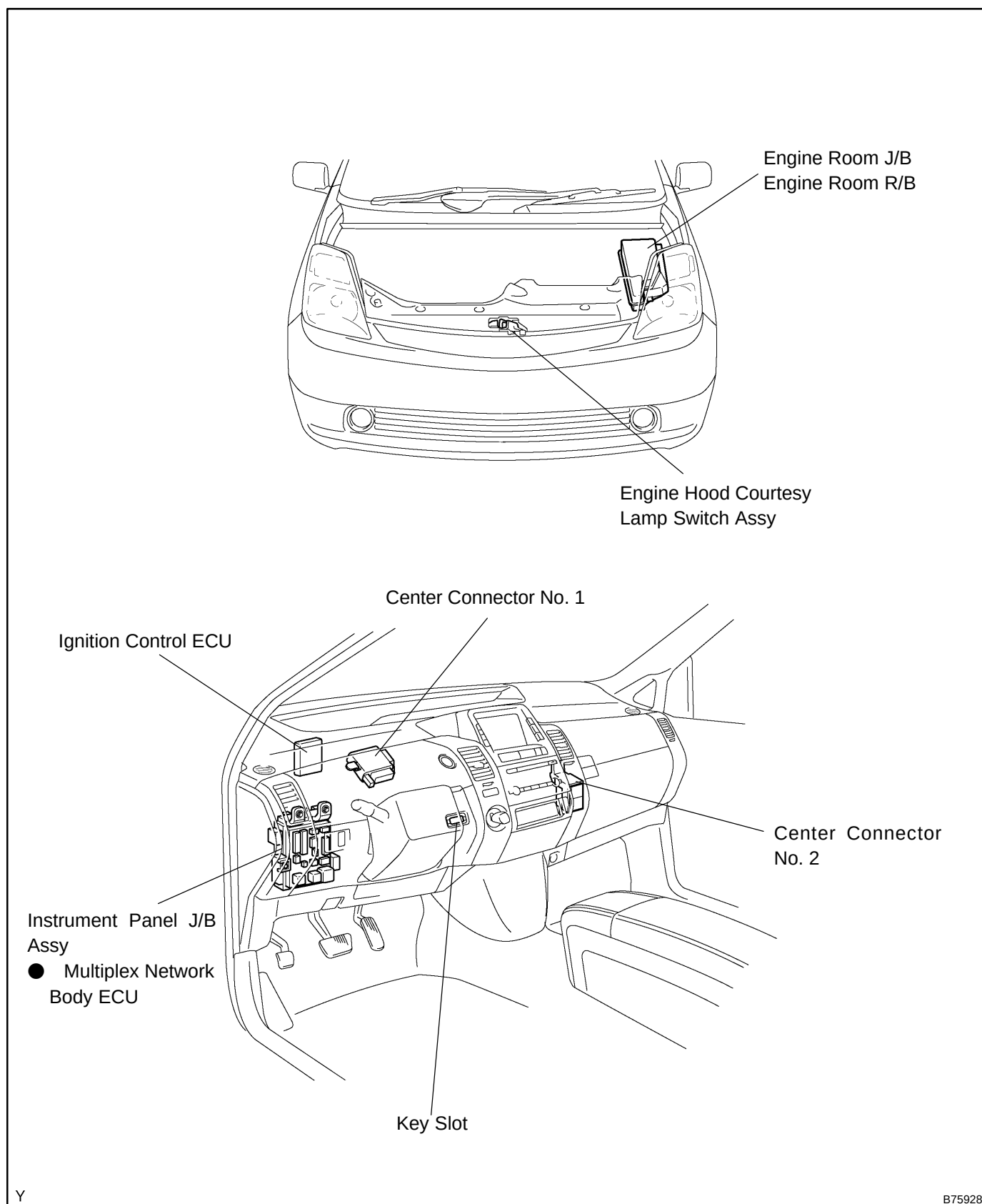
END

LOCATION



Y

B75927



THEFT DETERRENT SYSTEM

05F03-02

PRECAUTION

NOTICE FOR INITIALIZATION:

When disconnecting the negative (–) battery terminal, initialize the following system(s) after the terminal is reconnected.

System Name	See Page
Power Window Control System	05-2028

NOTICE FOR HYBRID SYSTEM ACTIVATION

When the warning lamp 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.

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PROBLEM SYMPTOMS TABLE

Proceed to the reference page shown in the table below for each malfunction symptom and troubleshoot each circuit.

HINT:

The theft deterrent system is based on the premise that the power door lock control system and the wireless door lock control system are operating normally. Check these systems first before troubleshooting the theft deterrent system.

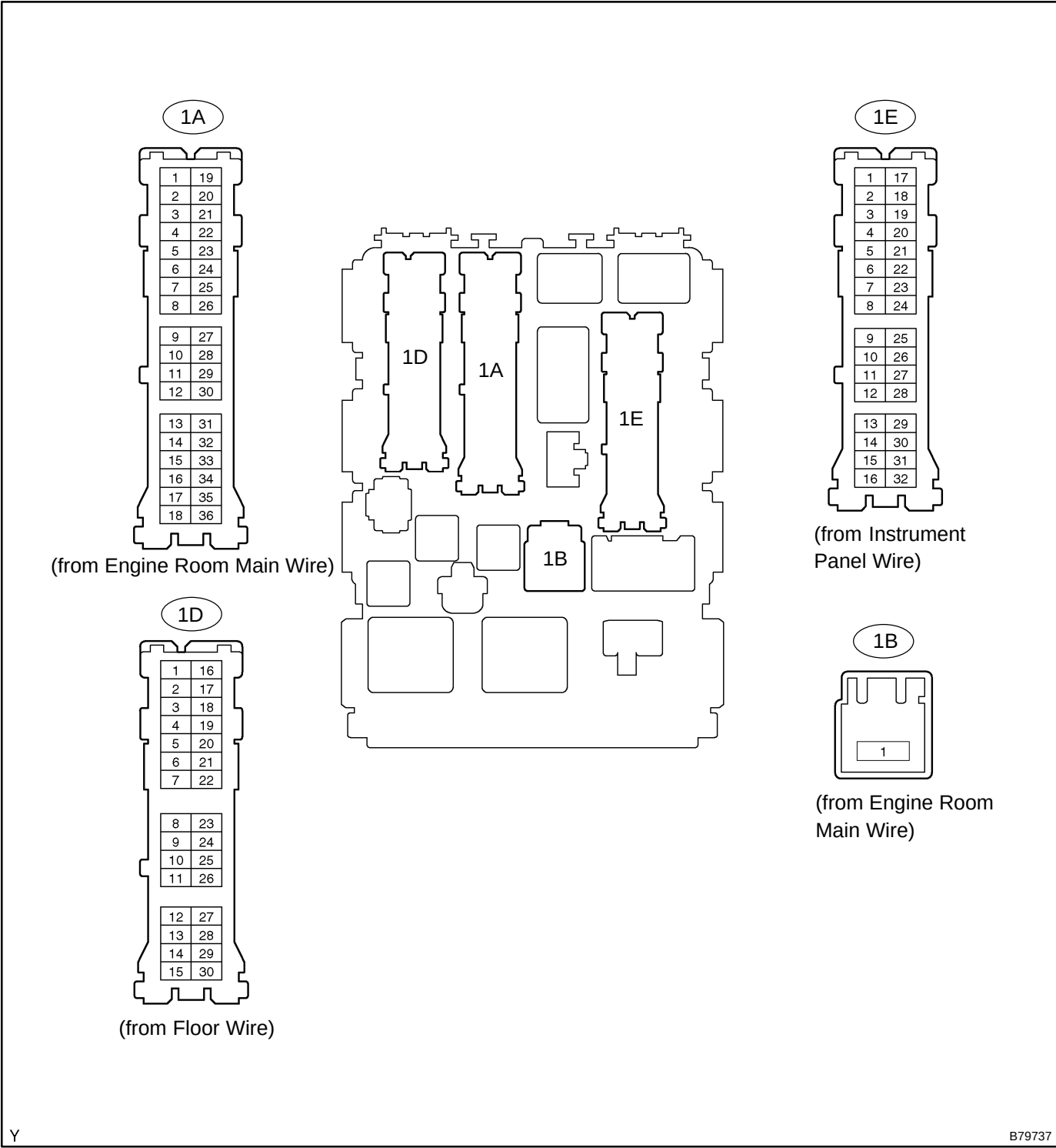
Symptom	Suspected Area	See Page
Theft deterrent system cannot be set*	1. Security indicator circuit 2. ECU power source circuit 3. Unlock warning switch circuit 4. Door key lock and unlock switch 5. Door courtesy switch circuit 6. Back door courtesy switch circuit 7. Engine hood courtesy switch circuit	05–2511 05–2509 05–1733 05–1729 05–2119 05–2520
Security indicator does not blink when power switch is changed from ON (IG) to OFF 10 times within 15 seconds *	1. Security indicator circuit	05–2511
Alarm sounding state cannot be canceled even when key is inserted into key slot, hybrid system is started and acceleration pedal is pushed for 10 seconds*	1. Ignition circuit 2. Unlock warning switch circuit	05–2511
Theft deterrent system can be set even when door is open	1. Door courtesy switch circuit	05–1729
Horns (low pitched, high pitched) do not sound while theft deterrent system is in warning operation	1. Horn (low pitched, high pitched) circuit	05–2522
Headlamps do not flash while theft deterrent system is in warning operation	1. Headlamp circuit	05–1697
Taillamps do not flash while theft deterrent system is in warning operation	1. Taillamp circuit	05–1710
Hazard warning lamps do not flash while theft deterrent system is in warning operation	1. Hazard warning circuit	05–1746
Room lamp does not illuminate while theft deterrent system is in warning operation	1. Room lamp circuit	05–1704
Security horn does not sound while theft deterrent system is in warning operation	1. Security horn circuit	05–2511
Headlamps flash even when theft deterrent system is not set	1. Headlamp circuit	05–1697
Taillamps flash even when theft deterrent system is not set	1. Taillamp circuit	05–1710
Hazard warning lamps flash even when theft deterrent system is not set	1. Hazard warning switch circuit	05–1746
Room lamp illuminates even when theft deterrent system is not set	1. Room lamp circuit	05–1704

HINT:

*: For these symptoms, if the suspected areas are found to be functioning normally, replace the instrument panel J/B assy.

TERMINALS OF ECU

1. CHECK INSTRUMENT PANEL J/B ASSY (MULTIPLEX NETWORK BODY ECU)



Y

B79737

- (a) Disconnect the B6 ECU connector.
- (b) Disconnect the 1A, 1B, 1D and 1E J/B connectors.
- (c) Measure the voltage and resistance of each terminal of the wire harness side connectors .

Standard:

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
ECUB (1A-30) – Body ground	R – Body ground	+B (ECUB) power supply	Constant	10 to 14 V
ALTB (1B-1) – Body ground	W – Body ground	+B (power system, generator system) power supply	Constant	10 to 14 V
KSW (1E-26) – Body ground	Y – Body ground	Key unlock warning switch input	No key in key slot → Key inserted	10 kΩ or higher → Below 1 Ω
HCTY (B6-5) – Body ground	P – Body ground	Engine hood courtesy switch	Engine hood CLOSED → OPEN	10 kΩ or higher → Below 1 Ω
DCTY (1D-21) – Body ground	V – Body ground	Driver side courtesy switch input	Driver side door CLOSED → OPEN	10 kΩ or higher → Below 1 Ω
PCTY (1D-24) – Body ground	BR – Body ground	Passenger side courtesy switch input	Passenger side door CLOSED → OPEN	10 kΩ or higher → Below 1 Ω
RCTY (1D-5) – Body ground	R – Body ground	Rear LH side courtesy switch input	Rear LH side door CLOSED → OPEN	10 kΩ or higher → Below 1 Ω
RCTY (1D-20) – Body ground	R – Body ground	Rear RH side courtesy switch input	Rear RH side door CLOSED → OPEN	10 kΩ or higher → Below 1 Ω
BCTY (1D-7) – Body ground	R – Body ground	Back door courtesy switch	Back door CLOSED → OPEN	10 kΩ or higher → Below 1 Ω
GND (1E-17) – Body ground	W-B – Body ground	Ground	Constant	Below 1 Ω

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

- (d) Reconnect the 1A, 1D and 1E J/B connectors.
- (e) Reconnect the B6 ECU connector.
- (f) Measure the voltage of each terminal of the connectors.

Standard:

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
SIND (B5-8) – Body ground	R – Body ground	Security indicator	Security indicator illuminates (illuminates for 30 sec. in alarm sounding state and flashes when immobilizer 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 → 0 V
HAZ (1L-17) – Body ground	Y – Body ground	Hazard lamp 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 → 0 V
TRLY (1D-29) – Body ground	BR – Body ground	Taillamps	Taillamps are flashing (theft deterrent system is in alarm sounding state)	Pulse generation → 0
HRLY (B7-20) – Body ground	G – Body ground	Headlamps	Headlamps are flashing (theft deterrent system is in alarm sounding state)	Pulse generation → 0

If the result is not as specified, the instrument panel J/B assy (body ECU) may have a malfunction.