

2009 Toyota Highlander Limited
2009 ACCESSORIES & EQUIPMENT Theft Deterrent - Highlander

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Theft Deterrent - Highlander

THEFT DETERRENT SYSTEM (W/SMART KEY SYSTEM)

PRECAUTION

1. NOTICE FOR INITIALIZATION

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

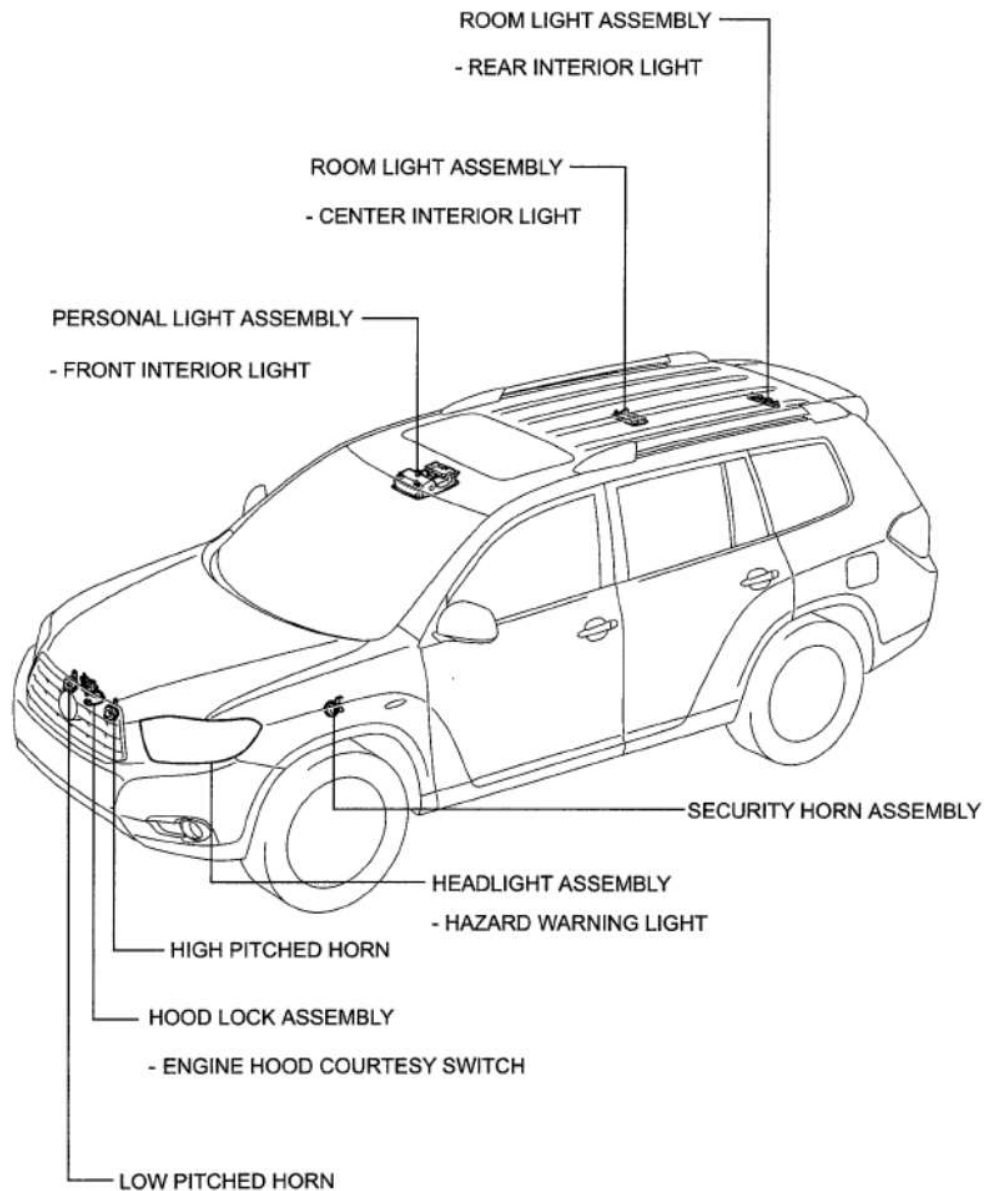
SYSTEM REFERENCE

System Name	See procedure
Power Back Door System	<u>INITIALIZATION</u>

PARTS LOCATION

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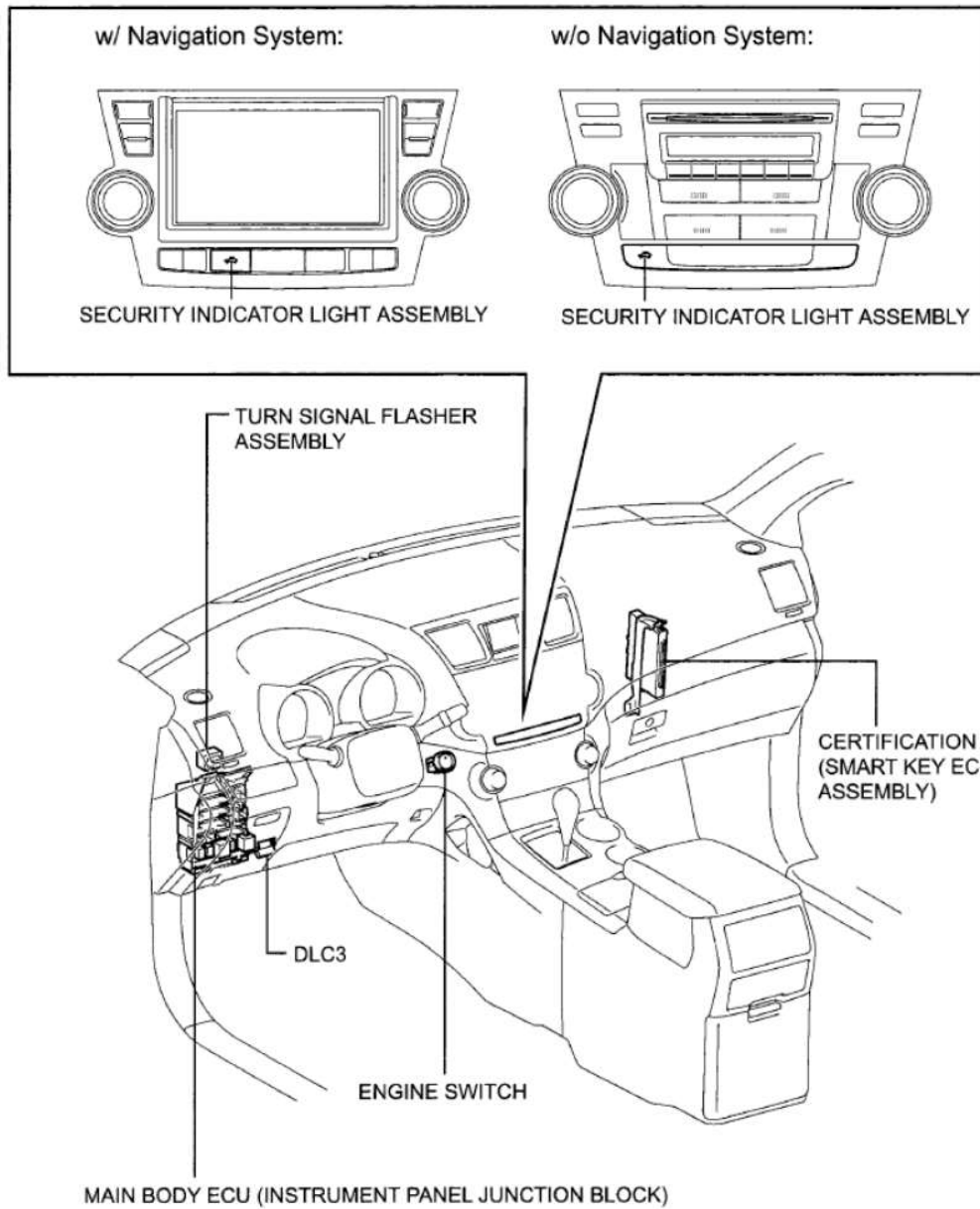
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Fig. 1: Identifying Theft Deterrent Parts Location (W/Smart Key System) (1 Of 3)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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Fig. 2: Identifying Theft Deterrent Parts Location (W/Smart Key System) (2 Of 3)
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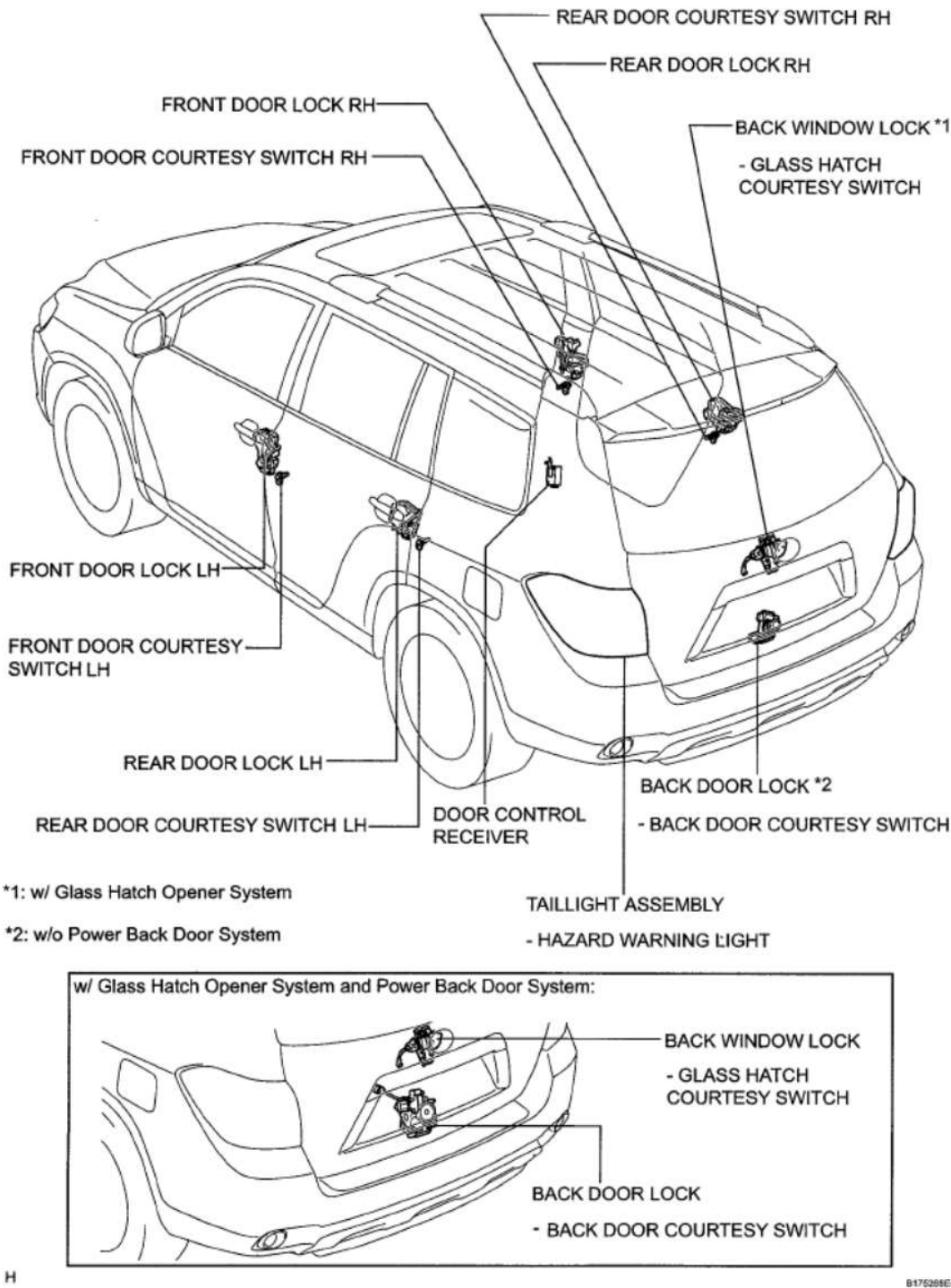
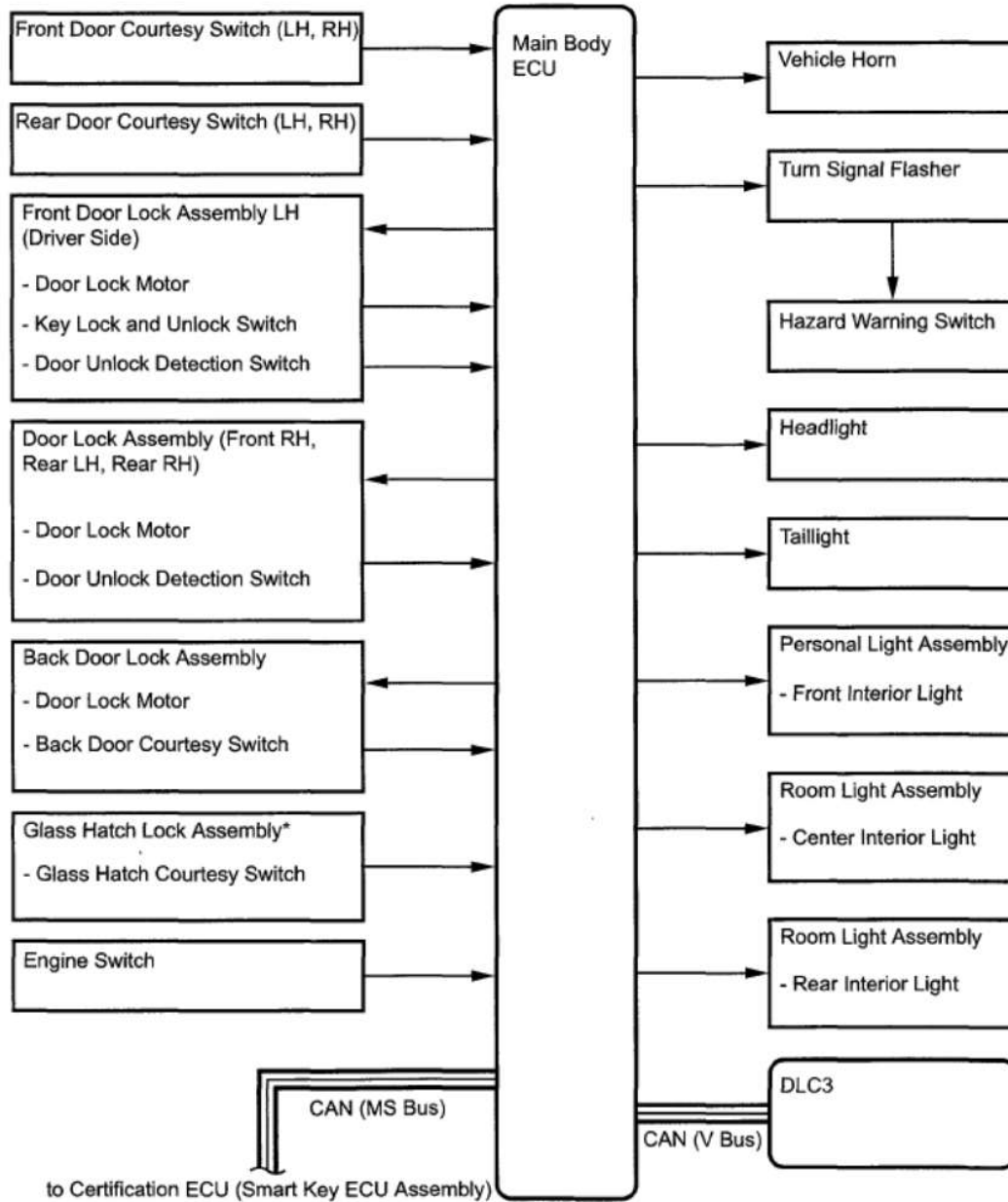


Fig. 3: Identifying Theft Deterrent Parts Location (W/Smart Key System) (3 Of 3)
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SYSTEM DIAGRAM

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*: w/ Glass Hatch Opener System

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Fig. 4: Theft Deterrent System Diagram (W/Smart Key System) (1 Of 2)
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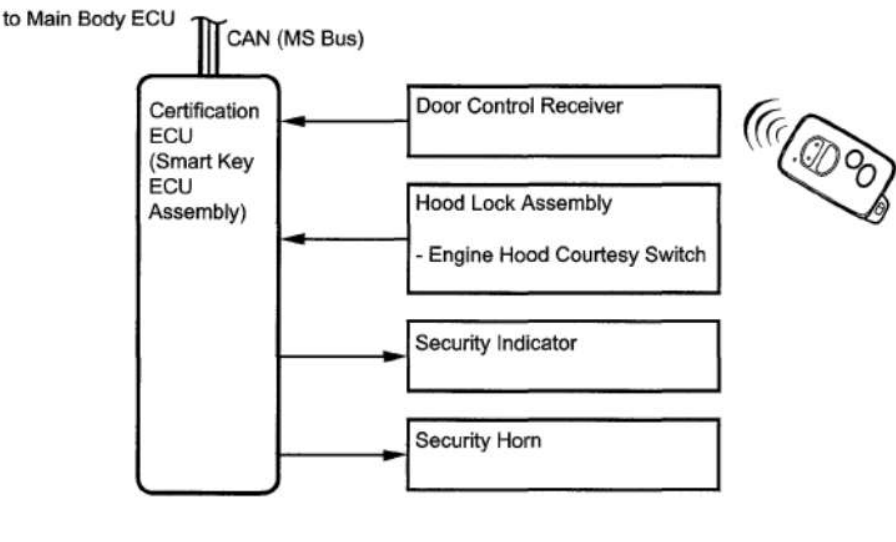


Fig. 5: Theft Deterrent System Diagram (W/Smart Key System) (2 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Communication Table:

COMMUNICATION CHART

Transmitter ECU (Transmitter)	Receiving ECU (Receiver)	Signal	Line
Certification ECU (Smart key ECU assembly)	Main body ECU	Wireless door lock/unlock signal	CAN
Certification ECU (Smart key ECU assembly)	Main body ECU	Engine hood courtesy switch signal	CAN
Main body ECU	Certification ECU (Smart key ECU assembly)	Security indicator signal	CAN
Certification ECU (Smart key ECU assembly)	Main body ECU	Security horn signal	CAN

SYSTEM DESCRIPTION

1. OUTLINE OF THEFT DETERRENT SYSTEM

- The theft deterrent system can be set by locking the doors using the transmitter or key, or by opening and closing the doors (see ACTIVE ARMING MODE or PASSIVE ARMING MODE for details).
- The alarm function will be activated when someone attempts to forcibly unlock any of the doors or open any of the doors, engine hood, and back door while the system is in the armed state.
- In the alarm sounding state, the system illuminates the interior light and blinks the hazard warning lights, the headlights and taillights. At the same time, the system sounds the vehicle horn(s) and security horn to deter break-in and theft as well as to warn people around the vehicle.
- The alarm can be cancelled by unlocking the doors using the transmitter or key.
- There are two arming modes for this system: active arming mode and passive arming mode. When

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the active arming mode has been set, the theft deterrent system will be set after the user locks the doors via the transmitter or key. When the passive arming mode has been set, the theft deterrent system will be set after the key is removed and the driver's door is closed.

- a. Disarmed state:
 - The alarm function is not operating.
 - The theft deterrent system is not operating.
- b. Arming preparation state:
 - The time until the system goes into the armed state.
 - The theft deterrent system is not operating.
- c. Armed state:
 - The theft deterrent system is operating.
- d. Alarm sounding state:
 - The alarm function is operating.

Alarm time:

Approx. 60 sec.

Refer to the table below for alarm methods and time:

ALARM METHODS AND TIME REFERENCE

Alarm Method	Headlights	Blinking
	Taillights	Blinking
	Hazard Warning Lights	Blinking
	Interior Light	Illuminating
	Vehicle Horn(s)	Sounding (approx. 0.4 second cycles)
	Security Horn	Sounding
Alarm Time	Approx. 60 sec.	

HINT:

If any of the doors are unlocked when the key is not in the actuation area during the armed state, a forced door lock signal will be output (see FORCED DOOR LOCK CONTROL).

2. FUNCTION OF MAIN COMPONENTS

COMPONENT FUNCTION CHART

Component	Function
Security indicator	Informs driver of theft deterrent system status.
Security horn	Sounds when attempted break-in or theft is detected.
Headlights	Blink when attempted break-in or theft is detected.
	• Blink when attempted break-in or theft is detected.

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Taillights	• Come on when theft deterrent system has entered alarm sounding state.
Hazard warning lights	Blink when attempted break-in or theft is detected.
Interior light	Comes on when attempted break-in or theft is detected.
Vehicle horn(s)	Sound when attempted break-in or theft is detected.
Door courtesy light switch	Detects door status (open or closed).
Door unlock detection switch	Detects door status (locked or unlocked).
Engine hood courtesy switch	Detects engine hood status (open or closed).
Back door courtesy switch	Detects back door status (open or closed).
Glass hatch courtesy switch*	Detects glass hatch status (open or closed).
Certification ECU (Smart key ECU assembly)	Receives wireless door lock/unlock signal.
HINT: *: w/ Glass Hatch Opener System	

3. ACTIVE ARMING MODE

HINT:

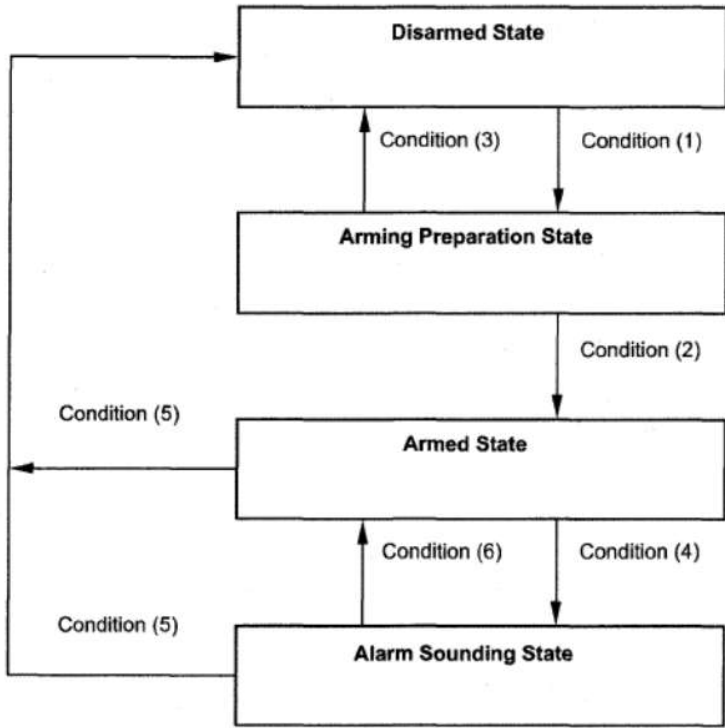
Active arming mode starts the alarm control immediately after the doors are locked.

a. Active arming mode:

This system operates as described in the diagram below when one of the items for each condition is met.

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Fig. 6: Active Arming Mode Flow Chart
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

HINT:

The below terms "all doors" and "door" also refer to the back door.

ITEM CONDITION CHART

Condition	Item
Condition (1)	In the disarmed state, the system state is switched if one of the following conditions is met when the key is not in the actuation area: • With all doors, engine hood, and glass hatch* closed, all doors are locked by key operation. • With all doors, engine hood, and glass hatch* closed, all doors are locked by wireless operation. • With the engine hood closed, any door or the glass hatch* is closed and all doors are locked without using the key.
Condition (2)	Approx. 30 seconds elapse after condition (1) is met.
	• A wireless unlock signal is received. • The driver's door only or all doors are unlocked by key operation.

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Condition (3)	- Any door is unlocked. - Any door or the glass hatch* is opened. - The engine switch is turned on (IG or ACC). - The battery is reconnected.
Condition (4)	- The engine hood is opened. - The battery is reconnected. - Any door or the glass hatch* is opened. - Any door is unlocked when all doors are locked. - When 5 seconds or more have elapsed after the engine switch is turned off, the engine switch is turned on (IG) without using remote control engine start.
Condition (5)	- A wireless unlock signal is received. - The driver's door only or all doors are unlocked by key operation. - The engine switch is turned on (IG) and the engine is run for more than 2 seconds.
Condition (6)	Approx. 60 seconds elapse. (The alarm stops and the system returns to the armed state.)

HINT:

*: w/ Glass Hatch Opener System

4. PASSIVE ARMING MODE

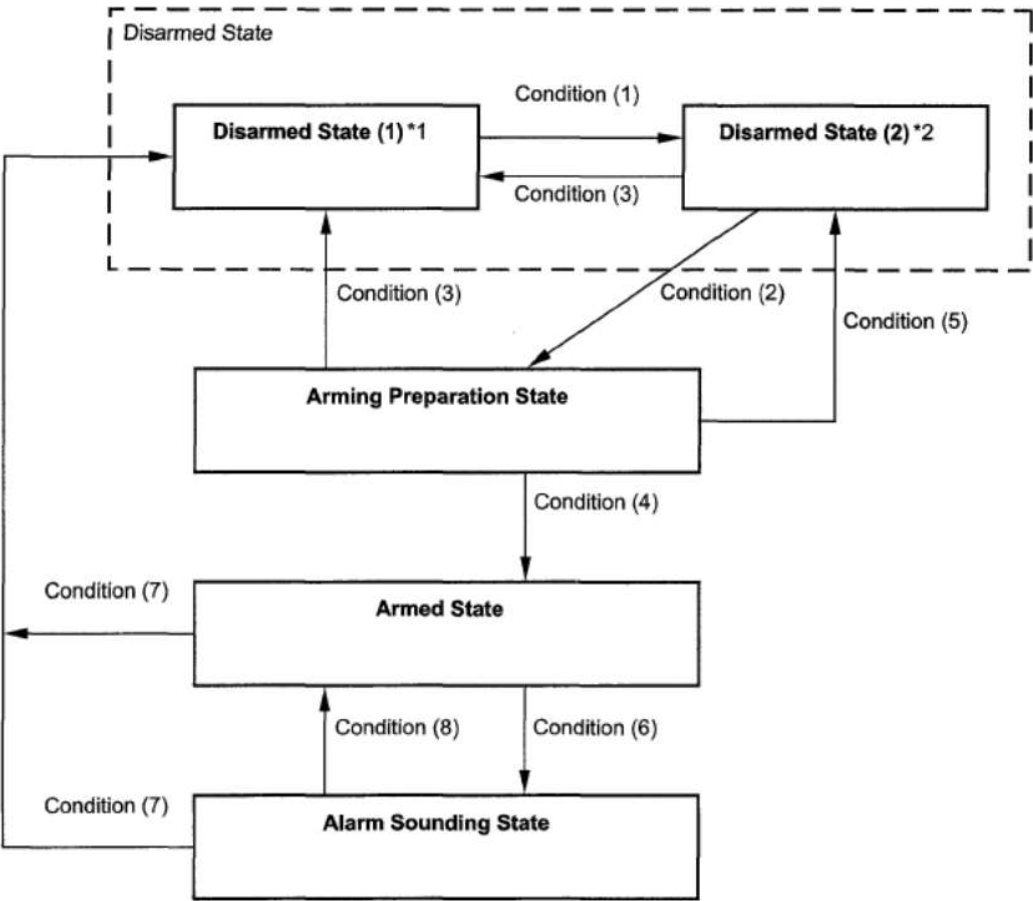
HINT:

- Passive arming mode starts the alarm control after the key is removed from the actuation area and the doors are closed.
 - Passive arming mode can be switched ON/OFF using Techstream.
 - The alarm is initially set (when shipped from the factory) to active arming mode (not passive arming mode).
 - During passive arming mode, the theft deterrent system goes into the armed state even if the doors are not locked.
 - 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 (see FORCED DOOR LOCK CONTROL).
 - Although the theft deterrent system detects that the doors are opened during passive arming mode, the alarm will not go off immediately because an entry delay time is set.
 - If condition (1) of active arming mode is met during passive arming mode, the theft deterrent system will switch to active arming mode.
- a. Passive arming mode:

This system operates as described in the diagram below when one of the items for each condition is met.

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*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.

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Fig. 7: Passive Arming Mode Flow Chart
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

HINT:

The below terms "all doors" and "door" also refer to the back door.

ITEM CONDITION CHART

Condition	Item
Condition (1)	- When the key is not in the actuation area, any door or the glass hatch*1 is opened and then the engine switch is turned off. - When the key is not in the actuation area, the engine switch is turned off and then any door or the glass hatch*1 is opened.
	An open door(s) or the glass hatch*1 is closed with the other door(s), glass

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Condition (2)	hatch*1, and engine hood closed. • The engine hood is closed with all doors and the glass hatch*1 closed.
Condition (3)	• A wireless unlock signal is received. • The driver's door only or all doors are unlocked by key operation. • The battery is reconnected. • The engine switch is turned on (IG or ACC).
Condition (4)	Approx. 30 seconds elapse after condition (1) is met.
Condition (5)	• Any door or the glass hatch*1 is opened. • The engine hood is opened.
Condition (6)	• Any door or the glass hatch*1 is opened and the entry delay time*2 elapse. • The engine hood is opened. • The battery is reconnected. • When 5 seconds or more have elapsed after the engine switch is turned off, the engine switch is turned on (IG) without using remote control engine start.
Condition (7)	• A wireless unlock signal is received. • The driver's door only or all doors are unlocked by key operation. • The engine switch is turned on (IG) and the engine is run for more than 2 seconds. • The engine switch is turned on (IG) within 5 seconds after it is turned off.
Condition (8)	Approx. 60 seconds elapse. (The alarm stops and the system returns to the armed state.)
HINT: • *1: w/ Glass Hatch Opener System • *2: When any door is opened while all the doors are closed during passive arming mode, the entry delay time starts. If the switch condition (armed state --> disarmed state (1) or (2)) is met during the entry delay time, the theft deterrent system will return to disarmed state (1) or (2). However, if the switch condition for disarmed state (1) or (2) is not met, the theft deterrent system will recognize it as a theft and set off the alarm. Entry delay time of 0, 14 or 30 sec. can be selected by the customizing function.	

5. FORCED DOOR LOCK CONTROL

- a. The forced door lock control prevents the vehicle from being tampered with. Immediately after a door is unlocked (alarm starts), all doors are forced to lock by a forced door lock signal.

1. Conditions that force the doors to lock:

The key is not in the actuation area and both of the following conditions are met:

- 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, it will be recorded by the alarm memory function. Whenever the theft deterrent system is cancelled, the

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alarm memory function causes the taillights to light up for 2 seconds in order to inform you that the alarm has been set off.

1. Conditions that cause the taillights to light up for 2 seconds:

The theft deterrent system has entered the alarm sounding state (tampering has been detected) even once and either of the following conditions has been met:

- 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:

Active arming mode: See ACTIVE ARMING MODE.

Passive arming mode: See PASSIVE ARMING MODE.

7. PANIC ALARM CONTROL

- a. The panic alarm control makes it possible to voluntarily set off the panic alarm by pressing the PANIC switch on the wireless transmitter.

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

The PANIC switch on the wireless transmitter is pressed under the following conditions:

- The engine switch is off.
- The theft deterrent system is not in the alarm sounding state. (This condition is common to both active arming mode and passive arming mode.)

2. Conditions that cause the panic alarm control to shut off the alarm:

Any of the following conditions is met during panic alarm operation:

- The engine switch is turned off.
- The PANIC switch is pressed again.
- Any of the switches on the wireless transmitter (LOCK/UNLOCK/POWER BACK DOOR^{*1} or GLASS HATCH OPEN^{*2}) is pressed.
- The panic alarm ends (approx. 60 sec. have passed).
- The theft deterrent system switches to the alarm sounding state. Under this condition, the theft deterrent system is controlling the alarm rather than the panic alarm control. In order to cancel this alarm, refer to the theft deterrent system alarm sounding state cancellation procedure. (This condition is common to both active arming mode and passive arming mode.)

HINT:

- ^{*1}: w/ Power Back Door System

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- *2: w/ Glass Hatch Opener System
- Active arming mode: See ACTIVE ARMING MODE.
- Passive arming mode: See PASSIVE ARMING MODE.

8. SECURITY INDICATOR OUTPUT

- a. The certification ECU (smart key ECU assembly) outputs a signal to come on the security indicator, according to the state of the theft deterrent system. However, some of the actual lighting conditions of the security indicator are different from the output signals of the certification ECU (smart key ECU assembly).

Output:

SECURITY INDICATOR CONDITION CHART

State of Theft Deterrent System	Security Indicator	
	Output Signal from Certification ECU (Smart Key ECU Assembly)	Actual Lighting Condition
Disarmed state (1), (2)	OFF	OFF (Immobiliser system unset) BLINKING (Immobiliser system set)
Arming preparation state	ON	ON
Armed state	OFF	BLINKING
Alarm sounding state	ON	ON

Blinking cycle:

BLINKING CYCLE CHART

Time	Security Indicator
0.2 sec.	ON
1.8 sec.	OFF

HINT:

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

HOW TO PROCEED WITH TROUBLESHOOTING

HINT:

- Use this procedure to troubleshoot the theft deterrent system.
- Techstream should be used in step 3.

1. VEHICLE BROUGHT TO WORKSHOP
2. CUSTOMER PROBLEM ANALYSIS

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- a. Interview the customer to confirm the trouble (See **HOW TO PROCEED WITH TROUBLESHOOTING**).

3. INSPECT COMMUNICATION FUNCTION OF CAN COMMUNICATION SYSTEM

- a. Use Techstream to check if the CAN Communication System is functioning normally (See **HOW TO PROCEED WITH TROUBLESHOOTING**).

Result

RESULT CHART

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

B: GO TO CAN COMMUNICATION SYSTEM (See **DIAGNOSIS SYSTEM**)

A: Go to next step.

4. SYMPTOM SIMULATION

5. PROBLEM SYMPTOMS TABLE

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

B: Go to step 7

A: Go to next step.

6. PERFORM TROUBLESHOOTING ACCORDING TO MALFUNCTION SYMPTOM

- a. System description (See **SYSTEM DESCRIPTION**)
- b. Terminals of ECU (See **TERMINALS OF ECU**)

7. ADJUST, REPAIR OR REPLACE

8. CONFIRMATION TEST

NEXT: END

CUSTOMIZE PARAMETERS

HINT:

The following items can be customized.

NOTE:

- After confirming whether the items requested by the customer are applicable or not for customization, perform customizing operations.
- Be sure to record the current settings before customization.

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- When troubleshooting, make sure that the item in question is not set to "OFF" as a result of customization (Example: For the system, "the wireless function does not operate", first check that the wireless function is not set to "OFF", then perform troubleshooting).

1. CUSTOMIZE

- Connect Techstream to the DLC3.
- Turn the engine switch on (IG).
- Turn the tester on.
- Enter the following menus:

Select: Customize Setting/

- Select the setting by referring to the table below.

Security:

CUSTOMIZE PARAMETERS

Display (Item)	Default	Contents	Setting
Passive Mode (Security System)	OFF	Passive Mode is a function that switches the theft deterrent system from the arming preparation state to the armed state 30 seconds after the key is removed from the actuation area and all doors, glass hatch* and engine hood are closed, even if the doors are not locked by wireless or door key lock operation. In Passive Mode, if the following operations are not performed within 14 seconds after a door is opened during armed state, the theft deterrent system will judge that condition as a theft and switch to the alarm sounding state. ○ Unlock any door by key or wireless operation ○ Turn the engine switch on (IG)	ON/OFF
Warning by Horn	ON	Function that allows the vehicle horn and theft deterrent horn to be used as warning devices.	ON/OFF
Entry Delay	14 s	Function that changes entry delay time (time before warning starts) for Passive Mode	0 s/14 s/30 s

HINT:

*: w/ Glass Hatch Opener System

PROBLEM SYMPTOMS TABLE

HINT:

- Troubleshooting of the theft deterrent system is based on the premise that the door lock control system and the wireless door lock control system are operating normally. Accordingly, before troubleshooting the theft deterrent system, first make certain that the door lock control system and the wireless door lock

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control system are operating normally.

- The following is the troubleshooting procedure for the theft deterrent system of a vehicle with the smart key system.
- Inspect the fuse and relay before investigating the suspected areas shown in the table below.

Theft deterrent system:

PROBLEM SYMPTOMS REFERENCE

Symptom	Suspected Area	Refer to
Theft deterrent system cannot be set	Security indicator light circuit	<u>SECURITY INDICATOR LIGHT CIRCUIT</u>
	ECU power source circuit	<u>ECU POWER SOURCE CIRCUIT</u>
	Door key lock/unlock switch	<u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Door courtesy switch circuit	<u>DOOR COURTESY SWITCH CIRCUIT</u>
	Back door courtesy switch circuit	<u>ONLY BACK DOOR LOCK/UNLOCK FUNCTIONS DO NOT OPERATE</u>
	Engine hood courtesy switch circuit	<u>ENGINE HOOD COURTESY SWITCH CIRCUIT</u>
	Glass hatch courtesy switch*	<u>INSPECTION</u>
	Replace certification ECU	<u>REMOVAL</u>
	If the symptom(s) still occur after the above areas are inspected and proved to be normal, replace the main body ECU (Instrument panel junction block)	-
Security indicator does not blink when theft deterrent system is set	Security indicator light circuit	<u>REMOVAL</u>
	If the symptom(s) still occur after the above area is inspected and proved to be normal, replace the main body ECU (Instrument panel junction block)	-
Theft deterrent system can be set even when a door is open	Door courtesy switch circuit	<u>DOOR COURTESY SWITCH CIRCUIT</u>
	Glass hatch courtesy switch*	<u>INSPECTION</u>
	If the symptom(s) still occur after the above areas are inspected and proved to be normal, replace the main body ECU (Instrument panel junction block)	-
Vehicle horn(s) (low pitched,	Horn circuit	<u>HORN CIRCUIT</u>
	If the symptom(s) still occur after the	

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high pitched) do not sound while theft deterrent system is in warning operation	above area is inspected and proved to be normal, replace the main body ECU (Instrument panel junction block)	-
Headlights do not blink while theft deterrent system is in warning operation	Headlight Relay Circuit If the symptom(s) still occur after the above area is inspected and proved to be normal, replace the main body ECU (Instrument panel junction block)	<u>HEADLIGHT RELAY CIRCUIT</u>
Taillights do not blink while theft deterrent system is in warning operation	Taillight Relay Circuit If the symptom(s) still occur after the above area is inspected and proved to be normal, replace the main body ECU (Instrument panel junction block)	<u>TAILLIGHT RELAY CIRCUIT</u>
Hazard warning lights do not flash while theft deterrent system is in warning operation	Wire harness or connector Turn signal flasher If the symptom(s) still occur after the above areas are inspected and proved to be normal, replace the main body ECU (Instrument panel junction block)	- <u>INSPECTION</u> -
Interior light does not light up while theft deterrent system is in warning operation	Interior light circuit If the symptom(s) still occur after the above area is inspected and proved to be normal, replace the main body ECU (Instrument panel junction block)	<u>INTERIOR LIGHT CIRCUIT</u> -
Security horn does not sound while theft deterrent system is in warning operation	Security horn circuit If the symptom(s) still occur after the above area is inspected and proved to be normal, replace the main body ECU (Instrument panel junction block)	<u>SECURITY HORN CIRCUIT</u> -
Headlights blink even when theft deterrent system is not set	Headlight Relay Circuit If the symptom(s) still occur after the above area is inspected and proved to be normal, replace the main body ECU (Instrument panel junction block)	<u>HEADLIGHT RELAY CIRCUIT</u> -
Taillights blink even when theft deterrent system is not set	Taillight Relay Circuit If the symptom(s) still occur after the above area is inspected and proved to be normal, replace the main body	<u>TAILLIGHT RELAY CIRCUIT</u> -

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	ECU (Instrument panel junction block)	
Hazard warning lights flash even when theft deterrent system is not set	Wire harness or connector	-
	Turn signal flasher	<u>INSPECTION</u>
	If the symptom(s) still occur after the above areas are inspected and proved to be normal, replace the main body ECU (Instrument panel junction block)	-
Interior light comes on even when theft deterrent system is not set	Interior light circuit	<u>INTERIOR LIGHT CIRCUIT</u>
	If the symptom(s) still occur after the above area is inspected and proved to be normal, replace the main body ECU (Instrument panel junction block)	-
HINT: *: w/ Glass Hatch Opener System		

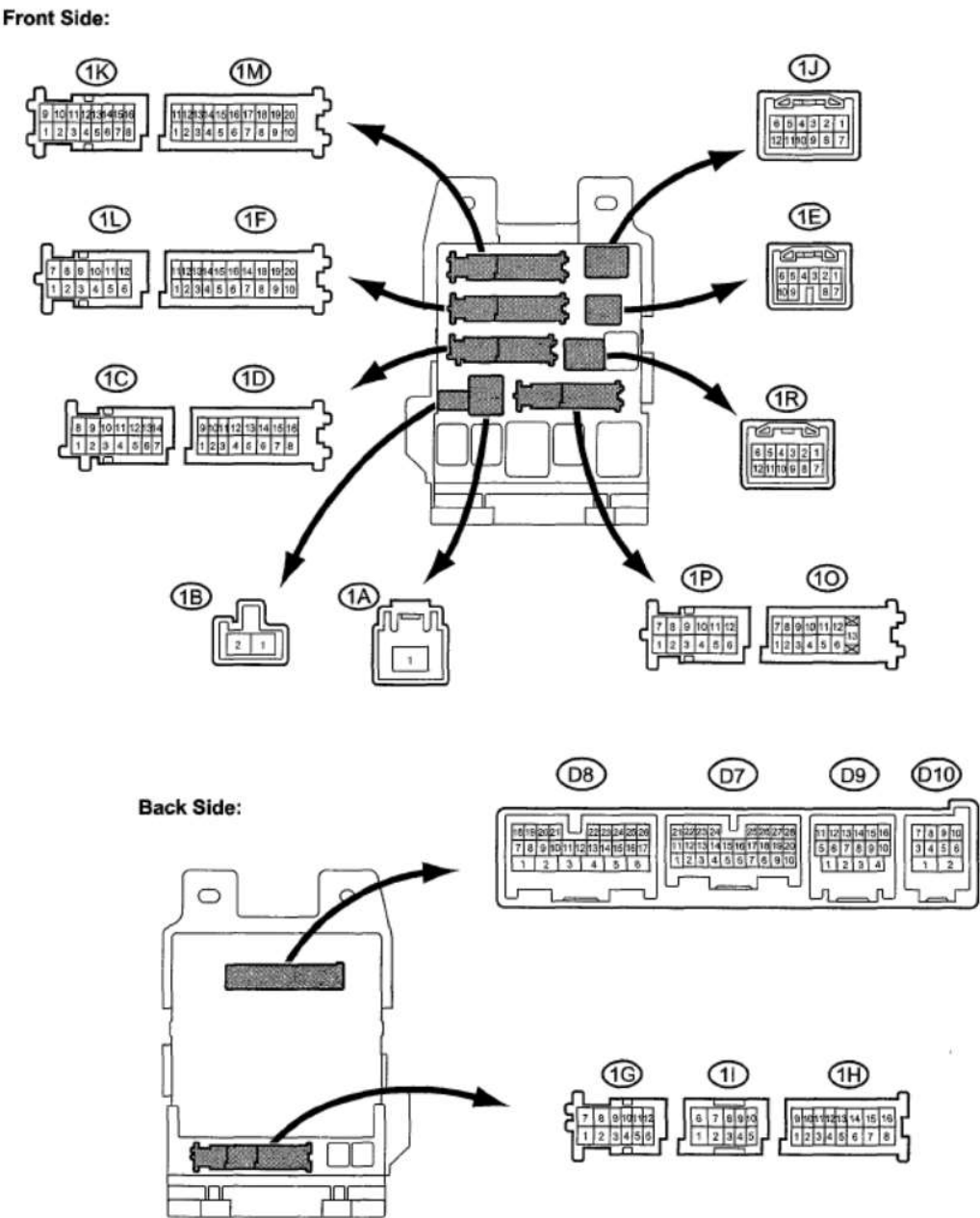
TERMINALS OF ECU

1. CHECK MAIN BODY ECU (INSTRUMENT PANEL JUNCTION BLOCK)

- a. Disconnect the main body ECU (instrument panel junction block) connectors.

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Fig. 8: Identifying Main Body ECU Connector Terminals (Instrument Panel Junction Block)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Measure the resistance and voltage between each terminal of the wire harness side connectors and body ground.

TESTER CONNECTION SPECIFIED CONDITION

Tester Connection	Wiring Color	Terminal Description	Condition	Specified Condition
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D7-5 (RCTY)* ¹ - Body ground	GR - Body ground	Rear courtesy light switch RH input	Rear door RH CLOSED (OFF) --> OPEN (ON)	10 kohms or higher --> Below 1 ohms
D7-7 (RCTY)* ² - Body ground	GR - Body ground	Rear courtesy light switch RH input	Rear door RH CLOSED (OFF) --> OPEN (ON)	10 kohms or higher --> Below 1 ohms
D7-21 (PCTY) - Body ground	SB - Body ground	Passenger side courtesy light switch input	Passenger side door CLOSED (OFF) --> OPEN (ON)	10 kohms or higher --> Below 1 ohms
D7-25 (BCTY) - Body ground	L - Body ground	Back door courtesy light switch input	Back door CLOSED (OFF) --> OPEN (ON)	10 kohms or higher --> Below 1 ohms
D8-24 (DCTY) - Body ground	G - Body ground	Driver side door courtesy light switch input	Driver side door CLOSED (OFF) --> OPEN (ON)	10 kohms or higher --> Below 1 ohms
D8-20 (GCTY)* ³ - Body ground	P - Body ground	Glass hatch courtesy switch	Glass hatch CLOSED (OFF) --> OPEN (ON)	10 kohms or higher --> Below 1 ohms
1A-1 (ACC) - Body ground	B - Body ground	Ignition power supply (ACC signal)	Engine switch ON (ACC) --> OFF	11 to 14 V --> Below 1 V
1A-1 (IG) - Body ground	B - Body ground	Ignition power supply (IG signal)	Engine switch ON (IG) --> OFF	11 to 14 V --> Below 1 V
1D-16 (ALTB) - Body ground	W - Body ground	+B (power system alternator system) power supply	Always	11 to 14 V
1F-10 (GND1) - Body ground	W-B - Body ground	Ground	Always	Below 1 ohms
1M-9 (GND2) - Body ground	W-B - Body ground	Ground	Always	Below 1 ohms
1O-7 (LCTY) - Body ground	B - Body ground	Rear courtesy light switch LH input	Rear door LH CLOSED (OFF) --> OPEN (ON)	10 kohms or higher --> Below 1 ohms
HINT: *1: w/o Power Back Door System *2: w/ Power Back Door System *3: w/ Glass Hatch Opener System - If the result is not as specified, there may be a malfunction on the wire harness side.				

- c. Reconnect the main body ECU (instrument panel junction block) connectors.
- d. Measure the voltage between each terminal of the wire harness side connectors and body ground.

TESTER CONNECTION SPECIFIED CONDITION

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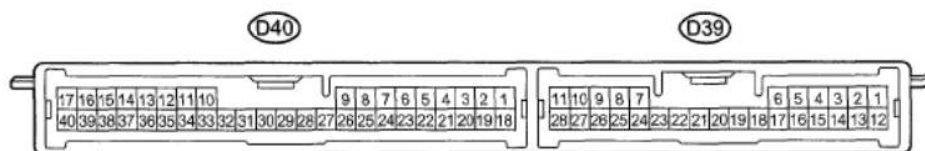
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Tester Connection	Wiring Color	Terminal Description	Condition	Specified Condition
D9-4 (HAZ) - Body ground	O - Body ground	Turn signal flasher relay signal	System is in alarm sounding state	Below 1 V
1D-11 (HORN) - Body ground	GR - Body ground	Vehicle horn drive	Vehicle horn is sounding (Theft deterrent system is in alarm sounding state)	Pulse generation (Below 1 V <--- --> 12 V)

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

2. CHECK CERTIFICATION ECU (SMART KEY ECU ASSEMBLY) ASSEMBLY

- a. Disconnect the D39 and D40 ECU connectors.



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Fig. 9: Identifying D39 And D40 ECU Connectors Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TESTER CONNECTION SPECIFIED CONDITION

Tester Connection	Wiring Color	Terminal Description	Condition	Specified Condition
D39-24 (HSW) - Body ground	R - Body ground	Engine hood courtesy switch	Engine hood CLOSED (OFF) --> OPEN (ON)	10 kohms or higher --> Below 1 ohms
D40-1 (+B) - D40-17 (E)	B - B	Battery power supply	Always	11 to 14 V
D40-17 (E) - Body ground	B - Body ground	Ground	Always	Below 1 ohms

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

- b. Reconnect the D39 and D40 ECU connectors.
- c. Measure the voltage of the connector.

TESTER CONNECTION SPECIFIED CONDITION

Tester Connection	Wiring Color	Terminal Description	Condition	Specified Condition
D39-20 (SH-) - Body ground	W - Body ground	Security horn drive	Security horn is sounding (Theft deterrent system is in alarm sounding	Pulse generation (Below 1 V <--- -->

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			state)	12 V)
D40-2 (IND) - Body ground	W - Body ground	Security indicator output	Security indicator is on (It comes on only in alarm sounding state. It flashes when immobiliser is operating.)	3 to 6 V

If the result is not as specified, the certification ECU (smart key ECU assembly) may have a malfunction.

DIAGNOSIS SYSTEM

1. DESCRIPTION

The ECU stores trouble codes when trouble occurs on the vehicle.

The diagnostic system allows for reading of the trouble codes from the DLC3.

Use Techstream to check and solve the problem.

2. CHECK DLC3

- a. Check the DLC3 (See **HOW TO TROUBLESHOOT ECU CONTROLLED SYSTEMS**).

DATA LIST/ACTIVE TEST

1. DATA LIST

HINT:

Using Techstream to read the Data List allows the values or states of switches, sensors, actuators and other items to be read without removing any parts. This non-intrusive inspection can be very useful because intermittent conditions or signals may be discovered before parts or wiring is disturbed. Reading the Data List information early in troubleshooting is one way to save diagnostic time.

- a. Connect Techstream to the DLC3.
- b. Turn the engine switch on (IG).
- c. Turn the tester on.
- d. Enter the following menus:

Select: Body Electrical/Main Body or Smart Key/Data List/

- e. According to the display on the tester, read the "Data List".

Main Body:

DATA LIST

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note

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D Door Courtesy SW	D door courtesy switch/ON or OFF	ON: Driver side door is OPEN OFF: Driver side door is CLOSED	-
P Door Courtesy SW	P door courtesy switch/ON or OFF	ON: Front passenger side door is OPEN OFF: Front passenger side door is CLOSED	-
RR Door Courtesy SW	Rear right door courtesy switch/ON or OFF	ON: Rear right door is OPEN OFF: Rear right door is CLOSED	-
RL Door Courtesy SW	Rear left door courtesy switch/ON or OFF	ON: Rear left door is OPEN OFF: Rear left door is CLOSED	-
Back Door Courtesy SW	Back door courtesy switch/ON or OFF	ON: Back door is OPEN OFF: Back door is CLOSED	-
D-Door Lock Pos SW	Driver's door lock position switch/ON or OFF	ON: Driver's door is UNLOCKED OFF: Driver's door is LOCKED	-
P-Door Lock Pos SW	Passenger door lock position switch/ON or OFF	ON: Passenger door is UNLOCKED OFF: Passenger door is LOCKED	-
Glass Hatch Courtesy Switch*	Glass hatch courtesy switch/ON or OFF	ON: Glass hatch is OPEN OFF: Glass hatch is CLOSED	-
RR-Door Lock Pos SW	Rear right door lock position switch/ON or OFF	ON: Rear right door is UNLOCKED OFF: Rear right door is LOCKED	-
RL-Door Lock Pos SW	Rear left door lock position switch/ON or OFF	ON: Rear left door is UNLOCKED OFF: Rear left door is LOCKED	-
HINT: *: w/ Glass Hatch Opener System			

Smart Key:

DATA LIST

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
----------------	------------------------	------------------	-----------------

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Hood Courtesy Switch	Engine hood courtesy signal/ON or OFF	ON: Engine hood is OPEN OFF: Engine hood is CLOSED	-
Passive Mode	Passive mode/ON or OFF	ON: Passive mode is ON OFF: Passive mode is OFF	-
Warning by Horn	Warning by horn/ON or OFF	ON: Vehicle horn(s) sound during alarm sounding state OFF: Vehicle horn(s) do no sound during alarm sounding state	-
Entry Delay Time	Entry delay time during passive mode	0 s: Entry delay time is 0 sec. 14 s: Entry delay time is 14 sec. 30 s: Entry delay time is 30 sec.	-

2. ACTIVE TEST

HINT:

Using Techstream to perform Active Tests allows relays, VSVs, actuators and other items to be operated without removing any parts. This non-intrusive inspection can be very useful because intermittent operation may be discovered before parts or wiring is disturbed. Performing Active Tests early in troubleshooting is one way to save diagnostic time. The Data List can be displayed while performing Active Tests.

- a. Connect Techstream to the DLC3.
- b. Turn the engine switch on (IG).
- c. Turn the tester on.
- d. Enter the following menus:

Select: Body Electrical/Main Body or Smart Key/Active Test/

- e. According to the display on the tester, perform the Active Test.

Main Body:

ACTIVE TEST CHART

Tester Display	Test Part	Control Range	Diagnostic Note
Hazard	Hazard warning lights	ON/OFF	-
Vehicle Horn	Vehicle horns	ON/OFF	-

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Smart Key:

ACTIVE TEST CHART

Tester Display	Test Part	Control Range	Diagnostic Note
Security Indicator	Security indicator	ON/OFF	-
Security Horn	Security horn	ON/OFF	-

ENGINE HOOD COURTESY SWITCH CIRCUIT

DESCRIPTION

The engine hood courtesy switch is installed together with the hood lock. This switch turns off when the engine hood is opened and turns on when the engine hood is closed.

WIRING DIAGRAM

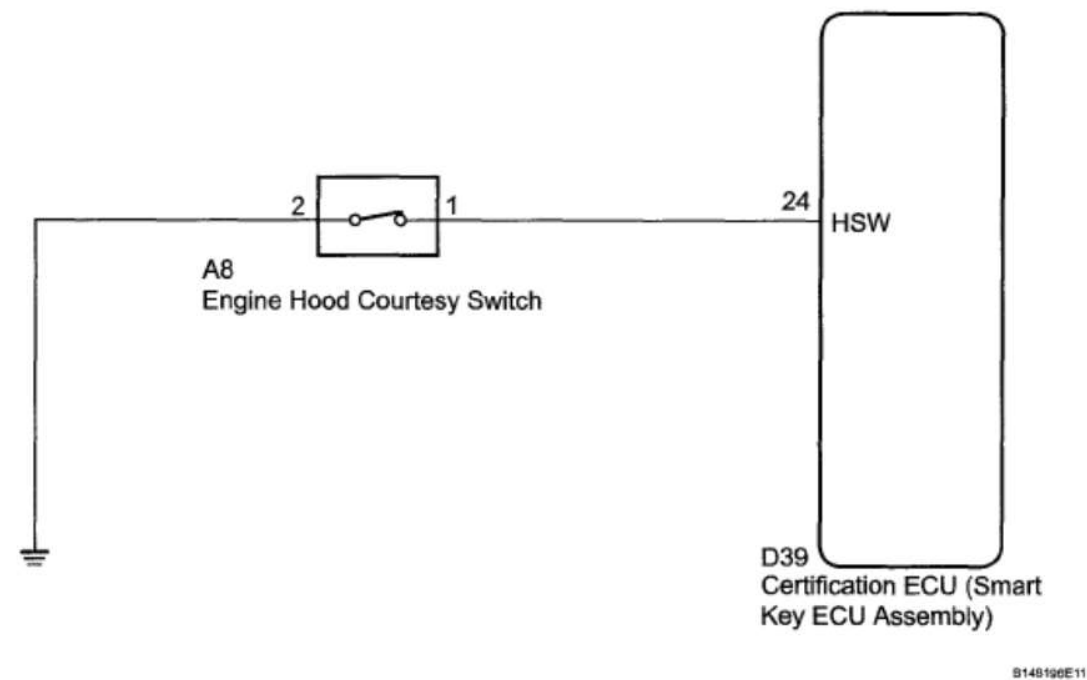


Fig. 10: Engine Hood Courtesy Switch - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

1. READ VALUE USING TECHSTREAM
 - a. Connect Techstream to the DLC3.
 - b. Turn the engine switch on (IG).
 - c. Turn Techstream main switch on.
 - d. Select the item below in the Data List and read the display on the tester.

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Smart Key:

DATA LIST

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Hood Courtesy Switch	Engine hood courtesy switch signal ON/OFF	ON: Engine hood is OPEN OFF: Engine hood is CLOSED	-

OK: The indicator on Techstream switches between ON and OFF in accordance with the engine hood courtesy switch status.

NG: Go to step 2

OK: PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE (See PROBLEM SYMPTOMS TABLE)

2. INSPECT ENGINE HOOD COURTESY SWITCH

- a. Disconnect the A8 courtesy switch connector.

Component without harness connected:
(Engine Hood Courtesy Switch)

Engine Hood Lock Assembly

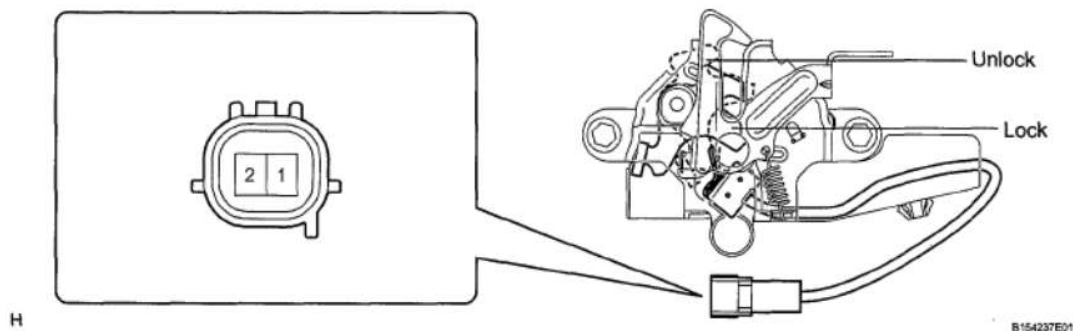


Fig. 11: Identifying A8 Courtesy Switch Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard resistance

TESTER CONNECTION SPECIFIED CONDITION

Tester Connection	Switch Condition	Specified Condition
1 - 2	LOCK position	Below 1 ohms
	UNLOCK position	10 kohms or higher

NG: REPLACE HOOD LOCK ASSEMBLY (See ENGINE HOOD COURTESY SWITCH)

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OK: Go to next step.

3. CHECK HARNESS AND CONNECTOR (ENGINE HOOD COURTESY SWITCH - BODY GROUND)

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

Standard resistance

TESTER CONNECTION SPECIFIED CONDITION

Tester Connection	Condition	Specified Condition
A8-1 - Body ground	Always	Below 1 ohms

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

Front view of wire harness connector:
(to Engine Hood Courtesy Switch)



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Fig. 12: Identifying Engine Hood Courtesy Switch Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to next step.

4. CHECK HARNESS AND CONNECTOR (CERTIFICATION ECU - ENGINE HOOD COURTESY SWITCH)

- a. Disconnect the D39 ECU connector.
- b. Measure the resistance according to the value(s) in the table below.

Standard resistance

TESTER CONNECTION SPECIFIED CONDITION

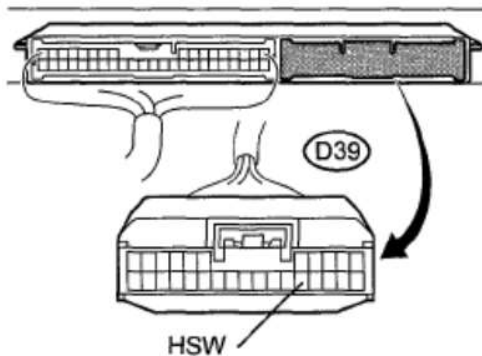
Tester Connection	Condition	Specified Condition
D39-24 (HSW) - A8-1	Always	Below 1 ohms
D39-24 (HSW) - Body ground	Always	10 kohms or higher

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NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

Front view of wire harness connector:
(to Certification ECU (Smart Key ECU))



Front view of wire harness connector:
(to Engine Hood Courtesy Switch)



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Fig. 13: Identifying D39 ECU And A8 Engine Hood Courtesy Switch Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: REPLACE CERTIFICATION ECU (SMART KEY ECU ASSEMBLY) (See REMOVAL)

HORN CIRCUIT

DESCRIPTION

When the theft deterrent system is switched from the armed state to the alarm sounding state, the main body ECU transmits a signal to cause the horn to sound at intervals of 0.4 seconds.

WIRING DIAGRAM

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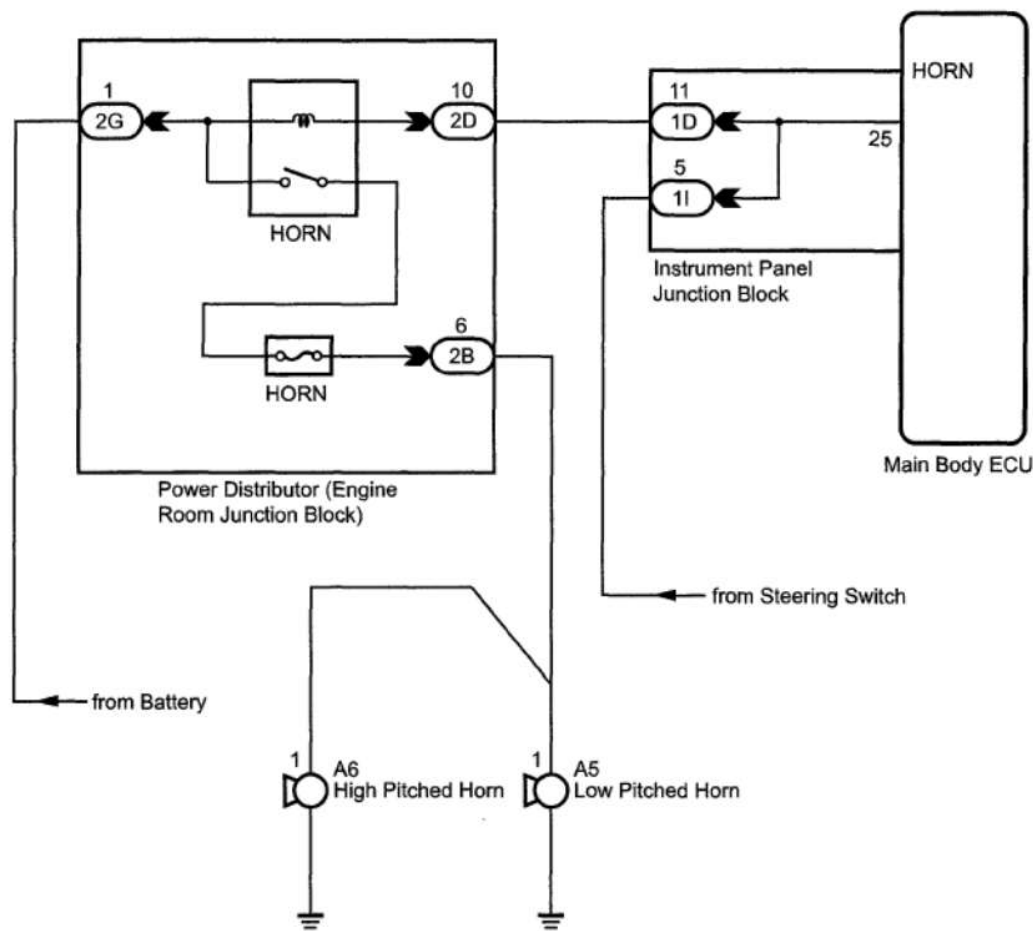


Fig. 14: Horn - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

- 1. **INSPECT HORNS**
 - a. Press the horn switch and check if the horns sound.

Result

RESULT CHART

Result	Proceed to
Horns sound	A
Horns do not sound	B

B: GO TO HORN SYSTEM (See **SYSTEM DIAGRAM**)

A: Go to next step.

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2. PERFORM ACTIVE TEST USING TECHSTREAM

- a. Connect Techstream to the DLC3.
- b. Turn the engine switch on (IG).
- c. Turn Techstream main switch on.
- d. Select the item below in the Active Test and then check that the horns operate.

Main Body:

ACTIVE TEST CHART

Tester Display	Test Part	Control Range	Diagnostic Note
Vehicle Horn	Vehicle horns	ON/OFF	-

OK: The vehicle horns sound or stop correctly when operating it through Techstream.

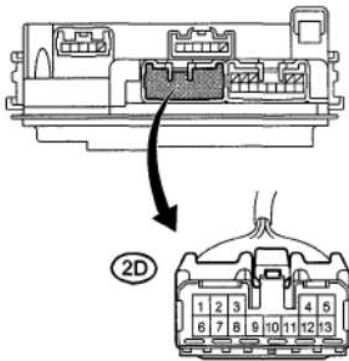
NG: Go to step 3

OK: PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE (See PROBLEM SYMPTOMS TABLE)

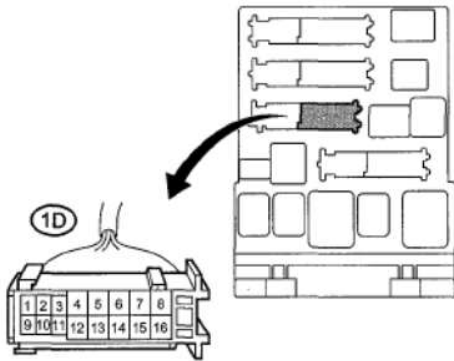
3. CHECK HARNESS AND CONNECTOR (INSTRUMENT PANEL JUNCTION BLOCK - ENGINE ROOM JUNCTION BLOCK)

- a. Disconnect the ID instrument panel junction block connector and 2D engine room junction block connector.

Front view of wire harness connector:
(to Engine Room Junction Block)



Front view of wire harness connector:
(to Instrument Panel Junction Block)



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Fig. 15: Identifying ID Instrument Panel Junction Block Connector And 2D Engine Room Junction Block Connector

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

2009 Toyota Highlander Limited**2009 ACCESSORIES & EQUIPMENT Theft Deterrent - Highlander****Standard resistance****TESTER CONNECTION SPECIFIED CONDITION**

Tester Connection	Condition	Specified Condition
1D-11 - 2D-10	Always	Below 1 ohms
1D-11 - Body ground	Always	10 kohms or higher

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR**OK: REPLACE MAIN BODY ECU (INSTRUMENT PANEL JUNCTION BLOCK)****SECURITY HORN CIRCUIT****DESCRIPTION**

When the theft deterrent system is changed from the armed state to the alarm sounding state, the certification ECU (smart key ECU assembly) controls the security horn.

WIRING DIAGRAM

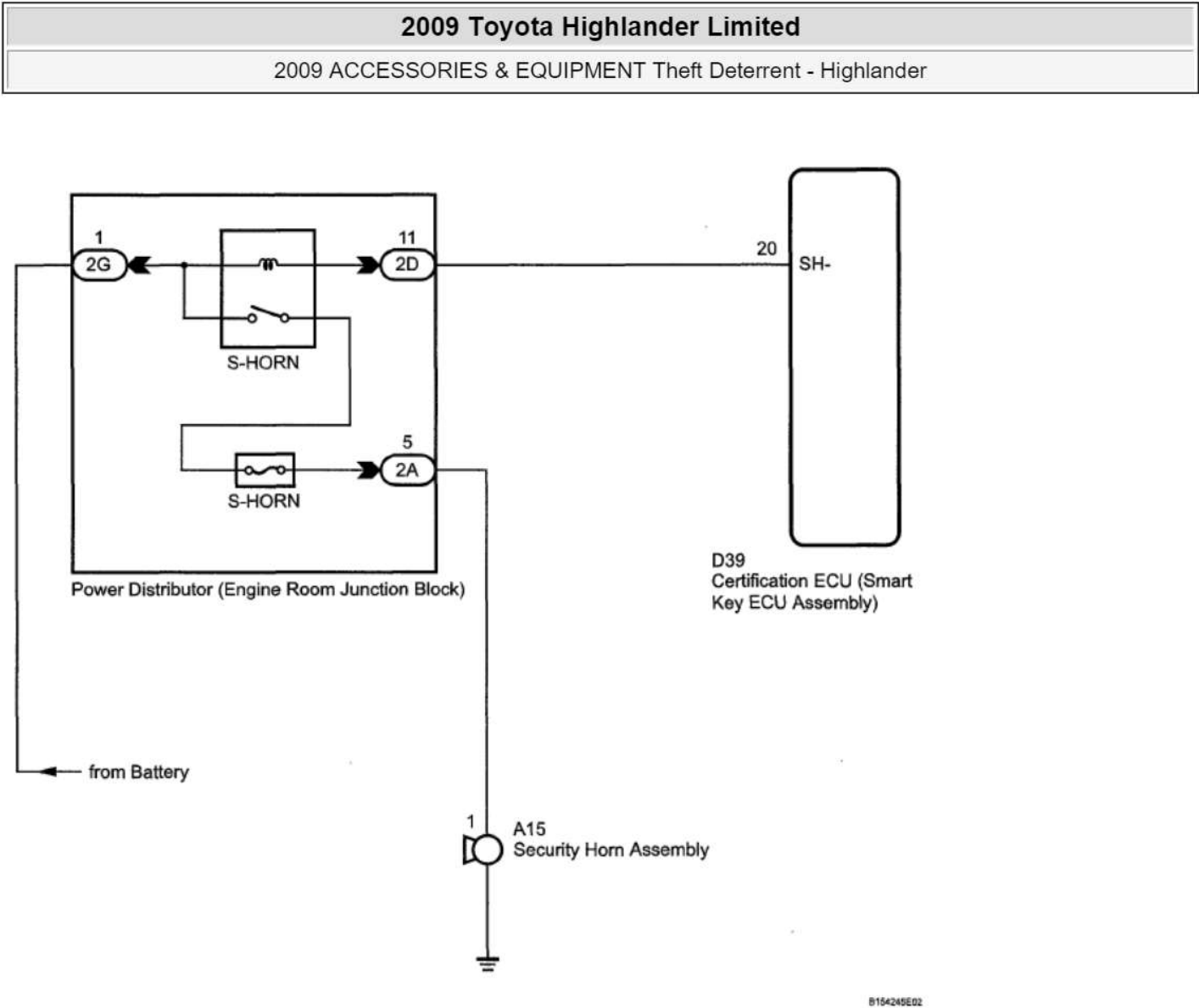


Fig. 16: Security Horn - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

1. **CHECK HARNESS AND CONNECTOR (CERTIFICATION ECU - ENGINE ROOM JUNCTION BLOCK)**
- a. Disconnect the D39 ECU connector.

b. Connect the negative battery to the D39 ECU connector.

c. Check operation of the security horn.

OK

MEASUREMENT SPECIFIED CONDITION

Measurement Condition	Specified Condition
Battery negative (-) --> D39-20 (SH-)	Horn sounds

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NG: Go to step 2

Front view of wire harness connector:
(to Certification ECU (Smart Key ECU))

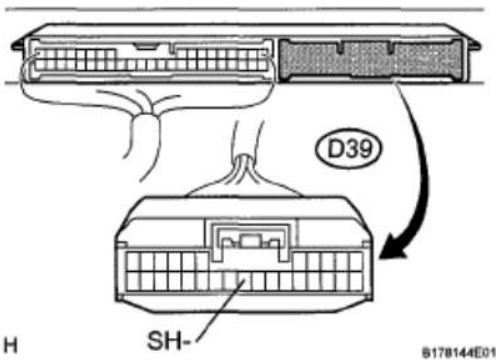


Fig. 17: Identifying D39 ECU Connectors Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS
TABLE (See PROBLEM SYMPTOMS TABLE)

2. INSPECT SECURITY HORN ASSEMBLY
- a. Remove the security horn assembly (See REMOVAL).

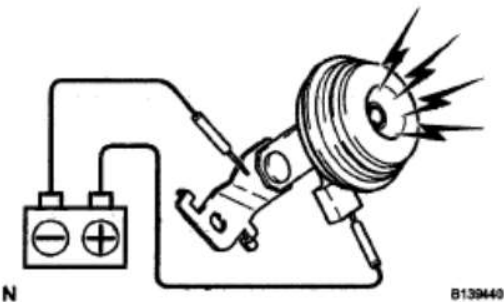
b. Check operation of the horn.

OK

MEASUREMENT SPECIFIED CONDITION

Measurement Condition	Specified Condition
Battery positive (+) --> Terminal 1	Horn sounds
Battery negative (-) --> Horn body	

NG: REPLACE SECURITY HORN ASSEMBLY (See REMOVAL)



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Fig. 18: Checking Operation Of Security Horn
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to next step.

3. **CHECK HARNESS AND CONNECTOR (ENGINE ROOM JUNCTION BLOCK ASSEMBLY - SECURITY HORN ASSEMBLY)**
- a. Disconnect the 2A engine room junction block assembly connector and A15 security horn connector.
 - b. Measure the resistance according to the value(s) in the table below.

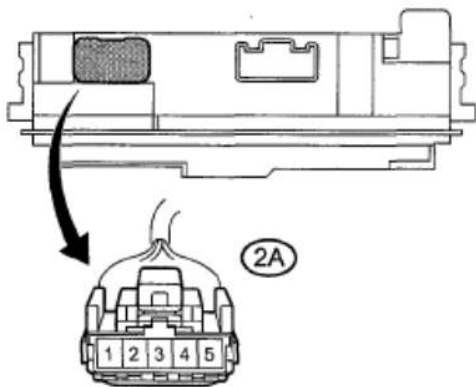
Standard resistance

TESTER CONNECTION SPECIFIED CONDITION

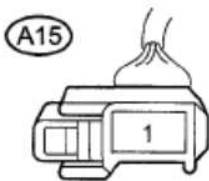
Tester Connection	Condition	Specified Condition
2A-5 - A15-1	Always	Below 1 ohms
2A-5 - Body ground	Always	10 kohms or higher

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

Front view of wire harness connector:
(to Engine Room Junction Block)



Front view of wire harness connector:
(to Security Horn Assembly)



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Fig. 19: Identifying 2A Engine Room Junction Block Assembly And A15 Security Horn Connectors

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Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to next step.

4. **CHECK HARNESS AND CONNECTOR (BATTERY - ENGINE ROOM JUNCTION BLOCK ASSEMBLY)**
- a. Disconnect the 2G engine room junction block assembly connector.
 - b. Measure the voltage on the relay block side according to the value(s) in the table below.

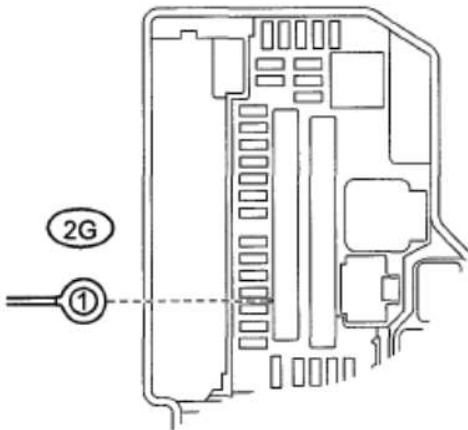
Standard voltage

TESTER CONNECTION SPECIFIED CONDITION

Tester Connection	Condition	Specified Condition
2G-1 - Body ground	Always	11 to 14 V

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

Components without harness connected:
(Engine Room Relay Block)



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Fig. 20: Identifying 2G Engine Room Junction Block Assembly Connector
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to next step.

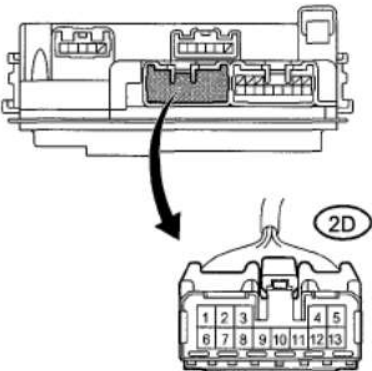
5. **CHECK HARNESS AND CONNECTOR (ENGINE ROOM JUNCTION BLOCK ASSEMBLY - CERTIFICATION ECU)**
- a. Disconnect the 2D engine room junction block assembly connector.

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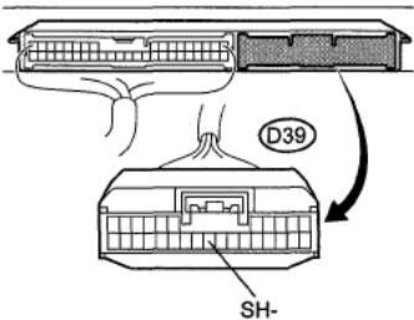
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- b. Disconnect the D39 ECU connector.
- c. Measure the resistance according to the value(s) in the table below.

Front view of wire harness connector:
(to Engine Room Junction Block)



Front view of wire harness connector:
(to Certification ECU (Smart Key ECU))



B179049E02

Fig. 21: Identifying 2D Engine Room Junction Block Assembly And D39 ECU Connectors
Terminals

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard resistance

TESTER CONNECTION SPECIFIED CONDITION

Tester Connection	Condition	Specified Condition
2D-11 - D39-20 (SH-)	Always	Below 1 ohms
D39-20 (SH-) - Body ground	Always	10 kohms or higher

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: REPLACE ENGINE ROOM JUNCTION BLOCK ASSEMBLY

SECURITY INDICATOR LIGHT CIRCUIT

DESCRIPTION

Even when the theft deterrent system is in the disarmed state, the security indicator blinks due to a signal output from the immobiliser system. The security indicator blinks continuously due to a continuous signal received from the immobiliser system while in the armed state.

The certification ECU (smart key ECU assembly) causes the security indicator to come on or blink only during

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the arming preparation state and alarm sounding states.

WIRING DIAGRAM

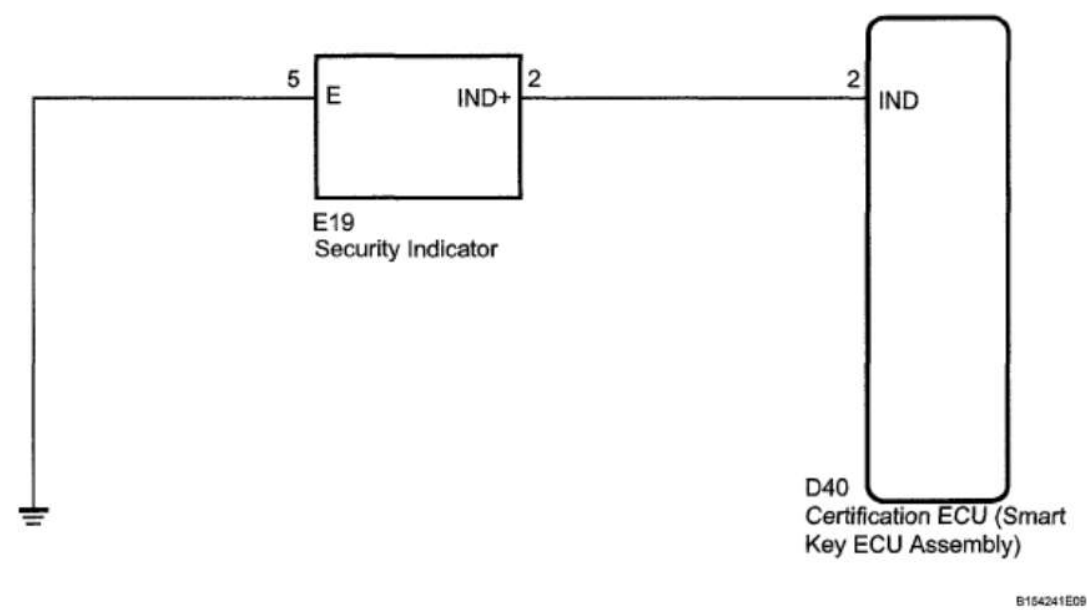


Fig. 22: Security Indicator Light - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

1. PERFORM ACTIVE TEST USING TECHSTREAM
- a. Connect Techstream to the DLC3.

b. Turn the engine switch on (IG).

c. Turn Techstream main switch on.

d. Select the item below in the Active Test and then check that the indicator operates.

Smart Key:

ACTIVE TEST CHART

Tester Display	Test Part	Control Range	Diagnostic Note
Security Indicator	Security indicator	ON/OFF	-

OK: The security indicator light flashes or goes off correctly when operating it through Techstream.

NG: Go to step 2

OK: PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE (See **PROBLEM SYMPTOMS TABLE**)

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2. CHECK HARNESS AND CONNECTOR (SECURITY INDICATOR - CERTIFICATION ECU)

- a. Disconnect the D40 ECU connector.
- b. Disconnect the E19 connector.
- c. Measure the resistance according to the value(s) in the table below.

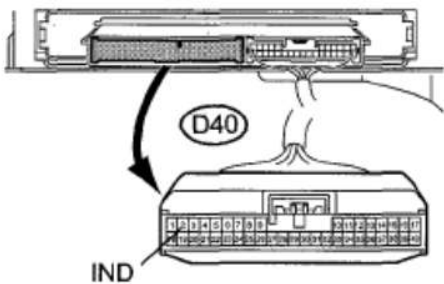
Standard resistance

TESTER CONNECTION SPECIFIED CONDITION

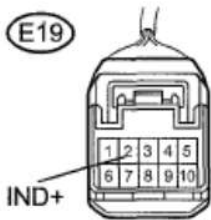
Tester Connection	Condition	Specified Condition
D40-2 (IND) - E19-2 (IND+)	Always	Below 1 ohms
D40-2 (IND) - Body ground	Always	10 kohms or higher

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

Front view of wire harness connector:
(to Certification ECU (Smart key ECU
Assembly))



Front view of wire harness connector:
(to Security Indicator Light)



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Fig. 23: Identifying D40 ECU And E19 Connectors Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to next step.

3. CHECK HARNESS AND CONNECTOR (SECURITY INDICATOR - BODY GROUND)

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

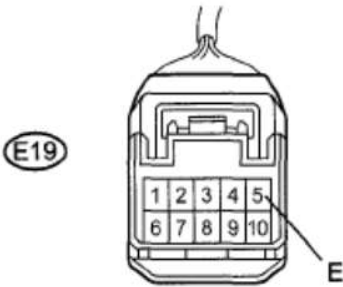
Standard resistance

TESTER CONNECTION SPECIFIED CONDITION

Tester Connection	Condition	Specified Condition
E19-5 (E) - Body ground	Always	Below 1 ohms

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

Front view of wire harness connector:
(to Security Indicator Light)



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Fig. 24: Identifying E Terminal Of Security Indicator Light Connectors
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to next step.

4. INSPECT SECURITY INDICATOR LIGHT

- a. Reconnect the E19 connector, with D40 ECU connector still disconnected.
- b. Apply battery voltage from the wire harness back side between the terminals of the indicator, and check the lighting condition of the security indicator.

Standard

MEASUREMENT SPECIFIED CONDITION

Measurement Condition	Specified Condition
Battery positive (+) --> Terminal E19-2 (IND+)	Security indicator comes on
Battery negative (-) --> Terminal E19-5 (E)	

NOTE:

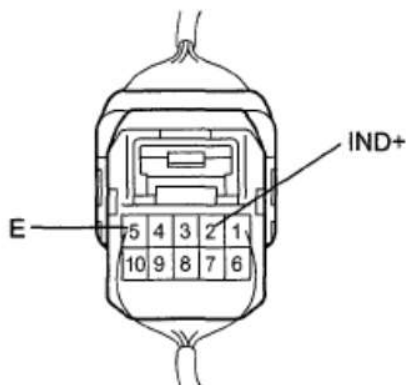
- If the positive (+) lead and the negative (-) lead are incorrectly connected, the security indicator will not come on.
- Voltage of more than 12V will damage the security indicator.

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- If the voltage is too low, the security indicator will not come on.

NG: REPLACE SECURITY INDICATOR LIGHT (See **REMOVAL**)

Component with harness connected:
(Security Indicator Light)



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Fig. 25: Identifying E And IND+ Security Indicator Light Connector
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: REPLACE CERTIFICATION ECU (SMART KEY ECU ASSEMBLY) (See **REMOVAL**)

ECU POWER SOURCE CIRCUIT

DESCRIPTION

This circuit provides power for main body ECU operation.

WIRING DIAGRAM

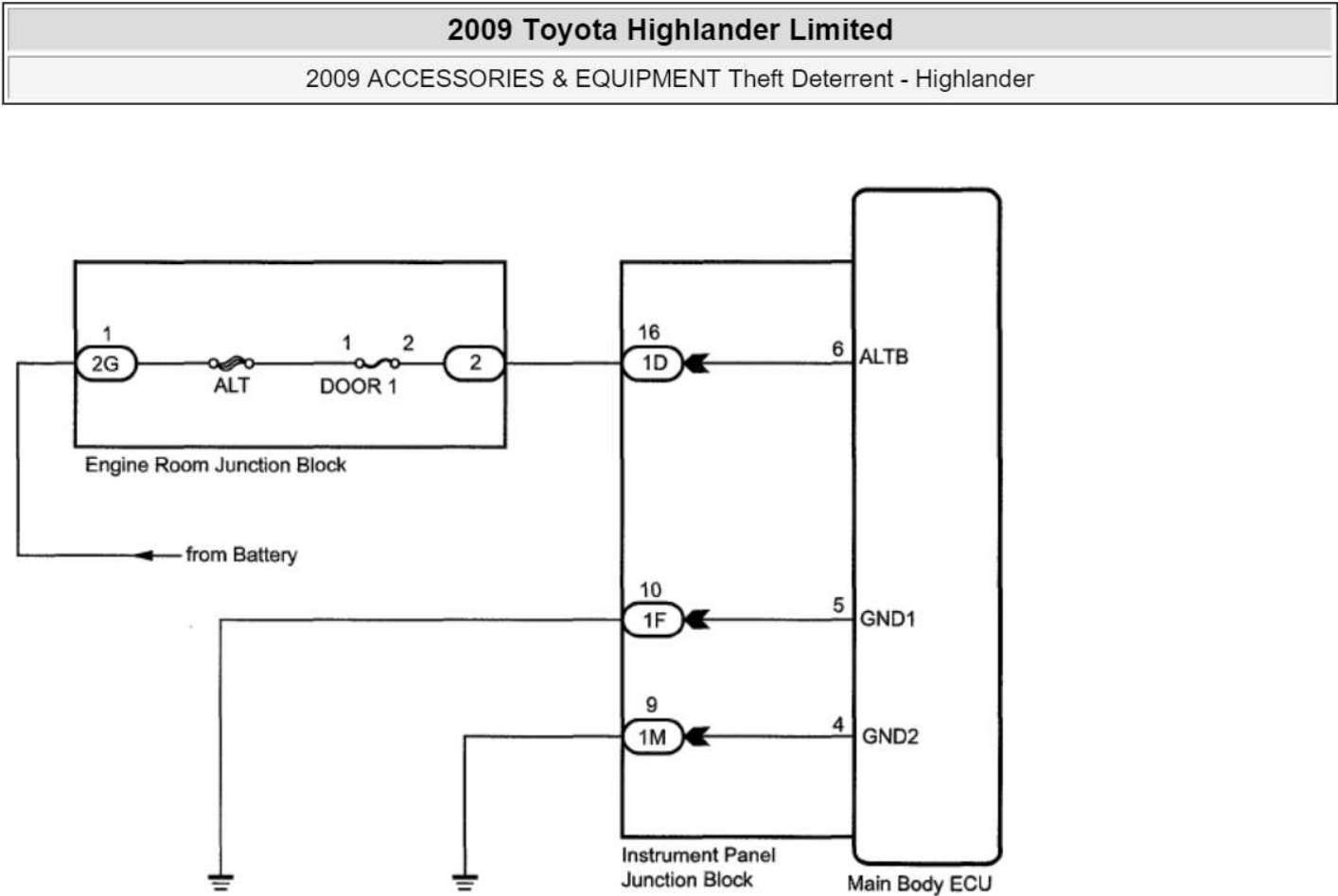


Fig. 26: ECU Power Source - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

1. CHECK INSTRUMENT PANEL JUNCTION BLOCK ASSEMBLY (MAIN BODY ECU (POWER SOURCE))
- a. Disconnect the 1D junction block connector.

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

Standard voltage

TESTER CONNECTION SPECIFIED CONDITION

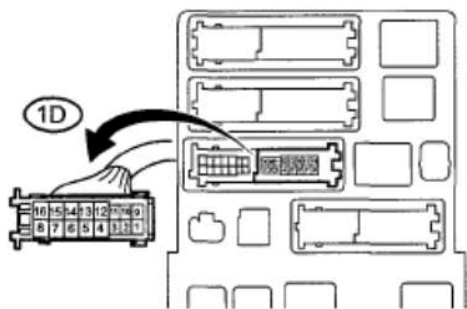
Tester Connection	Specified Condition
1D-16 - Body ground	11 to 14 V

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

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Front view of wire harness connector:
(to Instrument Panel Junction Block)



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Fig. 27: Identifying 1D Junction Block Connector
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to next step.

2. **CHECK HARNESS AND CONNECTOR (INSTRUMENT PANEL JUNCTION BLOCK - BODY GROUND)**
- a. Disconnect the 1F and 1M junction block connectors.

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

Standard resistance

TESTER CONNECTION SPECIFIED CONDITION

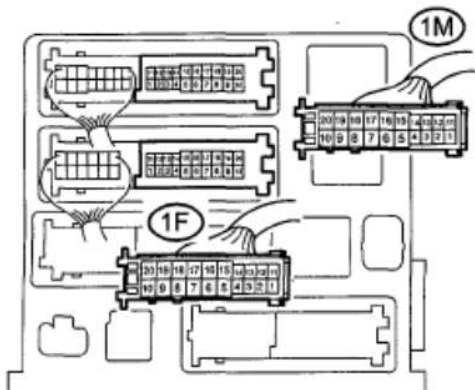
Tester Connection	Specified Condition
1F-10 - Body ground	Below 1 ohms
1M-9 - Body ground	

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

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Front view of wire harness connector:
(to Instrument Panel Junction Block)



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Fig. 28: Identifying 1F And 1M Junction Block Connectors
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE (See **PROBLEM SYMPTOMS TABLE**)

THEFT DETERRENT SYSTEM (W/O SMART KEY SYSTEM)

PRECAUTION

1. NOTICE FOR INITIALIZATION

HINT:

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

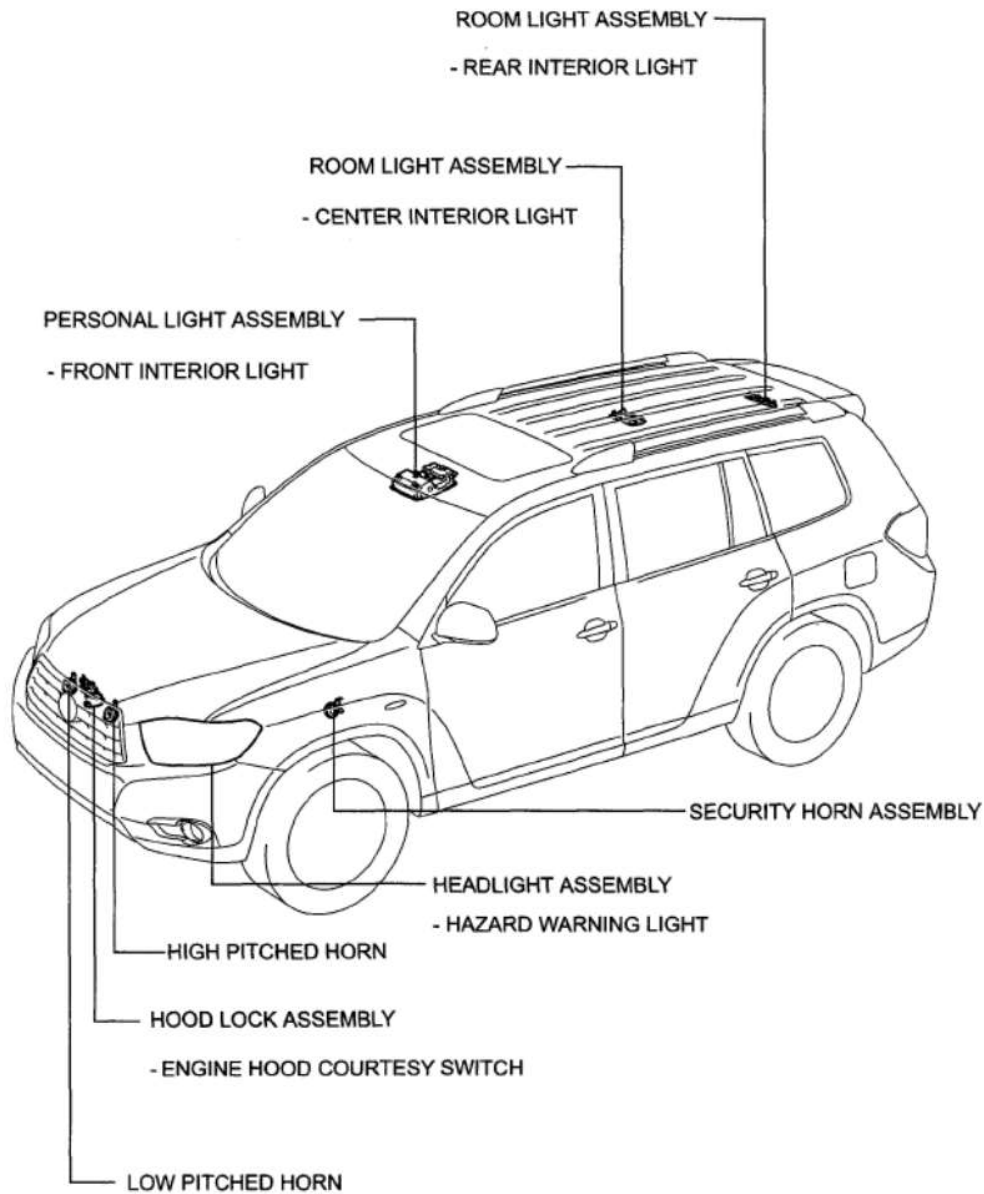
SYSTEM REFERENCE

System Name	See procedure
Power Back Door System	<u>INITIALIZATION</u>

PARTS LOCATION

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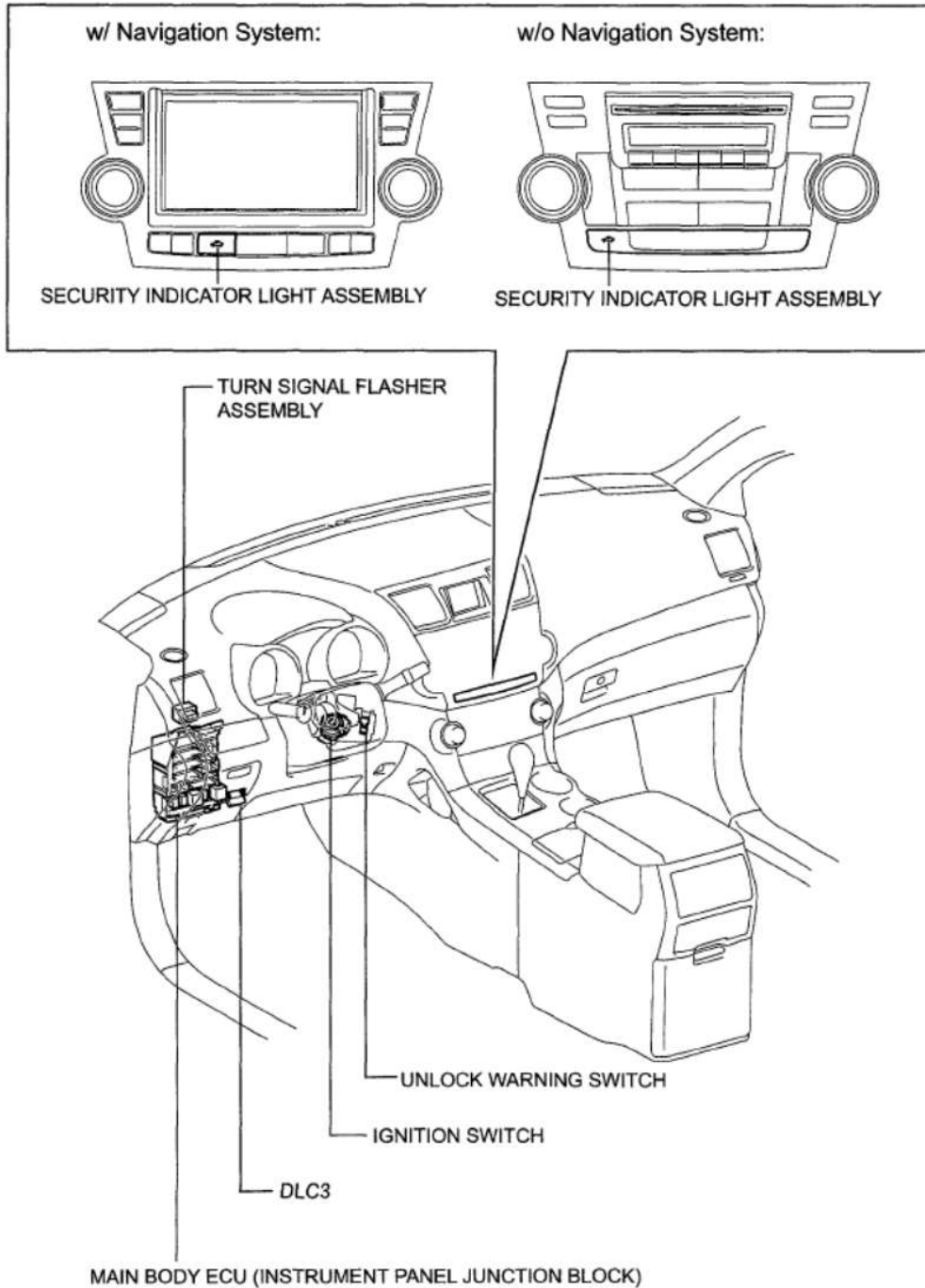
H

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Fig. 29: Identifying Theft Deterrent System Parts Location (W/O Smart Key System) (1 Of 3)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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Fig. 30: Identifying Theft Deterrent System Parts Location (W/O Smart Key System) (2 Of 3)
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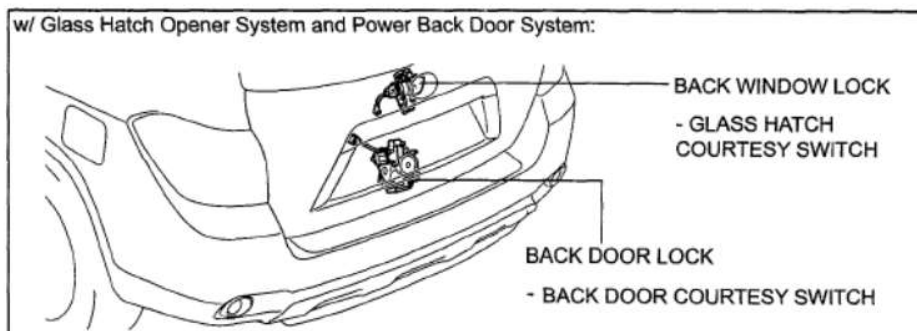
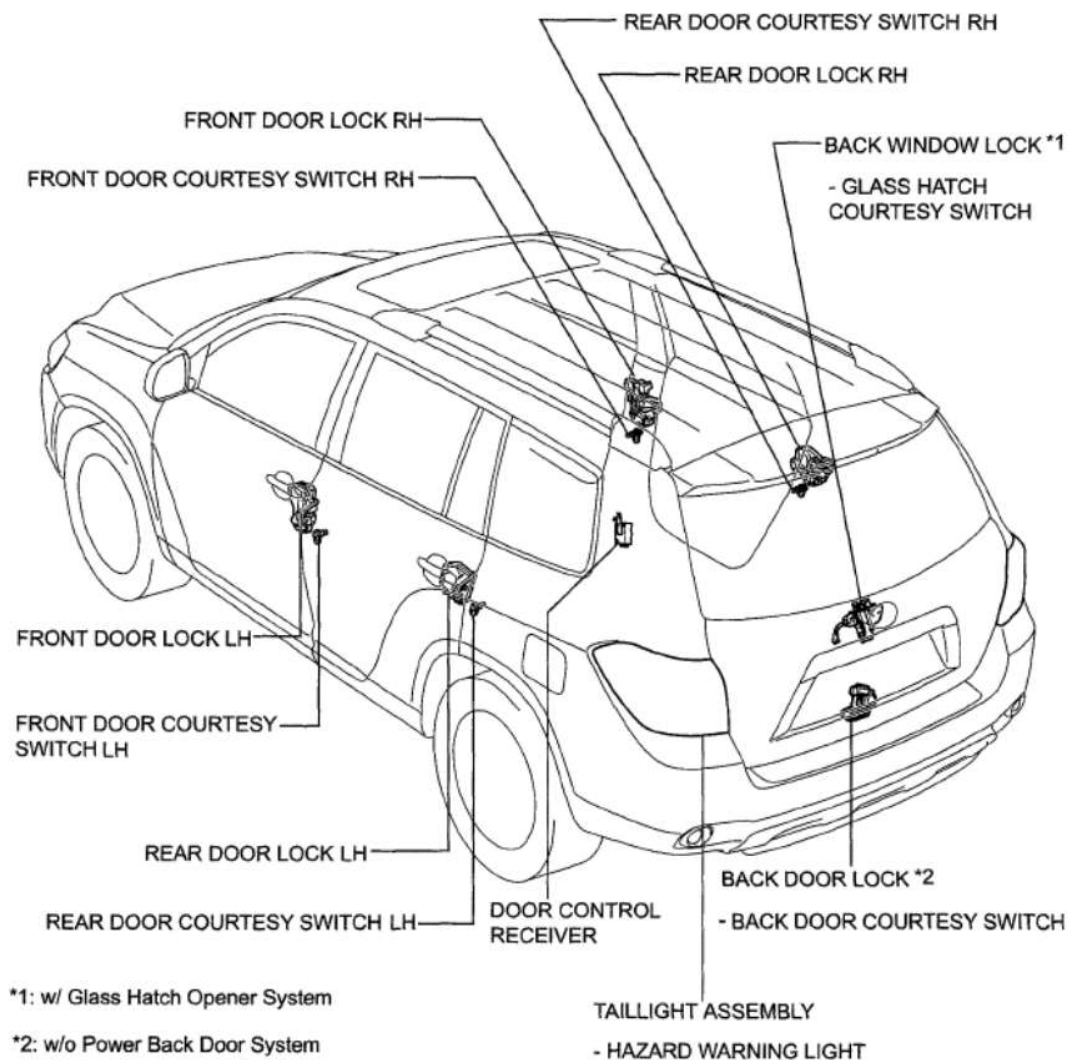


Fig. 31: Identifying Theft Deterrent System Parts Location (W/O Smart Key System) (3 Of 3)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

SYSTEM DIAGRAM

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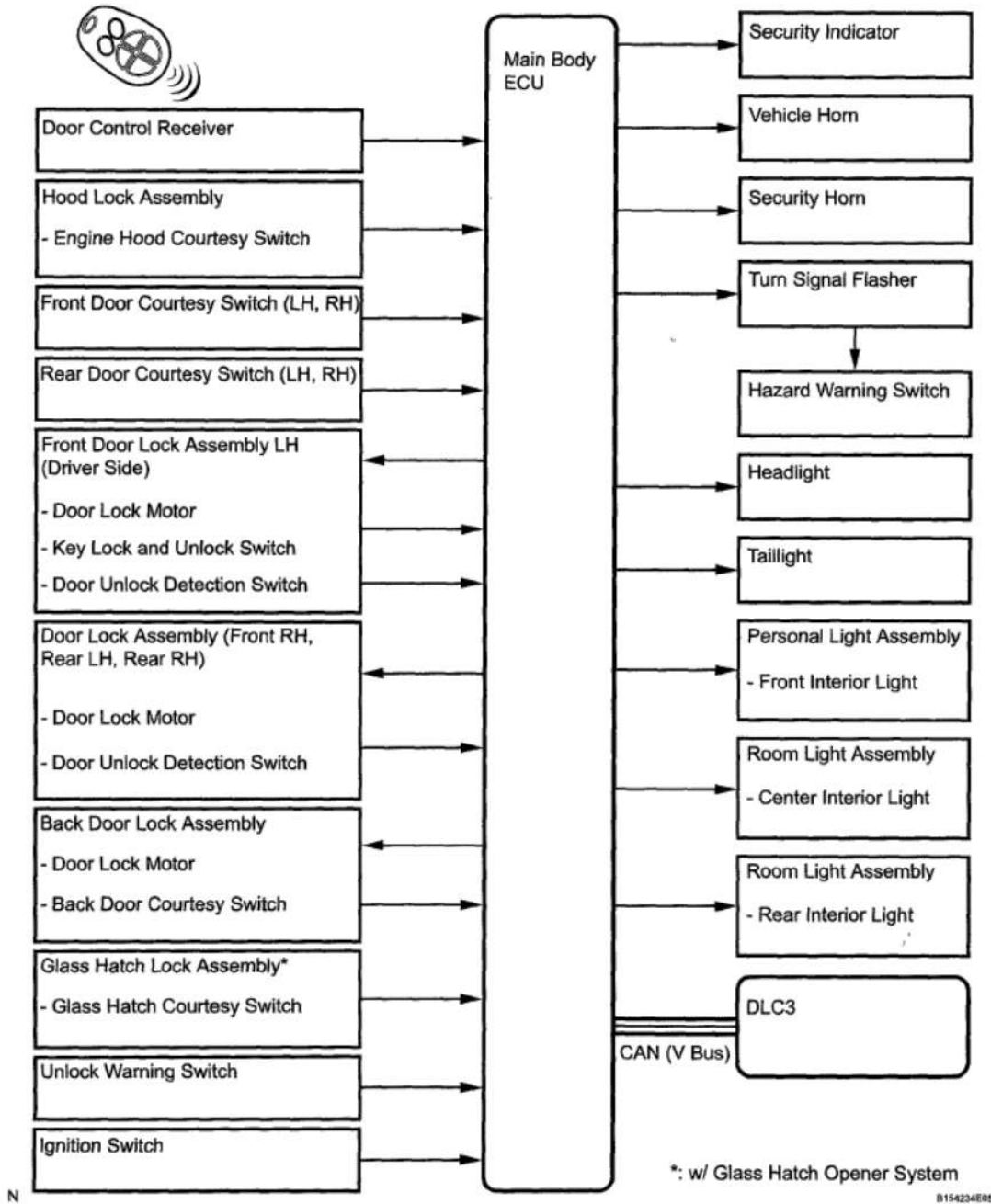


Fig. 32: Theft Deterrent System Diagram (W/O Smart Key System)

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

SYSTEM DESCRIPTION

1. OUTLINE OF THEFT DETERRENT SYSTEM

- The theft deterrent system can be set by locking the doors using the transmitter or key, or by opening and closing the doors (see ACTIVE ARMING MODE or PASSIVE ARMING MODE for details).

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- The alarm function will be activated when someone attempts to forcibly unlock any of the doors or open any of the doors, engine hood, and back door while the system is in the armed state.
- In the alarm sounding state, the system illuminates the interior light and blinks the hazard warning lights, the headlights and taillights. At the same time, the system sounds the vehicle horn(s) and security horn to deter break-in and theft as well as to warn people around the vehicle.
- The alarm can be cancelled by unlocking the doors using the transmitter or key.
- There are two arming modes for this system: active arming mode and passive arming mode. When the active arming mode has been set, the theft deterrent system will be set after the user locks the doors via the transmitter or key. When the passive arming mode has been set, the theft deterrent system will be set after the key is removed and the driver's door is closed.
 - a. Disarmed state:
 - The alarm function is not operating.
 - The theft deterrent system is not operating.
 - b. Arming preparation state:
 - The time until the system goes into the armed state.
 - The theft deterrent system is not operating.
 - c. Armed state:
 - The theft deterrent system is operating.
 - d. Alarm sounding state:
 - The alarm function is operating.

Alarm time:

Approx. 60 sec.

Refer to the table below for alarm methods and time:

ALARM METHODS AND TIME REFERENCE

Alarm Method	Headlights	Blinking
	Taillights	Blinking
	Hazard Warning Lights	Blinking
	Interior Light	Illuminating
	Vehicle Horn(s)	Sounding (approx. 0.4 second cycles)
	Security Horn	Sounding
Alarm Time	Approx. 60 sec.	

HINT:

If any of the doors are unlocked when the key is not in the key cylinder during the armed state, a forced door lock signal will be output (see FORCED DOOR LOCK CONTROL).

2. FUNCTION OF MAIN COMPONENTS

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COMPONENT FUNCTION CHART

Component	Function
Security indicator	Informs driver of theft deterrent system status.
Security horn	Sounds when attempted break-in or theft is detected.
Headlights	Blink when attempted break-in or theft is detected.
Taillights	• Blink when attempted break-in or theft is detected. • Come on when theft deterrent system has entered into alarm sounding state.
Hazard warning lights	Blink when attempted break-in or theft is detected.
Interior light	Comes on when attempted break-in or theft is detected.
Vehicle horn(s)	Sound when attempted break-in or theft is detected.
Door courtesy light switch	Detects door status (open or closed).
Door unlock detection switch	Detects door status (locked or unlocked).
Engine hood courtesy switch	Detects engine hood status (open or closed).
Back door courtesy switch	Detects back door status (open or closed).
Glass hatch courtesy switch*	Detects glass hatch status (open or closed).
HINT: *: w/ Glass Hatch Opener System	

3. ACTIVE ARMING MODE

HINT:

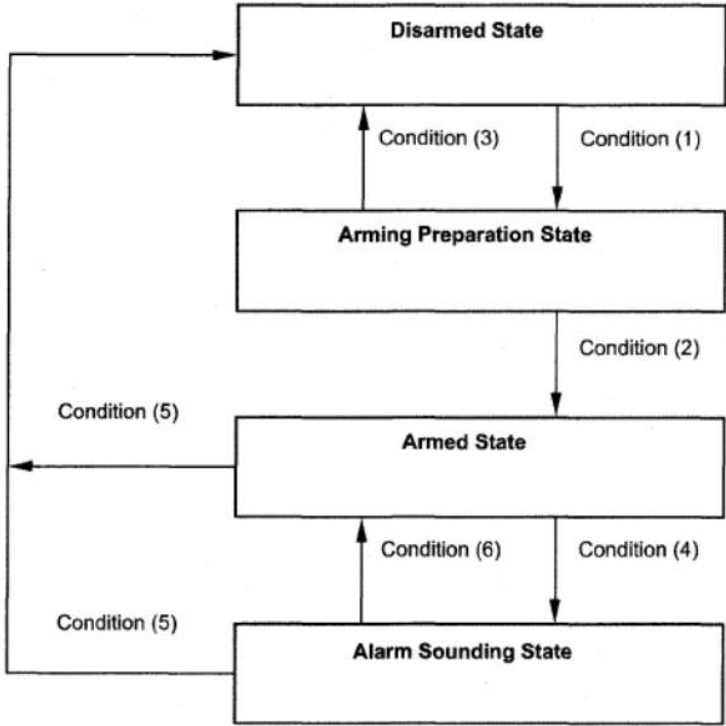
Active arming mode starts the alarm control immediately after the doors are locked.

a. Active arming mode:

This system operates as described in the diagram below when one of the items for each condition is met.

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Fig. 33: Active Arming Mode Flow Chart
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

HINT:

The below terms "all doors" and "door" also refer to the back door.

ITEM CONDITION CHART

Condition	Item
Condition (1)	In the disarmed state, the system state is switched if one of the following conditions is met when the key is not in the key cylinder: • With all doors, engine hood, and glass hatch* closed by key operation. • With all doors, engine hood, and glass hatch* closed, all doors are locked by wireless operation. • With the engine hood closed, any door or the glass hatch* is closed and all doors are locked without using the key.
Condition (2)	Approx. 30 seconds elapse after condition (1) is met.
Condition	• A wireless unlock signal is received. • The driver's door only or all doors are unlocked by key operation. • Any door is unlocked.

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(3)	- Any door or the glass hatch* is opened. - The key is inserted into the ignition key cylinder. - The ignition switch is turned to the ON or ACC position. - The battery is reconnected.
Condition (4)	- The engine hood is opened. - The battery is reconnected. - Any door or the glass hatch* is opened. - Any door is unlocked when all doors are locked. - The ignition switch is turned to the ON position without using the key.
Condition (5)	- A wireless unlock signal is received. - The driver's door only or all doors are unlocked by key operation. - The ignition switch is turned to the ON position and the engine is run for more than 2 seconds.
Condition (6)	Approx. 60 seconds elapse. (The alarm stops and the system returns to the armed state.)
HINT: *: w/ Glass Hatch Opener System	

4. PASSIVE ARMING MODE

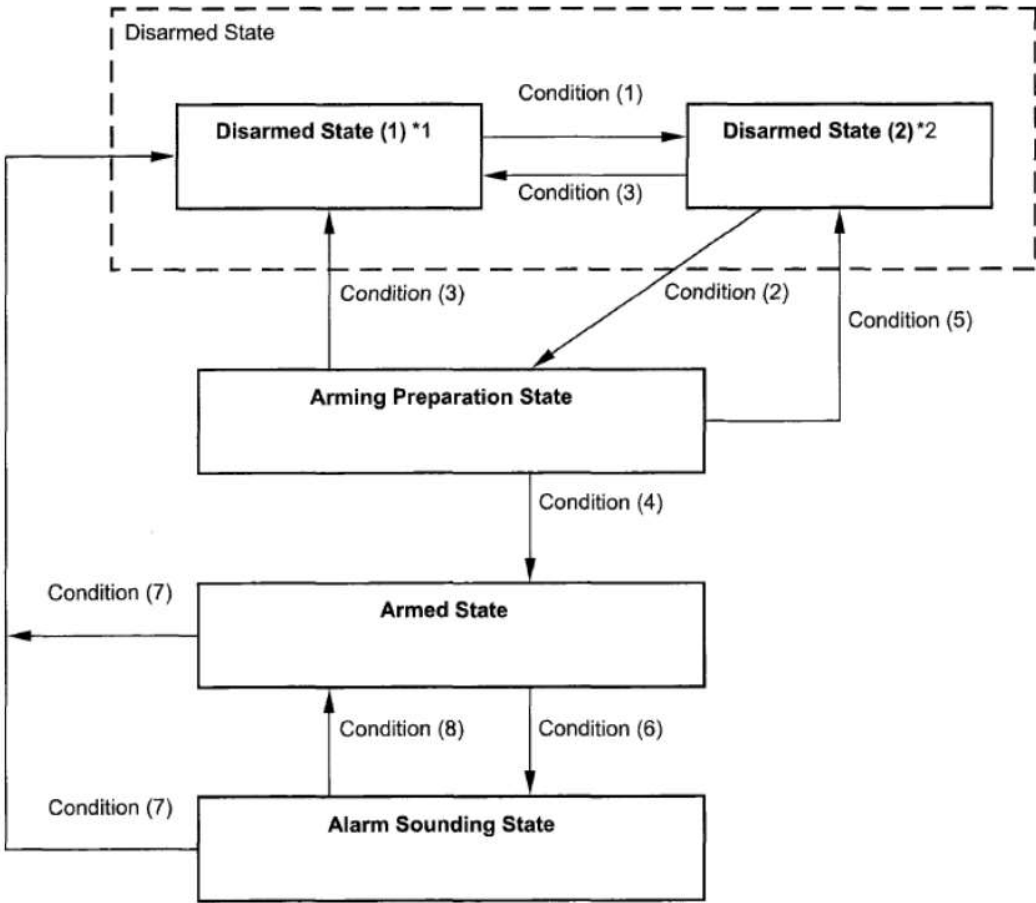
HINT:

- Passive arming mode starts the alarm control after the key is removed from the key cylinder and the doors are closed.
 - Passive arming mode can be switched ON/OFF using Techstream.
 - The alarm is initially set (when shipped from the factory) to active arming mode (not passive arming mode).
 - During passive arming mode, the theft deterrent system goes into the armed state even if the doors are not locked.
 - 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 (see FORCED DOOR LOCK CONTROL).
 - Although the theft deterrent system detects that the doors are opened during passive arming mode, the alarm will not go off immediately because an entry delay time is set.
 - If condition (1) of active arming mode is met during passive arming mode, the theft deterrent system will switch to active arming mode.
- a. Passive arming mode:

This system operates as described in the diagram below when one of the items for each condition is met.

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*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.

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Fig. 34: Passive Arming Mode Flow Chart
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

HINT:

The below terms "all doors" and "door" also refer to the back door.

ITEM CONDITION CHART

Condition	Item
Condition (1)	- With the ignition switch off, any door or the glass hatch*1 is opened and then the key is removed from the ignition key cylinder. - With the ignition switch off, the key is removed from the ignition key cylinder and then any door or the glass hatch*1 is opened.
	An open door(s) or the glass hatch*1 is closed with the other door(s), glass

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Condition (2)	hatch*1, and engine hood closed. • The engine hood is closed with all doors and the glass hatch*1 closed.
Condition (3)	• A wireless unlock signal is received. • The driver's door only or all doors are unlocked by key operation. • The battery is reconnected. • The key is inserted into the ignition key cylinder. • The ignition switch is turned to the ON or ACC position.
Condition (4)	Approx. 30 seconds elapse after condition (1) is met.
Condition (5)	• Any door or the glass hatch*1 is opened. • The engine hood is opened.
Condition (6)	• Any door or the glass hatch*1 is opened and the entry delay time*2 elapse. • The engine hood is opened. • The battery is reconnected. • The ignition switch is turned to the ON position without using the key.
Condition (7)	• A wireless unlock signal is received. • The driver's door only or all doors are unlocked by key operation. • The ignition switch is turned to the ON position and the engine is run for more than 2 seconds. • The ignition switch is turned to the ON position without using the key.
Condition (8)	Approx. 60 seconds elapse. (The alarm stops and the system returns to the armed state.)
HINT: • *1: w/ Glass Hatch Opener System • *2: When any door is opened while all the doors are closed during passive arming mode, the entry delay time starts. If the switch condition (armed state --> disarmed state (1) or (2)) is met during the entry delay time, the theft deterrent system will return to disarmed state (1) or (2). However, if the switch condition for disarmed state (1) or (2) is not met, the theft deterrent system will recognize it as a theft and set off the alarm. Entry delay time of 0,14 or 30 sec. can be selected by the customizing function.	

5. FORCED DOOR LOCK CONTROL

- a. The forced door lock control prevents the vehicle from being tampered with. Immediately after a door is unlocked (alarm starts), all doors are forced to lock by a forced door lock signal.
 1. Conditions that force the doors to lock:

The key is not in the key cylinder and both of the following conditions are met:

- The theft deterrent system is in the alarm sounding state of active arming mode.
- Any door is unlocked.

6. ALARM MEMORY FUNCTION

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- a. If the alarm is set off (tampering is detected) while the theft deterrent system is armed, it will be recorded by the alarm memory function. Whenever the theft deterrent system is cancelled, the alarm memory function causes the taillights to light up for 2 seconds in order to inform you that the alarm has been set off.

1. Conditions that cause the taillights to light up for 2 seconds:

The theft deterrent system has entered the alarm sounding state (tampering has been detected) even once and either of the following conditions is met:

- 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:

Active arming mode: See ACTIVE ARMING MODE.

Passive arming mode: See PASSIVE ARMING MODE.

7. PANIC ALARM CONTROL

- a. The panic alarm control makes it possible to voluntarily set off the panic alarm by pressing the PANIC switch on the wireless transmitter.

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

The PANIC switch on the wireless transmitter is pressed under the following conditions:

- The ignition switch is off.
- The theft deterrent system is not in the alarm sounding state. (This condition is common to both active arming mode and passive arming mode.)

2. Conditions that cause the panic alarm control to shut off the alarm:

Any of the following conditions is met during panic alarm operation:

- The ignition switch is turned to the ON position.
- The PANIC switch is pressed again.
- Any of the switches on the wireless transmitter (LOCK/UNLOCK/POWER BACK DOOR*1 or GLASS HATCH OPEN*2) is pressed.
- The panic alarm ends (approx. 60 sec. have passed).
- The theft deterrent system switches to the alarm sounding state. Under this condition, the theft deterrent system is controlling the alarm rather than the panic alarm control. In order to cancel this alarm, refer to the theft deterrent system alarm sounding state cancellation procedure. (This condition is common to both active arming mode and passive arming mode.)

HINT:

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- *1: w/ Power Back Door System
- *2: w/ Glass Hatch Opener System
- Active arming mode: See ACTIVE ARMING MODE.
- Passive arming mode: See PASSIVE ARMING MODE.

8. SECURITY INDICATOR OUTPUT

- a. The main body ECU outputs a signal to come on the security indicator, according to the state of the theft deterrent system. However, some of the actual lighting conditions of the security indicator are different from the output signals of the main body ECU.

Output:

SECURITY INDICATOR CONDITION CHART

State of Theft Deterrent System	Security Indicator	
	Output Signal from Main Body ECU	Actual Lighting Condition
Disarmed state (1), (2)	OFF	OFF (Immobiliser system unset) BLINKING (Immobiliser system set)
Arming preparation state	ON	ON
Armed state	OFF	BLINKING
Alarm sounding state	ON	ON

Blinking cycle:

BLINKING CYCLE CHART

Time	Security Indicator
0.2 sec.	ON
1.8 sec.	OFF

HINT:

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

HOW TO PROCEED WITH TROUBLESHOOTING

HINT:

- Use this procedure to troubleshoot the theft deterrent system.
- Techstream should be used in step 3.

1. VEHICLE BROUGHT TO WORKSHOP

2. CUSTOMER PROBLEM ANALYSIS

- a. Interview the customer to confirm the trouble (See **HOW TO PROCEED WITH**

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TROUBLESHOOTING).

3. INSPECT COMMUNICATION FUNCTION OF CAN COMMUNICATION SYSTEM

- a. Use Techstream to check if the CAN communication system is functioning normally (See **TERMINALS OF ECU**).

Result

RESULT CHART

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

B: GO TO CAN COMMUNICATION SYSTEM (See **DIAGNOSTIC TROUBLE CODE CHART**)

A: Go to next step.

4. SYMPTOM SIMULATION

5. PROBLEM SYMPTOMS TABLE

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

B: Go to step 7

A: Go to next step.

6. PERFORM TROUBLESHOOTING ACCORDING TO MALFUNCTION SYMPTOM

- a. System description (See **SYSTEM DESCRIPTION**)
- b. Terminals of ECU (See **TERMINALS OF ECU**)

7. ADJUST, REPAIR OR REPLACE

8. CONFIRMATION TEST

NEXT: END

CUSTOMIZE PARAMETERS

HINT:

The following items can be customized.

NOTE:

- After confirming whether the items requested by the customer are applicable or not for customization, perform customizing operations.
- Be sure to record the current settings before customization.
- When troubleshooting, make sure that the item in question is not set to

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"OFF" as a result of customization (Example: For the system, "the wireless function does not operate", first check that the wireless function is not set to "OFF", then perform troubleshooting).

1. CUSTOMIZE

- a. Connect Techstream to the DLC3.
- b. Turn the ignition switch to the ON position.
- c. Turn the tester on.
- d. Enter the following menus:

Select: Customize Setting/

- e. Select the setting by referring to the table below.

Security:

CUSTOMIZE PARAMETERS

Display (Item)	Default	Contents	Setting
Passive Mode (Security System)	OFF	Passive Mode is a function that switches the theft deterrent system from the arming preparation state to the armed state 30 seconds after the key is removed from the key cylinder and all doors, engine hood and luggage compartment door are closed, even if the doors are not locked by wireless or door key lock operation. In Passive Mode, if the following operations are not performed within 14 seconds after a door is opened during armed state, the theft deterrent system will judge that condition as a theft and switch to the alarm sounding state. ○ Unlock any door by key or wireless operation ○ Turn the ignition switch to the ON position ○ Open the luggage compartment door by key or wireless operation	ON/OFF
Warning by Horn	ON	Function that allows the vehicle horn and theft deterrent horn to be used as warning devices	ON/OFF
Entry Delay	14s	Function that changes entry delay time (time before warning starts) for Passive Mode	0s/14s/30s
Warning by Glass Broken Sensor	ON	Function that turns the glass breakage sensor on/off. This function is only effective for vehicles with glass breakage sensor.	ON/OFF

PROBLEM SYMPTOMS TABLE

HINT:

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- Troubleshooting of the theft deterrent system is based on the premise that the door lock control system and the wireless door lock control system are operating normally. Accordingly, before troubleshooting the theft deterrent system, first make certain that the door lock control system and the wireless door lock control system are operating normally.
- The following is the troubleshooting procedure for the theft deterrent system of a vehicle without the smart key system.
- Inspect the fuse and relay before investigating the suspected areas shown in the table below.

Theft deterrent system:

PROBLEM SYMPTOMS REFERENCE

Symptom	Suspected Area	Refer to
Theft deterrent system cannot be set	Security indicator light circuit	<u>SECURITY INDICATOR LIGHT CIRCUIT</u>
	ECU power source circuit	<u>ECU POWER SOURCE CIRCUIT</u>
	Unlock warning switch circuit	<u>KEY LOCK-IN PREVENTION FUNCTION DOES NOT WORK PROPERLY</u>
	Door key lock/unlock switch	<u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Door courtesy switch circuit	<u>DOOR COURTESY SWITCH CIRCUIT</u>
	Back door courtesy switch circuit	<u>ONLY BACK DOOR LOCK/UNLOCK FUNCTIONS DO NOT OPERATE</u>
	Engine hood courtesy switch circuit	<u>ENGINE HOOD COURTESY SWITCH CIRCUIT</u>
	Glass hatch courtesy switch*	<u>INSPECTION</u>
	If the symptom(s) still occur after the above areas are inspected and proved to be normal, replace the main body ECU (Instrument panel junction block)	-
Security indicator does not blink when theft deterrent system is set	Security indicator light circuit	<u>SECURITY INDICATOR LIGHT CIRCUIT</u>
	If the symptom(s) still occur after the above area is inspected and proved to be normal, replace the main body ECU (Instrument Panel junction block)	-
Alarm sounding state cannot	Ignition switch circuit	<u>IGNITION SWITCH CIRCUIT</u>
	Unlock warning switch circuit	<u>KEY REMINDER BUZZER DOES NOT SOUND</u>
	If the symptom(s) still occur after the	

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be canceled when ignition switch turned ON	above areas are inspected and proved to be normal, replace the main body ECU (Instrument panel junction block)	-
Theft deterrent system can be set even when a door is open	Door courtesy switch circuit	<u>DOOR COURTESY SWITCH CIRCUIT</u>
	Glass hatch courtesy switch*	<u>INSPECTION</u>
	If the symptom(s) still occur after the above areas are inspected and proved to be normal, replace the main body ECU (Instrument panel junction block)	-
Vehicle horns (low pitched, high pitched) do not sound while theft deterrent system is in warning operation	Horn circuit	<u>HORN CIRCUIT</u>
	If the symptom(s) still occur after the above area is inspected and proved to be normal, replace the main body ECU (Instrument panel junction block)	-
Headlights do not blink while theft deterrent system is in warning operation	Headlight Relay Circuit	<u>HEADLIGHT RELAY CIRCUIT</u>
	If the symptom(s) still occur after the above area is inspected and proved to be normal, replace the main body ECU (Instrument panel junction block)	-
Taillights do not blink while theft deterrent system is in warning operation	Taillight Relay Circuit	<u>TAILLIGHT RELAY CIRCUIT</u>
	If the symptom(s) still occur after the above area is inspected and proved to be normal, replace the main body ECU (Instrument panel junction block)	-
Hazard warning lights do not flash while theft deterrent system is in warning operation	Wire harness or connector	-
	Turn signal flasher	<u>INSPECTION</u>
	If the symptom(s) still occur after the above area is inspected and proved to be normal, replace the main body ECU (Instrument panel junction block)	-
Interior light does not light up while theft deterrent system is in warning operation	Interior light circuit	<u>INTERIOR LIGHT CIRCUIT</u>
	If the symptom(s) still occur after the above area is inspected and proved to be normal, replace the main body ECU (Instrument panel junction block)	-
Security horn does not sound	Security horn circuit	<u>SECURITY HORN CIRCUIT</u>
	If the symptom(s) still occur after the	

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while theft deterrent system is in warning operation	above area is inspected and proved to be normal, replace the main body ECU (Instrument panel junction block)	-
Headlights blink even when theft deterrent system is not set	Headlight Relay Circuit If the symptom(s) still occur after the above area is inspected and proved to be normal, replace the main body ECU (Instrument panel junction block)	<u>HEADLIGHT RELAY CIRCUIT</u>
Taillights blink even when theft deterrent system is not set	Taillight Relay Circuit If the symptom(s) still occur after the above area is inspected and proved to be normal, replace the main body ECU (Instrument panel junction block)	<u>TAILLIGHT RELAY CIRCUIT</u>
Hazard warning lights flash even when theft deterrent system is not set	Wire harness or connector Turn signal flasher If the symptom(s) still occur after the above area is inspected and proved to be normal, replace the main body ECU (Instrument panel junction block)	- <u>INSPECTION</u>
Interior light comes on even when theft deterrent system is not set	Interior light circuit If the symptom(s) still occur after the above area is inspected and proved to be normal, replace the main body ECU (Instrument panel junction block)	<u>INTERIOR LIGHT CIRCUIT</u>
HINT: *: w/ Glass Hatch Opener System		

TERMINALS OF ECU

1. CHECK MAIN BODY ECU (INSTRUMENT PANEL JUNCTION BLOCK)

- a. Disconnect the main body ECU (instrument panel junction block) connectors.

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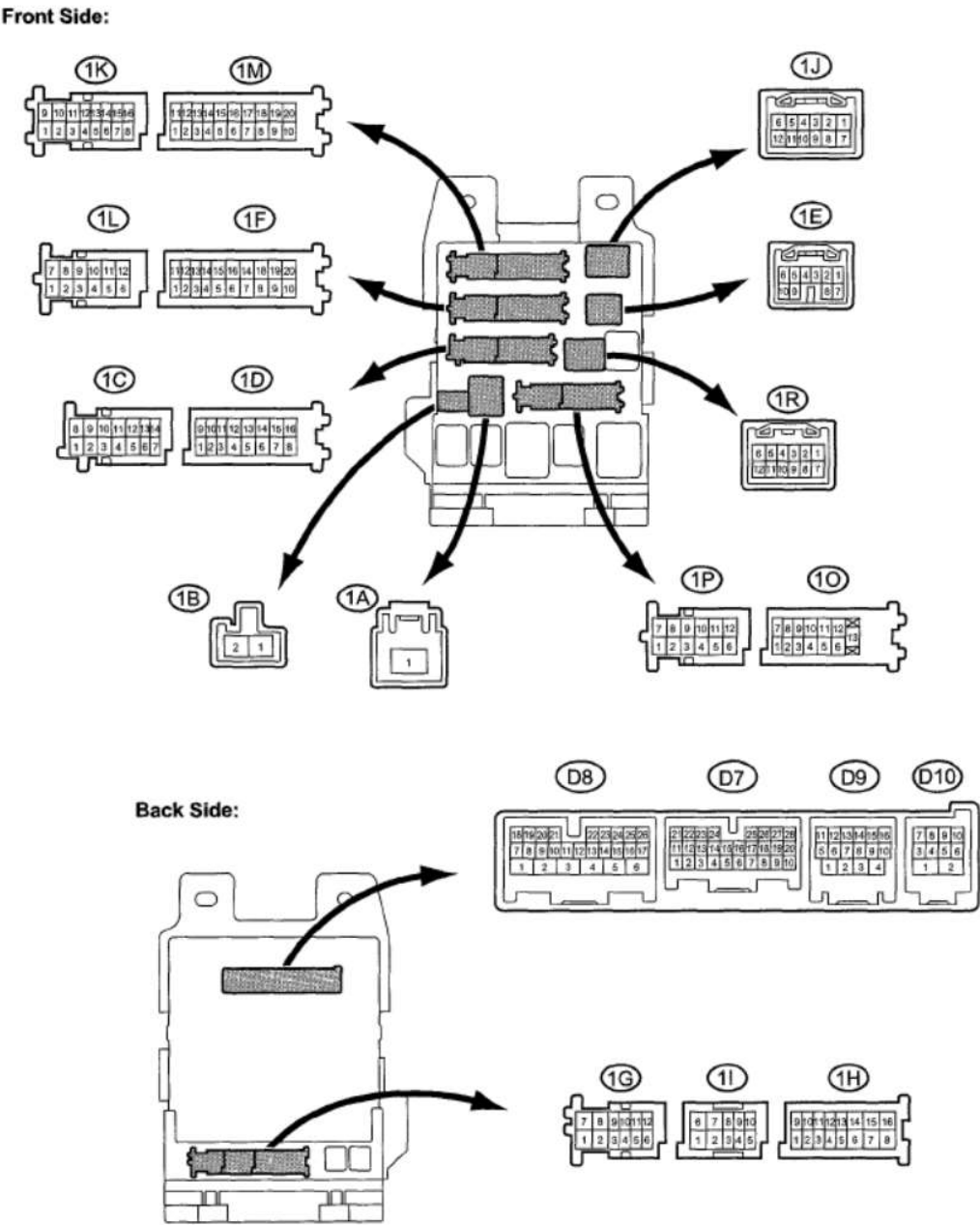


Fig. 35: Identifying Main Body ECU Connectors Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Measure the resistance and voltage between each terminal of the wire harness side connectors and body ground.

TESTER CONNECTION SPECIFIED CONDITION

Tester Connection	Wiring Color	Terminal Description	Condition	Specified Condition
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D7-5 (RCTY)* ¹ - Body ground	GR - Body ground	Rear courtesy light switch RH input	Rear door RH CLOSED (OFF) --> OPEN (ON)	10 kohms or higher --> Below 1 ohms
D7-7 (RCTY)* ² - Body ground	GR - Body ground	Rear courtesy light switch RH input	Rear door RH CLOSED (OFF) --> OPEN (ON)	10 kohms or higher --> Below 1 ohms
D7-21 (PCTY) - Body ground	SB - Body ground	Passenger side courtesy light switch input	Passenger side door CLOSED (OFF) --> OPEN (ON)	10 kohms or higher --> Below 1 ohms
D7-25 (BCTY) - Body ground	L - Body ground	Back door courtesy light switch input	Back door CLOSED (OFF) --> OPEN (ON)	10 kohms or higher --> Below 1 ohms
D8-16 (HCTY) - Body ground	R - Body ground	Engine hood courtesy switch	Engine hood CLOSED (OFF) --> OPEN (ON)	10 kohms or higher --> Below 1 ohms
D8-24 (DCTY) - Body ground	G - Body ground	Driver side door courtesy light switch input	Driver side door CLOSED (OFF) --> OPEN (ON)	10 kohms or higher --> Below 1 ohms
D8-20 (GCTY)* ³ - Body ground	P - Body ground	Glass hatch courtesy switch	Glass hatch CLOSED (OFF) --> OPEN (ON)	10 kohms or higher --> Below 1 ohms
D10-5 (KSW) - Body ground	GR - Body ground	Unlock warning switch input	No key in ignition key cylinder (OFF) --> Key inserted (ON)	10 kohms or higher --> Below 1 ohms
1A-1 (ACC) - Body ground	B - Body ground	Ignition power supply (ACC signal)	Ignition switch ACC --> OFF	11 to 14 V --> Below 1 V
1A-1 (IG) - Body ground	B - Body ground	Ignition power supply (IG signal)	Ignition switch ON --> OFF	11 to 14 V --> Below 1 V
1D-16 (ALTB) - Body ground	W - Body ground	+B (power system alternator system) power supply	Always	11 to 14 V
1F-10 (GND1) - Body ground	W-B - Body ground	Ground	Always	Below 1 ohms
1D-10 (BECU) - Body ground	W - Body ground	+B power supply	Always	11 to 14 V
1M-9 (GND2) - Body ground	W-B - Body ground	Ground	Always	Below 1 ohms
1O-7 (LCTY) - Body ground	B - Body ground	Rear courtesy light switch LH input	Rear door LH CLOSED (OFF) --> OPEN (ON)	10 kohms or higher --> Below 1 ohms

HINT:

- *1: w/o Power Back Door System

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- *2: w/ Power Back Door System
- *3: w/ Glass Hatch Opener System
- If the result is not as specified, there may be a malfunction on the wire harness side.

- c. Reconnect the main body ECU (instrument panel junction block) connectors.
- d. Measure the voltage between each terminal of the wire harness side connectors and body ground.

TESTER CONNECTION SPECIFIED CONDITION

Tester Connection	Wiring Color	Terminal Description	Condition	Specified Condition
D9-4 (HAZ) - Body ground	O - Body ground	Turn signal flasher relay signal	System is in alarm sounding state	Below 1 V
D10-4 (IND) - Body ground	B - Body ground	Security indicator output	Security indicator is on (It lights up only in arming preparation state or alarm sounding state. It flashes when immobiliser is operating.)	3 to 6 V
D10-6 (SH) - Body ground	W - Body ground	Security horn drive	Security horn is sounding (Theft deterrent system is in alarm sounding state)	Pulse generation (Below 1 V <--- > 12 V)
1D-11 (HORN) - Body ground	GR - Body ground	Vehicle horn drive	Vehicle horn is sounding (Theft deterrent system is in alarm sounding state)	Pulse generation (Below 1 V <--- > 12 V)

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

DIAGNOSIS SYSTEM

1. DESCRIPTION

The ECU stores trouble codes when trouble occurs on the vehicle.

The diagnostic system allows for reading of the trouble codes from the DLC3.

Use Techstream to check and solve the problem.

2. CHECK DLC3

- a. Check the DLC3 (See **HOW TO TROUBLESHOOT ECU CONTROLLED SYSTEMS**).

DATA LIST/ACTIVE TEST

1. DATA LIST

HINT:

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Using Techstream to read the Data List allows the values or states of switches, sensors, actuators and other items to be read without removing any parts. This non-intrusive inspection can be very useful because intermittent conditions or signals may be discovered before parts or wiring is disturbed. Reading the Data List information early in troubleshooting is one way to save diagnostic time.

- a. Connect Techstream to the DLC3.
- b. Turn the ignition switch to the ON position.
- c. Turn the tester on.
- d. Enter the following menus:

Select: Body Electrical/Main Body/Data List/

- e. According to the display on the tester, read the Data List.

Main Body:

DATA LIST

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Key Unlock Warning SW	Unlock warning switch signal/ON or OFF	ON: Key is inserted in the ignition key cylinder OFF: Key is removed from the ignition key cylinder	-
ACC SW	Ignition switch ACC signal/ON or OFF	ON: Ignition switch is in the ACC position OFF: Ignition switch is OFF	-
IG SW	Ignition switch signal/ON or OFF	ON: Ignition switch is in the ON position OFF: Ignition switch is OFF	-
D Door Courtesy SW	D door courtesy switch/ON or OFF	ON: Driver side door is OPEN OFF: Driver side door is CLOSED	-
P Door Courtesy SW	P door courtesy switch/ON or OFF	ON: Front passenger side door is OPEN OFF: Front passenger side door is CLOSED	-
RR Door Courtesy SW	Rear right door courtesy switch/ON or OFF	ON: Rear right door is OPEN OFF: Rear right door is CLOSED	-
RL Door Courtesy SW	Rear left door courtesy switch/ON or OFF	ON: Rear left door is OPEN OFF: Rear left door is CLOSED	-
Back Door Courtesy SW	Back door courtesy switch/ON or OFF	ON: Back door is OPEN OFF: Back door is CLOSED	-
D-Door Lock Pos SW	Driver's door lock position switch/ON or OFF	ON: Driver's door is UNLOCKED OFF: Driver's door is LOCKED	-
P-Door Lock Pos SW	Passenger door lock position switch/ON or OFF	ON: Passenger door is UNLOCKED OFF: Passenger door is LOCKED	-

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Glass Hatch Courtesy Switch*	Glass hatch courtesy switch/ON or OFF	ON: Glass hatch is OPEN OFF: Glass hatch is CLOSED	-
RR-Door Lock Pos SW	Rear right door lock position switch/ON or OFF	ON: Rear right door is UNLOCKED OFF: Rear right door is LOCKED	-
RL-Door Lock Pos SW	Rear left door lock position switch/ON or OFF	ON: Rear left door is UNLOCKED OFF: Rear left door is LOCKED	-
Hood Courtesy Switch	Engine hood courtesy signal/ON or OFF	ON: Engine hood is OPEN OFF: Engine hood is CLOSED	-
Passive Mode	Passive mode/ON or OFF	ON: Passive mode is ON OFF: Passive mode is OFF	-
Warning by Horn	Warning by horn/ON or OFF	ON: Vehicle horns sound during alarm sounding state OFF: Vehicle horns do no sound during alarm sounding state	-
Entry Delay	Entry delay time during passive mode	0 s: Entry delay time is 0 sec. 14 s: Entry delay time is 14 sec. 30 s: Entry delay time is 30 sec.	-

HINT:

*: w/ Glass Hatch Opener System

2. ACTIVE TEST

HINT:

Using Techstream to perform Active Tests allows relays, VSVs, actuators and other items to be operated without removing any parts. This non-intrusive inspection can be very useful because intermittent operation may be discovered before parts or wiring is disturbed. Performing Active Tests early in troubleshooting is one way to save diagnostic time. The Data List can be displayed while performing Active Tests.

- a. Connect Techstream to the DLC3.
- b. Turn the ignition switch to the ON position.
- c. Turn the tester on.
- d. Enter the following menus:

Select: Body Electrical/Main Body/Active Test/

- e. According to the display on the tester, perform the Active Test.

Main Body:

COMPONENTS TORQUE SPECIFICATION

Tester Display	Test Part	Control Range	Diagnostic Note
Hazard	Hazard warning lights	ON/OFF	-
Vehicle Horn	Vehicle horns	ON/OFF	-

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Security Indicator	Security indicator	ON/OFF	-
Security Horn	Security horn	ON/OFF	-

ENGINE HOOD COURTESY SWITCH CIRCUIT

DESCRIPTION

The engine hood courtesy switch is installed together with the hood lock. This switch turns off when the engine hood is opened and turns on when the engine hood is closed.

WIRING DIAGRAM

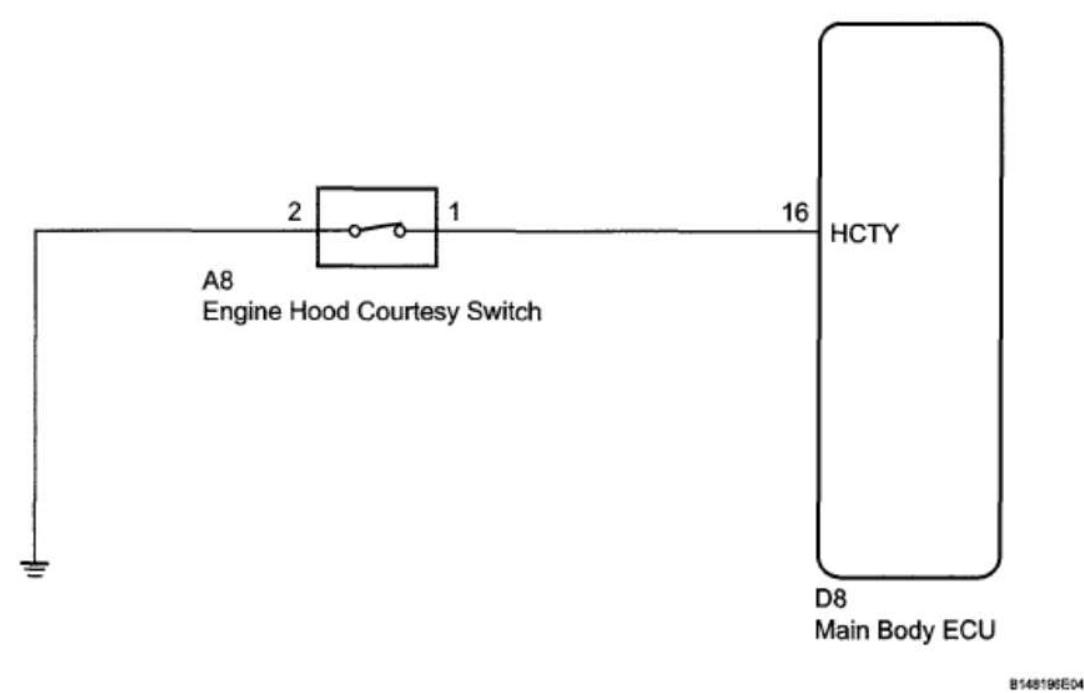


Fig. 36: Engine Hood Courtesy Switch - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

1. READ VALUE USING TECHSTREAM
- a. Connect Techstream to the DLC3.

b. Turn the ignition switch to the ON position.

c. Turn the Techstream main switch on.

d. Select the item below in the Data List and read the display on the tester.

Main Body:

DATA LIST

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Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Hood Courtesy Switch	Engine hood courtesy switch signal ON/OFF	ON: Engine hood is OPEN OFF: Engine hood is CLOSED	-

OK: The indicator on Techstream switches between ON and OFF in accordance with the engine hood courtesy switch status.

NG: Go to step 2

OK: PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE (See **PROBLEM SYMPTOMS TABLE**)

2. INSPECT ENGINE HOOD COURTESY SWITCH

- a. Disconnect the A8 courtesy switch connector.

Component without harness connected:
(Engine Hood Courtesy Switch)

Engine Hood Lock Assembly

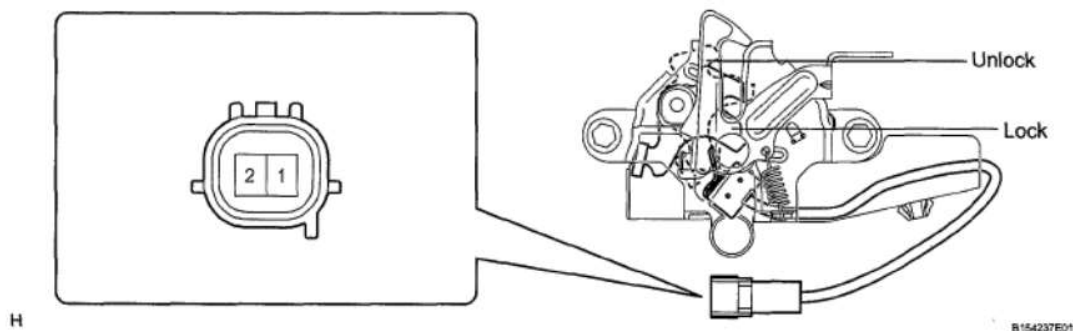


Fig. 37: Identifying A8 Courtesy Switch Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard resistance

TESTER CONNECTION SPECIFIED CONDITION

Tester Connection	Switch Condition	Specified Condition
1 - 2	LOCK position	Below 1 ohms
	UNLOCK position	10 kohms or higher

NG: REPLACE HOOD LOCK ASSEMBLY (See **ENGINE HOOD COURTESY SWITCH**)

OK: Go to next step.

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3. CHECK HARNESS AND CONNECTOR (ENGINE HOOD COURTESY SWITCH - BODY GROUND)

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

Standard resistance

TESTER CONNECTION SPECIFIED CONDITION

Tester Connection	Condition	Specified Condition
A8-2 - Body ground	Always	Below 1 ohms

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

Front view of wire harness connector:
(to Engine Hood Courtesy Switch)



N

8126091E02

Fig. 38: Identifying Engine Hood Courtesy Switch Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to next step.

4. CHECK HARNESS AND CONNECTOR (MAIN BODY ECU - ENGINE HOOD COURTESY SWITCH)

- a. Disconnect the D8 ECU connector.
- b. Measure the resistance according to the value(s) in the table below.

Standard resistance

TESTER CONNECTION SPECIFIED CONDITION

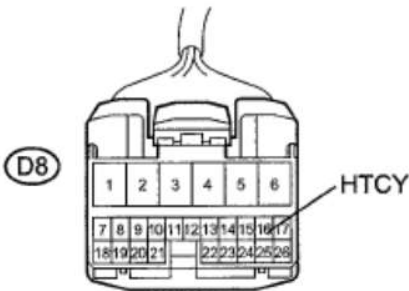
Tester Connection	Condition	Specified Condition
D8-16 (HCTY) - A8-1	Always	Below 1 ohms
D8-16 (HCTY) - Body ground	Always	10 kohms or higher

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

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Front view of wire harness connector:
(to Main Body ECU)



Front view of wire harness connector:
(to Engine Hood Courtesy Switch)



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Fig. 39: Identifying D8 ECU And A8 Engine Hood Courtesy Switch Connectors Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: REPLACE MAIN BODY ECU (INSTRUMENT PANEL JUNCTION BLOCK)

HORN CIRCUIT

DESCRIPTION

When the theft deterrent system is switched from the armed state to the alarm sounding state, the main body ECU transmits a signal to cause the horn to sound at intervals of 0.4 seconds.

WIRING DIAGRAM

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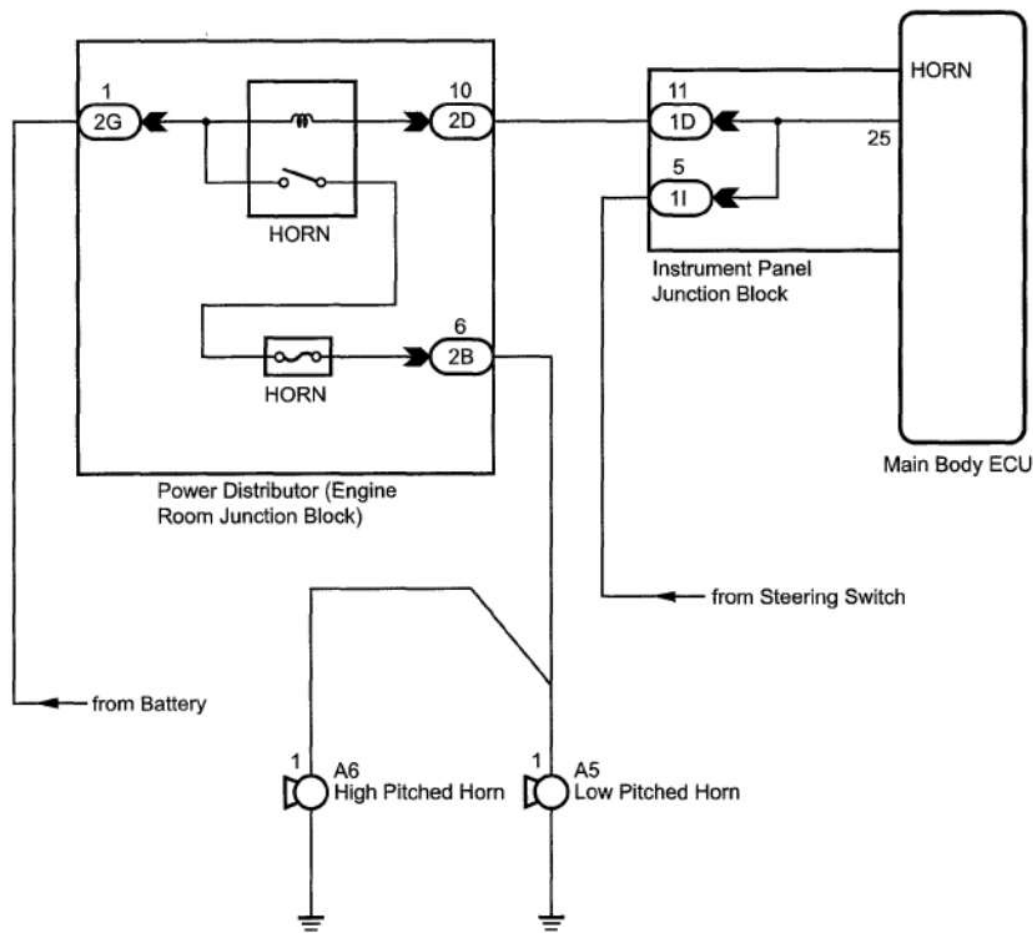


Fig. 40: Horn - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

1. INSPECT HORNS
- a. Press the horn switch and check if the horns sound.

Result

RESULT CHART

Result	Proceed to
Horns sound	A
Horns do not sound	B

B: GO TO HORN SYSTEM (See SYSTEM DIAGRAM)

A: Go to next step.

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2. PERFORM ACTIVE TEST USING TECHSTREAM

- a. Connect Techstream to the DLC3.
- b. Turn the ignition switch to the ON position.
- c. Turn Techstream main switch on.
- d. Select the item below in the Active Test and then check that the horns operate.

Main Body:

ACTIVE TEST CHART

Tester Display	Test Part	Control Range	Diagnostic Note
Vehicle Horn	Vehicle horns	ON/OFF	-

OK: The vehicle horns sound or stop correctly when operating them through Techstream.

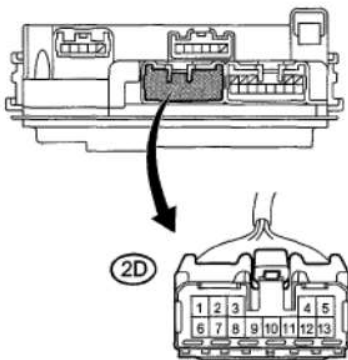
NG: Go to step 3

OK: PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE (See PROBLEM SYMPTOMS TABLE)

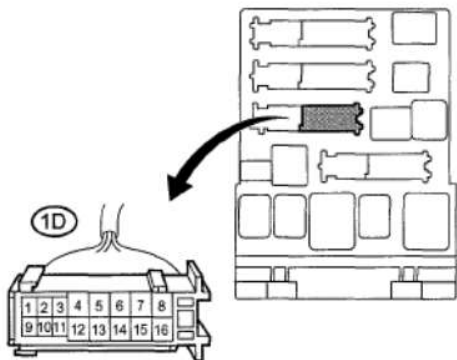
3. CHECK HARNESS AND CONNECTOR (INSTRUMENT PANEL JUNCTION BLOCK - ENGINE ROOM JUNCTION BLOCK)

- a. Disconnect the ID instrument panel junction block connector and 2D engine room junction block connector.

Front view of wire harness connector:
(to Engine Room Junction Block)



Front view of wire harness connector:
(to Instrument Panel Junction Block)



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B154240E05
Fig. 41: Identifying ID Instrument Panel Junction Block And 2D Engine Room Junction Block Connectors Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

2009 Toyota Highlander Limited**2009 ACCESSORIES & EQUIPMENT Theft Deterrent - Highlander****Standard resistance****TESTER CONNECTION SPECIFIED CONDITION**

Tester Connection	Condition	Specified Condition
1D-11 - 2D-10	Always	Below 1 ohms
1D-11 - Body ground	Always	10 kohms or higher

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR**OK: REPLACE MAIN BODY ECU (INSTRUMENT PANEL JUNCTION BLOCK)****SECURITY HORN CIRCUIT****DESCRIPTION**

When the theft deterrent system is switched from the armed state to the alarm sounding state, the main body ECU controls the security horn.

WIRING DIAGRAM

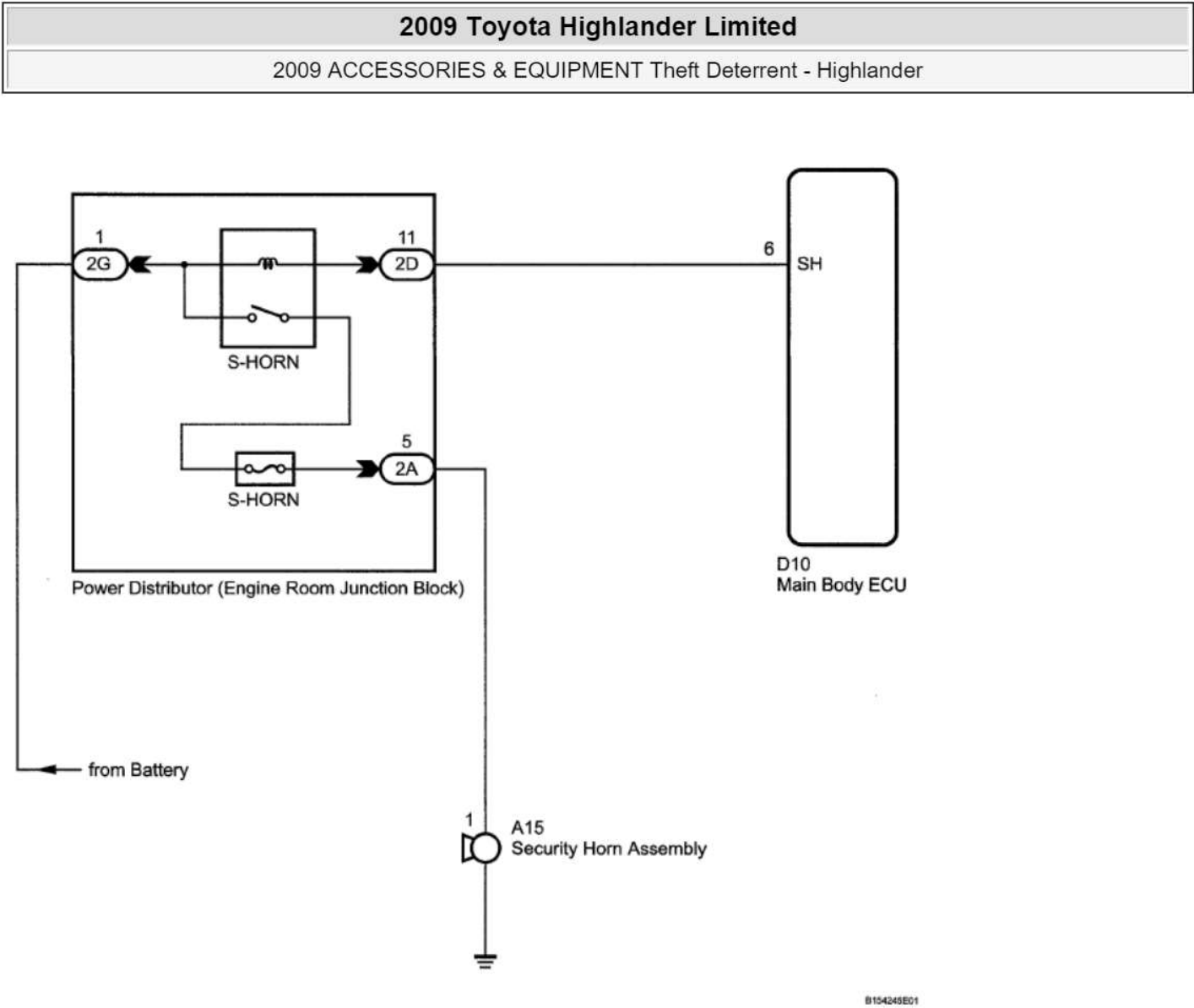


Fig. 42: Security Horn - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

1. **CHECK HARNESS AND CONNECTOR (MAIN BODY ECU - ENGINE ROOM JUNCTION BLOCK)**
- a. Disconnect the D10 ECU connector.

b. Connect a negative battery lead to terminal 6 (SH) of the D10 ECU connector.

c. Check operation of the security horn.

OK

MEASUREMENT SPECIFIED CONDITION

Measurement Condition	Specified Condition
Battery negative (-) --> D10-6 (SH)	Horn sounds

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NG: Go to step 2

Front view of wire harness connector:
(to Main Body ECU)

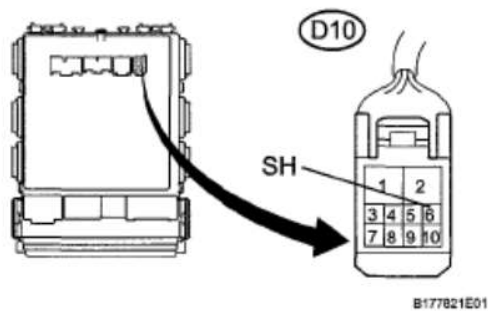


Fig. 43: Identifying D10 ECU Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE (See PROBLEM SYMPTOMS TABLE)

2. **INSPECT SECURITY HORN ASSEMBLY**
- a. Remove the security horn assembly (See REMOVAL).
 - b. Check operation of the horn.

OK

MEASUREMENT SPECIFIED CONDITION

Measurement Condition	Specified Condition
Battery positive (+) --> Terminal 1	Horn sounds
Battery negative (-) --> Horn body	

NG: REPLACE SECURITY HORN ASSEMBLY (See REMOVAL)

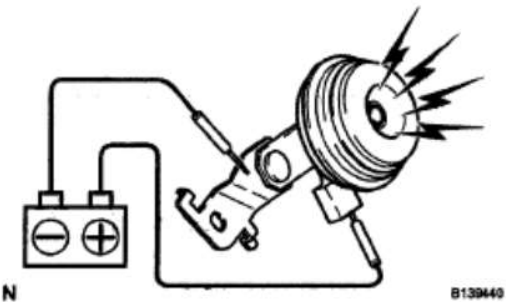


Fig. 44: Checking Operation Of Security Horn

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Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to next step.

3. CHECK HARNESS AND CONNECTOR (ENGINE ROOM JUNCTION BLOCK ASSEMBLY - SECURITY HORN ASSEMBLY)
- a. Disconnect the 2A engine room junction block assembly connector and A15 security horn assembly connector.
 - b. Measure the resistance according to the value(s) in the table below.

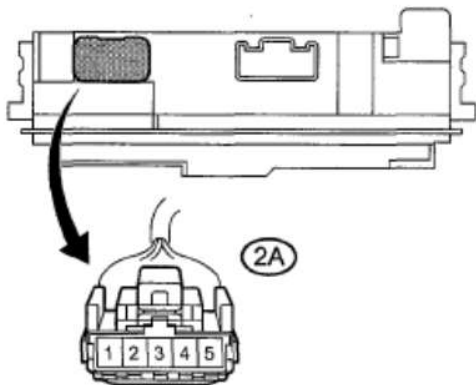
Standard resistance

TESTER CONNECTION SPECIFIED CONDITION

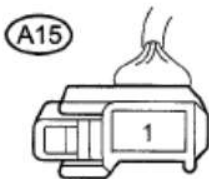
Tester Connection	Condition	Specified Condition
2A-5 - A15-1	Always	Below 1 ohms
2A-5 - Body ground	Always	10 kohms or higher

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

Front view of wire harness connector:
(to Engine Room Junction Block)



Front view of wire harness connector:
(to Security Horn Assembly)



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Fig. 45: Identifying 2A Engine Room Junction Block Assembly And A15 Security Horn Assembly Connectors Terminals

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Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to next step.

4. CHECK HARNESS AND CONNECTOR (BATTERY - ENGINE ROOM JUNCTION BLOCK ASSEMBLY)
- a. Disconnect the 2G engine room junction block assembly connector.

b. Measure the voltage on the relay block side according to the value(s) in the table below.

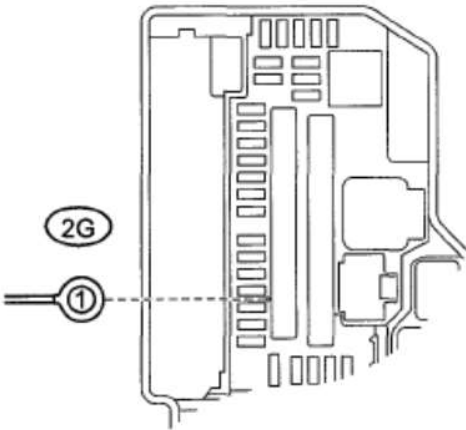
Standard voltage

TESTER CONNECTION SPECIFIED CONDITION

Tester Connection	Condition	Specified Condition
2G-1 - Body ground	Always	11 to 14 V

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

Components without harness connected:
(Engine Room Relay Block)



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Fig. 46: Identifying 2G Engine Room Junction Block Assembly Connector
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to next step.

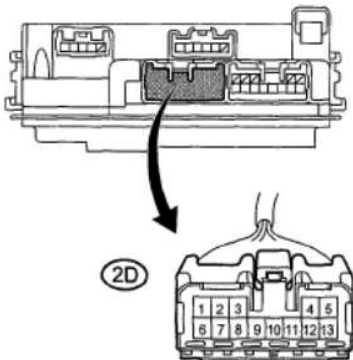
5. CHECK HARNESS AND CONNECTOR (ENGINE ROOM JUNCTION BLOCK ASSEMBLY - MAIN BODY ECU)
- a. Disconnect the 2D engine room junction block assembly connector.

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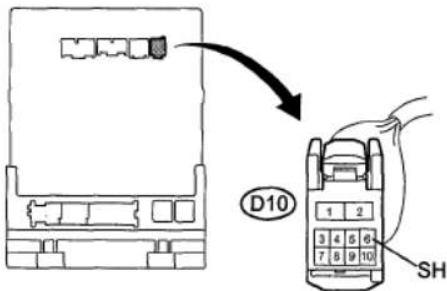
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- b. Disconnect the D10 ECU connector.
- c. Measure the resistance according to the value(s) in the table below.

Front view of wire harness connector:
(to Engine Room Junction Block)



Front view of wire harness connector:
(to Instrument Panel Junction Block)



B154255E01

Fig. 47: Identifying 2D Engine Room Junction Block Assembly And D10 ECU Connectors
Terminals

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard resistance

TESTER CONNECTION SPECIFIED CONDITION

Tester Connection	Condition	Specified Condition
2D-11 - D10-6 (SH)	Always	Below 1 ohms
D10-6 (SH) - Body ground	Always	10 kohms or higher

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: REPLACE ENGINE ROOM JUNCTION BLOCK ASSEMBLY

IGNITION SWITCH CIRCUIT

DESCRIPTION

The main body ECU determines the ignition switch position (OFF, ACC, ON) based on signals from the IG or ACC circuit.

WIRING DIAGRAM

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INSPECTION PROCEDURE

- Connect Techstream to the DLC3.
- Turn the ignition switch to the ON position.
- Turn Techstream main switch on.
- Select the items below in the Data List and read the display on Techstream.

DATA LIST

Item	Measurement Item/Range	Normal Condition	Diagnostic Note

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IG SW	Ignition switch ON signal ON/OFF	ON: Ignition switch is in the ON position OFF: ignition switch OFF	-
ACC SW	Ignition switch ACC signal ON/OFF	ON: Ignition switch is in the ACC position OFF: Ignition switch is OFF	-

OK: When the ignition switch is operated, the display changes as shown in the table.

NG: Go to step 2

OK: PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE (See **PROBLEM SYMPTOMS TABLE**)

2. **CHECK HARNESS AND CONNECTOR (BATTERY - INSTRUMENT PANEL JUNCTION BLOCK)**
- a. Disconnect the 1A junction block connector.

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

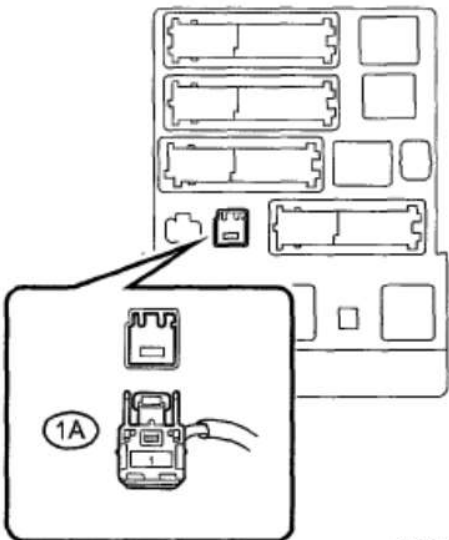
Standard voltage

TESTER CONNECTION SPECIFIED CONDITION

Tester Connection	Condition	Specified Condition
1A-1 - Body ground	Ignition switch ON	11 to 14 V

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

Front view of wire harness connector:
(to Instrument Panel Junction Block)



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Fig. 49: Identifying 1A Junction Block Connector

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to next step.

3. INSPECT IGNITION SWITCH ASSEMBLY

- a. Disconnect the D24 ignition switch connector.
- b. Measure the resistance according to the value(s) in the table below.

Standard resistance

TESTER CONNECTION SPECIFIED CONDITION

Tester Connection	Condition	Specified Condition
1 - 4	Ignition switch ON	Below 1 ohms
2 - 4	Ignition switch ACC	Below 1 ohms

Result

RESULT CHART

Result	Proceed to
OK	A
NG (for 2GR-FE)	B
NG (for 1AR-FE)	C

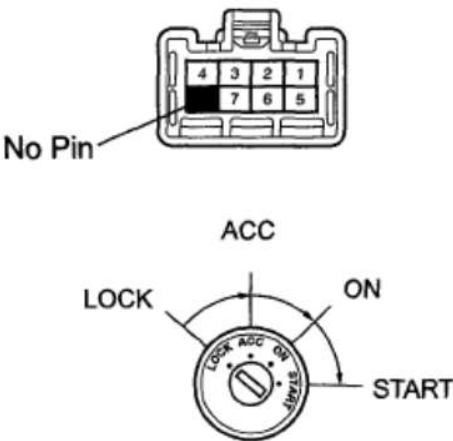
B: REPLACE IGNITION SWITCH ASSEMBLY (for 2GR-FE) (See REMOVAL)

C: REPLACE IGNITION SWITCH ASSEMBLY (for 1AR-FE) (See REMOVAL)

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Component without harness connected:
(Ignition Switch)



N

8125076E03

Fig. 50: Identifying D24 Ignition Switch Connector
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

A: Go to next step.

4. **CHECK HARNESS AND CONNECTOR (INSTRUMENT PANEL J/B - INSTRUMENT PANEL J/B)**
- a. Disconnect the 1I junction block connector.
 - b. Measure the resistance according to the value(s) in the table below.

Standard resistance

TESTER CONNECTION SPECIFIED CONDITION

Tester Connection	Condition	Specified Condition
1I-4 - 1I-9	Ignition switch ON	Below 1 ohms
1I-4 - 1I-3	Ignition switch ACC	Below 1 ohms

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

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Front view of wire harness connector:
(to Instrument Panel Junction Block)

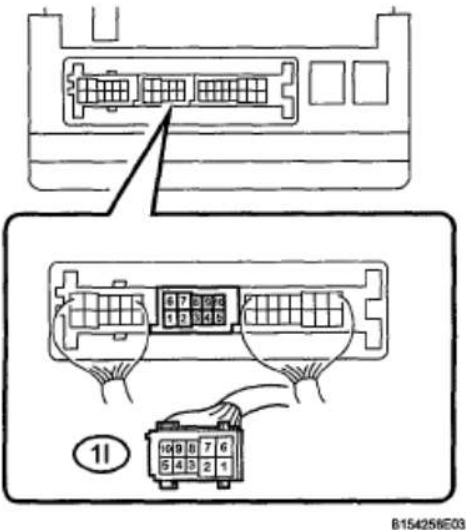


Fig. 51: Identifying 1I Junction Block Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to next step.

5. **CHECK HARNESS AND CONNECTOR (INSTRUMENT PANEL JUNCTION BLOCK - BODY GROUND)**
- a. Disconnect the 1F junction block connector.
 - b. Measure the resistance according to the value(s) in the table below.

Standard resistance

TESTER CONNECTION SPECIFIED CONDITION

Tester Connection	Specified Condition
1F-10 - Body ground	Below 1 ohms

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

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Front view of wire harness connector:
(to Instrument Panel Junction Block)

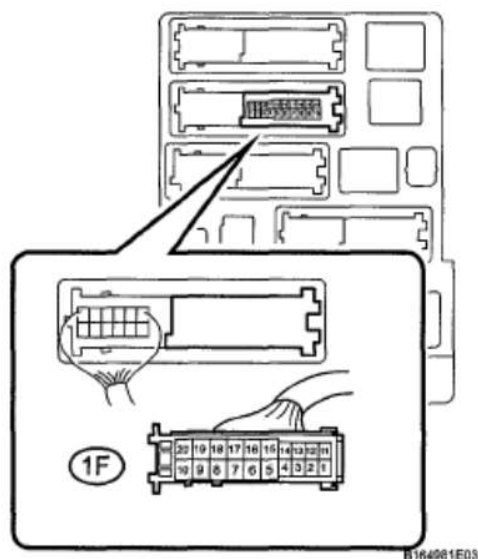


Fig. 52: Identifying 1F Junction Block Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: REPLACE MAIN BODY ECU (INSTRUMENT PANEL JUNCTION BLOCK)

SECURITY INDICATOR LIGHT CIRCUIT

DESCRIPTION

Even when the theft deterrent system is in the disarmed state, the security indicator blinks due to a signal output from the immobiliser system. The security indicator blinks continuously due to a continuous signal received from the immobiliser system while in the armed state.

The main body ECU causes the security indicator to come on or blink only during the arming preparation and alarm sounding states.

WIRING DIAGRAM

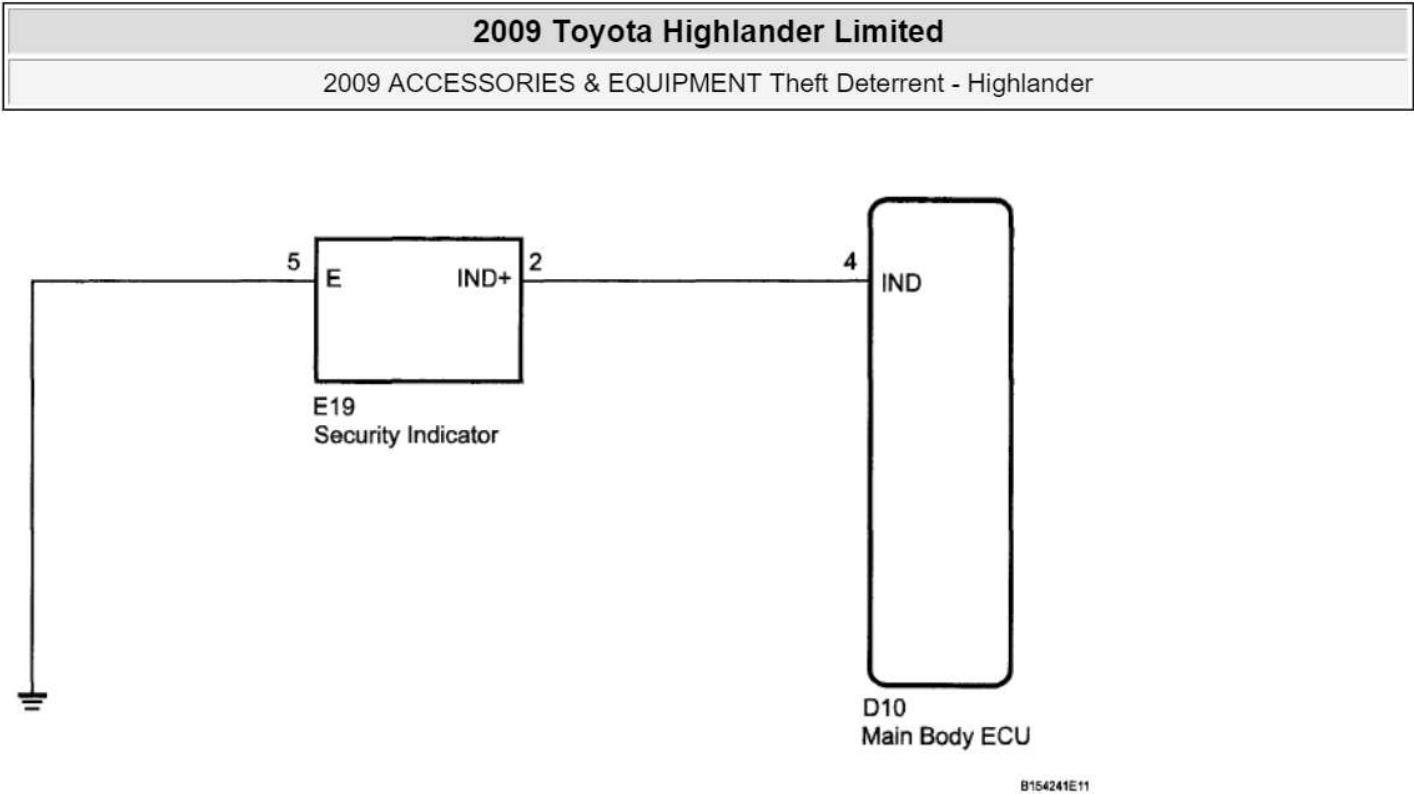


Fig. 53: Security Indicator Light - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

1. **PERFORM ACTIVE TEST USING TECHSTREAM**
- a. Connect Techstream to the DLC3.

b. Turn the ignition switch to the ON position.

c. Turn the Techstream main switch on.

d. Select the item below in the Active Test and then check that the indicator operates.

Main Body:

ACTIVE TEST CHART

Tester Display	Test Part	Control Range	Diagnostic Note
Security Indicator	Security indicator	ON/OFF	-

OK: The security indicator light flashes or goes off correctly when operating it through Techstream.

NG: Go to step 2

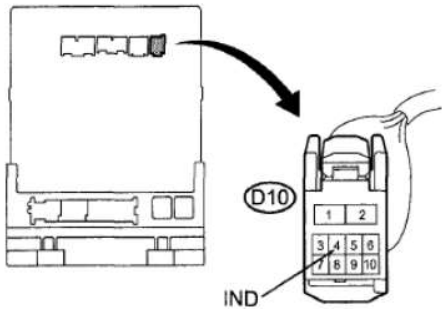
OK: PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE (See **PROBLEM SYMPTOMS TABLE**)

2. **CHECK HARNESS AND CONNECTOR (SECURITY INDICATOR - MAIN BODY ECU)**
- a. Disconnect the D10 ECU connector.

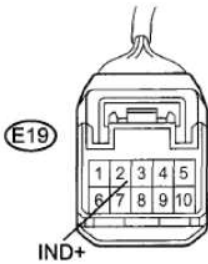
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Front view of wire harness connector:
(to Main Body ECU)



Front view of wire harness connector:
(to Security Indicator Light)



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Fig. 54: Identifying D10 ECU And E19 Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Disconnect the E19 connector.
- c. Measure the resistance according to the value(s) in the table below.

Standard resistance

TESTER CONNECTION SPECIFIED CONDITION

Tester Connection	Condition	Specified Condition
D10-4 (IND) - E19-2 (IND+)	Always	Below 1 ohms
D10-4 (IND) - Body ground	Always	10 kohms or higher

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step.

- 3. **CHECK HARNESS AND CONNECTOR (SECURITY INDICATOR - BODY GROUND)**
 - a. Measure the resistance according to the value(s) in the table below.

Standard resistance

TESTER CONNECTION SPECIFIED CONDITION

Tester Connection	Condition	Specified Condition
E19-5 (E) - Body ground	Always	Below 1 ohms

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

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Front view of wire harness connector:
(to Security Indicator Light)

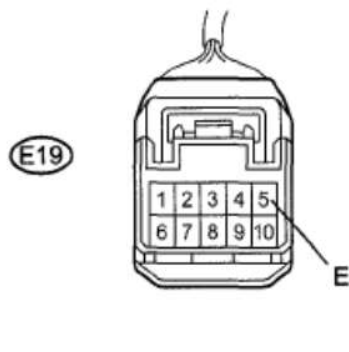


Fig. 55: Identifying E Terminal Of Security Indicator Light Connectors
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to next step.

4. INSPECT SECURITY INDICATOR LIGHT

- a. Reconnect the E19 connector with the D10 ECU connector still disconnected.
- b. Apply battery voltage from the wire harness back side between the specified terminals of the indicator, and check the lighting condition of the security indicator.

Standard

MEASUREMENT SPECIFIED CONDITION

Measurement Condition	Specified Condition
Battery positive (+) --> Terminal E19-2 (IND+) Battery negative (-) --> Terminal E19-5 (E)	Security indicator comes on

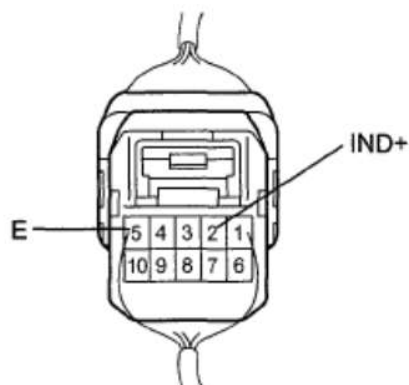
- NOTE:
- If the positive (+) lead and the negative (-) lead are incorrectly connected, the security indicator will not come on.
 - Voltage of more than 12 V will damage the security indicator.
 - If the voltage is too low, the security indicator will not come on.

NG: REPLACE SECURITY INDICATOR LIGHT (See REMOVAL)

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Component with harness connected:
(Security Indicator Light)



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Fig. 56: Identifying E And IND+ Security Indicator Light Connector
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: REPLACE MAIN BODY ECU (INSTRUMENT PANEL JUNCTION BLOCK)

ECU POWER SOURCE CIRCUIT

DESCRIPTION

This circuit provides power for main body ECU operation.

WIRING DIAGRAM

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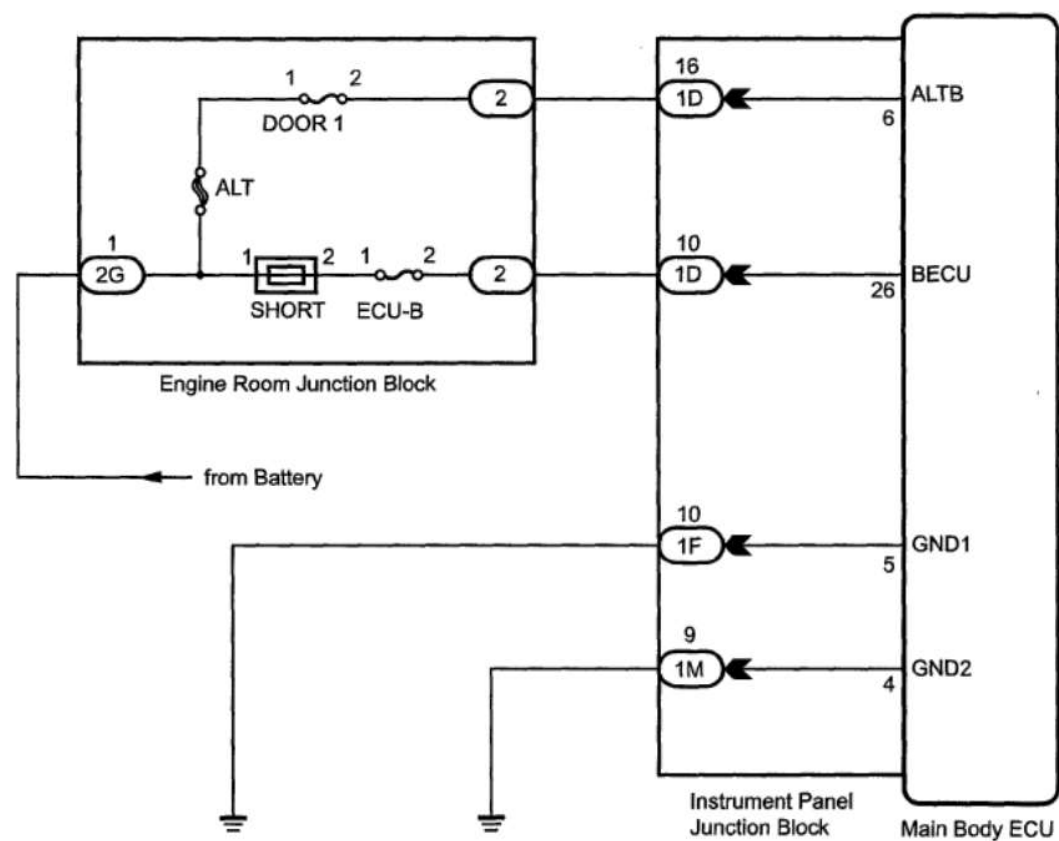


Fig. 57: ECU Power Source - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

1. CHECK INSTRUMENT PANEL JUNCTION BLOCK (MAIN BODY ECU (POWER SOURCE))
- a. Disconnect the 1D junction block connector.

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

Standard voltage

TESTER CONNECTION SPECIFIED CONDITION

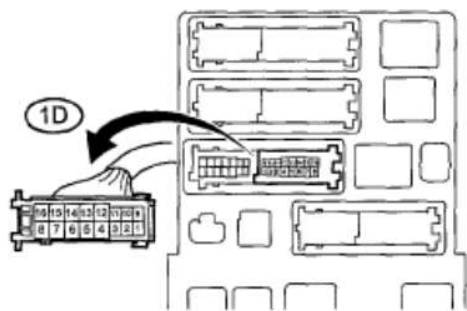
Tester Connection	Specified Condition
1D-10 - Body ground	11 to 14 V
1D-16 - Body ground	11 to 14 V

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

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Front view of wire harness connector.
(to Instrument Panel Junction Block)



B177818E05

Fig. 58: Identifying 1D Junction Block Connector
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to next step.

2. **CHECK HARNESS AND CONNECTOR (INSTRUMENT PANEL JUNCTION BLOCK - BODY GROUND)**
- a. Disconnect the 1F and 1M junction block connectors.

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

Standard resistance

TESTER CONNECTION SPECIFIED CONDITION

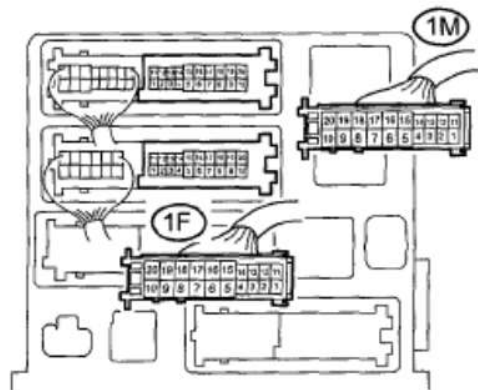
Tester Connection	Specified Condition
1F-10 - Body ground	Below 1 ohms
1M-9 - Body ground	Below 1 ohms

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

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Front view of wire harness connector:
(to Instrument Panel Junction Block)



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Fig. 59: Identifying 1F And 1M Junction Block Connectors
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

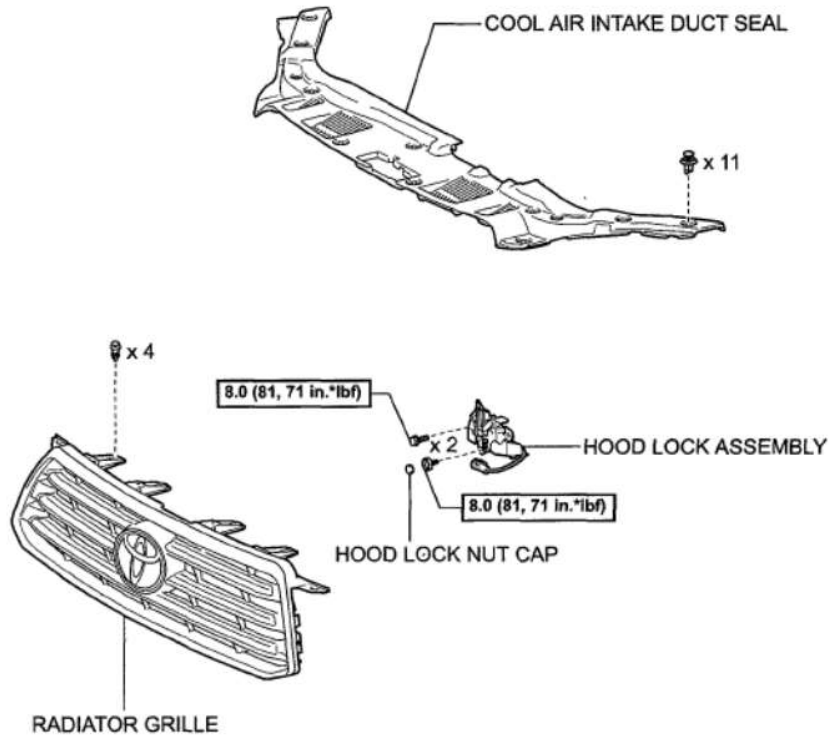
OK: PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE
(See **PROBLEM SYMPTOMS TABLE**)

ENGINE HOOD COURTESY SWITCH

COMPONENTS

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

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B170M2E01

Fig. 60: Identifying Engine Hood Courtesy Switch Components With Torque Specification
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REMOVAL

1. REMOVE COOL AIR INTAKE DUCT SEAL (See REMOVAL)
2. REMOVE RADIATOR GRILLE (See REMOVAL)
3. REMOVE HOOD LOCK ASSEMBLY (See REMOVAL)

INSPECTION

1. INSPECT ENGINE HOOD COURTESY SWITCH
 - a. Measure the resistance according to the value(s) in the table below.

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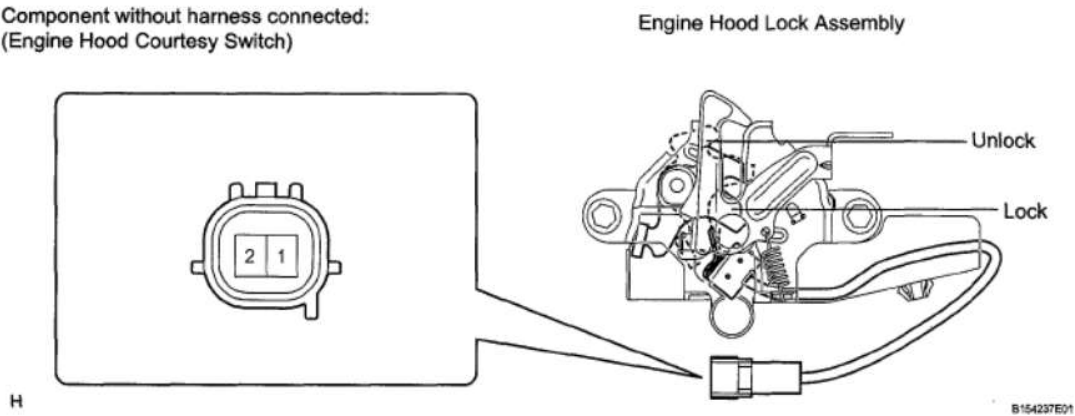


Fig. 61: Identifying A8 Courtesy Switch Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard resistance

TESTER CONNECTION SPECIFIED CONDITION

Tester Connection	Switch Condition	Specified Condition
1 - 2	LOCK position	Below 1 ohms
	UNLOCK position	10 kohms or higher

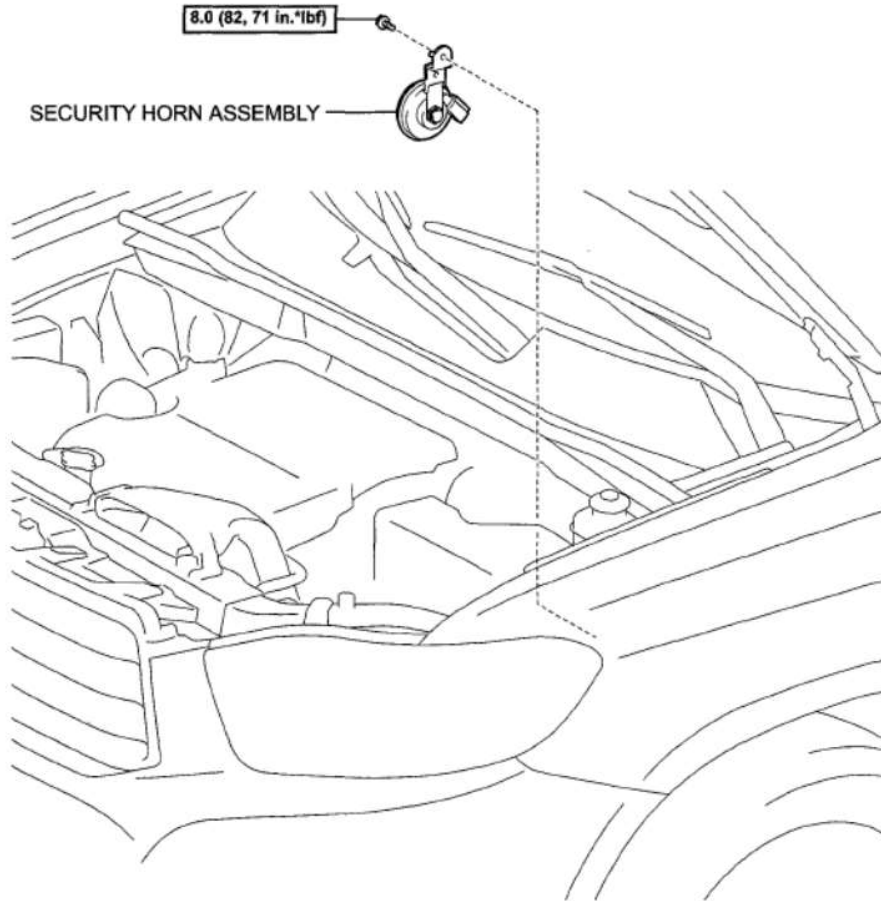
If the result is not as specified, replace the hood lock assembly.

INSTALLATION

1. **INSTALL HOOD LOCK ASSEMBLY** (See **INSTALLATION**)
2. **INSPECT HOOD SUB-ASSEMBLY** (See **ON-VEHICLE INSPECTION**)
3. **ADJUST HOOD SUB-ASSEMBLY** (See **ADJUSTMENT**)
4. **INSTALL RADIATOR GRILLE** (See **INSTALLATION**)
5. **INSTALL COOL AIR INTAKE DUCT SEAL** (See **INSTALLATION**)

SECURITY HORN ASSEMBLY

COMPONENTS

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

P

8170850E01

Fig. 62: Identifying Security Horn Assembly Components With Torque Specification
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REMOVAL

- 1. REMOVE SECURITY HORN ASSEMBLY**
 - a. Remove the bolt.
 - b. Disconnect the connector and remove the security horn assembly.

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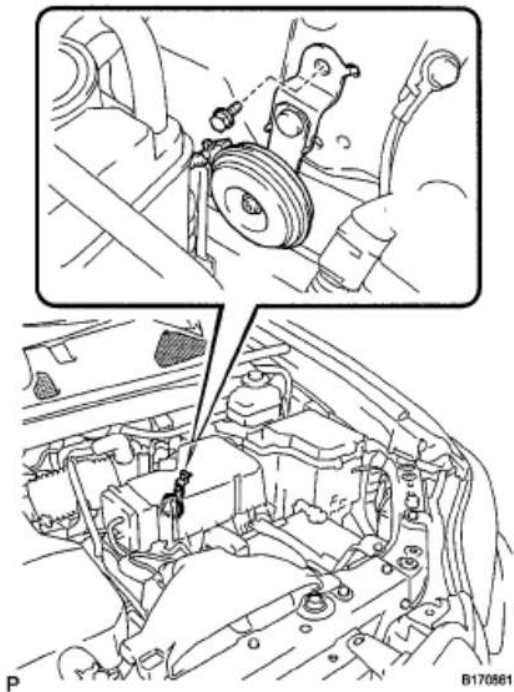


Fig. 63: Identifying Security Horn Connector With Bolt
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION

- 1. INSPECT SECURITY HORN ASSEMBLY
 - a. Check operation of the horn.

Standard

MEASUREMENT SPECIFIED CONDITION

Measurement Condition	Specified Condition
Battery positive (+) --> Terminal 1	Horn sounds
Battery negative (-) --> Horn body	

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

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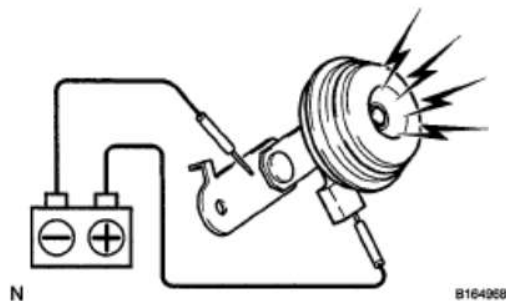


Fig. 64: Checking Operation Of Security Horn
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSTALLATION

1. INSTALL SECURITY HORN ASSEMBLY

- a. Connect the connector.
- b. Install the security horn assembly with the bolt.

Torque: 8.0 N*m (82 kgf*cm, 71 in.*lbf)

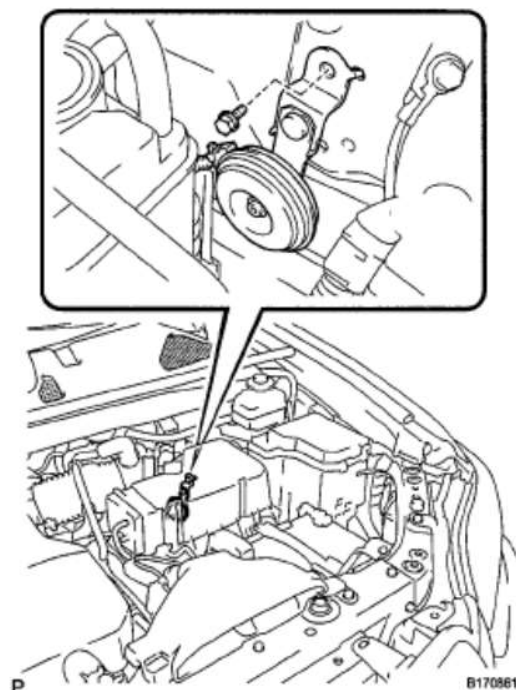


Fig. 65: Identifying Security Horn Connector With Bolt
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

SECURITY INDICATOR LIGHT ASSEMBLY

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COMPONENTS

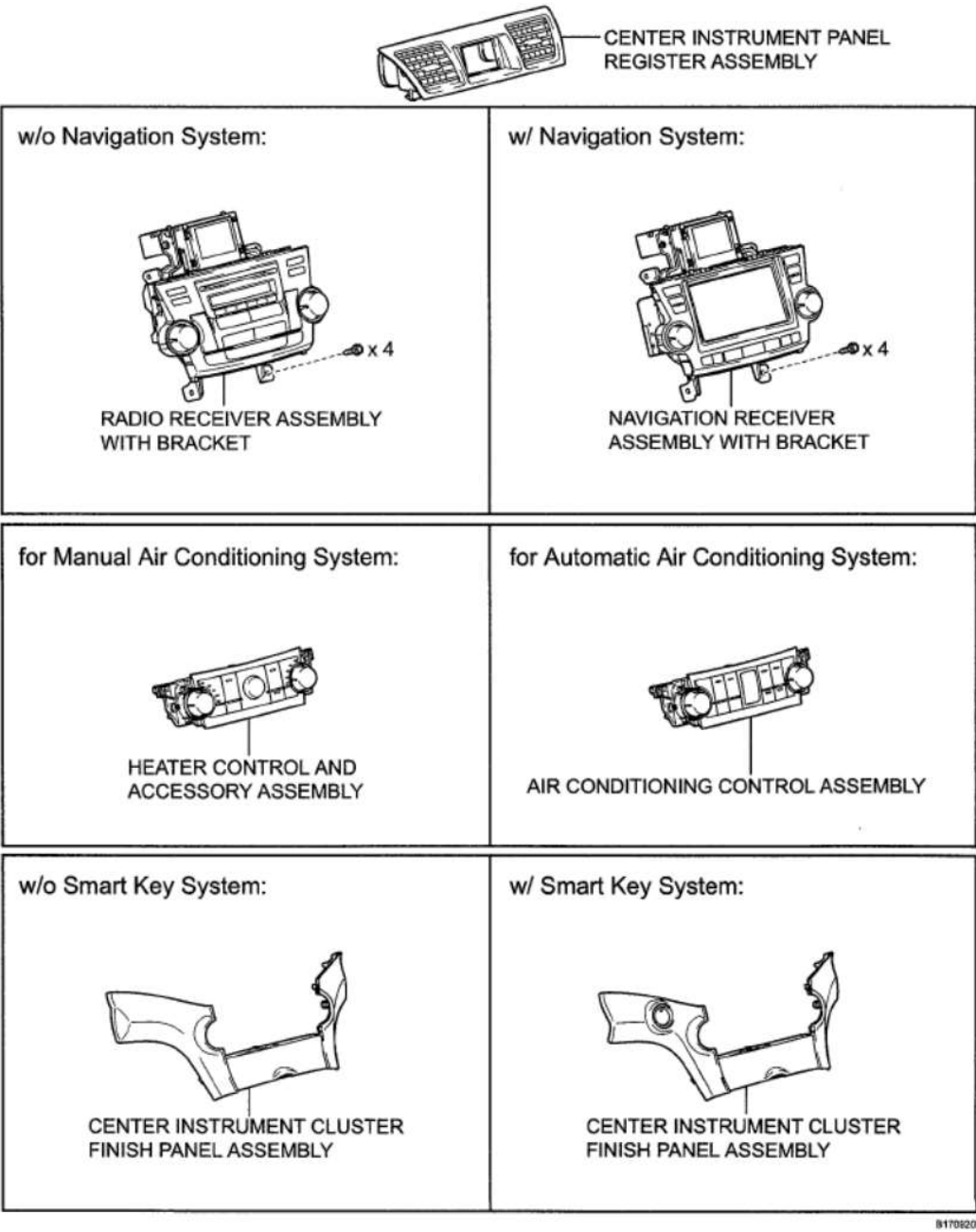
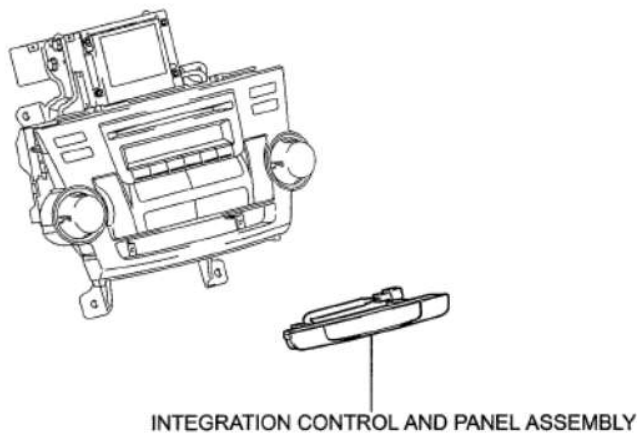


Fig. 66: Identifying Security Indicator Light Assembly Components With Torque Specification (1 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

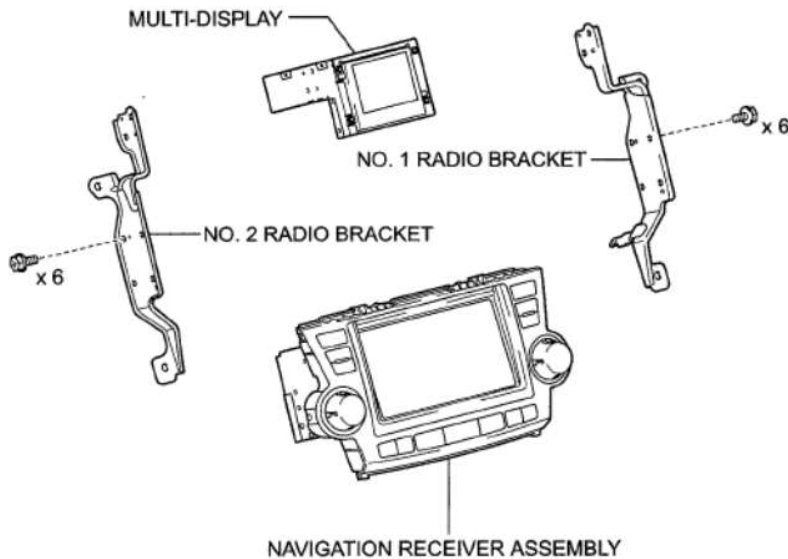
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w/o Navigation System:



w/ Navigation System:



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Fig. 67: Identifying Security Indicator Light Assembly Components With Torque Specification (2 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REMOVAL

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1. **REMOVE CENTER INSTRUMENT PANEL REGISTER ASSEMBLY** (See REMOVAL)
2. **REMOVE CENTER INSTRUMENT CLUSTER FINISH PANEL ASSEMBLY (w/o Smart Key System)** (See REMOVAL)
3. **REMOVE CENTER INSTRUMENT CLUSTER FINISH PANEL ASSEMBLY (w/ Smart Key System)** (See REMOVAL)
4. **REMOVE HEATER CONTROL AND ACCESSORY ASSEMBLY (for Manual Air Conditioning System)** (See AIR CONDITIONING PANEL (FOR MANUAL AIR CONDITIONING SYSTEM))
5. **REMOVE AIR CONDITIONING CONTROL ASSEMBLY (for Automatic Air Conditioning System)** (See REMOVAL)
6. **REMOVE RADIO RECEIVER ASSEMBLY WITH BRACKET (w/o Navigation System)** (See REMOVAL)
7. **REMOVE NAVIGATION RECEIVER ASSEMBLY WITH BRACKET (w/ Navigation System)** (See REMOVAL)
8. **REMOVE INTEGRATION CONTROL AND PANEL ASSEMBLY (w/o Navigation System)** (See REMOVAL)
9. **REMOVE NO. 1 RADIO BRACKET (w/ Navigation System)** (See REMOVAL)
10. **REMOVE NO. 2 RADIO BRACKET (w/ Navigation System)** (See INSTALLATION)
11. **REMOVE NAVIGATION RECEIVER ASSEMBLY (w/ Navigation System)**

INSPECTION

1. INSPECT SECURITY INDICATOR LIGHT

- a. Disconnect the D40 ECU connector, with the E19 indicator connector connected.
- b. Apply battery voltage from the wire harness back side between the terminals of the indicator, and check the lighting condition of the security indicator.

Standard

MEASUREMENT SPECIFIED CONDITION

Measurement Condition	Specified Condition
Battery positive (+) --> Terminal E19-2 (IND+)	Security indicator comes on
Battery negative (-) --> Terminal E19-5 (E)	

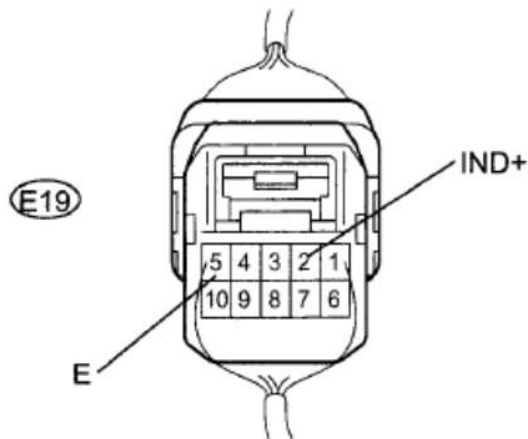
NOTE:

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

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Component with harness connected:
(Security Indicator Light)



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Fig. 68: Identifying E19 Indicator Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

If the result is not as specified, replace the passenger belt and airbag indicator.

INSTALLATION

1. **INSTALL NAVIGATION RECEIVER ASSEMBLY (w/ Navigation System)**
2. **INSTALL NO. 2 RADIO BRACKET (w/ Navigation System)** (See INSTALLATION)
3. **INSTALL NO. 1 RADIO BRACKET (w/ Navigation System)** (See INSTALLATION)
4. **INSTALL INTEGRATION CONTROL AND PANEL ASSEMBLY (w/o Navigation System)** (See INSPECTION)
5. **INSTALL NAVIGATION RECEIVER ASSEMBLY WITH BRACKET (w/ Navigation System)** (See INSTALLATION)
6. **INSTALL RADIO RECEIVER ASSEMBLY WITH BRACKET (w/o Navigation System)** (See INSTALLATION)
7. **INSTALL HEATER CONTROL AND ACCESSORY ASSEMBLY (for Manual Air Conditioning System)** (See AIR CONDITIONING PANEL (FOR MANUAL AIR CONDITIONING SYSTEM))
8. **INSTALL AIR CONDITIONING CONTROL ASSEMBLY (for Automatic Air Conditioning System)** (See REMOVAL)
9. **INSTALL CENTER INSTRUMENT CLUSTER FINISH PANEL ASSEMBLY (w/o Smart Key System)** (See INSTALLATION)

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10. **INSTALL CENTER INSTRUMENT CLUSTER FINISH PANEL ASSEMBLY (w/ Smart Key System)** (See **INSTALLATION**)
11. **INSTALL CENTER INSTRUMENT PANEL REGISTER ASSEMBLY** (See **INSTALLATION**)