

ACCESSORIES & EQUIPMENT

Theft Deterrent System (Diagnostics & Circuit Tests) - Sienna

THEFT DETERRENT SYSTEM

PRECAUTION

PRECAUTION

1. IGNITION SWITCH EXPRESSIONS

- a. The type of ignition switch used on this model differs according to the specifications of the vehicle. The expressions listed in the table below are used in this information.

Expression	Ignition Switch (Position)	Engine Switch (Condition)
Ignition switch off	LOCK	Off
Ignition switch ACC	ACC	On (ACC)
Ignition switch ON	ON	On (IG)
Engine start	START	Start

PARTS LOCATION

ILLUSTRATION

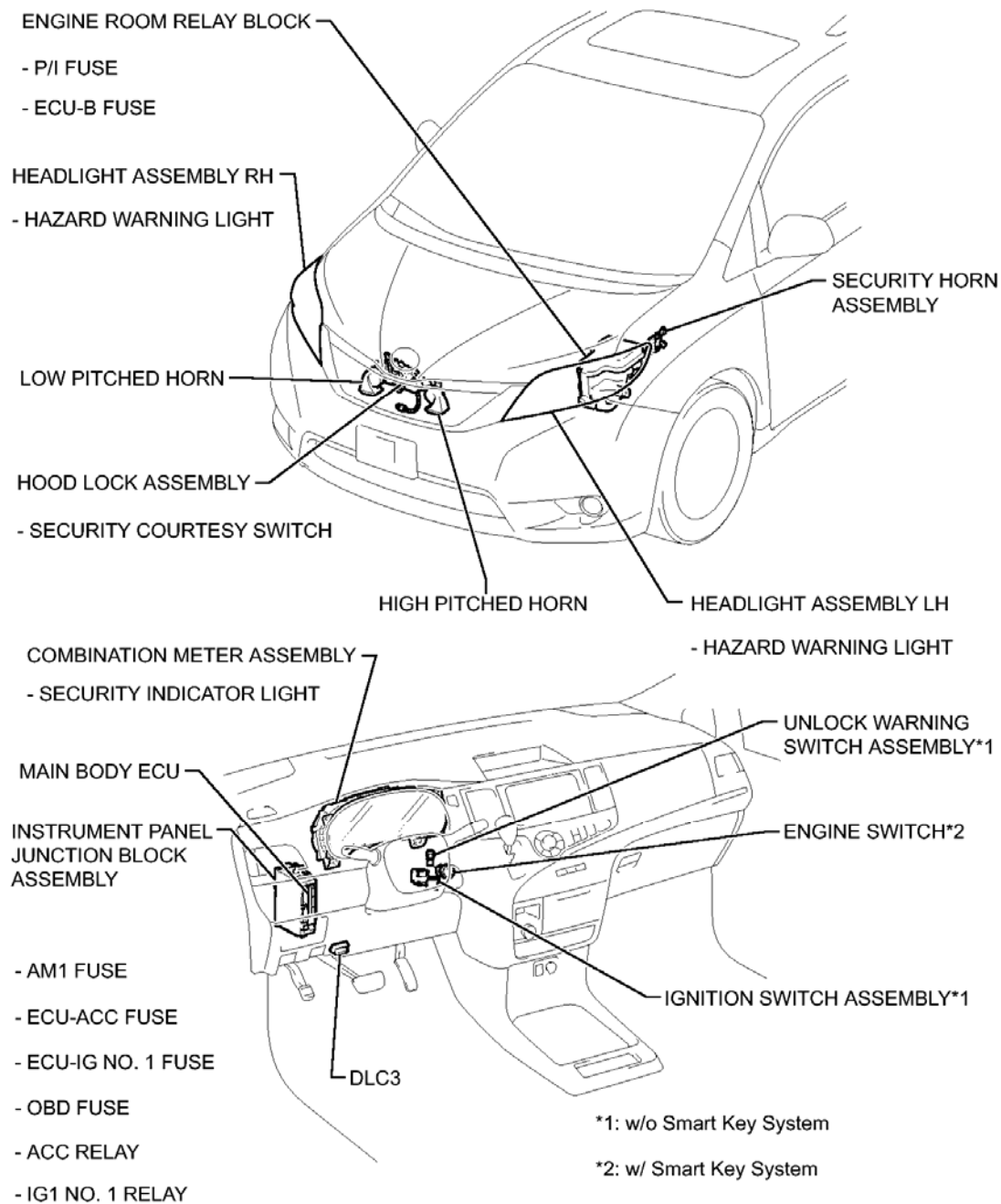


Fig. 1: Theft Deterrent System Components Location (1 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

ILLUSTRATION

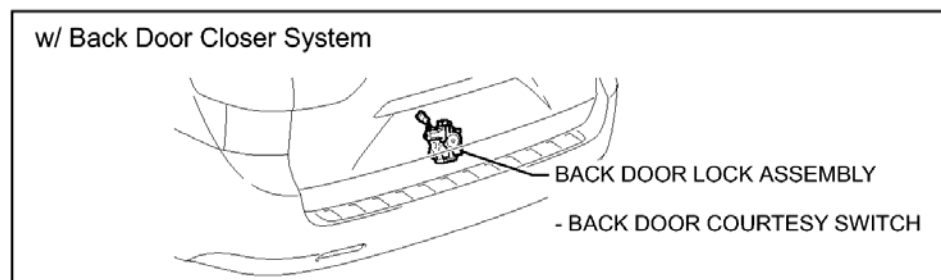
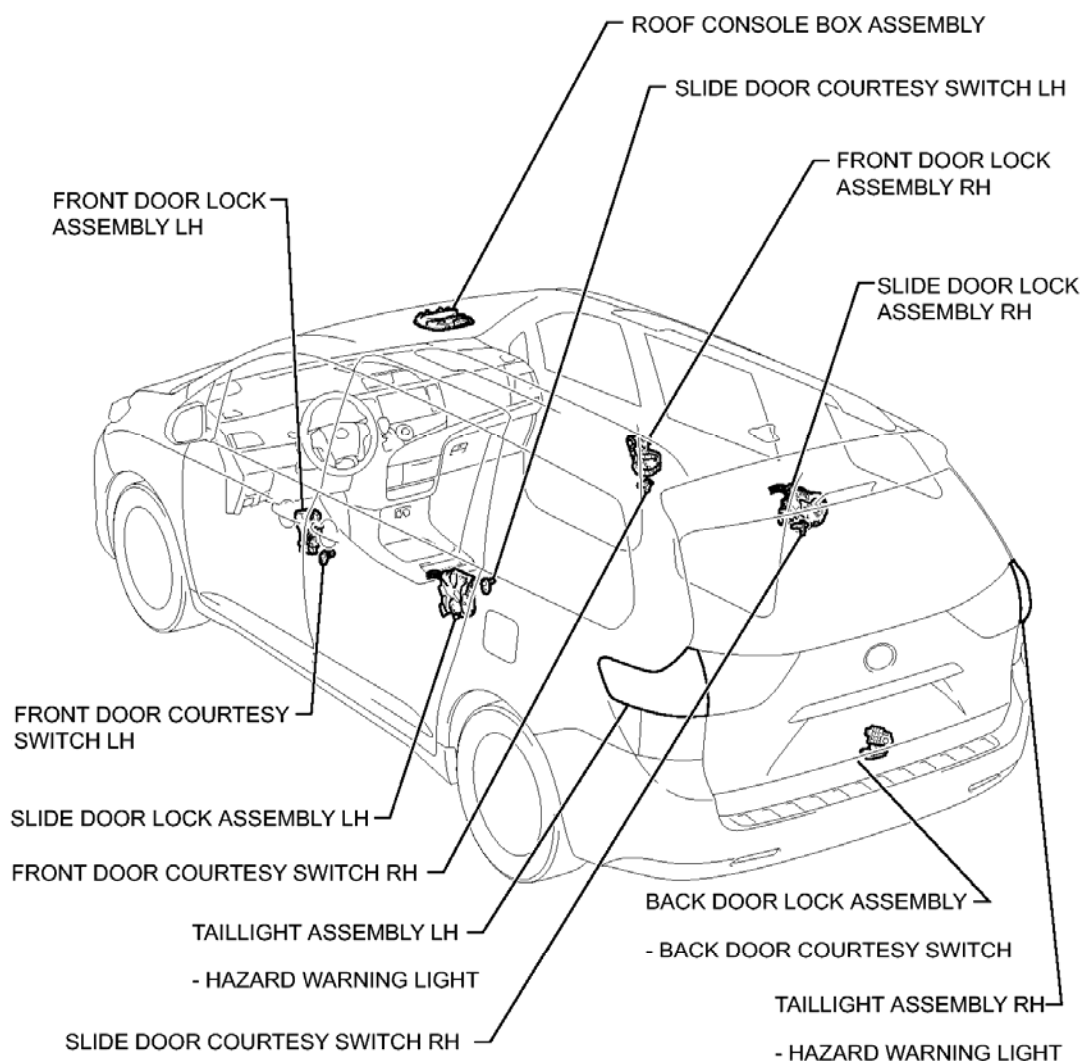


Fig. 2: Theft Deterrent System Components Location (2 Of 2)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

SYSTEM DIAGRAM

SYSTEM DIAGRAM

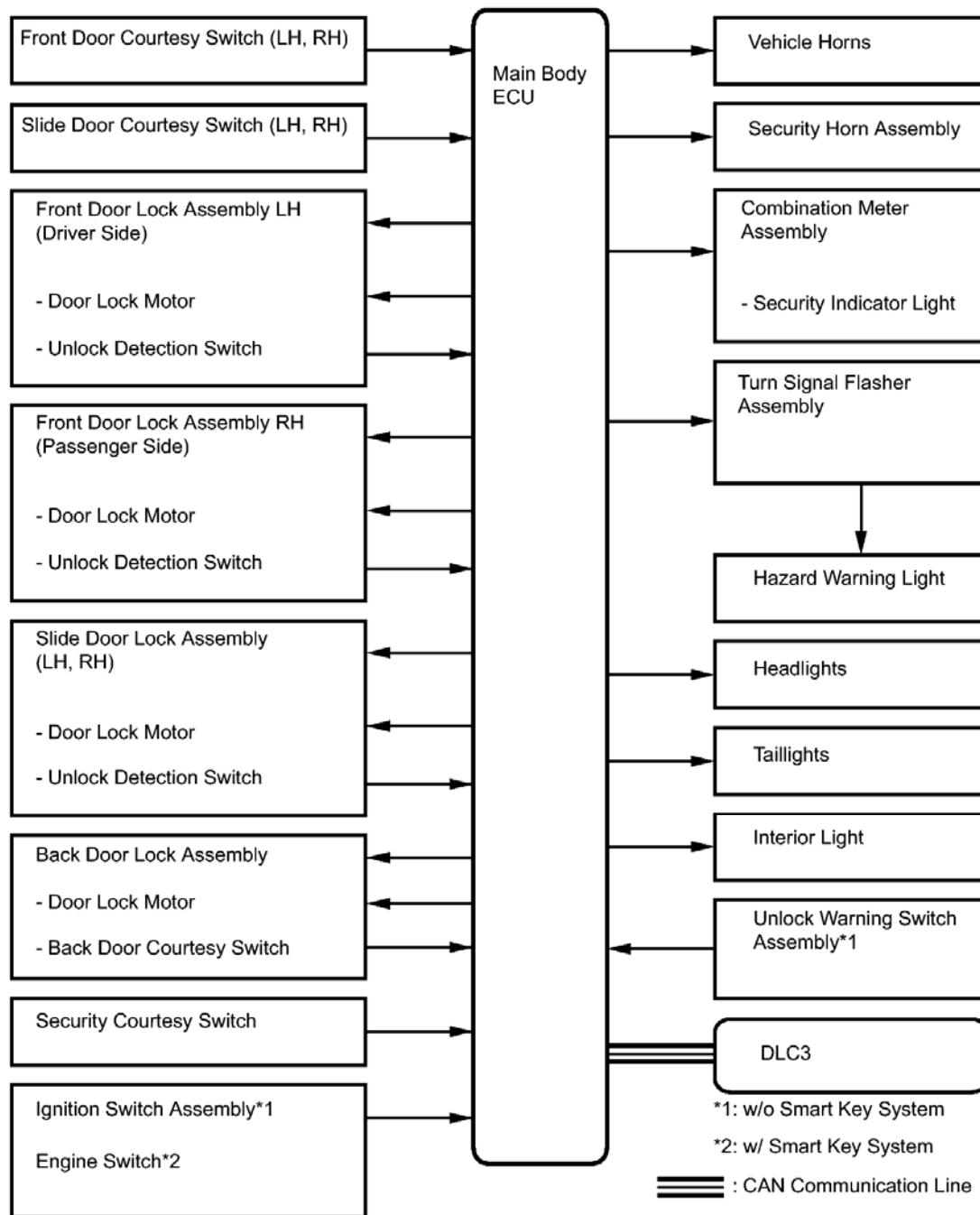


Fig. 3: Theft Deterrent System Diagram
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

SYSTEM DESCRIPTION

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 (for details, refer to Active Arming Mode or Passive Arming Mode).
 - 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 horns 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 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 seconds

ALARM METHODS AND TIME

Alarm Method	Headlights	Blinking
	Taillights	Blinking
	Hazard Warning Lights	Blinking
	Interior Light	Illuminating
	Vehicle Horns	Sounding (approx. 0.8 second cycles)
	Security Horn	Sounding

Alarm Time	Approx. 60 seconds
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HINT:

- If any of the doors are unlocked when the key is not in the key cylinder*1 or the actuation area*2 during the armed state, a forced door lock signal will be output (refer to Forced Door Lock Control).
- *1: w/o Smart Key System
- *2: w/ Smart Key System

2. FUNCTION OF MAIN COMPONENTS

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.
	Blink when

Hazard warning lights	attempted break-in or theft is detected.
Interior light	Comes on when attempted break-in or theft is detected.
Vehicle horns	Sound when attempted break-in or theft is detected.
Door courtesy switch	Detects door status (open or closed).
Unlock detection switch	Detects door status (locked or unlocked).
Security courtesy switch	Detects engine hood status (open or closed).
Back door courtesy switch	Detects back door status (open or closed).

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.

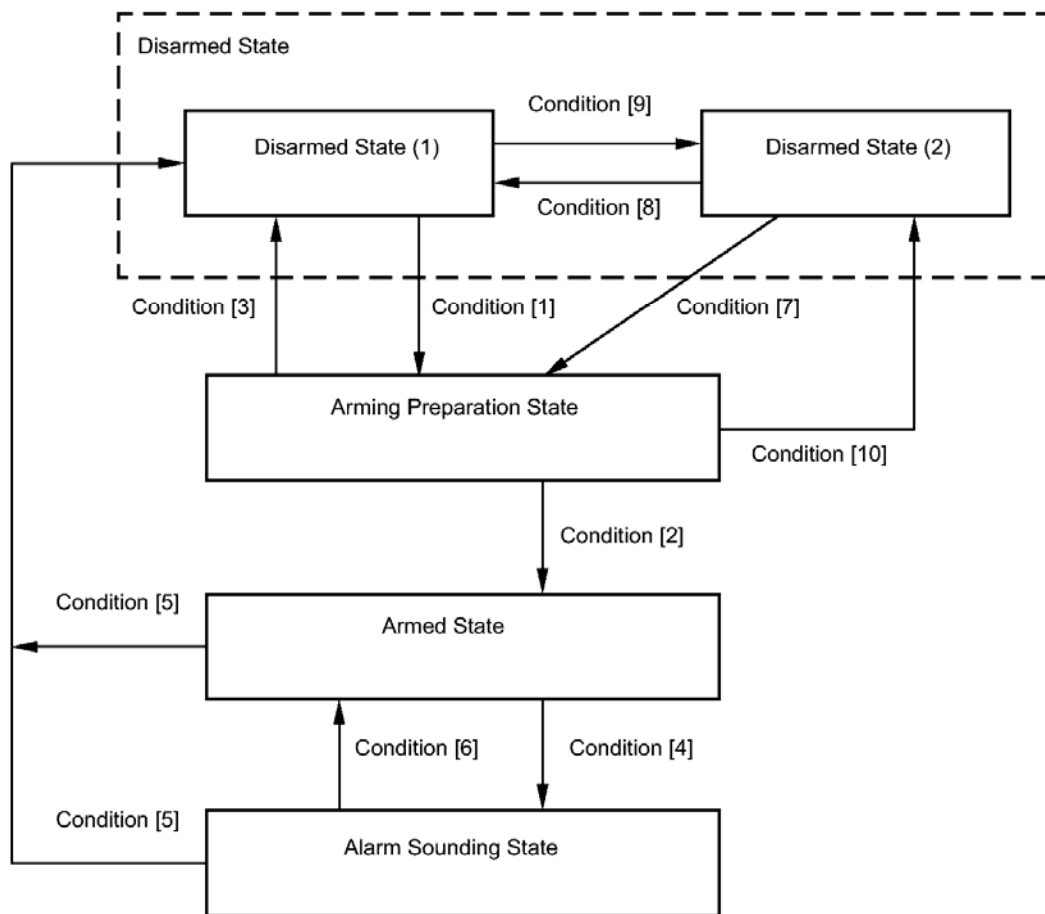


Fig. 4: Active Arming Mode Flow Diagram
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

HINT:

The terms "all doors" and "any door" used in the following table include the back door.

Condition	Item
	With all doors and engine hood closed, all

Condition [1]	doors are locked by key operation. • With all doors and engine hood closed, all doors are locked by wireless operation. (*1) • With all doors and engine hood closed, all doors are locked by wireless operation or smart key system. (*2) • With all door lock position switches locked and engine hood closed, all doors are closed then.
Condition [2]	• Allow approx. 30 seconds to elapse.
	• All doors are unlocked by wireless operation. (*1) • All doors are unlocked by wireless

Condition [3]	operation or smart key system.(*2) • All doors are unlocked by key operation. • Any door is unlocked. • Any door is opened. • The battery is reconnected. • Turn the ignition switch from off to ON or ACC. • The key is inserted into the ignition key cylinder. (*1)
Condition [4]	• The engine hood is opened. • The battery is reconnected. • Any door is opened when all doors are closed. • Any door is unlocked when all doors are locked. • The ignition switch is turned to

	ON without using the key.(*1) • Turn the ignition switch to ON when the key is not in the actuation area.(*2)
Condition [5]	• All doors are unlocked by wireless operation.(*1) • All doors are unlocked by wireless operation or smart key system.(*2) • All doors are unlocked by key operation. • The ignition switch is turned to ON and the engine is running for more than 2 seconds. • Turn the ignition switch from off to ON or ACC.(*1) • Turn the ignition switch to ON within 5

	seconds after turning it off.(*2)
Condition [6]	• After approx. 60 seconds, alarm stops and system returns to armed state.
Condition [7]	• The engine hood is closed.
Condition [8]	• Any door is unlocked when all doors are locked. • Any door is opened. • Turn the ignition switch from off to ON or ACC. • The battery is reconnected. • All doors are unlocked by wireless operation. (*1) • All doors are unlocked by wireless operation or smart key system.(*2) • All doors are unlocked by key

	operation. • The key is inserted into the ignition key cylinder. (*1)
Condition [9]	• With all doors closed and engine hood opened, all doors are locked by key operation. • With all doors closed and engine hood opened, all doors are locked by wireless operation. (*1) • With all doors closed and engine hood opened, all doors are locked by wireless operation or smart key system.(*2) • With all door lock position switches locked and engine hood opened, all doors are then closed.

Condition [10]	• The engine hood is opened.
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*1: w/o Smart Key System

*2: w/ Smart Key System

4. PASSIVE ARMING MODE

HINT:

- Passive arming mode starts the alarm control after the key is removed from the key cylinder*1 or the actuation area*2 and the doors are closed.
 - Passive arming mode can be switched ON/OFF using the 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 (refer to 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.
 - *1: w/o Smart Key System
 - *2: w/ Smart Key System
- a. Passive arming mode:

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

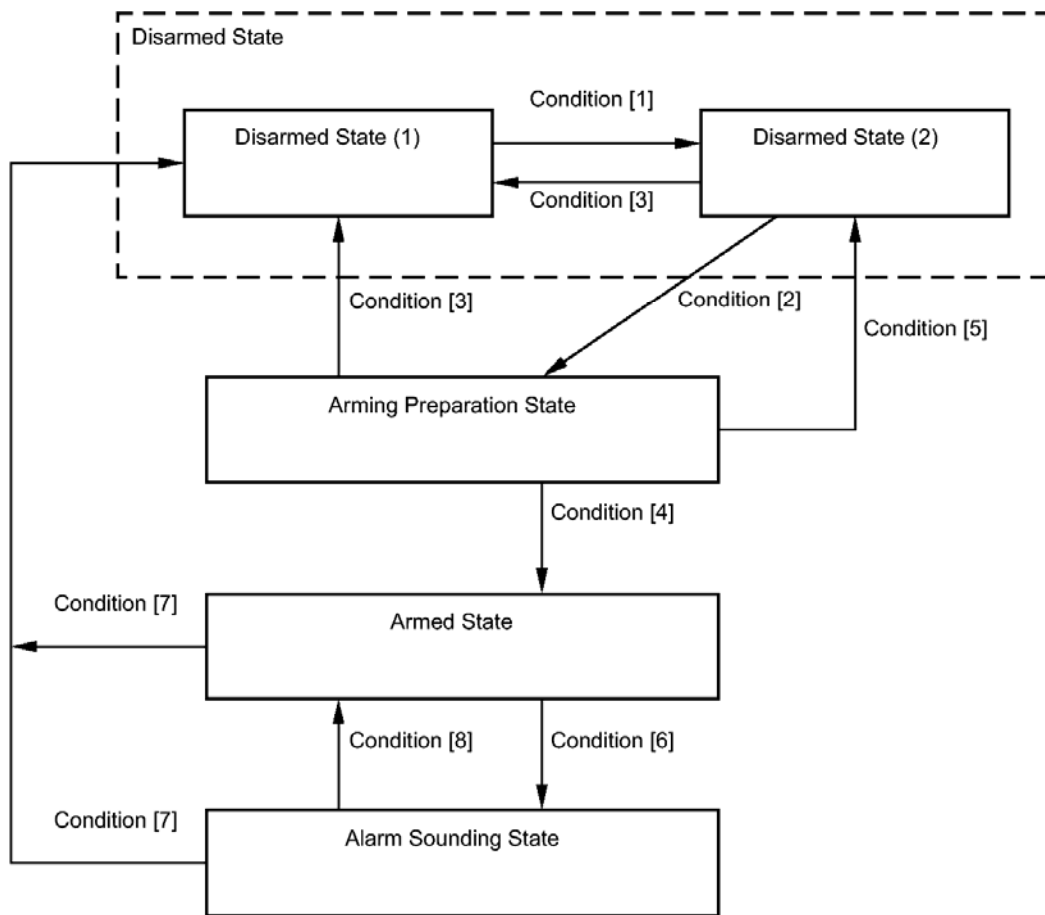


Fig. 5: Passive Arming Mode Flow Diagram
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

HINT:

The terms "all doors" and "any door" used in the following table include the back door.

Condition	Item
	With the ignition switch off, any door is

Condition [1]	opened and then the key is removed from the ignition key cylinder. (*1) • With the ignition switch off, the key is removed from the ignition key cylinder and then any door is opened.(*1) • When the key is not in the actuation area, any door is opened and then the ignition switch is turned off. (*2) • When the key is not in the actuation area, the ignition switch is turned off and then any door is opened.(*2)
Condition [2]	• With engine hood closed, any door is closed. • With all

	doors closed, the engine hood is closed.
Condition [3]	• All doors are unlocked by wireless operation. (*1) • All doors are unlocked by wireless operation or the smart key system. (*2) • All doors are unlocked by key operation. • The battery is reconnected. • The key is inserted into the ignition key cylinder. (*1) • The ignition switch is turned to ON or ACC.
Condition [4]	Approx. 30 seconds elapse after condition [1] is met.
Condition [5]	• Any door is opened. • The engine hood is opened.

Condition [6]	- Any door is opened and the entry delay time (*3) elapses. - The engine hood is opened. - The battery is reconnected. - The ignition switch is turned to ON without using the key.(*1) - When 5 seconds or more have elapsed after the ignition switch is turned off, the ignition switch is turned to ON.(*2)
	- All doors are unlocked by wireless operation. (*1) - All doors are unlocked by wireless operation or the smart key system. (*2) - All doors are unlocked by

Condition [7]	key operation. • The ignition switch is turned to ON and the engine is running for more than 2 seconds. • The key is inserted into the ignition key cylinder. (*1) • The ignition switch is turned to ON within 5 seconds after it is turned off. (*2)
Condition [8]	Approx. 60 seconds elapse. (The alarm stops and the system returns to the armed state.)

*1: w/o Smart Key System

*2: w/ Smart Key System

*3: When any door is opened while all 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 seconds 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*1 or the actuation area*2 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.

*1: w/o Smart Key System

*2: w/ Smart Key System

6. ALARM MEMORY FUNCTION

- a. If the alarm is set off (tampering is detected) while the theft deterrent system is armed, it will be stored 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 has been met:

- Switched to the disarmed state 1 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 ON.
- The PANIC switch is pressed again.
- Any of the switches on the wireless transmitter (LOCK/UNLOCK/POWER BACK DOOR*1/POWER SLIDE DOOR*2) is pressed.

- The panic alarm ends (approx. 60 seconds have elapsed).
- 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.)

*1: w/ Power Back Door System

*2: w/ Power Slide Door System

HINT:

- Active arming mode: See Active Arming Mode.
- Passive arming mode: See Passive Arming Mode.

8. SECURITY INDICATOR OUTPUT

- 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

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

Time	Security Indicator
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0.2 second	ON
1.8 second	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

HOW TO PROCEED WITH TROUBLESHOOTING

HINT:

- Use this procedure to troubleshoot the theft deterrent system.
- *: Use the Techstream.

1. VEHICLE BROUGHT TO WORKSHOP

NEXT: Go to next step

2. CUSTOMER PROBLEM ANALYSIS

- Interview the customer to confirm the trouble. Refer to **HOW TO PROCEED WITH TROUBLESHOOTING** .

NEXT: Go to next step

3. SYMPTOM SIMULATION

NEXT: Go to next step

4. PROBLEM SYMPTOMS TABLE

- Refer to **PROBLEM SYMPTOMS TABLE**.

RESULT

Result	Proceed to
Fault is not listed in Problem Symptoms Table.	A
Fault is	

listed in Problem Symptoms Table.	B
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B --> Go to step 6

A: Go to next step

5. PERFORM TROUBLESHOOTING ACCORDING TO MALFUNCTION SYMPTOM*

- a. System Description. Refer to **SYSTEM DESCRIPTION**
- b. Terminals of ECU. Refer to **TERMINALS OF ECU**
- c. Data List / Active Test. Refer to **DATA LIST / ACTIVE TEST**

6. ADJUST, REPAIR OR REPLACE

NEXT: Go to next step

7. CONFIRMATION TEST

NEXT --> END

CUSTOMIZE PARAMETERS

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 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 the Techstream to the DLC3.
- b. Turn the ignition switch to ON.
- c. Turn the Techstream on.
- d. Enter the following menus: Customize Setting /
- e. Select the setting by referring to the table below.

SECURITY

Display (Item)	Default	Content	Setting
Warning by Horn	ON	Function that allows the vehicle horn and theft deterrent horn to be used as warning devices	ON or OFF
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*1 or the actuation area*2 and all doors, engine hood and back 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	ON or OFF

		condition as a theft and switch to the alarm sounding state. • Unlock any door by key or wireless operation • Turn the ignition switch to ON	
Entry Delay	14 s	Function that changes entry delay time (time before warning starts) for Passive Mode	0 s, 14 s or 30 s

*1: w/o Smart Key System

*2: w/ Smart Key System

PROBLEM SYMPTOMS TABLE

PROBLEM SYMPTOMS TABLE

HINT:

- Use the table below to help determine the cause of problem symptoms. If multiple suspected areas are listed, the potential causes of the symptoms are listed in order of probability in the "Suspected Area" column of the table. Check each symptom by checking the suspected areas in the order they are listed. Replace parts as necessary.
- Inspect the fuses and relays related to this system before inspecting the suspected areas below.

THEFT DETERRENT SYSTEM

Symptom	Suspected Area	See
	Security indicator light circuit	Refer to <u>Security Indicator Light Circuit</u>
	ECU power source circuit	Refer to <u>ECU Power Source Circuit</u>
	Unlock warning switch circuit*	Refer to <u>Unlock Warning Switch Circuit</u>
	Front door lock assembly	Refer to <u>INSPECTION</u>
	Slide door lock assembly	Refer to <u>INSPECTION</u>
	Back door lock assembly	Refer to <u>INSPECTION</u>

Theft deterrent system cannot be set	Door courtesy switch circuit	Refer to <u>Door Courtesy Switch Circuit</u>
	Back door lock assembly (Back door courtesy switch)	Refer to <u>DTC B2251: Back Door Closer Switch Malfunction</u>
	Engine hood courtesy switch circuit	Refer to <u>Engine Hood Courtesy Switch Circuit</u>
	If the symptom(s) still occur after the above areas are inspected and proved to be normal, replace the main body ECU	Refer to <u>REMOVAL</u>
Security indicator does not blink when theft deterrent system is set	Security indicator light circuit	Refer to <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	Refer to <u>REMOVAL</u>
Alarm sounding state cannot be canceled when ignition switch is turned to ON*	Ignition switch circuit	Refer to <u>Ignition Switch Circuit</u>
	Unlock warning switch circuit	Refer to <u>Unlock Warning Switch Circuit</u>
	If the symptom(s) still occur after the above areas are inspected and proved to be normal, replace the main body ECU	Refer to <u>REMOVAL</u>
Theft deterrent system can be set even when door is open	Door courtesy switch circuit	Refer to <u>Door Courtesy Switch Circuit</u>
	If the symptom(s) still occur after the above area is inspected and proved to be normal, replace the main body ECU	Refer to <u>REMOVAL</u>
Theft deterrent system can be set even when engine hood is open.	Engine hood courtesy switch circuit	Refer to <u>Engine Hood Courtesy Switch Circuit</u>
	If the symptom(s) still occur after the above area is inspected and proved to be normal, replace the main body ECU	Refer to <u>REMOVAL</u>
Vehicle horns (low pitched, high pitched) do not sound while theft deterrent system is in warning operation	Horn circuit	Refer to <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	Refer to <u>REMOVAL</u>
Headlights do not blink while theft deterrent system is in	Headlight relay circuit	Refer to <u>Headlight Relay Circuit</u>
	If the symptom(s) still occur after the above area is	

warning operation	inspected and proved to be normal, replace the main body ECU	Refer to <u>REMOVAL</u>
Taillights do not blink while theft deterrent system is in warning operation	Taillight relay circuit	Refer to <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	Refer to <u>REMOVAL</u>
Hazard warning lights do not flash while theft deterrent system is in warning operation	Wire harness or connector	-
	Turn signal flasher assembly	Refer to <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	Refer to <u>REMOVAL</u>
Interior light does not light up while theft deterrent system is in warning operation	Interior light circuit	Refer to <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	Refer to <u>REMOVAL</u>
Security horn does not sound while theft deterrent system is in warning operation	Security horn circuit	Refer to <u>Security 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	Refer to <u>REMOVAL</u>
Headlights blink even when theft deterrent system is not set	Headlight relay circuit	Refer to <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	Refer to <u>REMOVAL</u>
Taillights blink even when theft deterrent system is not set	Taillight relay circuit	Refer to <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	Refer to <u>REMOVAL</u>
Hazard warning lights flash even when theft deterrent system is not set	Wire harness or connector	-
	Turn signal flasher assembly	Refer to <u>INSPECTION</u>
	If the symptom(s) still occur after the above areas are inspected and proved to be	Refer to <u>REMOVAL</u>

	normal, replace the main body ECU	
	Interior light circuit	Refer to <u>Interior Light Circuit</u>
Interior light comes on even when theft deterrent system is not set	If the symptom(s) still occur after the above area is inspected and proved to be normal, replace the main body ECU	Refer to <u>REMOVAL</u>

*: w/o Smart Key System

TERMINALS OF ECU

TERMINALS OF ECU

1. CHECK MAIN BODY ECU AND INSTRUMENT PANEL JUNCTION BLOCK ASSEMBLY

*a

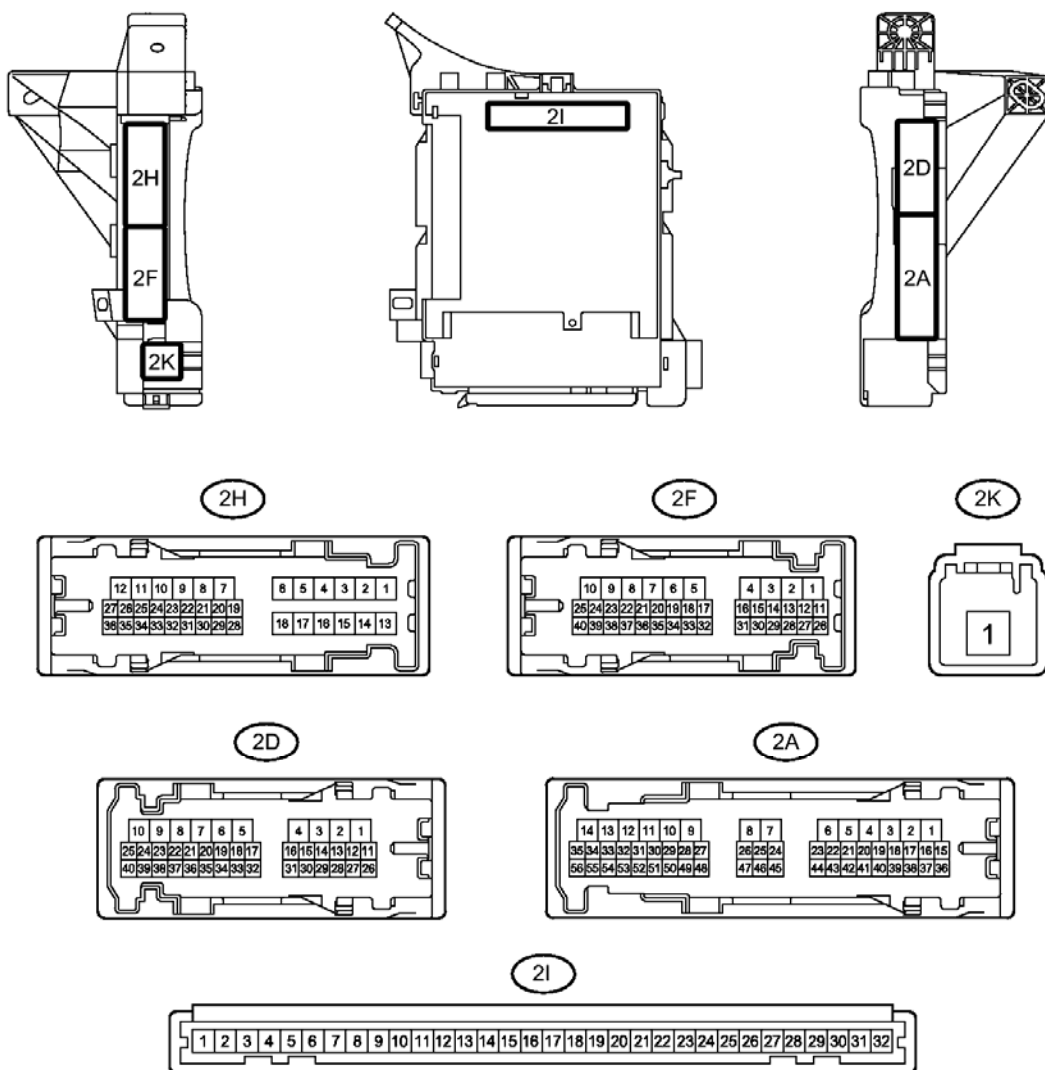


Fig. 6: ECM Connector Terminal Identification - I/P Junction Block & Main Body ECU
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Instrument Panel	
*a Junction Block Assembly	--

- Turn the ignition switch off.
- Remove the main body ECU from the instrument panel junction block assembly. Refer to **REMOVAL**.

HINT:

The instrument panel junction block assembly connectors must all be connected.

- c. Measure the resistance and voltage according to the value(s) in the table below.

Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
2I-2 (FLCY) - Body ground	-	Front door courtesy switch LH	Front door LH closed (OFF) --> open (ON)	10 kohms or higher -> below 1 ohms
2I-4 (FRCY) - Body ground	-	Front door courtesy switch RH	Front door RH closed (OFF) --> open (ON)	10 kohms or higher -> below 1 ohms
2I-11 (GND1) - Body ground	-	Ground	Always	Below 1 ohms
2I-20 (HCTY) - Body ground	-	Security courtesy switch	Engine hood closed (OFF) --> open (ON)	10 kohms or higher -> below 1 ohms
2I-28 (HORN) - Body ground	-	Horn switch	Horn button release (OFF) --> push (ON)	10 kohms or higher -> below 1 ohms
2I-29 (ACC) - Body ground	-	Ignition power supply (ACC signal)	Ignition switch ACC --> off	11 to 14 V --> Below 1 V
2I-30 (BECU) - Body ground	-	+B power supply	Always	11 to 14 V
2I-31 (ALTB) -	-	+B (power system alternator	Always	11 to 14 V

Body ground		system) power supply		
2I-32 (IG) - Body ground	-	Ignition power supply (IG signal)	Ignition switch ON --> off	11 to 14 V --> Below 1 V

If the result is not as specified, there may be a malfunction in the wire harness or the instrument panel junction block assembly.

- d. Reinstall the main body ECU.

*a

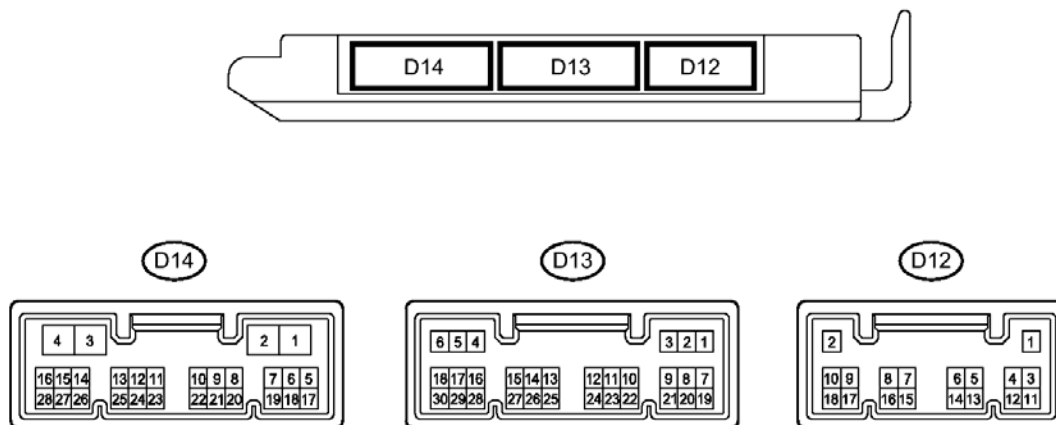


Fig. 7: ECU Connector Terminal Identification - Main Body ECU
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Main		
*a Body	-	-
ECU		

- e. Disconnect the D12 and D13 main body ECU connectors.
- f. Measure the resistance and voltage according to the value(s) in the table below.

Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
D12-3 (LCTY) - Body	GR - Body	Slide door courtesy	Slide door LH closed (OFF) -->	10 kohms or higher - -> Below

ground	ground	switch LH	open (ON)	1 ohms
D13-6 (RCTY) - Body ground	L - Body ground	Slide door courtesy switch RH	Slide door RH closed (OFF) --> open (ON)	10 kohms or higher -> Below 1 ohms
D13-17 (KSW) - Body ground	R - Body ground	Unlock warning switch	No key in ignition key cylinder (OFF) --> Key inserted (ON)	10 kohms or higher -> Below 1 ohms
D13-19 (BCTY) - Body ground	GR - Body ground	Back door courtesy switch	Back door closed (OFF) --> open (ON)	10 kohms or higher -> Below 1 ohms

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

HINT:

Measure the values on the wire harness side with the connectors disconnected.

- g. Reconnect the main body ECU connectors.
- h. Measure the voltage according to the value(s) in the table below.

Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
D13-3 (HAZ) - Body ground	B - Body ground	Turn signal flasher relay signal	System in alarm sounding state	Below 1 V
2D-35 (IND) - Body ground	B - Body ground	Security indicator output	Security indicator on (It lights up only in arming preparation state or alarm sounding	3 to 6 V

			state. It flashes when immobiliser is operating.)	
2F-22 (SH) - Body ground	G-B - Body ground	Security horn drive	Security horn sounding (Theft deterrent system is in alarm sounding state)	Pulse generation (Below 1 V <-- --> 12 V)
2F-24 (HORN) - Body ground	G-W - Body ground	Vehicle horn drive	Vehicle horn 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 may have a malfunction.

DIAGNOSIS SYSTEM

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 the Techstream to check and solve the problem.

2. CHECK DLC3

- Check the DLC3. Refer to **GENERAL INFORMATION** .

DATA LIST / ACTIVE TEST

DATA LIST / ACTIVE TEST

1. DATA LIST

HINT:

Using the 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 the Techstream to the DLC3.
- b. Turn the ignition switch to ON.
- c. Turn the Techstream on.
- d. Enter the following menus: Body Electrical / Main Body / Data List.
- e. According to the display on the Techstream, read the Data List.

MAIN BODY

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Key Unlock Warning SW*	Unlock warning switch signal/ON or OFF	ON: Key inserted in the ignition key cylinder OFF: Key removed from the ignition key cylinder	-
ACC SW*	Ignition switch ACC signal/ON or OFF	ON: Ignition switch ACC OFF: Ignition switch off	-
IG SW*	Ignition switch ON signal/ON or OFF	ON: Ignition switch ON OFF: Ignition switch off	-
D Door	D door courtesy	ON: Driver side door open	

Courtesy SW	switch/ON or OFF	OFF: Driver side door closed	-
P Door Courtesy SW	P door courtesy switch/ON or OFF	ON: Front passenger side door open OFF: Front passenger side door closed	-
RR Door Courtesy SW	Slide door courtesy switch RH/ON or OFF	ON: Slide door RH open OFF: Slide door RH closed	-
RL Door Courtesy SW	Slide door courtesy switch LH/ON or OFF	ON: Slide door LH open OFF: Slide door LH closed	-
Back Door Courtesy SW	Back door courtesy switch/ON or OFF	ON: Back door open OFF: Back door closed	-
D-Door Lock Pos SW	Driver's door lock position switch/ON or OFF	ON: Driver door unlocked OFF: Driver door locked	-
P-Door Lock Pos SW	Passenger door lock position switch/ON or OFF	ON: Passenger door unlocked OFF: Passenger door locked	-
		Permit:	

Back Door Open	Back door lock / Permit or Prohibit	Back door unlocked Prohibit: Back door locked	-
RR-Door Lock Pos SW	Slide door lock position switch RH/ON or OFF	ON: Slide door RH unlocked OFF: Slide door RH locked	-
RL-Door Lock Pos SW	Slide door lock position switch LH/ON or OFF	ON: Slide door LH unlocked OFF: Slide door LH locked	-
Passive Mode (Security system)	Passive mode/ON or OFF	ON: Passive mode on OFF: Passive mode off	-
Warning by Horn	Warning by horn/ON or OFF	ON: Vehicle horns sound during alarm sounding state OFF: Vehicle horns do not sound during alarm sounding state	-
Entry Delay	Entry delay time during passive mode	0 s: Entry delay time 0 sec. 14 s: Entry delay time 14 sec.	-

		30 s: Entry delay time 30 sec.	
--	--	---	--

*: w/o Smart Key System

2. ACTIVE TEST

HINT:

Using the 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.

- Connect the Techstream to the DLC3.
- Turn the ignition switch to ON.
- Turn the Techstream on.
- Enter the following menus: Body Electrical / Main Body / Active Test.
- According to the display on the Techstream, perform the Active Test.

MAIN BODY

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

CIRCUIT TESTS

Engine Hood Courtesy Switch Circuit

DESCRIPTION

The security 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

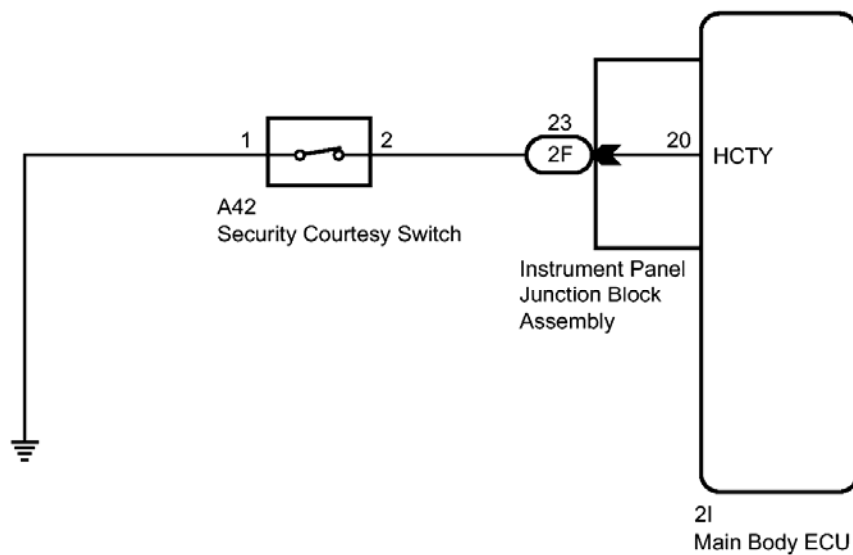
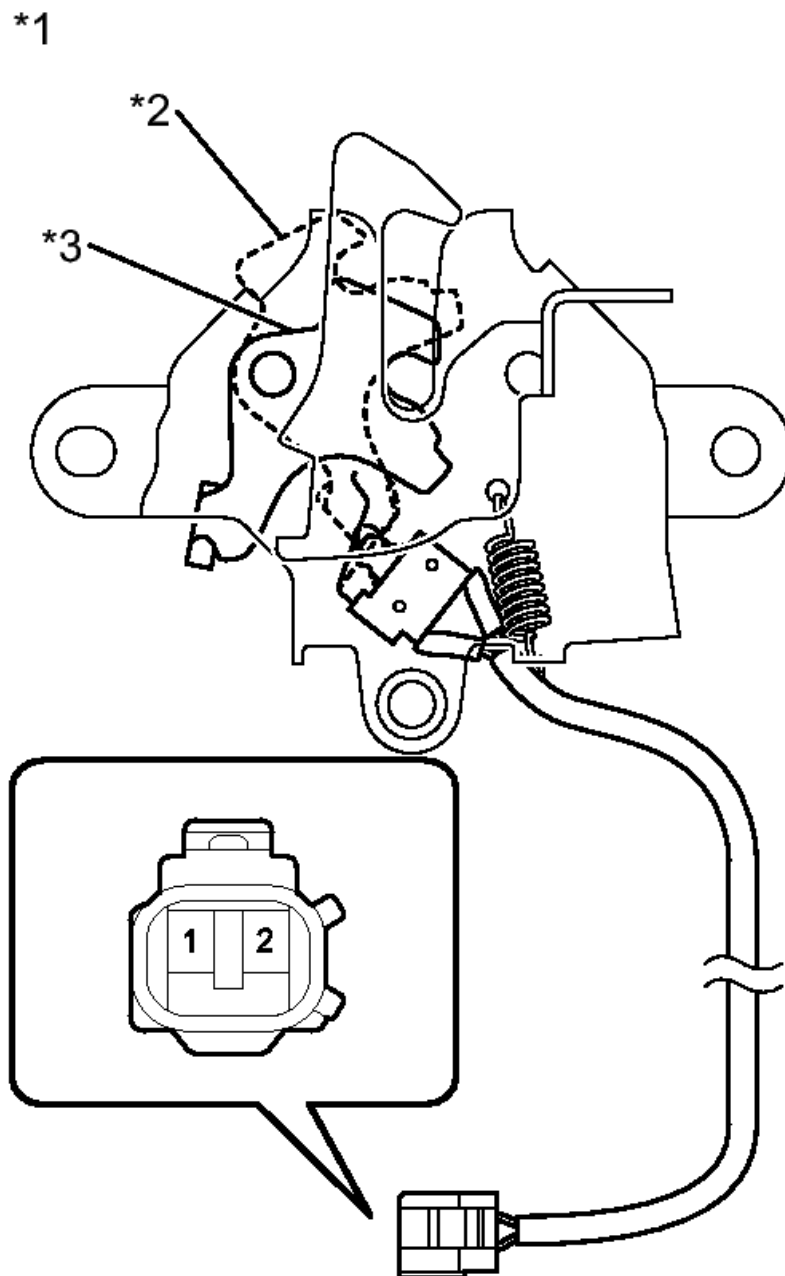


Fig. 8: Engine Hood Courtesy Switch Circuit - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

PROCEDURE

1. **INSPECT HOOD LOCK ASSEMBLY (SECURITY COURTESY SWITCH)**
 - a. Remove the hood lock assembly. Refer to **REMOVAL** .



Y

Fig. 9: Inspecting Hood Lock Assembly (Security Courtesy Switch)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Disconnect the A42 security courtesy switch connector.
- c. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
1 - 2	Opened	Below 1 ohms
	Locked	10 kohms or higher

TEXT IN ILLUSTRATION

*1	Component without harness connected (Hood Lock Assembly (Security Courtesy Switch))
*2	Opened
*3	Locked

NG --> See step 5

OK: Go to next step

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

*1

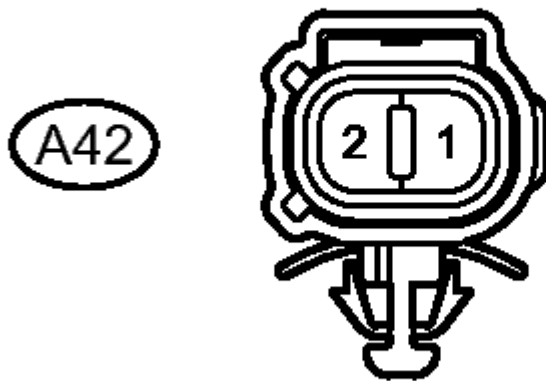


Fig. 10: A42 Courtesy Switch Connector End View
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Condition	Specified Condition
A42-1 - Body ground	Always	Below 1 ohms

TEXT IN ILLUSTRATION

*1	Front view of wire harness connector (to Security Courtesy Switch)
----	--

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

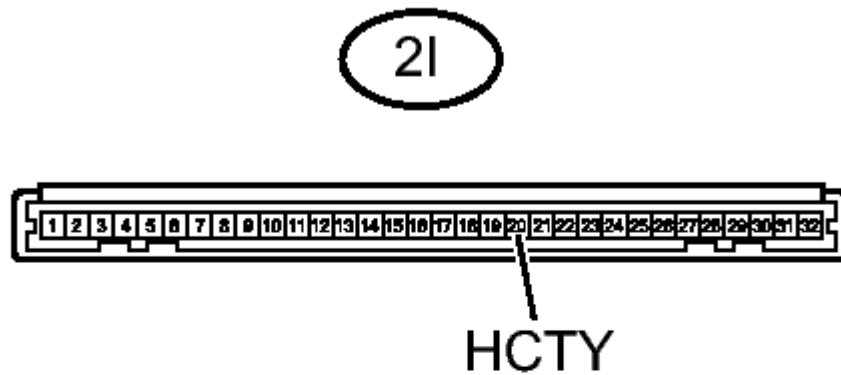
OK: Go to next step

3. CHECK HARNESS AND CONNECTOR (MAIN BODY ECU - SECURITY COURTESY

SWITCH)

- a. Remove the main body ECU from the instrument panel junction block assembly. Refer to **REMOVAL**.

*1



*2

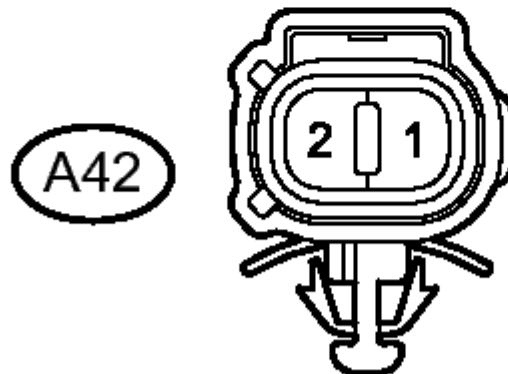


Fig. 11: Checking Harness And Connector (Main Body ECU - Security Courtesy Switch)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Condition	Specified Condition
2I-20 (HCTY) - A42-2	Always	Below 1 ohms

2I-20 (HCTY) - Body ground	Always	10 kohms or higher
-------------------------------------	--------	-----------------------

TEXT IN ILLUSTRATION

*1	Component without harness connected (Instrument Panel Junction Block Assembly)
*2	Front view of wire harness connector (to Security Courtesy Switch)

NG --> See step 4

OK --> See step 6

4. CHECK HARNESS AND CONNECTOR (INSTRUMENT PANEL JUNCTION BLOCK - SECURITY COURTESY SWITCH)

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

Standard Resistance

Tester Connection	Condition	Specified Condition
2F-23 (HCTY) - A42-2	Always	Below 1 ohms
2F-23 (HCTY) - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 7

5. **REPLACE HOOD LOCK ASSEMBLY (SECURITY COURTESY SWITCH).** Refer to REMOVAL
6. **PROCEED TO NEXT SUSPECTED AREA SHOWN IN PROBLEM SYMPTOMS TABLE.** Refer to PROBLEM SYMPTOMS TABLE
7. **REPLACE INSTRUMENT PANEL JUNCTION BLOCK ASSEMBLY.** Refer to 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

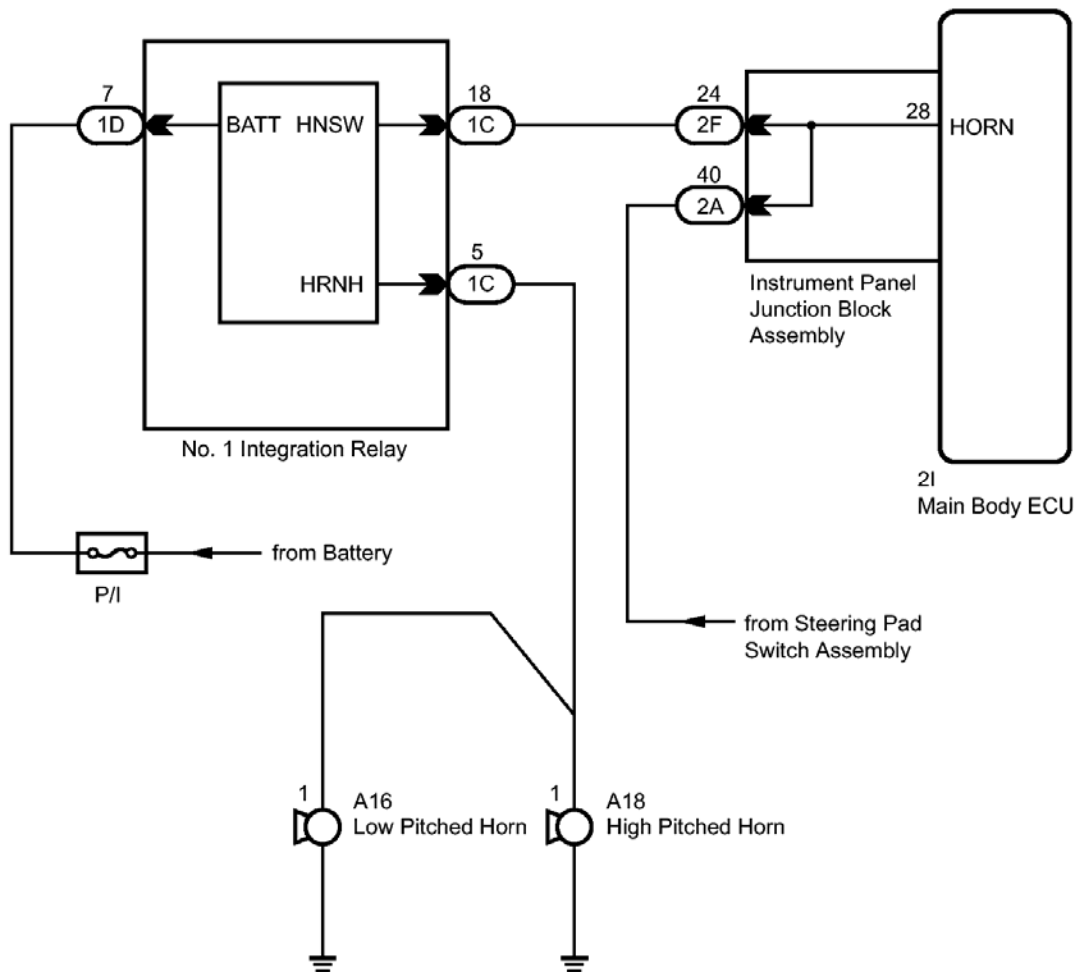


Fig. 12: Horn Circuit - Wiring Diagram

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

INSPECTION PROCEDURE

NOTE: **Inspect the fuses for circuits related to this system before performing the following inspection procedure.**

PROCEDURE

1. INSPECT HORNS

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

RESULT

Result	Proceed to
Horns sound	A
Horns do not sound	B

B --> See step 4

A: Go to next step

2. PERFORM ACTIVE TEST USING TECHSTREAM

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

MAIN BODY

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

OK

The vehicle horns sound and stop correctly when operated through the Techstream.

NG --> See step 5

OK: Go to next step

3. INSPECT INSTRUMENT PANEL JUNCTION BLOCK ASSEMBLY
- a. Remove the main body ECU from instrument panel junction block assembly. Refer to REMOVAL.

*1

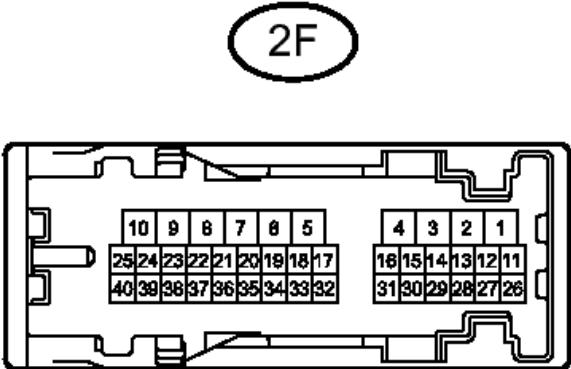
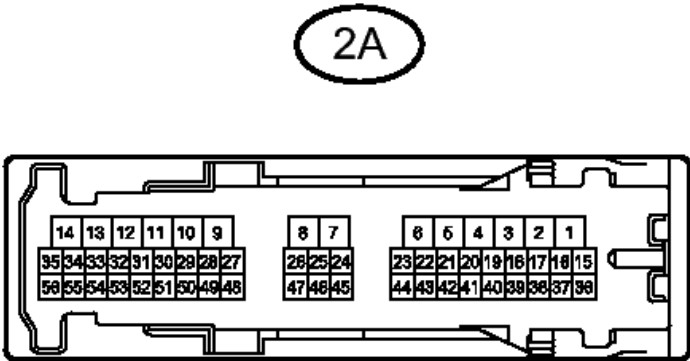
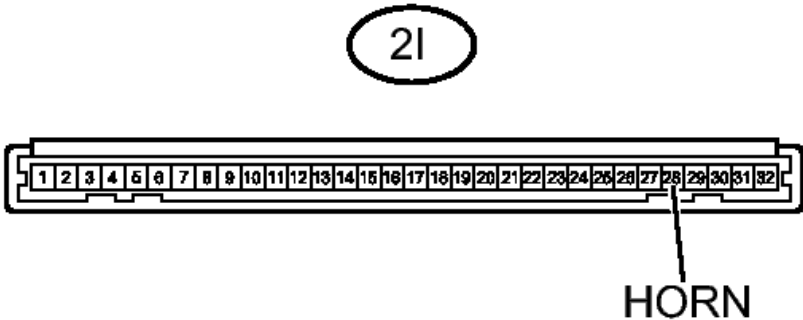


Fig. 13: Inspecting Instrument Panel Junction Block Assembly
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Disconnect the 2A and 2F instrument panel junction block assembly connectors.
- c. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
2I-28 (HORN) - 2F-24	Always	Below 1 ohms
2I-28 (HORN) - 2A-40		

TEXT IN ILLUSTRATION

*1	Component without harness connected (Instrument Panel Junction Block Assembly)
----	--

NG --> See step 7

OK --> See step 6

4. **GO TO HORN SYSTEM.** Refer to PROBLEM SYMPTOMS TABLE
5. **REPLACE MAIN BODY ECU.** Refer to REMOVAL
6. **PROCEED TO NEXT SUSPECTED AREA SHOWN IN PROBLEM SYMPTOMS TABLE.** Refer to PROBLEM SYMPTOMS TABLE
7. **REPLACE INSTRUMENT PANEL JUNCTION BLOCK ASSEMBLY.** Refer to REMOVAL

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 assembly.

WIRING DIAGRAM

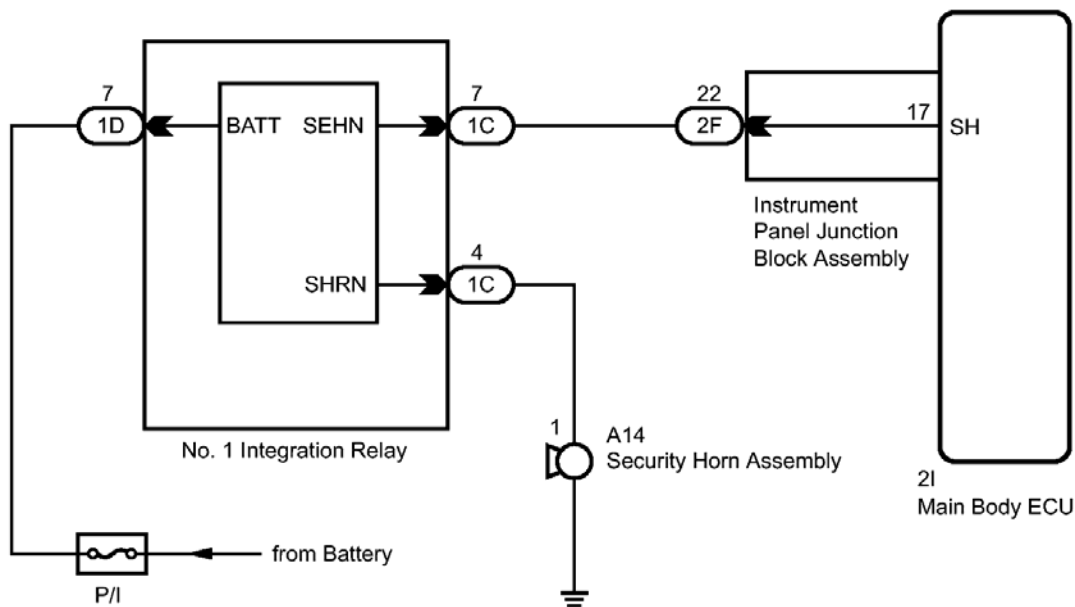


Fig. 14: Security Horn Circuit - Wiring Diagram
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE: Inspect the fuses for circuits related to this system before performing the following inspection procedure.

PROCEDURE

1. **INSPECT HORNS (HORN POWER SOURCE)**
 - a. Press the horn switch and check if the horns sound.

RESULT

Result	Proceed to
Horns sound	A
Horns do not sound	B

B --> See step 9

A: Go to next step

2. PERFORM ACTIVE TEST USING TECHSTREAM

- a. Connect the Techstream to the DLC3.
- b. Turn the ignition switch to ON.
- c. Turn the Techstream on.
- d. Select the item below in the Active Test and then check that the security horn assembly operates.

MAIN BODY

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

OK

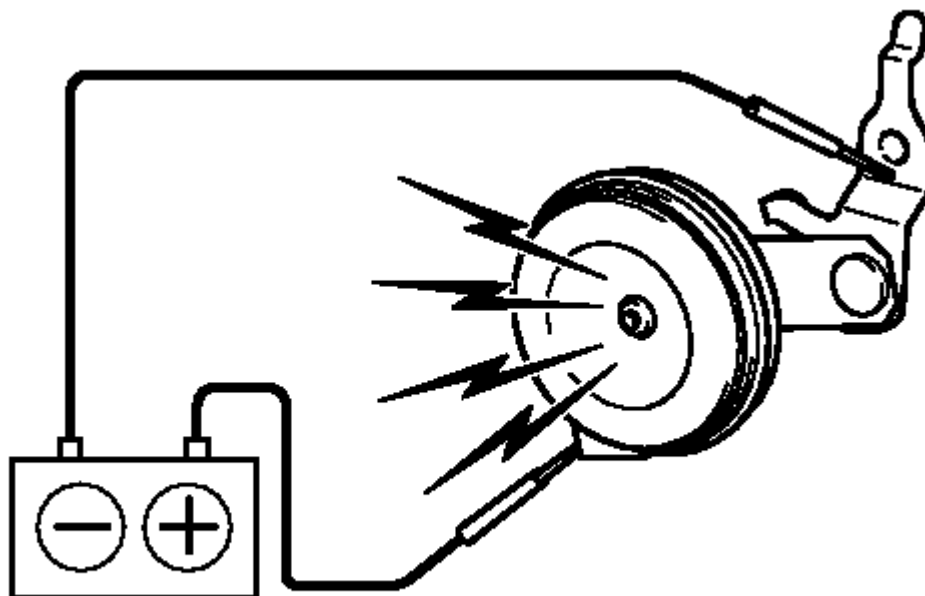
The security horn assembly sounds and stops correctly when operated through the Techstream.

NG --> See step 3

OK --> See step 10

3. INSPECT SECURITY HORN ASSEMBLY

- a. Remove the security horn assembly. Refer to REMOVAL .



H

Fig. 15: Checking Security Horn Assembly Operation
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Check the operation of the security horn assembly.

OK

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

NG --> See step 11

OK: Go to next step

4. CHECK HARNESS AND CONNECTOR (SECURITY HORN - INTEGRATION RELAY)

- a. Disconnect the 1C No. 1 integration relay connector.
b. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
1C-4 - A14-1	Always	Below 1 ohms
1C-4 - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

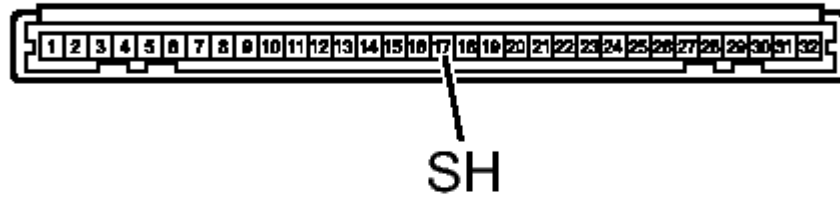
OK: Go to next step

5. CHECK HARNESS AND CONNECTOR (MAIN BODY ECU - INTEGRATION RELAY)

- a. Remove the main body ECU from instrument panel junction block assembly. Refer to REMOVAL .

*1

2I



*2

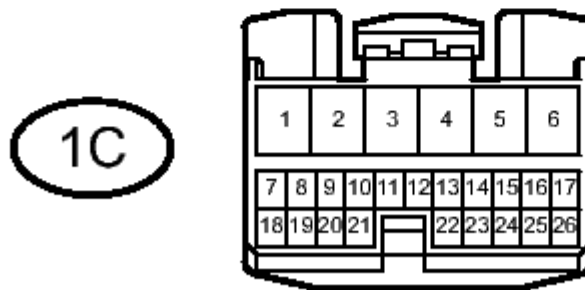


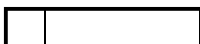
Fig. 16: Checking Harness And Connector (Main Body ECU - Integration Relay)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Condition	Specified Condition
1C-7 - 2I-17 (SH)	Always	Below 1 ohms
1C- - Body ground	Always	10 kohms or higher

TEXT IN ILLUSTRATION



*1	Component without harness connected (Instrument Panel Junction Block Assembly)
*2	Front view of wire harness connector (to No. 1 Integration Relay)

NG --> See step 8

OK: Go to next step

6. REPLACE NO. 1 INTEGRATION RELAY

- Replace the No. 1 integration relay with a new or normally functioning one.

NEXT: Go to next step

7. PERFORM ACTIVE TEST USING TECHSTREAM

- Connect the Techstream to the DLC3.
- Turn the ignition switch to ON.
- Turn the Techstream on.
- Select the item below in the Active Test and then check that the security horn assembly operates.

MAIN BODY

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

OK

The security horn assembly sounds and stops correctly when operated through the Techstream.

NG --> See step 12

OK --> END (NO. 1 INTEGRATION RELAY IS DEFECTIVE)

8. CHECK HARNESS AND CONNECTOR (INSTRUMENT PANEL JUNCTION BLOCK - INTEGRATION RELAY)

- a. Disconnect the 2F instrument panel junction block assembly connector.
- b. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
2F-22 - 1C-7	Always	Below 1 ohms
2F-22 - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 13

9. **GO TO HORN SYSTEM. Refer to PROBLEM SYMPTOMS TABLE**
10. **PROCEED TO NEXT SUSPECTED AREA SHOWN IN PROBLEM SYMPTOMS TABLE. Refer to PROBLEM SYMPTOMS TABLE**
11. **REPLACE SECURITY HORN ASSEMBLY. Refer to REMOVAL**
12. **PROCEED TO NEXT SUSPECTED AREA SHOWN IN PROBLEM SYMPTOMS TABLE. Refer to PROBLEM SYMPTOMS TABLE**
13. **REPLACE INSTRUMENT PANEL JUNCTION BLOCK ASSEMBLY. Refer to REMOVAL**

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

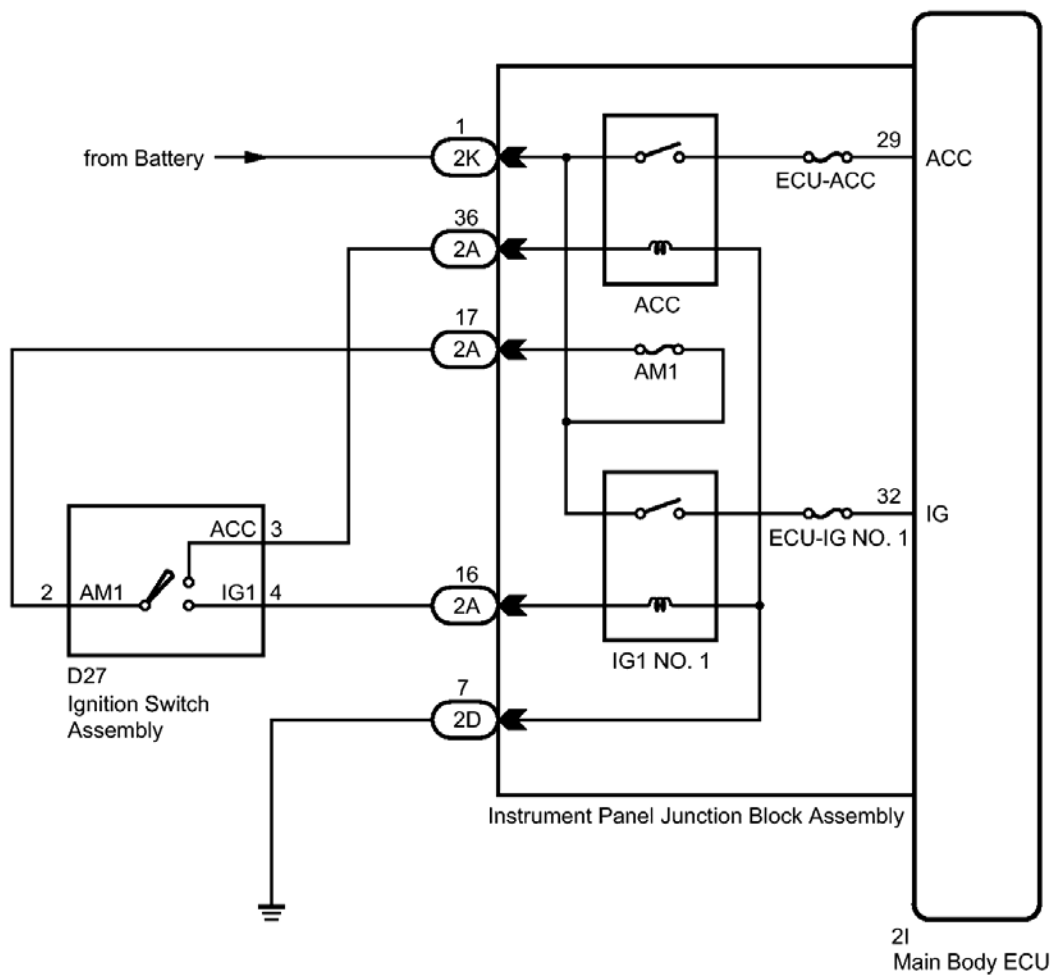


Fig. 17: Ignition Switch Circuit - Wiring Diagram
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE: Inspect the fuses for circuits related to this system before performing the following inspection procedure.

PROCEDURE

1. READ VALUE USING TECHSTREAM

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

MAIN BODY

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
IG SW	Ignition switch ON signal/ON or OFF	ON: Ignition switch ON OFF: Ignition switch off	-
ACC SW	Ignition switch ACC signal/ON or OFF	ON: Ignition switch ACC OFF: Ignition switch off	-

OK

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

NG --> See step 2

OK --> See step 8

2. CHECK HARNESS AND CONNECTOR (BATTERY - INSTRUMENT PANEL JUNCTION BLOCK)

- Disconnect the 2K instrument panel junction block assembly connector.

*1

2K

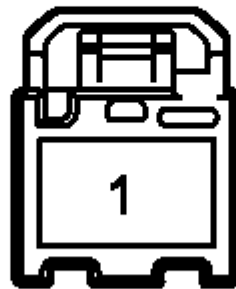


Fig. 18: Checking Harness And Connector (Battery - Instrument Panel Junction Block)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Voltage

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

TEXT IN ILLUSTRATION

*1	Front view of wire harness connector (to Instrument Panel Junction Block Assembly)
----	--

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

3. INSPECT IGNITION SWITCH ASSEMBLY

- a. Remove the ignition switch assembly. Refer to REMOVAL .

*1

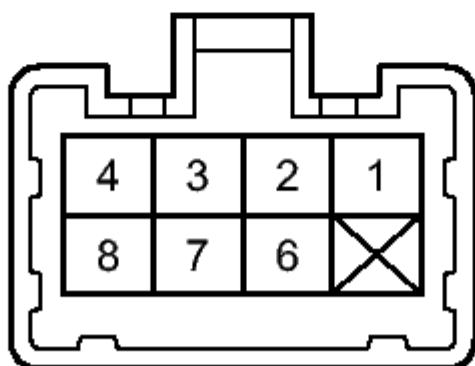
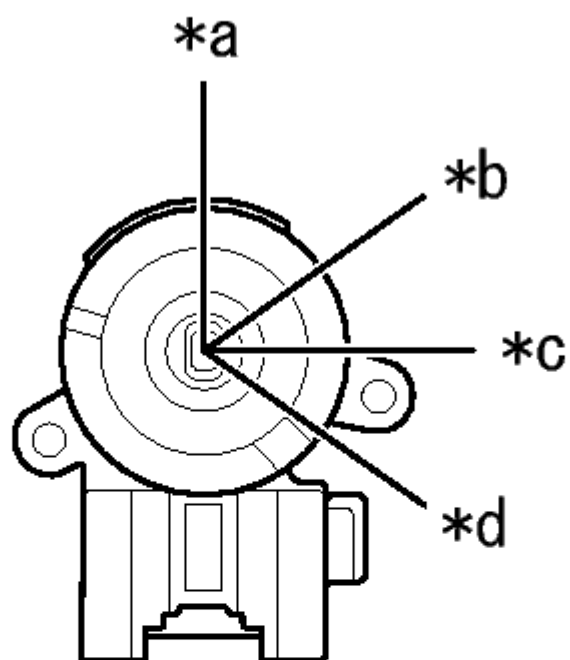


Fig. 19: Inspecting Ignition Switch Assembly With Connector End View
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
2 - 3	Ignition switch ON	Below 1 ohms
2 - 4		
3 - 4		
2 - 3	Ignition switch ACC	Below 1 ohms

TEXT IN ILLUSTRATION

*1	Component without harness connected (Ignition Switch Assembly)
*a	LOCK Position
*b	ACC Position
*c	ON Position
*d	Start Position

NG --> See step 9

OK: Go to next step

4. CHECK HARNESS AND CONNECTOR (IGNITION SWITCH - INSTRUMENT PANEL JUNCTION BLOCK)

- Reinstall the ignition switch assembly. Refer to **INSTALLATION**.
- Disconnect the 2A instrument panel junction block assembly connector.
- Measure the resistance according to the value(s) in the table below.

Standard Resistance



Tester Connection	Switch Condition	Specified Condition
2A-16 - 2A-17	Ignition switch ON	Below 1 ohms
2A-36 - 2A-17	Ignition switch ACC	Below 1 ohms

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

5. CHECK HARNESS AND CONNECTOR (INSTRUMENT PANEL JUNCTION BLOCK ASSEMBLY - BODY GROUND)

- Disconnect the 2D instrument panel junction block assembly connector.
- Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
2D-7 - Body ground	Always	Below 1 ohms

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

6. REPLACE MAIN BODY ECU

- Temporarily replace the main body ECU with a new or normally functioning one. Refer to **REMOVAL** .

NEXT: Go to next step

7. READ VALUE USING TECHSTREAM

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

MAIN BODY

Tester	Measurement	Normal	Diagnostic
--------	-------------	--------	------------

Display	Item/Range	Condition	Note
IG SW	Ignition switch ON signal/ON or OFF	ON: Ignition switch ON OFF: Ignition switch off	-
ACC SW	Ignition switch ACC signal/ON or OFF	ON: Ignition switch ACC OFF: Ignition switch off	-

OK

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

NG --> **See step 10**

OK --> **END (MAIN BODY ECU IS DEFECTIVE)**

8. **PROCEED TO NEXT SUSPECTED AREA SHOWN IN PROBLEM SYMPTOMS TABLE. Refer to PROBLEM SYMPTOMS TABLE**
9. **REPLACE IGNITION SWITCH ASSEMBLY. Refer to REMOVAL**
10. **REPLACE INSTRUMENT PANEL JUNCTION BLOCK ASSEMBLY. Refer to REMOVAL**

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 only during the arming preparation and alarm sounding states.

WIRING DIAGRAM

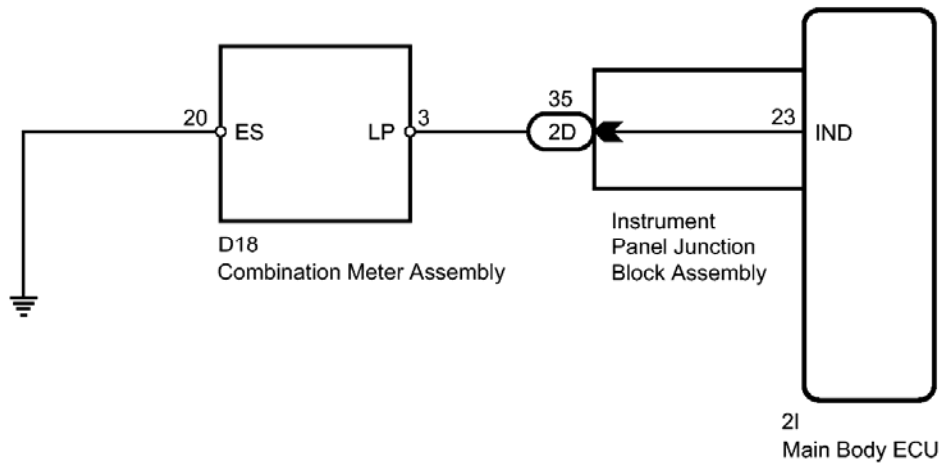


Fig. 20: Security Indicator Light Circuit - Wiring Diagram
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

PROCEDURE

1. PERFORM ACTIVE TEST USING TECHSTREAM

- Connect the Techstream to the DLC3.
- Turn the ignition switch to ON.
- Turn the Techstream on.
- Select the item below in the Active Test and then check that the indicator operates.

MAIN BODY

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

OK

The security indicator light flashes and goes off correctly when operated through the Techstream.

NG --> See step 2

OK --> See step 6

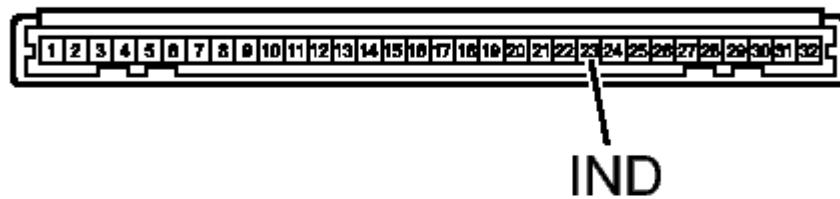
2. CHECK HARNESS AND CONNECTOR (COMBINATION METER - MAIN BODY ECU)

- Remove the main body ECU from instrument panel junction block assembly. Refer to

REMOVAL .

*1

21



*2

D18

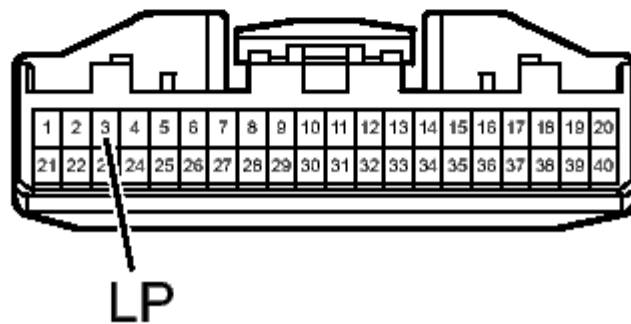


Fig. 21: Checking Harness And Connector (Combination Meter - Main Body ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Disconnect the D18 combination meter assembly connector.
- c. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D18-3 (LP) - 21-23 (IND)	Always	Below 1 ohms

D18-3 (LP) - Body ground	Always	10 kohms or higher
--------------------------------	--------	-----------------------

TEXT IN ILLUSTRATION

*1	Component without harness connected (Instrument Panel Junction Block Assembly)
*2	Front view of wire harness connector (to Combination Meter Assembly)

NG --> See step 5

OK: Go to next step

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

*1

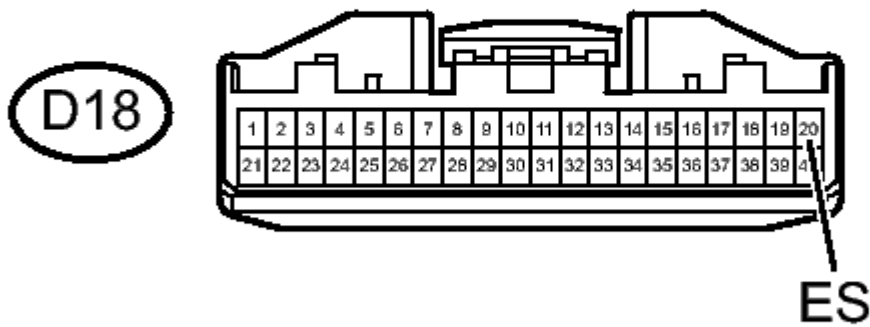


Fig. 22: Checking Harness And Connector (Combination Meter - Body Ground)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Condition	Specified Condition
D18-20 (ES) - Body ground	Always	Below 1 ohms

TEXT IN ILLUSTRATION

*1	Front view of wire harness connector (to Combination Meter Assembly)
----	--

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

- CHECK HARNESS AND CONNECTOR (COMBINATION METER - INSTRUMENT PANEL JUNCTION BLOCK)**

- a. Disconnect the 2D instrument panel junction block assembly connector.
- b. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D18-3 (LP) - 2D-35	Always	Below 1 ohms
D18-3 (LP) - Body ground	Always	10 kohms or higher

NG --> **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK --> See step 7

5. CHECK COMBINATION METER ASSEMBLY

- a. Reinstall the main body ECU and the instrument panel junction block assembly.

*1

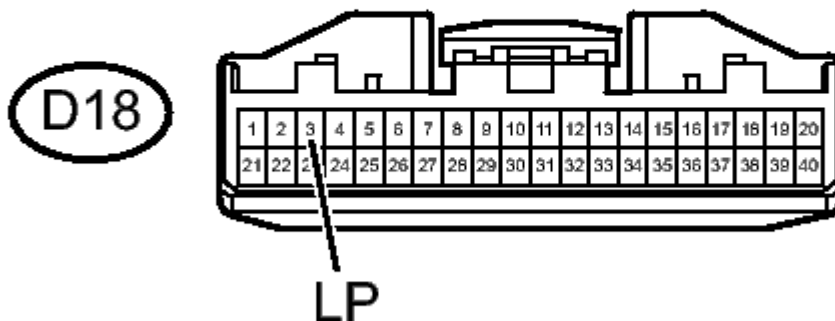


Fig. 23: D18 Combination Meter Connector End View
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Perform Active Test using the Techstream to turn the security indicator to the ON state. Refer to **DATA LIST / ACTIVE TEST**.
- c. Measure the voltage according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D18-3 (LP) - Body ground	Security indicator in ON state	11 to 14 V

TEXT IN ILLUSTRATION

*1	Front view of wire harness connector (to Combination Meter Assembly)
----	--

NG --> See step 9

OK --> See step 8

6. **PROCEED TO NEXT SUSPECTED AREA SHOWN IN PROBLEM SYMPTOMS TABLE. Refer to PROBLEM SYMPTOMS TABLE**
7. **REPLACE INSTRUMENT PANEL JUNCTION BLOCK ASSEMBLY. Refer to REMOVAL**
8. **REPLACE COMBINATION METER ASSEMBLY. Refer to REMOVAL**
9. **PROCEED TO NEXT SUSPECTED AREA SHOWN IN PROBLEM SYMPTOMS TABLE. Refer to PROBLEM SYMPTOMS TABLE**

ECU Power Source Circuit

DESCRIPTION

This circuit provides power for main body ECU operation.

WIRING DIAGRAM

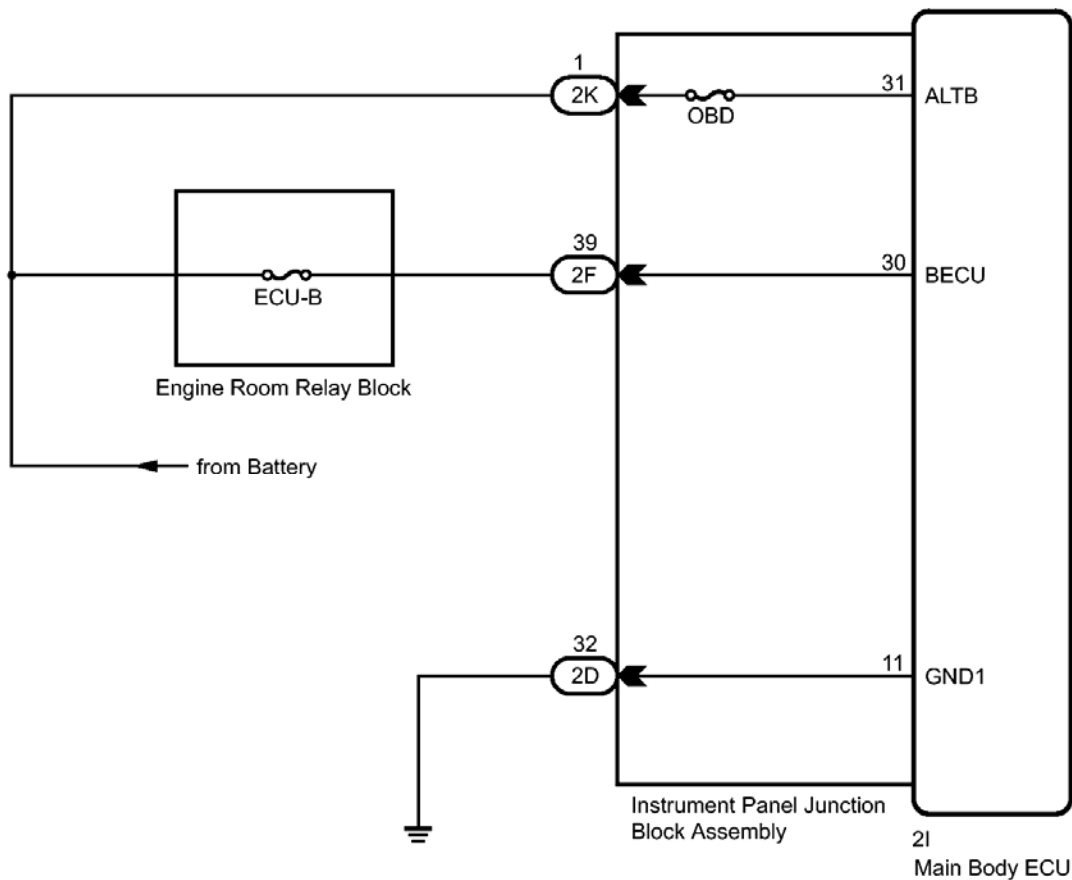


Fig. 24: ECU Power Source Circuit - Wiring Diagram
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE: Inspect the fuses for circuits related to this system before performing the following inspection procedure.

PROCEDURE

1. **CHECK HARNESS AND CONNECTOR (INSTRUMENT PANEL JUNCTION BLOCK - BATTERY)**
 - a. Disconnect the 2K and 2F instrument panel junction block assembly connectors.

*1

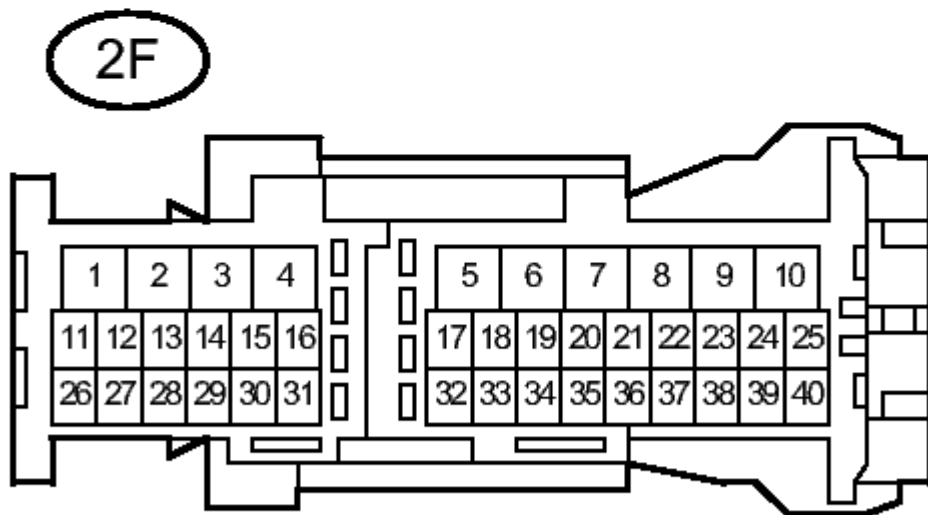
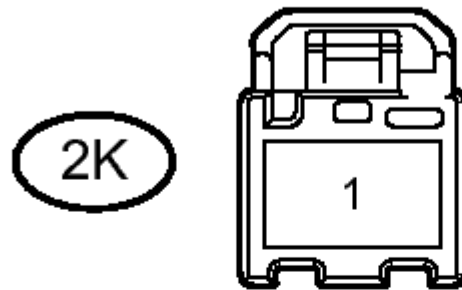


Fig. 25: Checking Harness And Connector (Instrument Panel Junction Block - Battery)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Voltage

Tester Connection	Condition	Specified Condition
2K-1 - Body ground	Always	11 to 14 V
2F-39 - Body ground	Always	11 to 14 V

TEXT IN ILLUSTRATION

*1	Front view of wire harness connector (to Instrument Panel Junction Block Assembly)
----	--

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

2. **CHECK HARNESS AND CONNECTOR (INSTRUMENT PANEL JUNCTION BLOCK - BODY GROUND)**
 - a. Disconnect the 2D instrument panel junction block assembly connector.

*1

2D

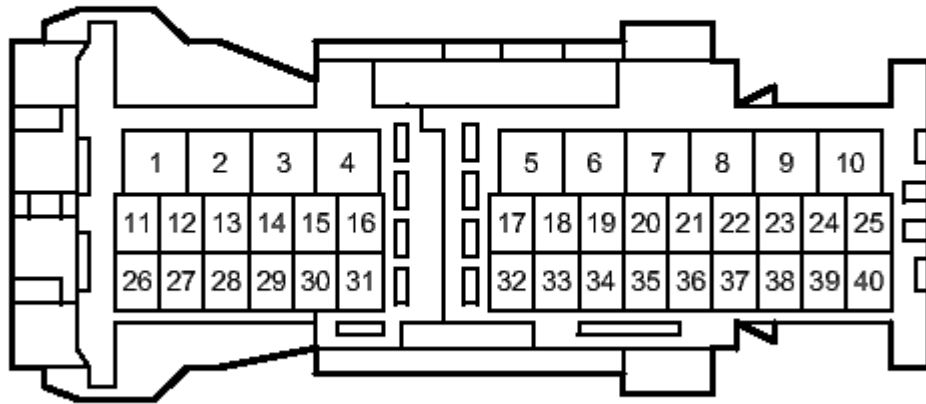


Fig. 26: Checking Harness And Connector (Instrument Panel Junction Block - Body Ground)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Condition	Specified Condition
2D-32 - Body ground	Always	Below 1 ohms

TEXT IN ILLUSTRATION

*1	Front view of wire harness connector (to Instrument Panel Junction Block Assembly)
----	--

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

3. INSPECT INSTRUMENT PANEL JUNCTION BLOCK ASSEMBLY (INTERNAL CIRCUIT)

- a. Remove the main body ECU from instrument panel junction block assembly. Refer to **REMOVAL** .

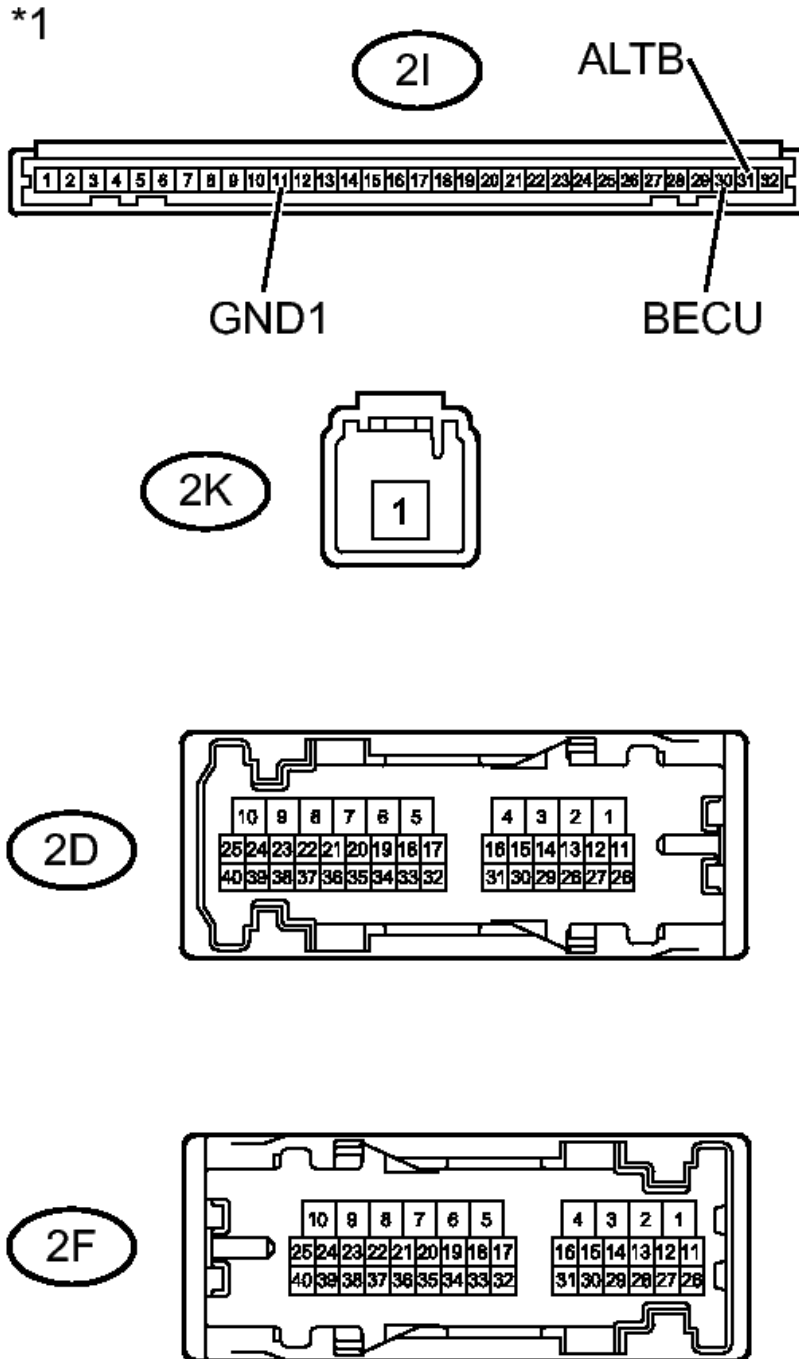


Fig. 27: Inspecting Instrument Panel Junction Block Assembly (Internal Circuit)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Condition	Specified Condition
2I-31 (ALTB) - 2K-1	Always	Below 1 ohms
2I-30 (BECU) - 2F-39	Always	Below 1 ohms
2I-11 (GND1) - 2D-32	Always	Below 1 ohms

TEXT IN ILLUSTRATION

	Component without harness connected
*1	(Instrument Panel Junction Block Assembly)

NG --> See step 5

OK --> See step 4

- 4. PROCEED TO NEXT SUSPECTED AREA SHOWN IN PROBLEM SYMPTOMS TABLE. Refer to PROBLEM SYMPTOMS TABLE**
- 5. REPLACE INSTRUMENT PANEL JUNCTION BLOCK ASSEMBLY. Refer to REMOVAL**

Unlock Warning Switch Circuit

DESCRIPTION

The key unlock warning switch assembly turns on when the ignition key is inserted into the ignition key cylinder and turns off when the ignition key is removed.

The main body ECU operates the key confinement prevention function while the key unlock warning switch assembly is on.

WIRING DIAGRAM

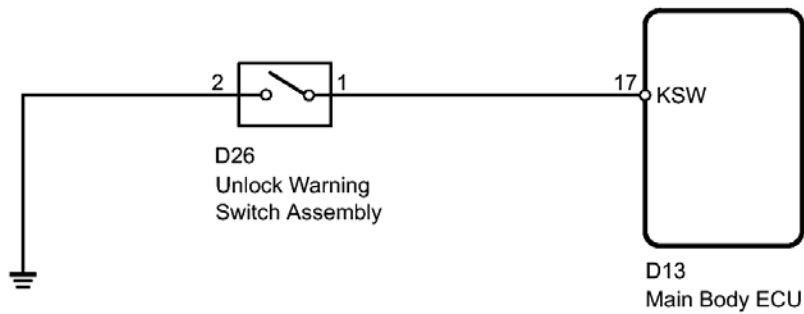


Fig. 28: Unlock Warning Switch Circuit - Wiring Diagram
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

PROCEDURE

1. READ VALUE USING TECHSTREAM (UNLOCK WARNING SWITCH ASSEMBLY)

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

MAIN BODY

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Key Unlock Warning SW	Unlock warning switch signal/ON or OFF	ON: Key inserted in the ignition key cylinder OFF: Key removed from the ignition key cylinder	-

OK

When the key is in the ignition key cylinder, ON appears on the Techstream.

NG --> See step 2

OK --> See step 5

2. INSPECT UNLOCK WARNING SWITCH ASSEMBLY

- a. Remove the unlock warning switch assembly. Refer to REMOVAL .

*1

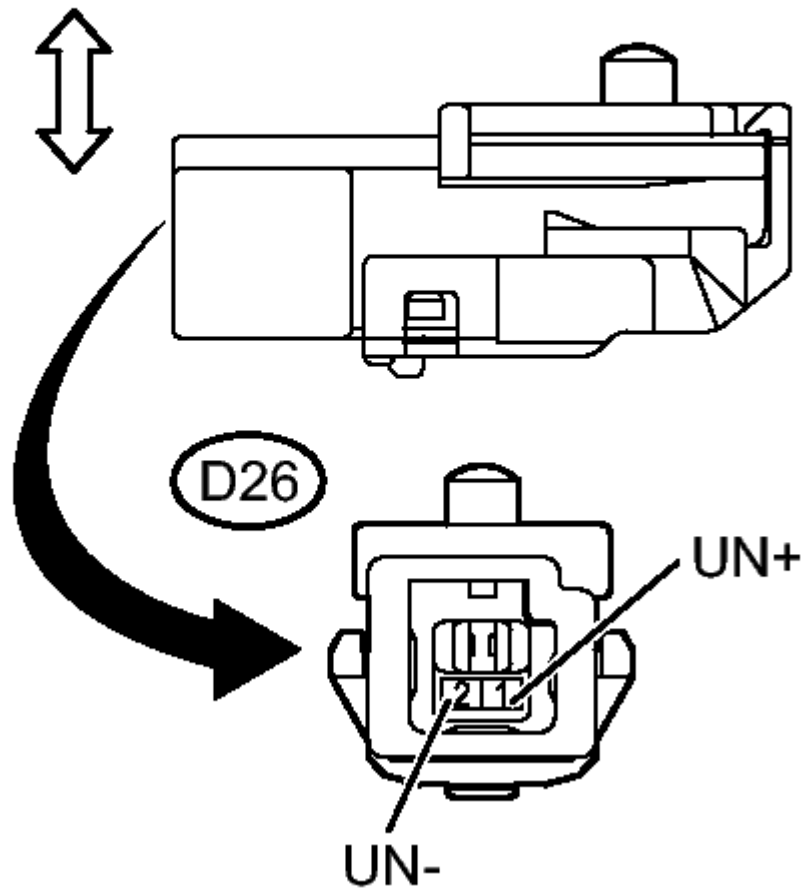


Fig. 29: Inspecting Unlock Warning Switch Assembly
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D26-1	Push	

(UN+) - D26-2 (UN-)	released (Free)	10 kohms or higher
D26-1 (UN+) - D26-2 (UN-)	Pin pushed in	Below 1 ohms

TEXT IN ILLUSTRATION

*1	Component without harness connected (Unlock Warning Switch Assembly)
----	---

NG --> See step 6

OK: Go to next step

3. **CHECK HARNESS AND CONNECTOR (UNLOCK WARNING SWITCH - BODY GROUND)**
 - a. Disconnect the D26 unlock warning switch assembly connector.

*1

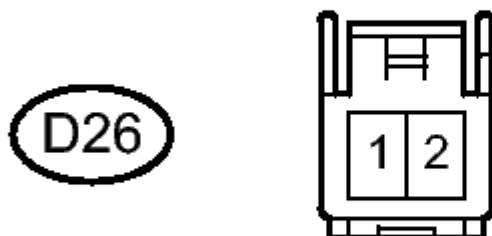


Fig. 30: D26 Unlock Warning Switch Assembly Connector End View

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	Condition	Specified Condition
D26-2 - Body ground	Always	Below 1 ohms

TEXT IN ILLUSTRATION

*1	Front view of wire harness connector (to Unlock Warning Switch Assembly)
----	--

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

4. CHECK HARNESS AND CONNECTOR (UNLOCK WARNING SWITCH - MAIN BODY ECU)

- a. Disconnect the D13 main body ECU connector.
b. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D26-1 - D13-17 (KSW)	Always	Below 1 ohms

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 7

5. PROCEED TO NEXT SUSPECTED AREA SHOWN IN PROBLEM SYMPTOMS TABLE. Refer to PROBLEM SYMPTOMS TABLE

6. **REPLACE UNLOCK WARNING SWITCH ASSEMBLY. Refer to REMOVAL**
7. **PROCEED TO NEXT SUSPECTED AREA SHOWN IN PROBLEM SYMPTOMS TABLE. Refer to PROBLEM SYMPTOMS TABLE**

ACCESSORIES & EQUIPMENT

Theft Deterrent System (Service Specifications) - Sienna

THEFT DETERRENT / KEYLESS ENTRY

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS

Part Tightened	N*m	kgf*cm	ft.*lbf
Electrical key antenna x Rear bumper energy absorber	8.0	82	71 in.*lbf
Negative battery terminal x Battery	5.4	55	48 in.*lbf