

ACCESSORIES & EQUIPMENT

Power Door Lock Control System (Diagnostics & Symptom Tests) - Sienna

POWER DOOR LOCK CONTROL 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 ON	ON	On (IG)
Ignition switch ACC	ACC	On (ACC)
Engine Start	START	Start

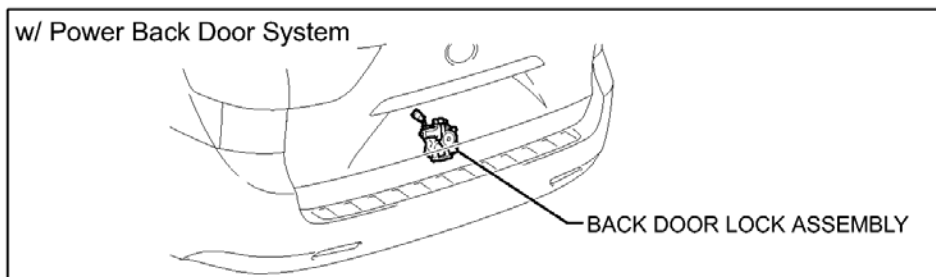
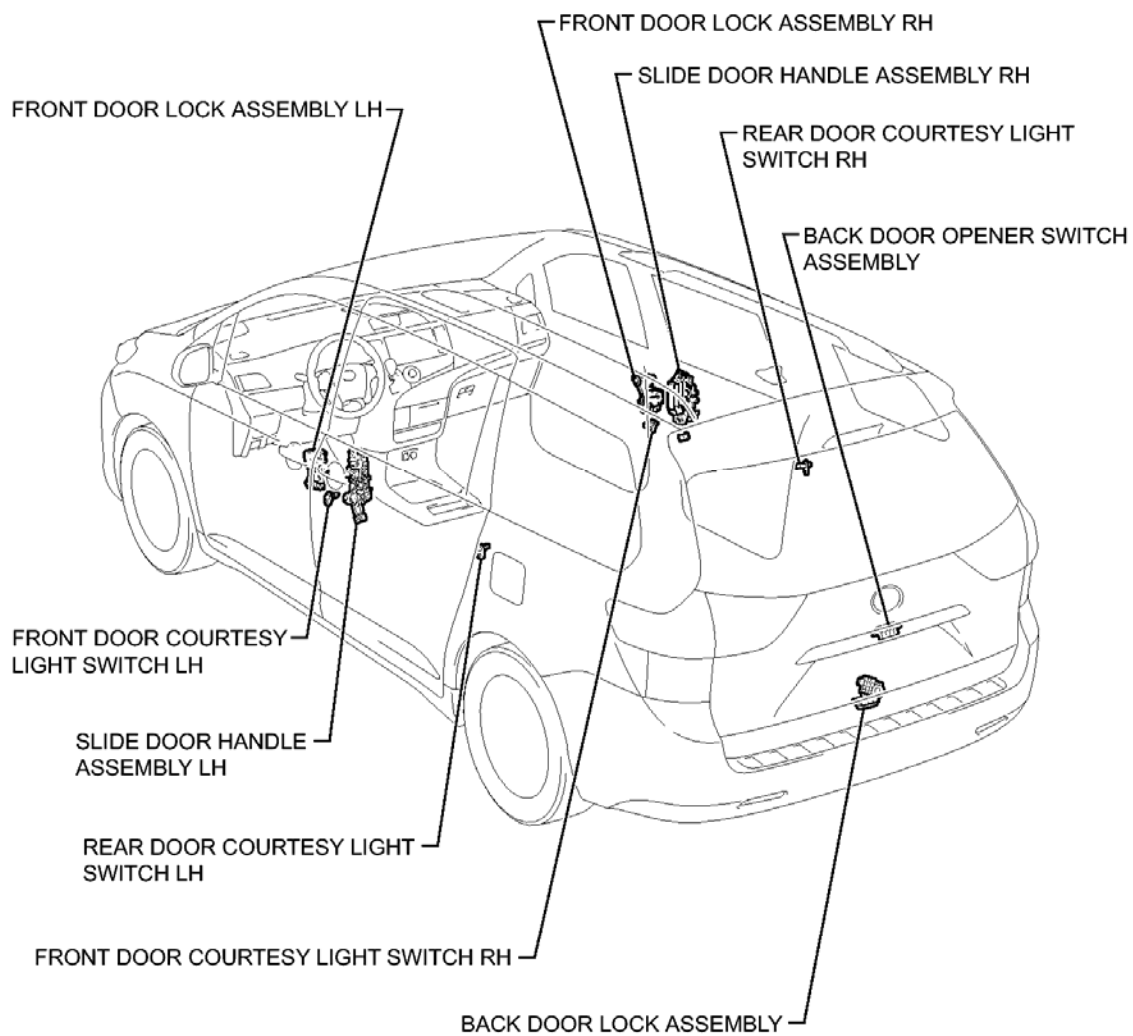
2. PRECAUTION WHEN USING TECHSTREAM

- a. When using the Techstream to troubleshoot the power door lock control system:

Connect the Techstream to the DLC3 while the ignition switch is off, and turn a door courtesy light switch on and off at 1.5-second intervals until communication between the Techstream and vehicle begins.

PARTS LOCATION

ILLUSTRATION



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Fig. 1: Power Door Lock Control System Components Location (1 Of 2)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

ILLUSTRATION

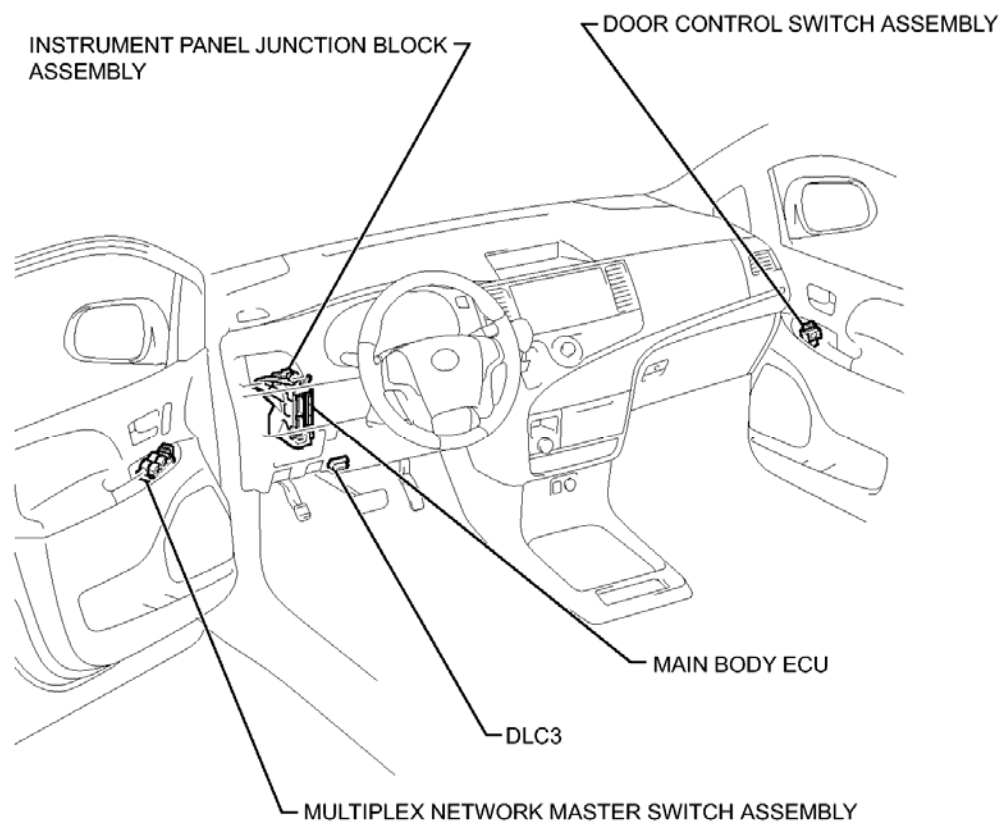


Fig. 2: Power Door Lock Control System Components Location (2 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

SYSTEM DIAGRAM

SYSTEM DIAGRAM

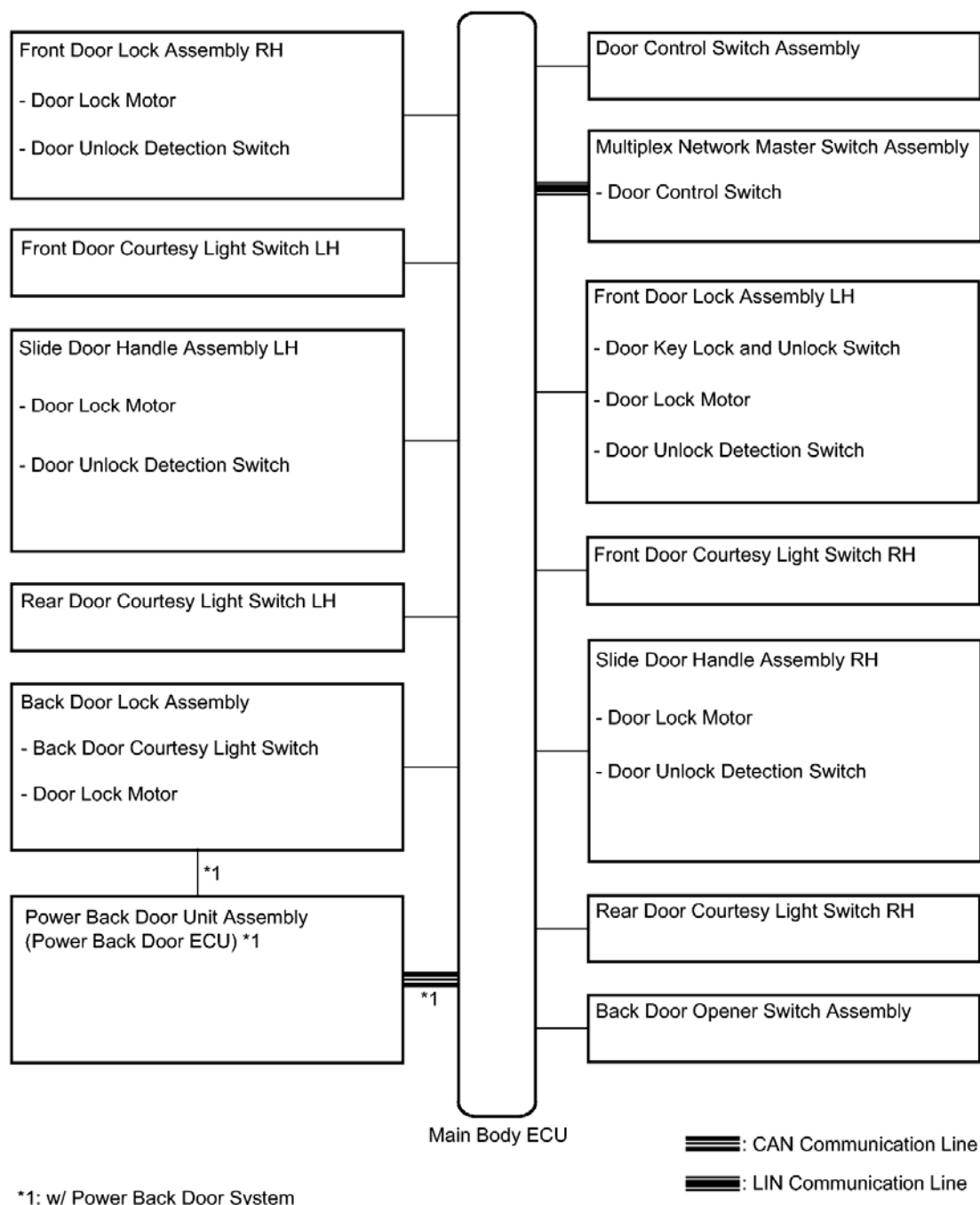


Fig. 3: Power Door Lock Control System Diagram
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

SYSTEM DESCRIPTION

SYSTEM DESCRIPTION

1. POWER DOOR LOCK CONTROL SYSTEM DESCRIPTION

- a. The power door lock system locks/unlocks all the doors.

The driver and passenger side door control switches send "lock/unlock" request signals to the main body ECU. Then, the main body ECU sends these request signals to the lock motors in each door to lock/unlock all the doors at once in response to the inputs.

Operating the driver door lock using a mechanical key sends request signals to lock or unlock the doors to the main body ECU.

2. FUNCTION OF MAIN COMPONENTS

Component	Function
Multiplex network master switch assembly	Door control switch on multiplex network master switch assembly locks or unlocks all doors.
Door control switch assembly	Door control switch on front passenger side locks or unlocks all doors.
Door courtesy light switch	Placed on each door. Detects door status (open or closed) and outputs data to main body ECU. Turns on when door is opened and turns off when door is closed.
	• Built-in motor locks or unlocks door. • Built-in door control switch (key-linked) detects door key operation status (locked or

Front door lock assembly LH	unlocked) and outputs a signal to main body ECU. • Built-in position switch detects door status (locked or unlocked) and outputs a signal to main body ECU. This switch turns off when door is locked and turns on when door is unlocked.
Front door lock assembly RH	• Built-in motor locks or unlocks door. • Built-in position switch detects door status (locked or unlocked) and outputs a signal to main body ECU. This switch turns off when door is locked and turns on when door is unlocked.
	• Built-in

Slide door handle assembly LH/RH	motor locks or unlocks door. • Built-in position switch detects door status (locked or unlocked) and outputs a signal to main body ECU. This switch turns off when door is locked and turns on when door is unlocked.
Back door lock assembly	• Built-in motor locks or unlocks door*1. • Built-in motor opens/closes door*2. • The built-in door courtesy switch detects status (open or closed) and outputs data to main body ECU*1 or power back door ECU*2. • Performs the back door

	open/close operation according to the door position as determined by the power back door ECU*2.
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- *1: w/o Power Back Door System
- *2: w/ Power Back Door System

3. SYSTEM FUNCTION

- This system is controlled by the main body ECU. The main body ECU outputs signals to each door lock motor. The door lock control system of the vehicle has the following functions:

Function	Outline
Manual lock and unlock function	This function can lock or unlock all doors by the door lock control switch operation.
Key-linked lock and unlock function	This function, which is linked with the mechanical key cylinder, can lock or unlock all doors when a lock or unlock operation is effected.
Manual unlock prohibition function	When the conditions listed below are met, unlocking the vehicle using the door lock control switch will be prohibited. • The doors are locked using a mechanical key or door control transmitter with all doors

	closed.
Key lock-in prevention function	When the key is in the vehicle, performing the door lock operation will not lock the door.
Shift-linked automatic door lock function	When the conditions listed below are met consecutively, this function causes all doors to be automatically locked. • All doors are closed. • The engine is started. • The shift lever is moved out of P. • Any one of the doors is unlocked.
Shift-linked automatic door unlock function	If the shift lever is moved out of P after the engine is started, all doors will be automatically unlocked.
2-step unlock function	Unlock only the driver side door by turning the key cylinder once and unlocks the other doors by turning it twice.
Speed-	When the conditions listed below are met consecutively, this function causes all doors to be automatically locked.

sensitive automatic door lock function*	• Vehicle speed is higher than approximately 20 km/h (12 mph). • All doors are closed. • Any one of the doors is unlocked.
Opening driver door-linked automatic door unlock*	All doors are unlocked automatically when the driver door is opened within 10 seconds after the power source is changed from "IG-ON" to "ACC" or "OFF".

*: This function is set through the customize function, it is off by default.

HOW TO PROCEED WITH TROUBLESHOOTING

HOW TO PROCEED WITH TROUBLESHOOTING

HINT:

- Use the following procedure to troubleshoot the power door lock control system.
- *: Use the Techstream.

1. VEHICLE BROUGHT TO WORKSHOP

NEXT: Go to next step

2. CUSTOMER PROBLEM ANALYSIS

HINT:

- In troubleshooting, confirm that the problem symptoms have been accurately identified. Preconceptions should be discarded in order to make an accurate judgment. To clearly understand what the problem symptoms are, it is extremely important to ask the customer about the problem and the conditions at the time the malfunction occurred.
- Gather as much information as possible for reference. Past problems that seem unrelated may also help in some cases.

- The following 5 items are important points for problem analysis:

What	Vehicle model, system name
When	Date, time, occurrence frequency
Where	Road conditions
Under what conditions?	Running conditions, driving conditions, weather conditions
How did it happen?	Problem symptoms

NEXT: Go to next step

3. INSPECT BATTERY VOLTAGE

- Measure the battery voltage.

Standard voltage

11 to 14 V

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

NEXT: Go to next step

4. CHECK COMMUNICATION FUNCTION OF CAN COMMUNICATION SYSTEM*

- Use the Techstream to check if the CAN communication system is functioning normally.

RESULT

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

output

B --> GO TO CAN COMMUNICATION SYSTEM. Refer to DIAGNOSTIC TROUBLE CODE CHART

A: Go to next step

5. CHECK COMMUNICATION FUNCTION OF LIN COMMUNICATION SYSTEM*

- a. Use the Techstream to check if the LIN communication system is functioning normally.

RESULT

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

B --> GO TO LIN COMMUNICATION SYSTEM. Refer to DIAGNOSTIC TROUBLE CODE CHART

A: Go to next step

6. PROBLEM SYMPTOMS TABLE

- a. 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

B --> Go to step 8

A: Go to next step

7. OVERALL ANALYSIS AND TROUBLESHOOTING*

- a. Terminals of ECU. Refer to **TERMINALS OF ECU**
- b. Data List / Active Test. Refer to **DATA LIST / ACTIVE TEST**
- c. Operation Check. Refer to **OPERATION CHECK**

NEXT: Go to next step

8. REPAIR OR REPLACE

NEXT: Go to next step

9. CONFIRMATION TEST

NEXT --> END

OPERATION CHECK

OPERATION CHECK

1. CHECK POWER DOOR LOCK CONTROL OPERATION

NOTE: **The following procedure is based on the assumption that the functions have not been customized using the Techstream.**

- a. Check basic functions.
 - 1. Check that all doors lock when the lock side of the door lock control switch (for manual operation) is pressed.
 - 2. Check that all doors unlock when the unlock side of the door lock control switch (for manual operation) is pressed.
 - 3. Check that all doors lock when the driver door lock key cylinder is turned to lock using the key.
 - 4. Check that all doors unlock when the driver door lock key cylinder is turned to unlock using the key.
- b. Check the electrical key lock-in prevention function (w/ Smart Key System).

NOTE: **In order to prevent the electrical key from being actually locked-in, the following inspection should be performed with the driver side door window open.**

- 1. Turn the ignition switch to ON or ACC.
- 2. With the driver side door open, check that all doors unlock immediately after the driver side door lock knob is locked.

3. With the driver side door open, check that all doors unlock immediately after the lock side of the door control switch (for manual operation) is pressed.
 4. With the driver side door open, lock the driver side door lock knob and hold it for 2 seconds or more, then close the driver side door and check that all doors unlock.
- c. Check the key lock-in prevention function (w/o Smart Key System).

NOTE: In order to prevent the key from being actually locked-in, the following inspection should be performed with the driver side door window open.

1. Insert the key into the ignition key cylinder.
 2. With the driver side door open, check that all doors unlock immediately after the driver side door lock knob is turned to lock.
 3. With the driver side door open, check that all doors unlock immediately after the door control switch (for manual operation) is turned to lock.
 4. With the driver side door open, turn the driver side door lock knob to lock, and then close the driver side door. Then check that all doors unlock.
- d. Check the security function.

HINT:

Close all doors with the driver side window open so that the door control switch can be operated from outside the vehicle.

1. Open the driver door and remove the key from the vehicle. With the door still open, lock the door using the lock knob. Hold the outside handle of the driver door open and close the door while holding the handle open (confirm that the lock knob remained in the lock position). Then, check that the doors do not unlock when the unlock side of the door lock control switch (for manual operation) is pressed from outside the vehicle.
2. When the key is outside the vehicle, close and lock the driver door using the mechanical key. Then, check that the doors do not unlock when the unlock side of the door lock control switch (for manual operation) is pressed from outside the vehicle.
3. When the key is outside the vehicle, close and lock the driver door using wireless door lock or entry lock operation. Then, check that the doors do not unlock when the unlock side of the door lock control switch (for manual operation) is pressed from outside the vehicle.

HINT:

Check that the security function of the door lock control system is canceled under the following conditions:

- The ignition switch is turned to ON.
- The driver side door is unlocked using the key.
- The door control switch (for manual operation) is turned to unlock after the door lock

knob is unlocked manually.

- The doors are unlocked by wireless operation.
- e. Check the illumination function.
 1. Set the room light switch to the door position.
 2. When the driver door is unlocked by the key linked or wireless operation with the ignition switch off and all doors closed and locked, check that the room light comes on.
 3. Check that the room light goes off in approximately 15 seconds* if the doors have not been opened.

HINT:

*: This function can be customized.

- f. Check the key-linked 2-step unlock function.
 1. Lock all doors.
 2. Check that only the driver side door unlocks when the driver side door lock cylinder is turned to unlock once using the key and other doors unlock when turned to unlock consecutively once again.
- g. Check the driver door-linked automatic door unlock function.

HINT:

The default setting for the driver door-linked automatic door unlock function is off. If necessary, the function must be set to on through the customize function.

1. When the driver door is closed, turning the ignition switch from ON to off and opening the driver door within 10 seconds will automatically unlock all doors.
- h. Check the shift linked automatic door lock function.
 1. When the ignition switch is ON with all doors closed and the shift lever is moved from P to any position other than P, check that all doors lock automatically.
 - i. Check the shift linked automatic door unlock function.
 1. When the ignition switch is ON and the shift lever is moved to P from any position other than P, check that all doors unlock automatically.
 - j. Check the speed-sensitive automatic door lock function.

HINT:

The default setting for the speed-sensitive automatic door lock function is off. If necessary, the function must be set to on through the customize function.

1. When any door is unlocked and the vehicle is driven at approximately 20 km/h (12 mph) or more, check that all doors automatically lock at once (automatic door lock).

CUSTOMIZE PARAMETERS

CUSTOMIZE PARAMETERS

1. CUSTOMIZING FUNCTION WITH TECHSTREAM

HINT:

The following items can be customized.

NOTE:

- When the customer requests a change in a function, first make sure that the function can be customized.
 - Be sure to make a note of the current settings before customizing.
 - When troubleshooting a function, first make sure that the function is set to the default setting.
- 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 / Door Lock or Illuminated Entry.
 - e. Select the setting by referring to the table below.

DOOR LOCK

Tester Display	Default	Content	Setting
Unlock Key Twice	ON	Function that unlocks only the driver side door when the driver side door key cylinder is turned to unlock once, and unlock all doors when it is turned	ON or OFF

		to unlock twice. For the OFF setting, turning it once unlocks all doors.	
Auto Lock	OFF	Function that locks all doors when the vehicle speed reaches a certain level.	ON or OFF
Auto Lock/Shift	ON	Function that locks all doors when the shift lever is moved from P to any position other than P when the engine is running and all doors are closed.	ON or OFF
		Function that unlocks	

Auto Unlock/Shift	ON	all doors when the shift lever is moved to P from any position other than P while the ignition switch is ON.	ON or OFF
All Unlock/Open- Close	OFF	Function that unlocks the other doors when the driver side door is opened within 10 seconds after the ignition switch is turned to off.	ON or OFF

ILLUMINATED ENTRY

Display	Default	Content	Setting
		Function that changes the lighting time after closing all	

Lighting Time	15 s	doors. (It will quickly fade out in case of turning the ignition switch from off to ACC or ON.)	7.5 s, 15 s or 30 s
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PROBLEM SYMPTOMS TABLE

PROBLEM SYMPTOMS TABLE

- 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.

POWER DOOR LOCK CONTROL SYSTEM

Symptom	Suspected Area	See
Only Driver Door LOCK/UNLOCK Functions do not operate	Front door lock assembly LH	Refer to <u>INSPECTION - Step 1</u>
	Wire harness or connector	-
	Main body ECU	-
Only Front Passenger Door LOCK/UNLOCK Functions do not operate	Front door lock assembly RH	Refer to <u>INSPECTION - Step 2</u>
	Wire harness or connector	-
	Main body ECU	-
Only Rear Door LH LOCK/UNLOCK Functions do not Operate	Slide door handle assembly LH	Refer to <u>INSPECTION</u>
	Wire harness or connector	-
	Main body ECU	-
Only Rear Door RH LOCK/UNLOCK Functions do not operate	Slide door handle assembly RH	Refer to <u>INSPECTION - Step 4</u>
	Wire harness or connector	-
	Main body ECU	-
All Doors LOCK/UNLOCK Functions do not operate via Master Switch, Driver Side Door Key Cylinder	Proceed to All Doors LOCK/UNLOCK Functions do not operate via Master Switch, Driver Side Door Key Cylinder	Refer to <u>All Doors LOCK/UNLOCK Functions do not Operate Via Master Switch, Driver Side Door Key Cylinder</u>
All Doors LOCK/UNLOCK Functions do not operate via Door Control	Proceed to All door LOCK/UNLOCK Functions do not operate via Door Control	Refer to <u>All Doors LOCK/UNLOCK Functions do not Operate Via Door Control</u>

Control Switch	Switch	<u>Switch</u>
Only Back Door cannot be opened*1	Proceed to Back Door cannot be opened	Refer to <u>Only Back Door cannot be Opened</u>
Only Back Door cannot be opened*2	Back door closer system	Refer to <u>Back Door cannot be Opened</u>

*1: w/o Power Back Door System

*2: w/ Power Back Door System

TERMINALS OF ECU

TERMINALS OF ECU

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

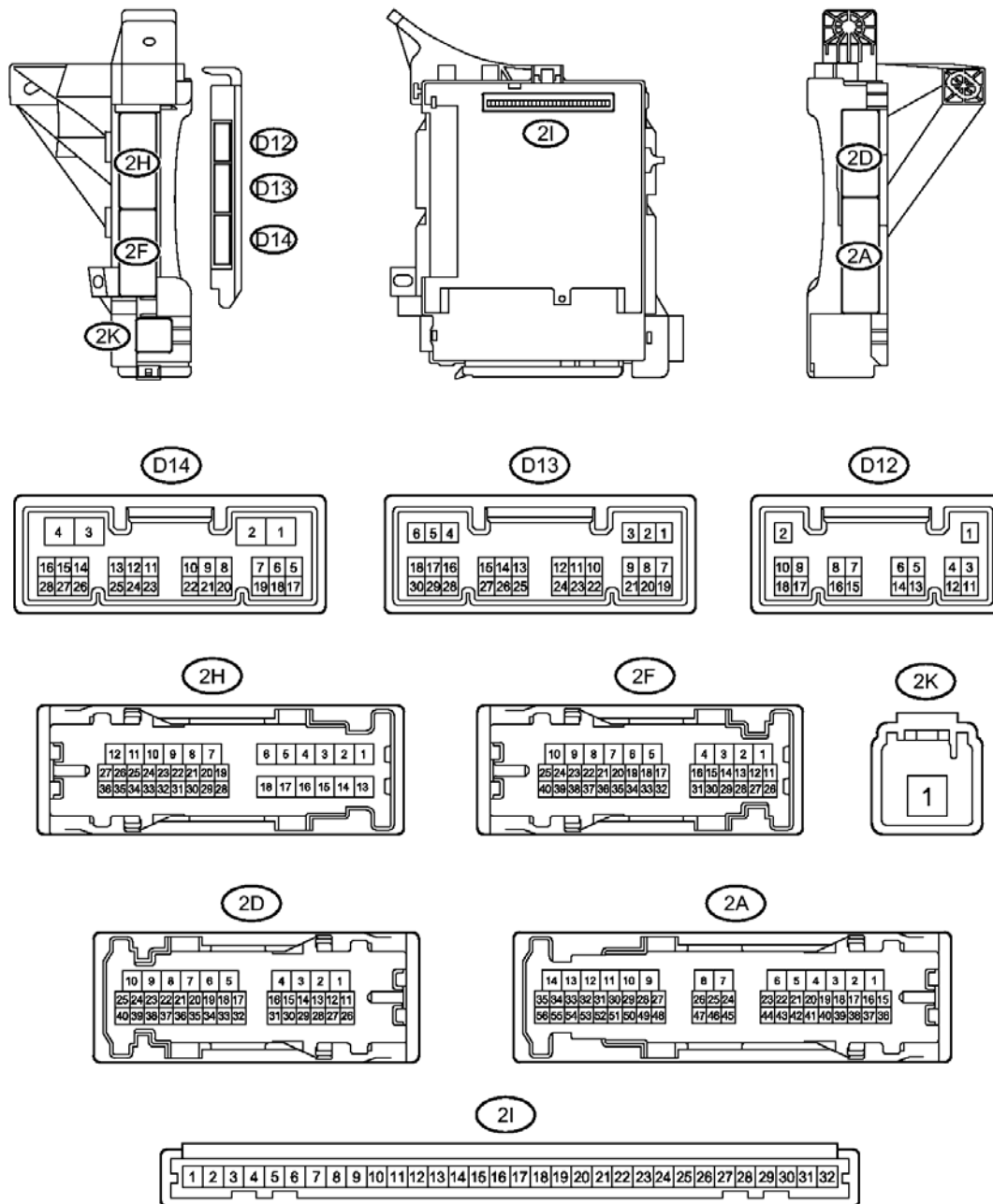


Fig. 4: ECU Connector Terminal Identification - I/P Junction Block & Main Body ECU
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- Remove the main body ECU.
- Disconnect the D12, D13 and D14 main body ECU connectors.
- Measure the voltage and resistance according to the value(s) in the table below.

HINT:

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

Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
2I-2 (FLCY) - Body ground	-	Front door courtesy light switch LH input	Driver door Close (off) --> Open (on)	10 kohms or higher - -> Below 1 ohms
2I-4 (FRCY) - Body ground	-	Front door courtesy light switch RH input	Front passenger door Close (off) --> Open (on)	10 kohms or higher - -> Below 1 ohms
2I-11 (GND1) - Body ground	-	Ground	Always	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 system signal system) power supply	Always	11 to 14 V
2I-31 (ALTB) - Body ground	-	+B (power system alternator system) power supply	Always	11 to 14 V
2I-32 (IG) - Body ground	-	Ignition power supply (IG signal)	Ignition switch ON --> off	11 to 14 V --> Below 1 V
D12-3 (LCTY) - Body ground	GR - Body ground	Rear door courtesy light LH switch input	Rear door Close (off) --> Open (on)	10 kohms or higher - -> Below 1 ohms
D13-6	L -	Rear door	Rear door	10 kohms

(RCTY) - Body ground	Body ground	courtesy light RH switch input	Close (off) --> Open (on)	or higher -> Below 1 ohms
D13-17 (KSW) - Body ground*1	R - Body ground	Unlock warning switch input	NO key in ignition cylinder (off) --> Key inserted (on)	10 kohms or higher -> Below 1 ohms
D13-19 (BCTY) - Body ground	GR - Body ground	Back door courtesy light switch input	Back door Close (off) --> Open (on)	10 kohms or higher -> Below 1 ohms
D14-3 (GND2) - Body ground	W-B - Body ground	Ground	Always	Below 1 ohms

*1: w/o Smart Key System

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

- d. Reinstall the main body ECU.
- e. Reconnect the D12, D13 and D14 main body ECU connectors.
- f. Measure the voltage according to the value(s) in the table below.

Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
2D-1 (ACT-) - Body ground	R - Body ground	Door lock motor unlock drive output (except driver side)	Multiplex network master switch (door control switch) or driver side door key cylinder off	Below 1 V
			Multiplex network master switch	

			(door control switch) or driver side door key cylinder unlocked	11 to 14 V
2D-2 (ACT+) - Body ground	B - Body ground	Door lock motor lock drive output (all doors)	Multiplex network master switch (door control switch) or driver side door key cylinder off	Below 1 V
			Multiplex network master switch (door control switch) or driver side door key cylinder locked	11 to 14 V
2D-4 (ACTD) - Body ground	SB - Body ground	Driver side door lock motor unlock drive output	Multiplex network master switch (door control switch) or driver side door key cylinder off	Below 1 V
			Multiplex network master switch (door control switch) or	11 to 14 V

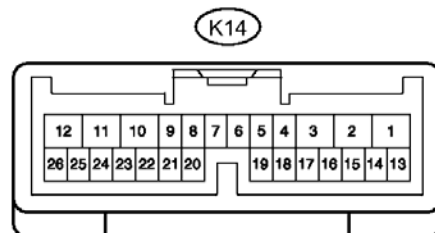
			driver side door key cylinder unlocked	
2H-27 (FRCY) - Body ground	GR - Body ground	Front door courtesy light switch RH input	Front passenger door open	Below 1 V
			Front passenger door closed	11 to 14 V
2H-35 (FLCY) - Body ground	P - Body ground	Front door courtesy light switch LH input	Driver door open	Below 1 V
			Driver door closed	11 to 14 V
2H-26 (LSWL) - Body ground	B - Body ground	Rear door LH side door lock position switch input	Rear door LH side door unlocked	Below 1 V
			Ignition switch off, all doors closed and rear door LH side door locked	Pulse generation
D12-3 (LCTY) - Body ground	GR - Body ground	Rear door courtesy light switch LH input	Rear door LH open	Below 1 V
			Rear door LH closed	11 to 14 V
D13-6 (RCTY) - Body ground	L - Body ground	Rear door courtesy light switch RH input	Rear door RH open	Below 1 V
			Rear door RH closed	11 to 14 V
D13-7 (LSFL) - Body ground	V - Body ground	Driver side door lock position switch input	Driver side door unlocked	Below 1 V
			Ignition switch off, all doors closed and driver side door locked	Pulse generation

D13-9 (L1) - Body ground	B - Body ground	Front passenger side door control switch input	Front passenger side door control switch locked	Below 1 V
			Front passenger side door control switch off	Pulse generation
D13-10 (UL1) - Body ground	G - Body ground	Front passenger side door control switch input	Front passenger side door control switch unlocked	Below 1 V
			Front passenger side door control switch off	Pulse generation
D13-11 (L2) - Body ground	LG - Body ground	Driver side door key- linked lock input	Driver side door key cylinder turned to locked	Below 1 V
			Driver side door key cylinder off	11 to 14 V
D13-18 (LSFR) - Body ground	Y - Body ground	Front passenger side door lock position switch input	Front passenger side door unlocked	Below 1 V
			Ignition switch off, all doors closed and front passenger side door locked	Pulse generation
D13-19	GR -	Back door	Back door open	Below 1 V

(BCTY) - Body ground	Body ground	courtesy light switch input	Back door closed	11 to 14 V
D13-24 (UL3) - Body ground	L - Body ground	Driver side door key- linked unlock input	Driver side door key cylinder turned to unlocked	Below 1 V
			Driver side door key cylinder locked	11 to 14 V
D14-2 (LSWR) - Body ground	L - Body ground	Rear door RH side door lock position switch input	Rear door RH side door unlocked	Below 1 V
			Ignition switch off, all doors closed and rear door RH side door locked	Pulse generation

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

2. CHECK POWER BACK DOOR ECU (POWER BACK DOOR MOTOR UNIT) (w/ Power Back Door System)



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Fig. 5: ECU Connector Terminal Identification - K14 Power Back Door ECU

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

- a. Disconnect the K14 power back door ECU (power back door motor unit) connector.
- b. Measure the voltage and resistance according to the value(s) in the table below.

HINT:

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

Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
K14-8 (IG) - Body ground	L - Body ground	IG power supply	Ignition switch ON	11 to 14 V
			Ignition switch off	Below 1 V
K14-10 (ECUB) - Body ground	SB - Body ground	Battery power supply	Always	11 to 14 V
K14-11 (GND) - Body ground	W-B - Body ground	Ground	Always	Below 1 ohms
K14-12 (B) - Body ground	B - Body ground	Battery power supply	Always	11 to 14 V

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

- c. Reconnect the K14 power back door ECU (power back door motor unit) connector.
- d. Initialize the power back door ECU (power back door motor unit). Refer to **INITIALIZATION** .
- e. Measure the voltage according to the value(s) in the table below.

Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
K14-20 (FUL) - Body ground	GR - Body ground	Back door courtesy switch circuit	Back door closed	11 to 14 V
			Back door open	Below 1 V

If the result is not as specified, the power back door ECU (power back door motor unit) may have a

malfunction.

DIAGNOSIS SYSTEM

DIAGNOSIS SYSTEM

1. DESCRIPTION

- a. Data of the system can be read from the Data Link Connector 3 (DLC3) of the vehicle. Therefore, when the system seems to be malfunctioning, use the Techstream to check for a malfunction and repair it.

2. CHECK DLC3

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

3. INSPECT BATTERY VOLTAGE

- a. Measure the battery voltage.

Standard voltage

11 to 14 V

If the voltage is below 11 V, recharge or replace the battery.

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.

NOTE: In the table below, the values listed under "Normal Condition" are reference values. Do not depend solely on these reference values when deciding whether a part is faulty or not.

- 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 / All Data.
- e. Read the Data List according to the display on the Techstream.

MAIN BODY

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
RR Door Courtesy SW	Rear door courtesy light switch RH signal/ON or OFF	ON: Rear door RH open OFF: Rear door RH closed	-
RL Door Courtesy SW	Rear door courtesy light switch LH signal/ON or OFF	ON: Rear Door LH open OFF: Rear Door LH closed	-
Back Door Courtesy SW	Back door courtesy switch signal/ON or OFF	ON: Back door open OFF: Back door closed	-
Back Door Open	Back door lock/Permit or Prohibt	Permit: Back door unlocked Prohibt: Back door locked	-
Door Lock SW-Lock	Front passenger side door control switch lock signal/ON or OFF	ON: Front passenger side door control switch pushed to lock position OFF: Front passenger side door control switch not pushed to lock position	-
	Front	ON: Front passenger side door control switch pushed to	

Door Lock SW-Unlock	passenger side door control switch unlock signal/ON or OFF	unlock position OFF: Front passenger side door control switch not pushed to unlock position	-
Door Key SW-Lock	Driver side door key- linked lock/unlock switch lock signal/ON or OFF	ON: Driver side door key cylinder turned to lock position OFF: Driver side door key cylinder not turned to lock position	-
D Door Key SW-UL	Driver side door key- linked lock/unlock switch unlock signal/ON or OFF	ON: Driver side door key cylinder turned to unlock position OFF: Driver side door key cylinder not turned to unlock position	-
FR Door Lock Pos	Front passenger side door lock position switch signal/LOCK or UNLOCK	LOCK: Front passenger side door locked UNLOCK: Front passenger side door	-

		unlocked	
FR Door Courtesy	Front door courtesy light switch RH signal/ON or OFF	ON: Front passenger door closed OFF: Front passenger door open	-
FL Door Lock Pos	Driver side door lock position switch signal/LOCK or UNLOCK	LOCK: Driver side door locked UNLOCK: Driver side door unlocked	-
FL Door Courtesy	Front door courtesy light switch LH signal/ON or OFF	ON: Driver door closed OFF: Driver door open	-
Back Door Open Handle SW	Back door opener switch signal / ON or OFF	ON: Back door opener switch pushed OFF: Back door opener switch not pushed	-
RR-Door Lock Pos SW	Rear door RH side door lock position switch signal/ON or OFF	ON: Rear door RH side door unlocked OFF: Rear door RH side door locked	-
RL-Door Lock Pos SW	Rear door LH side door lock position switch signal/ON or OFF	ON: Rear Door LH side door unlocked OFF: Rear Door LH side door locked	-
Unlock Key	Key-linked 2-step unlock	Customized	

Twice	function/ ON or OFF	value displayed	-
Auto Lock	Speed-sensitive automatic door lock function/ON or OFF	Customized value displayed	-
Auto Lock/Shift	Shift-linked automatic door lock function/ON or OFF	Customized value displayed	-
Auto Unlock/Shift	Shift-linked automatic door unlock function/ON or OFF	Customized value displayed	-
All Unlock/Open-Close	Driver door-linked automatic door unlock function/ON or OFF	Customized value displayed	-

- f. Enter the following menus: Body Electrical / Master Switch / Data List.
- g. Read the Data List according to the display on the Techstream.

MASTER SWITCH

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Door Lock Switch Status	Driver side door control switch lock signal/ON or OFF	ON: Driver side door control switch pushed to lock position OFF: Driver side door control switch not pushed to lock	-

		position	
Door Unlock Switch Status	Driver side door control switch unlock signal/ON or OFF	ON: Driver side door control switch pushed to unlock position OFF: Driver side door control switch not pushed to unlock position	-

- h. Enter the following menus: Body Electrical / Smart Access / Data List.
- i. Read the Data List according to the display on the Techstream.

SMART ACCESS

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Tr/B- Door Unlock SW	Back door opener switch (unlock switch) signal/ON or OFF	ON: Back door opener switch (unlock switch) pushed OFF: Back door opener switch (unlock switch) not pushed	-
Tr/B- Door	Back door opener switch (lock switch)	ON: Back door opener switch (lock switch) pushed OFF:	-

Lock SW	signal/ON or OFF	Back door opener switch (lock switch) not pushed	
---------	------------------	--	--

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 functional 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. Data List information 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.
- Perform the Active Test according to the display on the Techstream.

MAIN BODY

Tester Display	Test Part	Control Range	Diagnostic Note
Door Lock	Operate door lock motor	Unlock/Lock/OFF	-
D-Door Unlock	Operate driver door lock motor	ON/OFF	-
Trunk and Back-Door Open	Operate back door lock motor	ON/OFF	-

SYMPTOM TESTS

All Doors LOCK/UNLOCK Functions do not Operate Via Master Switch, Driver Side Door Key Cylinder

DESCRIPTION

The main body ECU receives switch signals from the multiplex network master switch, and driver side door key cylinder switch signals from the front door lock assembly LH. The main body ECU activates the door lock motor on each door according to these signals.

WIRING DIAGRAM

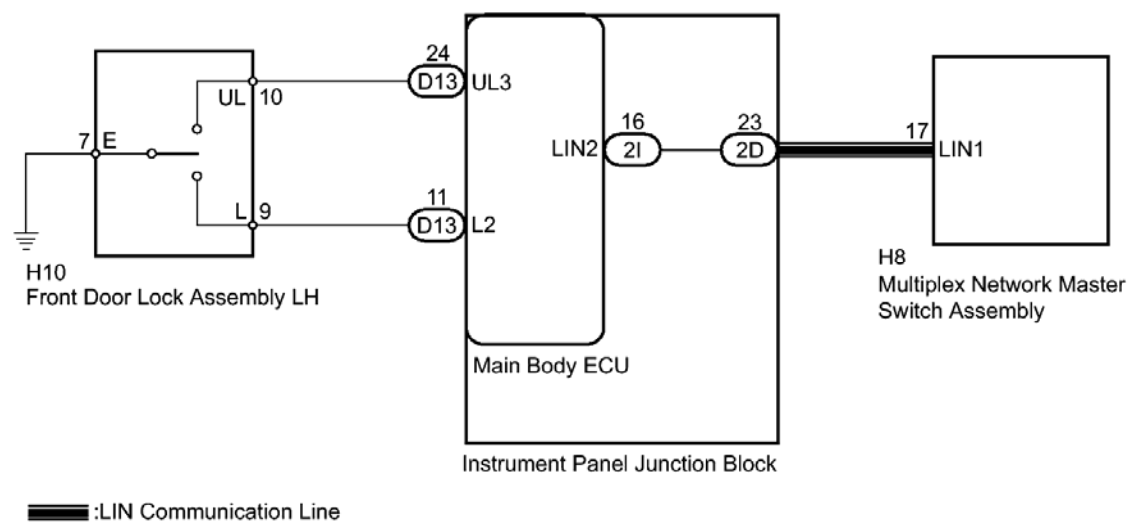


Fig. 6: Front Door Lock Assembly LH - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

PROCEDURE

- 1. **CHECK DOOR LOCK OPERATION**
 - a. Check door lock operation. Refer to **OPERATION CHECK**.

RESULT

Result	Proceed to
All doors cannot be locked through multiplex network master switch	A
All doors	

cannot be locked through driver side door key cylinder	B
---	---

B --> See step 5

A: Go to next step

2. CHECK DTC OUTPUT (LIN COMMUNICATION SYSTEM)

- Clear the DTC. Refer to **DTC CHECK / CLEAR** .
- Check for DTCs. Refer to **DTC CHECK / CLEAR** .

OK

DTC B1206 is not output.

NG --> See step 10

OK: Go to next step

3. REPLACE MULTIPLEX NETWORK MASTER SWITCH ASSEMBLY

- Replace the multiplex network master switch assembly. Refer to **REMOVAL** .

NEXT: Go to next step

4. CHECK DOOR LOCK OPERATION

- Check that all doors can be locked and unlocked by using the multiplex network master switch. Refer to **OPERATION CHECK**.

OK

All doors can be locked and unlocked with the multiplex network master switch.

NG --> See step 8

OK --> END (MULTIPLEX NETWORK MASTER SWITCH ASSEMBLY WAS DEFECTIVE)

5. READ VALUE USING TECHSTREAM (DOOR KEY LINKED LOCK AND UNLOCK SWITCH)

- Connect the Techstream to the DLC3.
- Turn the ignition switch to ON.

- c. Turn the Techstream on.
- d. Enter the following menus: Body Electrical / Main Body / Data List.
- e. Read the Data List according to the display on the Techstream.

MAIN BODY

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Door Key SW-Lock	Driver side door key-linked lock/unlock switch lock signal/ON or OFF	ON: Driver side door key cylinder turned to lock position OFF: Driver side door key cylinder not turned to lock position	-
D Door Key SW-UL	Driver side door key-linked lock/unlock switch unlock signal/ON or OFF	ON: Driver side door key cylinder turned to unlock position OFF: Driver side door key cylinder not turned to unlock position	-

OK

The Techstream indicates ON or OFF according to the key cylinder operation shown in the table.

NG --> See step 6

OK --> See step 11

- 6. INSPECT FRONT DOOR LOCK ASSEMBLY LH (DOOR KEY LINKED LOCK AND UNLOCK SWITCH)**
 - a. Remove the front door assembly LH. Refer to **REMOVAL** .

*a

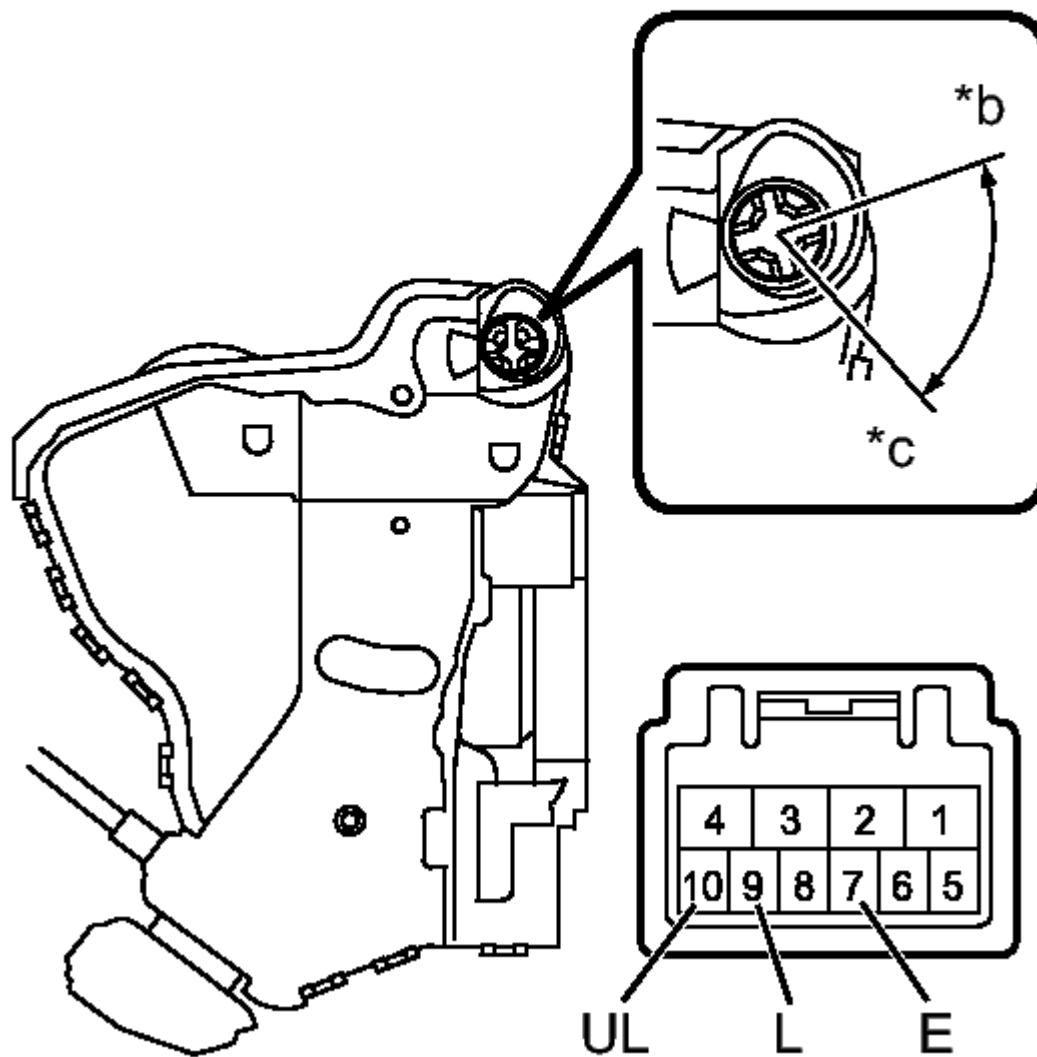


Fig. 7: Inspecting Front Door Lock Assembly LH (Door Key Linked Lock And Unlock Switch) With Connector End View

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	Condition	Specified Condition
9 (L) - 7 (E)	Locked	Below 1 ohms
9 (L) - 7 (E)	off	10 kohms or higher
10 (UL) - 7 (E)	Unlocked	Below 1 ohms
10 (UL) - 7 (E)	off	10 kohms or higher

TEXT IN ILLUSTRATION

*a	Component without harness connected (Front Door Lock Assembly LH)
*b	Lock
*c	Unlock

NG --> See step 9

OK: Go to next step

7. CHECK HARNESS AND CONNECTOR (FRONT DOOR LOCK ASSEMBLY LH - MAIN BODY ECU)

- Disconnect the D13 main body ECU connector.
- Disconnect the H10 front door lock assembly LH connector.
- Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
H10-9 (L) - D13-11 (L2)	Always	Below 1 ohms
H10-10 (UL) - D13-24 (UL3)	Always	Below 1 ohms

H10-7 (E) - Body ground	Always	Below 1 ohms
D13-11 (L2) - Body ground	Always	10 kohms or higher
D13-24 (UL3) - Body ground	Always	10 kohms or higher

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

OK --> **See step 11**

8. **REPLACE MAIN BODY ECU. Refer to REMOVAL**
9. **REPLACE FRONT DOOR LOCK ASSEMBLY LH. Refer to REMOVAL**
10. **GO TO LIN COMMUNICATION SYSTEM (DTC B1206). Refer to DTC B1206: P/W Master Switch Communication Stop**
11. **REPLACE MAIN BODY ECU. Refer to REMOVAL**

All Doors LOCK/UNLOCK Functions do not Operate Via Door Control Switch

DESCRIPTION

The main body ECU receives switch signals from the door control switch and activates the door lock motor on each door according to these signals.

WIRING DIAGRAM

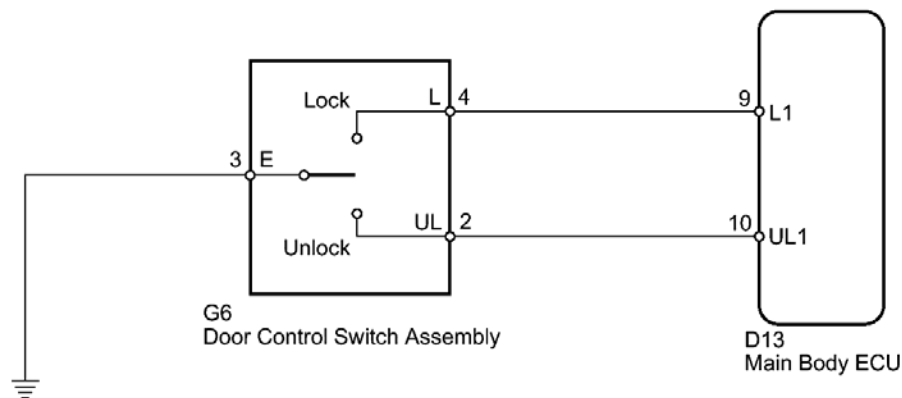


Fig. 8: Door Control Switch Assembly - Wiring Diagram
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

PROCEDURE

1. READ VALUE USING TECHSTREAM (DOOR CONTROL SWITCH)

- Connect the Techstream to the DLC3.
- Turn the ignition switch to ON.
- Turn the Techstream on.
- Enter the following menus: Body Electrical / Main Body / Data List.
- Read the Data List according to the display on the Techstream.

MAIN BODY

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Door Lock SW-Lock	Front passenger side door control switch lock signal/ON or OFF	ON: Front passenger side door control switch pushed to lock position OFF: Front passenger side door control switch not pushed to lock position	-
Door Lock SW-Unlock	Front passenger side door control switch unlock signal/ON or OFF	ON: Front passenger side door control switch pushed to unlock position OFF: Front passenger side door control switch not pushed to unlock position	-

OK

The Techstream indicates ON or OFF according to the switch operation shown in the table.

NG --> See step 2

OK --> See step 4

2. INSPECT DOOR CONTROL SWITCH ASSEMBLY

- a. Remove the door control switch assembly. Refer to **REMOVAL** .

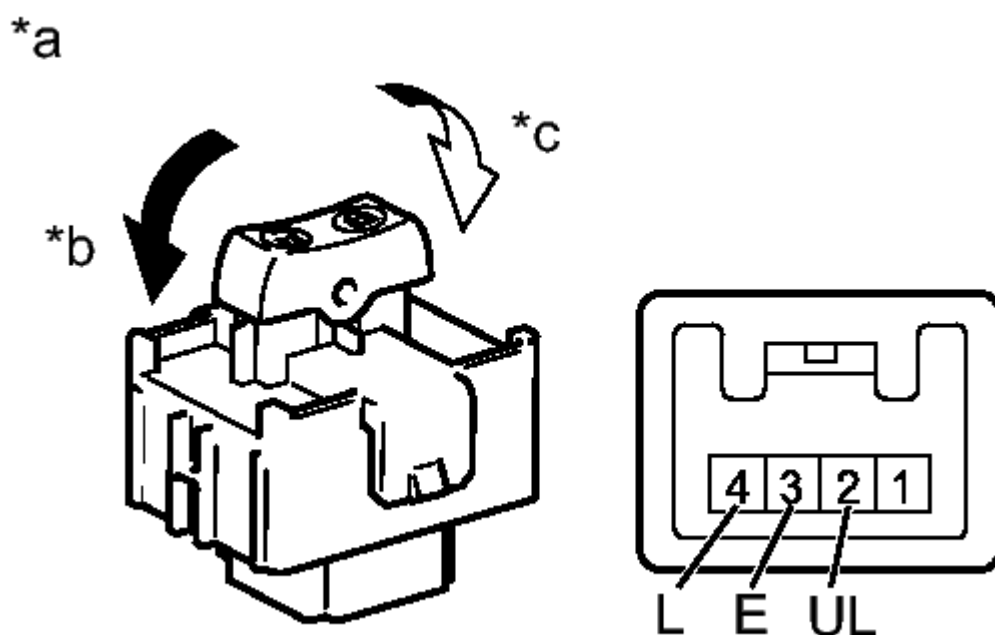


Fig. 9: Inspecting Door Control Switch Assembly With Connector End View
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
4 (L) - 3 (E)	Locked	Below 1 ohms
4 (L) - 3 (E)	off	10 kohms or higher
2 (UL) - 3 (E)	Unlocked	Below 1 ohms

2 (UL) - 3 (E)	off	10 kohms or higher
-------------------	-----	-----------------------

TEXT IN ILLUSTRATION

*a	Component without harness connected (Door Control Switch Assembly)
*b	Unlock
*c	Lock

NG --> See step 5

OK: Go to next step

3. CHECK HARNESS AND CONNECTOR (DOOR CONTROL SWITCH ASSEMBLY - MAIN BODY ECU)

- Disconnect the G6 door control switch assembly connector.
- Disconnect the D13 main body ECU connector.
- Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
G6-2 (UL) - D13-10 (UL1)	Always	Below 1 ohms
G6-4 (L) - D13-9 (L1)	Always	Below 1 ohms
G6-3 (E) - Body ground	Always	Below 1 ohms
G6-2 (UL) - Body ground	Always	10 kohms or higher
G6-4 (L) - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 4

4. **REPLACE MAIN BODY ECU. Refer to REMOVAL**

5. **REPLACE DOOR CONTROL SWITCH ASSEMBLY. Refer to REMOVAL**

Only Back Door cannot be Opened

DESCRIPTION

- The main body ECU detects the condition of the back door opener switch assembly.
- The main body ECU receives signals from the back door opener switch assembly and activates the back door lock motor according to the signals.

WIRING DIAGRAM

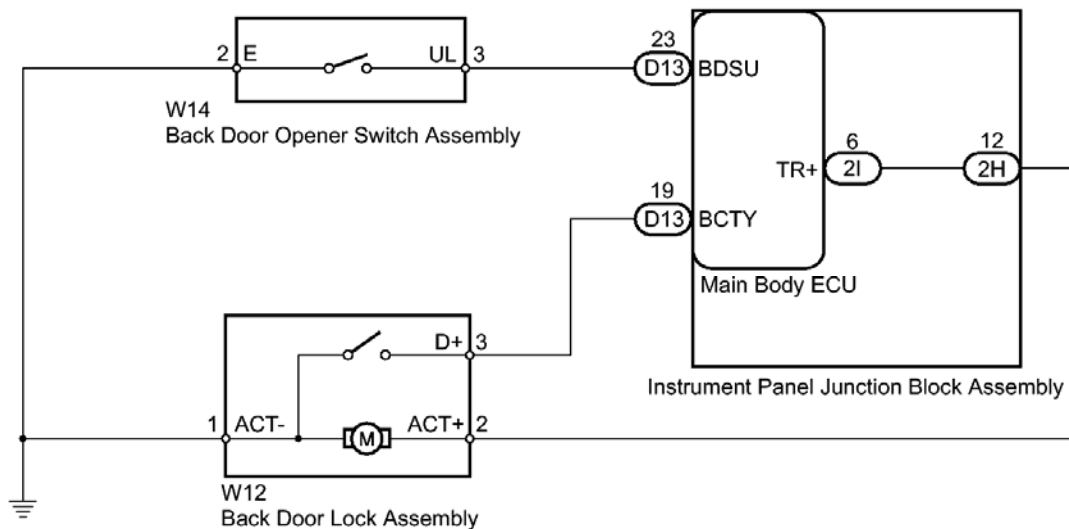


Fig. 10: Back Door Opener Switch Assembly - Wiring Diagram

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

INSPECTION PROCEDURE

PROCEDURE

1. CHECK POWER DOOR LOCK CONTROL SYSTEM (BASIC FUNCTION)

- a. Check the power door lock control system (basic function).

OK

Power door lock control system operates normally.

NG --> See step 11

OK: Go to next step

2. READ VALUE USING TECHSTREAM (BACK DOOR OPENER SWITCH)

- 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 Electrical / Data List.
- e. Read the Data List according to the display on the Techstream.

MAIN BODY

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Back Door Open Handle SW	Back door opener switch/ON or OFF	ON: Back door opener switch pushed OFF: Back door opener switch not pushed	-

OK

The Techstream indicates ON or OFF according to the switch operation as shown in the table.

NG --> See step 7

OK: Go to next step

3. INSPECT BACK DOOR LOCK ASSEMBLY

- a. Remove the back door lock assembly. Refer to **REMOVAL** .

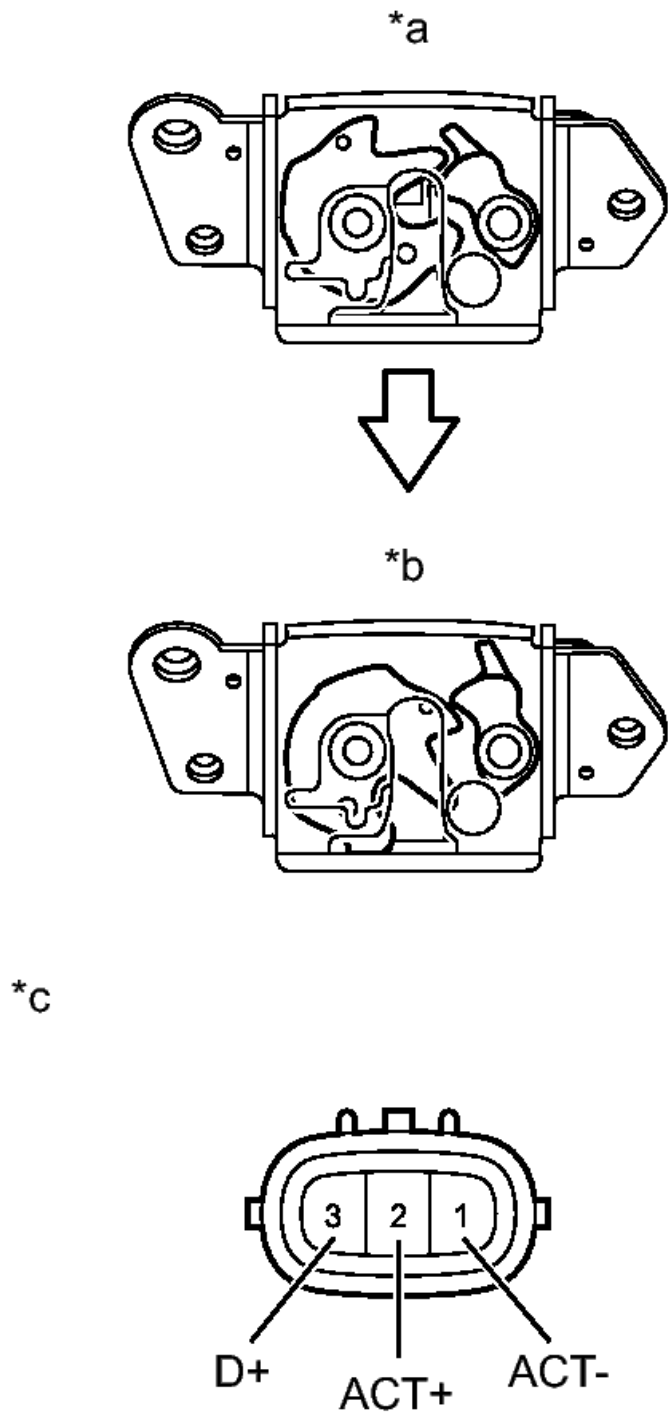


Fig. 11: Inspecting Back Door Lock Assembly With Connector End View
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Check the operation of the door lock motor.
 - 1. Move the door lock to the lock position.

2. Apply battery voltage to the door lock motor and check the operation of the door lock motor.

OK

Measurement Condition	Specified Condition
Battery positive (+) --> Terminal 2 (ACT+) Battery negative (-) --> Terminal 1 (ACT-)	Unlocks

- c. Check the operation of the door courtesy switch.

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

Standard Resistance

Tester Connection	Condition	Specified Condition
1 (ACT-) - 3 (D+)	Locked	10 kohms or higher
1 (ACT-) - 3 (D+)	Unlocked	Below 1 ohms

TEXT IN ILLUSTRATION

*a	Lock
*b	Unlock
*c	Component without harness connected (Back Door Lock Assembly)

NG --> See step 9

OK: Go to next step

4. CHECK HARNESS AND CONNECTOR (BACK DOOR LOCK ASSEMBLY - MAIN BODY ECU)

- a. Disconnect the W12 back door lock assembly connector.

- b. Disconnect the D13 main body ECU connector.
- c. Disconnect the 2H instrument panel junction block assembly connector.
- d. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
W12-2 (ACT+) - 2H-12	Always	Below 1 ohms
W12-2 (ACT+) - Body ground	Always	10 kohms or higher
W12-3 (D+) - D13-19 (BCTY)	Always	Below 1 ohms
W12-3 (D+) - Body ground	Always	10 kohms or higher
W12-1 (ACT-) - Body ground	Always	Below 1 ohms

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

5. REPLACE MAIN BODY ECU

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

NEXT: Go to next step

6. READ VALUE USING TECHSTREAM (BACK DOOR OPENER SWITCH)

- 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 Electrical / Data List.
- e. Read the Data List according to the display on the Techstream.

MAIN BODY

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Back Door Open Handle SW	Back door opener switch/ON or OFF	ON: Back door opener switch pushed OFF: Back door opener switch not pushed	-

OK

The Techstream indicates ON or OFF according to the switch operation as shown in the table.

NG --> REPLACE INSTRUMENT PANEL JUNCTION BLOCK ASSEMBLY

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

7. INSPECT BACK DOOR OPENER SWITCH ASSEMBLY

- a. Remove the back door opener switch assembly. Refer to **REMOVAL** .

*a

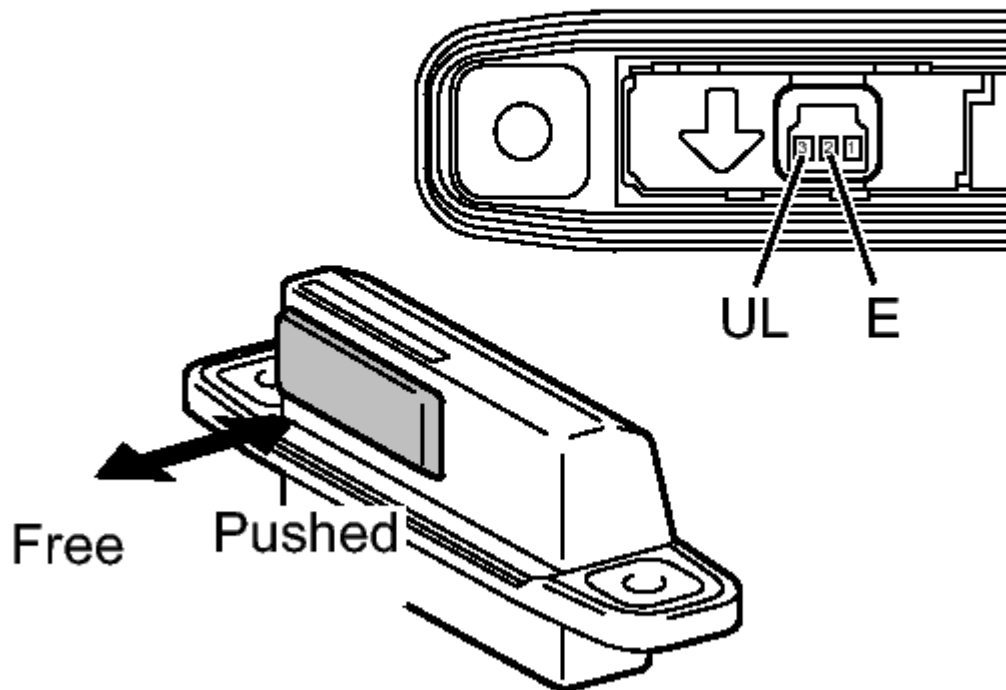


Fig. 12: Inspecting Back Door Opener Switch Assembly
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Check the operation of the opener switch.
1. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
2 (E) - 3 (UL)	Back door opener switch not pushed	10 kohms or higher
	Back door	

2 (E) - 3 (UL)	opener switch pushed	Below 1 ohms
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TEXT IN ILLUSTRATION

*a	Component without harness connected (Back Door Opener Switch Assembly)
----	--

NG --> See step 10

OK: Go to next step

8. CHECK HARNESS AND CONNECTOR (BACK DOOR OPENER SWITCH ASSEMBLY - MAIN BODY ECU)

- Disconnect the W14 back door opener switch assembly connector.
- Disconnect the D13 main body ECU connector.
- Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
W14-3 (UL) - D13- 23 (BDSU)	Always	Below 1 ohms
W14-3 (UL) - Body ground	Always	10 kohms or higher
W14-2 (E) - Body ground	Always	Below 1 ohms

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 12

9. REPLACE BACK DOOR LOCK ASSEMBLY. Refer to REMOVAL

10. **REPLACE BACK DOOR OPENER SWITCH ASSEMBLY. Refer to REMOVAL**
11. **GO TO PROBLEM SYMPTOMS TABLE. Refer to PROBLEM SYMPTOMS TABLE**
12. **REPLACE MAIN BODY ECU. Refer to REMOVAL**