

ACCESSORIES & EQUIPMENT

Back Door Closer System (Diagnostic Codes & Symptom Tests) - Sienna

BACK DOOR CLOSER SYSTEM

DTC B2250: BACK DOOR CLOSER OPERATION MALFUNCTION

DESCRIPTION

The power back door ECU (power back door motor unit) receives signals from the latch switch, sector switch and back door courtesy switch, which are built into the back door lock. Based on these switch signals, the latch position of the back door lock is determined.

DTC No.	DTC Detection Condition	Trouble Area
B2250	While the back door closer is operating, a malfunction is detected in position information from the sector switch within a specified amount of time.	• Back door lock assembly • Wire harness or connector • Power back door ECU (Power back door motor unit)

WIRING DIAGRAM

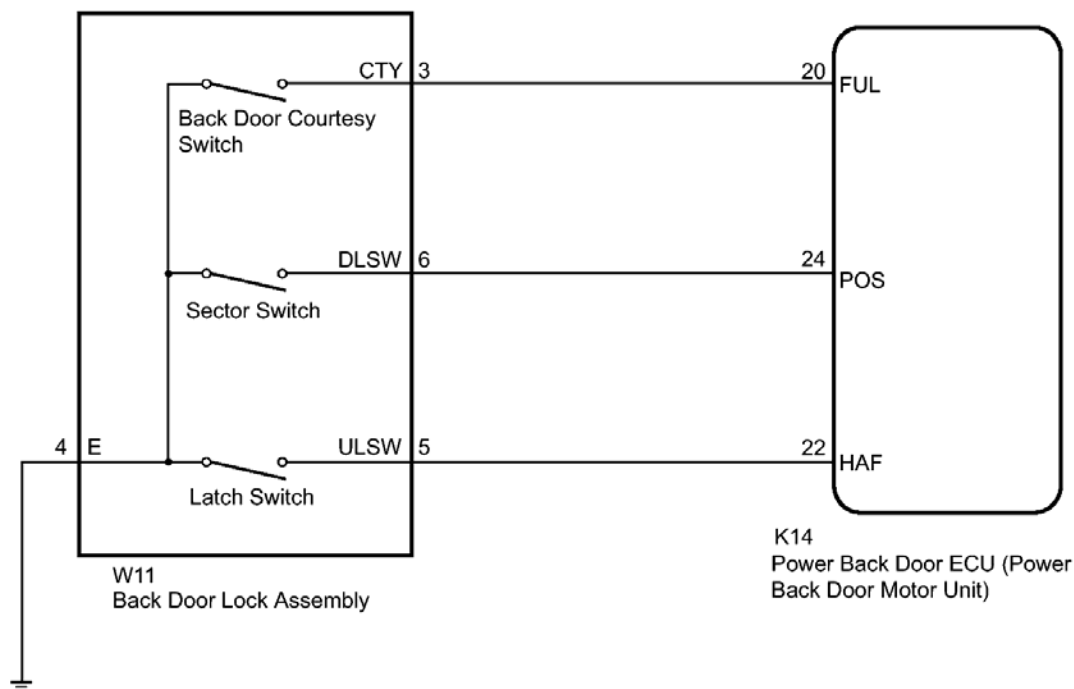


Fig. 1: Back Door Lock Assembly Circuit - Wiring Diagram
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

PROCEDURE

1. INSPECT BACK DOOR LOCK ASSEMBLY (SECTOR SWITCH)

- Remove the back door lock assembly. Refer to **REMOVAL**.
- Measure the resistance according to the value(s) in the table below.

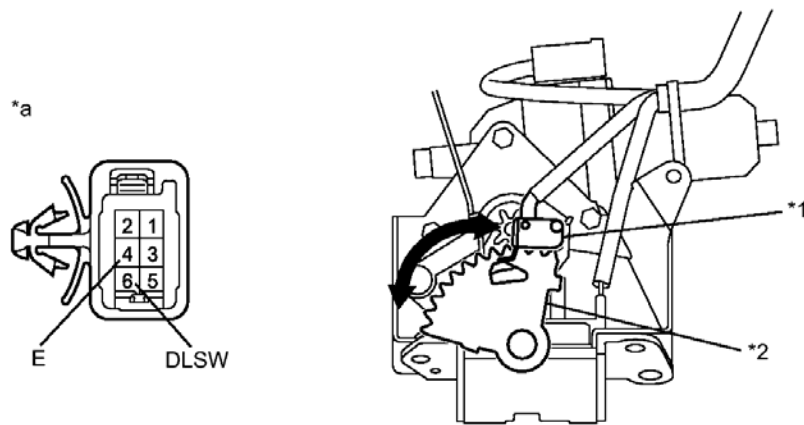


Fig. 2: Inspecting Back Door Lock Assembly (Sector Switch)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*1	Sector Switch	*2	Sector Gear
*a	Component without harness connected (Back Door Lock Assembly)	-	-

Standard Resistance

SECTOR SWITCH

Tester Connection	Condition	Specified Condition
6 (DLSW) - 4 (E)	Sector gear in neutral position (Sector switch on)	Below 1 ohms
6 (DLSW) - 4 (E)	Sector gear not in neutral position (Sector switch off)	10 kohms or higher

NG --> See step 3

OK: Go to next step

2. CHECK HARNESS AND CONNECTOR (BACK DOOR LOCK - POWER BACK DOOR ECU)

- a. Disconnect the W11 back door lock assembly connector and K14 power back door ECU connector.
- b. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
W11-6 (DLSW) - K14-24 (POS)	Always	Below 1 ohms
W11-4 (E) - Body ground	Always	Below 1 ohms
W11-6 (DLSW) - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 4

3. REPLACE BACK DOOR LOCK ASSEMBLY. Refer to REMOVAL

4. REPLACE POWER BACK DOOR ECU (POWER BACK DOOR MOTOR UNIT). Refer to REMOVAL

DTC B2251: BACK DOOR CLOSER SWITCH MALFUNCTION

DESCRIPTION

The power back door ECU (power back door motor unit) receives signals from the latch switch, sector switch and back door courtesy switch, which are built into the back door lock. Based on these switch signals, the latch position of the back door lock is determined.

DTC No.	DTC Detection Condition	Trouble Area
B2251	While the back door closer is operating, a malfunction is detected in position information from the back door courtesy switch within a specified amount of time.	• Back door lock assembly • Wire harness or connector • Power back door ECU (Power back door motor unit)

WIRING DIAGRAM

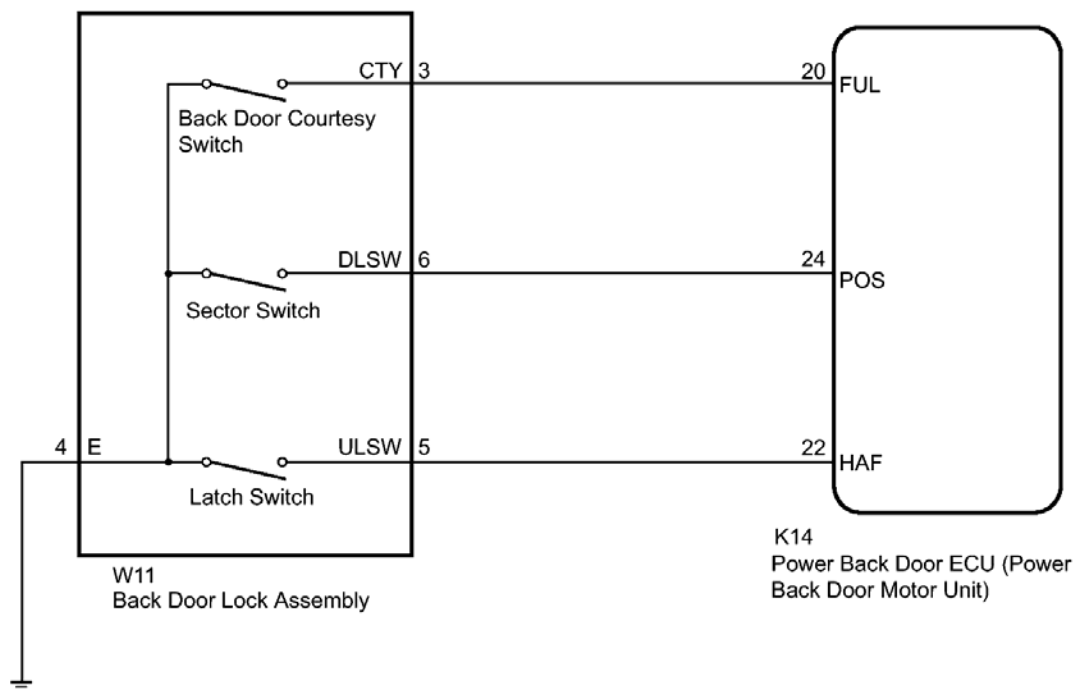


Fig. 3: Back Door Lock Assembly Circuit - Wiring Diagram
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

PROCEDURE

1. READ VALUE USING TECHSTREAM (BACK DOOR COURTESY SWITCH)

- Connect the Techstream to the DLC3.
- Turn the ignition switch to ON.
- Turn the Techstream on.
- Enter the following menus: Body Electrical / Back Door / Data List.
- Check if the switch functions properly.

BACK DOOR (POWER BACK DOOR ECU)

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Back	Back door	ON: Back door courtesy	

Door Courtesy SW	courtesy switch signal / ON or OFF	switch on OFF: Back door courtesy switch off	-
------------------------	--	--	---

OK

The display is as specified in the normal condition column.

RESULT

Result	Proceed to
NG	A
OK	B

B --> See step 4

A: Go to next step

2. INSPECT BACK DOOR LOCK ASSEMBLY (BACK DOOR COURTESY SWITCH)

- Remove the back door lock assembly. Refer to **REMOVAL** .
- Measure the resistance according to the value(s) in the table below.

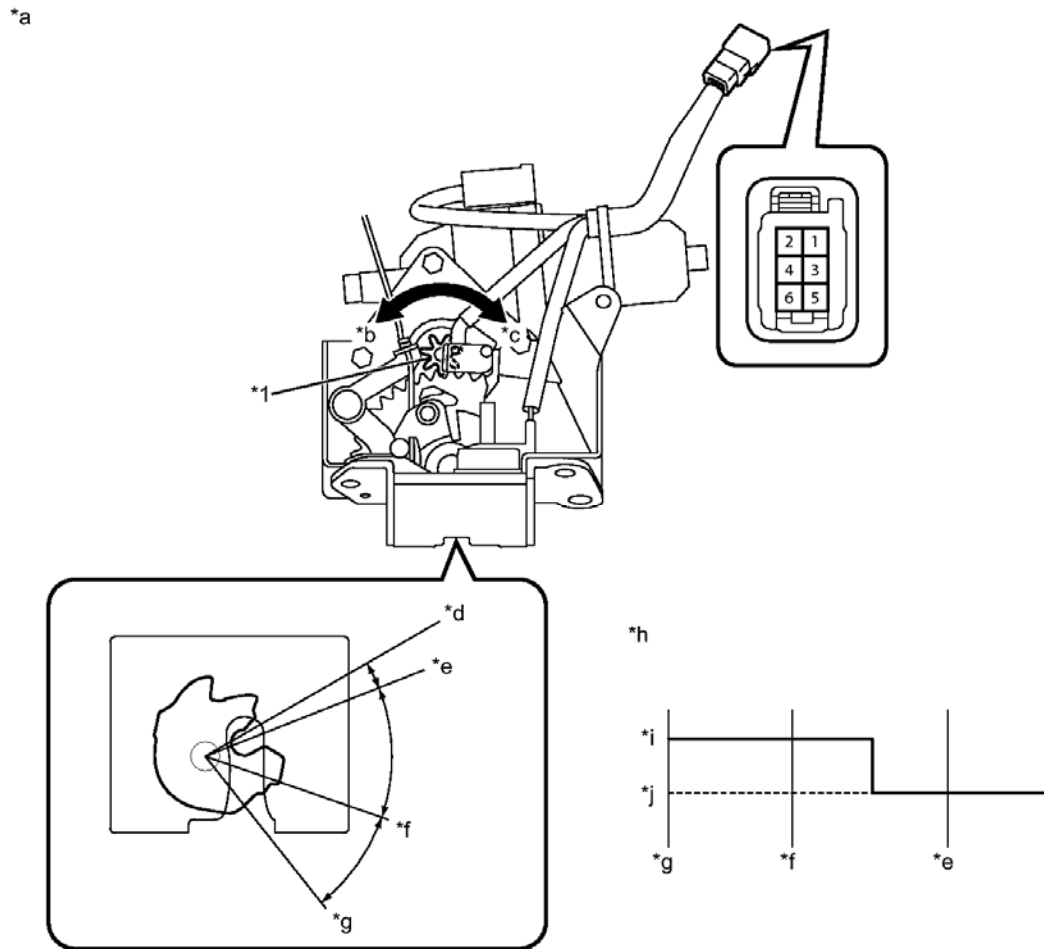


Fig. 4: Inspecting Back Door Lock Assembly (Back Door Courtesy Switch)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*1	Drive Gear	-	-
*a	Component without harness connected (Back Door Lock Assembly)	*b	Release
*c	Close	*d	Over-latch
*e	Full-latch	*f	Half-latch
			Back

*g	Open-latch	*h	Door Courtesy Switch
*i	ON	*j	OFF

Standard Resistance

BACK DOOR COURTESY SWITCH

Tester Connection	Condition	Specified Condition
3 (CTY) - 4 (E)	Open-latch	Below 1 ohms
	Half-latch	Below 1 ohms
	Full-latch	10 kohms or higher
	Over-latch	10 kohms or higher

NG --> See step 5

OK: Go to next step

3. **CHECK HARNESS AND CONNECTOR (BACK DOOR LOCK - POWER BACK DOOR ECU)**
 - a. Disconnect the W11 back door lock assembly connector and K14 power back door ECU connector.
 - b. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
W11-3 (CTY) - K14-20 (FUL)	Always	Below 1 ohms
W11-4 (E) - Body ground	Always	Below 1 ohms
W11-3 (CTY) - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 4

- 4. REPLACE POWER BACK DOOR ECU (POWER BACK DOOR MOTOR UNIT). Refer to REMOVAL**
- 5. REPLACE BACK DOOR LOCK ASSEMBLY. Refer to REMOVAL**

SYMPTOM TESTS

Back Door Closer does not Operate

DESCRIPTION

When the back door closer does not operate, one of the following may be the cause: 1) improper fit of the back door, or a foreign object is stuck in the back door, 2) initialization of the power back door ECU (power back door motor unit), 3) a malfunction in the power back door ECU (power back door motor unit) power source circuit, 4) back door lock circuit, 5) power back door ECU (power back door motor unit) or 6) touch sensor circuit.

WIRING DIAGRAM

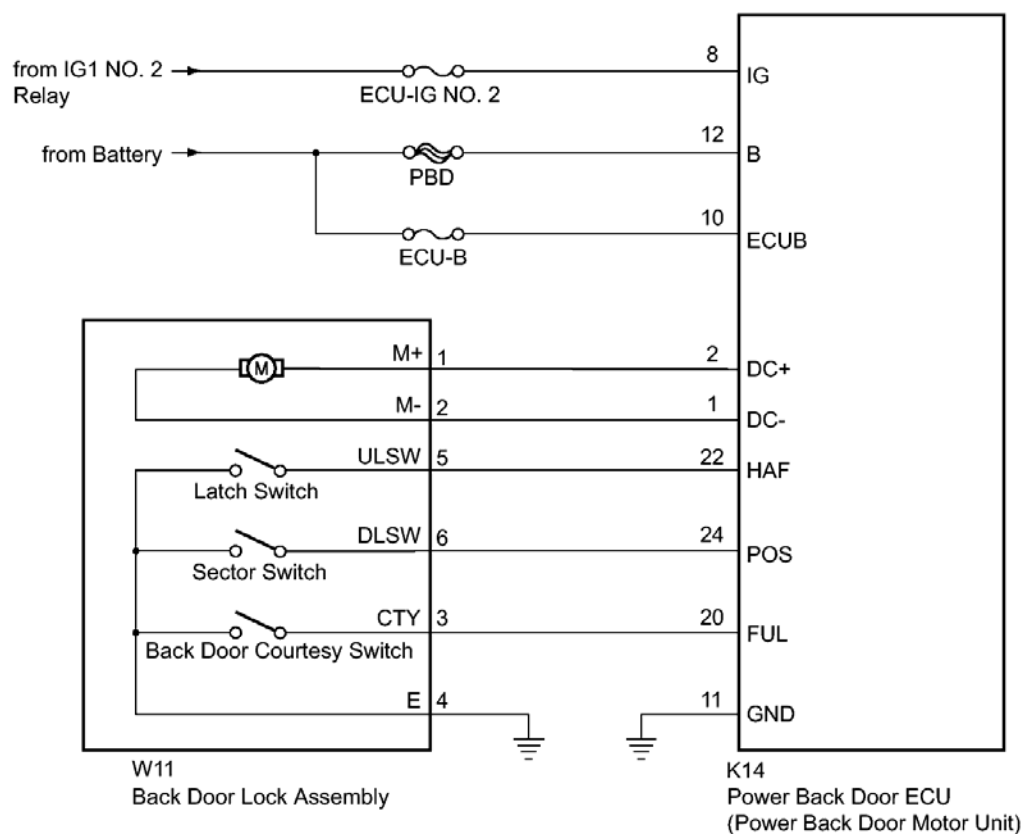


Fig. 5: Power Back Door Motor Unit - Wiring Diagram
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

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

PROCEDURE

1. CHECK BACK DOOR LOCK FUNCTION

- Check if the back door is fully closed by hand.

OK

The back door is fully closed.

NG --> IMPROPER FIT OF BACK DOOR, OR A FOREIGN OBJECT IS STUCK IN BACK DOOR

OK: Go to next step

2. INITIALIZE POWER BACK DOOR ECU

- a. Perform the initialization of the power back door ECU (power back door motor unit). Refer to **INITIALIZATION** .

NEXT: Go to next step

3. CHECK BACK DOOR CLOSER SYSTEM

- a. Check back door closer system operation.

OK

Back door closer system operates normally.

NG --> See step 4

OK --> END

4. READ VALUE USING TECHSTREAM (POWER BACK DOOR TOUCH SENSOR)

- 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 / Back Door / Data List.
- e. Check the Data List to determine if the power back door touch sensor functions properly.

BACK DOOR (POWER BACK DOOR ECU)

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
PBD Touch Sensor (Right)	Power back door touch sensor RH signal / ON or OFF	ON: Power back door touch sensor RH pressed OFF: Power back door touch sensor RH not pressed	-

PBD Touch Sensor (Left)	Power back door touch sensor LH signal / ON or OFF	ON: Power back door touch sensor LH pressed OFF: Power back door touch sensor LH not pressed	-
-------------------------	--	---	---

OK

The power back door sensors function as specified in the normal condition column.

NG --> **See step 10**

OK: Go to next step

5. CHECK DTC OUTPUT

- Connect the Techstream to the DLC3.
- Turn the ignition switch to ON.
- Turn the Techstream on.
- Enter the following menus: Body Electrical / Back Door / DTC.
- Check for DTCs.

RESULT

Result	Proceed to
DTC is not output	A
B2250 is output	B
B2251 is output	C

B --> See step 11

C --> See step 12

A: Go to next step

6. CHECK HARNESS AND CONNECTOR (POWER SOURCE)

- a. Disconnect the K14 power back door ECU connector.

*a

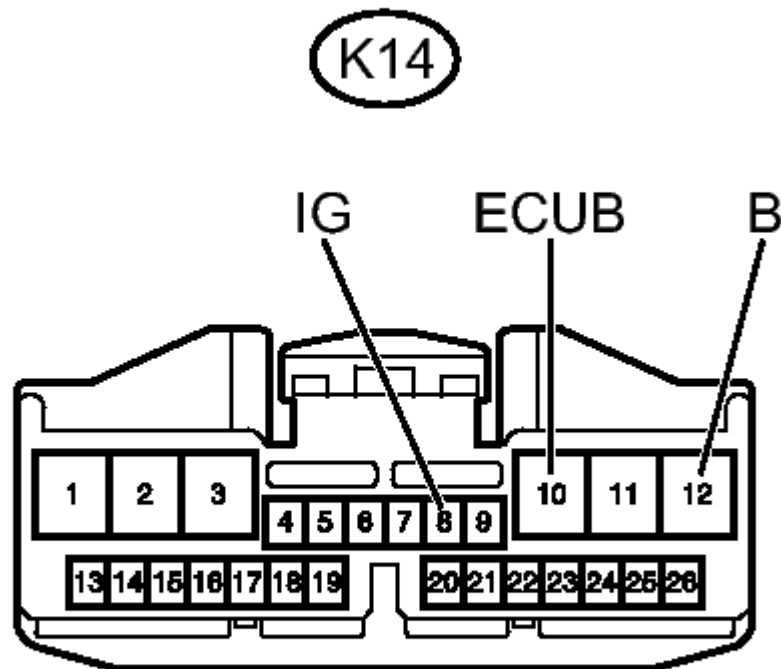


Fig. 6: Checking K14 Power Back Door ECU (Power Source)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Voltage

Tester Connection	Switch Condition	Specified Condition
K14-8 (IG)	Ignition	

- Body ground	switch ON	11 to 14 V
K14-10 (ECUB) - Body ground	Always	11 to 14 V
K14-12 (B) - Body ground	Always	11 to 14 V

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Power Back Door ECU)
----	---

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

7. CHECK HARNESS AND CONNECTOR (BODY GROUND)

- a. Disconnect the K14 power back door ECU connector.

*a

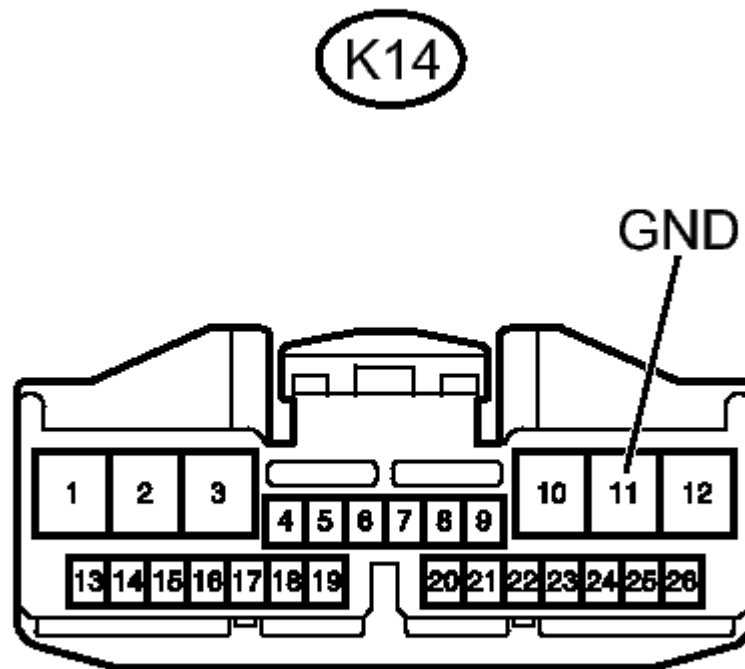


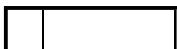
Fig. 7: Checking K14 Harness And Connector (Body Ground)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Condition	Specified Condition
K14-11 (GND) - Body ground	Always	Below 1 ohms

TEXT IN ILLUSTRATION



	Front view of wire harness *a connector (to Power Back Door ECU)
--	--

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

8. INSPECT BACK DOOR LOCK ASSEMBLY

- a. Remove the back door lock assembly. Refer to **REMOVAL** .
- b. Check the operation of the back door closer motor.
 1. Apply battery voltage and check the operation of the door lock motor.

*a

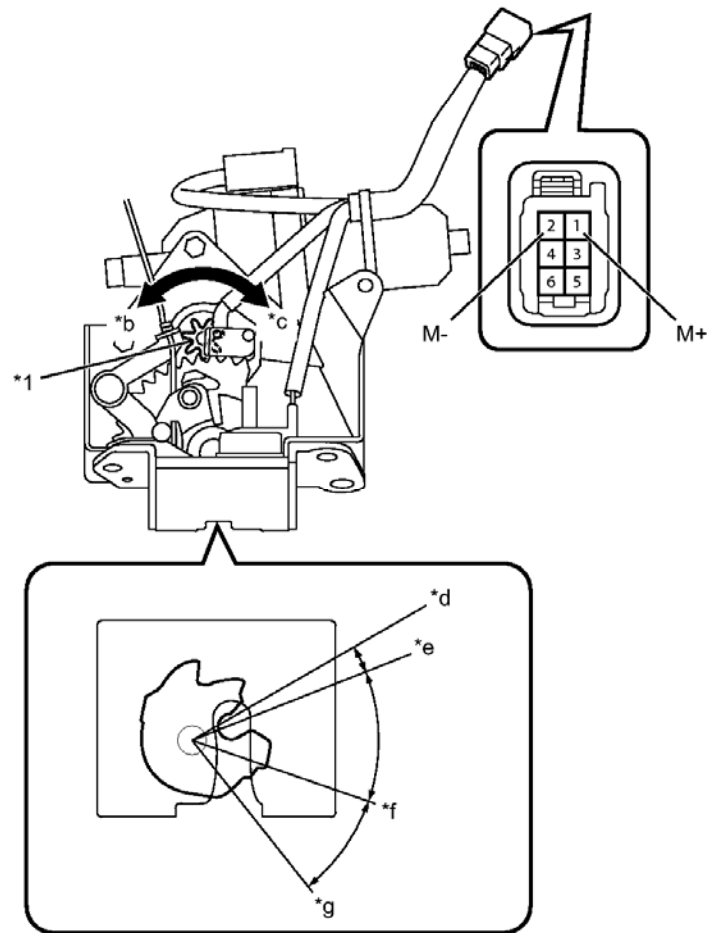


Fig. 8: Inspecting Back Door Lock Assembly
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

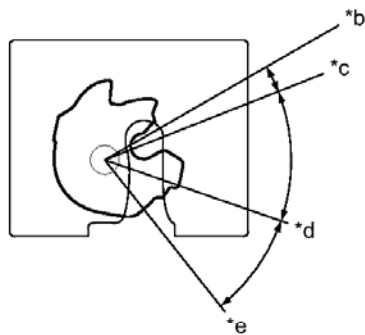
*1	Drive Gear	-	-
*a	Component without harness connected (Back Door Lock Assembly)	*b	Release
*c	Close	*d	Over-latch
*e	Full-latch	*f	Half-latch
*g	Open-latch	-	-

OK

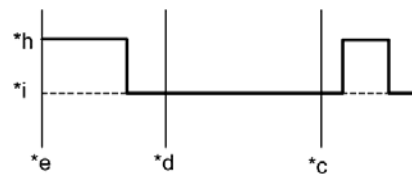
Measurement Condition	Specified Condition
Battery positive (+) -- > Terminal 1 (M+) Battery negative (-) -- > Terminal 2 (M-)	Latch turns to full-latch position
Battery positive (+) -- > Terminal 2 (M-) Battery negative (-) -- > Terminal 1 (M+)	Latch turns to open-latch position

c. Check the operation of the latch switch.

*a



*f



*g

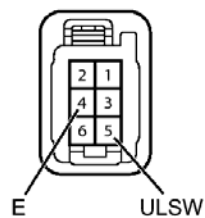
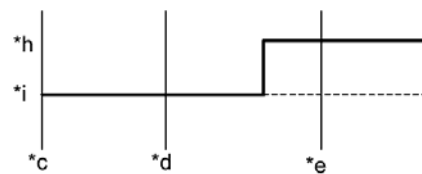


Fig. 9: Checking the Operation Of The Latch Switch
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*a	Component without harness connected (Back Door Lock Assembly)	*b	Over-latch
*c	Full-latch	*d	Half-latch
*e	Open-latch	*f	Latch Switch (Close Operation)
*g	Latch Switch (Open Operation)	*h	ON
*i	OFF	-	-

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

Standard Resistance

CLOSE OPERATION

Tester Connection	Condition	Specified Condition
5 (ULSW) - 4 (E)	Open-latch	Below 1 ohms
	Open-latch --> Half-latch	Below 1 ohms --> 10 kohms or higher
	Half-latch	10 kohms or higher
	Full-latch	10 kohms or higher
	Over-latch	10 kohms or higher -> Below 1 ohms --> 10 kohms or higher

OPEN OPERATION

Tester	Specified
--------	-----------

Connection	Condition	Condition
5 (ULSW) - 4 (E)	Full-latch	10 kohms or higher
	Half-latch	10 kohms or higher
	Half-latch --> Open- latch	10 kohms or higher - -> Below 1 ohms
	Open- latch	Below 1 ohms

d. Check the operation of the back door courtesy switch.

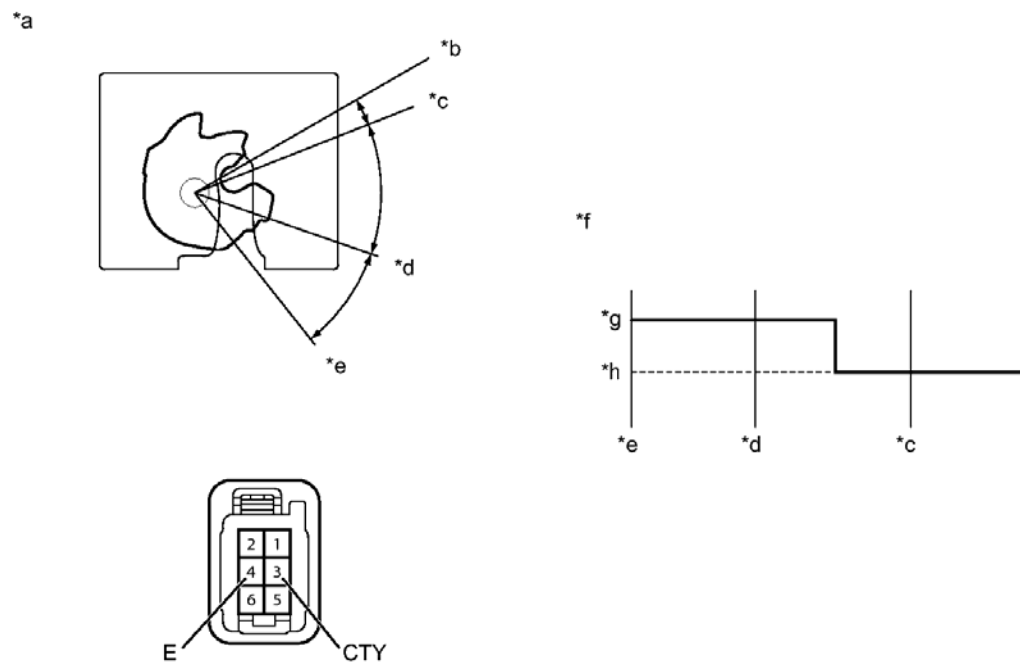


Fig. 10: Checking The Operation Of The Back Door Courtesy Switch
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*a	Component without harness connected (Back Door Lock Assembly)	*b	Over-latch
----	---	----	------------

*c	Full-latch	*d	Half-latch
*e	Open-latch	*f	Back Door Courtesy Switch
*g	ON	*h	OFF

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

Standard Resistance

Tester Connection	Condition	Specified Condition
3 (CTY) - 4 (E)	Open-latch	Below 1 ohms
	Half-latch	Below 1 ohms
	Full-latch	10 kohms or higher
	Over-latch	10 kohms or higher

- e. Check the operation of the sector switch.

*a

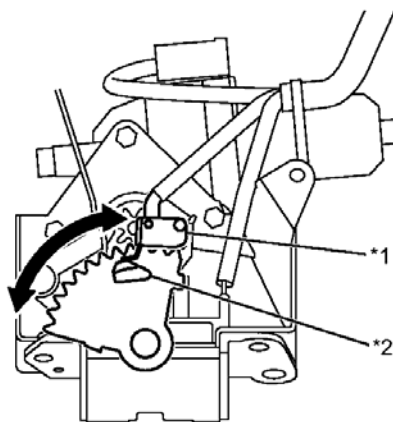
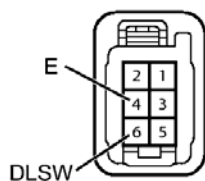


Fig. 11: Checking The Operation Of The Sector Switch
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*1	Sector Switch	*2	Sector Gear
	Component without		

*a	harness connected (Back Door Lock Assembly)	-	-
----	---	---	---

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
6 (DLSW) - 4 (E)	Sector gear in neutral position (sector switch on)	Below 1 ohms
	Sector gear not in neutral position (sector switch off)	10 kohms or higher

NG --> See step 13

OK: Go to next step

9. CHECK HARNESS AND CONNECTOR (BACK DOOR LOCK ASSEMBLY - POWER BACK DOOR ECU)

- a. Disconnect the W11 back door lock assembly connector and K14 power back door ECU connector.
- b. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
W11-1 (M+) - K14-2 (DC+)	Always	Below 1 ohms
W11-2 (M-) - K14-1 (DC-)	Always	Below 1 ohms

W11-5 (ULSW) - K14-22 (HAF)	Always	Below 1 ohms
W11-6 (DLSW) - K14-24 (POS)	Always	Below 1 ohms
W11-3 (CTY) - K14-20 (FUL)	Always	Below 1 ohms
W11-4 (E) - Body ground	Always	Below 1 ohms
W11-1 (M+) - Body ground	Always	10 kohms or higher
W11-2 (M-) - Body ground	Always	10 kohms or higher
W11-5 (ULSW) - Body ground	Always	10 kohms or higher
W11-6 (DLSW) - Body ground	Always	10 kohms or higher
W11-3 (CTY) - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 14

10. **GO TO OTHER FLOW CHART (TOUCH SENSOR CIRCUIT). Refer to Touch Sensor Circuit**
11. **GO TO OTHER FLOW CHART (B2250). Refer to DTC B2250: Back Door Closer Operation Malfunction**
12. **GO TO OTHER FLOW CHART (B2251). Refer to DTC B2251: Back Door Closer Switch Malfunction**
13. **REPLACE BACK DOOR LOCK ASSEMBLY. Refer to REMOVAL**

14. REPLACE POWER BACK DOOR ECU (POWER BACK DOOR MOTOR UNIT). Refer to REMOVAL

Back Door cannot be Opened

DESCRIPTION

When the back door cannot be opened, one of the following may be malfunctioning: 1) power back door ECU (power back door motor unit), 2) back door lock assembly, 3) back door opener switch assembly, or 4) main body ECU.

WIRING DIAGRAM

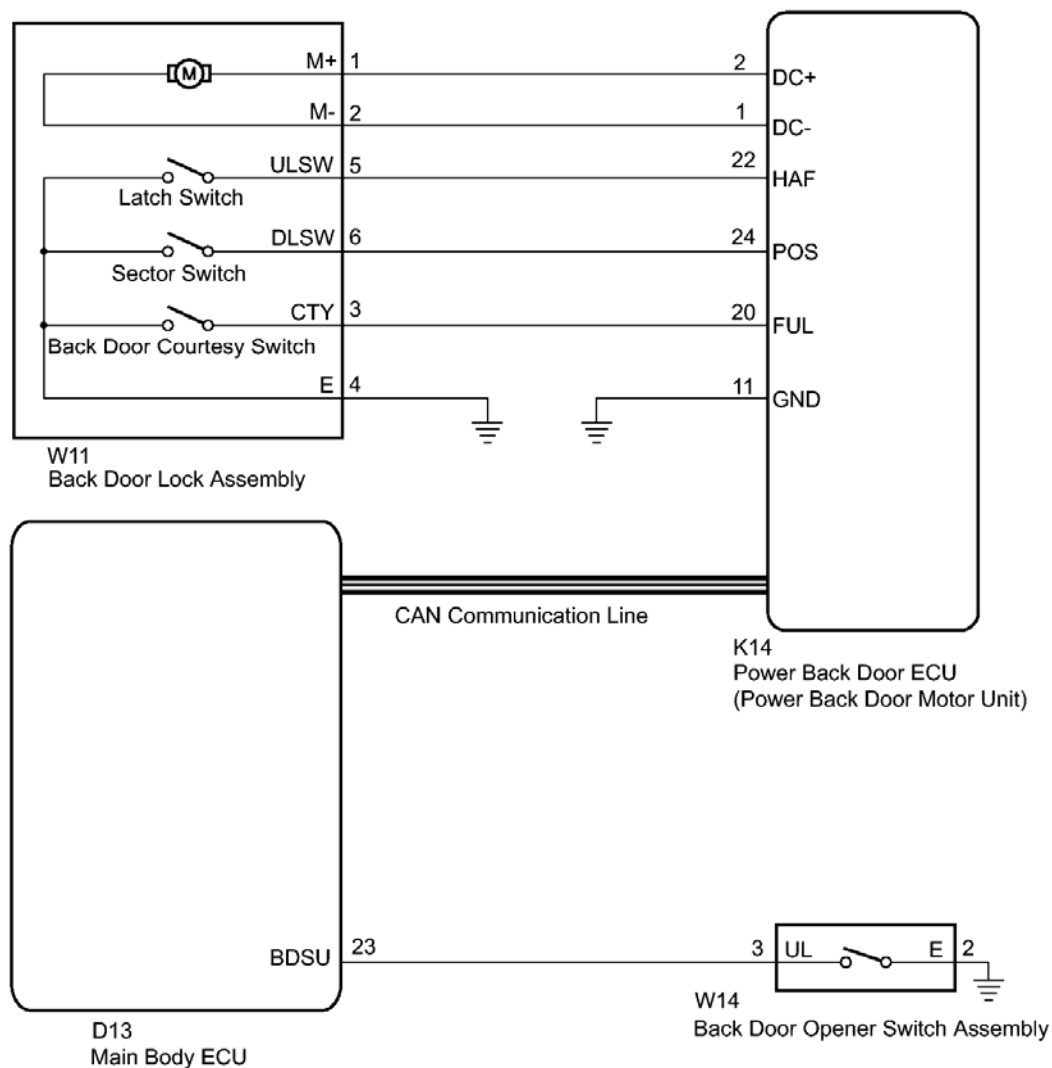


Fig. 12: Back Door Opener Switch Assembly - Wiring Diagram

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

INSPECTION PROCEDURE

NOTE: The back door closer system uses CAN communication. First, follow "How to Proceed with Troubleshooting" and at step "Check Communication Function of CAN Communication System", confirm that there is no malfunction in the CAN communication system. After confirming that B2250 or B2251 is not output, proceed with troubleshooting.

PROCEDURE

1. READ VALUE USING TECHSTREAM (BACK DOOR OPEN)

- 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. Check if the back door lock functions properly.

MAIN BODY (MAIN BODY ECU)

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Back Door Open	Back door lock / Permit or Prohibit	Permit: Back door unlocked Prohibit: Back door locked	-

OK

The back door functions as specified in the normal condition column.

NG --> See step 8

OK: Go to next step

2. READ VALUE USING TECHSTREAM (DOOR LOCK STATUS)

- 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 / Back Door / Data List.
- e. Check if the back door lock functions properly.

BACK DOOR (POWER BACK DOOR ECU)

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Door Lock Status	Back door lock condition signal / LOCK or UNLOCK	LOCK: Back door locked UNLOCK: Back door unlocked	-

OK

The back door functions as specified in the normal condition column.

NG --> See step 9

OK: Go to next step

3. READ VALUE USING TECHSTREAM (BACK DOOR OPEN HANDLE SW)

- 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.
- Check if the switch functions properly.

MAIN BODY (MAIN BODY ECU)

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Back Door Open Handle SW	Back door opener switch signal / ON or OFF	ON: Back door opener switch on OFF: Back door opener switch off	-

OK

The back door opener switch functions as specified in the normal condition column.

NG --> See step 6

OK: Go to next step

4. **INSPECT BACK DOOR LOCK ASSEMBLY** See step 8

NG --> See step 10

OK: Go to next step

5. **CHECK HARNESS AND CONNECTOR (BACK DOOR LOCK ASSEMBLY - POWER BACK DOOR ECU)** See step 9

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 9

6. **INSPECT BACK DOOR OPENER SWITCH ASSEMBLY**

- a. Remove the back door opener switch assembly. Refer to **REMOVAL** .
- b. Measure the resistance according to the value(s) in the table below.

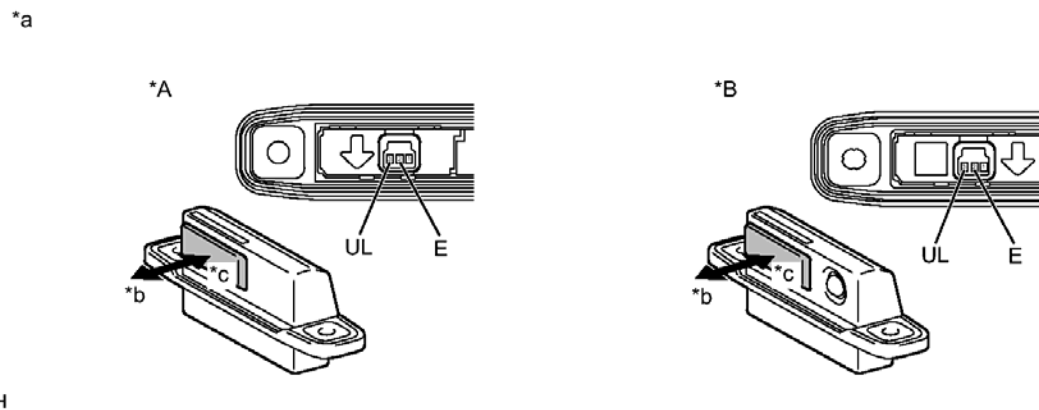


Fig. 13: Inspecting Back Door Opener Switch Assembly
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*A	w/o Smart Key System	*B	w/ Smart Key System
*a	Component without harness connected (Back Door Opener Switch Assembly)	*b	Free

*c	Pushed	-	-
----	--------	---	---

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
2 (E) - 3 (UL)	Back door opener switch not pushed (off)	10 kohms or higher
2 (E) - 3 (UL)	Back door opener switch pushed (on)	Below 1 ohms

NG --> See step 11

OK: Go to next step

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

- Disconnect the W14 back door opener switch assembly connector and 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
W14-2 (E) - Body ground	Always	Below 1 ohms
W14-3 (UL) - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 8

8. **REPLACE MAIN BODY ECU. Refer to REMOVAL**
9. **REPLACE POWER BACK DOOR ECU (POWER BACK DOOR MOTOR UNIT). Refer to REMOVAL**
10. **REPLACE BACK DOOR LOCK ASSEMBLY. Refer to REMOVAL**
11. **REPLACE BACK DOOR OPENER SWITCH ASSEMBLY. Refer to REMOVAL**

ACCESSORIES & EQUIPMENT

Back Door Closer System (Diagnostics - Introduction) - Sienna

BACK DOOR CLOSER SYSTEM

PRECAUTION

PRECAUTION

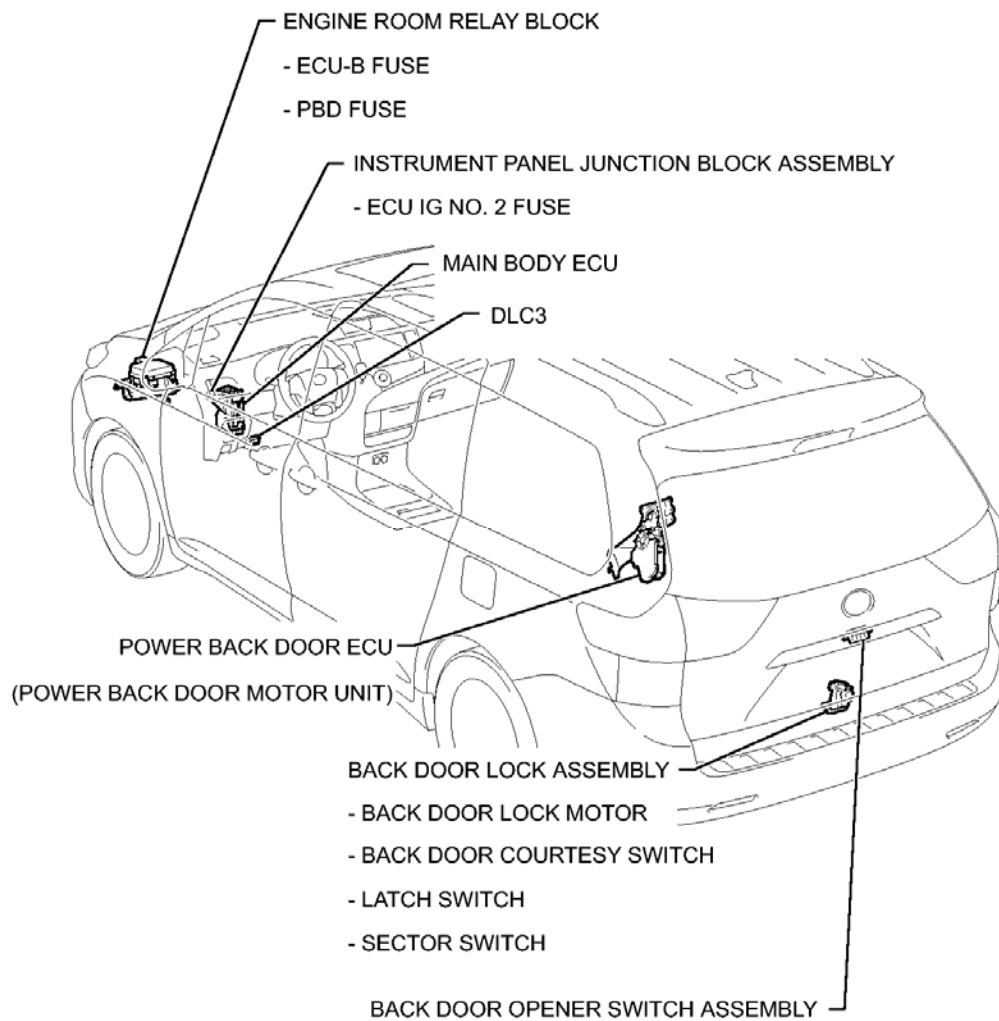
1. IGNITION SWITCH EXPRESSIONS

- 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



P

Fig. 1: Back Door Closer System Components Location
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

SYSTEM DIAGRAM

SYSTEM DIAGRAM

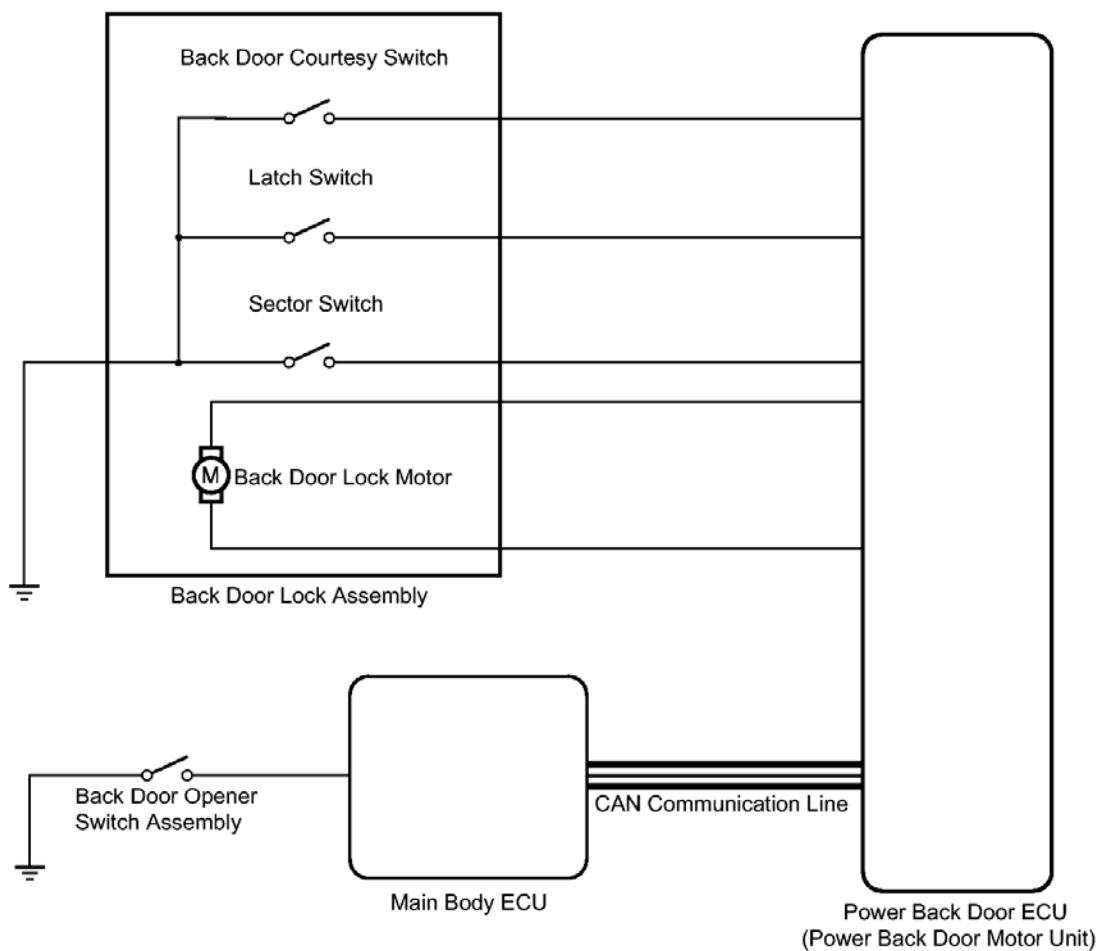


Fig. 2: Back Door Closer System Diagram

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

COMMUNICATION METHOD

Transmitting ECU	Receiver	Signal	Communication Method
Main body ECU	Power back door ECU (Power back door motor unit)	- Back door opener switch signal - Back door lock/unlock signal	CAN

SYSTEM DESCRIPTION

SYSTEM DESCRIPTION

1. BACK DOOR CLOSER SYSTEM DESCRIPTION

- a. Operating any power back door switch when the back door is fully closed inputs a request signal to the power back door ECU. The power back door ECU outputs a "latch release" command to the back door lock in response to the input.
- b. The latch can be released only when the back door is unlocked.
- c. 3 switches are built into the back door lock, and the power back door ECU monitors each switch status. The power back door ECU controls latch "release/ close" operations in response to the inputs from each switch.

Switch	Function
Back door courtesy switch	Detects whether back door is open or closed. This switch turns on when back door is open or ajar and turns off when it is fully closed.
Latch switch	Detects fully closed position of latch. This switch turns on when latch is in over-latch position.
	Detects ajar position of latch.

Sector switch	This switch turns on when latch is in open-latch position.
---------------	--

HOW TO PROCEED WITH TROUBLESHOOTING

HOW TO PROCEED WITH TROUBLESHOOTING

HINT:

- The back door closer system troubleshooting procedure is based on the premise that the power back door system is operating normally. Check the power back door system first before troubleshooting the back door closer system. Refer to **PROBLEM SYMPTOMS TABLE** .
- Use the procedure to troubleshoot the back door closer 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 in the 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

Standard voltage

11 to 14 V

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

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 output	B

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

A: Go to next step

5. CHECK FOR DTC*

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

RESULT

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

B --> GO TO DIAGNOSTIC TROUBLE CODE CHART. 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 on problem symptoms table	A
Fault is listed on problem symptoms table	B

B --> Go to step 8

A: Go to next step

7. OVERALL ANALYSIS AND TROUBLESHOOTING*

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

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 BASIC FUNCTIONS

- a. When the back door is partially closed, check that the motor operates to fully close (lock) the back door.
- b. Check that the back door can be opened.
- c. When the back door is partially closed and then the motor starts normal operation, push the back door opener switch assembly and pull up the back door to open it. At this time, check that the motor starts the reverse operation and then stops.
- d. Immediately after the back door is partially closed (the motor has not started operation yet), push the back door opener switch assembly to open the back door. Check that the motor does not operate at this time.

INITIALIZATION

INITIALIZATION

1. RESET BACK DOOR CLOSE POSITION

NOTE: Perform initialization of the power back door system (power back door ECU initialization) if one of the following is performed:

- a. The cable is disconnected from the negative (-) battery terminal.
- b. A wire harness of the back door closer system is disconnected and reconnected.
- c. The back door motor unit is replaced or removed and reinstalled.
- d. The ECU-B and PBD fuses are replaced or removed and reinstalled.

If initialization is not performed, the power back door system will not operate.

- a. When the back door is open and the cable is disconnected and reconnected to the negative (-) battery terminal, fully close the back door by hand to initialize the power back door system.

HINT:

- Initialization is not necessary if the cable is disconnected and reconnected to the negative (-)

battery terminal while the back door is closed.

- The power back door ECU controls the locked or unlocked state of the back door based on its memory. If the power for the power back door ECU is disconnected and reconnected, the back door will need to be unlocked before it can be operated.
- If the back door closer system does not operate and/or the back door does not open, disconnect the cable from the negative (-) battery terminal. Then wait 10 seconds, reconnect the cable and perform initialization of the power back door system again.

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.

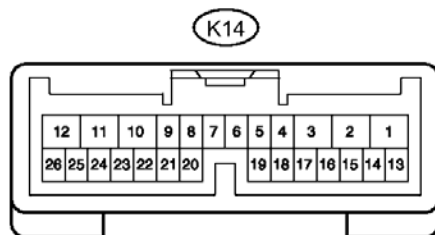
BACK DOOR CLOSER SYSTEM

Symptom	Suspected Area	See
Back Door cannot be Opened	Back door opener switch assembly	Refer to <u>Back Door cannot be Opened</u>
	Back door lock assembly	-
	Power back door ECU (Power back door motor unit)	-
	Main body ECU	-
	Wire harness or connector	-
Back Door Closer does not Operate	Initialize power back door ECU	Refer to <u>INITIALIZATION</u>
	ECU-B, ECU-IG No. 2, PBD fuse	-
	Back door lock assembly	Refer to <u>Back Door Closer does not Operate</u>
	Power back door ECU (Power back door motor unit)	-
	Touch sensor circuit	-
	Wire harness or connector	-

TERMINALS OF ECU

TERMINALS OF ECU

1. CHECK POWER BACK DOOR ECU (POWER BACK DOOR MOTOR UNIT)



T

Fig. 3: Power Back Door ECU (Power Back Door Motor Unit) (w/ Power Back Door System)

Connector Terminal Identification

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

- Disconnect the K14 power back door ECU connector.
- 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
K14-12 (B) - Body ground	B - Body ground	Battery power supply	Always	11 to 14 V
K14-10 (ECUB) - Body ground	SB - Body ground	Battery power supply	Always	11 to 14 V
K14-8 (IG) - Body ground	L - Body ground	IG power supply	Ignition switch ON	11 to 14 V
			Ignition switch off	Below 1 V
K14-11 (GND) - Body ground	W-B - Body ground	Ground	Always	Below 1 ohms

K14-6 (CANH) - Body ground	BR - Body ground	CAN	Always	200 ohms or higher
K14-5 (CANL) - Body ground	W - Body ground	CAN	Always	200 ohms or higher

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

- c. Reconnect the K14 power back door ECU connector.
- d. Initialize the power back door system. 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
K14-2 (DC+) - K14-1 (DC-)	W - G	Back door lock motor circuit	Back door lock motor operating	11 to 14 V
			Back door lock motor not operating	Below 1 V
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
K14-22 (HAF) - Body ground	L - Body ground	Back door lock half-latch switch signal circuit	Back door open --> Back door closer operates --> Back door closed	Below 1 V --> 11 to 14 V --> Below 1 V
K14-24 (POS) - Body ground	B - Body ground	Back door lock position switch signal circuit	Back door open --> Back door closer operates --> Back door closed	Below 1 V --> 11 to 14 V --> Below 1 V

If the result is not as specified, the power back door ECU may have a malfunction.

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

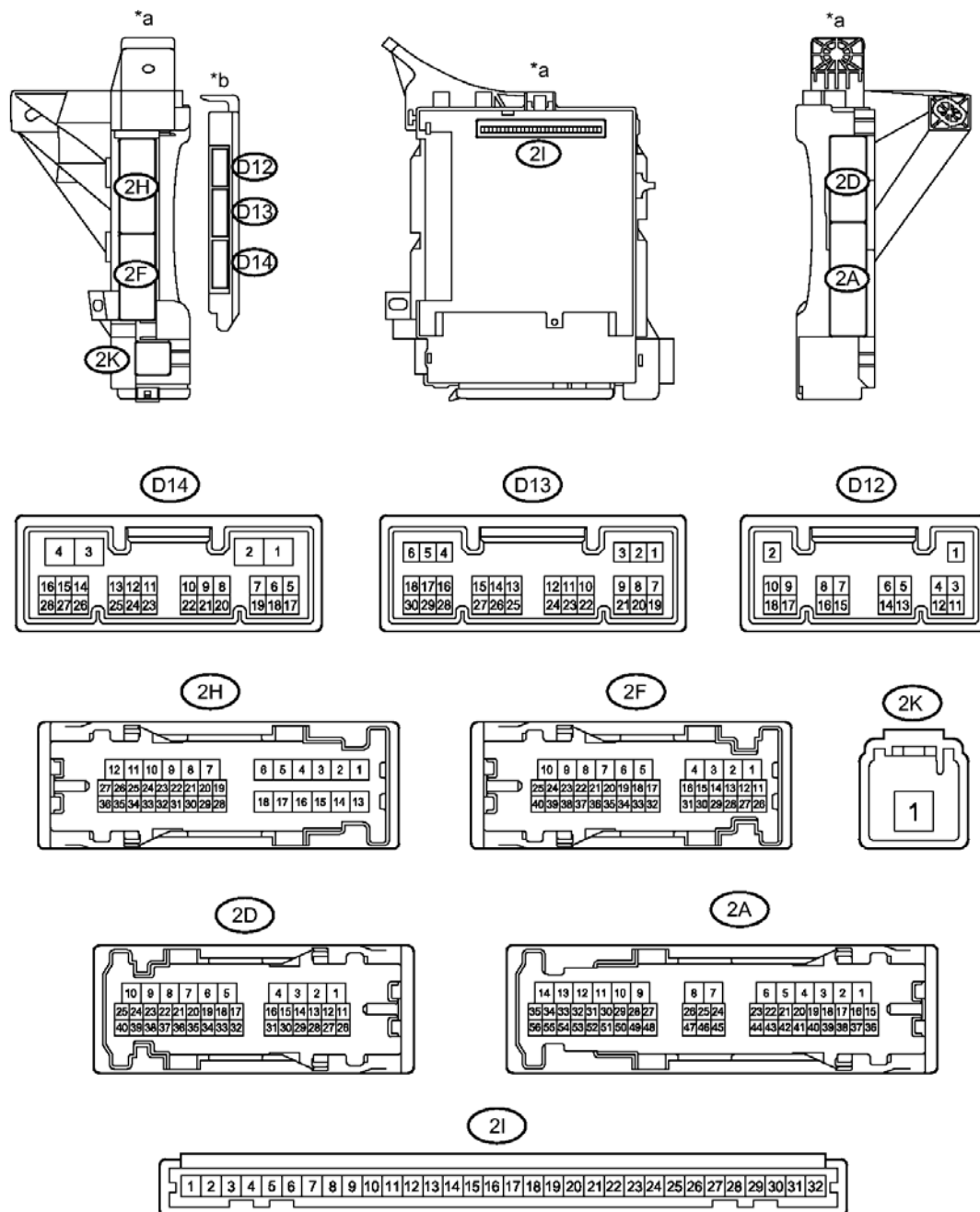


Fig. 4: Main Body ECU And Instrument Panel Junction Block Assembly Connector Terminal Identification

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

TEXT IN ILLUSTRATION

*a	Component without harness connected (Instrument Panel Junction Block Assembly)	*b	Component without harness connected (Main Body ECU)
----	---	----	--

- Disconnect the D13, D14 and main body ECU.
- 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
D13-23 (BDSU) - Body ground	L - Body ground	Back door opener switch signal circuit	Back door opener switch on	Below 1 ohms
			Back door opener switch off	10 kohms or higher
2I-30 (BECU) - Body ground	-	Battery power supply	Always	11 to 14 V
2I-31 (ALTB) - Body ground	-	Battery power supply	Always	11 to 14 V
2I-11 (GND1) - Body ground	-	Ground	Always	Below 1 ohms
D14-3 (GND2) - Body ground	W-B - Body ground	Ground	Always	Below 1 ohms

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

- c. Reconnect the D13, D14 and main body ECU.
- d. Measure the voltage according to the value(s) in the table below.

Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
D13-23 (BDSU) - Body ground	L - Body ground	Back door opener switch signal circuit	Back door opener switch on	Below 1 V
			Back door opener switch off	Pulse generation

If the result is not as specified, the main body ECU may have a malfunction.

DIAGNOSIS SYSTEM

DIAGNOSIS SYSTEM

1. DESCRIPTION

- a. The power back door ECU (power back door motor unit) control the vehicle's back door closer system functions. Back door closer system data and Diagnostic Trouble Code (DTC) can be read through the vehicle's Data Link Connector 3 (DLC3).

When the system seems to be malfunctioning, use the Techstream to check for malfunctions and perform repairs.

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.

DTC CHECK / CLEAR

DTC CHECK / CLEAR

1. CHECK DTC

- 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 / Back Door / DTC.

HINT:

Refer to the Techstream operator's manual for further details.

- e. Check DTCs and then write them down.
- f. Confirm the details of the DTCs. Refer to **DIAGNOSTIC TROUBLE CODE CHART**.

2. CLEAR DTC

- 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 / Back Door / DTC / Clear.

HINT:

Refer to the Techstream operator's manual for further details.

- e. Clear the DTCs by following the directions on the Techstream screen.

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 / Back Door or Main Body / Data List.
- e. According to the display on the Techstream, read the "Data List".

BACK DOOR (POWER BACK DOOR ECU)

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Door Lock Status	Back door lock condition signal / LOCK or UNLOCK	LOCK: Back door locked UNLOCK: Back door unlocked	-
Half Latch SW	Half-latch switch signal / ON or OFF	ON: Back door lock motor open-latched or over-latched OFF: Back door lock motor fully latched or half-latched	-
Closer Position SW	Closer position switch signal / ON or OFF	ON: Back door lock center gear in center position OFF: Back door lock center gear not in center position	-
Courtesy SW	Back door courtesy switch signal / ON or OFF	ON: Back door open OFF: Back door closed	-
PBD Touch Sensor (Right)	Power back door touch sensor RH signal / ON or	OK: Power back door touch sensor RH pressed OFF: Power	-

	OFF	back door touch sensor RH not pressed	
PBD Touch Sensor (Left)	Power back door touch sensor LH signal / ON or OFF	OK: Power back door touch sensor LH pressed OFF: Power back door touch sensor LH not pressed	-
IG SW	Ignition switch / ON or OFF	ON: Ignition switch ON OFF: Ignition switch off	-

MAIN BODY (MAIN BODY ECU)

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Back Door Courtesy SW	Back door courtesy switch signal / ON or OFF	ON: Back door courtesy switch on OFF: Back door courtesy switch off	-
Back Door Open	Back door lock / Permit or Prohibit	Permit: Back door unlocked Prohibit: Back door locked	-
Back	Power back	ON: Power back door control switch	

Door Open SW	door control switch / ON or OFF	pushed OFF: Power back door control switch not pushed	-
Back Door Open Handle SW	Back door opener switch signal / ON or OFF	ON: Back door opener switch on OFF: Back door opener switch off	-

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 / Back Door / Active Test.
- According to the display on the Techstream, perform the "Active Test".

BACK DOOR (POWER BACK DOOR ECU)

Tester Display	Test Part	Control Range	Diagnostic Note
Latch Release	Back door lock latch	ON / OFF	-
Courtesy SW Signal	Back door courtesy switch	ON / OFF	-

DIAGNOSTIC TROUBLE CODE CHART

DIAGNOSTIC TROUBLE CODE CHART

HINT:

If a trouble code is displayed during the DTC check, inspect the trouble areas listed for that code. For details of the code, refer to the following "See".

BACK DOOR CLOSER SYSTEM

DTC Code	Detection Item	Trouble Area	See
B2250	Back Door Closer Operation Malfunction	- Back door lock assembly - Wire harness or connector - Power back door ECU (Power back door motor unit)	Refer to <u>DTC B2250: Back Door Closer Operation Malfunction</u>
B2251	Back Door Closer Switch Malfunction	- Back door lock assembly - Wire harness or connector - Power back door ECU (Power back door motor unit)	Refer to <u>DTC B2251: Back Door Closer Switch Malfunction</u>