

ACCESSORIES & EQUIPMENT

Power Window Control System (Diagnostic Codes & Symptom Tests) - Sienna

POWER WINDOW CONTROL SYSTEM

DTC B2311: POWER WINDOW MOTOR MALFUNCTION

DESCRIPTION

The power window regulator motor is operated by the multiplex network master switch assembly or power window regulator switch assembly. The power window regulator motor assembly has motor, regulator and ECU functions.

This DTC is output when the power window regulator motor assembly has a malfunction, or the ECU built into the regulator motor assembly determines that the fully closed window position has deviated approximately 20 mm (0.787 in.) or more from the normal position.

HINT:

DTC B2311 can be stored in each power window regulator motor assembly (power window ECU).

D-DOOR MOTOR (FRONT POWER WINDOW REGULATOR MOTOR ASSEMBLY LH)

DTC No.	DTC Detection Condition	Trouble Area
B2311	Either condition is met: a. Power window regulator motor assembly malfunctions b. When ECU in power window regulator motor assembly determines that fully closed window position has deviated approx. 20 mm (0.787 in.) or more from normal position	• Battery disconnected when ignition switch ON • Front power window regulator motor assembly LH • Incorrect installation of power window components • Overheated front power window regulator motor assembly LH

P-DOOR MOTOR (FRONT POWER WINDOW REGULATOR MOTOR ASSEMBLY RH)

DTC No.	DTC Detection Condition	Trouble Area
B2311	Either condition is met: a. Power window regulator motor assembly malfunctions b. When ECU in power window regulator motor assembly determines that fully closed window position has deviated approx. 20 mm (0.787 in.) or more from normal position	• Battery disconnected when ignition switch ON • Front power window regulator motor assembly RH • Incorrect installation of power window components • Overheated front power window regulator motor assembly RH

RL-DOOR MOTOR (REAR POWER WINDOW REGULATOR MOTOR ASSEMBLY LH)

DTC No.	DTC Detection Condition	Trouble Area
B2311	Either condition is met: a. Power window regulator motor assembly malfunctions b. When ECU in power window regulator motor assembly determines that fully closed window position has deviated approx. 20 mm (0.787 in.) or more from normal position	• Battery disconnected when ignition switch ON • Rear power window regulator motor assembly LH • Incorrect installation of power window components • Overheated rear power window regulator motor assembly LH

RR-DOOR MOTOR (REAR POWER WINDOW REGULATOR MOTOR ASSEMBLY RH)

DTC No.	DTC Detection Condition	Trouble Area
B2311	Either condition is met: a. Power window regulator motor assembly malfunctions b. When ECU in power window regulator motor assembly determines that fully closed window position has deviated approx. 20 mm (0.787 in.) or more from normal position	• Battery disconnected when ignition switch ON • Rear power window regulator motor assembly RH • Incorrect installation of power window components • Overheated rear power window regulator motor assembly RH

INSPECTION PROCEDURE**NOTE:**

- When the power window regulator motor assembly is reinstalled or replaced, the power window control system must be initialized.
- After a door glass or a door glass run has been replaced, the jam protection function may operate unexpectedly when the auto up function is used. In such cases, the auto up function can be reinitialized by repeating the following operations at least 5 times:
 - a. Close the power window by fully pulling up the multiplex network master switch assembly or power window regulator switch assembly and holding it in the auto up position.
 - b. Open the power window by fully pushing down the switch.

PROCEDURE**1. PERFORM ACTIVE TEST USING TECHSTREAM (APPLICABLE LOCATION)**

- 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 / (desired system) / Active Test.

HINT:

Perform the Active Test for the power window regulator motor assembly that has DTC B2311 stored in its ECU.

- e. Perform the Active Test according to the display on the Techstream.

WARNING: Be careful to avoid injuries as this test causes vehicle parts to move. During the Active Test, the jam protection function will not operate.

D-DOOR MOTOR (FRONT POWER WINDOW REGULATOR MOTOR ASSEMBLY LH)

Tester Display	Test Part	Control Range	Diagnostic Note
Power Window	Power window	UP or OFF	-
Power Window	Power window	DOWN or OFF	-

P-DOOR MOTOR (FRONT POWER WINDOW REGULATOR MOTOR ASSEMBLY RH)

Tester Display	Test Part	Control Range	Diagnostic Note
Power Window	Power window	UP or OFF	-
Power Window	Power window	DOWN or OFF	-

RL-DOOR MOTOR (REAR POWER WINDOW REGULATOR MOTOR ASSEMBLY LH)

Tester Display	Test Part	Control Range	Diagnostic Note
Power Window	Power window	UP or OFF	-
Power Window	Power window	DOWN or OFF	-

RR-DOOR MOTOR (REAR POWER WINDOW REGULATOR MOTOR ASSEMBLY RH)

Tester Display	Test Part	Control Range	Diagnostic Note
Power Window	Power window	UP or OFF	-
Power Window	Power window	DOWN or OFF	-

OK

Each power window motor operates.

Result

Result	Proceed to
OK	A
NG (Driver side power window)	B
NG (Front passenger side power window)	C
NG (Rear LH side power window)	D
NG (Rear RH side power window)	E

B --> See step 5

C --> See step 6

D --> See step 7

E --> See step 8

A: Go to next step

2. PERFORM INITIALIZATION (APPLICABLE LOCATION)

- Initialize the power window regulator motor assembly. Refer to **INITIALIZATION** .

HINT:

Initialize the power window regulator motor assembly that has DTC B2311 stored in its ECU.

NEXT: Go to next step

3. CHECK POWER WINDOW CONTROL SYSTEM (APPLICABLE LOCATION)

- a. Check that the power window operates normally by opening and closing the window. Refer to **OPERATION CHECK** .

HINT:

Check the power window operation of the window where DTC B2311 has been stored.

OK

Each power window operates normally.

Result

Result	Proceed to
OK	A
NG (Driver side power window)	B
NG (Front passenger side power window)	C
NG (Rear LH side power window)	D
NG (Rear RH side power window)	E

B --> See step 5

C --> See step 6

D --> See step 7

E --> See step 8

A: Go to next step

4. CHECK WHETHER PARTS HAVE BEEN INSTALLED CORRECTLY

- a. Check that the power window components are installed correctly.

OK

Power window components are installed correctly.

HINT:

- Check the installation condition of the components for the window where DTC B2311 has been stored.
- When the power window components are installed correctly, the problem has occurred because the battery is disconnected while the ignition switch is ON, the power window components are installed improperly or the motor is overheated.

NG --> INSTALL PARTS CORRECTLY

OK --> END

5. **REPLACE FRONT POWER WINDOW REGULATOR MOTOR ASSEMBLY LH. Refer to REMOVAL**
6. **REPLACE FRONT POWER WINDOW REGULATOR MOTOR ASSEMBLY RH. Refer to REMOVAL**
7. **REPLACE REAR POWER WINDOW REGULATOR MOTOR ASSEMBLY LH. Refer to REMOVAL**
8. **REPLACE REAR POWER WINDOW REGULATOR MOTOR ASSEMBLY RH. Refer to REMOVAL**

DTC B2312: POWER WINDOW SWITCH MALFUNCTION

DESCRIPTION

The power window regulator motor assembly is operated by the multiplex network master switch assembly or power window regulator switch assembly. The power window regulator motor assembly has motor, regulator and ECU functions.

This DTC is output when the ECU built into the regulator motor determines that the multiplex network master switch assembly or power window regulator switch assembly is stuck.

HINT:

DTC B2312 can be stored in the multiplex network master switch assembly and in each power window regulator motor assembly (power window ECU).

MASTER SWITCH (MULTIPLEX NETWORK MASTER SWITCH ASSEMBLY)

DTC No.	DTC Detection Condition	Trouble Area
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B2312	• Multiplex network master switch assembly stuck • Multiplex network master switch assembly held in same position for more than 20 seconds	Multiplex network master switch assembly
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D-DOOR MOTOR (FRONT POWER WINDOW REGULATOR MOTOR ASSEMBLY LH)

DTC No.	DTC Detection Condition	Trouble Area
B2312	• Multiplex network master switch assembly stuck • Multiplex network master switch assembly held in same position for more than 20 seconds	• Multiplex network master switch assembly • Front power window regulator motor assembly LH • Wire harness or connector

P-DOOR MOTOR (FRONT POWER WINDOW REGULATOR MOTOR ASSEMBLY RH)

DTC No.	DTC Detection Condition	Trouble Area
B2312	• Power window regulator switch assembly stuck • Power window regulator switch assembly held in same position for more than 20 seconds	• Front power window regulator switch assembly RH • Front power window regulator motor assembly RH • Wire harness or connector

RL-DOOR MOTOR (REAR POWER WINDOW REGULATOR MOTOR ASSEMBLY LH)

DTC No.	DTC Detection Condition	Trouble Area
B2312	• Power window regulator switch assembly stuck • Power window regulator switch assembly held in same position for more than 20 seconds	• Rear power window regulator switch assembly LH • Rear power window regulator motor assembly LH • Wire harness or connector

RR-DOOR MOTOR (REAR POWER WINDOW REGULATOR MOTOR ASSEMBLY RH)

DTC No.	DTC Detection Condition	Trouble Area
B2312	• Power window regulator switch assembly stuck • Power window regulator switch assembly held in same position for more than 20 seconds	• Rear power window regulator switch assembly RH • Rear power window regulator motor assembly RH • Wire harness or connector

WIRING DIAGRAM

1. for Driver Side

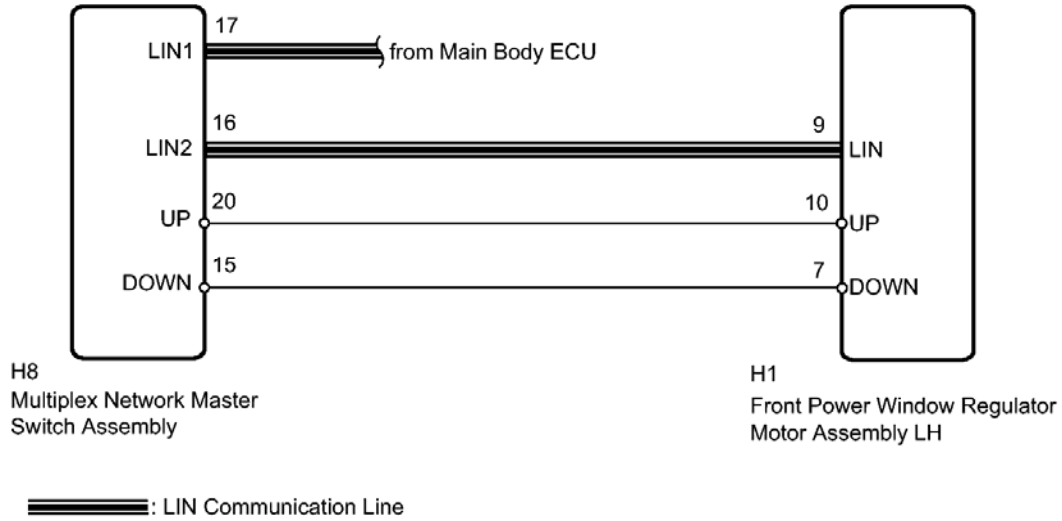


Fig. 1: Power Window Regulator Switch Circuit - Wiring Diagram (1 Of 4)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. for Front Passenger Side

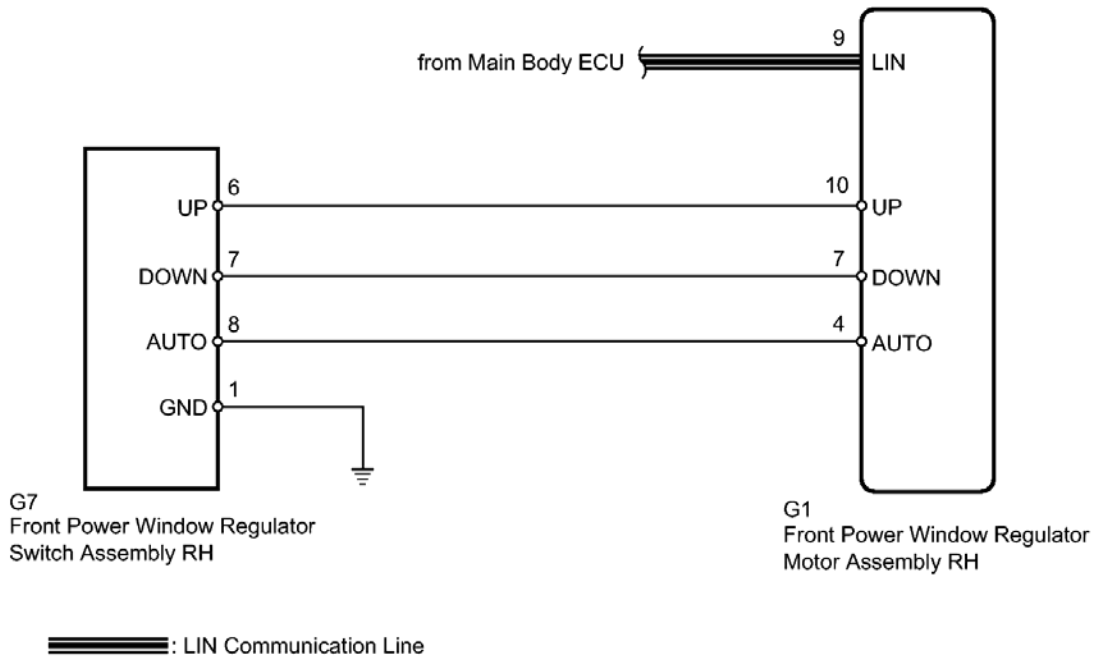


Fig. 2: Power Window Regulator Switch Circuit - Wiring Diagram (2 Of 4)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

3. for Rear LH Side

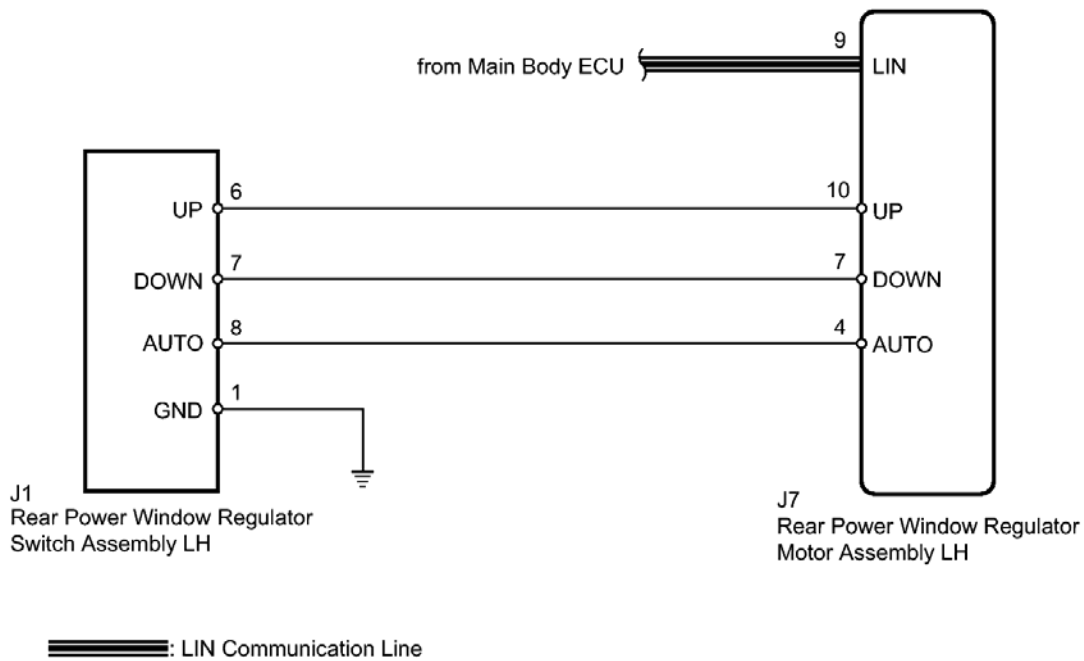


Fig. 3: Power Window Regulator Switch Circuit - Wiring Diagram (3 Of 4)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

4. for Rear RH Side

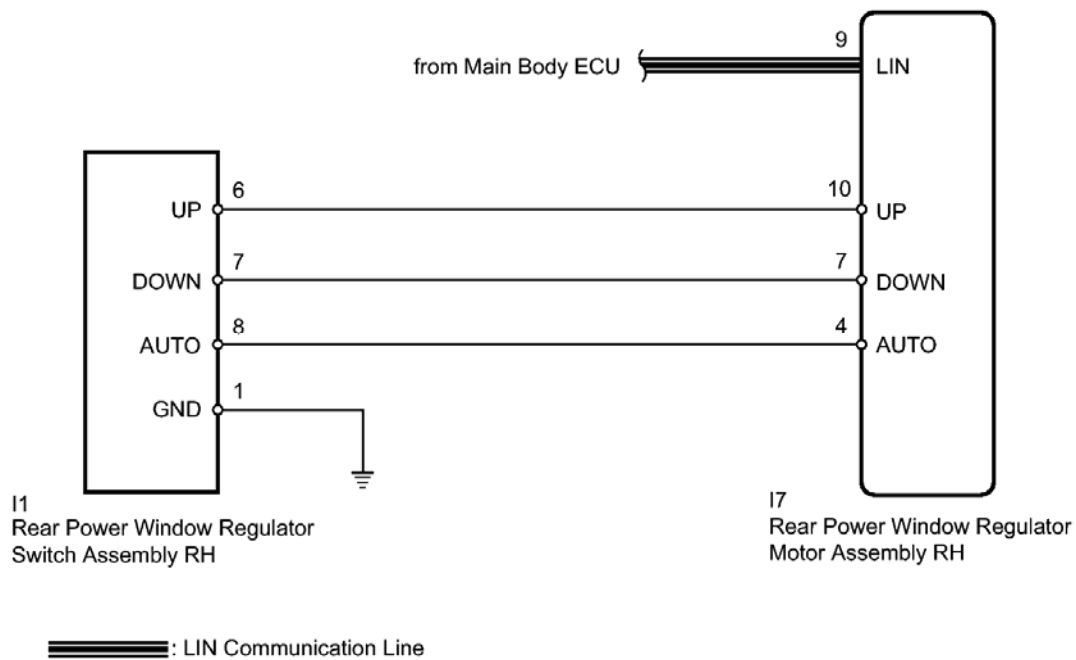


Fig. 4: Power Window Regulator Switch Circuit - Wiring Diagram (4 Of 4)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- When the power window regulator motor assembly is reinstalled or replaced, the power window control system must be initialized.
- After a door glass or a door glass run has been replaced, the jam protection function may operate unexpectedly when the auto up function is used. In such cases, the auto up function can be reinitialized by repeating the following operations at least 5 times:
 - a. Close the power window by fully pulling up the multiplex network master switch assembly or power window regulator switch assembly and holding it at the auto up position.
 - b. Open the power window by fully pushing down the switch.

PROCEDURE

1. CHECK DTC OUTPUT

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

OK

No DTCs output.

NG --> See step 2

OK --> END (DUE TO SWITCH BEING OPERATED FOR 20 SECONDS OR MORE)

2. CHECK DTC

- a. Check for DTC output conditions.

Result

Result	Proceed to
DTC output from multiplex network master switch assembly	A

DTC output from front power window regulator motor assembly LH	B
DTC output from front power window regulator motor assembly RH	C
DTC output from rear power window regulator motor assembly LH	D
DTC output from rear power window regulator motor assembly RH	E

B --> See step 3

C --> See step 5

D --> See step 8

E --> See step 11

A --> See step 14

3. READ VALUE USING TECHSTREAM (D-DOOR MOTOR)

- 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 / D-Door Motor / Data List.
- e. Read the Data List according to the display on the Techstream.

D-DOOR MOTOR (FRONT POWER WINDOW REGULATOR MOTOR ASSEMBLY LH)

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
D Door P/W Up SW	Driver side power window manual up switch signal / ON or OFF	ON: Driver side power window manual up switch operated OFF: Driver side power window manual up switch not operated	-
D Door P/W Down SW	Driver side power window manual down switch signal / ON or OFF	ON: Driver side power window manual down switch operated OFF: Driver side power window manual down switch not operated	-

OK

On the Techstream screen, ON or OFF is displayed accordingly.

NG --> See step 4

OK --> See step 18

4. CHECK HARNESS AND CONNECTOR (MASTER SWITCH - DRIVER SIDE MOTOR)

- Disconnect the multiplex network master switch assembly connector.
- Disconnect the front power window regulator motor assembly LH connector.
- Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
H8-20 (UP) - Body ground	Always	10 kohms or higher
H8-15 (DOWN) - Body ground	Always	10 kohms or higher
H1-10 (UP) - Body ground	Always	10 kohms or higher
H1-7 (DOWN) - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 18

5. READ VALUE USING TECHSTREAM (P-DOOR MOTOR)

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

P-DOOR MOTOR (FRONT POWER WINDOW REGULATOR MOTOR ASSEMBLY RH)

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Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
P Door P/W Auto SW	Front passenger side power window auto up/down switch signal / ON or OFF	ON: Front passenger side power window auto switch operated OFF: Front passenger side power window auto switch not operated	-
P Door P/W Up SW	Front passenger side power window manual up switch signal / ON or OFF	ON: Front passenger side power window manual up switch operated OFF: Front passenger side power window manual up switch not operated	-
P Door P/W Down SW	Front passenger side power window manual down switch signal / ON or OFF	ON: Front passenger side power window manual down switch operated OFF: Front passenger side power window manual down switch not operated	-

	switch signal / ON or OFF	passenger side power window manual down switch not operated	
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OK

On the Techstream screen, ON or OFF is displayed accordingly.

NG --> See step 6

OK --> See step 19

6. INSPECT FRONT POWER WINDOW REGULATOR SWITCH ASSEMBLY RH

- a. Remove the front power window regulator switch assembly RH. Refer to REMOVAL .

*a

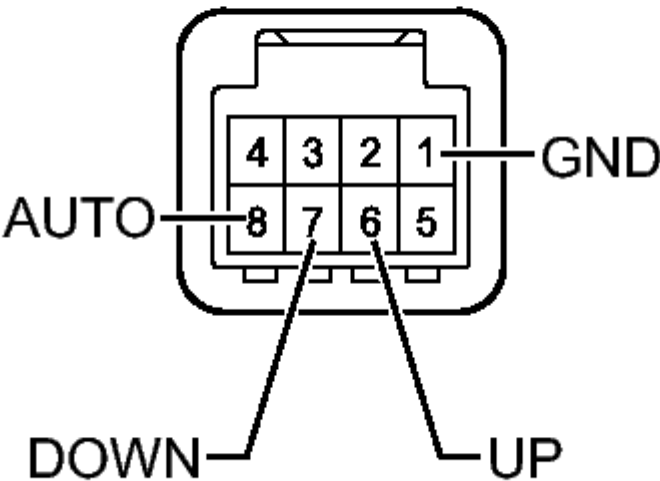


Fig. 5: Inspecting Power Window Regulator Switch Assembly
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

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Tester Connection	Switch Condition	Specified Condition
6 (UP) - 1 (GND)	Auto up or up position	Below 1 ohms
7 (DOWN) - 1 (GND)	Auto down or down position	Below 1 ohms
8 (AUTO) - 1 (GND)	Auto up or auto down position	Below 1 ohms
6 (UP) - 1 (GND)	Free	10 kohms or higher
7 (DOWN) - 1 (GND)	Free	10 kohms or higher
8 (AUTO) - 1 (GND)	Free	10 kohms or higher

TEXT IN ILLUSTRATION

	Component without harness connected (Front
*a	Power Window Regulator Switch Assembly RH)

NG --> See step 15

OK: Go to next step

7. CHECK HARNESS AND CONNECTOR (FRONT RH SIDE SWITCH - FRONT RH SIDE MOTOR)

- Disconnect the front power window regulator motor assembly RH connector.
- Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester	Condition	Specified
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Connection		Condition
G7-6 (UP) - Body ground	Always	10 kohms or higher
G7-7 (DOWN) - Body ground	Always	10 kohms or higher
G7-8 (AUTO) - Body ground	Always	10 kohms or higher
G1-10 (UP) - Body ground	Always	10 kohms or higher
G1-7 (DOWN) - Body ground	Always	10 kohms or higher
G1-4 (AUTO) - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 19

8. READ VALUE USING TECHSTREAM (RL-DOOR MOTOR)

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

RL-DOOR MOTOR (REAR POWER WINDOW REGULATOR MOTOR ASSEMBLY LH)

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
RL Door	Rear LH side power window auto	ON: Rear LH side power window auto switch operated	

P/W Auto SW	up/down switch signal / ON or OFF	OFF: Rear LH side power window auto switch not operated	-
RL Door P/W Up SW	Rear LH side power window manual up switch signal / ON or OFF	ON: Rear LH side power window manual up switch operated OFF: Rear LH side power window manual up switch not operated	-
RL Door P/W Down SW	Rear LH side power window manual down switch signal / ON or OFF	ON: Rear LH side power window manual down switch operated OFF: Rear LH side power window manual down switch not operated	-

OK

On the Techstream screen, ON or OFF is displayed accordingly.

NG --> See step 9

OK --> See step 20

9. INSPECT REAR POWER WINDOW REGULATOR SWITCH ASSEMBLY LH

- a. Remove the rear power window regulator switch assembly LH. Refer to **REMOVAL** .

*a

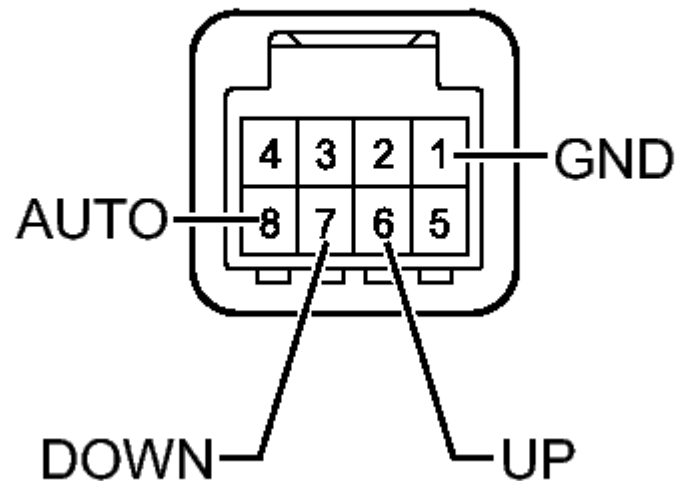


Fig. 6: Inspecting Power Window Regulator Switch Assembly
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
6 (UP) - 1 (GND)	Auto up or up position	Below 1 ohms
7 (DOWN) - 1 (GND)	Auto down or down position	Below 1 ohms
8 (AUTO) - 1 (GND)	Auto up or auto down position	Below 1 ohms
6 (UP) - 1 (GND)	Free	10 kohms or higher
7 (DOWN) - 1 (GND)	Free	10 kohms or higher

8 (AUTO) - 1 (GND)	Free	10 kohms or higher
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TEXT IN ILLUSTRATION

*a	Component without harness connected (Rear Power Window Regulator Switch Assembly LH)
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NG --> See step 16

OK: Go to next step

10. CHECK HARNESS AND CONNECTOR (REAR LH SWITCH - REAR LH MOTOR)

- Disconnect the rear power window regulator motor assembly LH connector.
- Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
J1-6 (UP) - Body ground	Always	10 kohms or higher
J1-7 (DOWN) - Body ground	Always	10 kohms or higher
J1-8 (AUTO) - Body ground	Always	10 kohms or higher
J7-10 (UP) - Body ground	Always	10 kohms or higher
J7-7 (DOWN) - Body ground	Always	10 kohms or higher

J7-4 (AUTO) - Body ground	Always	10 kohms or higher
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NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 20

11. **READ VALUE USING TECHSTREAM (RR-DOOR MOTOR)**

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

RR-DOOR MOTOR (REAR POWER WINDOW REGULATOR MOTOR ASSEMBLY RH)

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
RR Door P/W Auto SW	Rear RH side power window auto up/down switch signal / ON or OFF	ON: Rear RH side power window auto switch operated OFF: Rear RH side power window auto switch not operated	-
RR Door P/W Up SW	Rear RH side power window manual up switch signal / ON or OFF	ON: Rear RH side power window manual up switch operated OFF: Rear RH side power window manual up switch not	-

		operated	
RR Door P/W Down SW	Rear RH side power window manual down switch operated OFF: Rear switch signal / ON or OFF	ON: Rear RH side power window manual down switch operated OFF: Rear RH side power window manual down switch not operated	-

OK

On the Techstream screen, ON or OFF is displayed accordingly.

NG --> See step 12

OK --> See step 21

12. INSPECT REAR POWER WINDOW REGULATOR SWITCH ASSEMBLY RH

- Remove the rear power window regulator switch assembly RH. Refer to **REMOVAL** .

*a

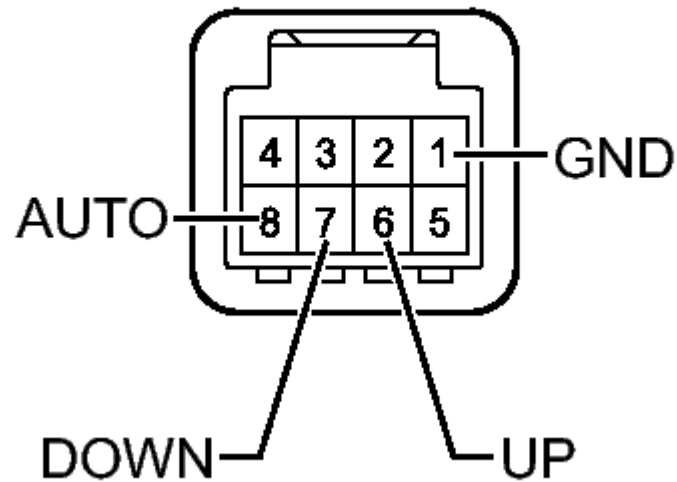


Fig. 7: Inspecting Power Window Regulator Switch Assembly
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
6 (UP) - 1 (GND)	Auto up or up position	Below 1 ohms
7 (DOWN) - 1 (GND)	Auto down or down position	Below 1 ohms
8 (AUTO) - 1 (GND)	Auto up or auto down position	Below 1 ohms
6 (UP) - 1 (GND)	Free	10 kohms or higher
7 (DOWN) - 1 (GND)	Free	10 kohms or higher
8 (AUTO) - 1 (GND)	Free	10 kohms or higher

TEXT IN ILLUSTRATION

	Component without harness connected (Rear Power Window Regulator Switch Assembly RH)
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NG --> See step 17

OK: Go to next step

13. CHECK HARNESS AND CONNECTOR (REAR RH SWITCH - REAR RH MOTOR)

- Disconnect the rear power window regulator motor assembly RH connector.
- Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
I1-6 (UP) - Body ground	Always	10 kohms or higher
I1-7 (DOWN) - Body ground	Always	10 kohms or higher
I1-8 (AUTO) - Body ground	Always	10 kohms or higher
I7-10 (UP) - Body ground	Always	10 kohms or higher
I7-7 (DOWN) - Body ground	Always	10 kohms or higher
I7-4 (AUTO) - Body	Always	10 kohms or higher



NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 21

14. **REPLACE MULTIPLEX NETWORK MASTER SWITCH ASSEMBLY. Refer to REMOVAL**
15. **REPLACE FRONT POWER WINDOW REGULATOR SWITCH ASSEMBLY RH. Refer to REMOVAL**
16. **REPLACE REAR POWER WINDOW REGULATOR SWITCH ASSEMBLY LH. Refer to REMOVAL**
17. **REPLACE REAR POWER WINDOW REGULATOR SWITCH ASSEMBLY RH. Refer to REMOVAL**
18. **REPLACE FRONT POWER WINDOW REGULATOR MOTOR ASSEMBLY LH. Refer to REMOVAL**
19. **REPLACE FRONT POWER WINDOW REGULATOR MOTOR ASSEMBLY RH. Refer to REMOVAL**
20. **REPLACE REAR POWER WINDOW REGULATOR MOTOR ASSEMBLY LH. Refer to REMOVAL**
21. **REPLACE REAR POWER WINDOW REGULATOR MOTOR ASSEMBLY RH. Refer to REMOVAL**

DTC B2313: GLASS POSITION INITIALIZATION INCOMPLETE

DESCRIPTION

The power window regulator motor assembly is operated by the multiplex network master switch assembly or power window regulator switch assembly. The power window regulator motor assembly has motor, regulator and ECU functions.

When the ECU determines that the power window regulator motor assembly has not been initialized, DTC B2313 is set.

HINT:

DTC B2313 can be stored in each power window regulator motor assembly (power window ECU).

D-DOOR MOTOR (FRONT POWER WINDOW REGULATOR MOTOR ASSEMBLY LH)

DTC No.	DTC Detection Condition	Trouble Area
B2313	- Power window regulator motor assembly not initialized - Power window regulator motor assembly malfunctions	- Front power window regulator motor assembly LH not initialized - Front power window regulator motor assembly LH

P-DOOR MOTOR (FRONT POWER WINDOW REGULATOR MOTOR ASSEMBLY RH)

DTC No.	DTC Detection Condition	Trouble Area
B2313	• Power window regulator motor assembly not initialized • Power window regulator motor assembly malfunctions	• Front power window regulator motor assembly RH not initialized • Front power window regulator motor assembly RH

RL-DOOR MOTOR (REAR POWER WINDOW REGULATOR MOTOR ASSEMBLY LH)

DTC No.	DTC Detection Condition	Trouble Area
B2313	• Power window regulator motor assembly not initialized • Power window regulator motor assembly malfunctions	• Rear power window regulator motor assembly LH not initialized • Rear power window regulator motor assembly LH

RR-DOOR MOTOR (REAR POWER WINDOW REGULATOR MOTOR ASSEMBLY RH)

DTC No.	DTC Detection Condition	Trouble Area
B2313	• Power window regulator motor assembly not initialized • Power window regulator motor assembly malfunctions	• Rear power window regulator motor assembly RH not initialized • Rear power window regulator motor assembly RH

INSPECTION PROCEDURE**NOTE:**

- When the power window regulator motor assembly is reinstalled or replaced, the power window control system must be initialized.
- After a door glass or a door glass run has been replaced, the jam protection function may operate unexpectedly when the auto up function is used. In such cases, the auto up function can be reinitialized by repeating the following operations at least 5 times:
 - a. Close the power window by fully pulling up the multiplex network master switch assembly or power window regulator switch assembly and holding it at the auto up position.
 - b. Open the power window by fully pushing down the switch.

PROCEDURE**1. PERFORM INITIALIZATION (APPLICABLE LOCATION)**

- a. Turn the ignition switch to ON.
- b. Initialize the power window regulator motor assembly. Refer to **INITIALIZATION**.

HINT:

Initialize the power window regulator motor assembly that has DTC B2313 stored in its ECU.

NEXT: Go to next step

2. CHECK DTC OUTPUT

- a. Turn the ignition switch off.
- b. Wait for at least 10 seconds, and then turn the ignition switch to ON.
- c. Check for DTCs. Refer to **DTC CHECK / CLEAR**.

HINT:

Check for DTCs for the power window regulator motor assembly that has DTC B2313 stored in its ECU.

OK

B2313 output does not recur.

Result

Result	Proceed to
OK	A
NG (Driver side power window)	B
NG (Front passenger side power window)	C
NG (Rear LH side power window)	D
NG (Rear RH side power window)	E

B --> See step 3

C --> See step 4

D --> See step 5

E --> See step 6

A --> END (POWER WINDOW CONTROL SYSTEM HAS NOT BEEN INITIALIZED)

3. **REPLACE FRONT POWER WINDOW REGULATOR MOTOR ASSEMBLY LH. Refer to REMOVAL**
4. **REPLACE FRONT POWER WINDOW REGULATOR MOTOR ASSEMBLY RH. Refer to REMOVAL**
5. **REPLACE REAR POWER WINDOW REGULATOR MOTOR ASSEMBLY LH. Refer to REMOVAL**
6. **REPLACE REAR POWER WINDOW REGULATOR MOTOR ASSEMBLY RH. Refer to REMOVAL**

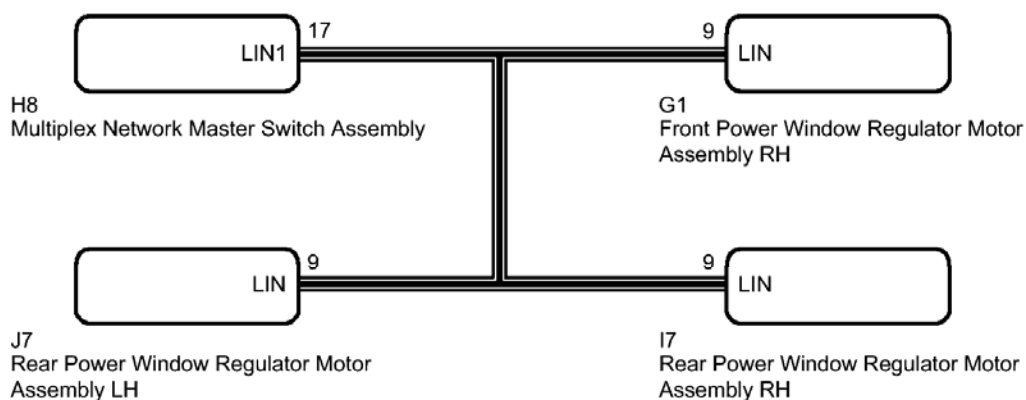
SYMPTOM TESTS

Remote Up / Down Function does not Operate

DESCRIPTION

When the ignition switch is ON, the multiplex network master switch assembly sends remote up/down signals to each power window regulator motor assembly via the LIN communication line.

WIRING DIAGRAM



==== : LIN Communication Line

Fig. 8: Multiplex Network Master Switch Assembly - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE: The power window control system uses a multiplex communication system (LIN communication system). Inspect the communication function by following How to Proceed with Troubleshooting. Refer to HOW TO PROCEED WITH TROUBLESHOOTING . Troubleshoot the power window control system after confirming that the communication system is functioning properly.

PROCEDURE

1. READ VALUE USING TECHSTREAM (MAIN BODY)

- 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 (MAIN BODY ECU)

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Communication P-Door Motor	Connection status between front power window regulator motor assembly RH and main body ECU / OK or STOP	OK: Normal communication STOP: Communication stopped	-
Communication RL-Door Motor	Connection status between rear power window regulator motor assembly LH and main body ECU / OK or STOP	OK: Normal communication STOP: Communication stopped	-
Communication RR-Door	Connection status between rear power window regulator motor	OK: Normal communication STOP:	-

Motor	assembly RH and main body ECU / OK or STOP	Communication stopped	
Communication Master SW	Connection status between multiplex network master switch and main body ECU / OK or STOP	OK: Normal communication STOP: Communication stopped	-

OK

On the Techstream screen, OK is displayed.

NG --> See step 3

OK: Go to next step

2. READ VALUE USING TECHSTREAM (MASTER SWITCH)

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

MASTER SWITCH (MULTIPLEX NETWORK MASTER SWITCH ASSEMBLY)

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
P Door P/W Auto SW	Front passenger side power window auto up/down switch signal / ON or OFF	ON: Front passenger side power window auto switch operated OFF: Front passenger side power window auto switch not operated	-
		ON: Rear	

RL Door P/W Auto SW	Rear LH side power window auto up/down switch signal / ON or OFF	LH side power window auto switch operated OFF: Rear LH side power window auto switch not operated	-
RR Door P/W Auto SW	Rear RH side power window auto up/down switch signal / ON or OFF	ON: Rear RH side power window auto switch operated OFF: Rear RH side power window auto switch not operated	-
P Door P/W Up SW	Front passenger side power window manual up switch signal / ON or OFF	ON: Front passenger side power window manual up switch operated OFF: Front passenger side power window manual up switch not operated	-
		ON: Rear LH side power	

RL Door P/W up switch	Rear LH side power window manual up switch signal / ON or OFF	window manual up switch operated OFF: Rear LH side power window manual up switch not operated	-
RR Door P/W up switch	Rear RH side power window manual up switch signal / ON or OFF	ON: Rear RH side power window manual up switch operated OFF: Rear RH side power window manual up switch not operated	-
P Door P/W Down SW	Front passenger side power window manual down switch signal / ON or OFF	ON: Front passenger side power window manual down switch operated OFF: Front passenger side power window manual down switch not operated	-
		ON: Rear LH side power	

RL Door P/W Down SW	Rear LH side power window manual down switch signal / ON or OFF	window manual down switch operated OFF: Rear LH side power window manual down switch not operated	-
RR Door P/W Down SW	Rear RH side power window manual down switch signal / ON or OFF	ON: Rear RH side power window manual down switch operated OFF: Rear RH side power window manual down switch not operated	-
Window Lock Switch Status	Window lock switch signal / ON or OFF	ON: Window lock switch LOCK position OFF: Window lock switch UNLOCK position	-

OK

On the Techstream screen, ON or OFF is displayed accordingly.

Result

Result	Proceed to
NG	A
OK (Front passenger side power window remote up/down function does not operate)	B
OK (Rear LH side power window remote up/down function does not operate)	C
OK (Rear RH side power window remote up/down function does not operate)	D

B --> See step 5

C --> See step 7

D --> See step 6

A --> See step 4

3. **GO TO LIN COMMUNICATION SYSTEM (Proceed to How to Proceed with Troubleshooting). Refer to HOW TO PROCEED WITH TROUBLESHOOTING**
4. **REPLACE MULTIPLEX NETWORK MASTER SWITCH ASSEMBLY. Refer to REMOVAL**
5. **REPLACE FRONT POWER WINDOW REGULATOR MOTOR ASSEMBLY RH. Refer to REMOVAL**

6. **REPLACE REAR POWER WINDOW REGULATOR MOTOR ASSEMBLY RH. Refer to REMOVAL**
7. **REPLACE REAR POWER WINDOW REGULATOR MOTOR ASSEMBLY LH. Refer to REMOVAL**

Driver Side Power Window does not Operate with Power Window Master Switch

DESCRIPTION

When the engine is running or the ignition switch is ON, the front power window regulator motor assembly LH is operated by the multiplex network master switch assembly. The front power window regulator motor assembly LH has motor, regulator, and ECU functions.

HINT:

If the pulse sensor built into the front power window regulator motor assembly LH malfunctions, the power window control system enters fail-safe mode. The remote up/down and auto up/down functions cannot be operated during fail-safe mode. However, the power window can be closed by holding the multiplex network master switch assembly at the auto up position, and opened manually by pushing down the multiplex network master switch assembly.

WIRING DIAGRAM

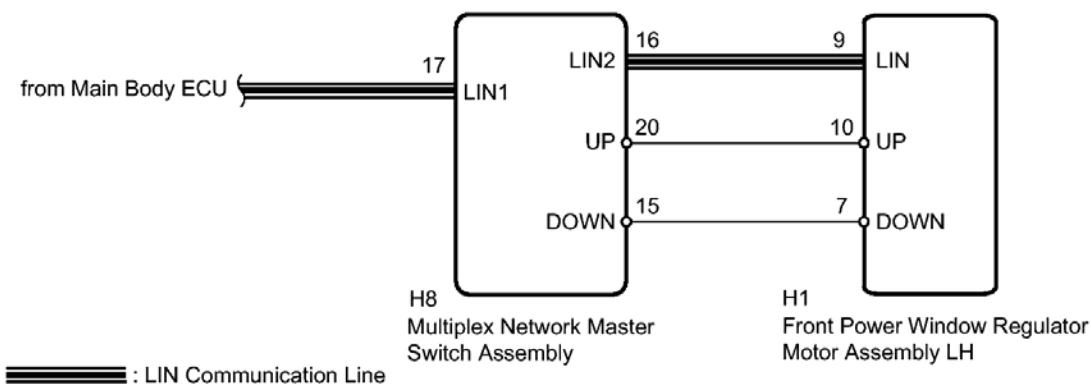


Fig. 9: Front Power Window Regulator Motor Assembly LH - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- The power window control system uses a multiplex communication system (LIN communication system). Inspect the communication function by following How to Proceed with Troubleshooting. Refer to HOW TO PROCEED WITH TROUBLESHOOTING. Troubleshoot the power window control system after confirming that the communication system is functioning properly.

- When the front power window regulator motor assembly LH is reinstalled or replaced, the power window control system must be initialized.
- After a door glass or a door glass run has been replaced, the jam protection function may operate unexpectedly when the auto up function is used. In such cases, the auto up function can be reinitialized by repeating the following operations at least 5 times:
 - a. Close the power window by fully pulling up the multiplex network master switch assembly and holding it at the auto up position.
 - b. Open the power window by fully pushing down the multiplex network master switch assembly.
- When the ECU determines that the front power window regulator motor assembly LH has a malfunction, DTC B2311 is set.

PROCEDURE

1. READ VALUE USING TECHSTREAM (MAIN BODY)

- 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. Read the Data List according to the display on the Techstream.

MAIN BODY (MAIN BODY ECU)

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Communication D-Door Motor	Connection status between front power window regulator motor assembly LH and main body ECU / OK or STOP	OK: Normal communication STOP: Communication stopped	-

OK

On the Techstream screen, OK is displayed.

NG --> See step 9

OK: Go to next step

2. READ VALUE USING TECHSTREAM (D-DOOR MOTOR)

- Enter the following menus: Body Electrical / D-Door Motor / Data List.
- Read the Data List according to the display on the Techstream.

D-DOOR MOTOR (FRONT POWER WINDOW REGULATOR MOTOR ASSEMBLY LH)

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
D Door P/W Up SW	Driver side power window manual up switch signal / ON or OFF	ON: Driver side power window manual up switch operated OFF: Driver side power window manual up switch not operated	-
D Door P/W Down SW	Driver side power window manual down switch signal / ON or OFF	ON: Driver side power window manual down switch operated OFF: Driver side power window manual down switch not operated	-

OK

On the Techstream screen, ON or OFF is displayed accordingly.

NG --> See step 4

OK: Go to next step

3. PERFORM ACTIVE TEST USING TECHSTREAM (D-DOOR MOTOR)

- a. Enter the following menus: Body Electrical / D-Door Motor / Active Test.
- b. Perform the Active Test according to the display on the Techstream.

D-DOOR MOTOR (FRONT POWER WINDOW REGULATOR MOTOR ASSEMBLY LH)

Tester Display	Test Part	Control Range	Diagnostic Note
Power Window	Power window	OFF / UP / DOWN	-

OK

Driver side power window operates normally.

WARNING: Be careful to avoid injuries as this test causes vehicle parts to move. During the Active Test, the jam protection function will not operate.

NG --> See step 7

OK --> See step 8

4. CHECK HARNESS AND CONNECTOR (MASTER SWITCH - DRIVER SIDE MOTOR)

- a. Disconnect the multiplex network master switch assembly connector.
- b. Disconnect the front power window regulator motor assembly LH connector.
- c. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
H8-20 (UP) - H1-10 (UP)	Always	Below 1 ohms
H8-15 (DOWN) - H1-7 (DOWN)	Always	Below 1 ohms
H8-20 (UP) - Body ground	Always	10 kohms or higher

H8-15 (DOWN) - Body ground	Always	10 kohms or higher
H1-10 (UP) - Body ground	Always	10 kohms or higher
H1-7 (DOWN) - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

5. REPLACE MULTIPLEX NETWORK MASTER SWITCH ASSEMBLY

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

NEXT: Go to next step

6. CHECK MANUAL UP / DOWN FUNCTION (for Driver Side)

- a. Check that the driver side door power window moves when the manual up/down function of the multiplex network master switch assembly is operated. Refer to **OPERATION CHECK** .

OK

Driver side manual up/down function is normal.

NG --> See step 7

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

7. REPLACE FRONT POWER WINDOW REGULATOR MOTOR ASSEMBLY LH. Refer to REMOVAL

8. REPLACE MAIN BODY ECU. Refer to REMOVAL

9. GO TO LIN COMMUNICATION SYSTEM (Proceed to How to Proceed with Troubleshooting). Refer to HOW TO PROCEED WITH TROUBLESHOOTING

Front Passenger Side Power Window does not Operate with Front Passenger Side Power Window Switch

DESCRIPTION

When the engine is running or the ignition switch is ON, the front power window regulator motor assembly RH is operated by the front power window regulator switch assembly RH. The front power window regulator motor assembly RH has motor, regulator, and ECU functions.

HINT:

If the pulse sensor built into the front power window regulator motor assembly RH malfunctions, the power window control system enters fail-safe mode. The remote up/down and auto up/down functions cannot be operated during fail-safe mode. However, the power window can be closed by holding the front power window regulator switch assembly RH at the auto up position, and opened manually by pushing down the front power window regulator switch assembly RH.

WIRING DIAGRAM

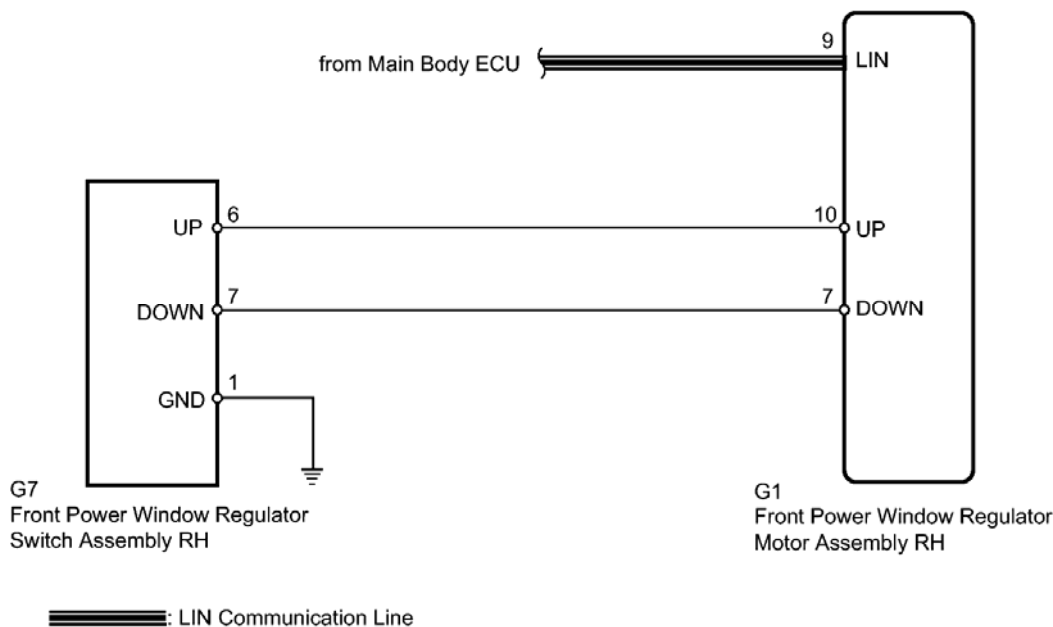


Fig. 10: Front Passenger Side Power Window Switch RH - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- The power window control system uses a multiplex communication system (LIN communication system). Inspect the communication function by following How to Proceed with Troubleshooting. Refer to **HOW TO PROCEED WITH TROUBLESHOOTING** . Troubleshoot the power window control system after confirming that the communication system is functioning properly.
- When the front power window regulator motor assembly RH is reinstalled or replaced, the power window control system must be initialized.
- After a door glass or a door glass run has been replaced, the jam protection function may operate unexpectedly when the auto up function is used. In such cases, the auto up function can be reinitialized by

repeating the following operations at least 5 times:

- a. Close the power window by fully pulling up the front power window regulator switch assembly RH and holding it at the auto up position.
 - b. Open the power window by fully pushing down the front power window regulator switch assembly RH.
- When the ECU determines that the front power window regulator motor assembly RH has a malfunction, DTC B2311 is set.

PROCEDURE

1. READ VALUE USING TECHSTREAM (MAIN BODY)

- 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. Read the Data List according to the display on the Techstream.

MAIN BODY (MAIN BODY ECU)

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Communication P-Door Motor	Connection status between front power window regulator motor assembly RH and main body ECU / OK or STOP	OK: Normal communication STOP: Communication stopped	-

OK

On the Techstream screen, OK is displayed.

NG --> See step 8

OK: Go to next step

2. READ VALUE USING TECHSTREAM (P-DOOR MOTOR)

- a. Enter the following menus: Body Electrical / P-Door Motor / Data List.
- b. Read the Data List according to the display on the Techstream.

P-DOOR MOTOR (FRONT POWER WINDOW REGULATOR MOTOR ASSEMBLY RH)

--	--	--	--

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
P Door P/W Up SW	Front passenger side power window manual up switch signal / ON or OFF	ON: Front passenger side power window manual up switch operated OFF: Front passenger power window manual up switch not operated	-
P Door P/W Down SW	Front passenger side power window manual down switch signal / ON or OFF	ON: Front passenger side power window manual down switch operated OFF: Front passenger power window manual down switch not operated	-

OK

On the Techstream screen, ON or OFF is displayed accordingly.

NG --> See step 4

OK: Go to next step

3. PERFORM ACTIVE TEST USING TECHSTREAM (P-DOOR MOTOR)

- Enter the following menus: Body Electrical / P-Door Motor / Active Test.

- b. Perform the Active Test according to the display on the Techstream.

P-DOOR MOTOR (FRONT POWER WINDOW REGULATOR MOTOR ASSEMBLY RH)

Tester Display	Test Part	Control Range	Diagnostic Note
Power Window	Power window	OFF / UP / DOWN	-

OK

Front passenger side power window operates normally.

WARNING: Be careful to avoid injuries as this test causes vehicle parts to move. During the Active Test, the jam protection function will not operate.

NG --> See step 6

OK --> See step 9

4. INSPECT FRONT POWER WINDOW REGULATOR SWITCH ASSEMBLY RH

- a. Remove the front power window regulator switch assembly RH. Refer to REMOVAL .

*a

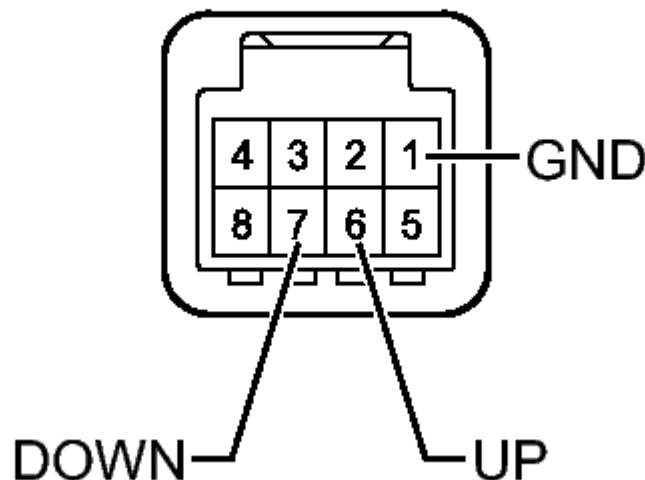


Fig. 11: Inspecting Power Window Regulator Switch Assembly
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
6 (UP) - 1 (GND)	Auto up or up position	Below 1 ohms
7 (DOWN) - 1 (GND)	Auto down or down position	Below 1 ohms

TEXT IN ILLUSTRATION

*a	Component without harness connected (Front Power Window Regulator Switch Assembly RH)
----	---

NG --> See step 7

OK: Go to next step

5. CHECK HARNESS AND CONNECTOR (FRONT RH SIDE SWITCH - MOTOR AND BODY GROUND)

- Disconnect the front power window regulator motor assembly RH connector.
- Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
G7-6 (UP) - G1-10 (UP)	Always	Below 1 ohms
G7-7 (DOWN) - G1-7	Always	Below 1 ohms

(DOWN)		
G7-1 (GND) - Body ground	Always	Below 1 ohms
G7-6 (UP) - Body ground	Always	10 kohms or higher
G7-7 (DOWN) - Body ground	Always	10 kohms or higher
G1-10 (UP) - Body ground	Always	10 kohms or higher
G1-7 (DOWN) - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 6

6. **REPLACE FRONT POWER WINDOW REGULATOR MOTOR ASSEMBLY RH. Refer to REMOVAL**
7. **REPLACE FRONT POWER WINDOW REGULATOR SWITCH ASSEMBLY RH. Refer to REMOVAL**
8. **GO TO LIN COMMUNICATION SYSTEM (Proceed to How to Proceed with Troubleshooting). Refer to HOW TO PROCEED WITH TROUBLESHOOTING**
9. **REPLACE MAIN BODY ECU. Refer to REMOVAL**

Rear Power Window LH does not Operate with Rear Power Window Switch LH

DESCRIPTION

When the engine is running or the ignition switch is ON, the rear power window regulator motor assembly LH is operated by the rear power window regulator switch assembly LH. The power window regulator motor has motor, regulator, and ECU functions.

HINT:

If the pulse sensor built into the rear power window regulator motor assembly LH malfunctions, the power window control system enters fail-safe mode. The remote up/down and auto up/down functions cannot be operated during fail-safe mode. However, the power window can be closed by holding the rear power window regulator switch assembly LH at the auto up position, and opened manually by pushing down the rear power

window regulator switch assembly LH.

WIRING DIAGRAM

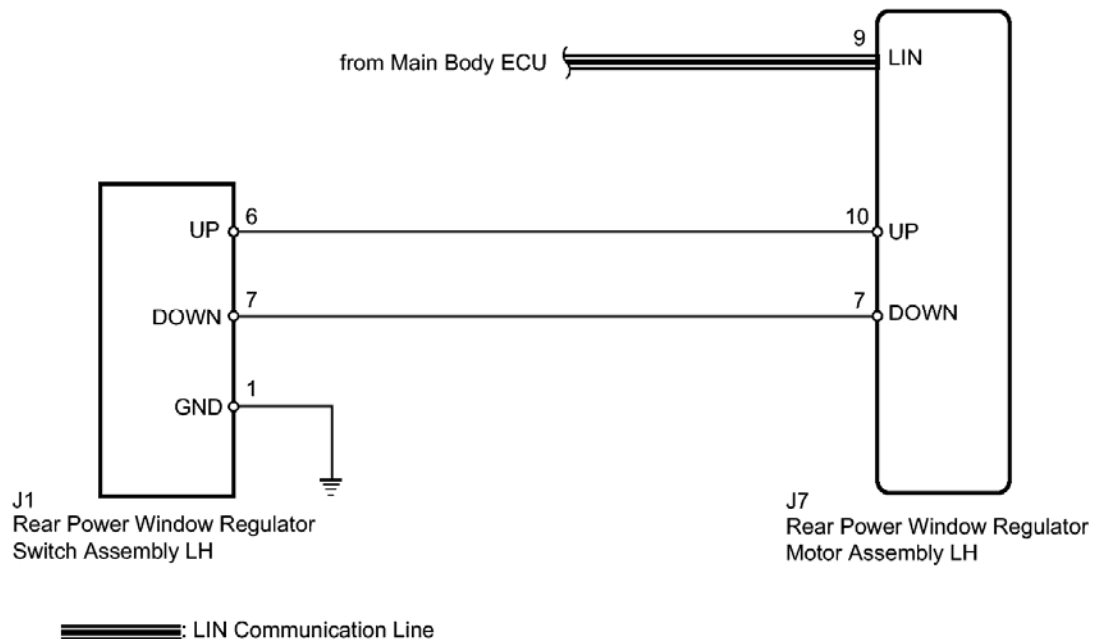


Fig. 12: Rear Power Window Regulator Switch LH - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- The power window control system uses a multiplex communication system (LIN communication system). Inspect the communication function by following How to Proceed with Troubleshooting. Refer to HOW TO PROCEED WITH TROUBLESHOOTING . Troubleshoot the power window control system after confirming that the communication system is functioning properly.
- When the rear power window regulator motor assembly LH is reinstalled or replaced, the power window control system must be initialized.
- After a door glass or a door glass run has been replaced, the jam protection function may operate unexpectedly when the auto up function is used. In such cases, the auto up function can be reinitialized by repeating the following operations at least 5 times:
 - a. Close the power window by fully pulling up the rear power window regulator switch assembly LH and holding it at the auto up position.
 - b. Open the power window by fully pushing down the rear power window regulator switch assembly LH.

- When the ECU determines that the rear power window regulator motor assembly LH has a malfunction, DTC B2311 is set.

PROCEDURE

1. READ VALUE USING TECHSTREAM (MAIN BODY)

- 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 (MAIN BODY ECU)

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Communication RL-Door Motor	Connection status between rear power window regulator motor assembly LH and main body ECU / OK or STOP	OK: Normal communication STOP: Communication stopped	-

OK

On the Techstream screen, OK is displayed.

NG --> See step 8

OK: Go to next step

2. READ VALUE USING TECHSTREAM (RL-DOOR MOTOR)

- Enter the following menus: Body Electrical / RL-Door Motor / Data List.
- Read the Data List according to the display on the Techstream.

RL-DOOR MOTOR (REAR POWER WINDOW REGULATOR MOTOR ASSEMBLY LH)

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
		ON: Rear LH side power	

RL Door P/W Up SW	Rear LH side power window manual up switch signal / ON or OFF	window manual up switch operated OFF: Rear LH side power window manual up switch not operated	-
RL Door P/W Down SW	Rear LH side power window manual down switch signal / ON or OFF	ON: Rear LH side power window manual down switch operated OFF: Rear LH side power window manual down switch not operated	-

OK

On the Techstream screen, ON or OFF is displayed accordingly.

NG --> See step 4

OK: Go to next step

3. PERFORM ACTIVE TEST USING TECHSTREAM (RL-DOOR MOTOR)

- Enter the following menus: Body Electrical / RL-Door Motor / Active Test.
- Perform the Active Test according to the display on the Techstream.

RL-DOOR MOTOR (REAR POWER WINDOW REGULATOR MOTOR ASSEMBLY LH)

Tester Display	Test Part	Control Range	Diagnostic Note
Power Window	Power window	OFF / UP / DOWN	-

OK

Rear LH side power window operates normally.

WARNING: Be careful to avoid injuries as this test causes vehicle parts to move. During the Active Test, the jam protection function will not operate.

NG --> See step 6

OK --> See step 9

4. **INSPECT REAR POWER WINDOW REGULATOR SWITCH ASSEMBLY LH**

- a. Remove the rear power window regulator switch assembly LH. Refer to **REMOVAL** .

*a

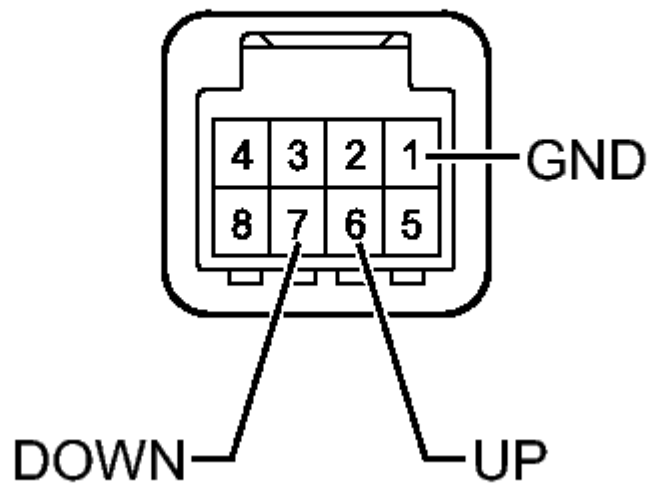


Fig. 13: Inspecting Power Window Regulator Switch Assembly
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
6 (UP) - 1 (GND)	Auto up or up	Below 1 ohms

	position	
7 (DOWN) - 1 (GND)	Auto down or down position	Below 1 ohms

TEXT IN ILLUSTRATION

*a	Component without harness connected (Rear Power Window Regulator Switch Assembly LH)
----	--

NG --> See step 7

OK: Go to next step

5. CHECK HARNESS AND CONNECTOR (REAR LH SIDE SWITCH - REAR LH SIDE MOTOR AND BODY GROUND)

- Disconnect the rear power window regulator motor assembly LH connector.
- Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
J1-6 (UP) - J7-10 (UP)	Always	Below 1 ohms
J1-7 (DOWN) - J7-7 (DOWN)	Always	Below 1 ohms
J1-1 (GND) - Body ground	Always	Below 1 ohms
J1-6 (UP) - Body ground	Always	10 kohms or higher
J1-7		

(DOWN) - Body ground	Always	10 kohms or higher
J7-10 (UP) - Body ground	Always	10 kohms or higher
J7-7 (DOWN) - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 6

6. **REPLACE REAR POWER WINDOW REGULATOR MOTOR ASSEMBLY LH. Refer to REMOVAL**
7. **REPLACE REAR POWER WINDOW REGULATOR SWITCH ASSEMBLY LH. Refer to REMOVAL**
8. **GO TO LIN COMMUNICATION SYSTEM (Proceed to How to Proceed with Troubleshooting). Refer to HOW TO PROCEED WITH TROUBLESHOOTING**
9. **REPLACE MAIN BODY ECU. Refer to REMOVAL**

Rear Power Window RH does not Operate with Rear Power Window Switch RH

DESCRIPTION

When the engine is running or the ignition switch is ON, the rear power window regulator motor assembly RH is operated by the rear power window regulator switch assembly RH. The rear power window regulator motor assembly RH has motor, regulator, and ECU functions.

HINT:

If the pulse sensor built into the rear power window regulator motor RH malfunctions, the power window control system enters fail-safe mode. The remote up/down and auto up/down functions cannot be operated during fail-safe mode. However, the power window can be closed by holding the rear power window regulator switch assembly RH at the auto up position, and opened manually by pushing down the rear power window regulator switch assembly RH.

WIRING DIAGRAM

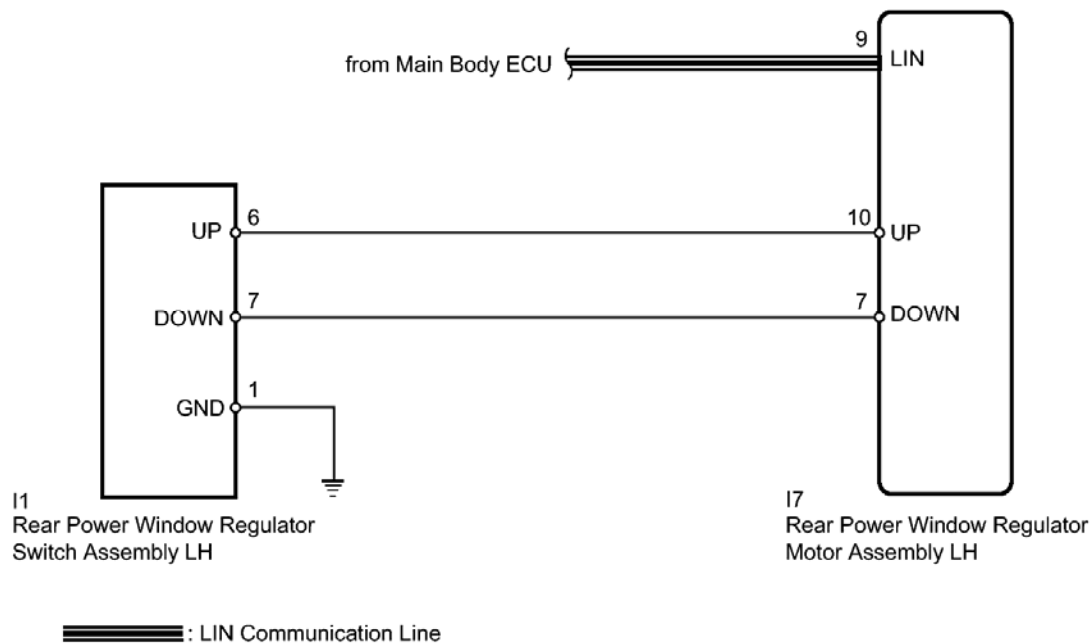


Fig. 14: Rear Power Window Regulator Switch RH - Wiring Diagram

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

INSPECTION PROCEDURE

NOTE:

- The power window control system uses a multiplex communication system (LIN communication system). Inspect the communication function by following How to Proceed with Troubleshooting. Refer to HOW TO PROCEED WITH TROUBLESHOOTING . Troubleshoot the power window control system after confirming that the communication system is functioning properly.
- When the rear power window regulator motor assembly RH is reinstalled or replaced, the power window control system must be initialized.
- After a door glass or a door glass run has been replaced, the jam protection function may operate unexpectedly when the auto up function is used. In such cases, the auto up function can be reinitialized by repeating the following operations at least 5 times:
 - a. Close the power window by fully pulling up the rear power window regulator switch assembly RH and holding it at the auto up position.
 - b. Open the power window by fully pushing down the rear power window regulator switch assembly RH.
- When the ECU determines that the rear power window regulator motor assembly RH has a malfunction, DTC B2311 is set.

PROCEDURE

1. READ VALUE USING TECHSTREAM (MAIN BODY)

- 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 (MAIN BODY ECU)

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Communication RR-Door Motor	Connection status between rear power window regulator motor assembly RH and main body ECU / OK or STOP	OK: Normal communication STOP: Communication stopped	-

OK

On the Techstream screen, OK is displayed.

NG --> See step 8

OK: Go to next step

2. READ VALUE USING TECHSTREAM (RR-DOOR MOTOR)

- Enter the following menus: Body Electrical / RR-Door Motor / Data List.
- Read the Data List according to the display on the Techstream.

RR-DOOR MOTOR (REAR POWER WINDOW REGULATOR MOTOR ASSEMBLY RH)

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
RR Door P/W Up SW	Rear RH side power window manual up switch signal /	ON: Rear RH side power window manual up switch operated OFF: Rear RH side	-

	ON or OFF	power window manual up switch not operated	
RR Door P/W Down SW	Rear RH side power window manual down switch signal / ON or OFF	ON: Rear RH side power window manual down switch operated OFF: Rear RH side power window manual down switch not operated	-

OK

On the Techstream screen, ON or OFF is displayed accordingly.

NG --> See step 4

OK: Go to next step

3. PERFORM ACTIVE TEST USING TECHSTREAM (RR-DOOR MOTOR)

- Enter the following menus: Body Electrical / RR-Door Motor / Active Test.
- Perform the Active Test according to the display on the Techstream.

RR-DOOR MOTOR (REAR POWER WINDOW REGULATOR MOTOR ASSEMBLY LH)

Tester Display	Test Part	Control Range	Diagnostic Note
Power Window	Power window	OFF / UP / DOWN	-

OK

Rear RH side power window operates normally.

WARNING: Be careful to avoid injuries as this test causes vehicle parts to

move. During the Active Test, the jam protection function will not operate.

NG --> See step 6

OK --> See step 9

4. INSPECT REAR POWER WINDOW REGULATOR SWITCH ASSEMBLY RH
- a. Remove the rear power window regulator switch assembly RH. Refer to REMOVAL .

*a

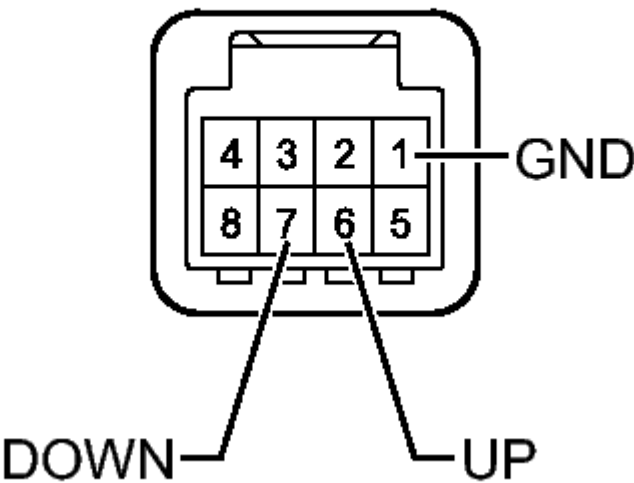


Fig. 15: Inspecting Power Window Regulator Switch Assembly
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
6 (UP) - 1 (GND)	Auto up or up position	Below 1 ohms
7 (DOWN) - 1 (GND)	Auto down or down position	Below 1 ohms

TEXT IN ILLUSTRATION

	Component without harness connected (Rear Power Window Regulator Switch Assembly RH)
--	--

NG --> See step 7

OK: Go to next step

5. CHECK HARNESS AND CONNECTOR (REAR RH SIDE SWITCH - REAR RH SIDE MOTOR AND BODY GROUND)

- Disconnect the rear power window regulator motor assembly RH connector.
- Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
I1-6 (UP) - I7-10 (UP)	Always	Below 1 ohms
I1-7 (DOWN) - I7-7 (DOWN)	Always	Below 1 ohms
I1-1 (GND) - Body ground	Always	Below 1 ohms
I1-6 (UP) - Body ground	Always	10 kohms or higher
I1-7 (DOWN) - Body ground	Always	10 kohms or higher
I7-10 (UP) - Body ground	Always	10 kohms or higher
I7-7		

(DOWN) - Body ground	Always	10 kohms or higher
----------------------------	--------	-----------------------

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 6

6. **REPLACE REAR POWER WINDOW REGULATOR MOTOR ASSEMBLY RH. Refer to REMOVAL**
7. **REPLACE REAR POWER WINDOW REGULATOR SWITCH ASSEMBLY RH. Refer to REMOVAL**
8. **GO TO LIN COMMUNICATION SYSTEM (Proceed to How to Proceed with Troubleshooting). Refer to HOW TO PROCEED WITH TROUBLESHOOTING**
9. **REPLACE MAIN BODY ECU. Refer to REMOVAL**

Driver Side Power Window Auto Up / Down Function does not Operate with Power Window Master Switch

DESCRIPTION

If the manual up/down function can be performed but the auto up/down function cannot, then the fail-safe mode may be functioning.

If the power window initialization. Refer to INITIALIZATION has not been performed, the auto up/down function will not operate.

WIRING DIAGRAM

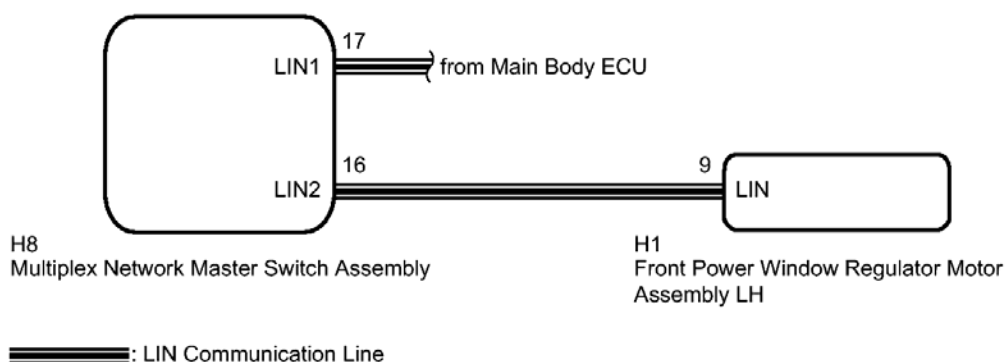


Fig. 16: Front Power Window Regulator Motor Assembly LH - Wiring Diagram
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- The power window control system uses a multiplex communication

system (LIN communication system). Inspect the communication function by following How to Proceed with Troubleshooting. Refer to HOW TO PROCEED WITH TROUBLESHOOTING . Troubleshoot the power window control system after confirming that the communication system is functioning properly.

- When the front power window regulator motor assembly LH is reinstalled or replaced, the power window control system must be initialized.
- After a door glass or a door glass run has been replaced, the jam protection function may operate unexpectedly when the auto up function is used. In such cases, the auto up function can be reinitialized by repeating the following operations at least 5 times:
 - a. Close the power window by fully pulling up the multiplex network master switch assembly and holding it at the auto up position.
 - b. Open the power window by fully pushing down the multiplex network master switch assembly.
- When the ECU determines that the front power window regulator motor assembly LH has a malfunction, DTC B2311 is set.

PROCEDURE

1. READ VALUE USING TECHSTREAM (MASTER 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 / Master switch / Data List.
- e. Read the Data List according to the display on the Techstream.

MASTER SWITCH (MULTIPLEX NETWORK MASTER SWITCH ASSEMBLY)

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
D Door P/W Auto SW	Driver side power window auto up/down switch signal / ON or OFF	ON: Driver side power window auto switch operated OFF: Driver side power window auto	-

		switch not operated	
--	--	------------------------	--

OK

On the Techstream screen, ON or OFF is displayed accordingly.

NG --> See step 7

OK: Go to next step

2. READ VALUE USING TECHSTREAM (D-DOOR MOTOR)

- Enter the following menus: Body Electrical / D-Door Motor / Data List.
- Read the Data List according to the display on the Techstream.

D-DOOR MOTOR (FRONT POWER WINDOW REGULATOR MOTOR ASSEMBLY LH)

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
D Door P/W Auto SW	Driver side power window auto up/down switch signal / ON or OFF	ON: Driver side power window auto switch operated OFF: Driver side power window auto switch not operated	-

OK

On the Techstream screen, ON or OFF is displayed accordingly.

NG --> See step 5

OK: Go to next step

3. PERFORM INITIALIZATION (for Driver Side)

- Initialize the front power window regulator motor assembly LH. Refer to **INITIALIZATION** .

NEXT: Go to next step

4. CHECK POWER WINDOW CONTROL SYSTEM (AUTO UP/DOWN FUNCTION)

- a. Check that the driver side door power window moves when the auto up/down function of the multiplex network master switch assembly is operated. Refer to **OPERATION CHECK** .

OK

Driver side auto up/down function is normal.

NG --> See step 8

OK --> END (PROBLEM DUE TO INITIALIZATION FAILURE)

5. REPLACE MULTIPLEX NETWORK MASTER SWITCH ASSEMBLY

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

NEXT: Go to next step

6. CHECK AND REPLACE POWER WINDOW CONTROL SYSTEM (AUTO UP/DOWN FUNCTION)

- a. Check that the driver side door power window moves when the auto up/down function of the multiplex network master switch assembly is operated. Refer to **OPERATION CHECK** .

OK

Driver side auto up/down function is normal.

NG --> See step 8

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

7. REPLACE MULTIPLEX NETWORK MASTER SWITCH ASSEMBLY. Refer to **REMOVAL**

8. REPLACE FRONT POWER WINDOW REGULATOR MOTOR ASSEMBLY LH. Refer to **REMOVAL**

Front Passenger Side Power Window Auto Up / Down Function does not Operate with Front Passenger Side Power Window Switch

DESCRIPTION

If the manual up/down function can be performed but the auto up/down function cannot, the fail-safe mode may be functioning.

If the power window initialization. Refer to **INITIALIZATION** has not been performed, the auto up/down function will not operate.

WIRING DIAGRAM

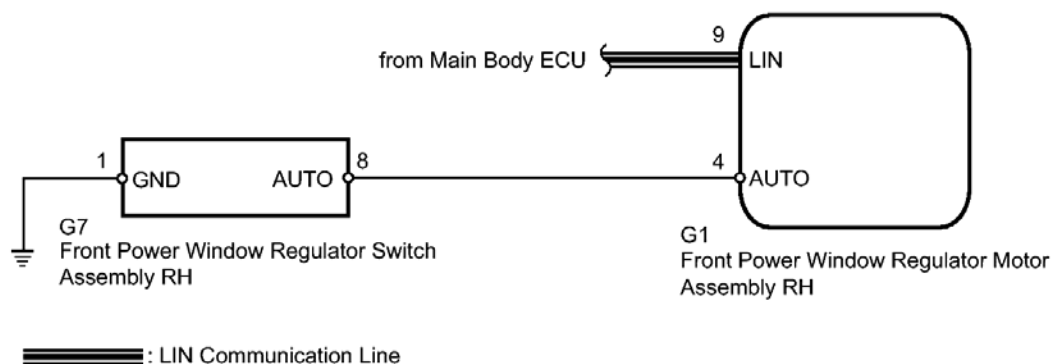


Fig. 17: Front Power Window Regulator Motor Assembly RH - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- The power window control system uses a multiplex communication system (LIN communication system). Inspect the communication function by following How to Proceed with Troubleshooting. Refer to HOW TO PROCEED WITH TROUBLESHOOTING. Troubleshoot the power window control system after confirming that the communication system is functioning properly.
- When the front power window regulator motor assembly RH is reinstalled or replaced, the power window control system must be initialized.
- After a door glass or a door glass run has been replaced, the jam protection function may operate unexpectedly when the auto up function is used. In such cases, the auto up function can be reinitialized by repeating the following operations at least 5 times:
 - a. Close the power window by fully pulling up the front power window regulator switch assembly RH and holding it at the auto up position.
 - b. Open the power window by fully pushing down the front power window regulator switch assembly RH.
- When the ECU determines that the front power window regulator motor assembly RH has a malfunction, DTC B2311 is set.

PROCEDURE

1. READ VALUE USING TECHSTREAM (P-DOOR MOTOR)

- 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 / P-Door Motor / Data List.

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

P-DOOR MOTOR (FRONT POWER WINDOW REGULATOR MOTOR ASSEMBLY RH)

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
P Door P/W Auto SW	Front passenger side power window auto switch signal / ON or OFF	ON: Front passenger side power window auto switch operated OFF: Front passenger side power window auto switch not operated	-

OK

On the Techstream screen, ON or OFF is displayed accordingly.

NG --> See step 4

OK: Go to next step

2. PERFORM INITIALIZATION (for Front Passenger Side)

- a. Initialize the front power window regulator motor assembly RH. Refer to INITIALIZATION .

NEXT: Go to next step

3. CHECK POWER WINDOW CONTROL SYSTEM (AUTO UP/DOWN FUNCTION)

- a. Check that the front passenger side power window moves when the auto up/down function of the front power window regulator switch assembly RH is operated. Refer to OPERATION CHECK .

OK

Front passenger side auto up/down function is normal.

NG --> See step 6

OK --> END (PROBLEM DUE TO INITIALIZATION FAILURE)

4. INSPECT FRONT POWER WINDOW REGULATOR SWITCH ASSEMBLY RH

- a. Remove the front power window regulator switch assembly RH. Refer to REMOVAL .

*a

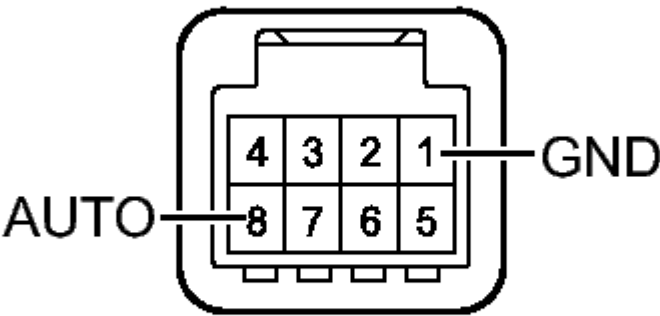


Fig. 18: Inspecting Power Window Regulator Switch Assembly
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
8 (AUTO) - 1 (GND)	Auto up or auto down position	Below 1 ohms

TEXT IN ILLUSTRATION

*a	Component without harness connected (Front Power
----	--

Window Regulator Switch Assembly RH)
--

NG --> See step 7

OK: Go to next step

5. CHECK HARNESS AND CONNECTOR (POWER WINDOW SWITCH - REGULATOR MOTOR)

- Disconnect the front power window regulator motor assembly RH connector.
- Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
G7-8 (AUTO) - G1-4 (AUTO)	Always	Below 1 ohms
G7-8 (AUTO) - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 6

- REPLACE FRONT POWER WINDOW REGULATOR MOTOR ASSEMBLY RH. Refer to REMOVAL**
- REPLACE FRONT POWER WINDOW REGULATOR SWITCH ASSEMBLY RH. Refer to REMOVAL**

Rear Power Window LH Auto Up / Down Function does not Operate with Rear Power Window Switch LH

DESCRIPTION

If the manual up/down function can be performed but the auto up/down function cannot, the fail-safe mode may be functioning.

If the power window initialization. Refer to **INITIALIZATION** has not been performed, the auto up/down function will not operate.

WIRING DIAGRAM

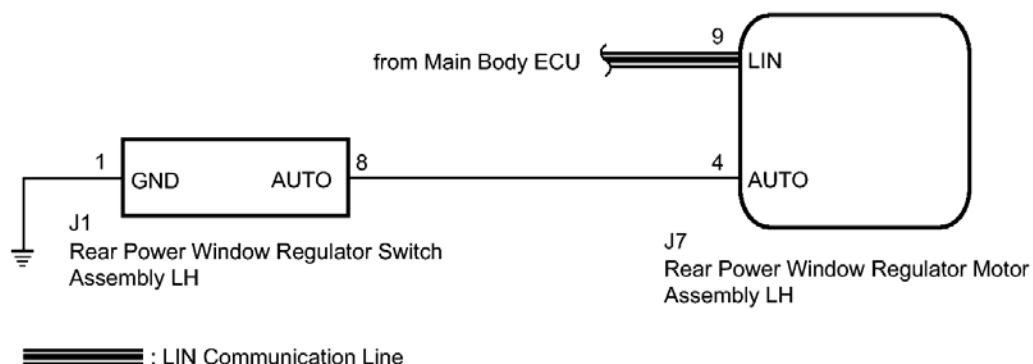


Fig. 19: Rear Power Window Regulator Motor Assembly LH - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- The power window control system uses a multiplex communication system (LIN communication system). Inspect the communication function by following How to Proceed with Troubleshooting. Refer to HOW TO PROCEED WITH TROUBLESHOOTING. Troubleshoot the power window control system after confirming that the communication system is functioning properly.
- When the rear power window regulator motor assembly LH is reinstalled or replaced, the power window control system must be initialized.
- After a door glass or a door glass run has been replaced, the jam protection function may operate unexpectedly when the auto up function is used. In such cases, the auto up function can be reinitialized by repeating the following operations at least 5 times:
 - a. Close the power window by fully pulling up the rear power window regulator switch assembly LH and holding it at the auto up position.
 - b. Open the power window by fully pushing down the rear power window regulator switch assembly LH.
- When the ECU determines that the rear power window regulator motor assembly LH has a malfunction, DTC B2311 is set.

PROCEDURE

1. READ VALUE USING TECHSTREAM (RL-DOOR MOTOR)

- 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 / RL-Door Motor / Data List.

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

RL-DOOR MOTOR (REAR POWER WINDOW REGULATOR MOTOR ASSEMBLY LH)

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
RL Door P/W Auto SW	Rear LH side power window auto switch signal / ON or OFF	ON: Rear LH side power window auto switch operated OFF: Rear LH side power window auto switch not operated	-

OK

On the Techstream screen, ON or OFF is displayed accordingly.

NG --> See step 4

OK: Go to next step

2. PERFORM INITIALIZATION (for Rear LH Side)

- a. Initialize the rear power window regulator motor assembly LH. Refer to **INITIALIZATION** .

NEXT: Go to next step

3. CHECK POWER WINDOW CONTROL SYSTEM (AUTO UP/DOWN FUNCTION)

- a. Check that the rear LH side power window moves when the auto up/down function of the rear power window regulator switch assembly LH is operated. Refer to **OPERATION CHECK** .

OK

Rear LH side auto up/down function is normal.

NG --> See step 6

OK --> END (PROBLEM DUE TO INITIALIZATION FAILURE)

4. INSPECT REAR POWER WINDOW REGULATOR SWITCH ASSEMBLY LH

- a. Remove the rear power window regulator switch assembly LH. Refer to **REMOVAL** .

*a

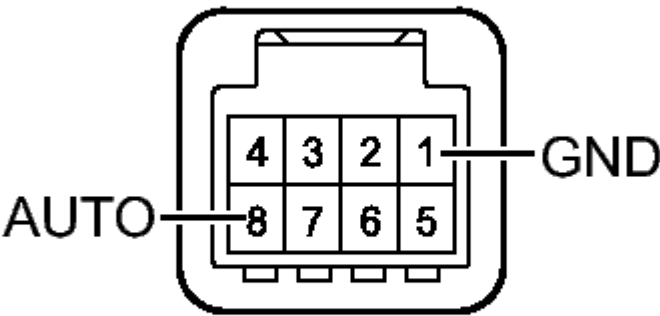


Fig. 20: Inspecting Power Window Regulator Switch Assembly
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
8 (AUTO) - 1 (GND)	Auto up or auto down position	Below 1 ohms

TEXT IN ILLUSTRATION

*a	Component without harness connected (Rear Power Window Regulator Switch)
----	--

Assembly LH)

NG --> See step 7

OK: Go to next step

5. CHECK HARNESS AND CONNECTOR (REAR LH SIDE SWITCH - REAR LH SIDE MOTOR)

- Disconnect the rear power window regulator motor assembly LH connector.
- Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
J1-8 (AUTO) - J7-4 (AUTO)	Always	Below 1 ohms
J1-8 (AUTO) - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 6

- REPLACE REAR POWER WINDOW REGULATOR MOTOR ASSEMBLY LH. Refer to REMOVAL**
- REPLACE REAR POWER WINDOW REGULATOR SWITCH ASSEMBLY LH. Refer to REMOVAL**

Rear Power Window RH Auto Up / Down Function does not Operate with Rear Power Window Switch RH

DESCRIPTION

If the manual up/down function can be performed but the auto up/down function cannot, the fail-safe mode may be functioning.

If the power window initialization. Refer to **INITIALIZATION** has not been performed, the auto up/down function will not operate.

WIRING DIAGRAM

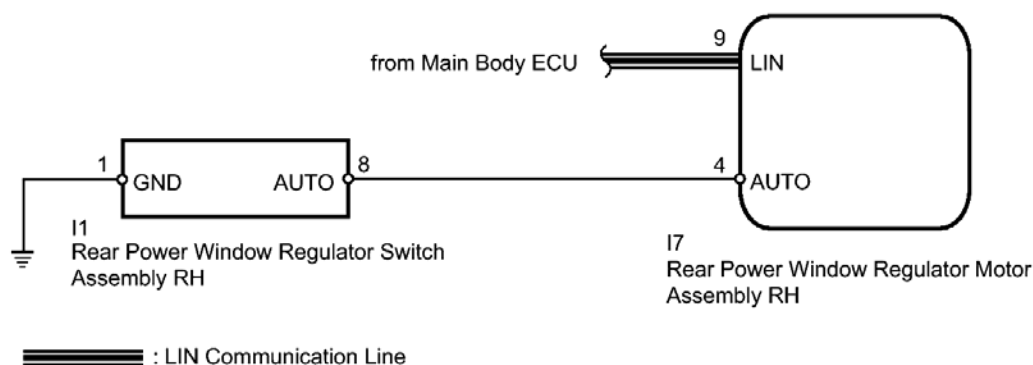


Fig. 21: Rear Power Window Switch RH - Wiring Diagram
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- The power window control system uses a multiplex communication system (LIN communication system). Inspect the communication function by following How to Proceed with Troubleshooting. Refer to HOW TO PROCEED WITH TROUBLESHOOTING. Troubleshoot the power window control system after confirming that the communication system is functioning properly.
- When the rear power window regulator motor assembly RH is reinstalled or replaced, the power window control system must be initialized.
- After a door glass or a door glass run has been replaced, the jam protection function may operate unexpectedly when the auto up function is used. In such cases, the auto up function can be reinitialized by repeating the following operations at least 5 times:
 - a. Close the power window by fully pulling up the rear power window regulator switch assembly RH and holding it at the auto up position.
 - b. Open the power window by fully pushing down the rear power window regulator switch assembly RH.
- When the ECU determines that the rear power window regulator motor assembly RH has a malfunction, DTC B2311 is set.

PROCEDURE

1. READ VALUE USING TECHSTREAM (RR-DOOR MOTOR)

- 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 / RR-Door Motor / Data List.
- e. Read the Data List according to the display on the Techstream.

RR-DOOR MOTOR (REAR POWER WINDOW REGULATOR MOTOR ASSEMBLY RH)

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
RR Door P/W Auto SW	Rear RH side power window auto switch signal / ON or OFF	ON: Rear RH side power window auto switch operated OFF: Rear RH side power window auto switch not operated	-

OK

On the Techstream screen, ON or OFF is displayed accordingly.

NG --> See step 4

OK: Go to next step

2. PERFORM INITIALIZATION (for Rear RH Side)

- a. Initialize the rear power window regulator motor assembly RH. Refer to **INITIALIZATION** .

NEXT: Go to next step

3. CHECK POWER WINDOW CONTROL SYSTEM (AUTO UP/DOWN FUNCTION)

- a. Check that the rear RH side power window moves when the auto up/down function of the rear power window regulator switch assembly RH is operated. Refer to **OPERATION CHECK** .

OK

Rear RH side auto up/down function is normal.

NG --> See step 6

OK --> END (PROBLEM DUE TO INITIALIZATION FAILURE)

4. INSPECT REAR POWER WINDOW REGULATOR SWITCH ASSEMBLY RH

- a. Remove the rear power window regulator switch assembly RH. Refer to **REMOVAL** .

*a

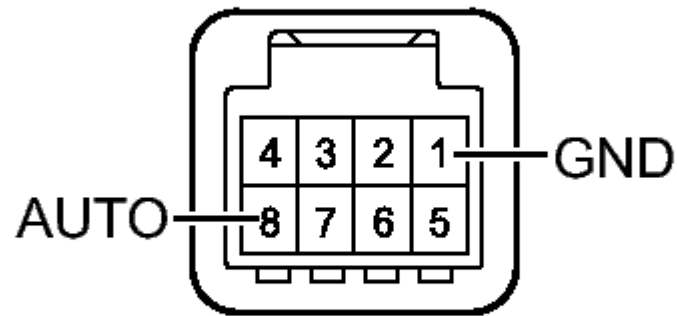


Fig. 22: Inspecting Power Window Regulator Switch Assembly
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
8 (AUTO) - 1 (GND)	Auto up or auto down position	Below 1 ohms

TEXT IN ILLUSTRATION

*a	Component without harness connected (Rear Power Window Regulator Switch Assembly RH)
----	--

NG --> See step 7

OK: Go to next step

5. CHECK HARNESS OR CONNECTOR (REAR RH SIDE SWITCH - REAR RH SIDE MOTOR)

- a. Disconnect the rear power window regulator motor assembly RH connector.
- b. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
I1-8 (AUTO) - I7-4 (AUTO)	Always	Below 1 ohms
I1-8 (AUTO) - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 6

6. **REPLACE REAR POWER WINDOW REGULATOR MOTOR ASSEMBLY RH. Refer to REMOVAL**
7. **REPLACE REAR POWER WINDOW REGULATOR SWITCH ASSEMBLY RH. Refer to REMOVAL**

Key-off Operation Function Operates even if Operating Conditions are not Satisfied

DESCRIPTION

- When the front doors are closed, each power window regulator motor assembly can control its power window operation for approximately 43 seconds after the ignition switch is turned from ON to off by receiving operation permission signals from the main body ECU.
- However, when approximately 43 seconds have elapsed, or the driver side door or front passenger side door is opened within approximately 43 seconds of the ignition switch being turned off, the power window regulator motor assembly stops operating.
- During an auto operation, when 43 seconds have passed and key-off operation is prohibited, the window operation stops immediately.

INSPECTION PROCEDURE

NOTE: The power window control system uses a multiplex communication system (LIN

communication system). Inspect the communication function by following How to Proceed with Troubleshooting. Refer to HOW TO PROCEED WITH TROUBLESHOOTING . Troubleshoot the power window control system after confirming that the communication system is functioning properly.

PROCEDURE

1. READ VALUE USING TECHSTREAM (MAIN BODY)

- 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 (MAIN BODY ECU)

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Communication D-Door Motor	Connection status between front power window regulator motor assembly LH and main body ECU / OK or STOP	OK: Normal communication STOP: Communication stopped	-

OK

On the Techstream screen, OK is displayed.

NG --> See step 7

OK: Go to next step

2. CHECK OPERATION FUNCTION AFTER IGNITION SWITCH IS TURNED OFF

- Check the power window operation function after the ignition switch is turned off.

Result

Result	Proceed to
When power window can	

still be operated even after opening driver side door or front passenger side door within approximately 43 seconds of ignition switch being turned off	A
When power window can still be operated even after approximately 43 seconds have elapsed after ignition switch is turned off (for Front Passenger Side, Rear LH Side or Rear RH Side)	B
When power window can still be operated even after approximately 43 seconds have elapsed after ignition switch is turned off (for All Doors)	C

B --> See step 4

C --> See step 5

A: Go to next step

3. READ VALUE USING TECHSTREAM (MAIN BODY)

- a. Enter the following menus: Body Electrical / Main Body / Data List.
- b. Read the Data List according to the display on the Techstream.

MAIN BODY (MAIN BODY ECU)

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
FL Door Courtesy	Front door courtesy light switch LH signal / ON or OFF	ON: Driver side door closed OFF: Driver side door open	-
FR Door Courtesy	Front door courtesy light switch RH signal / ON or OFF	ON: Front passenger side door closed OFF: Front passenger side door open	-

OK

On the Techstream screen, ON or OFF is displayed accordingly.

NG --> See step 6

OK --> See step 5

4. REPLACE POWER WINDOW REGULATOR MOTOR ASSEMBLY (KEY-OFF OPERATION FUNCTIONING WINDOW)

- a. Replace the power window regulator motor assembly. Refer to **REMOVAL** for Front Door. Refer to **REMOVAL** for Rear Door) for the window that still operates when more than 43 seconds have elapsed after the ignition switch was turned off.

NEXT: Go to next step

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

6. GO TO LIGHTING SYSTEM (Proceed to Door Courtesy Switch Circuit). Refer to **Door Courtesy Switch Circuit**

7. GO TO LIN COMMUNICATION SYSTEM (Proceed to How to Proceed with Troubleshooting).

Refer to **HOW TO PROCEED WITH TROUBLESHOOTING**

8. PERFORM INITIALIZATION (APPLICABLE LOCATION)

- a. Initialize the power window regulator motor assembly. Refer to **INITIALIZATION** .

NEXT: Go to next step

9. CHECK OPERATION FUNCTION AFTER IGNITION SWITCH IS TURNED OFF

- a. Check the power window operation function after the ignition switch is turned off.

OK

The power window does not operate when more than 43 seconds have elapsed after the ignition switch was turned off.

NG --> See step 5

OK --> END (POWER WINDOW REGULATOR MOTOR ASSEMBLY WAS DEFECTIVE)

Auto Up Operation does not Fully Close Power Window (Jam Protection Function is Activated)

DESCRIPTION

If a door glass or a power window regulator motor assembly does not operate smoothly, the jam protection function may be triggered automatically, resulting in the auto up function being unable to fully close the window.

HINT:

This symptom may occur for any of the windows.

INSPECTION PROCEDURE

NOTE:

- The power window control system uses a multiplex communication system (LIN communication system). Inspect the communication function by following How to Proceed with Troubleshooting. Refer to **HOW TO PROCEED WITH TROUBLESHOOTING** . Troubleshoot the power window control system after confirming that the communication system is functioning properly.
- When the power window regulator motor assembly is reinstalled or replaced, the power window control system must be initialized.
- After a door glass or a door glass run has been replaced, the jam protection function may operate unexpectedly when the auto up function is used. In such cases, the auto up function can be reinitialized by repeating the following operations at least 5 times:
 - a. Close the power window by fully pulling up the multiplex network master switch assembly or power window regulator switch assembly

- and holding it at the auto up position.
- b. Open the power window by fully pushing down the multiplex network master switch assembly or power window regulator switch assembly.

PROCEDURE

1. PERFORM INITIALIZATION (APPLICABLE LOCATION)

- a. Initialize the power window regulator motor assembly (applicable location). Refer to **INITIALIZATION** .

NEXT: Go to next step

2. CHECK POWER WINDOW CONTROL SYSTEM (AUTO UP/DOWN FUNCTION (APPLICABLE LOCATION))

- a. Check that all door power windows move when the auto up/down function of the multiplex network master switch assembly and power window regulator switch assembly (for front passenger, rear LH and rear RH sides) is operated. Refer to **OPERATION CHECK** .

OK

Auto up/down function is normal (applicable location).

NG --> See step 3

OK --> END (PROBLEM DUE TO INITIALIZATION FAILURE)

3. CHECK WINDOW GLASS SLIDING MOVEMENT (APPLICABLE LOCATION)

- a. Remove the window regulator.
- b. Install the window glass onto the door glass run.
- c. Check if the door window regulator operates smoothly.
- d. Check that the window glass slides smoothly when sliding it up by hand.

OK

Door window glass slides smoothly.

Result

Result	Proceed to
NG	A
OK (Driver side power	B

window)	
OK (Front passenger side power window)	C
OK (Rear LH side power window)	D
OK (Rear RH side power window)	E

HINT:

Ensure the following:

- The window glass fits with the glass run without improper contact or deformation.
- Foreign objects are not caught in the glass run.

WARNING: Perform initialization again.

B --> See step 4

C --> See step 5

D --> See step 6

E --> See step 7

A --> FIT WINDOW GLASS CORRECTLY (REMOVE FOREIGN OBJECTS CAUSING IMPROPER FIT OR REPLACE PARTS)

4. **REPLACE FRONT POWER WINDOW REGULATOR MOTOR ASSEMBLY LH. Refer to REMOVAL**
5. **REPLACE FRONT POWER WINDOW REGULATOR MOTOR ASSEMBLY RH. Refer to REMOVAL**
6. **REPLACE REAR POWER WINDOW REGULATOR MOTOR ASSEMBLY LH. Refer to REMOVAL**
7. **REPLACE REAR POWER WINDOW REGULATOR MOTOR ASSEMBLY RH. Refer to REMOVAL**

Jam Protection Function does not Operate

DESCRIPTION

This symptom may occur for any of the windows.

The jam protection function operates within a specified range during the manual up or auto up operation.

INSPECTION PROCEDURE

NOTE:

- The power window control system uses a multiplex communication system (LIN communication system). Inspect the communication function by following How to Proceed with Troubleshooting. Refer to HOW TO PROCEED WITH TROUBLESHOOTING . Troubleshoot the power window control system after confirming that the communication system is functioning properly.
- When the power window regulator motor assembly is reinstalled or replaced, the power window control system must be initialized.
- After a door glass or a door glass run has been replaced, the jam protection function may operate unexpectedly when the auto up function is used. In such cases, the auto up function can be reinitialized by repeating the following operations at least 5 times:
 - a. Close the power window by fully pulling up the multiplex network master switch assembly or power window regulator switch assembly and holding it at the auto up position.
 - b. Open the power window by fully pushing down the multiplex network master switch assembly or power window regulator switch assembly.

PROCEDURE

1. PERFORM INITIALIZATION (APPLICABLE LOCATION)

- a. Initialize the power window regulator motor assembly (applicable location). Refer to INITIALIZATION .

NEXT: Go to next step

2. CHECK POWER WINDOW CONTROL SYSTEM (AUTO UP/DOWN FUNCTION)

- a. Check if the power window auto up/down function operates normally. Refer to OPERATION CHECK .

OK

Auto up/down function is normal.

NG --> See step 4

OK: Go to next step

3. CHECK JAM PROTECTION FUNCTION OPERATING RANGE

- a. Check if the jam protection function operates normally for the applicable power window.

HINT:

The jam protection function will not operate within 4 mm (0.157 in.) of the fully closed position.

OK

Jam protection function operates normally.

Result

Result	Proceed to
OK	A
NG (Driver side power window)	B
NG (Front passenger side power window)	C
NG (Rear LH side power window)	D
NG (Rear RH side power window)	E

B --> See step 5

C --> See step 6

D --> See step 7

E --> See step 8

A --> END (PROBLEM DUE TO INITIALIZATION FAILURE)

- 4. GO TO OTHER PROBLEM (Proceed to Problem Symptoms Table). Refer to HOW TO PROCEED WITH TROUBLESHOOTING**
- 5. REPLACE FRONT POWER WINDOW REGULATOR MOTOR ASSEMBLY LH. Refer to REMOVAL**
- 6. REPLACE FRONT POWER WINDOW REGULATOR MOTOR ASSEMBLY RH. Refer to REMOVAL**
- 7. REPLACE REAR POWER WINDOW REGULATOR MOTOR ASSEMBLY LH. Refer to REMOVAL**
- 8. REPLACE REAR POWER WINDOW REGULATOR MOTOR ASSEMBLY RH. Refer to REMOVAL**

CIRCUIT TESTS

Power Vent Window Motor Circuit

DESCRIPTION

The power quarter windows are operated by power quarter window switch on the instrument panel while the ignition switch is in the ON position.

WIRING DIAGRAM

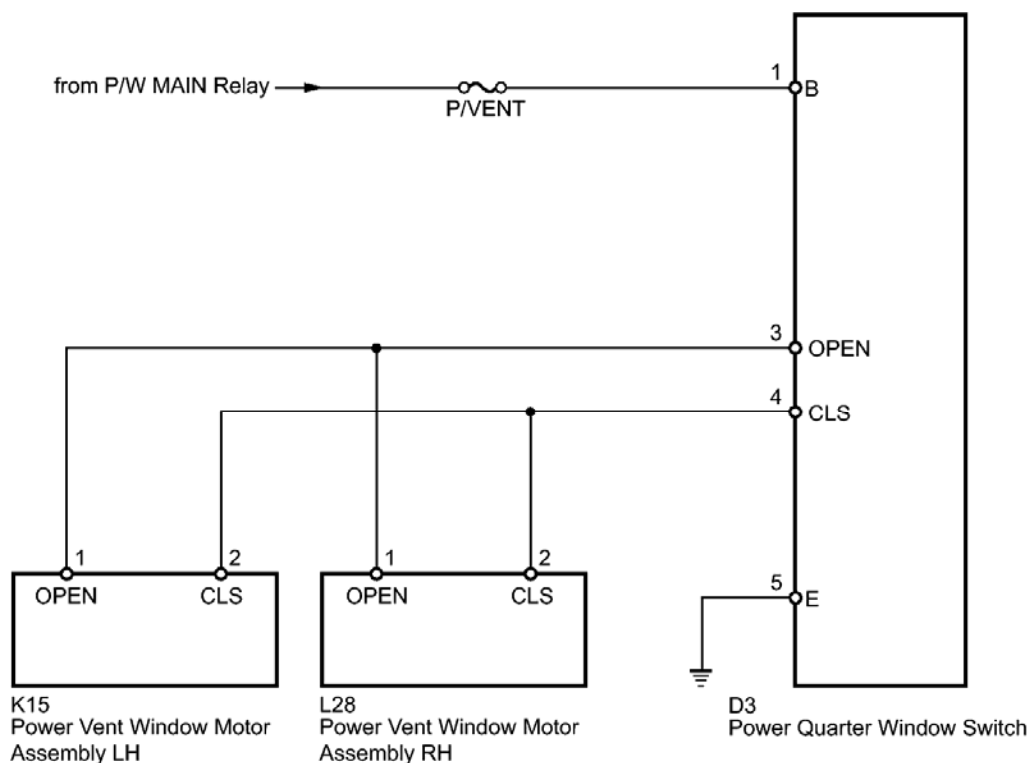


Fig. 23: Power Vent Window Motor Circuit - Wiring Diagram
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

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

PROCEDURE

1. **CHECK HARNESS AND CONNECTOR (POWER QUARTER WINDOW SWITCH - BODY GROUND)**
 - a. Disconnect the power quarter window switch connector.
 - b. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D3-5 (E) - Body	Always	Below 1

ground		ohms
--------	--	------

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

2. CHECK HARNESS AND CONNECTOR (BATTERY - POWER QUARTER WINDOW SWITCH)

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

*a

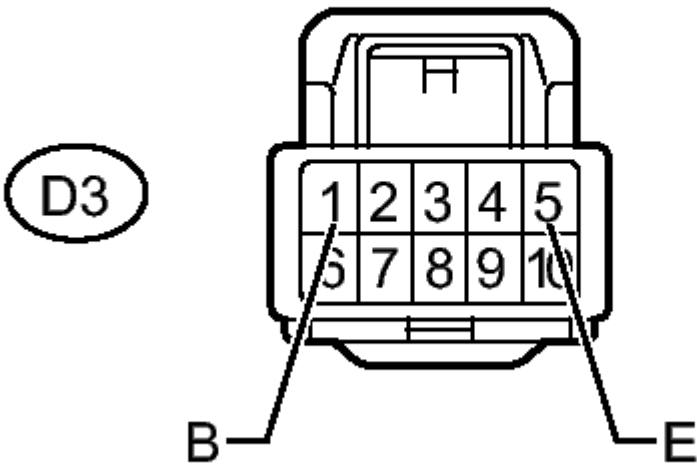


Fig. 24: Checking Harness And Connector (Battery - Power Quarter Window Switch)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Voltage

Tester Connection	Switch Condition	Specified Condition
D3-1 (B) - D3-5 (E)	Ignition switch ON	11 to 14 V
D3-1 (B) - D3-5 (E)	Ignition switch off	Below 1 V

TEXT IN ILLUSTRATION

Front view of

D3-3 (OPEN)	position -- > Close position	ohms --> 10 kohms or higher
D3-1 (B) - D3-4 (CLS)	Open position -- > Close position	10 kohms or higher - -> Below 1 ohms
D3-3 (OPEN) - D3-5 (E)	Open position -- > Close position	10 kohms or higher - -> Below 1 ohms
D3-4 (CLS) - D3-5 (E)	Open position -- > Close position	Below 1 ohms --> 10 kohms or higher

TEXT IN ILLUSTRATION

*a	Component without harness connected (Power Quarter Window Switch)
----	--

NG --> REPLACE POWER QUARTER WINDOW SWITCH

OK: Go to next step

4. CHECK HARNESS AND CONNECTOR (POWER QUARTER WINDOW SWITCH - POWER VENT WINDOW MOTOR)

- Disconnect the power vent window motor assembly LH and RH connector.
- Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D3-3 (OPEN) - K15-1 (OPEN)	Always	Below 1 ohms
D3-4 (CLS) - K15-2 (CLS)	Always	Below 1 ohms

D3-3 (OPEN) - L28-1 (OPEN)	Always	Below 1 ohms
D3-4 (CLS) - L28-2 (CLS)	Always	Below 1 ohms
D3-3 (OPEN) - Body ground	Always	10 kohms or higher
D3-4 (CLS) - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

5. CHECK REAR QUARTER POWER WINDOW CONTROL SYSTEM

- a. Check the operation of the rear quarter power window control system.

Result

Result	Proceed to
The rear quarter power window control system operates normally.	A
The power vent window motor assembly LH does not operate normally.	B
The power	

vent window motor assembly RH does not operate normally.	C
---	---

B --> See step 7

C --> See step 8

A --> See step 6

6. **USE SIMULATION METHOD TO CHECK. Refer to HOW TO PROCEED WITH TROUBLESHOOTING**
7. **REPLACE POWER VENT WINDOW MOTOR ASSEMBLY LH. Refer to REMOVAL**
8. **REPLACE POWER VENT WINDOW MOTOR ASSEMBLY RH. Refer to REMOVAL**

ACCESSORIES & EQUIPMENT

Power Window Control System (Diagnostics - Introduction) - Sienna

POWER WINDOW CONTROL SYSTEM

PRECAUTION

PRECAUTION

1. EXPRESSIONS OF IGNITION SWITCH

- 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. POWER WINDOW CONTROL SYSTEM PRECAUTIONS

WARNING:

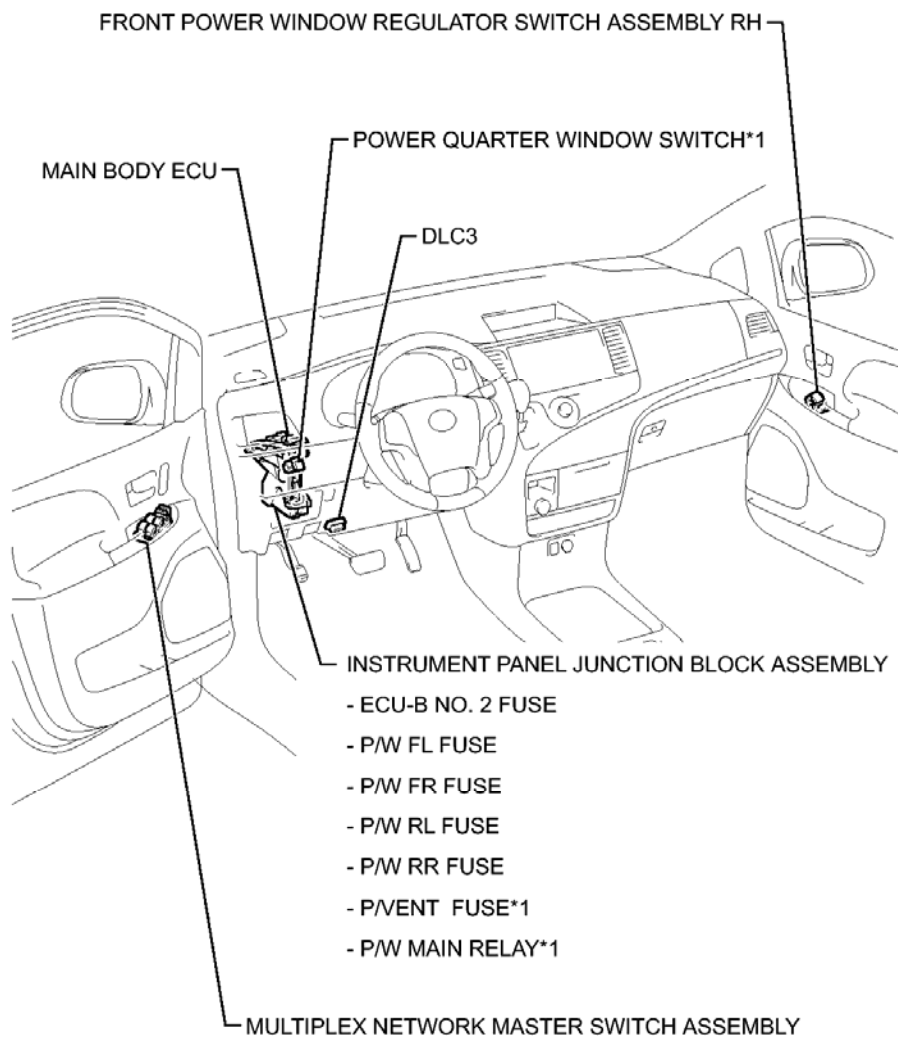
- The power window control system prohibits the auto up/down function when the jam protection function malfunctions. Therefore, troubleshoot the power window control system after confirming that no trouble codes are output.
- When a power window regulator or a power window regulator motor assembly is replaced, the power window control system must be initialized.
- After a door glass or a door glass run has been replaced, the jam protection function may operate unexpectedly when the auto up function is used. In such cases, the auto up function can be reinitialized by repeating the following operation at least 5 times:
 1. Close the power window by fully pulling up the multiplex network master switch assembly or power window regulator switch assembly and holding it at the auto up position.

2. Open the power window by fully pushing down the multiplex network master switch assembly or power window regulator switch assembly.
- The jam protection function may operate unexpectedly even when the power window control system is normal due to detection of a value different from the operation learned value when the door glass moving speed changes sharply under any of the following conditions:
 1. A power window is being opened or closed while the vehicle is driven on a rough road.
 2. A power window is being opened or closed while the door is being opened or closed.
 3. The voltage changes abruptly.

NOTE: Do not disconnect the battery while the ignition switch is ON. Otherwise, DTC B2311 will be output.

PARTS LOCATION

ILLUSTRATION

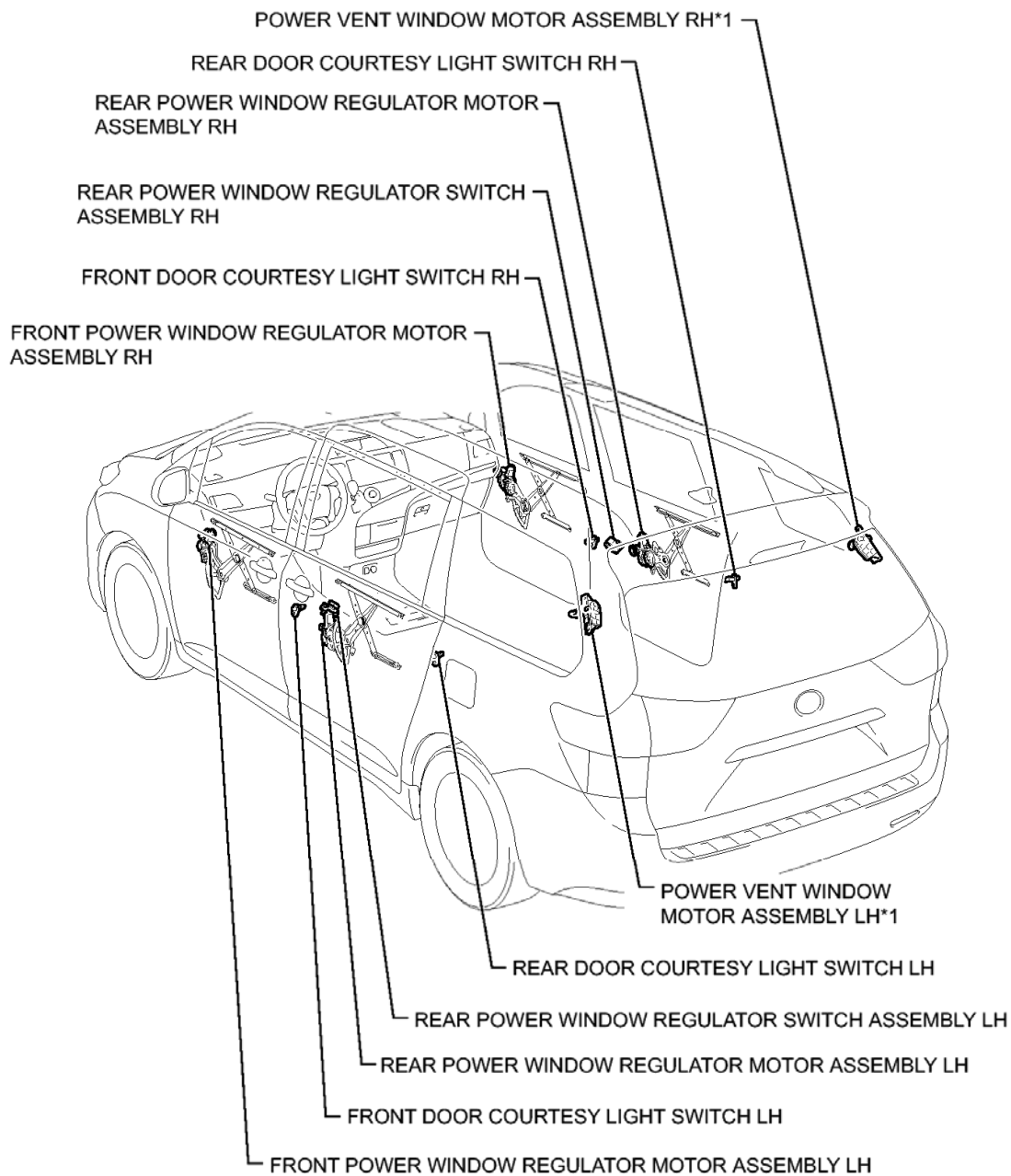


*1: w/ Rear Quarter Power Window Control System

P

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

ILLUSTRATION



*1: w/ Rear Quarter Power Window Control System

P

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

SYSTEM DIAGRAM

SYSTEM DIAGRAM

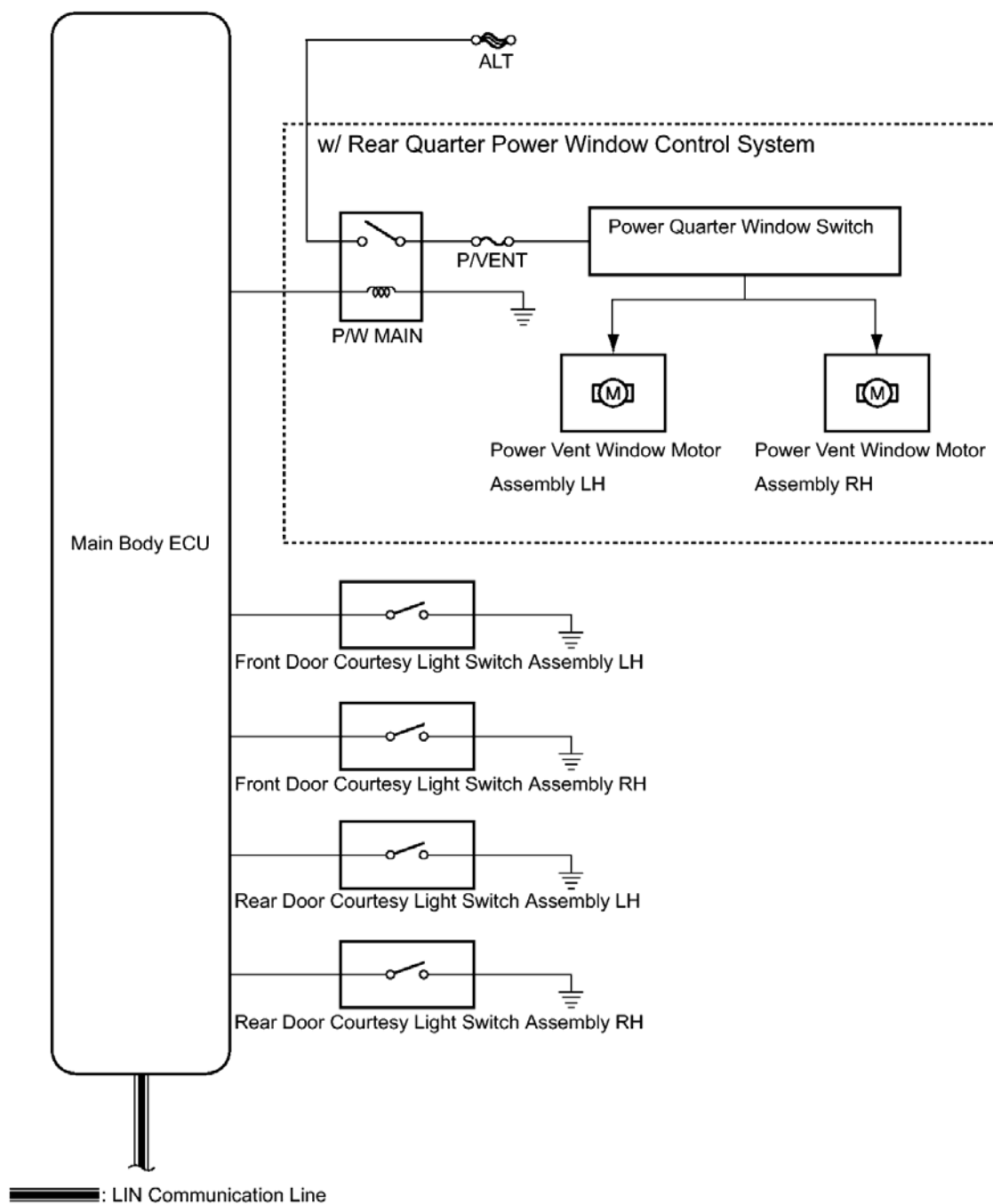


Fig. 3: Power Window Control System Diagram (1 Of 2)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

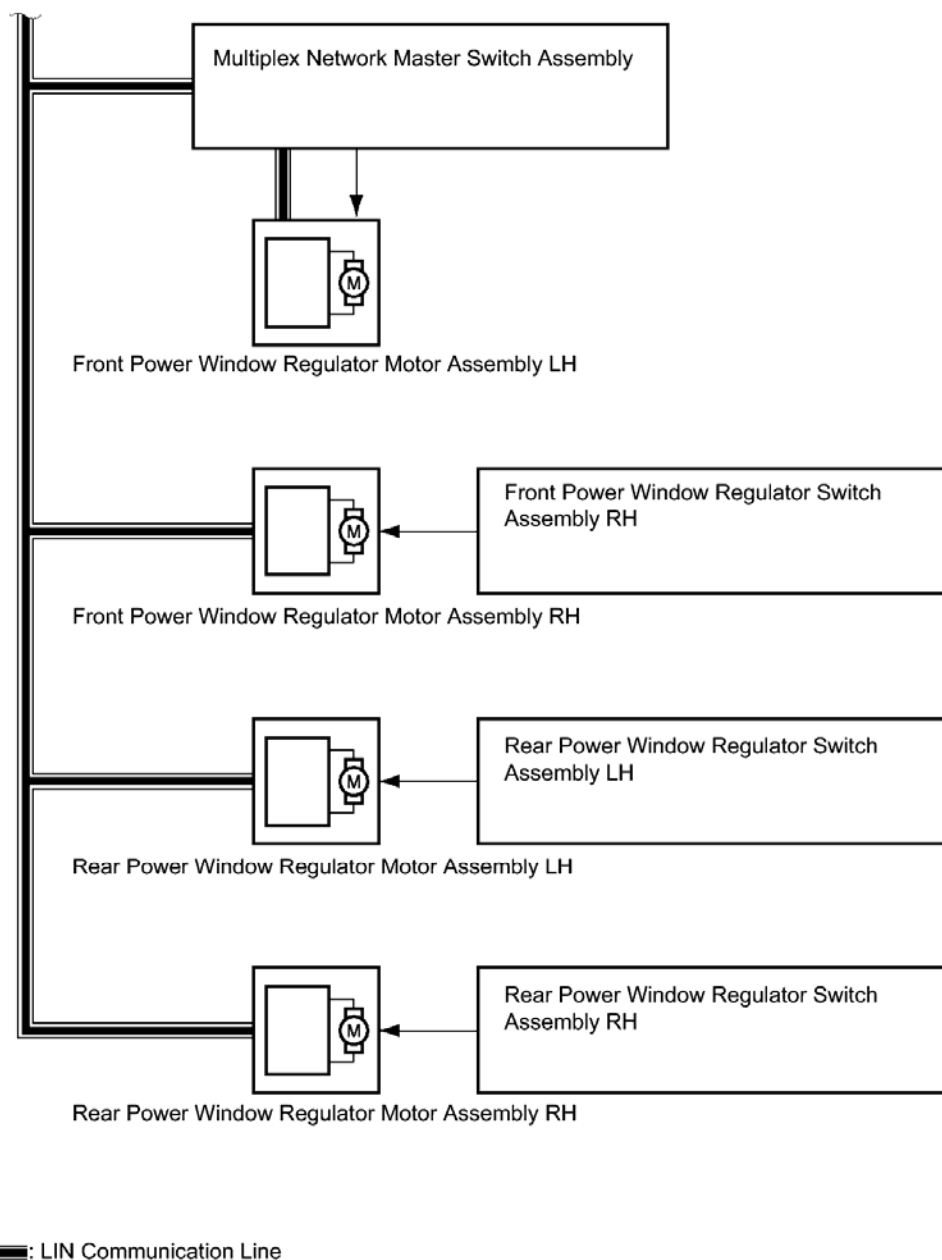


Fig. 4: Power Window Control System Diagram (2 Of 2)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

COMMUNICATION TABLE

Transmitting ECU	Receiving ECU	Signal	Communication Method
	Front power window regulator motor assembly LH	Power window auto up and down signal	LIN

Multiplex network master switch assembly	• Front power window regulator motor assembly RH • Rear power window regulator motor assembly LH • Rear power window regulator motor assembly RH	Power window remote up and down signal	LIN
Main body ECU	• Front power window regulator motor assembly LH • Front power window regulator motor assembly RH • Rear power window regulator motor assembly LH • Rear power window regulator motor assembly RH	Power window operation permission signal	LIN

SYSTEM DESCRIPTION

SYSTEM DESCRIPTION

1. POWER WINDOW CONTROL SYSTEM DESCRIPTION

- The power window control system controls the power window operation using the power window regulator motors. The main controls of this system are the multiplex network master switch assembly, which is mounted on the driver side door, and the power window regulator switches, which are mounted on the front passenger side door and rear doors. Operating a window switch results in electrical power being transmitted to the corresponding power window regulator motor.

2. FUNCTION OF MAIN COMPONENTS

The power window control system consists of the following components:

Component	Outline
Multiplex	• Controls power window operation for all seats. • When

Network Master Switch Assembly	lock switch is set to lock position, window operation will be possible for all windows.
Power Window Regulator Switch Assembly • Front Passenger Side • Rear LH Side • Rear RH Side	• Located on front passenger side door and rear doors. • Each switch controls window operation for its respective window.
Power Window Regulator Motor Assembly	• Receives switch signals and changes signals into motor activation. As a result, window position changes. • Uses Hall-IC in regulator motor with ECU to detect window position and

	jamming.
Power Quarter Window Switch*1	• Located on the instrument panel. • Controls power window operation for rear quarter window.
Power Vent Window Motor Assembly*1	Receives power quarter window signal and activates the motors to change the window position.

*1: w/ Rear Quarter Power Window Control System

3. SYSTEM FUNCTION

The power window control system has the following functions:

Function	Outline
Manual up-and-down function	Function that causes the window to go up while the power window switch is being pulled halfway up and to go down while pushed halfway down. The window stops as soon as the switch is released.
All door auto up-and-down function	Function that enables windows of all doors to be fully opened or closed by one full pull or push of the multiplex network master

	switch assembly or power window regulator switch assembly.
Window lock function	• Function that disables power window regulator switch assembly (for front passenger side, rear LH side and rear RH side) operations when the window lock switch is pressed. • The power window regulator switch assemblies (for front passenger side, rear LH side and rear RH side) can be operated when the window lock switch is pressed again. • Multiplex network master switch can operate all windows even when locked.
Jam	Function that automatically stops power window and moves it downward

protection function	if a foreign object gets jammed in door window during auto up and manual up operation.
Remote control function	Function that allows the multiplex network master switch assembly to control manual and auto up-and-down operations of the front passenger door window and rear door windows.
Key-off operation function	• Function that makes it possible to operate all power windows for approximately 43 seconds after the ignition switch is turned off when the driver side door or front passenger side door has not been opened. • If 43 seconds have passed or a front door is opened while the auto function is operating, the window operation stops.
	Function that allows diagnosis of the

Diagnosis	power window control system if any of the power window ECUs (built into each power window regulator motor assembly) detect a malfunction in the system. If a malfunction is detected, the power window ECU will illuminate the LEDs on the multiplex network master switch assembly and the respective power window regulator switch assembly to inform the driver and passenger of the malfunction.
Fail-safe	A fail-safe function to disable a part of power window functions if the pulse sensor in the power window motor has a malfunction. Auto up-and-down function and remote control function are disabled.

HOW TO PROCEED WITH TROUBLESHOOTING

HOW TO PROCEED WITH TROUBLESHOOTING

HINT:

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

1. VEHICLE BROUGHT TO WORKSHOP

NEXT: Go to next step

2. CUSTOMER PROBLEM ANALYSIS

- 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?	Driving conditions, weather conditions
How did it happen?	Problem symptoms

NEXT: Go to next step

3. PRE-CHECK

- a. Measure the 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.

- b. Check the fuses and relays.
- c. Check the connector connections and terminals to make sure that there are no abnormalities such as loose connections, deformation, etc.

NEXT: Go to next step

4. INSPECT COMMUNICATION FUNCTION OF LIN COMMUNICATION SYSTEM*

- a. Use the Techstream to check if the LIN communication system is functioning normally. Refer to **DTC CHECK / CLEAR**.

RESULT

Result	Proceed to
No DTCs output	A
DTCs output	B

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

A: Go to next step

5. LIN COMMUNICATION SYSTEM (Check By Multiplex Network Master Switch)

- a. Manually operate multiplex network master switch assembly to confirm front passenger side, rear LH side and rear RH side power window functions. Refer to **OPERATION CHECK**.

OK

Front passenger side, rear LH side and rear RH side power window regulator motors operate by multiplex network master switch assembly

NG --> Go to Remote Up / Down Function does not Operate. Refer to Remote Up / Down Function does not Operate

OK: Go to next step

6. CHECK FOR DTC*

- a. Check for DTCs and note any codes that are output. Refer to **DTC CHECK / CLEAR**.
- b. Clear the DTCs.
- c. Recheck for DTCs.

RESULT

Result	Proceed to
No DTCs output	A
DTCs output	B

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

A: Go to next step

7. 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 9

A: Go to next step

8. OVERALL ANALYSIS AND TROUBLESHOOTING*

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

NEXT: Go to next step

9. REPAIR OR REPLACE

NEXT: Go to next step

10. RESET POWER WINDOW MOTOR

- a. If the multiplex network master switch assembly or power window regulator switch assembly LED is blinking, reset the power window regulator motor assembly. Refer to **INITIALIZATION**.

NEXT: Go to next step

11. CONFIRMATION TEST

NEXT --> END

OPERATION CHECK

OPERATION CHECK

1. CHECK WINDOW LOCK SWITCH

HINT:

Before performing the window lock switch operation check, make sure that the window lock switch is off (the switch is not pushed in).

- a. Check that the front passenger and rear windows cannot be operated from each power window regulator switch assembly (front passenger side, rear LH side or rear RH side) when the window lock switch of the multiplex network master switch assembly is pushed in.

OK

Front passenger and rear windows are disabled.

HINT:

Even when the window lock switch of the multiplex network master switch assembly is pushed in, remote manual up and down and auto up and down functions can be operated.

- b. Check that the front passenger and rear windows can be operated from each power window regulator switch assembly (front passenger side, rear LH side or rear RH side) when the window lock switch of the multiplex network master switch assembly is pushed in again.

OK

Front passenger and rear windows operate normally.

2. CHECK MANUAL UP / DOWN FUNCTION

- a. Check that the driver side power window operates as follows:

OK

Condition	Master Switch	Switch Operation	Power Window
Ignition switch ON	Driver side	Pulled halfway up	UP (Closes)
		Pushed halfway down	DOWN (Opens)

- b. Check that the front passenger side window and rear power windows operate as follows:

OK

Condition	Regulator Switch	Switch Operation	Power Window
• Ignition switch ON • Window lock switch off	Front passenger side	Pulled halfway up	UP (Closes)
		Pushed halfway down	DOWN (Opens)
	Rear LH side	Pulled halfway up	UP (Closes)
		Pushed halfway down	DOWN (Opens)
	Rear RH side	Pulled halfway up	UP (Closes)
		Pushed halfway down	DOWN (Opens)

3. CHECK AUTO UP / DOWN FUNCTION

- a. Check that the driver side power window operates as follows:

OK

Condition	Master Switch	Switch Operation	Power Window
Ignition switch ON	Driver side	Pulled up (One touch operation)	AUTO UP (Closes)
		Pushed down (One touch operation)	AUTO DOWN (Opens)

- b. Check that the front passenger side window and rear power windows operate as follows:

OK

Condition	Regulator Switch	Switch Operation	Power Window

• Ignition switch ON • Window lock switch off	Front passenger side	Pulled up (One touch operation)	AUTO UP (Closes)
		Pushed down (One touch operation)	AUTO DOWN (Opens)
	Rear LH side	Pulled up (One touch operation)	AUTO UP (Closes)
		Pushed down (One touch operation)	AUTO DOWN (Opens)
	Rear RH side	Pulled up (One touch operation)	AUTO UP (Closes)
		Pushed down (One touch operation)	AUTO DOWN (Opens)

4. CHECK REMOTE MANUAL UP / DOWN FUNCTION

- Check that the front passenger side window and rear power windows operate as follows:

OK

Condition	Master Switch	Switch Operation	Power Window
Ignition switch ON	Front passenger side	Pulled halfway up	UP (Closes)
		Pushed halfway down	DOWN (Opens)
	Rear LH side	Pulled halfway up	UP (Closes)
		Pushed halfway down	DOWN (Opens)

	Rear RH side	Pulled halfway up	UP (Closes)
		Pushed halfway down	DOWN (Opens)

5. CHECK REMOTE AUTO UP / DOWN FUNCTION

- Check that the front passenger side window and rear power windows operate as follows:

OK

Condition	Master Switch	Switch Operation	Power Window
Ignition switch ON	Front passenger side	Pulled up (One touch operation)	AUTO UP (Closes)
		Pushed down (One touch operation)	AUTO DOWN (Opens)
	Rear LH side	Pulled up (One touch operation)	AUTO UP (Closes)
		Pushed down (One touch operation)	AUTO DOWN (Opens)
	Rear RH side	Pulled up (One touch operation)	AUTO UP (Closes)
		Pushed down (One touch operation)	AUTO DOWN (Opens)

6. CHECK POWER WINDOW OPERATION FUNCTION AFTER IGNITION SWITCH IS TURNED OFF

- Check that all the power windows can be operated with the multiplex network master switch assembly after the ignition switch is turned off.

- b. Check that the key-off operation function does not operate after the driver door or front passenger side door is opened.
- c. Check that all the power windows cannot be operated after more than approximately 45 seconds have elapsed since the ignition switch was turned off.

7. CHECK JAM PROTECTION FUNCTION

- a. Check the basic function.

WARNING: Do not put your fingers between the door frame and door glass to check the jam protection function. Also, prevent any part of your body from being caught during inspection.

HINT:

The jam protection function is operative during both the auto up and manual up operations while the engine is running or the ignition switch is ON, and also approximately 43 seconds have elapsed after the ignition switch is turned off.

- 1. Fully open the window.
- 2. Set a thick book wrapped with a piece of cloth near the window fully closed position.

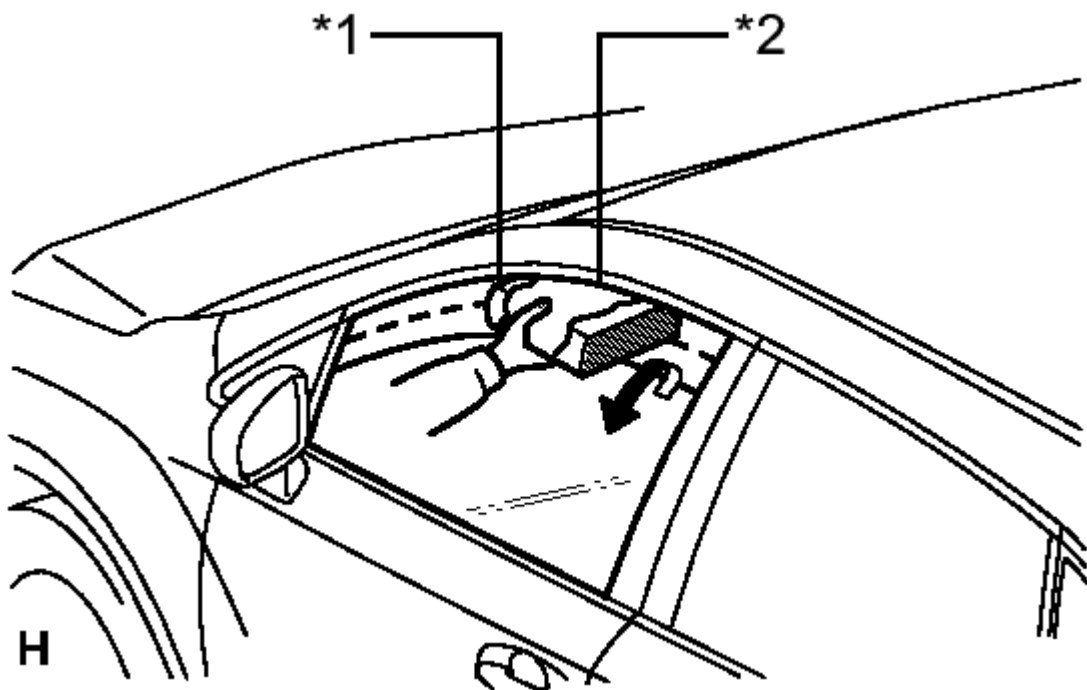


Fig. 5: Checking Jam Protection Function

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

TEXT IN ILLUSTRATION

*1	Thick
----	-------

	Book
*2	Cloth

3. Operate the auto up or manual up function to check that the power window goes down after the book is caught between the window and door frame, and stops when the opening reaches approximately 200 mm (7.87 in.).

HINT:

The power window moves down approximately 125 mm (4.93 in.). However, when the opening does not reach 200 mm (7.87 in.), the power window continues to go down until the opening reaches 200 mm (7.87 in.) or until approximately 5 seconds elapse.

4. While the power window is moving down, check that the door glass cannot be raised when the power window switch is used.

8. CHECK POWER QUARTER WINDOW SWITCH

- a. Check that the rear quarter windows operate as follows:

OK

Condition	Power Quarter Window Switch	Switch Operation	Power Windows
Ignition switch ON	-	Pulled up	Close
		Pushed down	Open

9. CHECK POWER WINDOW SWITCH LED ILLUMINATION

- a. Check the LED illumination (multiplex network master switch assembly).

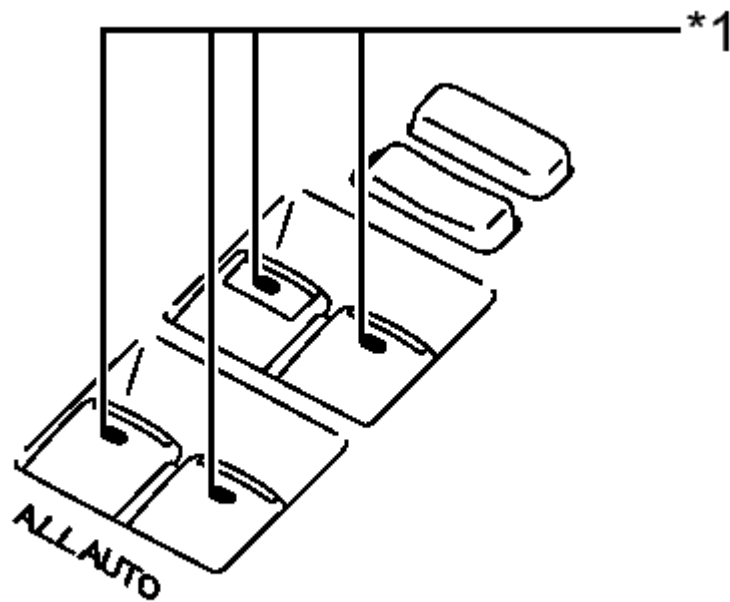
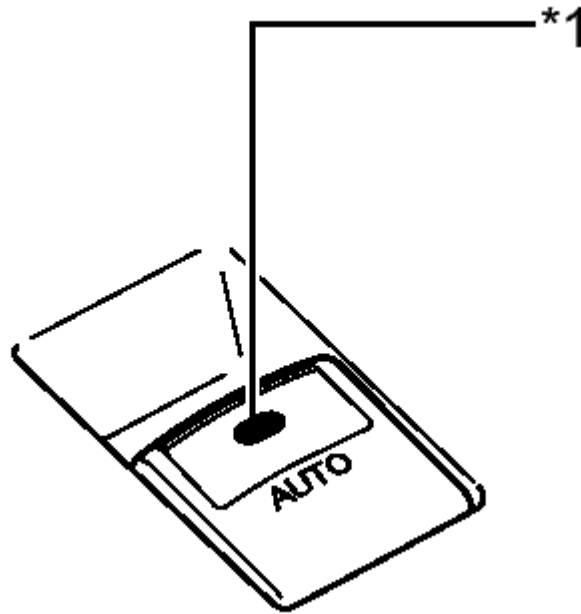


Fig. 6: Checking Power Window Switch LED Illumination
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

***1 LED**

1. Check that the LEDs located on the multiplex network master switch assembly illuminate when the ignition switch is turned to ON.
- b. Check the LED illumination (power window regulator switch assembly).



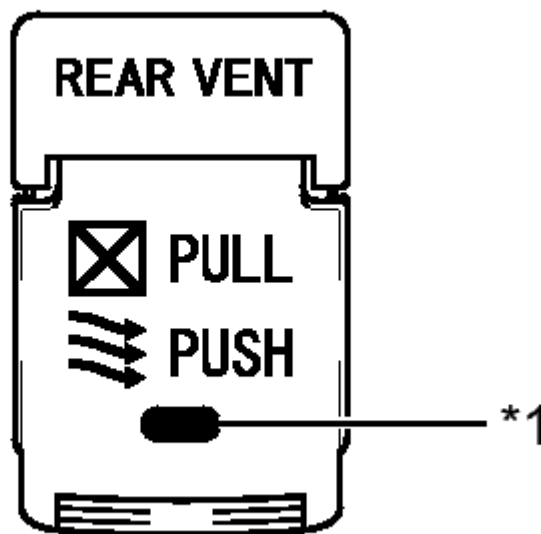
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Fig. 7: Checking LED Illumination (Power Window Regulator Switch Assembly)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*1	LED
----	-----

1. Check that the LED located on each power window regulator switch assembly (front passenger, rear LH and rear RH sides) illuminates when the ignition switch is turned to ON and the window lock switch is set to the unlock position.
10. **CHECK POWER QUARTER WINDOW SWITCH LED ILLUMINATION**
- a. Check the LED illumination (power quarter window switch).



P

Fig. 8: Checking Power Quarter Window Switch LED Illumination
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

***1 LED**

1. Check that the LEDs located on the power quarter window switch illuminate when the headlight dimmer switch is in the tail or head position.

CUSTOMIZE PARAMETERS

CUSTOMIZE PARAMETERS

1. CUSTOMIZE POWER WINDOW CONTROL SYSTEM

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.
- Record the current settings before customizing.

a. Customizing with the Techstream

1. Connect the Techstream to the DLC3.
2. Turn the ignition switch to ON.

3. Turn the Techstream on.
4. Enter the following menus: Customize Setting / Power Window.
5. Select the setting by referring to the table below.

Display	Default	Content	Setting	Relevant ECU
P Window Auto Up	Avail	This function is used to enable or disable the auto up function for the front passenger side window using the front power window regulator switch assembly RH.	Avail or Not Avl	Front power window regulator motor assembly RH
P Window Auto Up From Driver	Avail	This function is used to enable or disable the remote auto up function for the front passenger side window using the multiplex network master switch.	Avail or Not Avl	Front power window regulator motor assembly RH
		This		

RR Window Auto Up	Avail	function is used to enable or disable the auto up function using the rear power window regulator switch assembly RH.	Avail or Not Avl	Rear power window regulator motor assembly RH
RR Window Auto Up From Driver	Avail	This function is used to enable or disable the remote auto up function for the rear RH side window using the multiplex network master switch.	Avail or Not Avl	Rear power window regulator motor assembly RH
RL Window Auto Up	Avail	This function is used to enable or disable the auto up function using the rear power window regulator switch assembly	Avail or Not Avl	Rear power window regulator motor assembly LH

		LH.		
RL Window Auto Up From Driver	Avail	This function is used to enable or disable the remote auto up function for the rear LH side window using the multiplex network master switch.	Avail or Not Avl	Rear power window regulator motor assembly LH

INITIALIZATION

INITIALIZATION

1. INITIALIZE POWER WINDOW CONTROL SYSTEM (POWER WINDOW REGULATOR MOTOR ASSEMBLY (ALL DOORS))

WARNING: When the power window regulator motor assembly is reinstalled or replaced, the power window control system must be initialized. Functions such as the auto up/down, jam protection, remote control and key-off operation do not operate if the initialization is not performed.

HINT:

When the battery is replaced, it is not necessary to initialize the power window regulator motor assembly.

NOTE:

- When the power window regulator motor assembly is replaced, DTC B2313 is output. Clear the DTC after the initialization.
- When performing initialization, do not perform any other procedures.
- After a door glass or a door glass run has been replaced, the jam protection function may operate unexpectedly when the auto up function is used, due to detection of a value different from the operation learned value of the door glass movement speed. In such cases, the auto up function can be reinitialized by repeating the following operation at least 5 times:

- 1. Open the power window by fully pushing down the multiplex network master switch assembly or power window regulator switch assembly.**
 - 2. Close the power window by fully pulling up the multiplex network master switch assembly or power window regulator switch assembly and holding it at the auto up position.**
 - If the initialization is not completed properly, the LIN communication system may have a malfunction. Refer to HOW TO PROCEED WITH TROUBLESHOOTING .**
- a. Initialization procedure when replacing the power window regulator motor assembly with a new one:
1. Connect the battery and turn the ignition switch to ON (at this time, the LED on the multiplex network master switch assembly or power window regulator switch assembly blinks to indicate that it is ready for initialization).
 2. Fully open the window by fully pushing down the multiplex network master switch assembly or power window regulator switch assembly, and hold the switch for 1 second or more after the window is fully opened.
 3. Fully close the power window by fully pulling up the multiplex network master switch assembly or power window regulator switch assembly, and hold the switch for 1 second or more after the window is fully closed to reset the glass position. The LED on the multiplex network master switch assembly or power window regulator switch assembly stops blinking and illuminates to indicate that the initialization is complete.
- b. Initialization procedure when removing/installing the power window regulator motor assembly:
1. Connect the battery and turn the ignition switch to ON.
 2. Fully close the power window by fully pulling up the multiplex network master switch assembly or power window regulator switch assembly, and hold the switch for 6 seconds or more after the window is fully closed (if the power window does not move or stops halfway even when the switch is fully pulled, release the switch and fully pull it again).
 3. Fully open the window by pushing down the multiplex network master switch assembly or power window regulator switch assembly, and hold the switch for 1 second or more after the window is fully opened.
 4. Release the multiplex network master switch assembly or power window regulator switch assembly. Then fully push down and hold the switch for 4 seconds or more.
 5. Fully close the power window by fully pulling up the multiplex network master switch assembly or power window regulator switch assembly, and hold the switch for 1 second or more after the window is fully closed to reset the glass position and complete the initialization.
- c. Initialization procedure when the power window does not fully open:
1. Connect the battery and turn the ignition switch to ON.
 2. Fully close the power window by fully pulling up the multiplex network master switch assembly or power window regulator switch assembly, and hold the switch for 6 seconds or more after the window is fully closed (if the power window does not move or stops halfway even when the switch is fully pulled, release the switch and fully pull it again).

3. Fully open the window by pushing down the multiplex network master switch assembly or power window regulator switch assembly, and hold the switch for 1 second or more after the window is fully opened.
4. Release the multiplex network master switch assembly or power window regulator switch assembly. Then fully push down and hold the switch for 4 seconds or more.
5. Fully close the power window by fully pulling up the multiplex network master switch assembly or power window regulator switch assembly, and hold the switch for 1 second or more after the window is fully closed to reset the glass position and complete the initialization.

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.

POWER WINDOW CONTROL SYSTEM

Symptom	Suspected Area	See
Remote Up / Down Function does not Operate	Proceed to "Remote Up / Down Function does not Operate"	Refer to <u>Remote Up / Down Function does not Operate</u>
	LIN communication system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Multiplex network master switch assembly	Refer to <u>TERMINALS OF ECU</u>
	Front power window regulator motor assembly RH	Refer to <u>INSPECTION</u>
	Rear power window regulator motor assembly LH	Refer to <u>INSPECTION</u>
	Rear power window regulator motor assembly RH	Refer to <u>INSPECTION</u>
Driver Side Power Window does not Operate with Multiplex Network Master Switch	Proceed to "Driver Side Power Window does not Operate with Power Window Master Switch"	Refer to <u>Driver Side Power Window does not Operate with Power Window Master Switch</u>
	LIN communication system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Front power window regulator motor assembly LH	Refer to <u>INSPECTION</u>

	Multiplex network master switch assembly	Refer to <u>TERMINALS OF ECU</u>
	Main body ECU	Refer to <u>TERMINALS OF ECU</u>
	Wire harness or connector	-
Front Passenger Side Power Window does not Operate with Front Passenger Side Power Window Switch	Proceed to "Front Passenger Side Power Window does not Operate with Front Passenger Side Power Window Switch"	Refer to <u>Front Passenger Side Power Window does not Operate with Front Passenger Side Power Window Switch</u>
	LIN communication system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Front power window regulator motor assembly RH	Refer to <u>INSPECTION</u>
	Front power window regulator switch assembly RH	Refer to <u>INSPECTION</u>
	Main body ECU	Refer to <u>TERMINALS OF ECU</u>
	Wire harness or connector	-
Rear Power Window LH does not Operate with Rear Power Window Switch LH	Proceed to "Rear Power Window LH does not Operate with Rear Power Window Switch LH"	Refer to <u>Rear Power Window LH does not Operate with Rear Power Window Switch LH</u>
	LIN communication system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Rear power window regulator motor assembly LH	Refer to <u>INSPECTION</u>
	Rear power window regulator switch assembly LH	Refer to <u>INSPECTION</u>
	Main body ECU	Refer to <u>TERMINALS OF ECU</u>
	Wire harness or connector	-
Rear Power Window RH does not Operate with Rear Power Window Switch RH	Proceed to "Rear Power Window RH does not Operate with Rear Power Window Switch RH"	Refer to <u>Rear Power Window RH does not Operate with Rear Power Window Switch RH</u>
	LIN communication system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Rear power window regulator motor assembly RH	Refer to <u>INSPECTION</u>
	Rear power window regulator switch assembly RH	Refer to <u>INSPECTION</u>
	Main body ECU	Refer to <u>TERMINALS OF ECU</u>
	Wire harness or connector	-
	Proceed to "Driver Side Power Window Auto Up / Down Function does not Operate with Power Window Master	Refer to <u>Driver Side Power Window Auto Up / Down Function does not Operate with Power Window Master Switch</u>

Driver Side Power Window Auto Up / Down Function does not Operate with Multiplex Network Master Switch	Switch"	
	LIN communication system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Front power window regulator motor assembly LH	Refer to <u>INSPECTION</u>
	Multiplex network master switch assembly	Refer to <u>TERMINALS OF ECU</u>
	Glass position initialization	Refer to <u>INITIALIZATION</u>
	Wire harness or connector	-
Front Passenger Side Power Window Auto Up / Down Function does not Operate with Front Passenger Side Power Window Switch	Proceed to "Front Passenger Side Power Window Auto Up / Down Function does not Operate with Front Passenger Side Power Window Switch"	Refer to <u>Front Passenger Side Power Window Auto Up / Down Function does not Operate with Front Passenger Side Power Window Switch</u>
	Front power window regulator motor assembly RH	Refer to <u>INSPECTION</u>
	Front power window regulator switch assembly RH	Refer to <u>INSPECTION</u>
	Glass position initialization	Refer to <u>INITIALIZATION</u>
	Wire harness or connector	-
Rear Power Window LH Auto Up / Down Function does not Operate with Rear Power Window Switch LH	Proceed to "Rear Power Window LH Auto Up / Down Function does not Operate with Rear Power Window Switch LH"	Refer to <u>Rear Power Window LH Auto Up / Down Function does not Operate with Rear Power Window Switch LH</u>
	Rear power window regulator motor assembly LH	Refer to <u>INSPECTION</u>
	Rear power window regulator switch assembly LH	Refer to <u>INSPECTION</u>
	Glass position initialization	Refer to <u>INITIALIZATION</u>
	Wire harness or connector	-
Rear Power Window RH Auto Up / Down Function does not Operate with Rear Power Window Switch RH	Proceed to "Rear Power Window RH Auto Up / Down Function does not Operate with Rear Power Window Switch RH"	Refer to <u>Rear Power Window RH Auto Up / Down Function does not Operate with Rear Power Window Switch RH</u>
	Rear power window regulator motor assembly RH	Refer to <u>INSPECTION</u>
	Rear power window regulator switch assembly RH	Refer to <u>INSPECTION</u>
	Glass position initialization	Refer to <u>INITIALIZATION</u>
	Wire harness or connector	-
	Proceed to "Key-off Operation Function Operates even if	Refer to <u>Key-off Operation Function Operates</u>

Key-off Operation Function Operates even if Operating Conditions are not Satisfied	Operating Conditions are not Satisfied"	<u>even if Operating Conditions are not Satisfied</u>
	LIN communication system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Lighting system (door courtesy switch circuit)	Refer to <u>Door Courtesy Switch Circuit</u>
	Front power window regulator motor assembly LH	Refer to <u>INSPECTION</u>
	Front power window regulator motor assembly RH	Refer to <u>INSPECTION</u>
	Rear power window regulator motor assembly LH	Refer to <u>INSPECTION</u>
	Rear power window regulator motor assembly RH	Refer to <u>INSPECTION</u>
	Main body ECU	Refer to <u>TERMINALS OF ECU</u>
Auto Up Operation does not Fully Close Power Window (Jam Protection Function is Activated)	Proceed to "Auto Up Operation does not Fully Close Power Window (Jam Protection Function is Activated)"	Refer to <u>Auto Up Operation does not Fully Close Power Window (Jam Protection Function is Activated)</u>
	Glass position initialization (applicable location)	Refer to <u>INITIALIZATION</u>
	Improper installation (applicable location)	-
	Front power window regulator motor assembly LH	Refer to <u>INSPECTION</u>
	Front power window regulator motor assembly RH	Refer to <u>INSPECTION</u>
	Rear power window regulator motor assembly LH	Refer to <u>INSPECTION</u>
	Rear power window regulator motor assembly RH	Refer to <u>INSPECTION</u>
Jam Protection Function does not Operate	Proceed to "Jam Protection Function does not Operate"	Refer to <u>Jam Protection Function does not Operate</u>
	Glass position initialization (applicable location)	Refer to <u>INITIALIZATION</u>
	Front power window regulator motor assembly LH	Refer to <u>INSPECTION</u>
	Front power window regulator motor assembly RH	Refer to <u>INSPECTION</u>
	Rear power window regulator motor assembly LH	Refer to <u>INSPECTION</u>
	Rear power window regulator motor assembly RH	Refer to <u>INSPECTION</u>

REAR QUARTER POWER WINDOW CONTROL SYSTEM

Symptom	Suspected Area	See
Rear Quarter Window does not Operate with Power Quarter Window Switch	Proceed to "Power Vent Window Motor Circuit"	Refer to <u>Power Vent Window Motor Circuit</u>
	Power vent window motor assembly LH	-
	Power vent window motor assembly RH	-
	Power quarter window switch	-
	Wire harness or connector	-
	Main body ECU	Refer to <u>TERMINALS OF ECU</u>

TERMINALS OF ECU

TERMINALS OF ECU

1. CHECK MULTIPLEX NETWORK MASTER SWITCH ASSEMBLY

- Disconnect the H8 multiplex network master switch assembly connector.

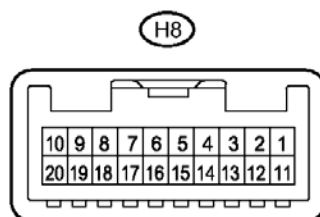


Fig. 9: Multiplex Network Master Switch Assembly Connector Terminal Identification
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- 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
H8-11 (B) - H8-12 (E)	W - W-B	Power supply	Ignition switch ON	11 to 14 V
H8-12 (E) - Body	W-B - Body ground	Ground	Always	Below 1 ohms

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

- c. Reconnect the H8 multiplex network master switch assembly connector.
- d. Measure the voltage according to the value(s) in the table below.

Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
H8-15 (DOWN) - H8-12 (E)	P - W-B	Power window motor DOWN output	Ignition switch ON, multiplex network master switch assembly off	11 to 14 V
			Ignition switch ON, multiplex network master switch assembly DOWN (Manual operation)	Below 1 V
H8-18 (LED) - H8-12 (E)	R - W-B	LED illumination signal	Ignition switch ON	11 to 14 V
			Approximately 43 seconds after ignition switch turned off	Below 1 V
H8-20 (UP) - H8-12 (E)	V - W-B	Power window motor UP output	Ignition switch ON, multiplex network master switch assembly off	11 to 14 V
			Ignition switch ON, multiplex network master switch assembly UP (Manual operation)	Below 1 V

If the result is not as specified, the multiplex network master switch assembly may have a malfunction.

2. CHECK FRONT POWER WINDOW REGULATOR SWITCH ASSEMBLY RH

- a. Disconnect the G7 front power window regulator switch assembly RH connector.

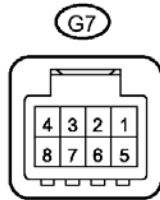


Fig. 10: Front Power Window Regulator Switch Assembly RH Connector Terminal Identification

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

- b. Measure the 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
G7-1 (GND) - Body ground	W-B - Body ground	Ground	Always	Below 1 ohms

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

- c. Reconnect the G7 front power window regulator switch assembly RH connector.
- d. Measure the voltage according to the value(s) in the table below.

Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
G7-4 (LED) - G7-1 (GND)	R - W- B	LED illumination signal	Ignition switch ON	11 to 14 V
			Approximately 43 seconds after ignition switch turned off	Below 1 V
			Ignition switch	

G7-8 (AUTO) - G7-1 (GND)	B - W- B	Power window motor AUTO UP output	ON, front passenger side power window fully open	11 to 14 V
			Ignition switch ON, front passenger side power window fully UP (AUTO UP position)	Below 1 V
			Ignition switch ON, front passenger side power window fully stopped (UP)	11 to 14 V
		Power window motor AUTO DOWN output	Ignition switch ON, front passenger side power window fully closed	11 to 14 V
			Ignition switch ON, front passenger side power window fully DOWN (AUTO DOWN position)	Below 1 V
			Ignition switch ON, front passenger side power window fully stopped (DOWN)	11 to 14 V
G7-7 (DOWN) - G7-1 (GND)	G - W- B	Power window motor DOWN output	Ignition switch ON, front power window regulator switch assembly RH off	11 to 14 V
			Ignition switch ON, front power window regulator	

			switch assembly RH DOWN (Manual operation)	Below 1 V
G7-6 (UP) - G7-1 (GND)	V - W- B	Power window motor UP output	Ignition switch ON, front power window regulator switch assembly RH off	11 to 14 V
			Ignition switch ON, front power window regulator switch assembly RH UP (Manual operation)	Below 1 V

If the result is not as specified, the front power window regulator switch assembly RH may have a malfunction.

3. CHECK REAR POWER WINDOW REGULATOR SWITCH ASSEMBLY LH

- a. Disconnect the J1 rear power window regulator switch assembly LH connector.

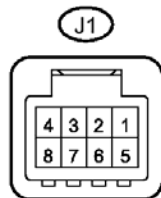


Fig. 11: Rear Power Window Regulator Switch Assembly LH Connector Terminal Identification

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

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

HINT:

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

Terminal	Wiring	Terminal		Specified
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No. (Symbol)	Color	Description	Condition	Condition
J1-1 (GND) - Body ground	W-B - Body ground	Ground	Always	Below 1 ohms

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

- c. Reconnect the J1 rear power window regulator switch assembly LH connector.
- d. Measure the voltage according to the value(s) in the table below.

Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
J1-4 (LED) - J1-1 (GND)	B - W- B	LED illumination signal	Ignition switch ON	11 to 14 V
			Approximately 43 seconds after ignition switch turned off	Below 1 V
J1-8 (AUTO) - J1-1 (GND)	G - W- B	Power window motor AUTO UP output	Ignition switch ON, rear LH side power window fully open	11 to 14 V
			Ignition switch ON, rear LH side power window fully UP (AUTO UP position)	Below 1 V
			Ignition switch ON, rear LH side power window fully stopped (UP)	11 to 14 V
		Power	Ignition switch ON, rear LH side power window fully closed	11 to 14 V
			Ignition switch ON, rear LH side power	

		window motor AUTO DOWN output	window fully DOWN (AUTO DOWN position)	Below 1 V
			Ignition switch ON, rear LH side power window fully stopped (DOWN)	11 to 14 V
J1-7 (DOWN) - J1-1 (GND)	W - W-B	Power window motor DOWN output	Ignition switch ON, rear power window regulator switch assembly LH off	11 to 14 V
			Ignition switch ON, rear power window regulator switch assembly LH DOWN (Manual operation)	Below 1 V
J1-6 (UP) - J1-1 (GND)	R - W-B	Power window motor UP output	Ignition switch ON, rear power window regulator switch assembly LH off	11 to 14 V
			Ignition switch ON, rear power window regulator switch assembly LH UP (Manual operation)	Below 1 V

If the result is not as specified, the rear power window regulator switch assembly LH may have a malfunction.

4. CHECK REAR POWER WINDOW REGULATOR SWITCH ASSEMBLY RH

- a. Disconnect the I1 rear power window regulator switch assembly RH connector.

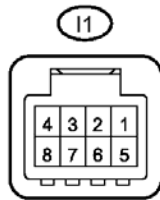


Fig. 12: Rear Power Window Regulator Switch Assembly RH Connector Terminal Identification

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

- b. Measure the 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
I1-1 (GND) - Body ground	W-B - Body ground	Ground	Always	Below 1 ohms

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

- c. Reconnect the I1 rear power window regulator switch assembly RH connector.
d. Measure the voltage according to the value(s) in the table below.

Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
I1-4 (LED) - I1-1 (GND)	SB - W-B	LED illumination signal	Ignition switch ON	11 to 14 V
			Approximately 43 seconds after ignition switch turned off	Below 1 V
			Ignition switch ON, rear RH side power	11 to 14 V

I1-8 (AUTO) - I1-1 (GND)	B - W- B	Power window motor AUTO UP output	window fully open	
			Ignition switch ON, rear RH side power window fully open (AUTO UP position)	Below 1 V
			Ignition switch ON, rear RH side power window fully stopped (UP)	11 to 14 V
		Power window motor AUTO DOWN output	Ignition switch ON, rear RH side power window fully closed	11 to 14 V
			Ignition switch ON, rear RH side power window fully DOWN (AUTO DOWN position)	Below 1 V
			Ignition switch ON, rear RH side power window fully stopped (DOWN)	11 to 14 V
I1-7 (DOWN) - I1-1 (GND)	G - W- B	Power window motor DOWN output	Ignition switch ON, rear power window regulator switch assembly RH off	11 to 14 V
			Ignition switch ON, rear power window regulator switch assembly RH DOWN (Manual	Below 1 V

			operation)	
I1-6 (UP) - I1-1 (GND)	R - W- B	Power window motor UP output	Ignition switch ON, rear power window regulator switch assembly RH off	11 to 14 V
			Ignition switch ON, rear power window regulator switch assembly RH UP (Manual operation)	Below 1 V

If the result is not as specified, the rear power window regulator switch assembly RH may have a malfunction.

5. CHECK FRONT POWER WINDOW REGULATOR MOTOR ASSEMBLY LH

- a. Disconnect the H1 front power window regulator motor assembly LH connector.

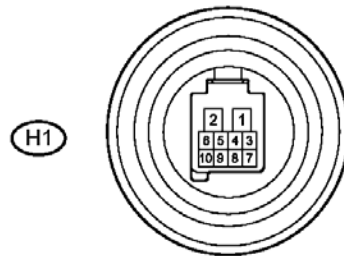


Fig. 13: Front Power Window Regulator Motor Assembly LH Connector Terminal Identification

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

- 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
H1-1 (GND) -	W-B - Body	Ground	Always	Below 1

Body ground	ground			ohms
H1-2 (B) - Body ground	G - Body ground	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 H1 front power window regulator motor assembly LH connector.
- d. Measure the voltage according to the value(s) in the table below.

Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
H1-5 (LED) - H1-1 (GND)	R - W-B	LED illumination signal	Ignition switch ON	11 to 14 V
			Approximately 43 seconds after ignition switch turned off	Below 1 V
H1-7 (DOWN) - H1-1 (GND)	P - W-B	Power window motor DOWN input	Ignition switch ON, multiplex network master switch assembly off	11 to 14 V
			Ignition switch ON, multiplex network master switch assembly DOWN (Manual operation)	Below 1 V
			Ignition switch ON, driver side power window fully closed	11 to 14 V
			Ignition switch ON, driver side power window fully DOWN (AUTO DOWN	Below 1 V

			position)	
			Ignition switch ON, driver side power window fully stopped (DOWN)	11 to 14 V
H1-10 (UP) - H1-1 (GND)	V - W- B	Power window motor UP input	Ignition switch ON, multiplex network master switch assembly off	11 to 14 V
			Ignition switch ON, multiplex network master switch assembly UP (Manual operation)	Below 1 V
			Ignition switch ON, driver side power window fully open	11 to 14 V
			Ignition switch ON, driver side power window fully UP (AUTO UP position)	Below 1 V
			Ignition switch ON, driver side power window fully stopped (UP)	11 to 14 V

If the result is not as specified, the front power window regulator motor assembly LH may have a malfunction.

6. **CHECK FRONT POWER WINDOW REGULATOR MOTOR ASSEMBLY RH**
 - a. Disconnect the G1 front power window regulator motor assembly RH connector.

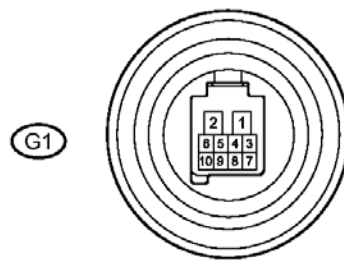


Fig. 14: Front Power Window Regulator Motor Assembly RH Connector Terminal Identification

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

- 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
G1-1 (GND) - Body ground	W-B - Body ground	Ground	Always	Below 1 ohms
G1-2 (B) - Body ground	G - Body ground	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 G1 front power window regulator motor assembly RH connector.
d. Measure the voltage according to the value(s) in the table below.

Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
			Ignition switch ON, front passenger side power window fully open	11 to 14 V
		Power window motor	Ignition switch ON, front passenger side power window	Below 1 V

G1-4 (AUTO) - G1-1 (GND)	B - W- B	AUTO UP input	fully UP (AUTO UP position)	
			Ignition switch ON, front passenger side power window fully stopped (UP)	11 to 14 V
		Power window motor AUTO DOWN input	Ignition switch ON, front passenger side power window fully closed	11 to 14 V
			Ignition switch ON, front passenger side power window fully DOWN (AUTO DOWN position)	Below 1 V
G1-5 (LED) - G1-1 (GND)	R - W- B	LED illumination signal	Ignition switch ON	11 to 14 V
			Approximately 43 seconds after ignition switch turned off	Below 1 V
			Ignition switch ON, front power window regulator switch assembly RH off	11 to 14 V
			Ignition switch ON, front power window regulator switch	Below 1

G1-7 (DOWN) - G1-1 (GND)	G - W- B	Power window motor DOWN input	assembly RH DOWN (Manual operation)	V
			Ignition switch ON, front passenger side power window fully closed	11 to 14 V
			Ignition switch ON, front passenger side power window fully DOWN (AUTO DOWN position)	Below 1 V
			Ignition switch ON, front passenger side power window fully stopped (DOWN)	11 to 14 V
G1-10 (UP) - G1-1 (GND)	V - W- B	Power window motor UP input	Ignition switch ON, front power window regulator switch assembly RH off	11 to 14 V
			Ignition switch ON, front power window regulator switch assembly RH UP (Manual operation)	Below 1 V
			Ignition switch ON, front passenger side power window fully open	11 to 14 V
			Ignition switch ON, front passenger side power window	Below 1

			fully UP (AUTO UP position)	V
			Ignition switch ON, front passenger side power window fully stopped (UP)	11 to 14 V

If the result is not as specified, the front power window regulator motor assembly RH may have a malfunction.

7. CHECK REAR POWER WINDOW REGULATOR MOTOR ASSEMBLY LH

- Disconnect the J7 rear power window regulator motor assembly LH connector.

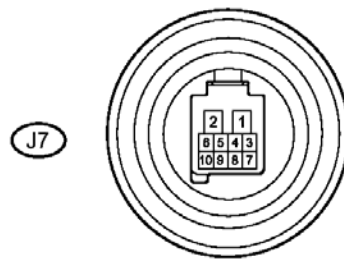


Fig. 15: Rear Power Window Regulator Motor Assembly LH Connector Terminal Identification

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

- 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
J7-1 (GND) - Body ground	W-B - Body ground	Ground	Always	Below 1 ohms
J7-2 (B) - Body ground	GR - Body ground	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 J7 rear power window regulator motor assembly LH connector.
- d. Measure the voltage according to the value(s) in the table below.

Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
J7-4 (AUTO) - J7-1 (GND)	G - W- B	Power window motor AUTO UP input	Ignition switch ON, rear LH side power window fully open	11 to 14 V
			Ignition switch ON, rear LH side power window fully UP (AUTO UP position)	Below 1 V
			Ignition switch ON, rear LH side power window fully stopped (UP)	11 to 14 V
		Power window motor AUTO DOWN input	Ignition switch ON, rear LH side power window fully closed	11 to 14 V
			Ignition switch ON, rear LH side power window fully DOWN (AUTO DOWN position)	Below 1 V
			Ignition switch ON, rear LH side power window fully stopped (DOWN)	11 to 14 V
J7-5 (LED) - J7-1 (GND)	B - W- B	LED illumination signal	Ignition switch ON	11 to 14 V
			Approximately 43 seconds after ignition	Below 1

			switch turned off	V
J7-7 (DOWN) - J7-1 (GND)	W - W- B	Power window motor DOWN input	Ignition switch ON, rear power window regulator switch assembly LH off	11 to 14 V
			Ignition switch ON, rear power window regulator switch assembly LH DOWN (Manual operation)	Below 1 V
			Ignition switch ON, rear LH side power window fully closed	11 to 14 V
			Ignition switch ON, rear LH side power window fully DOWN (AUTO DOWN position)	Below 1 V
			Ignition switch ON, rear LH side power window fully stopped (DOWN)	11 to 14 V
			Ignition switch ON, rear power window regulator switch assembly LH off	11 to 14 V
			Ignition switch ON, rear power window	

J7-10 (UP) - J7-1 (GND)	R - W- B	Power window motor UP input	regulator switch assembly LH UP (Manual operation)	Below 1 V
			Ignition switch ON, rear LH side power window fully open	11 to 14 V
			Ignition switch ON, rear LH side power window fully UP (AUTO UP position)	Below 1 V
			Ignition switch ON, rear LH side power window fully stopped (UP)	11 to 14 V

If the result is not as specified, the rear power window regulator motor assembly LH may have a malfunction.

8. CHECK REAR POWER WINDOW REGULATOR MOTOR ASSEMBLY RH

- a. Disconnect the I7 rear power window regulator motor assembly RH connector.

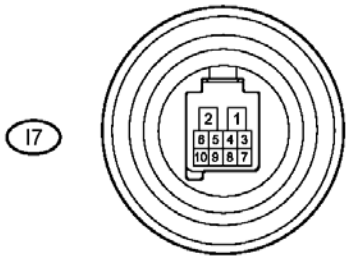


Fig. 16: Rear Power Window Regulator Motor Assembly RH Connector Terminal Identification

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

- 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.

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Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
I7-1 (GND) - Body ground	W-B - Body ground	Ground	Always	Below 1 ohms
I7-2 (B) - Body ground	R - Body ground	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 I7 rear power window regulator motor assembly RH connector.
- d. Measure the voltage according to the value(s) in the table below.

Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
I7-4 (AUTO) - I7-1 (GND)	B - W- B	Power window motor AUTO UP input	Ignition switch ON, rear RH side power window fully open	11 to 14 V
			Ignition switch ON, rear RH side power window fully open (AUTO UP position)	Below 1 V
			Ignition switch ON, rear RH side power window fully stopped (UP)	11 to 14 V
		Power window motor AUTO	Ignition switch ON, rear RH side power window fully closed	11 to 14 V
			Ignition switch ON, rear RH side power window fully DOWN (AUTO	Below 1 V

		DOWN input	DOWN position)	
			Ignition switch ON, rear RH side power window fully stopped (DOWN)	11 to 14 V
I7-5 (LED) - I7-1 (GND)	SB - W-B	LED illumination signal	Ignition switch ON	11 to 14 V
			Approximately 43 seconds after ignition switch turned off	Below 1 V
I7-7 (DOWN) - I7-1 (GND)	G - W- B	Power window motor DOWN input	Ignition switch ON, rear power window regulator switch assembly RH off	11 to 14 V
			Ignition switch ON, rear power window regulator switch assembly RH DOWN (Manual operation)	Below 1 V
			Ignition switch ON, rear RH side power window fully closed	11 to 14 V
			Ignition switch ON, rear RH side power window fully DOWN (AUTO DOWN position)	Below 1 V
			Ignition switch ON, rear RH side power	

			window fully stopped (DOWN)	11 to 14 V
I7-10 (UP) - I7-1 (GND)	R - W- B	Power window motor UP input	Ignition switch ON, rear power window regulator switch assembly RH off	11 to 14 V
			Ignition switch ON, rear power window regulator switch assembly RH UP (Manual operation)	Below 1 V
			Ignition switch ON, rear RH side power window fully open	11 to 14 V
			Ignition switch ON, rear RH side power window fully UP (AUTO UP position)	Below 1 V
			Ignition switch ON, rear RH side power window fully stopped (UP)	11 to 14 V

If the result is not as specified, the rear power window regulator motor assembly RH may have a malfunction.

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

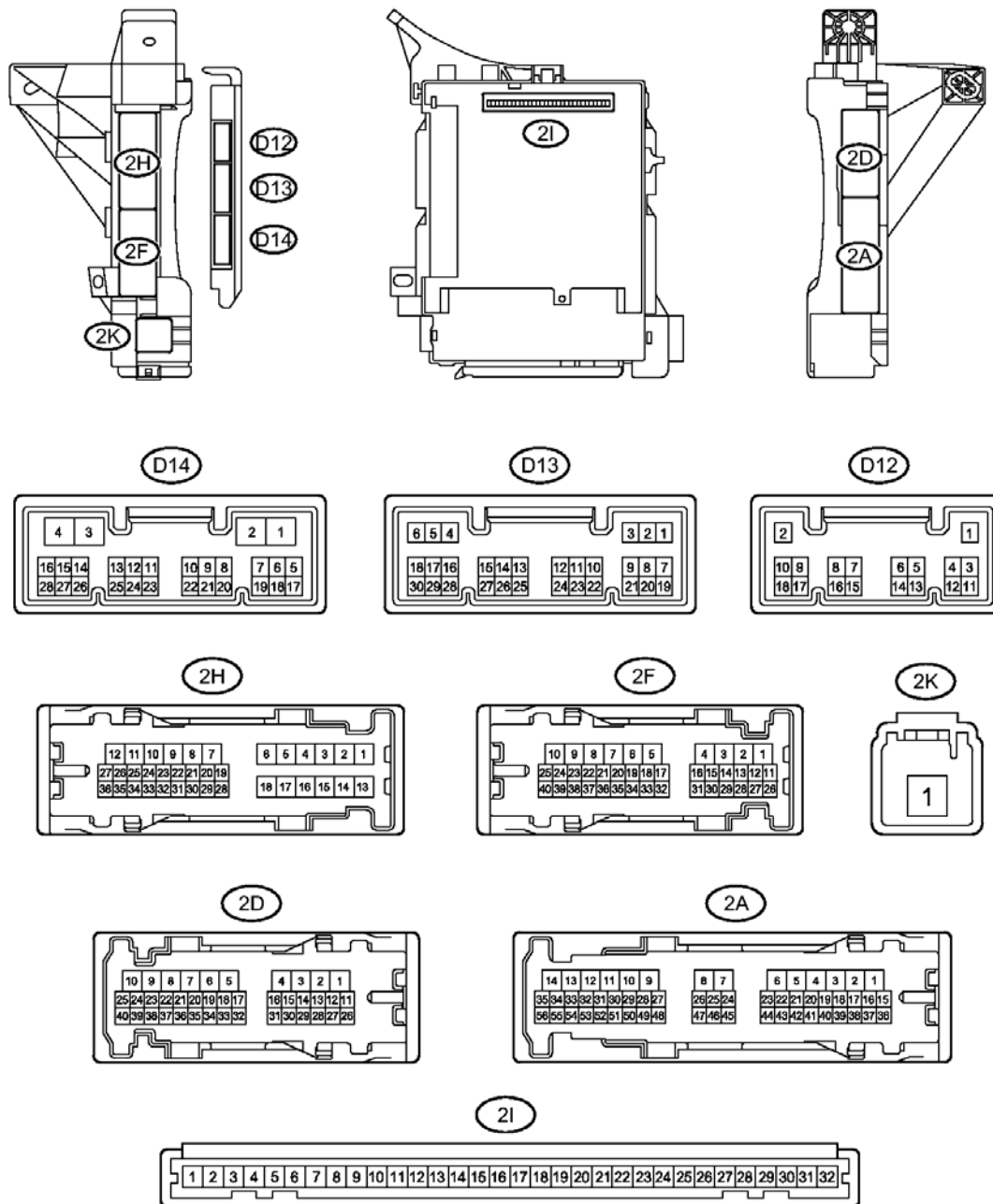


Fig. 17: Main Body ECU & Instrument Panel Junction Block Assembly Connector Terminal Identification

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

- Remove the main body ECU.
- Disconnect the D14 main body 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
2I-2 (FLCY) - Body ground	-	Front door courtesy light switch LH input	Driver side door Closed (off)	10 kohms or higher
			Driver side door Open (on)	Below 1 ohms
2I-4 (FRCY) - Body ground	-	Front door courtesy light switch RH input	Front passenger side door Closed (off)	10 kohms or higher
			Front passenger side door Open (on)	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	11 to 14 V
			Ignition switch off	Below 1 V
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
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.

- d. Reinstall the main body ECU.
- e. Reconnect the D14 main body ECU connector.
- f. Measure the voltage according to the value(s) in the table below.

Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
2H-27 (FRCY) - Body ground	GR - Body ground	Front door courtesy light switch RH input	Front passenger side door open	Below 1 V
		Front door courtesy light switch RH input	Front passenger side door closed	11 to 14 V
2H-35 (FLCY) - Body ground	P - Body ground	Front door courtesy light switch LH input	Driver side door open	Below 1 V
		Front door courtesy light switch LH input	Driver side door closed	11 to 14 V
D13-2 (PWS) - Body ground	V - Body ground	P/W MAIN relay operation signal	Ignition switch ON	11 to 14 V

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

DIAGNOSIS SYSTEM

DIAGNOSIS SYSTEM

1. DESCRIPTION

- a. The power window control system data can be read from the Data Link Connector 3 (DLC3) of the vehicle. 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

- Connect the Techstream to the DLC3.
- Turn the ignition switch to ON.
- Turn the Techstream on.
- Enter the following menus: Body Electrical / (desired system) / Trouble Codes.
- Check the details of the DTC(s). Refer to **DIAGNOSTIC TROUBLE CODE CHART**.

2. CLEAR DTC

- Connect the Techstream to the DLC3.
- Turn the ignition switch to ON.
- Turn the Techstream on.
- Enter the following menus: Body Electrical / (desired system) / Trouble Codes.
- Clear the DTCs.

FAIL-SAFE CHART

FAIL-SAFE CHART

1. POWER WINDOW OPERATION IN FAIL-SAFE MODE

HINT:

If the pulse sensor built into the power window regulator motor malfunctions, the power window control system enters fail-safe mode.

- The power window control system prohibits the following power window operations when the pulse sensor for the jam protection function has problems and the window position or the learned value is abnormal.

MULTIPLEX NETWORK MASTER SWITCH ASSEMBLY

Power Window Operation	Condition		
	Ignition switch ON	Ignition switch off (Key-off operation permitted)	Ignition switch off (Key-off operation prohibited)
Manual up			

(Driver side door window)	X	X	-
Manual down (Driver side door window)	o	X	-
Auto up (Driver side door window) (Hold switch at auto up position)	o*	X	-
Auto up (Driver side door window)	X	X	-
Auto down (Driver side door window)	X	X	-
Manual up (Remote switch operation)	X	X	-
Manual down (Remote switch operation)	X	X	-
Auto up (Remote switch operation) (hold switch at auto up position)	X	X	-
Auto up (Remote switch operation)	X	X	-

Auto down (Remote switch operation)	X	X	-
--	---	---	---

HINT:

- o: Operates
- X: Operation prohibited
- *: Operates in manual mode without jam protection

POWER WINDOW REGULATOR SWITCH ASSEMBLY (FOR FRONT PASSENGER SIDE, REAR LH AND REAR RH SIDES)

Power Window Operation	Condition		
	Ignition switch ON	Ignition switch off (Key-off operation permitted)	Ignition switch off (Key-off operation prohibited)
Manual up	X	X	-
Manual down	o	X	-
Auto up (hold switch at auto up position)	o*	X	-
Auto up	X	X	-
Auto down	X	X	-

HINT:

- o: Operates
- X: Operation prohibited
- *: Operates in manual mode without jam protection

1. Power window switch LED control

HINT:

During normal operation (fail-safe is not operating), or during fail-safe mode when there is a pulse sensor malfunction or the window position or learned value is abnormal, the LED illuminates as shown in the illustration.

a. For driver side:

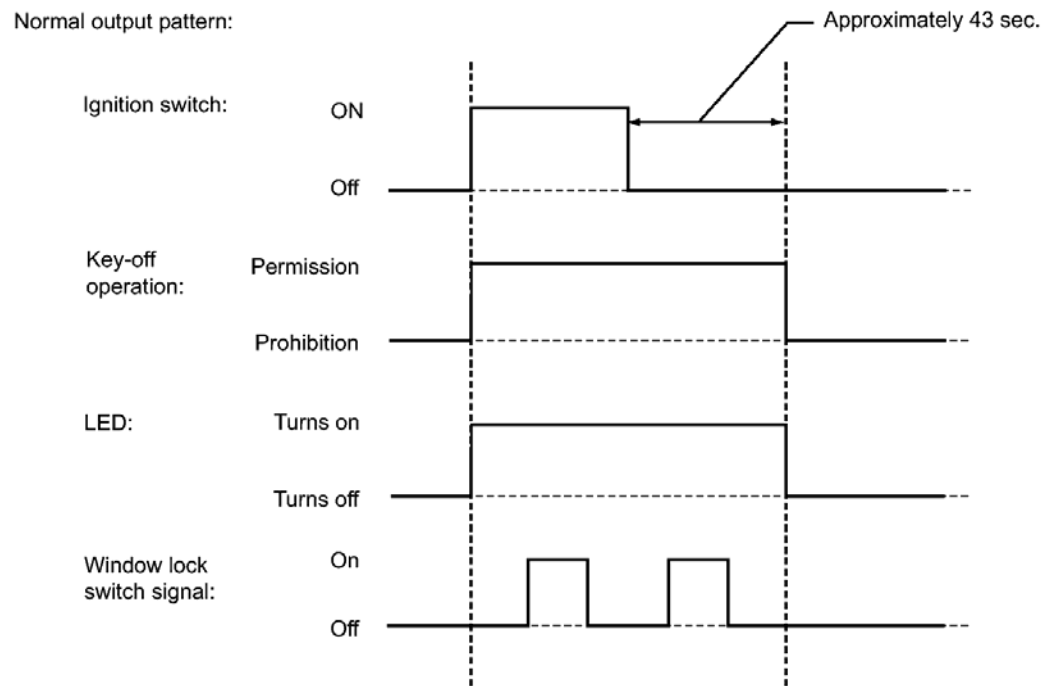


Fig. 18: Power Window Switch LED Control Output Pattern (For Driver Side)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

b. For front passenger side, rear LH and rear RH sides:

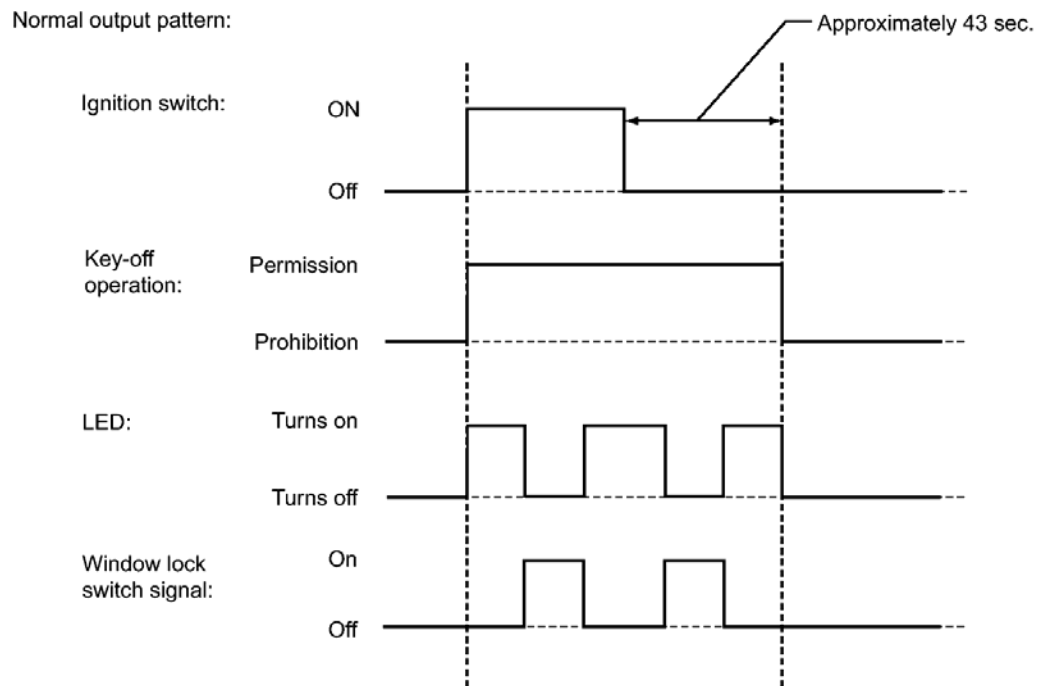


Fig. 19: Power Window Switch LED Control Output Pattern (for Front Passenger Side, Rear LH And Rear RH Sides)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. Fail-safe deactivation condition

When the pulse sensor is normal, to deactivate fail-safe mode, pull up the power window switch to the auto up position and hold it for at least 1 second to fully close the window from the fully open position. As a result, the auto up/down function will return.

b. Initialization failure

HINT:

During initialization of the power window regulator motor ECU, when the window position or initialization complete status cannot be properly read from the EEPROM, the power window control system prohibits the operations as follows:

MULTIPLEX NETWORK MASTER SWITCH ASSEMBLY

Power Window Operation	Condition		
	Ignition switch ON	Ignition switch off (Key-off operation permitted)	Ignition switch off (Key-off operation prohibited)
Manual up			

(Driver side door window)	X	X	-
Manual down (Driver side door window)	o	X	-
Auto up (Driver side door window) (hold switch at auto up position)	o*	X	-
Auto up (Driver side door window)	X	X	-
Auto down (Driver side door window)	X	X	-
Manual up (Remote switch operation)	X	X	-
Manual down (Remote switch operation)	X	X	-
Auto up (Remote switch operation) (hold switch at auto up position)	X	X	-
Auto up (Remote switch operation)	X	X	-

Auto down (Remote switch operation)	X	X	-
--	---	---	---

HINT:

- o: Operates
- X: Operation prohibited
- *: Operates in manual mode without jam protection

POWER WINDOW REGULATOR SWITCH ASSEMBLY (FOR FRONT PASSENGER SIDE, REAR LH AND REAR RH SIDES)

Power Window Operation	Condition		
	Ignition switch ON	Ignition switch off (Key-off operation permitted)	Ignition switch off (Key-off operation prohibited)
Manual up	X	X	-
Manual down	o	X	-
Auto up (hold switch at auto up position)	o*	X	-
Auto up	X	X	-
Auto down	X	X	-

HINT:

- o: Operates
- X: Operation prohibited
- *: Operates in manual mode without jam protection

1. Power window switch LED control

HINT:

During initialization of the power window regulator motor ECU, when the window position or initialization complete status cannot be properly read from the EEPROM during fail-safe mode, the LED illuminates as shown in the illustration.

a. For driver side:

Initialization failure output pattern:

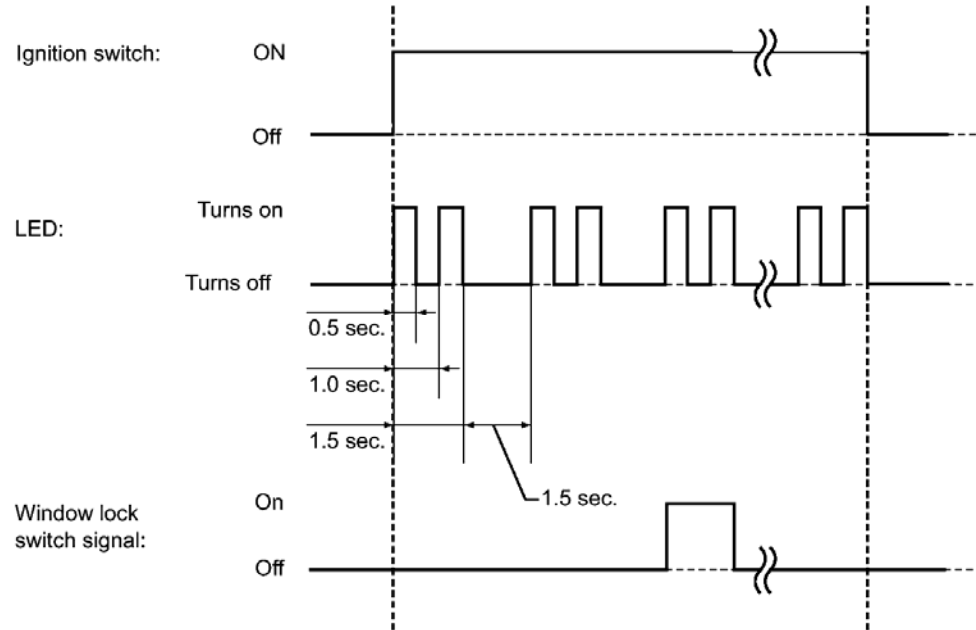


Fig. 20: Power Window Switch LED Control Output Pattern (For Driver Side)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

b. For front passenger side, rear LH and rear RH sides:

Initialization failure output pattern:

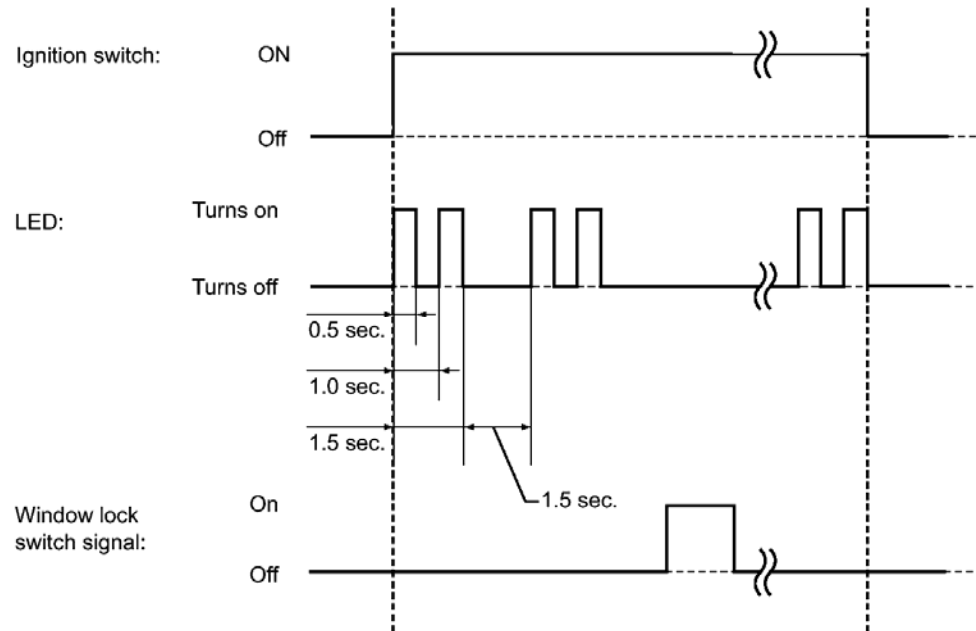


Fig. 21: Power Window Switch LED Control Output Pattern (For Front Passenger Side, Rear LH And Rear RH Sides)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

c. LIN communication failure

HINT:

If the LIN communication line malfunctions (communication stop), the power window control system prohibits the operations as follows:

MULTIPLEX NETWORK MASTER SWITCH ASSEMBLY

Power Window Operation	Condition
	Ignition switch ON
Manual up	o*
Manual down	o
Auto up (hold switch at auto up position)	X
Auto up	X

Auto down	X
--------------	---

HINT:

- o: Operates
- X: Operation prohibited
- *: Jam protection can operate.
- Remote up/down function does not operate.

POWER WINDOW REGULATOR SWITCH ASSEMBLY (FOR FRONT PASSENGER SIDE, REAR LH AND REAR RH SIDES)

Power Window Operation	Condition
	Ignition switch ON
Manual up	o*
Manual down	o
Auto up (hold switch at auto up position)	o*
Auto up	o*
Auto down	o

HINT:

- o: Operates
 - X: Operation prohibited
 - *: Jam protection can operate.
- d. LIN communication failure and pulse sensor failure

HINT:

If the LIN communication line malfunctions (communication stop) and the pulse sensor for the jam protection function has problems, the power window control system prohibits the operations as follows:

MULTIPLEX NETWORK MASTER SWITCH ASSEMBLY

Power Window	Condition

Operation	Always
Manual up	X
Manual down	X
Auto up (hold switch at auto up position)	X
Auto up	X
Auto down	X

HINT:

- o: Operates
- X: Operation prohibited
- Driver side power window: When the jam protection function does not operate due to a LIN communication failure, the manual up and auto up functions will not operate.
- Remote switch operation: Not operative during a LIN communication failure

POWER WINDOW REGULATOR SWITCH ASSEMBLY (FOR FRONT PASSENGER SIDE, REAR LH AND REAR RH SIDES)

Power Window Operation	Condition
	Always
Manual up	X
Manual down	X
Auto up (hold switch at auto up position)	X
Auto up	X
Auto down	X

HINT:

- o: Operates
 - X: Operation prohibited
- e. LIN communication failure and abnormal window position learned value or initialization failure

HINT:

If the LIN communication line malfunctions (communication stop) and the window position or the learned value is abnormal, the power window control system prohibits the operations as follows:

MULTIPLEX NETWORK MASTER SWITCH ASSEMBLY

Power Window Operation	Condition
	Always
Manual up	o*
Manual down	o
Auto up (hold switch at auto up position)	-
Auto up	-
Auto down	-

HINT:

- o: Operates
- *: Jam protection can operate and window reverses upon reaching the fully closed position.
- Remote switch operation: Operation is not possible during a LIN communication failure.

POWER WINDOW REGULATOR SWITCH ASSEMBLY (FOR FRONT PASSENGER SIDE, REAR LH AND REAR RH SIDES)

Power Window Operation	Condition
	Always
Manual up	o*
Manual down	o
Auto up (hold switch at auto up position)	o*
Auto up	X
Auto down	X

HINT:

- o: Operates
- X: Operation prohibited
- *: Jam protection can operate and window reverses upon reaching the fully closed position.

DATA LIST / ACTIVE TEST

DATA LIST / ACTIVE TEST

1. READ 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.

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

MASTER SWITCH (MULTIPLEX NETWORK MASTER SWITCH ASSEMBLY)

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
D Door P/W Auto SW	Driver side power window auto switch signal / ON or OFF	ON: Driver side power window auto switch operated OFF: Driver side power window auto switch not	-

		operated	
P Door P/W Auto SW	Front passenger side power window auto up/down switch signal / ON or OFF	ON: Front passenger side power window auto switch operated OFF: Front passenger side power window auto switch not operated	-
RR Door P/W Auto SW	Rear RH side power window auto up/down switch signal / ON or OFF	ON: Rear RH side power window auto switch operated OFF: Rear RH side power window auto switch not operated	-
RL Door P/W Auto SW	Rear LH side power window auto up/down switch signal / ON or OFF	ON: Rear LH side power window auto switch operated OFF: Rear LH side power window auto switch not operated	-
		ON: Front	

P Door P/W Up SW	Front passenger side power window manual up switch signal / ON or OFF	passenger side power window manual up switch operated OFF: Front passenger side power window manual up switch not operated	-
RR Door P/W up switch	Rear RH side power window manual up switch signal / ON or OFF	ON: Rear RH side power window manual up switch operated OFF: Rear RH side power window manual up switch not operated	-
RL Door P/W up switch	Rear LH side power window manual up switch signal / ON or OFF	ON: Rear LH side power window manual up switch operated OFF: Rear LH side power window manual up switch not operated	-
		ON: Front passenger side	

P Door P/W Down SW	Front passenger side power window manual down switch signal / ON or OFF	power window manual down switch operated OFF: Front passenger side power window manual down switch not operated	-
RR Door P/W Down SW	Rear RH side power window manual down switch signal / ON or OFF	ON: Rear RH side power window manual down switch operated OFF: Rear RH side power window manual down switch not operated	-
RL Door P/W Down SW	Rear LH side power window manual down switch signal / ON or OFF	ON: Rear LH side power window manual down switch operated OFF: Rear LH side power window manual down switch not operated	-

Door Lock Switch Status	Driver side door control switch lock signal / ON or OFF	ON: Door control switch pushed to lock position OFF: Door control switch not pushed to lock position	-
Door Unlock Switch Status	Driver side door control switch unlock signal / ON or OFF	ON: Door control switch pushed to unlock position OFF: Door control switch not pushed to unlock position	-
Window Lock Switch Status	Window lock switch signal / ON or OFF	ON: Window lock switch LOCK position OFF: Window lock switch UNLOCK position	-
Number of Trouble Codes	Number of trouble codes / Min.: 0 or Max.: 255	Number of DTCs will be displayed	-

D-DOOR MOTOR (FRONT POWER WINDOW REGULATOR MOTOR ASSEMBLY LH)

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

D Door P/W Auto SW	Driver side power window auto switch signal / ON or OFF	Driver side power window auto switch operated OFF: Driver side power window auto switch not operated	-
D Door P/W Up SW	Driver side power window manual up switch signal / ON or OFF	ON: Driver side power window manual up switch operated OFF: Driver side power window manual up switch not operated	-
D Door P/W Down SW	Driver side power window manual down switch signal / ON or OFF	ON: Driver side power window manual down switch operated OFF: Driver side power window manual down switch not	-

		operated	
Glass Position (Close - 1/4)	Margin for jam protection triggering force of window glass within range of fully closed to 1/4 open window glass position / OK or Caution	OK: Normal manual up operation Caution: Jam detected in the specified range	Caution is displayed only while the power window ECU built into the power window regulator motor assembly detects a jam.
Glass Position (1/4 - 2/4)	Margin for jam protection triggering force of window glass within range of 1/4 to 1/2 open window glass position / OK or Caution	OK: Normal manual up operation Caution: Jam detected in the specified range	Caution is displayed only while the power window ECU built into the power window regulator motor assembly detects a jam.
Glass Position (2/4 - 3/4)	Margin for jam protection triggering force of window glass within range of 1/2 to 3/4 open window glass position / OK or Caution	OK: Normal manual up operation Caution: Jam detected in the specified range	Caution is displayed only while the power window ECU built into the power window regulator motor assembly detects a jam.
	Margin for jam protection triggering	OK: Normal	Caution is displayed only while the power

Glass Position (3/4 - Open)	force of window glass within range of 3/4 to fully open window glass position / OK or Caution	manual up operation Caution: Jam detected in the specified range	window ECU built into the power window regulator motor assembly detects a jam.
Number of Trouble Codes	Number of trouble codes / Min.: 0 or Max.: 255	Number of DTCs will be displayed	-

P-DOOR MOTOR (FRONT POWER WINDOW REGULATOR MOTOR ASSEMBLY RH)

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
P Door P/W Auto SW	Front passenger side power window auto switch signal / ON or OFF	ON: Front passenger side power window auto switch operated OFF: Front passenger side power window auto switch not operated	-
P Door P/W Up SW	Front passenger side power window manual up switch signal / ON or OFF	ON: Front passenger side power window manual up switch operated OFF: Front passenger side power window manual up switch not operated	-
		ON: Front passenger side power	

P Door P/W Down SW	Front passenger side power window manual down switch signal / ON or OFF	window manual down switch operated OFF: Front passenger side power window manual down switch not operated	-
Glass Position (Close - 1/4)	Margin for jam protection triggering force of window glass within range of fully closed to 1/4 open window glass position / OK or Caution	OK: Normal manual up operation Caution: Jam detected in the specified range	Caution is displayed only while the power window ECU built into the power window regulator motor assembly detects a jam.
Glass Position (1/4 - 2/4)	Margin for jam protection triggering force of window glass within range of 1/4 to 1/2 open window glass position / OK or Caution	OK: Normal manual up operation Caution: Jam detected in the specified range	Caution is displayed only while the power window ECU built into the power window regulator motor assembly detects a jam.
Glass Position (2/4 -	Margin for jam protection triggering force of window glass within range of 1/2 to 3/4	OK: Normal manual up operation Caution: Jam detected in the	Caution is displayed only while the power window ECU built into the power

3/4)	open window glass position / OK or Caution	specified range	window regulator motor assembly detects a jam.
Glass Position (3/4 - Open)	Margin for jam protection triggering force of window glass within range of 3/4 to fully open window glass position / OK or Caution	OK: Normal manual up operation Caution: Jam detected in the specified range	Caution is displayed only while the power window ECU built into the power window regulator motor assembly detects a jam.
Window Auto Up	Auto up operation using the front power window regulator switch assembly RH / Avail or Not Avl	Customization status displayed	-
Window Auto Up From Driver	Remote auto up operation using the multiplex network master switch assembly / Avail or Not Avl	Customization status displayed	-
Number of Trouble Codes	Number of trouble codes / Min.: 0 or Max.: 255	Number of DTCs will be displayed	-

RL-DOOR MOTOR (REAR POWER WINDOW REGULATOR MOTOR ASSEMBLY LH)

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
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RL Door P/W Auto SW	Rear LH side power window auto switch signal / ON or OFF	ON: Rear LH side power window auto switch operated OFF: Rear LH side power window auto switch not operated	-
RL Door P/W Up SW	Rear LH side power window manual up switch signal / ON or OFF	ON: Rear LH side power window manual up switch operated OFF: Rear LH side power window manual up switch not operated	-
RL Door P/W Down SW	Rear LH side power window manual down switch signal / ON or OFF	ON: Rear LH side power window manual down switch operated OFF: Rear LH side power window manual down switch not operated	-
Glass Position (Close - 1/4)	Margin for jam protection triggering force of window glass within range of fully closed to 1/4 open window glass position / OK or Caution	OK: Normal manual up operation Caution: Jam detected in the specified range	Caution is displayed only while the power window ECU built into the power window regulator motor assembly detects a

			jam.
Glass Position (1/4 - 2/4)	Margin for jam protection triggering force of window glass within range of 1/4 to 1/2 open window glass position / OK or Caution	OK: Normal manual up operation Caution: Jam detected in the specified range	Caution is displayed only while the power window ECU built into the power window regulator motor assembly detects a jam.
Glass Position (2/4 - 3/4)	Margin for jam protection triggering force of window glass within range of 1/2 to 3/4 open window glass position / OK or Caution	OK: Normal manual up operation Caution: Jam detected in the specified range	Caution is displayed only while the power window ECU built into the power window regulator motor assembly detects a jam.
Glass Position (3/4 - Open)	Margin for jam protection triggering force of window glass within range of 3/4 to fully open window glass position / OK or Caution	OK: Normal manual up operation Caution: Jam detected in the specified range	Caution is displayed only while the power window ECU built into the power window regulator motor assembly detects a jam.
Window	Auto up operation using the front power	Customization	

Auto Up	window regulator switch assembly RH / Avail or Not Avl	status displayed	-
Window Auto Up From Driver	Remote auto up operation using the multiplex network master switch assembly / Avail or Not Avl	Customization status displayed	-
Number of Trouble Codes	Number of trouble codes / Min.: 0 or Max.: 255	Number of DTCs will be displayed	-

RR-DOOR MOTOR (REAR POWER WINDOW REGULATOR MOTOR ASSEMBLY RH)

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
RR Door P/W Auto SW	Rear RH side power window auto switch signal / ON or OFF	ON: Rear RH side power window auto switch operated OFF: Rear RH side power window auto switch not operated	-
RR Door P/W Up SW	Rear RH side power window manual up switch signal / ON or OFF	ON: Rear RH side power window manual up switch operated OFF: Rear RH side power window manual up switch not operated	-

RR Door P/W Down SW	Rear RH side power window manual down switch signal / ON or OFF	ON: Rear RH side power window manual down switch operated OFF: Rear RH side power window manual down switch not operated	-
Glass Position (Close - 1/4)	Margin for jam protection triggering force of window glass within range of fully closed to 1/4 open window glass position / OK or Caution	OK: Normal manual up operation Caution: Jam detected in the specified range	Caution is displayed only while the power window ECU built into the power window regulator motor assembly detects a jam.
Glass Position (1/4 - 2/4)	Margin for jam protection triggering force of window glass within range of 1/4 to 1/2 open window glass position / OK or Caution	OK: Normal manual up operation Caution: Jam detected in the specified range	Caution is displayed only while the power window ECU built into the power window regulator motor assembly detects a jam.
Glass	Margin for jam protection triggering force of window glass	OK: Normal manual up operation	Caution is displayed only while the power window ECU built

Position (2/4 - 3/4)	within range of 1/2 to 3/4 open window glass position / OK or Caution	Caution: Jam detected in the specified range	into the power window regulator motor assembly detects a jam.
Glass Position (3/4 - Open)	Margin for jam protection triggering force of window glass within range of 3/4 to fully open window glass position / OK or Caution	OK: Normal manual up operation Caution: Jam detected in the specified range	Caution is displayed only while the power window ECU built into the power window regulator motor assembly detects a jam.
Window Auto Up	Auto up operation using the front power window regulator switch assembly RH / Avail or Not Avl	Customization status displayed	-
Window Auto Up From Driver	Remote auto up operation using the multiplex network master switch assembly / Avail or Not Avl	Customization status displayed	-
Number of Trouble Codes	Number of trouble codes / Min.: 0 or Max.: 255	Number of DTCs will be displayed	-

MAIN BODY (MAIN BODY ECU)

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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 RH side door open OFF: Rear RH side door closed	-
RL Door Courtesy SW	Rear door courtesy light switch LH signal / ON or OFF	ON: Rear LH side door open OFF: Rear LH side door closed	-
FR Door Courtesy	Front door courtesy light switch RH signal / ON or OFF	ON: Front passenger side door closed OFF: Front passenger side door open	-
FL Door Courtesy	Front door courtesy light switch LH signal / ON or OFF	ON: Driver side door closed OFF: Driver side door open	-
Communication D-Door Motor	Connection status between front power window regulator motor assembly LH and main body ECU / OK or STOP	OK: Normal communication STOP: Communication stopped	-
Communication P-Door Motor	Connection status between front power window regulator motor assembly RH and main body ECU / OK or STOP	OK: Normal communication STOP: Communication stopped	-
	Connection status between rear power window	OK: Normal	

Communication RR-Door Motor	regulator motor assembly RH and main body ECU / OK or STOP	communication STOP: Communication stopped	-
Communication RL-Door Motor	Connection status between rear power window regulator motor assembly LH and main body ECU / OK or STOP	OK: Normal communication STOP: Communication stopped	-
Communication Master SW	Connection status between multiplex network master switch and main body ECU / OK or STOP	OK: Normal communication STOP: Communication stopped	-

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 / (desired system) / Active Test.
- Perform the Active Test according to the display on the Techstream.

WARNING: Be careful to avoid injuries as this test causes vehicle parts to move. During the Active Test, the jam protection function will not operate.

D-DOOR MOTOR (FRONT POWER WINDOW REGULATOR MOTOR ASSEMBLY LH)

Tester Display	Test Part	Control Range	Diagnostic Note
Power Window	Power window	OFF / UP /DOWN	-

P-DOOR MOTOR (FRONT POWER WINDOW REGULATOR MOTOR ASSEMBLY RH)

Tester Display	Test Part	Control Range	Diagnostic Note
Power Window	Power window	OFF / UP /DOWN	-

RL-DOOR MOTOR (REAR POWER WINDOW REGULATOR MOTOR ASSEMBLY LH)

Tester Display	Test Part	Control Range	Diagnostic Note
Power Window	Power window	OFF / UP /DOWN	-

RR-DOOR MOTOR (REAR POWER WINDOW REGULATOR MOTOR ASSEMBLY RH)

Tester Display	Test Part	Control Range	Diagnostic Note
Power Window	Power window	OFF / UP /DOWN	-

DIAGNOSTIC TROUBLE CODE CHART

DIAGNOSTIC TROUBLE CODE CHART

POWER WINDOW CONTROL SYSTEM

DTC Code	Detection Item	Trouble Area	See
B2311	Power Window Motor Malfunction	- Battery disconnected when ignition switch ON - Power window regulator motor assembly - Incorrect installation of power window components - Overheated power window regulator motor assembly	Refer to <u>DTC B2311: Power Window Motor Malfunction</u>
B2312	Power Window Switch Malfunction	- Multiplex network master switch assembly - Power window regulator switch assembly - Power window regulator motor assembly - Wire harness or connector	Refer to <u>DTC B2312: Power Window Switch Malfunction</u>
		- Power window regulator	

B2313	Glass Position Initialization Incomplete	motor assembly not initialized - Power window regulator motor assembly	Refer to <u>DTC B2313: Glass Position Initialization Incomplete</u>
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