

2005 ACCESSORIES & EQUIPMENT

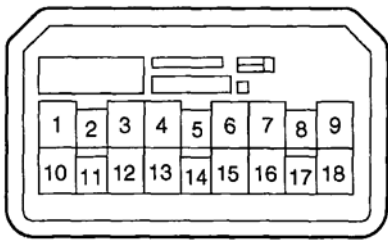
Power Window Control System - RAV4

TROUBLESHOOTING

TROUBLESHOOTING CHART

Malfunction Symptoms	Applicable Chart
Window does not move up and down with one-touch power window function (AUTO operation function).	1
During AUTO UP operation, window moves down.	2
Window does not move down even though something is caught between window and vehicle body.	3

Terminal Location (Wire harness side)



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Power Window Master Switch

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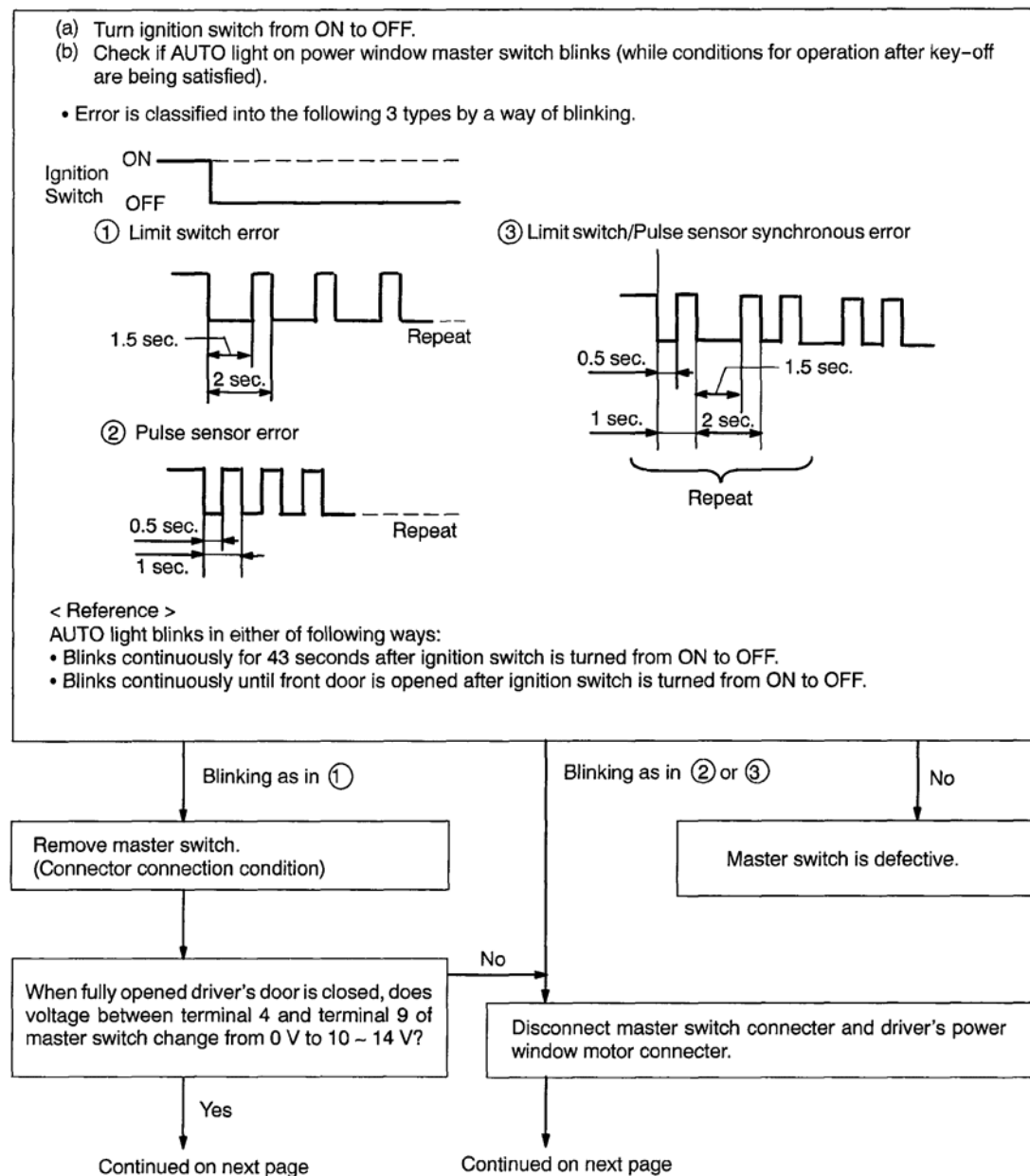


Power Window Motor

Fig. 1: Identifying Power Window Switch & Power Window Motor Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

1. Window does not move up and down with one-touch power window function.

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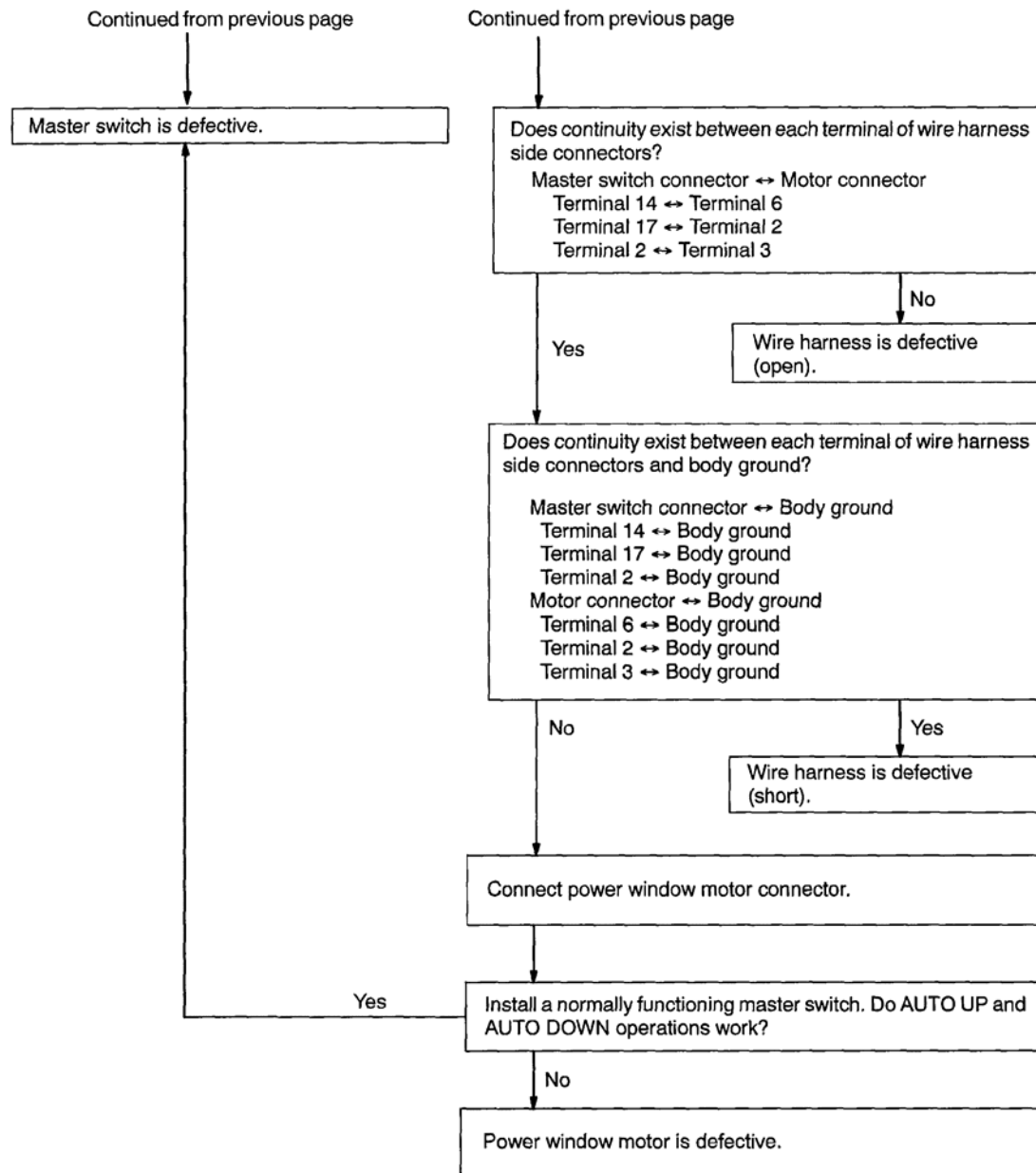
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Fig. 2: Testing - Window Does Not Move Up And Down With One-Touch Power Window Function Flow Chart (1 Of 2)

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

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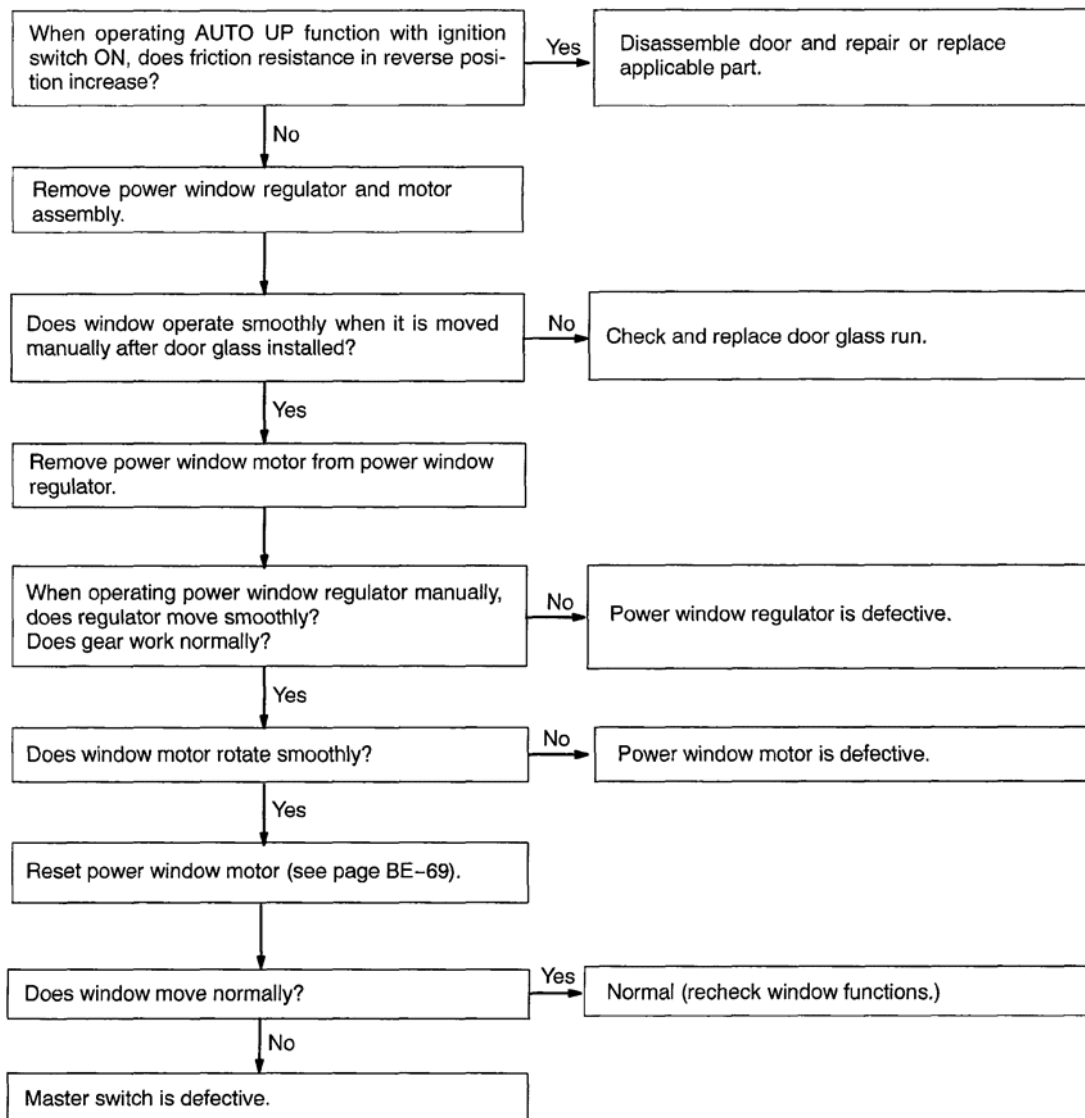
Fig. 3: Testing - Window Does Not Move Up And Down With One-Touch Power Window Function Flow Chart (2 Of 2)

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2. During AUTO UP operation, window moves down.

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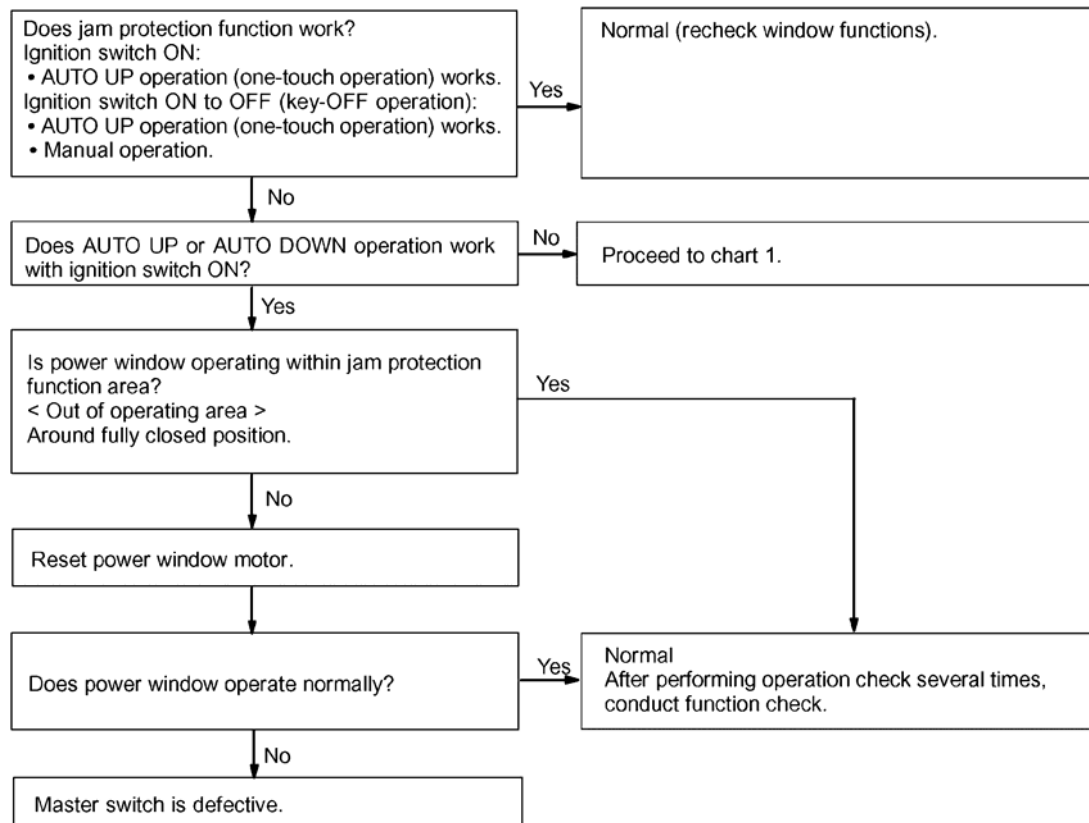
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Fig. 4: Testing - AUTO UP Operation (Window Moves Down) - Flow Chart
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

3. Window does not move down even though something is caught between window and vehicle body.

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Fig. 5: Testing - Window Does Not Move Down (Jam Protection Operation) - Flow Chart
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

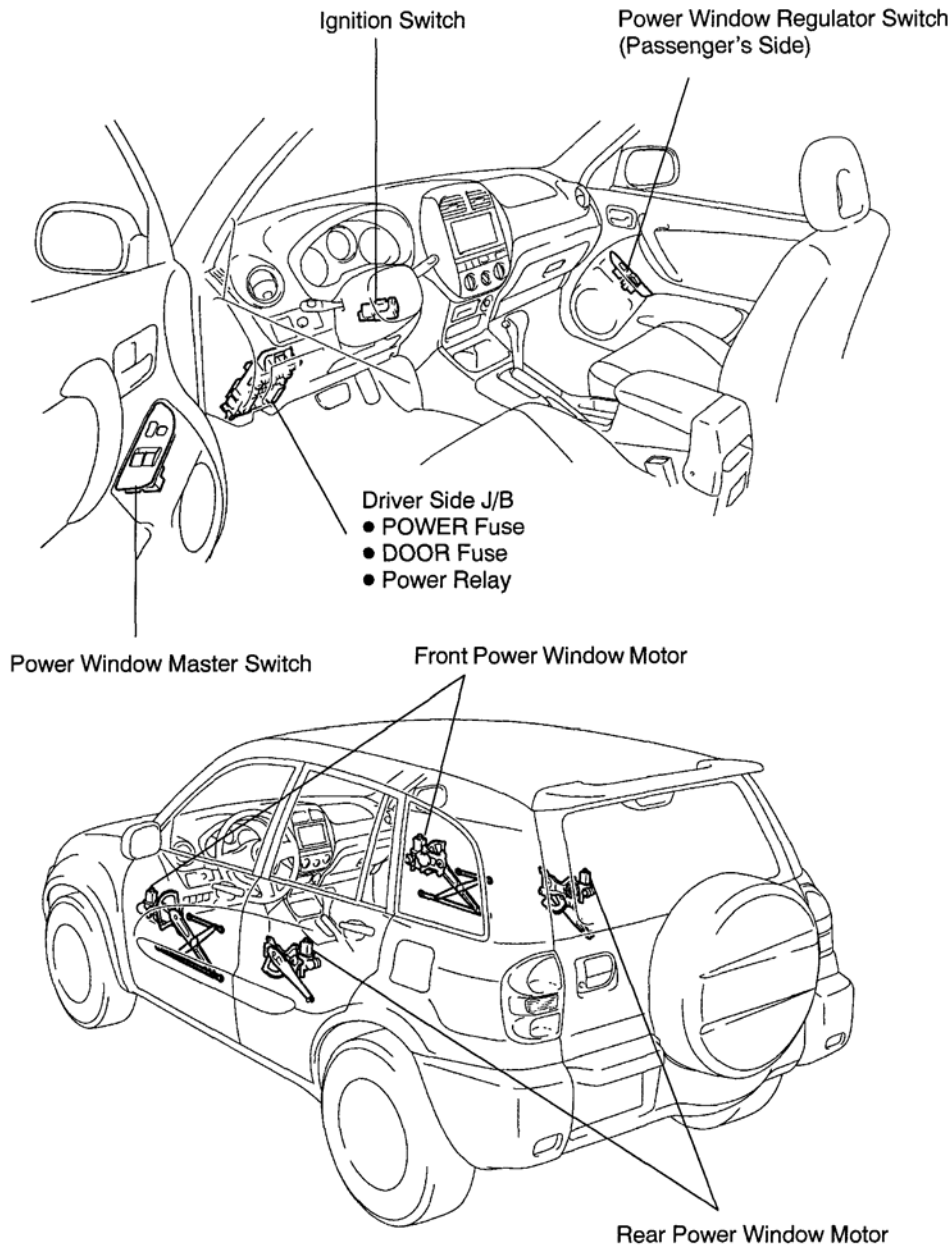
NOTE: For chart 1, see Fig. 2

NOTE: To reset power window motor, see ADJUSTMENT.

LOCATION

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Fig. 6: Identifying Component Location Of Power Window Control System
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION

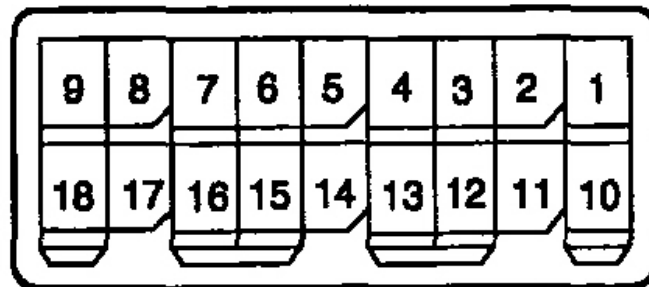
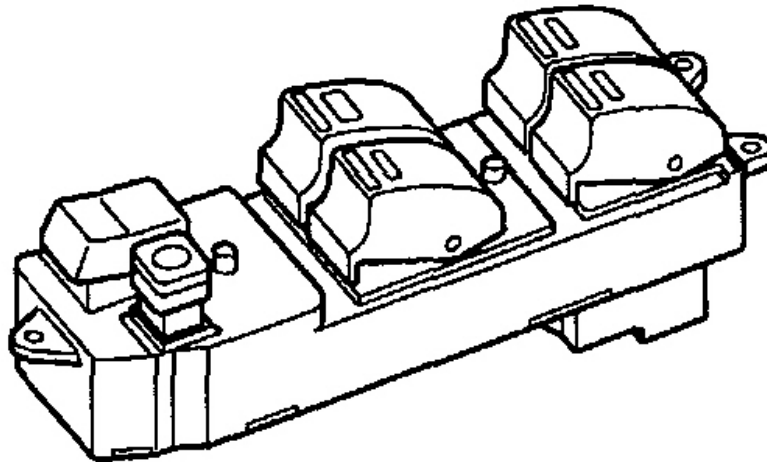
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1. INSPECT POWER WINDOW MASTER SWITCH CONTINUITY

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Fig. 7: Identifying Power Window Master Switch Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

FRONT DRIVER'S SWITCH (WINDOW UNLOCK AND LOCK):

SWITCH POSITION SPECIFIED CONDITION

Switch Position	Tester Connection	Specified Condition
UP	4 - 7 1 - 3 - 9	Continuity
OFF	1 - 3 - 4 1 - 3 - 9	Continuity
DOWN	7 - 9 1 - 3 - 4	Continuity

FRONT PASSENGER'S SWITCH (WINDOW UNLOCK):

SWITCH POSITION SPECIFIED CONDITION

Switch Position	Tester Connection	Specified Condition
UP	6 - 13 1 - 3 - 15	Continuity
OFF	1 - 3 - 13 1 - 3 - 15	Continuity
DOWN	6 - 15 1 - 3 - 13	Continuity

FRONT PASSENGER'S SWITCH (WINDOW LOCK):

SWITCH POSITION SPECIFIED CONDITION

Switch Position	Tester Connection	Specified Condition
UP	6 13	Continuity
OFF	13 - 15	Continuity
DOWN	6 - 15	Continuity

REAR LEFT SWITCH (WINDOW UNLOCK):

SWITCH POSITION SPECIFIED CONDITION

Switch Position	Tester Connection	Specified Condition
UP	6 - 12 1 - 3 - 10	Continuity
OFF	1 - 3 - 12 1 - 3 - 10	Continuity
DOWN	6 - 10 1 - 3 - 12	Continuity

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REAR LEFT SWITCH (WINDOW LOCK):

SWITCH POSITION SPECIFIED CONDITION

Switch Position	Tester Connection	Specified Condition
UP	6 - 12	Continuity
OFF	10 - 12	Continuity
DOWN	6 - 10	Continuity

REAR LEFT SWITCH (WINDOW UNLOCK):

SWITCH POSITION SPECIFIED CONDITION

Switch Position	Tester Connection	Specified Condition
UP	6 - 18 1 - 3 - 16	Continuity
OFF	1 - 3 - 18 1 - 3 - 16	Continuity
DOWN	6 - 16 1 - 3 - 18	Continuity

REAR LEFT SWITCH (WINDOW LOCK):

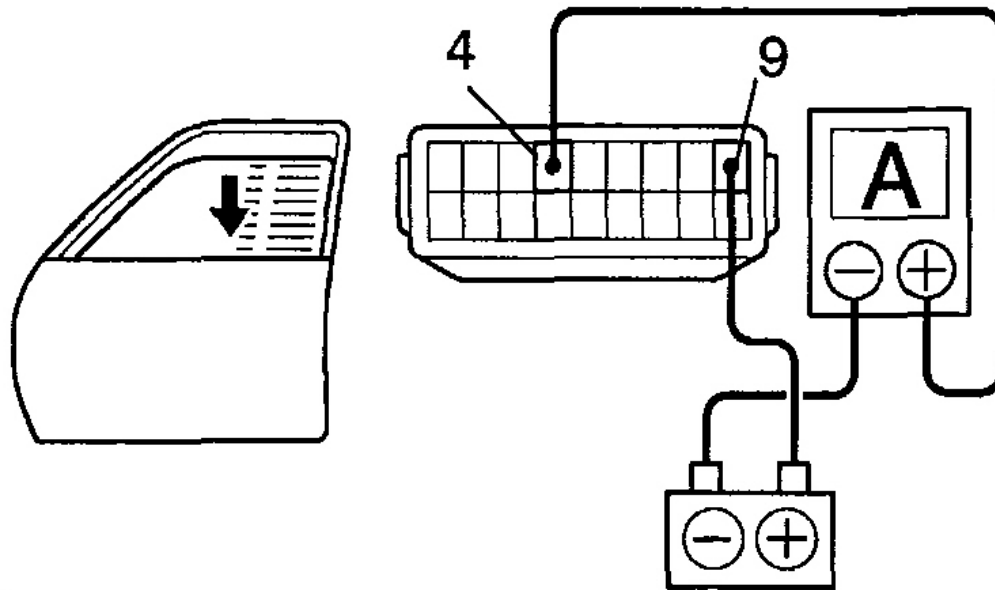
SWITCH POSITION SPECIFIED CONDITION

Switch Position	Tester Connection	Specified Condition
UP	6 - 18	Continuity
OFF	16 - 18	Continuity
DOWN	6 - 16	Continuity

If the continuity is not as specified, replace the master switch.

2. Using an ammeter: INSPECT ONE TOUCH POWER WINDOW SYSTEM/CURRENT OF CIRCUIT

- Disconnect the connector from the master switch.
- Connect the positive (+) lead from the ammeter to terminal 4 on the wire harness side connector and the negative (-) lead to negative (-) terminal of the battery.
- Connect the positive (+) lead from the battery to terminal 9 on the wire harness side connector.



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Fig. 8: Inspecting One Touch Power Window System/Current Of Circuit (1 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- d. As the window moves down, check if the current flow is approximately 7 A.
- e. Check if the current increases up to approximately 14.5 A or more when the window stops moving down.

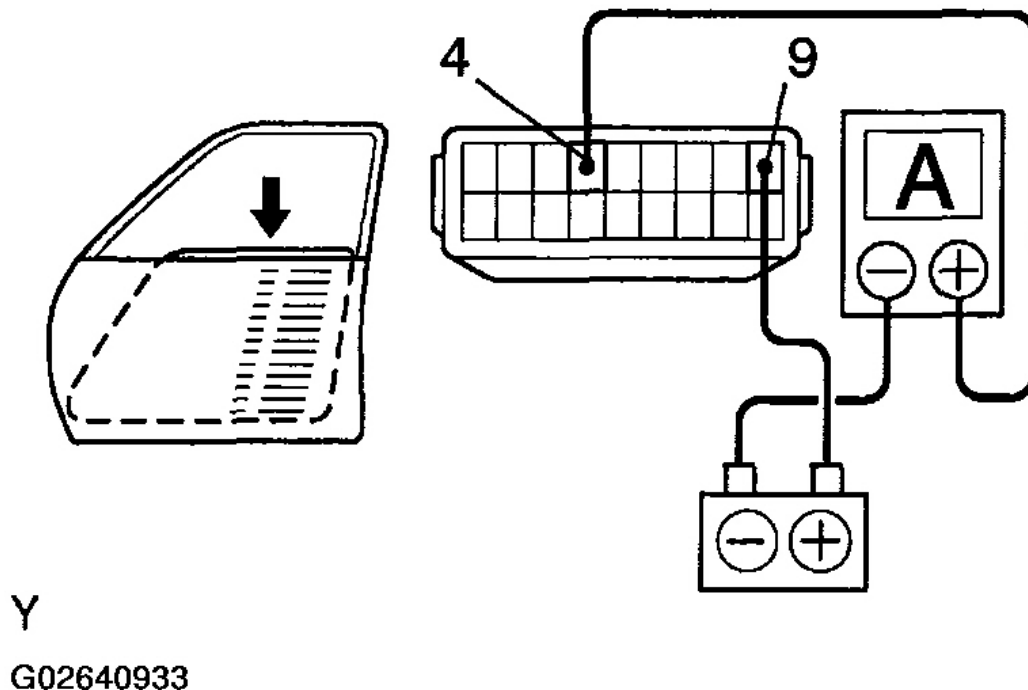


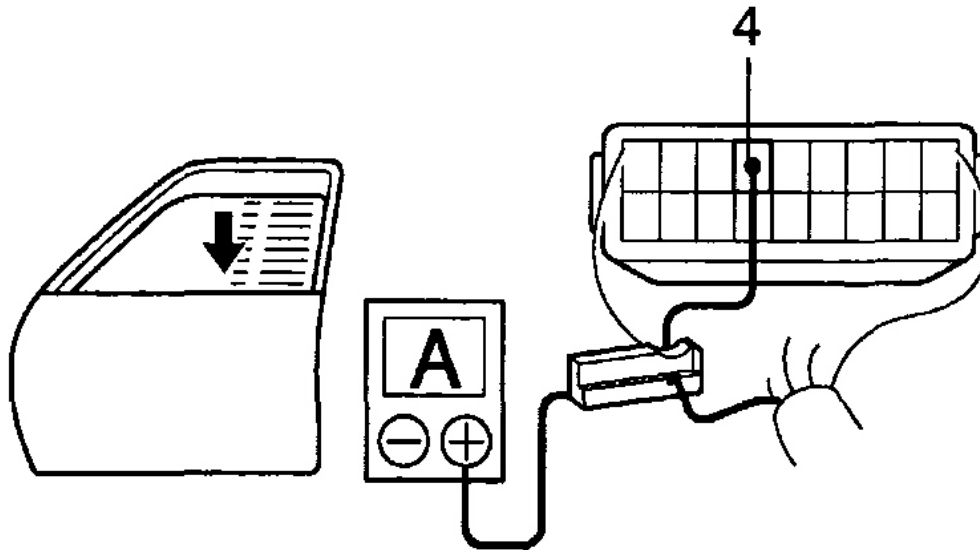
Fig. 9: Inspecting One Touch Power Window System/Current Of Circuit (2 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

HINT:

The circuit breaker opens 4 to 40 seconds after the window stops moving down. Therefore, check must be made before the circuit breaker operates.

If operation is not as specified, replace the master switch.

3. **Using an ammeter with a current-measuring probe: INSPECT ONE TOUCH POWER WINDOW SYSTEM/CURRENT OF CIRCUIT**
 - a. Remove the master switch with the connector connected.
 - b. Attach a current-measuring probe to terminal 4 of the wire harness.
 - c. Turn the ignition switch ON and set the power window switch in the down position.
 - d. As the window moves down, check if the current flow is approximately 7 A.

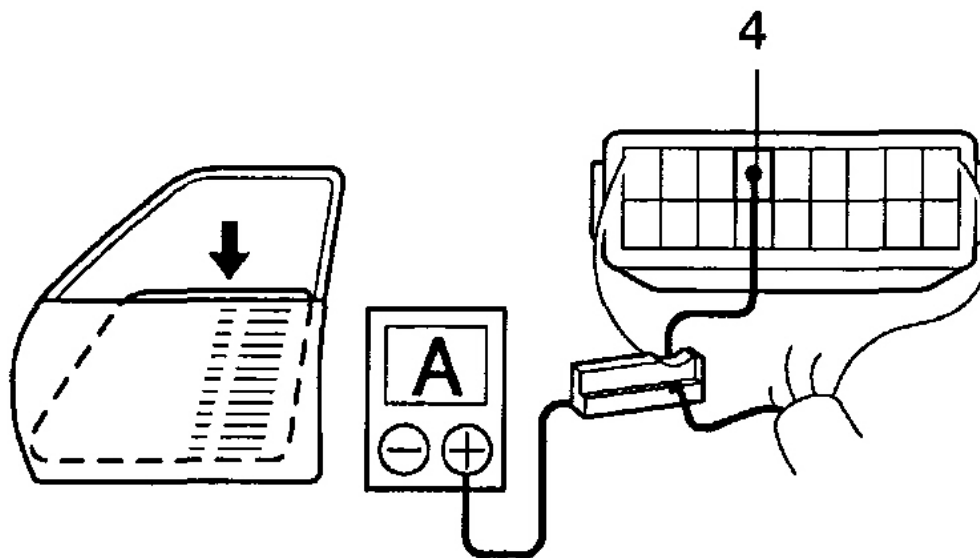


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Fig. 10: Attaching Current-Measuring Probe To Terminal 4
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- e. Check if the current increases up to approximately 14.5 A or more when the window stops moving down.



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Fig. 11: Checking Current Increases Up To Approximately 14.5 A
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HINT:

The circuit breaker opens 4 to 40 seconds after the window stops moving down. Therefore, check must be made before the circuit breaker operates.

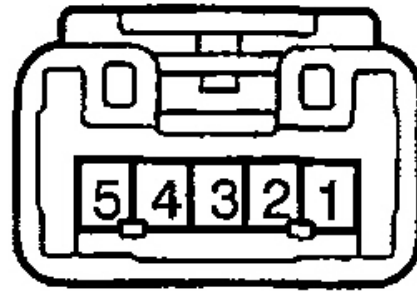
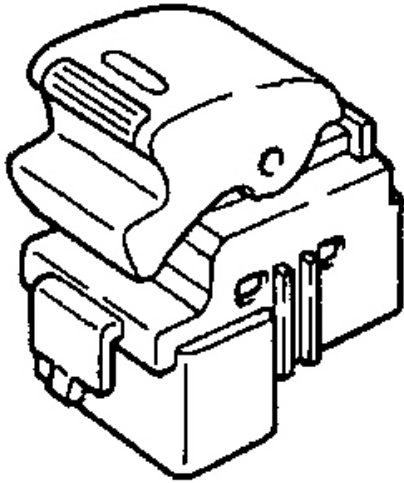
If operation is not as specified, replace the master switch.

4. Passenger's and rear switch: INSPECT PASSENGER'S AND REAR POWER WINDOW REGULATOR SWITCH CONTINUITY

SWITCH POSITION SPECIFIED CONDITION

Switch Position	Tester Connection	Specified Condition
UP	1 - 2	Continuity
	3 - 4	
OFF	1 - 2	Continuity
	3 - 5	
DOWN	1 - 4	Continuity

3 - 5



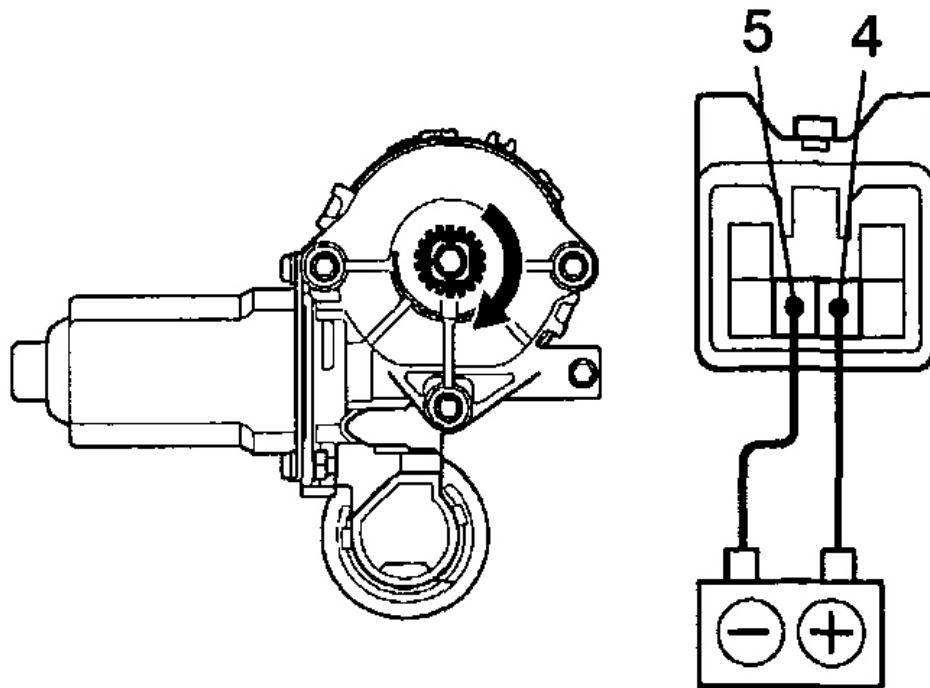
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Fig. 12: Inspecting Passenger's & Rear Power Window Regulator Switch Continuity
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

If the continuity is not as specified, replace the switch.

5. Front left side door and rear right side door: INSPECT POWER WINDOW MOTOR OPERATION

- a. Connect the positive (+) lead from the battery to terminal 4 and the negative (-) lead to terminal 5. Check if the motor turns clockwise.



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Fig. 13: Front Left Side & Rear Right Side Doors - Inspecting Power Window Motor Operation

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- b. Reverse the polarity and check if the motor turns counterclockwise.

If operation is not as specified, replace the motor.

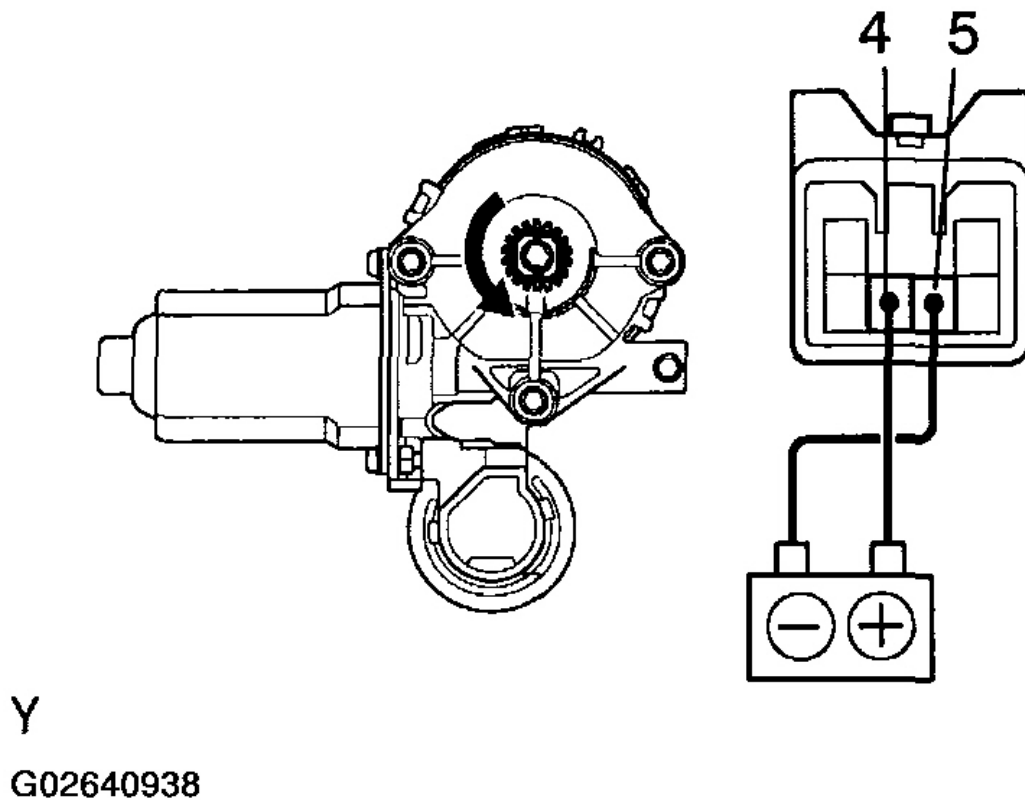
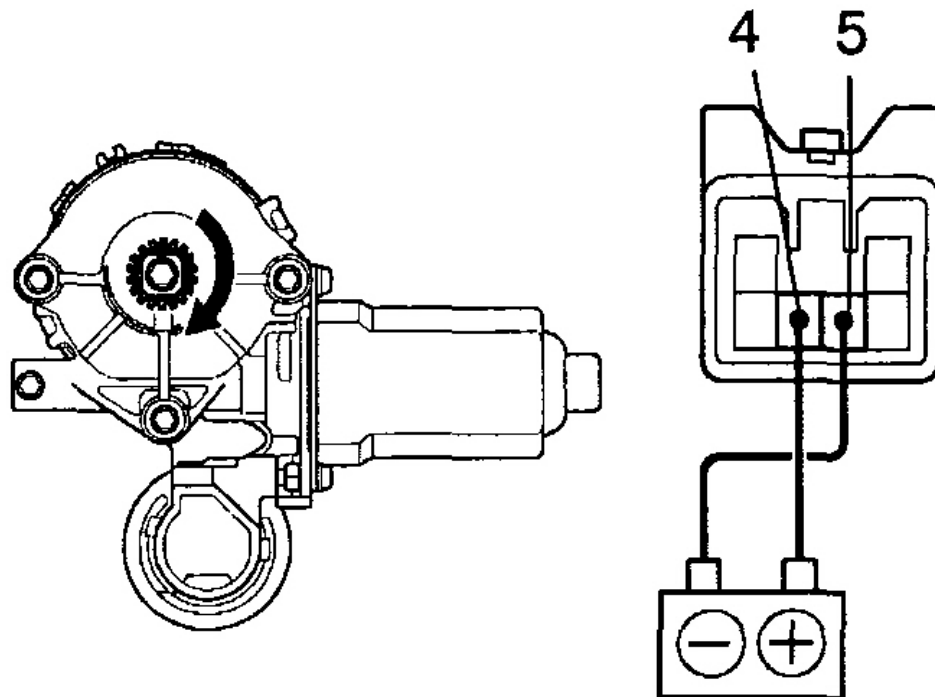


Fig. 14: Checking If Motor Turns Counterclockwise (Polarity Reversed)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

6. Front right side door and rear left side door: INSPECT POWER WINDOW MOTOR OPERATION

- a. Connect the positive (+) lead from the battery to terminal 5 and the negative (-) lead to terminal 4. Check if the motor turns clockwise.



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Fig. 15: Connecting Positive (+) Lead From Battery To Terminal 5 & Negative (-) Lead To Terminal 4

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

- b. Reverse the polarity and check if the motor turns counterclockwise.

If operation is not as specified, replace the motor.

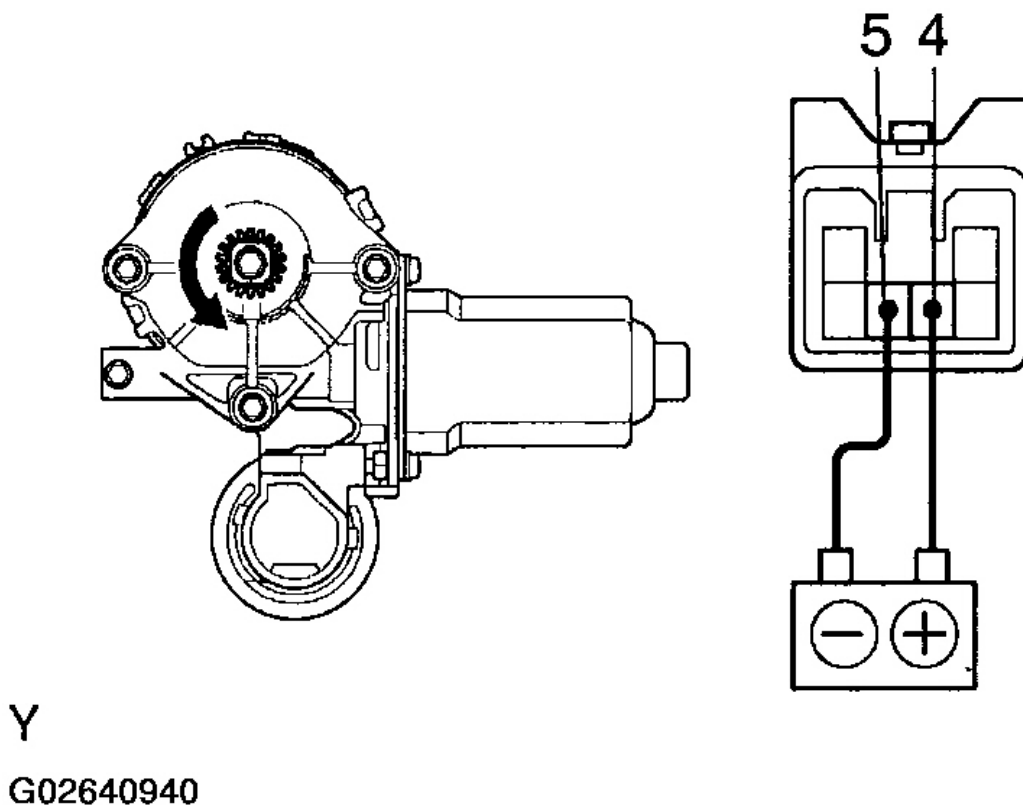


Fig. 16: Checking If Motor Turns Counterclockwise (Polarity Reversed)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

7. INSPECT POWER WINDOW MOTOR PTC THERMISTOR OPERATION

- Disconnect the connector from the driver door window motor.
- Connect the positive (+) lead from the ammeter to terminal 5 on the wire harness side connector and the negative (-) lead to the negative terminal of the battery.
- Connect the positive (+) lead from the battery to terminal 4 on the wire harness side connector. Then, raise the window to the fully closed position.

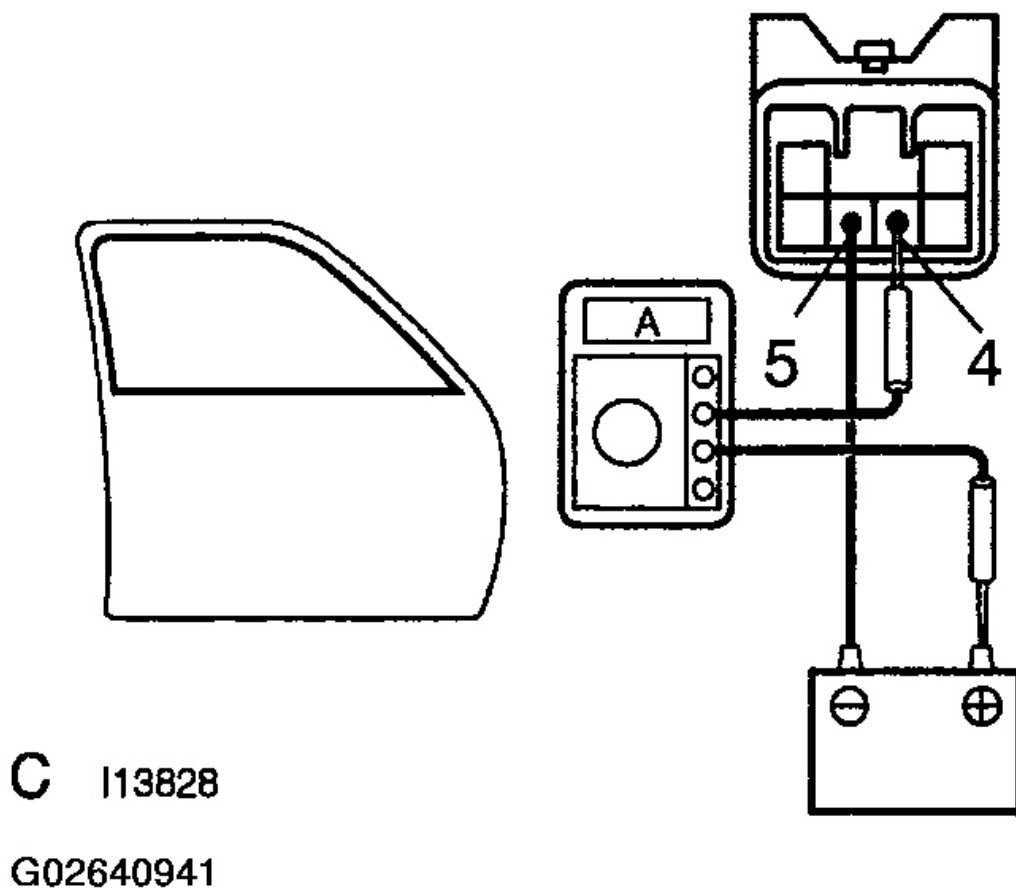


Fig. 17: Inspecting Power Window Motor PTC Thermistor Operation (1 Of 2)
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- d. Continue to apply voltage and check if the current changes to less than 1 A within 4 to 90 seconds.
- e. Disconnect the leads from the terminals.
- f. Approximately 60 seconds later, connect the positive (+) lead from the battery to terminal 5 and the negative (-) lead to terminal 4. Check if the window begins to descend.

If operation is not as specified, replace the motor.

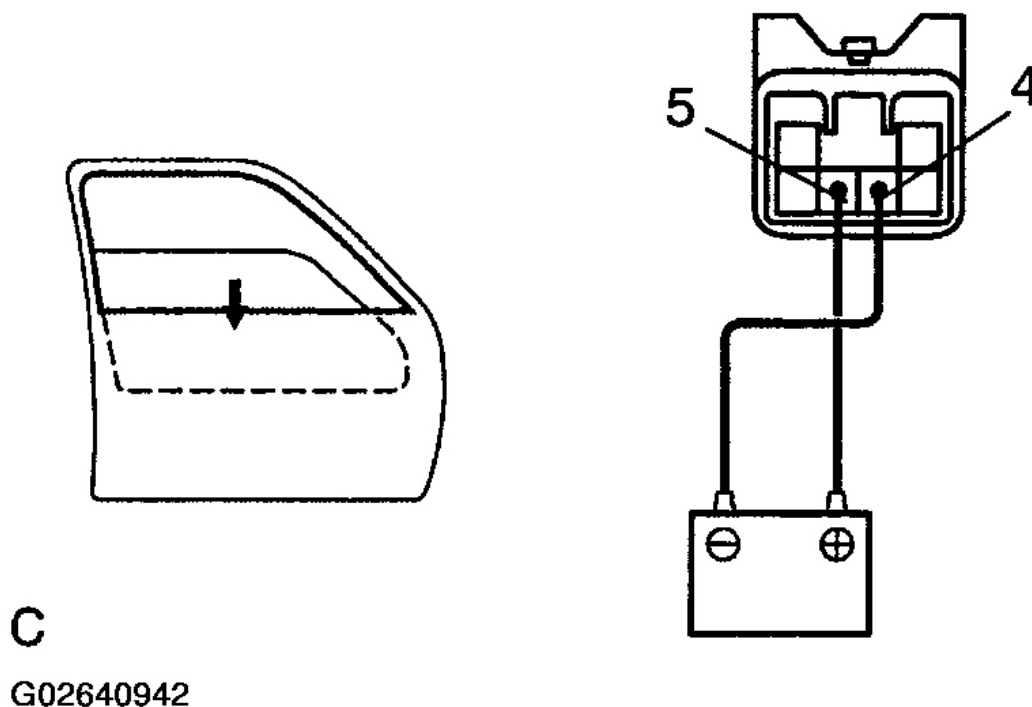
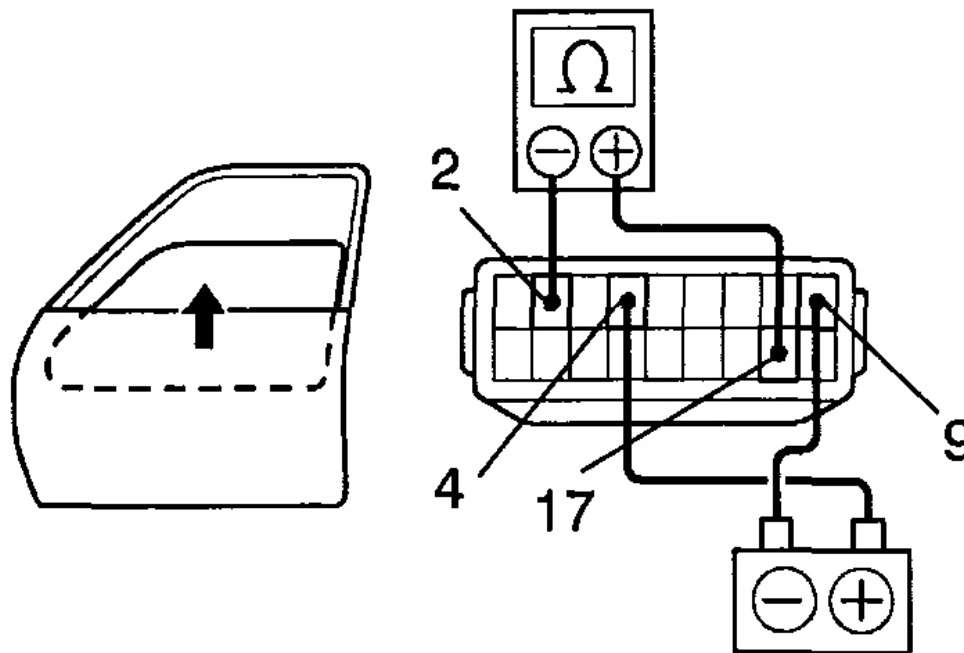


Fig. 18: Inspecting Power Window Motor PTC Thermistor Operation (2 Of 2)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

8. **Window up: INSPECT FRONT WINDOW JAM PROTECTION LIMIT SWITCH OPERATION**
 - a. Disconnect the connector from the master switch.
 - b. Connect the positive (+) lead from the ohmmeter to terminal 17 and the negative (-) lead to terminal 2.
 - c. Connect the positive (+) lead from the battery to terminal 4 and the negative (-) lead to terminal 9.
 - d. Check if continuity exists when the window moves up.



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Fig. 19: Window Up - Inspecting Front Window Jam Protection Limit Switch Operation
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- e. Check if no continuity exists when the window is in the fully closed position.

If operation is not as specified, replace the motor.

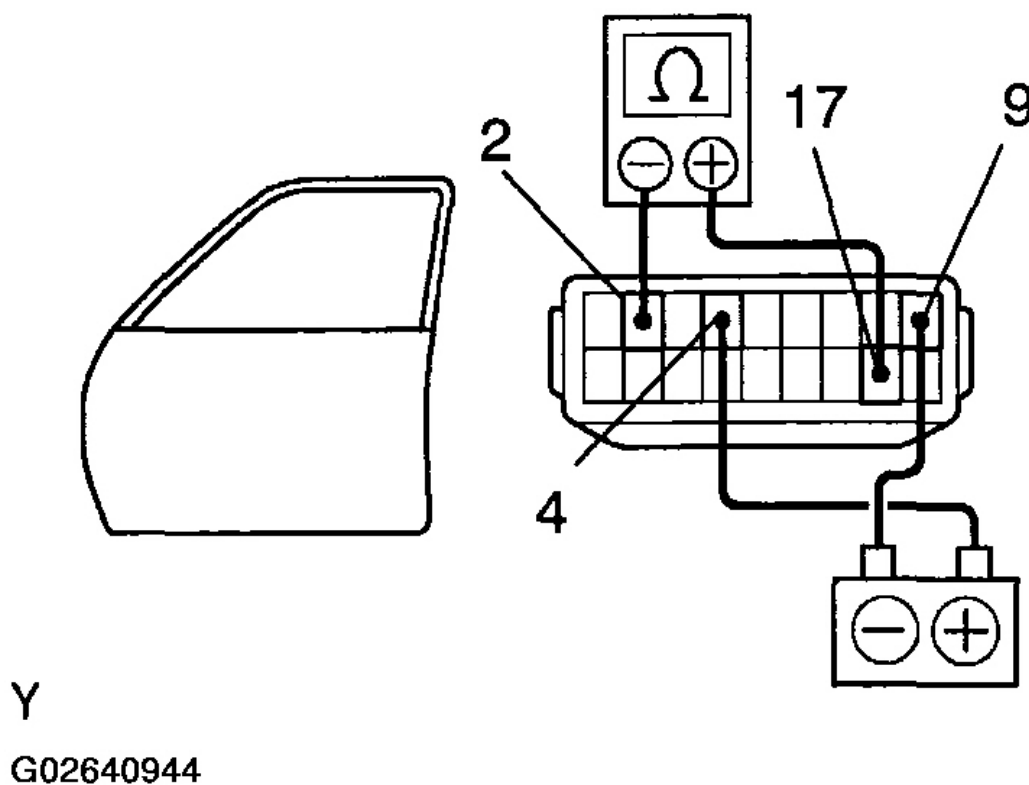


Fig. 20: Checking If No Continuity Exists - Window Is In The Fully Closed Position
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

9. Window down: INSPECT FRONT WINDOW JAM PROTECTION LIMIT SWITCH OPERATION

- a. Connect the positive (+) lead from the ohmmeter to terminal 17 and the negative (-) lead to terminal 2.
- b. Connect the positive (+) lead from the battery to terminal 9 and the negative (-) lead to terminal 4.
- c. Check if continuity exists when the window moves up.

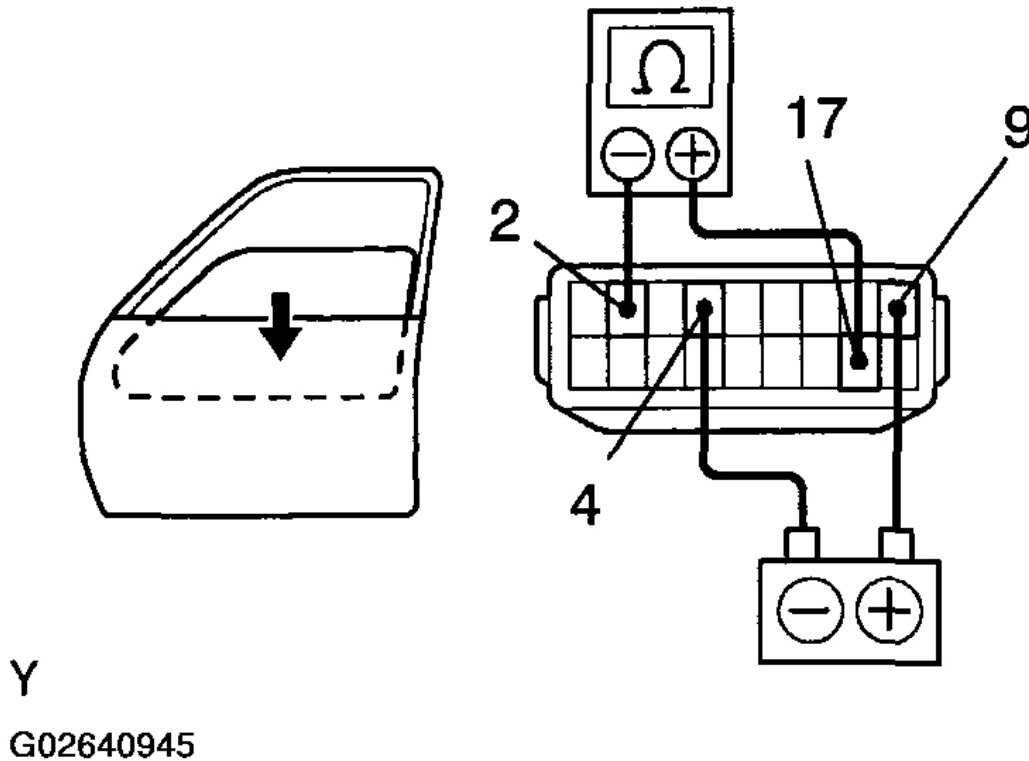


Fig. 21: Window Down - Inspecting Front Window Jam Protection Limit Switch Operation
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- d. Check if no continuity exists when the window is in the fully opened position.

NOTE: Connecting the wire harness incorrectly may damage the sensor. Caution is necessary.

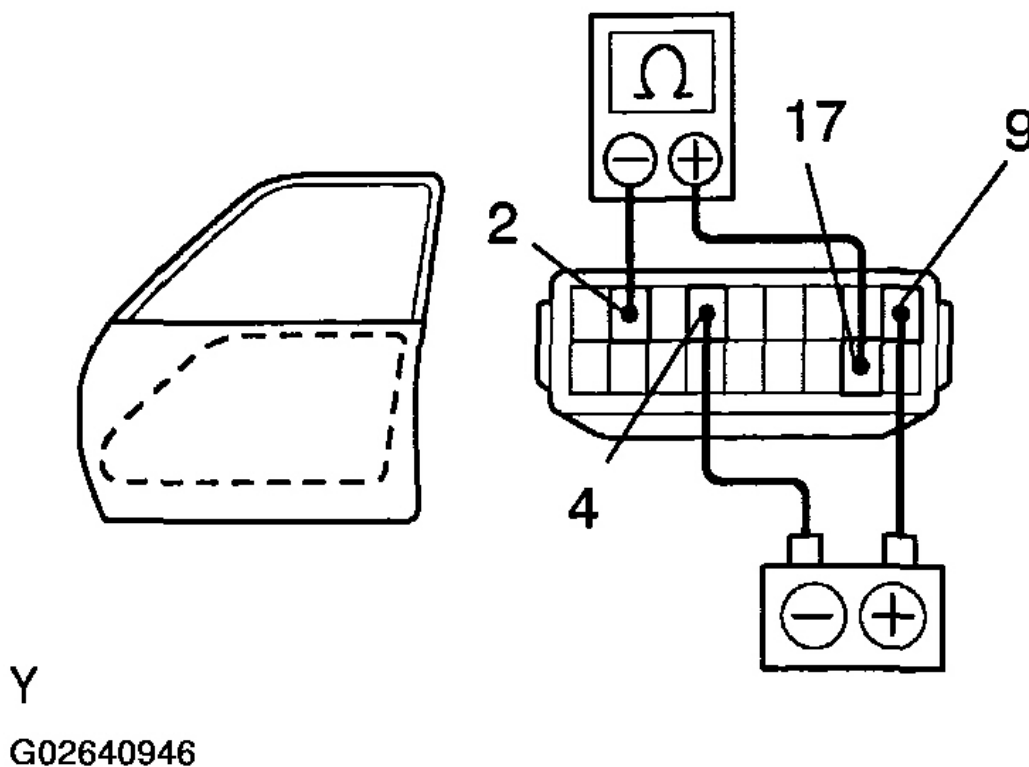


Fig. 22: Checking If No Continuity Exists - Window Is In The Fully Opened Position
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

10. INSPECT FRONT WINDOW JAM PROTECTION PULSE SWITCH OPERATION

- a. Connect the positive (+) lead from the electrical tester to terminal 14 and the negative (-) lead to terminal 2.
- b. Connect the positive (+) lead from the battery to terminal 4 and the negative (-) lead to terminal 9.
- c. Check if pulse is generated when the motor is running.

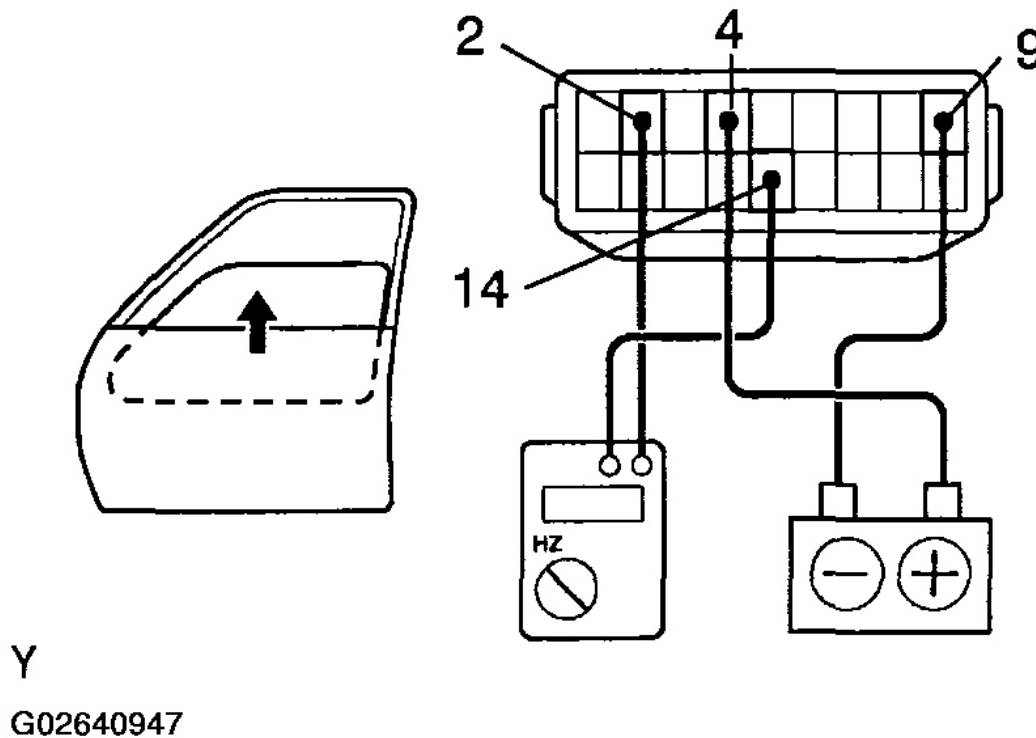


Fig. 23: Inspecting Front Window Jam Protection Pulse Switch Operation
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- d. Reverse the polarity and check if the pulse is generated.

If operation is not as specified, replace the motor.

NOTE: Connecting the wire harness incorrectly may damage the sensor.
Caution is necessary.

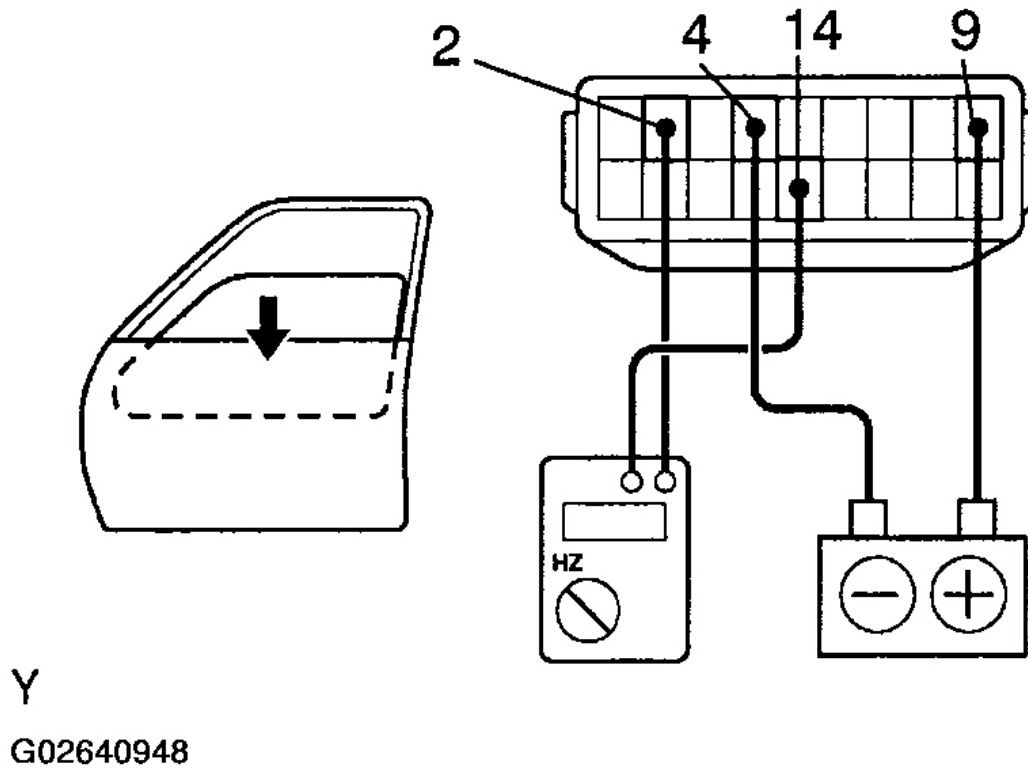
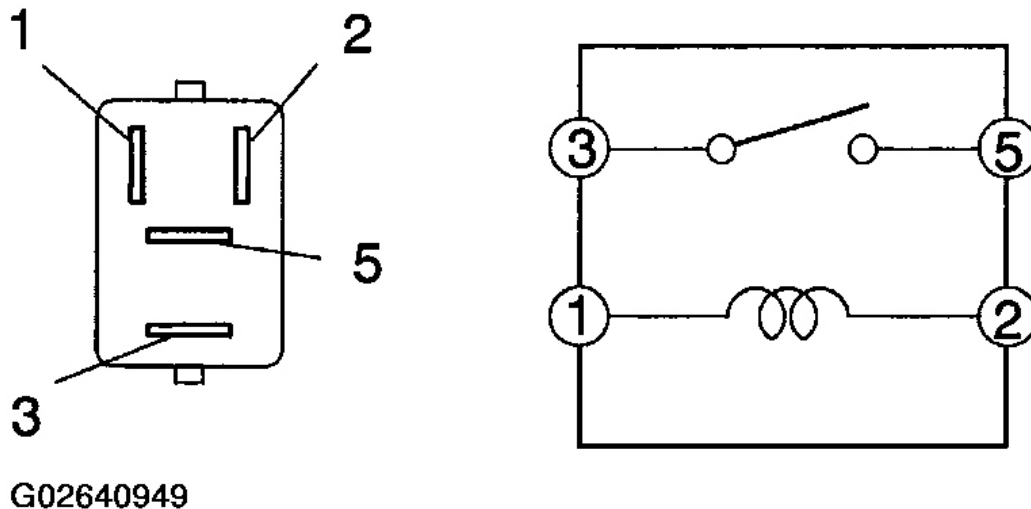


Fig. 24: Reversing Polarity & Checking If Pulse Is Generated
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

11. INSPECT POWER RELAY CONTINUITY

TESTER CONNECTION SPECIFIED CONDITION

Tester Connection	Specified Condition
3 - 5	No continuity
3 - 5	Continuity (when battery voltage is applied to terminals 1 and 2)

**Fig. 25: Identifying Power Relay Terminals**

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

If the continuity is not as specified, replace the relay.

12. Driver's door glass only: CHECK JAM PROTECTION FUNCTION

NOTE:

- Do not check this function using a part of your body such as a hand. Also, pay thorough attention that nothing gets caught by accident in this process.
- If the power window motor has just been reset, raise and lower the door glass several times using AUTO operation before performing the check.

HINT:

The jam protection function works only during AUTO UP operation.

- Fully open the door glass.
- Insert the hammer handle when the door glass is almost in the fully closed position.
- Try to fully close the door glass with the AUTO UP operation. Check if the door glass moves down by about 200 mm (7.87 in.) and stops there so that the hammer handle is not caught.

HINT:

The door glass usually moves down by approximately 50 mm (1.97 in.). However, when opening

between the door glass and body is less than 200 mm (7.87 in.), the door glass moves down by 200 mm (7.87 in.) or keeps moving down for 5 seconds, and then stops.

- d. During DOWN operation, check if the door glass does not move up even if the power window master switch is pulled UP.

ADJUSTMENT

HOW TO RESET POWER WINDOW MOTOR (RESET SWITCH AND PULSE SWITCH)

If the jam protection function is not working properly, perform the following procedure.

HINT:

The power window motor limit switch must be reset to its initial position after:

- Separating the window regulator from the power window motor.
 - Operating the window regulator with the door glass not installed.
- a. Remove the power window motor (see **COMPONENTS** and **COMPONENTS**).

HINT:

Place the matchmarks on the power window motor and window regulator gear.

- b. Connect the power window motor and power window switch to the wire harness of the vehicle.
- c. Turn the ignition switch ON. Pull the power window switch UP button to idle the power window motor in the UP side direction for more than 6 rotations or less than 10 rotations (4 seconds or more).
- d. Assemble the power window motor and regulator.

HINT:

- Install the motor when the regulator arm is below the middle point.
 - Align the matchmarks on the power window motor and window regulator gear when installing the power window motor.
- e. Assemble the power window regulator and door glass.

HINT:

Never rotate the motor downward until the completion of the window glass installation.

- f. Connect the power window switch to the wire harness and turn the ignition switch ON.
- g. Repeat UP and DOWN operation several times manually.
- h. Check if AUTO UP and AUTO DOWN operates.

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HINT:

- Take care that the jam protection function does not operate just after being reset.
 - Reset the regulator again when performing the reverse operation after fully closing the window by AUTO UP operation.
- i. Check the power window function.