

1999-2000 ACCESSORIES & EQUIPMENT**Power Windows - Trucks****DESCRIPTION & OPERATION**

Depending on model, system components vary. System components may consist of a power main relay, body control ECU, integration relay or instrument ECU. See **WIRING DIAGRAMS** . All models have power window switches and power window motors for each door. With ignition switch in ON position, battery voltage is supplied through power main relay or body control ECU to power window switches. Power window switch supplies power and ground for power window motors. 4Runner also has a power window switch and lock switch for tailgate door.

Driver's power window switch offers one-touch operation of driver's window. Driver's power window switch also includes a lock-out feature to prevent passengers from operating any other power window switches.

ADJUSTMENTS**ADJUSTING METHOD FOR JAM PROTECTION**

NOTE: Use this procedure when power window motor has been replaced or when power window motor has been run while removed from vehicle.

To adjust limit switch to OFF position, connect motor to harness connector and operate power window motor in UP direction for 4-5 seconds. This sets limit switch to full UP position (OFF).

TROUBLE SHOOTING

NOTE: Trouble shooting available for Land Cruiser and RAV4 models only. For connector views for trouble shooting diagnostic steps, see **CONNECTOR VIEWS** .

WINDOW REVERSES WHEN OPERATED IN AUTO UP MODE (DRIVER'S WINDOW ONLY)

If window reverses when window is being raised in AUTO UP mode, check door glass run, window regulator, window motor or window guide for sign of damage or misalignment. Resistance in window glass movement causes window to reverse direction. Check power window motor limit switch for proper adjustment. See **ADJUSTING METHOD FOR JAM PROTECTION** under ADJUSTMENTS. If all mechanical checks are okay, replace driver's power window master switch with a known-good unit and retest.

AUTO REVERSE INOPERATIVE WITH OBSTRUCTION IN WINDOW

NOTE: This test diagnoses inoperative AUTO REVERSE operation (jam function) when foreign object restricts window up operation. AUTO REVERSE mode will not operate when window is within .157" (4 mm) of fully open position.

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1. Ensure all power window modes function normally (i.e., UP, DOWN, AUTO UP, AUTO DOWN and key OFF). If all modes function normally, go to next step. If all modes do not function normally, perform appropriate symptom test.
2. AUTO REVERSE should operate when there is resistance to power window motor while raising window. If window opening is greater than 7.874" (200 mm) when window glass travel is obstructed, window will automatically lower 1.969" (50 mm) and stop. If window opening is 7.874" (200 mm) or less when window glass travel is obstructed, window will automatically lower until opening is 7.874" (200 mm) and stop. If operation is as specified, system is okay at this time. If operation is not as specified, go to next step.
3. Check power window motor limit switches for proper adjustment. See **ADJUSTING METHOD FOR JAM PROTECTION** under ADJUSTMENTS. Ensure power window motor is installed correctly. If motor is installed correctly and AUTO REVERSE still does not operate as specified, replace power window master switch or power window control switch.

ONE-TOUCH POWER WINDOW IS INOPERATIVE

NOTE: When a fault for one-touch mode in driver's power window master switch occurs, AUTO light on power window master switch will output a flash code. After 30 seconds, AUTO light will stop flashing and will stay on. If ignition switch is turned to OFF position during flash mode, flashing will stop.

1. Turn ignition switch to ON position and toggle power window master switch to UP or DOWN position for driver's side window only. Ensure power window master switch AUTO light begins to flash fault code. See **Fig. 1** . For Fault Code 1, go to next step. For Fault Code 2 or 3, go to step 3 . If AUTO light does not stay illuminated after 30 seconds, or flashes stop after ignition switch is turned to OFF position, replace power window master switch.
2. Fault Code 1 occurs when there is an error in power window motor limit switch. Remove power window master switch from door panel, with connector attached. Measure voltage by backprobing between power window master switch connector terminals No. 1 and 5. Voltage should change from zero volts when window is fully closed, to 10-14 volts while window is opening. If voltage is not as specified, go to next step. If voltage is as specified, replace power window master switch. If AUTO UP and AUTO DOWN does not work after power window master switch is replaced, replace power window motor.
3. Disconnect power window master switch and driver's power window motor from harness connectors. Check continuity between appropriate power window master switch terminals and driver's power window motor terminals. See **ONE-TOUCH POWER WINDOW TESTS** table. If continuity is present at all measurements, go to next step. If continuity is not present at any measurement, repair open circuit in affected wire.

ONE-TOUCH POWER WINDOW TESTS

Model	Check Between Master Switch Terminal No. & (Driver's Window Motor Terminal No.)
Land Cruiser	
	(1) 1 & (4)

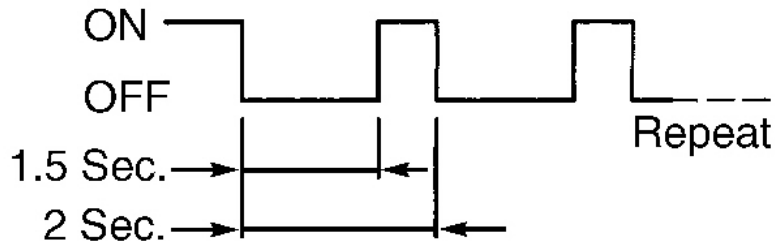
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	(2) 7 & (3)
	(2) 5 & (5)
RAV4 (2-Door)	
	(1) 4 & (4)
	(1) 1 & (3)
	(1) 10 & (5)
RAV4 (4-Door)	
	(1) 1 & (1)
	(2) 7 & (3)
	(2) 5 & (5)
(1) See Fig. 5 and Fig. 7 .	
(2) See Fig. 5 and Fig. 6 .	

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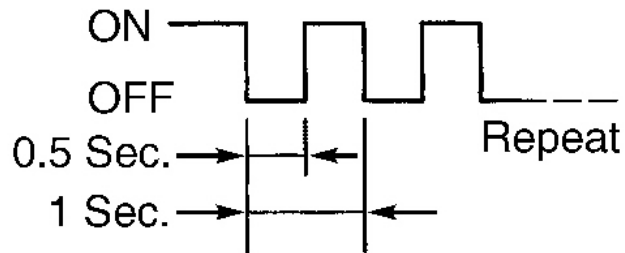
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FAULT CODE 1:



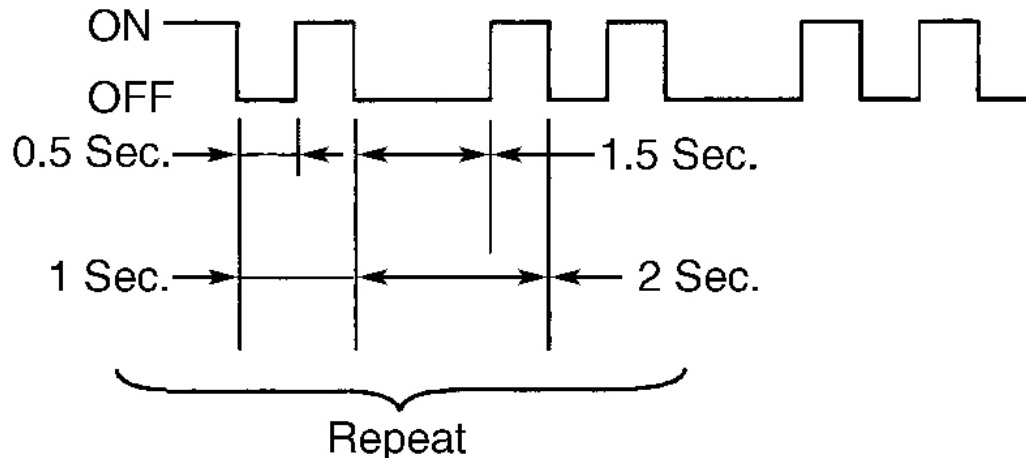
LIMIT SWITCH ERROR

FAULT CODE 2:



PULSE SENSOR ERROR

FAULT CODE 3:



LIMIT SWITCH/PULSE SENSOR
SYNCHRONIZE ERROR

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Fig. 1: Identifying AUTO Light Flash Codes

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

4. With master switch and driver's window motor disconnected, check for continuity between master switch harness 14-pin connector terminals No. 1, 5 and 7 on Land Cruiser and RAV4 4-door or terminals No. 1, 4 and 10 on RAV4 2-door. For correct terminal to connector location, see appropriate wiring diagram under **WIRING DIAGRAMS** . If continuity is not present, go to next step. If continuity is present, repair short between affected wires.
5. With master switch and driver's window motor disconnected, check continuity between driver's power window motor harness connector terminals No. 3, 4, 5 and ground. If continuity is not present, go to next step. If continuity is present, repair short to ground in affected wire.
6. Connect harness connectors to master switch and driver's power window motor. Ensure AUTO UP and AUTO DOWN function operates correctly. If AUTO UP and AUTO DOWN function still does not operate correctly, replace power window motor.

COMPONENT TESTS

POWER WINDOW SWITCH CONTINUITY TEST (DRIVER'S SWITCH)

Using an ohmmeter, check continuity between specified terminals with driver's power window switch in specified position. See appropriate **DRIVER'S POWER WINDOW SWITCH CONTINUITY TEST** table. See **Fig. 6 -Fig. 9** . Continuity should be present, except at those terminals specified by a footnote. If continuity is not as specified, replace power window switch. If continuity is as specified, switch is okay.

DRIVER'S POWER WINDOW SWITCH CONTINUITY TEST (LAND CRUISER)

Application & Switch Position	(1) Terminals No.
Driver's Switch	
Locked & Unlocked	
UP	1 & 3; 2, 4 & 5
OFF	1, 2, 4 & 5
DOWN	1, 4 & 5; 2 & 3
Passenger's Switch	
Locked	
UP	7 & 10
OFF	7 & 8
DOWN	8 & 10
Unlocked	
UP	4, 5, 8; 7 & 10
OFF	4, 5, 7 & 8
DOWN	4, 5, 7; 8 & 10
Left Rear Switch	
Locked	
UP	9 & 10

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OFF	9 & 11
DOWN	10 & 11
Unlocked	
UP	4, 5 & 11; 9 & 10
OFF	4, 5, 9 & 11
DOWN	4, 5 & 9; 7, 10 & 11
Right Rear Switch	
Locked	
UP	10 & 13
OFF	13 & 14
DOWN	10 & 14
Unlocked	
UP	4, 5 & 14; 10 & 13
OFF	4, 5, 13 & 14
DOWN	4, 5 & 13; 10 & 14
(1) See Fig. 7 .	

DRIVER'S POWER WINDOW SWITCH CONTINUITY TEST (RAV4)

Application & Switch Position	(1) Terminals No.
2-Door	
Driver's Switch	
Locked & Unlocked	
UP	3 & 5; 4 & 6
OFF	3, 4 & 5
DOWN	3 & 4; 5 & 6
Passenger's Switch	
Locked	
UP	12 & 13
OFF	12 & 14
DOWN	13 & 14
Unlocked	
UP	3 & 14; 12 & 13
OFF	3, 12 & 14
DOWN	3 & 12; 13 & 14
4-Door	
Driver's Switch	
Locked & Unlocked	
UP	1 & 3; 2, 4 & 5
OFF	1, 2, 4 & 5
DOWN	2 & 3; 1, 4 & 5

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Passenger's Switch	
Locked	
UP	7 & 10
OFF	7 & 8
DOWN	8 & 10
Unlocked	
UP	4, 5 & 8; 7 & 10
OFF	4, 5, 7 & 8
DOWN	4, 5 & 7; 8 & 10
Left Rear Switch	
Locked	
UP	9 & 10
OFF	9 & 11
DOWN	10 & 11
Unlocked	
UP	4, 5 & 11; 9 & 10
OFF	4, 5, 9 & 10
DOWN	4, 5 & 9; 10 & 11
Right Rear Switch	
Locked	
UP	10 & 13
OFF	13 & 14
DOWN	10 & 14
Unlocked	
UP	4, 5 & 14; 10 & 13
OFF	4, 5, 13 & 14
DOWN	4, 5 & 13; 10 & 14
(1) For RAV4 (2-door) master switch terminal locations, see Fig. 6 . For RAV4 (4-door) master switch terminal locations, see Fig. 7 .	

DRIVER'S POWER WINDOW SWITCH CONTINUITY TEST (SIENNA & TUNDRA)

Application & Switch Position	(1) Terminals No.
Driver's Switch	
Locked & Unlocked	
UP	1 & 4; 3 & 9
OFF	1, 3 & 4
DOWN	1 & 3; 4 & 9
Passenger's Switch	
Locked	
UP	8 & 9

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OFF	8 & 10
DOWN	9 & 10
Unlocked	
UP	1 & 10; 8 & 9
OFF	1, 8 & 10
DOWN	1 & 8; 9 & 10
(1) See Fig. 9 .	

DRIVER'S POWER WINDOW SWITCH CONTINUITY TEST (TACOMA)

Application & Switch Position	(1) Terminals No.
Driver's Switch	
Locked & Unlocked	
UP	3 & 9; 4 & 6
OFF	3, 4 & 6
DOWN	3 & 6; 4 & 9
Passenger's Switch	
Locked	
UP	9 & 10
OFF	7 & 10
DOWN	7 & 9
Unlocked	
UP	6 & 7; 9 & 10
OFF	6, 7 & 10
DOWN	6 & 10; 7 & 9
(1) See Fig. 9 .	

DRIVER'S POWER WINDOW SWITCH CONTINUITY TEST (4RUNNER)

Application & Switch Position	(1) Terminals No.
Driver's Switch	
Locked & Unlocked	
UP	2 & 4
DOWN	1 & 4
Left Rear Switch	
Locked	
UP	(2) 11 & 4
DOWN	(2) 9 & 4
Unlocked	
UP	11 & 4
DOWN	9 & 4

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Locked	
UP	(2) 14 & 4
DOWN	(2) 13 & 4
Unlocked	
UP	14 & 4
DOWN	13 & 4
(1) See Fig. 7 .	
(2) Continuity does not exist at these terminals.	

POWER WINDOW SWITCH CONTINUITY TEST (PASSENGER'S & REAR SWITCHES)

Using an ohmmeter, check continuity between specified terminals with power window switch in specified position. See **POWER WINDOW SWITCH CONTINUITY TEST (PASSENGER'S & REAR)** table. See **Fig. 10 Fig. 11** or **Fig. 12** . If continuity does not exist at specified terminals, replace appropriate power window switch.

POWER WINDOW SWITCH CONTINUITY TEST (PASSENGER'S & REAR)

Application & Switch Position	(1) Terminals No.
Land Cruiser	
Passenger's & Rear Switch	
UP	1 & 2; 3 & 4
OFF	1 & 2; 3 & 5
DOWN	1 & 4; 3 & 5
Rear Quarter Panel Window Switch	
CLOSE	3 & 6; 4 & 5
OFF	None
OPEN	3 & 4; 5 & 6
Illumination Circuit	1 & 2
RAV4	
Front Switch	
UP	1 & 2; 3 & 4
OFF	1 & 2; 3 & 5
DOWN	1 & 4; 3 & 5
Rear Switch	
UP	1 & 2; 3 & 4
OFF	1 & 2; 4 & 5
DOWN	2 & 3; 4 & 5
Sienna	
Front Switch	

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UP	1 & 2; 3 & 4
OFF	1 & 2; 3 & 5
DOWN	1 & 4; 3 & 5
Rear Quarter Panel Window Switch	
CLOSE	3 & 7; 8 & 9
OFF	6 & 7; 8 & 9
OPEN	3 & 8; 6 & 7
Illumination Circuit	1 & 5
Tacoma & Tundra	
UP	1 & 2; 3 & 4
OFF	1 & 2; 3 & 5
DOWN	1 & 4; 3 & 5
4Runner	
UP	6 & 12
DOWN	1 & 12
(1) See Fig. 10 , Fig. 11 or Fig. 12 .	

POWER WINDOW MASTER SWITCH VOLTAGE TEST**Land Cruiser & RAV4**

1. Remove master switch and disconnect 14-pin connector. Connect jumper wire between 12-volt battery positive terminal and master switch terminals No. 3 and 10. Connect another jumper between battery negative terminal and master switch terminals No. 4 and 5.
2. Measure voltage by backprobing between specified terminals with driver's power window switch in specified position. See **POWER WINDOW MASTER SWITCH VOLTAGE TEST (LAND CRUISER & RAV4)** table. Voltage should be 10-14 volts. If voltage is not as specified, replace power window switch. If voltage is as specified, switch is okay.

POWER WINDOW MASTER SWITCH VOLTAGE TEST (LAND CRUISER & RAV4)

Application & Switch Position	(1) Terminals No.
Driver's Switch (Lock & Unlock)	
UP	1 & 2
DOWN	1 & 2
Passenger's Switch (Locked & Unlocked)	
UP	7 & 8
DOWN	7 & 8
Left Rear Switch (Locked & Unlocked)	
UP	9 & 11
DOWN	9 & 11
Right Rear Switch (Locked & Unlocked)	
UP	13 & 14

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DOWN

13 & 14

(1) For terminal location, see **Fig. 7** .**4Runner**

1. Remove master switch and disconnect 14-pin connector. Connect jumper wire between 12-volt battery positive terminal and master switch terminals No. 3 and 10. Connect another jumper between battery negative terminal and master switch terminal No. 4.
2. Measure voltage by backprobing between specified terminals with driver's power window switch in specified position. See **POWER WINDOW MASTER SWITCH VOLTAGE TEST (4RUNNER)** table. Voltage should be 10-14 volts. If voltage is not as specified, replace power window switch. If voltage is as specified, switch is okay.

POWER WINDOW MASTER SWITCH VOLTAGE TEST (4RUNNER)

Application & Switch Position	(1) Terminals No.
Driver's Switch (Locked & Unlocked)	
UP	1 & 2
DOWN	1 & 2
Passenger's Switch (Locked & Unlocked)	
UP	7 & 8
DOWN	7 & 8
Left Rear Switch (Locked & Unlocked)	
UP	9 & 11
DOWN	9 & 11
Right Rear Switch (Locked & Unlocked)	
UP	13 & 14
DOWN	13 & 14
(1) For terminal location, see Fig. 7 .	

POWER WINDOW SWITCH CONTINUITY TEST (BACK DOOR/TAILGATE)**4Runner**

Using an ohmmeter, check continuity between specified terminals with back door/tailgate power window switch in specified position. See **POWER WINDOW SWITCH CONTINUITY TEST (4RUNNER - BACK DOOR/TAILGATE)** table. See **Fig. 13** . If continuity does not exist at specified terminals, replace appropriate power window switch.

POWER WINDOW SWITCH CONTINUITY TEST (4RUNNER - BACK DOOR/TAILGATE)

Application & Position	(1) Terminals No.
UP	2 & 6
OFF	None

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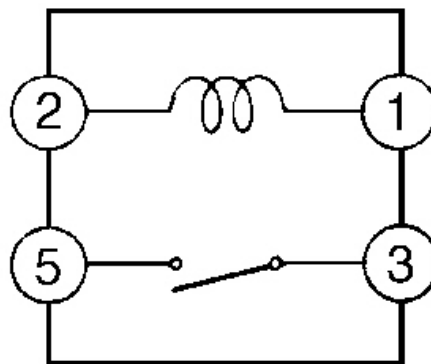
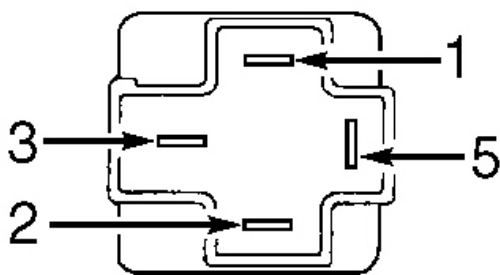
DOWN	1 & 6
Switch Illumination	
UP, OFF & DOWN	5 & 8
(1) See Fig. 13 .	

POWER MAIN RELAY

NOTE: Land Cruiser uses an instrument ECU and a power main relay. Sienna, Tacoma, Tundra and RAV4 use an integration relay and a power main relay. 4Runner uses a body ECU and power main relay.

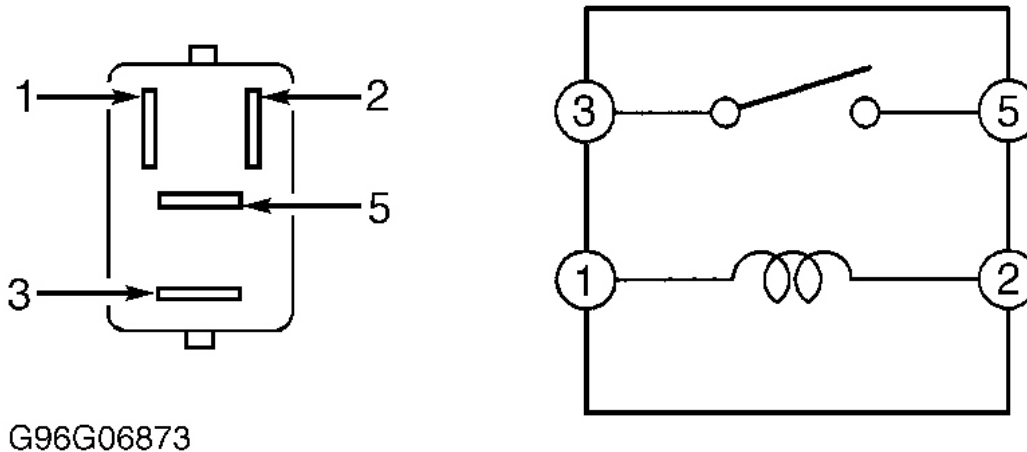
Land Cruiser, RAV4, Sienna, Tacoma, Tundra & 4Runner

1. Remove power main relay. On RAV4, Sienna, Tundra and 4Runner, relay is located in junction block No. 1 at left side of instrument panel. On Land Cruiser and Tacoma, relay is located behind left kick panel. On all models, using an ohmmeter, check continuity between power main relay terminals No. 1 and 2. See **Fig. 2** or **Fig. 3** . If continuity is present, go to next step. If continuity is not present, replace relay.
2. Connect jumper wire from 12-volt battery positive terminal to relay terminal No. 1. Connect another jumper from battery negative terminal and relay terminal No. 2. Continuity should then be present at relay terminals No. 3 and 5. If continuity is not present, replace power main relay.



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Fig. 2: Power Main Relay Terminals (Land Cruiser & RAV4)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



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Fig. 3: Power Main Relay Terminals (Sienna, Tacoma, Tundra & 4Runner)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

POWER WINDOW MOTOR CIRCUIT BREAKER TEST (DRIVER'S)

Land Cruiser, RAV4 & 4Runner

1. Slightly lower driver's side window glass. Disconnect 14-pin connector from power window master switch. Connect jumper wire from 12-volt battery positive terminal to master switch harness connector terminal No. 1. See **Fig. 7** . Connect another jumper wire from battery negative terminal to master switch harness connector terminal No. 2. Window should raise to fully closed position. If window operates correctly, go to next step. If window does not operate correctly, see **POWER WINDOW MOTOR TEST** .
2. Continue to apply voltage until there is an audible click from power window motor circuit breaker (within 4-40 seconds). Reverse polarity and ensure window begins to descend within about 60 seconds. If operation is not as specified, replace power window motor. If operation is as specified, power window motor circuit breaker is okay.

Sienna, Tacoma & Tundra

1. Slightly lower driver's side window glass. Disconnect 10-pin connector from power window master switch. Connect jumper wire from 12-volt battery positive terminal to master switch harness connector terminal No. 3. See **Fig. 9** . Connect another jumper wire from battery negative terminal to master switch harness connector terminal No. 4. Window should raise to fully closed position. If window operates correctly, go to next step. If window does not operate correctly, see **POWER WINDOW MOTOR TEST** .
2. Continue to apply voltage until there is an audible click from power window motor circuit breaker (within 4-40 seconds). Reverse polarity and ensure window begins to descend within about 60 seconds. If operation is not as specified, replace rear power window motor. If operation is as specified, rear power

window motor circuit breaker is okay.

POWER WINDOW MOTOR CIRCUIT BREAKER TEST (PASSENGER'S & REAR)

Sienna, Tundra, Land Cruiser, RAV4 & 4Runner (Rear Only)

1. Slightly lower window glass. Disconnect 5-pin connector from power window switch. Connect jumper wire from 12-volt battery positive terminal to power window switch harness connector terminal No. 3. See **Fig. 7** . Connect another jumper wire from battery negative terminal to power window switch harness connector terminal No. 1. Window should raise to fully closed position. If window operates correctly, go to next step. If window does not operate correctly, see **POWER WINDOW MOTOR TEST** .
2. Continue to apply voltage until there is an audible click from power window motor circuit breaker (within 4-40 seconds). Reverse polarity and ensure window begins to descend within about 60 seconds. If operation is not as specified, replace power window motor. If operation is as specified, power window motor circuit breaker is okay.

4Runner (Passenger Only)

1. Slightly lower window glass. Disconnect 12-pin connector from power window switch. Connect jumper wire from 12-volt battery positive terminal to power window switch harness connector terminal No. 6. See **Fig. 8** . Connect another jumper wire from battery negative terminal to power window switch harness connector terminal No. 1. Window should raise to fully closed position. If window operates correctly, go to next step. If window does not operate correctly, see **POWER WINDOW MOTOR TEST** .
2. Continue to apply voltage until there is an audible click from power window motor circuit breaker (within 4-40 seconds). Reverse polarity and ensure window begins to descend within about 60 seconds. If operation is not as specified, replace power window motor. If operation is as specified, power window motor circuit breaker is okay.

POWER WINDOW MOTOR TEST

Driver's Window Motor (Land Cruiser & RAV4)

Using a 12-volt battery, connect positive battery lead to power window motor terminal No. 1. See **Fig. 5** . Connect negative battery lead to power window motor connector terminal No. 4. Motor should operate. Reverse battery leads. Motor should operate in opposite direction. If motor does not test as specified, replace motor.

Rear Quarter Window Motors (Land Cruiser)

Connect jumper wire between 12-volt battery positive terminal to power window motor terminal No. 1 (on left side window), No. 2 (on right side window). See **Fig. 4** . Connect negative battery lead to other power window motor connector terminal. Window link should move to OPEN position. When battery jumper is removed, window link should move to CLOSED position. If motor does not operate as specified, replace motor.

All Other Window Motors

Using a 12-volt battery, connect positive battery lead to either power window motor terminal. Connect negative battery lead to other power window motor connector terminal. Motor should operate. Reverse battery leads.

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Motor should operate in opposite direction. If motor does not test as specified, replace motor.

POWER WINDOW LOCK SWITCH

Tailgate Door (4Runner)

Switch Continuity Test

Disconnect power window lock switch Black 10-pin connector, located on left side of instrument panel. Using an ohmmeter, check continuity between terminals No. 7 (White/Black wire) and No. 10 (Blue/White wire) with lock switch in UNLOCK position. See **Fig. 13** . Continuity should be present. With lock switch in LOCK position, continuity should not be present. If continuity is not as specified, replace switch.

Switch Illumination Circuit Test

Check continuity between power window lock switch terminals No. 2 (Green wire) and No. 3 (Green/White wire). Continuity should be present with power window lock switch in LOCK or UNLOCK position. If continuity is not as specified, replace power window lock switch.

POWER WINDOW LIMIT SWITCH

Tailgate Door (4Runner)

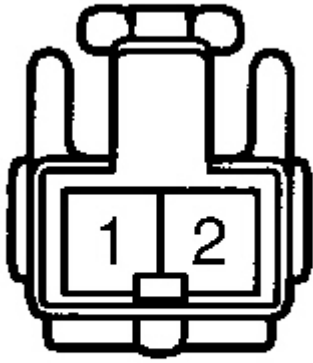
Disconnect power window limit switch 2-pin connector, located on left side of tailgate door, behind trim panel. Using an ohmmeter, check continuity between terminals No. 1 (Red/Blue wire) and No. 2 (White/Black wire) with switch in ON position. Continuity should exist. With switch in OFF position, continuity should not exist. If continuity is not as specified, replace switch.

CONNECTOR VIEWS

Use the following connector views for diagnostic pin point tests in **TROUBLE SHOOTING** , **COMPONENT TESTS** and **CIRCUIT TESTS** . See **Fig. 4 -Fig. 13** .

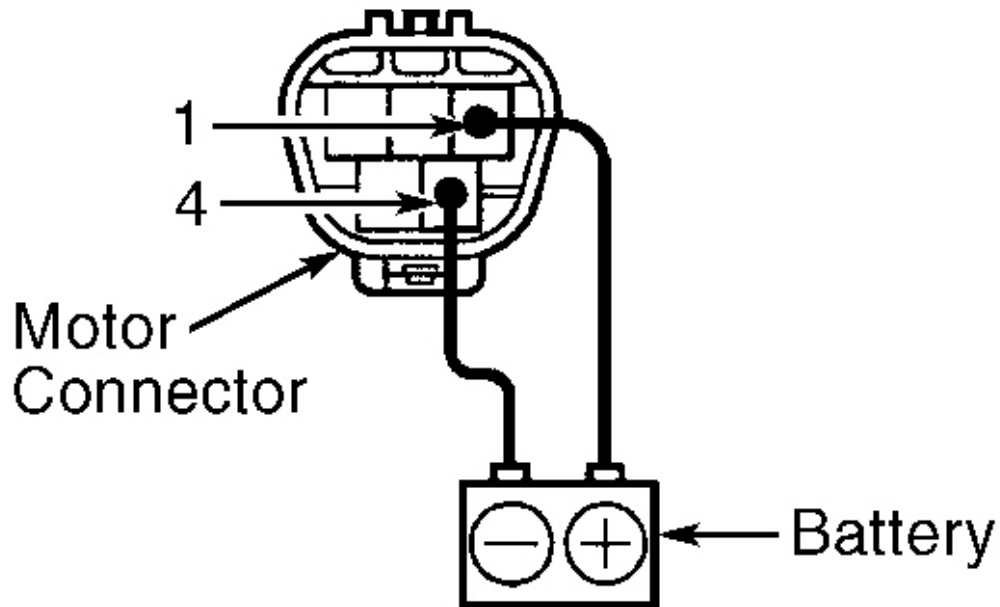
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Fig. 4: Identifying Rear Quarter Power Window Motor Terminals (Land Cruiser)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

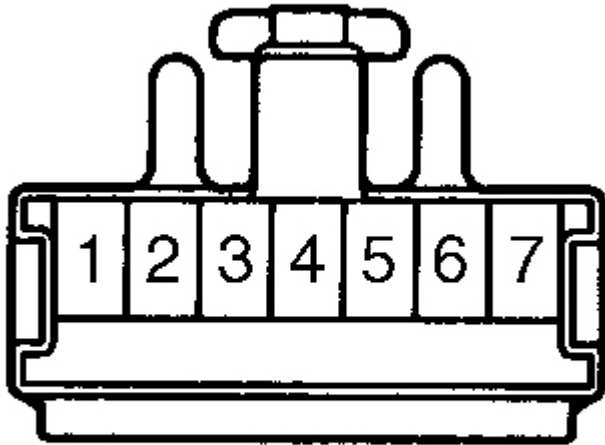


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Fig. 5: Identifying Driver's Power Window Motor Terminals (Land Cruiser & RAV4)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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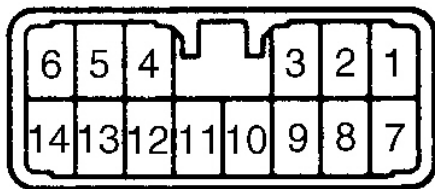
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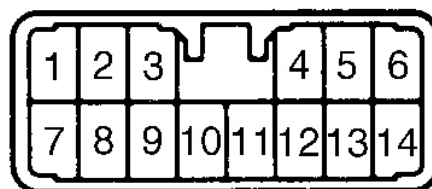
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Fig. 6: Identifying Driver's Power Window Master Switch 7-Pin Connector Terminals (Land Cruiser, RAV4 (4-Door) & 4Runner)

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



SWITCH SIDE



HARNESS SIDE

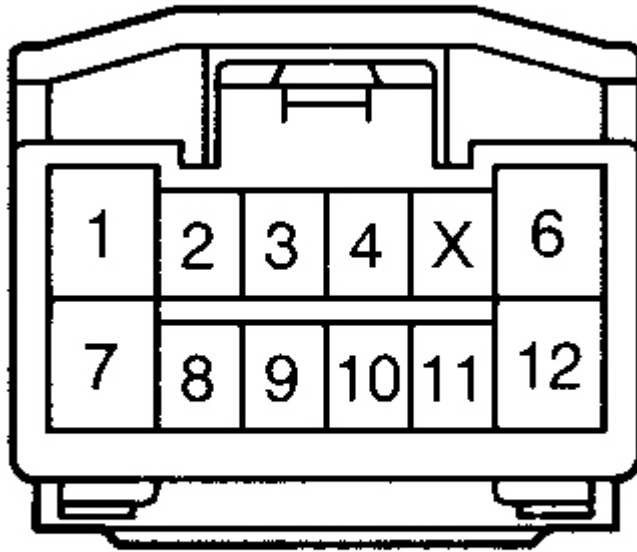
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Fig. 7: Identifying Driver's Power Window Master Switch 14-Pin Connector Terminals (Land Cruiser, RAV4 & 4Runner)

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

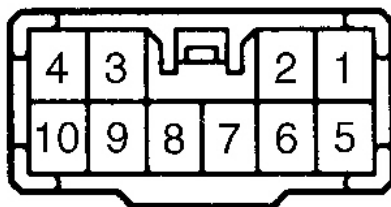
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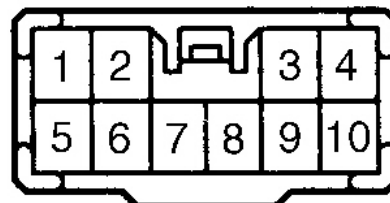


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Fig. 8: Identifying Passenger's Power Window Switch Connector Terminals (4Runner)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



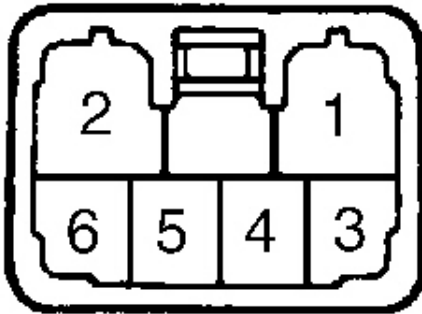
SWITCH SIDE



HARNESS SIDE

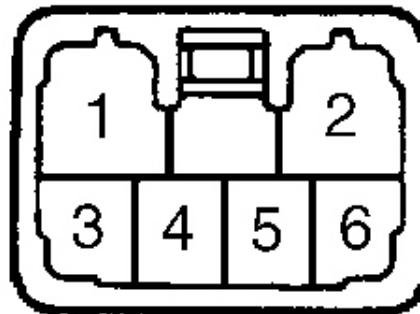
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Fig. 9: Identifying Driver's Power Window Master Switch Connector Terminals (Sienna, Tacoma & Tundra)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



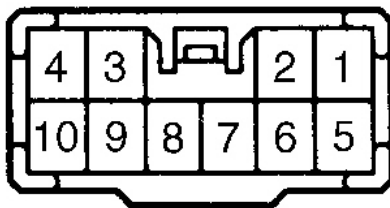
SWITCH SIDE

G96I06869



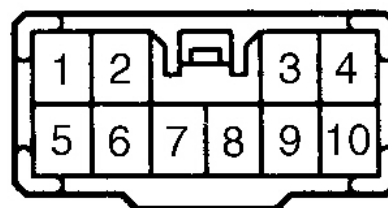
HARNESS SIDE

Fig. 10: Identifying Rear Quarter Power Window Switch Connector Terminals (Land Cruiser)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



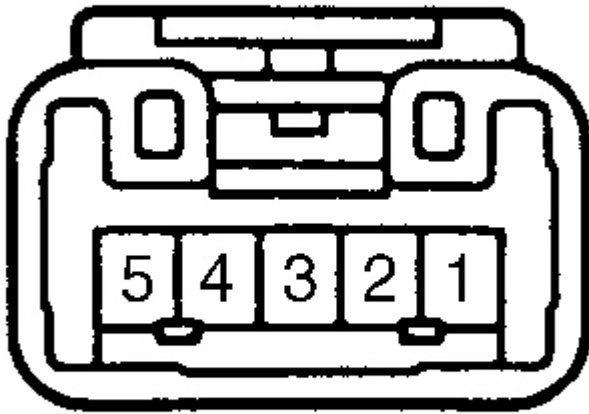
SWITCH SIDE

G96H06864



HARNESS SIDE

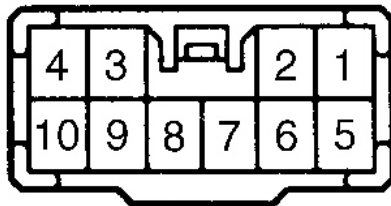
Fig. 11: Identifying Rear Quarter Power Window Switch Connector Terminals (Sienna)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



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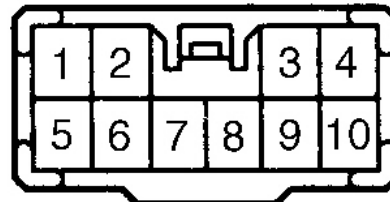
Fig. 12: Identifying Passenger & Rear Power Window Switch Connector Terminals (Land Cruiser, RAV4, Sienna, Tacoma, Tundra & 4Runner)

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



SWITCH SIDE

G96H06864



HARNESS SIDE

Fig. 13: Identifying Back Door/Tailgate Power Window Switch Connector Terminals (4Runner)

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

CIRCUIT TESTS

INTEGRATION RELAY CIRCUIT TEST

1999 Toyota RAV4

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NOTE: Diagnostic procedures for integration relay circuit is not available.

POWER WINDOW MASTER SWITCH ILLUMINATION TEST

Land Cruiser & RAV4 (4-Door)

Disconnect power window master switch 14-pin connector. Connect jumper wire from 12-volt battery positive terminal to master switch connector terminals No. 3 and 10. Connect another jumper wire from negative battery terminal to master switch connector terminal No. 4. Ensure all switch lights illuminate. If operation is not as specified, replace power window master switch.

RAV4 (2-Door)

Disconnect power window master switch 14-pin connector. Connect jumper wire from 12-volt battery positive terminal to master switch connector terminals No. 6 and 13. Connect another jumper wire from negative battery terminal to master switch connector terminal No. 3. Ensure all switch lights illuminate. If operation is not as specified, replace power window master switch.

Sienna

Disconnect power window master switch 14-pin connector. Place window lock switch in UNLOCK position. Connect jumper wire from 12-volt battery positive terminal to master switch connector terminal No. 9. Connect another jumper wire from negative battery terminal to master switch connector terminal No. 1. Ensure all switch lights illuminate. Place window lock switch in LOCK position and ensure passenger power window switches do not illuminate. If operation is not as specified, replace power window master switch.

POWER WINDOW SWITCH POWER SUPPLY TEST

NOTE: Testing for Land Cruiser, RAV4 and Tacoma is not available.

Sienna, Tundra & 4Runner

Disconnect power window switch connector. Measure battery voltage between appropriate power window switch harness connector terminal and ground. See **POWER WINDOW SWITCH POWER SUPPLY TEST** table. With ignition switch in ON position, voltage should be 10-14 volts. If voltage is not as specified, repair open in affected circuit.

POWER WINDOW SWITCH POWER SUPPLY TEST

Application & Switch	Condition	Terminal No.
Sienna		
Power Window Master Switch ⁽¹⁾		
⁽²⁾ Ignition Switch In ACC Or LOCK Position		7
Ignition Switch In ON Position		7
Rear Quarter Power Window Switch ⁽³⁾		
⁽²⁾ Ignition Switch In ACC Or LOCK Position		3

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Ignition Switch In ON Position	3
Tundra	
Driver Power Window Master Switch ⁽¹⁾	
⁽²⁾ Ignition Switch In ACC Or LOCK Position	9
Ignition Switch In ON Position	9
Passenger Power Window Switch ⁽⁴⁾	
⁽²⁾ Ignition Switch In ACC Or LOCK Position	4
Ignition Switch In ON Position	4
4Runner	
Driver Power Window Master Switch ⁽⁵⁾	
⁽²⁾ Ignition Switch In ACC Or LOCK Position	10
Ignition Switch In ON Position	10
Constant	3
Passenger Power Window Switch ⁽⁶⁾	
Constant	7
<p>(1) For switch terminal location, see Fig. 9 .</p> <p>(2) Voltage will be present for up to 45 seconds after ignition switch is turned to OFF position, or until driver or passenger door is opened.</p> <p>(3) For switch terminal location, see Fig. 11 .</p> <p>(4) For switch terminal location, see Fig. 12 .</p> <p>(5) For switch terminal location, see Fig. 7 .</p> <p>(6) For switch terminal location, see Fig. 8 .</p>	

POWER WINDOW SWITCH GROUND TEST

NOTE: Testing for Land Cruiser, Tacoma and RAV4 is not available.

Disconnect power window switch connector. Check for continuity between appropriate power window switch harness connector terminal and ground. See **POWER WINDOW SWITCH GROUND TEST** table. Continuity should be present at all times. If continuity is not present, repair open in ground circuit.

POWER WINDOW SWITCH GROUND TEST

Application & Switch	Terminals No.
Sienna	
Driver Power Window Master Switch ⁽¹⁾	1
Rear Quarter Power Window Switch ⁽²⁾	6 & 9
Tundra	
Driver Power Window Master Switch ⁽¹⁾	1

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4Runner

Driver Power Window Master Switch ⁽³⁾	4
Passenger Power Window Switch ⁽⁴⁾	12
<p>(1) For switch terminal location, see Fig. 9 .</p> <p>(2) For switch terminal location, see Fig. 11 .</p> <p>(3) For switch terminal location, see Fig. 7 .</p> <p>(4) For switch terminal location, see Fig. 8 .</p>	

POWER WINDOW SYSTEM CURRENT TEST

NOTE: **System circuit breaker opens 4-40 seconds after window operation stops.
Ensure circuit test is performed before circuit breaker operates.**

Land Cruiser, 4Runner & RAV4 (4-Door)

1. Disconnect driver's power window switch connector. Connect positive lead of ammeter to driver's power window switch harness connector terminal No. 1. See **Fig. 7** .
2. Connect ammeter negative lead to negative terminal of 12-volt battery. Connect jumper wire from positive battery terminal to driver's power window switch harness connector terminal No. 2.
3. As driver's window is lowered, current should be about 7 amps. When window reaches fully opened position, current should increase to about 14.5 amps or more. If current is as specified, replace driver's power window master switch. If current is not as specified, check and repair appropriate circuit.

RAV4 (2-Door)

1. Disconnect driver's power window switch connector. Connect positive lead of ammeter to driver's power window switch harness connector terminal No. 4. See **Fig. 7** .
2. Connect ammeter negative lead to negative terminal of 12-volt battery. Connect jumper wire from positive battery terminal to driver's power window switch harness connector terminal No. 5.
3. As driver's window is lowered, current should be about 7 amps. When window reaches fully opened position, current should increase to about 14.5 amps or more. If current is as specified, replace driver's power window switch. If current is not as specified, check and repair appropriate circuit.

Sienna & Tundra

1. Disconnect driver's power window switch connector. Connect positive lead of ammeter to driver's power window switch harness connector terminal No. 3. See **Fig. 9** .
2. Connect ammeter negative lead to negative terminal of 12-volt battery. Connect jumper wire from positive battery terminal to driver's power window switch harness connector terminal No. 4.
3. As driver's window is lowered, current should be about 7 amps. When window reaches fully opened position, current should increase to about 14.5 amps or more. If current is as specified, replace driver's power window switch. If current is not as specified, check and repair appropriate circuit.

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Tacoma

1. Disconnect driver's power window switch connector. Connect positive lead of ammeter to driver's power window switch harness connector terminal No. 4. See **Fig. 9** .
2. Connect ammeter negative lead to negative terminal of 12-volt battery. Turn ignition switch to ON position. Connect a jumper wire from positive battery terminal to driver's power window switch harness connector terminal No. 9.
3. As driver's window is lowered, current should be about 7 amps. When window reaches fully opened position, current should increase to about 14.5 amps or more. If current is as specified, replace driver's power window switch. If current is not as specified, check and repair appropriate circuit.

REMOVAL & INSTALLATION

POWER WINDOW MOTOR

Removal & Installation

Remove door trim panel and waterproof shield. Remove glass retaining bolts and glass. Remove window regulator bolts, and remove window regulator/power window motor assembly. Remove power window motor retaining screws, and remove motor from window regulator. To install, reverse removal procedure. Tighten window regulator motor retaining bolts or nuts to 44 INCH lbs. (5 N.m). Apply multipurpose grease to window regulator rollers.

POWER WINDOW SWITCH

Removal & Installation

Disconnect negative battery cable. Using a small flat blade screwdriver, pry and lift power window switch from door panel. Disconnect power window switch connector(s) and remove switch. To install, reverse removal procedure.

WIRING DIAGRAMS

1999 Toyota RAV4

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1999 Toyota RAV4
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Fig. 14: Power Window System Wiring Diagram (2000 Tundra)

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1999 Toyota RAV4
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Fig. 15: Power Window System Wiring Diagram (Land Cruiser)

1999 Toyota RAV4

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1999 Toyota RAV4
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Fig. 16: Power Window System Wiring Diagram (RAV4 - 2-Door)

1999 Toyota RAV4

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1999 Toyota RAV4
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Fig. 17: Power Window System Wiring Diagram (RAV4 - 4-Door)

1999 Toyota RAV4

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1999 Toyota RAV4
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Fig. 18: Power Window System Wiring Diagram (Sienna)

1999 Toyota RAV4

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1999 Toyota RAV4
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Fig. 19: Power Window System Wiring Diagram (Tacoma)

1999 Toyota RAV4

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1999 Toyota RAV4
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Fig. 20: Power Window System Wiring Diagram (4Runner)

1999 Toyota RAV4

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1999 Toyota RAV4
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Fig. 21: Tailgate Power Window System Wiring Diagram (4Runner)

1999 Toyota RAV4

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1999 Toyota RAV4
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Fig. 22: Rear Quarter Power Window System Wiring Diagram (Land Cruiser)