POWER WINDOWS

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GENERAL INFORMATION

INTRODUCTION

Front door window lift motors use permanent type magnets. The B+ and ground applied at the motor terminal pins will cause the motor to rotate in one direction. Reversing current through the motor terminals will cause the motor to rotate in the opposite direction.

The power window motors ground through the master switch in the driver door (Fig. 1) by a black wire attached to the left cowl panel. Refer to Group 8W, Wiring Diagrams from circuit information and component locations.

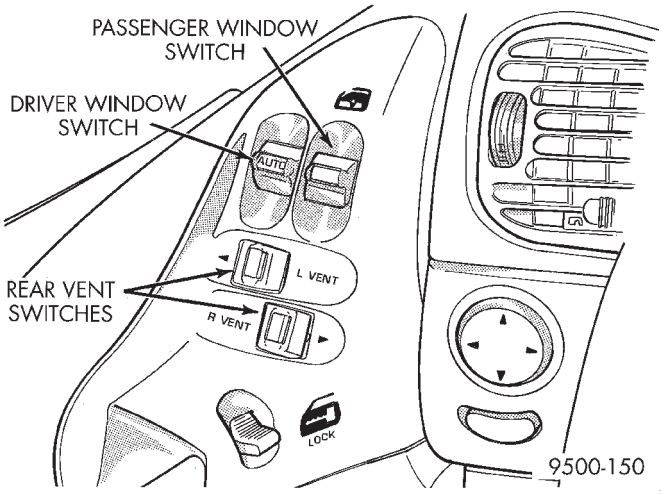


Fig. 1 Power Window Master Switch

The power rear vent windows, if equipped, are operated by switches mounted in the driver door switch bezel. A separate switch is used for each window. Permanent magnet type motors connected to a crank system are used to open and close the rear vent windows. A battery positive and negative connection to either of the two motor terminals will cause the motor to rotate in one direction. Reversing current through these same two connections will cause the motor to rotate in the opposite direction. Refer to Group 8W, Wiring Diagrams for circuit information and component locations.

DIAGNOSIS AND TESTING

POWER VENT WINDOW MOTOR TEST

If the power vent window motor is receiving proper current and ground and does not operate proceed with motor test. Refer to Group 8W, Wiring Diagrams for circuit information and component locations.

(1) Remove D-pillar trim panel necessary to gain access to power vent window motor wire connector, refer to Group 23, Body for proper procedures.

(2) Disconnect power vent window motor wire connector from body harness.

(3) Using two jumper wires, connect one to a battery (+) source and the other to a good ground (-).

(4) Connect the Negative (-) jumper probe to one of the motor connector terminals.

(5) Momentarily touch the Positive (+) jumper probe to the other motor connector terminal.

When positive probe is connected the motor should rotate in one direction to either move window open or closed. If window is all the way open or closed the motor will grunt and the crank system will flex when actuated in that one direction.

Reverse jumper probes at the motor connector terminals and window should now move in opposite direction. If window does not move or grunt, replace the motor.

If window moved completely open or closed, reverse the jumper probes and cycle window to the opposite position to verify full operation.

If motor grunts and does not move, verify that crank system is not binding.

DIAGNOSIS AND TESTING (Continued)

POWER WINDOW AND VENT SWITCH TEST

(1) Remove the driver or passenger door power window switch and bezel assembly from door trim panel. Refer to group 23, Body for proper procedures.

(2) Using an ohmmeter, Test driver door switch for continuity as described in (Fig. 2).

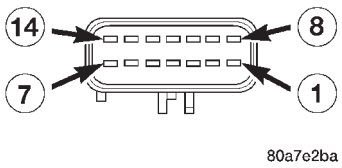


Fig. 2 Driver Side Power Window Switch Connector

DRIVER DOOR POWER WINDOW SWITCH TEST

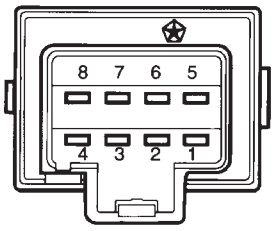
SWITCH POSITION	CONTINUITY BETWEEN
OFF	13 and 1
	13 and 2
	13 and 3
	13 and 4
	13 and 5
	13 and 6
	13 and 7
	13 and 8
UP DRIVER	11 and 8
*DOWN DRIVER	11 and 6
*X DOWN DRIVER	11and 6
UP PASSENGER	9 and 4
DOWN PASSENGER	9 and 2
LEFT VENT OPEN	11 and 7
LEFT VENT CLOSE	9 and 3
RIGHT VENT OPEN	9 and 1
RIGHT VENT CLOSE	11 and 5

* MUST TEST WITH B+ ON PIN 9 AND GROUND ON PIN 13 FOR CONTINUITY BETWEEN PINS 11 AND 6

(3) Test passenger door switch for continuity as described in (Fig. 3).

(4) If the results are not OK, replace the switch.

The driver door power window switch has a Auto-Down feature. The switch is equipped with two detent positions when actuating the power window OPEN. The first detent position allows the window to roll down and stop when the switch is released. The second detent position actuates an integral express roll down relay that rolls the window down after the switch is released. When the express down relay senses an amperage spike (motor pushing against down stop) in the feed circuit, current is turned off to the motor. The AUTO feature can be cancelled by actuating the switch UP or DOWN while window is in motion. Failure of the electronic switch to detect an amperage spike will cause the switch to disconnect after approximately 11 seconds.



SWITCH POSITION	CONTINUITY BETWEEN
OFF	3 AND 8
OFF	2 AND 5
UP	4 AND 8
DOWN	4 AND 5

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Fig. 3 Passenger Door Power Window Switch

POWER WINDOW MOTOR TEST

If the power window motor is receiving proper current and ground and does not operate proceed with motor test. Refer to Group 8W, Wiring Diagrams for circuit information and component locations.

(1) Remove front door trim panel and water shield as necessary to gain access to power window motor wire connector, refer to Group 23, Body for proper procedures.

(2) Disconnect power window motor wire connector from door harness.

(3) Using two jumper wires, connect one to a battery (+) source and the other to a good ground (-).

(4) Connect the Negative (-) jumper probe to one of the motor connector terminals.

(5) Momentarily touch the Positive (+) jumper probe to the other motor connector terminal.

When positive probe is connected the motor should rotate in one direction to either move window up or down. If window is all the way up or down the motor will grunt and the inner door panel will flex when actuated in that one direction.

(6) Reverse jumper probes at the motor connector terminals and window should now move in opposite direction. If window does not move or grunt, replace the motor.

If window moved completely up or down, reverse the jumper probes and cycle window to the opposite position to verify full operation.

DIAGNOSIS AND TESTING (Continued)

If motor grunts and does not move, verify that regulator is not binding.

WIRING VOLTAGE TEST

The following wiring test determines whether or not voltage is continuous through the body harness to switch.

(1) Remove the master power window switch and bezel assembly from the driver door. Refer to Group 23, Body for proper procedures.

(2) Disconnect wire connector from back of power window switch.

(3) Switch ignition ON position.

(4) Connect the clip end of a 12 volt test light to Pin 13 in door harness connector at the window switch. Touch the test light probe to Pin 9 and then to Pin 11.

- If the test light illuminates, the wiring circuit between the battery and switch is OK.
- If light does not illuminate, check the 40 amp fuse in the Power Distribution Center or for a broken wire.
- The power window motors are protected with Positive Temperature Coefficient (PTC) device that prevents motor burn out. Check Junction Block.
- Refer to Group 8W, Wiring Diagrams for circuit information and component locations.

REMOVAL AND INSTALLATION

POWER VENT WINDOW MOTOR

REMOVAL

(1) Disconnect battery negative cable.

(2) Remove D-pillar trim panel.

(3) Disconnect wire connector from power vent motor.

(4) Remove nut holding crank to vent glass.

(5) Remove bolts holding power vent motor to D-pillar (Fig. 4).

(6) Remove power vent motor.

(7) Pull the crank system from the motor.

INSTALLATION

Before installing crank, cycle replacement motor to the open position. Install crank hinge in extended position to the motor and for installation, reverse the above procedures.

POWER WINDOW SWITCH

To remove power window switches refer to Group 23, Body for proper procedures.

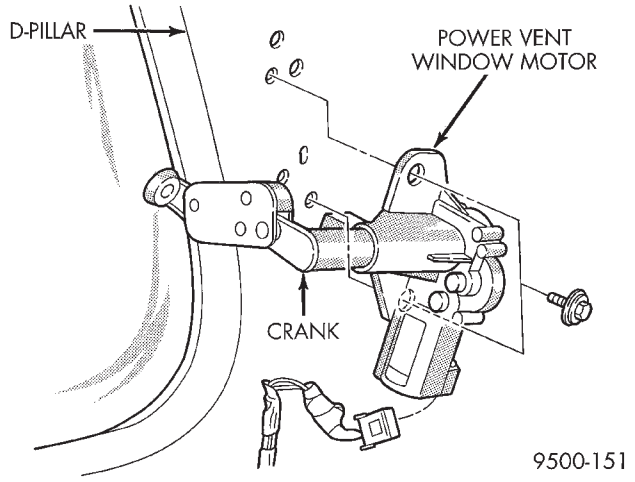

Fig. 4 Vent Window Motor

POWER WINDOW MOTOR

WARNING: DO NOT HAVE ANY HANDS OR FINGERS IN SECTOR GEAR AREA WHERE THEY CAN BE PINCHED BY SMALL MOVEMENTS OF REGULATOR LINKAGE.

REMOVAL

(1) Tape the window in its existing position to remove its weight from the regulator system.

(2) Cut and remove the tie wrap at the window motor. Its no longer required.

(3) Disconnect window motor wire connector from door harness.

(4) Remove screws and nuts holding window motor to the inner panel.

(5) Remove the motor from the door inner panel, let it hang from the cables.

(6) With the cables still attached to the failed motor, Install the replacement motor to the door inner panel. Tighten down the screws and nuts to 3.4 to 4.5 N·m (30 to 40 in. lbs.) of torque.

(7) Separate the failed motor from regulator by:

- Removing the drum cover plate.
- Lift the cable guide off the motor, the drum with cables, will be lifted off simultaneously (Fig. 5).

CAUTION: Do not allow the drum to separate from the cable guide, by dropping drum or letting the cables unwind.

INSTALLATION

(1) Install the cable guide and drum into the replacement motor.

REMOVAL AND INSTALLATION (Continued)

CAUTION: The drum may require a slight rotation to install onto the motor drive shaft. Rotate the drum with the use of needle nose pliers or a similar tool. If, the drum does not align with the motor shaft by a slight rotation, then, the glass should be lowered a small amount approximately 1 to 2 inches. The drum will rotate when the glass is lowered. Lowering the glass will require assistance of a second person.

(2) install the replacement cover plate onto the replacement motor. Crimp toy tabs.

(3) Connect the wiring harness to the window motor connector.

(4) Remove the tape holding the window in place and test window operation.

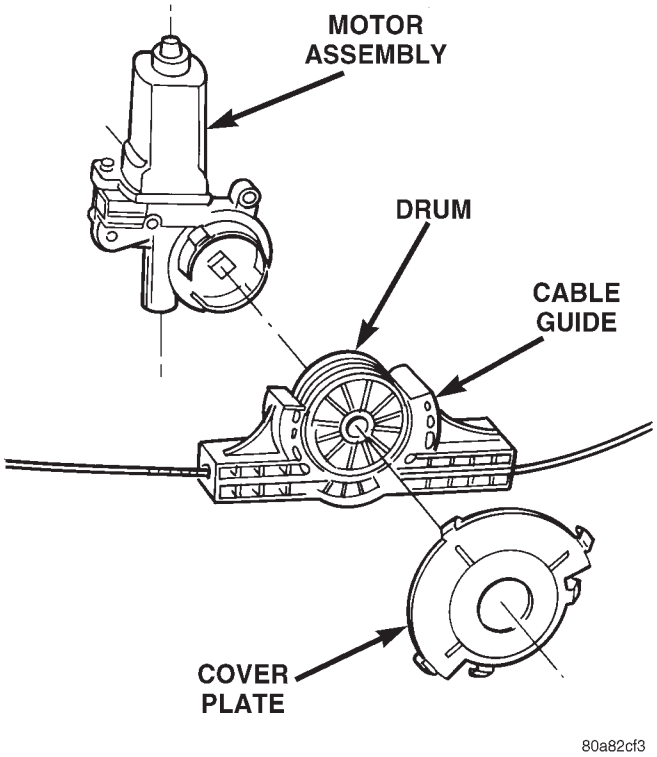

Fig. 5 Power Window Motor Removal