

POWER WINDOW SYSTEMS

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DESCRIPTION AND OPERATION

POWER WINDOW SYSTEMS

DESCRIPTION

The power window system allows each of the door windows to be raised and lowered electrically by actuating a switch on the trim panel of each respective door. A master switch on the driver side door trim panel allows the driver to raise or lower either front window. The power window system receives battery feed through a circuit breaker in the junction block, only when the ignition switch is in the On position.

The power window system includes the power window switches on each door trim panel, the circuit breaker in the junction block, and the power window motors inside each door. For service of mechanical components, such as the regulator, lift plate, window tracks, or glass refer to Group 23 - Body.

OPERATION

Front door window lift motors are of the permanent magnet type. 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.

Each individual motor is grounded through the master switch.

WINDOW DROP RELAY ASSEMBLY

DESCRIPTION

The Window Drop Relay Assembly allows the windows to be automatically lowered when the convertible top is raised or lowered.

It is mounted inside the drivers side door, behind the door trim panel.

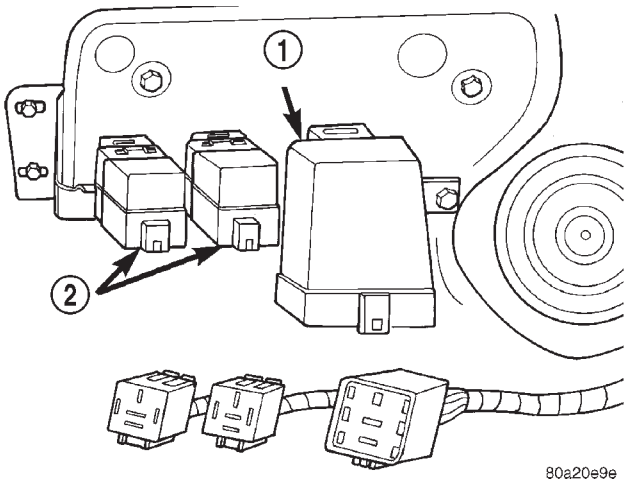


Fig. 1 Window Drop Relay Assembly

- 1 - WINDOW TIMER MODULE
- 2 - WINDOW MOTOR RELAYS

OPERATION

The window timer module will lower the windows for 280 to 380 milliseconds when the top switch is pressed up or down. This will lower the windows approximately 1 to 3 inches so that the windows are clear of the top while raising or lowering.

DIAGNOSIS AND TESTING

VOLTAGE

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

(1) Remove the driver door trim panel. Refer to Group 23, Body for proper procedures.

(2) Carefully separate wiring harness connector from switch body. Refer to Group 8W, Wiring Diagrams.

DIAGNOSIS AND TESTING (Continued)

(3) Using a voltmeter, connect the ground lead to the Pin 10 of the wiring harness connector.

(4) Using the positive lead, check Pin 1 of the harness connector for battery voltage. If OK, go to Window Switch Test below. If not OK, check 20 amp circuit breaker in the Junction Block, if the circuit breaker is OK, repair wire as necessary. For wiring, specific connector type and location, refer to Group 8W, Wiring Diagrams.

WINDOW DROP RELAY ASSEMBLY CONDITIONS

When testing for a voltage signal, use a digital voltmeter, because the signal will last only 280 to 380 milliseconds. Place the ignition switch in the run position with out engine running. Refer to Group 8W, Wiring Diagrams circuit and pin locations (Fig. 2).

When pressing the top switch all windows do not lower

(1) Check for battery voltage at Pin 1 and 2 of the window timer module wire connector. If OK, go to Step 2. If not OK, check circuit breaker top switch. Repair as necessary.

(2) Using a ohmmeter, check Pin 9 of the window timer module wire connector for ground. If OK, go to Step 3. If not OK, repair as necessary.

(3) Using a digital voltmeter, check Pin 7 of the window timer module wire connector for voltage signal for 280 to 380 milliseconds while pressing the top switch. If not OK, replace the window timer module. If OK, check power window circuit connections.

When pressing the top switch the front window(s) do not lower

(1) Using a digital voltmeter, check Pin 4 of both window motor relay wire connectors for voltage signal while pressing the top switch. If there is a momentary voltage, go to Step 2. If not OK, window timer relay.

(2) Using a ohmmeter, check Pin 6 of the both window motor relays wire connector for ground. If OK, go to Step 3. If not OK, repair ground as necessary.

(3) Using a ohmmeter, check Pin 85 to Pin 86 of window motor relay with connector disconnected for open circuit. If OK, check power window circuit connections. If open circuit replace window motor relay.

When pressing the top switch the rear window(s) do not lower

(1) Using a digital voltmeter, check Pin 4 and Pin 6 of the window timer module wire connector for battery voltage while pressing the top switch. If no voltage replace the window timer module. If voltage, check power window circuit connections.

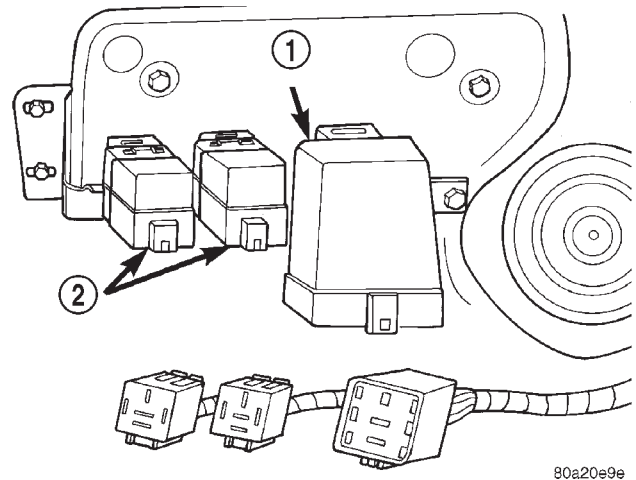


Fig. 2 Power Drop Relay Assembly

1 – WINDOW TIMER MODULE

2 – WINDOW MOTOR RELAYS

WINDOW MOTOR

(1) Remove door trim panel, refer to Group 23 Body for removal procedures.

(2) Connect positive (+) lead from a test battery to either of the two motor terminals.

(3) Connect negative (-) lead from test battery to remaining motor terminal.

(4) The motor should now rotate in one direction to either move window up or down.

(a) If window happens to already be in full UP position and motor is connected so as to move it in UP direction no movement will be observed.

(b) Likewise, motor connected to move window in DOWN direction no movement will be observed if window is already in full DOWN position.

(c) Reverse battery leads in Step 1 and Step 2 and window should now move. If window does not move, remove motor. See below for motor removal from vehicle.

(5) If window moved completely up or down, the test leads should be reversed one more time to complete a full window travel inspection.

(6) If window does not move, check to make sure that it is free.

(7) It is necessary that the window be free to slide up and down in the glass channels. If the window is not free to move up and down, the window lift motor will not be able to move the glass.

(8) To determine if the glass is free is to disconnect the regulator from the glass lift plate. Remove the two attaching screws, and slide the window up and down by hand.

WINDOW SWITCH

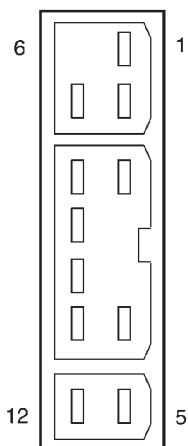
For switch testing, remove the switch from its mounting, refer to Switch Removal. Using an ohm-

DIAGNOSIS AND TESTING (Continued)

meter, refer to Window Switch Continuity Charts to determine if continuity is correct (Fig. 3) and (Fig. 4). If the results are not obtained, replace the switch.

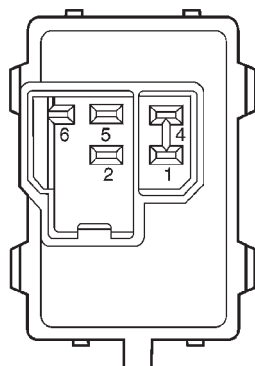
The master window switch has an Auto-Down feature. Actuation of the master switch to the second down position will move the drivers side window completely down. The electronic switch will automatically disconnect the motor approximately 1 second after the window bottoms out. Failure of the electronic switch to detect stall current, will cause the switch to disconnect after approximately 13 seconds. The auto down function can be canceled by any movement of the switch.

SWITCH POSITION		CONTINUITY BETWEEN TERMINALS
OFF		PIN 10 to 2
		PIN 10 to 3
		PIN 10 to 4
		PIN 10 to 7
		PIN 10 to 8
		PIN 10 to 9
		PIN 10 to 11
UP	DRIVER'S	PIN 1 to 7
		PIN 8 to 10
UP	RIGHT	PIN 1 to 12
	FRONT	PIN 10 to 11
UP	LEFT	PIN 3 to 10
	REAR	PIN 1 to 2
UP	RIGHT	PIN 1 to 4
	REAR	PIN 9 to 10
DOWN	DRIVER'S	PIN 1 to 8
		PIN 7 to 10
DOWN	RIGHT	PIN 1 to 11
	FRONT	PIN 10 to 12
DOWN	LEFT	PIN 3 to 1
	REAR	PIN 2 to 10
DOWN	RIGHT	PIN 1 to 9
	REAR	PIN 4 to 10



80a20ea4

Fig. 3 Master Window Switch



806dc180

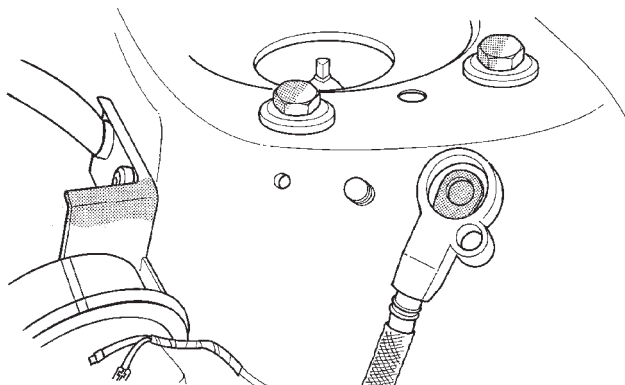
Fig. 4 Passenger Window Switch

REMOVAL AND INSTALLATION

WINDOW DROP RELAY ASSEMBLY

REMOVAL

- (1) Disconnect and isolate the battery negative remote cable (Fig. 5).



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Fig. 5 Battery Negative Remote Cable Removal

- (2) Remove door trim panel, refer to Group 23, Body for removal procedures.
- (3) Disconnect the wire connectors (Fig. 2).
- (4) Remove the attaching screws.
- (5) Remove relay assembly.

INSTALLATION

For installation, reverse the above procedures.

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) Move the window to the 3/4 down position, if possible.
- (2) Disconnect and isolate the battery negative remote cable (Fig. 5).
- (3) Remove door trim panel and window regulator, refer to Group 23 Body for removal procedures.

WARNING: FAILURE TO CLAMP THE SECTOR GEAR TO THE MOUNTING PLATE WHEN REMOVING THE MOTOR CAN RESULT IN INJURY.

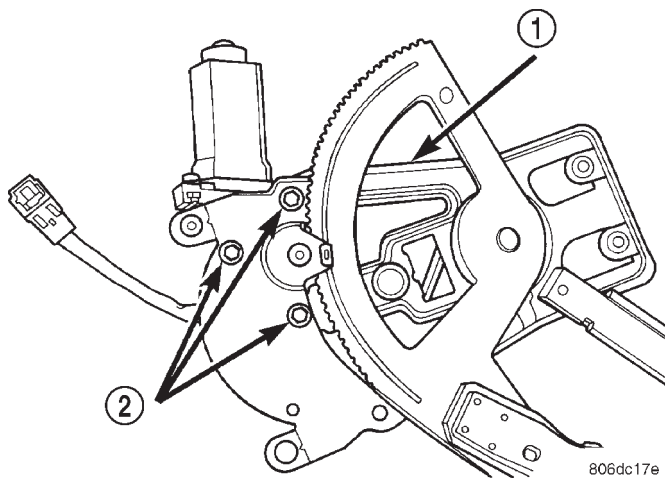
- (4) Disconnect wiring connector from motor.
- (5) Secure the sector gear and mounting plate with a C clamp or similar clamping tool. This will prevent a sudden and forceful movement of the regulator when the motor is removed.

REMOVAL AND INSTALLATION (Continued)

- (6) Remove three mounting screws that hold motor gearbox to regulator (Fig. 6).
- (7) Remove motor from regulator.

INSTALLATION

- (1) Install new motor on regulator by positioning motor gearbox so that it engages regulator sector teeth.
- (2) A slight rotational or rocking movement may be necessary to bring three motor gearbox screw holes into proper position.
- (3) Install three gearbox screws and one tie down bracket screw, if applicable. Tighten to 8.4 to 13 N·m (74 to 115 in. lbs.) torque.
- (4) Install regulator, using the switch, test operation of motor.

**Fig. 6 Motor Removal**

- 1 - CLAMP REGULATOR TO SECTOR GEAR
- 2 - MOTOR MOUNTING SCREWS

WINDOW SWITCH AND BEZEL**REMOVAL**

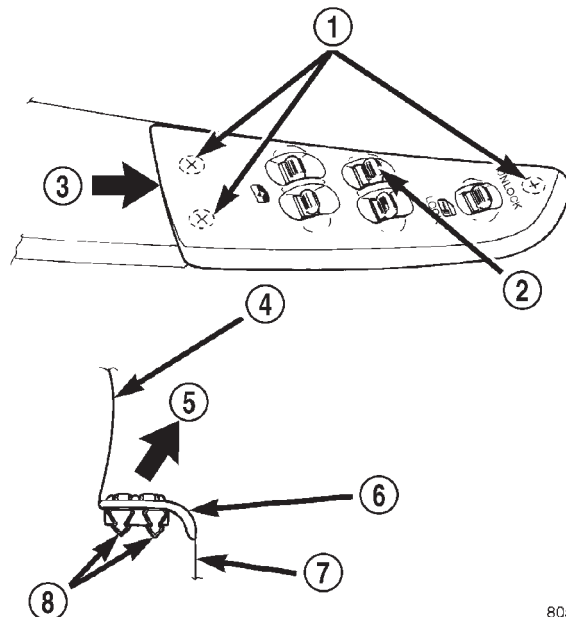
- (1) Disconnect and isolate the battery negative remote cable (Fig. 5).
- (2) Start at the rear center of the bezel. Using your fingers or a trim stick, lift the bezel upwards

and slightly inboard to disconnect the two rear clips (Fig. 7). Use care not to mar the door trim.

- (3) With the rear of the bezel raised, pull the forward end up to release the third clip.
- (4) Disconnect the power window switches and door lock switch wire connectors.
- (5) Remove attaching screws and remove window switch.

INSTALLATION

For installation, reverse the above procedures.

**Fig. 7 Window Switch Bezel**

- 1 - LOCATION OF BEZEL TO DOOR TRIM CLIPS UNDERNEATH
- 2 - AUTO
- 3 - LIFT POINT
- 4 - DOOR TRIM
- 5 - LIFT UPWARD & INBOARD IN THE DIRECTION OF ARROW
- 6 - SWITCH & BEZEL ASSEMBLY
- 7 - DOOR TRIM (ARMREST AREA)
- 8 - CLIPS