

POWER WINDOW SYSTEMS

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GENERAL INFORMATION

INTRODUCTION

Power windows are available as factory-installed optional equipment on this model. The power lock system is included on vehicles equipped with the power window option. Refer to 8W-60 - Power Windows in Group 8W - Wiring Diagrams for complete circuit descriptions and diagrams.

POWER WINDOW SYSTEM

The power window system allows each of the front door windows to be raised and lowered electrically by actuating a switch on the trim panel of each respective door. Additionally, the master switch on the driver side door trim panel allows the driver to raise or lower the passenger side front door 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 front door trim panel, the circuit breaker in the junction block, and the power window motors inside each front door. This group covers diagnosis and service of only the electrical components in the power window system. For service of mechanical components, such as the regulator, lift plate, window tracks, or glass refer to Group 23 - Body.

Following are general descriptions of the major components in the power window system. Refer to the owner's manual in the vehicle glove box for more information on the features, use and operation of the power window system.

DESCRIPTION AND OPERATION

POWER WINDOW SWITCH

The power windows are controlled by two-way switches integral to the power window and lock switch and bezel unit on the trim panel of each front door. A second power window switch in the driver side switch and bezel unit allows the driver to control the passenger side window. A Light-Emitting Diode (LED) in the paddle of each switch is illuminated whenever the ignition switch is in the On position.

The power window switches control the battery and ground feeds to the power window motors. The passenger side power window switch receives a ground feed through the driver side power window switch for operating the passenger side power window motor.

The power window and lock switch and bezel unit cannot be repaired and, if faulty or damaged, the entire switch and bezel unit must be replaced.

POWER WINDOW MOTOR

A permanent magnet reversible motor moves the window regulator through an integral gearbox mechanism. A positive and negative battery connection to the two motor terminals will cause the motor to rotate in one direction. Reversing the current through these same two connections will cause the motor to rotate in the opposite direction.

In addition, each power window motor is equipped with an integral self-resetting circuit breaker to protect the motor from overloads. The power window motor and gearbox assembly cannot be repaired and, if faulty or damaged, the entire power window regulator assembly must be replaced.

DESCRIPTION AND OPERATION (Continued)

CIRCUIT BREAKER

An automatic resetting circuit breaker in the junction block is used to protect the power window system circuit. The circuit breaker can protect the system from a short circuit, or from an overload condition caused by an obstructed or stuck window glass or regulator.

The circuit breaker cannot be repaired and, if faulty, it must be replaced.

DIAGNOSIS AND TESTING**POWER WINDOW SYSTEM**

For circuit descriptions and diagrams, refer to 8W-60 - Power Windows in Group 8W - Wiring Diagrams.

ALL WINDOWS INOPERATIVE

(1) Check the circuit breaker in the junction block, as described in this group. If OK, go to Step 2. If not OK, replace the faulty circuit breaker.

(2) Disconnect and isolate the battery negative cable. Remove the power window and lock switch and bezel unit from the driver side front door trim panel. Unplug the wire harness connector from the switch and bezel unit.

(3) Check for continuity between the ground circuit cavity of the switch and bezel unit wire harness connector and a good ground. If OK, see Power Window Switch in the Diagnosis and Testing section of this group. If not OK, repair the circuit to ground as required.

ONE WINDOW INOPERATIVE

The window glass must be free to slide up and down for the power window motor to function properly. If the glass is not free to move up and down, the motor will overload and trip the integral circuit breaker. To determine if the glass is free, disconnect the regulator plate from the glass. Then slide the window up and down by hand.

There is an alternate method to check if the glass is free. Position the glass between the up and down stops. Then, shake the glass in the door. Check that the glass can be moved slightly from side to side, front to rear, and up and down. Then check that the glass is not bound tight in the tracks. If the glass is free, proceed with the diagnosis that follows. If the glass is not free, refer to Group 23 - Body for the door window glass and hardware service and adjustment procedures.

(1) Disconnect and isolate the battery negative cable. Remove the power window and lock switch and bezel unit from the door trim panel on the side of the vehicle with the inoperative window. Unplug the wire harness connector from the switch and bezel unit.

(2) Connect the battery negative cable. Turn the ignition switch to the On position. Check for battery voltage at the fused ignition switch output (run) circuit cavity in the body half of the switch and bezel unit wire harness connector. If OK, and the inoperative power window is on the driver side, go to Step 4. If OK, and the inoperative power window is on the passenger side, go to Step 3. If not OK, repair the open circuit to the junction block as required.

(3) Disconnect and isolate the battery negative cable. Check for continuity between each of the two master window switch right up/down control circuit cavities in the body half of the passenger side switch and bezel unit wire harness connector and a good ground. In each case, there should be continuity. If OK, go to Step 4. If not OK, repair the open circuit to the driver side switch and bezel unit as required.

(4) Test the power window switch continuity. See Power Window Switch in the Diagnosis and Testing section of this group. If OK, go to Step 5. If not OK, replace the faulty power window and lock switch and bezel unit.

(5) Refer to the circuit diagrams in 8W-60 - Power Windows in Group 8W - Wiring Diagrams. Check the continuity in each circuit between the inoperative power window and lock switch and bezel unit wire harness connector cavities and the corresponding power window motor wire harness connector cavities. If OK, see Power Window Motor in the Diagnosis and Testing section of this group. If not OK, repair the open circuit(s) as required.

NOTE: The passenger side power window switch receives the ground feed for operating the passenger side power window motor through the driver side power window switch and wire harness connector.

CIRCUIT BREAKER

For circuit descriptions and diagrams, refer to 8W-60 - Power Windows in Group 8W - Wiring Diagrams.

(1) Locate the circuit breaker in the junction block. Pull out the circuit breaker slightly, but be certain that the circuit breaker terminals still contact the terminals in the junction block cavities.

(2) Connect the negative lead of a 12-volt DC voltmeter to a good ground.

(3) With the voltmeter positive lead, check both terminals of the circuit breaker for battery voltage.

If only one terminal has battery voltage, the circuit breaker is faulty and must be replaced. If neither terminal has battery voltage, repair the open circuit from the Power Distribution Center (PDC) as required. If the circuit breaker checks OK, but no

DIAGNOSIS AND TESTING (Continued)

power windows operate, see Power Window System in the Diagnosis and Testing section of this group.

POWER WINDOW SWITCH

The Light-Emitting Diode (LED) illumination lamps for all of the power window and lock switch and bezel unit switch paddles receive battery current through the power window circuit breaker in the junction block. If all of the LEDs are inoperative in either or both power window and lock switch and bezel units and the power windows are inoperative, perform the diagnosis for Power Window System in this group. If the power windows operate, but any or all of the LEDs are inoperative, the power window and lock switch and bezel unit with the inoperative LED(s) is faulty and must be replaced. For circuit descriptions and diagrams, refer to 8W-60 - Power Windows in Group 8W - Wiring Diagrams.

(1) Check the circuit breaker in the junction block. If OK, go to Step 2. If not OK, replace the faulty circuit breaker.

(2) Turn the ignition switch to the On position. Check for battery voltage at the circuit breaker in the junction block. If OK, turn the ignition switch to the Off position and go to Step 3. If not OK, repair the circuit to the ignition switch as required.

(3) Disconnect and isolate the battery negative cable. Remove the power window and lock switch and bezel unit from the door trim panel. Unplug the wire harness connector from the switch and bezel unit.

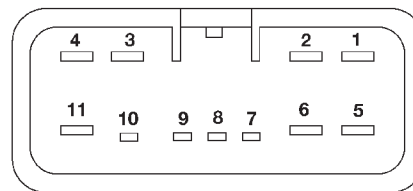
(4) Test the power window switch continuity. See the Power Window Switch Continuity charts to determine if the continuity is correct in the Neutral, Up and Down switch positions (Fig. 1) or (Fig. 2). If OK, see Power Window Motor in the Diagnosis and Testing section of this group. If not OK, replace the faulty switch.

POWER WINDOW MOTOR

For circuit descriptions and diagrams, refer to 8W-60 - Power Windows in Group 8W - Wiring Diagrams. Before you proceed with this diagnosis, confirm proper switch operation. See Power Window Switch in the Diagnosis and Testing section of this group.

(1) Disconnect and isolate the battery negative cable. Remove the trim panel from the door with the inoperative power window.

(2) Unplug the power window motor wire harness connector. Apply 12 volts across the motor terminals to check its operation in one direction. Reverse the connections across the motor terminals to check the operation in the other direction. Remember, if the window is in the full up or full down position, the motor will not operate in that direction by design. If OK, repair the circuits from the power window motor

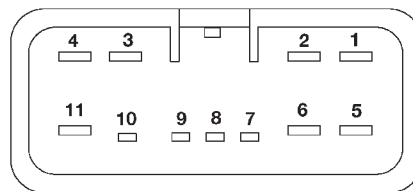


VIEW OF SWITCH SIDE CONNECTOR

DRIVER SIDE WINDOW SWITCH	
SWITCH POSITION	CONTINUITY BETWEEN
NEUTRAL	1 & 3, 2 & 3, 3 & 4, 3 & 6
LEFT UP	3 & 4, 5 & 6
RIGHT UP	1 & 5, 2 & 3
LEFT DOWN	3 & 6, 4 & 5
RIGHT DOWN	1 & 3, 2 & 5
LAMP	3 & 5

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Fig. 1 Power Window Switch Continuity - Driver Side



VIEW OF SWITCH SIDE CONNECTOR

PASSENGER SIDE WINDOW SWITCH	
SWITCH POSITION	CONTINUITY BETWEEN
NEUTRAL	1 & 4, 2 & 3
UP	2 & 3, 4 & 11
DOWN	1 & 4, 3 & 11
LAMP	8 & 11

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Fig. 2 Power Window Switch Continuity - Passenger Side

DIAGNOSIS AND TESTING (Continued)

to the power window switch as required. If not OK, replace the faulty motor.

(3) If the motor operates in both directions, check the operation of the window glass and lift mechanism through its complete up and down travel. There should be no binding or sticking of the window glass or lift mechanism through the entire travel range. If not OK, refer to Group 23 - Body to check the window glass, tracks, and regulator for sticking, binding, or improper adjustment.

REMOVAL AND INSTALLATION

POWER WINDOW SWITCH

(1) Disconnect and isolate the battery negative cable.

(2) Using a wide flat-bladed tool such as a trim stick, gently pry the upper edge of the switch bezel to release the retainer that secures the switch bezel to the door trim panel opening (Fig. 3).

(3) Pull the switch and bezel unit away from the door trim panel opening far enough to access and unplug the wire harness connector.

(4) Remove the power window and lock switch and bezel unit from the door trim panel.

(5) Reverse the removal procedures to install. When installing the switch and bezel unit to the door trim panel opening, insert the rear of the bezel into the opening, then push down on the front of the bezel until the retaining tab snaps into place.

POWER WINDOW MOTOR

The power window motor and mechanism is integral to the power window regulator unit. If the power

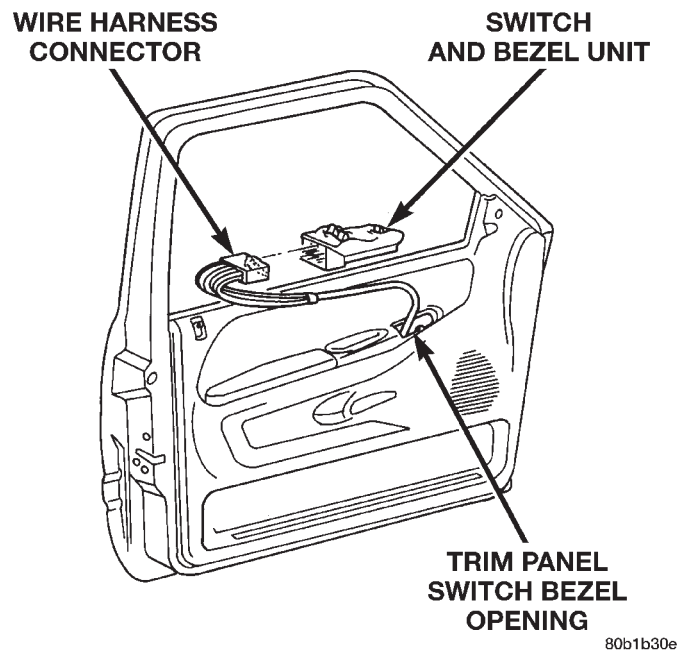


Fig. 3 Power Window and Lock Switch and Bezel Unit Remove/Install

window motor or mechanism is faulty or damaged, the entire power window regulator unit must be replaced. Refer to Group 23 - Body for the window regulator service procedures.