

POWER WINDOW SYSTEMS

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GENERAL INFORMATION

INTRODUCTION

Power windows are standard factory-installed equipment on this model. 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 8W-60 - Power Windows in Group 8W - Wiring Diagrams for complete circuit descriptions and diagrams. Refer to the owner's manual for more information on the features and use of this system.

NOTE: This group covers both Left-Hand Drive (LHD) and Right-Hand Drive (RHD) versions of this model. Whenever required and feasible, the RHD versions of affected vehicle components have been constructed as mirror-image of the LHD versions. While most of the illustrations used in this group represent only the LHD version, the diagnostic and service procedures outlined can generally be applied to either version. Exceptions to this rule have been clearly identified as LHD or RHD, if a special illustration or procedure is required.

POWER WINDOW SYSTEM

The power window system allows all of the door windows to be opened or closed by operating a switch on the trim panel for that door. The master switches on the driver side front door trim panel can be operated to open or close any of the door windows. In addition, a lockout switch on the driver side front

door trim panel allows the driver to disable all of the passenger door window switches.

The power window system includes the door modules mounted in each front door, the switches mounted on the rear doors, and the power window motors mounted to the window regulator in each door. In addition, several features and functions of the power window system are made possible because of the communication of the door modules on the Chrysler Collision Detection (CCD) data bus network.

The power window system operates with battery power supplied through a circuit breaker in the junction block, only when the ignition switch is in the On position. However, a feature of this system will allow the windows to be operated for up to thirty seconds after the ignition switch is turned to the Off position, or until a front door is opened, whichever occurs first.

An auto-down feature allows the driver side front door window to be lowered all the way, even if the window switch is released. The driver side front door window switch must be depressed in the down direction to a second detent to begin an auto-down event. Depressing the switch again in any direction will stop the window movement and cancel the auto-down event.

DESCRIPTION AND OPERATION

POWER WINDOW SWITCH

The power windows are controlled by a two-way momentary switch mounted on the trim panel of each passenger door, and four two-way momentary switches on the driver side front door trim panel. The driver side front door trim panel also has a two-position power window lockout switch.

DESCRIPTION AND OPERATION (Continued)

Each power window switch, except the lockout switch, is illuminated by a Light-Emitting Diode (LED) when the ignition switch is turned to the On position. However, when the lockout switch is placed in the Lock position, the LED for the locked-out front and rear passenger door power window switches is turned off.

The front door power window switches and the power window lockout switch are integral to the Driver Door Module (DDM) or Passenger Door Module (PDM), respectively. These power window switches provide an up or down (or lock and unlock signal in the case of the lockout switch) to the door module circuitry.

The DDM circuitry controls the output to the driver side front and rear door power window motors, and supplies electrical current as required for operation of the driver side rear door power window switch. The PDM circuitry controls the output to the passenger side front and rear door power window motors, and supplies electrical current as required for operation of the passenger side rear door power window switch. When a DDM-integrated power window switch for a passenger side window is actuated, the DDM circuitry sends a message to the PDM on the Chrysler Collision Detection (CCD) data bus to activate the output to that power window motor(s).

The front door power window switches and their lamps cannot be repaired so, if faulty or damaged, the entire door module must be replaced. The rear door power window switches and their lamps cannot be repaired but, if faulty or damaged, only the affected switch unit must be replaced.

DOOR MODULE

A Driver Door Module (DDM) and a Passenger Door Module (PDM) are used on this model to control and integrate many of the electronic features and functions on the vehicle. The DDM and PDM communicate with each other, and with other vehicle modules on the Chrysler Collision Detection (CCD) data bus network.

The CCD data bus network allows the sharing of sensor information. This helps to reduce wire harness complexity, internal controller hardware, and component sensor current loads. At the same time, this system provides increased reliability, enhanced diagnostics, and allows the addition of many new feature capabilities.

The DDM circuitry controls the output to the driver side front and rear door power windows. The PDM circuitry controls the output to the passenger side front and rear door power windows. The DDM can control the PDM output by sending control messages to the PDM over the CCD data bus.

Some of the features and functions of the power window system made possible because of the communication of the door modules on the CCD data bus network include:

- Power window operation after ignition off feature.
- Power window lockout function.
- Power window switch LED illumination control function.

For diagnosis of the DDM, PDM, or the CCD data bus network, refer to the proper Body Diagnostic Procedures manual.

BODY CONTROL MODULE

A Body Control Module (BCM) is used on this model to control and integrate many of the electronic functions and features included on the vehicle. The BCM contains a central processing unit and interfaces with other modules in the vehicle on the Chrysler Collision Detection (CCD) data bus network.

The CCD data bus network allows the sharing of sensor information. This helps to reduce wire harness complexity, reduce internal controller hardware, and reduce component sensor current loads. At the same time, this system provides increased reliability, enhanced diagnostics, and allows the addition of many new feature capabilities.

One of the functions and features that the BCM supports and controls, is the power window system. The BCM receives inputs from the ignition switch and the door ajar switches. The programming in the BCM allows it to process the information from these inputs and send ignition switch and door ajar status messages to the DDM and PDM on the CCD data bus. The DDM and PDM use this information to control the lighting of the power window switch lamps, and to control the operation of the power window after ignition off feature.

The BCM is mounted under the driver side outboard end of the instrument panel, behind the instrument panel support armature and below the outboard switch pod. Refer to Group 8E - Instrument Panel Systems for the removal and installation procedures. For diagnosis of the BCM or the CCD data bus, refer to the proper Body Diagnostic Procedures manual. The BCM can only be serviced by an authorized electronic repair station. Refer to the latest Warranty Policies and Procedures manual for a current listing of authorized electronic repair stations.

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

DESCRIPTION AND OPERATION (Continued)

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 motor assembly must be replaced.

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

NOTE: The following tests may not prove conclusive in the diagnosis of this component. The most reliable, efficient, and accurate means to diagnose this system involves the use of a DRB scan tool and the proper Body Diagnostic Procedures manual.

Remember, the DDM circuitry controls the output to the driver side front and rear power window motors. The PDM circuitry controls the output to the passenger side front and rear power window motors. For circuit descriptions and diagrams, refer to 8W-60 - Power Windows in Group 8W - Wiring Diagrams.

ALL WINDOWS INOPERATIVE

(1) Test 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 left and right front door trim panels. Check the 12-way door module wire harness connectors to see that they are fully seated in the door module receptacles. If OK, go to Step 3. If not OK, install the wire harness connectors properly.

(3) Unplug the 12-way door module wire harness connectors. Check for continuity between the ground circuit cavity of each door module wire harness connector and a good ground. If OK, go to Step 4. If not OK, repair the open circuit as required.

(4) Connect the battery negative cable. Check for battery voltage at the fused B(+) circuit cavity of each 12-way door module wire harness connector. If OK, use a DRB scan tool and the proper Body Diag-

nostic Procedures manual to diagnose the door modules and the CCD data bus. If not OK, repair the open circuit to the junction block 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 to the Door Module diagnosis in this group. If the glass is not free, refer to Group 23 - Body for the door window glass and hardware service and adjustment procedures.

CIRCUIT BREAKER

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

(1) Locate the correct circuit breaker in the junction block. Pull out the circuit breaker slightly, but be sure that the 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 power windows operate, see the diagnosis for Power Window System.

DOOR MODULE

NOTE: The following tests may not prove conclusive in the diagnosis of this component. The most reliable, efficient, and accurate means to diagnose this system involves the use of a DRB scan tool and the proper Body Diagnostic Procedures manual.

If the problem being diagnosed is a rear door window that does not operate from the rear door switch, but does operate from the master switch on the driver side front door, go to the diagnosis for Power Window Switch in this group. If the problem is a pas-

DIAGNOSIS AND TESTING (Continued)

senger side front or rear window that operates from the switch on that door, but does not operate from the master switch on the driver side front door, use a DRB scan tool and the proper Body Diagnostic Procedures manual to diagnose the circuitry of the door modules and the CCD data bus. For circuit descriptions and diagrams, refer to 8W-60 - Power Windows in Group 8W - Wiring Diagrams.

(1) Disconnect and isolate the battery negative cable. Remove the front door trim panel as described in this group. Go to Step 2.

(2) Check the 12-way door module wire harness connector to see that it is fully seated in the door module receptacle. If OK, go to Step 3. If not OK, install the wire harness connector properly.

(3) Unplug the 12-way door module wire harness connector from the door module. Check for continuity between the ground circuit cavity of the door module wire harness connector and a good ground. There should be continuity. If OK, go to Step 4. If not OK, repair the open circuit as required.

(4) Connect the battery negative cable. Check for battery voltage at the fused B(+) circuit cavity of the 12-way door module wire harness connector. If OK, go to Step 5. If not OK, repair the open circuit as required.

(5) If the inoperative window is on a front door, go to Step 6. If the inoperative window is on a rear door go to Step 9.

(6) Disconnect and isolate the battery negative cable. Unplug the inoperative power window motor wire harness connector. Check for continuity between the front window driver up circuit cavity of the 12-way door module wire harness connector and a good ground. Repeat the check for the front window driver down circuit cavity of the door module wire harness connector. In each case there should be no continuity. If OK, go to Step 7. If not OK, repair the short circuit as required.

(7) Check for continuity between the front window driver up circuit cavities of the 12-way door module wire harness connector and the power window motor wire harness connector. Repeat the check for the front window driver down circuit cavities. In each case there should be continuity. If OK, go to Step 8. If not OK, repair the open circuit as required.

(8) Plug the 12-way door module wire harness connector back into the door module. Connect the battery negative cable. Connect the probes of a reversible DC digital voltmeter to the door module side of the power window motor wire harness connector. Observe the voltmeter while actuating the switch in the up and down directions. There should be battery voltage for as long as the switch is held in both the up and down positions, and no voltage in the neutral position. If OK, see the diagnosis for Power

Window Motors. If not OK, replace the faulty door module.

(9) Disconnect and isolate the battery negative cable. Remove the rear door power window switch as described in this group. Check the rear door power window switch continuity as described in this group. If OK, go to Step 10. If not OK, replace the faulty switch.

(10) Plug the rear door power window switch into the wire harness connector. Unplug the inoperative power window motor connector. Check for continuity between the rear window driver up circuit cavity of the 12-way door module wire harness connector and a good ground. Repeat the check for the rear window driver down circuit cavity. In each case there should be no continuity. If OK, go to Step 11. If not OK, repair the short circuit as required.

(11) Check for continuity between the rear window driver up circuit cavities of the 12-way door module wire harness connector and the power window motor wire harness connector. Repeat the check for the rear window driver down circuit cavities. In each case there should be continuity. If OK, go to Step 12. If not OK, repair the open circuit as required.

NOTE: The door module feeds battery voltage to both terminals of the rear door power window motors when the power window lockout switch is in the Unlock position, until the master window switch on the driver side front door is actuated. The door module feeds ground to both terminals of the rear door power window motor when the power window lockout switch is in the Lock position, until the master window switch on the driver side front door is actuated.

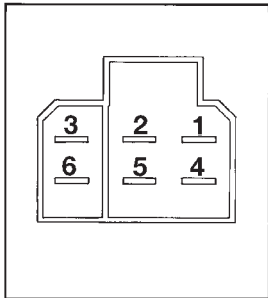
(12) Plug the 12-way door module wire harness connector back into the door module. Connect the battery negative cable. Check for battery voltage at each cavity of the switch side of the power window motor wire harness connector. Each cavity should have battery voltage in the neutral position. Each cavity should also have battery voltage in one other switch position, either up or down, and zero volts with the switch in the opposite position. If OK, go to the Power Window Motor diagnosis in this group. If not OK, replace the faulty door module.

POWER WINDOW SWITCH

This diagnosis is for the rear door power window switches. The front door power window switches are integral to the door modules. For diagnosis of the front door power window switches, see Door Module in this group. For circuit descriptions and diagrams, refer to 8W-60 - Power Windows in Group 8W - Wiring Diagrams.

DIAGNOSIS AND TESTING (Continued)

- (1) Disconnect and isolate the battery negative cable.
- (2) Remove the power window switch from the rear door trim panel as described in this group.
- (3) Carefully unplug the power window switch from the wire harness connector.
- (4) Check the switch continuity in each position, as shown in the chart (Fig. 1). If OK, see the Power Window Motor diagnosis in this group. If not OK, replace the faulty switch.



SWITCH POSITION	CONTINUITY BETWEEN
ALL POSITIONS	3 AND 6
OFF	1 AND 2
OFF	4 AND 5
FORWARD	1 AND 2
FORWARD	5 AND 6
REARWARD	2 AND 6
REARWARD	4 AND 5

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Fig. 1 Rear Power Window Switch Continuity

POWER WINDOW MOTOR

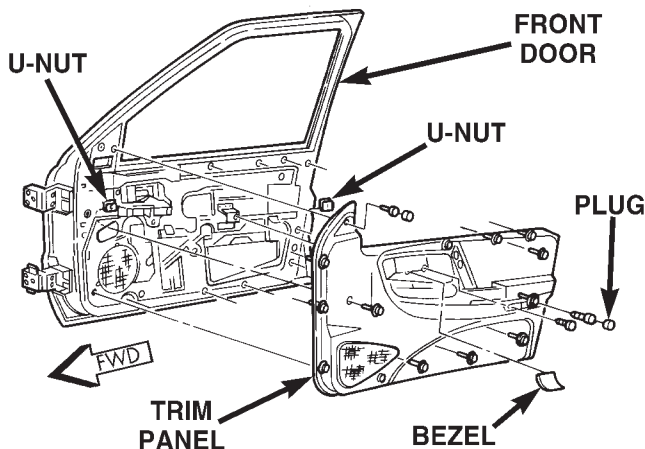
- For circuit descriptions and diagrams, refer to 8W-60 - Power Windows in Group 8W - Wiring Diagrams. Before you proceed with this diagnosis, confirm proper switch operation. See the Door Module and/or Power Window Switch diagnosis in this group.
- (1) Remove the door trim panel as described in Door Module (front door) or Power Window Switch (rear door) in this group.
 - (2) Disconnect 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 motor to the door module or 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

DOOR MODULE

- (1) Disconnect and isolate the battery negative cable.
- (2) Remove the bezel near the inside door latch release handle by inserting a straight-bladed screwdriver in the notched end and prying gently upwards.
- (3) Remove the door trim panel mounting screw located in the bezel opening near the inside door latch release handle (Fig. 2).

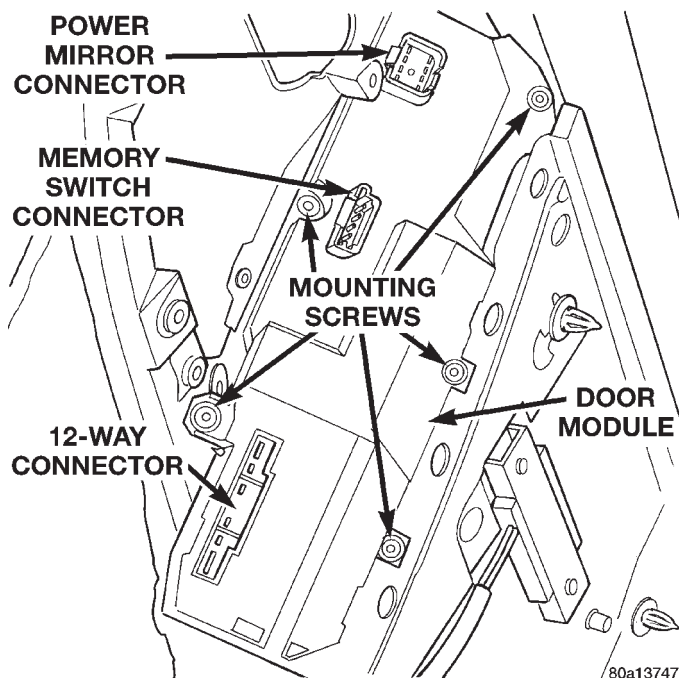


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Fig. 2 Front Door Trim Panel Remove/Install

- (4) Remove the trim cap and screw near the rear of the door armrest.
 - (5) Remove the trim cap and screw at the upper front corner of the trim panel.
 - (6) Remove the screw located above the front door speaker grille.
 - (7) Using a wide flat-bladed tool such as a trim stick, pry the trim panel away from the door around the perimeter and remove the trim panel.
- NOTE:** To aid in the removal of the trim panel, start at the bottom of the panel.
- (8) Unplug the wire harness connectors from the door module and the door courtesy lamp, if equipped.
 - (9) Remove the five screws that secure the door module to the door trim panel (Fig. 3).
 - (10) Remove the door module from the trim panel.
 - (11) Reverse the removal procedures to install.

REMOVAL AND INSTALLATION (Continued)

**Fig. 3 Door Module Remove/Install**

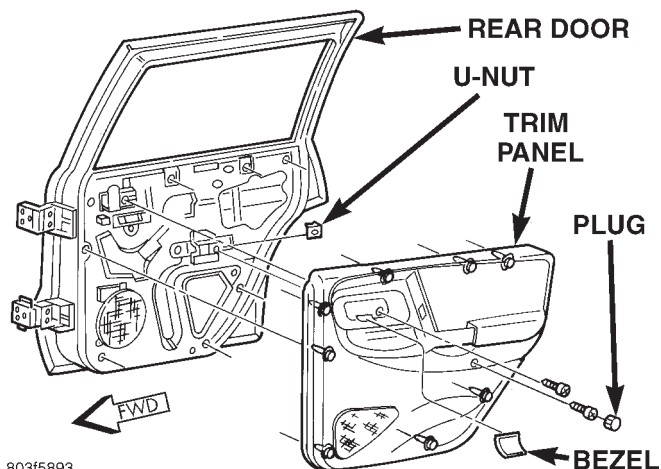
NOTE: If a new door module is installed, the programmable features must be enabled and/or disabled to the customer's preferred settings. Use a DRB scan tool and the proper Body Diagnostic Procedures manual to perform these operations.

POWER WINDOW SWITCH

(1) Disconnect and isolate the battery negative cable.

(2) Remove the bezel near the inside door latch release handle by inserting a straight-bladed screwdriver in the notched end and prying gently upwards.

(3) Remove the door trim panel mounting screw located in the bezel opening near the inside door latch release handle (Fig. 4).

**Fig. 4 Rear Door Trim Panel Remove/Install**

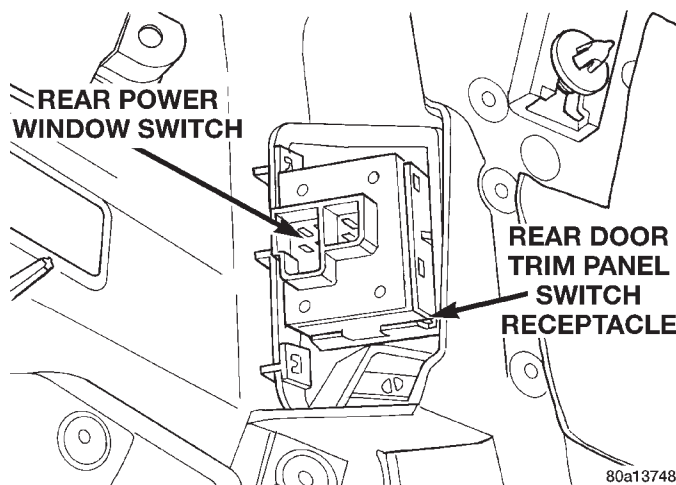
(4) Remove the trim cap and screw near the rear of the door armrest.

(5) Using a wide flat-bladed tool such as a trim stick, pry the trim panel away from the door around the perimeter and remove the trim panel.

NOTE: To aid in the removal of the trim panel, start at the bottom of the panel.

(6) Unplug the wire harness connector from the door power window switch.

(7) Unsnap the switch from the receptacle in the trim panel (Fig. 5).

**Fig. 5 Rear Door Power Window Switch Remove/Install**

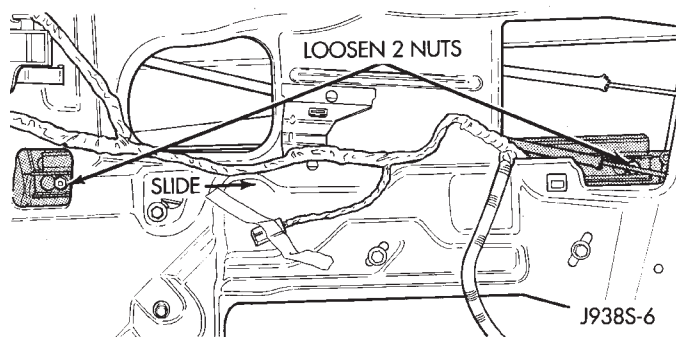
(8) Reverse the removal procedures to install.

POWER WINDOW MOTOR**FRONT DOOR**

(1) Remove the front door trim panel as described under Door Module in this group.

(2) Remove the watershield from the inner door panel.

(3) Loosen the two nuts that secure the door glass to the window regulator lift plate (Fig. 6).

**Fig. 6 Glass Attaching Nuts**

REMOVAL AND INSTALLATION (Continued)

(4) Slide the door glass rearward to remove it from the nuts.

(5) Pull the door glass to the full up position and tape the glass to the upper door window frame.

(6) Unplug the wire harness connector from the power window motor.

(7) Remove the four screws that secure the window regulator to the inner door panel (Fig. 7).

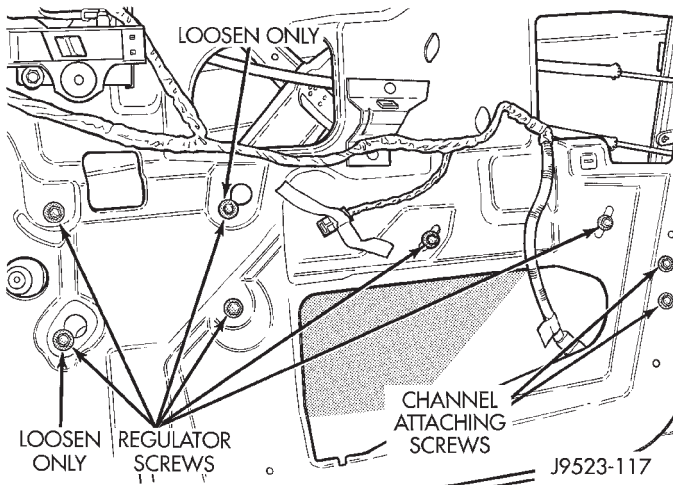


Fig. 7 Front Door Window Regulator Remove/Install

(8) Loosen the last two screws that secure the regulator to the inner door panel.

(9) Remove the window regulator and motor assembly from inside the door.

(10) To install, place the window regulator inside the door and slide the two loose screws into the slotted holes in the door inner panel.

(11) Install the remaining regulator mounting screws and tighten to 12 N·m (105 in. lbs.).

(12) Remove the tape used to secure the glass to the upper door window frame and lower the glass. Move the glass as far rearward into the channel as possible and push down. Tighten the two loose window regulator screws to 12 N·m (105 in. lbs.).

(13) Attach the door glass by sliding the two nuts into the slotted holes on the regulator lift plate. Tighten the nuts to 12 N·m (105 in. lbs.).

(14) Plug in the wire harness connector to the power window motor.

(15) Use an adhesive/sealant to install the plastic watershield to the door inner panel.

(16) Reverse the remaining removal procedures to complete the installation.

REAR DOOR

(1) Remove the rear door trim panel as described under Power Window Switch in this group.

(2) Remove the watershield from the inner door panel.

(3) Loosen the two nuts that secure the door glass to the window regulator lift plate (Fig. 8).

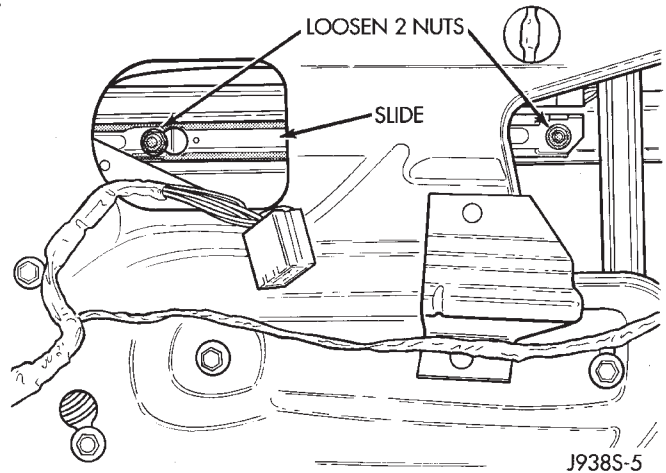


Fig. 8 Glass Attaching Nuts

(4) Slide the door glass forward to remove it from the nuts.

(5) Pull the door glass to the full up position and tape the glass to the upper door window frame.

(6) Unplug the wire harness connector from the power window motor.

(7) Remove the four screws that secure the window regulator to the inner door panel (Fig. 9).

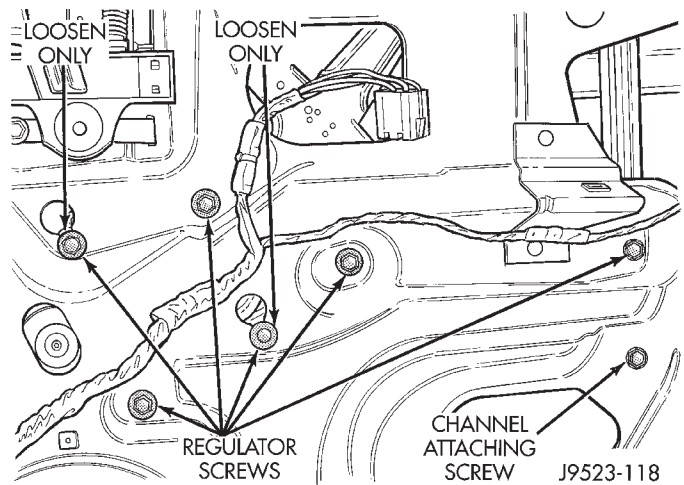


Fig. 9 Rear Door Window Regulator Remove/Install

(8) Loosen the last two screws that secure the regulator to the inner door panel.

(9) Remove the window regulator and motor assembly from inside the door.

(10) To install, place the window regulator inside the door and slide the two loose screws into the slotted holes in the door inner panel.

(11) Install the remaining regulator mounting screws and tighten to 12 N·m (105 in. lbs.).

(12) Remove the tape used to secure the glass to the upper door window frame and lower the glass. Move the glass as far rearward into the channel as

REMOVAL AND INSTALLATION (Continued)

possible and push down. Tighten the two loose window regulator screws to 12 N·m (105 in. lbs.).

(13) Attach the door glass by sliding the two nuts into the slotted holes on the regulator lift plate. Tighten the nuts to 12 N·m (105 in. lbs.).

(14) Plug in the wire harness connector to the power window motor.

(15) Use an adhesive/sealant to install the plastic watershield to the door inner panel.

(16) Reverse the remaining removal procedures to complete the installation.