DESCRIPTION AND OPERATION > DESCRIPTION AND OPERATION > DESCRIPTION

Fig 1: Power Window Switch Module

Courtesy of CHRYSLER GROUP, LLC

Electric windows - The front and rear windows are managed by the Body Computer (BCM). Vehicle

users can move the windows using the switches on the door panels. All windows on the vehicle (front and rear) can be moved using the switch module on the driver side door panel. The BCM moves the front windows in manual and automatic mode. The motion of the front windows is assisted by the anti-pinch function.

Fig 2: Window Movement Mechanism & Carrier

Courtesy of CHRYSLER GROUP, LLC

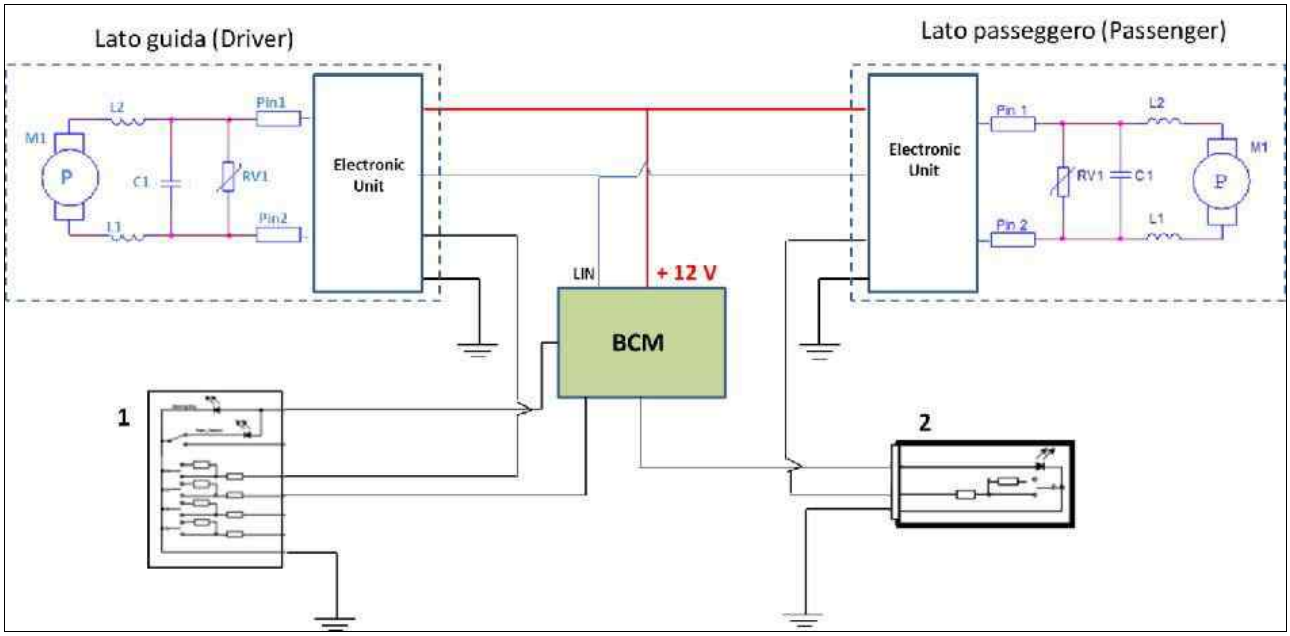
The window movement mechanism is connected to a carrier with screws. The carrier is located behind the door panel and is in turn screwed to the frame of the door itself. To remove the window movement mechanism, remove the carrier and disassemble at bench.

Fig 3: Power Window Electric Motor

Courtesy of CHRYSLER GROUP, LLC

Both the electric motors of the front electric window mechanisms incorporate an electronic unit that exchanges data with the BCM via LIN. The integrated electronic unit, in addition to providing a supply to the electric motors in "raising" and "lowering" modes, manages the anti-pinch function.

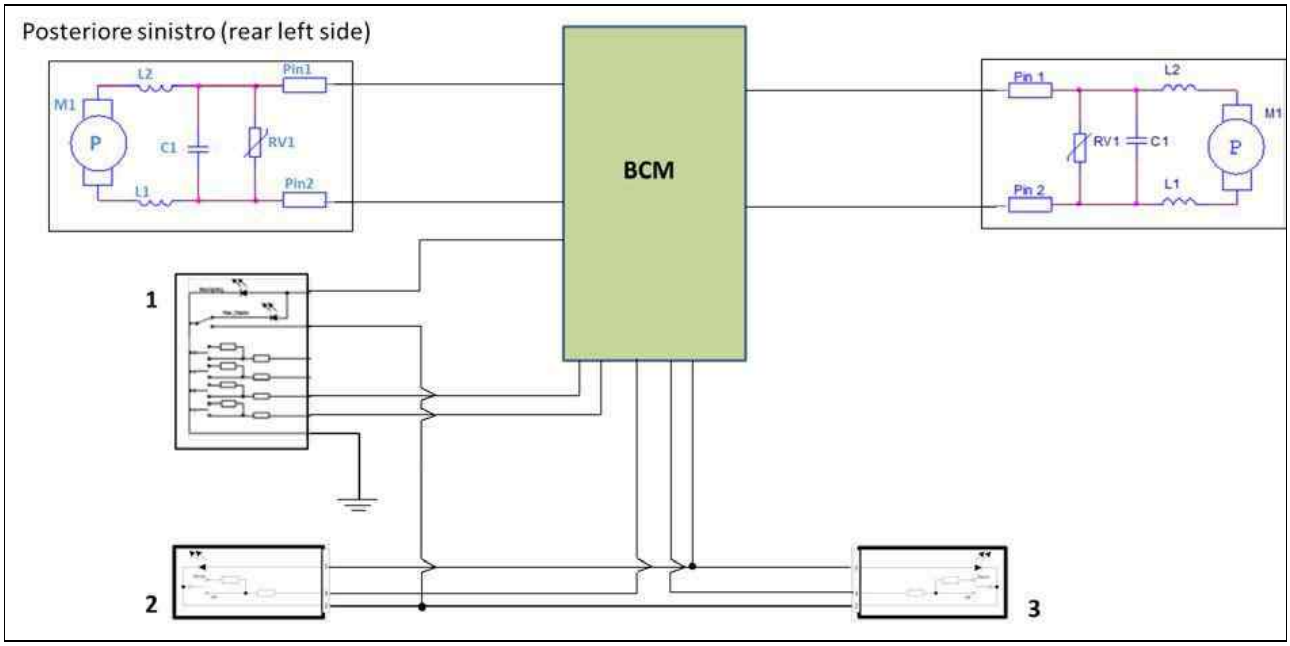
Fig 4: Front Power Window Circuit Diagram



Courtesy of CHRYSLER GROUP, LLC

The switch in the driver side switch unit that operates the passenger side window is connected to the BCM. When the switch is operated, the BCM receives the signal and then instructs the electronic unit of the passenger side motor to move the window via LIN. The electronic unit, in its turn, provides a supply to the electric motor for the raising or lowering motion.

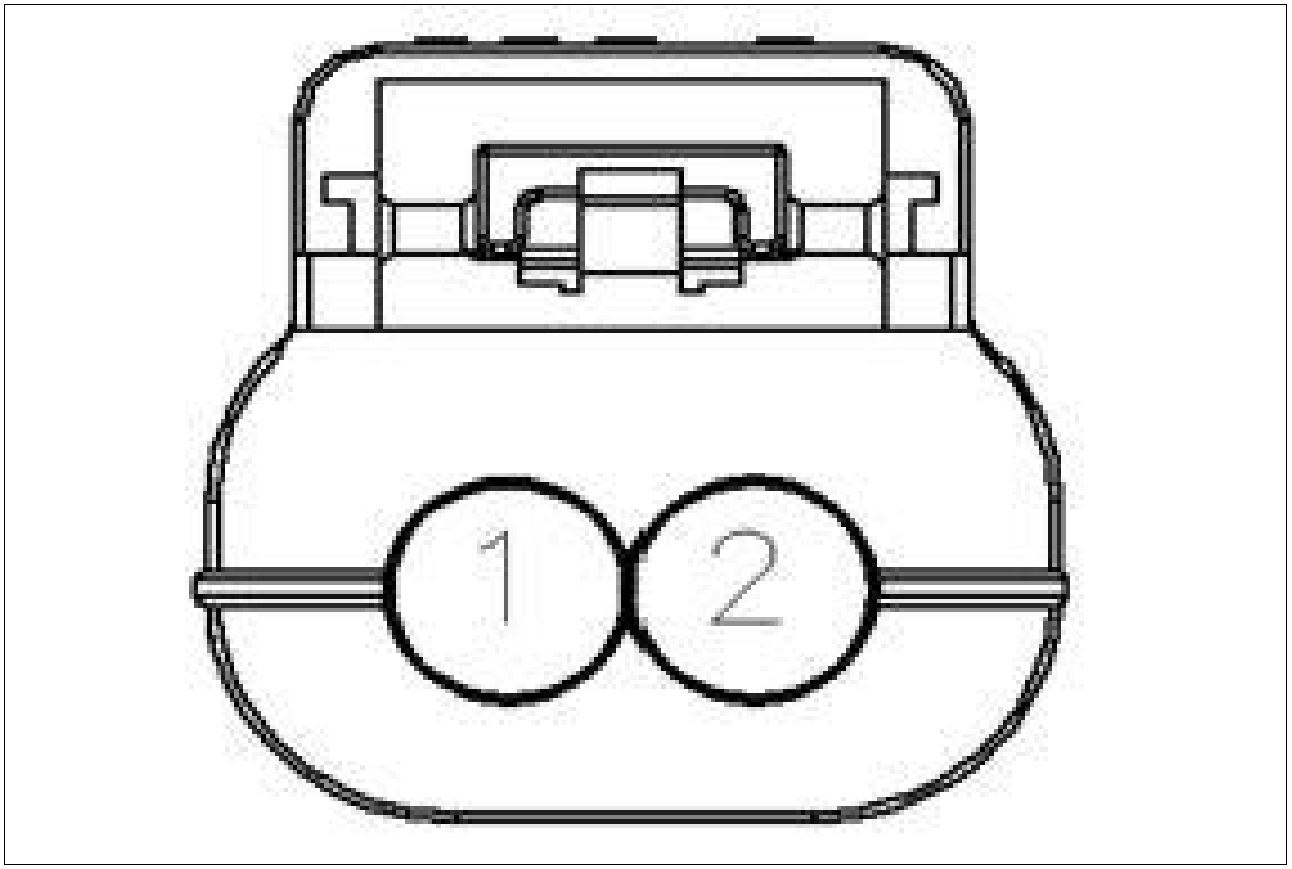
Fig 5: Rear Power Window Circuit Diagram



Courtesy of CHRYSLER GROUP, LLC

The electric motors of the rear window movement mechanisms do not have an electronic unit that manages the electrical command to the motor itself. It is controlled directly by the BCM in "raising" and "lowering" modes.

Fig 6: Power Window Motor Connector End View



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NOTE: Pin 1 down and Pin 2 up

In the following ignition "switch" conditions:

- OFF
- ACC.
- ON.
- ON with Engine running.
- During starting.

FRONT WINDOWS

The electronic unit built into the driver side electric motor can raise and lower the window in accordance with the command that arrives from the switch located on the driver side panel switch unit. The electronic unit can activate the electric motor only if the LIN line through which it communicates with the BCM is in normal operating conditions. If the LIN line is no longer in normal operating conditions, but in sleep mode, the electronic unit cannot move the window.

The LIN line enters sleep mode after three minutes with the ignition switch or KIN in OFF position. During the three minutes from key-off, the LIN line is active and the window can be moved (comfort enable

function). If the driver or passenger door is opened in the course of the three minutes, the comfort enable function is deactivated.

The electric windows for the doors are operated through the switches on the driver's side door (both windows) and the passenger side door (passenger side only).

The electronic circuit inside the controls operates the front electric window motors - both driver's and passenger side - which are operated in automatic mode, according to the following logic:

- if the button is pressed for between 60 and 300 milliseconds, operation is manual: the glass goes up/down only with the button pressed;
- if the button is pressed for longer than 300 milliseconds, operation is automatic: even if the button is released, the glass continues to go up/down until the end of travel or the implementation of the anti-crush safety system if fitted;
- pressing the button again whilst the window is moving stops it in the position that it is in;
- if the button is pressed for less than 60 milliseconds, this is ignored (it is treated as an accidental knock).

The electronic circuit inside the motors manages the anti-crush safety function: i.e. it acquires information about the possible presence of an obstacle during window closure (rising); the anti-crush function is performed by a Hall effect sensor that senses overloads on the window motor; the intervention threshold is set when the force of the obstacle encountered along the window travel (e.g. a finger, a hand) exceeds 7/8 kg (2.0 lbs).

The electronic unit automatically reverses the actuator which retracts the window by around 20 mm as required by regulations in force.

The power supply logic of the electric window controls is called "comfort enable":

- the electric window function operates only with the ignition on, with the following exception: after a key-off, the windows can be operated for 3 minutes; when this time period elapses, the system no longer acquires new commands.
- if one of the doors is opened during the timed period, new commands are no longer acquired, but any commands received before the opening of the door are brought to a conclusion.
- if one of the doors is already open at key off, any commands received before the opening of the door are brought to a conclusion.

DESCRIPTION AND OPERATION > DESCRIPTION AND OPERATION > OPERATION

The power window system allows each of the door windows to be raised and lowered electrically by actuating a switch on each door panel. A master switch on the drivers door allows the driver to raise or lower each door window. The power window system operates only when the ignition switch is in the RUN or ACCESSORY position.

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 switches control the battery and ground feeds to the power window motors. The

passenger door power window switches receive their battery and ground feeds through the circuitry of the drivers window switch.

DIAGNOSIS AND TESTING > DIAGNOSIS AND TESTING - POWER WINDOWS

For complete circuit diagrams, **refer to appropriate SYSTEM WIRING DIAGRAMS article.**

DIAGNOSIS AND TESTING > DIAGNOSIS AND TESTING - POWER WINDOWS > POWER WINDOW DIAGNOSIS

Suggested process to diagnose inoperative power windows:

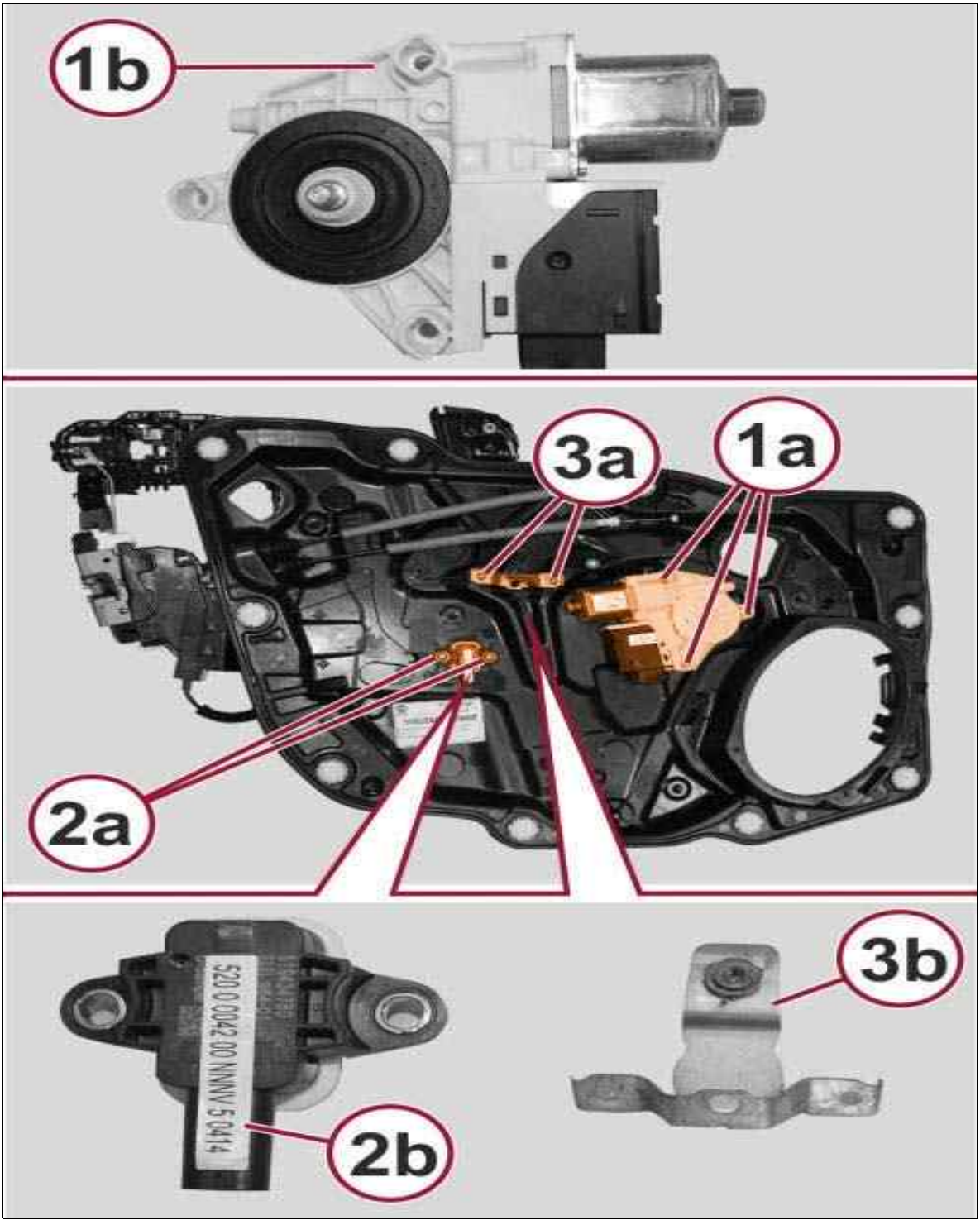
1. Connect the diagnostic scan tool to check for diagnostic trouble codes and to validate operation of the power window system.
2. Check for damaged fuses and replace as needed.
3. Confirm power to the motor and the motor ground integrity.
4. Using the diagnostic scan tool, confirm window switch actuation is recognized.
5. If the power window motor is receiving proper current and ground and does not operate, proceed with motor test.
    1. Remove front door trim panel as necessary to gain access to power window motor wire connector.
    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. If motor grunts and does not move, verify that regulator is not binding.

MOTOR, WINDOW REGULATOR > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION > POWER WINDOW MOTOR - REMOVAL

1. Remove the interior door panel. Refer to PANEL, DOOR TRIM, REMOVAL AND INSTALLATION .

Fig 1: Power Window Motor & Screws



Courtesy of CHRYSLER GROUP, LLC

2. Disconnect the electrical connector to the power window motor.

3. Remove the retaining screws (1a) and remove the power window motor (1b).

MOTOR, WINDOW REGULATOR > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION > POWER WINDOW MOTOR - INSTALLATION

1. Position the motor to the door shield and secure using retaining screws.
2. Connect the electrical connector to the motor.
3. Install the door trim panel. Refer to PANEL, DOOR TRIM, REMOVAL AND INSTALLATION .

SWITCH, POWER WINDOW > DIAGNOSIS AND TESTING > DIAGNOSIS AND TESTING - POWER WINDOW SWITCHES

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 one 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 that switch.

MASTER WINDOW SWITCH TEST

SWITCH POSITION	CONTINUITY BETWEEN (OHMS)
OFF	5/13 AND 2
	5/13 AND 3
	5/13 AND 6
	5/13 AND 7
LEFT FRONT UP-NON EXPRESS	3 AND 13 (67 +/- 25)
LEFT FRONT DOWN-NON EXPRESS	3 AND 13 (2519 +/- 25)
RIGHT FRONT UP-NON EXPRESS	5 AND 13 (649 +/- 25)
RIGHT FRONT DOWN-NON EXPRESS	5 AND 13 (2519 +/- 25)
LEFT REAR UP	3 AND 2 (2519 +/- 25)

LEFT REAR DOWN	2 AND 13 (2519 +/- 25)
RIGHT REAR UP	4 AND 13 (649 +/- 25)
RIGHT REAR DOWN	4 AND 13 (2519 +/- 25)
LOCK SWITCH	9 AND 13 (0)
LOCKOUT SWITCH (SWITCH NOT DEPRESSED)	16 AND 13

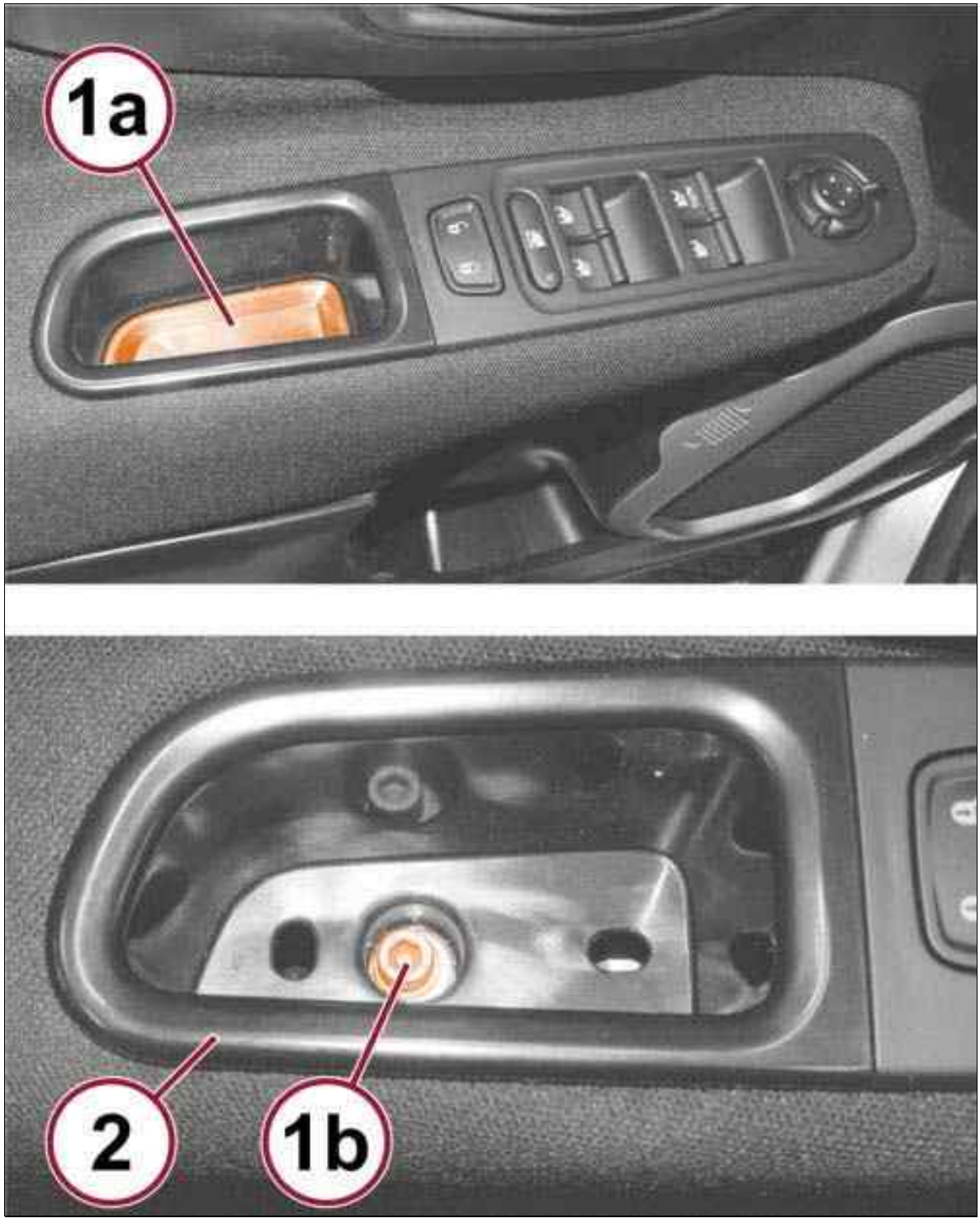
PASSENGER WINDOW SWITCH TEST

SWITCH POSITION	CONTINUITY BETWEEN	RESISTANCE VALUE
UP	3 AND 2	649 Ω ± 10%

SWITCH, POWER WINDOW > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION > DRIVER DOOR GANG SWITCH - REMOVAL

1. Disconnect and isolate the negative battery cable.

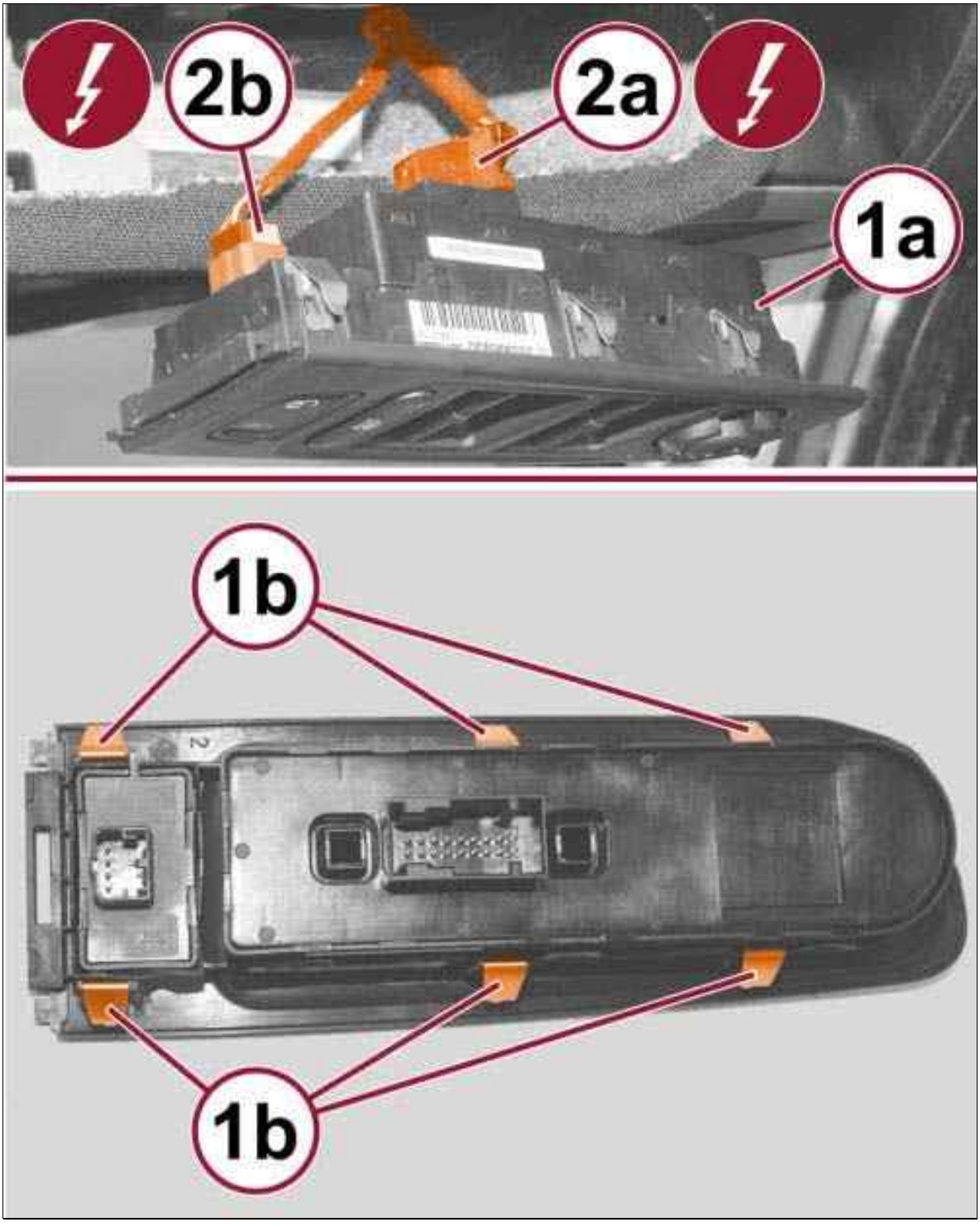
Fig 1: Pad & Screw



Courtesy of CHRYSLER GROUP, LLC

2. Remove the pad (1a) and unscrew the screw below (1b).

Fig 2: Switch Assembly, Clips & Connectors



Courtesy of CHRYSLER GROUP, LLC

3. Using the suitable tool, lift the gang switch assembly (1a) by releasing the retaining clips (1b).
4. Disconnect the electrical connections (2a, 2b)

SWITCH, POWER WINDOW > REMOVAL AND INSTALLATION > REMOVAL AND

INSTALLATION > DRIVER DOOR GANG SWITCH - INSTALLATION

1. Connect the driver door gang switch electrical connector.
2. Seat the driver door gang switch into the door panel.
3. Insert and tighten the screw securing the switch to the door.
4. Insert the cover.
5. Connect the negative battery cable.