

POWER WINDOWS

Component Index

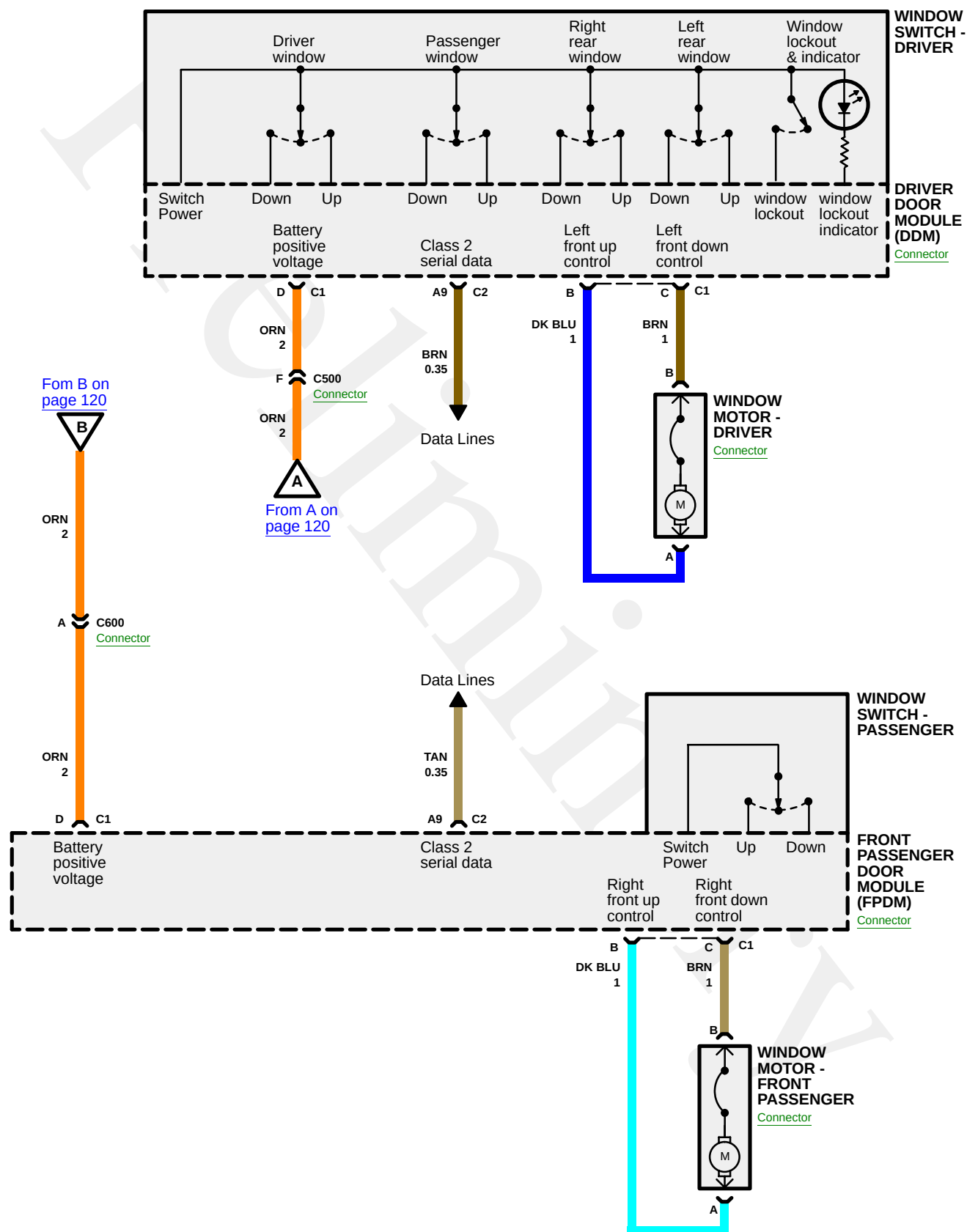
- Body Control Module (BCM)
- Driver Door Module (DDM)
- Front Passenger Door Module (FPDM)
- Fuse Block-Rear
- Quarter Glass Actuator-Left
- Quarter Glass Actuator-Right
- Quarter Glass Switch-Left
- Quarter Glass Switch-Right
- Window Motor-Driver
- Window Motor-Front Passenger
- Window Motor-LR
- Window Motor-Right Rear
- Window Switch-Left Rear
- Window Switch-Right Rear

Circuit Schematic



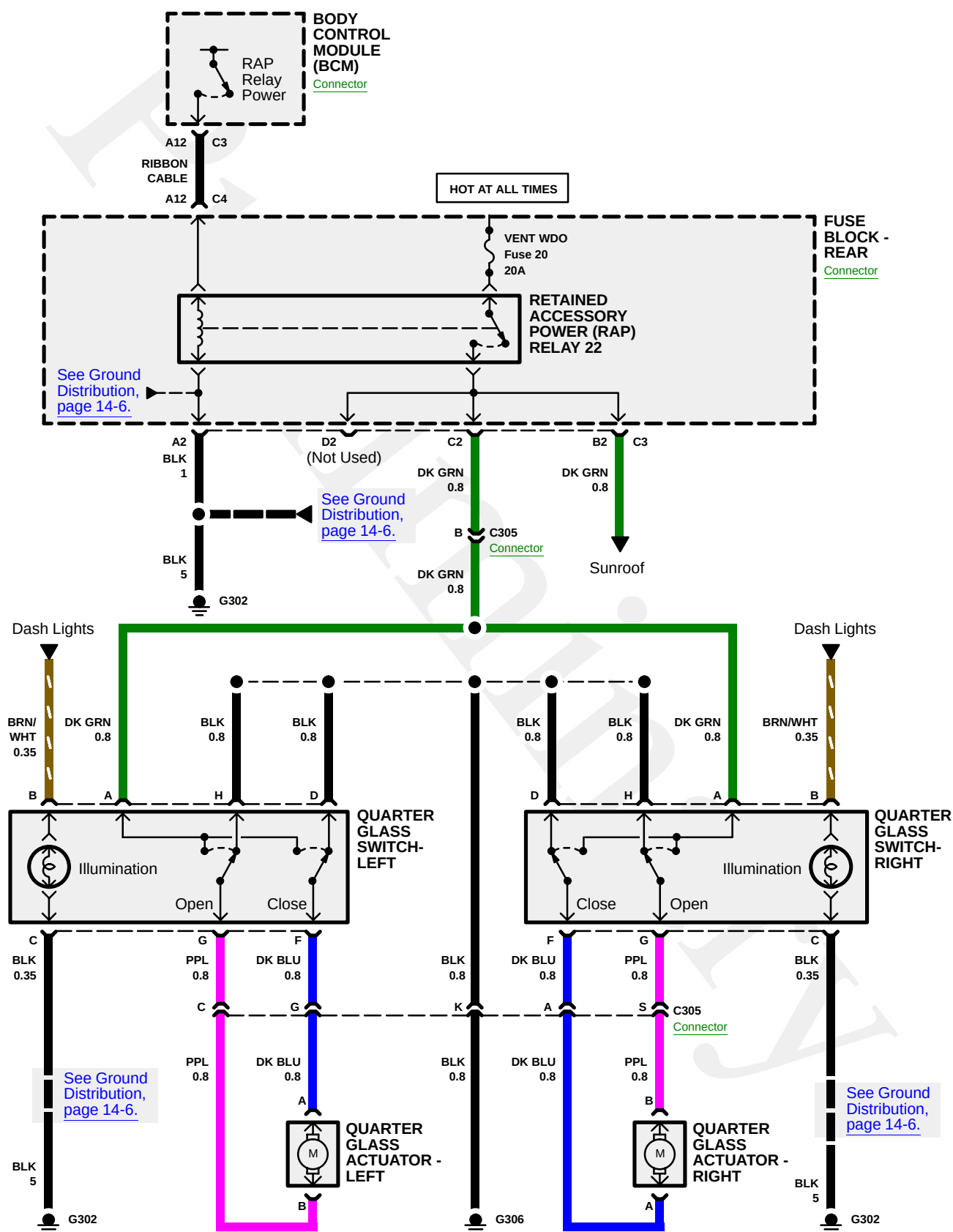
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Circuit Schematic



POWER WINDOWS: QUARTER GLASS ACTUATORS

Circuit Schematic



POWER WINDOWS

Circuit Operation

Power Window System Components

The power window system consists of the following components:

- Driver Door Module (DDM)
- Passenger Door Module (PDM)
- Body Control Module (BCM)
- LR power window switch
- RR power window switch
- Window up and window down relays in each of the rear passenger window switches
- Window lockout switch
- Reversible power window motors in each of the doors (circuit breaker protected)
- LT DOOR CB 25A
(System power for left rear window)
- RT DOOR CB 25A
(System power for right rear window)

Power Window System Controls

The power window system will operate anytime the Retained Accessory Power (RAP) system is active or when the ignition switch is in the ACCY or ON position. The DDM contains four power window switches which are integral components. Closing any of the normally open, rocker type switches provides the DDM with a request for power window operation. The switches for the two front windows have three positions UP, Down and Express Down, while the switches for the rear windows have only two positions, UP and Down. Each of these switches and their positions is a direct input into the DDM. Upon receiving a request for power window operation, the DDM, transmits a Class 2 message indicating the switch and it's changed position.

The PDM contains a single power window switch that is an integral component. Closing of this normally open, rocker switch provides the PDM with a request for the front passenger power window operation. The switch for the front passenger window has two positions Up and Down. Each of these switch positions is a direct input to the PDM.

The two rear passenger doors have there own switches. Each of the switches contain a power window up and down relay. A switch activation alone can control the up and down functions of the rear windows. However the BCM, upon receiving a Class 2 message from the DDM, can control the set of relays which will activate the rear window motors.

Power Window Motor Operation

A permanent magnet motor operates each of the power side windows. Each motor raises or lowers the glass when the motor receives voltage. The direction the motor turns depends on the polarity of the supply voltage. The power window switches control the polarity of the supply voltage. A built-in circuit breaker protects each motor. The circuit breaker opens when the switch is depressed for a extended period of time under the following conditions:

- The window has an obstruction.
- The window is fully open or fully closed.

The circuit breaker will reset automatically as the circuit breaker cools.

Driver Power Window Operation

The switch for the driver power window has three positions UP, Down and Express Down and its position is a direct input into the DDM. Upon receiving a request for power window operation (switch activation), the DDM supplies voltage to the power window motor left front up or down circuit and grounds the opposite and the power window motor runs to move the window up or down.

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Circuit Operation

Front Passenger Power Window Operation

The switch for the front passenger power window has two positions UP and Down, and its position is a direct input into the PDM. Upon receiving a request for power window operation (switch activation), the PDM supplies voltage to the power window motor right front up or down circuit and grounds the opposite and the power window motor runs to drive the window up or down.

The front passenger power window can also be controlled from the power window master switch. The power window master switch for the front passenger power window has three positions UP, Down and Express Down and its position is a direct input into the DDM. Upon receiving a request for front passenger power window operation (switch activation), the DDM transmits a Class 2 message indicating the changed switch position. When the PDM receives this message, the PDM supplies voltage to the power window motor right front up or down circuit and grounds the opposite and the power window motor runs to move the window up or down.

Rear Passenger Power Window Operation

The passenger power window switches incorporate window up and down relays. The supply side of all the window up and down relays receive voltage through the battery voltage supply circuit and the LT DOOR or RT DOOR circuit breakers respectively. The normally closed contacts of each relay is connected to ground. The load side of each of the relays are connected to either side of the power window motor through the power window up and down circuits. The relay coil feed circuits are connected to the BCM through the power window lockout control circuit and the relay control circuits are connected to the power window switches and to the BCM.

If a rear power window switch is placed in the down position, the down relay would energize and allow battery voltage to the power window motor through the power window motor down circuit. Since the opposite side of the motor is connected to the normally closed contacts of the up relay to ground through the power window motor up circuit, the window moves down. If a rear power window switch is placed in the up position, the up relay would energize and allow battery voltage to the power window motor through the power window motor up circuit. Since the opposite side of the motor is connected to the normally closed contacts of the down relay to ground through the power window motor down circuit, the window moves up.

The rear passenger power windows can also be controlled from the power window master switch. The power window master switches for the rear passenger power windows have two positions UP and Down and its position is a direct input into the DDM. Upon receiving a request for rear passenger power window operation (switch activation), the DDM transmits a Class 2 message indicating the changed switch position. When the BCM receives this message, the BCM can control the rear window up and down relays.

Express Down Operation

The express down function controls both the driver and front passenger power windows but only from the driver door power window master switch. When either the driver or front passenger window switch is momentarily depressed to the express down position, it is a direct input into the DDM. If the request was for the driver power window, the DDM supplies voltage to the power window down circuit continuously until the power window reaches the bottom of its travel. At this point, the DDM senses an over current situation on the power window down circuit and interrupts the voltage supply. If the request was for the front passenger power window, the DDM transmits a Class 2 message indicating an express down function was requested. When the PDM receives this message, the PDM supplies voltage to the power window down circuit continuously until the power window reaches the bottom of its travel. At this point, the PDM senses an over current situation on the power window down circuit and interrupts the voltage supply.

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Circuit Operation

Power Window Lockout Operation

The DDM contains a window lockout switch that is responsible for the disabling of all the passenger windows from the individual passenger window switches. When the window lockout switch is activated, the DDM transmits a Class 2 message indicating that a window lockout request has been received. When the PDM receives this message, it will disable the power window motor up and down circuits. When the BCM receives this message, it will interrupt the up and down relay coil feed voltage for both rear doors. Once activated, the lockout feature will remain in effect until the ignition switch is cycled or the DDM receives another power window lockout switch activation.

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Component Location Index

(Refer to Section 201 for photographs.)

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Quarter Glass Actuator-Right	On right D-pillar 110
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Window Motor-Driver	In driver's door 97
Window Motor-Front Passenger	In front passenger's door 97
Window Motor-LR	In left rear door 98
Window Motor-Right Rear	In right rear door 98
Connector	
C305 (16-BLK)	Inside upper console 91
C500 (12-BLK)	Midpoint of leading edge of left front door 93
C600 (12-BLK)	Midpoint of leading edge of right front door 93
C700 (17-NAT)	Midpoint of leading edge of left rear door 94
C800 (17-NAT)	Midpoint of leading edge of right rear door 94
Ground	
G302	On the lower left B-pillar 105
G303	On the lower right B-pillar 105
G306	On body panel, left of rear door 109