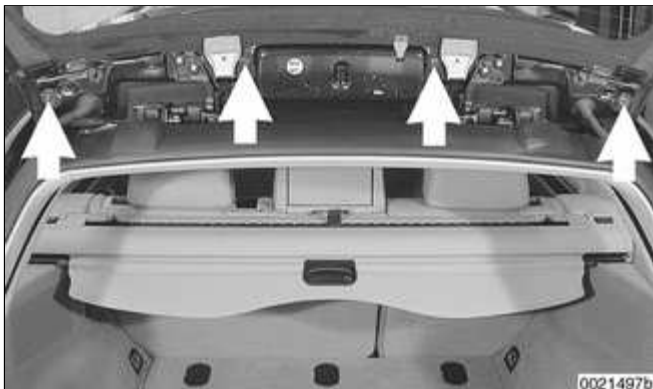


- ✦ Raise rear window. Remove inner trim from glass panel by releasing clips on trim from retainers (**arrows**). For clarity, trim is removed in photo.

**Note:**

*Use two plastic prying wedge tools to release each pin retaining trim.*

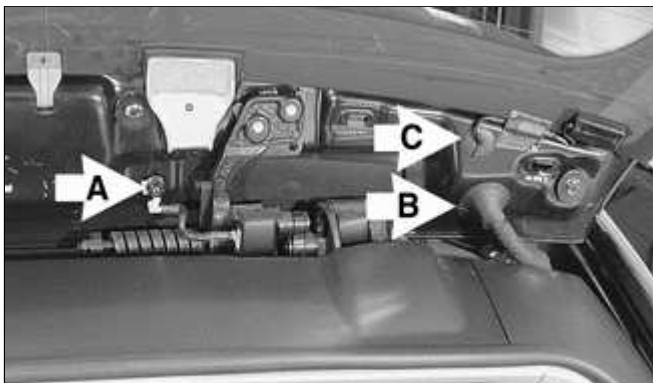


- ✦ Release spoiler mounting bolts (**arrows**). Disconnect wiring to brake light and AM radio antenna and release washer hose. Remove spoiler. (Window shown in place).

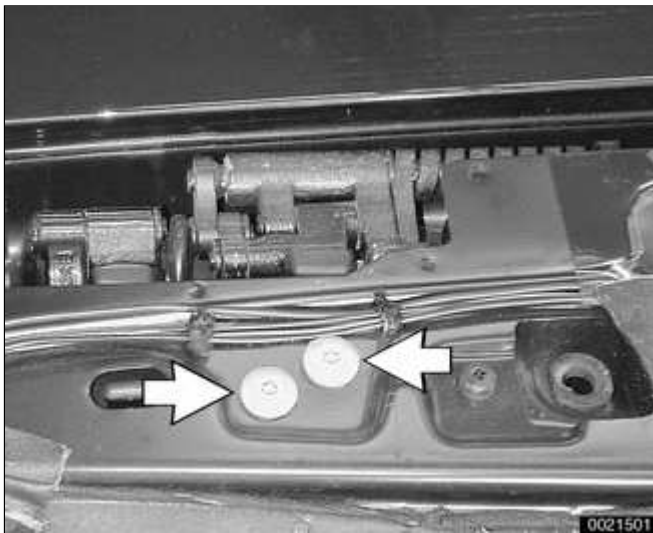
- Installation is the reverse of removal. Replace any waterproofing sheeting disturbed during removal. Adjust spoiler as shown later in this section.

## Rear window, removing and installing

- Remove rear spoiler as detailed above.
- Working at top outside of window, remove waterproofing sheeting over antenna amplifier and disconnect wiring connections. Release tape retaining wiring harnesses.



- ✦ Release grounds (**A**) and rubber grommets (**B, C**) at both hinges.



- ✦ Support window in open position. Working at top of tailgate, loosen screws (**arrows**) on each window hinge. Note positions of any spacers for reinstallation.

### **CAUTION!**

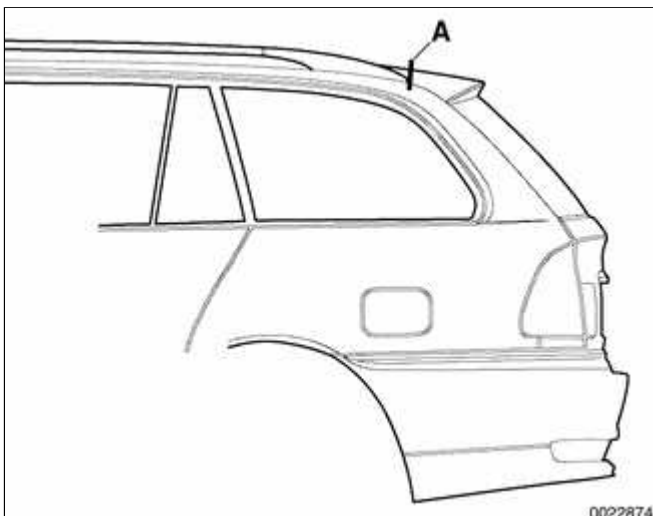
**Rear window is heavy. Use a second person to support window prior to releasing from hinges.**

- Remove screws and lift off window, taking care to release wiring to rear defroster/antenna.
- Installation is the reverse of removal. Replace waterproofing sheeting where disturbed. Align window as described below.

### **Tightening torques**

Hatchback window to hinge (M8)	16 Nm (12 ft-lb)
--------------------------------	------------------

### **Alignment of spoiler, rear window and tailgate**



- ✦ Alignment procedures involve adjusting tailgate, window, and spoiler to have equal space between left and right sides and to be flush with body. Measurement locations and specific dimensions are shown.

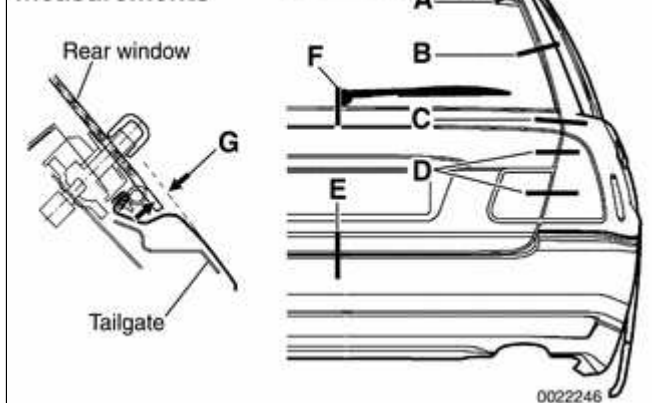
- If alignment has been disturbed during repair adjust fit of tailgate to body. Then adjust fit of rear window to hatch.

- ◆ Clearance of the rear window is adjusted by adding or removing shims between hinge bracket and rear window (maximum of three shims).
- ◆ Adjust spoiler gap to body last. Height of spoiler is set by alignment of the rear hatch. Gap of spoiler to body is set by adjusting spoiler attachment bolts.

#### Seam clearance specification

Rear spoiler to roof (A)	4.25 - 5 mm (0.167 - 0.197 in.)
Max. deviation from parallel	0.5 mm (0.019 in.)

#### Tailgate gap measurements



- ◀ Lateral and vertical alignment is adjusted using hinge bolts for window and tailgate. Fine adjustment of the tailgate to the body is made using rubber stop buffers and latch assembly.

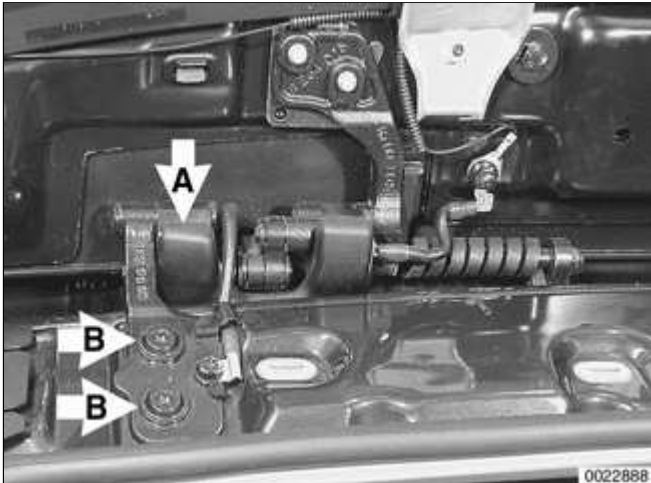
#### Tailgate and rear window position gap adjustment

Rear spoiler / side panel (A)	$3.75 \pm 1.3$ mm ( $0.15 \pm 0.05$ in.)
Rear window / side panel (B)	$3.5 \pm 1.4$ mm ( $0.14 \pm 0.06$ in.)
Tailgate / side panel (C)	$3.6 \pm 0.75$ mm ( $0.14 \pm 0.03$ in.)
Tailgate / side panel (height) (D)	flush to 2 mm (0.08 in.) lower
Tailgate light / corner light (D)	$4.25 \pm 0.75$ mm ( $0.17 \pm 0.03$ in.)
Tailgate / rear bumper (E)	$5 \pm 1$ mm ( $0.2 \pm 0.04$ in.)

### Tailgate and rear window position gap adjustment

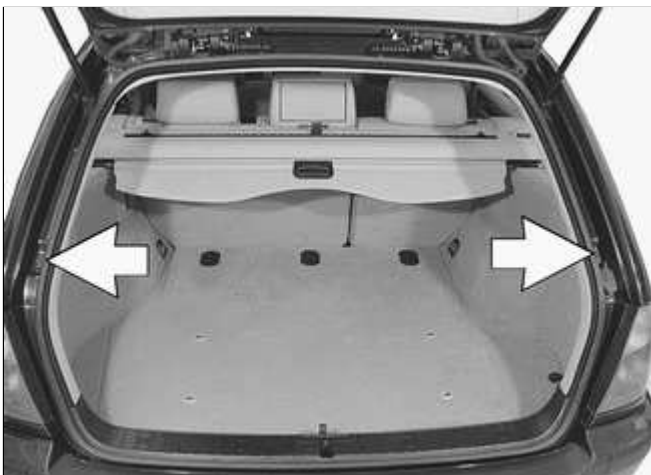
Rear window / tailgate (F)	$4 \pm 1 \text{ mm}$ ( $0.16 \pm 0.04 \text{ in.}$ )
----------------------------	---

Rear window / tailgate (G)	$5.4 \pm 1 \text{ mm}$ ( $0.21 \pm 0.04 \text{ in.}$ )
----------------------------	---



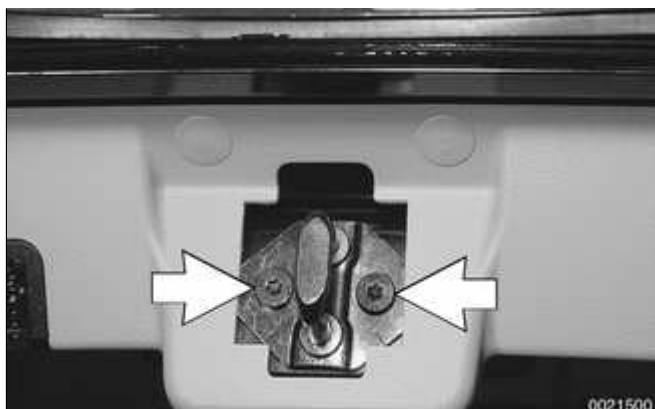
✎ To adjust fit of tailgate to body:

- ◆ Close tailgate and open rear window.
- ◆ Tailgate hinge bolts (A, behind trim) should be centered both vertically and horizontally within their adjustment range. When centered, tighten bolts.
- ◆ Loosen screws (B) on left and right to adjust horizontal location (gap on left and right). When gap is correct, tighten screws.
- ◆ To prevent damage or poor operation adjustments must be made to the rear window if the vertical adjustment of the tailgate is changed.
- ◆ Window hinge must be parallel to the tailgate hinge.



✎ Stop buffers (**arrows**) are adjustable and set height between tailgate and body at sides.

- ◆ To adjust buffers, remove inner trim panel and loosen lock nut.
- ◆ Initially adjust buffers to just contact tailgate when closed, then tighten buffers one turn. Tighten lock nut.



### Tightening torques

Lock nut for stop buffer (M8)	15 Nm (11 ft-lb)
-------------------------------	------------------

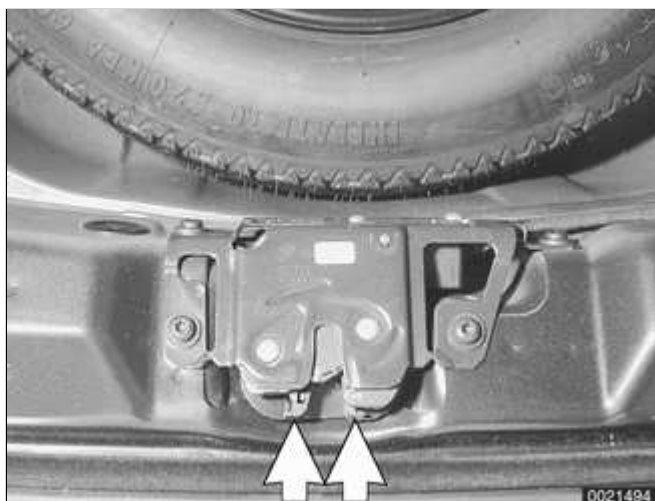
- ✦ Loosen screws (**arrows**) and reposition rear latch to further adjust gap between tailgate and body at sides, and to assure smooth operation.

- To adjust striker position:

- ◆ Close tailgate slowly, allowing striker to center itself on lock.
- ◆ Striker must not touch lock housing.
- ◆ Tighten striker mounting bolts, then check tailgate to body gaps as shown below.

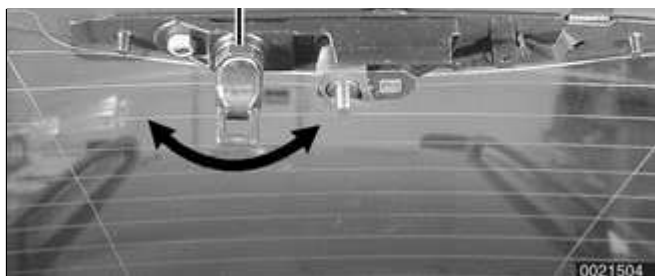
### Note:

*Do not lubricate lock or lock striker with grease.*



- ✦ Inspect plastic guides (**arrows**) on lock assembly for damage or wear, and replace if necessary. Trim panel is removed for clarity.

- ✦ The rear window lock striker height is adjusted by loosening lock nut **A**, then turning striker in or out.



- ◆ Retighten lock nut when window latch operates smoothly.



- ✦ To adjust rear window lock position, initially loosen lock mounting bolts (**arrows**).
- ◆ Close window slowly, allowing lock to center itself on striker.
- ◆ Tighten mounting bolts, then check rear window to body gaps as shown above.

Copyright © 2006 Robert Bentley, Inc. All rights reserved.

## General

This repair group includes repair information for the outside rear view mirror, front and rear bumpers, and the easily removable exterior trim parts.

Copyright © 2006 Robert Bentley, Inc. All rights reserved.

## Outside Rear View Mirrors

Many of the mirror components are separately available from an authorized BMW dealer, including the glass and outside plastic housing.

### Outside mirror glass, replacing

#### **CAUTION!**

***Mirror should be at or above room temperature before removal. Otherwise, small plastic parts or glass may break.***

- Insert thin pry tool (wooden or tape-wrapped screwdriver) between bottom mirror edge and mirror housing and carefully pry out mirror glass from housing.



Prying mirror glass out of mirror housing. Note screwdriver shaft wrapped with tape.

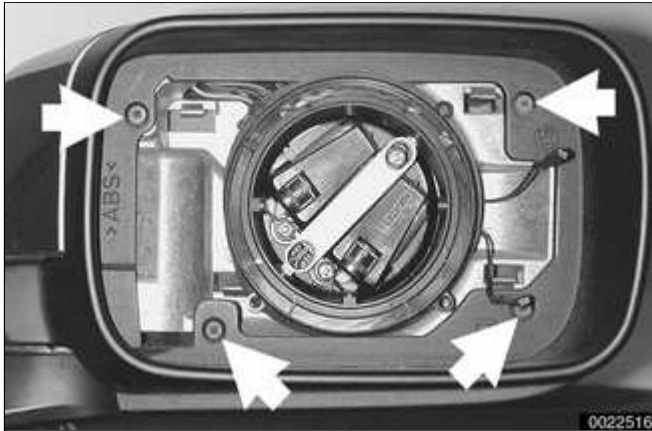
- Heated mirror: remove heating element harness connectors from back of mirror glass.
- Install new glass into position by pressing firmly until it snaps into place.

### Outside mirror housing, removing and installing

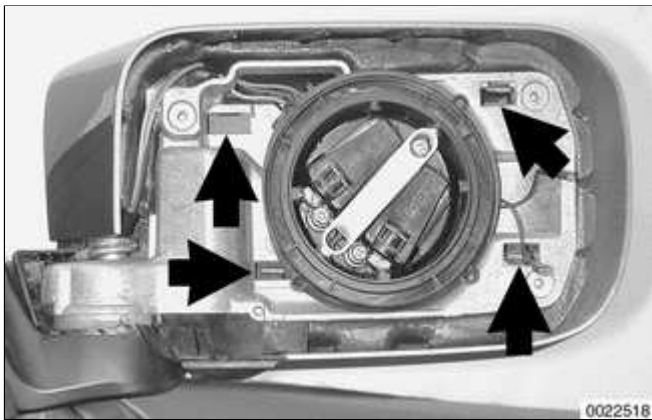
- Remove mirror glass as described



above.



- ✦ Remove housing retaining screws (**arrows**) and lift off rear housing.



- ✦ Tilt mirror housing forward and compress plastic retainers (**arrows**) and lift off front housing.

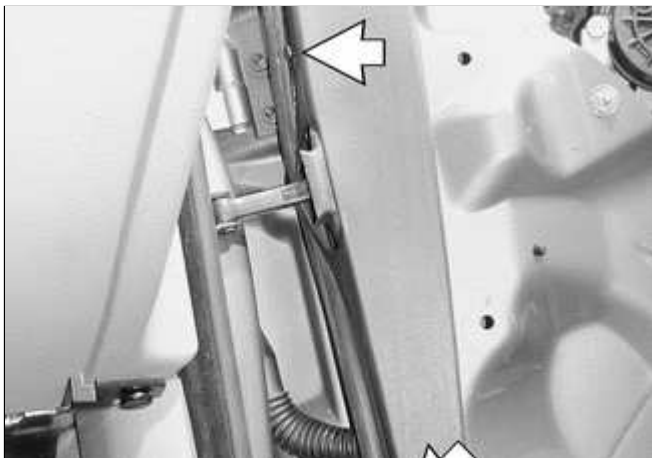
**Note:**

*The front mirror housing is retained by either three or four clips, depending on model.*

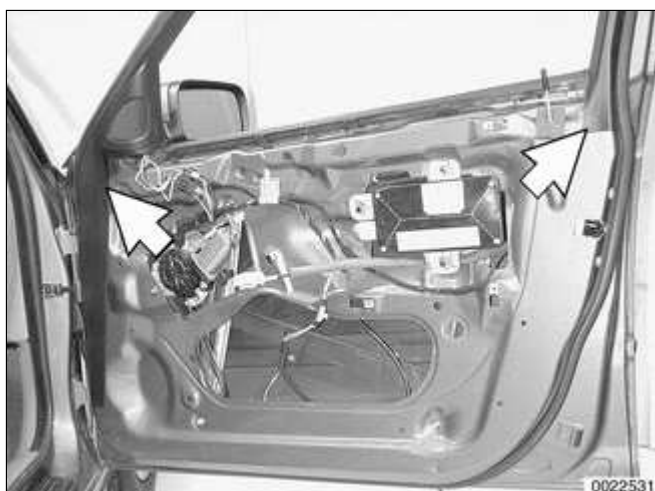
- Installation is reverse of removal. Check mirror function before installing covering parts.

## Outside mirror, removing and installing

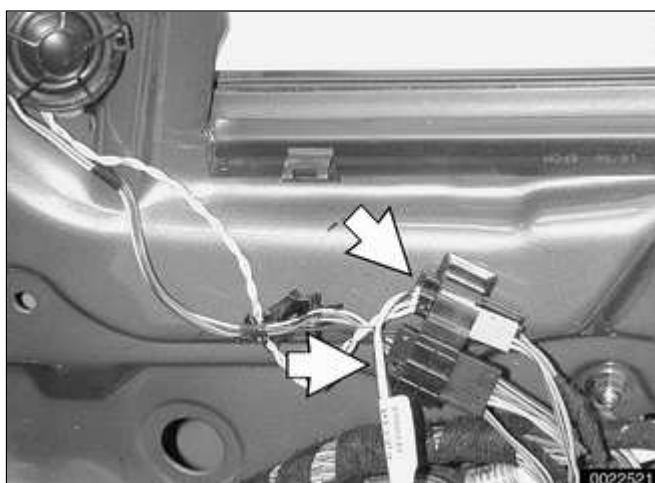
- Remove front door panel trim. See ⇒ [411 Doors](#).



- ✦ Working at door hinge, remove door inner trim panel retaining pins (**arrows**).



- Gently pry off door inner trim panel from retaining clips (**arrows**).



- Disconnect electrical harness connectors for window anti-trapping protection and speaker (**arrows**), if equipped.



- Remove inner door panel trim. On sedan models, trim strip extends around window to door latch area.



- Support mirror and speaker (if equipped) and remove mounting bolts (**arrows**). Lift speaker and mirror off door and feed out cable.

- Installation is reverse of removal.

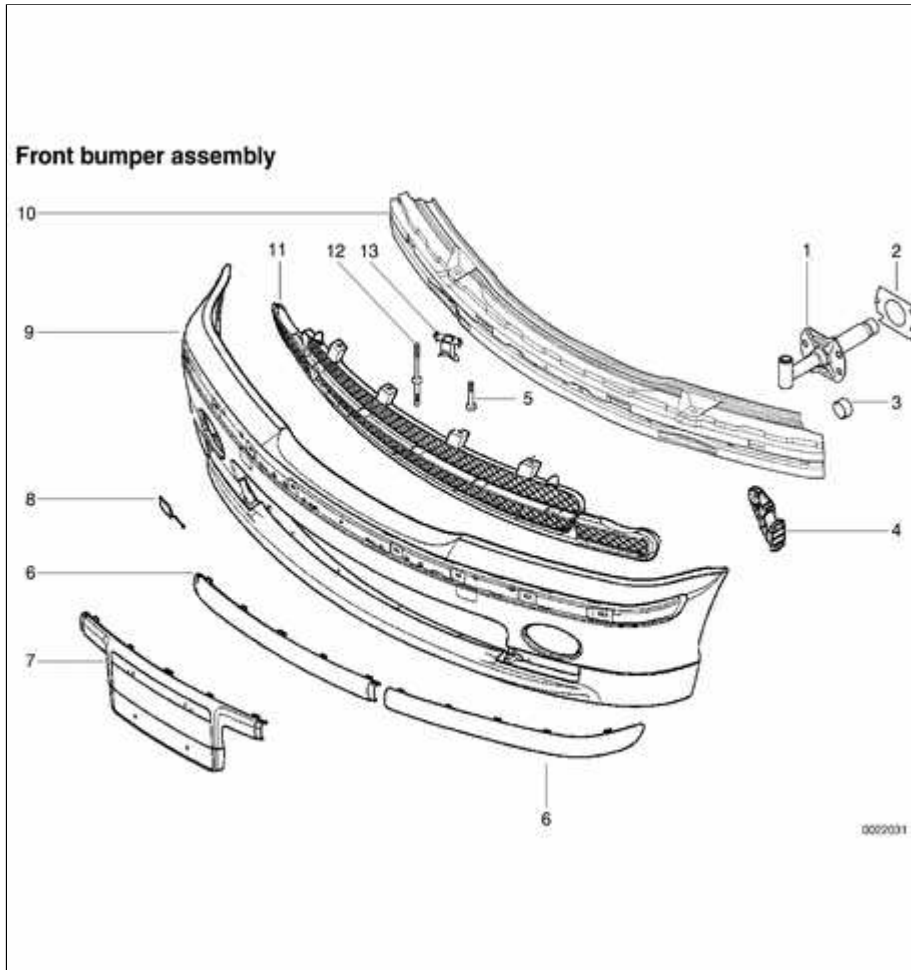


Check mirror function before installing covering parts.

Tightening torque	
Outside mirror to door (M6)	6 Nm (4.5 ft-lb)

Copyright © 2006 Robert Bentley, Inc. All rights reserved.

## Bumpers



### Front bumper assembly

- 1 - Impact absorber
- 2 - Spacer
- 3 - Cap
- 4 - Support bracket
- 5 - Bumper bracket bolt
- ◆ tighten to 41 Nm (30 ft-lb)
- 6 - Protective rubber strip
- 7 - License plate bracket
- 8 - Tow eye cover
- 9 - Bumper cover
- 10 - Carrier bumper
- 11 - Grill
- 12 - ASA bolt
- ◆ tighten to 41 Nm (30 ft-lb)
- 13 - Mounting sleeve

## Front bumper, removing and installing

- Raise and properly support vehicle.

### **WARNING!**

***Make sure that the car is firmly supported on jack stands designed for the purpose. Place the jack stands beneath a structural chassis point. Do not place jack stands under suspension parts.***

- Working underneath car, remove screws from left and right side corner trim, then remove trim.



- ◀ Remove bumper cover retaining screws (**arrows**).



- ◀ Remove screws (**arrows**) retaining bumper bar to impact absorbers on left and right sides.
- Slide bumper assembly out a few inches and disconnect the following connections, if applicable:
  - ◆ Electrical harness connectors at fog light assemblies.
  - ◆ Electrical harness connector at signal horn.
  - ◆ Electrical harness connectors at

outside temperature sensor at rear of left side of bumper and temperature switch at rear of right side of bumper.

- Slide bumper straight off side brackets.
- Installation is reverse of removal, noting the following:
  - ◆ Slide side brackets on bumper and body carefully together.
  - ◆ Make sure gap between body and bumper is set to specifications, adjust height as necessary. See ⇒ [Bumper height, adjusting](#).

Tightening torque	
Bumper to impact absorber (M10)	41 Nm (30 ft-lb)

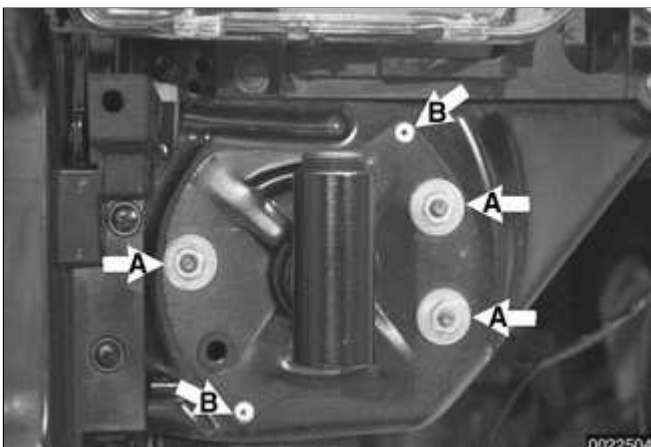
## Front bumper impact absorber, replacing

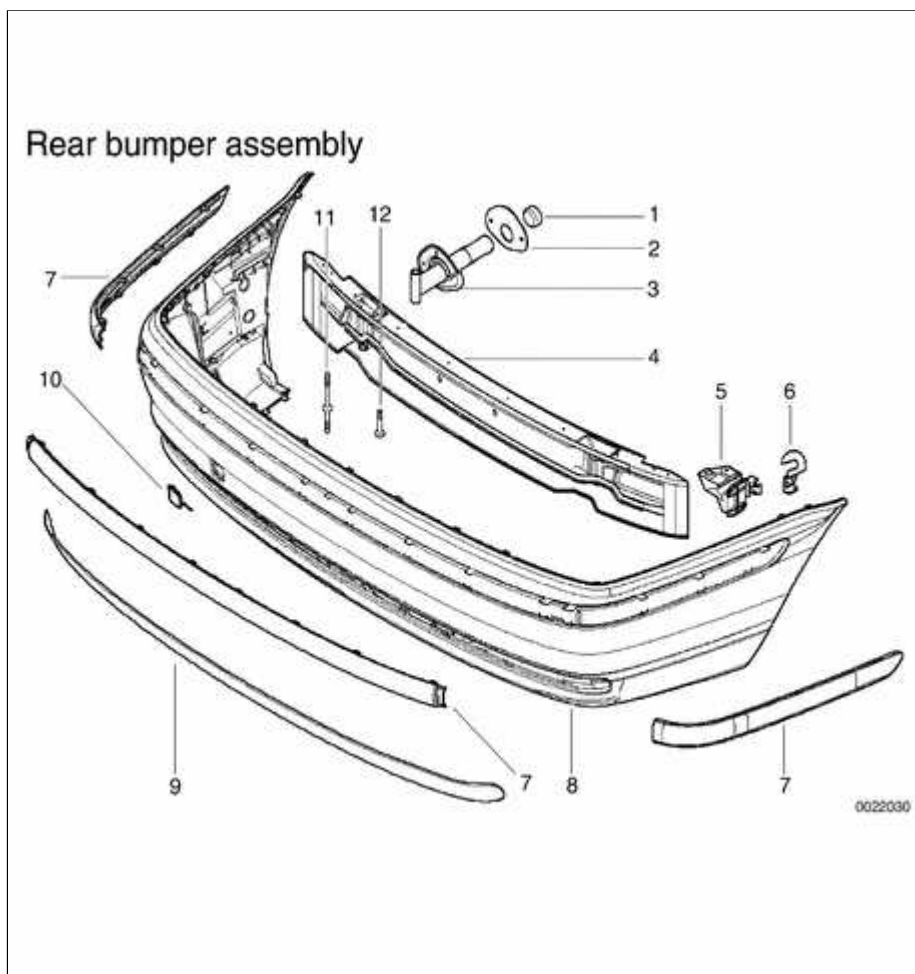
The bumper mounting bracket and impact absorber mounting hardware are accessible with the front bumper removed, as described above.

- ◀ Front bumper impact absorber mounting nuts (A) and drill out pop rivets (B).

**Note:**

*Install the bumper bracket bolt with thread locking compound such as Loctite®270 or equivalent.*





## Rear bumper assembly

- 1 - Cap
- 2 - Casket
- 3 - Impact absorber
- 4 - Carrier bumper
- 5 - Support bracket
- 6 - Bracket
- 7 - Protective rubber strip
- 8 - Bumper cover
- 9 - Lower part cover
- 10 - Tow eye cover
- 11 - ASA bolt

◆ tighten to 41 Nm (30 ft-lb)

- 12 - Bumper bracket bolt

◆ tighten to 41 Nm (30 ft-lb)

## Rear bumper, removing and installing

- Raise and properly support vehicle.

**WARNING!**

***Make sure that the car is firmly supported on jack stands designed for the purpose. Place the jack stands beneath a structural chassis point. Do not place jack stands under suspension parts.***



- ◀ Remove bumper support bolts using special BMW tool 00 2 150.



- ◀ Remove nut from bumper cover retaining bracket at rear of left and right rear wheel wells.
  - Remove expansion pin from lower rear wheel well. Remove wheel well liner from left and right sides.



- ◀ Release bumper bar retaining bolt (**arrow**) from impact absorber using BMW special tool 00 2 150, or similar Torx head socket.

**CAUTION!**

***Protect possible contact areas to prevent damage or scratches to vehicle bumper and paint.***

- Installation is reverse of removal.

**Note:**

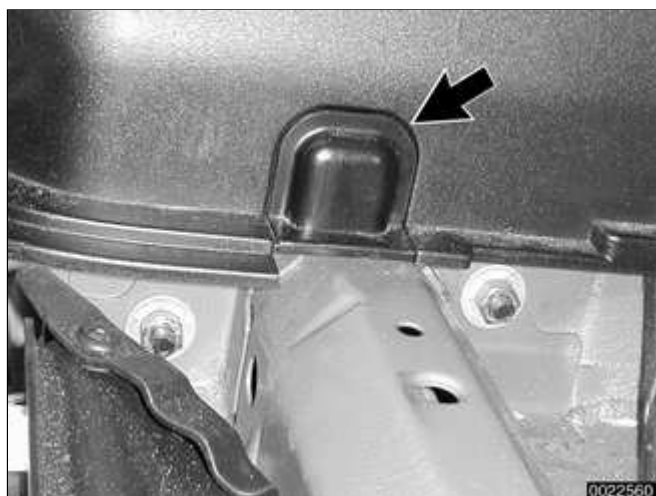


*Install the bumper bracket bolt with thread locking compound such as Loctite®270 or equivalent.*

Tightening torque	
Bumper bracket to impact absorber (M10 bolt)	41 Nm (30 ft-lb)

## Rear bumper impact absorber, replacing

- Remove bumper as described above.
- Remove luggage compartment floor covering.
- Remove battery and battery tray on right side and trunk trim panel on left side.



- ◀ Remove trim caps (**arrow**) at rear of frame rails.



- ◀ Release nuts on inside on vehicle trunk and remove absorber.
- Installation is reverse of removal. Replace body seal and protective cap if necessary. Make sure to check bumper height. See ⇒



### [Bumper height, adjusting.](#)

Tightening torques	
Bumper bracket to impact absorber (M10 bolt)	41 Nm (30 ft-lb)
Impact absorber to chassis (M8 nut)	22 Nm (16 ft-lb)

## Bumper height, adjusting

The adjustment procedure applies to either front or rear bumpers. A 14 mm allen socket is needed to make adjustments.

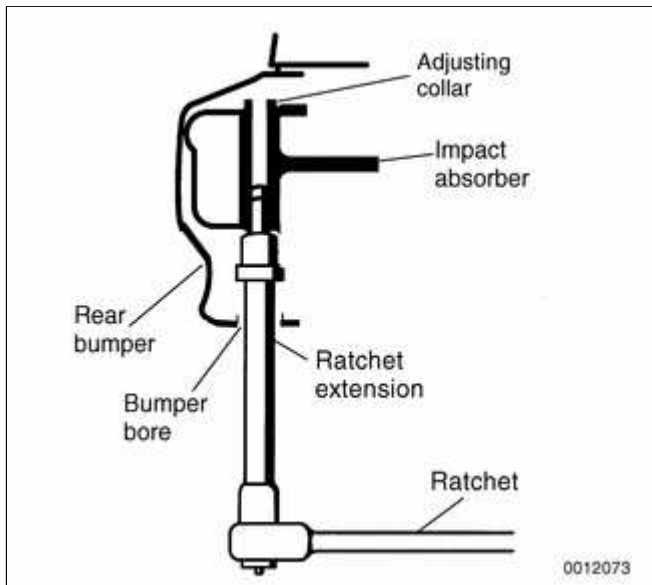
- Raise and properly support vehicle.

### **WARNING!**

***Make sure that the car is firmly supported on jack stands designed for the purpose. Place the jack stands beneath a structural chassis point. Do not place jack stands under suspension parts.***

- Front bumper:
  - ◆ Remove bumper as described earlier.
  - ◆ Remove bumper bracket bolt.
- Rear bumper:
  - ◆ Remove lower bumper panel as described in ⇒ [Rear bumper, removing and installing.](#)
  - ◆ Remove bumper bracket mounting

bolt at impact absorber.



Using a 12-inch extension and a 14 mm Allen socket, turn adjusting collar clockwise or counterclockwise as needed to change height of adjusting collar.

- Reinstall mounting bolts and check bumper height. Refit front bumper.

#### Tightening torques

Front bumper to bumper bracket (M8 nut)	22 Nm (16 ft-lb)
Front bumper bracket to impact absorber (M10 bolt)	55 Nm (41 ft-lb)
Rear bumper bracket to impact absorber (M10 bolt)	42 Nm (31 ft-lb)

Copyright © 2006 Robert Bentley, Inc. All rights reserved.

## Exterior Trim

Exterior trim is retained to the body by plastic clips and fasteners that may be damaged during removal. Be sure to have necessary fasteners on hand when reinstalling exterior trim pieces.

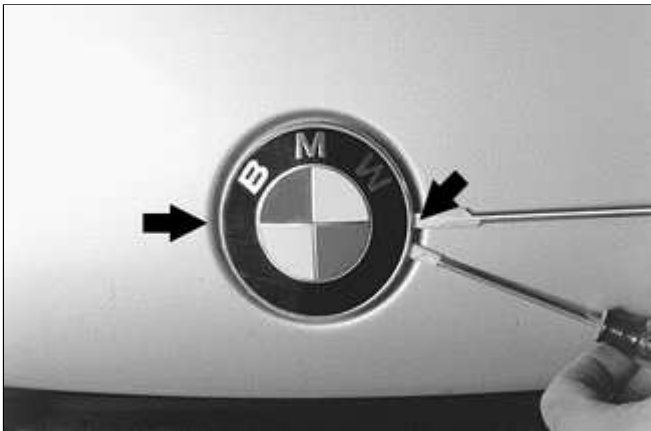
### BMW emblem, removing and installing

The procedure given below applies to both front and rear emblems.

- Wrap end of a screwdriver with tape.

#### **CAUTION!**

***Protect hood paint by covering area around emblem with tape.***



- ◀ Carefully pry out emblem. Pry up emblem carefully on either side (**arrows**). Note tape on screwdriver tips.
- Installation is reverse of removal.
- ◆ Replace plastic inserts in body if damaged.
- ◆ If emblem fits loosely, use a small amount of body molding tape or adhesive on rear of emblem before installing.

### Body side molding, replacing

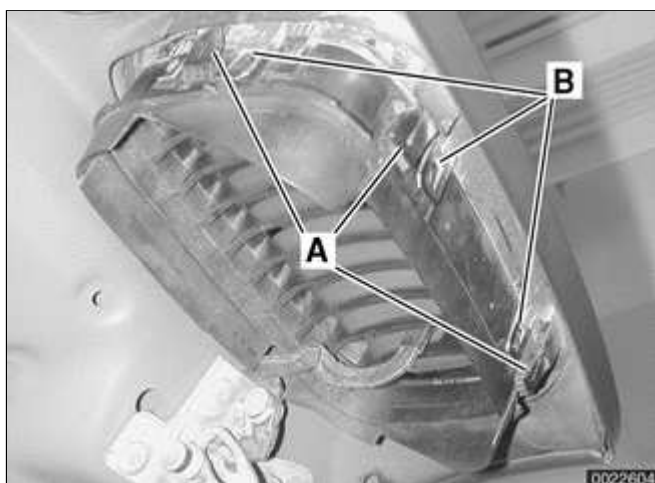
To remove body side moldings, carefully pry moldings straight off.



- ✦ Installation is reverse of removal. Replace any clips or clip covering boots damaged during removal.

## Radiator grill, removing and installing

- Open hood.



- ✦ Gently pry out tab on left or right side of grill trim ring (**A**), as well as tabs on bottom.
  - Feed grill out through opening. Be careful of hood lever on driver's side grill.
  - Once grill is removed, pry remaining tabs (**B**) to separate inner grill from chrome trim ring.
  - Before installation, assemble chrome trim ring and grill insert securely. Replace components if tabs or catches are broken or missing.



- ✦ To install align grill and trim ring in appropriate location in hood. Press on trim ring until grill snaps into place.



## Headlight housing trim panel, removing and installing

- Open hood.
- Remove spray nozzle of vehicles equipped with headlight cleaning systems. See ⇒ [611 Wipers and Washers](#).



- ◀ Unclip inner tab at radiator support.
- Press pane downward, out of retaining brackets. Feed out retaining hook at fender.
- Installation is reverse of removal.

Copyright © 2006 Robert Bentley, Inc. All rights reserved.

## General

This repair group covers door glass, window regulator and power window motor repair information.

### CAUTION!

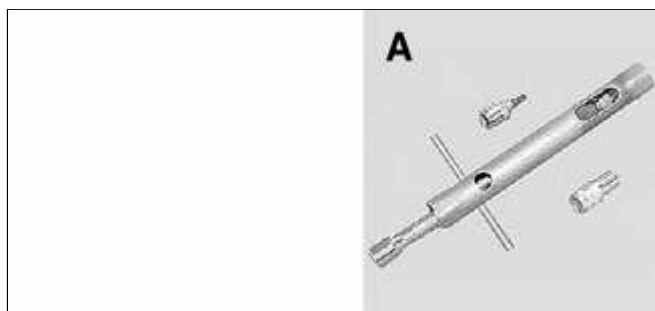
**All E46 models are equipped with side-impact airbags in the front doors. Some models are also equipped with airbags in the rear doors. Be sure to read the airbag warnings and cautions in ⇒ [721 Airbag System \(SRS\)](#).**

Electric window switch replacement is covered in ⇒ [612 Switches](#).

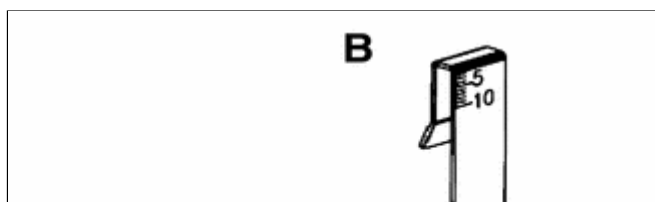
The windshield, rear window, fixed rear door glass, and cargo compartment glass (Sport Wagon only) are bonded using special adhesives and tools. It is recommended that bonded glass replacement be done by an authorized BMW service facility or an automotive glass installer.

## Special tools

Some window repair operations require the use of special tools.



- ◀ 2-door window adjustment tool BMW 41 6 120



- ◀ Window height gauge BMW 51 3 080



## Power windows

Power window features in E46 models include:

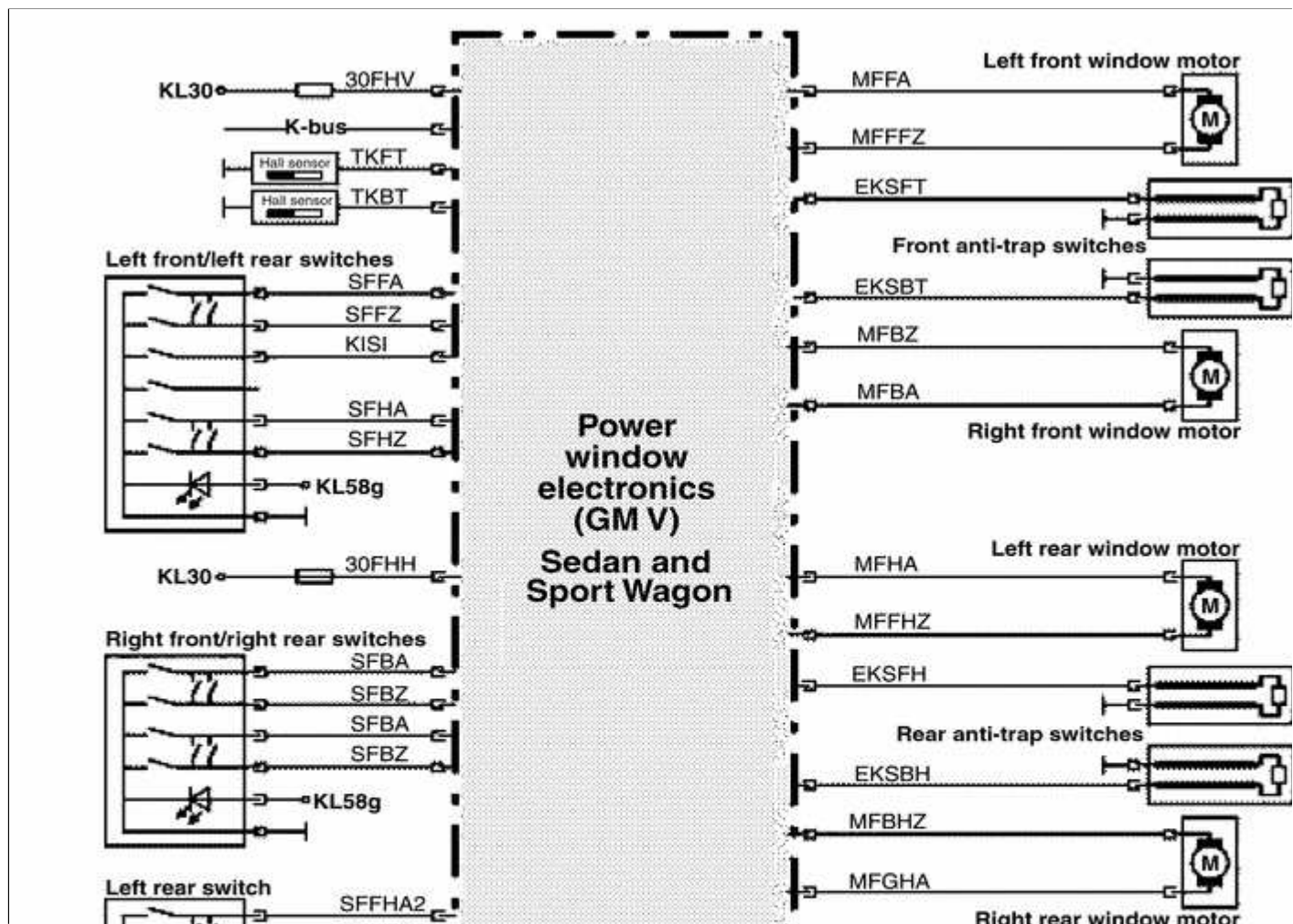
- ◆ Control of the front and rear door window motors is carried out directly by the General Module (GM V).
- ◆ One-touch operation in both directions on all four windows, where applicable.
- ◆ Cable type window regulator used for all door windows.
- ◆ Anti-trap protection is provided by the pressure sensitive finger guard.
- ◆ The window switch is pulled up to raise the window and pushed down to lower.
- ◆ 4-door models: Each rear door has a single window switch located in the door handle trim.
- ◆ The rear window switches can be deactivated by pressing the child lock-out switch in the center console.
- ◆ Convenience closing/opening of the windows from the driver's lock cylinder or convenience opening only from the FZV remote key. FZV operation can be owner

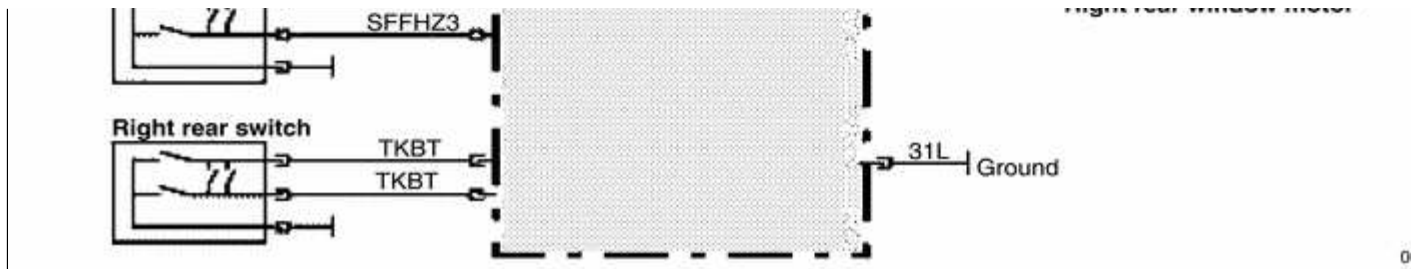


customized with the Car Memory function. See ⇒ [515 Central Locking and Anti-theft](#).

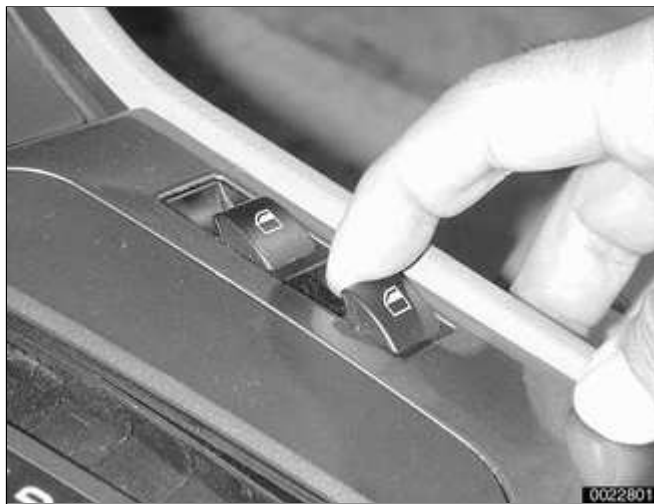
- ◆ After the ignition is switched off, electric windows can be operated until a door is opened or until 16 minutes has elapsed.
- ◆ The GM V bases window motor end position on current draw (load). There is a maximum window motor run time of 8 seconds. The motor is then switched off even if the end position load sensor fails.

### Power window electronics (GM V) Sedan and Sport Wagon





## Window switches



- ◀ The push-pull type window switch provides the GM V with a coded ground signal. Holding a switch at the first detent provides a single ground signal on one wire requesting the GM V to open the window. When released, the ground signal is removed and the window motor stops.

Momentarily pushing the switch to the second detent and releasing provides an additional ground signal on the second wire requesting "one touch mode". The GM V lowers the window automatically until it reaches the end position.

The switch functions in the same manner for window closing but the ground signal sequence is reversed.

### **Note:**

- ◆ *In Coupe models, the rear windows switches are used for operating the rear swing-out vent windows.*
- ◆ *Electric window switch replacement is covered in ⇒ [612 Switches](#).*

## Rear window child lockout switch



◀ In 4-door models, the rear window child lockout switch (**arrow**) is incorporated in the driver's window switch block to the left of the shifter. When activated, it provides a constant ground signal to the GM V, preventing the windows from being operated from the rear door switches.

The lockout switch ground signal is overridden by the GM V if a passive safety system (MRS) crash signal is received.

**Note:**

*In Convertible models the four-window control switch is in the position occupied by the rear window lockout switch in 4-door models.*

## Power window motors

The window motors are mounted on cable regulators. The window motor control circuit consists of two wires for operating the motor in both directions.

The motors are activated by relays in the GM V. The relays provide either power or ground depending on the direction of window travel. The GM V controls the polarity based on a request to run the window from a window switch or a convenience opening/closing signal.

## Convenience opening/closing

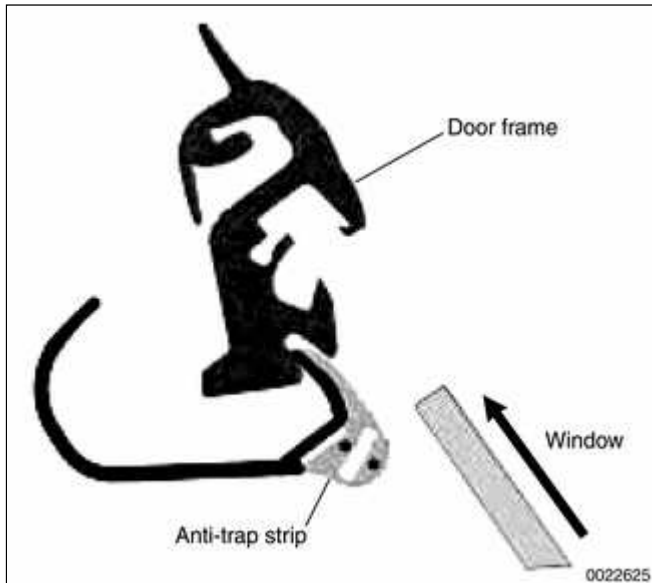
The GM V provides the convenience open/close feature, providing control of the power windows (and sunroof) from outside the vehicle with the key in the driver's door lock. The FZV (remote key) provides the same function for window opening only.

Anti-trap protection is active during convenience closing from the driver's

door lock.

If the GM receives a request to operate convenience closing or opening for more than 110 seconds, the function is deactivated and a fault code is stored.

## Window anti-trap protection



◀ In 4-door models, a rubber pressure guard located at the top edge of each door frame consists of two contact strips that close when subjected to pressure. When the contact strip closes (for example, a hand is trapped between the top of the window and the door frame), an anti-trap signal is sent to the GM V. The window immediately (within 10 milliseconds) reverses direction. This feature does not require initialization.

The E46 pressure sensor finger guard has a resistance of  $3\text{ K}\Omega$  and it is monitored for open circuit. When pressed, the monitored resistance changes to  $< 1\text{ K}\Omega$ . If anti-trap protection becomes faulty the one touch window closing will not function.

Window anti-trap protection is only active in the one touch and convenience close modes of operation. If the window switch is pulled and held, anti-trap protection will not function.

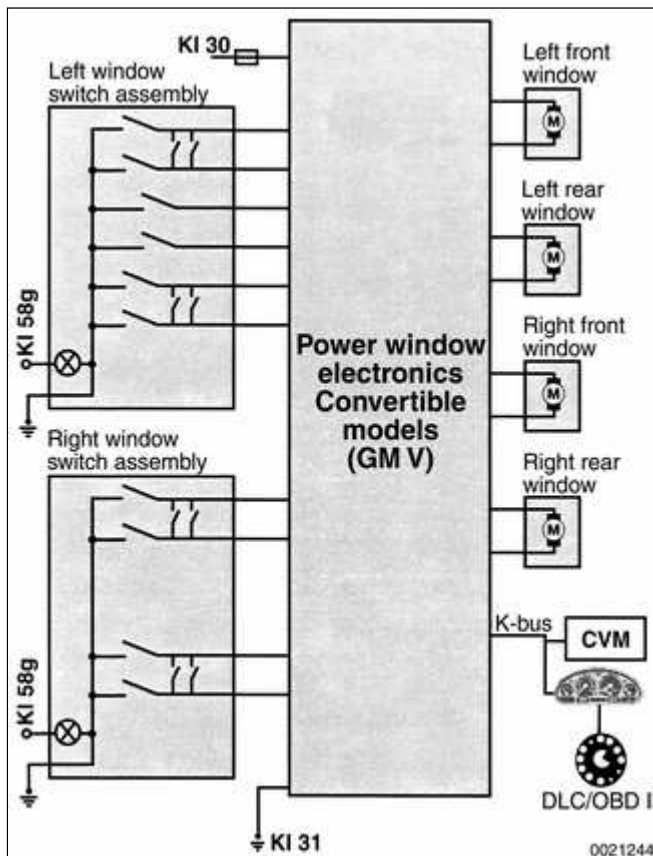
## Window motor limit stop function

If repeated window activation (up/down cycles) exceeds one minute, the GM V deactivates the internal relays and disregards any further up/down requests. The GM V provides motor activation after a short duration but not for the full one minute monitoring cycle.

The GM V monitors the number of times

a window motor is activated. It counts each cycle and stores the number in memory. After the stop function limit is reached and the window motor is deactivated, the GM V slowly reverses the stored count of activation until the stored number equals 0, thus allowing the window motor to cool down.

## Convertible windows



A central power window switch is located in the Convertible console between the left side window switches. This switch allows all four windows to be opened with one-touch operation and closed if the switch is held.

The Convertible is not supplied with window anti-trap protection. Therefore only the driver's window allows one touch closing.

When the convertible top is opened, the power windows are lowered for approx. 1.5 seconds to ensure clearance for the top. Once the top is stored in the storage compartment, the windows will close again if the top switch is held in the open position.

### **WARNING!**

- ♦ **Always wear hand and eye protection when working with broken glass.**
- ♦ **If a window is broken, all of the glass bits should be vacuumed out of the door cavity. Use a blunt screwdriver to clean out any remaining glass pieces from the window guide rails.**
- ♦ **When servicing the door windows, the harness connector**

***to the window regulator should  
always be disconnected to  
prevent pinching fingers in the  
moving window mechanism.***

Copyright © 2006 Robert Bentley, Inc. All rights reserved.

## Window Service, 4-door Models

Sedan and Sport Wagon doors are similar. Use the following procedures for window service on these models.

### **WARNING!**

- ♦ *E46 cars are fitted with side-impact airbags in the front doors. Some are equipped with airbags in the rear doors as well. When servicing the door windows on cars with side-impact airbags, always disconnect the negative (-) battery cable. See ⇒ [721 Airbag System \(SRS\)](#) for cautions and procedures relating to the airbag system.*
- ♦ *Prior to disconnecting the battery, read the battery disconnection cautions given at the front of this manual on page viii.*

## Window anti-trap strip, testing

- To test function of anti-trap strip on any window:
- ♦ With key ON and window down, pull up window switch to second detent, thus activating one-touch close operation.
- ♦ Insert wooden block or other soft object between glass and upper door frame.



- ◆ Window should contact block, then immediately reverse direction and lower by approx. 25 mm (1 in.).

**Note:**

*Anti-trap strip is integrated into the molding strip of the door window frame.*

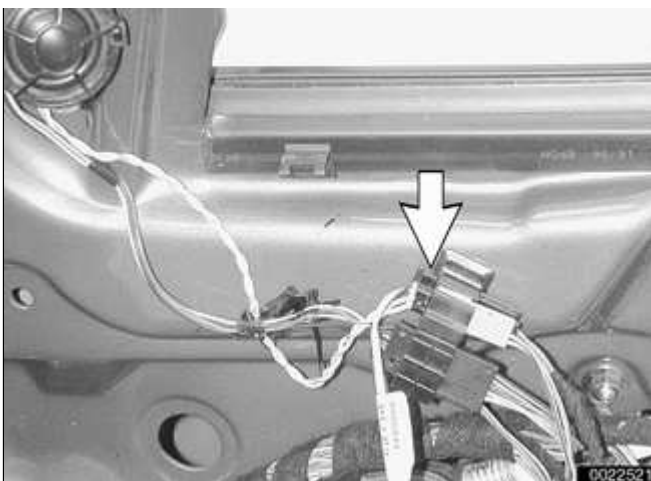
## Front window anti-trap strip, removing

- Remove front door panel and vapor barrier as described in ⇒ [411 Doors](#).

- ✦ Detach window frame molding strip and peel toward inside of vehicle.



- ✦ Separate anti-trap electrical harness connector (**arrow**) at top front of door.



**Note:**

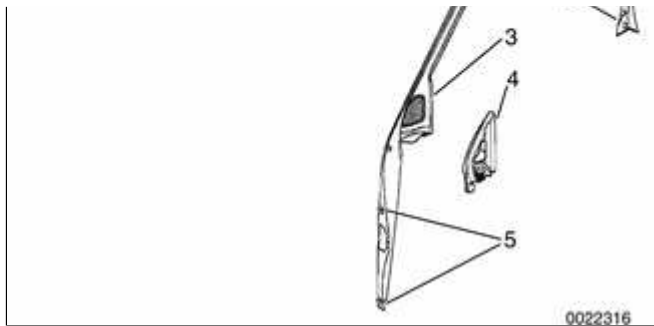
*Wire colors for anti-trap strip are black-white.*

- ✦ If replacing molding with new one, transfer mounting clips and foam insulation as necessary.

Front window frame molding and anti-trap strip



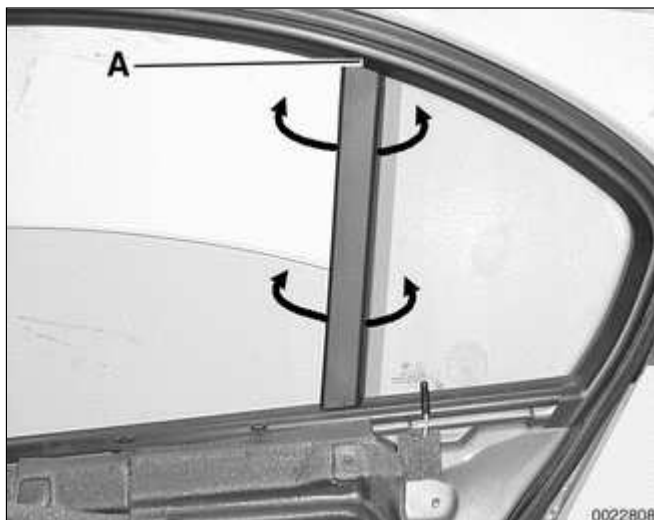




- 1 - Window frame molding
  - 2 - Clip
  - 3 - Door corner speaker cover
  - 4 - Foam insulation
  - 5 - Mounting clip
- After installation, recheck anti-trap protection.

### Rear window anti-trap strip, removing

- Remove rear door panel and vapor barrier as described in ⇒ [411 Doors](#).



- ✦ Detach window frame molding strip, peeling it off fixed window partition (**arrows**). Do not tear strip in area **A**.
  - Detach electrical harness connector at top front of door, just below window.
- Note:**
- Wire colors for anti-trap strip are black-white.*
- After installation, recheck anti-trap protection.

### Front door window, adjusting (4-door models)

Whenever the front window or window regulator is removed, window adjustment should be checked. The glass should contact the top of the window squarely and should seat

against the window seal uniformly.

**Note:**

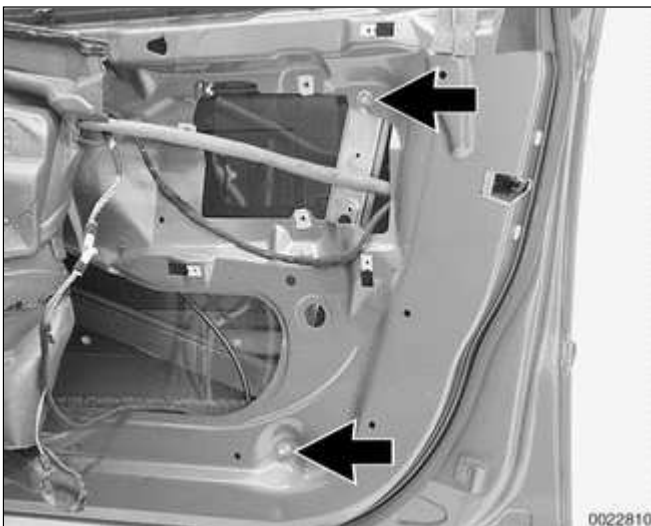
*If the window does not contact the window seal uniformly, wind noise or water infiltration may result.*

- Remove front door panel as described in ⇒ [411 Doors](#).
- Disconnect negative (-) cable from battery. Then remove airbag unit and vapor barrier from door. See ⇒ [721 Airbag System \(SRS\)](#).

**WARNING!**

***Prior to disconnecting the battery, read the battery disconnection cautions given at the front of this manual on page viii.***

- Partially detach rear of vapor barrier/sound insulation from door and fold forward. Hold in place using adhesive tape.



- ✦ Loosen window guide rail mounting nuts (**arrows**), but do not remove.

- Reconnect battery. Open window fully.
- Tighten guide rail nuts.

Tightening torque	
Window regulator guide rail to door	9 Nm (80 in-lb)

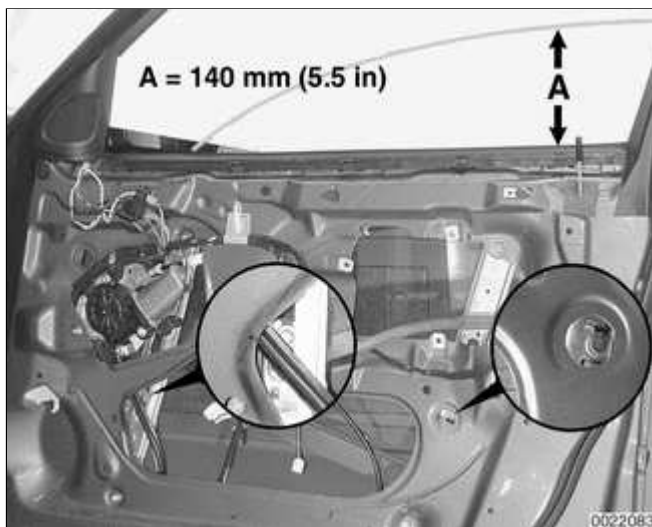
Window regulator guide rail to door	9 Nm (80 in-lb)
-------------------------------------	-----------------

**Front door window, removing and installing (4-door models)**

- Remove front door panel as described in ⇒ [411 Doors](#).
- Disconnect negative (-) cable from battery. Then remove airbag unit and vapor barrier from door. See ⇒ [721 Airbag System \(SRS\)](#).

### **WARNING!**

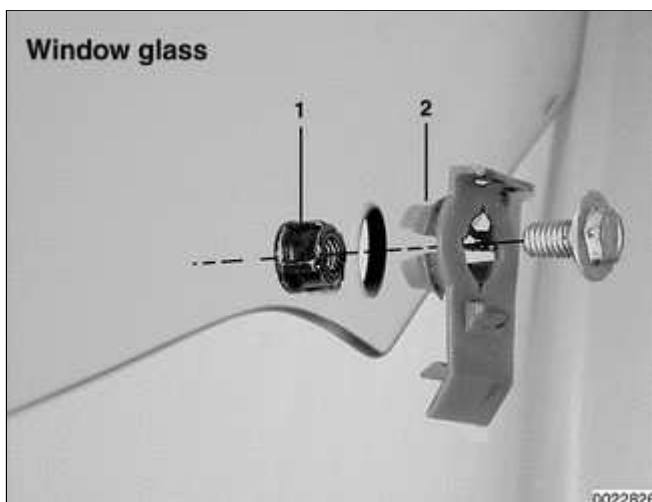
**Prior to disconnecting the battery, read the battery disconnection cautions given at the front of this manual on page viii.**



- ✦ Detach window from window regulator rails:
  - ◆ Reattach battery. Move window to approx. 140 mm (5.5 in.) from bottom.
  - ◆ Remove window retaining screws (**insets**) at window regulator rails.

### **WARNING!**

**Once the window is positioned correctly, disconnect harness connector from power window motor to prevent accidental operation of the window.**



- ✦ Detach plastic window retainers from glass:
  - ◆ Push expander nut (1) out of plastic retainer.
  - ◆ Squeeze retainer tabs (2) and remove from glass.

### **Note:**

*BMW recommends replacing the plastic*



*window retainers every time the glass is removed from the door.*

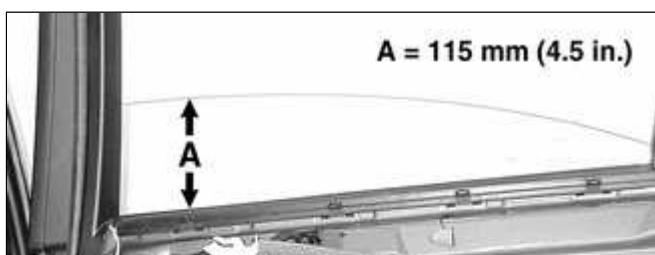
- ✦ Turn window glass carefully inside door cavity and lift out of door.
  - Installation is reverse of removal.
- ◆ Replace plastic window retainers once glass is inside door.
- ◆ Use new mounting bolts when reinstalling side-impact airbag to door.
- ◆ Adjust window as described earlier.

#### Tightening torque

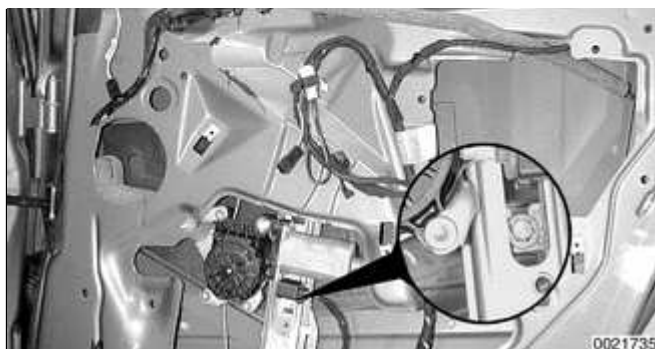
Side-impact airbag to door	8.5 Nm (75 in-lb)
Window to regulator guide	8 Nm (71 in-lb)

### Rear door window, removing and installing (4-door models)

- Remove rear door panel and vapor barrier. See ⇒ [411 Doors](#).
- In model with rear side impact airbag: Disconnect negative (-) cable from battery. Then remove airbag unit from door. See ⇒ [721 Airbag System \(SRS\)](#).



- ✦ Detach window from window regulator rail:
  - ◆ If applicable, reattach battery. Move window to approx. 115 mm

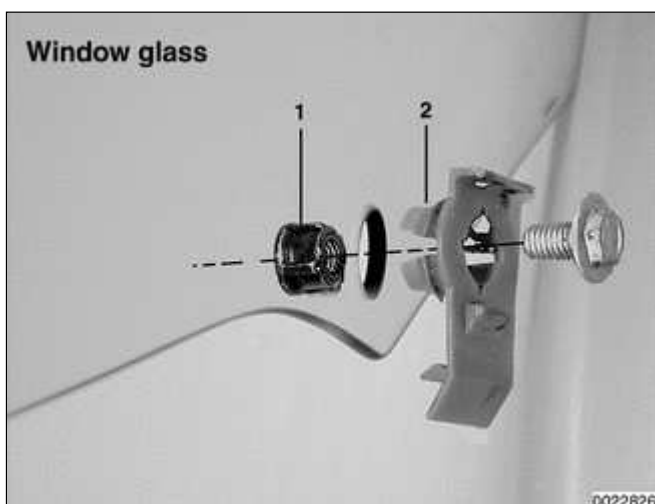


(4.5 in.) from bottom.

- ◆ Remove window retaining screw (inset) at window regulator rail.

### **WARNING!**

**Once the window is positioned correctly, disconnect harness connector from power window motor to prevent accidental operation of the window.**



- ✦ Detach plastic window retainer from glass:

- ◆ Push expander nut (1) out of plastic retainer.
- ◆ Squeeze retainer tabs (2) and remove from glass.

### **Note:**

*BMW recommends replacing the plastic window retainer every time the glass is removed from the door.*

- Pull window glass straight up to lift out of door.
- Installation is reverse of removal.
- ◆ Replace plastic window retainer once glass is inside door.
- ◆ If applicable, use new mounting bolts when reinstalling side-impact airbag to door.
- ◆ Rear window does not need adjustment.

Tightening torque	
Side-impact airbag to door	8.5 Nm (75 in-lb)
Window to regulator guide	8 Nm (71 in-lb)

Copyright © 2006 Robert Bentley, Inc. All rights reserved.

## Window Service, 2-door Models

2-door models are equipped with the "close with door shut" feature. In this mode, the window glass moves down slightly when the door latch is activated, then jams up tightly against the weather-strip when the door is fully closed.

### **WARNING!**

- ♦ *E46 cars are fitted with side-impact airbags in the front doors. When servicing the door windows on cars with side-impact airbags, always disconnect the negative (-) battery cable. See ⇒ [721 Airbag System \(SRS\)](#) for cautions and procedures relating to the airbag system.*
- ♦ *Prior to disconnecting the battery, read the battery disconnection cautions given at the front of this manual on page viii.*

### Front door window, adjusting (2-door models)

The "close with door shut" feature of 2-door cars with frameless windows makes window adjustment critical.

### **CAUTION!**

*There is risk of window glass breakage if correct adjustment procedures are not used. If in doubt, this procedure should be left to a trained BMW technician.*

The following adjustments can be made to the window:

- ◆ Longitudinal adjustment
- ◆ Pretension (or window rake)
- ◆ Parallelism (or window tilt)
- ◆ Vertical adjustment (or retraction depth)
- ◆ Glass protrusion (when open)
- ◆ Distance between side window and door window

### Emergency operation

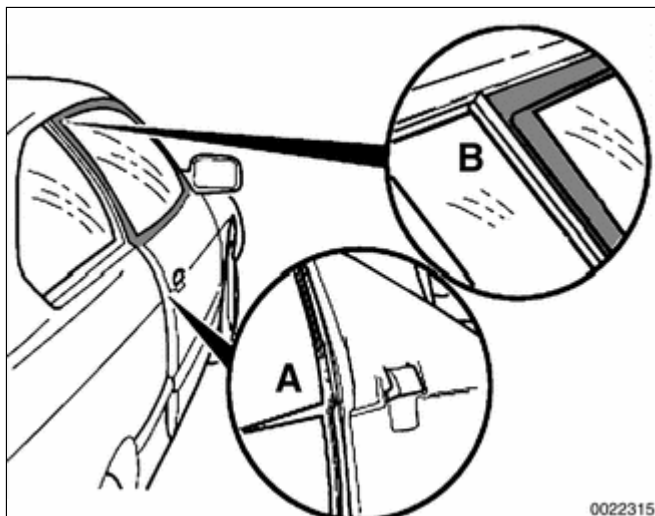
Adjusting the "close with door shut" feature insures low wind noise and water leakage past windows. With the door closed, the window must jam a predetermined amount up into the seal. When the door is opened, the window must lower immediately to clear the seal.



With door open, close window.

- ◆ To simulate closed door, use screwdriver or finger to push door lock rotary latch in direction of arrow.
- ◆ Window must rise to its full closed position.





✦ Close door as far as possible without forcing.

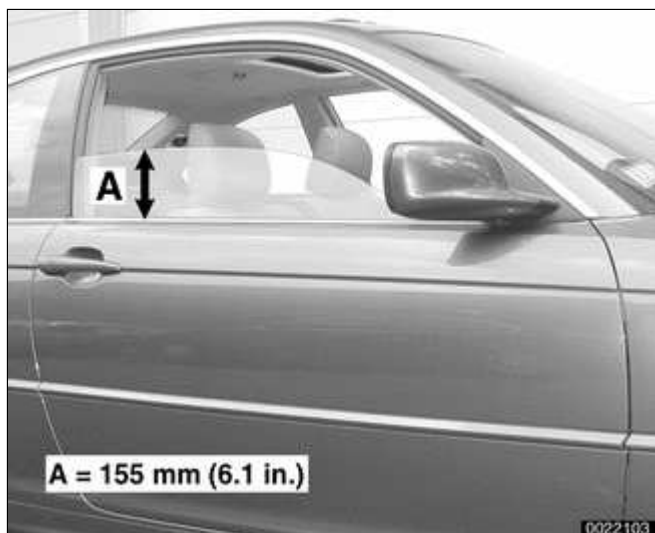
- ◆ Coupe models: Top edge of glass must rest on door seal (**A**).
- ◆ Convertible models: Gap between door and B-pillar (**B**) must be 25 mm (1 in.).

**Note:**

*Window must seal with water drain at mirror triangle in A-pillar.*

- Use door handle to open rotary latch:
- ◆ Window should lower a small amount.
- Close door:
- ◆ Window should raise a small amount.
- Reopen door:
- ◆ Window should lower a small amount and clear rubber seal.
- If window gets stuck in rubber seal:
- ◆ Lower glass.
- ◆ Adjust retraction depth as described later.

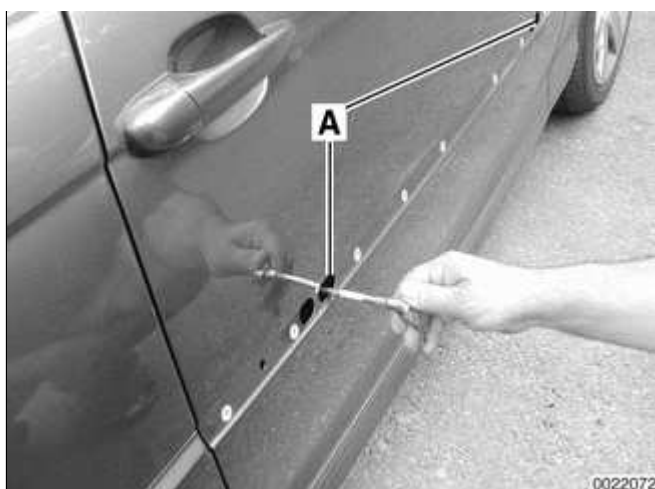
**Longitudinal adjustment**



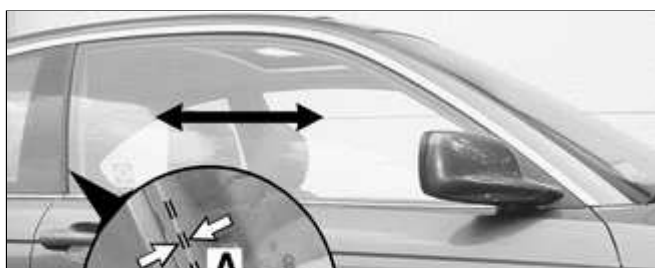
- Position window approx. 155 mm (6.1 in.) above dead bottom.



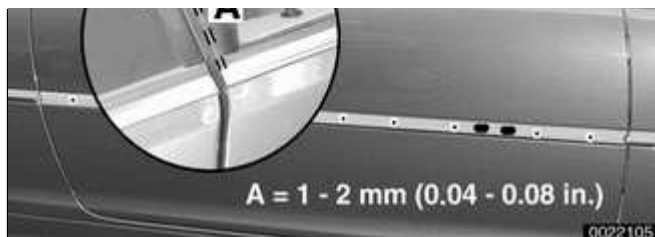
- Working carefully with a plastic prying tool, detach outside trim strip from door.



- Reach through door bores (**A**) using Torx driver E7 on extension with ratchet wrench (BMW special tool 41 6 120 or equivalent). Loosen but do not remove longitudinal adjustment screws.



- Raise glass to top. Move glass fore or aft to attain correct adjustment.
  - Coupe models: When fully closed, rear edge of window must protrude by distance **A** from edge

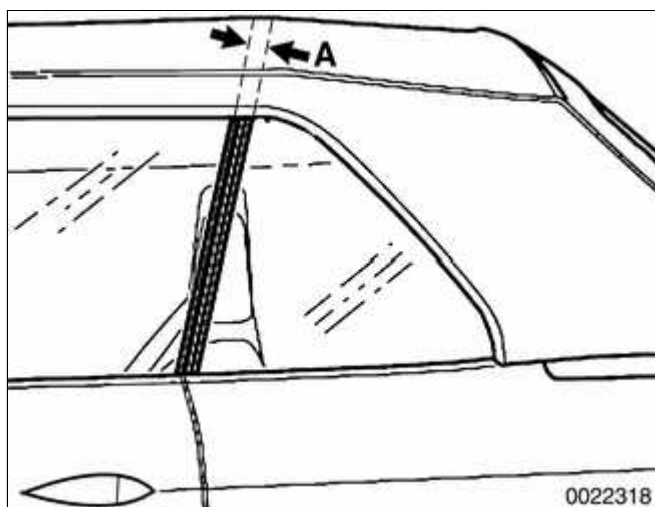


of window outer sealing lip.

- ◆ If necessary, replace side window trim.

#### Window longitudinal adjustment

Dimension <b>A</b>	1 - 2 mm (0.04 - 0.08 in.)
Door window rear edge to side window seal (Coupe)	$6 \pm 0.75$ mm ( $0.24 \pm 0.03$ in.)



- ✦ Convertible models: When all the way up, measure door window gap to side window trim.

- ◆ Gap **A** is measured from edge of door window to rear of side window seal.

#### Window longitudinal adjustment

Door window rear edge to side window seal (Convertible)	25 mm (1 in.)
---	---------------

- Tighten longitudinal adjustment screws.

#### Tightening torque

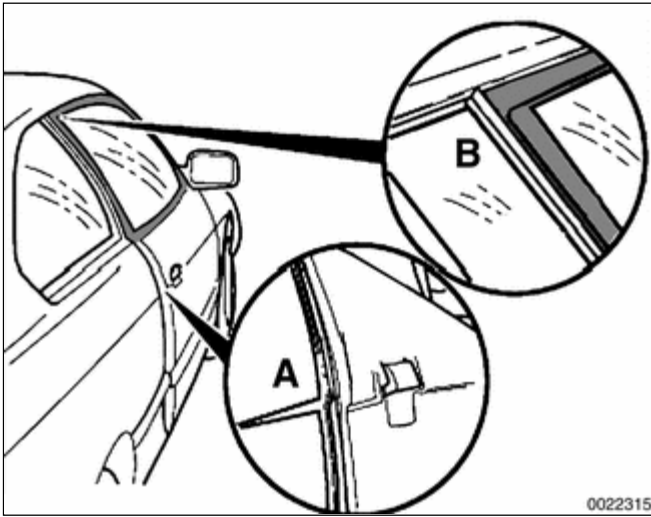
Window to guide	8 Nm (71 in-lb)
-----------------	-----------------

#### Pretension

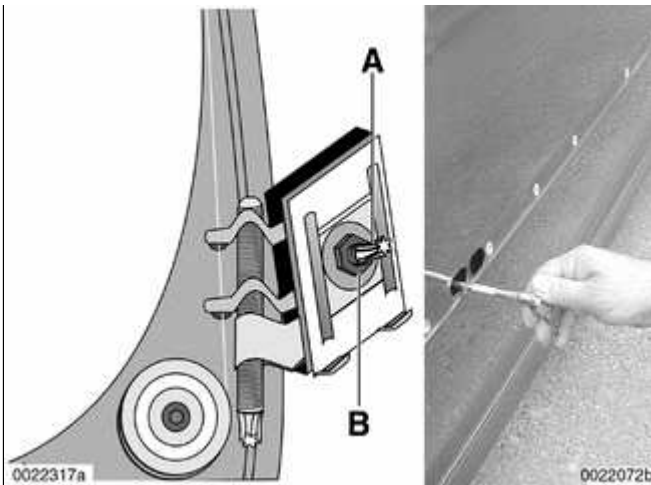
##### Note:

*Window pretension can also be thought of as the inward rake of the window.*

- Remove outer door trim strip as described earlier.



- ✦ Latch door to first catch of door lock (A). Check that top of window rests on rubber door seal (B).



- ✦ Reach through rear bore in door with BMW special tool 41 6 120 or equivalent ratchet wrench.
  - ◆ Loosen window adjustment Torx screw (A) 180° counterclockwise.
  - ◆ Turn slider adjustment nut (B) until it is hard to move.
  - ◆ Continue loosening window adjustment Torx screw and tightening slider adjustment nut (see previous step) until correct window rake is reached.
  - ◆ Tighten window adjustment screw.

#### Tightening torque

Window to guide	8 Nm (71 in-lb)
-----------------	-----------------

#### Vertical adjustments

##### **Note:**

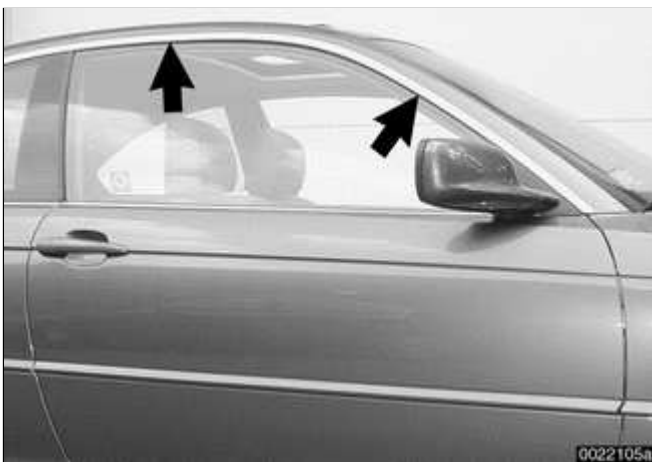
*Adjusting the depth that the window retracts into the door seal insures that wind noise and water leakage past window is kept to a minimum.*



- ✦ Parallelism. Top edge of door window must be parallel to contour of water drain in roof.

**Note:**

*Window parallelism is also referred to as window tilt.*



- ✦ Retraction depth. With door closed, raise window to top.
- ◆ Use BMW special tool 51 3 080 or equivalent device to measure depth of window in rubber seal.

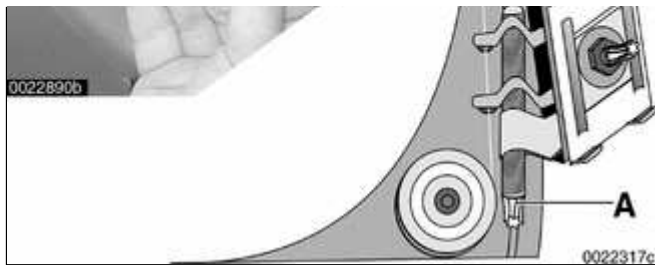
Window retraction	
At A-pillar or roof line ( <b>arrows</b> )	3 - 4 mm (0.12 - 0.16 in.)

- Window protrusion. When all the way down, measure door window glass protrusion above top edge of door.

Window protrusion	
Door window above top of door	max. 2 mm (0.08 in.)



- ✦ To adjust:
  - ◆ Lower door glass.



- ◆ Pry out rubber plugs at base of door.
- ◆ Starting at rear of door, reach through bore in door to turn Torx screw (A).

**Note:**

*Torx screw size is T20.*

- ◆ Repeat at front bore.
- ◆ Raise window and check for parallelism and correct depth of retraction.
- ◆ Repeat as necessary.
- ◆ Reinsert rubber plugs.

### Front door window, removing and installing (2-door models)

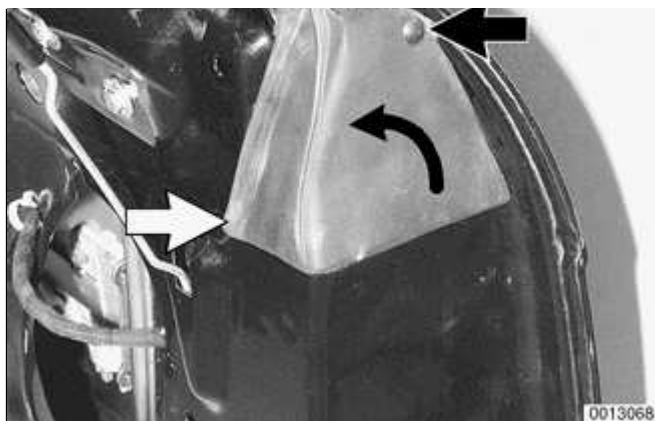
- Remove interior door panel. See ⇒ [411 Doors](#).
- Disconnect negative (-) cable from battery. Then remove airbag unit and vapor barrier from door. See ⇒ [721 Airbag System \(SRS\)](#).

**WARNING!**

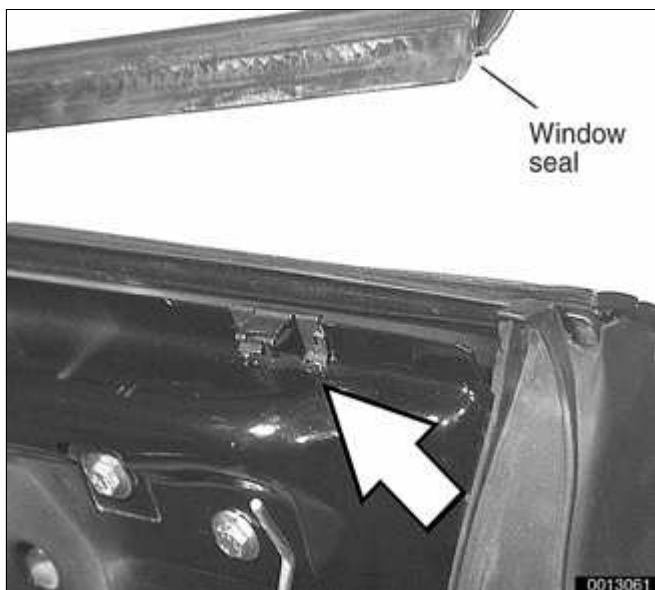
**Prior to disconnecting the battery, read the battery disconnection cautions given at the front of this manual on page viii.**



- ✦ Detach door corner rubber seal mounting clips (**arrows**). Remove seal by pulling up in direction of **curved**



arrow.



- ✦ Lift off window inner lip seal.
- ◆ If necessary, replace any defective retaining clip (**arrow**).



- ✦ Position door window approximately 80 mm (3.15 in.) below roofline. If necessary, temporarily reconnect battery cable.

### **WARNING!**

**Once the window is lowered, disconnect harness connector from power window motor to prevent accidental operation of the window.**

- Remove window mounting screws from window regulator rails.

### **Note:**

- ◆ Window mounting screws have left-hand thread.

- ◆ *Window rear mounting hardware will stay with glass.*
- Tilt rear edge of window glass up and out of door.
- If glass is being replaced, transfer window rear mounting hardware (mounting shim, threaded sleeve and clamping retainer) from lower rear corner of glass to new window.
- Installation is reverse of removal.
- ◆ Install window rear mounting screw with adjusting sleeve through guide rail and threaded sleeve in glass.

**Note:**

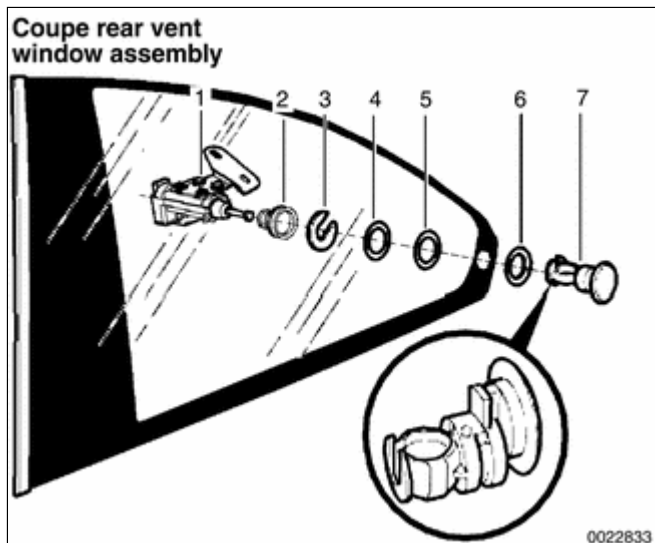
*Window mounting screws have left-hand thread.*

- ◆ Use new mounting bolts when reinstalling side-impact airbag to door.
- ◆ Adjust window as described earlier.

Tightening torque	
Side-impact airbag to door	8.5 Nm (75 in-lb)
Window to guide	8 Nm (71 in-lb)

**Rear vent window or vent latch, (Coupe models)**





Refer to accompanying illustration when removing Coupe rear vent window or vent latch mechanism.

- 1 - Vent window drive
- 2 - Inner cap
- 3 - Retainer
- 4 - Washer
- 5 - Washer
- 6 - Shim
- 7 - Glass support

- ◆ When installing, make sure U-shaped opening in glass support points to rear of car.
- ◆ To access rear vent hinges, remove B pillar (door pillar) trim.
- ◆ When reinstalling make sure window seals completely. Note gap clearances below.

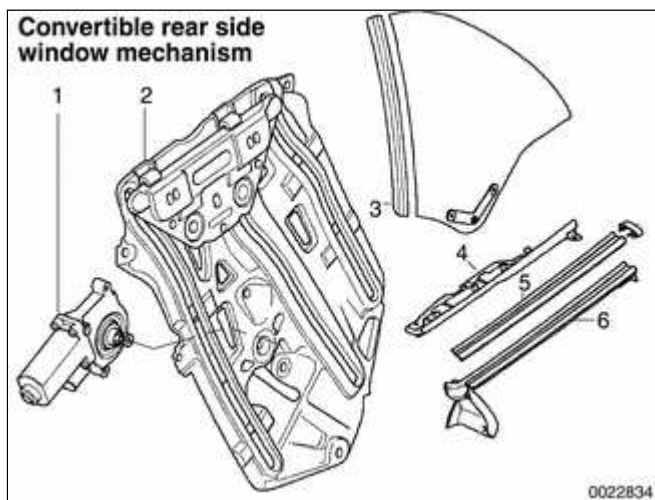
#### Vent window clearances

Front trim strip to rear edge of front window	up to 6 mm (0.24 in.)
Rear of window to water drain	up to 1.8 mm (0.07 in.)
Top of window to water drain	1 mm (0.04 in.)

#### Tightening torques

Vent window to body (M6 nut)	6.2 Nm (55 in-lb)
------------------------------	-------------------

### Rear side window (Convertible



## models)

Refer to accompanying illustration when removing Convertible rear window or window motor.

- 1 - Window motor
- 2 - Window regulator assembly
- 3 - Window glass
- 4 - Insert
- 5 - Inner seal
- 6 - Outer seal

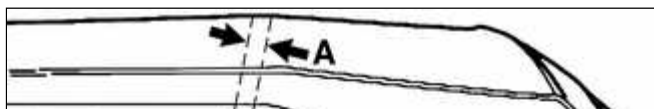
### **CAUTION!**

**Convertible rear window removal, installation and adjustment is complex. If the final adjustment is incorrect glass breakage may result. This job is best left to be done by a trained technician at a qualified BMW repair facility.**

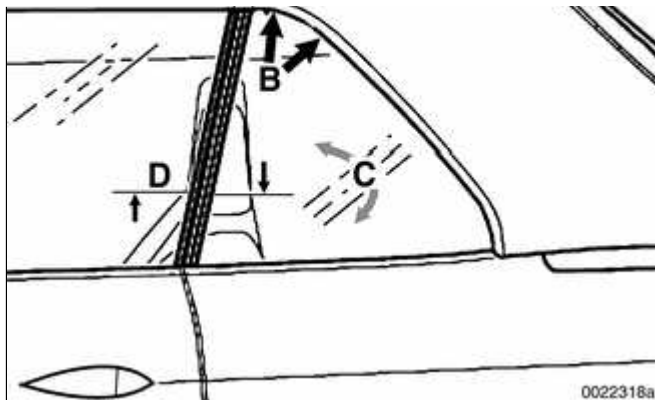
## Rear side window, adjusting (Convertible models)

The Convertible rear side window shares a version of "close with door shut" feature of the front window: It retracts slightly when the top is raised or lowered, then rises to seal against the folding top once the top is locked in place.

The procedure for setting Convertible rear side window adjustment, while similar in principle to front window adjustment, also depends on correct adjustment of the folding top and of the front window glass.



Refer to the accompanying illustration when adjusting Convertible side



window.

- ◆ Distance to front door window (longitudinal adjustment) (**A**) must be set by loosening Torx bolt through bore in outer shell of car, after removing exterior side trim strip.
- ◆ To set retraction depth (submersion) into top rubber seal (**B**), rear interior side trim panel must be removed to access adjustment screws.
- ◆ To set window centering (**C**), rear interior side trim panel must be removed to access adjustment screws.
- ◆ To set side window depth in relation to door window (**D**), rear interior side trim panel must be removed to access adjustment screws.

#### Convertible rear side window adjustments

<b>A</b>	23 - 25 mm (0.9 - 1.0 in.)
<b>B</b>	Window must run into convertible top seal when top is closed. With top open, glass must rest firmly against window seal.
<b>C</b>	With convertible top open, window must be centered in channel
<b>D</b>	up to 1 mm (0.04 in.) toward inside of car

Copyright © 2006 Robert Bentley, Inc. All rights reserved.

## Window Regulator Service

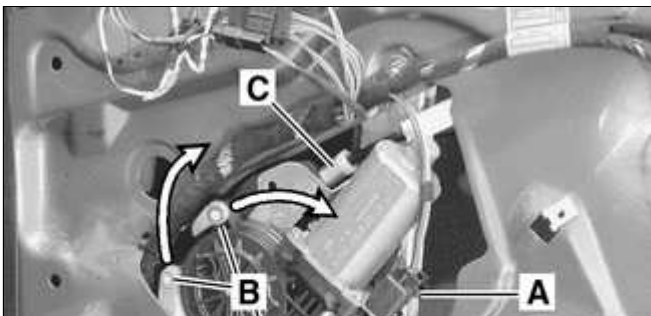
### **WARNING!**

- ♦ *E46 cars are fitted with side-impact airbags in the front doors. Some are equipped with airbags in the rear doors as well. When servicing the door windows on cars with side-impact airbags, always disconnect the negative (-) battery cable. See ⇒ [721 Airbag System \(SRS\)](#) for cautions and procedures relating to the airbag system.*
- ♦ *Prior to disconnecting the battery, read the battery disconnection cautions given at the front of this manual on page viii.*

## Window regulator motor

### **Note:**

*Because window operation is electronically controlled, a window motor does not have mechanical end positions. For this reason it can be removed and installed with the window in any position and does not need reinitialization.*



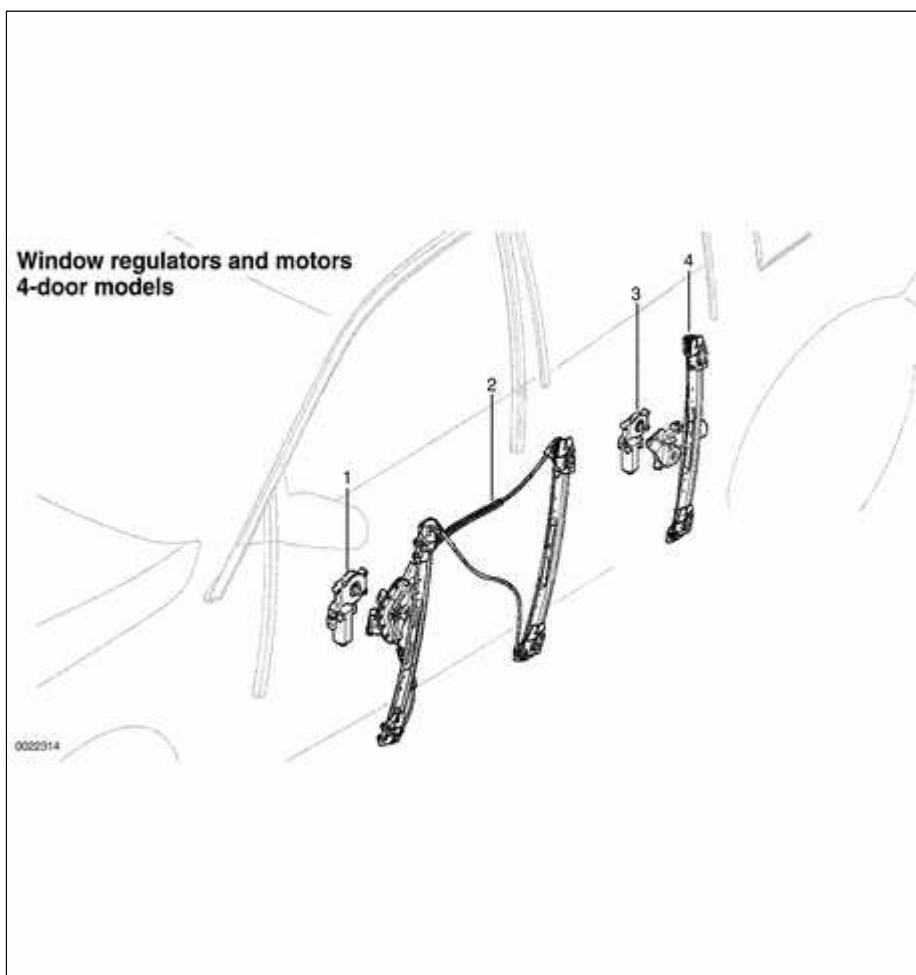
To remove motor:

- ♦ Remove inner door panel and vapor barrier
- ♦ Detach window motor electrical



harness connector (**A**).

- ◆ Remove motor mounting bolts (**B**).
- ◆ Twist motor slightly (**arrows**) to clear window regulator mounting tabs.
- When reinstalling:
  - ◆ Make sure window has not travelled fully downward.
  - ◆ Manipulate spring-loaded window control cable (**C**) to engage motor teeth to regulator gears.



### Window regulators and motors 4-door models, assembly

- 1 - Front window motor
- 2 - Front window regulator
- 3 - Rear window motor
- 4 - Rear window regulator

## Window regulator and motor, removing and installing (4-door models)

Sedan and Sport Wagon doors are similar. There are two window rails in each front window regulator, only one in the rear. Otherwise the front and rear regulators are similar.

### **Note:**

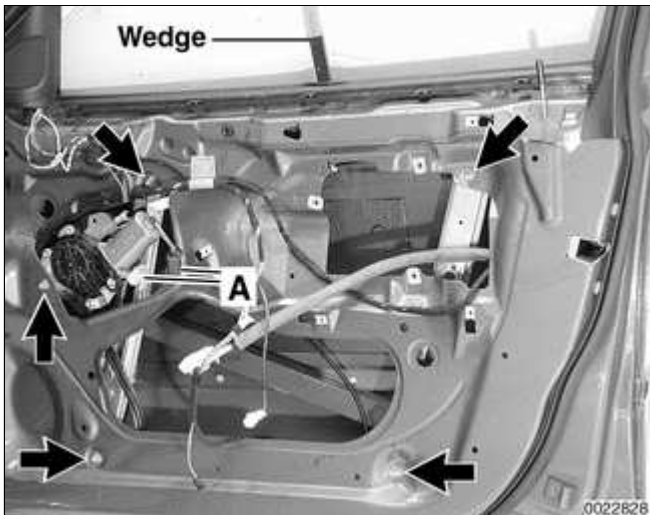
*BMW recommends removing the window regulator and motor as one unit, then separating the two on the bench.*

- Remove door panel as described in ⇒ [411 Doors](#).
- Disconnect battery negative cable and remove side impact air bag, if applicable. See ⇒ [721 Airbag System \(SRS\)](#).

### **WARNING!**

- ♦ ***E46 cars are fitted with side-impact airbags in the front doors. Some are equipped with airbags in the rear doors as well. When servicing the door windows on cars with side-impact airbags, always disconnect the negative (-) battery cable. See ⇒ [721 Airbag System \(SRS\)](#) for cautions and procedures relating to the airbag system.***
- ♦ ***Prior to disconnecting the battery, read the battery disconnection cautions given at the front of this manual on page viii.***

- Remove vapor barrier.
- Detach window from window regulator as described earlier. Do not remove window from door. Push window up and use wedge to hold in position.



- ◀ Detach window regulator from door:
  - ◆ Disconnect electrical harness connector (**A**) to power window motor.
  - ◆ Remove regulator mounting nuts (**arrows**).
- Remove window regulator through opening in bottom of door, checking for any wiring harnesses that might become snagged during removal.
- Installation is reverse of removal.
- ◆ Be sure to route wiring harnesses to keep them away from moving window mechanism. Use new wire ties as necessary.
- ◆ Adjust front window as described earlier.

#### Tightening torques

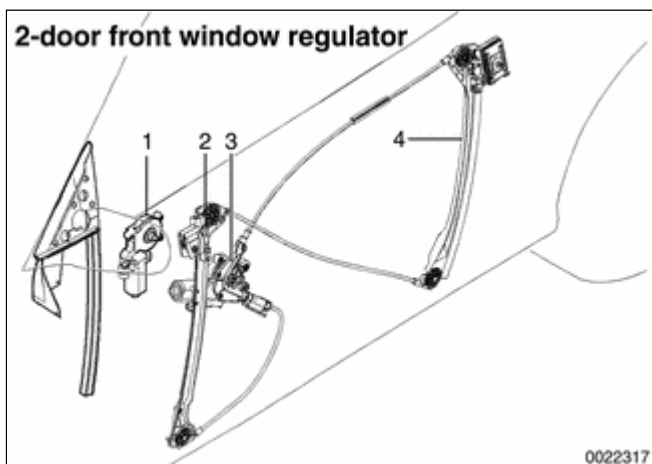
Window motor to regulator	5 Nm (4 ft-lb)
Window regulator to door	9 Nm (7 ft-lb)
Window to guide	8 Nm (71 in-lb)

## Door window regulator and motor, removing and installing, (2-door models)

- Remove door panel as described in ⇒ [411 Doors](#).
- Disconnect negative (-) cable from battery. Then remove airbag unit and vapor barrier from door. See ⇒ [721 Airbag System \(SRS\)](#).
- Remove door glass as described earlier.
- Lower window regulator completely.

### **WARNING!**

**Once the window regulator is positioned correctly, disconnect harness connector from power window motor to prevent accidental operation of the mechanism.**



Detach window regulator from door:

- 1 - Window motor
  - 2 - Front window rail
  - 3 - Window regulator mechanism
  - 4 - Rear window rail
- ◆ Disconnect electrical harness connector to power window motor.
  - ◆ Remove regulator mounting nuts.
  - Remove window regulator through opening in bottom of door, checking for any wiring harnesses that might become snagged during regulator



removal.

- Installation is reverse of removal, noting the following:
- ◆ Inspect rubber insulators. Replace if brittle.
- ◆ After inserting window regulator into door cavity, install and tighten down mounting nuts on rear window rail.
- ◆ Install front window rail mounting nuts but do not tighten.
- ◆ Install glass. See ⇒ [Front door window, removing and installing \(2-door models\)](#)
- ◆ Tighten upper nut of front rail.
- ◆ Lower window glass fully.
- ◆ Tighten front rail lower nuts.
- ◆ Adjust window. See ⇒ [Front door window, adjusting \(2-door models\)](#).

Tightening torques	
Window motor to regulator	5 Nm (4 ft-lb)
Window regulator to door	9 Nm (7 ft-lb)
Window to guide	8 Nm (71 in-lb)

Copyright © 2006 Robert Bentley, Inc. All rights reserved.

## General

This repair group covers interior trim removal and installation procedures.

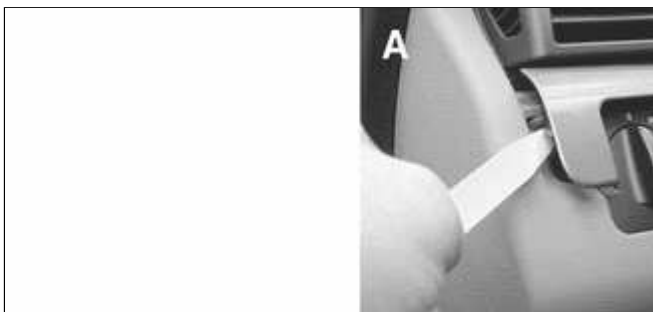
Refer to the following repair groups for additional information:

- ◆ ⇒ [250 Gearshift Linkage](#)
- ◆ ⇒ [411 Doors](#) (interior door panels)
- ◆ ⇒ [612 Switches](#)
- ◆ ⇒ [620 Instruments](#)
- ◆ ⇒ [640 Heating and Air Conditioning](#) (IHKA control panel)
- ◆ ⇒ [650 Radio](#)
- ◆ ⇒ [721 Airbag System \(SRS\)](#)

## Special tools

Use plastic prying tools or wrap the screwdriver tip with tape to avoid marring interior trim.

- ✦ Plastic prying tool BMW 00 9 321



## Interior trim repairs

Interior trim and finish panels are clipped or screwed into place. Many of the trim retaining clips are designed to be used only once. When removing trim that is held in place with clips, it is a good idea to have spares on hand before beginning the job.

**Note:**

*The BMW E46 is equipped with SRS airbags mounted in the steering wheel, the dashboard on the passenger side, the front doors, the A-pillars, and as an option in rear doors on four door models. See warnings and cautions on below and in ⇒ [721 Airbag System \(SRS\)](#).*

**WARNING!**

- ♦ ***Special precautions must be observed when servicing the BMW Supplemental Restraint System (SRS). Serious injury may result if system service is attempted by persons unfamiliar with the BMW SRS and its approved service procedures. BMW specifies that all inspection and service should be performed by an authorized BMW dealer.***
- ♦ ***Before performing any work involving airbags, disconnect the negative (-) battery cable. See ⇒ [721 Airbag System \(SRS\)](#).***
- ♦ ***Airbags contain a back-up power supply within the SRS control module. A 5 second discharge period should be allowed after the battery cable has been disconnected.***

**CAUTION!**

- ♦ ***When working on electrical switches or lights, always disconnect the negative (-) cable from the battery and insulate the cable end to prevent accidental reconnection.***
- ♦ ***Prior to disconnecting the battery, read the battery disconnection cautions given at the front of this manual on page viii.***
- ♦ ***To prevent marring the trim when working on interior components, work with plastic prying tools or wrap the tips of screwdrivers and pliers with tape before prying out switches or electrical accessories.***

Copyright © 2006 Robert Bentley, Inc. All rights reserved.