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Window replacing

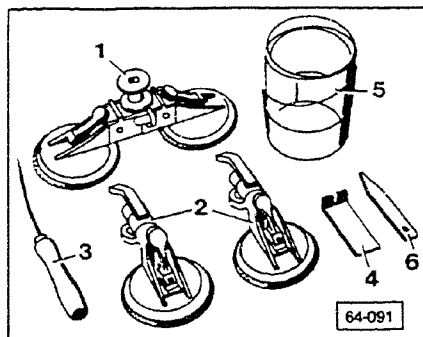
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★ **NEW INFORMATION** since last filming

Glass, Window Regulators



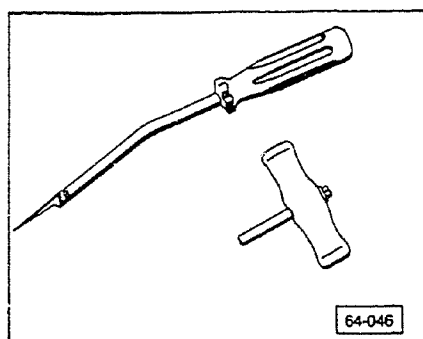
Window replacing, general information

To replace windshield, rear window or side windows, the following tools and materials are required.

Tool kit VW 1474

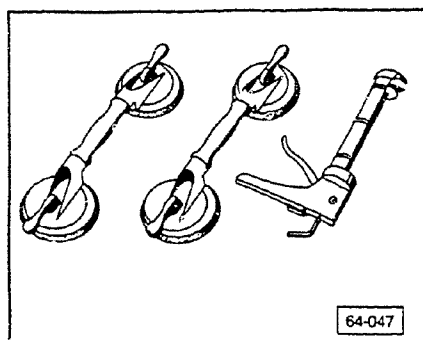
- 1 — Reel
- 2 — Relay roller with holder
- 3 — Awl
- 4 — Guide rail
- 5 — Protective sheeting
- 6 — Wedge

Use protective sheeting **VW 1474/7** to protect instrument panel.



Tool kit VW 1351

- for removing broken windshields, rear windows and **broken** or **unbroken** side windows



- caulking gun
- double suction pad (only for rear window, windshield)
- protective goggles
- utility knife
- protective gloves (leather)
- cloth or duct tape

Glass, Window Regulators

CAUTION

Part numbers are listed for reference only. Always consult with the Parts Department for latest information.

Parts required

Description	Part Number	Quantity
adjusting wedges for windshield	893 845 631	2
adjusting wedges for rear window	893 845 631A	2
cutting wire 50 m (150 ft) roll	443 845 955	1
adhesive kit (vehicles with airbag)	D 004 300 03	1
adhesive kit (vehicles without airbag)	D 004 300 04	1
Mixing rod (For use with adhesive kit D 004 300 04)	D 009 700	1

Hardening of adhesive sealing compound

Vehicles without airbag

- vehicle **must** stand at least one hour, at room temperature of 20°C (68°F) and relative humidity of 65-70% before allowing vehicle to be driven

Vehicles with airbag

- vehicle must stand at least three hours, at room temperature of 20°C (68°F) and relative humidity of 65-70% before allowing vehicle to be driven
- keeping the sealed/bonded area wet forms a skin that promotes hardening process

CAUTION

When using any cleaning agent, follow all cautions and warnings listed on the containers.

CAUTION

While adhesive sealant is hardening, avoid putting pressure on glass from inside car when cleaning around glass.

Glass, Window Regulators

Surplus bonding/sealing compound, removing

CAUTION

When using any cleaning agent, follow all cautions and warnings listed on the containers.

- first use dry cloth to clean off painted areas
- excess adhesive sealing compound can be removed using a cleaning solvent such as supplied in repair kit
 - do not use cleaners which contain alcohol
- to clean plastic trim, let adhesive sealing compound harden two to three hours, then scrape off excess with plastic wedge

Sealing leaks

CAUTION

While adhesive sealant is hardening, avoid putting pressure on glass from inside car when cleaning around glass.

- water test window area before reinstalling moldings, trim or lip or rubber molding
- dry area around leaks with compressed air and clean
- apply adhesive sealant from outside to leak area between glass and flange then smooth over
- retest area for water leaks

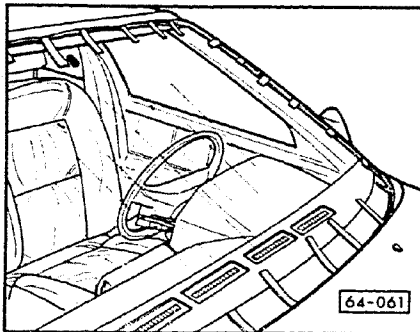
Note

The small adhesive sealant cartridge
D 009 100 03 is recommended for resealing.

Glass, Window Regulators

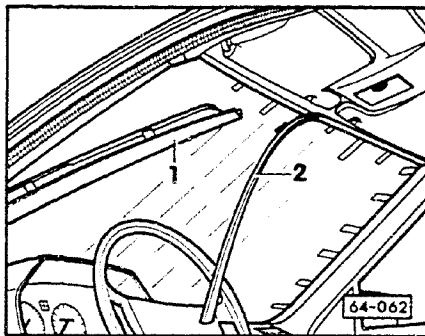
WARNING

Always wear protective goggles and leather gloves when removing and installing windows.



Windshield, removing

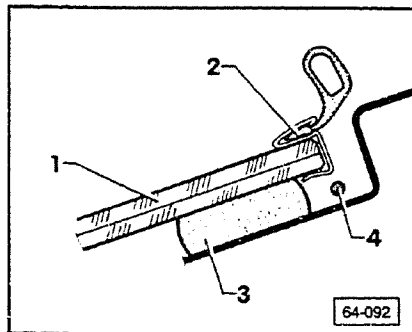
- disconnect wiring for front antenna
- pry up lip of rubber molding with plastic wedge and stick lip to windshield and adhesive tape (as shown)
- remove windshield wipers



- remove inner rear-view mirror
- pry trim 1 out of clips at A-pillar
- pry beading 2 from headliner
- cut off 7.5 m (24 ft) cutting wire
- locate center of cutting wire
- on the outside, starting at top center of windshield, press cutting wire under rubber molding so wire runs completely around perimeter of windshield ending at bottom center

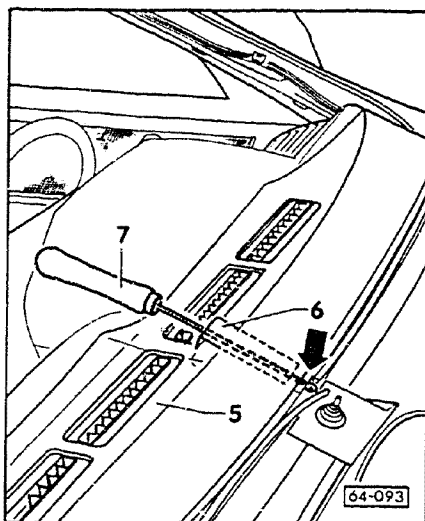
CAUTION

Do not bend or twist wire, otherwise wire will break when under tension.



- 1 — windshield
- 2 — molding with rubber lip
- 3 — adhesive sealant
- 4 — cutting wire

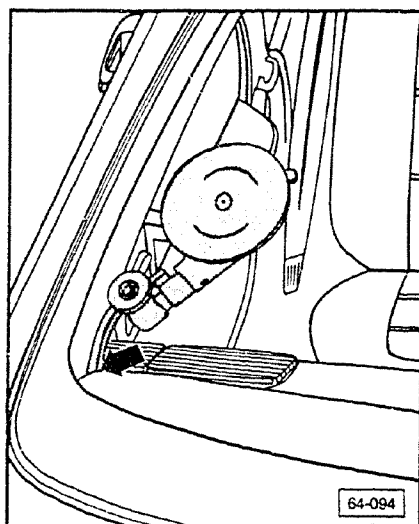
Glass, Window Regulators



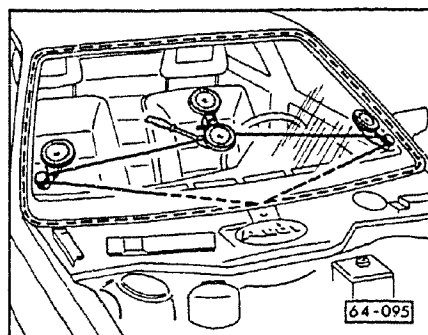
- slide plastic foil 5 between windshield and instrument panel
- slide guide rail 6 between windshield and instrument panel to base of windshield (arrow)
- push awl 7 through adhesive sealant until awl eye is visible from outside
- turn awl slightly and thread in one end of wire
- bend over wire and pull through to inside of vehicle
- do same with other end of wire
- remove guide rail

CAUTION

Ends of wire must be in adhesive sealant as close together as possible, but must not overlap, otherwise glass will break or wire will bend or twist.



- attach relay roller with holder (as shown) into left and right lower corner of windshield
 - holder must support on instrument panel (arrow)

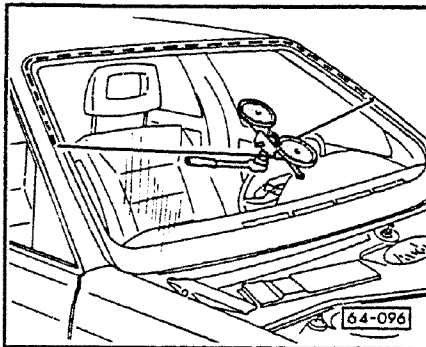


- attach reel (as shown) to center of windshield
- guide wire up from base of windshield and around relay rollers then thread ends into reel
- slightly tension cutting wire with reel and ratchet
- check that wire is placed correctly around corners and molding before cutting

Glass, Window Regulators

CAUTION

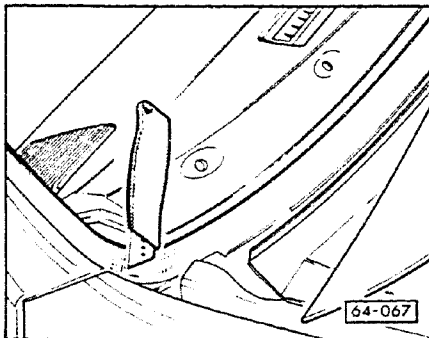
Depending on extent of paint damage in removing windshield, touch-up or repaint as required.



- start cutting and continue cutting operation until relay rollers are clear
- remove relay rollers
- cut out windshield completely

Note

If cutting wire breaks several times (wire gets caught on the windshield flange) and can no longer be fitted on the reel (wire too short), cut remaining area with tool VW 1351 (pulling handle and mounting).

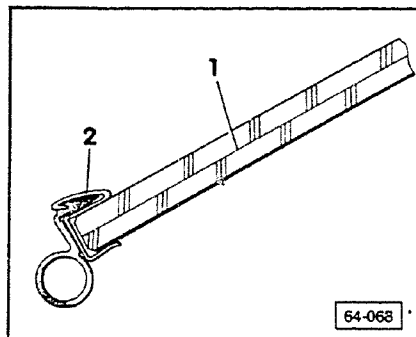


Windshield, installing

If windshield is to be reused, cut away enough old adhesive sealant with utility knife around glass and body flange to give smooth uniform surface.

Note

Area must be clean and free of grease. It is not necessary to remove all old adhesive sealant compound.

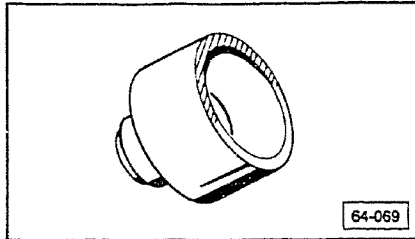


- clean edge of glass approximately 50 mm (2 in.) wide with cleaning solvent and wipe dry
- attach molding with rubber lip all around windshield
 - 1 — windshield
 - 2 — molding with rubber lip

Glass, Window Regulators

WARNING

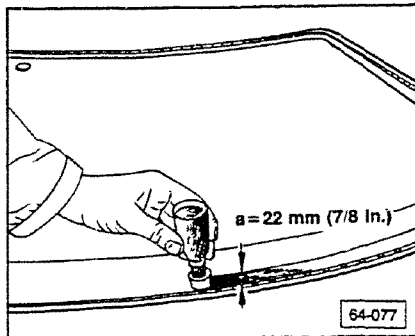
Adhesive used in bonded window glass installations, original or replacement, may give off toxic fumes when heated. Read container labels. **Ensure adequate ventilation.**



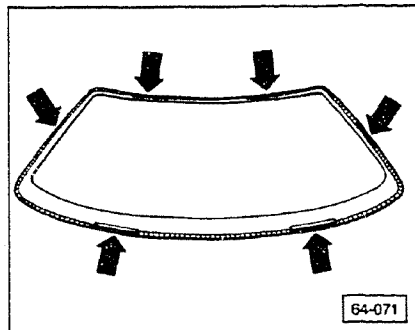
Note

Ceramic black-out band around windshield is not primer. Before applying adhesive sealant prime this area with primer from adhesive kit.

- cut applicator head
- insert felt into applicator head
- thoroughly shake bottle of primer (approximately 30 seconds) and fill applicator bottle
- attach application head onto bottle



- apply primer a = 22 mm (7/8 in.) wide evenly all around edge of windshield in one continuous operation. Ensure applicator head is always completely saturated
 - drying time approximately 10 minutes

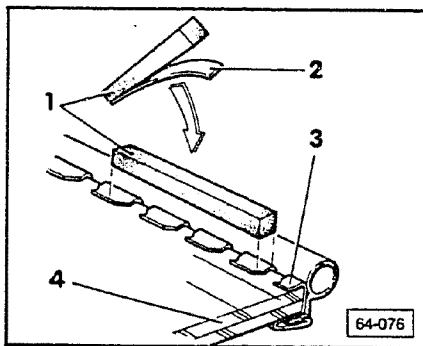


- attach six spacers, Part Number 443 845 237B onto molding (arrows)

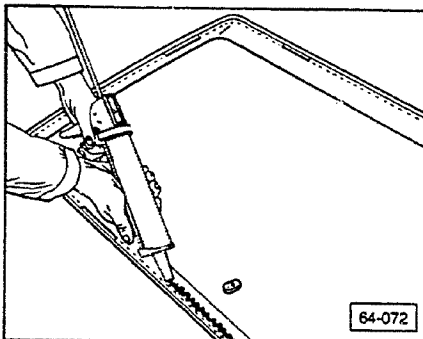
CAUTION

Part numbers are listed for reference only. Always consult with the Parts Department for latest information.

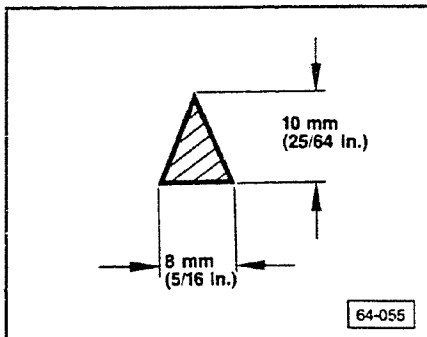
Glass, Window Regulators



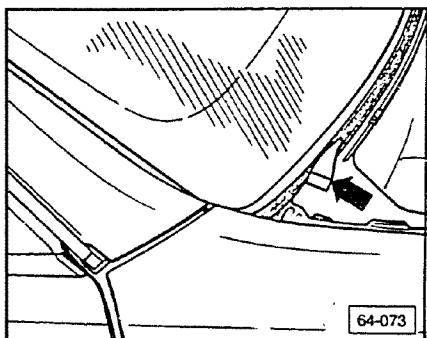
- 1 — spacer beading
- 2 — protection tape (pull off before using beading)
- 3 — molding
- 4 — windshield



- apply adhesive sealant to windshield after cartridge was warmed up for 30 minutes in 40°-60°C (104°-140°F) water

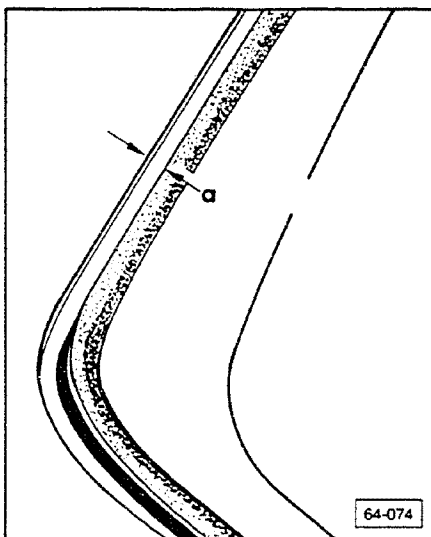


- adhesive sealant should be applied in shape shown, which is determined by nozzle opening and rate of application

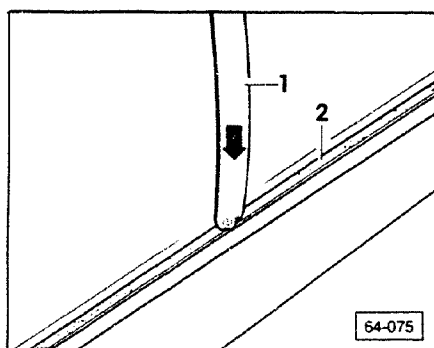


- place windshield into position using two double suction pad holders
- insert adjusting wedges (arrow) into corners of windshield (as shown)

Glass, Window Regulators



- align windshield gap **a** at both sides
- $$a = 5.0 \begin{matrix} +2.0 \\ -1.5 \end{matrix} \text{ mm } (13/64 \begin{matrix} +5/64 \\ -1/16 \end{matrix} \text{ in.})$$



- use plastic wedge 1 to press lip 2 of molding into gap between windshield and body
- re-connect antenna
- reinstall rear-view mirror
- reinstall wipers

Note

Vehicles without airbag

Do not remove adjustment wedges before one hour.

Vehicles with airbag

Do not remove adjustment wedges before three hours.

CAUTION

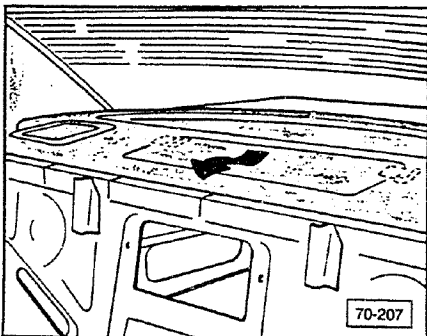
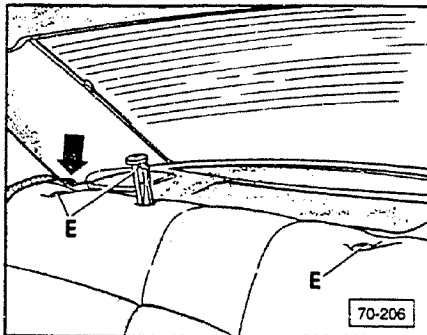
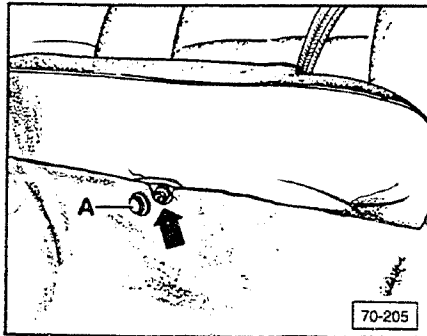
Vehicles **with** airbags **must** stand at least three hours, at room temperature of 20°C (68°F) and a relative humidity of 65-70% before allowing vehicle to be driven.

Vehicles **without** airbags **must** stand for at least one hour.

Glass, Window Regulators

WARNING

Wear protective goggles and leather gloves when removing and installing glass.



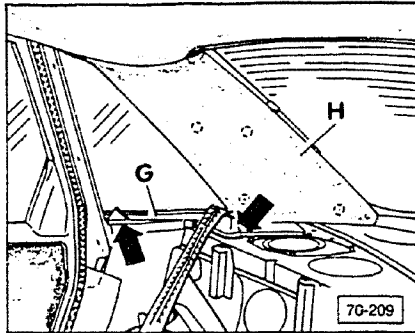
Rear window, removing

Note

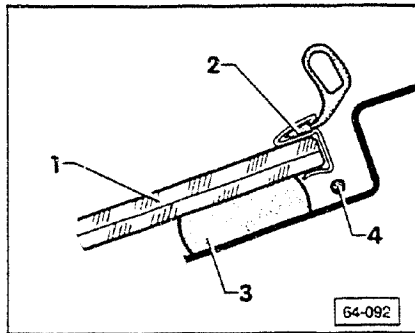
It is not necessary to remove rear lid.

- remove high mounted brake light assembly
- unplug, unscrew connectors for heatable glass and rear window antenna
- tape connections out of way (in center of glass)
- pry out caps **A** on left and right side and remove Phillip screws (**arrow**) from rear bench seat
- lift seat bench slightly and pull out toward front
- remove head restraints
- push guides **E** out from luggage compartment using screwdriver
- press back-rest downward and detach from retainers on heel board
- press rear shelf down slightly over cut-out area (**arrow**) and remove toward front

Glass, Window Regulators



- remove screws in cover **G** at both sides (**arrows**)
- twist front of cover 90° (1/4 turn) out of retainers and pull out
- pull out pillar trim **H** at both sides slightly. Use trim removal tool to pry out clips (marked with circles)

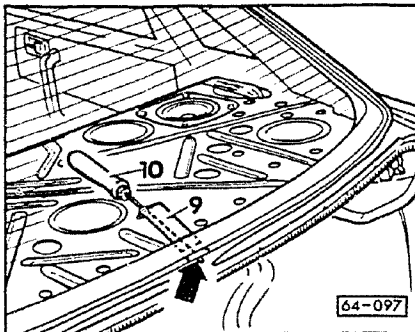


- 1 — rear window
- 2 — molding with rubber lip
- 3 — adhesive sealant compound
- 4 — cutting wire

- pry up rubber lip of molding all around rear window
- cut off 7 m (23 ft) cutting wire
- find center of cutting wire
- starting at top center of glass, press cutting wire under rubber molding so wire runs completely around perimeter of window ending at bottom center

Note

Do not bend or twist wire, otherwise wire will break when under tension.

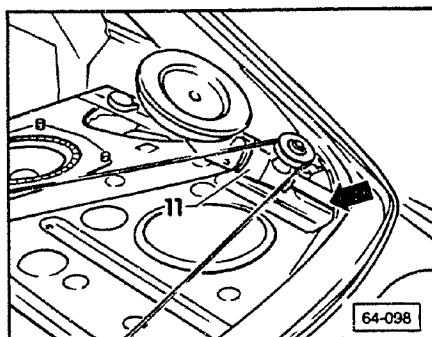


- slide guide rail **9** between rear window and body to base of window (**arrow**)
- push awl **10** through adhesive sealant until awl eye is visible from outside
- turn awl slightly and thread in one end of wire
- bend over wire and pull through to inside of vehicle
- do same with other end of wire
- remove guide rail

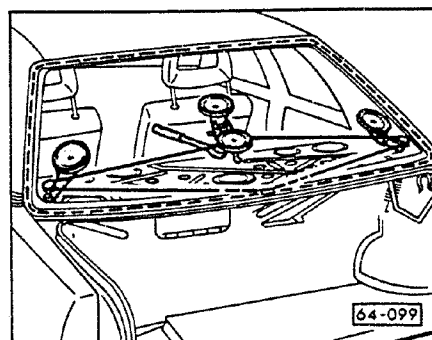
CAUTION

Ends of wire must be in adhesive sealant as close as possible together, but must not overlap, otherwise glass will break or wire will bend and/or twist.

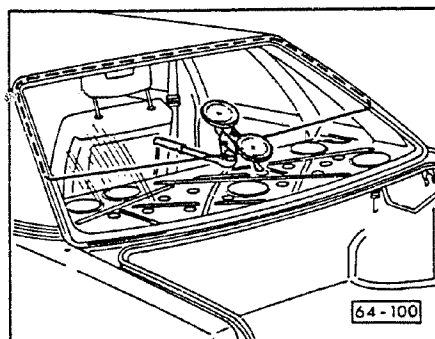
Glass, Window Regulators



- attach relay roller with holder 11 into left and right lower corner of glass (as shown)
 - holder must support on rear panel



- attach reel (as shown) to center of glass
- guide wire up from base of glass and around relay rollers
- thread ends into reel
- slightly tension cutting wire with reel and ratchet
- check that wire is correctly around corners and molding before cutting



- start cutting and continue cutting operation until relay rollers are clear
- remove relay rollers
- continue to cut out rear glass completely

Note

Rear adjustment wedges can be removed after four hours.

Glass, Window Regulators

Rear window, installing

- reinstall in same manner as for the windshield, page 64.6, noting **CAUTION**:

CAUTION

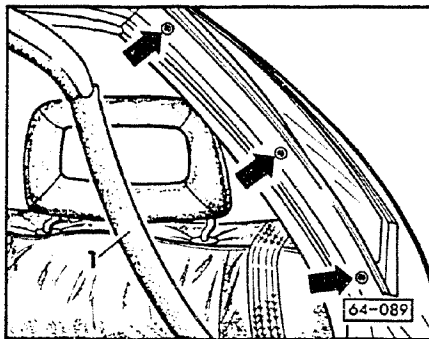
The distance between the adhesive and the bus (heated rear window and window aerial) should be at least 10 mm (25/64 in.).

When window is installed, the spacing over the entire length must be at least 3 mm (1/8 in.).

If the adhesive makes contact with the bus, there will be no radio reception with the window aerial.

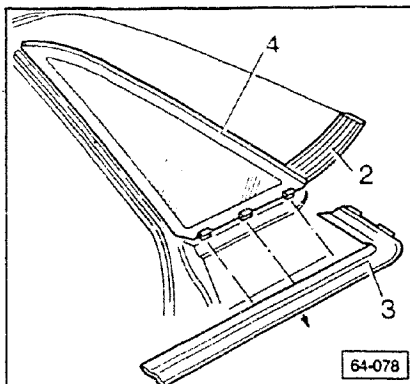
WARNING

Always wear protective goggles and leather gloves when removing and installing windows.



Side window, removing

- pull off inner door seal 1 at rear
- drill out 3 rivets (arrows) of cover in pillar
- push remaining part of rivet into pillar
- remove pillar cover



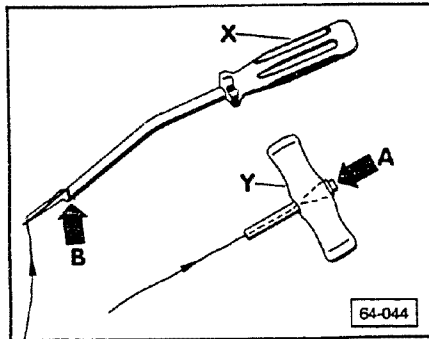
- pry off roof pillar trim 2
- pry off trim molding 3
- pry off door-gap cover 4 and discard.
 - Cover cannot be re-used

Note

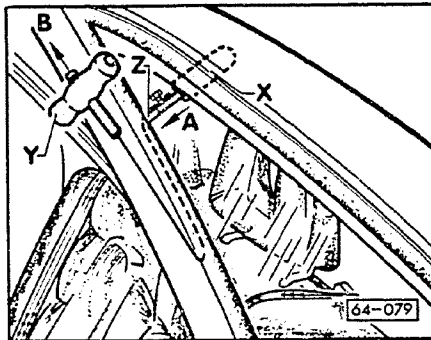
When cutting out window, do not use sawing action with wire, otherwise wire will heat up very quickly and break.

Also, do not kink or twist cutting wire.

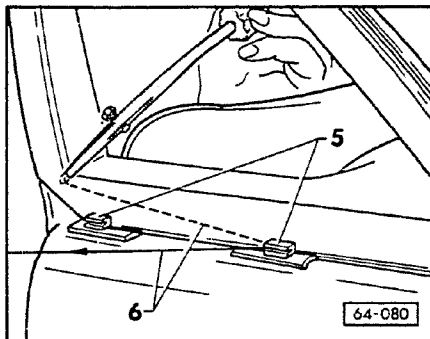
Glass, Windows Regulators



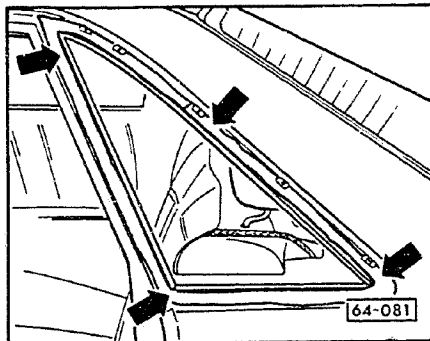
- working from interior of vehicle, use pliers to push cutting wire approximately 350-400 mm (14-16 in.) through adhesive sealant between window and body flange
- secure cutting wire with the wire ends at X and Y of the cutting tools
 - part X goes in the interior of the vehicle
 - part Y goes on the outside of the vehicle
- thread wire in direction of **arrow, A** clamp on, or **B** screw on



- insert cutting tool X into adhesive sealant and secure
- using handle Y, pull wire evenly in direction of **arrow B** until retaining lug is reached
- pull wire with cutting tool X inwards, insert into adhesive sealant approximately 100-200 mm (4-6 in.) further on and secure
- continue pulling until next retaining lug is reached and then repeat procedure until completely cut out



- when cutting near lower clips 5, pull wire 6 underneath clips. Do not remove clips
- continue cutting adhesive sealant until next anchorage point is reached
- continue this procedure until tool VW 1351 has worked entirely around window



Side window, installing

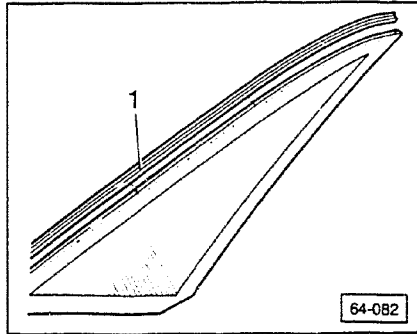
If an unbroken window is to be reused, use a utility knife to cut any remaining adhesive sealant on the glass and metal flange back until smooth.

- do not remove completely

The remaining sealant acts as a base for application of new adhesive sealant. Keep surfaces free of dirt and grease.

- clean glass all around edges approximately 50 mm (2 in.) wide with cleaning solvent and wipe dry

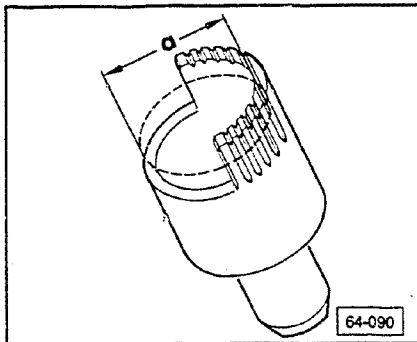
Glass, Window Regulators



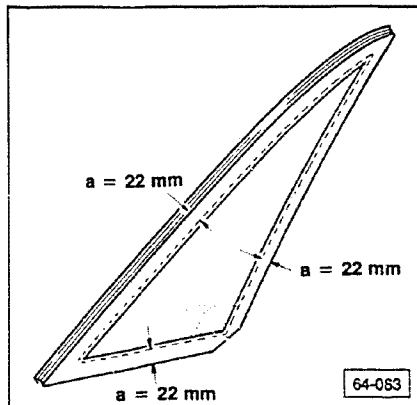
- fit new door gap cover 1 to glass

Note

Ceramic black-out band around windshield is not primer. Before applying adhesive sealant prime this area with primer from adhesive kit.

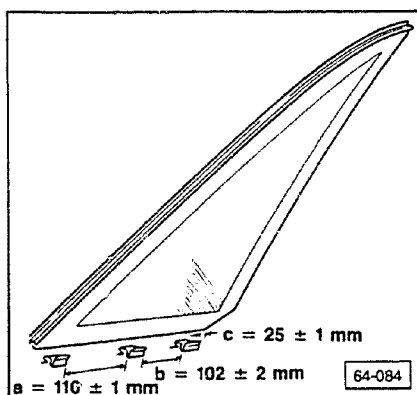


- cut applicator head
 - $a = 22 \text{ mm}$ (7/8 in.)
- insert felt into applicator head
- thoroughly shake bottle of primer (approximately 30 seconds) and fill applicator bottle
- attach application head onto bottle



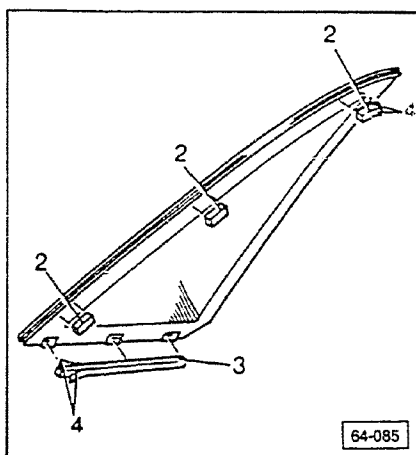
- apply primer $a = 22 \text{ mm}$ (25/32 in.) wide evenly all around edge of glass in one continuous operation. Ensure applicator head is always completely saturated.
 - drying time approximately 10 minutes

Glass, Window Regulators



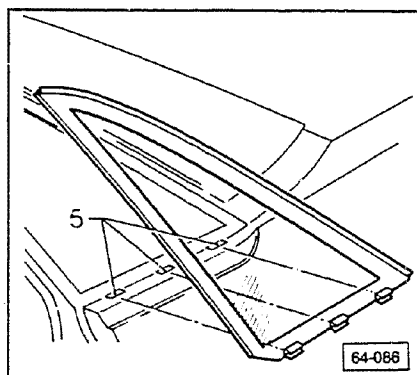
- attach molding retaining clips to window as shown

- $a = 110 \pm 1 \text{ mm}$ (4-19/64 $\pm$ 3/64 in.)
- $b = 102 \pm 2 \text{ mm}$ (4 $\pm$ 5/64 in.)
- $c = 25 \pm 1 \text{ mm}$ (1 $\pm$ 3/64 in.)



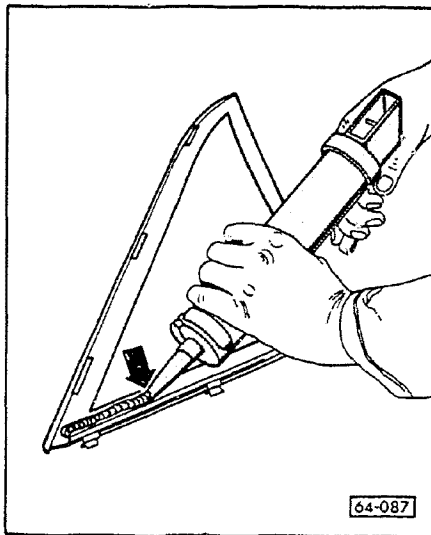
- stick beading-spacer to glass

- 2 — upper spacer
- 3 — lower spacer
- 4 — protection tape (remove before using)

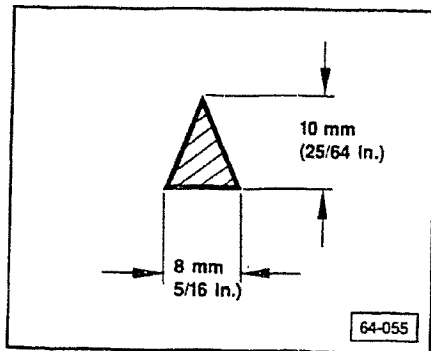


- place adhesive strip 5 in position underneath clips

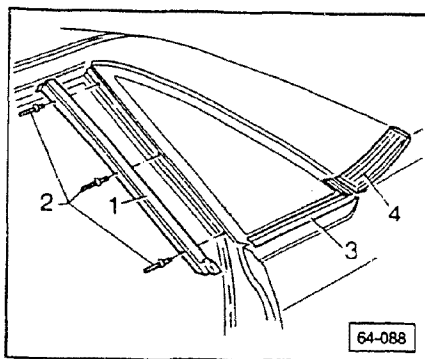
Glass, Window Regulators



- apply adhesive sealant around window



- adhesive sealant should be applied in shape shown, which is determined by nozzle opening and rate of application



- install window and position in body
- check position of door gap cover 1
- install 3 pop rivets (Part Number **N 909.244.01**) 2
- clip in molding at rear 3
- clip in pillar trim 4

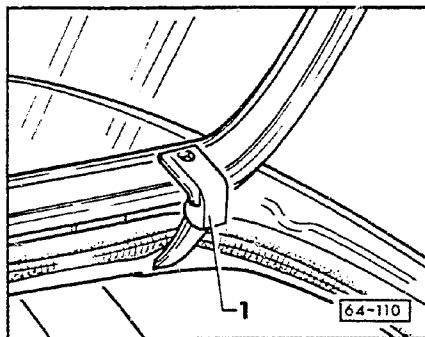
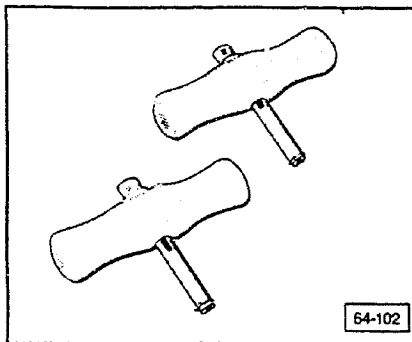
Glass, Window Regulators

WARNING

Always wear protective goggles and leather gloves when removing and installing windows.

Rear window, removing

Bonded rear window installed using conventional adhesive sealing material. Undamaged rear windows that have been cut out may be reused.



Tools required

The following additional tools are required for replacement of rear window:

- two cutting wire grips (one grip supplied in tool kit **VW 1351**)

or:

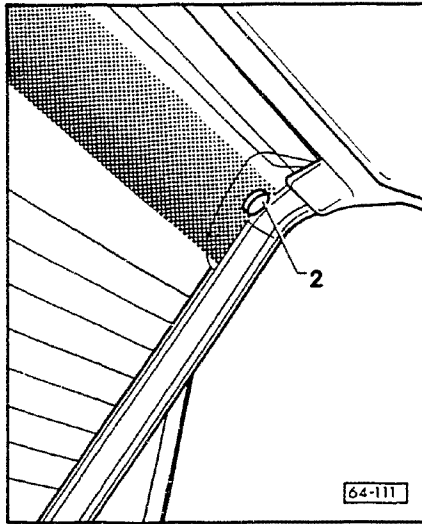
use one grip from tool kit **VW 1351** and substitute a pair of vise grips for second tool

- remove wiring covers **1**
- pull wire off connection for heated rear window

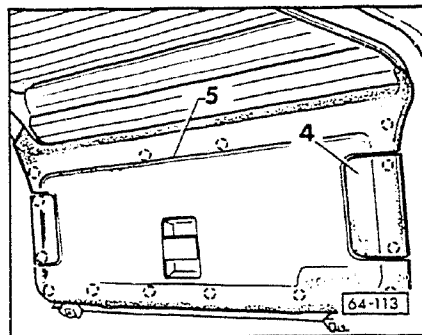
CAUTION

Mask rear window opening to prevent damaging paintwork with cutting wire.

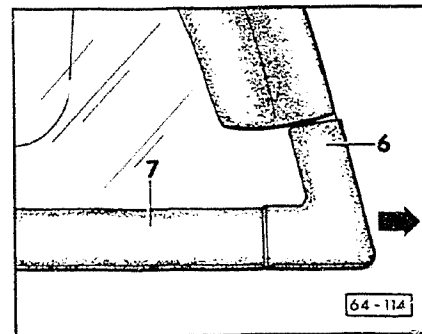
Glass, Window Regulators



- take off cap 2, remove spoiler securing screw and washer
- remove rear wiper arm
- pull hose off rear window washer spray nozzle

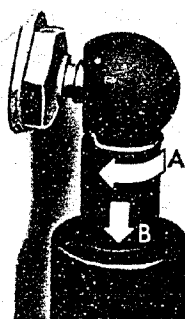


- unfasten clips and remove tail light cluster covers 4
- unfasten trim panel clips (clip locations indicated with dotted lines) and remove trim panel 5



- pull off corner sections 6 in direction of **arrow**
- using a small screwdriver, pry off trim molding 7

Glass, Window Regulators



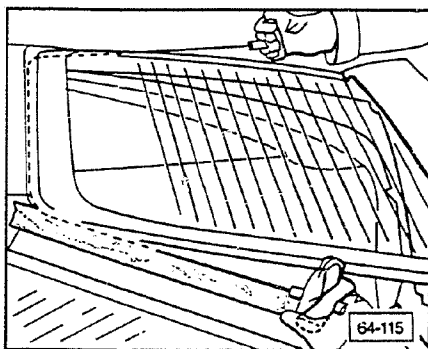
55-097

- remove gas-filled strut to prevent rear lid from opening suddenly when window is being removed (see Repair Group 55)

Note

The rear lid should be held open (using a block of wood or equivalent) while the window is being cut out. This will ensure that a clearance exists between the cutting wire and the vehicle side panels.

- cut off 2 m (6 ft) of cutting wire and thread into grips



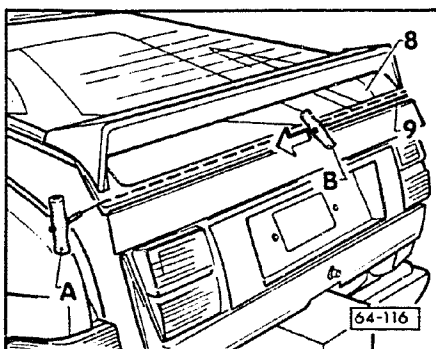
64-115

- slip cutting wire between rear lid frame and rear window at upper edge
- using fairly rapid sawing movements (minimum 2 sawing strokes per second) separate window from rear lid frame

Note

The cutting wire should form an angle of approximately 30 - 40° to the rear window and be pulled along very close to the glass itself.

Do not damage trim molding.



64-116

- in lower cutting area, pull wire along between rear window 8 and molding 9. Hold grip A still and pull grip B only, in direction of arrow

Note

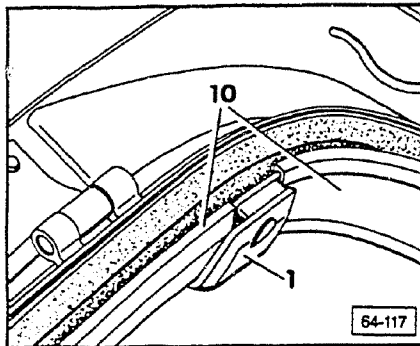
Pull grip B along as close to the window as possible.

- remove rear window glass
- pull adhesive cord off rear lid
- remove surplus adhesive, using a narrow flat scraper or emery cloth

Note

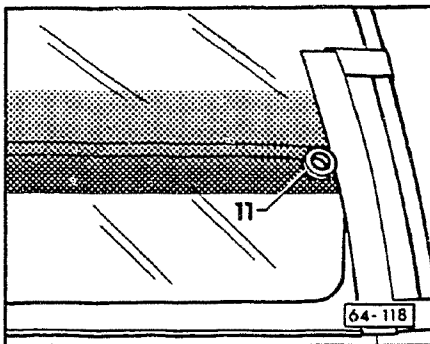
The adhesive cord primer must be completely removed. Adhesive remaining in this area should not have a smooth surface.

If the area is cleaned down to bare metal, it must be freshly primed before glass installation.



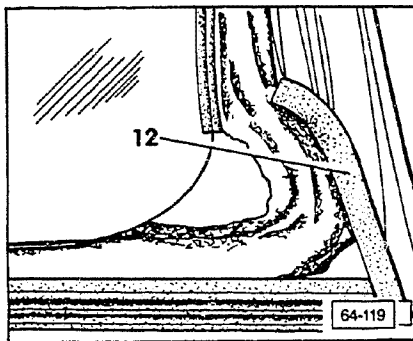
Rear window, installing

- reattach gas-filled strut and close rear lid
- carefully fit trim molding to rear window
- reinstall wiring covers 1
- check frame trim 10 for damage and replace if necessary



- insert rubber grommet 11 in rear window
- mount the spoiler and mark the adhesion area with tape
- clean surfaces to be bonded
 - spoiler contact area
 - inner ceramic coating on glass
 - rear lid frame (rub dry with a lint free cloth)

Glass, Window Regulators



CAUTION

Part numbers are listed for reference only. Always consult with the Parts Department for latest information.

- stick on sealing strips 12, Part Number 445 827 139, after first removing protective foil

Ceramic black-out band around windshield is not primer. Before applying adhesive sealant prime this area with primer from adhesive kit.

- cut applicator head
- insert felt into applicator head
- thoroughly shake bottle of primer (approximately 30 seconds) and fill applicator bottle
- attach application head onto bottle
- apply primer evenly all around edge of windshield in one continuous operation
 - width of primer = width of ceramic coating

Ensure applicator head is always completely saturated.

- drying time approximately 10 minutes

Glass, Window Regulators

Note

Do not retouch strip of primer until it has dried completely.

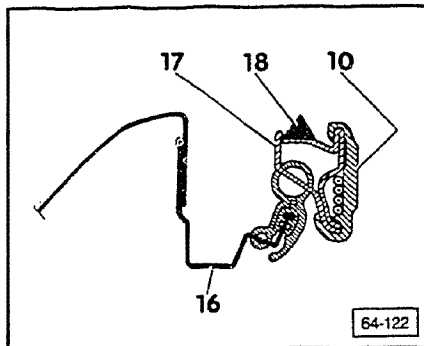
- prime spoiler adhesion area on rear window and also adhesion channel in spoiler
 - drying time = 10 minutes minimum

Note

If primer strip has to be touched up, primer already applied must first be allowed to dry completely.

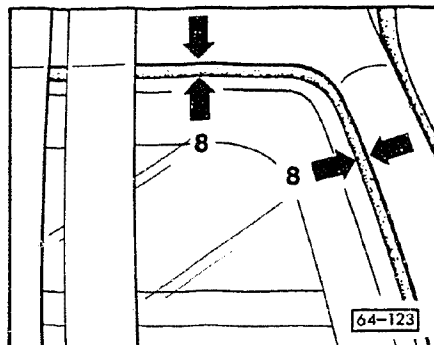
CAUTION

Do not touch primer. Leaks may be caused if primer is touched at any time during this process.



CAUTION

After placing rear window in position, it must be held with tape for a minimum of 12 hours. During this time the vehicle must **NOT** be moved.



- reinstall spoiler (see Repair Group 66)
- apply adhesive sealing material to outer surfaces of adhesion channel in rear lid frame
 - 10 — frame trim
 - 16 — side panel
 - 17 — rear lid frame
 - 18 — adhesive bead
 - bead cross section:
 - width = 12 mm (1/2 in.)
 - height = 12 mm (1/2 in.)

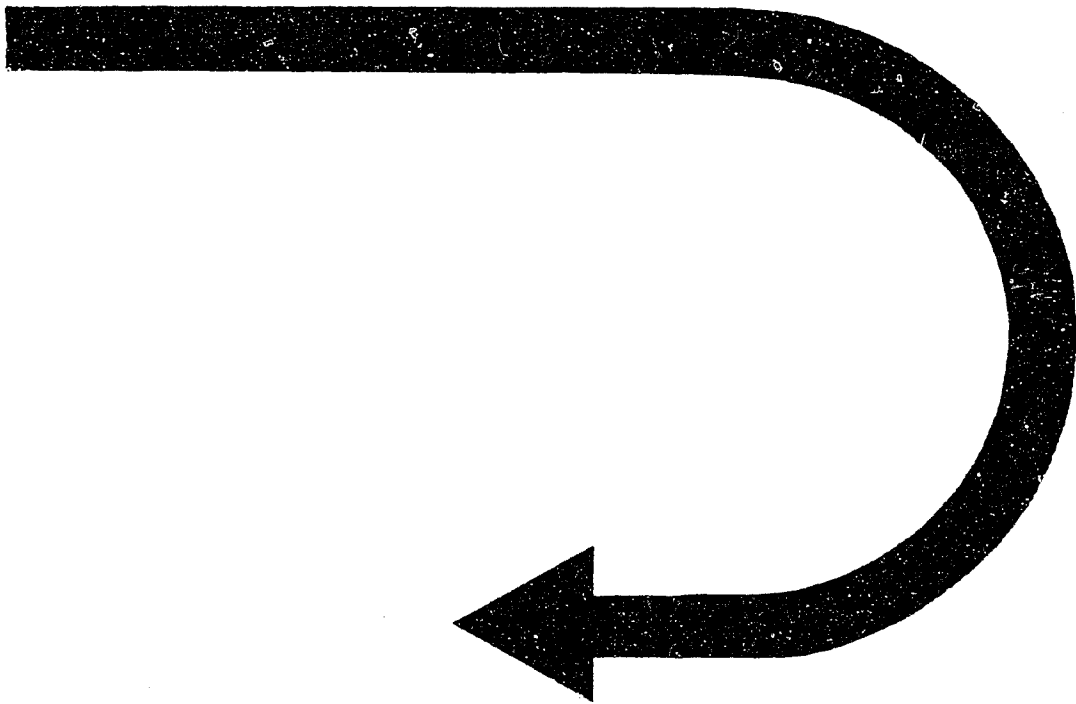
Note

In the rear lid frame corners, apply an adhesive bead approximately 14 mm (9/16 in.) wide and 14 mm (9/16 in.) high.

The cross section is determined by the nozzle opening and the rate of application.

- using double suction pad holder, place rear window onto frame
- align rear window and use strips of tape, approximately 60 mm (2 1/2 in.) wide, to hold window in place
 - gap at top and sides = 8 ± 1 mm (5/16 $\pm$ 3/64 in.)

CONTINUED IN THE
BEGINNING OF NEXT ROW



Glass, Window Regulators

Note

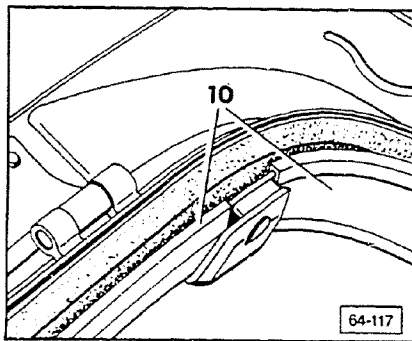
If absolutely essential, the vehicle may be put back into operation after 1 hour. This must be done only after the following conditions are fulfilled:

- tape rear window all around to body/lid with textile (cloth) reinforced adhesive tape
 - tape should be at least 40 mm (1.57 in.) wide
- remove tape after 12 hours

Note

Once 12 hours have elapsed, the tape can be removed.

- reinstall interior tailgate trim
- reconnect heated rear window harness
- reinstall rear window wiper and washer hose
- reinstall trim molding and corner sections



CAUTION

Do not pull out frame trim **10** or the rear window will also have to be removed. The frame maintains the correct distance between rear lid frame and rear window.

Rear window, resealing

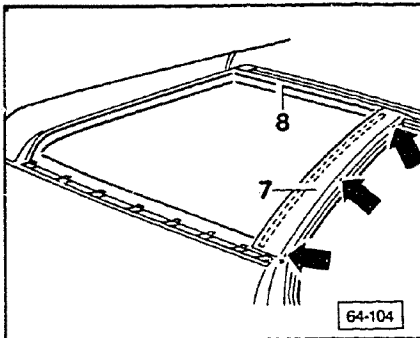
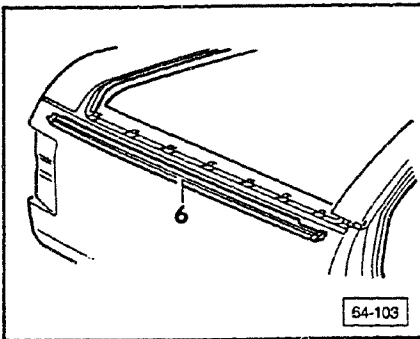
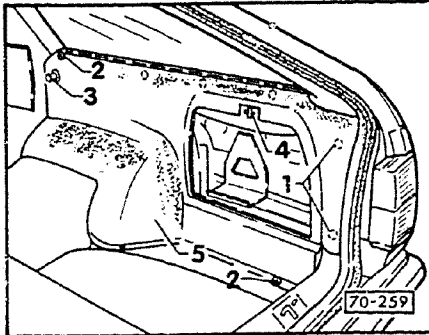
Note

In the lower area, the rear window can only be sealed from inside the luggage compartment, the sides and top must be sealed from outside.

Glass, Window Regulators

WARNING

Always wear protective goggles and leather gloves when removing and installing windows.



Side window, removing

- remove folding cover for rear compartment
- remove phillips screws 1 (screws are countersunk into trim)
- loosen nut on seat locking pin 3 and unscrew pin
- remove door in trim panel and pry out latch clip 4
- unclip side trim panel 5 (clips 2 are shown dotted)
- remove screws at rear attachment of cover guide
- remove trim panel 4
- remove screws at front attachment of cover guide and remove guide
- drill out rivets and remove molding at lower edge of window
- pull off molding between side window and headliner
- pry trim molding 6 off

Note

Always reinstall same number of clips when replacing trim molding.

- drill out rivets (arrows)
- lift cover slightly off C-pillar 7 and cut through adhesive
- remove C-pillar cover
- pull gap cover molding 8 off starting at C-pillar

CAUTION

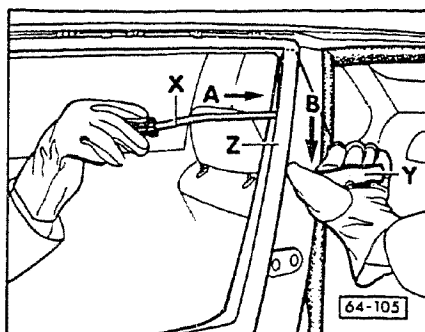
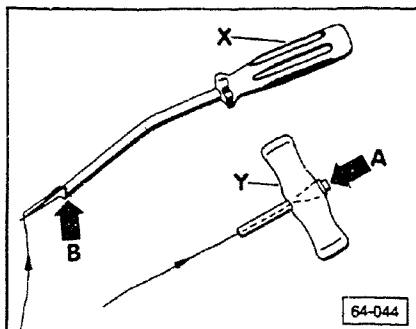
Always install new gap cover molding.

- push cutting wire approximately 450 mm (17 1/2 in.) long through adhesive in area of upper C-pillar. With pliers, pull cutting wire into interior of car

Glass, Window Regulators

CAUTION

When cutting out window do not use sawing action with wire, otherwise wire will heat up very quickly and break. Also, do not kink or twist cutting wire.



Note

Two mechanics are required to cut out window.

If it is necessary to remove an undamaged window, extreme care is required when applying pressure to glass to force out of frame.

Mask the window opening with tape to prevent damage to paint and trim.

- attach ends of cutting wire to tool VW 1351, so part X is inside and part Y outside of car. Thread wire through in direction of arrows and secure ends at screws A and B

- push tip of tool X in direction of arrow A into seal (inside car)
- pull handle Y down (arrow B) until cutting wire reaches point Z
- pull cutting wire back into car
- push tip of tool X into seal 100-200 mm (4-6 in.) further along window frame
- repeat cutting procedure around entire window

Note

Cut through seal of C-pillar first, then continue at top of window and work around.

Trim clips are mounted directly to glass. When cutting near clip locations, pull wire around outside of clips. Do not remove clips.

CAUTION

Depending on extent of paint damage in removing side window, touch-up or repaint as required.

Side window, installing

Note

If body repair has been done, body flange must be cleaned and primed with primer from adhesive kit.

Note

The ceramic black-out band around glass is not primer. Before applying adhesive sealant, prime this area with from adhesive kit.

If an unbroken window is to be reused, use a utility knife to cut any remaining adhesive sealant on the glass and metal flange back until smooth.

- do not remove completely

The remaining sealant acts as a base for application of new adhesive sealant. Keep surfaces free of dirt and grease.

- cut sealing material off outside of glass and C-pillar cover as completely as possible
- cut remaining sealer on metal flange smooth with utility knife but do not remove completely
- using the cleaning solution clean a strip approximately 50 mm (2 in.) wide around inside of glass, along outside in C-pillar area and also clean flange of C-pillar cover to be bonded to glass
- dry areas cleaned using a lint-free cloth

Note

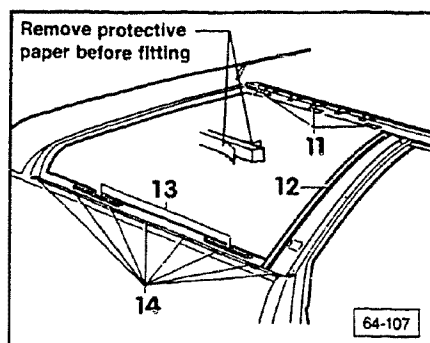
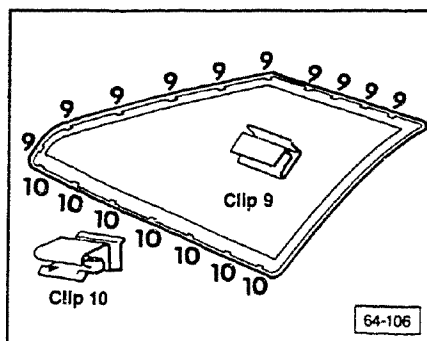
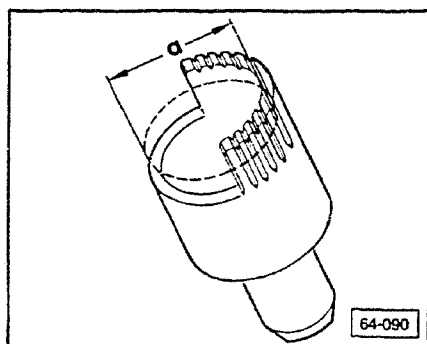
The applicator head does not need to be cut for this priming operation.

- place felt in applicator head
- shake primer well (minimum 30 seconds) and pour into applicator bottle
- place applicator head on bottle
- prime outside of glass 10 mm wide along C-pillar

Glass, Window Regulators

CAUTION

Do not retouch strip of primer until it has completely dried.



Note

Apply primer to glass smoothly and uniformly in one continuous operation.

Start application with the felt completely saturated.

Minimum drying time: 10 minutes.

- cut applicator head to the necessary primer width
 - $a = 22 \text{ mm (7/8 in.)}$
- prime inside of glass and C-pillar cover
 - inside inside width = 22 mm (7/8 in.)
 - C-pillar cover = 22 mm (7/8 in.)

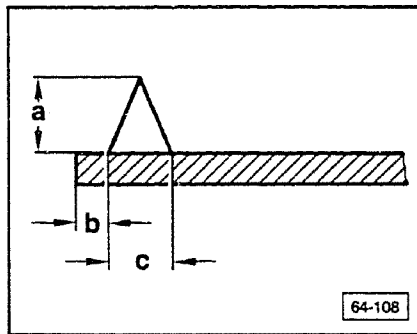
- fit clips for trim molding 10 and gap cover 9 in spaces in ceramic coating

Note

Do not interchange clips.

- fit gap cover molding for side window
- stick spacer beading on metal window flange
 - spacer beading, roof 11 = 40 mm (1 39/64 in.)
 - spacer beading, C-pillar 12 = 400 mm (16 in.)
 - spacer beading, lower 13 = 200 mm (8 in.)
- stick adhesive strips 14 onto body, locating to areas which will be immediately below clips on installed window

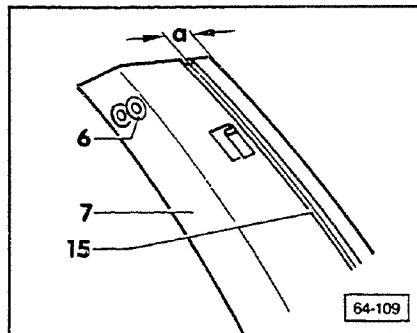
Glass, Window Regulators



- apply adhesive sealing material around perimeter of inside glass surface
 - a = 10 mm (25/64 in.)
 - b = 4 mm (5/32 in.)
 - c = 8 mm (5/16 in.)

Note

The bead cross-section is governed by the size of the nozzle opening and by the application speed.



- apply adhesive sealing material 15 to C-pillar cover 7
 - a = 20 mm (25/32 in.)
 - cross-section of adhesive bead = approximately 4 mm (5/32 in.)

Note

The cross-section is obtained by applying the adhesive very quickly.

- if sealing rings 6 are damaged, remove rings and replace with plastic tape

Note

If the C-pillar cover is replaced separately, adhesive **AMV 176 000 05** can also be used.

Roughen up adhesive surface on C-pillar cover with emery cloth and then clean area with solvent.

- place glass in window opening with aid of double suction pad holder
- align glass properly, gap cover molding must contact along D-pillar and roof trim molding
- press glass firmly into position
- clip trim molding on
- secure C-pillar cover with three rivets, Part Number **N 909 244.01**
- install interior molding at lower edge of window
- install side trim panel
- install guide for rear compartment load area cover
- screw seat locking pin in and adjust

CAUTION

Part numbers are for reference only. Always check with your Parts Department for latest information.

Glass, Window Regulators

Note

Rotary latch lock on backrest must contact in center of locking pin.

- tighten nut
 - tightening torque: 50 Nm (36 ft lb)
- install molding between side window and headliner
- install folding cover for rear compartment

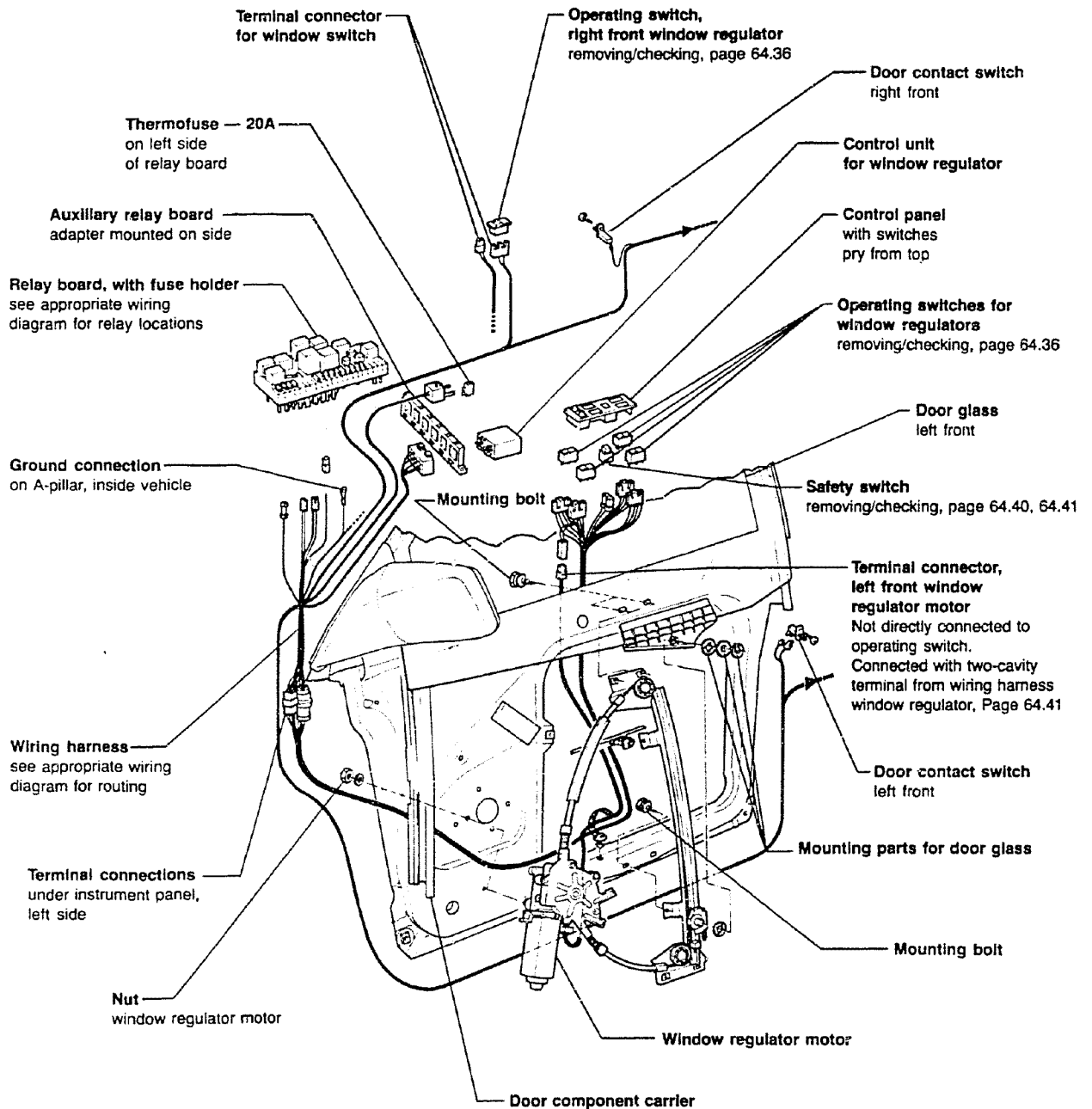
Side window, sealing leaks

In the area of roof, D pillar and lower part of window, the glass should be sealed from inside. In the area of C pillar, seal glass from outside. C pillar cover must be removed to seal leaks in C pillar area.

THIS FRAME INTENTIONALLY LEFT

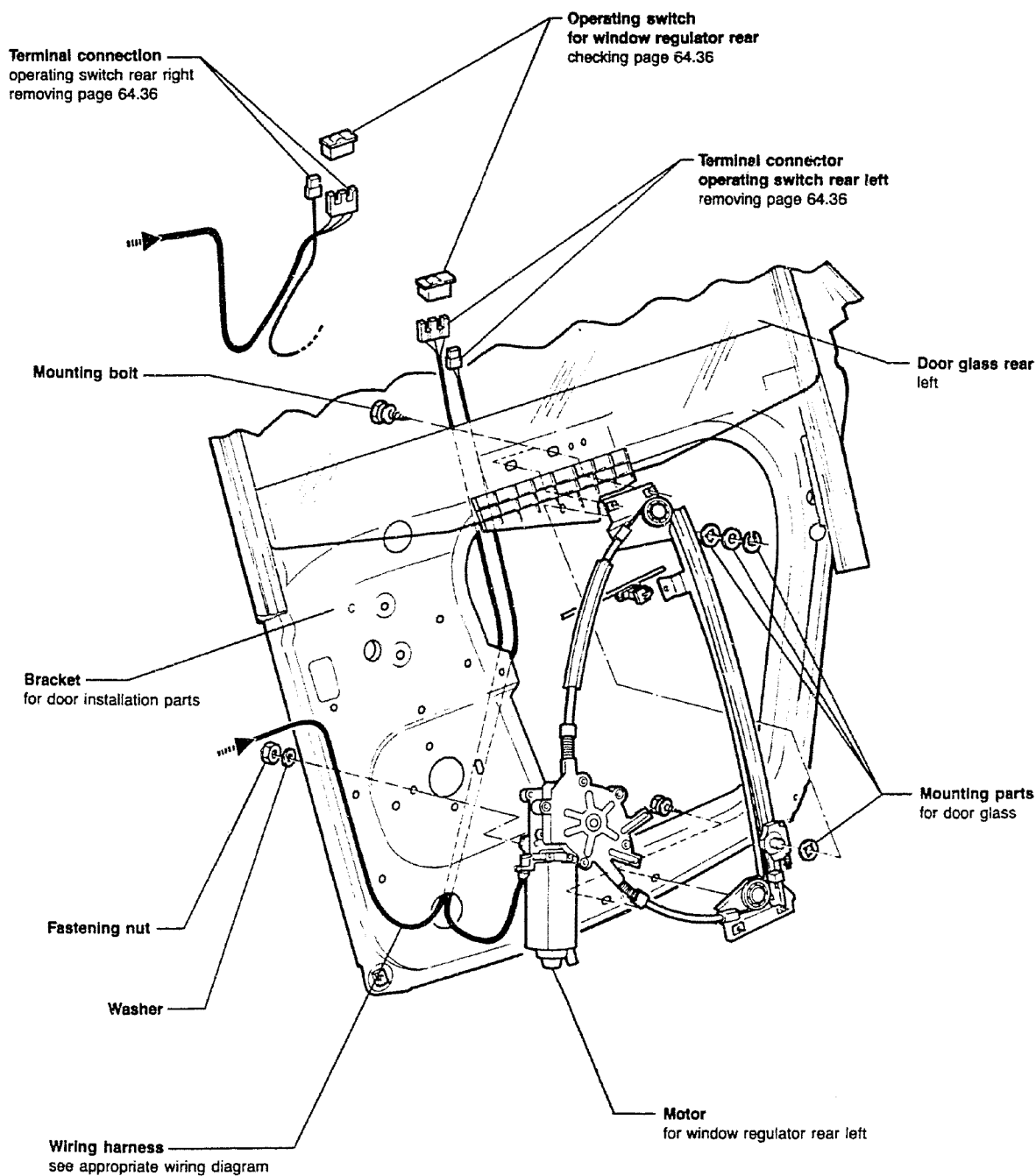
BLANK

Glass, Window Regulators



96-047

Glass, Window Regulators



96-948

Power window regulators, troubleshooting

Note

Refer always to appropriate wiring diagram.

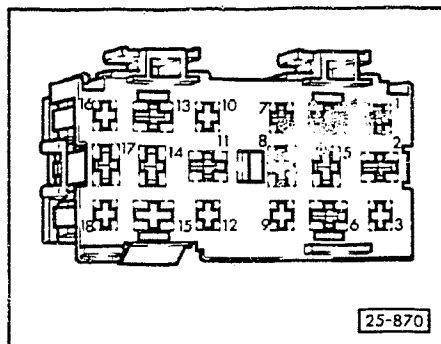
Test conditions

- battery **OK**
- rear window safety switch disengaged
- with ignition on, control unit "clicks" when drivers window switch activated

Tools required

- multimeter **US 1119**
- LED tester **US 1115**
- test adapter **VW 1594**
- Sun **VAT 40** or **VAT 60** or equivalent with current test lamp

No window operates

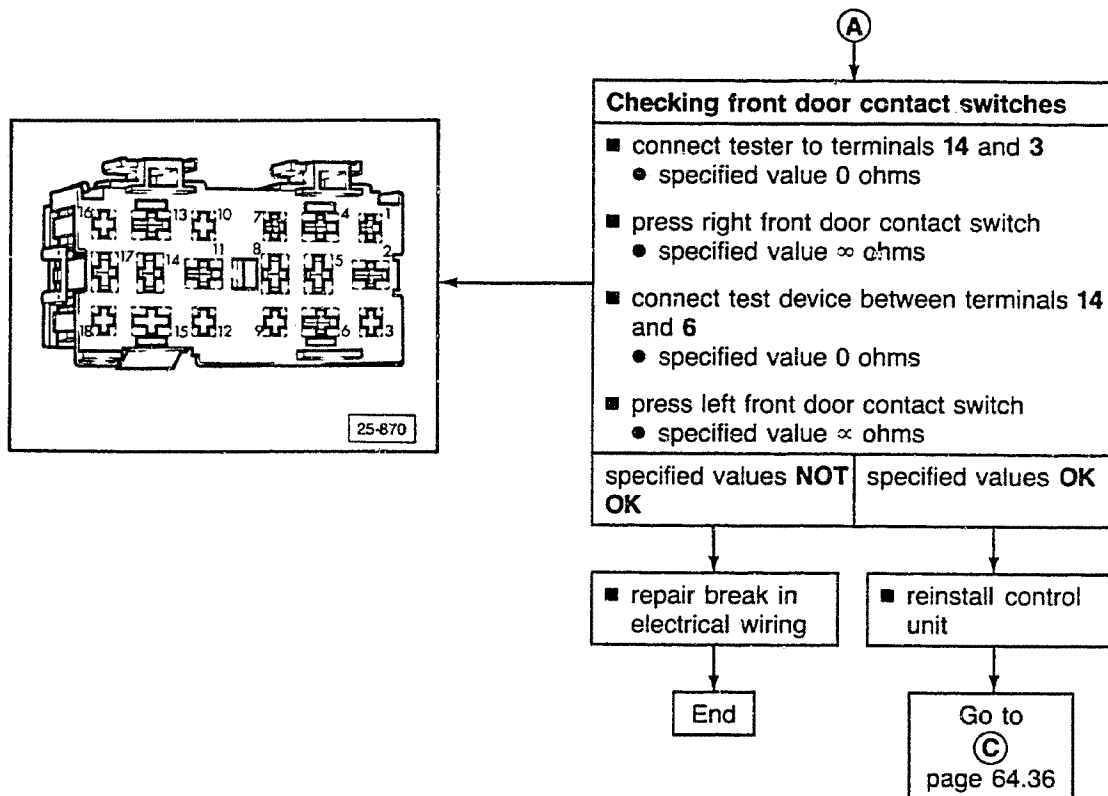


No power	
■ remove left lower dashboard cover ■ pull control unit from auxiliary relay panel ■ connect tester to terminals 14 and 2 • must read 12V ■ connect tester to terminals 14 and 1 ■ turn on ignition • tester must read 12V	
specified values NOT OK	specified values OK

- repair break in electrical wiring
or
- replace thermofuse

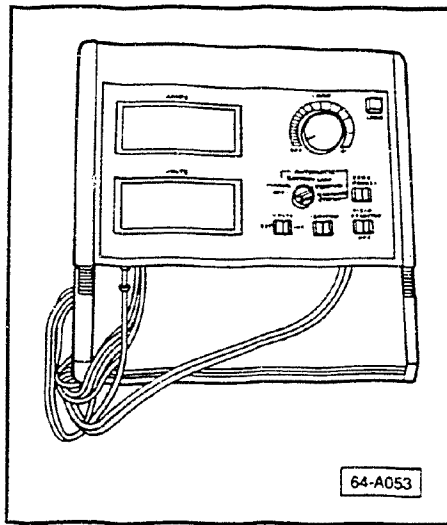
Go to
Ⓐ
page 64.34

End



Glass, Window Regulators

One front, or rear door window not working



Window regulator current draw, checking (installed)

- connect volt/ampere tester
Sun VAT 40, or VAT 60 or equivalent
 - Sun VAT 60 shown
- connect inductive pick-up to battery ground strap
- switch ignition **ON**
- press operating switches for window regulators one after the other (open or close)
- measure current draw during window switch operation
 - must be **6-12A** (during window travel)

Note

The tester will always indicate a certain current reading when the ignition is switched on; this reading will vary according to operating conditions and the type of model and equipment, to correct:

- zero tester to compensate for other electrical consumers
- after glass is at top or bottom and switch depressed, current must be between **15-20A** (stall current)

specified readings
NOT obtained;
window motor not
drawing current

tester registers stall
current and window
glass does not move

specified
values
OK

window
regulator
OK

End

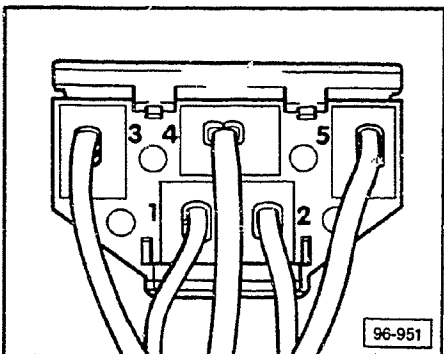
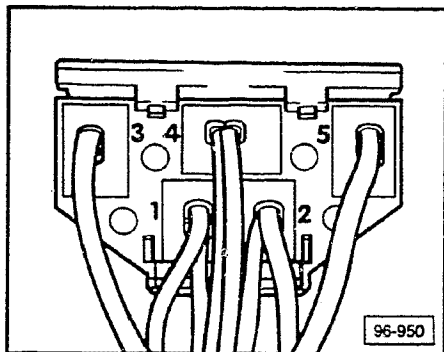
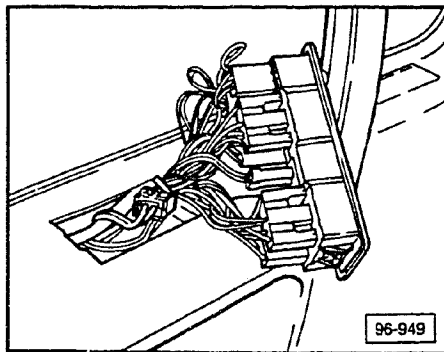
specified
values **NOT**
OK
no current
draw

Go to ©
page 64.36

stall current
OK
window does
not move

Go to
page 64.39

Glass, Window Regulators



Driver's window operating switch, checking

- remove control unit from door trim panel
 - wire to left front window regulator motor routed through terminal T2
- turn on ignition
- measure voltage between terminals 3 and 4, 5 and 4
 - must read approximately 12V
- connect tester to terminals 3 and 2
- lower window
 - must read approximately 12V

Note

Voltage can only be measured while door glass is being lowered.

- connect tester to terminals 3 and 1
- raise window
 - must read approximately 12V

Operating switches for right front, rear window, checking

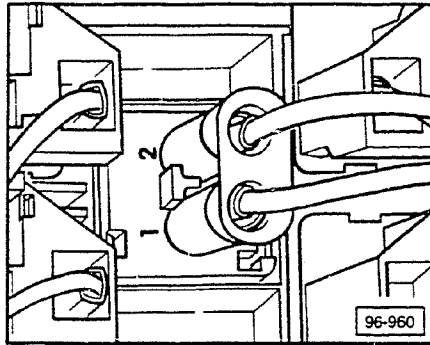
Note

Do not disconnect terminals from control panel.

- turn on ignition
- measure voltage between terminals 3 and 4, 5 and 4
 - must read approximately 12V
- connect tester to terminals 3 and 2
- lower window
 - must read approximately 12V

Go to
Ⓓ
page 64.37

Glass, Window Regulators



Rear window safety switch, checking

Note

Switch must not be depressed. Do not disconnect terminals.

- turn on ignition
- connect tester to ground and terminal 2
 - must read 12V
- connect tester to ground and terminal 1
 - must read 0V
- depress safety switch
- connect tester to ground and terminal 1
 - must read approximately 12V

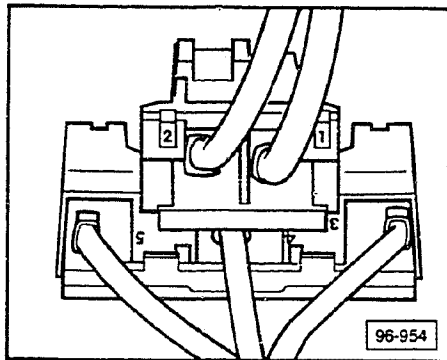
specified values **NOT**
OK

specified values **OK**

- repair break in electrical wiring
or
- check operating switches, safety switch for continuity. Go to Page 64.41

Go to Page
64.38

Window operating switches in doors



Right front window switch, checking

- remove switch from door trim panel
 - do not disconnect wiring
- turn on ignition
- measure voltage between terminals 3 and 4, 5 and 4
 - must be approximately 12V
- connect tester to terminals 3 and 2
- lower window
 - must read approximately 12V
- connect tester to terminals 3 and 1
- raise window
 - must read approximately 12V
- test rear window switches in same way
 - safety switch in control panel must be depressed

specified values **NOT**
OK

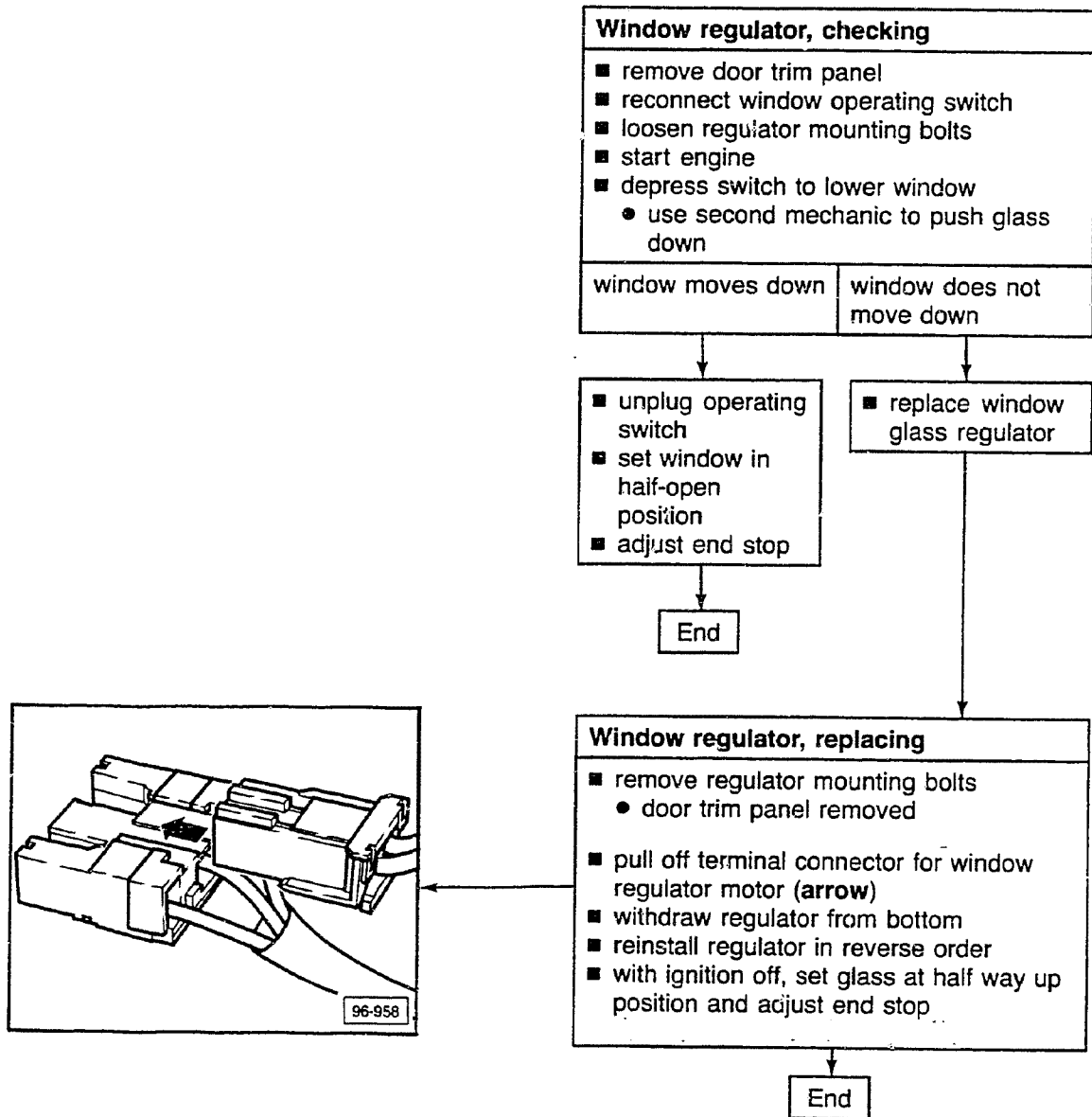
specified values **OK**
window does not
move

- repair break in
electrical wiring
or
- check switches
for continuity. Go
to Page 64.41

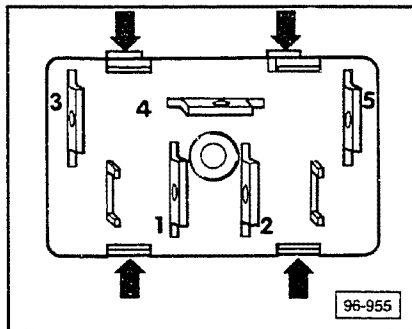
- repair wiring to
window regulator
motor, or replace
window
regulator. Go to
Page 64.39

End

Glass, Window Regulators



Glass, Window Regulators



Window regulator operating switches, replacing

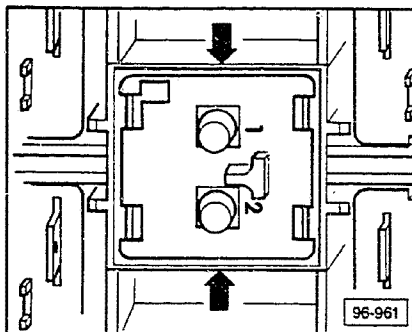
- pry out from door trim panel
- pull off terminal connector

Driver's door control panel switches

- pry switch from panel at points shown (arrows)
- push switch out of panel from bottom

Right front, rear window operating switches

- pry out of door trim panel
- reinstall in reverse order, noting:
 - switches are pressed in until "click" is heard



Safety switch, removing/installing

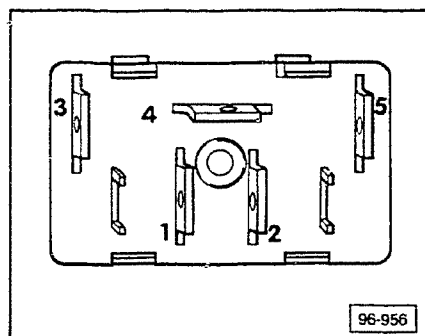
Removing

- remove control panel from door
- insert small screwdriver at arrows and twist slightly
 - press switch out at same time

Installing

- install in reverse order, noting:
 - push switch in until "click" is heard

Glass, Window Regulators



Window regulator switches, checking continuity

- remove switch
 - pry out
- pull off terminal connector
- connect tester to terminals 5 and 2, then 3 and 1
 - specified value 0 ohms
- connect tester to terminals 4 and 2
 - specified value ∞ ohms
- operate switch to lower window
 - specified value 0 ohms
- connect tester to terminals 4 and 1
 - specified value ∞ ohms
- operate switch to raise window
 - specified value 0 ohms

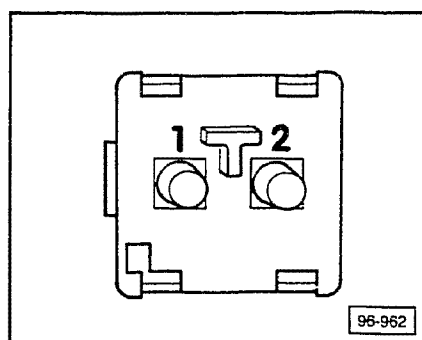
specified values **NOT**
OK

specified values **OK**

- replace operating switch

End

End



Safety switch, checking continuity

- remove driver's door control panel
- connect tester to terminals 1 and 2
 - specified value ∞ ohms
- push button in
 - specified value 0 ohms

specified values **NOT**
OK

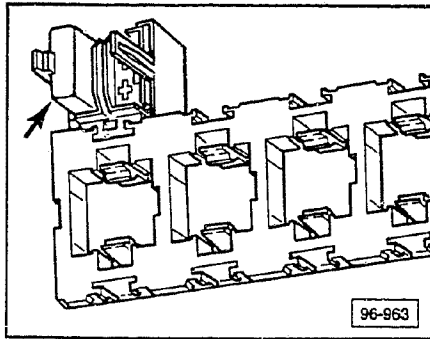
specified values **OK**

- replace safety switch

End

End

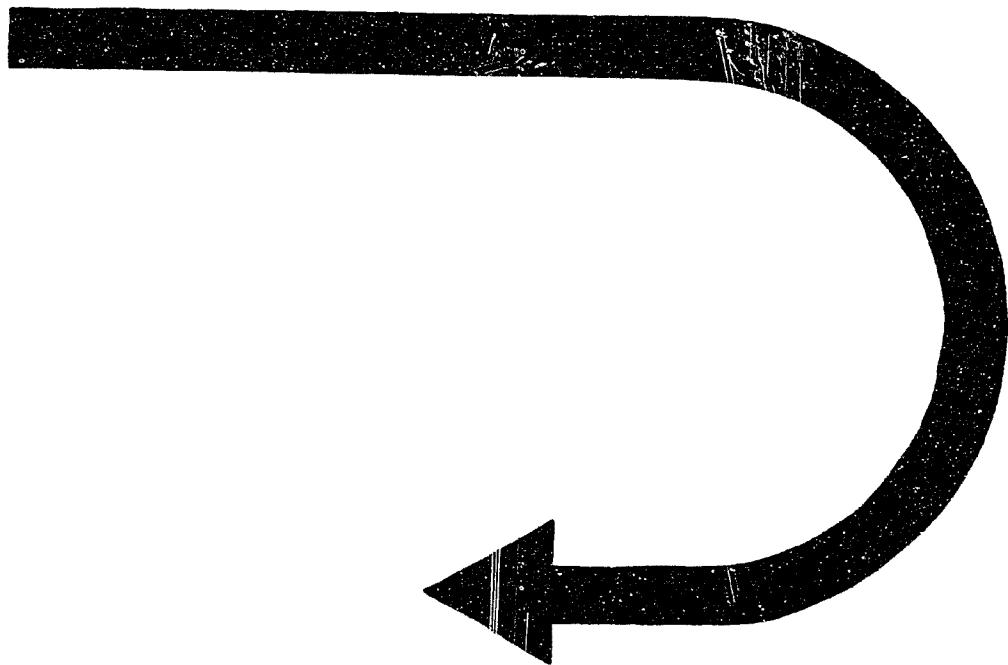
Glass, Window Regulators



Thermofuse, location

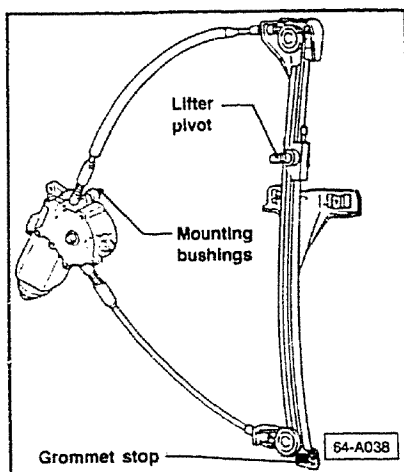
On left side of auxiliary relay panel (arrow).

CONTINUED IN THE
BEGINNING OF NEXT ROW



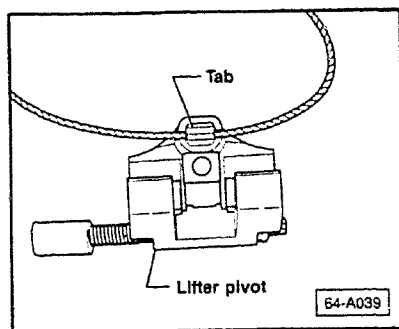
Glass, Window Regulators

Window regulator assembly, inspecting



CAUTION

Part numbers are for reference only. Always check with your Parts Department for latest parts information.



Note

Before replacing/repairing window regulator components, check window switch, electrical wiring for proper function.

- remove door trim panel
- inspect the following

Regulator drive cable

If cable broken or frayed, window regulator drive cable assembly must be replaced. Go to page 64.55.

Lifter pivot

If tab broken or loose, reattach with modified swivel pins. Go to page 64.54.

Grommet stop

Replace if missing or cracked,
Part Number **443 837 486**

Electric motor mounting bushing

Replace if split or broken,
Part Number **431 133 741**

Glass, Window Regulators

CAUTION

Part numbers are for reference only. Always check with your Parts Department for latest parts information.

CAUTION

Disassemble window regulator motor on clean work surface.

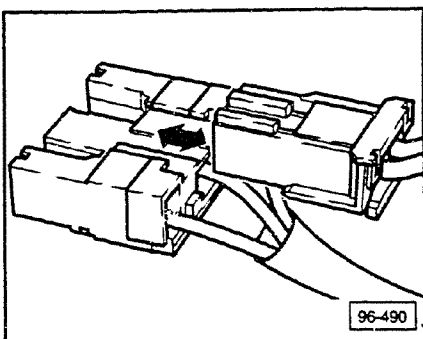
NO dirt or dust must enter motor.

Relubricate with grease
G 000 450 02 or
equivalent as required.

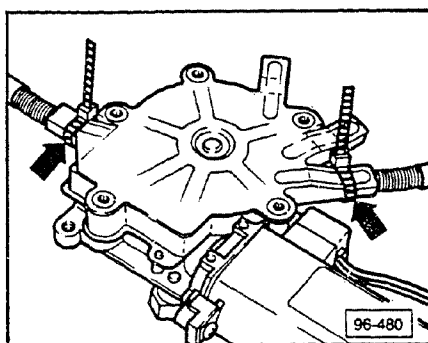
Window regulator motor/ disassembling

Note

Before disassembling window regulator motor, check window switch, electrical wiring and mechanical portion of regulator assembly for proper operation.

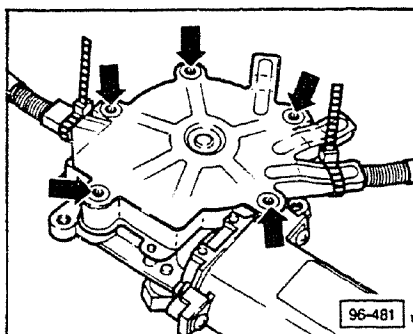


- remove door trim panel
- remove inner door panel
- remove regulator mounting bolts, and remove regulator from inner door panel
- pull off terminal connector for regulator motor (arrow)

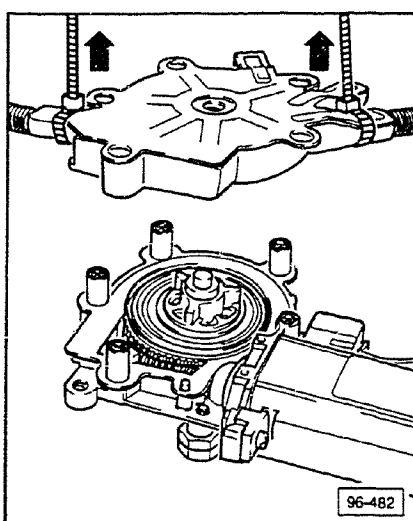


- with regulator removed from door assembly
- clamp housing cover and plastic bearing cover together with tie-wraps as shown (arrows)

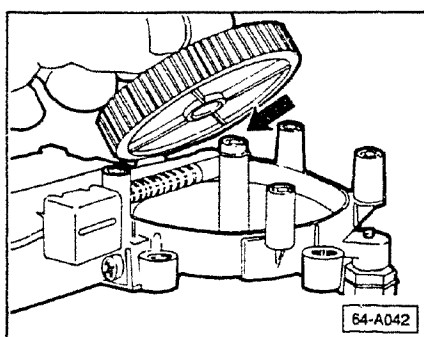
Glass, Window Regulators



- remove mounting bolts securing motor to drive cable housing (**arrows**)

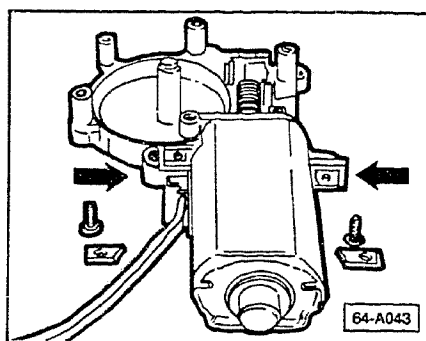


- using a rocking motion, carefully separate drive cable and cable spool from motor
 - do not damage mating surface

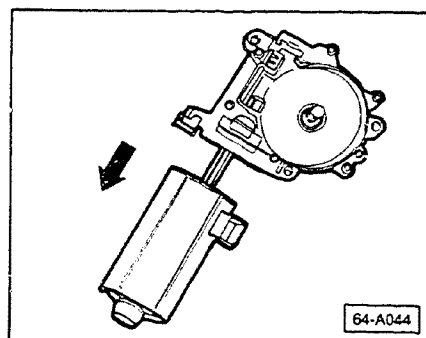


- lift out vaned drive gear and set aside
- clean any corrosion from shaft (**arrow**) with fine grit (400) sandpaper
- lubricate shaft with small amount of water repellent grease **G 000 450 02** or equivalent

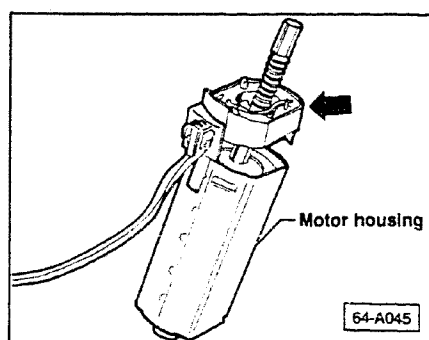
Glass, Window Regulators



- remove two screws and square washers (arrows)



- carefully pry apart motor and gear housing (arrows)
 - use thin blade screwdriver, if necessary

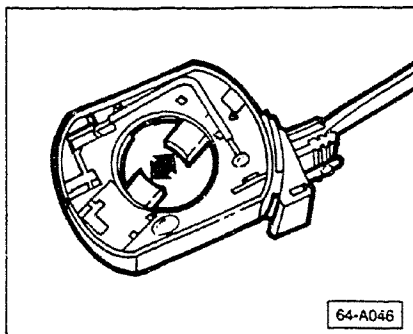


- remove white plastic carbon brush holder from motor housing (arrow)

Glass, Window Regulators

CAUTION

Do not scrape or use any abrasives to clean carbon brushes.



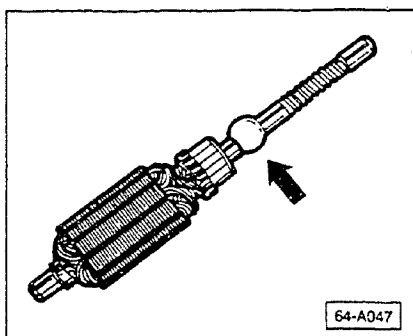
Window regulator motor, inspecting/cleaning

- clean contact surfaces on carbon brushes (**arrow**) with electrical contact cleaner spray
 - commercially available
- dry with compressed air
- remove armature from motor housing and inspect armature

Note

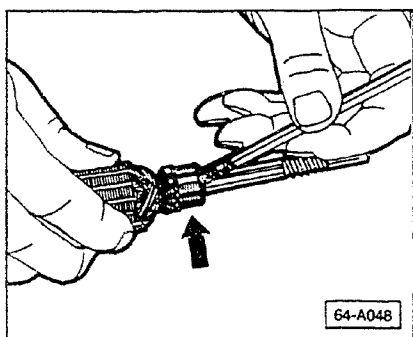
If front armature bushing is seized to armature (**arrow**), proceed as follows:

- carefully remove bushing
- remove any burrs from armature shaft and inside of bushing
- reinstall bushing into gear housing

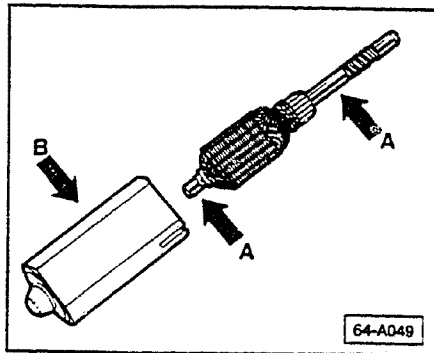


CAUTION

Do not use any abrasive materials on commutator or brushes.



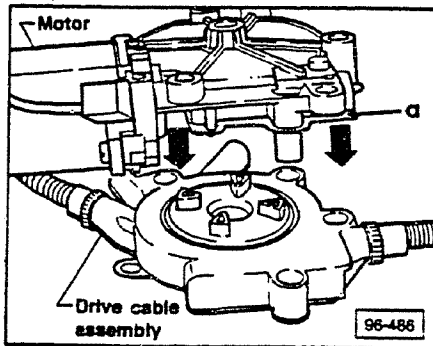
- clean commutator (**arrow**) with pencil eraser
- clean between commutator segments with a wooden toothpick



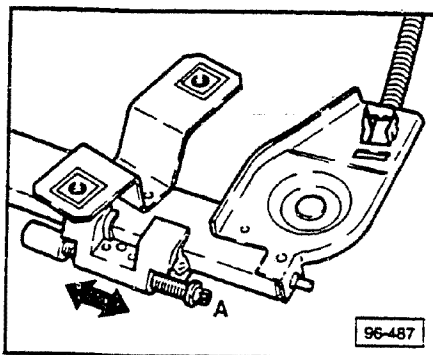
- lubricate shaft at A with G 000 450 02 or equivalent
- clean inside of motor case B with Brakleen® or equivalent
- blow dry with compressed air

Window regulator motor, reassembling

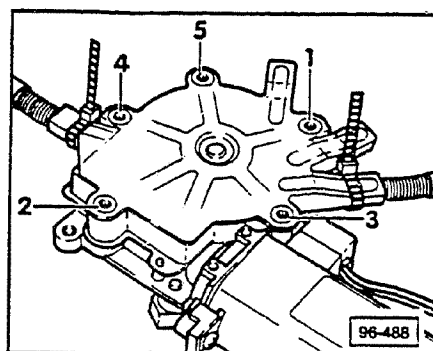
Reinstall all window regulator motor components in reverse order of removal, noting the following:



- install brush assembly on commutator
- slide armature with brush assembly into motor housing
- attach motor to gear housing and install vaned drive gear
- reinstall regulator motor to drive cable assembly
 - apply slight amount of grease to secure gasket a when installing

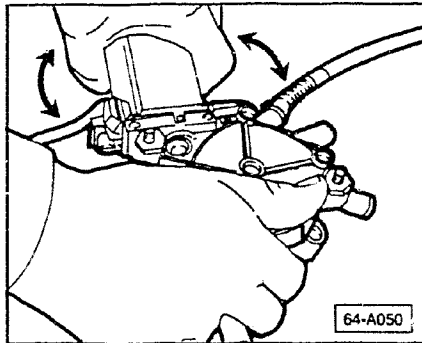


- if regulator motor and cable drive assembly cannot be fitted together move cable carrier slightly (arrow)
- do not turn screw A for upper window stop



- reinstall and tighten mounting bolts diagonally in numerical order as shown
 - 3 Nm (2.2 ft lb)

Glass, Window Regulators



- connect regulator assembly to power supply
- operate motor in both directions
- if motor is noisy in one or both directions, proceed as follows:
 - loosen two screws securing motor to gear housing
 - gently twist motor housing back and forth while operating motor
 - retighten screws when motor is operating the quietest
- cut off excess length of tie-wraps to prevent getting caught in window regulator
- reinstall window regulator and door panel
- test window for proper function

Glass, Window Regulators

CAUTION

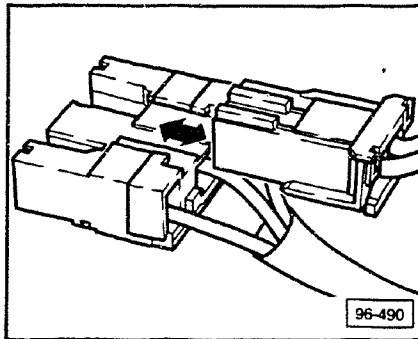
Part numbers are for reference only. Always check with your Parts Department for latest parts information.

CAUTION

Disassemble window regulator on clean work surface.

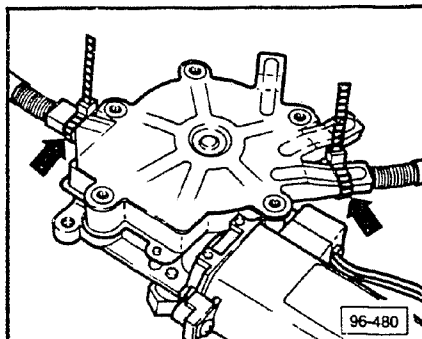
NO dirt or dust must enter motor.

Relubricate with grease
G 000 450 02 or
equivalent as required.



CAUTION

Do not remove tie-wraps after completing repair.



Window regulator motor/replacing

Note

Before replacing window regulator motor, check window switch, electrical wiring and mechanical portion of regulator assembly for proper operation.

Parts required

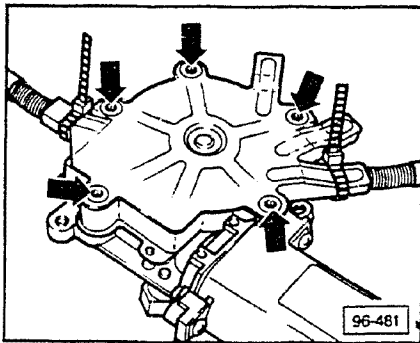
Audi 100/200

Description	m.y.	Part number	Quantity
Regulator motors			
Front left	1989-	443 959 801F	1
Front right	1989-	443 959 802F	1
Rear left	1989-	443 959 801F	1
Rear right	1989-	443 959 802F	1

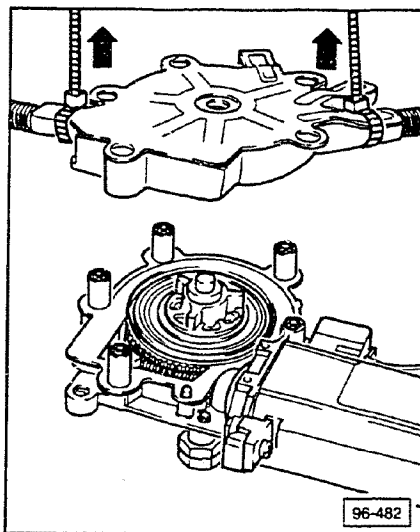
- remove door trim panel
- remove inner door panel
- remove regulator mounting bolts, and remove regulator from inner door panel
- pull off terminal connector for regulator motor (arrow)

- with regulator removed from door assembly clamp housing cover and plastic bearing cover together with tie-wraps as shown (arrows)

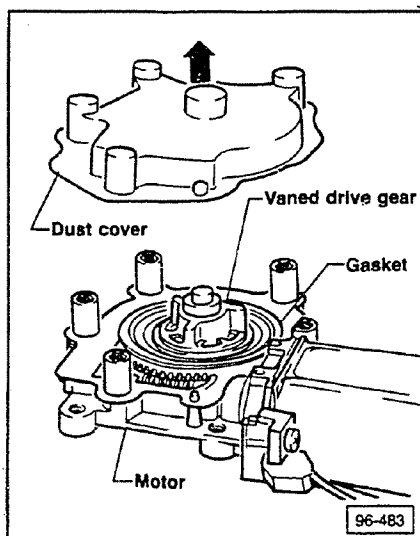
Glass, Window Regulators



- remove mounting bolts securing motor to drive cable housing (arrows)

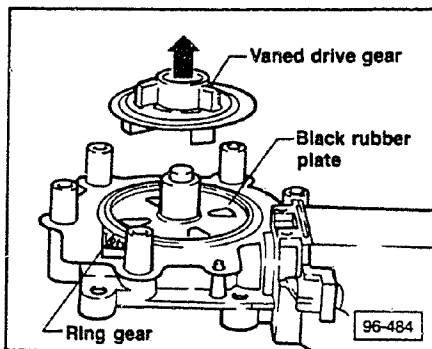


- using a rocking motion, carefully separate drive cable and cable spool from motor
 - do not damage mating surface



- remove plastic dust cover from new regulator motor
 - three vaned plastic drive gear and gasket remain on motor

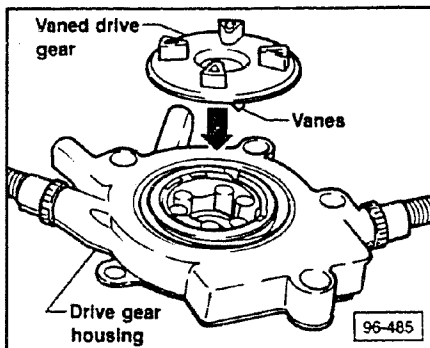
Glass, Window Regulators



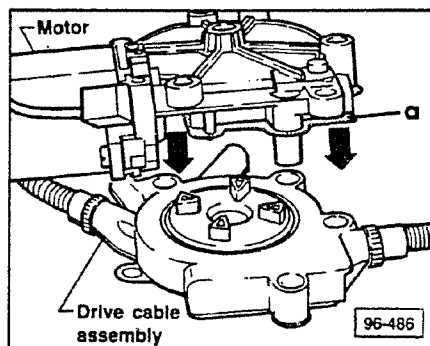
- carefully lift vaned drive gear from new regulator motor (**arrow**)
- black rubber plate and ring gear **stay** inside motor housing

CAUTION

Vanes must fit securely into drive cable housing.

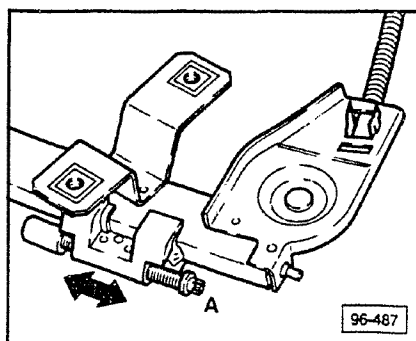


- insert vaned drive gear into drive cable housing (**arrow**) as shown

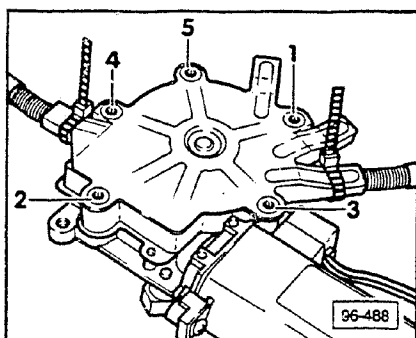


- reinstall new regulator motor to drive cable assembly
- apply slight amount of grease to secure gasket **a** when installing

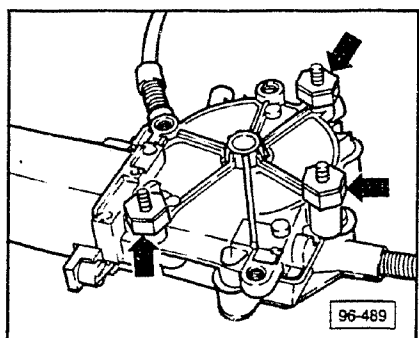
Glass, Window Regulators



- if regulator motor and cable drive cannot be fitted together move cable carrier slightly (**arrow**)
- do not turn screw **A** for upper window stop



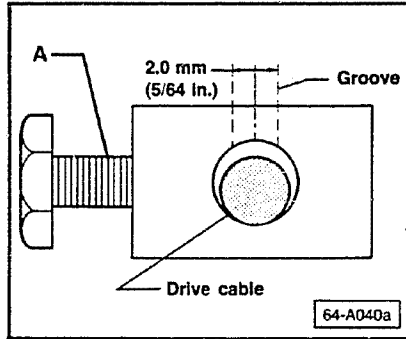
- reinstall and tighten mounting bolts diagonally in numerical order as shown
 - 3 Nm (2.2 ft lb)
- cut off excess length of tie-wraps to prevent getting caught in window regulator



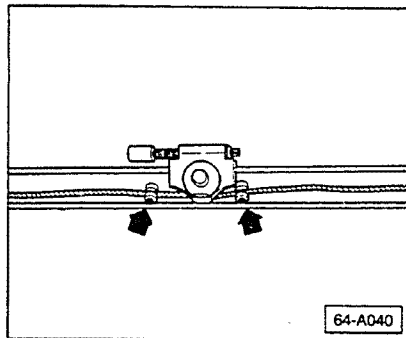
- remove rubber hex bushings from old motor (**arrow**) and reinstall on new motor
- reinstall window regulator and door panel
- test window for proper function

Glass, Window Regulators

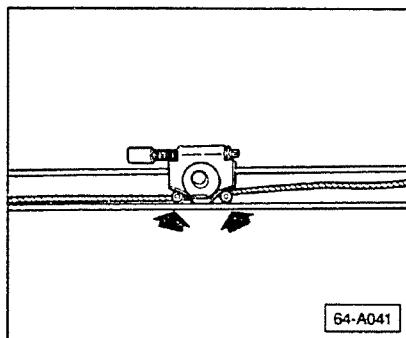
Window lifter pivot, repairing



- modify two swivel pins, Part Number 111 129 921 by cutting a 2.0 mm (5/64 in.) groove in middle (as shown) with a tungsten carbide rod saw or equivalent
 - coat screw A with Loctite



- install lug in cable guide
- insert modified swivel pins on both sides of cable guide (**arrows**)



- move pins (**arrows**) up to cable guide, and tighten screws
- check window regulator for proper function

CAUTION

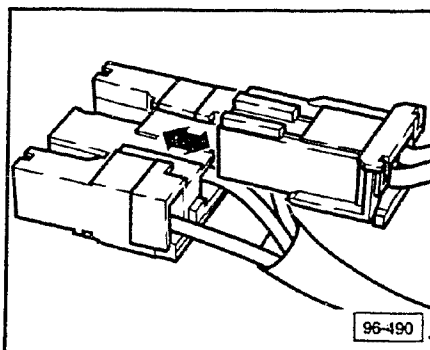
Part numbers are for reference only. Always check with your Parts Department for latest parts information.

CAUTION

Disassemble window regulator assembly on clean work surface.

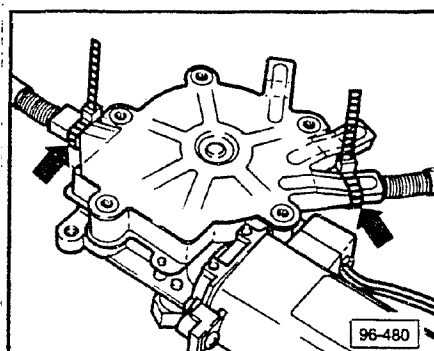
NO dirt or dust must enter motor.

Relubricate with grease
G 000 450 02 or equivalent as required.



CAUTION

Do not remove tie-wraps after completing repair.



Window regulator drive cable assembly, replacing

Note

Before replacing window regulator motor, check window switch, electrical wiring and mechanical portion of regulator assembly for proper operation.

Parts required

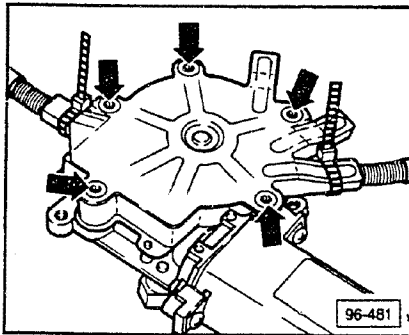
Audi 100/200

Description	m.y.	Part number	Quantity
Regulator drive cable assembly			
Front left	1989-	443 837 397C	1
Front right	1989-	443 837 398C	1
Rear left	1989-	443 839 397C	1
Rear right	1989-	443 839 398C	1

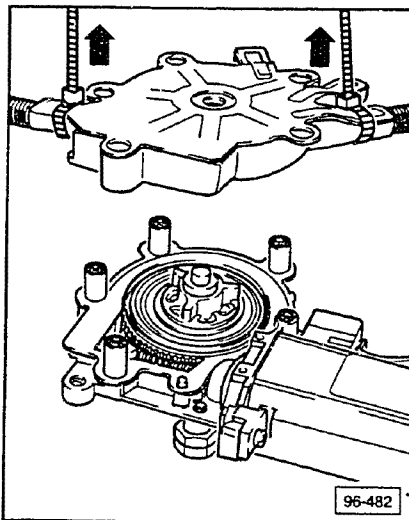
- remove door trim panel
- remove inner door panel
- remove regulator mounting bolts, and remove regulator from inner door panel
- pull off terminal connector for regulator motor (arrow)

- with regulator removed from door assembly
- clamp housing cover and plastic bearing cover together with tie-wraps as shown (arrows)

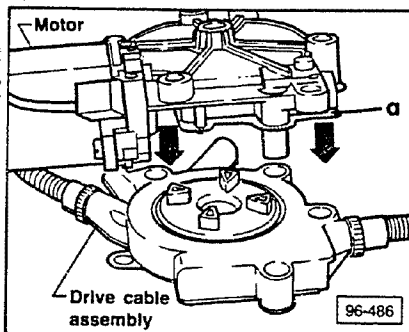
Glass, Window Regulators



- remove mounting bolts securing motor to drive cable housing (arrows)

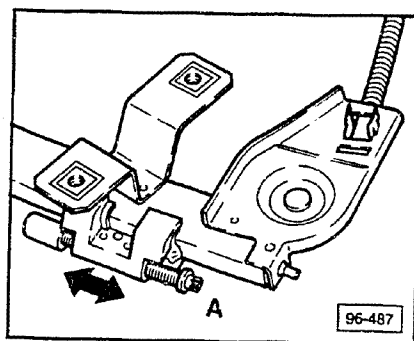


- using a rocking motion, carefully separate drive cable and cable spool from motor
 - do not damage mating surface

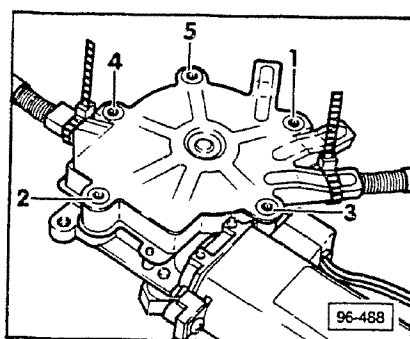


- reinstall replacement window regulator drive cable assembly onto motor
 - apply slight amount of grease to secure gasket a when installing

Glass, Window Regulators



- if regulator motor and cable drive cannot be fitted together move cable carrier slightly (**arrow**)
- measure stop screw **A** on old regulator assembly and adjust stop screw on replacement regulator to same length



- reinstall and tighten mounting bolts diagonally in numerical order as shown
 - 3 Nm (2.2 ft lb)
- cut off excess length of tie-wraps to prevent getting caught in window regulator

Note

Before installing window regulator into vehicle, test function by connecting window regulator to 12V power supply, and operate in both directions.

- reinstall window regulator and door panel
- test window for proper function